Coastal Engineering Building

5236 Randall Drive
Wilmington, NC 28403

University of North Carolina Wilmington

September 14, 2020

DRAWING LIST

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DRAWING LIST

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- TC201 FIRST FLOOR TECHNOLOGY PLAN
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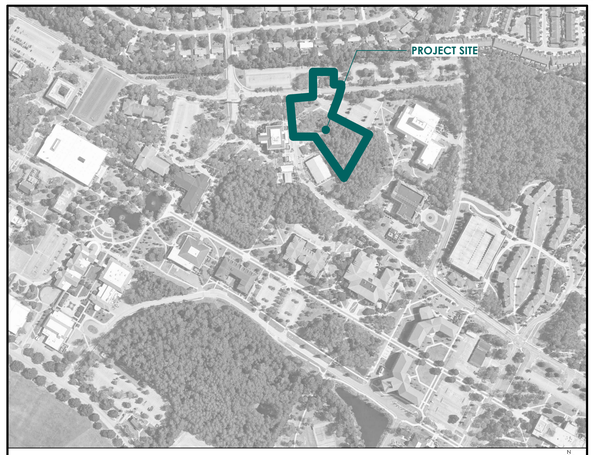
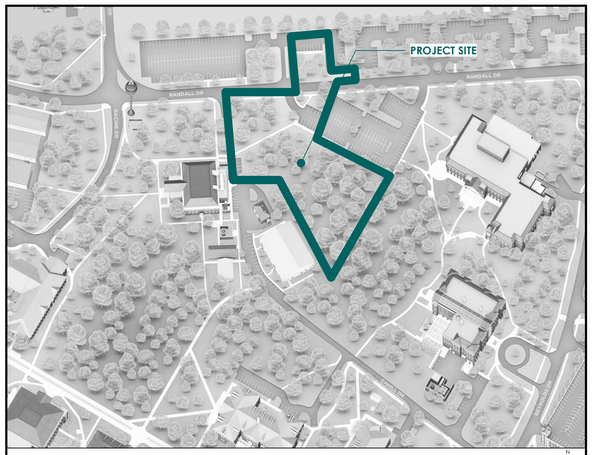


LOCATION MAP



VICINITY MAP

CIVIL	LANDSCAPE	STRUCTURAL	ARCHITECTURAL	INTERIORS	PLUMBING	MECHANICAL	ELECTRICAL	FIRE PROTECTION
McAdams 2905 Meridian Parkway Durham, NC 27713 (919)361-5000 https://mcadamsco.com/	McAdams 2905 Meridian Parkway Durham, NC 27713 (919)361-5000 https://mcadamsco.com/	Laurene, Rickher, & Sorrell 8701 Red Oak Boulevard, Suite 500 Charlotte, NC 28217 (704)522-0495 http://www.lrspc.net	SGA | Narmour Wright Design 1815 S. Tryon St. Suite A Charlotte, NC 28203 (704)332-5668 www.sganwdesign.com	SGA | Narmour Wright Design 1815 S. Tryon St. Suite A Charlotte, NC 28203 (704)332-5668 www.sganwdesign.com	Optima Engineering 1927 S. Tryon Street, Suite 300 Charlotte, NC 28203 (704)338-1292 http://www.optimapa.com	Optima Engineering 1927 S. Tryon Street, Suite 300 Charlotte, NC 28203 (704)338-1292 http://www.optimapa.com	Optima Engineering 1927 S. Tryon Street, Suite 300 Charlotte, NC 28203 (704)338-1292 http://www.optimapa.com	Optima Engineering 1927 S. Tryon Street, Suite 300 Charlotte, NC 28203 (704)338-1292 http://www.optimapa.com

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MARK WINSTON GRIFFITH
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CHARLOTTE, NORTH CAROLINA
9/14/20

CONSTRUCTION DOCUMENTS

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403
SCO PROJECT NUMBER: 20-21673-01

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

DESIGNED BY: AT
DRAWN BY: AT
CHECKED BY: MS

ISSUE DATE:
September 14, 2020

COVER SHEET

G000

9/18/2020 8:10:11 AM

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2018 APPENDIX B
BUILDING CODE SUMMARY
FOR ALL COMMERCIAL PROJECTS

(EXCEPT 1 AND 2-FAMILY DWELLINGS AND TOWNHOUSES)

Name of Project: Coastal Engineering Building

Address: 5236 Randall Drive, Wilmington, NC 28403

Proposed Use: Applied Learning Research Labs, Offices, and Classrooms

Owner/Authorized Agent: David Holsinger

Phone Number: (910) 962-7897

Email Address: holsingerd@uncw.edu

Owned By: ☐ City/County ☐ Private ☒ State

Code Enforcement Jurisdiction: ☐ City: _____ ☐ County: _____ ☒ State NC

Lead Design Professionals:

Designer Discipline:	Firm:	Contact:	Lic. #:	Telephone #:	Email Address:
Architectural	SGA | NW Design	Mark Sealy	5721	(704)332-9556	msealy@sganwdesign.com
Civil	McAdams	Daryl Riggins	027404	(919)361-5000	riggins@mcadamsco.com
Electrical	Optima Engineering	Brandon Miller	028297	(704)338-1292	bmiller@optimaengineering.com
Fire Alarm	Optima Engineering	Brandon Miller	028297	(704)338-1292	bmiller@optimaengineering.com
Plumbing	Optima Engineering	George Fowler	26203	(704)338-1292	gfowler@optimaengineering.com
Mechanical	Optima Engineering	Ron Almond	17228	(704)338-1292	ralmond@optimaengineering.com
Sprinkler/Standpipe	Optima Engineering	George Fowler	26023	(704)338-1292	gfowler@optimaengineering.com
Structural	Laurene, Rickher, & Sorrell	Mark Rickher	15464	(704)522-0495	mrickher@lrspc.net
Retaining Walls (>5')	NA	NA	NA	NA	NA
Landscape	McAdams	Daryl Riggins	027404	(919)361-5000	riggins@mcadamsco.com

2018 NC Code For: ☒ New Construction ☐ Addition ☐ Renovation ☐ 1st Time Interior Completion ☐ Shell/Core ☐ Phased Construction

2018 NC Existing Building Code: NA

Alteration: NA

Constructed (date): NA Original Occupancy (Ch. 3): NA

Renovated (date): NA Current Occupancy (Ch. 3): NA

Risk Category (Table 1604.5): ☐ I ☒ II ☐ III ☐ IV

Basic Building Data:

Construction Type: IIB

Sprinklers: Yes/NFPA 13

Standpipes: No

Fire District: No

Flood Hazard: No

Special Inspections: Yes

Gross Building Area:

Floor:	Existing (SQ FT):	New (SQ FT):	Reno/Alter:	Sub-Total:
Level 1	0 SF	14225 SF	0 SF	0 SF
TOTAL:				14225 SF

Allowable Area:

Primary Occupancy Classification: Business

Accessory Occupancy Classification(s): Storage

Incidental Uses: NA

Special Uses: NA

Special Provisions: NA

Mixed Occupancy: NA

Seperation (hr):

Exception:

☐ Non-Seperated Use (508.3): The required type of construction for the building shall be determined by applying the height and area limitations for each of the applicable occupancies to the entire building. The most restrictive type of construction, so determined, shall apply to the entire building.

☐ Seperated Use (508.4): See below for area calculations for each story, the area of the occupancy shall be such that the sum of the ratios of the actual floor area of each use divided by the allowable floor area for each use shall not exceed 1.

$$\frac{\text{Actual Area of Occupancy A}}{\text{Allowable Area of Occupancy A}} + \frac{\text{Actual Area of Occupancy B}}{\text{Allowable Area of Occupancy B}} \leq 1$$

$$\frac{\quad}{\quad} + \frac{\quad}{\quad} \leq 1$$

STORY NO.	DESCRIPTION AND USE	(A) BLDG. AREA PER STORY (ACTUAL)	(B) TABLE 506.2 [4] AREA	(C) AREA FOR FRONTAGE INCREASE [1,2]	(D) ALLOWABLE AREA PER STORY OR UNLIMITED [2,3]
1	Business	14,225 SF	92,000 SF	NA	NA

Frontage area increases from Section 506.2 are computed thus:
a. Permiter which fronts a public way or open space having 20 feet minimum width =_____(F)
b. Total Building Perimeter = _____(P)
c. Ratio (F/P) = _____(F/P)
d. W = Minimum width of public way = _____(W)
e. Percent of frontage increase I = 100 [F/P - 0.25] x W/30 = _____%
Unlimited area applicable under conditions of Section 507.
Maximum Building Area = total number of stories in the building x D (maximum 3 stories) (506.2).
The maximum area of open parking garages must comply with Table 406.5.4. The maximum area of air traffic control towers must comply with Table 412.3.1.
Frontage increase is based on the unsprinklered area value in Table 506.2.

Allowable Height:

	ALLOWABLE	ACTUAL	CODE REFERENCE
Building Height in Feet	75' - 0"	31' - 0"	Table 504.3
Building Height in Stories	4 stories	1 story	Table 504.4

Fire Protection:

BUILDING ELEMENT	FIRE SEPERATION DISTANCE (FT)	RATING REQ'D	RATING PROVIDED (W/ REDUCTION)	DETAIL # AND SHEET	DESIGN # FOR RATED ASSEMBLY	SHEET # FOR RATED PENETRATIONS	SHEET # FOR RATED JOINTS
Structural frame, including columns, girders, trusses							
Bearing Walls							
Exterior							
North							
East							
West							
South							
Interior							
Nonbearing walls and partitions							
Exterior walls							
North							
East							
West							
South							
Interior walls and partitions							
Floor Construction Including supporting beams and joists							
Floor Ceiling Assembly							
Columns Supporting Floors							
Roof Construction Including supporting beams and joists							
Roof Ceiling Assembly							
Columns Supporting Roof							
Shaft Enclosures - Exit							
Shafts Enclosures - Other							
Corridor Separation							
Occupancy/Fire Barrier Separation							
Party/Fire Wall Separation							
Smoke Barrier Separation							
Smoke Partition							
Tenant/Dwelling Unit/ Sleeping Unit Separation							
Incidental Use Separation							
Other - ATS		2 hr		A1/G301	UL 263 - U419	E601, M503, P511	N/A
Other - Riser		1 hr		A1/G301	UL 263 - U419	E601, M503, P511	N/A

* Indicate section number permitting reduction

Percentage of Wall Opening Calculations:

FIRE SEPARATION DISTANCE (FEET) FROM PROPERTY LINES	DEGREE OF OPENINGS PROTECTION (TABLE 705.8)	ALLOWABLE AREA (%)	ACTUAL SHOWN ON PLANS (%)
30' - 0" each side	No Limit	No Limit	18%

Life Safety System Requirements:

Emergency Lighting: Yes

Exit Signs: Yes

Fire Alarm: Yes

Smoke Detection: Yes

Carbon Monoxide: No

Life Safety Plan Requirements:

Life Safety Plan Sheet #: G100

☐ Fire and/or smoke rated wall locations (Chapter 7)

☒ Assumed and real property line locations (if not on the site plan)

☐ Exterior wall opening area with respect to distance to assumed property line (705.8)

☒ Occupancy types for each area as it relates to occupant load calculation (Table 1004.1.1)

☒ Occupant loads for each area.

☒ Exit access travel distances (1017)

☒ Common path of travel distance (1006.2.1 & 1006.3.2(1))

☒ Dead end lengths (1020.4)

☒ Clear exit widths for each door

☒ Maximum calculated occupant load capacity each exit door can accomodate based on egress width (1005.3)

☒ Actual occupant load for each exit door

☒ A separate schematic plan indicating where fire rated floor/ceiling and/or roof structure is provided for purposes of occupancy separation

☒ Location of doors with panic hardware (1010.1.10)

☐ Location of doors with delayed egress locks and the amount of delay (1010.1.9.7)

☐ Location of doors with electromagnetic egress locks (1010.1.9.9)

☐ Location of doors equipped with hold-open devices.

☐ Location of emergency escape windows (1030)

☐ Square footage of each fire area (202)

☐ The square footage of each smoke compartment for Occupancy Classification I-2 (407.5)

☐ Note any code exceptions or table notes that may have been utilized regarding itmes above

SECTION / TABLE / NOTE	TITLE

Accessible Dwelling Units (Section 1107) :

TOTAL UNITS	ACCESSIBLE UNITS REQ	ACCESSIBLE UNITS PROVIDED	TYPE A UNITS REQUIRED	TYPE A UNITS PROVIDED	TYPE B UNITS REQUIRED	TYPE B UNITS PROVIDED	TOTAL # ACCESSIBLE UNITS PROVIDED
NA	NA	NA	NA	NA	NA	NA	NA

Accessible Parking (Section 1106):

LOT OR PARKING AREA	TOTAL # OF PARKING SPACES		# OF ACCESSIBLE SPACES PROVIDED			TOTAL # ACCESSIBLE PROVIDED
	REQUIRED	PROVIDED	REGULAR WITH 5' ACCESS AISLE	VAN SPACES WITH 132" ACCESS AISLE	VAN SPACES WITH 8' ACCESS AISLE	
0	0	0				
TOTAL	0	0				

* This project will utilize an existing parking lot and will restripe accessible spaces to be closer to entrances.

Plumbing Fixture Requirements (Table 2902.1):

USE		WATER CLOSETS MALE	WATER CLOSETS FEMALE	WATER CLOSETS UNISEX	URINAL	LAVATORIES MALE	LAVATORIES FEMALE	LAVATORIES UNISEX	SHOWERS/ TUBS	DRINKING FOUNTAINS REGULAR	DRINKING FOUNTAINS ACCESSIBLE
SPACE	EXISTING	-	-	-	-	-	-	-	-	-	-
	NEW	2	5	1	2	4	5	1	0	1	1
	REQUIRED	2	5	1	2	3	4	1	0	1	1

Special Approvals:

Special Approval: (Local Jurisdiction, Department of Insurance, OSC, DPI, DHHS, etc., describe below)

Energy Summary:

ENERGY REQUIREMENTS:

The following data shall be considered minimum and any special attribute required to meet energy code shall also be provided. Each designer shall furnish the required portions of the project information for the plan data sheet. If performance method, state the annual energy cost for the standard reference design vs. annual energy cost for the proposed design.

Existing building envelope complies with code: NA

Exempt Building: NA

Code or statutory reference:

Climate Zone: 3A

Method of Compliance: Prescriptive (Engery Code)

Thermal Envelope:

(Persciptive method only)

Roof/Ceiling Assembly (each assembly)	
Description of assembly	ASPHALT SHINGLE - INSULATED NAIL BASE - SHEATHING - MTL DECK
U-Value of total assembly	0.032
R-Value of insulation	30.91
Skylights in each assembly	NA
U-Value of skylight	NA
Total square footage of skylights in each assembly	NA

Exterior Walls (each assembly)	
Description of assembly	FACE BRICK - AIR SPACE - INSUL. - SHEATHING - INSUL. GWB
U-Value of total assembly	0.052
R-Value of insulation	R 7.1 + R 8.6 CI
Openings (windows or doors with glazing)	
U-Value of assembly	.28
Solar heat gain coefficient	.27
Projection factor	NA
Door R-Values	.5

Walls Below Grade (each assembly)	
Description of assembly	NA
U-Value of total assembly	NA
R-Value of insulation	NA

Floor Over Uncodiitioned Space (each assembly)	
Description of assembly	NA
U-Value of total assembly	NA
R-Value of insulation	NA

Floor Slab on Grade (each assembly)	
Description of assembly	4" SLAB, 7" SLAB
U-Value of total assembly	NA
R-Value of insulation	NA
Horizontal/vertical requirement	NA
Slab heated	NA

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
STRUCTURAL DESIGN

(PROVIDE ON THE STRUCTURAL SHEETS IF APPLICABLE)

DESIGN LOADS:

Importance Factors: Snow (I_s) 1.0 Seismic (I_e) 1.0

Live Loads: Roof 20 psf; Mezzanine N/A psf; Floor 200 psf

Ground Snow Load: 10 psf

Wind Load: Basic Wind Speed 147 mph (ASCE-7); Exposure Category C

SEISMIC DESIGN CATEGORY:

Provide the following Seismic Design Parameters: B

Risk Category (Table 1604.5) II

Spectral Response Acceleration S_s 0.214 %g S_1 0.090 %g

Site Classification (ASCE 7) D

Data Source: Field Test

Basic Structural System:

Bearing Wall: Dual w/Special Moment Frame

Building Frame: Dual w/Intermediate R/C or Special Steel

Moment Frame: Inverted Pendulum

Analysis Procedure ____ Simplified X Equivalent Lateral Force ____ Modal

Architectural, Mechanical, Components anchored? Yes

LATERAL DESIGN CONTROL: Wind

SOIL BEARING CAPACITIES:

Field Test (provide copy of test report) 2000 psf

Presumptive Bearing Capacity 2000 psf

Pile Size, type and capacity NA

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
MECHANICAL DESIGN

(PROVIDE ON THE MECHANICAL SHEETS IF APPLICABLE)

MECHANICAL SUMMARY

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

Thermal Zone

winter dry bulb 23° F

summer dry bulb 93° F

Interior Design Conditions

winter dry bulb 72° F

summer dry bulb 75° F

relative humidity

Building heating load: Refer to schedules

Building cooling load: Refer to schedules

Mechanical Spacing Conditioning System

Unitary

description of unit: VRF w/ DOAS for ventilation air

heating efficiency: minimum pe Table C403.2.3

cooling efficiency:

size category of the unit:

Boiler

Size category. If oversized, state reason

Chiller

Size category. If oversized, state reason

List equipment efficiencies:

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
ELECTRICAL DESIGN

(PROVIDE ON THE ELECTRICAL SHEETS IF APPLICABLE)

ELECTRICAL SUMMARY

ELECTRICAL SYSTEM AND EQUIPMENT

Method of Compliance:

Prescriptive | Performance | Energy Cost Budget

Lighting Schedule

Lamp type required in fixture
number of lamps in fixture
ballast type used in fixture
number of ballasts in fixture
total wattage per fixture
total interior wattage specified vs. allowed (whole building or space by space)
total exterior wattage specified vs. allowed

Additional Efficiency Package Options
(When using the 2018 NCECC; not required for ASHRAE 90.1)

☐ C406.2 More Efficient HVAC Equipment Performance
☐ C406.3 Reduced Lighting Power Density
☐ C406.4 Enhanced Digital Lighting Controls
☐ C406.5 On-Site Renewable Energy
☐ C406.6 Dedicated Outdoor Air System
☐ C406.7 Reduced Energy Use in Service Water Heating

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CONSTRUCTION DOCUMENTS

Revision Schedule		
#	Description	Date

Coastal Engineering Building

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

DESIGNED BY: AT
DRAWN BY: AT
CHECKED BY: MS

ISSUE DATE: September 14, 2020

CODE SUMMARY

G001

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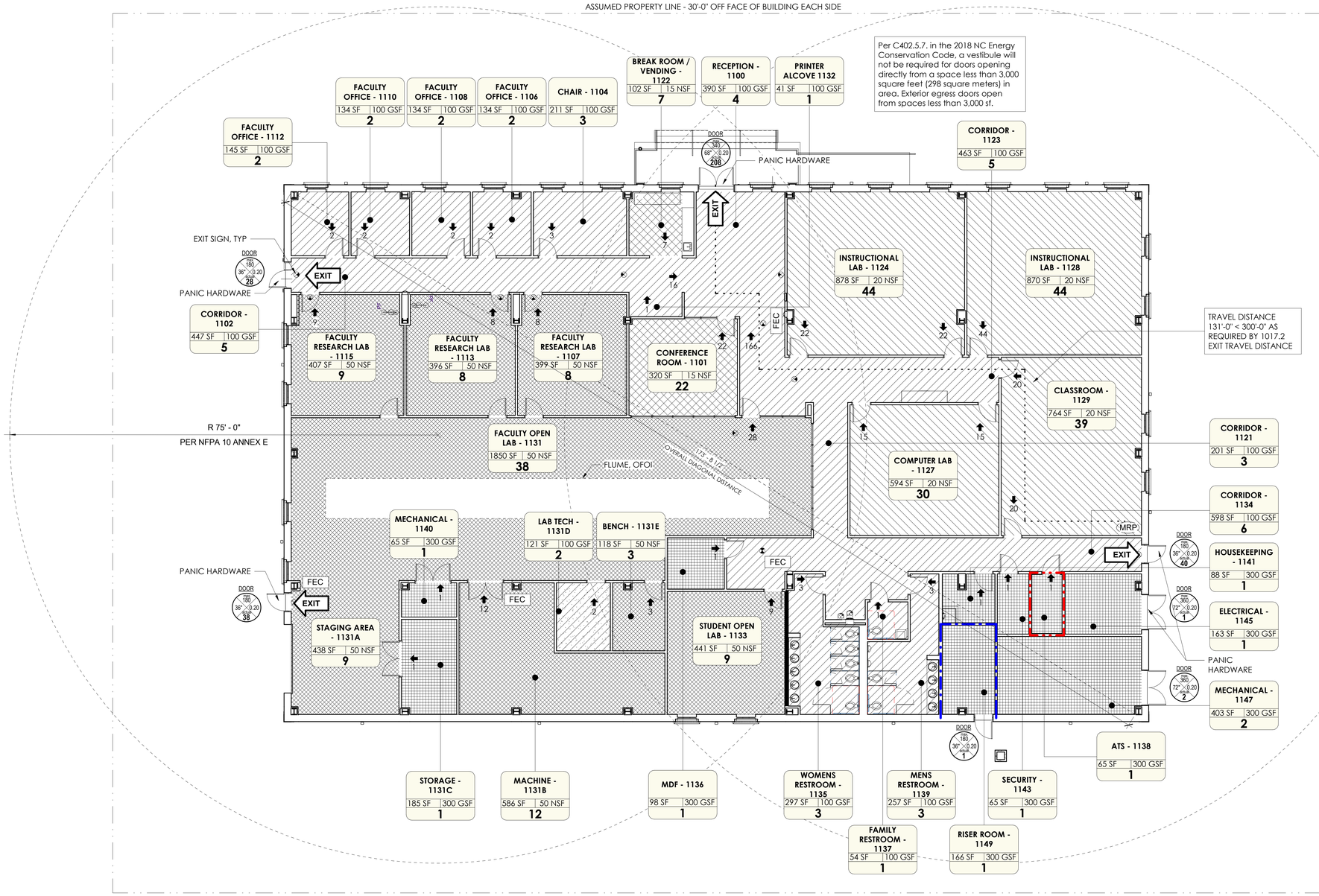
LIFE SAFETY SCHEDULE

SPACE NAME	AREA	OCCUPANCY	FUNCTION CLASSIFICATION	IBC OLF	IBC OLF GrossNet	IBC # Occupants
Not Placed						
LAB COORDINATOR - 1125	Not Placed	BUSINESS	BUSINESS AREAS	100 SF	Gross	
FIRST FLOOR						
ATS - 1138	65 SF	STORAGE	ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM	300 SF	Gross	1
BENCH - 1131E	118 SF	BUSINESS	EDUCATIONAL - SHOPS & OTHER VOCATIONAL ROOM AREAS	50 SF	Net	3
BREAK ROOM / VENDING - 1122	102 SF	BUSINESS	ASSEMBLY - UNCONCENTRATED TABLES & CHAIRS	15 SF	Net	7
CHAIR - 1104	211 SF	BUSINESS	BUSINESS AREAS	100 SF	Gross	3
CLASSROOM - 1129	764 SF	BUSINESS	EDUCATIONAL - CLASSROOM AREAS	20 SF	Net	39
COMPUTER LAB - 1127	594 SF	BUSINESS	EDUCATIONAL - CLASSROOM AREAS	20 SF	Net	30
CONFERENCE ROOM - 1101	320 SF	BUSINESS	ASSEMBLY - UNCONCENTRATED TABLES & CHAIRS	15 SF	Net	22
CORRIDOR - 1102	447 SF	BUSINESS	BUSINESS AREAS	100 SF	Gross	5
CORRIDOR - 1121	201 SF	BUSINESS	BUSINESS AREAS	100 SF	Gross	3
CORRIDOR - 1123	463 SF	BUSINESS	BUSINESS AREAS	100 SF	Gross	5
CORRIDOR - 1134	598 SF	BUSINESS	BUSINESS AREAS	100 SF	Gross	6
ELECTRICAL - 1145	163 SF	STORAGE	ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM	300 SF	Gross	1
FACULTY OFFICE - 1106	134 SF	BUSINESS	BUSINESS AREAS	100 SF	Gross	2
FACULTY OFFICE - 1108	134 SF	BUSINESS	BUSINESS AREAS	100 SF	Gross	2
FACULTY OFFICE - 1110	134 SF	BUSINESS	BUSINESS AREAS	100 SF	Gross	2
FACULTY OFFICE - 1112	145 SF	BUSINESS	BUSINESS AREAS	100 SF	Gross	2
FACULTY OPEN LAB - 1131	1850 SF	BUSINESS	EDUCATIONAL - SHOPS & OTHER VOCATIONAL ROOM AREAS	50 SF	Net	37
FACULTY RESEARCH LAB - 1107	399 SF	BUSINESS	EDUCATIONAL - SHOPS & OTHER VOCATIONAL ROOM AREAS	50 SF	Net	8
FACULTY RESEARCH LAB - 1113	396 SF	BUSINESS	EDUCATIONAL - SHOPS & OTHER VOCATIONAL ROOM AREAS	50 SF	Net	8

LIFE SAFETY SCHEDULE

SPACE NAME	AREA	OCCUPANCY	FUNCTION CLASSIFICATION	IBC OLF	IBC OLF GrossNet	IBC # Occupants
FACULTY RESEARCH LAB - 1115	407 SF	BUSINESS	EDUCATIONAL - SHOPS & OTHER VOCATIONAL ROOM AREAS	50 SF	Net	9
FAMILY RESTROOM - 1137	54 SF	BUSINESS	BUSINESS AREAS	100 SF	Gross	1
HOUSEKEEPING - 1141	88 SF	STORAGE	ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM	300 SF	Gross	1
INSTRUCTIONAL LAB - 1124	878 SF	BUSINESS	EDUCATIONAL - CLASSROOM AREAS	20 SF	Net	44
INSTRUCTIONAL LAB - 1128	870 SF	BUSINESS	EDUCATIONAL - CLASSROOM AREAS	20 SF	Net	44
LAB TECH - 1131D	121 SF	BUSINESS	BUSINESS AREAS	100 SF	Gross	2
MACHINE - 1131B	586 SF	BUSINESS	EDUCATIONAL - SHOPS & OTHER VOCATIONAL ROOM AREAS	50 SF	Net	12
MDF - 1136	98 SF	STORAGE	ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM	300 SF	Gross	1
MECHANICAL - 1140	65 SF	STORAGE	ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM	300 SF	Gross	1
MECHANICAL - 1147	403 SF	STORAGE	ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM	300 SF	Gross	2
MENS RESTROOM - 1139	257 SF	BUSINESS	BUSINESS AREAS	100 SF	Gross	3
PRINTER ALCOVE 1132	41 SF	BUSINESS	BUSINESS AREAS	100 SF	Gross	1
RECEPTION - 1100	390 SF	BUSINESS	BUSINESS AREAS	100 SF	Gross	4
RISER ROOM - 1149	166 SF	STORAGE	ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM	300 SF	Gross	1
SECURITY - 1143	65 SF	STORAGE	ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM	300 SF	Gross	1
STAGING AREA - 1131A	438 SF	STORAGE	EDUCATIONAL - SHOPS & OTHER VOCATIONAL ROOM AREAS	50 SF	Net	9
STORAGE - 1131C	185 SF	STORAGE	ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM	300 SF	Gross	1
STUDENT OPEN LAB - 1133	441 SF	BUSINESS	EDUCATIONAL - SHOPS & OTHER VOCATIONAL ROOM AREAS	50 SF	Net	9
WOMENS RESTROOM - 1135	297 SF	BUSINESS	BUSINESS AREAS	100 SF	Gross	3

TOTAL: 318 OCCUPANTS



HATCH LEGEND:

- BUSINESS AREAS
- ED. - CLASSROOM
- ACCESSORY STORAGE
- ED. - SHOPS & VOC.

RATED WALL LEGEND:

- 1 HR RATED WALL
- 2 HR RATED WALL

SGA
NarmourWright
DESIGN

1815 S. Tryon St. Suite A
Charlotte, NC 28203
p 704.332.5668
www.sganwdesign.com

SGA | NarmourWright Design | PA
53433
NORTH CAROLINA
Charlotte, North Carolina

PARK WINSTON WILEY
5721
NORTH CAROLINA
CHARLOTTE, NORTH CAROLINA
9/14/20

PROJECT NORTH

PLAN NORTH

KEY PLAN

CONSTRUCTION DOCUMENTS

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403
SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

DESIGNED BY: AT
DRAWN BY: AT
CHECKED BY: MS

ISSUE DATE:
September 14, 2020

LIFE SAFETY

G100

SCALE: 1/8" = 1'-0"

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UL Product iQ™

BXUV.U419

Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

BXUV - Fire Resistance Ratings - ANSI/UL 263 Certified for United States

BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

See General Information for Fire-resistance Ratings - ANSI/UL 263 Certified for United States
Design Criteria and Allowable Variances

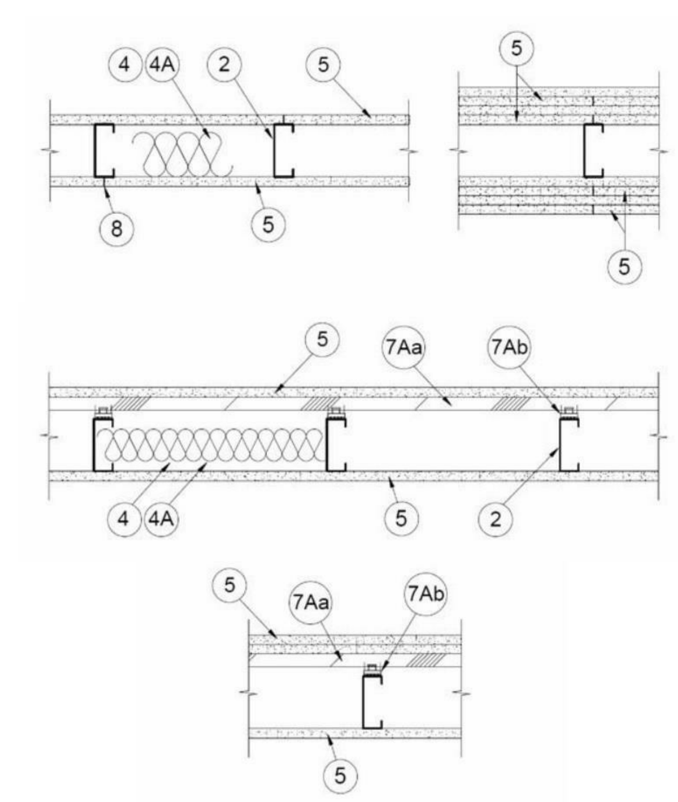
See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada
Design Criteria and Allowable Variances

Design No. U419

May 28, 2020

Nonbearing Wall Ratings — 1, 2, 3 or 4 Hr (See Items 4 & 5 through 5K)

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**



1. **Floor and Ceiling Runners** — (Not Shown) — For use with Item 2 — Channel shaped, fabricated from min 25 MSG corrosion-protected steel, min depth to accommodate stud size, with min 1-1/4 in. long legs, attached to floor and ceiling with fasteners 24 in. OC max.

1A. **Framing Members* — Floor and Ceiling Runner** — Not Shown — In lieu of Item 1 — For use with Item 2B, proprietary channel shaped runners, 3-5/8 in. deep attached to floor and ceiling with fasteners 24 in. OC max.
CALIFORNIA EXPANDED METAL PRODUCTS CO — Viper25™ Track

CRACO MFG INC — SmartTrack25™

MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper25™ Track

FUSION BUILDING PRODUCTS — Viper25™ Track

IMPERIAL MANUFACTURING GROUP INC — Viper25™ Track

1B. **Framing Members* — Floor and Ceiling Runner** — Not Shown — In lieu of Item 1 — For use with Item 2C, proprietary channel shaped runners, 1-1/4 in. wide by 3-5/8 in. deep fabricated from min 0.018 in. thick galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.
CALIFORNIA EXPANDED METAL PRODUCTS CO — Viper20™ Track

MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper20™ Track

FUSION BUILDING PRODUCTS — Viper20™ Track

IMPERIAL MANUFACTURING GROUP INC — Viper20™ Track

1C. **Framing Members* — Floor and Ceiling Runners** — (Not Shown) — In lieu of Item 1 — Channel shaped, attached to floor and ceiling with fasteners 24 in. OC. max.
ALLSTEEL & GYPSUM PRODUCTS INC — Type SUPREME D24/30EQD and Type SUPREME D20

CONSOLIDATED FABRICATORS CORP, BUILDING PRODUCTS DIV — Type SUPREME D24/30EQD and Type SUPREME D20

QUAIL RUN BUILDING MATERIALS INC — Type SUPREME D24/30EQD and Type SUPREME D20

SCAFCO STEEL STUD MANUFACTURING CO — Type SUPREME D24/30EQD and Type SUPREME D20

STEEL CONSTRUCTION SYSTEMS INC — Type SUPREME D24/30EQD and Type SUPREME D20

UNITED METAL PRODUCTS INC — Type SUPREME D24/30EQD and Type SUPREME D20

1D. **Floor and Ceiling Runners** — (Not Shown) — For use with Item 2A — Channel shaped, fabricated from min 20 MSG corrosion-protected or galv steel, min depth to accommodate stud size, with min 1 in. long legs, attached to floor and ceiling with fasteners spaced max 24 in. OC.

1E. **Framing Members* — Floor and Ceiling Runners** — (Not Shown, As an alternate to Item 1) — For use with Items 2E, 5F or 5G or 5I only, channel shaped, fabricated from min. 0.015 in. (min bare metal thickness) galvanized steel, attached to floor and ceiling with fasteners 24 in. OC. max.
CLARKDIETRICH BUILDING SYSTEMS — CD ProTRAK

DMFCWBS L L C — ProTRAK

MBA METAL FRAMING — ProTRAK

RAM SALES L L C — Ram ProTRAK

STEEL STRUCTURAL PRODUCTS L L C — Tri-S ProTRAK

1F. **Framing Members* — Floor and Ceiling Runner** — Not Shown — In lieu of Item 1 — For use with Item 2F, proprietary channel shaped runners, minimum width to accommodate stud size, with 1- 1/8 in. long legs fabricated from min 0.015 in. (min bare metal thickness) galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.
SUPER STUD BUILDING PRODUCTS — The Edge

1G. **Framing Members* — Floor and Ceiling Runner** — For use with Item 2G, proprietary channel shaped runners, minimum width to accommodate stud size attached to floor and ceiling with fasteners 24 in. OC max.
STUDCO BUILDING SYSTEMS — CROCSTUD Track

1H. **Floor and Ceiling Runners** — (Not Shown) — Channel shaped, fabricated from min 0.02 in. galv steel, min width to accommodate stud size, with min 1 in. long legs, for use with studs specified below and fabricated from min 0.018 in. galv steel or thicker, attached to floor and ceiling with fasteners spaced max 24 in. OC.
MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper20™ Track VT100

FUSION BUILDING PRODUCTS — Viper20™ Track VT100

IMPERIAL MANUFACTURING GROUP INC — Viper20™ Track VT100

1I. **Framing Members* — Floor and Ceiling Runners** — (Not Shown, As an alternate to Item 1) — For use with Items 2H, channel shaped, fabricated from min. 0.015 in. (min bare metal thickness) galvanized steel, attached to floor and ceiling with fasteners 24 in. OC. max.
TELLING INDUSTRIES L L C — TRUE-TRACK™

1J. **Framing Members* — Floor and Ceiling Runner** — Not Shown — In lieu of Item 1 — For use with Item 2I, proprietary channel shaped runners, 3-5/8 in. deep attached to floor and ceiling with fasteners 24 in. OC max.
TELLING INDUSTRIES L L C — Viper25™ Track

1K. **Framing Members* — Floor and Ceiling Runner** — Not Shown — In lieu of Item 1 — For use with Item 2J, proprietary channel shaped runners, 1-1/4 in. wide by 3-5/8 in. deep fabricated from min 0.018 in. thick galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.
TELLING INDUSTRIES L L C — Viper20™ Track

1L. **Framing Members* — Floor and Ceiling Runner** — Not Shown — In lieu of Item 1 — For use with Item 2N, proprietary channel shaped runners, 1-1/4 in. wide by min. 3-1/2 in. deep fabricated from min 0.018 in. thick galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.
RESCUE METAL FRAMING, L L C — AlphaTRAK

1M. **Framing Members* — Floor and Ceiling Runners** — Not Shown — As an alternate to Item 1 — For use with Item 2O, proprietary channel shaped runners, min width to accommodate stud size, galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.
RONDO BUILDING SERVICES PTY LTD — Rondo Wall Track

1N. **Framing Members* — Floor and Ceiling Runners** — Not Shown — As an alternate to Item 1 — For use with Item 2P, proprietary channel shaped runners, min width to accommodate stud size, galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.
OEG BUILDING MATERIALS — OEG Track

1O. **Framing Members* — Floor and Ceiling Runner** — Not Shown — In lieu of Item 1 — For use with Item 2Q, proprietary channel shaped runners, min width to accommodate stud size, fabricated from min. 25 MSG (0.018 in. min. bare metal thickness), attached to floor and ceiling with fasteners spaced 24 in. OC max.
CALIFORNIA EXPANDED METAL PRODUCTS CO — Viper X Track

2. **Steel Studs** — Channel shaped, fabricated from min 25 MSG corrosion-protected steel, min depth as indicated under Item 5, spaced a max of 24 in. OC. Studs to be cut 3/8 to 3/4 in. less than assembly height.

2A. **Steel Studs** — (As an alternate to Item 2, For use with Items 5B, 5E, 5H, 5J and 5K) — Channel shaped, fabricated from min 20 MSG corrosion-protected or galv steel, 3-1/2 in. min depth, spaced a max of 16 in. OC. Studs friction-fit into floor and ceiling runners. Studs to be cut 5/8 to 3/4 in. less than assembly height.

2B. **Framing Members* - Steel Studs** — (As an alternate to Item 2, For use with Items 5C, 5I or 5K) — Proprietary channel shaped studs, 3-5/8 in. deep spaced a max of 24 in. OC. Studs to be cut 3/4 in less than the assembly height and installed with a 1/2 in. gap between the end of the stud and track at the bottom of the wall. For direct attachment of gypsum board only.
CALIFORNIA EXPANDED METAL PRODUCTS CO — Viper25™

CRACO MFG INC — SmartStud25™

MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper25™

FUSION BUILDING PRODUCTS — Viper25™

IMPERIAL MANUFACTURING GROUP INC — Viper25™

2C. **Framing Members* — Steel Studs** — Not Shown — In lieu of Item 2 — proprietary channel shaped steel studs, min depth as indicated under Item 5, spaced a max if 24 in. OC, fabricated from min 0.018 in. thick galv steel. Studs cut 3/8 in. to 3/4 in. less in lengths than assembly heights.
CALIFORNIA EXPANDED METAL PRODUCTS CO — Viper20™

MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper20™

FUSION BUILDING PRODUCTS — Viper20™

IMPERIAL MANUFACTURING GROUP INC — Viper20™

2D. **Framing Members* — Steel Studs** — In lieu of Item 2 — Channel shaped studs, min depth as indicated under Item 5, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.
ALLSTEEL & GYPSUM PRODUCTS INC — Type SUPREME D24/30EQD and Type SUPREME D20

CONSOLIDATED FABRICATORS CORP, BUILDING PRODUCTS DIV — Type SUPREME D24/30EQD and Type SUPREME D20

QUAIL RUN BUILDING MATERIALS INC — Type SUPREME D24/30EQD and Type SUPREME D20

SCAFCO STEEL STUD MANUFACTURING CO — Type SUPREME D24/30EQD and Type SUPREME D20

STEEL CONSTRUCTION SYSTEMS INC — Type SUPREME D24/30EQD and Type SUPREME D20

UNITED METAL PRODUCTS INC — Type SUPREME D24/30EQD and Type SUPREME D20

2E. **Framing Members* — Steel Studs** — (Not Shown, As an alternate to Item 2) — For use with Items 5F or 5G or 5I or 5K only, channel shaped studs, min depth as indicated under Item 5F, 5G or 5I, fabricated from min. 0.015 in. (min bare metal thickness) galvanized steel, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.
CLARKDIETRICH BUILDING SYSTEMS — CD ProSTUD

DMFCWBS L L C — ProSTUD

MBA METAL FRAMING — ProSTUD

RAM SALES L L C — Ram ProSTUD

STEEL STRUCTURAL PRODUCTS L L C — Tri-S ProSTUD

2F. **Framing Members* — Steel Studs** — Not Shown — In lieu of Item 2 — proprietary channel shaped steel studs, minimum width indicated under Item 5, 1-1/4 in. deep fabricated from min 0.015 in. (min bare metal thickness) galvanized steel. Studs 3/8 in. to 3/4 in. less in lengths than assembly heights.
SUPER STUD BUILDING PRODUCTS — The Edge

2G. **Framing Members* — Steel Studs** — Not Shown — In lieu of Item 2 — proprietary channel shaped studs, minimum width indicated under Item 5, Studs to be cut 3/8 to 3/4 in less than the assembly height.
STUDCO BUILDING SYSTEMS — CROCSTUD

2H. **Framing Members* — Steel Studs** — (Not Shown, As an alternate to Item 2) — Fabricated from min. 0.015 in. (min bare metal thickness) galvanized steel, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.
TELLING INDUSTRIES L L C — TRUE-STUD™

2I. **Framing Members* — Steel Studs** — (As an alternate to Item 2, For use with Items 5C or 5L or 5K) — Proprietary channel shaped studs, 3-5/8 in. deep spaced a max of 24 in. OC. Studs to be cut 3/4 in less than the assembly height and installed with a 1/2 in. gap between the end of the stud and track at the bottom of the wall. For direct attachment of gypsum board only.
TELLING INDUSTRIES L L C — Viper25™

2J. **Framing Members* — Metal Studs** — Not Shown — In lieu of Item 2 — proprietary channel shaped steel studs, min depth as indicated under Item 5, spaced a max if 24 in. OC, fabricated from min 0.018 in. thick galv steel. Studs cut 3/8 in. to 3/4 in. less in lengths than assembly heights
TELLING INDUSTRIES L L C — Viper20™

2K. **Framing Members* — Steel Studs** — As an alternate to Item 2 — For use with Item 1, channel shaped studs, fabricated from min 25 MSG corrosion-protected steel, min depth as indicated under Item 5, spaced a max of 24 in. OC. Studs to be cut 3/8 to 3/4 in. less than assembly height.
EB METAL INC — NITROSTUD

2L. **Framing Members* — Steel Studs** — As an alternate to Item 2 — For use with Item 1, channel shaped studs, fabricated from min 25 MSG corrosion-protected steel, min depth as indicated under Item 5, spaced a max of 24 in. OC. Studs to be cut 3/8 to 3/4 in. less than assembly height.
OLMAR SUPPLY INC — PRIMESTUD

2M. **Framing Members* — Steel Studs** — As an alternate to Item 2 — For use with Item 1, channel shaped studs, fabricated from min 25 MSG corrosion-protected steel, min depth as indicated under Item 5, spaced a max of 24 in. OC. Studs to be cut 3/8 to 3/4 in. less than assembly height.
MARINO/WARE, DIV OF WARE INDUSTRIES INC — StudRite™

2N. **Framing Members*— Steel Studs** — As an alternate to Item 2 — proprietary channel shaped steel studs, min depth 3-1/2 in. and as indicated under Item 5, spaced a max of 24 in. OC, fabricated from min 0.018 in. thick galv steel. Studs cut 3/8 in. to 3/4 in. less in length than assembly height.
RESCUE METAL FRAMING, L L C — AlphaSTUD

2O. **Framing Members* — Steel Studs** — As an alternate to Item 2 — proprietary channel shaped steel studs, min width as indicated under Item 5, galv steel. Studs to be cut 3/8 to 3/4 in. less in lengths than assembly height. Spaced 24 in. OC max.
RONDO BUILDING SERVICES PTY LTD — Rondo Lipped Wall Stud

2P. **Framing Members* — Steel Studs** — As an alternate to Item 2 — proprietary channel shaped steel studs, min width as indicated under Item 5, min 25 MSG galv steel. Studs to be cut 3/8 to 3/4 in. less in lengths than assembly height. Spaced 24 in. OC max.
OEG BUILDING MATERIALS — OEG Stud

2Q. **Framing Members* — Steel Studs** — Not Shown — In lieu of Item 2 — For use with Item 1O, proprietary channel shaped steel studs, min depth as indicated under Item 5, spaced a max of 24 in. OC, fabricated from min 25 MSG (0.018 in. min. bare metal thickness). Studs cut 3/8 in. to 3/4 in. less in lengths than assembly heights.
CALIFORNIA EXPANDED METAL PRODUCTS CO — Viper X

3. **Wood Structural Panel Sheathing** — (Optional, For use with Item 5 Only) — (Not Shown) — 4 ft wide, 7/16 in. thick oriented strand board (OSB) or 15/32 in. thick structural 1 sheathing (plywood) complying with DOC PS1 or PS2, or APA Standard PRP-108, manufactured with exterior glue, applied horizontally or vertically to the steel studs. Vertical joints centered on studs, and staggered one stud space from wallboard joints. Attached to studs with flat-head self-drilling tapping screws with a min. head diam. of 0.292 in. at maximum 6 in. OC. in the perimeter and 12 in. OC. in the field. When used, gypsum panels attached over OSB or plywood panels and fastener lengths for gypsum panels increased by min. 1/2 in.

4. **Batts and Blankets*** — (Required as indicated under Item 5) — Mineral wool batts, friction fitted between studs and runners. Min nom thickness as indicated under Item 5.

See **Batts and Blankets** (BKNV or BZJZ) Categories for names of Classified companies.

4A. **Batts and Blankets*** — (Optional) — Placed in stud cavities, any glass fiber or mineral wool insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance.
See **Batts and Blankets** (BKNV or BZJZ) Categories for names of Classified companies.

4B. **Batts and Blankets*** — For use with Item 5K. Placed in stud cavities, any min. 3-1/2 in. thick glass fiber insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance.
See **Batts and Blankets** (BKNV or BZJZ) Categories for names of Classified companies.

4C. **Fiber, Sprayed*** — (Optional) and as an alternate to Batts and Blankets (Item 4B) where insulation is required - Spray applied granulated mineral fiber material. The fiber is applied with adhesive at a minimum density of 4.0 pcf to completely fill the wall cavity in accordance with the application instructions supplied with the product. See **Fiber, Sprayed** (CCAZ).
AMERICAN ROCKWOOL MANUFACTURING, LLC — Type Rockwool Premium Plus

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

Gypsum Board Protection on Each Side of Wall

Rating, Hr	Min Stud Depth, in. Items 2, 2C, 2D, 2F, 2G, 2O	No. of Layers & Thkns of Panel	Min Thkns of Insulation (Item 4)
1	3-1/2	1 layer, 5/8 in. thick	Optional
1	2-1/2	1 layer, 1/2 in. thick	1-1/2 in.
1	1-5/8	1 layer, 3/4 in. thick	Optional
2	1-5/8	2 layers, 1/2 in. thick	Optional
2	1-5/8	2 layers, 5/8 in. thick	Optional
2	3-1/2	1 layer, 3/4 in. thick	3 in.
3	1-5/8	3 layers, 1/2 in. thick	Optional
3	1-5/8	2 layers, 3/4 in. thick	Optional
3	1-5/8	3 layers, 5/8 in. thick	Optional
4	1-5/8	4 layers, 5/8 in. thick	Optional
4	1-5/8	4 layers, 1/2 in. thick	Optional
4	2-1/2	2 layers, 3/4 in. thick	2 in.

CGC INC — 1/2 in. thick Type C, IP-X2 or IPC-AR; WRC, 5/8 in. thick Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRX or WRC; 3/4 in. thick Types IP-X3 or ULTRACODE

UNITED STATES GYPSUM CO — 1/2 in. thick Type C, IP-X2, IPC-AR or WRC; 5/8 in. thick Type SCX, SGX, SHX, WRX, IP-X1, AR, C, WRC, FRX-G, IP-AR, IP-X2, IPC-AR; 3/4 in. thick Types IP-X3 or ULTRACODE

USG BORAL DRYWALL SFZ LLC — 1/2 in. Type C; 5/8 in. Types C, SCX, SGX, ULTRACODE

USG MEXICO S A DE C V — 1/2 in. thick Type C, IP-X2, IPC-AR or WRC; 5/8 in. thick Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRX, WRC or; 3/4 in. thick Types IP-X3 or ULTRACODE

When Item 7B, **Steel Framing Members***, is used, Nonbearing Wall Rating is limited to 1 Hr. Min. stud depth is 3-1/2 in., min. thickness of insulation (Item 4) is 3 in., and two layers of gypsum board panels (1/2 in. or 5/8 in. thick) shall be attached to furring channels as described in Item 6. One layer of gypsum board panels (1/2 in. or 5/8 in. thick) attached to opposite side of stud without furring channels as described in Item 6.

5A. **Gypsum Board*** — (As an alternate to Item 5) — 5/8 in. thick, 24 to 54 in. wide, applied horizontally as the outer layer to one side of the assembly. Secured as described in Item 6.
CGC INC — Type SHX.

UNITED STATES GYPSUM CO — Type FRX-G, SHX.

USG MEXICO S A DE C V — Type SHX.

5B. **Gypsum Board*** — (Not Shown) — As an alternate to Item 5 when used as the base layer on one or both sides of wall when 5/8 in or 3/4 in. thick products are specified. For direct attachment only to steel studs Item 2A, (not to be used with Item 3) — Nom 5/8 in. or 3/4 in. may be used as alternate to all 5/8 in. or 3/4 in. shown in Item 5, Wallboard Protection on Each Side of Wall table. Nom 5/8 in. or 3/4 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Gypsum board secured to 20 MSG steel studs Item 2A with 1-1/4 in. long Type S-12 steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field. To be used with Lead Batten Strips (see Item 11) or Lead Discs or Tabs (see Item 12).
RAY-BAR ENGINEERING CORP — Type RB-LBG

5C. **Gypsum Board*** — (For Use With Item 2B) — Rating Limited to 1 Hour. 5/8 in. thick, 48 in. wide, Gypsum panels with beveled, square or tapered edges, applied vertically or horizontally. (Vertical Application) - The gypsum board is to be installed on each side of the studs with 1 in. long Type S coated steel screws spaced 8 in. OC starting 4 in. from the edge of the board at the vertical edges and 12 in. OC starting 6 in. from the edge of the board at the center of each board. Gypsum boards are to be secured to the top and bottom track with screws spaced 8 in. OC starting 4 in. from the board edge. Fasteners shall not penetrate through both the stud and the track at the same time. Vertical joints are to be centered over studs and staggered one stud cavity on opposite sides of studs. (Horizontal Application) - The gypsum board is to be installed on each side of the studs with 1 in. long Type S coated steel screws spaced 8 in. OC starting 4 in. from the edge of the board at the vertical edges and 12 in. OC starting 6 in. from the edge of the board at the center of each board. Gypsum boards are to be secured to the top and bottom track with screws spaced 8 in. OC starting 4 in. from the board edge. Fasteners shall not penetrate through both the stud and the track at the same time. All horizontal joints are to be backed as outlined under section VI of Volume 1 in the Fire Resistive Directory.
CGC INC — Type SCX.

UNITED STATES GYPSUM CO — Type SCX, SGX.

USG BORAL DRYWALL SFZ LLC — Type SCX

USG MEXICO S A DE C V — Type SCX

5D. **Gypsum Board*** — (As an alternate to Item 5) — 5/8 in. thick, 48 in. wide, applied vertically or horizontally. Secured as described in Item 6. For use with Items 1 and 2 only.
CGC INC — Type USGX

UNITED STATES GYPSUM CO — Type USGX

USG BORAL DRYWALL SFZ LLC — Type USGX

USG MEXICO S A DE C V — Type USGX

5E. **Gypsum Board*** — (Not Shown) — (As an alternate to Item 5 when used as the base layer on one or both sides of wall when 1/2 in. or 5/8 in thick products are specified, For direct attachment only to steel studs Item 2A, not to be used with Item 3). Nominal 5/8 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Wallboard secured to studs with 1-1/4 in. long Type S-12 (or No. 6 by 1-1/4 in. long bugle head fine driller) steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field.
NEW ENGLAND LEAD BURNING CO INC, DBA NELCO — Nelco

5F. **Gypsum Board*** — (As an alternate to Item 5) — For use with Items 1E and 2E and limited to 1 Hour Rating only, Gypsum panels with beveled, square or tapered edges, applied vertically, and fastened to the steel studs with 1 in. long Type S screws spaced 8 in. OC along vertical and bottom edges and 12 in. OC in the field. Vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Steel stud depth shall be a minimum 3-5/8 in.
UNITED STATES GYPSUM CO — 5/8 in. thick Type SCX, SGX

USG BORAL DRYWALL SFZ LLC — 5/8 in. thick Type SCX, SGX

5G. **Gypsum Board*** — (As an alternate to Item 5) — For use with Items 1E and 2E only, Gypsum panels with beveled, square or tapered edges, applied vertically or horizontally, as specified in the table below and fastened to the steel studs as described in Item 6. Vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Vertical joints in adjacent layers (multilayer systems) staggered one stud cavity. Horizontal joints need not be backed by steel framing. Horizontal edge joints and horizontal butt joints on opposite sides of studs need not be staggered. Horizontal edge joints and horizontal butt joints in adjacent layers (multilayer systems) staggered a min of 12 in. The thickness and number of layers for the 2 hr, 3 hr and 4 hr ratings are as follows:

Gypsum Board Protection on Each Side of Wall

Rating, Hr	Min Stud Depth, in. Item 2E	No. of Layers & Thickness of Panel	Min Thkns of Insulation (Item 4)
2	1-5/8	2 layers, 1/2 in. thick	Optional
2	1-5/8	2 layers, 5/8 in. thick	Optional
3	1-5/8	3 layers, 1/2 in. thick	Optional
3	1-5/8	3 layers, 5/8 in. thick	Optional
4	1-5/8	4 layers, 5/8 in. thick	Optional
4	1-5/8	4 layers, 1/2 in. thick	Optional

CGC INC — 1/2 in. thick Type C, IP-X2 or IPC-AR;, 5/8 in. thick Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, or; 3/4 in. thick Types IP-X3 or ULTRACODE

UNITED STATES GYPSUM CO — 1/2 in. thick Type C, IP-X2, IPC-AR or; 5/8 in. thick Type SCX, SGX, SHX, IP-X1, AR, C, , FRX-G, IP-AR, IP-X2, IPC-AR, ULIX; 3/4 in. thick Types IP-X3 or ULTRACODE

USG BORAL DRYWALL SFZ LLC — 1/2 in. Type C; 5/8 in. Types C, SCX, SGX, ULTRACODE

USG MEXICO S A DE C V — 1/2 in. thick Type C, IP-X2, IPC-AR or; 5/8 in. thick Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, or; 3/4 in. thick Types IP-X3 or ULTRACODE

5H. **Gypsum Board*** — (Not Shown) — (As an alternate to Item 5 when used as the base layer on one or both sides of wall when 5/8 or 3/4 in thick products are specified. For direct attachment only to steel studs Item 2A, (not to be used with Item 3) - Nom 5/8 or 3/4 in. may be used as alternate to all 5/8 or 3/4 in. shown in Item 5, Wallboard Protection on Each Side of Wall table. Nom 5/8 or 3/4 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over 20 MSG steel studs and staggered min 1 stud cavity on opposite sides of studs. Wallboard secured to studs with 1-1/4 in. long Type S-12 steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field. Gypsum board secured to 20 MSG steel studs Item 2B with 1-1/4 in. long Type S-12 steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field. For Joint Compound see Item 5. To be used with Lead Batten Strips (see Item 11A) or Lead Discs (see Item 12A).
MAYCO INDUSTRIES INC — Type X-Ray Shielded Gypsum

5I. **Gypsum Board*** — (As an alternate to Item 5) — Nom. 5/8 in. thick gypsum panels with beveled, square or tapered edges installed as described in Item 5. Steel stud minimum depth shall be as indicated in Item 5.
CGC INC — Type ULX

UNITED STATES GYPSUM CO — Type ULX

USG MEXICO S A DE C V — Type ULX

5J. **Gypsum Board*** — (Not Shown) — (As an alternate to Item 5 when used as the base layer on one or both sides of wall when 1/2 in. or 5/8 in thick products are specified, For direct attachment only to steel studs Item 2A, not to be used with Item 3). Nom 5/8 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Wallboard secured to studs with 1-1/4 in. long Type S-12 steel screws gypsum panel steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field. Lead batten strips required behind vertical joints of lead backed gypsum wallboard and optional at remaining stud locations. Lead batten strips, min 2 in. wide, max 8 ft long with a max thickness of 0.14 in. placed on the face of studs and attached to the stud with construction adhesive and two 1 in. long Type S-12 pan head steel screws, one at the top of the strip and one at the bottom of the strip. Lead discs, nominal 3/8 in. diam by max 0.085 in. thick. Compression fitted or adhered over the screw heads. Lead batten strips and discs to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C".
RADIATION PROTECTION PRODUCTS INC — Type RPP - Lead Lined Drywall

5K. **Gypsum Board*** — (Not Shown) — (As an alternate to Item 5) — Nom. 5/8 in. thick gypsum panels with beveled, square or tapered edges, applied vertically or horizontally. Vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Vertical joints in adjacent layers (multilayer systems) staggered one stud cavity. Horizontal joints need not be backed by steel framing. Horizontal edge joints and horizontal butt joints on opposite sides of studs need not be staggered. Horizontal edge joints and horizontal butt joints in adjacent layers (multilayer systems) need not be staggered. The number of layers for the 1 hr, 2 hr, 3 hr and 4 hr ratings are as follows:

Gypsum Board Protection on Each Side of Wall

Rating, Hr	Min Stud Depth, in. Items 2 through 2O	No. of Layers & Thkns of Panel	Min Thkns of Insulation (Item 4B)
1	3-5/8	1 layer, 5/8 in. thick	3-1/2 in.
2	1-5/8	2 layers, 5/8 in. thick	Optional
3	1-5/8	3 layers, 5/8 in. thick	Optional
4	1-5/8	4 layers, 5/8 in. thick	Optional

UNITED STATES GYPSUM CO — 5/8 in. thick Type ULIX

6. **Fasteners** — (Not Shown) — For use with Items 2 and 2F - Type S or S-12 steel screws used to attach panels to studs (Item 2) or furring channels (Item 7). **Single layer systems:** 1 in. long for 1/2 and 5/8 in. thick panels or 1-1/4 in. long for 3/4 in. thick panels, spaced 8 in. OC when panels are applied horizontally, or 8 in. OC along vertical and bottom edges and 12 in. OC in the field when panels are applied vertically. **Two layer systems:** First layer- 1 in. long for 1/2 and 5/8 in. thick panels or 1-1/4 in. long for 3/4 in. thick panels, spaced 16 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels or 2-1/4 in. long for 3/4 in. thick panels, spaced 16 in. OC with screws offset 8 in. from first layer. **Three-layer systems:** First layer- 1 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Third layer- 2-1/4 in. long for 1/2 in., 5/8 in. thick panels or 2-5/8 in. long for 5/8 in. thick panels, spaced 12 in. OC. Screws offset min 6 in. from layer below. **Four-layer systems:** First layer- 1 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Third layer- 2-1/4 in. long for 1/2 in. thick panels or 2-5/8 in. long for 5/8 in. thick panels, spaced 24 in. OC. Fourth layer- 2-5/8 in. long for 1/2 in. thick panels or 3 in. long for 5/8 in. thick panels, spaced 12 in. OC. Screws offset min 6 in. from layer below.

7. **Furring Channels** — (Optional, Not Shown, for single or double layer systems) — Resilient furring channels fabricated from min 25 MSG corrosion-protected steel, spaced vertically a max of 24 in. OC. Flange portion attached to each intersecting stud with 1/2 in. long Type S-12 steel screws. Not for use with Item 5A.

7A. **Framing Members*** — (Optional on one or both sides, not shown, for single or double layer systems) — As an alternate to Item 7, furring channels and Steel Framing Members as described below:
a. **Furring Channels** — Formed of No. 25 MSG galv steel. 2-9/16 in. or 2-23/32 in. wide by 7/8 in. deep, spaced max. 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Gypsum board attached to furring channels as described in Item 6. Not for use with Item 5A.

b. **Steel Framing Members*** — Used to attach furring channels (Item 7Aa) to studs (Item 2). Clips spaced max. 48 in. OC. RSIC-1 and RSIC-1 (2.75) clips secured to studs with No. 8 x 1-1/2 in. minimum self-drilling, S-12 steel screw through the center grommet. RSIC-V and RSIC-V (2.75) clips secured to studs with No. 8 x 9/16 in. minimum self-drilling, S-12 steel screw through the center hole. Furring channels are friction fitted into clips. RSIC-1 and RSIC-V clips for use with 2-9/16 in. wide furring channels. RSIC-1 (2.75) and RSIC-V (2.75) clips for use with 2-23/32 in. wide furring channels.
PAC INTERNATIONAL L L C — Types RSIC-1, RSIC-V, RSIC-1 (2.75), RSIC-V (2.75).

7B. **Framing Members*** — (Optional, Not Shown) — As an alternate to Item 7, for single or double layer systems, furring channels and Steel Framing Members on only one side of studs as described below:
a. **Furring Channels** — Formed of No. 25 MSG galv steel, spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Batts and Blankets placed in stud cavity as described in Item 5. Two layers of gypsum board attached to furring channels as described in Item 5. Not for use with Item 5A.

b. **Steel Framing Members*** — Used to attach furring channels (Item 7Ba) to one side of studs (Item 2) only. Clips spaced 48 in. OC., and secured to studs with two No. 8 x 2-1/2 in. coarse drywall screws, one through the hole at each end of the clip. Furring channels are friction fitted into clips.
KINETICS NOISE CONTROL INC — Type Isomax

7C. **Framing Members*** — (Not Shown) — (Optional on one or both sides, not shown, for single or double layer systems) — As an alternate to Item 7, furring channels and Steel Framing Members as described below:
a. **Furring Channels** — Formed of No. 25 MSG galv steel. 2-3/8 in. wide by 7/8 in. deep, spaced max. 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Gypsum board attached to furring channels as described in Item 6. Not for use with Item 5A.

b. **Steel Framing Members*** — Used to attach furring channels (Item 7Ca) to studs (Item 2). Clips spaced max. 48 in. OC. GENIECLIPS secured to studs with No. 8 x 1-1/2 in. minimum self-drilling, S-12 steel screw through the center grommet. Furring channels are friction fitted into clips.
PLITEQ INC — Type GENIECLIP

7D. **Steel Framing Members*** — (Optional on one or both sides, not shown, for single or double layer systems) — Furring channels and Steel Framing Members as described below:
a. **Furring Channels** — Formed of No. 25 MSG galv steel. Spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 AWG galvanized steel wire.. Gypsum board attached to furring channels as described in Item 6. Not for use with Item 5A.

b. **Steel Framing Members*** — Used to attach furring channels (Item 7Da) to studs. Clips spaced 48 in. OC., and secured to studs with 2 in. coarse drywall screw with 1 in. diam washer through the center hole. Furring channels are friction fitted into clips
STUDCO BUILDING SYSTEMS — RESILMOUNT Sound Isolation Clips - Type A237 or A237R

7E. **Steel Framing Members*** — (Optional on one or both sides, not shown, for single or double layer systems) — Furring channels and Steel Framing Members as described below:
a. **Furring Channels** — Formed of No. 25 MSG galv steel. Spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item 7Eb. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 AWG galvanized steel wire.. Gypsum board attached to furring channels as described in Item 6. Not for use with Item 5A and 5E.

b. **Steel Framing Members*** — Used to attach furring channels (Item 7Ea) to studs. Clips spaced 48 in. OC., and secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center hole. Furring channels are friction fitted into clips.
REGUPOL AMERICA — Type SonusClip

7F. **Steel Framing Members*** — (Optional on one or both sides, not shown, for single or double layer systems) — Resilient channels and Steel Framing Members as described below:
a. **Resilient Channels** — Formed of No. 25 MSG galv steel, spaced 24 in. OC, and perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels overlapped 6 in. and secured in place with two No. 8 15 x 1/2 in. Philips Modified Truss screws spaced 2-1/2 in. from the center of the overlap. Gypsum board attached to resilient channels as described in Item 5. Not for use with Item 5A and 5E.

b. **Steel Framing Members*** — Used to attach resilient channels (Item 7Fa) to studs. Clips spaced 48 in. OC., and secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center hole. Resilient channels are secured to clips with one No. 10 x 1/2 in. pan-head self-drilling screw.

KEENE BUILDING PRODUCTS CO INC — Type RC+ Assurance Clip

7G. **Framing Members*** — (Optional on one or both sides, not shown, for single or double layer systems) — As an alternate to Item 7, furring channels and Steel Framing Members as described below:
a. **Furring Channels** — Formed of No. 25 MSG galv steel. 2-23/32 in. wide by 7/8 in. or 1-1/2 in. deep, spaced max. 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Gypsum board attached to furring channels as described in Item 6. Not for use with Item 5A.

b. **Steel Framing Members*** — Used to attach furring channels (Item 7Ga) to studs (Item 2). Clips spaced max. 48 in. OC. Clips secured to studs with No. 8 x 1-1/2 in. minimum self-drilling, S-12 steel screw through the center hole. Furring channels are friction fitted into clips.
CLARKDIETRICH BUILDING SYSTEMS — Type ClarkDietrich Sound Clip

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

9. **Siding, Brick or Stucco** — (Optional, Not Shown) — Aluminum, vinyl or steel siding, brick veneer or stucco, meeting the requirements of local code agencies, installed over gypsum panels. Brick veneer attached to studs with corrugated metal wall ties attached to each stud with steel screws, not more than each sixth course of brick.

10. **Caulking and Sealants*** — (Optional, Not Shown) — A bead of acoustical sealant applied around the partition perimeter for sound control.
UNITED STATES GYPSUM CO — Type AS

11. **Lead Batten Strips** — (Not Shown, For Use With Item 5B) — Lead batten strips, min 1-1/2 in. wide, max 10 ft long with a max thickness of 0.125 in. Strips placed on the interior face of studs and attached from the exterior face of the stud with two 1 in. long Type S-12 pan head steel screws, one at the top of the strip and one at the bottom of the strip. Lead batten strips to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C". Lead batten strips required behind vertical joints of lead backed gypsum wallboard (Item 5B) and optional at remaining stud locations. Required behind vertical joints.

11A. **Lead Batten Strips** — (Not Shown, For Use With Item 5H) — Lead batten strips, 2 in. wide, max 10 ft long with a max thickness of 0.140 in. Strips placed on the face of studs and attached to the stud with two min. 1 in. long min. Type S-8 pan head steel screws, one at the top of the strip and one at the bottom of the strip or with one min. 1 in. long min. Type S-8 pan head steel screw at the top of the strip. Lead batten strips to have a purity of 99.5% meeting the Federal specification QQ-L-201f, Grades "B, C or D". Lead batten strips required behind vertical joints of lead backed gypsum wallboard and optional at remaining stud locations.

12. **Lead Discs or Tabs** — (Not Shown, For Use With Item 5B) — Used in lieu of or in addition to the lead batten strips (Item 11) or optional at other locations - Max 3/4 in. diam by max 0.125 in. thick lead discs compression fitted or adhered over steel screw heads or max 1/2 in. by 1-1/4 in. by max 0.125 in. thick lead tabs placed on gypsum boards (Item 5B) underneath screw locations prior to the installation of the screws. Lead discs or tabs to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C".

12A. **Lead Discs** — (Not Shown, for use with Item 5H) — Max 5/16 in. diam by max 0.140 in. thick lead discs compression fitted or adhered over steel screw heads. Lead discs to have a purity of 99.5% meeting the Federal Specification QQ-L-201f, Grades "B, C or D".

13. **Lead Batten Strips** — (Not Shown, For Use With Item 5E) — Lead batten strips, 2 in. wide, max 10 ft long with a max thickness of 0.142 in. Strips placed on the face of studs and attached to the stud with two min. 1 in. long min. Type S-8 pan head steel screws, one at the top of the strip and one at the bottom of the strip or with one min. 1 in. long min. Type S-8 pan head steel screw at the top of the strip. Lead batten strips to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C". Lead batten strips required behind vertical joints of lead backed gypsum wallboard (Item 5E) and optional at remaining stud locations.

14. **Lead Tabs** — (Not Shown, For Use With Item 5E) — 2 in. wide, 5 in. long with a max thickness of 0.142 in. Tabs friction-fit around front face of stud, the stud folded back flange, and the back face of the stud. Tabs required at each location where a screw (that secures the gypsum boards, Item 5E) will penetrate the steel stud. Lead tabs to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C". Lead tabs may be held in place with standard adhesive tape if necessary.

15. **Barrier Mesh** — (Optional, Not Shown) - Attached to steel studs on one or both sides of the wall using Barrier Mesh Clips spaced at maximum 12 inches on center vertically, using a flat head type screw penetrating through the steel at least 3/8 of an inch. For Steel Studs less than 0.033 inches in thickness, use self-piercing screws. For Steel Studs equal to or greater than 0.033 inches in thickness, use steel drill screws (self-tapping). Gypsum Board (Item 5) to be installed directly over the Barrier Mesh using prescribed screw patterns with lengths increased by a minimum 1/8 in. Barrier Mesh may be installed with the long dimension of the diamond pattern positioned vertically or horizontally. Barrier Mesh joints may occur as butt joints at the framing members and secured using the Barrier Mesh Clips or occur in between framing members as overlapping joints secured using 18 SWG wire ties spaced a maximum 12 in. on center.
CLARKDIETRICH BUILDING SYSTEMS — Barrier Mesh, Barrier Mesh Clips

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

Last Updated on 2020-05-28

The appearance of a company's name or product in this database does not in itself assure that products so identified have been manufactured under UL's Follow-Up Service. Only those products bearing the UL Mark should be considered to be Certified and covered under UL's Follow-Up Service. Always look for the Mark on the product.

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SGA
NarmourWright
DESIGN

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Charlotte, NC 28203
p 704.332.5668
www.sganwdesign.com

SGA | NarmourWright Design, PA — Registered Architectural Corporation — 53433 — North Carolina — Charlotte, North Carolina

Mark Winston Sally — Registered Architect — 5721 — North Carolina — Charlotte, North Carolina — 09/14/20

PROJECT NORTH | PLAN NORTH

KEY PLAN

CONSTRUCTION DOCUMENTS

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW®

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403
SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

DESIGNED BY: AT
DRAWN BY: AT
CHECKED BY: MS

ISSUE DATE:
September 14, 2020

UL 263 - U419

G301

SCALE:

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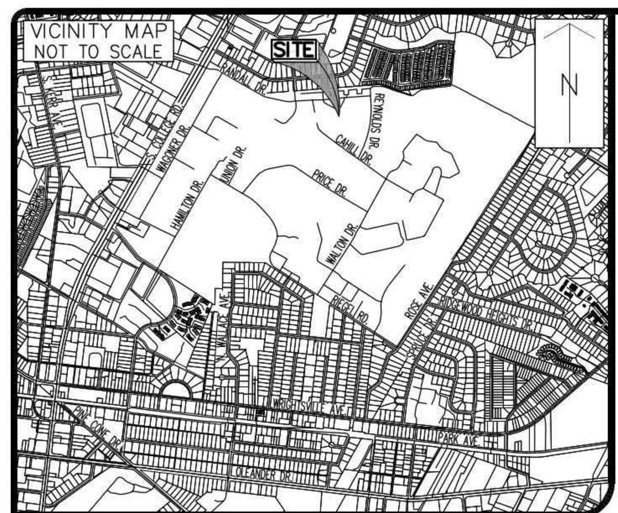


TOPOGRAPHY CERTIFICATION

I HEREBY CERTIFY THAT THE TOPOGRAPHIC SURVEY SHOWN HEREON IS BASED ON AN ACTUAL FIELD SURVEY MADE UNDER MY SUPERVISION AND ACCURATELY REPRESENTS THE PHYSICAL FEATURES THEREON WITHIN THE AREAS SURVEYED AT THE TIME OF THIS SURVEY. THIS SURVEY MEETS THE STANDARDS OF PRACTICE FOR LAND SURVEYING IN NORTH CAROLINA (21NCAC56.1600)

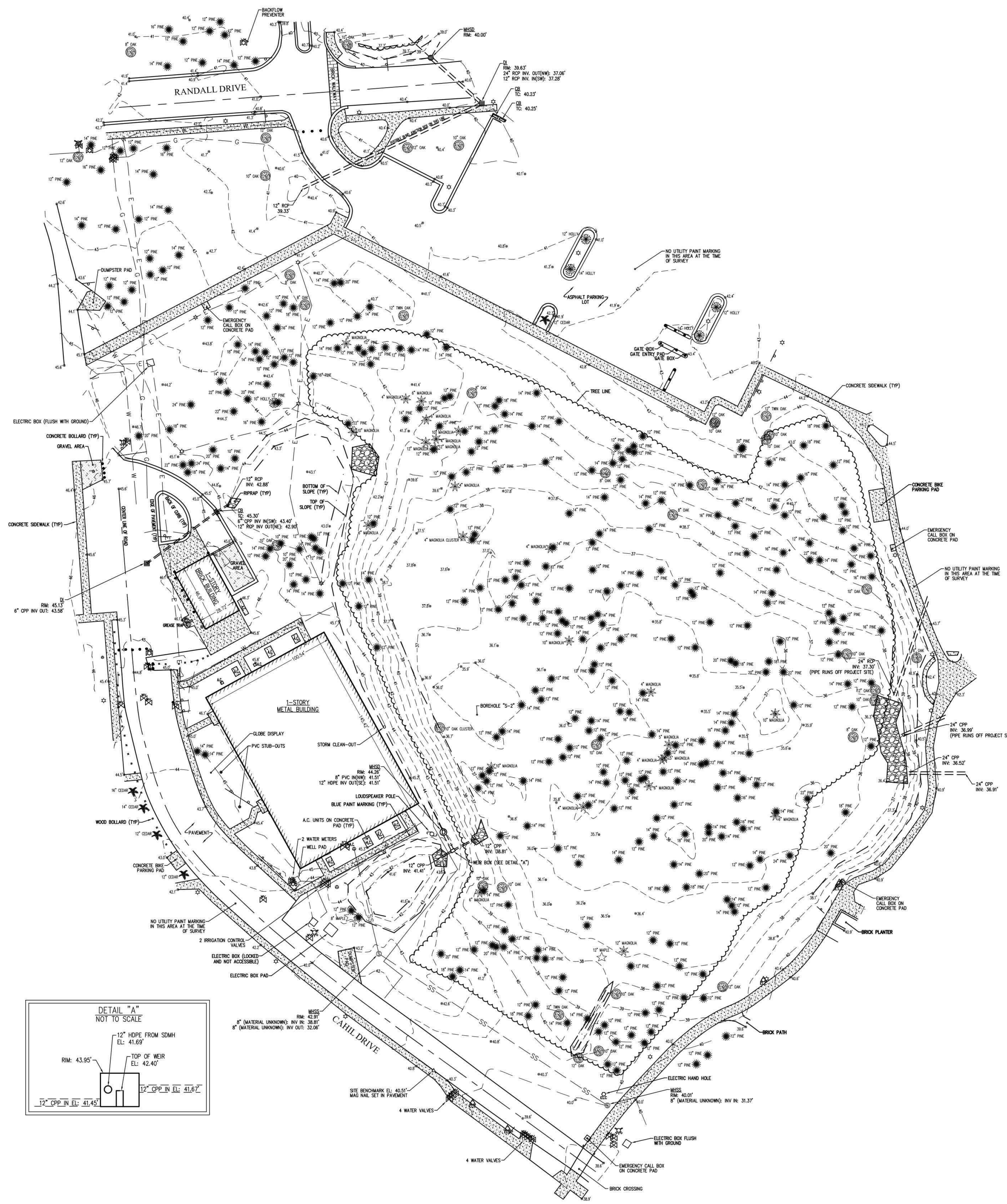
MILES O. MCCALL – PROFESSIONAL LAND SURVEYOR (L-3518)

NORTH CAROLINA PROFESSIONAL SEAL L-3518 LAND SURVEYOR MILES O. McCALL, III

3-11-19

GENERAL NOTES

1. THIS IS A EXISTING CONDITIONS SURVEY. NO BOUNDARY SURVEY WAS PERFORMED.
2. ELEVATIONS FOR THIS SURVEY REFERENCED TO UNCW DATUM.
3. ANY DISTANCES ARE HORIZONTAL GROUND DISTANCES UNLESS OTHERWISE NOTED.
4. UNITS ARE U.S. SURVEY FEET UNLESS OTHERWISE NOTED.
5. ANY AREAS BY COORDINATE GEOMETRY.
6. NO GRID MONUMENTS FOUND WITHIN 2000' OF SITE.
7. THIS SURVEY PERFORMED AND MAP PREPARED WITHOUT BENEFIT OF A TITLE REPORT. THIS SURVEY SUBJECT TO ANY FACTS AND EASEMENTS WHICH MAY BE DISCLOSED BY A FULL AND ACCURATE TITLE SEARCH.
8. FLOOD NOTE: AS DETERMINED BY GRAPHIC PLOTTING, THIS PROPERTY DOES NOT APPEAR TO BE LOCATED IN A SPECIAL FLOOD HAZARD ZONE PER FEMA FLOOD INSURANCE RATE MAP #3720314700K, EFFECTIVE DATE AUGUST 28TH, 2018.
9. UTILITY STATEMENT: THE UNDERGROUND UTILITIES SHOWN (IF ANY) HAVE BEEN LOCATED FROM COUNTY GIS INFORMATION, EXISTING DRAWINGS & FIELD SURVEY INFORMATION. THE SURVEYOR MAKES NO GUARANTEE THAT THE UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED, OR THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.
10. COUNTY PARCEL ID: R05511-003-001-000.
11. UTILITY PAINT MARKINGS PERFORMED BY OTHERS.



UNCW GRID
N

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

SYMBOL LEGEND:

WM	WATER METER	⊗	SEWER CLEAN-OUT
WV	WATER VALVE		UTILITY POLE
	FIRE HYDRANT		GUY WIRE ANCHOR
	FIRE DEPARTMENT CONNECTION	ELC	ELECTRIC PEDESTAL
ICV	IRRIGATION CONTROL VALVE		ELECTRIC METER
Ⓦ	WATER MANHOLE		LIGHT / LIGHT POLE
Ⓣ	TELEPHONE MANHOLE / VAULT	Ⓔ	ELECTRIC MANHOLE
GV	GAS VALVE	TEL	TELEPHONE PEDESTAL
Ⓓ	STORM DRAIN MANHOLE	MB	MAIL BOX
Ⓢ	SEWER MANHOLE		SIGN
⊗45.6'	GROUND SHOT ELEVATION		BOLLARD

LINETYPE LEGEND:

— — W —	BLUE PAINT MARKING (WATER)
— — G —	YELLOW PAINT MARKING (GAS)
— · — · —	GREEN PAINT MARKINGS (STORM)
— — E —	RED PAINT MARKINGS (ELECTRIC)
—XX— XX—	FENCE
—SS—	SEWER LINE (APPROXIMATE LOCATION)
=========	STORM PIPE
—OHE—	OVERHEAD ELECTRIC
— — 32 — —	MINOR CONTOUR WITH ELEVATION
— — 30 — —	MAJOR CONTOUR WITH ELEVATION
	RIPRAP
	CONCRETE AREA

ABBREVIATIONS:

CB	CATCH BASIN	SDMH	STORM DRAIN MANHOLE
DI	DROP INLET	MHSS	SEWER MANHOLE
INV	INVERT	RCP	REINFORCED CONCRETE PIPE
EL	ELEVATION	A.C.	AIR CONDITIONER UNIT ON PAD
TC	TOP OF CURB	(NE)	NORTHEAST
(SW)	SOUTHWEST	(SE)	SOUTHEAST
(NW)	NORTHWEST		

JOB NO: 18-1129.5 © 2019

Sheet No.	1 of 1
Scale	1" = 40'
Date	3.7.2019
Job No.	18-1129.5
Designer	N/A
Drawn By	WRD
Checked By	ACS

No.	Revision	Date	By

PREPARED FOR:
MCADAMS COMPANY
2905 MERIDIAN PARKWAY
DURHAM, NC 27713
PH: (919) 361-5000

EXISTING CONDITIONS SURVEY

UNCW FRIDAY ANNEX SITE

City Of Wilmington New Hanover County North Carolina

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Durham, NC 27713
phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293, C-187
www.mcadamsco.com

NORTH CAROLINA THE JOHN R. McADAMS COMPANY, INC. C-0293 CERTIFICATE OF AUTHORIZATION

PLAN NORTH

CONSTRUCTION DOCUMENTS

Revision Schedule		
#	Description	Date
1	SCO COMMENTS	09/17/20

Coastal Engineering Building

UNCW®

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

DESIGNED BY: KAS
DRAWN BY: JAA
CHECKED BY: THJ

ISSUE DATE:
SEPTEMBER 14, 2020

EXISTING CONDITIONS

C100

SCALE: 1" = 40'

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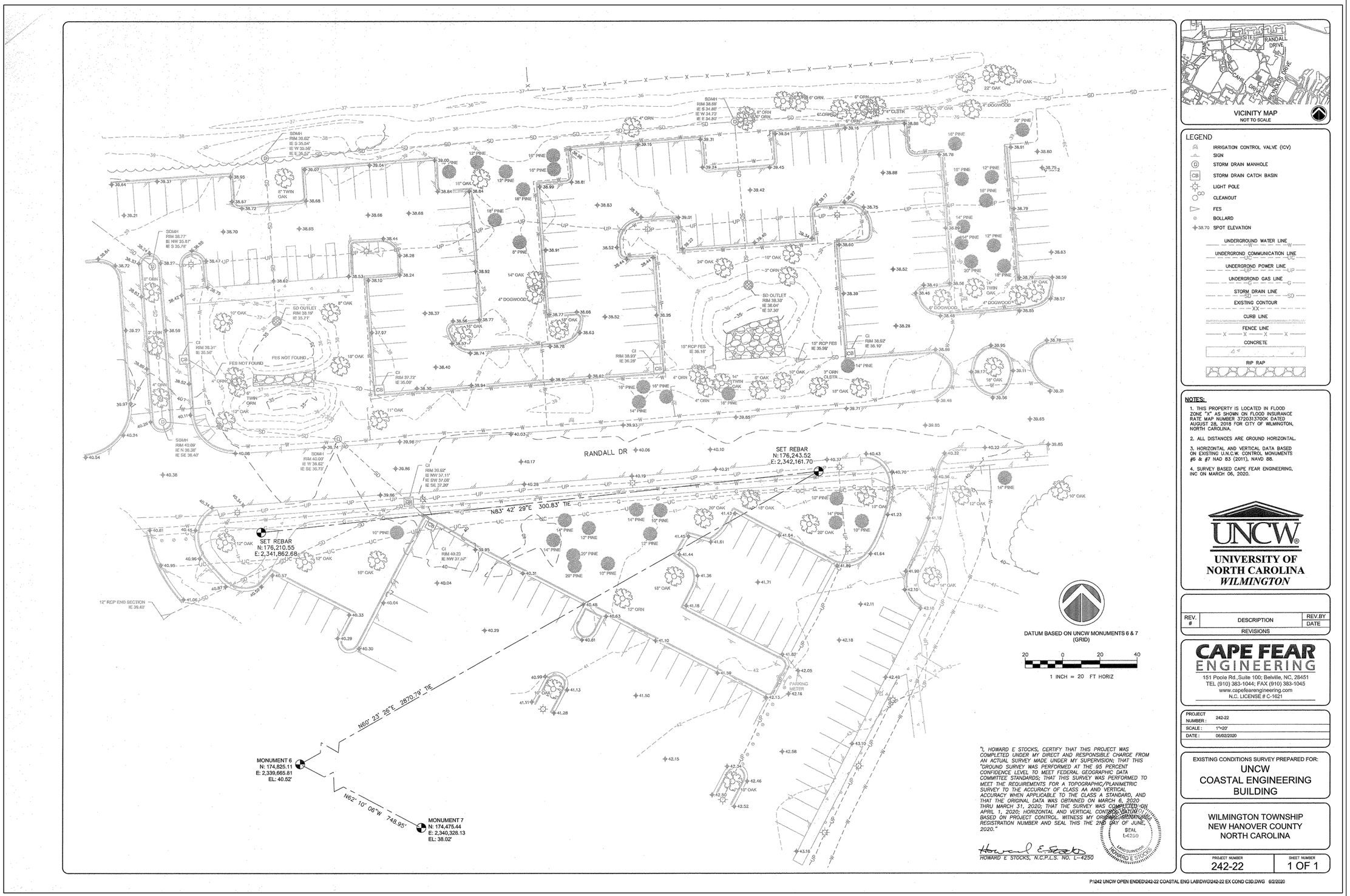

VICINITY MAP
NOT TO SCALE

NOTES:

1. THIS PROPERTY IS LOCATED IN FLOOD ZONE "X" AS SHOWN ON FLOOD INSURANCE RATE MAP NUMBER 3720313700K DATED AUGUST 28, 2018 FOR CITY OF WILMINGTON, NORTH CAROLINA.
2. ALL DISTANCES ARE GROUND HORIZONTAL.
3. HORIZONTAL AND VERTICAL DATA BASED ON EXISTING U.N.C.W. CONTROL MONUMENTS #6 & #7 NAD 83 (2011), NAVD 88.
4. SURVEY BASED CAPE FEAR ENGINEERING, INC ON MARCH 06, 2020.

UNCW
UNIVERSITY OF NORTH CAROLINA *WILMINGTON*

REV. #	DESCRIPTION	REV.BY DATE
	REVISIONS	

"I, HOWARD E STOCKS, CERTIFY THAT THIS PROJECT WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION; THAT THIS "GROUND SURVEY WAS PERFORMED AT THE 95 PERCENT CONFIDENCE LEVEL TO MEET FEDERAL GEOGRAPHIC DATA COMMITTEE STANDARDS; THAT THIS SURVEY WAS PERFORMED TO MEET THE REQUIREMENTS FOR A TOPOGRAPHIC/PLANIMETRIC SURVEY TO THE ACCURACY OF CLASS AA AND VERTICAL ACCURACY WHEN APPLICABLE TO THE CLASS A STANDARD, AND THAT THE ORIGINAL DATA WAS OBTAINED ON MARCH 6, 2020 THRU MARCH 31, 2020; THAT THE SURVEY WAS COMPLETED ON APRIL 1, 2020; HORIZONTAL AND VERTICAL CONTROL DATUM IS BASED ON PROJECT CONTROL. WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER AND SEAL THIS THE 2ND DAY OF JUNE, 2020."

HOWARD E STOCKS, N.C.P.L.S. NO. L-4250

SEAL L-4250 HOWARD E STOCKS

CAPE FEAR ENGINEERING
151 Poole Rd.,Suite 100; Belville, NC, 28451
TEL (910) 383-1044; FAX (910) 383-1045
www.capefearengineering.com
N.C. LICENSE # C-1621

PROJECT NUMBER :	242-22
SCALE :	1"=20'
DATE :	06/02/2020

EXISTING CONDITIONS SURVEY PREPARED FOR:
UNCW
COASTAL ENGINEERING BUILDING

WILMINGTON TOWNSHIP
NEW HANOVER COUNTY
NORTH CAROLINA

PROJECT NUMBER	SHEET NUMBER
242-22	1 OF 1

P:\242 UNCW OPEN ENDED\242-22 COASTAL ENG LAB\DWG\242-22 EX COND C3D.DWG 6/2/2020

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NORTH CAROLINA
THE JOHN R. McADAMS COMPANY, INC.
C-0293
CERTIFICATE OF AUTHORIZATION

PLAN NORTH

CONSTRUCTION DOCUMENTS

Revision Schedule

#	Description	Date
1	SCO COMMENTS	09/17/20

Coastal Engineering Building

UNCW
University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

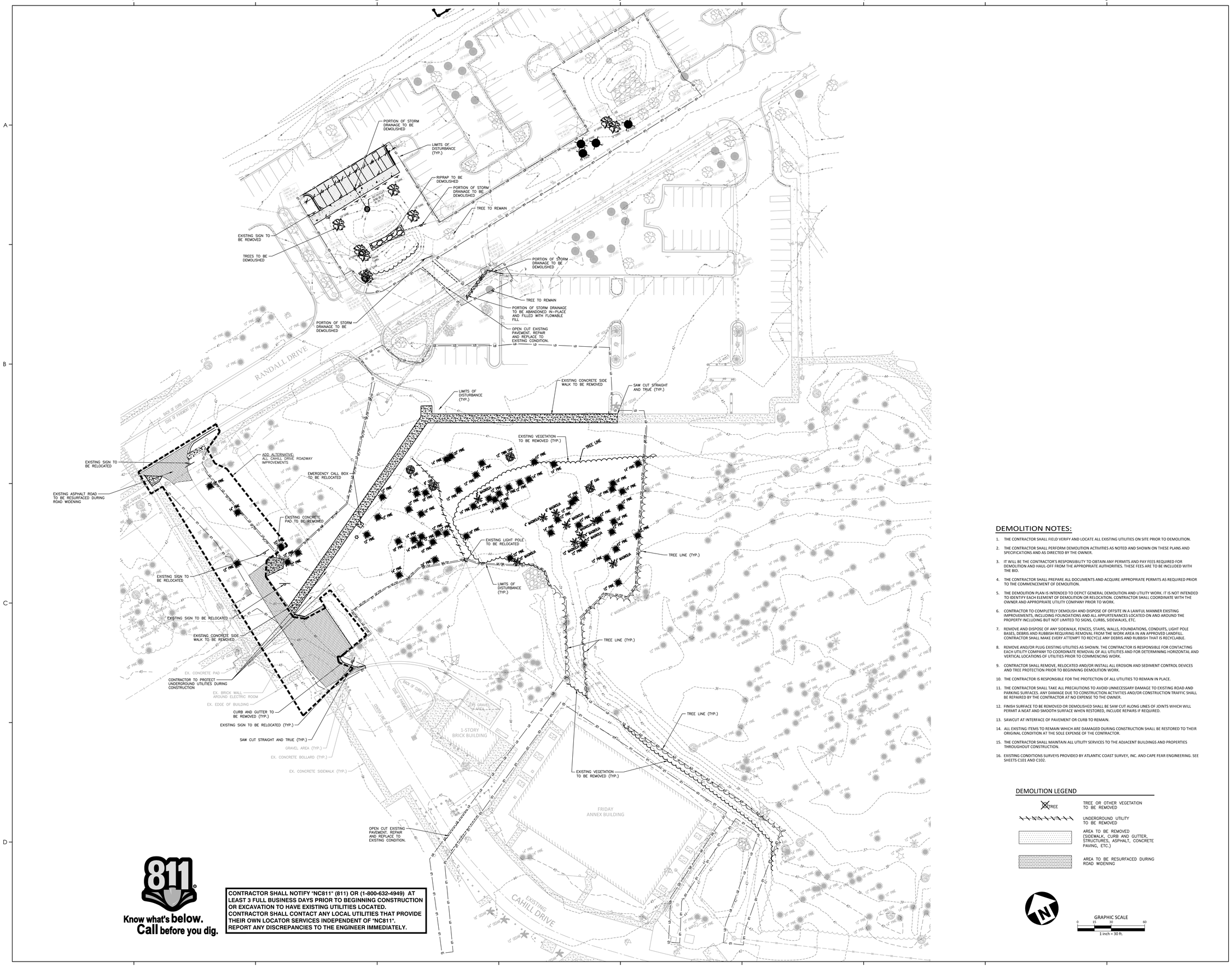
DESIGNED BY: KAS
DRAWN BY: JAA
CHECKED BY: THJ

ISSUE DATE:
SEPTEMBER 14, 2020

EXISTING CONDITIONS

C101

SCALE: 1" = 20'



Know what's below. Call before you dig.

CONTRACTOR SHALL NOTIFY "NC811" (811) OR (1-800-632-4949) AT LEAST 3 FULL BUSINESS DAYS PRIOR TO BEGINNING CONSTRUCTION OR EXCAVATION TO HAVE EXISTING UTILITIES LOCATED. CONTRACTOR SHALL CONTACT ANY LOCAL UTILITIES THAT PROVIDE THEIR OWN LOCATOR SERVICES INDEPENDENT OF "NC811". REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY.

DEMOLITION NOTES:

1. THE CONTRACTOR SHALL FIELD VERIFY AND LOCATE ALL EXISTING UTILITIES ON SITE PRIOR TO DEMOLITION.
2. THE CONTRACTOR SHALL PERFORM DEMOLITION ACTIVITIES AS NOTED AND SHOWN ON THESE PLANS AND SPECIFICATIONS AND AS DIRECTED BY THE OWNER.
3. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ANY PERMITS AND PAY FEES REQUIRED FOR DEMOLITION AND HAUL-OFF FROM THE APPROPRIATE AUTHORITIES. THESE FEES ARE TO BE INCLUDED WITH THE BID.
4. THE CONTRACTOR SHALL PREPARE ALL DOCUMENTS AND ACQUIRE APPROPRIATE PERMITS AS REQUIRED PRIOR TO THE COMMENCEMENT OF DEMOLITION.
5. THE DEMOLITION PLAN IS INTENDED TO DEPICT GENERAL DEMOLITION AND UTILITY WORK. IT IS NOT INTENDED TO IDENTIFY EACH ELEMENT OF DEMOLITION OR RELOCATION. CONTRACTOR SHALL COORDINATE WITH THE OWNER AND APPROPRIATE UTILITY COMPANY PRIOR TO WORK.
6. CONTRACTOR TO COMPLETELY DEMOLISH AND DISPOSE OF OFFSITE IN A LAWFUL MANNER EXISTING IMPROVEMENTS, INCLUDING FOUNDATIONS AND ALL APPURTENANCES LOCATED ON AND AROUND THE PROPERTY INCLUDING BUT NOT LIMITED TO SIGNS, CURBS, SIDEWALKS, ETC.
7. REMOVE AND DISPOSE OF ANY SIDEWALK, FENCES, STAIRS, WALLS, FOUNDATIONS, CONDUITS, LIGHT POLE BASES, DEBRIS AND RUBBISH REQUIRING REMOVAL FROM THE WORK AREA IN AN APPROVED LANDFILL. CONTRACTOR SHALL MAKE EVERY ATTEMPT TO RECYCLE ANY DEBRIS AND RUBBISH THAT IS RECYCLABLE.
8. REMOVE AND/OR PLUG EXISTING UTILITIES AS SHOWN. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING EACH UTILITY COMPANY TO COORDINATE REMOVAL OF ALL UTILITIES AND FOR DETERMINING HORIZONTAL AND VERTICAL LOCATIONS OF UTILITIES PRIOR TO COMMENCING WORK.
9. CONTRACTOR SHALL REMOVE, RELOCATED AND/OR INSTALL ALL EROSION AND SEDIMENT CONTROL DEVICES AND TREE PROTECTION PRIOR TO BEGINNING DEMOLITION WORK.
10. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES TO REMAIN IN PLACE.
11. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS TO AVOID UNNECESSARY DAMAGE TO EXISTING ROAD AND PARKING SURFACES. ANY DAMAGE DUE TO CONSTRUCTION ACTIVITIES AND/OR CONSTRUCTION TRAFFIC SHALL BE REPAIRED BY THE CONTRACTOR AT NO EXPENSE TO THE OWNER.
12. FINISH SURFACE TO BE REMOVED OR DEMOLISHED SHALL BE SAW CUT ALONG LINES OF JOINTS WHICH WILL PERMIT A NEAT AND SMOOTH SURFACE WHEN RESTORED, INCLUDE REPAIRS IF REQUIRED.
13. SAWCUT AT INTERFACE OF PAVEMENT OR CURB TO REMAIN.
14. ALL EXISTING ITEMS TO REMAIN WHICH ARE DAMAGED DURING CONSTRUCTION SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AT THE SOLE EXPENSE OF THE CONTRACTOR.
15. THE CONTRACTOR SHALL MAINTAIN ALL UTILITY SERVICES TO THE ADJACENT BUILDINGS AND PROPERTIES THROUGHOUT CONSTRUCTION.
16. EXISTING CONDITIONS SURVEYS PROVIDED BY ATLANTIC COAST SURVEY, INC. AND CAPE FEAR ENGINEERING. SEE SHEETS C101 AND C102.

DEMOLITION LEGEND

- TREE — TREE OR OTHER VEGETATION TO BE REMOVED
- UNDERGROUND UTILITY TO BE REMOVED
- AREA TO BE REMOVED (SIDEWALK, CURB AND GUTTER, STRUCTURES, ASPHALT, CONCRETE PAVING, ETC.)
- AREA TO BE RESURFACED DURING ROAD WIDENING

GRAPHIC SCALE
0 15 30 60
1 inch = 30 ft.

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NORTH CAROLINA BOARD OF EXAMINERS FOR ENGINEERING AND SURVEYING
THE JOHN R. McADAMS COMPANY, INC.
C-0293
CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 049881 ENGINEER TONYA H. JONES

Tonya Jones
09/22/20 1:58 PM

PLAN NORTH

CONSTRUCTION DOCUMENTS

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UNCW

University of North Carolina Wilmington

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Wilmington, NC 28403
SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

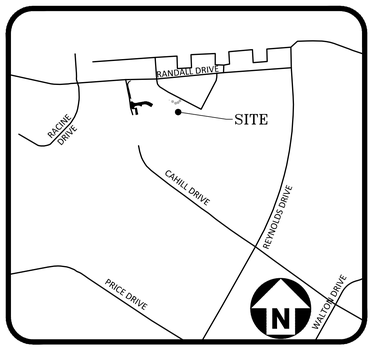
DESIGNED BY: KAS
DRAWN BY: JAA
CHECKED BY: THJ

ISSUE DATE:
SEPTEMBER 14, 2020

DEMOLITION PLAN

C102

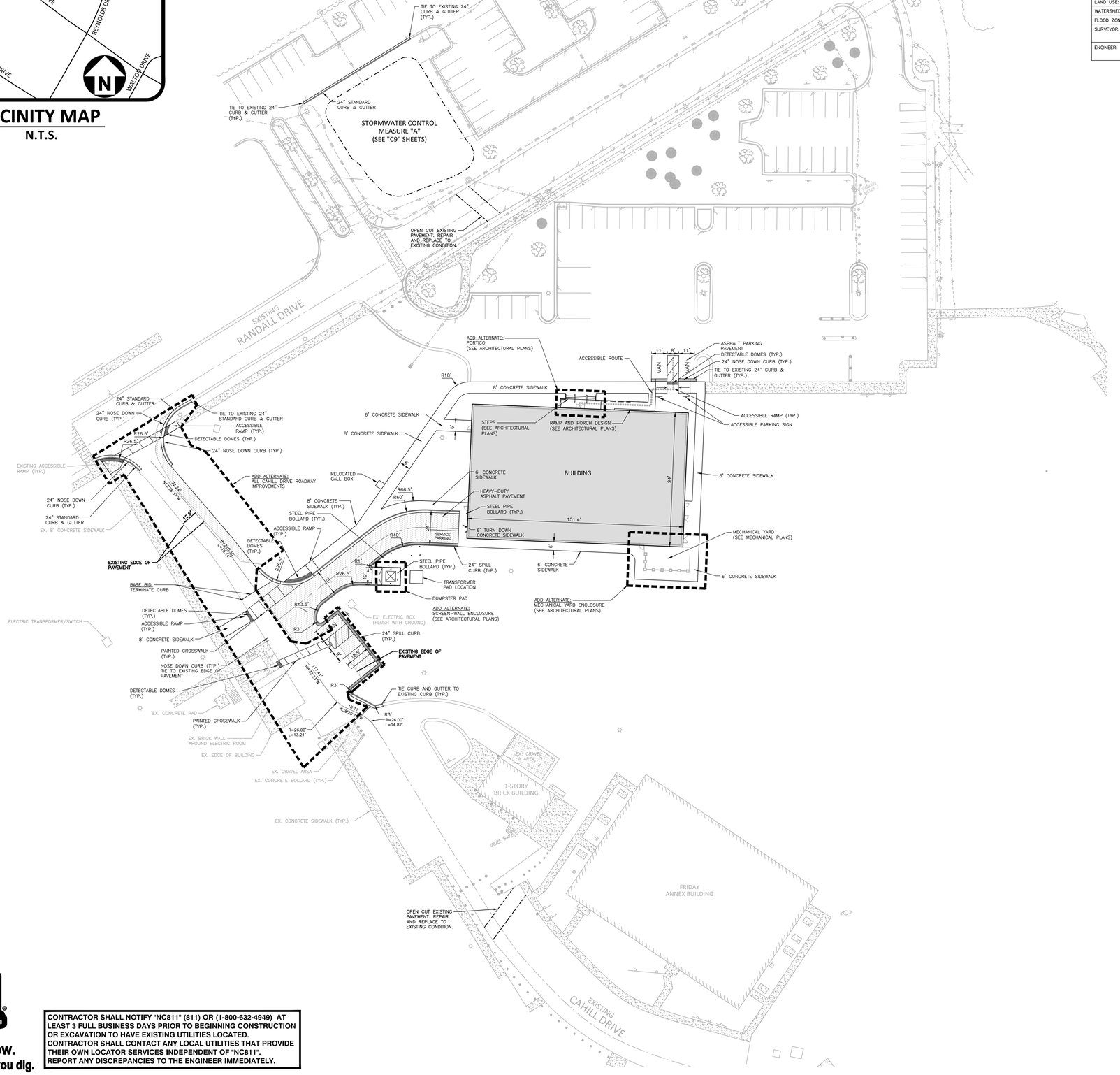
SCALE: 1" = 30'



VICINITY MAP

N.T.S.

SITE DATA TABLE	
PROJECT NAME:	COASTAL ENGINEERING BUILDING
PHYSICAL ADDRESS:	5236 RANDALL DRIVE, WILMINGTON, NC, 28403
OWNER/DEVELOPER:	UNC-WILMINGTON 601 SOUTH COLLEGE ROAD WILMINGTON, NC, 28403
PARCEL ID NUMBER:	PID NUMBER: R05511-003-001-000
TOTAL PARCEL & IMPERVIOUS AREA:	649.13 AC **(1.97 AC DISTURBED)** **EXISTING SITE IMPERVIOUS AREA: 13,428 SF/.30 AC** **PROPOSED SITE IMPERVIOUS AREA: 41,841 SF/.96 AC** **NET IMPERVIOUS AREA INCREASE: 28,413 SF/.66 AC (0.1% PARCEL AREA)**
WETLANDS:	N/A
ZONING:	O&I-1-OFFICE & INSTITUTION (GENERAL)
LAND USE:	821-EDUCATIONAL
WATERSHED:	WHITE OAK RIVER BASIN
FLOOD ZONE:	ZONE X PER FEMA MAP # 3720314700K 08/28/2018
SURVEYOR:	ATLANTIC COAST SURVEY, PLLC 1200 N 23RD ST #107 WILMINGTON, NC 28405 TEL: (910) 443-0080 CAPE FEAR ENGINEERING 151 POOLE RD., SUITE 100 BELVILLE, NC 28451 TEL: (910) 383-1044, FAX: (910) 383-1045
ENGINEER:	MCADAMS 2905 MERIDIAN PKWY DURHAM, NC 27713 (919) 361-5000



SITE NOTES:

1. NO WATERCOURSE OR 100 YEAR FLOODPLAIN AS MAPPED BY F.E.M.A. OR AS DEFINED BY ANY FEDERAL, STATE, OR LOCAL AUTHORITY IS LOCATED ON THIS PROPERTY.
2. PRIOR TO CONSTRUCTION, ANY DISCREPANCIES BETWEEN THE CONSTRUCTION PLANS, SPECIFICATIONS, AND NOTES SHALL BE BROUGHT TO THE DESIGN ENGINEER'S ATTENTION IMMEDIATELY.
3. ALL DIMENSIONS AND GRADES SHOWN ON THE PLANS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE OWNER IF ANY DISCREPANCIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION FOR NECESSARY PLAN OR GRADE CHANGES. NO EXTRA COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR ANY WORK DONE DUE TO DIMENSIONS OR GRADES SHOWN INCORRECTLY ON THESE PLANS IF SUCH NOTIFICATION HAS NOT BEEN GIVEN.
4. ALL UTILITIES TO BE RELOCATED SHALL BE COORDINATED WITH UNCW. EXISTING BUILDINGS SHALL REMAIN FUNCTIONING AT ALL TIMES. CONTRACTOR SHALL MAKE ALL EFFORT TO AVOID AND MINIMIZE UTILITY SHUT DOWN DURING CONSTRUCTION. NEW UTILITIES SHALL BE INSTALLED AND TESTED PRIOR TO EXISTING UTILITY SHUT DOWN.
5. CURB RADII ARE DIMENSIONED TO THE FACE OF CURB. DIMENSIONS FOR ROADS ARE TO THE BACK OF CURB.
6. CONTRACTOR TO COORDINATE WITH OWNER FOR COLOR OF PAINT STRIPING IN PARKING LOT.

SITE LEGEND

- SIGNAGE
- LIGHT POLE
- POWER POLE
- ACC — ACCESSIBLE PARKING STALL
- VAN — VAN ACCESSIBLE PARKING STALL
- XX — PARKING SPACE COUNT
- ACCESSIBLE RAMPS (TYPE A, TYPE B, TYPE C)
- ACCESSIBLE ROUTE
- 24" SPILL CURB
- CENTERLINE
- HEAVY DUTY ASPHALT PAVEMENT

GRAPHIC SCALE
0 15 30 60
1 inch = 30 ft.

Know what's below. Call before you dig.

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NORTH CAROLINA BOARD OF EXAMINERS FOR ENGINEERING AND SURVEYING — THE JOHN R. McADAMS COMPANY, INC. — C-0293 — CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL ENGINEER — SEAL — 049861 — ENGINEER — TONYA H. JONES

Tonya Jones
09/22/20 1:59 PM

PLAN NORTH

CONSTRUCTION DOCUMENTS

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1	SCO COMMENTS	09/17/20

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CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

DESIGNED BY: KAS
DRAWN BY: JAA
CHECKED BY: THJ

ISSUE DATE:
SEPTEMBER 14, 2020

SITE PLAN

C201

SCALE: 1" = 30'

GRADING NOTES:

1. ALL DIMENSIONS AND GRADES SHOWN ON THE PLANS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY DISCREPANCIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION. FOR NECESSARY PLAN OR GRADE CHANGES, NO EXTRA COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR ANY WORK DONE DUE TO DIMENSIONS OR GRADES SHOWN INCORRECTLY ON THESE PLANS IF SUCH NOTIFICATION HAS NOT BEEN GIVEN.
2. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) STANDARDS FOR EXCAVATIONS; FINAL RULE 29CFR PART 1926, SUBPART "P" APPLIES TO ALL EXCAVATIONS EXCEEDING FIVE (5) FEET IN DEPTH. EXCAVATION EXCEEDING TWENTY (20) FEET IN DEPTH REQUIRES THE DESIGN OF A TRENCH SAFETY SYSTEM BY A REGISTERED PROFESSIONAL ENGINEER, PROVIDED BY CONTRACTOR RESPONSIBLE FOR EXCAVATION.
3. CONTRACTOR SHALL NOTIFY "NC811" (811) OR (1-800-632-4949) AT LEAST 3 FULL BUSINESS DAYS PRIOR TO BEGINNING CONSTRUCTION OR EXCAVATION TO HAVE EXISTING UTILITIES LOCATED. CONTRACTOR SHALL CONTACT ANY LOCAL UTILITIES THAT PROVIDE THEIR OWN LOCATOR SERVICES INDEPENDENT OF "NC811". REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY.
4. A PRE-CONSTRUCTION CONFERENCE WILL BE HELD PRIOR TO ANY LAND DISTURBING ACTIVITY, AS DEEMED NECESSARY, THE OWNER, ENGINEER, CONTRACTOR, AND REPRESENTATIVES FROM NCDEQ WILL BE INVITED TO ATTEND THE MEETING. FOR NCDEQ REPRESENTATIVES, CONTACT DIVISION OF LAND QUALITY AT (910) 796-7215 PRIOR TO START OF CONSTRUCTION.
5. CONSTRUCTION, MAINTENANCE AND REMOVAL OF ALL EROSION CONTROL DEVICES ARE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. TIMING OF REMOVAL SHALL BE COORDINATED WITH THE EROSION CONTROL INSPECTOR.
6. EXISTING UTILITIES AND STRUCTURES SHOWN, BOTH UNDERGROUND AND ABOVE GROUND, ARE BASED ON A FIELD SURVEY AND THE BEST AVAILABLE RECORD DRAWINGS. THE CONTRACTOR SHALL VERIFY FIELD CONDITIONS PRIOR TO BEGINNING RELATED CONSTRUCTION. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
7. SOIL UNDER BUILDINGS, PAVED AREAS AND WITHIN SLOPES GREATER THAN 3:1 (H:V) SHALL BE APPROVED, PLACED AND COMPACTED AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER.
8. CONTRACTOR SHALL ALSO OBTAIN A UNCW DIG PERMIT PRIOR TO CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL ALLOW FOR 7 DAYS FOR DIG PERMIT PROCESSING. THE PERMIT CN BE FOUND AT THE UNCW WEBSITE: (https://www.uncw.edu/ba/facilities/Forms/dig-permit.pdf)
9. SPOT ELEVATIONS HAVE BEEN PROVIDED THROUGHOUT THE SITE TO ENSURE THAT STORMWATER FLOWS TO STORM DRAINAGE NETWORK. CONTRACTOR IS RESPONSIBLE FOR ENSURING CORRECT PLACEMENT OF SPILL CURB AS INDICATED ON THE PLANS AND PERFORM THE NECESSARY TRANSITIONS TO ACHIEVE SPILL CURB. ANY GRADE MODIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE FIELD CHANGES ARE MADE.
10. CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHEN WORKING UNDER, AROUND, AND/OR ADJACENT TO EXISTING POWER LINES.
11. STORM DRAINAGE PIPE SHALL BE CLASS III RCP MIN. UNLESS OTHERWISE NOTED.
12. UNDER NO CIRCUMSTANCES SHALL WATER BE ALLOWED TO RISE IN UNBACKFILLED TRENCHES AFTER PIPE HAS BEEN PLACED.
13. PROPOSED CONTOURS AND SPOT ELEVATIONS ARE FINISHED GRADE ELEVATIONS (TOP OF STONE, TOP OF GRASS, ETC.) UNLESS OTHERWISE NOTED.
14. SPILL CURB HAS BEEN INDICATED ON GRADING AND DRAINAGE PLAN. CONTRACTOR SHALL ENSURE ALL CURB AND GUTTER DRAINS TO STORM DRAINAGE AND MY MAKE MODIFICATIONS AS NECESSARY. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY REVISIONS BEFORE MAKING CHANGES.
15. CONTRACTOR TO COORDINATE AND VERIFY ALL BUILDING UTILITY CONNECTIONS WITH BUILDING MEP PLANS.
16. ALL UNDERGROUND LINES OUTSIDE THE BUILDING FOOTPRINT, EXCEPT LAWN IRRIGATION LINES, SHALL HAVE A WARNING TAPE INSTALLED IN THE BACKFILL BETWEEN 6 INCHES TO 24 INCHES BELOW FINISHED GRADE DIRECTLY OVER PIPING.
    - 16.1. METALLIC LINES SHALL BE IDENTIFIED WITH DURABLE PRINTED PLASTIC WARNING TAPES, MINIMUM 3 INCHES WIDE WITH LETTERING TO IDENTIFY BURIED LINE BELOW.
    - 16.2. NON-METALLIC PIPES, OTHER THAN GAS LINES, SHALL BE IDENTIFIED BY DETECTABLE WARNING TAPE, MINIMUM 2 INCHES WIDE, WITH LETTERING TO IDENTIFY BURIED LINE BELOW.
    - 16.3. 2018 NC PLUMBING CODE SECTION 306.2.4 TRACER: FOR PLASTIC SEWER PIPING, AN INSULATED COPPER TRACER WIRE OR OTHER APPROVED CONDUCTOR SHALL BE INSTALLED ADJACENT TO AND OVER THE FULL LENGTH OF THE PIPING. ACCESS SHALL BE PROVIDED TO THE TRACER WIRE OR THE TRACER WIRE SHALL TERMINATE AT THE CLEANOUT BETWEEN THE BUILDING DRAIN AND BUILDING SEWER. THE TRACER WIRE SIZE SHALL NOT BE LESS THAN 14-AWG AND THE INSULATION TYPE SHALL BE LISTED FOR DIRECT BURIAL.

GRADING LEGEND

	FLARED END SECTION
	CATCH BASIN
	STORM SERVICE ROOF-DRAIN
	DRAINAGE FLOW ARROW
250.50 / 250.00	TOP & BOTTOM CURB ELEVATIONS
+ 250.60	SPOT ELEVATION
	STORM DRAINAGE
	ROOF DRAIN, 8" ADS NON-PERFORATED TUBING OR EQUAL 1.0% MIN. SLOPE 3' MIN. COVER PVC SCHEDULE 40 IN TRAFFIC AREAS
TP TP TP	TREE PROTECTION FENCE
LD LD	LIMITS OF DISTURBANCE
	WOODED AREA
250	MAJOR CONTOUR
252	MINOR CONTOUR
250	EXISTING MAJOR CONTOUR
252	EXISTING MINOR CONTOUR

GRAPHIC SCALE
0 15 30 60
1 inch = 30 ft.

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NORTH CAROLINA PROFESSIONAL SEAL 040881 ENGINEER TONYA H. JONES

Tonya Jones
09/22/20 2:00 PM

PLAN NORTH

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DRAWN BY: JAA
CHECKED BY: THJ

ISSUE DATE:
SEPTEMBER 14, 2020

GRADING AND STORM DRAINAGE PLAN

C301

SCALE: 1" = 30'

UTILITY NOTES:

1. ALL SITE WATER & SEWER IMPROVEMENTS SHALL BE IN ACCORDANCE WITH CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS. CONTRACTOR SHALL COORDINATE WITH UNC-W PERSONNEL ON THE TIMING FOR TIE-IN TO EXISTING WATER LINE.
2. WATER LINE SHALL HAVE A MINIMUM COVER OF 36" FROM FINISHED GROUND.
3. THE LOCATIONS INDICATED FOR WATER AND SEWER TO ENTER THE BUILDINGS ARE APPROXIMATE. THE CONTRACTOR SHALL REFER TO PLUMBING PLANS FOR THE EXACT LOCATION OF TIE-IN OR EXTENSIONS INTO THE BUILDINGS AND PROVIDE ADAPTERS AS NECESSARY.
4. THE CONTRACTOR SHALL VERIFY THE LOCATIONS, BOTH HORIZONTALLY AND VERTICALLY, OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO WATER AND SEWER LINE INSTALLATION. ANY CONFLICTS SHOULD BE BROUGHT TO THE ATTENTION TO THE ENGINEER IMMEDIATELY.
5. CONTRACTOR SHALL REPAIR ANY UTILITY OR STRUCTURE DAMAGED DUE TO CONSTRUCTION AT NO EXPENSE TO THE OWNER. ANY REPAIRS SHALL BE COORDINATED WITH UNC-W AND ENGINEER.
6. ALL NEW BACKFLOW DEVICES SHALL BE IN ACCORDANCE WITH CAPE FEAR PUBLIC UTILITY AUTHORITY DETAILS AND SPECIFICATIONS.
7. ALL UNDERGROUND LINES OUTSIDE THE BUILDING FOOTPRINT, EXCEPT LAWN IRRIGATION LINES, SHALL HAVE A WARNING TAPE INSTALLED IN THE BACKFILL BETWEEN 6 INCHES TO 24 INCHES BELOW FINISHED GRADE DIRECTLY OVER PIPING.
   - 7.1. METALLIC LINES SHALL BE IDENTIFIED WITH DURABLE PRINTED PLASTIC WARNING TAPES, MINIMUM 3 INCHES WIDE WITH LETTERING TO IDENTIFY BURIED LINE BELOW.
   - 7.2. NON-METALLIC PIPES, OTHER THAN GAS LINES, SHALL BE IDENTIFIED BY DETECTABLE WARNING TAPE, MINIMUM 2 INCHES WIDE, WITH LETTERING TO IDENTIFY BURIED LINE BELOW.
   - 7.3. 2018 NC PLUMBING CODE, SECTION 306.2.4 TRACER: FOR PLASTIC SEWER PIPING, AN INSULATED COPPER TRACER WIRE OR OTHER APPROVED CONDUCTOR SHALL BE INSTALLED ADJACENT TO AND OVER THE FULL LENGTH OF THE PIPING. ACCESS SHALL BE PROVIDED TO THE TRACER WIRE OR THE TRACER WIRE SHALL TERMINATE AT THE CLEANOUT BETWEEN THE BUILDING DRAIN AND BUILDING SEWER. THE TRACER WIRE SIZE SHALL NOT BE LESS THAN 14-AWG AND THE INSULATION TYPE SHALL BE LISTED FOR DIRECT BURIAL.
8. CONTRACTOR SHALL COVER ANY FIRE HYDRANTS THAT ARE OUT OF SERVICE WITH BLACK PLASTIC AND NOTIFY UNC-W FACILITIES DEPARTMENT WHEN THEY ARE OUT OF SERVICE AND WHEN PUT BACK INTO SERVICE.
9. TAPPING SLEEVE SHALL BE IN ACCORDANCE WITH CAPE FEAR PUBLIC UTILITY AUTHORITY DETAILS AND SPECIFICATIONS.
10. ALL 4" SANITARY SEWER SERVICES SHALL BE INSTALLED AT 1.00% MINIMUM SLOPE.

GENERAL NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO GAS OR WATER PIPES, PUBLIC OR PRIVATE SEWERS, DRAINS OR CULVERTS, RAILROAD OR TRAFFIC SIGNAL CABLES, TELEPHONE OR POWER CONDUITS, OR OTHER STRUCTURES. WHEN UTILITY LINES THAT ARE TO BE REMOVED ARE ENCOUNTERED WITHIN THE AREA OF OPERATIONS, THE CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE WITH AMPLE TIME FOR THE NECESSARY MEASURES TO BE TAKEN TO PREVENT INTERRUPTION OF THE SERVICES. REASONABLE CARE HAS BEEN EXERCISED IN SHOWING THE LOCATION OF EXISTING UTILITIES ON THE PLANS. THE EXACT LOCATION OF SUCH UTILITIES IS NOT KNOWN IN ALL CASES. THE CONTRACTOR SHALL EXPLORE THE AREA AHEAD OF THE GREADING OPERATION BY OBSERVATIONS, ELECTRONIC DEVICES, AND BY PERSONAL CONTACTS WITH UTILITY COMPANIES, AND LOCATE SUCH UTILITIES IN ADVANCE OF THE TRENCHING OR GRADING OPERATIONS, AND SHALL CONDUCT HIS WORK SO AS TO ELIMINATE OR MINIMIZE DAMAGE TO THE EXISTING STRUCTURES OR UTILITIES.
2. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR CONFORMANCE WITH ALL CURRENT LOCAL, STATE, AND OSHA SAFETY CODES DURING ALL PHASES OF THE WORK. CONTRACT PRICES ESTABLISHED FOR THE WORK SHALL INCLUDE COSTS ASSOCIATED WITH THE PROVISION OF SAFETY EQUIPMENT, AND PERSONNEL NECESSARY TO COMPLETE THE WORK, INCLUDING, BUT NOT LIMITED TO, TRENCH BRACING, AND PERSONNEL LICENSED BY OSHA AS COMPETENT FOR EVALUATING SOIL STABILITY.
3. ALL DISTURBED AREAS SHALL BE RESTORED TO EXISTING OR BETTER CONDITIONS AT NO ADDITIONAL EXPENSE TO THE OWNER.
4. CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF EXISTING 10" WATER LINE PRIOR TO TIE-IN AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
5. 5.CONTRACTOR SHALL REFER TO THE PLUMBING PLANS FOR THE EXACT LOCATION OF BUILDING WATER LINE AND SANITARY SEWER SERVICE TIE-IN POINTS.

UTILITY LEGEND

- FIRE HYDRANT ASSEMBLY
- FIRE DEPARTMENT CONNECTION (FDC)
- WATER VALVE
- BACKFLOW PREVENTER
- SANITARY SEWER MANHOLE
- SEWER CLEAN-OUT
- SEWER FLOW DIRECTION ARROW
- WATERLINE
- WATER SERVICE LINE
- SEWER SERVICE LINE
- GAS LINE
- UNDERGROUND ELECTRIC
- TELEPHONE

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

Know what's below. Call before you dig.

CONTRACTOR SHALL NOTIFY "NC811" (811) OR (1-800-632-4949) AT LEAST 3 FULL BUSINESS DAYS PRIOR TO BEGINNING CONSTRUCTION OR EXCAVATION TO HAVE EXISTING UTILITIES LOCATED. CONTRACTOR SHALL CONTACT ANY LOCAL UTILITIES THAT PROVIDE THEIR OWN LOCATOR SERVICES INDEPENDENT OF "NC811". REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY.

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www.mcadamsco.com

NORTH CAROLINA BOARD OF EXAMINERS FOR ENGINEERING AND SURVEYING
THE JOHN R. McADAMS COMPANY, INC.
C-0293
CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 041681 ENGINEER TONYA N. JONES

Tonya Jones
09/22/20 2:01 PM

PLAN NORTH

CONSTRUCTION DOCUMENTS

Revision Schedule		
#	Description	Date
1	SCO COMMENTS	09/17/20

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

DESIGNED BY: KAS
DRAWN BY: JAA
CHECKED BY: THJ

ISSUE DATE:
SEPTEMBER 14, 2020

UTILITY PLAN

C401

SCALE: 1" = 30'

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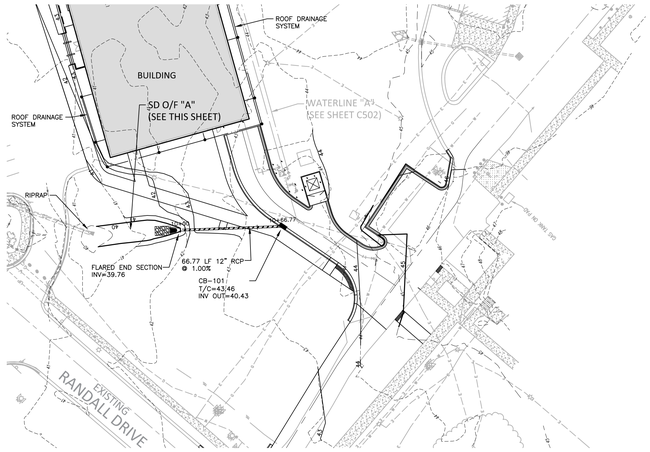

NC GRID (NAD83)

GRAPHIC SCALE
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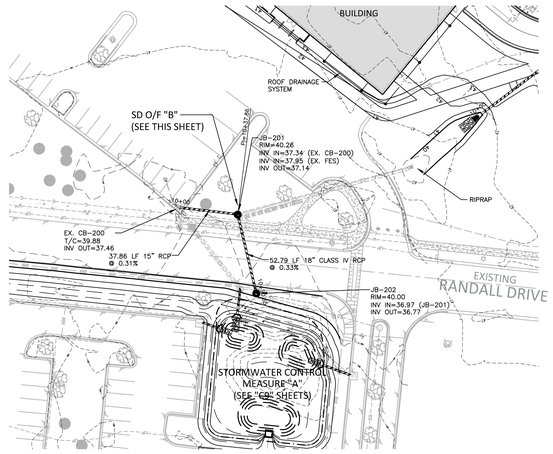
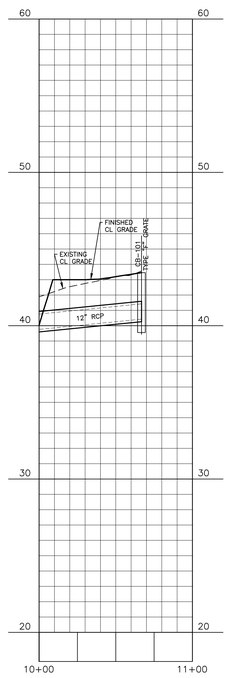
1 inch = 40 ft.



NC GRID (NAD83)

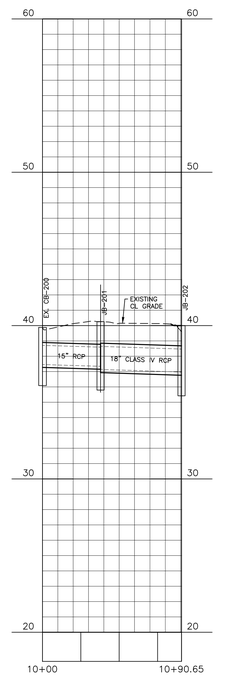
GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

STORM DRAINAGE OUTFALL "A"



VERTICAL SCALE
1 inch = 4 ft.

STORM DRAINAGE OUTFALL "B"



VERTICAL SCALE
1 inch = 4 ft.

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 049881 TONYA H. JONES

Tonya Jones
09/22/20 2:01 PM

PLAN NORTH

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DESIGNED BY: KAS
DRAWN BY: JAA
CHECKED BY: THJ

ISSUE DATE:
SEPTEMBER 14, 2020

PLAN & PROFILE
STORM DRAINAGE
OUTFALL "A" & "B"

C500

SCALE:

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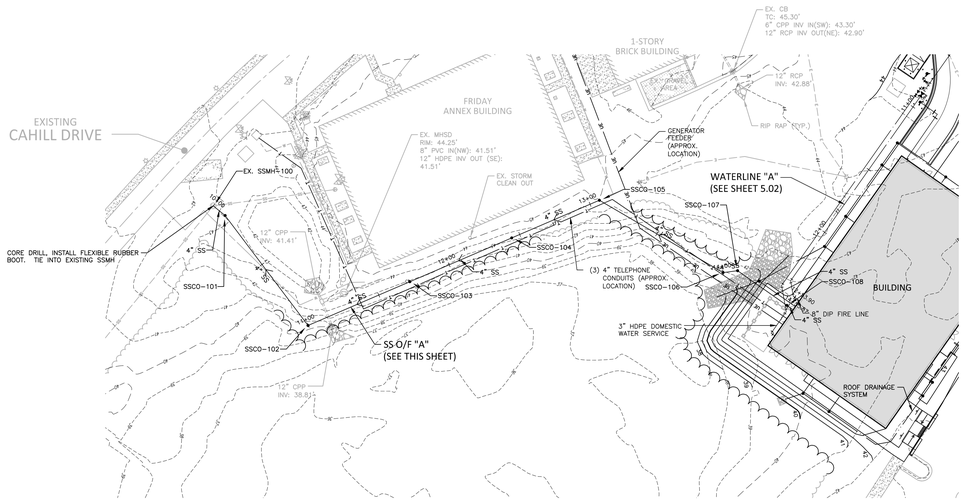
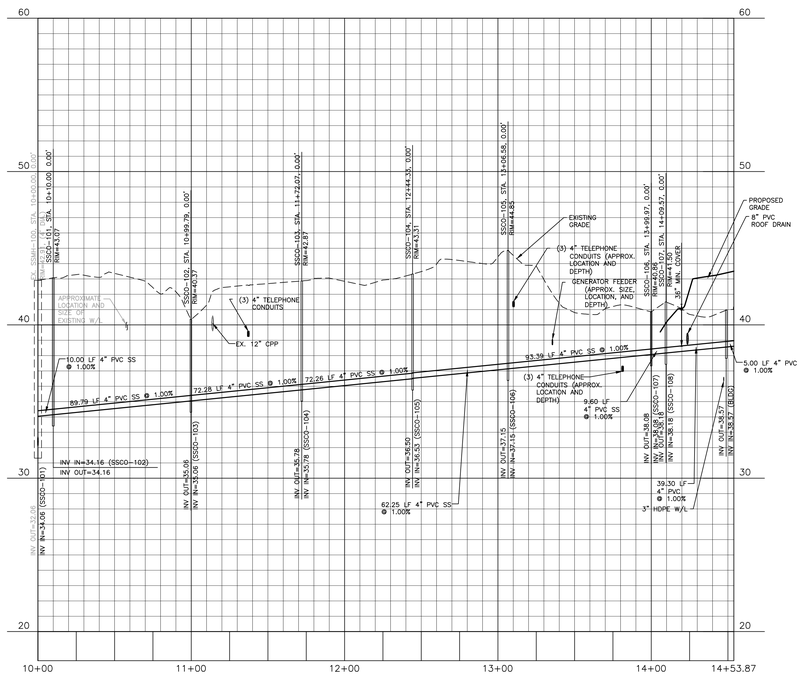


NC GRID (NAD83)

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

SANITARY SEWER SERVICE "A"



VERTICAL SCALE
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NORTH CAROLINA
THE JOHN R. McADAMS COMPANY, INC.
C-0293
CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA
PROFESSIONAL
SEAL
041281
ENGINEER
TONYA H. JONES

Tonya Jones
09/22/20 2:02 PM

PLAN NORTH

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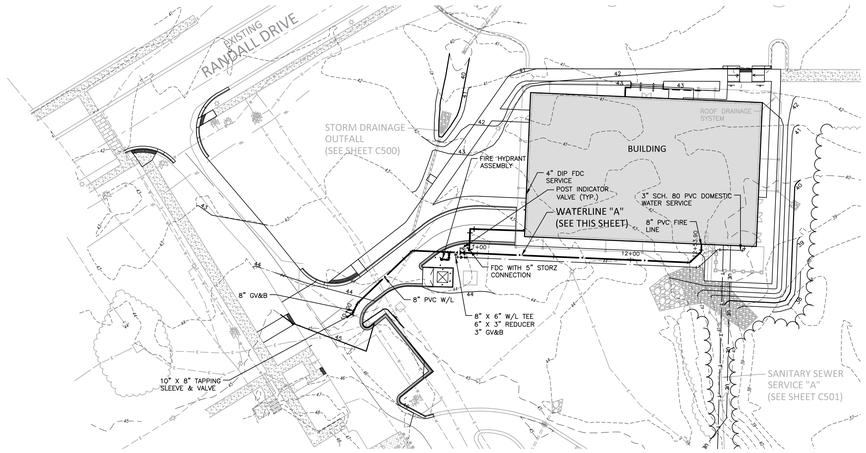
SEPTEMBER 14, 2020

PLAN & PROFILE
SS SERVICE "A"

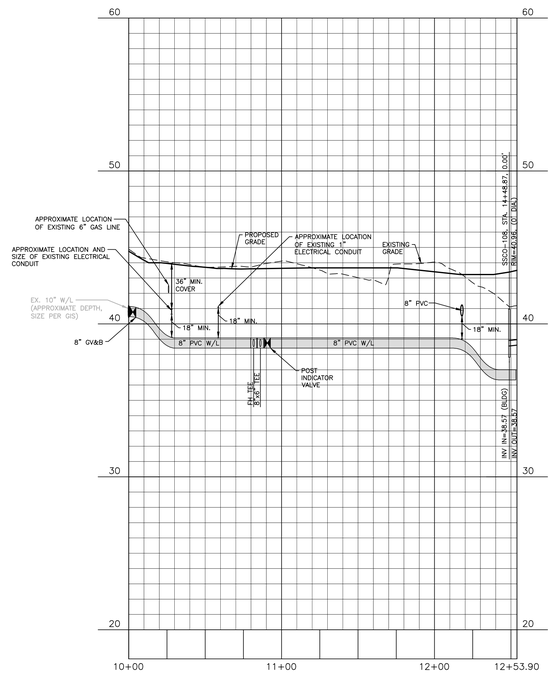
C501

SCALE:



GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

WATERLINE "A"



VERTICAL SCALE
1 inch = 4 ft.

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043881 TONYA H. JONES

Tonya Jones
09/22/20 2:03 PM

PLAN NORTH

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DESIGNED BY: KAS
DRAWN BY: JAA
CHECKED BY: THJ

ISSUE DATE:
SEPTEMBER 14, 2020

PLAN & PROFILE
WATERLINE "A"

C502

SCALE:

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EROSION CONTROL NARRATIVE

UNC-WILMINGTON
COASTAL ENGINEERING BUILDING
WILMINGTON, NORTH CAROLINA
RECEIVING STREAM - UNNAMED TRIBUTARY TO BRADLEY CREEK
CLASSIFICATION - SC; HQW

PROJECT NUMBER: UNW-20000
DESIGNED BY: TONYA JONES, PE

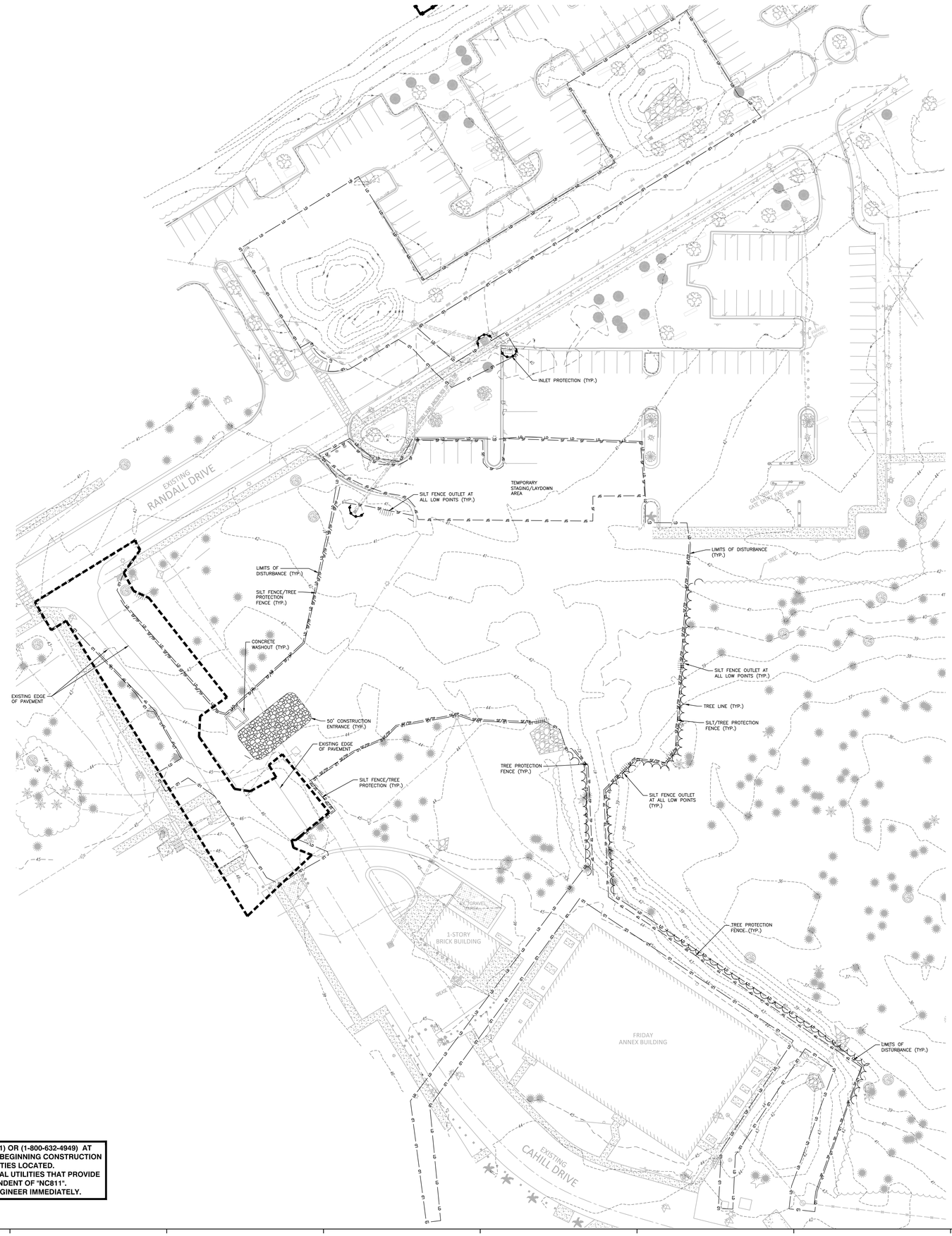
PROJECT DESCRIPTION:
THE COASTAL ENGINEERING BUILDING PROJECT CONSISTS OF CONSTRUCTING A NEW RESEARCH BUILDING. NECESSARY INFRASTRUCTURE IMPROVEMENTS, SUCH AS: WATER, SEWER AND STORM DRAINAGE WILL ACCOMPANY THE PROPOSED CONSTRUCTION. THE PROPOSED STORM DRAINAGE WILL BE DIRECTED TOWARDS A STORM WATER MANAGEMENT FACILITY NORTH OF THE SITE.

GENERAL NOTES:

1. SURVEY PERFORMED BY ATLANTIC COAST SURVEY DATED: MARCH 11, 2019.
2. ALL DISTANCES ARE HORIZONTAL GROUND DISTANCES.
3. FLOOD NOTE: THIS PROPERTY IS NOT LOCATED IN A SPECIAL FLOOD HAZARD ZONE. IT IS LOCATED IN ZONE "X" AS DEFINED BY F.E.M.A F.I.R.M COMMUNITY PANEL #3720314700KJ DATED AUGUST 28, 2018.
4. PRIOR TO ANY CLEARING, GRADING OR CONSTRUCTION ACTIVITY, CONSTRUCTION FENCE OR TREE PROTECTION FENCING (IF APPLICABLE) SHALL BE INSTALLED AROUND PROTECTED TREES OR GROVES OF TREES. NO CONSTRUCTION WORKERS, TOOLS, MATERIALS, OR VEHICLES ARE PERMITTED WITHIN THE TREE PROTECTION FENCING.
5. ANY TREES AND/OR AREAS DESIGNATED TO BE PROTECTED MUST BE PROPERLY BARRICADED WITH FENCING AND PROTECTED THROUGHOUT CONSTRUCTION TO INSURE THAT NO CLEARING, GRADING, OR STAGING OF MATERIALS WILL OCCUR IN THOSE AREAS.
6. PROTECTIVE FENCING IS TO BE MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT, AND CONTRACTORS SHALL RECEIVE ADEQUATE INSTRUCTION ON TREE PROTECTION METHODS.
7. CONTRACTOR SHALL NOTIFY "NC811" (811) OR (1-800-632-4949) AT LEAST 3 FULL BUSINESS DAYS PRIOR TO BEGINNING CONSTRUCTION OR EXCAVATION TO HAVE EXISTING UTILITIES LOCATED. CONTRACTOR SHALL CONTACT ANY LOCAL UTILITIES THAT PROVIDE THEIR OWN LOCATOR SERVICES INDEPENDENT OF NC811. REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY.
8. EXISTING UTILITIES AND STRUCTURES SHOWN BOTH UNDERGROUND AND ABOVE GROUND, ARE BASED ON THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL VERIFY FIELD CONDITIONS, BOTH HORIZONTAL AND VERTICAL, PRIOR TO BEGINNING RELATED CONSTRUCTION. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
9. CONTRACTOR SHALL ROOT SPADE WITHIN ALL TREE DRIPLINES AND TAKE ALL PRECAUTIONS NECESSARY TO SAVE TREES NOT SHOWN TO BE DEMOLISHED.
10. ALL GROUND COVER SHALL BE APPLIED PER CONDITIONS OF THE NPDES PERMIT OR IN CRITICAL AREAS AT THE END OF EACH DAY.

EROSION CONTROL NOTES:

1. CONTRACTOR SHALL LOCATE AND VERIFY THE LOCATION AND DEPTH OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO BEGINNING CONSTRUCTION AND NOTIFY THE ENGINEERING OF ANY CONFLICTS/DISCREPANCIES.
2. NEW EROSION AND SEDIMENT CONTROL DEVICES MUST BE INSTALLED AS SHOWN ON PLANS AND INSPECTED PRIOR TO ANY GRADING OR DEMOLITION ON SITE. MAINTENANCE AND REPAIR SHALL BE MADE, AS NECESSARY, DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL CALL FOR AN INSPECTION ONCE INITIAL MEASURES ARE IN PLACE.
3. SEDIMENT/EROSION CONTROL DEVICES MUST BE CHECKED AFTER EACH STORM EVENT. EACH DEVICE IS TO BE MAINTAINED OR REPLACED IF SEDIMENT ACCUMULATION HAS REACHED ONE HALF THE CAPACITY OF THE DEVICE.
4. A COPY OF THE APPROVED EROSION CONTROL PLAN MUST BE ON FILE AT THE JOB SITE AT ALL TIMES.
5. INSTALL A RAIN GAUGE (6" CAPACITY OR GREATER) ONSITE.
6. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED UNTIL ALL UPSLOPE DRAINAGE AREAS HAVE BEEN STABILIZED AND PERMANENT VEGETATION HAS BEEN ESTABLISHED.
7. CONSTRUCTION, MAINTENANCE, AND REMOVAL OF ALL EROSION CONTROL DEVICES ARE THE RESPONSIBILITY OF THE GRADING CONTRACTOR UNLESS OTHERWISE NOTED. ANY DEWATERING ASSOCIATED WITH THIS PROJECT IS TO BE DONE THROUGH A SILT BAG. CONTRACTOR SHALL WORK IN DRY CONDITIONS TO THE MAXIMUM EXTENT POSSIBLE.
8. ANY GRADING BEYOND THE DENUDED LIMITS SHOWN ON THE PLAN IS A VIOLATION OF THE EROSION CONTROL PERMIT AND IS SUBJECT TO A FINE. ANY NEED TO DISTURB BEYOND THE APPROVED PLAN SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER, ENGINEER AND EROSION CONTROL INSPECTOR.
9. THE ANGLE FOR GRADED SLOPES AND FILLS SHALL BE NO GREATER THAN THE ANGLE THAT CAN BE RETAINED BY VEGETATIVE COVER OR OTHER ADEQUATE EROSION-CONTROL DEVICES OR STRUCTURES. IN ANY EVENT, SLOPES LEFT EXPOSED WILL, WITHIN 7 OR 14 CALENDAR DAYS OF COMPLETION OF ANY PHASE OF GRADING, BE PLANTED OR OTHERWISE PROVIDED WITH TEMPORARY GROUND COVER, DEVISES OR STRUCTURES SUFFICIENT TO RESTRAIN EROSION. PERMANENT GROUNDCOVER WILL BE PROVIDED FOR ALL DISTURBED AREAS WITHIN 15 WORKING DAYS OR NO MORE THAN 90 CALENDAR DAYS (WHICHEVER IS SHORTER) FOLLOWING COMPLETION OF CONSTRUCTION. TEMPORARY SEEDING IS NECESSARY TO ACHIEVE EROSION CONTROL ON LARGE DENUDED AREAS AND ESPECIALLY WHEN SPECIFICALLY REQUIRED AS PART OF THE CONSTRUCTION SEQUENCE ON THE PLAN. ALL GRADED SLOPES STEEPER THAN 3:1 MUST BE SEEDED & COMPOST LAID WITHIN 7 DAYS OF COMPLETION OF GRADING. ALL REMAINING DISTURBED AREAS ARE TO BE SEEDED AND COMPOST LAID WITHIN 14 DAYS. PERMANENT SWALES ARE TO BE STABILIZED WITHIN 7 DAYS. SEE THE GROUND STABILIZATION CHART FOR ADDITIONAL REQUIREMENTS.
10. ADDITIONAL MEASURES TO CONTROL EROSION AND SEDIMENT MAY BE REQUIRED BY REPRESENTATIVE OF THE NCDEQ DEMLR DEPARTMENT. ADDITIONAL SILT FENCE OUTLETS AT LOW AREAS MAY BE INSTALLED BY CONTRACTOR AS REQUIRED. E&SC MEASURES ARE TO BE INSTALLED AT ANY AREAS USED FOR CONTRACTOR EQUIPMENT STAGING, MATERIALS LAYDOWN, SPOIL OR WASTE AREA.
11. PROTECTION OF EXISTING VEGETATION (IF APPLICABLE): AT THE START OF GRADING INVOLVING THE STRIPPING OF TOPSOIL OR LOWERING OF EXISTING GRADE AROUND A TREE, A CLEAN, SHARP, VERTICAL CUT SHALL BE MADE AT THE EDGE OF THE TREE SAVE AREA AT THE SAME TIME AS OTHER EROSION CONTROL MEASURES ARE INSTALLED. THE TREE PROTECTION FENCING SHALL BE INSTALLED ON THE SIDE OF THE CUT FARTHEST AWAY FROM THE TREE TRUNK AND SHALL REMAIN IN PLACE UNTIL ALL CONSTRUCTION IN THE VICINITY OF THE TREES IS COMPLETE. NO STORAGE OF MATERIALS, FILL, OR EQUIPMENT AND NO TRESPASSING SHALL BE ALLOWED WITHIN THE BOUNDARY OF THE PROTECTED AREA AND SHALL BE POSTED ON THE PROTECTION FENCE. A PROTECTION FENCE CONSTRUCTED OF MATERIAL RESISTANT TO DEGRADATION BY SUN, WIND, AND MOISTURE FOR THE DURATION OF THE CONSTRUCTION, SHALL BE INSTALLED AT THE SAME TIME AS THE EROSION CONTROL MEASURES AND SHALL BE IN PLACE UNTIL ALL CONSTRUCTION IN THE VICINITY OF THE TREES IS COMPLETE.
12. INSTALLATION AND MAINTENANCE OF ALL PROPOSED SEDIMENTATION & EROSION CONTROL MEASURES IS REQUIRED. THE CONTRACTOR MAY BE ALLOWED, WITH PRIOR APPROVAL FROM THE OWNER, TO COORDINATE CHANGES TO THE PLAN WITH THE ON-SITE NCDEQ DEMLR INSPECTOR AND THE ENGINEER OR THE OWNER'S REPRESENTATIVE.
13. CONTRACTOR WILL FIELD LOCATE SILT FENCE OUTLETS AT LOW POINTS IN SILT FENCE AS REQUIRED TO PROVIDE RELIEF FROM CONCENTRATED FLOWS.
14. ALL DIMENSIONS AND GRADES SHOWN ON THE PLANS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE OWNER IF ANY DISCREPANCIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION FOR NECESSARY PLAN OR GRADE CHANGES. NO EXTRA COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR ANY WORK DONE DUE TO DIMENSIONS OR GRADES SHOWN INCORRECTLY ON THESE PLANS IF SUCH NOTIFICATION HAS NOT BEEN GIVEN.
15. REQUIRED CONSTRUCTION/SAFETY FENCING SHALL BE INSTALLED PRIOR TO BEGINNING LAND DISTURBANCE.
16. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO KEEP ALL DIRT OFF PAVED ROADS. HEAVY MATS MAY BE USED IN LIEU OF ROCK CONSTRUCTION ENTRANCES AS DETERMINED BY THE ON-SITE INSPECTOR.
17. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO KEEP ALL SEDIMENT ON SITE AND ENSURE NO SEDIMENT LEAVES THE LIMITS OF DISTURBANCE OF THE PROJECT. THIS MAY REQUIRE INSTALLATION OF ADDITIONAL EROSION CONTROL MEASURES ABOVE AND BEYOND WHAT IS SHOWN ON THE PLANS. IF ENVIRONMENTAL OR SITE CONDITIONS WARRANT ADDITIONAL EROSION CONTROL MEASURES, CONTRACTOR SHALL OBTAIN PRIOR APPROVAL FROM DEP REPRESENTATIVE. EROSION CONTROL MEASURES DAMAGED OR REQUIRED DUE TO CONTRACTOR ACTIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. ALL EROSION CONTROL MEASURES SHALL BE PROPERLY MAINTAINED THROUGHOUT CONSTRUCTION AT NO ADDITIONAL COST TO DEP.
18. ALL CONSTRUCTION DEBRIS SHALL BE TESTED AND DISPOSED OF OFF-SITE IN A STATE PERMITTED LINED LANDFILL.
19. ALL EARTHEN MATERIAL BROUGHT TO OR REMOVED FROM THE PROJECT SITE SHALL COME FROM OR BE DELIVERED TO A SITE THAT HAS A CURRENT EROSION AND SEDIMENTATION CONTROL



SEEDBED PREPARATION:

AREAS TO BE SEEDED TO BE SCARIFIED 4" DEEP. A FIRM, WELL PULVERIZED, UNIFORM SEEDBED SHOULD BE PROVIDED. FERTILIZER SHALL BE PLACED DURING SCARIFICATION AS FOLLOWS:
LIME: 45 LBS / 1,000 SF
PHOSPHOROUS: 20 LBS / 1,000 SF
FERTILIZER: 17 LBS / 1,000 SF

PER NORTH CAROLINA SOIL AND SEDIMENTATION LAW, A VEGETATIVE GROUNDCOVER SUFFICIENT TO PERMANENTLY RESTRAIN EROSION SHALL BE RE-ESTABLISHED WITHIN 21 CALENDAR DAYS AFTER COMPLETION OF ANY PHASE OF GRADING. PERMANANT GROUNDCOVER FOR ALL DISTURBED AREAS WITHIN 15 WORKING DAYS OR 90 CALENDAR DAYS (WHICHEVER IS SHORTER) FOLLOWING COMPLETION OF CONSTRUCTION OR DEVELOPMENT.

TEMPORARY SEEDING SCHEDULE:

SEEDING DATE	SEEDING MIXTURE	APPLICATION RATE
JAN 1 - MAY 1	RYE (GRAIN)	120 LBS/AC
MAY 1 - AUG 15	GERMAN MILLET	40 LBS/AC
AUG 15 - DEC 30	RYE (GRAIN)	120 LBS/AC

SOIL AMENDMENTS
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 2,000 LB/AC GROUND AGRICULTURE LIMESTONE AND 750 LB/AC 10-10-10 FERTILIZER (FROM AUG 15 - DEC 30, INCREASE 10-10-10 FERTILIZER TO 1000 LB/AC).

MULCH
APPLY 4000 LB/AC STRAW. ANCHOR STRAW PER UNCW REQUIREMENTS.

MAINTENANCE
JAN 1 - AUG 15: REFERTILIZE IF GROWTH IS NOT FULLY ADEQUATE. RESEED, REFERTILIZE, AND MULCH IMMEDIATELY FOLLOWING EROSION OR OTHER DAMAGE.

AUG 15 - DEC 30: REPAIR AND REFERTILIZE DAMAGED AREAS IMMEDIATELY. TOP DRESS WITH 50 LB/AC OF NITROGEN IN MARCH. IF IT IS NECESSARY TO EXTEND TEMPORARY COVER BEYOND JUNE 15, OVERSEED WITH 50 LB/AC KOBE LESPEDEZA IN LATE FEBRUARY OR EARLY MARCH.

NOTE: USE THE TEMPORARY SEEDING SCHEDULE ONLY WHEN DATE IS NOT CORRECT TO USE THE PERMANENT SEEDING SCHEDULE.

PERMANENT SEEDING SCHEDULE:

SEEDING DATE	SEEDING MIXTURE	APPLICATION RATE
APR 15 - JUNE 30	PRINCESS 77 BERMUDA	90 LBS/AC

SOIL AMENDMENTS
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR SEE DETAILS ON SHEET EC-2.

MULCH
APPLY 4000 LB/AC STRAW. ANCHOR STRAW BY UNCW REQUIREMENTS.

MAINTENANCE
INSPECT AND REPAIR MULCH FREQUENTLY. REFERTILIZE IN LATE WINTER OF THE FOLLOWING YEAR; USE SOIL TESTS OR APPLY 150 LB/AC 10-10-10 FERTLIZER. MOW REGULARLY TO A HEIGHT OF 2-4 INCHES.

CONSTRUCTION SEQUENCE:

1. OBTAIN AN EROSION CONTROL PERMIT FROM THE N.C. DEPARTMENT OF ENVIRONMENT QUALITY (NCDEQ).
2. IF NECESSARY, OBTAIN DIG PERMIT FROM THE UNIVERSITY OF NORTH CAROLINA AT WILMINGTON.
3. OBTAIN AN APPROVED (STAMPED) S&E CONTROL PLAN AND KEEP IT ON SITE, EITHER IN THE INSPECTION BOX, CONSTRUCTION OFFICE OR WITH THE CONTRACTOR.
4. CONTRACTOR SHALL HAVE THE LIMITS OF DISTURBANCE FLAGGED PRIOR TO THE PRE-CONSTRUCTION MEETING FOR LAND DISTURBANCE.
5. A PRE-CONSTRUCTION CONFERENCE WILL BE HELD PRIOR TO ANY LAND DISTURBING ACTIVITY. AS DEEMED NECESSARY, THE OWNER, ENGINEER, CONTRACTOR, AND REPRESENTATIVES FROM NCDEQ WILL BE INVITED TO ATTEND THE MEETING. FOR NCDEQ REPRESENTATIVES, CONTACT DIVISION OF LAND QUALITY AT (910) 796-7215 PRIOR TO START OF CONSTRUCTION.
6. INSTALL ALL PERIMETER EROSION CONTROL MEASURES. CLEAR ONLY THOSE AREAS NECESSARY TO GAIN ACCESS TO AND INSTALL EROSION CONTROL MEASURES.
7. ONCE INITIAL EROSION CONTROL MEASURES HAVE BEEN INSTALLED TO ACCESS THE SITE, INSTALL REMAINING EROSION CONTROL MEASURES.
9. DEMOLISH ANY EXISTING STRUCTURES INDICATED ON THE PLANS. STRIP AND STOCKPILE TOPSOIL FROM AREAS OF PROPOSED GRADING. CONTRACTOR SHALL ALSO SEPARATE, INTO A SEPARATE STOCKPILE, ANY SOIL DEEMED RE-USABLE ON-SITE FOR STRUCTURAL FILL OR OTHER (AS DETERMINED BY UNCW REPRESENTATIVES AND / OR THE ON-SITE GEOTECHNICAL ENGINEER). STOCKPILES SHALL BE PROTECTED (ENCIRCLED) WITH SILT FENCE. STOCKPILE SIZES AND LOCATIONS MUST BE MINIMIZED DUE TO THE LIMITED STORAGE AREA. ANY UNUSED MATERIAL FROM THE TOPSOIL STOCKPILE SHALL BE REMOVED FROM SITE AND DISPOSED OF PROPERLY AT THE CONTRACTOR'S EXPENSE. CONTRACTOR TO DETERMINE STOCKPILE LOCATIONS ON SITE DUE TO LIMITED STORAGE AREA AND EXISTING SURROUNDING VEGETATION.
10. PROVIDE ALL DISTURBED AREAS WITH GROUND COVER WITHIN 14 CALENDAR DAYS AFTER COMPLETION OF ANY PHASE OF CLEARING, GRUBBING OR GRADING. THE SEEDING, SEEDBED PREPARATION, COMPOST AND/OR ROLLED EROSION CONTROL PRODUCT INSTALLATION MUST BE IN ACCORDANCE WITH THE SEEDING SCHEDULE PROVIDED IN THIS S&E PLAN. NOTE: SLOPES IN EXCESS OF 3H:1V SHALL BE STABILIZED WITHIN 7 DAYS AND FOR MODERATE SLOPES (SLOPES LESS THAN 3H:1V) SHALL BE STABILIZED WITHIN 14 DAYS. SEE THE GROUND STABILIZATION CHART ON THIS SHEET FOR ADDITIONAL REQUIREMENTS.
11. BEGIN FILLING SITE.
12. INSTALL STORM DRAINAGE OUTFALL, SEWER OUTFALL, WATERLINE EXTENSION, AS WELL AS UTILITIES UNDER MECHANICAL PLANS AND NECESSARY EROSION CONTROL
13. FINE GRADE SITE AREAS AS SHOWN ON THE CONSTRUCTION DRAWINGS. STABILIZE SITE AS AREAS ARE BROUGHT UP TO FINISH GRADE WITH VEGETATION, STONE, CONCRETE, ETC. DURING CONSTRUCTION FILL, CONTRACTOR SHALL FOLLOW ANY ADDITIONAL GUIDELINES/CRITERIA AS INDICATED BY THE GEOTECHNICAL ENGINEER.
14. STABILIZE ANY REMAINING AREAS AND INSTALL ALL REMAINING PERMANENT EROSION CONTROL MEASURES.
15. WHEN CONSTRUCTION IS COMPLETE AND ALL AREAS ARE STABILIZED COMPLETELY, CALL FOR INSPECTION BY NCDEQ, THE OWNER, AND THE ENGINEER.
16. IF SITE IS APPROVED, REMOVE ANY OTHER TEMPORARY EROSION CONTROL MEASURES AND SEED ANY RESULTING BARE AREAS. ALL REMAINING PERMANENT EROSION CONTROL DEVICES (SUCH AS VELOCITY DISSIPATORS) SHOULD BE INSTALLED AT THIS TIME.
17. SEED AND STABILIZE ALL REMAINING AREAS.
18. WHEN VEGETATION HAS BECOME ESTABLISHED (SEE SEEDING/FERTILIZER NOTE), CALL FOR FINAL SITE INSPECTION BY ENGINEER.

ENFORCEMENT NOTE 1. FAILURE TO FOLLOW THIS CONSTRUCTION SEQUENCE MAY RESULT IN ENFORCEMENT ACTIONS, INCLUDING BUT NOT LIMITED TO CIVIL PENALTIES, INJUNCTIVE RELIEF, CRIMINAL PENALTIES, AND PERMIT REVOCATION. ADDITIONALLY, OFF-SITE SEDIMENTATION MAY RESULT IN RESTORATION REQUIREMENTS.

ENFORCEMENT NOTE 2. IF EXCESSIVE SEDIMENT IS LEAVING THE SITE, A REVISED SEDIMENTATION AND EROSION CONTROL PLAN MAY BE REQUIRED, WITH ASSOCIATED REQUIREMENTS FOR ADDITIONAL S&E MEASURES.

EROSION CONTROL LEGEND

- INLET PROTECTION
- INLET PROTECTION FOR EXISTING STRUCTURES
- SF — SF — SF — SILT FENCE
- TP — TP — TP — TREE PROTECTION FENCE
- LD — LD — LIMITS OF DISTURBANCE
- WOODED AREA
- CHECK DAM
- CONSTRUCTION ENTRANCE/EXIT

DISTURBED AREA=2.30 AC.

GRAPHIC SCALE
0 15 30 60
1 inch = 30 ft.

Know what's below. Call before you dig.

CONTRACTOR SHALL NOTIFY "NC811" (811) OR (1-800-632-4949) AT LEAST 3 FULL BUSINESS DAYS PRIOR TO BEGINNING CONSTRUCTION OR EXCAVATION TO HAVE EXISTING UTILITIES LOCATED. CONTRACTOR SHALL CONTACT ANY LOCAL UTILITIES THAT PROVIDE THEIR OWN LOCATOR SERVICES INDEPENDENT OF "NC811". REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY.

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NORTH CAROLINA BOARD OF EXAMINERS FOR ENGINEERING AND SURVEYING — THE JOHN R. McADAMS COMPANY, INC. — C-0293 — CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 038881 ENGINEER TONYA H. JONES

Tonya Jones
09/22/20 2:05 PM

PLAN NORTH

CONSTRUCTION DOCUMENTS

Revision Schedule		
#	Description	Date
1	SCO COMMENTS	09/17/20

Coastal Engineering Building

UNCW
University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403
SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

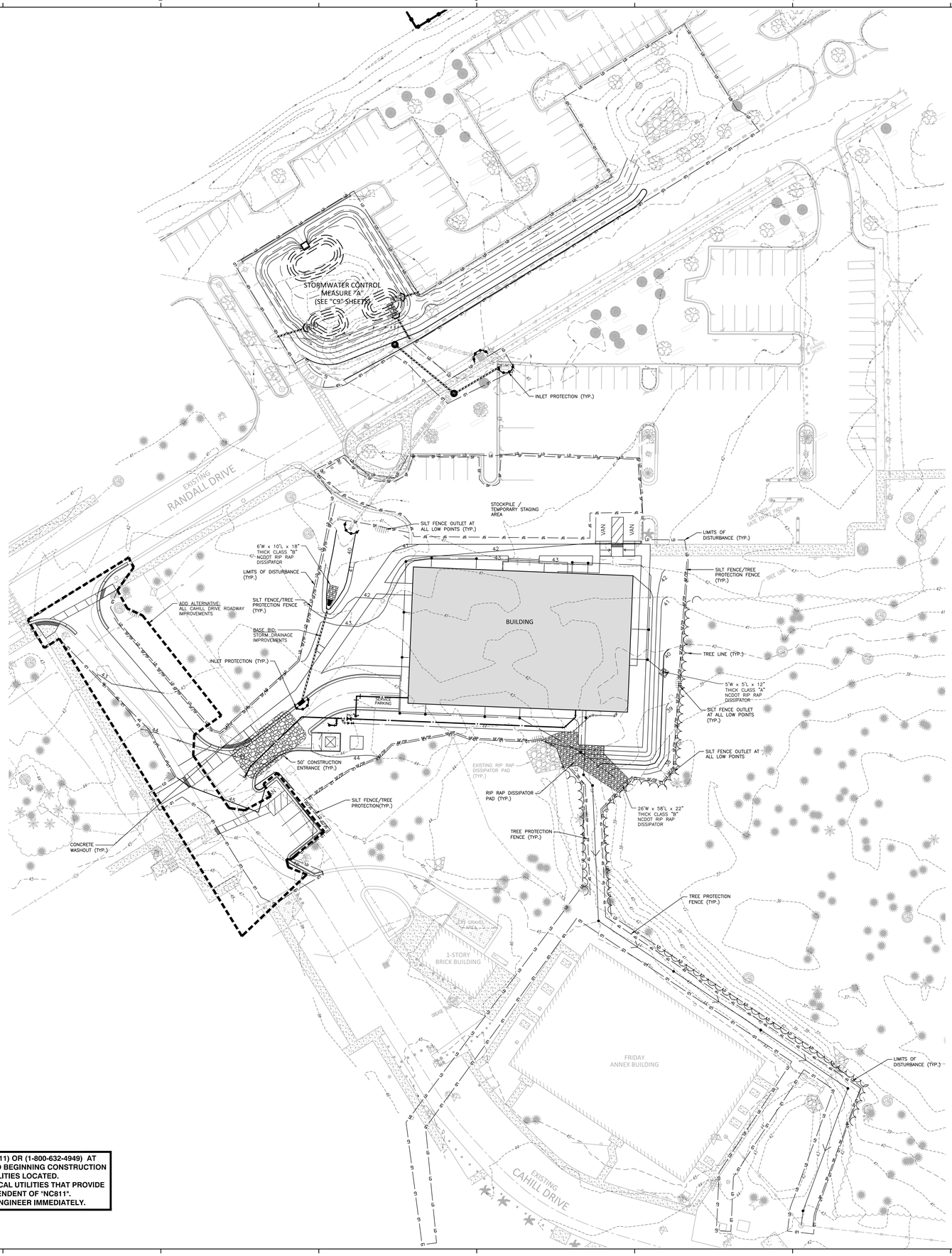
DESIGNED BY: KAS
DRAWN BY: JAA
CHECKED BY: THJ

ISSUE DATE:
SEPTEMBER 14, 2020

EROSION CONTROL STAGE 1

C601

SCALE: 1" = 30'



EROSION CONTROL LEGEND

- SILT FENCE OUTLET
- INLET PROTECTION
- INLET PROTECTION FOR EXISTING STRUCTURES
- TEMPORARY SLOPE DRAIN
- FILTER BERM
- CHECK DAM
- SF SF SF — SILT FENCE
- TP TP TP — TREE PROTECTION FENCE
- LD LD — LIMITS OF DISTURBANCE
- WOODED AREA
- DIVERSION DITCH
- CONSTRUCTION ENTRANCE/EXIT

DISTURBED AREA=2.30 AC.

GRAPHIC SCALE
0 15 30 60
1 inch = 30 ft.

Know what's below. Call before you dig.

CONTRACTOR SHALL NOTIFY "NC811" (811) OR (1-800-632-4949) AT LEAST 3 FULL BUSINESS DAYS PRIOR TO BEGINNING CONSTRUCTION OR EXCAVATION TO HAVE EXISTING UTILITIES LOCATED. CONTRACTOR SHALL CONTACT ANY LOCAL UTILITIES THAT PROVIDE THEIR OWN LOCATOR SERVICES INDEPENDENT OF "NC811". REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY.

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NORTH CAROLINA CERTIFICATE OF AUTHORIZATION — THE JOHN R. McADAMS COMPANY, INC. C-0293

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 049381 TONYA H. JONES

Tonya Jones
09/22/20 2:07 PM

PLAN NORTH

CONSTRUCTION DOCUMENTS

Revision Schedule		
#	Description	Date
1	SCO COMMENTS	09/17/20

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
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SCO PROJECT NUMBER: 20-21673-01A

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SGA | NW DESIGN PROJECT NUMBER: 19-202-01

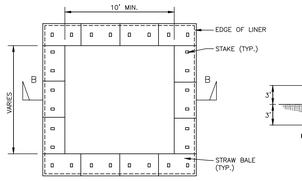
DESIGNED BY: KAS
DRAWN BY: JAA
CHECKED BY: THJ

ISSUE DATE:
SEPTEMBER 14, 2020

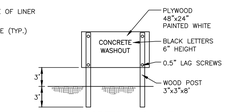
EROSION CONTROL STAGE 2

C602

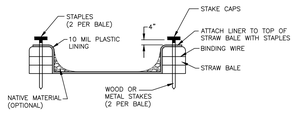
SCALE: 1" = 30'



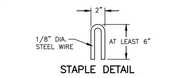
PLAN



CONCRETE WASHOUT SIGN DETAIL
(OR EQUIVALENT)



SECTION B–B



STAPLE DETAIL

NOTES:
1. ACTUAL LAYOUT DETERMINED IN THE FIELD.
2. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FEET OF THE TEMPORARY CONCRETE WASHOUT FACILITY.

INSPECTION/MAINTENANCE/REMOVAL:
1. TEMPORARY CONCRETE WASHOUT FACILITIES ARE TO BE INSPECTED BY THE CONTRACTOR DURING HIS/HER WEEKLY EROSION AND SEDIMENT CONTROL INSPECTION, AFTER A STORM EVENT OF 1/2" OR GREATER AND AT THE END OF ANY DAY WHEN CONCRETE HAS BEEN POURED ON THE CONSTRUCTION SITE. THE INSPECTOR IS TO ENSURE THAT THERE ARE NO LEAKS, NO SPILLS AND THAT THE FACILITIES CAPACITY HAS NOT YET BEEN COMPROMISED.
2. ANY OVERFLOWING OF THE WASHOUT FACILITIES ONTO THE GROUND MUST BE CLEANED UP AND REMOVED WITHIN 24 HOURS OF DISCOVERY.
3. IF A RAIN OR SNOW EVENT IS FORECASTED, A NON-COLLAPSING, NON-WATER COLLECTING COVER SHALL BE PLACED OVER THE WASHOUT FACILITY AND SECURED TO PREVENT ACCUMULATION AND OVERFLOW OF PRECIPITATION. CONTENTS OF EACH CONCRETE WASHOUT FACILITY ARE NOT TO EXCEED 75% OF ITS DESIGNED CAPACITY. IF THE CONTENTS REACH 75% CAPACITY, DISCONTINUE POURING CONCRETE INTO THE FACILITY UNTIL IT HAS BEEN CLEANED OUT.
4. ALLOW SLURRY TO EVAPORATE OR REMOVE FROM SITE IN A SAFE MANNER (I.E. VACUUM TRUCK). ALL HARDENED MATERIAL CAN THEN BE REMOVED AND DISPOSED OF PROPERLY.
5. IF A LINED BASIN IS USED, IMMEDIATELY REPLACE THE LINER IF IT BECOMES DAMAGED.
6. REMOVE TEMPORARY CONCRETE WASHOUT FACILITIES WHEN THEY ARE NO LONGER NEEDED AND RESTORE THE DISTURBED AREAS TO THEIR ORIGINAL CONDITION.

CONCRETE WASHOUT PIT
N.T.S.

CONTRACTOR'S INSPECTION REQUIREMENTS OF EROSION CONTROL MEASURES:

Self Inspection and Reporting Requirements

Minimum self-inspection and reporting requirements are as follows unless otherwise approved in writing by the Division of Water Quality.

a) A rain gauge shall be maintained in good working order on the site unless another rain-monitoring device has been approved by the Division of Water Quality.

b) A written record of the daily rainfall amounts shall be retained and all records shall be made available to Division of Water Quality or authorized agent upon request. If no daily rain gauge observations are made during weekend or holiday periods, and no individual-day rainfall information is available, the cumulative rain measurement for those un-attended days will determine if a site inspection is needed. (Note: if no rainfall occurred, the permittee must record "zero")

c) Erosion and sedimentation control measures shall be inspected to ensure that they are operating correctly. Inspection records must be maintained for each inspection event and for each measure. At a minimum, inspection of measures must occur at the frequency indicated below:

i) All erosion and sedimentation control measures must be inspected by or under the direction of the permittee at least once every seven calendar days, and

ii) All erosion and sediment control measures must be inspected by or under the direction of the permittee within 24 hours after any storm event or greater than 0.50 inches of rain per 24 hour period.

d) Once land disturbance has begun on the site, stormwater runoff discharge outfalls shall be inspected by observation for erosion, sedimentation and other stormwater discharge characteristics such as clarity, floating solids and oil sheens. Inspections of the outfalls shall be made at least once every seven calendar days and within 24 hours after any storm event of greater than 0.50 inches of rain per 24 hour period.

e) Inspections are only required to be made during normal business hours. When adverse weather conditions would cause the safety of the inspection personnel to be in jeopardy, the inspection can be delayed until this deemed safe to perform these duties. (Times when inspection were delayed because of safety issues should be noted in the Inspection Record). If the inspection cannot be done on that day, it must be completed on the following business day.

f) Twenty-four House Reporting for visible sediment deposition

i) The permittee shall report to the Division of Water Quality central office or the appropriate regional office any visible sediment being deposited in any stream or wetland or any noncompliance which may endanger health or the environment. (See Section VIII of this permit for contract information.) Any information shall be provided orally or electronically within 24 hours from the time the permittee became aware of the circumstances.

ii) A written submission shall be provided to the appropriate regional office of the Division of Water Quality within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the sediment deposition and actions taken to address the cause of the deposition. The Division of Water Quality staff may waive the requirement for a written report on a case-by-case basis.

g) Records of inspections made during the previous 30 days shall remain on the site and available for agency inspectors at all times during normal working hours, unless the Division of Water Quality provides a site-specific exemption based on unique site conditions that make this requirement not practical. Older records must be maintained for a period of three years after project completion and made available upon request. The records must provide the details of each inspection including observations, and actions taken in accordance with this permit. The permittee shall record the required rainfall and monitoring observations on the Inspection Record form provided by the Division or a similar inspection form that is inclusive of all of the elements contained in the Division's form. Use of electronically-available records, in lieu of the required paper copies for inspection will be allowed if shown to provide equal access and utility as the hard-copy records.

h) Inspection records must include, at a minimum, the following:

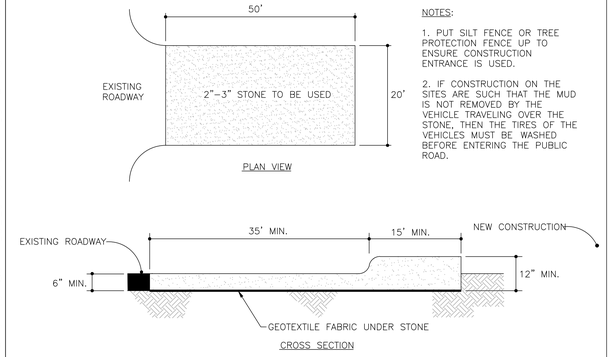
i) Control Measure Inspections: Inspection records must include at a minimum: 1) identification of the measures inspected, 2) date and time of the inspection, 3) name of the person performing the inspection, 4) indication of whether the measures were operating properly, 5) description of maintenance needs for the measure, 6) corrective actions taken (7) date of actions taken, as well as the date and amounts of rainfall received.

ii) Stormwater Discharge Inspections: Inspection records must include at a minimum: 1) identification of the discharge outfall inspected, 2) date and time of the inspection, 3) name of the person performing the inspection, 4) evidence of indicators of stormwater pollution such as oil sheen, floating or suspended solids or discoloration, 5) indication of visible sediment leaving site 6) actions taken to correct/prevent sedimentation and 7) date of actions taken.

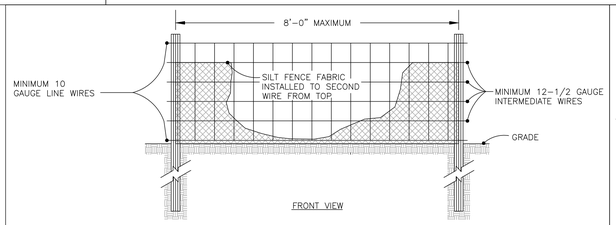
iii) Visible Sedimentation Found Outside the Site Limits: Inspection records must include: 1) an explanation as to the actions taken to control future releases, 2) actions taken to clean up or stabilize the sediment that has left the site limits and 3) the date of actions taken.

iv) Visible Sedimentation Found in Streams or Wetlands: All inspection should include evaluation of streams or wetlands onsite or offsite (where accessible) to determine if visible sedimentation has occurred.

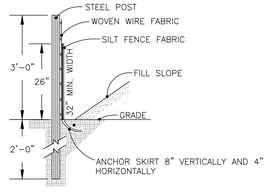
i) Visible Stream Turbidity – If the discharge form a site results in an increase in visible stream turbidity, inspection records must record that evidence and actions taken to reduce sediment contribution. Sites discharging to streams named on the state's 303(d) list as impaired for sediment-related causes may be required to perform additional monitoring, inspections or application of more-stringent management practices if it is determined that the additional requirements are needed to assure compliance with the federal or state impaired-waters conditions. If a discharge covered by this permit enters a stream segment that is listed on the Impaired Stream List for sediment-related causes, and a Total Maximum Daily Load (TMDL) has been prepared for those pollutants, the permittee must implement measures to ensure that the discharge of pollutants from the site is consistent with the assumptions and meets the requirements of the approved TMDL. The Division of Water Quality 303(d) list can be found at: http://h2o.enr.state.nc.us/tmdl/General_303d.htm/



STANDARD CONSTRUCTION ENTRANCE

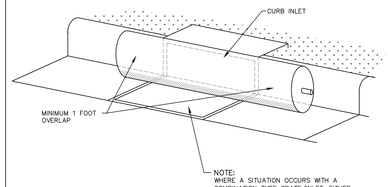


NOTE:
1. USE SILT FENCE ONLY WHEN DRAINAGE AREA DOES NOT EXCEED 1/4 ACRE AND NEVER IN AREAS OF CONCENTRATED FLOW.
2. REMOVE SEDIMENT DEPOSITED AS NEEDED TO PROVIDE STORAGE VOLUME FOR THE NEXT RAIN AND TO REMOVE PRESSURE ON THE SILT FENCE.



SIDE VIEW

STANDARD TEMPORARY SILT FENCE



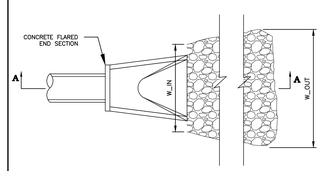
NOTE:
WHERE A SITUATION OCCURS WITH A COMBINATION TYPE GRATE/INLET, EITHER COVER GRATE INLET OR BEND SEDIMENT FILTER AROUND GRATE TO ASSURE ALL SEDIMENT LADEN RUNOFF IS CAPTURED.

NOTES:
1. THE SEDIMENT FILTER SHALL BE SYNTHETIC FILTER MANUFACTURED FROM RECYCLED SYNTHETIC FIBERS.
2. THE SEDIMENT FILTER WILL BE MANUFACTURED TO BY 9" IN DIAMETER AND ARE AVAILABLE IN 4', 6', 8', 10', 12', 14' AND 16' LENGTHS AND A MINIMUM OF 24" LONGER THAN THE CURB INLET OPENING. THIS WILL ALLOW FOR SUFFICIENT LENGTH TO COVER THE INLET WITH TWELVE (12) INCHES BEYOND THE INLET ON BOTH ENDS.

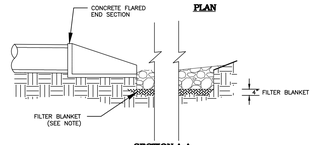
CONSTRUCTION SEQUENCE
1. INSTALL THE SEDIMENT FILTER IN FRONT OF THE CURB INLET OPENING. EACH END OF THE SEDIMENT FILTER SHOULD OVERLAP THE CURB INLET APPROXIMATELY 12".
2. THE SEDIMENT FILTER SHOULD BE CLEANED IF A VISUAL INSPECTION SHOWS SILT AND DEBRIS BUILD UP AROUND THE SEDIMENT FILTER.
3. TO REMOVE THE SEDIMENT FILTER , LIFT OUT OF THE OPENING.
4. PONDING IS LIKELY IF SEDIMENT IS NOT REMOVED REGULARLY. INSPECTION SHOULD BE ON A REGULAR BASIS AND IMMEDIATELY AFTER MAJOR RAIN EVENTS.

EXISTING INLET SEDIMENT FILTER
N.T.S.

TYPICAL (OUT OF CHANNEL) VELOCITY DISSIPATOR



PLAN



SECTION A-A

NOTES:
1. A FILTER BLANKET IS TO BE INSTALLED BETWEEN THE RIPRAP AND SOIL FOUNDATION. THE FILTER BLANKET WILL CONSIST OF A MINIMUM 4" THICK LAYER OF STONE (NCDOT #57) UNDERLAIN WITH MIRAFI FILTER WEAVE 700 OR ENGINEER APPROVED EQUIVALENT.
2. INSPECT VELOCITY DISSIPATOR WEEKLY AND AFTER EVERY 1/2 INCH OR GREATER RAINFALL TO SEE IF ANY EROSION AROUND OR BELOW THE RIPRAP HAS TAKEN PLACE, OR IF STONES HAVE BEEN DISLODGED. IMMEDIATELY MAKE ALL NEEDED REPAIRS TO PREVENT FURTHER DAMAGE.

RIP RAP MAINTENANCE

INSPECT CHANNELS AT REGULAR INTERVALS AS WELL AS AFTER MAJOR RAINS, AND MAKE REPAIRS PROMPTLY. GIVE SPECIAL ATTENTION TO THE OUTLET AND INLET SECTIONS AND OTHER POINTS WHERE CONCENTRATED FLOW ENTERS. CAREFULLY CHECK STABILITY AT ROAD CROSSINGS, AND LOOK FOR INDICATIONS OF PIPING, SCOUR HOLES, OR BANK FAILURES. MAKE REPAIRS IMMEDIATELY. MAINTAIN ALL VEGETATION ADJACENT TO THE CHANNEL IN A HEALTHY, VIGOROUS CONDITION TO PROTECT THE AREA FROM EROSION AND SCOUR DURING OUT-OF-BANK FLOW.

SILT FENCE MAINTENANCE

INSPECT SEDIMENT FENCES AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY

SHOULD THE FABRIC OF A SEDIMENT FENCE COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY.

REMOVE SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE FENCE. TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEANOUT.

REMOVE ALL FENCING MATERIALS AND UNSTABLE SEDIMENT DEPOSITS AND BRING THE AREA TO GRADE AND STABILIZE IT AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

TEMPORARY GRAVEL CONSTRUCTION ENTRANCE MAINTENANCE

MAINTAIN THE GRAVEL PAD IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING THE CONSTRUCTION SITE. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH 2–INCH STONE.

AFTER EACH RAINFALL, INSPECT ANY STRUCTURE USED TO TRAP SEDIMENT AND CLEAN IT OUT AS NECESSARY.

IMMEDIATELY REMOVE ALL OBJECTIONABLE MATERIALS SPILLED, WASHED, OR TRACKED ONTO ANY ROADWAYS.

POST AND GRAVEL INLET PROTECTION MAINTENANCE

1. CONTRACTOR SHALL INSPECT THE GRAVEL FILTER EVERY 7 DAYS AND AFTER EACH SIGNIFICANT (1/2 INCH OR GREATER) RAINFALL AND MAKE REPAIRS AS NEEDED.
2. CONTRACTOR SHALL REMOVE SEDIMENT AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR SUBSEQUENT RAINS.
3. WHEN THE CONTRIBUTING DRAINAGE AREA HAS BEEN ADEQUATELY STABILIZED, THE CONTRACTOR SHALL REMOVE ALL MATERIALS AND UNSUITABLE SOIL. CONTRACTOR SHALL BRING THE DISTURBED AREA TO PROPER GRADE, THEN SMOOTH AND COMPACT IT AND APPROPRIATELY STABILIZE ALL BARE AREAS AROUND THE INLET.

INLET PROTECTION MAINTENANCE

1. CONTRACTOR SHALL INSPECT THE GRAVEL FILTER EVERY 7 DAYS AND AFTER EACH SIGNIFICANT (1/2 INCH OR GREATER) RAINFALL AND MAKE REPAIRS AS NEEDED.
2. CONTRACTOR SHALL REMOVE SEDIMENT AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR SUBSEQUENT RAINS.

SILT FENCE OUTLET MAINTENANCE

REMOVE SEDIMENT WHEN HALF OF STONE OUTLET IS COVERED.

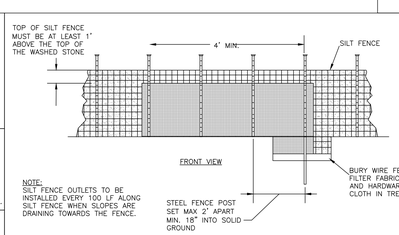
REPLACE STONE AS NEEDED TO ENSURE DEWATERING.

INSPECT SEDIMENT FENCES AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY

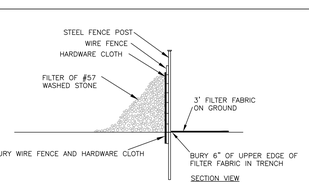
SHOULD THE FABRIC OF A SEDIMENT FENCE COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY.

REMOVE SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE FENCE. TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEANOUT.

REMOVE ALL FENCING MATERIALS AND UNSTABLE SEDIMENT DEPOSITS AND BRING THE AREA TO GRADE AND STABILIZE IT AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.



NOTE:
SILT FENCE OUTLETS TO BE INSTALLED EVERY 100 LF ALONG SILT FENCE WHEN SLOPES ARE DRAINING TOWARDS THE FENCE.



STANDARD SILT FENCE OUTLET

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NORTH CAROLINA BOARD OF EXAMINERS FOR ENGINEERS AND SURVEYORS
THE JOHN R. McADAMS COMPANY, INC.
C-0293
CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 29981 ENGINEER TONYA H. JONES

Tonya Jones
09/22/20 2:09 PM

PLAN NORTH

CONSTRUCTION DOCUMENTS

Revision Schedule		
#	Description	Date
1	SCO COMMENTS	09/17/20

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

DESIGNED BY: KAS
DRAWN BY: JAA
CHECKED BY: THJ

ISSUE DATE:
SEPTEMBER 14, 2020

EROSION CONTROL DETAILS

C603

SCALE: NTS

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GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCG01 CONSTRUCTION GENERAL PERMIT

Implementing the details and specifications on this plan sheet will result in the construction activity being considered compliant with the Ground Stabilization and Materials Handling sections of the NCG01 Construction General Permit (Sections E and F, respectively). The permittee shall comply with the Erosion and Sediment Control plan approved by the delegated authority having jurisdiction. All details and specifications shown on this sheet may not apply depending on site conditions and the delegated authority having jurisdiction.

SECTION E: GROUND STABILIZATION

Required Ground Stabilization Timeframes

Site Area Description	Stabilize within this many calendar days after ceasing land disturbance	Timeframe variations
(a) Perimeter dikes, swales, ditches, and perimeter slopes	7	None
(b) High Quality Water (HQW) Zones	7	None
(c) Slopes steeper than 3:1	7	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed
(d) Slopes 3:1 to 4:1	14	-7 days for slopes greater than 50' in length and with slopes steeper than 4:1 -7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed
(e) Areas with slopes flatter than 4:1	14	-7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed unless there is zero slope

Note: After the permanent cessation of construction activities, any areas with temporary ground stabilization shall be converted to permanent ground stabilization as soon as practicable but in no case longer than 90 calendar days after the last land disturbing activity. Temporary ground stabilization shall be maintained in a manner to render the surface stable against accelerated erosion until permanent ground stabilization is achieved.

GROUND STABILIZATION SPECIFICATION

Stabilize the ground sufficiently so that rain will not dislodge the soil. Use one of the techniques in the table below:

Temporary Stabilization	Permanent Stabilization
• Temporary grass seed covered with straw or other mulches and tackifiers • Hydroseeding • Rolled erosion control products with or without temporary grass seed • Appropriately applied straw or other mulch • Plastic sheeting	• Permanent grass seed covered with straw or other mulches and tackifiers • Geotextile fabrics such as permanent soil reinforcement matting • Hydroseeding • Shrubs or other permanent plantings covered with mulch • Uniform and evenly distributed ground cover sufficient to restrain erosion • Structural methods such as concrete, asphalt or retaining walls • Rolled erosion control products with grass seed

POLYACRYLAMIDES (PAMS) AND FLOCCULANTS

1. Select flocculants that are appropriate for the soils being exposed during construction, selecting from the *NC DWR List of Approved PAMS/Flocculants*.
2. Apply flocculants at or before the inlets to Erosion and Sediment Control Measures.
3. Apply flocculants at the concentrations specified in the *NC DWR List of Approved PAMS/Flocculants* and in accordance with the manufacturer's instructions.
4. Provide ponding area for containment of treated Stormwater before discharging offsite.
5. Store flocculants in leak-proof containers that are kept under storm-resistant cover or surrounded by secondary containment structures.

EQUIPMENT AND VEHICLE MAINTENANCE

1. Maintain vehicles and equipment to prevent discharge of fluids.
2. Provide drip pans under any stored equipment.
3. Identify leaks and repair as soon as feasible, or remove leaking equipment from the project.
4. Collect all spent fluids, store in separate containers and properly dispose as hazardous waste (recycle when possible).
5. Remove leaking vehicles and construction equipment from service until the problem has been corrected.
6. Bring used fuels, lubricants, coolants, hydraulic fluids and other petroleum products to a recycling or disposal center that handles these materials.

LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE

1. Never bury or burn waste. Place litter and debris in approved waste containers.
2. Provide a sufficient number and size of waste containers (e.g dumpster, trash receptacle) on site to contain construction and domestic wastes.
3. Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
4. Locate waste containers on areas that do not receive substantial amounts of runoff from upland areas and does not drain directly to a storm drain, stream or wetland.
5. Cover waste containers at the end of each workday and before storm events or provide secondary containment. Repair or replace damaged waste containers.
6. Anchor all lightweight items in waste containers during times of high winds.
7. Empty waste containers as needed to prevent overflow. Clean up immediately if containers overflow.
8. Dispose waste off-site at an approved disposal facility.
9. On business days, clean up and dispose of waste in designated waste containers.

PAINT AND OTHER LIQUID WASTE

1. Do not dump paint and other liquid waste into storm drains, streams or wetlands.
2. Locate paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
3. Contain liquid wastes in a controlled area.
4. Containment must be labeled, sized and placed appropriately for the needs of site.
5. Prevent the discharge of soaps, solvents, detergents and other liquid wastes from construction sites.

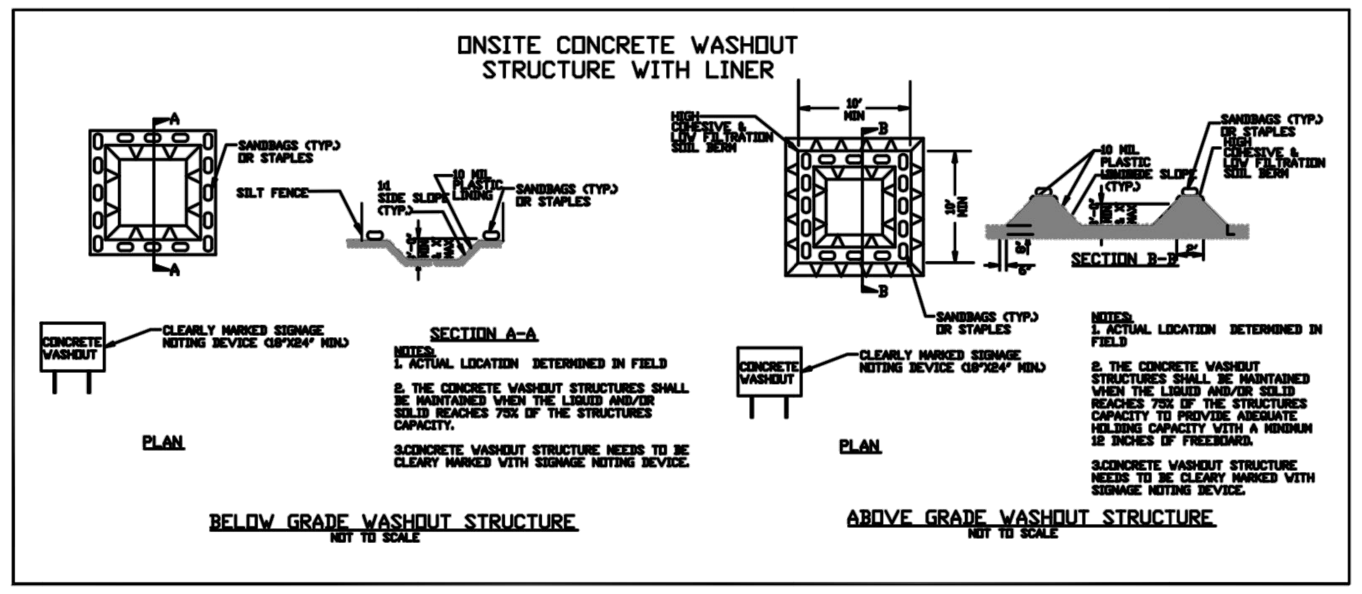
PORTABLE TOILETS

1. Install portable toilets on level ground, at least 50 feet away from storm drains, streams or wetlands unless there is no alternative reasonably available. If 50 foot offset is not attainable, provide relocation of portable toilet behind silt fence or place on a gravel pad and surround with sand bags.
2. Provide staking or anchoring of portable toilets during periods of high winds or in high foot traffic areas.
3. Monitor portable toilets for leaking and properly dispose of any leaked material. Utilize a licensed sanitary waste hauler to remove leaking portable toilets and replace with properly operating unit.

EARTHEN STOCKPILE MANAGEMENT

1. Show stockpile locations on plans. Locate earthen-material stockpile areas at least 50 feet away from storm drain inlets, sediment basins, perimeter sediment controls and surface waters unless it can be shown no other alternatives are reasonably available.
2. Protect stockpile with silt fence installed along toe of slope with a minimum offset of five feet from the toe of stockpile.
3. Provide stable stone access point when feasible.
4. Stabilize stockpile within the timeframes provided on this sheet and in accordance with the approved plan and any additional requirements. Soil stabilization is defined as vegetative, physical or chemical coverage techniques that will restrain accelerated erosion on disturbed soils for temporary or permanent control needs.

NORTH CAROLINA
Environmental Quality



CONCRETE WASHOUTS

1. Do not discharge concrete or cement slurry from the site.
2. Dispose of, or recycle settled, hardened concrete residue in accordance with local and state solid waste regulations and at an approved facility.
3. Manage washout from mortar mixers in accordance with the above item and in addition place the mixer and associated materials on impervious barrier and within lot perimeter silt fence.
4. Install temporary concrete washouts per local requirements, where applicable. If an alternate method or product is to be used, contact your approval authority for review and approval. If local standard details are not available, use one of the two types of temporary concrete washouts provided on this detail.
5. Do not use concrete washouts for dewatering or storing defective curb or sidewalk sections. Stormwater accumulated within the washout may not be pumped into or discharged to the storm drain system or receiving surface waters. Liquid waste must be pumped out and removed from project.
6. Locate washouts at least 50 feet from storm drain inlets and surface waters unless it can be shown that no other alternatives are reasonably available. At a minimum, install protection of storm drain inlet(s) closest to the washout which could receive spills or overflow.
7. Locate washouts in an easily accessible area, on level ground and install a stone entrance pad in front of the washout. Additional controls may be required by the approving authority.
8. Install at least one sign directing concrete trucks to the washout within the project limits. Post signage on the washout itself to identify this location.
9. Remove leavings from the washout when at approximately 75% capacity to limit overflow events. Replace the tarp, sand bags or other temporary structural components when no longer functional. When utilizing alternative or proprietary products, follow manufacturer's instructions.
10. At the completion of the concrete work, remove remaining leavings and dispose of in an approved disposal facility. Fill pit, if applicable, and stabilize any disturbance caused by removal of washout.

HERBICIDES, PESTICIDES AND RODENTICIDES

1. Store and apply herbicides, pesticides and rodenticides in accordance with label restrictions.
2. Store herbicides, pesticides and rodenticides in their original containers with the label, which lists directions for use, ingredients and first aid steps in case of accidental poisoning.
3. Do not store herbicides, pesticides and rodenticides in areas where flooding is possible or where they may spill or leak into wells, stormwater drains, ground water or surface water. If a spill occurs, clean area immediately.
4. Do not stockpile these materials onsite.

HAZARDOUS AND TOXIC WASTE

1. Create designated hazardous waste collection areas on-site.
2. Place hazardous waste containers under cover or in secondary containment.
3. Do not store hazardous chemicals, drums or bagged materials directly on the ground.

NCG01 GROUND STABILIZATION AND MATERIALS HANDLING

EFFECTIVE: 04/01/19

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 049981 TONYA H. JONES

Tonya Jones
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PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION A: SELF-INSPECTION

Self-inspections are required during normal business hours in accordance with the table below. When adverse weather or site conditions would cause the safety of the inspection personnel to be in jeopardy, the inspection may be delayed until the next business day on which it is safe to perform the inspection. In addition, when a storm event of equal to or greater than 1.0 inch occurs outside of normal business hours, the self-inspection shall be performed upon the commencement of the next business day. Any time when inspections were delayed shall be noted in the Inspection Record.

Inspect	Frequency (during normal business hours)	Inspection records must include:
(1) Rain gauge maintained in good working order	Daily	Daily rainfall amounts. If no daily rain gauge observations are made during weekend or holiday periods, and no individual-day rainfall information is available, record the cumulative rain measurement for those un-attended days (anc this will determine if a site inspection is needed). Days on which no rainfall occurred shall be recorded as "zero." The permittee may use another rain-monitoring device approved by the Division.
(2) E&SC Measures	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Identification of the measures inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Indication of whether the measures were operating properly, 5. Description of maintenance needs for the measure, 6. Description, evidence, and date of corrective actions taken.
(3) Stormwater discharge outfalls (SDCs)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Identification of the discharge outfalls inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Evidence of indicators of stormwater pollution such as oil sheen, floating or suspended solids or discoloration, 5. Indication of visible sediment leaving the site, 6. Description, evidence, and date of corrective actions taken.
(4) Perimeter of site	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	If visible sedimentation is found outside site limits, then a record of the following shall be made: 1. Actions taken to clean up or stabilize the sediment that has left the site limits, 2. Description, evidence, and date of corrective actions taken, and 3. An explanation as to the actions taken to control future releases.
(5) Streams or wetlands onsite or offsite (where accessible)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	If the stream or wetland has increased visible sedimentation or a stream has visible increased turbidity from the construction activity, then a record of the following shall be made: 1. Description, evidence and date of corrective actions taken, and 2. Records of the required reports to the appropriate Division Regional Office per Part III, Section C, Item (2)(a) of this permit.
(6) Ground stabilization measures	After each phase of grading	1. The phase of grading (installation of perimeter E&SC measures, clearing and grubbing, installation of storm drainage facilities, completion of all land-disturbing activity, construction or redevelopment, permanent ground cover). 2. Documentation that the required ground stabilization measures have been provided within the required timeframe or an assurance that they will be provided as soon as possible.

NOTE: The rain inspection resets the required 7 calendar day inspection requirement.

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION B: RECORDKEEPING

1. E&SC Plan Documentation

The approved E&SC plan as well as any approved deviation shall be kept on the site. The approved E&SC plan must be kept up-to-date throughout the coverage under this permit. The following items pertaining to the E&SC plan shall be kept on site and available for inspection at all times during normal business hours.

Item to Document	Documentation Requirements
(a) Each E&SC measure has been installed and does not significantly deviate from the locations, dimensions and relative elevations shown on the approved E&SC plan.	Initial and date each E&SC measure on a copy of the approved E&SC plan or complete, date and sign an inspection report that lists each E&SC measure shown on the approved E&SC plan. This documentation is required upon the initial installation of the E&SC measures or if the E&SC measures are modified after initial installation.
(b) A phase of grading has been completed.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate completion of the construction phase.
(c) Ground cover is located and installed in accordance with the approved E&SC plan.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate compliance with approved ground cover specifications.
(d) The maintenance and repair requirements for all E&SC measures have been performed.	Complete, date and sign an inspection report.
(e) Corrective actions have been taken to E&SC measures.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate the completion of the corrective action.

2. Additional Documentation to be Kept on Site

In addition to the E&SC plan documents above, the following items shall be kept on the site and available for inspectors at all times during normal business hours, unless the Division provides a site-specific exemption based on unique site conditions that make this requirement not practical:

(a) This General Permit as well as the Certificate of Coverage, after it is received.

(b) Records of inspections made during the previous twelve months. The permittee shall record the required observations on the Inspection Record Form provided by the Division or a similar inspection form that includes all the required elements. Use of electronically-available records in lieu of the required paper copies will be allowed if shown to provide equal access and utility as the hard-copy records.

3. Documentation to be Retained for Three Years

All data used to complete the e-NOI and all inspection records shall be maintained for a period of three years after project completion and made available upon request. [40 CFR 122.41]

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION C: REPORTING

1. Occurrences that Must be Reported

Permittees shall report the following occurrences:

(a) Visible sediment deposition in a stream or wetland.

(b) Oil spills if:
- They are 25 gallons or more,
- They are less than 25 gallons but cannot be cleaned up within 24 hours,
- They cause sheen on surface waters (regardless of volume), or
- They are within 100 feet of surface waters (regardless of volume).

(c) Releases of hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (Ref: 40 CFR 110.3 and 40 CFR 117.3) or Section 102 of CERCLA (Ref: 40 CFR 302.4) or G.S. 143-215.85.

(d) Anticipated bypasses and unanticipated bypasses.

(e) Noncompliance with the conditions of this permit that may endanger health or the environment.

2. Reporting Timeframes and Other Requirements

After a permittee becomes aware of an occurrence that must be reported, he shall contact the appropriate Division regional office within the timeframes and in accordance with the other requirements listed below. Occurrences outside normal business hours may also be reported to the Department's Environmental Emergency Center personnel at (800) 858-0368.

Occurrence	Reporting Timeframes (After Discovery) and Other Requirements
(a) Visible sediment deposition in a stream or wetland	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days***, a report that contains a description of the sediment and actions taken to address the cause of the deposition. Division staff may waive the requirement for a written report on a case-by-case basis. • If the stream is named on the NC 303(d) list as impaired for sediment-related causes, the permittee may be required to perform additional monitoring, inspections or apply more stringent practices if staff determine that additional requirements are needed to assure compliance with the federal or state impaired-waters conditions.
(b) Oil spills and release of hazardous substances per Item 1(b)-(c) above	• ***Within 24 hours***, an oral or electronic notification. The notification shall include information about the date, time, nature, volume and location of the spill or release.
(c) Anticipated bypasses [40 CFR 122.41(m)(3)]	• ***A report at least ten days before the date of the bypass, if possible***. The report shall include an evaluation of the anticipated quality and effect of the bypass.
(d) Unanticipated bypasses [40 CFR 122.41(m)(3)]	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days,*** a report that includes an evaluation of the quality and effect of the bypass.
(e) Noncompliance with the conditions of this permit that may endanger health or the environment[40 CFR 122.41(l)(7)]	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days***, a report that contains a description of the noncompliance, and its causes; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time noncompliance is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. [40 CFR 122.41(l)(6). • Division staff may waive the requirement for a written report on a case-by-case basis.

PART II, SECTION G, ITEM (4)
DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT

Sediment basins and traps that receive runoff from drainage areas of one acre or more shall use outlet structures that withdraw water from the surface when these devices need to be drawn down for maintenance or close out unless this is infeasible. The circumstances in which it is not feasible to withdraw water from the surface shall be rare (for example, times with extended cold weather). Non-surface withdrawals from sediment basins shall be allowed only when all of the following criteria have been met:

(a) The E&SC plan authority has been provided with documentation of the non-surface withdrawal and the specific time periods or conditions in which it will occur. The non-surface withdrawal shall not commence until the E&SC plan authority has approved these items,
(b) The non-surface withdrawal has been reported as an anticipated bypass in accordance with Part III, Section C, Item (2)(c) and (d) of this permit,
(c) Dewatering discharges are treated with controls to minimize discharges of pollutants from stormwater that is removed from the sediment basin. Examples of appropriate controls include properly sited, designed and maintained dewatering tanks, weir tanks, and filtration systems,
(d) Vegetated, upland areas of the sites or a properly designed stone pad is used to the extent feasible at the outlet of the dewatering treatment devices described in Item (c) above,
(e) Velocity dissipation devices such as check dams, sediment traps, and riprap are provided at the discharge points of all dewatering devices, and
(f) Sediment removed from the dewatering treatment devices described in Item (c) above is disposed of in a manner that does not cause deposition of sediment into waters of the United States.

NORTH CAROLINA Environmental Quality

NCG01 SELF-INSPECTION, RECORDKEEPING AND REPORTING

EFFECTIVE: 04/01/19

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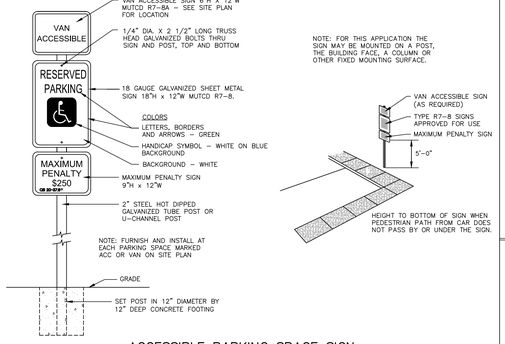
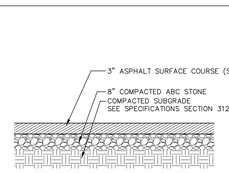
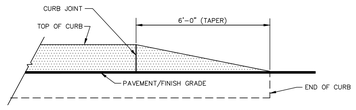


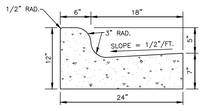
ACCESSIBLE PARKING SPACE SIGN
N.T.S.



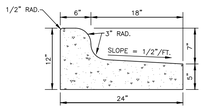
HEAVY DUTY ASPHALT PAVEMENT DETAIL
N.T.S.



NOSE-DOWN CURB DETAIL
N.T.S.



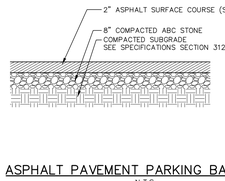
STANDARD 24" CURB AND GUTTER



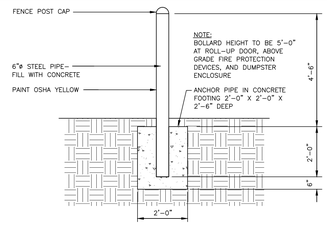
24" SPILL CURB AND GUTTER

NOTES:
1. 10' MAXIMUM BETWEEN DUMMY JOINTS. 15' MAXIMUM BETWEEN DUMMY JOINTS ON MACHINE POURS.
2. 1/2" EXPANSION JOINT EVERY 50'.
3. 3000 PSI CONCRETE MINIMUM, 4" SLUMP MAXIMUM.
4. LIQUID MEMBRANE CURING COMPOUND SHALL MEET THE REQUIREMENTS OF SECTION 1026-2 OF NCDOT STANDARDS AND SPECIFICATIONS FOR ROADS AND STRUCTURES.
5. ALL CONSTRUCTION JOINTS SHALL BE FILLED WITH FILLER AND SEALER IN ACCORDANCE WITH NCDOT ROADWAY STANDARD DETAIL 846.01. THE JOINT MATERIAL SHALL CONFORM TO SECTION 1028-2 OF THE NCDOT STANDARDS AND SPECIFICATIONS FOR ROADS AND STRUCTURES.
6. REFER TO NCDOT DETAIL 846.01 FOR CURB AND GUTTER SUPERELEVATION RATES.

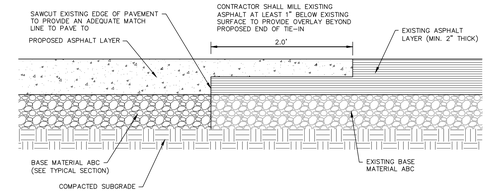
24" CURB AND GUTTER
N.T.S.



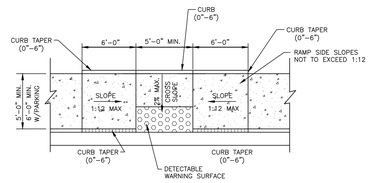
ASPHALT PAVEMENT PARKING BAY DETAIL
N.T.S.



STEEL PIPE BOLLARD
N.T.S.

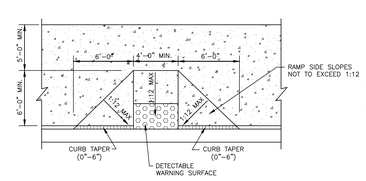


TYPICAL ASPHALT KEY-IN DETAIL
N.T.S.



NOTE: RAMP LANDING AREA SHALL RECEIVE A 24" DETECTABLE WARNING SURFACE OF COLOR TO CONTRAST WITH ADJOINING SURFACES PER ICC A117.1-2009 SECT. 705 REQUIREMENTS.

ACCESSIBLE SIDEWALK RAMP
N.T.S.



NOTE: RAMP LANDING AREA SHALL RECEIVE A 24" DETECTABLE WARNING SURFACE OF COLOR TO CONTRAST WITH ADJOINING SURFACES PER ICC A117.1-2009 SECT. 705 REQUIREMENTS.

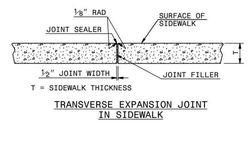
DEPRESSED ACCESSIBLE RAMP
N.T.S.

NOTES:

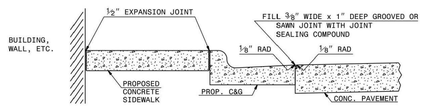
CONSTRUCT STANDARD SIDEWALK 5' WIDE AND 4" THICK UNLESS OTHERWISE DENOTED ON PLANS.

PLACE A GROOVE JOINT 1" DEEP WITH 1/8" RADII IN THE CONCRETE SIDEWALK AT 5' INTERVALS. ONE 1/2" EXPANSION JOINT WILL BE REQUIRED AT 50' INTERVALS. A 1/2" EXPANSION JOINT WILL BE REQUIRED WHERE THE SIDEWALK JOINS ANY RIGID STRUCTURE.

SEE STD. DWG. 848.05 FOR CURB RAMP LOCATION REQUIREMENTS AND CONSTRUCTION GUIDELINES.



TRANSVERSE EXPANSION JOINT IN SIDEWALK



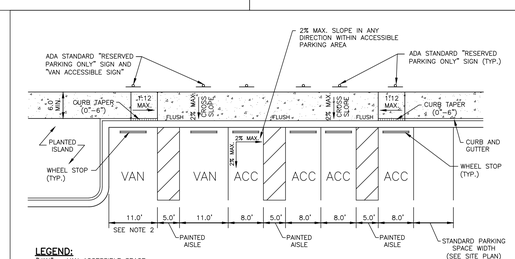
DETAILS SHOWING JOINTS IN CONCRETE SIDEWALK

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

K-18

ROADWAY STANDARD DRAWING FOR **CONCRETE SIDEWALK**

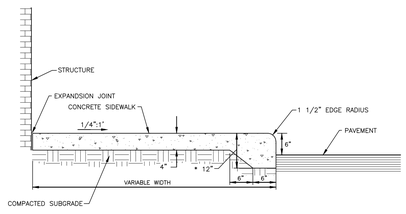
SHEET 1 OF 1
848.01



LEGEND:
"VAN" = VAN ACCESSIBLE SPACE
"ACC" = STANDARD ACCESSIBLE SPACE

NOTES:
1. CURB AND GUTTER, WALK AND RAMP TO BE PLACED SEPARATELY.
2. ACCESSIBLE PARKING SPACE WIDTH TO BE MEASURED FROM THE EDGE OF PAVEMENT WHERE CURB AND GUTTER IS ADJACENT TO THE ACCESSIBLE SPACE.
3. ALL ACCESSIBLE SPACES SHALL BE IDENTIFIED BY ABOVE-GROUND SIGNS ONLY.
4. STRIPING IS WHITE ON DARK PAVEMENT AND BLACK ON LIGHT PAVEMENT.
5. VAN ACCESSIBLE SPACES TO BE 11.0' MINIMUM WIDTH.

TYPICAL ACCESSIBLE PARKING SPACE LAYOUT, RAMP AND SIGN LOCATIONS
N.T.S.



NOTES:
1. ALL CONCRETE 3000 PSI.
2. EXPANSION JOINTS 30' APART MAXIMUM.
3. CONTROL JOINT EVERY 5 FEET.
4. ALL SIDEWALKS SHALL BE CONSTRUCTED WITH TOOLED 1/4" EDGE RADIUS.

*AT CONTRACTOR'S OPTION THE BASE THICKNESS MAY BE INCREASED AT EDGE OF PAVEMENT TO MAKE BOTTOM OF SIDEWALK PARALLEL WITH PAVING OF BASE COURSE.

CONCRETE SIDEWALK TURNDOWN
N.T.S.

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www.mcadamsco.com

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040887 TONYA H. JONES
THE JOHN R. McADAMS COMPANY, INC. C-0293
STATE OF AUTHORIZATION

Tonya Jones
09/22/20 2:14 PM

PLAN NORTH

CONSTRUCTION DOCUMENTS

Revision Schedule		
#	Description	Date
1	SCO COMMENTS	09/17/20

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

DESIGNED BY: KAS
DRAWN BY: JAA
CHECKED BY: THJ

ISSUE DATE:
SEPTEMBER 14, 2020

SITE DETAILS

C801

SCALE: NTS

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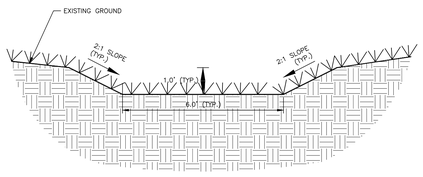
NOTES:
1. CHANNEL DIMENSION (1.0' DEEP, 6'.0 BOTTOM WIDTH) ARE TO TOP OF SWALE. SWALE TO STOP AT TOP OF BANK.



GRASS SWALE DETAIL
N.T.S.

GENERAL NOTES

USE 4000 PSI MINIMUM COMPRESSIVE STRENGTH CONCRETE.

USE ASTM A615 GRADE 60 REINFORCING STEEL. USE ASTM A1064 WELDED WIRE FABRIC (WWF).

FABRICATE, ASSEMBLE AND DESIGN PRECAST MANHOLE COMPONENTS ACCORDANCE WITH AASHTO M199.

ASSEMBLE RISER AND GRADE RINGS WITH THE STEPS SPACED 12" FROM THE TOP TO THE BOTTOM OF THE MANHOLE.

WHERE THEY ARE EXPOSED TO ROAD TRAFFIC, CONSTRUCT THE TOP OF THE MANHOLE FLUSH WITH THE GROUND AND A MINIMUM OF 9" ABOVE THE GROUND AT OTHER LOCATIONS.

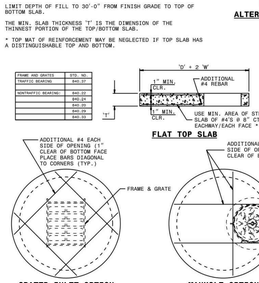
LIMIT DEPTH OF FILL TO 30'-0" FROM FINISH GRADE TO TOP OF BOTTOM SLAB.

THE MIN. SLAB THICKNESS 'T' IS THE DIMENSION OF THE THINNEST PORTION OF THE TOP/BOTTOM SLAB.

* TOP MAT OF REINFORCEMENT MAY BE NEGLECTED IF TOP SLAB HAS A DISTINGUISHABLE TOP AND BOTTOM.

ALTERNATE CONE SECTION

D	W	T	As
INTERNAL DIAMETER (FT.)	MIN. WALL THICKNESS (IN.)	MIN. TOP/BOTTOM SLAB THICKNESS (IN.)	MIN. CIRCUMFERENTIAL AREA OF STEEL PER VERTICAL FT. (SQ. IN.)
4	4	6	0.12
5	5	8	0.15
6	6	8	0.18

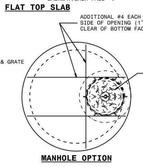


TYPICAL MANHOLE SECTION

FRAME AND GRATES	STD. NO.
STANDARD BEARING	840.03
CONTINUOUS BEARING	840.03
	840.04
	840.05
	840.06
	840.09

FLAT TOP SLAB

GRATED INLET OPTION



MANHOLE OPTION

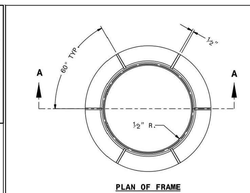
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

K-1B

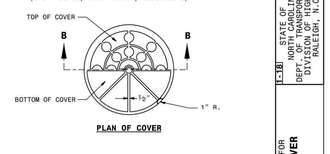
ROADWAY STANDARD DRAWING FOR
PRECAST MANHOLE 4', 5' AND 6' DIAMETER 12" THRU 48" PIPE

SHEET 1 OF 1
840.52

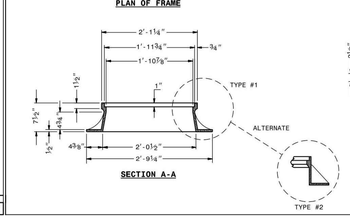
SOLID COVER SHOWN PERFORATED. PERFORATED AVAILABLE IF SPECIFIED.
STATE USE OF SYSTEM ON COVER (I.E.: SEWER, STORM DRAIN, ELECTRICAL)



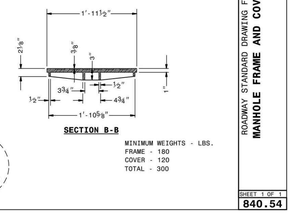
PLAN OF FRAME



PLAN OF COVER



SECTION A-A



SECTION B-B

MINIMUM WEIGHTS - LBS.
FRAME - 180
COVER - 120
TOTAL - 300

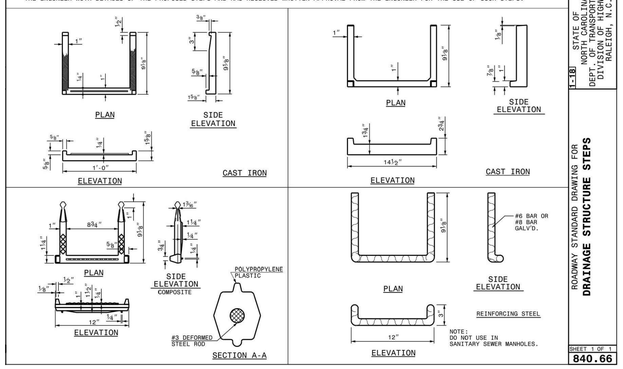
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

K-1B

ROADWAY STANDARD DRAWING FOR
MANHOLE FRAME AND COVER

SHEET 1 OF 1
840.54

NOTES:
INSTALL ALL STEPS PROTRUDING 4" FROM INSIDE FACE OF STRUCTURE WALL.
STEPS DIFFERING IN DIMENSIONS, CONFIGURATION, OR MATERIALS FROM THOSE SHOWN MAY ALSO BE USED PROVIDED THE CONTRACTOR HAS FURNISHED THE ENGINEER WITH DETAILS OF THE PROPOSED STEPS AND HAS RECEIVED WRITTEN APPROVAL FROM THE ENGINEER FOR THE USE OF SUCH STEPS.

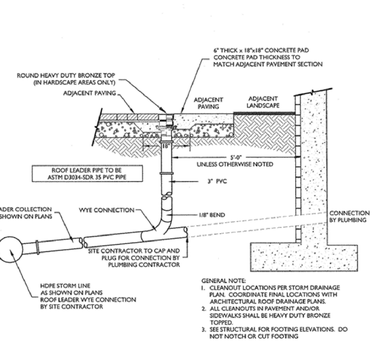


STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

K-1B

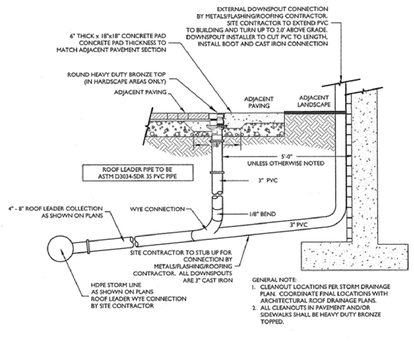
ROADWAY STANDARD DRAWING FOR
DRAINAGE STRUCTURE STEPS

SHEET 1 OF 1
840.66



GENERAL NOTE:
1. CLEANOUT LOCATIONS PER STORM DRAINAGE PLAN. COORDINATE FINAL LOCATIONS WITH ARCHITECTURAL ROOF DRAINAGE PLANS.
2. ALL CLEANOUTS IN PAVEMENT AND/OR SIDEWALKS SHALL BE HEAVY DUTY BRONZE TOPPED.
3. SEE STRUCTURAL FOR FOOTING ELEVATIONS. DO NOT NOTCH OR CUT FOOTING

ROOF LEADER CONNECTION
TO INTERNAL PIPE



GENERAL NOTE:
1. CLEANOUT LOCATIONS PER STORM DRAINAGE PLAN. COORDINATE FINAL LOCATIONS WITH ARCHITECTURAL ROOF DRAINAGE PLANS.
2. ALL CLEANOUTS IN PAVEMENT AND/OR SIDEWALKS SHALL BE HEAVY DUTY BRONZE TOPPED.

ROOF LEADER CONNECTION
TO EXTERNAL PIPE

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NORTH CAROLINA
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C-0293
CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA
PROFESSIONAL
SEAL
29381
ENGINEER
TONYA H. JONES

Tonya Jones
09/22/20 2:15 PM

PLAN NORTH

CONSTRUCTION DOCUMENTS

Revision Schedule		
#	Description	Date
1	SCO COMMENTS	09/17/20

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

DESIGNED BY: KAS
DRAWN BY: JAA
CHECKED BY: THJ

ISSUE DATE:
SEPTEMBER 14, 2020

STORM DRAINAGE DEATILS

C802

SCALE: NTS

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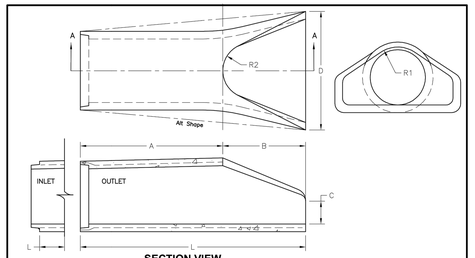

SECTION VIEW

ROUND PIPE FLARED END SECTIONS

DIAMETER	WATER AREA	OVERALL LAYING LENGTH	BARREL LENGTH	FLARE LENGTH					WALL THICK-NESS	WEIGHT
		L	A	B	C	D	R1	R2	T	
inches	sq.ft.	ft-in	ft-in	ft-in	inch	inch	inch	inch	inch	lbs.
12	0.79	6'-1"	4'-1"	2'-0"	4	24	10.1/8	9	2	530
15	1.23	6'-1"	3'-10"	2'-3"	6	30	12.1/2	11	2.1/4	740
18	1.77	6'-1"	3'-10"	2'-3"	9	36	15.1/2	12	2.1/2	990
24	3.14	6'-1"	2'-6"	3'-7"	9.1/2	48	16.13/16	14	3	1520
30	4.91	6'-1"	1'-7"	4'-6"	12	60	18.1/2	15	3.1/2	2190
36	7.07	8'-1"	2'-11"	5'-3"	15	72	24.5/16	20	4	4100
42	9.62	8'-2"	2'-11"	5'-3"	21	78	27.1/2	22	4.1/2	5380
48	12.57	8'-2"	2'-2"	6'-0"	24	84	28.1/2	22	5	6500
54	15.90	8'-2"	2'-9"	5'-5"	27	90	33.1/8	24	5.1/2	8240
60	19.63	8'-3"	3'-3"	5'-0"	30	96	36.11/16	24	6	8730
66	23.76	8'-3"	2'-3"	6'-0"	24	102	36.1/8	24	6.1/2	10710

MEETS ASTM C-76

Oldcastle Precast Vanguard

5230 N.W. 17th Street, Topeka, KS 66618
Phone: 785.232.2982 Fax: 785.232.5842

PIPEDATA

FILE NAME: 120DPCFLAREDDATA_DET
ISSUE DATE: January 2007
www.vanguardprecast.com

Round Flared End Section Data Sheet

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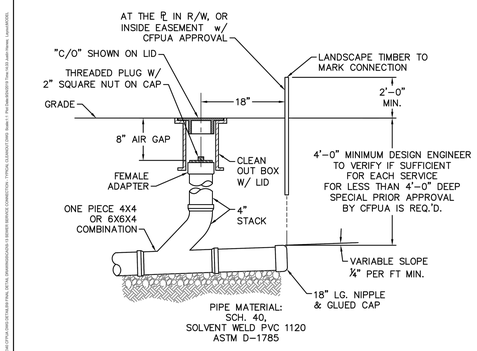

NOTES:

1. FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR CONNECTION TO SYSTEM AND AT THE PROPERTY LINE, WITH REQUIRED EASEMENT.
2. CLEANOUTS SHALL BE LOCATED A MINIMUM OF 12 FEET FROM ALL PROPERTY CORNERS.

DETAIL: SEWER SERVICE CONNECTION - TYPICAL CLEAN-OUT		CAPE FEAR PUBLIC UTILITY AUTHORITY 235 GOVERNMENT CENTER DRIVE WILMINGTON, NC 28403 OFFICE: (910)332-6560	DETAIL NO: S-13
SCALE: NOT TO SCALE	CFPUA DETAIL DATE: 01/01/20	Stewardship. Sustainability. Service.	SHEET NO: -
CFPUA REV. No: 2			

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NORTH CAROLINA PROFESSIONAL SEAL 049811 ENGINEER TONYA H. JONES

Tonya Jones
09/22/20 2:17 PM

PLAN NORTH

CONSTRUCTION DOCUMENTS

Revision Schedule

#	Description	Date
1	SCO COMMENTS	09/17/20

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UNCW

University of North Carolina Wilmington

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CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

DESIGNED BY: KAS
DRAWN BY: JAA
CHECKED BY: THJ

ISSUE DATE:
SEPTEMBER 14, 2020

SANITARY SEWER DETAILS

C803

SCALE: NTS

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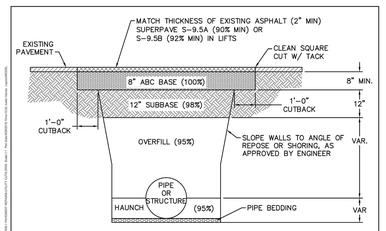
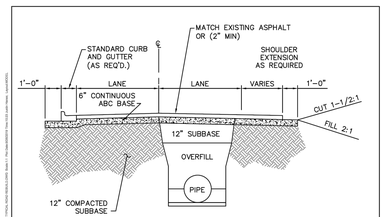


NOTES:

1. CONTRACTOR SHALL ENSURE BOTTOM OF TRENCH IS SUITABLE FOR INSTALLATION AND DOES NOT REQUIRE FOUNDATION CONDITIONING STONE.
2. FILL SHALL BE SUITABLE MATERIAL THAT IS FREE FROM HEAVY CLAY, GUMBOS, DEBRIS, ORGANICS AND LITTLE TO NO EXCESSIVE MOISTURE.
3. SELECT BACKFILL MAY BE SUBSTITUTED OR REQUIRED BY CITY TO ACHIEVE COMPACTION, (I.E. #57 STONE, ABC, CRUSHED LIMESTONE, CLEAN SAND, FLOWABLE FILL, ETC).
4. SOIL SHALL BE INSTALLED IN 6"-8" LIFTS AND COMPACTED BY A MECHANIZED TAMPER (I.E. JUMPING JACK). HOWEVER, VIBRATORY ROLLERS > 18" WIDTH MAY BE USED FOR LARGER EXCAVATIONS. THE PLATE TAMP METHOD SHALL NOT BE USED.
5. ALL APPROVED CASTINGS SHALL BE SET FLUSH TO GRADE AND SUPPORTED IF APPLICABLE.
6. COMPACT MATERIALS TO MINIMUM % DENSITY SHOWN IN DIAGRAM AS DETERMINED BY THE STANDARD PROCTOR METHOD ASTM D-698-A FOR SOILS, AND ASTM D-698-C FOR ABC STONE, AND BY NUCLEAR GAGE OR CORE SAMPLE FOR ASPHALT.
7. CUTBACKS OF ASPHALT SHALL BE PREPARED ON EDGE OF EXCAVATION OVER TOP OF UNDISTURBED SOIL.

(FOR PRIVATE ROADS AND PAVED AREAS; CONTRACTOR TO MEET MINIMUM REQUIREMENTS AS DEFINED BY RIGHT-OF-WAY OWNER FOR PUBLIC ROAD REPAIRS)

DETAIL: CITY OF WILMINGTON PAVEMENT REPAIRS-UTILITY CUTS		CAPE FEAR PUBLIC UTILITY AUTHORITY 235 GOVERNMENT CENTER DRIVE WILMINGTON, NC 28403 OFFICE: (910)332-6560 Stewardship. Sustainability. Service.	DETAIL NO: WS-1
SCALE: NOT TO SCALE	CFPUA DETAIL DATE: 01/01/20		SHEET NO: -
CFPUA REV. No: 2			

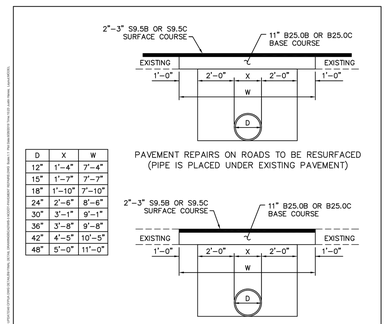


NOTES:

1. PAVEMENT RESTORATION DESIGN IS DEPENDEND ON CITY OF WILMINGTON STREET CUT POLICY AND PERMITTED CONDITIONS.
2. PIPE TRENCH AND COMPACTION REQUIREMENTS PER SPECIFICATIONS. SEE WS-1.

(FOR PRIVATE ROADS AND PAVED AREAS; CONTRACTOR TO MEET MINIMUM REQUIREMENTS AS DEFINED BY RIGHT-OF-WAY OWNER FOR PUBLIC ROAD REPAIRS)

DETAIL: CITY OF WILMINGTON TYPICAL ROAD REBUILD		CAPE FEAR PUBLIC UTILITY AUTHORITY 235 GOVERNMENT CENTER DRIVE WILMINGTON, NC 28403 OFFICE: (910)332-6560 Stewardship. Sustainability. Service.	DETAIL NO: WS-2
SCALE: NOT TO SCALE	CFPUA DETAIL DATE: 01/01/20		SHEET NO: -
CFPUA REV. No: 2			

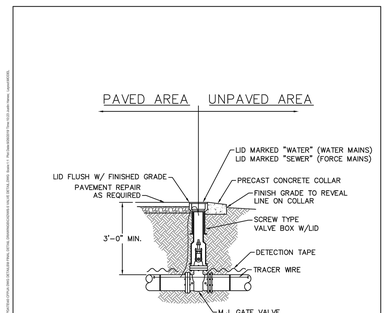


D	X	W
12"	1'-4"	7'-4"
15"	1'-7"	7'-7"
18"	1'-10"	7'-10"
24"	2'-6"	8'-6"
30"	3'-1"	9'-1"
36"	3'-8"	9'-8"
42"	4'-5"	10'-5"
48"	5'-0"	11'-0"

NOTE:

1. FOR REFERENCE, SEE NCDOT STANDARD 654.01

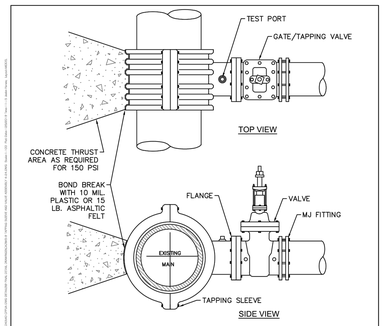
DETAIL: NCDOT-PAVEMENT REPAIRS		CAPE FEAR PUBLIC UTILITY AUTHORITY 235 GOVERNMENT CENTER DRIVE WILMINGTON, NC 28403 OFFICE: (910)332-6560 Stewardship. Sustainability. Service.	DETAIL NO: WS-3
SCALE: NOT TO SCALE	CFPUA DETAIL DATE: 01/01/20		SHEET NO: -
CFPUA REV. No: 2			



NOTES:

1. TRACER WIRE SHALL PENETRATE VALVE BOX THROUGH DRILLED HOLE APPROX. 6" BELOW GRADE WITH MINIMUM 2-FEET EXTRA LENGTH COILED IN THE VALVE BOX. SEE WS-6.

DETAIL: VALVE DETAIL		CAPE FEAR PUBLIC UTILITY AUTHORITY 235 GOVERNMENT CENTER DRIVE WILMINGTON, NC 28403 OFFICE: (910)332-6560 Stewardship. Sustainability. Service.	DETAIL NO: WS-5
SCALE: NOT TO SCALE	CFPUA DETAIL DATE: 01/01/20		SHEET NO: -
CFPUA REV. No: 2			



NOTES:

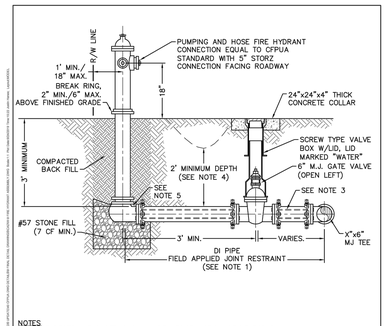
1. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.
2. PIPE & FITTING TO BE WRAPPED IN 10 MIL. PLASTIC OR 15 LB. ASPHALTIC FELT PRIOR TO THRUST BLOCK BEING POURED.
3. TEST PRESSURE SHALL NOT BE APPLIED FOR A MINIMUM OF 7 DAYS AFTER THRUST BLOCK PLACEMENT.
4. BRANCH SHALL NOT EQUAL RUN DIAMETER UNLESS APPROVED BY CFPUA ENGINEERING.

DETAIL: TAPPING SLEEVE AND VALVE ASSEMBLY (4"-24")		CAPE FEAR PUBLIC UTILITY AUTHORITY 235 GOVERNMENT CENTER DRIVE WILMINGTON, NC 28403 OFFICE: (910)332-6560 Stewardship. Sustainability. Service.	DETAIL NO: WS-9
SCALE: NOT TO SCALE	CFPUA DETAIL DATE: 01/01/20		SHEET NO: -
CFPUA REV. No: 2			

CAPE FEAR PUBLIC UTILITY AUTHORITY STANDARD NOTES:

1. ALL PROPOSED ADDITIONS TO THE CAPE FEAR PUBLIC UTILITY AUTHORITY (CFPUA) WATER DISTRIBUTION AND SANITARY SEWER COLLECTION SYSTEMS, AS SHOWN AND SPECIFIED HEREIN, SHALL BE DESIGNED AND CONSTRUCTED TO CONFORM TO STATE RULES AND THE CFPUA'S MINIMUM TECHNICAL STANDARDS. THE CFPUA MINIMUM TECHNICAL STANDARDS ARE CONTAINED IN THE CURRENT DESIGN GUIDANCE MANUAL, MATERIAL SPECIFICATION MANUAL, TECHNICAL SPECIFICATIONS FOR CONSTRUCTION, AND STANDARD DRAWING DETAILS.
2. SEWER GUARDS REQUIRED AT ALL MANHOLES. STAINLESS STEEL SEWER GUARDS REQUIRED AT MANHOLES LOCATED IN TRAFFIC AREAS.
3. WATER AND SEWER SERVICES SHALL BE PERPENDICULAR TO MAIN AND TERMINATE 18" INSIDE RIGHT-OF-WAY LINE. SEWER SERVICES IN CUL-DE-SACS ARE REQUIRED TO BE PERPENDICULAR, OR MUST ORIGINATE IN END OF LINE MANHOLE AND TERMINATE 18" INSIDE RIGHT-OF-WAY LINE.
4. ALL SEWER SERVICES CONNECTING INTO DUCTILE IRON MAINS SHALL ALSO BE CONSTRUCTED OF DIP.
5. MINIMUM 10' UTILITIES EASEMENT PROVIDED ALONG THE FRONTAGE OF ALL LOTS AND AS SHOWN FOR NEW DEVELOPMENTS.
6. NO FLEXIBLE COUPLINGS SHALL BE USED.
7. ALL STAINLESS STEEL FASTENERS SHALL BE TYPE 316.
8. CLEANOUTS SHALL BE LOCATED A MINIMUM OF 6 FEET FROM ALL PROPERTY CORNERS.
9. WATER METER BOXES ARE TO BE A MINIMUM OF 5 FEET FROM THE PROPERTY CORNER.
10. UNUSED SERVICES SHALL BE ABANDONED. ABANDONED WATER SERVICES SHALL BE DISCONNECTED FROM MAIN.
11. A MINIMUM OF 10' OF MAIN LINE, 5' UPSTREAM AND 5' DOWNSTREAM SHALL BE REPLACED FOR NEW SEWER SERVICE CONNECTIONS TO EXISTING CLAY GRAVITY SEWER MAINS.
12. A MINIMUM OF 20' OF MAIN LINE, 10' UPSTREAM AND 10' DOWNSTREAM SHALL BE REPLACED FOR NEW CUT IN MANHOLES ON EXISTING CLAY GRAVITY SEWER MAINS
13. PROVIDE A MINIMUM DISTANCE OF SIX (6) INCHES BETWEEN EDGE OF MANHOLE CORE HOLES AND MANHOLE BARREL JOINTS. PROVIDE A MINIMUM DISTANCE OF SIX (6) INCHES BETWEEN EDGES OF CORE HOLES. CORING THE MANHOLE CONE IS NOT PERMITTED
14. WATER MAIN AND FORCE MAIN PIPE INSTALLED BY OPEN CUT SHALL BE BURIED AT A MINIMUM OF THREE (3) FEET AND A MAXIMUM OF FIVE (5) FEET BELOW FINISHED GRADE. DEPTHS GREATER THAN FIVE (5) FEET MUST BE APPROVED BY CFPUA.
15. ALL MANHOLE MAIN LINE AND SERVICE PIPING TO BE INSTALLED AT A MINIMUM OF CROWN TO CROWN OF THE LARGEST DIAMETER PIPE.

DETAIL: STANDARD NOTES (REQUIRED ON ALL PLAN AND PROFILE SHEETS)		CAPE FEAR PUBLIC UTILITY AUTHORITY 235 GOVERNMENT CENTER DRIVE WILMINGTON, NC 28403 OFFICE: (910)332-6560 Stewardship. Sustainability. Service.	DETAIL NO: WS-14
SCALE: NOT TO SCALE	CFPUA DETAIL DATE: 01/01/20		SHEET NO: -
CFPUA REV. No: 2			



NOTES

1. JOINT RESTRAINT SYSTEMS SHALL BE WEDGE ACTION STYLE FOR DI.
2. WHEN HYDRANT LEGS REQUIRE FULL LENGTH PIPE SECTIONS, OVER BELL RESTRAINT SYSTEM SHALL HAVE 316 STAINLESS STEEL HARNESS AND FASTENERS.
3. CONTINUOUS 316 STAINLESS STEEL RODS (TEE TO VALVE AND VALVE TO HYDRANT) MAY BE USED WITH COR-BLUE MJ T-BOLT AND GASKET KITS, AS AN ALTERNATIVE.
4. HYDRANT AND VALVE SHALL BE PLACED OUTSIDE DITCH LIMITS.
5. WEEP HOLES OPEN AND UNBLOCKED TO DRAIN.
6. MJ TEE SHALL BE RESTRAINED ON EACH SIDE OF MAIN PLUS MAIN VALVES, FITTING, OR JOINTS WITHIN 10-FEET OF MJ TEE.
7. TRACING WIRE SHALL EXTEND ALONG HYDRANT LATERAL AND UP TO FINISHED GRADE WITH 2-FEET EXTENDED ABOVE THE BREAK RING OF HYDRANT.

DETAIL: FIRE HYDRANT ASSEMBLY		CAPE FEAR PUBLIC UTILITY AUTHORITY 235 GOVERNMENT CENTER DRIVE WILMINGTON, NC 28403 OFFICE: (910)332-6560 Stewardship. Sustainability. Service.	DETAIL NO: W-9
SCALE: NOT TO SCALE	CFPUA DETAIL DATE: 01/01/20		SHEET NO: -
CFPUA REV. No: 2			

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NORTH CAROLINA
THE JOHN R. McADAMS COMPANY, INC.
C-0293
CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL 038111 ENGINEER TONYA H. JONES

Tonya Jones
09/22/20 2:19 PM

PLAN NORTH

CONSTRUCTION DOCUMENTS

Revision Schedule		
#	Description	Date
1	SCO COMMENTS	09/17/20

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

DESIGNED BY: KAS
DRAWN BY: JAA
CHECKED BY: THJ

ISSUE DATE:
SEPTEMBER 14, 2020

WATER DETAILS

C804

SCALE: NTS

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STORMWATER CONTROL MEASURE CONSTRUCTION SPECIFICATIONS

GENERAL NOTES

1. PRIOR TO CONSTRUCTION, ANY DISCREPANCIES IN THE PLANS AND NOTES SHALL BE BROUGHT TO THE DESIGN ENGINEER'S ATTENTION IMMEDIATELY.
2. THE CONTRACTOR SHALL MAKE HIMSELF FAMILIAR WITH THE OBSERVATION, TESTING, AND CERTIFICATION REQUIREMENTS LISTED ON THIS PLAN SHEET. THIS FACILITY WILL REQUIRE OBSERVATION, TESTING, AND CERTIFICATION BY THE GEOTECHNICAL ENGINEER PRIOR TO AND DURING CONSTRUCTION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT OBSERVATION, TESTING, AND CERTIFICATION EFFORTS ARE COORDINATED WITH THE DESIGN ENGINEER AND THE GEOTECHNICAL ENGINEER.
3. THE FINAL CERTIFICATION FOR THIS FACILITY WILL INCLUDE A CERTIFICATION BY THE ON-SITE GEOTECHNICAL ENGINEER THAT THE PROJECT WAS CONSTRUCTED PER THE APPROVED PLANS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE ON-SITE GEOTECHNICAL ENGINEER FOR OBSERVATION AND TESTING SUCH THAT THE ON-SITE GEOTECHNICAL ENGINEER CAN CERTIFY THE CONSTRUCTION, OF THE DAM EMBANKMENT AND SPILLWAY. THIS CERTIFICATION MUST ADDRESS THE TESTING FOR MATERIALS AND COMPACTION OF THE DAM EMBANKMENT AND SPILLWAY.
4. ALL CONSTRUCTION ACTIVITY RELATED TO THE PROPOSED STORMWATER MANAGEMENT FACILITY SHALL BE PER THE DETAILS AND SPECIFICATIONS SHOWN IN THESE DRAWINGS. SOILS, COMPACTION, AND OTHER MISCELLANEOUS DETAILS AND SPECIFICATIONS MAY BE MODIFIED PER THE RECOMMENDATIONS OF THE ON-SITE GEOTECHNICAL ENGINEER, HOWEVER, PRIOR TO IMPLEMENTATION, THE DESIGN ENGINEER SHALL BE NOTIFIED OF ANY DEVIATION FROM THESE DESIGN DRAWINGS, INCLUDING SHOP DRAWINGS FOR ANY PROPOSED MODIFICATION.
5. THE CONTRACTOR SHALL REFER TO THE LANDSCAPE PLAN FOR THE PERMANENT PLANTING PLAN/SCHEDULE.
6. PRIOR TO TOPSOIL INSTALLATION, THE CONTRACTOR SHALL SCARIFY THE THE TOP 2"-3" OF THE BERM SECTION TO PROMOTE BONDING OF THE TOPSOIL WITH THE COMPACTED FILL. THE TOPSOIL DEPTH SHALL RANGE FROM 3"-4" ON THE DAM EMBANKMENT. PLEASE NOTE THE STOCKPILED TOPSOIL SHALL BE AMENDED, AS DIRECTED BY A LANDSCAPE PROFESSIONAL, PRIOR TO INSTALLATION ON THE EMBANKMENT, AND AQUATIC SHELF.
7. IT IS ANTICIPATED THAT DEWATERING WILL BE NECESSARY IN THE EXCAVATION AREAS (E.G. - EMBANKMENT SUB GRADE, INTERIOR PORTIONS OF THE STORMWATER FACILITY, KEY TRENCH, ETC.). THEREFORE, THE CONTRACTOR SHALL FURNISH, INSTALL, OPERATE, AND MAINTAIN ANY PUMPING EQUIPMENT, ETC., NEEDED FOR REMOVAL OF WATER FROM VARIOUS PARTS OF THE STORMWATER FACILITY SITE. DURING PLACEMENT OF FILL WITHIN THESE AREAS, THE CONTRACTOR SHALL KEEP THE WATER LEVEL BELOW THE BOTTOM OF THE EXCAVATION / CONSTRUCTION AREAS. THE MANNER IN WHICH THE WATER IS REMOVED SHALL BE SUCH THAT THE EXCAVATION BOTTOM AND SIDE SLOPES ARE STABLE, WITH NO SEDIMENT DISCHARGED FROM THE SITE (I.E. PUMPED WATER MAY NEED TO BE DIRECTED TO AN APPROVED EROSION CONTROL DEVICE SUCH AS A DIRT BAG (ACF ENVIRONMENTAL), OR APPROVED EQUIVALENT, PRIOR TO DISCHARGE).
8. ONSITE GEOTECHNICAL ENGINEER TO DETERMINE IF IN-SITU SOILS ENCOUNTERED WOULD MAINTAIN A STROMWATER CONTROL MEASURE PERMANENT POOL AT DESIGN ELEVATION. IF HIGHLY PERMEABLE SOILS ARE ENCOUNTERED THAT, IN THE OPTION OF THE GEOTECHNICAL ENGINEER, WOULD NOT MAINTAIN A PERMANENT POOL ELEVATION AS DESIGNED, A LINER MAY BE REQUIRED TO MAINTAIN A PERMANENT POOL OF WATER IN THE STORMWATER CONTROL MEASURE. DETERMINATION IF A LINER IS NEEDED SHALL BE THE RESPONSIBILITY OF THE ON-SITE GEOTECHNICAL ENGINEER. UPON DETERMINATION OF HIGHLY PERMEABLE SOIL CONDITIONS, ON-SITE GEOTECHNICAL ENGINEER WILL INFORM THE DESIGN ENGINEER. THE GEOTECHNICAL ENGINEER WILL SPECIFY THE APPROPRIATE LINING TYPE TO MAINTAIN THE PERMANENT POOL AS DESIGNED.

ENVIRONMENTAL ASSESSMENT

1. NO BOUNDARIES EXIST WITHIN THE PROJECT AREA OF ANY SURFACE WATERS, WETLANDS, REGULATORY FLOOD ZONES, PROTECTED VEGETATED SETBACKS, OR PROTECTED RIPARIAN BUFFERS.
2. NO SURFACE WATERS EXIST WITHIN 50 FEET OF THE PROJECT BOUNDARY.

CONSTRUCTION SEQUENCE

1. PRIOR TO CONSTRUCTION, THE OWNER SHALL OBTAIN A LAND DISTURBING (GRADING) PERMIT AND AN "APPROVAL TO CONSTRUCT" FROM ALL OTHER NECESSARY PERMITS FROM APPLICABLE AGENCIES (E.G. 404 / 401 PERMITS)
2. INSTALL ALL SEDIMENT AND EROSION CONTROL MEASURES PER THE APPROVED SEDIMENT AND EROSION CONTROL PLAN. THE CONTRACTOR SHALL MAINTAIN ALL APPROVED SEDIMENT AND EROSION CONTROL MEASURES THROUGHOUT THE ENTIRE PROJECT, AS REQUIRED. THE CONTRACTOR SHALL RECEIVE APPROVAL FROM THE EROSION CONTROL INSPECTOR, AS REQUIRED BY GOVERNING AGENCIES, PRIOR TO ANY CLEARING.
3. PRIOR TO INSTALLATION, SUBGRADE CONDITIONS ALONG THE SPILLWAY PIPES SHOULD BE EVALUATED BY THE ON-SITE GEOTECHNICAL ENGINEER TO ASSESS WHETHER SUITABLE BEARING CONDITIONS EXIST AT THE SUBGRADE LEVEL. SHOULD SOFT OR OTHERWISE UNSUITABLE CONDITIONS BE ENCOUNTERED ALONG THE PIPE ALIGNMENTS, THESE MATERIALS SHOULD BE UNDERCUT AS DIRECTED BY THE GEOTECHNICAL ENGINEER. THE UNDERCUT MATERIALS SHALL BE REPLACED WITH ADEQUATELY COMPACTED STRUCTURAL FILL, LEAN CONCRETE OR FLOWABLE FILL AS DIRECTED BY THE ON-SITE GEOTECHNICAL ENGINEER.
4. REMOVE EXISTING TREES AS SHOWN IN PLAN VIEW BELOW. CONTRACTOR SHALL TAKE NOTE OF THE TREE THAT WILL REMAIN AND HARD GRADE AROUND IT SUCH THAT NO ROOTS WILL BE IMPACTED.
5. INSTALL CLAY LINER IN DEEP POOL AREAS UNDER DIRECTION OF ON-SITE GEOTECHNICAL ENGINEER. CLAY LINER SHALL ADHERE TO SPECIFICATIONS LISTED ON THIS SHEET.
6. INSTALL RISER / BARREL ASSEMBLY, ALONG WITH THE EMERGENCY DRAIN SYSTEM. THE DRAIN VALVE LOCATED WITHIN THE RISER BOX SHALL BE KEPT OPEN UNTIL AN AS-BUILT CERTIFICATION HAS BEEN COMPLETED BY THE ENGINEER AND AN APPROVAL TO IMPOUND HAS BEEN ISSUED BY ALL APPLICABLE AGENCIES.
7. CONSTRUCT EMBANKMENT PER SPECIFICATIONS LISTED IN THE SECTION TITLED "BERM AND SOIL COMPACTION SPECIFICATIONS" AND REQUIREMENTS OF THE ON-SITE GEOTECHNICAL ENGINEER. ALL CHARACTERISTICS OF THE EMBANKMENT FILL MATERIAL SHALL MEET THE STANDARDS SET FORTH IN "BERM AND SOIL COMPACTION SPECIFICATIONS", INCLUDING COMPACTION AND MOISTURE REQUIREMENTS. IF NECESSARY TO ACHIEVE PROPER COMPACTION, THE EMBANKMENT FILL MATERIAL WILL BE OVERBUILT IN HORIZONTAL LIFTS AND CUT BACK TO PROPER FINAL GRADE. ANY HAND COMPACTION ACTIVITIES AROUND SPILLWAY OR DRAIN STRUCTURES SHALL BE CONDUCTED IN 4-INCH LOOSE LIFTS AND BE TO THE SAME COMPACTION AND MOISTURE REQUIREMENTS AS THE ENTIRE EMBANKMENT. ALL COMPACTION AND MOISTURE TESTING SHALL BE CARRIED OUT AS DIRECTED BY THE ON-SITE GEOTECHNICAL ENGINEER AND AS LISTED IN THE SECTION TITLED "BERM AND SOIL COMPACTION SPECIFICATIONS".

BERM AND SOIL COMPACTION SPECIFICATIONS

1. PRIOR TO CONSTRUCTION, THE ON-SITE GEOTECHNICAL ENGINEER SHALL IDENTIFY BORROW / FILL AREAS AND VERIFY THEIR SUITABILITY FOR USE WITHIN THE DAM EMBANKMENT. ALSO, THE ON-SITE GEOTECHNICAL ENGINEER SHALL PERFORM STANDARD PROCTORS ON THE PROPOSED BORROW MATERIAL TO ENSURE THAT OPTIMUM MOISTURE CONTENT AND COMPACTION CAN BE ACHIEVED / CONTROLLED DURING CONSTRUCTION.
2. ALL FILL MATERIALS SHALL BE TAKEN FROM BORROW AREAS APPROVED BY THE ON-SITE GEOTECHNICAL ENGINEER. THE FILL MATERIAL SHALL BE FREE FROM ROOTS, STUMPS, WOOD, STONES GREATER THAN 6", AND FROZEN OR OTHER OBJECTIONABLE MATERIAL. ALL FILL MATERIALS SHALL BE APPROVED BY THE ONSITE GEOTECHNICAL ENGINEER FOR THE INTENDED USE.
3. FILL PLACEMENT FOR THE EMBANKMENT SHALL NOT EXCEED A MAXIMUM 8" LIFT (UNCOMPACTED). EACH LIFT SHALL BE CONTINUOUS FOR THE ENTIRE LENGTH OF EMBANKMENT. ALL UNSUITABLE MATERIAL SHALL BE REMOVED AND THE SURFACE PROPERLY PREPARED FOR FILL PLACEMENT. FILL MATERIAL ADJACENT TO ALL SPILLWAY AND DRAINAGE STRUCTURES SHALL BE PLACED IN 4-INCH (UNCOMPACTED) LIFTS AND HAND-COMPACTED TO THE SAME COMPACTION AND MOISTURE REQUIREMENTS AS THE ENTIRE EMBANKMENT.
4. ALL FILL SOILS USED IN THE EMBANKMENT CONSTRUCTION SHALL BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM-698). THE FILL SOILS SHALL BE COMPACTED AT A MOISTURE CONTENT WITHIN -1 TO +3 PERCENT OF ITS OPTIMUM MOISTURE CONTENT. COMPACTION TESTS SHALL BE PERFORMED BY THE ON-SITE GEOTECHNICAL ENGINEER DURING CONSTRUCTION TO VERIFY THAT THE PROPER COMPACTION LEVEL HAS BEEN REACHED. THE FILL SHOULD BE COMPACTED USING A SHEEPSFOOT TYPE COMPACTOR. IN ORDER TO PREVENT DAMAGE TO THE PIPE, NO COMPACTION EQUIPMENT SHALL CROSS ANY PIPE UNTIL MINIMUM COVER IS ESTABLISHED ALONG THE PIPE.
5. THE DESIGN ENGINEER SHALL BE PROVIDED WITH REPORTS AND CERTIFICATION, BY THE ON-SITE GEOTECHNICAL ENGINEER, THAT THE GEOTECHNICAL ASPECTS OF THE FACILITY HAVE BEEN CONSTRUCTED PER PLAN. THIS CERTIFICATION MUST ADDRESS THE TESTING FOR MATERIALS AND COMPACTION OF THE DAM EMBANKMENT AND SPILLWAY. THESE REPORTS AND CERTIFICATION WILL BE NEEDED DURING THE AS-BUILTS CERTIFICATION PROCESS FOR THIS STORMWATER CONTROL MEASURE. THEREFOR, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE TESTING AND OBSERVATION WITH THE ON-SITE GEOTECHNICAL ENGINEER.
6. TESTING OF THE NEW FILL MATERIALS SHALL BE PERFORMED TO VERIFY THAT THE RECOMMENDED LEVEL OF COMPACTION IS ACHIEVED DURING CONSTRUCTION. THEREFORE, ONE DENSITY TEST SHALL BE PERFORMED FOR EVERY 2,500 SQUARE FEET OF AREA FOR EVERY LIFT OF FILL OR AS RECOMMENDED BY THE ON-SITE GEOTECHNICAL ENGINEER.

STATEMENT OF RESPONSIBILITY

1. ALL REQUIRED MAINTENANCE AND INSPECTIONS OF THE STORMWATER MANAGEMENT FACILITY SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER'S ASSOCIATION AS REQUIRED, PER THE EXECUTED OPERATION AND MAINTENANCE AGREEMENT FOR THIS FACILITY.

CLAY LINER SPECIFICATIONS

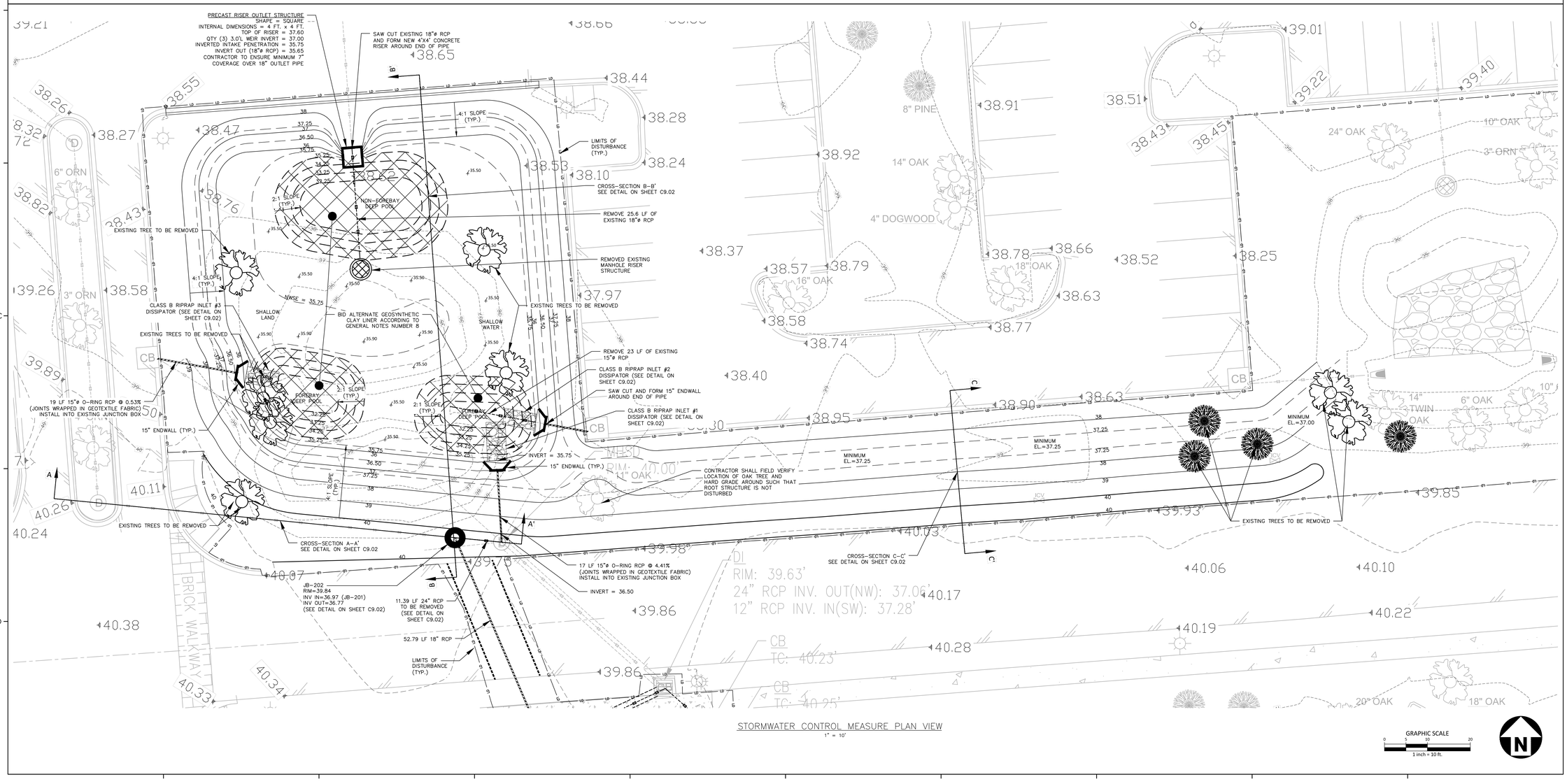
GEOSYNTHETIC CLAY LINER: A LINER INTENDED TO MINIMIZE INFILTRATION OF WATER VERTICALLY AND HORIZONTALLY INTO THE ADJACENT SOILS. TO BE UTILIZED WHEN THE INFILTRATION RATE OF THE IN-SITU SOILS IS FOUND TO BE GREATER THAN 0.025 INCHES PER HOUR.

1. WOVEN: 3.1 OZ/YD^2 MARV OR GREATER
2. BENTONITE MASS/UNIT AREA: 0.75 LB/FT^2 MARV; D5993
3. TENSILE STRENGTH: 30 LB/IN ; ASTM D 6768.
4. PEEL STRENGTH: 3.5LBS/IN MIN; ASTM D 6496.
5. PERMEABILITY: 0.01 IN/HR, MAXIMUM; ASTM D 5887.
6. INDEX FLUX: 1 X 10-8 M3 /M2 /S, MAX; ASTM D 5887.
7. INTERNAL SHEAR STRENGTH: 500 PSF; ASTM D 6243

OUTLET STRUCTURE MATERIAL SPECIFICATIONS

1. THE STRUCTURAL DESIGN FOR THE 4' X 4' (INTERNAL DIMENSIONS) RISER BOX WITH EXTENDED BASE SHALL BE BY OTHERS. PRIOR TO ORDERING THE STRUCTURES, THE CONTRACTOR SHALL PROVIDE, TO THE DESIGN ENGINEER FOR REVIEW, SHOP DRAWINGS AND SUPPORTING STRUCTURAL CALCULATIONS SEALED BY A P.E. REGISTERED IN NORTH CAROLINA DEMONSTRATING THE PERTINENT VERTICAL LOADS ARE SUPPORTED BY THE CONCRETE RISER STRUCTURE.
2. THE RISER BOX OUTLET STRUCTURE SHALL BE PROVIDED WITH STEPS 16" ON CENTER. STEPS SHALL BE PROVIDED ON THE INNER WALL OF THE RISER BOX. STEPS SHALL BE IN ACCORDANCE WITH NCDOT STD. 840.66. PLEASE REFER TO SHEET C9.02 FOR LOCATION OF THE RISER STEPS.
3. THE CONCRETE ANTI-FLOTATION BLOCKS SHALL BE PRECAST AS THE EXTENDED BASE OF THE RISER BOX DURING FABRICATION. THE PRECAST BASE SHALL BE INCLUDED AS PART OF THE SHOP DRAWINGS THAT WILL BE SUBMITTED TO THE ENGINEER FOR REVIEW (SEE ITEM 2 ABOVE). IN LIEU OF A PRE-CAST BASE, THE CONTRACTOR MAY OPT TO CAST-IN-PLACE THE ANTI-FLOTATION BLOCK IN THE FIELD. HOWEVER, PRIOR TO CONSTRUCTING THE CAST-IN-PLACE BASE, THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR REVIEW DENOTING THE FOLLOWING:
   A. STEEL REINFORCEMENT
   B. THE CONNECTION MECHANISM TO JOIN THE ANTI-FLOTATION BLOCK WITH THE RISER SECTION
5. IF THE ANTI-FLOTATION BLOCK IS PRECAST AS PART OF THE RISER BASE SECTION, THE ENTIRE PRECAST RISER BOX STRUCTURE SHALL HAVE A SHIPPING WEIGHT OF 12,757 LBS. THE STRUCTURE WEIGHT SHALL BE THE SHIPPING WEIGHT AND SHALL BE DETERMINED BY SUBTRACTING THE WEIGHT OF THE FACTORY BLOCK OUTS FROM THE GROSS STRUCTURE WEIGHT. THIS INFORMATION SHALL BE SHOWN ON THE SHOP DRAWINGS SUBMITTED TO THE ENGINEER FOR REVIEW. IF THE CONTRACTOR OPTS TO CAST-IN-PLACE THE ANTI-FLOTATION BLOCK, THE CONTRACTOR SHALL ENSURE THE WEIGHT OF THE ENTIRE RISER STRUCTURE IS EQUAL TO THE MINIMUM LISTED ABOVE.
6. THE RISER BOX JOINTS SHALL BE SEALED USING BUTYL RUBBER SEALANT CONFORMING TO ASTM-C990-LATEST. IF NECESSARY, THE CONTRACTOR SHALL INCORPORATE A WATERSTOP INTO THE RISER BOX JOINT TO ENSURE A WATERTIGHT CONNECTION. THE CONTRACTOR SHALL PARGE JOINTS ON BOTH THE INSIDE AND OUTSIDE WITH NON-SHRINK GROUT, AND INSTALL GALVANIZED STEEL STRAPS PER DETAIL ON SHEET C9.02.
7. PRIOR TO ORDERING, THE CONTRACTOR SHALL SUBMIT TRASH RACK SHOP DRAWINGS TO THE ENGINEER FOR REVIEW. CONTRACTOR SHALL ENSURE THAT AN ACCESS HATCH IS PROVIDED WITHIN THE TRASH RACK (SEE DETAIL FOR LOCATION) THAT WILL ALLOW FOR FUTURE MAINTENANCE ACCESS. CONTRACTOR SHALL ALSO PROVIDE A CHAIN AND LOCK FOR SECURING THE ACCESS HATCH. NOTE THE ACCESS HATCH SHALL LINE UP WITH THE ACCESS STEPS AFTER INSTALLATION.
8. ALL POURED CONCRETE SHALL MEET THE FOLLOWING SPECIFICATIONS UNLESS OTHERWISE NOTED:
   -MINIMUM 3000 PSI (28 DAY)
   -SLUMP = 3" - 5"
   -ENTRAINED AIR = 5% - 7%

   PLEASE NOTE NO CONCRETE SHALL BE POURED WHEN THE AMBIENT AIR TEMPERATURES ARE EXPECTED TO BE ABOVE 85°F OR BELOW 40°F. CAST-IN-PLACE CONCRETE SHALL BE "WET CURED" AFTER FINISHING FOR A MINIMUM OF 48 HOURS. ONSITE GEOTECHNICAL ENGINEER TO ENSURE AND CERTIFY ALL POURED CONCRETE MEET THE ABOVE SPECIFICATIONS.
9. STORMWATER FACILITY EMERGENCY DRAW DOWN IS VIA AN 4"Ø PLUG VALVE. THE VALVE SHALL BE A M&H STYLE 1820 ECCENTRIC VALVE OR APPROVED EQUAL. THIS VALVE IS IN ACCORDANCE WITH AWWA C-517, AND SHALL BE OPERABLE FROM TOP OF OUTLET STRUCTURE VIA A HAND WHEEL (SEE DETAIL SHEET C9.02). THE CONTRACTOR SHALL PROVIDE A REMOVABLE VALVE WRENCH WITH A HAND WHEEL ON TOP FOR OPERATION OF THE 6"Ø PLUG VALVE.



STORMWATER CONTROL MEASURE PLAN VIEW
1" = 10'

GRAPHIC SCALE
0 5 10 20
1 inch = 10 ft.

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NORTH CAROLINA
THE JOHN R. McADAMS COMPANY, INC.
C-0293
CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA
SEAL
043300
ENGINEER
DANIEL C. WITHEE

Daniel Withee
Sep 22 2020

PLAN NORTH

CONSTRUCTION DOCUMENTS

Revision Schedule		
#	Description	Date
1	SCO COMMENTS	09/17/20

Coastal Engineering Building

UNCW
University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403
SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

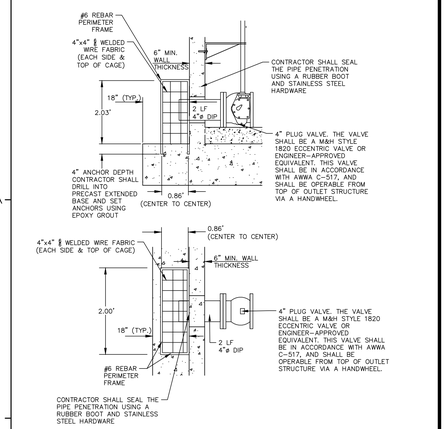
DESIGNED BY: CMJ
DRAWN BY: CMJ
CHECKED BY: DCW

ISSUE DATE:
SEPTEMBER 14, 2020

STORMWATER CONTROL MEASURE NOTES AND PLAN

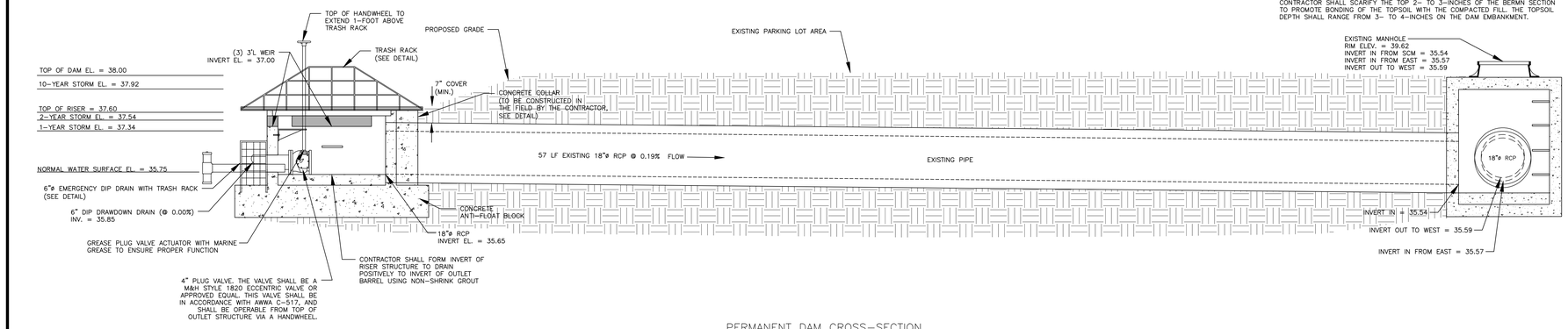
C9.00

SCALE: 1"=10'



4"ø EMERGENCY DIP DRAIN TRASH RACK DETAILS

N.T.S.

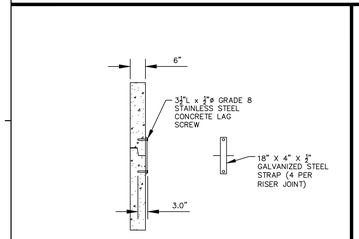


NOTES:

1. REMOVED TOPSOIL SHALL BE STOCKPILED FOR USE IN PLANTING (SEEDING) THE DAM EMBANKMENT ONCE FINAL GRADES (AS SHOWN ON THE GRADING PLAN) HAVE BEEN ESTABLISHED WITH COMPACTED FILL. PRIOR TO TOPSOIL INSTALLATION, THE CONTRACTOR SHALL SCARIFY THE TOP 2– TO 3–INCHES OF THE BERMIN SECTION TO PROMOTE BONDING OF THE TOPSOIL WITH THE COMPACTED FILL. THE TOPSOIL DEPTH SHALL RANGE FROM 3– TO 4–INCHES ON THE DAM EMBANKMENT.

PERMANENT DAM CROSS–SECTION

N.T.S.

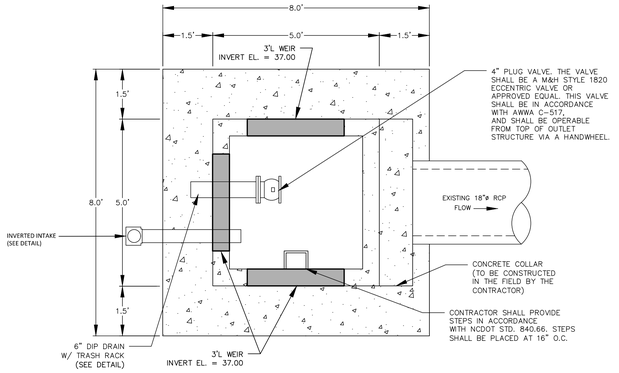


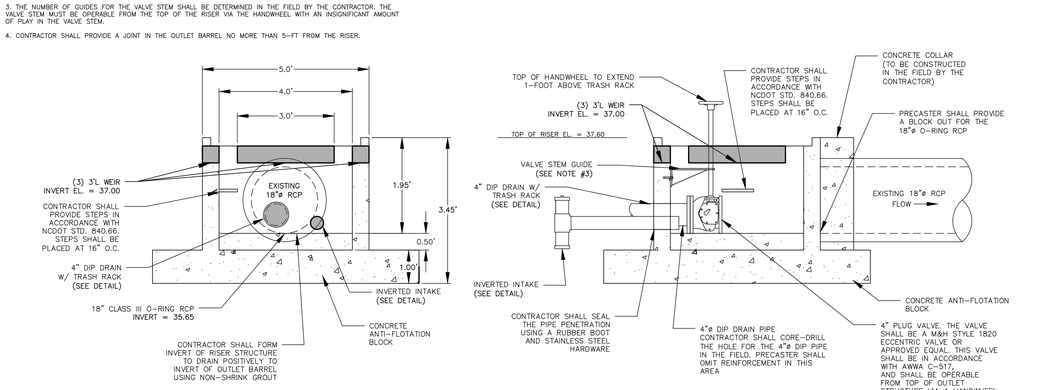
RISER JOINT CONNECTION DETAIL

N.T.S.

NOTES:

1. CONCRETE ANTI–FLOTATION BLOCK TO BE PROVIDED WITH MINIMUM TEMPERATURE AND SHRINKAGE STEEL REINFORCEMENT.
2. TRASH RACKS NOT SHOWN FOR CLARITY.
3. THE NUMBER OF GUIDES FOR THE VALVE STEM SHALL BE DETERMINED IN THE FIELD BY THE CONTRACTOR. THE VALVE STEM MUST BE OPERABLE FROM THE TOP OF THE RISER VIA THE HANDWHEEL WITH AN INSIGNIFICANT AMOUNT OF PLAY IN THE VALVE STEM.
4. CONTRACTOR SHALL PROVIDE A JOINT IN THE OUTLET BARREL NO MORE THAN 5–FT FROM THE RISER.



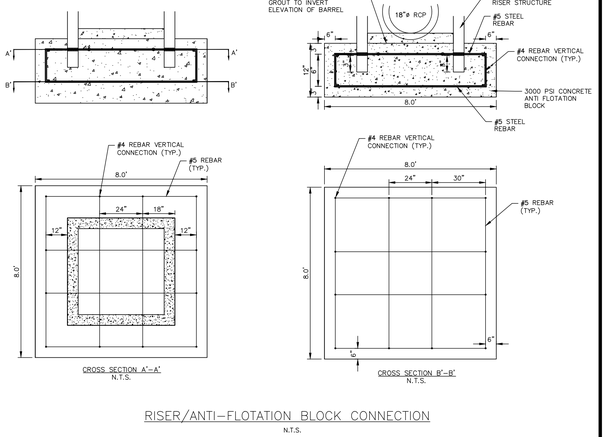


PERMANENT OUTLET STRUCTURE DETAILS

N.T.S.

NOTES:

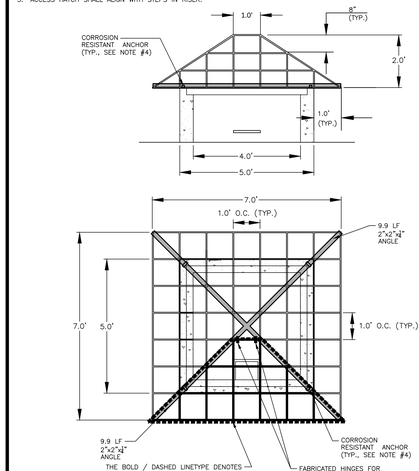
1. ALL REINFORCING STEEL IN RISER ANTI–FLOTATION BLOCK TO BE GRADE 60 #5 BARS FOR HORIZONTAL CROSSING AND GRADE 60 #4 BARS FOR VERTICAL CONNECTIONS.
2. INSIDE OF RISER BOTTOM TO BE FORMED WITH NON–SHRINK GROUT TO INVERT ELEVATION OF BARREL.
3. ALL PIPE PENETRATIONS THROUGH THE CONCRETE RISER STRUCTURE SHALL BE MADE WATERTIGHT.



RISER/ANTI–FLOTATION BLOCK CONNECTION

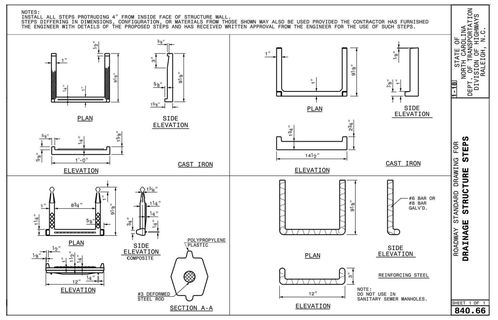
N.T.S.

NOTES:
1. ALL REBAR TO BE #4 REBAR.
2. ALL REBAR AND ANGLES TO BE HOT–DIPPED GALVANIZED AND BE PROVIDED WITH AN EPOXY COATING.
3. THE HOT–DIPPED, GALVANIZED 2"x2"x1/4" ANGLES SHALL BE WELDED TO THE REBAR TRASH RACK, ONCE WELDED, THE ENTIRE ASSEMBLY SHALL BE PLACED ONTO THE RISER WITH ANGLES SITTING DIRECTLY ON TOP OF RISER.
4. TRASH RACK IS TO BE SECURELY FASTENED TO THE SPILLWAY RISER WITH A MINIMUM OF FOUR CORROSION–RESISTANT ANCHORS.
5. ACCESS HATCH SHALL ALIGN WITH STEPS IN RISER.



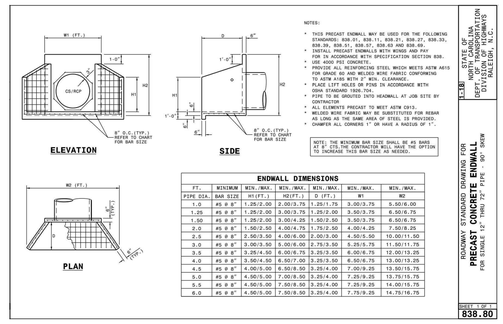
4'X4' RISER TRASH RACK DETAIL

N.T.S.



MAINTENANCE ACCESS STEPS

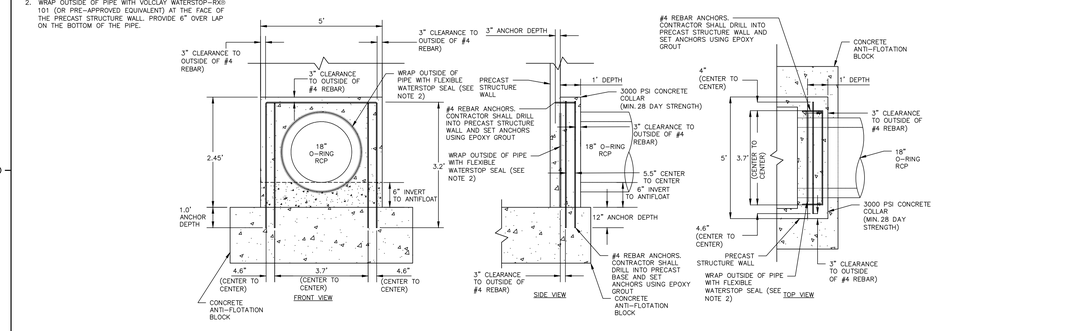
N.T.S.



ENDWALL DETAIL

N.T.S.

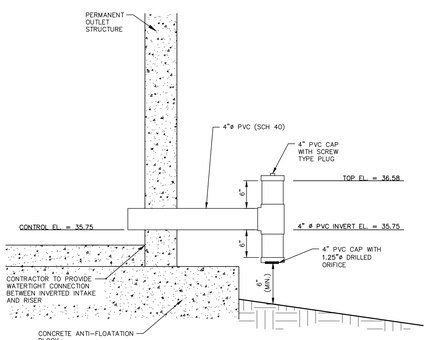
NOTES:
1. ALL REBAR TO BE #4 REBAR.
2. WRAP OUTSIDE OF PIPE WITH VOLCLAY WATERSTOP–RX® 101 (OR PRE–APPROVED EQUIVALENT) AT THE FACE OF THE PRECAST STRUCTURE WALL. PROVIDE 6" OVER LAP ON THE BOTTOM OF THE PIPE.



18"ø CONCRETE COLLAR DETAIL

N.T.S.

NOTE: DO NOT DRILL THROUGH RISER FOR INVERTED INTAKE PENETRATION UNTIL GRADING HAS BEEN CONFIRMED



INVERTED INTAKE DETAIL (RISER)

N.T.S.

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license number: C-0293, C-187
www.mcadamsco.com

NORTH CAROLINA THE JOHN R. McADAMS COMPANY, INC. C-0293 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 2300 AL 043300 PROFESSIONAL ENGINEER DANIEL C. WIEBKE

Daniel Wiebke
Sep 22 2020 3:26 PM EDT

PLAN NORTH

CONSTRUCTION DOCUMENTS

Revision Schedule		
#	Description	Date
1	SCO COMMENTS	09/17/20

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

DESIGNED BY: CMJ
DRAWN BY: CMJ
CHECKED BY: DCW

ISSUE DATE: SEPTEMBER 14, 2020

STORMWATER CONTROL MEASURE DETAILS

C9.01

SCALE: NTS

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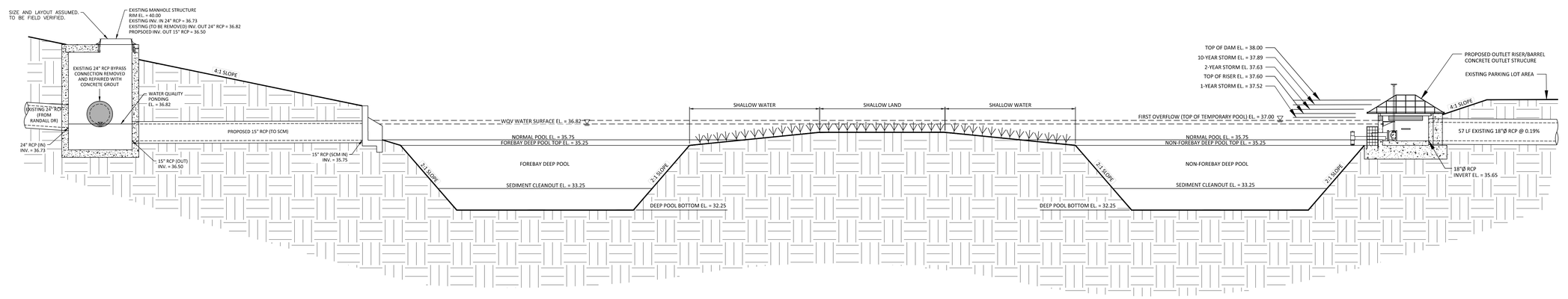
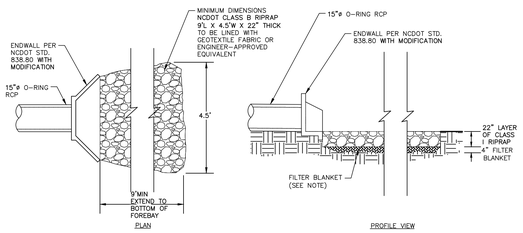


CROSS-SECTION B-B'
N.T.S.

NOTES:

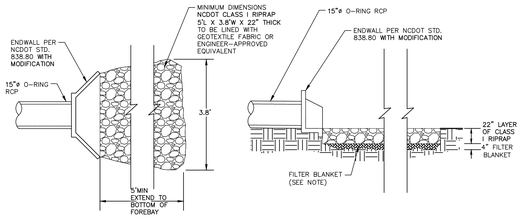
1. A FILTER BLANKET IS TO BE INSTALLED BETWEEN THE RIPRAP AND SOIL FOUNDATION. THE FILTER BLANKET WILL CONSIST OF A MINIMUM 4" THICK LAYER OF STONE (NCDOT #57) UNDERLAIN WITH MIRAFI FILTER WEAVE 700 OR ENGINEER-APPROVED EQUIVALENT.
2. RIPRAP TO EXTEND TO TOP OF CHANNEL WITH 2:1 SIDE SLOPES THROUGHOUT THE EXTENT OF CHANNEL.



INLET#1 VELOCITY DISSIPATER
N.T.S.

NOTES:

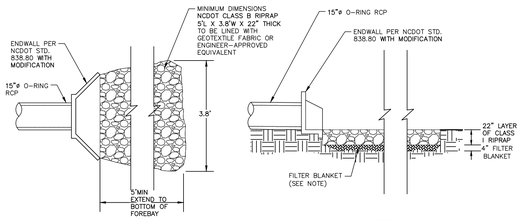
1. A FILTER BLANKET IS TO BE INSTALLED BETWEEN THE RIPRAP AND SOIL FOUNDATION. THE FILTER BLANKET WILL CONSIST OF A MINIMUM 4" THICK LAYER OF STONE (NCDOT #57) UNDERLAIN WITH MIRAFI FILTER WEAVE 700 OR ENGINEER-APPROVED EQUIVALENT.
2. RIPRAP TO EXTEND TO TOP OF CHANNEL WITH 2:1 SIDE SLOPES THROUGHOUT THE EXTENT OF CHANNEL.



INLET#2 VELOCITY DISSIPATER
N.T.S.

NOTES:

1. A FILTER BLANKET IS TO BE INSTALLED BETWEEN THE RIPRAP AND SOIL FOUNDATION. THE FILTER BLANKET WILL CONSIST OF A MINIMUM 4" THICK LAYER OF STONE (NCDOT #57) UNDERLAIN WITH MIRAFI FILTER WEAVE 700 OR ENGINEER-APPROVED EQUIVALENT.
2. RIPRAP TO EXTEND TO TOP OF CHANNEL WITH 2:1 SIDE SLOPES THROUGHOUT THE EXTENT OF CHANNEL.



INLET#3 VELOCITY DISSIPATER
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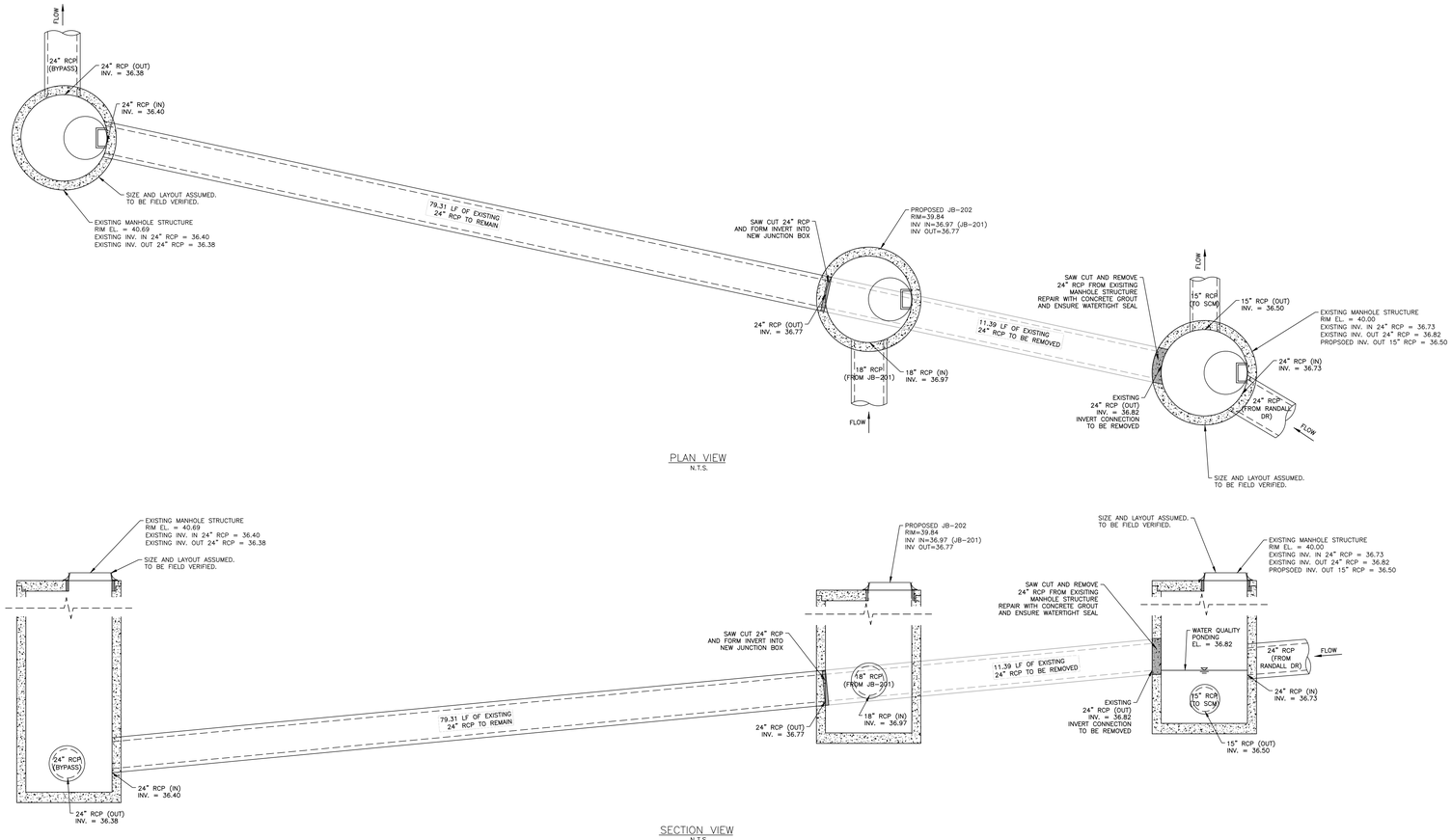
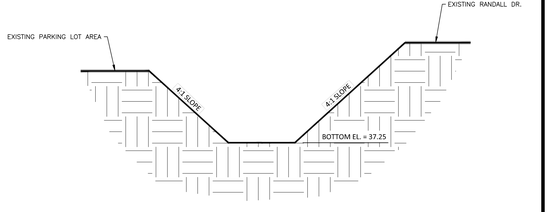


PLAN VIEW
N.T.S.

SECTION VIEW
N.T.S.



CROSS-SECTION C-C'
N.T.S.

CROSS-SECTION A-A'
N.T.S.

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NORTH CAROLINA ENGINEERING THE JOHN R. McADAMS COMPANY, INC. C-0293 CERTIFICATE OF AUTHORIZATION

SEAL
043300
NORTH CAROLINA
ENGINEER
DANIEL C. WIEMKE

Daniel Wiemke
Sep 22 2020 2:41 PM

PLAN NORTH

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CHECKED BY: DCW

ISSUE DATE: SEPTEMBER 14, 2020

STORMWATER CONTROL MEASURE DETAILS

C9.02

SCALE: NTS

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STORMWATER CONTROL MEASURE LANDSCAPE SPECIFICATIONS

LEGEND

QTY.	SYM.	SCIENTIFIC NAME	COMMON NAME	HATCH	TYPE	SPACING
SHALLOW WATER						
171	IV	IRIS VIRGINIANA	BLUE FLAG IRIS		4-INCH CONTAINER	24" O.C.
234	PC	PONTEDERIA CORDATA	PICKEREL WEED		4-INCH CONTAINER	24" O.C.
120	ST	SCHOENOPLECTUS TABERNAEMONTANI	SOFT-STEM BULRUSH		4-INCH CONTAINER	24" O.C.
SHALLOW LAND						
206	CS	CAREX SPP.	SEDGES		4-INCH CONTAINER	24" O.C.
226	CA	CRINUM AMERICANUM	AMERICAN CRINUM LILY		4-INCH CONTAINER	24" O.C.
294	HA	HIBISCUS ACULEATUS	PINELANDS MALLOW		4-INCH CONTAINER	24" O.C.

SEEDBED PREPARATION

1. CHISEL COMPACTED AREAS AND SPREAD TOPSOIL 3 INCHES DEEP OVER ADVERSE SOIL CONDITIONS, IF AVAILABLE.
2. RIP THE ENTIRE AREA TO 6 INCHES DEPTH.
3. REMOVE ALL LOOSE ROCK, ROOTS, AND OTHER OBSTRUCTIONS LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
4. PER ONE TIME ONLY, APPLY AGRICULTURAL LIME, FERTILIZER, AND SUPERPHOSPHATE UNIFORMLY AND MIX WITH SOIL.
5. CONTINUE TILLAGE UNTIL A WELL-PULVERIZED, FIRM REASONABLY UNIFORM SEEDBED IS PREPARED 4 TO 6 INCHES DEEP.
6. SEED ON A FRESHLY PREPARED SEEDBED AND COVER.
7. MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
8. INSPECT ALL SEEDED AREAS AND MAKE NECESSARY REPAIRS OR RESEEDINGS WITHIN THE PLANTING SEASON, IF POSSIBLE, AFTER PERMANENT COVER IS ESTABLISHED.
9. CONSULT CONSERVATION INSPECTOR ON MAINTENANCE TREATMENT

TEMPORARY SEEDING SCHEDULE

SEEDING DATE	SEEDING MIXTURE	APPLICATION RATE
JAN 1 – MAY 1	RYE (GRAIN)	120 LBS/AC
	KOBE LESPEDEZA	50 LBS/AC
MAY 1 – AUG 15	GERMAN MILLET	40 LBS/AC
AUG 15 – DEC 30	RYE (GRAIN)	120 LBS/AC

SOIL AMENDMENTS
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 2,000 LB/AC GROUND AGRICULTURE LIMESTONE AND 750 LB/AC 10-10-10 FERTILIZER (FROM AUG 15 – DEC 30, INCREASE 10-10-10 FERTILIZER TO 1000 LB/AC).

MULCH
APPLY 4000 LB/AC STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

MAINTENANCE
JAN 1 – AUG 15: REFERTILIZE IF GROWTH IS NOT FULLY ADEQUATE. RESEED, REFERTILIZE, AND MULCH IMMEDIATELY FOLLOWING EROSION OR OTHER DAMAGE.

AUG 15 – DEC 30: REPAIR AND REFERTILIZE DAMAGED AREAS IMMEDIATELY. TOP DRESS WITH 50 LB/AC OF NITROGEN IN MARCH. IF IT IS NECESSARY TO EXTEND TEMPORARY COVER BEYOND JUNE 15, OVERSEED WITH 50 LB/AC KOBE LESPEDEZA IN LATE FEBRUARY OR EARLY MARCH.

NOTE: USE THE TEMPORARY SEEDING SCHEDULE ONLY WHEN DATE IS NOT CORRECT TO USE THE PERMANENT SEEDING SCHEDULE.

PERMANENT SEEDING SCHEDULE (DAM EMBANKMENTS)

SEEDING DATE	SEEDING MIXTURE	APPLICATION RATE
AUG 25 – OCT (BEST) FEB – APR 15 (POSSIBLE)	CENTIPEDE	200 LBS/AC

SOIL AMENDMENTS
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 4,000 LB/AC GROUND AGRICULTURE LIMESTONE AND 1000 LB/AC 10-10-10 FERTILIZER.

MULCH
APPLY 4000 LB/AC STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

MAINTENANCE
INSPECT AND REPAIR MULCH FREQUENTLY. REFERTILIZE IN LATE WINTER OF THE FOLLOWING YEAR; USE SOIL TESTS OR APPLY 150 LB/AC 10-10-10 FERTILIZER. MOW REGULARLY TO A HEIGHT OF 2–4 INCHES.

NOTE: PERMANENT SEEDING SCHEDULE IS FOR SLOPES OF THE BASIN AND TOP OF BERM.

PLANTING INSTRUCTIONS

PLANTING TECHNIQUES
A. A SOIL ANALYSIS SHOULD BE CONDUCTED WITHIN THE STORMWATER WETLAND TO DETERMINE THE VIABILITY OF SOILS FOR HEALTHY VEGETATION GROWTH. IMPORTED OR IN-SITU SOILS MAY BE AMENDED WITH ORGANIC MATERIAL, DEPENDING ON SOIL ANALYSIS RESULTS, TO ENHANCE SUITABILITY AS A PLANTING MEDIA.
B. THE FIRST 12 INCHES OF SOIL SHALL BE ADJUSTED AS NEEDED TO PROMOTE PLANT ESTABLISHMENT AND GROWTH.
C. ENSURE THAT ROOTS, ONCE REMOVED FROM POT, ARE STRAIGHTENED AND FACE DOWNWARD.
D. CREATE PLANTING AREA FOR EACH PLANT AND EXCAVATE PIT.
E. PLACE PLANTS IN PIT INSURING ROOTS ARE FACING COMPLETELY DOWNWARD.
F. HEEL IN SOIL AROUND PLANT AND PROCEED TO NEXT PLANTING LOCATION.
G. NEWLY PLANTED PLANTS NEED TO BE FASTENED TO THE SUBSTRATE FOR THE ESTABLISHMENT OF NEW ROOTS.
H. ROOTS SHALL BE SPREAD IN THEIR NORMAL POSITION. ALL BROKEN OR FRAYED ROOTS HALL BE CUT OFF CLEANLY.
I. THE DIAMETER OF THE PITS FOR ALL VEGETATIVE STOCK SHALL BE AT LEAST THREE TIMES THE DIAMETER OF THE ROOT MASS. PLANT PIT WALL SHALL BE SCARIFIED PRIOR TO PLANT INSTALLATION.
J. SET THE PLANTS UPRIGHT, IN THE CENTER OF THE PIT. THE BOTTOM OF THE ROOT MASS SHOULD BE RESTING ON UNDISTURBED SOIL.
K. PLACE THE BACKFILL AROUND THE BASE AND SIDES OF THE ROOT MASS, AND WORK EACH LAYER TO SETTLE BACKFILL AND TO ELIMINATE VOIDS AND AIR POCKETS. WHEN PIT IS APPROXIMATELY 2/3 FULL, WATER THOROUGHLY BEFORE PLACING REMAINDER OF THE BACKFILL. WATER AGAIN AFTER PLACING FINAL LAYER OF BACKFILL.
L. BROKEN OR DAMAGED PARTS WILL BE CUT BACK TO UNDAMAGED TISSUE, LEAVING AS MUCH GREEN BASAL TISSUE AS POSSIBLE ABOVE THE ROOTS. IF MORE THAN FIFTY PERCENT (50%) OF THE PLANT IS DAMAGED THEN CONTRACTOR SHALL REPLACE THE PLANT.

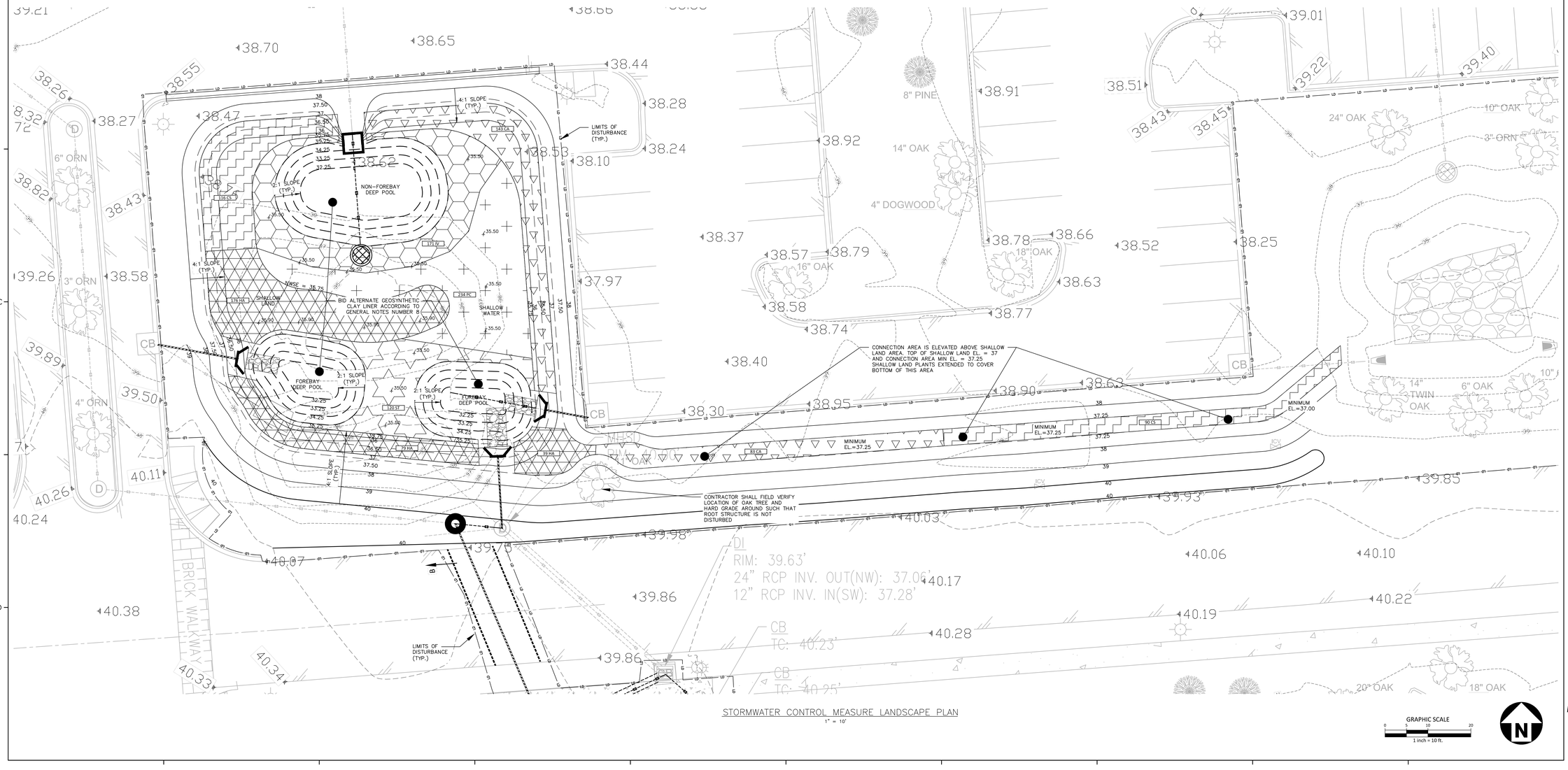
CONTAINER STOCK / BARE ROOT
A. STOCK SHALL HAVE BEEN GROWN IN A CONTAINER LONG ENOUGH FOR THE ROOT SYSTEM TO HAVE DEVELOPED SUFFICIENTLY TO HOLD ITS SOIL TOGETHER ONCE REMOVED FROM THE CONTAINER.
B. CONTAINER PLANTS WILL NEED TO BE WATERED REGULARLY AND PLACED IN SHADY CONDITIONS UNTIL PLANTING OCCURS.
C. BARE ROOT PLANTS ARE FOR IMMEDIATE PLANTING, OTHERWISE SEE D) BELOW.
D. IF BARE ROOTS SPECIMENS ARE NOT TO BE PLANTED WITHIN FOUR (4) DAYS, TEMPORARY HOLDING OF BARE ROOT SPECIMENS ARE TO BE COVERED ENTIRELY BY A SUITABLE MEDIUM (ETC. SOIL, SAWDUST, MULCH OR THE LIKE) AND WATERED REGULARLY SO AS TO NOT DRY OUT.

PLANT LOCATIONS
A. NEW PLANTINGS SHALL BE LOCATED WHERE SHOWN ON PLAN EXCEPT WHERE CHANGES HAVE BEEN MADE IN PROPOSED CONSTRUCTION.
B. NECESSARY ADJUSTMENTS SHALL BE MADE ONLY AFTER APPROVAL BY THE OWNER OR THE OWNER'S REPRESENTATIVE.

WATER
WATER SHALL BE POTABLE AND SHALL NOT CONTAIN ELEMENTS TOXIC TO PLANT LIFE.

PLANTING SCHEDULE

1. ONCE THE GRADING IS COMPLETE, THE CONTRACTOR SHALL REQUEST AN ON-SITE INSPECTION AND AN AS-BUILT SURVEY PRIOR TO INSTALLATION OF THE STORMWATER MANAGEMENT FACILITY PLANTS. IF THE CONTRACTOR PLANTS THE PROPOSED VEGETATION PRIOR TO AN AS-BUILT SURVEY (AND SUBSEQUENT APPROVAL), ANY CHANGES TO THE GRADING / RE-PLANTING OF PLANTS WILL BE AT THE CONTRACTOR'S EXPENSE.
2. ONCE THE ENGINEER HAS APPROVED THE AS-BUILT GRADING, THE CONTRACTOR SHALL PLANT THE PROPOSED STORMWATER MANAGEMENT FACILITY PLANTS SHOWN ON THE LANDSCAPE PLAN FOR THE FACILITY. AFTER COMPLETION OF THE PLANTING, THE LANDSCAPE CONTRACTOR SHALL PROVIDE A LETTER TO THE ENGINEER CERTIFYING THAT THE PLANTS HAVE BEEN INSTALLED PER THE APPROVED STORMWATER MANAGEMENT FACILITY PLANTING PLAN.
3. OPTIMAL PLANTING PERIODS RANGE APPROXIMATELY FROM APRIL 15TH THRU JUNE 30TH AND SEPTEMBER 1ST THRU OCTOBER 31ST. FOR FINAL DETERMINATION OF THE SITE'S PLANTING PERIOD, THE CONTRACTOR SHALL COORDINATE WITH A LANDSCAPE PROFESSIONAL REGARDING SCHEDULING FOR PLANT INSTALLATION.



STORMWATER CONTROL MEASURE LANDSCAPE PLAN
1" = 10'

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DESIGN

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CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA
PROFESSIONAL ENGINEER
DANIEL C. WIEBKE
SEAL 043300
Daniel Wiebke 043300
Sep 22 2020 2:42 PM

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DRAWN BY: CMJ
CHECKED BY: DCW

ISSUE DATE:
SEPTEMBER 14, 2020

STORMWATER CONTROL MEASURE LANDSCAPE PLAN

C9.03

SCALE: 1"=10'

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STORMWATER CONTROL MEASURE PERMIT BOUNDARY
1" = 40'

LEGEND

UPDATED PERMIT BOUNDARY (SW8 960413)

Point Number	Easting	Northing
1	2342005.7913'	176052.6275'
2	2342037.5422'	176026.8810'
3	2342065.0919'	176013.3232'
4	2342086.7700'	176002.1565'
5	2342106.1510'	175992.1650'
6	2342127.7048'	175991.9232'
7	2342141.9411'	175992.3872'
8	2342156.6417'	176002.2844'
9	2342172.4255'	176009.0888'
10	2342179.0794'	176010.6352'
11	2342190.2526'	176022.3209'
12	2342206.5673'	176064.1487'
13	2342235.3789'	176138.0160'
14	2342223.6554'	176177.7212'
15	2342215.0051'	176187.5169'
16	2342216.6307'	176197.7548'
17	2342207.2253'	176225.6562'
18	2342210.2369'	176239.1635'
19	2342211.8400'	176264.6700'
20	2342254.0428'	176267.9125'
21	2342279.3900'	176269.8600'
22	2342369.3500'	176276.3500'
23	2342422.5700'	176280.4100'
24	2342476.0100'	176284.6200'
25	2342518.9200'	176287.3000'
26	2342579.9100'	176292.3000'
27	2342615.3800'	176294.5100'
28	2342642.4600'	176295.6500'
29	2342692.0800'	176299.6900'
30	2342696.0444'	176298.8325'
31	2342701.2431'	176297.0031'
32	2342702.9800'	176295.9800'
33	2342713.7800'	176310.7300'
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35	2342734.1952'	176325.2965'
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42	2342724.2851'	176344.5967'
43	2342725.9498'	176345.5864'
44	2342741.1280'	176346.4108'
45	2342740.8307'	176355.4805'
46	2342738.5640'	176388.1774'
47	2342734.9152'	176435.1852'
48	2342733.5833'	176454.0378'
49	2342721.1458'	176453.6636'
50	2342719.4173'	176453.5790'
51	2342717.2647'	176453.3431'
52	2342715.6706'	176454.6547'
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54	2342677.8568'	176468.8190'
55	2342641.3012'	176465.8045'
56	2342642.4325'	176449.3945'
57	2342641.5651'	176448.1365'
58	2342640.2430'	176447.6514'
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61	2342604.5672'	176463.0132'
62	2342563.0590'	176460.0140'
63	2342531.7355'	176457.3725'
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67	2342516.4041'	176438.5008'
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207	2341990.9031'	176010.8740'
208	2342006.2395'	176025.9788'
209	2342000.3974'	176041.1068'

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

PLAN NORTH

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NORTH CAROLINA
THE JOHN R. McADAMS COMPANY, INC.
C-0293
CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA
PROFESSIONAL ENGINEER
SEAL
Daniel Widyk 043300
Sep 22 2020 09:49 PM
DANIEL C. WIDYK

CONSTRUCTION DOCUMENTS

Revision Schedule		
#	Description	Date
1	SCO COMMENTS	09/17/20

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

DESIGNED BY: CMJ
DRAWN BY: CMJ
CHECKED BY: DCW

ISSUE DATE:
SEPTEMBER 14, 2020

STORMWATER CONTROL MEASURE PERMIT BOUNDARY

C9.04

SCALE: 1"=40'

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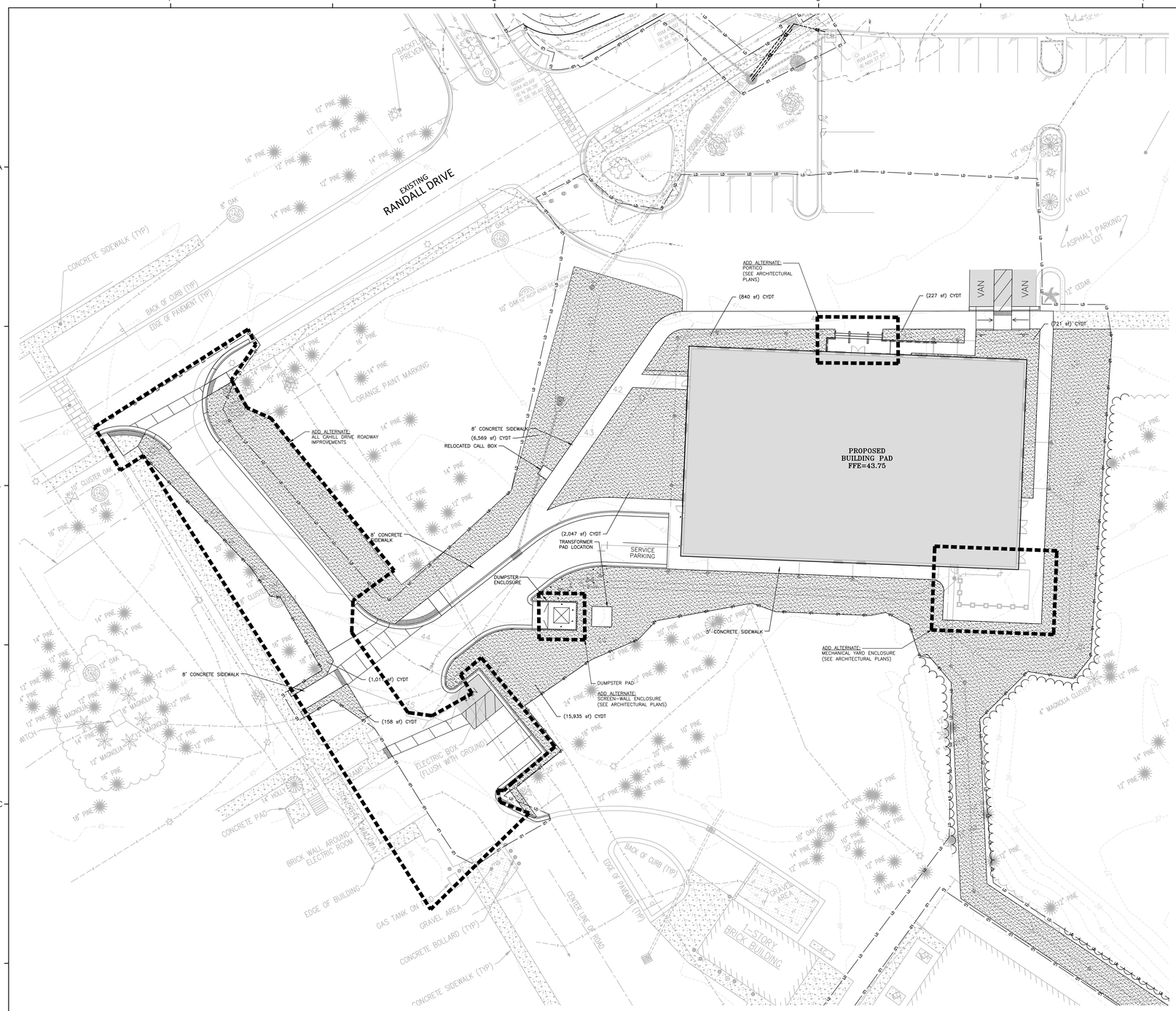

LANDSCAPE NOTES

1. ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF WILMINGTON AND THE STATE OF NORTH CAROLINA STANDARDS AND SPECIFICATIONS.
2. CONTRACTOR IS RESPONSIBLE FOR THE SITE INSPECTION BEFORE LANDSCAPE CONSTRUCTION AND INSTALLATION IN ORDER TO BECOME FAMILIAR WITH THE EXISTING CONDITIONS.
3. LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES BEFORE BEGINNING DEMOLITION OR INSTALLATION.
4. CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT OF ANY DISCREPANCIES BETWEEN THE NOTES, SPECIFICATIONS, DRAWINGS OR SITE CONDITIONS FOR RESOLUTION PRIOR TO INSTALLATION.
5. ANY DAMAGE TO UTILITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
6. THIS PLAN IS FOR PLANTING PURPOSES ONLY. FOR INFORMATION REGARDING BUILDINGS, GRADING, WALLS, ETC., REFER TO ARCHITECTURE, SITE AND GRADING PLANS.
7. VERIFICATION OF TOTAL PLANT QUANTITIES AS SHOWN IN THE PLANT SCHEDULE SHALL BE THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT.
8. CONTRACTOR TO ENSURE PROPER STABILIZATION AND SEEDING OF THE SITE IN ACCORDANCE WITH APPLICABLE REGULATIONS.
9. LANDSCAPE MATERIAL SHALL BE WELL FORMED, VIGOROUS, GROWING SPECIMENS WITH GROWTH TYPICAL OF VARIETIES SPECIFIED AND SHALL BE FREE FROM DAMAGE, INSECTS AND DISEASES. MATERIAL SHALL EQUAL OR SURPASS #1 QUALITY AS DEFINED IN THE CURRENT ISSUE OF "AMERICAN STANDARD FOR NURSERY STOCK" AS PUBLISHED BY THE AMERICAN NURSERY & LANDSCAPE ASSOCIATION.
10. ALL PLANT MATERIAL IS TO BE CAREFULLY HANDLED BY THE ROOT BALL, NOT THE TRUNK, BRANCHES AND/OR FOLIAGE OF THE PLANT. MISHANDLED PLANT MATERIAL MAY BE REJECTED BY THE LANDSCAPE ARCHITECT.
11. ALL PLANT MATERIAL IS TO BE WELL ROOTED, NOT ROOT BOUND, SUCH THAT THE ROOT BALL REMAINS INTACT THROUGHOUT THE PLANTING PROCESS. DEFICIENT PLANT MATERIAL MAY BE REJECTED BY THE LANDSCAPE ARCHITECT OR OWNER.
12. ALL PLANTS TO BE A MINIMUM OF WHAT IS SPECIFIED IN THE PLANT SCHEDULE. ANY CHANGES OR SUBSTITUTIONS SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT AND GOVERNING JURISDICTION PRIOR TO ANY HOLE BEING DUG.
13. CONTRACTOR TO COORDINATE WITH OWNER'S REPRESENTATIVE AND LANDSCAPE ARCHITECT TO ESTABLISH THE EXTENTS OF MULCH/SEED/SOD IF NOT SPECIFICALLY SHOWN ON PLANS.
14. CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE IN ALL PLANTING AREAS.
15. PROPOSED TREES TO BE PLANTED A MINIMUM 15 FEET FROM ANY LIGHT POLE AS MEASURED FROM TRUNK OF THE TREE TO THE POLE.
16. PROPOSED TREES TO BE PLANTED A MINIMUM 5 FEET FROM ANY FIRE HYDRANT AS MEASURED FROM TRUNK OF THE TREE TO THE HYDRANT.
17. CONTRACTOR SHALL COMPLETE SOIL TEST IN ALL PLANTING AREAS TO DETERMINE SOIL AMENDMENT REQUIREMENTS UNLESS WAIVED BY OWNER'S REPRESENTATIVE. CONTRACTOR SHALL ADJUST PH AND FERTILITY BASED UPON THE SOIL TEST RESULTS.
18. TOPSOIL SHALL BE FREE OF MATERIAL LARGER THAN 1.0 INCH IN DIAMETER OR LENGTH AND SHALL NOT CONTAIN SLAG, CINDERS, STONES, LUMPS OF SOIL, STICKS, ROOTS, TRASH, OR OTHER EXTRANEOUS MATERIAL.
19. LOOSEN SUBGRADE / SURFACE SOIL TO A MINIMUM DEPTH OF 6 INCHES. APPLY SOIL AMENDMENTS AND FERTILIZERS AS REQUIRED BY THE SOIL TEST RESULTS TO ACHIEVE A HEALTHY GROWING MEDIA AND MIX THOROUGHLY INTO TOP 4 INCHES OF SOIL. SPREAD PLANTING SOIL MIX TO A DEPTH OF 6 INCHES BUT NOT LESS THAN REQUIRED TO MEET FINISH GRADES AFTER NATURAL SETTLEMENT. DO NOT SPREAD IF PLANTING SOIL OR SUBGRADE IS FROZEN, MUDDY, OR EXCESSIVELY WET.
20. IF IMPORTED TOPSOIL IS REQUIRED, THE SUBGRADE SHALL BE SCARIFIED OR TILLED TO A DEPTH OF AT LEAST 6 INCHES PRIOR TO INSTALLATION OF IMPORTED TOPSOIL. FOLLOWING INSTALLATION OF IMPORTED TOPSOIL, THE TOPSOIL SHALL BE TILLED TO INTEGRATE THE SOIL PROFILES.
21. PLANT MATERIALS ARE TO BE GUARANTEED FOR A PERIOD OF 12 MONTHS. PLANT MATERIALS WHICH REMAIN UNHEALTHY WILL BE REPLACED BY THE LANDSCAPE CONTRACTOR BEFORE THE EXPIRATION OF THE GUARANTEE PERIOD OR IMMEDIATELY IF SO DIRECTED BY THE OWNER'S REPRESENTATIVE OR LANDSCAPE ARCHITECT.
22. ALL TREE PLANTINGS SHALL BE MULCHED TO A DEPTH OF 3 INCHES, AND WITH A MINIMUM 3 FOOT RADIUS FROM BASE OF TREE OR TO DRIPLINE. MULCH SHALL BE FREE OF TRASH AND MAINTAINED WEED FREE. MULCH SHALL NOT COVER THE ROOT FLARE. CONFIRM MULCH SPECIFICATIONS WITH OWNER'S REPRESENTATIVE OR LANDSCAPE ARCHITECT.
23. DO NOT PRUNE TREES AND SHRUBS BEFORE DELIVERY. PROTECT BARK, BRANCHES, AND ROOT SYSTEMS FROM SUN SCALD, DRYING, SWEATING, WHIPPING, AND OTHER HANDLING AND TYING DAMAGE. DO NOT BEND OR BIND-TIE TREES OR SHRUBS IN SUCH A MANNER AS TO DESTROY THEIR NATURAL SHAPE. PROVIDE PROTECTIVE COVERING OF EXTERIOR PLANTS DURING DELIVERY. DO NOT DROP EXTERIOR PLANTS DURING DELIVERY AND HANDLING.
24. DELIVER EXTERIOR PLANTS AFTER PREPARATIONS FOR PLANTING HAVE BEEN COMPLETED AND INSTALL IMMEDIATELY. IMMEDIATELY AFTER UNLOADING, STAND THE TREES UP TO REDUCE THE RISK OF SUN SCALD. PROPERLY STAGED TREES ARE STANDING, UNTIED AND SPACED. UNLESS IMMEDIATELY INSTALLED, SET EXTERIOR PLANTS AND TREES IN SHADE, PROTECT FROM WEATHER AND MECHANICAL DAMAGE, AND KEEP ROOTS MOIST.
25. SEE LANDSCAPE DETAILS FOR TREE STAKING REQUIREMENTS.
26. EXCAVATE EDGES OF ALL PLANTING BEDS TO 2 INCH DEPTH TO FORM A NEAT AND CRISP DEFINITION.
27. CONTRACTOR SHALL REMOVE DEBRIS AND FINE GRADE ALL PLANTING AREAS PRIOR TO INSTALLATION.
28. REMOVE GUY WIRES AND STAKES AT END OF WARRANTY PERIOD OR ESTABLISHMENT.
29. FINISH GRADING: GRADE PLANTING AREAS TO A SMOOTH, UNIFORM SURFACE PLANE WITH LOOSE, UNIFORMLY FINE TEXTURE. GRADE TO WITHIN PLUS OR MINUS 1/2 INCH OF FINISH ELEVATION. ROLL AND RAKE, REMOVE RIDGES, AND FILL DEPRESSIONS TO MEET FINISH GRADES. LIMIT FINISHED GRADING TO AREAS THAT CAN BE PLANTED IN THE IMMEDIATE FUTURE.

PERMANENT SODDING SCHEDULE:

SEEDING DATE	SOD MIXTURE	PAD SIZES
AUG 25 - OCT (BEST) FEB - APR 15 (POSSIBLE)	LOCALLY GROWN MIN. 3 VARIETIES OF KENTUCKY BLUEGRASS AND FESCUE	MIN. 48 INCHES x 30 INCHES MAX. 5% DEVIATION IN SIZE BROKEN PADS UNACCEPTABLE

PRODUCT
PROVIDE STRONGLY ROOTED SOD, FREE OF WEEDS AND UNDESIRABLE NATIVE GRASSES. MACHINE CUT TO PAD THICKNESS OF 3/4 INCH, EXCLUDING TOP GROWTH AND THATCH. SOD SHALL BE HEALTHY AND GREEN WITH NO DEAD OR DISCOLORED SPOTS LARGER THAN 6".

SUBMITTALS
SUBMIT DATA FOR SOD AND SOURCE.

DELIVERY, STORAGE, HANDLING
DELIVER SOD ON PALLETS IN ROLLS. DO NOT DELIVER MORE SOD THAN CAN BE LAID WITH 24 HOURS.

SOIL AMENDMENTS
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 4,000 LB/AC GROUND AGRICULTURE LIMESTONE AND 1000 LB/AC 10-10-10 FERTILIZER.

MAINTENANCE
INSPECT AND REPAIR SOD AS NEEDED. REFERTILIZE IN LATE WINTER OF THE FOLLOWING YEAR; USE SOIL TESTS OR APPLY 150 LB/AC 10-10-10 FERTILIZER. MOW REGULARLY TO A HEIGHT OF 2-4 INCHES.

PERMANENT SODDING INSTALLATION:

EXAMINATION AND PREPARATION
1. INSTALLER TO EXAMINE AREAS TO RECEIVE PERMANENT SEEDING FOR COMPLIANCE WITH REQUIREMENTS AND CONDITIONS AFFECTING INSTALLATION AND PERFORMANCE. PROCEED WITH INSTALLATION ONLY AFTER UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.
2. REFER TO CIVIL DRAWINGS FOR EROSION AND SEDIMENT CONTROL MEASURES.

SOD BED ESTABLISHMENT
1. VERIFY SITE GRADING PRIOR TO INSTALLATION. ELIMINATE UNEVEN AREAS AND LOW SPOTS AND ENSURE POSITIVE DRAINAGE.
2. LOOSEN SUBGRADE TO A MINIMUM DEPTH OF 4 TO 6 INCHES. REMOVE STONES LARGER THAN 1 INCH IN ANY DIMENSION AND STICKS, ROOTS, RUBBISH AND OTHER EXTRANEOUS MATTER. APPLY TOP SOIL, FERTILIZER, LIME AND SOIL AMENDMENTS AND THOROUGHLY BLEND PLANTING SOIL MIX TO CREATE ACCEPTABLE PLANTING SOIL AS DESCRIBED THROUGH ANLA.
3. RAKE SOIL SURFACE SMOOTH PRIOR TO SODDING. SOIL SURFACE SHALL BE REASONABLE FREE OF LARGE CLODS, STONES GREATER THAN 3/4 INCH IN THE LONGEST DIMENSION, AND OTHER MATERIAL WHICH WILL INTERFERE WITH PLANT ESTABLISHMENT.
4. INSTALL EDGING AT PERIPHERY OF SODDED AREAS IN STRAIGHT LINES TO CONSISTENT DEPTH.

LAYING SOD
1. MOISTEN PREPARED SURFACE IMMEDIATELY PRIOR TO LAYING SOD.
2. LAY SOD WITHIN 24 FROM TIME OF STRIPING.
3. LAY SOD TIGHT TO FORM A SOLID MASS WITH NO OPEN JOINTS VISIBLE AND NO STRETCHING OR OVERLAPPING. STAGGER END JOINTS 12 INCHES MINIMUM. LEAVE 6 A 36-INCH RADIUS AROUND ALL TREE TRUNKS FOR MULCH. WORK SIFTED SOIL INTO MINOR CRACKS BETWEEN PIECES OF SOD. REMOVE EXCESS TO AVOID SMOTHERING OF ADJACENT GRASS.
4. SOD ROLL LENGTH SHALL RUN PERPENDICULAR TO ALL SLOPE FALL LINES. PIN OR STAKE SOD STRIPS THAT ARE PLANTED ON SLOPES GREATER THAN 3:1 (33 PERCENT).
5. SOD SHALL LAY FLUSH WITH PAVING, CURBS AND IRRIGATION HEADS AND ONE INCH BELOW THE TOP OF STEEL EDGING.
6. WATER SOD THOROUGHLY WITH A FINE SPRAY IMMEDIATELY AFTER PLANTING.
7. AFTER SECOND WATERING AND WHEN SOIL AND SOD ARE MOIST, ROLL SOD LIGHTLY AS SOON AS POSSIBLE AFTER ITS LAID.
8. ADD TOPSOIL ALONG EXPOSED EDGES TO MATCH ADJACENT GRADE. FEATHER TOPSOIL OUT APPROXIMATELY ONE FOOT FROM EDGE OF SOD.

SOD MAINTENANCE
1. MOW GRASS AT REGULAR INTERVALS. DO NOT CUT MORE THAN 1/3 OF GRASS BLADE AT EACH MOWING. PERFORM FIRST MOWING WHEN SEEDLINGS ARE 40 PERCENT HIGHER THAN DESIRED HEIGHT.
2. IMMEDIATELY REMOVED CLIPPINGS AFTER MOWING. DO NOT LET CLIPPINGS LAY IN CLUMPS.
3. WATER TO PREVENT SOD AND SOIL FROM DRYING OUT.
4. INSPECT AND REPAIR ACCORDING TO THE SOD SCHEDULE.

PLANT SCHEDULE

GROUND COVERS	CODE	QTY	COMMON NAME	BOTANICAL NAME	CONT	REMARKS
	CYDT	27,508 sf	Celebration Bermuda Grass	Cynodon dactylon "Celebration"	Sod	

SITE LEGEND

-o-	SIGNAGE
➡	TRAFFIC DIRECTIONAL ARROW
ACC	ACCESSIBLE PARKING STALL
VAN	VAN ACCESSIBLE PARKING STALL

NOTES:

1. PRIOR TO CONSTRUCTION, ANY DISCREPANCIES BETWEEN THE CONSTRUCTION PLANS, SPECIFICATIONS, AND NOTES SHALL BE BROUGHT TO THE DESIGNER'S ATTENTION IMMEDIATELY.
2. ALL PLANTING LOCATIONS SHOWN ON THE PLANS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE OWNER IF ANY DISCREPANCIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION FOR NECESSARY PLAN OR GRADE CHANGES. NO EXTRA COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR ANY WORK DONE DUE TO DIMENSIONS OR GRADES SHOWN INCORRECTLY ON THESE PLANS IF SUCH NOTIFICATION HAS NOT BEEN GIVEN.

GRAPHIC SCALE
0 10 20 40
1 inch = 20 ft.

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NarmourWright
DESIGN

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NORTH CAROLINA
THE JOHN R. McADAMS COMPANY, INC.
C-0293
CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA
REGISTERED LANDSCAPE ARCHITECT
1898
DAVE C. TONG

09/22/2020

PLAN NORTH

CONSTRUCTION DOCUMENTS

Revision Schedule		
#	Description	Date
1	SCO COMMENTS	09/17/20

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

DESIGNED BY: KAS
DRAWN BY: JAA
CHECKED BY: THJ

ISSUE DATE: SEPTEMBER 14, 2020

LANDSCAPE PLAN

LS101

SCALE:

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ABBREVIATIONS:

A	
ABV	ABOVE
ACCES	ACCESSIBLE
ACT	ACOUSTICAL CEILING TILE
ADJ	ADJACENT
AFF	ABOVE FINISHED FLOOR
AGGR	AGGREGATE
AHU	AIR HANDLING UNIT
ALT	ALTERNATE
ALUM	ALUMINUM
ARCH	ARCHITECTURE (URE,URAL)
AS	ABOVE SLAB
ASPH	ASPHALT
AUTO	AUTOMATIC
AUX	AUXILIARY
B	
B/C	BOTTOM OF CURB
BD	BOARD
BEL	BELOW
BET	BETWEEN
BKBD	BACKBOARD
BLDG	BUILDING
BLKG	BLOCKING
BLKHD	BULKHEAD
BM	BEAM
BOD	BASIS OF DESIGN
BOT	BOTTOM
BRG	BEARING
BRK	BRICK
BRKT	BRACKET
BSMT	BASEMENT
C	
C	CONDUIT
CAB	CABINET
CAP	CAPACITY
CEM	CEMENT
CF	CUBIC FOOT
CJ	CONTROL JOINT
CLG	CEILING (SEE ALSO MECH ABBREVIATIONS)
CLL	CONTRACT LIMIT LINE
CLR	CLEAR(ANCE)
COL	COLUMN
CONC	CONCRETE
CONF	CONFERENCE
CONST	CONSTRUCTION
CONT	CONTINU(OUS,ATION)
CONTR	CONTRACTOR
COORD	COORDINATE
CPT	CARPET
CRS	COURSE
CT	CERAMIC TILE
CW	COLD WATER
CWR	COLD WATER RETURN
CY	CUBIC YARD
D	
DET	DETAIL
DRWR	DRAWER
DS	DOWNSPOUT
DWGS	DRAWINGS
E	
EF	EXHAUST FAN
EHD	ELECTRIC HAND DRYER
EIFS	EXTERIOR INSULATION & FINISH SYSTEM
ELEC	ELECTRICAL
EMER	EMERGENCY
ENCL	ENCLO(ES,SURE)
EOS	EDGE OF SLAB
EP	ELECTRICAL PANEL
EPX	EPOXY
EQ	EQUAL
EQUIP	EQUIPMENT
EW	EACH WAY
EWC	ELECTRIC WATER COOLER
EXH	EXHAUST
EXP	EXPANSION
F	
F/C	FLOOR TO CEILING
FAI	FRESH AIR INTAKE
FB	FOILBACKED
FBR	FABRIC
FD	FLOOR DRAIN
FDVC	FIRE DEPT. VALVE CABINET
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FH	FIRE HYDRANT
FIN	FINISH(ED)
FLAM	FLAMMABLE
FLR	FLOOR
FO	FIBER OPTIC(S)
FOB	FACE OF BRICK
FOC	FACE OF CONCRETE
FOP	FACE OF PILASTER
FOUND	FOUNDATION
FP	FIRE PROTECTION
FPM	FORMED PLASTIC MOULDING
FRT	FIRE RETARDANT TREAT(ED,MENT)
FS	FLOOR SINK
FSACCP	FLAT SEAM ALLOY - COATED COPPER PANEL
FT	FEET
FTG	FOOTING
G	
GC	GENERAL CONTRACTOR
H	
HTR	HEATER
HVAC	HEATING,VENTILATION, AIR CONDITIONING
HW	HOT WATER
HWD	HARDWOOD
HWR	HOT WATER RETURN
I	
ID	INSIDE DIAMETER
IE	THAT IS
IN	INTERIOR
INV	INVERT(ED)
J	
JB	JUNCTION BOX
JC	JANITOR'S CLOSET
JG	JAMB GUARD
JT	JOINT
L	
LAV	LAVATORY
LGMF	LIGHT GAUGE METAL FRAMING
LL	LIVE LOAD
LP	LOW POINT
M	
MB	MARKER BOARD
MEJ	MASONRY EXPANSION JOINT
MTD	MOUNT(ED)
MTL	METAL
N	
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
O	
OA	OVERALL
OC	ON CENTER
OD	OUTSIDE DIAMETER
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED OWNER INSTALLED
OH	OVERHEAD
OPG	OPENING
OPP	OPPOSITE
P	
PB	PULL BOX
PCC	PRECAST CONCRETE
PD	PRESSURE DROP
PH	PHASE
PL	PLATE
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLMB	PLUMBING
PLYWD	PLYWOOD
PNL	PANEL
POLY	POLYCARBONATE
PS	PROJECTION SCREEN
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	PRESSURE TREATED
PTD	PAINTED
PTN	PARTION
PVC	POLYVINYL CHLORIDE
Q	
QT	QUARRY TILE
QTY	QUANTITY
R	
RAD	RADIUS
RB	RUBBER BASE
RD	ROOF DRAIN
REF	REFERENCE
REINF	REINFORCED
REQ'D	REQUIRED
RESIL	RESILIENT
RM	ROOM
S	
S&R	SHELF & ROD
SB	SMART BOARD
SC	SOLID CORE
SD	SOAP DISPENSER
SF	SQUARE FOOT/FEET
SG	SAFTEY GLASS
SHT	SHEET
SIM	SIMILAR
SLD	SEALED
SOG	SLAB ON GRADE
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL
ST	STAIN
STD	STANDARD
STL	STEEL
STOR	STORAGE
STRUCT	STRUCUR(E, AL)
SUSP	SUSPEND(ED)
SYS	SYSTEM
T	
T	THREAD
T&B	TOP & BOTTOM
T/	TOP OF
T/C	TOP OF CONCRETE
T/F	TOP OF FRAME
T/S	TOP OF STEEL
T/W	TOP OF WALL
TEL	TELEPHONE
TEMP	TEMPERATURE
THK	THICK
THR	THRESHOLD
TOIL	TOILET
TYP	TYPICAL
U	
UC	UNDERCUT
UG	UNDERGROUND
UNFIN	UNFINISHED
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERUPTABLE POWER SUPPLY
UTIL	UTILITY
V	
VAR	VARIABLE
VB	VINYL BASE
VCT	VINYL COMPOSITE TILE
VD	VISUAL DISPLAY
VEN	VENEER
VERT	VERTICAL
VIF	VERIFY IN FEILD
VIN	VINYL
VT	VAPOR TIGHT
VTR	VENT THROUGH ROOF
VWC	VINYL WALL COVERING
W	
W	WIDTH
W/	WITH
W/O	WITHOUT
WC	WATER CLOSET
WD	WOOD
WH	WATER HEATER
WP	WATERPROOF
WT	WEIGHT
WTC	WATER COOLER
WTR	WATER

GENERAL NOTES:

1 THESE GENERAL REQUIREMENTS ARE INTENDED TO SUPPLEMENT AND, WHERE MORE STRINGENT, SUPERSEDE THE "GENERAL CONDITIONS" AND "SUPPLEMENTAL GENERAL CONDITIONS" OF THE CONTRACT BETWEEN OWNER AND CONTRACTOR. THE CONTRACTOR SHALL BUILD THIS PROJECT IN ACCORDANCE WITH ALL APPLICABLE BUILDING CODES AND SAFETY STANDARDS AND/OR REGULATIONS.

2 DO NOT SCALE THE DRAWINGS. DIRECT DIMENSIONAL DISCREPANCIES AND QUESTIONS TO THE ARCHITECT.

3 INSTALL ALL OWNER FURNISHED EQUIPMENT ACCORDING TO MANUFACTURERS' INSTRUCTIONS.

4 FULLY COORDINATE ALL ARCHITECTURAL, MECHANICAL, PLUMBING, ELECTRICAL AND STRUCTURAL WORK.

5 LOCATE ALL EXISTING UTILITIES AND SERVICES PRIOR TO START OF WORK.

6 PROTECT FROM DAMAGE ALL ADJACENT AREAS AND PROPERTIES, SUCH AS LANDSCAPING AND EXTERIOR & INTERIOR BUILDING SURFACES. RESTORE ALL EXISTING WORK AFFECTED BY THESE CONTRACT DOCUMENTS TO MATCH EXISTING CONDITIONS.

7 ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, MANUFACTURERS' LATEST PRINTED INSTRUCTIONS, AND ACCEPTED TRADE STANDARDS, UNLESS MORE STRINGENT METHODS ARE SPECIFIED HEREIN OR SHOWN ON THE DRAWINGS.

8 ALL DIMENSIONS SHOWN ARE FROM FACE OF STUD TO FACE OF STUD UNLESS OTHERWISE NOTED, MASONRY WALLS WHICH ARE DIMENSIONED FACE OF MASONRY TO FACE OF MASONRY. FIELD VERIFY ALL DIMENSIONS. DIMENSIONS NOTED "CLEAR" ARE NOT TO BE ADJUSTED WITHOUT APPROVAL OF ARCHITECT. ALL DIMENSIONS ARE IN FEET AND INCHES.

9 ALL DIMENSIONS NOTED "CLEAR" ARE TO FACE OF FINISHED WALL SURFACE UNLESS NOTED OTHERWISE.

10 CENTER PARTITIONS ON COLUMNS OR MULLIONS UNLESS OTHERWISE NOTE.

11 WINDOWS ARE DIMENSIONED TO CENTER UNLESS NOTED OTHERWISE.

12 VERIFY LEVELNESS OF ALL SUB-FLOORS PRIOR TO INSTALLATION OF FINISH FLOOR MATERIALS

13 PROVIDE CONTINUOUS WOOD OR METAL BLOCKING AS REQUIRED FOR ATTACHMENT OF ALL WALL MOUNTED EQUIPMENT, TOILET ACCESSORIES AND GRAB BARS, CABINETS, SHELVING, WOOD CHAIR RAIL, WALL BUMPERS, WALL MOUNTED HAND RAILS, WOOD BASE AND CROWN MOULDINGS.

14 PROVIDE 3/4" PLYWOOD AT ALL ELECTRICAL AND TELEPHONE CLOSETS. REFER TO ELECTRICAL AND TELECOM DRAWINGS FOR EXACT LOCATIONS.

15 THE CONTRACTOR SHOULD CONFIRM AND CONFORM WITH ALL BUILDING CODE AND ZONING REQUIREMENTS WITH RESPECT TO THESE PLANS. ALL BUILDING CODE AND ZONING REQUIREMENTS TO BE CONFIRMED BEFORE STARTING ANY WORK.

16 REFER TO THE PLUMBING DRAWINGS FOR LOCATION OF ALL FLOOR DRAINS.

17 PROVIDE FIRESTOPPING SYSTEMS TO MEET THE MINIMUM FIRE RESISTANCE RATING OF FLOOR OR WALL ELEMENT PENETRATED AND AROUND BUILDING SERVICE EQUIPMENT THAT PASSES THROUGH FIRE RATED CONSTRUCTION. FOR NON-FIRE RATED FLOORS PROVIDE SYSTEM FOR RATED FLOOR.

18 PAINT ALL DOOR AND WINDOW STEEL LINTELS.

20 PROVIDE CONTROL JOINTS AT 30'-0" O.C. MAXIMUM FOR ALL GWB WALLS AND AT 50 FOOT O.C. MAXIMUM, WITH AREAS NOT TO EXCEED 2,500 SQ. FT. FOR ALL CEILINGS, UNLESS OTHERWISE SHOWN ON DRAWINGS.

21 THESE DRAWINGS ARE AN INSTRUMENT OF SERVICE AND SHALL NOT BE REPRODUCED ALTERED OR REUSED IN WHOLE OR IN PART WITHOUT THE WRITTEN PERMISSION OF SGA NW DESIGN. THESE DRAWINGS ARE PROTECTED UNDER THE ARCHITECTURAL WORKS COPYRIGHT PROTECTION ACT.

22 ALL EXTERIOR PAINTED ELEMENTS ARE TO BE PAINTED P-8, UNLESS NOTED OR SPECIFIED OTHERWISE.

SYMBOLS:

Room name 101 — ROOM NAME/NUMBER

133A — DOOR NUMBER

11 — WINDOW TYPE

1 A101 SIM — SECTION REFERENCE

1 A101 SIM — ELEVATION REFERENCE

1 A101 SIM — DETAIL REFERENCE

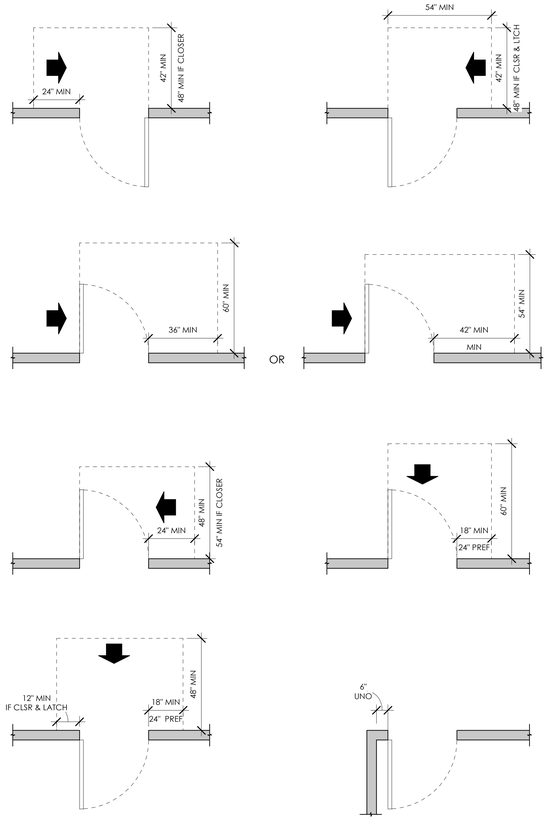
A4 — ACCESSORY/EQUIPMENT TYPE

DOOR CLEARANCES:

LEGEND:

APPROACH

REQUIRED CLEARANCE AROUND DOOR



TYPICAL MOUNTING HEIGHTS:

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MARK WINSTON WRIGHT
REGISTERED ARCHITECT
5721
NORTH CAROLINA
CHARLOTTE, NORTH CAROLINA
9/14/20

PROJECT NORTH

PLAN NORTH

KEY PLAN

CONSTRUCTION DOCUMENTS

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CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

DESIGNED BY: AT
DRAWN BY: AT
CHECKED BY: MS

ISSUE DATE:
September 14, 2020

ABBREVIATIONS, NOTES, & TYPICAL CONDITIONS

A001

SCALE: As indicated

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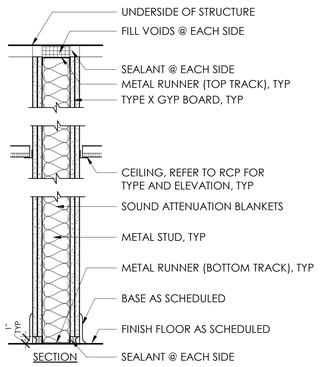
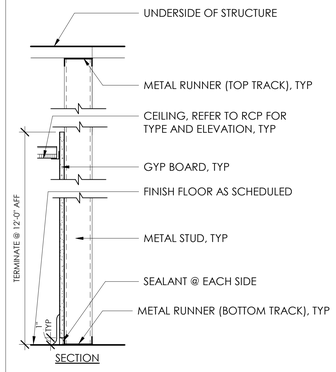


IW6

UL 263 - IW6.3B

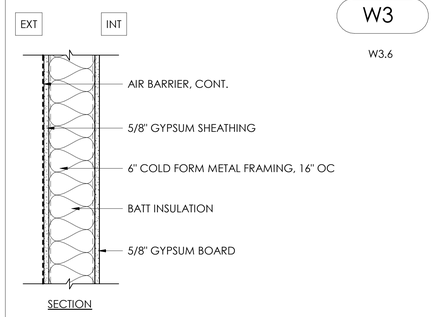
A2 TYPICAL INTERIOR 2 HR RATED PARTITION
1 1/2" = 1'-0"



IW2

IW2.1
IW2.2
IW2.3
IW2.6

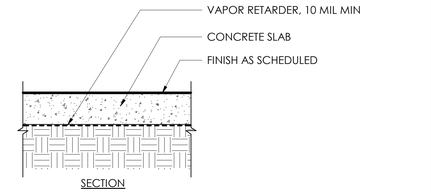
A3 TYPICAL ONE SIDED INTERIOR PARTITION
1 1/2" = 1'-0"



W3

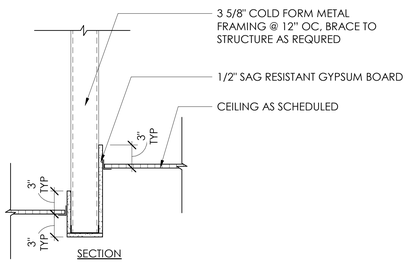
W3.6

A4 TYPICAL EXTERIOR GYPSUM WALL W/ METAL FRAMING BACKUP WALL
1 1/2" = 1'-0"



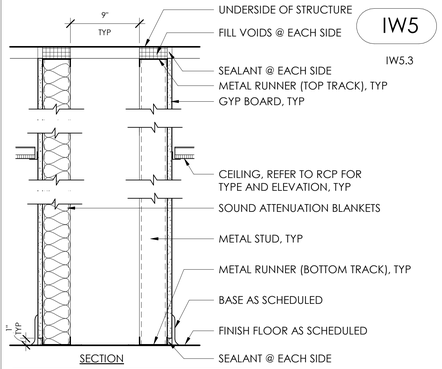
SG

A5 TYPICAL SLAB ON GRADE
1 1/2" = 1'-0"



IS1

B1 TYPICAL GYP BOARD SOFFIT
1 1/2" = 1'-0"

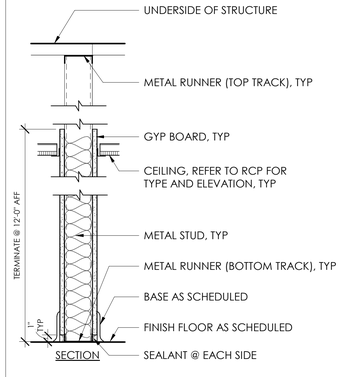


IW5

IW5.3

PROVIDE VERTICAL BRACING @ 48" OC MAX

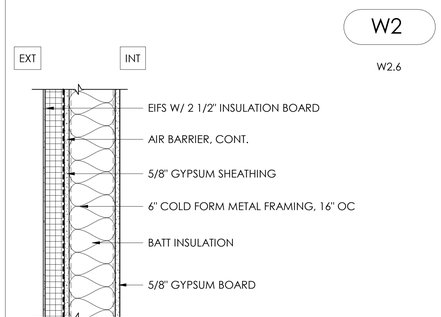
B2 TYPICAL PLUMBING CHASE
1 1/2" = 1'-0"



IW1

IW1.3
IW1.8

B3 TYPICAL INTERIOR PARTITION
1 1/2" = 1'-0"



W2

W2.6

B4 TYPICAL EXTERIOR EIFS WALL ON COLD FORM METAL FRAMING
1 1/2" = 1'-0"

PARTITION TYPE NOTES:

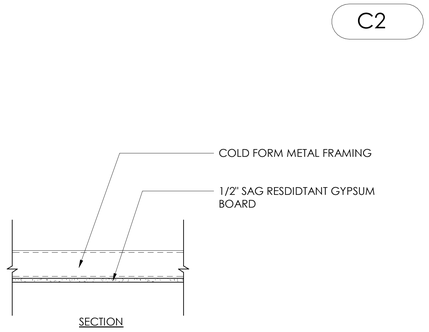
KEY:

PARITION TYPES:
BG - BELOW GRADE
C - CEILING
ES - EXTERIOR SOFFIT
IS - INTERIOR SOFFIT
IW - INTERIOR METAL STUD
R - ROOF
SG - SLAB ON GRADE
W - EXTERIOR METAL STUD

NOMINAL THICKNESS:
1 - 1 5/8"
2 - 2 1/2"
3 - 3 5/8"
4 - 4"
6 - 6"
8 - 8"

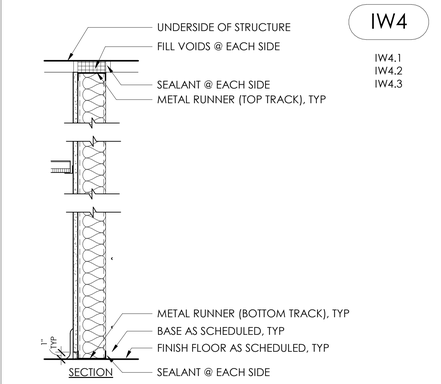
RATING:
A - 1 HOUR
B - 2 HOUR

GENERAL NOTES:
1. ALL GYP WALL BOARD TO BE INSTALLED 1" ABOVE FINISHED FLOOR W/ CONT SEALANT AT FLOOR.
2. PROVIDE 5/8" THICK TYPE "X" GYPSUM BOARD, UNLESS OTHERWISE INDICATED.
3. SPACE STUDS AT 16" OC, MAX, UNLESS OTHERWISE INDICATED.
4. WALLS NOT EXTENDING TO BOTTOM OF ROOF DECK TO BE PROPERLY BRACED AS REQUIRED.
5. PROVIDE SAG RESISTANT GYPSUM BOARD AT ALL INTERIOR CEILING APPLICATIONS UNLESS OTHERWISE INDICATED.
6. PROVIDE SOUND ATTENUATION BLANKETS FULL THICKNESS OF STUD UNLESS OTHERWISE INDICATED.
7. PROVIDE ACOUSTICAL SEALANT AT ALL NON RATED PARTITIONS AT PERIMETERS, OPEN JOINTS, AND PENETRATIONS.
8. PROVIDE FIRE RESISTANT JOINT SYSTEM AT ALL RATED CONDITIONS.
9. BRACE TOP OF WALLS TO STRUCTURE AS REQUIRED.



C2

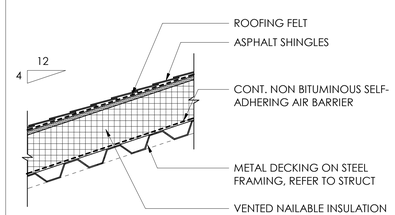
C1 TYPICAL GYP BOARD CEILING
1 1/2" = 1'-0"



IW4

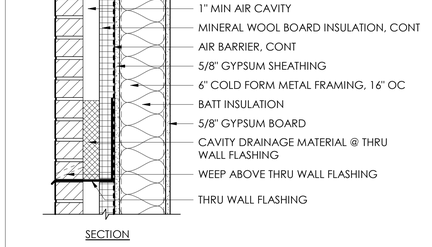
IW4.1
IW4.2
IW4.3

C2 TYPICAL INTERIOR PARTITION
1 1/2" = 1'-0"



R1

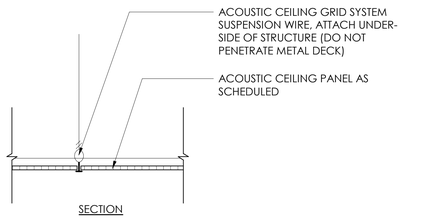
C3 TYPICAL ASPHALT SHINGLE ROOF ASSEMBLY
1 1/2" = 1'-0"



W1

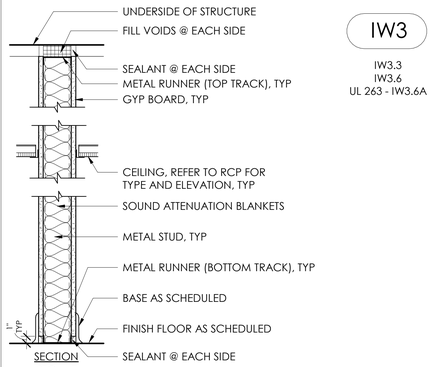
W1.4
W1.6

C4 TYPICAL EXTERIOR MASONRY WALL ON COLD FORM METAL FRAMING
1 1/2" = 1'-0"



C1

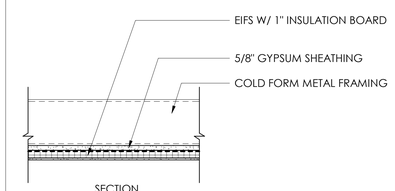
D1 TYPICAL GYP BOARD CEILING
1 1/2" = 1'-0"



IW3

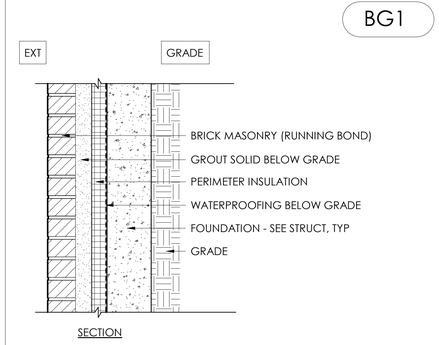
IW3.3
IW3.6
UL 263 - IW3.6A

D2 TYPICAL INTERIOR 1 HR RATED PARTITION
1 1/2" = 1'-0"



ES1

D3 TYPICAL EXTERIOR EIFS SOFFIT
1 1/2" = 1'-0"



BG1

D4 TYPICAL EXTERIOR MASONRY WALL BELOW GRADE
1 1/2" = 1'-0"

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PARK WINSTON HALL
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CHARLOTTE, NORTH CAROLINA
09/14/20

PROJECT NORTH
PLAN NORTH
KEY PLAN

CONSTRUCTION DOCUMENTS

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Coastal Engineering Building

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CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

DESIGNED BY: AT
DRAWN BY: AT
CHECKED BY: MS

ISSUE DATE:
September 14, 2020

TYPICAL EXTERIOR AND INTERIOR PARTITIONS

A002

SCALE: As indicated

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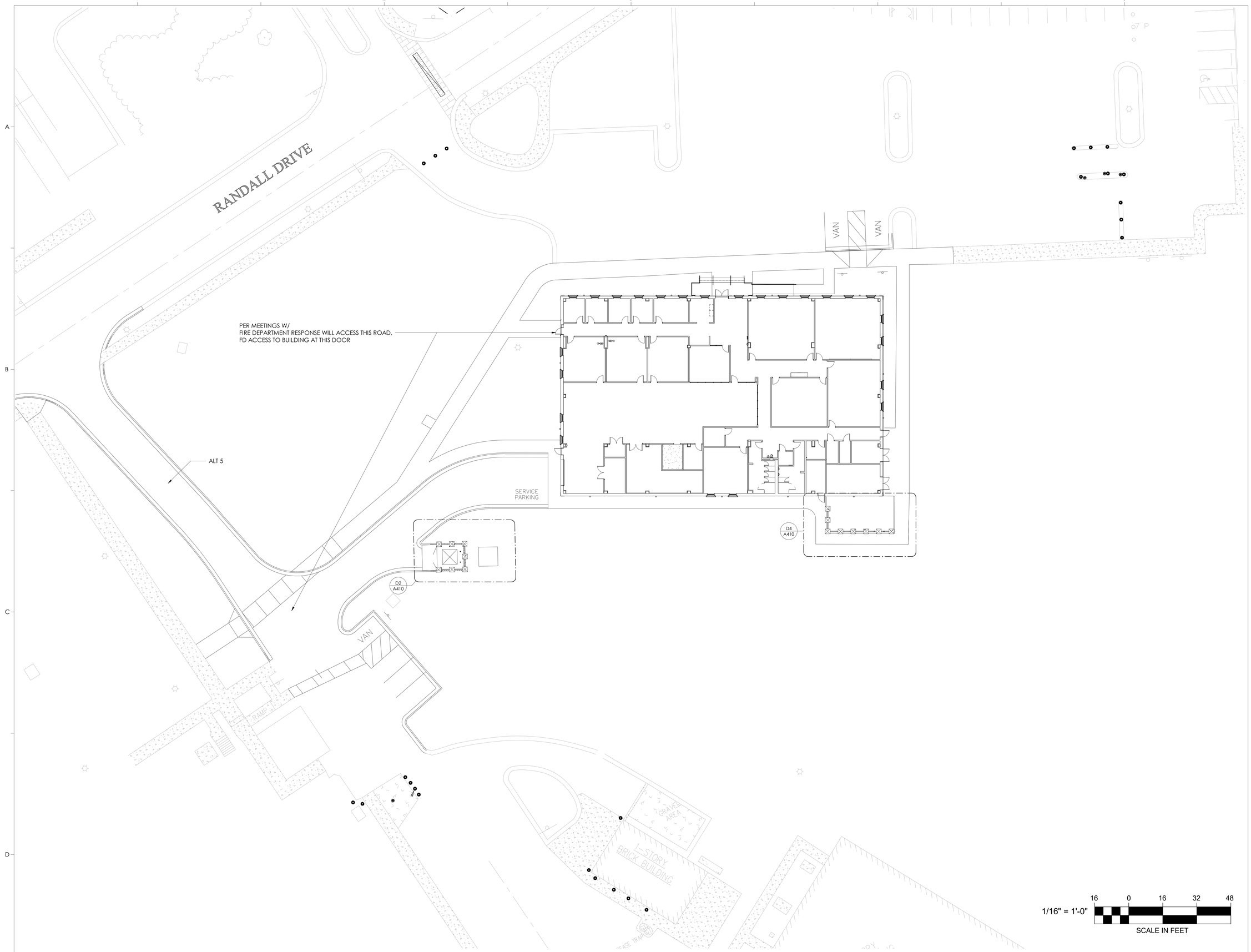

A1 ARCHITECTURAL SITE PLAN
1/16" = 1'-0"

1/16" = 1'-0"
16 0 16 32 48
SCALE IN FEET

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PROJECT NORTH
PLAN NORTH

KEY PLAN

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ARCHITECTURAL SITE PLAN

A100

SCALE: 1/16" = 1'-0"

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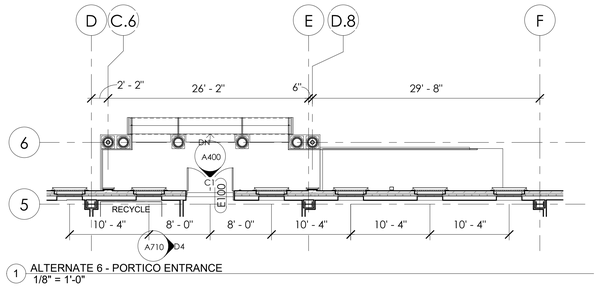
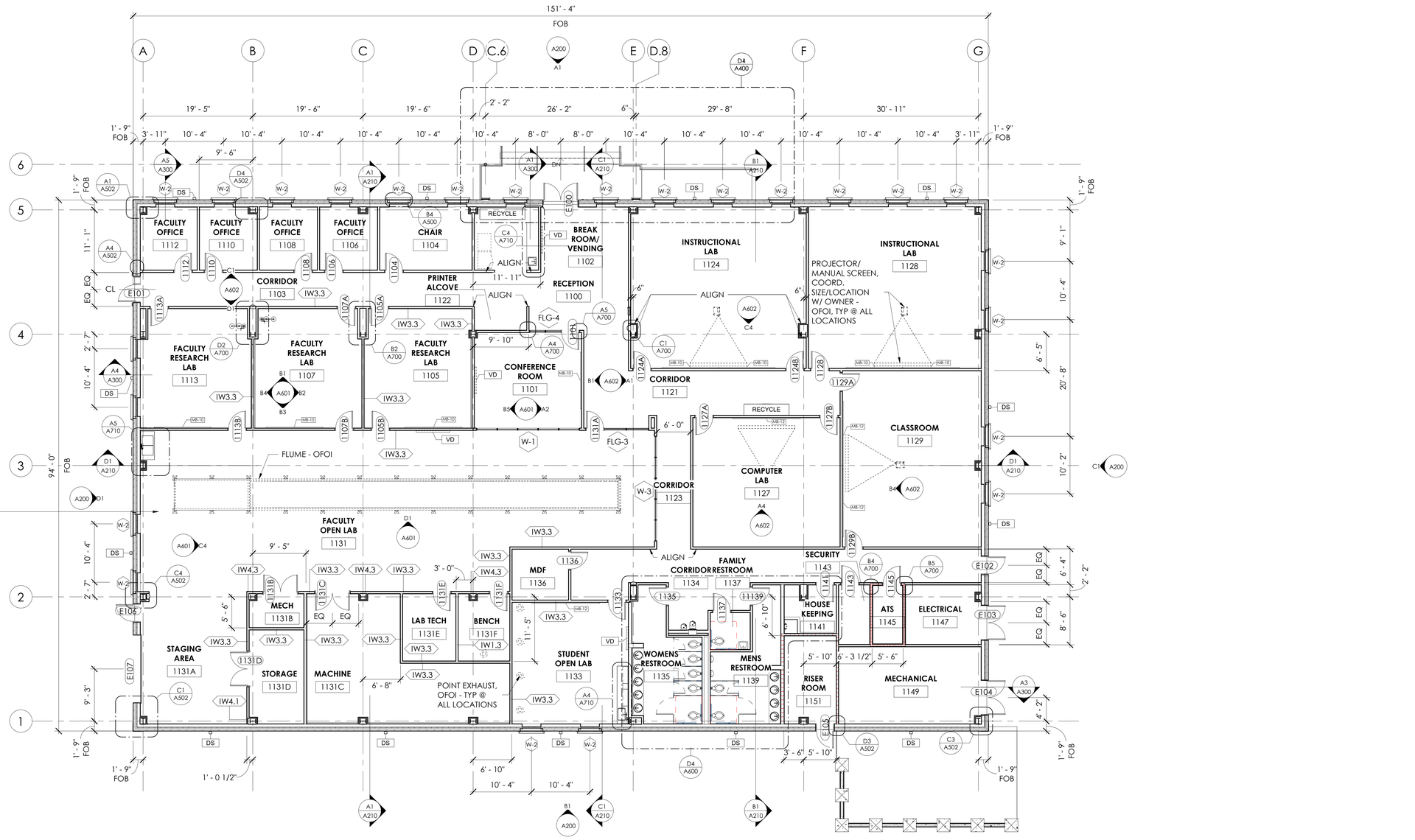


1 ALTERNATE 6 - PORTICO ENTRANCE
1/8" = 1'-0"



1/8" = 1'-0"

SCALE IN FEET

A1 LEVEL 1 FLOOR PLAN
1/8" = 1'-0"

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9/14/20

PROJECT NORTH

PLAN NORTH

KEY PLAN

CONSTRUCTION DOCUMENTS

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

DESIGNED BY: AT
DRAWN BY: AT
CHECKED BY: MS

ISSUE DATE:
September 14, 2020

LEVEL 1 - FLOOR PLAN

A101

SCALE: As indicated

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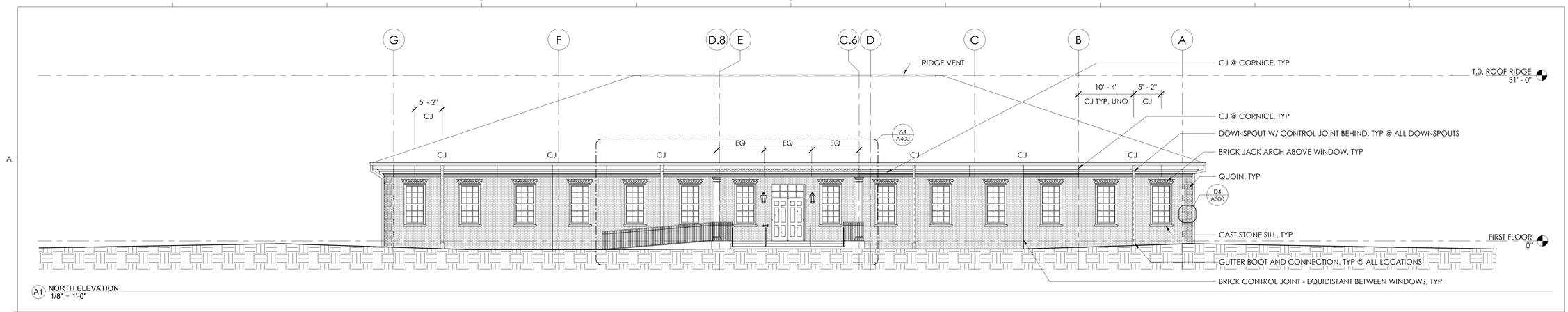
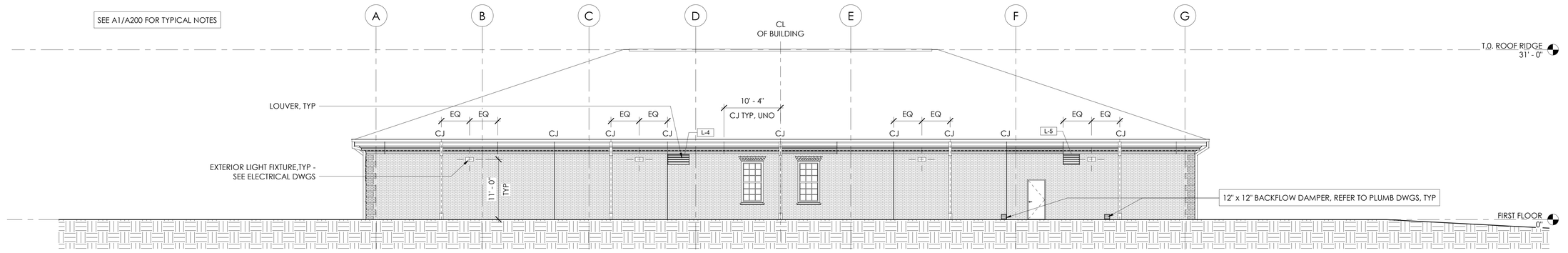
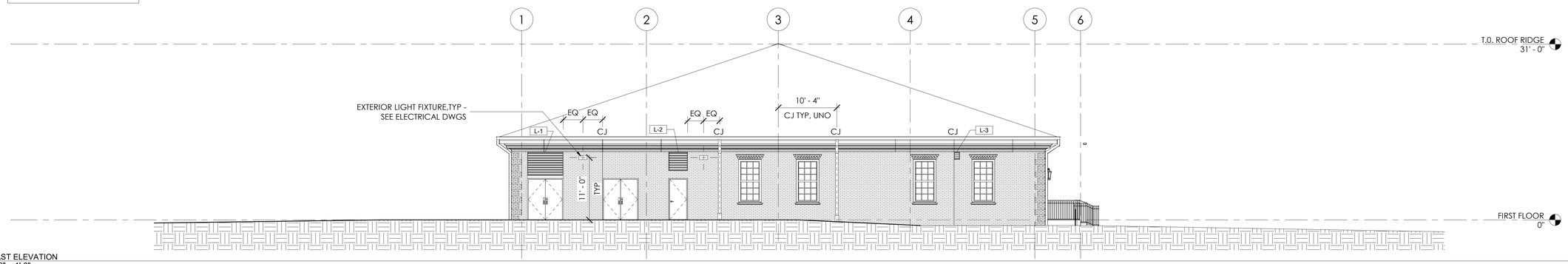


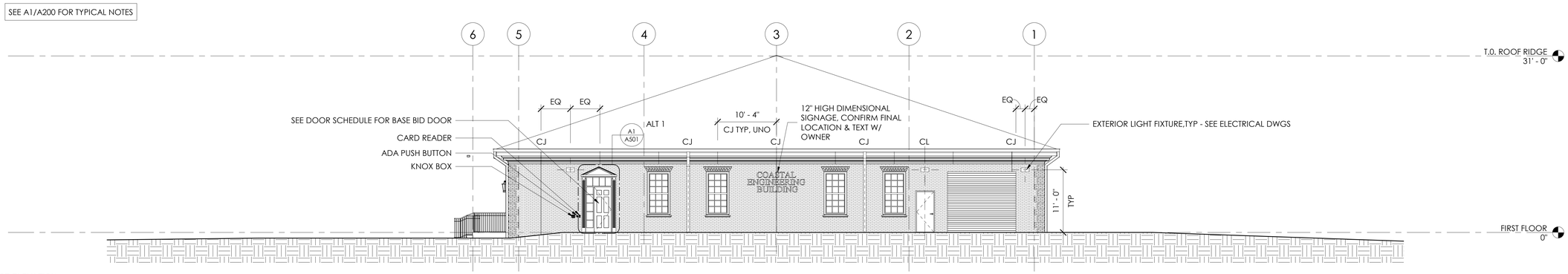
A1 NORTH ELEVATION
1/8" = 1'-0"



B1 SOUTH ELEVATION
1/8" = 1'-0"



C1 EAST ELEVATION
1/8" = 1'-0"



D1 WEST ELEVATION
1/8" = 1'-0"

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CHARLOTTE, NORTH CAROLINA
09/14/20

PROJECT NORTH
PLAN NORTH
KEY PLAN

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UNCW

University of North Carolina Wilmington

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ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

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ISSUE DATE:
September 14, 2020

BUILDING ELEVATIONS

A200

SCALE: 1/8" = 1'-0"

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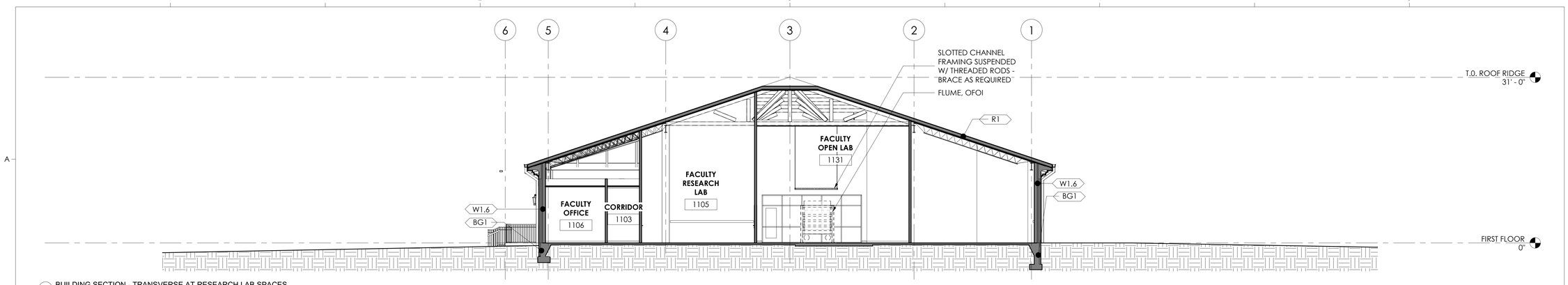
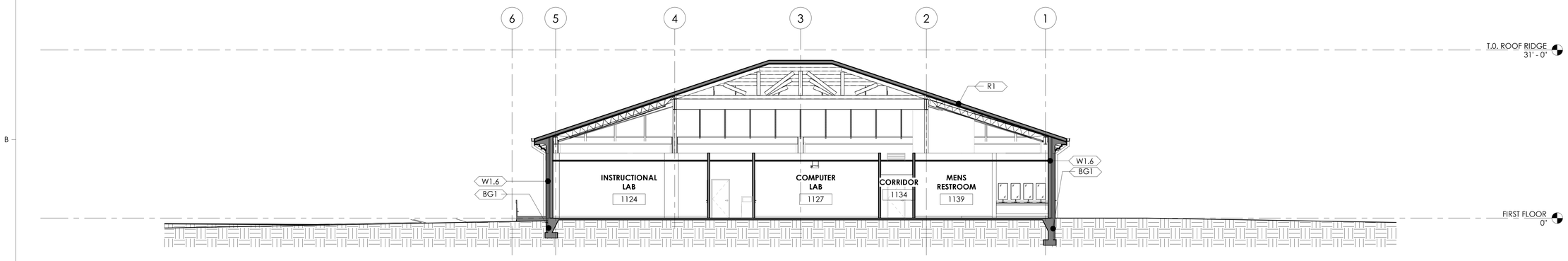
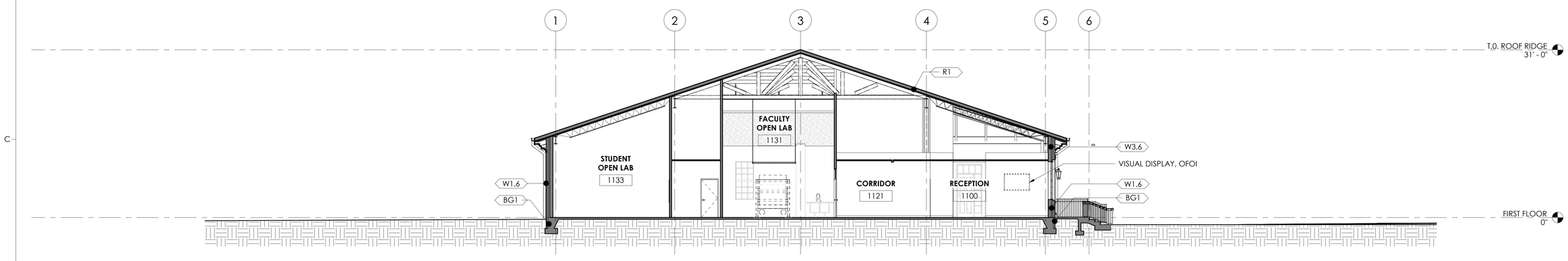


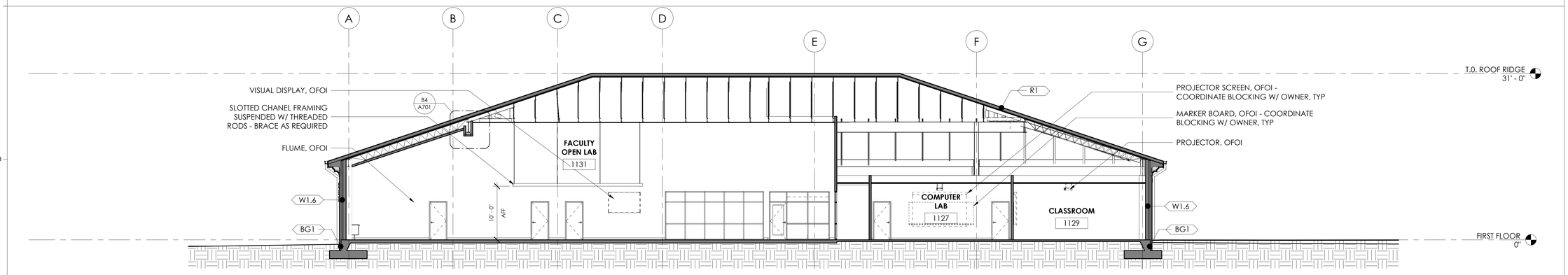
A1 BUILDING SECTION - TRANSVERSE AT RESEARCH LAB SPACES
1/8" = 1'-0"



B1 BUILDING SECTION - TRANSVERSE AT CLASSROOM SPACES
1/8" = 1'-0"



C1 BUILDING SECTION - TRANSVERSE AT CENTRAL CORRIDOR
1/8" = 1'-0"



D1 BUILDING SECTION - LONGITUDINAL AT CENTER OF BUILDING
1/8" = 1'-0"

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CHARLOTTE, NORTH CAROLINA
09/14/20

PROJECT NORTH
PLAN NORTH
KEY PLAN

CONSTRUCTION DOCUMENTS

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403
SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

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ISSUE DATE:
September 14, 2020

BUILDING SECTIONS

A210

SCALE: 1/8" = 1'-0"

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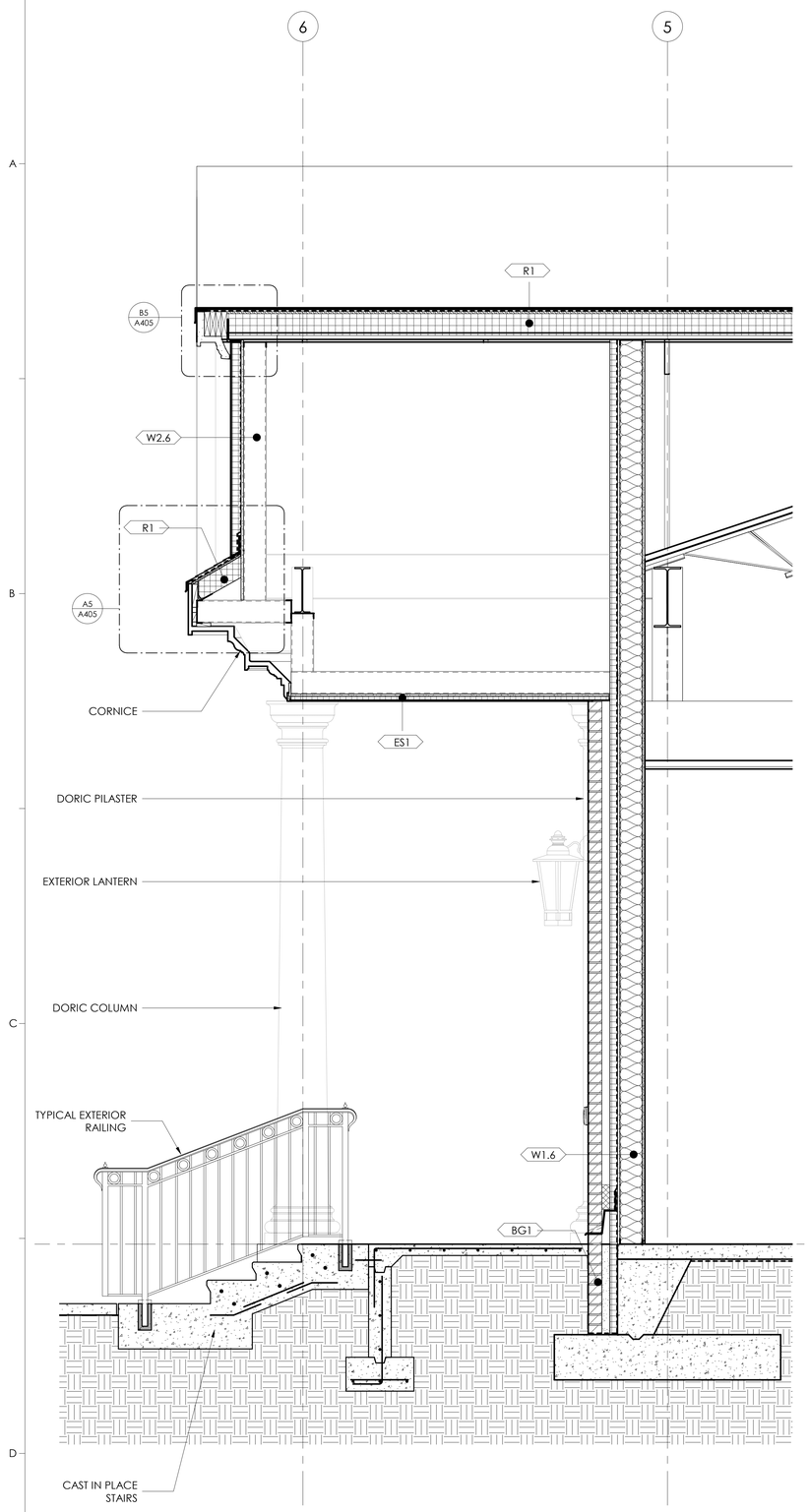
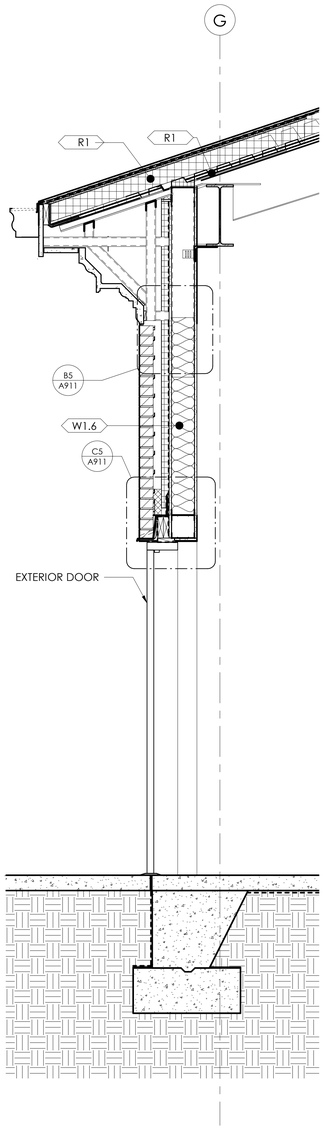
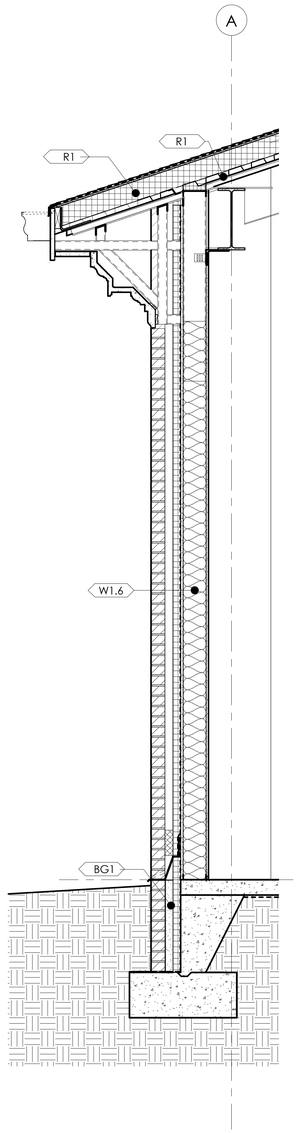


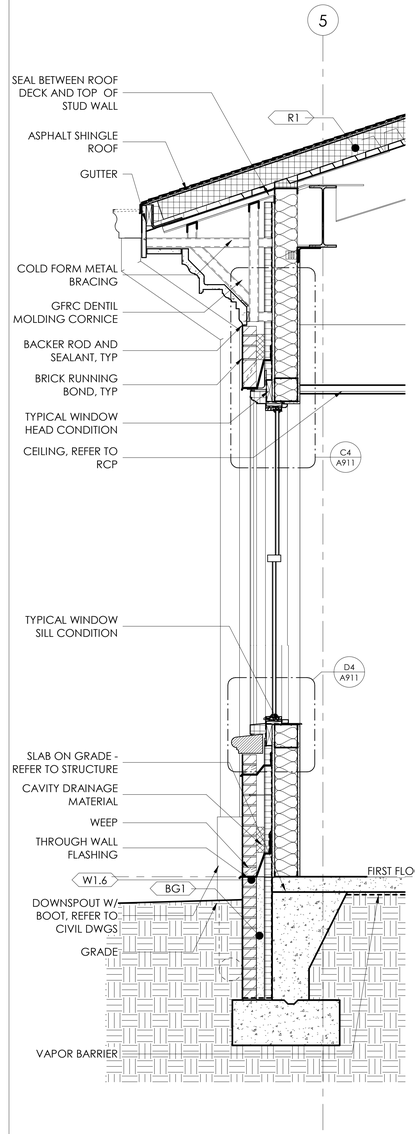
A1 ADD ALT 6 - PORTICO - WALL SECTION
3/4" = 1'-0"



A3 TYPICAL WALL SECTION AT DOOR
3/4" = 1'-0"



A4 TYPICAL WALL SECTION
3/4" = 1'-0"



A5 TYPICAL WALL SECTION AT WINDOW
3/4" = 1'-0"

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PROJECT NORTH
PLAN NORTH

KEY PLAN

CONSTRUCTION
DOCUMENTS

Revision Schedule		
#	Description	Date

Coastal Engineering
Building

UNCW
University of North Carolina
Wilmington

5236 Randall Drive
Wilmington, NC 28403
SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER:
19-202-01

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ISSUE DATE:
September 14, 2020

WALL SECTIONS

A300

SCALE: 3/4" = 1'-0"

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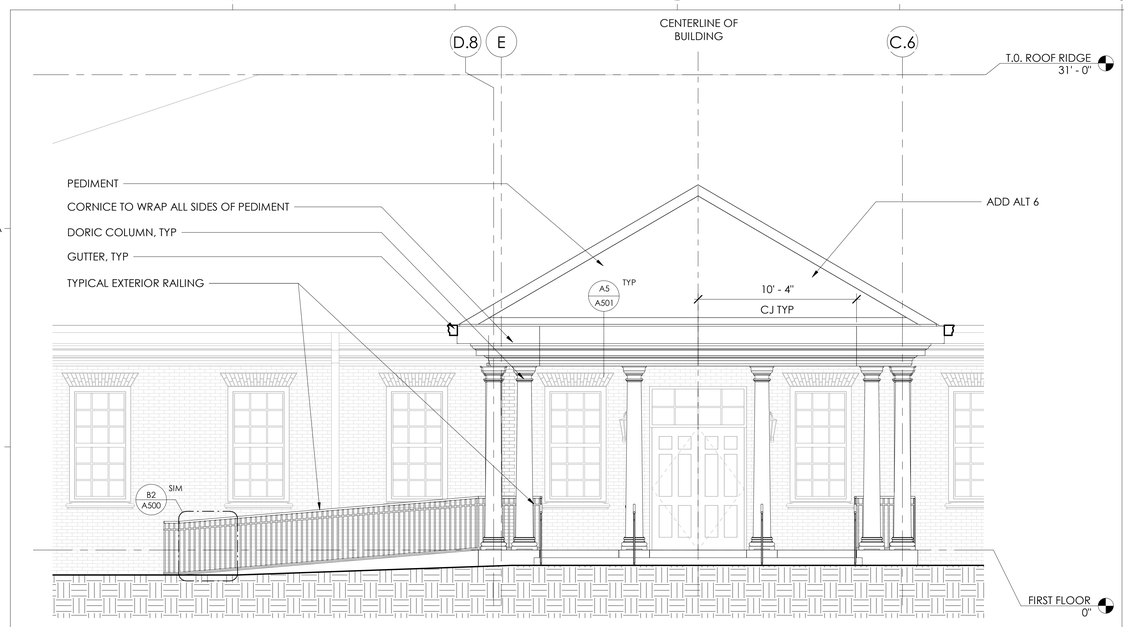
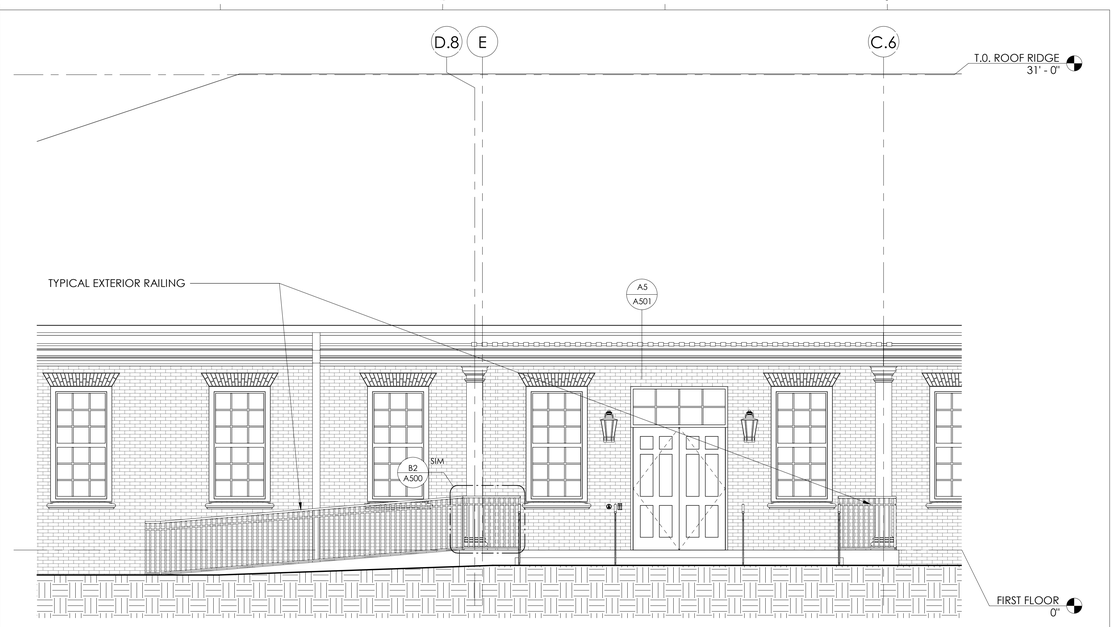
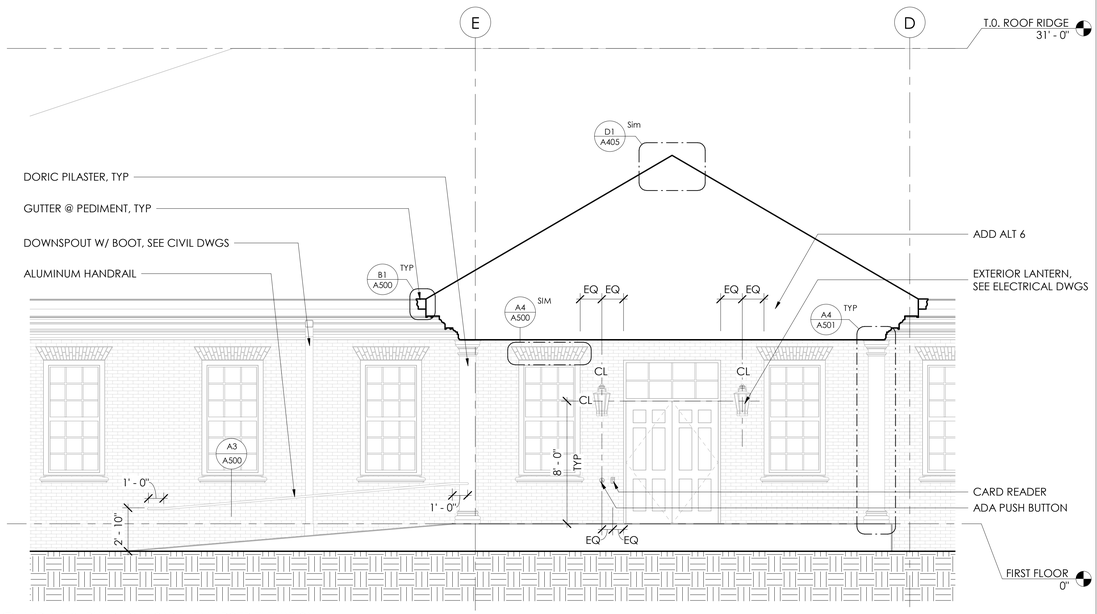


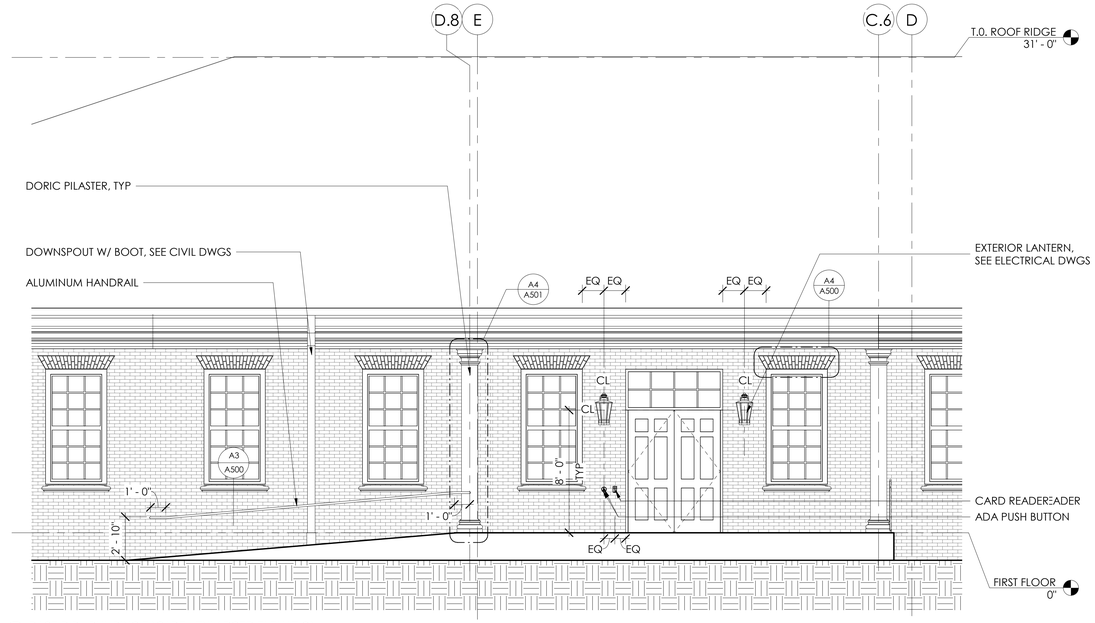
A1 ADD ALT 6 - PORTICO - ENLARGED ELEVATION
1/4" = 1'-0"



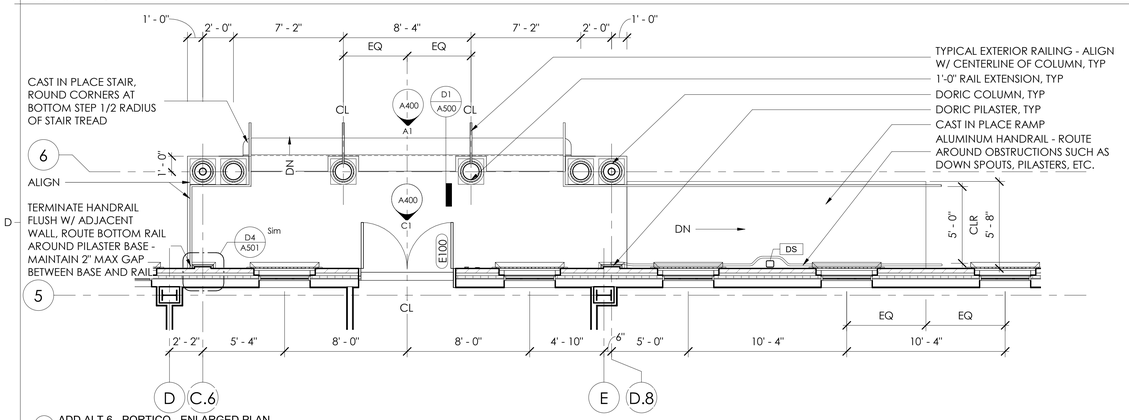
A4 BASE BID - PORTICO - ENLARGED ELEVATION
1/4" = 1'-0"



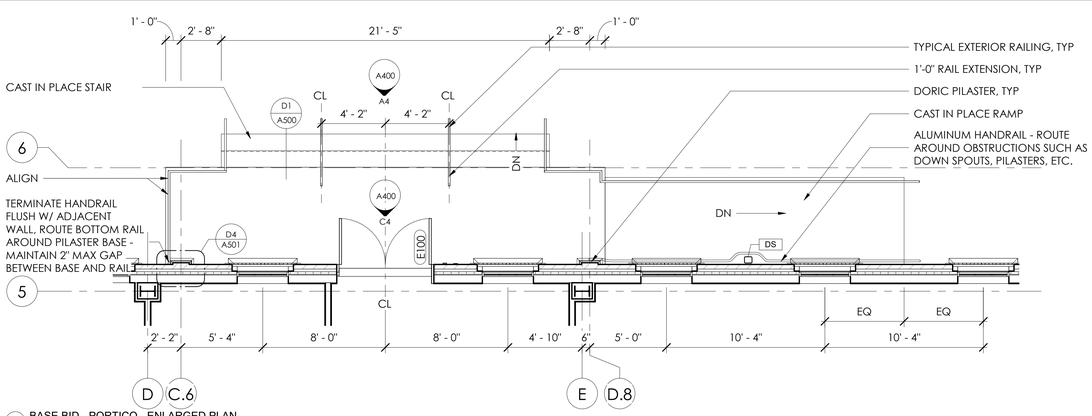
C1 ADD ALT 6 - BUILDING FACADE - ENLARGED ELEVATION
1/4" = 1'-0"



C4 BASE BID - BUILDING FACADE - ENLARGED ELEVATION
1/4" = 1'-0"



D1 ADD ALT 6 - PORTICO - ENLARGED PLAN
1/4" = 1'-0"



D4 BASE BID - PORTICO - ENLARGED PLAN
1/4" = 1'-0"

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09/14/20

PROJECT NORTH
PLAN NORTH
KEY PLAN

CONSTRUCTION DOCUMENTS

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403
SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

DESIGNED BY: AT
DRAWN BY: AT
CHECKED BY: MS

ISSUE DATE:
September 14, 2020

ENLARGED ENTRANCE

A400

SCALE: 1/4" = 1'-0"

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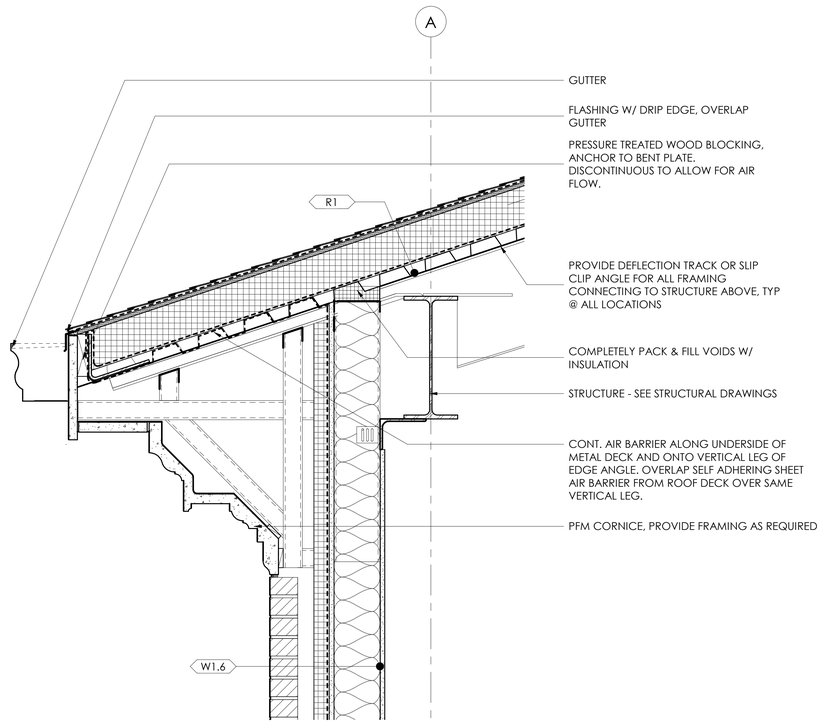
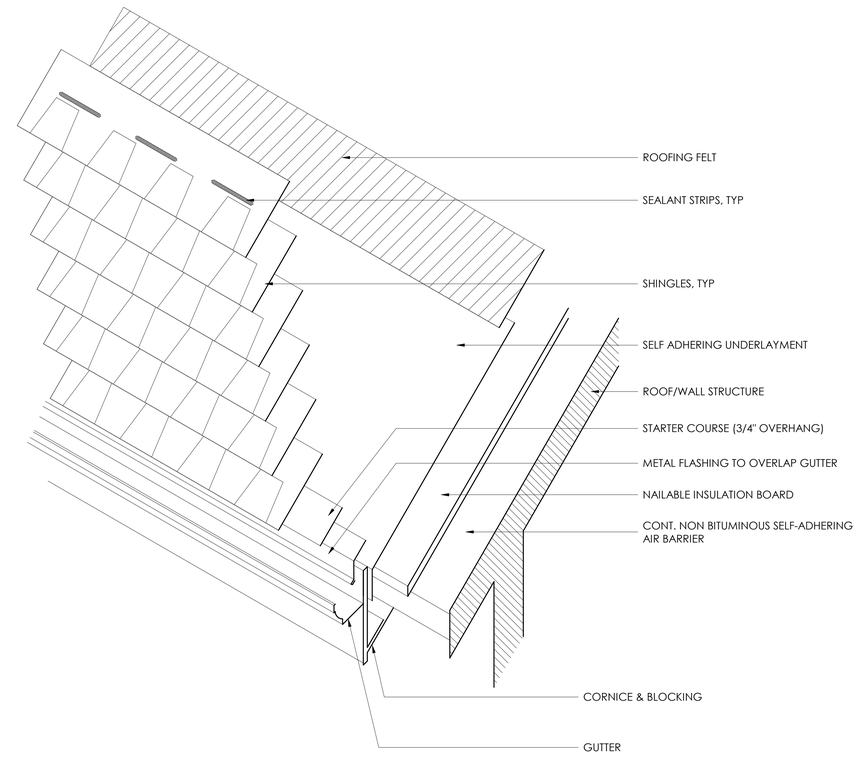
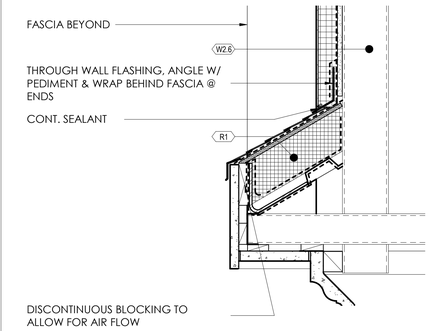


B1 TYPICAL EAVE - SECTION
1 1/2" = 1'-0"



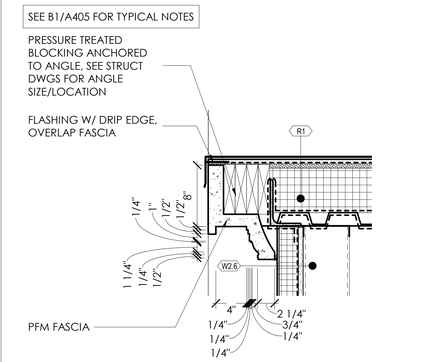
B3 TYPICAL EAVE - ISOMETRIC
NTS

SEE B1/A405 FOR TYPICAL NOTES

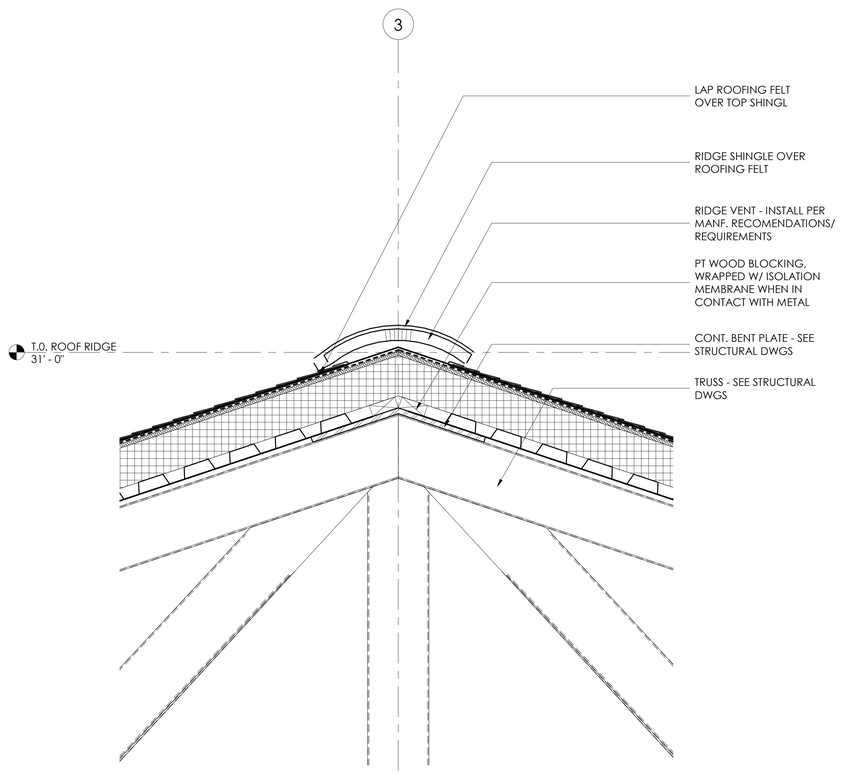


A5 ADD ALT 6 @ PEDIMENT
1 1/2" = 1'-0"

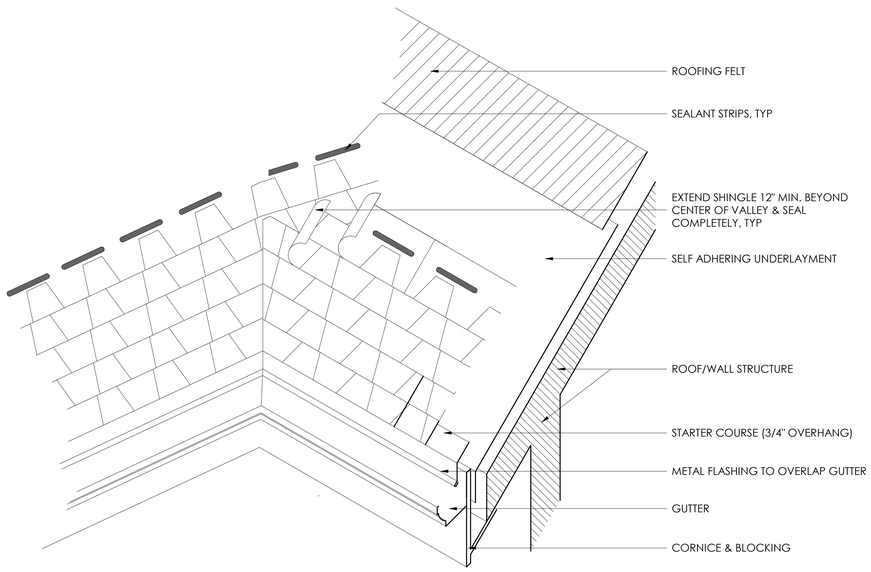
SEE B1/A405 FOR TYPICAL NOTES



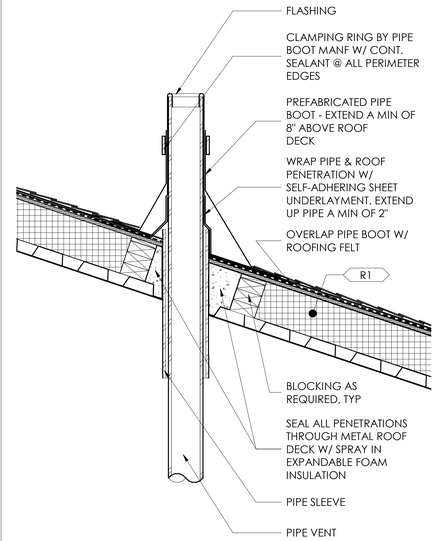
B5 ADD ALT 6 @ FASCIA
1 1/2" = 1'-0"



D1 TYPICAL RIDGE - SECTION
1 1/2" = 1'-0"



D3 TYPICAL VALLEY - ISOMETRIC
NTS



D5 TYPICAL MECHANICAL VENT PENTRATION @ ROOF - SECTION
1 1/2" = 1'-0"

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PROJECT NORTH
PLAN NORTH

KEY PLAN

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ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

DESIGNED BY: Author
DRAWN BY: Author
CHECKED BY: Checker

ISSUE DATE:
September 14, 2020

ROOF DETAILS

A405

SCALE: As indicated

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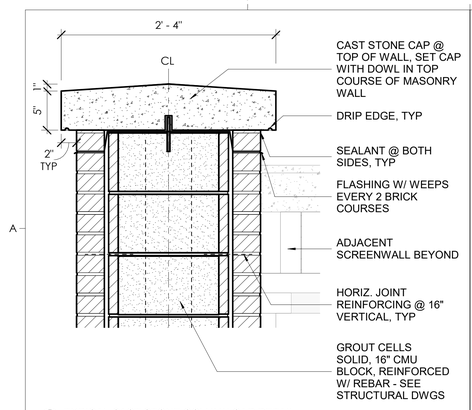
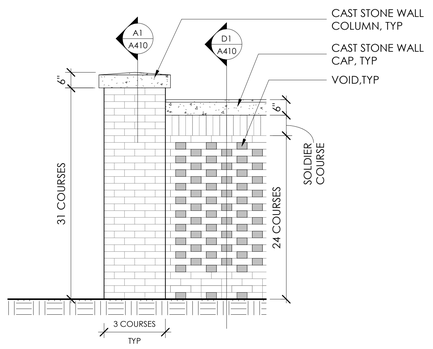
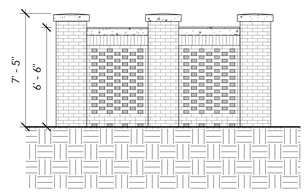


A1 TYPICAL CAST STONE COLUMN CAP DETAIL
1 1/2" = 1'-0"



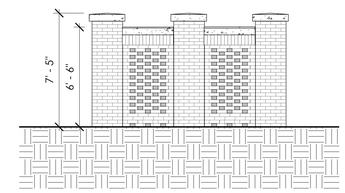
A2 ALT 4 - TYPICAL BRICK SCREEN WALL & COLUMN - ELEVATION
1/2" = 1'-0"

SEE B4/A410 FOR TYPICAL NOTES

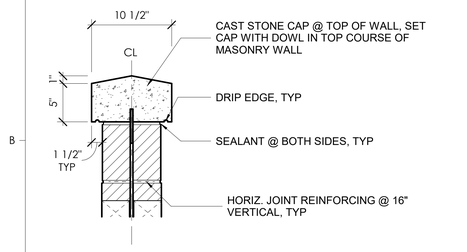


A3 ALT 4 - DUMPSTER YARD - EAST ELEVATION
1/4" = 1'-0"

SEE B4/A410 FOR TYPICAL NOTES

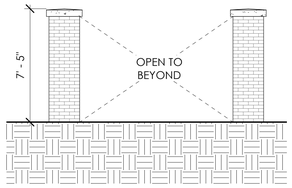


A4 ALT 4 - MECHANICAL YARD WEST ELEVATION
1/4" = 1'-0"



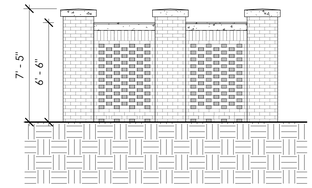
B1 TYPICAL CAST STONE WALL CAP DETAIL
1 1/2" = 1'-0"

SEE B4/A410 FOR TYPICAL NOTES

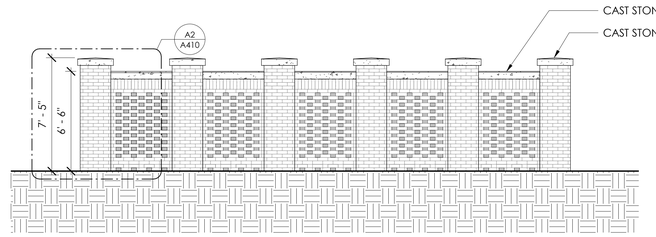


B2 ALT 4 - DUMPSTER YARD - WEST ELEVATION
1/4" = 1'-0"

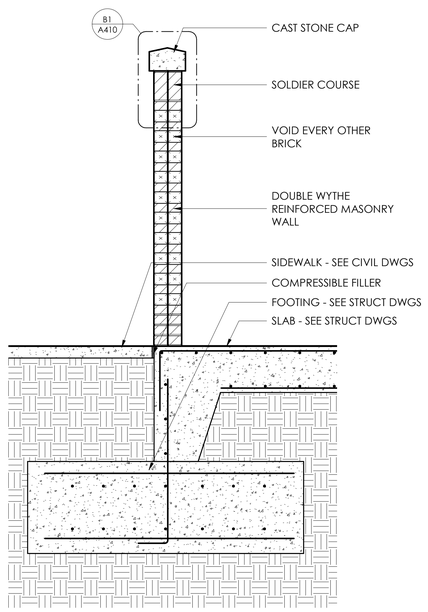
SEE B4/A410 FOR TYPICAL NOTES



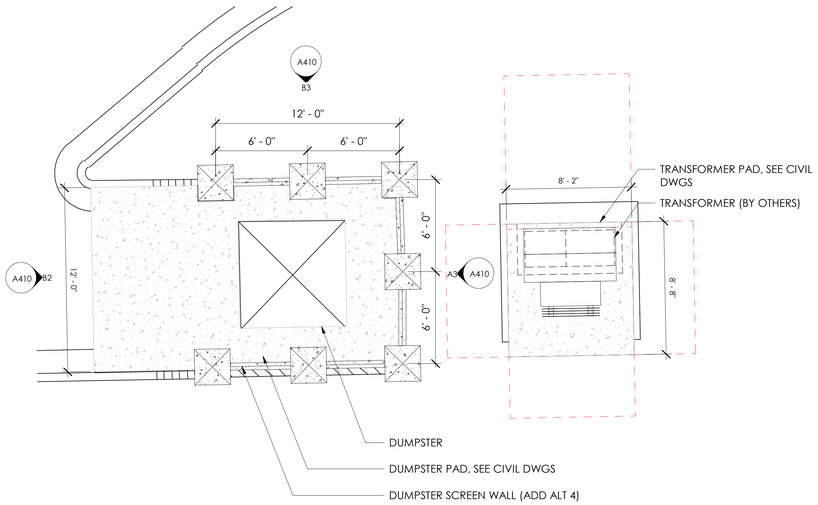
B3 ALT 4 - DUMPSTER YARD - NORTH ELEVATION
1/4" = 1'-0"



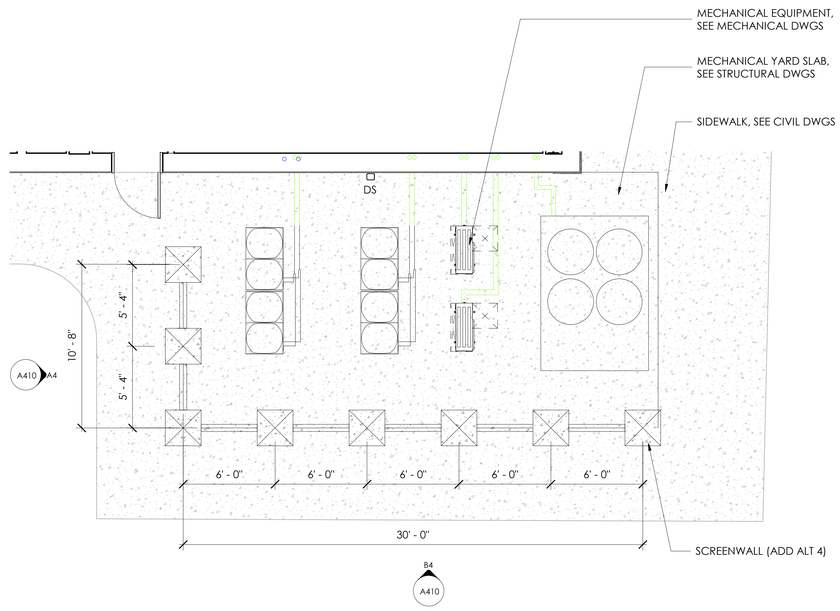
B4 ALT 4 - MECHANICAL YARD - SOUTH ELEVATION
1/4" = 1'-0"



D1 TYPICAL UTILITY YARD SCREEN WALL - SECTION
3/4" = 1'-0"



D2 DUMPSTER YARD ENLARGED - PLAN
1/4" = 1'-0"



D4 MECHANICAL YARD ENLARGED - PLAN
1/4" = 1'-0"

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9/14/20

PROJECT NORTH
PLAN NORTH

KEY PLAN

CONSTRUCTION DOCUMENTS

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW
University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403
SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

DESIGNED BY: AT
DRAWN BY: AT
CHECKED BY: MS

ISSUE DATE:
September 14, 2020

UTILITY YARD

A410

SCALE: As indicated

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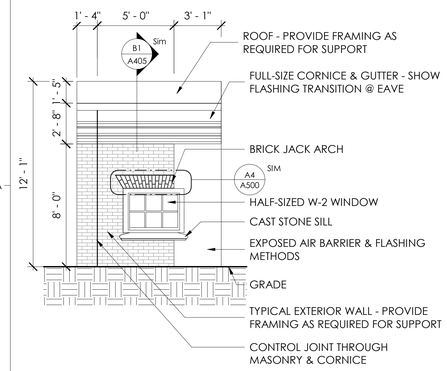
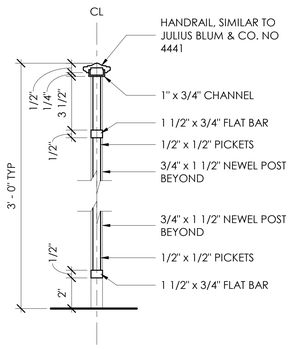
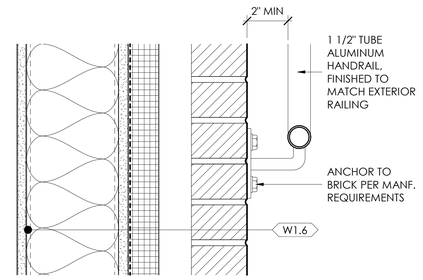


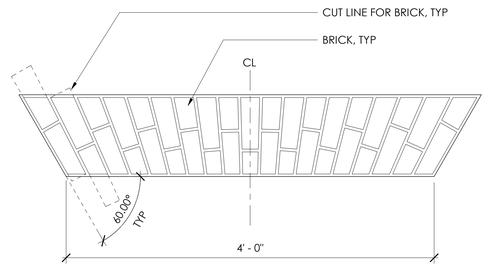
A1 MOCK-UP - ELEVATION
1/4" = 1'-0"



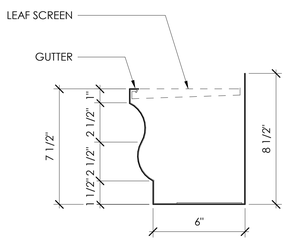
A2 TYPICAL EXTERIOR RAILING - SECTION
3" = 1'-0"



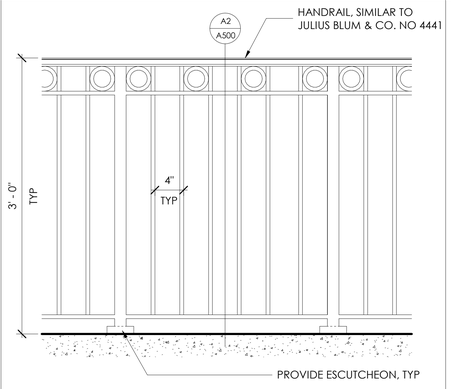
A3 TYPICAL EXTERIOR HANDRAIL @ RAMP SECTION
3" = 1'-0"



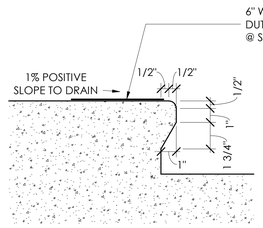
A4 BRICK JACK ARCH TYPICAL @ W-2 TYPE WINDOWS - ELEVATION
1 1/2" = 1'-0"



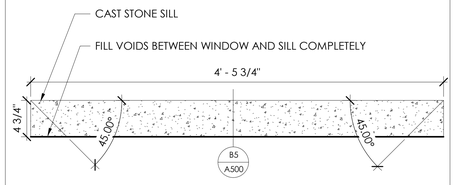
B1 TYPICAL GUTTER PROFILE
3" = 1'-0"



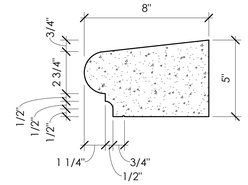
B2 TPYICAL EXTERIOR RAILING - ELEVATION
1 1/2" = 1'-0"



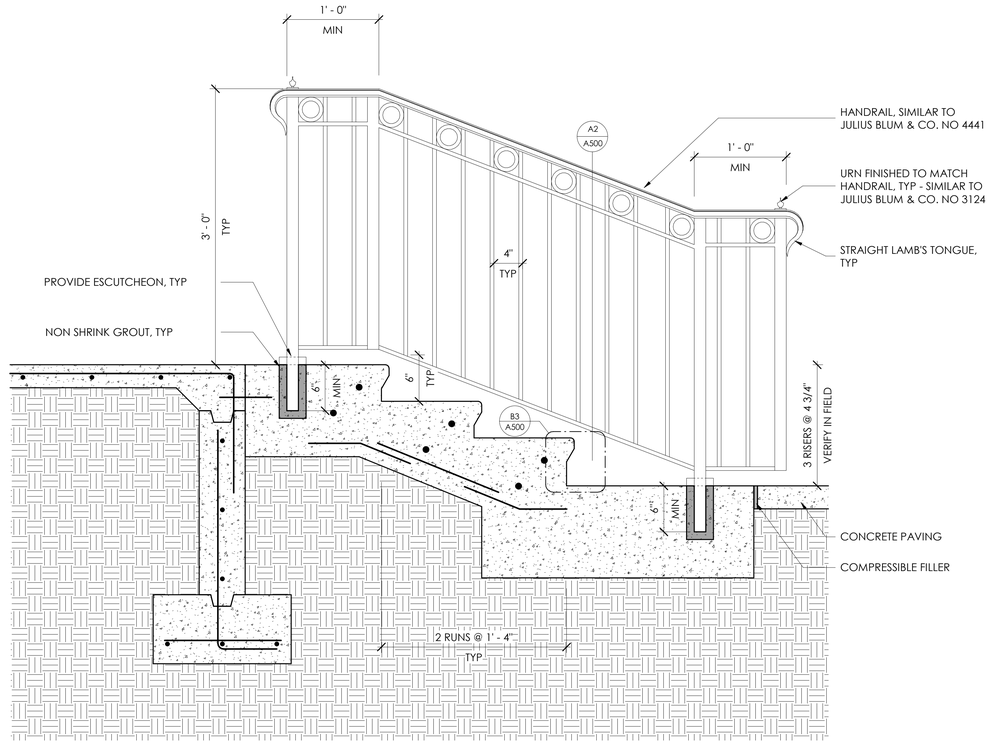
B3 TYPICAL EXTERIOR STAIR NOSING - SECTION
3" = 1'-0"



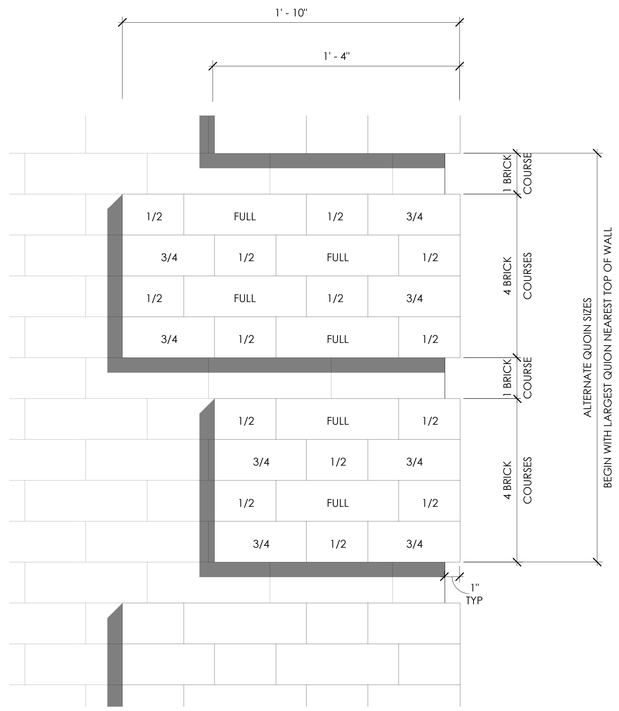
B4 TYPICAL CAST STONE SILL - PLAN
1 1/2" = 1'-0"



B5 TYPICAL CAST STONE SILL - SECTION
3" = 1'-0"



D1 TYPICAL CAST IN PLACE EXTERIOR STAIR & HANDRAIL - SECTION
1 1/2" = 1'-0"



D4 TYPICAL QUOIN - ELEVATION
3" = 1'-0"

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PLAN NORTH
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ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

DESIGNED BY: AT
DRAWN BY: AT
CHECKED BY: MS

ISSUE DATE:
September 14, 2020

EXTERIOR DETAILS - BRICK, CONCRETE, CS, MTL, & MOCK-UP

A500

SCALE: As indicated

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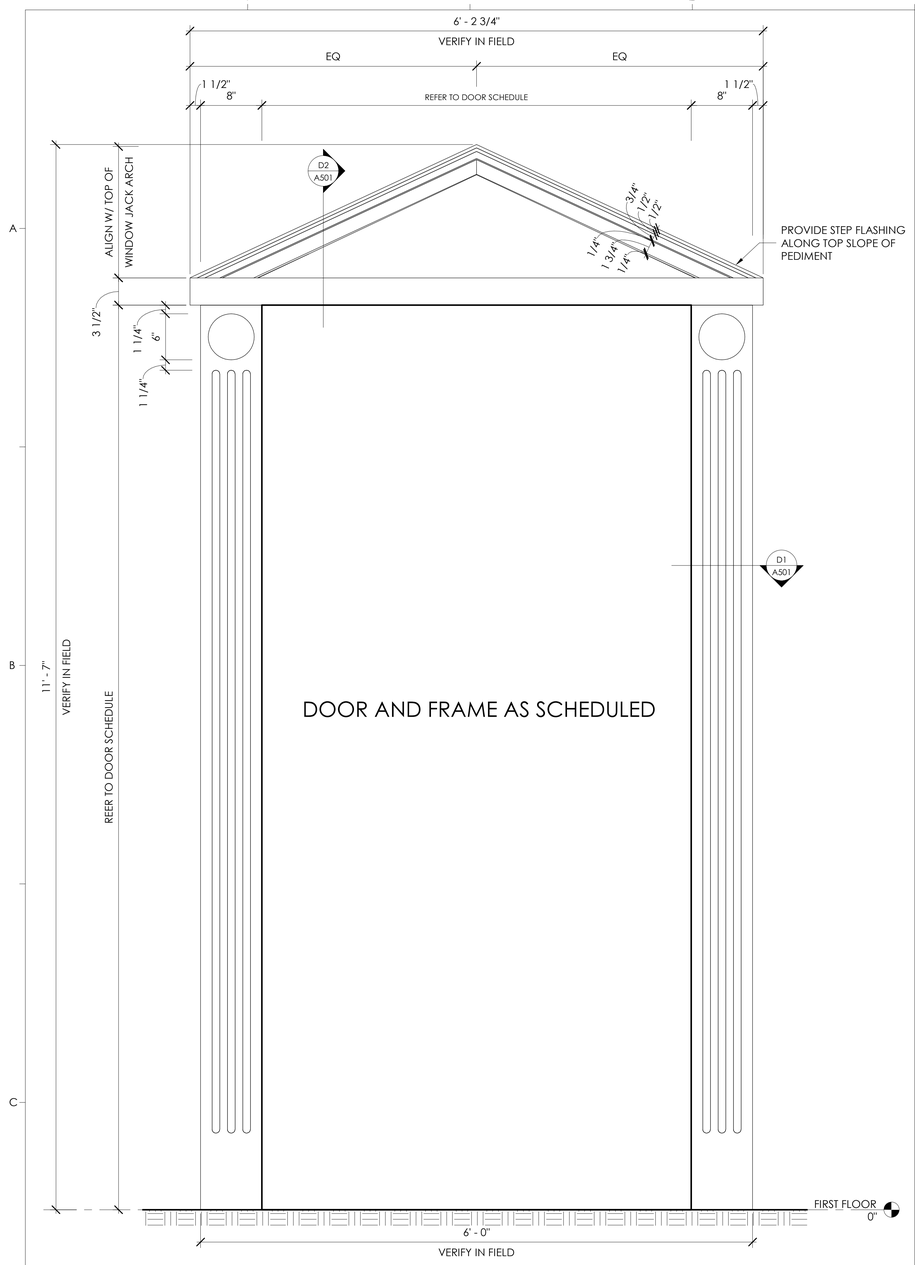
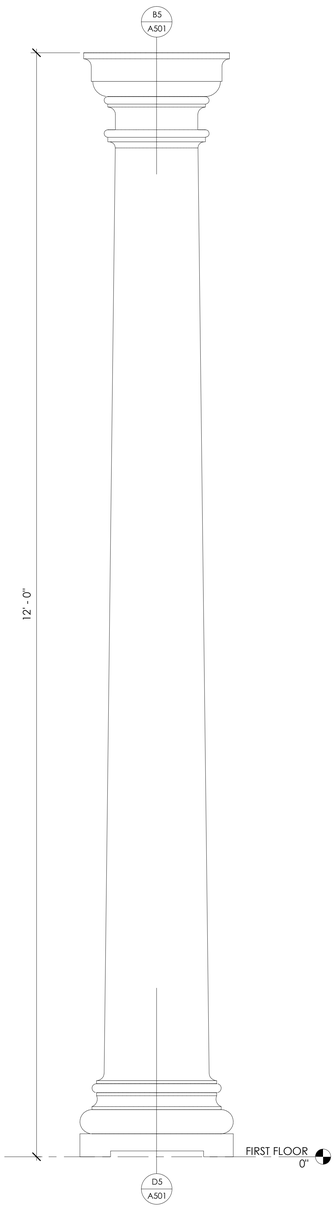
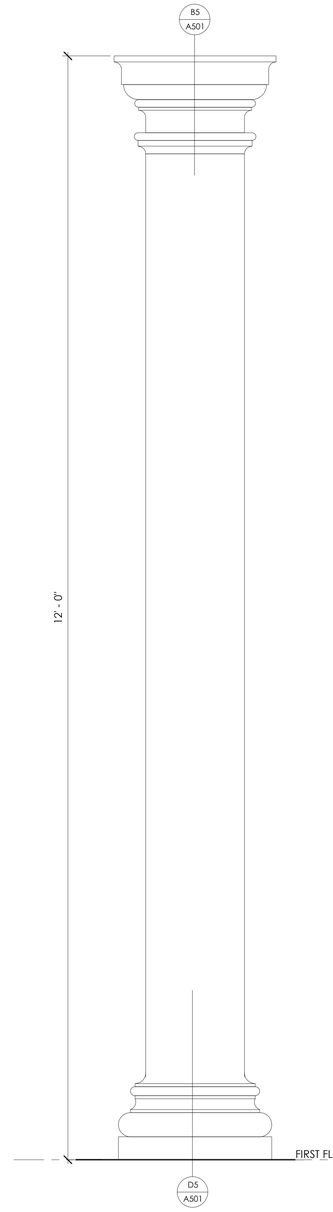


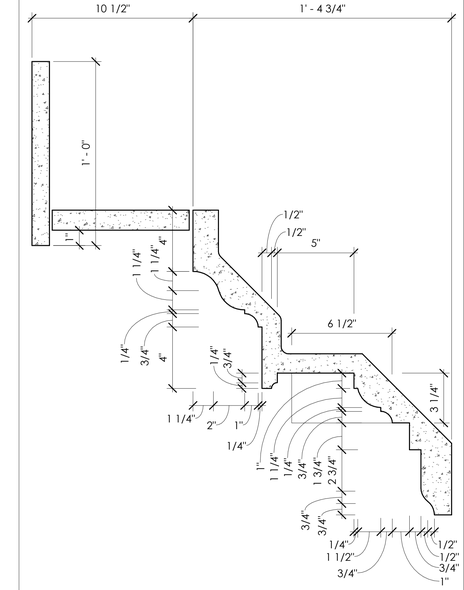
A1 ADD ALT 1 - PFM DOOR SURROUND & PEDIMENT
1 1/2" = 1'-0"



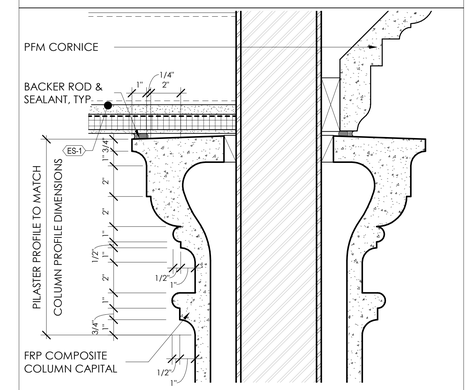
A3 ADD ALT 6 - TYPICAL FRP COMPOSITE DORIC COLUMN ELEVATION
1 1/2" = 1'-0"



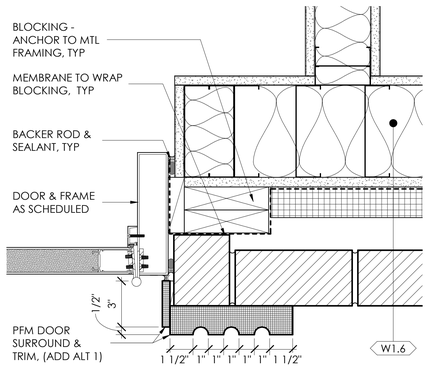
A4 TYPICAL FRP COMPOSITE DORIC PILASTER
1 1/2" = 1'-0"



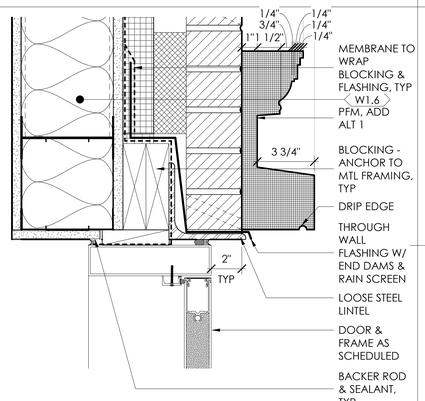
A5 TYPICAL PFM DENTIL MOLDING CORNICE PROFILE - SECTION
3" = 1'-0"



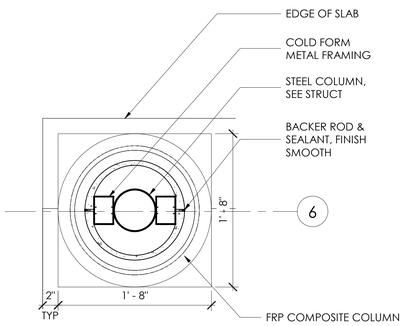
B5 TYPICAL FRP COMPOSITE DORIC COLUMN CAPITAL PROFILE SECTION
3" = 1'-0"



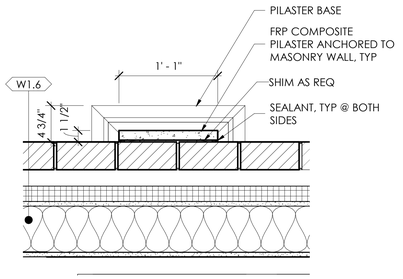
D1 ADD ALT 1 - PFM DOOR SURROUND FLUTED COLUMN PLAN
3" = 1'-0"



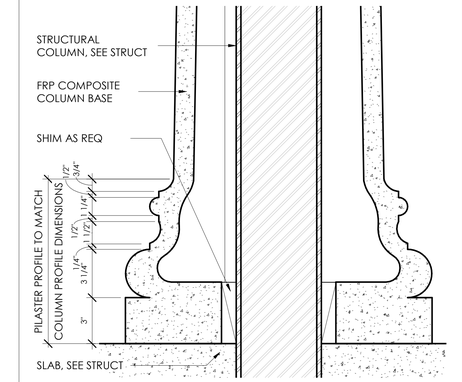
D2 ADD ALT 1 - PFM DOOR SURROUND PEDIMENT SECTION
3" = 1'-0"



D3 TYPICAL FRP COMPOSITE DORIC COLUMN PLAN DETAIL
1 1/2" = 1'-0"



D4 TYPICAL FRP COMPOSITE DORIC PILASTER PLAN DETAIL
1 1/2" = 1'-0"



D5 TYPICAL FRP COMPOSITE DORIC COLUMN BASE PROFILE SECTION
3" = 1'-0"

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PLAN NORTH

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DRAWN BY: AT
CHECKED BY: MS

ISSUE DATE:
September 14, 2020

EXTERIOR DETAILS - FRP & PFM

A501

SCALE: As indicated

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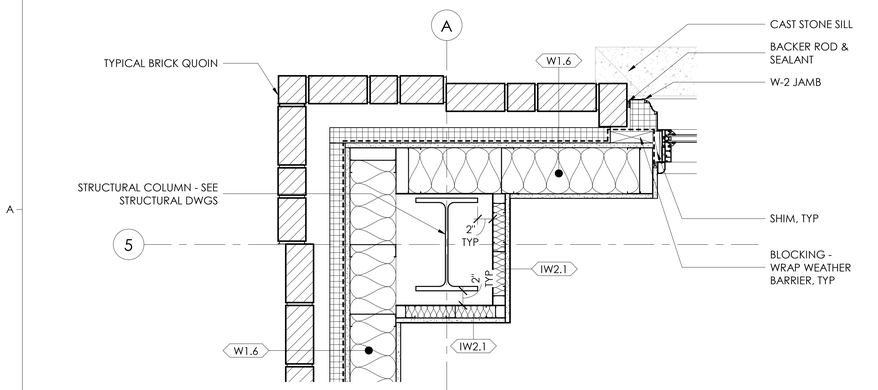
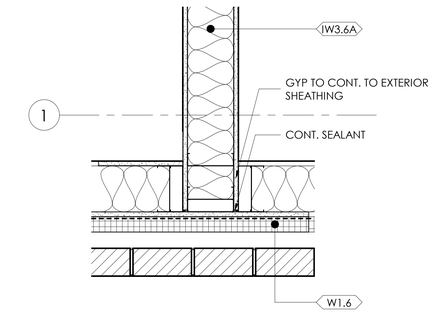
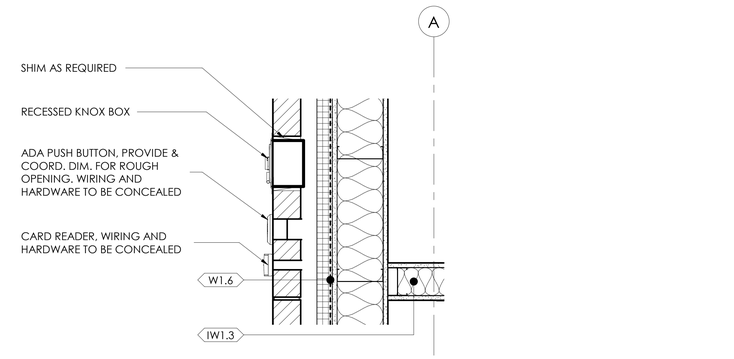


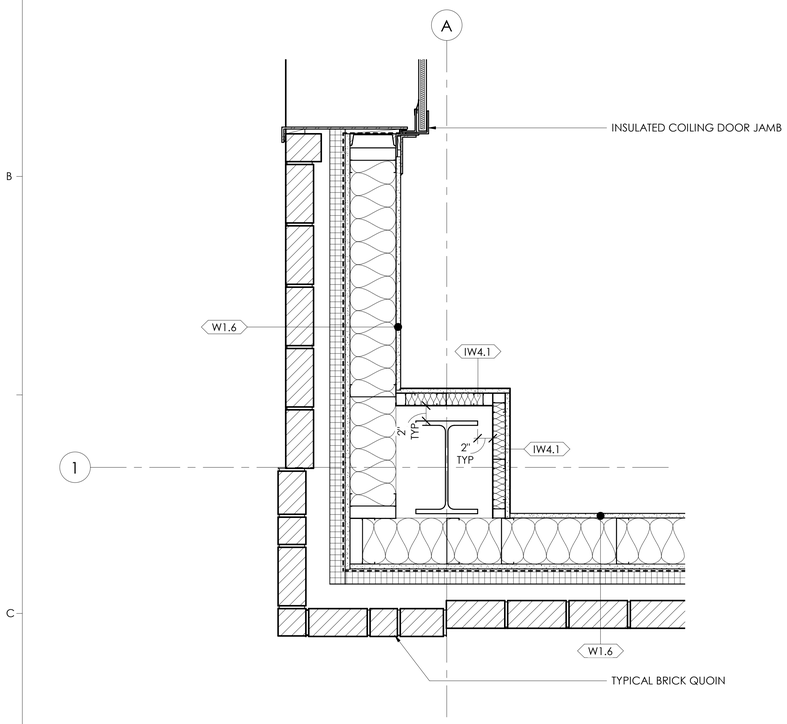
A1 NORTHWEST COLUMN & WINDOW JAMB - PLAN
1 1/2" = 1'-0"



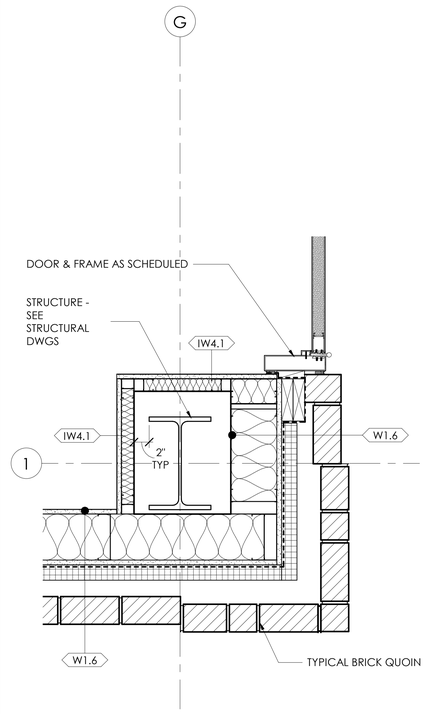
A3 TYPICAL INTERIOR WALL AT RATED WALL - PLAN
1 1/2" = 1'-0"



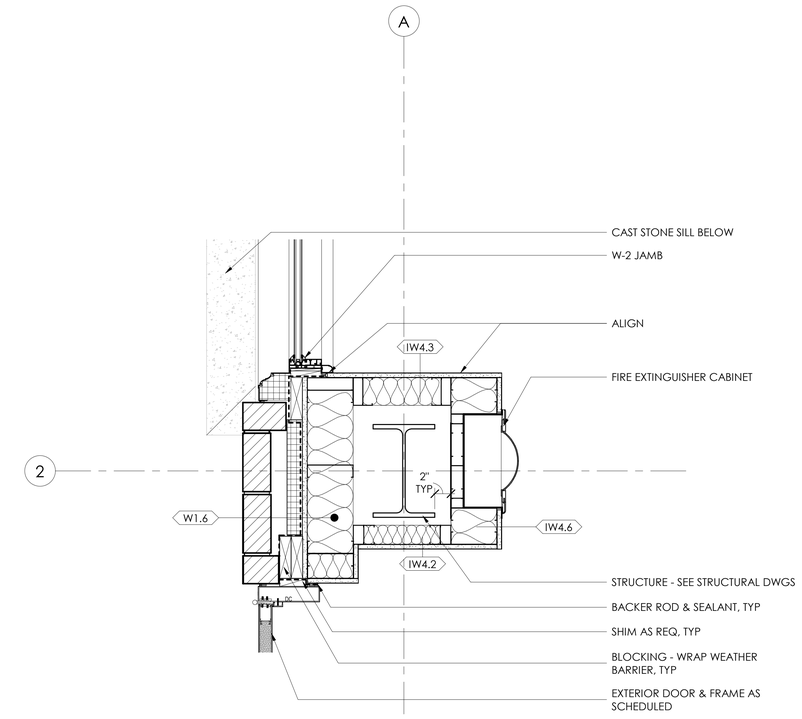
A4 TYPICAL CARD READER, ADA PUSH BUTTON, & KNOX BOX - PLAN
1 1/2" = 1'-0"



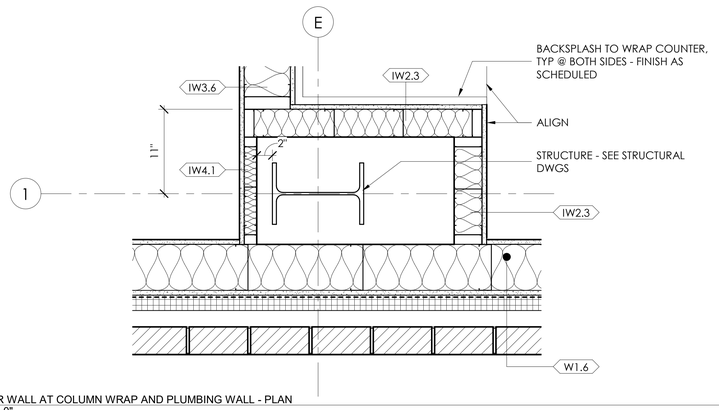
C1 SOUTHWEST CORNER & GARAGE DOOR JAMB - PLAN
1 1/2" = 1'-0"



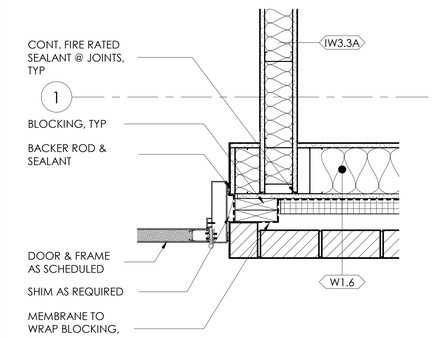
C3 SOUTHEAST CORNER & DOOR JAMB - PLAN
1 1/2" = 1'-0"



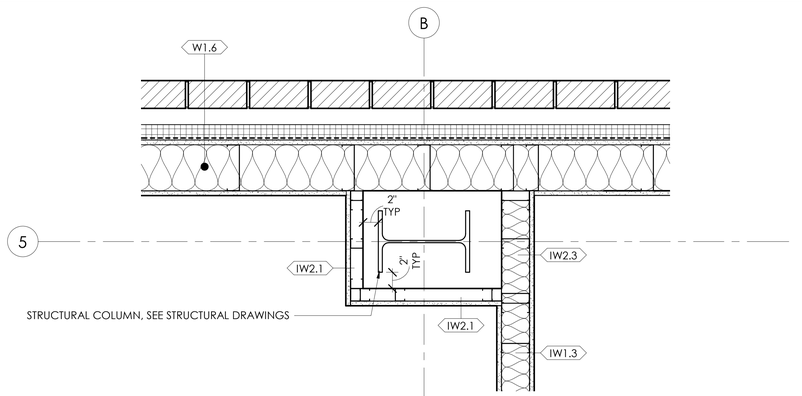
C4 FEC IN COLUMN WRAP AT STAGING AREA DOOR - PLAN
1 1/2" = 1'-0"



D1 EXTERIOR WALL AT COLUMN WRAP AND PLUMBING WALL - PLAN
1 1/2" = 1'-0"



D3 EXTERIOR WALL @ 1 HR RATED WALL - PLAN
1 1/2" = 1'-0"



D4 TYPICAL EXTERIOR COLUMN - PLAN
1 1/2" = 1'-0"

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DRAWN BY: AT
CHECKED BY: MS

ISSUE DATE:
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EXTERIOR DETAILS

A502

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

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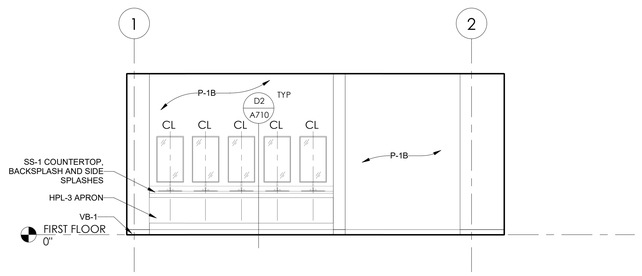
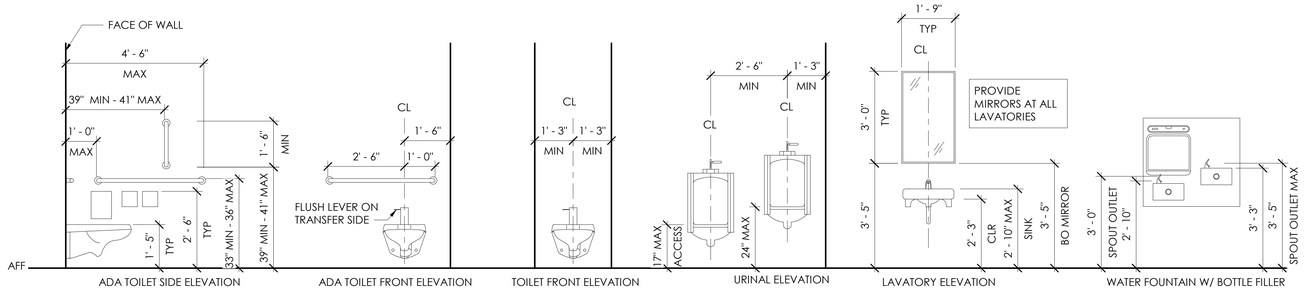
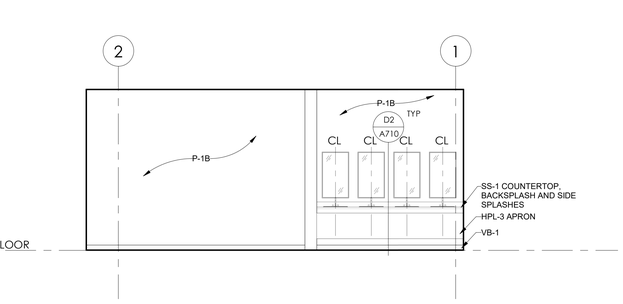


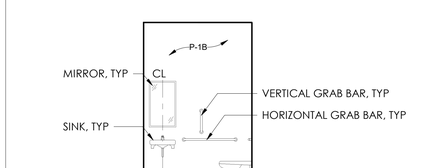
A1 WOMENS RESTROOM - WEST ELEVATION
1/4" = 1'-0"



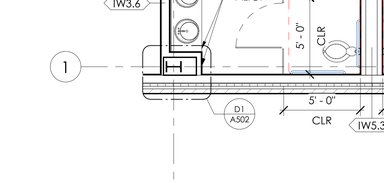
RESTROOM MOUNTING HEIGHTS
1/2" = 1'-0"



B1 WOMENS RESTROOM - EAST ELEVATION
1/4" = 1'-0"



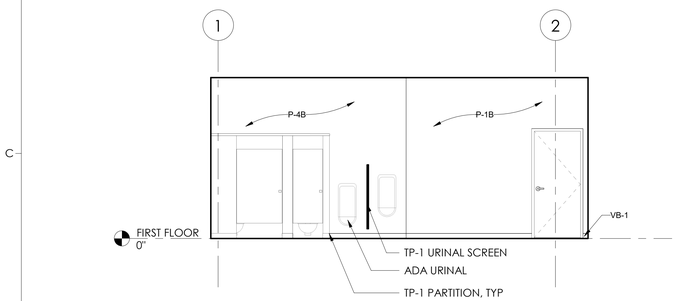
B3 WATER FOUNTAIN & BOTTLE FILL - ELEVATION
1/4" = 1'-0"



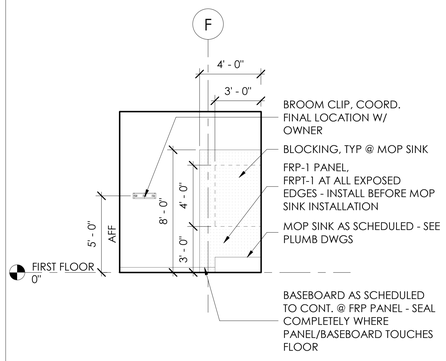
B4 FAMILY RESTROOM - SOUTH ELEVATION
1/4" = 1'-0"

GENERAL NOTES:

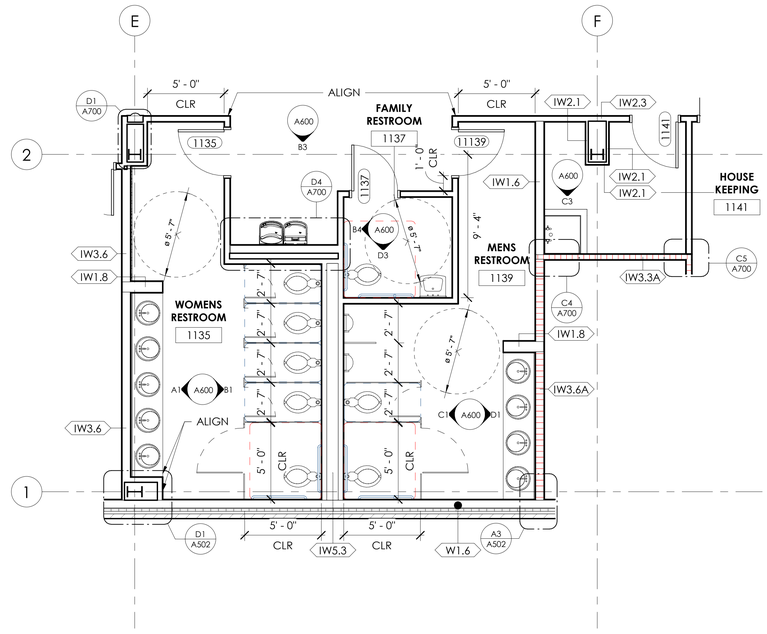
1. SEE RESTROOM MOUNTING HEIGHTS LEGEND FOR ALL MOUNTING HEIGHTS AND CLEARANCES.
2. TOILET ACCESSORIES SUCH AS SOAP DISPENSERS, TOWEL DISPENSERS, CHANGING TABLES, TRASH RECEPTACLES, ETC. WILL BE PROVIDED & INSTALLED BY THE OWNER. GC TO COORDINATE ALL BLOCKING LOCATIONS, REQUIREMENTS, & DIMENSIONS WITH OWNER.
3. SEE B4 & B5/A601 FOR TYPICAL NOTES.



C1 MENS RESTROOM - WEST ELEVATION
1/4" = 1'-0"



C3 HOUSEKEEPING - TYPICAL ELEVATION @ MOP SINK
1/4" = 1'-0"



D4 RESTROOMS & HOUSEKEEPING - ENLARGED PLAN
1/4" = 1'-0"

D1 MENS RESTROOM - EAST ELEVATION
1/4" = 1'-0"

D3 FAMILY RESTROOM - WEST ELEVATION
1/4" = 1'-0"

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Charlotte, North Carolina

MARK WINSTON CRAIG
REGISTERED LANDSCAPE ARCHITECT
5721
NORTH CAROLINA
CHARLOTTE, NORTH CAROLINA
9/14/20

PROJECT NORTH
PLAN NORTH
KEY PLAN

CONSTRUCTION DOCUMENTS

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403
SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

DESIGNED BY: AT
DRAWN BY: AT
CHECKED BY: MS

ISSUE DATE:
September 14, 2020

ENLARGED PLANS & ELEVATIONS - RESTROOMS

A600

SCALE: As indicated

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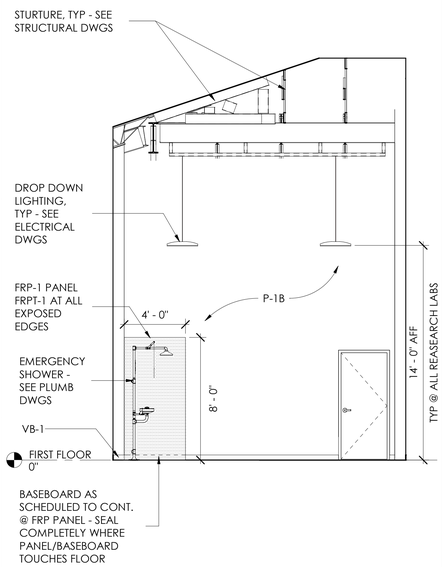
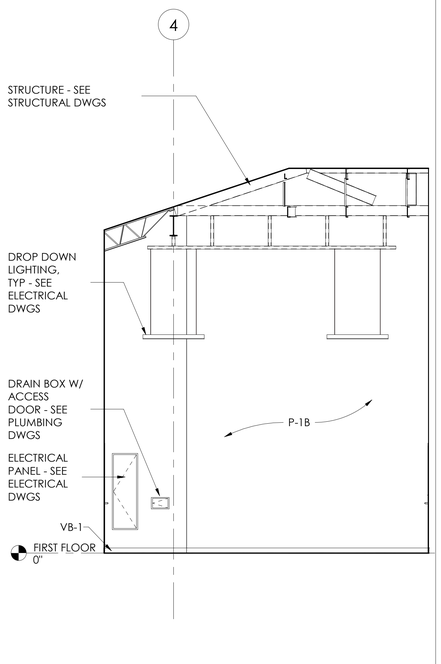
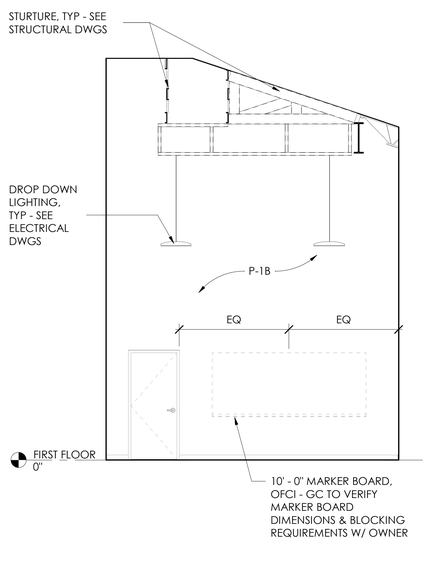


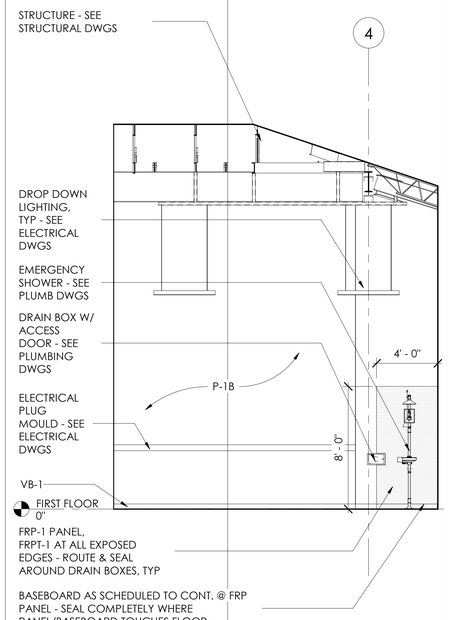
B1 TYPICAL FACULTY RESEARCH LAB - NORTH ELEVATION
1/4" = 1'-0"



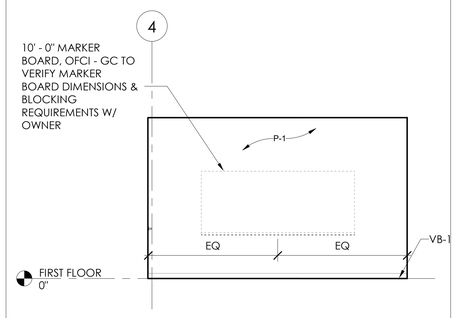
B2 TYPICAL FACULTY RESEARCH LAB - EAST ELEVATION
1/4" = 1'-0"



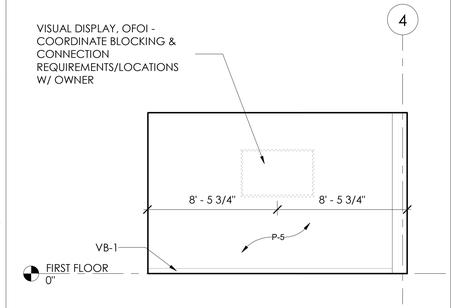
B3 TYPICAL FACULTY RESEARCH LAB - SOUTH ELEVATION
1/4" = 1'-0"



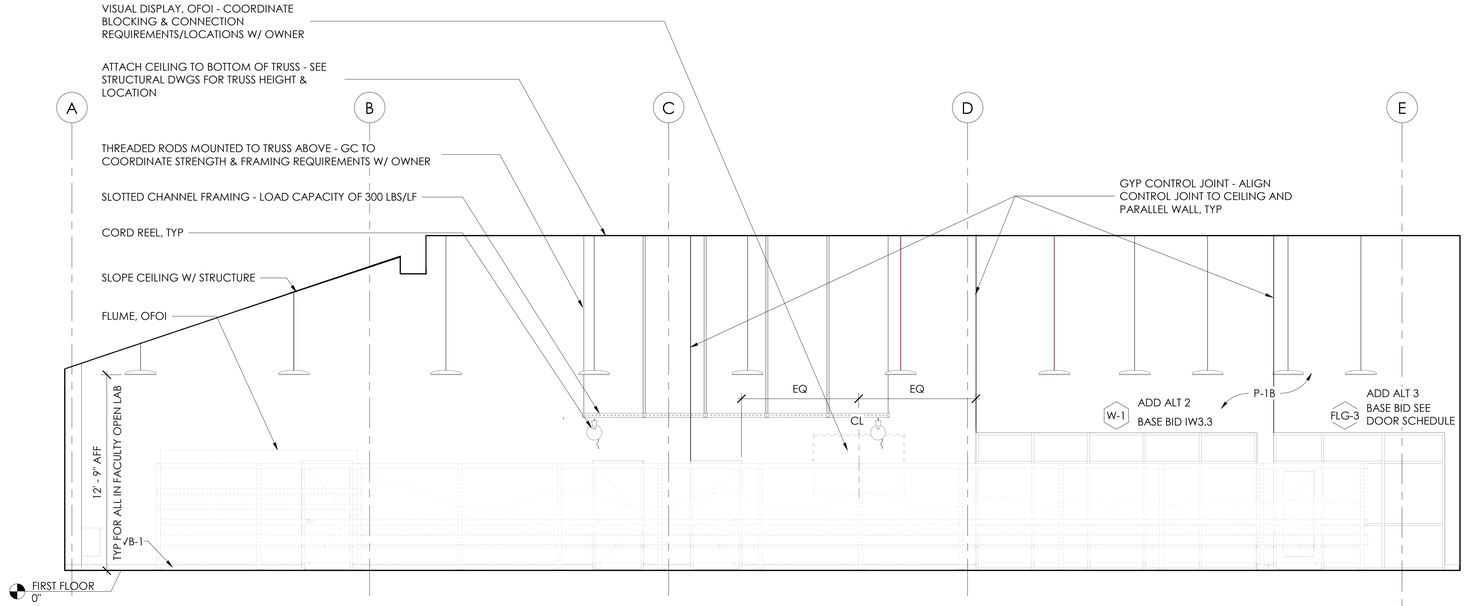
B4 TYPICAL FACULTY RESEARCH LAB - WEST ELEVATION
1/4" = 1'-0"



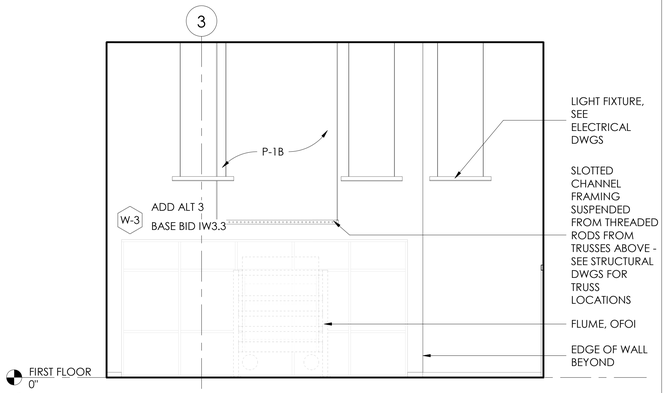
A2 CONFERENCE ROOM - EAST ELEVATION
1/4" = 1'-0"



B5 CONFERENCE ROOM - WEST ELEVATION
1/4" = 1'-0"



D1 FACULTY OPEN LAB - NORTH ELEVATION
1/4" = 1'-0"



C4 FACULTY OPEN LAB - EAST ELEVATION
1/4" = 1'-0"

GENERAL NOTES:

1. GC TO COORDINATE ALL SUSPENDED MECHANICAL, ELECTRICAL, PLUMBING, & TELECOMMUNICATION DEVICES TO ENSURE NO PIPING, CONDUIT, ETC OCCURS BELOW LIGHTING FIXTURES.
2. ALIGN VERTICAL GYPSUM BOARD CONTROL JOINTS WITH NEAREST DOOR FRAME OR FRAMED OPENING WHERE APPLICABLE.
3. ALL VERTICAL GYPSUM BOARD CONTROL JOINTS IN CORRIDORS ARE TO ALIGN WITH PARALLEL WALL.
4. ALL VERTICAL GYSUM BOARD CONTROL JOINTS IN CLASSROOMS & LABS ARE TO ALIGN WITH PARALLEL WALL.
5. ALIGN ALL HORIZONTAL GYPSUM BOARD CONTROL JOINTS WITH ADJACENT VERTICAL CONTROL JOINT
6. GC TO COORDINATE DIMENSIONS, BLOCKING REQUIREMENTS, & LOCATIONS FOR ALL ALL OWNER PROVIDED MARKER BOARDS, VISUAL DISPLAYS, PROJECTORS, PROJECTOR SCREENS, DEVICES, ETC.
7. IN AREAS CONTAINING NO CEILINGS - COMPLETELY FILL VOIDS & ACOUSTICALLY SEAL WALL AT ALL PENETRATIONS FROM STRUCTURE, PIPING, CONDUIT, ETC. PAINT WALLS TO UNDERSIDE OF STRUCTURAL DECKING..

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CHARLOTTE, NORTH CAROLINA
09/14/20

PROJECT NORTH
PLAN NORTH
KEY PLAN

CONSTRUCTION DOCUMENTS

Revision Schedule		
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Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
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SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

DESIGNED BY: AT
DRAWN BY: AT
CHECKED BY: MS

ISSUE DATE:
September 14, 2020

ENLARGED ELEVATIONS - LABS & CONFERENCE ROOM

A601

SCALE: 1/4" = 1'-0"

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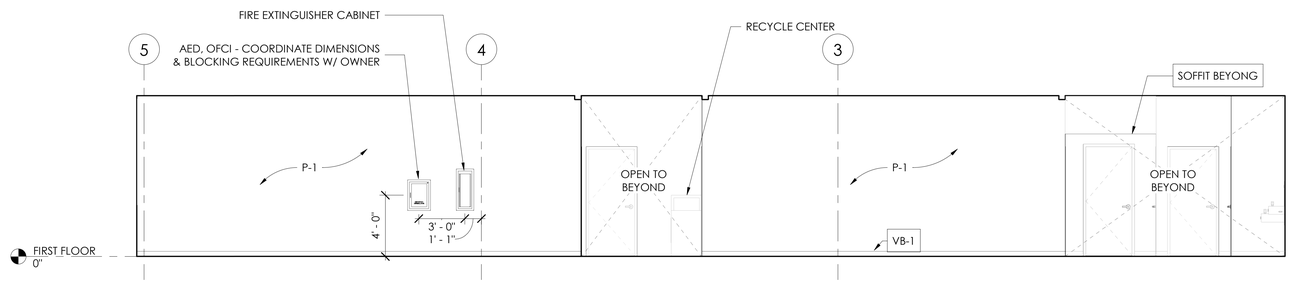
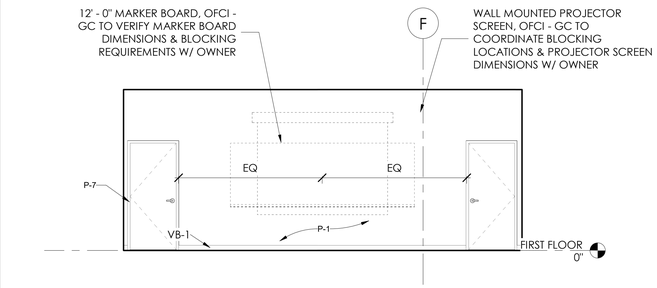
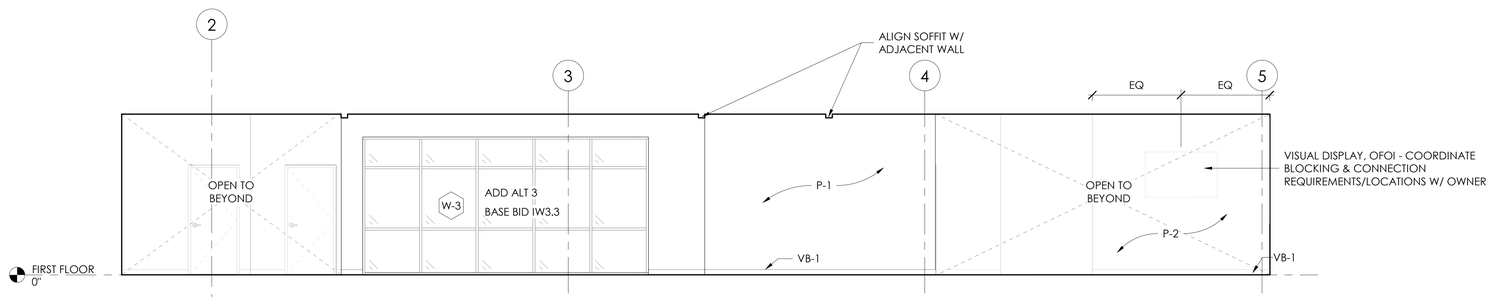


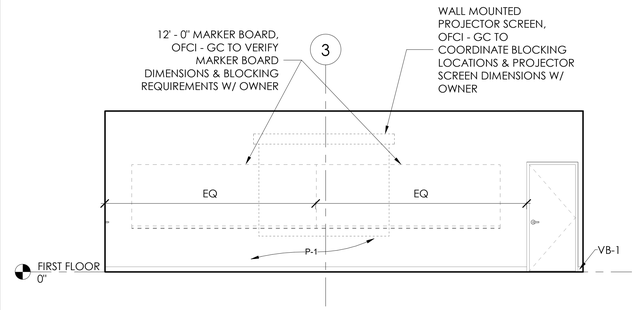
A1 CORRIDOR 1121 - EAST ELEVATION
1/4" = 1'-0"



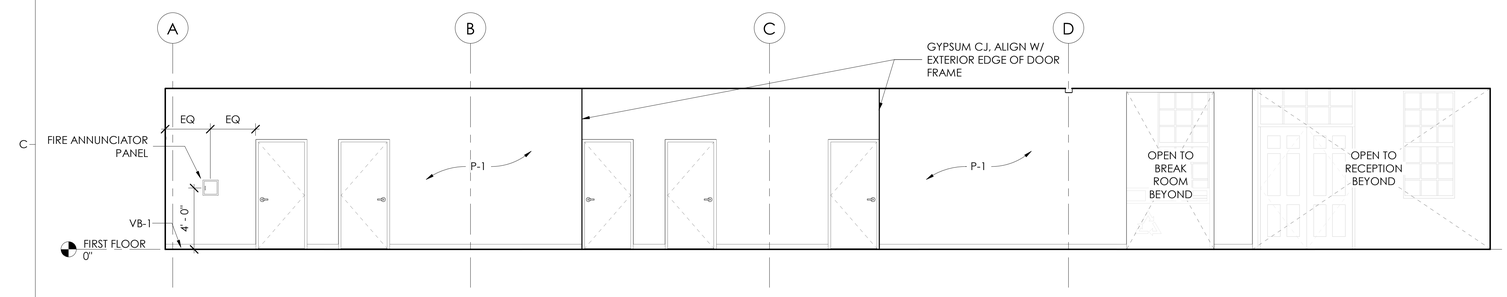
A4 COMPUTER LAB - TEACHING WALL ELEVATION
1/4" = 1'-0"



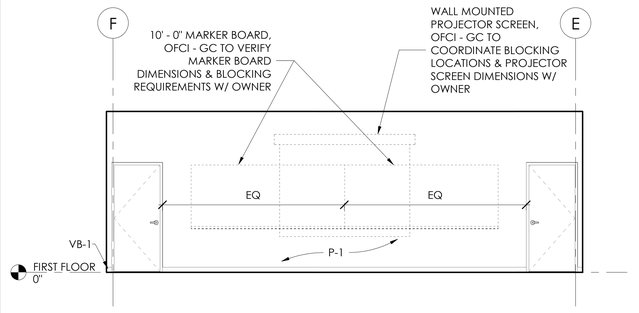
B1 CORRIDOR 1121 - WEST ELEVATION
1/4" = 1'-0"



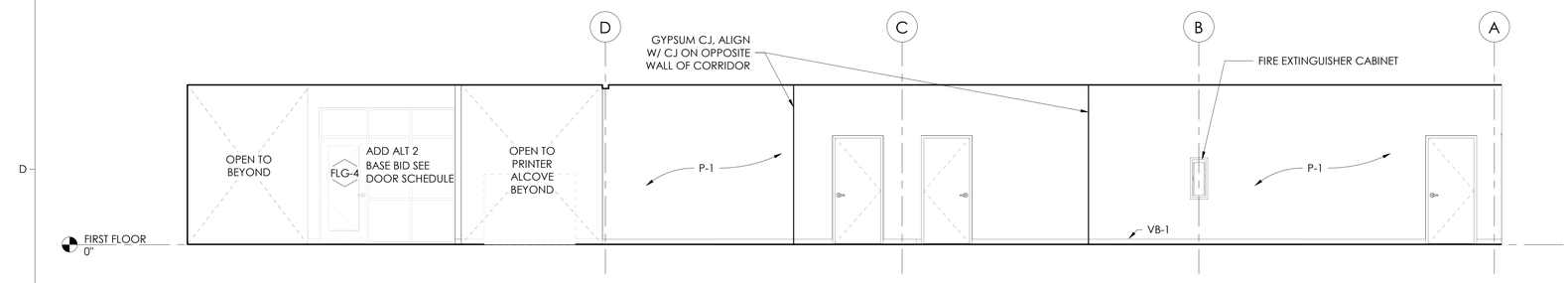
B4 CLASSROOM - TEACHING WALL ELEVATION
1/4" = 1'-0"



C1 CORRIDOR 1103 - NORTH ELEVATION
1/4" = 1'-0"



C4 TYPICAL INSTRUCTIONAL LAB - TEACHING WALL ELEVATION
1/4" = 1'-0"



D1 CORRIDOR 1103 - SOUTH ELEVATION
1/4" = 1'-0"

GENERAL NOTES:

1. ALIGN VERTICAL GYPSUM BOARD CONTROL JOINTS WITH NEAREST DOOR FRAME OR FRAMED OPENING WHERE APPLICABLE.
2. ALL VERTICAL GYPSUM BOARD CONTROL JOINTS IN CORRIDORS ARE TO ALIGN WITH PARALLEL WALL.
3. ALL VERTICAL GYSUM BOARD CONTROL JOINTS IN CLASSROOMS & LABS ARE TO ALIGN WITH PARALLEL WALL.
4. GC TO COORDINATE DIMENSIONS, BLOCKING REQUIREMENTS, & LOCATIONS FOR ALL ALL OWNER PROVIDED MARKER BOARDS, VISUAL DISPLAYS, PROJECTORS, PROJECTOR SCREENS, DEVICES, ETC.
5. CENTER MARKERBOARDS AND PROJECTOR SCREENS ON TEACHING WALLS. UNO.

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Charlotte, North Carolina

Mark Winston Kelly
Registered Architect
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Charlotte, North Carolina
9/14/20

PROJECT NORTH

PLAN NORTH

KEY PLAN

CONSTRUCTION DOCUMENTS

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

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Wilmington, NC 28403

SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

DESIGNED BY: AT
DRAWN BY: AT
CHECKED BY: MS

ISSUE DATE:
September 14, 2020

ENLARGED ELEVATIONS - CLASSROOMS & CORR

A602

SCALE: 1/4" = 1'-0"

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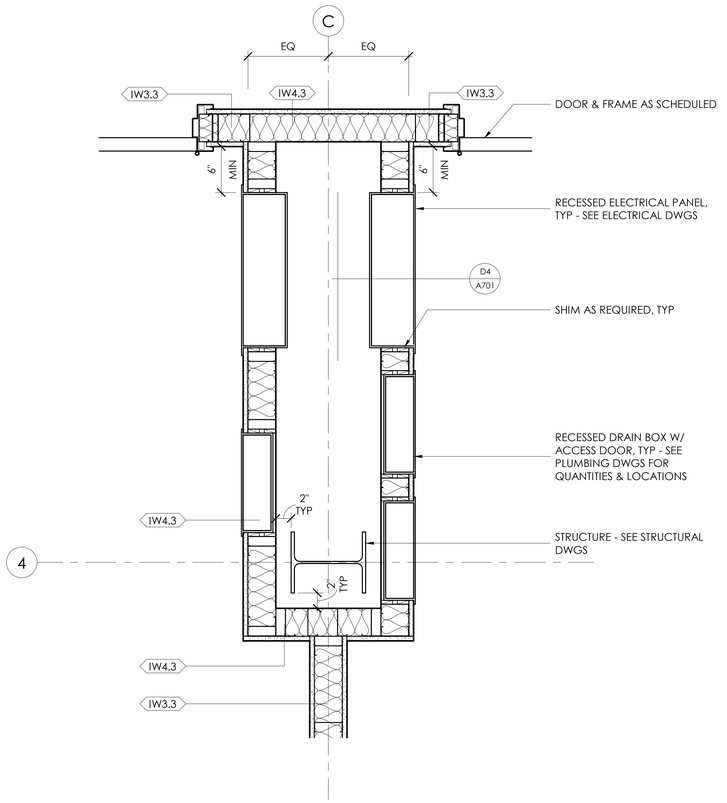
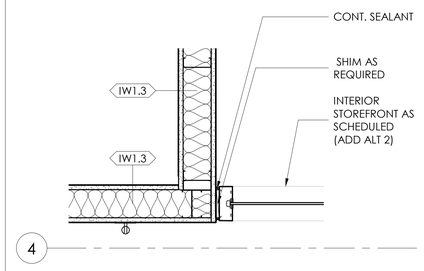
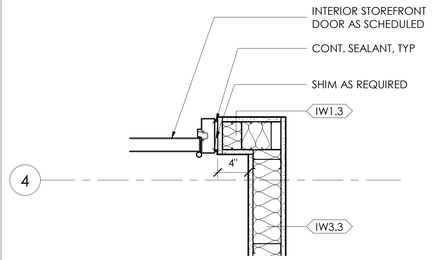


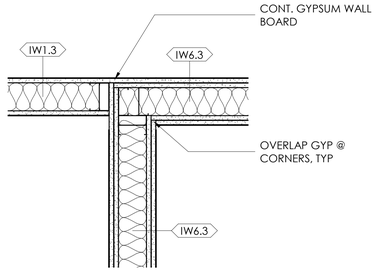
B2 TYPICAL ELECTRICAL PANEL FOR FACULTY RESEARCH LABS - PLAN
1 1/2" = 1'-0"



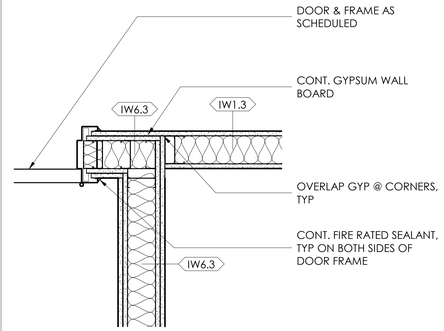
A4 CONFERENCE ROOM STOREFRONT (ALT 2) - PLAN
1 1/2" = 1'-0"



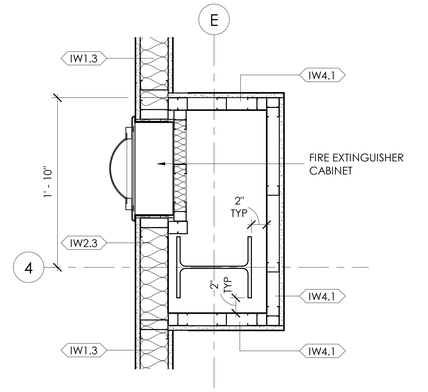
A5 CONFERENCE ROOM STOREFRONT DOOR - PLAN
1 1/2" = 1'-0"



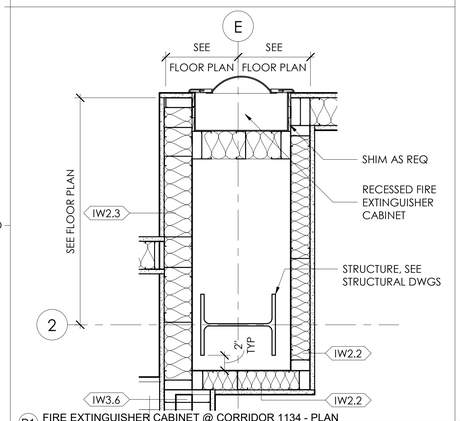
B4 2 HR RATED VERTICAL PARTITION INTERSECTION IW3.3A & IW1.3 - PLAN
1 1/2" = 1'-0"



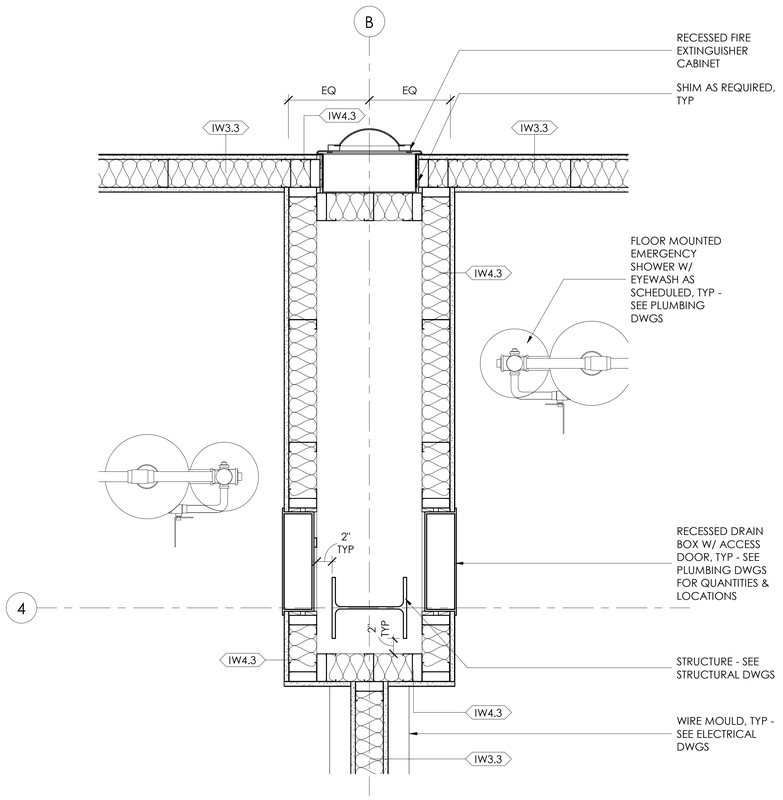
B5 2 HR RATED VERTICAL PARTITION @ RATED DOOR - PLAN
1 1/2" = 1'-0"



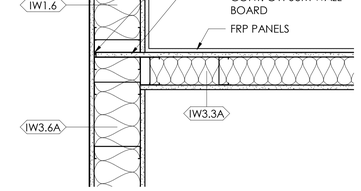
C1 FIRE EXTINGUISHER CABINET @ CORRIDOR 1121 - PLAN
1 1/2" = 1'-0"



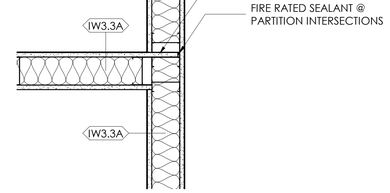
D1 FIRE EXTINGUISHER CABINET @ CORRIDOR 1134 - PLAN
1 1/2" = 1'-0"



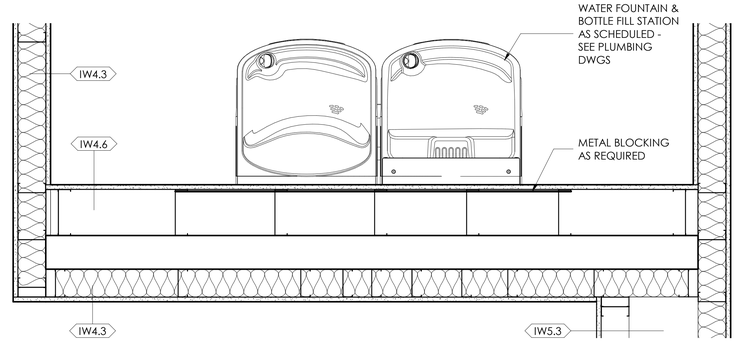
D2 TYPICAL FACULTY RESEARCH LAB EMERGENCY SHOWER - PLAN
1 1/2" = 1'-0"



C4 1 HR RATED VERTICAL PARTITION INTERSECTION IW3.3A & IW3.6 - PLAN
1 1/2" = 1'-0"



C5 1 HR RATED VERTICAL PARTITION INTERSECTION IW3.3A & IW3.3 - PLAN
1 1/2" = 1'-0"



D4 WATER FOUNTAIN W/ RECESSED BOTTLE FILL STATION - PLAN
1 1/2" = 1'-0"

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CHARLOTTE, NORTH CAROLINA
9/14/20

PROJECT NORTH
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KEY PLAN

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CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

DESIGNED BY: Author
DRAWN BY: Author
CHECKED BY: Checker

ISSUE DATE:
September 14, 2020

INTERIOR PLAN DETAILS

A700

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

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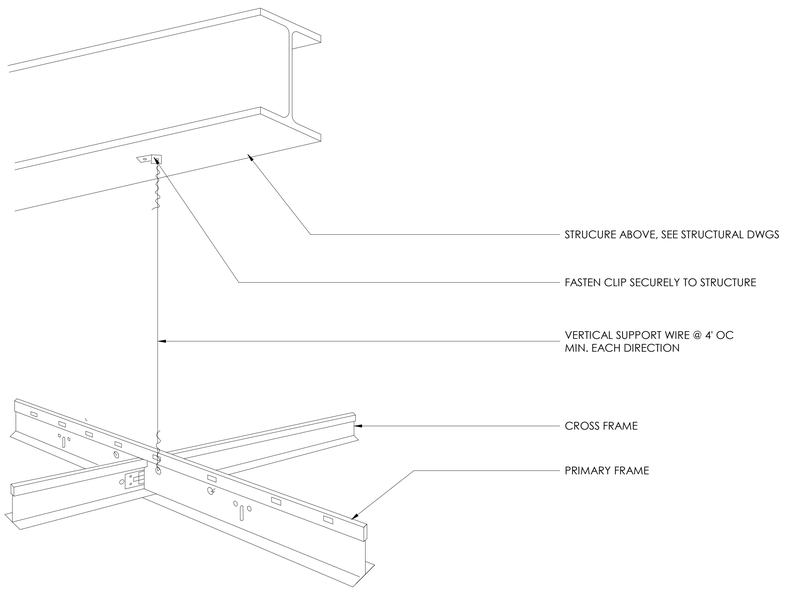
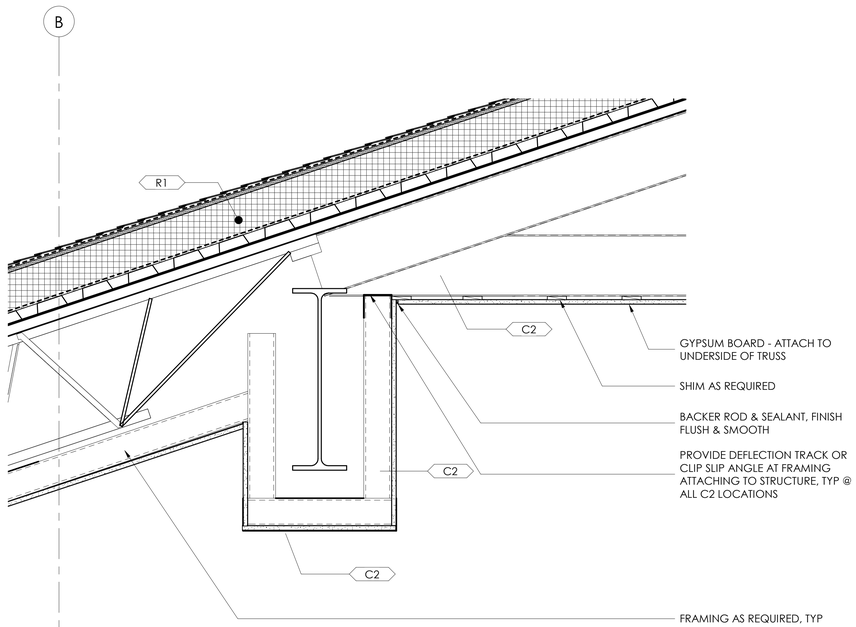
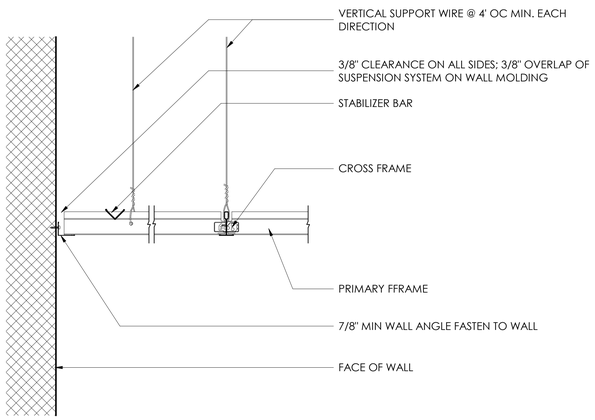


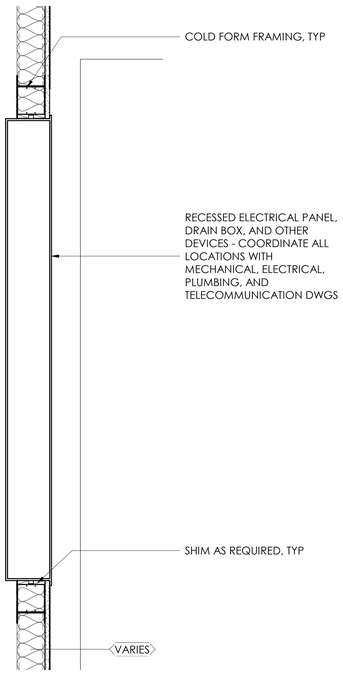
A1 TYPICAL ACOUSTICAL PANEL CEILING GRID ISOMETRIC
NTS



B4 SLOPED CEILING TRANSITION IN FACULTY OPEN LAB - SECTION
1 1/2" = 1'-0"



D1 TYPICAL ACOUSTICAL PANEL CEILING AT VERTICAL PARTITION
3" = 1'-0"



D4 TYPICAL WALL BOX PENETRATION - SECTION
1 1/2" = 1'-0"

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MARK WINSTON CRAWFORD
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CHARLOTTE, NORTH CAROLINA
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PROJECT NORTH
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DRAWN BY: AT
CHECKED BY: MS

ISSUE DATE:
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INTERIOR SECTION DETAILS

A701

SCALE: As indicated

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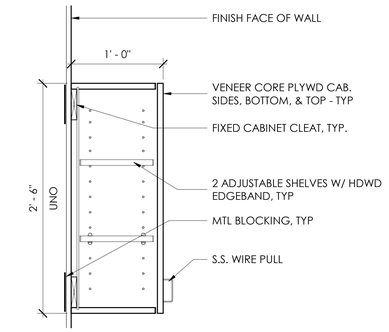
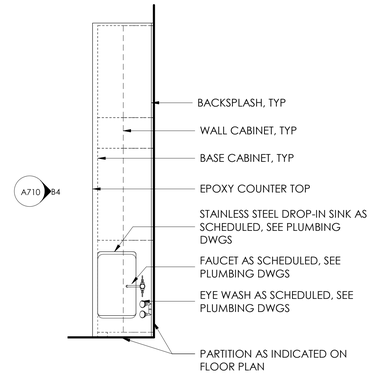
GENERAL CASEWORK NOTES:

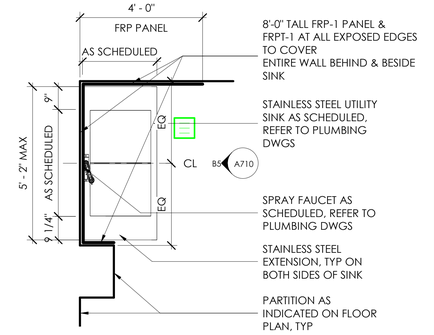
1. ALL DIMENSIONS INDICATED FOR CASEWORK ARE NOMINAL. MANUFACTURER TO FABRICATE USING MANUFACTURER'S STANDARD SIZES.
2. ALL DRAWERS TO BE FULL DEPTH OF CABINET.
3. ALL SHELVES IN UPPER CABINETS TO BE FULL DEPTH OF CABINET.
4. ALL BASE CABINETS TO INCLUDE SHELVES WITH INDEPENDET ADJUSTMENT FOR EACH HALF. SHELVES 36" OR GREATER (IN WIDTH) SHALL BE REINFORCED.
5. ALL FILLERS, SCRIBES, PANEL ENCLOSURES, SUPPORTS, ETC NECESSARY FOR A COMPLETE AND FINISHED INSTALLATION ARE TO BE PROVIDED, EVEN IF NOT SPECIFICALLY INDICATED ON THE DRAWINGS. GAP(S) BETWEEN CASEWORK AND PARTITIONS SHALL NOT BE PERMITTED.
6. ALL EXPOSED ENDS OF CABINETS TO BE FINISHED.
7. INSTALL FLOORING PRIOR TO INSTALLATION OF ALL CASEWORK.



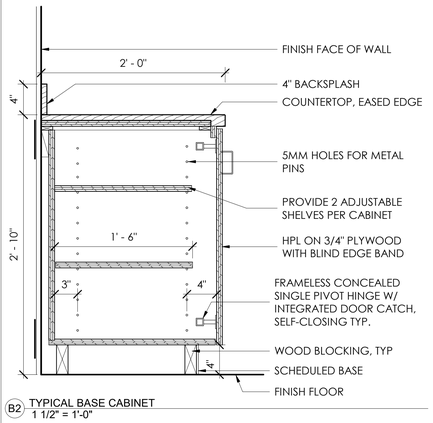
A3 (WC-1) LAB CASEWORK - TYPICAL WALL CABINET - SECTION
1 1/2" = 1'-0"



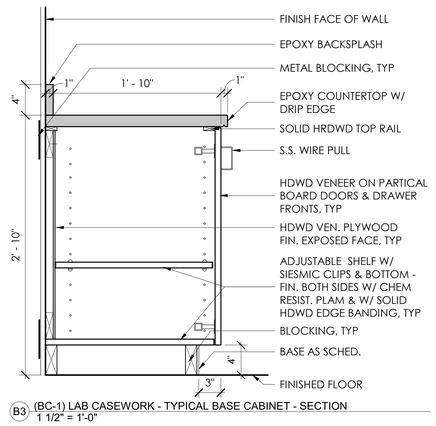
A4 STUDENT OPEN LAB CASEWORK - PLAN
1/2" = 1'-0"



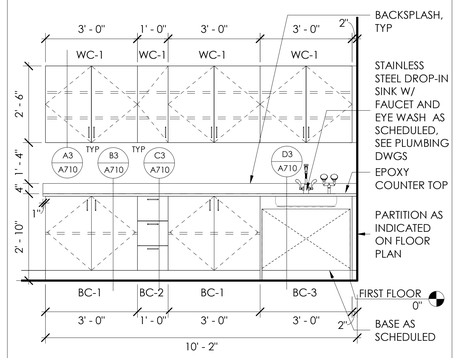
A5 FACULTY OPEN LAB UTILITY SINK - PLAN
1/2" = 1'-0"



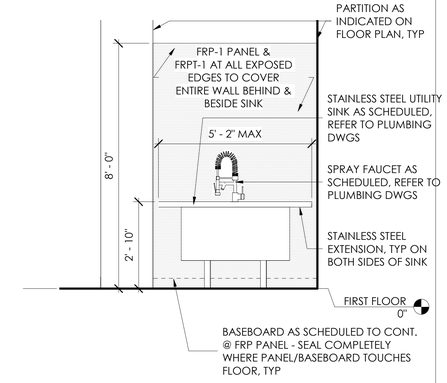
B2 TYPICAL BASE CABINET
1 1/2" = 1'-0"



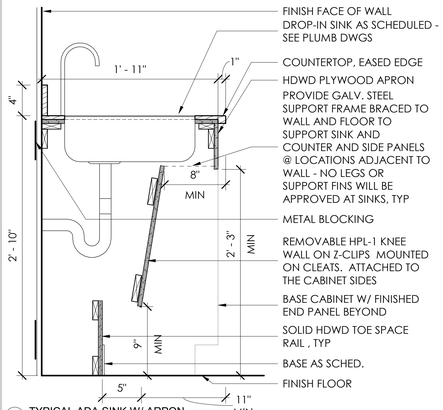
B3 (BC-1) LAB CASEWORK - TYPICAL BASE CABINET - SECTION
1 1/2" = 1'-0"



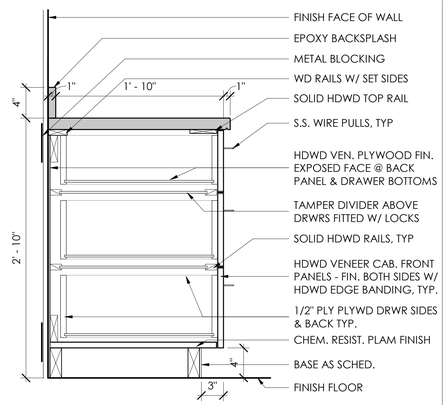
B4 STUDENT OPEN LAB CASEWORK - ELEVATION
1/2" = 1'-0"



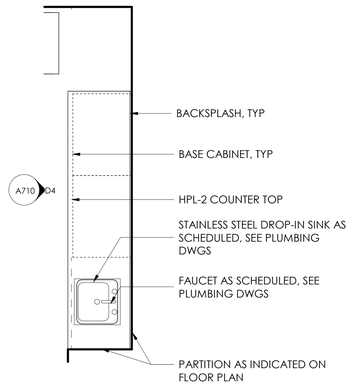
B5 FACULTY OPEN LAB UTILITY SINK - ELEVATION
1/2" = 1'-0"



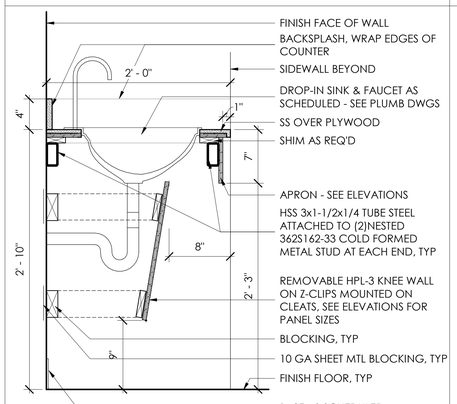
C2 TYPICAL ADA SINK W/ ARPON
1 1/2" = 1'-0"



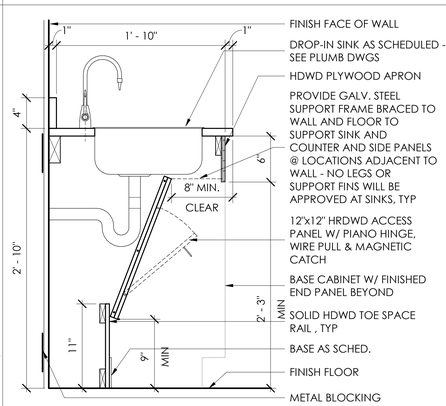
C3 (BC-2) LAB CASEWORK - TYPICAL BASE CABINET W/ DRAWERS - SECTION
1 1/2" = 1'-0"



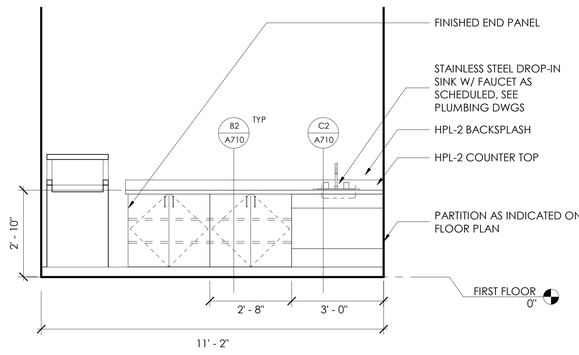
C4 A710 - BREAK ROOM/VENDING CASEWORK - PLAN
1/2" = 1'-0"



D2 TYPICAL ADA LAVATORY W/ APRON
1 1/2" = 1'-0"



D3 (BC-3) LAB CASEWORK - TYPICAL ADA SINK- SECTION
1 1/2" = 1'-0"



D4 A710 - BREAK ROOM/VENDING CASEWORK - ELEVATION
1/2" = 1'-0"

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09/14/20

PROJECT NORTH | PLAN NORTH

KEY PLAN

CONSTRUCTION DOCUMENTS

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403
SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

DESIGNED BY: AT
DRAWN BY: AT
CHECKED BY: MS

ISSUE DATE:
September 14, 2020

CASEWORK PLANS, ELEVATIONS, & DETAILS

A710

SCALE: As indicated

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GENERAL NOTES:

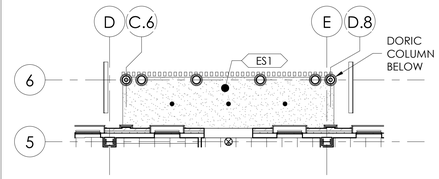
1. ELEVATIONS OF ALL CEILINGS ARE 10'-6" UNO.
2. COORDINATE HANGER LOCATIONS FOR ALL MECHANICAL, ELECTRICAL, AND PLUMBING.
3. COORDINATE ALL CEILING DEVICES & LIGHTING WITH MECHANICAL, ELECTRICAL, PLUMBING, & TELECOMMUNICATION DRAWINGS.

CEILING LIGHTING & DEVICE LEGEND:

- SUPPLY DIFFUSER
- RETURN DIFFUSER
- EXHAUST DIFFUSER
- 2' x 2' LAY-IN LIGHTING
- 2' x 2' LAY-IN EMERGENCY LIGHTING
- 2' x 4' LAY-IN EMERGENCY LIGHTING
- 2' x 4' LAY-IN EMERGENCY LIGHTING
- 2' x 4' DROP LIGHTING
- 2' x 4' DROP EMERGENCY LIGHTING
- UTILITY STRIP LIGHTING
- EMERGENCY UTILITY STRIP LIGHTING
- WALL MOUNTED WAP
- EXIT SIGN
- CEILING MOUNTED PROJECTOR CONNECTION, PROJECTOR TO BE OFOI
- WALL PACK
- EMERGENCY WALL PACK
- LANTERN
- CAN LIGHT

CEILING MATERIAL LEGEND:

- (C1) ACOUSTIC CEILING PANEL
- (C2) GYPSUM BOARD CEILING
- NO CEILING
- (ES1) EXTERIOR SOFFIT



A5 (ADD ALT 6) FIRST FLOOR - CEILING PLAN
1/8" = 1'-0"

D1 FIRST FLOOR - CEILING PLAN
1/8" = 1'-0"

1/8" = 1'-0"

8 0 8 16 24

SCALE IN FEET

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CHARLOTTE, NORTH CAROLINA

PROJECT NORTH

PLAN NORTH

KEY PLAN

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SGA | NW DESIGN PROJECT NUMBER: 19-202-01

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CHECKED BY: MS

ISSUE DATE:
September 14, 2020

REFLECTED CEILING PLAN

A800

SCALE: 1/8" = 1'-0"

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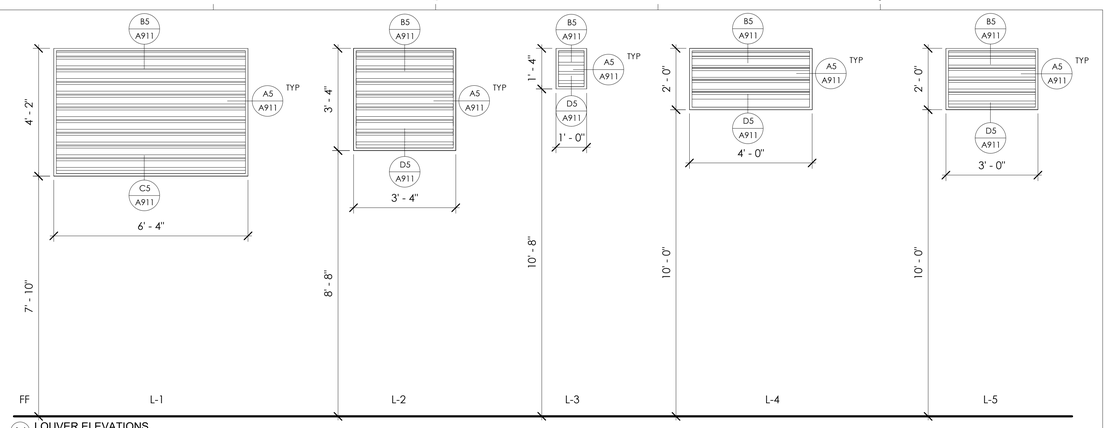
GENERAL NOTES:

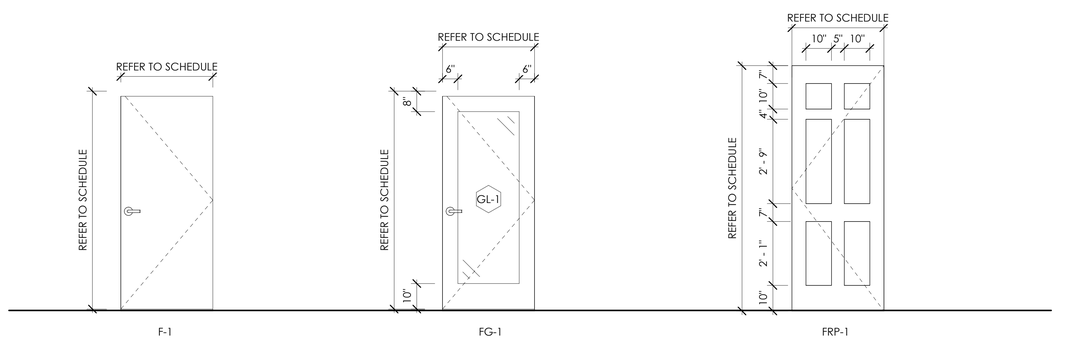
1. REFER TO A910 & A911 FOR TYPICAL DOOR, WINDOW, AND LOUVER DETAILS.
2. PROVIDE VENETIAN MINI BLINDS AT ALL W-2 WINDOW TYPES.
3. FOR ALL WINDOWS, DOORS, & LOUVERS, FILL ALL VOIDS AT SHIM POINTS WITH LOW-EXPANDING SPF.

DOOR SCHEDULE

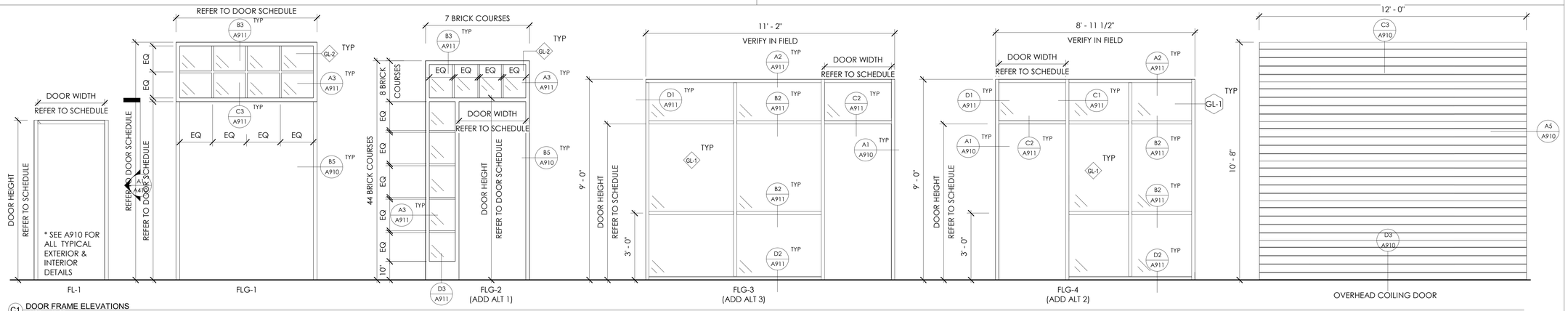
OPENING		DOOR						FRAME				FIRE RATING			
NO.	TO ROOM	WIDTH	HEIGHT	THICKNESS	TYPE	DOOR MTL	DOOR FINISH	TYPE	FRAME MTL	FRAME FINISH	GLAZING	MIN.	REMARKS	HARDWARE	ALT
1101	CONFERENCE ROOM	3' - 0"	7' - 0"	1 3/4"	FG-2	ALUM	ALUM	FLG-4	ALUM	ALUM	GL-1			11	ADD ALT 2
1101	CONFERENCE ROOM	3' - 0"	7' - 0"	1 3/4"	FG-2	ALUM	ALUM	FL-1	ALUM	ALUM	GL-1			11	BASE BID
1104	CHAIR	3' - 0"	7' - 0"	1 3/4"	F-1	WD SC	ST	FL-1	HM	P-7				12	
1105A	CORRIDOR	3' - 0"	7' - 0"	1 3/4"	F-1	WD SC	ST	FL-1	HM	P-7				13	
1105B	FACULTY OPEN LAB	3' - 0"	7' - 0"	1 3/4"	F-1	FRP	P-7	FL-1	ALUM	ALUM				19	
1106	FACULTY OFFICE	3' - 0"	7' - 0"	1 3/4"	F-1	WD SC	ST	FL-1	HM	P-7				12	
1107A	FACULTY RESEARCH LAB	3' - 0"	7' - 0"	1 3/4"	F-1	WD SC	ST	FL-1	HM	P-7				13	
1107B	FACULTY RESEARCH LAB	3' - 0"	7' - 0"	1 3/4"	F-1	FRP	P-7	FL-1	ALUM	ALUM				19	
1108	CORRIDOR	3' - 0"	7' - 0"	1 3/4"	F-1	WD SC	ST	FL-1	HM	P-7				12	
1110	FACULTY OFFICE	3' - 0"	7' - 0"	1 3/4"	F-1	WD SC	ST	FL-1	HM	P-7				12	
1112	CORRIDOR	3' - 0"	7' - 0"	1 3/4"	F-1	WD SC	ST	FL-1	HM	P-7				12	
1113A	CORRIDOR	3' - 0"	7' - 0"	1 3/4"	F-1	WD SC	ST	FL-1	HM	P-7				13	
1113B	FACULTY OPEN LAB	3' - 0"	7' - 0"	1 3/4"	F-1	FRP	P-7	FL-1	ALUM	ALUM				19	
1124A	INSTRUCTIONAL LAB	3' - 0"	7' - 0"	1 3/4"	F-1	WD SC	ST	FL-1	HM	P-7				13	
1124B	CORRIDOR	3' - 0"	7' - 0"	1 3/4"	F-1	WD SC	ST	FL-1	HM	P-7				13	
1127A	CORRIDOR	3' - 0"	7' - 0"	1 3/4"	F-1	WD SC	ST	FL-1	HM	P-7				07	
1127B	COMPUTER LAB	3' - 0"	7' - 0"	1 3/4"	F-1	WD SC	ST	FL-1	HM	P-7				13	
1128	INSTRUCTIONAL LAB	3' - 0"	7' - 0"	1 3/4"	F-1	WD SC	ST	FL-1	HM	P-7				13	
1129A	CORRIDOR	3' - 0"	7' - 0"	1 3/4"	F-1	WD SC	ST	FL-1	HM	P-7				12	
1129B	CORRIDOR	3' - 0"	7' - 0"	1 3/4"	F-1	WD SC	ST	FL-1	HM	P-7				12	
1131A	CORRIDOR	3' - 0"	7' - 0"	1 3/4"	FG-1	ALUM	ALUM	FLG-3	ALUM	ALUM	GL-1			15	ADD ALT 3
1131B	FACULTY OPEN LAB	6' - 0"	7' - 0"	1 3/4"	F-1	FRP	P-7	FL-1	ALUM	ALUM				18	
1131C	MACHINE	6' - 0"	7' - 0"	1 3/4"	F-1	FRP	P-7	FL-1	ALUM	ALUM				17	
1131D	STAGING AREA	6' - 0"	7' - 0"	1 3/4"	F-1	FRP	P-7	FL-1	ALUM	ALUM				18	
1131E	LAB TECH	3' - 0"	7' - 0"	1 3/4"	F-1	FRP	P-7	FL-1	ALUM	ALUM				19	
1131F	BENCH	3' - 0"	7' - 0"	1 3/4"	F-1	FRP	P-7	FL-1	ALUM	ALUM				19	
1133	STUDENT OPEN LAB	3' - 0"	7' - 0"	1 3/4"	F-1	WD SC	ST	FL-1	HM	P-7				13	
1135	WOMENS RESTROOM	3' - 0"	7' - 0"	1 3/4"	F-1	WD SC	ST	FL-1	HM	P-7				09	
1136		3' - 0"	7' - 0"	1 3/4"	F-1	WD SC	ST	FL-1	HM	P-7				20	
1137	FAMILY RESTROOM	3' - 0"	7' - 0"	1 3/4"	F-1	WD SC	ST	FL-1	HM	P-7				10	
1141	HOUSE KEEPING	3' - 0"	7' - 0"	1 3/4"	F-1	WD SC	ST	FL-1	HM	P-7				16	
1143	SECURITY	3' - 0"	7' - 0"	1 3/4"	F-1	WD SC	ST	FL-1	HM	P-7				08	
1145	CORRIDOR	3' - 0"	7' - 0"	1 3/4"	F-1	HM	P-7	FL-1	HM	P-7		90 MIN		14	
11139	MENS RESTROOM	3' - 0"	7' - 0"	1 3/4"	F-1	WD SC	ST	FL-1	HM	P-7				09	
E100		6' - 0"	8' - 0"	1 3/4"	FRP-1	FRP	P-8	FLG-1	ALUM	ALUM	GL-2			01	
E101	CORRIDOR	3' - 0"	8' - 0"	1 3/4"	FRP-1	FRP	P-8	FLG-2	ALUM	ALUM	GL-2			02A	ADD ALT 1
E101	CORRIDOR	3' - 0"	7' - 2"	1 3/4"	F-1	FRP	P-8	FL-1	ALUM	ALUM				02	BASE BID
E102	CORRIDOR	3' - 0"	7' - 2"	1 3/4"	F-1	FRP	P-8	FL-1	ALUM	ALUM				02	
E103		6' - 0"	7' - 2"	1 3/4"	F-1	FRP	P-8	FL-1	ALUM	ALUM				03	
E104		6' - 0"	7' - 2"	1 3/4"	F-1	FRP	P-8	FL-1	ALUM	ALUM				04	
E105		3' - 0"	7' - 2"	1 3/4"	F-1	FRP	P-8	FL-1	ALUM	ALUM				05	
E106	STAGING AREA	3' - 0"	7' - 2"	1 3/4"	F-1	FRP	P-8	FL-1	ALUM	ALUM				02	
E107		12' - 0"	10' - 8"	2"	COILING	ALUM	ALUM	COILING	ALUM	P-7			INSULATED OVERHEAD COILING DOOR	06	



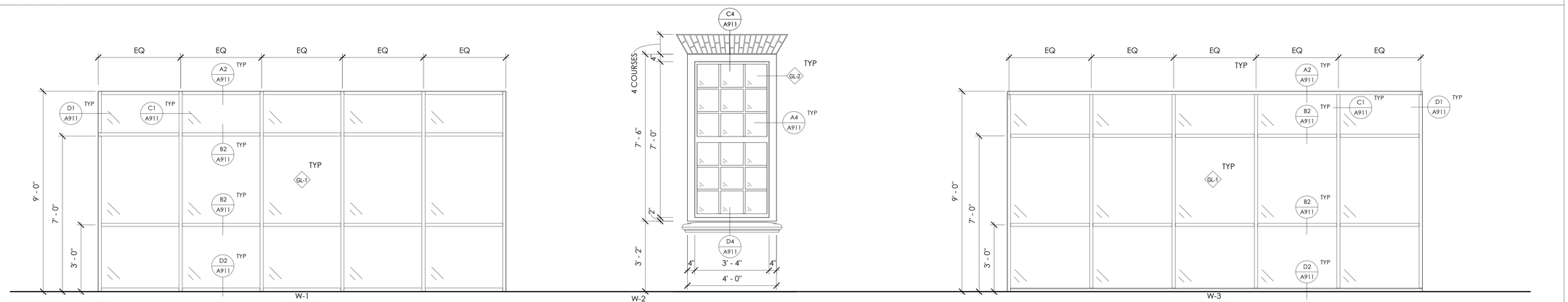
A4 LOUVER ELEVATIONS
1/2" = 1'-0"



B4 DOOR PANEL ELEVATIONS
1/2" = 1'-0"



C1 DOOR FRAME ELEVATIONS
1/2" = 1'-0"



D1 WINDOW ELEVATIONS
1/2" = 1'-0"

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CHARLOTTE, NORTH CAROLINA
10/14/20

PROJECT NORTH
PLAN NORTH
KEY PLAN

CONSTRUCTION DOCUMENTS

Revision Schedule		
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DESIGNED BY: AT
DRAWN BY: AT
CHECKED BY: MS

ISSUE DATE:
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DOOR SCHEDULE, DOOR ELEVATIONS, & WINDOW ELEVATIONS

A900

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

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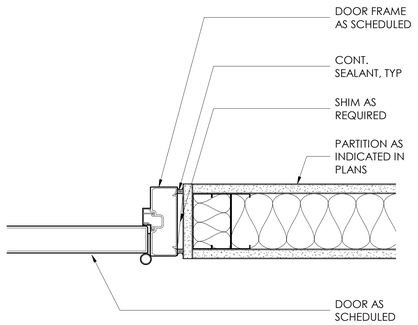
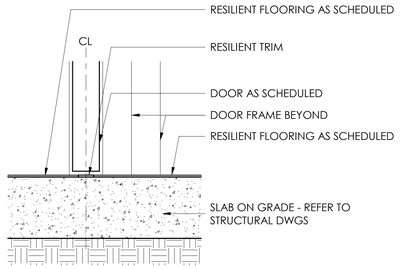
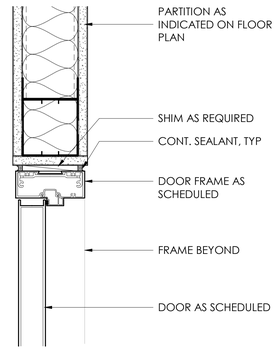


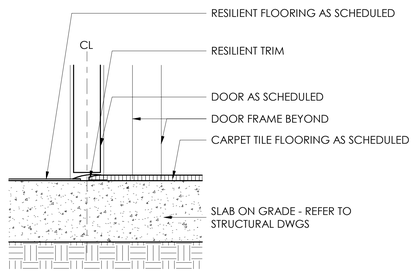
A1 TYPICAL STOREFRONT DOOR JAMB - SECTION
3" = 1'-0"



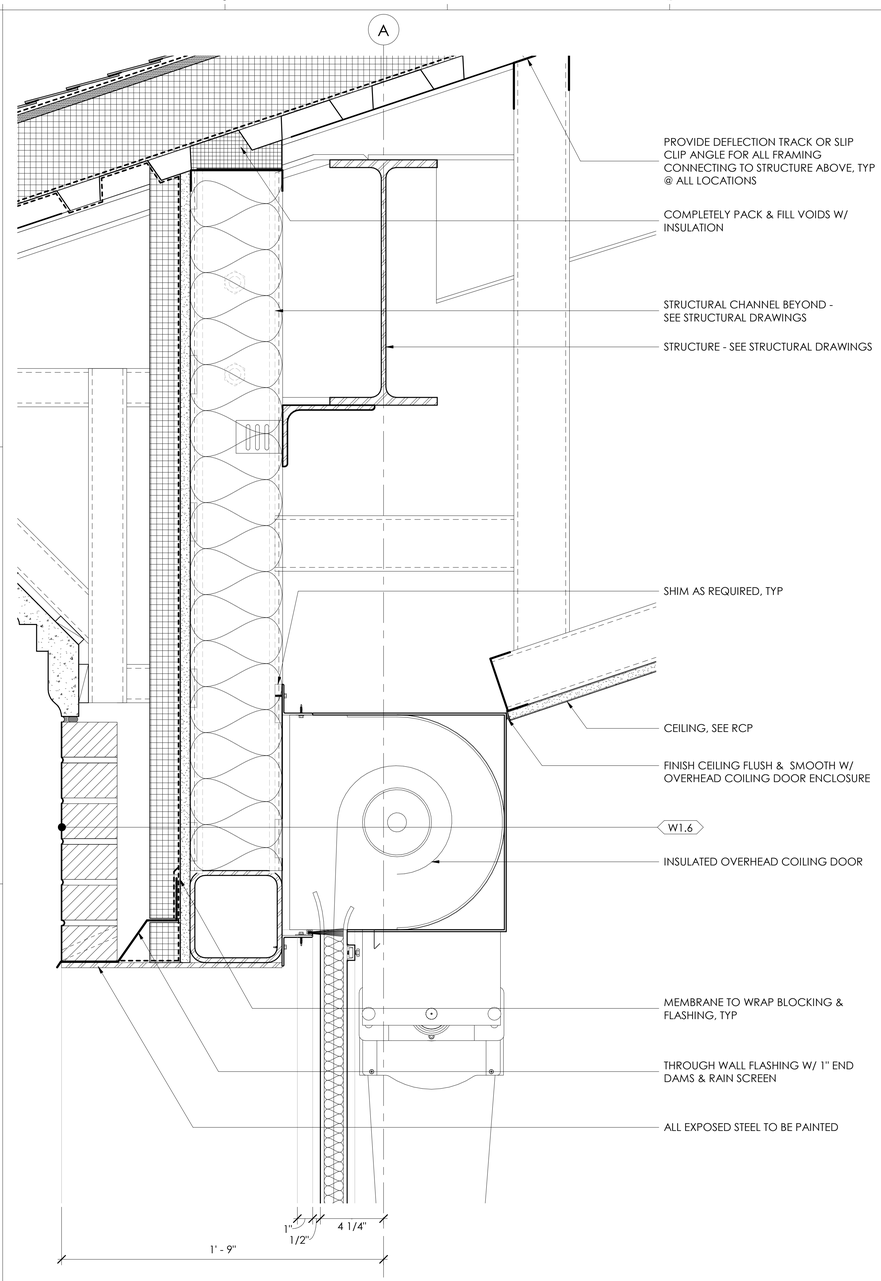
A2 TYP. INT. DOOR TRANSITION (RESILIENT TO RESILIENT) - SECTION
3" = 1'-0"



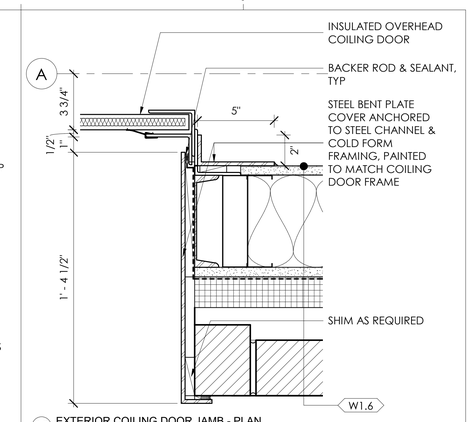
B1 TYPICAL INTERIOR STOREFRONT HEAD - SECTION
3" = 1'-0"



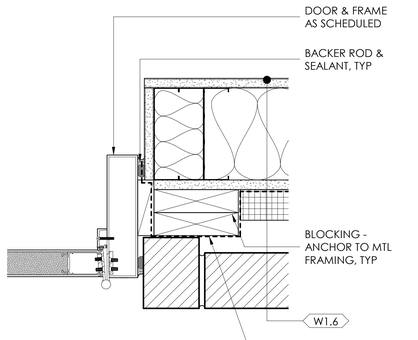
B2 TYP. INT. DOOR TRANSITION (RESILIENT TO CARPET TILE) - SECTION
3" = 1'-0"



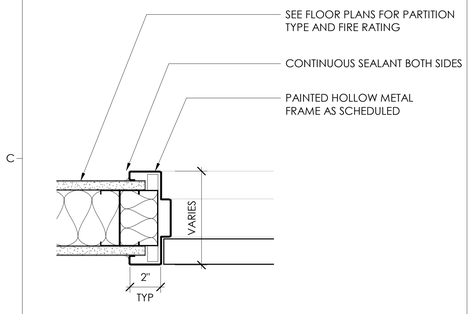
C3 EXTERIOR COILING DOOR HEAD - SECTION
3" = 1'-0"



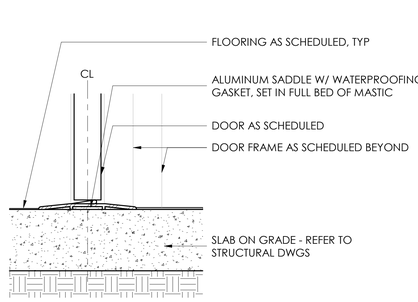
A5 EXTERIOR COILING DOOR JAMB - PLAN
3" = 1'-0"



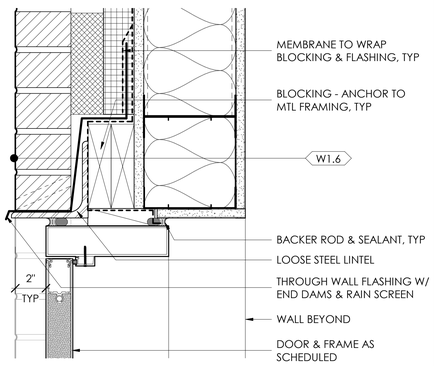
B5 TYPICAL EXTERIOR DOOR JAMB - PLAN
3" = 1'-0"



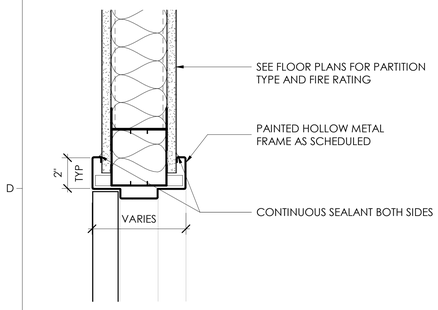
C1 TYPICAL INTERIOR HOLLOW METAL DOOR JAMB - SECTION
3" = 1'-0"



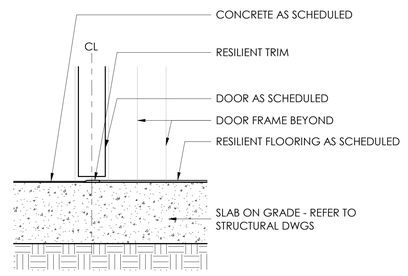
C2 TYP. INT. DOOR TRANSITION (ALUMINUM SADDLE) - SECTION
3" = 1'-0"



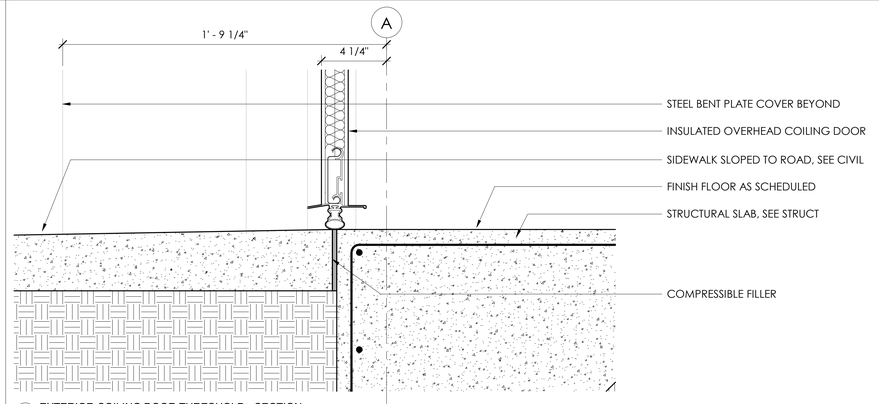
C5 TYPICAL EXTERIOR DOOR HEAD - SECTION
3" = 1'-0"



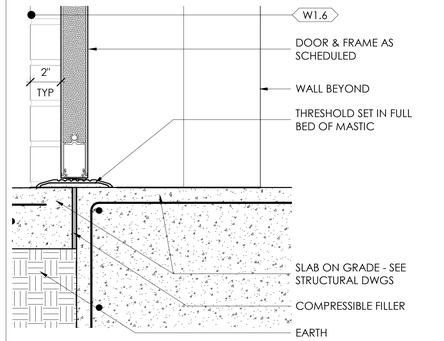
D1 TYPICAL INTERIOR HOLLOW METAL DOOR HEAD - SECTION
3" = 1'-0"



D2 TYP. INT. DOOR TRANSITION (CONCRETE TO RESILIENT) - SECTION
3" = 1'-0"



D3 EXTERIOR COILING DOOR THRESHOLD - SECTION
3" = 1'-0"



D5 TYPICAL EXTERIOR DOOR THRESHOLD - SECTION
3" = 1'-0"

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Mark Winston Wright
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09/14/20

PROJECT NORTH
PLAN NORTH

KEY PLAN

CONSTRUCTION DOCUMENTS

Revision Schedule		
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Coastal Engineering Building

UNCW

University of North Carolina Wilmington

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Wilmington, NC 28403

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CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

DESIGNED BY: AT
DRAWN BY: AT
CHECKED BY: MS

ISSUE DATE:
September 14, 2020

TYPICAL DOOR DETAILS

A910

SCALE: 3" = 1'-0"

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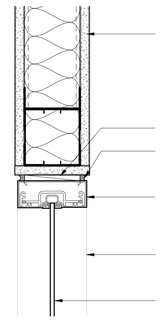
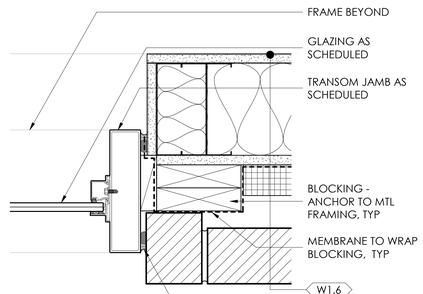
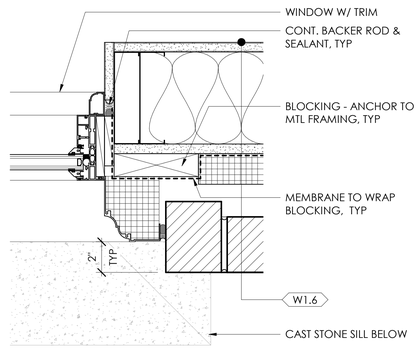


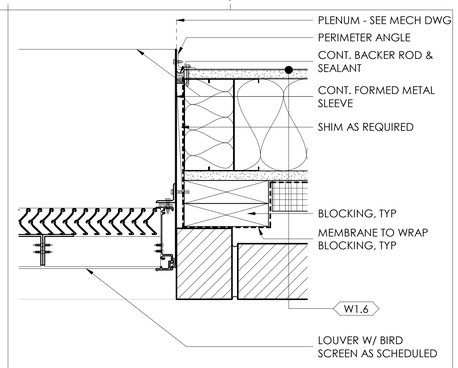
A2 TYPICAL INTERIOR STOREFRONT HEAD - SECTION
3" = 1'-0"



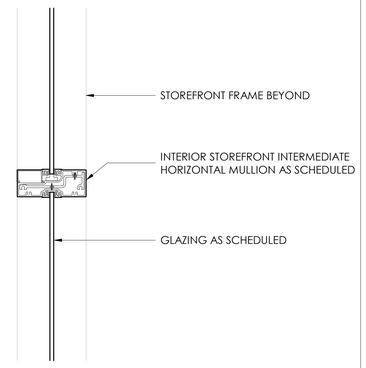
A3 TYPICAL EXTERIOR TRANSOM/SIDELIGHT JAMB - PLAN
3" = 1'-0"



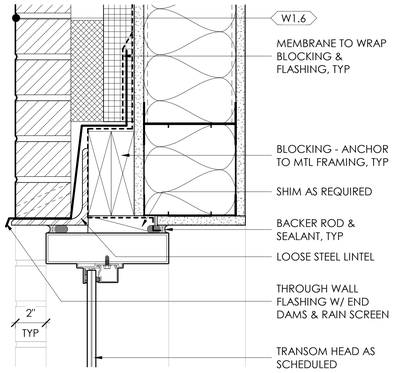
A4 TYPICAL EXTERIOR WINDOW (W-2) JAMB - PLAN
3" = 1'-0"



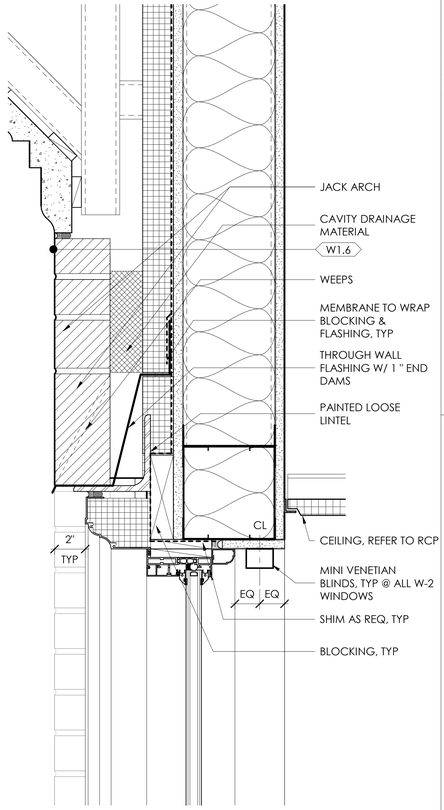
A5 TYPICAL EXTERIOR LOUVER JAMB - PLAN
3" = 1'-0"



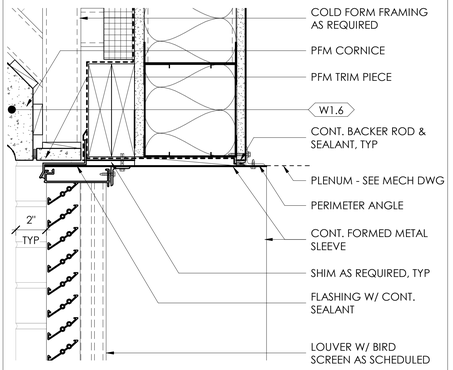
B2 TYPICAL INTERIOR STOREFRONT INTERMEDIATE MULLION - SECTION
3" = 1'-0"



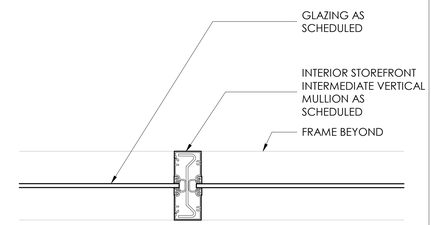
B3 EXTERIOR TRANSOM HEAD - SECTION
3" = 1'-0"



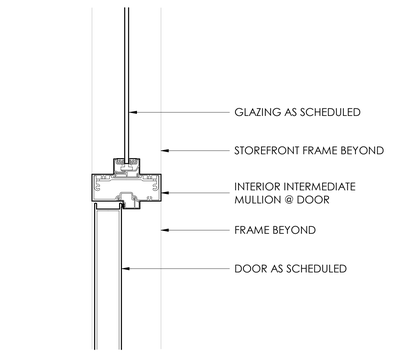
B4 TYPICAL EXTERIOR WINDOW (W-2) HEAD - SECTION
3" = 1'-0"



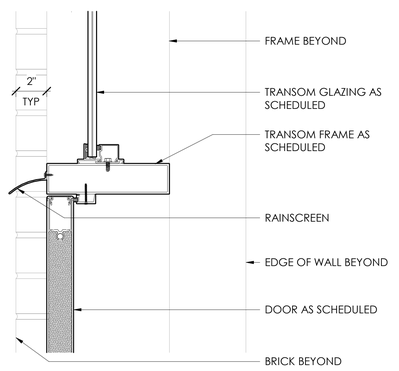
B5 TYPICAL EXTERIOR LOUVER HEAD - SECTION
3" = 1'-0"



C1 TYPICAL INTERIOR MULLION - PLAN
3" = 1'-0"

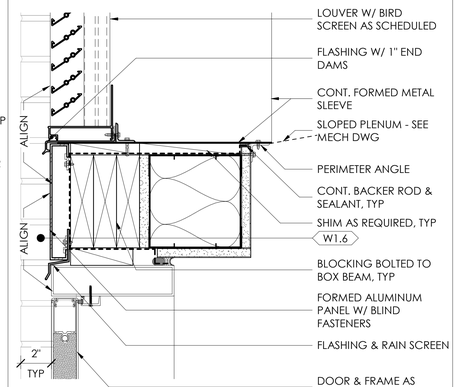


C2 TYPICAL INTERIOR STOREFRONT INTERMEDIATE MULLION - SECTION
3" = 1'-0"

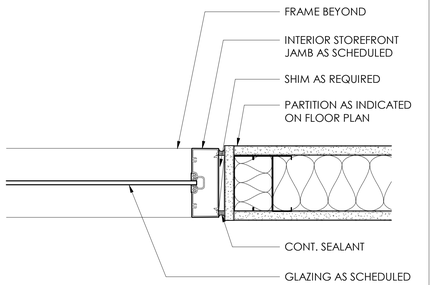


C3 TYPICAL EXTERIOR TRANSOM - SECTION
3" = 1'-0"

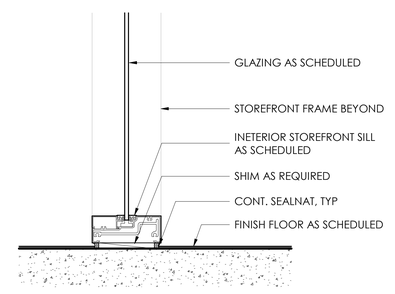
C4 TYPICAL EXTERIOR WINDOW (W-2) HEAD - SECTION
3" = 1'-0"



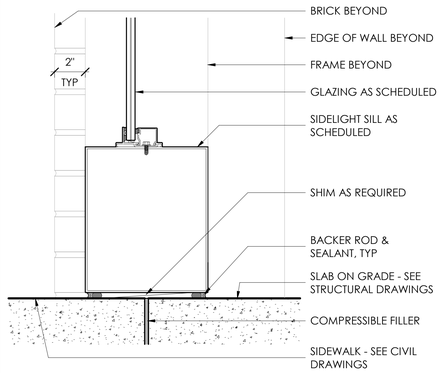
C5 EXTERIOR LOUVER (L-1) HEAD - SECTION
3" = 1'-0"



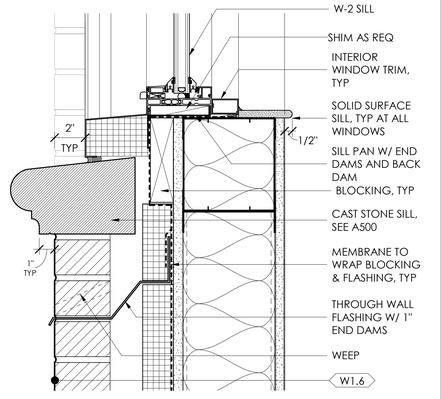
D1 TYPICAL INTERIOR STOREFRONT JAMB - PLAN
3" = 1'-0"



D2 TYPICAL INETERIOR STOREFRONT SILL - SECTION
3" = 1'-0"



D3 TYPICAL SIDELIGHT SILL - SECTION
3" = 1'-0"



D4 TYPICAL EXTERIOR WINDOW (W-2) SILL - SECTION
3" = 1'-0"

D5 TYPICAL EXTERIOR LOUVER SILL - SECTION
3" = 1'-0"

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9/14/20

PROJECT NORTH
PLAN NORTH
KEY PLAN

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TYPICAL LOUVER & WINDOW DETAILS

A911

SCALE: 3" = 1'-0"

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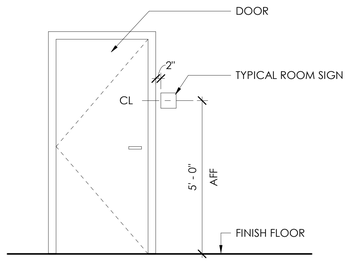
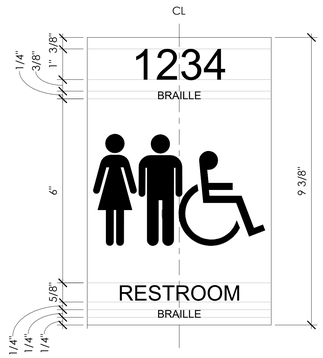
GENERAL NOTES:

1. COORDINATE ALL SIGN ROOM NAMES AND NUMBERS WITH THE OWNER.
2. ARCHITECT TO SELECT COLOR OF SIGNS FROM FULL RANGE OF MANF. SELECTION.
3. TEXT DIMENSION GUIDES ARE INDICATED BY GREY LINES.
4. PROVIDE BRAILLE WHERE "BRAILLE" IS SIGNIFIED IN TEXT ON THE SIGN.
5. PROVIDE SIGNS AS DIRECTED BY THE TYPICAL SIGNAGE DETAILS D1/A912.

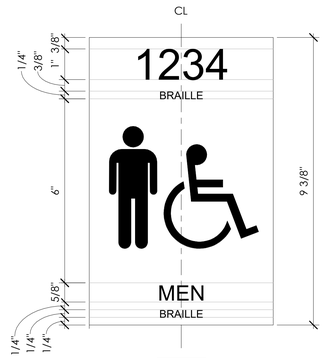


A2 TYPICAL SIGN MOUNTING LOCATION
1/2" = 1'-0"



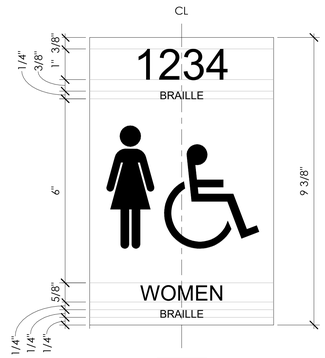
TYPE 4C

PROVIDE AT FAMILY RESTROOM



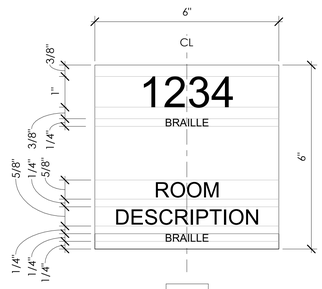
TYPE 4B

PROVIDE AT MENS RESTROOM



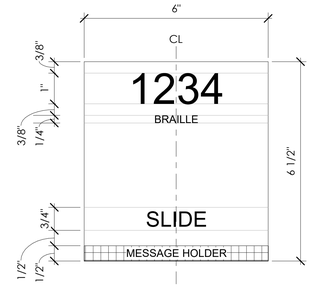
TYPE 4A

PROVIDE AT WOMENS RESTROOM



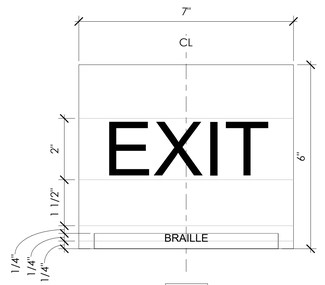
TYPE 3

TO BE USED FOR THE FOLLOWING SPACES:
HOUSEKEEPING
MECHANICAL
HAZARDOUS WASTE
ELECTRICAL
TELECOM/DATA



TYPE 1

TO BE USED FOR THE FOLLOWING SPACES:
OFFICES
CONFERENCE ROOMS
CLASSROOMS
PHOTOCOPY ROOMS
RECEPTION
FILE ROOMS



TYPE 5

PROVIDE AT ALL EXIT SIGNS

D1 TYPICAL SIGNAGE DETAILS
6" = 1'-0"

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PLAN NORTH

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DESIGNED BY: Author
DRAWN BY: Author
CHECKED BY: Checker

ISSUE DATE:
September 14, 2020

SIGNAGE

A912

SCALE: As indicated

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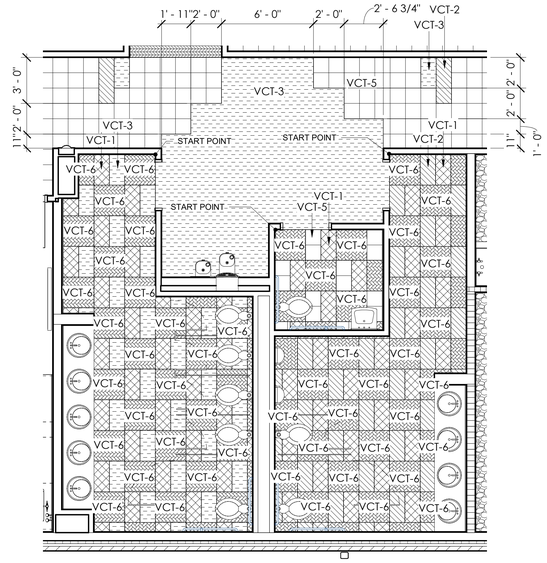
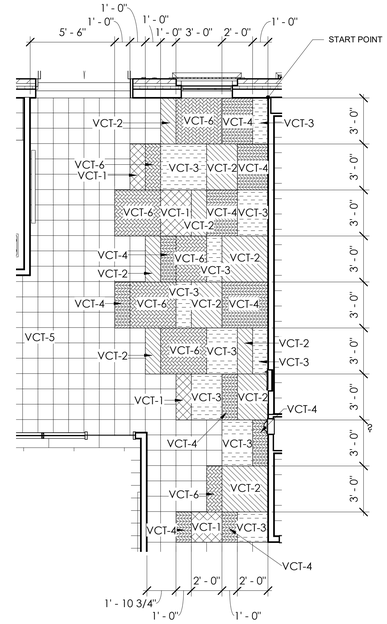


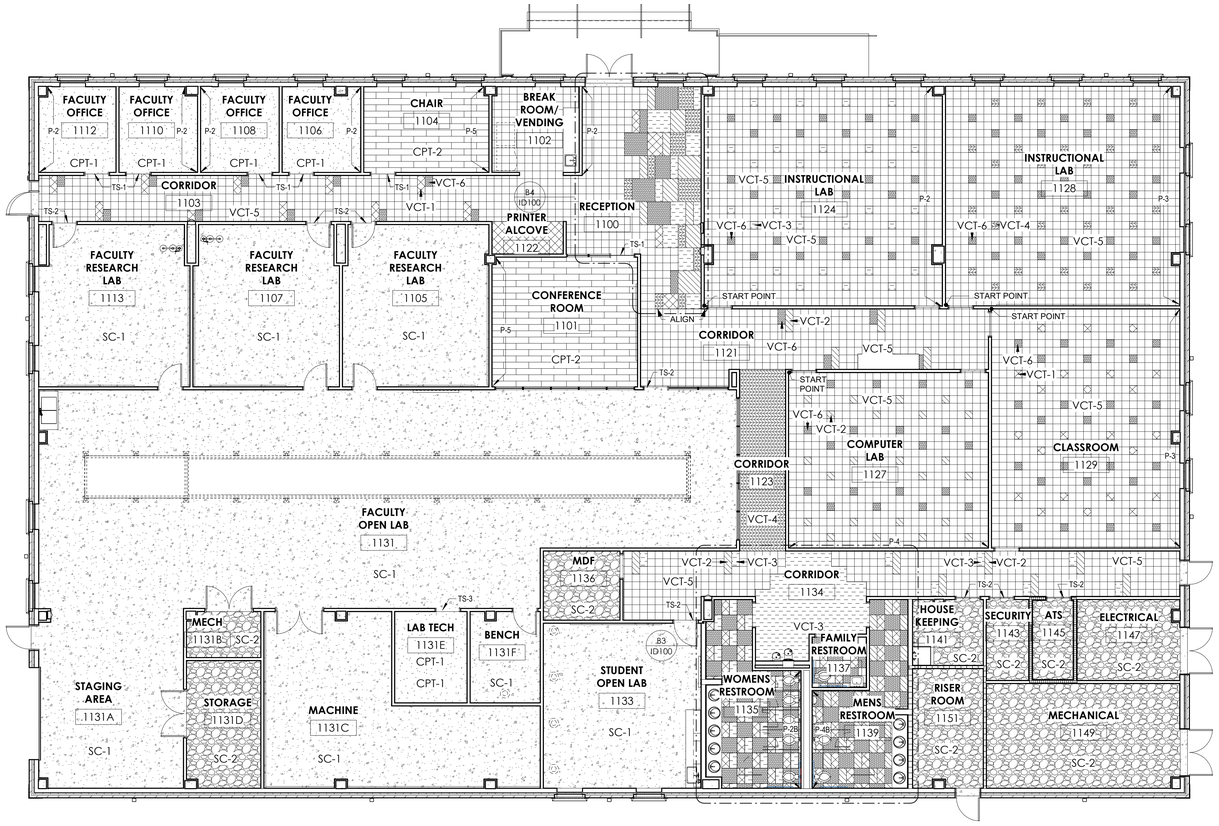
B3 ENLARGED RESTROOM FLOOR FINISH PLAN
1/4" = 1'-0"



B4 ENLARGED LOBBY FLOOR FINISH PLAN
1/4" = 1'-0"

FLOOR FINISH LEGEND

- CPT-1
- CPT-2
- SC-1
- SC-2
- VCT-1
- VCT-2
- VCT-3
- VCT-4
- VCT-5
- VCT-6



D3 FINISH PLAN
1/8" = 1'-0"

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PROJECT NORTH
PLAN NORTH

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DRAWN BY: Author
CHECKED BY: Checker

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FLOOR FINISH PLAN

ID100

SCALE: As indicated

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ROOM FINISH KEY SCHEDULE

KEY NAME	MATERIAL	LOCATION	MANUFACTURER	SERIES.MODEL	COLOR	SIZE	ACCESSORY	REMARKS
FLOOR								
CPT-1	CARPET TILE	OFFICES	MILLIKEN	LOW COUNTRY SEA FALL	SFL201-13 TIDAL	25 CM X 1 M	N/A	
CPT-2	CARPET TILE	CONFERENCE ROOM AND CHAIR	MILLIKEN	LOW COUNTRY ESTUARY	EST201-13 TIDAL	25 CM X 1 CM		
SC-1	EPOXY	LABS	SHERWIN WILLIAMS	TILE CLAD HS EPOXY	SW7026 GRIFFIN			
SC-2	SEALED CONCRETE	MECHANICAL SPACES	SHERWIN WILLIAMS					
VCT-1	VINYL COMPOSITION TILE	PROJECT STANDARD	ARMSTRONG	STANDARD EXCELON IMPERIAL TEXTURE	51901 TAUPE	12"x12"	N/A	
VCT-2	VINYL COMPOSITION TILE	ACCENT	ARMSTRONG	STANDARD EXCELON IMPERIAL TEXTURE	51882 SERENE BLUE	12"x12"	N/A	
VCT-3	VINYL COMPOSITION TILE	ACCENT	ARMSTRONG	STANDARD EXCELON IMPERIAL TEXTURE	57506 COLORADO STONE	12"x12"		
VCT-4	VINYL COMPOSITION TILE	ACCENT	ARMSTRONG	STANDARD EXCELON IMPERIAL TEXTURE	51946 GENTIAN BLUE	12"x12"		
VCT-5	VINYL COMPOSITION TILE	ACCENT	ARMSTRONG	STANDARD EXCELON IMPERIAL TEXTURE	51810 WASHED LINEN	12"x12"		
VCT-6	VINYL COMPOSITION TILE	ACCENT	ARMSTRONG	STANDARD EXCELON IMPERIAL TEXTURE	51899 COOL WHITE	12"x12"		
BASE								
VB-1	VINYL BASE	RESILIENT FLOORING SPACES	JOHNSONITE	TRADITIONAL WALL BASE	TB1 PEPPERCORN	1/8" THICK, 4" HIGH	N/A	
VB-2	VINYL BASE	CARPETED SPACES	JOHNSONITE	TRADITIONAL WALL BASE	TA4 GATEWAY WG	1/8" THICK, 4" HIGH		TOELESS
WALL								
FRP-1	FIBERGLASS REINFORCED PLASTIC PANEL	FACULTY RESEARCH LAB AND HOUSE KEEPING	MARLITE	STANDARD FRP	S 100 S/2/S WHITE	4' X 8'	FRPT-1	SMOOTH FINISH, INSTALL FRPT-1 AT ALL EXPOSED EDGES
P-1	PAINT	PROJECT STANDARD	SHERWIN WILLIAMS		SW9165 GOSSAMER VEIL	N/A	N/A	EGGSHELL FINISH
P-1B	EPOXY PAINT	FACULTY OPEN LAB AND RESTROOMS	SHERWIN WILLIAMS	TILE CLAD HS EPOXY	SW9165 GOSSAMER VEIL	N/A	N/A	EPOXY FINISH
P-2	PAINT	FACULTY OFFICE AND CLASSROOM ACCENT	SHERWIN WILLIAMS		SW0020 PEACOCK PLUME	N/A	N/A	EGGSHELL FINISH
P-2B	EPOXY PAINT	WOMEN'S RESTROOM ACCENT	SHERWIN WILLIAMS	TILE CLAD HS EPOXY	SW0020 PEACOCK PLUME	N/A	N/A	EPOXY FINISH
P-3	PAINT	INSTRUCTIONAL LAB AND CLASSROOM ACCENT	SHERWIN WILLIAMS		SW9149 INKY BLUE	N/A	N/A	EGGSHELL FINISH
P-4	PAINT	COMPUTER LAB ACCENT	SHERWIN WILLIAMS		SW9147 FAVORITE JEANS	N/A	N/A	EGGSHELL FINISH
P-4B	EPOXY PAINT	MEN'S RESTROOM ACCENT	SHERWIN WILLIAMS	TILE CLAD HS EPOXY	SW9147 FAVORITE JEANS	N/A	N/A	EPOXY FINISH
P-5	PAINT	CONFERENCE AND FACULTY CHAIR ACCENT	SHERWIN WILLIAMS		SW6444 LOUNGE GREEN	N/A	N/A	EGGSHELL FINISH
P-9	FIRE RESISTIVE PAINT	MDF	SHERWIN WILLIAMS	FLAME CONTROL/FLAT INTUMESCENT FIRE RETARDANT/20-20A	SW9165 GOSSAMER VEIL	N/A	N/A	SEE NOTE 2 ON TC201
CEILING								
ACP-1	ACOUSTICAL CEILING PANEL	PROJECT STANDARD	USG	ORION 85 ACOUSTICAL PANELS	WHITE	2' X 2'	N/A	SQUARE EDGE
GWB-1	GYPSUM WALL BOARD	FACULTY OPEN LAB			P-6	N/A	N/A	
P-6	EPOXY PAINT	FACULTY OPEN LAB CEILING	SHERWIN WILLIAMS	TILE CLAD HS EPOXY	SW7007 CEILING BRIGHT WHITE	N/A	N/A	EPOXY FINISH
MISCELLANEOUS								
TP-1	TOILET PARTITION	RESTROOMS	GENERAL PARTITIONS	SOLID PHENOLIC CORE PANEL	4170-60 BEIGE PAMPAS			
CASEWORK								
HPL-1	HIGH PRESSURE LAMINATE	WORK ROOM CABINETS	FORMICA	LAMINATE	5488-NT SMOKY BROWN PEAR			NATURELLE FINISH
HPL-2	HIGH PRESSURE LAMINATE	WORK ROOM COUNTERTOP	FORMICA	LAMINATE	8956-58 BUBBLE SCIENCE			MATTE FINISH
HPL-3	HIGH PRESSURE LAMINATE	RESTROOM SINK APRONS	FORMICA	LAMINATE	8842-WR WEATHERED ASH			WOODBRUSH FINISH
SS-1	SOLID SURFACE	RESTROOM COUNTERTOP	FORMICA	SOLID SURFACING	BIANCO MINERAL 758	30" X 144", 1/2" THICKNESS		
TRIM								
FRPT-1	FIBERGLASS REINFORCED PLASTIC TRIM	FACULTY RESEARCH LAB AND HOUSE KEEPING	MARLITE	PVC TRIM	WHITE	M370 EDGE - 8' LENGTH		
P-7	PAINT	HOLLOW METAL DOOR FRAMES	SHERWIN WILLIAMS		SW7005 PURE WHITE			SEMI-GLOSS FINISH
TS-1	TRANSITION STRIP	PROJECT STANDARD		CTA-40-A	40 BLACK			TRANSITION FROM VCT TO CPT
TS-2	TRANSITION STRIP	PROJECT STANDARD	JOHNSONITE	RRS-40-D	40 BLACK			TRANSITION FROM VCT TO SC
TS-3	TRANSITION STRIP	PROJECT STANDARD	JOHNSONITE	CRS-40-A	40 BLACK			TRANSITION FROM CPT TO SC
EXTERIOR								
P-8	PAINT	PROJECT STANDARD	SHERWIN WILLIAMS		SW2429 PALAIS WHITE			LATEX FLAT FINISH - ALL EXTERIOR PAINTED SURFACES, UNO

ROOM FINISH SCHEDULE

ROOM NUMBER	ROOM NAME	FLOOR FINISH	BASE FINISH	WALL FINISH				CEILING FINISH	Comments
				NORTH	SOUTH	EAST	WEST		
FIRST FLOOR									
1100	RECEPTION	VCT-1/VCT-2/VCT-3/VCT-4/VCT-5/VCT-6	VB-1	P-1	P-1	P-1	P-1	GWB-1	SEE ID100 FOR FLOOR FINISH PATTERN
1101	CONFERENCE ROOM	CPT-2	VB-2	P-1	P-1	P-1	P-5	ACP-1	
1102	BREAK ROOM/ VENDING	VCT-1	VB-1	P-1	P-1	P-1	P-1	ACP-1	
1103	CORRIDOR	VCT-1	VB-1	P-1	P-1	P-1	P-1	ACP-1	
1104	CHAIR	CPT-1	VB-2	P-1	P-1	P-5	P-1	ACP-1	
1105	FACULTY RESEARCH LAB	SC-1	VB-1	P-1	P-1	P-1	P-1	NO CEILING	
1106	FACULTY OFFICE	CPT-1	VB-2	P-1	P-1	P-2	P-1	ACP-1	
1107	FACULTY RESEARCH LAB	SC-1	VB-1	P-1	P-1	P-1	P-1	NO CEILING	INSTALL FRP-1 BEHIND DRENCH SHOWER
1108	FACULTY OFFICE	CPT-1	VB-2	P-1	P-1	P-1	P-2	ACP-1	
1110	FACULTY OFFICE	CPT-1	VB-2	P-1	P-1	P-2	P-1	ACP-1	
1112	FACULTY OFFICE	CPT-1	VB-2	P-1	P-1	P-1	P-2	ACP-1	
1113	FACULTY RESEARCH LAB	SC-1	VB-1	P-1	P-1	P-1	P-1	NO CEILING	INSTALL FRP-1 BEHIND DRENCH SHOWER
1121	CORRIDOR	VCT-1	VB-1	P-1	P-1	P-1	P-1/P-2	ACP-1	
1122	PRINTER ALCOVE	VCT-1	VB-1	P-1	P-1	P-1	P-1	ACP-1	
1123	CORRIDOR	VCT-4	VB-1	P-1	P-1	P-1	P-1	ACP-1	
1124	INSTRUCTIONAL LAB	VCT-3/VCT-5/VCT-6	VB-1	P-1	P-1	P-2	P-1	ACP-1	
1127	COMPUTER LAB	VCT-2/VCT-5/VCT-6	VB-1	P-1	P-4	P-1	P-1	ACP-1	
1128	INSTRUCTIONAL LAB	VCT-4/VCT-5/VCT-6	VB-1	P-1	P-1	P-3	P-1	ACP-1	
1129	CLASSROOM	VCT-1/VCT-5/VCT-6	VB-1	P-1	P-1	P-3	P-1	ACP-1	
1131	FACULTY OPEN LAB	SC-1	VB-1	P-1B	P-1B	P-1B	P-1B	GWB-1	
1131A	STAGING AREA	SC-1	VB-1	P-1B	P-1B	P-1B	P-1B	GWB-1	
1131B	MECH	SC-2	VB-1	P-1	P-1	P-1	P-1	ACP-1	
1131C	MACHINE	SC-1	VB-1	P-1	P-1	P-1	P-1	NO CEILING	
1131D	STORAGE	SC-1	VB-1	P-1	P-1	P-1	P-1	NO CEILING	
1131E	LAB TECH	CPT-1	VB-2	P-1	P-1	P-1	P-1	ACP-1	
1131F	BENCH	SC-1	VB-1	P-1	P-1	P-1	P-1	ACP-1	
1133	STUDENT OPEN LAB	SC-1	VB-1	P-1	P-1	P-1	P-1	NO CEILING	
1134	CORRIDOR	VCT-2/VCT-3?VCT-5	VB-1	P-1	P-1	P-1	P-1	ACP-1	SEE ID100 FOR FLOOR FINISH PATTERN
1135	WOMENS RESTROOM	VCT-1/VCT-3/VCT-6	VB-1	P-1B	P-1B	P-2B	P-1B	ACP-1	SEE ID100 FOR FLOOR FINISH PATTERN
1136	MDF	SC-2	VB-1	P-9	P-9	P-9	P-9	NO CEILING	SEE TC201 FOR ADDITIONAL WALL/MATERIAL FINISH NOTES
1137	FAMILY RESTROOM	VCT-1/VCT-5/VCT-6	VB-1	P-1B	P-1B	P-1B	P-1B	ACP-1	SEE ID100 FOR FLOOR FINISH PATTERN
1139	MENS RESTROOM	VCT-1/VCT-2-VCT-6	VB-1	P-1B	P-1B	P-1B	P-4B	ACP-1	SEE ID100 FOR FLOOR FINISH PATTERN
1141	HOUSE KEEPING	SC-2	VB-1	P-1	P-1	P-1	P-1/FRP-1	ACP-1	INSTALL FRP-1 BEHIND MOP SINK
1143	SECURITY	SC-2	VB-1	P-1	P-1	P-1	P-1	NO CEILING	
1145	ATS	SC-2	VB-1	P-1	P-1	P-1	P-1	NO CEILING	
1147	ELECTRICAL	SC-2	VB-1	P-1	P-1	P-1	P-1	NO CEILING	
1149	MECHANICAL	SC-2	VB-1	P-1	P-1	P-1	P-1	NO CEILING	
1151	RISER ROOM	SC-2	VB-1	P-1	P-1	P-1	P-1	NO CEILING	

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CHARLOTTE, NORTH CAROLINA
9/14/20

PROJECT NORTH | PLAN NORTH

KEY PLAN

CONSTRUCTION DOCUMENTS

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW
University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403
SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01

DESIGNED BY: Author
DRAWN BY: Author
CHECKED BY: Checker

ISSUE DATE:
September 14, 2020

FINISH KEY & ROOM FINISH SCHEDULE

ID200

SCALE:

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1.0. CODES AND STANDARDS:

1.1. NORTH CAROLINA STATE BUILDING CODE 2018 EDITION INCLUDING ALL SUBSEQUENT SUPPLEMENTS AND AMENDMENTS THERETO.
1.2. "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES", AMERICAN SOCIETY OF CIVIL ENGINEERS, ASCE 7-10.
1.3. "SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS", PUBLICATION 360-10 BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION, AND AS AMENDED IN SPECIFICATIONS.
1.4. "SEISMIC PROVISIONS FOR STRUCTURAL STEEL BUILDINGS", PUBLICATION 341-10 BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION INCLUDING SUPPLEMENT NO. 1 DATED 2005.
1.5. "STRUCTURAL WELDING CODE - STEEL (AWS D1.1-10)" AND "STRUCTURAL WELDING CODE REINFORCING STEEL (AWS D1.4-11)", AMERICAN WELDING SOCIETY.
1.6. "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318-14)", AMERICAN CONCRETE INSTITUTE AND ALL SUCCEEDING REVISIONS.
1.7. "MANUAL OF STANDARD PRACTICE", CONCRETE REINFORCING STEEL INSTITUTE, LATEST EDITION.
1.8. "STANDARD FOR STEEL ROOF DECK", ANSI/RD1.0-10, STEEL DECK INSTITUTE.
1.9. "NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS", AISI S100-12, AMERICAN IRON AND STEEL INSTITUTE.
1.10. "STANDARD SPECIFICATIONS FOR OPEN WEB STEEL JOISTS, K-SERIES", K-10 STEEL JOIST INSTITUTE.

2.0. SPECIFICATIONS:

2.1. THE STRUCTURAL GENERAL NOTES ARE NOT A SUBSTITUTE OR A REPLACEMENT FOR THE PROJECT SPECIFICATIONS. THESE NOTES ARE INTENDED AS A GUIDE TO THE DESIGN AND/OR CONSTRUCTION REQUIREMENTS ESTABLISHED FOR THIS PROJECT. NO CONTRACTOR SHOULD ATTEMPT TO DESIGN, BID, OR CONSTRUCT ANY PORTION OF THE WORK HEREIN WITHOUT CONSULTING THE PROJECT SPECIFICATIONS. WHERE CONFLICTS OCCUR BETWEEN THESE NOTES AND THE SPECIFICATIONS, THE MORE STRINGENT REQUIREMENT SHALL APPLY UNLESS A WRITTEN CLARIFICATION IS ISSUED BY THE STRUCTURAL ENGINEER.
2.2. CONTRACTOR AND STRUCTURAL STEEL FABRICATOR SHOULD ACQUAINT THEMSELVES WITH THE REQUIREMENTS FOR DOMESTICALLY PRODUCED BOLTS AND FOR STEEL CONNECTION DESIGN REQUIREMENTS NOTED HEREIN AND IN THE STRUCTURAL STEEL SPECIFICATIONS.
2.3. CONTRACTOR AND STRUCTURAL STEEL FABRICATOR SHOULD ACQUAINT THEMSELVES WITH THE REQUIREMENTS FOR DOMESTICALLY PRODUCED BOLTS AND FOR STEEL CONNECTION DESIGN REQUIREMENTS, INCLUDING SIGNED AND SEALED SHOP DRAWINGS AND CONNECTION DESIGN CALCULATIONS, NOTED HEREIN AND IN THE STRUCTURAL STEEL SPECIFICATIONS. REQUIREMENTS ARE MANDATORY. REFER TO SPECIFICATION SECTION 051200 "STRUCTURAL STEEL"
2.4. STRUCTURAL STEEL SHALL BE FABRICATED BY A QUALIFIED FABRICATOR WHO PARTICIPATES IN THE AISC CERTIFICATION PROGRAM AND IS DESIGNATED AS AN AISC CERTIFIED PLANT "STANDARD FOR STEEL BUILDING STRUCTURES (STD)" OR/AND THE STRUCTURAL STEEL FABRICATOR MUST DEMONSTRATE A CONSISTENT RECORD OF AT LEAST TEN (10) SUCCESSFUL PROJECTS OF EQUAL OR GREATER MAGNITUDE OVER THE PRECEDING FIVE (5) YEARS. CONTRACTOR SHALL SUBMIT EVIDENCE TO THE ARCHITECT VERIFYING HIS PROPOSED FABRICATOR'S COMPLIANCE. FABRICATOR'S CREDENTIALS MUST BE IN COMPLIANCE WITHIN 48 HOURS OF BID.
2.5. STRUCTURAL STEEL SHALL BE ERECTED BY A QUALIFIED INSTALLER WHO PARTICIPATES IN THE AISC CERTIFICATION PROGRAM AND IS DESIGNATED AS AN AISC "CERTIFIED STEEL ERECTOR (CSE)"/"ADVANCED CERTIFIED STEEL ERECTOR (ACSE)" AND THE ERECTOR MUST DEMONSTRATE A CONSISTENT RECORD OF AT LEAST TEN (10) SUCCESSFUL PROJECTS OF EQUAL OR GREATER MAGNITUDE OVER THE PRECEDING FIVE (5) YEARS. CONTRACTOR SHALL SUBMIT EVIDENCE TO THE ARCHITECT VERIFYING HIS ERECTOR'S COMPLIANCE. ERECTOR'S CREDENTIALS MUST BE IN COMPLIANCE WITHIN 48 HOURS OF BID.

3.0. DESIGN LOADS:

3.1. SUPERIMPOSED GRAVITY LOADS:

AREA	LIVE LOAD	DEAD LOAD
MINIMUM UNIFORM ROOF LOAD	20 PSF	25 PSF
SLAB ON GRADE	200 PSF	-

LIVE LOADS ARE REDUCED IN CONFORMANCE WITH ASCE 7-10 SECTION 4.8 "REDUCTION IN LIVE LOADS"

3.2. SEISMIC LOADS:

RISK CATEGORY	II	
RISK IMPORTANCE FACTOR "IE"	1.0	
SITE SOIL CLASSIFICATION	D	
SITE SPECIFIC SPECTRAL RESPONSE "Ss/S1"	0.207g/0.071g	
DESIGN SPECTRAL RESPONSE "Sds/Sd1"	0.220g/0.114g	
SEISMIC DESIGN CATEGORY	B	
MEAN ROOF HEIGHT	22'-11"	
STRUCTURAL SYSTEM	NORTH/SOUTH STEEL MOMENT FRAMES	EAST/WEST STEEL MOMENT FRAMES
RESPONSE MODIFICATION "R"	3.0	3.0
**DEFLECTION AMPLIFICATION "CD"	4.5	4.5
PERIOD BY CODE FORMULA "TA"	0.249 SEC.	0.249 SEC.
**PERIOD BY ELASTIC ANALYSIS "TE"	0.366 SEC.	0.394 SEC.
MAXIMUM PERMISSIBLE PERIOD "TU"	0.361 SEC.	0.401 SEC.
SEISMIC COEFFICIENT "CS"	0.095	0.095
SEISMIC BASE SHEAR "VO"	8.11 KIPS	8.11 KIPS

3.3. WIND LOADS PER ASCE 7-10:

BASIC WIND SPEED (3-SECOND GUST)	147 MPH	
RISK CATEGORY	II	
ASCE 7 EXPOSURE CATEGORY	C	
MEAN ROOF HEIGHT	22'-11"	
MAIN WIND FORCE RESISTING SYSTEM	NORTH/SOUTH STEEL MOMENT FRAMES	EAST/WEST STEEL MOMENT FRAMES
WINDWARD PRESSURE COEFFICIENT "CP"	+0.80	+0.80
LEEWARD PRESSURE COEFFICIENT	-0.50	-0.50
WIND BASE SHEAR "VO"	54.70 KIPS	33.81 KIPS

WIND PRESSURES FOR CLADDING AND OTHER COMPONENTS VARY WITH SHAPE FACTORS FOR THOSE COMPONENTS - SEE APPROPRIATE ASCE 7-10 SECTIONS

3.4. DRIFTING SNOW LOADS PER ASCE 7-10:

50 YEAR GROUND SNOW LOAD "PG"	10.0 PSF
RISK CATEGORY	II
IMPORTANCE FACTOR "I"	1.0
ROOF EXPOSURE TYPE	PARTIAL
EXPOSURE FACTOR "CE"	1.00
THERMAL FACTOR "CT"	1.00
MINIMUM ROOF SNOW LOAD (PG*I)	10.0 PSF
FLAT ROOF SNOW LOAD "PF"	7.0 PSF
RAIN-ON-SNOW SURCHAGE	5.0 PSF
FLAT ROOF DESIGN SNOW LOAD	12.0 PSF

4.0. FOUNDATIONS:

4.1. FOUNDATION DESIGN IS BASED ON THE GEOTECHNICAL REPORT, DATED APRIL 9, 2019 AND THE SITE-SPECIFIC RESPONSE ANALYSIS DATED MAY 11, 2020 BY ECS SOUTHEAST, LLP. THIS REPORT IS AVAILABLE FOR INSPECTION AT THE OFFICE OF THE ARCHITECT OR OWNER. THE RECOMMENDATIONS OF THIS "REPORT" ARE HEREIN MADE A PART OF THE REQUIREMENTS OF THESE CONTRACT DOCUMENTS.
4.2. ALL SHALLOW FOUNDATIONS WERE ANTICIPATED TO BE IN CUT INTO UNDISTURBED RESIDUAL SOILS OR PROPERLY COMPACTED STRUCTURAL FILL AT THE TIME OF DESIGN AND WERE DESIGNED TO BEAR ON STRATA CAPABLE OF SUSTAINING A MINIMUM BEARING PRESSURE OF 2000 PSF IN ACCORDANCE WITH THE GEOTECHNICAL REPORT.
4.3. FOOTINGS SHALL BEAR ON STRATA CAPABLE OF SUSTAINING A MINIMUM BEARING PRESSURE OF 2000 PSF.
4.4. WHERE FOOTING EXCAVATIONS MUST REMAIN OPEN OVERNIGHT OR IF RAINFALL BECOMES IMMINENT WHILE BEARING SOILS ARE EXPOSED, A 2" TO 4" THICK MUD MAT OF UNREINFORCED LEAN (F'C = 2000 PSI) CONCRETE SHALL BE PLACED ON THE BEARING SOILS BEFORE PLACEMENT OF THE FOOTING REINFORCING.
4.5. TOP OF FOOTING (T/FTG) ELEVATIONS ARE SHOWN ON THE DRAWINGS OR ARE TO BE DETERMINED BY THE CONTRACTOR IN THE FIELD IN ACCORDANCE WITH THE GUIDELINES SET FORTH IN THE DRAWINGS AND SPECIFICATIONS.
4.6. BOTTOM OF EXTERIOR FOOTINGS SHALL BEAR AT A MINIMUM DEPTH OF 1'-6" BELOW FINAL GRADE FOR FROST PROTECTION.
4.7. TESTING AND INSPECTION:
A. ALL AREAS TO HAVE SLABS ON GRADE SHALL BE PROOF ROLLED IN ACCORDANCE WITH THE "REPORT" AND UNDER OBSERVATION OF THE GEOTECHNICAL ENGINEER AND APPROVED PRIOR TO PREPARATION FOR CONCRETE PLACEMENT. AND APPROVED PRIOR TO PREPARATION FOR CONCRETE PLACEMENT.
B. ALL FOUNDATION BEARING/FOUNDING STRATA SHALL BE INSPECTED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO ANY CONCRETE PLACEMENT.
C. GEOTECHNICAL ENGINEER SHALL BE THE SOLE JUDGE AS TO SUITABILITY OF ALL FOUNDATION AND/OR SLAB BEARING/FOUNDING STRATA.
D. FOOTING BEARING ELEVATIONS SHALL BE ADJUSTED IN THE FIELD AS REQUIRED TO MEET THE DESIGN BEARING PRESSURES BY ADDITIONAL EXCAVATION OR COMPACTION AND/OR BACKFILLING OR BY OTHER MEANS ACCEPTABLE TO THE GEOTECHNICAL ENGINEER.
E. ALL OPERATIONS SHALL BE PERFORMED BY THE CONTRACTOR IN ACCORDANCE WITH THE SPECIFICATION REQUIREMENTS AND UNIT PRICES.
4.8. UNACCEPTABLE SOILS: CONTRACTOR SHALL REMOVE AND REPLACE UNACCEPTABLE SOILS IN ACCORDANCE WITH THE GEOTECHNICAL REPORT AND/OR AT THE DIRECTION OF THE GEOTECHNICAL ENGINEER. ALL SOILS WITH PLASTICITY INDICES GREATER THAN 15 OF WHICH MORE THAN 10% PASSES A #200 SIEVE SHALL BE REMOVED TO A DEPTH OF NOT LESS THAN 3'-0" OR GREATER AS DIRECTED BY THE GEOTECHNICAL ENGINEER WHERE SUCH MATERIAL OCCURS BELOW FOUNDATIONS.
4.9. ENGINEERED FILL: ALL FILL MATERIAL SHALL BE SELECTED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT. MATERIAL SHALL BE A CLEAN, LOW PLASTIC SOIL WITH A PLASTICITY INDEX LESS THAN 30 (LESS THAN 15 IS PREFERRED), LIQUID LIMIT LESS THAN 50, UNIT WEIGHT OF 120 PCF (+/- 5 PCF), AND SHALL NOT CONTAIN MORE THAN 5% BY WEIGHT OF FIBROUS ORGANIC MATERIALS. PARTIALLY WEATHERED ROCK MATERIALS MAY BE USED FOR STRUCTURAL FILL PROVIDED THE MATERIAL CAN BE REDUCED TO MAXIMUM DIMENSIONS OF 6".
4.10. DEEP FILL: WHERE SEVERAL FEET OF STRUCTURAL FILL WILL BE REQUIRED TO ACHIEVE THE FINAL GRADES, CONSTRUCTION SHALL BE DELAYED TO PERMIT THE UNDERLYING SOILS TO SETTLE AND CONSOLIDATE UNDER THE WEIGHT OF THE NEWLY PLACED FILL OVERBURDEN. SEVERAL WEEKS OF TIME MAY BE REQUIRED FOR THIS SETTLING TO OCCUR. SETTLEMENT PINS SHALL BE INSTALLED AT THE TOP OF THE FILL AND MONITORED TO DETERMINE WHEN THE CONSOLIDATION HAS REACHED A NEGLIGIBLE MOVEMENT THUS PERMITTING CONSTRUCTION TO BEGIN. THE GEOTECHNICAL ENGINEER SHALL BE THE SOLE JUDGE AS TO THE REQUIREMENTS FOR DELAY AND COMPLETION OF ADEQUATE CONSOLIDATION.
4.11. EXTENT OF FILL PLACEMENT: STRUCTURAL FILL SHALL EXTEND HORIZONTALLY BEYOND THE EDGE OF BUILDING FOUNDATIONS AT LEAST A DISTANCE OF 10'-0" BUT NOT LESS THAN THE HEIGHT OF THE FILL MATERIAL PLACED. SLOPES AT PERMANENT CUTS SHOULD NOT EXCEED 2:1 (H:V). SLOPE AT PERMANENT FILLS SHOULD NOT EXCEED 2.5:1 (H:V) AND SHOULD BE PROPERLY COMPACTED.
4.12. COMPACTION: ALL FILL SHALL BE PLACED IN LOOSE LIFTS NOT EXCEEDING 8 INCHES IN THICKNESS AND COMPACTED TO A MINIMUM OF 95 PERCENT STANDARD PROCTOR (ASTM D-698) EXCEPT THAT THE TOP 12 INCHES UNDER FOUNDATIONS AND THE BUILDING PAD SHALL BE COMPACTED TO A MINIMUM OF 98 PERCENT STANDARD PROCTOR. MOISTURE SHALL BE CONTROLLED TO WITHIN 3 PERCENT ABOVE OR BELOW OPTIMUM CONTENT.
4.13. MUD SLABS: PROVIDE 2" TO 4" THICK LEAN CONCRETE (2,000 PSI) "MUD-MAT" SLABS WHERE FOUNDATION EXCAVATIONS WILL BE LEFT OPEN TO POTENTIAL RAINFALLS.
4.14. MODULUS OF SUBGRADE REACTION FOR SLABS ON GRADE: 200 PCI
4.15. FOUNDATION AND RETAINING WALL DESIGN:

PARAMETER	#57 STONE	SAND	SOIL
ACTIVE COEFFICIENT (KA)	0.20	0.27	0.33
AT REST COEFFICIENT (KO)	0.33	0.43	0.50
PASSIVE COEFFICIENT (KP)	5.00	3.70	3.00
FRICTION COEFFICIENT	0.50	0.40	0.35
UNIT WEIGHT OF FILL	105 PCF	100 PCF	120 PCF

4.16. FOUNDATION AND RETAINING WALLS SHALL HAVE A MINIMUM OF TWO FEET (2'-0") OF FREE DRAINING GRANULAR FILL AGAINST THE BACK OF THE WALL OR SHALL HAVE AN ACCEPTABLE COMMERCIAL GRADE OF DRAINAGE MAT PLACED AGAINST THE BACK OF THE WALL.
4.17. FOUNDATION WALLS RETAINING EARTH SHALL BE BRACED AGAINST BACKFILL PRESSURES UNTIL FLOOR SLABS AT TOP AND BOTTOM ARE IN PLACE. BACKFILLING IS STRICTLY PROHIBITED UNTIL SLABS ARE IN PLACE.
4.18. FOUNDATION WALLS OR GRADE BEAMS HAVING EARTH PLACED ON EACH SIDE SHALL HAVE BOTH FILLED SIMULTANEOUSLY TO MAINTAIN A COMMON ELEVATION.
4.19. REINFORCING IN ALL CONTINUOUS STRIP FOOTINGS SHALL HAVE CORNER BARS OR DOWELS PROVIDED AT ALL CORNERS AND INTERSECTIONS.

5.0. CONCRETE:

5.1. CONCRETE SHALL HAVE 28-DAY COMPRESSIVE STRENGTHS AND DENSITIES AS FOLLOWS:

ELEMENT/MEMBER	STRENGTH F'C	DENSITY WC
FOOTINGS & SLABS ON GRADE	3 KSI	145 PCF
EXTERIOR CONCRETE OR CONCRETE EXPOSED TO WEATHER	4.5 KSI	145 PCF
ALL OTHER CONCRETE U.N.O.	4 KSI	145 PCF

5.2. CONCRETE MIX DESIGNS:
A. SUBMITTALS: SUBMIT WRITTEN REPORTS OF EACH PROPOSED CONCRETE MIX NOT LESS THAN 15 DAYS PRIOR TO THE START OF WORK. DESIGN MIXES PREPARED MORE THAN TWENTY-FOUR (24) MONTHS PRIOR TO THE DATE OF THE SUBMITTAL ARE NOT PERMITTED.
B. MIX DESIGNS, INCLUDING W/C RATIOS AND SLUMPS, SHALL BE PREPARED IN ACCORDANCE WITH THE MOST CURRENT ACI 301 CHAPTER 4, EXCEPT WHERE NOTED OTHERWISE IN THE PROJECT SPECIFICATIONS. CEMENT SHALL CONFORM TO ASTM C 150 TYPE I OR AT CONTRACTOR'S OPTION, ASTM C 595 TYPE IP WHERE FLY ASH IS PERMITTED IN ACCORDANCE WITH THE SPECIFICATIONS. NORMAL WEIGHT AGGREGATE SHALL CONFORM TO ASTM C 33 AND LIGHT WEIGHT AGGREGATE SHALL CONFORM TO ASTM C 330. NO ADMIXTURES CONTAINING CALCIUM CHLORIDE SHALL BE PERMITTED IN ANY CONCRETE.
C. AGGREGATE SIZES SHALL BE:

FORMED CONCRETE ELEMENTS, U.N.O.	#67 STONE (3/4" MAX.)
GRADE SLABS AND EARTH FORMED ELEMENTS	#57 STONE (1" MAX.)
LIGHTWEIGHT CONCRETE ELEMENTS	3/8" MAX. DIMENSION

D. WATER REDUCING ADMIXTURE SHALL BE USED IN ALL CONCRETE.
E. AIR ENTRAINING ADMIXTURE IN ACCORDANCE WITH ACI 301 TABLE 4.4.1. SHALL BE USED IN ALL CONCRETE EXPOSED TO FREEZING AND THAWING DURING CONSTRUCTION OR SERVICE CONDITIONS.
F. WATER/CEMENT RATIO SHALL NOT EXCEED 0.45 FOR ANY CONCRETE SUBJECTED TO FREEZING/THAWING.
G. ALL PUMPED CONCRETE SHALL HAVE A WATER/CEMENT RATIO LESS THAN 0.50 AND SHALL CONTAIN A HIGH RANGE WATER REDUCING ADMIXTURE (SUPERPLASTICIZER).
H. IN NO CASE SHALL A WATER/CEMENT RATIOS EXCEED THE FOLLOWING:

F'C 3000 PSI	0.60 MAX. W/C RATIO
F'C 4000 PSI	0.50 MAX. W/C RATIO
F'C 4500 PSI	0.42 MAX W/C RATIO

5.3. CURING:
A. LIQUID MEMBRANE CURING COMPOUND WITH A MINIMUM 30% SOLIDS CONTENT SHALL BE APPLIED WITHIN TWO (2) HOURS AFTER COMPLETION OF FINISHING TO ALL CONCRETE FLATWORK AND WALLS, U.N.O., OTHER THAN FOOTINGS AND GRADE BEAMS.
B. FLOORS IN AREAS RECEIVING QUARRY TILE, CERAMIC TILE AND LIQUID FLOOR HARDENER SHALL BE CURED WITH SPECIFIED DISSIPATING LIQUID MEMBRANE CURING COMPOUND OR WET CURED BY USE OF MOISTURE RETAINING COVER. DISSIPATING CURING COMPOUND SHALL BE THOROUGHLY BROOMED AND WASHED OFF PRIOR TO APPLICATION OF FLOOR FINISH.
5.4. WHEN COLD WEATHER CONDITIONS EXIST, PLACE AND CURE CONCRETE IN ACCORDANCE WITH ACI 306 "COLD WEATHER CONCRETING". WHERE USE IS DESIRED, SUBMIT FOR ENGINEER'S APPROVAL A NON-CORROSIVE, NON-CHLORIDE, ACCELERATING ADMIXTURE FOR CONCRETE EXPOSED TO TEMPERATURES BELOW 40 DEGREES. UNIFORMLY HEAT WATER AND AGGREGATES TO A TEMPERATURE OF NOT LESS THAN 50 DEGREES.
5.5. WHEN HOT WEATHER CONDITIONS EXIST, PLACE AND CURE CONCRETE IN ACCORDANCE WITH ACI 305 "HOT WEATHER CONCRETING". COOL MATERIALS BEFORE MIXING TO MAINTAIN CONCRETE PLACEMENT TEMPERATURE BELOW 90 DEGREES.
5.6. ALL CONSTRUCTION JOINTS SHOWN ON THE DRAWINGS SHALL BE INCORPORATED INTO THE STRUCTURE UNLESS THE STRUCTURAL ENGINEER APPROVES THEIR ELIMINATION.
5.7. ADDITIONAL CONSTRUCTION JOINTS, REQUIRED TO FACILITATE CONSTRUCTION, ARE SUBJECT TO THE APPROVAL OF THE STRUCTURAL ENGINEER AND MAY REQUIRE ADDITIONAL REINFORCING. SUCH JOINTS SHALL BE CLEARLY DETAILED ON THE SHOP DRAWINGS AND ALL REINFORCING SHALL PASS CONTINUOUSLY THROUGH THE JOINT.
5.8. REINFORCING IN ALL ABUTTING CONCRETE, INCLUDING FOOTINGS, SHALL BE CONTINUOUS THROUGH OR AROUND ALL CORNERS OR INTERSECTIONS. DOWELS OR SPLICES SHALL BE EQUAL IN SIZE AND SPACING TO THE REINFORCING IN THE ABUTTING MEMBERS.
5.9. REFER TO ARCHITECTURAL DRAWINGS FOR DOOR AND WINDOW OPENINGS, DRIPS, REGLETS, WASHES, MASONRY ANCHORS, BRICK LEDGE ELEVATIONS, SLAB DEPRESSIONS AND MISCELLANEOUS EMBEDDED PLATES, BOLTS, ANCHORS, ANGLES, ETC.
5.10. REFER TO ARCHITECTURAL DRAWINGS FOR CONCRETE FINISHES. WHERE FINISH IS NOT SPECIFIED, CONFORM TO REQUIREMENTS OF ACI 301.
5.11. REFER TO PLUMBING, MECHANICAL AND ELECTRICAL DRAWINGS FOR UNDERFLOOR, PERIMETER AND OTHER DRAINS AND FOR SLEEVES, OUTLET BOXES, CONDUIT, ANCHORS, ETC. THE VARIOUS TRADES ARE RESPONSIBLE FOR THEIR ITEMS.
5.12. BASE PLATES, ANCHOR BOLTS, SUPPORT ANGLES AND OTHER STEEL EXPOSED TO EARTH OR GRANULAR FILL SHALL BE COVERED WITH A MINIMUM OF 3" OF CONCRETE.
5.13. FILL SLABS, NOT SHOWN ON THE STRUCTURAL DRAWINGS, SHALL BE REINFORCED WITH A MINIMUM OF 6X6-W1.4XW1.4 WWM UNLESS NOTED OTHERWISE ON OTHER DRAWINGS OR IN THE SPECIFICATIONS.
5.15. FINISHING TOLERANCE SHALL BE WITHIN CLASS B IN ACCORDANCE WITH ACI 301 AND CONSIDERATION SHALL BE GIVEN TO SEQUENCING OF CONCRETE PLACEMENT TO FACILITATE CONTROL OF FINISH ELEVATIONS.
5.16. NON-SHRINK GROUT SHALL BE PRE-MIXED, NON-CORROSIVE, NON-METALLIC, NON-STAINING CONTAINING SILICA SANDS, PORTLAND CEMENT, SHRINKAGE COMPENSATING AND WATER REDUCING AGENTS. PRODUCT SHALL ONLY REQUIRE THE ADDITION OF WATER. MINIMUM COMPRESSIVE STRENGTH SHALL BE 2500 PSI AFTER ONE DAY AND 7000 PSI AFTER 28 DAYS. GROUT SHALL BE FREE OF GAS PRODUCING OR AIR RELEASING AND OXIDIZING AGENTS AND CONTAIN NO CORROSIVE IRON, ALUMINUM OR GYPSUM.
5.18. TOLERANCE FOR ANCHOR BOLTS AND OTHER EMBEDDED ITEMS SHALL BE PER THE AISC CODE OF STANDARD PRACTICE SECTION 7.5.
5.19. UNLESS OTHERWISE SHOWN IN THE ARCHITECTURAL DRAWINGS, PROVIDE 3/4" CHAMFERS AT ALL COLUMN, WALL, SLAB OR BEAM EDGES THAT ARE EXPOSED TO VIEW IN THE FINISHED STRUCTURE.

6.0. REINFORCING STEEL:

6.1. REINFORCING SHALL BE DOMESTIC NEW BILLET STEEL CONFORMING TO ASTM A615, GRADE 60 OR 60S INCLUDING STIRRUPS AND TIES, EXCEPT THAT REINFORCING WHICH IS REQUIRED TO BE WELDED SHALL CONFORM TO ASTM A706.
6.2. FIELD BENDING OF CONCRETE REINFORCING STEEL IS NOT PERMITTED WITHOUT WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER.
6.3. WELDED WIRE REINFORCING SHALL CONFORM TO ASTM A1064.
6.4. ALL REINFORCING SHALL BE DETAILED, FABRICATED AND PLACED IN ACCORDANCE WITH ACI SP-66 "ACI DETAILING MANUAL - 2004" AND THE "CRSI MANUAL OF STANDARD PRACTICE", LATEST EDITION.
6.5. MINIMUM CONCRETE COVER OVER REINFORCING SHALL BE U.N.O.:

A. UNFORMED SURFACE CAST AGAINST EARTH........................ 3 IN.
B. FORMED SURFACE EXPOSED TO EARTH/WEATHER............. 2 IN.
C. FORMED SLABS AND WALLS NOT EXPOSED TO EARTH/WEATHER FOR #11 AND SMALLER BAR....................... 3/4 IN.
D. ALL OTHER FORMED ELEMENTS NOT EXPOSED TO EARTH/WEATHER.. 1-1/2 IN.

6.6. DEVELOPMENT LENGTHS AND LAP SPLICES SHALL BE IN ACCORDANCE WITH ACI 318 CHAPTER 12 AS INDICATED BELOW AND AS INDICATED ON THE DRAWINGS. WHERE SPLICES ARE NOT CALLED OUT ON THE DRAWINGS, USE CLASS "B". THE BASIC DEVELOPMENT LENGTH (LD) IS SHOWN AS A MULTIPLE OF THE BAR DIAMETER (DB) IN THE TABLE BELOW. THE TENSION DEVELOPMENT LENGTHS SHALL BE MULTIPLIED BY EACH OF THE APPLICABLE FACTORS IN PARAGRAPH "C" AS INDICATED FOR TENSION. THE COMPRESSION DEVELOPMENT LENGTHS DO NOT REQUIRE ANY MODIFICATION. THE COMPRESSION LAP SPLICE LENGTH IS NOTED IN PARAGRAPH "C". FINAL LENGTHS SHALL BE ROUNDED UP TO THE NEAREST WHOLE INCH.

A. TWO TENSION DEVELOPMENT LENGTH CASES ARE NOTED IN THE TABLE BELOW. THESE TWO CASES ADDRESS CONDITIONS OF MINIMUM BAR SPACING AND MINIMUM CLEAR CONCRETE COVER. BOTH SPACING AND COVER MUST COMPLY IN SELECTING CASE 1 OF THE TENSILE DEVELOPMENT LENGTH. WHERE THERE IS ANY QUESTION OF SPACING OR COVER THE LARGER DEVELOPMENT LENGTH (CASE 2) SHALL BE USED.

CASE 1: BAR SPACING GREATER THAN 2DB AND CLEAR COVER GREATER THAN DB
CASE 2: BAR SPACING EQUAL/LESS THAN 2DB OR CLEAR COVER EQUAL/LESS THAN DB

B. DEVELOPMENT LENGTHS (LD) FOR REINFORCING FY = 60 KSI:

F'C PSI	COMPRESSION ALL CASES	TENSION CASE 1	TENSION CASE 2
3000	22 DB	55 DB	82 DB
4000/4500	19 DB	48 DB	72 DB

C. DEVELOPMENT LENGTH MODIFIERS: MULTIPLICATION FACTORS APPLY TO THE BASIC "LD" INDICATED ABOVE AND ARE CUMULATIVE OVER EACH OF THE REQUIREMENTS NOTED BELOW.

I. COMPRESSION: CLASS "C" LAP SPLICE REQUIREMENT................. 30 DB
II. TENSION: CLASS "A" LAP SPLICE REQUIREMENT (EQUALS LD)..... 1.0
III. TENSION: CLASS "B" LAP SPLICE REQUIREMENT........................... 1.3
IV. TENSION: TOP BARS WITH > 12" OF CONCRETE BELOW............... 1.3
V. TENSION: BARS SMALLER THAN #7... 0.8
VI. TENSION: BARS IN LIGHTWEIGHT AGGREGATE CONCRETE......... 1.3
VII. TENSION: EPOXY COATED BARS WITH CLEAR SPACING < 6 DB OR SIDECOVER < 3 DB... 1.5
VIII. TENSION: EPOXY COATED BARS OTHER THAN ABOVE.................. 1.2

6.7. A CLASS "B" SPLICE IS REQUIRED WHEREVER ALL REINFORCING BARS CROSSING A SECTION ARE SPLICED.
6.8. REINFORCING BARS SHALL BE WELDED ONLY WHERE SHOWN ON THE STRUCTURAL DRAWINGS AND WELDS SHALL BE IN ACCORDANCE WITH THE "STRUCTURAL WELDING CODE - REINFORCING STEEL" (AWS D1.4). NO OTHER REINFORCING MAY BE WELDED WITHOUT THE APPROVAL OF THE STRUCTURAL ENGINEER. TACK WELDING OF ANY REINFORCING IS STRICTLY PROHIBITED.
6.9. WELDED WIRE MAT/FABRIC SHALL BE LAPPED 1'-0" AT ALL SPLICES.
6.10. ALL REINFORCING TERMINATING AT THE TOPS OF COLUMNS AND PILASTERS SHALL BE HOOKED, U.N.O.
6.11. SUBMIT SHOP DRAWINGS FOR FABRICATION, BENDING, AND PLACEMENT OF CONCRETE REINFORCEMENT. COMPLY WITH ACI DETAILING MANUAL (SP-66) SHOWING BAR SCHEDULES, STIRRUP SPACING, DIAGRAMS OF BENT BARS, ARRANGEMENT OF CONCRETE REINFORCEMENT. INCLUDE SPECIAL REINFORCEMENT REQUIRED AT OPENINGS THROUGH CONCRETE STRUCTURES. INCLUDE ALL ACCESSORIES SPECIFIED/REQUIRED TO SUPPORT REINFORCING. THE SHOP DRAWING SHOULD INCLUDE ELEVATIONS OF ALL WALLS.
6.12. SHOP DRAWINGS SHALL BE REVIEWED BY THE CONTRACTOR PRIOR TO SUBMISSION AND SHALL BEAR THE CONTRACTOR'S APPROVAL STAMP ACCEPTING RESPONSIBILITY FOR DIMENSIONS, QUANTITIES AND COORDINATION WITH THE OTHER TRADES.
6.13. DRAWINGS MAY BE ELECTRONICALLY SUBMITTED, PROVIDED LEGIBILITY IS MAINTAINED. REVIEW COMMENTS ONLY WILL BE ELECTRONICALLY FORWARDED TO THE CONTRACTOR.
6.14. CONTRACTOR SHALL PROVIDE IN HIS SCHEDULE FOR A SHOP DRAWING REVIEW AND RETURN TIME OF A MINIMUM OF FIFTEEN (15) WORKING DAYS IN THE STRUCTURAL ENGINEER'S OFFICE.
6.15. CONTRACTOR SHALL NOTIFY THE STRUCTURAL ENGINEER A MINIMUM OF 48 HOURS PRIOR TO ALL CONCRETE POURS IN ORDER TO PERMIT REINFORCING STEEL REVIEW IF REQUIRED BY THE STRUCTURAL ENGINEER.

7.0. STRUCTURAL STEEL:

7.1. ALL STRUCTURAL STEEL SHALL BE OF THE GRADES INDICATED BELOW, UNLESS NOTED OTHERWISE ON PLANS OR DETAILS:

A. WIDE FLANGE SHAPES ASTM A992 GR50.
B. OTHER ROLLED SHAPES ASTM A36 TYPICALLY, U.N.O.
C. ANCHOR BOLTS ASTM F1554 GR36 U.N.O.
D. STRUCTURAL TUBING (SQUARE AND RECTANGULAR) ASTM A500, GRADE B, FY=46 KSI.
E. STRUCTURAL TUBING (ROUND) ASTM A500, GRADE B, FY=42 KSI.
F. PLATES AND BARS ASTM A36 U.N.O.
G. MISCELLANEOUS ASTM A36 U.N.O.

7.2. ALL STRUCTURAL STEEL SHALL BE DETAILED AND, FABRICATED IN ACCORDANCE WITH THE AISC CODE OF STANDARD PRACTICE AS MODIFIED IN THESE NOTES AND THE PROJECT SPECIFICATIONS.
7.3. SUBMIT SHOP DRAWINGS FOR DETAILS, FABRICATION, AND ERECTION OF STRUCTURAL STEEL. COMPLY WITH AISC "STEEL CONSTRUCTION MANUAL", AISC "DETAILING FOR STEEL CONSTRUCTION", AND AISC "ENGINEERING FOR STEEL CONSTRUCTION" PUBLICATIONS.
7.4. SHOP DRAWINGS SHALL BE REVIEWED BY THE CONTRACTOR PRIOR TO SUBMISSION. DRAWINGS SHALL BEAR THE CONTRACTOR'S APPROVAL STAMP ACCEPTING RESPONSIBILITY FOR DIMENSIONS, QUANTITIES AND COORDINATION WITH THE OTHER TRADES.
7.5. DRAWINGS MAY BE ELECTRONICALLY SUBMITTED, PROVIDED LEGIBILITY IS MAINTAINED. REVIEW COMMENTS ONLY WILL BE ELECTRONICALLY FORWARDED TO THE CONTRACTOR.
7.6. CONTRACTOR SHALL PROVIDE IN HIS SCHEDULE FOR A SHOP DRAWING REVIEW AND RETURN TIME OF A MINIMUM OF FIFTEEN (15) WORKING DAYS IN THE STRUCTURAL ENGINEER'S OFFICE.
7.7. CONNECTION DESIGN: SEE SPECIFICATIONS FOR SPECIFIC REQUIREMENTS.

A. FABRICATOR IS RESPONSIBLE FOR THE DESIGN OF CONNECTIONS NOT DESIGNED ON THE STRUCTURAL DRAWINGS.
B. ALL CONNECTIONS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE WHERE THE PROJECT IS LOCATED. SHOP DRAWING CONTAINING CONNECTION DESIGNS SHALL BE SIGNED AND SEALED. A NOTE INDICATING "CONNECTION DESIGN ONLY" SHOULD ACCOMPANY THE SEAL. FABRICATOR SHALL SUBMIT SIGNED AND SEALED CALCULATIONS FOR ALL CONNECTIONS DESIGNED AS PART OF HIS WORK AND APPEARING ON HIS SHOP DRAWINGS.
C. GENERALLY, CONNECTIONS SHOWN ON THE DRAWINGS ARE SCHEMATIC AND ARE INTENDED TO SHOW THE RELATIONSHIP OF THE MEMBERS.
D. CONNECTIONS SHALL BE DESIGNED FOR THE REACTIONS AS SHOWN ON THE DRAWINGS, WITH A MINIMUM REACTION OF 10 KIPS. IF NO REACTION IS SHOWN ON PLAN, DESIGN CONNECTIONS FOR ONE-HALF (1/2) THE MAXIUMUM TOTAL UNIFORM LOAD ON THE MEMBER, AS DEFINED IN TABLE 3-6, "MAXIUMUM TOTAL UNIFORM LOAD" IN THE AISC "SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS", PUBLICATION 360-05.
E. MEMBER FORCES AND REACTIONS HAVE BEEN REDUCED IN CONFORMANCE TO CODE PROVISIONS RELATED TO COMBINATIONS OF LOADS THAT INCLUDE WIND AND SEISMIC FORCES. NO FURTHER REDUCTIONS IN FORCES OR INCREASES IN ALLOWABLE STRESSES ARE PERMITTED.
F. CONNECTIONS SHOWN ON DRAWINGS ARE ULTIMATE (LRFD) LOAD REACTIONS.
G. CONNECTIONS MAY BE BOLTED OR WELDED, U.N.O. ON THE DRAWINGS.

7.8. BOLTED CONNECTIONS:

A. SLIP CRITICAL CONNECTIONS WITH A325SC OR A490SC BOLTS SHALL BE USED IN ALL BOLTED MOMENT PLATE CONNECTIONS. OVERSIZED OR LONG-SLOTTED HOLES ARE PERMITTED.
B. BEARING-TYPE CONNECTIONS WITH A325N OR A490N BOLTS SHALL BE USED FOR ALL OTHER BOLTED CONNECTIONS. OVERSIZED AND LONG-SLOTTED HOLES ARE NOT PERMITTED U.N.O. IN SINGLE TAB PLATE CONNECTIONS ONLY BEARING-TYPE FASTENERS ARE PERMITTED, FASTENERS SHALL NOT BE TORQUED, AND SHORT SLOTTED HOLES ARE REQUIRED.
C. ANCHOR BOLTS OR OTHER BOLTS, WHERE INDICATED, SHALL CONFORM TO ASTM F1554 GR36 U.N.O.
D. PROTRUDING BOLT HEADS, SHAFTS OR NUTS SHALL NOT EXTEND NOR PROHIBIT THE APPLICATION OF ARCHITECTURAL FINISHES OR PLACEMENT OF STEEL DECK AT ITS CORRECT LOCATION AND ELEVATION.
E. CONNECTION DESIGNER IS RESPONSIBLE FOR VERIFYING THE AXIAL CAPACITY AFTER A SECTION IS REDUCED FOR BOLT HOLES. MEMBER SIZE MAY BE INCREASED OR PLATES ADDED TO MAINTAIN REQUIRED CAPACITY.
F. SHOP DRAWINGS SHALL INDICATE THE TYPE OF BOLT USED IN EACH CONNECTION, ALLOWABLE VALUES FOR THE VARIOUS BOLT TYPES AND CAPACITY OF EACH CONNECTION SHOWN.
G. DOMESTIC FASTENERS (AMERICAN OR CANADIAN) ARE REQUIRED IN ALL STRUCTURAL STEEL WORK ON THIS PROJECT. IMPORTED FASTENERS ARE PROHIBITED.

7.9. WELDED CONNECTIONS:

A. ALL WELDING SHALL BE IN ACCORDANCE WITH THE "STRUCTURAL WELDING CODE - STEEL" (AWS D1.1) OF THE AMERICAN WELDING SOCIETY.
B. ELECTRODES FOR WELDING SHALL COMPLY WITH THE REQUIREMENTS OF AWS D1.1 TABLE 4.1.1.
C. SHOP DRAWINGS SHALL INDICATE WELD TYPE, REQUIRED ELECTRODES AND CAPACITY FOR EACH CONNECTION DETAILED ON THE SHOP DRAWINGS.
D. PERFORM VISUAL INSPECTIONS OF ALL WELDS.
E. PERFORM NON-DESTRUCTIVE TESTS OF WELDS AS FOLLOWS:
1. PARTIAL PENETRATION WELDS - ONE SPOT TEST PER WELD USING MAGNETIC PARTICLE TESTING TECHNIQUES.
2. FULL PENETRATION WELDS - TEST ENTIRE LENGTH OF ALL WELDS. USE RADIOGRAPHIC OR ULTRASONIC TESTING TECHNIQUES.

7.10. WHERE CANTILEVER BEAMS OCCUR ON PLAN AND THE SIZE IS NOTED ONLY FOR THE BACK-SPAN, THE CANTILEVER IS INTENDED TO BE THE SAME SIZE AS THE BACK-SPAN.
7.11. SPLICING OF STEEL MEMBERS, UNLESS SHOWN ON THE DRAWINGS, IS PROHIBITED WITHOUT WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER.
7.12. NO CHANGE IN SIZE OR POSITION OF ANY STRUCTURAL ELEMENT NOR HOLES, SLOTS, CUTS, ETC. SHALL BE MADE UNLESS DETAILED AND NOTED AS A PROPOSED CHANGE ON THE SHOP DRAWINGS AND REVIEWED AND ACCEPTED BY THE STRUCTURAL ENGINEER.
7.13. NO FINAL BOLTING OR WELDING SHALL BE PERFORMED UNTIL AS MUCH OF THE STRUCTURE AS WILL BE STIFFENED THEREBY HAS BEEN PROPERLY ALIGNED.
7.14. FABRICATE ALL BEAMS WITH MILL CAMBERS UP.
7.15. MINIMUM PLATE THICKNESS SHALL BE 3/8" U.N.O.; MINIMUM BOLT DIAMETER SHALL BE 3/4" U.N.O.; MINIMUM SHOP WELD SHALL BE 3/16" AND MINIMUM FIELD WELD SHALL BE 1/4" U.N.O.
7.16. ALL RE-ENTRANT CORNERS (SUCH AS COPES AND BLOCKS) SHALL BE CUT AND SHAPED NOTCH FREE WITH A RADIUS OF AT LEAST 1/2".
7.17. FIELD USE OF GAS CUTTING TORCHES IS PROHIBITED FOR CORRECTING FABRICATION ERRORS IN PRIMARY STRUCTURAL FRAMING.
7.18. PARAGRAPH 4.4.1 OF THE AISC CODE OF STANDARD PRACTICE SHALL BE SUPERSEDED BY THE FOLLOWING: INDICATION OF COMPLIANCE BY THE OWNER OF SHOP DRAWINGS PREPARED BY THE FABRICATOR INDICATES THAT THE FABRICATOR HAS CORRECTLY INTERPRETED THE CONTRACT REQUIREMENTS. SUCH INDICATION DOES NOT RELIEVE THE FABRICATOR OF THE RESPONSIBILITY ASSIGNED TO HIM FOR THE DESIGN AND DETAILING OF CONNECTIONS ASSIGNED TO HIM, NOR FOR THE ACCURACY OF DIMENSIONS ON THE SHOP DRAWINGS, NOR FOR GENERAL FIT UP OF PARTS TO BE ASSEMBLED IN FIELD.
7.19. PARAGRAPHS 7.2 THROUGH 7.6 OF THE AISC CODE OF STANDARD PRACTICE SHALL BE SUPERSEDED AS FOLLOWS: ALL REFERENCES TO "OWNER" SHALL BE REPLACED WITH REFERENCES TO "CONTRACTOR".
7.20. EXPANSION BOLTS SHALL PROVIDE A MINIMUM SAFETY FACTOR OF FOUR (4) TIMES THE FOLLOWING MINIMUM SERVICE LOAD CAPACITIES, U.N.O.

SLEEVE ANCHORS (2000 PSI MASONRY) DIA.	SHEAR	TENSION	WEDGE ANCHORS (3000 PSI CONCRETE) DIA.	SHEAR	TENSION
1/4"	270 LB.	300 LB.	1/2"	1950 LB.	1250 LB.
1/2"	930 LB.	600 LB.	3/4"	3750 LB.	2250 LB.

9.0. STEEL DECK:

9.1. STEEL DECKS SHALL HAVE THE DEPTHS, MINIMUM GAGES, AND PROPERTIES SHOWN BELOW. DECK HAS BEEN SELECTED BASED ON A MINIMUM THREE SPAN CONDITION. SUPPLIER SHALL EVALUATE THE ABILITY OF HIS STEEL DECK TO ACCOMMODATE THE LOAD CONDITIONS INDICATED IN THE GENERAL NOTES FOR ALL SPAN CONDITIONS REQUIRED FOR HIS PROPOSED DETAILING. WHERE SUPPLIER DETAILS SINGLE OR TWO SPAN CONDITIONS ON HIS SHOP DRAWINGS DECK WITH A GREATER THICKNESS MAY BE REQUIRED SUBJECT TO APPROVAL BY THE STRUCTURAL ENGINEER.

DECK TYPE	DEPTH	GAGE	"I" /FT.	"SP"/FT.	"SN"/FT.	FY
TYPE "B" ROOF DECK	1 1/2"	20 GA.	.210 IN.	.232 IN.	.245 IN.	33 KSI

9.2. ALL COMPOSITE STEEL FLOOR DECK SHALL BE GALVANIZED PER ASTM A525 G60 EXCEPT DECK PERMANENTLY EXPOSED TO WEATHER SHALL BE G90.
9.2. STEEL DECK AT ROOFS AND PENTHOUSES SHALL BE GALVANIZED PER ASTM A525 G60.
9.5. STEEL ROOF DECK:
A. STEEL ROOF DECK SHALL BE DESIGNED TO FUNCTION AS A DIAPHRAGM FOR TRANSMISSION OF LATERAL LOADS. CONNECTIONS OF DECK UNITS TO EACH OTHER AND TO SUPPORTS SHALL BE DESIGNED BY THE DECK MANUFACTURER CONSISTENT WITH THE DECK PROPERTIES AND SHALL BE DESIGNED TO TRANSMIT A SHEAR FORCE PER LINEAL FOOT AT THE DIAPHRAGM BOUNDARIES DENOTED AS "Q=XX PLF" (MINIMUM 200 PLF) WHERE SHOWN ON THE DRAWINGS.
B. FASTEN STEEL ROOF DECK UNITS TO STEEL SUPPORTING MEMBERS BY NOT LESS THAN 5/8" DIAMETER FUSION WELDS OR ELONGATED WELDS OF EQUAL PERIMETER. ALTERNATIVELY, FASTEN WITH "HILTI" X-ENP-19, X-EDN19 OR X-EDNK22 FASTENERS CONFORMING TO THE REQUIREMENTS OF THE "HILTI" PUBLISHED INSTALLATION INSTRUCTIONS. ATTACHMENTS SHALL BE SPACED NOT MORE THAN 12" O/C. AT EVERY SUPPORT AND AT CLOSER SPACINGS WHERE REQUIRED FOR DIAPHRAGM SHEAR RESISTANCE.
C. FOR STEEL ROOF DECK SPANS EXCEEDING 5'-0", MECHANICALLY FASTEN SIDE LAPS AT MID-SPAN USING "HILTI" #10 SELF-TAPPING SCREW OR "HILTI" S-SLC01 OR S-SLC02 SIDELAP CONNECTORS AS SHOWN ON DRAWINGS. PROVIDE ADDITIONAL SIDELAP FASTENERS WHERE REQUIRED FOR LATERAL FORCE RESISTANCE.
D. DO NOT HANG PIPES OR DUCTS FROM STEEL ROOF DECK.
9.6. NON-COMPOSITE STEEL FORM DECK:
A. FASTEN NON-COMPOSITE STEEL FORM DECK THINNER THAN 22 GAUGE TO STEEL SUPPORTING MEMBERS WITH WELDING WASHERS HAVING A NOMINAL 3/8" DIAMETER HOLE. FASTEN FORM DECK 22 GAUGE AND THICKER WITH NOT LESS THAN 5/8" DIAMETER FUSION WELDS OR ELONGATED WELDS OF EQUAL PERIMETER. MINIMUM ATTACHMENT SHALL BE IN CONFORMANCE WITH WELD PATTERNS A, B OR C AS RECOMMENDED AND DESCRIBED BY THE STEEL DECK INSTITUTE FOR THE APPROPRIATE DECK SPAN CONDITION. ALTERNATIVELY, FASTEN WITH "HILTI" X-ENP-19, X-EDN19 OR X-EDNK22 FASTENERS CONFORMING TO THE REQUIREMENTS OF THE "HILTI" PUBLISHED INSTALLATION INSTRUCTIONS.
B. SLOTTED, GALVANIZED, STEEL FORM DECK WITH VENTS PROVIDING A MINIMUM 1.5% OPEN AREA SHALL BE PROVIDED AT ALL AREAS WITH LIGHTWEIGHT VERMICULITE CONCRETE ROOF TOPPINGS.
C. DO NOT HANG PIPES OR DUCTS FROM VERMICULITE ROOF SYSTEM.
D. FASTEN NON-COMPOSITE STEEL FORM DECK TO LIGHTGAGE STEEL FRAMING MEMBERS WITH SCREWS OF SIZE AND SPACING NECESSARY TO ACHIEVE A MINIMUM DIAPHRAGM SHEAR CAPACITY OF 100 POUNDS PER LINEAL FOOT BASED ON THE MINIMUM CAPACITY OF EITHER THE FORM DECK OR THE LIGHTGAGE FRAMING MEMBERS.
9.7. STEEL DECK SUBMITTALS: STEEL DECK MANUFACTURER SHALL SUBMIT SHOP DRAWINGS FOR REVIEW AND ACCEPTANCE BY THE STRUCTURAL ENGINEER INDICATING DECK TYPE, GAUGE AND PROTECTIVE TREATMENT, AS WELL AS TYPE, SIZE AND LAYOUT OF DECK CONNECTIONS.
9.8. SHEAR CONNECTOR SUBMITTALS: STEEL DECK MANUFACTURER SHALL SUBMIT SHOP DRAWINGS FOR REVIEW AND ACCEPTANCE BY THE STRUCTURAL ENGINEER INDICATING SHEAR CONNECTOR (STUD) LAYOUT CONTAINING STUD DIAMETER(S), LENGTH, AND INSTALLATION DETAILS SHOWING NUMBER AND SPACING OF STUDS CONSISTENT WITH THE MANUFACTURER'S STEEL DECK CONFIGURATION.
9.9. SHOP DRAWINGS SHALL BE REVIEWED BY THE CONTRACTOR PRIOR TO SUBMISSION AND SHALL BEAR THE CONTRACTOR'S APPROVAL STAMP ACCEPTING RESPONSIBILITY FOR DIMENSIONS, QUANTITIES AND COORDINATION WITH THE OTHER TRADES.
9.10. DRAWINGS MAY BE ELECTRONICALLY SUBMITTED, PROVIDED LEGIBILITY IS MAINTAINED. REVIEW COMMENTS ONLY WILL BE ELECTRONICALLY FORWARDED TO THE CONTRACTOR.
9.11. CONTRACTOR SHALL PROVIDE IN HIS SCHEDULE FOR A SHOP DRAWING REVIEW AND RETURN TIME OF A MINIMUM OF FIFTEEN (15) WORKING DAYS IN THE STRUCTURAL ENGINEER'S OFFICE.

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PROJECT NORTH
PLAN NORTH

KEY PLAN

CONSTRUCTION DOCUMENTS

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW®

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403
SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA|NW DESIGN PROJECT NUMBER: 19-202-01 (LRSPC#19650)

DESIGNED BY: RES
DRAWN BY: RES
CHECKED BY: MSR

ISSUE DATE:
SEPTEMBER 14, 2020

STRUCTURAL GENERAL NOTES

S001

SCALE:

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10.0 LIGHT GAGE STEEL FRAMING:

10.1. ALL MEMBERS SHALL BE DESIGNED IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE AMERICAN IRON AND STEEL INSTITUTE (AISI) "SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS".
10.2. ALL FRAMING MEMBERS SHALL BE FORMED FROM CORROSION-RESISTANT STEEL, CORRESPONDING TO THE REQUIREMENTS OF ASTM A653, WITH A MINIMUM YIELD STRENGTH OF 50 KSI FOR MEMBERS WITH THICKNESSES OF 54 MILS AND HIGHER AND 33 KSI FOR MEMBERS WITH THICKNESSES OF 33 AND 43 MILS.
10.3. ALL MEMBERS SHOWN ARE STANDARD DESIGNATIONS OF "STEEL STUD MANUFACTURERS ASSOCIATION".
10.4. MEMBERS INDICATED ON THE STRUCTURAL DRAWINGS ARE BASED ON MINIMUM PROPERTIES OF PRODUCTS PRODUCED BY "STEEL STUD MANUFACTURERS ASSOCIATION". SUBSTITUTION OF MATERIALS IS ACCEPTABLE, PRIOR TO SUBMISSION OF SHOP DRAWINGS SUBJECT TO APPROVAL OF THE STRUCTURAL ENGINEER.
10.5. MEMBER CONFIGURATIONS AND CONNECTIONS SHOWN ON THE DRAWINGS ARE SCHEMATIC AND ARE INTENDED ONLY TO SHOW RELATIONSHIPS OF MEMBERS AND INFORMATION FOR PRICING AND BIDDING PURPOSES.
10.6. CONTRACTOR/FABRICATOR IS RESPONSIBLE FOR THE DESIGN AND DETAILING OF ALL LIGHTGAGE STEEL FRAMING AND SHALL RETAIN A PROFESSIONAL ENGINEER REGISTERED IN THE STATE WHERE THE PROJECT IS LOCATED TO PERFORM SUCH. THE ENGINEER SHALL SEAL AND SIGN BOTH CALCULATIONS AND SHOP DRAWINGS. UPON COMPLETION OF THE LIGHTGAGE FRAMING THE ENGINEER SHALL FURNISH A LETTER STATING THAT THE LIGHTGAGE FRAMING WAS INSTALLED IN ACCORDANCE WITH THE APPROVED SHOP DRAWINGS.
10.7. SUBMIT CALCULATIONS AND SHOP DRAWINGS FOR DETAILS, FABRICATION, AND ERECTION OF LIGHTGAGE STEEL FRAMING:
A. COORDINATE CALCULATIONS WITH SHOP DRAWINGS.
B. DRAWINGS SHALL CLEARLY INDICATE LOCATION OF DETAILS FOR ERECTION.
C. DRAWINGS SHALL INCLUDE LAYOUT, SPACING, TYPE, MATERIAL MEMBER PROPERTIES AND ALL DETAILS OF CONNECTIONS INCLUDING TYPE, SIZE, AND SPACING OF CONNECTORS.
D. PROVIDE CALCULATIONS FOR ALL TYPICAL AND NON-TYPICAL CONNECTIONS AND FOR ATTACHMENT TO PRIMARY STRUCTURAL FRAME.
10.8. SHOP DRAWINGS SHALL BE REVIEWED BY THE CONTRACTOR PRIOR TO SUBMISSION AND SHALL BEAR THE CONTRACTOR'S APPROVAL STAMP ACCEPTING RESPONSIBILITY FOR DIMENSIONS, QUANTITIES AND COORDINATION WITH THE OTHER TRADES.
10.9. DRAWINGS MAY BE ELECTRONICALLY SUBMITTED, PROVIDED LEGIBILITY IS MAINTAINED. REVIEW COMMENTS ONLY WILL BE ELECTRONICALLY FORWARDED TO THE CONTRACTOR.
10.10. CONTRACTOR SHALL PROVIDE IN HIS SCHEDULE FOR A SHOP DRAWING REVIEW AND RETURN TIME OF A MINIMUM OF FIFTEEN (15) WORKING DAYS IN THE STRUCTURAL ENGINEER'S OFFICE.
10.11. ALL FRAMING COMPONENTS SHALL BE CUT SQUARELY FOR ATTACHMENT TO PERPENDICULARMEMBERS OR AS REQUIRED FOR AN ANGULAR FIT TIGHT AGAINST ABUTTING MEMBERS.
10.12. AXIALLY LOADED STUDS SHALL BE INSTALLED IN A MANNER WHICH WILL ASSURE THAT THEIR ENDS ARE POSITIONED TIGHT AGAINST THE INSIDE OF RUNNER WEBS PRIOR TO FASTENING. PROVIDE WEAK-AXIS HORIZONTAL BRACING AT 36 INCHES MAXIMUM VERTICAL SPACING, BOTH STUD FLANGES. HORIZONTAL BRACING SHALL BE 1-1/2" X 20 GA. STRAPS AND CS TYPE RUNNER SOLID BRIDGING AT EACH END OF WALL, ADJACENT TO WALL OPENINGS, AND AT 8'-0" O/C. MAXIMUM.
10.13. FLOOR OR ROOF JOISTS AND RAFTERS SHALL HAVE SOLID BLOCKING, A FITTED CS TYPE CLOSURE OR JOIST SECTION, PLACED BETWEEN OUTER JOISTS, OVER ALL INTERIOR SUPPORTS, ADJACENT TO OPENINGS AND AT 8'-0" O/C. MAXIMUM. BETWEEN SOLID BLOCKING PROVIDE STRAP BRACING OF 1-1/2" X 20 GA. STRAPS. JOIST BRIDGING SHALL BE PROVIDED AT MID-SPAN OR AT 8'-0' O/C. MAXIMUM FOR SPANS EXCEEDING 15"-0".
10.14. WHERE STUDS FRAME TO STRUCTURAL FLOOR OR ROOF MEMBERS SUBJECT TO DEFLECTION FROM TRANSIENT OR LIVE LOADING, EITHER A DEEP LEG DOUBLE TRACK OR A "Z" CLIP ASSEMBLY SHALL BE PROVIDED AT THE TOP RUNNER TO ACCOMMODATE VERTICAL STRUCTURAL MOVEMENT. FAILURE TO PROVIDE TOP CONNECTIONS CAPABLE OF ACCOMMODATING MOVEMENT MAY RESULT IN CRUSHING AND BUCKLING OF THE STUD MEMBERS AND DAMAGE TO ARCHITECTURAL COMPONENTS OR FINISHES.
10.15. COORDINATE FIREPROOFING REQUIREMENTS FOR LIGHT GAGE ATTACHMENT TO STRUCUTRAL STEEL.
10.16. FASTENING OF COMPONENTS SHALL BE BY SELF-DRILLING SCREWS OR BY WELDING AS DEFINED BELOW U.N.O. ON THE DRAWINGS.
10.17. SCREWED CONNECTIONS:
A. FASTENERS SHALL BE SELF-DRILLING SCREWS BY BUILDEX, COMPASS, GRABBER OR APPROVED EQUAL WITH THE CAPACITIES NECESSARY FOR THE REQUIRED DESIGN LOADINGS FOR ALL FRAMING MEMBERS PER MANUFACTURER'S RECOMMENDATIONS.
B. MINIMUM SCREW SIZE IS #6.
C. SCREWS SHALL CONFORM TO ASTM C1513 & C954.
D. A MINIMUM OF THREE (3) EXPOSED THREADS SHALL PENETRATE THROUGH ALL JOINED MATERIALS.
E. CORROSION-RESISTANT CADMIUM-PLATED SCREWS SHALL BE USED FOR SCREWS ATTACHING METAL LATH, MASONRY TIES, AND OTHER EXTERIOR MATERIALS.
10.18. WELDED CONNECTIONS:
A. CONTRACTOR SHALL REQUIRE THAT AWS QUALIFICATION TESTS FOR WELDING OF MATERIAL LESS THAN 1/8" IN THICKNESS ARE SATISFACTORILY PASSED BY WELDERS EXPECTED TO ERECT LIGHTGAGE FRAMING MATERIALS. THESE TESTS ARE NOT THE SAME AS FOR STRUCTURAL STEEL WELDING QUALIFICATION.
B. USE GAS METAL ARC WELDING (GMAW) FOR 20 GA. OR LIGHTER MEMBERS. AWS E-705-3, E-705-5, E-705-6 WIRE ELECTRODES OF .030" TO .035" DIAMETER SHALL BE USED WITH CARBON DIOXIDE, ARGON-OXYGEN, OR ARGON-CARBON DIOXIDE GAS SHIELDING. WELDING EQUIPMENT SHALL PROVIDE 60 TO 100 AMPERES AT 25 VOLTS USING 220-VOLT 3-PHASE ELECTRIC SERVICE.
C. SHIELDED METAL ARC WELDING (SMAW) SHALL BE USED FOR 18 GA. AND HEAVIER MEMBERS. AWS E-6012, E-6013, OR E-7014 ELECTRODES OF 3/32" OR 1/8" DIAMETER SHALL BE USED. WELDING EQUIPMENT HEAT SETTING SHALL BE VARIED DEPENDENT ON MATERIAL THICKNESS.
D. ALL WELDS SHALL BE TOUCHED UP WITH A ZINC RICH PAINT, OR PAINT SIMILAR TO THAT USED BY THE FRAMING MEMBER SUPPLIER ON PAINTED MEMBERS FROM THE SUPPLIER.
10.19. CUTTING OF STEEL FRAMING MEMBERS MAY BE DONE WITH A SAW OR CUTTING SHEARS. TORCH CUTTING OF LOAD BEARING MEMBERS IS NOT PERMITTED.
10.20. COMPLETE, UNIFORM, AND LEVEL BEARING SUPPORT SHALL BE PROVIDED FOR THE BOTTOM RUNNER. AT SPLICES WHERE SUPPORT IS NOT COMMON TO BOTH RUNNERS, EITHER BUTT WELD RUNNERS OR USE A STUD SECTION INSERTED IN THE RUNNER AS A SPLICING MEMBER ATTACHED PER MANUFACTURER'S RECOMMENDATIONS. RUNNER INTERSECTIONS SHALL BUTT EVENLY.
10.21. SPACING OF STUDS SHALL HAVE A TOLERANCE OF 1/8" FROM THAT SHOWN ON THE DRAWINGS, PROVIDING THAT THE CUMULATIVE ERROR DOES NOT EXCEED THE REQUIREMENTS OF OTHER MATERIALS OR CONSTRUCTION.
10.22. ALIGNMENT OF STUDS (PLUMBNESS) AND WALLS (STRAIGHTNESS) SHALL BE WITHIN 1/960TH OF THEIR RESPECTIVE HEIGHTS AND LENGTHS.
10.23. STUDS SHALL BE PLUMBED, ALIGNED, AND SECURELY ATTACHED TO BOTH TOP AND BOTTOM RUNNERS. SPLICES IN STUDS ARE NOT PERMITTED.
10.24. TEMPORARY BRACING, WHERE REQUIRED, SHALL BE PROVIDED UNTIL ERECTION IS COMPLETED.
10.25. WHERE MANUFACTURER'S RECOMMENDATIONS FOR ERECTION, ATTACHMENT, ASSEMBLY, BRACING, ALIGNMENT, OR OTHER REQUIREMENTS ARE MORE STRINGENT THAN INDICATED IN THESE DRAWINGS OR THE PROJECT SPECIFICATIONS THE MANUFACTURER'S RECOMMENDATIONS SHALL APPLY.

12.0. INSPECTION AND TESTING:

12.1. AN INDEPENDENT TESTING LABORATORY SHALL BE RETAINED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS TO PERFORM TESTING OF FOUNDATION BEARING STRATA, ENGINEERED FILLS, CONCRETE, GROUT, STEEL, AND WELDING. SEE PROJECT SPECIFICATIONS FOR REQUIREMENTS.
12.2. THE CONTRACTOR, IN CONJUNCTION WITH THE TESTING LABORATORY AND IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, SHALL DETERMINE THE FREQUENCY OF THE TESTING NECESSARY TO INSURE THAT THE DESIGN REQUIREMENTS ARE BEING MET.
12.3. THE TESTING AGENCY SHALL VERIFY THAT ALL WELDERS HAVE SATISFACTORILY PASSED AWS QUALIFICATION TESTS FOR THE WELDS WHICH THEY WILL PERFORM.
12.4. THE CONTRACTOR AND TESTING AGENCY SHALL REQUIRE THAT AWS QUALIFICATION TESTS FOR WELDING OF MATERIAL LESS THAN 1/8" IN THICKNESS ARE PASSED BY WELDERS EXPECTED TO ERECT LIGHTGAGE FRAMING MATERIALS. THESE TESTS ARE NOT THE SAME AS FOR MATERIALS 1/8" OR GREATER IN THICKNESS (I.E. STRUCTURAL STEEL MATERIALS)
12.5. ALL WELDING SHALL BE INSPECTED AND TESTED IN ACCORDANCE WITH AWS D1.1 OR D1.3 AS APPROPRIATE TO THE MATERIAL THICKNESS.
12.6. THE TESTING AGENCY SHALL VERIFY THAT THE METAL DECK IS ATTACHED TO THE STRUCTURAL STEEL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND APPROVED SHOP DRAWINGS.
12.7. VK SERIES: TORSIONAL LOADS ON ANGLES AT TOP & BOTTOM CHORDS
B. BRIDGING THAT TERMINATES AT OR IS INTERRUPTED BY STRUCTURAL STEEL MEMBERS, SHALL BE WELDED OR BOLTED THERETO. PROVIDE DIAGONAL ("X") BRIDGING FOR ENDS OF BRIDGING LINES TERMINATING AT WALLS/BEAMS.
C. WHERE "OPEN-WEB" JOIST LENGTHS ARE 40 FEET AND LONGER, INSTALL A CENTER ROW OF BOLTED DIAGONAL ("X") BRIDGING TO PROVIDE LATERAL STABILITY BEFORE SLACKENING OF HOISTING LINES.
12.8 RETAINING WALLS PROVIDING VERTICAL RELIEF GREATER THAN 5'-0" IN HEIGHT SHALL BE TESTED AND INSPECTED ACCORDING TO NCBC SECTION 1807.2.5.

13.0. CONSTRUCTION AND SAFETY:

13.1. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ALL SAFETY REGULATIONS, PROGRAMS AND PRECAUTIONS RELATED TO ALL WORK ON THIS PROJECT.
13.2. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE PROTECTION OF PERSONS AND PROPERTY EITHER ON OR ADJACENT TO THE PROJECT AND SHALL PROTECT SAME AGAINST INJURY, DAMAGE OR LOSS.
13.3. MEANS AND METHODS OF CONSTRUCTION AND ERECTION OF STRUCTURAL MATERIALS ARE SOLELY THE CONTRACTOR'S RESPONSIBILITY.
13.4. STRUCTURAL DRAWINGS ARE INTENDED TO BE USED IN CONJUNCTION WITH THE DRAWINGS OF OTHER CONSULTANTS AND TRADES. THE CONTRACTOR SHALL COORDINATE THE VARIOUS REQUIREMENTS.
13.5. NO OPENINGS NOR ANY CHANGES IN SIZE, DIMENSION OR LOCATION SHALL BE MADE IN ANY STRUCTURAL ELEMENTS WITHOUT WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER.
13.6. OPENINGS 1'-0" OR LESS ON A SIDE ARE GENERALLY NOT SHOWN ON THE STRUCTURAL DRAWINGS. REFER TO DRAWINGS OF OTHER CONSULTANTS FOR SUCH OPENINGS.
13.7. FIREPROOFING OF STRUCTURAL ELEMENTS IS NOT SHOWN ON THE STRUCTURAL DRAWINGS. REFER TO THE SPECIFICATIONS AND ARCHITECTURAL DRAWINGS FOR FIRE RATING REQUIREMENTS, MATERIALS AND METHODS.
13.8. THE CONTRACTOR IS RESPONSIBLE FOR LIMITING THE AMOUNT OF CONSTRUCTION LOAD IMPOSED ON THE STRUCTURE. SUCH LOADS SHALL NOT EXCEED THE CAPACITY OF THE STRUCTURE AT ANY TIME.
13.9. THE STRUCTURE IS DESIGNED TO FUNCTION AS A UNIT UPON COMPLETION, AND ANY TEMPORARY BRACING OR SUPPORT REQUIRED TO ACCOMMODATE THE CONTRACTOR'S MEANS AND METHODS ARE THE RESPONSIBILITY OF THE CONTRACTOR.
13.10. THE CONTRACTOR SHALL INFORM THE STRUCTURAL ENGINEER, CLEARLY AND EXPLICITLY IN WRITING, OF ANY DEVIATION OR SUBSTITUTION OF REQUIREMENTS OF THE CONTRACT DOCUMENTS. CONTRACTOR IS NOT RELIEVED OF ANY REQUIREMENTS OF THE CONTRACT DOCUMENTS BY VIRTUE OF THE STRUCTURAL ENGINEER'S REVIEW OF SHOP DRAWINGS, PRODUCT DATA, ETC., UNLESS THE CONTRACTOR HAS CLEARLY AND EXPLICITLY INFORMED THE STRUCTURAL ENGINEER IN WRITING OF ANY DEVIATIONS OR SUBSTITUTIONS AT TIME OF SUBMISSION, AND THE STRUCTURAL ENGINEER HAS GIVEN WRITTEN APPROVAL FOR THE SPECIFIC DEVIATIONS OR SUBSTITUTIONS.
13.11. ALL THINGS WHICH, IN THE OPINION OF THE CONTRACTOR, APPEAR TO BE DEFICIENCIES, OMISSIONS, CONTRADICTIONS OR AMBIGUITIES IN THE DRAWINGS OR SPECIFICATIONS, SHALL BE BROUGHT TO THE ATTENTION OF THE STRUCTURAL ENGINEER. CORRECTIONS OR WRITTEN INTERPRETATIONS SHALL BE ISSUED BEFORE AFFECTED WORK MAY PROCEED.
13.12. IF THE CONTRACTOR CANNOT CONSTRUCT ANY PORTION OF THE WORK IDENTIFIED IN THE DRAWINGS IN ACCORDANCE WITH THESE DRAWINGS AND SPECIFICATIONS, THEN THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE STRUCTURAL ENGINEER PRIOR TO PROCEEDING WITH THE WORK. WORK THAT DOES NOT COMPLY WITH THE DRAWINGS MAY REQUIRE REMOVAL, TESTING, OR ENGINEERING EVALUATION AT THE CONTRACTOR'S EXPENSE.
13.13. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO ORDERING MATERIALS OR PROCEEDING WITH NEW WORK IN AREAS AFFECTED BY EXISTING CONDITIONS. STRUCTURAL ENGINEER SHALL BE INFORMED IN WRITING OF CONFLICTS BETWEEN EXISTING AND PROPOSED NEW CONSTRUCTION.
13.14. CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL DIMENSIONS SHOWN ON THE CONTRACT DOCUMENTS. INCONSISTENCIES ON THE STRUCTURAL DRAWINGS OR BETWEEN THE STRUCTURAL DRAWINGS AND ANY OTHER CONTRACT, SHOP, FABRICATION, OR OTHER DRAWINGS OR INFORMATION SHALL BE BROUGHT TO THE ATTENTION OF THE STRUCTURAL ENGINEER PRIOR TO PROCEEDING WITH AFFECTED WORK.
13.15. DO NOT SCALE THESE DRAWINGS, USE THE DIMENSIONS SHOWN.
13.16. CONTRACTOR SHALL PROVIDE IN HIS SCHEDULE FOR A SHOP DRAWING REVIEW AND RETURN TIME OF A MINIMUM OF FIFTEEN (15) WORKING DAYS IN THE STRUCTURAL ENGINEER'S OFFICE.
13.17. VERIFY ELEVATOR PIT DIMENSIONS, LOCATIONS, LOADS AND DETAILS WITH THE ELEVATOR SUPPLIER PRIOR TO THE FABRICATION AND/OR INSTALLATION OF ANY MATERIAL.
13.18 FOR METAL STAIRS, PROVIDE A DELEGATED DESIGN SUBMITTAL INCLUDING CALCULATIONS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF THE PROJECT. SHOP DRAWINGS REFLECTING THIS DESIGN SHALL BE SUBMITTED WITH THE CALCULATIONS.

14.0 STEEL JOISTS AND JOIST GIRDERS:

14.1. ALL STEEL JOISTS AND JOIST GIRDERS SHALL BE DESIGNED, FABRICATED, AND ERECTED IN ACCORDANCE WITH THE SJI SPECIFICATIONS.
14.2. JOIST ENDS SHALL BE FIXED AND BRIDGING SHALL BE PLACED PRIOR TO APPLICATION OF ANY LOADS.
14.3. END SUPPORT:
A. MINIMUM BEARING REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE SJI SPECIFICATION. EXTENDED JOIST ENDS FOR BEARING ON MASONRY SHALL BE PROVIDED BY THE JOIST MANUFACTURER WHERE REQUIRED TO ACCOMMODATE BEARING CONDITIONS SHOWN ON THE DRAWINGS.
B. JOISTS SHALL BE WELDED TO SUPPORTS AS FOLLOWS U.N.O.:
K SERIES: 1/8" FILLET WELDS, ONE EACH SIDE, 2" LONG
C. K SERIES JOISTS AT COLUMN CENTERLINES SHALL BE BOLTED TO STRUCTURAL STEEL SUPPORTS WITH 2 @ 1/2" DIAMETER BOLTS (MINIMUM). WHERE JOISTS DO NOT SPACE ON CENTERLINES, BOLT CONNECTIONS FOR EACH JOIST ADJACENT TO CENTERLINE.
D. BOLT JOISTS AS INDICATED BELOW TO STRUCTURAL STEEL SUPPORTS AT COLUMN CENTERLINES OR BOLT CONNECTIONS FOR EACH JOIST ADJACENT TO CENTERLINE.
K SERIES: 2 @ 1/2" DIAMETER BOLTS (MINIMUM)
14.4. JOIST BRIDGING:
A. SHALL BE PLACED PER THE SJI SPECIFICATION U.N.O. AND SHALL BE:
14.5. SPECIAL JOISTS:
A. JOISTS MARKED "XXKSP" (DEPTH = "XX" AS SHOWN ON PLAN) INDICATE STEEL JOISTS SUPPORTING ROOF TOP MECHANICAL EQUIPMENT WITH LOADS SHOWN ON THE PLAN. JOIST SUPPLIER SHALL DESIGN AND INDICATE THESE JOISTS AND LOADS ON THE JOIST SHOP DRAWINGS SUBMITTED FOR REVIEW.
B. CONTRACTOR SHALL VERIFY THAT MECHANICAL ROOF TOP EQUIPMENT FURNISHED IS PLACED ONLY ON DESIGNATED JOISTS (XXKSP) SUCH THAT THE DISTRIBUTION OF OPERATING WEIGHT DOES NOT EXCEED THE DESIGN LOADS GIVEN IN PLAN.
14.6. SUBMITTALS: JOIST MANUFACTURER SHALL SUBMIT SHOP DRAWINGS INCLUDING BILLS OF MATERIAL FOR REVIEW AND ACCEPTANCE BY THE STRUCTURAL ENGINEER. SUBMIT CALCULATIONS FOR SPECIAL "KSP" JOISTS INDICATING SUPPLIERS CONFORMANCE WITH SPECIFIED DESIGN CRITERIA. ALL SHOP DRAWINGS SUBMITTED SHALL BEAR THE EMBLEM OF MEMBERSHIP OF THE STEEL JOIST INSTITUTE INDICATING SUPPLIER'S COMPLIANCE WITH SJI SPECIFICATIONS. SHOP DRAWINGS SUBMITTED FOR JOISTS FROM NON-SJI MEMBERS ARE NOT ACCEPTABLE AND WILL BE REJECTED.
14.7. SHOP DRAWINGS SHALL BE REVIEWED BY THE CONTRACTOR PRIOR TO SUBMISSION. DRAWINGS SHALL BEAR THE CONTRACTOR'S APPROVAL STAMP ACCEPTING RESPONSIBILITY FOR DIMENSIONS, QUANTITIES AND COORDINATION WITH THE OTHER TRADES.
14.8. DRAWINGS MAY BE ELECTRONICALLY SUBMITTED, PROVIDED LEGIBILITY IS MAINTAINED. REVIEW COMMENTS ONLY WILL BE ELECTRONICALLY FORWARDED TO THE CONTRACTOR.
14.9. CONTRACTOR SHALL PROVIDE IN HIS SCHEDULE FOR A SHOP DRAWING REVIEW AND RETURN TIME OF A MINIMUM OF FIFTEEN (15) WORKING DAYS IN THE STRUCTURAL ENGINEER'S OFFICE.
14.10. HOLES IN JOIST CHORDS ARE NOT PERMITTED, EXCEPT AT BEARING END BOLTED CONNECTIONS.
14.11. JOIST ENDS AT ROOF DIAPHRAGM BOUNDARIES SHALL BE CAPABLE OF TRANSMITTING THE DIAPHRAGM BOUNDARY SHEAR PER LINEAL FOOT TIMES THE JOIST SPACING TO THE SUPPORTING STRUCTURE. DIAPHRAGM BOUNDARY SHEARS IN EXCESS OF THE 200 PLF MINIMUM BOUNDARY SHEAR ARE INDICATED ON THE DRAWINGS. THE JOIST MANUFACTURER'S PRODUCT SHALL BE DESIGNED TO TRANSMIT THE BOUNDARY SHEAR INDICATED ON THE DRAWINGS OR A MINIMUM BOUNDARY SHEAR OF 200 PLF, UNLESS SPECIAL JOIST END CONDITIONS ARE DETAILED OTHERWISE ON THE DRAWINGS.
14.12. JOISTS SHALL BE STOCKPILED IN A VERTICAL POSITION RESTING ON EITHER TOP OR BOTTOM CHORDS AND KEPT FREE OF MUD AND DIRT.
14.13. NO JOISTS WHICH ARE DAMAGED, KINKED, BENT OR HAVE BROKEN WELDS SHALL BE PLACED IN THE STRUCTURE. THE ERECTOR SHALL CULL ALL SUCH JOISTS.

10.0 PREENGINEERED LIGHTGAGE METAL TRUSSES:

10.1 ROOFTRUSSES SHALL BE DESIGNED AND CONSTRUCTED TO SAFELY SUPPORT THE FOLLOWING LOADS (UNO IN DRAWINGS):
A. TOP CHORD: DEAD LOAD = 15 PSF, LIVE LOAD = 20 PSF
B. BOTTOM CHORD: DEAD LOAD = 7PSF
(TRUSS LOADING DOES NOT INCLUDE SELF WEIGHT)
10.2 ALL TEMPORARY AND PERMENANT BRIDGING SHALL BE DESIGNED AND DETAILED BY THE TRUSS FABRICATOR.
10.3 HANDLE, STORE, AND ERECT TRUSSES IN ACCORDANCE WITH THE LIGHT GAUGE STEEL ENGINEER'S ASSOCIATION AND THE AMERICAN IRON AND STEEL INSTITUTE'S RECOMMENDATIONS.
10.4 MEMBER CONFIGURATIONS AND CONNECTIONS SHOWN ON THE DRAWINGS ARE SCHEMATIC AND ARE INTENDED ONLY TO SHOW RELATIONSHIPS OF MEMBERS AND INFORMATION FOR PRICING AND BIDDING PURPOSES.
10.5. CONTRACTOR/FABRICATOR IS RESPONSIBLE FOR THE DESIGN AND DETAILING OF ALL PREFABRICATED LIGHTGAGE METAL TRUSSES AND SHALL RETAIN A PROFESSIONAL ENGINEER REGISTERED IN THE STATE WHERE THE PROJECT IS LOCATED TO PERFORM SUCH. THE ENGINEER SHALL SEAL AND SIGN BOTH CALCULATIONS AND SHOP DRAWINGS. UPON COMPLETION OF THE LIGHTGAGE FRAMING ERECTION THE ENGINEER SHALL FURNISH A LETTER STATING THAT THE LIGHTGAGE TRUSSES WERE INSTALLED IN ACCORDANCE WITH THE APPROVED SHOP DRAWINGS.
10.6. SUBMIT CALCULATIONS AND SHOP DRAWINGS FOR DETAILS, FABRICATION, AND ERECTION OF PREFABRICATED LIGHTGAGE METAL TRUSSES:
A. COORDINATE CALCULATIONS WITH SHOP DRAWINGS.
B. DRAWINGS SHALL CLEARLY INDICATE LOCATION OF DETAILS FOR ERECTION.
C. DRAWINGS SHALL INCLUDE LAYOUT, SPACING, TYPE, MATERIAL MEMBER PROPERTIES AND ALL DETAILS OF CONNECTIONS INCLUDING TYPE, SIZE, AND SPACING OF CONNECTORS.
D. PROVIDE CALCULATIONS FOR ALL TYPICAL AND NON-TYPICAL CONNECTIONS AND FOR ATTACHMENT TO PRIMARY STRUCTURAL FRAME.
10.7. SHOP DRAWINGS SHALL BE REVIEWED BY THE CONTRACTOR PRIOR TO SUBMISSION AND SHALL BEAR THE CONTRACTOR'S APPROVAL STAMP ACCEPTING RESPONSIBILITY FOR DIMENSIONS, QUANTITIES AND COORDINATION WITH THE OTHER TRADES.
10.8. DRAWINGS MAY BE ELECTRONICALLY SUBMITTED, PROVIDED LEGIBILITY IS MAINTAINED. REVIEW COMMENTS ONLY WILL BE ELECTRONICALLY FORWARDED TO THE CONTRACTOR.
10.9. CONTRACTOR SHALL PROVIDE IN HIS SCHEDULE FOR A SHOP DRAWING REVIEW AND RETURN TIME OF A MINIMUM OF FIFTEEN (15) WORKING DAYS IN THE STRUCTURAL ENGINEER'S OFFICE.

14.0 STRUCTURAL ABBREVIATIONS:

ABBREV.	DEFINITION	ABBREV.	DEFINITION
A.B.	ANCHOR BOLTS	HOF	HORIZONTAL OUTER FAC
ABV	ABOVE	HK	HOOK
ADDNL	ADDITIONAL	HORZ	HORIZONTAL
AFF	ABOVE FINISHED FLOOR	IF	INNER FACE
ALT	ALTERNATE	INT	INTERIOR
ARCH	ARCHITECTURAL	JT	JOINT
B, BOT	BOTTOM	K	KIPS (1000 LBS)
B/XXX	BOTTOM OF XXX	L, LEN	LENGTH
BAL.	BALANCE	LAT	LATERAL
BB	BOND BEAM	LBS	POUNDS
BCX	BOTTOM CHORD EXTENSION	LE	LEFT END
BL	BRICK LEDGE	LLH	LONG LEG HORIZONTAL
BLDG	BUILDING	LLO	LONG LEG OUTSTANDING
BLW	BELOW	LLV	LONG LEG VERTICAL
BM	BEAM	LONG	LONGITUDINAL
BRG	BEARING	MAS	MASONRY
BRK	BRICK	MAX	MAXIMUM
BTWN	BETWEEN	MECH	MECHANICAL
CJ	CONST., CONTROL JOINT	MFR	MANUFACTURER
CL,CLR	CLEAR	MIN	MINIMUM
CMU	CONC. MASONRY UNIT	MTL	METAL
COL	COLUMN	NOM	NOMINAL
CONC	CONCRETE	OC, O/C	ON CENTER
CONN	CONNECTION	OF	OUTER FACE, OPP. FACE
CONST	CONSTRUCTION	OH	OPPOSITE HAND
CONT	CONTINUOUS	OPP	OPPOSITE
CTR	CENTER	OPNG	OPENING
CTRD	CENTERED	PC	PRECAST
DBA	DEFORMED BAR ANCHOR	PL	PLATE
DET,DTL	DETAIL	RE	RIGHT END
DIM	DIMENSION	REINFG	REINFORCING
DK	DECK	REINF	REINFORCEMENT
DWGS	DRAWINGS	REQD	REQUIRED
DWL	DOWEL	RET	RETAINING
EA	EACH	SOG	SLAB ON GRADE
EE	EACH END	SC	SLIP CRITICAL
EF	EACH FACE	SCHED	SCHEDULE
EFF	EFFECTIVE	SECT	SECTION
EJ	EXPANSION JOINT	S, SHRT	SHORT
EL ELEV	ELEVATION	SL	SLAB
EOC	EDGE OF CONCRETE	SPA	SPACING
EOD	EDGE OF DECK	STFNR	STIFFENER
EOM	EDGE OF MASONRY	STL	STEEL
EOS	EDGE OF SLAB	SUPPL	SUPPLIER
ES	EACH SIDE	SUPT	SUPPORT
EW	EACH WAY	T	TOP
EXIST	EXISTING	T/XXX	TOP OF XXX
EXP	EXPANSION	TCX	TOP CHORD EXTENSION
EXT	EXTERIOR, EXTENSION	THK	THICK, THICKNESS
FK	FOOT-KIPS	TO	THROUGHOUT
FL, FLR	FLOOR	TRAN	TRANSVERSE
FOB	FACE OF BRICK	TYP	TYPICAL
FOM	FACE OF MASONRY	UNO	UNLESS NOTED OTHERWISE
FOS	FACE OF STUD	VERT	VERTICAL
FP	FULL PENETRATION	VEF	VERTICAL EACH FACE
FS	FOOTING STEP	VIF	VERTICAL INNER FACE
FT	FOOT, FEET	VOF	VERTICAL OUTER FACE
FTG	FOOTING	W	WIDE, WIDTH
GB	GRADE BEAM	WF	WELDED WIRE FABRIC
GEN	GENERAL	WWM	WELDED WIRE MAT
HEF	HORIZONTAL EACH FACE	XE	EXTENDED END JOIST
HIF	HORIZONTAL INNER FACE		

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PROJECT NORTH

PLAN NORTH

KEY PLAN

CONSTRUCTION DOCUMENTS

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01 (LRSPC#19650)

DESIGNED BY: RES
DRAWN BY: RES
CHECKED BY: MSR

ISSUE DATE:
SEPTEMBER 14, 2020

STRUCTURAL GENERAL NOTES

S002

SCALE:

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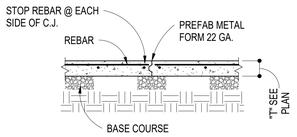
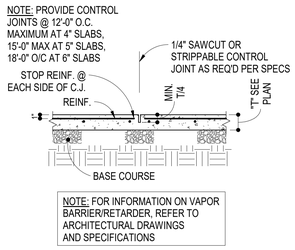


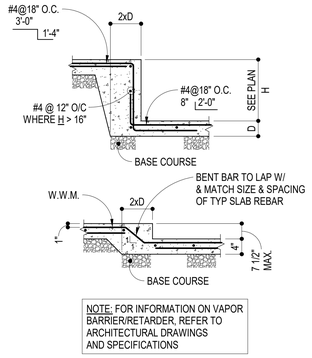
1 TYP CONSTRUCTION JOINT

3/4" = 1'-0"



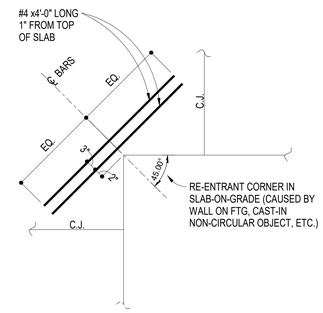
2 TYP CONSTRUCTION JOINT

3/4" = 1'-0"



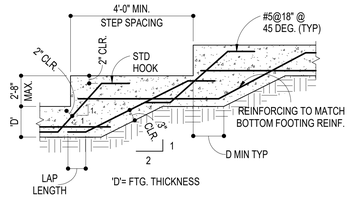
3 TYP SLAB DEPRESSION

3/4" = 1'-0"



4 TYP PLAN DET @ RE-ENTRANT CORNER

3/4" = 1'-0"



5 TYP STEPPED FOOTING

3/4" = 1'-0"

6 STAIR ON GRADE

3/4" = 1'-0"

7 TYP ISOLATION JOINT

3/4" = 1'-0"

@ FOOTING CORNERS

8 TYP CORNER REINFORCING

3/4" = 1'-0"

@ FOOTING INTERSECTION

9 TYP CORNER REINFORCING

3/4" = 1'-0"

STEEL ANGLE LOOSE LINTEL SCHEDULE FOR MASONRY VENEER

CLEAR OPENING	ONE ANGLE FOR EA. 4" WYTHE MASONRY VENEER	BEARING	DETAIL
0'-6" TO 3'-4"	L 3 1/2"x 3 1/2"x 1/4"	4"	NOM. 4" WYTHE
3'-4" TO 5'-4"	L 4"x 3 1/2"x 1/4" LLV	6"	
5'-4" TO 7'-4"	L 5"x 3 1/2"x 5/16" LLV	8"	
7'-4" TO 10'-0"	L 6"x 3 1/2"x 5/16" LLV	8"	

NOTES:

1. WHERE LINTELS BEAR ON HOLLOW MASONRY UNITS FILL ALL CORES UNDER BEARING WITH GROUT FROM BOTTOM OF LINTEL TO 16" MINIMUM BELOW LINTEL.
2. THESE LINTELS ARE NOT DESIGNED FOR MASONRY WALLS THAT CARRY FLOOR LOAD.
3. GALVANIZE ALL EXTERIOR LOOSE LINTELS.

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NORTH CAROLINA PROFESSIONAL SEAL 15464 ENGINEER MARK STEVEN RICHER

PROJECT NORTH PLAN NORTH

KEY PLAN

CONSTRUCTION DOCUMENTS

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Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01 (LRSPC#19650)

DESIGNED BY: RES
DRAWN BY: RES
CHECKED BY: MSR

ISSUE DATE: SEPTEMBER 14, 2020

TYPICAL DETAILS

S003

SCALE: 3/4" = 1'-0"

9/14/2020 7:19:34 AM

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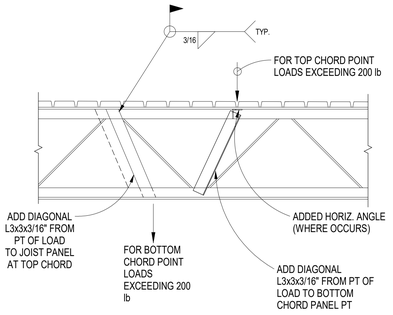
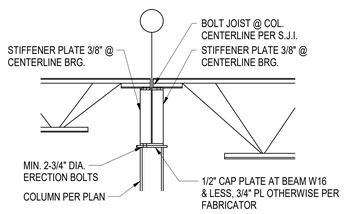


1 JOIST REINF @ CONCENTRATED LOAD

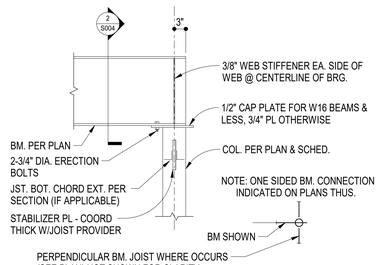
3/4" = 1'-0"



NOTE: WHERE A WIDE FLANGE BEAM CONNECTS @ COLUMN CENTERLINE TO WEB OF SUPPORTING GIRDER, CONN BEAM TO STIFF PS WITH BOLTS.

2 TYP BEAM/COL CONNECTION

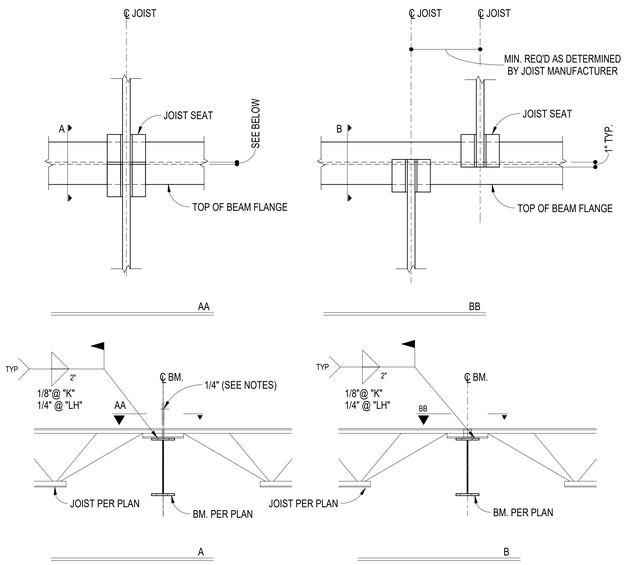
3/4" = 1'-0"



PERPENDICULAR BM. JOIST WHERE OCCURS (SEE PLAN) NOT SHOWN FOR CLARITY. PROVIDE CONNECTION FROM WEB OF BM TO STIFF PL

3 TYP BEAM CONNECTION

3/4" = 1'-0"



NOTE:

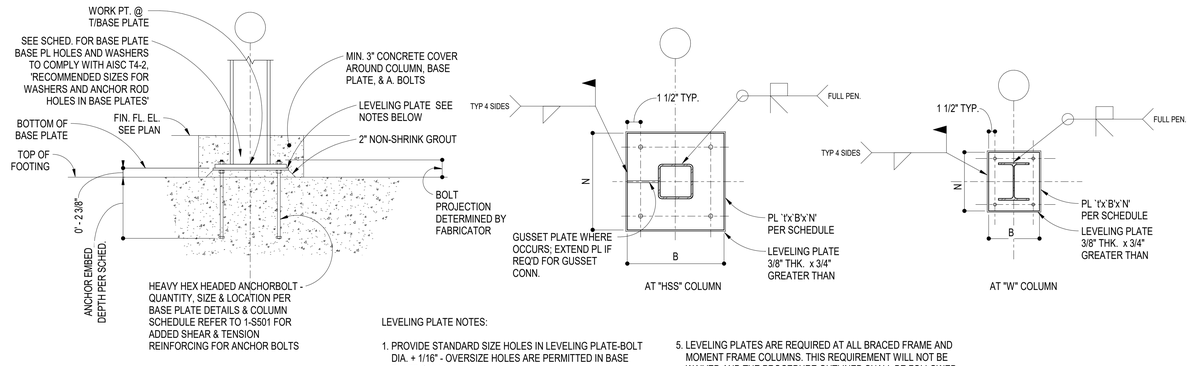
WHEN BEAM FLANGE IS GREATER THAN OR EQUAL TO 5 1/2", THEN ABUT JOISTS ENDS AS SHOWN IN "A".

WHEN BEAM FLANGE IS LESS THAN 5 1/2", THEN STAGGER JOISTS AS SHOWN IN "B".

WHERE JOIST ENDS DO NOT ABUT, EXTEND JST. ENDS ONE INCH BEYOND CENTERLINE OF BEAM.

4 TYP JOIST BEAM CONNECTION

3/4" = 1'-0"

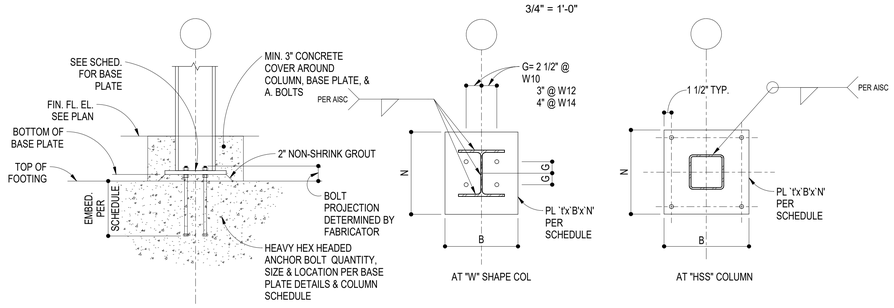


LEVELING PLATE NOTES:

1. PROVIDE STANDARD SIZE HOLES IN LEVELING PLATE-BOLT DIA. + 1/16" - OVERSIZE HOLES ARE PERMITTED IN BASE PLATE ONLY.
2. SNUG TIGHT ANCH. BOLT NUTS AGAINST EA. SIDE OF LEVELING PLATE AND USE PLATE AS ANCH. BOLT TEMPLATE. DO NOT USE PLYWOOD TEMPLATE.
3. BEFORE GROUTING SET LEVELING PLATE TO PROPER ELEVATION AND LEVEL USING SNUG TIGHT LEVELING NUTS.
4. GROUT LEVELING PLATE AND ALLOW MIN. 24 HOURS CURING TIME PRIOR TO STEEL ERECTION.
5. LEVELING PLATES ARE REQUIRED AT ALL BRACED FRAME AND MOMENT FRAME COLUMNS. THIS REQUIREMENT WILL NOT BE WAIVED AND THE PROCEDURE OUTLINED SHALL BE FOLLOWED PROPERLY OR PLATES WILL BE REQUIRED TO BE REMOVED AND RE-GROUTED.
6. LEVELING PLATES ARE CRITICAL TO PERFORMANCE OF BUILDING LATERAL SYSTEM.

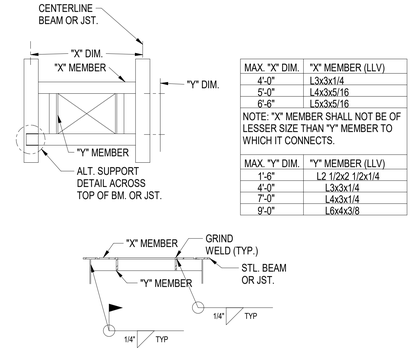
5 TYPE 2 COLUMN & BASE PLATE

3/4" = 1'-0"



6 TYPE 1 COLUMN & BASE PLATE

3/4" = 1'-0"



MAX. "X" DIM.	"X" MEMBER (LLV)
4'-0"	L3x3x1/4
5'-0"	L4x3x5/16
6'-6"	L5x3x5/16

NOTE: "X" MEMBER SHALL NOT BE OF LESSER SIZE THAN "Y" MEMBER TO WHICH IT CONNECTS.

MAX. "Y" DIM.	"Y" MEMBER (LLV)
1'-6"	L2 1/2x2 1/2x1/4
4'-0"	L3x3x1/4
7'-0"	L4x3x1/4
9'-0"	L6x4x3/8

NOTE: USE THIS DETAIL AT ROOF DECK ONLY NOT COMPOSITE SLABS

7 ROOF SUPPORT @ OPENINGS

3/4" = 1'-0"

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PROJECT NORTH

PLAN NORTH

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TYPICAL DETAILS

S004

SCALE: 3/4" = 1'-0"

9/14/2020 7:19:35 AM

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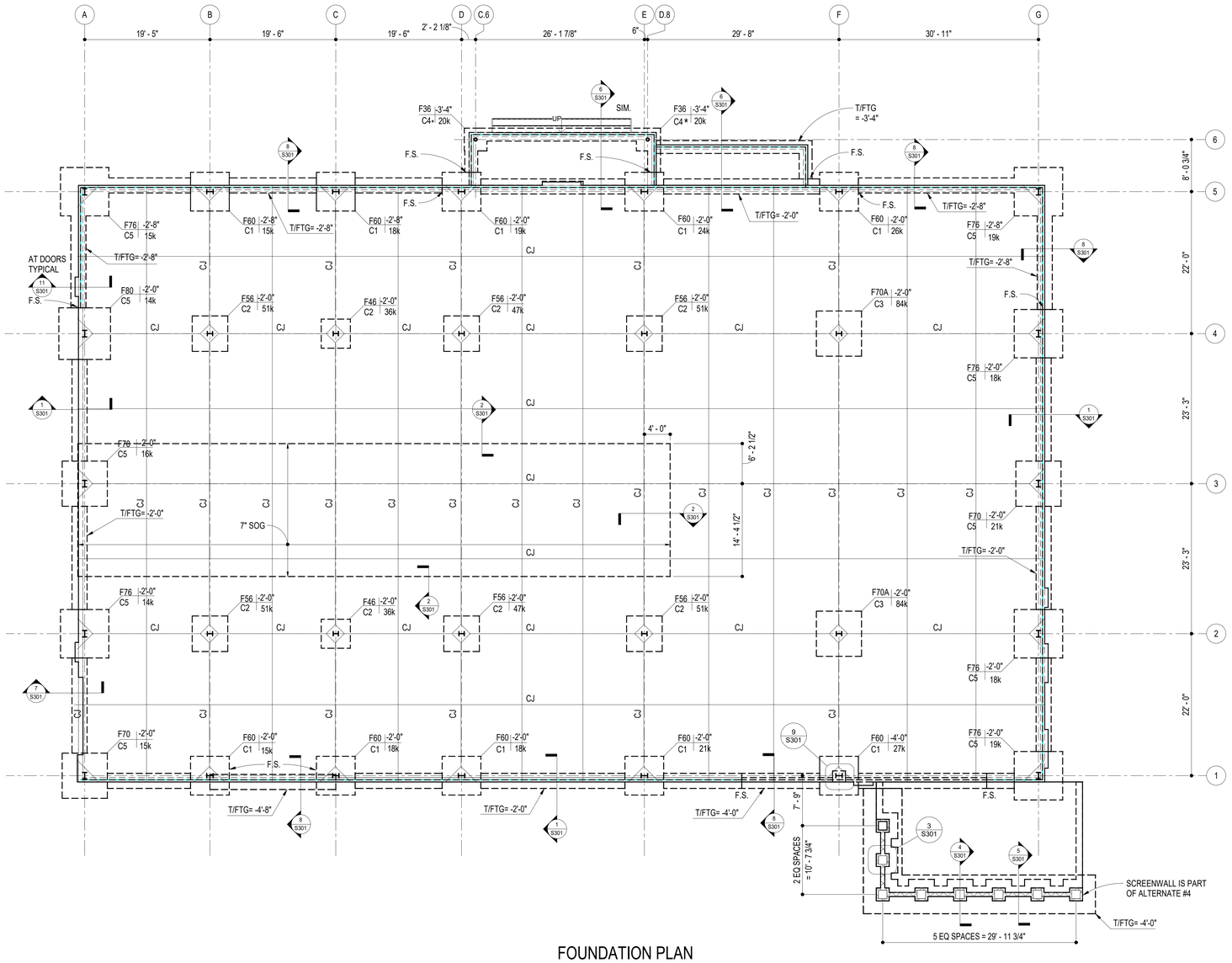

FOUNDATION PLAN

1/8" = 1'-0"

FOOTING FOUNDATION PLAN NOTES:

1. T/SL IS AT DATUM ELEVATION (0'-0"). DATUM ELEVATION IS SET AT ELEV. 43.75' PER CIVIL DRAWINGS (CONFIRM WITH ARCHITECT). ELEVATIONS FOR FOOTINGS, SLABS, STEEL, WALLS, FLOORS, ELEVATOR PITS, ETC. ARE REFERENCED + OR - FROM T/SL ELEVATION (I.E. T/SL +2'-6", T/W -5'-3", T/STL -6 1/4", ETC.).

2. T/FTG ELEVATIONS ARE SHOWN ON PLAN FOR STRIP AND SPREAD FOOTINGS. TOP OF STRIP FOOTING ELEVATION MATCHES TOP OF ADJACENT SPREAD FOOTING ELEVATION, U.N.O. FOOTING STEPS ARE SHOWN IN RELATIVE LOCATIONS UNLESS NOTED OTHERWISE ON PLAN. SEE SHT. S002 "STRUCTURAL TYPICAL DETAILS" FOR FOOTING STEP AND SPACING REQUIREMENTS. CONTRACTOR SHALL COORDINATE AND FIELD VERIFY GRADING PLANS WITH STRUCTURAL FOUNDATION DETAILS TO MAINTAIN REQUIRED EARTH COVER AND REQUIRED DEPTH TO BOTTOM OF FOOTINGS.

3. TYPICAL SLAB ON GRADE (S.O.G.) IS 4" NORMAL WEIGHT CONCRETE REINFORCED WITH #3 @ 15" O/C E.W. ON 4" CRUSHED STONE BASE AT 7" S.O.G. USE #3 @ 8" O.C. EACH WAY AND A 6" CRUSHED STONE BASE. SEE ARCHITECT FOR VAPOR RETARDER, IF REQUIRED. SUPPORT REINFORCING AT 1" FROM TOP OF S.O.G. WITH SAND PLATES (CHAIRS WITH SHEET METAL PLATE BASES) OR OTHER ACCEPTABLE DEVICES. BRICKS ARE NOT PERMITTED.

4. PROVIDE THICKENED S.O.G. UNDER ALL MASONRY WALLS (SEE ARCHITECT FOR WALL LOCATIONS, WHETHER OR NOT WALLS ARE SHOWN ON FOUNDATION PLAN) WHERE STRIP FOOTINGS ARE NOT SHOWN ON FOUNDATION PLAN. SEE SHEET S003 "STRUCTURAL TYPICAL DETAILS" FOR REQUIREMENTS.

5. CONTROL JOINTS (CJ), EITHER SAW CUT OR STRIPPABLE, IN SOG ARE SHOWN IN RELATIVE LOCATIONS ON PLAN. SEE SHEET S003 "STRUCTURAL TYPICAL DETAILS" FOR TYPICAL CONTROL JOINT DETAILS. WHERE CONTRACTOR DESIRES TO BREAK SLAB POURS ALONG THESE JOINTS, THE TYPICAL CONSTRUCTION JOINT DETAILS ON SHT. S003 SHALL BE USED.

6. UNLESS SPECIFICALLY DIRECTED BY GEOTECHNICAL ENGINEER, NO UNDERCUTTING AND BACKFILLING WITH SOIL IS PERMITTED UNDER ANY FOOTINGS. LEAN CONCRETE (f'c = 2000 PSI) OR FOOTING CONCRETE SHALL BE USED TO "BACKFILL" ANY OVEREXCAVATION.

7. FOR FOUNDATION OR BASEMENT WALLS RECEIVING BACKFILL, SEE SECTION 4.0 "FOUNDATIONS" NOTES ON SHEET S-001 "STRUCTURAL GENERAL NOTES" FOR BRACING AND BACKFILLING REQUIREMENTS, U.N.O. ON DRAWINGS.

8. MASONRY SHOWN ON STRUCTURAL DRAWINGS DEFINES ONLY THE EXTENT AND REQUIREMENTS OF MASONRY UTILIZED FOR STRUCTURAL PURPOSES (I.E. BEARING WALLS, SHEAR WALLS, RETAINING WALLS, FOUNDATION WALLS, COLUMNS, ETC.).

9. REFER TO ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING AND DRAWINGS OF OTHER DISCIPLINES FOR LOCATIONS AND DIMENSIONS OF OPENINGS, DEPRESSIONS, NON-STRUCTURAL MASONRY, AND MASONRY VENEER/PRECAST PANEL CLADDING SYSTEMS.

10. SEE SHT. S001-S002 FOR "STRUCTURAL GENERAL NOTES" AND SHT. S003-S004 FOR "STRUCTURAL TYPICAL DETAILS". TYPICAL DETAILS ARE GENERALLY NOT CUT ON PLANS BUT RATHER ARE INTENDED TO DEFINE TYPICAL CONSTRUCTION CONDITIONS. WHERE TYPICAL DETAILS ARE CUT ON PLAN, THE INTENT IS TO ILLUSTRATE THE TYPE OF CONDITION AT WHICH THAT DETAIL IS INTENDED TO APPLY RATHER THAN EVERY OCCURRENCE OF THAT DETAIL.

11. SEE SHT. S100 FOR FOOTING SCHEDULE.

12. SEE SHT. S100 FOR COLUMN SCHEDULE.

13. FOOTINGS ARE NOTED ON PLAN WITH THE FOLLOWING DESIGNATIONS:

FXX = FOOTING MARK PER SCHEDULE
T/FTG = TOP OF FOOTING FROM T/SL
CXX = COLUMN MARK PER SCHEDULE
XX K = COLUMN LOAD (KIPS)

FXX	T/FTG
CXX	XXk

FOOTING SCHEDULE Fp=2000 PSF

MARK	SIZE (LxWxD)	REINF.	REMARKS
F36	3'-6"x3'-6"X1'-0"	(9) #4 E.W. BOTTOM	
F46	4'-6"x4'-6"X1'-0"	(8) #4 E.W. BOTTOM	
F56	5'-6"x5'-6"X1'-0"	(8) #4 E.W. BOTTOM	
F60	6'-0"x6'-0"X1'-6"	(8) #5 E.W. TOP AND BOTTOM	
F70	7'-0"x7'-0"X1'-6"	(9) #5 E.W. TOP AND BOTTOM	
F70A	7'-0"x7'-0"X1'-0"	(7) #5 E.W. BOTTOM	
F76	7'-6"x7'-6"X1'-6"	(7) #6 E.W. TOP AND BOTTOM	
F80	8'-0"x8'-0"X1'-6"	(8) #6 E.W. TOP AND BOTTOM	

COLUMN SCHEDULE

MARK	SIZE	BASE PLATE	REMARKS
C1	W12x40	SEE 1/S501	TYPE 1
C2	W10x33	PL 3/4"x12"x1'-0" W/ (4) 3/4" DIA F1554, GR36 ANCHOR BOLTS	TYPE 2
C3	W10x45	PL 3/4"x13"x1'-1" W/ (4) 3/4" DIA F1554, GR36 ANCHOR BOLTS	TYPE 2
C4*	HSS5.563x0.134	PL 3/4"x12"x1'-0" W/ (4) 3/4" DIA F1554, GR36 ANCHOR BOLTS	* THESE COLUMNS ARE PART OF ALTERNATE #6
C5	W12x45	SEE 1/S501	TYPE 1

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STRUCTURAL FOUNDATION PLAN

S100

SCALE: 1/8" = 1'-0"

9/17/2020 1:43:02 PM

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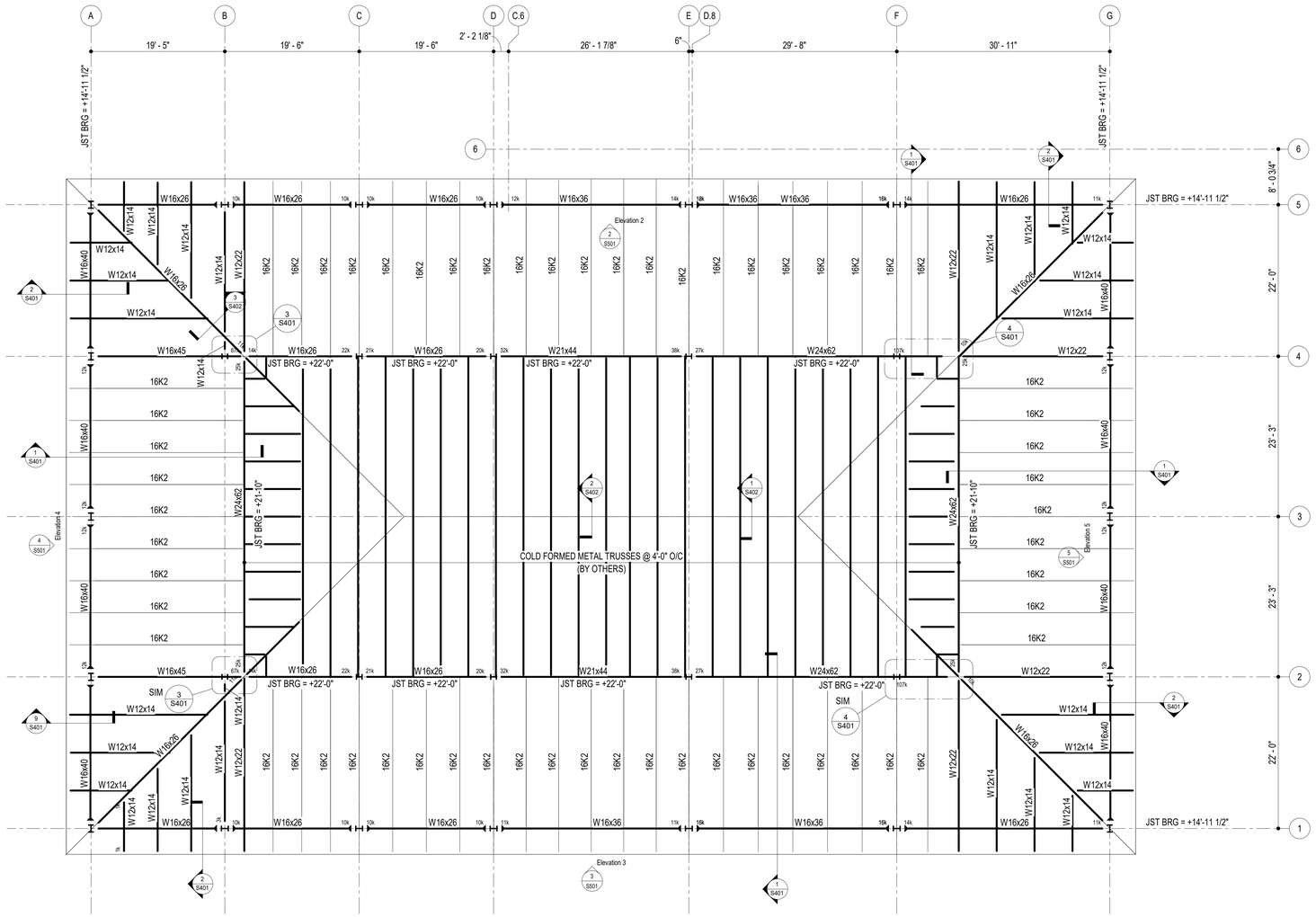
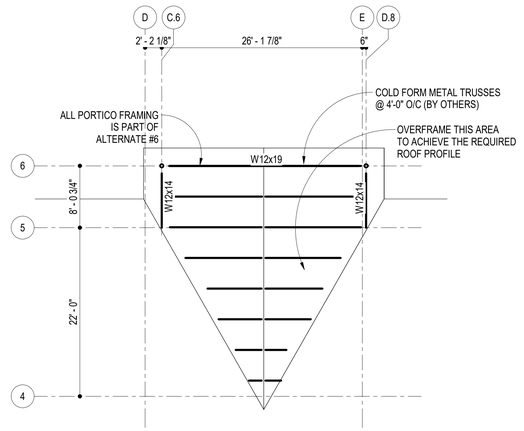


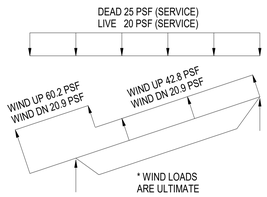
ROOF FRAMING PLAN

1/8" = 1'-0"



ALTERNATE 6 - PORTICO ROOF FRAMING PLAN

1/8" = 1'-0"



TYPICAL JOIST LOADS

ROOF FRAMING PLAN NOTES:

1. T/STL ELEVATIONS (JOIST BEARING ELEVATIONS) ARE INDICATED ABOVE DATUM ELEVATION ON ON PLAN AS THUS: T/STL = +XX'-XX" DATUM ELEVATION (+0'-0") IS SET AT LEVEL 1 T/SL. BEAMS PARALLEL TO JOISTS ARE TO BE SET AT ELEVATIONS REQUIRED TO SUPPORT DECK, U.N.O.

2. TOP OF ROOF DECK AND SLAB SLOPES DOWN EACH WAY FROM A RIDGE ALONG THE X LINE. SEE PLAN FOR T/STL ELEVATIONS FOR FRAMING UNDER ROOF DECK OUTSIDE SCREENWALL. T/STL ELEVATIONS FOR FRAMING UNDER SLAB INSIDE SCREENWALL SHALL BE 4-1/2" BELOW ELEVATIONS INDICATED ON PLAN. DATUM ELEVATION (+0'-0") IS SET AT LEVEL 1 T/SL.

3. TYPICAL ROOF DECK IS 1-1/2" DEEP, 20 GAGE G60 GALVANIZED TYPE "B" STEEL ROOF DECK. SPAN DIRECTION OF DECK IS INDICATED THUS: ATTACH DECK TO SUPPORTING MEMBERS WITH 5/8" DIA. PUDDLE WELDS IN A 36/4 PATTERN, U.N.O. PROVIDE SIDELAP FASTENERS OF (3) #10 TEK SCREWS PER SPAN, U.N.O.

4. STEEL JOIST DESIGNATIONS CONFORM TO SJI STANDARDS. PROVIDE JOIST BRIDGING PER SJI REQUIREMENTS, WHETHER SHOWN ON PLAN OR NOT.

5. SPECIAL JOISTS ARE INDICATED THUS: XXKSP JOIST FABRICATOR TO DESIGN SPECIAL JOISTS FOR UNIFORM ROOF LOADS PLUS CONCENTRATED LOADS INDICATED ON PLAN.

6. SEE STRUCTURAL STEEL GENERAL NOTES FOR GRADES FOR ALL STRUCTURAL STEEL MEMBERS THIS PLAN, U.N.O.

7. JOISTS ARE EQUALLY SPACED ALONG SUPPORTING MEMBERS, U.N.O.

8. BEAMS ARE EQUALLY SPACED ALONG SUPPORTING MEMBERS U.N.O.

9. DESIGNATIONS ON PLAN FOR BEAM CAMBERS, END REACTIONS, AND END MOMENTS ARE INDICATED AS FOLLOWS: ⟷

CAMBER AT MID-SPAN U.N.O.	C= XX"
FACTORED END REACTION (1.2D+1.6L,IN KIPS)	XX K

10. MOMENT CONNECTIONS ARE INDICATED AT BEAM ENDS BY THE FOLLOWING SYMBOL: ▶— WHERE NO VALUE IS SHOWN FOR END MOMENT THE CONNECTION SHALL BE DESIGNED FOR THE FULL MOMENT CAPACITY OF THE MEMBER.

11. REFER TO ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING AND DRAWINGS OF OTHER DISCIPLINES FOR LOCATIONS AND DIMENSIONS OF OPENINGS, DEPRESSIONS, NON-STRUCTURAL MASONRY, AND MASONRY VENEER/PRECAST PANEL CLADDING SYSTEMS.

12. SEE SHT. S001 - S002 FOR "STRUCTURAL GENERAL NOTES" AND SHT. S003 - S004 FOR "STRUCTURAL TYPICAL DETAILS". TYPICAL DETAILS ARE GENERALLY NOT CUT ON PLANS BUT RATHER ARE INTENDED TO DEFINE TYPICAL CONSTRUCTION CONDITIONS. WHERE TYPICAL DETAILS ARE CUT ON PLAN, THE INTENT IS TO ILLUSTRATE THE TYPE OF CONDITION AT WHICH THAT DETAIL IS INTENDED TO APPLY RATHER THAN EVERY OCCURRENCE OF THAT DETAIL.

13. SEE SHT. S501 FOR MOMENT FRAME INFORMATION.

14. SEE SHT. S100 FOR COLUMN SCHEDULE.

15. COORDINATE WITH ARCHITECTURAL AND MECHANICAL DRAWINGS FOR ROOF OPENING SIZES AND LOCATIONS. SEE STRUCTURAL TYPICAL DETAILS FOR ROOF FRAMING AROUND OPENINGS.

16. MECHANICAL EQUIPMENT UNIT LOCATIONS INDICATED ON PLAN ARE APPROXIMATE, UNLESS EXPLICITLY DIMENSIONED OR DETAILED. WEIGHTS INDICATED REPRESENT DESIGN LOADS FOR STRUCTURE. CONTRACTOR IS RESPONSIBLE FOR COORDINATING FINAL LOCATIONS AND DIMENSIONS OF ROOFTOP EQUIPMENT AND OPENINGS ALONG WITH ALL SUPPORTING STEEL. WHERE ROOFTOP EQUIPMENT LOCATIONS, OPENINGS, OR WEIGHTS DIFFER FROM THOSE INDICATED ON PLAN, CONTRACTOR SHALL NOTIFY STRUCTURAL ENGINEER PRIOR TO FABRICATION OF STEEL MEMBERS.

17. SEE JOIST LOADING DIAGRAM FOR JOIST LOADS ON S101.

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DRAWN BY: RES
CHECKED BY: MSR

ISSUE DATE: SEPTEMBER 14, 2020

ROOF FRAMING PLAN

S101

SCALE: As indicated

9/14/2020 7:19:38 AM

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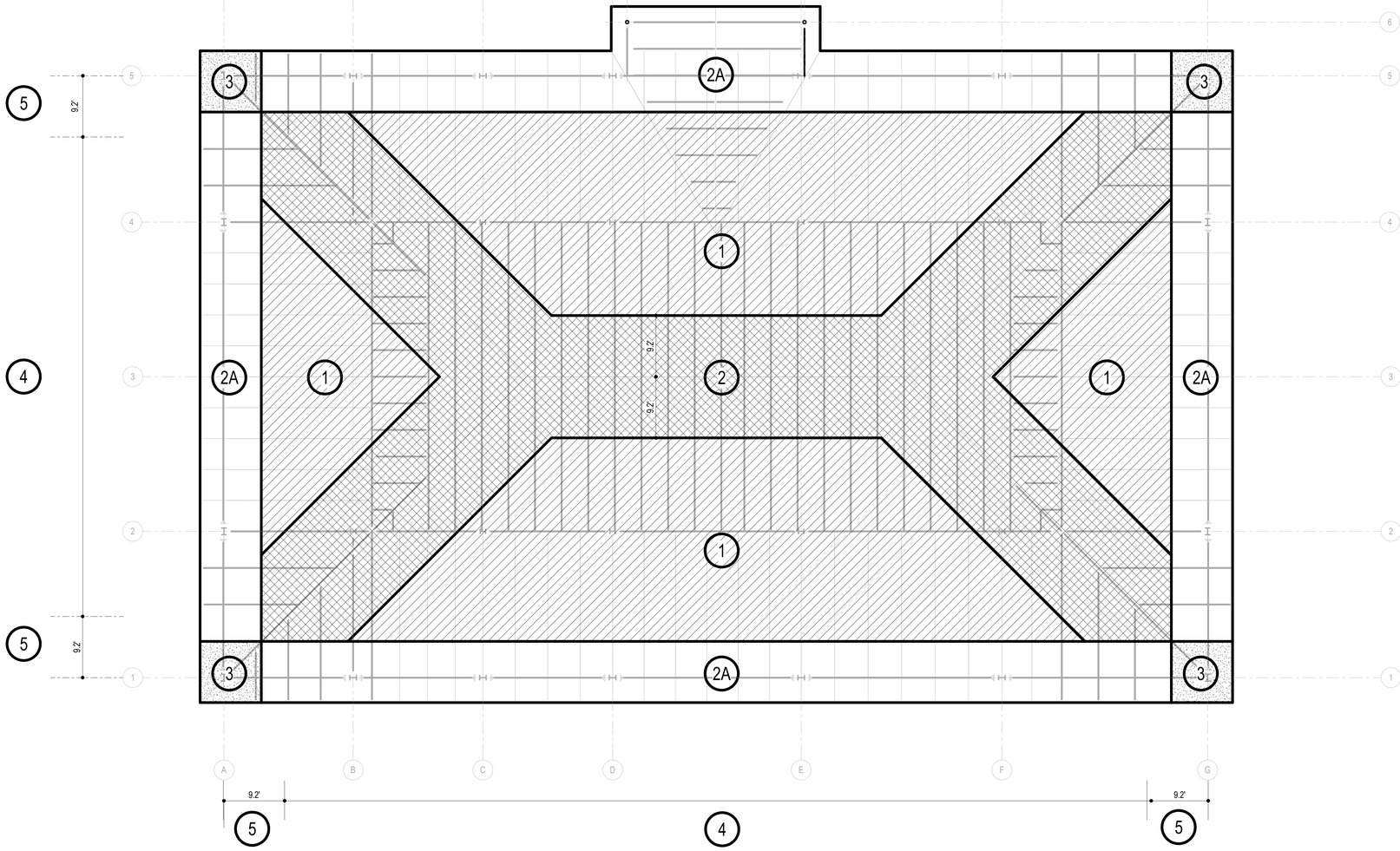

ULTIMATE ROOF UPLIFT PRESSURES

ZONE	PRESSURES
1	-47.1
2	-82.0
2A	-96.0
3	-96.0

ULTIMATE WALL WIND PRESSURES

ZONE POSITIVE	PRESSURES	ZONE NEGATIVE	PRESSURES
4	44.7	4	-49.7
5	44.7	5	-55.7

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www.sganwdesign.com

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NORTH CAROLINA REGISTERED CERTIFICATE C-0613 ENGINEERING CORPORATION LAURENE, RICKHER & SORRELL, P.C.

NORTH CAROLINA PROFESSIONAL SEAL 15464 ENGINEER DEREK STEVEN RICHER

PROJECT NORTH PLAN NORTH

KEY PLAN

CONSTRUCTION DOCUMENTS

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01 (LRSPC#19650)

DESIGNED BY: Author
DRAWN BY: Author
CHECKED BY: Checker

ISSUE DATE:
SEPTEMBER 14, 2020

WIND PRESSURES

S102

SCALE: 1/8" = 1'-0"

9/14/2020 7:19:38 AM

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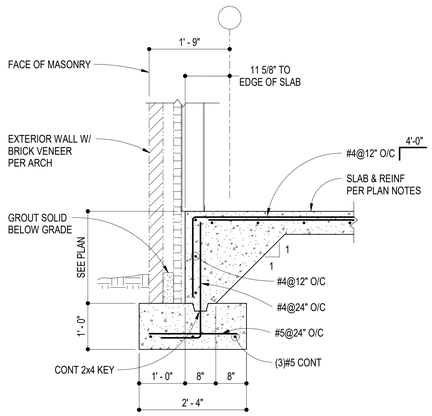
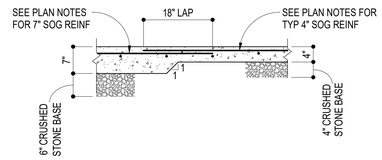


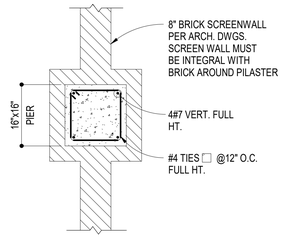
1 SECTION

3/4" = 1'-0"



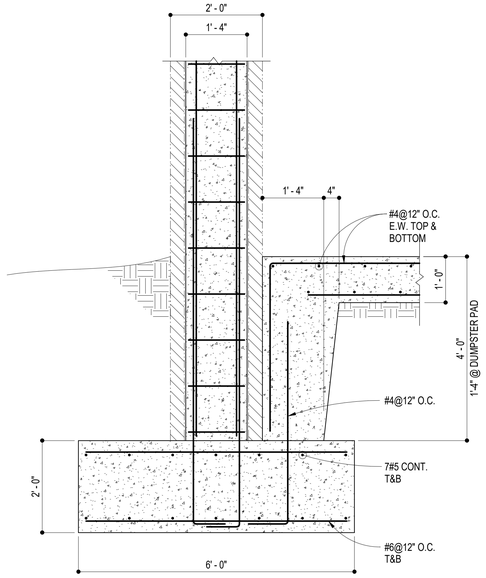
2 SECTION

3/4" = 1'-0"



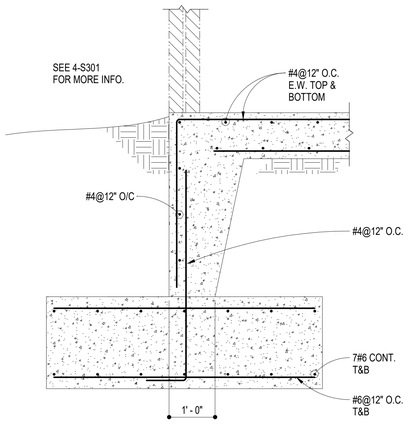
3 SECTION

3/4" = 1'-0"



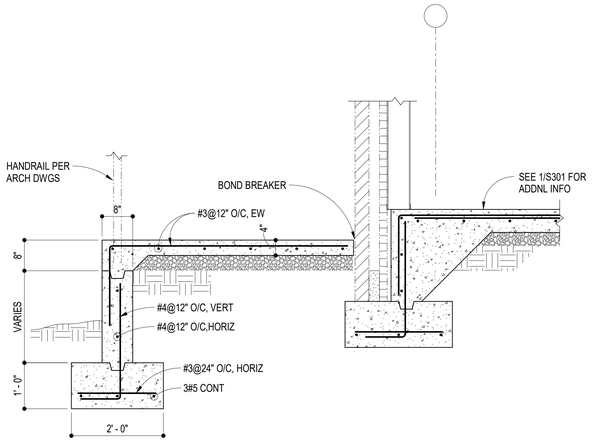
4 SECTION

3/4" = 1'-0"



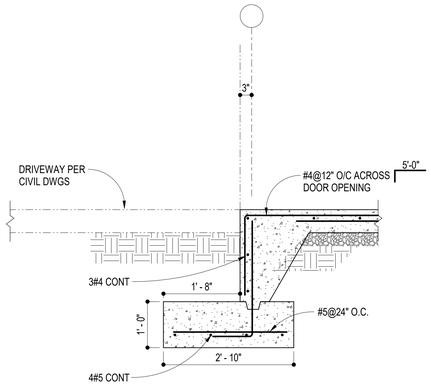
5 SECTION

3/4" = 1'-0"



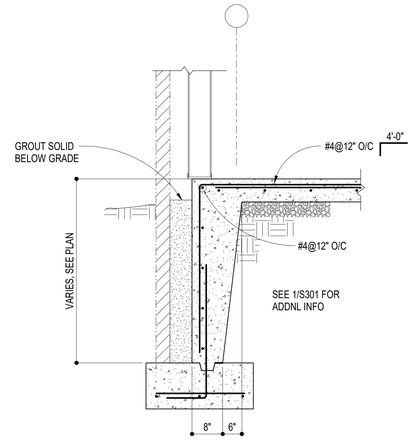
6 SECTION

3/4" = 1'-0"



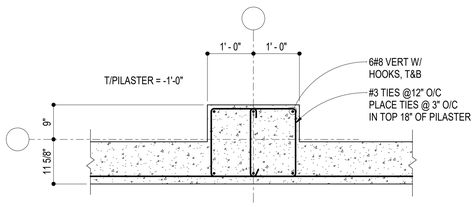
7 SECTION

3/4" = 1'-0"



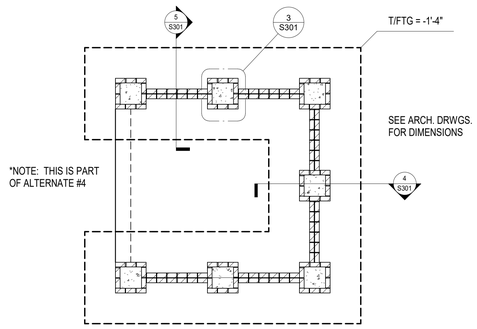
8 SECTION

3/4" = 1'-0"



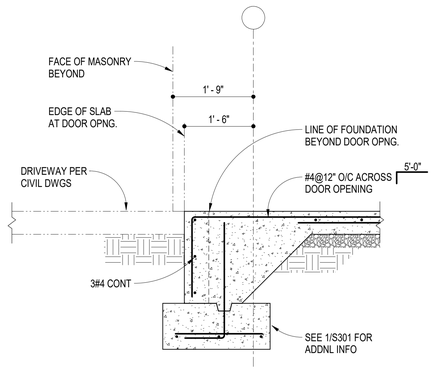
9 DETAIL

3/4" = 1'-0"



10 DUMPSTER ENCLOSURE

1/4" = 1'-0"



11 SECTION

3/4" = 1'-0"

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www.sganwdesign.com

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NORTH CAROLINA REGISTERED CERTIFICATE C-0613 ENGINEERING CORPORATION LAURENE RICKHER & SORRELL, P.C.

NORTH CAROLINA PROFESSIONAL SEAL 15464 ENGINEER MARK STEVEN RICHER

PROJECT NORTH

PLAN NORTH

KEY PLAN

CONSTRUCTION DOCUMENTS

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01 (LRSPC#19650)

DESIGNED BY: RES
DRAWN BY: RES
CHECKED BY: MSR

ISSUE DATE:
SEPTEMBER 14, 2020

FOUNDATION SECTIONS & DETAILS

S301

SCALE: As indicated

9/14/2020 7:19:39 AM

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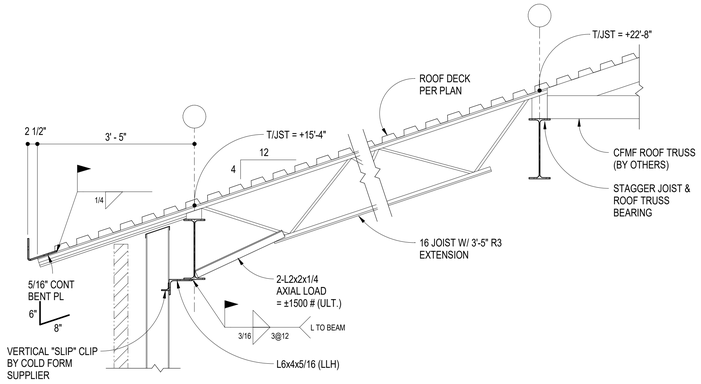
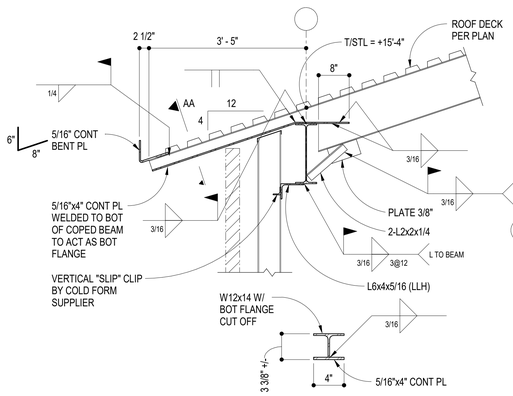


1 SECTION

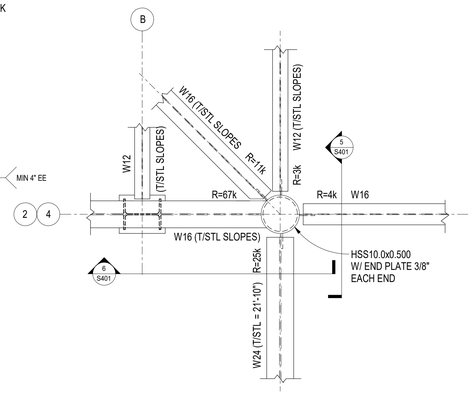
3/4" = 1'-0"



SECTION A-A

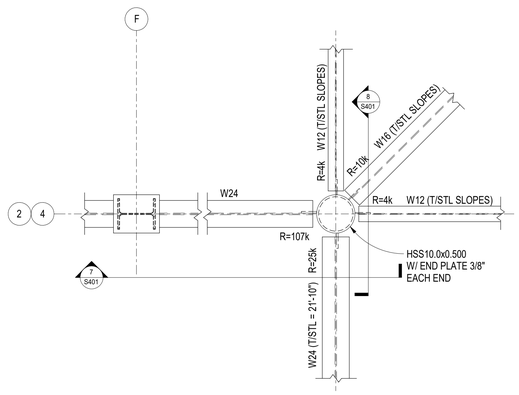
2 SECTION

3/4" = 1'-0"



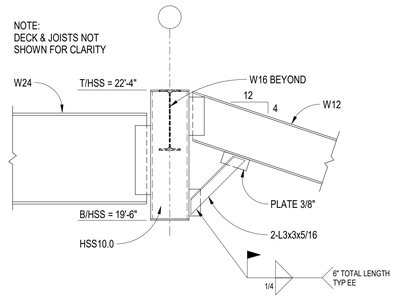
3 SECTION

3/4" = 1'-0"



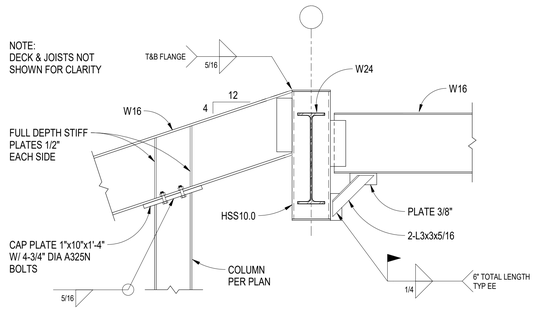
4 SECTION

3/4" = 1'-0"



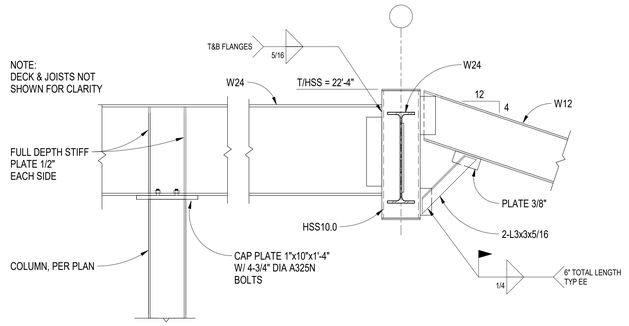
5 SECTION

3/4" = 1'-0"



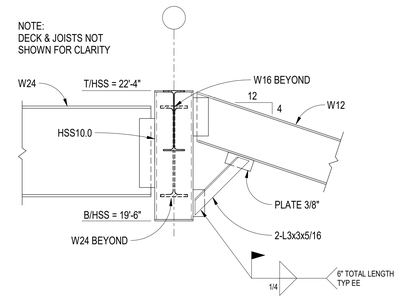
6 SECTION

3/4" = 1'-0"



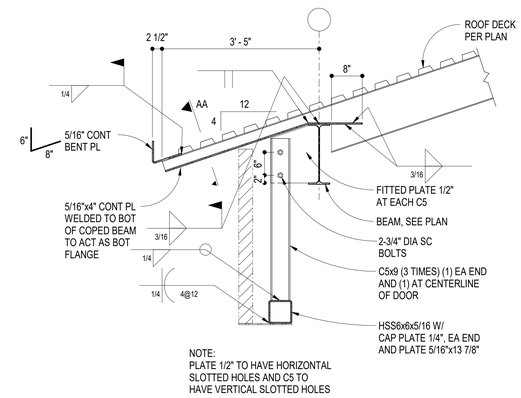
7 SECTION

3/4" = 1'-0"



8 SECTION

3/4" = 1'-0"



NOTE:
PLATE 1/2" TO HAVE HORIZONTAL
SLOTTED HOLES AND C5 TO
HAVE VERTICAL SLOTTED HOLES

9 SECTION

3/4" = 1'-0"

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NORTH CAROLINA PROFESSIONAL SEAL 15464 ENGINEER MARK STEVEN RICHER

PROJECT NORTH

PLAN NORTH

KEY PLAN

CONSTRUCTION DOCUMENTS

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER:
19-202-01 (LRSPC#19650)

DESIGNED BY: RES
DRAWN BY: RES
CHECKED BY: MSR

ISSUE DATE:
SEPTEMBER 14, 2020

FRAMING SECTIONS & DETAILS

S401

SCALE: As indicated

9/14/2020 7:19:40 AM

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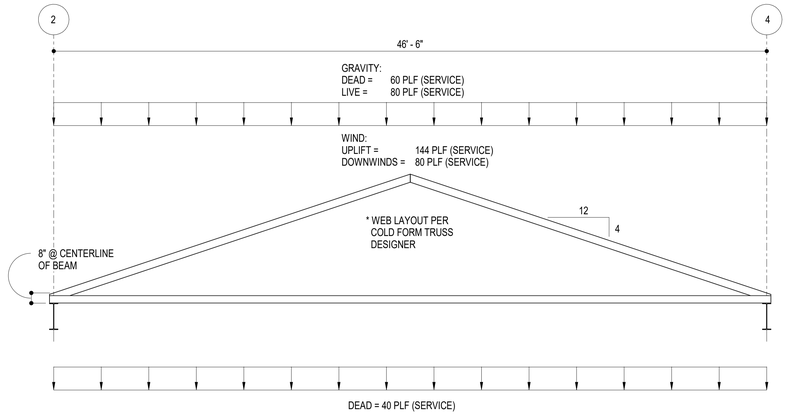
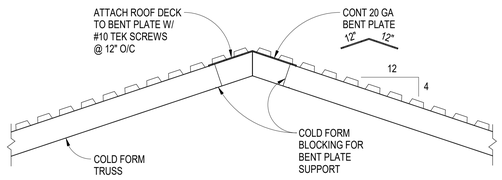


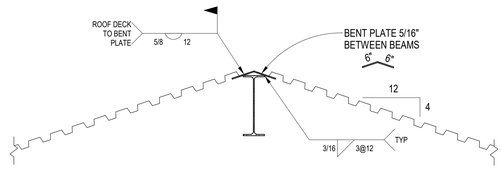
1 ELEVATION

1/4" = 1'-0"



2 SECTION

3/4" = 1'-0"



3 SECTION

3/4" = 1'-0"

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NORTH CAROLINA PROFESSIONAL SEAL 15464 ENGINEER MARK STEVEN RICHKER

PROJECT NORTH PLAN NORTH

KEY PLAN

CONSTRUCTION DOCUMENTS

Revision Schedule		
#	Description	Date

Coastal Engineering Building

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SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01 (LRSPC#19650)

DESIGNED BY: Author
DRAWN BY: Author
CHECKED BY: Checker

ISSUE DATE:
SEPTEMBER 14, 2020

FRAMING SECTIONS & ELEVATION

S402

SCALE: As indicated

9/14/2020 7:19:41 AM

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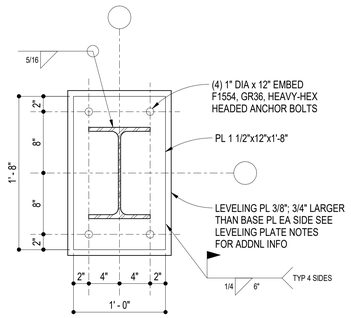
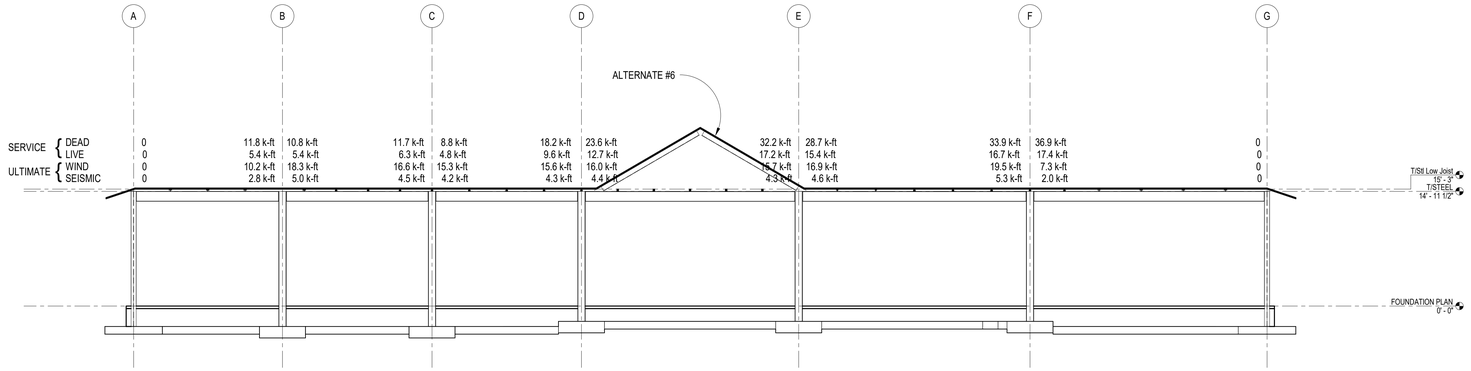


1 SECTION

1 1/2" = 1'-0"

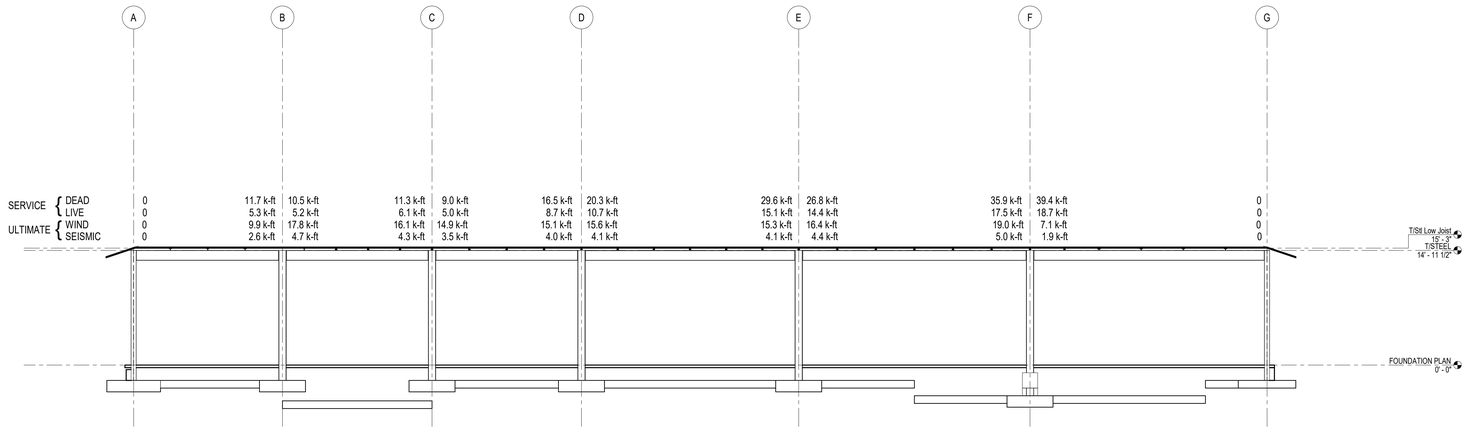


2 LINE 5 ELEVATION

1/8" = 1'-0"

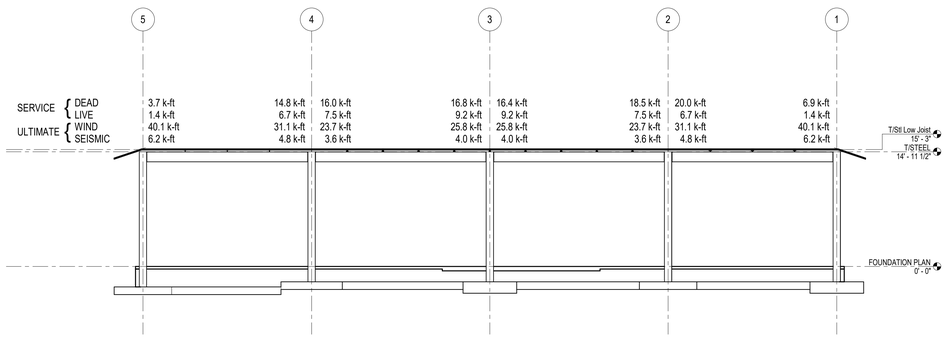
NOTE:

SEE ROOF FRAMING PLAN FOR ULTIMATE SHEAR LOADS



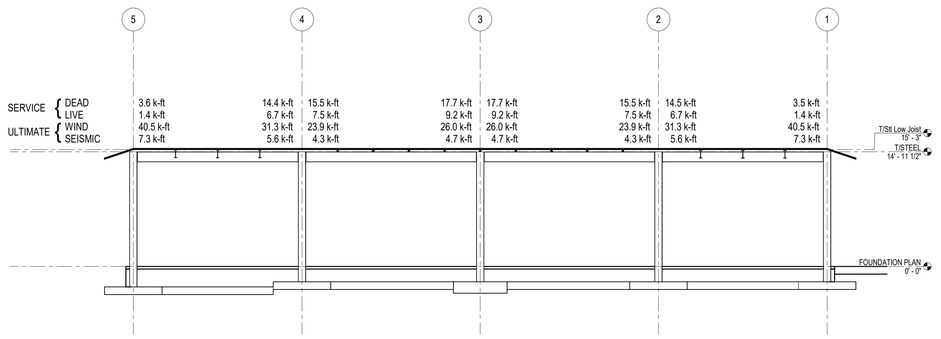
3 LINE 1 ELEVATION

1/8" = 1'-0"



4 LINE A ELEVATION

1/8" = 1'-0"



5 LINE G ELEVATION

1/8" = 1'-0"

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NORTH CAROLINA REGISTERED CERTIFICATE C-0613 ENGINEERING CORPORATION LAURENE, RICKHER & SORRELL, P.C.

NORTH CAROLINA PROFESSIONAL SEAL 15464 ENGINEER MARK STEVEN RICHER

PROJECT NORTH PLAN NORTH

KEY PLAN

CONSTRUCTION DOCUMENTS

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
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SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA | NW DESIGN PROJECT NUMBER: 19-202-01 (LRSPC#19650)

DESIGNED BY: RES
DRAWN BY: RES
CHECKED BY: MSR

ISSUE DATE:
SEPTEMBER 14, 2020

FRAME ELEVATIONS & BASE PLATE DETAIL

S501

SCALE: As indicated

9/14/2020 7:19:42 AM

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GRILLE AND DIFFUSER SCHEDULE

SYMBOL	SERVICE	CFM RANGE	FACE SIZE	NECK SIZE	TYPE	OBD	PRICE
A	SUPPLY	0-120	24x24	6"Ø	SQUARE PLAQUE	NO	SPD
B	SUPPLY	125-225	24x24	8"Ø	SQUARE PLAQUE	NO	SPD
C	SUPPLY	225-375	24x24	10"Ø	SQUARE PLAQUE	NO	SPD
D	SUPPLY	0-90	10x3		SPIRAL SIDEWALL	YES	TITUS S300FL
E	SUPPLY	95-150	10x4		SPIRAL SIDEWALL	YES	TITUS S300FL
F	SUPPLY	155-210	12x4		SPIRAL SIDEWALL	YES	TITUS S300FL
G	SUPPLY	215-300	16x4		SPIRAL SIDEWALL	YES	TITUS S300FL
H	SUPPLY	305-545	18x8		SPIRAL SIDEWALL	YES	TITUS S300FL
I	SUPPLY	SEE PLANS FOR SIZE AND AIRFLOW			DBL DEFLECT.	YES	620
J	RETURN	0-100	24x24	6"Ø	PERF	NO	10FF
K	RETURN	105-175	24x24	8"Ø	PERF	NO	10FF
L	RETURN	180-270	24x24	10"Ø	PERF	NO	10FF
M	RETURN	275-390	24x24	12"Ø	PERF	NO	10FF
N	RETURN	395-500	24x24	12x12	PERF	NO	10FF
O	RETURN	505-885	24x24	16x16	PERF	NO	10FF
P	RETURN	890-1800	24x24	22x22	PERF	NO	PDDR
Q	EXHAUST	0-100	24x24	6"Ø	PERF	NO	PDDR
R	EXHAUST	105-175	24x24	8"Ø	PERF	NO	PDDR
S	EXHAUST	180-265	24x24	10"Ø	PERF	NO	PDDR
T	EXHAUST	270-385	24x24	12"Ø	PERF	NO	PDDR
U	EXHAUST	0-550	22x6		SPIRAL SIDEWALL	NO	TITUS S8F

NOTES:

1. ALL DEVICES SHALL BE FURNISHED WITH AN ENAMEL OFF-WHITE FINISH.
2. ALL DEVICES SHALL BE FURNISHED WITH FRAMES SUITABLE FOR TYPE OF INSTALLATION REQUIRED.
3. ALL AIR TERMINALS THAT SERVE TOILETS AND FACULTY OPEN LAB SHALL BE ALUMINUM CONSTRUCTION
4. ALL RETURN AIR DIFFUSERS SHALL BE PROVIDED WITH FILTER INSERT

EQUIVALENT MANUFACTURERS LISTING

LISTING OF MANUFACTURER'S NAME DOES NOT GUARANTEE APPROVAL. ALL EQUIPMENT MUST MEET OR EXCEED QUALITY AND CAPACITIES OF SPECIFIED EQUIPMENT. FINAL APPROVAL WILL BE BASED ON EQUIPMENT SUBMITTALS. ANY MANUFACTURER NOT LISTED BUT WISHING TO BID THIS PROJECT SHALL SUBMIT A WRITTEN REQUEST A MINIMUM OF 7 DAYS PRIOR TO BID DATE OR AS INDICATED IN THE SPECIFICATIONS, PRIOR APPROVAL IS REQUIRED FOR ALL MANUFACTURERS NOT LISTED. ALL REQUESTS SHALL BE SUBMITTED THROUGH THE CM OR A BIDDING GENERAL CONTRACTOR

FANS: COOK, GREENHECK, PENN, TWIN CITY, ACME
AIR DISTRIBUTION: CARNES, METAL*AIRE, NAILOR, PRICE, TITUS
FIRE DAMPERS: AIR BALANCE INC., GREENHECK, NAILOR, RUSKIN
LOUVERS: AIR BALANCE INC., GREENHECK, RUSKIN, SAFE-AIR
VRF SYSTEMS: DAIKIN, MITSUBISHI, PANASONIC, SANYO
DDC CONTROLS PRODUCTS AND SYSTEMS: (TRIDIUM NIAGARA N4),HONEYWELL, SCHNEIDER, DISTECH, TRANE
DOAS UNITS: AAON, DAIKIN, TRANE, YORK/JCI
GRAVITY VENTILATOR: GREENHECK, COOK, RUSKIN
VARIABLE FREQUENCY DRIVES: ABB, HONEYWELL, DANFOSS, SQUARE D, CUTLER HAMMER
SPIRAL DUCTWORK: EASTERN SHEET METAL, LINDAB, UNITED MCGILL, HAMLIN

OWNER PREEFERRED ALTERNATE (PA-3) :
VRF SYSTEM - MITSUBISHI

NOTE:
ALL COST ASSOCIATED WITH SUBSTITUTED EQUIPMENT TO COMPLY WITH BASIS OF DESIGN, INCLUDING PROVIDING MAINTENANCE ACCESS, CLEARANCE, PIPING, SHEET METAL, ELECTRICAL, REPLACEMENT OF OTHER SYSTEM COMPONENTS, BUILDING ALTERATIONS, ETC., SHALL BE INCLUDED IN THE ORIGINAL BASE BID. NO ADDITIONAL COST ASSOCIATED WITH SUBSTITUTED EQUIPMENT WILL BE APPROVED DURING CONSTRUCTION AND ALL COST WILL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR.

TESTING, ADJUSTING, AND BALANCING

1. THE MECHANICAL CONTRACTOR SHALL BALANCE ALL MECHANICAL SYSTEMS TO THE PERFORMANCE SPECIFICATIONS INDICATED ON PLANS AND PROVIDE THE ENGINEER WITH THREE COPIES OF A COMPLETE TEST AND BALANCE REPORT. THE REPORT IS TO BE ISSUED A MINIMUM OF TWO WEEKS PRIOR TO PROJECT COMPLETION. THE TEST AND BALANCE REPORTWILL BE SUBJECT TO REVIEW AND APPROVAL BY THE ENGINEER. ANY ADDITIONAL TESTING, ADJUSTING AND BALANCING REQUIRED (AT ENGINEER'S REQUEST) AFTER REVIEW OF THE INITIAL REPORT SHALL BE PROVIDED AT NO ADDITIONAL COST. TEST AND BALANCE REPORT TO BE COMPLETED BY AN INDEPENDENT, CERTIFIED TEST AND BALANCE CONTRACTOR.
2. CONDUCT TEST AND BALANCING IN ACCORDANCE WITH TECHNICAL PORTIONS OF THE AABC "NATIONAL STANDARDS FOR TESTING AND BALANCING HVAC SYSTEMS", LATEST EDITION.
3. INSTRUMENTS USED FOR BALANCING MUST HAVE BEEN CALIBRATED WITHIN A PERIOD OF SIX (6) MONTHS PRIOR TO BALANCING. SUBMIT SERIAL NUMBERS, AND STATES OF CALIBRATION OF ALL INSTURMENTS TO BE USED PRIOR TO THE START OF WORK.
4. SET HVAC SYSTEM AIRFLOW AND WATER FLOW RATES WITHIN THE FOLLOWING TOLERANCES:

   4.2. AIR OUTLETS AND INLETS: 0 TO MINUS 10 PERCENT

2018 NORTH CAROLINA ENERGY CONSERVATION CODE COMMERCIAL ENERGY EFFICIENCY - MECHANICAL SUMMARY

C401 METHOD OF COMPLIANCE

- [x] 2018 NCECC CHAPTER 4
- [ ] ASHRAE 90.1-2013 PRESCRIPTIVE
- [ ] ASHRAE 90.1-2013 PERFORMANCE
- [ ] N/A (EXISTING LIGHTING, HVAC, AND DOM. WATER HEATING SYSTEMS TO REMAIN)
- [ ] COMCHECK PROVIDED (2018 NCECC)
- [ ] COMCHECK PROVIDED (90.1-2013)
- [ ] ENERGY MODELING DATA PROVIDED

C406 APPLICATION COMPLIANCE

- [ ] C406.2 EFFICIENT MECH EQUIPMENT
- [x] C406.3 REDUCED LTG DENSITY
- [ ] C406.4 ENERGY RECOVERY SYSTEMS
- [ ] C406.5 ONSITE RENEWABLE ENERGY
- [ ] C406.6 DEDICATED O.A. SYSTEM
- [ ] C406.7 SERVICE WATER HEATING

301.1 CLIMATE ZONE

3A - NEW HANOVER COUNTY, NC

DESIGN CONDITIONS

EXTERIOR (ASHRAE 90.1-2013 TABLE D-1)

winter dry bulb	23° F.
summer dry bulb	93° F.
summer wet bulb	78.5° F.

INTERIOR (2018 NCECC SECTION C302.1)

winter dry bulb	70° F.
summer dry bulb	75° F.

C403.2 HEATING & COOLING LOADS AND EQUIPMENT & SYSTEM SIZING

BUILDING HEATING LOAD	REFER TO SCHEDULES
BUILDING COOLING LOAD	REFER TO SCHEDULES
INSTALLED HEATING CAPACITY	REFER TO SCHEDULES
INSTALLED COOLING CAPACITY	REFER TO SCHEDULES

C403.2.3 & C406.2 - REQUIRED & INCREASED HVAC EQUIPMENT PERFORMANCE

SYSTEM DESCRIPTION - VRF SYSTEM WITH DOAS FOR VENTILATION AIR

- [x] MINIMUM HVAC EQUIPMENT EFFICIENCY COMPLIANCE - TABLE C403.2.3
- [ ] INCREASED HVAC EQUIPMENT EFFICIENCY COMPLIANCE - 10% OVER TABLE C406.2.3

EQUIP TYPE	SIZE CATEGORY (BTUH)	SUBCATEGORY	C403.2.3 MINIMUM EFFICIENCY (b)	10% INCREASED EFFICIENCY	DESIGN EFFIC.
TABLE C403.2.3(2) - ELECTRICALLY OPERATED UNITARY AND APPLIED HEAT PUMPS					
AIR COOLED COOL MODE	>= 135,000 & < 240,000	SPLIT SYSTEM & SINGLE PACKAGE	10.6 EER 11.6 IEER	12.4 EER 11.9 IPLV	SEE SCHEDULE

C403.2.4 THRU C403.2.11

- [x] HVAC SYSTEMS ARE FULLY COMPLIANT WITH THE REQUIREMENTS FOR HVAC SYSTEM CONTROL, VENTILATION, ENERGY RECOVERY, DUCT AND PLENUM INSULATION AND SEALING, PIPING INSULATION, AND SYSTEM COMPLETION.

C403.2.12 - AIR SYSTEM DESIGN AND CONTROL

- [x] ALL FANS INSTALLED ON THE PROJECT ARE 5 HP OR LESS AND ARE EXEMPT FROM THESE REQUIREMENTS.
- [ ] FANS ABOVE 5 HP MEET THE CFM LIMITATIONS SHOWN BELOW:

OPTION 2 - FAN SYSTEM MOTOR BRAKE HP - TABLE 503.2.10.1(1)

SYSTEM/UNIT	ALLOWABLE MOTOR BRAKE HP	DESIGN MOTOR BRAKE HP	DESIGN CFM
7.5	6,818 CFM	5,000 CFM	SEE SCHEDULE
10	9,091 CFM	6,667 CFM	SEE SCHEDULE
15	13,636 CFM	10,000 CFM	SEE SCHEDULE
20	18,182 CFM	13,333 CFM	SEE SCHEDULE
25	22,727 CFM	16,667 CFM	SEE SCHEDULE
30	27,272 CFM	20,000 CFM	SEE SCHEDULE
40	36,364 CFM	26,667 CFM	SEE SCHEDULE
50	45,455 CFM	33,333 CFM	SEE SCHEDULE

IF YOU DONT MEET THESE REQUIREMENTS, CHECK THE CODE AND USE OPTION 2

C403.3 - SIMPLE HVAC SYSTEMS AND EQUIPMENT (PRESCRIPTIVE)

- [ ] PROJECT CONSISTS OF ONLY DX SINGLE ZONE SYSTEMS FULLY COMPLIANT WITH THE SIMPLE PRESCRIPTIVE REQUIREMENTS OF 503.3.

C403.4 - COMPLEX HVAC SYSTEMS AND EQUIPMENT (PRESCRIPTIVE)

- [x] PROJECT CONSISTS OF HVAC SYSTEMS FULLY COMPLIANT WITH THE COMPLEX PRESCRIPTIVE REQUIREMENTS OF 503.4.

COORDINATION DRAWINGS

THE MECHANICAL CONTRACTOR SHALL ORGANIZE COORDINATION MEETINGS TO DEVELOP A SET OF BIM COORDINATION DRAWINGS WITH ALL CONTRACTORS (ELECTRICAL, MECHANICAL, PLUMBING, FIRE PROTECTION, IT/DATA, AND GENERAL CONTRACTOR). THE MECHANICAL CONTRACTOR WILL HAVE THE LEAD RESPONSIBILITY FOR THE COORDINATION DRAWINGS. THE MECHANICAL CONTRACTOR SHALL PRODUCE THE ORIGINAL DRAWINGS AND FORWARD THE DRAWINGS TO EACH OF THE OTHER CONTRACTORS FOR THEM TO ADD THEIR SYSTEMS TO THIS SET OF COORDINATION DRAWINGS. THE CONTRACTORS WILL DEVELOP THE DRAWINGS IN THIS ORDER: MECHANICAL, FIRE PROTECTION, PLUMBING, ELECTRICAL, IT/DATA, AND GENERAL. THIS SHALL ALSO BE THE ORDER OF PRECEDENCE FOR INSTALLATION OF SYSTEMS. ANY RELOCATION OF SYSTEM ROUTINGS WILL BE FOUND IN THE COORDINATION PHASE AND NOTICED BY EACH OF THE CONTRACTORS. THESE DRAWINGS, WHEN COMPLETED, SHALL BE SIGNED OFF BY ALL OF THE ABOVE LISTED PARTIES. DRAWINGS SHALL BE COMPLETED PRIOR TO FABRICATION AND INSTALLATION OF DUCTWORK AND PIPING SYSTEMS, OR PURCHASE OF EQUIPMENT. THE FOLLOWING ITEMS REPRESENT THE MINIMUM REQUIREMENTS AND COORDINATION DRAWINGS:

1. ALL COORDINATION DRAWINGS WILL BE PRODUCED IN REVIT AT 1/4"= 1'-0" SCALE
2. COORDINATION DRAWINGS WILL BE DISTRIBUTED ON REPRODUCIBLE MATERIAL 48"x36"
3. COORDINATION DRAWINGS ARE NOT SHOP DRAWINGS AND ARE REQUIRED IN ADDITION TO SHOP DRAWINGS.
4. ONCE THE COMPLETE COORDINATION DRAWINGS HAVE BEEN COMPILED, THE MECHANICAL CONTRACTOR WILL DISTRIBUTE ONE SIGNED SET TO EACH OF THE FOLLOWING CONTRACTORS: ELECTRICAL, PLUMBING, FIRE PROTECTION, AND GENERAL. ADDITIONAL SETS WILL BE SENT TO THE OWNER, ARCHITECT, AND ENGINEER.

THE USE OF BUILDING INFORMATION MODELING (BIM) THROUGHOUT THE CONSTRUCTION PROCESS IS A REQUIREMENT FOR THIS PROJECT TO HELP REDUCE OR ELIMINATE FIELD DETECTED CONFLICTS, IMPROVE CONSTRUCTION QUALITY AND MAINTAIN AN AGGRESSIVE SCHEDULE. THE CONTRACTOR WILL BE RESPONSIBLE FOR CREATING THE MODEL AND MANAGING THE COORDINATION AND COLLISION DETECTION PROCESS. THE MODEL MUST CONTAIN COMPLETE ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, PLUMBING AND FIRE PROTECTION SYSTEMS CONSISTENT WITH THE DESIGN AND FABRICATION DRAWINGS.

MECHANICAL GENERAL NOTES

SEE SPECIFICATIONS FOR ADDITIONAL PROJECT REQUIREMENTS. THESE GENERAL NOTES ARE INTENDED TO SUPPLEMENT THE SPECIFICATIONS. IN THE EVENT THAT THE VERBIAGE IS IN CONFLICT OR CONTRADICTS THE REQUIREMENTS LISTED HERE, THE QUESTION SHALL BE ASKED BEFORE BIDDING OR THE MORE STRINGENT SHALL APPLY AT THE ENGINEER'S DISCRETION.

1. DO NOT SCALE DRAWINGS. SEE ARCHITECTURAL DRAWINGS AND REFLECTED CEILING PLANS FOR EXACT LOCATION OF DOORS, WINDOWS, CEILING DIFFUSERS, ETC.
2. ALL COST ASSOCIATED WITH SUBSTITUTED EQUIPMENT TO COMPLY WITH BASIS OF DESIGN, INCLUDING PROVIDING MAINTENANCE ACCESS, CLEARANCE, PIPING, SHEET METAL, ELECTRICAL, REPLACEMENT OF OTHER SYSTEM COMPONENTS, BUILDING ALTERATIONS, ETC., SHALL BE INCLUDED IN THE ORIGINAL BASE BID. NO ADDITIONAL COST ASSOCIATED WITH SUBSTITUTED EQUIPMENT WILL BE APPROVED DURING CONSTRUCTION AND ALL COST WILL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR. THIS INCLUDES ANY MODIFICATIONS TO ANY ASSOCIATED MECHANICAL, PLUMBING, OR ELECTRICAL SYSTEMS REQUIRED BY THIS SPECIFIC MANUFACTURER'S INSTALLATION INSTRUCTIONS.
3. ALL DUCTWORK SHALL BE GALVANIZED SHEET METAL CONSTRUCTED IN ACCORDANCE WITH THE LATEST SMACNA STANDARDS. ALL SUPPLY, RETURN AND OUTSIDE AIR DUCTWORK SHALL BE WRAPPED WITH 2" THICK DUCT WRAP WITH VAPOR BARRIER. INSULATION (INCLUDING FLEXIBLE DUCT INSULATION) SHALL HAVE A MINIMUM INSTALLED R-VALUE OF 6.0. AIR HANDLING UNIT RETURN DUCTWORK AND TRANSFER DUCTS SHALL BE LINED WITH 1" THICK FIBERGLASS DUCT LINER FOR ACOUSTICAL PURPOSES. DUCT DIMENSIONS ON PLANS ARE FREE AREA SIZE. ALL EXPOSED RECTANGULAR AND SPIRAL DUCTWORK LOCATED IN 1131 FACULTY OPEN LAB SHALL BE CORROSION RESISTANT ALUMINUM CONSTRUCTION.
4. ALL DUCTWORK SHALL BE SEALED PER THE REQUIREMENTS OF THE NORTH CAROLINA MECHANICAL CODE. SEAL MEDIUM PRESSURE SUPPLY DUCTWORK FOR POSITIVE 3" PRESSURE CLASS, SMACNA SEAL CLASS A, SMACNA LEAKAGE CLASS 4. SEAL LOW PRESSURE SUPPLY, RETURN, OUTSIDE AIR, AND EXHAUST DUCTWORK FOR POSITIVE/NEGATIVE 2" PRESSURE CLASS, SMACNA SEAL CLASS A, SMACNA LEAKAGE CLASS 4.
5. ALL PIPING, DUCTS, VENTS, ETC., EXTENDING THROUGH WALLS AND ROOF SHALL BE FLASHED AND COUNTERFLASHED IN A WATERPROOF MANNER.
6. ALL PIPING AND DUCTWORK LOCATIONS SHALL BE COORDINATED WITH THE WORK UNDER OTHER DIVISIONS OF THE SPECIFICATIONS, TO AVOID INTERFERENCE.
7. THE MECHANICAL CONTRACTOR SHALL HAVE THE MECHANICAL SYSTEMS BALANCED TO THE PERFORMANCE SPECIFICATIONS INDICATED ON PLANS AND PROVIDE THE ENGINEER WITH THREE COPIES OF A COMPLETE TEST AND BALANCE REPORT. THE REPORT IS TO BE ISSUED A MINIMUM OF TWO WEEKS PRIOR TO PROJECT COMPLETION. THE TEST AND BALANCE REPORT WILL BE SUBJECT TO REVIEW AND APPROVAL BY THE ENGINEER. ANY ADDITIONAL TESTING, ADJUSTING AND BALANCING REQUIRED (AT ENGINEER'S REQUEST) AFTER REVIEW OF THE INITIAL REPORT SHALL BE PROVIDED AT NO ADDITIONAL COST. TEST AND BALANCE REPORT TO BE COMPLETED BY AN INDEPENDENT, CERTIFIED TEST AND BALANCE CONTRACTOR (AABC OR NEBB).
8. UPON PROJECT COMPLETION, THE MECHANICAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE OWNER INSTALLATION INFORMATION INCLUDING RECORD SUBMITTALS (WITH ANY SUBMITTAL REVIEW COMMENTS ADDRESSED) AND O&M MANUALS FOR EACH PIECE OF EQUIPMENT INCLUDING ALL SELECTED OPTIONS, THE NAME AND ADDRESS OF AT LEAST ONE SERVICE AGENCY, FULL CONTROL SYSTEM O&M AND CALIBRATION INFORMATION INCLUDING WIRING DIAGRAMS, SCHEMATICS, FULL SEQUENCE OF OPERATION, AND PROGRAMMED SETPOINTS.
9. PROVIDE A ONE YEAR WARRANTY FOR ALL WORK PERFORMED BEGINNING ON THE DAY THE SYSTEM IS COMPLETELY OPERATIONAL AND ACCEPTABLE BY THE OWNER.
10. PROVIDE 30"x30" OR MANUFACTURER'S RECOMMENDED CLEARANCES AROUND ALL EQUIPMENT FOR MAINTENANCE AND FILTER REMOVAL.
11. CONDENSATE DRAIN PIPING SHALL BE SCHEDULE TYPE "L" HARD DRAWN COPPER AND SHALL BE INSULATED PER THE SPECIFICATIONS. DRAINS FROM ALL COOLING COILS SHALL BE TRAPPED. DRAIN SIZE SHALL BE EQUIPMENT DRAIN CONNECTION SIZE (1-1/4" MINIMUM) WITH A MINIMUM DEPTH OF 4" OR 1.5 TIMES THE UNIT FAN TSP, WHICHEVER IS GREATER
12. ALL REFRIGERANT PIPE SHALL BE NITROGENIZED ACR COPPER TUBE. SIZE, INSULATE, AND INSTALL REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATIONS. ALL REFRIGERANT PIPING ROUTED OUTSIDE SHALL BE ALUMINUM JACKETED.
13. ANY DEVICE REQUIRING A THERMOSTAT FOR CONTROL SHALL BE FURNISHED WITH A THERMOSTAT WHETHER INDICATED ON THE DRAWINGS OR NOT.
14. INSTALL THE TOP OF ALL THERMOSTATS, SENSORS, AND SWITCHES AT 4'-0" (MAXIMUM) ABOVE FINISH FLOOR. COORDINATE EXACT THERMOSTAT LOCATION WITH OWNER PRIOR TO INSTALLATION. ANY DEVICE ON A PERIMETER WALL SHALL BE MOUNTED ON A FOAM-FILLED ELECTRICAL BOX, WITH ALL GAPS BETWEEN BOX AND WALL SEALED TO PREVENT INFILTRATION.
15. MECHANICAL CONTRACTOR SHALL VERIFY LOCATION OF ROOF PENETRATIONS FOR RELIEF HOODS WITH ARCHITECT & ENGINEER PRIOR TO INSTALLATION.
16. MECHANICAL CONTRACTOR SHALL LOCATE EXHAUST FANS AND OUTLETS MINIMUM OF 15'-0" FROM ANY OUTSIDE AIR INTAKE.
17. PROVIDE UNIONS, FLANGES OR COUPLINGS AT CONNECTION TO ALL VALVES AND EQUIPMENT. DO NOT USE DIRECT WELDED OR THREADED CONNECTIONS TO VALVES, EQUIPMENT OR OTHER APPARATUS.
18. PROVIDE NON-CONDUCTING DIELECTRIC UNIONS WHENEVER CONNECTING DISSIMILAR METALS.
19. EQUIPMENT OPERATED DURING CONSTRUCTION SHALL USE FILTERED MEDIA TO PREVENT CONSTRUCTION DEBRIS FROM ENTERING COILS, DUCTWORK SYSTEMS, AIR TERMINALS ETC. AT COMPLETION OF CONSTRUCTION, MECHANICAL CONTRACTOR SHALL CLEAN ALL SYSTEMS WITH ALL CONTROL DEVICES WIDE OPEN AND REMOVE ANY REMAINING DEBRIS PRIOR TO TEST AND BALANCING. MECHANICAL CONTRACTOR SHALL REPLACE ALL FILTRATION WITH NEW FILTERS AT COMPLETION OF CONSTRUCTION. ANY DUCTWORK, AIR TERMINALS, AND/OR OTHER EQUIPMENT UPSTREAM OF FILTRATION SHALL BE CLEANED THOROUGHLY OF CONSTRUCTION DEBRIS BEFORE HANDING OVER TO OWNER.
20. MECHANICAL CONTRACTOR SHALL PROVIDE PRE-PRINTED COLOR-CODED PIPE LABELS WITH 1-1/2" HIGH LETTERING INDICATING SERVICE AND FLOW DIRECTION. ALL PIPING TO MATCH EXISTING FACILITIES STANDARD (IF APPLICABLE). OTHERWISE, PIPE LABELS SHALL MATCH THE FOLLOWING:

    REFRIGERANT PIPING: YELLOW BACKGROUND, BLACK LETTERING
21. MECHANICAL CONTRACTOR SHALL PROVIDE FUSED DISCONNECTS AND STARTERS FOR ALL MECHANICAL EQUIPMENT REQUIRED FOR A COMPLETE AND FUNCTIONING SYSTEM. REFER TO DIVISION 23 & 26 SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS
22. ALL EQUIPMENT CONCRETE PAD SIZES FOR MECHANICAL EQUIPMENT SHALL BE CONFIRMED WITH APPROVED SHOP DRAWING SUBMITTALS AND ASSOCIATED UNIT MANUFACTURER ANCHOR LOCATIONS PRIOR TO FABRICATION/INSTALLATION. REFER TO STRUCTURAL PLANS FOR CONCRETE PAD REQUIREMENTS
22. PROVIDE YOUNG REGULATOR ON ALL DAMPERS INSTALLED ABOVE INACCESSIBLE CEILINGS
23. ALL COOLING & CONDENSER COILS SHALL BE PROVIDED WITH MFR SALT WATER RESISTANT COATING
24. ALL COOLING CONDENSATE DRAINS FROM UNITS SHALL BE PROVIDED WITH TRENT TECH TRAP COST-GARD DRAIN SEAL, INSTALLED PER MFR INSTALLATION INSTRUCTIONS

DRAWING LIST

SHEET NUMBER	SHEET NAME
M001	MECHANICAL LEGEND AND NOTES
M002	MECHANICAL SCHEDULES
M003	MECHANICAL SEQUENCE OF OPERATIONS
M004	MECHANICAL POINTS LIST
M101	FIRST FLOOR MECHANICAL PLAN
M201	FIRST FLOOR MECHANICAL PIPING PLAN
M401	ENLARGED MECHANICAL PLANS
M501	MECHANICAL DETAILS
M502	MECHANICAL DETAILS
M503	MECHANICAL DETAILS

MECHANICAL LEGEND

SYMBOL	DESCRIPTION	ABBR.
R	REFRIGERANT PIPING	R
D	CONDENSATE DRAIN	D
PD	PUMPED CONDENSATE	PD
CW	COLD WATER MAKE-UP	CW
	BUTTERFLY VALVE	
	3-PIECE BALL VALVE	
	CHECK VALVE	
	STRAINER WITH BLOWDOWN VALVE WITH HOSE CONN.	
	BALANCING VALVE	
	B&G CIRCUIT SETTER	
	UNION	
	THERMOMETER	
P	PRESSURE GAGE & COCK	
	GAGE COCK	
	FLOW SWITCH	
	ECCENTRIC REDUCER	
	CONCENTRIC REDUCER	
	CONTROL VALVE	
DP	DIFFERENTIAL PRESSURE SENSOR	
T	TEMPERATURE GAUGE	
FM	FLOW METER	
S	PRESSURE REDUCING/REGULATING VALVE	
	SOLENOID VALVE	
3WV	3-WAY VALVE	
T	THERMOSTAT / TEMP SENSOR (4'-0" AFF TO TOP)	
H	HUMIDISTAT (4'-0" AFF TO TOP)	
S	SWITCH (4'-0" AFF TO TOP)	
P	BAROMETRIC PRESSURE SENSOR	
	SUPPLY AIR DIFFUSER (4-WAY)	
	RETURN AIR GRILLE	
	RETURN AIR GRILLE WITH SOUND ATTENUATION (SEE DETAIL)	
	EXHAUST AIR GRILLE	
	DOUBLE LINE DUCTWORK	
	SINGLE LINE DUCTWORK	
FD	FIRE DAMPER OR CEILING RADIATION DAMPER W/ ACCESS DOOR (SEE DETAIL)	
FSD	COMBINATION FIRE/SMOKE DAMPER W/ ACCESS DOOR (SEE DETAIL)	
20/14Ø	20"x14" FLAT OVAL DUCT	
20x14	20"x14" RECTANGULAR DUCT	
20x14L	20"x14" RECTANGULAR DUCT LINED	
8Ø	8" DIAMETER ROUND DUCT	
DD	DUCT MOUNTED SMOKE DETECTOR W/ ACCESS DOOR	
SP	STATIC-PRESSURE SENSOR	
M	MOTORIZED DAMPER	
BD	BACKDRAFT DAMPER	
C	CARBON MONOXIDE SENSOR	
CO2	CARBON DIOXIDE SENSOR	
U	UNDERCUT DOOR	
M.C.	MECHANICAL CONTRACTOR	
E.C.	ELECTRICAL CONTRACTOR	
P.C.	PLUMBING CONTRACTOR	
N.I.C.	NOT IN CONTRACT	
AFF	ABOVE FINISHED FLOOR	
AFG	ABOVE FINISHED GRADE	
DN	DOWN	
UP	UP	

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9/14/2020

PROJECT NORTH

PLAN NORTH

KEY PLAN

Construction Documents

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER:
20-21673-01A

CODE:
41928

ITEM:
302

SGA | NW DESIGN PROJECT NUMBER:
19-202-01

DESIGNED BY: CP
DRAWN BY: CP
CHECKED BY: RVA

ISSUE DATE:
September 14, 2020

MECHANICAL LEGEND AND NOTES

M001

SCALE: 1/8" = 1'-0"

9/22/2020 12:20:18 PM

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FAN SCHEDULE

SYMBOL	LOCATION	TYPE	CFM	APPROX. S.P.	DRIVE	FAN RPM	ELECTRICAL DATA			MANUFACTURER	ACCESSORIES	CONTROLS
							VFD	H.P.	VOLTAGE	GREENHECK		
EF-1	FIRST FLOOR	INLINE	780	0.75"	DIRECT	1846	--	3/4	208/1/60	SQ-99-VG	A,B,C,D,G	1
EF-2	FIRST FLOOR	INLINE	625	0.75"	DIRECT	2021	--	3/4	208/1/60	SQ-98-VG	A,B,C,D,G	2
EF-3	FIRST FLOOR	INLINE	1100	0.55"	DIRECT	1725	--	1/3	120/1/60	SQ-100-A	A,B,C,D,G	2
EF-4	FIRST FLOOR	INLINE	150	0.3"	DIRECT	1125	--	1/10	120/1/60	SQ-70-VG	A,B,C,D,G	1

ACCESSORIES

A: DISCONNECT SWITCH
B: BACKDRAFT DAMPER
C: ACOUSTICAL LINING
D: HANGING BRACKETS WITH VIBRATION ISOLATION
E: BELT GUARD
F: EXTENDED LUBE LINES
G:MAGNETIC STARTER WITH AUXILIARY CONTACTS
H: ROOF CURB

CONTROLS

1: CONTROLLED BY BUILDING AUTOMATION SYSTEM
2: 2-HR MANUAL TIMER SWITCH

NOTES:

1. ALL FANS SHALL BE U.L. LISTED AND LABELED AND SHALL BE AMCA CERTIFIED FOR SOUND AND AIR FLOW.
   ALL FANS INSTALLED INSIDE, ABOVE, OR ADJACENT TO OCCUPIED SPACES SHALL HAVE A MAXIMUM 9.0 INLET SONE LEVEL.
2. ALL FANS SHALL BE SUPPLIED BY ONE MANUFACTURER UNLESS NOTED OTHERWISE.
3. MECHANICAL CONTRACTOR SHALL PROVIDE MAGNETIC STARTER WITH AUXILIARY CONTACTS AS REQUIRED.
4. INSTALL INLINE FANS TIGHT TO BOTTOM OF STRUCTURE

ELECTRIC UNIT HEATER SCHEDULE

SYMBOL	LOCATION	CFM	BTUH	kW	MOTOR			MANUFACTURER	ACCESSORIES
					R.P.M.	H.P.	VOLTAGE	MARKEL	
UH-1	1151 - RISER ROOM	400	11,200	3.0	--	1/125	208/1/60	FIF5103N	A,B,E,F
UH-2	1149 - MECHANICAL	400	11,200	3.0	--	1/125	208/1/60	FIF5103N	A,B,E,F

NOTES:

1. HEATING CAPACITY BASED ON 65°F E.A.T.
2. HORIZONTAL HEATERS SHALL BE PROVIDED WITH ADJUSTABLE DISCHARGE LOUVERS.
3. SEE PLANS FOR TYPE OF THERMOSTAT REQUIRED (WALL MOUNTED OR UNIT MOUNTED). UNIT HEATERS SHOWN WITHOUT THERMOSTAT INDICATED SHALL BE PROVIDED WITH A UNIT MOUNTED THERMOSTAT.

ACCESSORIES:

A. DISCONNECT SWITCH
B. BUILT-IN THERMOSTAT
C. WALL MOUNTED THERMOSTAT
D. WALL MOUNTING BRACKETS
E. CEILING MOUNTED BRACKETS
F. ADJUSTABLE DISCHARGE LOUVERS

DOAS UNIT SCHEDULE (ELECTRIC HEAT WITH DX COOLING)

UNIT NUMBER	LOCATION	AREA SERVED	SUPPLY AIR FAN			HEATING CAPACITY		COOLING COIL			ELECTRICAL DATA						MANUFACTURER & MODEL NO.
			AIR FLOW (CFM)	E.S.P. (IN. H2O)	TYPE	INPUT (kW)	TEMPERATURE RISE (°F)	TOTAL CAPACITY	SENSIBLE CAPACITY	EER	SUPPLY FAN (H.P.)	VOLTS	PHASE	Hz	MCA	MOCP	
DOAS-1	MER	WHOLE BUILDING	3,800	1.5"	DIRECT	52.5	41	356 MBH	160 MBH	9.4	(2) 4	208	3	60	167	175	AAON - V3DRB
DOAS-1 CU-1	UTIL. YARD	WHOLE BUILDING	--	--	--	--	--	358 MBH	161 MBH	10.1	(4) 1	208	3	60	156	175	AAON - CFA040-D

NOTES:

1. COOLING COIL CAPACITY IS BASED ON 93° F. D.B./80° F. W.B. E.A.T. AND 53.7° F. D.B./52.7° F. W.B. L.A.T.
2. HEATING COIL CAPACITY IS BASED ON 24° F. E.A.T.
3. MAXIMUM FACE VELOCITY OF COOLING COILS SHALL BE 500 FPM.
4. CONTRACTOR SHALL INSTALL NEW BELTS AND A NEW SET OF MERV 8 PLEATED FILTERS AT SUBSTANTIAL COMPLETION, AND PROVIDE SPARE AND FILTERS TO THE OWNER.
5. UNITS SHALL BE U.L. LABELED.
6. PROVIDE UNIT WITH A PHOTO-ELECTRIC TYPE SMOKE DETECTOR, INSTALLED IN THE SUPPLY DUCT WIRED TO SHUT DOWN THE UNIT UPON ACTIVATION. SMOKE DETECTOR SHALL BE SUPPLIED, WIRED FOR INTERFACE WITH FIRE ALARM SYSTEM AND UNIT SHUTDOWN BY THE ELECTRICAL CONTRACTOR. SMOKE DETECTOR SHALL BE INSTALLED IN THE RETURN DUCT BY THE MECHANICAL CONTRACTOR.
7. UNIT SHALL BE DOUBLE-WALL AHU CONSTRUCTION, DIRECT DRIVE PLENUM SUPPLY FAN ARRAY WITH (1) VFD TOTAL (SOLID STATE ENTHALPY CONTROL) VAV CONTROLS, SUPPLY FAN MOTOR SPRING-TYPE VIBRATION ISOLATORS, ALL NON-LOW VOLTAGE ELECTRICAL WIRING IN METALLIC RACEWAY, DUCT MOUNTED STATIC PRESSURE CONTROLLER, NEMA PREMIUM EFFICIENCY FAN MOTORS, EXTENDED SUPPLY FAN DISCHARGE PLENUM SECTION, 2" PREFILTERS (MERV 8), PITCHED STAINLESS STEEL DRAIN PAN, RESETTABLE CIRCUIT BREAKERS, CONTROL PANEL WITH DISPLAY, BAS CONTROLS INTERFACE MODULE, MARINE TYPE LIGHTS IN EACH SECTION WIRED BACK TO A COMMON SWITCH. ALL ACCESS DOORS SHALL BE HINGED DOORS WITH "TOOL-LESS" ENTRY.
8. PROVIDE EQUIPMENT MOUNTED DUPLEX GFI SERVICE RECEPTACLE IN WEATHER TIGHT "WHILE IN USE" COVER
9. A SINGLE VFD SHALL BE PROVIDED FOR THE ABOVE NOTED SUPPLY FANS (TOTAL CONNECTED HP) MOUNTED EXTERNAL OF THE UNIT, PROVIDE CONNECTION CONTROL ENCLOSURE ON UNIT FOR INDIVDUAL FAN RELAY AND CONTROL.
10. ALL ELECTRICAL COMPONENTS SERVING AND WITHIN UNIT SHALL HAVE A MINIMUM SCCR RATING OF 65 KAIC.
11. EACH FAN INLET SHALL BE PROVIDED WITH A FAN BLANK OFF PLATE (NO ISOLATION DAMPERS) FOR FAN ISOLATION DURING REPAIR
12. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS
13. EQUIPMENT SHALL BE PROVIDED WITH FACTORY APPLIED CORROSION RESISTANT COATINGS

VRF INDOOR UNIT SCHEDULE

SYMBOL	CFM	NOMINAL TONNAGE	O.A. CFM	E.S.P.	COOLING CAPACITY		HEATING CAPACITY	ELECTRICAL DATA			MANUFACTURER	WEIGHT	REFRIGERANT	MATCHING	BC CONTROLLER
					TC (BTUH)	SHC (BTUH)	(BTUH)	MCA	MOP	VOLTAGE	MITSUBISHI		TYPE	OUTDOOR UNIT	
IDU-1	459	1.25	--	--	15,000	12,000	17,000	0.55	15	208V-1PH	TPCFYP015	53 LBS	R410a	HP-A	BS-1
IDU-2	600	1.50	--	0.2"	18,000	14,400	20,000	1.56	15	208V-1PH	TPEFYP018	58 LBS	R410a	HP-A	BS-1
IDU-3	459	1.25	--	--	15,000	12,000	17,000	0.55	15	208V-1PH	TPCFYP015	53 LBS	R410a	HP-A	BS-1
IDU-4	600	1.50	--	0.2"	18,000	14,400	20,000	1.56	15	208V-1PH	TPEFYP018	58 LBS	R410a	HP-A	BS-1
IDU-5	459	1.25	--	--	15,000	12,000	17,000	0.55	15	208V-1PH	TPCFYP015	53 LBS	R410a	HP-A	BS-1
IDU-6	600	1.50	--	0.2"	18,000	14,400	20,000	1.56	15	208V-1PH	TPEFYP018	58 LBS	R410a	HP-A	BS-1
IDU-7	600	1.50	--	0.2"	18,000	14,400	20,000	1.56	15	208V-1PH	TPEFYP018	58 LBS	R410a	HP-A	BS-1
IDU-8	1165	3.00	--	0.4"	36,000	28,800	40,000	3.32	15	208V-1PH	TPEFYP036	86 LBS	R410a	HP-A	BS-1
IDU-9	460	1.50	--	0.2"	15,000	12,000	17,000	0.55	15	208V-1PH	TPEFYP015	58 LBS	R410a	HP-A	BS-1
IDU-10	1410	4.00	--	0.4"	48,000	38,400	54,000	3.41	15	208V-1PH	TPEFYP048	86 LBS	R410a	HP-A	BS-1
IDU-11	1165	3.00	--	0.4"	36,000	28,800	40,000	3.32	15	208V-1PH	TPEFYP036	86 LBS	R410a	HP-A	BS-1
IDU-12	875	2.50	--	0.8"	30,000	24,000	34,000	4.13	15	208V-1PH	TPVFYP030	141 LBS	R410a	HP-B	BS-2
IDU-13	1400	4.00	--	0.8"	48,000	38,400	54,000	4.13	15	208V-1PH	TPVFYP048	172 LBS	R410a	HP-B	BS-2
IDU-14	875	2.50	--	0.8"	30,000	24,000	34,000	4.13	15	208V-1PH	TPVFYP030	141 LBS	R410a	HP-B	BS-2
IDU-15	459	1.25	--	--	15,000	12,000	17,000	0.55	15	208V-1PH	TPCFYP015	53 LBS	R410a	HP-B	BS-2
IDU-16	459	1.25	--	--	15,000	12,000	17,000	0.55	15	208V-1PH	TPCFYP015	53 LBS	R410a	HP-B	BS-2
IDU-17	371	1.00	--	0.2"	12,000	9,600	13,500	1.20	15	208V-1PH	TPEFYP012	48 LBS	R410a	HP-B	BS-2
IDU-18	636	2.00	--	--	24,000	19,200	27,000	0.52	15	208V-1PH	TPCFYP024	71 LBS	R410a	HP-B	BS-2
IDU-19	600	1.50	--	0.2"	18,000	14,400	20,000	1.56	15	208V-1PH	TPEFYP018	58 LBS	R410a	HP-B	BS-2
IDU-20	1165	3.00	--	0.4"	36,000	28,800	40,000	3.32	15	208V-1PH	TPEFYP036	86 LBS	R410a	HP-B	BS-2
BS-1								1.57	20	208V-1PH	TCMBM1012				
BS-2								1.57	20	208V-1PH	TCMBM1012				

NOTES:

1. COOLING CAPACITY @ 95° AMBIENT, 80°/67° ENTERING COIL CONDITIONS. AIRFLOWS INDICATED ON ON "HIGH" SETTING.
2. PROVIDE UNITS WITH: WIRE TSTAT, 1" THICK DISPOSABLE FILTER (MERV 8 MINIMUM), U.L. LABEL, SINGLE POINT ELECTRICAL CONNECTION, 1-INCH INSULATION, FILTER RACK.
3. PROVIDE FUSED DISCONNECT & STARTER WITH CONTACTS.
4. PROVIDE VIBRATION ISOLATORS ON ALL UNITS LOCATED IN ATTIC.
5. PROVIDE SEPARATE ELECTRICAL CONNECTIONS FOR THE INDOOR UNIT AND BRANCH SELECTOR BOXES
6. EQUIPMENT SHALL BE PROVIDED WITH FACTORY APPLIED CORROSION RESISTANT COATINGS
7. OUTDOOR AIR PROVIDED DIRECTLY TO SPACES BY DOAS SYSTEM
8. VRF SUBMITTAL SHALL INCLUDE COMPLETE PIPING AND WIRING DIAGRAMS
9. EQUIPMENT SHALL BE PROVIDED WITH FACTORY APPLIED CORROSION RESISTANT COATINGS

VRF HEAT PUMP SCHEDULE (AIR COOLED)

SYMBOL	NOMINAL TONNAGE	COOLING CAPACITY		EFFICIENCY			HEATING CAPACITY	EFFICIENCY		ELECTRICAL DATA			MANUFACTURER	REFRIG.	MATCHING
		TC (BTUH)	SHC (BTUH)	EER	SEER	IEER	(BTUH)	COP	HSPF	MCA	FUSE	VOLTAGE	MITSUBISHI	TYPE	INDOOR UNIT
HP-A	16	192,000	--	13.4	--	25.7	215,000	3.82	--	31	45	208V-3Ø	TURYE192	R-410A	SEE LIST ABOVE
HP-B	16	192,000	--	13.4	--	25.7	215,000	3.82	--	31	45	208V-3Ø	TURYE192	R-410A	SEE LIST ABOVE

NOTES:

1. COOLING CAPACITY @ 95° AMBIENT
2. ALL UNITS SHALL BE U.L. LISTED
3. MOUNT UNITS ON A 4" THICK CONCRETE PAD AND PROVIDE MANUFACTURER'S RECOMMENDED CLEARANCES AROUND UNITS.
4. PROVIDE UNITS WITH CONDENSER COIL HAIL GUARDS AND LOW AMBIENT CONTROLS.
5. PROVIDE FUSED DISCONNECTS & STARTER WITH CONTACTS
6. ALL ELECTRICAL COMPONENTS SERVING AND WITHIN UNIT SHALL HAVE A MINIMUM SCCR RATING OF 65 KAIC.
7. PROVIDE COMPLETE MFR CONTROL SYSTEM INCLUDING TSTAT, CENTRAL CONTROLS SYSTEM, CAPABLE OF MONITORING AND ADJ. SETPOINTS FOR ALL INDOOR UNITS
8. UNITS SHALL BE CAPABLE OF SIMULTANEOUS COOLING AND HEATING DURING OPERATION
9. EQUIPMENT SHALL BE PROVIDED WITH FACTORY APPLIED CORROSION RESISTANT COATINGS

DUCTLESS SPLIT SYSTEMS (DX COOLING ONLY)

INDOOR UNIT						OUTDOOR UNIT										
SYMBOL	CFM	ELECTRICAL DATA		OPERATING WEIGHT	MANUFACTURER	SYMBOL	COOLING CAPACITY		HEATING CAPACITY	COMPRESSOR	ELECTRICAL DATA			OPERATING WEIGHT	MANUFACTURER	ALLOWABLE LINE-SET
		FLA	VOLTAGE		DAIKIN		TC (BTUH)	SHC (BTUH)	(BTUH)	RLA	MCA	FUSE	VOLTAGE		DAIKIN	LENGTHS
AC-1	700	0.30	208V-1Ø	38 LBS	FTKN24NMVJU	ODU-1	22,000	16,120	N/A - COOL ONLY	12.0	18.3	20	208V-1Ø	97 LBS	RKN24NMVJU	98' TOTAL, 66' VERT.
AC-2	700	0.30	208V-1Ø	38 LBS	FTKN24NMVJU	ODU-2	22,000	16,120	N/A - COOL ONLY	12.0	18.3	20	208V-1Ø	97 LBS	RKN24NMVJU	98' TOTAL, 66' VERT.

NOTES:

1. ALL UNITS SHALL BE U.L. LISTED AND HAVE A MINIMUM SEER OF 14.
2. COOLING CAPACITIES ARE BASED ON 95° AMBIENT, 80° ENTERING AIR DRY BULB, 67° ENTERING AIR WET BULB. AIRFLOWS INDICATED ARE AT 'HIGH' SPEED.
3. MOUNT GROUND-MOUNTED UNITS ON 4" CONCRETE PAD.
4. PROVIDE MANUFACTURER'S SUGGESTED CLEARANCES AROUND UNIT.
5. PROVIDE UNITS WITH MANUFACTURER'S WIND BAFFLES OR LOW AMBIENT CONTROLS FOR OPERATION DOWN TO 0° F, INVERTER COMPRESSOR, WIRED TSTAT, NON-LOCKING DISCONNECT FOR INDOOR UNIT.
6. PROVIDE OUTDOOR UNITS WITH 6 YEAR EXTENDED COMPRESSOR WARRANTY.
7. SEE MANUFACTURER'S RECOMMENDATIONS FOR REQUIRED ADDITIONAL REFRIGERANT CHARGE AND RECOMMENDED LINE-SET LENGTHS.
8. POWER SUPPLY TO CONDENSING UNIT IS A SINGLE POINT ELECTRICAL CONNECTION FOR THE SYSTEM (A/C UNIT AND CONDENSING UNIT). THE ELECTRICAL CONTRACTOR SHALL PROVIDE POWER TO THE CONDENSING UNIT AND FROM THE CONDENSING UNIT TO THE A/C UNIT INCLUDING CODE REQUIRED DISCONNECT SWITCHES.
9. REFRIGERANT PIPING AND WIRING FOR WALL-MOUNTED INDOOR UNITS SHALL BE ROUTED IN WALL WHERE POSSIBLE. ANY EXPOSED PIPING SHALL BE PAINTED TO MATCH WALL-FINISH.
10. TELCOM ROOMS: COORDINATE WITH ALL UTILITIES, LIGHTS, CEILING, ETC. COORDINATE FINAL HEIGHT OF UNITS TO ALLOW GRAVITY DRAINAGE OF CONDENSATE.
11. EQUIPMENT SHALL BE PROVIDED WITH FACTORY APPLIED CORROSION RESISTANT COATINGS

VENTILATION CALCULATIONS (NCMC 2018, SECT 403): DOAS-1

OCCUPANCY CLASSIFICATION	PEOPLE O/A RATE IN BREATHING ZONE (CFM/PERSON)	AREA O/A RATE IN BREATHING ZONE (CFM/SQ. FT.)	DEFAULT OCCUPANCY DENSITY (PEOPLE/1000 SQ. FT.)	EXHAUST AIRFLOW RATE (CFM/SQ. FT.)	AREA (SQ. FT.)	CALCULATED OCCUPANCY (PEOPLE)	CALCULATED PEOPLE O/A (CFM)	CALCULATED AREA O/A (CFM)	CALCULATED AREA E/A (CFM)
CONFERENCE ROOMS	5	0.060000	50	0.000000	320	16	80	19	--
OFFICE SPACES	5	0.060000	5	0.000000	1659	29**	145	100	--
CORRIDORS	0	0.060000	0	0.000000	1510	--	--	91	--
TOILET ROOMS - PUBLIC	0	0.000000	0	70.000000	10*	--	--	--	700
STORAGE ROOMS	0	0.120000	0	0.000000	1700	--	--	204	--
SCIENCE LABORATORIES	10	0.180000	25	0.000000	6061	70**	700	1091	--
COMPUTER LAB	10	0.120000	25	0.000000	594	20**	200	71	--
CLASSROOMS	7.5	0.000000	35	0.000000	764	30**	225	--	--
			BLDG TOTAL OUTSIDE AIR REQ'D (Ez=0.8, CFM)				3658		
			BUILDING TOTAL OUTSIDE AIR PROVIDED (CFM)				3800		
				BUILDING TOTAL EXHAUST AIR REQUIRED (CFM)					700
* BASED ON FIXTURE COUNT				BUILDING TOTAL EXHAUST AIR PROVIDED (CFM)					2655
** BASED ON PROGRAM SCHEDULE									

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9/14/2020

PROJECT NORTH

PLAN NORTH

KEY PLAN

Construction Documents

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER:
20-21673-01A

CODE:
41928

ITEM:
302

SGA | NW DESIGN PROJECT NUMBER:
19-202-01

DESIGNED BY: CP
DRAWN BY: CP
CHECKED BY: RVA

ISSUE DATE:
September 14, 2020

MECHANICAL SCHEDULES

M002

SCALE: As indicated

9/22/2020 12:20:22 PM

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SEQUENCE OF OPERATION

A COMPLETE AND OPERATIONAL DDC CONTROL SYSTEM (BAS) SHALL BE INSTALLED IN ACCORDANCE WITH THE SPECIFICATIONS (SECTION 230900) AND AS INTENDED ON THESE PLANS. ALL CONTROL POINTS AND EQUIPMENT SEQUENCES OF OPERATION LISTED IN SPECIFICATION SECTION 230900 SHALL BE CONSIDERED IN ADDITION TO THOSE LISTED HERE. IN THE EVENT THAT THE VERBIAGE IS IN CONFLICT OR CONTRADICTS THE REQUIREMENTS LISTED HERE, THE QUESTION SHALL BE ASKED BEFORE BIDDING OR THE MORE STRINGENT SHALL APPLY AT THE ENGINEER'S DISCRETION.

GENERAL:
BUILDING AUTOMATION SYSTEM (BAS) SHALL PROVIDE PROGRAMMED/TIMED OPERATION OF THE BUILDING HVAC SYSTEM AND SYSTEM COMPONENTS BY PLACING THE SYSTEM IN "OCCUPIED" OR "UNOCCUPIED" MODES BASED ON THE OWNERS OPERATING SCHEDULE. UNOCCUPIED MODE WILL BE A MANUAL OPERATION THROUGH THE BAS, OR AS SCHEDULED BY THE OWNER. (COORDINATE WITH OWNER FOR FINAL HOURS OF OPERATION), UNOCCUPIED WILL BE FOR THE REMAINING HOURS. MINIMUM ZONES FOR OCCUPANCY SETTINGS SHALL BE GROUPED AS FOLLOWS:

1. LAB SPACES
2. CLASS ROOM SPACES
3. MECHANICAL SPACES
4. REMAINING BUILDING

BAS SHALL BE WEB (IP) BASED TO ALLOW INTERNET ACCESS FOR REMOTE OPERATION OF ALL SYSTEM FUNCTIONS. BAS SHALL ALLOW GLOBAL OPERATION OF COOLING AND HEATING SETPOINTS. BAS SHALL ALSO ALLOW EITHER ZONE BY ZONE OR GLOBAL OVERRIDE OF SYSTEM EQUIPMENT OPERATION WHILE IN THE UNOCCUPIED MODE. OVERRIDE SHALL ACTIVATE ALL SYSTEM EQUIPMENT, REQUIRED FOR PROPER OPERATION OF OVERRIDDEN EQUIPMENT TO MAINTAIN "OCCUPIED" SPACE CONDITIONS IN THE OVERRIDE ZONE FOR A TIME PERIOD OF 2 HOURS (ADJ.), TIME PERIOD SHALL BE ADJUSTABLE THROUGH THE BAS. ALL BAS COMPONENTS SUCH AS JACE CONTROLLERS, AHU CONTROLLERS, PUMP CONTROLLERS, ETC. SHALL BE FURNISHED WITH A LOCAL UPS WITH SURGE SUPPRESSION SIZED FOR DEVICE CONNECTED WATTAGE, VOLTAGE AND 5 MINUTE BATTERY OPERATION.

DOAS UNIT:
ALL UNITS SHALL BE STOPPED/STARTED ON A PROGRAMMED BASIS THROUGH THE BAS.

UNIT SHALL BE CONTROLLED FROM THE FACTORY INTERNAL CONTROLS/PROGRAMMING TO MAINTAIN NEUTRAL AIR. DOAS IS CAPBLE OF PROVIDING FIRST STAGE OF COOLING, AND SHALL PROVIDE FULL UNIT COOLING CAPACITY OF 53F DISCHARGE AIR TEMPERATURE DURING OCCUPIED COOLING MODES. WHEN A CALL FOR HEATING IS RECEIVED BY THE BAS THE UNIT DISCHARGE AIR TEMP SHALL BE ADJUSTED TO 72F (ADJ).

ASSOCIATED OUTSIDE AIR MOTOR OPERATED DAMPER SHALL CYCLE OPEN/CLOSED BASED ON UNIT OPERATION, AND SHALL BE PROVIDED WITH END SWITCH FOR DAMPER POSITION INDICATION VIA BAS

THE ASSOCIATED RELIEF AIR MOTOR OPERATED DAMPER SHALL OPERATE BASED ON BUILDING PRESSURE TO MAINTAIN A POSITIVE PRESSURE OF .01" WC (ADJ.)

UNIT SHALL BE SCHEDULED THROUGH THE BAS TO OPERATE DURING ALL OCCUPIED TIMEFRAMES

DUCTLESS SPLIT SYSTEMS:
REFER TO SPECIFIC NOTES/SEQUENCE BLOCK

UTILITY MONITORING
THE INTENT OF THE SYSTEM IS TO CONSTANTLY MEASURE THE NOTED UTILITIES. THE CONTROLS CONTRACTOR (SYSTEM INTEGRATOR) WILL PROVIDE THE DATA LOGGING DEVICES AS REQUIRED TO MONITOR THE BUILDING UTILITIES FOR THIS PROJECT.
(REFER TO POINTS LIST ON M-003 AND MORE INFO ON M-503)

UTILITY MONITORING NOTES:
1. DOMESTIC WATER SHALL BE PROVIDED AND INSTALLED BY THE PLUMBING CONTRACTOR. METERS SHALL PROVIDE BOTH CUBIC FEET (CF) TOTAL USAGE .
2. ELECTRICAL CIRCUITS AND CT'S FOR MONITORING POWER SHALL BE PROVIDED AND INSTALLED BY THE ELECTRICAL CONTRACTOR. ELECTRICAL CONTRACTOR SHALL ALSO PROVIDE AND INSTALL 3-PHASE AND MULTI-CIRCUIT METERS.
3. THE CONTROLS CONTRACTOR (SYSTEM INTEGRATOR) SHALL COORDINATE COMMUNICATION PROTOCOL REQUIREMENTS FOR ALL METERS AND MONITORING DEVICES WITH ALL OTHER DIVISIONS TO ENSURE SYSTEM COMPATIBILITY.
4. DATA LOGGER SHALL BE EQUAL TO TRIDIUM JACE

MISC. EXHAUST FANS
PROVIDE WALL SWITCHES, WALL THERMOSTATS, INTERLOCKS, ETC. AS INDICATED ON THE FAN SCHEDULE TO CONTROL FANS AS INDICATED ON PLANS.

TOILET EXHAUST FANS
FANS SHALL OPERATE ON A PROGRAMMED SCHEDULE BY BAS, OR AS NOTED IN THE FAN SCHEDULE. FANS SHALL REMAIN OFF WHEN BUILDING IS IN THE UNOCCUPIED MODE.

DUCT MOUNTED SMOKE DETECTORS:
FOR APPLICABLE SMOKE DETECTOR SHALL BE PROVIDED IN THE SUPPLY DUCT FOR DOAS-1.

DETECTOR SHALL INTERFACE WITH FIRE ALARM SYSTEM AND SHUT-DOWN UNIT FANS UPON ACTIVATION. A NOTIFICATION ALARM SHALL BE GENERATED WHEN A SMOKE DETECTOR IS ACTIVATED. SMOKE DETECTORS SHALL BE INDICATED ON EQUIPMENT GRAPHICS WITH WHICH DETECTOR IS ASSOCIATED.

DOOR POSITION INTERLOCK:
IDU-13 SHALL BE INTERLOCKED WITH ROLL UP DOOR LOCATED IN STAGING AREA 1134A. WHEN DOOR POSITION IS OPEN A SIGNAL SHALL BE SENT TO IDU-13 TO SHUT DOWN THE UNIT. UPON CLOSING OF ROOL UP DOOR, IDU-13 SHALL BE ACTIVATED AND CONTINUE NORMAL OPERATION.

TEMP GENERATOR SWITCH POSITION INTERLOCK:
BAS TO MONITOR A CONTACT, IN AN DOUBLE THROW SWITCH, THAT IS UTILIZED TO INTEGRATE A TEMP GENERATOR INTO THE BUILDING ELECTRICAL SYSTEM IN THE EVENT THAT THE BUILDING'S GENERATOR IS BEING SERVICED. THE BAS IS TO ALERT THE OWNER IN THE CASE THE SWITCH IS MOVED INTO POSITION FOR THE TEMP GENERATOR.

APPLICATION SPECIFIC CONTROL SYSTEM NOTES

A. DIRECT DIGITAL CONTROL (DDC) TECHNOLOGY SHALL BE USED TO PROVIDE THE FUNCTIONS NECESSARY FOR CONTROL OF MECHANICAL SYSTEMS.
B. THE CONTROL SYSTEM SHALL BE DESIGNED SUCH THAT IN THE EVENT OF A NETWORK COMMUNICATION FAILURE, OR THE LOSS OF ANY OTHER CONTROLLER, THE CONTROL SYSTEM SHALL CONTINUE TO INDEPENDENTLY OPERATE UNDER CONTROL.
C. OWNER SHALL PROVIDE WAN/LAN CONNECTION TO THE BUILDING AUTOMATION SYSTEM.
D. NIAGRA PROTOCAL SHALL BE USED FOR WORKBENCH TO DAEMON COMMUNICATION
E. UNIT LEVEL CONTROLLERS SHALL USE BACNET MSTP PROTOCOL. CONTROLLERS SHALL BE BACNET BTL CERTIFIED.
F. THE SYSTEM MUST BE PROVIDED, INSTALLED, WIRED AND PROGRAMED BY THE MANUFACTURER'S LOCAL FACTORY OFFICE OR INDEPENDENT CONTROLS SPECIFIC CONTRACTOS. BIDS BY WHOLESALERS, CONTRACTORS OR FRANCHISED DEALERS OR ANY OTHER FIRM WHOSE PRINCIPLE BUSINESS IS NOT THAT OF MANUFACTURING AND INSTALLING BUILDING AUTOMATION SYSTEM IS NOT ACCEPTABLE.
G. PROVIDE ONE YEAR PARTS AND LABOR WARRANTY OF THE BAS, FROM DATE OF ACCEPTANCE

THE SYSTEM SHALL HAVE THE FOLLOWING FUNCTIONS:
A. TIME OF DAY SCHEDULING INCLUDING OPTIMAL START/STOP, HOLIDAY AND EXCEPTION SCHEDULES.
B. TIMED OVERRIDE BASED ON DURATION LIMIT OR FIXED UNTIL RELEASED.
C. DATA LOGGING AND TRENDING.
D. USER SECURITY LEVEL ASSIGNMENT.
E. SYSTEM AND ALARMS REPORTS.
F. FLOOR PLANS, SYSTEM, EQUIPMENT GRAPHICS WITH DYNAMIC DATA DISPLAY.
G. ALARM E-MAIL ROUTING.
H. GLOBAL NAVIGATION ICONS TO MANAGE ALARMS, USER CREDENTIALS, HELP FUNCTIONS.
I. SUPPORT A MINIMUM OF 10 CONCURRENT USERS.

THE SYSTEM SHALL HAVE THE FOLLOWING PROGRAMMING STANDARD APPLICATIONS:

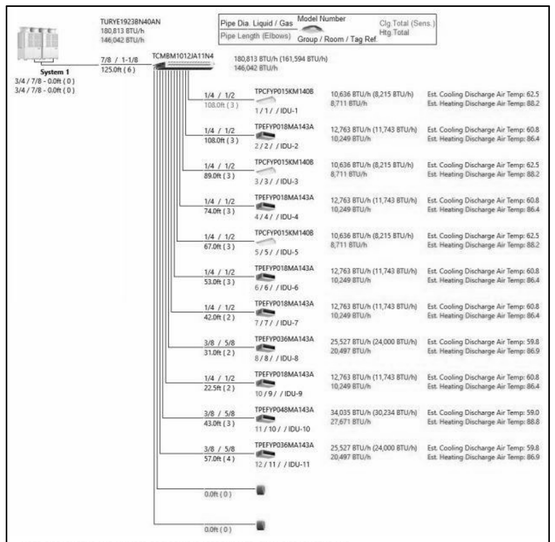
A. DEMAND CONTROL VENTILATION OPTIMIZATION AS DEFINED BY ASHRAE 62.1.

GENERAL NOTES:

1. THE CONTROLS CONTRACTOR SHALL COORDINATE WITH THE OWNER ON FINAL JACE INTEGRATION BACK TO THE EXISTIN CAMPUS FRONT END SUPERVISOR
2. ALL INTEGRATION FROM EXTERIOR SYSTEMS (LIGHTING CONTROLS, ETC.) SHALL BE INCLUDED WITH THE SCOPE OF THIS PROJECT AS DEFINED WITH IN THIS PROJECT OR AS IMPLIED THROUGH NOTES AND OTHER DIVISIONS BY APPLICABLE TRADES (DIVISION 23, 22, 26, 28)
3. PROVIDE GRAPHICS REVIEW WITH OWNER PRIOR TO FINAL SYSTEM COMISSIONING AND TURNOVER
4. ALL EXTERIOR CONNECTIONS TO EXTERNAL WAN/LAN SHALL BE COORDINATED WITH OWNER IT DEPARTMENT
5. FINAL INTEGRATION INTO EXTERNAL WEB BAS ACCESS PLATFORM SHALL BE COORDINATED WITH OWNER

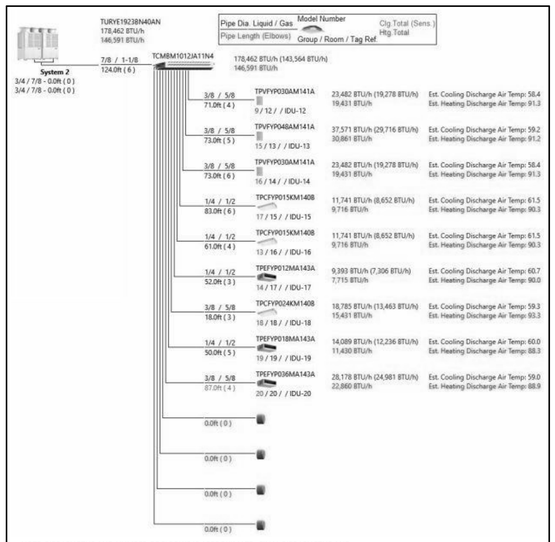
CONTROL SYSTEM NOTES

1. SEE SPECIFICATIONS (SECTION 23 09 00) FOR ADDITIONAL REQUIREMENTS.
2. THE SEQUENCE OF OPERATION OF OPERATION AND POINTS LIST IS INTENDED TO COMMUNICATE THE MINIMUM REQUIREMENTS AND GENERAL DESIGN INTENT TO THE CONTROLS CONTRACTOR AND IS NOT INTENDED TO BE A FULLY DEVELOPED OR COMPLETE SEQUENCE OF OPEARTION. IN THE CONTROLS SUBMITTAL THE CONTROLS CONTRACTOR SHALL FULLY DEVELOP THE SEQUENCE OF OPERATIONS FOR ALL SYSTEMS IDENTIFIED AN SHALL PRESENT ALL SETPOINTS, CONTROL PARAMETERS, TIME DELAYS, ALARM POINTS, ETC. AS REQUIRED TO COMPLY WITH THE DESIGN INTENT. THE CONTROLS CONTRACTOR SHALL INCORPORATE STANDARD FEATURES SUCH AS MINIMUM RUN TIME DELAYS AND DEAD BANDS TO PREVENT SHORT CYCLING. ALL MONITORED POINTS SHALL INCLUDE EARLY HIGH/LOW ALARM NOTIFICATIONS PRIOR TO REQUIRED CORRECTIVE ACTIONS OR UNIT SHUT-DOWNS. CONTROL CONTRACTOR SHALL SPECIFY IN THE CONTROL SUBMITTAL FAIL SAFE POSITION FOR OUT OF RANGE, FAIL SAFE POSITIONING FOR OPEN CIRCUITS OR LOSS OF COMMUNICATION.
3. SYSTEM SHALL USE CAMPUS SYSTEM GLOBAL OUTSIDE AIR TEMPERATURE AND HUMIDITY SENSORS FOR PRIMARY SYSTEM OPERATION. LOCAL OUTSIDE AIR TEMPERATURE AND HUMIDITY SENSORS SHALL BE PROVIDED FOR SYSTEM OPERATION UPON LOSS OF NETWORK COMMUNICATION.
4. ALL CONTROL SETPOINTS SHALL BE ADJUSTABLE AND TRENDABLE. INDICATED TEMPERATURE SETPOINTS SHOULD BE USED FOR ORIGINAL SYSTEM SET-UP. ANY CHANGES IN SETPOINT SETTINGS REQUIRED FOR INTENDED SYSTEM OPERATION SHALL BE NOTED ON AS-BUILT CONTROL DRAWINGS.
6. IONIZATION TYPE DUCT SMOKE DETECTORS SHALL BE FURNISHED AND WIRED TO THE FIRE ALARM SYSTEM BY THE ELECTRICAL CONTRACTOR. MECHANICAL CONTRACTOR SHALL INSTALL DETECTORS IN THE DUCT AND WIRE UNIT FROM FIRE ALARM SYSTEM (DRY CONTACTS) FOR UNIT SHUT-DOWN UPON ACTIVATION.
7. ELECTRICAL CONTRACTOR SHALL PROVIDE DEDICATED 120V CIRCUIT(S) IN A J-BOX FOR CONTROL POWER. CONTROLS CONTRACTOR SHALL EXTEND 120V POWER FROM J-BOX TO CONTROL PANELS, DAMPER ACTUATORS, TRANSFORMERS, ETC. AS REQUIRED FOR OPERATION OF CONTROL SYSTEM.
9. PROVIDE ALL CONTROL PANELS WITH 3RD PARTY U.L. LISTING
10. LOCATE MAIN DDC CONTROL PANEL(S) MECHANICAL ROOMS AS INDICATED ON PLANS COORDINATE EXACT LOCATION PANEL WITH ALL OTHER TRADES PRIOR TO INSTALLATION.
11. OUTDOOR TEMP/HUMIDITY SENSOR SHALL BE PROVIDED WITH AND ACCURACY OF +/- 1%
12. PROOF OF STATUS FOR UTILITY BEING MONITORED SHALL BE ACCOMPLISHED DIRECTLY, NOT INDIRECTLY; VIA CURRENT SENSOR MONITORING FOR PROOF OF STATUS



NOTE: PIPE LENGTHS AND NUMBER OF ELBOWS IS APPROXIMATE. FINAL PIPE LENGTHS AND ELBOWS SHALL BE CONFIRMED WITH FINAL PLANNED INSTALLATION.

1 VRF PIPING SCHEMATIC DETAIL - HP-A
NO SCALE



NOTE: PIPE LENGTHS AND NUMBER OF ELBOWS IS APPROXIMATE. FINAL PIPE LENGTHS AND ELBOWS SHALL BE CONFIRMED WITH FINAL PLANNED INSTALLATION.

2 VRF PIPING SCHEMATIC DETAIL - HP-B
NO SCALE

VRF NOTES & SEQUENCE OF OPERATION

VRF SPLIT SYSTEM UNITS

VRF CONTROL NOTE: THE VRF SYSTEM SHALL BE PROVIDED WITH SPACE TEMPERATURE SENSORS, CONTROLS AND CONTROLLERS AS MANUFACTURED BY THE VRF EQUIPMENT MANUFACTURER. ALL VRF CONTROL WIRING SHALL BE INSTALLED PER THE VRF EQUIPMENT MANUFACTURER'S INSTALLATION GUIDELINES. ALL VRF CONTROL LOGIC SHALL BE DIRECTED BY VRF CENTRAL CONTROLLER WITH GRAPHIC INTERFACE AS SHALL AS MONITORING, ADJUSTMENT, ALARM, ETC.

THE VRF CONTROLLER SHALL USE AN OUTSIDE AIR SENSOR TO COMMAND THE VARIABLE REFRIGERANT FLOW ZONING SYSTEM TO GLOBAL HEAT OR COOL MODE.

INDOOR UNIT OPERATING PARAMETERS:
THE SPACE SETPOINT IN THE OCCUPIED COOL MODE SHALL BE 75 DEGREES (ADJUSTABLE).
THE SPACE SETPOINT IN THE OCCUPIED HEAT MODE SHALL BE 70 DEGREES (ADJUSTABLE).
LOCAL ADJUSTMENT SHALL INITIALLY BE ENABLED.
INITIAL OCCUPANCY SCHEDULE IS M-F 7 A.M. TO 6 P.M.
INDOOR FAN SPEED SHALL BE DETERMINED DURING FIELD SETUP.
UNOCCUPIED WITH SYSTEM IN COOL MODE SETTING IS 80 DEGREES (ADJUSTABLE).
UNOCCUPIED WITH SYSTEM IN HEAT MODE SETTING IS 60 DEGREES (ADJUSTABLE).
A 5 DEGREE DEADBAND BETWEEN HEATING AND COOLING SETPOINTS SHALL BE INCLUDED.

NOTES:

1. MANUFACTURER MUST BE CERTIFIED, LISTED, AND LABELED PER AHRI 1230.
2. SYSTEM RATING DATA BASED ON DESIGN AMBIENT CONDITIONS FOR COOLING AND FOR HEATING.
3. MANUFACTURER MUST CERTIFY AND SUBMIT SYSTEM PERFORMANCE AT EXTREME CONDITIONS OF 120 DEGREES F AMBIENT IN COOLING MODE AND -4 DEGREES F IN HEATING MODE.
4. SUBMITTED PERFORMANCE DATA MUST BE FULLY DE-RATED FOR ALL COMPONENTS AND ACCESSORIES, INCLUDING BUT NOT LIMITED TO, LINE LENGTH, VERTICAL SEPARATION, CONNECTION RATIO, DESIGN
5. SYSTEM MUST PROVIDE CONTINUOUS HEATING DURING DEFROST AND OIL RETURN. SYSTEMS WITHOUT THIS CAPABILITY MUST BE DE-RATED TO ACCOUNT FOR HEATING LOST DURING DEFROST CYCLE AND UNIT
6. MANUFACTURER MUST HAVE PUBLISHED CONTINUOUS PERFORMANCE RATING DATA AT LEAST 120F AND -4F TO ENSURE PERFORMANCE DURING EXTREME CONDITIONS
7. CONDENSING UNITS MUST HAVE FULLY MODULATING INVERTER COMPRESSORS.
8. NON - VFD COMPRESSORS(INCLUDING DIGITAL SCROLL COMPRESSORS AND COMPRESSORS WITH HOT GAS BYPASS) WILL NOT BE PERMITTED.
9. CONDENSING UNITS MUST HAVE HAVE AUTO CHANGEOVER FUNCTIONS
10. DEMAND LIMITING RELAY CONTACT MUST BE PROVIDED.
11. CONDENSING UNITS MUST HAVE A MINIMUM OF 3 MINUTES OF NON -VOLATILE OPERATIONAL MEMORY FOR USE IN DIAGNOSTICS.
12. ALL MODE CHANGEOVER DEVICES AND FCU REFRIGERANT CONTROLS SHALL BE VIA ELECTRONIC EXPANSION VALVES(EEV'S) WITH 2000:1 THROTTLING RANGE.
13. EEV ACTUATORS MUST BE REMOVABLE FROM VALVE BODY WITHOUT DISTURBING THE REFRIGERANT SYSTEM.
14. SYSTEMS USING SOLENOID CONTROL VALVES MUST INCLUDE FULL PORT ISOLATION VALVES BEFORE AND AFTER REFRIGERANT CONTROL BOX AND ACOUSTIC TREATMENT TO PROVIDE NO GREATER THAN NC20 IN THE OCCUPIED MODE.
15. SOLENOID CONTROL VALVES AND FULL PORT ISOLATION VALVES MUST BE RATED FOR 2.5 TIMES THE MAXIMUM WORKING PRESSURE IN THE SYSTEM AND BE RATED FOR A MINIMUM L10 LIFE OF 500, 000 HOURS
16. VRF SYSTEMS USING SOLENOID CONTROL VALVES MUST PROVIDE ACOUSTIC TREATMENT TO ATTENUATE VALVE NOISE BELOW NC20 IN ALL OCCUPIED MODES.
17. CONDENSING UNITS MUST BE FURNISHED WITH PROTECTIVE COIL COATING TO WITHSTAND ASTM B117 SALT SPRAY TEST FOR A MINIMUM OF 2500 HOURS.PERFORMANCE OF SYSTEM MUST BE DE - RATED FOR COIL COATING.
18. CONDENSING UNITS MUST HAVE PUBLISHED PERFORMANCE DATA WITH 50-150% INDOOR CONNECTED CAPACITY.
19. IDU THERMOSTAT'S MUST PROVIDE +/ - 1 DEGREE DEAD - BAND SET - POINT AND CONTROL CAPABILITY.
20. AIR HANDLING UNITS SHALL BE PROVIDED WITH CONDENSATE PUMP.
21. SYSTEM SHALL BE PROVIDED WITH I - TOUCH MANAGER CONTROLLER (OR EQUAL) WITH WEB BASED SOFTWARE FOR DISPLAYING UP TO 8 DIII - NET SYSTEMS WITH 128 INDOOR UNITS PER SYSTEM.PC BY OTHERS.
22. MANUFACTURERS SUBMITTAL MUST INCLUDE REFRIGERANT PIPING DIAGRAM WITH PIPE DIAMETERS, LENGTHS, AND REFRIGERANT VOLUME.
23. SUBSTITUTE MANUFACTURER SHALL BE RESPONSIBLE FOR ADDITIONAL PIPING AND REFRIGERANT.
24. CONTRACTOR TO VERIFY PIPING DIMENSIONS.
25. INSTALLING CONTRACTOR MUST HAVE SUCCESSFULLY COMPLETED MANUFACTURERS CERTIFIED INSTALLATION CLASS WITHIN PAST 36 MONTHS.
26. CONTRACTOR TO FURNISH AND INSTALL PLENUM RATED CLOSED CELL INSULATION ON REFRIGERANT PIPING.
27. MANUFACTURERS REPRESENTATIVE MUST HAVE LOCAL STOCK OF PARTS AND FACTORY CERTIFIED TECHNICIAN ON STAFF.
28. MANUFACTURERS REPRESENTATIVE SHALL PROVIDE PROOF OF ONGOING INSTALLATION TRAINING AT THEIR LOCAL FACILITY FOR AT LEAST THE PAST 5 YEARS.
29. MANUFACTURERS REPRESENTATIVE SHALL PROVIDE PROOF OF CONTINUOUS SALES AND SUPPORT OF THEIR PRODUCTS FOR AT LEAST 15 YEARS.
30. CONDENSING UNIT SHALL PROVIDE AUTO CHARGING AND INDOOR UNIT AUTO ADDRESSING CAPABILITY.
31. MANUFACTURER MUST PROVIDE 7 YEARS PARTS WARRANTY ON ALL IDUS, CONDENSING UNITS, MODE CHANGEOVER DEVICES AND ZONE CONTROLS. WARRANTY CONDITIONS MUST BE CLARIFIED DURING SUBMITTAL PHASE.
32. PROVIDE 16 HOURS OF OWNER TRAINING BY MFR REP. TRAINING SHALL BE SCHEDULED WITH OWNER 10 DAYS IN ADVANCE

VRF INSTALLATION NOTE

ALL MECHANICAL CONTRACTORS BIDDING THIS PROJECT SHALL BE FAMILIAR WITH INSTALLATION OF A VARIABLE REFRIGERANT FLOW (VRF) MECHANICAL SYSTEM. UPON REQUEST, MECHANICAL CONTRACTOR SHALL DEMONSTRATE EXPERIENCE WITH ALL APPLICABLE CONSTRUCTION REQUIREMENTS OF THIS PROJECT.

THE BASIS OF DESIGN FOR PORTIONS OF THIS PROJECT SERVED BY VRF SYSTEMS IS AS NOTED IN THE SCHEDULES WITH HEAT RECOVERY.

MECHANICAL CONTRACTORS BIDDING THIS PROJECT SHALL:
- HAVE COMPLETED VRF MFRS TRAINING OR ANY SUBSTITUTED MANUFACTURER'S VRF INSTALLATION TRAINING.
- HAVE EXPERIENCE AND HAVE COMPLETED INSTALLATION OF SUBMITTED VRF EQUIPMENT. VERIFICATION OF SUCCESSFULLY COMPLETED VRF PROJECTS SHALL BE PROVIDED UPON REQUEST.

THE VRF SYSTEM MANUFACTURER SHALL USE MANUFACTURER'S PROPRIETARY SELECTION SOFTWARE FOR A COMPLETE DESIGN OF THE REFRIGERANT PIPE LENGTHS, SIZING, AND OTHER REQUIRED SPECIALTIES. SUBMITTALS SHALL INCLUDE PIPE LENGTHS, NUMBER OF ELBOWS, CONTROLS WIRING, POWER WIRING DIAGRAM, ADDITIONAL REFRIGERANT CHARGE, AND OTHER APPURTENANCES REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM. THE PIPING DIAGRAMS INDICATED ON THIS SHEET ARE BASED OFF OF THE ROUTING SHOWN ON DIAGRAMMATIC CONSTRUCTION DRAWINGS, AND WILL BE ADJUSTED THROUGH THE COORDINATION DRAWINGS PHASE, AND AS REQUIRED DURING THE COORDINATION PHASE. ADDITIONAL LENGTHS OF PIPE, BRANCHES, AND PIPE FITTINGS MAY BE REQUIRED.

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PROJECT NORTH PLAN NORTH

KEY PLAN

Construction Documents

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER:
20-21673-01A

CODE:
41928

ITEM:
302

SGA | NW DESIGN PROJECT NUMBER:
19-202-01

DESIGNED BY: CP
DRAWN BY: CP
CHECKED BY: RVA

ISSUE DATE:
September 14, 2020

MECHANICAL SEQUENCE OF OPERATIONS

M003

SCALE: 1/8" = 1'-0"

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MINIMUM INPUT/OUTPUT SUMMARY

SYSTEM, APPARATUS, OR AREA POINT DESCRIPTION	INPUTS – ANALOG – MEASURED											INPUTS – ANALOG – CALC.				INPUTS – BINARY							OUTPUTS – DIGITAL				OUTPUTS – ANALOG				SYSTEM FEATURES – ALARMS					SYSTEM FEATURES – PROGRAMS									GENERAL	SUPPLEMENTAL NOTES
	TEMPERATURE	PRESSURE	RH	KW	AIR FLOW	WATER FLOW	CO2	HERTZ	STEAM FLOW (LBS)	NG FLOW (CFH)	AMPS	KWH	ENTHALPY	RUN TIME	EFFICIENCY	STATUS	FILTER	SMOKE	FREEZE	AIR FLOW	METER	OVER-RIDE	OFF-ON	OFF-AUTO-ON	OFF-HI-LO	OPEN-CLOSE	DMPR. POS.	VALVE POS.	SETPOINT ADJ.	STEP CONTROL	HI ANALOG	LO ANALOG	HI BINARY	LO BINARY	PROOF	TIME SCHEDULING	DEMAND LIMITING	DUTY CYCLE	START/STOP OPT.	ENTHALPY OPT.	SMOKE CNT.	TREND	ALARM INSTRUCT	MAIN. WK. ORD.	COLOR GRAPHIC	
DOAS-1																																				X			X						X	
Supply Fan																X									X				X																	
VFD on/off																								X																						
VFD Speed																													X																	
VFD Status																X																			X											
Supply Static Pressure		X																																												
Elect Heat (Preheat)																												X																		
Preheat Coil Disch. Temp	X																																													
DX Cooling																												X																		
Cooling Coil Disch. Temp	X																																													
Supply Temp	X																																													
OA Damper																											X																			
SA Airflow Mon.					X																																									
Smoke Detector																		X																												
Freezestat																			X																											
Filter Status																	X																													
Over-ride																						X																								
Space Humidity			X																												X															
FANS																																													X	ALL TYPES
General Exh. Fans																X							X																							

SYSTEM, APPARATUS, OR AREA POINT DESCRIPTION	INPUTS – ANALOG – MEASURED											INPUTS – ANALOG – CALC.						INPUTS – BINARY							OUTPUTS – DIGITAL						OUTPUTS – ANALOG				SYSTEM FEATURES – ALARMS					SYSTEM FEATURES – PROGRAMS									GENERAL	SUPPLEMENTAL NOTES
	TEMPERATURE	PRESSURE	RH	KW	AIR FLOW	WATER FLOW	CO2	HERTZ	RPM	VOLTZ	AMPS	KWH	ENTHALPY	RUN TIME	EFFICIENCY	BTU	CFH	STATUS	FILTER	SMOKE	FREEZE	AIR FLOW	METER	OVER-RIDE	OFF-ON	OFF-AUTO-ON	OFF-HI-LO	OPEN-CLOSE	DOOR CONTACT	SWITCH POS.	DMPR. POS.	VALVE POS.	SETPOINT ADJ.	STEP CONTROL	HI ANALOG	LO ANALOG	HI BINARY	LO BINARY	PROOF	TIME SCHEDULING	DEMAND LIMITING	DUTY CYCLE	START/STOP OPT.	ENTHALPY OPT.	SMOKE CNT.	TREND	ALARM INSTRUCT	MAIN. WK. ORD.	COLOR GRAPHIC	
VRF SPLIT SYSTEM																																								X									X	
Indoor AC Unit																		X							X														X											
Outdoor Unit																		X							X														X											
Space Temp	X																																																	
Supply Temp	X																																																	
Setpoint Adjust																																	X																	
Relative Humidity			X																																															
MISC POINTS																																																		
OA Temp	X												X																						X															
Dew Point	X												X																																					
Fire Alarm Status																		X																																FACP by Division 26
OA CO2							X																																											Standby Power
OA RH			X																																															
Building Pressure Sensors		X																																																
Generator																		X																					X										X	
Motor Operated Dampers																		X													X																			End Switch Verification
Door Position Interlock																													X																					Interlock with IDU-13
Temp Generator Switch																														X																				Refer to electrical plans for location of switch
UTILITY METERING																																																		
Water Meter						X																																											X	BY P.C.
Main BLDG Elec Service																																																		
Total Elec Demand												X											X																		X									
Total Demand												X											X																											
Total kWh				X								X																																						
Consumption				X								X																																						
Phase AMPs											X																																							
Phase Volts										X																																								
Average Volts										X																																								
Phase Demand								X																																										

GENERAL NOTE:
INPUT/OUTPUT SUMMARY IS A GENERAL LIST OF CONTROL POINTS REQUIRED FOR THE OPERATION OF THE MECHANICAL SYSTEM. IN ADDITION TO CONTROL POINTS INDICATED, THE CONTROLS CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADDITIONAL POINTS AS REQUIRED FOR OPERATION OF THE MECHANICAL SYSTEM AS SPECIFIED AND OUTLINED IN THE SEQUENCE OF OPERATION AND TO COMPLY WITH THE SPECIFICATIONS.

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NORTH CAROLINA PROFESSIONAL SEAL 17228 ENGINEER RONALD V. ALMOND

9/14/2020

PROJECT NORTH PLAN NORTH

KEY PLAN

Construction Documents

Revision Schedule		
#	Description	Date

Coastal Engineering Building

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER: 20-21673-01A

CODE: 41928

ITEM: 302

SGA|NW DESIGN PROJECT NUMBER: 19-202-01

DESIGNED BY: CP
DRAWN BY: CP
CHECKED BY: RVA

ISSUE DATE: September 14, 2020

MECHANICAL POINTS LIST

M004

SCALE: 1/8" = 1'-0"

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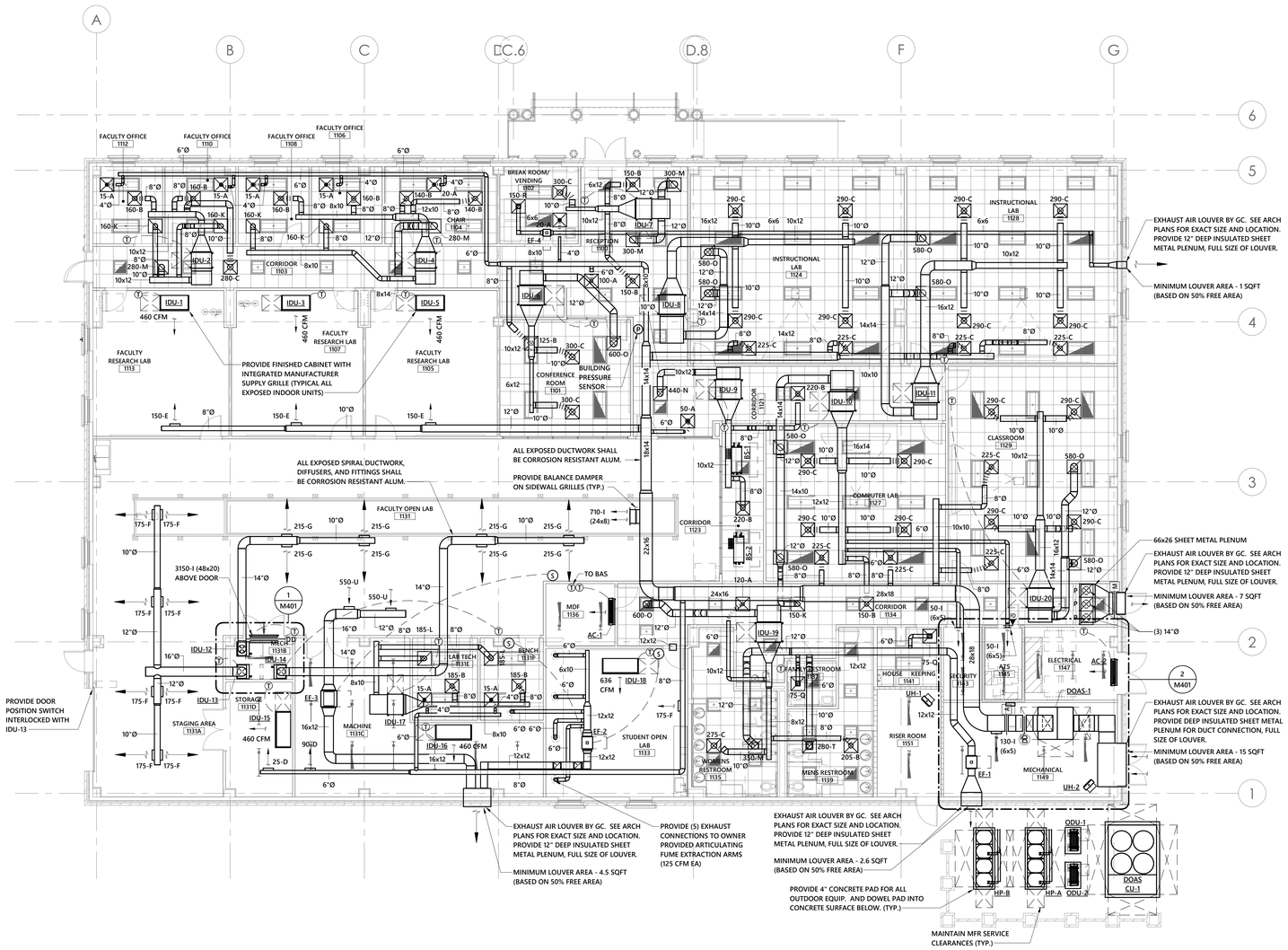

1 **FIRST FLOOR MECHANICAL PLAN**
1/8" = 1'-0"

1/8" = 1'-0"

8 0 8 16 24

SCALE IN FEET

RATED PARTITION LEGEND

1 HR RATED PARTITION

2 HR RATED PARTITION

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PROJECT NORTH

PLAN NORTH

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Coastal Engineering Building

UNCW

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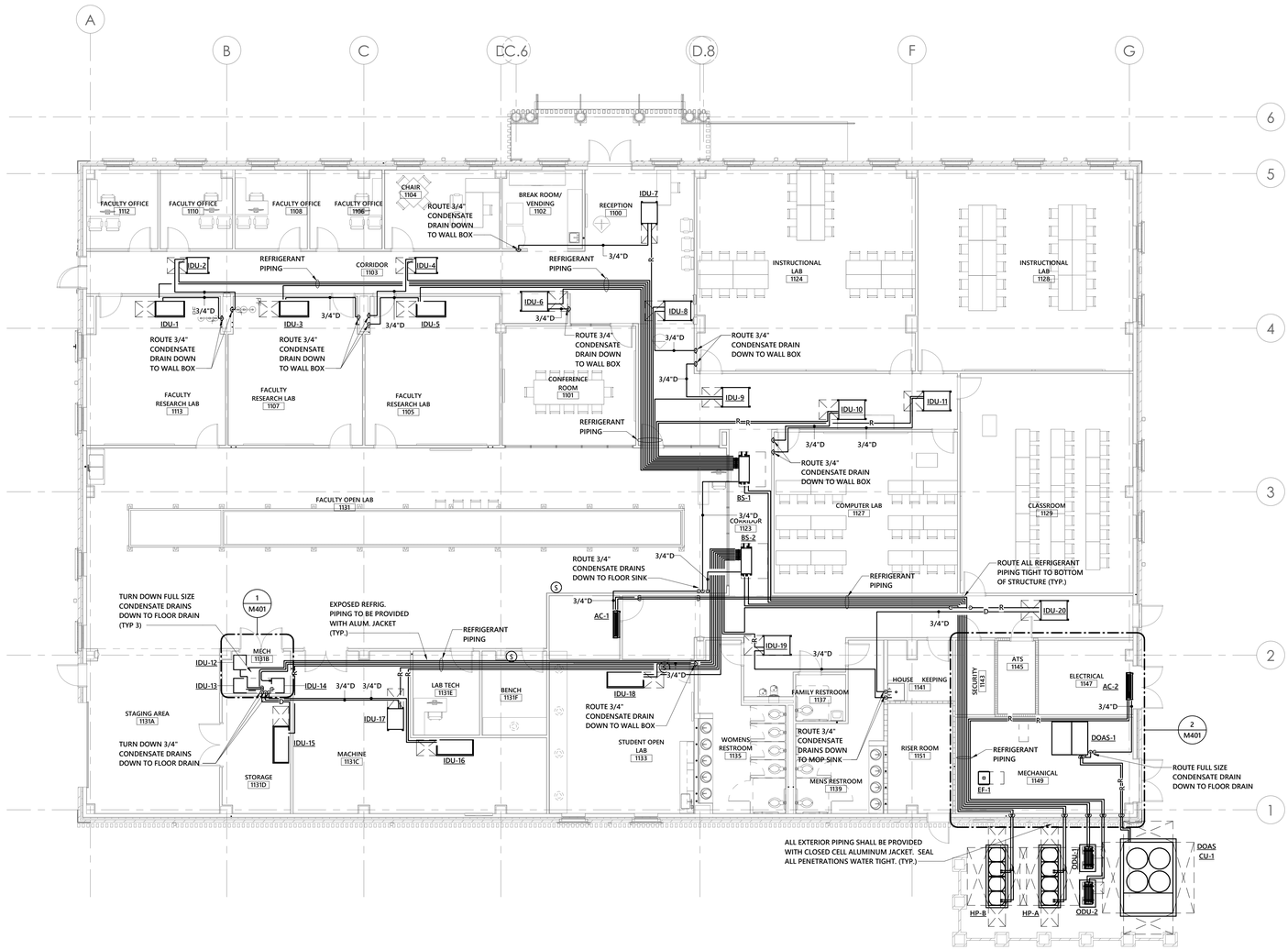
FIRST FLOOR MECHANICAL PLAN

M101

SCALE: As indicated



1 **FIRST FLOOR MECHANICAL PIPING PLAN**
1/8" = 1'-0"

1/8" = 1'-0"

8 0 8 16 24

SCALE IN FEET

RATED PARTITION LEGEND

1 HR RATED PARTITION

2 HR RATED PARTITION

9/22/2020 12:20:35 PM

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PROJECT NORTH

PLAN NORTH

KEY PLAN

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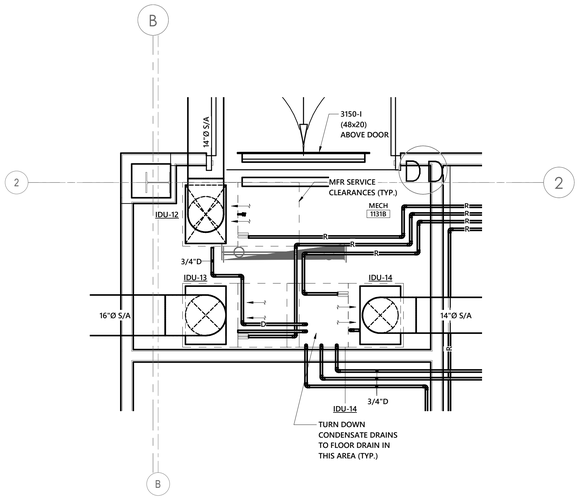
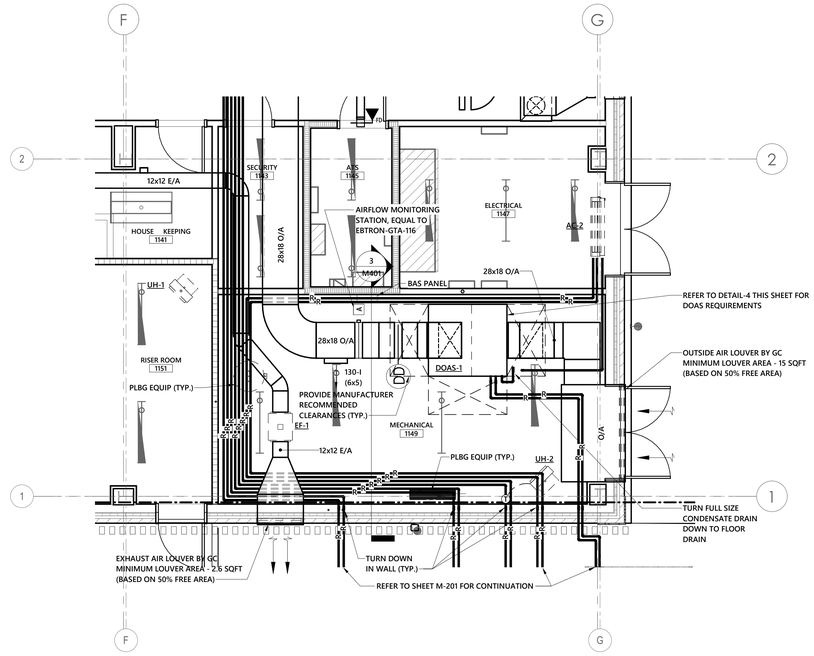
FIRST FLOOR MECHANICAL PIPING PLAN

M201

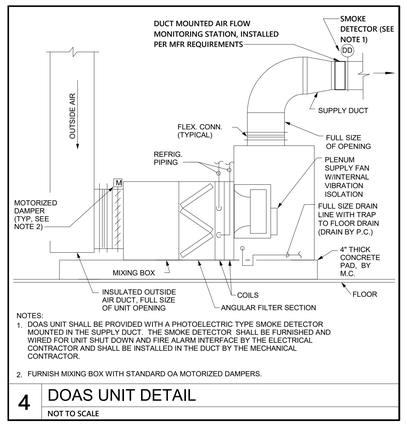
SCALE: As indicated



1 **ENLARGED FIRST FLOOR MECHANICAL PLAN - RM-1131B**
1/2" = 1'-0"

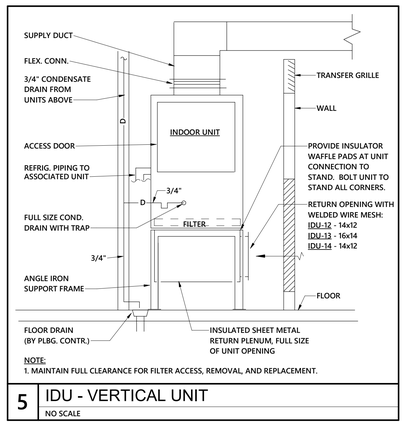


2 **ENLARGED MECHANICAL ROOM**
1/4" = 1'-0"



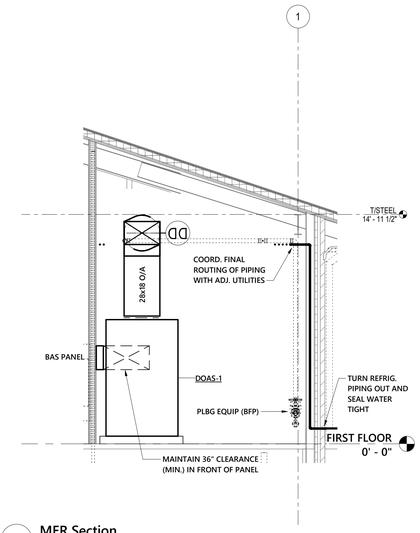
NOTES:
1. DOAS UNIT SHALL BE PROVIDED WITH A PHOTOELECTRIC TYPE SMOKE DETECTOR MOUNTED IN THE SUPPLY DUCT. THE SMOKE DETECTOR SHALL BE FURNISHED AND WIRED FOR UNIT SHUT DOWN AND FIRE ALARM INTERFACE BY THE ELECTRICAL CONTRACTOR AND SHALL BE INSTALLED IN THE DUCT BY THE MECHANICAL CONTRACTOR.
2. FURNISH MIXING BOX WITH STANDARD OA MOTORIZED DAMPERS.

4 **DOAS UNIT DETAIL**
NOT TO SCALE



NOTE:
1. MAINTAIN FULL CLEARANCE FOR FILTER ACCESS, REMOVAL, AND REPLACEMENT.

5 **IDU - VERTICAL UNIT**
NO SCALE



3 **MER Section**
1/4" = 1'-0"

1/4" = 1'-0" 4 0 4 8 12
SCALE IN FEET

RATED PARTITION LEGEND

1 HR RATED PARTITION

2 HR RATED PARTITION

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9/14/2020

PROJECT NORTH PLAN NORTH

KEY PLAN

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Coastal Engineering Building

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SGA | NW DESIGN PROJECT NUMBER:
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DESIGNED BY: CP
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ENLARGED MECHANICAL PLANS

M401

SCALE: As indicated

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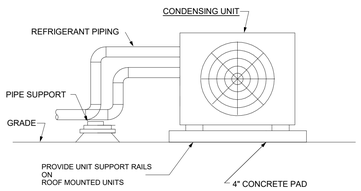
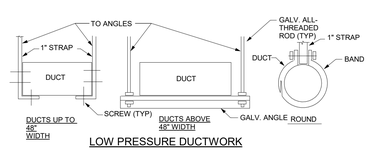


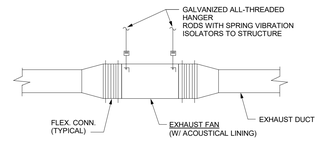
1 CONDENSING UNIT
NO SCALE



LOW PRESSURE DUCTWORK

NOTE:
1. SUPPORTS OR FASTENERS SHALL NOT PENETRATE GREASE EXHAUST DUCT.

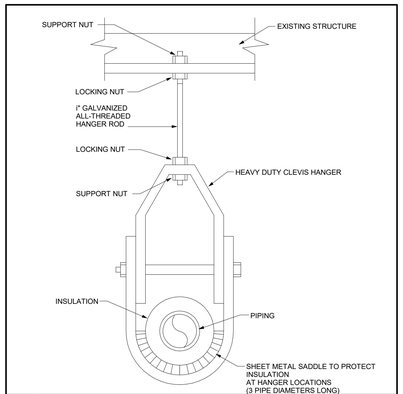
2 DUCTWORK HANGER DETAILS
NO SCALE



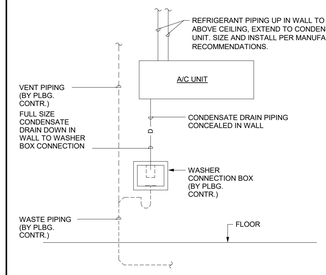
INLINE EXHAUST FAN

NOTES:
1. COORDINATE LOCATION OF FAN WITH OTHER TRADES TO ENSURE SERVICE CLEARANCES.
2. MECHANICAL CONTRACTOR SHALL PROVIDE ACCESS DOOR IN CEILING IF REQUIRED.

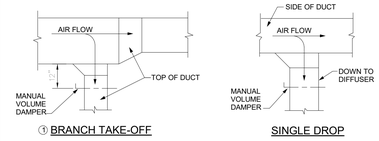
3 EXHAUST FAN DETAIL
NO SCALE



4 PIPE HANGER DETAIL
NO SCALE

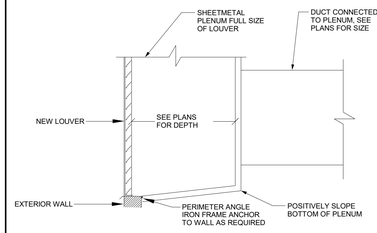


5 UNIT CONDENSATE DRAIN
NO SCALE



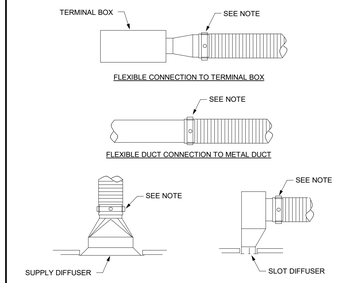
NOTE:
1. USE BRANCH TAKE-OFF 1 WHEN MAIN AND BRANCH DUCTS ARE DIFFERENT DEPTHS
2. USE BRANCH TAKE-OFF 2 WHEN MAIN AND BRANCH DUCTS ARE SAME DEPTHS

6 DUCTWORK DETAILS
NO SCALE



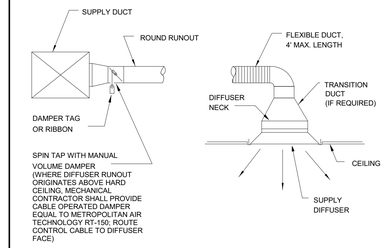
NOTE:
1. EXTEND SHEET METAL PLENUM TO BACKSIDE OF LOUVER
2. PROVIDE FULL SIZE ACCESS PANEL WITH INSULATED BACK COVER, AND LOCKING HANDLE TO ALLOW FOR PLENUM/LOUVER CLEANING

7 SHEET METAL PLENUM
NO SCALE



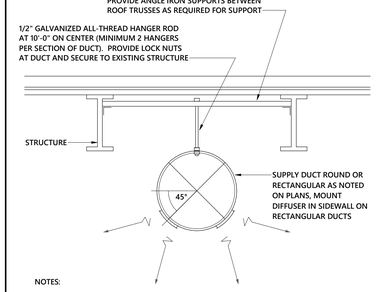
NOTE:
ALL FLEXIBLE DUCT CONNECTIONS TO SHEET METAL SHALL BE SECURED WITH NYLON STRAP AND 2 SHEET METAL SCREWS (MIN.).

8 FLEX. CONNECTION DETAIL
NO SCALE



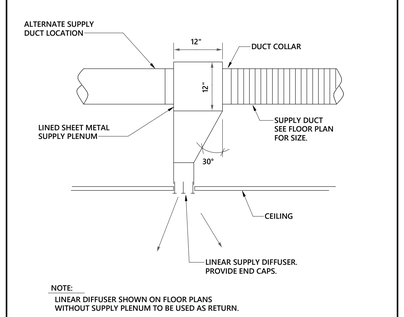
NOTE:
ALL MANUAL VOLUME DAMPERS (FOR INSULATED DUCTWORK) SHALL BE PROVIDED WITH AN ELEVATED REGULATOR (STAND-OFF) EQUAL TO DURO DYNE SRST SERIES. STAND SHALL EXTEND A MINIMUM OF 2" BEYOND DUCTWORK WITH EXTENDED TAB/SHAFT.

9 SPIN TAP TO DIFFUSER
NO SCALE



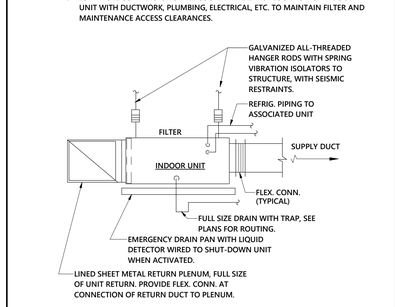
NOTES:
1. DUCTWORK SHALL BE INSTALLED LEVEL, AS HIGH AS POSSIBLE (UNLESS OTHERWISE NOTED).

10 DBL. DEFL. DIFFUSER MOUNTING DETAIL
NO SCALE

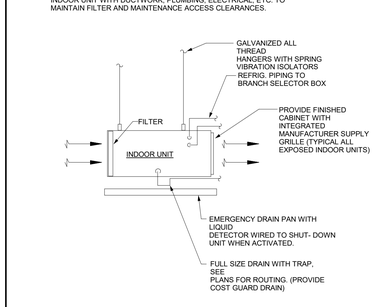


NOTE:
LINEAR DIFFUSER SHOWN ON FLOOR PLANS WITHOUT SUPPLY PLENUM TO BE USED AS RETURN.

11 DIFFUSER PLENUM DETAIL
NO SCALE

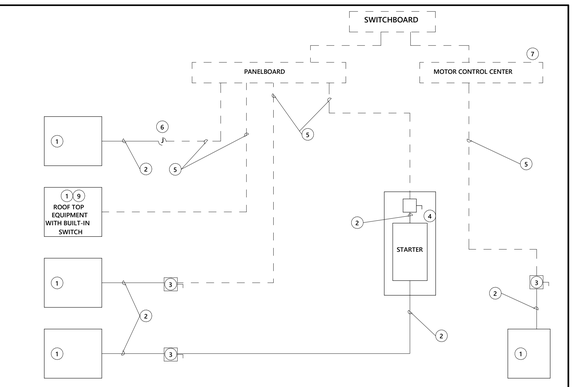


12 INDOOR UNIT DETAIL (ABOVE CEILING)
NOT TO SCALE



13 INDOOR UNIT DETAIL (EXPOSED)
NO SCALE

NOTES:
1. EQUIPMENT OF TRADES OTHER THAN ELECTRICAL.
2. CONDUIT AND WIRING BY MECHANICAL, PLUMBING CONTRACTOR OR OTHER TRADES.
3. IF AN ADDITIONAL DISCONNECT IS REQUIRED BY NEC, IT SHALL BE PROVIDED AND INSTALLED BY THE EQUIPMENT CONTRACTOR.
4. A COMBINATION STARTER OR VFD MAY BE USED IN LIEU OF A SEPARATE DISCONNECT SWITCH AND STARTER LOCATE ADJACENT TO EQUIPMENT.
5. FEEDER CIRCUIT WIRING AND CONDUIT IN ELECTRICAL WORK SEE PANELBOARD SCHEDULES FOR WIRE AND BREAKER SIZES.
6. JUNCTION BOX MAY BE SHOWN ON ELECTRICAL PLANS FOR SOME EQUIPMENT. IF NO STARTER OR DISCONNECT IS SUPPLIED, A JUNCTION BOX SHALL BE INSTALLED ADJACENT TO EQUIPMENT. THE ELECTRICAL CONTRACTOR SHALL PROVIDE LINE SIDE WIRING TO THE JUNCTION BOX. LOAD SIDE WIRING WILL BE PROVIDED BY MECHANICAL CONTRACTOR OR OTHER TRADES.
7. PROJECTS UTILIZING AN MCC. THE STARTER, CB, OR VFD IN THE MCC ARE PROVIDED BY THE ELECTRICAL CONTRACTOR.
8. IN ALL CASES THE EQUIPMENT CONTRACTOR SHALL MAKE FINAL CONNECTIONS STARTUP, AND TEST EQUIPMENT.
9. IF THE ROOF TOP EQUIPMENT IS NOT PROVIDED WITH BUILT IN SWITCH, THE ELECTRICAL CONTRACTOR SHALL PROVIDE A DISCONNECT SWITCH.



14 ELECTRICAL REQUIREMENTS FOR MECHANICAL CONTRACTOR (DIVISION 23/26 DEMARCATION)
NO SCALE

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North Carolina License Number C-0914

9/14/2020

PROJECT NORTH
PLAN NORTH

KEY PLAN

Construction Documents

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW
University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403
SCO PROJECT NUMBER:
20-21673-01A
CODE:
41928
ITEM:
302

SGA | NW DESIGN PROJECT NUMBER:
19-202-01

DESIGNED BY: CP
DRAWN BY: CP
CHECKED BY: RVA

ISSUE DATE:
September 14, 2020

MECHANICAL DETAILS

M501

SCALE: 1/8" = 1'-0"

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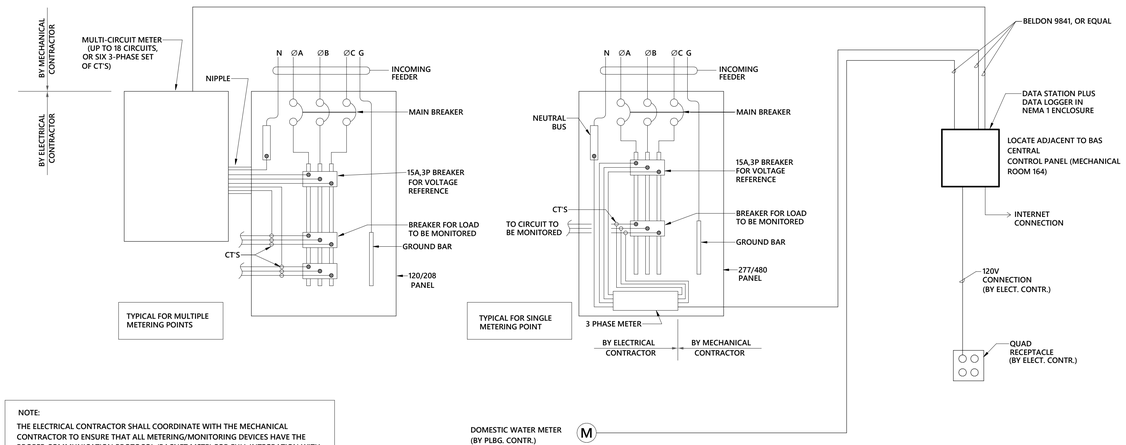
UTILITY MONITORING SYSTEM NOTES

SYSTEM DESCRIPTION:

THE UTILITY RESOURCE MONITORING SYSTEM IS PROVIDED BY THE MECHANICAL CONTRACTOR. METERS AND MONITORING DEVICES ARE PROVIDED AS NOTED BELOW. THE INTENT OF THE SYSTEM IS TO CONSTANTLY MEASURE AND DISPLAY THE ENERGY (ELECTRICAL) AND WATER (DOMESTIC) BEING CONSUMED BY THE BUILDING. THE INFORMATION SHALL BE MADE PUBLIC VIA THE INTERNET AND VIA UNCW'S EXISTING UTILITY MONITORING DASHBOARD SYSTEM. THE SYSTEM INTEGRATOR (CONTROLS CONTRACTOR) IS RESPONSIBLE FOR PROVIDING TRENDS FOR INTEGRATION INTO EXTG BAS. THE SYSTEM INTEGRATOR WILL PROVIDE AN ENERGY/UTILITY DASHBOARD FOR THIS PROJECT. ALL ELECTRICAL CIRCUITS FOR MONITORING ELECTRICITY ARE SHOWN ON THE ELECTRICAL PANEL SCHEDULES.

MECHANICAL GENERAL NOTES:

1. PROVIDE METERS TO COLLECT ELECTRICAL POWER AND DOMESTIC WATER USAGE.
2. CONNECT METER(S) TO ENERGY DATA LOGGER USING RS-485 SHIELDED TWISTED PAIR WIRE (LIMIT OF 32 METERS PER DATA LOGGER), OR UTILIZE THE EXISTING POWER LINES VIA A CARRIER SYSTEM.
3. CONNECT ENERGY DATA LOGGER TO OWNER PROVIDED INTERNET CONNECTION.
4. SEE MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR ITEMS TO BE METERED. PROVIDE METERS AND DATA LOGGERS AND CONTROL WIRING FOR A COMPLETE SYSTEM
5. DASH BOARD SHALL BE PROVIDED ON OWNER'S EXISTING SYSTEM
6. PROVIDE STARTUP, VERIFICATION AND TESTING SERVICES TO VERIFY PROPER OPERATION OF ENERGY REPORTING.
7. PROVIDE OWNER TRAINING, MINIMUM OF 8 HOURS.
8. PROVIDE A COMPLETE, TURNKEY METERING SYSTEM.
9. METERS MUST BE CAPABLE OF BEING CONNECTED AS INTENDED ON THESE DRAWINGS OR BACNET.
10. DATA LOGGER BY RED LION, TRIDIUM JACE, ECHELON SMARTSERVER, OR EQUAL.
11. PROVIDE THREE YEARS OF DATA STORAGE IN 15 MINUTE INTERVALS.
12. LOCAL DISPLAY IS REQUIRED FOR ALL METERS FOR VERIFICATION.
13. CONNECT TO PULSE TYPE METERS FOR WATER. WATER METERS SHALL INCLUDE TOTAL USAGE (GALLONS OR CUBIC FEET) AS WELL AS DEMAND (GALLONS/HOUR OR CUBIC FEET/HOUR).
14. CONTRACTOR SHALL VERIFY EACH METER WITH A HANDHELD RMS MULTI-METER. INCLUDE DOCUMENTATION WITH POINTS LIST TO OWNER.



NOTE:
THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE MECHANICAL CONTRACTOR TO ENSURE THAT ALL METERING/MONITORING DEVICES HAVE THE PROPER COMMUNICATION PROTOCOL (BACNET MSTP) FOR FULL INTEGRATION WITH THE UTILITY MONITORING SYSTEM

1 UTILITY MONITORING DETAIL
NOT TO SCALE

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North Carolina License Number C-0914

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 7728 ENGINEERING

9/14/2020

PROJECT NORTH | PLAN NORTH

KEY PLAN

Construction Documents

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW
University of North Carolina Wilmington

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Wilmington, NC 28403

SCO PROJECT NUMBER:
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CODE:
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ITEM:
302

SGA | NW DESIGN PROJECT NUMBER:
19-202-01

DESIGNED BY: CP
DRAWN BY: CP
CHECKED BY: RVA

ISSUE DATE:
September 14, 2020

MECHANICAL DETAILS

M502

SCALE: 1/8" = 1'-0"

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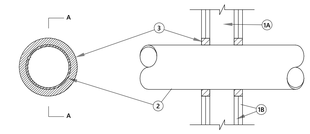
System No. W-L-1054

METAL PIPE THROUGH GYPSUM WALL ASSEMBLY

F Ratings - 1 and 2 Hr (See Items 1 and 3)
T Rating – 0 Hr
L Rating At Ambient – Less Than 1 CFM/Sq Ft
L Rating At 400 F - 4 CFM/Sq Ft



SECTION A-A

2. THROUGH-PENETRANTS -- ONE METALLIC PIPE, CONDUIT OR TUBING TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. THE ANNULAR SPACE SHALL BE MIN 0 IN. TO MAX 2-1/4 IN. PIPE MAY BE INSTALLED WITH CONTINUOUS POINT CONTACT. PIPE, CONDUIT OR TUBING MAY BE INSTALLED AT AN ANGLE NOT GREATER THAN 45 DEGREES FROM PERPENDICULAR. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED:
A. STEEL PIPE -- NOM 30 IN DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.
B. IRON PIPE -- NOM 30 IN. DIAM (OR SMALLER) CAST OR DUCTILE IRON PIPE.
C. CONDUIT -- NOM 4 IN DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING OR 6 IN. DIAM STEEL CONDUIT.
D. COPPER TUBING -- NOM 6 IN. DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.
E. COPPER PIPE -- NOM 6 IN. DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.
3. FILL, VOID OR CAVITY MATERIAL* -- SEALANT -- MIN 5/8 IN. THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH BOTH SURFACES OF WALL AT THE POINT OR CONTINUOUS CONTACT LOCATIONS BETWEEN PIPE AND WALL A MIN 1/2 IN. DIAM BEAD OF FILL MATERIAL SHALL BE APPLIED AT THE PIPE WITH PERFORMANCE ON BOTH SURFACES OF WALL .
*BEARING THE UL CLASSIFICATION MARK
1. WALL ASSEMBLY -- THE 1 OR 2 HR FIRE-RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES WALL AND PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
A. STUDS -- WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN. LUMBER SPACED 16 IN. OC. STEEL STUDS TO BE MIN 2-1/2 IN. WIDE AND SPACED MAX 24 IN. OC. WHEN STEEL STUDS ARE USED AND THE DIAM OF OPENING EXCEEDS THE WIDTH OF STUD CAVITY, THE OPENING SHALL BE FRAMED ON ALL SIDES USING LENGTHS OF STEEL STUD INSTALLED BETWEEN THE VERTICAL STUDS AND SCREW-ATTACHED TO THE STEEL STUDS AT EACH END. THE FRAMED OPENING IN THE WALL SHALL BE 4 TO 6 IN. WIDER AND 4 TO 6 IN. HIGHER THAN THE DIAM OF THE PENETRATING ITEM SUCH THAT, WHEN THE PENETRATING ITEM IS INSTALLED IN THE OPENING, A 2 TO 3 IN. CLEARANCE IS PRESENT BETWEEN THE PENETRATING ITEM AND THE FRAMING ON ALL FOUR SIDES.
B. GYPSUM BOARD* -- 5/8 IN. THICK, 4 FT WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM BOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX DIAM OF OPENING IS 32-1/4 IN. FOR STEEL STUD WALLS. MAX DIAM OF OPENING IS 14-1/2 IN. FOR WOOD STUD WALLS.
THE F RATING OF THE FIRESTOP SYSTEM IS EQUAL TO THE FIRE RATING OF THE WALL ASSEMBLY.

1 U.L SYSTEM NO W-L-1054 DETAIL
NO SCALE

System No. W-L-8047

HVAC LINE SET THROUGH GYPSUM WALL ASSEMBLY

F Rating -- 2 Hr
T Rating -- 1/4 Hr

SECTION A-A

1. WALL ASSEMBLY -- THE 2 HR FIRE-RATED GYPSUM BOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL U300 OR U400 SERIES WALL OR PARTITION DESIGN IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
A. STUDS -- WALL FRAMING SHALL CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN. LUMBER SPACED MAX 16 IN. OC. STEEL STUDS TO BE MIN 3-1/2 IN. WIDE AND SPACED MAX 24 IN. OC.
B. GYPSUM BOARD* -- THE GYPSUM BOARD TYPE, THICKNESS NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE SPECIFIED IN THE INDIVIDUAL WALL AND PARTITION DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX DIAM OF OPENING IS 4-1/2 IN.
2. THROUGH PENETRANTS -- ONE OR MORE PIPE OR TUBING TO BE INSTALLED CONCENTRICALLY OR ECCENTRICALLY WITHIN THE OPENING. THE SPACE BETWEEN ANY PENETRANT AND THE PERIPHERY OF THE OPENING SHALL BE MIN 0 IN. (POINT CONTACT) TO MAX 1-1/4 IN. PIPES OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES OR TUBING MAY BE USED:
A. COPPER TUBE -- NOM 1 IN. DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBE.
B. COPPER PIPE -- NOM 1 IN. DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.
3. TUBE INSULATION - PLASTICS+ -- NOM 3/4 IN. THICK ACRYLONITRILE BUTADIENE/POLYVINYL CHLORIDE (AB/PVC) FLEXIBLE FOAM FURNISHED IN THE FORM OF TUBING. TUBE INSULATION TO BE INSTALLED ON ONE OR MORE OF THE METALLIC PIPES OR TUBES.
SEE PLASTICS+ (QMFZ2) CATEGORY IN THE PLASTICS RECOGNIZED COMPONENT DIRECTORY FOR NAMES OF MANUFACTURERS. ANY RECOGNIZED COMPONENT TUBE INSULATION MATERIAL MEETING THE ABOVE SPECIFICATIONS AND HAVING A UL 94 FLAMMABILITY CLASSIFICATION OF 94-5VA MAY BE USED.
4. CABLES -- MAX OF ONE 4 PAIR NO. 18 AWG (OR SMALLER) CABLE WITH PVC INSULATION AND JACKET MATERIALS.
5. FILL, VOID OR CAVITY MATERIAL - SEALANT* -- MIN 1-1/4 IN. THICKNESS OF FILL MATERIAL APPLIED WITHIN ANNULUS BETWEEN PENETRANTS AND GYPSUM BOARD, FLUSH WITH BOTH SURFACES OF WALL AT POINT CONTACT, A 1/4 IN. BEAD OF FILL MATERIAL SHALL BE APPLIED AT THE PENETRANT/GYPSUM BOARD INTERFACE ON BOTH SIDES OF WALL.

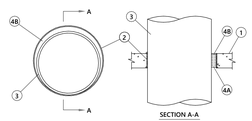
*BEARING THE UL CLASSIFICATION MARK

5 U.L SYSTEM NO W-L-8047 DETAIL
NO SCALE

System No. C-AJ-1226

METAL PIPE THROUGH CONCRETE WALL ASSEMBLY

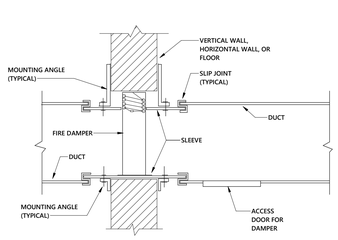
F Rating — 3 Hr
T Rating — 0 Hr
L Rating At Ambient — Less Than 1 CFM/Sq Ft
L Rating At 400 F — 4 CFM/Sq Ft



SECTION A-A

1. FLOOR OR WALL ASSEMBLY -- MIN 4-1/2 IN. THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS*. MAX DIAM OF OPENING IS 32 IN.
2. METALLIC SLEEVE -- (OPTIONAL) NOM 32 IN. DIAM (OR SMALLER) SCHEDULE 40 (OR HEAVIER) STEEL SLEEVE CAST OR GROUTED INTO FLOOR OR WALL ASSEMBLY, FLUSH WITH FLOOR OR WALL SURFACES OR EXTENDING A MAX OF 3 IN. ABOVE FLOOR OR BEYOND BOTH SURFACES OF WALL
2A. SHEET METAL SLEEVE -- (OPTIONAL) MAX 6 IN. DIAM, MIN 26 GA GALV STEEL PROVIDED WITH A 26 GA GALV STEEL SQUARE FLANGE SPOT WELDED TO THE SLEEVE AT APPROX MID-HEIGHT, OR FLUSH WITH BOTTOM OF SLEEVE IN FLOORS, AND SIZED TO BE A MIN OF 2 IN. LARGER THAN THE SLEEVE DIAM. THE SLEEVE IS TO BE CAST IN PLACE AND MAY EXTEND A MAX OF 4 IN. BELOW THE BOTTOM OF THE DECK AND A MAX OF 1 IN. ABOVE THE TOP SURFACE OF THE CONCRETE FLOOR.
2B. SHEET METAL SLEEVE -- (OPTIONAL) - MAX 12 IN. DIAM, MIN 24 GA GALV STEEL PROVIDED WITH A 24 GA GALV STEEL SQUARE FLANGE SPOT WELDED TO THE SLEEVE AT APPROX MID-HEIGHT, OR FLUSH WITH BOTTOM OF SLEEVE IN FLOORS, AND SIZED TO BE AS MIN OF 2 IN. LARGER THAN THE SLEEVE DIAM. THE SLEEVE IS TO BE CAST IN PLACE AND MAY EXTEND A MAX OF 4 IN. BELOW THE BOTTOM OF THE DECK AND A MAX OF 1 IN. ABOVE THE TOP SURFACE OF THE CONCRETE FLOOR.
3. THROUGH-PENETRANT -- ONE METALLIC PIPE, TUBE OR CONDUIT TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. THE ANNULAR SPACE BETWEEN PENETRANT AND PERIPHERY OF OPENING SHALL BE MIN 0 IN. (POINT CONTACT) TO MAX 1-7/8 IN. PENETRANT MAY BE INSTALLED WITH CONTINUOUS POINT CONTACT. PENETRANT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PENETRANTS MAY BE USED:
A. STEEL PIPE -- NOM 30 IN. DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.
B. IRON PIPE -- NOM 30 IN. DIAM (OR SMALLER) CAST OR DUCTILE IRON PIPE.
C. COPPER PIPE -- NOM 6 IN. DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.
D. COPPER TUBING -- NOM 6 IN. DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.
E. CONDUIT -- NOM 6 IN. DIAM (OR SMALLER) STEEL CONDUIT.
F. CONDUIT -- NOM 4 IN. DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING (EMT).
4. FIRESTOP SYSTEM -- THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:
A. PACKING MATERIAL -- MIN 4 IN. THICKNESS OF MIN 4 PCF MINERAL WOOL BATT INSULATION FIRMLY PACKED INTO OPENING AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM TOP SURFACE OF FLOOR OR SLEEVE OR FROM BOTH SURFACES OF WALL OR SLEEVE AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL.
B. FILL, VOID OR CAVITY MATERIAL* -- SEALANT -- MIN 1/4 IN. THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH TOP SURFACE OF FLOOR OR SLEEVE OR WITH BOTH SURFACES OF WALL OR SLEEVE. AT THE POINT OR CONTINUOUS CONTACT LOCATIONS BETWEEN PENETRANT AND CONCRETE OR SLEEVE, A MIN 1/4 IN. DIAM BEAD OF FILL MATERIAL SHALL BE APPLIED AT THE CONCRETE OR SLEEVE/ PIPE PENETRANT INTERFACE ON THE TOP SURFACE OF FLOOR AND ON BOTH SURFACES OF WALL.
*BEARING THE UL CLASSIFICATION MARK

2 U.L SYSTEM NO C-AJ-1226 DETAIL
NO SCALE



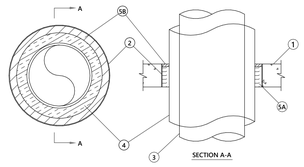
FIRE DAMPER SHALL BE RUSKIN TYPE IBD2 STYLE B 1 1/2 HOUR UL, INSTALLED IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS. ACCESS DOOR SHALL BE RUSKIN MODEL ADC2 LOCATED ON ACCESSIBLE CEILING SIDE OF WALL. IF ACCESSIBLE CEILING NOT AVAILABLE, MECHANICAL CONTRACTOR SHALL PROVIDE ACCESS DOOR IN CEILING (OR WALL) TO MATCH FINISH COLOR. DAMPER SHALL BE EQUIPPED FOR HORIZONTAL OR VERTICAL MOUNTING AS REQUIRED. WHERE ROUND DUCTS REQUIRE A DAMPER, AN ENCLOSURE WITH ROUND DUCT CONNECTION WILL BE REQUIRED WITH TYPE B DAMPER INSIDE. ALL MODELS ARE RUSKIN (APPROVED EQUAL ACCEPTABLE).

6 LOW PRESSURE FIRE DAMPER DETAIL
NO SCALE

System No. C-AJ-5091

INSULATED METAL PIPE THROUGH CONCRETE WALL ASSEMBLY

F Rating — 2 Hr
T Rating — 1 Hr
L Rating At Ambient — 4 CFM/Sq Ft
L Rating At 400 F — Less Than 1 CFM/Sq Ft



SECTION A-A

1. FLOOR OR WALL ASSEMBLY -- MIN 4-1/2 IN. THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS*. MAX DIAM OF OPENING IS 19-1/2 IN. SEE CONCRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.

2. METALLIC SLEEVE -- (OPTIONAL) -- NOM 20 IN. DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.
2A. SHEET METAL SLEEVE -- (OPTIONAL) - MAX 6 IN. DIAM, MIN 26 GA GALV STEEL PROVIDED WITH A 26 GA GALV STEEL SQUARE FLANGE SPOT WELDED TO THE SLEEVE AT APPROXIMATELY MID- HEIGHT, OR FLUSH WITH BOTTOM OF SLEEVE IN FLOORS, AND SIZED TO BE A MIN OF 2 IN. LARGER THAN THE SLEEVE DIAM. THE SLEEVE IS TO BE CAST IN PLACE FLUSH WITH BOTTOM SURFACE OF FLOOR AND MAY EXTEND A MAX OF 1 IN. ABOVE THE TOP SURFACE OF THE FLOOR.

2B. SHEET METAL SLEEVE -- (OPTIONAL) - MAX 12 IN. DIAM, MIN 24 GA GALV STEEL PROVIDED WITH A 24 GA GALV STEEL SQUARE FLANGE SPOT WELDED TO THE SLEEVE AT APPROXIMATELY MID- HEIGHT, OR FLUSH WITH BOTTOM OF SLEEVE IN FLOORS, AND SIZED TO BE A MIN OF 2 IN. LARGER THAN THE SLEEVE DIAM. THE SLEEVE IS TO BE CAST IN PLACE FLUSH WITH BOTTOM SURFACE OF FLOOR AND MAY EXTEND A MAX OF 1 IN. ABOVE THE TOP SURFACE OF THE FLOOR.

3. THROUGH PENETRANTS -- ONE METALLIC PIPE OR TUBING TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. PIPE OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES OR TUBING MAY BE USED:

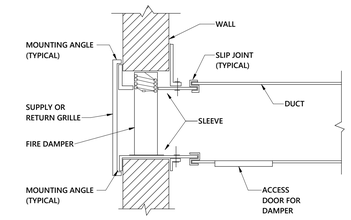
A. STEEL PIPE -- NOM 12 IN. DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.
B. IRON PIPE -- NOM 12 IN. DIAM (OR SMALLER) CAST OR DUCTILE IRON PIPE.
C. COPPER PIPE -- NOM 6 IN. DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.
D. COPPER TUBING -- NOM 6 IN. DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.

4. PIPE COVERING -- NOM 2 IN. THICK HOLLOW CYLINDRICAL HEAVY DENSITY (MIN 3.5 PCF) GLASS FIBER UNITS JACKETED ON THE OUTSIDE WITH AN ALL-SERVICE JACKET. LONGITUDINAL JOINTS SEALED WITH METAL FASTENERS OR FACTORY-APPLIED, SELF-SEALING LAP TAPE. TRANSVERSE JOINTS SECURED WITH METAL FASTENERS OR WITH BUTT TAPE SUPPLIED WITH THE PRODUCT. THE ANNULAR SPACE BETWEEN THE INSULATED PIPE AND THE EDGE OF THE PERIPHERY OF THE OPENING SHALL BE MIN 1/2 IN. TO A MAX 2-1/4 IN. E-0117,L0.4,5SEE PIPE EQUIPMENT COVERING -- MATERIALS -- (BRGU) CATEGORY IN THE BUILDING MATERIALS DIRECTORY FOR NAMES OF MANUFACTURERS. ANY PIPE COVERING MATERIAL MEETING THE ABOVE SPECIFICATIONS AND BEARING THE UL CLASSIFICATION MARKING WITH A FLAME SPREAD INDEX OF 25 OR LESS AND A SMOKE DEVELOPED INDEX OF 50 OR LESS MAY BE USED.
4A. PIPE COVERING -- (NOT SHOWN) -- AS AN ALTERNATE TO ITEM 4, MAX 2 IN. THICK CYLINDRICAL CALCIUM SILICATE (MIN 14 PCF) UNITS SIZED TO THE OUTSIDE DIAM OF THE PIPE OR TUBE MAY BE USED. PIPE INSULATION SECURED WITH STAINLESS STEEL BANDS OR MIN 8 AWG STAINLESS STEEL WIRE SPACED MAX 12 IN. OC. THE ANNULAR SPACE SHALL BE MIN 1/2 IN. TO MAX 2-1/4 IN.

5. FIRESTOP SYSTEM -- THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:
A. PACKING MATERIAL -- MIN 4 IN. THICKNESS OF MIN 4 PCF MINERAL WOOL BATT INSULATION FIRMLY PACKED INTO OPENING AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM TOP SURFACE OF FLOOR OR FROM BOTH SURFACES OF WALL AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL.
B. FILL, VOID OR CAVITY MATERIAL* -- SEALANT -- MIN 1/2 IN. THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH TOP SURFACE OF FLOOR OR WITH BOTH SURFACES OF WALL.

*BEARING THE UL CLASSIFICATION MARK

3 U.L SYSTEM NO C-AJ-5091 DETAIL
NO SCALE



NOTE: DAMPERS SHALL BE INSTALLED AS PER MFG. INSTRUCTIONS.

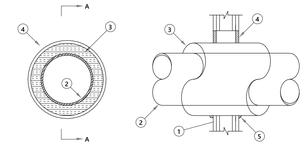
FIRE DAMPER SHALL BE RUSKIN DIBD20 STYLE G, CURTAIN TYPE, UL, INSTALLED IN ACCORDANCE WITH NFPA. ACCESS DOOR SHALL BE RUSKIN MODEL ADC2 LOCATED ON ACCESSIBLE CEILING SIDE OF WALL. IF ACCESSIBLE CEILING NOT AVAILABLE, MECHANICAL CONTRACTOR SHALL PROVIDE ACCESS DOOR IN CEILING (OR WALL) TO MATCH FINISH COLOR. DAMPER SHALL BE EQUIPPED FOR HORIZONTAL OR VERTICAL MOUNTING AS REQUIRED. ALL MODELS ARE RUSKIN(APPROVED EQUAL ACCEPTABLE).

7 DAMPER - LOW PRESSURE FIRE W/GRILLE
NOT TO SCALE

System No. W-L-5029

INSULATED METAL PIPE THROUGH GYPSUM WALL ASSEMBLY

F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 1/2, 3/4, 1, 1-1/2 and 1-3/4 Hr (See Item 3)
L Rating At Ambient — 4 CFM/Sq Ft
L Rating At 400 F — Less Than 1 CFM/Sq Ft



SECTION A-A

1. WALL ASSEMBLY -- THE 1 OR 2 HR FIRE-RATED GYPSUM BOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES WALL AND PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
A. STUDS -- WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN. LUMBER SPACED 16 IN. OC. STEEL STUDS TO BE MIN 2-1/2 IN. WIDE AND SPACED MAX 24 IN. OC.
B. GYPSUM BOARD* -- 5/8 IN. THICK, 4 FT WIDE, WITH SQUARE OR TAPERED EDGES. THE GYPSUM BOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL WALL AND PARTITION DESIGN. MAX DIAM OF OPENING IS 19-5/8 IN.
THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS EQUAL TO THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED.
2. THROUGH PENETRANTS -- ONE METALLIC PIPE OR TUBING TO BE CENTERED WITHIN THE FIRESTOP SYSTEM. PIPE OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES OR TUBING MAY BE USED:
A. STEEL PIPE -- NOM 12 IN. DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.
B. IRON PIPE -- NOM 12 IN. DIAM (OR SMALLER) CAST OR DUCTILE IRON PIPE.
C. COPPER TUBING -- NOM 6 IN. DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.
D. COPPER PIPE -- NOM 6 IN. DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.
3. PIPE COVERING* -- NOM 1 1-1/2 OR 2 IN. THICK HOLLOW CYLINDRICAL HEAVY DENSITY (MIN 3.5 PCF) GLASS FIBER UNITS JACKETED ON THE OUTSIDE WITH AN ALL SERVICE JACKET. LONGITUDINAL JOINTS SEALED WITH METAL FASTENERS OR FACTORY-APPLIED SELF-SEALING LAP TAPE. TRANSVERSE JOINTS SECURED WITH METAL FASTENERS OR WITH BUTT TAPE SUPPLIED WITH THE PRODUCT.
SEE PIPE AND EQUIPMENT COVERING - MATERIALS (BRGU) CATEGORY IN THE BUILDING MATERIAL DIRECTORY FOR THE NAMES OF MANUFACTURERS. ANY PIPE COVERING MATERIAL MEETING THE ABOVE SPECIFICATIONS AND BEARING THE UL CLASSIFICATION MARKING WITH A FLAME SPREAD INCEX OF 25 OR LESS AND A SMOKE DEVELOPED INDEX OF 50 OR LESS MAY BE USED.
THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS DEPENDENT ON THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, THE SIZE AND TYPE OF THROUGH PENETRANT AND THE PIPE COVERING THICKNESS, AS SHOWN IN THE TABLE BELOW:

Wall Assembly Rating	Through Penetrant		Pipe Covering Thkns	Annular Space		T Rating Hr
Hr	Type +	Max Diam In.	In.	Min In.	Max In.	
1	A	4	1	0	1-1/2	1/2
1	B or C	2	1 or 1-1/2	0	1-1/2	1/2
1	A	4	1-1/2	0	1-1/2	1
1	A	12	2	0	1-7/8	3/4
1	B or C	6	2	0	1-7/8	1
2	A	4	1	0	1-1/2	1
2	B or C	4	1 or 1-1/2	0	1-1/2	1
2	B or C	6	2	0	1-7/8	1
2	A	4	1-1/2	0	1-1/2	1-3/4
2	A	12	2	0	1-7/8	1-1/2
2	B or C	6	2	0	1-7/8	1

+INDICATES PENETRANT TYPE AS ITEMIZED IN ITEM 2.
3A. PIPE COVERING* -- (NOT SHOWN) -- AS AN ALTERNATE TO ITEM 3, MAX 2 IN. THICK CYLINDRICAL CALCIUM SILICATE (MIN 14 PCF) UNITS SIZED TO THE OUTSIDE DIAM OF THE PIPE OR TUBE MAY BE USED. PIPE INSULATION SECURED WITH STAINLESS STEEL BANDS OR MIN 8 AWG STAINLESS STEEL WIRE SPACED MAX 12 IN. OC. WHEN THE ALTERNATE PIPE COVERING IS USED, THE T RATING SHALL BE DETERMINED FROM THE TABLE ABOVE.
SEE PIPE AND EQUIPMENT COVERING -- MATERIALS (BRGU) CATEGORY IN THE BUILDING MATERIALS DIRECTORY FOR NAMES OF MANUFACTURERS. ANY PIPE COVERING MATERIAL MEETING THE ABOVE SPECIFICATIONS AND BEARING THE UL CLASSIFICATION MARKING WITH A FLAME SPREAD INDEX OF 25 OR LESS AND A SMOKE DEVELOPED INDEX OF 50 OR LESS MAY BE USED.

4. FILL, VOID OR CAVITY MATERIAL* -- SEALANT -- MIN 5/8 IN. THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH BOTH SURFACES OF WALL . AT THE POINT CONTACT LOCATION BETWEEN PIPE COVERING AND GYPSUM BOARD, A MIN 1/2 IN. DIAM BEAD OF FILL MATERIAL SHALL BE APPLIED AT THE PIPE COVERING/GYPSUM BOARD INTERFACE ON BOTH SURFACES OF WALL.
*BEARING THE UL CLASSIFICATION MARK

4 U.L SYSTEM NO W-L-5029 DETAIL
NO SCALE

PIPE AND DUCTWORK WALL PENETRATION NOTES (MECHANICAL)

1. ALL INSULATED METAL PIPING PENETRATING A ONE HOUR OR MORE RATED ASSEMBLY SHALL BE SEALED AROUND INSULATION ON BOTH SIDES OF WALL WITH AN APPROVED FIRE STOP WRAP/STRIP MATERIAL. NUMBER OF WRAPS AROUND INSULATION WITHIN WALL OPENING SHALL BE AS REQUIRED FOR THICKNESS OF INSULATION AND MFG. RECOMMENDATIONS. COVER EXPOSED SURFACE AND SEAMS WITH AN APPROVED FIRE STOP CAULK ON BOTH SIDES OF WALL.

2. ALL NON-INSULATED METAL PIPING PENETRATING A ONE HOUR WALL OR MORE RATED WALL OR FLOOR SHALL BE SEALED AROUND PIPE ON BOTH SIDES OF WALL WITH AN APPROVED FIRE STOP CAULK. THICKNESS SHALL BE AS RECOMMENDED BY MANUFACTURER FOR WALL RATING REQUIRED TO MAINTAIN U.L. CLASSIFICATION.

3. ALL DUCTWORK PENETRATING A TWO HOUR OR MORE RATED WALL OR FLOOR SHALL BE PROVIDED WITH A FIRE DAMPER INSTALLED AS DETAILED.

4. NO FLEXIBLE DUCTWORK WILL BE ALLOWED TO PENETRATE ONE HOUR WALLS, TWO HOUR WALLS, SMOKE WALLS, CORRIDOR WALLS OR WALLS CLOSED-OFF TO STRUCTURE. METAL RIGID DUCTWORK SHALL EXTEND A MINIMUM OF 5'-0" FROM WALL BEFORE THE FIRST AIR DISTRIBUTION DEVICE IS INSTALLED OR BEFORE FLEXIBLE DUCT IS STARTED. FLEXIBLE DUCTWORK IN A SINGLE DUCT RUN IS ALLOWED ON ONE SIDE OF A RATED WALL BUT NOT BOTH SIDES.

5. ACCEPTABLE MANUFACTURERS OF FIRE STOP MATERIALS ARE AS FOLLOWS:

NELSON FLAMESEAL PUTTY+
CROUSE-HINDS CABLE BARRIER SYSTEM
DOW CORNING FIRE STOP SEALANT/FOAM
3M FIRE BARRIER
T&B FLAMESAFE
THERMAFIBER BRAND SAFING

ALL MATERIALS AND METHODS OF INSTALLATION SHALL BE U.L. APPROVED FOR THAT INSTALLATION. SHOP DRAWING SUBMITTALS OF MATERIALS AND METHOD OF INSTALLATION, INCLUDING DRAWINGS, SHALL BE SUBMITTED TO THE ARCHITECT FOR REVIEW.

6. WHEN A PIPE, WIRE, OR DUCT PENETRATES A NON-RATED SMOKETIGHT PARTITION, THE MECHANICAL CONTRACTOR SHALL SEAL AROUND ALL PIPES WIRES AND DUCTS WITH SEALANT MATERIAL TO MAKE IT SMOKETIGHT. SEE ARCHITECTURAL PLANS FOR LOCATION OF THESE PARTITIONS.

7. SEE ARCHITECTURAL PLANS FOR WALL TYPES.

8. ALL RATED WALL PENETRATIONS SHALL BE IN ACCORDANCE WITH UNDERWRITERS LABORATORIES PENETRATION FIRESTOP SYSTEM REQUIREMENTS. ALL MATERIALS USED IN PENETRATION FIRESTOP SYSTEMS SHALL BE APPROVED BY UNDERWRITERS LABORATORIES AND SHALL BE U.L. LABELED.

9. PENETRATIONS OF NONRATED WALLS, PARTITIONS AND FLOORS OF NON-COMBUSTIBLE CONSTRUCTION SHALL BE FIRESTOPPED WITH NONCOMBUSTIBLE MATERIALS. PENETRATIONS OF NONRATED WALLS, PARTITIONS AND FLOOR OF COMBUSTIBLE CONSTRUCTION SHALL BE FIRESTOPPED WITH MATERIALS EQUIVALENT TO TWO INCHES OF WOOD. FIRESTOPPING SHALL COMPLY WITH ASTM E-814.

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9/14/2020

PROJECT NORTH | PLAN NORTH

KEY PLAN

Construction Documents

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW
University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER:
20-21673-01A

CODE:
41928

ITEM:
302

SGA | NW DESIGN PROJECT NUMBER:
19-202-01

DESIGNED BY: CP
DRAWN BY: CP
CHECKED BY: RVA

ISSUE DATE:
September 14, 2020

MECHANICAL DETAILS

M503

SCALE: 1/8" = 1'-0"

9/22/2020 12:20:45 PM

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SANITARY WASTE & VENT PIPING

1. BELOW GRADE PIPING AND JOINTS: PROVIDE SCHEDULE 40 SOLID WALL PVC PIPE AND SOCKET FITTINGS (ASTM D 2665) WITH SOLVENT WELD JOINTS (ASTM D2855). INSTALL PLASTIC PIPE BELOW GRADE PER ASTM D2321. FOAM CORE PVC PIPING IS NOT APPROVED.
2. ABOVE GRADE PIPING AND JOINTS: PROVIDE SCHEDULE 40 SOLID WALL PVC PIPE AND SOCKET FITTINGS (ASTM D 2665) WITH SOLVENT WELD JOINTS (ASTM D2855). FOAM CORE PVC PIPING IS NOT APPROVED.
3. SLOPE WASTE PIPING AT 1/4" PER FOOT MINIMUM FOR PIPING 2-1/2" AND SMALLER AND 1/8" PER FOOT MINIMUM FOR PIPING 3" AND LARGER UNLESS NOTED OTHERWISE.
4. PROVIDE CLEAN-OUTS AT EVERY TURN IN PIPING IN EXCESS OF 45° AND SPACED WITH-IN 100'-0" APART IN A LOCATION THAT PERMITS ACCESS FOR SERVICE WITHOUT DAMAGE TO THE BUILDING OR FINISHED MATERIALS.
5. PROVIDE FLOOR CLEANOUTS WITH TOPS DESIGNED TO MATCH SPECIFIC FLOOR FINISHES SUCH AS CARPET, TILE, ETC. YARD CLEANOUTS SHALL BE PROVIDED IN AN 18"x18"x6" CONCRETE PAD.
6. WHERE WASTE PIPING IS EXPOSED IN REST ROOM AREAS, PROVIDE CHROME PLATED BRASS PIPING, REMOVABLE P-TRAPS, MATCHING STOPS AND ESCUTCHEONS FOR ALL LAVATORIES.
7. WASTE AND VENT SYSTEMS SHALL BE TESTED AND PROVED WATER TIGHT UNDER A HEAD PRESSURE OF NO LESS THAN 10 FT. THIS PRESSURE SHALL BE HELD FOR A PERIOD OF NO LESS THAN 15 MINUTES.

COORDINATION DRAWINGS

PER DIVISION 01 SPECIFICATIONS, THE MECHANICAL CONTRACTOR SHALL ORGANIZE COORDINATION MEETINGS TO DEVELOP A SET OF COORDINATION DRAWINGS WITH ALL CONTRACTORS (ELECTRICAL, MECHANICAL, PLUMBING, FIRE PROTECTION, IT/DATA, AND GENERAL CONTRACTOR). THE MECHANICAL CONTRACTOR WILL HAVE THE LEAD RESPONSIBILITY FOR THE COORDINATION DRAWINGS. THE MECHANICAL CONTRACTOR SHALL PRODUCE THE ORIGINAL DRAWINGS AND FORWARD THE DRAWINGS TO EACH OF THE OTHER CONTRACTORS FOR THEM TO ADD THEIR SYSTEMS TO THIS SET OF COORDINATION DRAWINGS. THE CONTRACTORS WILL DEVELOP THE DRAWINGS IN THIS ORDER: MECHANICAL, FIRE PROTECTION, PLUMBING, ELECTRICAL, IT/DATA, AND GENERAL. THIS SHALL ALSO BE THE ORDER OF PRECEDENCE FOR INSTALLATION OF SYSTEMS. ANY RELOCATION OF SYSTEM ROUTINGS WILL BE FOUND IN THE COORDINATION PHASE AND NOTICED BY EACH OF THE CONTRACTORS. THESE DRAWINGS, WHEN COMPLETED, SHALL BE SIGNED OFF BY ALL OF THE ABOVE LISTED PARTIES. DRAWINGS SHALL BE COMPLETED PRIOR TO FABRICATION AND INSTALLATION OF DUCTWORK AND PIPING SYSTEMS, OR PURCHASE OF EQUIPMENT. THE FOLLOWING ITEMS REPRESENT THE MINIMUM REQUIREMENTS AND COORDINATION DRAWINGS:

1. ALL COORDINATION DRAWINGS WILL BE PRODUCED AT 1/4"= 1'-0 SCALE.
2. COORDINATION DRAWINGS WILL BE DISTRIBUTED ON REPRODUCIBLE MATERIAL 48"X36".
3. COORDINATION DRAWINGS ARE NOT SHOP DRAWINGS AND ARE REQUIRED IN ADDITION TO SHOP DRAWINGS.
4. ONCE THE COMPLETE COORDINATION DRAWINGS HAVE BEEN COMPILED, THE MECHANICAL CONTRACTOR WILL DISTRIBUTE ONE SIGNED SET TO EACH OF THE FOLLOWING CONTRACTORS: ELECTRICAL, PLUMBING, FIRE PROTECTION, AND GENERAL. ADDITIONAL SETS WILL BE SENT TO THE OWNER, ARCHITECT, AND ENGINEER.

DOMESTIC WATER PIPING

1. BELOW GRADE PIPING AND JOINTS: PROVIDE TYPE 'K' SOFT ANNEALED SEAMLESS COPPER TUBING (ASTM B 88) WITH NO JOINTS FOR PIPING 2-1/2" AND SMALLER. PROVIDE DUCTILE IRON PIPE AND FITTINGS (AWWA C151, AWWA C110) WITH RUBBER GASKET JOINTS AND RODS (AWWA C111) FOR PIPING 3" AND LARGER.
2. ABOVE GRADE PIPING AND JOINTS IN MECHANICAL ROOM ONLY: PROVIDE TYPE 'L' HARD DRAWN SEAMLESS COPPER TUBING (ASTM B 88) AND CAST COPPER ALLOY FITTINGS (ASME B16.18). JOINTS 2" AND SMALLER SHALL BE LEAD FREE 95-5 TIN/SILVER SOLDER JOINTS (ASTM B 32), JOINTS 2-1/2" AND LARGER SHALL BE BCUP SILVER / PHOSPHORUS / COPPER BRAZED JOINTS (AWS A5.8).
3. ABOVE GRADE PIPING AND JOINTS THROUGHOUT FACILITY (EXCEPT AS NOTED OTHERWISE): SIZE 2" AND SMALLER: PROVIDE CROSSLINKED POLYETHYLENE (PEX-TYPE A) PIPING (ASTM F876) AND COLD EXPANSION FITTINGS (ASTM F1960),

   SIZE 2-1/2" AND LARGER: PROVIDE TYPE 'L' HARD DRAWN SEAMLESS COPPER TUBING (ASTM B 88) AND CAST COPPER ALLOY FITTINGS (ASME B16.18). JOINTS 2-1/2" AND LARGER SHALL BE BCUP SILVER / PHOSPHORUS / COPPER BRAZED JOINTS (AWS A5.8).
4. INSULATE PIPING ABOVE GRADE (EXCEPT EXPOSED CONNECTIONS TO PLUMBING FIXTURES) WITH GLASS FIBER INSULATION HAVING A VAPOR BARRIER AND JACKET. PIPE INSULATION SHALL HAVE A CONDUCTIVITY NOT EXCEEDING 0.27 BTUH x SQ. FT., SEE LIST BELOW FOR INSULATION THICKNESS:
   - PROVIDE 1" THICK INSULATION FOR HOT WATER & CIRCULATION PIPING SIZES 1/2" THRU 1-1/4".
   - PROVIDE 1-1/2" THICK INSULATION FOR HOT WATER & CIRCULATON PIPING SIZES 1-1/2" THRU 4".
   - PROVIDE 1/2" THICK INSULATION FOR COLD WATER PIPING SIZES 1/2" THRU 1-1/4".
   - PROVIDE 1" THICK INSULATION FOR COLD WATER PIPING SIZES 1-1/2" THRU 4".
5. PIPING INSULATION, JACKETS, COVERINGS, SEALERS, MASTICS AND ADHESIVES SHALL MEET A FLAME-SPREAD RATING OF 25 OR LESS AND A SMOKE-DEVELOPED RATING OF 50 OR LESS AS TESTED BY ASTM E84 (NFPA 255) METHOD AND SHALL BE PLENUM RATED. PROVIDE PVC INSULATION JACKET FOR EXPOSED PIPING IN MECHANICAL ROOMS. INSTALL INSULATION CONTINUOUSLY THRU FIRE RATED WALLS AND PIPE HANGERS. PROVIDE GALVANIZED STEEL SHIELD BETWEEN PIPE HANGER AND INSULATION.
6. PROVIDE A CHROME FINISH ON EXPOSED PIPING IN REST ROOMS AND OTHER FINISHED AREAS.
7. PROTECT COPPER PIPING AGAINST CONTACT WITH DISSIMILAR METALS. ALL HANGERS, SUPPORTS, ANCHORS AND CLIPS SHALL BE COPPER OR COPPER PLATED. WHERE COPPER PIPING IS CARRIED ON TRAPEZE HANGERS WITH OTHER PIPING, PROVIDE A PERMANENT ELECTROLYTIC ISOLATION MATERIAL TO PREVENT CONTACT WITH DISSIMILAR OTHER METALS.
8. PROTECT COPPER PIPING AGAINST CONTACT WITH MASONRY. WHERE COPPER IS SLEEVED THROUGH MASONRY, PROVIDE COPPER OR RED BRASS SLEEVES. WHERE COPPER MUST BE CONCEALED IN OR AGAINST MASONRY PARTITIONS, PROVIDE A HEAVY COATING OF ASPHALTIC ENAMEL ON THE COPPER PIPING AND 15# ASPHALT SATURATED FELT BETWEEN THE PIPING AND THE MASONRY PARTITION.
9. PERFORM A PRESSURE TEST ON ALL WATER PIPING. FILL PIPING WITH POTABLE WATER, CAP AND SUBJECT PIPING TO A STATIC WATER PRESSURE OF 50 PSIG ABOVE OPERATING PRESSURE, WITHOUT EXCEEDING PRESSURE RATING OF PIPING SYSTEM MATERIALS OR PRESSURIZE PIPING WITH AIR TO AT LEAST ONE-HUNDRED (100) PSI. ISOLATE TEST SOURCE AND ALLOW TO STAND FOR FOUR HOURS. LEAKS AND LOSS IN TEST PRESSURE CONSTITUTE DEFECTS THAT MUST BE REPAIRED. REPAIR LEAKS AND DEFECTS WITH NEW MATERIALS AND RETEST PIPING OR PORTION THEREOF UNTIL SATISFACTORY RESULTS ARE OBTAINED
10. STERILIZE THE DOMESTIC WATER SYSTEM IN PER THE AMERICAN WATER WORKS ASSOCIATION'S INSTRUCTIONSSPECIFICATIONS AND LOCAL HEALTH DEPARTMENT REGULATIONS.
11. SLOPE WATER PIPING FOR DRAINAGE WITH DRAIN VALVES INSTALLED AT LOW POINTS.
12. BALANCE THE DOMESTIC HOT WATER CIRCULATION SYSTEM TO THE PERFORMANCE SPECIFICATIONS INDICATED ON THE PLANS AND PROVIDE THE ENGINEER WITH THREE COPIES OF A COMPLETE TEST AND BALANCE REPORT. THE REPORT IS TO BE ISSUED A MINIMUM OF TWO WEEKS PRIOR TO PROJECT COMPLETION. THE TEST AND BALANCE REPORT WILL BE SUBJECT TO REVIEW AND APPROVAL BY THE ENGINEER. ANY ADDITIONAL TESTING, ADJUSTING AND BALANCING REQUIRED (AT ENGINEER'S REQUEST) AFTER REVIEW OF THE INITIAL REPORT SHALL BE PROVIDED AT NO ADDITIONAL COST. TEST AND BALANCE REPORT TO BE COMPLETED BY AN INDEPENDENT, CERTIFIED TEST AND BALANCE CONTRACTOR.
13. WATER METER SHALL BE TIED INTO BUILDING AUTOMATION SYSTEM. COORDINATE WITH THE CONTROLS CONTRACTOR.
    A. WATER METER AND REGISTER SHALL BE EQUAL TO APPROPRIATE NEPTUNE METER WITH NEPTUNE E-CODER REGISTER WITH THE POTTED CABLE. R900i REGISTER IS NOT COMPATIBLE SINCE IT DOES NOT FEATURE A CONNECTION WIRE.
    B. CONTROLS GATEWAY: METERS NOT HAVING DIRECT MODBUS COMMUNICATION SHALL BE INTEGRATED TO THE BUILDING MANAGEMENT SYSTEM (BMS) THROUGH A MODBUS GATEWAY EQUAL TO SCADAMETRICS ETHERMETER. THE GATEWAY DEVICE SHALL DIRECTLY INTERROGATE THE METER REGISTER AND SHALL CALCULATE AND RELAY THE FOLLOWING PARAMETERS TO THE BMS:
       a. TOTALIZED VOLUME
       b. INSTANTANEOUS FLOWRATE
    C. BUILDING WATER METERS
       a. MECHANICAL WATER METERS 1-1/2 INCHES AND BELOW SHALL BE POSITIVE DISPLACEMENT TYPE.
       b. MECHANICAL WATER METERS ABOVE 2 INCHES SHALL BE COMPOUND TYPE WATER METER WITH MATCHING STRAINER.

PLUMBING GENERAL NOTES

1. PLUMBING WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE NORTH CAROLINA STATE PLUMBING CODE AND THE NC STATE CONSTRUCTION OFFICE REQUIREMENTS.
2. SCOPE: PROVIDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED FOR THE COMPLETION AND OPERATION OF ALL PLUMBING SYSTEMS IN ACCORDANCE WITH ALL APPLICABLE CODES.
3. WARRANT THE SYSTEM LABOR, MATERIALS AND EQUIPMENT FOR THE TIME PERIOD SPECIFIED IN THE PROJECT MANUAL. IF NO WARRANTY SECTION IS PROVIDED, THEN WARRANT THE SYSTEM LABOR, MATERIAL AND EQUIPMENT FOR A MINIMUM OF ONE YEAR AFTER COMPLETION AND ACCEPTANCE. PRIOR TO TURNING THE COMPLETED SYSTEM OVER TO THE OWNER, REVIEW THE INSTALLATION WITH THE ARCHITECT / ENGINEER AND REPLACE OR REPAIR ANY DEFECTIVE WORKMANSHIP, EQUIPMENT AND MATERIALS AT NO ADDITIONAL COST TO THE OWNER.
4. COORDINATE ALL PLUMBING PIPING LOCATIONS, ROUGH-IN LOCATIONS AND EQUIPMENT LOCATIONS WITH OTHER TRADES TO AVOID CONFLICTS AND INTERFERENCES. FINAL PIPING AND EQUIPMENT LOCATIONS SHALL BE A CODE COMPLIANT INSTALLATION FOR ALL TRADES.
5. FIELD VERIFY PROPER OPERATION OF EXISTING SYSTEMS BEFORE STARTING CONSTRUCTION. NOTIFY THE ARCHITECT / ENGINEER OF RECORD OF ANY PROBLEMS OR DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND EXISTING CONDITIONS AND/OR ANY POTENTIAL PROBLEMS OBSERVED BEFORE CONTINUING WORK IN THE EFFECTED AREAS.
6. PLUMBING PLANS SHALL NOT BE SCALED. REFERENCE THE ARCHITECTURAL PLANS FOR DIMENSIONS OF ALL LOCATIONS OF PLUMBING FIXTURES, FLOOR DRAINS, COLUMNS, WALLS, DOORS, ETC.
7. WHERE DISCREPANCIES ARE FOUND IN THE DRAWINGS AND SPECIFICATIONS THE MORE STRINGENT SHALL APPLY. CONTACT ENGINEER FOR CLARIFICATION.
8. ALL PIPING SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA.
9. ALL VALVES, BACKFLOW PREVENTERS, BOOSTER PUMPS, FIXTURES, FAUCETS, ETC. SERVING THE DOMESTIC WATER SYSTEM SHALL MEET LEAD FREE STANDARDS PER ANSI/NSF 372 AND NSF 61, ANNEX G.
10. PROVIDE COMPLETE PLUMBING FIXTURES AND EQUIPMENT. INCLUDE SUPPLIES, STOPS, VALVES, FAUCETS, DRAINS, TRAPS, TAIL PIECES, ESCUTCHEONS, ETC. AND INSTALL PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE MANUFACTURER'S RECOMMENDED CLEARANCE, BUT NO LESS THAN 30" X 30".
11. CUT WALLS, FLOORS AND CEILINGS AS REQUIRED FOR INSTALLATION OF PLUMBING WORK. ALL CUTTING SHALL BE HELD TO A MINIMUM. PATCH AND FINISH SURFACES TO MATCH ADJOINING SURFACES.
12. PIPING AND SPECIALTIES SHALL BE LOCATED CONCEALED IN WALLS, PARTITIONS OR ABOVE CEILINGS UNLESS NOTED OTHERWISE. PIPING IN EXPOSED AREAS SHALL BE RUN TIGHT TO UNDERSIDE OF STRUCTURE.
13. PROVIDE ACCESS DOORS FOR ALL SPECIALTIES, VALVES, WATER HAMMER ARRESTORS, TRAP PRIMERS, ETC., CONCEALED BEHIND WALLS OR CEILINGS THAT REQUIRE MAINTENANCE ACCESS.
14. DO NOT INSTALL PIPING IN AREAS SUBJECT TO FREEZING TEMPERATURES. INSTALL PIPING SHOWN IN EXTERIOR WALLS ON THE CONDITIONED SIDE OF THE WALL INSULATION.
15. PIPING, VENTS, ETC. EXTENDING THROUGH EXTERIOR WALLS AND/OR THE ROOF SHALL BE FLASHED AND COUNTER FLASHED IN A WATERPROOF MANNER. COORDINATE FLASHING WITH THE GENERAL CONTRACTOR.
16. PROVIDE A CHROME FINISH FOR ALL EXPOSED PIPING IN REST ROOMS AND OTHER FINISHED AREAS.
17. PROVIDE NON-CONDUCTING DIELECTRIC UNIONS WHENEVER CONNECTING DISSIMILAR METALS.
18. ATTACH HANGERS TO STRUCTURE, HANGERS SHALL NOT ATTACH TO THE DECK.
19. PROVIDE MANUFACTURERS RECOMMENDED CLEARANCES AROUND ALL EQUIPMENT FOR MAINTENANCE.
20. VALVES AND OTHER PIPING ACCESSORIES REQUIRING ACCESS SHALL BE INSTALLED IN ACCESSIBLE LOCATION NO MORE THAN 18" ABOVE THE CEILING, PROVIDE OFFSETS IN PIPING AS NEEDED.
21. PLUMBING SYSTEMS INCLUDE, BUT ARE NOT LIMITED TO: PLUMBING FIXTURES AND EQUIPMENT, FIRE STOPPING, SEISMIC BRACING, PIPE IDENTIFICATION, DOMESTIC WATER SYSTEM, SANITARY WASTE AND VENT SYSTEM.

FIRE STOPPING:

1. FIRE STOP ALL PENETRATIONS, BY PIPING OR CONDUITS, OF FIRE RATED WALLS, FLOORS AND PARTITIONS. PROVIDE A DEVICE(S) OR SYSTEM(S) WHICH HAS BEEN TESTED AND LISTED AS COMPLYING WITH ASTM E-814 AND INSTALL IN ACCORDANCE WITH THE CONDITIONS OF THEIR LISTING. PROVIDE A DEVICE(S) OR SYSTEM(S) WITH AN 'F' RATING EQUAL TO THE RATING OF THE ASSEMBLY BEING PENETRATED. REFER TO ARCHITECTURAL PLANS FOR WALL AND FLOOR TYPES.

PIPE IDENTIFICATION:

1. PIPE IDENTIFICATION SHALL MATCH THE FACILITY'S EXISTING STANDARD. IF NO STANDARD EXISTS, THEN THE PIPE IDENTIFICATION SHALL BE IN ACCORDANCE WITH ANSI A13.1.
2. PROVIDE PIPING LABELS FOR ALL PLUMBING PIPING. PIPING LABELS SHALL BE ACRYLIC FACED, WRAP-AROUND TYPE. EACH LABEL SHALL INDICATE THE PIPING CONTENTS, DIRECTION OF FLOW AND SHALL BEAR THE MANUFACTURER'S STANDARD COLOR FOR THE SERVICE INDICATED.

SUBMITTALS:

1. PROVIDE SUBMITTALS BEARING THE CONTRACTORS REVIEW STAMP FOR ALL PLUMBING FIXTURES, PIPING, EQUIPMENT AND ACCESSORIES IN ELECTRONIC FORMAT (PDF).
2. NO PRIVATE LABELED MATERIALS WILL BE ACCEPTED AS EQUALS TO PRODUCTS SPECIFIED HEREIN.
3. THE PLUMBING CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH SUBSTITUTIONS TO SPECIFIED PLUMBING FIXTURES AND EQUIPMENT INCLUDING BUT NOT LIMITED TO; PROVIDING MAINTENANCE ACCESS CLEARANCE, PIPING, ELECTRICAL, REPLACEMENT OF OTHER SYSTEM COMPONENTS, BUILDING ALTERATIONS, ETC. AND ANY MODIFICATIONS TO ASSOCIATED MECHANICAL, ELECTRICAL OR PLUMBING SYSTEMS REQUIRED BY THE EQUIPMENTS INSTALLATION INSTRUCTIONS. ALL COSTS ASSOCIATED WITH SUBSTITUTIONS SHALL BE INCLUDED IN THE ORIGINAL BASE BID.

PLUMBING SHEET INDEX

SHEET NUMBER	SHEET NAME
P001	PLUMBING LEGEND, INDEX AND NOTES
P002	PLUMBING SCHEDULES
P101	FIRST FLOOR DRAINAGE PIPING PLAN
P201	FIRST FLOOR SUPPLY PIPING PLAN
P511	PLUMBING DETAILS

PLUMBING LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
	CW	COLD WATER PIPING
	HW	HOT WATER PIPING
	HWR	HOT WATER RETURN PIPING
	W	SANITARY WASTE PIPING
	V	SANITARY VENT PIPING
D	D	DRAIN PIPING
	-	PIPING ELBOW DOWN
	-	PIPING ELBOW UP
	-	PIPING CONTINUES
	-	BALL VALVE
	-	CHECK VALVE
	-	BALANCING VALVE
	-	GAS VALVE
	PRV	PRESSURE REDUCING VALVE
	-	SOLENOID VALVE
	RPZ	REDUCED PRESSURE BACKFLOW PREVENTER ASSEMBLY
	-	IN-LINE PUMP
	-	PIPING REDUCER
	FCO	FLOOR CLEANOUT
	YCO	YARD CLEANOUT
	WCO	WALL CLEANOUT
	CO	PLUG CLEANOUT
	FD	FLOOR DRAIN
	FS	FLOOR SINK
	RD	ROOF DRAIN
	HB	HOSE BIBB / WALL HYDRANT
	SA-#	SHOCK ARRESTOR - SUFFIX INDICATES PDI SIZE

ADDITIONAL ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR	MFG	MANUFACTURER
AFG	ABOVE FINISHED GRADE	PSI	POUNDS PER SQUARE INCH
AVTR	ACID VENT THRU ROOF	T&P	TEMPERATURE AND PRESSURE
BAS	BUILDING AUTOMATION SYSTEM	TW	TEMPERED WATER
BFF	BELOW FINISHED FLOOR	TYP	TYPICAL
CFH	CUBIC FEET PER HOUR	UG	UNDERGROUND
CLG	CEILING	VTR	VENT THRU ROOF
CONT	CONTINUATION	VR	VANDAL RESISTANT
DN	DOWN	WC	WATER COLUMN
GPF	GALLONS PER FLUSH		
GPM	GALLONS PER MINUTE	EC	ELECTRICAL CONTRACTOR
HP	HORSE POWER	GC	GENERAL CONTRACTOR
INV	INVERT ELEVATION	MC	MECHANICAL CONTRACTOR
KW	KILOWATT	PC	PLUMBING CONTRACTOR
MBH	1,000 BRITISH THERMAL UNIT / HOUR		

2018 NORTH CAROLINA ENERGY CONSERVATION CODE

COMMERCIAL ENERGY EFFICIENCY - PLUMBING SUMMARY

C401 METHOD OF COMPLIANCE

- [x] 2018 NCECC CHAPTER 4
- [ ] ASHRAE 90.1-2013 PRESCRIPTIVE
- [ ] ASHRAE 90.1-2013 PERFORMANCE
- [ ] N/A (EXISTING LIGHTING, HVAC, AND DOM. WATER HEATING SYSTEMS TO REMAIN)
- [ ] COMCHECK PROVIDED (2018 NCECC)
- [ ] COMCHECK PROVIDED (90.1-2013)
- [ ] ENERGY MODELING DATA PROVIDED

C406 ADDITIONAL EFFICIENCY PACKAGE OPTIONS

- [ ] C406.2 EFFICIENT MECH EQUIPMENT
- [x] C406.3 REDUCED LTG DENSITY
- [ ] C406.4 ENHANCED LTG CONTROLS
- [ ] C406.5 ON-SITE RENEWABLE ENERGY
- [ ] C406.6 DEDICATED OA SYSTEM
- [ ] C406.7 SERVICE WATER HEATING

TABLE C404.2 - MINIMUM PERFORMANCE OF WATER HEATING EQUIPMENT[c]

EQUIPMENT TYPE	SIZE CATEGORY (INPUT)	SUB CATEGORY OR RATING CONDITION	PERFORMANCE REQUIRED [a,b]	REQ'D EFFICIENCY	SPECIFIED EQPM
WATER HEATER ELECTRIC	≤ 12 kW	RESISTANCE	0.97-0.00132V, EF	*0.81*	*0.90*

a. ENERGY FACTOR (EF) AND THERMAL EFFICIENCY (E_t) ARE MINIMUM REQUIREMENTS. IN THE EF EQUATION V IS THE VOLUME IN GALLONS.
b. STANDBY LOSS (SL) IS THE MAXIMUM BTU/H BASED ON A NOMINAL 70° TEMPERATURE DIFFERENCE BETWEEN STORED WATER AND AMBIENT REQUIREMENTS. IN THE SL EQUATION Q IS THE NAMEPLATE INPUT RATE IN BTU/H. IN THE EQUATIONS FOR ELECTRIC WATER HEATERS, V IS THE RATED VOLUME IN GALLONS AND V_m IS THE MEASURED VOLUME IN GALLONS. IN THE SL EQUATION FOR GAS WATER HEATERS AND BOILERS, V IS THE RATED VOLUME IN GALLONS.
c. REFER TO WATER HEATER SCHEDULES FOR SPECIFIED WATER HEATING EQUIPMENT TYPES, CAPACITIES (STORAGE VOLUME) AND ENERGY INPUTS (ELECTRIC AND/OR GAS)

PLUMBING LOAD SUMMARY

LOAD	FIXTURE UNITS	FLOW
SANITARY WASTE	85 DFU	-
DOMESTIC WATER	145.5 SFU	78.1 GPM

FLOW TEST DATA

DATE / TIME	LOCATION	PRESSURE STATIC (PSI)	PRESSURE RESIDUAL (PSI)	FLOW (GPM)	FLOW AT 20 PSI (GPM)
02-25-2020 7:00 AM	UNCW CAMPUS - RANDALL DRIVE - ADJACENT TO FRIDAY HALL BLDG., WILMINGTON, NC	47	40	995	2025

FLOW TEST PERFORMED BY: BFPE INTERNATIONAL; WITNESSED BY DAN SUITS WITH UNCW

FLOW TEST NOTES:

1. THE CONTRACTOR IS SHALL OBTAIN A NEW FIRE FLOW TEST ON WHICH TO BASE THEIR CALCULATIONS.
2. THE FLOW TEST USED FOR THE WORKING PLAN DESIGN SHOULD BE PERFORMED AS INDICATED IN NFPA 291 WHICH USES TWO HYDRANTS; A PRESSURE HYDRANT AND A FLOW HYDRANT. THE TWO HYDRANTS SHALL BE AS CLOSE TO THE POINT OF CONNECTION AS POSSIBLE. PROVIDE A COPY OF THE FLOW TEST AND TEST HYDRANT LOCATIONS WITH THE SUBMITTED SPRINKLER SHOP DRAWING PACKAGE.

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Warren C. Tarkington
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REGISTERED PROFESSIONAL ENGINEER

9/14/2020

PROJECT NORTH

PLAN NORTH

KEY PLAN

Construction Documents

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER:
20-21673-01A

CODE:
41928

ITEM:
302

SGA | NW DESIGN PROJECT NUMBER:
19-202-01

DESIGNED BY: GCF/LS
DRAWN BY: GCF/LS
CHECKED BY: GCF

ISSUE DATE:
September 14, 2020

PLUMBING LEGEND, INDEX AND NOTES

P001

SCALE: 12" = 1'-0"

9/22/2020 12:18:23 PM

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PLUMBING SPECIALTIES SCHEDULE

SYMBOL	DESCRIPTION	CONNECTION SIZE				SPECIFICATION	REMARKS
		W	V	CW	HW		
WB1	INDIRECT DRAIN CONNECTION BOX; 14"x 9"x 3.5", 20 GAUGE STEEL WITH WHITE POWDER COATING, RECESSED IN WALL	2"	1-1/2"	-	-	FIXTURE: GUY GRAY T200LV WITH KNOCK-OUTS IN TOP OF BOX 2" DRAIN OUTLET WITH 2" DEEP SEAL P-TRAP	PROVIDE 2" TRAP GUARD EQUAL TO RECTORSEAL "SURE-SEAL". SEE S/P511
WB2	WATER CONNECTION BOX; 7"X 7"X 3.5", 20 GAUGE STEEL WITH WHITE POWDER COATING, RECESSED IN WALL	-	-	1/2"	-	FIXTURE: GUY GRAY MIB1AB STOP: QUARTER TURN WITH SHOCK ARRESTOR SUPPLY: 1/4" FLEXIBLE HOSE	PROVIDE INLINE DOUBLE CHECK VALVE WILKINS SERIES 700
CS-x	BALANCING VALVE, THERMOSTATIC, AUTOMATIC, SUFFIX INDICATES PIPE SIZE, SEE FLOOR PLANS	-	-	-	**	EQUIPMENT: CIRCUIT SOLVER CS SERIES, SIZES 1/2" THRU 2", NSF 61 CERTIFIED.	PROVIDE 105°F MODEL
SA-x	SHOCK ARRESTOR, SUFFIX INDICATES PDI SIZE	-	-	x	-	EQUIPMENT: SIOUX CHIEF 650 SERIES, SIZES 1/2" THRU 2", NSF 61 CERTIFIED.	SEE SHOCK ARRESTOR TABLE THIS SHEET
HB1	HOSE BIBB, INTERIOR, EXPOSED, STAINLESS STEEL FACE PLATE, ANTI-SIPHON	-	-	3/4"	-	EQUIPMENT: ZURN Z1333-C-34EL, PROVIDE VACUUM BREAKER AND METAL LOOSE KEY FOR EACH HOSE BIBB	MOUNT 18" AFF
HB2	HOSE BIBB, EXTERIOR, EXPOSED, STAINLESS STEEL FACE PLATE, FREEZELESS, ANTI-SIPHON	-	-	3/4"	-	EQUIPMENT: ZURN Z1310-34EL PROVIDE VACUUM BREAKER AND METAL LOOSE KEY FOR EACH HOSE BIBB	MOUNT 18" AFF
HB3	HOSE BIBB, INTERIOR, EXPOSED, AUTOMATIC DRAINING, ANTI-SIPHON, VACUUM BREAKER	-	-	3/4"	-	EQUIPMENT: WOODFORD 24, PROVIDE METAL LOOSE KEY FOR EACH HOSE BIBB	MOUNT 18" AFF
WCO	WALL CLEANOUT, CAST IRON BODY, STAINLESS STEEL WALL PLATE	**	-	-	-	CLEANOUT: ZURN Z-1446-BP, BRONZE PLUG, CLEANOUT SIZE SHALL MATCH PIPE SIZE	GAS / WATER TIGHT
FCO	FLOOR CLEANOUT, CAST IRON BODY, NICKEL BRONZE TOP, ADJUSTABLE	**	-	-	-	CLEANOUT: ZURN ZN-1400-BP, BRONZE PLUG CLEANOUT SIZE SHALL MATCH PIPE SIZE	GAS / WATER TIGHT, INSTALL TOP FLUSH WITH FINISHED FLOOR
YCO	YARD CLEANOUT, CAST IRON BODY, NICKEL BRONZE TOP, ADJUSTABLE, INSTALLED IN 18"x18"x6" CONCRETE PAD	**	-	-	-	CLEANOUT: ZURN ZN-1400-BP, BRONZE PLUG INSTALL IN 18"x 18"x 6" DEEP CONCRETE PAD	GAS / WATER TIGHT, INSTALL TOP FLUSH WITH FINISHED GRADE
FD1	FLOOR DRAIN, CAST IRON BODY, SQUARE NICKEL BRONZE GRATE, ADJUSTABLE	**	-	-	-	DRAIN: ZURN ZN-415-S, 6"x6" SQUARE GRATE P-TRAP: DEEP SEAL.	INSTALL TOP FLUSH WITH FINISHED FLOOR. SEE NOTE 1 BELOW.
FD2	FLOOR DRAIN, CAST IRON BODY AND TOP, SEDIMENT BUCKET	**	-	-	-	DRAIN: ZURN ZN-556-Y, 8" DIAMETER, SLOTTED CAST IRON STRAINER P-TRAP: DEEP SEAL.	INSTALL TOP OF DRAIN LIP FLUSH WITH FLOOR. SEE NOTES 1 AND 2 BELOW.
FS1	FLOOR SINK, 12"x12"x6", STAINLESS STEEL BODY AND HEEL-PROOF GRATE,	**	-	-	-	DRAIN: ZURN Z-1750-HP-KC-3, 3/4 GRATE STRAINER: 12"x12" STAINLESS STEEL (TYPE 304), 3/4 GRATE P-TRAP: DEEP SEAL	INSTALL TOP OF DRAIN LIP FLUSH WITH FLOOR. SEE NOTES 1 AND 2 BELOW.
TP1	TRAP PRIMER, PROVIDE DISTRIBUTION UNIT WHEN SERVING MORE THAN ONE DRAIN	-	-	1/2"	-	EQUIPMENT: PPP PRODUCTS MODEL P-1 PROVIDE 1/2" COPPER PIPING SLOPED CONTINUOUSLY TO DRAIN(S).	PROVIDE ACCESS DOOR FOR CONCEALED INSTALLATIONS.

NOTES:
1. PROVIDE WATERLESS INLINE TRAP GUARD FOR EACH FLOOR DRAIN CONFORMING TO ASSE 1072 AND EQUAL TO RECOTORSEAL"SURE-SEAL" MODEL SS3009V. INSTALL TRAP GUARDS IN THE OUTLET OF THE FLOOR DRAIN BODY (NOT IN THE STRAINER).
2. DO NOT INSTALL INTERIOR DOME STRAINER IN FLOOR SINK AT WAVE TANK IN FACULTY OPEN LAB ROOM 1131.

** MATCH PIPE SIZE SHOWN ON PLANS, SEE PLANS.

APPROVED EQUALS:	PRODUCT TYPE:	ACCEPTED MANUFACTURERS:
THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE MODEL WHICH MOST CLOSELY MATCHES THE SPECIFIED PRODUCT. PROVIDE PRODUCTS MADE BY THE MANUFACTURER'S LISTED.	WATER SPECIALTIES HOSE BIBBS DRAINS BACKFLOW PREVENTER	SIOUX CHIEF, PPP INC., ZURN, WATTS ZURN, WOODFORD, ZURN, J.R. SMITH ZURN, J.R. SMITH, WADE WILKINS, WATTS, APOLLO

SHOCK ARRESTOR TABLE

DRAWING SYMBOL	FIXTURE UNITS	P.D.I. WH201 DESIGNATION	ARRESTOR SIZE	REMARKS
SA-A	1 - 11	A	1/2"	INSTALL SHOCK ARRESTORS PER THE PLUMBING DRAINAGE INSTITUTE (P.D.I.) GUIDELINES. ACCEPTED MANUFACTURERS: SIOUX CHIEF, WATTS, PPP INC., ZURN
SA-B	12 - 32	B	3/4"	
SA-C	33 - 60	C	1"	
SA-D	61 - 113	D	1-1/4"	
SA-E	114 - 154	E	1-1/2"	

PLUMBING EQUIPMENT SCHEDULE

SYM.	DESCRIPTION	CONN. SIZE		SPECIFICATION	REMARKS
		INLET	OUT		
WH1	WATER HEATER, COMMERCIAL 119 GALLON TANK, ELECTRIC FIRED	**	**	EQUIPMENT: A.O. SMITH DRE-120-9 ELEC: 9 KW, 208 V, 3 PHASE RECOVERY: 46 GPH AT 80° RISE.	SET OUTLET TEMPERATURE TO 140°F SEE NOTE 1
ET1	THERMAL EXPANSION TANK 2 GALLON CAPACITY	3/4"	-	EQUIPMENT: AMTROL ST-12-C	-
RCP1	HWR PUMP, ECM, STAINLES STEEL BODY	3/4"	3/4"	PUMP: B&G ECOCIRC 19-16 ELEC: 4-60 WATTS, 120V RATED FOR 2 GPM AT 8 FT HEAD	SEE NOTE 2
MV1	THERMOSTATIC HI-LO MIXING VALVE, LEAD-FREE ASSE 1017 CERTIFIED	1-1/2"	1-1/2"	VALVE: LEONARD TM-420B-LF-DT 23 GPM AT 16.25 PSI DROP	SET OUTLET TEMPERATURE TO 120 F.

NOTES:
1. COMMERCIAL ELECTRIC FIRED WATER HEATER SHALL HAVE AT LEAST A 90% THERMAL EFFICIENCY RATING, A 5 YEAR WARRANTY, ASME 150 PSI WORKING PRESSURE, INLET AND OUTLET TEMPERATURE GAUGE, TEMP GAUGE, 150 PSI T&P RELIEF VALVE, OPERATING LIMIT AND HIGH LIMIT CONTROLS. WATER HEATER SHALL EXCEED ASHRAE 90.1 REQUIREMENTS.
2. INTERLOCK WITH FULLY ADJUSTABLE AQUASTAT AND 7-DAY, 24 HOUR PROGRAMMIBLE TIMER.

** MATCH PIPE SIZE SHOWN ON PLANS, SEE PLANS.

APPROVED EQUALS:	PRODUCT TYPE:	ACCEPTED MANUFACTURERS:
THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE MODEL WHICH MOST CLOSELY MATCHES THE SPECIFIED PRODUCT. PROVIDE PRODUCTS MADE BY THE MANUFACTURER'S LISTED.	WATER HEATERS EXPANSION TANKS PUMPS MIXING VALVES	A.O. SMITH, LOCHINVAR, BRADFORD-WHITE AMTROL, A.O. SMITH, WATTS, WESSLES B&G, TACO, ARMSTRONG LEONARD, LAWLER, POWERS

PLUMBING FIXTURE SCHEDULE

SYMBOL	DESCRIPTION	CONNECTION SIZE				SPECIFICATION	REMARKS
		W	V	CW	HW		
P1	TOILET ELONGATED, WHITE VITREOUS CHINA, CARRIER MOUNTED (1.28 GPF) MANUALLY OPERATED FLUSH VALVE	4"	2"	1-1/4"	-	FIXTURE: KOHLER K-4325 "KINGSTON" FLUSH VALVE: MOEN 8310M128 SEAT: CHURCH 9500CT (WHITE) CARRIER: ZURN Z-1203 SERIES	15" RIM HEIGHT.
P1A	TOILET, A.D.A. COMPLIANT ELONGATED, WHITE VITREOUS CHINA, CARRIER MOUNTED (1.28 GPF) MANUALLY OPERATED FLUSH VALVE	4"	2"	1-1/4"	-	FIXTURE: KOHLER K-4325 "KINGSTON" FLUSH VALVE: MOEN 8310M128 SEAT: CHURCH 9500CT (WHITE) CARRIER: ZURN Z-1203 SERIES	17"-19" RIM HEIGHT. PROVIDE LEVER ON WIDE SIDE OF STALL.
P2	URINAL WHITE VITREOUS CHINA, CARRIER MOUNTED, (0.125 GPF) MANUALLY OPERATED FLUSH VALVE	2"	2"	3/4"	-	FIXTURE: KOHLER K-4991-ETSS MATERIAL / COLOR: VITREOUS CHINA, WHITE FLUSH VALVE: MOEN 8312M0125 CARRIER: ZURN FLOOR MOUNTED URINAL CARRIER	FIXTURE LIP HEIGHT 24" AFF. SEE NOTE 1 BELOW
P2A	URINAL, A.D.A. COMPLIANT WHITE VITREOUS CHINA, CARRIER MOUNTED, (0.125 GPF) MANUALLY OPERATED FLUSH VALVE	2"	2"	3/4"	-	FIXTURE: KOHLER K-4991-ETSS MATERIAL / COLOR: VITREOUS CHINA, WHITE FLUSH VALVE: MOEN 8312M0125 CARRIER: ZURN FLOOR MOUNTED URINAL CARRIER	FIXTURE LIP HEIGHT 17" AFF. SEE NOTE 1 BELOW
P3	LAVATORY, A.D.A. COMPLIANT, 20"x17" OVAL COUNTER MOUNTED, WHITE VITREOUS CHINA, 4" CENTER FAUCET HOLES, 0.5 GPM SINGLE HANDLE FAUCET	2"	1-1/2"	1/2"	1/2"	FIXTURE: KOHLER K-2196-4 FAUCET: MOEN 8439F05, 0.5 GPM GRID DRAIN: MCGUIRE 155A GRID STRAINER P-TRAP: MCGUIRE 8902 (1-1/4"x1-1/2", 17 GA.) SUPPLIES/STOPS: MCGUIRE LF175	SEE NOTES 2 & 4 BELOW
P3A	LAVATORY, A.D.A. COMPLIANT, 20"x18" CARRIER MOUNTED, WHITE VITREOUS CHINA, 4" CENTER FAUCET HOLES, 0.5 GPM SINGLE HANDLE FAUCET	2"	1-1/2"	1/2"	1/2"	FIXTURE: KOHLER K-2032 FAUCET: MOEN 8439F05, 0.5 GPM GRID DRAIN: MCGUIRE 155A GRID STRAINER P-TRAP: MCGUIRE 8902 (1-1/4"x1-1/2", 17 GA.) SUPPLIES/STOPS: MCGUIRE LF175 CARRIER: ZURN Z-1231	RIM HEIGHT 34"AFF. SEE NOTES 2 & 4 BELOW
P4	WATER COOLER & BOTTLE FILLER, A.D.A. COMPLIANT, STAINLESS STEEL FINISH, BI-LEVEL DOUBLE BOWL, VANDAL RESISTANT, WALL MOUNTED, INTEGRAL WATER FILTER, SENSOR OPERATED BOTTLE FILLER WITH AUTO SHUT-OFF.	2"	1-1/2"	1/2"	-	FIXTURE: ELKAY EZSTL8WSLK, ELEC: 370 WATT, 120 VOLT, SINGLE PHASE P-TRAP: MCGUIRE 8902 (1-1/4"x1-1/2", 17 GA.) SUPPLY/STOP: MCGUIRE LF175	LOWER BUBBLER HEIGHT 34" AFF. SEE NOTE 3 BELOW
P5	1-COMP. STAINLESS STEEL SINK, A.D.A. COMPLIANT, 19"x21"x6.5" (14"x18"BOWL), 3-HOLE PUNCH, COUNTER MOUNTED, SELF RIMMING, GOOSENECK FAUCET, WRIST BLADE HANDLES, (1.2 GPM) LAMINAR FLOW OUTLET	2"	1-1/2"	1/2"	1/2"	FIXTURE: JUST SL-ADA-1921-A-GR DRAIN: JUST J-35, BASKET STRAINER FAUCET: MOEN 8248 (1.2 GPM) P-TRAP: MCGUIRE 8912 (1-1/2"x1-1/2", 17 GA.) SUPPLY/STOP: MCGUIRE LF175-LK	SEE NOTE 4 BELOW
P5A	1-COMP. STAINLESS STEEL SINK, A.D.A. COMPLIANT, 19"x21"x6.5" (14"x18"BOWL), 4-HOLE PUNCH, COUNTER MOUNTED, SELF RIMMING, KITCHEN FAUCET, (1.5 GPM) OUTLET WITH HAND SPRAY	2"	1-1/2"	1/2"	1/2"	FIXTURE: JUST SL-ADA-1921-A-GR DRAIN: JUST J-35, BASKET STRAINER FAUCET: MOEN 8707 (1.5 GPM) P-TRAP: MCGUIRE 8912 (1-1/2"x1-1/2", 17 GA.) SUPPLY/STOP: MCGUIRE LF175-LK	SEE NOTE 4 BELOW
P5B	2-COMP. CUSTOM STAINLESS STEEL UTILITY SINK, 60"x30" (21"x26.5"x12" BOWLS), 2-HOLE PUNCH, WALL MOUNTED FAUCET WITH SPRAY VALVE	2"	1-1/2"	1/2"	1/2"	FIXTURE: ELKAY LK50-9504A DRAIN: (2)ELKAY LKDD, DEEP STRAINER BASKET FAUCET: T&S BRASS B-0133-A12-B08C P-TRAP: MCGUIRE 8912 (1-1/2"x1-1/2", 17 GA.) SUPPLY/STOP: MCGUIRE LF175-LK	BACK-SPLASH MOUNTED FAUCET WITH SWING SPOUT AND SPRAYER
P6	MOP SINK, 32"x 32"x 12" TERRAZZO BASIN, 6" DROP FRONT WITH STAINLESS STEEL THRESHOLD CAP, HIGH STAINLESS STEEL WALL GUARDS, INDIVIDUAL SERVICE FAUCET FOR HOT WATER AND COLD WATER, HOSES, MOP HANGER BRACKET.	3"	2"	3/4"	3/4"	FIXTURE: FIAT TSB3001 DRAIN: FIAT 1453-BB FAUCET: CHICAGO MODEL 952 (2 TOTAL; ONE FOR HW AND ONE FOR CW) ACCESSORIES: FIAT MSG3232 SS WALL GUARDS ACCESSORIES: FIAT 832-AA HOSE & BRACKET ACCESSORIES: FIAT 889-CC MOP HANGER ACCESSORIES: FIAT E-88-AA BUMPERGUARDS P-TRAP: DEEP SEAL	PROVIDE CHECK VALVES ON HW AND CW SUPPLIES.
P7	EMERGENCY SHOWER AND EYE/FACE WASH, STAINLESS STEEL, BARRIER-FREE ACCESS, STAY-OPEN BALL VALVES	FD	-	1-1/4"	1-1/4"	FIXTURE: HAWS 8309WC MIXING VALVE: HAWS 9201E "AXION", SET TEMP TO 85 F	INSTALL PER ANSI Z358.1
P7A	EMERGENCY EYEWASH WITH DRENCH HOSE, DECK MOUNTED, THERMOSTATIC MIXING VALVE	-	-	1/2"	1/2"	FIXTURE: GUARDIAN G5022 MIXING VALVE: GUARDIAN G3600LF	INSTALL PER ANSI Z358.1

NOTES:
1. SEE ARCHITECTURAL PLANS FOR MOUNTING HEIGHT. PROVIDE A FLOOR MOUNTED PLATE STYLE CARRIER EQUAL TO ZURN Z1222-EZ (-SL) SERIES. WHEN CARRIER IS LOCATED BEHIND A BLOCK WALL, PROVIDE EXTENDED STUD LENGTHS TO COMPENSATE FOR THE BLOCK WALL THICKNESS.
2. SEE ARCHITECTURAL PLANS FOR MOUNTING HEIGHT. PROVIDE A FLOOR MOUNTED, ADJUSTABLE CONCEALED ARM CARRIER EQUAL TO ZURN Z1231-EZ (-SL) SERIES. WHEN CARRIER IS LOCATED BEHIND BLOCK WALL, PROVIDE EXTENDED CONCEALED ARM SLEEVES TO COMPENSATE FOR THE BLOCK WALL THICKNESS.
3. SEE ARCHITECTURAL PLANS FOR MOUNTING HEIGHT. PROVIDE A FLOOR MOUNTED PLATE STYLE CARRIER EQUAL TO ZURN Z1225-EZ (-SL) SERIES. WHEN CARRIER IS LOCATED BEHIND A BLOCK WALL, PROVIDE EXTENDED STUD LENGTHS TO COMPENSATE FOR THE BLOCK WALL THICKNESS.
4. PROVIDE PRE-MANUFACTURED A.D.A. COMPLIANT INSULATION KIT FOR EXPOSED P'TRAP AND SUPPLY TRIM UNDER SINK.
5. PROVIDE HEAVY DUTY CAST IRON CLOSET FLANGE WITH COMPRESSION SEAL AND TEST CAP EQUAL TO ZURN CF2980-CI4. OFFSET FLANGES ARE NOT ACCEPTABLE.

** MATCH PIPE SIZE SHOWN ON PLANS, SEE PLANS.

APPROVED EQUALS:	PRODUCT TYPE:	ACCEPTED MANUFACTURERS:
THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE MODEL WHICH MOST CLOSELY MATCHES THE SPECIFIED PRODUCT. PROVIDE PRODUCTS MADE BY THE MANUFACTURER'S LISTED.	VITREOUS CHINA FLUSH VALVES ENAMELED CAST IRON CARRIERS STAINLESS STEEL SINKS FAUCETS WATER COOLERS SUPPLIES, STOPS HOSE BIBBS UTILITY SINKS	KOHLER, AMERICAN STANDARD, TOTO MOEN, SLOAN, ZURN, DELANEY KOHLER, AMERICAN STANDARD, ZURN ZURN, J.R. SMITH, WADE ELKAY, JUST, ADVANCE TABCO MOEN, ZURN, CHICAGO, T&S BRASS ELKAY, HALSEY TAYLOR, HAWS ZURN, MCGUIRE, BRASSCRAFT ZURN, J.R. SMITH, WOODFORD FIAT, FLORESTONE, STERN WILLIAMS

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9/14/2020

PROJECT NORTH PLAN NORTH

KEY PLAN

Construction Documents

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER:
20-21673-01A

CODE:
41928

ITEM:
302

SGA | NW DESIGN PROJECT NUMBER:
19-202-01

DESIGNED BY: GCF/LS
DRAWN BY: GCF/LS
CHECKED BY: GCF

ISSUE DATE:
September 14, 2020

PLUMBING SCHEDULES

P002

SCALE: 12" = 1'-0"

9/22/2020 12:18:25 PM

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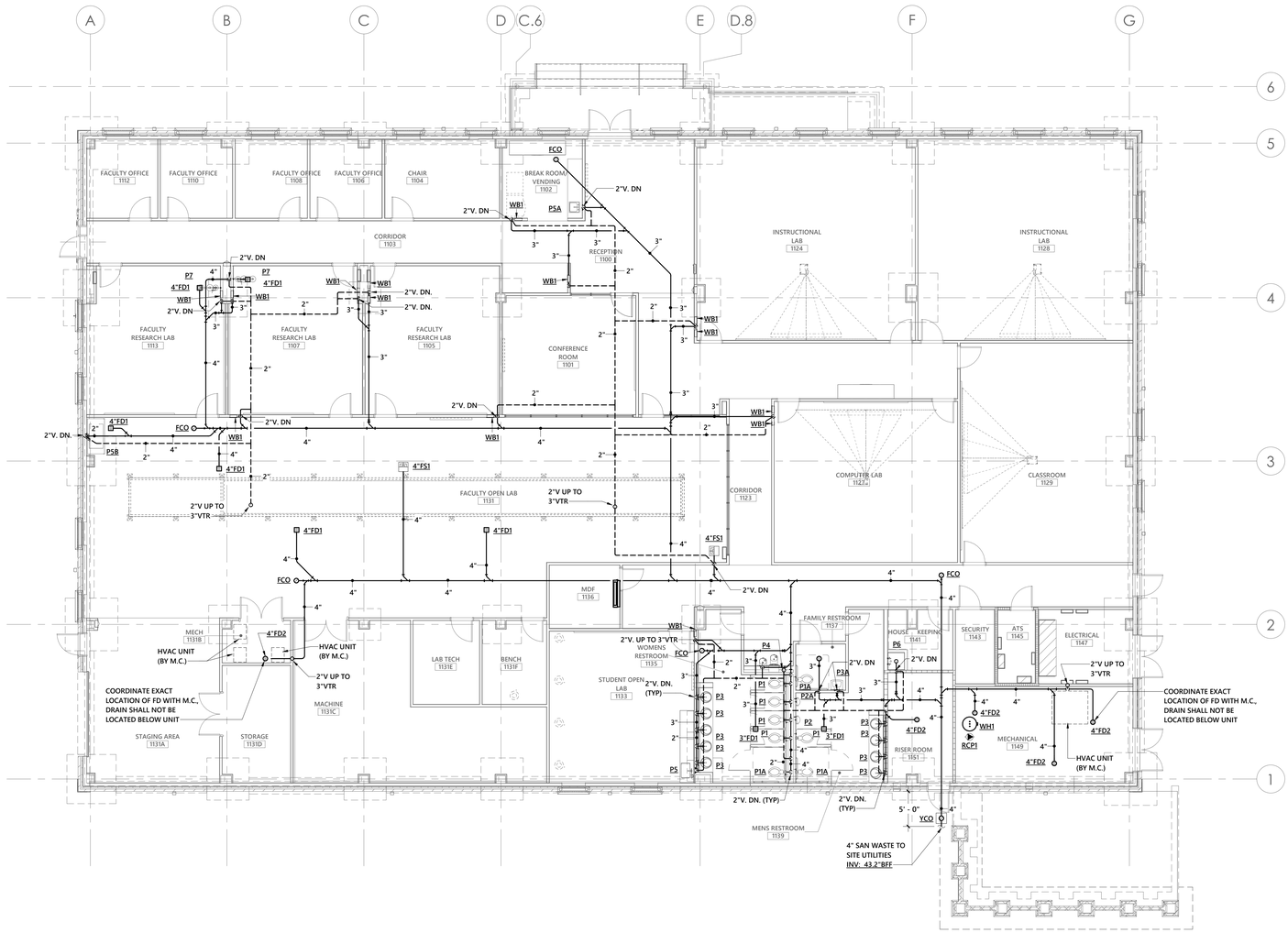

1 **FIRST FLOOR DRAINAGE PIPING PLAN**
1/8" = 1'-0"

1/8" = 1'-0"

8 0 8 16 24

SCALE IN FEET

RATED PARTITION LEGEND

- 1 HR RATED PARTITION
- 2 HR RATED PARTITION

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NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT
Marcus C. Tabor III
10 2603
SEAL

9/14/2020

PROJECT NORTH

PLAN NORTH

KEY PLAN

Construction Documents

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UNCW

University of North Carolina Wilmington

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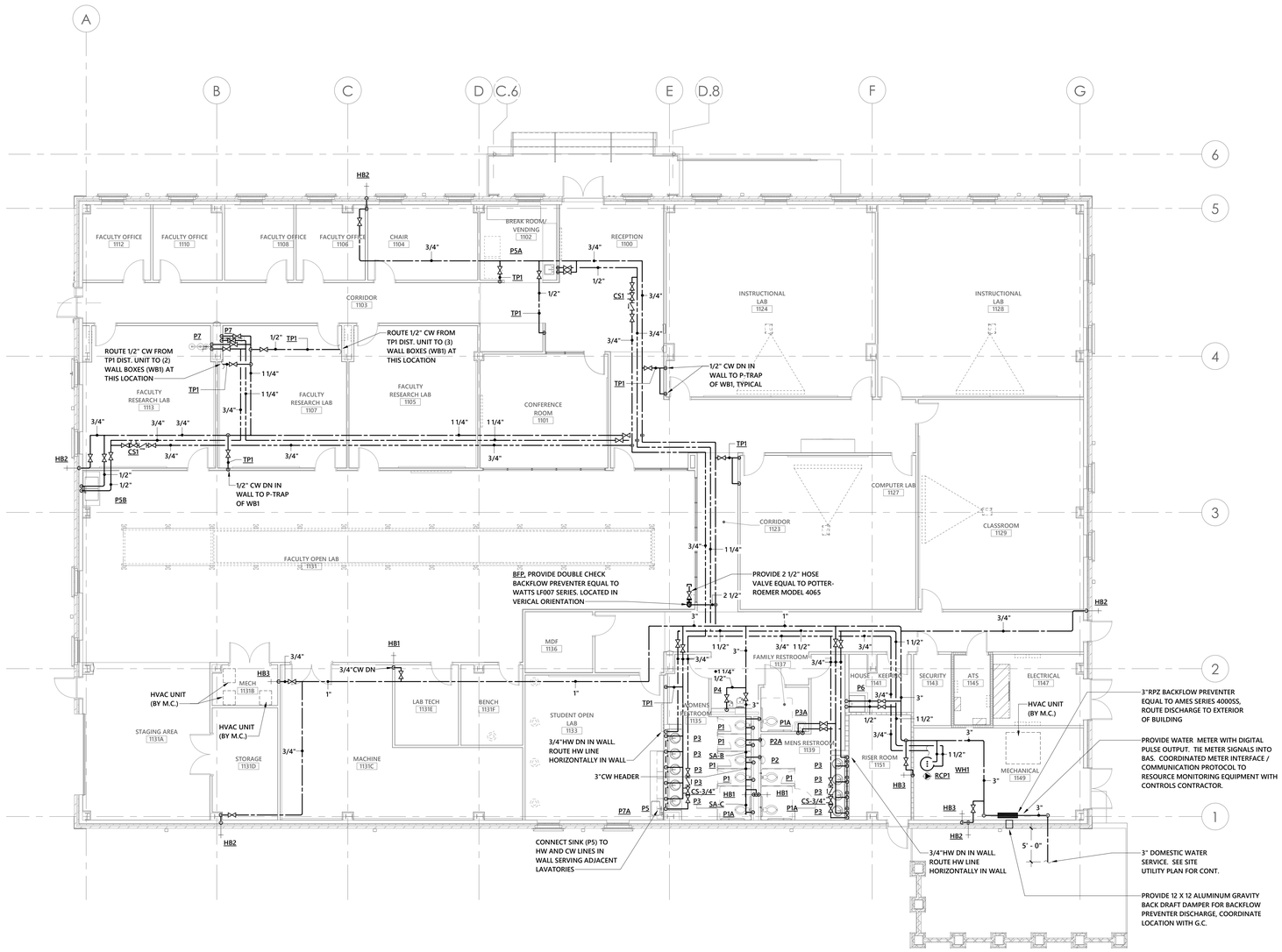
DRAWN BY: GCF/LS
CHECKED BY: GCF

ISSUE DATE:
September 14, 2020

FIRST FLOOR DRAINAGE PIPING PLAN

P101

SCALE: As indicated



2 FIRST FLOOR SUPPLY PIPING PLAN

1/8" = 1'-0"

1/8" = 1'-0"

8 0 8 16 24

SCALE IN FEET

RATED PARTITION LEGEND

- 1 HR RATED PARTITION
- 2 HR RATED PARTITION

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NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT
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PROJECT NORTH

PLAN NORTH

KEY PLAN

Construction Documents

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Coastal Engineering Building

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University of North Carolina Wilmington

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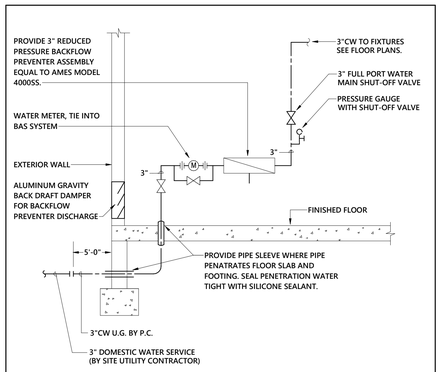
CHECKED BY: GCF

ISSUE DATE:
September 14, 2020

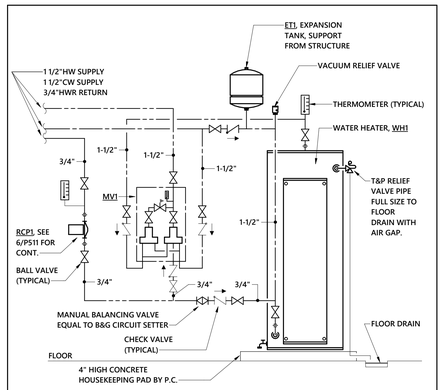
FIRST FLOOR SUPPLY PIPING PLAN

P201

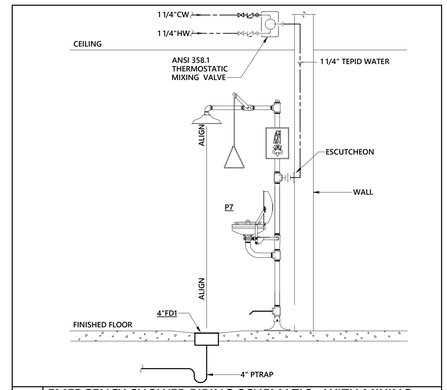
SCALE: As indicated



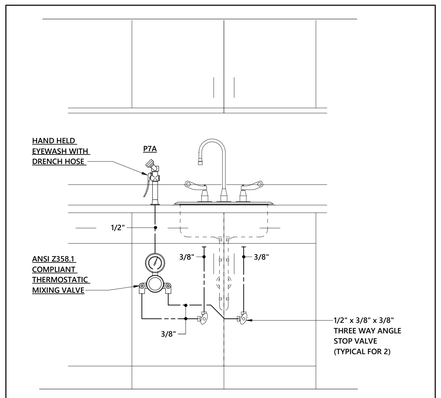
1 WATER SERVICE ENTRANCE SCHEMATIC W/BACKFLOW
NOT TO SCALE



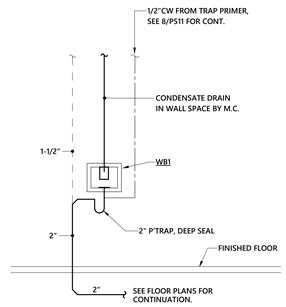
2 ELECTRIC WATER HEATER PIPING SCHEMATIC
NOT TO SCALE



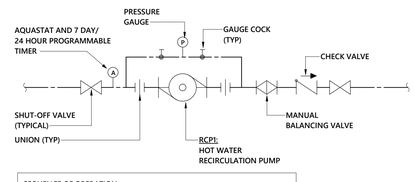
3 EMERGENCY SHOWER PIPING SCHEMATIC - WITH MIXING VALVE ABV CEILING
NOT TO SCALE



4 DECK MOUNTED EYEWASH DETAIL - HAND HELD
NOT TO SCALE



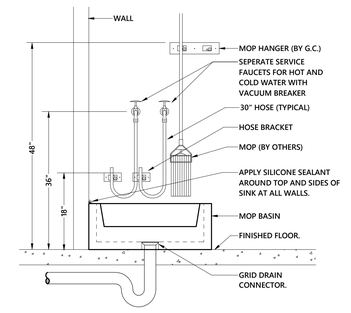
5 CONDENSATE DRAIN, WALL BOX SCHEMATIC
NOT TO SCALE



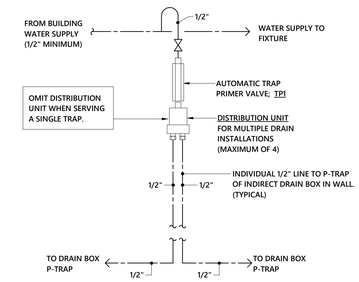
SEQUENCE OF OPERATION:
TIMER: PROGRAM FOR TYPICAL BUILDING OPERATIONAL HOURS (COORDINATE OPERATIONAL HOURS WITH OWNER):
- SET TIMER TO TURN PUMP ON 1 HOUR BEFORE START OF DAY.
- SET TIMER TO TURN PUMP OFF 1 HOUR AFTER END OF DAY.

AQUASTAT SETTINGS:
- PUMP ON AT 110 F.
- PUMP OFF AT 120 F.

6 HOTWATER RECIRC PUMP DETAIL
NOT TO SCALE



7 MOP BASIN AND ACCESSORIES
NOT TO SCALE

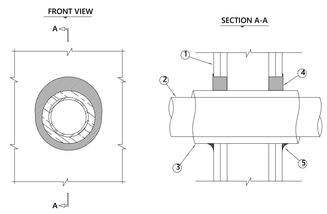


8 AUTOMATIC TRAP PRIMER DETAIL - LOCATED ABOVE CEILING
NOT TO SCALE

U.L. SYSTEM NO. WL5028
INSULATED METAL PIPE THROUGH 1-HR. OR 2-HR. GYPSUM WALL ASSEMBLY

F RATING = 1-HR AND 2-HR
T RATING = 1/2-HR

L RATING AT AMBIENT = 4 CFM/SQ. FT.
L RATING AT 400°F = LESS THAN 1 CFM/SQ. FT.



1. GYPSUM-WALL ASSEMBLY (1-HR. OR 2-HR. FIRE RATING)(2-HR. SHOWN).
2. PENETRATING ITEM TO BE ONE OF THE FOLLOWING:
   A. MAXIMUM 4" DIAMETER STEEL PIPE.
   B. MAXIMUM 2" DIAMETER COPPER PIPE.
   C. MAXIMUM 4" DIAMETER EMT.
   D. MAXIMUM 4" DIAMETER STEEL CONDUIT.
3. MAXIMUM 3/4" THICK (AB/PVC) FLEXIBLE FOAM TYPE PIPE INSULATION.
4. HILTI FS-ONE FIRESTOP SEALANT:
   A. MINIMUM 5/8" DEPTH, FOR A 1-HR. FIRE-RATING.
   B. MINIMUM 1-1/4" DEPTH, FOR A 2-HR. FIRE-RATING.
5. MINIMUM 1/2" CROWN HILTI FS-ONE FIRESTOP SEALANT AT PIPE INSULATION/WALL ASSEMBLY INTERFACE.

NOTES: 1. MAXIMUM DIAMETER OF OPENING = 7-1/2".
2. ANNULAR SPACE = MINIMUM 0", MAXIMUM 1-1/2".

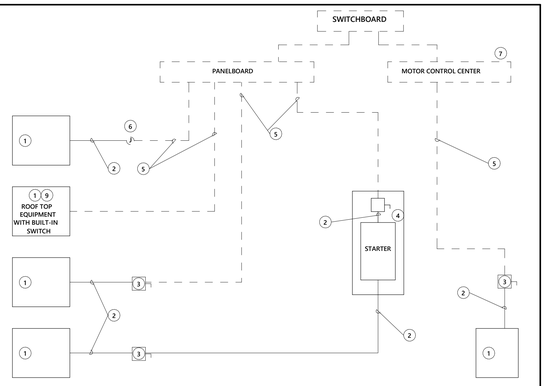
INSTALLATION INSTRUCTIONS FOR UL NO.WL5028

STEP 1 - PREPARATION: ALL SURFACES MUST BE CLEAN, SOUND, DRY AND FROST FREE PRIOR TO APPLICATION OF FIRESTOPPING MATERIALS.

STEP 2 - FIRESTOP SEALANT: APPLY A MINIMUM 5/8" OR 1-1/4" DEPTH OF FS-ONE IN THE ANNULAR SPACE BETWEEN THE PIPE AND WALL ON BOTH SIDES AND TOOL IT WITH A PUTTY KNIFE UNTIL FLUSH WITH SURFACE. TOOL EXCESS BEYOND THE PERIMETER OF THE OPENING 1/2" ONTO EACH WALL SURFACE. LEAVE COMPLETED SEAL UNDISTURBED FOR 48 HOURS.

9 U.L. SYSTEM NO WL5028 DETAIL
NOT TO SCALE

NOTES:
1. EQUIPMENT OF TRADES OTHER THAN ELECTRICAL.
2. CONDUIT AND WIRING BY MECHANICAL, PLUMBING CONTRACTOR OR OTHER TRADES.
3. IF AN ADDITIONAL DISCONNECT IS REQUIRED BY NEC, IT SHALL BE PROVIDED AND INSTALLED BY THE EQUIPMENT CONTRACTOR.
4. A COMBINATION STARTER OR VFD MAY BE USED IN LIEU OF A SEPARATE DISCONNECT SWITCH AND STARTER LOCATE ADJACENT TO EQUIPMENT.
5. FEEDER CIRCUIT WIRING AND CONDUIT IN ELECTRICAL WORK SEE PANELBOARD SCHEDULES FOR WIRE AND BREAKER SIZES.
6. JUNCTION BOX MAY BE SHOWN ON ELECTRICAL PLANS FOR SOME EQUIPMENT. IF NO STARTER OR DISCONNECT IS SUPPLIED, A JUNCTION BOX SHALL BE INSTALLED ADJACENT TO EQUIPMENT. THE ELECTRICAL CONTRACTOR SHALL PROVIDE LINE SIDE WIRING TO THE JUNCTION BOX. LOAD SIDE WIRING WILL BE PROVIDED BY MECHANICAL CONTRACTOR OR OTHER TRADES.
7. PROJECTS UTILIZING AN MCC, THE STARTER, CB, OR VFD IN THE MCC ARE PROVIDED BY THE ELECTRICAL CONTRACTOR.
8. IN ALL CASES THE EQUIPMENT CONTRACTOR SHALL MAKE FINAL CONNECTIONS STARTUP, AND TEST EQUIPMENT.
9. IF THE ROOF TOP EQUIPMENT IS NOT PROVIDED WITH BUILT IN SWITCH, THE ELECTRICAL CONTRACTOR SHALL PROVIDE A DISCONNECT SWITCH.



10 ELECTRICAL REQUIREMENTS FOR PLUMBING CONTRACTOR (DIVISION 22/26 DEMARCATION)
NO SCALE

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North Carolina License Number C-0914

9/14/2020

PROJECT NORTH
PLAN NORTH

KEY PLAN

Construction Documents

Revision Schedule		
#	Description	Date

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University of North Carolina Wilmington

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Wilmington, NC 28403

SCO PROJECT NUMBER:
20-21673-01A

CODE:
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ITEM:
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SGA | NW DESIGN PROJECT NUMBER:
19-202-01

DESIGNED BY: GCF/LS
DRAWN BY: GCF/LS
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ISSUE DATE:
September 14, 2020

PLUMBING DETAILS

P511

SCALE: 1/8" = 1'-0"

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SYMBOL SCHEDULE

2018 NORTH CAROLINA ENERGY CONSERVATION CODE

COMMERCIAL ENERGY EFFICIENCY - ELECTRICAL SUMMARY

C401 METHOD OF COMPLIANCE
- [x] 2018 NCECC CHAPTER 4
- [ ] NC SPECIFIC COMCHECK PROVIDED
- [ ] N/A BASED ON PROJECT SCOPE
- [ ] ASHRAE 90.1-2013

C406 ADDITIONAL EFFICIENCY PACKAGE OPTIONS
- [ ] C406.1.1 EFFICIENT MECH EQUIPMENT
- [ ] C406.1.4 ON-SITE RENEWABLE ENERGY
- [x] C406.1.2 REDUCED LTG DENSITY
- [ ] C406.1.5 DEDICATED OA SYSTEM
- [ ] C406.1.3 ENHANCED DIGITAL LTG CNTLS
- [ ] C406.1.6 HI-EFF SERVICE WTR HTG
- [ ] NOT APPLICABLE BASED ON PROJECT SCOPE

C405.2 - LIGHTING CONTROLS (MANDATORY REQUIREMENTS):
- [x] LIGHTING SYSTEMS ARE PROVIDED WITH CONTROLS AS REQUIRED PER SECTION C405.2, EXCEPT WHERE EXEMPT.
- [ ] NOT APPLICABLE

C405.3 - EXIT SIGNS (MANDATORY REQUIREMENTS):
- [x] INTERNALLY ILLUMINATED EXIT SIGNS DO NOT EXCEED 5 WATTS PER SIDE.
- [ ] NOT APPLICABLE

C405.4 - INTERIOR LIGHTING POWER REQUIREMENTS (PRESCRIPTIVE) (NON-EXEMPT):
- [ ] NOT APPLICABLE PER 2018 NCECC C503.1, EXCEPTION 2.G.

C405.4.1 - TOTAL CONNECTED INTERIOR LIGHTING POWER:

XXXXW WATTS SPECIFIED

X,XXXW/X,XXXW 10% REDUCTION OF ALLOWED VS. SPECIFIED (APPLICABLE IF C406.1.2 IS SELECTED)

C405.4.2 - TOTAL ALLOWABLE INTERIOR LIGHTING POWER:

METHOD OF COMPLIANCE:
- [ ] BUILDING AREA METHOD
- [x] SPACE-BY-SPACE METHOD

X,XXXW WATTS ALLOWED

C405.5.1 - EXTERIOR BUILDING LIGHTING POWER (NON-EXEMPT):
- [ ] NOT APPLICABLE

TOTAL CONNECTED EXTERIOR LIGHTING POWER:

X,XXXW WATTS SPECIFIED

TOTAL ALLOWABLE EXTERIOR LIGHTING POWER:

X,XXXW WATTS ALLOWED

C405.6 - ELECTRICAL ENERGY CONSUMPTION (DWELLING UNITS):
- [ ] SEPARATE ELECTRICAL METERING HAS BEEN PROVIDED FOR EACH DWELLING UNIT IN GROUP R-2 BUILDINGS.
- [x] NOT APPLICABLE

C405.7 - ELECTRICAL TRANSFORMERS (MANDATORY REQUIREMENTS):
- [x] ELECTRICAL TRANSFORMERS HAVE BEEN SPECIFIED TO MEET MINIMUM EFFICIENCY REQUIREMENTS PER C405.7, EXCEPT WHERE EXEMPT.
- [ ] NOT APPLICABLE

C405.8 - ELECTRICAL MOTORS (MANDATORY REQUIREMENTS):
- [x] ELECTRICAL MOTORS HAVE BEEN SPECIFIED TO MEET MINIMUM EFFICIENCY REQUIREMENTS PER C405.8, EXCEPT WHERE EXEMPT.
- [ ] NOT APPLICABLE

C408 - SYSTEM COMMISSIONING:
- [x] BUILDING IS LESS THAN 10,000 SQUARE FEET AND IS EXEMPT FROM THE SYSTEM COMMISSIONING REQUIREMENTS OF SECTION C408.
- [ ] BUILDING IS GREATER THAN 10,000 SQUARE FEET AND REQUIRES SYSTEM COMMISSIONING PER SECTION C408.

DEVICES AND PATHWAYS

Symbol	Description
	WIRING SYSTEM CONCEALED IN WALL OR CEILING.
	WIRING SYSTEM CONCEALED IN OR UNDER SLAB OR UNDERGROUND.
	WIRING SYSTEM EXPOSED
	CONDUIT TURNED UP TO FLOOR ABOVE.
	CONDUIT TURNED DOWN TO FLOOR BELOW.
	BRANCH CIRCUIT HOMERUN TO PANEL.
J	JUNCTION BOX WITH CONNECTION TO EQUIPMENT SERVED. 4" SQUARE BOX WITH A SINGLE-GANG OPENING AND PLASTER RING.
J HD	JUNCTION BOX FOR HAND DRYER CONNECTION; SEE MOUNTING HEIGHTS DETAIL FOR EXACT HEIGHT; SEE ARCH. SHEETS FOR COORDINATION 4" SQUARE BOX WITH A SINGLE-GANG OPENING AND PLASTER RING. PROVIDE WITH MANUAL TOGGLE SWITCH DISCONNECT MOUNTED ABOVE CEILING. IF MOUNTED IN HARD CEILING SPACE AN ACCESS DOOR SHALL BE PROVIDED AT TOGGLE SWITCH LOCATION.
	DUPLEX RECEPTACLE, 20 AMP, 120 VOLT (USE 20 AMP FOR SINGLE RECEPTACLE ON A CIRCUIT.) HUBBELL 5352, OR EQUAL.
	DUPLEX RECEPTACLE MOUNTED ABOVE COUNTER BACKSPLASH, OR AT HEIGHT NOTED. SEE MOUNTING HEIGHTS OF DEVICES DETAILS. COORDINATE EXACT HEIGHT WITH ARCHITECTURAL DRAWING CASEWORK DETAILS AND ELEVATIONS.
	SPRING RETURN CORD REEL WITH DUPLEX RECEPTACLE, 25'-0" LONG INSULATED SJOW CORD WITH 3#12 CONDUCTORS, BALL STOP, AND PULL STRING. HUBBELL, OR EQUAL.
	QUAD RECEPTACLE. TWO NEMA 5-20R DUPLEX RECEPTACLES.
EWC	STANDARD TWO NEMA 5-20R DUPLEX RECEPTACLE FOR ELECTRIC WATER COOLER. COORDINATE LOCATION WITH PLUMBING CONTRACTOR.
GFI	GROUND FAULT RECEPTACLE. NEMA 5-20R DUPLEX. ALL RECEPTACLES INSTALLED OUTSIDE, WITHIN 6' OF A SINK OR IN A KITCHEN SHALL BE GFCI.
IG	ISOLATED GROUND RECEPTACLE. NEMA 5-20R DUPLEX.
WP	WEATHERPROOF RECEPTACLE. NEMA 5-20R DUPLEX. COVER SHALL BE INTERMATIC #WP1020 (CLEAR) OR EQUAL.
USB	COMBINATION 20A SPEC GRADE DUPLEX RECEPTACLE WITH (2) USB JACKS. LEGRAND OR SPECIFIED EQUAL.
CM	CEILING MOUNTED DUPLEX RECEPTACLE HUBBELL OR EQUAL. FLUSH MOUNTED AT THE CEILING.
EM	RED DUPLEX RECEPTACLE POWERED FROM GENERATOR PANEL, 20 AMP, 120 VOLT (USE 20 AMP FOR SINGLE RECEPTACLE ON A CIRCUIT.) HUBBELL, OR EQUAL.
J PS	PROVIDE CEILING MOUNTED JUNCTION BOX FOR PROJECTOR SCREEN. VERIFY SCREEN CONTROL LOCATION WITH OWNER PRIOR TO ROUGH-IN.
EPO	EMERGENCY POWER OFF, SEE RESPECTIVE FLOOR PLAN FOR DETAIL REFERENCE.
SPD	SURGE PROTECTION DEVICE (SPD); SEE DETAIL
	SURFACE RACEWAY. NEMA 5-20R RECEPTACLES, SEE PLAN NOTES.
	SPECIAL OUTLET. SEE PLANS.
M	MOTOR OPERATED DAMPER, INTERLOCK WITH FAN AS INDICATED. (DAMPER BY M.C.)
G	GROUNDING BAR PER DIAGRAM.
	WIREMOLD 6000 SERIES OR EQUAL BY PANDUIT & HUBBELL. SPACE DUPLEX RECTANGLES AS SHOWN ON PLANS.

FIRE ALARM

Symbol	Description
FACP SD	FIRE ALARM CONTROL PANEL WITH LOCAL SMOKE DETECTOR
RA	FIRE ALARM REMOTE ANNUNCIATOR. PROVIDE BOX AS REQUIRED PER MANUFACTURER RECOMMENDATION. PROVIDE 1"C CONDUIT FOR CABLING.
F	FIRE ALARM MANUAL STATION.
SD	CEILING MOUNTED SMOKE DETECTOR. FA VENDOR PROVIDED.
HD	CEILING MOUNTED HEAT DETECTOR.
DD	DUCT MOUNTED SMOKE DETECTOR. FURNISHED AND CONNECTED BY ELECTRICAL CONTRACTOR, INSTALLED BY MECHANICAL CONTRACTOR. CUTTING OF DUCT, INSTALLATION OF DETECTOR. AND DETERMINATION OF SAMPLING TUBE LENGTH SHALL BE THE MECHANICAL CONTRACTOR. PROVIDE REMOTE INDICATING LIGHT WITH EACH DETECTOR.
FSD	FIRE SMOKE DAMPER. FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR, CONNECTED TO FIRE ALARM SYSTEM BY ELECTRICAL CONTRACTOR. SEE DETAIL.
F	ADA COMPLIANT WALL MOUNT FIRE ALARM SPEAKER WITH STROBE LIGHT, 75CD UNLESS OTHERWISE NOTED. WHITE FINISH.
S	ADA COMPLIANT WALL MOUNT FIRE ALARM STROBE LIGHT, 75CD UNLESS OTHERWISE NOTED. WHITE FINISH.
F	ADA COMPLIANT CEILING MOUNTED FIRE ALARM SPEAKER STROBE LIGHT, 75cd, UNLESS OTHERWISE NOTED. WHITE FINISH.
S	ADA COMPLIANT CEILING MOUNTED FIRE ALARM STROBE LIGHT, 75cd, UNLESS OTHERWISE NOTED. WHITE FINISH.
R	DUCT DETECTOR REMOTE INDICATING LIGHT.
DH	DOOR HOLDER
CO	CEILING MOUNTED CARBON MONOXIDE DETECTOR (CENTRAL SYSTEM CONNECTED)

PANELS, DISCONNECTS

Symbol	Description
S_M	FRACTIONAL HORSEPOWER MANUAL MOTOR STARTER, WITH OVERLOAD PROTECTION
	NON-FUSED HEAVY DUTY DISCONNECT SWITCH. NUMERALS INDICATE SWITCH RATING. NEMA 1 ENCLOSURE, UNLESS OTHERWISE NOTED.
	FUSED HEAVY DUTY DISCONNECT SWITCH. NUMERALS INDICATE SWITCH RATING/FUSE SIZE. NEMA 1 ENCLOSURE, UNLESS OTHERWISE NOTED.
	CIRCUIT BREAKER. NUMERALS INDICATE RATING. NEMA 1 ENCLOSURE, UNLESS OTHERWISE NOTED.
	PANELBOARD. SEE SCHEDULE FOR MOUNTING. TOP OF PANEL AT 6'-6" AFF.
	CONNECTION TO MOTOR. STARTER PROVIDED BY OTHERS UNLESS OTHERWISE NOTED.

FLOOR BOX / POKE-THRU OUTLETS

Symbol	Description
AV	FLOOR BOX WITH NETWORK, QUAD POWER AND AV. ELECTRICAL CONTRACTOR SHALL PROVIDE FLOOR BOX, COVER, 1.25" CONDUIT WITH PULL STRING IN/UNDERSLAB TO LOCAL TELECOMMUNICATIONS ROOM FOR NETWORK CABLING, 1.25" CONDUIT WITH PULL STRING TO ACCESSIBLE CEILING SPACE WITHIN ROOM FOR AV CABLING, 1.25" CONDUIT WITH PULL STRING TO DISPLAY CONNECTION FOR AV CABLING, 0.75" CONDUIT FOR POWER, QUAD RECEPTACLE AND ASSOCIATED MOUNTING PLATES FOR A COMPLETE INSTALLATION. LEGRAND: EFB6S-OG OR APPROVED EQUAL

LIGHTING (SEE FIXTURE SCH.)

Symbol	Description
	LED LIGHTING FIXTURE. SEE FIXTURE SCHEDULE. SUSPEND FOUR CORNERS WITH WIRE TO STRUCTURE. DO NOT ALLOW GRID ALONE TO SUPPORT FIXTURE.
	LED STRIP FIXTURE.
	LED DOWNLIGHT FIXTURE.
	WALL MOUNTED INCANDESCENT, FLUOR., LED OR H.I.D. LIGHTING FIXTURE.
	LED FIXTURE ON GENERATOR BACKED LIGHTING CIRCUIT. SEE FIXTURE SCHEDULE FOR FIXTURE TYPE, EMERGENCY DEVICE SHALL SUPPLEMENT FIXTURE.
	LED DOWNLIGHT ON GENERATOR BACKED LIGHTING CIRCUIT. SEE FIXTURE SCHEDULE FOR FIXTURE TYPE, EMERGENCY DEVICE SHALL SUPPLEMENT FIXTURE.
	EXIT LIGHT WITH ARROWS AND NUMBERS OF FACES ON GENERATOR BACKED CIRCUIT AS INDICATED ON PLANS. DESIGNATES WALL MOUNTED EXIT SIGN.
S	SINGLE POLE SWITCH, 20 AMP, 120/277 VOLT, TO OPERATE WITH LIGHTING CONTROLS IN THIS ROOM.
S_3	THREE WAY SWITCH, 20 AMP, 120/277 VOLT, TO OPERATE WITH LIGHTING CONTROLS IN THIS ROOM.
S_4	FOUR WAY SWITCH, 20 AMP, 120/277 VOLT, COOPER 1224, OR EQUAL.
PP	CEILING MOUNTED OCCUPANCY SENSOR POWER PACK. ACUITY OR EQUAL BY WATTSTOPPER OR ENCELIUM.
PP_D	CEILING MOUNTED DIMMING OCCUPANCY SENSOR POWER PACK. ACUITY nLIGHT NPP16D EFP, OR EQUAL BY WATTSTOPPER OR ENCELIUM.
PL1	LIGHTING RELAY PANEL. ACUITY GR 1416 LTD INT 16FCR IDIM DTCMOD DV, OR EQUAL BY WATTSTOPPER OR ENCELIUM.
PP	CEILING MOUNTED OCCUPANCY SENSOR POWER PACK. ACUITY nLIGHT NPP 16 EFP, OR EQUAL BY WATTSTOPPER, ENCELIUM, OR LUTRON.
PP_D	CEILING MOUNTED OCCUPANCY SENSOR W/DIMMING POWER PACK. ACUITY nLIGHT NPP 16D EFP, OR EQUAL BY WATTSTOPPER, ENCELIUM, OR LUTRON.
OC_{DT}	CEILING MOUNTED OCCUPANCY SENSOR, DUAL TECHNOLOGY, SMALL MOTION/STANDARD RANGE. ACUITY nLIGHT NCM PDT 9 , OR EQUAL BY WATTSTOPPER, ENCELIUM, OR LUTRON.
OS	WALL MOUNTED OCCUPANCY SENSOR, DUAL TECHNOLOGY. ACUITY nLIGHT NWV PDT 16 KIT , OR EQUAL BY WATTSTOPPER OR ENCELIUM.
S_{OC}	WALL MOUNTED OCCUPANCY SENSOR AND SWITCH W/DIMMING. DUAL TECHNOLOGY WITH NEUTRAL, ACUITY nLIGHT WSX PDT D XX, OR EQUAL BY WATTSTOPPER, ENCELIUM, OR LUTRON.
S_{OCD}	WALL MOUNTED OCCUPANCY SENSOR AND SWITCH. DUAL TECHNOLOGY WITH NEUTRAL, ACUITY nLIGHT WSX PDT XX, OR EQUAL BY WATTSTOPPER, ENCELIUM, OR LUTRON.
S_{SW1}	LOW VOLTAGE PUSH-BUTTON WALLPOD, ACUITY nLIGHT NPODM XX, OR EQUAL BY WATTSTOPPER, ENCELIUM, OR LUTRON.
S_{SW2}	LOW VOLTAGE PUSH-BUTTON WALLPOD, RAISE/LOWER DIMMING, ACUITY nLIGHT NPODM DX XX, OR EQUAL BY WATTSTOPPER, ENCELIUM, OR LUTRON.
S_{SW3}	LOW VOLTAGE PUSH-BUTTON WALLPOD, 2-POLE, RAISE/LOWER DIMMING, ACUITY nLIGHT NPODM 2P DX XX, OR EQUAL BY WATTSTOPPER, ENCELIUM, OR LUTRON.
S_{SW4}	LOW VOLTAGE KEY SWITCH WALLPOD, ACUITY nLIGHT NPOD KEY XX, OR EQUAL BY WATTSTOPPER, ENCELIUM, OR LUTRON.
1	GENERATOR EMERGENCY RELAY DEVICE FOR NORMAL LIGHTING CONTROL, SEE EMERG. LTG RELAY DETAIL. CONNECT TO LOCAL LIFE SAFETY BRANCH LIGHTING CIRCUIT. NORMAL CIRCUIT IS THE SWITCH CONTROL. BASED ON BODINE BLCD-20B, EQUALS BY: LEGRAND, ETC, OR APPROVED EQUAL.
2	GENERATOR EMERGENCY RELAY DEVICE FOR NORMAL LIGHTING CONTROL, SEE EMERG. LTG RELAY DETAIL. CONNECT TO LOCAL LIFE SAFETY BRANCH LIGHTING CIRCUIT. NORMAL CIRCUIT IS THE SWITCH CONTROL. BASED ON ACUITY nLIGHT NPP16 D ER XX, EQUALS BY: LEGRAND, ETC, OR APPROVED EQUAL. PROVIDE DEVICE RATED FOR DIMMING WHERE APPLICABLE.

ELECTRICAL SHEET INDEX

SHEET NUMBER	SHEET NAME
E001	ELECTRICAL LEGEND AND NOTES
E010	ELECTRICAL SITE PLAN
E101	FIRST FLOOR LIGHTING PLAN
E201	FIRST FLOOR POWER PLAN
E301	FIRST FLOOR EQUIPMENT CONNECTIONS PLAN
E401	FIRST FLOOR SPECIAL SYSTEMS PLAN
E402	FIRST FLOOR SECURITY PLAN
E501	ENLARGED ELECTRICAL PLANS
E601	ELECTRICAL DETAILS
E602	ELECTRICAL DETAILS
E603	ELECTRICAL DETAILS
E604	ELECTRICAL DETAILS
E701	ELECTRICAL DIAGRAMS
E803	LIGHTING & MECHANICAL SCHEDULES

ABBREVIATIONS & ACRONYMS

THIS SCHEDULE IS REPRESENTATIVE OF THOSE TYPICALLY FOUND ON THE PLANS BUT NOT ALL MAY BE UTILIZED

A	AMPERE, AMMETER
A/C	ABOVE COUNTER
AF	AMPERE FRAME
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
AIC	AMPERES INTERRUPTING CAPACITY
AMP	AMPERE
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
C	CONDUIT
CB	CIRCUIT BREAKER
CLG	CEILING
COMM	COMMUNICATION
CP	CIRCULATING PUMP
CR	CARD READER ACCESS
CU	COPPER
DH	DOOR HOLDER
DISC	DISCONNECT
DIV	DIVISION
DWG	DRAWING
EC	ELECTRICAL CONTRACTOR
ECB	ENCLOSED CIRCUIT BREAKER
EF	EXHAUST FAN
ELEC	ELECTRICAL
EM	EMERGENCY
EMCS	EMERGENCY MANAGEMENT CONTROL SYSTEM
EMT	ELECTRICAL METALLIC TUBING
EQP	EQUIPMENT
ER	EXISTING ITEM RELOCATED TO HERE
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EX	EXISTING
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FPN	FUSE PER NAMEPLATE
GFI	GROUND FAULT INTERRUPTER
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
G, GND	GROUND
HD	HAND DRYER
HP	HORSEPOWER
HVAC	HEATING, VENTILATING & AIR CONDITIONING
HZ	HERTZ
IG	ISOLATED GROUND
ISC	RMS SYMMETRICAL SHORT CIRCUIT
JB	JUNCTION BOX
KAIC	(THOUSAND) AMPERE INTERRUPTING CAPACITY
kcmil	THOUSAND OF CIRCULAR MILS
KVA	KILOVOLT-AMPERES
KW	KILOWATTS
LC	LIGHTING CONTACTOR
LED	LIGHT EMITTING DIODE
LTG	LIGHTING
MC	MECHANICAL CONTRACTOR
MTD	MOUNTED
N	NEUTRAL
NA	NOT APPLICABLE
NAC	NOTIFICATION APPLIANCE CIRCUIT
NC	NORMALLY CLOSED
NF	NON-FUSED
NEC	NATIONAL ELECTRICAL CODE
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO	NUMBER
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOC.
NFPA	NATIONAL FIRE PROTECTION ASSOC.
NO	NORMALLY OPEN
PBC	PLUMBING CONTRACTOR
PROVIDE	FURNISH, INSTALL & CONNECT
RCP	REFLECTED CEILING PLAN
REC	RECEPTACLE
RGS	RIGID GALVANIZED STEEL
RL	EXISTING ITEM TO BE RELOCATED
RM	EXISTING ITEM TO REMAIN
RP	EXISTING ITEM TO BE REPLACED
RV	EXISTING ITEM TO BE REMOVED
SE	SERVICE ENTRANCE
SPD	SURGE PROTECTION DEVICE
SPEC	SPECIFICATION
SPST	SINGLE POLE SINGLE THROW
SS	STAINLESS STEEL
SQ	SQUARE
SW	SWITCH
SWBD	SWITCHBOARD
TEL	TELEPHONE
TTC	TELEPHONE TERMINAL CABINET
TV	COMBINATION TV & RECEPTACLE OUTLETS
TVTC	TELEVISION TERMINAL CABINET
TYP	TYPICAL
UG	UNDER GROUND
UGC	UNDERGROUND COMMUNICATIONS
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
V	VOLT
W	WIRE
WG	WIRE GUARD OVER DEVICE
WP	WEATHERPROOF (WEATHERTIGHT)
XFMR	TRANSFORMER
Y	WYE (CONNECTED)
1PH	SINGLE-POLE
3P	THREE-PHASE

COORDINATION DRAWINGS

THE MECHANICAL CONTRACTOR SHALL ORGANIZE COORDINATION MEETINGS TO DEVELOP A SET OF BIM COORDINATION DRAWINGS WITH ALL CONTRACTORS (ELECTRICAL, MECHANICAL, PLUMBING, FIRE PROTECTION, IT/DATA, AND GENERAL CONTRACTOR). THE MECHANICAL CONTRACTOR WILL HAVE THE LEAD RESPONSIBILITY FOR THE COORDINATION DRAWINGS. THE MECHANICAL CONTRACTOR SHALL PRODUCE THE ORIGINAL DRAWINGS AND FORWARD THE DRAWINGS TO EACH OF THE OTHER CONTRACTORS FOR THEM TO ADD THEIR SYSTEMS TO THIS SET OF COORDINATION DRAWINGS. THE CONTRACTORS WILL DEVELOP THE DRAWINGS IN THIS ORDER: MECHANICAL, FIRE PROTECTION, PLUMBING, ELECTRICAL, IT/DATA, AND GENERAL. THIS SHALL ALSO BE THE ORDER OF PRECEDENCE FOR INSTALLATION OF SYSTEMS. ANY RELOCATION OF SYSTEM ROUTINGS WILL BE FOUND IN THE COORDINATION PHASE AND NOTICED BY EACH OF THE CONTRACTORS. THESE DRAWINGS, WHEN COMPLETED, SHALL BE SIGNED OFF BY ALL OF THE ABOVE LISTED PARTIES. DRAWINGS SHALL BE COMPLETED PRIOR TO FABRICATION AND INSTALLATION OF DUCTWORK AND PIPING SYSTEMS, OR PURCHASE OF EQUIPMENT. THE FOLLOWING ITEMS REPRESENT THE MINIMUM REQUIREMENTS AND COORDINATION DRAWINGS:

1. ALL COORDINATION DRAWINGS WILL BE PRODUCED IN REVIT AT 1/4"= 1'-0" SCALE
2. COORDINATION DRAWINGS WILL BE DISTRIBUTED ON REPRODUCIBLE MATERIAL 48"x36"
3. COORDINATION DRAWINGS ARE NOT SHOP DRAWINGS AND ARE REQUIRED IN ADDITION TO SHOP DRAWINGS.
4. ONCE THE COMPLETE COORDINATION DRAWINGS HAVE BEEN COMPILED, THE MECHANICAL CONTRACTOR WILL DISTRIBUTE ONE SIGNED SET TO EACH OF THE FOLLOWING CONTRACTORS: ELECTRICAL, PLUMBING, FIRE PROTECTION, AND GENERAL. ADDITIONAL SETS WILL BE SENT TO THE OWNER, ARCHITECT, AND ENGINEER.

THE USE OF BUILDING INFORMATION MODELING (BIM) THROUGHOUT THE CONSTRUCTION PROCESS IS A REQUIREMENT FOR THIS PROJECT TO HELP REDUCE OR ELIMINATE FIELD DETECTED CONFLICTS, IMPROVE CONSTRUCTION QUALITY AND MAINTAIN AN AGGRESSIVE SCHEDULE. THE CONTRACTOR WILL BE RESPONSIBLE FOR CREATING THE MODEL AND MANAGING THE COORDINATION AND COLLISION DETECTION PROCESS. THE MODEL MUST CONTAIN COMPLETE ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, PLUMBING AND FIRE PROTECTION SYSTEMS CONSISTENT WITH THE DESIGN AND FABRICATION DRAWINGS.

COMMISSIONING NOTE

ELECTRICAL CONTRACTOR SHALL COORDINATE WITH OWNER'S COMMISSIONING AGENT AND PROVIDE ALL NECESSARY TIME, MATERIALS, AND PROCEDURES REQUIRED FOR A FULLY COMMISSIONED PROJECT.

CORROSIVE LOCATION NOTES:

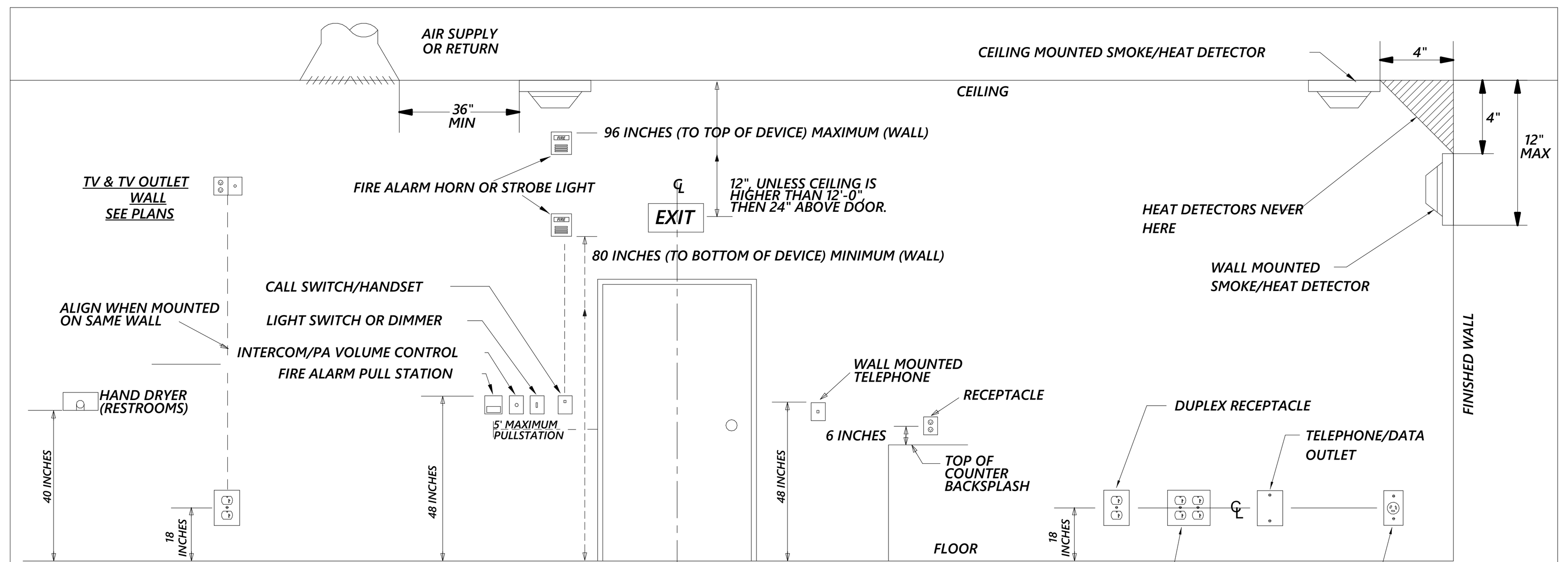
- ALL CONDUIT IN FACULTY OPEN LAB SHALL BE GALVANIZED RIGID CONDUIT, OR PVC IF CONCEALED.
- ELECTRICAL EQUIPMENT ENCLOSURES IN THIS AREA SHALL BE NEMA-4X , WET LOCATION LISTED, TO RESIST CORROSION.
- LIGHTING FIXTURES MOUNTED IN OR ON CEILING IN THIS AREA SHALL BE SUPPORTED FROM STRUCTURE VIA HOT DIPPED GALVANIZED CABLES HUNG FROM GALVANIZED EYEBOLTS AND USING GALVANIZED THIMBLES TO RESIST CORROSION.
- ALL CONDUIT (WHERE POSSIBLE) SHALL BE CONCEALED IN WALLS AND CEILINGS IN FINISHED SPACES.

GENERAL DRAWING NOTES:

SCHEDULE NOTES:
1. SEE DETAIL FOR STANDARD MOUNTING HEIGHTS OF ALL DEVICES, UNLESS OTHERWISE NOTED.
2. ALL DEVICES (SWITCHES AND RECEPTACLES) SHALL BE SELECTED BY ARCHITECT AND EMERGENCY SHALL BE ORANGE. COVER PLATE SHALL BE 302 MATCH BASE BUILDING STANDARD. ALL COVER PLATES IN MASONRY WALLS SHALL BE JUMBO PLATES.
3. DEVICE BOXES SHALL NOT BE MOUNTED BACK TO BACK IN COMMON WALLS UNLESS OTHERWISE NOTED.
4. ALL FIRE ALARM SHALL BE IN CONDUIT.
5. ALL COST ASSOCIATED WITH SUBSTITUTED EQUIPMENT TO COMPLY WITH BASIS OF DESIGN, INCLUDING PROVIDING MAINTENANCE ACCESS, CLEARANCE, CONDUIT, WIRE, REPLACEMENT OF OTHER SYSTEM COMPONENTS, BUILDING ALTERATIONS, ETC., SHALL BE INCLUDED IN THE ORIGINAL BASE BID. NO ADDITIONAL COST ASSOCIATED WITH SUBSTITUTED EQUIPMENT WILL BE APPROVED DURING CONSTRUCTION AND ALL COST WILL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.
6. SHARED NEUTRAL OR "SUPER NEUTRAL" CONDUCTORS SHALL NOT BE PERMITTED UNLESS SPECIFICALLY SHOWN ON THESE DRAWINGS.
7. STACKED TRANSFORMERS SHALL BE COORDINATED AND INSTALLED PRIOR TO DOOR OPENING OF ELECTRICAL ROOMS
8. ALL WALL MOUNTED OCCUPANCY/VACANCY SENSOR SWITCH OUTLETS SHALL BE BE PROVIDED WITH A GROUNDED CONDUCTOR AS PART OF THE WIRING SYSTEM. PROGRAM SENSORS TO 30MIN OFF TIME.
9. ALL PANELBOARDS SHALL BE PROVIDED WITH A TYPED CIRCUIT DIRECTORY PER NEC 408.4. SPARE CIRCUIT BREAKERS SHALL BE PLACED IN THE "OFF" POSITION.
10. CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS - A700 SERIES FOR APPLICABLE OWNER FURNISHED EQUIPMENT AS A DESIGN BASIS FOR COORDINATION WITH ELECTRICAL, MECHANICAL, AND PLUMBING CONNECTION REQUIREMENTS. THE EQUIPMENT SHALL PERTAIN TO ALL LABS (WELDING, CMT, ETC) AND CLASSROOMS. ANY SUBSTITUTIONS FROM THE DESIGN BASIS EQUIPMENT LISTED IN THE ABOVE REFERENCED LOCATION THAT RESULTS IN ANY CHANGE FROM THE BASIS OF DESIGN INCLUDING BUT NOT LIMITED TO MAINTENANCE ACCESS, CLEARANCE, PIPING CONNECTIONS, SHEET METAL CONNECTIONS, ELECTRICAL CONNECTIONS, ETC., SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER OF RECORD PRIOR TO PROCURING AND INSTALLATION OF NOTED EQUIPMENT.

TELECOMMUNICATIONS

SYMBOL	DESCRIPTION
(#D/#V)	STANDARD INFORMATION OUTLET. STANDARD HEIGHT (+18" AFF). ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1.25" CONDUIT WITH PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE.
(#D/#V)	STANDARD INFORMATION OUTLET. ELEVATED HEIGHT (+42" AFF, UNLESS OTHERWISE NOTED). ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1.25" CONDUIT WITH PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE.
(#D)	NETWORK OUTLET. STANDARD HEIGHT (+18" AFF). ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1.25" CONDUIT WITH PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE.
(#D)	NETWORK OUTLET. ELEVATED HEIGHT (+42" AFF, UNLESS OTHERWISE NOTED). ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1.25" CONDUIT WITH PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE.
(#D)	NETWORK OUTLET. CEILING MOUNTED. ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1.25" CONDUIT WITH PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE.
W	NETWORK WALL PHONE OUTLET. ELEVATED HEIGHT (+42" AFF). ELECTRICAL CONTRACTOR SHALL PROVIDE 1-GANG JUNCTION BOX AND 1" CONDUIT WITH PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE.
WAP	WIRELESS ACCESS POINT CONNECTION (CEILING). WHEN INSTALLED IN HARD/OPEN CEILING, ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1.25" CONDUIT WITH PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE. REFER TO WIRELESS ACCESS POINT DETAIL (HARD/OPEN CEILING).
WAP	WIRELESS ACCESS POINT CONNECTION (WALL). ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1.25" CONDUIT WITH PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE. REFER TO WIRELESS ACCESS POINT DETAIL (WALL).
WAP EXT	WIRELESS ACCESS POINT CONNECTION (EXTERIOR). ELECTRICAL CONTRACTOR SHALL PROVIDE 8"x8"x6" DEEP JUNCTION BOX, 2" SLEEVE TO EXTERIOR AND 1.25" CONDUIT WITH PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE.
TV	DISPLAY CONNECTION WITH NETWORK AND DUPLEX POWER. ELECTRICAL CONTRACTOR SHALL PROVIDE 3-GANG JUNCTION BOX WITH OFFSET 1-GANG TRIM RING FOR LOW VOLTAGE SECTION, LOW VOLTAGE DIVIDER, 1.25" CONDUIT WITH PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE FOR NETWORK CABLING, 0.75" CONDUIT FOR POWER AND DUPLEX RECEPTACLE. REFER TO DISPLAY DETAIL.
AV TV	DISPLAY CONNECTION WITH NETWORK, QUAD POWER AND AV. ELECTRICAL CONTRACTOR SHALL PROVIDE RECESSED AV WALL BOX, 1.25" CONDUIT WITH PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE FOR NETWORK CABLING, 1.25" CONDUIT WITH PULL STRING TO ASSOCIATED FLOOR BOX/WALL PLATE FOR AV CABLING, 0.75" CONDUIT FOR POWER AND QUAD RECEPTACLE. REFER TO AV DISPLAY DETAIL.
	CONDUIT/SLEEVE. 4" UNLESS OTHERWISE NOTED.
	WIRE MESH CABLE TRAY ABOVE ACCESSIBLE CEILINGS.
	3/4" NON FIRE-RATED PLYWOOD WITH TWO COATS OF FIRE RETARDANT WHITE PAINT ON ALL SIDES. STAMP SHALL BE VISIBLE. MOUNT 4" AFF WITH GRADE A SURFACE EXPOSED.
TMGB	TELECOMMUNICATIONS MAIN GROUND BAR.



NOTES:
1. ALL DIMENSIONS ARE TO CENTER LINE OF DEVICE, UNLESS OTHERWISE NOTED.
2. LOCATIONS WHERE TV MOUNT IS BACK TO BACK ON SAME WALL, AN OFFSET OF 8-12" WILL BE NEEDED FOR INSTALLATION OF JACK/RECEPTACLE.
3. DEVICES ABOVE COUNTER TOPS SHALL BE A MAXIMUM OF 48" TO TOP OF DEVICE FOR ADA ACCESS.

1 MOUNTING HEIGHTS OF DEVICES - ELEVATION
NO SCALE

SPECIAL SYSTEMS

Symbol	Description
TV	SEE TV DETAILS FOR TYPE AND REQUIREMENTS. COORDINATE HEIGHT WITH ARCHITECT.
D	ACCESSIBLE DOOR OPENER PUSH BUTTON. PROVIDE MINIMUM (2) GANG BOX WITH SINGLE GANG OPENING. 3/4"C TO DOOR OPERATOR. COORDINATE WITH EQUIPMENT PROVIDED. SEE DETAIL.
P	CEILING MOUNTED PROJECTOR. MAKE CONNECTION TO UNIT PROVIDED BY OWNER.
GA	GENERATOR ANNUNCIATOR LOCATION, VERIFY FINAL LOCATION WITH OWNER PRIOR TO ROUGH-IN.
CR	CARD READER LOCATION, SEE DETAILS. COORDINATE ALL CONDUIT REQUIREMENTS WITH DOOR HARDWARE SUPPLIER AND OWNER PRIOR TO ROUGH-IN.
DC	DOOR CONTACT, MINIMUM 1/2" CONDUIT. PROVIDE SINGLE GANG JUNCTION BOX AND PULL STRING. SEE CARD READER DETAIL FOR ADDITIONAL REQUIREMENTS OF PATHWAYS AND CABLING.
EL	ELECTRIC LOCK (GENERIC). ELECTRIC MORTISE LOCK WITH BUILT-IN REQUEST TO EXIT (RTE). REQUIRES ELECTRIC HINGE (EH) AND DOOR PREP. COORDINATION WITH DOOR HARDWARE CONSULTANT IS REQUIRED FOR ALL DOOR HARWARE.
RTE	REQUEST TO EXIT DEVICE/CONNECTION. ELECTRICAL CONTRACTOR SHALL PROVIDE 1-GANG JUNCTION BOX AND 1" CONDUIT WITH PULL STRING TO ACCESS CONTROL JUNCTION BOX ON SECURE SIDE OF DOOR. SECURITY CONTRACTOR SHALL PROVIDE DEVICE AND CABLING.
	PUSH BUTTON FOR ADA DOOR OPERATOR. (PEDESTAL MOUNT)

PREFERRED BRAND ALTERNATES

- PA-1: NOTIFIER FIRE ALARM SYSTEM CONTROL PANELS AND COMPONENTS.
- PA-4: CAMPUS STANDARD PEDESTRIAN HEIGHT POLE. SEE LIGHT FIXTURE SCHEDULE.

LOAD TABULATION

LOADS IN KVA	EXISTING DEMAND		NEW CONNECTED		DIVERSITY	NEW DEMAND		TOTAL KVA
	SINGLE PHASE	THREE PHASE	SINGLE PHASE	THREE PHASE	FACTOR (%)	SINGLE PHASE	THREE PHASE	EXISTING AND NEW DEMAND
LIGHTS			15.5		125	19.4		19.4
VENTILATION			20.0	110.0	100	20.0	110.0	130.0
MOTORS				20.0	100		20.0	20.0
KITCHEN					100			0.0
RECEPTACLES			60.0		NEC	35.0		35.0
WATER HEATER			5.0		125	6.3		6.3
MISC.			110.0	55.0	100	110.0	55.0	165.0
FUTURE ALLOWANCE			50.0	25.0	100	50.0	25.0	75.0
TOTAL				471		240.6	210.0	450.6

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NORTH CAROLINA PROFESSIONAL SEAL 028297 ENGINEER BRANDON L. MILLER

9/14/2020

PROJECT NORTH PLAN NORTH

KEY PLAN

Construction Documents

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER:
20-21673-01A

CODE:
41928

ITEM:
302

SGA | NW DESIGN PROJECT NUMBER:
19-202-01

DESIGNED BY: AJH
DRAWN BY: AJH
CHECKED BY: BLM

ISSUE DATE:
September 14, 2020

ELECTRICAL LEGEND AND NOTES

E001

SCALE: NO SCALE

9/22/2020 12:21:39 PM

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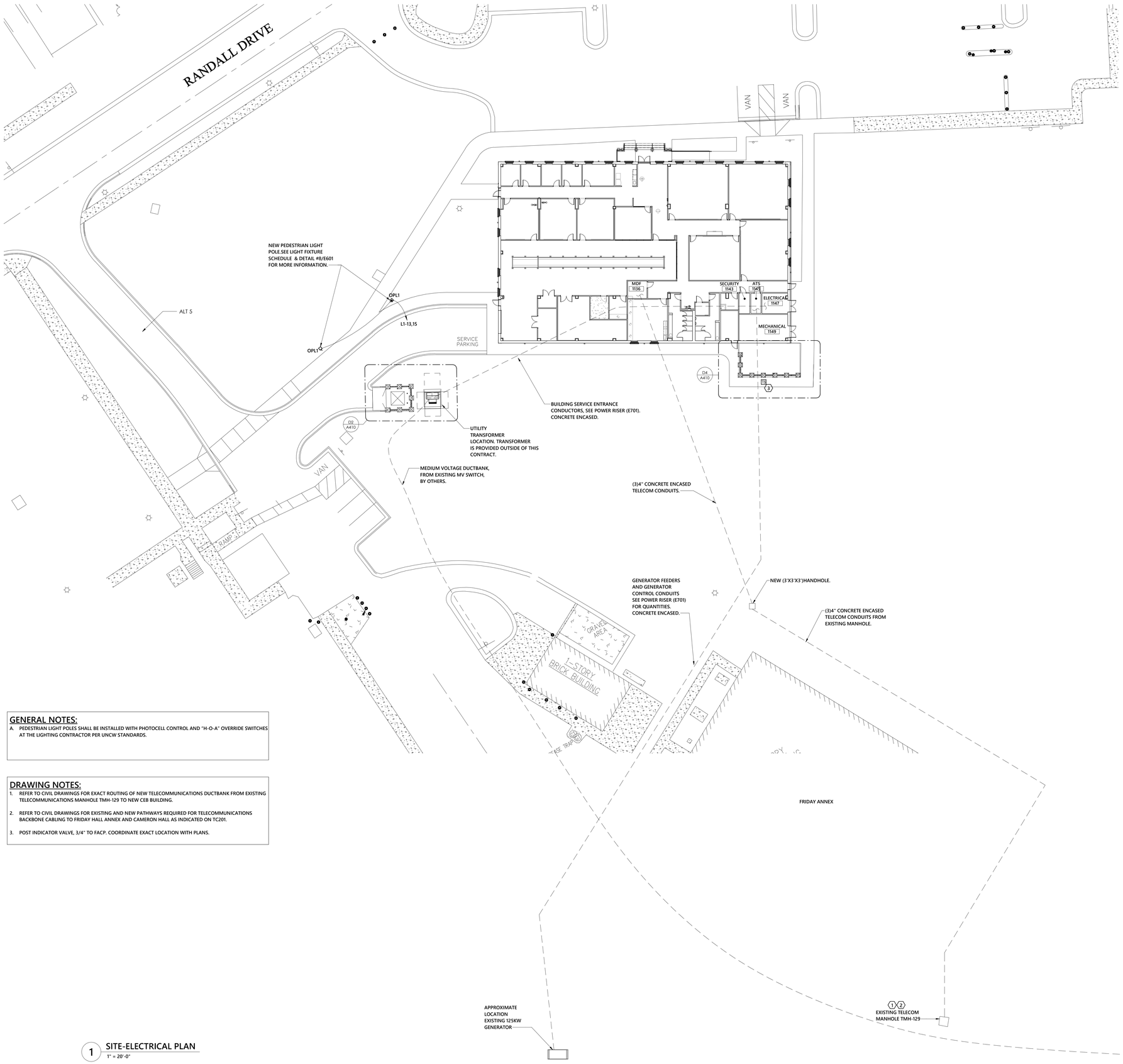

GENERAL NOTES:

A. PEDESTRIAN LIGHT POLES SHALL BE INSTALLED WITH PHOTOCELL CONTROL AND "H-O-A" OVERRIDE SWITCHES AT THE LIGHTING CONTRACTOR PER UNCW STANDARDS.

DRAWING NOTES:

1. REFER TO CIVIL DRAWINGS FOR EXACT ROUTING OF NEW TELECOMMUNICATIONS DUCTBANK FROM EXISTING TELECOMMUNICATIONS MANHOLE TMH-129 TO NEW CEB BUILDING.
2. REFER TO CIVIL DRAWINGS FOR EXISTING AND NEW PATHWAYS REQUIRED FOR TELECOMMUNICATIONS BACKBONE CABLING TO FRIDAY HALL ANNEX AND CAMERON HALL AS INDICATED ON TC201.
3. POST INDICATOR VALVE, 3/4" TO FACP. COORDINATE EXACT LOCATION WITH PLANS.

1 **SITE-ELECTRICAL PLAN**
1" = 20'-0"

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9/14/2020

PROJECT NORTH | PLAN NORTH

KEY PLAN

Construction Documents

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER:
20-21673-01A

CODE:
41928

ITEM:
302

SGA | NW DESIGN PROJECT NUMBER:
19-202-01

DESIGNED BY: AJH
DRAWN BY: AJH
CHECKED BY: BLM

ISSUE DATE:
September 14, 2020

ELECTRICAL SITE PLAN

E010

SCALE: As indicated

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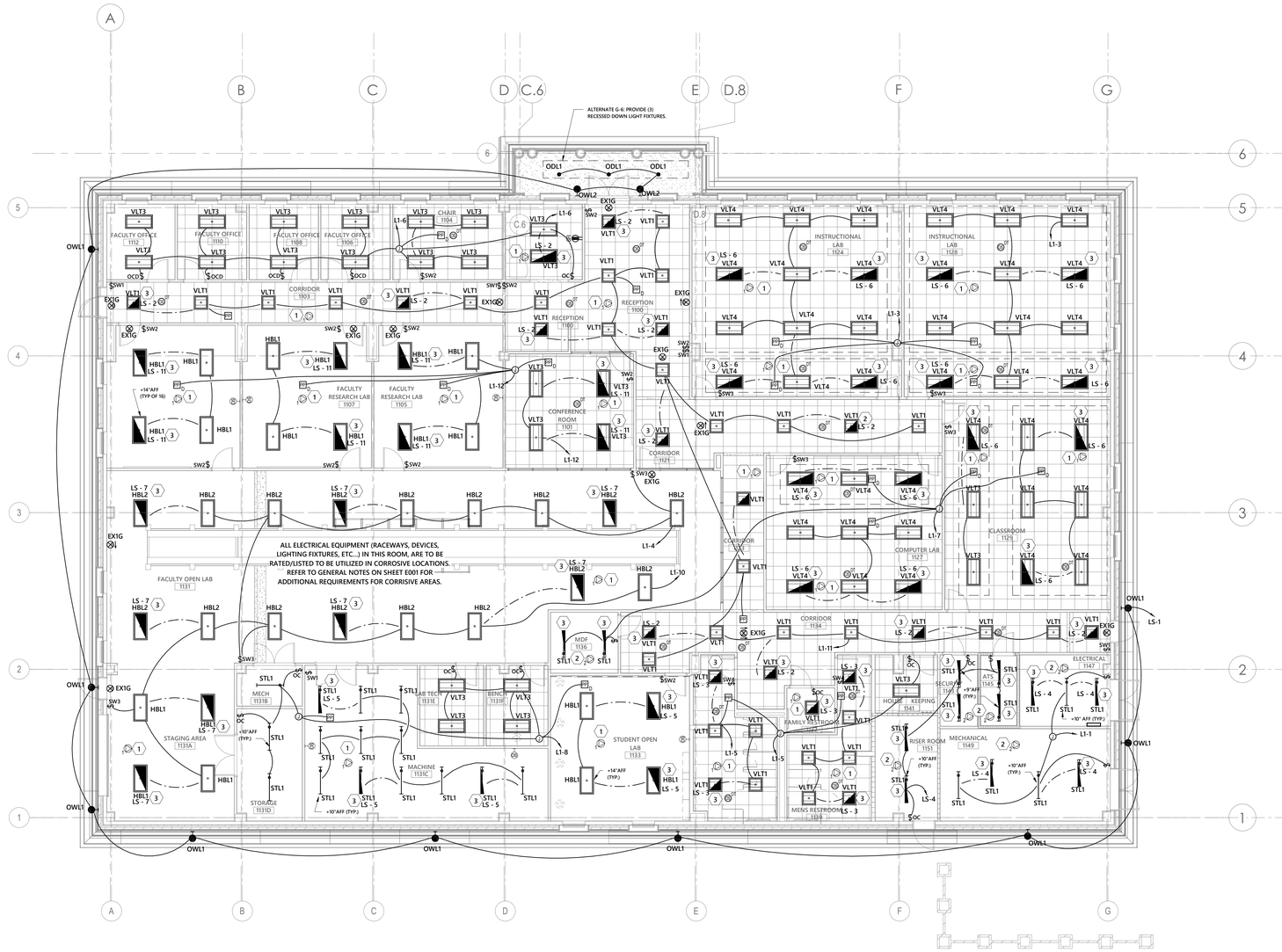
GENERAL NOTE:

A. ALL OUTSIDE LIGHTING SHALL BE INSTALLED WITH PHOTOCELL CONTROL AND "H-O-A" OVERRIDE SWITCHES AT THE LIGHTING CONTRACTOR PER UNIVERSITY OF WILMINGTON STANDARDS.
B. CONNECT ALL EXIT LIGHT FIXTURES TO THE NEAREST EMERGENCY CIRCUIT. WIRING NOT SHOWN FOR CLARITY.
C. ALL LOW VOLTAGE WIRING IS NOT SHOWN FOR DRAWING CLARITY (SWITCHES, OCCUPANCY SENSORS, POWER PACKS, ETC..)

(#) KEYED NOTE:

1. EMERGENRY LIGHTING RELAY UNIT, SEE SYMBOL SCHEDULE FOR MORE INFORMATION. CONNECT DEVICE TO LOCAL EMERGENCY CIRCUIT AND LOCAL CONTROLS. CONNECT NORMAL LIGHT CIRCUIT (AHEAD OF RELAY/SWITCHING) FOR VOLTAGE SENSING. SEE TYPICAL CLASSROOM LIGHTING CONTROL DETAIL W/EMERGENCY AND EMERGENCY LIGHTING RELAY CONTROL DETAILS ON SHEET E602 & E603 RESPECTIVELY.
2. EMERGENRY LIGHTING RELAY POWER PACK, SEE SYMBOL SCHEDULE FOR MORE INFORMATION. CONNECT DEVICE TO LOCAL EMERGENCY CIRCUIT AND LOCAL CONTROLS. CONNECT NORMAL LIGHT CIRCUIT (AHEAD OF RELAY/SWITCHING) FOR VOLTAGE SENSING. SEE TYPICAL CLASSROOM LIGHTING CONTROL DETAIL W/EMERGENCY AND EMERGENCY LIGHTING RELAY CONTROL DETAILS ON SHEET E602 & E603 RESPECTIVELY.
3. EMERGENCY FIXTURE SHALL BE POWERED VIA GENERATOR RELAY DEVICE IN THIS ZONE/ROOM. PROVIDE NORMAL CONTROL WIRING TO COMPLETE SWITCHING AS SHOWN.



1 **FIRST FLOOR LIGHTING PLAN**
1/8" = 1'-0"

1/8" = 1'-0"
8 0 8 16 24
SCALE IN FEET

RATED PARTITION LEGEND

1 HR RATED PARTITION

2 HR RATED PARTITION

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NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT LAE.AL 2028297

9/14/2020

PROJECT NORTH PLAN NORTH

KEY PLAN

Construction Documents

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER:
20-21673-01A

CODE:
41928

ITEM:
302

SGA | NW DESIGN PROJECT NUMBER:
19-202-01

DESIGNED BY: AJH
DRAWN BY: AJH
CHECKED BY: BLM

ISSUE DATE:
September 14, 2020

FIRST FLOOR LIGHTING PLAN

E101

SCALE: As indicated

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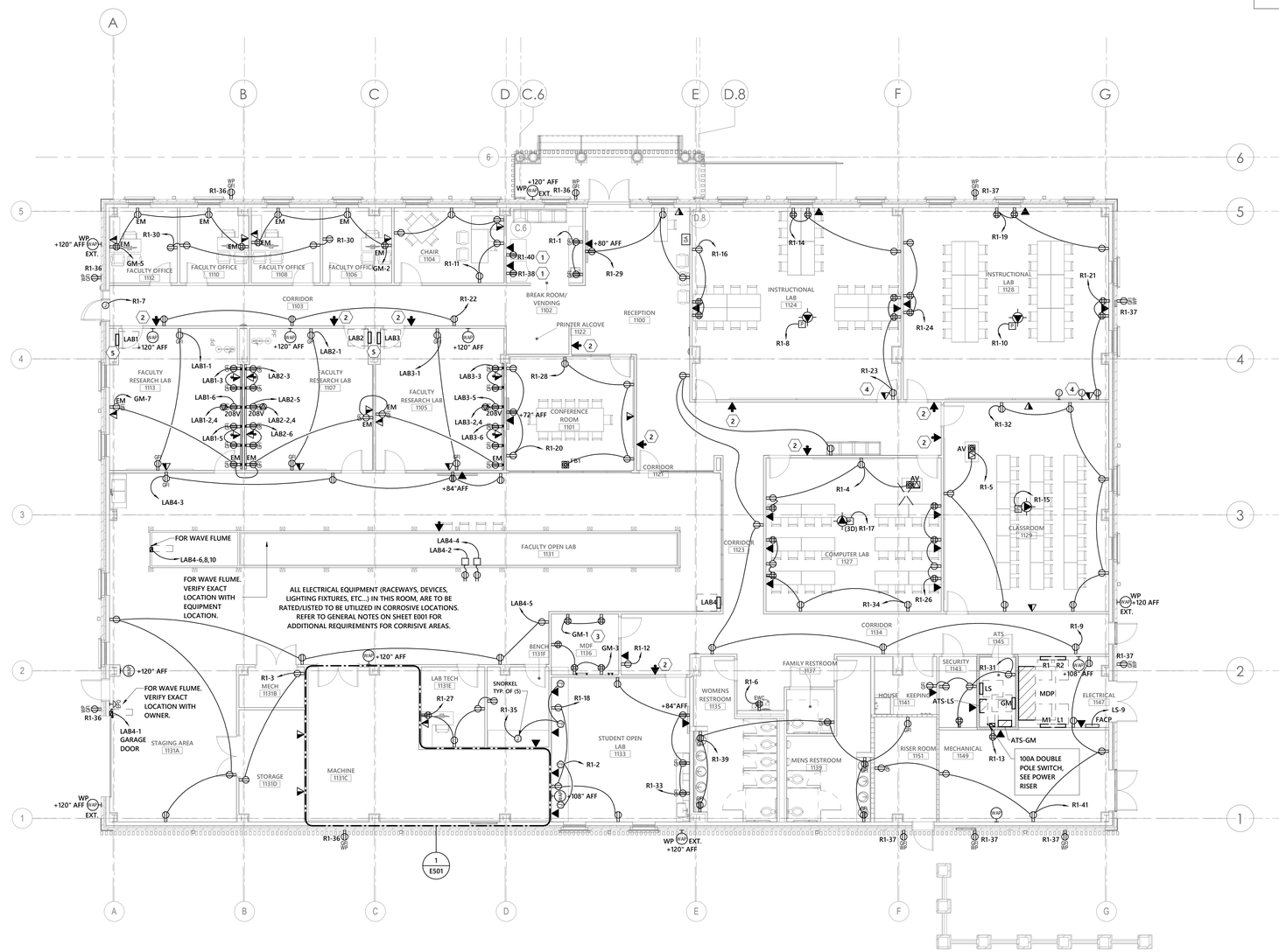
GENERAL NOTE:

A. ELECTRICAL CONTRACTOR SHALL VERIFY ALL ELECTRIC MOTORS OF 5 HORSEPOWER AND LARGER HAVE WIRING TERMINATED IN THE MOTOR TERMINAL JUNCTION BOX AND ACCOMPLISHED WITH EITHER COPPER SPLIT BOLTS OR RING TERMINAL BOLTS AND NUTS. WIRE NUTS ARE NOT ACCEPTABLE ON MOTORS OF 5 HORSEPOWER AND LARGER PER UNIVERSITY OF WILMINGTON STANDARDS.

B. PROVIDE RED COLOR DEVICE AND PLATE FOR ALL RECEPTACLE OUTLETS THAT ARE POWERED FROM GENERATOR PANEL PER UNIVERSITY OF WILMINGTON STANDARDS.

(#) KEYED NOTE:

1. PROVIDE POWER & DATA OUTLETS FOR VENDINT MACHINE AT +84" AFF. COORDINATE EXACT LOCATION WITH ARCHITECT BEFORE ROUGH-IN.
2. DATA AT +48" AFF FOR ROOM RESERVATION DISPLAYS.
3. RECEPTACLES IN THIS ROOM SHALL BE MOUNTED AT +82" AFF.
4. 2-GANG J-BOX @ 18" AFF FOR AV, PROVIDE WITH BLANK COVER PLATE. STUB 1-1/4" CONDUIT TO ABOVE CEILING..
5. PROVIDE (6) 1" CONDUITS STUBBED FROM EACH RECESSED PANEL TO LOCATION ABOVE CEILING FOR FUTURE CAPACITY.



1 FIRST FLOOR POWER PLAN

1/8" = 1'-0"

1/8" = 1'-0"

8 0 8 16 24

SCALE IN FEET

RATED PARTITION LEGEND

- 1 HR RATED PARTITION
- 2 HR RATED PARTITION

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NORTH CAROLINA REGISTERED LICENSED ARCHITECT SEAL 028297

9/14/2020

PROJECT NORTH

PLAN NORTH

KEY PLAN

Construction Documents

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER:
20-21673-01A

CODE:
41928

ITEM:
302

SGA | NW DESIGN PROJECT NUMBER:
19-202-01

DESIGNED BY: AJH
DRAWN BY: AJH
CHECKED BY: BLM

ISSUE DATE:
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FIRST FLOOR POWER PLAN

E201

SCALE: As indicated

9/22/2020 12:21:52 PM

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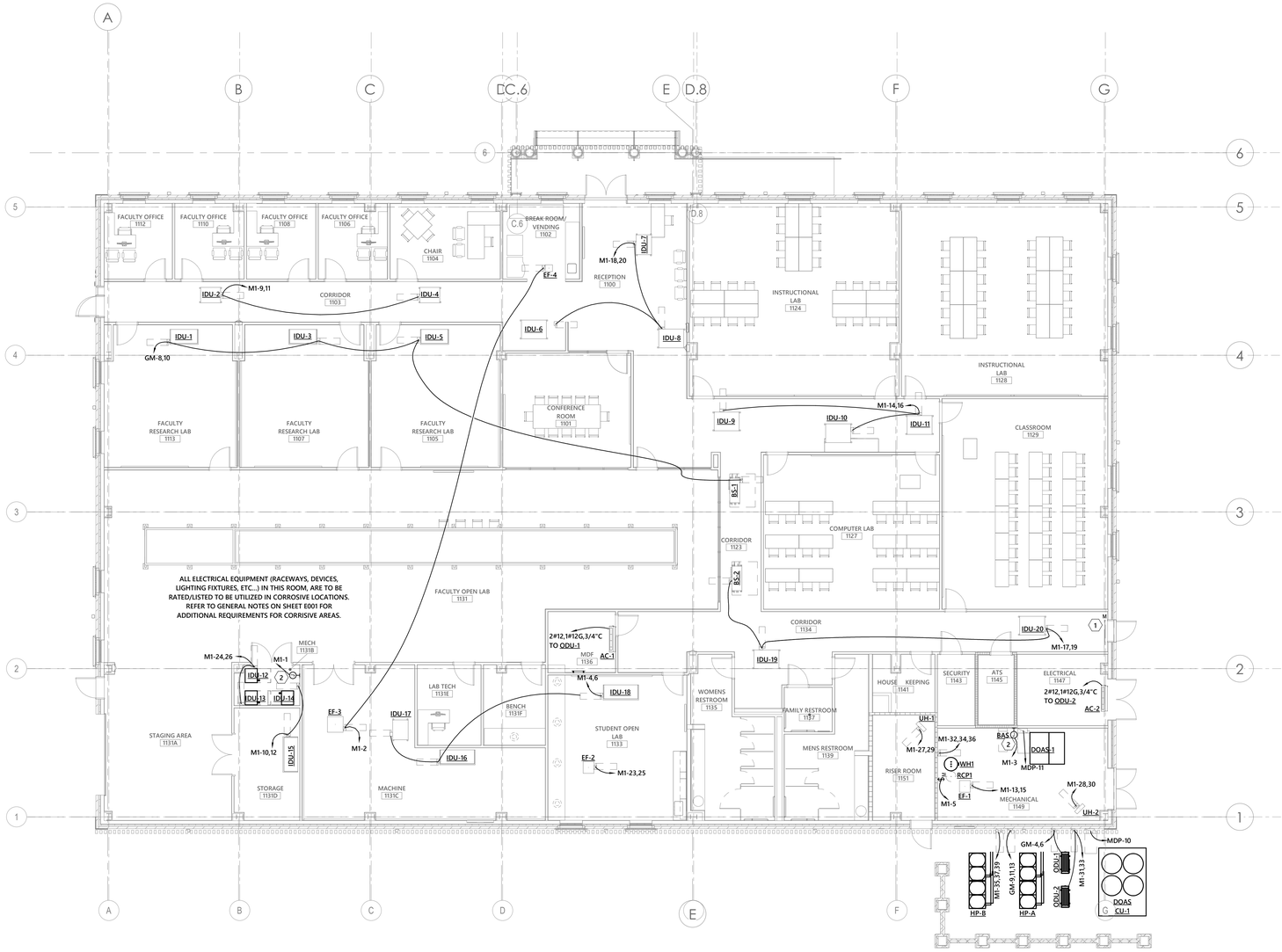
GENERAL NOTE:

A. ELECTRICAL CONTRACTOR SHALL VERIFY ALL ELECTRIC MOTORS OF 5 HORSEPOWER AND LARGER HAVE WIRING TERMINATED IN THE MOTOR TERMINAL JUNCTION BOX AND ACCOMPLISHED WITH EITHER COPPER SPLIT BOLTS OR RING TERMINAL BOLTS AND NUTS. WIRE NUTS ARE NOT ACCEPTABLE ON MOTORS OF 5 HORSEPOWER AND LARGER.

KEYED NOTE:

1. PROVIDE 120V CONNECTION FROM LOCAL 20A, NORMAL POWER RECEPTACLE CIRCUIT.
2. J-BOX FOR MECHANICAL CONTROLS. COORDINATE EXACT LOCATION WITH MECHANICAL CONTRACTOR.



1 **FIRST FLOOR EQUIPMENT CONNECTIONS PLAN**
1/8" = 1'-0"

1/8" = 1'-0"

8 0 8 16 24

SCALE IN FEET

RATED PARTITION LEGEND

- 1 HR RATED PARTITION
- 2 HR RATED PARTITION

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PROJECT NORTH PLAN NORTH

KEY PLAN

Construction Documents

Revision Schedule		
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Coastal Engineering Building

UNCW
University of North Carolina Wilmington

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Wilmington, NC 28403

SCO PROJECT NUMBER:
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CODE:
41928

ITEM:
302

SGA | NW DESIGN PROJECT NUMBER:
19-202-01

DESIGNED BY: AJH
DRAWN BY: AJH
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ISSUE DATE:
September 14, 2020

FIRST FLOOR EQUIPMENT CONNECTIONS PLAN

E301

SCALE: As indicated

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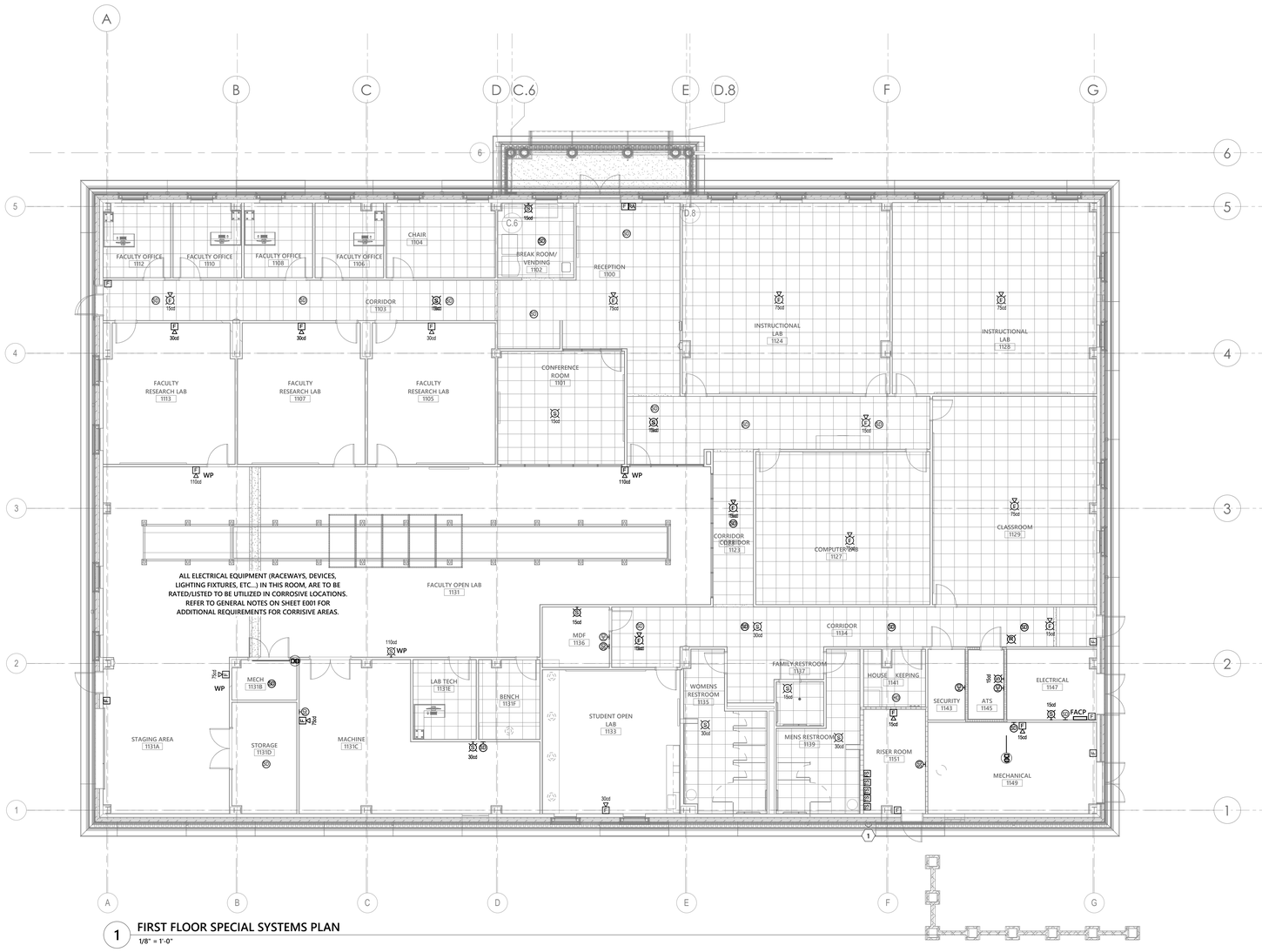
KEYED NOTE:

1. SPRINKLER BELL. CONNECT TO LOCAL 24V FACP CIRCUIT. ACTIVATED WITH FIRE ALARM SIGNAL OF SPRINKLER SYSTEM WATER FLOW.



1 **FIRST FLOOR SPECIAL SYSTEMS PLAN**
1/8" = 1'-0"

1/8" = 1'-0"

8 0 8 16 24

SCALE IN FEET

RATED PARTITION LEGEND

- 1 HR RATED PARTITION
- 2 HR RATED PARTITION

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NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT SEAL 2829 Jennifer Lee Jones

9/14/2020

PROJECT NORTH

PLAN NORTH

KEY PLAN

Construction Documents

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER:
20-21673-01A

CODE:
41928

ITEM:
302

SGA | NW DESIGN PROJECT NUMBER:
19-202-01

DESIGNED BY: AJH
DRAWN BY: AJH
CHECKED BY: BLM

ISSUE DATE:
September 14, 2020

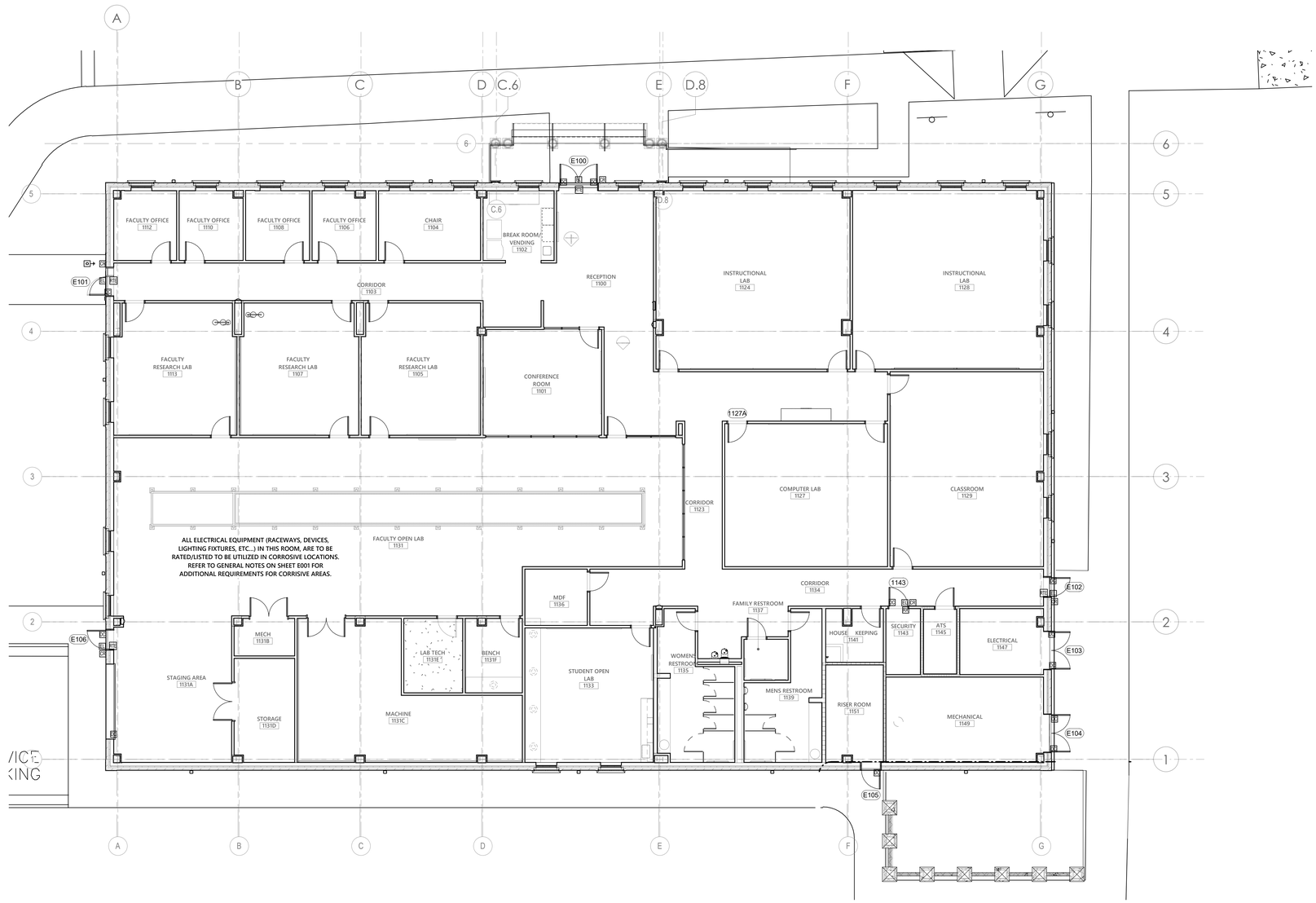
FIRST FLOOR SPECIAL SYSTEMS PLAN

E401

SCALE: As indicated

GENERAL NOTE:

1. REQUEST TO EXIT SHALL BE INTEGRATED INTO DOOR HARDWARE. COORDINATE WITH DOOR HARDWARE CONSULTANT/ARCHITECT. SECURITY CONTRACTOR SHALL PROVIDE ALL INTERCONNECTIONS.



1 FIRST FLOOR SECURITY PLAN

1/8" = 1'-0"

1/8" = 1'-0" — 8 0 8 16 24

SCALE IN FEET

RATED PARTITION LEGEND

- 1 HR RATED PARTITION
- 2 HR RATED PARTITION

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NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT SEAL 2828297

9/14/2020

PROJECT NORTH | PLAN NORTH

KEY PLAN

Construction Documents

Revision Schedule		
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Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
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20-21673-01A

CODE:
41928

ITEM:
302

SGA | NW DESIGN PROJECT NUMBER:
19-202-01

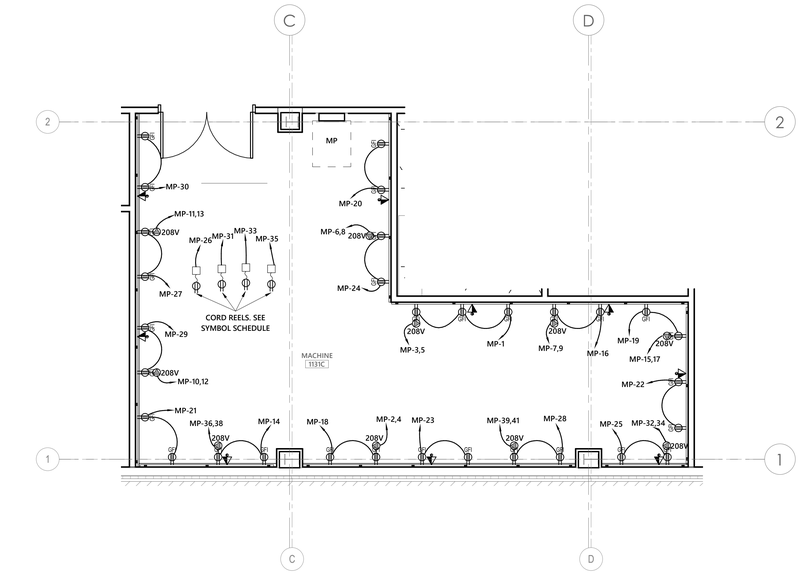
DESIGNED BY: AJH
DRAWN BY: AJH
CHECKED BY: BLM

ISSUE DATE:
September 14, 2020

FIRST FLOOR SECURITY PLAN

E402

SCALE: As indicated



1 ENLARGED MACHINE ROOM 1131C - POWER
1/4" = 1'-0"

1/4" = 1'-0"

4 0 4 8 12

SCALE IN FEET

RATED PARTITION LEGEND

1 HR RATED PARTITION

2 HR RATED PARTITION

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NORTH CAROLINA REGISTERED LICENSED ARCHITECT ALEXANDER J. HOLT 32829

9/14/2020

PROJECT NORTH

PLAN NORTH

KEY PLAN

Construction Documents

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER:
20-21673-01A

CODE:
41928

ITEM:
302

SGA | NW DESIGN PROJECT NUMBER:
19-202-01

DESIGNED BY: AJH
DRAWN BY: AJH
CHECKED BY: BLM

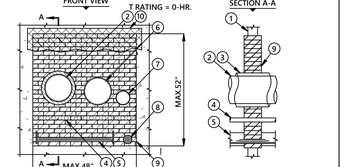
ISSUE DATE:
September 14, 2020

ENLARGED ELECTRICAL PLANS

E501

SCALE: As indicated

U.L. SYSTEM NO. WJ18007
MULTIPLE PENETRATING ITEMS THROUGH CONCRETE FLOOR OR WALL

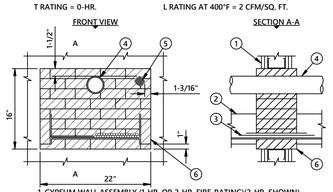


1. CONCRETE FLOOR OR WALL ASSEMBLY (MINIMUM 4-1/2" THICK).
2. MAXIMUM 12" DIAMETER STEEL PIPE OR MAXIMUM 6" DIAMETER COPPER PIPE.
3. MAXIMUM 1-1/2" THICK GLASS-FIBER PIPE INSULATION.
4. 1-1/2" DIAMETER STEEL CONDUIT (MAXIMUM QUANTITY = 15).
5. STEEL OR ALUMINUM CABLE TRAY (MAXIMUM SIZE : 36" x 6") WITH ANY OF THE FOLLOWING TYPES OF CABLE MAY BE USED WITH MAXIMUM 30% FILL OF CABLE TRAY :
   A. MAXIMUM 500 KCMIL SINGLE CONDUCTOR POWER CABLE.
   B. MAXIMUM 7/C NO. 12 AWG COPPER CONDUCTOR CABLE.
   C. MAXIMUM 300 PAIR NO. 24 AWG TELEPHONE CABLES.
6. MAXIMUM 30" DIAMETER STEEL PIPE (12" DIAMETER PIPE SHOWN).
7. 6" DIAMETER STEEL PIPE.
8. MAXIMUM 4" DIAMETER CABLE BUNDLE TO INCLUDE ANY OF THE FOLLOWING :
   A. FIBER-OPTIC CABLE (MAX. 1/2" DIA).
   B. ROMEX (2/C NO. 10 +GROUND).
   C. 25 PAIR NO. 24 AWG TELEPHONE CABLES.
   D. 7/C NO. 12 AWG CABLES.
   E. RG 62A COAXIAL CABLES.
   F. METAL CLAD CABLE (MAX. 3/4" DIA.)
9. HILTI FS 657 INTUMESCENT FIRESTOP BLOCK (2" TALL x 5" WIDE x 8" DEEP, REF: FRONT VIEW).
10. SEE NOTE NO. 4 BELOW.

NOTES : 1. ANNULAR SPACING FOR CABLE TRAY = MINIMUM 1-1/2".
2. ANNULAR SPACING FOR PIPE AND CABLE PENETRATIONS = MINIMUM 1".
3. INSTALL HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT IN ANY VOID THAT MAY EXIST (AROUND CABLE TRAY, CABLES, OR PIPE PENETRATIONS).
4. IF THE ANNULAR SPACE IS GREATER THAN 5", PROVIDE A STEEL WIRE MESH (NOMINAL 2" SQUARES, NO. 16 SWG). INSTALL ON EACH SIDE OF WALL ASSEMBLY.
5. MAXIMUM AREA OF OPENING = 2496 SQUARE INCHES.

SEE HILTI FIRESTOP INSTALLATION MANUAL FOR ADDITIONAL INSTRUCTIONS
HILTI, INC. TULSA, OK 1-800-879-8000

U.L. SYSTEM NO. WL8013
MULTIPLE PENETRATIONS THROUGH 1-HR. OR 2-HR. GYPSUM WALL
F RATING = 1-HR. OR 2-HR. L RATING AT AMBIENT = 5 CFM/SQ. FT.
T RATING = 0-HR. L RATING AT 400°F = 2 CFM/SQ. FT.

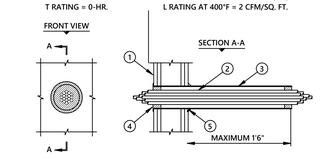


1. GYPSUM WALL ASSEMBLY (1-HR. OR 2-HR. FIRE-RATING)(2-HR. SHOWN).
2. STEEL OR ALUMINUM CABLE TRAY (MAXIMUM SIZE : 18" x 6").
3. ANY OF THE FOLLOWING TYPES OF CABLE MAY BE USED WITH MAX. 30% FILL ON CABLE TRAY :
   A. 500 KCMIL SINGLE CONDUCTOR POWER CABLE.
   B. 7/C NO. 12 AWG COPPER CONDUCTOR CABLE.
   C. 300 PAIR NO. 24 AWG TELEPHONE CABLE.
4. MAXIMUM 3" DIAMETER PVC PLASTIC PIPE (SCHEDULE 40)(CLOSED OR VENTED PIPING SYSTEM).
5. CABLE BUNDLE (MAX. 2" DIA.) TO CONSIST OF ANY OF THE FOLLOWING:
   A. FIBER-OPTIC CABLE.
   B. RG 59 COAXIAL CABLE.
   C. 25 PAIR NO. 24 AWG TELEPHONE CABLE.
   D. 7/C NO. 12 AWG COPPER CONDUCTOR.
6. HILTI FS 657 FIRESTOP BLOCKS (2" x 5" x 8" DEEP, REF: FRONT VIEW).

NOTES : 1. NOT SHOWN: PENETRATING ITEMS MAY ALSO INCLUDE A MAX. 4" DIA. STEEL OR COPPER PIPE, EMT, OR STEEL CONDUIT WITH A MAX. 1-1/2" GLASS-FIBER PIPE INSULATION OR NON-INSULATED MAX. 4" STEEL PIPE, EMT, OR CONDUIT.
2. ANNULAR SPACE = MINIMUM 1".
3. INSTALL HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT IN ANY VOID THAT MAY EXIST (AROUND PENETRATING ITEMS, OR BETWEEN BLOCKS).

SEE HILTI FIRESTOP INSTALLATION MANUAL FOR ADDITIONAL INSTRUCTIONS
HILTI, INC. TULSA, OK 1-800-879-8000

U.L. SYSTEM NO. WL3065
CABLE BUNDLE THROUGH 1-HR. OR 2-HR. FIRE-RATED GYPSUM WALL
F RATING = 1-HR. OR 2-HR. L RATING AT AMBIENT = 5 CFM/SQ. FT.
T RATING = 0-HR. L RATING AT 400°F = 2 CFM/SQ. FT.

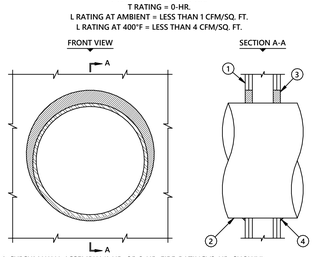


1. GYPSUM WALL ASSEMBLY (1-HR. OR 2-HR. FIRE-RATING)(2-HR. SHOWN).
2. CABLE BUNDLE TO CONSIST OF ANY OF THE FOLLOWING :
   A. 7/C NO. 12 AWG CAGLES.
   B. 12 PAIR 24 AWG PHONE CABLES.
   C. 25 PAIR 24 AWG PHONE CABLES.
   D. RG 59 COAXIAL CABLES.
   E. 2/C (+GND) NO. 14 AWG METAL-CLAD CABLES.
   F. 2/C NO. 8 AWG METAL-CLAD CABLES.
   G. MAXIMUM 1/2" DIAMETER FIBER-OPTIC CABLES.
3. OPTIONAL : MAX. 4" NOM. DIA. STEEL PIPE SLEEVE (SCH. 40 OR THINNER)(SEE NOTE NO. 4).
4. HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT :
   A. MINIMUM 5/8" DEPTH OF SEALANT FOR A 1-HR. FIRE-RATING.
   B. MINIMUM 1-1/4" DEPTH OF SEALANT FOR A 2-HR. FIRE-RATING.
5. SEE NOTE NO. 4 BELOW.

NOTES : 1. MAXIMUM DIAMETER OF OPENING = 4-1/2".
2. CABLES TO FILL MAXIMUM 33% OF AREA OF OPENING.
3. ANNULAR SPACE = MINIMUM 1/4", MAXIMUM 3/4".
4. STEEL SLEEVE MAY BE FLUSH WITH WALL SURFACE OR EXTEND UP TO 18" BEYOND WALL SURFACE IN ANY COMBINATION. WHEN SLEEVE IS FLUSH WITH WALL, APPLY HILTI FS-ONE FIRESTOP SEALANT ONTO WALL SURFACE. WHEN SLEEVE IS EXTENDED BEYOND ONE OR BOTH SIDES OF WALL, APPLY 1/2" CROWN HILTI FS-ONE FIRESTOP SEALANT TO WALL/SLEEVE INTERFACE.

SEE HILTI FIRESTOP INSTALLATION MANUAL FOR ADDITIONAL INSTRUCTIONS
HILTI, INC. TULSA, OK 1-800-879-8000

U.L. SYSTEM NO. WL1054
METAL PIPE THROUGH GYPSUM WALL ASSEMBLY
F RATING = 1-HR. OR 2-HR. L RATING AT AMBIENT = LESS THAN 1 CFM/SQ. FT.
T RATING = 0-HR. L RATING AT 400°F = LESS THAN 4 CFM/SQ. FT.

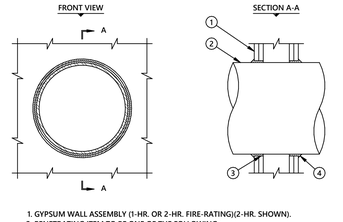


1. GYPSUM WALL ASSEMBLY (1-HR. OR 2-HR. FIRE-RATING)(2-HR. SHOWN).
2. PENETRATING ITEM TO BE ONE OF THE FOLLOWING :
   A. MAXIMUM 30" DIAMETER STEEL PIPE (SCHEDULE 10 OR HEAVIER).
   B. MAXIMUM 6" DIAMETER COPPER PIPE.
   C. MAXIMUM 6" DIAMETER STEEL CONDUIT.
   D. MAXIMUM 4" DIAMETER STEEL EMT.
3. HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT :
   A. MINIMUM 5/8" DEPTH OF SEALANT FOR A 1-HR. FIRE-RATING.
   B. MINIMUM 1-1/4" DEPTH OF SEALANT FOR A 2-HR. FIRE-RATING.
4. MINIMUM 1/2" BEAD HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT AT POINT OF CONTACT.

NOTES : 1. MAXIMUM DIAMETER OF OPENING = 32-1/4".
2. ANNULAR SPACE = MINIMUM 0", MAXIMUM 2-1/4".

SEE HILTI FIRESTOP INSTALLATION MANUAL FOR ADDITIONAL INSTRUCTIONS
HILTI, INC. TULSA, OK 1-800-879-8000

U.L. SYSTEM NO. WL1085
EMT THROUGH 1-HR. OR 2-HR. GYPSUM WALL ASSEMBLY
F RATING = 1-HR. AND 2-HR.
T RATING = 0-HR.
L RATING AT AMBIENT = LESS THAN 1 CFM/SQ. FT.
L RATING AT 400°F = 4 CFM/SQ. FT.

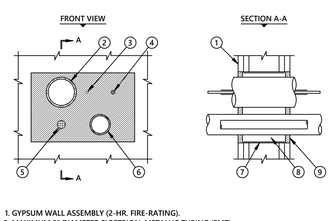


1. GYPSUM WALL ASSEMBLY (1-HR. OR 2-HR. FIRE-RATING)(2-HR. SHOWN).
2. PENETRATING ITEM TO BE ONE OF THE FOLLOWING :
   A. MAXIMUM 12" DIAMETER STEEL PIPE (SCHEDULE 20 OR HEAVIER).
   B. MAXIMUM 12" DIAMETER CAST IRON PIPE.
   C. MAXIMUM 6" DIAMETER COPPER PIPE.
   D. MAXIMUM 6" DIAMETER EMT.
   E. MAXIMUM 6" DIAMETER STEEL CONDUIT.
3. HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT FORCED INTO ANNULAR SPACE TO MAXIMUM EXTENT.
4. MINIMUM 1/2" BEAD HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT AT PIPE/GYPSUM WALLBOARD INTERFACE.

NOTE : ANNULAR SPACE = MINIMUM 0", MAXIMUM 1/4".

SEE HILTI FIRESTOP INSTALLATION MANUAL FOR ADDITIONAL INSTRUCTIONS
HILTI, INC. TULSA, OK 1-800-879-8000

U.L. SYSTEM NO. WL8004
MULTIPLE METAL PIPE AND CABLE THROUGH 2-HR. GYPSUM WALL
F RATING = 2-HR.
T RATING = 1/4-HR.
L RATING AT AMBIENT = LESS THAN 1 CFM/SQ. FT.
L RATING AT 400°F = 4 CFM/SQ. FT.

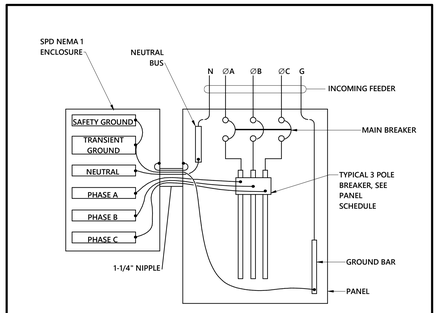


1. GYPSUM WALL ASSEMBLY (2-HR. FIRE-RATING).
2. MAXIMUM 3" DIAMETER ELECTRICAL METALLIC TUBING (EMT).
3. MAXIMUM 25 PAIR NO. 24 AWG (OR SMALLER) TELEPHONE CABLES.
4. MAXIMUM 3/C NO. 10 AWG NM (WITH GROUND) POWER CABLE WITH PVC INSULATION.
5. MAXIMUM 300 KCMIL (OR SMALLER) POWER CABLE WITH PVC INSULATION & NYLON JACKET.
6. MAXIMUM 2" DIAMETER STEEL PIPE, COPPER PIPE, EMT, OR STEEL CONDUIT.
7. NO. 8 STEEL WIRE MESH, 4-3/4" LONG (OR STANDARD METAL DRYWALL TRACK SCREWED SECURELY IN PLACE) CENTERED IN OPENING.
8. MINIMUM 4" THICKNESS MINERAL WOOL (MIN. 4 PCF DENSITY) TIGHTLY PACKED.
9. MIN. 1/2" DEPTH HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT.

NOTES : 1. MAXIMUM AREA OF OPENING = 96 SQUARE INCHES WITH A MAX. DIM. OF 12".
2. DISTANCE BETWEEN ITEMS = MINIMUM 1-3/4", MAXIMUM 7".
3. DISTANCE FROM EDGE OF OPENING = MINIMUM 1/2", MAXIMUM 7". (EXCEPTION: 300 KCMIL POWER CABLE MUST BE MINIMUM 1-1/2" FROM EDGE OF OPENING.

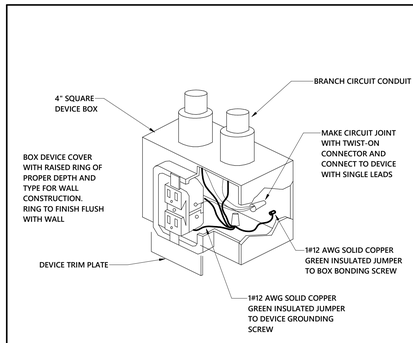
SEE HILTI FIRESTOP INSTALLATION MANUAL FOR ADDITIONAL INSTRUCTIONS
HILTI, INC. TULSA, OK 1-800-879-8000

1

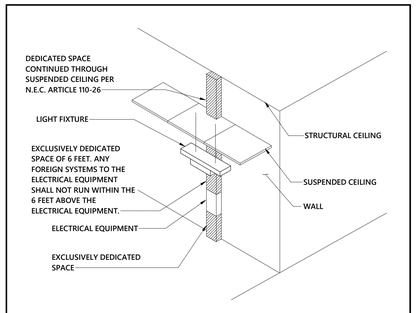


NOTES:
1. ALL WIRING SHALL BE #6 AWG.
2. AVOID SHARP BENDS IN WIRES. ALL WIRE LENGTHS SHALL NOT EXCEED 18" (WHERE POSSIBLE).
3. SEE SPD SPECIFICATION FOR EXACT TYPE (H1,H2,L1,L2) FOR LOCATION AS INDICATED ON THE POWER RISER DIAGRAM.

2 SPD CONNECTION DETAIL
NOT TO SCALE



3 RECEPTACLE GROUNDING DETAIL
NO SCALE



NOTES:

THIS FIGURE ILLUSTRATES THE ADDITIONAL EXCLUSIVELY DEDICATED SPACE REQUIRED OVER AND UNDER THE ELECTRICAL EQUIPMENT FOR THE CABLES, RACEWAYS, ETC., TO AND FROM THE ELECTRICAL EQUIPMENT REQUIRED BY SECTION 11-26 OF THE NATIONAL ELECTRICAL CODE.

4 DEDICATED SPACE FOR ELECTRICAL EQUIPMENT
NO SCALE

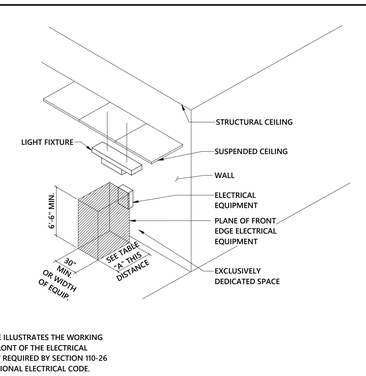


TABLE A - WORKING CLEARANCES

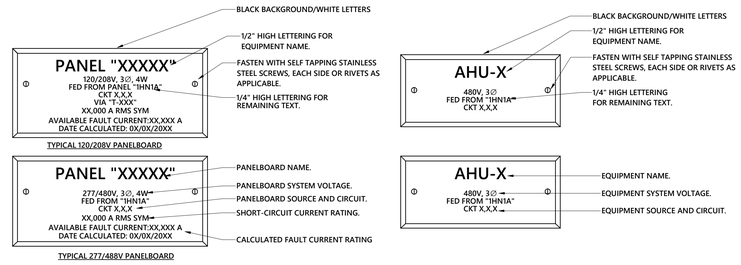
VOLTAGE TO GROUND NOMINAL	MINIMUM CLEAR DISTANCE (FEET) CONDITION:	1	2	3
0 - 150		3	3	3
151 - 600		3	3 1/2	4

WHERE THE "CONDITIONS" ARE AS FOLLOWS:

1. EXPOSED LIVE PARTS ON ONE SIDE AND NO LIVE OR GROUNDED PARTS ON THE OTHER SIDE OF THE WORKING SPACE, OR EXPOSED PARTS ON BOTH SIDES EFFECTIVELY GUARDED BY SUITABLE WOOD OR OTHER INSULATING MATERIALS. INSULATED WIRE OR INSULATED BUSBARS OPERATING AT NOT OVER 300V SHALL NOT BE CONSIDERED LIVE PARTS.
2. EXPOSED LIVE PARTS ON ONE SIDE AND GROUNDED PARTS ON THE OTHER SIDE.
3. EXPOSED LIVE PARTS ON BOTH SIDES OF THE WORK SPACE (NOT GUARDED AS PROVIDED IN CONDITION 1) WITH THE OPERATOR BETWEEN.

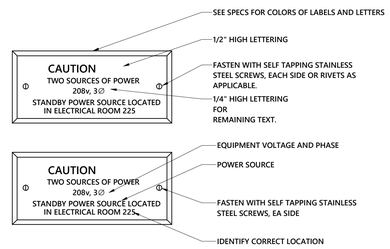
NOTES:
THIS FIGURE ILLUSTRATES THE WORKING SPACE IN FRONT OF THE ELECTRICAL EQUIPMENT REQUIRED BY SECTION 110-26 OF THE NATIONAL ELECTRICAL CODE.

5 WORKING CLEARANCE FOR ELECTRICAL EQUIPMENT
NO SCALE

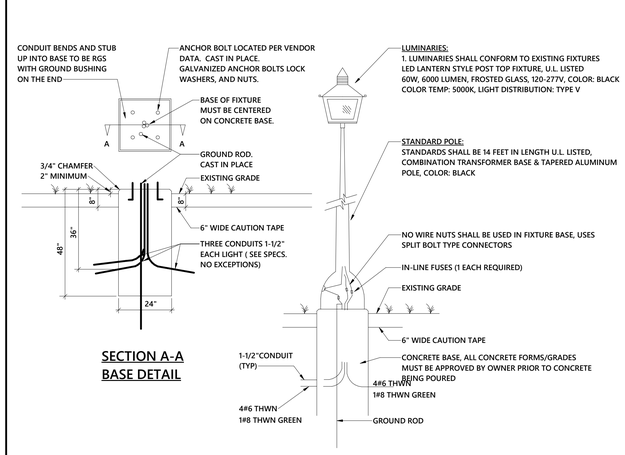


NOTES:
1. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS, COLORS, ETC.
2. PROVIDE SHORT-CIRCUIT CURRENT RATING AND AVAILABLE FAULT CURRENT ON EACH NON-DWELLING SERVICE EQUIPMENT NAMEPLATE.

6 TYPICAL NAMEPLATE DIAGRAM
NOT TO SCALE



7 EMERGENCY POWER NAMEPLATE
NOT TO SCALE



8 POLE BASE DETAIL
NOT TO SCALE

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DESIGN

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155 Fayetteville St., Suite 505, Raleigh, NC 27601
Phone: 704.338.1292 - www.optimaengineering.com
North Carolina License Number C-0914

9/14/2020

PROJECT NORTH PLAN NORTH

KEY PLAN

Construction Documents

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER:
20-21673-01A

CODE:
41928

ITEM:
302

SGA | NW DESIGN PROJECT NUMBER:
19-202-01

DESIGNED BY: AJH
DRAWN BY: AJH
CHECKED BY: BLM

ISSUE DATE:
September 14, 2020

ELECTRICAL DETAILS

E601

SCALE: As indicated

9/22/2020 12:22:08 PM

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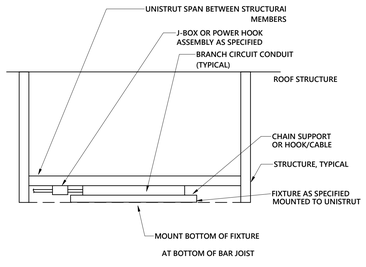
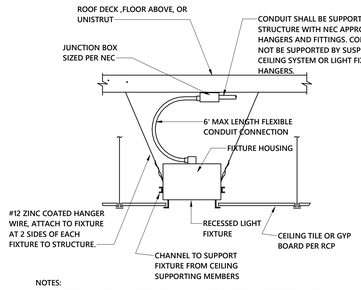


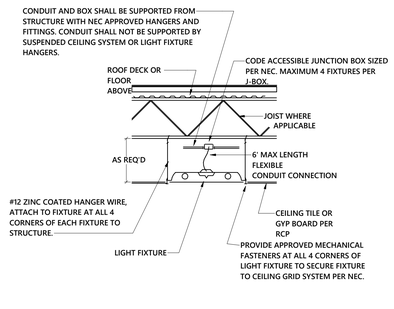
NOTES:
1. ORIENTATION SHOWN IS FOR PERPENDICULAR TO FLOOR APPLICATIONS. FOR SLOPED JOIST INSTALLATION, MATCH SLOPE OF JOIST AND MOUNT FLUSH WITH JOIST. ADJUST UNISTRUT AS REQUIRED.

1 HI-BAY FIXTURE 2X4
NOT TO SCALE



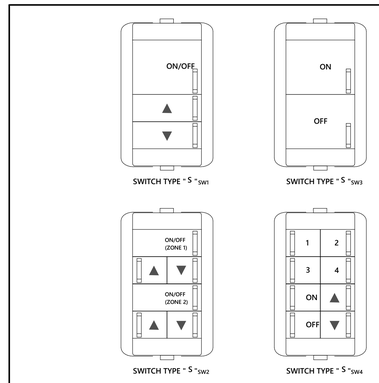
NOTES:
1. WHERE ROOF DECKING IS THE IS THE ALLOWABLE SUPPORT STRUCTURE, AND PATHWAY SYSTEM IS NOT IMC OR RMC, THE MINIMUM DISTANCE FROM ROOF DECKING SHALL BE 1.5" FOR ALL BOXES AND CONDUIT.

2 TYPICAL RECESSED DOWN LIGHT FIXTURE INSTALLATION DIAGRAM
NOT TO SCALE

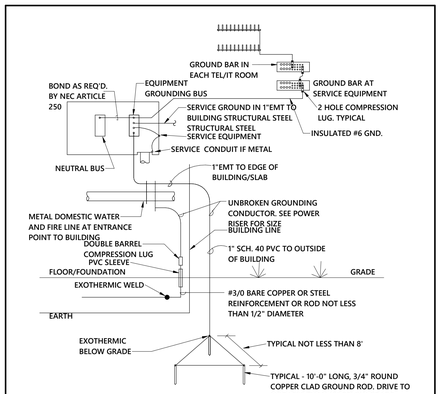


NOTES:
1. WHERE ROOF DECKING IS THE IS THE ALLOWABLE SUPPORT STRUCTURE, AND PATHWAY SYSTEM IS NOT IMC OR RMC, THE MINIMUM DISTANCE FROM ROOF DECKING SHALL BE 1.5" FOR ALL BOXES AND CONDUIT.

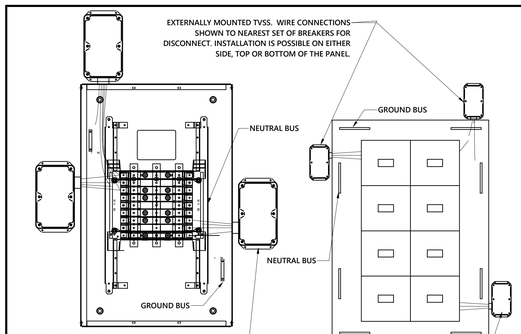
3 TYPICAL LAY-IN FIXTURE DIAGRAM
NOT TO SCALE

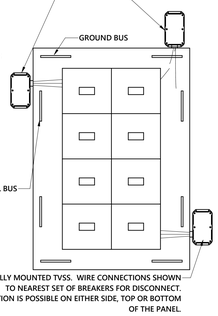


4 SWITCH TYPES "TYPICAL"
NO SCALE



5 SERVICE GROUND DIAGRAM
NOT TO SCALE

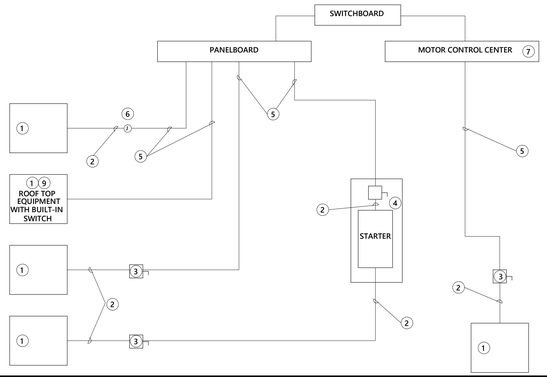




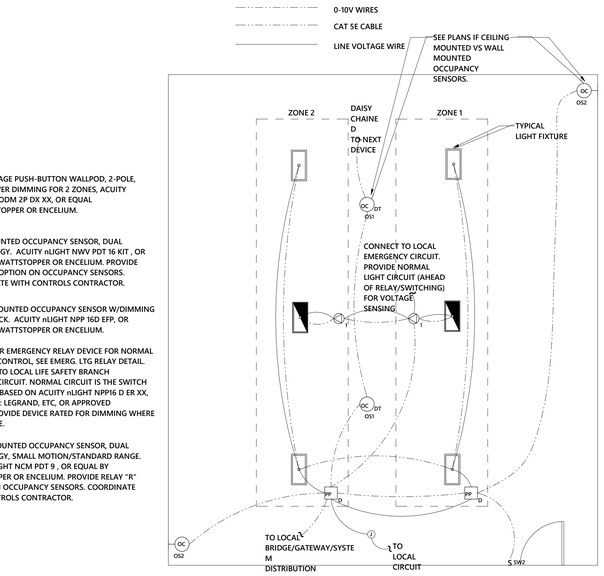
TRANSIENT VOLTAGE SURGE SUPPRESSION NOTES:
1. TVSS DEVICES SHALL BE UL 1283 (LISTED) "ELECTROMAGNETIC INTERFERENCE FILTERS," (TYPE 2 ONLY) AND UL 1449 3RD EDITION (LISTED) "TRANSIENT VOLTAGE SURGE SUPPRESSORS."
2. SPD SHALL BE TYPE 1, 20KA NOMINAL DISCHARGE CURRENT (SERVICE ENTRANCE)
3. SPD SHALL BE TYPE 2, 20KA NOMINAL DISCHARGE CURRENT (ALL OTHER PANELS)
4. INSTALL DEVICES WITH CONDUCTORS BETWEEN SUPPRESSOR AND POINTS OF ATTACHMENT AS SHORT AND STRAIGHT AS POSSIBLE.
5. PROVIDE A MULTIPOLE, 30 AMP CIRCUIT BREAKER AS A DEDICATED DISCONNECT FOR SUPPRESSOR, IN PROPER COORDINATION WITH VOLTAGE CONFIGURATION OF PROTECTED EQUIPMENT.
6. DEVICES SHALL INCORPORATE "DIRECTLY CONNECTED PROTECTION ELEMENTS" BETWEEN ALL POSSIBLE MODES IN EVERY GIVEN SERVICE RATING (I.E. LINE-TO-NEUTRAL, LINE-TO-LINE, LINE-TO-GROUND, NEUTRAL-TO-GROUND) "REDUCED-MODE" VARIATIONS WILL NOT BE ACCEPTED. LINE-TO-NEUTRAL-TO-LINE IS NOT ACCEPTABLE FOR LINE-TO-LINE.
7. WARRANTY: THE MANUFACTURER SHALL PROVIDE A STANDARD UNLIMITED FREE REPLACEMENT OF THE ENTIRE TVSS (NOT JUST MODULES, COMPONENTS OR SUB-ASSEMBLIES) FOR ALL INOPERABLE TVSS DURING THE WARRANTY PERIOD. MINIMUM WARRANTY PERIOD SHALL BE 25 (TWENTY FIVE) YEARS.
8. SEE SPECIFICATION AND PLANS FOR FURTHER DETAILS AND MODEL NUMBERS.
9. FOR SUPPLIER PLEASE CONTACT MIKE BARTON, CHRIS STORK OR IAIN KING AT: 888-987-8877 OR VIA EMAIL AT: BKS@SURGESUPPRESSION.COM

6 TYPICAL TVSS/SPD LOCATIONS FOR SERVICE ENTRANCE, DISTRIBUTIONPANEL OR PANEL BOARD
NOT TO SCALE

ELECTRICAL NOTES:
1. EQUIPMENT OF TRADES OTHER THAN ELECTRICAL.
2. CONDUIT AND WIRING BY HVAC PLUMBING CONTRACTOR OR OTHER TRADES.
3. IF AN ADDITIONAL DISCONNECT IS REQUIRED BY NEC, IT SHALL BE PROVIDED AND INSTALLED BY THE EQUIPMENT CONTRACTOR.
4. A COMBINATION STARTER OR VFD MAY BE USED IN LIEU OF A SEPARATE DISCONNECT SWITCH AND STARTER LOCATE ADJACENT TO EQUIPMENT.
5. FEEDER CIRCUIT WIRING AND CONDUIT IN ELECTRICAL WORK SEE PANELBOARD SCHEDULES FOR WIRE AND BREAKER SIZES.
6. JUNCTION BOX MAY BE SHOWN ON ELECTRICAL PLANS FOR SOME EQUIPMENT. IF NO STARTER OR DISCONNECT IS SUPPLIED, A JUNCTION BOX SHALL BE INSTALLED ADJACENT TO EQUIPMENT. THE ELECTRICAL CONTRACTOR SHALL PROVIDE LINE SIDE WIRING TO THE JUNCTION BOX. LOAD SIDE WIRING WILL BE PROVIDED BY MECHANICAL CONTRACTOR OR OTHER TRADES.
7. PROJECTS UTILIZING AN MCC. THE STARTER, CB, OR VFD IN THE MCC ARE PROVIDED BY THE ELECTRICAL CONTRACTOR.
8. IN ALL CASES THE EQUIPMENT CONTRACTOR SHALL MAKE FINAL CONNECTIONS STARTUP, AND TEST EQUIPMENT.
9. IF THE ROOF TOP EQUIPMENT IS NOT PROVIDED WITH BUILT IN SWITCH, THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL DISCONNECT SWITCH.



7 ELECTRICAL EQUIPMENT CONNECTION
NO SCALE



S SW2 — LOW VOLTAGE PUSH-BUTTON WALLPOD, 2-POLE, RAISE/LOWER DIMMING FOR 2 ZONES, ACUITY nLIGHT NPODM 2P DX XX, OR EQUAL BY WATTSTOPPER OR ENCELIUM.

OC OS2 — WALL MOUNTED OCCUPANCY SENSOR, DUAL TECHNOLOGY. ACUITY nLIGHT NWV PDT 16 KIT , OR EQUAL BY WATTSTOPPER OR ENCELIUM. PROVIDE RELAY "R" OPTION ON OCCUPANCY SENSORS. COORDINATE WITH CONTROLS CONTRACTOR.

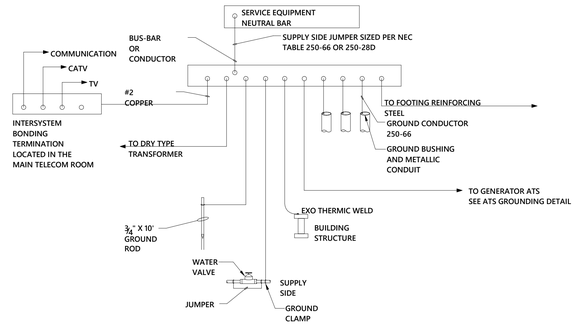
PP D — CEILING MOUNTED OCCUPANCY SENSOR W/DIMMING POWER PACK. ACUITY nLIGHT NPP 16D EFP, OR EQUAL BY WATTSTOPPER OR ENCELIUM.

1 — GENERATOR EMERGENCY RELAY DEVICE FOR NORMAL LIGHTING CONTROL, SEE EMERG. LTG RELAY DETAIL. CONNECT TO LOCAL LIFE SAFETY BRANCH LIGHTING CIRCUIT. NORMAL CIRCUIT IS THE SWITCH CONTROL. BASED ON ACUITY nLIGHT NPP16 D ER XX, EQUALS BY: LEGRAND, ETC, OR APPROVED EQUAL. PROVIDE DEVICE RATED FOR DIMMING WHERE APPLICABLE.

OC DT OS1 — CEILING MOUNTED OCCUPANCY SENSOR, DUAL TECHNOLOGY, SMALL MOTION/STANDARD RANGE. ACUITY nLIGHT NCM PDT 9 , OR EQUAL BY WATTSTOPPER OR ENCELIUM. PROVIDE RELAY "R" OPTION ON OCCUPANCY SENSORS. COORDINATE WITH CONTROLS CONTRACTOR.

GENERAL NOTES:
1. CEILING HEIGHTS GREATER THAN 10', MOUNT SENSOR ON WALL AT 9'.
2. SEE LIGHTING PLANS FOR LOCAL CIRCUIT.
3. SEE PLANS FOR TOTAL LIGHTING FIXTURES REQUIRED.
4. WIRING/DEVICES VARY BASED ON MANUFACTURER DEVICES PROVIDED, ALWAYS REFER TO MANUFACTURER DIAGRAMS FOR EXACT CABLING AND INSTALLATION PROCEDURES.
5. EMERGENCY POWER PACKS TO BE PROVIDED PER ZONE/SWITCHLEG.

8 TYPICAL CLASSROOM LIGHTING CONTROL DETAIL WITH EMERGENCY
NO SCALE



9 SERVICE EQUIPMENT GROUNDING DIAGRAM
NO SCALE

SGA
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1815 S. Tryon St. Suite A
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www.sganwdesign.com

optima engineering
1507 South Tryon St, Suite 300, Charlotte NC 28203
150 Fayetteville St., Suite 520, Raleigh, NC 27601
Phone: 704.338.1092 - www.optimaengineering.com
North Carolina License Number C-0914

NORTH CAROLINA REGISTERED LICENSED ARCHITECT SEAL 028297

9/14/2020

PROJECT NORTH | PLAN NORTH

KEY PLAN

Construction Documents

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER:
20-21673-01A

CODE:
41928

ITEM:
302

SGA | NW DESIGN PROJECT NUMBER:
19-202-01

DESIGNED BY: AJH
DRAWN BY: AJH
CHECKED BY: BLM

ISSUE DATE:
September 14, 2020

ELECTRICAL DETAILS

E602

SCALE: As indicated

9/22/2020 12:22:11 PM

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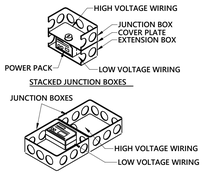
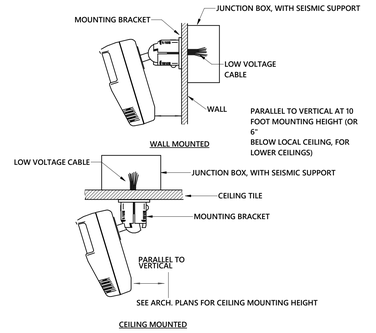


NOTE:
DO NOT MOUNT POWER PACKS CLOSER THAN 6-12 INCHES FROM SENSOR. PROVIDE DOUBLE STACKED JUNCTION BOX FOR MAXIMUM VENTILATION OF POWER PACK. PROVIDE BLANK COVER. WHERE PERMITTED BY CODE AND AHJ, LEAVE (2) OPENINGS IN CONDUIT KNOCKOUT FOR VENTING OF POWER PACK. VERIFY WITH AHJ PRIOR TO KNOCKOUT REMOVAL.

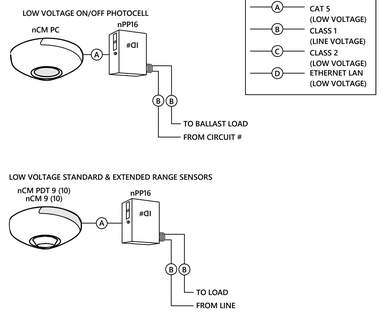
POWER PACK
INSTALLED IN J-BOX

1 POWER PACK INSTALLATION
NOT TO SCALE



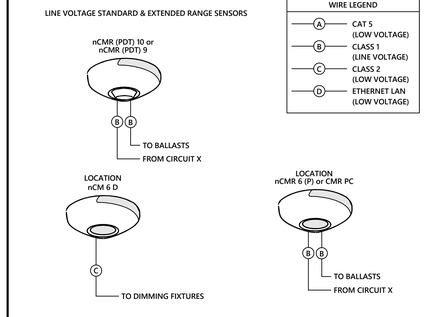
NOTES:
1. TILT SENSOR TOWARD CENTER OF ROOM FOR MAXIMUM EFFECTIVENESS.
2. CALIBRATE SENSITIVITY AND DIRECTION AFTER INSTALLATION.
3. PROVIDE WALL MOUNT BRACKET AND INSTALL AT CORNER MOST SECTION OF ROOM. PATTERN IS BASED ON CONICAL SHAPE.

2 CORNER MOUNT SENSOR
NOT TO SCALE

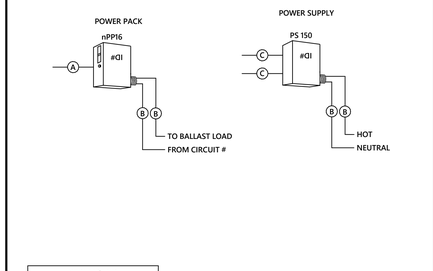


NOTE: PROGRAM ALL OCCUPANCY SENSORS TO 30MIN OFF TIME.

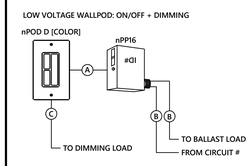
3 OCC. AND PHOTO CELL SENSORS
NOT TO SCALE



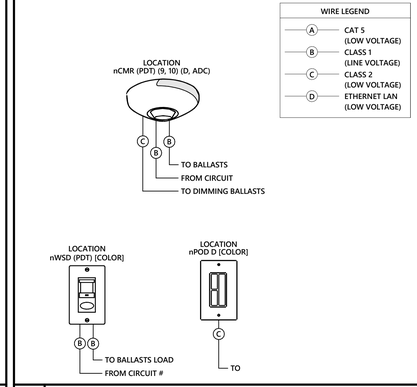
4 CEILING MOUNTED SENSORS
NOT TO SCALE



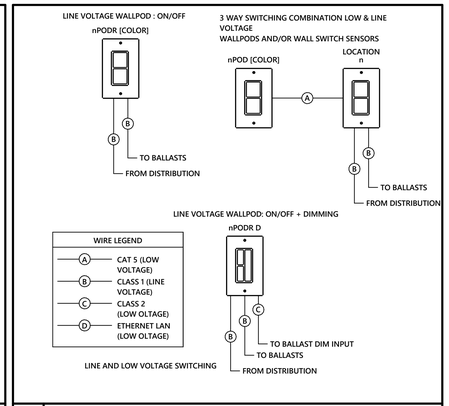
5 POWER PACKS
NOT TO SCALE



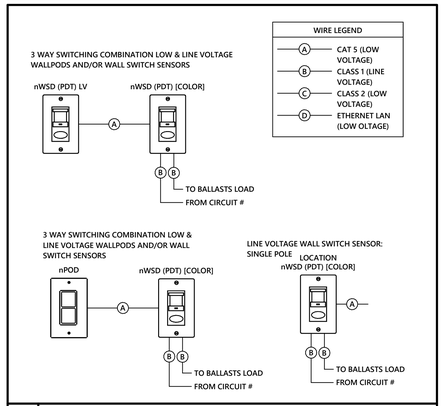
6 DIMMING-NORMAL SWITCH AND POWER PACK
NOT TO SCALE



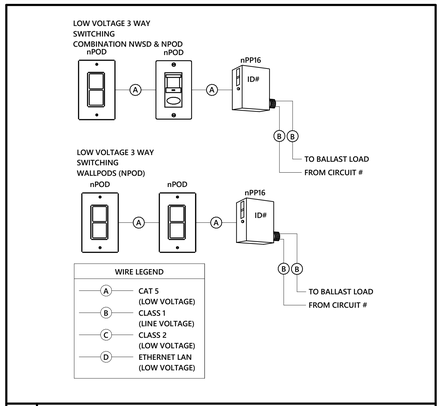
7 SWITCHING AND CEILING MOUNTED SENSOR
NOT TO SCALE



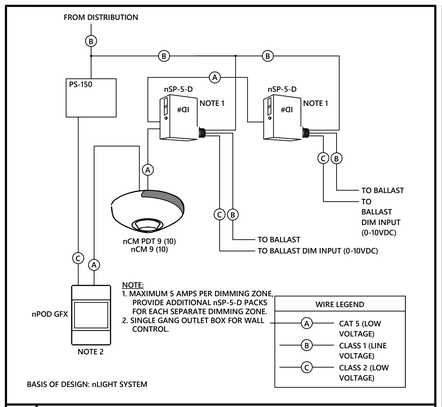
8 LINE & LOW VOLTAGE SWITCHING
NOT TO SCALE



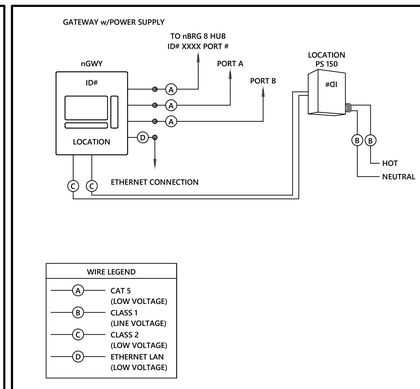
9 SINGLE-3 WAY POLE OCC. SENSOR SWITCH
NOT TO SCALE



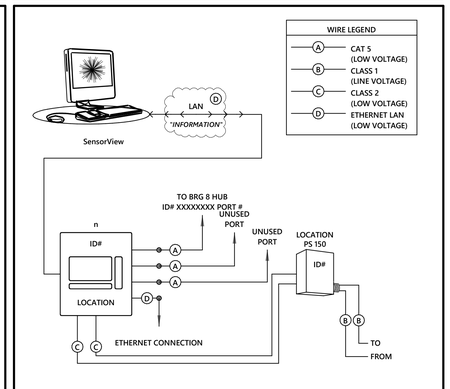
10 3-WAY SWITCHING WITH POWER PACK
NOT TO SCALE



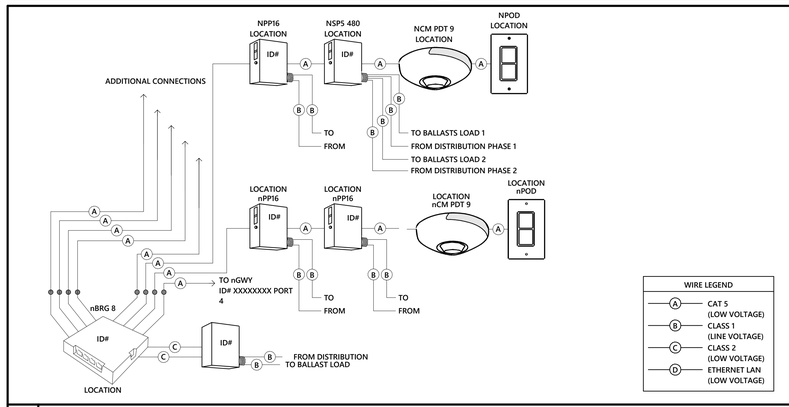
11 LOCAL DIMMING CONTROL SYSTEM
NOT TO SCALE



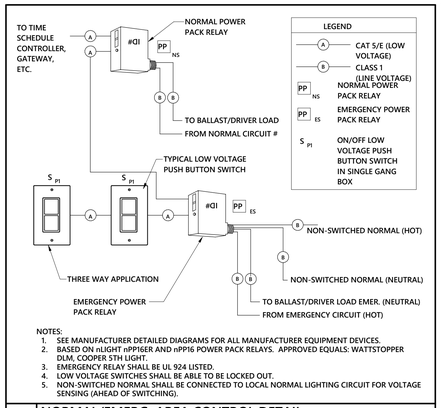
12 GATEWAY SCHEMATIC
NOT TO SCALE



13 GATEWAY SENSOR VIEW AND PP ONE LINE
NOT TO SCALE

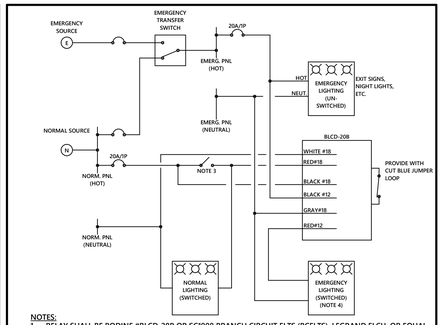


14 BRIDGE ONE-LINE
NOT TO SCALE



NOTES:
1. SEE MANUFACTURER DETAILED DIAGRAMS FOR ALL MANUFACTURER EQUIPMENT DEVICES.
2. BASED ON nLIGHT nPP16ER AND nPP16 POWER PACK RELAYS. APPROVED EQUALS: WATTSTOPPER DLM, COOPER 5TH LIGHT.
3. EMERGENCY RELAY SHALL BE UL 924 LISTED.
4. LOW VOLTAGE SWITCHES SHALL BE ABLE TO BE LOCKED OUT.
5. NON-SWITCHED NORMAL SHALL BE CONNECTED TO LOCAL NORMAL LIGHTING CIRCUIT FOR VOLTAGE SENSING (AHEAD OF SWITCHING).

15 NORMAL/EMERG. AREA CONTROL DETAIL
NO SCALE



NOTES:
1. RELAY SHALL BE BODINE #BLCD-20B OR SC1008 BRANCH CIRCUIT ELTS (BCELTS), LEGRAND ELCU, OR EQUAL.
2. PROVIDE ONE RELAY PER LIFE SAFETY SWITCH LEG / CIRCUIT SHOWN ON PLANS.
3. LOCAL LIGHTING CONTROL (WALL SWITCH, OCCUPANCY SENSOR, RELAY, CONTACT, ETC.).
4. SWITCHED EMERGENCY FIXTURE SHALL BE POWERED VIA THE EMERGENCY PANEL. SWITCHED EMERGENCY FIXTURE SHALL BE CONTROLLED WITH NORMAL LOCAL LIGHTING FIXTURES ONLY WHEN NORMAL POWER IS AVAILABLE. UPON LOSS OF NORMAL POWER, SWITCHED EMERGENCY LIGHTING FIXTURE CONTROL SHALL BE BYPASSED AND THE FIXTURE SHALL BE FULLY ENERGIZED. RELAY SHALL NOT BE UTILIZED AS A POWER TRANSFER DEVICE.

16 EMERGENCY LIGHTING RELAY CONTROL CIRCUIT
NOT TO SCALE

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155 Fayetteville St., Suite 125, Raleigh, NC 27601
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North Carolina License Number C-0914

9/14/2020

PROJECT NORTH
PLAN NORTH

KEY PLAN

Construction Documents

Revision Schedule		
#	Description	Date

Coastal Engineering Building

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403
SCO PROJECT NUMBER:
20-21673-01A
CODE:
41928
ITEM:
302

SGA | NW DESIGN PROJECT NUMBER:
19-202-01

DESIGNED BY: AJH
DRAWN BY: AJH
CHECKED BY: BLM

ISSUE DATE:
September 14, 2020

ELECTRICAL DETAILS

E603

SCALE: As indicated

9/22/2020 12:22:15 PM

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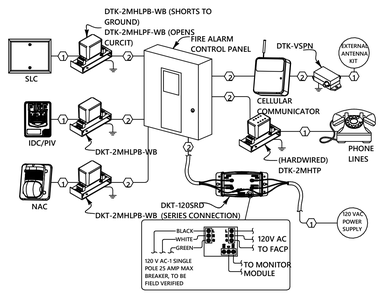


KEY NOTES:

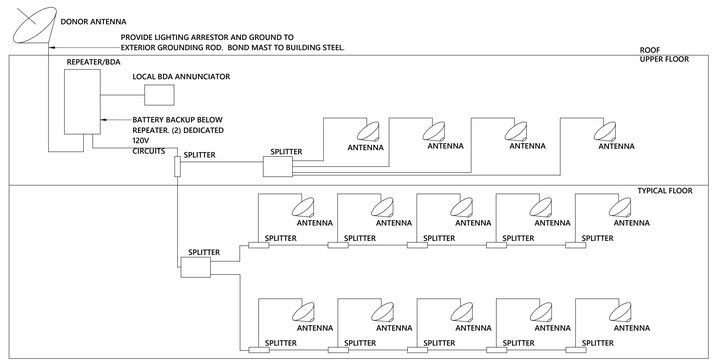
① HIGH SURGE RISK CONNECTION, TYPICAL

② PROTECTED COPPER CONNECTION,TYPICAL. MINIMUM 3' TO PROTECTION EQUIPMENT.

③ INSTALL THE 120V POWER SUPPLY SURGE PROTECTION DEVICE BESIDE THE BRANCH CIRCUIT PANEL.

④ PROVIDE 10-TURN COIL IN OUPUT OF 120-VOLT LINE CONDUCTOR FROM THE SURGE PROTECTION DEVICE TO FACP

1 SURGE PROTECTION FIRE ALARM
NOT TO SCALE

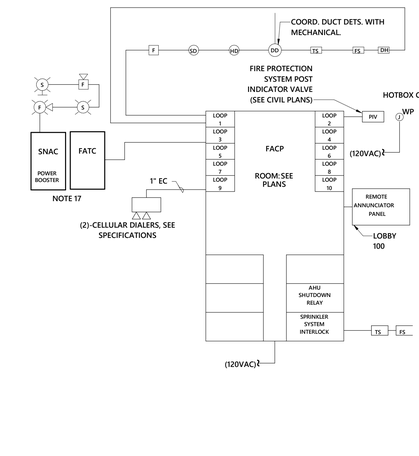


2 EMERGENCY RESPONDER SYSTEM BOOSTING RISER
NO SCALE

SYSTEM NOTES

NOTES:

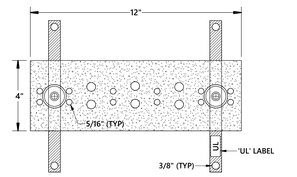
1. SYSTEM IS BASED ON 800Mhz. COORDINATE WITH LOCAL EMERGENCY RESPONDERS FOR NECESSARY FREQUENCY RFEQUIRED
2. SEE SPECIFICATIONS FOR ALL EQUIPMENT AND CABLING REQUIREMENTS.
3. ALL CABLING TO BE INSTALLED IN 1 1/2" CONDUIT.
4. SYSTEM BASED ON DESIGN FROM HARRIS COMMUNICATIONS. SEE SPECIFICATIONS FOR REQUIREMENTS AND EQUALS.
5. PROVIDE BATTERY BACK UP (5 MINS.) FOR MOMENTARY LOSS OF POWER. MAIN SYSTEM IS GENERATOR BACKED UP. NON GENERATOR BACKED UP SYSTEMS SHALL HAVE A MINIMUM BATTERY BACKUP OF 24 HOURS.
6. SEE SPECIFICATIONS FOR CABLING REQUIREMENTS.
7. SYSTEM SUPPLIER SHALL PROVIDE A SYSTEM SURVEY REPORT PRIOR TO PROVIDING THE SYSTEM. THIS SHALL BE CONSIDERED BASE BID FOR THE PROJECT. SIGNAL SURVEY REPORT SHALL BE TAKEN TO THE LOCAL FIRE CODE OFFICIAL AND THE LOCAL FIRE CODE OFFICIAL SHALL DETERMINE IF THE SYSTEM NEEDS TO BE INSTALLED. SIGNAL STRENGTH MEASUREMENTS SHALL BE MEASURED IN 95% OF ALL AREAS ON EACH FLOOR (100% OF ALL EGRESS AND CRITICAL AREAS). A MINIMUM SIGNAL STRENGTH OF -95dBM IS REQUIRED.
8. PROVIDE A ADD ALTERNATE FOR THE EMERGENCY RESPONDER SYSTEM INCLUDING ALL DEVICES, CABLING, CONDUIT, AND EQUIPMENT. SUBMITTAL AND SURVEY REPORT SHALL BE CONSIDERED BASE BID.
9. BASED ON SURVEY REPORT, DEVICES SHALL BE LOCATED TO MAXIMIZE BOOSTING SIGNAL. LOCATIONS SHALL BE COORDINATED WITH GENERAL CONTRACTOR.
10. LOCAL ANNUNCIATOR SHALL PROVIDE VISUAL AND LABELED IDENTIFICATION OF:
    A. NORMAL AC POWER.
    B. SIGNAL BOOSTER TROUBLE.
    C. LOSS OF NORMAL AC POWER.
    D. FAILURE OF BATTERY CHARGER.
    E. LOW-BATTERY CAPACITY.
    F. ANTENNA FAILURE.
11. PROVIDE FIRE ALARM PANEL CONNECTION (SUPERVISORY SIGNALS). COORDINATE REQUIRED CONNECTIONS WITH FIRE ALARM CONTRACTOR:
    A. DONOR ANTENNA MALFUNCTION.
    B. BDA FAILURE.
    C. LOW BATTERY CAPACITY.
    D. LOSS OF NORMAL AC POWER.
    E. FAILURE OF BATTERY CHARGER.



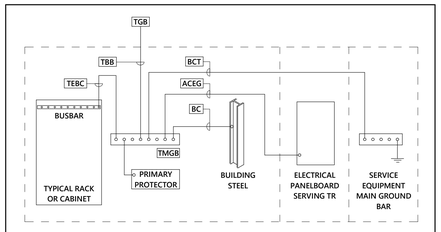
1. FACP SHALL HAVE A MINIMUM 60HR. BATTERY BACKUP.
2. FACP SHALL BE FULLY ANALOG ADDRESSABLE.
3. FACP SHALL BE CONNECTED TO A UL APPROVED CENTRAL STATION.
4. ZONE PER NFPA 72, 2013 AND MANUFACTURER'S RECOMMENDATIONS WITH NO ONE ZONE EXCEEDING 15,000 S.F. PER FLOOR.
5. COORDINATE QUANTITY AND LOCATIONS OF DEVICES WITH CONTRACT DRAWINGS.
6. LOCATE SMOKE DETECTOR WITHIN 5' OF THE MAGNETIC HOLD OPEN DOORS. (TYPICAL)
7. LOCATE FIRE ALARM PULL STATION WITHIN 5' OF THE EXIT DOOR.
8. LOCATE SMOKE/HEAT DETECTOR WITHIN 5' OF THE FA EQUIPMENT (FACP, FATC).
9. LOCATION OF CEILING MOUNTED SMOKE/HEAT DETECTOR SHALL BE FIELD COORDINATED PRIOR TO ROUGH IN. THE DETECTOR SHALL BE A MINIMUM OF 2' AWAY FROM LIGHT FIXTURE AND A MINIMUM OF 3' AWAY FROM AIR DISTRIBUTION DEVICES.
10. AUTOMATIC DOOR CLOSING SHALL BE ACCOMPLISHED BY THE ACTIVATION OF THE LOCAL SMOKE DETECTORS AT THAT DOOR. SMOKE DETECTOR ACTIVATION SHALL ALERT THE BUILDING FIRE ALARM SYSTEM. THE FIRE ALARM SYSTEM SHALL CAUSE ALL HOLD OPEN DOORS TO CLOSE UPON ALARM ACTIVATION IN THE BUILDING.
11. ACTIVATION OF AN ALARM ZONE SHALL CAUSE ALL AIR HANDLING EQUIPMENT TO SHUT DOWN (ALL DAMPERS, AIR HANDLERS AND EXHAUST FANS MUST STOP).
12. ELECTRICAL CONTRACTOR SHALL COORDINATE EXACT LOCATIONS OF ALL FLOW, PRESSURE, & TAMPER SWITCHES WITH FIRE PROTECTION CONTRACTOR PRIOR TO INSTALLATION.
13. ALL VISUAL DEVICES WITHIN THE SAME AREA SHALL BE SYNCHRONIZED. IT SHALL BE A THREE BEAT TEMPORAL PATTERN.
14. PROVIDE 12X12X4" JUNCTION BOX AT FACP
15. PROVIDE VOICE EVACUATION SOUNDING CAPABILITY AT ALL AUDIO DEVICES FOR EMERGENCY NOTIFICATION.
16. THE FIRE ALARM SYSTEM MANUFACTURER SHALL PROVIDE NOTIFICATION APPLIANCE CIRCUIT (NAC) POWER EXTENDERS AS REQUIRED. PROVIDE 120V CIRCUITS FROM SPARE BREAKERS IN PANEL 1LE AS REQUIRED.
17. THE DUCT SMOKE DETECTORS SHALL COMPLY WITH IFC 907.12. 3
18. PROVIDE CONTACT ON SURGE SUPRESSION THAT IS MONITORED BY BAS. PROVIDE "C CONDUIT TO BAS PANEL 4 WITH CABLING.
19. THE CIRCUIT FEEDING THE FIRE ALARM PANEL IS DEDICATED FOR THE FIRE ALARM ONLY.
20. PROVIDE REMOTE LIGHT WITH TEST SWITCH FOR DUCT SMOKE DETECTOR ON CEILING WHERE UNIT IS ABOVE CEILING.
21. CONTRACTOR SHALL INCLUDE IN BID LABOR TO RE-LOCATE UP TO 5 DEVICES UP TO 30' FROM EXISTING LOCATION.
22. CONTRACTOR SHALL INCLUDE IN BID LABOR AND MATERIAL FOR UP TO (2) DUCT DETECTORS. (5) ANNUNCIATION DEVICES, (3) SMOKE DETECTORS AND (2) PULL STATIONS 100' FROM LOCAL PANEL (IN WALL NOT SURFACE MOUNTED) AS REQUIRED BY LOCAL AHJ/ENGINEER.
23. CONTRACTOR RESPONSIBLE FOR SHOP DRAWINGS AS REQUIRED BY LOCAL AHJ.
24. DUCT DETECTORS SHALL BE VERIFIED WITH THE MECHANICAL DRAWINGS FOR QUANTITY AND LOCATION. TOTAL QUANTITY MINIMUM SHALL BE BASED ON BOTH MECHANICAL SCHEDULES AND MECHANICAL PLAN LOCATIONS AND ELECTRICAL PLANS. WHEN DEVICE QUANTITIES (ELECTRICAL VS. MECHANICAL) ARE IN CONFLICT, PROVIDE THE GREATER QUANTITY OF DETECTORS.
25. A SUPERVISED "AHU SHUTDOWN DEFEAT" SWITCH MUST BE PROVIDED IN/ADJACENT TO THE FACP. PROVIDE AN INFORMATIVE ENGRAVED LABEL AT THE FACP ABOUT THIS FUNCTION. THE SWITCH MUST CAUSE A SYSTEM "SUPERVISORY" INDICATION WHEN IT'S PLACED IN THE OFF-NORMAL ("SHUTDOWN DEFEATED") POSITION. THIS IS TO PROVIDE THE OWNER WITH A CONVENIENT MEANS TO TEMPORARILY RESUME HVAC OPERATION IN THE EVENT AN UNWANTED ALARM WILL NOT CLEAR, PRIOR TO ARRIVAL OF THE FIRE ALARM SERVICE TECHNICIAN.
26. ISOLATION MODULES SHALL BE PROVIDED FOR EVERY 20 INITIATION DEVICES AND CONTROL POINTS, OR A LESSER NUMBER WHERE RECOMMENDED BY THE MANUFACTURER. LOOP ISOLATION MODULES FOR FACP SHALL BE MOUNTED IN NEMA 1 ENCLOSURE, DIRECTLY ADJACENT.
27. PROVIDE FIRE PUMP MONITORING AS REQUIRED PER NFPA 72. FIRE ALARM PANEL IS TO MONITOR PUMP RUNNING STATUS, LOSS OF PHASE POWER, PHASE REVERSAL AND SWITCHING TO ALTERNATE POWER SOURCE PER NFPA 20. 28.PROVIDE GENERATOR MONITORING AS REQUIRED PER NFPA 72.

3 FIRE ALARM RISER DIAGRAM - VOICE EVACUATION
NOT TO SCALE

FIRE ALARM SYSTEM MATRIX	BUILDING SYSTEM OUTPUTS																			CENTRAL COMM
	ACTIVATE COMMON ALARM SIGNAL INDICATOR	ACTIVATE AUDIBLE ALARM SIGNAL	ACTIVATE AUDIBLE SUPERVISORY SIGNAL INDICATOR	ACTIVATE AUDIBLE SUPERVISORY INDICATOR	ACTIVATE COMMON TROUBLE SIGNAL INDICATOR	ACTIVATE AUDIBLE TROUBLE SIGNAL INDICATOR	ACTIVATE GENERAL EVACUATION SIGNAL	ACTIVATE EXTERNAL ALARM SIGNAL	TRANSMIT FIRE ALARM SIGNAL TO CENTRAL STATION	TRANSMIT TROUBLE SIGNAL TO CENTRAL STATION	TRANSMIT SUPERVISORY SIGNAL TO CENTRAL STATION	RECALL ELEVATORS TO ALTERNATE FLOOR	RETURN ELEVATOR TO ALTERNATE FLOOR	SHUT DOWN ALL HVAC UNITS	SHUT DOWN RESPECTIVE HVAC	SHOW CHANGE OF STATUS ON ANNUNCIATOR	SHOW CHANGE OF STATUS ON CONTROL PANEL	TRANSMIT FIRE ALARM SIGNAL TO CENTRAL STATION	TRANSMIT SUPERVISORY SIGNAL TO CENTRAL STATION	TRANSMIT TROUBLE SIGNAL TO CENTRAL STATION	
MANUAL FIRE ALARM PULL BOXES	X	X				X	X	X	X				X		X	X	X			
BUILDING SMOKE DETECTOR	X	X				X	X	X	X				X		X	X	X			
BUILDING HEAT DETECTOR	X	X				X	X	X	X				X		X	X	X			
DUCT SMOKE DETECTOR			X	X			X			X				X	X	X		X		
SPRINKLER WATER FLOW	X	X				X	X	X	X				X		X	X	X			
SPRINKLER TAMPER			X	X			X			X					X	X		X		
NOTIFICATION DEVICE SHORT CIRCUIT					X	X	X				X				X	X				
OPEN CIRCUIT					X	X	X				X				X	X			X	
GROUND FAULT					X	X	X				X				X	X			X	
FIRE ALARM A.C. POWER FAILURE					X	X	X				X				X	X			X	
FIRE ALARM SYSTEM LOW BATTERY					X		X				X				X	X			X	
AHU SHUTDOWN BYPASS SWITCH					X	X	X				X	X			X	X				



4 TELECOMMUNICATIONS MAIN GROUNDING BUSBAR 'TMGB'
NOT TO SCALE



TELECOMMUNICATIONS GROUNDING LEGEND

TMGB TELECOMMUNICATIONS MAIN GROUND BAR

TGB TELECOMMUNICATIONS GROUND BAR

TBB TELECOMMUNICATIONS BONDING BACKBONE. PROVIDE A MINIMUM #3/0 AWG GROUND IN 3/4" C.

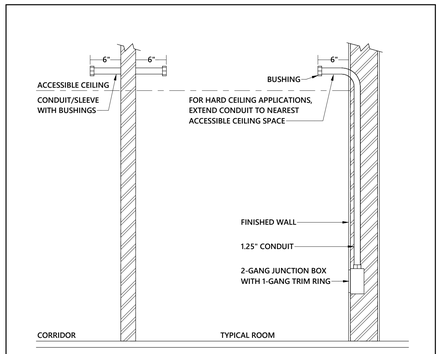
TEBC TELECOMMUNICATIONS EQUIPMENT BONDING CONDUCTOR. PROVIDE A MINIMUM #6 AWG GROUND.

BC BONDING CONDUCTOR. PROVIDE A MINIMUM #6 AWG GROUND.

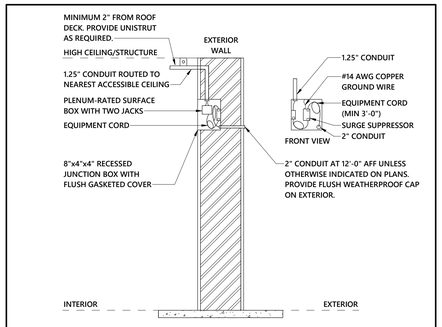
ACEG ALTERNATING CURRENT EQUIPMENT GROUND. PROVIDE A MINIMUM #6 AWG GROUND.

BCT BONDING CONDUCTOR FOR TELECOMMUNICATIONS. PROVIDE A MINIMUM #3/0 AWG GROUND IN 3/4" C.

5 TYPICAL TMGB CONNECTIONS
NOT TO SCALE



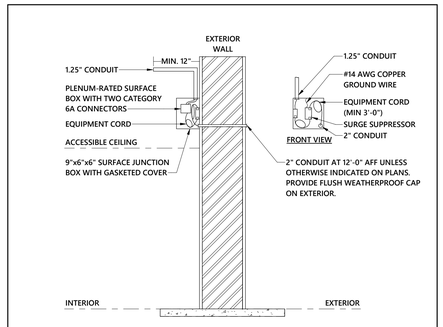
6 NETWORK OUTLET STUB UP DETAIL
NOT TO SCALE



GENERAL NOTES:

A. COORDINATE RECESSED JUNCTION BOX DEPTH WITH WALL CONSTRUCTION.
B. EXPOSED CONDUIT AND JUNCTION BOX COVER FINISH SHALL MATCH ADJACENT SURFACE.
C. ALL DEVICES SHALL BE SECURED INSIDE JUNCTION BOX.

7 EXTERIOR NETWORK DEVICE DETAIL
NOT TO SCALE
HIGH CEILING/OPEN STRUCTURE NEW EXTERIOR WALL



GENERAL NOTES:

A. SURFACE JUNCTION BOX SHALL BE LOCATED ABOVE ACCESSIBLE CEILING SPACE.
B. ALL DEVICES SHALL BE SECURED INSIDE JUNCTION BOX.

8 EXTERIOR NETWORK DEVICE DETAIL (ACCESSIBLE CEILING)
NOT TO SCALE

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optima engineering
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100 Fayetteville St., Suite 520, Raleigh, NC 27601
Phone: 704.338.1292 - www.optimaengineering.com
North Carolina License Number C-0914

9/14/2020

PROJECT NORTH

PLAN NORTH

KEY PLAN

Construction Documents

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER:
20-21673-01A

CODE:
41928

ITEM:
302

SGA | NW DESIGN PROJECT NUMBER:
19-202-01

DESIGNED BY: AJH
DRAWN BY: AJH
CHECKED BY: BLM

ISSUE DATE:
September 14, 2020

ELECTRICAL DETAILS

E604

SCALE: As indicated

9/22/2020 12:22:18 PM

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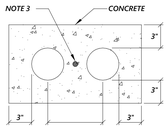
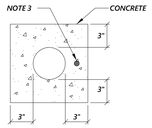


NOTES:
1. SEE "TYPICAL DUCTBANK TRENCH DETAIL" FOR ADDITIONAL REQUIREMENTS.
2. CONDUITS NOT DRAWN TO SCALE.
3. INSTALL 1¥2 BARE COPPER GROUND WIRE WITHIN CONCRETE ALONG ENTIRE DUCTBANK LENGTH. EXOTHERMICALLY CONNECT TO GROUND TRIAD RING. THIS GROUND WIRE IS IN ADDITION TO ANY GROUNDED (NEUTRAL) AND GROUNDING CONDUCTORS INDICATED TO BE INSTALLED WITHIN THE CONDUITS. ALTERNATE THE POSITION OF THE GROUND WIRE THROUGH THE DUCT SPACERS TO PREVENT SAG. ELECTRICAL POWER DUCTBANKS ONLY.

7 2-WAY (2Hx1V) DUCTBANK SECTION
NO SCALE



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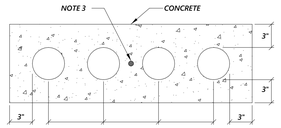
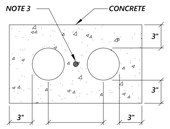
6 1-WAY (1Hx1V) DUCTBANK SECTION
NO SCALE



NOTES:
1. SEE "TYPICAL DUCTBANK TRENCH DETAIL" FOR ADDITIONAL REQUIREMENTS.
2. CONDUITS NOT DRAWN TO SCALE.
3. INSTALL 1¥2 BARE COPPER GROUND WIRE WITHIN CONCRETE ALONG ENTIRE DUCTBANK LENGTH. EXOTHERMICALLY CONNECT TO GROUND TRIAD RING. THIS GROUND WIRE IS IN ADDITION TO ANY GROUNDED (NEUTRAL) AND GROUNDING CONDUCTORS INDICATED TO BE INSTALLED WITHIN THE CONDUITS. ALTERNATE THE POSITION OF THE GROUND WIRE THROUGH THE DUCT SPACERS TO PREVENT SAG. ELECTRICAL POWER DUCTBANKS ONLY.

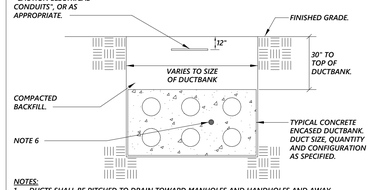
5 4-WAY (4Hx1V) DUCTBANK SECTION
NO SCALE



NOTES:
1. SEE "TYPICAL DUCTBANK TRENCH DETAIL" FOR ADDITIONAL REQUIREMENTS.
2. CONDUITS NOT DRAWN TO SCALE.
3. INSTALL 1¥2 BARE COPPER GROUND WIRE WITHIN CONCRETE ALONG ENTIRE DUCTBANK LENGTH. EXOTHERMICALLY CONNECT TO GROUND TRIAD RING. THIS GROUND WIRE IS IN ADDITION TO ANY GROUNDED (NEUTRAL) AND GROUNDING CONDUCTORS INDICATED TO BE INSTALLED WITHIN THE CONDUITS. ALTERNATE THE POSITION OF THE GROUND WIRE THROUGH THE DUCT SPACERS TO PREVENT SAG. ELECTRICAL POWER DUCTBANKS ONLY.

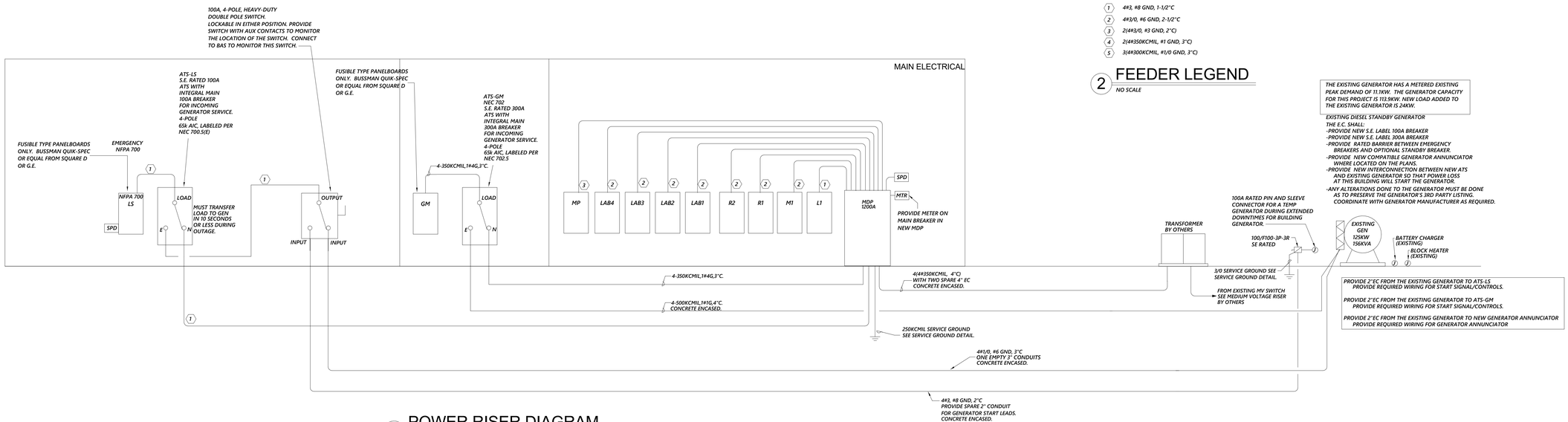
4 2-WAY (2Hx1V) DUCTBANK SECTION
NO SCALE

6" WIDE X 4 MILS THICK MARKED WARNING TAPE: "CAUTION ELECTRICAL CONDUITS", OR AS APPROPRIATE.



NOTES:
1. DUCTS SHALL BE PITCHED TO DRAIN TOWARD MANHOLES AND HANDHOLES AND AWAY FROM BUILDINGS AND EQUIPMENT AS APPROPRIATE.
2. DUCT SPACERS SHALL BE INSTALLED AND COORDINATED WITH THE DUCT SIZE. SPACING SHALL BE AS REQUIRED BY THE MANUFACTURER AND TO PREVENT SAGGING/DEFORMING OF DUCTS. SPACERS SHALL BE SECURED BY NON-FERROUS MEANS TO PREVENT FLOATING DURING CONCRETE POUR.
3. ALL DUCTS SHALL BE SEALED AT TERMINATIONS WITH APPROVED SEALING COMPOUND AND PLUGS, RATED TO WITHSTAND MINIMUM 15 PSI HYDROSTATIC PRESSURE.
4. ALL DUCTS SHALL BE RODDED, CLEARED AND SWABBED TO REMOVE ALL OBSTRUCTIONS AFTER INSTALLATION AND HAVE A WATERPROOF PULL CORD INSTALLED (130 LB MINIMUM TENSILE TEST). CORD SHALL BE FACTORY MARKED AT MINIMUM ONE FOOT INTERVALS.
5. VIBRATE CONCRETE TO FILL VOIDS.
6. INSTALL 1¥2 BARE COPPER GROUND WIRE WITHIN CONCRETE ALONG ENTIRE DUCTBANK LENGTH. EXOTHERMICALLY CONNECT TO GROUND TRIAD RING. THIS GROUND WIRE IS IN ADDITION TO ANY GROUNDED (NEUTRAL) AND GROUNDING CONDUCTORS INDICATED TO BE INSTALLED WITHIN THE CONDUITS. ALTERNATE THE POSITION OF THE GROUND WIRE THROUGH THE DUCT SPACERS TO PREVENT SAG. ELECTRICAL POWER DUCTBANKS ONLY.
7. CONCRETE STRENGTH SHALL BE 3000 PSI @ 28 DAYS MINIMUM.
8. CONCRETE THERMAL RESISTIVITY (RHO) SHALL BE 0.55 m-C/W OR LESS.
9. MEDIUM VOLTAGE, BUILDING PRIMARY AND SECONDARY DUCTBANKS ARE TO BE DYED RED. COORDINATE WITH OWNER PRIOR TO WORK BEGINNING.

3 TYPICAL DUCTBANK TRENCH DETAIL
NO SCALE



1 POWER RISER DIAGRAM
NTS

GENERAL NOTES:
1. E.C. SHALL PROVIDE A PIT SEPARATION BARRIER AT THE UTILITY TRANSFORMER BETWEEN THE LOW VOLTAGE AND HIGH VOLTAGE SECTIONS.
2. TYPE OF METER ON "MDP" IS TO BE VERIFIED WITH OWNER PRIOR TO ORDERING. BASIS OF DESIGN IS "HONEYWELL/E-MON" CLASS 3200 OR EQUAL (SQUARE-D OR VERIS). METERS ARE SHOWN AS (wtg.). COORDINATE COMMUNICATION PROTOCOL WITH M.C. PRIOR TO ORDERING.
3. FEEDERS THAT ARE REQUIRED TO BE CONCRETE ENCASED ARE TO BE CONCRETE ENCASED UNTIL TERMINATION POINT, INCLUDING UNDER BUILDING SLABS. EXCAVATION WILL BE REQUIRED IN EXISTING MAIN ELECTRICAL ROOM.
4. PROVIDE CONCRETE PAD FOR INDOOR TRANSFORMER. PAD SPECS ARE TO BE COORDINATED WITH TRANSFORMER MANUFACTURER.
5. ALL ELECTRICAL CONDUCTORS SHALL BE COPPER.

1. 4¥3, ¥8 GND, 1-1/2"C
2. 4¥3/0, ¥6 GND, 2-1/2"C
3. 2(4¥3/0, ¥3 GND, 2"C)
4. 2(4¥350KCMIL, ¥1 GND, 3"C)
5. 3(4¥300KCMIL, ¥1/0 GND, 3"C)

2 FEEDER LEGEND
NO SCALE

THE EXISTING GENERATOR HAS A METERED EXISTING PEAK DEMAND OF 11.1KW. THE GENERATOR CAPACITY FOR THIS PROJECT IS 113.9KW. NEW LOAD ADDED TO THE EXISTING GENERATOR IS 24KW.

EXISTING DIESEL STANDBY GENERATOR
THE E.C. SHALL:
-PROVIDE NEW S.E. LABEL 100A BREAKER
-PROVIDE NEW S.E. LABEL 300A BREAKER
-PROVIDE RATED BARRIER BETWEEN EMERGENCY BREAKERS AND OPTIONAL STANDBY BREAKER.
-PROVIDE NEW COMPATIBLE GENERATOR ANNUNCIATOR WHERE LOCATED ON THE PLANS.
-PROVIDE NEW INTERCONNECTION BETWEEN NEW ATS AND EXISTING GENERATOR SO THAT POWER LOSS AT THIS BUILDING WILL START THE GENERATOR.
-ANY ALTERATIONS DONE TO THE GENERATOR MUST BE DONE AS TO PRESERVE THE GENERATOR'S 3RD PARTY LISTING. COORDINATE WITH GENERATOR MANUFACTURER AS REQUIRED.

PROVIDE 2"EC FROM THE EXISTING GENERATOR TO ATS-LS PROVIDE REQUIRED WIRING FOR START SIGNAL/CONTROLS.

PROVIDE 2"EC FROM THE EXISTING GENERATOR TO ATS-GM PROVIDE REQUIRED WIRING FOR START SIGNAL/CONTROLS.

PROVIDE 2"EC FROM THE EXISTING GENERATOR TO NEW GENERATOR ANNUNCIATOR PROVIDE REQUIRED WIRING FOR GENERATOR ANNUNCIATOR

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North Carolina License Number C-0914

9/14/2020

PROJECT NORTH
PLAN NORTH

KEY PLAN

Construction Documents

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER:
20-21673-01A

CODE:
41928

ITEM:
302

SGA | NW DESIGN PROJECT NUMBER:
19-202-01

DESIGNED BY: AJH
DRAWN BY: AJH
CHECKED BY: BLM

ISSUE DATE:
September 14, 2020

ELECTRICAL DIAGRAMS

E701

SCALE: 1/8" = 1'-0"

9/22/2020 12:22:20 PM

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SWITCHBOARD: MDP

VOLTAGE: 208Y/120 3Ø | **MAIN TYPE:** MCB | **MANUFACTUR...**
MOUNTING: SURFACE | **PHASE:** 3 | **TYPE:**
MAIN: 1200 A | **WIRE:** 4 | **AIC:** 65 KAIC

MAIN CB NOTES:

CKT/ID	LOAD SERVED	FRAME	TRIP	POLE	FEEDER	NOTES	Load
1	PANEL-L1	100 A	100 A	3	SEE POWER RISE DIAGRAM		5.8 kVA
2	PANEL-R1	200 A	200 A	3	SEE POWER RISE DIAGRAM		28.4 kVA
3	PANEL - R2	200 A	200 A	3	SEE POWER RISE DIAGRAM		0.0 kVA
4	PANEL-M1	200 A	200 A	3	SEE POWER RISE DIAGRAM		43.1 kVA
5	PANEL-LAB1	400 A	200 A	3	SEE POWER RISE DIAGRAM		33.3 kVA
6	PANEL-LAB2	200 A	200 A	3	SEE POWER RISE DIAGRAM		33.3 kVA
7	PANEL-LAB3	200 A	200 A	3	SEE POWER RISE DIAGRAM		33.3 kVA
8	PANEL-LAB4	200 A	200 A	3	SEE POWER RISE DIAGRAM		37.3 kVA
9	PANEL-MP	400 A	400 A	3	SEE POWER RISE DIAGRAM		39.5 kVA
10	DOAS CU-1	200 A	175 A	3	3#2/0, #6 GND, 2"C		44.9 kVA
11	DOAS-1	200 A	175 A	3	3#2/0, #6 GND, 2"C		48.1 kVA
12	PANEL - GM (VIA ATS-GM)	400 A	300 A	3	SEE POWER RISE DIAGRAM		18.1 kVA
13	PANEL - LS (VIA ATS-LS)	100 A	100 A	3	SEE POWER RISE DIAGRAM		5.2 kVA
14	SPARE	--	20 A	3			0.0 kVA
15	SPARE	--	20 A	3			0.0 kVA
16	SPARE	--	20 A	3			0.0 kVA

Load Classification	Connected...	Demand Factor	Estimated Demand
LIGHTS	9463 VA	125.00%	11828 VA
LIGHTING - EXTERIOR	497 VA	125.00%	621 VA
HEATING	61982 VA	100.00%	61982 VA
COOLING	73638 VA	100.00%	73638 VA
VENTILATION	4362 VA	100.00%	4362 VA
MOTORS	1629 VA	112.71%	1836 VA
KITCHEN	0 VA	0.00%	0 VA
RECEPTACLES	31340 VA	65.95%	20670 VA
WATER HEATER	9000 VA	100.00%	9000 VA
MISC.	58228 VA	100.00%	58228 VA
ELEVATOR	0 VA	0.00%	0 VA
Spare	120000 VA	100.00%	120000 VA

TOTAL KVA (CONNECTED):	370.1 kVA	TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA (DEMAND):	362.2 kVA	1033.1 A	1054.1 A	1004.8 A
TOTAL AMP. (CONNECTED):	1027.4 A			
TOTAL AMP. (DEMAND):	1005.3 A			

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. THIS SWITCHBOARD SHALL BE U.L. LISTED FOR USE AS S.E. EQUIP.
8. MAIN BREAKER IS TO BE 100% RATED.
9. MAIN BREAKER IS TO HAVE A REDUCED ENERGY LET-THROUGH DEVICE.

PANEL: L1

VOLTAGE: 208Y/120 3Ø | **FED FROM:** MDP
MOUNTING: SURFACE | **MAIN TYPE:** MLO | **MFR:** COOPER BUSSMANN
ENCLOSURE: NEMA1 | **PHASE:** 3 | **TYPE:** FUSED
MAIN: 100 A | **WIRE:** 4 | **AIC:** 42 KAIC

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
LIGHTS	LTG - MECH, ELEC, ATS, SEC	12	20 A	1	1	0.12 0.00			1	2	20 A	--	SPARE	--
LIGHTS	LTG - LAB 1124 & 1128	12	20 A	3	1		0.53 1.04		1	4	20 A	12	LTG - LAB 1131	LIGHTS
LIGHTS	LTG - RESTROOMS	12	20 A	5	1			0.14 0.30	1	6	20 A	12	LTG - OFFICES & VENDING	LIGHTS
Other;...	LTG - MDF & LAB 1127 & 1129	12	20 A	7	1	0.43 0.84			1	8	20 A	12	LTG - 1131B - F & 1133	LIGHTS
--	SPARE	--	20 A	9	1		0.00 1.12		1	10	20 A	12	LTG - LAB 1131	LIGHTS
LIGHTS	LTG - CORRIDOR	12	20 A	11	1			0.34 0.80	1	12	20 A	12	LTG - RESEARCH LAB & CONF	LIGHTS
LIGHTS	LTG - POLE LIGHTS	12	20 A	13	2	0.06 0.00			1	14	20 A	--	SPARE	--
				15			0.06 0.00		1	16	20 A	--	SPARE	--
--	SPARE	--	20 A	17	1			0.00 0.00	1	18	20 A	--	SPARE	--
--	SPARE	--	20 A	19	1	0.00 0.00			1	20	20 A	--	SPARE	--
--	SPARE	--	20 A	21	1		0.00 0.00		1	22	20 A	--	SPARE	--
--	SPARE	--	20 A	23	1			0.00 0.00	1	24	20 A	--	SPARE	--
--	SPARE	--	20 A	25	1	0.00 0.00			1	26	20 A	--	SPARE	--
--	SPARE	--	20 A	27	1		0.00 0.00		1	28	20 A	--	SPARE	--
--	SPARE	--	20 A	29	1			0.00 0.00	1	30	20 A	--	SPARE	--
--	SPACE ONLY	--	--	31	--	0.00 0.00			--	32	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	33	--		0.00 0.00		--	34	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	35	--			0.00 0.00	--	36	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	37	--	0.00 0.00			--	38	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	39	--		0.00 0.00		--	40	--	--	SPACE ONLY	--
--	SPARE	--	20 A	41	1			0.00 0.00	--	42	--	--	SPACE ONLY	--

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	5785 VA	125.00%	7231 VA
LE	LIGHTING - EXTERIOR	0 VA	0.00%	0 VA
H	HEATING	0 VA	0.00%	0 VA
C	COOLING	0 VA	0.00%	0 VA
V	VENTILATION	0 VA	0.00%	0 VA
M	MOTORS	0 VA	0.00%	0 VA
K	KITCHEN	0 VA	0.00%	0 VA
R	RECEPTACLES	0 VA	0.00%	0 VA
WH	WATER HEATER	0 VA	0.00%	0 VA
MI	MISC.	0 VA	0.00%	0 VA
S	Spare	0 VA	0.00%	0 VA
E	ELEVATOR	0 VA	0.00%	0 VA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. PROVIDE SWD (SWITCHING DUTY) RATED BREAKER.

TOTAL KVA (CONNECTED):	5.78 kVA	TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA (DEMAND):	7.23 kVA	12.0 A	23.1 A	13.4 A
TOTAL AMP. (CONNECTED):	16 A			
TOTAL AMP. (DEMAND):	20 A			

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

PANEL: M1

VOLTAGE: 208Y/120 3Ø | **FED FROM:** MDP
MOUNTING: SURFACE | **MAIN TYPE:** MLO | **MFR:**
ENCLOSURE: NEMA1 | **PHASE:** 3 | **TYPE:**
MAIN: 200 A | **WIRE:** 4 | **AIC:** 42 KAIC

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
MISC.	MECHANICAL CONTROLS - ...	12	20 A	1	1	0.50 1.29			1	2	15 A	12	EF-3 & EF-4	VENTIL...
MISC.	MECHANICAL CONTROLS - 1149	12	20 A	3	1		0.50 0.24							
Other;...	RCP1	12	20 A	5	1			0.83 0.24	2	4	15 A	12	IDU-15,16 & 17 : MACHINE,...	HEATING
--	SPARE	--	20 A	7	1	0.00 0.00				6				
HEATING	IDU-2 & 4: CORRIDOR	12	15 A	9	2		0.32 0.49		1	8	20 A	--	SPARE	--
				11				0.32 0.49	2	10	15 A	12	IDU-14 & 15: MECH, STORAGE	HEATING
VENTIL...	EF-1	12	15 A	13	2	0.77 0.81				12				
				15			0.77 0.81		2	14	15 A	12	IDU-9,10,11: CORRIDOR	HEATING
HEATIN...	IDU-19 & 20: CORRIDOR & BS-2	12	15 A	17	2			0.52 0.61		16				
				19		0.52 0.61			2	18	15 A	12	IDU-6,7 & 8 : CORRIDOR	HEATING
--	SPARE	--	20 A	21	1		0.00 0.00			20				
				23				0.77 0.86	1	22	20 A	--	SPARE	--
VENTIL...	EF-2	12	15 A	25	2	0.77 0.86			2	24	20 A	12	IDU-12 & 13: MECH	HEATING
				27			1.50 1.50			26				
HEATING	UH-1	12	20 A	29	2			1.50 1.50	2	28	20 A	12	UH-2	HEATING
				31		1.52 3.00				30				
COOLING	ODU-2 & A/C-2	12	20 A	33	2		1.52 3.00		3	32	40 A	8	WH1	WATER HEATER
				35				3.72 3.00		34				
COOLING	HP-B	6	45 A	37	3	3.72 0.00				36				
				39			3.72 0.00		1	38	20 A	--	SPARE	--
--	SPARE	--	20 A	41	1			0.00 0.00	1	40	20 A	--	SPARE	--
									1	42	20 A	--	SPARE	--

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	0 VA	0.00%	0 VA
LE	LIGHTING - EXTERIOR	0 VA	0.00%	0 VA
H	HEATING	13543 VA	100.00%	13543 VA
C	COOLING	14355 VA	100.00%	14355 VA
V	VENTILATION	4362 VA	100.00%	4362 VA
M	MOTORS	828 VA	125.00%	1035 VA
K	KITCHEN	0 VA	0.00%	0 VA
R	RECEPTACLES	0 VA	0.00%	0 VA
WH	WATER HEATER	9000 VA	100.00%	9000 VA
MI	MISC.	1000 VA	100.00%	1000 VA
S	Spare	0 VA	0.00%	0 VA
E	ELEVATOR	0 VA	0.00%	0 VA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. PROVIDE HACR (HEAT, AC, REFRIG) RATED BREAKER.

TOTAL KVA (CONNECTED):	43.09 kVA	TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA (DEMAND):	43.30 kVA	119.7 A	119.8 A	119.6 A
TOTAL AMP. (CONNECTED):	120 A			
TOTAL AMP. (DEMAND):	120 A			

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

PANEL: R1

VOLTAGE: 208Y/120 3Ø | **FED FROM:** MDP
MOUNTING: SURFACE | **MAIN TYPE:** MLO | **MFR:**
ENCLOSURE: NEMA1 | **PHASE:** 3 | **TYPE:**
MAIN: 200 A | **WIRE:** 4 | **AIC:** 42 KAIC

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
RECEP...	REC: BREAK RM	12	20 A	1	1	0.36 0.60			1	2	20 A	12	SNORKELS: LAB 1133	MISC.
RECEP...	REC: MECH 1131B & STOR....	12	20 A	3	1		0.36 0.72		1	4	20 A	12	REC: COMPUTER LAB 1127	RECEP...
RECEP...	REC: CLASSROOM 1129	12	20 A	5	1			0.54 0.80	1	6	20 A	12	EWC (NOTE 7)	MOTORS
MISC.	SECURITY POWER	12	20 A	7	1	0.50 0.50			1	8	20 A	12	PROJECTOR: LAB 1124	RECEP...
RECEP...	REC: CORRIDOR	12	20 A	9	1		1.08 0.50		1	10	20 A	12	PROJECTOR: LAB 1128	RECEP...
RECEP...	REC: CHAIR 1104	12	20 A	11	1			0.90 0.50	1	12	20 A	12	REC: PRINTER	MISC.
MISC.	BAS (NOTE 8)	12	20 A	13	1	0.50 0.54			1	14	20 A	12	REC: LAB 1124	RECEP...
RECEP...	PROJECTOR: CLASSROOM...	12	20 A	15	1		0.50 0.54		1	16	20 A	12	REC: LAB 1124	RECEP...
RECEP...	PROJECTOR: COMPUTER LAB...	12	20 A	17	1			0.50 0.54	1	18	20 A	12	REC: STUDENT LAB 1133	RECEP...
RECEP...	REC: INST LAB 1128	12	20 A	19	1	0.54 0.54			1	20	20 A	12	REC: CONFERENCE RM	RECEP...
RECEP...	REC: INST LAB 1128	12	20 A	21	1		0.54 0.54		1	22	20 A	12	REC: CORR 1103	RECEP...
RECEP...	REC: LAB 1124	12	20 A	23	1			0.54 0.54	1	24	20 A	12	REC: INST LAB 1128	RECEP...
--	SPARE	--	20 A	25	1	0.00 0.72			1	26	20 A	12	REC: COMPUTER LAB 1127	RECEP...
RECEP...	REC: LAB TECH & BENCH	12	20 A	27	1		0.72 0.72		1	28	20 A	12	REC: CONFERENCE RM	RECEP...
RECEP...	REC: RECEPTION 1100	12	20 A	29	1			0.72 0.72	1	30	20 A	12	REC: FACULTY OFFICES	RECEP...
RECEP...	REC: SECURITY, ATS, HS...	12	20 A	31	1	0.90 0.90			1	32	20 A	12	REC: CLASSROOM 1129	RECEP...
RECEP...	REC: STUDENT LAB 1133	12	20 A	33	1		0.90 0.90		1	34	20 A	12	REC: COMPUTER LAB 1127	RECEP...
MISC.	SNORKELS: LAB 1133 & BENCH	12	20 A	35	1			0.90 0.90	1	36	20 A	12	REC: EXTERIOR	RECEP...
RECEP...	REC: EXTERIOR	12	20 A	37	1	1.08 1.20			1	38	20 A	12	VENDING MACHINE (NOTE 7)	MISC.
RECEP...	REC: RESTROOMS	12	20 A	39	1		1.08 1.20		1	40	20 A	12	VENDING MACHINE (NOTE 7)	MISC.
RECEP...	REC: RISER. MECH,ELEC	12	20 A	41	1			1.08 0.00	1	42	20 A	--	SPARE	--

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	0 VA	0.00%	0 VA
LE	LIGHTING - EXTERIOR	0 VA	0.00%	0 VA
H	HEATING	0 VA	0.00%	0 VA
C	COOLING	0 VA	0.00%	0 VA
V	VENTILATION	0 VA	0.00%	0 VA
M	MOTORS	800 VA	125.00%	1000 VA
K	KITCHEN	0 VA	0.00%	0 VA
R	RECEPTACLES	22160 VA	72.56%	16080 VA
WH	WATER HEATER	0 VA	0.00%	0 VA
MI	MISC.	5400 VA	100.00%	5400 VA
S	Spare	0 VA	0.00%	0 VA
E	ELEVATOR	0 VA	0.00%	0 VA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. PROVIDE GFI BREAKER.
8. PROVIDE BREAKER WITH HANDLE LOCK-ON DEVICE.

TOTAL KVA (CONNECTED):	28.36 kVA	TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA (DEMAND):	22.48 kVA	74.0 A	86.2 A	76.9 A
TOTAL AMP. (CONNECTED):	79 A			
TOTAL AMP. (DEMAND):	62 A			

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

NEC 700 — PANEL: LS

VOLTAGE: 208Y/120 3Ø | **FED FROM:** ATS-LS
MOUNTING: SURFACE | **MAIN TYPE:** MLO | **MFR:** COOPER BUSSMANN
ENCLOSURE: NEMA1 | **PHASE:** 3 | **TYPE:** FUSED
MAIN: 100 A | **WIRE:** 4 | **AIC:** 42 KAIC

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
LIGHTI...	EM LIGHTING - EXTERIOR	12	20 A	1	1	0.50 0.21			1	2	20 A	12	EM LTG - CORRIDOR	LIGHTS
LIGHTS	EM LTG - RESTROOM	12	20 A	3	1		0.08 0.41		1	4	20 A	12	EM LTG - MECH, ELEC, ATS,...	LIGHTS
LIGHTS	EM LTG - 1131B - F & 1133	12	20 A	5	1			0.37 0.50	1	6	20 A	12	EM LAB - LAB & CLASSROOMS	LIGHTS
LIGHTS	EM LTG - LAB 1131	12	20 A	7	1	1.30 0.00			1	8	20 A	--	SPARE	--
MISC.	FACP (NOTE 7 & 8)	12	20 A	9	1		1.00 0.00		1	10	20 A	--	SPARE	--
LIGHTS	EM LTG - RESEARCH LAB &...	12	20 A	11	1			0.81 0.00	1	12	20 A	--	SPARE	--
--	SPARE	--	20 A	13	1	0.00 0.00			1	14	20 A	--	SPARE	--
--	SPARE	--	20 A	15	1		0.00 0.00		1	16	20 A	--	SPARE	--
--	SPARE	--	20 A	17	1			0.00 0.00	1	18	20 A	--	SPARE	--
--	SPARE	--	20 A	19	1	0.00 0.00			1	20	20 A	--	SPARE	--
--	SPARE	--	20 A	21	1		0.00 0.00		1	22	20 A	--	SPARE	--
--	SPARE	--	20 A	23	1			0.00 0.00	1	24	20 A	--	SPARE	--
--	SPARE	--	20 A	25	1	0.00 0.00			1	26	20 A	--	SPARE	--
--	SPARE	--	20 A	27	1		0.00 0.00		1	28	20 A	--	SPARE	--
--	SPARE	--	20 A	29	1			0.00 0.00	1	30	20 A	--	SPARE	--
--	SPACE ONLY	--	--	31	--	0.00 0.00			--	32	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	33	--		0.00 0.00		--	34	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	35	--			0.00 0.00	--	36	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	37	--	0.00 0.00			--	38	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	39	--		0.00 0.00		--	40	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	41	--			0.00 0.00	--	42	--	--	SPACE ONLY	--

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	3678 VA	125.00%	4598 VA
LE	LIGHTING - EXTERIOR	497 VA	125.00%	621 VA
H	HEATING	0 VA	0.00%	0 VA
C	COOLING	0 VA	0.00%	0 VA
V	VENTILATION	0 VA	0.00%	0 VA
M	MOTORS	0 VA	0.00%	0 VA
K	KITCHEN	0 VA	0.00%	0 VA
R	RECEPTACLES	0 VA	0.00%	0 VA
WH	WATER HEATER	0 VA	0.00%	0 VA
MI	MISC.	1000 VA	100.00%	1000 VA
S	Spare	0 VA	0.00%	0 VA
E	ELEVATOR	0 VA	0.00%	0 VA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. PROVIDE BREAKER WITH HANDLE LOCK-ON DEVICE.
8. PROVIDE SWD (SWITCHING DUTY) RATED BREAKER.

TOTAL KVA (CONNECTED):	5.17 kVA	TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA (DEMAND):	6.22 kVA	16.9 A	12.4 A	14.3 A
TOTAL AMP. (CONNECTED):	14 A			
TOTAL AMP. (DEMAND):	17 A			

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

NEC 702 — PANEL: GM

VOLTAGE: 208Y/120 3Ø | **FED FROM:** ATS-GM
MOUNTING: SURFACE | **MAIN TYPE:** MLO | **MFR:**
ENCLOSURE: NEMA1 | **PHASE:** 3 | **TYPE:**
MAIN: 300 A | **WIRE:** 4 | **AIC:** 42 KAIC

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
RECEP...	REC: MDF (NOTE 7)	12	20 A	1	1	0.36 0.72			1	2	20 A	12	REC: OFFICE 1108, 1106	RECEP...
RECEP...	REC: MDF (NOTE 7)	12	20 A	3	1		0.54 1.52			4				
RECEP...	REC: OFFICE 1112,1110	12	20 A	5	1			0.72 1.52	2	6	20 A	12	ODU-1 & A/C-1	COOLING
RECEP...	REC: LAB 1113,1107 & 1105	12	20 A	7	1	1.08 0.25				8				
				9			3.72 0.25		2	10	15 A	12	IDU-1, IDU-3,IDU-5, BS-1	HEATIN...
COOLING	HP-A	6	45 A	11	3			3.72 0.00	1	12	20 A	--	SPARE	--
				13		3.72 0.00				14				
--	SPARE	--	20 A	15	1		0.00 0.00		1	16	20 A	--	SPARE	--
--	SPARE	--	20 A	17	1			0.00 0.00	1	18	20 A	--	SPARE	--
--	SPARE	--	20 A	19	1	0.00 0.00			1	20	20 A	--	SPARE	--
--	SPARE	--	20 A	21	1		0.00 0.00		1	22	20 A	--	SPARE	--
--	SPARE	--	20 A	23	1			0.00 0.00	1	24	20 A	--	SPARE	--
--	SPARE	--	20 A	25	1	0.00 0.00			1	26	20 A	--	SPARE	--
--	SPARE	--	20 A	27	1		0.00 0.00		1	28	20 A	--	SPARE	--
--	SPARE	--	20 A	29	1			0.00 0.00	1	30	20 A	--	SPARE	--
--	SPACE ONLY	--	--	31	--	0.00 0.00			--	32	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	33	--		0.00 0.00		--	34	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	35	--			0.00 0.00	--	36	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	37	--	0.00 0.00			--	38	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	39	--		0.00 0.00		--	40	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	41	--			0.00 0.00	--	42	--	--	SPACE ONLY	--

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	0 VA	0.00%	0 VA
LE	LIGHTING - EXTERIOR	0 VA	0.00%	0 VA
H	HEATING	343 VA	100.00%	343 VA
C	COOLING	14355 VA	100.00%	14355 VA
V	VENTILATION	0 VA	0.00%	0 VA
M	MOTORS	0 VA	0.00%	0 VA
K	KITCHEN	0 VA	0.00%	0 VA
R	RECEPTACLES	3420 VA	100.00%	3420 VA
WH	WATER HEATER	0 VA	0.00%	0 VA
MI	MISC.	0 VA	0.00%	0 VA
S	Spare	0 VA	0.00%	0 VA
E	ELEVATOR	0 VA	0.00%	0 VA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. PROVIDE BREAKER WITH HANDLE LOCK-ON DEVICE.

TOTAL KVA (CONNECTED):	18.12 kVA	TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA (DEMAND):	18.12 kVA	51.1 A	50.3 A	49.7 A
TOTAL AMP. (CONNECTED):	50 A			
TOTAL AMP. (DEMAND):	50 A			

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

SGA
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North Carolina License Number C-0914

9/14/2020

PROJECT NORTH | PLAN NORTH

KEY PLAN

Construction Documents

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER:
20-21673-01A

CODE:
41928

ITEM:
302

SGA | NW DESIGN PROJECT NUMBER:
19-202-01

DESIGNED BY: AJH
DRAWN BY: AJH
CHECKED BY: BLM

ISSUE DATE:
September 14, 2020

PANEL SCHEDULES

E801

SCALE:

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9/22/2020 12:22:23 PM

PANEL: LAB1

VOLTAGE: 208Y/120 3Ø **FED FROM:** MDP
MOUNTING: RECESSED **MAIN TYPE:** MLO **MFR:**
ENCLOSURE: NEMA1 **PHASE:** 3 **TYPE:**
MAIN: 200 A **WIRE:** 4 **AIC:** 22 KAIC

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
RECEP...	REC: GENERAL	12	20 A	1	1	0.36 1.00			2	2	30 A	10	208V REC	MISC.
RECEP...	REC: SURFCE RACEWAY	12	20 A	3	1		0.36 1.00			4				
RECEP...	REC: SURFCE RACEWAY	12	20 A	5	1			0.36 0.18	1	6	20 A	12	REC: SURFCE RACEWAY	RECEP...
--	SPARE	--	20 A	7	1	0.00 0.00			1	8	20 A	--	SPARE	--
--	SPARE	--	20 A	9	1		0.00 0.00		1	10	20 A	--	SPARE	--
--	SPARE	--	20 A	11	1			0.00 0.00	1	12	20 A	--	SPARE	--
--	SPARE	--	20 A	13	1	0.00 0.00			1	14	20 A	--	SPARE	--
--	SPARE	--	20 A	15	1		0.00 0.00		1	16	20 A	--	SPARE	--
--	SPARE	--	20 A	17	1			0.00 0.00	1	18	20 A	--	SPARE	--
--	SPARE	--	20 A	19	1	0.00 0.00			1	20	20 A	--	SPARE	--
--	SPARE	--	20 A	21	1		0.00 0.00		1	22	20 A	--	SPARE	--
--	SPARE	--	20 A	23	1			0.00 0.00	1	24	20 A	--	SPARE	--
--	SPARE LOAD	--	20 A	25	1	10.00 0.00			1	26	20 A	--	SPARE	--
--	SPARE LOAD	--	20 A	27	1		10.00 0.00		1	28	20 A	--	SPARE	--
--	SPARE LOAD	--	20 A	29	1			10.00 0.00	1	30	20 A	--	SPARE	--
--	SPACE ONLY	--	--	31	--	0.00 0.00			--	32	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	33	--		0.00 0.00		--	34	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	35	--			0.00 0.00	--	36	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	37	--	0.00 0.00			--	38	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	39	--		0.00 0.00		--	40	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	41	--			0.00 0.00	--	42	--	--	SPACE ONLY	--

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	0 VA	0.00%	0 VA
LE	LIGHTING - EXTERIOR	0 VA	0.00%	0 VA
H	HEATING	0 VA	0.00%	0 VA
C	COOLING	0 VA	0.00%	0 VA
V	VENTILATION	0 VA	0.00%	0 VA
M	MOTORS	0 VA	0.00%	0 VA
K	KITCHEN	0 VA	0.00%	0 VA
R	RECEPTACLES	1260 VA	100.00%	1260 VA
WH	WATER HEATER	0 VA	0.00%	0 VA
MI	MISC.	2000 VA	100.00%	2000 VA
S	Spare	30000 VA	100.00%	30000 VA
E	ELEVATOR	0 VA	0.00%	0 VA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. PROVIDE GFI BREAKER.

		TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA (CONNECTED):	33.26 kVA			
TOTAL KVA (DEMAND):	33.26 kVA	95.7 A	95.7 A	87.8 A
TOTAL AMP. (CONNECTED):	92 A			
TOTAL AMP. (DEMAND):	92 A			

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)

F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

PANEL: LAB2

VOLTAGE: 208Y/120 3Ø **FED FROM:** MDP
MOUNTING: RECESSED **MAIN TYPE:** MLO **MFR:**
ENCLOSURE: NEMA1 **PHASE:** 3 **TYPE:**
MAIN: 200 A **WIRE:** 4 **AIC:** 22 KAIC

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
RECEP...	REC: GENERAL	12	20 A	1	1	0.36 1.00			2	2	30 A	10	208V REC	MISC.
RECEP...	REC: SURFCE RACEWAY	12	20 A	3	1		0.36 1.00			4				
RECEP...	REC: SURFCE RACEWAY	12	20 A	5	1			0.18 0.36	1	6	20 A	12	REC: SURFCE RACEWAY	RECEP...
--	SPARE	--	20 A	7	1	0.00 0.00			1	8	20 A	--	SPARE	--
--	SPARE	--	20 A	9	1		0.00 0.00		1	10	20 A	--	SPARE	--
--	SPARE	--	20 A	11	1			0.00 0.00	1	12	20 A	--	SPARE	--
--	SPARE	--	20 A	13	1	0.00 0.00			1	14	20 A	--	SPARE	--
--	SPARE	--	20 A	15	1		0.00 0.00		1	16	20 A	--	SPARE	--
--	SPARE	--	20 A	17	1			0.00 0.00	1	18	20 A	--	SPARE	--
--	SPARE	--	20 A	19	1	0.00 0.00			1	20	20 A	--	SPARE	--
--	SPARE	--	20 A	21	1		0.00 0.00		1	22	20 A	--	SPARE	--
--	SPARE	--	20 A	23	1			0.00 0.00	1	24	20 A	--	SPARE	--
--	SPARE LOAD	--	20 A	25	1	10.00 0.00			1	26	20 A	--	SPARE	--
--	SPARE LOAD	--	20 A	27	1		10.00 0.00		1	28	20 A	--	SPARE	--
--	SPARE LOAD	--	20 A	29	1			10.00 0.00	1	30	20 A	--	SPARE	--
--	SPACE ONLY	--	--	31	--	0.00 0.00			--	32	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	33	--		0.00 0.00		--	34	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	35	--			0.00 0.00	--	36	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	37	--	0.00 0.00			--	38	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	39	--		0.00 0.00		--	40	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	41	--			0.00 0.00	--	42	--	--	SPACE ONLY	--

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	0 VA	0.00%	0 VA
LE	LIGHTING - EXTERIOR	0 VA	0.00%	0 VA
H	HEATING	0 VA	0.00%	0 VA
C	COOLING	0 VA	0.00%	0 VA
V	VENTILATION	0 VA	0.00%	0 VA
M	MOTORS	0 VA	0.00%	0 VA
K	KITCHEN	0 VA	0.00%	0 VA
R	RECEPTACLES	1260 VA	100.00%	1260 VA
WH	WATER HEATER	0 VA	0.00%	0 VA
MI	MISC.	2000 VA	100.00%	2000 VA
S	Spare	30000 VA	100.00%	30000 VA
E	ELEVATOR	0 VA	0.00%	0 VA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. PROVIDE GFI BREAKER.

		TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA (CONNECTED):	33.26 kVA			
TOTAL KVA (DEMAND):	33.26 kVA	95.7 A	95.7 A	87.8 A
TOTAL AMP. (CONNECTED):	92 A			
TOTAL AMP. (DEMAND):	92 A			

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)

F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

PANEL: LAB3

VOLTAGE: 208Y/120 3Ø **FED FROM:** MDP
MOUNTING: RECESSED **MAIN TYPE:** MLO **MFR:**
ENCLOSURE: NEMA1 **PHASE:** 3 **TYPE:**
MAIN: 200 A **WIRE:** 4 **AIC:** 22 KAIC

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
RECEP...	REC: GENERAL	12	20 A	1	1	0.36 1.00			2	2	30 A	10	208V REC	MISC.
RECEP...	REC: SURFCE RACEWAY	12	20 A	3	1		0.36 1.00			4				
RECEP...	REC: SURFCE RACEWAY	12	20 A	5	1			0.18 0.36	1	6	20 A	12	REC: SURFCE RACEWAY	RECEP...
--	SPARE	--	20 A	7	1	0.00 0.00			1	8	20 A	--	SPARE	--
--	SPARE	--	20 A	9	1		0.00 0.00		1	10	20 A	--	SPARE	--
--	SPARE	--	20 A	11	1			0.00 0.00	1	12	20 A	--	SPARE	--
--	SPARE	--	20 A	13	1	0.00 0.00			1	14	20 A	--	SPARE	--
--	SPARE	--	20 A	15	1		0.00 0.00		1	16	20 A	--	SPARE	--
--	SPARE	--	20 A	17	1			0.00 0.00	1	18	20 A	--	SPARE	--
--	SPARE	--	20 A	19	1	0.00 0.00			1	20	20 A	--	SPARE	--
--	SPARE	--	20 A	21	1		0.00 0.00		1	22	20 A	--	SPARE	--
--	SPARE	--	20 A	23	1			0.00 0.00	1	24	20 A	--	SPARE	--
--	SPARE LOAD	--	20 A	25	1	10.00 0.00			1	26	20 A	--	SPARE	--
--	SPARE LOAD	--	20 A	27	1		10.00 0.00		1	28	20 A	--	SPARE	--
--	SPARE LOAD	--	20 A	29	1			10.00 0.00	1	30	20 A	--	SPARE	--
--	SPACE ONLY	--	--	31	--	0.00 0.00			--	32	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	33	--		0.00 0.00		--	34	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	35	--			0.00 0.00	--	36	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	37	--	0.00 0.00			--	38	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	39	--		0.00 0.00		--	40	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	41	--			0.00 0.00	--	42	--	--	SPACE ONLY	--

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	0 VA	0.00%	0 VA
LE	LIGHTING - EXTERIOR	0 VA	0.00%	0 VA
H	HEATING	0 VA	0.00%	0 VA
C	COOLING	0 VA	0.00%	0 VA
V	VENTILATION	0 VA	0.00%	0 VA
M	MOTORS	0 VA	0.00%	0 VA
K	KITCHEN	0 VA	0.00%	0 VA
R	RECEPTACLES	1260 VA	100.00%	1260 VA
WH	WATER HEATER	0 VA	0.00%	0 VA
MI	MISC.	2000 VA	100.00%	2000 VA
S	Spare	30000 VA	100.00%	30000 VA
E	ELEVATOR	0 VA	0.00%	0 VA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. PROVIDE GFI BREAKER.

		TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA (CONNECTED):	33.26 kVA			
TOTAL KVA (DEMAND):	33.26 kVA	95.7 A	95.7 A	87.8 A
TOTAL AMP. (CONNECTED):	92 A			
TOTAL AMP. (DEMAND):	92 A			

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)

F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

PANEL: LAB4

VOLTAGE: 208Y/120 3Ø **FED FROM:** MDP
MOUNTING: SURFACE **MAIN TYPE:** MLO **MFR:**
ENCLOSURE: NEMA4X **PHASE:** 3 **TYPE:**
MAIN: 200 A **WIRE:** 4 **AIC:** 22 KAIC

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
MOTORS	GARAGE DOOR	12	20 A	1	1	0.00 1.00			1	2	20 A	12	CORD REEL (NOTE 8)	MISC.
RECEP...	REC: GENERAL	12	20 A	3	1		0.90 1.00		1	4	20 A	12	CORD REEL (NOTE 8)	MISC.
RECEP...	REC: GENERAL	12	20 A	5	1			1.08 1.11		6				
--	SPARE	--	20 A	7	1	0.00 1.11			3	8	20 A	12	WAVE FLUME	MISC.
--	SPARE	--	20 A	9	1		0.00 1.11			10				
--	SPARE	--	20 A	11	1			0.00 0.00	1	12	20 A	--	SHUNT	--
--	SPARE	--	20 A	13	1	0.00 0.00			1	14	20 A	--	SPARE	--
--	SPARE	--	20 A	15	1		0.00 0.00		1	16	20 A	--	SPARE	--
--	SPARE	--	20 A	17	1			0.00 0.00	1	18	20 A	--	SPARE	--
--	SPARE	--	20 A	19	1	0.00 0.00			1	20	20 A	--	SPARE	--
--	SPARE	--	20 A	21	1		0.00 0.00		1	22	20 A	--	SPARE	--
--	SPARE	--	20 A	23	1			0.00 0.00	1	24	20 A	--	SPARE	--
--	SPARE LOAD	--	20 A	25	1	10.00 0.00			1	26	20 A	--	SPARE	--
--	SPARE LOAD	--	20 A	27	1		10.00 0.00		1	28	20 A	--	SPARE	--
--	SPARE LOAD	--	20 A	29	1			10.00 0.00	1	30	20 A	--	SPARE	--
--	SPACE ONLY	--	--	31	--	0.00 0.00			--	32	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	33	--		0.00 0.00		--	34	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	35	--			0.00 0.00	--	36	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	37	--	0.00 0.00			--	38	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	39	--		0.00 0.00		--	40	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	41	--			0.00 0.00	--	42	--	--	SPACE ONLY	--

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	0 VA	0.00%	0 VA
LE	LIGHTING - EXTERIOR	0 VA	0.00%	0 VA
H	HEATING	0 VA	0.00%	0 VA
C	COOLING	0 VA	0.00%	0 VA
V	VENTILATION	0 VA	0.00%	0 VA
M	MOTORS	1 VA	125.00%	1 VA
K	KITCHEN	0 VA	0.00%	0 VA
R	RECEPTACLES	1980 VA	100.00%	1980 VA
WH	WATER HEATER	0 VA	0.00%	0 VA
MI	MISC.	5328 VA	100.00%	5328 VA
S	Spare	30000 VA	100.00%	30000 VA
E	ELEVATOR	0 VA	0.00%	0 VA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. PROVIDE BREAKER WITH SHUNT TRIP.
8. PROVIDE GFI BREAKER.

		TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA (CONNECTED):	37.31 kVA			
TOTAL KVA (DEMAND):	37.31 kVA	100.9 A	108.5 A	101.7 A
TOTAL AMP. (CONNECTED):	104 A			
TOTAL AMP. (DEMAND):	104 A			

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)

F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

PANEL: MP

VOLTAGE: 208Y/120 3Ø **FED FROM:** MDP
MOUNTING: SURFACE **MAIN TYPE:** MLO **MFR:**
ENCLOSURE: NEMA1 **PHASE:** 3 **TYPE:**
MAIN: 200 A **WIRE:** 4 **AIC:** 42 KAIC

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
MISC.	REC: SURFCE RACEWAY	12	20 A	1	1	1.50 1.00			2	2	20 A	12	208V REC	MISC.
MISC.	208V REC	12	20 A	3	2		1.00 1.00			4				
MISC.	208V REC	12	20 A	5	2			1.00 1.00	2	6	20 A	12	208V REC	MISC.
MISC.	208V REC	12	20 A	7	2	1.00 1.00				8				
MISC.	208V REC	12	20 A	9	2		1.00 1.00		2	10	20 A	12	208V REC	MISC.
MISC.	208V REC	12	20 A	11	2			1.00 1.00		12				
MISC.	208V REC	12	20 A	13	2	1.00 1.00			1	14	20 A	12	REC: SURFCE RACEWAY	MISC.
MISC.	208V REC	12	20 A	15	2		1.00 1.00		1	16	20 A	12	REC: SURFCE RACEWAY	MISC.
MISC.	208V REC	12	20 A	17	2			1.00 1.00	1	18	20 A	12	REC: SURFCE RACEWAY	MISC.
MISC.	REC: SURFCE RACEWAY	12	20 A	19	1	1.00 1.00			1	20	20 A	12	REC: SURFCE RACEWAY	MISC.
MISC.	REC: SURFCE RACEWAY	12	20 A	21	1		1.00 1.00		1	22	20 A	12	REC: SURFCE RACEWAY	MISC.
MISC.	REC: SURFCE RACEWAY	12	20 A	23	1			1.00 1.00	1	24	20 A	12	REC: SURFCE RACEWAY	MISC.
MISC.	REC: SURFCE RACEWAY	12	20 A	25	1	1.00 1.00			1	26	20 A	12	CORD REEL (NOTE 7)	MISC.
MISC.	REC: SURFCE RACEWAY	12	20 A	27	1		1.00 1.00		1	28	20 A	12	REC: SURFCE RACEWAY	MISC.
MISC.	REC: SURFCE RACEWAY	12	20 A	29	1			1.00 1.00	1	30	20 A	12	REC: SURFCE RACEWAY	MISC.
MISC.	CORD REEL (NOTE 7)	12	20 A	31	1	1.00 1.00			2	32	30 A	10	208V REC	MISC.
MISC.	CORD REEL (NOTE 7)	12	20 A	33	1		1.00 1.00			34				
MISC.	CORD REEL (NOTE 7)	12	20 A	35	1			1.00 1.00	2	36	20 A	12	208V REC	MISC.
--	SPARE	--	20 A	37	1	0.00 1.00				38				
MISC.	208V REC	12	20 A	39	2		1.00 0.00		1	40	20 A	--	SPARE	--
		12	20 A	41				1.00 0.00	1	42	20 A	--	SPARE	--

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	0 VA	0.00%	0 VA
LE	LIGHTING - EXTERIOR	0 VA	0.00%	0 VA
H	HEATING	0 VA	0.00%	0 VA
C	COOLING	0 VA	0.00%	0 VA
V	VENTILATION	0 VA	0.00%	0 VA
M	MOTORS	0 VA	0.00%	0 VA
K	KITCHEN	0 VA	0.00%	0 VA
R	RECEPTACLES	0 VA	0.00%	0 VA
WH	WATER HEATER	0 VA	0.00%	0 VA
MI	MISC.	39500 VA	100.00%	39500 VA
S	Spare	0 VA	0.00%	0 VA
E	ELEVATOR	0 VA	0.00%	0 VA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. PROVIDE GFI BREAKER.

		TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA (CONNECTED):	39.50 kVA			
TOTAL KVA (DEMAND):	39.50 kVA	112.5 A	108.3 A	108.3 A
TOTAL AMP. (CONNECTED):	110 A			
TOTAL AMP. (DEMAND):	110 A			

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)

F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

PANEL: R2

VOLTAGE: 208Y/120 3Ø **FED FROM:** MDP
MOUNTING: SURFACE **MAIN TYPE:** MLO **MFR:**
ENCLOSURE: NEMA1 **PHASE:** 3 **TYPE:**
MAIN: 200 A **WIRE:** 4 **AIC:** 42 KAIC

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
--	SPARE	--	20 A	1	1	0.00 0.00			1	2	20 A	--	SPARE	--
--	SPARE	--	20 A	3	1		0.00 0.00		1	4	20 A	--	SPARE	--
--	SPARE	--	20 A	5	1			0.00 0.00	1	6	20 A	--	SPARE	--
--	SPARE	--	20 A	7	1	0.00 0.00			1	8	20 A	--	SPARE	--
--	SPARE	--	20 A	9	1		0.00 0.00		1	10	20 A	--	SPARE	--
--	SPARE	--	20 A	11	1			0.00 0.00	1	12	20 A	--	SPARE	--
--	SPARE	--	20 A	13	1	0.00 0.00			1	14	20 A	--	SPARE	--
--	SPARE	--	20 A	15	1		0.00 0.00		1	16	20 A	--	SPARE	--
--	SPARE	--	20 A	17	1			0.00 0.00	1	18	20 A	--	SPARE	--
--	SPARE	--	20 A	19	1	0.00 0.00			1	20	20 A	--	SPARE	--
--	SPARE	--	20 A	21	1		0.00 0.00		1	22	20 A	--	SPARE	--
--	SPARE	--	20 A	23	1			0.00 0.00	1	24	20 A	--	SPARE	--
--	SPARE	--	20 A	25	1	0.00 0.00			1	26	20 A	--	SPARE	--
--	SPARE	--	20 A	27	1		0.00 0.00		1	28	20 A	--	SPARE	--
--	SPARE	--	20 A	29	1			0.00 0.00	1	30	20 A	--	SPARE	--
--	SPACE ONLY	--	--	31	--	0.00 0.00			--	32	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	33	--		0.00 0.00		--	34	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	35	--			0.00 0.00	--	36	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	37	--	0.00 0.00			--	38	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	39	--		0.00 0.00		--	40	--	--	SPACE ONLY	--
--	SPACE ONLY	--	--	41	--			0.00 0.00	--	42	--	--	SPACE ONLY	--

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	0 VA	0.00%	0 VA
LE	LIGHTING - EXTERIOR	0 VA	0.00%	0 VA
H	HEATING	0 VA	0.00%	0 VA
C	COOLING	0 VA	0.00%	0 VA
V	VENTILATION	0 VA	0.00%	0 VA
M	MOTORS	0 VA	0.00%	0 VA
K	KITCHEN	0 VA	0.00%	0 VA
R	RECEPTACLES	0 VA	0.00%	0 VA
WH	WATER HEATER	0 VA	0.00%	0 VA
MI	MISC.	0 VA	0.00%	0 VA
S	Spare	0 VA	0.00%	0 VA
E	ELEVATOR	0 VA	0.00%	0 VA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.

		TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA (CONNECTED):	0.00 kVA			
TOTAL KVA (DEMAND):	0.00 kVA	0.0 A	0.0 A	0.0 A
TOTAL AMP. (CONNECTED):	0 A			
TOTAL AMP. (DEMAND):	0 A			

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)

F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

SGA
NarmourWright
DESIGN

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NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 028297 Daniel Jones

9/14/2020

PROJECT NORTH PLAN NORTH

KEY PLAN

Construction Documents

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER:
20-21673-01A

CODE:
41928

ITEM:
302

SGA | NW DESIGN PROJECT NUMBER:
19-202-01

DESIGNED BY: AJH
DRAWN BY: AJH
CHECKED BY: BLM

ISSUE DATE:
September 14, 2020

PANEL SCHEDULES

E802

SCALE:

9/22/2020 12:22:26 PM

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LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	LAMP	BALLAST/DRIVER	WATTAGE	VOLTAGE	MFR	CATALOG SERIES	NOTE
EXTG	THERMOPLASTIC EXIT SIGN	LED	INTEGRAL LED DRIVER	1 W	UNIV	LITHONIA HUBBELL JUNO COOPER PHILLIPS	QUANTUM LQM S W R 120/277 DUAL LITE LX U R W NAVILITE NXPA R WH SURE-LITES LPX 6 CHLORIDE	NON-BATTERY EXIT SIGN UL LISTED FOR DAMP LOCATIONS RED
HBL1	HIGH BAY (PENDANT MOUNTED)	LED	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	125 W	UNIV	LITHONIA COOPER JUNO	IBL 15L WD SD125 LP840 APPROVED EQUAL APPROVED EQUAL	15,000+ LUMENS MINIMUM; 4000K PENDANT MOUNTED WITH WIRE GUARD DIFFUSING ACRYLIC
HBL2	HIGH BAY (VAPORTITE LISTED)	LED	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	172 W	UNIV	LITHONIA COOPER JUNO	APPROVED EQUAL VRVT4LED LD5 15 DR UNV L840 CD 2 WL APPROVED EQUAL	15,000+ LUMENS MINIMUM; 4000K PENDANT MOUNTED; NEMA 4X RATED. PROVIDE STAINLESS STEEL OR GALVANIZED MOUTING; DIFFUSING HIGH IMPACT ACRYLIC LENS VAPORTITE/WET LOCATION LISTED.
ODL1	6" RECESSED DOWNLIGHT	LED	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	19 W	UNIV	LITHONIA JUNO COOPER	LDN6 50/15 L06 AR LS MVOLT APPROVED EQUAL APPROVED EQUAL	1500 LUMENS MINIMUM; 5000K 6" APERATURE CLEAR SPECULAR LENS WET LOCATION LISTED
OPL1	PEDESTRIAN POLE LIGHT	LED	INTEGRAL LED DRIVER	60 W	UNIV	KING LUMINAIRE	K611 (MOD)-T-BAAR-III-60(SSL)-5000-277-XPG	5000K; TYPE III DISTRIBUTION WET LOCATION LISTED BLACK FINISH FOR LIGHT AND POLE 14' UL LISTED POLE - VALMONT 1308-30-50-5-T-P-P2-DBL WITH ANCHOR BASE SIZE OF 12.5" DIAMETER WITH 9" BOLT CIRCLE. REFER TO DETAIL FOR ADDITIONAL INFORMATION
OWL1	WALL PACK TRAPEZOID	LED	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	30 W	UNIV	LITHONIA HUBBELL COOPER	WST LED P2 50K VW MVOLT DDBXD APPROVED EQUAL APPROVED EQUAL	3000 LUMENS MINIMUM; 5000K WIDE THROW VERIFY MOUNTING HEIGHT & FINISH WITH ARCHITECT.
OWL2	DECORATIVE LANTERN LIGHT	LED	INTEGRAL LED DRIVER	60 W	120V	PROGRESS LITHONIA COLUMBIA	P6617-20 APPROVED EQUAL APPROVED EQUAL	ANTIQUE BRONZE FINISH. WET LOCATION LISTED 5000K COLOR TEMP LAMP
STL1	4' STRIP	LED	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	40 W	UNIV	LITHONIA COLUMBIA EATON	CLX LED L48 5000LM SEF FDL MVOLT GZ10 40K 80CRI APPROVED EQUAL APPROVED EQUAL	4000 LUMENS MINIMUM; 4000K PROVIDE CHAIN FOR PENDANT MOUNTING PROVIDE WIRE GUARD; LENSED
VLT1	2'x2' VOLUMETRIC TROFFER	LED	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	16 W	UNIV	LITHONIA COLUMBIA EATON	2VTL2 20L ADP EZ1 LP840 APPROVED EQUAL APPROVED EQUAL	MINIMUM 2000 LUMENS; 4000K DAMP LOCATION LISTED
VLT3	2'x4' VOLUMETRIC TROFFER	LED	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	23 W	UNIV	LITHONIA COLUMBIA EATON	2VTL4 30L ADP EZ1 LP840 APPROVED EQUAL APPROVED EQUAL	MINIMUM 3000 LUMENS; 4000K DAMP LOCATION LISTED
VLT4	2'x4' VOLUMETRIC TROFFER	LED	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	33 W	UNIV	LITHONIA COLUMBIA EATON	2VTL4 40L ADP EZ1 LP8440 APPROVED EQUAL APPROVED EQUAL	MINIMUM 4000 LUMENS; 4000K DAMP LOCATION LISTED

FAN SCHEDULE

SYMBOL	LOCATION	ELECTRICAL DATA			DISCONNECT
		VFD	H.P.	VOLTAGE	
EF-1	FIRST FLOOR	--	3/4	208/1/60	30/FI5-2P
EF-2	FIRST FLOOR	--	3/4	208/1/60	30/FI5-2P
EF-3	FIRST FLOOR	--	1/3	120/1/60	30/FI5-1P
EF-4	FIRST FLOOR	--	1/10	120/1/60	30/FI5-1P

ELECTRIC UNIT HEATER SCHEDULE

SYMBOL	LOCATION	kW	MOTOR			
			R.P.M.	H.P.	VOLTAGE	DISCONNECT
UH-1	1151 - RISER ROOM	3.0	--	1/125	208/1/60	30/F20-2P
UH-2	1149 - MECHANICAL	3.0	--	1/125	208/1/60	30/F20-2P

VRF HEAT PUMP SCHEDULE

SYMBOL	NOMINAL TONNAGE	ELECTRICAL DATA			
		MCA	FUSE	VOLTAGE	VOLTAGE
HP-A	16	31	45	208V-3Ø	60/F45-3P-3R
HP-B	16	31	45	208V-3Ø	60/F45-3P-3R

NOTES:

1. PROVIDE FUSED DISCONNECTS & STARTER WITH CONTACTS
2. ALL ELECTRICAL COMPONENTS SERVING AND WITHIN UNIT SHALL HAVE A MINIMUM SCCR RATING OF 65 KAIC.

DUCTLESS SPLIT SYSTEMS

INDOOR UNIT			OUTDOOR UNIT				
SYMBOL	ELECTRICAL DATA		SYMBOL	ELECTRICAL DATA			
	FLA	VOLTAGE		MCA	FUSE	VOLTAGE	DISCONNECT
AC-1	0.30	208V-1Ø	ODU-1	18.3	20	208V-1Ø	30/F20-2P-3R
AC-2	0.30	208V-1Ø	ODU-2	18.3	20	208V-1Ø	30/F20-2P-3R

NOTES:

1. NON-LOCKING DISCONNECT FOR INDOOR UNIT.
2. POWER SUPPLY TO CONDENSING UNIT IS A SINGLE POINT ELECTRICAL CONNECTION FOR THE SYSTEM (A/C UNIT AND CONDENSING UNIT). THE ELECTRICAL CONTRACTOR SHALL PROVIDE POWER TO THE CONDENSING UNIT AND FROM THE CONDENSING UNIT TO THE A/C UNIT INCLUDING CODE REQUIRED DISCONNECT SWITCHES.

DOAS UNIT SCHEDULE (ELECTRIC HEAT WITH DX COOLING)

UNIT NUMBER	LOCATION	AREA SERVED	ELECTRICAL DATA						DISCONNECT
			SUPPLY FAN (H.P.)	VOLTS	PHASE	Hz	MCA	MOCP	
DOAS-1	MER	WHOLE BUILDING	(2) 4	208	3	60	167	175	200/FI75-3P-3R
DOAS-1 CU-1	UTIL. YARD	WHOLE BUILDING		208	3	60	156	175	200/FI75-3P-3R

NOTES:

1. ELECTRIC TYPE SMOKE DETECTOR, INSTALLED IN THE RETURN DUCT WIRED TO SHUT DOWN THE UNIT UPON ACTIVATION. SMOKE DETECTOR SHALL BE SUPPLIED, WIRED FOR INTERFACE WITH FIRE ALARM SYSTEM AND UNIT SHUTDOWN BY THE ELECTRICAL CONTRACTOR. SMOKE DETECTOR SHALL BE INSTALLED IN THE RETURN DUCT BY THE MECHANICAL CONTRACTOR.
2. ALL NON-LOW VOLTAGE ELECTRICAL WIRING IN METALLIC RACEWAY, RESETTABLE CIRCUIT BREAKERS, MARINE TYPE LIGHTS IN EACH SECTION WIRED BACK TO A COMMON SWITCH.
3. PROVIDE EQUIPMENT MOUNTED DUPLEX GFI SERVICE RECEPTACLE IN WEATHER TIGHT "WHILE IN USE" COVER
4. A SINGLE VFD SHALL BE PROVIDED FOR THE ABOVE NOTED SUPPLY FANS (TOTAL CONNECTED HP) MOUNTED EXTERNAL OF THE UNIT, PROVIDE CONNECTION CONTROL ENCLOSURE ON UNIT FOR INDIVDUAL FAN RELAY AND CONTROL.
5. 65KA SCCR RATING FOR ALL UNITS

VRF INDOOR UNIT SCHEDULE

SYMBOL	NOMINAL TONNAGE	ELECTRICAL DATA				MATCHING OUTDOOR UNIT	BC CONTROLLER
		MCA	MOP	VOLTAGE	DISCONNECT		
IDU-1	1.25	0.55	15	208V-1PH	30/F15-2P	HP-A	BS-1
IDU-2	1.50	1.56	15	208V-1PH	30/F15-2P	HP-A	BS-1
IDU-3	1.25	0.55	15	208V-1PH	30/F15-2P	HP-A	BS-1
IDU-4	1.50	1.56	15	208V-1PH	30/F15-2P	HP-A	BS-1
IDU-5	1.25	0.55	15	208V-1PH	30/F15-2P	HP-A	BS-1
IDU-6	1.50	1.56	15	208V-1PH	30/F15-2P	HP-A	BS-1
IDU-7	1.50	1.56	15	208V-1PH	30/F15-2P	HP-A	BS-1
IDU-8	3.00	3.32	15	208V-1PH	30/F15-2P	HP-A	BS-1
IDU-9	1.50	1.56	15	208V-1PH	30/F15-2P	HP-A	BS-1
IDU-10	4.00	3.41	15	208V-1PH	30/F15-2P	HP-A	BS-1
IDU-11	3.00	3.32	15	208V-1PH	30/F15-2P	HP-A	BS-1
IDU-12	2.50	4.13	15	208V-1PH	30/F15-2P	HP-B	BS-2
IDU-13	4.00	4.13	15	208V-1PH	30/F15-2P	HP-B	BS-2
IDU-14	2.50	4.13	15	208V-1PH	30/F15-2P	HP-B	BS-2
IDU-15	1.25	0.55	15	208V-1PH	30/F15-2P	HP-B	BS-2
IDU-16	1.25	0.55	15	208V-1PH	30/F15-2P	HP-B	BS-2
IDU-17	1.00	1.20	15	208V-1PH	30/F15-2P	HP-B	BS-2
IDU-18	2.00	0.52	15	208V-1PH	30/F15-2P	HP-B	BS-2
IDU-19	1.50	1.56	15	208V-1PH	30/F15-2P	HP-B	BS-2
IDU-20	3.00	3.32	15	208V-1PH	30/F15-2P	HP-B	BS-2
BS-1		1.57	20	208V-1PH	30/F20-2P		
BS-2		1.57	20	208V-1PH	30/F20-2P		

NOTES:

1. SINGLE POINT ELECTRICAL CONNECTION
2. PROVIDE EACH UNIT WITH A IONIZATION TYPE SMOKE DETECTOR, INSTALLED IN THE RETURN DUCT WIRED TO SHUT DOWN THE UNIT UPON ACTIVATION. SMOKE DETECTOR SHALL BE SUPPLIED, WIRED FOR INTERFACE WITH FIRE ALARM SYSTEM AND UNIT SHUTDOWN BY THE ELECTRICAL CONTRACTOR. SMOKE DETECTOR SHALL BE INSTALLED IN THE RETURN DUCT BY THE MECHANICAL CONTRACTOR. ACTIVATION OF DUCT SMOKE DETECTOR SHALL INITIATE A VISIBLE AND AUDBILE SUPERVISORY SIGNAL AT A CONSTANTLY ATTENDED OR MONITORED LOCATION
3. PROVIDE FUSED DISCONNECT & STARTER WITH CONTACTS.
4. PROVIDE VIBRATION ISOLATORS ON ALL UNITS LOCATED IN ATTIC.
5. PROVIDE SEPARATE ELECTRICAL CONNECTIONS FOR THE INDOOR UNIT AND BRANCH SELECTOR BOXES

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North Carolina License Number C-0914

9/14/2020

PROJECT NORTH

PLAN NORTH

KEY PLAN

Construction Documents

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER:
20-21673-01A

CODE:
41928

ITEM:
302

SGA | NW DESIGN PROJECT NUMBER:
19-202-01

DESIGNED BY: Author
DRAWN BY: Author
CHECKED BY: Checker

ISSUE DATE:
September 14, 2020

LIGHTING & MECHANICAL SCHEDULES

E803

SCALE: 1/8" = 1'-0"

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FIRE PROTECTION DESIGN CRITERIA

SYMBOL	OCCUPANCY	TYPE	DESIGN DENSITY (GPM/SF)	HYDRAULIC REMOTE AREA (SF)	MAX. COVERAGE PER SPRINKLER HEAD (SF)	HOSE STREAM		AREAS OF COVERAGE
						INSIDE GPM	OUTSIDE GPM	
LH	LIGHT HAZARD	WET	0.10	1500	225	100	-	ENTIRE FACILITY, EXCEPT AS NOTED OTHERWISE
OH-1	ORDINARY HAZARD GROUP I	WET	0.15	1500	130	100	150	MECHANICAL ROOMS, STORAGE ROOMS, ELECTRICAL ROOMS, JANITORS CLOSETS, ETC.

APPLICABLE PUBLICATIONS: THE FOLLOWING PUBLICATIONS SHALL BE USED AS A REFERENCE FOR THE DESIGN OF THE FIRE PROTECTION SYSTEM ON THIS PROJECT:

1. NORTH CAROLINA STATE BUILDING CODE: FIRE PREVENTION CODE - 2018 EDITION
2. NFPA 13 - STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS - 2013 EDITION
3. NFPA 24 - STANDARD FOR THE INSTALLATION OF PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCES - 2013 EDITION

NOTES:

1. CONTRACTOR HAS THE OPTION TO REDUCE THE HYDRAULIC REMOTE AREA AS ALLOWED PER NFPA 13 BASED ON CEILING HEIGHT AND THE USE OF QUICK-RESPONSE SPRINKLERS.

SPRINKLER SCHEDULE

1. PROVIDE ADJUSTABLE CONCEALED PENDENT SPRINKLERS ALL LAY-IN ACOUSTICAL TILE AND GYPBOARD CEILINGS. COORDINATE COLOR OF CONCEALED SPRINKLER HEAD COVER-PLATE WITH ARCHITECT.
2. LOCATE SPRINKLERS TO AVOID OBSTRUCTIONS BY CEILING MOUNTED DEVICES. WHERE CEILING MOUNTED DEVICES OBSTRUCT SPRINKLER DISCHARGE, PROVIDE PENDANT SPRINKLER WITH 2 PIECE WHITE PLATE.
3. PROVIDE BRASS UPRIGHT SPRINKLERS IN EXPOSED AREAS WITH NO FINISH CEILING.
4. PROVIDE BRASS PENDENT SPRINKLERS WITH SHIELDS IN MECHANICAL ROOMS, ELECTRIC ROOMS, STORAGE ROOMS AND OTHER AREAS WHERE EXPOSED SPRINKLERS ARE SUBJECT TO DAMAGE.
5. PROVIDE RECESSED DRY STEM PENDENT SPRINKLER WITH WHITE PLATE IN AREAS SUBJECT TO FREEZING.
6. PROVIDE RECESSED SIDEWALL SPRINKLERS AS REQUIRED OR INDICATED.
7. PROVIDE INTERMEDIATE TEMPERATURE SPRINKLERS (175° F - 225°F ACTIVATION TEMPERATURE) IN ELEC. ROOMS, BOILER ROOMS, DATA CLOSETS AND WHEN SPRINKLER IS LOCATED WITHIN 18" OF HVAC DIFFUSER.
8. PROVIDE CORROSION RESISTANT SPRINKLER HEADS IN THE FACULTY OPEN LAB ROOM 1131 AND STAGING AREA ROOM 1131A DUE TO THE OPEN WAVE TANK.

* INSTALL SPRINKLERS IN ACCORDANCE WITH NFPA 13 AND THE MANUFACTURERS APPROVAL LISTING.
* PROVIDE QUICK RESPONSE SPRINKLERS.

FLOW TEST DATA

DATE / TIME	LOCATION	PRESSURE		FLOW (GPM)	FLOW AT 20 PSI (GPM)
		STATIC (PSI)	RESIDUAL (PSI)		
02-25-2020 7:00 AM	UNCW CAMPUS - RANDALL DRIVE - ADJACENT TO FRIDAY HALL BLDG., WILMINGTON, NC	47	40	995	2025
	SCO SAFETY FACTOR PRESSURE AND FLOW	37	30	896	1447

FLOW TEST PERFORMED BY: BFPE INTERNATIONAL; WITNESSED BY DAN SUITS WITH UNCW

FLOW TEST NOTES:

1. THE CONTRACTOR IS SHALL OBTAIN A NEW FIRE FLOW TEST ON WHICH TO BASE THEIR CALCULATIONS.
2. THE FLOW TEST USED FOR THE WORKING PLAN DESIGN SHOULD BE PERFORMED AS INDICATED IN NFPA 291 WHICH USES TWO HYDRANTS; A PRESSURE HYDRANT AND A FLOW HYDRANT. THE TWO HYDRANTS SHALL BE AS CLOSE TO THE POINT OF CONNECTION AS POSSIBLE. PROVIDE A COPY OF THE FLOW TEST AND TEST HYDRANT LOCATIONS WITH THE SUBMITTED SPRINKLER SHOP DRAWING PACKAGE.

FIRE FLOW ANALYSIS

APPLICABLE PUBLICATIONS:

THE FOLLOWING PUBLICATIONS SHALL BE USED AS A REFERENCE FOR THE FIRE FLOW ANALYSIS:

1. NORTH CAROLINA STATE FIRE CODE - 2018 EDITION - APPENDIX B
2. NORTH CAROLINA STATE BUILDING CODE - 2018 EDITION

BUILDING SUMMARY:
TYPE IIB CONSTRUCTION
1ST FLOOR AREA: 14,225 SF
TOTAL AREA OF BLDG: 14,225 SF
FULLY SPRINKLED BUILDING PER NFPA 13

FIRE FLOW CALCULATION:
FIRE FLOW REQUIRED FROM TABLE B105.1(2) = 2,500 GPM FOR 2 HOURS
75% FIRE FLOW REDUCTION ALLOWED FOR FULLY SPRINKLED BUILDING
2,500 GPM X 25% = 625 GPM (FIRE FLOW SHALL NOT BE LESS THAN 1,000 GPM)

FIRE FLOW REQUIRED = 1,000 GPM
DURATION OF FLOW = 2 HOURS

WATER AVAILABLE PER FLOW TEST:
2,025 GPM @ 20 PSI
1,447 GPM @ 20 PSI (NC SCO ADJUSTED FLOW TEST)

CITY WATER MAIN SATISFIES THE FIRE-FLOW REQUIREMENT.

FIRE PROTECTION GENERAL NOTES

1. THE INTENT OF THESE PLANS IS TO PROVIDE INFORMATION TO THE REVIEWING AUTHORITIES THAT THE BUILDING WILL BE PROTECTED BY A SPRINKLER SYSTEM.
2. SCOPE: PROVIDE DESIGN, FABRICATION AND INSTALLATION OF A HYDRAULICALLY CALCULATED AUTOMATIC SPRINKLER SYSTEM INCLUDING ALL SERVICES, MATERIALS, LABOR AND EQUIPMENT REQUIRED FOR A COMPLETE WORKING SPRINKLER SYSTEM IN FULL COMPLIANCE WITH THE REQUIREMENTS OF THE 2013 EDITION OF NFPA 13, THE OWNER'S INSURANCE UNDERWRITER, THE 2018 NORTH CAROLINA STATE FIRE CODE AND THE LOCAL AUTHORITY HAVING JURISDICTION.
3. WARRANTY: PROVIDE A ONE YEAR WARRANTY, FROM THE DATE OF ACCEPTANCE OF WORK BY THE OWNER, FOR ALL SPRINKLER SYSTEM MATERIALS AND EQUIPMENT.
4. COORDINATE ALL SPRINKLER PIPING LOCATIONS, SPRINKLER LOCATIONS AND EQUIPMENT LOCATIONS WITH OTHER TRADES TO AVOID CONFLICTS AND INTERFERENCES. FINAL PIPING AND EQUIPMENT LOCATIONS SHALL BE A CODE COMPLIANT INSTALLATION FOR ALL TRADES.
5. DO NOT SCALE THE DRAWINGS, REFERENCE THE ARCHITECTURAL PLANS FOR DIMENSIONAL INFORMATION.
6. WHERE DISCREPANCIES ARE FOUND IN THE DRAWINGS AND SPECIFICATIONS THE MORE STRINGENT SHALL APPLY. CONTACT ENGINEER FOR CLARIFICATION.
7. OBTAIN A CURRENT FLOW TEST, LESS THAN 1 YEAR OLD, PRIOR TO STARTING THE DESIGN OF THE SPRINKLER SYSTEM. THE FLOW TEST CRITERIA SHALL INCLUDE THE STATIC PRESSURE, RESIDUAL PRESSURE, FLOW IN GPM, HORIZONTAL AND VERTICAL DISTANCE OF TEST FROM BASE OF FIRE RISER, THE NAME OF THE PERSON AND COMPANY WHOM PERFORMED THE FLOW TEST, THE TESTING COMPANY'S PHONE NUMBER, AND THE DATE AND TIME THE TEST WAS PERFORMED.
8. DESIGN AND HYDRAULICALLY CALCULATE THE SPRINKLER SYSTEM UTILIZING THE CURRENT FLOW TEST DATA. MEET ALL NFPA 13 REQUIREMENTS WHETHER OR NOT SPECIFICALLY INDICATED WITHIN THESE DOCUMENTS. TERMINATE THE HYDRAULIC CALCULATIONS AT THE CITY CONNECTION MINIMUM. INDICATE ON DRAWINGS ALL UNDERGROUND PIPE AND FITTINGS BOTH NEW AND EXISTING.
9. THE CONTRACTOR SHALL HAVE A DESIGNER ON STAFF WITH A CURRENT N.I.C.E.T. LEVEL III CERTIFICATION OR HIGHER TO PREPARE THE WORKING PLANS AND HYDRAULIC CALCULATIONS IN ACCORDANCE WITH NFPA 13 CHAPTER 23 "PLANS AND CALCULATIONS". THE N.I.C.E.T. DESIGNERS NAME, SIGNATURE AND CERTIFICATE NUMBER SHALL APPEAR ON THE WORKING DRAWINGS AND HYDRAULIC CALCULATIONS.
10. SUBMIT WORKING PLANS, HYDRAULIC CALCULATIONS AND MATERIALS DATA AND ACCESSORIES IN ELECTRONIC FORMAT (PDF) TO THE ARCHITECT / ENGINEER FOR REVIEW AND OBTAIN APPROVAL BEFORE STARTING THE INSTALLATION OF THE SPRINKLER SYSTEM.
11. THE CONTRACTOR SHALL SUBMIT WORKING PLANS AND HYDRAULIC CALCULATIONS EXPEDIENTLY TO THE AUTHORITIES HAVING JURISDICTION. APPROVAL FROM ALL AUTHORITIES HAVING JURISDICTION SHALL BE OBTAINED BEFORE STARTING THE INSTALLATION OF THE SPRINKLER SYSTEM.
12. AT THE COMPLETION OF THE PROJECT, PROVIDE TWO SETS OF RECORD DRAWINGS TO THE OWNER, CLEARLY SHOWING ANY CHANGES AND/OR MODIFICATIONS, ADDITIONS OR DELETIONS TO AND FROM THE CONSTRUCTION DOCUMENTS. THESE SETS SHALL BE REVIEWED BY THE ARCHITECT / ENGINEER BEFORE BEING TURNING OVER TO THE OWNER.

INSTALLATION REQUIREMENTS:

1. PROVIDE ALL NECESSARY OFFSETS, RISES OR DROPS IN THE PIPING AND AUXILIARY DRAINS AS REQUIRED BY ALL APPLICABLE CODES WHETHER OR NOT SHOWN ON THE PLANS.
2. CONNECT ALL SPRINKLER ALARM, TAMPER AND DETECTION SYSTEMS TO THE BUILDINGS CENTRAL FIRE ALARM SYSTEM, COORDINATE LOCATIONS AND REQUIREMENTS WITH THE ELECTRICAL CONTRACTOR.
3. CUT WALLS, FLOORS AND CEILINGS AS REQUIRED FOR INSTALLATION OF SPRINKLER WORK. ALL CUTTING SHALL BE HELD TO A MINIMUM. PATCH AND FINISH SURFACES TO MATCH ADJOINING SURFACES. AVOID PENETRATING ANY MAIN STRUCTURAL BEAM. NOTIFY ARCHITECT OF ANY CONFLICTS.
4. CONCEALED FIRE PROTECTION SYSTEM ABOVE CEILINGS.
5. PAINT ALL EXPOSED FIRE PROTECTION SYSTEM PIPING (IN CLOSETS, STAIRWELLS, MECHANICAL ROOMS, ETC.). COLOR TO BE SELECTED BY THE ARCHITECT.
6. SPRINKLER LOCATIONS ARE TO BE IN THE CENTER OF THE CEILING TILE USING THE REFLECTED CEILING PLANS AND AS COORDINATED WITH THE CEILING CONTRACTOR.
7. WARRANT THE SYSTEM LABOR, MATERIALS AND EQUIPMENT FOR THE AMOUNT OF TIME SPECIFIED IN THE PROJECT MANUAL. IF NO WARRANTY SECTION IS PROVIDED, THEN WARRANT THE SYSTEM LABOR, MATERIAL AND EQUIPMENT FOR A MINIMUM OF ONE YEAR AFTER COMPLETION AND ACCEPTANCE. PRIOR TO TURNING THE COMPLETED SYSTEM OVER TO THE OWNER, REVIEW THE INSTALLATION WITH THE ARCHITECT / ENGINEER AND REPLACE OR REPAIR ANY DEFECTIVE WORKMANSHIP, EQUIPMENT AND MATERIALS AT NO ADDITIONAL COST TO THE OWNER.

TESTING AND FLUSHING:

1. OVERHEAD SPRINKLER PIPING: TESTED FOR A PERIOD OF TWO HOURS AT A HYDROSTATIC PRESSURE OF 200 LBS. AND ALL PIPING, VALVES, HEADS,ETC. SHALL BE WATERTIGHT.
2. UNDERGROUND PIPING: TESTED FOR A PERIOD OF TWO HOURS AT A HYDROSTATIC PRESSURE OF 200 LBS. IN ACCORDANCE WITH NFPA PAMPHLET #13. LEAKAGE SHALL NOT EXCEED QUANTITIES INDICATED.

FIRE PROTECTION SHEET INDEX

SHEET NUMBER	SHEET NAME
FP001	FIRE PROTECTION LEGEND AND NOTES
FP101	FIRST FLOOR FIRE PROTECTION PLAN
FP501	FIRE PROTECTION DETAILS AND SCHEMATICS

FIRE PROTECTION LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
F	F	SPRINKLER PIPING WET
D	D	DRAIN PIPING
	-	PIPING ELBOW DOWN
	-	PIPING ELBOW UP
	-	PIPING CONTINUES
	OSY	OS&Y VALVE
	-	SHUT-OFF VALVE
	BF	BUTTERFLY VALVE
	CV	CHECK VALVE
	PRV	PRESSURE REDUCING VALVE
	RPZ	REDUCED PRESSURE BACKFLOW PREVENTER ASSEMBLY
	FDC	FIRE DEPARTMENT CONNECTION
	FHV	FIRE HOSE VALVE

ADDITIONAL ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR	MFG	MANUFACTURER
AFG	ABOVE FINISHED GRADE	PSI	POUNDS PER SQUARE INCH
BAS	BUILDING AUTOMATION SYSTEM	TS	TAMPER SWITCH
BFF	BELOW FINISHED FLOOR	TYP	TYPICAL
CLG	CEILING	WMG	WATER MOTOR GONG
CONT	CONTINUATION	WC	WATER COLUMN
DN	DOWN		
FS	FLOW SWITCH	EC	ELECTRICAL CONTRACTOR
GPM	GALLONS PER MINUTE	GC	GENERAL CONTRACTOR
HP	HORSE POWER	MC	MECHANICAL CONTRACTOR
INV	INVERT ELEVATION	PC	PLUMBING CONTRACTOR
KW	KILOWATT		

FIRE PROTECTION MATERIALS

1. ALL PIPING SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA.
2. UNDERGROUND PIPE AND FITTINGS CLASS 50 DUCTILE IRON CONFORMING TO ANSI/AWWA C110/A21.10 AND ANSI/AWWA C111/A21.11 OR CLASS 315 PVC PIPE FOR SIZES 6" AND SMALLER CONFORMING TO ASTM-2241.
3. ABOVE GRADE PIPING: BLACK STEEL PIPING (ASTM A53, ASTM A135, OR ASTM A795) SHALL BE LISTED FOR FIRE SPRINKLER PIPING USE AND INCLUDE FM APPROVED MIC INHIBITING COATING. PIPING 2" AND SMALLER SHALL BE SCHEDULE 40 BLACK STEEL PIPE WELDED OR ROLL GROOVED FOR MECHANICAL FITTINGS. PIPING 2-1/2" AND LARGER SHALL BE SCHEDULE 10 BLACK STEEL PIPE THREADED, WELDED, OR ROLL GROOVED FOR MECHANICAL FITTINGS.
4. THREADED FITTINGS: UL-LISTED, STANDARD WEIGHT SUITABLE FOR PRESSURE UP TO 175 PSIG, CAST IRON MEETING ASTM A126 OR MALLEABLE IRON MEETING ASTM A197. THREADED CAST IRON FITTINGS SHALL MEET ANSI B16.4; FLANGED CAST IRON FITTINGS SHALL MEET ANSI B16.1. THREADED MALLEABLE IRON FITTINGS SHALL MEET ANSI B16.3.
5. GROOVED FITTINGS AND COUPLINGS: UL-LISTED, DUCTILE IRON MEETING ASTM A536, UTILIZING AN EDPM GASKET. PLAIN-END FITTINGS AND COUPLINGS, OR WELDED-SEGMENTED FITTINGS SHALL NOT BE USED. CHANGES IN PIPE DIAMETER SHALL BE MADE USING TAPERED REDUCING FITTINGS. BUSHINGS OR GROOVED-END REDUCING COUPLINGS SHALL NOT BE USED UNLESS STANDARD REDUCING FITTINGS ARE NOT REGULARLY AVAILABLE.
6. USE HOT-DIPPED GALVANIZED PIPING AND FITTINGS FOR COMPRESSED AIR PIPING, WATER MOTOR ALARM PIPING, BALL DRIP DISCHARGES AND TEST / DRAIN PIPING SUBJECT TO ALTERNATE WETTING AND DRYING.
7. PIPE HANGERS: UL-LISTED SWIVEL LOOP TYPE WITH PRE-GALVANIZED CARBON STEEL BAND, HANGER RODS SIZED PER NFPA 13, UL-LISTED STEEL OR MALLEABLE IRON BEAM CLAMPS, UL-LISTED ANCHORS. POWER DRIVEN ANCHORS SHALL NOT BE USED.
8. VALVES: OS&Y TYPE, IRON BODY BRONZE MOUNTED, DOUBLE DISC WITH PARALLEL SEATS, OR; BUTTERFLY, LUG TYPE, DUCTILE IRON BODY, STAINLESS STEEL STEM, ALUMINUM BRONZE DISC, PHENOLIC RING AND BUNA N SEAT. VALVES SHALL BE FM/UL LISTED AND APPROVED FOR FIRE PROTECTION SERVICE.
9. ESCUTCHEON PLATES: PROVIDE CHROME PLATED ESCUTCHEON PLATES WHERE PIPES PASS THROUGH FINISHED WALLS, FLOORS, OR CEILING. PROVIDE PRIME COAT PAINTED ESCUTCHEON PLATES WHERE PIPES PASS THROUGH WALLS, CEILINGS, ETC. IN UNFINISHED EXPOSED AREAS.

COORDINATION DRAWINGS

THE MECHANICAL CONTRACTOR SHALL ORGANIZE COORDINATION MEETINGS TO DEVELOP A SET OF BIM COORDINATION DRAWINGS WITH ALL CONTRACTORS (ELECTRICAL, MECHANICAL, PLUMBING, FIRE PROTECTION, IT/DATA, AND GENERAL CONTRACTOR). THE MECHANICAL CONTRACTOR WILL HAVE THE LEAD RESPONSIBILITY FOR THE COORDINATION DRAWINGS. THE MECHANICAL CONTRACTOR SHALL PRODUCE THE ORIGINAL DRAWINGS AND FORWARD THE DRAWINGS TO EACH OF THE OTHER CONTRACTORS FOR THEM TO ADD THEIR SYSTEMS TO THIS SET OF COORDINATION DRAWINGS. THE CONTRACTORS WILL DEVELOP THE DRAWINGS IN THIS ORDER: MECHANICAL, FIRE PROTECTION, PLUMBING, ELECTRICAL, IT/DATA, AND GENERAL. THIS SHALL ALSO BE THE ORDER OF PRECEDENCE FOR INSTALLATION OF SYSTEMS. ANY RELOCATION OF SYSTEM ROUTINGS WILL BE FOUND IN THE COORDINATION PHASE AND NOTICED BY EACH OF THE CONTRACTORS. THESE DRAWINGS, WHEN COMPLETED, SHALL BE SIGNED OFF BY ALL OF THE ABOVE LISTED PARTIES. DRAWINGS SHALL BE COMPLETED PRIOR TO FABRICATION AND INSTALLATION OF DUCTWORK AND PIPING SYSTEMS, OR PURCHASE OF EQUIPMENT. THE FOLLOWING ITEMS REPRESENT THE MINIMUM REQUIREMENTS AND COORDINATION DRAWINGS:

1. ALL COORDINATION DRAWINGS WILL BE PRODUCED IN REVIT AT 1/4"= 1'-0" SCALE
2. COORDINATION DRAWINGS WILL BE DISTRIBUTED ON REPRODUCIBLE MATERIAL 48"x36"
3. COORDINATION DRAWINGS ARE NOT SHOP DRAWINGS AND ARE REQUIRED IN ADDITION TO SHOP DRAWINGS.
4. ONCE THE COMPLETE COORDINATION DRAWINGS HAVE BEEN COMPILED, THE MECHANICAL CONTRACTOR WILL DISTRIBUTE ONE SIGNED SET TO EACH OF THE FOLLOWING CONTRACTORS: ELECTRICAL, PLUMBING, FIRE PROTECTION, AND GENERAL. ADDITIONAL SETS WILL BE SENT TO THE OWNER, ARCHITECT, AND ENGINEER.

THE USE OF BUILDING INFORMATION MODELING (BIM) THROUGHOUT THE CONSTRUCTION PROCESS IS A REQUIREMENT FOR THIS PROJECT TO HELP REDUCE OR ELIMINATE FIELD DETECTED CONFLICTS, IMPROVE CONSTRUCTION QUALITY AND MAINTAIN AN AGGRESSIVE SCHEDULE. THE CONTRACTOR WILL BE RESPONSIBLE FOR CREATING THE MODEL AND MANAGING THE COORDINATION AND COLLISION DETECTION PROCESS. THE MODEL MUST CONTAIN COMPLETE ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, PLUMBING AND FIRE PROTECTION SYSTEMS CONSISTENT WITH THE DESIGN AND FABRICATION DRAWINGS.

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Registered Professional Engineer
Gregory C. Fisher III
SEAL 042625

9/14/2020

PROJECT NORTH PLAN NORTH

KEY PLAN

Construction Documents

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER:
20-21673-01A

CODE:
41928

ITEM:
302

SGA | NW DESIGN PROJECT NUMBER:
19-202-01

DESIGNED BY: GCF/LS
DRAWN BY: GCF/LS
CHECKED BY: GCF

ISSUE DATE:
September 14, 2020

FIRE PROTECTION LEGEND AND NOTES

FP001

SCALE: 12" = 1'-0"

9/22/2020 12:19:02 PM

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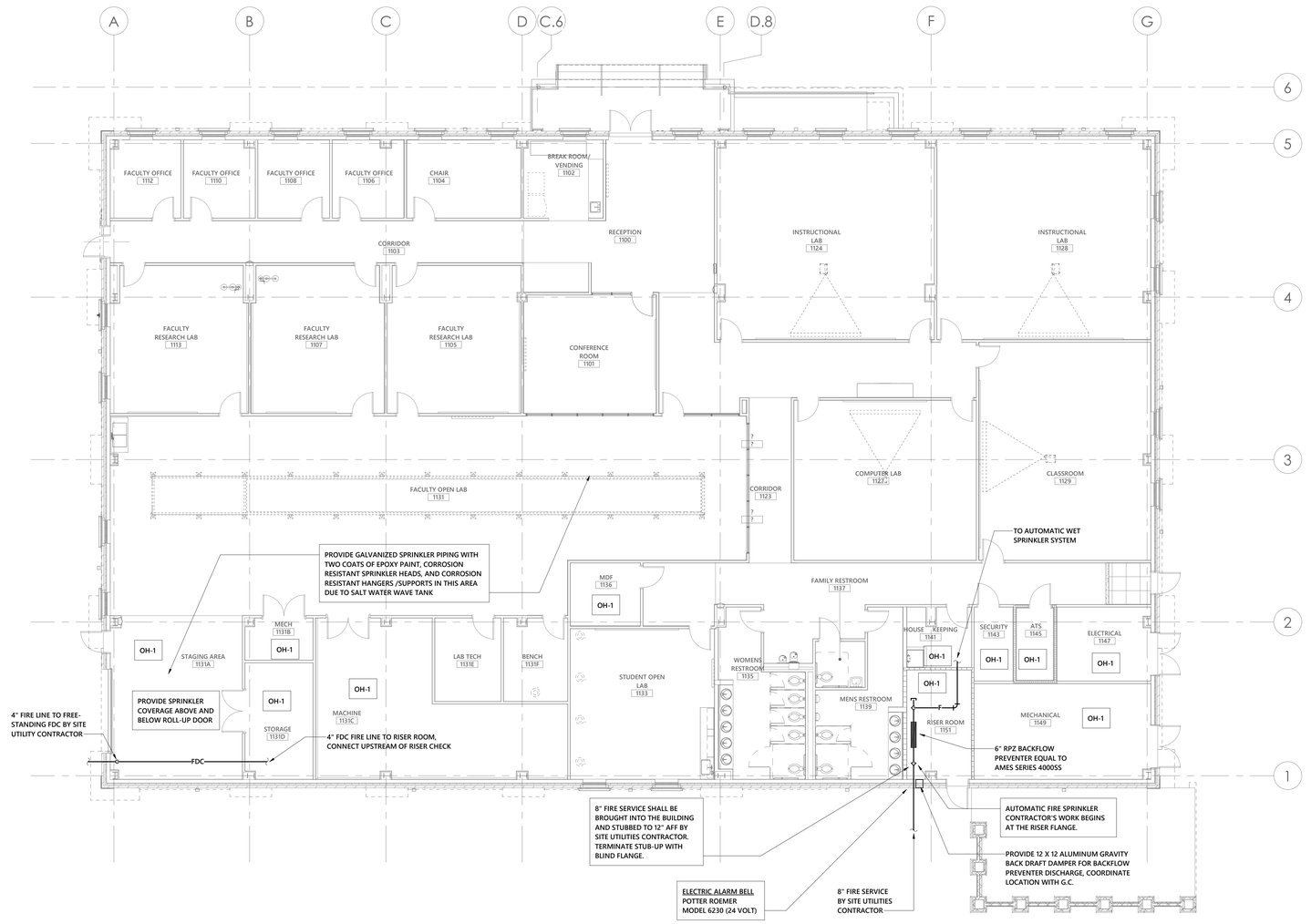

1 **FIRST FLOOR FIRE PROTECTION PLAN**
1/8" = 1'-0"

1/8" = 1'-0"
8 0 8 16 24
SCALE IN FEET

RATED PARTITION LEGEND

1 HR RATED PARTITION

2 HR RATED PARTITION

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NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 2623

9/14/2020

PROJECT NORTH PLAN NORTH

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September 14, 2020

FIRST FLOOR FIRE PROTECTION PLAN

FP101

SCALE: As indicated

9/22/2020 12:19:05 PM

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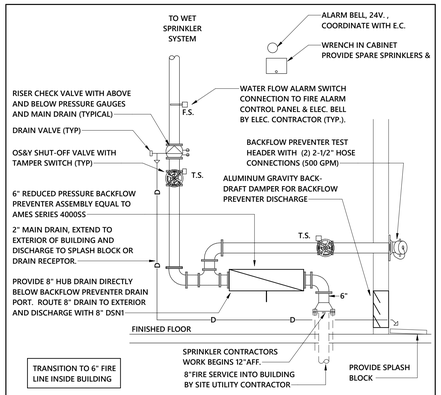

1 SPRINKLER SYSTEM WATER SERVICE ENTRANCE
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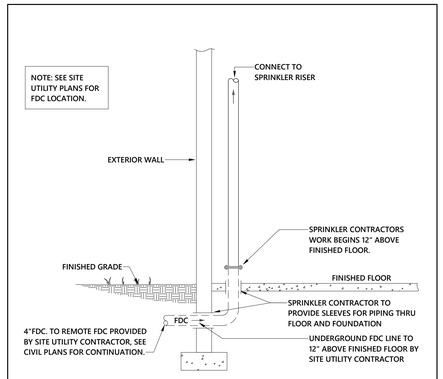

2 FIRE DEPT CONNECTION SERVICE ENTRANCE SCHEMATIC
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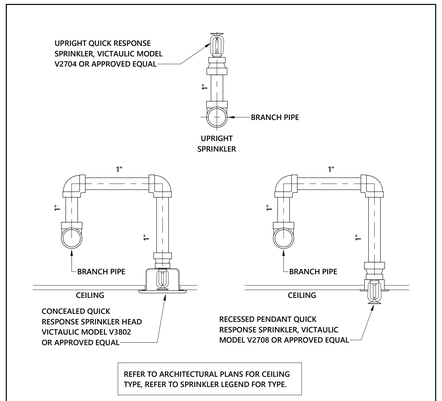

3 TYPICAL RETURN BEND SCHEMATIC
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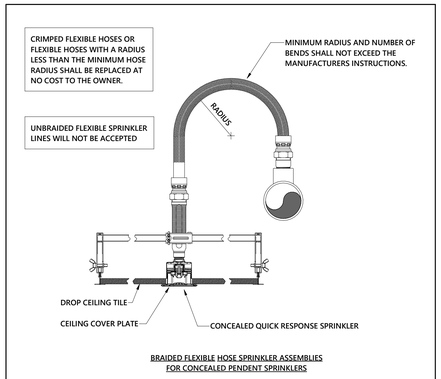

4 TYPICAL RETURN BEND SCHEMATIC - FLEXIBLE HOSE
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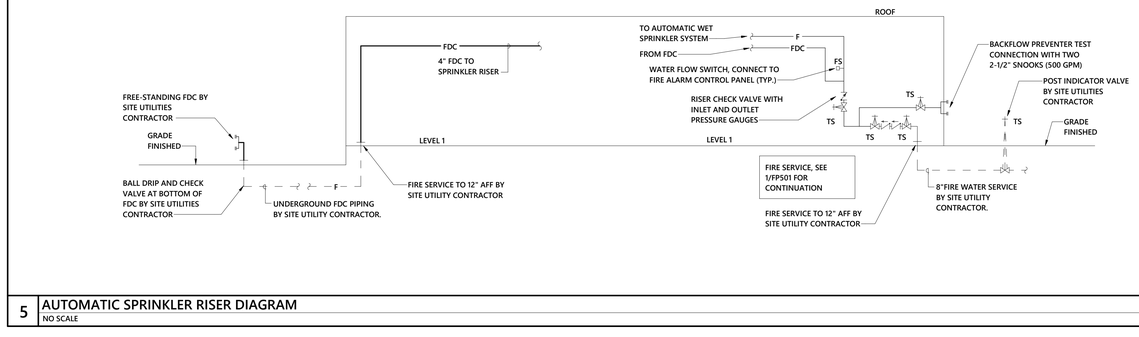

5 AUTOMATIC SPRINKLER RISER DIAGRAM
NO SCALE

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FIRE PROTECTION DETAILS AND SCHEMATICS

FP501

SCALE: 1/8" = 1'-0"

9/22/2020 12:19:07 PM

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SYMBOLS:

SYMBOL	DESCRIPTION
(#D/#V)	STANDARD INFORMATION OUTLET. STANDARD HEIGHT (+18" AFF). ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1.25" CONDUIT WITH PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE QUANTITY OF CATEGORY 6A CABLES AS INDICATED BY SUBSCRIPTS. PROVIDE 1'-6" CABLE SLACK AND COIL AT CABLE TRAY/J-HOOKS ABOVE ACCESSIBLE CEILING.
(#D/#V)	STANDARD INFORMATION OUTLET. ELEVATED HEIGHT (+42" AFF, UNLESS OTHERWISE NOTED). ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1.25" CONDUIT WITH PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE QUANTITY OF CATEGORY 6A CABLES AS INDICATED BY SUBSCRIPT. PROVIDE 1'-6" CABLE SLACK AND COIL AT CABLE TRAY/J-HOOKS ABOVE ACCESSIBLE CEILING.
(#D)	NETWORK OUTLET. STANDARD HEIGHT (+18" AFF). ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1.25" CONDUIT WITH PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE QUANTITY OF CATEGORY 6A CABLES AS INDICATED BY SUBSCRIPTS. PROVIDE 1'-6" CABLE SLACK AND COIL AT CABLE TRAY/J-HOOKS ABOVE ACCESSIBLE CEILING.
(#D)	NETWORK OUTLET. ELEVATED HEIGHT (+42" AFF, UNLESS OTHERWISE NOTED). ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1.25" CONDUIT WITH PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE QUANTITY OF CATEGORY 6A CABLES AS INDICATED BY SUBSCRIPT. PROVIDE 1'-6" CABLE SLACK AND COIL AT CABLE TRAY/J-HOOKS ABOVE ACCESSIBLE CEILING.
(#D)	NETWORK OUTLET. CEILING MOUNTED. ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1.25" CONDUIT WITH PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE QUANTITY OF CATEGORY 6A CABLES AS INDICATED BY SUBSCRIPT. PROVIDE 1'-6" CABLE SLACK AND COIL AT CABLE TRAY/J-HOOKS ABOVE ACCESSIBLE CEILING.
W	NETWORK WALL PHONE OUTLET. ELEVATED HEIGHT (+42" AFF). ELECTRICAL CONTRACTOR SHALL PROVIDE 1-GANG JUNCTION BOX AND 1" CONDUIT WITH PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE (1) CATEGORY 6A CABLE AND PHONE WALL MOUNT FACEPLATE. PROVIDE 1'-6" CABLE SLACK AND COIL AT CABLE TRAY/J-HOOKS ABOVE ACCESSIBLE CEILING.
WAP	WIRELESS ACCESS POINT CONNECTION (CEILING). WHEN INSTALLED IN HARD/OPEN CEILING, ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1.25" CONDUIT WITH PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE. REFER TO WIRELESS ACCESS POINT DETAIL (HARD/OPEN CEILING). STRUCTURED CABLING CONTRACTOR SHALL PROVIDE (2) CATEGORY 6A CABLES FOR EACH WIRELESS ACCESS POINT CONNECTION. PROVIDE 10'-0" CABLE SLACK AND COIL AT CABLE TRAY/J-HOOKS ABOVE ACCESSIBLE CEILING. WHEN INSTALLED IN ACCESSIBLE CEILING, STRUCTURED CABLING CONTRACTOR SHALL PROVIDE ABOVE CEILING BRACKET AND SURFACE BOX. REFER TO WIRELESS ACCESS POINT DETAIL (ACCESSIBLE CEILING). STRUCTURED CABLING CONTRACTOR SHALL PROVIDE (2) 3'-0" PATCH AND EQUIPMENT CORDS. WIRELESS ACCESS POINT EQUIPMENT SHALL BE OWNER FURNISHED, OWNER INSTALLED. COORDINATE WITH OWNER EXACT LOCATION AND MOUNTING METHOD OF WIRELESS ACCESS POINT EQUIPMENT.
WAP	WIRELESS ACCESS POINT CONNECTION (WALL). ELECTRICAL CONTRACTOR SHALL PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1.25" CONDUIT WITH PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE. REFER TO WIRELESS ACCESS POINT DETAIL (WALL). STRUCTURED CABLING CONTRACTOR SHALL PROVIDE (2) CATEGORY 6A CABLES FOR EACH WIRELESS ACCESS POINT CONNECTION. PROVIDE 10'-0" CABLE SLACK AND COIL AT CABLE TRAY/J-HOOKS ABOVE ACCESSIBLE CEILING. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE (2) 3'-0" PATCH AND EQUIPMENT CORDS. WIRELESS ACCESS POINT EQUIPMENT SHALL BE OWNER FURNISHED, OWNER INSTALLED. COORDINATE WITH OWNER EXACT LOCATION AND MOUNTING METHOD OF WIRELESS ACCESS POINT EQUIPMENT.
WAP EXT	WIRELESS ACCESS POINT CONNECTION (EXTERIOR). ELECTRICAL CONTRACTOR SHALL PROVIDE 8"x8"x6" DEEP JUNCTION BOX, 1" SLEEVE TO EXTERIOR AND 1.25" CONDUIT WITH PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE (2) CATEGORY 6A CABLES FOR EACH WIRELESS ACCESS POINT CONNECTION. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE SURGE PROTECTION AND 3'-0" EQUIPMENT CORD. WIRELESS ACCESS POINT EQUIPMENT SHALL BE OWNER FURNISHED, OWNER INSTALLED. REFER TO EXTERIOR NETWORK DEVICE DETAIL. COORDINATE WITH OWNER EXACT LOCATION AND MOUNTING METHOD OF WIRELESS ACCESS POINT EQUIPMENT.
AV (#)	FLOOR BOX WITH NETWORK, QUAD POWER AND AV. ELECTRICAL CONTRACTOR SHALL PROVIDE FLOOR BOX, COVER, 1.25" CONDUIT WITH PULL STRING IN/UNDERSLAB TO LOCAL TELECOMMUNICATIONS ROOM FOR NETWORK CABLING, 1.25" CONDUIT WITH PULL STRING TO ACCESSIBLE CEILING SPACE WITHIN ROOM FOR AV CABLING, 1.25" CONDUIT WITH PULL STRING TO DISPLAY CONNECTION FOR AV CABLING, 0.75" CONDUIT FOR POWER, QUAD RECEPTACLE AND ASSOCIATED MOUNTING PLATES FOR A COMPLETE INSTALLATION. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE QUANTITY OF CATEGORY 6A CABLES AS INDICATED BY SUBSCRIPT.
	CONDUIT/SLEEVE. 4" UNLESS OTHERWISE NOTED.
	RUNWAY LADDER CABLE TRAY IN TELECOMMUNICATIONS ROOMS.
	WIRE MESH CABLE TRAY ABOVE ACCESSIBLE CEILINGS.
	TWO-POST EQUIPMENT RACK WITH VERTICAL WIRE MANAGEMENT. PROVIDED BY TELECOMMUNICATIONS CONTRACTOR.
	FOUR-POST EQUIPMENT RACK WITH VERTICAL WIRE MANAGEMENT. PROVIDED BY TELECOMMUNICATIONS CONTRACTOR.
	3/4" FIRE-RATED AC PLYWOOD WITH TWO COATS OF FIRE RETARDANT LIGHT-COLORED PAINT ON ALL SIDES. STAMP SHALL BE VISIBLE. MOUNT 8" AFF WITH GRADE A SURFACE EXPOSED.
TMGB	TELECOMMUNICATIONS MAIN GROUND BAR.
X	DRAWING NOTE

GENERAL NOTES:

A. COORDINATE WITH ARCHITECTURAL PLANS FOR EXACT NETWORK OUTLET LOCATIONS.

B. COORDINATE LOCATIONS OF CEILING MOUNTED DEVICES (WIRELESS ACCESS POINTS, SPEAKERS, CABLE TRAY, ETC) WITH ALL OTHER TRADES (ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING, TECHNOLOGY, ETC).

C. ANY DIRECTION GIVEN IN THE FIELD THAT DEVIATES FROM THE CONSTRUCTION DOCUMENTS MUST BE DOCUMENTED AND VERIFIED WITH THE ENGINEER.

D. PROVIDE ALL REQUIRED HARDWARE FOR A COMPLETE INSTALLATION.

E. ALL CONDUITS SHALL BE CONCEALED UNLESS OTHERWISE NOTED. WHERE CONDUITS ARE TO BE INSTALLED IN EXPOSED CEILINGS, CONDUITS SHALL BE INSTALLED TIGHT TO STRUCTURE AND PAINTED TO MATCH ADJACENT SURFACE.

F. NO SECTION OF CONDUIT SHALL CONTAIN MORE THAN (2) 90° BENDS, OR EQUIVALENT BETWEEN PULL POINTS. PROVIDE JUNCTION BOX SIZED PER NEC AS REQUIRED.

G. NO SECTION OF CONDUIT SHALL BE LONGER THAN 100'-0" BETWEEN PULL POINTS. PROVIDE JUNCTION BOX SIZED PER NEC AS REQUIRED.

H. ALL 2" AND LARGER CONDUITS SHALL BE LABELED ON BOTH ENDS INDICATING DESTINATION LOCATION.

I. ALL JUNCTION BOXES MOUNTED IN EXTERIOR WALLS SHALL BE WEATHERPROOF AND GASKETED.

J. ALL JUNCTION BOXES AND CONDUITS LOCATED IN FACULTY OPEN LAB AREAS SHALL BE GALVANIZED EMT.

K. INSTALLATION OF AC VOLTAGE CABLING IN LOW VOLTAGE PATHWAYS IS NOT ACCEPTABLE.

L. CABLING SHALL PASS STRAIGHT THROUGH ANY PULL BOX. CHANGE OF DIRECTION IN A PULL BOX IS NOT ACCEPTABLE.

M. CONDUITS SHALL HAVE A MINIMUM OF 40% FILL PRIOR TO UTILIZING AN ADJACENT EMPTY CONDUIT.

N. FACEPLATES SHALL MATCH ADJACENT ELECTRICAL DEVICES. FINAL COLOR AND FINISH TO BE APPROVED BY ARCHITECT AND OWNER. PROVIDE STAINLESS STEEL FACEPLATES. CONTRACTOR SHALL PROVIDE ALTERNATE PRICING FOR PLASTIC FACEPLATES.

O. ALL FACEPLATES AND PATCH PANELS SHALL UTILIZE MODULAR JACKS.

P. COPPER JACK COLOR SHALL MATCH CABLE COLOR.

Q. CABLING SHALL NOT BE PAINTED. MANUFACTURERS WARRANTY MAY BE VOIDED.

R. TERMINATE ALL CABLING ON DEDICATED SYSTEM PATCH PANEL. (WIRELESS, DATA, SECURITY, ETC.)

S. PROVIDE 10'-0" CABLE SLACK AT TELECOMMUNICATIONS ROOM LOCATION. UTILIZE FIGURE EIGHT CONFIGURATION.

T. PROVIDE OUTSIDE PLANT CATEGORY CABLING FOR IN/UNDERSLAB OR OUTDOOR APPLICATIONS. CONDUIT CONTAINING OUTSIDE PLANT CABLING SHALL BE EXTENDED TO LOCAL TELECOMMUNICATIONS ROOM.

U. ALL CABLING SHALL BE TERMINATED, TESTED AND LABELED PER SPECIFICATIONS. ALL LABELING SHALL BE MACHINE PRINTED. HAND WRITTEN LABELS ARE NOT ACCEPTABLE.

V. PROVIDE PATCH CORD FOR EACH TERMINATED PORT IN TELECOMMUNICATIONS ROOM. COORDINATE EXACT LENGTH WITH OWNER.

W. PROVIDE EQUIPMENT CORD FOR EACH WIRELESS ACCESS POINT.

X. PROVIDE SURGE SUPPRESSION MODULE AT EXTERIOR WIRELESS ACCESS POINT LOCATIONS. DITEK: DTK-MRJPOES OR APPROVED EQUAL. REFER TO EXTERIOR NETWORK DEVICE DETAIL. PROVIDE 24 CHANNEL, RACK MOUNTED SURGE SUPPRESSION AT RACK LOCATION FOR NETWORK PROTECTION. DITEK: DTK-RM24NETS OR APPORVED EQUAL. PROVIDE PATCH CORDS AS REQUIRED.

Y. ALL PENETRATIONS THROUGH RATED WALLS MUST BE FIRESTOPPED. UTILIZE MECHANICAL FIRE RATED PATHWAYS. STI EZ-PATH OR APPROVED EQUAL.

Z. PROVIDE METALLIC J-HOOKS FOR CABLING IN ACCESSIBLE CEILING SPACES WITHOUT CABLE TRAY AT 3'-5' IRREGULAR INTERVALS. PANDUIT, COOPER B-LINE, NVENT CADDY, OR APPROVED EQUAL.

AA. THE USE OF J-HOOKS IN EXPOSED CEILING AREAS IS NOT ACCEPTABLE. PROVIDE CONDUIT OR SOLID BOTTOM CABLE TRAY. CONDUITS AND/OR SOLID BOTTOM CABLE TRAY SHALL BE PAINTED TO MATCH ADJACENT SURFACE.

BB. PROVIDE PLASTIC INSERT WITH SIDES FOR WIRE MESH CABLE TRAY SHOWN IN EXPOSED CEILINGS.

CC. THE USE OF J-HOOKS ABOVE HARD CEILING AREAS IS NOT ACCEPTABLE. PROVIDE CONDUIT.

DD. NYLON CABLE TIE WRAPS ARE NOT ACCEPTABLE FOR BINDING OR SECURING CABLE BUNDLES. UTILIZE HOOK AND LOOP STRAPS TO SECURE CABLING. STRAPS SHALL BE PLENUM RATED AND EVENLY SPACED THROUGHOUT THE DRESSED LENGTH.

EE. PROVIDE (2) CATEGORY 6A CABLES TO EACH FIRE ALARM CONTROL PANEL FROM LOCAL TELECOMMUNICATIONS ROOM FOR NETWORK INTERFACE. EXTEND INCOMING ANALOG DEMARK TO LOCAL TELECOMMUNICATIONS ROOM AS REQUIRED. COORDINATE LOCATION AND REQUIREMENTS WITH FIRE ALARM CONTRACTOR.

FF. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE PATCH CORDS IN TELECOMMUNICATIONS ROOMS AND EQUIPMENT CORDS AT WIRELESS ACCESS POINT AND WORK AREA OUTLET LOCATIONS. COORDINATE EXACT LENGTHS WITH OWNER.

TELECOMMUNICATIONS STANDARDS:

INSTALLATION SHALL CONFORM TO THE FOLLOWING STANDARDS:

A. TIA-568.0-D-1 (GENERIC TELECOMMUNICATIONS CABLING FOR CUSTOMER PREMISES)

B. TIA-568.1-D-1 (COMMERCIAL BUILDING TELECOMMUNICATIONS CABLING)

C. TIA-568.3-D (OPTICAL FIBER CABLING COMPONENTS)

D. TIA-568-C.2-1 (BALANCED TWISTED-PAIR TELECOMMUNICATIONS CABLING AND COMPONENTS)

E. TIA-569-D-1 (TELECOMMUNICATIONS PATHWAYS AND SPACES)

F. TIA-606-C (ADMINISTRATION STANDARD FOR TELECOMMUNCATIONS INFRASTRUCTURE)

G. TIA-607-C-1 (TELECOMMUNICATIONS BONDING AND GROUNDING FOR CUSTOMER PREMISES)

ABBREVIATIONS

ACT	ACOUSTICAL CEILING TILE
ADA	AMERICANS WITH DISABILITIES ACT
AFF	ABOVE FINISHED FLOOR (ELEVATION TAKEN FROM FINISHED FLOOR)
AFG	ABOVE FINISHED GRADE (ELEVATION TAKEN FROM FINISHED GRADE)
AV	AUDIO/VISUAL
AVC	AUDIO/VISUAL CONTRACTOR
AWG	AMERICAN WIRE GAUGE
BOCT	BOTTOM OF CABLE TRAY
C	CONDUIT
CATV	CABLE TELEVISION
CLG	CEILING
CMU	CONCRETE MASONRY UNIT
D	DATA
EC	ELECTRICAL CONTRACTOR
EXT	EXTERIOR
FACP	FIRE ALARM CONTROL PANEL
GYP	GYPSUM BOARD
HDMI	HIGH DEFINITION MULTIMEDIA INTERFACE
HDTV	HIGH DEFINITION TELEVISION
HH	HANDHOLE
IoT	INTERNET OF THINGS
IP	INTERNET PROTOCOL
J-BOX	JUNCTION BOX
MH	MANHOLE
MIN	MINIMUM
NEC	NATIONAL ELECTRICAL CODE
NVR	NETWORK VIDEO RECORDER
OSP	OUTSIDE PLANT
PDU	POWER DISTRIBUTION UNIT
PoE	POWER OVER ETHERNET
PVC	POLYVINYL CHLORIDE
QTY	QUANTITY
SC	SECURITY CONTRACTOR
SPECS	SPECIFICATIONS
TC	TELECOMMUNICATIONS CONTRACTOR
TELECOM	TELECOMMUNICATIONS
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VOICE
VoIP	VOICE OVER INTERNET PROTOCOL
WAP	WIRELESS ACCESS POINT
WP	WEATHERPROOF

PULL BOX SIZING SCHEDULE

CONDUIT	PULL BOX WIDTH	PULL BOX LENGTH	PULL BOX DEPTH	PULL BOX WITH MULTIPLE CONDUITS (NOTE A)
1.00"	4.00"	16.00"	3.00"	2.00"
1.25"	6.00"	20.00"	3.00"	3.00"
1.50"	8.00"	27.00"	4.00"	4.00"
2.00"	8.00"	36.00"	4.00"	5.00"
2.50"	10.00"	42.00"	5.00"	6.00"
3.00"	12.00"	48.00"	5.00"	6.00"
4.00"	15.00"	60.00"	8.00"	8.00"

NOTES:
A. FOR EACH ADDITIONAL CONDUIT, ADD INDICATED DIMENSION TO PULL BOX WIDTH.
B. SIZING INDICATED IS FOR MINIMUM PULL BOX SIZE. INCREASE AS REQUIRED.

CONDUIT CAPACITY SCHEDULE

CONDUIT	1.00"	1.25"	1.50"	2.00"	2.50"	3.00"	4.00"
CABLES	4	7	10	18	25	40	70

NOTES:
A. UPSIZE CONDUIT TO NEXT SIZE SHOWN IN THIS SCHEDULE WHEN CABLE CAPACITY HAS BEEN EXCEEDED.
B. CONDUIT CAPACITY CALCULATED WITH 0.295" O.D. CATEGORY CABLE AT 40% FILL RATIO.

CABLE TRAY CAPACITY SCHEDULE

CABLE TRAY	12"X2"	18"X2"	24"X2"	--	12"X4"	18"X4"	24"X4"
CABLES	140	210	281	--	281	421	562

NOTES:
A. UPSIZE CABLE TRAY WIDTH TO NEXT SIZE SHOWN IN THIS SCHEDULE WHEN CABLE CAPACITY HAS BEEN EXCEEDED.
B. CABLE TRAY CAPACITY CALCULATED WITH 0.295" O.D. CATEGORY CABLE AT 40% FILL RATIO.

CONDUIT/SLEEVE SCHEDULE

CLASSROOMS	(2) 2" CONDUITS TO CABLE TRAY/J-HOOKS IN ACCESSIBLE CEILING SPACE IN CORRIDOR.
COMPUTER LABS	(2) 4" CONDUITS TO CABLE TRAY/J-HOOKS IN ACCESSIBLE CEILING SPACE IN CORRIDOR.
SMALL OFFICES	(2) 2" CONDUITS TO CABLE TRAY/J-HOOKS IN ACCESSIBLE CEILING SPACE IN CORRIDOR.
LARGE OFFICES	(2) 2" CONDUITS TO CABLE TRAY/J-HOOKS IN ACCESSIBLE CEILING SPACE IN CORRIDOR.
WORKSPACES	(2) 2" CONDUITS TO CABLE TRAY/J-HOOKS IN ACCESSIBLE CEILING SPACE IN CORRIDOR.
CONFERENCE ROOMS	(2) 2" CONDUITS TO CABLE TRAY/J-HOOKS IN ACCESSIBLE CEILING SPACE IN CORRIDOR.

ADDITIONAL REQUIREMENTS:

A. PROVIDE A MINIMUM OF (1) 4" CONDUIT BETWEEN ALL ACCESSIBLE CEILING SPACES SEPARATED BY A HARD CEILING GREATER THAN 3'-0" UNLESS OTHERWISE NOTED. REFER TO TELECOMMUNICATIONS CONDUIT CAPACITY SCHEDULE.

CABLE SERVICE LOOP SCHEDULE

	SOURCE	DESTINATION	NOTES
HORIZONTAL - COPPER - DATA	10'-0"	1'-6"	
HORIZONTAL - COPPER - WAP	10'-0"	10'-0"	

NOTES:
A. UTILIZE FIGURE EIGHT CONFIGURATION FOR LARGE SERVICE LOOPS.
B. COIL CABLING FOR FIELD DEVICE LOCATIONS AT CABLE TRAY/J-HOOKS ABOVE ACCESSIBLE CEILING.

TECHNOLOGY DRAWING LIST

Sheet Number	Sheet Name
TC001	TECHNOLOGY LEGEND AND NOTES
TC201	FIRST FLOOR TECHNOLOGY PLAN
TCS01	TECHNOLOGY DETAILS

CONTRACTOR/INTEGRATOR RESPONSIBILITY MATRIX

SYSTEM		EQUIPMENT FURNISHED	EQUIPMENT INSTALLED	RACEWAY FURNISHED & INSTALLED	POWER WIRING FURNISHED & INSTALLED	CONTROLS WIRING FURNISHED & INSTALLED	PROGRAMMING & INTEGRATION	DESIGNED BY
GROUNDING AND BONDING	--	ELECTRICAL	ELECTRICAL	ELECTRICAL	N/A	N/A	N/A	OPTIMA
CABLE TRAYS	--	ELECTRICAL	ELECTRICAL	ELECTRICAL	N/A	N/A	N/A	OPTIMA
STRUCTURED CABLING J-HOOKS	--	TELECOM	TELECOM	N/A	N/A	N/A	N/A	OPTIMA
SECURITY CABLING J-HOOKS	--	SECURITY	SECURITY	N/A	N/A	N/A	N/A	OPTIMA
PLYWOOD BACKBOARD	--	GENERAL	GENERAL	N/A	N/A	N/A	N/A	OPTIMA
EQUIPMENT RACKS & CABINETS	--	TELECOM	TELECOM	ELECTRICAL	ELECTRICAL	N/A	N/A	OPTIMA
INCOMING COMMUNICATIONS SERVICE	--	TELECOM	TELECOM	ELECTRICAL	ELECTRICAL	N/A	N/A	OPTIMA
STRUCTURED CABLING	--	TELECOM	TELECOM	ELECTRICAL	ELECTRICAL	N/A	N/A	OPTIMA
STRUCTURED CABLING SURGE SUPPRESSION	--	TELECOM	TELECOM	N/A	N/A	N/A	N/A	OPTIMA
WIRELESS ACCESS POINTS	--	OWNER	OWNER	ELECTRICAL	ELECTRICAL	N/A	OWNER	OTHERS
WORKSTATIONS, PRINTERS & COPIERS	--	OWNER	OWNER	ELECTRICAL	ELECTRICAL	OWNER	OWNER	OTHERS
VOIP TELEPHONE EQUIPMENT	--	OWNER	OWNER	ELECTRICAL	ELECTRICAL	OWNER	OWNER	OTHERS
ACTIVE NETWORK ELECTRONICS	--	OWNER	OWNER	ELECTRICAL	ELECTRICAL	OWNER	OWNER	OWNER
INTRUSION DETECTION	--	SECURITY	SECURITY	ELECTRICAL	ELECTRICAL	SECURITY	SECURITY	OPTIMA
SECURITY/SURVEILLANCE	--	SECURITY	SECURITY	ELECTRICAL	ELECTRICAL	SECURITY	SECURITY	OPTIMA
HARDWIRED DOOR ACCESS CONTROL	--	SECURITY	SECURITY	ELECTRICAL	ELECTRICAL	SECURITY	SECURITY	OPTIMA
WIRELESS DOOR ACCESS CONTROL	--	HARDWARE	HARDWARE	ELECTRICAL	ELECTRICAL	HARDWARE	HARDWARE	ARCHITECT
ELECTRIFIED DOOR HARDWARE	--	HARDWARE	HARDWARE	ELECTRICAL	ELECTRICAL	HARDWARE	HARDWARE	ARCHITECT
FIRE ALARM	--	ELECTRICAL	ELECTRICAL	ELECTRICAL	ELECTRICAL	ELECTRICAL	ELECTRICAL	OPTIMA
FIRST RESPONDER DISTRIBUTED ANTENNA	--	ELECTRICAL	ELECTRICAL	ELECTRICAL	ELECTRICAL	ELECTRICAL	ELECTRICAL	OPTIMA

MATRIX NOT INCLUSIVE OF ALL SYSTEMS TO BE PROVIDED. REFER TO PROJECT MANUAL AND DRAWINGS FOR ADDITIONAL INFORMATION.

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REGISTERED LANDSCAPE ARCHITECT
RYAN V. ALLEN
028297

9/14/2020

PROJECT NORTH

PLAN NORTH

KEY PLAN

Construction Documents

Revision Schedule		
#	Description	Date

Coastal Engineering Building

UNCW

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER:
20-21673-01A

CODE:
41928

ITEM:
302

SGA | NW DESIGN PROJECT NUMBER:
19-202-01

DESIGNED BY: TMC
DRAWN BY: TMC
CHECKED BY: RVA

ISSUE DATE:
September 14, 2020

TECHNOLOGY LEGEND AND NOTES

TC001

SCALE: NO SCALE

9/22/2020 12:23:13 PM

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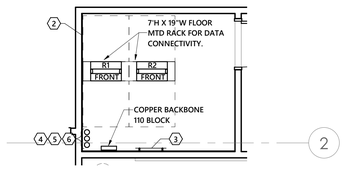
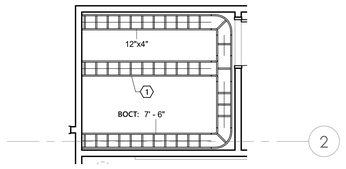


2 ENLARGED LOWER PLAN - MDF 1136

1/4" = 1'-0"

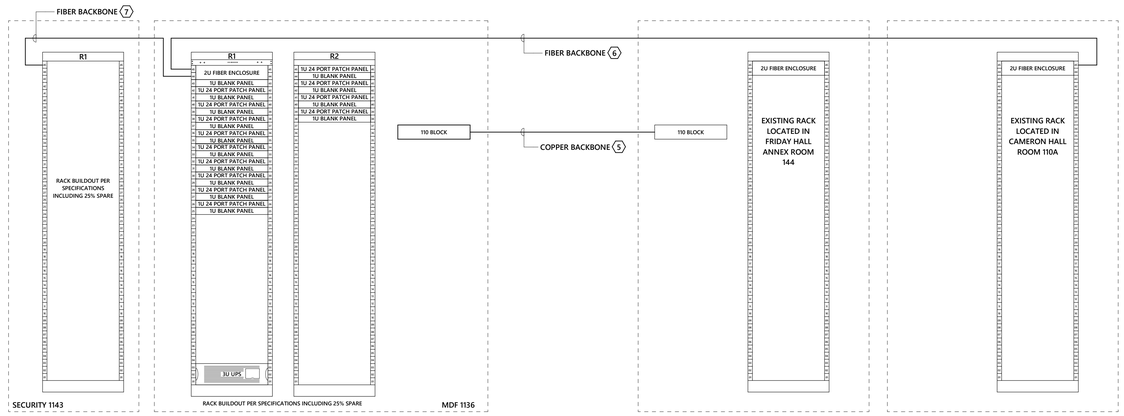


3 ENLARGED UPPER PLAN - MDF 1136

1/4" = 1'-0"

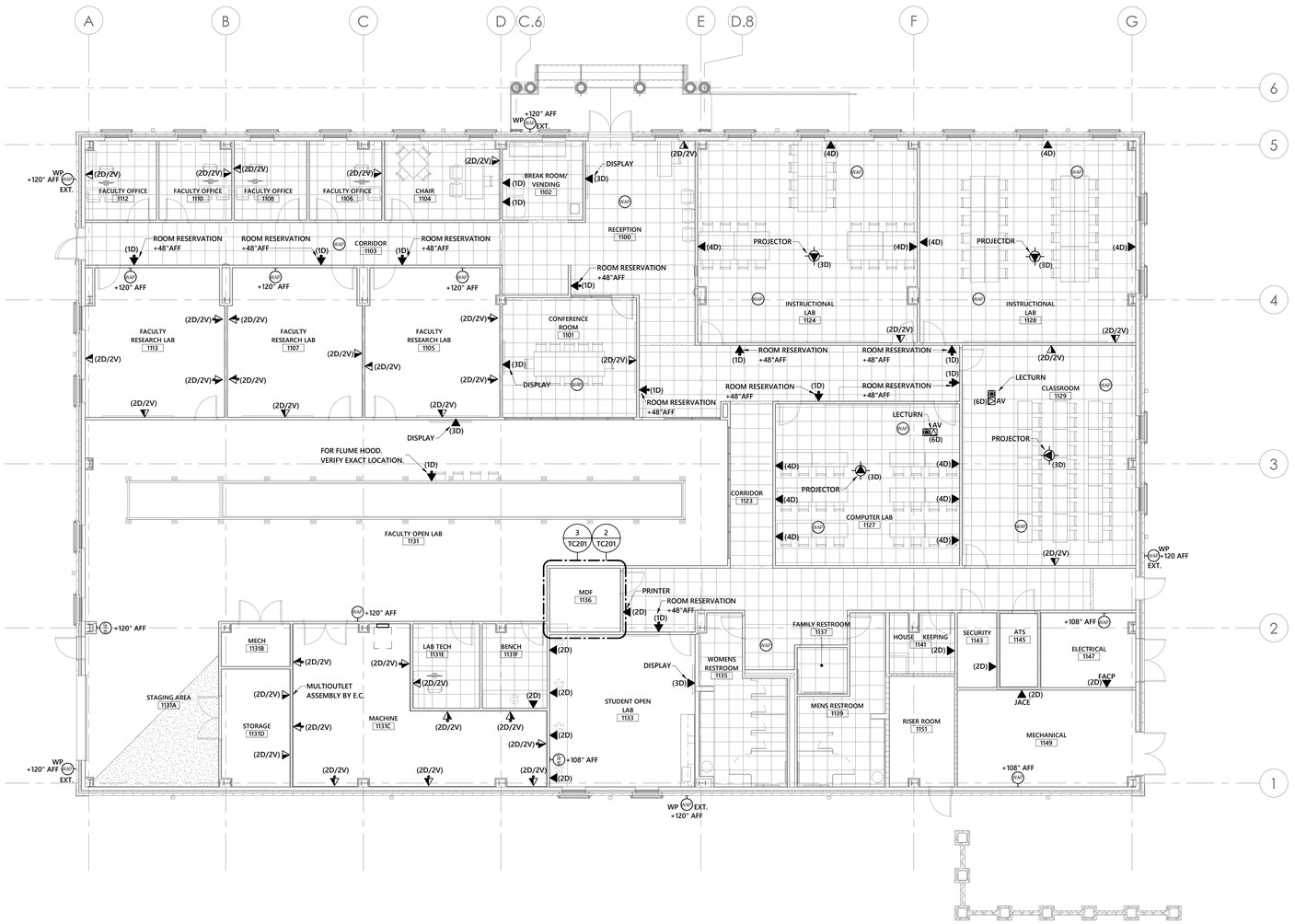
TELECOMMUNICATION ROOM - DRAWING NOTES: (#)

1. 12" LADDER RACK AT 7'-6" AFF. MOUNT FLUSH TO TOP OF DATA RACKS UTILIZING 6" RUNWAY ELEVATION KITS.
2. PROVIDE 8' x 4', 3/4" NON-FIRE RATED PLYWOOD BACKBOARD. PLYWOOD BACKBOARD SHALL BE VOID FREE AND FINISHED ON ONE SIDE. CONTRACTOR SHALL MOUNT PLYWOOD 4" AFF ON ALL WALLS OF TELECOMMUNICATION ROOM. PLYWOOD BACKBOARD SHALL HAVE A MINIMUM OF TWO COATS OF FIRE RESISTANT WHITE PAINT ON ALL SIX SIDES. FINAL PAINT FINISH SHALL HAVE A SMOOTH FINISH CLEAR OF FOOTPRINTS, MARKINGS, ECT. NO EXCEPTIONS.
3. ELECTRICAL CONTRACTOR SHALL PROVIDE 24" PRE-DRILLED GROUND BUS BAR MOUNTED ABOVE CABLE TRAY IN MDF ROOM. PROVIDE CHATSWORTH GROUNDING BAR 10622-010 OR EQUIVALENT. REFER TO E-604/DETAIL #6 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
4. (3) 4" INCOMING CONDUITS STUBBED UNDERGROUND. REFER TO E010 FOR ADDITIONAL INFORMATION. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH CIVIL FOR HANDHOLE/PULL BOX LOCATIONS.
5. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE (1) 50-PAIR, PE-89 RATED OUTDOOR COPPER CABLE FOR VOICE BACKBONE. TERMINATE BACKBONE CABLE ON PROTECTOR BLOCKS WITH A SPLICE CHAMBER CONTAINING 110IN/110OUT TERMINATIONS. EACH PAIR ON THE PROTECTOR BLOCK SHALL USE 4C1S 5 PIN SOLID-STATE PROTECTOR MODULES. CABLING SHALL BE PROVIDED FROM MDF TO SITE TIE IN POINT AT FRIDAY HALL ANNEX ROOM 144 (APPROXIMATELY 1000'). REFER TO ELECTRICAL SITE PLAN E010 FOR LOCATION AND ROUTE. STRUCTURED CABLING CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION, TERMINATION AND TESTING. COORDINATE WITH UNCW PRIOR TO COMMENCING WORK.
6. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE (1) 24-STRAND, CORNING DUCT/AERIAL HYBRID SINGLE-MODE LOOSE TUBE FIBER CABLE FOR DATA BACKBONE. TERMINATE EACH FIBER WITH AN LC CONNECTOR AND ASSOCIATED RACK MOUNTED HARDWARE. CABLING SHALL BE PROVIDED FROM MDF TO SITE TIE IN POINT AT CAMERON HALL ROOM 110A (APPROXIMATELY 1500'). REFER TO ELECTRICAL SITE PLAN E010 FOR LOCATION AND ROUTE. STRUCTURED CABLING CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION, TERMINATION AND TESTING. COORDINATE WITH UNCW PRIOR TO COMMENCING WORK.
7. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE (1) 6-STRAND, CORNING SINGLE-MODE FIBER OPTIC CABLE WITH LC CONNECTORS. STRUCTURED CABLING CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION, TERMINATION AND TESTING. COORDINATE WITH UNCW PRIOR TO COMMENCING WORK.



4 TELECOMMUNICATIONS DISTRIBUTION DIAGRAM

1/8" = 1'-0"



1 FIRST FLOOR TECHNOLOGY PLAN

1/8" = 1'-0"

1/4" = 1'-0" — 4 0 4 8 12 — SCALE IN FEET

1/8" = 1'-0" — 8 0 8 16 24 — SCALE IN FEET

SGA
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p 704.332.5668
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optima engineering
1507 South Tryon St, Suite 300, Charlotte NC 28203
150 Fayetteville St., Suite 120, Raleigh, NC 27601
Phone: 704.338.1282 - www.optimaengineering.com
North Carolina License Number C-0914

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT GREAL 028297

9/14/2020

PROJECT NORTH

PLAN NORTH

KEY PLAN

Construction Documents

Revision Schedule		
#	Description	Date

Coastal Engineering Building

University of North Carolina Wilmington

5236 Randall Drive
Wilmington, NC 28403

SCO PROJECT NUMBER:
20-21673-01A

CODE:
41928

ITEM:
302

SGA | NW DESIGN PROJECT NUMBER:
19-202-01

DESIGNED BY: TMC
DRAWN BY: TMC
CHECKED BY: RVA

ISSUE DATE:
September 14, 2020

FIRST FLOOR TECHNOLOGY PLAN

TC201

SCALE: As indicated

9/22/2020 12:23:23 PM

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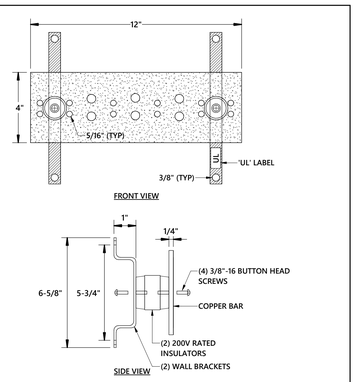
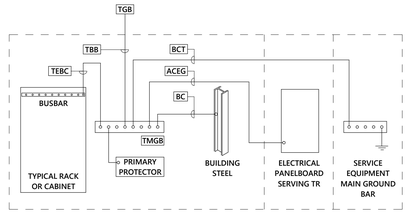


1 TELECOMMUNICATIONS MAIN GROUNDING BUSBAR 'TMGB'

NOT TO SCALE

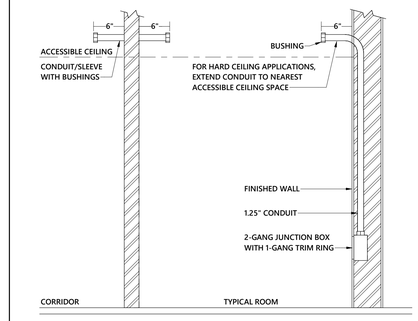


TELECOMMUNICATIONS GROUNDING LEGEND

TMGB	TELECOMMUNICATIONS MAIN GROUND BAR
TGB	TELECOMMUNICATIONS GROUND BAR
TBB	TELECOMMUNICATIONS BONDING BACKBONE. PROVIDE A MINIMUM #3/0 AWG GROUND IN 3/4" C.
TEBC	TELECOMMUNICATIONS EQUIPMENT BONDING CONDUCTOR. PROVIDE A MINIMUM #6 AWG GROUND.
BC	BONDING CONDUCTOR. PROVIDE A MINIMUM #6 AWG GROUND.
ACEG	ALTERNATING CURRENT EQUIPMENT GROUND. PROVIDE A MINIMUM #6 AWG GROUND.
BCT	BONDING CONDUCTOR FOR TELECOMMUNICATIONS. PROVIDE A MINIMUM #3/0 AWG GROUND IN 3/4" C.

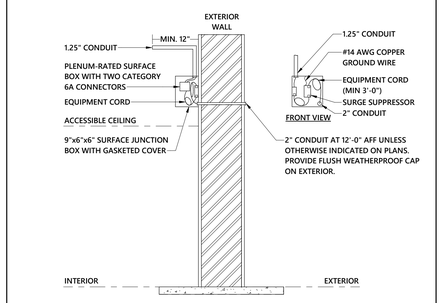
2 TYPICAL TMGB CONNECTIONS

NOT TO SCALE



3 NETWORK OUTLET STUB UP DETAIL

NOT TO SCALE

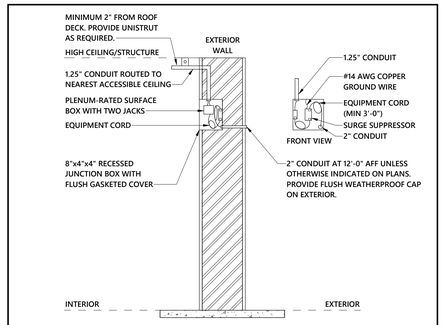


GENERAL NOTES:

A. SURFACE JUNCTION BOX SHALL BE LOCATED ABOVE ACCESSIBLE CEILING SPACE.
B. ALL DEVICES SHALL BE SECURED INSIDE JUNCTION BOX.

4 EXTERIOR NETWORK DEVICE DETAIL (ACCESSIBLE CEILING)

NOT TO SCALE



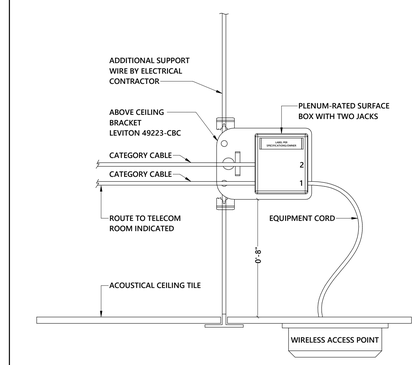
GENERAL NOTES:

A. COORDINATE RECESSED JUNCTION BOX DEPTH WITH WALL CONSTRUCTION.
B. EXPOSED CONDUIT AND JUNCTION BOX COVER FINISH SHALL MATCH ADJACENT SURFACE.
C. ALL DEVICES SHALL BE SECURED INSIDE JUNCTION BOX.

5 EXTERIOR NETWORK DEVICE DETAIL

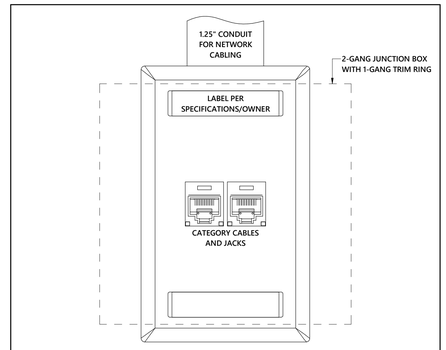
HIGH CEILING/OPEN STRUCTURE
NEW EXTERIOR WALL

NOT TO SCALE



6 WIRELESS ACCESS POINT DETAIL (ACCESSIBLE CEILING)

NOT TO SCALE



7 WIRELESS ACCESS POINT DETAIL (WALL MOUNTED, HARD AND OPEN CEILING)

NOT TO SCALE

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Phone: 704.338.1292 - www.optimaengineering.com
North Carolina License Number C-0914

REGISTERED PROFESSIONAL ENGINEER
SEAL
028297
Timothy M. Cowell

9/14/2020

PROJECT NORTH
PLAN NORTH

KEY PLAN

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September 14, 2020

TECHNOLOGY DETAILS

TC501

SCALE: NO SCALE

9/22/2020 12:23:26 PM

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