ABBREVIATIONS

AC	ACOUSTIC
ACT	ACOUSTIC CEILING TILE
AFF	ABOVE FINISH FLOOR
AL	ALUMINUM
AP	ACCESS PANEL
ARGWB	ABUSE RESISTANT GYPSUM WALL BOARD
BD	BOARD
BLDG	BUILDING
BM	BENCH MARK
BRG	BEARING
CAB	CABINET
CB	CHALKBOARD
CH	CEILING HEIGHT
CJ	CONTROL JOINT
CL	CENTER LINE
CLG	CEILING
CLO	CLOSET
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS
CORR	CORRIDOR
CPT	CARPET
CR	COLD ROLLED
CT	CERAMIC TILE
DA	DISTURBED AREA
DBL	DOUBLE
DET	DETAIL
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DIM	DIMENSION
DISP	DISPENSER
DR	DOOR
DS	DOWNSPOUT
DW	DRYWALL
DWG	DRAWING
EA	EACH
EJ	EXPANSION JOINT
ELEC	ELECTRIC/ELECTRICAL
EP	EPOXY PAINT
EQ	EQUAL
EQUIP	EQUIPMENT
EWC	ELECTRICAL WATER COOLER
EXG	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
FC	FIRE CODE
FCU	FAN COIL UNIT
FD	FLOOR DRAIN
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FINF	FINISHED FLOOR
FON	FOUNDATION
FOS	FACE OF STUD
FRP	FIREGLASS REINFORCED PLASTIC
FRT	FIRE RETARDANT TREATED
FTG	FOOTING
FURR	FURRED (FURRING)
FV	FIELD VERIFY
FVC	FIRE VALVE CABINET
GA	GAUGE
GB	GRAB BAR
GWB	GYPSUM WALL BOARD
GYP	GYPSUM BOARD
HC	HANDICAPPED
HDW	HARDWARE
HM	HOLLOW METAL
HP	HIGH POINT
HR	HOUR
HT	HEIGHT
ID	INSIDE DIAMETER
INSUL	INSULATION
JAN	JANITOR
JST	JOIST
JT	JOINT
LAM	LAMINATE
LAV	LAVATORY SINK
LP	LOW POINT
M	MEN
MACH	MACHINE
MAINT	MAINTENANCE
MAS	MASONRY
MAT	MATERIALS
MAX	MAXIUMUM
MB	MARKER BOARD
MC	MEDICINE CABINET
MECH	MECHANICAL
MET	METAL
MFR	MANUFACTURER
MIN	MINIMUM
MO	MASONRY OPENING
MS	METAL SHELVING
MTD	MOUNTED
NC	NONCOMBUSTIBLE
NIC	NOT IN CONTRACT
NO	NUMBER
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OFF	OFFICE
OH	OPPOSITE HAND
OPG	OPENING
PART	PARTITION
PL	PLATE
PLAM	PLASTIC LAMINATE
PLY	PLYWOOD
PNL	PANEL
PRV	POWER ROOF VENTILATOR
PS	PROJECTOR SCREEN
PT	PAINTED
RD	ROOF DRAIN
REC	RECESSED
RECPT	RECEPTIONIST
REF	REFRIGERATOR
REQD	REQUIRED
RL	RAIN LEADER
RM	ROOM
RO	ROUGH OPENING
RUB	RUBBER (WALL BASE)
SD	SOAP DISPENSER
SECT	SECTION
SGFT	STRUCTURAL GLAZED FACING TILE
SH	SHOWERHEAD
SHT	SHEET
SIM	SIMILAR
SLS	STAINLESS STEEL
SM	SURFACE MOUNTED
SP	STAND PIPE
SS	SERVICE SINK
STL	STEEL
STOR	STORAGE
STRUCT	STRUCTURAL
SUSP	SUSPEND (SUSPENDED)
SYN	SYNTHETIC FLOOR
T&G	TONGUE & GROOVED
TB	TACKBOARD
TEL	TELEPHONE
THLD	THRESHOLD
TOB	TOP OF BEARING
TOM	TOP OF MASONRY PARAPET
TP	TOILET PAPER HOLDER
TS	TACK STRIP/ TEACHING STATION
TW	TEACHING WALL
TYP	TYPICAL
UL	UNDERWRITERS LABORATORIES
UON	UNLESS OTHERWISE NOTED
USG	U.S. GYPSUM COMPANY
VAT	VINYL ABESTOS TILE
VCT	VINYL COMPOSITION TILE
VERT	VERTICAL
VEST	VESTIBULE
VRG	VINYL REDUCER STRIP
VTR	VENT THROUGH ROOF
W	WOMEN
W/	WITH
WAIN	WAINSCOT
WARD	WARDROBE
WC	WATER CLOSET
WD	WOOD
WDR	WARDROBE
WL	WALL
WM	WALL-MOUNTED
WWM	WELDED WIRE MESH

SYMBOLS OF MATERIALS

- ALL METALS-SMALL SCALE
- ACOUSTIC C.M.U. SMALL SCALE
- ACOUSTIC C.M.U. LARGE SCALE
- BATT INSULATION
- BRICK
- CAST STONE
- CONCRETE
- CONCRETE MASONRY UNITS
- EARTH
- GLASS-LARGE SCALE
- GLAZED C.M.U.
- PARTICLE BOARD
- RIGID INSULATION
- SHINGLES
- SOLID CONCRETE MASONRY UNITS
- STEEL-LARGE SCALE
- STUD PARTITION
- WOOD-FINISH
- WOOD BLOCKING

DRAWING KEYS

- 0 — STRUCTURAL GRID LINES
- 1 / A101 SIM — SECTION
- 1 / A101 SIM — ELEVATION
- 1 / A101 SIM — DETAILS IN PLAN, SECTION
- NEW WALL
- 1i — WALL TYPE, SEE A501
- Name / 101 — ROOM NAME AND NUMBER
- 11 — WINDOW TAG
- 101 — DOOR TAG

NEW CONSTRUCTION OF

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SCO ID# 19-20473-01A; PM# 6034



95% PROGRESS REVIEW SET

9/23/2019

DESIGN TEAM

BECKER MORGAN GROUP	ARCHITECT
THE JOHN R. MCADAMS COMPANY	CIVIL ENGINEER
WOODS ENGINEERING	STRUCTURAL ENGINEER
SUD ASSOCIATES	PME ENGINEER

GENERAL NOTES

1. THE CONTRACTOR SHALL VERIFY THE EXISTING SITE CONDITIONS AND DIMENSIONS PRIOR TO COMMENCING WORK AND REPORT ANY DISCEPANCIES, VARIATIONS, OR FIELD ALTERNATIONS TO THE ARCHITECT. ANY ITEMS NOT REPORTED BEFORE THE COMMENCING OF WORK SHALL NOT BE USED AS GROUNDS FOR ADDITIONAL EXPENSE CLAIMS BY THE CONTRACTOR TO ADEQUATELY COMPLETE THE WORK.
2. ANY ITEMS NOT SPECIFICALLY SHOWN ON THE DRAWINGS, BUT REASONABLY INCIDENTAL TO AND NECESSARY FOR THE SATISFACTORY COMPLETION OF THE PROJECT IN ACCORDANCE WITH INDUSTRY STANDARDS, ARE INCLUDED WITHIN THE INTENT OF THESE DESIGN DRAWINGS.
3. DIMENSIONS ARE FROM FACE OF MASONRY OR METAL STUD UNLESS NOTED OTHERWISE. ALL DIMENSIONS MARKED 'CLEAR' SHALL BE MAINTAINED AND SHALL ALLOW FOR THICKNESS OF ALL FINISHES INCLUDING FLOOR FINISH.
4. **CODES:** ALL WORK ON THIS PROJECT SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE BUILDING CODES, ORDINANCES, REGULATIONS AND ANY ADDITIONAL REQUIREMENT SO STATED IN ANY LAW, ORDINANCE OR REGULATION PERTAINING TO CONSTRUCTION WITHIN THE SAID LIMITS OF THE AUTHORITY HAVING JURISDICTION OVER THE PROPOSED WORK, ZONING, ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLUMBING, ELECTRICAL ENERGY CONSERVATION AND FIRE. CONFORMITY TO ALL CODES APPLICABLE TO THIS PROJECT SHALL BE THE CONTRACTORS RESPONSIBILITY.
5. PROPER ASSEMBLY, INSTALLATION, AND OPERATION OF ALL MATERIALS, COMPONENTS, SYSTEMS AND FINISHES ARE THE CONTRACTOR'S RESPONSIBILITY AND SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
6. COMPONENTS FOR CONSTRUCTION SAFETY ARE NOT INDICATED IN THESE DRAWINGS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COMPLY WITH ALL RULES AND REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ACT DURING ALL CONSTRUCTION.
7. ALL NEW CONSTRUCTION, INCLUDING BUT NOT LIMITED TO, PLUMBING FIXTURES, LAVATORY ACCESSORIES, ACCESSIBLE PATHS, ETC. SHALL COMPLY WITH THE MOUNTING HEIGHTS AND NECESSARY FLOOR CLEARANCES SET FORTH BY ANSI A117.1 AND THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT.

DRAWING LIST

SHEET No.	SHEET TITLE
GENERAL	
G001	COVER SHEET
G002	CODE SUMMARY
G003	LIFE SAFETY PLAN
CIVIL	
C1.01	EXISTING CONDITIONS SURVEY
C1.02	EXISTING CONDITIONS SURVEY
C2.01	SITE PLAN
C3.01	GRADING PLAN
C4.01	UTILITY PLAN
C5.01	PLAN AND PROFILE - SS O/F
C5.02	PLAN AND PROFILE - WATERLINE "A"
C6.01	EROSION CONTROL PLAN
C6.02	EROSION CONTROL DETAILS
C6.03	EROSION CONTROL DETAILS
C8.00	SITE DETAILS
C8.01	STORM DRAINAGE DETAILS
SSD-1	CFPUA SANITARY SEWER DETAILS
SSD-2	CFPUA SANITARY SEWER DETAILS
WSD-1	CFPUA WATER DETAILS
WSD-2	CFPUA WATER DISTRIBUTION DETAILS
C9.01	STORMWATER CONTROL MEASURE PLAN VIEW
C9.02	STORMWATER CONTROL MEASURE DETAILS
C9.03	STORMWATER CONTROL MEASURE DETAILS
C9.04	STORMWATER CONTROL MEASURE DETAILS
C9.05	STORMWATER CONTROL MEASURE LANDSCAPE PLAN
L5.01	LANDSCAPE PLAN
STRUCTURAL	
S-101	GENERAL NOTES
S-102	GENERAL NOTES
S-103	TYPICAL DETAILS AND STRUCTURAL MATERIAL INSPECTIONS
S-201	FOUNDATION AND SLAB PLAN - ALTERNATE #1
S-202	FOUNDATION AND SLAB PLAN - ALTERNATE #1
S-301	FOUNDATION SECTIONS AND DETAILS
ARCHITECTURAL	
A101	FLOOR PLAN
A102	FIRST FLOOR REFLECTED CEILING PLAN
A103	ROOF PLAN
A201	EXTERIOR ELEVATIONS
A301	CINEMA SECTIONS AND DETAILS
A302	WALL SECTIONS
A303	WALL SECTIONS
A401	ENLARGED TOILET PLANS AND SECTIONS
A402	ENLARGED CINEMA AND SECTIONS
A403	COLUMN DETAILS
A404	COLUMN DETAILS
A501	WALL TYPES AND DETAILS
A502	ENLARGED DETAILS
A601	DOOR AND WINDOW TYPES AND SCHEDULE
A602	FINISH SCHEDULE AND LEGEND
A603	WINDOW ELEVATIONS AND DETAILS
A701	INTERIOR ELEVATIONS
A702	INTERIOR ELEVATIONS
PLUMBING	
P100	PLUMBING COVER
P101	PLUMBING FLOOR PLAN
P401	ENLARGED AND ELEVATION VIEWS
P402	ENLARGED TOILETS
P501	PLUMBING DETAILS
P601	ISOMETRIC OF DOMESTIC WATER
P602	ISOMETRIC OF WASTE AND VENT PIPES
P603	PLUMBING SCHEDULES
MECHANICAL	
M100	MECHANICAL COVER SHEET
M101	MECHANICAL FLOOR PLAN
M401	ENLARGED FLOOR PLANS
M402	ENLARGED FLOOR PLANS
M403	ELEVATION VIEWS
M404	ELEVATION VIEWS
M501	DUCT DETAILS
M502	DETAILS
M503	ROUND DUCT DETAILS
M504	UL DETAILS
M505	SAMPLE DUCT LAYOUT
M601	MECHANICAL SCHEDULES
M602	MECHANICAL SCHEDULES
M603	DDC CONTROLS, PACKAGED HEAT PUMP CONTROL (PHP1 & PHP2)
M604	PACKAGED HEAT PUMP SYSTEM CONTROL (PHP3)
M605	SPLIT HEAT PUMP SYSTEM CONTROL (AHU4/CU4) AND FIRE ALARM MONITORING
M606	DDC CONTROLS, SPLIT SYSTEM HEAT PUMP SYSTEMS, WATER METER, EXHAUST FANS
ELECTRICAL	
E-100	ELECTRICAL TITLESHEET
ES-101	ELECTRICAL SITE PLAN
E-101	ELECTRICAL POWER PLANS
E-102	ELECTRICAL LIGHTING PLANS
E-103	ELECTRICAL SYSTEMS PLANS
E-401	SECTIONS
E-500	ELECTRICAL DETAILS
E-501	ELECTRICAL DETAILS
E-502	SYSTEMS DETAILS
E-503	ELECTRICAL LIGHTING DETAILS
E-600	ELECTRICAL SCHEDULES
FA-101	FIRE ALARM PLANS
FA-500	FIRE ALARM DETAILS

BECKER MORGAN GROUP

ARCHITECTURE
PLANNING

North Carolina
3333 Jaeckle Drive, Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
Newark, DE 19711
302.369.3700

www.beckermorgan.com

THE JOHN R. MCADAMS COMPANY
CIVIL ENGINEERING
2905 MERIDIAN PARKWAY
DURHAM, NC 27713
OFFICE: 919.361.5000

WOODS ENGINEERING
STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
910-343-8007 fax 910-343-8088

SUD ASSOCIATES, P.A.
PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

MARK LOUDERMILK, AIA — REGISTERED ARCHITECT — 10776 — N.C. — WILMINGTON, NC

BECKER MORGAN GROUP, INC. — Registered Architectural Corporation — 51922 — North Carolina — WILMINGTON, NC

PROJECT TITLE

UNCW

SCO ID: 19-20473-01A
PM#: 6034

UNCW FILM STUDIES
601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

COVER SHEET

ISSUE BLOCK

Mark	Date	Description

PROJECT NO: 2018070.01
DATE: 9/23/2019
SCALE: 1" = 1'-0"
DRAWN BY: JDF | PROJ MGR: LML

G001

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BUILDING CODE SUMMARY

NAME OF PROJECT: UNCW FILM STUDIES

ADDRESS: 601 S. COLLEGE RD WILMINGTON, NC 28403

OWNER OR AUTHORIZED AGENT: L. MARK LOUDERMILK PHONE #: 910.341.7600 E-Mail: mloudermilk@beckermorgan.com

OWNED BY: ☐ City ☐ County ■ State ☐ Private

CODE ENFORCEMENT JURISDICTION: ☐ City ☐ County ■ State

CONTACT:

DESIGNER	FIRM	NAME	LICENSE #	TELEPHONE #	EMAIL ADDRESS
ARCHITECTURAL	Becker Morgan Group, Inc.	L. Mark Loudermilk	10776	910.341.7600	mloudermilk@beckermorgan.com
CIVIL	The John R. McAdams CO, Inc.	Daryl T. Riggins	27404	919.361.5000	riggins@mcadamsco.com
ELECTRICAL	Sud Associates, P.A.	Michael Meinert, P.E.	48024	919.493.5277	mmeinert@sudassociates.com
FIRE ALARM	Sud Associates, P.A.	Michael Meinert, P.E.	48024	919.493.5277	mmeinert@sudassociates.com
PLUMBING	Sud Associates, P.A.	Dixie M. Davis, P.E.	14050	919.493.5277	ddavis@sudassociates.com
MECHANICAL	Sud Associates, P.A.	Dixie M. Davis, P.E.	14050	919.493.5277	ddavis@sudassociates.com
SPRINKLER-STANDPIPE					
STRUCTURAL	Woods Engineering, P.A.	Don R. Woods	19475	910.343.8007	donwoods@woodseng.com
RETAINING WALL >5' HIGH					
OTHER					

2018 NC BUILDING CODE:

■ New Building ☐ Addition ☐ 1st Time Interior Completion

☐ Phased Construction - Shell/Core - Contact the local inspection jurisdiction for possible additional precedures and requirements

☐ Shell/Core - Contact the local inspection jurisdiction for possible additional precedures and requirements

2018 NC EXISTING BUILDING CODE:

☐ N/A ☐ Chapter 14 ☐ Alteration Level I ☐ N/A ☐ N/A

☐ Prescriptive ☐ Historic Property ☐ Alteration Level II ☐ Repair ☐ Change of Use

☐ Repair ☐ Change of Use ☐ Alteration Level III ☐ Historic Property

CONSTRUCTED: RENOVATED:

CURRENT OCCUPANCY(S) (Ch. 3)

PROPOSED OCCUPANCY(S) (Ch. 3) B: BUSINESS, A-1: ASSEMBLY

OCCUPANCY CATEGORY (Table 1604.5):

CURRENT ■ N/A ☐ I ☐ II ☐ III ☐ IV

PROPOSED ☐ N/A ☐ I ■ II ☐ III ☐ IV

BASIC BUILDING DATA:

CONSTRUCTION TYPE: ☐ I-A ☐ I-B ☐ II-A ■ II-B ☐ III-A ☐ III-B ☐ IV ☐ V-A ☐ V-B

SPRINKLERS: ■ NO ☐ YES ☐ PARTIAL ☐ NFPA 13 ☐ NFPA 13R ☐ NFPA 13D

STANDPIPES: ■ NO ☐ YES ☐ CLASS I ☐ CLASS II ☐ CLASS III ☐ WET ☐ DRY

PRIMARY FIRE DISTRICT: ■ NO ☐ YES

FLOOD HAZARD AREA: ■ NO ☐ YES

SPECIAL INSPECTIONS: ■ NO ☐ YES (Contact the local inspection jurisdiction for additional procedures and requirements)

GROSS BUILDING AREA TABLE:

FIRST FLOOR EXISTING	0 SF
FIRST FLOOR NEW	12871 SF
FIRST FLOOR	12871 SF
TOTAL BUILDING AREA	12871 SF

ALLOWABLE AREA:

PRIMARY OCCUPANCY CLASSIFICATION(S): B: BUSINESS, A-1: ASSEMBLY

ACCESSORY OCCUPANCY CLASSIFICATION(S): S-1: STORAGE

INCIDENTAL USES (Table 509):

SPECIAL USES (Chapter 4 - List Code Sections): 409

SPECIAL Provisions (Chapter 5 - List Code Sections):

MIXED OCCUPANCY: ☐ NO ■ YES SEPARATION: 0 HR. EXCEPTION:

■ Non-Separated Use (508.3)

☐ Separated 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

$$\frac{\text{ACTUAL AREA OF OCCUPANCY A}}{\text{ALLOWABLE AREA OF OCCUPANCY A}} + \frac{\text{ACTUAL AREA OF OCCUPANCY B}}{\text{ALLOWABLE AREA OF OCCUPANCY B}} \leq 1$$

STORY NO.	DESCRIPTION AND USE	(A) BLDG AREA PER STORY (ACTUAL)	(B) TABLE 506.2[4] AREA UNSPRINKLERED	(B) TABLE 506.2[4] AREA SPRINKLERED	(C) AREA FOR FRONTAGE INCREASE[1,5]	(D) ALLOWABLE AREA PER STORY OR UNLIMITED
1	A-1: ASSEMBLY	12,871 SF	8500		6375	14875

1. FRONTAGE AREA INCREASES FROM SECTION 506.2 ARE COMPUTED THUS:
   - A. PERIMETER WHICH FRONTS A PUBLIC WAY OR OPEN SPACE HAVING 20 FT MINIMUM WIDTH 505 (F)
   - B. TOTAL BUILDING PERIMETER = 505 (P)
   - C. RATIO (F/P) = 1 (F/P)
   - D. W = MINIMUM WIDTH OF PUBLIC WAY = 30 (W) (do not exceed 30)
   - E. PERCENT OF FRONTAGE INCREASE If = 100 [F/P - 0.25] x W/30 = 75 (%)
2. UNLIMITED AREA APPLICABLE UNDER CONDITIONS OF SECTION 507.
3. MAXIMUM BUILDING AREA = TOTAL NUMBER OF STORIES IN THE BUILDING x D (MAXIMUM 3 STORIES) (506.2)
4. THE MAXIMUM AREA OF OPEN PARKING GARAGES MUST COMPLY WITH 406.5.4. THE MAXIMUM AREA OF AIR TRAFFIC CONTROL TOWERS MUST COMPLY WITH 412.3.1
5. FRONTAGE INCREASE IS BASED ON THE UNSPRINKLERED AREA VALUE IN TABLE 506.2

ALLOWABLE HEIGHT:

	ALLOWABLE (TABLES 504.3 & 504.4)	SHOWN ON PLANS	CODE REFERENCE
BUILDING HEIGHT IN FEET	55	33' 3"	
BUILDING HEIGHT IN STORIES	3	1	

Provide code reference if the "Shown on Plans" quantity is not based on Table 504.3 or 504.4.

FIRE PROTECTION REQUIREMENTS:

BUILDING ELEMENT	FIRE SEPARATION DISTANCE (FEET)	RATING REQ'D	RATING PROVIDED* (W/ REDUCTION)	DETAIL # AND SHEET #	DESIGN # FOR RATED ASSEMBLY	DESIGN # FOR RATED PENETRATION	DESIGN # FOR RATED JOINTS
Structural Frame including columns, girders, trusses							
Bearing Walls							
Exterior							
North							
East							
West							
South							
Interior							
Nonbearing Walls and Partitions							
Exterior							
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							
Shaft Enclosures - Other							
Corridor Separation	1 HR	1 HR	1 HR	1/A501	UL 419		
Occupancy / Fire Barrier Separation							
Party / Fire Wall Separation							
Smoke Barrier Separation							
Tenant / Dwelling Unit / Sleeping Separation							
Incidental Use Separation							

* 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 OR GREATER	UP, NS	NO LIMIT	NO LIMIT

LIFE SAFETY SYSTEM REQUIREMENTS:

EMERGENCY LIGHTING: ☐ NO ■ YES

EXIT SIGNS: ☐ NO ■ YES

FIRE ALARM: ☐ NO ■ YES

SMOKE DETECTION SYSTEMS: ■ NO ☐ YES ☐ PARTIAL

CARBON MONOXIDE DETECTION: ☐ NO ■ YES

LIFE SAFETY PLAN REQUIREMENTS:

LIFE SAFETY PLAN SHEET # G003

- 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 LINES (705.8)
- OCCUPANCY TYPES FOR EACH AREA AS IT RELATES TO OCCUPANT LOAD CALCULATION (TABLE 1004.1.2)
- OCCUPANT LOADS FOR EACH AREA
- EXIT ACCESS TRAVEL DISTANCES (1017)
- COMMON PATH OF TRAVEL DISTANCES (1006.2.1 & 1006.3.2(1))
- DEAD END LENGTHS (1020.4)
- CLEAR EXIT WIDTHS FOR EACH EXIT DOOR
- MAXIMUM CALCULATED OCCUPANT LOAD CAPACITY EACH EXIT DOOR CAN ACCOMMODATE 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 (1008.1.10.)
- 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)
- THE 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 THE ITEMS ABOVE

ACCESSIBLE DWELLING UNITS (SECTION 1107)

TOTAL UNITS	ACCESSIBLE UNITS REQUIRED	ACCESSIBLE UNITS PROVIDED	TYPE A UNITS REQUIRED	TYPE A UNITS PROVIDED	TYPE B UNITS REQUIRED	TYPE B UNITS PROVIDED	TOTAL ACCESSIBLE UNITS PROVIDED

ACCESSIBLE PARKING (SECTION 1106)

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

PLUMBING FIXTURE REQUIREMENTS (TABLE 2902.1)

	USE	WATERCLOSETS MALE	WATERCLOSETS FEMALE	WATERCLOSETS UNISEX	URINALS	LAVATORIES MALE	LAVATORIES FEMALE	LAVATORIES UNISEX	SHOWERS / TUBS	DRINKING FOUNTAINS REGULAR	DRINKING FOUNTAINS ACCESSIBLE
SPACE	EXIST'G										
SPACE	NEW	3	4		1	3	3			1	1
SPACE	REQ'D	4	4			3	3			1	1

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 THE 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: ☐ YES (the remiander of this section is not applicable) ☐ NO

EXEMPT BUILDING: ☐ YES Provide code or statutory reference: ☐ NO

CLIMATE ZONE:

METHOD OF COMPLIANCE:

- ☐ PRESCRIPTIVE (ENERGY CODE)
- ☐ PERFORMANCE (ENERGY CODE)
- ☐ PRESCRIPTIVE (ASHRAE 90.1)
- ☐ PERFORMANCE (ASHRAE 90.1)
- ☐ PERFORMANCE (OTHER)

If 'Other' specify source here:

THERMAL ENVELOPE (Prescriptive method only)

ROOF/CEILING ASSEMBLY (each assembly)
- DESCRIPTION OF ASSEMBLY
- U-VALUE OF TOTAL ASSEMBLY
- R-VALUE OF INSULATION
- SKYLIGHTS IN EACH ASSEMBLY
- U-VALUE OF SKYLIGHT
- TOTAL SQUARE FOOTAGE OF SKYLIGHTS IN EACH ASSEMBLY

EXTERIOR WALLS (each assembly)
- DESCRIPTION OF ASSEMBLY
- U-VALUE OF TOTAL ASSEMBLY
- R-VALUE OF INSULATION
- **OPENINGS** (windows or doors with glazing)
- U-VALUE OF ASSEMBLY
- SOLAR HEAT GAIN COEFFICIENT
- PROJECTION FACTOR
- DOOR R-VALUES

WALLS BELOW GRADE (each assembly)
- DESCRIPTION OF ASSEMBLY
- U-VALUE OF TOTAL ASSEMBLY
- R-VALUE OF INSULATION

FLOORS OVER UNCONDITIONED SPACE (each assembly)
- DESCRIPTION OF ASSEMBLY
- U-VALUE OF TOTAL ASSEMBLY
- R-VALUE OF INSULATION

FLOORS SLAB ON GRADE (each assembly)
- DESCRIPTION OF ASSEMBLY
- U-VALUE OF TOTAL ASSEMBLY
- R-VALUE OF INSULATION
- HORIZONTAL / VERTICAL REQUIREMENT
- SLAB HEATED

STRUCTURAL DESIGN

DESIGN LOADS:

IMPORTANCE FACTORS: WIND (Iw) 1.0 SNOW (Is) 1.0 SEISMIC (Ie) 1.0

LIVE LOADS: ROOF 20 PSF MEZZANINE 100 PSF FLOOR 100 PSF

GROUND SNOW LOAD: 10 PSF

WIND LOAD: BASIC WIND SPEED 146 MPH (ASCE-7-10) EXPOSURE CATEGORY C

SEISMIC DESIGN CATEGORY: C

PROVIDE THE FOLLOWING SEISMIC DESIGN PARAMETERS:

OCCUPANCY CATEGORY (TABLE 1604.5) II

SPECTRAL RESPONSE ACCELERATION S_S 0.213 %g S_1 0.090 %g

SITE CLASSIFICATION (ASCE 7) D

DATA SOURCE: FIELD TEST

BASIC STRUCTURAL SYSTEM STRUCTURAL STEEL NO SPECIFICALLY DETAILED FOR SERVICE

ANALYSIS PROCEDURE: ☐ N/A ☐ SIMPLIFIED ■ EQUIVALENT LATERAL FORCE ☐ DYNAMIC

ARCHITECTURAL, MECHANICAL, COMPONENTS ANCHORED? ☐ YES ■ NO

LATERAL DESIGN CONTROL: ☐ N/A ☐ EARTHQUAKE ■ WIND

SOIL BEARING CAPACITIES:

☐ N/A

■ FIELD TEST (PROVIDE COPY OF TEST REPORT) 3,000 PSF

☐ PRESUMPTIVE BEARING CAPACITY PSF

PILE SIZE, TYPE AND CAPACITY PSF

MECHANICAL SUMMARY

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

THERMAL ZONE

WINTER DRY BULB 24.7 °F

SUMMER DRY BULB 93.5 °F

INTERIOR DESIGN CONDITIONS

WINTER DRY BULB 70 °F

SUMMER DRY BULB 75 °F

RELATIVE HUMIDITY 50 %

BUILDING HEATING LOAD 226 MBH

BUILDING COOLING LOAD 441 MBH

MECHANICAL SPACING CONDITIONING SYSTEM

UNITARY Air cooled packaged heat pumps and air-cooled split system heat pumps with auxiliary electric heat

DESCRIPTION OF UNIT

HEATING EFFICIENCY See Below

COOLING EFFICIENCY See Below

SIZE CATEGORY OF UNIT From 1/2 ton to 7-1/2 tons

BOILER

SIZE CATEGORY, IF OVERSIZED, STATE REASON N/A

CHILLER

SIZE CATEGORY, IF OVERSIZED, STATE REASON N/A

LIST EQUIPMENT EFFICIENCIES: AHU1/CU1: 15 SEER, 3.7 COP
AHU3/CU3: 14.5 SEER, 3.7 COP
AHU4/CU4: 12.8 EER, 3.3 COP
AHU5/CU5: 15 SEER, 3.7 COP
IDU1/ODU1: 24.6 SEER, 12.8 HSPF
IDU2,3/ODU2,3: 20.0 SEER, 10.0 HSPF
IDU4/ODU4: 20.5 SEER, 10.0 HSPF
PHP1: 11.8 EER, 15.5 IEER, 3.5 COP
PHP2: 11.8 EER, 15.5 IEER, 3.5 COP
PHP3: 12.1 EER, 15.5 IEER, 3.5 COP

ELECTRICAL SUMMARY

ELECTRICAL SYSTEM AND EQUIPMENT

METHOD OF COMPLIANCE:

ENERGY CODE: ■ PRESCRIPTIVE ☐ PERFORMANCE

ASHRAE 90.1: ☐ PRESCRIPTIVE ☐ PERFORMANCE

LIGHTING SCHEDULE

- LAMP TYPE REQUIRED IN FIXTURE
- NUMBER OF LAMPS IN FIXTURE
- BALLAST TYPE USED IN THE FIXTURE
- TOTAL WATTAGE PER FIXTURE

{ SEE LIGHT FIXTURE SCHEDULE ON SHEET E-600

- TOTAL INTERIOR WATTAGE SPECIFIED VS ALLOWED (LPD of 0.53VA/SF vs. 0.87VA/SF ALLOWED FOR UNIVERSITY BUILDINGS. EXCEPTIONS FOR THEATRICAL LIGHTING APPLY.)
- TOTAL EXTERIOR WATTAGE SPECIFIED VS ALLOWED: 1030VA vs. 1320VA ALLOWED FOR ZONE 2 w/ 36' LINEAR ENTRANCE

ADDITIONAL PRESCRIPTIVE COMPLIANCE

- C406.2 MORE EFFICIENT HVAC EQUIPMENT PERFORMANCE
- X 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

BECKER MORGAN GROUP

ARCHITECTURE PLANNING

North Carolina
3333 Jaeckle Drive, Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
Newark, DE 19711
302.369.3700

www.beckermorgan.com

THE JOHN R. MCADAMS COMPANY
CIVIL ENGINEERING
2905 MERIDIAN PARKWAY
DURHAM, NC 27713
OFFICE: 919.361.5000

WOODS ENGINEERING
STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
910-343-8007 fax 910-343-8088

SUD ASSOCIATES, P.A.
PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

L. MARK LOUDERMILK REGISTERED ARCHITECT 10776 N.C. WILMINGTON, N.C.

BECKER MORGAN GROUP, INC. Registered Architectural Corporation 51922 North Carolina WILMINGTON, N.C.

PROJECT TITLE

UNCW

SCO ID: 19-20473-01A
PM#: 6034

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

CODE SUMMARY

ISSUE BLOCK

Mark	Date	Description

PROJECT NO: 2018070.01

DATE: 9/23/2019

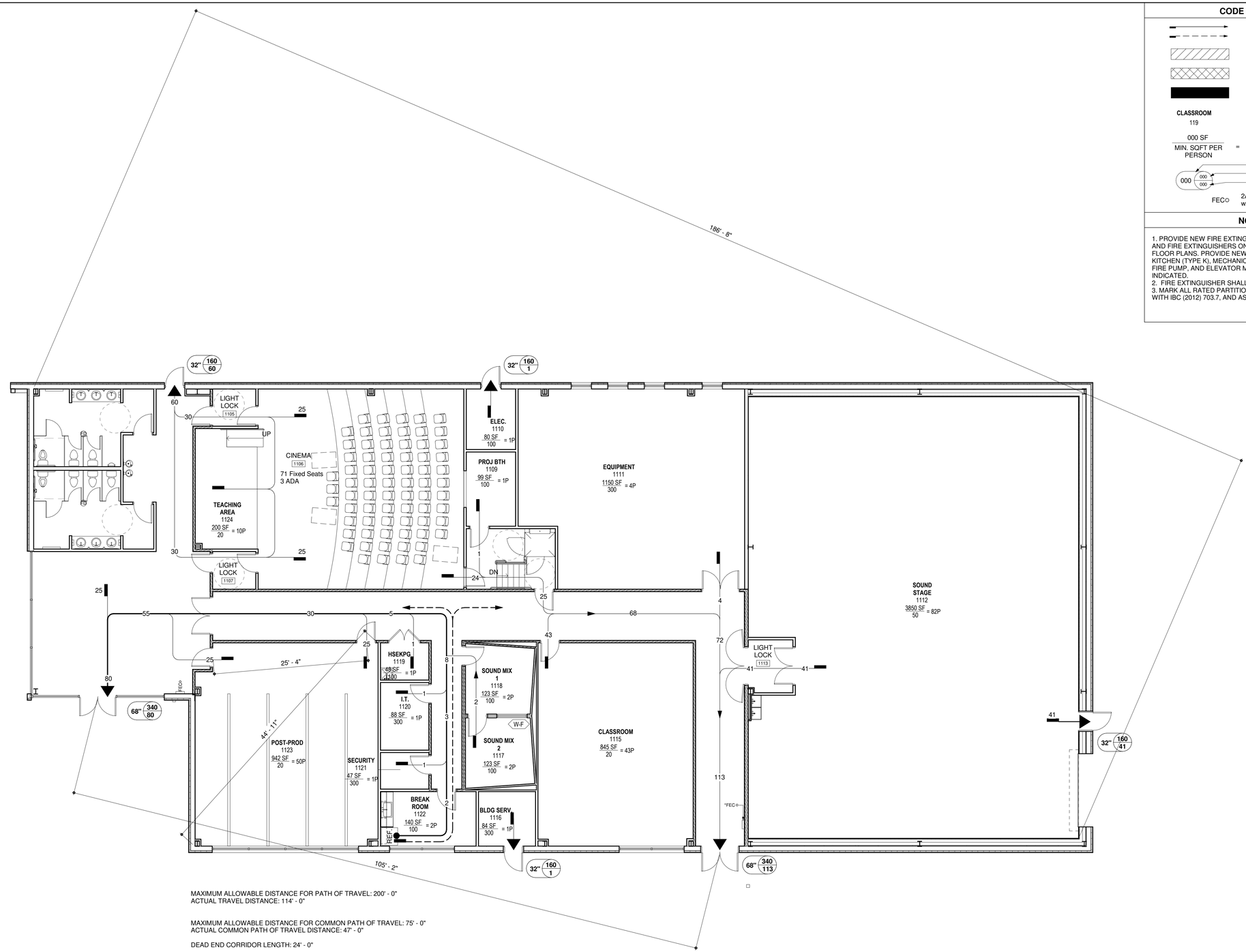
SCALE:

DRAWN BY: JDF PROJ MGR: LML

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MAXIMUM ALLOWABLE DISTANCE FOR PATH OF TRAVEL: 200' - 0"
ACTUAL TRAVEL DISTANCE: 114' - 0"

MAXIMUM ALLOWABLE DISTANCE FOR COMMON PATH OF TRAVEL: 75' - 0"
ACTUAL COMMON PATH OF TRAVEL DISTANCE: 47' - 0"

DEAD END CORRIDOR LENGTH: 24' - 0"

1 LIFE SAFETY PLAN

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

CODE LEGEND

- PATH OF EGRESS
- COMMON PATH OF TRAVEL
- 0 HR RATED SMOKE PARTITION
- 1 HR RATED FIRE PARTITION / FIRE BARRIER
- 2 HR RATED FIRE WALL
- CLASSROOM 119 — ROOM NAME & NUMBER
- 000 SF / MIN. SQFT PER PERSON = OCCUPANCY LOAD (P)
- 000 (000 / 000) — CLEAR EXIT WIDTH; OCCUPANT LOAD CAPACITY; OCCUPANT LOAD
- FEC — 2A FIRE EXTINGUISHER LOCATION w/ RECESSED CABINET

NOTES

1. PROVIDE NEW FIRE EXTINGUISHERS IN CABINETS (FEC) AND FIRE EXTINGUISHERS ON BRACKETS (FE) AS SHOWN ON FLOOR PLANS. PROVIDE NEW FIRE EXTINGUISHERS IN KITCHEN (TYPE K), MECHANICAL, ELECTRICAL (TYPE B-C), FIRE PUMP, AND ELEVATOR MACHINE ROOMS, AND AS INDICATED.
2. FIRE EXTINGUISHER SHALL BE MINIMUM 3A-40BC RATING.
3. MARK ALL RATED PARTITIONS AND WALLS IN ACCORDANCE WITH IBC (2012) 703.7, AND AS DETAILED.

BECKER MORGAN GROUP

ARCHITECTURE
PLANNING

North Carolina
3333 Jaeckle Drive, Suite 120
Wilmington, NC 28403
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MARK LOUDERMILK, AIA — REGISTERED ARCHITECT — 10776 — N.C. — WILMINGTON, N.C.

BECKER MORGAN GROUP, INC. — Registered Professional Engineering Firm — 51922 — North Carolina — WILMINGTON, NC

PROJECT TITLE

UNCW

SCO ID: 19-20473-01A
PM#: 6034

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

LIFE SAFETY PLAN

ISSUE BLOCK

Mark	Date	Description

PROJECT NO:	2018070.01
DATE:	9/23/2019
SCALE:	As indicated
DRAWN BY: AVB	PROJ MGR: LML

G003

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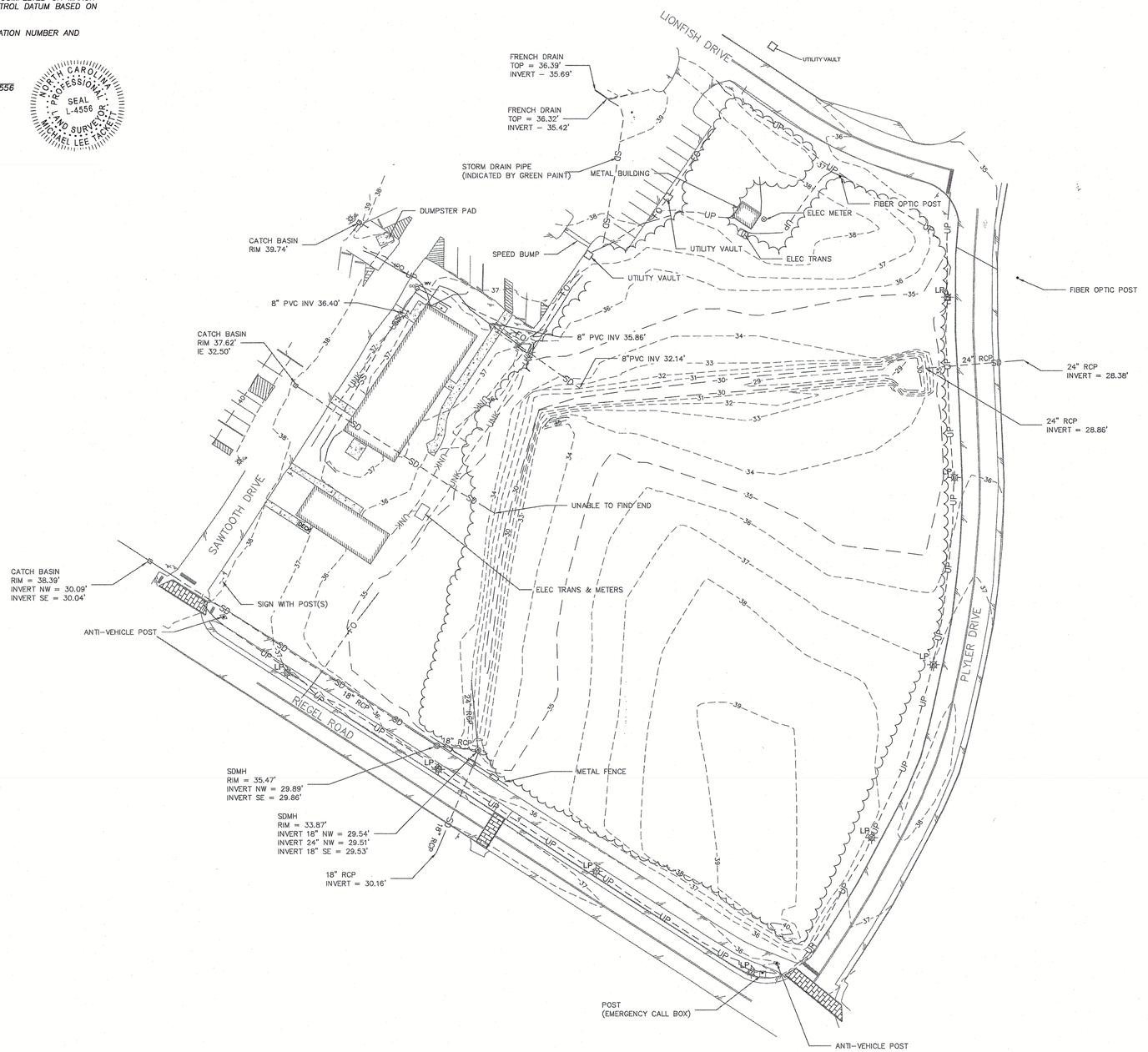
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"I, MICHAEL LEE TACKETT, CERTIFY THAT THIS PROJECT WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION; THAT THIS "GROUND SURVEY WAS PERFORMED AT THE 95 PERCENT CONFIDENCE LEVEL TO MEET FEDERAL GEOGRAPHIC 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 JANUARY 19, THRU MARCH 23, 2018; THAT THE SURVEY WAS COMPLETED ON MARCH 23, 2018; HORIZONTAL AND VERTICAL CONTROL DATUM BASED ON PROJECT CONTROL.

WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER AND SEAL THIS 2ND DAY OF APRIL 2018."

MICHAEL LEE TACKETT, N.C.P.L.S. NO. L-4556

NORTH CAROLINA PROFESSIONAL SEAL L-4556 LAND SURVEYOR MICHAEL LEE TACKETT

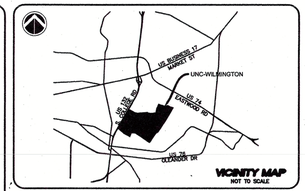


MCADAMS SHEET
C1.01

SEE NOTE #2

0 40 80 120
SCALE: 1" = 40'

P:\242 UNCW OPEN ENDED\242-13 SOUND STAGE\DWG\242-13-UNCW-SOUNDSTAGE-EXIST-COND-SURVEY.DWG



VICINITY MAP
NOT TO SCALE

LEGEND:

- BRICK PAVERS
- CONCRETE
- ASPHALT PAVEMENT
- BUILDING OUTLINE
- PAVEMENT MARKING (SINGLE WHITE LINE)
- PAVEMENT MARKING DOUBLE YELLOW LINES
- METAL FENCE
- DITCH/SWALE CENTERLINE
- FO — UNDERGROUND FIBER OPTIC
- UP — UNDERGROUND POWER
- TREE LINE
- SS — SEWER LINE
- SD — STORM DRAIN LINE
- 35 — CONTOUR ELEVATION
- UNK — UNKNOWN UTILITY
- STOP BAR
- LP — LIGHT POLE
- POST (AS NOTED)
- SIGN
- WV — WATER VALVE
- STORM DRAIN MANHOLE
- SEWER CLEAN OUT

NOTES:

1. BASED ON SURVEY BY CAPE FEAR ENGINEERING, INC. ON JANUARY 19, FEBRUARY 21 & 22, AND MARCH 20, 22, AND 23, 2018.
2. HORIZONTAL AND VERTICAL DATA BASED ON EXISTING U.N.C.W. CONTROL MONUMENTS #26, AND #105.

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WILMINGTON

REV. #	DESCRIPTION	REV. BY DATE
	REVISIONS	

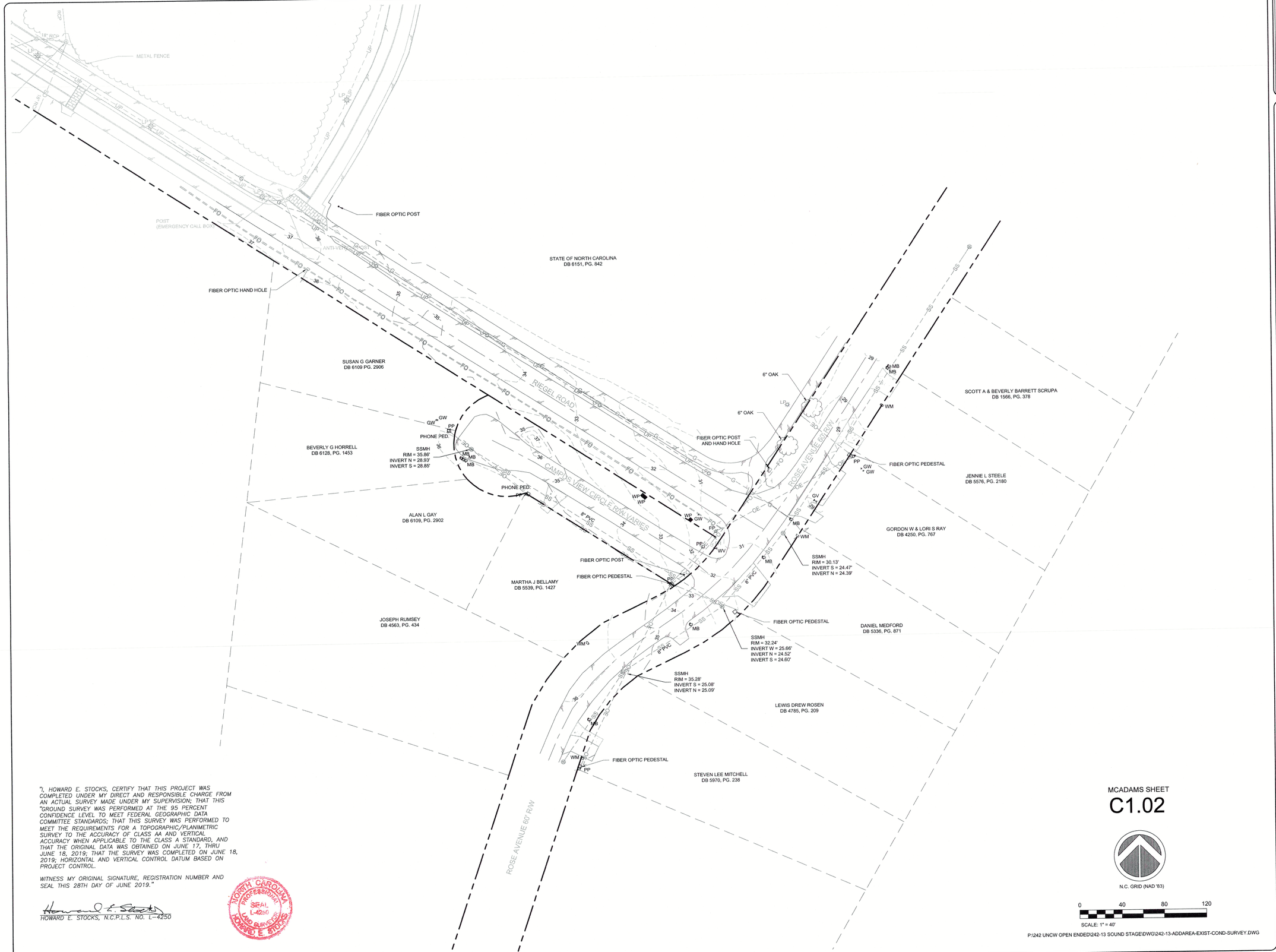
CAPE FEAR ENGINEERING
151 Poole Rd.,Suite 100; Belville, NC, 28451
TEL (910) 383-1044; FAX (910) 383-1045
www.capefearengineering.com
N.C. LICENSE # C-1621

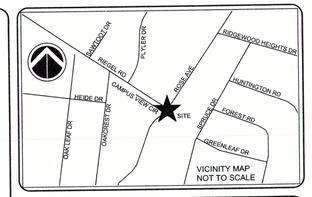
PROJECT NUMBER :	242-13
SCALE :	AS INDICATED
DATE :	02 APRIL 2018
TRACKING :	

EXISTING CONDITIONS SURVEY UNIVERSITY OF NORTH CAROLINA WILMINGTON

NEW HANOVER COUNTY
NORTH CAROLINA

PROJECT NUMBER	SHEET NUMBER
242-13	1 OF 1





LEGEND:

- BRICK PAVERS
- CONCRETE
- ASPHALT PAVEMENT
- PAVEMENT MARKING (SINGLE WHITE LINE)
- SOIL/GRAVEL DRIVE
- FO — UNDERGROUND FIBER OPTIC
- UP — UNDERGROUND POWER
- SS — SEWER LINE
- SD — STORM DRAIN LINE
- 35 — CONTOUR ELEVATION
- G — UNDERGROUND GAS
- OE — OVERHEAD ELECTRIC
- ADJOINER
- RIGHT OF WAY
- STOP BAR
- LP — LIGHT POLE
- POST (AS NOTED)
- SIGN
- WV — WATER VALVE
- FH — FIRE HYDRANT
- GV — GAS VALVE
- MB — MAIL BOX
- PHONE PED. — PHONE PEDESTAL
- PP — POWER POLE
- GW — GUY WIRE
- WP — WOOD POST
- WM — WATER METER

NOTES:

1. BASED ON SURVEY BY CAPE FEAR ENGINEERING INC. ON JUNE 17, AND 18, 2019.
2. HORIZONTAL AND VERTICAL DATA BASED ON EXISTING U.N.C.W. CONTROL MONUMENTS #26 AND #105 PER PREVIOUS SURVEY BY CAPE FEAR ENGINEERING.
3. BACKGROUND INFORMATION TAKEN FROM PREVIOUS EXISTING CONDITIONS SURVEY BY CAPE FEAR ENGINEERING INC. DATED APRIL 2, 2018, AND IS SHOWN FOR INFORMATION PURPOSES ONLY.
4. NO BOUNDARY SURVEY PERFORMED, PARCEL LINES AND RIGHT OF WAY LINES APPROXIMATE.

"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 JUNE 17, THRU JUNE 18, 2019; THAT THE SURVEY WAS COMPLETED ON JUNE 18, 2019; HORIZONTAL AND VERTICAL CONTROL DATUM BASED ON PROJECT CONTROL.

WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER AND SEAL THIS 28TH DAY OF JUNE 2019."

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

NORTH CAROLINA PROFESSIONAL SEAL L-4250 LAND SURVEYOR HOWARD E. STOCKS

MCADAMS SHEET
C1.02

N.C. GRID (NAD '83)

0 40 80 120
SCALE: 1" = 40'

P:\242 UNCW OPEN ENDED\242-13 SOUND STAGE\DWG\242-13-ADDAREA-EXIST-COND-SURVEY.DWG

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UNIVERSITY OF NORTH CAROLINA *WILMINGTON*

REVISIONS

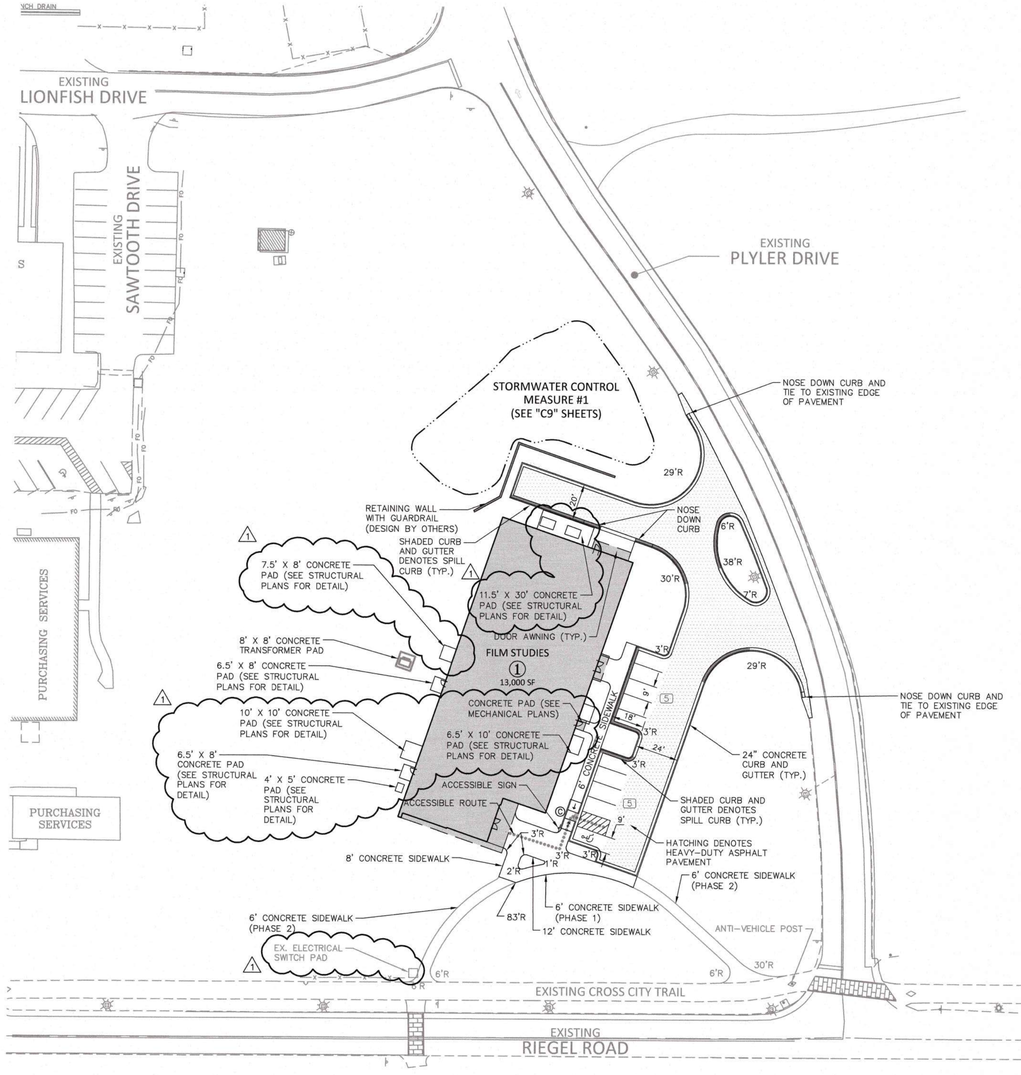
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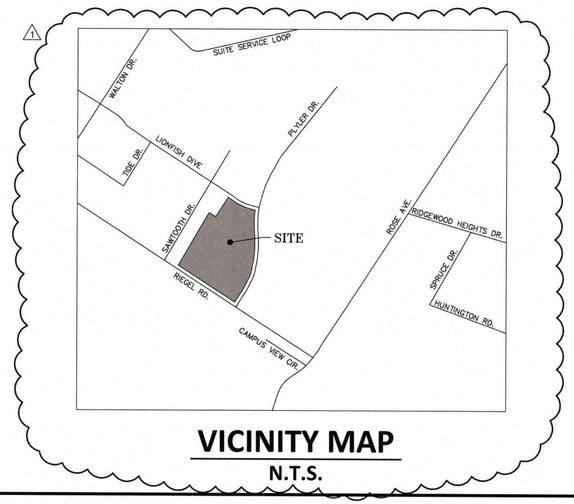
PROJECT NUMBER :	242-13
SCALE :	AS INDICATED
DATE :	28 JUNE 2019
TRACKING :	

EXISTING CONDITIONS SURVEY UNIVERSITY OF NORTH CAROLINA WILMINGTON

NEW HANOVER COUNTY
NORTH CAROLINA

PROJECT NUMBER	SHEET NUMBER
242-13	1 OF 1





VICINITY MAP

N.T.S.

VICINITY MAP

N.T.S.

OAK CREST SUBDIVISION

STATE OF NORTH CAROLINA
DB. 6151, PG. 842

SUSAN GARNER
DB 6109, PG. 2906

BEVERLY G HORRELL
DB 6128, PG. 1453

ALAN L GAY
DB 6109, PG. 2902

SCOTT A & BEVERLY BARRETT SCRUPA
DB. 1566, PG. 378

EX. MAIL BOXES

JENNIE L STEELE
DB. 5576, PG. 2180

EXISTING ROSE AVENUE (60' PUBLIC R/W)

GORDON W & LORI S RAY
DB. 4250, PG. 767

DANIEL MEDFORD
DB. 5336, PG. 871

LEWIS DREW ROSEN
DB. 4785, PG. 209

WOODEN POST

EXISTING
CAMPUS VIEW CIRCLE
(PUBLIC R/W WIDTH VARIES)

MARTHA J BELLAMY
DB 6109, PG. 1427

SITE DATA

OWNER/ DEVELOPER	UNIVERSITY OF NORTH CAROLINA - WILMINGTON 601 SOUTH COLLEGE ROAD WILMINGTON, NORTH CAROLINA 28403-5620
SITE ADDRESS	UNIVERSITY OF NORTH CAROLINA - WILMINGTON 601 SOUTH COLLEGE ROAD WILMINGTON, NORTH CAROLINA 28403-5620
PARCEL NUMBER	R05511-003-001-000
EXISTING ZONING	O&I (OFFICE & INSTITUTION), R (RESIDENTIAL)
EXISTING USE	N/A
PROPOSED USE	INSTITUTIONAL
TOTAL PROJECT AREA	2.90 AC.
DISTURBED AREA	2.90 AC
IMPERVIOUS AREA	0.89 AC
WATERSHED	CAPE FEAR RIVER
SOILS	Be (BAYMEADE FINE SAND), Se (SEAGATE FINE SAND) Kr (KUREB SAND), Le (LEON SAND)
PARKING PROVIDED	10 SPACES TOTAL (1 ADA SPACE)
ADA SPACES REQUIRED	1 VAN (ACCESSIBLE)
BICYCLE SPACES REQUIRED PER COW LDC SEC. 18-528(f)	0 SPACES (0 SPACES PROVIDED)
STACKING SPACES	N/A
REQUIRED SETBACKS	N/A
THIS PROPERTY IS NOT IN A FLOOD ZONE PER FEMA MAP 3720313700K DATED 08/28/2018	
*ALL SIGNS TO BE PERMITTED SEPARATELY. *THERE IS NO FLOODPLAIN LOCATED ON THE PROPERTY.	

GENERAL NOTES:

1. CONTRACTOR SHALL LOCATE AND VERIFY THE LOCATION AND DEPTH OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO BEGINNING CONSTRUCTION AND NOTIFY THE ENGINEER OF ANY CONFLICTS/DISCREPANCIES.
2. LOCATION AND TOPOGRAPHICAL INFORMATION WAS TAKEN FROM FIELD SURVEY PERFORMED BY ATLANTIC COAST SURVEY PLLC. ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL (GROUND) DISTANCES AND VERTICAL DATUM IS NAVD 88. COORDINATES AS SHOWN ARE NC GRID NAD 83 (2011).
3. THE CONTRACTOR SHALL NOTIFY "NORTH CAROLINA ONE CALL" (811 OR 1-800-632-4949) AT LEAST 3 FULL BUSINESS DAYS BEFORE BEGINNING ANY EXCAVATION OR UTILITY WORK TO HAVE EXISTING UTILITIES LOCATED.
4. CONTRACTOR SHALL ALSO OBTAIN A UNCW DIG PERMIT PRIOR TO CONSTRUCTION ACTIVITIES.CONTRACTOR SHALL ALLOW FOR 7 DAYS FOR DIG PERMIT PROCESSING. THE PERMIT CAN BE FOUND AT THE UNCW WEBSITE: (http://www.uncw.edu/ba/facilities/Forms/dig-permit.pdf)
5. SEE SUPPLEMENTARY GENERAL CONDITIONS FOR ALLOWABLE WORKING HOURS AND EXCLUDED WORKING DATES.
6. ALL MATERIALS, CONSTRUCTION, WORKMANSHIP SHALL MEET PROJECT SPECIFICATIONS FOR STANDARDS AND DESIGN.
7. CONTRACTOR SHALL COMPLY WITH AND THE SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION ISSUED BY THE U.S. DEPARTMENT OF LABOR.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ANY PAVEMENT OR EXISTING UTILITIES THAT MAY BE DAMAGED DUE TO CONSTRUCTION ACTIVITY. EXERCISE CAUTION.
9. ALL UTILITIES SHALL BE PROTECTED AND REMAIN ACTIVE UNLESS OTHERWISE NOTED.
10. EXISTING IMPROVEMENTS SLATED TO REMAIN THAT ARE DAMAGED DURING CONSTRUCTION SHALL BE REPLACED/RESTORED TO THEIR ORIGINAL CONDITION OR TO THE SATISFACTION OF THE OWNER BY THE CONTRACTOR RESPONSIBLE FOR THE DAMAGE AT NO COST TO THE OWNER.
11. THE CONTRACTOR MAY USE BORROW MATERIAL FROM A "COMMERCIAL SOURCE" WHICH HAS BEEN APPROVED BY NCDEQ LAND QUALITY SECTION. CONTRACTOR SHALL FURNISH THE PERMIT NUMBER (TO THE UNIVERSITY REPRESENTATIVE) ON THE COMMERCIAL SOURCE WHICH WILL BE USED TO PROVIDE FILL FOR THE PROJECT.
12. 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.
13. CONTRACTOR SHALL COMPLY WITH ALL REGULATIONS ISSUED BY EPA, NATIONAL FIRE PREVENTION AGENCY, US DEPARTMENT OF LABOR OCCUPATIONAL SAFETY, AND HEALTH ADMINISTRATION, AND ANY OTHER STATE, LOCAL, AND FEDERAL AGENCIES GOVERNING FUELING, FUEL STORAGE, AND MAINTENANCE OF CONSTRUCTION EQUIPMENT. UNCW SHALL BE PROVIDED SHOP DRAWINGS ON FUEL CONTAINMENT AND REFUELING FACILITIES. CONTRACTOR SHALL NOT MOBILIZE REFUELING EQUIPMENT UNTIL UNIVERSITY APPROVAL HAS BEEN GRANTED.

GENERAL NOTES:

1. 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.

SITE LEGEND

- 24" CONCRETE CURB AND GUTTER
- 24" SPILL CONCRETE CURB AND GUTTER
- XX — PARKING SPACE COUNT
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- CENTERLINE
- HEAVY DUTY ASPHALT PAVEMENT
- ACCESSIBLE RAMPS — TYPE A, TYPE B, TYPE C
- ACCESSIBLE ROUTE

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

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

811 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.

McADAMS
The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713

phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293

www.mcadamsco.com

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601 SOUTH COLLEGE ROAD
WILMINGTON, NORTH CAROLINA 28403
PHONE: 910.962.3761

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WILMINGTON, NORTH CAROLINA, 28403-5620

NORTH CAROLINA PROFESSIONAL SEAL 027404 ENGINEER DARYL L. RIGGINS
9-29-18

REVISIONS

NO.	DATE	
1	09. 27. 2019	ADDENDUM #1

PLAN INFORMATION

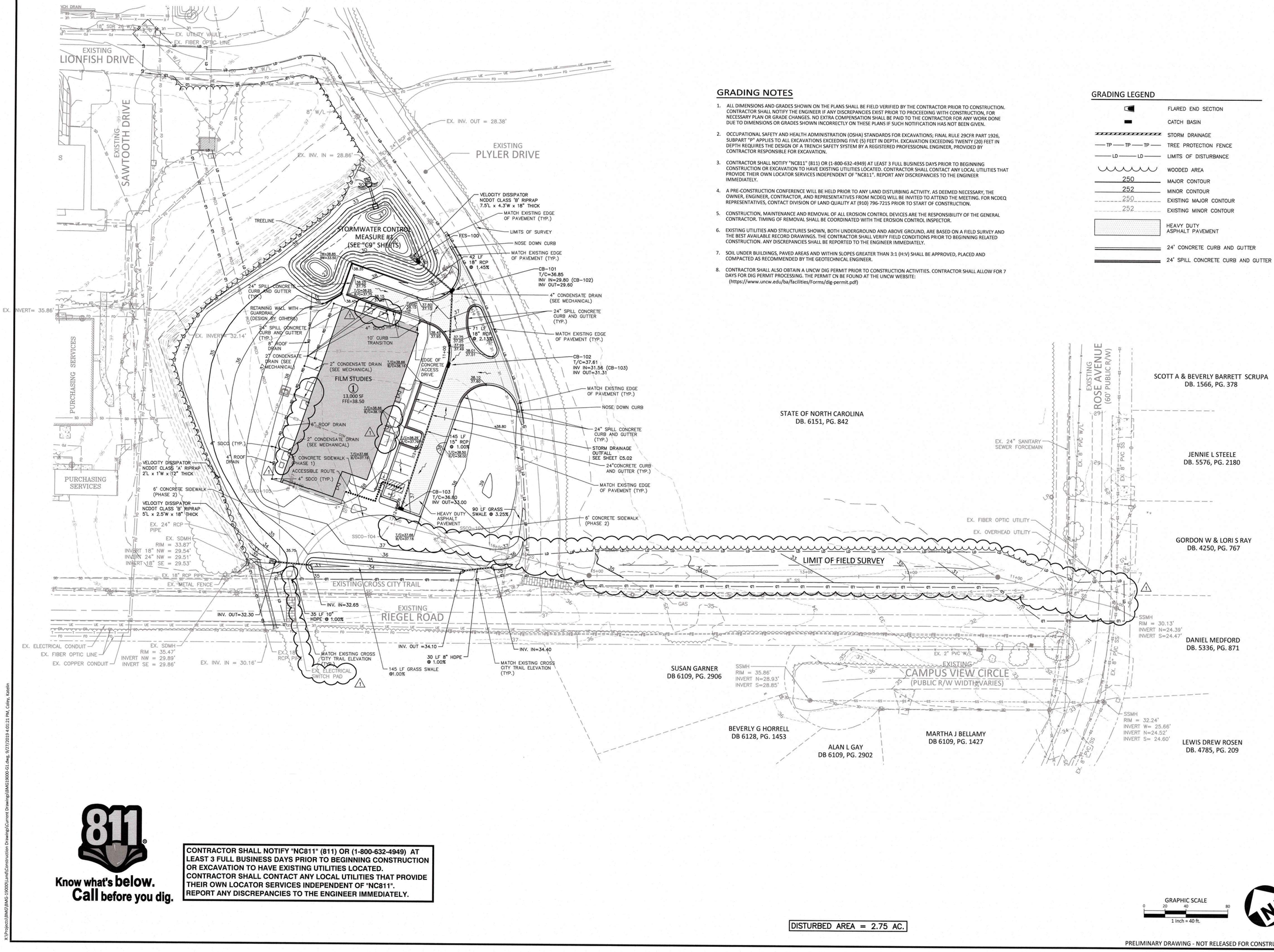
PROJECT NO.	BMG-19000
FILENAME	BMG19000-S1
CHECKED BY	DTR
DRAWN BY	KNC
SCALE	1"=40'
DATE	09.19.2019

SHEET

SITE PLAN

C2.01

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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)

GRADING LEGEND

- FLARED END SECTION
- CATCH BASIN
- STORM DRAINAGE
- 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
- HEAVY DUTY ASPHALT PAVEMENT
- 24" CONCRETE CURB AND GUTTER
- 24" SPILL CONCRETE CURB AND GUTTER

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DISTURBED AREA = 2.75 AC.

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

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

X:\Projects\BMG\BMG-19000\Land\Construction Drawings\Current Drawings\BMG19000-G1.dwg, 9/27/2019 4:31:21 PM, Caley_Katelin

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The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713

phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293

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WILMINGTON, NORTH CAROLINA 28403
PHONE: 910.962.3761

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9-27-19

REVISIONS

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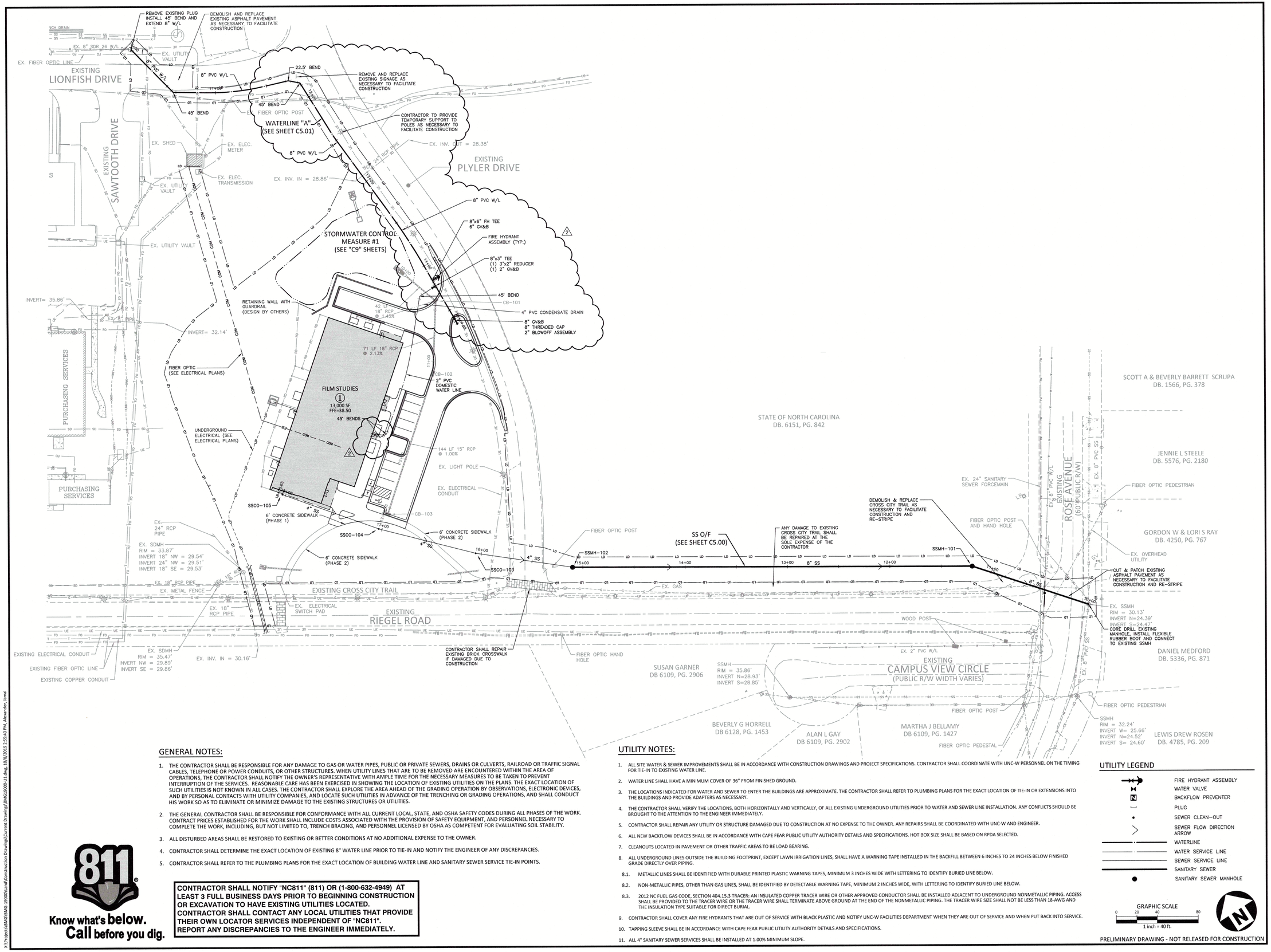
PLAN INFORMATION

PROJECT NO.	BMG-19000
FILENAME	BMG19000-G1
CHECKED BY	DTR
DRAWN BY	KNC
SCALE	1"=40'
DATE	09.19.2019

SHEET

GRADING AND STORM DRAINAGE PLAN

C3.01



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 GRADING 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 8" WATER LINE PRIOR TO TIE-IN AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
5. CONTRACTOR SHALL REFER TO THE PLUMBING PLANS FOR THE EXACT LOCATION OF BUILDING WATER LINE AND SANITARY SEWER SERVICE TIE-IN POINTS.

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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. HOT BOX SIZE SHALL BE BASED ON RPDA SELECTED.
7. CLEANOUTS LOCATED IN PAVEMENT OR OTHER TRAFFIC AREAS TO BE LOAD BEARING.
8. 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.
   - 8.1. METALLIC LINES SHALL BE IDENTIFIED WITH DURABLE PRINTED PLASTIC WARNING TAPES, MINIMUM 3 INCHES WIDE WITH LETTERING TO IDENTIFY BURIED LINE BELOW.
   - 8.2. 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.
   - 8.3. 2012 NC FUEL GAS CODE, SECTION 404.15.3 TRACER: AN INSULATED COPPER TRACER WIRE OR OTHER APPROVED CONDUCTOR SHALL BE INSTALLED ADJACENT TO UNDERGROUND NONMETALLIC PIPING. ACCESS SHALL BE PROVIDED TO THE TRACER WIRE OR THE TRACER WIRE SHALL TERMINATE ABOVE GROUND AT THE END OF THE NONMETALLIC PIPING. THE TRACER WIRE SIZE SHALL NOT BE LESS THAN 18-AWG AND THE INSULATION TYPE SUITABLE FOR DIRECT BURIAL.
9. 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.
10. TAPPING SLEEVE SHALL BE IN ACCORDANCE WITH CAPE FEAR PUBLIC UTILITY AUTHORITY DETAILS AND SPECIFICATIONS.
11. ALL 4" SANITARY SEWER SERVICES SHALL BE INSTALLED AT 1.00% MINIMUM SLOPE.

UTILITY LEGEND

- FIRE HYDRANT ASSEMBLY
- WATER VALVE
- BACKFLOW PREVENTER
- PLUG
- SEWER CLEAN-OUT
- SEWER FLOW DIRECTION ARROW
- WATERLINE
- WATER SERVICE LINE
- SEWER SERVICE LINE
- SANITARY SEWER
- SANITARY SEWER MANHOLE

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

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

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NORTH CAROLINA PROFESSIONAL SEAL 027404 ENGINEER DARYL T. BIGGINS
10-08-19

REVISIONS

NO.	DATE	
1	10.01.2019	ADDENDUM #1
2	10. 09. 2019	ADDENDUM #2

PLAN INFORMATION

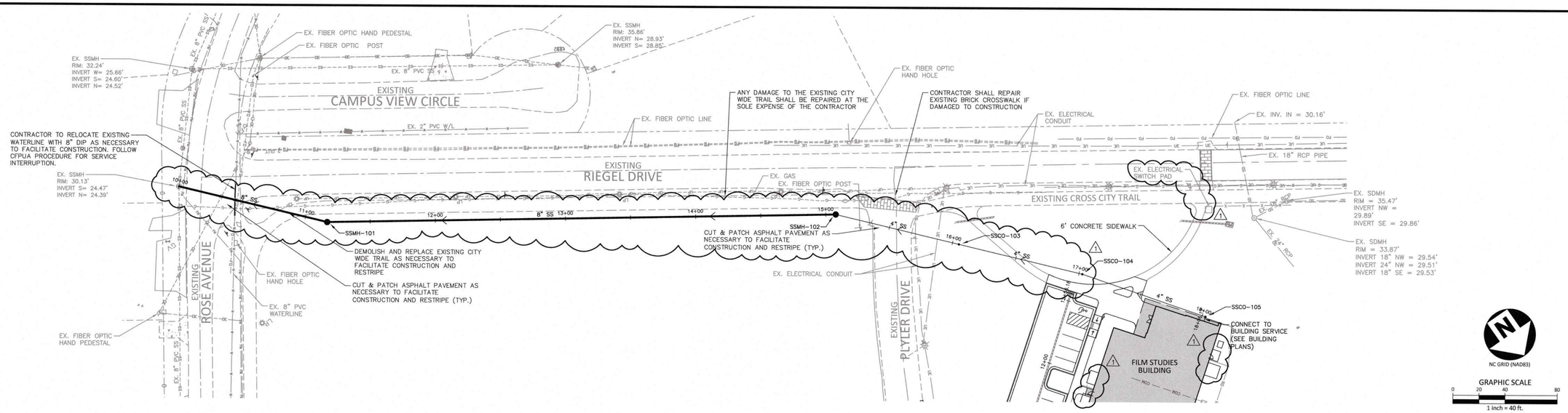
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CHECKED BY	DTR
DRAWN BY	KNC
SCALE	1"=40'
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SHEET

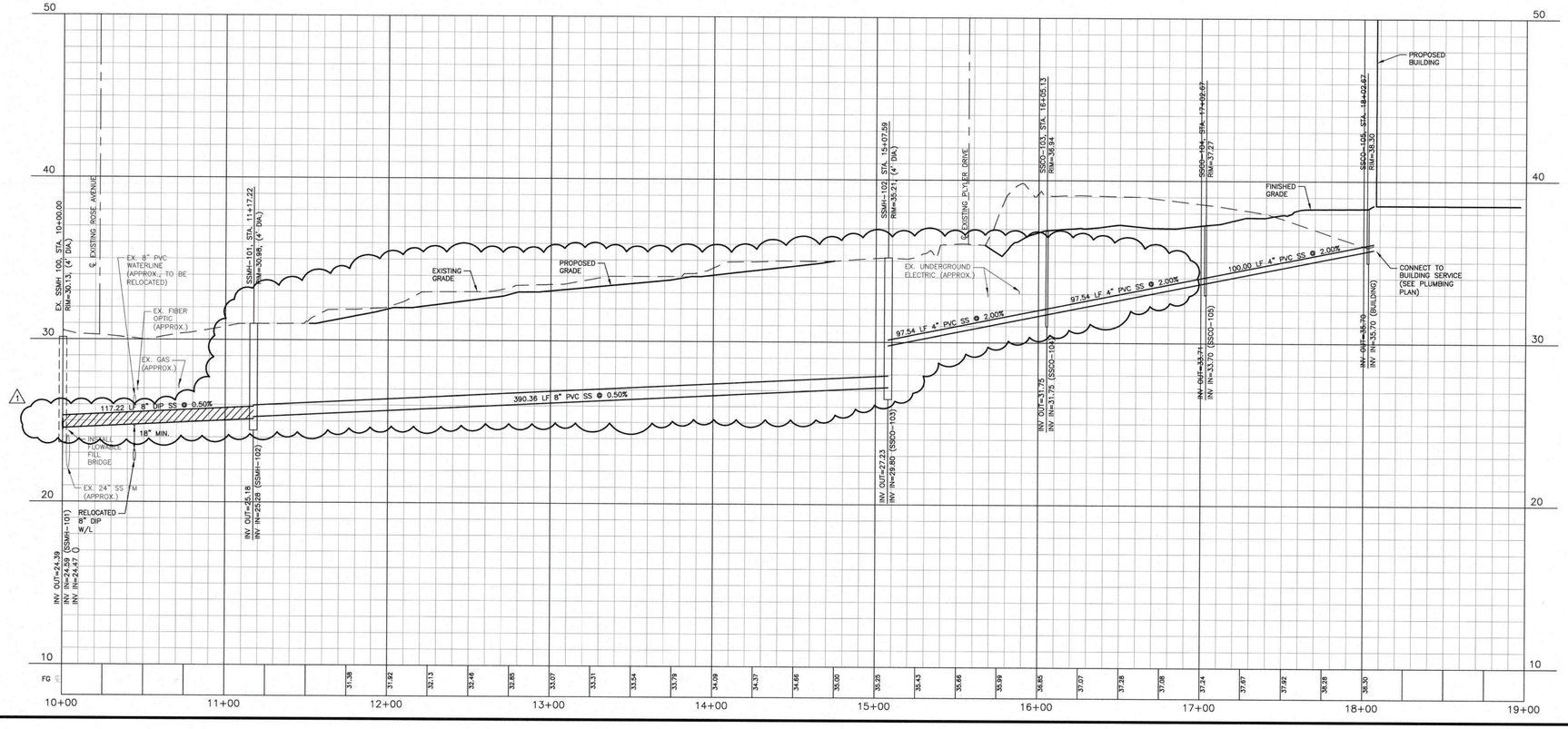
UTILITY PLAN

C4.01

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SANITARY SEWER OUTFALL



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Durham, NC 27713

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Daryl T. Riggins 9-27-19

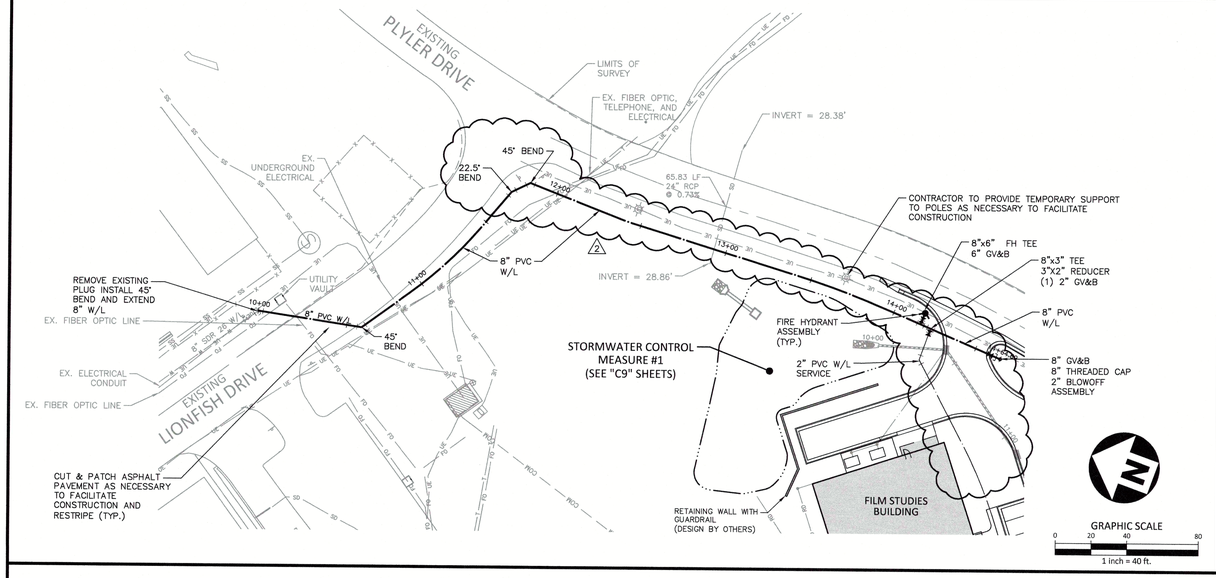
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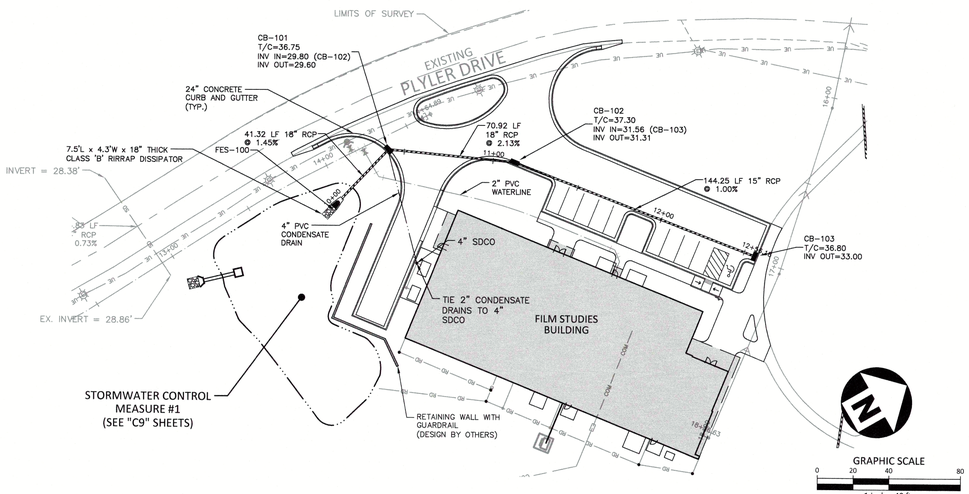
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PROJECT NO.	BMG-19000
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CHECKED BY	DTR
DRAWN BY	KNC
SCALE	1"=40'/1"=4'
DATE	09.13.2019

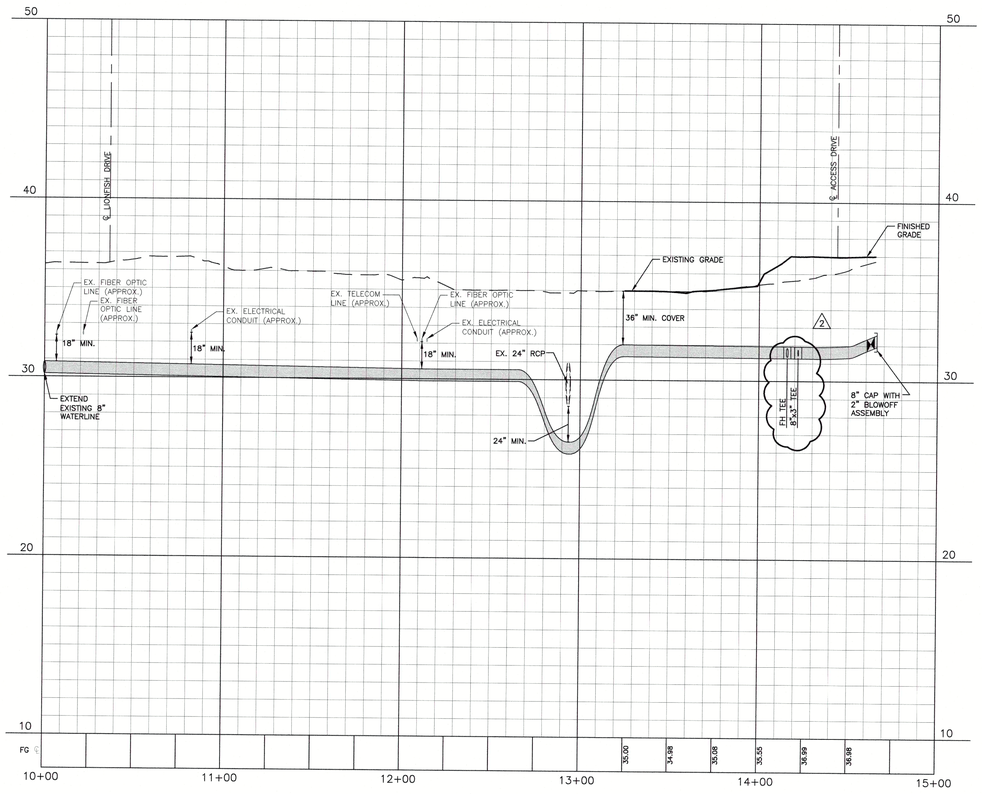
PLAN AND PROFILE
SS O/F, STA. 10+00 THRU STA. 18+11.26

C5.01

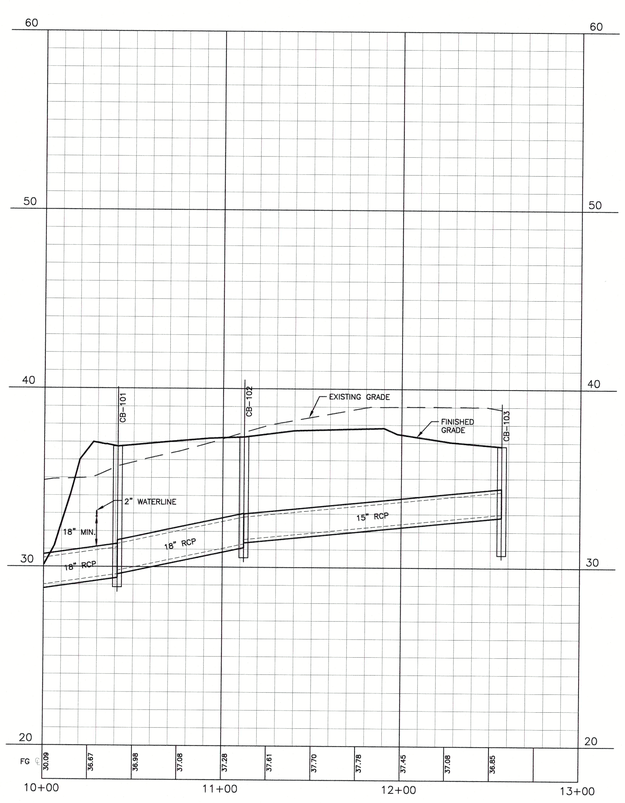




WATERLINE "A"



STORM DRAINAGE OUTFALL



PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

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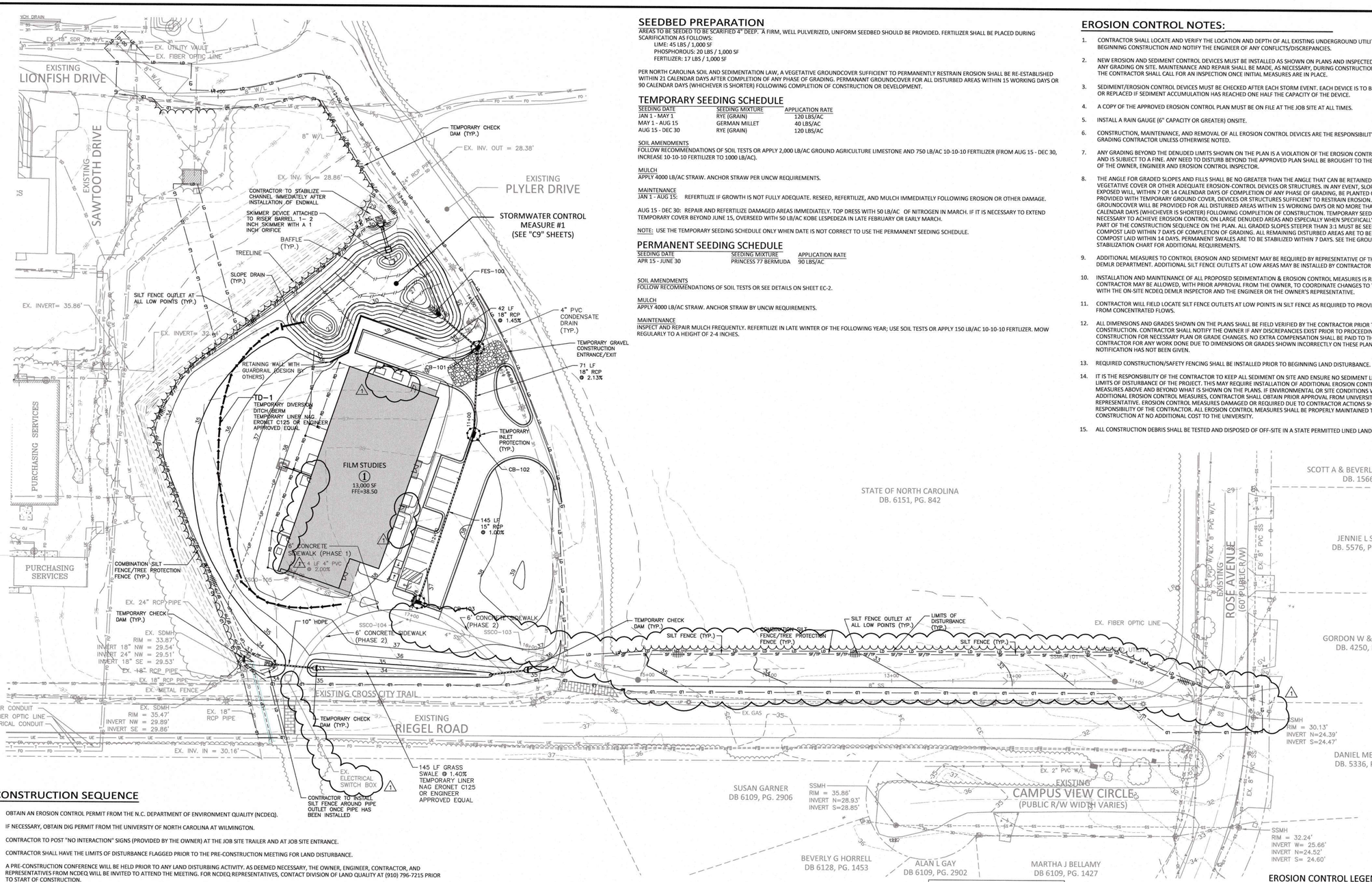
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CHECKED BY	DTR
DRAWN BY	KNC
SCALE	1"=40'/1"=4'
DATE	09.13.2019

PLAN AND PROFILE
WATERLINE "A", STA. 10+00 THRU 14+66.08
SD O/F, STA. 10+00 THRU STA. 12+54.66

C5.02



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.

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 ENGINEER OF ANY CONFLICTS/DISCREPANCIES.
2. NEW EROSION AND SEDIMENT CONTROL DEVICES MUST BE INSTALLED AS SHOWN ON PLANS AND INSPECTED PRIOR TO ANY GRADING 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. CONSTRUCTION, MAINTENANCE, AND REMOVAL OF ALL EROSION CONTROL DEVICES ARE THE RESPONSIBILITY OF THE GRADING CONTRACTOR UNLESS OTHERWISE NOTED.
7. 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.
8. 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, DEVICES 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.
9. 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.
10. 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.
11. CONTRACTOR WILL FIELD LOCATE SILT FENCE OUTLETS AT LOW POINTS IN SILT FENCE AS REQUIRED TO PROVIDE RELIEF FROM CONCENTRATED FLOWS.
12. 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.
13. REQUIRED CONSTRUCTION/SAFETY FENCING SHALL BE INSTALLED PRIOR TO BEGINNING LAND DISTURBANCE.
14. 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 UNIVERSITY 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 THE UNIVERSITY.
15. ALL CONSTRUCTION DEBRIS SHALL BE TESTED AND DISPOSED OF OFF-SITE IN A STATE PERMITTED LINED LANDFILL.

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. CONTRACTOR TO POST "NO INTERACTION" SIGNS (PROVIDED BY THE OWNER) AT THE JOB SITE TRAILER AND AT JOB SITE ENTRANCE.
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. A 6' TEMPORARY SCREENED CONSTRUCTION FENCE SHALL BE INSTALLED TO ENCOMPASS THE SITE. 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.
8. 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.
9. BEGIN FILLING SITE. AS FILL IS BROUGHT IN, ADJUST TEMPORARY DIVERSIONS SUCH THAT POSITIVE DRAINAGE TO THE SEDIMENT BASINS OCCUR.
10. INSTALL STORM DRAINAGE WITH INLET PROTECTION.
11. MASS GRADE SITE AND CONSTRUCT STORMWATER MANAGEMENT FACILITY IMPROVEMENTS PER CONSTRUCTION DRAWINGS, AND INSTALL SKIMMER. DURING CONSTRUCTION FILL, CONTRACTOR SHALL FOLLOW ANY ADDITIONAL GUIDELINES/CRITERIA AS INDICATED BY THE GEOTECHNICAL ENGINEER. AREAS IN THE VICINITY OF SEDIMENT BASINS SHALL BE FILLED LAST. ADJUST SILT FENCE NEAR STORM OUTLET TO ALLOW FREE FLOW FROM OUTLET.
12. FINE GRADE PARKING LOTS AND OTHER SITE AREAS AS SHOWN ON THE CONSTRUCTION DRAWINGS. STABILIZE SITE AS AREAS ARE BROUGHT UP TO FINISH GRADE WITH VEGETATION, STONE, CONCRETE, ETC. ONCE AREAS DRAINING TO SEDIMENT BASINS AREA STABILIZED, CONTACT THE EROSION CONTROL INSPECTOR TO REMOVE BASINS TO BEGIN FILLING PARKING LOT IN THAT AREA.
13. FILL, STONE AND PAVE PARKING LOT.
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 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 NOTES),CALL FOR FINAL SITE INSPECTION BY ENGINEER.

GROUND STABILIZATION		
SITE AREA DESCRIPTION	STABILIZATION TIME FRAME	STABILIZATION TIME FRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50 FEET IN LENGTH
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE (EXCEPT FOR PERIMETERS AND HQW ZONES)

EROSION CONTROL NARRATIVE

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

PPROJECT NUMBER: BMG-19000
DESIGNED BY: DARYL RIGGINS, PE

PROJECT DESCRIPTION
CONSTRUCTION OF A ONE-STORY METAL BUILDING AND NECESSARY SITE AND UTILITY IMPROVEMENTS AT THE INTERSECTION OF PLYER DRIVE AND RIEGEL ROAD IN WILMINGTON, NC.

SEDIMENT TRAP DESIGN TABLE	
SEDIMENT TRAP ID	SB–1
Qp (CFS)	23.9 cfs
Bottom Length	40 ft
Bottom Width	19 ft
Sediment Depth	2.5 ft
Freeboard (from Sediment Depth)	1.5 ft
Depth to Crest of Spillway	2.5 ft
Side Slopes1	3.0H:1V
Spillway Length	16 ft
Height of Berm	4 ft
Top of Trap Length	64 ft
Top of Trap Width	43 ft
Storage Volume Required	2250 cf
Storage Volume Prov'd.	3190 cf
Sediment Surface Area Req'd	1800 sf
Sediment Surface Area Prov'd	1870 sf
Drainage Area (AC.)	1.25 ac
Disturbed Area (AC.)	1.19 ac

Trap ID	Drawdown	Skimmer Type(s)
SB–1	3 DAYS	1 – 2 inch Skimmers with a(n) 1 inch orifice

Notes:
1. Side slopes pertain only for the vertical height from the base to the top of berm, 2H:1V above that.
2. See details regarding skimmer design specifications
3. See details on silt fence baffle spacing.

DISTURBED AREA = 2.61 AC.

EROSION CONTROL LEGEND

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

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

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

811 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.

McADAMS
The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713

phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293

www.mcadamsco.com

CLIENT

UNC WILMINGTON
601 SOUTH COLLEGE ROAD
WILMINGTON, NORTH CAROLINA 28403
PHONE: 910.962.3761

UNCW - FILM STUDIES BUILDING

CONSTRUCTION DRAWINGS
901 SOUTH COLLEGE ROAD
WILMINGTON, NORTH CAROLINA, 28403-5620

NORTH CAROLINA PROFESSIONAL SEAL 027404 ENGINEER DARYL T. RIGGINS
Daryl T. Riggins 9-27-19

REVISIONS

NO.	DATE	
1	09. 27. 2019	ADDENDUM #1

PLAN INFORMATION

PROJECT NO.	BMG-19000
FILENAME	BMG19000-EC1
CHECKED BY	DTR
DRAWN BY	KNC
SCALE	1"=40'
DATE	09.19.2019

SHEET

EROSION CONTROL PLAN

C6.01

X:\Projects\BMG\BMG-19000\Land\Construction Drawing\Current Drawing\BMG19000-EC1.dwg, 9/27/2019 4:22:33 PM, Alexander, Jamal

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 the 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/

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.

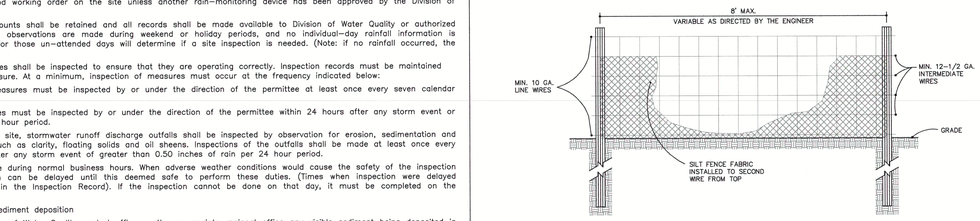
REPLACE STONE AS NEEDED TO ENSURE DEWATERING.

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

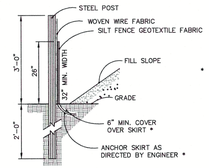
SHOULD THE FABRIC OF A SEDIMENT FENCE COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY.

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.



FRONT VIEW



SIDE VIEW

NOTES

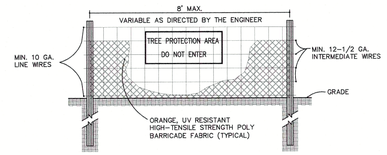
1. USE SILT FENCE ONLY WHEN DRAINAGE AREA DOES NOT EXCEED 1/4 ACRE AND NEVER IN AREAS OF CONCENTRATED FLOW
2. END OF SILT FENCE NEEDS TO BE TURNED UPHILL.

* FOR REPAIR OF SILT FENCE FAILURES, USE No. 57 WASHED STONE. FOR ANCHOR WHEN SILT FENCE IS PROTECTING CATCH BASIN.

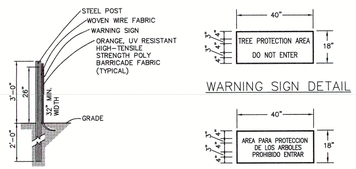
MAINTENANCE

1. INSPECT SEDIMENT FENCES AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY.
2. SHOULD THE FABRIC OF A SEDIMENT FENCE COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY.
3. 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 CLEAN OUT.
4. 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.

SILT FENCE
N.T.S.



FRONT VIEW



SIDE VIEW

WARNING SIGN DETAIL

WARNING SIGN DETAIL

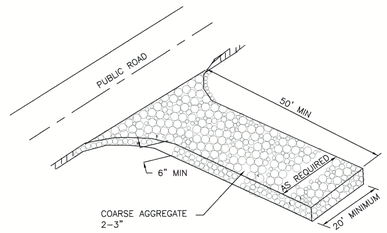
NOTES

1. INSTALL FENCING AS SHOWN ON THESE PLANS.
2. WARNING SIGNS TO BE MADE OF DURABLE, WEATHERPROOF MATERIAL. LETTERS TO BE 3" HIGH MINIMUM, CLEARLY LEGIBLE AND SPACED AS DETAILED.
3. SIGNS SHALL BE PLACED AT 50' MAXIMUM INTERVALS. PLACE A SIGN AT EACH END OF LINEAR TREE PROTECTION AND 50' ON CENTER THEREAFTER.
4. FOR TREE PROTECTION AREAS LESS THAN 200' IN PERIMETER, PROVIDE NO LESS THAN ONE SIGN PER PROTECTION AREA. ATTACH SIGNS SECURELY TO FENCE POSTS AND FABRIC. ADDITIONAL SIGNS MAY BE REQUIRED BY GOVERNMENT ENTITIES BASED ON ACTUAL FIELD CONDITIONS.
5. IN SPITE OF PRECAUTIONS, SOME DAMAGE TO PROTECTED TREES MAY OCCUR. IN SUCH CASES REPAIR ANY DAMAGE TO THE CROWN, TRUNK OR ROOT SYSTEM IMMEDIATELY. REFER TO THE EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL CHAPTER 6 SECTIONS 6.05B AND 6.05C FOR DIRECTIONS ON WOUND REPAIR AND PRUNING OF DAMAGED TREES.
6. MAINTAIN TREE PROTECTION FENCE THROUGHOUT DURATION OF PROJECT.

MAINTENANCE

1. INSPECT TREE PROTECTION FENCES AT LEAST ONCE A WEEK. MAKE ANY REQUIRED REPAIRS IMMEDIATELY.
2. SHOULD THE FABRIC OF A FENCE COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY.

TREE PROTECTION FENCE
N.T.S.



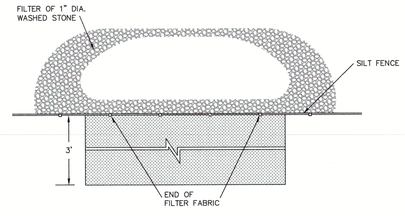
NOTES

1. GRAVEL PAD TO BE 20'X 50' AND 6" THICK MINIMUM.
2. TURNING RADIUS SUFFICIENT TO ACCOMMODATE LARGE TRUCKS IS TO BE PROVIDED.
3. ENTRANCE(S) SHOULD BE LOCATED TO PROVIDE FOR MAXIMUM UTILITY BY ALL CONSTRUCTION VEHICLES.
4. MUST BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR DIRECT FLOW OF MUD ONTO STREETS. PERIODIC TOP DRESSING WITH STONE WILL BE NECESSARY. KEEP SOME HANDY.
5. ANY MATERIAL WHICH STILL MAKES IT ONTO THE ROAD MUST BE CLEANED UP IMMEDIATELY.
6. APPLICABLE AT ALL POINTS OF INGRESS & EGRESS UNTIL SITE IS STABILIZED, FREQUENT CHECKS OF THE DEVICE AND TIMELY MAINTENANCE MUST BE PROVIDED.

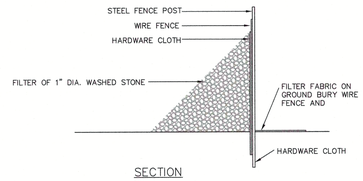
MAINTENANCE

1. 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.
2. AFTER EACH RAINFALL, INSPECT ANY STRUCTURE USED TO TRAP SEDIMENT AND CLEAN IT OUT AS NECESSARY.
3. IMMEDIATELY REMOVE ALL OBJECTIONABLE MATERIALS SPILLED, WASHED, OR TRACKED ONTO PUBLIC ROADWAYS.

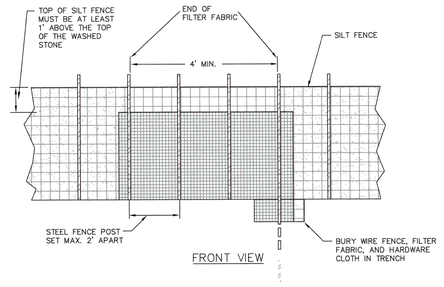
TEMPORARY CONSTRUCTION ENTRANCE/ EXIT
N.T.S.



PLAN VIEW



SECTION



FRONT VIEW

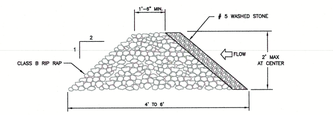
MAINTENANCE

1. REMOVE SEDIMENT WHEN HALF OF STONE OUTLET IS COVERED.
2. REPLACE STONE AS NEEDED TO ENSURE DEWATERING.
3. INSPECT SEDIMENT FENCES AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY
4. SHOULD THE FABRIC OF A SEDIMENT FENCE COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY.
5. 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.
6. 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.

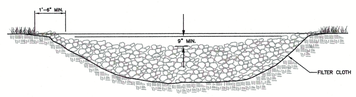
SILT FENCE GRAVEL OUTLET
N.T.S.



A AND B ARE AT EQUAL ELEVATIONS



CROSS SECTION



FRONT VIEW

NOTES

1. RIPRAP SIZE TO BE DESIGNED BY ENGINEER.
2. CHECK DAMS MAY BE USED IN SLOPING DITCHES OR CHANNELS TO SLOW VELOCITY OR TO CREATE SEDIMENT TRAPS.
3. ENSURE THAT MAXIMUM SPACING BETWEEN DAMS PLACES THE TOE OF THE UPSTREAM DAM AT THE SAME ELEVATION AS THE DOWNSTREAM DAM (SEE DIAGRAM BELOW).

MAINTENANCE

1. INSPECT SEDIMENT FENCES AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY
2. SHOULD THE FABRIC OF A SEDIMENT FENCE COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY.
3. 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.
4. 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 ROCK CHECK DAM
N.T.S.

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McADAMS
The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713

phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293

www.mcadamsco.com

CLIENT

UNC WILIMINGTON
601 SOUTH COLLEGE ROAD
WILMINGTON, NORTH CAROLINA 28403
PHONE: 910.962.3761

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WILMINGTON, NORTH CAROLINA, 28403-5620

NORTH CAROLINA PROFESSIONAL SEAL 027404 ENGINEER DARYL T. RIGGINS

REVISIONS

NO.	DATE

PLAN INFORMATION

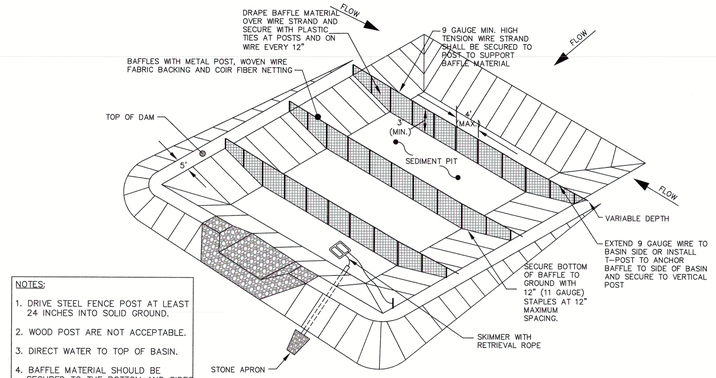
PROJECT NO.	BMG-19000
FILENAME	BMG19000-EC2
CHECKED BY	DTR
DRAWN BY	KNC
SCALE	NTS
DATE	09.19.2019

SHEET

EROSION CONTROL DETAILS

C6.02

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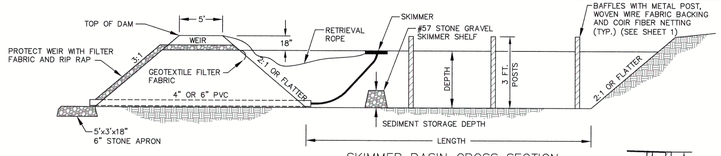


NOTES:

1. DRIVE STEEL FENCE POST AT LEAST 24 INCHES INTO SOLID GROUND.
2. WOOD POST ARE NOT ACCEPTABLE.
3. DIRECT WATER TO TOP OF BASIN.
4. BAFFLE MATERIAL SHOULD BE SECURED TO THE BOTTOM AND SIDES OF BASIN USING 12" LANDSCAPE STAPLES.

PERSPECTIVE VIEW

STANDARD TEMPORARY SKIMMER BASIN

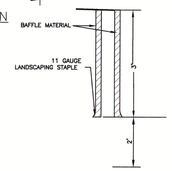


SKIMMER BASIN CROSS SECTION

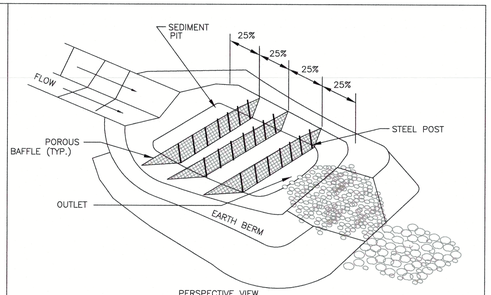
SEDIMENT BASIN MAINTENANCE

INSPECT TEMPORARY SEDIMENT BASIN AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT (1/2 INCH OR GREATER) RAINFALL EVENT AND REPAIR IMMEDIATELY. REMOVE SEDIMENT AND RESTORE THE BASIN TO ITS ORIGINAL DIMENSIONS WHEN SEDIMENT ACCUMULATES TO ONE-HALF THE DESIGN DEPTH. PLACE REMOVED SEDIMENT IN AN AREA WITH SEDIMENT CONTROLS.

CHECK THE EMBANKMENT, SPILLWAY, AND OUTLET FOR EROSION DAMAGE, AND INSPECT THE EMBANKMENT FOR PIPING AND SETTLEMENT. MAKE ALL NECESSARY REPAIRS IMMEDIATELY. REMOVE ALL TRASH AND OTHER DEBRIS FROM THE RISER AND POOL AREAS.



STANDARD TEMPORARY SKIMMER BASIN



PERSPECTIVE VIEW
NTS

CONSTRUCTION SPECIFICATION

1. GRADE THE BASIN SO THAT THE BOTTOM IS LEVEL FRONT TO BACK AND SIDE TO SIDE.
2. INSTALL POSTS OR SAW HORSES ACROSS THE WIDTH OF THE SEDIMENT TRAP.
3. STEEL POSTS SHOULD BE DRIVEN TO A DEPTH OF 24 INCHES, SPACED AT A MAXIMUM OF 4 FEET APART, AND INSTALLED UP THE SIDES OF THE BASIN AS WELL. THE TOP OF THE FABRIC SHOULD BE 6 INCHES HIGHER THAN THE INVERT OF THE SPILLWAY. TOPS OF BAFFLES SHOULD BE 2 INCHES LOWER THAN THE TOP OF THE BERM.
4. INSTALL AT LEAST THREE ROWS OF BAFFLES BETWEEN THE INLET AND OUTLET DISCHARGE POINT.
5. WHEN USING POSTS, ADD A SUPPORT WIRE OR ROPE ACROSS THE TOP OF THE MEASURE TO PREVENT SAGGING.
6. WRAP POROUS MATERIAL, LIKE JUTE BACKED BY COIR MATERIAL, OVER A SAWHORSE OR THE TOP WIRE. HAMMER REBAR INTO THE SAWHORSE LEGS FOR ANCHORING. THE FABRIC SHOULD HAVE FIVE TO TEN PERCENT OPENINGS IN THE WEAVE. ATTACH FABRIC TO A ROPE AND A SUPPORT STRUCTURE WITH SIP TIES, WIRE, OR STAPLES.
7. THE BOTTOM AND SIDES OF THE FABRIC SHOULD BE ANCHORED IN A TRENCH OR PINNED WITH 8 INCH EROSION CONTROL MATTING STAPLES.
8. DO NOT SPLICE THE FABRIC, BUT USE A CONTINUOUS PIECE ACROSS THE BASIN.

POROUS BAFFLE INSTALLATION DETAIL

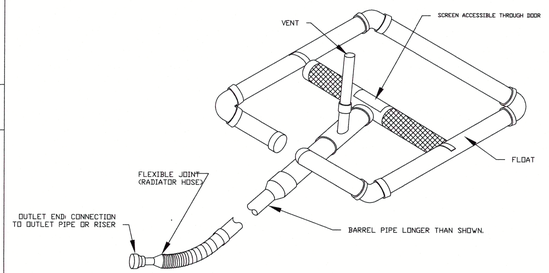
BAFFLES MAINTENANCE

INSPECT BAFFLES AT LEAST WEEKLY AND AFTER EACH RAINFALL EVENT. MAKE ANY REQUIRED REPAIRS IMMEDIATELY.

BE SURE TO MAINTAIN ACCESS TO THE BAFFLES. SHOULD THE FABRIC OF A BAFFLE COLLAPSE, TEAR, DECOMPOSE, OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY.

REMOVE SEDIMENT DEPOSITS WHEN IT REACHES HALF FULL TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE BAFFLES. TAKE CARE TO AVOID DAMAGING THE BAFFLES DURING CLEANOUT. SEDIMENT DEPTH SHOULD NEVER EXCEED HALF THE DESIGNED STORAGE DEPTH.

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



SKIMMER DETAIL

McAdams
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2905 Meridian Parkway
Durham, NC 27713

phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293

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NORTH CAROLINA PROFESSIONAL SEAL 027404 ENGINEER DARYL T. RIGGINS
Daryl T. Riggins 9.19.19

REVISIONS

NO.	DATE

PLAN INFORMATION

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DRAWN BY	KNC
SCALE	NTS
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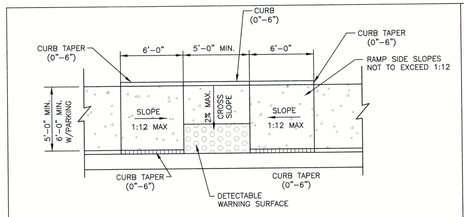
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EROSION CONTROL DETAILS

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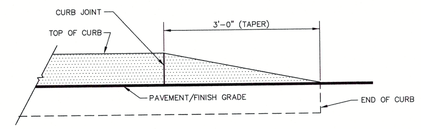
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PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

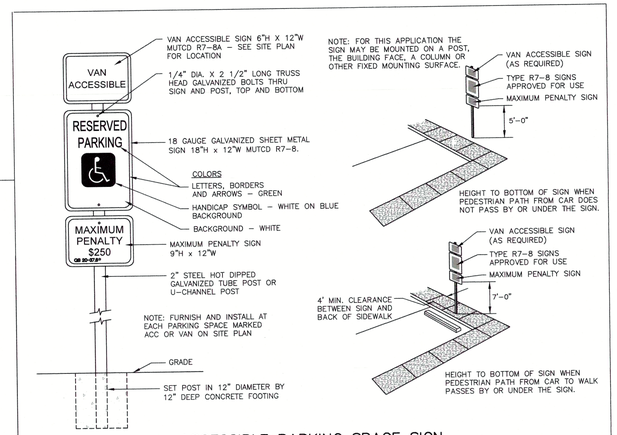


NOTE: RAMP LANDING AREA SHALL RECEIVE A 24" DETECTABLE WARNING SURFACE OF COLOR TO CONTRAST WITH ADJOINING SURFACES PER ICC A117.1-2009 SECT. 705 REQUIREMENTS.

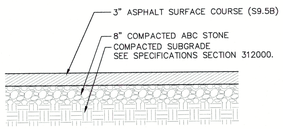
ACCESSIBLE SIDEWALK RAMP
N.T.S.



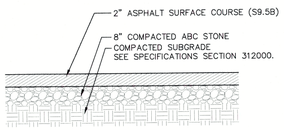
NOSE-DOWN CURB DETAIL
N.T.S.



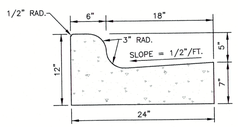
ACCESSIBLE PARKING SPACE SIGN
N.T.S.



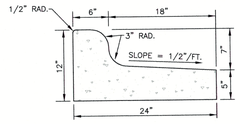
HEAVY DUTY ASPHALT PAVEMENT DETAIL
N.T.S.



ASPHALT PAVEMENT PARKING BAY 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.

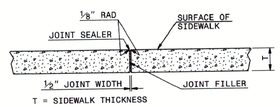
24" CURB AND GUTTER
N.T.S.

NOTES:

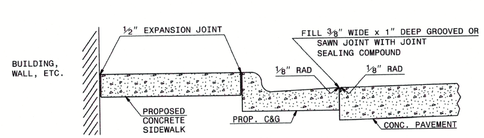
CONSTRUCT STANDARD SIDEWALK 5' WIDE AND 4" THICK UNLESS OTHERWISE DENOTED ON PLANS.

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

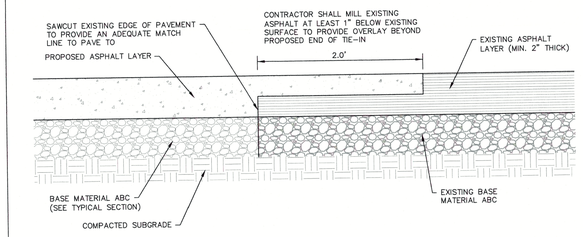
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-138

ROADWAY STANDARD DRAWING FOR **CONCRETE SIDEWALK**

SHEET 1 OF 1

848.01



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

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The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713

phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293

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NORTH CAROLINA PROFESSIONAL SEAL 027404 ENGINEER DARYL T. RIGGINS
Daryl T Riggins 9-19-19

REVISIONS

NO.	DATE

PLAN INFORMATION

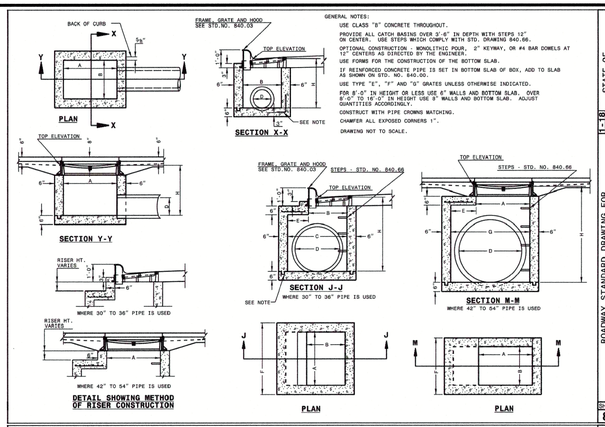
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FILENAME	BMG19000-D1
CHECKED BY	DTR
DRAWN BY	KNC
SCALE	N.T.S.
DATE	09.19.2019

SHEET

SITE DETAILS

C8.00

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GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE ALL CATCH BASINS OVER 5'-0" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR - 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.

USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.

FOR 8'-0" IN HEIGHT OR LESS USE 6" WALLS AND BOTTOM SLAB. OVER 8'-0" TO 10'-0" IN HEIGHT USE 8" WALLS AND BOTTOM SLAB. ADJUST QUANTITIES ACCORDINGLY.

CONSTRUCT WITH PIPE CROWNS MATCHING.

CHAMFER ALL EXPOSED CORNERS 1".

DRAWING NOT TO SCALE.

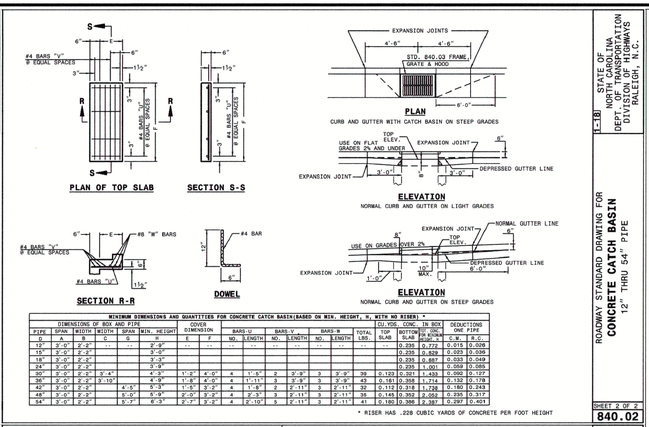
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-18

ROADWAY STANDARD DRAWING FOR **CONCRETE CATCH BASIN** 12" THRU 54" PIPE

SHEET 1 OF 2

840.02



MINIMUM DIMENSIONS AND QUANTITIES FOR CONCRETE CATCH BASIN(BASED ON MIN. HEIGHT, W, WITH NO RISER) *

DIMENSIONS OF BOX AND PIPE						COVER DIMENSION	BARS-U			BARS-V			TOTAL LBS.	CU.YDS. CONC. IN BOX		DEDUCTING ONE PIPE	
PIPE	SPAN	WIDTH	WIDTH	SPAN	MIN. HEIGHT		NO.	LENGTH	NO.	NO.	LENGTH	NO.		TOP SLAB	BOTTOM SLAB	C.Y.	F.C.
D	A	B	C	G	H												
12"	3'-0"	2'-2"	--	--	2'-9"	--	--	--	--	--	--	--	--	--	--	0.235	0.772	0.015	0.028
15"	3'-0"	2'-5"	--	--	3'-0"	--	--	--	--	--	--	--	--	--	--	0.235	0.829	0.023	0.035
18"	3'-0"	2'-8"	--	--	3'-3"	--	--	--	--	--	--	--	--	--	--	0.235	0.887	0.033	0.049
24"	3'-0"	2'-8"	--	--	3'-9"	--	--	--	--	--	--	--	--	--	--	0.235	1.001	0.059	0.085
30"	3'-0"	2'-8"	3'-4"		4'-3"	1'-2"	4'-0"	4	1'-6"	2	3'-9"	3	3'-9"	39	0.123	0.301	1.453	0.092	0.127
36"	3'-0"	2'-8"	3'-10"		4'-9"	1'-8"	4'-6"	4	1'-11"	3	3'-9"	3	3'-9"	43	0.181	0.398	1.714	0.132	0.178
42"	3'-0"	2'-8"			5'-3"	1'-5"	5'-2"	4	1'-8"	2	2'-11"	3	2'-11"	32	0.112	0.318	1.728	0.180	0.243
48"	3'-0"	2'-8"			5'-9"	2'-0"	5'-8"	4	2'-0"	3	2'-11"	3	2'-11"	39	0.145	0.352	2.082	0.235	0.317
54"	3'-0"	2'-8"			6'-3"	2'-7"	6'-2"	4	2'-10"	5	2'-11"	3	2'-11"	41	0.180	0.388	2.387	0.297	0.401

* RISER HAS .228 CUBIC YARDS OF CONCRETE PER FOOT HEIGHT

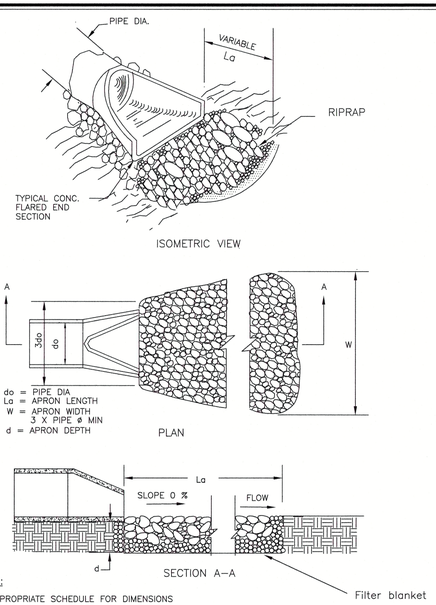
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-18

ROADWAY STANDARD DRAWING FOR **CONCRETE CATCH BASIN** 12" THRU 54" PIPE

SHEET 2 OF 2

840.02



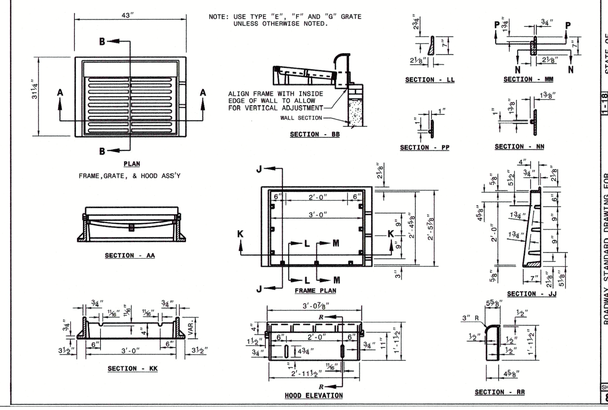
do = PIPE DIA
La = APRON LENGTH
W = APRON WIDTH
3 X PIPE ø MIN
d = APRON DEPTH

NOTES:

SEE APPROPRIATE SCHEDULE FOR DIMENSIONS

1. La is the length of the riprap apron.
2. d = 1.5 times the maximum stone diameter but not less than 6"
3. A filter blanket or filter fabric should be installed between the riprap and soil foundation.

PIPE OUTLET TO FLAT AREA – NO WELL DEFINED CHANNEL



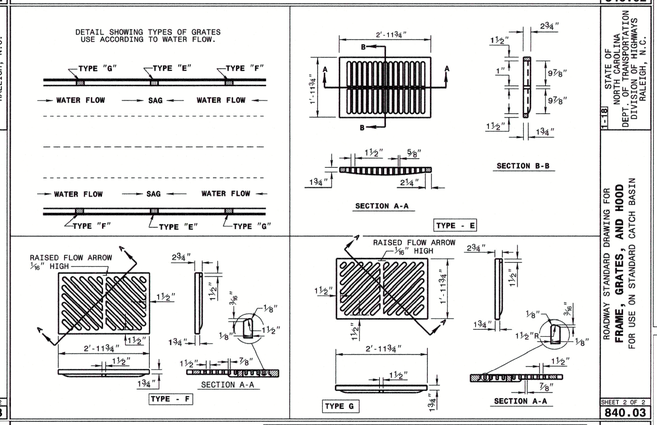
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1-18

ROADWAY STANDARD DRAWING FOR **FRAME, GRATES, AND HOOD** FOR USE ON STANDARD CATCH BASIN

SHEET 1 OF 2

840.03



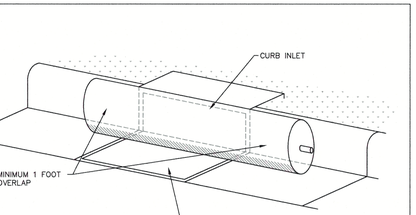
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1-18

ROADWAY STANDARD DRAWING FOR **FRAME, GRATES, AND HOOD** FOR USE ON STANDARD CATCH BASIN

SHEET 2 OF 2

840.03



NOTES:

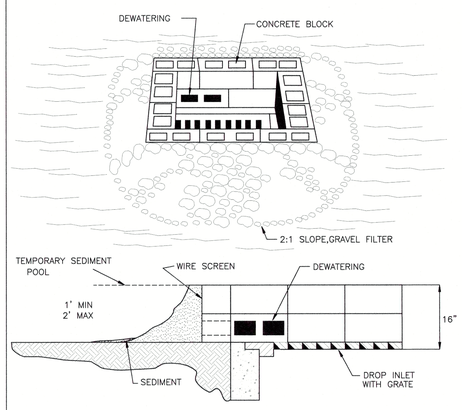
1. THE SEDIMENT FILTER SHALL BE SYNTHETIC FILTER MANUFACTURED FROM RECYCLED SYNTHETIC FIBERS.
2. THE SEDIMENT FILTER WILL BE MANUFACTURED TO BY 9" IN DIAMETER AND ARE AVAILABLE IN 4', 6', 8', 10', 12', 14' AND 16' LENGTHS AND A MINIMUM OF 24" LONGER THAN THE CURB INLET OPENING. THIS WILL ALLOW FOR SUFFICIENT 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.



CONSTRUCTION SPECIFICATIONS

1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE IN THE BOTTOM ROW TO ALLOW POOL DRAINAGE. THE FOUNDATION SHOULD BE EXCAVATED AT LEAST 2" BELOW THE CREST OF THE STORM DRAIN. PLACE THE BOTTOM ROW OF BLOCKS AGAINST THE EDGE OF THE STORM DRAIN FOR LATERAL SUPPORT AND TO AVOID WASHOUTS WHEN OVERFLOW OCCURS. IF NEEDED, GIVE LATERAL SUPPORT TO SUBSEQUENT ROWS BY PLACING 2x4 WOOD STUDS THROUGH BLOCK OPENINGS.
2. CAREFULLY FIT HARDWARE CLOTH OR COMPARABLE WIRE MESH WITH 1/2-INCH OPENINGS OVER ALL BLOCK OPENINGS TO HOLD GRAVEL IN PLACE.
3. USE CLEAN GRAVEL, 3/4 TO 1/2-INCH IN DIAMETER, PLACED 2 INCHES BELOW THE TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER AND SMOOTH IT TO AN EVEN GRADE. D.O.T #57 WASHED STONE IS RECOMMENDED.

DROP INLET PROTECTION

SD 2-14

NOT TO SCALE

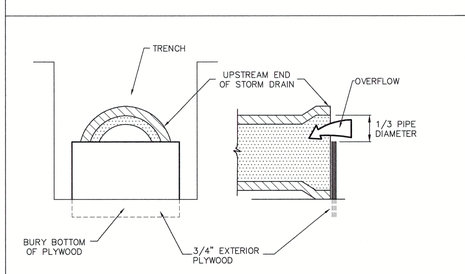


FIGURE 1

ILLUSTRATION OF PLYWOOD INLET PROTECTION FOR STORM DRAIN UNDER CONSTRUCTION

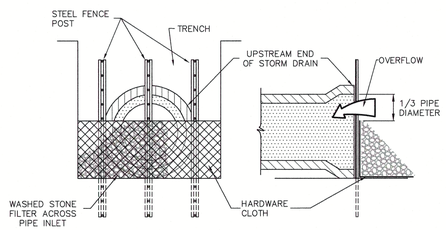
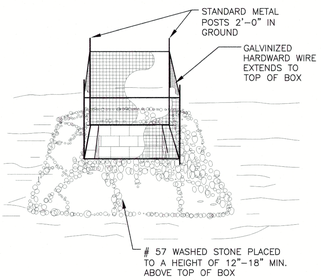
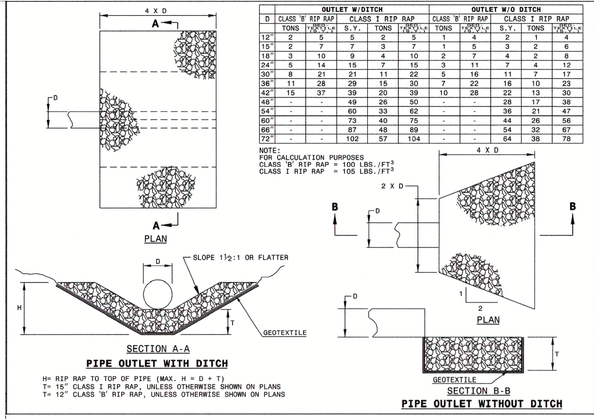


FIGURE 2

ILLUSTRATION OF STONE FILTER INLET PROTECTION FOR STORM DRAIN UNDER CONSTRUCTION



STANDARD POST & GRAVEL INLET PROTECTION



D	OUTLET W/DITCH CLASS 'B' RIP RAP TONS	CLASS 'B' RIP RAP S.Y.	CLASS I RIP RAP TONS	CLASS I RIP RAP S.Y.	OUTLET W/O DITCH CLASS 'B' RIP RAP TONS	CLASS 'B' RIP RAP S.Y.	CLASS I RIP RAP TONS	CLASS I RIP RAP S.Y.
12"	2	5	5	2	5	1	4	2
15"	2	7	7	3	7	1	5	3
18"	3	10	9	4	10	2	7	4
24"	5	14	15	7	15	3	11	7
30"	8	21	21	11	22	5	16	11
36"	11	28	29	15	30	7	22	16
42"	15	37	39	20	39	10	28	22
48"	-	-	49	26	50	-	-	28
54"	-	-	60	33	62	-	-	36
60"	-	-	73	40	75	-	-	44
66"	-	-	87	48	89	-	-	54
72"	-	-	102	57	104	-	-	64

NOTE:
FOR CALCULATION PURPOSES
CLASS 'B' RIP RAP = 100 LBS./FT^3
CLASS I RIP RAP = 105 LBS./FT^3

H= RIP RAP TO TOP OF PIPE (MAX. H = D + T)
T= 15" CLASS I RIP RAP, UNLESS OTHERWISE SHOWN ON PLANS
T= 12" CLASS 'B' RIP RAP, UNLESS OTHERWISE SHOWN ON PLANS

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

1-18

ROADWAY STANDARD DRAWING FOR **GUIDE FOR RIP RAP AT PIPE OUTLETS**

SHEET 1 OF 1

876.02

McADAMS

The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713

phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293

www.mcadamsco.com

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601 SOUTH COLLEGE ROAD
WILMINGTON, NORTH CAROLINA 28403
PHONE: 910.962.3761

UNCW - FILM STUDIES BUILDING

CONSTRUCTION DRAWINGS
901 SOUTH COLLEGE ROAD
WILMINGTON, NORTH CAROLINA, 28403-5620

NORTH CAROLINA PROFESSIONAL SEAL 027404 ENGINEER DARYL T. RIGGINS

Daryl T. Riggins 9.19.19

REVISIONS

NO. DATE

PLAN INFORMATION

PROJECT NO.	BMG-19000
FILENAME	BMG19000-D1
CHECKED BY	DTR
DRAWN BY	KNC
SCALE	N.T.S.
DATE	09.19.2019

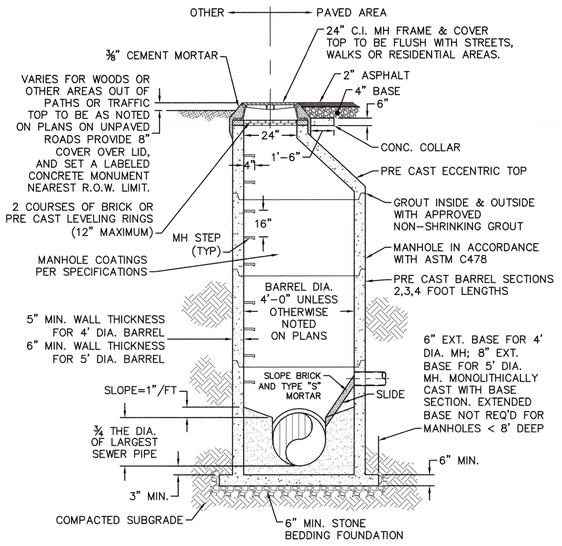
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STORM DRAINAGE DETAILS

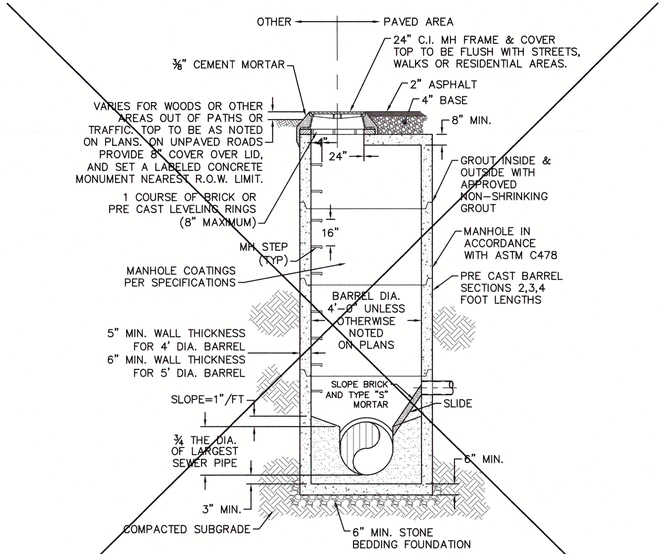
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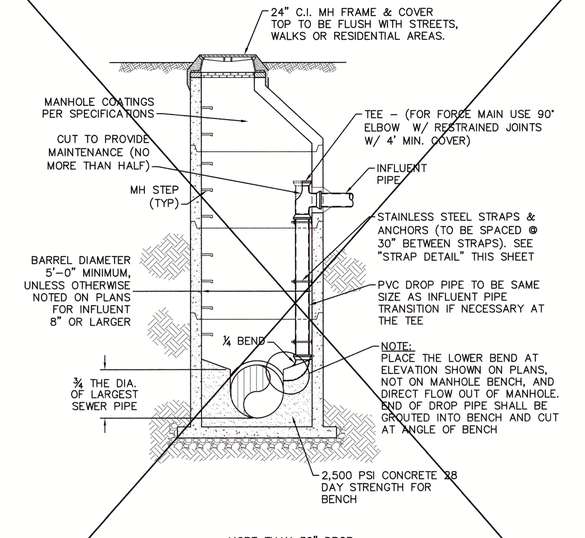
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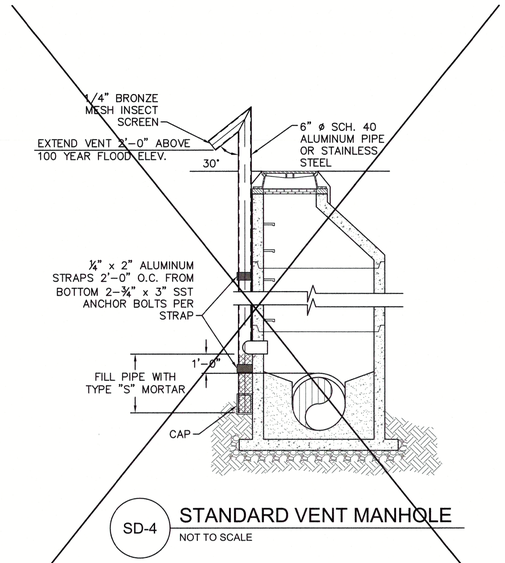
SD-1 PRECAST CONCRETE OFFSET MANHOLE TYPICAL
NOT TO SCALE



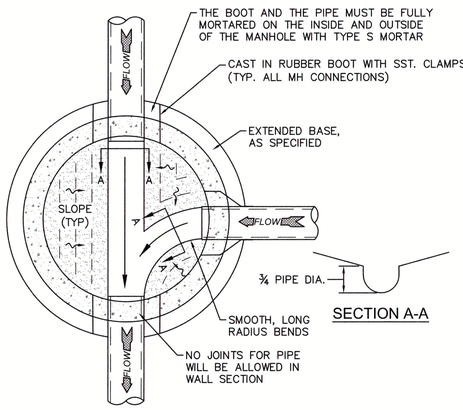
SD-2 PRECAST CONCRETE FLAT TOP MANHOLE TYPICAL
NOT TO SCALE



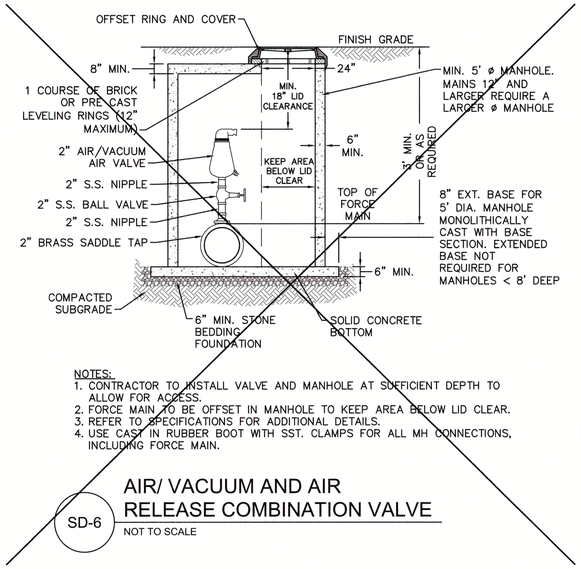
SD-3 DROP MANHOLE
NOT TO SCALE



SD-4 STANDARD VENT MANHOLE
NOT TO SCALE

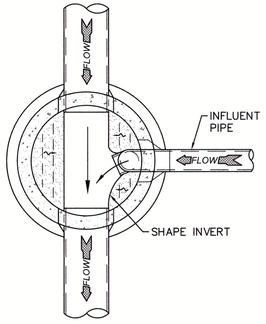


SD-5 MANHOLE FLOOR PLAN
NOT TO SCALE

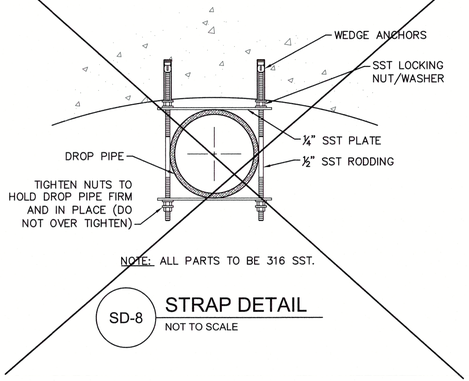


NOTES:
1. CONTRACTOR TO INSTALL VALVE AND MANHOLE AT SUFFICIENT DEPTH TO ALLOW FOR ACCESS.
2. FORCE MAIN TO BE OFFSET IN MANHOLE TO KEEP AREA BELOW LID CLEAR.
3. REFER TO SPECIFICATIONS FOR ADDITIONAL DETAILS.
4. USE CAST IN RUBBER BOOT WITH SST. CLAMPS FOR ALL MH CONNECTIONS, INCLUDING FORCE MAIN.

SD-6 AIR/ VACUUM AND AIR RELEASE COMBINATION VALVE
NOT TO SCALE



SD-7 DROP MANHOLE FLOOR PLAN
NOT TO SCALE



NOTE: ALL PARTS TO BE 316 SST.

SD-8 STRAP DETAIL
NOT TO SCALE

CAPE FEAR PUBLIC UTILITY AUTHORITY STANDARD NOTES:

1. SEWER GUARDS REQUIRED AT ALL MANHOLES. STAINLESS STEEL SEWER GUARDS REQUIRED AT MANHOLES LOCATED IN TRAFFIC AREAS.
2. WATER AND SEWER SERVICES SHALL BE PERPENDICULAR TO MAIN AND TERMINATE AT 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 AT RIGHT-OF-WAY LINE.
3. ALL SERVICES TYING INTO DUCTILE IRON MAINS SHALL BE CONSTRUCTED OF CLASS 50, DIP, WITH PROTECTO 401 CERAMIC EPOXY LINING.
4. MINIMUM 10' UTILITIES EASEMENT PROVIDED ALONG THE FRONTAGE OF ALL LOTS AND AS SHOWN FOR NEW DEVELOPMENTS.
5. NO FLEXIBLE COUPLINGS SHALL BE USED.
6. ALL STAINLESS STEEL FASTENERS SHALL BE 316.
7. CLEANOUTS SHALL BE LOCATED A MINIMUM OF 12 FEET FROM ALL PROPERTY CORNERS. WATER METER BOXES ARE TO BE A MINIMUM OF 5 FEET FROM THE PROPERTY CORNER.

SD-9 STANDARD NOTES
(REQUIRED ON ALL PLAN AND PROFILE SHEETS)

GENERAL NOTES:

1. NO EXCAVATED MATERIAL SHALL BE PLACED IN ANY STREAM, DITCH OR DRAINAGE-WAY.
2. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES BEFORE ANY CONSTRUCTION BEGINS.
3. THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES WHILE CONSTRUCTION IS IN PROGRESS.
4. THE CONTRACTOR IS RESPONSIBLE FOR STABILIZATION OF ALL DISTURBED AREAS.
5. THE CONTRACTOR IS RESPONSIBLE FOR LAY DOWN AND STOCKPILE AREAS (TO ARRANGE AND ENSURE COMPLIANCE WITH ALL LOCAL AND STATE REGULATIONS).

THE DETAILS SHOWN HEREON SUPERCEDE CFPUA WRITTEN TECHNICAL SPECIFICATIONS VERSIONS 1.00 - 1.04

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

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The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713
phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293
www.mcadamsco.com

REV:	DESCRIPTION:	DATE:
1	AIR / VACUUM AND AIR RELEASE COMBINATION VALVE REVISED	10/26/12
2	STANDARD SEWER NOTE #6 REVISED	12/10/12
3	REVISED STANDARD VENT MANHOLE TO EXTEND VENT 2'-0" ABOVE 100 YR FLOOD	11/20/14
4	Revised Multiple Details	02/15/16

NORTH CAROLINA PROFESSIONAL SEAL 027404 ENGINEER DARYL T. RIGGINS
Daryl Riggins 9-19-13

CFPUA SANITARY SEWER

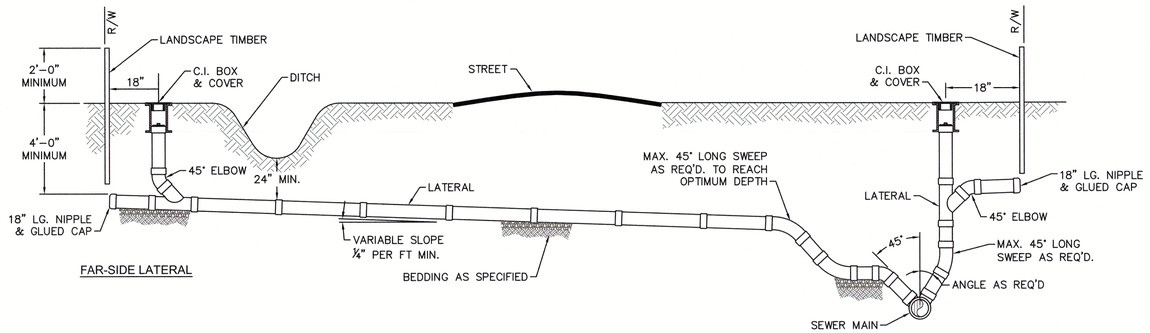
STANDARD DETAILS

DATE: 1/9/12
SCALE: N/A
DRAWN BY: CFPUA
CHECKED BY: CFPUA
PROJECT NO. :

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560
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SHEET NO: SSD-1

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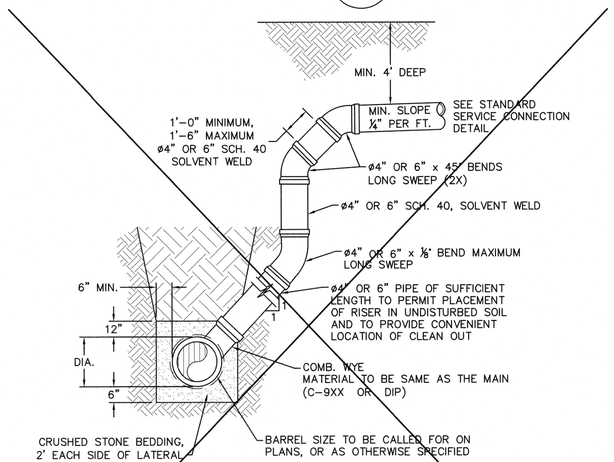
FAR-SIDE LATERAL

NEAR-SIDE LATERAL
WITH RIGHT-OF-WAY RESTRICTIONS

NOTE: FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR TIE-IN TO MAIN

SD-19 STANDARD SERVICE CONNECTION TO SANITARY SEWER

NOT TO SCALE

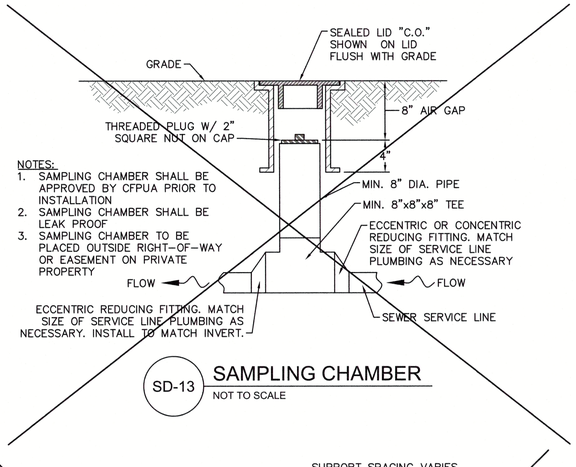


NOTES:
1. SPECIAL CARE SHALL BE TAKEN DURING BACKFILL OPERATIONS. THE RISER SHALL BE PLUMB AND TRUE AT ALL TIMES, AND REST ON FIRM, STABLE FOUNDATION.
2. FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR CONNECTION TO SYSTEM AND AT THE PROPERTY LINE, WITH REQUIRED EASEMENT.

MAIN DEPTH GREATER THAN 8 FT

SD-12 DEEP SERVICE LATERAL

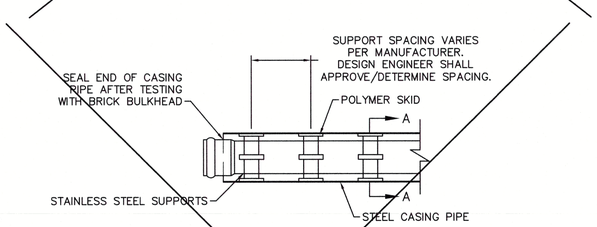
NOT TO SCALE



NOTES:
1. SAMPLING CHAMBER SHALL BE APPROVED BY CFPUA PRIOR TO INSTALLATION
2. SAMPLING CHAMBER SHALL BE LEAK PROOF
3. SAMPLING CHAMBER TO BE PLACED OUTSIDE RIGHT-OF-WAY OR EASEMENT ON PRIVATE PROPERTY

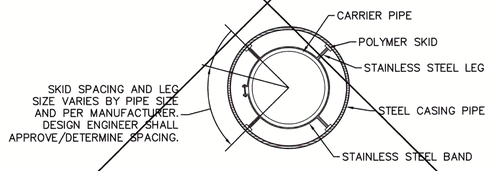
SD-13 SAMPLING CHAMBER

NOT TO SCALE



PLAN

NOTE: PIPE SUPPORT TO BE PLACED TO PROVIDE PROPER SUPPORT, ALIGNMENT, AND GRADE AS SPECIFIED. CONTINUOUS SUPPORTS MAY BE USED AS ALTERNATIVE. OIL, GREASE, OR PETROLEUM PRODUCT MAY NOT BE USED AS LUBRICANT.

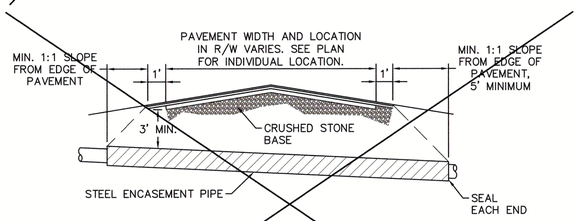


SECTION A-A

NOTE: ALL STAINLESS STEEL PARTS TO BE 316 SST.

SD-17 PIPE CASING SUPPORT DETAIL

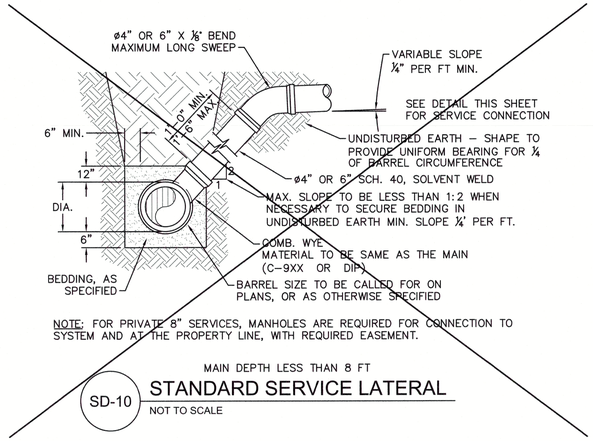
NOT TO SCALE



NOTES:
1. CASING WILL BE INSTALLED AT LINE AND GRADE SHOWN ON INDIVIDUAL PROFILE FOR EACH CROSSING. BORING/JACKING TO LINE AND GRADE IS REQUIRED.
2. TRACER WIRE SHALL BE CONTINUED THROUGH CASING.

SD-16 TYPICAL BORING/ JACKING DETAIL

NOT TO SCALE

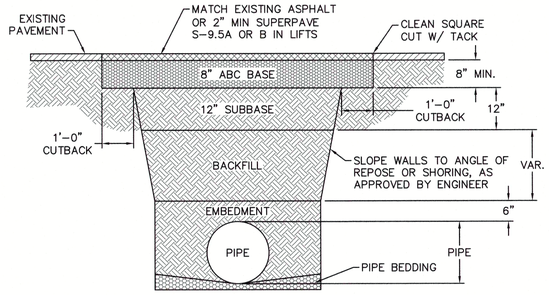


NOTE: FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR CONNECTION TO SYSTEM AND AT THE PROPERTY LINE, WITH REQUIRED EASEMENT.

MAIN DEPTH LESS THAN 8 FT

SD-10 STANDARD SERVICE LATERAL

NOT TO SCALE

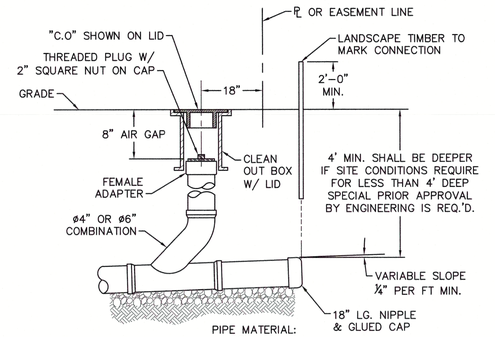


NOTES:
1. BACKFILL SHALL BE SUITABLE MATERIAL THAT IS FREE FROM HEAVY CLAY, GUMBOS, DEBRIS, ORGANICS AND LITTLE TO NO EXCESSIVE MOISTURE.
2. SELECT BACKFILL MAY BE SUBSTITUTED OR REQUIRED BY CITY TO ACHIEVE COMPACTION, (I.E. #57, ABC, CRUSHED LIMESTONE, CLEAN SAND, FLOWABLE FILL, ETC).
3. 8-INCH OF ABC BASE MATERIAL SHALL BE USED ON CITY STREETS.
4. BACKFILL AND BASE MATERIALS SHALL BE COMPACTED 12" MINIMUM LIFTS
5. SOIL SHALL BE 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.
6. ALL APPROVED CASTINGS SHALL BE SET FLUSH TO GRADE AND SUPPORTED IF APPLICABLE.
7. ABC BASE AND SUBBASE COMPACTED TO 98% AND BACKFILL AND EMBEDMENT COMPACTED TO 90% AS DETERMINED BY THE MODIFIED PROCTOR AASHTO METHOD T-99.
8. 1-FOOT CUTBACKS OF ASPHALT SHALL BE PREPARED ON UNDISTURBED SOIL. MINIMUM ASPHALT DENSITY IS 90%.

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

SD-14 PAVEMENT REPAIR WHERE PIPE INSTALLED

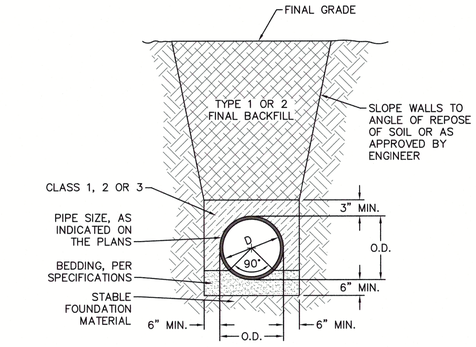
NOT TO SCALE



NOTE: FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR CONNECTION TO SYSTEM AND AT THE PROPERTY LINE, WITH REQUIRED EASEMENT.

SD-11 SERVICE CONNECTION AND CLEAN-OUT

NOT TO SCALE



SD-15 TYPICAL TRENCH DETAIL

NOT TO SCALE

GENERAL NOTES:
1. NO EXCAVATED MATERIAL SHALL BE PLACED IN ANY STREAM, DITCH OR DRAINAGE-WAY.
2. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES BEFORE ANY CONSTRUCTION BEGINS.
3. THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES WHILE CONSTRUCTION IS IN PROGRESS.
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The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713
phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293
www.mcadamsco.com

REV:	DESCRIPTION:	DATE:
1	SAMPLING CHAMBER REVISED	10/26/12
2	Revised Multiple Details	02/15/16

CFPUA SANITARY SEWER

STANDARD DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 027404 ENGINEER DARYL T. RIGGINS
5-9-19

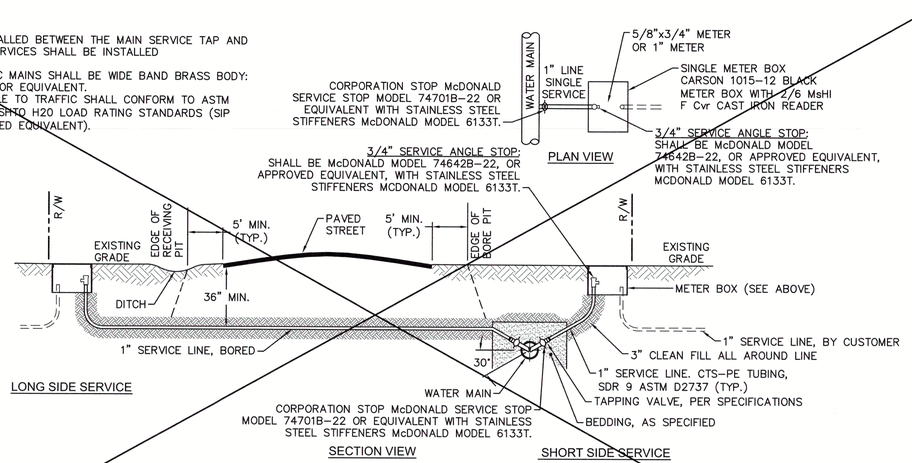
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CHECKED BY:	CFPUA
PROJECT NO. :	

SHEET NO: SSD-2

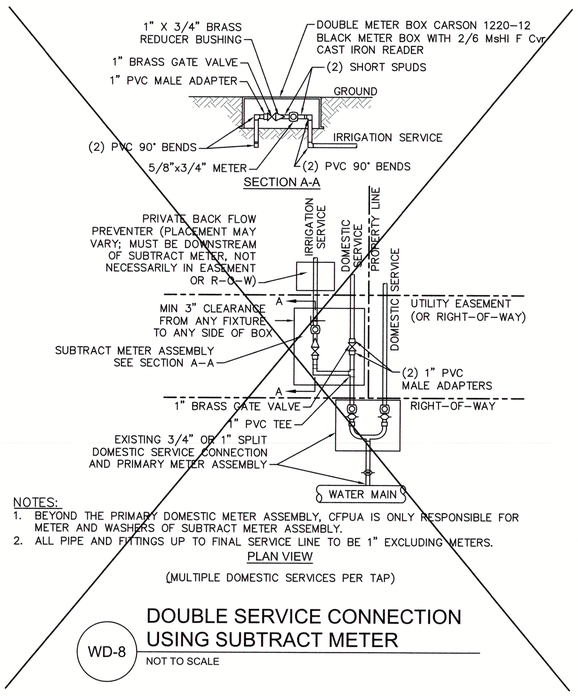
\\Cfpua-share\Department\Engineers\CFPUA Standard Details\CAD Files\CFPUA-Sewer Details.dwg, 5/18/2016 8:51:13 AM, justin.haren

NOTES:
1. NO JOINT SHALL BE INSTALLED BETWEEN THE MAIN SERVICE TAP AND THE METER STOP. ALL SERVICES SHALL BE INSTALLED PERPENDICULAR TO MAIN.
2. SERVICE SADDLES ON PVC MAINS SHALL BE WIDE BAND BRASS BODY: SADDLE McDONALD 3801 OR EQUIVALENT.
3. METER BOXES SUSCEPTIBLE TO TRAFFIC SHALL CONFORM TO ASTM A48, CLASS 30B AND AASHTO H20 LOAD RATING STANDARDS (SIP MODEL 4242, OR APPROVED EQUIVALENT).



NOTE:
TYPICAL WATER SERVICE CONNECTION FOR RESIDENTIAL SINGLE FAMILY HOME ON CFPUA WATER SYSTEM

WD-18 **SINGLE SERVICE CONNECTION**
NOT TO SCALE

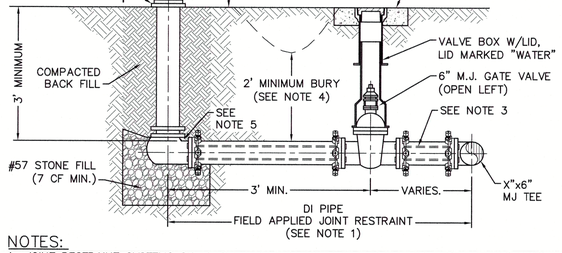


NOTES:
1. BEYOND THE PRIMARY DOMESTIC METER ASSEMBLY, CFPUA IS ONLY RESPONSIBLE FOR METER AND WASHERS OF SUBTRACT METER ASSEMBLY.
2. ALL PIPE AND FITTINGS UP TO FINAL SERVICE LINE TO BE 1" EXCLUDING METERS.

PLAN VIEW

(MULTIPLE DOMESTIC SERVICES PER TAP)

WD-8 **DOUBLE SERVICE CONNECTION USING SUBTRACT METER**
NOT TO SCALE



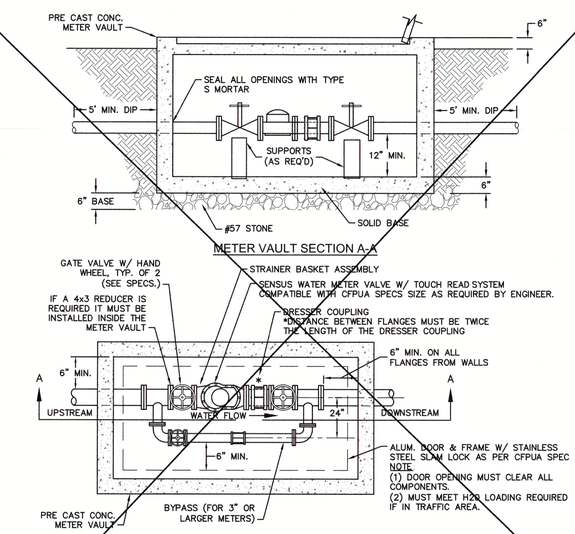
NOTES:
1. JOINT RESTRAINT SYSTEMS SHALL BE WEDGE ACTION STYLE FOR DI PIPE AS MANUFACTURED BY EBAA IRON, SIGMA, STAR PIPE PRODUCTS OR APPROVED EQUAL.
2. WHEN HYDRANT LEGS REQUIRE FULL LENGTH PIPE SECTIONS, OVER BELL RESTRAINT SYSTEM SHALL HAVE 316 STAINLESS STEEL HARNESS AND FASTENERS.
3. CONTINUOUS 316 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.

WD-10 **FIRE HYDRANT ASSEMBLY**
NOT TO SCALE

CAPE FEAR PUBLIC UTILITY AUTHORITY STANDARD NOTES:

1. SEWER GUARDS REQUIRED AT ALL MANHOLES. STAINLESS STEEL SEWER GUARDS REQUIRED AT MANHOLES LOCATED IN TRAFFIC AREAS.
2. WATER AND SEWER SERVICES SHALL BE PERPENDICULAR TO MAIN AND TERMINATE AT 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 AT RIGHT-OF-WAY LINE.
3. ALL SERVICES TYING INTO DUCTILE IRON MAINS SHALL BE CONSTRUCTED OF CLASS 50, DIP, WITH PROTECTO 401 CERAMIC EPOXY LINING.
4. MINIMUM 10' UTILITIES EASEMENT PROVIDED ALONG THE FRONTAGE OF ALL LOTS AND AS SHOWN FOR NEW DEVELOPMENTS.
5. NO FLEXIBLE COUPLINGS SHALL BE USED.
6. ALL STAINLESS STEEL FASTENERS SHALL BE 316.
7. CLEANOUTS SHALL BE LOCATED A MINIMUM OF 12 FEET FROM ALL PROPERTY CORNERS. WATER METER BOXES ARE TO BE A MINIMUM OF 5 FEET FROM THE PROPERTY CORNER.

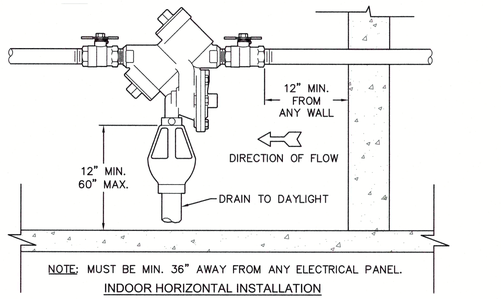
WD-19 **STANDARD NOTES**
(REQUIRED ON ALL PLAN AND PROFILE SHEETS)



METER VAULT PLAN

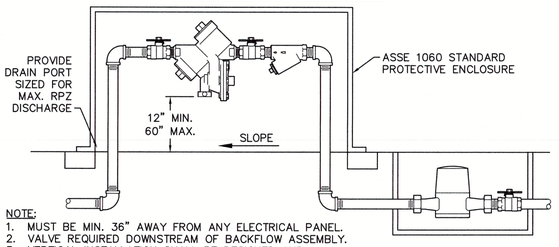
FOR WATER METERS LARGER THAN 2"

WD-1 **WATER METER VAULT**
NOT TO SCALE



NOTE: MUST BE MIN. 36" AWAY FROM ANY ELECTRICAL PANEL.

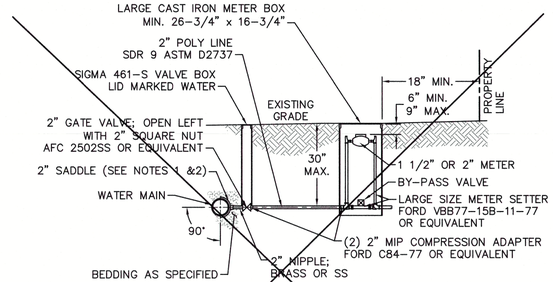
INDOOR HORIZONTAL INSTALLATION



NOTE:
1. MUST BE MIN. 36" AWAY FROM ANY ELECTRICAL PANEL.
2. VALVE REQUIRED DOWNSTREAM OF BACKFLOW ASSEMBLY.
3. VERTICAL INSTALLATION SHALL BE DESIGNED AND SUBMITTED TO CFPUA ESMD FOR APPROVAL.

OUTDOOR HORIZONTAL INSTALLATION

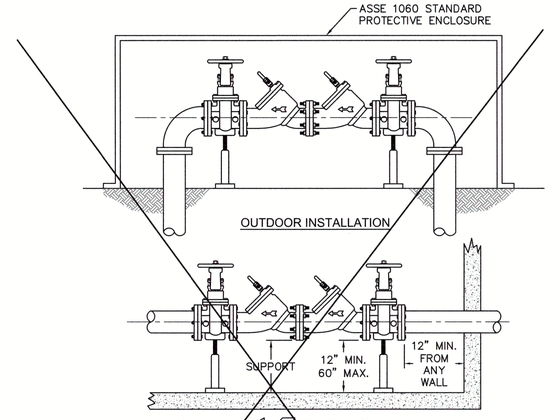
WD-12 **REDUCED PRESSURE PRINCIPLE ASSEMBLY**
NOT TO SCALE



NOTES:
1. ALL SERVICES SHALL BE INSTALLED PERPENDICULAR TO MAIN.
2. SERVICE SADDLES ON PVC MAINS SHALL BE WIDE BAND BRASS BODY: McDONALD 3800, FORD S90 (DOUBLE STRAP) OR EQUIVALENT.
3. METER BOXES SUSCEPTIBLE TO TRAFFIC SHALL CONFORM TO ASTM A48, CLASS 30B AND AASHTO H20 LOAD RATING STANDARDS (OLDCASTLE PRECAST MODEL B1730 OR APPROVED EQUIVALENT).
4. METER BOXES SUSCEPTIBLE TO INCIDENTAL, NON-DELIBERATE TRAFFIC SHALL CONFORM TO ANSI/SCTE 77 TIER 15 LOAD RATING STANDARDS (SYNERTECH MODEL DUO 17x30 OR APPROVED EQUIVALENT).
5. NON-TRAFFIC METER BOXES SHALL BE SIGMA MB2203 OR APPROVED EQUIVALENT.
6. 3" CLEAN FILL REQUIRED ALL AROUND 2" POLY SERVICE LINE.

FOR 1-1/2" OR 2" WATER SERVICES

WD-11 **LARGE METER**
NOT TO SCALE



NOTE:
1. MUST BE MIN. 36" AWAY FROM ANY ELECTRICAL PANEL.
2. VALVE REQUIRED DOWNSTREAM OF BACKFLOW ASSEMBLY.
3. VERTICAL INSTALLATION SHALL BE DESIGNED AND SUBMITTED TO CFPUA ESMD FOR APPROVAL

INDOOR INSTALLATION

WD-7 **DOUBLE CHECK VALVE ASSEMBLY**
NOT TO SCALE

GENERAL NOTES:
1. NO EXCAVATED MATERIAL SHALL BE PLACED IN ANY STREAM, DITCH OR DRAINAGE-WAY.
2. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES BEFORE ANY CONSTRUCTION BEGINS.
3. THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES WHILE CONSTRUCTION IS IN PROGRESS.
4. THE CONTRACTOR IS RESPONSIBLE FOR STABILIZATION OF ALL DISTURBED AREAS.
5. THE CONTRACTOR IS RESPONSIBLE FOR LAY DOWN AND STOCKPILE AREAS (TO ARRANGE AND ENSURE COMPLIANCE WITH ALL LOCAL AND STATE REGULATIONS).

THE DETAILS SHOWN HEREON SUPERCEDE CFPUA WRITTEN TECHNICAL SPECIFICATIONS VERSIONS 1.00 - 1.04

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

McADAMS
The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713
phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293
www.mcadamsco.com

REV:	DESCRIPTION:	DATE:
1	Single Service Connection, Double Service Connection, and Large Meter Revised	10/26/12
2	Single Service Connection and Fire Hydrant Details Revised	7/23/13
3	Fire Hydrant Detail Revised	01/03/14
4	Revised Fire Hydrant Assembly To Show 5" STORZ Connection	04/10/15
5	Revised Fire Hydrant Assembly To Show Full DIP Hydrant Leg	01/19/16
6	Revised Water Meter Vault and Large Meter Details, Added Standard Notes	02/15/16

NORTH CAROLINA PROFESSIONAL SEAL 027404 ENGINEER DARYL T. RIGGINS
Daryl T. Riggins 9-19-19

CFPUA WATER DISTRIBUTION SYSTEM

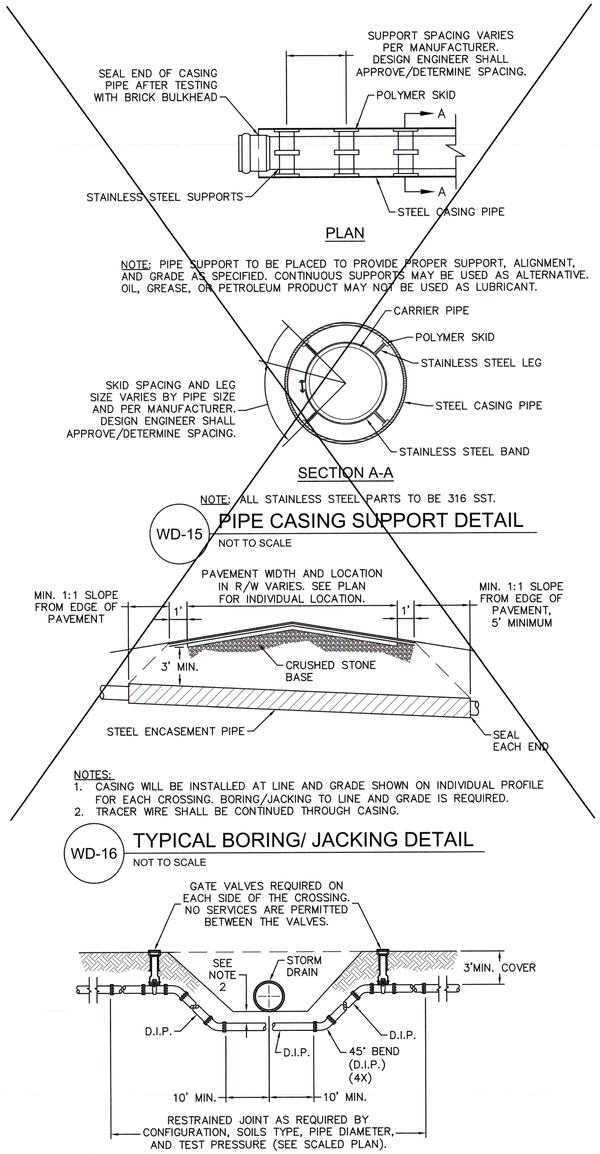
STANDARD DETAILS

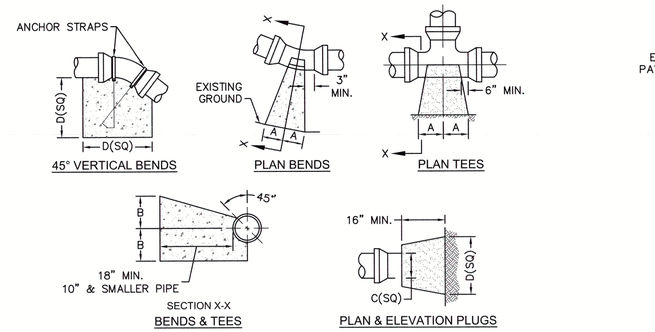
CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560
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DATE:	1/9/12
SCALE:	N/A
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CHECKED BY:	CFPUA
PROJECT NO. :	

SHEET NO: WSD-1

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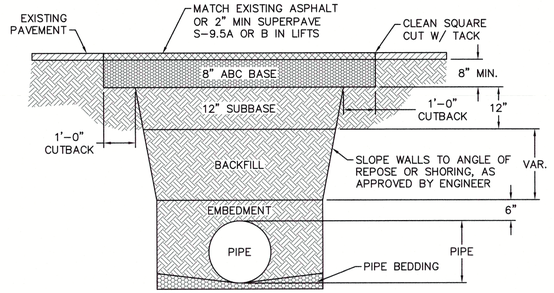




SIZE	90 BENDS		45 BENDS		22-1/2 BENDS		TEES/PLUGS		45 VERT. BENDS
	A	B	A	B	A	B	A	B	
3"	8"	6"	5"	6"	3"	7"	6"	8"	27"
4"	8"	9"	5"	8"	3"	11"	6"	9"	28"
6"	14"	11"	9"	9"	8"	8"	12"	9"	36"
8"	16"	16"	12"	12"	10"	13"	14"	13"	42"
10"	18"	22"	15"	14"	14"	16"	18"	15"	50"
12"	20"	28"	18"	17"	16"	16"	22"	18"	62"
14"	26"	29"	21"	19"	18"	18"	26"	20"	72"
16"	33"	29"	25"	21"	20"	21"	32"	21"	83"
18"	40"	30"	28"	24"	22"	23"	36"	24"	88"

NOTES:
1. BASED ON 160 PSI TEST PRESSURE AND 2000 PSF SOIL BEARING CAPACITY.
2. ALL BEARING SURFACES TO BE CARRIED TO UNDISTURBED GROUND.
3. USE MEG-A-LUG (PREFERRED) IN LIEU OF BLOCKING AND RODDING.

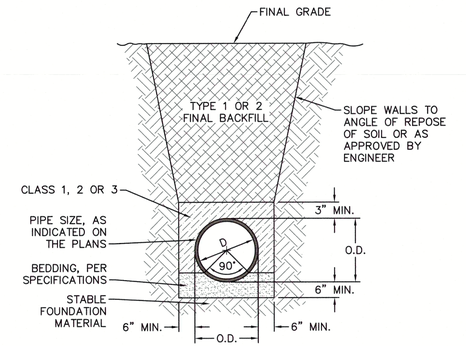
WD-4
THRUST BLOCK DETAIL
NOT TO SCALE



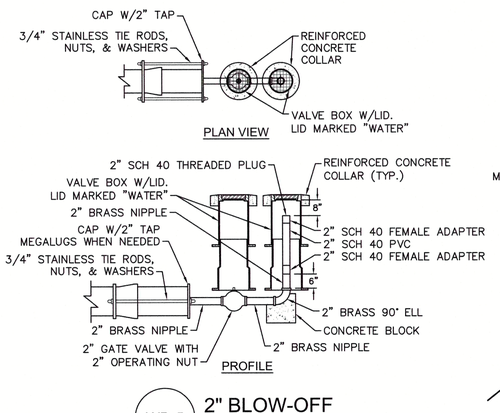
NOTES:
1. BACKFILL SHALL BE SUITABLE MATERIAL THAT IS FREE FROM HEAVY CLAY, GUMBOS, DEBRIS, ORGANICS AND LITTLE TO NO EXCESSIVE MOISTURE.
2. SELECT BACKFILL MAY BE SUBSTITUTED OR REQUIRED BY CITY TO ACHIEVE COMPACTION, (I.E. #57, ABC, CRUSHED LIMESTONE, CLEAN SAND, FLOWABLE FILL, ETC).
3. 8-INCH OF ABC BASE MATERIAL SHALL BE USED ON CITY STREETS.
4. BACKFILL AND BASE MATERIALS SHALL BE COMPACTED 12" MINIMUM LIFTS
5. SOIL SHALL BE 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.
6. ALL APPROVED CASTINGS SHALL BE SET FLUSH TO GRADE AND SUPPORTED IF APPLICABLE.
7. ABC BASE AND SUBBASE COMPACTED TO 98% AND BACKFILL AND EMBEDMENT COMPACTED TO 90% AS DETERMINED BY THE MODIFIED PROCTOR AASHTO METHOD T-99.
8. 1-FOOT CUTBACKS OF ASPHALT SHALL BE PREPARED ON UNDISTURBED SOIL. MINIMUM ASPHALT DENSITY IS 90%.

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

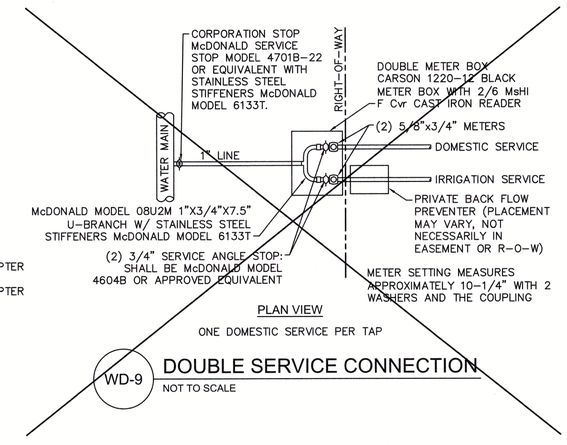
WD-14
PAVEMENT REPAIR WHERE PIPE INSTALLED
NOT TO SCALE



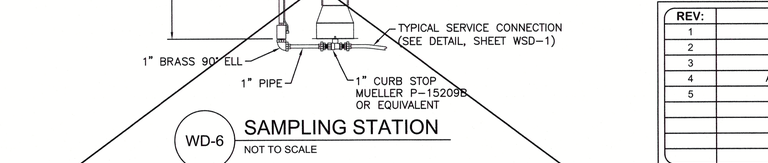
WD-13
TYPICAL TRENCH DETAIL
NOT TO SCALE



WD-5
2" BLOW-OFF
NOT TO SCALE

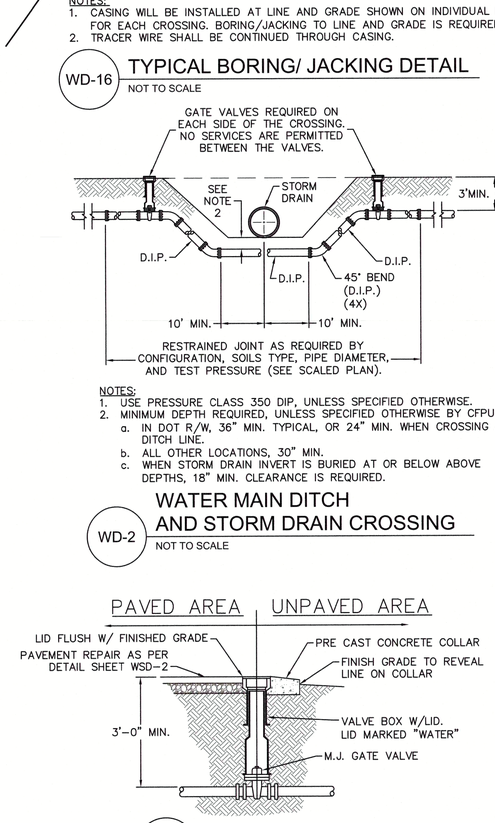


WD-9
DOUBLE SERVICE CONNECTION
NOT TO SCALE



NOTES:
1. TRACER WIRE SHALL BE #10 COPPER SOLID CORE COPPER WIRE WITH GAS AND OIL RESISTANT INSULATION.
2. WIRE SHALL BE STRAPPED TO ALL PVC WATER MAIN PIPING WITH DUCT TAPE AT 12 FOOT INTERVALS ALONG THE PIPE.
3. SECURE WIRE TO ALL TEE AND CROSS FITTINGS WITH DUCT TAPE.
4. ALL SPLICES IN THE WIRE SHALL BE MADE WITH 3M DBR DIRECT BURY SPLICE KIT AN UNDERGROUND RATED, WATERTIGHT, AND APPROVED SPLICE CONNECTOR OR APPROVED EQUAL.

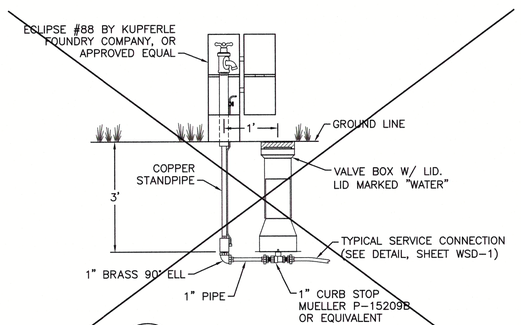
WD-17
TRACER WIRE DETAIL
NOT TO SCALE



NOTES:
1. USE PRESSURE CLASS 350 DIP, UNLESS SPECIFIED OTHERWISE.
2. MINIMUM DEPTH REQUIRED, UNLESS SPECIFIED OTHERWISE BY CFPUA:
   a. IN DOT R/W, 36" MIN. TYPICAL, OR 24" MIN. WHEN CROSSING A DITCH LINE.
   b. ALL OTHER LOCATIONS, 30" MIN.
   c. WHEN STORM DRAIN INVERT IS BURIED AT OR BELOW ABOVE DEPTHS, 18" MIN. CLEARANCE IS REQUIRED.

WD-2
WATER MAIN DITCH AND STORM DRAIN CROSSING
NOT TO SCALE

WD-3
VALVE DETAIL
NOT TO SCALE



WD-6
SAMPLING STATION
NOT TO SCALE

GENERAL NOTES:
1. NO EXCAVATED MATERIAL SHALL BE PLACED IN ANY STREAM, DITCH OR DRAINAGE-WAY.
2. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES BEFORE ANY CONSTRUCTION BEGINS.
3. THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES WHILE CONSTRUCTION IS IN PROGRESS.
4. THE CONTRACTOR IS RESPONSIBLE FOR STABILIZATION OF ALL DISTURBED AREAS.
5. THE CONTRACTOR IS RESPONSIBLE FOR LAY DOWN AND STOCKPILE AREAS (TO ARRANGE AND ENSURE COMPLIANCE WITH ALL LOCAL AND STATE REGULATIONS).

THE DETAILS SHOWN HEREON SUPERCEDE CFPUA WRITTEN TECHNICAL SPECIFICATIONS VERSIONS 1.00 - 1.04

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

McADAMS
The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713
phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293
www.mcadamsco.com

REV:	DESCRIPTION:	DATE:
1	Revised Water Main Ditch and Storm Crossing Detail	11/12/13
2	Revised Water Main Ditch and Storm Crossing Detail	05/05/14
3	Revised Tracer Wire Detail	10/20/15
4	Added Backflow Preventer to Double Service Connection Detail	02/01/16
5	Revised Sampling Station Detail	02/15/16

CFPUA WATER DISTRIBUTION SYSTEM

NORTH CAROLINA PROFESSIONAL SEAL 027404 ENGINEER DARYL T. RIGGINS
Daryl T. Riggins 9-19-13

STANDARD DETAILS

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

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DATE: 1/9/12
SCALE: N/A
DRAWN BY: CFPUA
CHECKED BY: CFPUA
PROJECT NO. :

SHEET NO: WSD-2

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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. 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.
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.
4. ALL CONSTRUCTION ACTIVITY RELATED TO THE PROPOSED STORMWATER CONTROL MEASURE 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. PLEASE NOTE THAT NO TREES/SHRUBS OF ANY TYPE MAY BE PLANTED ON THE PROPOSED DAM EMBANKMENT (FILL AREAS).
6. DURING THE INITIAL STAGES OF CONSTRUCTION, THE STORMWATER CONTROL MEASURE MAY BE USED AS A SEDIMENT BASIN FOR EROSION CONTROL PURPOSES. IF SO, THE CONTRACTOR SHALL FOLLOW THE GENERAL CONSTRUCTION SEQUENCE BELOW:
   - 6.1. THE CONTRACTOR SHALL CONSTRUCT THE ENTIRE FACILITY (PERMANENT OUTLET STRUCTURE, DAM, ETC.) WITH THE EXCEPTION OF THE INTERIOR FINE GRADING FOR THE FACILITY. THE INTERIOR FINE GRADING WILL BE CONSTRUCTED ONCE THE EROSION CONTROL PHASE IS COMPLETE.
   - 6.2. THE TEMPORARY DRAW DOWN RISER (OR SKIMMER) SHALL BE CONNECTED TO THE PERMANENT 6"Ø DIP DRAIN PIPE.
   - 6.3. ONCE THE UPSTREAM DRAINAGE AREA IS STABILIZED AND THE EROSION CONTROL INSPECTOR APPROVES THE REMOVAL OF THE SEDIMENT BASIN, THE CONTRACTOR SHALL REMOVE THE TEMPORARY DRAW DOWN RISER (OR SKIMMER) AND CLEAN-OUT THE BASIN. ALL SEDIMENT, TRASH, ETC. SHALL BE DISPOSED OF PROPERLY (I.E. - PLACED IN A LANDFILL) AND NOT STOCKPILED IN AN AREA WHERE WATER QUALITY COULD BE ADVERSELY AFFECTED.
   - 6.4. ONCE THE BASIN IS CLEANED OUT, AND ALL EROSION CONTROL DEVICES REMOVED, THE CONTRACTOR SHALL CONSTRUCT THE INTERIOR GRADING SHOWN ON THIS SHEET.
   - 6.5. ONCE THE GRADING IS COMPLETE, THE CONTRACTOR SHALL REQUEST AN ON-SITE INSPECTION AND AN AS-BUILT SURVEY PRIOR TO INSTALLATION OF THE STORMWATER CONTROL MEASURE 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.
   - 6.6. ONCE THE ENGINEER HAS APPROVED THE AS-BUILT GRADING, THE CONTRACTOR SHALL PLANT THE PROPOSED STORMWATER CONTROL MEASURE 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 CONTROL MEASURE PLANTING PLAN.
7. THE GRADES SHOWN ON THIS PLAN ARE FINISHED GRADES. IF THE EXISTING SOIL LAYER ALONG THE FOREBAY BERM IN THE PROPOSED POND AFTER CONSTRUCTION / COMPACTION IS NOT DETERMINED SUITABLE BY A LANDSCAPE PROFESSIONAL FOR THE POND PLANTINGS, THEN THE CONTRACTOR SHALL AMEND THE PLANTING AREA OF THE STORMWATER CONTROL MEASURE AS DIRECTED BY A LANDSCAPE PROFESSIONAL.
8. ANY REMOVED TOPSOIL SHALL BE STOCKPILED FOR USE IN PLANTING (SEEDING) ON 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 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.
9. 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 ENGINEER APPROVED EQUIVALENT, PRIOR TO DISCHARGE).
10. THE RETAINING WALL ALIGNMENT SHOWN ON THESE PLANS DEPICTS THE LOCATION OF THE FRONT FACE OF THE RETAINING WALL AT THE BOTTOM.
11. THE RETAINING WALL IS TO BE A DESIGN-BUILD PROJECT(S) BY THE CONTRACTOR. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN FINAL CONSTRUCTION DRAWINGS FROM A REGISTERED PROFESSIONAL ENGINEER AND GAIN ALL REQUIRED PERMITS NECESSARY FOR THE CONSTRUCTION OF THE RETAINING WALL.
12. THE RETAINING WALL SHALL BE ASSUMED TO BE BACKFILLED WITH OFF-SITE BORROW MATERIAL OR PROCESSED FILL UNLESS CONTRACTOR CAN PROVIDE OWNER WITH CONFIRMATION FROM THE GEOTECHNICAL ENGINEER AND THE RETAINING WALL DESIGNER THAT READILY AVAILABLE ON-SITE SOILS CAN BE USED.
13. THE TOP AND BOTTOM OF WALL ELEVATIONS SHOWN ON THESE PLANS IDENTIFY FINISHED GRADE ELEVATIONS ONLY. THE EXTENT THAT THE RETAINING WALL WILL BE EXTENDED BELOW GRADE TO THE FOOTING SHALL BE IDENTIFIED ON THE RETAINING WALL CONSTRUCTION DRAWINGS.
14. THE ON-SITE GEOTECHNICAL ENGINEER SHOULD BE GIVEN AN OPPORTUNITY TO REVIEW ALL RETAINING WALL PLANS AND DESIGNS RELEVANT TO GEOTECHNICAL CONSIDERATIONS PRIOR TO FINAL DESIGN OF THE WALLS.

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 TO BE USED FOR THE DAM EMBANKMENT 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", FROZEN OR OTHER OBJECTIONABLE MATERIAL. THE FOLLOWING SOIL TYPES ARE SUITABLE FOR USE AS FILL WITHIN THE DAM EMBANKMENT AND KEY TRENCH: ML AND CL. 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. BEFORE PLACEMENT OF FILL FOR THE BERM SECTION, 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. THESE REPORTS AND CERTIFICATION WILL BE NEEDED DURING THE AS-BUILT CERTIFICATION PROCESS FOR THIS STORMWATER FACILITY. THEREFORE, 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.
7. TESTING WILL BE REQUIRED ALONG THE 18"Ø RCP OUTLET BARREL AT A FREQUENCY OF ONE TEST PER 25 LF OF PIPE PER VERTICAL FOOT OF FILL OR AS DIRECTED BY THE ON-SITE GEOTECHNICAL ENGINEER.

STATEMENT OF RESPONSIBILITY

ALL REQUIRED MAINTENANCE AND INSPECTIONS OF THIS FACILITY SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER, PER THE EXECUTED OPERATION AND MAINTENANCE AGREEMENT FOR THIS FACILITY.

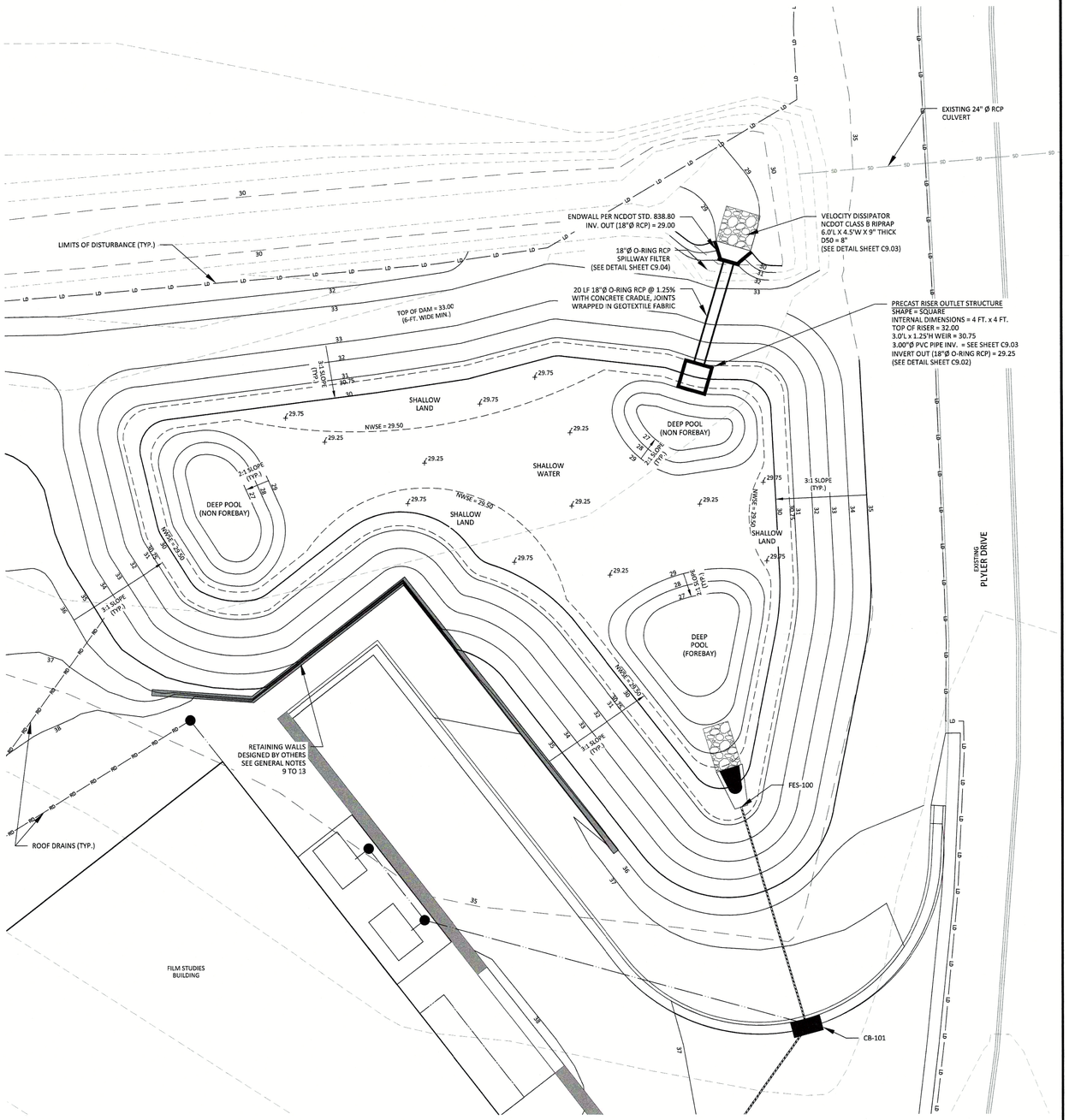
CONSTRUCTION SEQUENCE

1. PRIOR TO CONSTRUCTION, THE OWNER SHALL OBTAIN A LAND DISTURBING (GRADING) PERMIT AND AN "APPROVAL TO CONSTRUCT" FROM NCDEQ AND ALL OTHER NECESSARY PERMITS FROM APPLICABLE AGENCIES (E.G. 404 / 401 PERMITS).
2. INSTALL ALL SEDIMENT AND EROSION MANAGEMENT FACILITYS PER THE APPROVED SEDIMENT AND EROSION CONTROL PLAN. THE CONTRACTOR SHALL MAINTAIN ALL APPROVED SEDIMENT AND EROSION MANAGEMENT FACILITYS 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. CLEAR AND GRUB AREA WITHIN THE LIMITS OF THE PROPOSED DAM CONSTRUCTION. ALL TREES AND THEIR ENTIRE ROOT SYSTEMS MUST BE REMOVED FROM THE DAM FOOTPRINT AREA AND BACKFILLED WITH SUITABLE SOIL MATERIAL. THE BACKFILLED AREAS SHALL BE COMPACTED TO THE SAME STANDARDS AS THE DAM EMBANKMENT. THE REMAINING AREA OF THE EMBANKMENT SHALL BE STRIPPED TO A SUITABLE DEPTH AS DIRECTED BY THE ON-SITE GEOTECHNICAL ENGINEER. ANY RESIDUAL SOILS TO BE LEFT IN PLACE MUST BE WELL SCARIFIED TO PROMOTE BONDING OF THE NEW EMBANKMENT FILL. NO EMBANKMENT MATERIAL SHALL BE PLACED FOR THE DAM OR KEY TRENCH UNTIL APPROVAL OF THE DAM SUBGRADE / TRENCH IS OBTAINED FROM THE ON-SITE GEOTECHNICAL ENGINEER.
4. EXCAVATE FOR THE NEW KEY TRENCH ALONG THE CENTERLINE OF THE PROPOSED DAM EMBANKMENT. THE TRENCH SHALL EXTEND A MINIMUM OF 5 FT BELOW EXISTING GRADE OR 2 FT BELOW THE 18"Ø RCP OUTLET BARREL AND SHALL HAVE A MINIMUM BOTTOM WIDTH OF 5 FEET. THE KEY TRENCH SIDESLOPES SHALL BE A MINIMUM OF 1:1 (H:V). WHEN DIGGING THE KEY TRENCH IF ANY DEBRIS IS ENCOUNTERED TO THE EXTENT THAT SUCH DEBRIS MAY EXIST IN OTHER INSITU PORTIONS OF THE DAM EMBANKMENT, IT TOO SHALL EB REMOVED. THE KEY TRENCH AND ANY ADDITIONALLY EXCAVATED OR STRIPPED AREAS SHALL BE COMPACTED TO THE SAME SPECIFICATION LISTED IN ITEM 4 OF THE SECTION TITLED "BERM AND SOIL COMPACTION SPECIFICATIONS." DEPENDING UPON ON-SITE SOIL CONDITIONS ENCOUNTERED DURING EXCAVATION, THE ON-SITE GEOTECHNICAL ENGINEER MAY VARY THE DEPTH AND DIMENSIONS OF THE KEY TRENCH AS DEEMED NECESSARY. THE ON-SITE GEOTECHNICAL ENGINEER SHALL RETAIN DOCUMENTATION OF ANY VARIATION FOR FUTURE AS-BUILT SUBMITTALS TO NCDEQ.
5. BEGIN PLACEMENT OF BACKFILL WITHIN THE KEY TRENCH. THE KEY TRENCH SHALL BE COMPACTED TO THE SPECIFICATIONS LISTED ITEM 4 OF THE SECTION TITLED "BERM AND SOIL COMPACTION SPECIFICATIONS." THE KEY TRENCH SHALL BE TESTED PER THE SPECIFICATIONS LISTED IN THAT SECTION.
6. 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 ADEQUIATELY COMPACTED STRUCTURAL FILL OR LEAN CONCRETE AS DIRECTED BY THE ON-SITE GEOTECHNICAL ENGINEER.
7. BEGIN CONSTRUCTION OF THE NEW EMBANKMENT. FILL MATERIALS SHALL BE PLACED IN MAXIMUM 8" THICK LIFTS PRIOR TO COMPACTION, UNLESS DIRECTED OTHERWISE BY THE ON-SITE GEOTECHNICAL ENGINEER. FILL LIFTS SHALL BE CONTINUOUS OVER THE ENTIRE LENGTH OF FILL. IF IT IS NECESSARY, THE EMBANKMENT FILL MATERIAL WILL BE OVERBUILT IN HORIZONTAL LIFTS AND CUT BACK TO FINAL GRADE IN ORDER TO ACHIEVE PROPER COMPACTION.
8. A CERTIFICATION LETTER MUST BE SUBMITTED TO THE DESIGN ENGINEER BEFORE AS-BUILT CERTIFICATION OF THE FACILITY. THIS SEPARATE CERTIFICATION MUST BE SPECIFIC TO THE BARREL PIPE FOR THE FACILITY, AND MUST CLEARLY STATE THAT ALL SOIL MATERIAL UNDER, AROUND, AND ABOVE THE BARREL PIPE MEETS THE BERM AND SOIL COMPACTION SPECIFICATIONS ON THIS SHEET. THIS CERTIFICATION IS TO INCLUDE REFERENCE TO BOTH MATERIAL AND COMPACTION, AND MUST STATE THAT ALL MATERIALS UNDER, AROUND, AND ABOVE THE BARREL HAVE BEEN COMPACTED PER THE BERM MATERIAL SPECIFICATIONS (AT LEAST 95% OF MAXIMUM DRY DENSITY USING ASTM D698 STANDARD PROCTOR) WITH NO VOID SPACES PRESENT. THE CONTRACTORS INTENT TO UTILIZE THIS ALTERNATIVE MUST BE STATED PRIOR TO CONSTRUCTION TAKING PLACE. THIS CONTRACTORS CERTIFICATION MUST BE PRESENTED TO THE DESIGN ENGINEER BEFORE AN AS-BUILT CERTIFICATION CAN BE ISSUED FOR THIS FACILITY.
9. 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.
10. INSTALL 18" RCP OUTLET BARREL SPILLWAY FILTER FROM THE DETAILS SHOWN ON SHEET C9.04.
11. 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".
12. UPON COMPLETION OF DAM EMBANKMENT, PROMPTLY STABILIZE AND SEED DAM EMBANKMENT PER SEEDING SCHEDULE.
13. SCHEDULE A FINAL AS-BUILT INSPECTION AND AS-BUILT SURVEY WITH THE ENGINEER. AN AS-BUILT INSPECTION SHOULD BE SCHEDULED A MINIMUM OF 60 DAYS BEFORE A PERMIT TO IMPOUND IS REQUIRED. ANY COMMENTS OR DEFICIENCIES IN THE DAM CONSTRUCTION MUST BE CORRECTED TO THE SATISFACTION OF THE ENGINEER AND OWNER BEFORE CERTIFICATION SHALL BE GRANTED. UPON FINAL APPROVAL FROM NCDEQ, CLOSE THE 6"Ø BOTTOM DRAIN VALVE IN THE RISER BOX AND BEGIN IMPOUNDING WATER. NO WATER SHALL BE IMPOUNDED BEFORE AN APPROVAL TO IMPOUND IS ISSUED FROM NCDEQ.

OUTLET STRUCTURE MATERIAL SPECIFICATIONS

1. THE 18"Ø RCP OUTLET BARREL SHALL BE CLASS III RCP, MODIFIED BELL AND SPIGOT, MEETING THE REQUIREMENTS OF ASTM C76-LATEST. THE PIPES SHALL HAVE CONFINED O-RING RUBBER GASKET JOINS MEETING ASTM C-443-LATEST. THE PIPE JOINTS SHALL BE TYPE R-4.
2. 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.
3. 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.
4. 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 13,891 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.
5. 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.
6. 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.
7. 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.
8. STORMWATER CONTROL MEASURE EMERGENCY DRAWDOWN IS VIA A 6" 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 HANDWHEEL (SEE DETAIL SHEET SW-2). THE CONTRACTOR SHALL PROVIDE A REMOVABLE VALVE WRENCH WITH A HANDWHEEL ON TOP FOR OPERATION OF THE 6" Ø PLUG VALVE. A CHAIN AND LOCK SHALL ALSO BE PROVIDED FOR SECURING THE WRENCH TO THE TRASH RACK.



STORMWATER CONTROL MEASURE PLAN VIEW

1" = 10'

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

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

McADAMS
The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713

phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293

www.mcadamsco.com

CLIENT

UNC WILIMINGTON
601 SOUTH COLLEGE ROAD
WILMINGTON, NORTH CAROLINA 28403
PHONE: 910.962.3761

UNCW - FILM STUDIES BUILDING
CONSTRUCTION DRAWINGS
901 SOUTH COLLEGE ROAD
WILMINGTON, NORTH CAROLINA, 28403-5620

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042309 DANIEL C. WILEBSKI
9-19-19

REVISIONS

NO.	DATE

PLAN INFORMATION

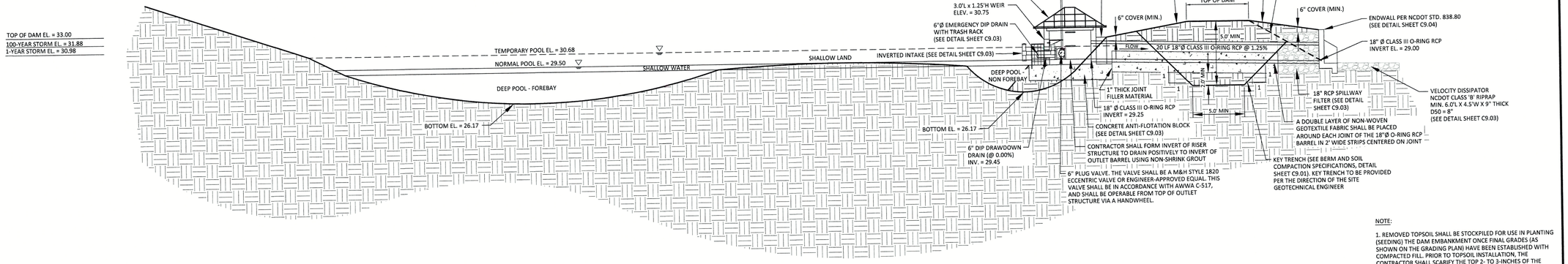
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FILENAME	BMG19000-SW
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SCALE	1"=10'
DATE	09.19.2019

SHEET

STORMWATER CONTROL MEASURE PLAN VIEW

C9.01

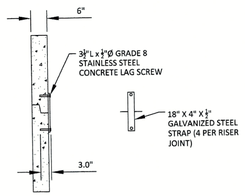
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NOTE:

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 BERM 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.

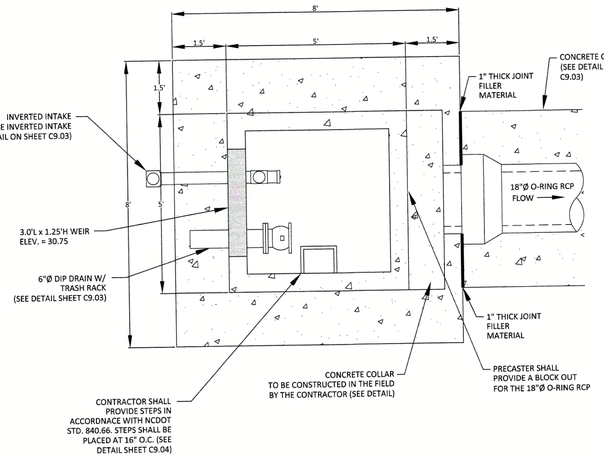
POND CROSS SECTION
N.T.S.



RISER JOINT CONNECTION DETAIL
N.T.S.

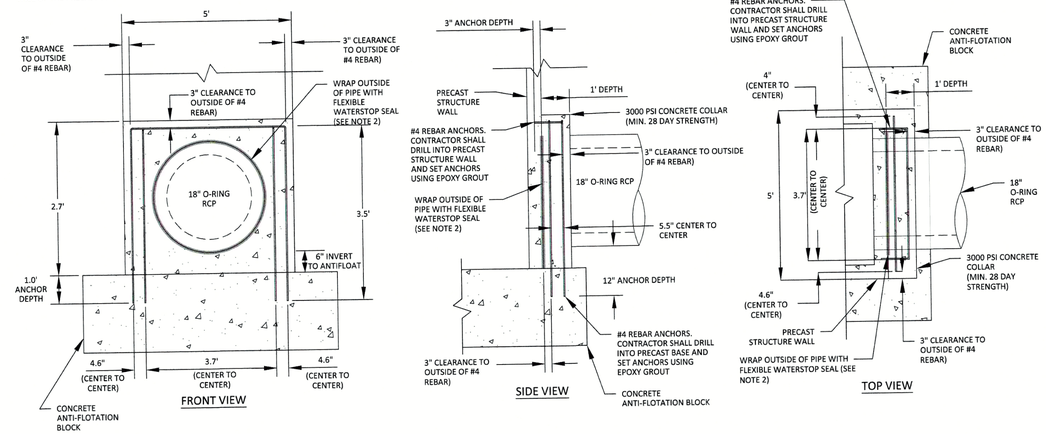
NOTES:

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.

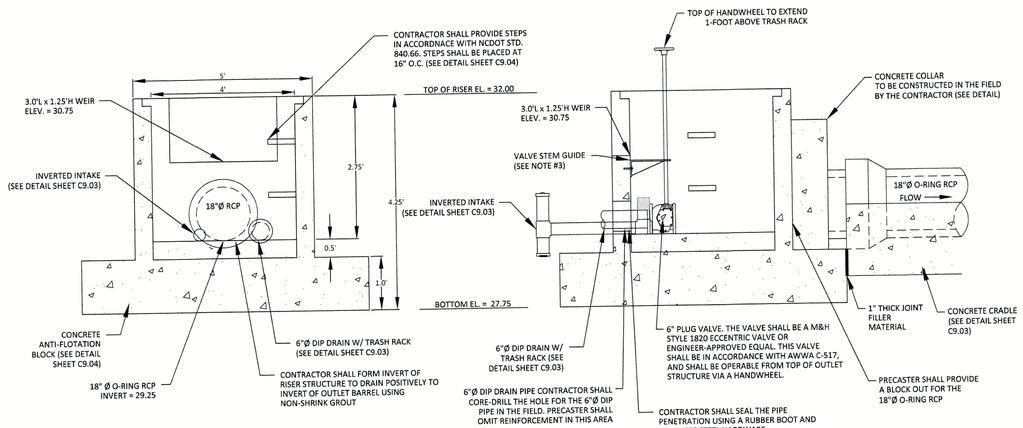


NOTES:

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.



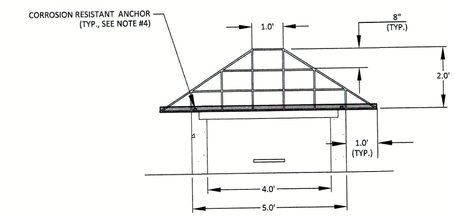
18"Ø CONCRETE COLLAR DETAIL
N.T.S.

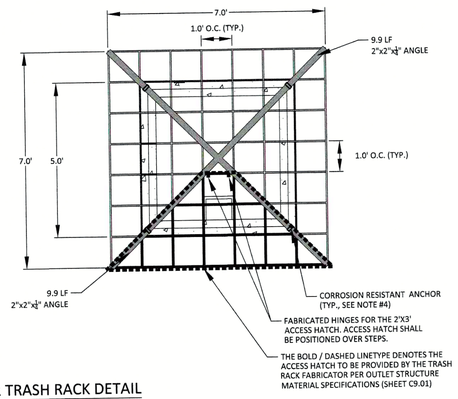


PERMANENT OUTLET STRUCTURE DETAILS
N.T.S.

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.

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WILMINGTON, NORTH CAROLINA, 28403-5620

NORTH CAROLINA PROFESSIONAL SEAL 041300 ENGINEER DANIEL C. WEBKE
9-19-19

REVISIONS

NO.	DATE

PLAN INFORMATION

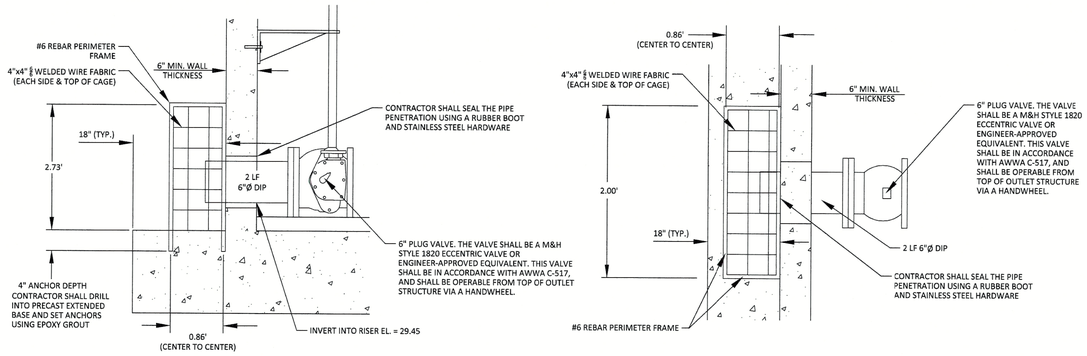
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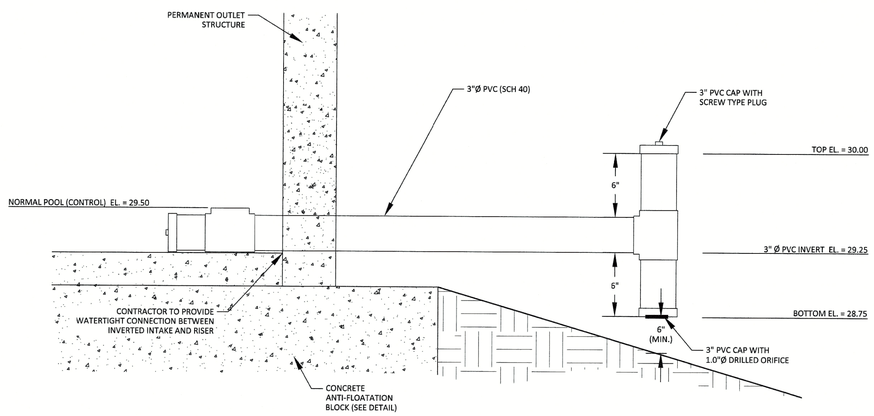
STORMWATER CONTROL MEASURE DETAILS

C9.02

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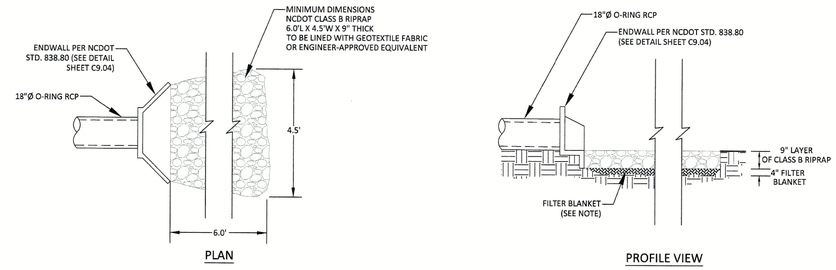
6"Ø EMERGENCY DIP DRAIN TRASH RACK DETAILS
N.T.S.



INVERTED INTAKE OUTLET DETAIL
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.



OUTLET BARREL VELOCITY DISSIPATER
N.T.S.

NOTE:

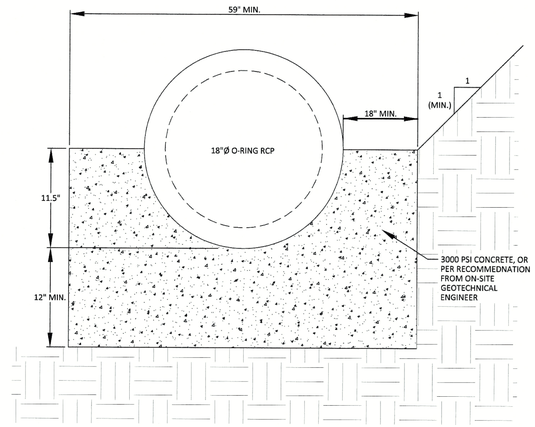
AS AN ALTERNATE TO A CONCRETE CRADLE UNDER THE BARREL PIPE (THIS DETAIL), THE CONTRACTOR MAY CHOOSE TO ELIMINATE THE CONCRETE CRADLE AND USE COMPACTED BACKFILL IF THE ON-SITE GEOTECHNICAL ENGINEER WILL PROVIDE A NC PE SEALED LETTER CERTIFYING THAT THE COMPACTION UNDER, AROUND, AND ABOVE THE BARREL MEETS THE SPECIFICATIONS OF THE EMBANKMENT COMPACTION REQUIREMENTS AND MOISTURE CONTENT. THIS CERTIFICATION LETTER MUST BE SUBMITTED TO THE DESIGN ENGINEER BEFORE AS-BUILT CERTIFICATION OF THE FACILITY. THIS SEPARATE CERTIFICATION MUST BE SPECIFIC TO THE BARREL PIPE FOR THE FACILITY, AND MUST CLEARLY STATE THAT ALL SOIL MATERIAL UNDER, AROUND, AND ABOVE THE BARREL PIPE MEETS THE BERM MATERIAL SPECIFICATIONS STATED ON SHEET C9.01. THIS CERTIFICATION IS TO INCLUDE REFERENCE TO BOTH MATERIAL AND COMPACTION, AND MUST STATE THAT ALL MATERIALS UNDER, AROUND, AND ABOVE THE BARREL HAVE BEEN COMPACTED PER THE BERM MATERIAL SPECIFICATIONS (AT LEAST 95% OF MAXIMUM DRY DENSITY USING ASTM D698 STANDARD PROCTOR) WITH NO VOID SPACES PRESENT. THE CONTRACTORS INTENT TO UTILIZE THIS ALTERNATIVE MUST BE STATED PRIOR TO CONSTRUCTION TAKING PLACE. THIS CONTRACTORS CERTIFICATION MUST BE PRESENTED TO THE DESIGN ENGINEER BEFORE AN AS-BUILT CERTIFICATION CAN BE ISSUED FOR THIS FACILITY.

BARREL PIPE CONCRETE CRADLE CONSTRUCTION SEQUENCE

1. IF OPTION A IS CHOSEN FROM NOTE 9 OF THE OUTLET STRUCTURE MATERIAL SPECIFICATIONS (SHEET C9.01), THEN BRING GRADE OF DAM EMBANKMENT TO SPRINGLINE OF PIPE ELEVATION. IF OPTION B IS CHOSEN FROM NOTE 9 OF THE OUTLET STRUCTURE MATERIAL SPECIFICATIONS, THEN CONSTRUCT FORMWORK FOR CONCRETE CRADLE ON EXISTING GRADE.
2. IF OPTION A IS CHOSEN FROM NOTE 9 OF THE OUTLET STRUCTURE MATERIAL SPECIFICATIONS, THEN EXCAVATE TRENCH FOR CRADLE AND BARREL PER DIMENSIONS ON DRAWINGS. IF OPTION B IS CHOSEN FROM NOTE 9 OF THE OUTLET STRUCTURE MATERIAL SPECIFICATIONS, PROCEED TO STEP 3 BELOW.
3. PLACE BARREL PIPE ON CONCRETE BLOCKS TO GRADE. AT THIS STEP, CONTRACTOR SHALL WRAP A DOUBLE LAYER OF NON-WOVEN GEOTEXTILE FABRIC AROUND EACH JOINT OF THE 18"Ø O-RING RCP BARREL IN 2' WIDE STRIPS CENTERED ON JOINT.
4. PLACE CONCRETE FOR CRADLE FOR EACH SECTION FROM ONE SIDE OF THE TRENCH. ALLOW CONCRETE TO FILL ENTIRE AREA UNDER PIPE AND PIPE HAUNCHES AS TO LEAVE NO VOIDS UNDER THE PIPE BEFORE PLACING CONCRETE ON THE OPPOSITE SIDE OF THE TRENCH. PLACE ENTIRE CRADLE AS ONE LIFT (VERTICALLY) PER DRAWINGS.
5. CONCRETE CRADLE MAY BE ELIMINATED PER RECOMMENDATION FROM THE ON-SITE GEOTECHNICAL ENGINEER. ANY DEVIATION FROM THIS DETAIL SHALL BE SUBMITTED TO AND REVIEWED BY THE DESIGN ENGINEER PRIOR TO IMPLEMENTATION. IF THE CRADLE IS ELIMINATED, THEN A LETTER FROM AN NC PE CERTIFYING THAT ALL SOIL MATERIAL UNDER, AROUND, AND ABOVE THE BARREL PIPE MEETS THE BERM MATERIAL SPECIFICATIONS STATED ON SHEET C9.01 IS REQUIRED.
6. ALLOW CRADLE TO CURE FOR A MINIMUM OF 7 DAYS BEFORE ANY VIBRATING COMPACTION EQUIPMENT IS USED IN THE VICINITY OF THE BARREL PIPE.
7. TRENCH TO BE BACKFILLED IN 5" LIFTS WHEN COMPACTION IS BY HAND. BACKFILL IS IN 8" LIFTS WHEN CONDUCTED BY MACHINE. MINIMUM OF 2 FEET COVER MUST BE PRESENT ON 18"Ø RCP BEFORE DRIVING OVER WITH HEAVY EQUIPMENT.

NOTE:

1. CONTRACTOR SHALL PROVIDE A JOINT IN THE OUTLET BARREL NO MORE THAN 5-FT FROM THE RISER.



18" CONCRETE CRADLE DETAIL
N.T.S.

McAdams
The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713

phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293

www.mcadamsco.com

CLIENT

UNC WILMINGTON
601 SOUTH COLLEGE ROAD
WILMINGTON, NORTH CAROLINA 28403
PHONE: 910.962.3761

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CONSTRUCTION DRAWINGS
901 SOUTH COLLEGE ROAD
WILMINGTON, NORTH CAROLINA, 28403-5620

NORTH CAROLINA PROFESSIONAL SEAL 036200 ENGINEER DANIEL C. WIEBKE
9-19-19

REVISIONS

NO.	DATE

PLAN INFORMATION

PROJECT NO.	BMG-19000
FILENAME	BMG19000-SW
CHECKED BY	DCW
DRAWN BY	LK
SCALE	N.T.S.
DATE	09.19.2019

SHEET

STORMWATER CONTROL MEASURE DETAILS

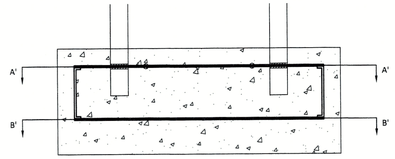
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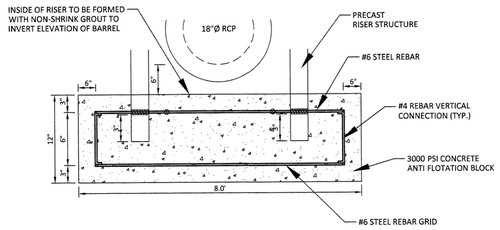
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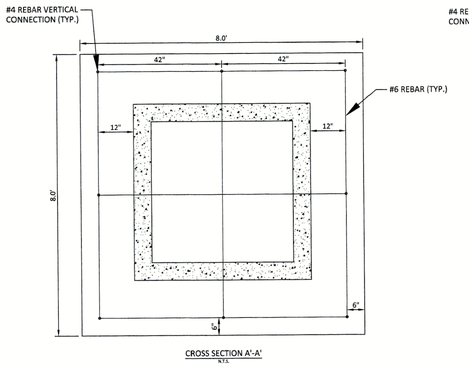
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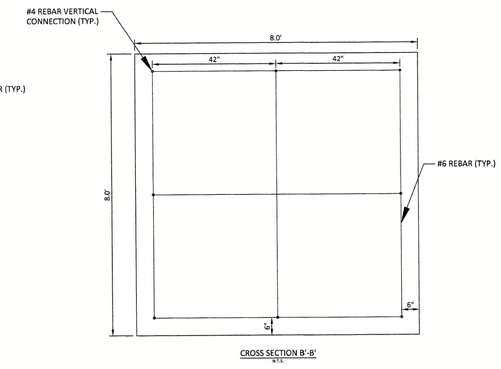
NOTES:

1. ALL REINFORCING STEEL IN RISER ANTI-FLOTATION BLOCK TO BE GRADE 60 #6 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.





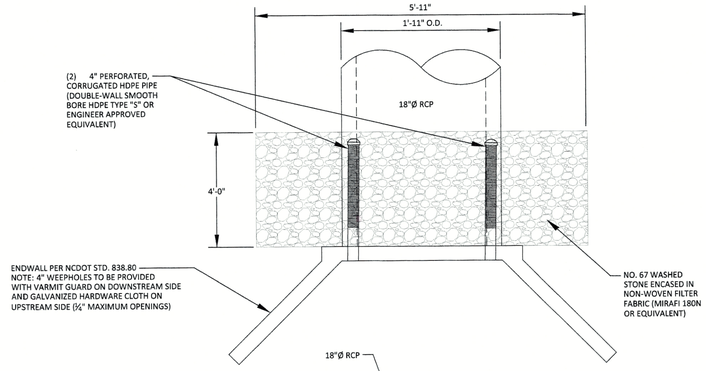


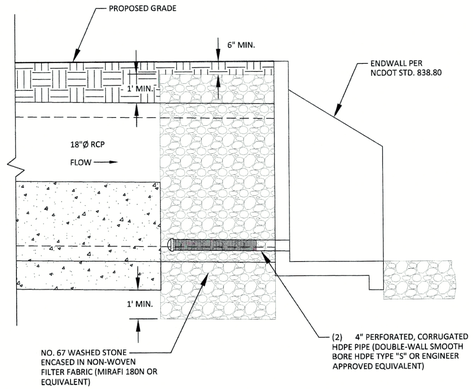


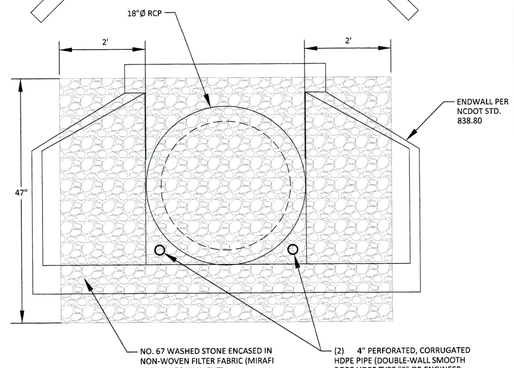
RISER/ANTI-FLOTATION BLOCK CONNECTION
N.T.S.

NOTE:

1. HAVILAND DRAINAGE PRODUCTS 4" ALUMINUM ANIMAL GUARD ITEM NUMBER 40160420 (OR ENGINEER APPROVED EQUIVALENT) TO BE INSTALLED AT OUTLET OF 4" HDPE PIPES.

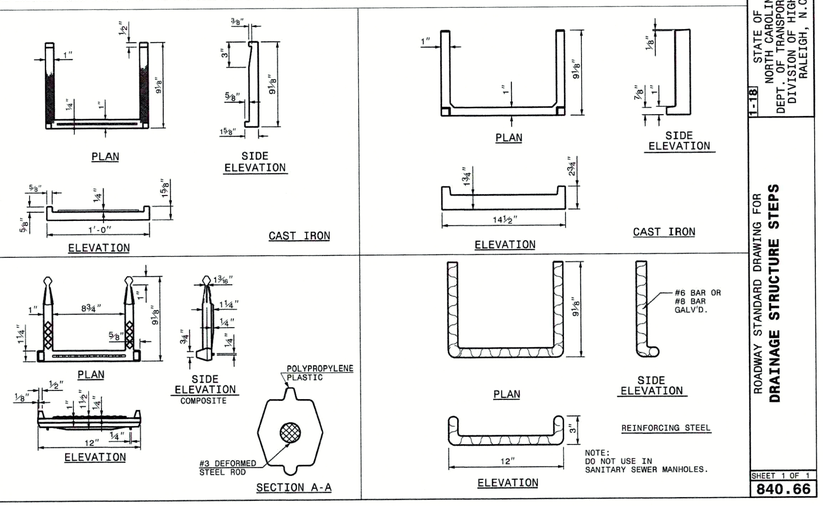






SPILLWAY FILTER DETAIL
N.T.S.

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.



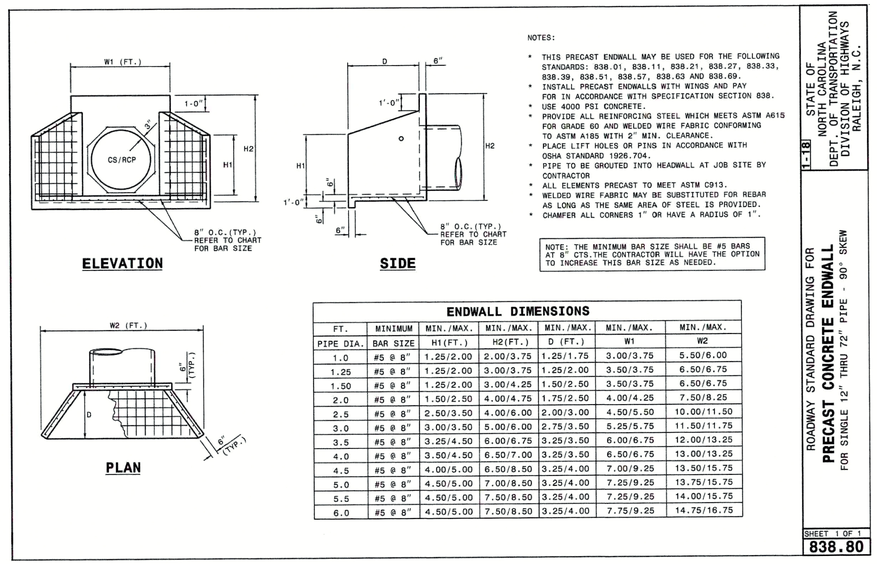
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-18

ROADWAY STANDARD DRAWING FOR
DRAINAGE STRUCTURE STEPS

SHEET 1 OF 1
840.66

ACCESS STEPS DETAILS
N.T.S.



NOTES:

- THIS PRECAST ENDWALL MAY BE USED FOR THE FOLLOWING STANDARDS: 838.01, 838.11, 838.21, 838.27, 838.33, 838.39, 838.51, 838.57, 838.63 AND 838.69.
- INSTALL PRECAST ENDWALLS WITH WINGS AND PAY FOR IN ACCORDANCE WITH SPECIFICATION SECTION 838.
- USE 4000 PSI CONCRETE.
- PROVIDE ALL REINFORCING STEEL WHICH MEETS ASTM A615 FOR GRADE 60 AND WELDED WIRE FABRIC CONFORMING TO ASTM A185 WITH 2" MIN. CLEARANCE.
- PLACE LIFT HOLES OR PINS IN ACCORDANCE WITH OSHA STANDARD 1926.704.
- PIPE TO BE GROUTED INTO HEADWALL AT JOB SITE BY CONTRACTOR
- ALL ELEMENTS PRECAST TO MEET ASTM C913.
- WELDED WIRE FABRIC MAY BE SUBSTITUTED FOR REBAR AS LONG AS THE SAME AREA OF STEEL IS PROVIDED.
- CHAMFER ALL CORNERS 1" OR HAVE A RADIUS OF 1".

NOTE: THE MINIMUM BAR SIZE SHALL BE #5 BARS AT 8" CTS. THE CONTRACTOR WILL HAVE THE OPTION TO INCREASE THIS BAR SIZE AS NEEDED.

ENDWALL DIMENSIONS

FT.	MINIMUM	MIN./MAX.	MIN./MAX.	MIN./MAX.	MIN./MAX.	MIN./MAX.
PIPE DIA.	BAR SIZE	H1(FT.)	H2(FT.)	D (FT.)	W1	W2
1.0	#5 @ 8"	1.25/2.00	2.00/3.75	1.25/1.75	3.00/3.75	5.50/6.00
1.25	#5 @ 8"	1.25/2.00	3.00/3.75	1.25/2.00	3.50/3.75	6.50/6.75
1.50	#5 @ 8"	1.25/2.00	3.00/4.25	1.50/2.50	3.50/3.75	6.50/6.75
2.0	#5 @ 8"	1.50/2.50	4.00/4.75	1.75/2.50	4.00/4.25	7.50/8.25
2.5	#5 @ 8"	2.50/3.50	4.00/6.00	2.00/3.00	4.50/5.50	10.00/11.50
3.0	#5 @ 8"	3.00/3.50	5.00/6.00	2.75/3.50	5.25/5.75	11.50/11.75
3.5	#5 @ 8"	3.25/4.50	6.00/6.75	3.25/3.50	6.00/6.75	12.00/13.25
4.0	#5 @ 8"	3.50/4.50	6.50/7.00	3.25/3.50	6.50/6.75	13.00/13.25
4.5	#5 @ 8"	4.00/5.00	6.50/8.50	3.25/4.00	7.00/9.25	13.50/15.75
5.0	#5 @ 8"	4.50/5.00	7.00/8.50	3.25/4.00	7.25/9.25	13.75/15.75
5.5	#5 @ 8"	4.50/5.00	7.50/8.50	3.25/4.00	7.25/9.25	14.00/15.75
6.0	#5 @ 8"	4.50/5.00	7.50/8.50	3.25/4.00	7.75/9.25	14.75/16.75

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

1-18

ROADWAY STANDARD DRAWING FOR
PRECAST CONCRETE ENDWALL
FOR SINGLE 12" THRU 72" PIPE - 90° SKEW

SHEET 1 OF 1
838.80

OUTLET ENDWALL DETAILS
N.T.S.

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

McADAMS
The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713

phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293

www.mcadamsco.com

CLIENT

UNC WILIMINGTON
601 SOUTH COLLEGE ROAD
WILMINGTON, NORTH CAROLINA 28403
PHONE: 910.962.3761

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901 SOUTH COLLEGE ROAD
WILMINGTON, NORTH CAROLINA, 28403-5620

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043300 DANIEL C. WEBBE
9-19-19

REVISIONS

NO.	DATE

PLAN INFORMATION

PROJECT NO.	BMG-19000
FILENAME	BMG19000-SW
CHECKED BY	DCW
DRAWN BY	LK
SCALE	N.T.S.
DATE	09.19.2019

SHEET

STORMWATER CONTROL MEASURE DETAILS

C9.04

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STORMWATER CONTROL MEASURE LANDSCAPE SPECIFICATIONS

LEGEND

QTY.	SYM.	SCIENTIFIC NAME	COMMON NAME	HATCH	TYPE	SPACING
SHALLOW LAND						
145	CC	CONOCLINIUM COELESTINUM	BLUE MISTFLOWER		4-INCH CONTAINER	24" O.C.
133	SL	SYPHYOTRICHUM LATERIFLORUM	CALICO ASTER		4-INCH CONTAINER	24" O.C.
121	KV	KOSTELETZKYA VIRGINICA	SEASHORE/SALTMARSH MALLOW		4-INCH CONTAINER	24" O.C.
SHALLOW WATER						
144	LC	LILAEOPSIS CHINENSIS	EASTERN GRASSWORT		4-INCH CONTAINER	24" O.C.
147	SA	SAGITTARIA LANCIFOLIA	BULLTONGUE ARROWHEAD		4-INCH CONTAINER	24" O.C.
137	IV	IRIS VIRGINICA	BLUE FLAG IRIS		4-INCH CONTAINER	24" O.C.

(ASSUMED 1 STEM PER 4 SF FOR ALL CALCULATIONS)

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. APPLY AGRICULTURAL LIME, FERTILIZER, AND SUPERPHOSPHATE UNIFORMLY AND MIX WITH SOIL (SEE PERMANENT SEEDING SCHEDULE).
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. IF STAND SHOULD BE OVER 60% DAMAGED, REESTABLISH FOLLOWING ORIGINAL LIME, FERTILIZER AND SEEDING RATES. SEED LIGHTLY WITH SEEDING EQUIPMENT OR CULTIPACK AFTER SEEDING.
9. CONSULT CONSERVATION INSPECTOR ON MAINTENANCE TREATMENT AND FERTILIZATION AFTER PERMANENT COVER IS ESTABLISHED.

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)	TALL FESCUE	200 LBS/AC

FEB - APR 15 (POSSIBLE)

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 FERTLIZER. MOW REGULARLY TO A HEIGHT OF 2-4 INCHES.

NOTE: PERMANENT SEEDING SCHEDULE IS FOR SLOPES OF THE BASIN AND DAM EMBANKMENT.

PLANTING INSTRUCTIONS

PLANTING TECHNIQUES

A. ENSURE THAT ROOTS, ONCE REMOVED FROM POT, ARE STRAIGHTENED AND FACE DOWNWARD.

B. CREATE PLANTING AREA FOR EACH PLANT AND EXCAVATE PIT.

C. PLACE PLANTS IN PIT INSURING ROOTS ARE FACING COMPLETELY DOWNWARD.

D. HEEL IN SOIL AROUND PLANT AND PROCEED TO NEXT PLANTING LOCATION.

E. NEWLY PLANTED PLANTS NEED TO BE FASTENED TO THE SUBSTRATE FOR THE ESTABLISHMENT OF NEW ROOTS.

F. ROOTS SHALL BE SPREAD IN THEIR NORMAL POSITION. ALL BROKEN OR FRAYED ROOTS HALL BE CUT OFF CLEANLY.

G. 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.

H. SET THE PLANTS UPRIGHT, IN THE CENTER OF THE PIT. THE BOTTOM OF THE ROOT MASS SHOULD BE RESTING ON UNDISTURBED SOIL.

I. 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.

J. 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.

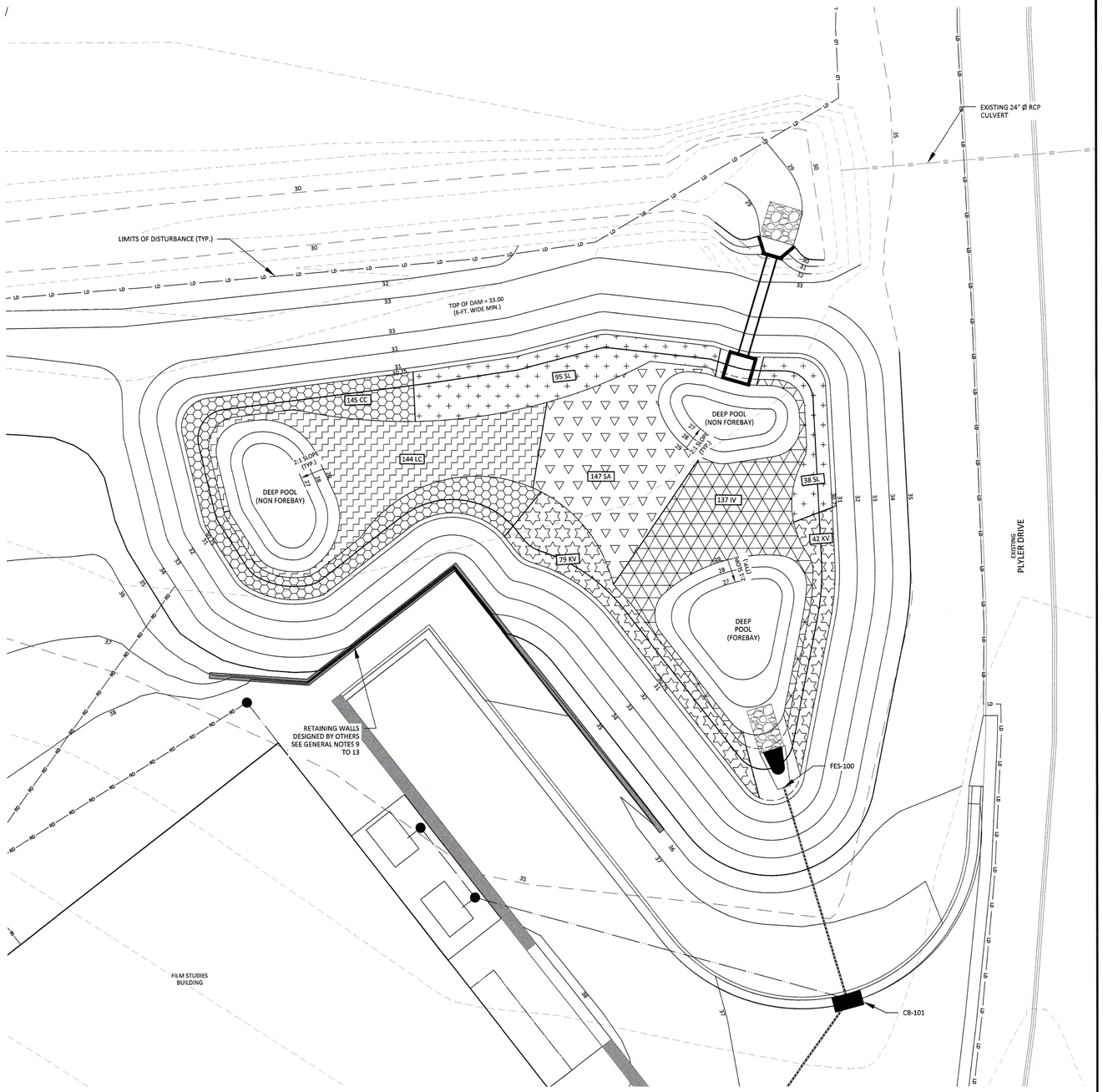
PLANT LOCATIONS

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.



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

STORMWATER CONTROL MEASURE LANDSCAPE PLAN

1" = 10'

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

McADAMS
The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713

phone 919. 361. 5000
fax 919. 361. 2269
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NORTH CAROLINA PROFESSIONAL SEAL 043300 ENGINEER DANIEL C. WIEBKE
9-19-19

REVISIONS

NO. DATE

PLAN INFORMATION

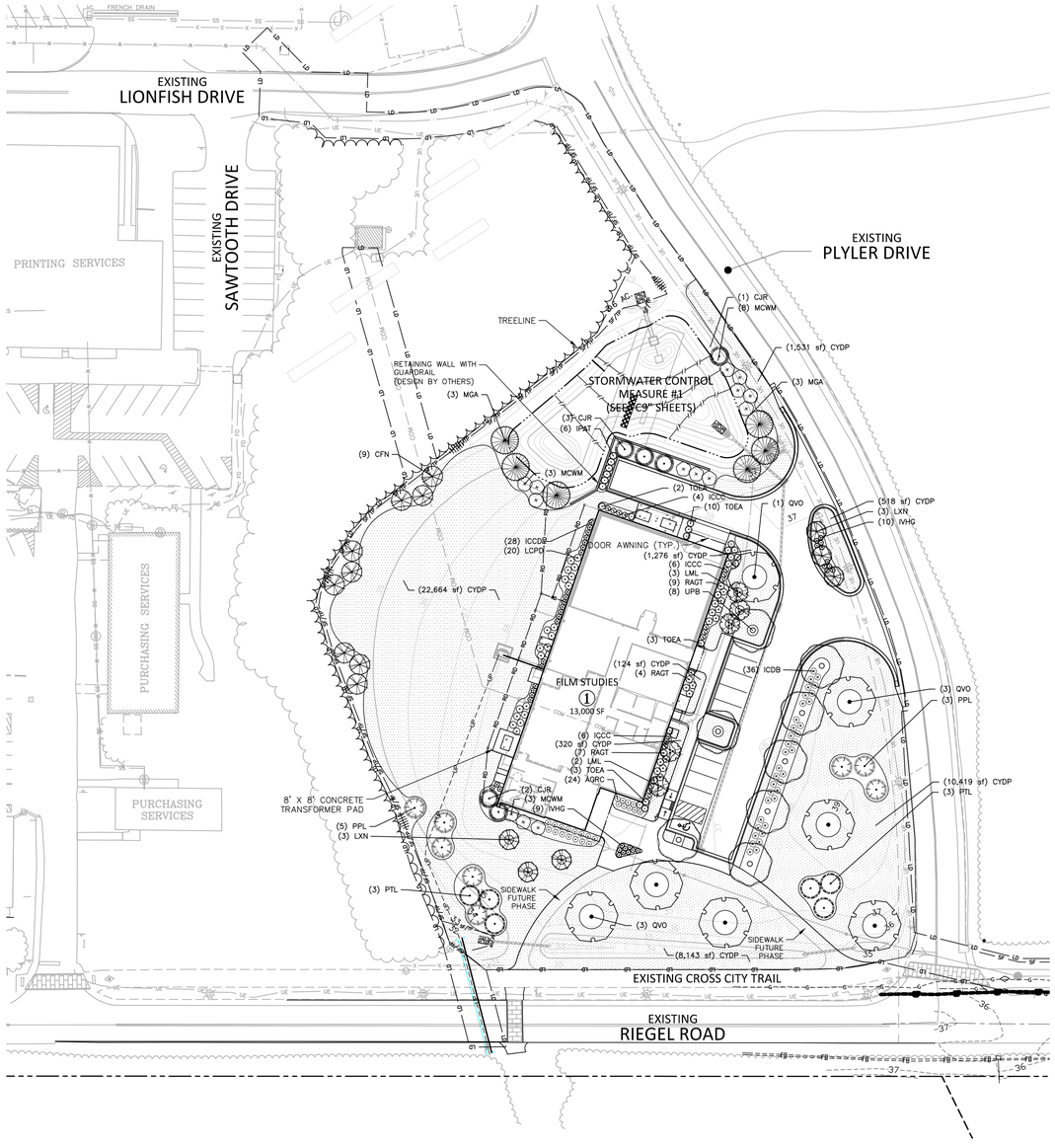
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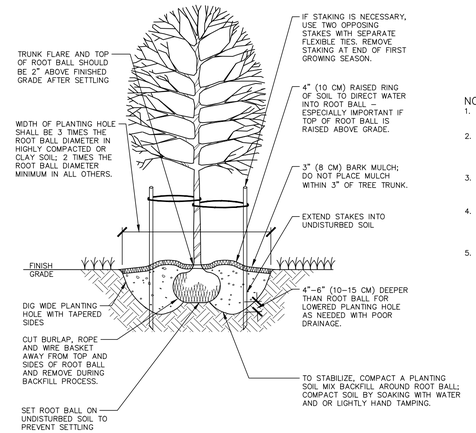
SHEET

STORMWATER CONTROL MEASURE LANDSCAPE PLAN

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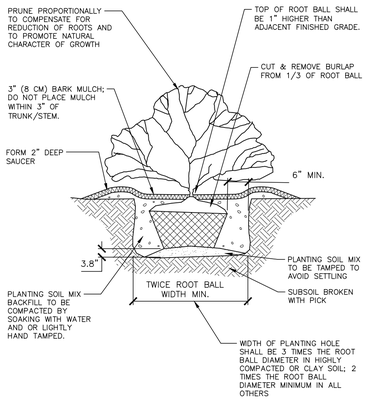
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01 TREE PLANTING
SCALE: 3/8"=1'-0"

NOTES:
1. SELECT TREES THAT HAVE: STRONG CENTRAL LEADER; CROWN WITH FULL FOLIAGE; ARE GROWN IN HEAVY CLAY SOIL WITH DRIP IRRIGATION.
2. BEFORE INSTALLING PLANTING SOIL MIX BACKFILL AROUND ROOT BALL, BE SURE TO SOAK HOLE TO CONFIRM WATER FILTERS THROUGH UNDISTURBED SOIL. DESIGN ALTERNATIVE DRAINAGE SYSTEM IF REQUIRED.
3. A SOIL EXPERT CAN BE CONSULTED TO HELP MODIFY AND FERTILIZE TOPSOIL TO CREATE AN ACCEPTABLE PLANTING SOIL MIX FOR THE SITE CONDITIONS AND SPECIFIC TREE SPECIES.
4. IF USING CONTAINER GROWN TREES, USE FINGERS OR SMALL HAND TOOLS TO PULL ROOTS OUT OF THE OUTER LAYER OF POTTING SOIL; THEN CUT OR PULL APART ANY ROOTS CIRCLING THE PERIMETER OF THE CONTAINER.
5. THOROUGHLY SOAK THE TREE ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND DURING DRY PERIODS.



02 SHRUB PLANTING
SCALE: 3/8"=1'-0"

SITE LEGEND

- SIGNAGE
- TRAFFIC DIRECTIONAL ARROW
- ACCESSIBLE PARKING STALL
- PROPERTY LINE
- RIGHT–OF–WAY LINE

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. REFER TO SPECIFICATIONS FOR SOIL TESTING, SOIL PREPARATION, MATERIAL SELECTION AND HANDLING, AND OTHER REQUIREMENTS. Narrative SPECIFICATIONS SHALL SUPERSEDE DRAWINGS IF DISCREPANCIES ARE IDENTIFIED.
3. CONTRACTOR IS RESPONSIBLE FOR THE SITE INSPECTION BEFORE LANDSCAPE CONSTRUCTION AND INSTALLATION IN ORDER TO BECOME FAMILIAR WITH THE EXISTING CONDITIONS.
4. LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES BEFORE BEGINNING DEMOLITION OR INSTALLATION.
5. PRIOR TO CONSTRUCTION, ANY DISCREPANCIES BETWEEN THE CONSTRUCTION PLANS, SPECIFICATIONS, AND NOTES SHALL BE BROUGHT TO THE DESIGNER'S ATTENTION IMMEDIATELY.
6. 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.
7. ANY DAMAGE TO UTILITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
8. THIS PLAN IS FOR PLANTING PURPOSES ONLY. FOR INFORMATION REGARDING BUILDINGS, GRADING, WALLS, ETC., REFER TO ARCHITECTURE, SITE AND GRADING PLANS.
9. 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.
10. CONTRACTOR TO ENSURE PROPER STABILIZATION AND SEEDING OF THE SITE IN ACCORDANCE WITH APPLICABLE REGULATIONS.
11. 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.
12. 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.
13. 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.
14. 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.
15. CONTRACTOR TO COORDINATE WITH OWNER'S REPRESENTATIVE AND LANDSCAPE ARCHITECT TO ESTABLISH THE EXTENTS OF MULCH/SEED/SOD IF NOT SPECIFICALLY SHOWN ON PLANS.
16. CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE IN ALL PLANTING AREAS.
17. PROPOSED TREES TO BE PLANTED A MINIMUM 15 FEET FROM ANY LIGHT POLE AS MEASURED FROM TRUNK OF THE TREE TO THE POLE.
18. PROPOSED TREES TO BE PLANTED A MINIMUM 5 FEET FROM ANY FIRE HYDRANT AS MEASURED FROM TRUNK OF THE TREE TO THE HYDRANT.
19. 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.
20. 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.
21. 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.
22. 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.
23. SEE LANDSCAPE DETAILS FOR TREE STAKING REQUIREMENTS.
24. EXCAVATE EDGES OF ALL PLANTING BEDS TO 2 INCH DEPTH TO FORM A NEAT AND CRISP DEFINITION.
25. CONTRACTOR SHALL REMOVE DEBRIS AND FINE GRADE ALL PLANTING AREAS PRIOR TO INSTALLATION.
26. REMOVE GUY WIRES AND STAKES AT END OF WARRANTY PERIOD OR ESTABLISHMENT.
27. 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.

PLANT SCHEDULE

TREES	CODE	QTY	COMMON NAME	BOTANICAL NAME	CAL	HEIGHT	REMARKS
	CFN	9	Cloud Nine Eastern Dogwood	Cornus florida 'Cloud Nine'	1"	8'	
	CJR	6	Japanese Cedar	Cryptomeria japonica 'Radicans'	–	8'	
	LML	5	Lavender Crape Myrtle Multi–Trunk	Lagerstroemia x 'Muskogee'	–	8' min	Multi–leader
	LXN	6	White Crape Myrtle	Lagerstroemia x 'Natchez'	1.5"	8'	
	MGA	6	Alta Magnolia	Magnolia grandiflora 'Alta'	–	8' min	
	PPL	8	Longleaf Pine	Pinus palustris	–	8'	
	PTL	6	Loblolly Pine	Pinus taeda	–	8'	
	QVO	7	Southern Live Oak	Quercus virginiana	2.5" min		
	UPB	8	Bosque Elm	Ulmus parvifolia 'Bosque'	3.5"	14' min	

GROUND COVERS	CODE	QTY	COMMON NAME	BOTANICAL NAME	CONT	HEIGHT	REMARKS
	CYDP	45,303 sf	Princess 77 Bermuda Grass	Cynodon dactylon 'Princess 77'	Seed		

SHRUBS	CODE	QTY	COMMON NAME	BOTANICAL NAME	HEIGHT	REMARKS
	AGRC	24	Rose Creek Abelia	Abelia x grandiflora 'Rose Creek'	18"	
	ICCC	16	Carissa Holly	Ilex cornuta 'Carissa'	24"	
	ICDB	36	Dwarf Burford Holly	Ilex cornuta 'Dwarf Burford'	24"	
	ICCD	28	Dwarf Japanese Holly	Ilex crenata 'Compacta'	18"	
	IPAT	6	Anise Tree	Illicium parviflorum	36"	
	IVHG	19	Henry's Garnet Sweetspire	Itea virginica 'Henry's Garnet'	18"	
	LCPD	20	Fringe Flower	Loropetalum chinense 'Purple Diamond'	24" min	
	MCWM	14	Wax Myrtle	Myrica cerifera	36" min	
	RAGT	20	Large Pink Azalea	Rhododendron azalea 'George L. Taber'	24"	
	TOEA	18	Emerald Arborvitae	Thuja occidentalis 'Emerald'	48"	

BID ALTERNATIVES:

BASE BID - SEED ALL DISTURBED AREAS: +/- 61,400 SF

BID ALTERNATE #2 - INSTALL ENHANCED LANDSCAPE PER PLAN

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

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

McADAMS
The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713

phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293

www.mcadamsco.com

CLIENT

UNC WILIMINGTON
601 SOUTH COLLEGE ROAD
WILMINGTON, NORTH CAROLINA 28403
PHONE: 910.962.3761

UNCW - FILM STUDIES BUILDING
CONSTRUCTION DRAWINGS
901 SOUTH COLLEGE ROAD
WILMINGTON, NORTH CAROLINA, 28403-5620

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 1898 DAVE C. TOMS
9/19/2019

REVISIONS

NO. DATE

PLAN INFORMATION

PROJECT NO.	BMG-19000
FILENAME	UNW19000-LS1
CHECKED BY	DCT
DRAWN BY	AMR
SCALE	1"=40'
DATE	09.19.2019

SHEET

LANDSCAPE PLAN

L5.01

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1.0 CODES AND STANDARDS:

1.1 "2018 North Carolina State Building Code" and "International Building Code", 2015.

1.2 "Minimum Design Loads for Buildings and other Structures" SEI/ASCE 7-10.

1.3 "Building Code Requirements for Structural Concrete (ACI 318-14)" American Concrete Institute 2014.

1.4 "Manual of Standard Practice", Concrete Reinforcing Steel Institute, latest edition.

1.5 "Specification for Structural Steel Buildings (AISC 360-10)" American Institute of Steel Construction, 2011 – 14th Edition

1.6 "Structural Welding Code – Steel (AWS D1.1)" and "Structural Welding Code – Reinforcing Steel (AWS D1.4)", American Welding Society.

1.7 "Specification for the Design of Cold-Formed Steel Structural Members", American Iron and Steel Institute (AISI), latest edition.

2.0 DESIGN LOADS:
Project Located in: City of Wilmington, County of New Hanover, State of North Carolina.

2.1 Gravity Loads: (Reduced where allowed)

GRAVITY LOADS		
Location	**Uniform (psf)**	**Concentrated (lbs) (Over 2.5'x2.5')**
Roof Loads:		
Dead Load	20	
Live Load	20	300
Floor Live Loads:		
Classrooms	40	
Office	81	2000
Assembly	100	
Cinema Seating	60	
Mechanical & Electrical Rooms	150	
Storage	125	
Platform	150	

2.2 Drifting Snow Loads per N.C. Building Code.

Pg = 10 psf
I = 1.0
Ce = 1.0
Ct = 1.0

2.3 Risk Category = II

2.4 Wind Loads per N.C. State Building Codes, 2018 edition (IBC 2015) & ASCE 7-10 (3-second gust)

Main Wind Force Resisting System:
V=146 mph
Exposure Category "C"

Building is enclosed & Internal Pressure coefficient (GCpi) = +0.18 & -0.18
Topographic Factor Kzt = 1.0
Wind Directionality Factor, Kd = 0.85

Calculated Wind Base Shear (For MWFRS) – Final Base Shear will be provided by PEMB Supplier.
Vx = 51K Vy = 121K

Components and Cladding:
V 146 mph
Exposure Category "C"

Components and Cladding Wind Pressure (psf)									
Walls	Area < 10ft²		< 20ft²		Area < 50ft²		Area < 100ft²		Area < 500ft²	
Zone 4	55.7	-60.3	53.2	-57.9	49.8	-54.6	47.3	-52.0	41.5	-46.2
Zone 5	55.7	-74.5	53.2	-69.5	49.8	-62.8	47.3	-57.9	41.5	-46.2
Roof	Area < 10ft²		Area < 20ft²		Area < 50ft²		Area < 100ft²		Area < 500ft²	
Zone 1	22.6	-55.7	21.2	-54.2	19.4	-52.4	17.9	-50.9	17.9	-50.9
Zone 2	22.6	-93.4	21.2	-83.5	19.4	-70.3	17.9	-60.3	17.9	-60.3
Zone 3	22.6	-140.5	21.2	-116.5	19.4	-84.5	17.9	-60.3	17.9	-60.3

Notes:
1. Areas noted are effective wind areas as per ASCE 7-10, 26.2 definitions.
2. See figures below for Zone locations.
3. Plus and minus signs signify pressures acting toward and away from surfaces, respectively.
4. Design pressures shown in table are Strength Design wind pressures. Allowable Stress Design wind pressures may be calculated by multiplying table pressures by 0.6.
5. Tributary area = greater of LxW or LxL/3.
6. Design for strength using loads from ASCE-7 or from this table. Deflections may be calculated based on 42% of these loads.

2.5 Seismic Loads per 2018 North Carolina State Building Code (IBC 2015) & ASCE 7-10

Risk Category = III
Site class = "D" (Per Geotechnical Report)
Spectral Response Coefficients:
SDS = 0.228g
SD1 = 0.145g
Cx = Cy = 0.076

Seismic Design Category = C
Seismic Importance Factor = 1.0
Basic Seismic – Force – Resisting System
Building Frame System – Steel Systems Not Specifically Detailed for Seismic Resistance.

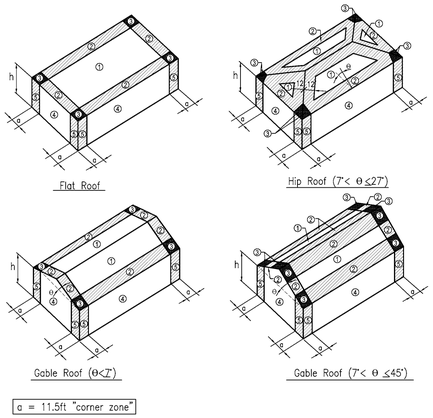
RX=RY=3.0, ΩX=ΩY=3.0, CDX=CDY=3.0
Design Base Shear – Final Base Shear will be provided by PEMB Supplier.
Vx = Vy = 15K

Building Height Limit = 160'
Analysis Procedure – 12.8.1 ASCE 7-10
Equivalent Lateral Force Procedure

2.6 Guardrail designed per North Carolina State Building Code, Section 1607.8

Guardrail:
Uniform load = 50 plf, any direction – per 1607.8.1
Concentrated load = 200 lbs, any direction – per 1607.8.1.1
Intermediate Rail: (all those expect handrail) per 1607.8.1.2

2.7 Flood Loads:
Property is not in a Designated Flood Zone



a = 11.5ft "corner zone"

3.0 FOUNDATIONS:

3.1 Foundation design is based on geotechnical report # 22:27978 by ECS Southeast, LLP, Wilmington, NC dated June 13, 2019. This report is available for inspection at the office of the architect or owner. The recommendations contained in this report are herein made part of the requirements of these contract documents.

3.2 Footings shall bear on strata capable of sustaining a minimum bearing pressure of 3,000 psf.

3.3 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.

3.4 Bottom of exterior footings, grade beams and walls shall bear at a minimum depth of 1'-6" below final grade for frost protection.

3.5 Testing and Inspection:
a. All areas to have slabs on grade shall be proof rolled in accordance with and under observation for the Geotechnical Engineer and approved prior to preparation for concrete placement.

b. All foundation bearing 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 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.

3.6 Undercutting to remove existing fill beneath footings and slab shall be performed at the direction of the Geotechnical Engineer.

3.7 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, and unit weight of 120 pcf (+ 5 pcf)

3.8 Compaction: All fill shall be placed in loose lifts not exceeding 8 inches in thickness and compacted to a minimum of 96 percent Standard Proctor (ASTM D-698) except that the top 12 inches shall be compacted to a minimum of 98 percent Standard Proctor. Moisture shall be controlled to within 3 percent above or below optimum content.

3.9 Remove all topsoil and organic materials. The stripping should extend at least 10' beyond the proposed construction limits.

3.10 Contractor shall review all construction considerations as outlined in the Geotechnical report and bid accordingly.

3.11 Foundation design for pricing only. Final foundation design will be issued after PEMB reactions are provided.

4.0 CONCRETE:

4.1 Concrete Strength:
All concrete shall be in accordance with the American Concrete Institute (ACI) 301 and 318.

4.2 Concrete shall have a 28 day compressive strength and density as follows:
a. Footings, Grade Beams, and Interior Slab-on-grade.....3,000psi, Density = ±145pcf
b. Exterior Slab on Grade.....4,000psi, Density = ±145pcf
c. Elevated Slab on Deck.....3,000psi, Density = ±145pcf

4.3 Concrete Mix Designs:
b. Submittals: Submit written reports of each proposed concrete mix not less than 15 days prior to the start of work.
c. Mix designs, including water, cement ratios and slumps, shall be prepared in accordance with ACI 301-05, Section 4, Cement shall conform to ASTM C 150 Type 1 or at contractor's option, ASTM C 595 Type IP where fly ash is permitted. 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.
d. Aggregate size shall be #67 stone for supported slabs or other formed concrete elements; #57 stone for slabs on grade and footings or other concrete elements formed from and poured against earth; #89 stone for masonry grout.
e. Water reducing admixture shall be used in all concrete.
f. Air entraining admixture in accordance with ACI 301 shall be used in all concrete exposed freezing and thawing during construction or service conditions.
g. Concrete subjected to freezing/thawing shall have a maximum water/cement ratio of 0.45 and shall contain the amount of air entraining agent specified in ACI 301-05 Section 4.

4.4 Curing:
See specifications for curing method options and apply within two (2) hours after completion of finishing to all concrete flatwork and walls, U.N.O., other than footings and grade beams.

4.5 Use a non-corrosive, non-chloride accelerating admixture in concrete exposed to temperatures below 40 degrees. Uniformly heat the water and aggregates to a temperature of not less than 50 degrees. Place and cure concrete in accordance with ACI 306.

4.6 When hot weather conditions exist, place and cure concrete in accordance with ACI 301. Cool ingredients before mixing to maintain concrete temp. at time of placement below 90 degrees.

4.7 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.

4.8 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.

4.9 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.

4.10 Base plates, anchor rods, support angles and other steel exposed to earth or granular fill shall be covered with a minimum of 3" of concrete.

4.11 Fill slabs, not shown on the structural drawings, shall be reinforced with a minimum of 3.0 lbs/yd³ of synthetic macro-fibers – see plan notes, unless noted otherwise on other drawings.

4.12 Finish surfaces to the following tolerances, according to ASTM E 1155, for a randomly trafficked floor surface:
a. Specified overall values of flatness, F(F) 25; and of levelness, F(L) 20; with minimum local values equal to ⅔ of the overall flatness and levelness values.
b. The composite F(F) and F(L) numbers shall be measured and reported within 72 hours after completion of slab concrete finishing operations and before removal of any supporting shores.

4.13 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.

4.14 Provide concrete grout – not mortar – for reinforced masonry lintel and bond beams where indicated on drawing or as scheduled.

4.15 Tolerance for anchor rods and other embedded items shall be per the AISC Code of Standard Practice Section 7.5.

4.16 Unless otherwise shown in the architectural drawings, provide 3/4-inch chamfers at all column, wall, slab or beam edges that are exposed to view in the finished structure.

4.17 Concrete cover for cast-in-place concrete reinforcement:
Concrete cast against & permanently exposed to earth:.....3 Inches
Concrete exposed to earth or weather:
No. 6 through No. 18 Bars:.....2 Inches
No. 5 Bar and smaller:.....1½" Inches
Concrete not exposed to weather or in contact with ground:
Slabs, Walls, Joists:
No. 11 Bar and smaller:.....¾" Inches
Beams, Columns:
Primary Reinforcement, Ties, Stirrups:.....1½" Inches

5.0 REINFORCING STEEL:

5.1 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.

5.2 Field bending of concrete reinforcing steel is not permitted.

5.3 Welded wire mat and fabric shall conform to ASTM A184 and A185 respectively and shall be provided in flat sheets. Welded wire mat/fabric shall be lapped 0'-6" at all splices.

5.4 Bar Splices:

	f'c = 3,000psi		f'c = 4,000psi		f'c = 5,000psi	
Bar Size	**Ld (in)**	**Class "B" Lap Splice (in)**	**Ld (in)**	**Class "B" Lap Splice (in)**	**Ld (in)**	**Class "B" Lap Splice (in)**
#3	17	22	15	19	13	17
#4	22	29	19	25	17	23
#5	28	36	24	31	22	28
#6	33	43	29	37	26	34
#7	48	63	42	54	38	49
#8	55	72	48	62	43	56

1. Values are based on normal weight concrete.
2. Ld = minimum embed of rebar
3. Class "B" lap splice refers to minimum distance bars must be lapped for a full tension splice.

6.0 LIGHT GAUGE STEEL FRAMING (DIETRICH):

6.1 All members shall be designed in accordance with the American Iron and Steel Institute (AISI) "Specifications for the Design of Cold-formed Steel Structural Members", Latest Edition.

6.2 All framing members shall be formed from corrosion-resistant steel corresponding to the requirements of ASTM A446, with a minimum yield strength of 33 ksi for joists and studs and 33 ksi for runners.

6.3 All members shown are standard designations of "Dietrich Industries, Inc."

6.4 Design of members indicated in structural drawings is based on minimum properties of products produced by "Dietrich Industries." No substitution of materials is acceptable for use without prior approval of the structural engineer. Substitutions shall meet or exceed all properties produced by "Dietrich Industries, Inc."

6.5 All shop drawing submittals shall show layout, spacing, sizes, thicknesses and types of cold-formed metal framing, fabrication, and fastening and anchorage details, including mechanical fasteners. Show reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details and attachment to adjoining work.

6.6 All framing components shall be cut squarely for attachment to perpendicular members or as required for an angular fit tight against abutting members. All load bearing stud/walls shall be factory assembled into panels with studs bearing squarely and fully in top and bottom tracks.

6.7 Fastening components shall be by self-drilling screws or by welding as defined below UNO on the drawings.

6.8 Screwed connections:
a. Screws shall be type S-12 or type S-4 for all framing members per manufacturer's recommendations.
b. A minimum of three (3) exposed threads shall penetrate through at joined materials.
c. Corrosion-resistant cadmium-plated screws shall be used for screws attaching metal lath, masonry ties, and other exterior materials.

6.9 Welded connections:
a. Gas metal arc welding (GMAW) shall be used for 20 ga. Or lighter members. AWSE-705-3, E-705-E, E-705-6 wire electrodes .030"-.035" diameter shall be used with carbon dioxide, argon-oxygen or argon-carbon dioxide shielding. Welding equipment 60-100 amperes at 25 volts using 220-volt 3-phase electric service.
b. 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.
c. All welds shall be touched up with zinc rich paint, or paint similar to that used by the framing member manufacturer.

6.10 Alignment of studs (plumbness) and walls (straightness) shall be within 1/960 of their respective heights and lengths.

6.11 Studs shall be plumbed, aligned, and securely attached to top and bottom runners. Splices in studs are not permitted.

6.12 Where manufacturer's recommendations for erection, attachment, assembly, bracing, alignment, or other installation, or assembly requirements are more stringent than indicated in these drawings, the manufacturer's recommendations shall apply.

STEEL THICKNESS						
Gauge:	**Mils**	**Design Thickness**		**Minimum Thickness**		**Yield Strength**
		Inches	**mm**	**Inches**	**mm**	**ksi**
20	33	0.0346	0.879	0.0329	0.836	33
18	43	0.0451	1.146	0.0428	1.087	33
16	54	0.0566	1.438	0.0538	1.367	50
14	68	0.0713	1.811	0.0677	1.720	50
12	97	0.1017	2.583	0.0966	2.454	50

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ARCHITECTURE PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
Newark, DE 19711
302.369.3700

www.beckermorgan.com

WOODS ENGINEERING
Consulting Structural Engineers
254 North Front Street
Suite 201 Wilmington,
NC 28401
Phone: 910.343.8007
Fax: 910.343.8088
www.woodseng.com

WOODS ENGINEERING, P.A. CORPORATE SEAL No. C-1806 NORTH CAROLINA

NORTH CAROLINA PROFESSIONAL SEAL 19475 ENGINEER DON R. WOODS

PROJECT TITLE

UNCW

SCO ID: 19-20473-01A
PM#: 6034

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

GENERAL NOTES

ISSUE BLOCK

Mark	Date	Description

PROJECT NO: 18-2870
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S-101

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7.0 STRUCTURAL STEEL:

7.1 All structural steel shall be of the grades indicated below, unless noted otherwise on plans or details.
Rolled shapes ASTM A992 Gr. 50
Steel pipe ASTM A53, Type E or S, Grade B, Fy=35ksi
Structural tubing ASTM A500, Grade B, Fy=46ksi
Plates and bars ASTM A36 U.N.O.
Anchor rods ASTM F1554, Grade 36 U.N.O.
Miscellaneous ASTM A36 U.N.O.

7.2 All structural steel shall be detailed, fabricated and erected in accordance with the AISC Code of Standard Practice. The fabricator is responsible for the design of connections not shown on the structural drawings.

7.3 Connection Design:
a. Generally, connections shown on the drawings are schematic and are intended to show the relationship of the members.
b. Connections shall be designed for one-half (1/2) the allowable uniform load on the member, as defined in Part 3, "Allowable Loads on Beams" tables in the AISC "Manual of Steel Construction", 14th Edition, See plan notes for design methodology and minimum reactions.

7.4 Bolted connections:
a. Bearing type connections shall be snug tight with A325N or A490N bolts, U.N.O. Oversized and long-slotted holes are NOT permitted U.N.O. At single shear plate connections, provide bearing type fasteners with horizontal short slotted holes. All bolts shall be snug tight. DO NOT over torque bolts.
b. 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.
c. 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.
d. Bolted connections shall be assembled and inspected in accordance with RCSC-2009 (Specification for Structural Joints Using High-Strength Bolts).

7.5 Welded connections:
a. All welding shall be in accordance with the "Structural Welding Code - Steel" (AWS D1.1) of the American Welding Society, Latest Edition.
b. Electrodes for welding shall comply with the requirements of Table 4.1.1 of the AWS code.
c. At Moment Connections and Braced Frames Provide filler Metal that has a minimum CVN Toughness of 20 ft-lbs at minus 20 degrees F, As determined by AWS classification or Manufacturer Certification.
d. Proof of welder certification shall be available at the job site during times of inspection.

7.6 Minimum plate thickness shall be 3/8" U.N.O.; minimum bolt diameter shall be 3/4-inch U.N.O.; minimum shop weld shall be 3/16" and minimum field weld shall be 1/4-inch U.N.O.

7.7 All re-entrant corners (such as copes and blocks) shall be cut and shaped notch free with a radius of at least 1/2-inch.

8.0 PRE-ENGINEERED METAL BUILDING (PEMB):

8.1 Design the building system(s) in accordance with the 2018 North Carolina state building code.

8.2 Design the roof system(s) for the live loads or snow loads (whichever is greater) indicated and a collateral load of 3 psf in addition to the roof dead loads (including roof- and ceiling-mounted equipment, such as A.V. loads, lighting, stage equipment, etc.), wind loads, and seismic loads.

8.3 Load combinations shall be in accordance with ASCE 7-10 unless the MBMA Metal Building Systems Manual (2006) load combinations are more stringent.

8.4 Design the building system(s) with hinged/pinned column bases.

8.5 Building Lateral deflections/racking/drift limits shall be in accordance with "Serviceability Considerations" summary tables contained in AISC Steel Design Guide Series 3 "Serviceability Design Considerations for Low Rise Buildings" (1990). Frame drift shall be limited to max H/60. Deflection limits shall not exceed deflection tolerances of equipment supported by the building.

8.6 Design and provide structural members for the support of HVAC units, ducts, fans, piping, electrical components, supported partitions, etc.

8.7 Submit final calculations sealed by the PEMB Structural Engineer. Final calculations shall include the combined maximum reaction for each column (i.e. the maximum reaction determined by the controlling load combination).

9.0 SHOP DRAWING SUBMITTAL:

9.1 Contractor shall submit Electronic copies (PDF format) of each shop drawing for review. Shop drawings shall be reviewed by the Contractor prior to submission to the Engineer. The Contractor shall allow 10 working days for shop drawing approval.

10.0 CONSTRUCTION AND SAFETY:

10.1 Woods Engineering P.A.'s responsibility is limited to the details and information shown on these drawings. It is the responsibility of the Contractor to provide adequate safety measures required by local codes as well as OSHA Standards for the Construction Industry.
This should include, but not be limited to the following:
Shoring to protect new as well as existing structures.
Necessary Scaffolding.
Material Handling Equipment.
Trench Boxing.

11.0 SPECIAL INSPECTIONS:

11.1 Refer to Sheet S1.03 for Inspections requirements.

ABBREVIATIONS

@	AT
&	AND
AB	ANCHOR BOLTS
ACI	AMERICAN CONCRETE INSTITUTE
ADDL	ADDITIONAL
AFF	ABOVE FINISHED FLOOR
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
AISI	AMERICAN IRON AND STEEL INSTITUTE
ALT	ALTERNATE
ARCH	ARCHITECTS - ARCHITECTURAL
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWS	AMERICAN WELDING SOCIETY
B, BOTT	BOTTOM
BCX	BOTTOM CHORD EXTENSION
BFF	BELOW FINISHED FLOOR
BLDG	BUILDING
BM	BEAM
BOS	BOTTOM OF STEEL
BRG	BEARING
BTWN	BETWEEN
CJ	CONTRACTION JOINT
CL	CENTERLINE
CLR	CLEAR
CMU	CONCRETE MASONRY UNITS
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONST JT	CONSTRUCTION JOINT
CONT	CONTINUOUS
CONTR	CONTRACTOR
CSJ	COMPOSITE STEEL JOIST
CTRD	CENTERED
DBA	DEFORMED BAR ANCHOR
DD	DELEGATED DESIGN
DEFL	DEFLECTION
DEPR	DEPRESSION - DEPRESSED
DET	DETAIL
DIAG	DIAGONAL
ø	DIAMETER
DIM	DIMENSION
DIST	DISTANCE
DWG(S)	DRAWING(S)
DWL(S)	DOWEL(S)
EA	EACH
ELEV	ELEVATION
EMBED	EMBEDDED - EMBEDMENT
ENG	ENGINEER
EOR	ENGINEER OF RECORD
EQ	EQUAL
EQUIP	EQUIPMENT
EF	EACH FACE
EJ	EXPANSION JOINT
EOD	EDGE OF DECK
EOS	EDGE OF SLAB
EOW	EDGE OF WALL
EW	EACH WAY
EXIST	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
FDN	FOUNDATION
FFE	FINISHED FLOOR ELEVATION
FS	FAR SIDE
FTG	FOOTING
GA	GAUGE
GALV	GALVANIZED
GT	GIRDER TRUSS
HD	HEADED
HI	HIGH
HORIZ	HORIZONTAL
HSS	HOLLOW STRUCTURAL SECTION
HT	HIP TRUSS
IFM	INSIDE FACE OF MASONRY
INT	INTERIOR
JBE	JOIST BEARING ELEVATION
JT	JOINT
K	KIP-S
KB	KICKER BRACE
KSI	KIPS PER SQUARE INCH
(L)	LONG SIDE REINFORCEMENT
LB	LONG BAR
LBS	POUNDS
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LO	LOW
LOC	LOCATION
LWC	LIGHT WEIGHT CONCRETE
MAX	MAXIMUM
MC	MOMENT CONNECTION
MECH	MECHANICAL
MFR	MANUFACTURER
MID	MIDDLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MOW	MIDDLE OF WALL
MP	MASONRY PILASTER
d	NAILS - PENNY
No	NUMBER
NS	NEAR SIDE
NTS	NOT TO SCALE
NWC	NORMAL WEIGHT CONCRETE
OC	ON CENTER
OFB	OUTSIDE FACE OF BRICK
OFM	OUTSIDE FACE OF MASONRY
OFS	OUTSIDE FACE OF STUD
OPNG	OPENING
OPP	OPPOSITE HAND
PEMB	PRE-ENGINEERED METAL BUILDING
PED	PEDESTAL
PL	PLATE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSL	PARALLEL STRAND LUMBER
PLF	POUNDS PER LINEAR FOOT
PT	PRESSURE TREATED
REF	REFERENCE
REINF	REINFORCING
REQD	REQUIRED
(S)	SHORT SIDE REINFORCEMENT
SB	SHORT BAR
SCHD	SCHEDULE
SF	STEP FOOTING
SIM	SIMILAR
SOG	SLAB ON GRADE
SPEC(S)	SPECIFICATION(S)
SPF	SPRUCE PINE FUR
SQ	SQUARE
STD	STANDARD
STIFF	STIFFENER
STIRR	STIRRUP
STL	STEEL
STR	STRUCTURAL
SW	SHEAR WALL
SYP	SOUTHERN YELLOW PINE
T	TOP
TCX	TOP CHORD EXTENSION
TOC	TOP OF CONCRETE
TOS	TOP OF STEEL
TOW	TOP OF WALL
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VB	VEHICLE BARRIER
VERT	VERTICAL
VIF	VERIFY IN FIELD
W	WITH
WWF	WELDED WIRE FABRIC

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ARCHITECTURE PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
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Consulting Structural Engineers
254 North Front Street
Suite 201 Wilmington,
NC 28401
Phone: 910.343.8007
Fax: 910.343.8088
www.woodseng.com

WOODS ENGINEERING, P.A. CORPORATE SEAL No. C-1806 NORTH CAROLINA

NORTH CAROLINA PROFESSIONAL SEAL 19475 ENGINEER DON R. WOODS

PROJECT TITLE

UNCW

SCO ID: 19-20473-01A
PM#: 6034

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

GENERAL NOTES

ISSUE BLOCK

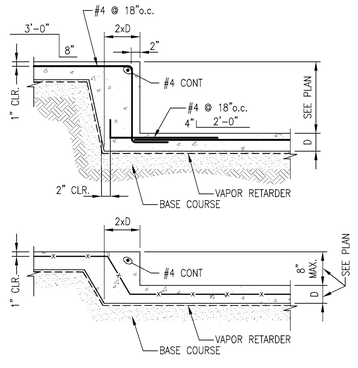
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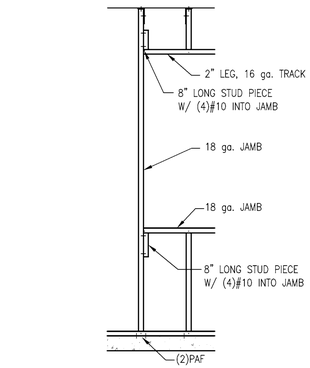
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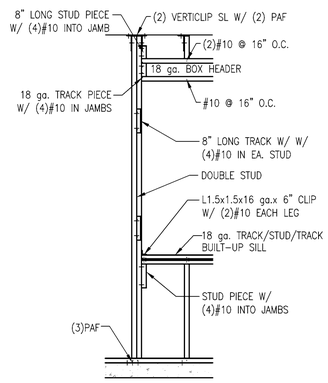
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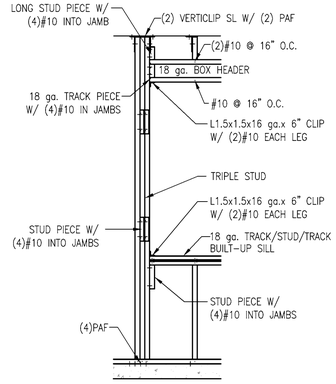
TYPICAL SLAB STEP
SCALE: 3/4" = 1'-0"



TYPICAL EXTERIOR WALL FRAMING AT WINDOW OPENING UP TO 3'-4"
SCALE: 1/2" = 1'-0"



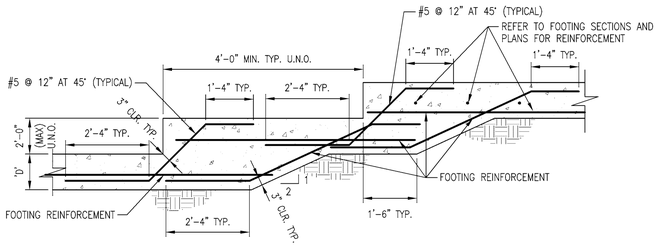
TYPICAL EXTERIOR WALL FRAMING AT WINDOW OPENING UP TO 6'-4"
SCALE: 1/2" = 1'-0"



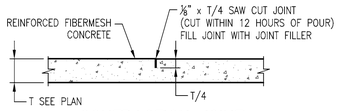
TYPICAL EXTERIOR WALL FRAMING AT WINDOW OPENING UP TO 8'-8"
SCALE: 1/2" = 1'-0"

TYPICAL LIGHT GAUGE CONSTRUCTION DETAILS FOR NON-LOAD BEARING EXTERIOR WALLS

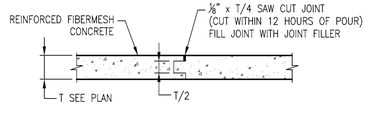
NOTE: THESE DETAILS ARE GENERIC AND ARE FOR GENERAL INFORMATION AND BUDGET PRICING. ACTUAL DESIGN BY LIGHT GAUGE SUPPLIER AND ENGINEER.



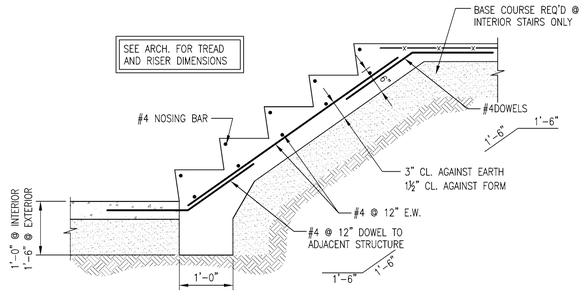
STEP FOOTING DETAIL
SCALE: 1/2" = 1'-0"



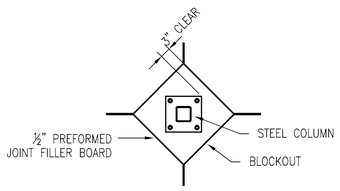
CONTRACTION JOINT
SCALE: 1" = 1'-0"



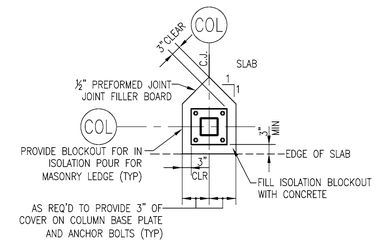
CONSTRUCTION JOINT
SCALE: 1" = 1'-0"



TYPICAL STAIR ON GRADE
SCALE: 3/4" = 1'-0"



ISOLATION JOINT DETAIL
NOT TO SCALE



TYPICAL ISOLATION JOINT AT SLAB EDGE
NOT TO SCALE

SCHEDULE FOR STRUCTURAL MATERIAL INSPECTIONS							
BUILDING COMPONENTS OR MATERIAL	**MATERIAL SUBMITTAL**	**INSPECTION / MONITORING**	**INSPECTION FREQUENCY**	**INSPECTOR QUALIFICATIONS**	**TEST REQUIREMENTS**	**TEST FREQUENCY**	**INSPECTION AGENCY**
SOILS	1. REVIEW ECS, INC. GEOTECHNICAL REPORT #22:27978 – ALLOWABLE SOIL BEARING = 3,000 PSF 2. FILL MATERIAL SPECIFICATIONS. 3. VAPOR BARRIER	1.-2. INSPECT SOILS PER ATTACHED 2015 IBC, TABLE 1705.6 FOR REQUIRED VERIFICATION AND INSPECTION. 3. INSPECT VAPOR BARRIER INSTALLATION. SEE PROJECT & MANUFACTURER SPECS.	ALL INSPECTIONS ARE PERIODIC EXCEPT FILL PLACEMENT AND COMPACTION WHICH IS CONTINUOUS.	1. QUALIFIED INSPECTION AGENCY A) INSPECTION AGENCY TO BE APPROVED BY SPECIAL INSPECTION COORDINATOR & BUILDING OFFICIAL.	1. PROVIDE VISUAL AND DCP TESTS PER ASTM STP-399 2. SUBGRADE DENSITY VERIFICATION	1. EACH ISOLATED FOOTING AND AT 20' INTERVALS FOR CONTINUOUS FOOTINGS. 2. AS REQUIRED TO VERIFY ENTIRE BUILDING PAD.	1. QUALIFIED INSPECTION AGENCY A) INSPECTION AGENCY TO BE APPROVED BY SPECIAL INSPECTION COORDINATOR & BUILDING OFFICIAL.
CONCRETE	1. SUBMIT CONCRETE MIX DESIGN. 2. SUBMIT MATERIAL CERTIFICATION 3. SUBMIT REBAR SHOP DRAWINGS.	INSPECT CONCRETE CONSTRUCTION PER ATTACHED 2015 IBC, TABLE 1705.3	AS OUTLINED PER TASK IN TABLE 1705.3	1. QUALIFIED INSPECTION AGENCY A) INSPECTION AGENCY TO BE APPROVED BY SPECIAL INSPECTION COORDINATOR & BUILDING OFFICIAL.	1. TEST CONCRETE FOR COMPRESSIVE STRENGTH, SLUMP, AIR CONTENT, TEMPERATURE AND BATCH TO PLACEMENT TIME.	1. SAMPLES FOR STRENGTH TESTS FOR EACH CLASS OF CONCRETE PLACED EACH DAY SHALL BE TAKEN NOT LESS THAN ONCE A DAY, NOR LESS THAN ONCE FOR EACH 50 YD^3 OF CONCRETE, NOR LESS THAN ONCE FOR EACH 5,000FT^2 OF SURFACE AREA FOR SLABS OR WALLS.	1. QUALIFIED INSPECTION AGENCY A) INSPECTION AGENCY TO BE APPROVED BY SPECIAL INSPECTION COORDINATOR & BUILDING OFFICIAL.
STEEL	1. SUBMIT ANCHOR BOLT SETTING PLAN. 2. SUBMIT STEEL SHOP DRAWINGS. 3. SUBMIT MATERIAL CERTIFICATES. 4. FABRICATOR CERTIFICATE OF COMPLIANCE WITH 2015 IBC, 1704.2.5.1	INSPECT STEEL PER AISC 360	AS OUTLINED PER AISC 360	1. QUALIFIED INSPECTION AGENCY A) INSPECTION AGENCY TO BE APPROVED BY SPECIAL INSPECTION COORDINATOR & BUILDING OFFICIAL.	1. VISUAL INSPECTION BY A QUALIFIED STEEL INSPECTOR. 2. MOMENT CONNECTIONS FIELD WELDED. 3. ALL FIELD BOLTING SHALL BE SNUG TIGHT.	INSPECT ALL FIELD CONNECTIONS. CONTINUOUS INSPECTION OF ALL MOMENT CONNECTIONS REQUIRED.	1. QUALIFIED INSPECTION AGENCY A) INSPECTION AGENCY TO BE APPROVED BY SPECIAL INSPECTION COORDINATOR & BUILDING OFFICIAL.

BECKER MORGAN GROUP
ARCHITECTURE PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
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302.369.3700

www.beckermorgan.com

WOODS ENGINEERING
Consulting Structural Engineers
254 North Front Street
Suite 201 Wilmington,
NC 28401
Phone: 910.343.8007
Fax: 910.343.8088
www.woodseng.com

WOODS ENGINEERING, INC. CORPORATE SEAL No. C-1806 NORTH CAROLINA

NORTH CAROLINA PROFESSIONAL SEAL 19475 ENGINEER DON R. WOODS

PROJECT TITLE

UNCW

SCO ID: 19-20473-01A
PM#: 6034

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

Typical Details and Structural Material Inspections

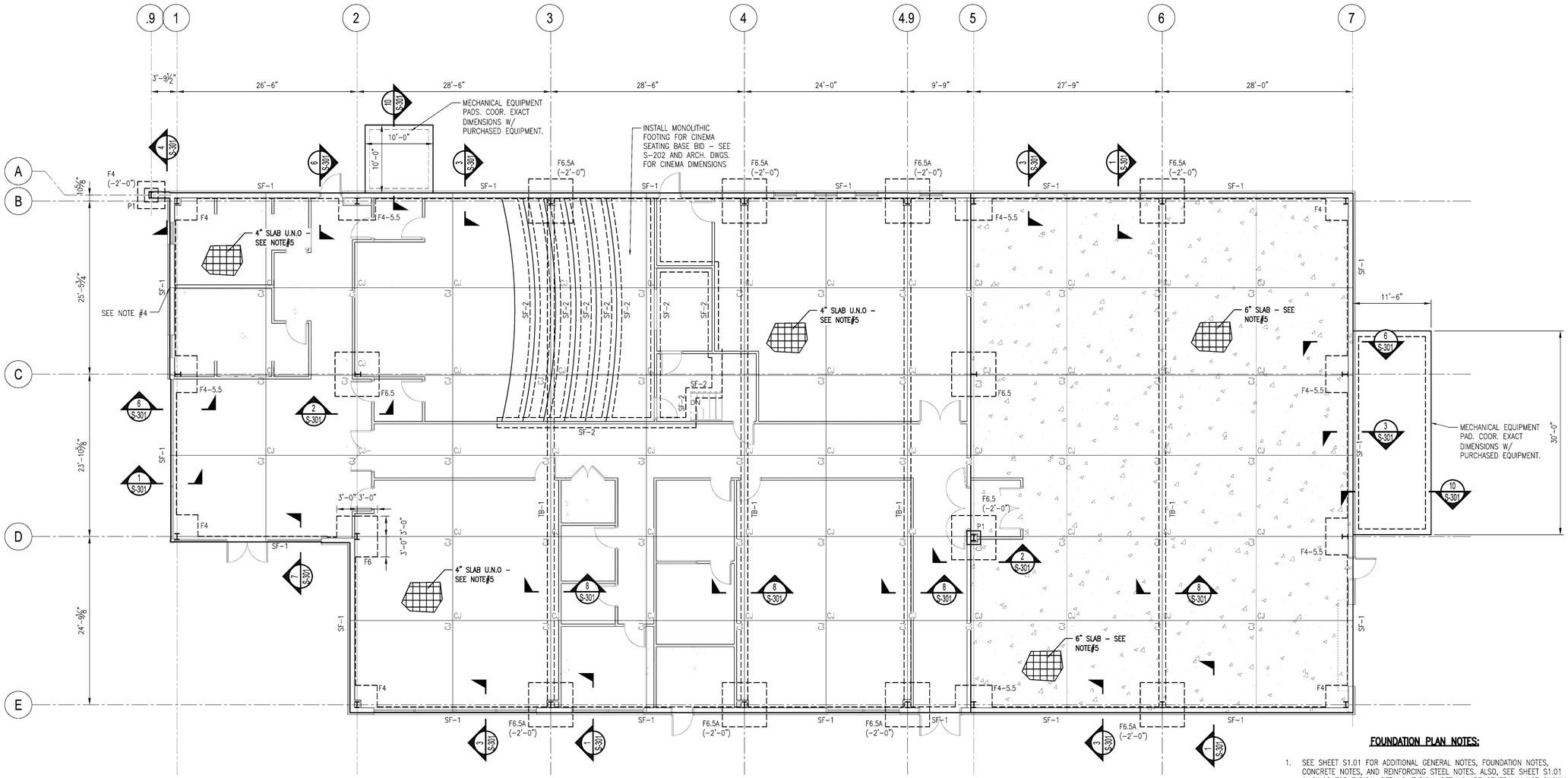
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FOUNDATION PLAN

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

FOUNDATION LEGEND

FX	SPREAD FOOTING DESIGNATION SEE SCHEDULE THIS SHEET
SF-X	STRIP FOOTING DESIGNATION SEE SCHEDULE THIS SHEET
I	PRE-ENGINEERED METAL BUILDING STEEL COLUMN - SEE PEMB BASE PLATE INFO AND S3.01 FOR ANCHOR BOLT INFO
CJ	SLAB CONTROL OR CONSTRUCTION JOINT - SEE DETAILS ON S1.01
	LIGHT GAUGE JOIST, SEE PLAN FOR SIZE AND LOCATION
P-1	PIER DESTINATION, SEE SCHEDULE ON 4-4/S-301
TB-1	TIE BEAM #1, SEE 8-8/S-301
	6" SLAB - SEE NOTE #5
	INDICATES 3" SLAB DEPRESSION - COORDINATE EXACT LIMITS w/ARCH. DWGS. & S3.01 FOR TYPICAL SLAB DEPRESSION DETAILS.

STRIP FOOTING (SFX) SCHEDULE

MARK	SIZE width x thickness x length	REINFORCEMENT (BOTTOM BARS)	REMARKS
SF-1	1'-0" x 2'-0" x CONT.	(2) #4 BOTT. CONT. & (1) #4 TOP CONT.	SEE DETAIL 3/S3.01
SF-2	1'-6" x 0'-8" x CONT.	(2) #5 BOTT. CONT.	SEE DETAIL 5/S3.01

FOOTING (FX) SCHEDULE

MARK	SIZE width x length x thickness	REINFORCEMENT (BOTTOM BARS)	REINFORCEMENT (TOP BARS)
F4	4'-0" x 4'-0" x 2'-0"	(4) #5 EW	(4) #4 EACH WAY
F4-5.5	4'-0" x 5'-6" x 2'-0"	(4) #5 LW / (5) #5 SW	(4) #4 LONG / (5) #4 SHORT
F6	6'-0 x 6'-0" x 2'-0"	(6) #5 EW	(6) #4 EACH WAY
F6.5	6'-6" x 6'-6" x 2'-0"	(8) #6 EW	(8) #4 EACH WAY
F6.5A	6'-6" x 6'-6" x 2'-0"	(8) #6 EW	(8) #6 EACH WAY
F7.5	7'-6" x 7'-6" x 2'-0"	(9) #6 EW	(9) #4 EACH WAY

SCHEDULE NOTES:
1. FOOTINGS ARE MONOLITHIC WITH SLAB UNLESS TOP OF FOOTING IS NOTED OTHERWISE ON PLAN.
2. FOOTINGS FOR PRICING ONLY. FINAL DESIGN WILL BE PROVIDED WHEN PRE-ENGINEERED BUILDING COLUMN REACTIONS ARE PROVIDED. G.C. TO PROVIDE UNIT PRICE FOR CONCRETE/yd³

FOUNDATION PLAN NOTES:

1. SEE SHEET S1.01 FOR ADDITIONAL GENERAL NOTES, FOUNDATION NOTES, CONCRETE NOTES, AND REINFORCING STEEL NOTES. ALSO, SEE SHEET S1.01 & S1.02 FOR TYPICAL DETAILS. TYPICAL DETAILS ARE GENERALLY NOT SHOWN ON PLAN BUT RATHER ARE INTENDED TO DEFINE TYPICAL CONSTRUCTION CONDITIONS.
2. DATUM ELEVATION = TOP OF SLAB ELEVATION ASSUMED 0'-0". OTHER ELEVATIONS ARE NOTED AS (+ OR -) FROM DATUM ELEVATION.
3. FOOTINGS ARE MONOLITHIC WITH SLAB UNLESS NOTED AS (±X'-X") FROM DATUM ELEVATION.
4. RELOCATE ANY UTILITY LINES THAT CONFLICT WITH THE FOUNDATIONS OR DROP THE FOUNDATIONS TO AN ELEVATION BELOW THE PROPOSED UTILITIES. RELOCATE ANY GRAVITY FLOW LINES THAT CONFLICT WITH SPREAD FOOTINGS AS SHOWN ON STRUCTURAL FOUNDATION PLANS. IF A GRAVITY FLOW LINE TRAVELS UNDER A CONTINUOUS STRIP FOOTING EITHER
   a. DROP THE FOOTING ELEVATION BELOW THE PROPOSED LINE
   b. ENCASE THE LINE IN A STEEL PIPE 2" LARGER IN DIAMETER THAN THE LINE AND EXTEND THE PIPE 1'-0" PAST EACH SIDE OF THE CONCRETE FOOTING. BACKFILL THE TRENCH WITH #57 STONE. THE BEARING CAPACITY OF THIS AREA MUST MEET OR EXCEED THE ALLOWABLE SOIL BEARING CAPACITY
5. SLAB-ON-GRADE SHALL BE 4" OR 6" THICK (SEE PLAN) 3000 psi CONCRETE WITH 3.0lbs/yd.³ OF SYNTHETIC MACRO-FIBERS (TUF-STRAND SF BY EUCLID, FIBER MAC SERIES BY BASF, FORTA-FERRO BY FORTA CORP, OR APPROVED EQUAL) or WWF6x6xW2.9xW2.9 ON 15 mil VAPOR BARRIER, ON 6" CLEAN SANDS WITH LESS THAN 3% FINES, ON WELL COMPACTED SUB GRADE. SEE S1.01 FOUNDATION NOTES FOR COMPACTION REQUIREMENTS. VERIFY COMPACTION w/QUALIFIED GEOTECHNICAL ENGINEER.
6. REFER TO ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING, AND OTHER DISCIPLINE DRAWINGS FOR OPENINGS AND DEPRESSIONS NOT SHOWN ON THESE DRAWINGS.
7. GC TO COORDINATE STEPS IN FOUNDATION FOR PLUMBING, ELECTRICAL AND MECHANICAL.
8. SLAB-ON-DECK SHALL BE 2 ½", 3000 PSI, N.W. CONCRETE TOPPING ON 2" COMPOSITE DECK - SEE SECTION 5-5 ON SHEET S-301
9. G.C. TO VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS, (ALL DIMENSIONS ARE TO E.O.S./O.F.B. OR TO A GRID LINE.) WHEN A SECTION IS CUT OR A DETAIL IS LABELED FOR A PARTICULAR CONDITION, THAT SECTION OR DETAIL SHALL APPLY FOR ALL SIMILAR CONDITIONS REGARDLESS OF WHETHER CUT OR LABELED, U.N.O.

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ARCHITECTURE PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

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Fax: 910.343.8088
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NORTH CAROLINA PROFESSIONAL SEAL 19475 ENGINEER DON R. WOODS

PROJECT TITLE

UNCW

SCO ID: 19-20473-01A
PM#: 6034

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

Foundation and Slab Plan - Alternate #1

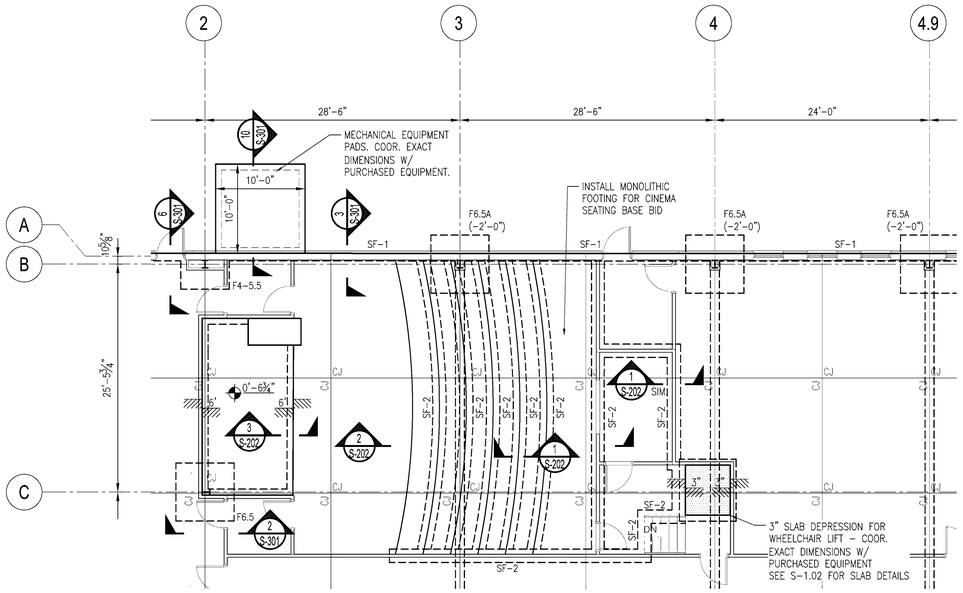
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PROJECT NO:	18-2870
DATE:	05/31/2019
SCALE:	As indicated
DRAWN BY: MBK	CHECKED BY: DW

S-201

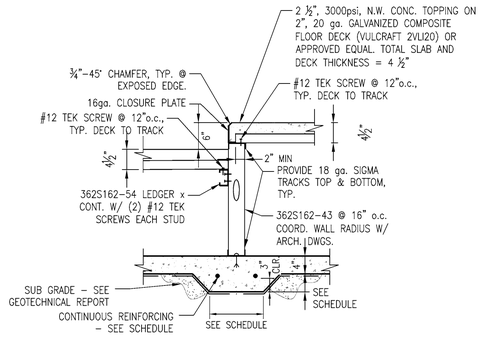
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FOUNDATION PLAN BID ALTERNATE #1

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



SECTION 1–1

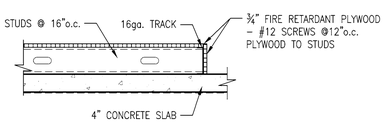
SCALE: 3/4" = 1'-0"

FOUNDATION PLAN NOTES:

1. SEE SHEET S1.01 FOR ADDITIONAL GENERAL NOTES, FOUNDATION NOTES, CONCRETE NOTES, AND REINFORCING STEEL NOTES. ALSO, SEE SHEET S1.01 & S1.02 FOR TYPICAL DETAILS. TYPICAL DETAILS ARE GENERALLY NOT SHOWN ON PLAN BUT RATHER ARE INTENDED TO DEFINE TYPICAL CONSTRUCTION CONDITIONS.
2. DATUM ELEVATION = TOP OF SLAB ELEVATION ASSUMED 0'-0". OTHER ELEVATIONS ARE NOTED AS (+ OR –) FROM DATUM ELEVATION.
3. REFER TO ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING, AND OTHER DISCIPLINE DRAWINGS FOR OPENINGS AND DEPRESSIONS NOT SHOWN ON THESE DRAWINGS.
4. SLAB–ON–DECK SHALL BE 2 ½", 3000 PSI, N.W. CONCRETE TOPPING ON 2" COMPOSITE DECK – SEE SECTION 5–5 ON SHEET S–301
5. G.C. TO VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS, (ALL DIMENSIONS ARE TO E.O.S./O.F.B. OR TO A GRID LINE.) WHEN A SECTION IS CUT OR A DETAIL IS LABELED FOR A PARTICULAR CONDITION, THAT SECTION OR DETAIL SHALL APPLY FOR ALL SIMILAR CONDITIONS REGARDLESS OF WHETHER CUT OR LABELED, U.N.O.

COMPOSITE FLOOR DECK NOTES:

a. Composite Floor Deck shall be 2", 20ga. galvanized composite floor deck (vulcraft 2VLI20) or approved equal.
b. Deck shall be galvanized per ASTM A924–94 (G60)
c. Fasten composite floor deck to supporting members by providing #12 TEK screws @ 12"o.c.

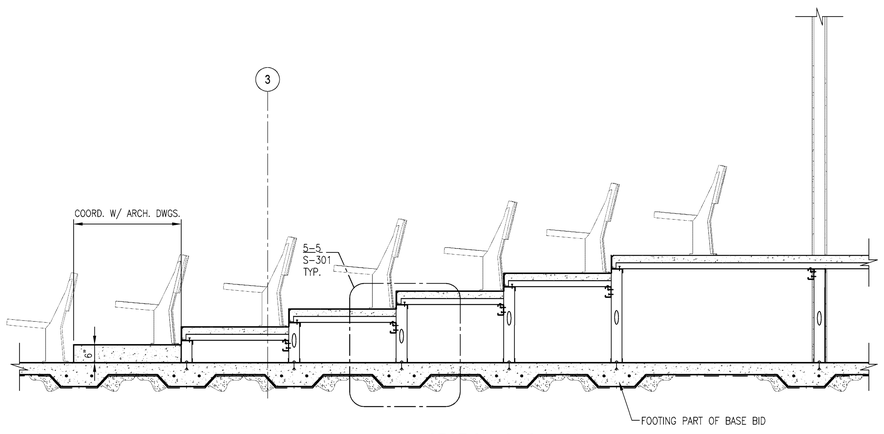


SECTION 3–3

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

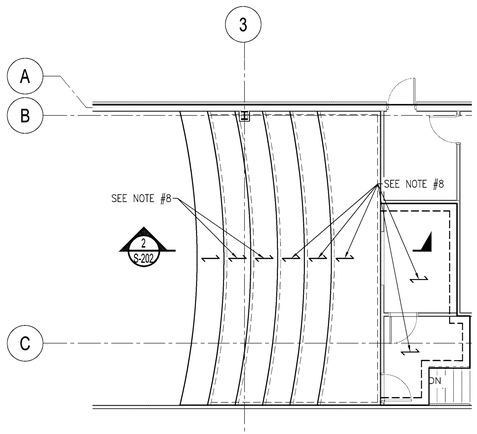
FOUNDATION LEGEND

FX	SPREAD FOOTING DESIGNATION SEE SCHEDULE THIS SHEET
SF–X	STRIP FOOTING DESIGNATION SEE SCHEDULE THIS SHEET
I	PRE–ENGINEERED METAL BUILDING STEEL COLUMN – SEE PEMB BASE PLATE INFO AND S3.01 FOR ANCHOR BOLT INFO
CJ CJ	SLAB CONTROL OR CONSTRUCTION JOINT – SEE DETAILS ON S1.01
	LIGHT GAUGE JOIST, SEE PLAN FOR SIZE AND LOCATION
P–1	PIER DESTINATION, SEE SCHEDULE ON 4–4/S–301
TB–1	TIE BEAM #1, SEE 8–8/S–301
	6" SLAB – SEE NOTE #5
	INDICATES 3" SLAB DEPRESSION – COORDINATE EXACT LIMITS w/ARCH. DWGS. & S3.01 FOR TYPICAL SLAB DEPRESSION DETAILS.



SECTION 2–2

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



CINEMA SEATING FRAMING PLAN

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

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North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
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410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
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Consulting Structural Engineers
254 North Front Street
Suite 201 Wilmington,
NC 28401
Phone: 910.343.8007
Fax: 910.343.8088
www.woodseng.com

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NORTH CAROLINA PROFESSIONAL SEAL 19475 ENGINEER DON R. WOODS

PROJECT TITLE

UNCW

SCO ID: 19-20473-01A
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UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

Foundation and Slab Plan - Bid Alternate #1

ISSUE BLOCK

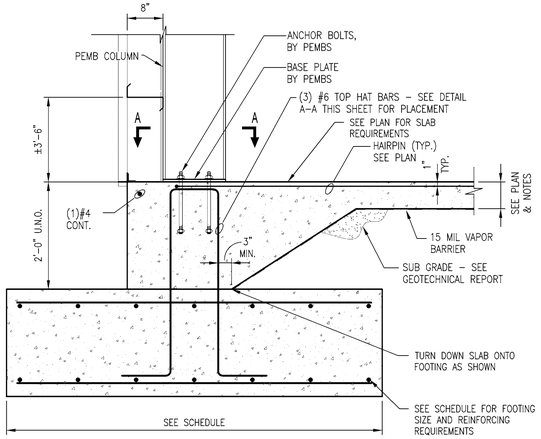
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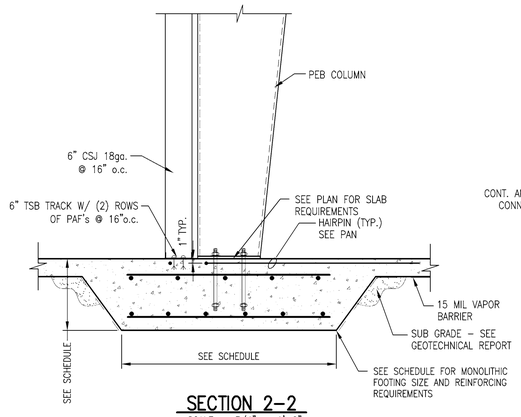
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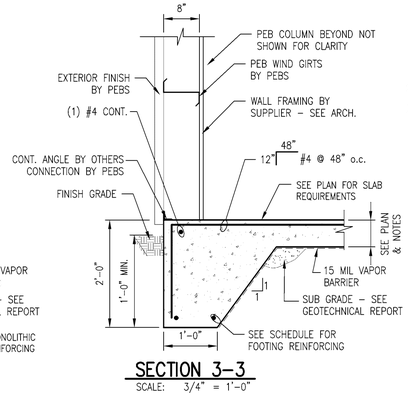
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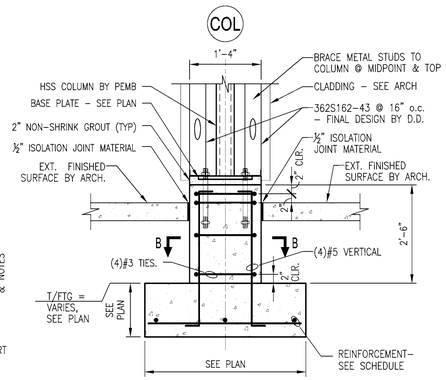
SECTION 1-1
TYPICAL FOUNDATION AT EXTERIOR PEMB COLUMN
SCALE: 3/4" = 1'-0"



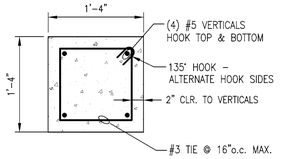
SECTION 2-2
SCALE: 3/4" = 1'-0"



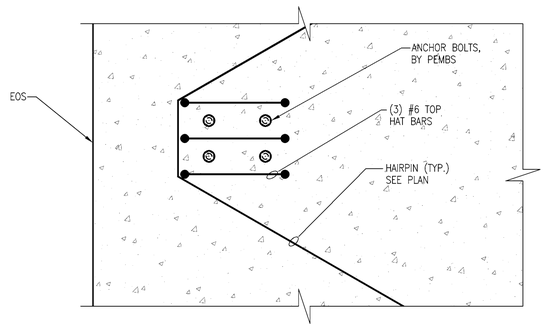
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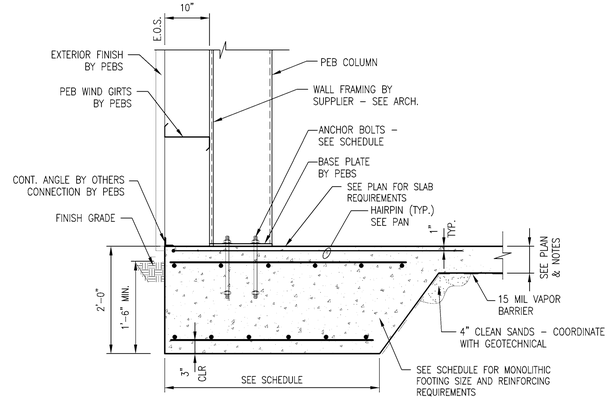
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SCALE: 3/4" = 1'-0"



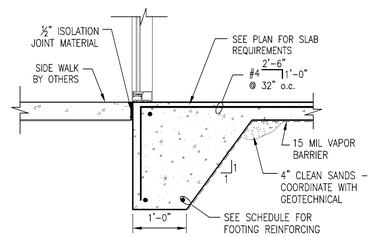
DETAIL B-B
SCALE: 1" = 1'-0"



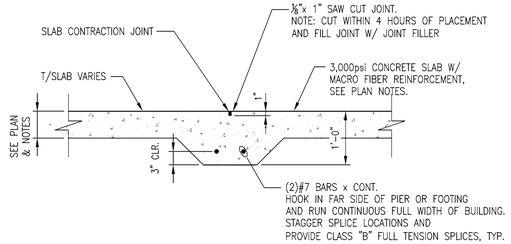
DETAIL A-A
SCALE: 1 1/2" = 1'-0"



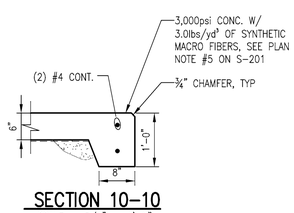
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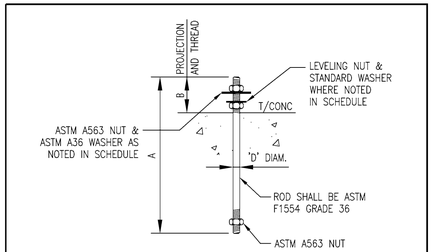
SECTION 7-7
SCALE: 3/4" = 1'-0"



SECTION 8-8 (TB-1)
SCALE: 3/4" = 1'-0"



SECTION 10-10
SCALE: 3/4" = 1'-0"



ANCHOR BOLT SCHEDULE

MARK	BOLT DIAM. D	HOLE DIAMETER	A	B	TOP WASHER O.D. x t	LEVELING NUT	REMARKS
AB-1	¾"	1 3/16"	1'-2"	5"	2" x ¼"	YES	2" LEVELING GROUT
AB-2	⅞"	1 3/16"	2'-2"	6"	2½" x 5/16"	YES	2" LEVELING GROUT
AB-3	1"	1 13/16"	2'-3"	7"	3" x ⅜"	YES	2" LEVELING GROUT
AB-4	1¼"	2 1/16"	2'-3"	7"	3" x ½"	YES	2" LEVELING GROUT
AB-5	1½"	2 5/16"	2'-6"	8"	3½" x ½"	YES	3" LEVELING GROUT
AB-6	1¾"	2¾"	2'-7"	9"	4" x ⅝"	YES	3" LEVELING GROUT
AB-7	2"	3¼"	2'-9"	10"	5" x ¾"	YES	3" LEVELING GROUT

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ARCHITECTURE PLANNING
North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600
Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100
Delaware
309 S Governors Ave
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Consulting Structural Engineers
254 North Front Street
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Phone: 910.343.8007
Fax: 910.343.8088
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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19475 DON R. WOODS

PROJECT TITLE

SCO ID: 19-20473-01A
PM#: 6034

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

Foundation Sections & Details

ISSUE BLOCK

Mark	Date	Description

PROJECT NO: 18-2870
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DRAWN BY: MBK CHECKED BY: DW

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CODE LEGEND	
CLASSROOM 1115	1 HR RATED FIRE PARTITION / FIRE BARRIER - UL DESIGN UL#419 ROOM NAME & NUMBER

CONSTRUCTION NOTES:

1. GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION (STANDARD AIA DOCUMENT A201, 2007 EDITION) APPLIES TO ALL WORK UNDER THIS CONSTRUCTION CONTRACT.

2. THE CONTRACTOR SHALL REVIEW AND COORDINATE THE SCHEDULING OF ALL CONSTRUCTION WITH THE BUILDING OWNER, SUBMIT DETAILED CONSTRUCTION SCHEDULE PRIOR TO DOING WORK INCLUDING PHASED CONSTRUCTION AND AFTER HOURS WORK.

3. REVIEW WALL EXIT SIGNS AND FIRE EXTINGUISHER LOCATIONS WITH LOCAL CODE OFFICIALS PRIOR TO END OF PRIMARY CONSTRUCTION PHASE. COORDINATE ANY VARIATIONS FROM CONSTRUCTION DOCUMENTS WITH ARCHITECT. RELOCATE EXISTING FIRE EXTINGUISHERS PER FIRE MARSHAL'S DIRECTION.

4. DIMENSIONS ARE FROM FACE OF MASONRY OR METAL STUD UNLESS NOTED OTHERWISE. ALL DIMENSIONS MARKED 'CLEAR' SHALL BE MAINTAINED AND SHALL ALLOW FOR THICKNESS OF ALL FINISHES INCLUDING FLOOR FINISH.

5. CHASE WALLS SHALL MATCH ADJACENT CONSTRUCTION UNLESS NOTED OTHERWISE SHOWN BY WALL TYPE, TYP.

6. THE CONTRACTOR SHALL VERIFY ALL SITE CONDITIONS AND DIMENSIONS PRIOR TO CONSTRUCTION. ANY VARIATIONS, DISCREPANCIES OR FIELD ALTERATIONS TO THESE DESIGNS PRIOR TO CONSTRUCTION. DISCREPANCIES OR OTHER SUCH CONDITIONS NOT REPORTED PRIOR TO CONSTRUCTION MAY NOT BE USED AS GROUNDS FOR ADDITIONAL EXPENSE CLAIMS BY THE CONTRACTOR NECESSARY TO ADEQUATELY COMPLETE THE WORK.

7. ANY ITEMS NOT SPECIFICALLY SHOWN ON THE DRAWINGS, BUT REASONABLY INCIDENTAL TO AND NECESSARY FOR THE SATISFACTORY COMPLETION OF THE PROJECT IN ACCORDANCE WITH INDUSTRY STANDARDS, ARE INCLUDED WITHIN THE INTENT OF THESE DESIGN DRAWINGS.

8. CODES: ALL WORK ON THIS PROJECT SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE BUILDING CODES, ORDINANCES, REGULATIONS AND ANY ADDITIONAL REQUIREMENT SO STATED IN ANY LAW, ORDINANCE OR REGULATION PERTAINING TO CONSTRUCTION WITHIN THE SAID LIMITS OF THE AUTHORITY HAVING JURISDICTION OVER THE PROPOSED WORK, ZONING, ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLUMBING, ELECTRICAL, ENERGY CONSERVATION AND FIRE. CONFORMITY TO ALL CODES APPLICABLE TO THIS PROJECT SHALL BE THE CONTRACTOR'S RESPONSIBILITY.

9. PROPER ASSEMBLY, INSTALLATION, AND OPERATION OF ALL MATERIALS, COMPONENTS, SYSTEMS AND FINISHES ARE THE CONTRACTOR'S RESPONSIBILITY AND SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

10. COMPONENTS FOR CONSTRUCTION SAFETY ARE NOT INDICATED IN THESE DRAWINGS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COMPLY WITH ALL RULES AND REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ACT DURING ALL CONSTRUCTION.

11. ALL PLUMBING FIXTURES, LAVATORY ACCESSORIES, MOUNTING HEIGHTS AND NECESSARY FLOOR CLEARANCE SHALL COMPLY WITH ANSI A117.1 AND THE REQUIREMENTS SET FORTH BY THE AMERICANS WITH DISABILITIES ACT.

12. NEW GYPSUM BOARD CONSTRUCTION MEETING EXISTING CONSTRUCTION IN SAME PLANE SHALL BE FLUSH WITH NO VISIBLE JOINT.

13. PROVIDE WATER RESISTANT GYPSUM BOARD OR APPROVED EQUAL AT ALL NEW PLUMBING WALLS.

14. PROVIDE GYPSUM BOARD ASSEMBLIES IN ACCORDANCE WITH ASTM C840, LEVEL 4 FINISH.

15. PROVIDE WOOD BLOCKING (FIRE RETARDANT) INSIDE PARTITIONS FOR SECURING WALL-HUNG CABINETS, SHELVING, TRIM, MILLWORK AND OTHER ELEMENTS ATTACHED TO PARTITIONS AS REQUIRED TO ENSURE FLUSH, STRAIGHT, WELL-SECURED CONDITIONS. PROVIDE CORROSIVE RESISTANT FASTENERS FOR FIRE-RETARDANT TREATED WOOD.

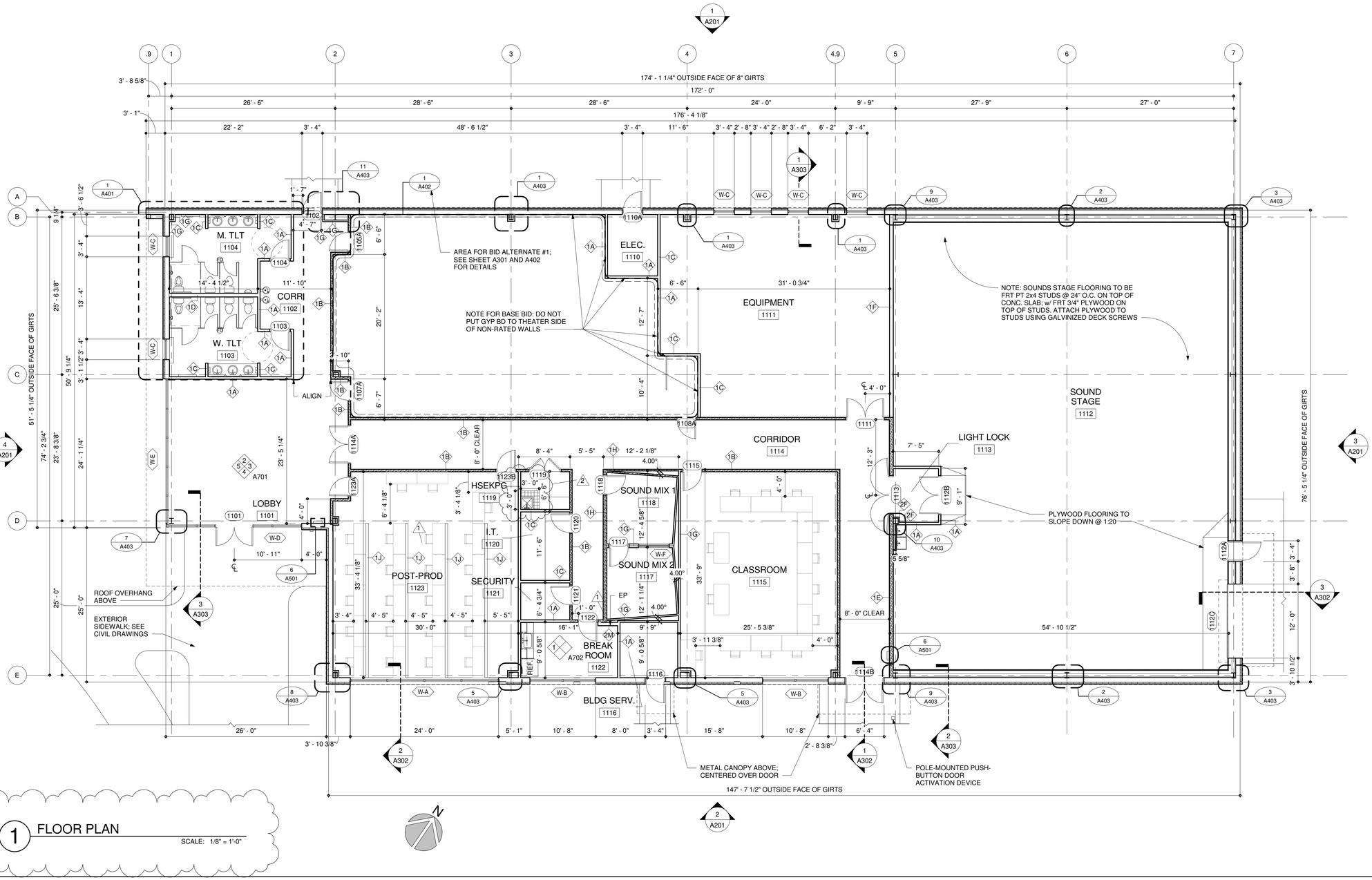
16. THE CONTRACTOR SHALL COORDINATE ALL KEYING REQUIREMENTS, INCLUDING MASTER AND SUB-MASTER SETS, WITH THE OWNER.

17. ALL CODE REQUIRED LABELS SUCH AS 'UL'; FACTORY MUTUAL, OR ANY EQUIPMENT IDENTIFICATION, PERFORMANCE RATING, NAME OR NOMENCLATURE PLATES SHALL REMAIN READABLE AND NOT PAINTED.

18. TRANSITIONS OF FLOOR MATERIALS TO BE LOCATED AT CENTERLINE OF DOORS IN CLOSED POSITION UNLESS NOTED OTHERWISE.

19. PAINT BACK SIDES OF REMOVABLE ACCESS PANELS AND HINGED COVERS TO MATCH EXPOSED SURFACE.

20. FIELD VERIFY CLEARANCES FOR NEW CASEWORK BEFORE FABRICATION.



1 FLOOR PLAN

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

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ARCHITECTURE
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North Carolina
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Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
Newark, DE 19711
302.369.3700

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THE JOHN R. MCADAMS COMPANY
CIVIL ENGINEERING
2905 MERIDIAN PARKWAY
DURHAM, NC 27713
OFFICE: 919.361.5000

WOODS ENGINEERING
STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
910-343-8007 fax 910-343-8088

SUD ASSOCIATES, P.A.
PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

MARK LOUDERMILK, AIA
REGISTERED ARCHITECT
10776
N.C.
WILMINGTON, NC

BECKER MORGAN GROUP, INC.
Southeastern Architecture
51922
North Carolina
WILMINGTON, NC

PROJECT TITLE

UNCW

SCO ID: 19-20473-01A
PM#: 6034

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

FLOOR PLAN

ISSUE BLOCK

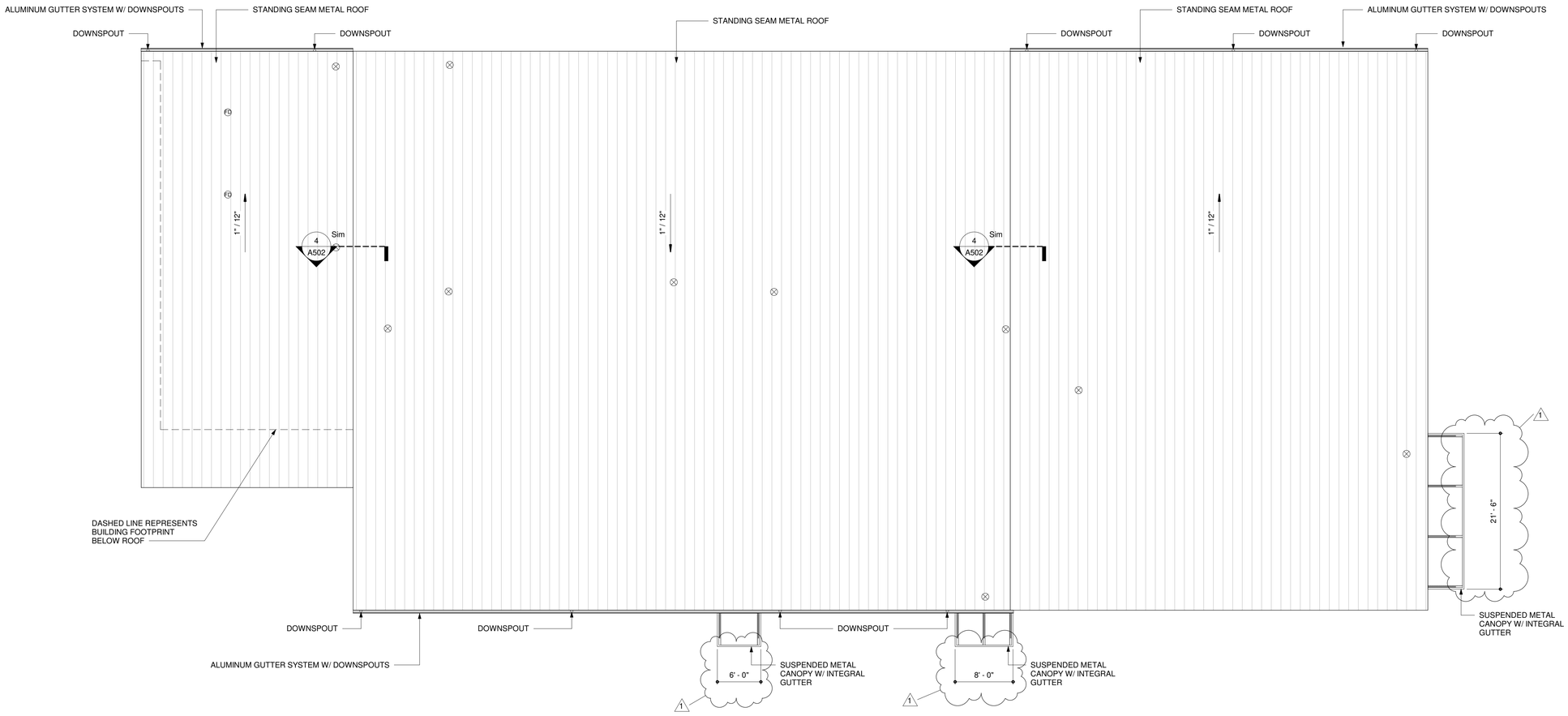
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2	10/7/19	ADDENDUM #2
1	10/2/19	ADDENDUM #1

PROJECT NO:	2018070.01
DATE:	9/23/2019
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DRAWN BY: JDF	PROJ MGR: LML

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NOTE: CONNECT ALL DOWNSPOUTS TO UNDERGROUND STORMWATER PIPING; SEE CIVIL ENGINEERING DRAWINGS

NOTE: COORDINATE ROOF PENETRATIONS WITH PME

1 ROOF PLAN

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

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STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
910-343-8007 fax 910-343-8088

SUD ASSOCIATES, P.A.
PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

MARK LOUDERMILK, AIA
REGISTERED ARCHITECT
10776
N.C.

BECKER MORGAN GROUP, INC.
Registered Architectural Corporation
51922
North Carolina
WILMINGTON, NC

PROJECT TITLE

SCO ID: 19-20473-01A
PM#: 6034

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

ROOF PLAN

ISSUE BLOCK

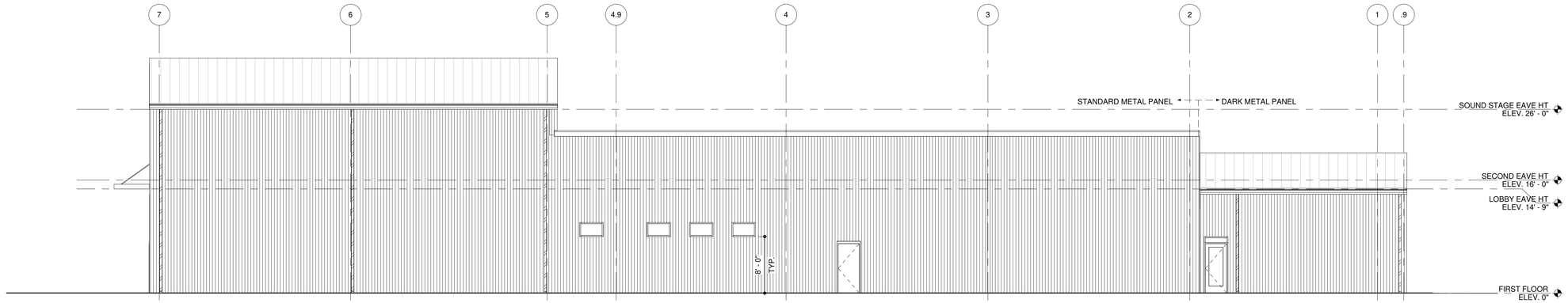
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1	10/2/19	ADDENDUM #1

PROJECT NO: 2018070.01
DATE: 9/23/2019
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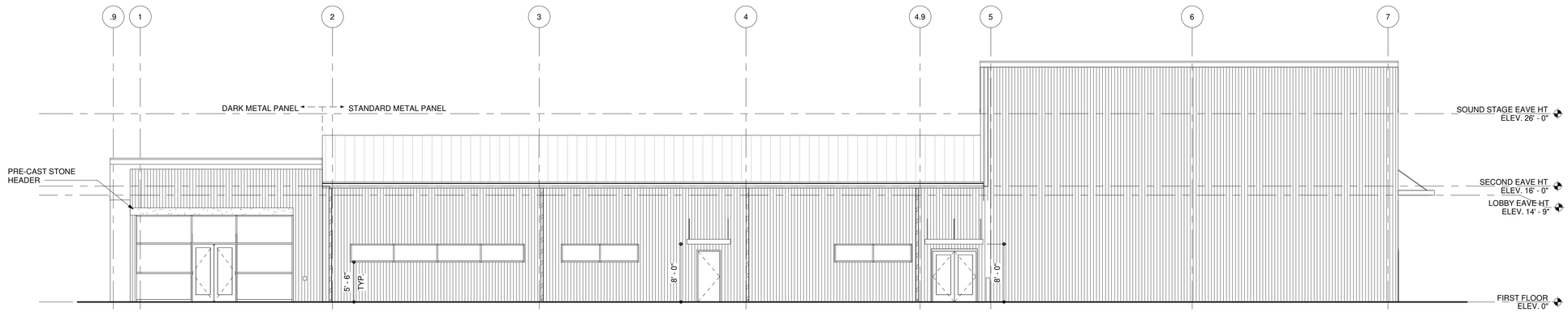
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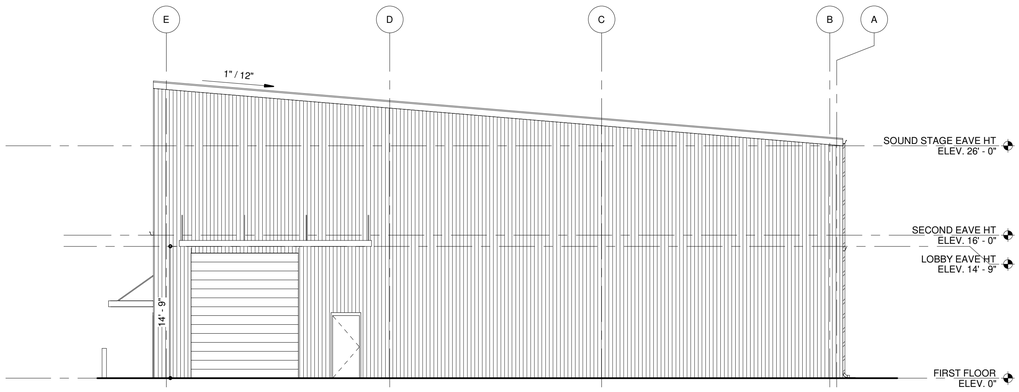
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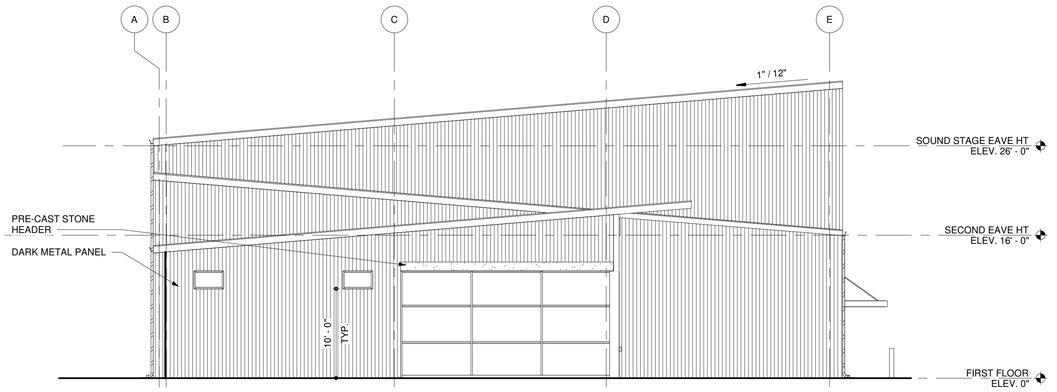
2 SOUTH ELEVATION

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



3 EAST ELEVATION

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



4 WEST ELEVATION

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

BECKER MORGAN GROUP

ARCHITECTURE
PLANNING

North Carolina
3333 Jaeckle Drive, Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
Newark, DE 19711
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CIVIL ENGINEERING
2905 MERIDIAN PARKWAY
DURHAM, NC 27713
OFFICE: 919.361.5000

WOODS ENGINEERING
STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
910-343-8007 fax 910-343-8088

SUD ASSOCIATES, P.A.
PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549





PROJECT TITLE

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SCO ID: 19-20473-01A
PM#: 6034

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

EXTERIOR ELEVATIONS

ISSUE BLOCK

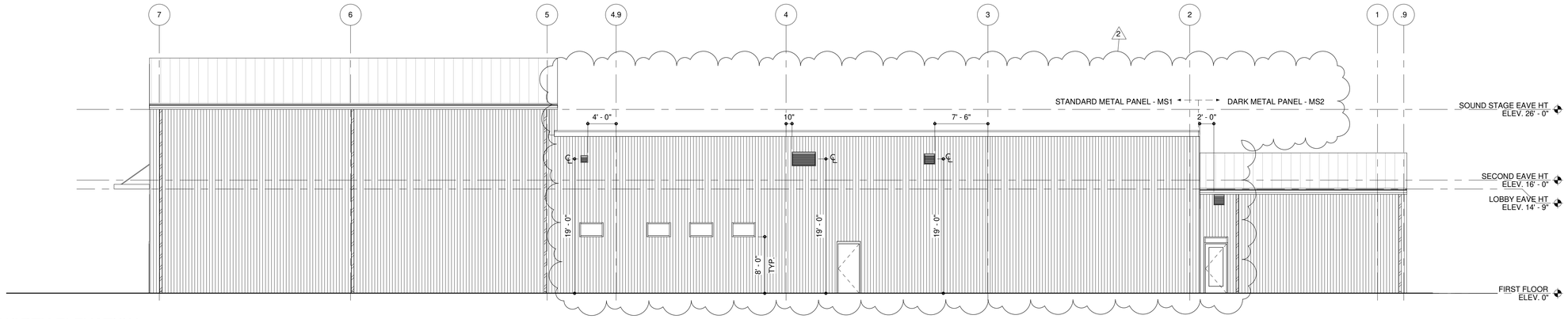
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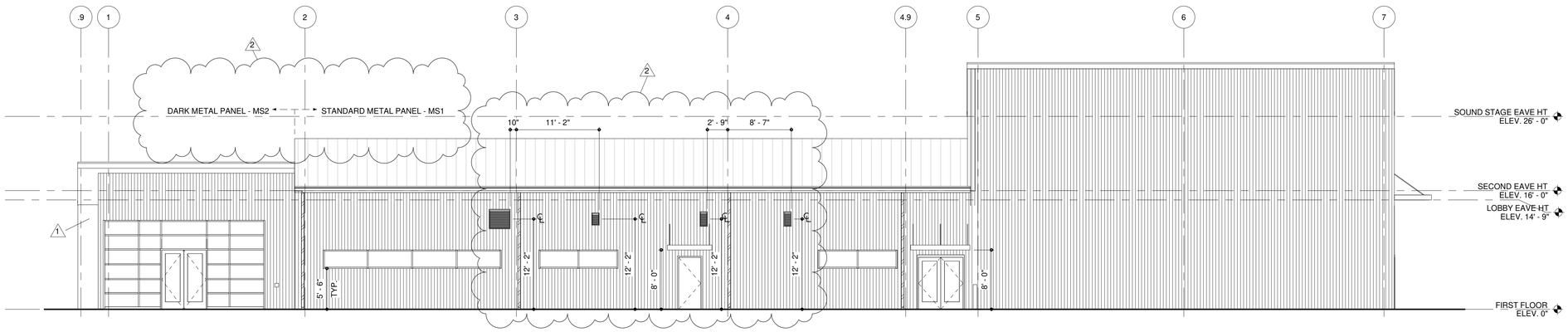
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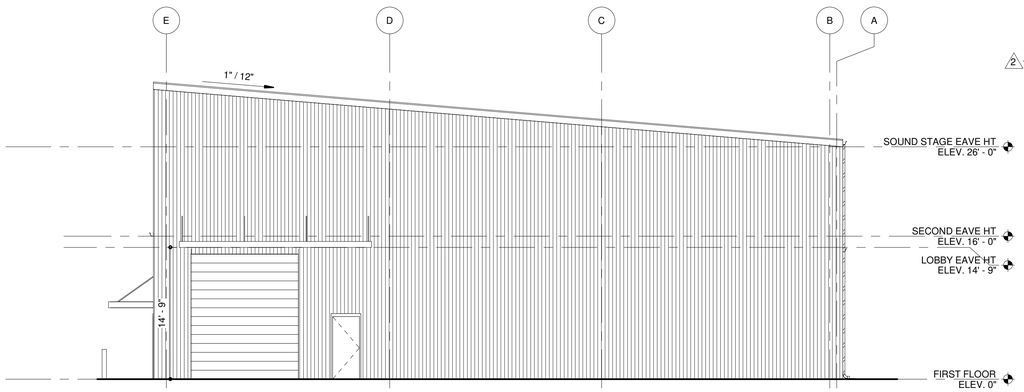
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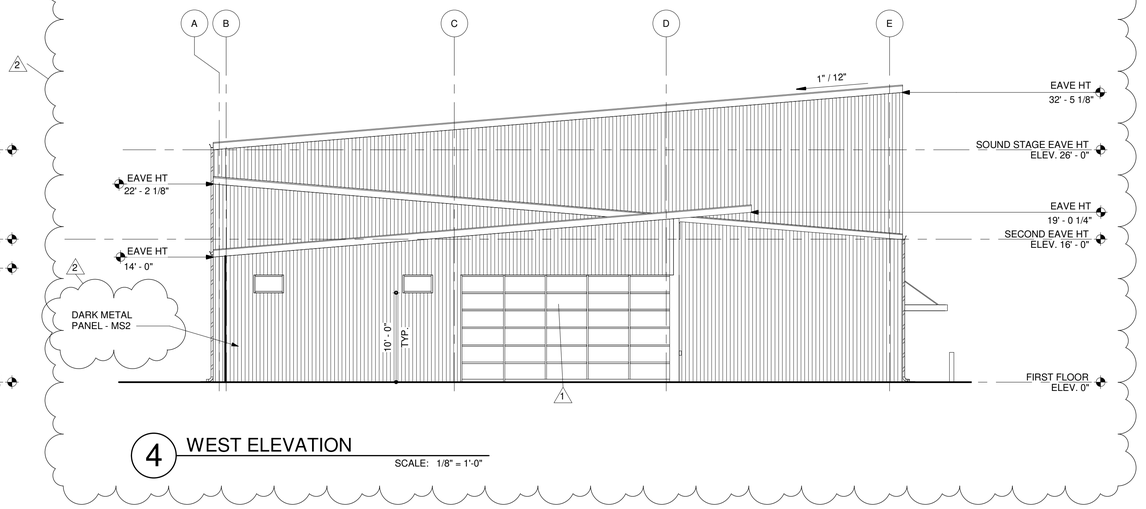
2 SOUTH ELEVATION

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



3 EAST ELEVATION

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



4 WEST ELEVATION

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

BECKER MORGAN GROUP

ARCHITECTURE
PLANNING

North Carolina
3333 Jaeckle Drive, Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
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Salisbury, MD 21801
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UNCW FILM STUDIES

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SHEET TITLE

EXTERIOR ELEVATIONS

ISSUE BLOCK

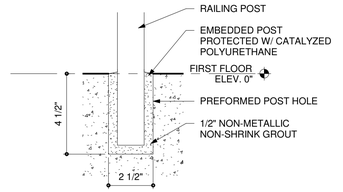
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1	10/2/19	ADDENDUM #1

PROJECT NO:	2018070.01
DATE:	9/23/2019
SCALE:	1/8" = 1'-0"
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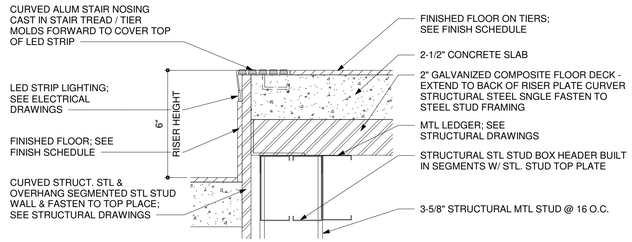
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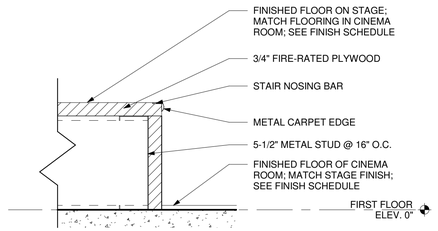
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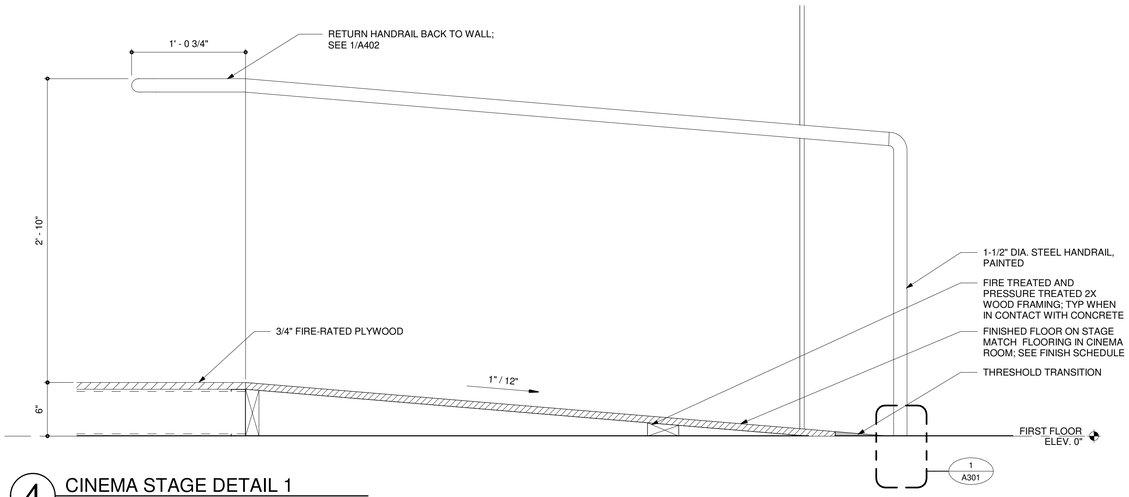
2 STAIR NOSE DETAIL

SCALE: 3" = 1'-0"



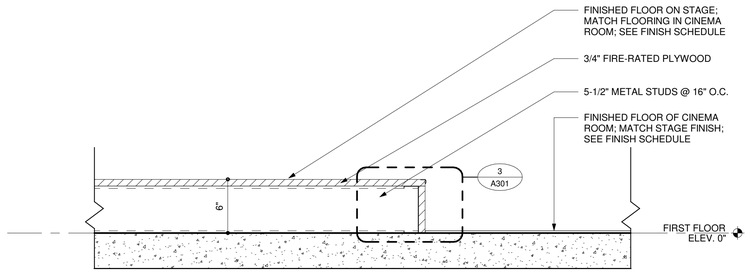
3 STAGE NOSING DETAIL

SCALE: 3" = 1'-0"



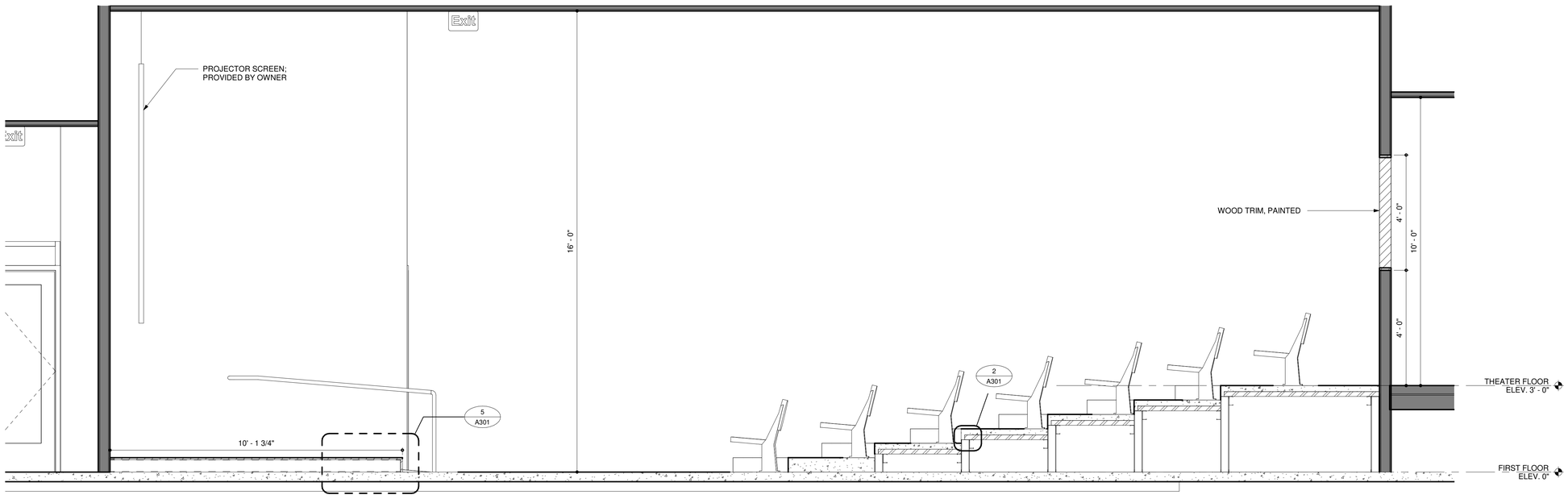
4 CINEMA STAGE DETAIL 1

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



5 CINEMA STAGE DETAIL 2

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



6 CINEMA SECTION

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

THIS SHEET: BID ALTERNATE #1

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ARCHITECTURE
PLANNING

North Carolina
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Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
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Dover, DE 19904
302.734.7950

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DURHAM, NC 27713
OFFICE: 919.361.5000

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254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
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PME ENGINEERING
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DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

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BECKER MORGAN GROUP, INC. Registered Professional Engineers North Carolina 51922 WILMINGTON, NC

PROJECT TITLE

UNCW

SCO ID: 19-20473-01A
PM#: 6034

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

CINEMA SECTIONS AND DETAILS

ISSUE BLOCK

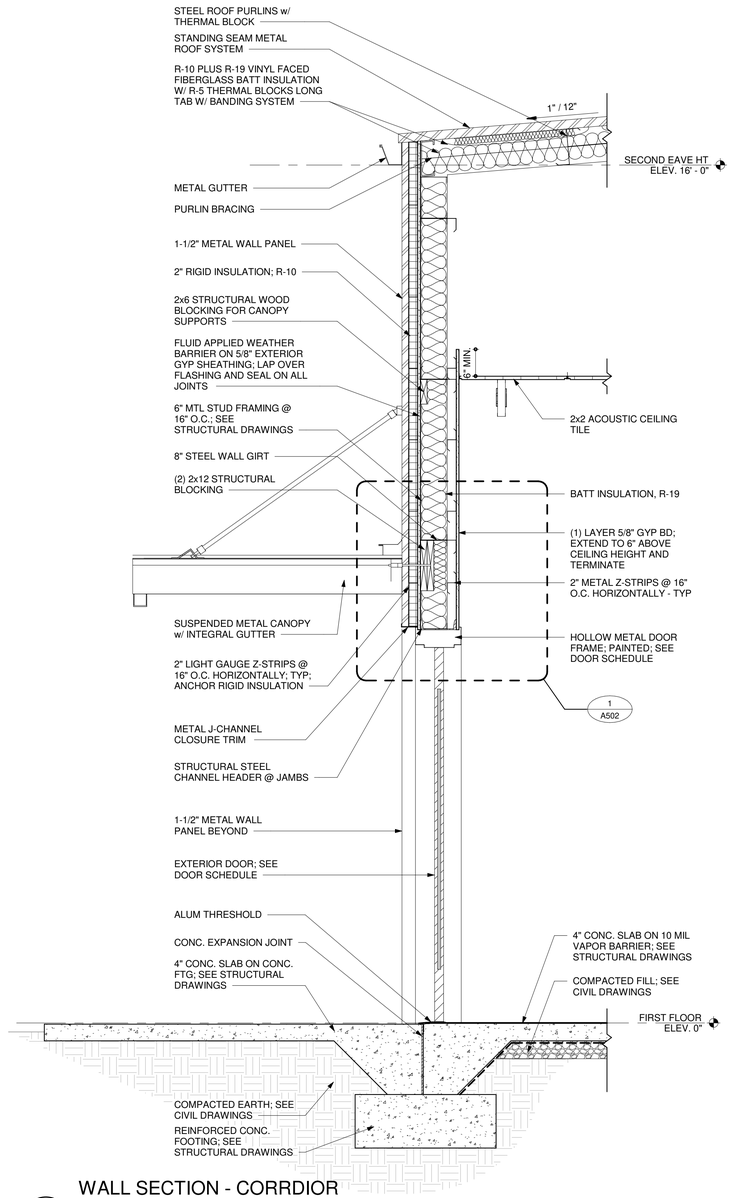
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DATE:	9/23/2019
SCALE:	As indicated
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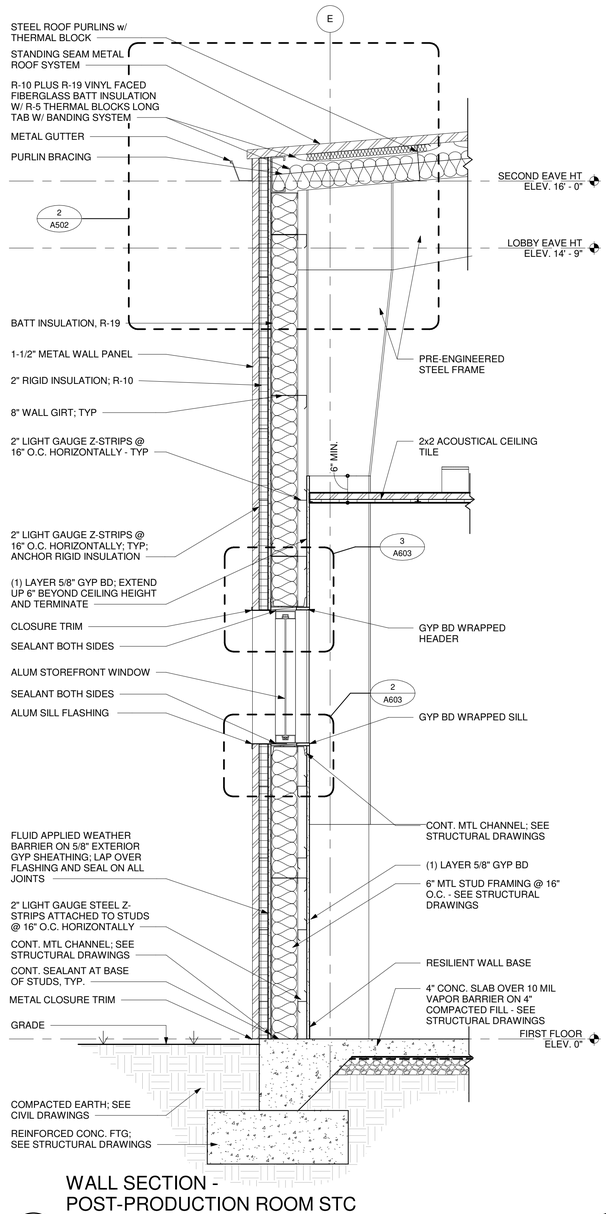
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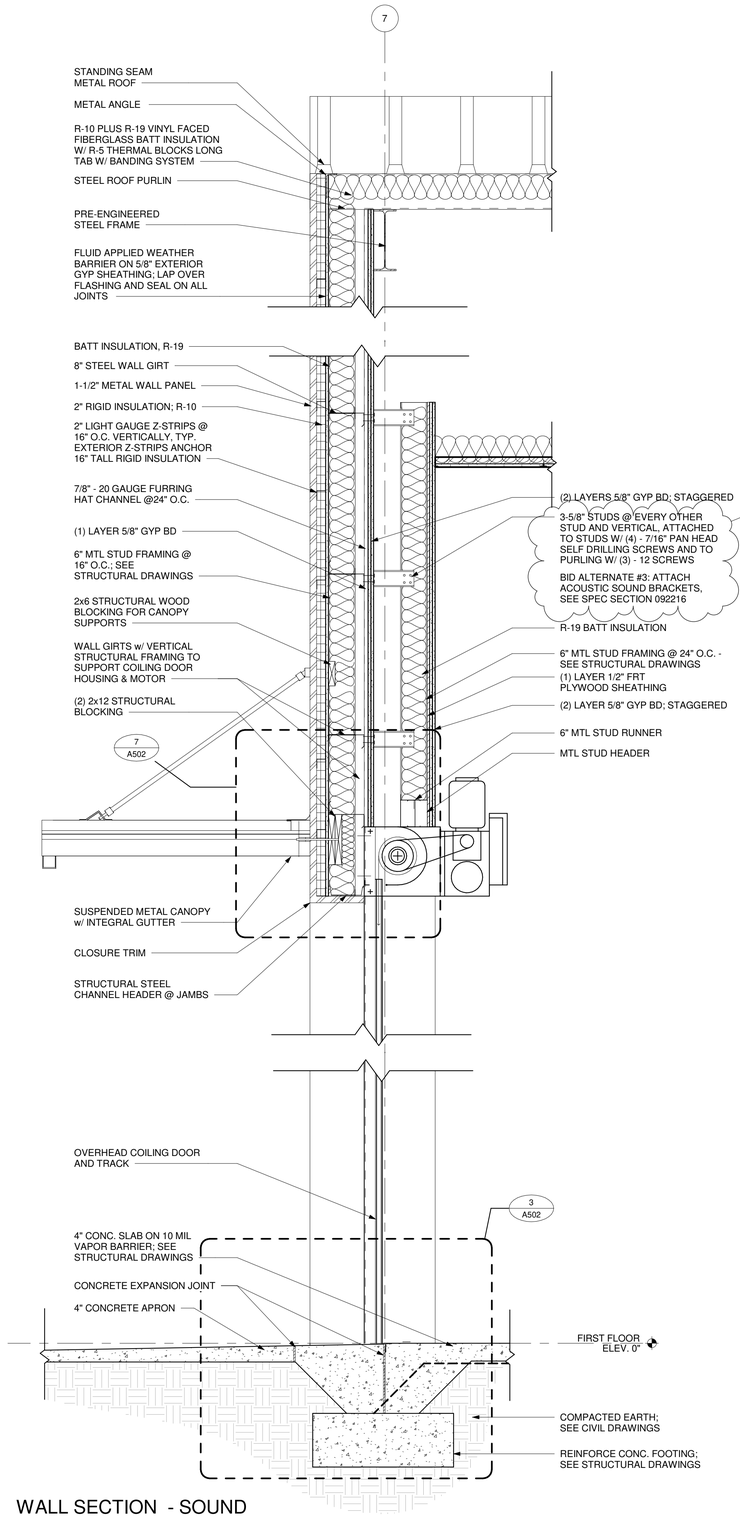
1 WALL SECTION - CORRDIOR CANOPY

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



2 WALL SECTION - POST-PRODUCTION ROOM STC RATING 56

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



3 WALL SECTION - SOUND STAGE CANOPY STC RATING 56

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

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ARCHITECTURE
PLANNING

North Carolina
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Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

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CIVIL ENGINEERING
2905 MERIDIAN PARKWAY
DURHAM, NC 27713
OFFICE: 919.361.5000

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STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
910-343-8007 fax 910-343-8088

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PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549





PROJECT TITLE

UNCW

SCO ID: 19-20473-01A
PM#: 6034

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

WALL SECTIONS

ISSUE BLOCK

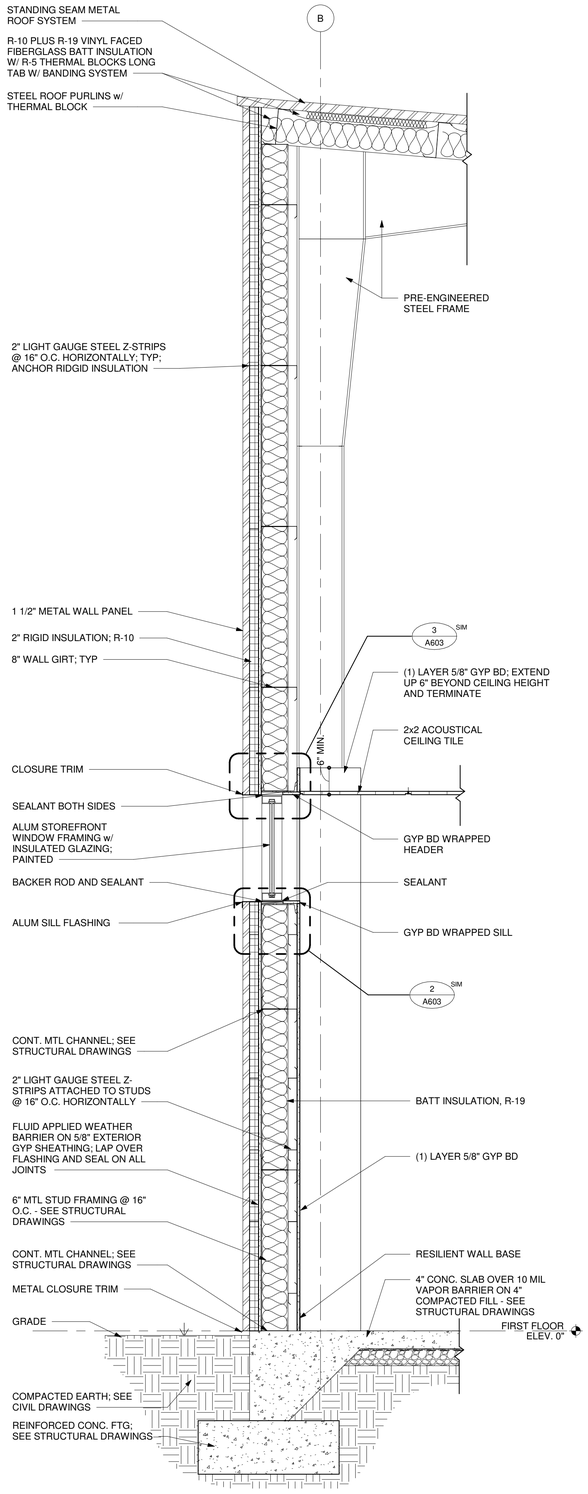
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1	10/2/19	ADDENDUM #1

PROJECT NO: 2018070.01
DATE: 9/23/2019
SCALE: 3/4" = 1'-0"
DRAWN BY: AVB PROJ MGR: LML

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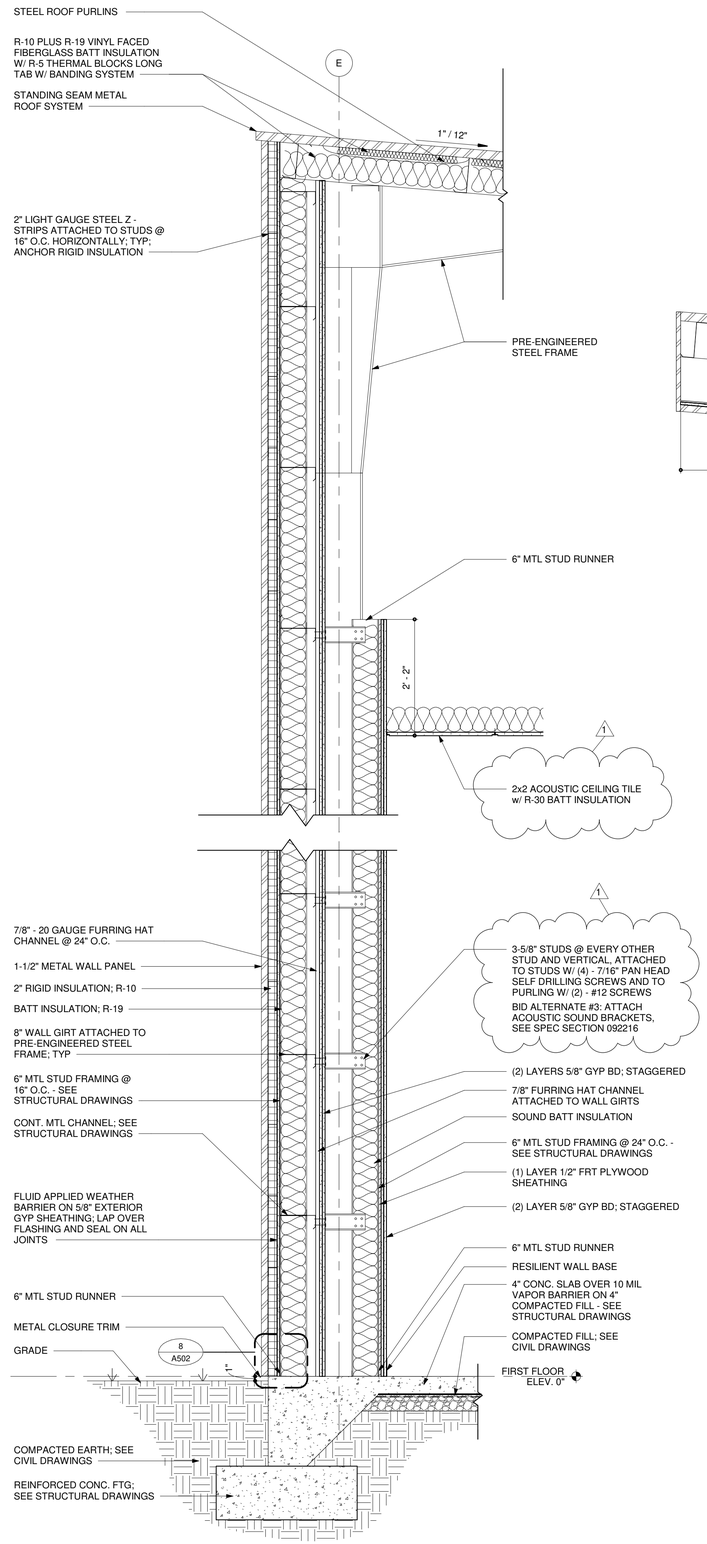
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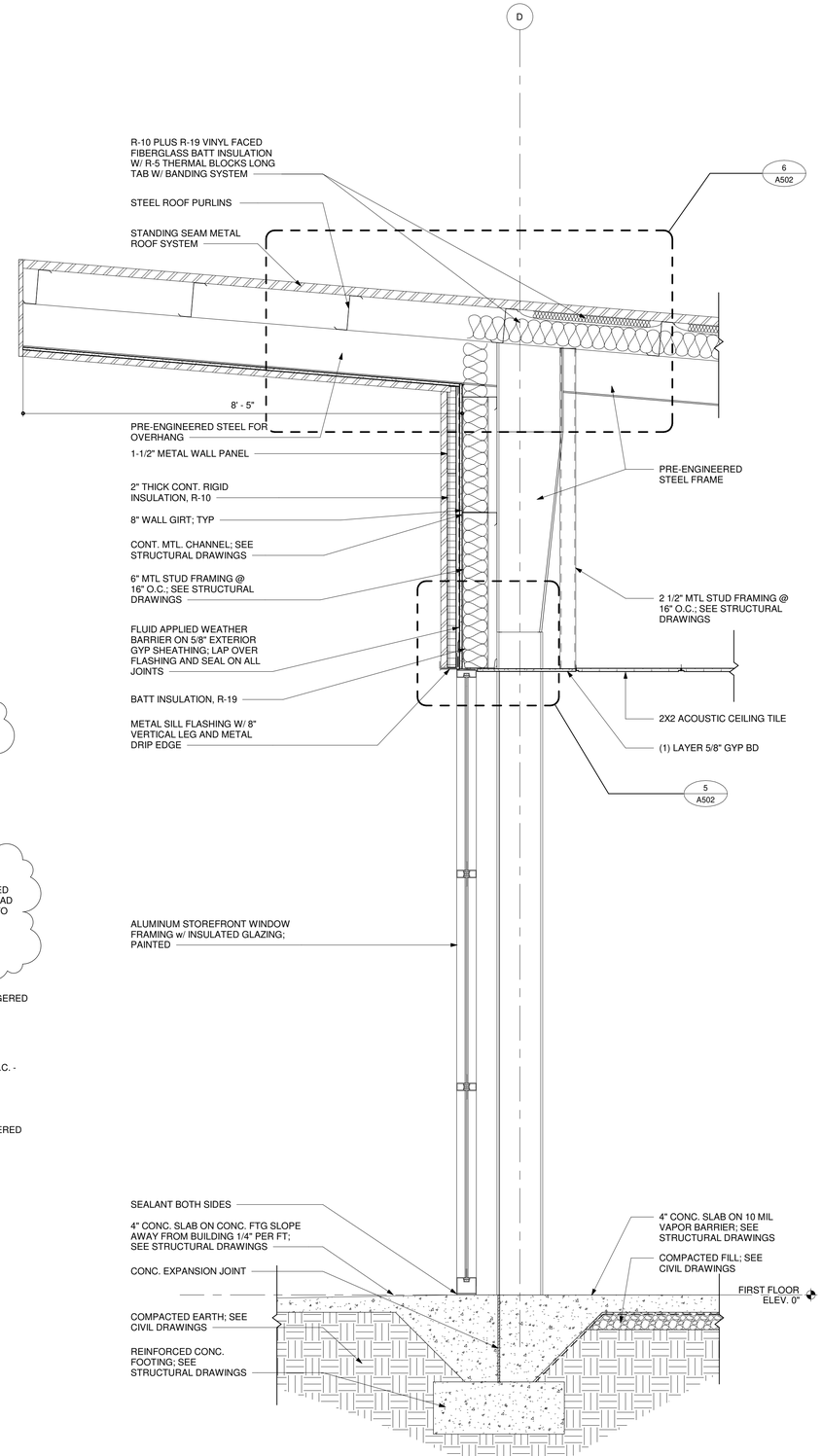
1 WALL SECTION - EQUIPMENT ROOM

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



2 WALL SECTION - SOUND STAGE STC RATING 56

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



3 WALL SECTION - LOBBY

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

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ARCHITECTURE
PLANNING

North Carolina
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910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
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250 South Main Street, Suite 109
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DURHAM, NC 27713
OFFICE: 919.361.5000

WOODS ENGINEERING
STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
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SUD ASSOCIATES, P.A.
PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

MARK LOUDERMILK, AIA REGISTERED ARCHITECT 10776 N.C. WILMINGTON, NC

BECKER MORGAN GROUP, INC. Registered Architectural Corporation 51922 North Carolina WILMINGTON, NC

PROJECT TITLE

UNCW

SCO ID: 19-20473-01A
PM#: 6034

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

WALL SECTIONS

ISSUE BLOCK

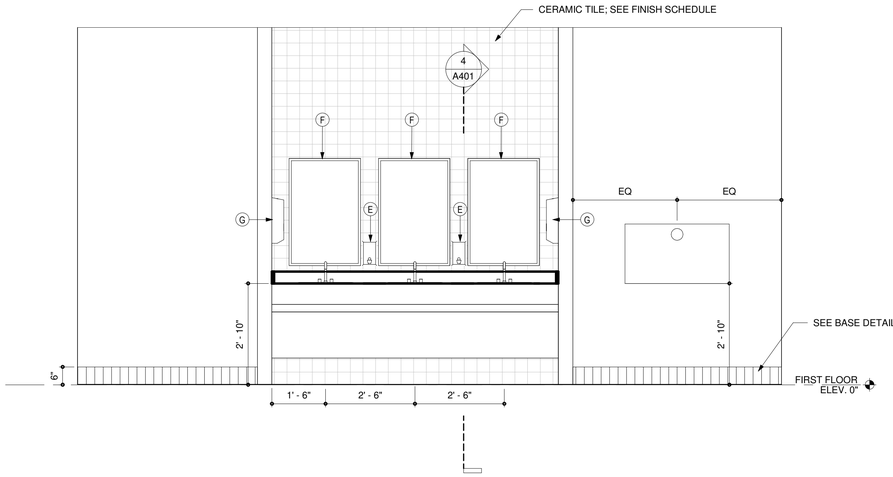
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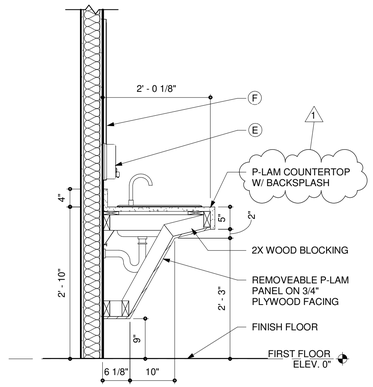
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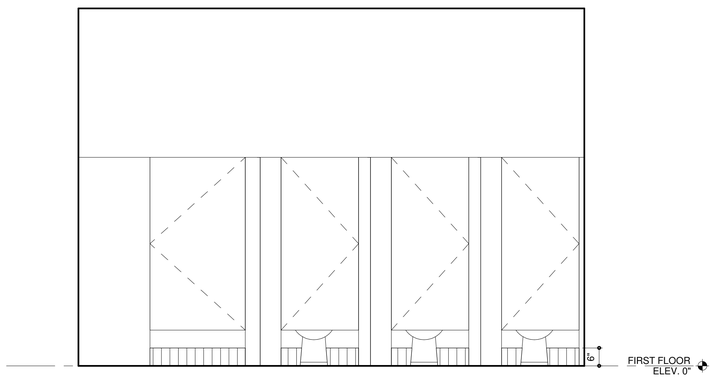
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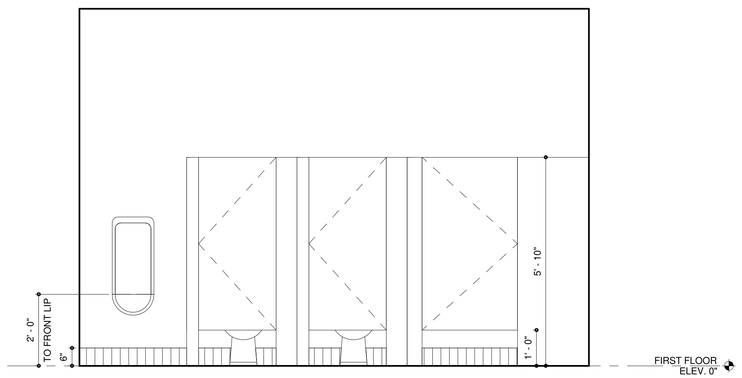
5 SINK AREA ELEVATION, TYP.
SCALE: 1/2" = 1'-0"



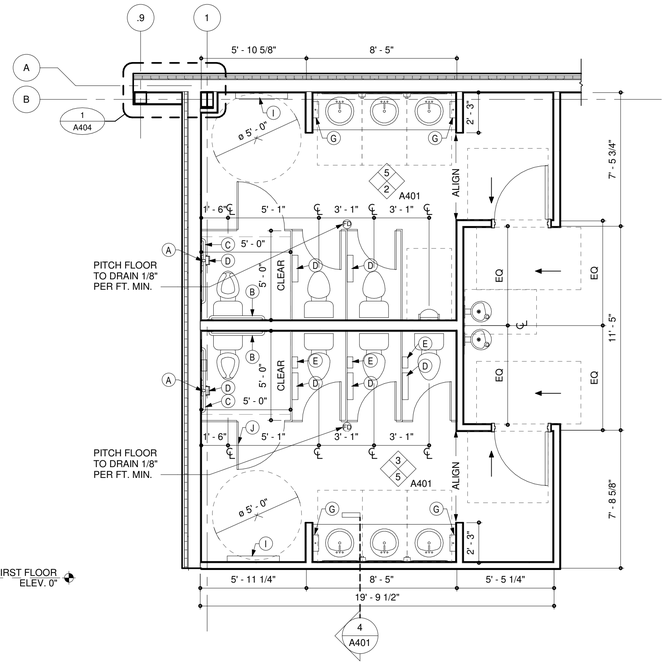
4 VANITY SECTION, TYP.
SCALE: 3/4" = 1'-0"



3 WOMEN'S TOILET ELEVATION, TYP.
SCALE: 1/2" = 1'-0"

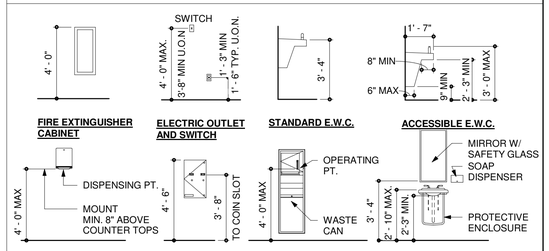


2 MEN'S TOILET ELEVATION, TYP.
SCALE: 1/2" = 1'-0"



1 ENLARGED TOILET PLANS
SCALE: 1/4" = 1'-0"

STANDARD MOUNTING HEIGHTS



KEYNOTES: TOILET ACCESSORIES

A	18" VERTICAL GRAB BAR
B	36" HORIZONTAL GRAB BAR
C	42" HORIZONTAL GRAB BAR
D	TOILET PAPER DISPENSER
E	WALL MOUNTED SOAP DISPENSER
F	18" x 36" MIRROR
G	PAPER TOWEL DISPENSER
H	SANITARY NAPKIN DISPOSALS
I	BABY CHANGING TABLE
J	COAT HOOKS ON PARTITION DOOR, TYP.

BECKER MORGAN GROUP
ARCHITECTURE
PLANNING

North Carolina
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UNCW FILM STUDIES
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SHEET TITLE

ENLARGED TOILET PLANS AND SECTIONS

ISSUE BLOCK

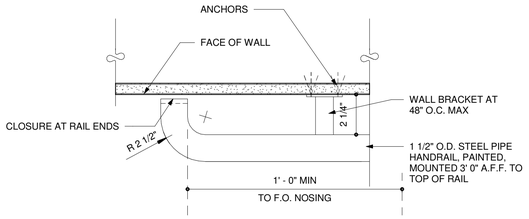
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1	10/2/19	ADDENDUM #1

PROJECT NO: 2018070.01
DATE: 9/23/2019
SCALE: As indicated
DRAWN BY: JDF PROJ MGR: LML

A401

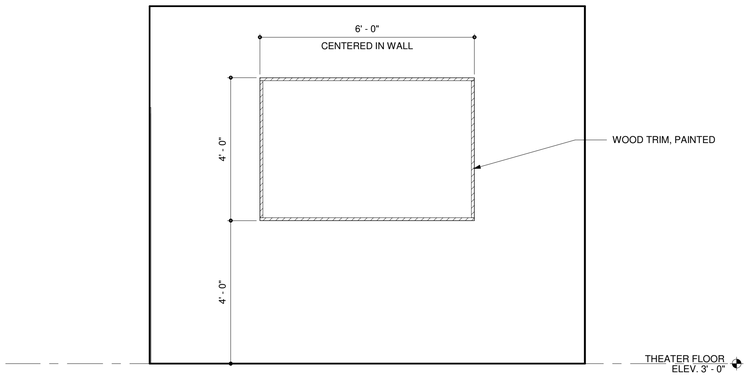
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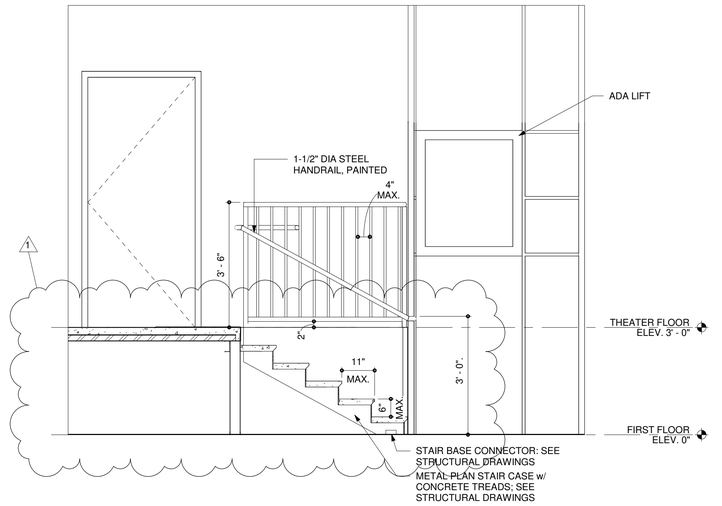
6 WALL-MOUNTED HANDRAIL DETAIL

SCALE: 3" = 1'-0"



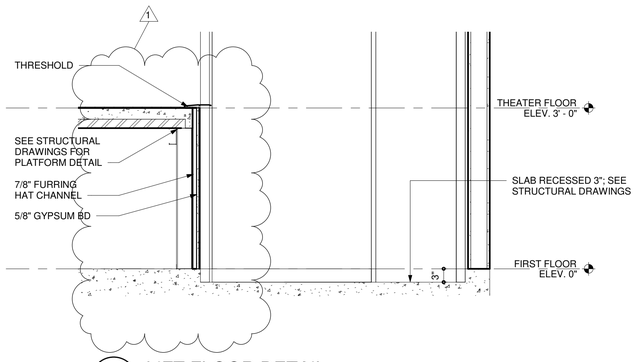
5 PROJECTION WALL OPENING

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



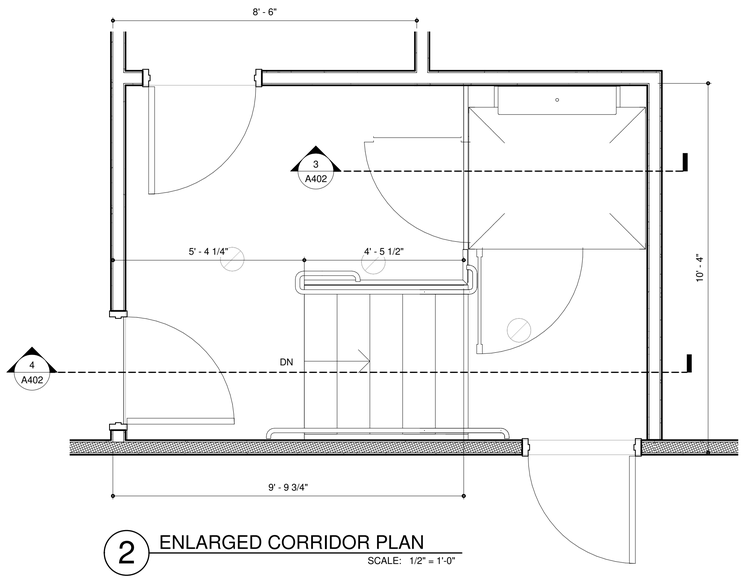
4 CORRIDOR STAIR SECTION 1

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



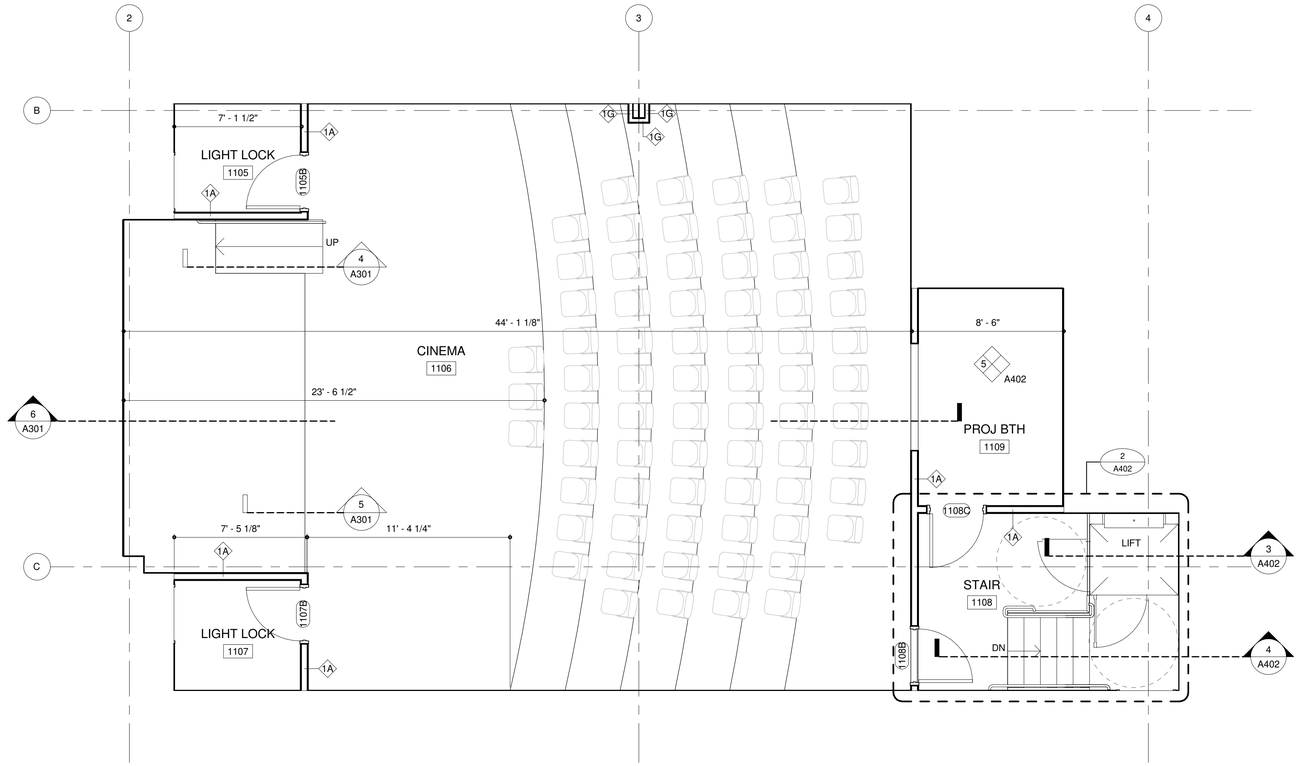
3 LIFT FLOOR DETAIL

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



2 ENLARGED CORRIDOR PLAN

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



1 COLUMN DETAIL 4

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

THIS SHEET: BID ALTERNATE #1

BECKER MORGAN GROUP

ARCHITECTURE
PLANNING

North Carolina
3333 Jaeckle Drive, Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
Newark, DE 19711
302.369.3700

www.beckermorgan.com

THE JOHN R. MCADAMS COMPANY
CIVIL ENGINEERING
2905 MERIDIAN PARKWAY
DURHAM, NC 27713
OFFICE: 919.361.5000

WOODS ENGINEERING
STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
910-343-8007 fax 910-343-8088

SUD ASSOCIATES, P.A.
PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

MARK LOUDERMILK, AIA
REGISTERED ARCHITECT
10776
N.C.
WILMINGTON, N.C.

BECKER MORGAN GROUP, INC.
Registered Architecture
51922
North Carolina
WILMINGTON, N.C.

PROJECT TITLE

UNCW

SCO ID: 19-20473-01A
PM#: 6034

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

ENLARGED CINEMA AND SECTIONS

ISSUE BLOCK

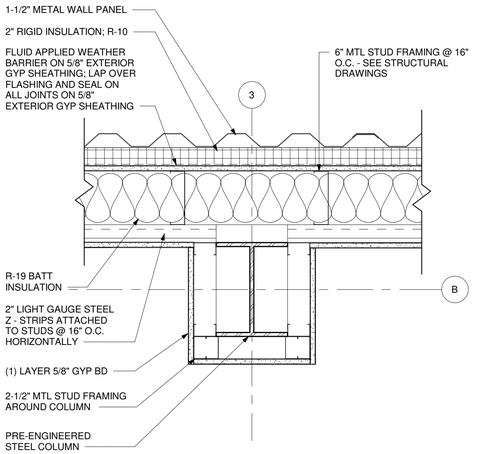
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PROJECT NO: 2018070.01
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SCALE: As indicated
DRAWN BY: JDF PROJ MGR: LML

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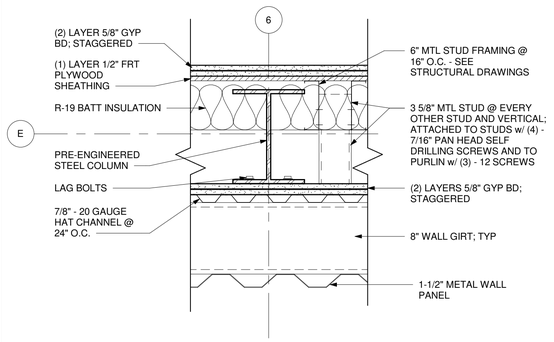
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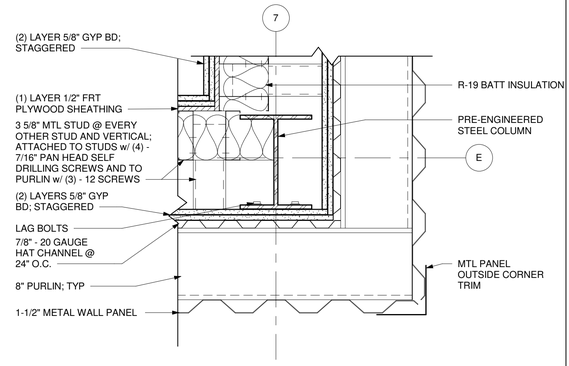
1 COLUMN DETAIL 1

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



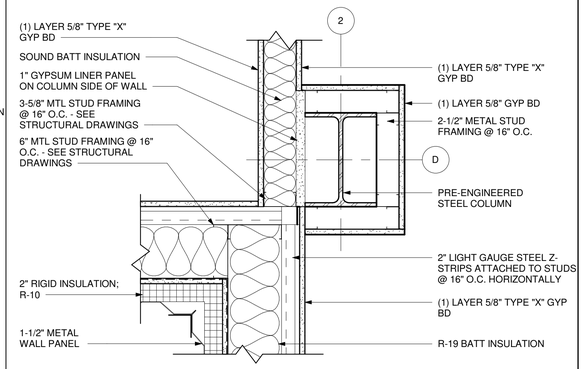
2 COLUMN DETAIL 2

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



3 COLUMN DETAIL 3

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



4 COLUMN DETAIL 4

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

5 COLUMN DETAIL 5

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

6 COLUMN DETAIL 6

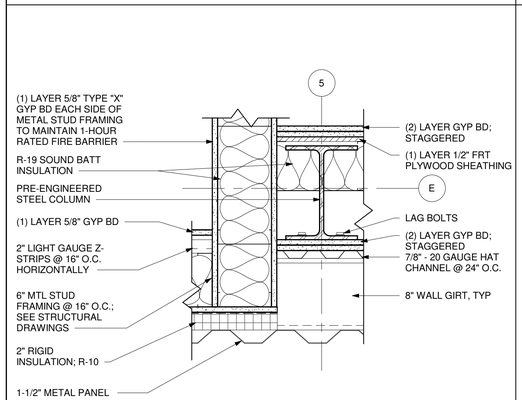
SCALE: 1 1/2" = 1'-0"

7 COLUMN DETAIL 7

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

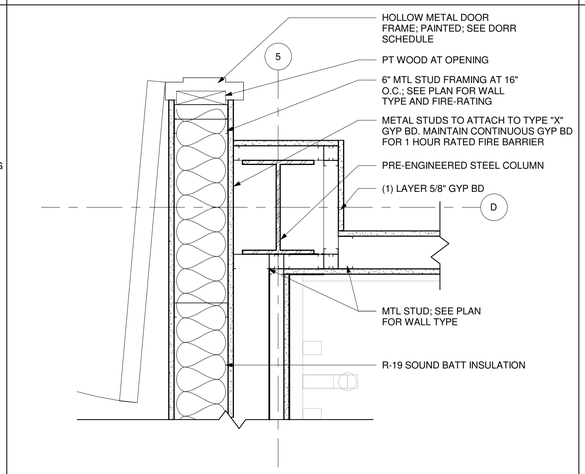
8 COLUMN DETAIL 8

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



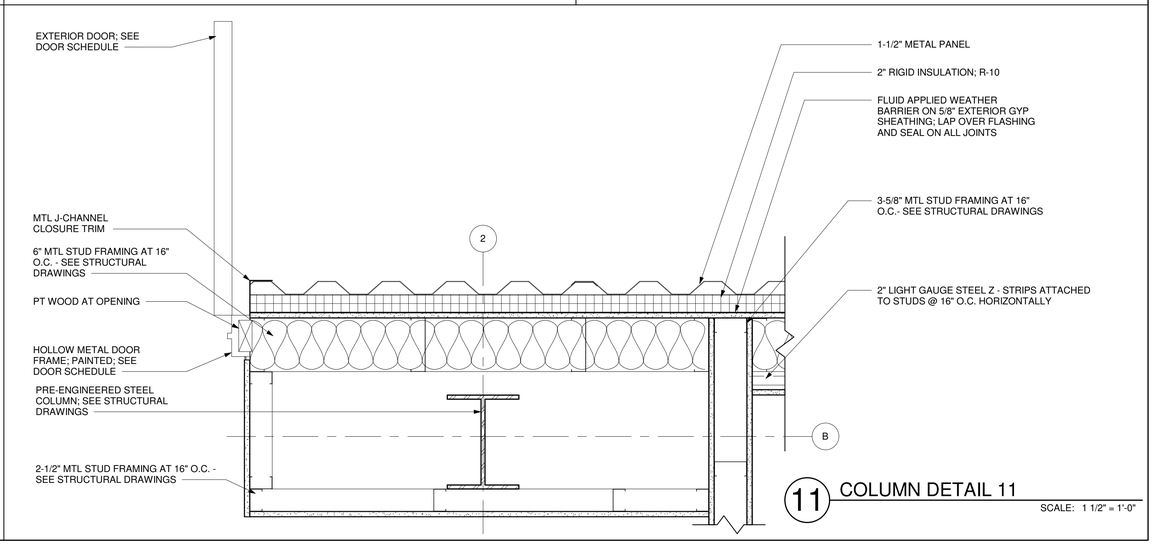
9 COLUMN DETAIL 9

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



10 COLUMN DETAIL 10

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



11 COLUMN DETAIL 11

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

BECKER MORGAN GROUP

ARCHITECTURE
PLANNING

North Carolina
3333 Jaeckle Drive, Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
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250 South Main Street, Suite 109
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302.369.3700

www.beckermorgan.com

THE JOHN R. MCADAMS COMPANY
CIVIL ENGINEERING
2905 MERIDIAN PARKWAY
DURHAM, NC 27713
OFFICE: 919.361.5000

WOODS ENGINEERING
STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
910-343-8007 fax 910-343-8088

SUD ASSOCIATES, P.A.
PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

MARK LOUDERMILK, AIA
REGISTERED ARCHITECT
L 10776
N.C.
WILMINGTON, NC

BECKER MORGAN GROUP, INC
Registered Architectural Corporation
51922
North Carolina
WILMINGTON, NC

PROJECT TITLE

UNCW

SCO ID: 19-20473-01A
PM#: 6034

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

COLUMN DETAILS

ISSUE BLOCK

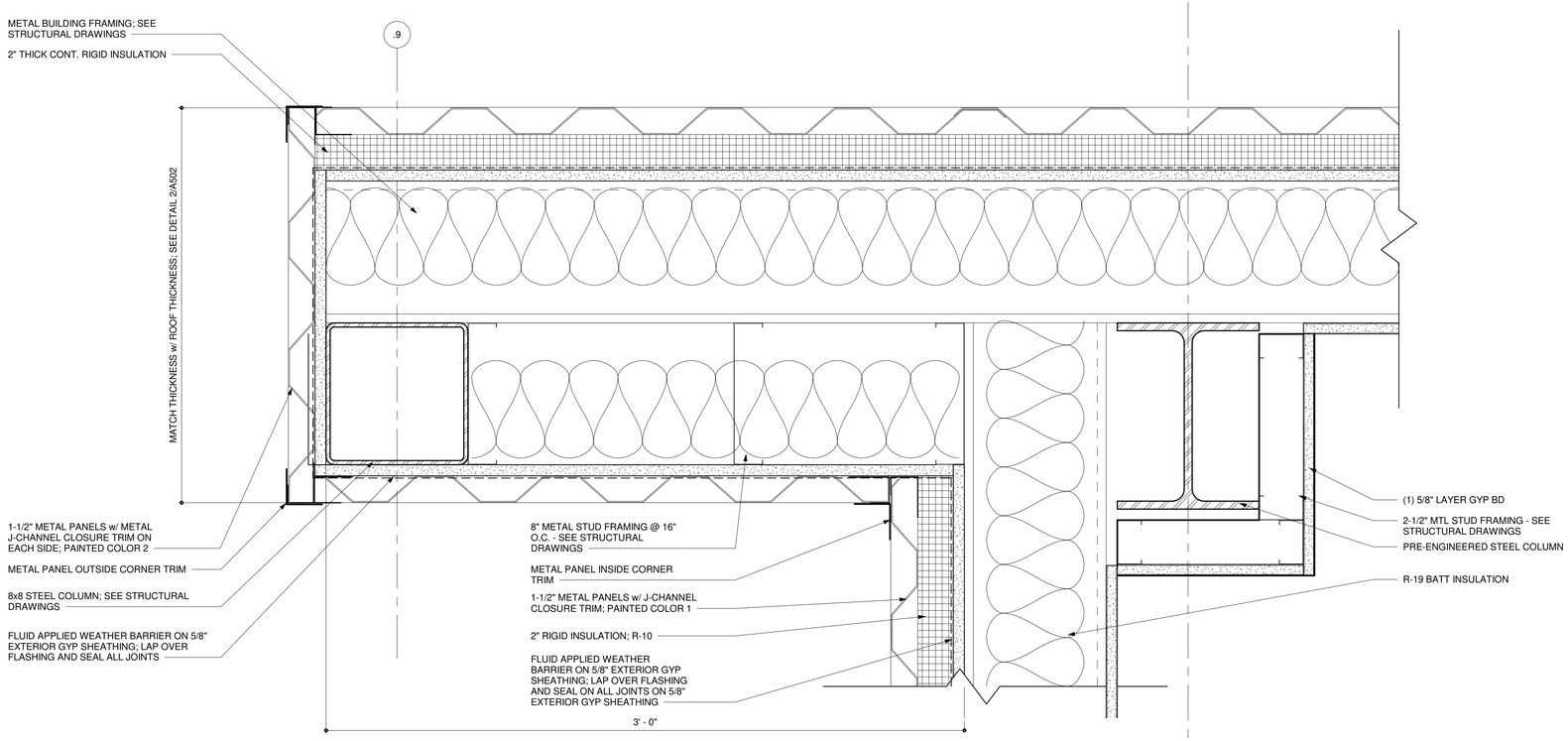
Mark	Date	Description

PROJECT NO:	2018070.01
DATE:	9/23/2019
SCALE:	1 1/2" = 1'-0"
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1 COLUMN DETAIL 1

SCALE: 3" = 1'-0"

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ARCHITECTURE
PLANNING

North Carolina
3333 Jaeckle Drive, Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
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250 South Main Street, Suite 109
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THE JOHN R. MCADAMS COMPANY
CIVIL ENGINEERING
2905 MERIDIAN PARKWAY
DURHAM, NC 27713
OFFICE: 919.361.5000

WOODS ENGINEERING
STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
910-343-8007 fax 910-343-8088

SUD ASSOCIATES, P.A.
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DURHAM, NC 27707
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PROJECT TITLE

UNCW

SCO ID: 19-20473-01A
PM#: 6034

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

COLUMN DETAILS

ISSUE BLOCK

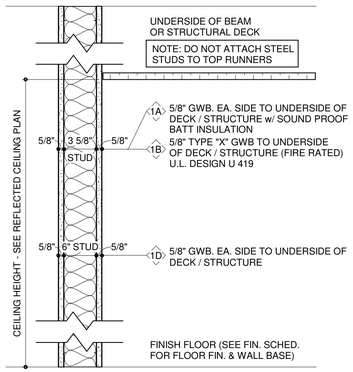
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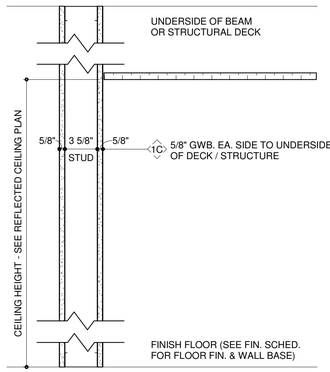
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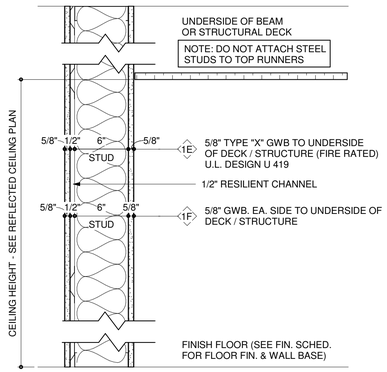
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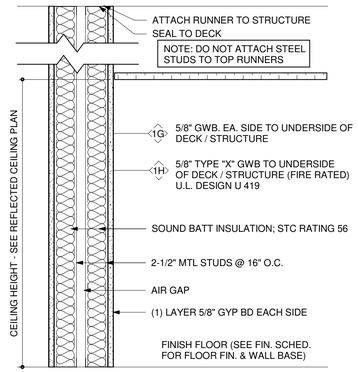
1 **WALL TYPES** 1A 1B 1D



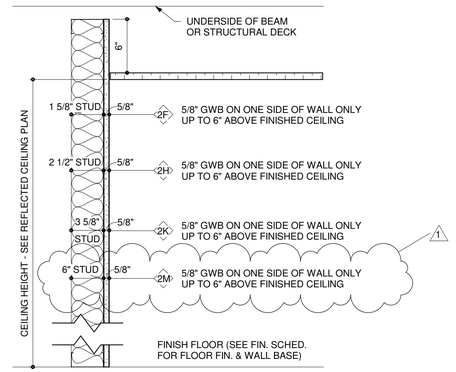
2 **WALL TYPES** 1C



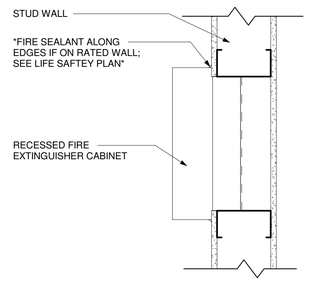
3 **WALL TYPES** 1E 1F



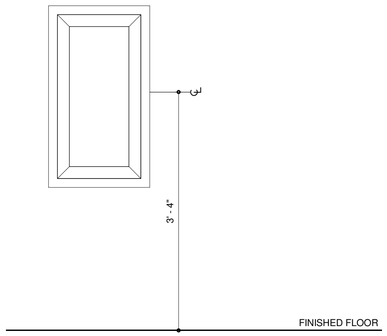
4 **WALL TYPES** 1G 1H



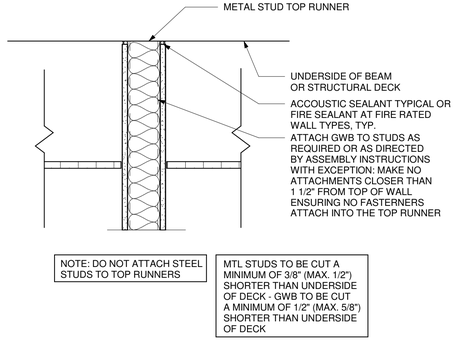
5 **WALL TYPES** 2F 2H 2K 2M



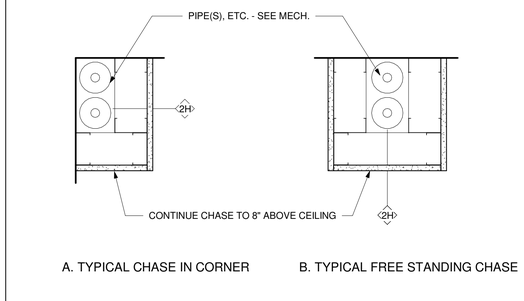
6 **RECESSED FIRE EXTINGUISHER DETAIL**
SCALE : 1 1/2" = 1' 0"



7 **RECESSED FIRE EXTINGUISHER ELEVATION**
SCALE : 1" = 1' 0"



8 **TYPICAL FIRE-RATED PARTITON DETAIL**
SCALE : 1 1/2" = 1' 0"



A. TYPICAL CHASE IN CORNER B. TYPICAL FREE STANDING CHASE

NOTE: COORDINATE CHASE SIZES WITH MECHANICAL/PLUMBING & STRUCTURAL REQUIREMENTS
AND WITH DIMENSIONS INDICATED ON FLOOR PLANS. ALIGN CHASE WITH ADJACENT WALLS AS INDICATED ON PLANS.

9 **TYPICAL CHASE DETAILS**
SCALE : 1 1/2" = 1' 0"

WALL TYPE GENERAL NOTES

1. SEE CODE SHEETS, AND WALL TYPES FOR REQUIRED FIRE RATINGS OF ALL WALL ASSEMBLIES. MULTIPLE LAYERS OF GWB MAY BE REQUIRED AT RATED PARTITIONS.

2. PROVIDE SOUND-ATTENUATING BATT INSULATION OR SOUND-ATTENUATING FIRE BATT INSULATION IN METAL STUD PARTITIONS, U.O.N.

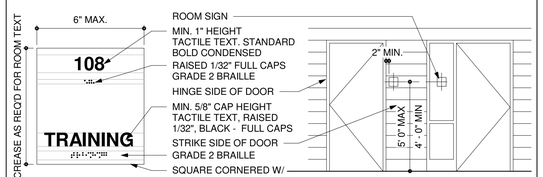
3. PROVIDE MOLD AND MOISTURE RESISTANT GWB AT ALL METAL STUD FRAMED PARTITIONS AT WET LOCATIONS, INCLUDING TOILET ROOMS, AND AT SINKS AND LAVATORIES. EXTEND TO END OF CASEWORK RUN, INCLUDING SIDEWALLS WHERE ADJACENT TO SINKS. SEE SPECIFICATIONS.

4. BRACE METAL STUD PARTITIONS WHERE REQUIRED. SEE SPECIFICATIONS AND STRUCTURAL DRAWINGS.

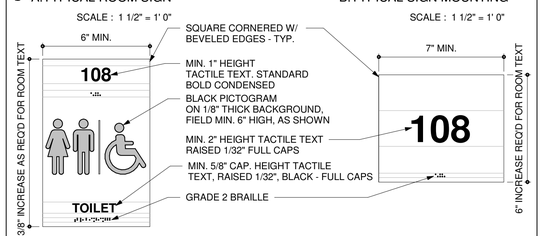
5. PROVIDE ACOUSTICAL SEALANT AT PARTITIONS IN THE FOLLOWING LOCATIONS: ALL MECHANICAL ROOMS AND MEZZANINES, AND ELEVATOR MACHINE ROOM. SEE SPECIFICATIONS.

6. LABEL ALL FIRE-RATED WALLS ABOVE CEILING W/ 4" THICK RED STENCIL LETTERING

NOTE: WHERE SIGNS ARE MOUNTED ON GLASS, PROVIDE A "BLANK" OF SAME SIZE AND FINISH AS SIGN ON OPPOSITE SIDE OF GLASS. ALIGN "BLANK" WITH SIGN TO CONCEAL ALL MOUNTING ADHESIVES AND BACK OF SIGN FROM VIEW.

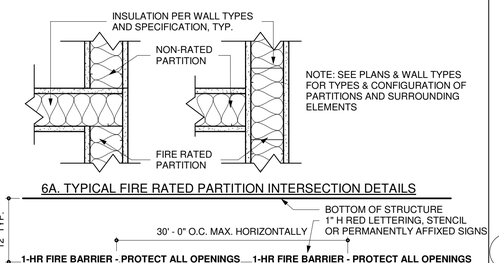


A.TYPICAL ROOM SIGN SCALE : 1 1/2" = 1' 0" B.TYPICAL SIGN MOUNTING SCALE : 1 1/2" = 1' 0"



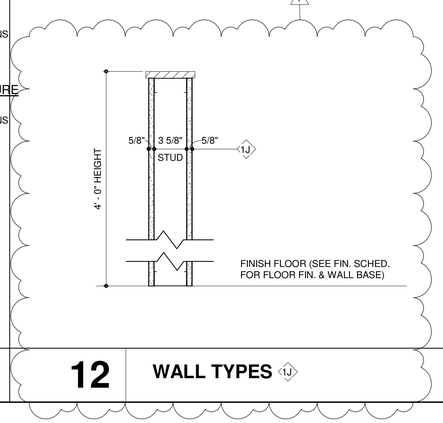
C.TYPICAL TOILET ROOM SIGN SCALE : 1 1/2" = 1' 0" D.ROOM NUMBER SIGN SCALE : 1 1/2" = 1' 0"

10 **TYPICAL SIGN DETAIL**
SCALE : 1 1/2" = 1' 0"



NOTE:
1. PROVIDE MARKING ON BOTH SIDES OF RATED WALLS AND PARTITIONS.
2. WHERE CHANGE IN WALL OR PARTITION DIRECTION OCCURS, MARK EACH SEGMENT INDIVIDUALLY.
3. LOCATE MARKINGS TO BE VISIBLE ABOVE CEILING.
4. LETTERING SHALL READ AS FOLLOWS:
SMOKE PARTITION: " SMOKE PARTITION - PROTECT ALL OPENINGS "
1-HR FIRE BARRIER: " 1-HR FIRE BARRIER - PROTECT ALL OPENINGS "
2-HR FIRE WALL: " 2-HR FIRE WALL - PROTECT ALL OPENINGS "

11 **TYPICAL RATED PARTITION DETAILS**
SCALE : N.T.S.



12 **WALL TYPES** 1J

BECKER MORGAN GROUP
ARCHITECTURE
PLANNING

North Carolina
3333 Jaeckle Drive, Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
Newark, DE 19711
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www.beckermorgan.com

THE JOHN R. MCADAMS COMPANY
CIVIL ENGINEERING
2905 MERIDIAN PARKWAY
DURHAM, NC 27713
OFFICE: 919.361.5000

WOODS ENGINEERING
STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
910-343-8007 fax 910-343-8088

SUD ASSOCIATES, P.A.
PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

KARL LOUDERMILK, AIA
REGISTERED ARCHITECT
10776
NORTH CAROLINA
WILMINGTON, NC

BECKER MORGAN GROUP, INC.
Professional Architecture
51922
North Carolina
WILMINGTON, NC

PROJECT TITLE

UNCW

SCO ID: 19-20473-01A
PM#: 6034

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

WALL TYPES AND DETAILS

ISSUE BLOCK

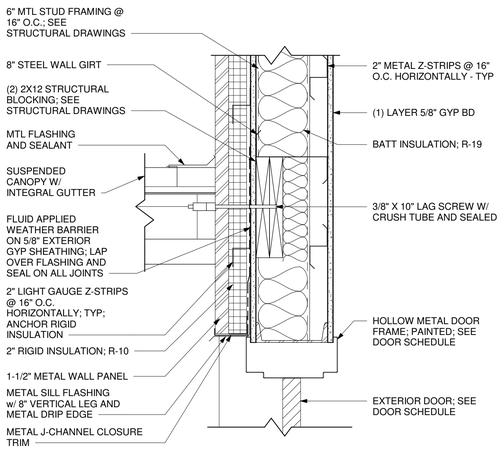
Mark	Date	Description
1	10/2/19	ADDENDUM #1

PROJECT NO: 2018070.01
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SCALE: As indicated
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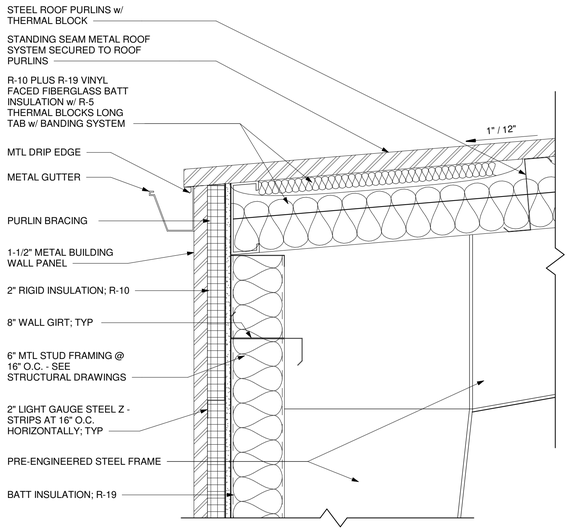
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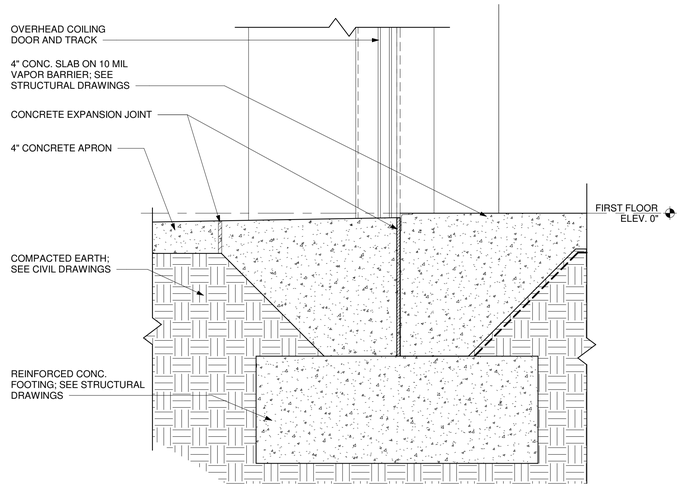
1 CANOPY OVER EXTERIOR DOOR

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



2 FLUSH ROOF TO EXTERIOR WALL

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



3 EXTERIOR WALL TO FOOTING

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

4 ROOF MEETING EXTERIOR WALL

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

5 EXTERIOR WALL TO STOREFRONT

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

6 OVERHANGING ROOF TO EXTERIOR WALL

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

7 CANOPY TO EXTERIOR WALL

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

8 WALL TO SLAB, TYP

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

9 LOBBY TRIM

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

10 DUCT WALL PENETRATION DETAIL

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

BECKER MORGAN GROUP

ARCHITECTURE
PLANNING

North Carolina
3333 Jaeckle Drive, Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
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302.369.3700

www.beckermorgan.com

THE JOHN R. MCADAMS COMPANY
CIVIL ENGINEERING
2905 MERIDIAN PARKWAY
DURHAM, NC 27713
OFFICE: 919.361.5000

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STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
910-343-8007 fax 910-343-8088

SUD ASSOCIATES, P.A.
PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

KURT LOUDERMILK ARCHITECT P.A. REGISTERED ARCHITECT L 10776 N.C. WILMINGTON, N.C.

BECKER MORGAN GROUP, INC. Southeastern Architecture Architecture 51922 North Carolina WILMINGTON, N.C.

PROJECT TITLE

UNCW

SCO ID: 19-20473-01A
PM#: 6034

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

ENLARGED DETAILS

ISSUE BLOCK

Mark	Date	Description

PROJECT NO:	2018070.01
DATE:	9/23/2019
SCALE:	1 1/2" = 1'-0"
DRAWN BY: AVB	PROJ MGR: LML

A502

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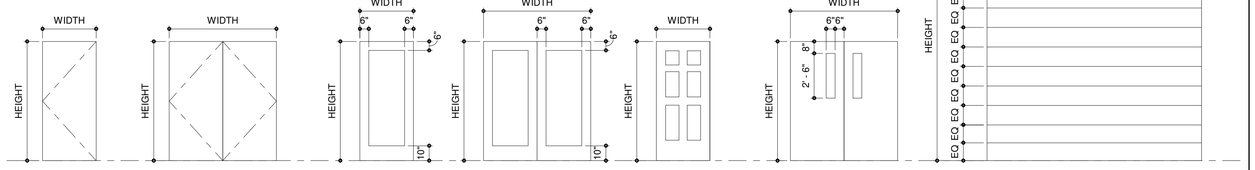
DOOR AND FRAME SCHEDULE

LEVEL	ROOM NAME	DOOR NUMBER	FIRE RATING	DOOR: LEAF QTY	DOOR: SIZE: OPENING WIDTH	DOOR: SIZE: HEIGHT	DOOR: DESCRIPTION: TYPE	DOOR: DESCRIPTION: MATERIAL	DOOR: DESCRIPTION: FINISH	FRAME: DESCRIPTION: TYPE	FRAME: DESCRIPTION: MATERIAL	FRAME: DESCRIPTION: FINISH	FRAME: DETAILS: HEAD	FRAME: DETAILS: JAMB	HARDWARE: LOCKSET / LATCHSET	REMARKS
FIRST FLOOR																
FIRST FLOOR	LOBBY	1101	--	2	6' - 0"	8' - 0"	D	ALUM	ANOD	SF	ALUM	ANOD	H2	J2	20	
FIRST FLOOR	CORR	1102	--	1	3' - 0"	7' - 0"	C	ALUM	ANOD	SF	ALUM	ANOD	H2	J2	19	
FIRST FLOOR	W. TLT	1103	--	1	3' - 0"	7' - 0"	A	SCWD	ST	A	HM	PT	H1	J1	16	
FIRST FLOOR	M. TLT	1104	--	1	3' - 0"	7' - 0"	A	SCWD	ST	A	HM	PT	H1	J1	16	
FIRST FLOOR	LIGHT LOCK	1105A	20 MIN	1	3' - 0"	7' - 0"	A	SCWD	ST	A	HM	PT	H4	J4	13	GROUT SOLID FRAME FOR SOUND RATING
FIRST FLOOR	LIGHT LOCK	1105B	--	1	3' - 0"	7' - 0"	A	SCWD	ST	A	HM	PT	H1	J1	17	GROUT SOLID FRAME FOR SOUND RATING; BID ALTERNATE #1
FIRST FLOOR	LIGHT LOCK	1107A	20 MIN	1	3' - 0"	7' - 0"	A	SCWD	ST	A	HM	PT	H4	J4	13	GROUT SOLID FRAME FOR SOUND RATING
FIRST FLOOR	LIGHT LOCK	1107B	--	1	3' - 0"	7' - 0"	A	SCWD	ST	A	HM	PT	H1	J1	17	GROUT SOLID FRAME FOR SOUND RATING; BID ALTERNATE #1
FIRST FLOOR	STAIR	1108A	20 MIN	1	3' - 0"	7' - 0"	A	SCWD	ST	A	HM	PT	H4	J4	13	GROUT SOLID FRAME FOR SOUND RATING; BID ALTERNATE #1
FIRST FLOOR	ELEC.	1110A	--	1	3' - 0"	7' - 0"	A	HM	PT	A	HM	PT	H3	J3	14	
FIRST FLOOR	EQUIPMENT	1111	20 MIN	2	6' - 0"	7' - 0"	F	SCWD	ST	A	HM	PT	H4	J4	10	
FIRST FLOOR	SOUND STAGE	1112A	--	1	3' - 0"	7' - 0"	A	HM	PT	A	HM	PT	H3	J3	12	
FIRST FLOOR	LIGHT LOCK	1112B	--	2	6' - 0"	7' - 0"	B	SCWD	ST	A	HM	PT	H1	J1	18	GROUT SOLID FRAME FOR SOUND RATING: 56
FIRST FLOOR	SOUND STAGE	1112C	--		12' - 0"	14' - 0"	G	--	--	--	--	--	--	--	01	OVERHEAD SECTIONAL
FIRST FLOOR	LIGHT LOCK	1113	20 MIN	2	6' - 0"	7' - 0"	F	SCWD	ST	A	HM	PT	H4	J4	15	GROUT SOLID FRAME FOR SOUND RATING: 56
FIRST FLOOR	CORRIDOR	1114A	20 MIN	2	6' - 0"	7' - 0"	F	SCWD	ST	A	HM	PT	H4	J4	09	
FIRST FLOOR	CORRIDOR	1114B	--	2	6' - 0"	7' - 0"	D	ALUM	ANOD	SF	ALUM	ANOD	H2	J2	20	
FIRST FLOOR	CLASSROOM	1115	20 MIN	1	3' - 0"	7' - 0"	A	SCWD	ST	A	HM	PT	H4	J4	04	
FIRST FLOOR	BLDG SERV.	1116	--	1	3' - 0"	7' - 0"	E	HM	PT	A	HM	PT	H3	J3	08	
FIRST FLOOR	SOUND MIX 2	1117	--	1	3' - 0"	7' - 0"	A	SCWD	ST	A	HM	PT	H1	J1	02	GROUT SOLID FRAME FOR SOUND RATING: 56
FIRST FLOOR	SOUND MIX 1	1118	20 MIN	1	3' - 0"	7' - 0"	A	SCWD	ST	A	HM	PT	H4	J4	07	GROUT SOLID FRAME FOR SOUND RATING: 56
FIRST FLOOR	HSEKPG	1119	20 MIN	2	5' - 0"	7' - 0"	B	SCWD	ST	A	HM	PT	H4	J4	11	
FIRST FLOOR	I.T.	1120	20 MIN	1	3' - 0"	7' - 0"	A	SCWD	ST	A	HM	PT	H4	J4	04	
FIRST FLOOR	SECURITY	1121	20 MIN	1	3' - 0"	7' - 0"	A	SCWD	ST	A	HM	PT	H4	J4	04	
FIRST FLOOR	BREAK ROOM	1122	20 MIN	1	3' - 0"	7' - 0"	A	SCWD	ST	A	HM	PT	H4	J4	03	
FIRST FLOOR	POST-PROD	1123A	20 MIN	1	3' - 0"	7' - 0"	A	SCWD	ST	A	HM	PT	H4	J4	06	
FIRST FLOOR	POST-PROD	1123B	20 MIN	1	3' - 0"	7' - 0"	A	SCWD	ST	A	HM	PT	H4	J4	05	
THEATER FLOOR																
THEATER FLOOR	STAIR	1108B	--	1	3' - 0"	7' - 0"	A	SCWD	ST	A	HM	PT	H1	J1	17	GROUT SOLID FRAME FOR SOUND RATING; BID ALTERNATE #1
THEATER FLOOR	STAIR	1108C	--	1	3' - 0"	7' - 0"	A	SCWD	ST	A	HM	PT	H1	J1	17	GROUT SOLID FRAME FOR SOUND RATING; BID ALTERNATE #1



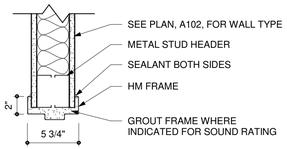
1 FRAME TYPES

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

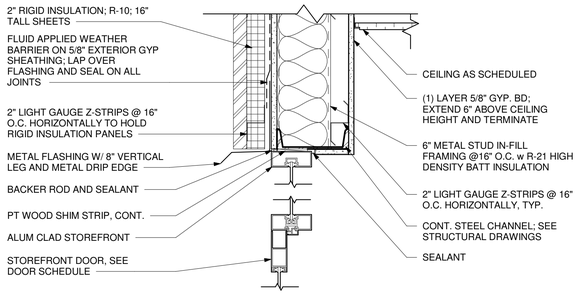


2 DOOR TYPES

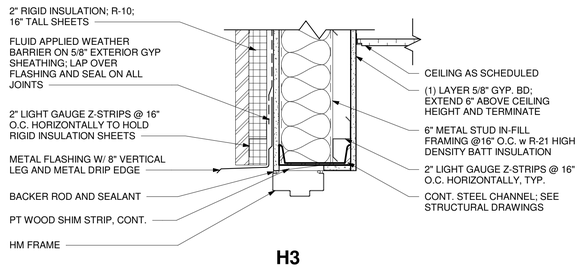
SCALE: 1/4" = 1'-0"



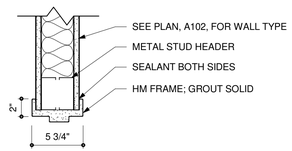
H1



H2

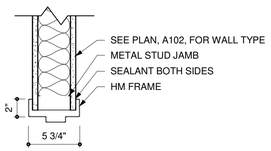


H3

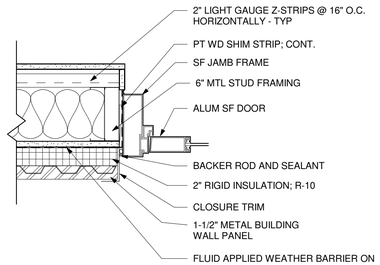


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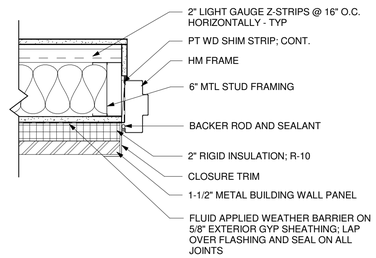
INTERIOR FRAME
1-HOUR RATED



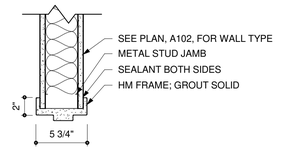
J1



J2



J3



J4

INTERIOR FRAME
1-HOUR RATED

BECKER MORGAN GROUP

ARCHITECTURE
PLANNING

North Carolina
3333 Jaeckle Drive, Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
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SUD ASSOCIATES, P.A.
PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

MARK LOUDERMILK, AIA
REGISTERED ARCHITECT
10776
N.C.

BECKER MORGAN GROUP, INC.
Professional Architectural Corporation
51922
North Carolina
WILMINGTON, NC

PROJECT TITLE

UNCW

SCO ID: 19-20473-01A
PM#: 6034

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

DOOR AND WINDOW TYPES AND SCHEDULE

ISSUE BLOCK

Mark	Date	Description

PROJECT NO:	2018070.01
DATE:	9/23/2019
SCALE:	As indicated
DRAWN BY: JDF	PROJ MGR: LML

A601

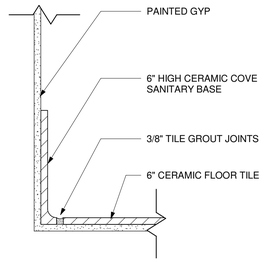
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FINISH SCHEDULE

#	ROOM NAME	FLOOR MAT	BASE MAT	WALL NORTH MAT	WALL NORTH FIN	WALL EAST MAT	WALL EAST FIN	WALL SOUTH MAT	WALL SOUTH FIN	WALL WEST MAT	WALL WEST FIN	CEILING MAT	CEILING FIN	COMMENTS
FIRST FLOOR														
1101	LOBBY	PFT	WD	GWB	PT	GWB	PT	GWB	PT	GWB	PT	ACT-1 / GWB	PT	
1102	CORR	VCT	V	GWB	PT	GWB	PT	GWB	PT	GWB	PT	ACT-1	--	
1103	W. TLT	CT	CT	CB	CMT	GWB	PT	GWB	PT	GWB	PT	ACT-2	--	EPOXY PAINT
1104	M. TLT	CT	CT	GWB	PT	GWB	PT	CB	CMT	GWB	PT	ACT-2	--	EPOXY PAINT
1105	LIGHT LOCK	VCT	V	GWB	PT	GWB	PT	GWB	PT	GWB	PT	ACT-3	--	
1106	CINEMA	CPT	V	GWB	PT	GWB	PT	GWB	PT	GWB	PT	ACT-3	--	
1107	LIGHT LOCK	VCT	V	GWB	PT	GWB	PT	GWB	PT	GWB	PT	ACT-3	--	
1108	STAIR	CONC	V	GWB	PT	GWB	PT	GWB	PT	GWB	PT	ACT-3	--	
1109	PROJ BTH	CPT	V	GWB	PT	GWB	PT	GWB	PT	GWB	PT	ACT-3	--	
1110	ELEC.	CONC	V	GWB	PT	GWB	PT	GWB	PT	GWB	PT	EXPO	PT	
1111	EQUIPMENT	VCT	V	GWB	PT	GWB	PT	GWB	PT	GWB	PT	ACT-1	--	
1112	SOUND STAGE	CONC	V	GWB	PT	GWB	PT	GWB	PT	GWB	PT	ACT-3	--	FRT 2x4 STUDS @ 24" O.C. ON TOP OF CONC. SLA; w/ FRT 3/4" PLYWOOD ON TOP OF STUDS. ATTACH PLYWOOD TO STUDS USING GALVINIZED DECK SCREWS
1113	LIGHT LOCK	CONC	V	GWB	PT	GWB	PT	GWB	PT	GWB	PT	ACT-3	--	
1114	CORRIDOR	VCT	V	GWB	PT	GWB	PT	GWB	PT	GWB	PT	ACT-1	--	
1115	CLASSROOM	VCT	V	GWB	PT	GWB	PT	GWB	CK	GWB	CK	ACT-1	--	WOOD TRIM FRAMING CORK PANELS ON NOTED WALLS
1116	BLDG SERV.	CONC	V	GWB	PT	GWB	PT	GWB	PT	GWB	PT	EXPO	PT	
1117	SOUND MIX 2	VCT	V	GWB	PT	GWB	PT	GWB	PT	GWB	PT	ACT-1	--	
1118	SOUND MIX 1	VCT	V	GWB	PT	GWB	PT	GWB	PT	GWB	PT	ACT-1	--	
1119	HSEKPG	CONC	V	GWB	PT	GWB	PT	GWB	PT	GWB	PT	ACT-1	--	CERAMIC TILE FLOOR IN MOP RECEPTOR AREA
1120	I.T.	VCT	V	GWB	PT	GWB	PT	GWB	PT	GWB	PT	ACT-1	--	
1121	SECURITY	VCT	V	GWB	PT	GWB	PT	GWB	PT	GWB	PT	ACT-1	--	
1122	BREAK ROOM	VCT	V	GWB	PT	GWB	PT	GWB	PT	GWB	PT	ACT-1	--	
1123	POST-PROD	VCT	V	GWB	PT	GWB	PT	GWB	PT	GWB	PT	ACT-1	--	

1



1 TILE COVE BASE

SCALE: 3" = 1'-0"

FINISH SCHEDULE LEGEND

KEY NAME	DESCRIPTION
FLOOR	
-	NOT APPLICABLE
CONC	CONCRETE WITH SEALER/HARDENER
CPT	CARPET
CT	CERAMIC TILE FLOORING
PFT	PORCELAIN FLOOR TILE
VCT	VINYL COMPOSITION TILE
BASE	
-	NOT APPLICABLE
CT	CERAMIC TILE BASE
V	VINYL BASE
WD	WOOD BASE
WALL	
-	NOT APPLICABLE
CB	CEMENT BOARD
CK	CORK PANELS
CMT	CERAMIC MOSAIC TILE
GWB	GYPSUM WALL BOARD
PT	PAINT
CEILING	
-	NOT APPLICABLE
ACT-1	2x2 ACOUSTICAL CEILING TILE
ACT-2	2x2 ACOUSTICAL CEILING TILE MOISTURE RESISTANT
ACT-3	2x2 BLACK ACOUSTICAL CEILING TILE WITH BLACK GRID
EXPO	EXPOSED STRUCTURE, FIRE PROTECTION, PLUMBING, MECHANICAL, ELECTRICAL, TECHNOLOGY
ORIENTATION	
	ON PLANS NORTH WALL IS DOWN, EAST IS LEFT, SOUTH IS UP, WEST IS RIGHT
GENERAL NOTES	
1	WALLS AND CEILINGS MAY CONTAIN MORE THAN ONE MATERIAL OR FINISH AS INDICATED. COORDINATE WITH CONSTRUCTION TYPE AND FINISH SIMILAR TO ADJACENT MATERIALS
2	SEE A102 REFLECTED CEILING PLAN & CEILING NOTES FOR CEILING HEIGHTS, MATERIAL EXTENTS, LOCATIONS AND HEIGHTS OF BULKHEADS, SOFFITS, ETC.
3	PLAN WALL TYPES TAKE PRECEDENCE OVER SCHEDULED WALL FINISH. PROVIDE APPROPRIATE WALL FINISH TO CORRESPOND TO WALL TYPES.
4	MOLD AND MOISTURE RESISTANT GYPSUM BOARD W/ LATEX PAINT SHALL BE USED AT ALL KITCHEN AREAS, TOILET ROOMS AND CUSTODIAN SERVICE CLOSETS SCHEDULED TO HAVE GYPSUM BOARD FINISHES
5	WALL AND CEILING FINISHES SHALL INCLUDE ALL PROJECTIONS, BEAM ENCLOSURES, RECESSES, BULKHEADS, MATERIAL CHANGES, OR OTHER ENCLOSURES. REFER TO REFLECTED CEILING PLANS
6	PROVIDE SEALANT/CAULK AT INTERSECTIONS OF DISSIMILAR MATERIALS AND AS RECOMMENDED BY MANUFACTURERS' GUIDELINES.
7	ALL NEW PARTITIONS AND WALLS SHALL BE PAINTED.

BECKER MORGAN GROUP

ARCHITECTURE
PLANNING

North Carolina
3333 Jaeckle Drive, Suite 120
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Maryland
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PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549





PROJECT TITLE

UNCW

SCO ID: 19-20473-01A
PM#: 6034

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

FINISH SCHEDULE AND LEGEND

ISSUE BLOCK

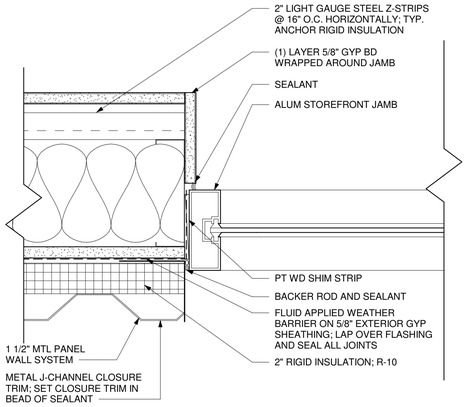
Mark	Date	Description
1	10/7/19	ADDENDUM #2

PROJECT NO: 2018070.01
DATE: 9/23/2019
SCALE: 3" = 1'-0"
DRAWN BY: JDF | PROJ MGR: LML

A602

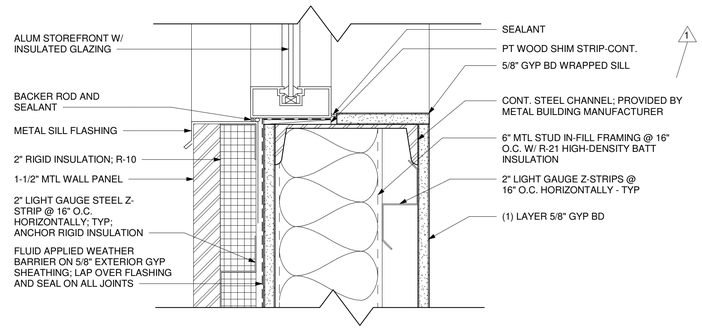
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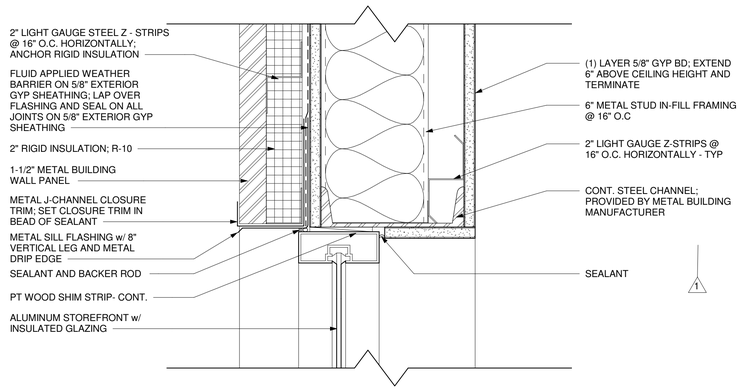
1 WINDOW JAMB DETAIL

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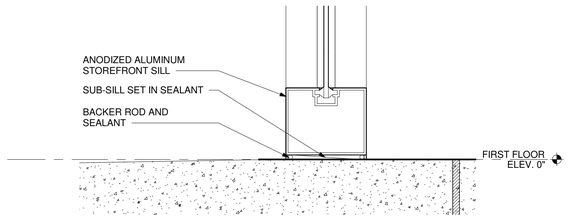
2 WINDOW SILL DETAIL

SCALE: 3" = 1'-0"



3 WINDOW HEAD DETAIL

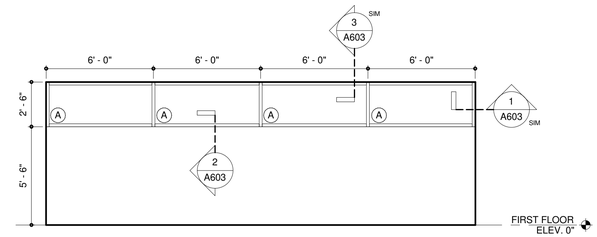
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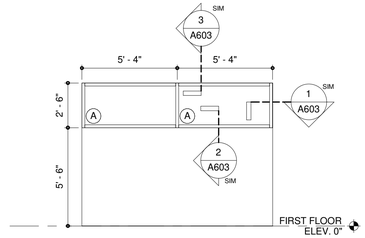
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SCALE: 3" = 1'-0"

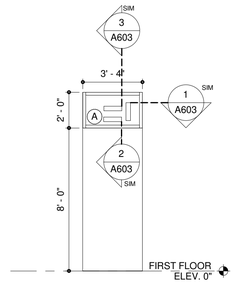
CODE LEGEND	
(T)	= TEMPERED GLAZING
(A)	= ANNEALED GLAZING
(L)	= LAMINATED GLASS



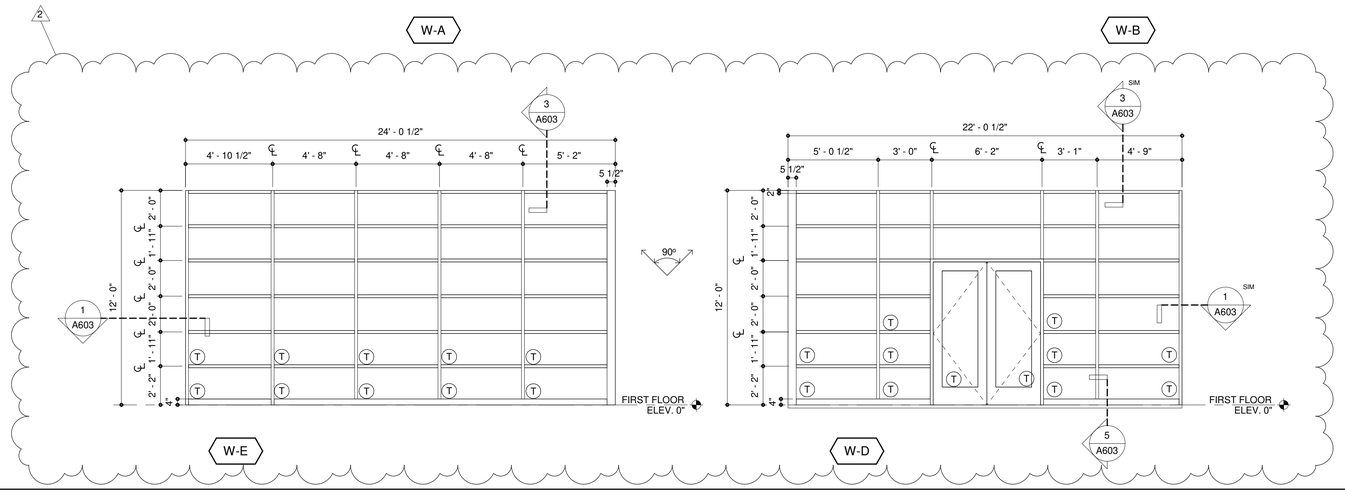
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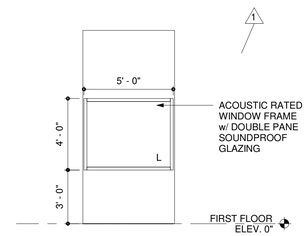


W-B



W-C





W-F

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ARCHITECTURE
PLANNING

North Carolina
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Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
Newark, DE 19711
302.369.3700

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THE JOHN R. MCADAMS COMPANY
CIVIL ENGINEERING
2905 MERIDIAN PARKWAY
DURHAM, NC 27713
OFFICE: 919.361.5000

WOODS ENGINEERING
STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
910-343-8007 fax 910-343-8088

SUD ASSOCIATES, P.A.
PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

MARK LOUDERMILK, AIA
REGISTERED ARCHITECT
10776
N.C.
WILMINGTON, NC

BECKER MORGAN GROUP, INC.
Registered Architectural Corporation
North Carolina
51922
WILMINGTON, NC

PROJECT TITLE

UNCW

SCO ID: 19-20473-01A
PM#: 6034

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

WINDOW ELEVATIONS AND DETAILS

ISSUE BLOCK

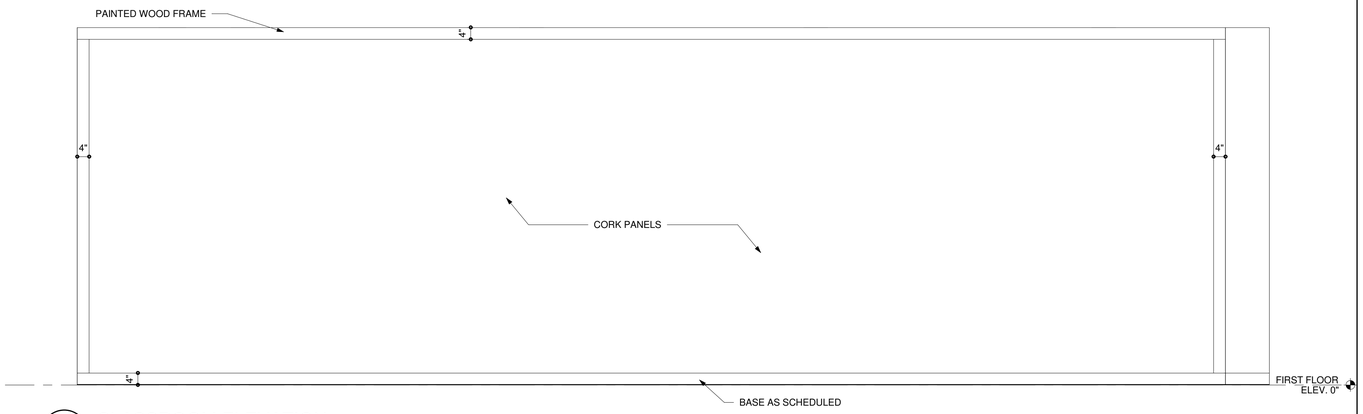
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DATE:	9/23/2019
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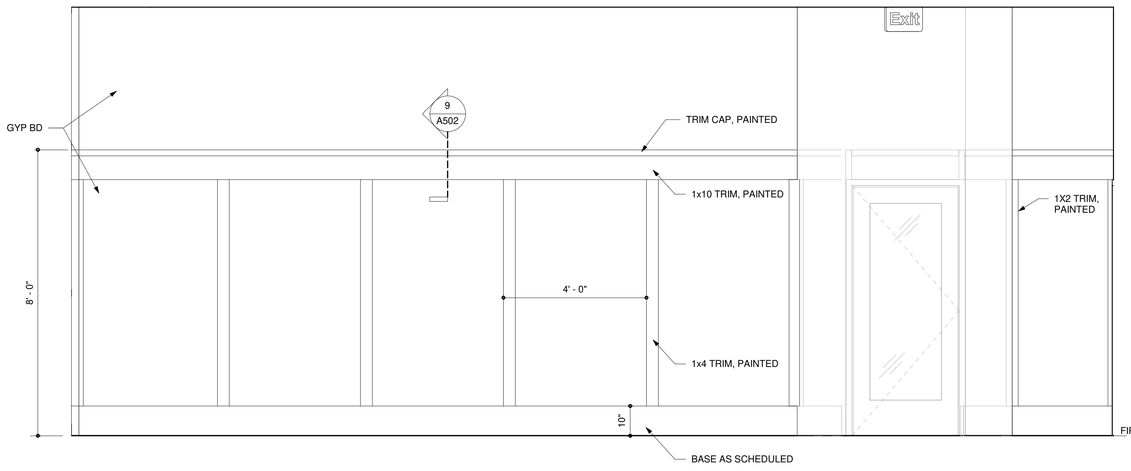
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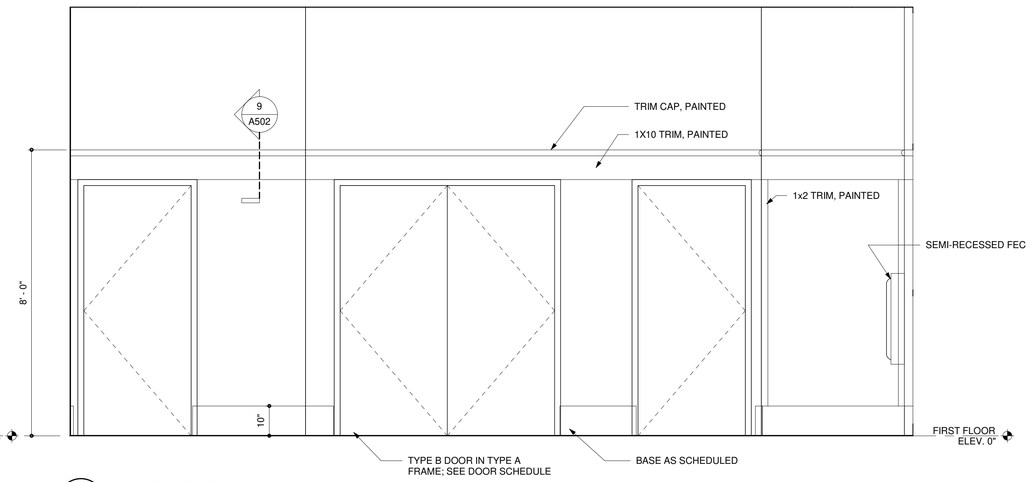
1 CLASSROOM ELEVATION

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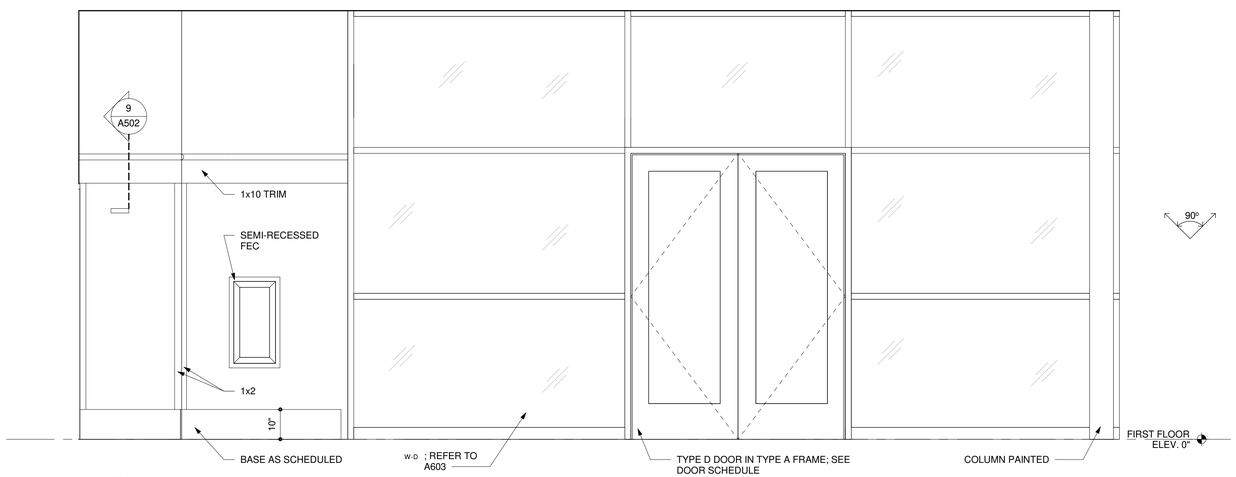
2 LOBBY ELEVATION 1

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



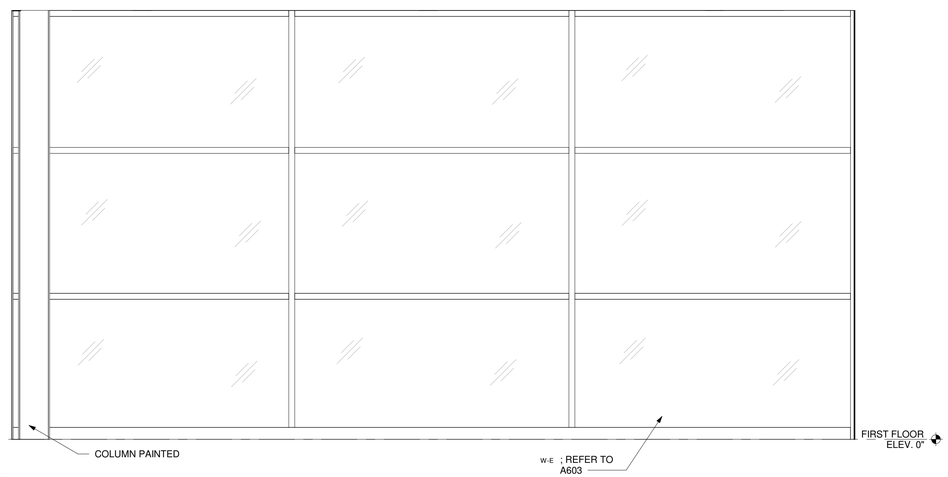
3 LOBBY ELEVATION 2

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



4 LOBBY ELEVATION 4

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



5 LOBBY ELEVATION 3

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

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ARCHITECTURE
PLANNING

North Carolina
3333 Jaeckle Drive, Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
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Dover, DE 19904
302.734.7950

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51922
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INTERIOR ELEVATIONS

ISSUE BLOCK

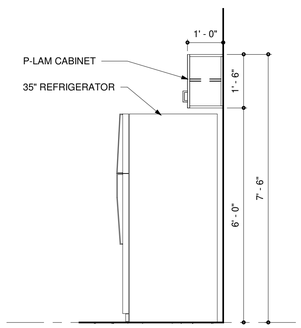
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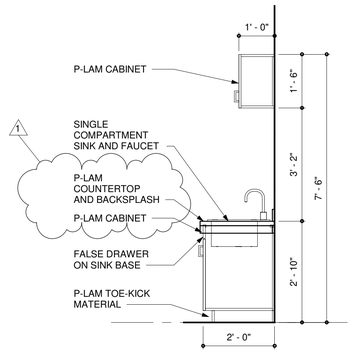
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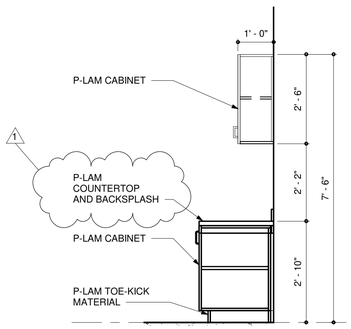
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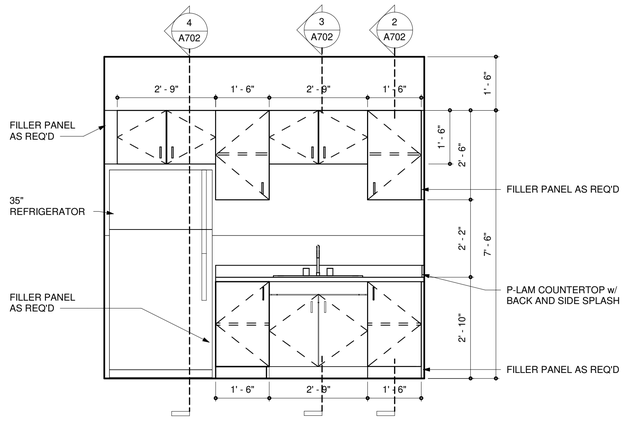
3 CASEWORK SECTION 2

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2 CASEWORK SECTION 1

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



1 BREAKROOM CASEWORK

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

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ARCHITECTURE
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North Carolina
3333 Jaeckle Drive, Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
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Salisbury, MD 21801
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Delaware
309 S Governors Ave
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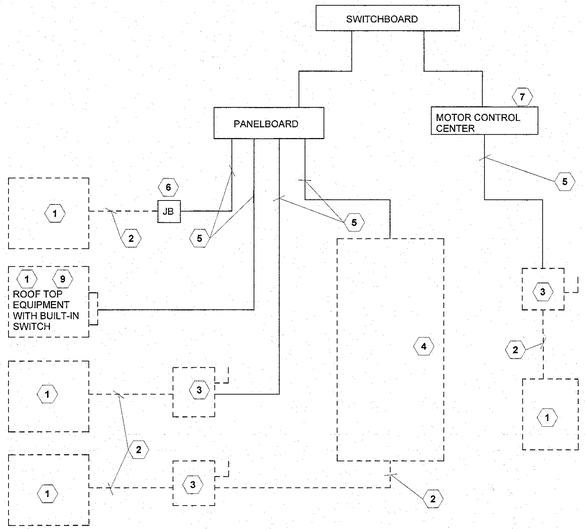
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ELECTRICAL NOTES

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 DISCONECT SWITCH AND STARTER. LOCATE ADJACENT TO THE 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 THE ELECTRICAL PLANS FOR SOME EQUIPMENT. IF NO STARTER OR DISCONNECT IS SUPPLIED A JUNCTION BOX SHALL BE INSTALLED ADJACENT TO THE 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, CIRCUIT BREAKER OR VFD IN THE MCC ARE PROVIDED BY THE ELECTRICAL CONTRACTOR.
8. IN ALL CASES THE EQUIPMENT CONTRACTOR SHALL MAKE FINAL CONNECTIONS, START UP, AND TEST EQUIPMENT.
9. IF ROOF TOP EQUIPMENT (RTE) IS NOT PROVIDED WITH A BUILT-IN DISCONNECT SWITCH, THE ELECTRICAL CONTRACTOR SHALL PROVIDE A DISCONNECT SWITCH.
10. IN A SINGLE PRIME CONTRACT, IT IS THE RESPONSIBILITY OF THE PRIME CONTRACTOR TO COORDINATE BETWEEN THE ELECTRICAL AND OTHER TRADES.



1 PLUMBING/ELECTRICAL EQUIPMENT CONNECTION

NTS

ABBREVIATIONS	
A/C	AIR CONDITIONING
ABV	ABOVE
AC	ACRE
ACOUST	ACOUSTICAL
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
ATV	ATMOSPHERIC VENT
BBD	BOILER BLOWDOWN
BD	BOARD
BFF	BELOW FINISH FLOOR
BOT'M	BOTTOM
BTU	BRITISH THERMAL UNITS
C.O.	CLEAN OUT
C.U.	CONDENSING UNIT
CB	CATCH BASINS
CD	CONDENSATE DRAIN
CEIL	CEILING
CFM	CUBIC FEET PER MINUTE
CFS	CUBIC FEET PER SECOND
CHWR	CHILLED WATER RETURN
CHWR	CHILLED EATER REVERSE RETURN
CHWS	CHILLED WATER SUPPLY
COL	COLUMN
CONC	CONCRETE
COND	CONDUIT
CONST	CONSTRUCTION
CONT	CONTINUOUS
CR	CONDENSATE RETURN (STEAM)
CW	COLD WATER SUPPLY
CWR	CONDENSTER WATER RETURN
CWS	CONDENSER WATER SUPPLY
DDC	DIRECT DIGITAL CONTROL
DEPT	DEPARTMENT
DET	DETAIL
DIA	DIAMETER
DMC	DOMESTIC COLD
DN	DOWN
DTR	DUAL TEMP. RETURN

DTRR	DUAL TEMP. REVERSE RETURN
DTS	DUAL TEMP. SUPPLY
DWGS	DRAWING
E.C.	ELECTRICAL CONTRACTOR
EA.	EACH
EDC	ELECTRIC DUCT COIL
EH	ELECTRIC HEATER
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
EMCS	ENERGY MANAGEMENT CONTROL SYSTEM
EQ	EQUAL
EQUIP	EQUIPMENT
EXIST	EXISTING
FCC	FAN COIL CONTRACTOR PANEL
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FIN	FINISH
FL	FLOOR
FPS	FEET PER SECOND
FR	FIRE RESISTANT
FT	FOOT
G	GAS
G.C.	GENERAL CONTRACTOR
GA	GAUGE
GALV	GALVANIZED
GSHP	GROUND SOURCE HEAT PUMP
HORIZ	HORIZONTAL
HP	HORSEPOWER
HP-__	HEAT PUMP - #
HPS	HIGH - PRESSURE STEAM
HR	HOUR
HTWR	HOT WATER RETURN (HEATING)
HTWRR	HOT WATER REVERSE RETURN (HEATING)
HTWS	HOT WATER SUPPLY (HEATING)
HVAC	HEATING, VENTILATING & AIR CONDITIONING
HW	DOMESTIC HOT WATER
JST	JOIST
LG	LONG
LPS	LOW - PRESSURE STEAM
M.C.	MECHANICAL CONTRACTOR

MANUF.	MANUFACTURER
MAS	MASONRY
MAX.	MAXIMUM
MBTU	THOUSAND BRITISH THERMAL UNITS
MECH	MECHANICAL
MET	METAL
MIN	MINIMUM
MPS	MEDIUM PRESSURE STEAM
MU	MAKEUP WATER
O.A.	OUTDOOR AIR
O.C.	ON CENTER
OZ	OUNCE
P.C.	PLUMBING CONTRACTOR
PC	PUMPED CONDENSATE
PERIM	PERIMETER
PSI	POUNDS PER SQUARE INCH
PVMT	PAVEMENT
R.A.	RELIEF AIR
R.V.	RELIEF VENT
REFRIG	REFRIGERANT
REINF	REINFORCING
REQ'D	REQUIRED
RET. A.	RETURN AIR
RM	ROOM
S.F.	SQUARE FOOR
SCHED	SCHEDULE
SHT. MET.	SHEET METAL
SPECS	SPECIFICATIONS
SPRN	FIRE PROTECTION SPRINKLER PIPING
SQ. IN.	SQUARE INCH
STL	STEEL
STM	STORM
STRUCT	STRUCTURAL
TLT	TOILET
TYP	TYPICAL
U.O.N.	UNLESS OTHERWISE NOTED
UL	UNDERWRITERS LABORATORIES
W/	WITH
WWF	WELDED WIRE FABIC

PLUMBING LEGEND		
SYMBOL	ABBREVIATION	COMPONENT
	DHC	HOT WATER RECIRC PIPING
	DHW	HOT WATER PIPING
	DCW	COLD WATER PIPING
	V	VENT PIPING
	SAN	SANITARY DRAIN PIPING
	CO or XCO	FLOOR CLEANOUT (CO) OR EXTERIOR CLEANOUT (XCO)
	WHA	WATER HAMMER ARRESTOR
	WCO	WALL CLEANOUT
	HB	HOSE BIBB
FD	FD	FLOOR DRAIN OR FUNNEL AS INDICATED.
W	WM	WATER METER
	BFP	BACK FLOW PREVENTER
	STR	STRAINER
	VTR	VENT THRU ROOF
	AFF	ABOVE FINISHED FLOOR
***		FIXTURE NUMBER REFER TO PLUMBING SCHEDULES
		POINT OF CONNECTION, NEW / EXISTING
		BALL VALVE
	NAT	NATURAL GAS

NOTE:
ALL PROJECTS REQUIRE COORDINATION AND COOPERATION AMONG THE DISCIPLINES. CONTRACTORS SHALL COORDINATE LOCATIONS AND SEQUENCE OF INSTALLATION OF THEIR RESPECTIVE EQUIPMENT, PIPES, CONDUITS, DUCTS, ETC. WITH ALL DISCIPLINES. DO NOT BEGIN FABRICATION OR INSTALLATION UNTIL ALL ROUTING AND POTENTIAL CONFLICT ISSUES HAVE BEEN RESOLVED. ANY REMOVAL AND REINSTALLATION OF NEWLY INSTALLED ITEMS TO RESOLVE CONFLICTS SHALL BE DONE AT NO ADDITIONAL COST TO THE OWNER OR DESIGNERS.

PLUMBING FIXTURE LOADS
DOMESTIC WATER - 56 W.S.F.U.
SANITARY WASTE - 44 D.F.U.

GENERAL NOTES (ALL NOTES ON THIS PAGE APPLY TO ALL SHEETS U.O.N.)

1. DRAWINGS ARE DIAGRAMMATIC. DRAWINGS ARE NOT INTENDED TO BE ABSOLUTELY PRECISE, AND DO NOT SPECIFY OR SHOW EVERY OFFSET, FITTING, AND COMPONENT. THE PURPOSE OF THE DRAWINGS IS TO INDICATE A SYSTEM CONCEPT, THE MAIN COMPONENTS OF THE SYSTEMS, AND THE APPROXIMATE GEOMETRICAL RELATIONSHIPS. BASED ON THE SYSTEMS CONCEPT, THE MAIN COMPONENTS AND APPROXIMATE GEOMETRICAL RELATIONSHIPS, THE CONTRACTOR SHALL PROVIDE ALL OTHER COMPONENTS AND MATERIALS NECESSARY TO MAKE THE SYSTEMS FULLY COMPLETE AND OPERATIONAL. THE CONTRACTOR SHALL ROUTE PIPING OR PROVIDE OFFSETS TO AVOID INTERFERENCE WITH STRUCTURAL ELEMENTS, EQUIPMENT, ELECTRICAL PANELS AND JUNCTION BOXES, ETC. VERIFY LOCATIONS, DIMENSIONS, EXISTING FLOW DIRECTIONS, AVAILABLE POWER CHARACTERISTICS (VOLTS/PHASE), ETC., BEFORE CONSTRUCTION.
2. WORKMANSHIP: COMPETENT SKILLFUL WORKMEN SHALL DO ALL WORK IN A FINISHED, THOROUGHLY SUBSTANTIAL AND CRAFTSMANLIKE MANNER. THIS IS INTENDED TO REFER PARTICULARLY TO SMALLER DETAILS NECESSARY BUT USUALLY NOT SPECIFIED OR INDICATED ON THE DRAWINGS. ALL SUB-STANDARD WORK, INSTALLED BY THIS CONTRACTOR, SHALL BE REPLACED BY THIS CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER. IF THIS CONTRACTOR DAMAGES EXISTING WORK, HE SHALL PAY THE COST OF REPLACEMENT OF THE DAMAGED WORK AT NO ADDITIONAL EXPENSE TO THE OWNER. THE ENGINEER SHALL BE THE JUDGE OF WORKMANSHIP AND HIS/HER OPINION SHALL BE FINAL.
3. THE DESIGN DOCUMENTS INDICATE THE PRODUCTS THAT WERE USED AS THE BASIS OF THE DESIGN. THIS ESTABLISHES THE PRODUCT PARAMETERS AND OTHER SYSTEMS INTERACTING WITH THE PRODUCT (SIZE, POWER REQUIREMENTS, PIPE SIZES, PUMP CAPACITY, ETC.). CONTRACTOR SHALL SPECIFICALLY BRING TO THE DESIGNER'S ATTENTION ANY CHANGES IN OTHER SYSTEMS REQUIRED WHEN PRODUCTS, OTHER THAN THOSE USED AS THE BASIS OF THE DESIGN, ARE USED. THE CONTRACTOR SHALL BEAR ALL COSTS, INCLUDING DESIGN, FOR THE CHANGES.
4. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS, DIMENSIONS AND SIZES BEFORE FABRICATING OR ORDERING EQUIPMENT.
5. REPAIR AND PATCH ALL NEW CEILING, ROOF, WALL AND FLOOR PENETRATIONS TO MATCH EXISTING FINISH. SEAL ALL PENETRATIONS OF FIRE RATED WALLS/FLOORS/CEILINGS IN ACCORDANCE WITH UL SPECIFICATIONS.
6. SUPPORT ALL PIPING FROM BUILDING STRUCTURE, FLOOR OR PAVEMENT. REFER TO SPECIFICATIONS AND DETAIL DRAWINGS FOR REQUIREMENTS.
7. LABEL ALL EQUIPMENT, DUCTS, ETC. IN ACCORDANCE WITH SPECIFICATIONS.
8. PROVIDE WARNING TAPE OR TRACER WIRE IN THE BACKFILL OF ALL PIPE TRENCHES. INSTALL AT LEAST 6 INCHES BELOW GRADE, BUT NOT DEEPER THAN 24 INCHES BELOW GRADE, DIRECTLY OVER PIPING.
   A. METALLIC LINES SHALL BE IDENTIFIED WITH DURABLE PRINTED PLASTIC WARNING TAPES, MINIMUM 3 INCHES WIDE WITH LETTERING TO IDENTIFY BURIED LINE BELOW.
   B. NON-METALLIC PIPES SHALL BE MARKED USING AN APPROVED TRACER. A YELLOW INSULATED COPPER TRACER WIRE OR OTHER APPROVED CONDUCTOR SHALL BE INSTALLED ADJACENT TO AND OVER THE FULL LENGTH OF UNDERGROUND NONMETALLIC 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 14AWG AND THE INSULATION TYPE SHALL BE LISTED FOR DIRECT BURIAL.
9. THE DELINEATION OF THE WORK BETWEEN THE PLUMBING AND THE ELECTRICAL CONTRACTORS SHALL COMPLY WITH THE REQUIREMENTS ESTABLISHED BY THE NC STATE CONSTRUCTION OFFICE. REFER TO SCHEMATIC TITLED "PLUMBING/ELECTRICAL EQUIPMENT CONNECTION" ON THIS SHEET.
10. REFER TO PLANS, EQUIPMENT SCHEDULES AND DETAILS FOR CAPACITIES AND ADDITIONAL REQUIREMENTS.INSTALL ALL EQUIPMENT IN COMPLIANCE WITH MANUFACTURER'S WRITTEN RECOMMENDATION AND REQUIREMENTS. IF RECOMMENDATIONS CONFLICT WITH DRAWINGS, REQUEST CLARIFICATIONS FROM ENGINEER BEFORE PROCEEDING.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR SAFETY AT THE SITE. PROVIDE BARRICADES AND COVERS AT THE EXCAVATION AREAS AS APPROPRIATE. COMPLY WITH SAFETY REQUIREMENTS OF OSHA, ETC.
12. EXCEPT FOR INTERRUPTIONS SPECIFICALLY PERMITTED BY THE OWNER, PEDESTRIAN TRAFFIC SHALL BE MAINTAINED AT ALL TIMES. COORDINATE WITH THE OWNER.
13. FIELD-VERIFY EXISTING AND COORDINATE NEW EQUIPMENT SIZES WITH ASSOCIATED CONTRACTORS (ELECTRICAL, KITCHEN VENDERS, ETC.) AFTER COMPLETION OF SHOP DRAWING REVIEW. ADJUST VOLTAGE RATING, CAPACITY AND SIZE OF WIRING, STARTERS, DISCONNECT SWITCHES AND OVERCURRENT PROTECTION DEVICES AS REQUIRED. NOTIFY ENGINEER OF ANY DISCREPANCIES BEFORE ORDERING SUPPLIES AND START OF CONSTRUCTION. FAILURE TO COMPLY WILL REQUIRE THE CONTRACTOR TO BEAR THE COST FOR CORRECTLY SIZED EQUIPMENT AND WIRING.
14. EQUIPMENT SHALL BE INSTALLED WITH MANUFACTURERS RECOMMENDED SERVICE CLEARANCES OR STATE BUILDING CODE SERVICE CLEARANCES WHICHEVER IS GREATER.
15. WHERE PIPES ARE SHOWN GOING THROUGH A CEILING OR THE ROOF THEY SHALL GO BETWEEN JOISTS OR JOISTS AND BEAMS. NO TRUSSES, BEAMS, COLUMNS OR OTHER STRUCTURAL MEMBERS ARE TO BE CUT WITHOUT PRIOR APPROVAL OF THE ENGINEER.
16. THE SERVICE WATER HEATING SYSTEMS FOR THIS PROJECT WILL BE COMMISSIONED BY A COMMISSIONING AGENT. THE CONTRACTOR SHALL PROVIDE ALL MATERIAL AND RESOURCES NECESSARY TO ENSURE COMPLIANCE WITH THE REQUIREMENTS OF SPECIFICATION SECTION 01 91 13 – GENERAL COMMISSIONING REQUIREMENTS, AND WITH THE REQUIREMENTS OF THE COMMISSIONING PLAN.

BECKER MORGAN GROUP
ARCHITECTURE PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
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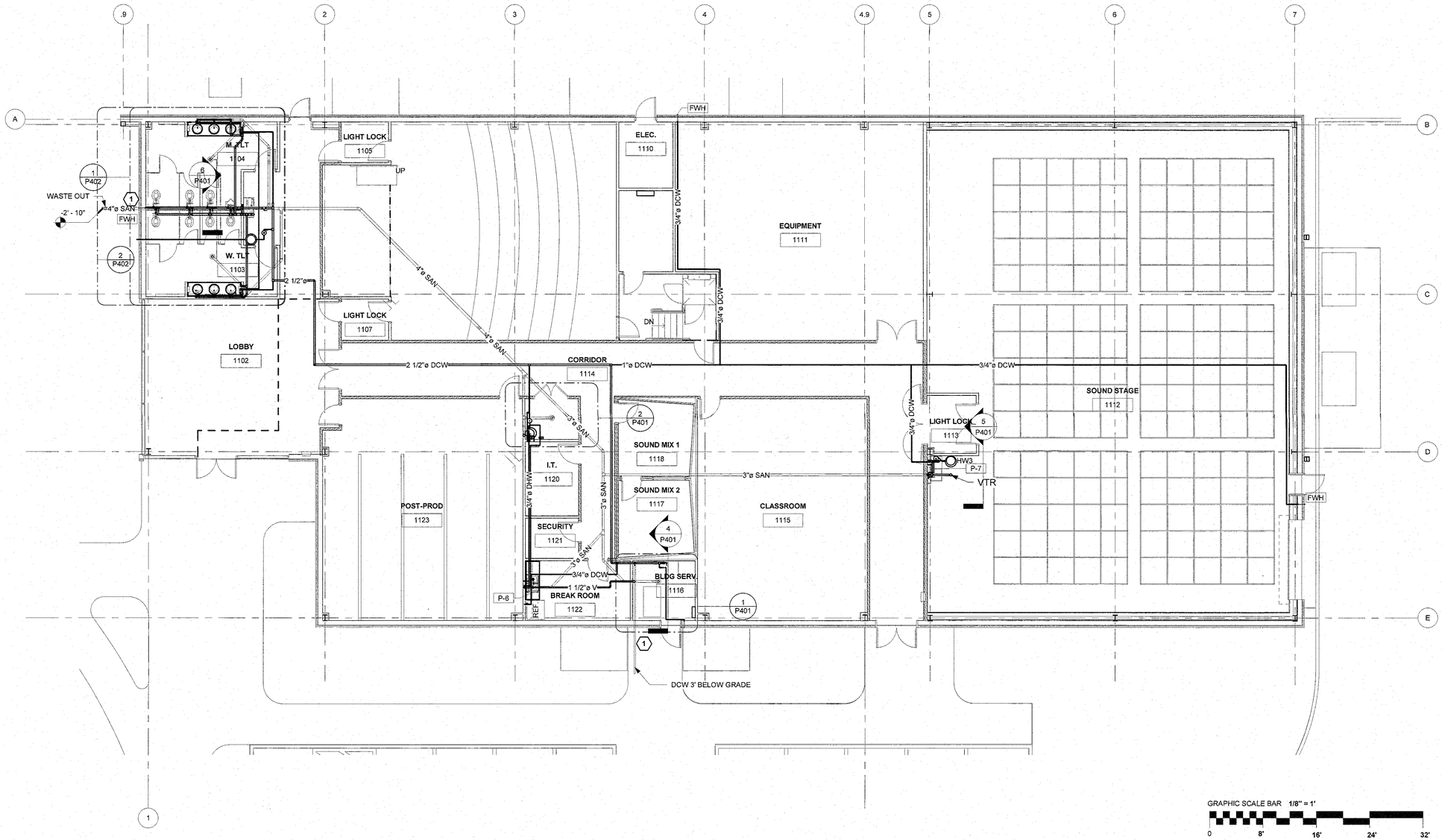
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1 FIRST FLOOR - PLUMBING LAYOUT

1/8" = 1'-0"

NOTES:
1. REFER TO SHEET P100 FOR GENERAL NOTES, LEGENDS, AND ABBREVIATIONS.

2. REFER TO THE P400 SERIES FOR ENLARGED PLANS AND ELEVATIONS, TO THE P500 SERIES FOR DETAILS, AND TO THE P600 SERIES FOR EQUIPMENT SCHEDULES AND PIPING ISOMETRICS.

3. SUPPORT ALL EQUIPMENT AND PIPING FROM THE STRUCTURE OR THE FLOOR AS RECOMMENDED BY THE MANUFACTURER. CONCEAL PIPES AND WIRING ABOVE CEILINGS OR IN WALLS WHEREVER CEILINGS AND WALLS ARE PROVIDED.

KEYED NOTES

(1) WHERE PIPES PASS UNDER THE EDGE OF THE FOOTING (TURNED DOWN SLAB), PROVIDE A SCHEDULE 40 STEEL PIPE SLEEVE TWO PIPE SIZES LARGER THAN THE PIPE. EXTEND THE PIPE SLEEVE 1'-0" PAST EACH SIDE OF THE CONCRETE FOOTING. PROVIDE SPACERS INSIDE SLEEVE TO MAINTAIN SLOPE OF WASTE PIPE. FILL OR SEAL ANNULAR SPACE IN AN APPROVED MANNER. BACKFILL TRENCH WITH #57 STONE. THE BEARING CAPACITY OF THIS AREA MUST MEET OR EXCEED THE ALLOWABLE SOIL BEARING CAPACITY. COORDINATE WITH STRUCTURAL WORK.

FIRE RATED SCHEDULE

- 0 HR RATED SMOKE PARTITION
- 1 HR RATED FIRE PARTITION / FIRE BARRIER
- 2 HR RATED FIRE WALL

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ARCHITECTURE
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North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
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302.369.3700

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CIVIL ENGINEERING
2905 MERIDIAN PARKWAY
DURHAM, NC 27713
OFFICE: 919.361.5000

WOODS ENGINEERING
STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
910-343-8007 fax 910-343-8088

SUD ASSOCIATES, P.A.
PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14050 DIXIE M. DAVIS 9/23/19

PROJECT TITLE

UNCW

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

PLUMBING FLOOR PLAN

ISSUE BLOCK

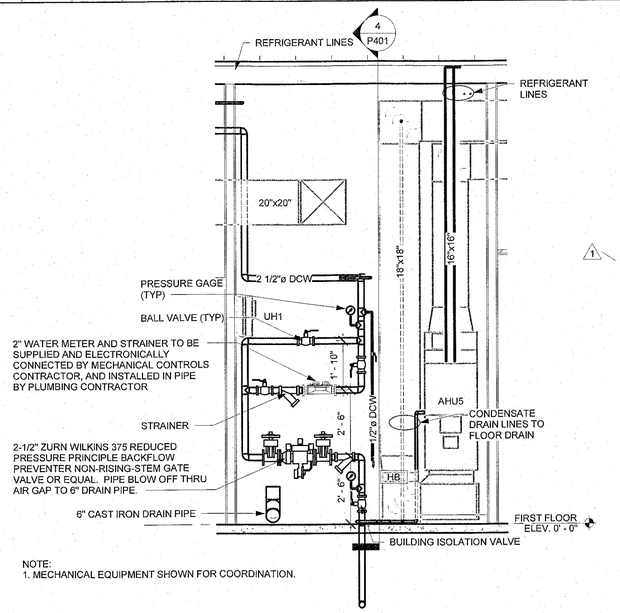
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PROJECT NO:	2018070.01
DATE:	09/23/2019
SCALE:	As indicated
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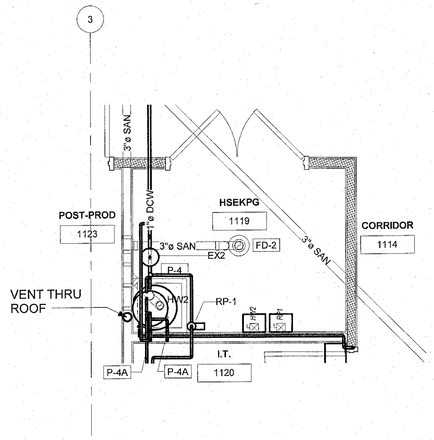


3 ELEVATION VIEW OF WATER MAIN AND METER

3/8" = 1'-0"

GRAPHIC SCALE BAR 3/8" = 1'

0 2' 4' 6' 8'

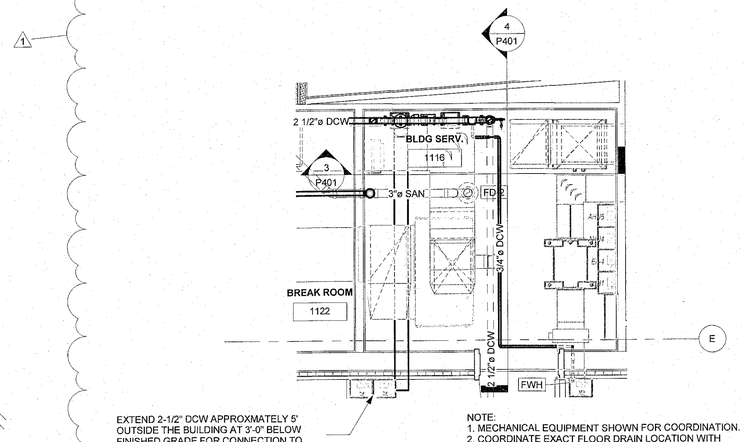


2 ENLARGED HOUSEKEEPING DOMESTIC WATER

3/8" = 1'-0"

GRAPHIC SCALE BAR 3/8" = 1'

0 2' 4' 6' 8'



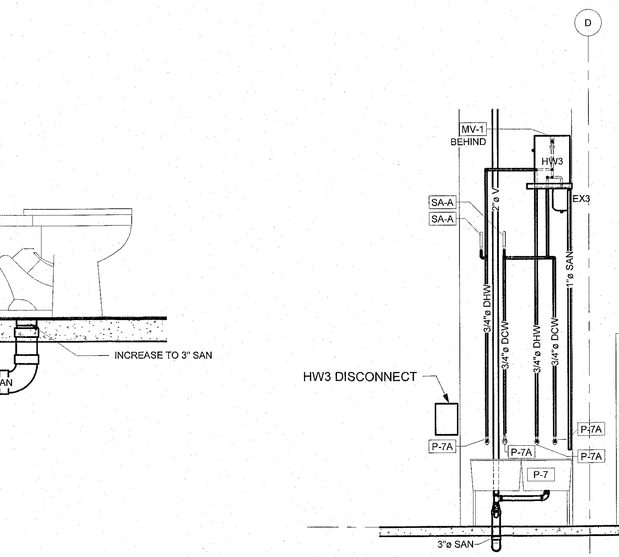
NOTE:
1. MECHANICAL EQUIPMENT SHOWN FOR COORDINATION.
2. COORDINATE EXACT FLOOR DRAIN LOCATION WITH MECHANICAL CONTRACTOR.

1 ENLARGED BUILDING SERVICE ROOM PLUMBING

3/8" = 1'-0"

GRAPHIC SCALE BAR 3/8" = 1'

0 2' 4' 6' 8'



6 ELEVATION DETAIL OF BACK TO BACK TOILETS

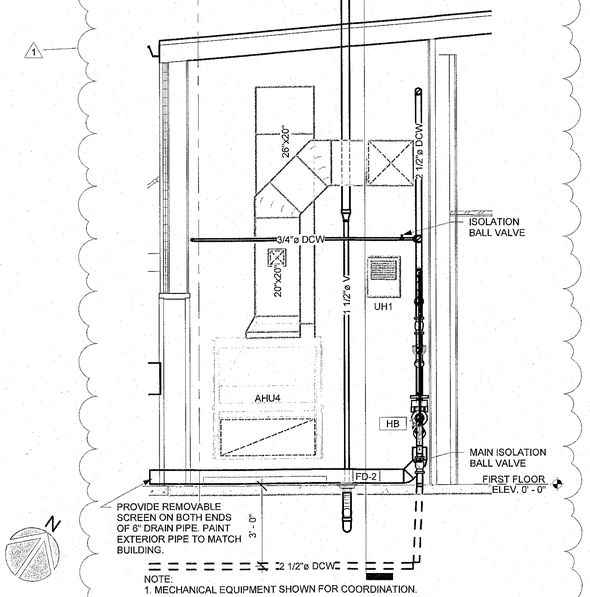
NTS

5 ELEVATION VIEW PLUMBING IN SOUND STAGE

3/8" = 1'-0"

GRAPHIC SCALE BAR 3/8" = 1'

0 2' 4' 6' 8'



NOTE:
1. MECHANICAL EQUIPMENT SHOWN FOR COORDINATION.

4 ELEVATION BUILDING SERVICE ROOM

3/8" = 1'-0"

GRAPHIC SCALE BAR 3/8" = 1'

0 2' 4' 6' 8'

FIRE RATED SCHEDULE

- 0 HR RATED SMOKE PARTITION
- 1 HR RATED FIRE PARTITION / FIRE BARRIER
- 2 HR RATED FIRE WALL

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ARCHITECTURE PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

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250 South Main Street, Suite 109
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DURHAM, NC 27713
OFFICE: 919.361.5000

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STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
910-343-8007 fax 910-343-8088

SUD ASSOCIATES, P.A.
PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

NORTH CAROLINA PROFESSIONAL ENGINEER 14050 10-9-19 DIXIE M. DAVIS

PROJECT TITLE

UNCW

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

ENLARGED AND ELEVATION VIEWS

ISSUE BLOCK

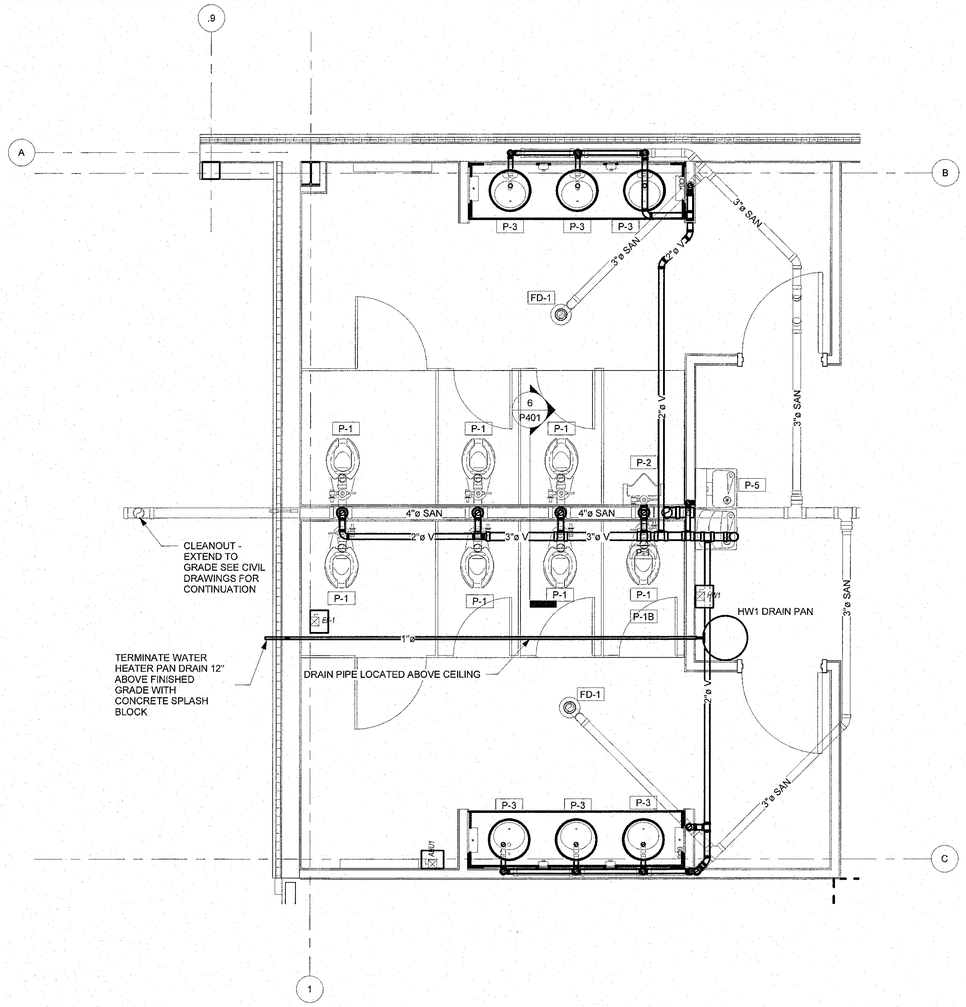
Mark	Date	Description
1	10-09-19	Addendum No. 2

PROJECT NO:	2018070.01
DATE:	09/23/2019
SCALE:	As indicated
DRAWN BY: JWS	PROJ MGR: IS

P401

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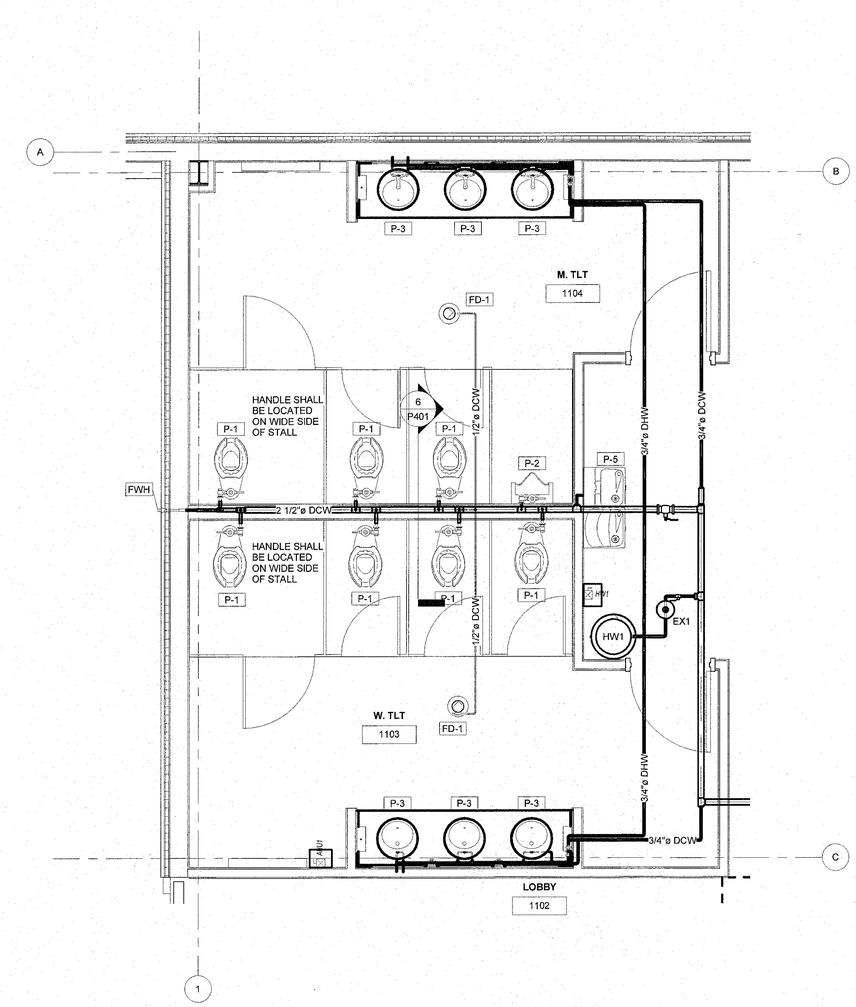


2 ENLARGED TOILET ROOMS WASTE AND VENT

3/8" = 1'-0"

GRAPHIC SCALE BAR 3/8" = 1'

0 2' 4' 6' 8'



1 ENLARGED TOILET ROOMS DOMESTIC WATER

3/8" = 1'-0"

GRAPHIC SCALE BAR 3/8" = 1'

0 2' 4' 6' 8'

NOTES
1. FOR SIZES NOT SHOWN REFER TO ISOMETRICS ON P602 AND PLUMBING SCHEDULES ON P603.

NOTES
1. IN HANDICAP STALLS THE HANDLE OF THE FLUSH VALVE SHALL BE MOUNTED ON THE WIDE SIDE OF THE TOILET AREA AND NO MORE THAN 36 INCHES ABOVE THE FLOOR.
2. FOR SIZES NOT SHOWN REFER TO ISOMETRICS ON P601 AND PLUMBING SCHEDULES ON P603.

FIRE RATED SCHEDULE	
	0 HR RATED SMOKE PARTITION
	1 HR RATED FIRE PARTITION / FIRE BARRIER
	2 HR RATED FIRE WALL

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ARCHITECTURE
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North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

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254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
910-343-8007 fax 910-343-8088

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PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14050 DIXIE M. DAVIS 9-23-19

PROJECT TITLE

UNCW

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

ENLARGED TOILETS

ISSUE BLOCK

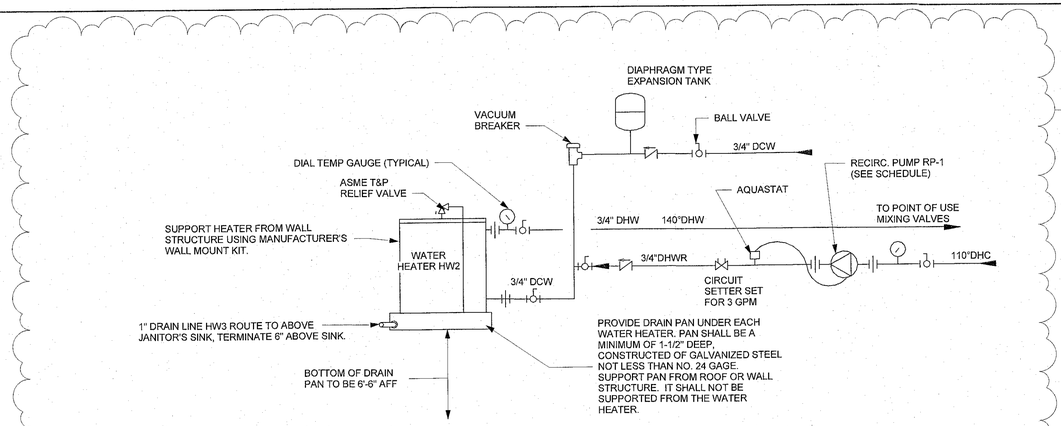
Mark	Date	Description

PROJECT NO:	2018070.01
DATE:	09/23/2019
SCALE:	As indicated
DRAWN BY: JWS	PROJ MGR: IS

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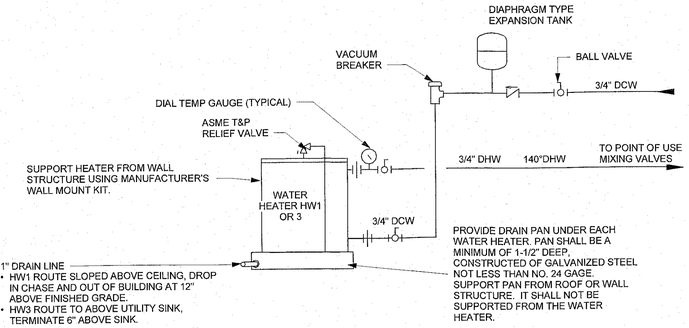
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2 WATER HEATING PIPING SCHEMATIC - HW2

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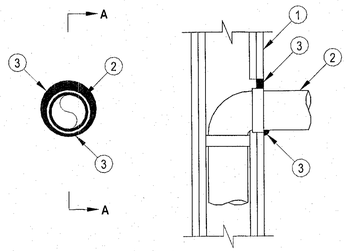
1 WATER HEATING PIPING SCHEMATIC - HW1 & HW3

12" = 1'-0"

System No. W-L-1410

January 26, 2015

ANSI/UL1479 (ASTM E814) CAN/ULC S115
F Ratings — 1 and 2 Hr (See Item 1) FT Rating — 0 Hr
F Ratings — 1 and 2 Hr (See Item 1) FH Ratings — 1 and 2 Hr (See Item 1)
T Rating — 0 Hr FTH Rating — 0 Hr



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, U400, V400 or W400 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. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — One or two layers of nom 5/8 in. (16 mm) thick gypsum board as specified in the individual Wall and Partition Design. Max diam of opening is 5 in. (127 mm). **The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly.**
2. **Through penetrants** — One metallic pipe or conduit to be installed either concentrically or eccentrically within the firestop system. The annular space shall be 0 in. (point contact) to 1 in. (25 mm). Pipe or conduit to be rigidly supported on the penetrated side of the wall assembly. The following types and sizes of metallic pipes or conduits may be used:
   A. **Steel pipe** — Nom 3 in. (76 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.
   B. **Conduit** — Nom 3 in. (76 mm) diam (or smaller) steel electrical metallic tubing (EMT), nom 3 in. (76 mm) diam steel conduit or nom 1 in. (25 mm) diam (or smaller) flexible steel conduit.
   C. **Copper Tubing** — Nom 1 in. (25 mm) diam (or smaller) Type L (or heavier) copper tubing.
   D. **Copper Pipe** — Nom 1 in. (25 mm) diam (or smaller) Regular (or heavier) copper pipe.
3. **Fill, Void or Cavity Material++**— Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with surface of wall. Min 1/2 in. (13 mm) diam bead of sealant applied at point contact location.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant, FS-ONE MAX Intumescent Sealant, CFS-S-SIL GG Sealant, CP601S Elastomeric Sealant, CP 606 Sealant,or CP618 Putty.

++ Bearing the UL Classification Mark

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System No. W-L-1001

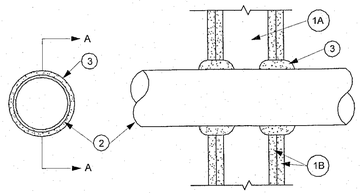
June 15, 2005

F Ratings -- 1, 2, 3 and 4 Hr (See Items 2 and 3)

T Ratings -- 0, 1, 2, 3 and 4 Hr (See Item 3)

L Rating At Ambient -- less than 1 CFM/sq ft

L Rating At 400 F -- less than 1 CFM/sq ft



SECTION A-A

1. **Wall Assembly** — The 1, 2, 3 or 4 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or 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 (max 2 h fire rated assemblies) or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC with nom 2 by 4 in. (51 by 102 mm) lumber end plates and cross braces. Steel studs to be min 3-5/8 in. (92 mm) wide by 1-3/8 in. (35 mm) deep channels spaced max 24 in. (610 mm) OC.

   B. **Gypsum Board*** — Nom 1/2 or 5/8 in. (13 or 16 mm) thick, 4 ft. (122 cm) wide with square or tapered edges. The gypsum wallboard 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 26 in. (660 mm).

2. **Through-Penetrant** — One metallic pipe, conduit or tubing installed either concentrically or eccentrically within the firestop system. The annular space between pipe, conduit or tubing and periphery of opening shall be min of 0 in / (0 mm). (point contact) to max 2 in. (51 mm) 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 24 in. (610 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

   B. **Iron Pipe** — Nom 24 in. (610 mm) diam (or smaller) service weight (or heavier) cast iron soil pipe, nom 12 in (305 mm) diam (or smaller) or Class 50 (or heavier) ductile iron pressure pipe.

   C. **Conduit** — Nom 6 in. (152 mm) diam (or smaller) steel conduit or nom 4 in (102 mm) diam (or smaller) steel electrical metallic tubing

   D. **Copper Tubing** — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing

   E. **Copper Pipe** — Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.

   F. **Through Penetrating Product*** — Flexible Metal Piping The following types of steel flexible metal gas piping may be used:

   1. Nom 2 in. (51 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

   OMEGA FLEX INC

   2. Nom 1 in. (25 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

   GASTITE, DIV OF TITEFLEX

   3. Nom 1 in. (25 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

   WARD MFG L L C

3. **Fill, Void or Cavity Material* — Caulk or Sealant —** Min 5/8. , 1-1/4,1-7/8 and 2-1/2 in. (16, 32, 48 and 64 mm) thickness of caulk for 1, 2, 3 and 4 hr rated assemblies, respectively, applied within annulus, flush with both surfaces of wall. Min 1/4 in. (6 mm) diam bead of caulk applied to gypsum board/penetrant interface at point contact location on both sides of wall. The hourly F Rating of the firestop system is dependent upon the hourly fire rating of the wall assembly in which it is installed, as shown in the following table. The hourly T Rating of the firestop system is dependent upon the type or size of the pipe or conduit and the hourly fire rating of the wall assembly in which it is installed, as tabulated below:

Max Pipe or Conduit Diam In	F Rating Hr	T Rating Hr
1	1 or 2	0+, 1 or 2
1	3 or 4	3 or 4
4	1 or 2	0
6	3 or 4	0
12	1 or 2	0

+When copper pipe is used, T Rating is 0 h.

3M COMPANY — CP 25WB+ or FB-3000 WT.

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

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System No. W-L-5001

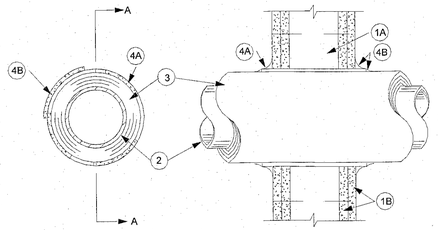
May 19, 2005

F Ratings - and 2 Hr (See Item 1)

T Ratings - 3/4, 1 and 1-1/2 Hr (See Item 3)

L Rating At Ambient - 2 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 described in the individual U300, U400 or V400 Series Wall or Partition Design 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. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC with nom 2 by 4 in. (51 by 102 mm) lumber end plates and cross braces. Steel studs to be min 3-5/8 in. (92 mm) wide by 1-3/8 in. (35 mm) deep channels spaced max 24 in. (610 mm) OC.

   B. **Gypsum Board*** — Nom 5/8 in. (16 mm) thick, 4 ft (122 cm) 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 Design in the UL Fire Resistance Directory. Max diam of opening is 14-1/2 (368mm) in for wood stud walls and 18 in. (457 mm) for steel stud walls.

   The hourly F Rating of the firestop system is 1 hr when installed in a 1 hr fire rated wall and 2 hr when installed in a 2 hr fire rated wall.

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. (305 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

   B. **Copper Tubing** — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.

   C. **Copper Pipe** — Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.

3. **Pipe Covering*** — Nom 1 or 2 in. (25 or 51 mm) thick hollow cylindrical heavy density (min 3.5 pcf or 56 kg/m3) 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 sealed with metal fasteners or with butt strip tape supplied with the product. When nom 1 in. (25 mm) thick pipe covering is used, the annular space between the pipe covering and the circular cutout in the gypsum wallboard layers on each side of the wall shall be min 1/4 in. (6 mm) to max 3/8 in. (10 mm) When nom 2 in. (51 mm) thick pipe covering is used, the annular space between the pipe covering and the circular cutout in the gypsum board layers on each side of the wall shall be min 1/2 in. (13 mm) to max 3/4 in. (19 mm)

See **Pipe and Equipment Covering Materials** (BRGU) category in 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.

The hourly T Rating of the firestop system is 3/4 hr when nom 1 in. (25 mm) thick pipe covering is used. The hourly T Rating of the firestop system is 1 hr and 1-1/2 hr when nom 2 in. (52 mm) thick pipe covering is used with 1 hr and 2 hr fire rated walls, respectively.

4. Firestop System — Installed symmetrically on both sides of wall assembly. The details of the firestop system shall be as follows:

   A. **Fill, Void or Cavity Materials* — Wrap Strip** — Nom 1/4 in. (6 mm) thick intumescent elastomeric material faced on one side with aluminum foil, supplied in 2 in. (51 mm) wide strip tightly wrapped around pipe covering (foil side out) with seam butted. Wrap strip layer securely bound with steel wire or aluminum foil tape and slid into annular space approx 1-1/4 in. (32 mm) such that approx 3/4 in. (19 mm) of the wrap strip width protrudes from the wall surface. One layer of wrap strip is required when nom 1 in. (25 mm) thick pipe covering is used, Two layers of wrap strip are required when nom 2 in. (51 mm) thick pipe covering is used.

   3M COMPANY — FS-195+

   B. **Fill, Void or Cavity Materials* — Caulk or Sealant** — Min 1/4 in. (6 mm) diam continuous bead applied to the wrap strip/wall interface and to the exposed edge of the wrap strip layer approx 3/4 in. (19 mm) from the wall surface.

   3M COMPANY — CP 25WB+, IC 15WB+, FireDam 150+ caulk or FB-3000 WT sealant

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

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Maryland
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2905 MERIDIAN PARKWAY
DURHAM, NC 27713
OFFICE: 919.361.5000

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STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
910-343-8007 fax 910-343-8088

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PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14050 DAVID M. SWAIN 10-9-19

PROJECT TITLE

UNCW

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

PLUMBING DETAILS

ISSUE BLOCK

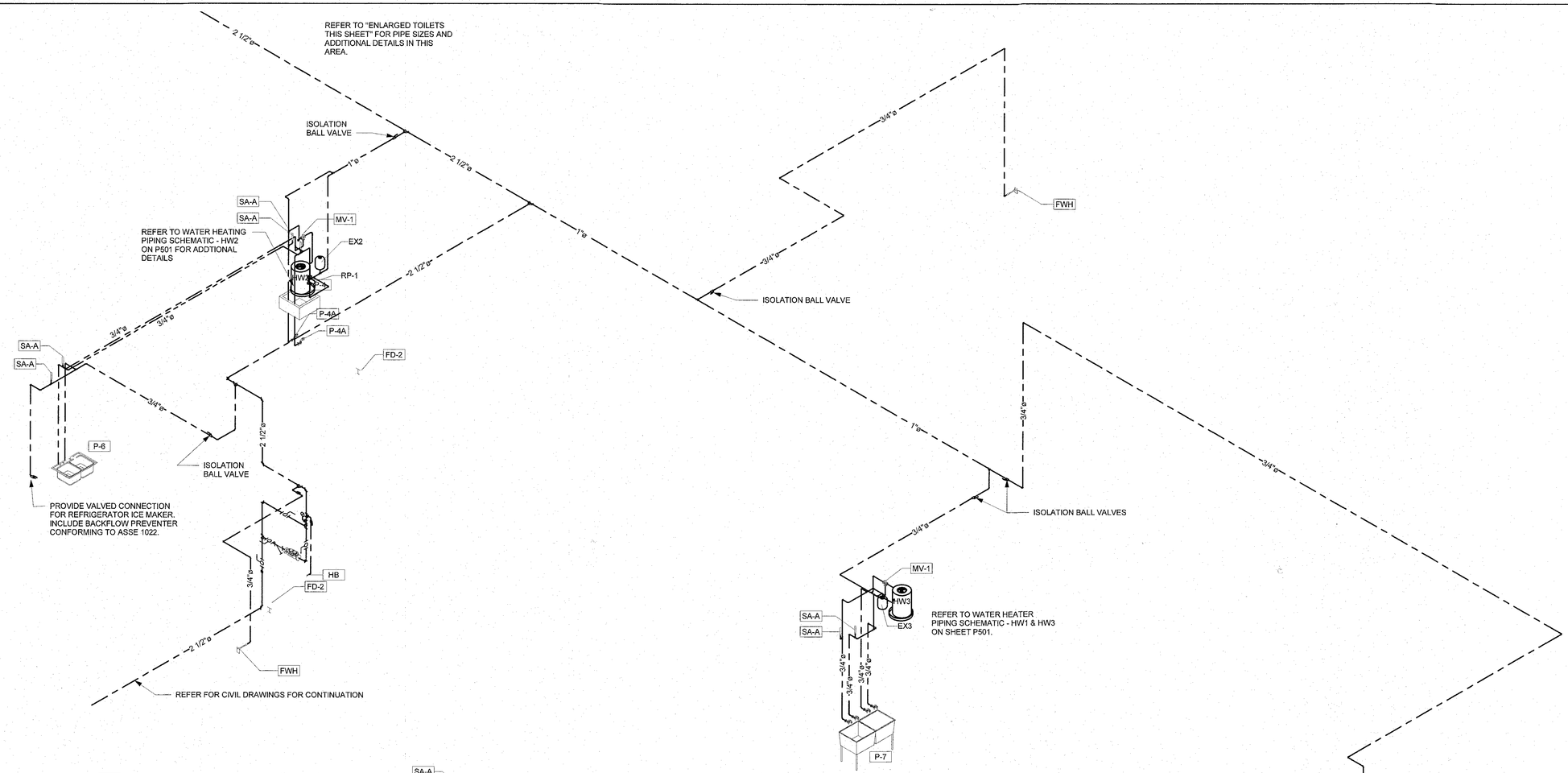
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1	10-09-19	Addendum No. 2

PROJECT NO: 2018070.01
DATE: 09/23/2019
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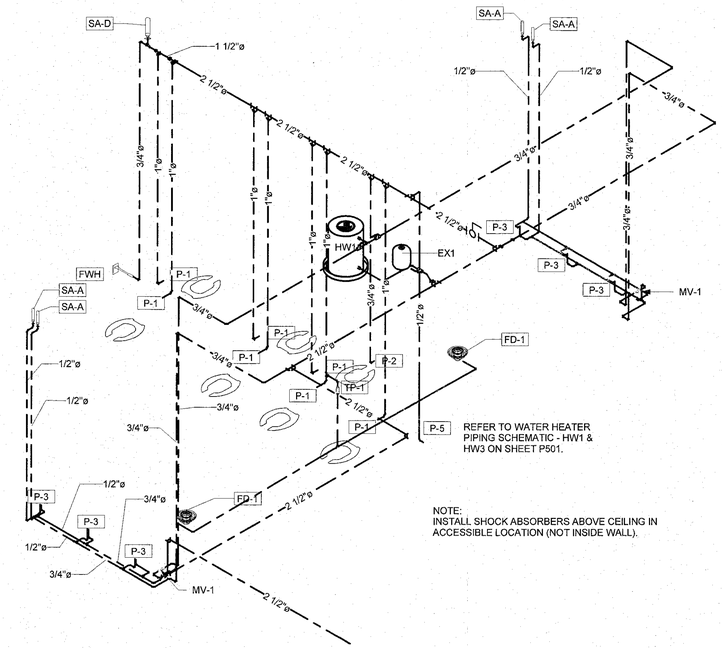
P501

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1 ISOMETRIC OF DOMESTIC WATER



2 ENLARGED TOILETS THIS SHEET

BECKER MORGAN GROUP

ARCHITECTURE
PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
Newarrk, DE 19711
302.369.3700

www.beckermorgan.com

MCADAMS
CIVIL ENGINEERING
2905 MERIDIAN PARKWAY
DURHAM, NC 27713
OFFICE: 919.361.5000

WOODS ENGINEERING
STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
910-343-8007 fax 910-343-8088

SUD ASSOCIATES, P.A.
PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14050 DIXIE M. DAVIS 9-23-19

PROJECT TITLE

UNCW

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

ISOMETRIC OF DOMESTIC WATER

ISSUE BLOCK

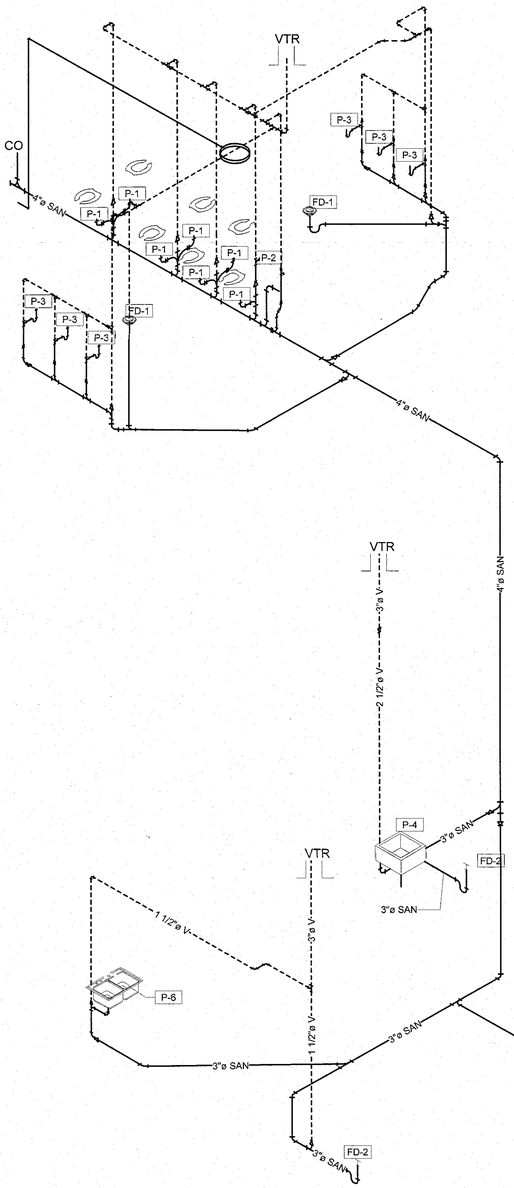
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PROJECT NO:	2018070.01
DATE:	09/23/2019
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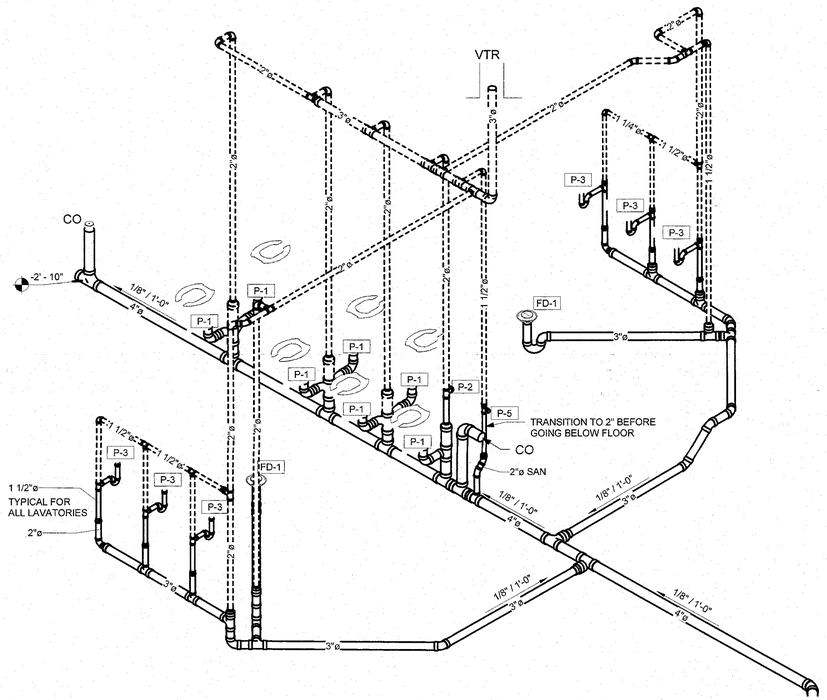
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1 ISOMETRIC OF WASTE AND VENT



2 ENLARGED TOILETS WASTE AND VENT THIS SHEET

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ARCHITECTURE
PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
Newark, DE 19711
302.369.3700

www.beckermorgan.com

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CIVIL ENGINEERING
2905 MERIDIAN PARKWAY
DURHAM, NC 27713
OFFICE: 919.361.5000

WOODS ENGINEERING
STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
910-343-8007 fax 910-343-8088

SUD ASSOCIATES, P.A.
PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

NORTH CAROLINA PROFESSIONAL ENGINEER 14050 9.23.19 DUANE M. DAIRS

PROJECT TITLE

UNCW

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

ISOMETRIC OF WASTE AND VENT PIPES

ISSUE BLOCK

Mark	Date	Description

PROJECT NO:	2018070.01
DATE:	09/23/2019
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PLUMBING EXPANSION TANK

Mark	Manufacturer	Model	Description	Max Working Water Pressure	Max Working Water Temperature	Type Comments	Tank Volume
EX1	Zurn Wilkins	XT-8	Designed for installation on potable water lines between the backflow preventer or pressure reducing valve and the water heater to protect against water thermal expansion. When system pressure increases, water enters the tank's polypropylene lined water chamber which expands a diaphragm into a pre-charged air chamber, keeping system pressure below the relief valve setting.	150.00 psi	200 °F	End connections Threaded NPT ANSI B1.20.1	2.1 Gal
EX2	Zurn Wilkins	XT-8	Designed for installation on potable water lines between the backflow preventer or pressure reducing valve and the water heater to protect against water thermal expansion. When system pressure increases, water enters the tank's polypropylene lined water chamber which expands a diaphragm into a pre-charged air chamber, keeping system pressure below the relief valve setting.	150.00 psi	200 °F	End connections Threaded NPT ANSI B1.20.1	2.1 Gal
EX3	Zurn Wilkins	XT-8	Designed for installation on potable water lines between the backflow preventer or pressure reducing valve and the water heater to protect against water thermal expansion. When system pressure increases, water enters the tank's polypropylene lined water chamber which expands a diaphragm into a pre-charged air chamber, keeping system pressure below the relief valve setting.	150.00 psi	200 °F	End connections Threaded NPT ANSI B1.20.1	2.1 Gal

WATER HEATER SCHEDULE

Mark	Manufacturer	Model	Description	Comments	Total Watts	Gallons per hour at 100 degrees F rise	Voltage/Phase	Tank Capacity
HW1	Rheem	EGSP10	Tank Water Heater	Temperature to be set at 140 degrees F.	6000 W	24	208 V/1	10.0 gal
HW2	Rheem	EGSP10	Tank Water Heater	Temperature to be set at 140 degrees F.	6000 W	24	208 V/1	10.0 gal
HW3	Rheem	EGSP10	Tank Water Heater	Temperature to be set at 140 degrees F.	6000 W	24	208 V/1	10.0 gal

NOTES FOR ALL WATER HEATERS:
1. PROVIDE OPTIONAL WALL MOUNT KIT.
2. PROVIDE HEAT TRAP DEVICE ON INLET AND OUTLET IF HEAT TRAPS ARE NOT INTEGRAL TO THE WATER HEATER.
3. PROVIDE DRAIN PAN UNDER EACH WATER HEATER.
4. REFER TO SCHEMATICS ON P501 FOR INSTALLATION AND PIPING GUIDANCE.

PUMP SCHEDULE

Mark	Service	Manufacturer	Series	Model	Description	Discharge Size	Suction Size	Design Flow Rate	Fluid Type	Pump Head (FT)	Voltage	Phase	Frequency	Watts
RP-1	140 F HOT WATER RECIRCULATION	B&G	ecocirc 19-16	6050B4004LF	Inline ECM Circulator Pump	3/4"	3/4"	3 GPM	Water	12	115 V	1	60 Hz	4 to 60 Watts Variable

NOTE: REFER TO SPECIFICATION SECTION 221000 FOR APPROVED MANUFACTURERS.

1

PLUMBING FIXTURE SCHEDULE

Type Mark	Item Name	Manufacturer	Comments	Model	Description	Accessories and Trim	DCW Connection	DHC Connection	Sanitary Connection
P-1	Toilet	American Standard	OR APPROVED EQUAL.	3043.001	'MADERA FloWise ELONGATED 16-1/2" HIGH' Less Everclean Toilet, floor mounted, vitreous china, elongated syphon jet flush action bowl, 2-1/8" fully glazed internal trapway, 10" x 12" large water surface, high efficiency 1.1 GPF to low consumption 1.6 GPF, 1-1/2" top spud and bolt caps, for use with exposed flush valve.				3"
P-1A	Flush Valve	SLOAN	OR APPROVED EQUAL. Install on P-1	Royal 111-1.28	Exposed Water Closet Flushometer, for floor mounted or wall hung 1-1/2" top spud bowls, 1.28 gallons per flush, manual operation.		1 1/2"		
P-1B	Toilet Seat	American Standard	OR APPROVED EQUAL. Install on P-1	5901.100	Toilet Seat, heavy duty solid plastic polypropylene open front less cover, with reinforced stainless steel check hinge, posts, washers and nuts, for elongated bowl.				
P-2	Urinal	American Standard	OR APPROVED EQUAL.	6590.001	'WASHBROOK UNIVERSAL' High Efficiency Urinal, wall hung for flush valve, vitreous china, wash out flush action 0.125 gpf to 1.0 gpf (0.5 lpf to 3.8 lpf), extended sides for privacy, integral flush spreader, 3/4" (19mm) top spud, wall hangers, open trap.	One Urinal shall be mounted at Handicap Height see Arch. Drawings.			2"
P-2A	Flush Valve	SLOAN	OR APPROVED EQUAL.	Royal 186-0.125	Exposed high efficiency urinal flushometer, for 3/4" top spud urinals, 0.125 gallons per flush, manual operation.				
P-3	Lavatory	American Standard	OR APPROVED EQUAL.	Rondalyn 0490.156	Drop-In Sink with Single Faucet Hole, White, vitreous china, drop in, round basin with overflow, 19 inch diameter.				1 1/4"
P-3A	Faucet	Delta Teck-Commercial	OR APPROVED EQUAL.	22C951	Single hole mount with open grid strainer, single lever handle, 0.5 gpm vandal resistant spray outlet, polished chrome - plated finish.		1/2"	1/2"	
P-4	Janitors Sink	Fiat	OR APPROVED EQUAL.	TSB-100	Mop Sink, 24" x 24" x 12" (610mm x 610mm x 305mm) deep, floor mounted, precast terrazzo, with one piece stainless steel cast integral cap on all four sides and Integral S.S. Drain with S.S. strainer, 3" (75mm) outlet.				3"
P-4A	Faucet	T&S Brass and Bronze Works,Inc	OR APPROVED EQUAL.	B-2301	Wall mounted sill faucet w/vacuum breaker, compression cartridge w/spring check, 3/4" hose thread on spout, or approved equal. Single temperature so two are required.	Provide chrome plated grid drain. Provide 5/8" dia. Hose, 48" long, w/stainless steel clamp, DELTA TECK 28T911 or approved equal. Provide stainless steel mop hanger with 3 clamps, DELTA 28T910 or approved equal.	3/4"	3/4	
P-5	Drinking fountain, barrier free bi-level, with bottle filling station.	Elkay Manufacturing	OR APPROVED EQUAL.	LVRCTL8WSK	Mechanical pushbar actuated water cooler. High efficiency, hermetically sealed, R134A refrigerant, 8 GPH at 50ºF delivery, stainless steel finish for whole unit, 3.8 FLA, 260 W, 115V, single phase. Provide water shut-off valve and steel pipe carrier.		3/8"		1 1/2"
P-6	Breakroom Sink	Elkay Manufacturing	OR APPROVED EQUAL.	DLR332210	Lustertone Double Bowl Sink, 33"x22"x10-1/8" equal double bowl drop-in sink.	Provide sound deadening coating on bottom.			2"
P-6A	Faucet	Delta Commercial	OR APPROVED EQUAL.	400LF-WF	Classic Single Handle Kitchen Faucet with Spray	Provide stainless steel strainer baskets.	1/2"	1/2"	
P-7	Service Sink	Fiat Products	OR APPROVED EQUAL.	FLTD-II	Floor mounted with white baked enamel steel legs Compression Molded Stone, Twin Tubs.				1 1/2"
P-7A	Faucet	T&S Brass and Bronze Works,Inc	OR APPROVED EQUAL.	B-2301	Wall mounted sill faucet w/vacuum breaker, compression cartridge w/spring check, 3/4" hose thread on spout, or approved equal. Single temperature so two are required per basin(total of 4 to be installed for P-7).	Provide 1 1/2" drain fittings with stainless steel strainer basket. Provide 5/8" dia. Hose, 48" long, w/stainless steel clamp, DELTA TECK 28T911 or approved equal.	3/4"	3/4	

PLUMBING SPECIALTIES SCHEDULE

Type Mark	Item Name	Manufacturer	Comments	Model	Description	DCW Connection	DHW Connection	Sanitary Connection	Remarks
FD-1	Floor Drain	Josam Company	With Trap Primer Tap	30003-6A-50	Floor drain, coated cast iron, two piece body, double drainage flange, invertible nonpuncturing flashing collar, weepholes, 6 inch dia. Top, nickel alloy adjustable and removable strainer. Strainer removal shall require a special tool.			3"	
FD-2	Floor Drain	Josam Company		30003-7E	Floor drain, coated cast iron, two piece body, double drainage flange, invertible nonpuncturing flashing collar, weepholes, 7 inch dia. Top, nickel alloy adjustable and removable tractor strainer. Strainer removal shall require a special tool.			3"	
FWH	Hose Bibb	Woodford		B65	Freezeproof wall hydrant, automatic draining, box type, loose key operated, with vacuum breaker, Woodford b65, or equivalent by Josam, J.R. Smith or Zurn.	3/4"			
HB	Hose Bibb	Woodford		No. 24	Hose Bibb, chrome plated, loose key operated with integral vacuum breaker and anti-siphon faucet hose connection,Woodford no. 24, or equivalent by crane, Nibco, J.R. Smith, Watts or Wilkins	3/4"			
MV-1	Thermostatic Mixing Valve	Lawler	Provide 3/4" Size	Model 570 Lead Free	Thermostatic Mixing Valve to maintain and limit mixed hot water to a desired, selectable temperature. The valve can be set to any temperature between 80°F and 120°F with flow rates as low as 0.5 gpm and as high as 12 gpm, Lawler or approved equal by Haws, Leonard Water Temperature Controls, or Watts..	3/4"	3/4"		Set to 110 degree F, discharge size 3/4"
SA-A	Shock Absorber	Josam	PDI Size A	Series 75000-S	Water Hammer Arrestor. The Arrestor features Lead Free* construction to comply with Lead Free* requirements.				
SA-D	Shock Absorber	Josam	PDI Size D	Series 75000-S	Water Hammer Arrestor. The Arrestor features Lead Free* construction to comply with Lead Free* requirements.				
TP-1	Trap Primer	Precision Plumbing Products		P2-500	Trap Primer Valve to be installed on cold water lines of 1-1/2" diameter or less, a pressure drop of 10 psig activates primer valve. Provide DU-U Distribution unit so 2 floor drains can be served.	1/2"			
WM	Water Meter	NEPTUNE TECHNOLOGY GROUP	2" Meter Size	TRU/FLO	Furnished by Mechanical Controls Sub-Contractor, installed by Plumbing Contractor	2"			

BECKER MORGAN GROUP
ARCHITECTURE PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
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302.369.3700

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MCADAMS
CIVIL ENGINEERING
2905 MERIDIAN PARKWAY
DURHAM, NC 27713
OFFICE: 919.361.5000

WOODS ENGINEERING
STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
910-343-8007 fax 910-343-8088

SUD ASSOCIATES, P.A.
PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

NORTH CAROLINA PROFESSIONAL ENGINEER 14050 DIXIE M. DAVIS
10-9-19

PROJECT TITLE

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

PLUMBING SCHEDULES

ISSUE BLOCK

Mark	Date	Description
1	10-09-19	Addendum No. 2

PROJECT NO: 2018070.01
DATE: 09/23/2019
SCALE:
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ABBREVIATIONS	
A/C	AIR CONDITIONING
ABV	ABOVE
AC	ACRE
ACOUST	ACOUSTICAL
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
ATV	ATMOSPHERIC VENT
BBD	BOILER BLOWDOWN
BD	BOARD
BFF	BELOW FINISH FLOOR
BOT'M	BOTTOM
BTU	BRITISH THERMAL UNITS
C.O.	CLEAN OUT
C.U.	CONDENSING UNIT
CB	CATCH BASINS
CD	CONDENSATE DRAIN
CEIL	CEILING
CFM	CUBIC FEET PER MINUTE
CFS	CUBIC FEET PER SECOND
CHWR	CHILLED WATER RETURN
CHWR	CHILLED EATER REVERSE RETURN
CHWS	CHILLED WATER SUPPLY
COL	COLUMN
CONC	CONCRETE
COND	CONDUIT
CONST	CONSTRUCTION
CONT	CONTINUOUS
CR	CONDENSATE RETURN (STEAM)
CW	COLD WATER SUPPLY
CWR	CONDENSTER WATER RETURN
CWS	CONDENSER WATER SUPPLY
DDC	DIRECT DIGITAL CONTROL
DEPT	DEPARTMENT
DET	DETAIL
DIA	DIAMETER
DMC	DOMESTIC COLD
DN	DOWN
DTR	DUAL TEMP. RETURN
DTRR	DUAL TEMP. REVERSE RETURN
DTS	DUAL TEMP. SUPPLY
DWGS	DRAWING
E.C.	ELECTRICAL CONTRACTOR
EA.	EACH
EDC	ELECTRIC DUCT COIL
EH	ELECTRIC HEATER
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
EMCS	ENERGY MANAGEMENT CONTROL SYSTEM
EQ	EQUAL
EQUIP	EQUIPMENT
EXIST	EXISTING
FCC	FAN COIL CONTRACTOR PANEL
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FIN	FINISH
FL	FLOOR
FPS	FEET PER SECOND
FR	FIRE RESISTANT
FT	FOOT
G	GAS
G.C.	GENERAL CONTRACTOR
GA	GAUGE
GALV	GALVANIZED
GSHP	GROUND SOURCE HEAT PUMP
HORIZ	HORIZONTAL
HP	HORSEPOWER
HP-__	HEAT PUMP - #
HPS	HIGH - PRESSURE STEAM
HR	HOUR
HTWR	HOT WATER RETURN (HEATING)
HTWRR	HOT WATER REVERSE RETURN (HEATING)
HTWS	HOT WATER SUPPLY (HEATING)
HVAC	HEATING, VENTILATING & AIR CONDITIONING
HW	DOMESTIC HOT WATER
JST	JOIST
LG	LONG
LPS	LOW - PRESSURE STEAM
M.C.	MECHANICAL CONTRACTOR

MANUF.	MANUFACTURER
MAS	MASONRY
MAX.	MAXIMUM
MBTU	THOUSAND BRITISH THERMAL UNITS
MECH	MECHANICAL
MET	METAL
MIN	MINIMUM
MPS	MEDIUM PRESSURE STEAM
MU	MAKEUP WATER
O.A.	OUTDOOR AIR
O.C.	ON CENTER
OZ	OUNCE
P.C.	PLUMBING CONTRACTOR
PC	PUMPED CONDENSATE
PERIM	PERIMETER
PSI	POUNDS PER SQUARE INCH
PVMT	PAVEMENT
R.A.	RELIEF AIR
R.V.	RELIEF VENT
REFRIG	REFRIGERANT
REINF	REINFORCING
REQ'D	REQUIRED
RET. A.	RETURN AIR
RM	ROOM
S.F.	SQUARE FOOR
SCHED	SCHEDULE
SHT. MET.	SHEET METAL
SPECS	SPECIFICATIONS
SPRN	FIRE PROTECTION SPRINKLER PIPING
SQ. IN.	SQUARE INCH
STL	STEEL
STM	STORM
STRUCT	STRUCTURAL
TLT	TOILET
TYP	TYPICAL
U.O.N.	UNLESS OTHERWISE NOTED
UL	UNDERWRITERS LABORATORIES
W/	WITH
WWF	WELDED WIRE FABIC

GENERAL NOTES (ALL NOTES ON THIS PAGE APPLY TO ALL MECHANICAL SHEETS U.O.N.)

1. DRAWINGS ARE DIAGRAMMATIC. DRAWINGS ARE NOT INTENDED TO BE ABSOLUTELY PRECISE, AND DO NOT SPECIFY OR SHOW EVERY OFFSET, FITTING, AND COMPONENT. THE PURPOSE OF THE DRAWINGS IS TO INDICATE A SYSTEM CONCEPT, THE MAIN COMPONENTS OF THE SYSTEMS, AND THE APPROXIMATE GEOMETRICAL RELATIONSHIPS. BASED ON THE SYSTEMS CONCEPT, THE MAIN COMPONENTS AND APPROXIMATE GEOMETRICAL RELATIONSHIPS, THE CONTRACTOR SHALL PROVIDE ALL OTHER COMPONENTS AND MATERIALS NECESSARY TO MAKE THE SYSTEMS FULLY COMPLETE AND OPERATIONAL. THE CONTRACTOR SHALL ROUTE PIPING OR PROVIDE OFFSETS TO AVOID INTERFERENCE WITH STRUCTURAL ELEMENTS, EQUIPMENT, ELECTRICAL PANELS AND JUNCTION BOXES, ETC. VERIFY LOCATIONS, DIMENSIONS, EXISTING FLOW DIRECTIONS, AVAILABLE POWER CHARACTERISTICS (VOLTS/PPHASE), ETC., BEFORE CONSTRUCTION.
2. WORKMANSHIP: COMPETENT SKILLFUL WORKMEN SHALL DO ALL WORK IN A FINISHED, THOROUGHLY SUBSTANTIAL AND CRAFTSMANLIKE MANNER. THIS IS INTENDED TO REFER PARTICULARLY TO SMALLER DETAILS NECESSARY BUT USUALLY NOT SPECIFIED OR INDICATED ON THE DRAWINGS. ALL SUB-STANDARD WORK, INSTALLED BY THIS CONTRACTOR, SHALL BE REPLACED BY THIS CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER. IF THIS CONTRACTOR DAMAGES EXISTING WORK, HE SHALL PAY THE COST OF REPLACEMENT OF THE DAMAGED WORK AT NO ADDITIONAL EXPENSE TO THE OWNER. THE ENGINEER SHALL BE THE JUDGE OF WORKMANSHIP AND HIS/HER OPINION SHALL BE FINAL.
3. THE DESIGN DOCUMENTS INDICATE THE PRODUCTS THAT WERE USED AS THE BASIS OF THE DESIGN. THIS ESTABLISHES THE PRODUCT PARAMETERS AND OTHER SYSTEMS INTERACTING WITH THE PRODUCT (SIZE, POWER REQUIREMENTS, PIPE SIZES, PUMP CAPACITY, ETC.). CONTRACTOR SHALL SPECIFICALLY BRING TO THE DESIGNER'S ATTENTION ANY CHANGES IN OTHER SYSTEMS REQUIRED WHEN PRODUCTS, OTHER THAN THOSE USED AS THE BASIS OF THE DESIGN, ARE USED. THE CONTRACTOR SHALL BEAR ALL COSTS, INCLUDING DESIGN, FOR THE CHANGES.
4. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS, DIMENSIONS AND SIZES BEFORE FABRICATING OR ORDERING EQUIPMENT.
5. REPAIR AND PATCH ALL (NEW AND DEMOLISHED) WALL AND FLOOR PENETRATIONS TO MATCH EXISTING FINISH. REPAIR AND PATCH ALL CONCRETE FLOORS, SLABS OR ASPHALT PAVING TO MATCH EXISTING FINISHES WHERE EQUIPMENT, SLABS OR SUPPORTS ARE REMOVED. SEAL ALL PENETRATIONS OF FIRE RATED WALLS/FLOORS IN ACCORDANCE WITH UL SPECIFICATIONS. REFER TO DRAWINGS FOR WALL RATINGS. TREAT ALL FLOORS AS TWO HOUR RATED.
6. DUCT LINER SHALL ONLY BE INSTALLED WHERE SPECIFICALLY NOTED. SEE DETAIL SHEETS. WHEREVER LINED DUCT IS CUT OR TAKEN APART LEAVING A RAW EDGE ON THE DUCT LINER, AND THIS DUCT IS TO CONTINUE IN USE, THE RAW EDGES OF THE DUCT LINER SHALL BE SEALED WITH ADHESIVE MADE FOR THIS PURPOSE, OR WITH METAL NOSING.
7. SUPPORT ALL PIPING FROM BUILDING STRUCTURE, FLOOR OR PAVEMENT. REFER TO SPECIFICATION SECTION PERTAINING TO "SUPPORTS, ANCHORS AND VIBRATION ISOLATION", AND DETAIL DRAWINGS FOR REQUIREMENTS.
8. LABEL ALL EQUIPMENT, DUCTS, ETC. IN ACCORDANCE WITH SPECIFICATIONS.
9. PROVIDE MAGNETIC TYPE WARNING TAPE IN THE BACKFILL OF ALL PIPE TRENCHES. INSTALL AT LEAST 6 INCHES BELOW GRADE.
10. AFTER COMPLETION OF CONSTRUCTION, TEST AND BALANCE THE AIR DISTRIBUTION SYSTEMS TO THE FLOW VALUES INDICATED IN THE PLANS. A TEST AND BALANCE REPORT SHALL BE SUBMITTED AND ANY DISCREPANCIES SHALL BE NOTED AND BROUGHT TO THE ATTENTION OF THE ENGINEER. SEE SPECIFICATION SECTION PERTAINING TO "TEST AND BALANCING".
11. UNLESS OTHERWISE NOTED, ALL MECHANICAL EQUIPMENT SHALL BE MOUNTED ON 4" THICK, 3000 PSI CONCRETE HOUSEKEEPING PADS, MINIMUM 4" LARGER THAN EQUIPMENT ON EACH SIDE. OUTSIDE PADS TO BE 6" THICK AND PROVIDED BY G.C.
12. THE DELINEATION OF THE WORK BETWEEN THE MECHANICAL AND THE ELECTRICAL CONTRACTORS SHALL COMPLY WITH THE REQUIREMENTS ESTABLISHED BY THE NC STATE CONSTRUCTION OFFICE. REFER TO SCHEMATIC TITLED "MECHANICAL/ELECTRICAL EQUIPMENT CONNECTION" ON SHEET M501.
13. PROVIDE FIRE DAMPERS WHERE INDICATED ON THE DRAWINGS. REFER TO FLOOR PLANS FOR LOCATIONS AND RATINGS OF FIRE RATED WALLS. CONSIDER ALL FLOORS TO BE TWO-HOUR RATED. SEE DETAIL SHEETS FOR INSTALLATION DETAILS.
14. REFER TO PLANS, EQUIPMENT SCHEDULES AND DETAILS FOR CAPACITIES AND ADDITIONAL REQUIREMENTS.
15. INSTALL ALL EQUIPMENT IN COMPLIANCE WITH MANUFACTURER'S WRITTEN RECOMMENDATION AND REQUIREMENTS. IF RECOMMENDATIONS CONFLICT WITH DRAWINGS, REQUEST CLARIFICATIONS FROM ENGINEER BEFORE PROCEEDING.
16. CONTRACTOR SHALL BE RESPONSIBLE FOR SAFETY AT THE SITE. PROVIDE BARRICADES AND COVERS AT THE EXCAVATION AREAS AS APPROPRIATE. COMPLY WITH SAFETY REQUIREMENTS OF OSHA, ETC. EXCEPT FOR INTERRUPTIONS SPECIFICALLY PERMITTED BY THE OWNER, VEHICULAR AND PEDESTRIAN TRAFFIC SHALL BE MAINTAINED AT ALL TIMES. COORDINATE WITH THE OWNER.
17. FIELD-VERIFY EXISTING AND COORDINATE NEW EQUIPMENT SIZES WITH ASSOCIATED CONTRACTORS (ELECTRICAL, KITCHEN VENDORS ETC.) AFTER COMPLETION OF SHOP DRAWING REVIEW, ADJUST VOLTAGE RATING, CAPACITY AND SIZE OF WIRING, STARTERS, DISCONNECT SWITCHES AND OVERCURRENT PROTECTION DEVICES AS REQUIRED. NOTIFY ENGINEER OF ANY DISCREPANCIES BEFORE ORDERING SUPPLIES AND START OF CONSTRUCTION. FAILURE TO COMPLY WILL REQUIRE THE CONTRACTOR TO BEAR THE COST FOR CORRECTLY SIZED EQUIPMENT AND WIRING.
18. THE DDC CONTROL CONTRACTOR SHALL RUN THE POWER WIRING TO ALL DAMPER ACTUATORS. THE ACTUATORS ARE TO BE 24V. REFER TO SPECIFICATIONS.
19. THE MECHANICAL CONTRACTOR SHALL INSTALL THE DUCT SMOKE DETECTORS PROVIDED BY THE ELECTRICAL CONTRACTOR.
20. EQUIPMENT SHALL BE INSTALLED WITH MANUFACTURERS RECOMMENDED SERVICE CLEARANCES OR STATE BUILDING CODE SERVICE CLEARANCES WHICHEVER IS GREATER.
21. ALL EXTERIOR PIPING WHICH CARRIES WATER ABOVE GRADE SHALL BE HEAT TRACED, INSULATED, COVERED WITH ALUMINUM JACKET, AND SHALL BE SLOPED TO DRAIN WITH NO LOW POINT POCKETS.
22. WHERE DUCTS ARE SHOWN GOING THROUGH A WALL OR THE ROOF THEY SHALL GO BETWEEN STUDS, JOISTS OR BEAMS. NO TRUSSES, BEAMS, STUDS, COLUMNS OR OTHER STRUCTURAL MEMBERS ARE TO BE CUT WITHOUT PRIOR APPROVAL OF THE ENGINEER. NEW OPENINGS FOR DUCTS SHALL BE SAW CUT. NEW OPENINGS FOR PIPES SHALL BE CORE DRILLED.
23. THIS IS TO BE A PREFABRICATED METAL BUILDING, THE MECHANICAL CONTRACTOR SHALL COORDINATE WEIGHTS AND LOCATIONS OF THE EQUIPMENT TO BE HUNG FROM THE STRUCTURE AND WALL OPENINGS, WITH THE G.C.
24. THE BUILDING MECHANICAL SYSTEMS FOR THIS PROJECT WILL BE COMMISSIONED BY A COMMISSIONING AGENT. THE CONTRACTOR SHALL PROVIDE ALL MATERIAL AND RESOURCES NECESSARY TO ENSURE COMPLIANCE WITH THE REQUIREMENTS OF SPECIFICATION SECTION 01 91 13 – GENERAL COMMISSIONING REQUIREMENTS, AND WITH THE REQUIREMENTS OF THE COMMISSIONING PLAN.

ALTERNATES

BID ALTERNATE #1: CINEMA 1106 AND ITS SUPPORTING ROOMS (LIGHT LOCK 1105, LIGHT LOCK 1107, CORRIDOR 1108, PROJECTION BOOTH 1109, AND TEACHING AREA 1124) WILL BE BUILT AS SHELL SPACES IN THE BASE BID. PROVISION AND INSTALLATION OF SPLIT SYSTEM HEAT PUMP IDU1 AND ODU1 WILL BE INCLUDED IN BASE BID TO HELP TEMPER AND DEHUMIDIFY THE SPACE. TESTING AND BALANCING OF THE IDU1/ODU1 SYSTEM SHALL BE PART OF THE BASE BID. PROVISION AND INSTALLATION OF PACKAGED HEAT PUMP PHP3 AND RELIEF FAN EF-7 AND THEIR ASSOCIATED DUCTWORK, DAMPERS, DISCONNECTS, WIRING, CONCRETE PAD, DIFFUSERS, GRILLES, CONTROLS, ETC. SHALL BE PART OF BID ALTERNATE #1. TESTING AND BALANCING OF THE PHP3/EF-7 SYSTEM SHALL BE PART OF BID ALTERNATE #1.

NOTE:
ALL PROJECTS REQUIRE COORDINATION AND COOPERATION AMONG THE DISCIPLINES. CONTRACTORS SHALL COORDINATE LOCATIONS AND SEQUENCE OF INSTALLATION OF THEIR RESPECTIVE EQUIPMENT, PIPES, CONDUITS, DUCTS, ETC. WITH ALL DISCIPLINES. DO NOT BEGIN FABRICATION OR INSTALLATION UNTIL ALL ROUTING AND POTENTIAL CONFLICT ISSUES HAVE BEEN RESOLVED. ANY REMOVAL AND REINSTALLATION OF NEWLY INSTALLED ITEMS TO RESOLVE CONFLICTS SHALL BE DONE AT NO ADDITIONAL COST TO THE OWNER OR DESIGNERS.

MECHANICAL AND DDC LEGEND

SYMBOL PLAN	SYMBOL ELEVATION	SYMBOL SCHEMATIC	DESCRIPTION
		DHC	HOT WATER RECIRC PIPING
		DHW	HOT WATER PIPING
		DCW	COLD WATER PIPING
		V	VENT PIPING
		SAN	SANITARY DRAIN PIPING
		*	MECHANICAL PIPES SEE ABBREVIATION TABLE FOR *
			POINT OF CONNECTION OR DISCONNECTION
		ES	EMERGENCY SHUT-DOWN
		TW	TEMPERATURE WELL
		A	ANALOG INPUT TO DDC
		AO	ANALOG OUTPUT TO DDC
		D	DIGITAL INPUT TO DDC
		DO	DIGITAL OUTPUT TO DDC
		T	THERMOSTATIC RADIATOR VALVE
			TEMPERATURE SENSOR (EMCS)
		M	MANUAL OVERRIDE (EMCS)
		H	HUMIDISTAT (EMCS)
		CO2 T	THERMOSTATS OR TEMPERATURE SENSORS
		T *	THERMOSTAT * INDICATES UNIT
			DUCT STATIC PRESSURE SENSOR
		FM	FLOW METER
		S	DUCT SMOKE DETECTOR
			ONE HOUR FIRE RATED WALL
			TWO HOUR FIRE RATED WALL
	FD	FD	FIRE DAMPER
	SD	SD	SMOKE DAMPER
			BALANCING DAMPER
			HANGER
		TT	TEMPERATURE TRANSMITTER

SYMBOL PLAN	SYMBOL ELEVATION	SYMBOL SCHEMATIC	DESCRIPTION
			GATE VALVE
			GLOBE VALVE
OR PSIG			PRESSURE GAGE
			THERMOMETER
			CIRCUIT SETTER
			BALL VALVE
			BUTTERFLY VALVE
			CHECK VALVE
			TRIPLE DUTY VALVE
			RELIEF VALVE
			THREE WAY CONTROL VALVE
			TWO WAY CONTROL VALVE
			STRAINER
			IN-LINE PUMP
		FD	AD - AREA DRAIN FD - FLOOR DRAIN FS - FLOOR SINK RD - ROOF DRAIN
			COCK OR PLUG

BECKER MORGAN GROUP

ARCHITECTURE
PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
Newarrk, DE 19711
302.369.3700

www.beckermorgan.com

MCADAMS
CIVIL ENGINEERING
2905 MERIDIAN PARKWAY
DURHAM, NC 27713
OFFICE: 919.361.5000

WOODS ENGINEERING
STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
910-343-8007 fax 910-343-8088

SUD ASSOCIATES, P.A.
PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14050 DIXIE M. DAVIS 9-23-19

PROJECT TITLE

UNCW

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

MECHANICAL COVER SHEET

ISSUE BLOCK

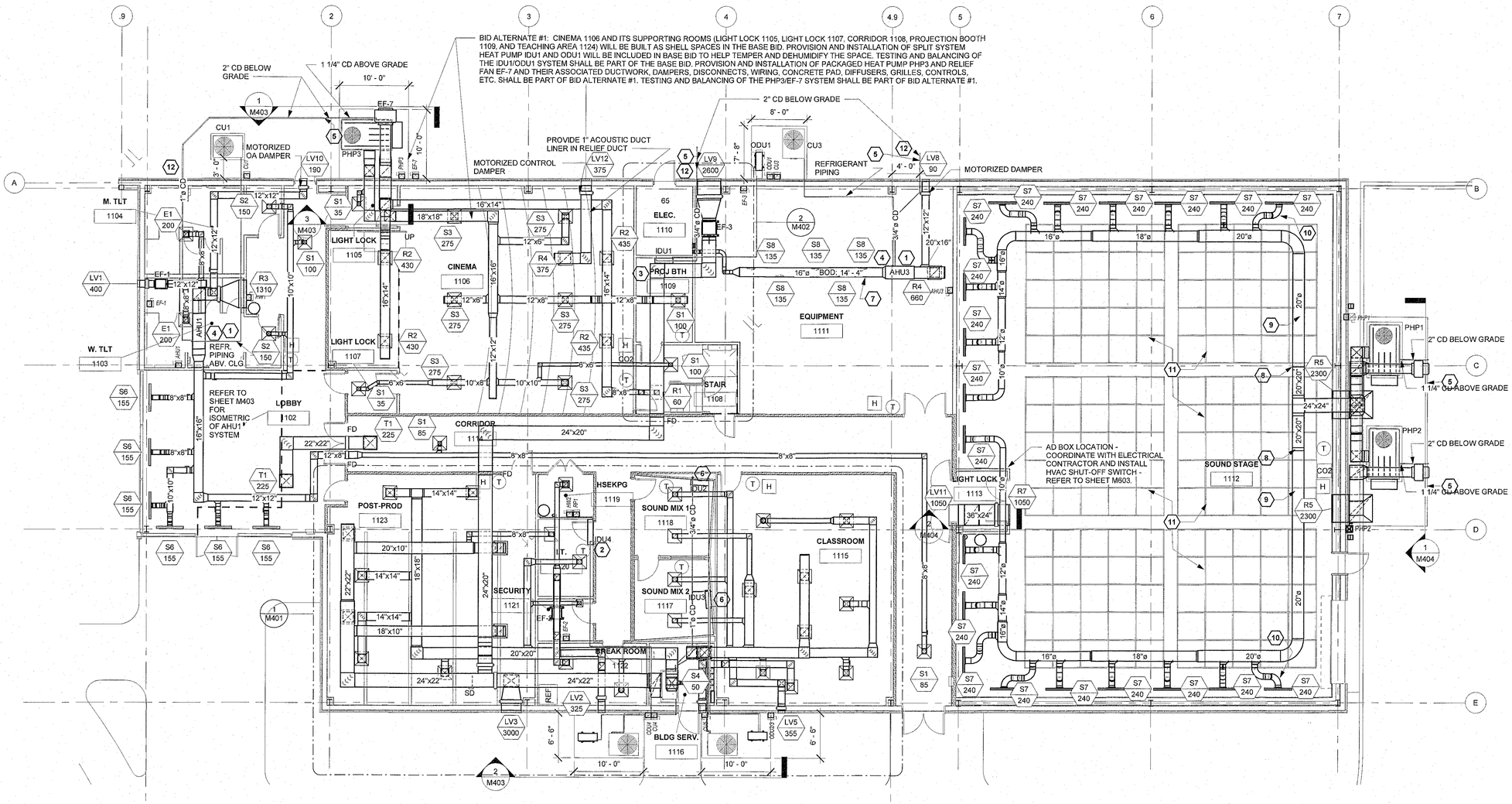
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PROJECT NO: 2018070.01
DATE: 09/23/2019
SCALE: As indicated
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M100

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1 FIRST FLOOR - MECHANICAL LAYOUT

1/8" = 1'-0"

GRAPHIC SCALE BAR 1/8" = 1'

0 8' 16' 24' 32'

NOTES:
1. REFER TO SHEET M100 FOR GENERAL NOTES, LEGENDS, AND ABBREVIATIONS.
2. REFER TO THE M500 SERIES FOR DETAILS AND TO M600 SERIES FOR EQUIPMENT SCHEDULES.
3. DUCT DIMESIONS GIVEN ARE CLEAR INSIDE DIMENSIONS. WHERE ACOUSTIC DUCT LINER IS CALLED FOR THE SHEET METAL SIZES MUST BE ADJUSTED ACCORDINGLY. REFER TO NOTES ON THE DRAWINGS FOR LOCATIONS OF DUCT LINER (SOME ARE NOTED ON ENLARGED PLANS AND ELEVATIONS ON OTHER SHEETS). REFER TO DUCT LINER INSTALLATION DETAIL ON M501.
4. REFRIGERANT PIPING SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE NORTH CAROLINA STATE BUILDING CODE: MECHANICAL CODE AND THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. REFRIGERANT PIPING SHALL NOT BE RUN ABOVE OR THROUGH ANY EXIT ENCLOSURE. ALSO REFER TO SPECIFICATION SECTION 232300 - REFRIGERANT PIPING AND SPECIALTIES.
5. LOUVERS SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR AND INSTALLED BY THE GENERAL CONTRACTOR. WHERE DAMPERS OR DUCTWORK ARE REQUIRED AT LOUVERS, THE MECHANICAL CONTRACTOR SHALL INSTALL THEM.
6. REFER TO THE ARCHITECTURAL PLANS FOR LOUVER INSTALLATION DETAILS.
7. REFER TO THE ARCHITECTURAL PLANS FOR A DETAIL OF HOW TO HANDLE A DUCT OR PIPE PENETRATION THROUGH AN EXTERIOR WALL.
8. SUPPORT ALL EQUIPMENT, DUCTWORK, AND PIPING FROM THE STRUCTURE OR THE FLOOR AS RECOMMENDED BY THE MANUFACTURER. CONCEAL DUCTS, PIPES, AND WIRING ABOVE CEILINGS WHEREVER CEILINGS ARE PROVIDED.
9. LOCKING VOLUME DAMPERS SHALL BE PROVIDED AT ALL DUCT TAKE-OFFS AND BRANCHES. LOCKING VOLUME DAMPERS ARE NOT ALL SHOWN ON THE DRAWINGS FOR CLARITY. AIR BALANCING SHALL BE PERFORMED USING DUCT VOLUME DAMPERS, NOT DAMPERS AT THE DIFFUSERS OR GRILLES.
10. CONDENSATE DRAINS FOR AHU1, IDU1, AND AHU3 SHALL BE RUN ABOVE CEILINGS WHERE AVAILABLE, AND DROP TO BELOW GRADE WITHIN THE BUILDING. THIS VERTICAL PIPING SHALL BE CONCEALED IN WALLS. THE PIPES SHALL HAVE A MINIMUM OF 36" OF COVER WHERE THEY ARE RUN OUTSIDE THE BUILDING.
1 11. ALL UNITS SHALL HAVE MANUFACTURER'S RECOMMENDED VIBRATION ISOLATION FOR SOUND CONTROL, AND FLEXIBLE DUCT CONNECTIONS, PIPING CONNECTIONS AND WIRING CONNECTIONS.

KEYED NOTES

1. ROUTE CONDENSATE FROM AHU1 AND AHU3 OUT TO CLEAN OUT PROVIDED BY SITE UTILITY CONTRACTOR. SEE DETAIL 2/M502 FOR TRAP DEPTH AND SIZE. INCREASE TO 2" BEFORE GOING BELOW FLOOR OR GRADE.
2. ROUTE PUMPED CONDENSATE DRAIN FROM IDU4 TO JANITOR'S SINK IN HOUSKEEPING 1120. INCLUDE CHECK VALVE AFTER EACH PUMP.
3. ROUTE PUMPED CONDENSATE DRAIN FROM IDU1 TO CLEAN OUT OUTSIDE OF BUILDING. INCLUDE CHECK VALVE AFTER PUMP.
4. AHU SHALL HAVE SECONDARY DRAIN PAN WITH MOISTURE SHUTOFF SWITCH.
5. TIE INTO CLEAN OUT PROVIDED BY SITE UTILITY CONTRACTOR. SEE SHEET C4.01 FOR CONTINUATION OF DRAIN.
6. ROUTE CONDENSATE DRAIN FROM IDU2 AND IDU3 TO FLOOR DRAIN IN BLDG SERV. 1116. INCLUDE CHECK VALVE AFTER THE PUMP.
7. SUPPLY DUCT SHALL BE DOUBLE WALL SPIRAL DUCT WITH THE INTERIOR OF THE 16" DIAMETER PORTION PERFORATED. RETURN DUCT SHALL BE DOUBLE WALL RECTANGULAR DUCT WITH INTERIOR PERFORATED. O.A. DUCT SHALL BE DOUBLE WALL RECTANGULAR WITH SOLID INTERIOR.
8. PROVIDE DOUBLE WALL RECTANGULAR INSULATED DUCT WITH PERFORATED INTERIOR FROM ELBOW AT WALL TO THIS POINT.
9. PROVIDE DOUBLE WALL INSULATED DUCTWORK WITH SOLID INTERIOR WALLS - TYPICAL FOR SUPPLY TRUNK DUCTS IN THIS ROOM.
10. BRANCH DUCTS MAY BE SINGLE WALL ROUND DUCT WITH NO MORE THAN 3' OF FLEXIBLE DUCT FOR CONNECTION TO LINEAR DIFFUSER PLENUM BOXES – TYPICAL FOR THIS ROOM.
11. SIX THEATRICAL LIGHTING GRIDS TO BE INSTALLED BELOW THE CEILING BY G.C. COORDINATE EXACT LOCATION OF DUCTWORK, DIFFUSERS, AND GRILLES TO AVOID INTERFERENCE WITH THE SUPPORTS FOR THIS GRID.
12. WHERE CONDENSATE DRAIN PIPES PASS UNDER THE EDGE OF THE FOOTING (TURNED DOWN SLAB), PROVIDE A SCHEDULE 40 STEEL PIPE SLEEVE TWO PIPE SIZES LARGER THAN THE PIPE. EXTEND THE PIPE SLEEVE 1'-0" PAST EACH SIDE OF THE CONCRETE FOOTING. PROVIDE SPACERS INSIDE SLEEVE TO MAINTAIN SLOPE OF PIPE. FILL OR SEAL ANNULAR SPACE IN AN APPROVED MANNER. BACKFILL TRENCH WITH #57 STONE. THE BEARING CAPACITY OF THIS AREA MUST MEET OR EXCEED THE ALLOWABLE SOIL BEARING CAPACITY. COORDINATE WITH STRUCTURAL WORK.

FIRE RATED SCHEDULE

- 0 HR RATED SMOKE PARTITION
- 1 HR RATED FIRE PARTITION / FIRE BARRIER
- 2 HR RATED FIRE WALL

BECKER MORGAN GROUP

ARCHITECTURE PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

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250 South Main Street, Suite 109
Newark, DE 19711
302.369.3700

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MCADAMS
CIVIL ENGINEERING
2905 MERIDIAN PARKWAY
DURHAM, NC 27713
OFFICE: 919.361.5000

WOODS ENGINEERING
STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
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910-343-8007 fax 910-343-8068

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PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14050 10-9-19 ENGINEER: DAVID M. SUD

PROJECT TITLE

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

MECHANICAL FLOOR PLAN

ISSUE BLOCK

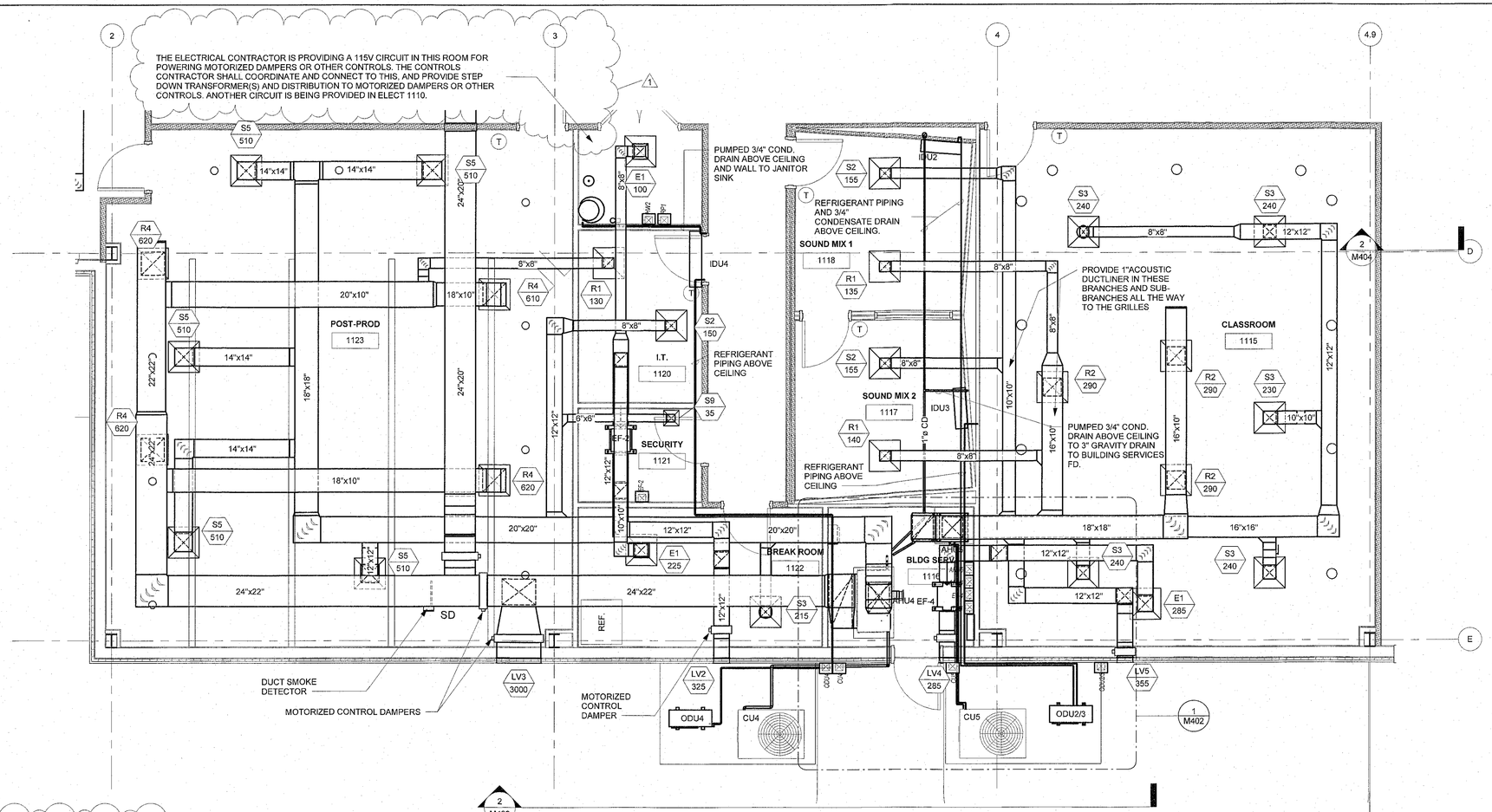
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1	10-09-19	Addendum No. 2

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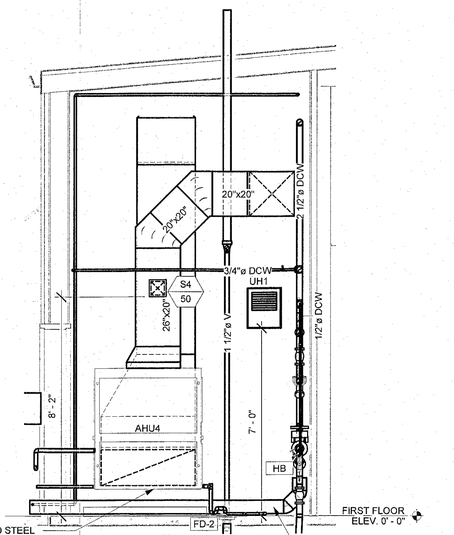


1 ENLARGED POST-PROD AND CLASSROOM

1/4" = 1'-0"

GRAPHIC SCALE BAR 1/4" = 1'

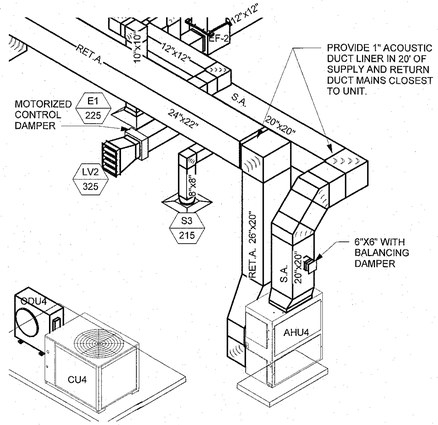
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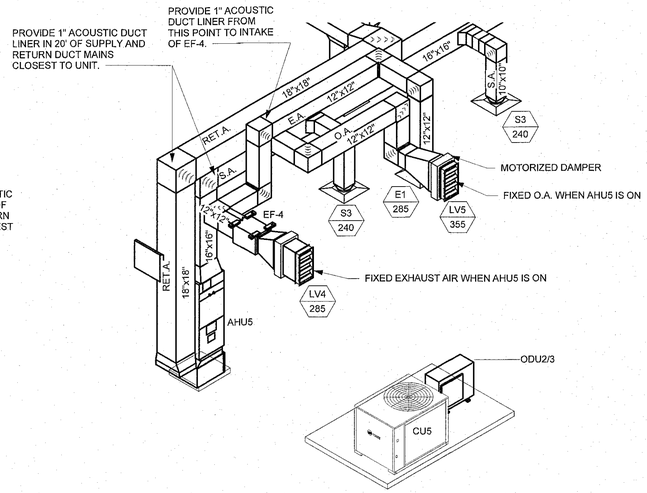
INSTALL AHU4 ON GALVANIZED STEEL FRAME TO ALLOW THE DRAIN FROM THE BACKFLOW PREVENTER TO RUN BELOW IT. COORDINATE WITH THE PLUMBING CONTRACTOR.

4 ELEVATION VIEW AHU4

3/8" = 1'-0"



3 ISOMETRIC AHU4



2 ISOMETRIC AHU5

FIRE RATED SCHEDULE

- 0 HR RATED SMOKE PARTITION
- 1 HR RATED FIRE PARTITION / FIRE BARRIER
- 2 HR RATED FIRE WALL

BECKER MORGAN GROUP

ARCHITECTURE PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

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Newark, DE 19711
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CIVIL ENGINEERING
2905 MERIDIAN PARKWAY
DURHAM, NC 27713
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254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
910-343-8007 fax 910-343-8088

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PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14050 10-9-19 DIXIE M DAVIS

PROJECT TITLE

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

ENLARGED FLOOR PLANS

ISSUE BLOCK

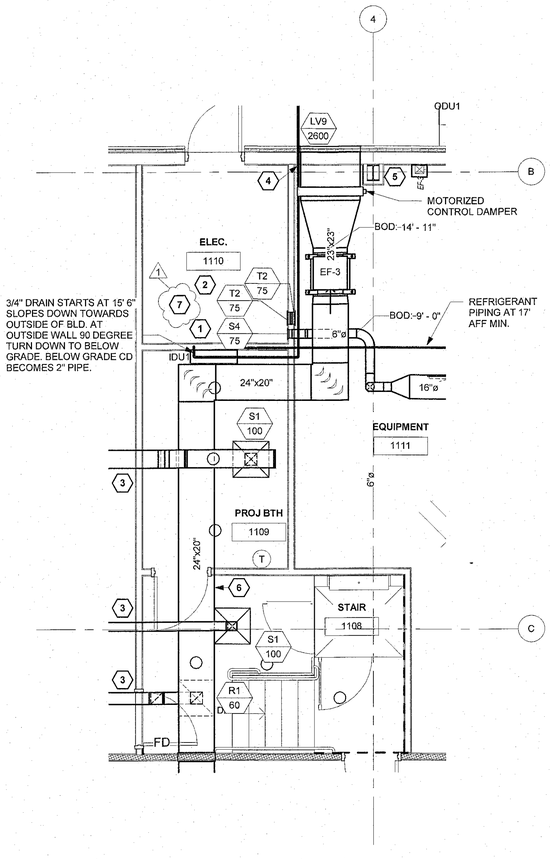
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2 ENLARGED PROJECTION BOOTH AND CORRIDOR

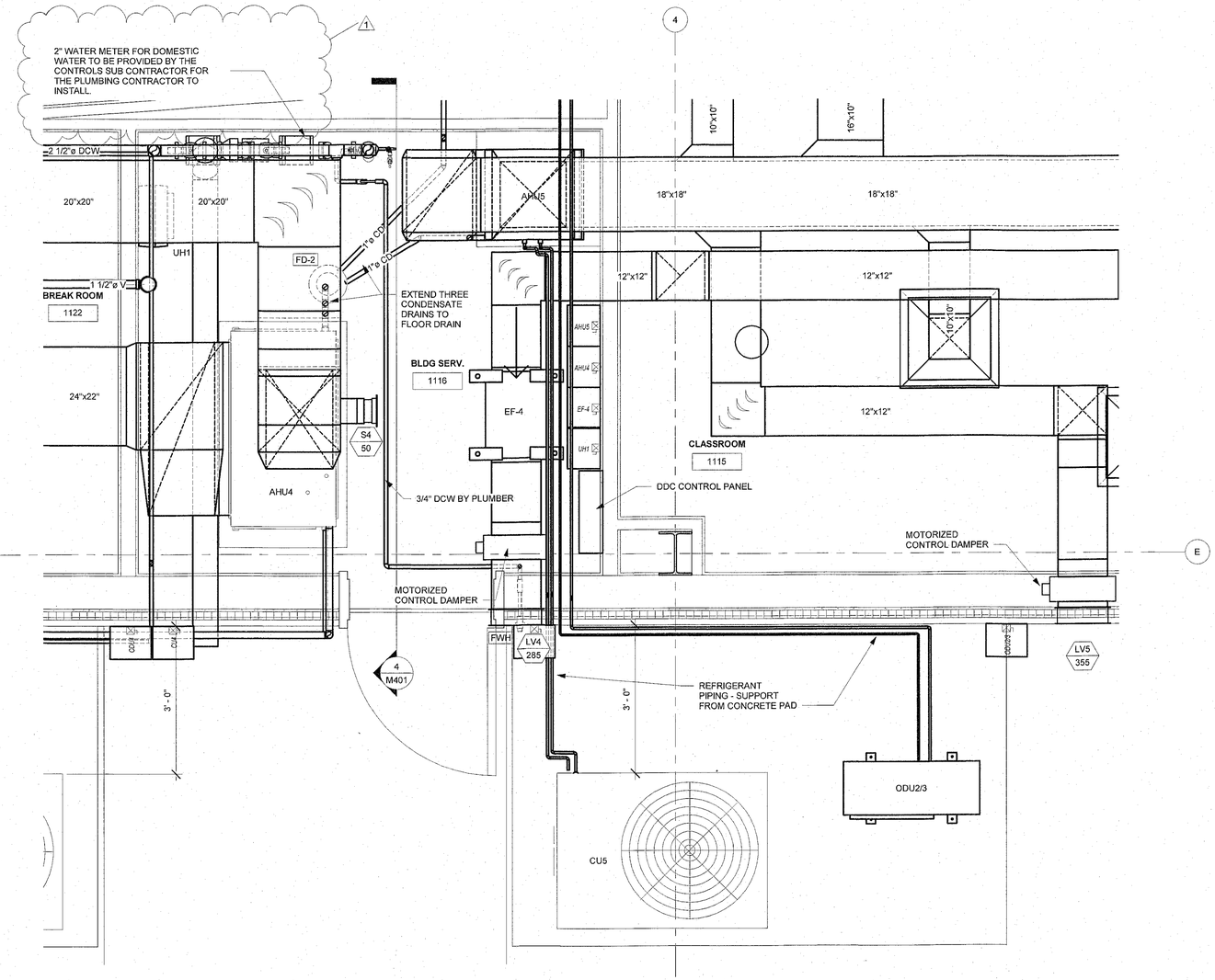
1/4" = 1'-0"

GRAPHIC SCALE BAR 1/4" = 1'

0 4' 8' 12' 16'

KEYED NOTES:

1. SUPPLY DIFFUSER TO BE APPROXIMATELY 9'-0" AFF IN CORNER TO AVOID ELECTRICAL PANELS. COORDINATE EXACT LOCATION WITH ELECTRICAL CONTRACTOR AND DO NOT INSTALL DIRECTLY OVER ANY ELECTRICAL PANEL.
2. TRANSFER GRILLES TO BE INSTALLED DIRECTLY BELOW THE SUPPLY DIFFUSER AT APPROXIMATELY 12" AFF. COORDINATE EXACT LOCATION WITH ELECTRICAL CONTRACTOR AND DO NOT INSTALL DIRECTLY BELOW ANY ELECTRICAL PANEL.
3. THESE THREE BRANCHES AND THEIR DIFFUSERS AND GRILLE ARE PART OF BID ALTERNATE #1.
4. RUN 3/4" CONDENSATE DRAIN DOWN AGAINST WALL, TRANSITION TO 2" NEAR THE FLOOR, RUN OUT BELOW GRADE AS 2" TO JOIN THE CLEANOUT PROVIDED BY THE SITE UTILITY CONTRACTOR.
5. RUN THE REFRIGERANT PIPING DOWN ALONG THE WALL AND OUT HORIZONTALLY ABOVE GRADE TO ODU1.
6. PROVIDE 1" ACOUSTIC DUCT LINER FROM THIS POINT TO THE INTAKE OF EF-3.
7. THE ELECTRICAL CONTRACTOR IS PROVIDING A 115V CIRCUIT IN THIS ROOM FOR POWERING MOTORIZED DAMPERS OR OTHER CONTROLS. THE CONTROLS CONTRACTOR SHALL COORDINATE AND CONNECT TO THIS, AND PROVIDE STEP DOWN TRANSFORMER(S) AND DISTRIBUTION TO MOTORIZED DAMPERS OR OTHER CONTROLS. ANOTHER CIRCUIT IS BEING PROVIDED IN HOUSEKEEPING 1119.



1 ENLARGED BUILDING SERVICES

3/4" = 1'-0"

GRAPHIC SCALE BAR 3/4" = 1'

0 1' 2' 3' 4'

FIRE RATED SCHEDULE

- 0 HR RATED SMOKE PARTITION
- 1 HR RATED FIRE PARTITION / FIRE BARRIER
- 2 HR RATED FIRE WALL

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ARCHITECTURE
PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
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2905 MERIDIAN PARKWAY
DURHAM, NC 27713
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254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
910-343-8007 fax 910-343-8088

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PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER SEAL 14050 10-9-19 DIXIE M. DAVIS

PROJECT TITLE

UNCW

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

ENLARGED FLOOR PLANS

ISSUE BLOCK

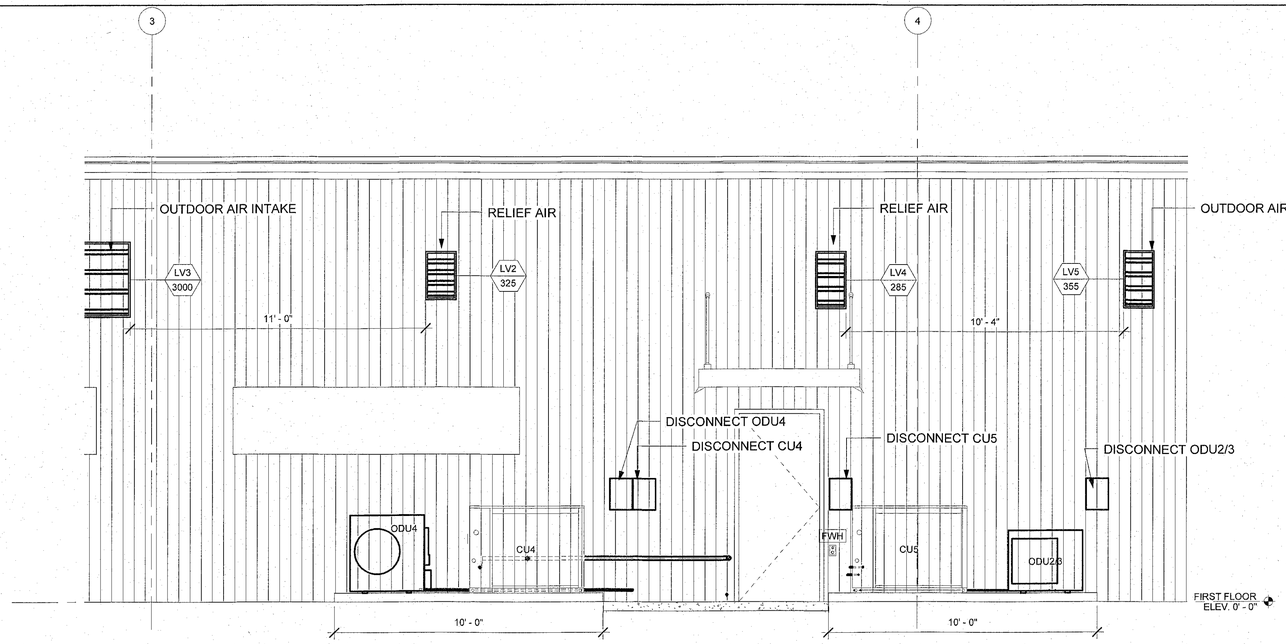
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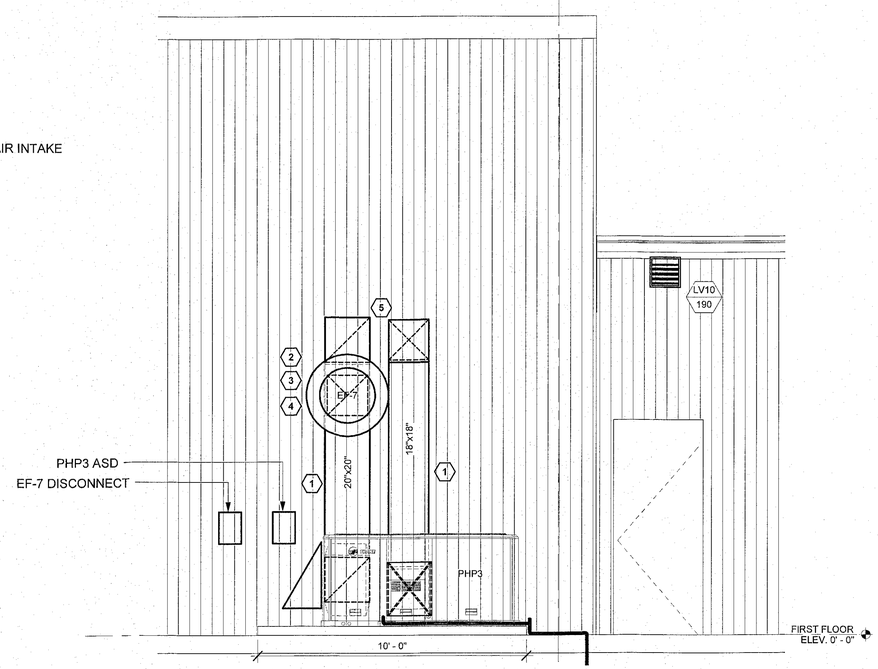
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2 ELEVATION VIEW OUTSIDE BUILDING SERVICES

3/8" = 1'-0"



1 ELEVATION VIEW PHP3

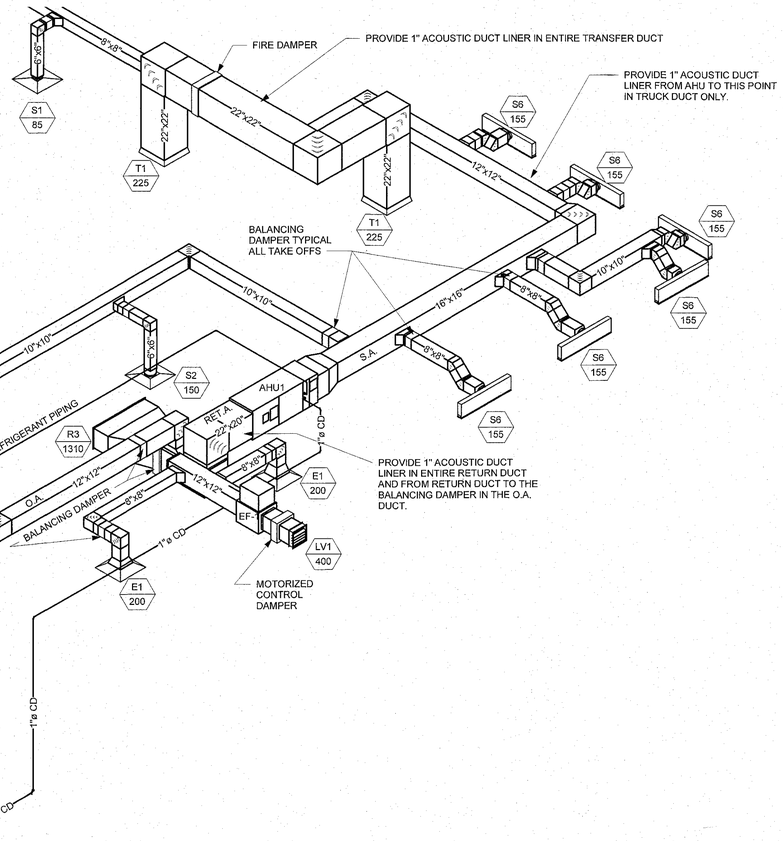
3/8" = 1'-0"

GENERAL NOTES FOR ELEVATION VIEW PHP3

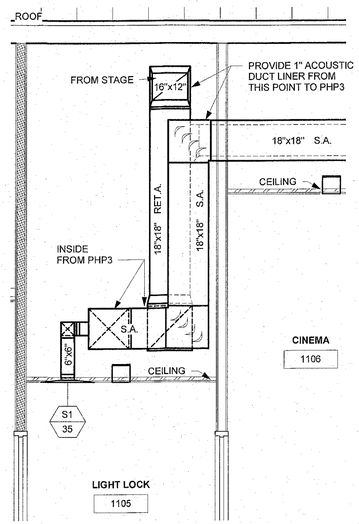
1. REFER TO DETAIL SHEETS FOR EXTERIOR DUCT INSULATION DETAIL AND OUTDOOR DUCT SUPPORT DETAIL. IN ADDITION TO DUCT BOARD ON THE OUTSIDE OF THE DUCT, PROVIDE 1" ACOUSTIC LINER FOR SOUND ATTENUATION IN ALL EXTERIOR DUCTS. DUCT DIMESIONS GIVEN ARE CLEAR INSIDE DIMENSIONS SO SHEET METAL SIZE MUST BE ADJUSTED ACCORDINGLY.
2. CONNECT SUPPLY AND RETURN DUCTS TO THE PACKAGED UNITS WITH FLEXIBLE CONNECTIONS.
3. REFER TO DETAIL SHEETS FOR CONDENSATE DRAIN PIPING SCHEMATIC.
4. HEAT TRACE AND INSULATE CONDENSATE DRAINS FROM THE UNIT DISCHARGE TO WHERE THE CONDENSATE DRAIN GOES BELOW GRADE.
5. ALL STEEL USED FOR SUPPORTING EQUIPMENT SHALL BE GALVANIZED WITH STAINLESS STEEL FASTENERS. OTHER MATERIAL RECOMMENDED BY METAL BUILDING FABRICATOR MAY BE USED IF APPROVED DURING SHOP DRAWING REVIEW.

KEYED NOTES:

1. SUPPORT SUPPLY AND RETURN DUCTS FROM CONCRETE SLAB AND WALL STRUCTURE. COORDINATE WITH G.C. AND/OR METAL BUILDING FABRICATOR.
2. PROVIDE FLEXIBLE DUCT CONNECTION BETWEEN THE 16" x 16" RELIEF DUCT AND THE RELIEF FAN.
3. REINFORCE THE RELIEF AIR DUCT AND PROVIDE 4"x4"x1/4" ANGLE FRAME AT THE END OF THE RELIEF DUCT TO ACCEPT MOUNTING OF THE RELIEF FAN. SUPPORT THE RELIEF AIR DUCTWORK AND RELIEF FAN FROM THE CONCRETE SLAB UTILIZING 4"x4" x1/4" ANGLES.
4. INSTALL MOTORIZED DAMPER IN RELIEF DUCT PROVIDED BY CONTROLS CONTRACTOR.
5. REFER TO ARCHITECTURAL DRAWINGS FOR DETAIL OF DUCT PENETRATION OF WALL. COORDINATE WITH G.C. TO PROVIDE WEATHERPROOF/SOUND DEADENING SEAL.



4 ISOMETRIC AHU1



3 ELEVATION VIEW ABOVE LIGHT LOCK 1105

3/8" = 1'-0"

FIRE RATED SCHEDULE	
	0 HR RATED SMOKE PARTITION
	1 HR RATED FIRE PARTITION / FIRE BARRIER
	2 HR RATED FIRE WALL

BECKER MORGAN GROUP

ARCHITECTURE
PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
Newarrk, DE 19711
302.369.3700

www.beckermorgan.com

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CIVIL ENGINEERING
2905 MERIDIAN PARKWAY
DURHAM, NC 27713
OFFICE: 919.361.5000

WOODS ENGINEERING
STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
910-343-8007 fax 910-343-8088

SUD ASSOCIATES, P.A.
PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14050 DIXIE M. DAVIS 9-23-19

PROJECT TITLE

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

ELEVATION VIEWS

ISSUE BLOCK

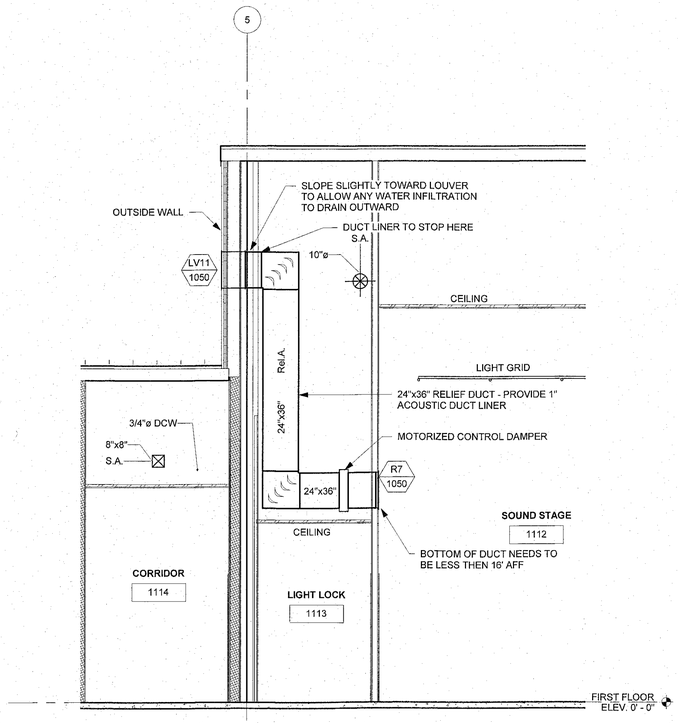
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DATE:	09/23/2019
SCALE:	As indicated
DRAWN BY: JWS	PROJ MGR: IS

M403

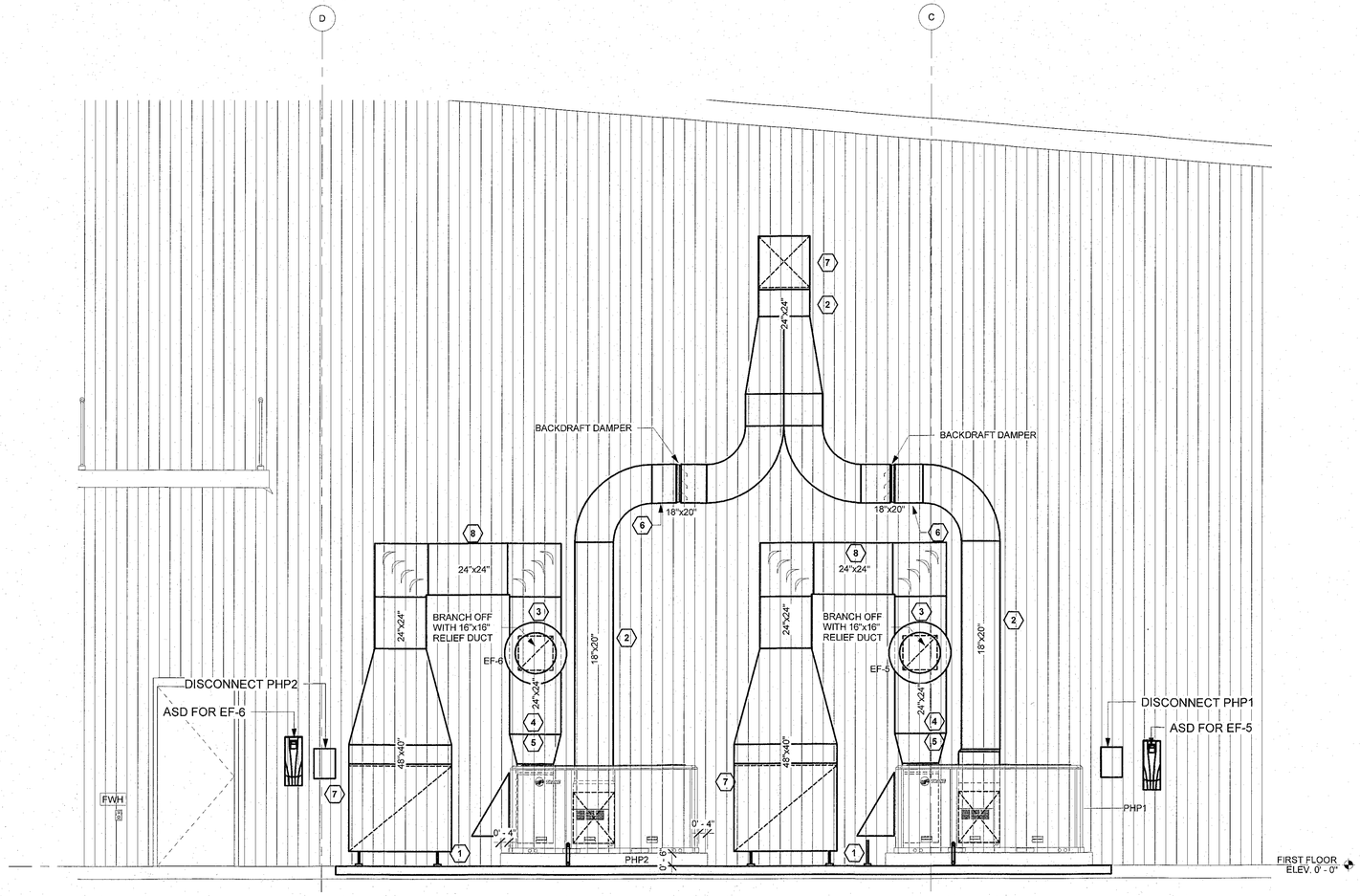
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2 ELEVATION VIEW RELIEF AIR SOUND STAGE

1/4" = 1'-0"



1 ELEVATION OF OUTSIDE DUCTWORK AND PACKAGED UNITS PHP1 AND PHP2

3/8" = 1'-0"

GENERAL NOTES

1. REFER TO DETAIL SHEETS FOR EXTERIOR DUCT INSULATION DETAIL AND OUTDOOR DUCT SUPPORT DETAIL. IN ADDITION TO DUCT BOARD ON THE OUTSIDE OF THE DUCT, PROVIDE 1" ACOUSTIC LINER FOR SOUND ATTENUATION IN ALL EXTERIOR DUCTS. DUCT DIMESIONS GIVEN ARE CLEAR INSIDE DIMENSIONS SO SHEET METAL SIZE MUST BE ADJUSTED ACCORDINGLY.
2. CONNECT SUPPLY AND RETURN DUCTS TO THE PACKAGED UNITS WITH FLEXIBLE CONNECTIONS.
3. REFER TO DETAIL SHEETS FOR CONDENSATE DRAIN PIPING SCHEMATIC.
4. HEAT TRACE AND INSULATE CONDENSATE DRAINS FROM THE UNIT DISCHARGE TO WHERE THE CONDENSATE DRAIN GOES BELOW GRADE.
5. ALL STEEL USED FOR SUPPORTING EQUIPMENT SHALL BE GALVANIZED WITH STAINLESS STEEL FASTENERS. OTHER MATERIAL RECOMMENDED BY METAL BUILDING FABRICATOR MAY BE USED IF APPROVED DURING SHOP DRAWING REVIEW.

KEYED NOTES:

1. SUPPORT DUCTS FROM CONCRETE SLAB USING GALVANIZED STEEL ANGLES, CHANNELS, OR UNISTRUT. BOLT THESE SUPPORTS INTO THE CONCRETE. TYPICAL FOR RETURN/RELIEF/SUPPLY DUCTS NEAR GRADE.
2. SUPPORT SUPPLY DUCTS FROM CONCRETE SLAB AND WALL STRUCTURE. COORDINATE WITH G.C. AND/OR METAL BUILDING FABRICATOR.
3. PROVIDE FLEXIBLE DUCT CONNECTION BETWEEN THE 16" x 16" RELIEF DUCT AND THE RELIEF FAN.
4. REINFORCE THE RELIEF AIR DUCT AND PROVIDE 4"x4"x1/4" ANGLE FRAME AT THE END OF THE RELIEF DUCT TO ACCEPT MOUNTING OF THE RELIEF FAN. SUPPORT THE RELIEF AIR DUCTWORK AND RELIEF FAN FROM THE CONCRETE SLAB UTILIZING 4"x4"x1/4" ANGLES.
5. INSTALL MOTORIZED DAMPER IN RELIEF DUCT PROVIDED BY CONTROLS CONTRACTOR.
6. PROVIDE ACCESS DOOR ON THE BOTTOM OF THE DUCT FOR CHECKING THE BACKDRAFT DAMPER.
7. REFER TO ARCHITECTURAL DRAWINGS FOR DETAIL OF DUCT PENETRATION OF WALL. COORDINATE WITH G.C. TO PROVIDE WEATHERPROOF/SOUND DEADENING SEAL.
8. PROVIDE UPSIDE-DOWN U-SHAPED RETURN/RELIEF DUCT WITH 1" ACOUSTIC LINER TO ABSORB SOUND. ENTIRE PATH FROM THE GRILLES TO THE FAN AND TO THE UNIT SHALL BE LINED. OUTSIDE OF DUCTS SHALL ALSO BE INSULATED WITH DUCT BOARD AND COVERED WITH ALUMINUM JACKETING. SUPPORT FROM CONCRETE SLAB AND WALL STRUCTURE. COORDINATE WITH G.C. AND/OR METAL BUILDING FABRICATOR.

FIRE RATED SCHEDULE

- 0 HR RATED SMOKE PARTITION
- 1 HR RATED FIRE PARTITION / FIRE BARRIER
- 2 HR RATED FIRE WALL

BECKER MORGAN GROUP

ARCHITECTURE
PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
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Delaware
309 S Governors Ave
Dover, DE 19904
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CIVIL ENGINEERING
2905 MERIDIAN PARKWAY
DURHAM, NC 27713
OFFICE: 919.361.5000

WOODS ENGINEERING
STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
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PME ENGINEERING
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DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

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PROJECT TITLE

UNCW

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

ELEVATION VIEWS

ISSUE BLOCK:

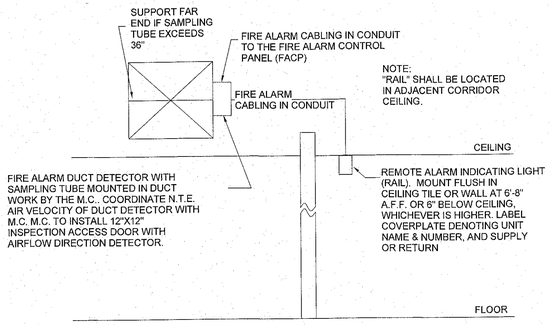
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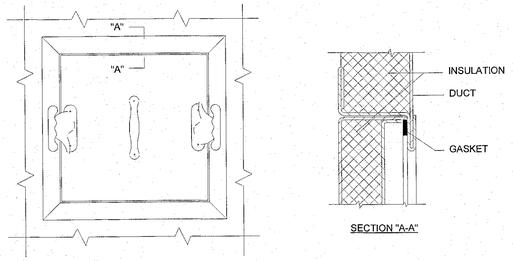
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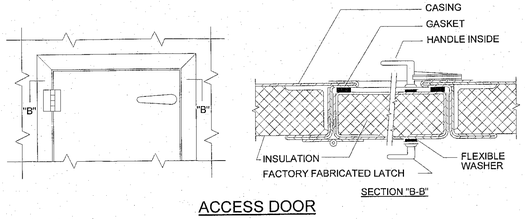
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3 DUCT DETECTOR DETAIL
12" = 1'-0"



ACCESS PANEL

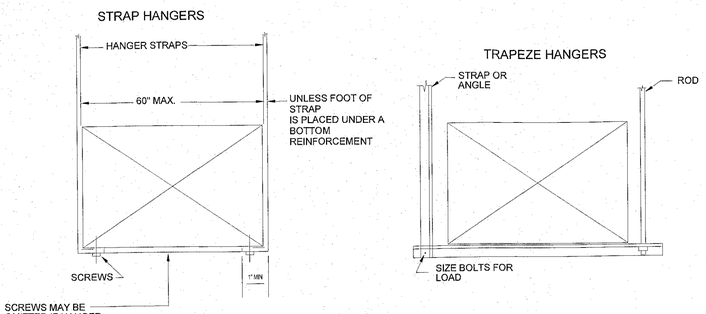


ACCESS DOOR

NOTES:
1. LATCHES SHALL BE OF THE WEDGE TYPE TO CLOSE DOORS TIGHTLY.
2. HINGES ON THE ACCESS DOORS SHALL HAVE NON-CORROSIVE PINS.

DESIGNERS NOTES:
1. USE ACCESS DOORS ON AIR HANDLING UNITS AND DUCTWORK INSTALLED IN EQUIPMENT ROOMS.
2. USE ACCESS PANELS ON ALL EQUIPMENT AND DUCTWORK INSTALLED ABOVE FINISHED CEILINGS.

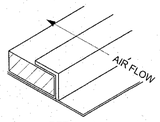
2 DUCT ACCESS DOOR
12" = 1'-0"



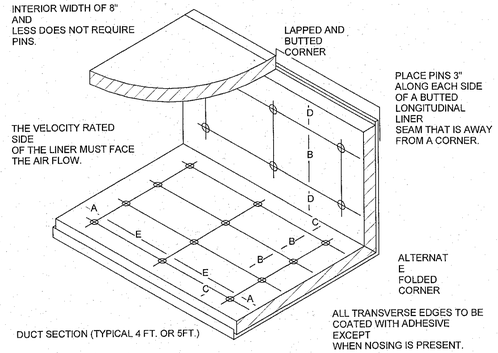
1 DUCT HANGER DETAIL
12" = 1'-0"

NOTE:

METAL NOSING MUST BE USED WHEREVER LINER IS PRECEDED BY UNLINED METAL; OTHERWISE WHEN VELOCITY EXCEEDS 4000 FPM USE METAL NOSING ON EVERY LEADING EDGE. NOSING MAY BE FORMED ON DUCT OR BE CHANNEL OR ZEE ATTACHED BY SCREWS, RIVETS OR WELDS.



DETAIL - A
METAL NOSING CHANNEL OR ZEE



DUCT SECTION (TYPICAL 4 FT. OR 5FT.)

"A" PIN MAY BE OMITTED WHEN METAL NOSING IS USED. "E" THEN STARTS FROM THE NOSING.

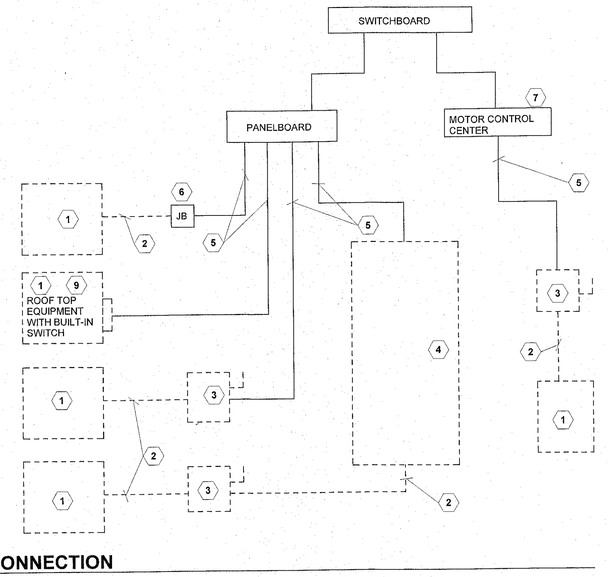
Velocity	A	B	C	D	E
0 - 2500 FPM	3"	12"	4"	6"	18"
2501 - 6000 FPM	3"	6"	4"	6"	16"

NOTE:
DUCT LINER IS TO BE USED FOR SOUND ABSORPTION. DUCT LINER IS TO BE USED WHERE NOTED ON THE DRAWINGS. LINED SUPPLY DUCTS SHALL ALSO BE WRAPPED WITH INSULATION. DUCT LINER SHALL BE PROVIDED ONLY WHERE NOTED. DUCT SIZES ON THE DRAWINGS ARE CLEAR INSIDE DIMENSIONS. WHERE LINER IS CALLED FOR THE SHEET METAL SIZE SHALL BE ADJUSTED ACCORDINGLY.

6 DUCT LINER INSTALLATION DETAIL
12" = 1'-0"

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 DISCONECT SWITCH AND STARTER. LOCATE ADJACENT TO THE 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 THE ELECTRICAL PLANS FOR SOME EQUIPMENT. IF NO STARTER OR DISCONNECT IS SUPPLIED A JUNCTION BOX SHALL BE INSTALLED ADJACENT TO THE 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, CIRCUIT BREAKER OR VFD IN THE MCC ARE PROVIDED BY THE ELECTRICAL CONTRACTOR.
8. IN ALL CASES THE EQUIPMENT CONTRACTOR SHALL MAKE FINAL CONNECTIONS, START UP, AND TEST EQUIPMENT.
9. IF ROOF TOP EQUIPMENT (RTE) IS NOT PROVIDED WITH A BUILT-IN DISCONNECT SWITCH, THE ELECTRICAL CONTRACTOR SHALL PROVIDE A DISCONNECT SWITCH.
10. IN A SINGLE PRIME CONTRACT, IT IS THE RESPONSIBILITY OF THE PRIME CONTRACTOR TO COORDINATE BETWEEN THE ELECTRICAL AND OTHER TRADES.



4 MECHANICAL/ELECTRICAL EQUIPMENT CONNECTION
12" = 1'-0"

BECKER MORGAN GROUP
ARCHITECTURE PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
Newark, DE 19711
302.369.3700

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CIVIL ENGINEERING
2905 MERIDIAN PARKWAY
DURHAM, NC 27713
OFFICE: 919.361.5000

WOODS ENGINEERING
STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
910-343-8007 fax 910-343-8088

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PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

NORTH CAROLINA PROFESSIONAL ENGINEER 14050 DIXIE M. DAVIS 9.23.19

PROJECT TITLE

UNCW

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SHEET TITLE

DUCT DETAILS

ISSUE BLOCK

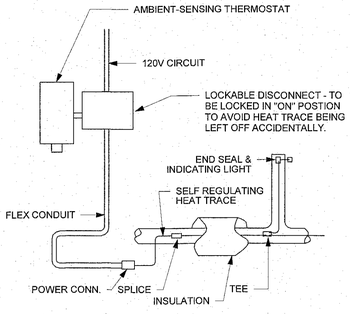
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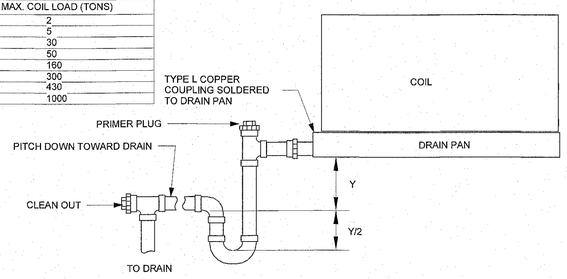
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NOTE: HEAT TRACING IS REQUIRED FOR OUTDOOR ABOVE GRADE CONDENSATE PIPING. SEE SPECIFICATION SECTION 230700 FOR WATTS/LF AND COMPONENT DESCRIPTIONS.

6 HEAT TRACING
12" = 1'-0"

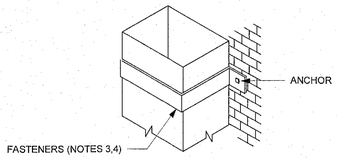
PIPE SIZE	MAX. COIL LOAD (TONS)
3/4"	2
1"	5
1-1/4"	30
1-1/2"	50
2"	160
3"	300
4"	430
5"	1000



DIMENSIONS

Y = FAN INLET PRESSURE (IN. WG) + 1"

2 CONDENSATE DRAIN PIPING SCHEMATIC
12" = 1'-0"



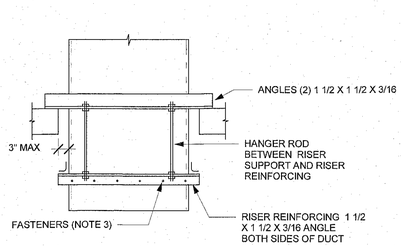
SUPPORT FROM WALL

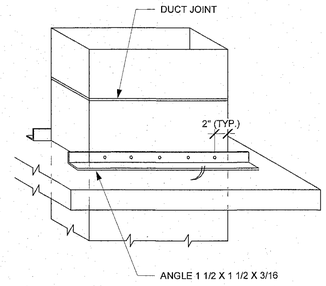
NOTES

1. RISER SUPPORTS FROM SMACNA, HVAC DUCT CONSTRUCTION STANDARDS.
2. SUPPORT RISERS SO THAT THEY ARE IN TENSION.
3. MINIMUM NUMBER OF FASTNERS ON EACH OF TWO SUPPORT BARS.

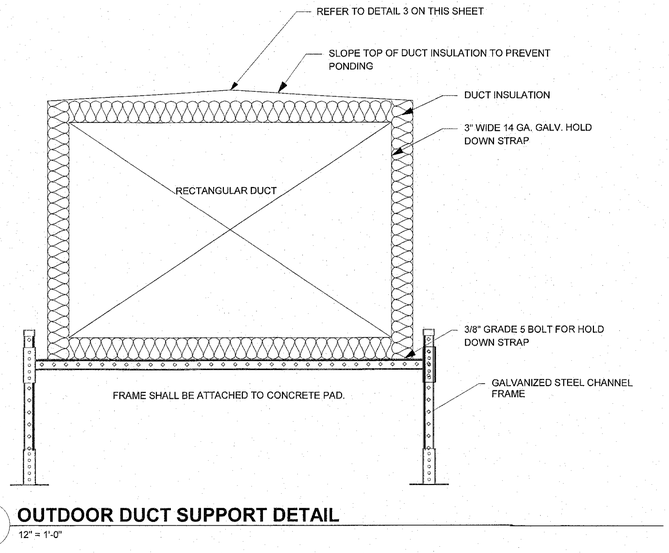
LARGEST DUCT DIM.	MINIMUM NUMBER OF FASTNERS
16" AND DOWN	2
17" - 24"	3
OVER 24"	LARGEST DUCT DIM. DIVIDED BY 8

4. LOCATE A FASTNER WITHIN 2" IF THE DUCT EDGES. LOCATE OTHERS AT EVENLY SPACED INTERVALS.

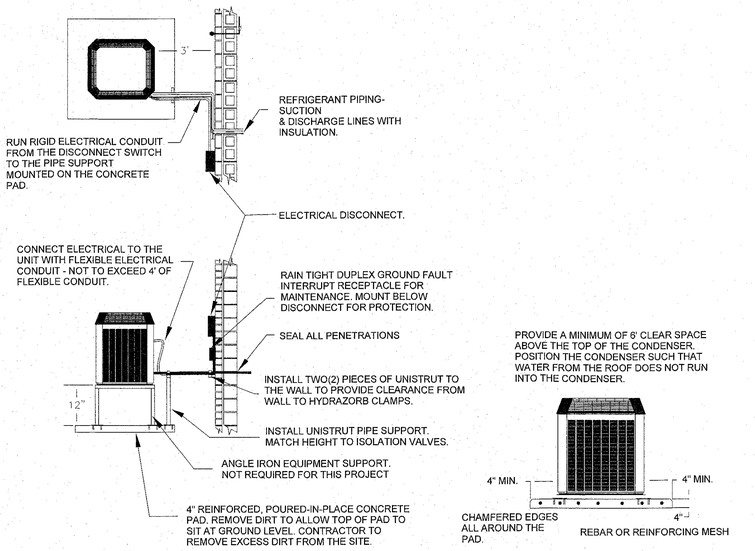




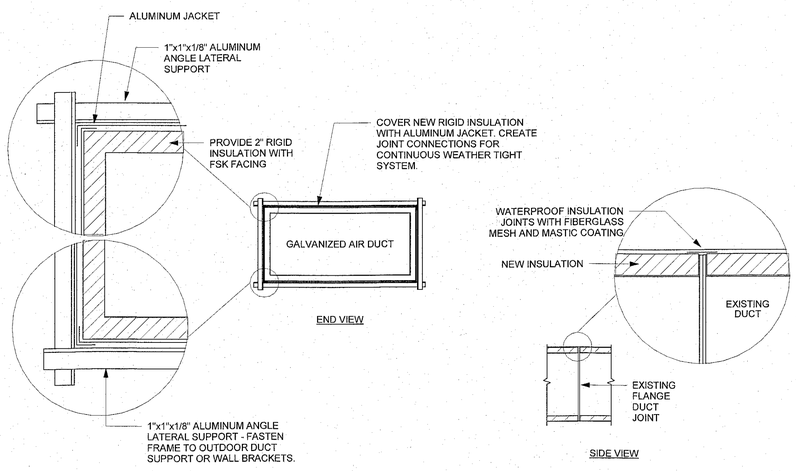
4 DUCT RISER SUPPORTS DETAIL
12" = 1'-0"



5 OUTDOOR DUCT SUPPORT DETAIL
12" = 1'-0"



1 OUTDOOR CONDENSING UNIT INSTALLATION DETAILS
12" = 1'-0"



3 EXTERIOR DUCT INSULATION DETAIL
12" = 1'-0"

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ARCHITECTURE PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

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WOODS ENGINEERING
STRUCTURAL ENGINEERING
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1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14050 9-23-19 ENGINEER JOSEPH M. DAVIS

PROJECT TITLE

UNCW

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

DETAILS

ISSUE BLOCK

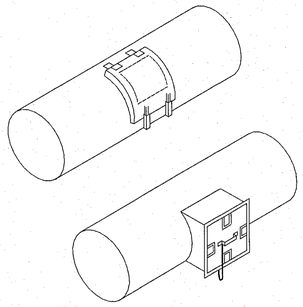
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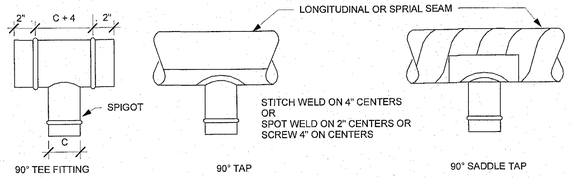
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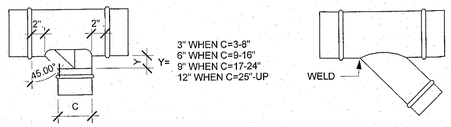
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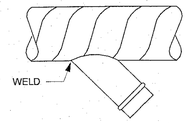
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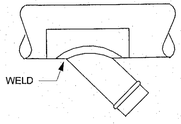


3 ACCESS DOOR ROUND DUCT DETAIL
12" = 1'-0"



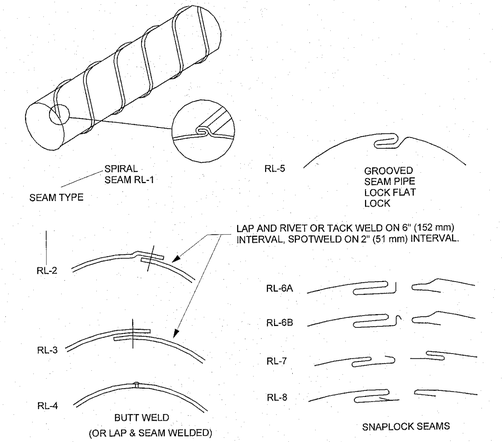






NOTE: STANDARD SPIGOT LENGTH IS 2"

2 90 DEGREE TEES AND LATERALS DETAIL
12" = 1'-0"

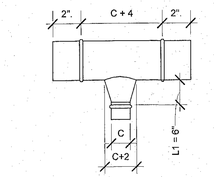


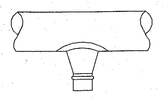
PRESSURE CLASS IN W.G. (Pa)		SEAM TYPE PERMITTED
POSITIVE		
TO +10" W.G.	(2500)	RL-1,4,5 (2",3")
TO +4" W.G.	(1000)	RL-1,2,3,4,5
TO +2" W.G.	(500)	ALL
NEGATIVE		
TO -10" W.G.	(-2500)	RL-1,4 (2",3")
TO -4" W.G.	(-1000)	RL-1,2,3,4 (5**)
TO -2" W.G.	(-250)	ALL

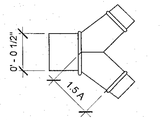
* ACCEPTABLE IF SPOTWELDED ON 1" (25 mm) INTERVALS OR TACK WELDED ON 3" (75 mm) INTERVALS.

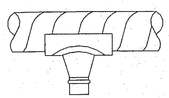
** RL-5 PRESSURE LIMIT IS -3" W.G. (-750 Pa)

1 SEAMS-ROUND DUCT AND FITTINGS DETAIL
12" = 1'-0"

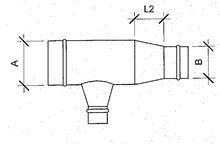


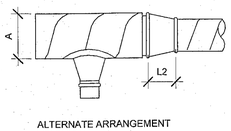






L2=A-B(4" MIN.)





4 CONICAL TEES DETAIL
12" = 1'-0"

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ARCHITECTURE
PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
Newark, DE 19711
302.369.3700

www.beckermorgan.com

MCADAMS
CIVIL ENGINEERING
2905 MERIDIAN PARKWAY
DURHAM, NC 27713
OFFICE: 919.361.5000

WOODS ENGINEERING
STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
910-343-8007 fax 910-343-8088

SUD ASSOCIATES, P.A.
PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14050 DIXIE M. SMITH 9/23/19

PROJECT TITLE

UNCW

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

ROUND DUCT DETAILS

ISSUE BLOCK

Mark	Date	Description

PROJECT NO: 2018070.01
DATE: 09/23/2019
SCALE: 12" = 1'-0"
DRAWN BY: JWS PROJ MGR: IS

M503

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System No. W-L-1001

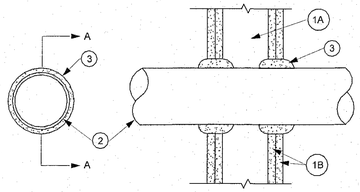
June 15, 2005

F Ratings -- 1, 2, 3 and 4 Hr (See Items 2 and 3)

T Ratings -- 0, 1, 2, 3 and 4 Hr (See Item 3)

L Rating At Ambient -- less than 1 CFM/sq ft

L Rating At 400 F -- less than 1 CFM/sq ft



SECTION A-A

1. **Wall Assembly —** The 1, 2, 3 or 4 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or 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 (max 2 h fire rated assemblies) or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 In. (406 mm) OC with nom 2 by 4 in. (51 by 102 mm) lumber end plates and cross braces. Steel studs to be min 3-5/8 in. (92 mm) wide by 1-3/8 in. (35 mm) deep channels spaced max 24 in. (610 mm) OC.

B. **Gypsum Board*** — Nom 1/2 or 5/8 in. (13 or 16 mm) thick, 4 ft. (122 cm) wide with square or tapered edges. The gypsum wallboard 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 26 in. (660 mm).

2. **Through-Penetrant —** One metallic pipe, conduit or tubing installed either concentrically or eccentrically within the firestop system. The annular space between pipe, conduit or tubing and periphery of opening shall be min of 0 in / (0 mm). (point contact) to max 2 in. (51 mm) 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 24 in. (610 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

B. **Iron Pipe —** Nom 24 in. (610 mm) diam (or smaller) service weight (or heavier) cast iron soil pipe, nom 12 in (305 mm) diam (or smaller) or Class 50 (or heavier) ductile iron pressure pipe.

C. **Conduit** — Nom 6 in. (152 mm) diam (or smaller) steel conduit or nom 4 in (102 mm) diam (or smaller) steel electrical metallic tubing

D. **Copper Tubing** — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing

E. **Copper Pipe —** Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.

F. **Through Penetrating Product*** — Flexible Metal Piping The following types of steel flexible metal gas piping may be used:

1. Nom 2 in. (51 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

OMEGA FLEX INC

2. Nom 1 in. (25 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

GASTITE, DIV OF TITEFLEX

3. Nom 1 in. (25 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

WARD MFG L L C

3. **Fill, Void or Cavity Material* — Caulk or Sealant** — Min 5/8 , 1-1/4,1-7/8 and 2-1/2 in. (16, 32, 48 and 64 mm) thickness of caulk for 1, 2, 3 and 4 hr rated assemblies, respectively, applied within annulus, flush with both surfaces of wall. Min 1/4 in. (6 mm) diam bead of caulk applied to gypsum board/penetrant interface at point contact location on both sides of wall. The hourly F Rating of the firestop system is dependent upon the hourly fire rating of the wall assembly in which it is installed, as shown in the following table. The hourly T Rating of the firestop system is dependent upon the type or size of the pipe or conduit and the hourly fire rating of the wall assembly in which it is installed, as tabulated below:

Max Pipe or Conduit Diam In	F Rating Hr	T Rating Hr
1	1 or 2	0+, 1 or 2
1	3 or 4	3 or 4
4	1 or 2	0
6	3 or 4	0
12	1 or 2	0

+When copper pipe is used, T Rating is 0 h.

3M COMPANY — CP 25WB+ or FB-3000 WT.

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

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System No. W-L-5001

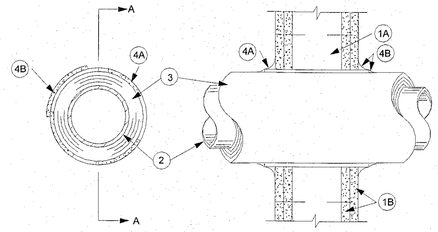
May 19, 2005

F Ratings - and 2 Hr (See Item 1)

T Ratings - 3/4, 1 and 1-1/2 Hr (See Item 3)

L Rating At Ambient - 2 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 described in the individual U300, U400 or V400 Series Wall or Partition Design 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. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC with nom 2 by 4 in. (51 by 102 mm) lumber end plates and cross braces. Steel studs to be min 3-5/8 in. (92 mm) wide by 1-3/8 in. (35 mm) deep channels spaced max 24 in. (610 mm) OC.

B. **Gypsum Board*** — Nom 5/8 in. (16 mm) thick, 4 ft (122 cm) 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 Design in the UL Fire Resistance Directory. Max diam of opening is 14-1/2 (368mm) in for wood stud walls and 18 in. (457 mm) for steel stud walls.

The hourly F Rating of the firestop system is 1 hr when installed in a 1 hr fire rated wall and 2 hr when installed in a 2 hr fire rated wall.

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. (305 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

B. **Copper Tubing** — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.

C. **Copper Pipe —** Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.

3. **Pipe Covering* —** Nom 1 or 2 in. (25 or 51 mm) thick hollow cylindrical heavy density (min 3.5 pcf or 56 kg/m3) 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 sealed with metal fasteners or with butt strip tape supplied with the product. When nom 1 in. (25 mm) thick pipe covering is used, the annular space between the pipe covering and the circular cutout in the gypsum wallboard layers on each side of the wall shall be min 1/4 in. (6 mm) to max 3/8 in. (10 mm) When nom 2 in. (51 mm) thick pipe covering is used, the annular space between the pipe covering and the circular cutout in the gypsum board layers on each side of the wall shall be min 1/2 in. (13 mm) to max 3/4 in. (19 mm)

See **Pipe and Equipment Covering Materials** (BRGU) category in 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.

The hourly T Rating of the firestop system is 3/4 hr when nom 1 in. (25 mm) thick pipe covering is used. The hourly T Rating of the firestop system is 1 hr and 1-1/2 hr when nom 2 in. (52 mm) thick pipe covering is used with 1 hr and 2 hr fire rated walls, respectively.

4. Firestop System — Installed symmetrically on both sides of wall assembly. The details of the firestop system shall be as follows:

A. **Fill, Void or Cavity Materials* — Wrap Strip** — Nom 1/4 in. (6 mm) thick intumescent elastomeric material faced on one side with aluminum foil, supplied in 2 in. (51 mm) wide strips. Nom 2 in. (51 mm) wide strip tightly wrapped around pipe covering (foil side out) with seam butted. Wrap strip layer securely bound with steel wire or aluminum foil tape and slid into annular space approx 1-1/4 in. (32 mm) such that approx 3/4 in. (19 mm) of the wrap strip width protrudes from the wall surface. One layer of wrap strip is required when nom 1 in. (25 mm) thick pipe covering is used. Two layers of wrap strip are required when nom 2 in. (51 mm) thick pipe covering is used.

3M COMPANY — FS-195+

B. **Fill, Void or Cavity Materials* — Caulk or Sealant** — Min 1/4 in. (6 mm) diam continuous bead applied to the wrap strip/wall interface and to the exposed edge of the wrap strip layer approx 3/4 in. (19 mm) from the wall surface.

3M COMPANY — CP 25WB+, IC 15WB+, FireDam 150+ caulk or FB-3000 WT sealant

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

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BECKER MORGAN GROUP

ARCHITECTURE
PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
Newarrk, DE 19711
302.369.3700

www.beckermorgan.com

MCADAMS
CIVIL ENGINEERING
2905 MERIDIAN PARKWAY
DURHAM, NC 27713

OFFICE: 919.361.5000

WOODS ENGINEERING
STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401

910-343-8007 fax 910-343-8088

SUD ASSOCIATES, P.A.
PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707

office: 919.493.5277 fax: 919.493.5549

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14050 9/23/19 DIXIE M. DAVIS

PROJECT TITLE

UNCW

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

UL DETAILS

ISSUE BLOCK

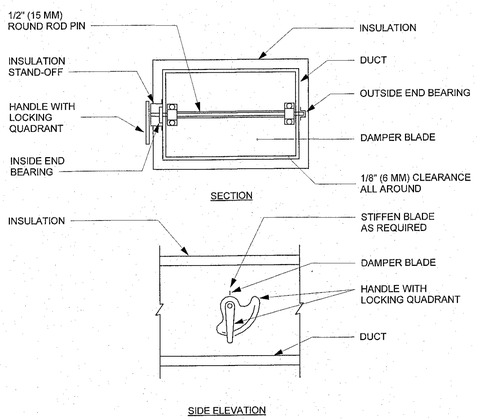
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DATE:	09/23/2019
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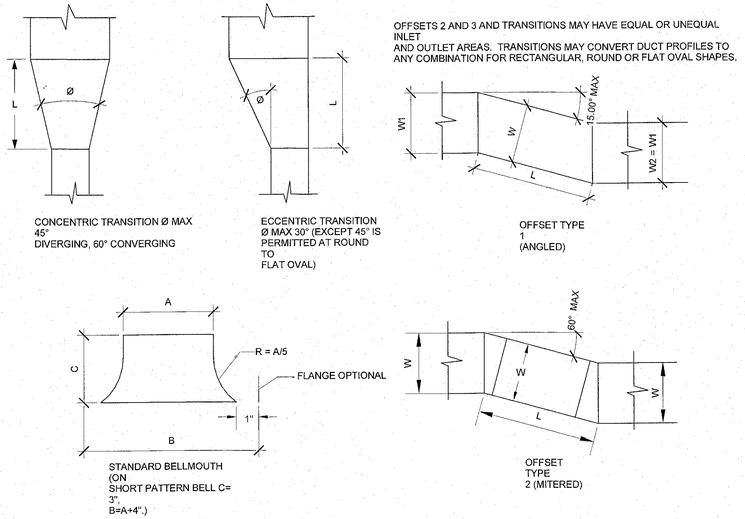


NOTES:

1. DELETE INSULATION STAND-OFF ON DUCTWORK WITHOUT EXTERIOR INSULATION.
2. DETAIL SHOWS SINGLE BLADE DAMPER. DAMPER INSTALLATION SHALL BE SIMILAR FOR MULTI-BLADE DAMPERS & ROUND DAMPERS.

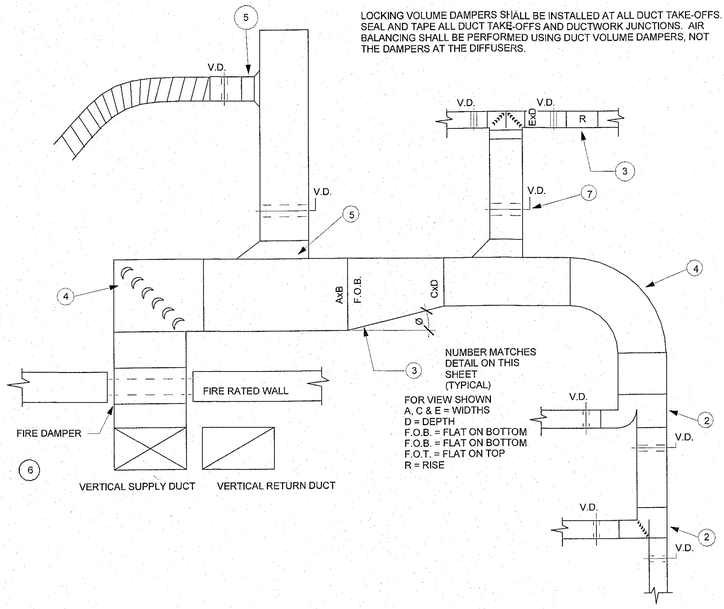
7 VOLUME DAMPER DETAIL

NTS



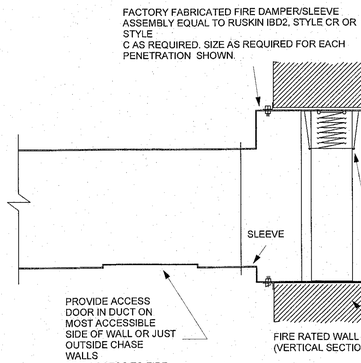
3 OFFSETS AND TRANSITIONS

NTS



1 SAMPLE DUCT LAYOUT

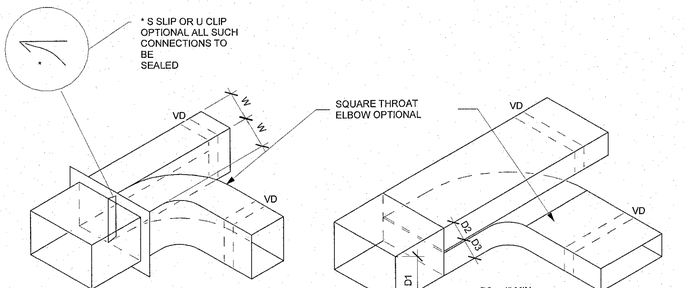
NTS



NOTES:
SEE ARCHITECTURAL PLANS FOR LOCATION
OF FIRE RATED WALLS AND RATING.
DO NOT INSULATE DUCT LOCATED IN CHASE
DO NOT INSULATE FIRE DAMPERS.

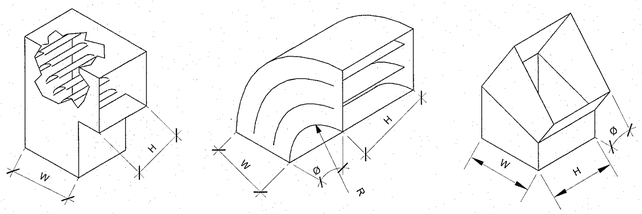
6 FIRE DAMPER INSTALLATION DETAIL

NTS



2 PARALLEL FLOW BRANCHES

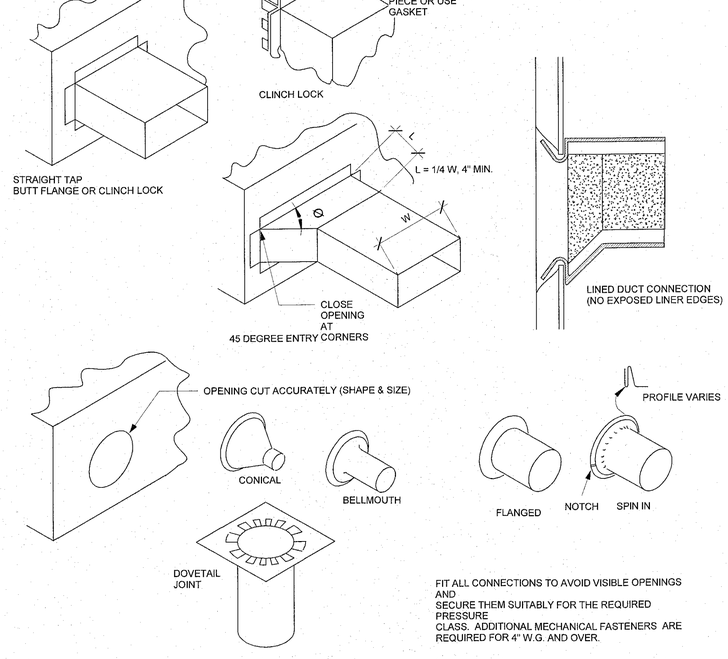
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BEAD, CROSSBREAK AND REINFORCE FLAT SURFACES AS IN STRAIGHT DUCT

4 RECTANGULAR ELBOWS DETAIL

NTS



5 BRANCH CONNECTIONS DETAIL

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ARCHITECTURE
PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

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312 West Main St, Suite 300
Salisbury, MD 21801
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309 S Governors Ave
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1813 CHAPEL HILL ROAD
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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14050 DIXIE M DAVIS

PROJECT TITLE

UNCW

UNCW FILM STUDIES

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SHEET TITLE

SAMPLE DUCT LAYOUT

ISSUE BLOCK

Mark	Date	Description

PROJECT NO:	2018070.01
DATE:	09/23/2019
SCALE:	12" = 1'-0"
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M505

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LOUVERS

Mark	Manufacturer	Flow	Pressure Drop	Free Area %	Free Velocity Area fpm	Beginning Water Pen. (fpm)	Water Pen. Safety Factor	Model	Size, WxH	Description
LV1	Ruskins	400 CFM	0.04	40	574			ELF6375DX	12"x12"	EXHAUST
LV2	Ruskins	325 CFM	0.04	43	453			ELF6375DX	12"x20"	EXHAUST
LV3	Ruskins	3000 CFM	0.09	54	742	1023	1.38	ELF6375DX	34"x32"	INTAKE
LV4	Ruskins	285 CFM	0.01	43	330			ELF6375DX	12"x24"	EXHAUST
LV5	Ruskins	355 CFM	0.03	43	411	1023	2.49	ELF6375DX	12"x24"	INTAKE
LV8	Ruskins	90 CFM	0.03	31	346	1023	3.16	ELF6375DX	12"x12"	INTAKE
LV9	Ruskins	2600 CFM	0.08	49	792			ELF6375DX	40"x24"	EXHAUST
LV10	Ruskins	190 CFM	0.06	31	614	1023	1.66	ELF6375DX	12"x12"	INTAKE
LV11	Ruskins	1050 CFM	0.03	49	380			ELF6375DX	36"x24"	EXHAUST
LV12	Ruskins	375 CFM	0.03	43	387			ELF6375DX	18"x18"	EXHAUST

LOUVER SCHEDULE NOTES:
1. FURNISH LOUVERS WITH FACTORY APPLIED BAKED ON PRIMER. SUBMIT COLOR SELECTIONS FOR OWNER'S APPROVAL.
2. FURNISH LOUVER WITH EXTENDED SILL, 1/4" MINIMUM INSECT SCREEN OPENING, DRAINABLE BLADES.
3. MANUFACTURER: RUSKIN OR EQUALS BY ARROW, GREENHECK, LOUVERS & DAMPERS, SAFE-AIR, VENT PRODUCTS CO., OR UNITED ENERTECH.
4. INSTALLATION OF LOUVERS SHALL BE BY GENERAL CONTRACTOR (GC).

CONDENSING UNIT SCHEDULE

Mark	Manufacturer	Model	Refrigerant	Frequency	Voltage	Phase	Max Circuit Breaker	MCA	System EER	Equipment Served
CU1	Trane	4TWA4060A3000A	410A	60 Hz	208 V	3	35.0 A	21.0 A	12.5	AHU1
CU3	Trane	4TWR4024	410A	60 Hz	208 V	1	25.0 A	14.0 A	12.0	AHU3
CU4	Trane	TWA09043DAB	410A	60 Hz	208 V	3	45.0 A	33.0 A	12.8	AHU4
CU5	Trane	4TWA4060A3000A	410A	60 Hz	208 V	3	35.0 A	21.0 A	12.5	AHU5

CU NOTES:

1. PROVIDE UNITS WITH EER VALUES SIMILAR TO THESE UNITS, BUT IN NO CASE LESS THAN N.C. STATE BUILDING CODE - ENERGY CONSERVATION VOLUME MINIMUMS.
2. CU4 SHALL HAVE TWO COMPRESSORS. LINE SIZE IS BASED ON MANUFACTURER'S PIPING CALCULATIONS FOR SIZE AND LENGTH.

AIR TERMINAL SCHEDULE

Mark	Manufacturer	Model	Accessories / Notes	Number of Slots	Description	Min Flow	Max Flow	Neck Size	Type	System Type
E1	Metalaire	4002R-6			Ceiling exhaust grille for lay in T-Bar ceiling.	50 CFM	350 CFM	12"x12"	24 x 24 Face 12 x 12 Connection	Exhaust Air
R1	Metalaire	7000R-6	NC Shall be less than 20		T-Bar Lay-in - Return, Aluminum, Perforated Grille	60 CFM	175 CFM	8"x8"	24 x 24 Face 8 x 8 Connection	Return Air
R2	Metalaire	7000R-6			T-Bar Lay-in - Return, Aluminum, Perforated Grille	280 CFM	470 CFM	14"x14"	24 x 24 Face 14 x 14 Connection	Return Air
R3	Metalaire	4002R			Surface Mount - Return, Aluminum	760 CFM	1500 CFM	48"x16"	48"x16" Surface Mounted	Return Air
R4	Metalaire	7000R-6			T-Bar Lay-in - Return, Aluminum, Perforated Grille	90 CFM	675 CFM	18"x18"	24 x 24 Face 18 x 18 Connection	
R5	Metalaire	HDRH			Heavy Duty Surface Mounted Aluminum Grille with Flat Black Finish	275 CFM	3000 CFM	48"x40"	48x40 Surface Mounted	Return Air
R7	Metalaire	4002R			Surface Mount - Relief, Aluminum, Black Finish	350 CFM	1050 CFM	36"x24"	36"x24" Surface Mounted	Relief Air
S1	Metalaire	5700-6 AL			T-bar Lay-in - 2 Cone Supply Round Neck, Aluminum	0 CFM	125 CFM	6"ø	24x24 - 6 Neck	Supply Air
S2	Metalaire	5700-6 AL	NC Shall be less than 15		T-bar Lay-in - 2 Cone Supply Round Neck, Aluminum	130 CFM	195 CFM	8"ø	24x24 - 8 Neck	Supply Air
S3	Metalaire	5700-6 AL			T-bar Lay-in - 2 Cone Supply Round Neck, Aluminum	200 CFM	300 CFM	10"ø	24x24 - 10 Neck	Supply Air
S4	Metalaire	H4004			Surface Mounted, double deflection, Aluminum	50 CFM	75 CFM	6"x6"	6 x 6 Surface Mounted	Supply Air
S5	Metalaire	5700-6 AL			T-bar Lay-in - 2 Cone Supply Round Neck, Aluminum	455 CFM	550 CFM	14"ø	24x24 - 14 Neck	Supply Air
S6	Metalaire	PHPSI-IT-75-6-CC	PHP-TBPF Frame for surface mounting.	2	Linear Slot Ceiling Diffuser 4' long	0 CFM	155 CFM	8"ø	8" Neck	Supply Air
S7	Metalaire	PHPSI-IT-75-9-CC	NC Shall be less than 22	3	Linear Slot Ceiling Diffuser 4' long. All Black Finish	200 CFM	240 CFM	10"ø	10" Oval Neck	Supply Air
S8	Metalaire	4004P	Aluminum Finish		Spiral Duct Diffuser, double deflection, aluminum finish.	100 CFM	195 CFM	14"x6"	14x6 for Sprial Duct	Supply Air
S9	Metalaire	5700-6 AL			T-bar Lay-in - 2 Cone Supply Round Neck, Aluminum	0 CFM	100 CFM	6"ø	12x12 - 6 Neck	Supply Air
T1	Metalaire	4002R-6			Ceiling transfer grille for lay in T-Bar ceiling.	50 CFM	400 CFM	22"x22"	24 x 24 Face 22x22 Connection	Transfer Air
T2	Metalaire	4002R			Surface Mount - Return, Aluminum	50 CFM	75 CFM	8"x6"	8x6 Surface Mounted	Transfer Air

DIFFUSER SCHEDULE NOTES:

1. MANUFACTURER: METALAIRE OR EQUALS BY KRUEGER, PRICE, NAILOR INDUSTRIES, TUTTLE & BAILEY, TITUS OR CARNES.
2. DIFFUSERS AND GRILLES IN CINEMA & PROJECTION BOOTH TO BE BLACK FINISH. OTHERS TO BE WHITE FINISH EXCEPT WHERE INDIVIDIUALLY NOTED OTHERWISE.
3. MAXIMUM NOISE LEVEL SHALL BE 25 NC. EXCEPT WHERE NOTED OTHERWISE.
4. BALANCING DAMPER TO BE LOCATED IN DUCT UNLESS INDICATED OTHERWISE ON PLAN.
5. CEILING SUPPLY DIFFUSERS SHALL HAVE INSULATED BACKPANS.

AIR HANDLING UNIT SCHEDULE

Mark	Manufacturer	Model	Design Supply Air Flow	Min Outdoor Air	Economizer	External Static Pressure	Entering Air Cooling Temperature DB/WB	Leaving Air Cooling Temperature DB/WB	Net Total Cooling Capacity	Net Sensible Cooling Capacity	Heating Ambient Dry Bulb Temperature	Heating Capacity MBh @ 47F Ambient	Heating Capacity MBh @ 17F Ambient	EER/SEER @ AHRI Conditions	COP @ 47F / COP @ 17F	Electric Heat	VOLTS / PHASE / HZ	Maximum Overcurrent Protection	Minimum Circuit Current
AHU1	Trane	TAM9A0C60V51	1500 CFM	190 CFM	No	0.90 in-wg	80 °F/67 °F	56 °F/54 °F	56.056 MBh	38.781 MBh	17 °F	52.5	34.8	12.5/15.0	3.7/2.6	10.8 kW 208V /3Ph	208 V /3 /60 Hz	45.0 A	45.0 A
AHU3	Trane	TAM9A0A24V21	750 CFM	90 CFM	No	0.90 in-wg	80 °F/67 °F	59 °F/57 °F	23.166 MBh	16.887 MBh	17 °F	21.8	14.3	12/14.5	3.7/2.5	5.77 kW @208V/3 Ph	208 V /3 /60 Hz	30.0 A	29.0 A
AHU4	Trane	TWE09043BAA	3000 CFM	400 CFM	Yes	1.00 in-wg	80 °F/67 °F	60 °F/58 °F	91.90 MBh	70.14 MBh	17 °F	82.0	51.5	12.2 IEER/	3.3/2.25	11.25 kW @ 208/ 3Ph	208 V /3 /60 Hz	60.0 A	51.0 A
AHU5	Trane	TAM9A0C60V51	1500 CFM	355 CFM	No	0.90 in-wg	80 °F/67 °F	56 °F/54 °F	56.056 MBh	38.781 MBh	17 °F	52.5	34.8	12.5/15.0	3.7/2.6	10.8 kW @ 208V/3Ph	208 V /3 /60 Hz	45.0 A	45.0 A

AHU NOTES:
1. REFER TO SPECIFICATIONS FOR OTHER ACCEPTABLE MANUFACTURERS. FOR UNITS OTHER THAN TRANE, PROVIDE DRAWINGS WHICH SHOW THE UNITS WILL FIT IN THE AVAILABLE SPACE WITH PROPER DUCTWORK AND PIPING CONNECTIONS, AND WITH PROPER SERVICE CLEARANCES.
2. HIGH EFFICIENCY MERV 8 FILTERS SHALL BE PROVIDED AND CHANGED AS NEEDED DURING CONSTRUCTION, FROM UNIT START-UP THROUGH FINAL ACCEPTANCE. AT THE TIME OF OWNER ACCEPTANCE, THE CONTRACTOR SHALL INSTALL A NEW SET OF FILTERS.
3. MOTORS SHALL BE HIGH EFFICIENCY.
4. MOTORS FOR AHU1, AHU3 AND AHU5 SHALL BE ECM PROGRAMMABLE TYPE. THE MOTOR SHALL BE PREPROGRAMMED IN THE FACTORY TO MEET SPECIFIED AIRFLOW REQUIREMENTS.
5. PROVIDE 3HP ULTRA HIGH STATIC MOTOR FOR AHU4.

FAN SCHEDULE

Mark	Manufacturer	Model	Description	Drive Type	External Static Pressure	Max Air Flow	Volts/Phase/Hz	Motor HP	Motor Speed	Inlet Sones	Serves
EF-1	Greenheck	BSQ-80-3	Belt Drive Centrifugal Inline Fan	Belt	1.00 in-wg	400 CFM	208 V/1/60 Hz	0.33 hp	1725	13.9	TOILET ROOMS
EF-2	Greenheck	BSQ-80-3	Belt Drive Centrifugal Inline Fan	Belt	1.00 in-wg	325 CFM	208 V/1/60 Hz	0.33 hp	1725	12.4	HOUSEKEEPING & BREAKROOM
EF-3	Greenheck	BSQ-160-10	Belt Drive Centrifugal Inline Fan	Belt	1.00 in-wg	2600 CFM	208 V/3/60 Hz	1.00 hp	1725	13.3	AHU4 RELIEF AIR
EF-4	Greenheck	SQ-98-VG	Direct Drive Centrifugal Inline Fan	Direct	0.70 in-wg	285 CFM	208 V/1/60 Hz	0.25 hp	1725	10.3	AHU5 RELIEF AIR
EF-5	Greenheck	CW-141-A	Direct Drive Centrifugal Sidewall Exhaust Fan	Direct	0.70 in-wg	2300 CFM	208 V/3/60 Hz	1.00 hp	1725	12.8	PHP1 RELIEF AIR
EF-6	Greenheck	CW-141-A	Direct Drive Centrifugal Sidewall Exhaust Fan	Direct	0.70 in-wg	2300 CFM	208 V/3/60 Hz	1.00 hp	1725	12.8	PHP2 RELIEF AIR
EF-7	Greenheck	CW-141HP-A	Direct Drive Centrifugal Sidewall Exhaust Fan	Direct	0.70 in-wg	1790 CFM	208 V/3/60 Hz	1.00 hp	1725	12.0	PHP3 RELIEF AIR

FAN SCHEDULE NOTES:
1. MANUFACTURER: GREENHECK, OR EQUAL BY CARNES, LOREN COOK , PENN BARRY, OR TWIN CITY FAN. REFER TO SPECIFICATION SECTION 233423 FOR MORE DETAILED REQUIREMENTS.
2. PROVIDE HANGING VIBRATION ISOLATION FOR INLINE AND CEILING EXHAUST FANS.
3. FANS SHALL BE CONTROLLED VIA THE DDC CONTROL SYSTEM
4. PROVIDE VARIABLE FREQUENCY DRIVE FOR EF-5, EF6 AND EF7.
5. EF-7 AND ITS ASSOCIATED WIRING, CONTROLS, DISCONNECT, DUCTWORK, ETC. ARE PART OF BID ALTERNATE #1.
6. FANS SHALL NOT BE SELECTED WITH HIGHER INLET SONES THAN SCHEDULED.

BECKER MORGAN GROUP
ARCHITECTURE PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
Newarrk, DE 19711
302.369.3700

www.beckermorgan.com

MCADAMS
CIVIL ENGINEERING
2905 MERIDIAN PARKWAY
DURHAM, NC 27713
OFFICE: 919.361.5000

WOODS ENGINEERING
STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
910-343-8007 fax 910-343-8088

SUD ASSOCIATES, P.A.
PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14050 DIXIE M. DAVIS 9-23-19

PROJECT TITLE

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

MECHANICAL SCHEDULES

ISSUE BLOCK

Mark	Date	Description

PROJECT NO: 2018070.01
DATE: 09/23/2019
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PACKAGED HEAT PUMP SCHEDULE

Mark	Manufacturer	Model	Design Supply Air Flow	External Static Pressure	Minimum Outdoor Air	Max.Design Outdoor Air	EER	Refrigerant	Net Total Cooling Capacity	Net Sensible Cooling Capacity	Cooling Entering Air Temperature DB/WB	Leaving Air Cooling Temperature DB/WB	Electric Heating KW	Electric Heating LDB Temperature Rise	Electric Heating Capacity MBh	Heat Pump Heating Capacity with Fan	Heating Entering Dry Bulb Temperature	HP Heating LDB Temperature Rise	VOLTS / PHASE / HZ	Maximum Overcurrent Protection	Minimum Circuit Current	Notes
PHP1	Trane	WHC092	2400 CFM	1.50 in-wg	275 CFM	625 CFM	11.8	410 R	90.71 MBh	61.30 MBh	80 °F/67 °F/	56 °F/55 °F/	13.5 kW	18 °F	46.1 MBh	85.40 MBh	70 °F	33 °F	208 V /3 /60 Hz	90.0 A	90.0 A	
PHP2	Trane	WHC092	2400 CFM	1.50 in-wg	275 CFM	625 CFM	11.8	410 R	90.71 MBh	61.30 MBh	80 °F/67 °F/	56 °F/55 °F/	13.5 kW	18 °F	46.1 MBh	85.40 MBh	70 °F	33 °F	208 V /3 /60 Hz	90.0 A	90.0 A	
PHP3 *	Trane	WHC074	1920 CFM	1.50 in-wg	200 CFM	485 CFM	12.1	410 R	75.14 MBh	48.43 MBh	81 °F/68 °F/	57 °F/56 °F/	13.5 kW	22 °F	46.1 MBh	73.97 MBh	70 °F	36 °F	208 V /3 /60 Hz	90.0 A	89.0 A	ALT #1

NOTES:
1. PROVIDE TRANE UNITS AS SCHEDULED OR EQUAL BY OTHER MANUFACTURERS LISTED IN THE SPECIFICATIONS.
2. PROVIDE UNITS WITH ECONOMIZER INTAKE HOODS AND DAMPERS. MAXIMUM ECONOMIZER VOLUME SHALL MATCH DESIGN SUPPLY AIR FLOW.
3. UNIT COOLING CAPACITIES ARE BASED ON 95°F AMBIENT TEMPERATURE.
4. SUPPLEMENTARY ELECTRIC HEAT ELEMENTS ARE RATED FOR 230V/3 PHASE CURRENT, BUT WILL BE RUNNING ON 208V/3 PHASE CURRENT. THE ELECTRIC HEAT CAPACITY MBH GIVEN HAS BEEN DERATED BY 25% FOR THIS VOLTAGE DIFFERENCE. THE ELECTRIC HEATING DRY BULB TEMPERATURE RISE ALSO REFLECTS THE DERATING.

* PHP3 AND ITS ASSOCIATED WIRING, CONTROLS, DISCONNECT, DUCTWORK, ETC. ARE PART OF BID ALTERNATE #1.

VENTILATION TABULATION

UNIT DESIGNATION	ROOM NAMES	NO. OF PEOPLE	ROOM AREA SQ. FEET	OUTDOOR AIRFLOW RATE CFM/ PERSON	OUTDOOR AIRFLOW RATE CFM/FT²	MINIMUM OUTSIDE AIRFLOW CFM	OUTSIDE AIR THRU UNIT, CFM	NUMBER OF FLUSHING FIXTURES	EXHAUST AIRFLOW RATE PER FLUSHING FIXTURE	EXHAUST AIRFLOW RATE CFM/FT²	MINIMUM EXHAUST AIRFLOW CFM	EXHAUST CFM
AHU1 / EF1												
	LOBBY 1102	10	670	5	0.06	90.2						
	CORR. TO TOILETS	0	237	5	0.06	14.22						
	W. TOILET 1103	0	225	5	0.06	13.5		4	50		200	
	M. TOILET 1104	0	225	5	0.06	13.5		4	50		200	
	CORRIDOR 1114	0	954	5	0.06	57.24						
TOTAL REQUIRED						188.66					400	
PROVIDED							190					400
AHU3												
	EQUIPMENT 1111	2	1162	5	0.06	79.72						
	ELECT. 1110	0	80	5	0.06	4.8						
TOTAL REQUIRED						84.52						
PROVIDED							90					
AHU4												
	I.T. 1120	0	90	5	0.06	5.4						
	SECURITY 1121	0	48	5	0.06	2.88						
	BREAKROOM 1122	3	144	5	0.06	23.64						
	POST-PROD. 1123	25	932	10	0.12	361.84						
	BLDG. SERV. 1116	0	86	5	0.06	5.16						
TOTAL REQUIRED						398.92						
PROVIDED							400					
AHU5												
	CLASSROOM 1115	30	880	7.5	0.06	277.8						
	SOUND MIX 1117	2	138	10	0.12	36.56						
	SOUND MIX 1118	2	138	10	0.12	36.56						
TOTAL REQUIRED						350.92						
PROVIDED							355					
PHP1 & PHP2												
	SOUND STAGE 1112	100	3912	10	0.06	1234.72						
	LIGHT LOCK 1113	0	68	5	0.06	4.08						
TOTAL REQUIRED						1238.8						
PROVIDED							1250					
PHP3												
	LIGHT LOCK 1105	0	45	5	0.06	2.7						
	CINEMA 1106	75	1326	5	0.06	454.56						
	LIGHT LOCK 1107	0	45	5	0.06	2.7						
	STAIR 1108	0	150	5	0.06	9						
	PROJ BOOTH 1109	2	100	5	0.06	16						
TOTAL REQUIRED						484.96						
PROVIDED							485					
EF2												
	HOUSEKEEPING 1120		48							2	96	
	BREAKROOM 1122	3	144							0.7	100.8	
TOTAL REQUIRED											196.8	
PROVIDED												325

NOTE: THE NUMBER OF PEOPLE IS BASED ON THE OWNER'S ANTICIPATED USAGE OF THE SPACES.

SPLIT SYSTEM HP SCHEDULE

Mark	Manufacturer	Model	Description	Total Cooling Capacity	Total Heating Capacity @ 47F	System SEER	Dry CFM	Serves	Voltage/Phase/	Minimum Circuit Ampacity	Maximum Overcurrent Protection
IDU1	Mitsubishi Electric	MSZ-GL24NA	Mitsubishi Electric 9000 Btu/h, Wall Mounted, M Series Air Conditioner	9000.0 Btu/h	10900.0 Btu/h		145 to 399 CFM	Projection Booth	208 V/1	1.0 A	
IDU2	Mitsubishi Electric	MSZ-GL24NA	Mitsubishi Electric 9000 Btu/h, Wall Mounted, M Series Air Conditioner	9000.0 Btu/h	10900.0 Btu/h		145 to 399 CFM	Sound Mix 1	208 V/1	1.0 A	
IDU3	Mitsubishi Electric	MSZ-GL24NA	Mitsubishi Electric 9000 Btu/h, Wall Mounted, M Series Air Conditioner	9000.0 Btu/h	10900.0 Btu/h		145 to 399 CFM	Sound Mix 2	208 V/1	1.0 A	
IDU4	Mitsubishi Electric	MSZ-GL24NA	Mitsubishi Electric 24000 Btu/h, Wall Mounted, M Series Air Conditioner	22400.0 Btu/h	27600.0 Btu/h		388 to 738 CFM	I.T.	208 V/1	1.0 A	
ODU1	Mitsubishi Electric	MUZ-GL24NA	Mitsubishi Electric 9000 Btu/h, MUZ Series, Air-Source VRF Heat Pump	9000.0 Btu/h	10900.0 Btu/h	24.6		IDU1	208 V/1	9.0 A	15.0 A
ODU2/3	Mitsubishi Electric	MXZ-2C20NA2	Mitsubishi Electric 1.5 Ton, MXZ Series, Air-Source VRF Heat Pump	18000.0 Btu/h	22000.0 Btu/h	20		IDU2&3	208 V/1	17.2 A	20.0 A
ODU4	Mitsubishi Electric	MUZ-GL24NA	Mitsubishi Electric 24000 Btu/h, MUZ Series, Air-Source VRF Heat Pump	22400.0 Btu/h	27600.0 Btu/h	20.5		IDU4	208 V/1	17.1 A	20.0 A

DUCTLESS NOTES:
1. MITSUBISHI ELECTRIC OR APPROVED EQUALS BY DAIKIN, EMI, SANYO, OR JOHNSON CONTROLS.
2. HEATING AND COOLING CAPACITIES AT AHRI 210/240 TEST
3. PROVIDE BUILT IN CONDENSATE PUMP FOR INDOOR UNITS.
4. REFRIGERANT SHALL BE R-410A OR R-134A.
5. PROVIDE HIGH WATER SWITCH IN THE DRAIN PAN WHICH WILL TURN THE UNIT OFF IF THE DRAIN BECOMES CLOGGED.
6. MAINTAIN FILTERS IN UNITS DURING CONSTRUCTION. AT THE TIME OF OWNER ACCEPTANCE, INSTALL NEW FILTERS IF USING DISPOSABLE TYPE, OR CLEAN IF USING PERMANENT TYPE.
7. INDOOR UNIT IS POWERED BY OUTDOOR UNIT.
8. MOTOR TYPE DC INVERTER DRIVEN.

ELECTRIC UNIT HEATER

Mark	Serves	Manufacturer	Type	Model	BTU/HR	CFM	KW	Motor HP	Volts/Phase	Full Load Amps
UH1	Building Serves	Trane	Unit Heater	UHEC-032A0C0	11,200	400	3.3	1/125	208/3	9.2

UNIT HEATER NOTES:
1. MANUFACTURER: TRANE OR EQUAL BY QMARK, MARKEL OR CHROMALUX.
2. PROVIDE DISCONNECT SWITCH.
3. LINE VOLTAGE, INTERNAL THERMOSTAT.
4. PROVIDE WITH MOUNTING BRACKETS.

BECKER MORGAN GROUP
ARCHITECTURE PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
Newark, DE 19711
302.369.3700

www.beckermorgan.com

MCADAMS
CIVIL ENGINEERING
2905 MERIDIAN PARKWAY
DURHAM, NC 27713
OFFICE: 919.361.5000

WOODS ENGINEERING
STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
910-343-8007 fax 910-343-8088

SUD ASSOCIATES, P.A.
PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14050 DILIE M. DAVIS

PROJECT TITLE

UNCW

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

MECHANICAL SCHEDULES

ISSUE BLOCK

Mark	Date	Description

PROJECT NO: 2018070.01
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DIRECT DIGITAL CONTROL (DDC) SYSTEM

The DDC system shall be a complete integrated Direct Digital Control (DDC) Building Automation System (BAS). The system shall consist of a high-speed, peer-to-peer network of DDC controllers and a web-based operator interface. The system shall be robust, flexible, expandable, easy to use, and easily accessible.

Provide all labor, materials, special tools, hardware, software, programming, etc. required for the functional turn-key operation of the complete and fully functional Direct Digital Control Building Automation System to accomplish control and monitoring of the HVAC equipment as shown on the drawings and as indicated in the Sequence of Operation and Input/Output Point Schedules.

SEQUENCE OF OPERATION

All schedules and temperature, humidity and CO2 setpoints shall be adjustable by facility personnel from the control panel and remotely located central site. No such parameters, which may need adjustment, may be imbedded in the programming.

Packaged Heat Pump System Control (PHP1 and PHP2) (Tandem Systems)

PHP1 and PHP2 are constant volume packaged heat pump units. The units will operate as a system to serve the Sound Stage. The units will operate in tandem in a lead/lag configuration.

Each unit is equipped with economizer/return air dampers, relief air damper, relief air fan, air filter, cooling/heating DX coil, auxiliary electric heat, and supply air fan.

Run Conditions - Scheduled:
The system shall run according to a user definable time schedule in the following modes:

- Occupied Mode: The unit shall maintain
  - A 75°F (adj.) cooling setpoint
  - A 70°F (adj.) heating setpoint
  - A 60% RH (adj.) high humidity setpoint
  - A 45% RH (adj.) low humidity setpoint
- Unoccupied Mode (night setback): The unit shall maintain:
  - A 80°F (adj.) cooling setpoint
  - A 60°F (adj.) heating setpoint
  - A 60% RH (adj.) high humidity setpoint
  - A 45% RH (adj.) low humidity setpoint

Alarms shall be provided as follows:

- High Space Temp: If the zone temperature is greater than the cooling setpoint by a user definable amount (adj.).
- Low Space Temp: If the zone temperature is less than the heating setpoint by a user definable amount (adj.).
- High Space Humidity: If the zone humidity is greater than 65% (adj.).

Tandem Sequence:
The program shall be capable of operating the two heat pumps as a single system as follows:

1. One of the heat pumps will be designated as the lead unit and one will be designated as the lag unit.
2. The units shall be rotated from lead to lag on a scheduled basis.
3. The unit designated as the lag unit shall operate in tandem with the lead unit.
4. The program shall allow the operation of the lead and lag units at the same time based upon load requirements. The program shall provide the option to run the lead unit fan continuously or cycled with the cooling and heating. The lag unit fan shall be cycled with cooling and heating. The lag unit will operate 1°F above/below the lead units last stage of cooling or heating.

System / Roll-up Door Interlock:
The units shall be interlocked with the roll-up door in the space to prevent them from operating if the door is open.

System Unoccupied Override:
A timed local override control shall allow an occupant to override the schedule and place the system into an occupied mode for an adjustable period of time. At the expiration of this time, control of the system shall automatically return to the schedule.

Emergency Shutdown:
The unit shall shut down and generate an alarm upon receiving an emergency shutdown signal from the fire alarm.

High Static Shutdown:
The unit shall shut down and generate an alarm upon receiving a high static shutdown signal.

System Optimal Start:
The system shall use an optimal start algorithm for morning start-up. This algorithm shall minimize the unoccupied warm-up or cool-down period while still achieving comfort conditions by the start of scheduled occupied period. The start time shall automatically adjust based on changes in outside air temperature, zone temperatures and prior history.

Supply Fan:
The supply fan shall run anytime the unit is commanded to run, unless shutdown on safeties. To prevent short cycling, the supply fan shall have a user definable (adj.) minimum runtime.

Alarms shall be provided as follows:

- Supply Fan Failure: Commanded on, but the status is off.

Relief Air Fan:
The relief air fan shall operate when its associated heat pump is in the economizer mode and the economizer damper is operating, unless shutdown on safeties. The relief fan shall not energize without its heat pump being in operation. If the heat pump shuts down for any reason, the associated relief fan shall also shut down.

Alarms shall be provided as follows:

- Relief Air Fan Failure: Commanded on, but the status is off.

Heat/Cool Changeover:
Automatic heat/cool changeover shall be achieved by controlling the reversing valve according to the space temperature.

Cooling Control:
Upon a rise in space temperature above the active cooling setpoint for 15 seconds, the compressor shall start and the reversing valve shall be energized. When the space temperature falls 1°F below the active cooling setpoint for 15 seconds, the compressor shall stop. The compressor output shall have a 5-minute delay off. The cooling cycle shall be disabled if the fan proof option is enabled and the fan proof is not present.

If more cooling is required than can be provided by the lead unit, the program shall similarly sequence on the lag unit.

The cooling shall be enabled whenever:

- Outside air temperature is greater than 60°F (adj.).
- AND the economizer is disabled or fully open.
- AND the supply fan status is on.

Heating Control:
Upon a fall in space temperature below the active heating setpoint for 15 seconds, the compressor shall start and the reversing valve shall not energize. If the space temperature continues to fall to 1°F below the active heating setpoint for 10 minutes (adj), the auxiliary electric heat shall start. When the space temperature rises above the active heating setpoint for 15 seconds, the auxiliary heat shall stop. When the space temperature rises to 1°F above the active heating setpoint for 15 seconds, the compressor shall stop and the compressor shall stop and the reversing valve shall be returned to the normal position. During the heat pump heating cycle, the unit's on-board controls shall control the defrost cycle. The compressor output shall have a 5-minute delay off. The heating cycle shall be disabled if the fan proof option is enabled and the fan proof is not present.

If more heating is required than can be provided by the lead unit, the program shall similarly sequence on the lag unit.

The heating shall be enabled whenever:

- Outside air temperature is less than 60°F (adj.).
- AND the space temperature is below setpoint.
- AND the supply fan status is on.

Damper Control:
The units have economizer outside/return air and relief air dampers.

- The economizer outside and return air dampers shall maintain a minimum adjustable open position during occupied periods to provide minimum OA requirements.
- The remote relief air damper shall be enabled when the unit supply air fan status is proven. The damper shall modulate to maintain space static pressure setpoint of .05 in. H2O (adj.).
- The relief air damper associated with a relief air fan shall be open when the unit is cooling economizing and the relief air fan is operating.
- The economizer outside air damper, and relief air dampers shall close and the return air damper shall open when the unit is off. During unoccupied periods including optimized cool-down/warm-up periods, the economizer OA dampers shall be kept closed except when the OA enthalpy is suitable for cooling economizing.
- Economizer Control: If the system is in the cooling mode and the average space temperature becomes greater than one degree below setpoint and the OA enthalpy is less than the economizer enthalpy setpoint (27.5 BTU/lb. of dry air) (adj.) and the outside air temperature is less than the return air temperature, the outside (economizer), and return air dampers shall modulate to provide "free cooling" by mixing outside and return air as necessary to maintain the discharge setpoint. While under economizer control minimum discharge air temperature shall be 52°F.

The economizer outdoor air dampers, and relief air dampers shall close, and the return air damper shall open whenever:

- Mixed air temperature drops below 40°F (adj.)
- OR on loss of supply fan status.

Demand Control Ventilation - Carbon Dioxide (CO2) Control:

When in the occupied mode, the controller shall monitor space CO2 levels. The controller shall modulate the economizer damper open on rising CO2 concentrations, overriding normal damper operation to maintain a CO2 setpoint of 900 ppm (adj.). When under CO2 control, the outside air flow shall not exceed the Max. Design OA CFM.

Alarms shall be provided as follows:

- High Zone Carbon Dioxide Concentration: If the highest zone CO2 concentration is greater than 1500 ppm (adj.).

Mixed Air Temperature:
The controller shall monitor the mixed air temperature and use as required for economizer control.

Alarms shall be provided as follows:

- High Mixed Air Temp: If the mixed air temperature is greater than 90°F (adj.).
- Low Mixed Air Temp: If the mixed air temperature is less than 40°F (adj.).

Mixed Air Humidity:
The controller shall monitor the mixed air humidity.

Supply Air Temperature:
The controller shall monitor the supply air temperature.

Alarms shall be provided as follows:

- High Supply Air Temp: If the supply air temperature is greater than 90°F (adj.).
- Low Supply Air Temp: If the supply air temperature is less than 45°F (adj.).

Space Air Humidity:
The controller shall monitor the space air humidity.

Alarms shall be provided as follows:

- High Space Air Humidity: If the space air humidity is greater than 65% (adj.).

Space Static Pressure Control:
The controller shall measure the space static pressure and use as required for space static pressure reset.

Alarms shall be provided as follows:

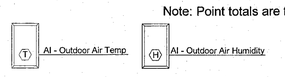
- High Space Static Pressure: If the space static pressure is .05 (adj.) greater than setpoint.
- Low Space Static Pressure: If the space static pressure is .05 (adj.) less than setpoint.

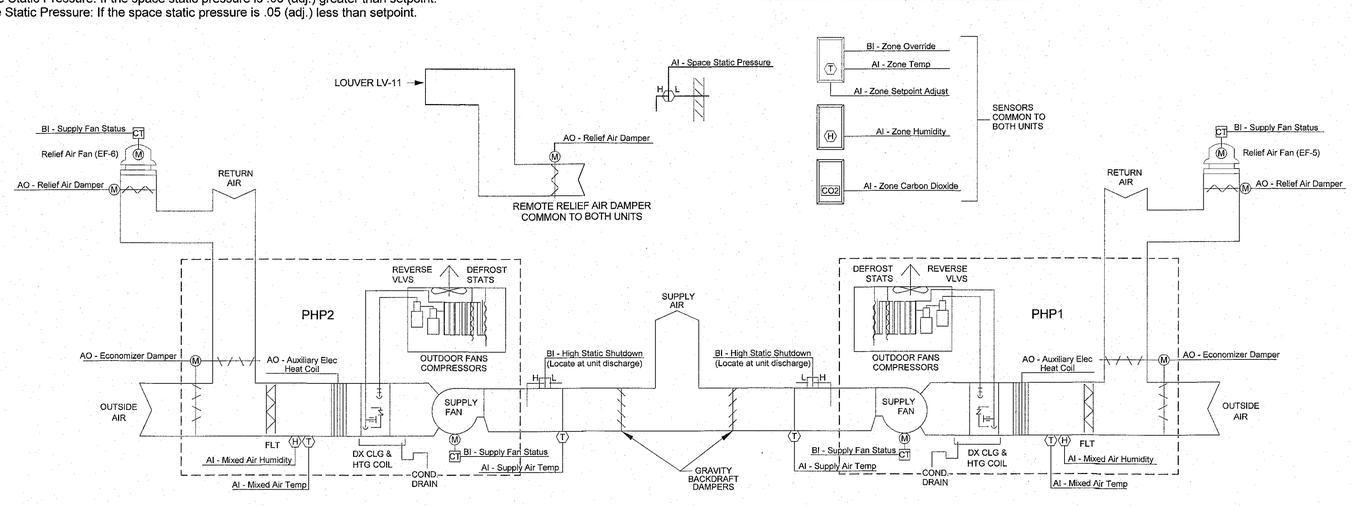
Assistant Director's Box:

The Assistant Director's (AD) Box is a central location in the Sound Stage for controlling the house lights, "Quiet – Recording" lights, and for temporarily shutting off the HVAC system. Switches shall be provided in this box which will tell the BMS to shut off PHP1, PHP2, EF-5, and EF-6. The BMS shall display the status during shut down as "Turned off by AD". If these systems are not manually turned back on after 2 hours (adjustable), the BMS shall register an alarm. If they are not turned on after an additional 2 hours (adjustable), they shall be returned to automatic control.

PACKAGED HEAT PUMP SYSTEM CONTROL (PHP1 & PHP2) (Tandem Control)	Hardware Points				Software Points					
Point Name	AI	AO	BI	BO	AV	BV	Sched	Trend	Alarm	Show On Graphic
Outside Air Humidity (Universal Point)	X							X		X
Outside Air Temp (Universal Point)	X							X		X
Space Temp (Common to Both Units)	X							X		X
Space Humidity (Common to Both Units)	X							X		X
Space CO2 (Common to Both Units)	X							X		X
Mixed Air Temp	X							X		X
Mixed Air Humidity	X							X		X
Supply Air Temp	X							X		X
Supply Air Static Pressure	X							X		X
Economizer Outside/Return Air Damper Position	X							X		X
Space Static Pressure	X							X		X
Economizer Outside/Return Air Damper		X								
Relief Air Damper		X								
High Static Shutdown			X					X	X	X
Supply Fan Status			X					X		X
Relief Fan Status			X					X		X
Supply Fan Start/Stop				X				X		X
Relief Fan Start/Stop				X				X		X
Space Air Humidity Setpoint					X			X		X
Space Temp Setpoint					X			X		X
Mixed Air Temp Setpoint					X			X		X
Zone Carbon Dioxide PPM Setpoint					X			X		X
Schedule							X			
Supply Fan Failure									X	
Relief Fan Failure									X	
High Space Humidity									X	
High Mixed Air Temp									X	
Low Mixed Air Temp									X	
High Supply Air Temp									X	
Low Supply Air Temp									X	
High Supply Air Static Pressure									X	
Low Supply Air Static Pressure									X	
High Zone Carbon Dioxide Concentration									X	
High Space Static Pressure									X	
Low Space Static Pressure									X	
	16	4	6	4	4	0	2	31	22	31
	Total Hardware (30)				Total Software (59)					

Note: Point totals are for both units as a system.





PACKAGED HEAT PUMP SYSTEM CONTROL (TYPICAL FOR PHP-1 & PHP-2) (TANDEM SYSTEMS)
No Scale

BECKER MORGAN GROUP
ARCHITECTURE PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
Newarrk, DE 19711
302.369.3700

www.beckermorgan.com

MCADAMS
CIVIL ENGINEERING
2905 MERIDIAN PARKWAY
DURHAM, NC 27713
OFFICE: 919.361.5000

WOODS ENGINEERING
STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
910-343-8007 fax 910-343-8088

SUD ASSOCIATES, P.A.
PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14050 DIXIE M. DAVIS 9/23/19

PROJECT TITLE

UNCW

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

DDC CONTROLS, PACKAGED HEAT PUMP CONTROL (PHP1 & PHP2)

ISSUE BLOCK

Mark	Date	Description

PROJECT NO: 2018070.01
DATE: 09/23/2019
SCALE: 12" = 1'-0"
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Packaged Heat Pump System Control (PHP3)

PHP3 is a constant volume packaged heat pump unit. The unit is equipped with economizer/return air dampers, relief air damper, relief air fan, air filter, cooling/heating DX coil, auxiliary electric heat, and supply air fan.

Run Conditions - Scheduled:
The system shall run according to a user definable time schedule in the following modes:

- Occupied Mode: The unit shall maintain
  - A 75°F (adj.) cooling setpoint
  - A 70°F (adj.) heating setpoint
  - A 60% RH (adj.) high humidity setpoint
  - A 45% RH (adj.) low humidity setpoint
- Unoccupied Mode (night setback): The unit shall maintain:
  - A 80°F (adj.) cooling setpoint
  - A 60°F (adj.) heating setpoint
  - A 60% RH (adj.) high humidity setpoint
  - A 45% RH (adj.) low humidity setpoint

Alarms shall be provided as follows:

- High Space Temp: If the zone temperature is greater than the cooling setpoint by a user definable amount (adj.).
- Low Space Temp: If the zone temperature is less than the heating setpoint by a user definable amount (adj.).
- High Space Humidity: If the zone humidity is greater than 65% (adj.).

System Unoccupied Override:
A timed local override control shall allow an occupant to override the schedule and place the system into an occupied mode for an adjustable period of time. At the expiration of this time, control of the system shall automatically return to the schedule.

Emergency Shutdown:
The unit shall shut down and generate an alarm upon receiving an emergency shutdown signal from the fire alarm.

High Static Shutdown:
The unit shall shut down and generate an alarm upon receiving a high static shutdown signal.

System Optimal Start:
The system shall use an optimal start algorithm for morning start-up. This algorithm shall minimize the unoccupied warm-up or cool-down period while still achieving comfort conditions by the start of scheduled occupied period. The start time shall automatically adjust based on changes in outside air temperature, zone temperatures and prior history.

Supply Fan:
The supply fan shall run anytime the unit is commanded to run, unless shutdown on safeties. To prevent short cycling, the supply fan shall have a user definable (adj.) minimum runtime.

Alarms shall be provided as follows:

- Supply Fan Failure: Commanded on, but the status is off.

Relief Air Fan:
The relief air fan shall operate when the heat pump is in the economizer mode and the economizer damper is operating, unless shutdown on safeties. The relief fan shall not energize without the heat pump being in operation. If the heat pump shuts down for any reason, the relief fan shall also shut down.

Alarms shall be provided as follows:

- Relief Air Fan Failure: Commanded on, but the status is off.

Heat/Cool Changeover:
Automatic heat/cool changeover shall be achieved by controlling the reversing valve according to the space temperature.

Cooling Control:
Upon a rise in space temperature above the active cooling setpoint for 15 seconds, the compressor shall start and the reversing valve shall be energized. When the space temperature falls 1˚F below the active cooling setpoint for 15 seconds, the compressor shall stop. The compressor output shall have a 5-minute delay off. The cooling cycle shall be disabled if the fan proof option is enabled and the fan proof is not present.

The cooling shall be enabled whenever:

- Outside air temperature is greater than 60°F (adj.).
- AND the economizer is disabled or fully open.
- AND the supply fan status is on.

Heating Control:
Upon a fall in space temperature below the active heating setpoint for 15 seconds, the compressor shall start and the reversing valve shall not energize. If the space temperature continues to fall to 1 ˚F below the active heating setpoint for 10 minutes (adj), the auxiliary electric heat shall start. When the space temperature rises above the active heating setpoint for 15 seconds, the auxiliary heat shall stop. When the space temperature rises to 1˚F above the active heating setpoint for 15 seconds, the compressor shall stop and the compressor shall stop and the reversing valve shall be returned to the normal position. During the heat pump heating cycle, the unit's on-board controls shall control the defrost cycle. The compressor output shall have a 5-minute delay off. The heating cycle shall be disabled if the fan proof option is enabled and the fan proof is not present.

The heating shall be enabled whenever:

- Outside air temperature is less than 60°F (adj.).
- AND the space temperature is below setpoint.
- AND the supply fan status is on.

Damper Control:
The unit has economizer outside/return air and relief air dampers.

- The economizer outside and return air dampers shall maintain a minimum adjustable open position during occupied periods to provide minimum OA requirements.
- The remote relief air damper shall be enabled when the unit supply air fan status is proven. The damper shall modulate to maintain space static pressure setpoint of .05 in. H2O (adj.).
- The relief air damper associated with a relief air fan shall be open when the unit is cooling economizing and the relief air fan is operating.
- The economizer outside air damper, and relief air dampers shall close and the return air damper shall open when the unit is off. During unoccupied periods including optimized cool-down/warm-up periods, the economizer OA dampers shall be kept closed except when the OA enthalpy is suitable for cooling economizing.
- Economizer Control: If the system is in the cooling mode and the average space temperature becomes greater than one degree below setpoint and the OA enthalpy is less than the economizer enthalpy setpoint (27.5 BTU/lb. of dry air) (adj.) and the outside air temperature is less than the return air temperature, the outside (economizer), and return air dampers shall modulate to provide "free cooling" by mixing outside and return air as necessary to maintain the discharge setpoint. While under economizer control minimum discharge air temperature shall be 52°F.

The economizer outdoor air dampers, and relief air dampers shall close, and the return air damper shall open whenever:

- Mixed air temperature drops below 40°F (adj.)
- OR on loss of supply fan status.

Demand Control Ventilation - Carbon Dioxide (CO2) Control:
When in the occupied mode, the controller shall monitor space CO2 levels. The controller shall modulate the economizer damper open on rising CO2 concentrations, overriding normal damper operation to maintain a CO2 setpoint of 900 ppm (adj.). When under CO2 control, the outside air flow shall not exceed the Max. Design OA CFM.

Alarms shall be provided as follows:

- High Zone Carbon Dioxide Concentration: If the highest zone CO2 concentration is greater than 1500 ppm (adj.).

Mixed Air Temperature:
The controller shall monitor the mixed air temperature and use as required for economizer control.

Alarms shall be provided as follows:

- High Mixed Air Temp: If the mixed air temperature is greater than 90°F (adj.).
- Low Mixed Air Temp: If the mixed air temperature is less than 40°F (adj.).

Mixed Air Humidity:
The controller shall monitor the mixed air humidity.

Supply Air Temperature:
The controller shall monitor the supply air temperature.

Alarms shall be provided as follows:

- High Supply Air Temp: If the supply air temperature is greater than 90°F (adj.).
- Low Supply Air Temp: If the supply air temperature is less than 45°F (adj.).

Space Air Humidity:
The controller shall monitor the space air humidity.

Alarms shall be provided as follows:

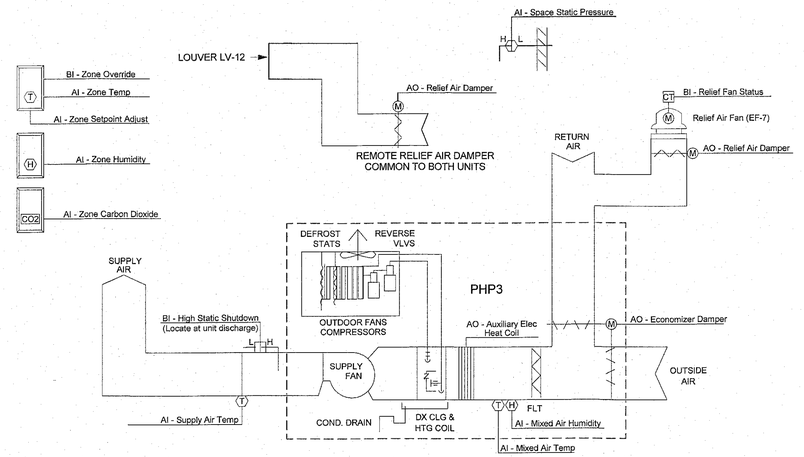
- High Space Air Humidity: If the space air humidity is greater than 65% (adj.).

Space Static Pressure Control:
The controller shall measure the space static pressure and use as required for space static pressure reset.

Alarms shall be provided as follows:

- High Space Static Pressure: If the space static pressure is .05 (adj.) greater than setpoint.
- Low Space Static Pressure: If the space static pressure is .05 (adj.) less than setpoint.

PACKAGED HEAT PUMP CONTROL (PHP3)	Hardware Points				Software Points					
Point Name	AI	AO	BI	BO	AV	BV	Sched	Trend	Alarm	Show On Graphic
Space Temp	X							X		X
Space Humidity	X							X		X
Space CO2	X							X		X
Mixed Air Temp	X							X		X
Mixed Air Humidity	X							X		X
Supply Air Temp	X							X		X
Supply Air Static Pressure	X							X		X
Economizer Outside/Return Air Damper Position	X							X		X
Economizer Outside/Return Air Damper Position	X							X		X
Space Static Pressure		X						X		X
Relief Air Damper		X						X		X
High Static Shutdown			X					X		X
Supply Fan Status			X					X		X
Relief Fan Status			X					X		X
Supply Fan Start/Stop				X				X		X
Relief Fan Start/Stop				X				X		X
Space Air Humidity Setpoint					X			X		X
Space Temp Setpoint					X			X		X
Mixed Air Temp Setpoint					X			X		X
Zone Carbon Dioxide PPM Setpoint					X			X		X
Schedule							X			
Supply Fan Failure									X	
Relief Fan Failure									X	
High Space Humidity									X	
High Mixed Air Temp									X	
Low Mixed Air Temp									X	
High Supply Air Temp									X	
Low Supply Air Temp									X	
High Supply Air Static Pressure									X	
Low Supply Air Static Pressure									X	
High Zone Carbon Dioxide Concentration									X	
High Space Static Pressure									X	
Low Space Static Pressure									X	
	9	2	3	2	4	0	1	20	12	20
	Total Hardware (16)				Total Software (37)					



PACKAGED HEAT PUMP SYSTEM CONTROL (PHP-3)
No Scale

BECKER MORGAN GROUP
ARCHITECTURE PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
Newark, DE 19711
302.369.3700

www.beckermorgan.com

MCADAMS
CIVIL ENGINEERING
2905 MERIDIAN PARKWAY
DURHAM, NC 27713
OFFICE: 919.361.5000

WOODS ENGINEERING
STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
910-343-8007 fax 910-343-8088

SUD ASSOCIATES, P.A.
PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14050 DIXIE M. DAVIS ENGINEERING

PROJECT TITLE

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

PACKAGED HEAT PUMP SYSTEM CONTROL (PHP3)

ISSUE BLOCK

Mark	Date	Description

PROJECT NO: 2018070.01
DATE: 09/23/2019
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Fire Alarm Monitoring

Fire Alarm

The DDC System shall monitor the Fire Alarm System for the Fire Alarm Status, Supervisory Status and Trouble Status via dry contacts in the Fire Alarm System. The DDC System will use these inputs as a notification of Fire Alarm Conditions and will generate HVAC alarms to the BAS.

Fire Alarm Monitoring	Hardware Points				Software Points					
Point Name	AI	AO	BI	BO	AV	BV	Sched	Trend	Alarm	Show On Graphic
Fire Alarm Status			X						X	
Supervisory Status			X						X	
Trouble Status			X						X	
Totals	0	0	3	0	0	0	0	0	3	
	Total Hardware (3)				Total Software (3)					

Split Heat Pump System Control (AHU4/CU4)

AHU4/CU4 is a constant volume split heat pump system. The system is comprised of the outdoor condensing unit (compressor, fan, and coil), and the indoor air handling unit (economizer/return air dampers, air filter, cooling/heating DX coil, auxiliary electric heat, and supply air fan.

The system is also equipped with a remote relief air fan.

Run Conditions - Scheduled:
The system shall run according to a user definable time schedule in the following modes:

- Occupied Mode: The unit shall maintain
  - A 75°F (adj.) cooling setpoint
  - A 70°F (adj.) heating setpoint
  - A 60% RH (adj.) high humidity setpoint
  - A 45% RH (adj.) low humidity setpoint

- Unoccupied Mode (night setback): The unit shall maintain:
  - A 80°F (adj.) cooling setpoint
  - A 60°F (adj.) heating setpoint
  - A 60% RH (adj.) high humidity setpoint
  - A 45% RH (adj.) low humidity setpoint

Alarms shall be provided as follows:

- High Space Temp: If the zone temperature is greater than the cooling setpoint by a user definable amount (adj.).
- Low Space Temp: If the zone temperature is less than the heating setpoint by a user definable amount (adj.).
- High Space Humidity: If the zone humidity is greater than 65% (adj.).

System Unoccupied Override:
A timed local override control shall allow an occupant to override the schedule and place the system into an occupied mode for an adjustable period of time. At the expiration of this time, control of the system shall automatically return to the schedule.

Emergency Shutdown:
The unit shall shut down and generate an alarm upon receiving an emergency shutdown signal from the fire alarm.

System Optimal Start:
The system shall use an optimal start algorithm for morning start-up. This algorithm shall minimize the unoccupied warm-up or cool-down period while still achieving comfort conditions by the start of scheduled occupied period. The start time shall automatically adjust based on changes in outside air temperature, zone temperatures and prior history.

Supply Fan:
The supply fan shall run anytime the unit is commanded to run, unless shutdown on safeties. To prevent short cycling, the supply fan shall have a user definable (adj.) minimum runtime.

Alarms shall be provided as follows:

- Supply Fan Failure: Commanded on, but the status is off.

Relief Air Fan:
The relief air fan shall operate when the heat pump is in the economizer mode and the economizer damper is operating, unless shutdown on safeties. The relief fan shall not energize without the heat pump being in operation. If the heat pump shuts down for any reason, the relief fan shall also shut down.

Alarms shall be provided as follows:

- Relief Air Fan Failure: Commanded on, but the status is off.

Heat/Cool Changeover:
Automatic heat/cool changeover shall be achieved by controlling the reversing valve according to the space temperature.

Cooling Control:
Upon a rise in space temperature above the active cooling setpoint for 15 seconds, the compressor shall start and the reversing valve shall be energized. When the space temperature falls 1°F below the active cooling setpoint for 15 seconds, the compressor shall stop. The compressor output shall have a 5-minute delay off. The cooling cycle shall be disabled if the fan proof option is enabled and the fan proof is not present.

The cooling shall be enabled whenever:

- Outside air temperature is greater than 60°F (adj.).
- AND the economizer is disabled or fully open.
- AND the supply fan status is on.

Heating Control:
Upon a fall in space temperature below the active heating setpoint for 15 seconds, the compressor shall start and the reversing valve shall not energize. If the space temperature continues to fall to 1°F below the active heating setpoint for 10 minutes (adj), the auxiliary electric heat shall start. When the space temperature rises above the active heating setpoint for 15 seconds, the auxiliary heat shall stop. When the space temperature rises to 1°F above the active heating setpoint for 15 seconds, the compressor shall stop and the compressor shall stop and the reversing valve shall be returned to the normal position. During the heat pump heating cycle, the unit's on-board controls shall control the defrost cycle. The compressor output shall have a 5-minute delay off. The heating cycle shall be disabled if the fan proof option is enabled and the fan proof is not present.

The heating shall be enabled whenever:

- Outside air temperature is less than 60°F (adj.).
- AND the space temperature is below setpoint.
- AND the supply fan status is on.

Damper Control:
The unit has economizer outside/return air and relief air dampers.

- The economizer outside and return air dampers shall maintain a minimum adjustable open position during occupied periods to provide minimum OA requirements.
- The relief air damper shall be open when the unit is cooling economizing.
- The economizer outside air damper, and relief air damper shall close and the return air damper shall open when the unit is off. During unoccupied periods including optimized cool-down/warm-up periods, the economizer OA dampers shall be kept closed except when the OA enthalpy is suitable for cooling economizing.
- Economizer Control: If the system is in the cooling mode and the average space temperature becomes greater than one degree below setpoint and the OA enthalpy is less than the economizer enthalpy setpoint (27.5 BTU/lb. of dry air) (adj.) and the outside air temperature is less than the return air temperature, the outside (economizer), and return air dampers shall modulate to provide "free cooling" by mixing outside and return air as necessary to maintain the discharge setpoint. While under economizer control minimum discharge air temperature shall be 52°F.

The economizer outdoor air dampers, and relief air damper shall close, and the return air damper shall open whenever:

- Mixed air temperature drops below 40°F (adj.)
- OR on loss of supply fan status.

Mixed Air Temperature:
The controller shall monitor the mixed air temperature and use as required for economizer control.

Alarms shall be provided as follows:

- High Mixed Air Temp: If the mixed air temperature is greater than 90°F (adj.).
- Low Mixed Air Temp: If the mixed air temperature is less than 40°F (adj.).

Mixed Air Humidity:
The controller shall monitor the mixed air humidity.

Supply Air Temperature:
The controller shall monitor the supply air temperature.

Alarms shall be provided as follows:

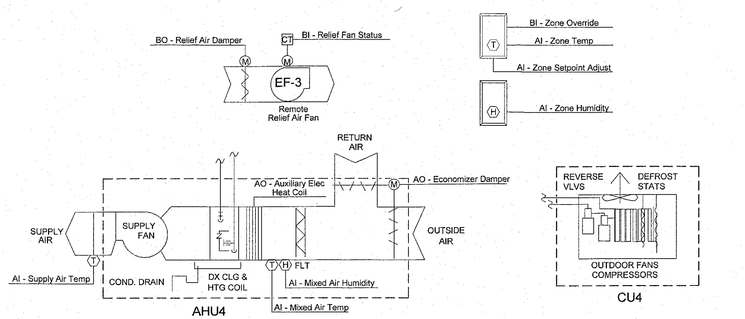
- High Supply Air Temp: If the supply air temperature is greater than 90°F (adj.).
- Low Supply Air Temp: If the supply air temperature is less than 45°F (adj.).

Space Air Humidity:
The controller shall monitor the space air humidity.

Alarms shall be provided as follows:

- High Space Air Humidity: If the space air humidity is greater than 65% (adj.).

SPLIT HEAT PUMP SYSTEM CONTROL (AHU4/CU4)	Hardware Points				Software Points					
Point Name	AI	AO	BI	BO	AV	BV	Sched	Trend	Alarm	Show On Graphic
Space Temp	X							X		X
Space Humidity	X							X		X
Space CO2	X							X		X
Mixed Air Temp	X							X		X
Mixed Air Humidity	X							X		X
Supply Air Temp	X							X		X
Supply Air Static Pressure	X							X		X
Economizer Outside/Return Air Damper Position	X							X		X
Economizer Outside/Return Air Damper		X						X		X
Relief Air Damper		X						X		X
High Static Shutdown			X					X	X	X
Supply Fan Status			X					X		X
Relief Fan Status			X					X		X
Supply Fan Start/Stop				X				X		X
Relief Fan Start/Stop				X				X		X
Space Air Humidity Setpoint					X			X		X
Space Temp Setpoint					X			X		X
Mixed Air Temp Setpoint					X			X		X
Schedule							X			
Supply Fan Failure									X	
Relief Fan Failure									X	
High Space Humidity									X	
High Mixed Air Temp									X	
Low Mixed Air Temp									X	
High Supply Air Temp									X	
Low Supply Air Temp									X	
High Supply Air Static Pressure									X	
Low Supply Air Static Pressure									X	
	8	2	3	2	3	0	1	18	10	18
	Total Hardware (15)				Total Software (32)					



SPLIT HEAT PUMP SYSTEM CONTROL (AHU4/CU4)
No Scale

BECKER MORGAN GROUP
ARCHITECTURE PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
Newark, DE 19711
302.369.3700

www.beckermorgan.com

MCADAMS
CIVIL ENGINEERING
2905 MERIDIAN PARKWAY
DURHAM, NC 27713
OFFICE: 919.361.5000

WOODS ENGINEERING
STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
910-343-8007 fax 910-343-8088

SUD ASSOCIATES, P.A.
PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14050 DYLAN M. DAVIS 9/23/19

PROJECT TITLE

UNCW

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

SPLIT HEAT PUMP SYSTEM CONTROL (AHU4/CU4) AND FIRE ALARM MONITORING

ISSUE BLOCK

Mark	Date	Description

PROJECT NO: 2018070.01
DATE: 09/23/2019
SCALE: 12" = 1'-0"
DRAWN BY: MJS | PROJ MGR: IS

M605

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Water Flow Meter

Water Meter:
The controller shall monitor the water meter for water consumption on a continual basis. These values shall be made available to the system at all times.

Alarm shall be generated as follows:

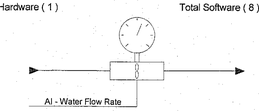
- Meter Failure: Sensor reading indicates a loss of signal from the water meter.

Peak Demand History:
The controller shall monitor and record the peak (high and low) demand readings from the water meter. These readings shall be recorded on a daily, month-to-date, and year-to-date basis.

Usage History:
The controller shall monitor and record water meter readings so as to provide a water consumption history. Usage readings shall be recorded on a daily, month-to-date, and year-to-date basis.

WATER FLOW METER	Hardware Points				Software Points					
Point Name	AI	AO	BI	BO	AV	BV	Sched	Trend	Alarm	Show On Graphic
Water Flow Rate	X									
Demand								X		X
Peak Today								X		X
Peak Month-to-Date								X		X
Peak Year-to-Date								X		X
Usage Today								X		X
Usage Month-to-Date								X		X
Usage Year-to-Date								X		X
Meter Failure									X	
Totals	1	0	0	0	0	0	0	7	1	7

Total Hardware (1) Total Software (8)



WATER FLOW METER
NO SCALE

Split System Heat Pump Control (ODU1 / IDU1, ODU2 / IDU2, IDU3 & IDU4)

The split heat pump systems consist of an outdoor condensing unit and associated indoor terminal units. ODU1 has one indoor unit (IDU1), and ODU2 has three associated indoor units (IDU2, IDU3 & IDU4).

The heat pump systems will be scheduled through the DDC system, and controlled locally by thermostats furnished with the systems from the manufacturer.

Run Conditions - Scheduled:
The system shall run according to a user definable time schedule.

System Unoccupied Override:
A timed local override control shall allow an occupant to override the schedule and place the system into an occupied mode for an adjustable period of time. At the expiration of this time, control of the system shall automatically return to the schedule.

Zone Temperature:
The DDC System shall monitor the zone temperature.

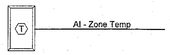
Alarms shall be provided as follows:

- High Zone Temperature: If the zone temperature is greater than the cooling setpoint by a user definable amount (adj.).

Low Zone Temperature: If the zone temperature is less than the heating setpoint by a user definable amount (adj.).

SPLIT SYSTEM HEAT PUMP CONTROL (TYPICAL FOR ODU1/IDU1, ODU2/IDU2, 3 & 4)	Hardware Points				Software Points					
Point Name	AI	AO	BI	BO	AV	BV	Sched	Trend	Alarm	Show On Graphic
System Start/Stop				X				X		X
Schedule							X			
Zone Temp	X							X		X
High Zone Temp									X	
Low Zone Temp									X	
Totals	1	0	0	1	0	0	1	2	2	2

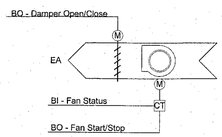
Total Hardware (2) Total Software (5)



SPLIT SYSTEM HEAT PUMP MONITORING (ODU1/IDU1, ODU2/IDU2, 3, & 4)
NO SCALE

Exhaust Fan Control	Hardware Points				Software Points					
Point Name	AI	AO	BI	BO	AV	BV	Sched	Trend	Alarm	Sho w On Graphic
Fan Status			X					X		X
Fan Start/Stop				X				X		X
Damper Open/Close				X				X		X
Schedule							X			
Fan Failure									X	X
Fan in Hand									X	
Fan Runtime Exceeded									X	
Totals	0	0	1	2	0	0	1	3	3	4

Total Hardware (3) Total Software (7)



EXHAUST FAN CONTROL - EF-1, EF-2 & EF-4
No Scale

Exhaust Fan Control - EF-1, EF-2 & EF-4
Run Conditions - Scheduled:
The fan shall run according to a user definable schedule. EF-1 schedule shall match AHU-1 schedule. EF-2 schedule shall match AHU-4 schedule. EF-4 schedule shall match AHU-5 schedule.

Fan:
The fan shall have a user definable (adj.) minimum runtime.

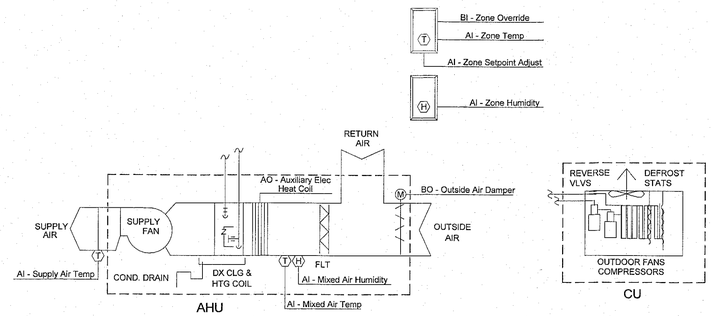
Fan Status:
The controller shall monitor the fan status.
Alarms shall be provided as follows:
- Fan Failure: Commanded on, but the status is off.
- Fan in Hand: Commanded off, but the status is on.
- Fan Runtime Exceeded: Fan status runtime exceeds a user definable limit (adj.).

Damper:
The damper shall open whenever the fan is called to operate.

Damper Status:
The controller shall monitor the damper position.
Alarms shall be provided as follows:
- Damper Failure: Commanded open, but closed or commanded closed but open.

SPLIT HEAT PUMP SYSTEM CONTROL (Typical for AHU1/CU1, AHU3/CU3 & AHU5/CU5)	Hardware Points				Software Points					
Point Name	AI	AO	BI	BO	AV	BV	Sched	Trend	Alarm	Show On Graphic
Space Temp	X							X		X
Space Humidity	X							X		X
Supply Air Temp	X							X		X
Outside Air Damper Position	X							X		X
Outside Air Damper				X				X		X
Supply Fan Status			X					X		X
Supply Fan Start/Stop				X				X		X
Space Temp Setpoint					X			X		X
Schedule							X			
Supply Fan Failure									X	
High Space Humidity									X	
High Supply Air Temp									X	
Low Supply Air Temp									X	
	4	0	1	2	1	0	1	8	4	8

Total Hardware (7) Total Software (14)



SPLIT HEAT PUMP SYSTEM CONTROL (TYPICAL OF AHU1/CU1, AHU-3/CU3 & AHU5/CU5)
No Scale

Split Heat Pump System Control (Typical of AHU1/CU1, AHU3/CU3 and AHU5/CU5)

AHU1/CU1, AHU3/CU3 and AHU5/CU5 are constant volume split heat pump systems. The systems are comprised of an outdoor condensing unit (compressor, fan, and coil), and an indoor air handling unit, return air dampers, air filter, cooling/heating DX coil, auxiliary electric heat, and supply air fan.

Run Conditions - Scheduled:
The system shall run according to a user definable time schedule in the following modes:

- Occupied Mode: The unit shall maintain
  - A 75°F (adj.) cooling setpoint
  - A 70°F (adj.) heating setpoint
  - A 60% RH (adj.) high humidity setpoint
  - A 45% RH (adj.) low humidity setpoint
- Unoccupied Mode (night setback): The unit shall maintain:
  - A 80°F (adj.) cooling setpoint
  - A 60°F (adj.) heating setpoint
  - A 60% RH (adj.) high humidity setpoint
  - A 45% RH (adj.) low humidity setpoint

Alarms shall be provided as follows:

- High Space Temp: If the zone temperature is greater than the cooling setpoint by a user definable amount (adj.).
- Low Space Temp: If the zone temperature is less than the heating setpoint by a user definable amount (adj.).
- High Space Humidity: If the zone humidity is greater than 65% (adj.).

System Unoccupied Override:
A timed local override control shall allow an occupant to override the schedule and place the system into an occupied mode for an adjustable period of time. At the expiration of this time, control of the system shall automatically return to the schedule.

Emergency Shutdown:
The unit shall shut down and generate an alarm upon receiving an emergency shutdown signal from the fire alarm.

System Optimal Start:
The system shall use an optimal start algorithm for morning start-up. This algorithm shall minimize the unoccupied warm-up or cool-down period while still achieving comfort conditions by the start of scheduled occupied period. The start time shall automatically adjust based on changes in outside air temperature, zone temperatures and prior history.

Supply Fan:
The supply fan shall run anytime the unit is commanded to run, unless shutdown on safeties. To prevent short cycling, the supply fan shall have a user definable (adj.) minimum runtime.

Alarms shall be provided as follows:

- Supply Fan Failure: Commanded on, but the status is off.

Heat/Cool Changeover:
Automatic heat/cool changeover shall be achieved by controlling the reversing valve according to the space temperature.

Cooling Control:
Upon a rise in space temperature above the active cooling setpoint for 15 seconds, the compressor shall start and the reversing valve shall be energized. When the space temperature falls 1°F below the active cooling setpoint for 15 seconds, the compressor shall stop. The compressor output shall have a 5-minute delay off. The cooling cycle shall be disabled if the fan proof option is enabled and the fan proof is not present.

The cooling shall be enabled whenever:

- Outside air temperature is greater than 60°F (adj.).
- AND the economizer is disabled or fully open.
- AND the supply fan status is on.

Heating Control:
Upon a fall in space temperature below the active heating setpoint for 15 seconds, the compressor shall start and the reversing valve shall not energize. If the space temperature continues to fall to 1°F below the active heating setpoint for 15 seconds, the auxiliary electric heat shall start. When the space temperature rises above the active heating setpoint for 15 seconds, the auxiliary heat shall stop. When the space temperature rises to 1°F above the active heating setpoint for 15 seconds, the compressor shall stop and the compressor shall stop and the reversing valve shall be returned to the normal position. During the heat pump heating cycle, the unit's on-board controls shall control the defrost cycle. The compressor output shall have a 5-minute delay off. The heating cycle shall be disabled if the fan proof option is enabled and the fan proof is not present.

The heating shall be enabled whenever:

- Outside air temperature is less than 60°F (adj.).
- AND the space temperature is below setpoint.
- AND the supply fan status is on.

Damper Control:
The units have an outside air damper.

- The outside air damper shall maintain a minimum adjustable open position during occupied periods to provide minimum OA requirements.
- The outside air damper shall close when the unit is off.
- During unoccupied periods including optimized cool-down/warm-up periods, the OA damper shall be kept closed.

Supply Air Temperature:
The controller shall monitor the supply air temperature.

Alarms shall be provided as follows:

- High Supply Air Temp: If the supply air temperature is greater than 90°F (adj.).
- Low Supply Air Temp: If the supply air temperature is less than 45°F (adj.).

Space Air Humidity:
The controller shall monitor the space air humidity.

Alarms shall be provided as follows:

- High Space Air Humidity: If the space air humidity is greater than 65% (adj.).

BECKER MORGAN GROUP
ARCHITECTURE PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
Newarrk, DE 19711
302.369.3700

www.beckermorgan.com

MCADAMS
CIVIL ENGINEERING
2905 MERIDIAN PARKWAY
DURHAM, NC 27713
OFFICE: 919.361.5000

WOODS ENGINEERING
STRUCTURAL ENGINEERING
254 N. FRONT STREET, SUITE 201
WILMINGTON, NC 28401
910-343-8007 fax 910-343-8088

SUD ASSOCIATES, P.A.
PME ENGINEERING
1813 CHAPEL HILL ROAD
DURHAM, NC 27707
office: 919.493.5277 fax: 919.493.5549

NORTH CAROLINA 14050 PROFESSIONAL ENGINEER

PROJECT TITLE

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

DDC CONTROLS, SPLIT SYSTEM HEAT PUMP SYSTEMS, WATER METER, EXHAUST FANS

ISSUE BLOCK

Mark	Date	Description

PROJECT NO:	2018070.01
DATE:	09/23/2019
SCALE:	12" = 1'-0"
DRAWN BY: MJS	PROJ MGR: IS

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ELECTRICAL SYMBOLS

(ALL SYMBOLS MAY NOT BE USED ON THIS PROJECT)

- FLUORESCENT LIGHT FIXTURE
- EMERGENCY FLUORESCENT LIGHT FIXTURE
- DOWNLIGHT FIXTURE
- WALL MOUNTED FIXTURE
- WALL MOUNTED UPLIGHT FIXTURE
- EXIT LIGHT, DARKENED SIDE INDICATES FACE
- DUAL LAMP EMERGENCY BATTERY LIGHT
- DUAL LAMP REMOTE LIGHT FIXTURE

UPPERCASE ALPHANUMERIC DESIGNATOR INDICATES LIGHT FIXTURE TYPE. REFER TO LIGHT FIXTURE SCHEDULE. NL INDICATES NIGHT LIGHT. OCCUPANCY SENSOR SYMBOL INDICATES INTEGRAL SENSOR.

LOWER CASE ALPHANUMERIC DESIGNATORS INDICATES ASSOCIATED SWITCHED CIRCUIT.

DOTS INDICATE PENDANT MOUNTING

CIRCLE INDICATES SURFACE MOUNTING

XW= WALL MTD. EXIT SIGN
XC= CEILING MTD. EXIT SIGN PROVIDE UNIVERSAL MTG. BRACKET.
TIE BATTERY UNITS INTO GENERAL LIGHTING CIRCUIT SERVING THE SAME AREA AHEAD OF SWITCHING.

- RECEPTACLE, DUPLEX
- RECEPTACLE, QUAD
- RECEPTACLE, SINGLE
- RECEPTACLE, GFI
- RECEPTACLE, SPECIAL (NEMA CONFIGURATION INDICATED)
- C,F FLUSH RECEPTACLE. C,F INDICATES CEILING, FLOOR MOUNTED. DUPLEX NEMA5-20 U.O.N.

MOUNT 1'-6" A.F.F. U.O.N.
"+" = 3'-0" AFF AND MIN. 6" ABOVE COUNTER. REFER TO ARCHITECTURAL DRAWINGS.
"TV" = 7'-0" AFF
"M" = MONITOR 6'-6" AFF
"IC" = ISOLATED GROUND, 1'-6" AFF
"WP" = GFCI TYPE W/ EXTRA DUTY WEATHERPROOF IN-USE COVER 2'-0"AFF
"HD", "EWC" = 2'-0"AFF,
"FP" = 4'-6"AFF
"GFI" = GROUND FAULT CIRC. INTERRUPTER
"R" = 4'-0" AFF. REFRIGERATOR OUTLET

- FULL SIZE FLUSH FIBER-READY A/V FLOOR POCKET W/ (2) 1" C. FOR A/V AND DATA AND (1) 3/4" C. FOR QUAD RECEPTACLE.
- J C,F , J C,F JUNCTION BOX, C,F INDICATES CEILING, FLOOR MOUNTED
- EQUIPMENT CABINET OR PANEL AS INDICATED
- LIGHTING/RECEPTACLE PANEL SURFACE MOUNT, FLUSH MOUNT
- POWER PANEL SURFACE MOUNT, FLUSH MOUNT
- DISTRIBUTION PANEL
- xx/xx/xx/xx NON-FUSED DISCONNECT SWITCH
- xx/xx/xx/xx FUSED DISCONNECT SWITCH
- xx/xx/xx/xx COMBINATION STARTER/DISCONNECT SWITCH ("F" INDICATES FUSED)

xx/xx/xx/xx INDICATES CURRENT RATING/ POLES/NEMA RATING/ VOLTAGE

30A, 3P UNLESS NOTED OTHERWISE

- K KEY OPERATED CONTROL STATION (BY OTHERS, U.O.N.)
- Cn ELECTRICALLY OPERATED, MECHANICALLY HELD STARTER C INDICATES CONTACTOR WITH n POLES
- S_M MOTOR RATED SWITCH
- S_F FRACTIONAL HP STARTER
- MOTOR (# INDICATES HORSEPOWER)
- CIRCUIT BREAKER IN ENCLOSURE
- CIRCUIT BREAKER
- ADJUSTABLE FREQUENCY DRIVE WITH INTEGRAL DISCONNECT SWITCH
- e EQUIPMENT TERMINATION. SEE MECHANICAL DRAWINGS FOR DETAILS.
- M ELECTRIC UTILITY METER
- CT CURRENT TRANSFORMER
- DM DIGITAL METER MONITOR

SIZE & # OF POLES AS INDICATED ON DRAWINGS.

- $ SWITCH, SINGLE POLE TOGGLE
- $3 SWITCH, 3 WAY TOGGLE
- $4 SWITCH, 4 WAY TOGGLE
- $DM SWITCH, DIMMER
- $3c D SWITCH, 3 WAY DIMMER
- $K SWITCH, KEY-OPERATED
- $M SWITCH, MOTOR RATED
- $OS SWITCH, DUAL TECHNOLOGY OCCUPANCY SENSOR
- $OD SWITCH, DUAL TECHNOLOGY OCCUPANCY SENSOR WITH 0-10V DIMMER COMPATIBLE WITH FIXTURE PROVIDED.
- $P SWITCH, SINGLE POLE & PILOT LIGHT COMBINATION

LOWER CASE LETTERS INDICATE ASSOCIATED LIGHT FIXTURES. TWO COMMA-SEPARATED LOWER CASE LETTERS INDICATE INGANG/OUTGOING SWITCHING.

- OS U OCCUPANCY SENSOR (P=PASSIVE INFRARED, U=ULTRASONIC, D=DUAL TECHNOLOGY, A= ACOUSTIC DUAL PASSIVE TECHNOLOGY)
- Z LIGHTING CONTROL POWER PACK / ZONE RELAY.
- ES LIGHTING CONTROL UL924 EMERGENCY SHUNT RELAY
- D LOW VOLTAGE DIMMER SW.
- E EMERGENCY ILLUMINATION STRIKE BUTTON.
- F FIRST RESPONDER KEYED LIGHT SWITCH.
- S LOW VOLTAGE 6-PRESET SCENE PLUS DIMMER SW.
- G GRAPHIC WALL POD TOUCH SCREEN 8-SCENE CONTROL
- PC PHOTO CELL
- TS NETWORK LIGHTING CONTROL OUTPUT TO SIMULATE 4-CHANNEL ASTRONOMICAL, 365-DAY TIME SWITCH
- WALL, CORNER MOUNTED FIXTURE/DEVICE.
- W SURFACE RACEWAY, WIREMOLD
- EXPOSED RACEWAY
- LOW VOLTAGE WIRING
- CONDUIT CONCEALED IN WALLS OR CEILING
- EM EMERGENCY CIRCUIT
- CONDUIT CONCEALED IN OR UNDER FLOOR OR UNDER GROUND
- FLEXIBLE CONNECTION TO EQUIPMENT
- HOMERUN - CIRCUIT & PANEL AS INDICATED (2#12 + 1#12G., 3/4"C. UNLESS NOTED OTHERWISE)
- HOMERUN - AS WITH ARROW, EXCEPT TO FLOOR ABOVE OR BELOW.

ON LIGHTING PLANS, DASHED LINES INDICATE UNSWITCHED CIRCUIT LEGS

- MGB MASTER GROUND BUS BAR ON INSULATORS. PRE-DRILLED 8"X12"X1/4"
- AVB A/V SYSTEM GROUND BUS BAR ON INSULATORS. PRE-DRILLED 4"X12"X1/4"
- SGB SECURITY SYSTEM GROUND BUS BAR ON INSULATORS. PRE-DRILLED 4"X12"X1/4"
- TBB CLASS A FIRE RATED TELECOM BACKBOARD WITH WHITE ENAMEL, MASKED STAMP.
- TGB I.T. SYSTEM GROUND BUS BAR ON INSULATORS. PRE-DRILLED 4"X12"X1/4"
- ITR 2-POST 96"X24" I.T. RACK W/ (2) 6" SQ. VERTICAL CABLE MANAGERS EA.
- J4 (2) 4x4 J-BOXES 18" & 60" AFF CONNECTED BY 1"C. FOR COLOR CORR. MONITOR
- TS TIME CLOCK SWITCH
- AC ACCESS CONTROL SERVER.
- FR FIRE ALARM DOOR RELEASE INTERFACE
- NVR NETWORK VIDEO RECORDER
- MON MULTI-SYSTEM SWITCHABLE MONITOR / KEYBOARD / MOUSE INTERFACE
- KP SECURITY SYSTEM ACCESS CONTROL KEYPAD
- FIX SECURITY SYSTEM PoIP CAMERA, PTZ: PAN, TILT, ZOOM FIX: FIXED MOUNTING. CAT6A CABLE.
- CR SECURITY SYSTEM CARD READER
- DC SECURITY SYSTEM DOOR CONTACTS
- SB H/C STRIKE BUTTON ON REMOVABLE MIN. 4" SQ. STAINLESS STEEL POST W/ ANGLED TOP PLATE WELDED & GROUND SMOOTH MIN. 4'-2" AFG. (2) STACKED ELEC. BOXES NTE 3'-10" TO MEET ADA, ACCESSIBLE VIA HANDHOLE AT 1' AFG AND CONNECTED TO SECURITY ROOM VIA (2) 1" C. BELOW SLAB. ANCHOR POST W/ SLAB VIA CONCEALED FASTENERS.
- TH SECURITY SYSTEM TRANSFER HINGE

PROVIDE ROUGH-IN WITH CAT5e CABLES IN 1" RACEWAY TO SECURITY RM U.O.N. COORDINATE ROUTING WITH OWNER'S REPRESENTATIVE TERMINATIONS AND TESTING OF CHANNELS IS BY CONTRACTOR.

- FACP FIRE ALARM CONTROL PANEL
- FAA FIRE ALARM ANNUNCIATOR
- FATC FIRE ALARM TERMINAL CABINET
- SPRINKLER FLOW SWITCH
- SPRINKLER TAMPER SWITCH
- ZV SPRINKLER ZONE VALVE
- F FIRE ALARM PULL STATION
- F FIRE ALARM STROBE LIGHT. WALL, CEILING MOUNTED
- F COMBINATION FIRE ALARM SPEAKER/STROBE WALL, CEILING MOUNTED
- FIRE ALARM SPEAKER WALL, CEILING MOUNTED

'F' INDICATES MANUAL PULL STATION BELOW. 15cd U.O.N.

- IM ISOLATION MODULE
- AIM AIM ADDRESSABLE INPUT MODULE
- AOM AOM ADDRESSABLE OUTPUT MODULE
- PHOTO-ELECTRIC TYPE SMOKE DETECTOR.
- BR BT BT & BR INDICATE BEAM TRANSMITTER & RECEIVER.
- SB SB INDICATES SOUNDER BASE.
- HEAT DETECTOR (COMBINATION FT/RR U.O.N., A=ANTICIPATOR TYPE, AC=ABOVE CEILING.)
- F HEAT DETECTOR (FIXED TEMPERATURE)
- R HEAT DETECTOR (RATE OF RISE)
- DD PHOTO-ELECTRIC TYPE DUCT SMOKE DETECTOR WITH REMOTE ANNUNCIATING TEST STATION 'RAIL'.
- REMOTE ANNUNCIATING TEST STATION 'RAIL'
- nV nV: (n) RJ-11 TELEPHONE OUTLET
- MON TV (2) CAT6A UTP PER WALL PLATE "MON" = 5'-4"AFF, "TV" = 7'-0"AFF,
- nIT nAV RJ-45 ETHERNET DATA OUTLET. nIT: (n) CAT6A UTP PER WALL PLATE nAV: (n) CAT6A UTP PER WALL PLATE. "+" - 3'-0"AFF,
- WAP CEILING MTD DATA OUTLET. WAP: WIRELESS ACCESS POINT W/ (2) CAT6A TERMINATIONS.

PROVIDE ROUGH-IN WITH (2) 1" C. FROM RACEWAY TO BACKBOARD. COORDINATE ROUTING AND CONDUIT TERMINATIONS WITH OWNER'S REPRESENTATIVE. TERMINATIONS AND TESTING OF CHANNELS IS BY CONTRACTOR.

- CAM A/V CAMERA. 2-GANG WALL BOX. W/ CAT6A PoE TO PROJ. BOOTH A/V RACK.
- AVR HINGED 24"X26"X36" FRONT/BACK ACCESSIBLE 19" RACK ENCLOSURE ON CASTERS. CONNECTIONS VIA 18"X18" LARGE IN-WALL A/V BOX SIMILAR TO PANDUIT CMBBMWH W/ (6) CAT6A JACKS. PROVIDE (1) 1-1/2" C. TO CEILING ABOVE.
- AVS A/V 1X8 MATRIX SWITCH TO PATCH WORKSTATIONS THROUGH TO PROJ.
- F4 HALF SIZE, FIBER-READY A/V FLOOR BOX W/ (4) CAT6A to A/V RACK. (1) 3/4" C. TO CLG. ABOVE AND (1) DUPLEX PWR REC.
- F6 FULL SIZE, FIBER-READY A/V FLOOR BOX W/ (4) CAT6A to IT Room, (2) CAT6A to Proj. Rm. A/V RACK, (1) 3/4" C. TO CLG. ABOVE AND (1) DUPLEX PWR REC.
- FPP FIBER PATCH PANEL
- PROJ 4K PROJECTOR W/ SINGLE GANG BOX ABOVE AND BELOW CEILING. CEILING MTD. BOX HAS (3) CAT6A OUTLETS, ABOVE-CEILING BOX HAS (4) CAT6A OUTLETS.
- 3CS 3-BUTTON SHADE / CURTAIN CONTROL STATION. 1-GANG WALL BOX W/ 3/4" C
- SPK SPEAKER WALL MOUNTED. 2'-0" BFC.
- S SPEAKER CEILING MOUNTED. 1-GANG WALL BOX W/ 3/4" C.
- M 1 MICROPHONE OUTLET, 1-GANG CEILING MOUNTED BOX W/ (4) CAT6 DROPS BACK TO PROJ. BOOTH 1109. VERTICAL ROUTING BELOW CEILINGS IN 1" C.

ABBREVIATIONS

%	PERCENT	CLG.	CEILING	EQ.,	EQUAL	INC.	INCANDESCENT	NAT'L	NATIONAL	SEC.	SECONDARY
&	AND	CO.	COMPANY	EQUIP.	EQUIPMENT	INSUL.	INSULATION/INSULATED	NAC	F.A. NOTIFICATION APPLIANCE CKT.	SECT.	SECTION
∅, PH	PHASE	COAX.	COAXIAL CABLE	EST.	ESTIMATE	I.T.	INFORMATION TECHNOLOGY	NC	NORMALLY CLOSED	SEP.	SEPARATE
C.°	CENTIGRADE DEGREES	COL.	COLUMN	EX.	EXISTING	ISOL.	ISOLATED	NEC	NAT'L ELECTRICAL CODE	SERV.	SERVICE
F.°	FAHRENHEIT DEGREES	COMP	COMPLETE	EXT.	EXTERNAL/EXTERIOR	JB, J	JUNCTION BOX	NEMA	NAT'L ELEC. MANUF. ASSOC.	SHT.	SHEET
1/C	SINGLE CONDUCTOR	CONC.	CONCRETE	F.A.	FIRE ALARM	KAIC	KILOAMP. INTERRUPT. CAPACITY	NIC	NOT IN CONTRACT	SIG.	SIGNAL
A/V	AUDIO/VISUAL SYSTEM	CONDR.	CONDUCTOR	F.E.	FIRE EXTINGUISHER	KO	KNOCKOUT	NO. NO.	NORMALLY OPEN	SK.	SKETCH
A.I.C.	AMPERES INTERRUPTING CAPACITY	CONN	CONNECTED, CONNECTOR	F.O.	FIBER OPTIC	KCMIL	THOUSAND CIRCULAR MILS	NOTIF.	NOTIFICATION	SLC	F.A. SIGNALING LINE CIRCUIT
AIM/AOM	ADDRESSABLE I/O MODULE	CONST.	CONSTRUCTION	FDN.	FOUNDATION	KHZ	KILOHERTZ	#	NUMBER	SN	SOLID NEUTRAL
A.T.C.	AUTOMATIC TEMPERATURE CTRL	CONT.	CONTINUATION	FIG.	FIGURE	KV	KILOVOLT	NTS	NOT TO SCALE	SPD	SURGE PROTECTION DEVICE
ATS	AUTOMATIC TRANSFER SWITCH	CONTR.	CONTRACTOR	FIN.	FINISH/FINISHED	KVA	KILOVOLT-AMPERE	OB	OUTLET BOX	SPECS.	SPECIFICATIONS
A/C.	AIR CONDITION	COORD.	COORDINATE	FIXT.	FIXTURE	KVAR	KILOVAR	P	POLE	SQ.	SQUARE
AC	ALTERNATING CURRENT	CORR	CORRIDOR	FL.	FLOOR	KW	KILOWATT	PC	PHOTO CELL, PULL CHAIN	STA.	STATION
ADDL.	ADDITIONAL	CPU	CENTRAL PROCESSING UNIT	FLA	FULL LOAD AMPERES	KWH	KILOWATT HOUR	P.C.	PLUMBING CONTRACTOR	SURF.	SURFACE
AF	AMPERE FRAME	CU	COPPER, CONDENSING UNIT	FLEX.	FLEXIBLE	LF	LINEAR FEET	P.I.L.C.	PAPER INSULATED LEAD COVERED	SUSP.	SUSPENDED
A-F	AMPERE FUSE	CU	CONDENSING UNIT	LFMC	FLEX. LIQUIDTIGHT METAL COND.	LG.	LENGTH	PIV	POST INDICATOR VALVE	SW.	SWITCH
AFF	ABOVE FINISHED FLOOR	CU. FT.	CUBIC FEET	FLUOR.	FLUORESCENT	LG.	LONG	PB, P	PULL BOX, BREAKER OR SWITCH POLE	SWBD.	SWITCHBOARD
AFG	ABOVE FINISHED GRADE	CW	CLOCKWISE, COOL WHITE	FC	FOOTCANDLE	LRA	LOCKED ROTOR AMPERES	PNL.	PANELBOARD	SYM.	SYMMETRICAL
AHU	AIR HANDLING UNIT	D	DEPTH	FT.	FEET	LT.	LIGHT	PoE	POWER OVER ETHERNET	TC	TIME CLOCK
AHJ	AUTHORITY HAVING JURISDICTION	DEM	DEMAND	FU.	FUSE/FUSED	LTG.	LIGHTING	PORC.	PORCELAIN	TEL.	TELEPHONE
AL.	ALUMINUM	DIA.	DIAMETER	G.C.	GENERAL CONTRACTOR	M.L.O.	MAIN LUGS ONLY	PRI.	PRIMARY	THRU	THROUGH
AMP., A.	AMPERE	DISC	DISCONNECT SWITCH	GA.	GAGE/GAUGE	M/C	MULTI-CONDUCTOR	PS	PAYSTATION TELEPHONE	XFMR	TRANSFORMER
APPROX.	APPROXIMATE	DIV.	DIVISION	GALV.	GALVANIZED	MFR.	MANUFACTURER	PTD.	PAINTED	TYP.	TYPICAL
ARCH.	ARCHITECTURAL	DN.	DOWNUM	GEN.	GENERATOR	MAX.	MAXIMUM	PTZ	PAN-TILT-ZOOM	U.O.N.	UNLESS OTHERWISE NOTED
AT	AMPERE TRIP	DPST	DOUBLE POLE SINGLE THROW	GFCI	GND. FAULT CIRC. INTERRUPTER	MB	MAIN BREAKER	PVC	POLYVINYLCHLORIDE	UH	UNIT HEATER
ASY.	ASYMMETRICAL	DWG.	DRAWING	GFI	GROUND FAULT INTERRUPTER	MCB	MAIN CIRCUIT BREAKER	R.	RADIUS	UL	UNDERWRITING LABORATORIES
AUX.	AUXILIARY	E.C.	ELECTRICAL CONTRACTOR	GND., G	GROUND	MCC	MOTOR CONTROL CENTER	R.C.SW.	REMOTE CONTROL SWITCH	UPS	UNINTERRUPTIBLE POWER SOURCE
B.F.C.	BELOW FINISHED CEILING	E.F., EF	EXHAUST FAN	H.I.D.	HIGH INTENSITY DISCHARGE	MCM	THOUSAND CIRCULAR MILLS	REBAR.	REINFORCING BAR	V	VOLTAGE, VOLTS
BFP	BACK FLOW PREVENTER	E.H.	ELECTRIC HEATER	H.O.A.	HAND OFF AUTO	MDP	MAIN DISTRIBUTION PANEL	REC.	RECESSED, RECEPTACLE	VD	VOLTAGE DROP
BKR.	BREAKER	E.P.R.	ETHYLENE PROPYLENE RUBBER	H.P.S.	HIGH PRESSURE SODIUM	MDS	MAIN DISTRIBUTION SWBD.	RECPT.	RECEPTACLES	VERT.	VERTICAL
BLDG.	BUILDING	E.W.	EACH WAY	HEX.	HEXAGON	MECH.	MECHANICAL	REQ'D	REQUIRED	VS.	VERSUS
BSMT.	BASEMENT	EA.	EACH	HH	HANDHOLE	MET.	METALLIC	REV.	REVISE/REVISION	W	WIRE
C	CONDUIT	EHT	ELEC. HEAT TRACING CABLE	HORIZ.	HORIZONTAL	MF	MAINTENANCE FACTOR	RF	RADIO FREQUENCY	WAP	WIRELESS ACCESS POINT
C OF U	COEFFICIENT OF UTILIZATION	ELEC.	ELECTRIC	HP.	HORSEPOWER	MG	MOTOR GENERATOR	RGA	REMOTE GENERATOR ANNUNCIATOR	W.I.	WROUGHT IRON
C.T., CT	CURRENT TRANSFORMER	ELEV.	ELEVATION/ELEVATOR	HPF	HIGH POWER FACTOR	MIN.	MINIMUM	RMC	RIGID METAL CONDUIT	W/	WITH
CB, C/B	CIRCUIT BREAKER	EM	EMERGENCY POWER PACK	HT., H	HEIGHT	MISC	MISCELLANEOUS	RM	ROOM	W/O	WITHOUT
CCTV	CLOSED CIRCUIT TELEVISION	EMT	ELECTRICAL METALLIC TUBING	HWH	HOT WATER HEATER	MTD.	MOUNTED	RT	ROOFTOP	WD.	WIDE
CKT.	CIRCUIT	ENCL.	ENCLOSURE	HZ.	HERTZ	MTG.	MOUNTING	S.F.	SQUARE FEET	WP	WEATHER PROOF
CL.	CLOSET	ENT.	ENTRANCE	IMC	INTERMEDIATE CONDUIT	N.	NEUTRAL	S.S.	STAINLESS STEEL, SET SCREW	XLP	CROSSLINKED POLYETHYLENE
						NAT'L.	NATIONAL				

GENERAL NOTES

1. THIS WORK SHALL COMPLY WITH STATE CONSTRUCTION OFFICE AND NORTH CAROLINA DEPARTMENT OF INSURANCE STANDARDS AND ALL OTHER STATE AND LOCAL BUILDING, ELECTRIC, AND FIRE CODES AND REGULATIONS.
2. ELECTRICAL EQUIPMENT SHALL BE INSTALLED AND GROUNDED IN ACCORDANCE WITH THE LATEST REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE EDITION 2017. THE SPECIFICATIONS FOR GROUNDING, THE CONTRACT DRAWINGS, FEDERAL, STATE AND LOCAL CODES AND TO THE SATISFACTION OF THE ENGINEER. SERVICE GROUNDING CONNECTIONS SHALL BE MADE BY THE CADWELD PROCESS OR EQUAL.
3. CONDUITS AND ELECTRICAL EQUIPMENT ARE SHOWN DIAGRAMMATICALLY AND MAY BE ALTERED TO SUIT FIELD CONDITIONS PENDING ENGINEER'S APPROVAL.
4. ELEVATIONS AND CLEARANCES SHALL BE COORDINATED IN THE FIELD PRIOR TO INSTALLATION TO AVOID CONFLICTS AND OBSTRUCTIONS. CORRECTIONS NECESSARY DUE TO FAILURE TO COORDINATE ARE AT NO ADDITIONAL COST TO THE OWNER.
5. JUNCTION BOXES AND PULL BOXES SHALL BE OF SUFFICIENT SIZE TO PROVIDE FREE SPACE FOR ALL CONDUCTORS ENCLOSED IN THE BOX AND SHALL BE SIZED WITH THE LATEST N.E.C. ARTICLE 314.
6. DIMENSIONS SHOWN ARE APPROXIMATE AND MUST BE VERIFIED IN THE FIELD BY THE CONTRACTOR.
7. CONTRACTOR SHALL CHECK FOR OBSTRUCTIONS AND CLEAN OUT ALL CONDUITS PRIOR TO PULLING IN CABLES.
8. PHASING OF ALL ELECTRICAL CONNECTIONS SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR AND SHALL BE MADE IN ACCORDANCE WITH THE LOCAL UTILITY COMPANY REQUIREMENTS.
9. PENETRATIONS THROUGH STRUCTURE TO ACCOMMODATE ELECTRICAL CONDUITS SHALL BE CORE DRILLED AND SEALED WITH NON-SHRINK GROUTING COMPOUND. WHERE RACEWAYS PASS THROUGH FLOORS AND FIRE RATED WALLS AND/OR PARTITIONS, CONTRACTOR SHALL FURNISH UL RATED FIREPROOFING MATERIAL TO BE INSTALLED IN STRICT COMPLIANCE WITH THE UL PENETRATION DETAIL TO RESTORE ORIGINAL FIRE RATING.
10. THE CONTRACTOR SHALL FURNISH STRUCTURAL SUPPORT FOR ALL EQUIPMENT. FOR SURFACE MOUNTED EQUIPMENT, SUCH AS PANELBOARDS, STARTERS, SAFETY SWITCHES AND THE LIKE, PROVIDE "UNISTRUT" WITH CORROSION RESISTANT MOUNTING HARDWARE.
11. NO CONDUIT SMALLER THAN 1/2" SHALL BE USED UNLESS OTHERWISE SPECIFIED.
12. ALL JOINTS BETWEEN DISSIMILAR METALS SHALL BE COATED WITH A LITHIUM BASED THREAD LUBRICANT.
13. RACEWAYS SHALL BE PROVIDED WITH EXPANSION-DEFLECTION FITTINGS WHERE CROSSING BUILDING CONSTRUCTION EXPANSION JOINTS AND WHERE NECESSARY TO COMPENSATE FOR THERMAL EXPANSION AND CONTRACTION.
14. FURNISH AND INSTALL 4" CONCRETE PADS WITH 1" CAMFERS EXTENDING 2" ON ALL SIDES FOR FLOOR MOUNTED ELECTRICAL EQUIPMENT.
15. PRIOR TO SUBMITTING PROPOSALS, BIDDERS ARE INSTRUCTED TO REVIEW PLANS AND SPECIFICATIONS OF ALL CONCURRENT WORK TO DETERMINE QUANTITIES OF LABOR AND MATERIAL NECESSARY TO INSTALL, CONNECT, AND TEST MATERIAL FURNISHED UNDER THESE SPECIFICATIONS. ANY ADDITIONAL LABOR AND MATERIAL REQUIRED DUE TO FAILURE OF THE CONTRACTOR TO FOLLOW THESE INSTRUCTIONS, SHALL BE FURNISHED AT NO ADDITIONAL COST TO THE OWNER.
16. THE ELECTRICAL CONTRACTOR SHALL COORDINATE HIS WORK WITH THAT OF ALL OTHER CONTRACTORS EMPLOYED ON THIS PROJECT PRIOR TO ROUGHING IN. THE CONTRACTOR SHALL OBTAIN AND REVIEW APPROVED SHOP DRAWINGS OF ALL OTHER TRADES AFFECTING HIS WORK.
17. THE CONTRACTOR SHALL CHECK AND TORQUE TIGHTEN ALL CONNECTIONS, WHETHER FACTORY MADE OR MADE UNDER THIS CONTRACT, USING ACCURATELY CALIBRATED TOOLS. TORQUE SETTINGS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC RECOMMENDATIONS. IN THE ABSENCE OF THE MANUFACTURER'S RECOMMENDATIONS, THE CONTRACTOR SHALL USE THE VALUES LISTED IN THE ANNEX "I" OF THE NATIONAL ELECTRICAL CODE HANDBOOK.
18. INSTALL AN 1/8 INCH POLY PROPYLENE (PULL-IN-ROPE) IN ALL SPARE CONDUITS.
19. INSULATED GREEN COPPER CONDUCTORS FOR EQUIPMENT GROUNDING SHALL BE ROUTED WITH ALL POWER CONDUCTORS.
20. MULTIWIRE BRANCH CIRCUITS ARE NOT PERMISSIBLE. PROVIDE DEDICATED NEUTRAL WIRES WITH ALL SINGLE PHASE BRANCH CIRCUITS.
21. CONDUCTORS USED FOR CONTROL WIRING SHALL BE AT LEAST NO. 14 A.W.G AND ALL POWER CONDUCTORS SHALL BE AT LEAST NO. 12 A.W.G. UNLESS OTHERWISE SPECIFIED.
22. CONTRACTOR SHALL PROVIDE ALL NECESSARY SAFETY EQUIPMENT AND EXERCISE PRECAUTIONARY PROCEDURES WHEN WORKING WITH OR NEAR ENERGIZED EQUIPMENT.
23. WHEN CONDUIT OR CABLE RUNS FOR POWER AND LIGHTING EXCEED 50 FT. FOR 120 VOLT OR 125 FT. FOR 277 VOLT TO CENTER OF LOAD, NO. 10 AWG WIRE OR LARGER SHALL BE USED AS REQUIRED FOR A MAXIMUM 2% VOLTAGE DROP AT FULL CIRCUIT CAPACITY.
24. COORDINATE EQUIPMENT ELECTRICAL INTERFACE WITH ASSOCIATED CONTRACTORS (MECHANICAL, KITCHEN VENDORS ETC.) AFTER COMPLETION OF SHOP DRAWING REVIEW, ADJUST VOLTAGE RATING, CAPACITY AND SIZE OF WIRING, STARTERS, DISCONNECT SWITCHES AND OVERCURRENT PROTECTION DEVICES AS REQUIRED. NOTIFY ENGINEER OF ANY DISCREPANCIES BEFORE ORDERING SUPPLIES AND START OF CONSTRUCTION. OMISSION TO COMPLY WILL REQUIRE THE ELECTRICAL CONTRACTOR TO BEAR THE COST FOR CORRECTLY SIZED EQUIPMENT AND WIRING.
25. TERMINATIONS OF LIGHT FIXTURES SHALL BE MADE DIRECTLY FROM A JUNCTION BOX. JUMPERS FROM FIXTURE TO FIXTURE ARE NOT ACCEPTABLE. "FIXTURE WHIPS" CONNECTING JUNCTION BOXES AND FIXTURES IN SUSPENDED CEILINGS SHALL BE FLEXIBLE METAL OR SEALTIGHT CONDUIT NOT TO EXCEED 6 FEET. NO JUNCTION BOX SHALL HAVE MORE THAN 4 TERMINATIONS.
26. ALL PROJECTS REQUIRE COORDINATION AND COOPERATION AMONG THE DISCIPLINES. CONTRACTORS SHALL COORDINATE LOCATIONS AND SEQUENCE OF INSTALLATION OF THEIR RESPECTIVE EQUIPMENT, PIPES, CONDUITS, DUCTS, ETC. WITH ALL DISCIPLINES. DO NOT BEGIN FABRICATION OR INSTALLATION UNTIL ALL ROUTING AND POTENTIAL CONFLICT ISSUES HAVE BEEN RESOLVED. ANY REMOVAL AND REINSTALLATION OF NEWLY INSTALLED ITEMS TO RESOLVE CONFLICTS SHALL BE DONE AT NO ADDITIONAL COST TO THE OWNER OR DESIGNERS.
27. CLASS 2 WIRING PATHWAYS OF WALL MOUNTED DEVICES AND EQUIPMENT SHALL BE 1" C. IN WALLS AND IN OPEN J-HOOKS / CABLE TRAYS IN CONCEALED CEILING SPACE U.O.N..

WIRE AND CONDUIT SIZING SCHEDULE

WIRE SIZE (AWG/KCMIL)			NO. OF WIRES & CONDUIT SIZE IN INCHES		
CODE	CONDUCTOR Ø & NEUTRAL	GROUND	A 1Ø, 2W+G	B 1Ø/3Ø, 3W+G	C 3Ø, 4W+G
1	14	14	3/4	3/4	3/4
2	12	12	3/4	3/4	3/4
3	10	10	3/4	3/4	3/4
4	8	10	3/4	3/4	3/4
5	6	10	3/4	3/4	1
6	4	10	3/4	1	1-1/4
7	4	8	3/4	1	1-1/4
8	3	8	1	1	1-1/4
9	2	8	1	1 1/4	1-1/4
10	1	8	1-1/4	1-1/4	1-1/2
11	1	6	1-1/4	1-1/4	1-1/2
12	1/0	6	1-1/4	1-1/2	1-1/2
13	2/0	6	1-1/2	2	2
14	3/0	6	1 1/2	2	2
15	4/0	4	1-1/2	2	2-1/2
16	250	4	2	2	2-1/2
17	300	4	2	2-1/2	2-1/2
18	350	4	2	2-1/2	3
19	400	3	2	2-1/2	3
20	500	3	2-1/2	3	3
21	(2)4/0	(2)2	-	(2)2	(2)2-1/2
22	(2)250	(2)2	-	(2)2	(2)2-1/2
23	(2)350	(2)1	-	(2)2-1/2	(2)3
24	(2)500	(2)1/0	-	(3)	(2)3-1/2
25	(3)300	(3)1/0	-	(3)2-1/2	(3)3
26	(3)400	(3)2/0	-	(3)3	(3)3
28	(4)350	(4)3/0	-	(4)2-1/2	(4)3
30	(5)400	(5)4/0	-	(5)3	(5)3
32	(6)400	(6)350	-	(6)3	(6)4
33	(7)500	(7)350	-	(7)3	(7)3-1/2
34	(8)500	(8)400	-	(8)3	(8)3-1/2

NOTE: THE ABOVE SCHEDULE IS BASED ON 600VOLT WIRE TYPE THWN/XHHN. THE FOLLOWING IS A SAMPLE OF CONDUIT AND WIRE READOUT FROM ABOVE SCHEDULE:

- 2A 2#12+1#12G IN 3/4" C.
- 11B 3#1+1#6G IN 1-1/4" C.
- 25C (3) 3" C. W/ 4-300KCMIL+1#1/0G EA.

STANDARD MOUNTING HEIGHTS

MOUNTING HEIGHTS FOR EQUIPMENT SHALL BE AS LISTED BELOW UNLESS OTHERWISE SPECIFICALLY LABELED. (UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE TO THE CENTERLINE OF BOXES.) ALL PROTRUSIONS BELOW 7 A.F.F. SHALL BE LESS THAN 4" FOR ADA COMPLIANCE.

SWITCHES	3'-10" A.F.F.
TELEPHONE - WALL TYPE	4'-0" A.F.F.
TELEPHONE - DESK TYPE	1'-6" A.F.F.
RECEPTACLE - GENERAL	1'-6" A.F.F.
RECEPTACLE - MECHANICAL ROOMS	3'-0" A.F.F.
FIRE ALARM GONG OR HORN	6'-8" TO BOTTOM OF GONG OR HORN
FIRE ALARM PULL STATION	4'-0" A.F.F. TO CENTER OF PULL
FIRE ALARM STROBE LIGHT	6'-8" A.F.F. TO BOTTOM OF STROBE
FIRE ALARM MODULE	6'-0" A.F.F. TO BOTTOM OF MODULE.
MOTION DETECTORS	6'-5" AFF
PANELBOARDS	6'-0" TO TOP OF CB MAX.
EXIT LIGHTS- WALL OR END MOUNTED	ABOVE DOORS (MIN. 7'-6" A.F.F. CLEAR)
KEY PAD	3'-8" AFF
DATA	1'-6" AFF
VOLUME CONTROL	3'-8" AFF
TIMERS	4'-6" AFF
SPEAKER, WALL MTD.	2'-0" BFC

BECKER MORGAN GROUP
ARCHITECTURE PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
Newark, DE 19711
302.369.3700

www.beckermorgan.com

SUD ASSOCIATES, P.A.
CONSULTING ENGINEERS
LICENSE NO. C-0315

1813 CHAPEL HILL RD
DURHAM, NORTH CAROLINA
(919) 493-5277

FLAT IRON BUILDING SUITE 706
20 BATTERY PARK AVENUE
ASHEVILL

GENERAL POWER CONSTRUCTION NOTES:

1. BID ALTERNATE #1: CINEMA 1106 AND ITS SUPPORTING ROOMS (LIGHT LOCK 1105, LIGHT LOCK 1107, CORRIDOR 1108, PROJECTION BOOTH 1109, AND TEACHING AREA 1124) WILL BE BUILT AS SHELL SPACES IN THE BASE BID.
2. COORDINATION ELECTRICAL WORK W/ OTHER TRADES AND G.C..
3. REFER TO MECHANICAL AND PLUMBING DRAWINGS FOR EQUIPMENT AND DEVICE INTERFACES. EQUIPMENT IDs ON THOSE PLANS MAY BE W/O DASHES BETWEEN LETTERS AND NUMBERS SHOWN ON ELECTRICAL DRAWINGS.
4. PROVIDE ALL WORK REQUIRED TO SUPPORT THE TRADES IN THIS PROJECT INCLUDING BUT NOT LIMITED TO TEMPORARY POWER, DISCONNECTING AND MAKING CIRCUITS SAFE AND OTHER WORK SHOWN, WHERE BOXES AND CONDULETS ARE MADE INACCESSIBLE DUE TO LACK OF COORDINATION WITH OTHER TRADES RELOCATE THE BOXES AND CONDULETS AND RE-ROUTE THE ASSOCIATED CIRCUITS.
5. AVOID BACK-TO-BACK DEVICES AND EXTEND RACEWAYS TO MAINTAIN FIRE RATINGS . PROVIDE INTUMESCENT FIRE BARRIER SHEET MATERIAL RATED FOR THE USE AND FIRE-CAULK CONDUITS CONNECTING ADJACENT SPACES WHERE OFF-SETTING BACK-TO-BACK RECEPTACLES IS NOT FEASIBLE.
6. PROVIDE GROUNDING CONDUCTORS SIZED PER NEC AND CONNECT TO BOXES AND GROUNDING TERMINALS.
7. SEAL PENETRATIONS OF ARCHITECTURAL ASSEMBLIES FOR SOUND PROOFING IN NON-FIRE RATED ASSEMBLIES.
8. PROVIDE FIRE STOPPING TO MAINTAIN THE FIRE RATING OF ARCHITECTURAL ASSEMBLIES. REFER TO DETAIL SHEET FOR UL FIRE RATED PENETRATIONS.
9. EMERGENCY POWER DISTRIBUTION SYSTEM SHALL COMPLY WITH NEC ARTICLE 700. USE SEPARATE DEDICATED EMERGENCY POWER RACEWAY SYSTEMS.

BID LEGEND

EXCLUDE DIVISION 26, 27, 28 DEVICES, EQUIPMENT AND ASSOCIATED CIRCUITING WITHIN BOUNDARY OF HATCH FROM THE BASE BID. INCLUDE THEM IN ADD ALTERNATE#1 ONLY. LOOPS, CIRCUITS AND HOME RUNS ASSOCIATED WITH ITEMS OUTSIDE THE BOUNDARY ARE UNAFFECTED.

COORDINATE WITH DUKE ENERGY ROUTING OF PRIMARY LATERAL TO SWITCH AT RIEGEL RD.

6"ø

6" C. ELL AND SLEEVES FOR UTIL. PRIMARY LATERAL PULL AT PAD, BELOW PAVEMENT AND AT STEEP GRADE. (TYP.)

UTIL. XFMR ON CONCR. PAD

XFMR PAD BY E.C.

SECONDARY LATERAL FROM UTIL. TRANSFORMER. SEE DETAIL 3/E-501

(3) 3/4"X10' GROUND RODS W/ 12" DIA. INSPECTION WELLS 10' O.C.

METER & CT CAB. IF NOT XFMR MOUNTED

3 1/2"ø

1 1/4"ø

M. TLT 1104

W. TLT 1103

LOBBY 1102

LIGHT LOCK 1105

LIGHT LOCK 1107

TEACHING AREA 1124

CINEMA 2 1106.2

CINEMA 1 1106.1

PROJ BTH 1109

STAIR 1106

EQUIPMENT 1111

CORRIDOR 1114

HSEKPG 1119

POST-PROD 1123

SOUND MIX 1 1118

SOUND MIX 2 1117

CLASSROOM 1115

I.T. 1120

SECURITY 1121

BREAK ROOM 1122

LIGHT LOCK 1113

SOUND STAGE 1112

BLDG SERV. 1116

COORDINATE W/ MILLWORK TO INSTALL 6" ABOVE DESK. (TYP.)

FUTURE PANEL BUILD-OUT

CENTRAL EMERGENCY INVERTER

12"X12"X6" J-BOX FOR FUTURE TERMINATION OF GRID-IRON BOX ADJACENT TO MOTOR RATED SAFETY SWITCH FOR GRID HOIST. (TYP. 6)

400A/3Ø/4W+GINEMA3R W/ 4'X4' ALUM. CANOPY 7'6" AFG.

400A/3Ø/4W+G/NEMA1

COORD. EXACT LOCATION AND RACEWAYS FOR MANUAL CONTROL STATIONS W/ G.C.

ROLL-UP DOOR

SPARE C. TURNED UP IN 24"X17"X30" OPEN BOTTOM POLYMER CONCRETE BOX LEVEL WITH FINISHED GRADE. (TYP. 5)

HOTBOX HTR. TERMINATION. COORD. TERMINATION W/ CIVIL. SCHEMATIC ONLY. SEE UTILITY PLAN C4.01 FOR EXACT LOCATION ON FAR SIDE OF PAVEMENT.

1 FIRST FLOOR POWER PLAN
1/8" = 1'-0"

0 1' 2' 4' 8' 16' 1/8"=1'-0"

FIRE RATED WALL LEGEND

- 0 HR RATED SMOKE PARTITION
- 1 HR RATED FIRE PARTITION / FIRE BARRIER
- 2 HR RATED FIRE WALL

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ASHEVILLE, NORTH CAROLINA
(828) 255-4691

PROFESSIONAL ENGINEER SEAL 48024 9-23-19 MICHAEL MEHAFFEY

PROJECT TITLE

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

ELECTRICAL POWER PLANS

ISSUE BLOCK

Mark	Date	Description

PROJECT NO:	2018070.01
DATE:	9/23/2019
SCALE:	As indicated
DRAWN BY: MM	PROJ MGR: IS

E-101

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GENERAL LIGHTING CONSTRUCTION NOTES:

1. COORDINATE ELECTRICAL WORK W/ OTHER TRADES AND G.C.
2. PROVIDE ALL WORK REQUIRED TO SUPPORT THE TRADES IN THIS PROJECT INCLUDING BUT NOT LIMITED TO TEMPORARY SERVICE, TEMPORARY LIGHTING, AND WORK SHOWN.
3. CLASS 1 WIRING IS SHOWN SCHEMATICALLY ONLY. ALL LAY-IN TYPE FIXTURES SHALL BE CONNECTED BY A N.T.E. 6' FMC WHIP TO A BOX MOUNTED TO STRUCTURE ABOVE. BOXES NTE (4) CONDUIT CONNECTIONS.
4. DO NOT INSTALL LIGHTING CONTROL DEVICE BOXES BACK-TO-BACK.
5. PROVIDE GROUNDING CONDUCTORS SIZED PER NEC AND CONNECT TO BOXES AND GROUNDING TERMINALS.
6. PROVIDE 2-GANG BOXES WITH BARRIERS WHERE BOTH CLASS1 AND CLASS2 WIRING TERMINATE AT A COMMON DEVICE. FOR SWITCHING DEVICES REQUIRING BOTH CLASS 1 AND CLASS2 WIRING PROVIDE SEPARATE RACEWAYS TO CEILING SPACE. CLASS 2 WIRING MAY BE IN J-HOOKS IN CEILING SPACE TO TERMINATE AT FIXTURES. PROVIDE GROMMETS AT LUMINAIRE BODY PENETRATIONS TO PROTECT CONTROLS WIRING. EXPOSED WIRING FOR CONTROLS IS NOT ACCEPTABLE. SEE DETAIL SHEET E-500.
7. SUPPORT LAY-IN LUMINAIRES EA. WITH (2) HANGER WIRES FROM STRUCTURE ABOVE AND SECURED WITH (4) SHEET METAL SCREWS TO THE CEILING GRID.
8. SEAL PENETRATIONS OF ARCHITECTURAL ASSEMBLIES FOR SOUND PROOFING IN NON-FIRE RATED ASSEMBLIES.
9. PROVIDE FIRE STOPPING TO MAINTAIN THE FIRE RATING OF ARCHITECTURAL ASSEMBLIES. REFER TO DETAIL SHEET FOR UL FIRE RATED PENETRATIONS.
10. EMERGENCY LIGHTING CIRCUITS SHALL COMPLY WITH NEC ARTICLE 700. PROVIDE SEPARATE DEDICATED EMERGENCY POWER RACEWAYS.
11. DIMMING AND CONTROLS COMPONENTS SHALL BE TURN-KEY FROM SINGLE MANUFACTURER. WHERE SINGLE SOURCE PROCUREMENT IS NOT POSSIBLE THE LIGHTING SYSTEM COMPONENTS SHALL BE TESTED AND MUTUALLY APPROVED BY BOTH, THE LIGHT FIXTURE MANUFACTURER AND THE LIGHTING CONTROLS COMPONENT MANUFACTURER.
12. THE LIGHTING SYSTEM SHALL BE COMMISSIONED UNDER SUPERVISION OF A UNIVERSITY REPRESENTATIVE TO THE SATISFACTION OF THE ENGINEER.

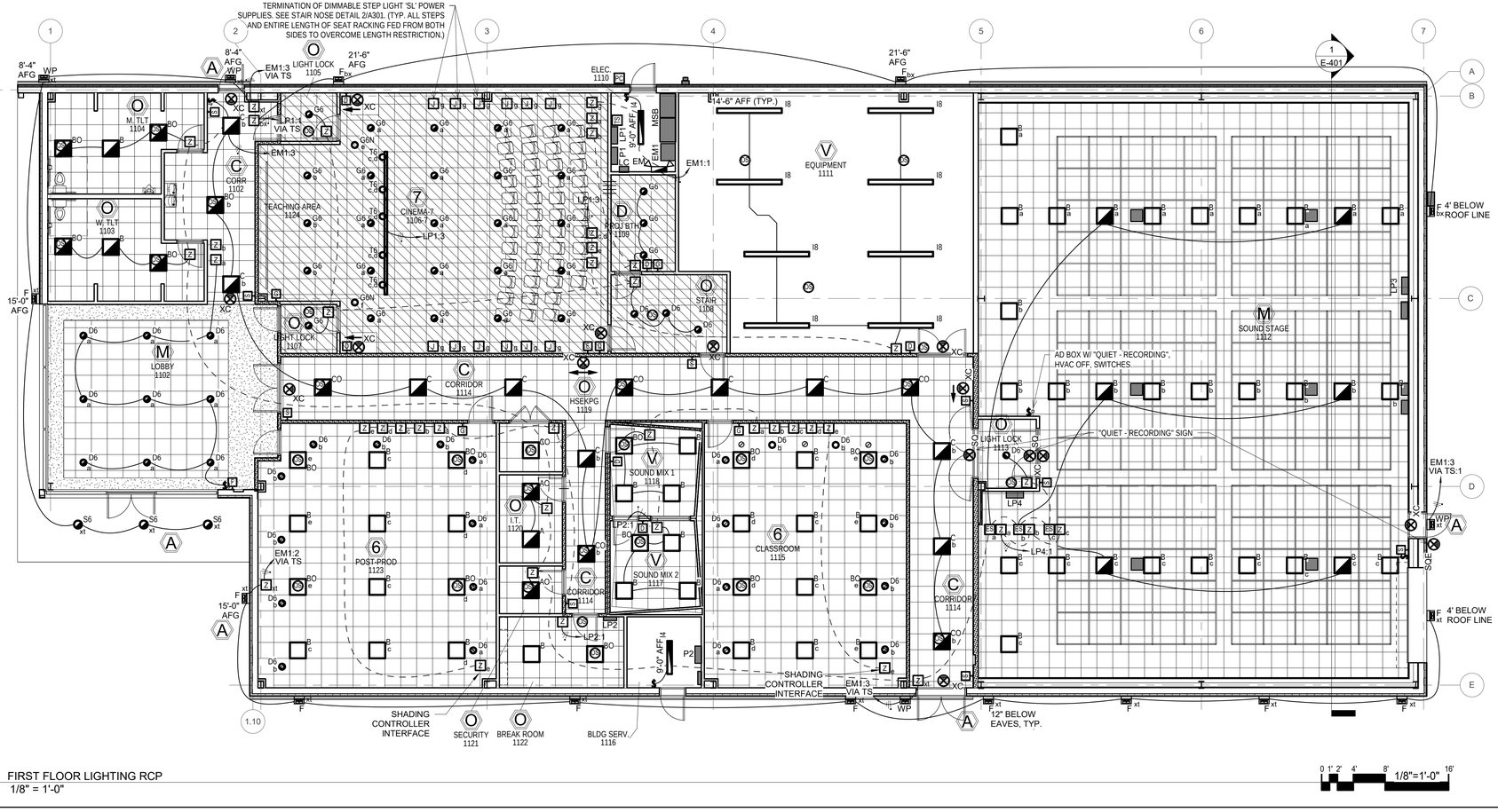
LIGHTING CONTROLS LEGEND

- (A) ASTRONOMICALLY TIME CONTROLLED: DUSK PLUS n HOURS TILL DAWN MINUS m HOURS WITH PHOTOCELL OVERRIDE FOR STORMS.
- (C) CORRIDOR NIGHT LIGHT SETBACK FOR REDUCED LIGHT LEVEL AFTER HOURS WITH 10-MINUTE TIME-LIMITED MANUAL AND/OR AUTOMATIC OVERRIDE.
- (D) MANUAL IN-SPACE DIMMING
- (O) OCCUPANCY CONTROL - AUTOMATIC ON/OFF CONTROL
- (M) MANUAL ON/OFF CONTROL.
- (V) VACANCY CONTROL - MANUAL-ON, AUTO-OFF WITH DIMMING
- (#) MULTI-ZONE VACANCY CONTROL W/ DIMMING AND RS-232 INTERFACE. # INDICATES ZONE COUNT. 6-ZONE CONTROLS INCLUDES WINDOW SHADING, 3-SIDE DOWNLIGHT AND 2'X2' LAY-IN LUMINAIRE VACANCY CTRL. W/ DIMMING

NOTES:
1. LOCAL LIGHTING CONTROLS SHALL INTERFACE WITH FIRE ALARM, SCHEDULING AND HOUSEKEEPING / FIRST RESPONDER OVERRIDE SWITCHES.
2. OCCUPANCY CONTROL IS CEILING MOUNTED LOW VOLTAGE DUAL PASSIVE TECHNOLOGY - IR & MICROPHONICS.
3. ALL SPACES HAVE SETPOINT TRIMMING.
4. THE CINEMA HAS PRESET SCENE CONTROL WITH MANUAL DIMMING OVERRIDES FOR EACH ZONE AT THE STAGE AND IN THE PROJECTION BOOTH. HOUSE AND STEP LIGHTING CONTROL ZONES ARE CONTROLLED AT THE EXITS, ALSO.
5. STEP LIGHTS TYPE 'SL' HAVE 0.2FC SETBACK AT TREADS AND CORRIDOR LIGHTS HAVE 2FC SETBACK AT CORRIDOR FLOOR THAT CANNOT BE DIMINISHED FURTHER BY OCCUPANTS.

BID LEGEND

EXCLUDE DIVISION 26, 27, 28 DEVICES, EQUIPMENT AND ASSOCIATED CIRCUITING WITHIN BOUNDARY OF HATCH FROM THE BASE BID. INCLUDE THEM IN ADD ALTERNATE#1 ONLY. LOOPS, CIRCUITS AND HOME RUNS ASSOCIATED WITH ITEMS OUTSIDE THE BOUNDARY ARE UNAFFECTED.
IN LIEU OF THE DOWNLIGHTS, TRACK LIGHTS, STEP LIGHTS AND LOW VOLTAGE CONTROL SHOWN FOR ADD ALTERNATE#1 PROVIDE UNDER THE BAS BID (6) TYPE '18' LUMINAIRES EVENLY DISTRIBUTED IN THE OPEN CINEMA SPACE AND CORRIDOR 1108 WITH LINE VOLTAGE 3- / 4-WAY SWITCHING TO COVER EACH EXIT OF THE SHELL SPACE. MOVE DIRECTIONAL EXIT SIGNS TO ABOVE DOORS.



1 FIRST FLOOR LIGHTING RCP
1/8" = 1'-0"

Illuminance Calculations

Calculation Points Name	Average	Maximum	Minimum	Average / Minimum
LIGHT LOCK 1107	20 fc	20 fc	20 fc	1.0
LIGHT LOCK 1105	20 fc	21 fc	20 fc	1.0
ELEC. / TELE. 1116	15 fc	26 fc	0 fc	71943.2
HSEKPG 1120	12 fc	13 fc	10 fc	1.1
BLDG SRVC 1110	21 fc	25 fc	18 fc	1.2
LIGHT LOCK 1123	16 fc	16 fc	15 fc	1.0
CORRIDOR 1122	9 fc	12 fc	6 fc	1.5
CINEMA-1106 STAGE	30 fc	44 fc	16 fc	1.9
CORRIDOR 1108	24 fc	37 fc	0 fc	2022.1
CLASSROOM 1113	57 fc	76 fc	34 fc	1.7
PROJ BTH 1109	49 fc	60 fc	42 fc	1.2
SECURITY 1118	45 fc	50 fc	43 fc	1.1
I.T. 1119	57 fc	66 fc	49 fc	1.2
EQUIPMENT 1111	24 fc	29 fc	12 fc	2.1
POST-PROD 1121	50 fc	78 fc	27 fc	1.9
SOUND MIX 1 1114	48 fc	52 fc	42 fc	1.1
SOUND MIX 2 1115	49 fc	55 fc	40 fc	1.2
SOUND STAGE 1112	17 fc	21 fc	9 fc	1.9
A/V 1117	26 fc	34 fc	0 fc	43521.9
W. TLT 1103	25 fc	41 fc	4 fc	6.8
M. TLT 1104	25 fc	39 fc	4 fc	5.6
CINEMA-STEP1 1106-2	38 fc	44 fc	24 fc	1.6
CINEMA-STEP2 1106-3	38 fc	44 fc	21 fc	1.8
CINEMA-STEP3 1106-4	38 fc	44 fc	21 fc	1.8
CINEMA-STEP4 1106-5	38 fc	44 fc	23 fc	1.6
CINEMA-STEP5 1106-6	35 fc	42 fc	22 fc	1.6
CINEMA-STEP6 1106-7	25 fc	36 fc	11 fc	2.2
CINEMA-HOUSE FLOOR	48 fc	70 fc	32 fc	1.5

FIRE RATED WALL LEGEND

- 0 HR RATED SMOKE PARTITION
- 1 HR RATED FIRE PARTITION / FIRE BARRIER
- 2 HR RATED FIRE WALL

BECKER MORGAN GROUP
ARCHITECTURE PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
Newarrk, DE 19711
302.369.3700

www.beckermorgan.com

SUD ASSOCIATES, P.A.
CONSULTING ENGINEERS
LICENSE NO. C-0315

1813 CHAPEL HILL RD
DURHAM, NORTH CAROLINA
(919) 493-5277

FLAT IRON BUILDING SUITE 706
20 BATTERY PARK AVENUE
ASHEVILLE, NORTH CAROLINA
(828) 255-4691

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 48024 7-25-19 ENGINEER MICHAEL MEINE

PROJECT TITLE
UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE
ELECTRICAL LIGHTING PLANS

ISSUE BLOCK

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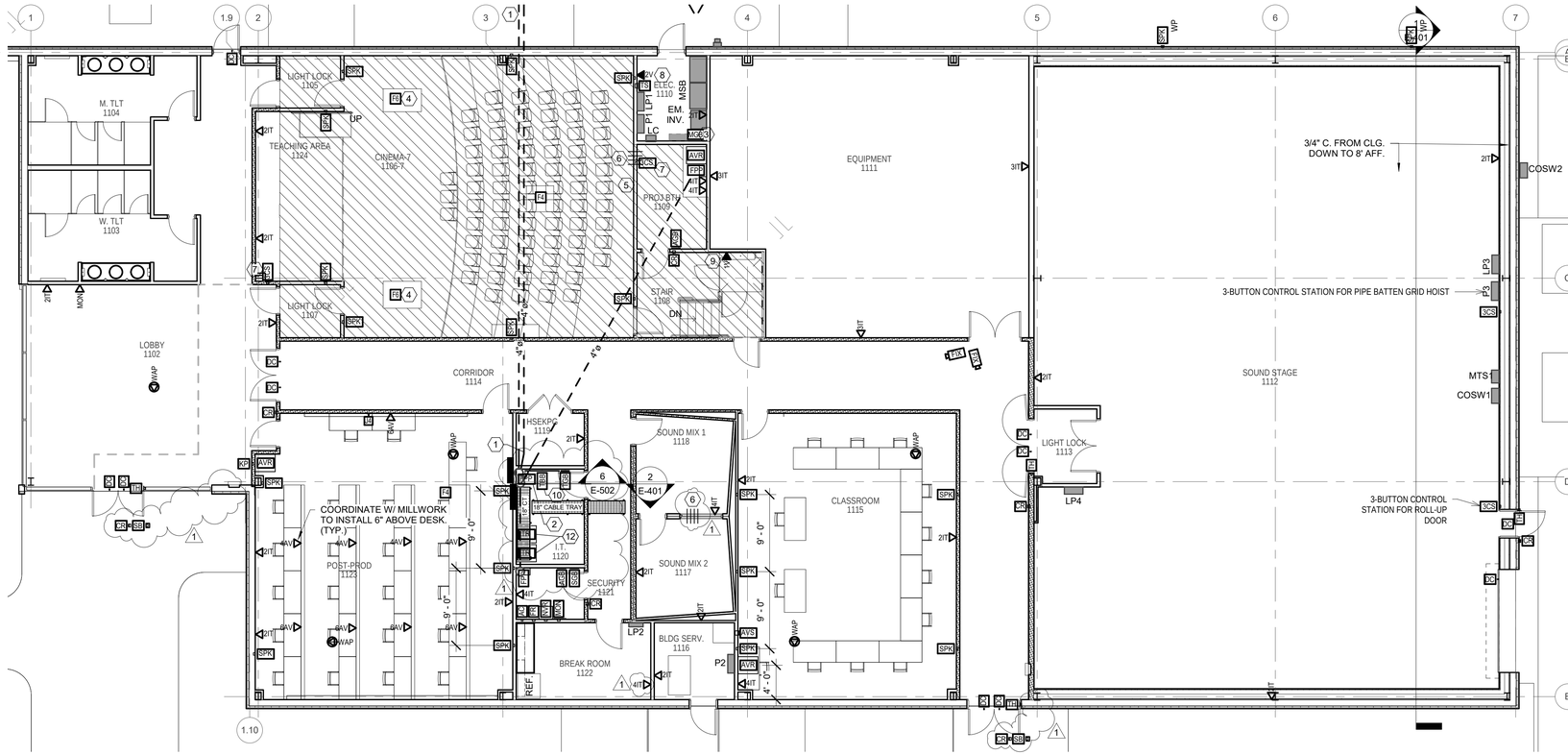
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2 FIRST FLOOR SYSTEMS RCP
1/8" = 1'-0"



1 FIRST FLOOR SYSTEMS FLOOR PLAN
1/8" = 1'-0"

GENERAL POWER CONSTRUCTION NOTES:

1. COORDINATE ELECTRICAL SYSTEMS WORK W/ OTHER TRADES AND G.C.. REROUTING OF CLASS1 AND CLASS2 CIRCUITS AND RELOCATION OF CABLE TRAYS, BOXES AND RACEWAYS WHERE THEY WOULD BE MADE INACCESSIBLE BY OTHER TRADES OR ARE NOT COMPLIANT WITH REQUIREMENTS.
2. A/V SYSTEM COMPONENTS ARE NIC. PROVIDE RACEWAYS, WIRING, TERMINATIONS, TEST REPORTS FOR EA. COMMUNICATION CHANNEL.
3. ETHERNET INFORMATION TECHNOLOGY SYSTEM IS PER-CHANNEL PERFORMANCE TESTED TEN (10) GIGABIT ETHERNET AT 100 METERS END-TO-END MANUFACTURER'S CERTIFIED SOLUTION WITH 20 YEAR WARRANTY AS APPROVED BY UNCW. DATA WIRING, DEVICES AND COMPONENTS ARE CAT6A. WHERE CONFLICTS EXIST ELSEWHERE IN CONTRACT DOCUMENTS, THIS NOTE SHALL SUPERSEDE ALL OTHERS.
4. AVOID BACK-TO-BACK INSTALLATION OF DEVICES.
5. EXPOSED CONDUITS IN UTILITY SPACES SHALL BE PRIMED AND PAINTED TO MATCH ADJACENT FINISHES.
6. PROVIDE COLOR CODING OF RACEWAYS AND BOXES TO DISTINGUISH SYSTEMS. DISTANCE BETWEEN MARKINGS SHALL NOT EXCEED 20' ON LONG RUNS. MINIMUM NUMBER OF MARKINGS ARE (2) PER SPACE.
7. PROVIDE MIN. #6 AWG BARE BONDING CONDUCTOR IN CABLE TRAYS FOR BONDING OF EA. SECTION. PROVIDE LISTED BONDING CLAMPS AT EACH SEGMENT FOR CONTINUOUS BONDING.
8. FOR CLASS 2 WIRING PROVIDE 1" C. DROPS TO INDIVIDUAL DATA AND A/V OUTLETS U.O.N. PROVIDE 48 PORT CAT6A PATCH PANELS IN RACKS WITH CABLE MANAGEMENT, COMBS, SUPPORTS, CABLE INSTALLATION, TERMINATIONS, TESTING, CERTIFICATION AND EXTENDED WARRANTY FOR AN END-TO-END STRUCTURED CABLING SOLUTION.
9. SEAL PENETRATIONS OF ARCHITECTURAL ASSEMBLIES FOR SOUND PROOFING IN NON-FIRE RATED ASSEMBLIES.
10. PROVIDE FIRE STOPPING TO MAINTAIN THE FIRE RATING OF ARCHITECTURAL ASSEMBLIES. REFER TO DETAIL SHEET FOR UL FIRE RATED PENETRATIONS.
11. TELE/DATA PATHWAYS SHALL BE INSTALLED BELOW DUCTWORK. COORDINATE CABLE TRAY ROUTING W/ G.C. AND M.C. E.G. FOR HANGER SPACES.
12. PROVIDE CLOSED SYSTEM CONDUIT DATA PATHWAY FOR INTERIOR AND EXTERIOR SECURITY CAMERAS BACK TO SECURITY RM. 1118. (TYP.)
13. COORDINATE CONCEALMENT OF PATHWAYS FOR WIRING OF DOOR HARDWARE, E.G. TRANSFER HINGES WITH G.C.
14. COORDINATE EXACT LOCATIONS, LAYOUT AND DETAILS OF AUDIO/VISUAL PATHWAYS WITH OWNER'S A/V REPRESENTATIVE.
15. COORDINATE EXACT LAYOUT AND DETAILS OF TELECOM PATHWAYS WITH OWNER'S TELECOM REPRESENTATIVE.
16. PROVIDE CONDUIT FOR IN-WALL AND BELOW-SLAB PATHWAYS. USE 4" J-HOOKS FOR CONCEALED HORIZONTAL PATHWAYS BACK TO IT ROOM VIA CABLE TRAYS.
17. PATCH CORDS ARE CAT 6A FOR A TOTAL END-TO-END STRUCTURED CABLE SOLUTION.
18. TV OUTLETS ARE TWO (2) CAT 6A.

BID LEGEND

EXCLUDE DIVISION 26, 27, 28 DEVICES, EQUIPMENT AND ASSOCIATED CIRCUITING WITHIN BOUNDARY OF HATCH FROM THE BASE BID. INCLUDE THEM IN ADD ALTERNATE#1 ONLY. LOOPS, CIRCUITS AND HOME RUNS ASSOCIATED WITH ITEMS OUTSIDE THE BOUNDARY ARE UNAFFECTED.

KEYED CONSTRUCTION NOTES

KEY	CONSTRUCTION NOTE (HEXAGON REFERENCE NUMBER ⟨#⟩)
1	BUILDING'S TELECOM DEMARCATION POINT IS IN THE IT ROOM AT THE FIBER PATCH PANEL FOR FIBER OPTIC CABLES AND AT THE CAT3 SURGE PROTECTED BUILDING ENTRANCE TERMINALS AND PUNCH-DOWN BLOCK AT THE TELECOM BACKBOARD FOR 25-PAIR CAT3 UTP COPPER CABLE. PROVIDE (2) 4"C. W/ WIDE SWEEP ELLS. STUB INTO 24"X24"X18" PULL BOX BELOW FIBER PATCH PANEL IN IT ROOM PER DETAIL 6/E-502 AND INTO 2'X4'X30" POLYMER CONCRETE PULLBOX 5' OUTSIDE OF BLDG WITH LEVEL COVER 1" ABOVE GRADE. SEE ELECTRICAL SITE PLAN ES-101 FOR CONTINUATION TO CAMPUS TELECOM MANHOLE MH-52A. SEE ALSO DETAILS 1/E-502, 2/E-502 AND 7/E-502.
2	PROVIDE FIBER PATCH PANEL WITH PULL BOX BELOW TO SEPARATE FIBER OPTIC AND COPPER CABLES FOR TELECOM DEMARCATION POINTS.
3	PROVIDE SYSTEM MAIN GROUNDING BUS BAR 96" AFF. REFER TO DETAIL 2/E-501.
4	PROVIDE FULL SIZE DUAL SERVICE CLASS 1 / CLASS 2 / FIBER OPTIC CABLE RATED FLOOR BOX WITH BARRIERS. OUTLETS SHALL BE (2) DUPLEX RECEPTACLES, (4) CAT6 RJ45 DATA JACKS, (2) CAT6A RJ45 A/V JACKS, (2) FIBER CONNECTORS, (1) DIN MICROPHONE JACK AND (1) SET OF MONITOR SPEAKER OUTLETS. REFER TO DETAIL. TELEDATA COMPONENT SHOWN ONLY. REFER TO POWER PLANs FOR RECEPTACLE COMPONENT. (TYP.)
5	4" SQ. BOX ONLY FOR FUT. REAR SPEAKERS. 3/4" C. BACK TO PROJ. BOOTH. REFER TO A/V SINGLE LINE DIAGRAMS.
6	PROVIDE (2) 1" C., (2) 1-1/2" SLEEVES W/ RUBBER GROMMETS ON BOTH SIDES FOR CLASS2 WIRE PENETRATIONS.
7	DISCONNECT SHALL BE CONCEALED 8' AFF BEHIND CURTAIN TRACKS. PROVIDE 3/4" C. BETWEEN CURTAIN CONTROLLER AND (2) PUSHBUTTON STATIONS - (1) BELOW MOTOR CONTROLLER AND (1) IN PROJECTION BOOTH.
8	PROVIDE (2) POTS TELEPHONE LINES FOR FIRE ALARM PANEL. COORDINATE WITH OWNER REP.
9	PROVIDE (1) POTS TELEPHONE LINE FOR H/C LIFT. COORDINATE WITH OWNER REP.
10	PROVIDE 4'X4' CLASS A FIRE RATED TELECOM BACKBOARD WITH 25-POLE CAT3 SPLICE CHAMBER TYPE BUILDING ENTRANCE TERMINALS WITH (25) SURGE PROTECTION MODULES AND 110 TYPE PUNCH-DOWN BLOCK WITH WIRE MANAGEMENT COMBS. TERMINATE 25-PAIR CAT3 UTP PE-89 RATED OUTDOOR COPPER TELEPHONE SERVICE CABLE VIA SPDs.
11	PROVIDE EXTERIOR WEATHERPROOF WIRELESS ACCESS POINT AND CIRCUIT LP3:18 AT 12'-0" AFG.
12	PROVIDE TWO-POST OPEN FRAME IT-RACK WITH THREE (3) INCH DEEP CHANNEL, SEVEN (7) FEET IN HEIGHT. NINETEEN (19) INCHES WIDE AND HAVE A TOTAL OF FORTY-FIVE (45) RU'S. VERTICAL CABLE MANAGEMENT WILL BE A MINIMUM OF SIX (6) INCHES WIDE AND SIX (6) INCHES DEEP, DOUBLE SIDED WITH COVERS. EACH RACK WILL HAVE A VERTICAL CABLE MANAGER PER SIDE. WITH THE TWO (2) RACKS SIDE BY SIDE THE TOTAL VERTICAL CABLE MANAGER'S WIDTH WILL BE TWELVE (12) INCHES WIDE.

FIRE RATED WALL LEGEND

- 0 HR RATED SMOKE PARTITION
- 1 HR RATED FIRE PARTITION / FIRE BARRIER
- 2 HR RATED FIRE WALL

0 1' 2' 4' 8' 1/8"=1'-0" 16'

BECKER MORGAN GROUP
ARCHITECTURE PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
Newarrk, DE 19711
302.369.3700

www.beckermorgan.com

SUD ASSOCIATES, P.A.
CONSULTING ENGINEERS
LICENSE NO. C-0315

1813 CHAPEL HILL RD
DURHAM, NORTH CAROLINA
(919) 493-5277

FLAT IRON BUILDING SUITE 706
20 BATTERY PARK AVENUE
ASHEVILLE, NORTH CAROLINA
(828) 255-4691

NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER SEAL 48024 10-4-19 MICHAEL MEYER

PROJECT TITLE

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SHEET TITLE

ELECTRICAL SYSTEMS PLANS

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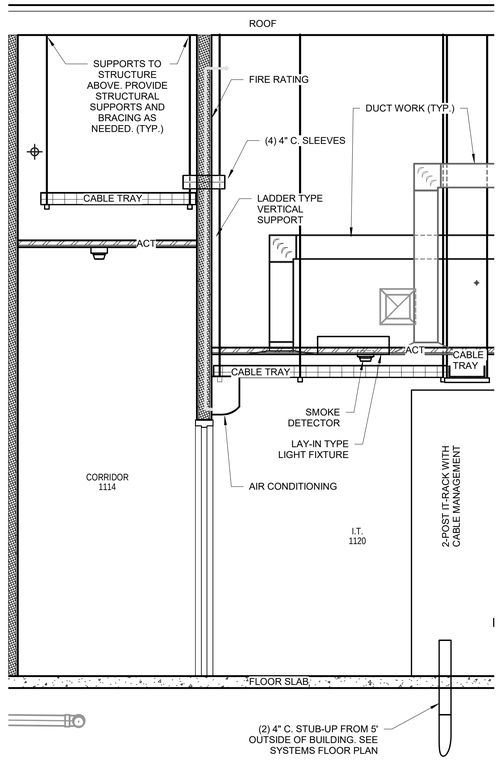
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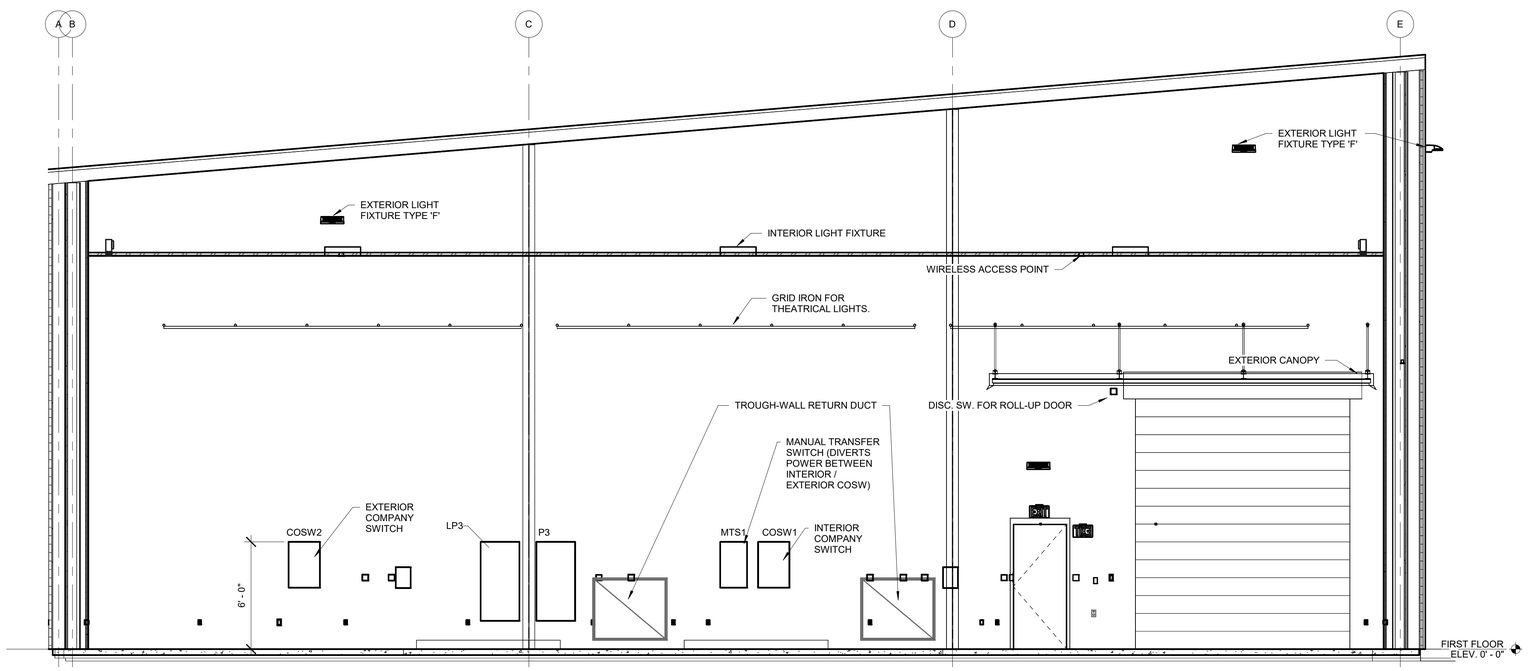
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2 IT ROOM CABLE MANAGEMENT DETAIL
1/2" = 1'-0"



1 SECTION EAST SOUNDSTAGE WALL - EQUIPMENT LAYOUT
1/4" = 1'-0"

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ARCHITECTURE
PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
Newarrk, DE 19711
302.369.3700

www.beckermorgan.com

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CONSULTING ENGINEERS
LICENSE NO. C-0315

1813 CHAPEL HILL RD
DURHAM, NORTH CAROLINA
(919) 493-5277

FLAT IRON BUILDING SUITE 706
20 BATTERY PARK AVENUE
ASHEVILLE, NORTH CAROLINA
(828) 255-4051

PROFESSIONAL ENGINEER SEAL 48024 9-23-19 MICHAEL MEINERT

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SHEET TITLE

SECTIONS

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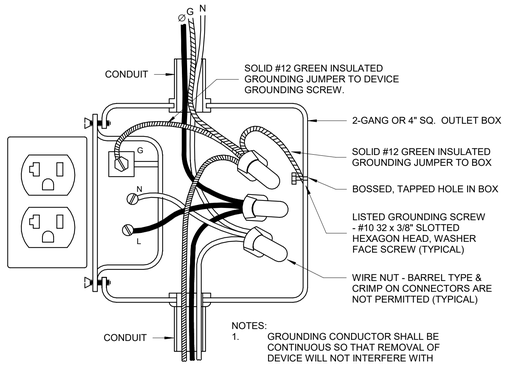
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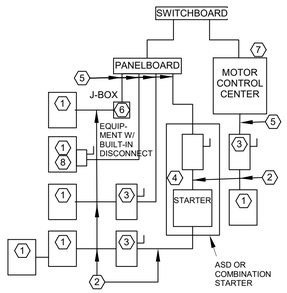
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NOTES:
1. GROUNDING CONDUCTOR SHALL BE CONTINUOUS SO THAT REMOVAL OF DEVICE WILL NOT INTERFERE WITH CONDUCTOR CONTINUITY.
2. MIN. CONDUCTOR SIZE IS #12 AWG.

4 RECEPTACLE CONNECTION DETAIL
12" = 1'-0"



GENERAL NOTES

1. IN ALL CASES THE CONTRACTOR FURNISHING THE EQUIPMENT SHALL MAKE FINAL CONNECTIONS, START UP AND TEST THE EQUIPMENT.
2. WHERE ELECTRICAL WIRING IS REQUIRED BY TRADES OTHER THAN COVERED BY DIVISION 26, THE INSTALLER SHALL REFER TO THE WIRING MATERIALS AND METHODS AS SPECIFIED UNDER DIVISION 26. NO EXCEPTIONS.

KEYED NOTES

1. EQUIPMENT OF TRADES OTHER THAN ELECTRICAL.
2. CONDUIT AND WIRING BY HVAC, PLUMBINGCONTRACTOR OR OTHER TRADES.
3. IF AN ADDITIONAL DISCONNECT SWITCH IS REQUIRED BY THE NEC IT SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR FURNISHING THE EQUIPMENT.
4. A COMBINATION STARTER OR VFD MAY BE USED IN LIEU OF A SEPARATE DISCONECT SWITCH AND STARTER. LOCATE ADJACENT TO THE EQUIPMENT. IT SHALL BE PROVIDED BY THE CONTRACTOR FURNISHING THE EQUIPMENT.
5. FEEDER CIRCUIT WIRING AND CONDUIT IN ELECTRICAL WORK. SEE PANELBOARD SCHEDULES FOR WIRE AND CIRCUIT BREAKER SIZES.
6. A JUNCTION BOX MAY BE SHOWN ON THE ELECTRICAL PLANS FOR SOME EQUIPMENT. IF NO STARTER OR DISCONNECT IS SUPPLIED A JUNCTION BOX SHALL BE INSTALLED ADJACENT TO THE EQUIPMENT. THE ELECTRICAL CONTRACTOR SHALL PROVIDE LINE SIDE WIRING TO THE JUNCTION BOX. LOAD SIDE WIRING WILL BE PROVIDED BY THE CONTRACTOR FURNISHING THE EQUIPMENT.
7. IN PROJECTS UTILIZING AN MCC, THE STARTER, CIRCUIT BREAKER OR VFD IN THE MCC ARE PROVIDED BY THE ELECTRICAL CONTRACTOR.
8. IF ROOF TOP EQUIPMENT IS NOT PROVIDED WITH A BUILT-IN DISCONNECT SWITCH, THE ELECTRICAL CONTRACTOR SHALL PROVIDE A DISCONNECT SWITCH.

2 EQUIPMENT WIRING RESPONSIBILITY
12" = 1'-0"

System No. W-L-1001

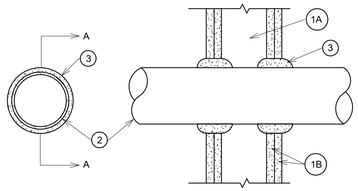
June 15, 2005

F Ratings -- 1, 2, 3 and 4 Hr (See Items 2 and 3)

T Ratings -- 0, 1, 2, 3 and 4 Hr (See Item 3)

L Rating At Ambient -- less than 1 CFM/sq ft

L Rating At 400 F -- less than 1 CFM/sq ft



SECTION A-A

1. **Wall Assembly** — The 1, 2, 3 or 4 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or 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 (max 2 h fire rated assemblies) or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC with nom 2 by 4 in. (51 by 102 mm) lumber end plates and cross braces. Steel studs to be min 3-5/8 in. (92 mm) wide by 1-3/8 in. (35 mm) deep channels spaced max 24 in. (610 mm) OC.

B. **Gypsum Board*** — Nom 1/2 or 5/8 in. (13 or 16 mm) thick, 4 ft. (122 cm) wide with square or tapered edges. The gypsum wallboard 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 26 in. (660 mm).

2. **Through-Penetrant** — One metallic pipe, conduit or tubing installed either concentrically or eccentrically within the firestop system. The annular space between pipe, conduit or tubing and periphery of opening shall be min of 0 in / (0 mm). (point contact) to max 2 in. (51 mm) 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 24 in. (610 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

B. **Iron Pipe** — Nom 24 in. (610 mm) diam (or smaller) service weight (or heavier) cast iron soil pipe, nom 12 in (305 mm) diam (or smaller) or Class 50 (or heavier) ductile iron pressure pipe.

C. **Conduit** — Nom 6 in. (152 mm) diam (or smaller) steel conduit or nom 4 in (102 mm) diam (or smaller) steel electrical metallic tubing

D. **Copper Tubing** — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing

E. **Copper Pipe** — Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.

F. **Through Penetrating Product*** — Flexible Metal Piping The following types of steel flexible metal gas piping may be used:

1. Nom 2 in. (51 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

OMEGA FLEX INC

2. Nom 1 in. (25 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

GASTITE, DIV OF TITEFLEX

3. Nom 1 in. (25 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

WARD MFG L L C

3. **Fill, Void or Cavity Material* — Caulk or Sealant** — Min 5/8. , 1-1/4,1-7/8 and 2-1/2 in. (16, 32, 48 and 64 mm) thickness of caulk for 1, 2, 3 and 4 hr rated assemblies, respectively, applied within annulus, flush with both surfaces of wall. Min 1/4 in. (6 mm) diam bead of caulk applied to gypsum board/penetrant interface at point contact location on both sides of wall. The hourly F Rating of the firestop system is dependent upon the hourly fire rating of the wall assembly in which it is installed, as shown in the following table. The hourly T Rating of the firestop system is dependent upon the type or size of the pipe or conduit and the hourly fire rating of the wall assembly in which it is installed, as tabulated below:

Max Pipe or Conduit Diam In	F Rating Hr	T Rating Hr
1	1 or 2	0+, 1 or 2
1	3 or 4	3 or 4
4	1 or 2	0
6	3 or 4	0
12	1 or 2	0

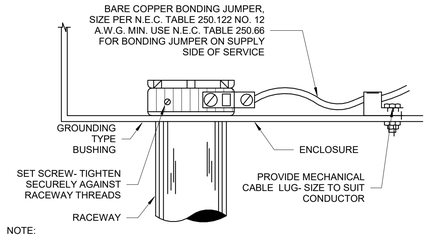
+When copper pipe is used, T Rating is 0 h.

3M COMPANY — CP 25WB+ or FB-3000 WT.

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

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1 UL RATED FIRE PENETRATION DETAILS
N.T.S.



NOTE:

FOR MORE THAN ONE RACEWAY IN AN ENCLOSURE, BOND ALL LUGS TOGETHER BEFORE CONNECTING TO ENCLOSURE.

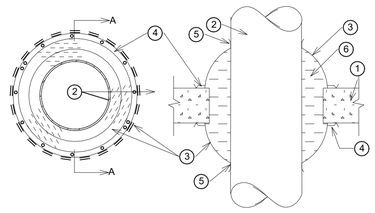
3 RACEWAY GROUNDING DETAIL
12" = 1'-0"

System No. C-AJ-1086

April 23, 2014

F Rating — 3 Hr

T Rating — 1 Hr



SECTION A-A

1. **Floor or Wall Assembly** — Min 4-1/2 in. thick lightweight or normal weight (100-150 pcf) concrete. Diam of through opening to be 5 to 6 in. larger than outside diam of steel pipe (Item 2). Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 26 in.

See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.

2. **Steel Pipe** — Nom 20 in. diam (or smaller) Schedule 10 (or heavier) steel pipe centered in through opening and rigidly supported on both sides of concrete floor or wall assembly.

3. **Fill, Void or Cavity Materials* — Coated Fabric** — Two pieces of coated fabric supplied with kit. Length of each piece of fabric to be equal to inside circumference of steel anchor ring (Item 4) plus min 2 in. for overlap. Height of each piece of fabric to be min 18 in. Fabric to be formed into cylindrical shape with diam equal to inside diam of steel anchor ring. End of fabric cylinder to be provided with nom 3 in. long slits on nom 2 to 4 in. centers to allow folding of the fabric flaps between the steel anchor ring and the concrete. After securing the fabric cylinder to the floor or wall with the steel anchor ring, the opposite end of the fabric cylinder shall be gathered and cinched about the pipe with a stainless steel band clamp (Item 5). Sufficient slack shall be left in the fabric to permit installation of a nom 2-1/2 to 3 in. thickness of mineral wool batt insulation (Item 6) extending a min of 8 in. from the surface of the floor or wall. Fabric "boot" to be installed symmetrically on both sides of floor or wall assembly. Ends of fabric protruding beyond steel anchor ring and beyond banding strap may be trimmed for appearance.

4. **Steel Anchor Ring** — Nom 1-1/2 in. wide by 1/8 in. thick two-piece steel ring having an inside diam of 1 to 2 in. larger than diam of through opening in floor or wall. Anchor ring to compress flaps of fabric (Item A) against floor or wall surfaces and to be secured to floor or wall surfaces on each side of assembly with steel anchor bolts, powder actuated nails, or equivalent, in conjunction with steel fender washers.

5. **Stainless Steel Banding Strap** — Min 1/2 in. wide by 0.020 in. thick stainless steel banding strap with worm gear tightening mechanism. Banding strap to be installed to tightly-cinch fabric "boot" against steel pipe on both sides of assembly.

6. **Packing Material** — Fabric boot on each side of floor or wall assembly and annular space between pipe and concrete to be tightly-packed with nom 6 to 9 pcf mineral wool batt insulation such that min overall fill length is 20 in.

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

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System No. C-AJ-1044

March 15, 2007

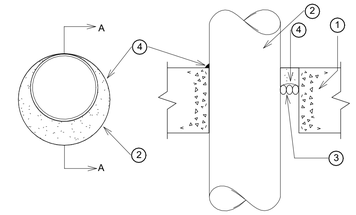
F Ratings — 2, 3, and 4 Hr (See Items 2A and 4)

T Rating — 0 Hr

L Rating At Ambient — 2 CFM/sq ft

L Rating At 400 F — less than 1 CFM/sq ft

W Rating — Class 1 (See Item 4)



SECTION A-A

1. **Floor or Wall Assembly** — Lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete. Except as noted in table under Item 4, min thickness of solid concrete floor or wall assembly is 4-1/2 in. (114 mm). Floor may also be constructed of any min 6 in.(152 mm) thick UL Classified hollow core **Precast Concrete Units***. When floor is constructed of hollow core precast concrete units, packing material (Item 3) and caulk fill material (Item 4) to be installed symmetrically on both sides of floor, flush with floor surface. Wall assembly may also be constructed of any UL Classified **Concrete Blocks***. Max diam of opening in solid lightweight or normal weight concrete floor is 32 in. (813 mm). Max diam of opening in floor constructed of hollow-core precast concrete units is 7 in. (178 mm)
See **Concrete Blocks** (CAZT) and **Precast Concrete Units** (CFTV) categories in the Fire Resistance Directory for names of manufacturers.

1A. **Steel Sleeve** — (Optional, Not Shown) - Nom 16 in. (406 mm) diam (or smaller) Schedule 10 (or heavier) steel sleeve cast or grouted into floor or wall assembly. Sleeve may extend a max of 2 in. (51 mm) above top of floor or beyond either surface of wall. As an alternate, nom 16 in. (406 mm) diam (or smaller) min 0.028 (0.71 mm) thick galvanized sheet steel sleeve cast or grouted into floor or wall assembly flush with floor or wall surfaces.

2. **Through Penetrants** — One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. Max annular space between pipe, conduit or tubing and edge of through opening or sleeve is dependent on the parameters shown in Item 4. Min annular space between pipe or conduit and edge of through opening is 0 in. (point contact). Max annular space to be as shown in the table in Item 4. Pipe, conduit or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:

A. **Steel Pipe** — Nom 30 in. (762 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

B. **Iron Pipe** — Nom 30 in. (762 mm) diam (or smaller) cast or ductile iron pipe.

C. **Conduit** — Nom 6 in. (152 mm) diam (or smaller) rigid steel conduit.

D. **Conduit** — Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing.

E. **Copper Tubing** — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tube.

F. **Copper Pipe** — Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.

3. **Packing Material** — Polyethylene backer rod or nom 1 in. (25 mm) thickness of tightly-packed mineral wool batt or glass fiber 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 caulk fill material (Item 4).

3A. **Forming Material*** — As an alternate to the packing material in Item 3, nom 4 in. (102 mm) wide strips of min 1/2 in (13 mm) thick compressible mat to be stacked to a thickness greater than the width of the annular space and compression-fitted, edge-first, to fill the annular space to a min 4 in. (102 mm) depth. As an option, the strips of min 1/2 in. (13mm) thick compressible mat may be folded in half, lengthwise, and stacked to a thickness greater than the width of the annular space and compression-fitted, edge-first, to fill the annular space to a min 2 in. (51 mm) depth. Top of forming material to be recessed from top surface of floor or from both surfaces of wall as necessary to accommodate the required thickness of caulk fill material.

3M COMPANY — Fire Barrier Packing Material

4. **Fill, Void or Cavity Material* — Caulk, Sealant** — Applied to fill the annular space flush with top surface of floor. In wall assemblies, required caulk thickness to be installed symmetrically on both sides of wall, flush with wall surface. At point contact location between penetrant and sleeve or between penetrant and concrete, a min 1/4 in. (6 mm) diam bead of caulk shall be applied at top surface of floor and at both surfaces of wall. The hourly F Ratings and the min required caulk thicknesses are dependent upon a number of parameters, as shown in the following table:

Min Floor or Wall Thkns In.	Nom Pipe Tube or Conduit Diam In.	Max Annular Space In.	Min Caulk Thkns In.	F Rating Hr
2-1/2 (64)	1/2-12 (13-305)	1-3/8 (35)	1/2 (13)	2
2-1/2 (64)	1/2-12 (13-305)	3-1/4 (83)	1 (25)	2
4-1/2 (114)	1/2-6 (13-152)	1-3/8 (35)	1/4 (6) (a)	2
4-1/2 (114)	1/2-12 (13-305)	1-1/4 (32)	1/2 (13)	3
4-1/2 (114)	1/2-20 (13-508)	2 (51)	1 (25)	3
4-1/2 (114)	1/2-20 (13-508)	2 (51)	1 (25)	3
4-1/2 (114)	1/2-12 (13-305)	3-1/4 (83)	1 (25)	3
4-1/2 (114)	22-30 (558-762)	2 (51)	2 (51)	3
5-1/2 (140)	1/2-6 (13-152)	1-3/8 (35)	1 (25) (b)	4

(a)Min 2 in (51 mm) thickness of mineral wool batt insulation or forming material (Item 3A) required in annular space.

(b)Min 1 in. (25 mm) thickness of mineral wool batt insulation required in annular space on both sides of floor or wall assembly. Min 1 in.(25 mm) thickness of caulk to be installed flush with each surface of floor or wall assembly.

3M COMPANY — CP 25WB+ or FB-3000 WT.

(Note - W Rating applies only when FB-3000 WT is used.)

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BECKER MORGAN GROUP
ARCHITECTURE PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
Newarrk, DE 19711
302.369.3700

www.beckermorgan.com

SUD ASSOCIATES, P.A.
CONSULTING ENGINEERS
LICENSE NO. C-0315

1813 CHAPEL HILL RD
DURHAM, NORTH CAROLINA
(919) 493-5277

FLAT IRON BUILDING SUITE 706
20 BATTERY PARK AVENUE
ASHEVILLE, NORTH CAROLINA
(828) 250-4691

REGISTERED PROFESSIONAL ENGINEER SEAL 48024 9-25-19 ENGINEER MICHAEL MEHER

PROJECT TITLE

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

ELECTRICAL DETAILS

ISSUE BLOCK

Mark	Date	Description

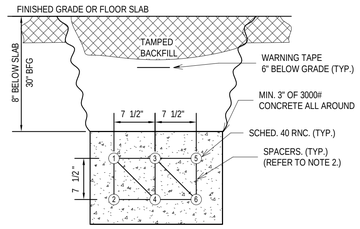
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DATE: 9/23/2019
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E-500

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SERVICE CONDUIT SCHEDULE		
#	PURPOSE	SIZE
1	SERVICE LATERAL	3-1/2"
2	SERVICE LATERAL	3-1/2"
3	SERVICE LATERAL	3-1/2"
4	SERVICE LATERAL	3-1/2"
5	SERVICE LATERAL	3-1/2"
6	GROUNDING ELECTRODE CONDUCTOR TO ROD TRIAD	1-1/4"

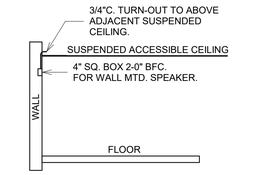


SECTION A-A

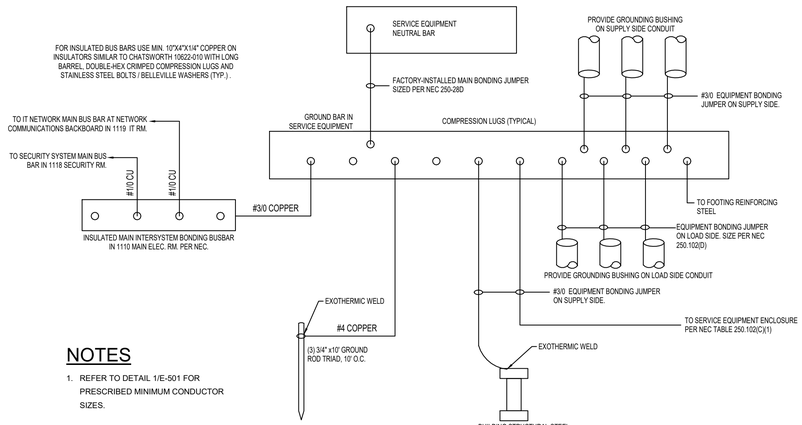
GENERAL NOTES:

1. DUCT SHALL BE PITCHED TO DRAIN AWAY FROM BUILDINGS AND EQUIPMENT. MINIMUM SLOPE SHALL BE 4 INCHES IN 100 FEET.
2. NONMETALLIC CONDUITS SHALL BE SUPPORTED ON PLASTIC SEPERATORS 4'-0" ON CENTER. METALLIC CONDUITS SHALL BE SUPPORTED 6'-0" ON CENTER.
3. WATERPROOF TRACEABLE MARKING TAPE SHALL BE INSTALLED AS INDICATED. USE 130 POUND TENSILE TEST AND MARK ABOUT EVERY 12".
4. CONDUIT SHALL BE ARRANGED PER OSHA REQUIREMENTS.
5. CONDUITS SHALL BE SEALED AT TERMINATIONS, USING SEALING COMPOUND AND PLUGS AS REQUIRED TO WITHSTAND 15psi OF HYDROSTATIC PRESSURE.
6. UNPROTECTED CONDUIT STUBS AND VERTICAL SWEEPS SHALL BE TRANSITIONED TO RMC. MIN. 36" RADIUS EMBEDDED IN CONCRETE. C. TERMINATING DIRECTLY IN ENCLOSURES MAY BE SCHED. 40 PVC.

3 DUCT BANK DETAILS
N.T.S.



6 WALL SPEAKER MOUNTING DETAIL
N.T.S.



NOTES

1. REFER TO DETAIL 1/E-501 FOR PRESCRIBED MINIMUM CONDUCTOR SIZES.

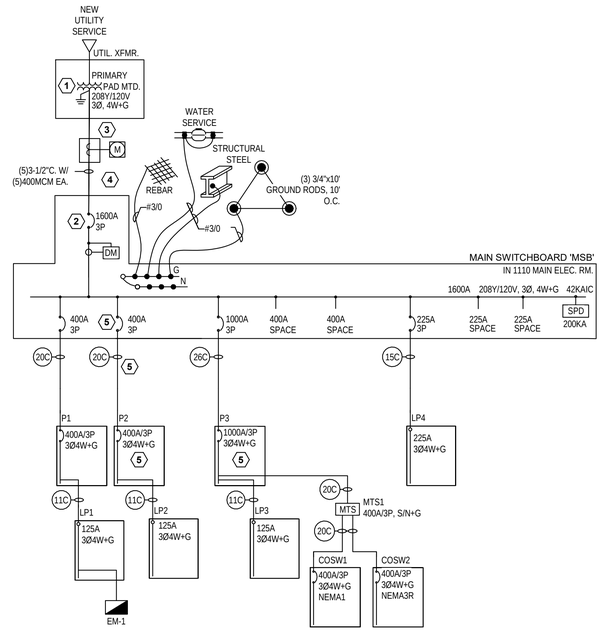
2 GROUNDING AND BONDING DIAGRAM
N.T.S.

GENERAL NOTES

1. COORDINATE ALL ASPECTS OF SERVICE WORK WITH G.C., UTIL. CO. AND STATE ELECTRICAL INSPECTOR PRIOR TO START OF WORK.
2. ALL RACEWAYS IN FINISHED AREAS SHALL BE CONCEALED.
3. PROVIDE WARNING LABELS ON ALL PANELS PER NEC AND NFPA 70E INCLUDING BUT NOT LIMITED TO AVAILABLE INCIDENT ENERGY LABEL AT THE MAIN PANEL AND ARC FLASH WARNING LABELS THROUGHOUT. SHORT CIRCUIT CALCULATIONS BASED ON UTIL. AVAILABLE FAULT CURRENT ARE INCLUDED. INCREASE INTERRUTING RATING AS NEEDED.
4. PROVIDE WHITE LETTERING PHENOLIC EQUIPMENT NAMEPLATES. BLUE FOR NORMAL POWER, GREEN FOR EMERGENCY PANELS AND EQUIPMENT. (TYP.)

KEYED NOTES

1. POWER SERVICE POINT IS AT THE UTILTY SERVICE TRANSFORMER EXCEPT WHERE UTIL. CO. REQUIRES A CT CABINET IN WHICH CASE THE CT CABINET BECOMES THE SERVICE POINT. PRIMARY LATERAL, TRANSFORMER AND METER IS BY THE UTIL. CO., TRANSFORMER PAD, CT CABINET, METER BASE, SECONDARY LATERAL IN DUCTBANK AND POWER DISTRIBUTION SYSTEM IS BY E.C..
2. CURRENT LIMITING CB TO REDUCE AVAILABLE FAULT CURRENT TO 25 KAIC. FOR 1200A FRAME BREAKERS OR LARGER PROVIDE ELECTRONIC TRIP UNIT W/ ENERGY REDUCING MAINTENANCE SWITCH PER NEC 240.87.
3. PROVIDE CT CABINET, METER BASE AND CONDUIT IN STRICT COMPLIANCE W/ UTIL. CO. REQUIREMENTS. WHERE UTIL. CO. PERMITS INSTALLATION OF CTs INSIDE TRANSFORMER LV COMPARTMENT CT CABINET IS NOT NEEDED.
4. PROVIDE DUCTBANK BELOW GRADE AND SLAB PER DETAIL 3/E-501.
5. PROVIDE 400A MTS AHEAD OF COMPANY SWITCHES TO SELECT ACTIVE INDOOR/OUTDOOR EQUIPMENT.



1 POWER SINGLE LINE DIAGRAM
N.T.S.

BECKER MORGAN GROUP

ARCHITECTURE
PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
Newarrk, DE 19711
302.369.3700

www.beckermorgan.com

SUD ASSOCIATES, P.A.
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LICENSE NO. C-0315

1813 CHAPEL HILL RD
DURHAM, NORTH CAROLINA
(919) 493-5277

FLAT IRON BUILDING SUITE 706
20 BATTERY PARK AVENUE
ASHEVILLE, NORTH CAROLINA
(828) 255-4691



PROJECT TITLE

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

ELECTRICAL DETAILS

ISSUE BLOCK

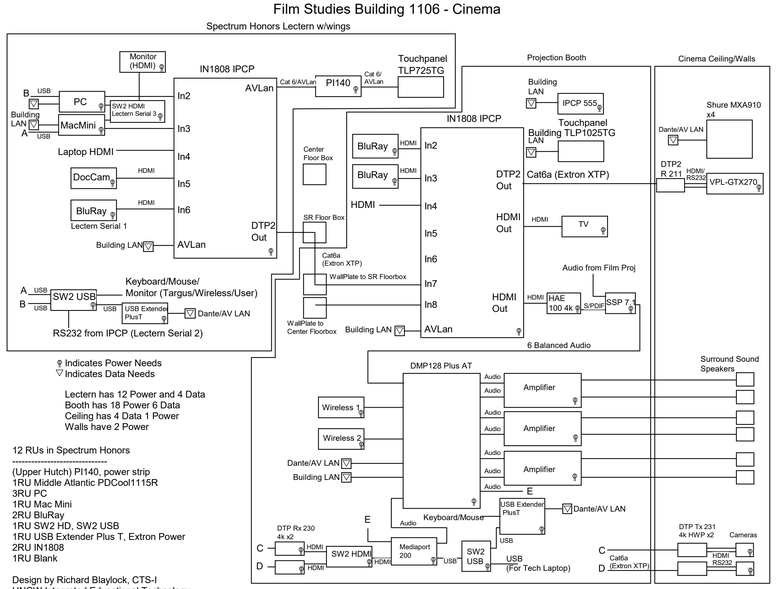
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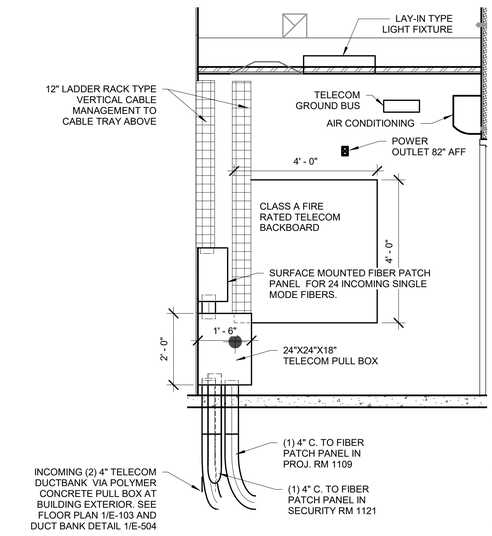
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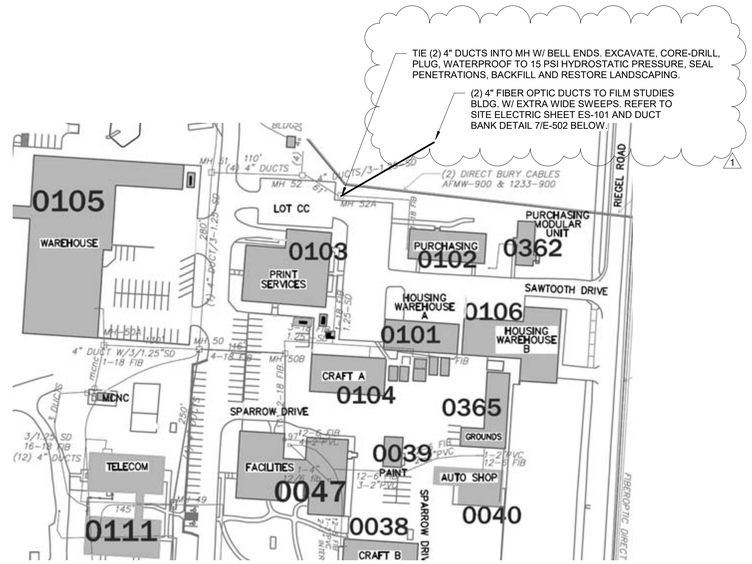
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3 CINEMA 1106 A/V CONNECTION DETAILS - BID ALTERNATE#1
N.T.S.



6 IT ROOM BUILDING DEMARCATION POINT ELEVATION DETAIL
1/2" = 1'-0"



1 FIBER OPTIC PATHWAY MAP
N.T.S.

FILM STUDIES CU/ FIBER OPTIC PATHWAY

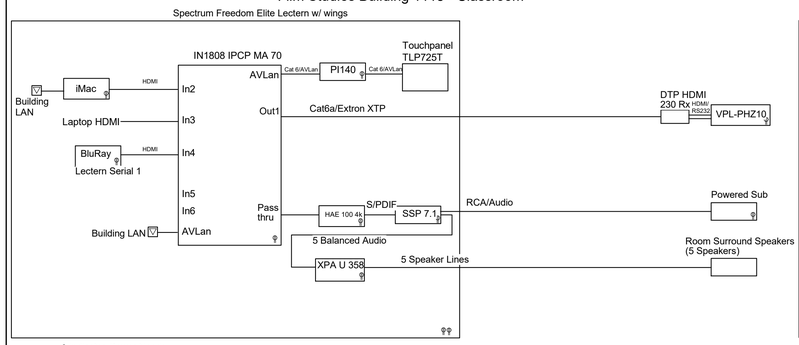
MANHOLE #	TO	MANHOLE #	LENGTH	SLACK LOOP
NETCOM		49	145	16
49		50	250	16
50		51	280	16
51		52	110	16
52		52A	61	16
52A		FILM STUDIES	250	16
		SUB-TOTAL	1096	96
		EST. TOTAL	1192	

LENGHTS SHOWN ARE ESTIMATES ONLY.
FIELD-VERIFY PRIOR TO BID.

2 TELECOM PATHWAY ESTIMATE
N.T.S.

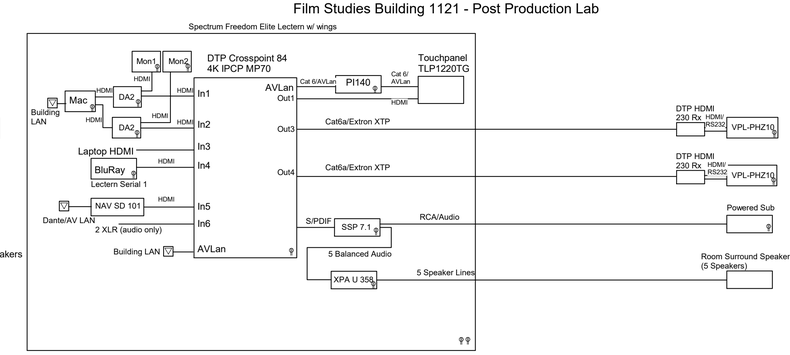
GENERAL NOTE:
PROVIDE (1) DIRECT BURIAL RATED SINGLE MODE 24 FIBER, NON-ARMORED FIBER OPTIC CABLE PER THE SPECIFIED STRUCTURAL CABELING SOLUTIONS AND (1) DIRECT BURIAL PE-89 RATED 25-PAIR CAT3 UTP COPPER CABLE BETWEEN THE FILM STUDIE'S DEMARCATION POINT IN THE I.T. ROOM AND THE CAMPUS TELECOM BACKBONE AT THE UNCW NETCOM BUILDING.
FLUSH AND CAREFULLY ROD EXISTING DUCTS TO CLEAR OF ANY DEBRIS. SWAB AND LUBRICATE PRIOR TO PULLING IN NEW CABLES. DOCUMENT MAXIMUM PULL FORCE APPLIED TO CABLES.
PUMP MANHOLES AND FOLLOW UNCW RESTRICTED ENRTY PROCEDURES.
SECURE NEW CABLES TO MANHOLE WALLS, LABEL CABLES WITH DESIGNATION, ORIGIN, DESTINATION CABLE SIZE AND FIBER/PAIR COUNT AT ALL MANHOLES, MDF'S, IDF'S AND ER'S WITH STAMPED ALUMINUM TAGS.
PLUG ALL DUCTS AND INNERDUCTS AT TERMINATIONS TO WITHSTAND 15PSI HYDROSTATIC PRESSURE.
EACH CABLE WILL HAVE A SLACK LOOP IN EACH MANHOLE. THE SLACK LOOP WILL BE ONE FULL CIRCLE INSIDE THE MANHOLE.
INSTALL CONDUITS WITH GRADUAL, SWEEPING ELBOWS AND OFFSETS. HARD 90S ARE NOT ACCEPTABLE.
EXISTING CABLES SHALL REMAIN AND ANY DAMAGED CABLES DUE TO INSTALLATION OF NEW CABLES IS INCLUDED.

Film Studies Building 1113 - Classroom



4 CLASSROOM 1113 A/V CONNECTION DETAILS
N.T.S.

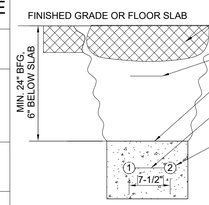
Film Studies Building 1121 - Post Production Lab



5 POST-PROD 1121 A/V CONNECTION DETAILS
N.T.S.

CONDUIT SCHEDULE

#	PURPOSE	SIZE
1	FIBER OPTIC CABLE WITH HALOGEN-FREE 4" 3-CELL PRE-LUBED FABRIC INNERDUCT AND (3) COLOR CODED 1250LBS PULL TAPES.	4"
1	INNERDUCT CELL W/ DIRECT BURIAL RATED 24 SINGLE MODE FIBER OPTIC CABLE APPROVED BY STRUCTURAL CABLING SOLUTION PROVIDER. SEE DETAIL 2/E-502 ABOVE FOR LENGTH BETWEEN MANHOLES.	4"
2	INNERDUCT CELL W/ DIRECT BURIAL & PE-89 RATED CAT3 UTP. SEE DETAIL 2/E-503 FOR LENGTHS BETWEEN MANHOLES.	4"
3	SPARE INNERDUCT CELL W/ 1250 LBS PULL TAPE	4"
2	SEALED SPARE C. W/ 1250LBS PULL TAPE.	4"



GENERAL NOTES:

1. DUCT SHALL BE PITCHED TO DRAIN AWAY FROM BUILDINGS AND EQUIPMENT. MINIMUM SLOPE SHALL BE 4 INCHES IN 100 FEET.
2. NONMETALLIC CONDUITS SHALL BE SUPPORTED ON PLASTIC SEPARATORS 4'-0" ON CENTER. METALLIC CONDUITS SHALL BE SUPPORTED 6'-0" ON CENTER.
3. WATERPROOF TRACABLE MARKING TAPE SHALL BE INSTALLED AS INDICATED. USE 130 POUND TENSILE TEST AND MARK ABOUT EVERY 12".
4. CONDUIT AND TRENCH SHALL BE ARRANGED PER OSHA REQUIREMENTS. PROVIDE SHORING AND DE-WATERING AS NEEDED.
5. USE BELL ENDS IN STEEL-REINFORCED CONCRETE DUCTBANK TERMINATIONS AT MANHOLES.
6. DUCTS AND INNERDUCTS SHALL BE SEALED AT TERMINATIONS, USING SEALING COMPOUND AND PLUGS AS REQUIRED TO WITHSTAND 15psi OF HYDROSTATIC PRESSURE.
7. AFTER THE DUCT LINE IS COMPLETED, A STANDARD FLEXIBLE MANDREL USED FOR CLEANING FOLLOWED BY A BRUSH WITH STIFF BRISTLES. MANDRELS SHALL BE AT LEAST 12 INCHES LONG AND HAVE A DIAMETER ¼ INCH LESS THAN THE INSIDE DIAMETER OF THE DUCT BEING CLEANED.
8. DUCT BANKS WILL HAVE A TRACE WIRE INSTALLED AND A 1250-POUND TENSILE TEST ½" WIDE MARKING CORD.
9. ALL DUCT BANKS INSPECTED AND APPROVED PRIOR TO THE PLACEMENT OF ANY CONCRETE.

7 TELECOM DUCTBANK DETAIL
12" = 1'-0"

BECKER MORGAN GROUP
ARCHITECTURE PLANNING
North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600
Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100
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309 S Governors Ave
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SUD ASSOCIATES, P.A.
CONSULTING ENGINEERS
LICENSE NO. C-0315
1813 CHAPEL HILL RD
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FLAT IRON BUILDING SUITE 706
20 BATTERY PARK AVENUE
ASHEVILLE, NORTH CAROLINA
(828) 255-4691

NORTH CAROLINA PROFESSIONAL SEAL 48024 ENGINEER MICHAEL MEYER 10-4-19

PROJECT TITLE
UNCW FILM STUDIES
601 S College Rd, Wilmington, NC, 28403

SHEET TITLE
SYSTEMS DETAILS

ISSUE BLOCK

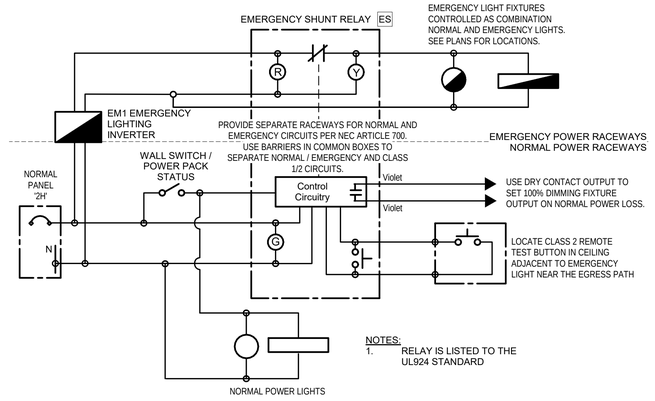
Mark	Date	Description
1	10/4/19	Addendum #1

PROJECT NO: 2018070.01
DATE: 9/23/2019
SCALE: As indicated
DRAWN BY Author | PROJ MGR Checker

E-502

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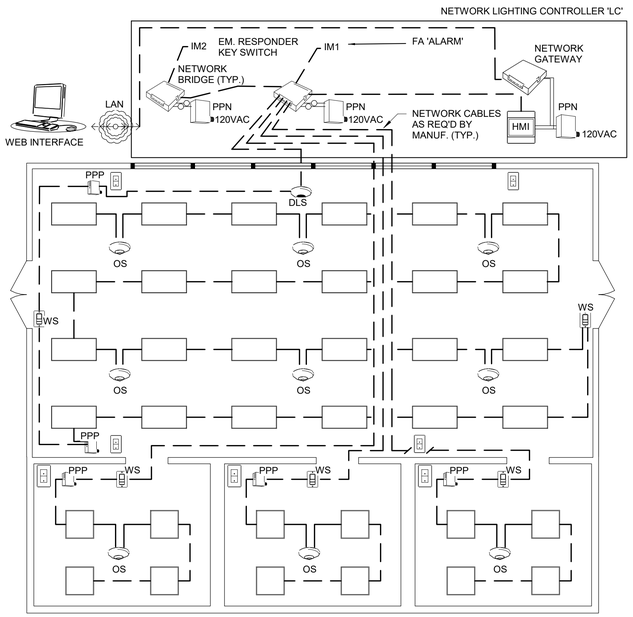
2 EMERGENCY SHUNT RELAY DETAIL
N.T.S.

LEGEND:

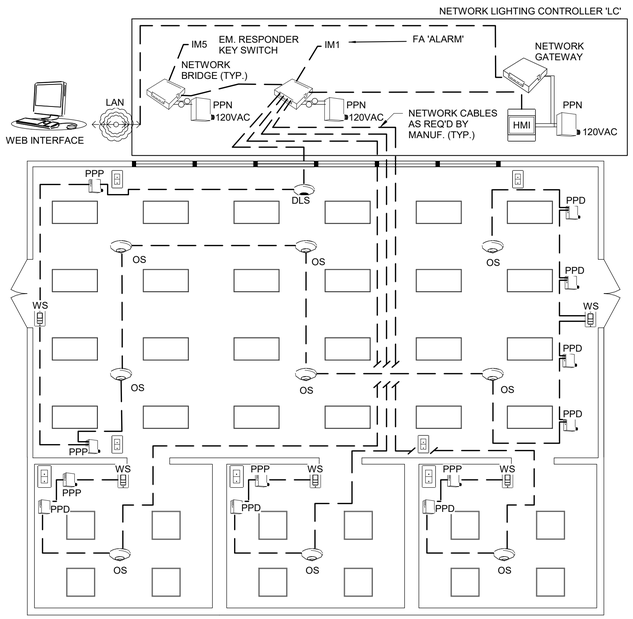
HMI: TOUCH SCREEN INTERFACE
OS: DUAL PASSIVE TECHNOLOGY OCC. SENSOR
DLS: DAYLIGHT SENSOR (NOT APPLICABLE)
PP: POWER PACK IN ZONE BOX.
PPD: POWER PACK W/ DIMMING INTERFACE IN ZONE BOX.
PPN: NETWORK POWER SUPPLY.
PPP: POWER PACK FOR PLUG AND MOTOR LOADS IN ZONE BOX. (NOT APPLICABLE)
WS: MANUAL / AUTOMATIC WALL SWITCH / DIMMER SWITCH / TOUCH-SCREEN SCENE CONTROLLER / EMERGENCY RESPONDER KEYED SWITCH. SEE FLOOR PLAN 1/E6.
IM1, IM2: INPUT MODULE. TIE CONTACT CLOSURE OF ADDRESSABLE FIRE ALARM SYSTEM 'ALARM' RELAY INTO LIGHTING CONTROLLER INPUT (IM1), TIE EM. RESPONDER KEY SWITCH VIA LIGHTING CONTROLLER INPUT (IM2) INTO THE LIGHTING CONTROLLER LOGIC. REFER TO LIGHTING CONTROL LEGEND ON SHEET E-102 FOR FUNCTIONAL DESCRIPTIONS.

NOTES:

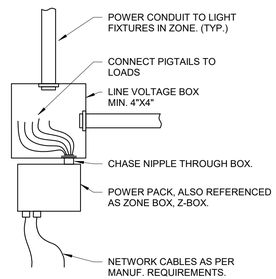
MOUNT LIGHTING CONTROL AND NETWORKING EQUIPMENT IN ENCLOSURE "LC" IN ELECTRICAL ROOM. REFER TO SHEET E6. SEMI-RECESS HMI INTO FRONT. FEED POWER PACKS VIA ADJACENT ELECTRICAL BOX SIMILAR TO POWER PACK MOUINTING DETAIL BELOW. PROVIDE CAT5e LOW VOLTAGE SIGNAL CABLES WITH FACTORY-TERMINATED PLUGS OR FIELD-TERMINATIONS SUPERVISED AND DOCUMENTED BY A NICET CERTIFIED TECHNICIAN. ALL WIRING IS IN MIN. 3/4" CONDUIT. USE LARGER CONDUIT SIZES WHERE REQUIRED BY NEC AND WHERE RECOMMENDED BY THE MANUFACTURER. PROVIDE MIN. 14 AWG THHN SYSTEMS INTERFACE WIRING IN 3/4" C. FOR IM1 AND IM2. COORDINATE SYSTEMS INTERFACE AND TERMINATIONS W/ COMMISSIONING AGENT.



TYPICAL NETWORK ENABLED LIGHT FIXTURES W/ INTEGRAL POWER PACKS



TYPICAL LIGHT FIXTURES W/ EXTERNAL NETWORKED POWER PACKS



TYPICAL POWER PACK MOUNTING DETAIL

1 NETWORK LIGHTING CONTROL SYSTEM TOPOLOGY AND DETAILS
N.T.S.

BECKER MORGAN GROUP
ARCHITECTURE
PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
Newarrk, DE 19711
302.369.3700

www.beckermorgan.com

SUD ASSOCIATES, P.A.
CONSULTING ENGINEERS
LICENSE NO. C-0315
1813 CHAPEL HILL RD
DURHAM, NORTH CAROLINA
(919) 493-5277
FLAT IRON BUILDING SUITE 706
20 BATTERY PARK AVENUE
ASHEVILLE, NORTH CAROLINA
(828) 255-4051



PROJECT TITLE
UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE
ELECTRICAL LIGHTING DETAILS

ISSUE BLOCK

Mark	Date	Description

PROJECT NO:	2018070.01
DATE:	9/23/2019
SCALE:	12" = 1'-0"
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kVA LOAD A	B	C	DESIGNATION TYPED ON DIRECTORY	COND [in]	WIRE SIZE	BRKR RATG	POLES	CKT NO.
35.58			P1	3"	4#500+1#3G	400	3	1
	31.09							2
		31.69						3
34.73			P2	3"	4#500+1#3G	400	3	4
	33.39							5
		29.03						6
			SPACE			400	3	7
								8
			SPACE			400	3	9
								10
70.31	64.48	60.72	kVA					

CIRCUIT BREAKER TOP OR BOTTOM AS REQUIRED BY FEEDER ENTRANCE

ENCLOSURE: NEMA 1 SURFACE MOUNT
VOLTAGE: 208Y/120V, 3ø, 4W+G
BUSSES (#/in): 1600 / 1600 AMP
BUSSING: COPPER
MAIN: 1600 AMP MAIN CIRCUIT BREAKER, 100%, CURR. LIMITING
FEEDER: SEE "SINGLE LINE DIAGRAM"
INTERRUPTING RATING: 42 KAIC FULLY RATED
SERVICE ENTRY RATED: YES
SPD: 200KA
NOTES: SPECIAL FEATURES: ELECTRONIC TRIP UNIT W/ ENERGY REDUCING MAINT. SW.
1.) REFER TO WIRE AND CONDUIT SIZING SCHEDULE.
2.) NEW PARTS OF CIRCUIT ARE SHOWN BOLD. EX. LOADS ARE ESTIM. ONLY.
3.) GRAPHICAL REPRESENTATION OF CBs IS SCHEMATIC ONLY. PROVIDE NUMBER OF POLES AS SHOWN IN 'COLUMN 'POLES'.
4.) LETTERS AFTER CB RATINGS INDICATE THESE FEATURES: 'F'- AFCI, 'G'- GFCI, 'L' - LOCKABLE, 'S' - SHUNT TRIP, 'P' - GFP, 'R' REVERSE POWER FLOW RATED, 'T' - TIMER CIRCUIT, 'C'- CONTROLLED BY OTHER MEANS.

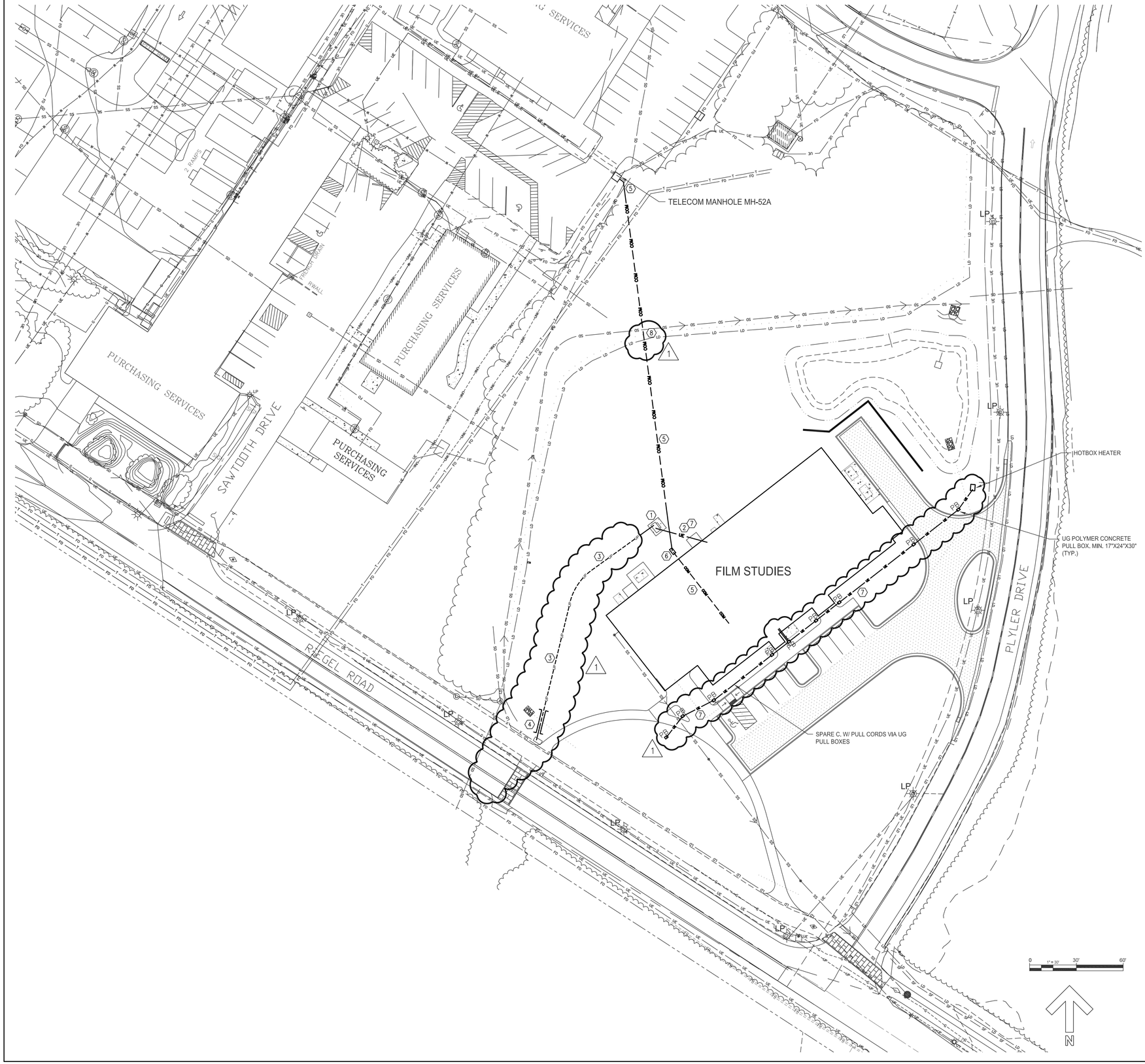
SWITCHBOARD 'MSB'
ROOM NO. 1110

kVA LOAD A	B	C	DESIGNATION TYPED ON DIRECTORY	COND [in]	WIRE SIZE	BRKR RATG	POLES	CKT NO.
0.42			EF-1	3/4"	3#12+1#12G	15	2	1
	0.42							3
		0.55						5
0.55			EF-3	3/4"	3#12+1#12G	15	3	7
	0.55							9
		0.55						11
0.55			EF-7 via ASD	3/4"	3#12+1#12G	15	3	13
	0.55							15
		3.02						17
3.02			HW-1	3/4"	3#8+1#10G	40	2	19
	0.92							21
		0.92	CURTAIN MOTOR	3/4"	3#12+1#12G	20	2	23
			SPARE			20	1	25
			SPARE			20	1	27
			SPARE			20	1	29
1.96			EMERGENCY INVERTER TEM1	3/4"	3#12+1#12G	20	2	31
	1.08							33
		1.08						35
4.59			PANEL 'LP1'	1-1/2"	4#1+1#6G	125	3	37
	3.78							39
		3.14						41
			SPARE			20	1	43
			SPARE			20	1	45
			SPARE			20	1	47
			SPARE			20	1	49
			SPARE			20	1	51
			SPARE			20	1	53
11.09	7.30	8.18	kVA					

CIRCUIT BREAKER TOP OR BOTTOM AS REQUIRED BY FEEDER ENTRANCE

kVA LOAD A	B	C	DESIGNATION TYPED ON DIRECTORY	COND [in]	WIRE SIZE	BRKR RATG	POLES	CKT NO.
								2
						45	3	4
								6
								8
						35	3	10
								12
								14
						30	3	16
								18
								20
						90	3	22
								24
			SPARE				2	26
			SPARE			25		28
			SPARE				2	30
			SPARE			20	1	32
			SPARE					34
			SPARE			20	3	36
			SPARE					38
			SPARE			400	3	40
			SPARE					42
			SPARE			225	3	44
								46
								48
			SPARE					50
			SPARE					52
			SPARE					54

DESIGNATION TYPED ON DIRECTORY	COND [in]	WIRE SIZE	BRKR RATG	POLES	CKT NO.
AHU-1	3/4"	3#6+1#10G	45	3	3
CU-1	3/4"	3#8+1#10G	35	3	5
AHU-3	3/4"	3#10+1#10G	30	3	9
PHP-3	1-1/4"	3#1+1#8G	90	3	21
CU-3	3/4"	3#10+1#10G	45	2	23
ODU-1	3/4"	3#12+1#12G	20	2	33
HEAT TAPE HT-3	3/4"	2#12+1#12G	20	1	39
MOT. DAMPRS MD-1	3/4"	2#12+1#12G	20	1	41
SPARE					
SPARE					
SPARE				



GENERAL NOTES

1. PROVIDE NEW SERVICE IN STRICT COMPLIANCE W/ UTIL. CO.
2. SCHEDULE INSPECTIONS WITH SCO ELECTRICAL INSPECTOR PRIOR TO BACKFILLING.

KEYED NOTES

1. PROVIDE PRE-CAST CONCRETE TRANSFORMER PAD AND GROUND ROD IN STRICT COMPLIANCE W/ UTIL. CO. REQUIREMENTS.
2. PROVIDE UG SECONDARY LATERAL IN CONCR. DUCTBANK. STUB UP CONDUIT AT TRANSFORMER PAD. POUR CONTINUOUS DUCTBANK END-TO-END TERMINATING AT SERVICE EQUIPMENT'S HOUSEKEEPING PAD IN MAIN ELECTRICAL ROOM.
3. COORDINATE EXACT ROUTING AND TERMINATION OF PRIMARY LATERAL W/ UTIL. CO.
4. PROVIDE 6" SCHED. 40 PVC CONDUIT SLEEVES MIN. 3'-0" BFG TO CROSS 10" HDPE WATER LINE (~2'-3" BFG) AND SWEEP INTO UTIL. CO. EX. PRIMARY SPLICE BOX VIA OVERSIZED RADIUS ELL. IN STRICT COMPLIANCE W/ UTIL.CO. REQUIREMENTS AS DIRECTED BY THE UTIL. CO. ENGINEER. COORDINATE CROSSING OF CIVIL STRUCTURES, UTILITIES AND PAVEMENT W/ CIVIL CONTRACTOR AND G.C.. (TYP.)
5. PROVIDE CONCRETE ENCASED TELECOM DUCTBANK W/ (2) 4" C. W/ WIDE-SWEEP TURNS FOR FIBER OPTIC CABLES. REFER TO DETAILS 1/E-502, 2/E-502 AND 7/E-502. COORDINATE WITH CIVIL AND G.C. EXACT SLOPE, DEPTH AND INTERSECTION WITH OTHER UTILITIES. DE-WATERING, SHORING AND HAND-DIGGING IS INCLUDED.
6. PROVIDE 48"X24"x30" UG POLYMER CONCRETE BOX FLUSH WITH FINISHED GRADE WITHIN 5' OF BUILDING EXTERIOR WALL FOR INTERFACE WITH (2) 4" BELOW-SLAB BUILDING-SIDE IT CONDUITS. SEE SHEET E-103.
7. REFER TO E-101 FOR CONDUIT SIZING AND CIRCUITS. COVER PER NEC TABLE 300.5.
8. REFER TO CIVIL PLANS FOR GRADE CHANGES. DIRECTIONAL BORING IS INCLUDED WHERE NEEDED. (TYP.)

BECKER MORGAN GROUP

ARCHITECTURE
PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
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Newark, DE 19711
302.369.3700

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CONSULTING ENGINEERS
LICENSE NO. C-0315

1813 CHAPEL HILL RD
DURHAM, NORTH CAROLINA
(919) 493-5277

FLAT IRON BUILDING SUITE 706
21 BATTERY PARK AVENUE
ASHEVILLE, NORTH CAROLINA
(828) 255-4491

PROFESSIONAL ENGINEER
SEAL
48024
10-4-19
ENGINEER
MICHAEL MEINERT

PROJECT TITLE

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

ELECTRICAL SITE PLAN

ISSUE BLOCK

Mark	Date	Description
1	10/4/19	Addendum #1

PROJECT NO:	2018070.01
DATE:	9/23/2019
SCALE:	As indicated
DRAWN BY: MM	PROJ MGR: IS

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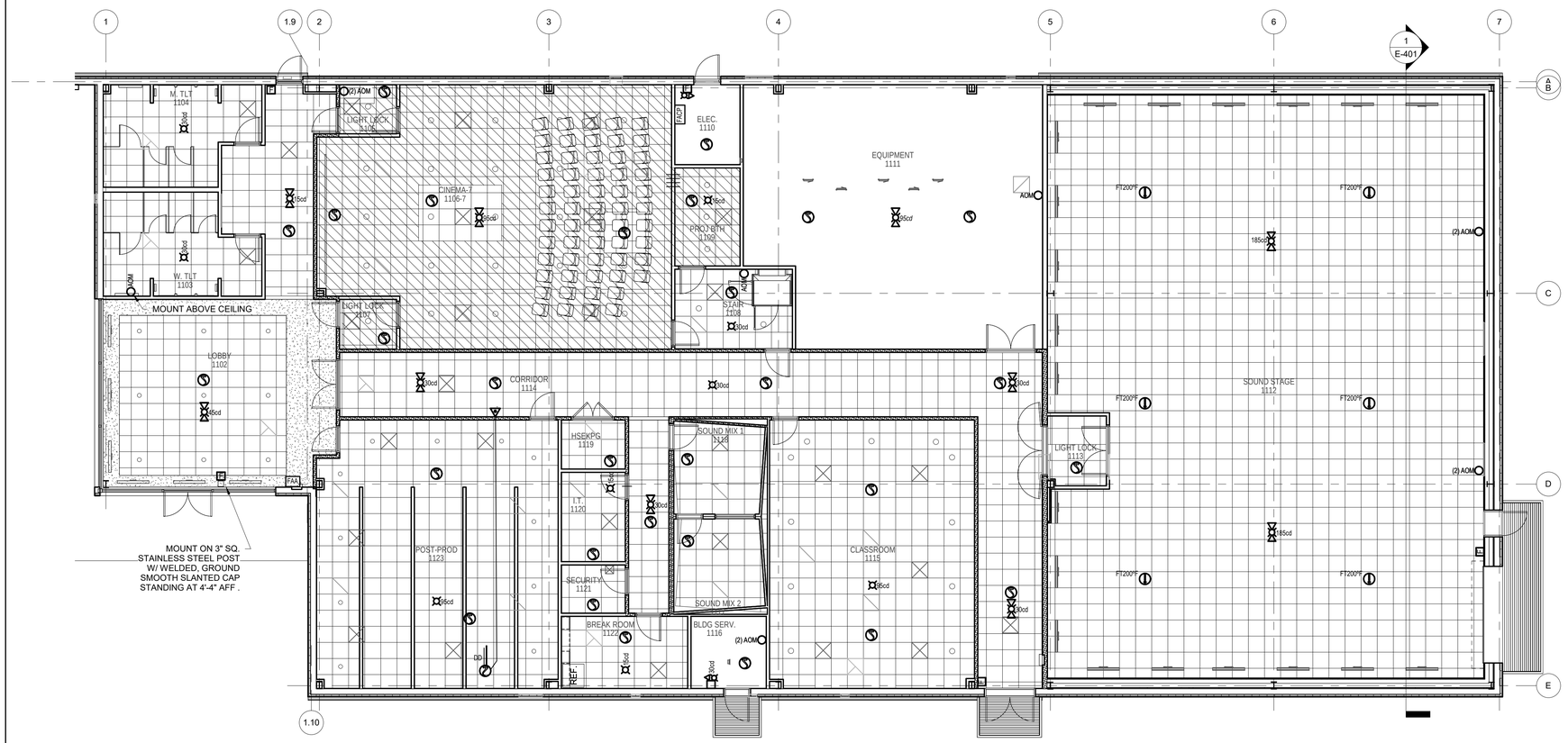
GENERAL FIRE ALARM NOTES:

1. ACTIVE FIRE ALARM WORK INCLUDED IN THIS PROJECT SHALL USE COMPONENTS LISTED FOR USE WITH THE MAKE AND MODEL FACP PROVIDED AND BE PERFORMED BY A FACTORY CERTIFIED PROGRAMMER, TECHNICIAN AND INSTALLER TO THE SATISFACTION OF THE ENGINEER AND AHJ.
2. BAG SMOKE DETECTORS AND BASES TO PROTECT THEM FROM CONTAMINANTS. REPLACE DETECTORS W/ INCREASED DIRT LEVELS.
3. PROVIDE FIRE ALARM SHOP DRAWINGS, PRODUCT DATA AND DETAIL DESIGN TO THE SATISFACTION OF THE AHJ, SIGNED BY A FIRE ALARM DESIGN PROFESSIONAL LICENSED IN THE STATE OF NORTH CAROLINA.
4. PROVIDE FIRE STOPPING TO MAINTAIN THE FIRE RATING OF ARCHITECTURAL ASSEMBLIES. REFER TO DETAIL SHEET E-500 FOR UL FIRE RATED PENETRATIONS.
5. ALL WIRING SHALL BE IN RACEWAY. CONCEAL POWER AND SYSTEMS WIRING IN CEILINGS AND SOFFITS OF FINISHED SPACES. USE PAINTED RED EMT WITH STRAPS IN UNFINISHED AREAS. CONDUIT HANGERS ARE NOT PERMITTED ON WALLS.
6. THE MINIMUM SOUND PRESSURE LEVELS SHALL BE 15 dBA ABOVE AVERAGE AMBIENT SOUND LEVEL IN ALL AREAS. PROVIDE ADDITIONAL HORNS OR VARIABLE OUTPUT DEVICES AS REQUIRED TO ACHIEVE THESE LEVELS.
7. FIRE ALARM PANELS SHALL BE MARKED WITH ENGRAVED PHENOLIC LABELS INDICATING NAME, FUNCTION AND LINE VOLTAGE CIRCUIT IDs. PROVIDE BONDING JUMPERS TO BACK PLANE, ENCLOSURE AND DOORS.
8. MAINTAIN SPECIFIED SLC LOOP TYPE 'A' WITH LOOP SECTIONALIZING NTE 20 DEVICES PER SECTION AND AT FLOOR PENETRATIONS.
9. POWER BOOSTER PANELS AND TERMINAL CABINETS ARE NOT SHOWN. LOCATE ANY REQUIRED ADDITIONAL EQUIPMENT IN NON-PUBLIC SPACES BELOW CEILINGS.
10. EACH POWERED FIRE ALARM EQUIPMENT PANEL, INCLUDING POWER BOOSTER PANELS SHALL BE SUPERVISED BY A SMOKE DETECTOR WITHIN 15 FEET.
11. PROVIDE SURGE PROTECTION FOR CLASS 1 WIRING AT EACH POWERED PANEL.0
12. PROVIDE SURGE PROTECTION FOR CLASS 2 WIRING WITHIN 3' OF PENTRATING THE BUILDING ENVELOPE.
13. DESIGN, INSTALL, TEST AND CERTIFY FIRE ALARM SYSTEM PER NFPA 72 EDITION 2013 REQUIREMENTS AND SCO GUIDELINES.
14. PROVIDE 100% TEST PER THE SCO FIRE ALARM SYSTEM CHECKLIST AND RE-CERTIFICATION BY LICENSED VENDOR AT PROJECT COMPLETION AFTER ANY DUST HAS STOPPED BEING GENERATED. INCLUDE TESTING MILESTONES FOR CONTRACTOR, ENGINEER AND STATE CONSTRUCTION OFFICE TESTING IN PROJECT SCHEDULE.
15. PROVIDE A LEGIBLE DEVICE (ZONE) MAP AT FACP AND REMOTE ANNUNCIATOR WITH INITIATING DEVICE ID LABELING AFTER REVIEW BY ENGINEER.
16. EXCEPT AS REQUIRED ABOVE, ALL OTHER CIRCUITS IN THE SYSTEM SHALL BE WIRED WITH MINIMUM AWG 14, STRANDED COPPER, THHN/THWN CONDUCTORS, INSTALLED IN CONDUIT. COLOR CODE AS SHOWN BELOW THROUGHOUT THE SYSTEM, WITHOUT COLOR CHANGE IN ANY WIRE RUN:

- ALARM NOTIFICATION APPLIANCE CIRCUITS (STROBES): BLUE (+)/BLACK (-)
- SEPARATE 24VDC OPERATING POWER (FOR EQUIPMENT): YELLOW (+)/BROWN (-)
- DOOR HOLDER CONTROL CIRCUITS (MAGNET POWER, IF FROM SYSTEM): ORANGE
- CIRCUITS FROM AIM'S TO MONITORED DEVICES (AWG 14/16): VIOLET(+)/GREY (-)

BID LEGEND

EXCLUDE DIVISION 26, 27, 28 DEVICES, EQUIPMENT AND ASSOCIATED CIRCUITING WITHIN BOUNDARY OF HATCH FROM THE BASE BID. INCLUDE THEM IN ADD ALTERNATE#1 ONLY. LOOPS, CIRCUITS AND HOME RUNS ASSOCIATED WITH ITEMS OUTSIDE THE BOUNDARY ARE UNAFFECTED.



1 FIRST FLOOR FIRE ALARM RCP
1/8" = 1'-0"

0 1' 2' 4' 8' 16'
1/8"=1'-0"

FIRE RATED WALL LEGEND

- 0 HR RATED SMOKE PARTITION
- 1 HR RATED FIRE PARTITION / FIRE BARRIER
- 2 HR RATED FIRE WALL

BECKER MORGAN GROUP

ARCHITECTURE
PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
309 S Governors Ave
Dover, DE 19904
302.734.7950

Rittenhouse Station
250 South Main Street, Suite 109
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302.369.3700

www.beckermorgan.com

SUD ASSOCIATES, P.A.
CONSULTING ENGINEERS
LICENSE NO. C-0315

1813 CHAPEL HILL RD
DURHAM, NORTH CAROLINA
(919) 493-5277

FLAT IRON BUILDING SUITE 706
20 BATTERY PARK AVENUE
ASHEVILLE, NORTH CAROLINA
(828) 255-4051

NORTH CAROLINA
SEAL
48024
ENGINEER
MICHAEL MEINERT

PROJECT TITLE

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

FIRE ALARM PLANS

ISSUE BLOCK

Mark	Date	Description

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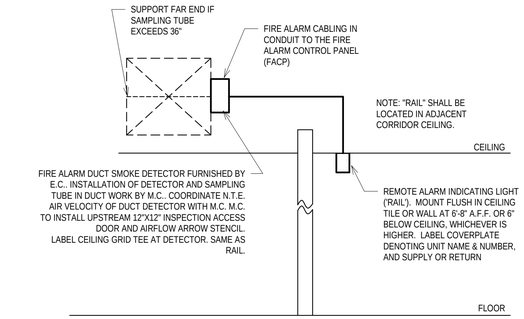
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SYSTEM INPUTS	FACP ANNUNCIATION					NOTIFICATION					FIRE SAFETY CONTROL				SUPPLEMENTARY			
	ACTUATE COMMON ALARM SIGNAL INDICATOR	ACTUATE AUDIBLE ALARM SIGNAL	ACTUATE COMMON SUPERVISORY SIGNAL INDICATOR	ACTUATE AUDIBLE SUPERVISORY SIGNAL	ACTUATE COMMON TROUBLE SIGNAL INDICATOR	ACTUATE AUDIBLE COMMON TROUBLE SIGNAL	ACTUATE EVACUATION SIGNALS	DISPLAYPRINT CHARGE OF SIGNALS	TRANSMIT FIRE ALARM SIGNAL TO SUPERVISING STATION	TRANSMIT SUPERVISORY SIGNAL TO SUPERVISING STATION	TRANSMIT TROUBLE SIGNAL TO SUPERVISING STATION	AIR HANDLER SHUTDOWN	SET LIGHTS IN CINEMA TO 100% OUTPUT	ACTUATE REMOTE ANNUNCIATOR				
	A	B	C	D	E	F	O	P	Q	Z	AA	AB	AC	AD	AE	AF	AT	AU	AV	AW	
1 MANUAL FIRE ALARM BOXES	●	●					●	●	●			●	●				●				1
7 SPOT SMOKE DETECTORS	●	●					●	●	●			●	●				●				7
8 DUCT SMOKE DETECTORS			●	●				●		●		●	●				●				8
15 FIRE ALARM A/C POWER FAILURE *					●	●		●			●						●				15
16 FIRE ALARM SYSTEM LOW BATTERY					●	●		●			●						●				16
10 OPEN CIRCUIT					●	●		●			●						●				10
11 GROUND FAULT					●	●		●			●						●				11
12 NOTIFICATION APPLIANCE CIRCUIT ANY FAULT					●	●		●			●						●				12
16																					16
17																					17
LEGEND:	A	B	C	D	E	F	L	M	N	V	W	T	U	V	W	X	AF	AG	AH	AI	

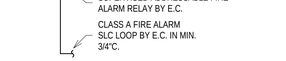
* TRANSMIT TROUBLE SIGNAL AFTER 8 HOUR TIME DELAY.

FIRE ALARM INPUT/OUTPUT RESPONSE MATRIX

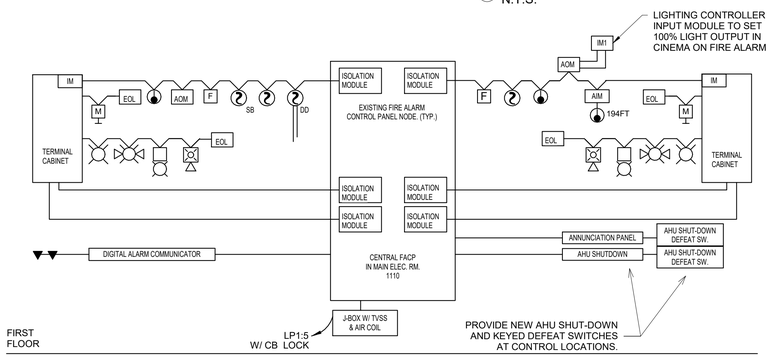
4 FIRE ALARM IO RESPONSE MATRIX
N.T.S.



3 DUCT DETECTOR SCHEMATIC DETAIL
N.T.S.



2 TYPICAL FAN CONTROL SCHEMATIC DETAIL
N.T.S.



NOTES:

1. FIRE ALARM RISER IS SCHEMATIC ONLY. PROVIDE DUAL RISER FOR INCREASED SURVIVABILITY OF SYSTEM. FIELD-VERIFY ALL EXISTING CONDITIONS.
2. PROVIDE FULLY ANNOTATED SHOP DRAWINGS TO INCLUDE FLOOR PLANS, RISER DIAGRAMS, LOAD, VOLTAGE DROP, BATTERY CALCULATIONS AND WIRE LEGEND INDICATING WIRE TYPE, GAUGE AND INSULATION COLOR FOR THE COMPLETE SYSTEM.
3. THE FIRE ALARM PANEL SHALL BE LABELED WITH THE PANEL BOARD LOCATION, PANEL BOARD IDENTIFICATION AND CIRCUIT BREAKER NUMBER.
4. PROVIDE ADDITIONAL ISOLATION MODULE(S) AFTER EACH 25 DEVICES AND CONTROL POINTS ON ANY ADDRESSABLE CIRCUIT.
5. EACH LOOP SHALL HAVE A MINIMUM OF 25 PERCENT SPARE CAPACITY.
6. EACH FIRE ALARM PANEL, INCLUDING POWER BOOSTER PANELS SHALL BE SUPERVISED BY A SMOKE DETECTOR ABOVE AND WITHIN 15' HORIZONTALLY.
7. POWER BOOSTER PANELS ARE NOT SHOWN. LOCATE AS PER VOLTAGE DROP CALCULATION IN NON-PUBLIC SPACES BELOW CEILING. PROVIDE ALL POWER BOOSTER PANELS WITH BATTERY BACK-UP, CIRCUIT BREAKER LOCKS AND SMOKE DETECTOR WITHIN 15FT HORIZONTALLY ON CEILING ABOVE.
8. ALL NEW WIRING SHALL BE IN NEW RACEWAY.
9. TEST AND CERTIFY COMPLETE SYSTEM. DEMONSTRATE SYSTEM PERFORMANCE AND COMPLIANCE WITH NFPA 72 PER THE SCO FIRE ALARM SYSTEM CHECKLIST TO THE ENGINEER AND THE STATE CONSTRUCTION OFFICE.

1 SCHEMATIC ADDRESSABLE FIRE ALARM SYSTEM RISER DIAGRAM
N.T.S.

BECKER MORGAN GROUP

ARCHITECTURE
PLANNING

North Carolina
3333 Jaeckle Dr., Suite 120
Wilmington, NC 28403
910.341.7600

Maryland
312 West Main St, Suite 300
Salisbury, MD 21801
410.546.9100

Delaware
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302.734.7950

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Newarrk, DE 19711
302.369.3700

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DURHAM, NORTH CAROLINA
(919) 493-5277

FLAT IRON BUILDING SUITE 706
20 BATTERY PARK AVENUE
ASHEVILLE, NORTH CAROLINA
(828) 255-4691

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 48024 1-23-19 ENGINEER MICHAEL MEINERT

PROJECT TITLE

UNCW FILM STUDIES

601 S College Rd, Wilmington, NC, 28403

SHEET TITLE

FIRE ALARM DETAILS

ISSUE BLOCK

Mark	Date	Description

PROJECT NO:	2018070.01
DATE:	9/23/2019
SCALE:	12" = 1'-0"
DRAWN BY: MM	PROJ MGR: IS

FA-500

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BECKER MORGAN GROUP

ARCHITECTURE PLANNING

Addendum No. 2

UNIVERSITY OF NORTH CAROLINA WILMINGTON FILM STUDIES BUILDING
Wilmington, North Carolina
PM #6034
SCO #19-20473-01A
BMG Project No. 2018070.010
October 10, 2019

The following items supplement, change, delete or add to the Construction Documents as though repeated in full therein. All general conditions, special conditions, etc., as originally specified shall apply to these items.

Item No. 1 DRAWINGS

a. The following sheets have been added or revised and are attached to this addendum in PDF format:

i. **02 201807001 C4.01 rev02**
ii. **02 201807001 C5.02 rev02**
iii. **05 201807001 A101 rev02**
iv. **05 201807001 A201 rev02**
v. **05 201807001 A602 rev01**
vi. **05 201807001 A603 rev02**
vii. **06 2018070.01 P401 rev01**

Item No. 2 SPECIFICATIONS

a. Notice to Bidders has been revised and is attached to the end of this Addendum.
b. Guidelines for Recruitment and Selection of Minority Business for Participation has been revised and is attached to the end of this Addendum.
c. In specification section 27 10 00 paragraphs 2.1.A and 2.2.A replace "See Equipment and device schedule on drawings." with "See equipment and devices shown on drawings."
d. In specification sections 28 13 00 and 28 23 00 paragraph 2.1.A replace "See Equipment and device schedule on drawings." with "See equipment and devices shown on drawings."
e. In specification section 28 31 00 add paragraph 2.3.F. as follows:

i. "F. Duct Mounted Smoke Detector: NFPA 72, photoelectric type with key-operated NORMAL-RESET-TEST switch, remote alarm indicating light (RAIL), duct sampling tubes extending the full width of duct, visual indication of detector actuation, and a keyed or magnet-operated Alarm Test switch in duct-mounted housing. Duct mounted detectors shall be powered and

supervised from the FACP. Separate 120-volt power sources will not be accepted."

f. 221000 Plumbing Piping and Specialties specification has been revised and is attached to the end of this Addendum.

g. 313116 Termite Control specification has been revised and is attached to the end of this Addendum.

Item No. 3 SUBSTITUTION REQUEST

a. Extruded Aluminum Walkway Covers, manufactured by Peachtree Protective Covers, Inc., of Lithia Springs, Georgia, is an approved substitution for aluminum canopy systems, Section 107316.
b. TK-AirMax 2102 Non-Permeable, manufactured by TK Products of Minnetonka, Minnesota, is an approved equal for fluid applied membrane air barriers, Section 072726. *Model 2103 NP WB is not approved.*

Item No. 4 ADDITIONAL INFORMATION

a. Recess panel 'LP2' in Break Room wall. Furr out wall so panel does not intersect with rated wall.
b. Eliminate Hotbox heater receptacle circuit LP2:30 shown on sheets E-101 and E-600. Raceway including exterior underground conduits and pull boxes shown on sheet ES-101 are to remain with 1250 lb pull ribbons installed. Disregard number and locations of pull boxes on sheet E-101. Sheet ES-101 shows the correct number and location of boxes.
c. On detail 2/E-502 replace the last sentence of the General Notes: "EXISTING CABLES SHALL REMAIN AND ANY DAMAGED CABLES DUE TO INSTALLATION OF NEW CABLES IS INCLUDED." with the following: "EXISTING CABLES IN EXISTING DUCTS TO BE USED FOR NEW CABLES SHALL REMAIN. THE REPLACEMENT AND RE-CERTIFICATION OF DAMAGED CABLES IN THEIR ENTIRETY DUE TO THE INSTALLATION OF NEW CABLES IS INCLUDED."
d. On detail 6/E-502 change reference "DUCT BANK DETAIL 1/E-504" to "TELECOM DUCT BANK DETAIL 7/E-502 below."

Item No. 5 BIDDER QUESTIONS

a. Door schedule and spec 083613 calls for a sectional door but balance of drawings show a coiling door. Please advise which is wanted: coiling door as shown on drawings or sectional as called out in spec and door schedule? If coiling door, please provide specification. **Response: Provide pricing for the sectional door specified in the project manual and disregard drawing.**

b. Specification 083613- Sectional doors: Paragraph 2.2 B4 calls for operability under wind load. While the door can be built to withstand the design wind load, we are not aware of any manufacturers who offer operability under the design wind load. Is it required on this project and, if so, who offers it? **Response: That sentence refers to a coiling door. Disregard requirement.**

c. Specification 083613- Sectional doors: Paragraph 2.3 L1 calls for baked enamel or powder coat finish. Is manufacturer's standard baked enamel finish available in

limited color options or the optional powder coat finish available in 180 color choices wanted? Please clarify. **Response: Standard baked enamel finishes are acceptable.**

d. Specification section 260800 Commissioning of Electrical states to review section 019000 Commissioning—this spec section is not included in the bid manual. Other electrical sections reference the commissioning agent as the owner's subcontractor. Please confirm commissioning is by the owner. **Response: 019000 - Commissioning specification has been added to the project bid manual by Addendum No. 4.**

e. Specification section 230510- refers to section 019000 for commissioning requirements, however this spec section is not included in the bid manual. Please advise and confirm commissioning is by the owner. **Response: 019000 - Commissioning specification has been added to the project bid manual by Addendum No. 4.**

f. We have not been able to locate any information for seating for the theatre alternate #1. Please confirm the seating is not included in the alternate #1 pricing. **Response: Please provide a material allowance of $46,000 for seating in Cinema 1106.**

g. Sheet A701 shows cork panels, which seem to be associated with spec 101100. That same spec also refers to markerboards, which we have not been able to locate on the drawings? Please advise. **Response: Currently there are no marker boards in the project.**

h. Supplementary general conditions 010090-6 Article 23 lists June 29th, **2018** for fire alarm and August 12, **2018** for completion. Those dates also do not seem to correspond to the 245 days listed in the form of construction contract. Please advise on potential NTP dates, clarify completion dates, etc. **Response: Pending the project falls within budget, the notice to proceed is anticipated as December 2, 2019. Completion date is a hard date of August 1, 2020 to be ready for Fall semester classes.**

i. The finish schedule detail on ceramic floor and base show's 6"x6" floor and 6" sanitary base at toilets. Does room 1101 Lobby also have the same or would PFT be different? Lobby elevation shows wood base but I don't see the PFT and the specs only list 2"x2" mosaic floor. **Response: For the lobby please use an allowance of $5 per square foot for porcelain tile material and a two-piece 8" tall painted wood base.**

j. Where is Room 1124 Teaching Area located? It is listed on the finish room schedule but there is not a room by that name or number on the plans. **Response: This is the "stage" area in the theater, not a separate room. This has been removed from the finish schedule as the finishes are the same as the theater.**

k. There is also a note about the mop sink have floor tile in the mop receptor, please advise and clarify extent and tile to be used. **Response: See revised sheet A101 for extents. Provide 6"x 6" CT with 6" base.**

l. The finish schedule shows the wet walls in both bathrooms to receive the 6x6 ceramic glazed tile. However, the elevation drawings on page A401 drawing #5 "sink

elevation" show the sink wall to receive wall tile as well but the finish schedule does not reflect this. Please confirm all points to this question. **Response: sink wall only as shown in elevations. Other parts of the wet wall to be gypsum board with epoxy paint. Remainder of walls to have latex paint.**

m. Please confirm that "all" flooring finishes in the Cinema room are to be part of Alternate # 1? **Response: Yes**

n. Sheet A101 – Sound Stage Room 1112 plan note calls for "…FRT PT 2x4 studs (sleepers) 24" o.c. on top of conc. Slab; w/ FRT ¾" Plywood on top of studs…". The only product we are aware of that comes close to being both fire treated and pressure treated is called Hoover Exterior Fire X but not sure if it meets codes for direct contact with a concrete slab. Please advise. **Response: Sleepers do not need to be fire treated. Plywood does not need to be fire treated. Sleepers to be 24" o.c. and then fireblock in the opposite direction at the midpoint of the space so that no open area between sleepers exceeds 100 square feet.**

o. In Room 1123 Post Prod, is there to be a framed knee wall in front of each row of desks? There seems to be no section detail of that area. **Response: Addressed in Addendum 1**

p. The specs call for two wall panels noted as MS1 and MS2. We have not been able to locate either of these referenced in the plans. Please clarify the locations of these panel profiles. **Response: Updated on sheet A201.**

q. On sheet S-101 note 2.3 states the building classification as a Risk Category II and to the contrary note 2.5 indicates Risk Category III. Please clarify which risk category we are to use for design. **Response: Risk Category is II.**

r. With all the suspended duct and ceiling throughout this building, would it be acceptable using either a long-tab banded or sag & bag roof insulation system in lieu of the Simple Saver liner so as to not lose access to the purlins. If so, please advise which one. **Response: Please bid as drawn. We can explore any cost savings options after contract award.**

s. What is the collateral load on this project? **Response: 3psf collateral load everywhere except the Sound Stage room where the collateral load needs to be 10psf.**

t. What are the out/out of steel dimensions? **Response: Dimensions have been added to sheet A101 from outside face to outside face of girts. Out to out of steel would be 16" less.**

u. What are the heights of the "high" eave points on this project? Elevations only show low eave heights. **Response: Updated on sheet A201.**

v. Are the columns in this project supermarket style? The drawings seems to show them straight and then tapered above the ceiling line. If so, what height do we need to keep them straight and is there a depth that we need to hold? Please advise. **Response: Supermarket style should be used at frame line 1 only (lobby); everywhere else can use standard frame shapes.**

w. The wall louver openings shown on the mechanical drawings are not shown on the architectural drawings. Please show on the architectural elevations so metal building subcontractors can see where openings are needed. **Response: Updated on sheet A201.**

x. We received a question about Note 5 of the Air Handling Unit Schedule on M601. They wanted to know what we mean by "ultra-high static". **Response: "Ultra high static" is the terminology used by Trane for that particular motor for that air handler. This motor provided higher static pressure than the standard motor for that unit. Other manufacturers may not call it that. We just want the motor to be capable of handling the external static value in the schedule.**

y. Where is the schedule for the air distribution devices? **Response: On Sheet M601. It is named "Air Terminal Schedule".**

z. For the 2x4 studs at 24" OC for the Sound State floor, is it 24" OC both directions, or only 24" OC in one direction? **Response: See response to question "o" above.**

aa. Will Rose Ave. be able to be closed while doing the sewer crossing? **Response: Contractor is responsible for coordination with the City for work within their right-of-way.**

bb. Will Lionfish Dr. be able to be closed while doing the waterline crossing? **Response: Contractor is responsible for coordination with UNCW for work that impacts their roadways.**

cc. Specification 011000-1.80-B leads us to believe that IT items like cabling, terminations, access points, etc. are owner furnished and installed, however specifications in 271000 with UNCW guidelines leads us to believe we are to include cabling, terminations, access points, etc. Please clarify what the owner is furnishing/installing. A matrix listing what the owner is providing/installing would be very helpful. **Response: The I.T. systems' copper and certified fiber optic service, building demarcation components and building's end-to-end Structural Cabling Solution are included in this project. All passive components including but not limited to fiber patch panels, terminal devices, cabling, raceways, I.T. racks, cable management and items needed for a 20 year warranty of the building's end-to-end structural cabling solution and a complete copper and fiber optic I.T. building service solution including a 25 year warranty are included per section 27 10 00. Actively powered I.T. components such as network switches, wireless access points etc. are owner-provided and excluded from this project.**

dd. Currently the exterior wall design seems to indicate the exterior metal wall framing is in-between the metal building girt system. This will increase the amount of metal framing material and labor due to having to "in-fill" between all the girts. Seems a full height/bypass framing design would be more economical and quicker. Would the owner/design team consider revising? **Response: if this is in reference to the sound stage, this is being designed for sound isolation. Please bid as drawn and we can discuss cost saving alternatives after contract award.**

ee. We do not see any window treatment requirements. Please confirm not needed. **Response: At Classroom 1115 and Post Production 1123, include blackout**

Flexshade by Draper, manually operated; fabric: SunBloc SB9100 with white exterior and interior color by architect. At lobby, include same product except use Phifer Sheer Weave Series SW2400, 3% opening for fabric.

ff. Finish schedule on A602 calls for CMT on a wall in both toilet rooms. The specs list two types of wall tile CT-1 & CT-2 in section 093013, but the finish schedule does not call out either specifically. Please clarify which is to be used. **Response: CT-2. CT-1 is not within the project scope.**

gg. We received word that the large seed project at Camp Lejeune will not be moving its bid date from 10/17/19. As that project has a total of 6ea metal buildings, we would like to request the bid date be pushed until the following week. **Response: Not at this time.**

hh. There is a note on sheet A102 that calls out Adjustable Pipe Grid by Owner. Will the GC oversee installing the pipe grids? If so, are they electrical fixtures? **Response: No. Part of owner FFE. No electrical fixtures although there are junction boxes located on the bid documents.**

ii. Will this project be needing hand dryers or paper towels? Do you think that maybe it was a mistake that hand dryers were on the spec's? **Response: There are no hand dryers in the project. UNCW has a state contract for providing toilet accessories. Toilet accessories, including toilet paper and paper towel dispensers, soap dispensers and sanitary napkins disposal containers, shall be installed by the contractor.**

jj. Can you tell me if the stair detail shown for Alternate Bid Cinema A301 detail #2 Stair Nose detail will go from one side to the other on each seating level, or should it only be where people would exit seating? **Response: only at the stair widths, which would be 48" x 2.**

kk. Wall type 1J on Sheet A501 in Addendum One shows some type of Trim on top of wall. What material is this? **Response: painted wood.**

ll. Can you provide a specification for cork panels in Classroom 1115? **Response: Use 3/8" thick 48" wide continuous sheets manufactured by Manton Cork Industries www.mantoncork.com fully adhered to the gypsum board.**

End of Addendum No. 2

UNIVERSITY OF NORTH CAROLINA WILMINGTON

NOTICE TO BIDDERS

Sealed proposals will be received by the University of North Carolina at Wilmington on behalf of and for the benefit of The Board of Trustees of the Endowment Fund of the University of North Carolina at Wilmington ("Endowment"), in the office of the Project Management Department, in the Facilities Administration Building, Conference Room #1, up to 1:30 PM on Wednesday, October 16, 2019, and immediately thereafter publicly opened and read for the furnishing of labor, material and equipment entering into the construction of: **Film Studies Building**

Work Summary
New Film Studies Building: Site improvements and building construction of a 12,871 square foot facility. Construction includes concrete footings, concrete slab on grade, pre-engineered metal building frame, exterior metal siding and standing seam roofing, aluminum storefronts, hollow metal windows, wood and metal doors, sectional overhead door, interior metal stud partitions, interior finishes, plumbing, lighting, electrical and mechanical components. Special features include sound rated partitions and door assemblies, fire rated partitions, ADA lift and sloped interior floor. Site work includes excavation, extension and installation of utilities, earthwork, vehicular and pedestrian pavements, drainage, grading, storm water control, irrigation and landscaping.

Bids will be received for "single prime contract" by Contractors with appropriate license(s) and/or registration. All proposals shall be lump sum.

Pre-Bid Meeting
A non-mandatory Pre-Bid Conference was held on Wednesday, August 21, 2019, in the UNCW Project Management Department, in the Facilities Administration Building. Minutes from this conference are available upon request.

The meeting is also to identify preferred brand alternates and their performance standards that the owner will consider for approval on this project.

In accordance with General Statute GS 133-3, Specifications may list one or more preferred brands as an alternate to the base bid in limited circumstances. Specifications containing a preferred brand alternate under this section must identify the performance standards that support the preference. Performance standards for the preference must be approved in advance by the owner in an open meeting. Any alternate approved by the owner shall be approved only where (i) the preferred alternate will provide cost savings, maintain or improve the functioning of any process or system affected by the preferred item or items, or both, and (ii) a justification identifying these criteria is made available in writing to the public.

In accordance with GS133-3 and SCO procedures the following preferred brand items are being considered as Alternates by the owner for this project:

A. SCHLAGE, locksets
B. VON DUPRIN, door hardware and latches
C. LCN, door closers, operators and magnetic hold-open
D. IVES, hinges
E. STEELCRAFT, hollow metal doors and frames
F. MARSHFIELD, flush wood doors
G. INPRO ENDURANT, plastic toilet compartments

Justification of any approvals will be made available to the public in writing no later than seven (7) days prior to bid date.

Requests for information (RFI) will be accepted during bidding until Wednesday, October 9, 2019 at 4:00 PM. All RFI's must be submitted to the Architect and UNCW Project Manager in writing via e-mail.

Architect: Becker Morgan Group, Inc.; L. Mark Loudermilk, AIA, mloudermilk@beckermorgan.com
UNCW Project Manager: Lisa Seifert, seifertl@uncw.edu

The UNCW Facilities Project # 6034 shall be clearly indicated on the outside of the envelope.

Complete plans, specifications and contract documents will be open for inspection in the offices of UNCW Facilities Administration, 5150 Lionfish Drive, Wilmington, NC; the printer (Copycat Print Shop, 4107 Oleander Drive, Unit J, Wilmington, NC) and in the plan rooms of the Associated General Contractors, Carolinas Branch, in the local North Carolina

UNIVERSITY OF NORTH CAROLINA WILMINGTON

NOTICE TO BIDDERS

offices of McGraw-Hill Dodge Corporation, and in the Eastern Regional Office of Reed Construction Data in Norcross, GA and in Minority Plan Rooms in:

1. Hispanic Contractors Association of the Carolinas (HCAC), through Duncan-Parnell, Inc., 4275 Regency Drive, Greensboro, NC, 336-855-1211
2. East Coast Digital – Minority Plan Room Provider 1982 Wesley Lane, Greenville, NC 27858, 252-758-1616

or may be obtained by those qualified as prime bidders, from the printer: Copycat Print Shop, 4107 Oleander Drive, Unit J, Wilmington, NC 28403, 910-799-1500,
https://www.beckermorganplanroom.com/jobs/87/details/university-of-north-carolina-wilmington-film-studies-building

NOTE: The bidder shall include with the bid proposal the form *Identification of Minority Business Participation* identifying the minority business participation it will use on the project and shall include either *Affidavit **A*** or *Affidavit **B*** as applicable. Forms and instructions are included within the Form of Proposal in the bid documents. Failure to complete these forms is grounds for rejection of the bid. (GS143-128.2c Effective 1/1/2002.)

All contractors are hereby notified that they must have proper license and/or registration as required under the state laws governing their respective trades associated within this project.

General Contractors are notified that Chapter 87, Article 1, General Statutes of North Carolina, will be observed in receiving and awarding general contracts. General contractors submitting bids on this project must have license classification for Building Contractors.

Each proposal shall be accompanied by a cash deposit or a certified check drawn on some bank or trust company, insured by the Federal Deposit Insurance Corporation, of an amount equal to not less than five percent (5%) of the proposal, or in lieu thereof a bidder may offer a bid bond of five percent (5%) of the bid executed by a surety company licensed under the laws of North Carolina to execute the contract in accordance with the bid bond. Said deposit shall be retained by the owner as liquidated damages in event of failure of the successful bidder to execute the contract within ten days after the award or to give satisfactory surety as required by law.

A performance bond and a payment bond will be required for one hundred percent (100%) of the contract price.

Payment will be made based on ninety-five percent (95%) of monthly estimates and final payment made upon completion and acceptance of work.

No bid may be withdrawn after the scheduled closing time for the receipt of bids for a period of 30 days.

As of the date of this Notice, the owner of the property is the State of North Carolina, acting through its constituent institution, the University of North Carolina at Wilmington, an agency of the State and constituent institution of the University of North Carolina (collectively, “UNCW”).

General contractors are hereby put on notice that prior to the date the Endowment enters into a construction contract with a general contractor related to an accepted bid, if so selected, UNCW will enter into a ground lease with the Endowment, which will provide, among other things, that UNCW will lease and assign its rights to the land together with a non-exclusive easement and right of access to the Endowment for the term of the lease, during which term, the Endowment will own the building and improvements related to this building project.

The owner reserves the right to reject any or all bids and to waive informalities.

Designer:
Becker Morgan Group, Inc.
3333 Jaeckle Drive, Suite 120
Wilmington, NC 28403
910.341.7600

Owner:
State of North Carolina on behalf of the
University of North Carolina at Wilmington
601 S. College Rd
Wilmington, NC 28403

GUIDELINES FOR RECRUITMENT AND SELECTION OF MINORITY BUSINESSES FOR PARTICIPATION IN STATE CONSTRUCTION CONTRACTS

In accordance with G.S. 143-128.2 (effective January 1, 2002) these guidelines establish goals for minority participation in single-prime bidding, separate-prime bidding, construction manager at risk, and alternative contracting methods, on State construction projects in the amount of $300,000 or more. The legislation provides that the State shall have a verifiable ten percent (10%) goal for participation by minority businesses in the total value of work for each project for which a contract or contracts are awarded. These requirements are published to accomplish that end.

SECTION A: INTENT

It is the intent of these guidelines that the State of North Carolina, as awarding authority for construction projects, and the contractors and subcontractors performing the construction contracts awarded shall cooperate and in good faith do all things legal, proper and reasonable to achieve the statutory goal of ten percent (10%) for participation by minority businesses in each construction project as mandated by GS 143-128.2. Nothing in these guidelines shall be construed to require contractors or awarding authorities to award contracts or subcontracts to or to make purchases of materials or equipment from minority-business contractors or minority-business subcontractors who do not submit the lowest responsible, responsive bid or bids.

SECTION B: DEFINITIONS

1. Minority - a person who is a citizen or lawful permanent resident of the United States and who is:
   a. Black, that is, a person having origins in any of the black racial groups in Africa;
   b. Hispanic, that is, a person of Spanish or Portuguese culture with origins in Mexico, South or Central America, or the Caribbean Islands, regardless of race;
   c. Asian American, that is, a person having origins in any of the original peoples of the Far East, Southeast Asia and Asia, the Indian subcontinent, the Pacific Islands;
   d. American Indian, that is, a person having origins in any of the original peoples of North America; or
   e. Female

2. Minority Business - means a business:
   a. In which at least fifty-one percent (51%) is owned by one or more minority persons, or in the case of a corporation, in which at least fifty-one percent (51%) of the stock is owned by one or more minority persons or socially and economically disadvantaged individuals; and
   b. Of which the management and daily business operations are controlled by one or more of the minority persons or socially and economically disadvantaged individuals who own it.

3. Socially and economically disadvantaged individual - means the same as defined in 15 U.S.C. 637. "Socially disadvantaged individuals are those who have been subjected to racial or ethnic prejudice or cultural bias because of their identity as a member of a group without regard to their individual qualities". "Economically disadvantaged individuals are those socially disadvantaged individuals whose ability to compete in the free enterprise system has been impaired due to diminished capital and credit opportunities as compared to others in the same business area who are not socially disadvantaged".

4. Public Entity - means State and all public subdivisions and local governmental units.

5. Owner - The State of North Carolina, through the Agency/Institution named in the contract.

6. Designer – Any person, firm, partnership, or corporation, which has contracted with the State of North Carolina to perform architectural or engineering, work.

7. Bidder - Any person, firm, partnership, corporation, association, or joint venture seeking to be awarded a public contract or subcontract.

8. Contract - A mutually binding legal relationship or any modification thereof obligating the seller to furnish equipment, materials or services, including construction, and obligating the buyer to pay for them.

9. Contractor - Any person, firm, partnership, corporation, association, or joint venture which has contracted with the State of North Carolina to perform construction work or repair.

10. Subcontractor - A firm under contract with the prime contractor or construction manager at risk for supplying materials or labor and materials and/or installation. The subcontractor may or may not provide materials in his subcontract.

SECTION C: RESPONSIBILITIES

1. Office for Historically Underutilized Businesses, Department of Administration (hereinafter referred to as HUB Office).

   The HUB Office has established a program, which allows interested persons or businesses qualifying as a minority business under G.S. 143-128.2, to obtain certification in the State of North Carolina procurement system. The information provided by the minority businesses will be used by the HUB Office to:
   a. Identify those areas of work for which there are minority businesses, as requested.
   b. Make available to interested parties a list of prospective minority business contractors and subcontractors.
   c. Assist in the determination of technical assistance needed by minority business contractors.

   In addition to being responsible for the certification/verification of minority businesses that want to participate in the State construction program, the HUB Office will:
   (1) Maintain a current list of minority businesses. The list shall include the areas of work in which each minority business is interested.
   (2) Inform minority businesses on how to identify and obtain contracting and subcontracting opportunities through the State Construction Office and other public entities.
   (3) Inform minority businesses of the contracting and subcontracting process for public construction building projects.
   (4) Work with the North Carolina trade and professional organizations to improve the ability of minority businesses to compete in the State construction projects.
   (5) The HUB Office also oversees the minority business program by:
      a. Monitoring compliance with the program requirements.
      b. Assisting in the implementation of training and technical assistance programs.
      c. Identifying and implementing outreach efforts to increase the utilization of minority businesses.
      d. Reporting the results of minority business utilization to the Secretary of the Department of Administration, the Governor, and the General Assembly.

2. State Construction Office
   The State Construction Office will be responsible for the following:

   a. Furnish to the HUB Office a minimum of twenty-one days prior to the bid opening the following:
      (1) Project description and location;
      (2) Locations where bidding documents may be reviewed;
      (3) Name of a representative of the owner who can be contacted during the advertising period to advise who the prospective bidders are;
      (4) Date, time and location of the bid opening.
      (5) Date, time and location of prebid conference, if scheduled.

   b. Attending scheduled prebid conference, if necessary, to clarify requirements of the general statutes regarding minority-business participation, including the bidders' responsibilities.

c. Reviewing the apparent low bidders' statutory compliance with the requirements listed in the proposal, that must be complied with, if the bid is to be considered as responsive, prior to award of contracts. The State reserves the right to reject any or all bids and to waive informalities.
d. Reviewing of minority business requirements at Preconstruction conference**.**
e. Monitoring of contractors' compliance with minority business requirements in the contract documents during construction.
f. Provide statistical data and required reports to the HUB Office.
g. Resolve any protest and disputes arising after implementation of the plan, in conjunction with the HUB Office.

3. Owner
Before awarding a contract, owner shall do the following:

a. Develop and implement a minority business participation outreach plan to identify minority businesses that can perform public building projects and to implement outreach efforts to encourage minority business participation in these projects to include education, recruitment, and interaction between minority businesses and non-minority businesses.
b. Attend the scheduled prebid conference.
c. At least 10 days prior to the scheduled day of bid opening, notify minority businesses that have requested notices from the public entity for public construction or repair work and minority businesses that otherwise indicated to the Office for Historically Underutilized Businesses an interest in the type of work being bid or the potential contracting opportunities listed in the proposal. The notification shall include the following:
    1. A description of the work for which the bid is being solicited.
    2. The date, time, and location where bids are to be submitted.
    3. The name of the individual within the owner's organization who will be available to answer questions about the project.
    4. Where bid documents may be reviewed.
    5. Any special requirements that may exist.
d. Utilize other media, as appropriate, likely to inform potential minority businesses of the bid being sought.
e. Maintain documentation of any contacts, correspondence, or conversation with minority business firms made in an attempt to meet the goals.
f. Review, jointly with the designer, all requirements of G.S. 143-128.2(c) and G.S. 143-128.2(f) – (i.e. bidders' proposals for identification of the minority businesses that will be utilized with corresponding total dollar value of the bid and affidavit listing good faith efforts, or affidavit of self-performance of work, if the contractor will perform work under contract by its own workforce) - prior to recommendation of award to the State Construction Office.
g. Evaluate documentation to determine good faith effort has been achieved for minority business utilization prior to recommendation of award to State Construction Office.
h. Review prime contractors' pay applications for compliance with minority business utilization commitments prior to payment**.**
i. Make documentation showing evidence of implementation of Owner's responsibilities available for review by State Construction Office and HUB Office, upon request

4. Designer
Under the single-prime bidding, separate prime bidding, construction manager at risk, or alternative contracting method, the designer will:

a. Attend the scheduled prebid conference to explain minority business requirements to the prospective bidders.
b. Assist the owner to identify and notify prospective minority business prime and subcontractors of potential contracting opportunities.
c. Maintain documentation of any contacts, correspondence, or conversation with minority business firms made in an attempt to meet the goals.
d. Review jointly with the owner, all requirements of G.S. 143-128.2(c) and G.S.143-128.2(f) – (i.e. bidders' proposals for identification of the minority businesses that will be utilized with

corresponding total dollar value of the bid and affidavit listing Good Faith Efforts, or affidavit of self-performance of work, if the contractor will perform work under contract by its own workforce) - prior to recommendation of award.

e. During construction phase of the project, review "MBE Documentation for Contract Payment" – (Appendix E) for compliance with minority business utilization commitments. Submit Appendix E form with monthly pay applications to the owner and forward copies to the State Construction Office.
f. Make documentation showing evidence of implementation of Designer's responsibilities available for review by State Construction Office and HUB Office, upon request.

5. Prime Contractor(s), CM at Risk, and Its First-Tier Subcontractors
Under the single-prime bidding, the separate-prime biding, construction manager at risk and alternative contracting methods, contractor(s) will:

a. Attend the scheduled prebid conference.
b. Identify or determine those work areas of a subcontract where minority businesses may have an interest in performing subcontract work.
c. At least ten (10) days prior to the scheduled day of bid opening, notify minority businesses of potential subcontracting opportunities listed in the proposal. The notification will include the following:
   (1) A description of the work for which the subbid is being solicited.
   (2) The date, time and location where subbids are to be submitted.
   (3) The name of the individual within the company who will be available to answer questions about the project.
   (4) Where bid documents may be reviewed.
   (5) Any special requirements that may exist, such as insurance, licenses, bonds and financial arrangements.

   If there are more than three (3) minority businesses in the general locality of the project who offer similar contracting or subcontracting services in the specific trade, the contractor(s) shall notify three (3), but may contact more, if the contractor(s) so desires.
d. During the bidding process, comply with the contractor(s) requirements listed in the proposal for minority participation.
e. Identify on the bid**,** the minority businesses that will be utilized on the project with corresponding total dollar value of the bid and affidavit listing good faith efforts as required by G.S. 143-128.2(c) and G.S. 143-128.2(f).
f. Make documentation showing evidence of implementation of PM, CM-at-Risk and First-Tier Subcontractor responsibilities available for review by State Construction Office and HUB Office, upon request.
g. Upon being named the apparent low bidder, the Bidder shall provide one of the following: (1) an affidavit (Affidavit C) that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the applicable goal; (2) if the percentage is not equal to the applicable goal, then documentation of all good faith efforts taken to meet the goal. Failure to comply with these requirements is grounds for rejection of the bid and award to the next lowest responsible and responsive bidder.
h. The contractor(s) shall identify the name(s) of minority business subcontractor(s) and corresponding dollar amount of work on the schedule of values. The schedule of values shall be provided as required in Article 31 of the General Conditions of the Contract to facilitate payments to the subcontractors.
i. The contractor(s) shall submit with each monthly pay request(s) and final payment(s), "MBE Documentation for Contract Payment" – (Appendix E), for designer's review.
j. During the construction of a project, at any time**,** if it becomes necessary to replace a minority business subcontractor, immediately advise the owner, State Construction Office, and the Director of the HUB Office in writing**,** of the circumstances involved. The prime contractor shall make a good faith effort to replace a minority business subcontractor with another minority business subcontractor.

k. If during the construction of a project additional subcontracting opportunities become available, make a good faith effort to solicit subbids from minority businesses.
l. It is the intent of these requirements apply to all contractors performing as prime contractor and first tier subcontractor under construction manager at risk on state projects.

6. Minority Business Responsibilities
While minority businesses are not required to become certified in order to participate in the State construction projects, it is recommended that they become certified and should take advantage of the appropriate technical assistance that is made available. In addition, minority businesses who are contacted by owners or bidders must respond promptly whether or not they wish to submit a bid.

SECTION 4: DISPUTE PROCEDURES
It is the policy of this state that disputes that involves a person's rights, duties or privileges, should be settled through informal procedures. To that end, minority business disputes arising under these guidelines should be resolved as governed under G.S. 143-128(g).

SECTION 5: These guidelines shall apply upon promulgation on state construction projects. Copies of these guidelines may be obtained from the Department of Administration, State Construction Office, (physical address) 301 North Wilmington Street, Suite 450, NC Education Building, Raleigh, North Carolina, 27601-2827, (mail address) 1307 Mail Service Center, Raleigh, North Carolina, 27699-1307, phone (919) 807-4100, Website: www.nc-sco.com

SECTION 6: In addition to these guidelines, there will be issued with each construction bid package provisions for contractual compliance providing minority business participation in the state construction program.

MINORITY BUSINESS CONTRACT PROVISIONS (CONSTRUCTION)

APPLICATION:

The **Guidelines for Recruitment and Selection of Minority Businesses for Participation in State Construction Contracts** are hereby made a part of these contract documents. These guidelines shall apply to all contractors regardless of ownership. Copies of these guidelines may be obtained from the Department of Administration, State Construction Office, (physical address) 301 North Wilmington Street, Suite 450, NC Education Building, Raleigh, North Carolina, 27601-2827, (mail address) 1307 Mail Service Center, Raleigh, North Carolina, 27699-1307, phone (919) 807-4100, Website: http://www.nc-sco.com

MINORITY BUSINESS SUBCONTRACT GOALS:

The goals for participation by minority firms as subcontractors on this project have been set at 10%.

The bidder must identify on its bid, the minority businesses that will be utilized on the project with corresponding total dollar value of the bid and affidavit (Affidavit A) listing good faith efforts **or** affidavit (Affidavit B) of self-performance of work, if the bidder will perform work under contract by its own workforce, as required by G.S. 143-128.2(c) and G.S. 143-128.2(f).

The lowest responsible, responsive bidder must provide Affidavit C, that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the applicable goal.

OR

Provide Affidavit D, that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, **with documentation of Good Faith Effort, if the percentage is not equal to the applicable goal.**

OR

Provide Affidavit B, which includes sufficient information for the State to determine that the bidder does not customarily subcontract work on this type project.

The above information must be provided as required. Failure to submit these documents is grounds for rejection of the bid.

MINIMUM COMPLIANCE REQUIREMENTS:

All written statements, affidavits or intentions made by the Bidder shall become a part of the agreement between the Contractor and the State for performance of this contract. Failure to comply with any of these statements, affidavits or intentions, or with the minority business Guidelines shall constitute a breach of the contract. A finding by the State that any information submitted either prior to award of the contract or during the performance of the contract is inaccurate, false or incomplete, shall also constitute a breach of the contract. Any such breach may result in termination of the contract in accordance with the termination provisions contained in the contract. It shall be solely at the option of the State whether to terminate the contract for breach.

In determining whether a contractor has made Good Faith Efforts, the State will evaluate all efforts made by the Contractor and will determine compliance in regard to quantity, intensity, and results of these efforts. Good Faith Efforts include:

(1) Contacting minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor or available on State or local government maintained lists at least 10 days before the bid or proposal date and notifying them of the nature and scope of the work to be performed.

(2) Making the construction plans, specifications and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bid or proposals are due.

(3) Breaking down or combining elements of work into economically feasible units to facilitate minority participation.

(4) Working with minority trade, community, or contractor organizations identified by the Office for Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.

(5) Attending any prebid meetings scheduled by the public owner.

(6) Providing assistance in getting required bonding or insurance or providing alternatives to bonding or insurance for subcontractors.

(7) Negotiating in good faith with interested minority businesses and not rejecting them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing.

(8) Providing assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisting minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.

(9) Negotiating joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.

(10) Providing quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.

Identification of HUB Certified/ Minority Business Participation

I,_____,
(Name of Bidder)
do hereby certify that on this project, we will use the following HUB Certified/ minority business as construction subcontractors, vendors, suppliers or providers of professional services.

Firm Name, Address and Phone #	Work Type	*Minority Category	**HUB Certified (Y/N)

*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

**** HUB Certification with the state HUB Office required to be counted toward state participation goals.**

The total value of minority business contracting will be ($)_____.

State of North Carolina AFFIDAVIT A – Listing of Good Faith Efforts

County of _____

(Name of Bidder)

Affidavit of_____

I have made a good faith effort to comply under the following areas checked:

Bidders must earn at least 50 points from the good faith efforts listed for their bid to be considered responsive. (1 NC Administrative Code 30 I.0101)

- ❑ **1 – (10 pts)** Contacted minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor, or available on State or local government maintained lists, at least 10 days before the bid date and notified them of the nature and scope of the work to be performed.
- ❑ **2 --(10 pts)** Made the construction plans, specifications and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bids are due.
- ❑ **3** – **(15 pts)** Broken down or combined elements of work into economically feasible units to facilitate minority participation.
- ❑ **4 – (10 pts)** Worked with minority trade, community, or contractor organizations identified by the Office of Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.
- ❑ **5** – **(10 pts)** Attended prebid meetings scheduled by the public owner.
- ❑ **6** – **(20 pts)** Provided assistance in getting required bonding or insurance or provided alternatives to bonding or insurance for subcontractors.
- ❑ **7 – (15 pts)** Negotiated in good faith with interested minority businesses and did not reject them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing.
- ❑ **8** – **(25 pts)** Provided assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisted minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.
- ❑ **9** – **(20 pts)** Negotiated joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.
- ❑ **10** - **(20 pts)** Provided quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.

The undersigned, if apparent low bidder, will enter into a formal agreement with the firms listed in the Identification of Minority Business Participation schedule conditional upon scope of contract to be executed with the Owner. Substitution of contractors must be in accordance with GS143-128.2(d) Failure to abide by this statutory provision will constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of the minority business commitment and is authorized to bind the bidder to the commitment herein set forth.

Date:_____ Name of Authorized Officer:_____

Signature:_____

Title:_____

SEAL

State of_____, County of_____

Subscribed and sworn to before me this _____day of _____20____

Notary Public_____

My commission expires _____

State of North Carolina --AFFIDAVIT B-- Intent to Perform Contract with Own Workforce.

County of _____

Affidavit of _____
(Name of Bidder)

I hereby certify that it is our intent to perform 100% of the work required for the _____

_____ contract.
(Name of Project)

In making this certification, the Bidder states that the Bidder does not customarily subcontract elements of this type project, and normally performs and has the capability to perform and will perform all elements of the work on this project with his/her own current work forces; and

The Bidder agrees to provide any additional information or documentation requested by the owner in support of the above statement. The Bidder agrees to make a Good Faith Effort to utilize minority suppliers where possible.

The undersigned hereby certifies that he or she has read this certification and is authorized to bind the Bidder to the commitments herein contained.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____

SEAL

State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____ 20___

Notary Public _____

My commission expires _____

Do not submit with bid Do not submit with bid Do not submit with bid Do not submit with bid

State of North Carolina - AFFIDAVIT C - Portion of the Work to be Performed by HUB Certified/Minority Businesses

County of _____

(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the portion of the work to be executed by HUB certified/minority businesses as defined in GS143-128.2(g) and 128.4(a),(b),(e) is equal to or greater than 10% of the bidders total contract price, then the bidder must complete this affidavit.
This affidavit shall be provided by the apparent lowest responsible, responsive bidder within **72 hours** after notification of being low bidder.

Affidavit of _____ I do hereby certify that on the
(Name of Bidder)

_____
(Project Name)

Project ID#_____ Amount of Bid $_____

I will expend a minimum of _____% of the total dollar amount of the contract with minority business enterprises. Minority businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below. Attach additional sheets if required

Name and Phone Number	*Minority Category	**HUB Certified Y/N	Work Description	Dollar Value

*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

**** HUB Certification with the state HUB Office required to be counted toward state participation goals.**

Pursuant to GS143-128.2(d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the commitment herein set forth.

Date:_____ Name of Authorized Officer:_____

SEAL

Signature:_____

Title:_____

State of _____, County of _____
Subscribed and sworn to before me this _____day of _____20____
Notary Public_____
My commission expires_____

State of North Carolina AFFIDAVIT D – Good Faith Efforts

County of _____

(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the goal of 10% participation by HUB Certified/ minority business **is not** achieved, the Bidder shall provide the following documentation to the Owner of his good faith efforts:

Affidavit of _____ I do hereby certify that on the
(Name of Bidder)

_____
(Project Name)

Project ID#_____ Amount of Bid $_____

I will expend a minimum of _____% of the total dollar amount of the contract with HUB certified/ minority business enterprises. Minority businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below. (Attach additional sheets if required)

Name and Phone Number	*Minority Category	**HUB Certified Y/N	Work Description	Dollar Value

*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

**** HUB Certification with the state HUB Office required to be counted toward state participation goals.**

Examples of documentation that may be required to demonstrate the Bidder's good faith efforts to meet the goals set forth in these provisions include, but are not necessarily limited to, the following:

A. Copies of solicitations for quotes to at least three (3) minority business firms from the source list provided by the State for each subcontract to be let under this contract (if 3 or more firms are shown on the source list). Each solicitation shall contain a specific description of the work to be subcontracted, location where bid documents can be reviewed, representative of the Prime Bidder to contact, and location, date and time when quotes must be received.

B. Copies of quotes or responses received from each firm responding to the solicitation.

C. A telephone log of follow-up calls to each firm sent a solicitation.

D. For subcontracts where a minority business firm is not considered the lowest responsible sub-bidder, copies of quotes received from all firms submitting quotes for that particular subcontract.

E. Documentation of any contacts or correspondence to minority business, community, or contractor organizations in an attempt to meet the goal.

F. Copy of pre-bid roster

G. Letter documenting efforts to provide assistance in obtaining required bonding or insurance for minority business.

H. Letter detailing reasons for rejection of minority business due to lack of qualification.

I. Letter documenting proposed assistance offered to minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letter of credit, including waiving credit that is ordinarily required.

Failure to provide the documentation as listed in these provisions may result in rejection of the bid and award to the next lowest responsible and responsive bidder.

Pursuant to GS143-128.2(d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the commitment herein set forth.

Date:_____ Name of Authorized Officer:_____

Signature:_____

Title:_____

SEAL

State of _____, County of _____

Subscribed and sworn to before me this _____day of _____20____

Notary Public_____

My commission expires _____

APPENDIX E

MBE DOCUMENTATION FOR CONTRACT PAYMENTS

Prime Contractor/Architect: _____

Address & Phone: _____

Project Name: _____

Pay Application #: _____ Period: _____

The following is a list of payments made to Minority Business Enterprises on this project for the above-mentioned period.

MBE FIRM NAME	* INDICATE TYPE OF MBE	AMOUNT PAID THIS MONTH	TOTAL PAYMENTS TO DATE	TOTAL AMOUNT COMMITTED

*Minority categories: Black, African American (B), Hispanic (H), Asian American (A), American Indian (I), Female (F), Social and Economically Disadvantage (D)

Date: _____ Approved/Certified By: _____
Name

_____
Title

_____
Signature

SUBMIT WITH EACH PAY REQUEST & FINAL PAYMENT

(Revised on 3/14/2003)

SECTION 221000 - PLUMBING PIPING AND SPECIALTIES (REVISED 10-9-19 ADD. #2)

PART 1: GENERAL

1.1 RELATED DOCUMENTS AND RELATED WORK SPECIFIED ELSEWHERE:

A. Related Documents

1. Drawings, Standard General Conditions of the Construction Contract, including Supplementary General Conditions, Division 01 Specification sections and other Division 22 specification sections, Division 21, Division 23, Division 26, and Division 31 specifications apply to work of this section.

1.2 REFERENCED SECTIONS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Specification Divisions and Sections as referenced in Division 22 Section “Plumbing General Requirements”, and Division 22 Specification Sections as follows apply to work of this section:

C. Section 220110 - Plumbing General Requirements

D. Section 220150 - Basic Materials and Methods

E. Section 220700 - Plumbing Insulation

F. Section 224000 - Plumbing Fixtures

1.3 REFERENCES

A. The publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by basic designation only.

1. AMERICAN GAS ASSOCIATED LABORATORIES (AGA)

a.	AGA	American Gas Association Laboratories Listing.

2. AMERICAN SOCIETY OF SANITARY ENGINEERING (ASSE)

a.	ASSE 1010	Water Hammer Arrestors
b.	ANSI/ASSE 1011	Performance Requirements for Hose Connection Vacuum Breakers
c.	ASSE 1012	Backflow Preventers with Immediate Atmospheric Vent
d.	ASSE 1013	Backflow Preventers, Reduced Pressure Principle
e.	ASSE 1019	Wall Hydrants, Frost Proof Automatic Draining Anti-Backflow Types

3. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

a.	ANSI A112.21.1M	Floor Drains

b. ANSI A112.21.2M Roof Drains
c. ANSI A112.26.1 Water Hammer Arrestors
d. ANSI B16.18 Cast Copper Alloy Solder Joint Pressure Fittings
e. ANSI B16.23 Cast Copper Alloy Solder-Joint Pressure Fittings - DWV
f. ANSI B31.2 Fuel Gas Piping
g. ANSI B31.9 Building Services Piping Code

4. AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS (ASHRAE)

a. ANSI/ASHRAE 90.1B Energy Conservation in New Building Design

5. AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

a. ANSI/ASME Code Boiler Pressure Vessel Code

b. ANSI/ASME Code Sec.9 Boiler and Pressure Vessel Code - Welding and Brazing Qualifications

c. ANSI/ASME A112.19.8M Certification of Suction Fittings & Drains

d. ANSI/ASME B16.1 Cast Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250 and 800.

e. ANSI/ASME B16.3 Malleable-Iron Threaded Fittings, Classes 150 and 300

f. ANSI/ASME B16.4 Cast-Iron Threaded Fittings Class 125 and 250

g. ANSI/ASME B16.22 Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings

h. ANSI/ASME B16.26 Cast Copper Alloy Fittings for Flared Copper Tubes

i. ANSI/ASME B16.29 Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings - DWV

j. ANSI/ASME B16.32 Cast Copper Alloy Solder-Joint Fittings for Solvent Drainage Systems

6. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

a. ASTM A 47 Ferritic Malleable Iron Castings
b. ASTM A 53 Pipe, Steel, Black and Hot-Dipped Zinc Coated, Welded and Seamless
c. ASTM A 74; CIS {O 3-1, Cast Iron Soil Pipe and Fittings ASTM A888
d. ASTM A 234/A234M Pipe Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperatures
e. ASTM B 32 Solder Metal

f.	ASTM B 42	Seamless Copper Pipe, Standard Sizes
g.	ASTM B 43	Seamless Red Brass Pipe
i.	ASTM B 62	Cast Bronze Valves
j.	ASTM B 75	Seamless Copper Tube
k.	ASTM B 88	Seamless Copper Water Tube
l.	ASTM B 251	Wrought Seamless Copper and Copper-Alloy Tube
m.	ASTM B 302	Threadless Copper Pipe (TP)
n.	ASTM B 306	Copper Drainage Tube (DWV)
o.	ASTM B 447	Copper or Copper Alloy Tubing
p.	ASTM C 1540	Heavy duty Shielded Couplings Joining Hubless Cast Iron Soil Pipe and Fittings
q.	ASTM C 564	Rubber Gaskets for Cast Iron Soil Pipe and Fittings

7. AMERICAN WELDING SOCIETY (AWS)

a.	ANSI/AWS A5.8	Brazing Filler Metal

8. AMERICAN WATER WORKS ASSOCIATIONS (AWWA)

a.	ANSI/AWWA C105/A21.5	Polyethylene Encasement for Ductile Iron Piping for Water and Other Liquids
b.	ANSI/AWWA C151/A21.51	Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or Other Liquids
c.	ANSI/AWWA C110/A21.10	Ductile - Iron and Gray - Iron Fittings 3 in. through 48 in., for Water and Other Liquids
d.	ANSI/AWWA C111/A21.11	Rubber Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings
e.	AWWA C506	Backflow Prevention Devices - Reduced Pressure Principle and Double Check Valve Types
f.	AWWA C651	Disinfecting Water Mains

9. CAST IRON SOIL PIPE INSTITUTE (CISPI)

a.	CISPI 301	Cast Iron Soil Pipe and Fittings for Hubless Cast Iron Sanitary Systems
b.	CISPI 310	Joints for Hubless Cast Iron Sanitary Systems

10. NATIONAL CERTIFIED PIPE WELDING BUREAU (NCPWB)

a.	NCPWB Procedure Specifications for Pipe Welding	

11. NATIONAL FIRE PROTECTION ASSN (NFPA)

a.	NFPA 70	National Electrical Code

12. NATIONAL SANITATION FOUNDATION (NSF)

a.	NSF Std 5	Commercial Hot Water Generating and Heat Recovery Equipment

13. NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

    a. NEMA 250 — Enclosures for Electrical Equipment (1000 Volts Maximum)

14. PLUMBING AND DRAINAGE INSTITUTE (PDI)

    a. PDI WH-201 — Water Hammer Arresters

15. UNDERWRITERS LABORATORIES (UL)

    a. UL 1453 — Electric Booster and Commercial Storage Tank Water Heaters

    b. UL listed Product Directories

1.4 SUBMITTALS

A. Submit under provisions of Division 01, and Division 22, “Plumbing General Requirements” the following: manufacturer’s catalog data, installation, dimensions (including rough in dimensions) and operating and maintenance data for plumbing specialty items; catalog data and material certification for pipe materials and fittings. Provide for all items as listed in Specification Section 220110.

1.5 QUALITY ASSURANCE

A. Equipment of the same general type shall be of the same make.

B. Brand names and catalog numbers included with equipment or material specifications are used to indicate quality, rating or operating characteristics of the equipment of material.

C. All materials provided shall be new and shall be approved by the Underwriter’s Laboratories, Inc. wherever that agency has applicable standards. All work shall be accomplished in a neat, workmanlike manner by experienced journeymen. All work shall be performed at such times as are required by the progress of the job.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three years’ experience.

B. Installer: NC State licensed plumber specializing in performing the work of this section with minimum 3 years’ experience.

1.7 REGULATORY REQUIREMENTS

A. Installation and materials shall be in conformance with the North Carolina State Building Code 2012 Edition (Year 2009 Edition of the International Plumbing Code as modified and adopted by the North Carolina Building Code Council).

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect and handle products to site under provisions of Division 01 and Division 220110, Plumbing General Requirements.

1.9 SYSTEM COMPLETION

A. Provide all bolts, nuts, gaskets, sleeves, hangers, supports, miscellaneous valves and fittings, and specialties required for complete installation of the piping and equipment to be provided.

PART 2: PRODUCTS

2.1 BURIED WASTE AND STORM DRAIN PIPING

A. Below grade: PVC DWV pipe and fittings: ASTM D 2665, Schedule 40, installation per manufacturer’s instructions, and connect by ASTM D 2564 PVC solvent cement. Use 2 inch minimum size underground.

B. Contractor’s Option below grade: Cast iron pipe, ASTM A 74, service weight with cast iron fittings. Joints shall be either 1) hub-and spigot joints, CISPI HSN compression type with ASTM C 564 neoprene gaskets.

2.2 ROOF DRAIN AND SANITARY DRAIN PIPING ABOVE GROUND

A. Cast iron pipe: All 1-1/2" through 8" cast iron soil, waste pipe and house or building sewer lines and fittings shall bear the registered insignia "CI" or "CI No-Hub" indicating that these items used in the sanitary system comply with the Cast Iron Soil Pipe Institute's Standard 301-63T. Universal "Alpha Couplings" or "No-Hub" stainless steel connections shall be used above grade.

B. Fixture Arms: Schedule 40 galvanized steel pipe with threaded fittings.

2.3 WATER PIPING

A. All above grade water piping 2-1/2" and smaller shall be ANSI/ASTM B88, Type "L" copper, hard drawn, with the type and manufacturer's name on each piece. Fittings shall be wrought brass or copper. Under no circumstances shall notching or mitering be permitted. Appropriate fittings shall be used for all turns, and joints.

B. All above grade water piping 3” and larger shall be ductile iron with flanged joints.

C. All below grade water piping 3" and smaller shall be Type "K" copper soft annealed, with the type and manufacturer's name on each piece. Copper tubing which is out of round or kinked will not be acceptable on this project. No joints allowed under the building slab.

D. Below grade water piping is also permitted to be ductile iron pipe meeting the requirements of ANSI-AWWA C151 Pressure Class 350.

E. Fittings shall be wrought copper, ANSI B16.22, or cast brass, ANSI B16.18, with solder joints. Solder for potable water systems shall be lead free, 95 /5 Tin/Antimony. Joints on piping 1-1/2” and larger shall be silver brazed. Under no circumstances shall notching or mitering be permitted. Appropriate fittings shall be used for all turns, and joints.

F. Below Ground piping shall have coal tar protective coating (comply with AWWA C203 for enamel and tape, hot applied.) Avoid use of underground fittings. Where underground fittings are required, provide wrought copper and connect by silver brazing.

G. Solder: 95-5 tin - antimony solder. Solders containing lead shall not be used on potable water systems.

2.4 DIELECTRIC CONNECTORS

A. Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

2.5 ESCUTCHEONS

A. General: Use chrome-plated B & C Type 40 flush escutcheons on ceiling and wall. At floors, use Ritter No. 36-A deep cup chrome-plated escutcheon. Use Ritter, Grabler, Blaw-Knox, or equal. Escutcheons shall be used at all piping in finished areas. Escutcheons on insulated piping shall fit insulation tightly.

B. For Exposed Flush Valves, Water Supplies, and P-traps: Provide chrome-plated cast brass escutcheons with set screws.

2.6 FLASHING

A. Sheet lead for general use shall weigh at least 4 pounds per square foot. Sheet copper for general use shall weigh at least 12 ounces per square foot and conform to ASTM B152.

2.7 SLEEVES

A. Pipe Sleeves with Link Seal below grade: Modular mechanical type wall sleeve seals shall consist of interlocking synthetic rubber links shaped to continuously fill the annular space between the pipe and wall sleeve. Links shall be loosely assembled with bolts to form a continuous rubber belt around the pipe with pressure plate under each bolt head and nut. Tightening of the bolts shall cause the rubber links to expand and provide a positive weather tight seal between the pipe and the wall sleeve. Mechanical wall sleeve seals shall be “Link-Seal” model as manufactured by Thunderline Corporation, Wayne Michigan, Wade, Zurn, or equal.

B. Walls and Floors

1. Sleeves through poured through concrete walls and floors, and non-bearing partition walls shall be linear polyethylene as manufactured "Crete Sleeve", Sperzel Division, Tyler, or Charlotte Pipe.

2. Sleeves through waterproof floors or where exposed in rooms with floor drains shall be coated cast iron with flashing device and under deck clamp. J.R. Smith #1720, Josam, Wade or Zurn.

3. General Provision for Sleeves: Provide sleeves for all pipe passing through masonry fire walls, floors, foundation walls or ceilings of concrete or masonry construction, provide a Schedule 40 galvanized steel pipe large enough to clear pipes by 1/4 inch all around. No sheet metal sleeves are to be permitted. All floor sleeves shall extend 1/2 inch above floor. Sleeves at walls and ceilings shall be flush at wall lines. For insulated pipes, sleeves shall be larger than the outside diameter of the insulation and insulation shall be continuous through the sleeves. Sleeves shall be machine cut at right angles to centerline of pipe and deburred. No flame cut sleeves will be permitted.

2.8 FLOOR DRAINS

A. ANSI A112.21.1, coated cast iron two-piece body with double drainage flange, weep holes, reversible clamping collar, and round, adjustable nickel-bronze strainer. All floor drains shall have round tops, except where square tiles are employed provide square tops. Provide tractor grate, perforated stainless steel basket or sediment bucket, funnels, and trap primer connections where called for in the Plumbing Specialties Schedule.

B. Provide Series 30000 as manufactured by Josam, or equal by Zurn, Jay R. Smith, or Wade.

C. Use deep seal p-traps with all floor drains.

2.9 CLEANOUTS

A. Cleanouts shall be adjustable and equipped with an internal brass plug with countersunk brass screws holding the rim to the body and cover. Provide tops with tile recess for floor coverings or terrazzo. Provide a permanent carpet indicator where cleanout is located under carpet. Line type shall have lacquered cast iron body and round epoxy coated gasketed cover. Wall cleanouts shall have stainless steel round access covers, frame with anchor lugs and cover plate with screws; as manufactured by Josam, or equal by Zurn, Jay R. Smith, or Wade.

B. Exterior cleanouts shall be brass recessed type protected by 24”x24”x 6” thick concrete pad poured to finished grade.

2.10 HOSE BIBBS

A. Bronze or brass with integral adjustable mounting flange, hose thread spout, integral vacuum breaker, hand wheel or loose key operated as indicated in Plumbing Specialties Schedule on the drawings, in conformance with ANSI/ASSE 1011; as manufactured by Woodford, Wilkins, Watts, Jay R. Smith, Nibco, or Crane.

B. All hose bibbs exposed to public view shall have chrome plated finish.

2.11 WALL HYDRANT

A. Non-freeze hot and cold type with 3/4” hose thread spout, chrome plated, drains automatically when hose is removed, internal resetting pressure relief valve to prevent faucet casing tube from bursting if hose is left on in freezing conditions, with two independent check valves, ASSE 1052 approved, listed by IAPMO; as manufactured by Wilkins, J.R. Smith, Nibco, Crane, Woodford, or Watts.

B. Provide a loose tee key for each hydrant to the owner.

2.12 VACUUM BREAKERS

A. Atmospheric type – bronze body and trim with 212F temperature rating, 125 PSI working pressure, bottom inlet, side outlet, and silicone sealing disc. Provide polished chrome finish where exposed in finished areas.

2.13 THERMOSTATIC MIXING VALVES

A. Thermostatic mixing valves shall meet ASSE 1069 and 1070 requirements. The point of use master controller valve shall be a nickel plated thermostatic mixing valve with 3/4” MNPT connections. The

mixing valve shall have a spindle to adjust outlet temperature. The mixing valve shall protect against scalding and chilling. Outlet temperature range shall be 95 to 115 degrees F with a temperature stability of +/- 5 degrees F, and minimum flow rate of 0.5 gpm. Provide Model 570 Lead Free as Manufactured by Lawler MFG Co., Inc. or approved equal by Haws, Leonard Water Temperature Controls, or Watts.

2.14 TRAP SEAL PRIMERS

A. Install where shown on the drawings and use the type indicated on the drawings for a specific location.
   1. TP-1: Activated by a pressure drop of 10 psig, Model P2-500 as manufactured by Precision Plumbing Products, or approved equal by Sloan, Delta, or Zurn.

2.15 WATER HAMMER ARRESTORS

A. ANSI A112.26.1; All stainless-steel construction, meets standards PDI WH-201 and ASSE 1010, filled with glycerin, pressurized with argon or nitrogen, size as indicated by PDI WH 201 letter designation; Series 75000-S as manufactured by Josam, or equal by J.R. Smith, Watts, or Zurn. Install where shown on the drawings.

2.16 BUTTERFLY VALVES

A. MSS SP-67: Butterfly Valves shall be lead free full-tapped lug design suitable for dead-end service. Valves through 6" shall have infinite position handles equipped with adjustable memory stops. Valves shall be suited for working pressure up to 150 psi and 275 F, shall have cast iron body, ductile iron discs, stainless steel shaft, and elastomeric seats and o-rings. Provide with stem extension for insulated pipe applications.

2.17 ANGLE VALVES

A. Up to and including 2 Inches: Lead-free, MSS SP-80, Class 150, body and union bonnet of ASTM B 62 bronze, inside rising stem of bronze, brass packing gland, Teflon-impregnated packing, and malleable-iron handwheel.

B. Up to and including 2 Inches: Lead-free, Class 300, body and union bonnet of ASTM B 61 bronze, inside rising stem of bronze, plug disc and seat ring of stainless steel, and malleable-iron handwheel.

C. Over 2 inches: Lead-free Class 125, Iron body, MSS SP-85, bronze mounted with body and bonnet ASTM A 126, Class B cast iron, flanged ends, outside screw and yoke, with Teflon-impregnated packing and two-piece packing gland assembly, and malleable-iron handwheel.

2.18 CHECK VALVES

A. Up to and Including 2 Inches: Lead-free, Class 125 or Class 150, body and caps of ASTM B584-C89836 bronze, renewable bronze seat, threaded ends or solder ends, and swing type disc.

2.19 BALL VALVES

A. Up to and Including 4”: Lead-free, 400 psig CWP, 150 psig SWP, bronze body, 3-piece full port, adjustable packing gland, reinforced seats, blow-out-proof stem, inline repairable, chrome-plated brass ball, threaded, or soldered ends.

B. Provide with stem extension for insulated pipe applications.

2.20 STRAINERS

A. Size 2 Inches and Under: Lead-free, screwed bronze cast iron body for 175 psig working pressure, Y pattern with 1/32-inch perforated stainless-steel screen.

B. Each strainer with gate-type drain valve with 3/4-inch hose nipple and cap.

2.21 BACK FLOW PREVENTER

A. The backflow preventer shall consist of a pressure differential relief valve located in a zone between two positive seating check valves, suitable for use in potable water (lead free components in contact with the water). The main body shall be bronze or epoxy coated cast iron. The relief valve shall contain a separate means where by free air will enter the zone and contained water will be discharged to atmosphere when the valve is fully open. The assembly shall include two tightly closing shut-off valves before and after the device, test cocks and a protective strainer upstream of the first gate valve. The device shall meet the requirements of A.S.S.E. Std. 1013 and NSF/ANSI 61. Zurn Wilkins Model 375, or approved equal by Watts Regulator Co., Apollo, Armstrong, or Flowmatic Corp.

2.22 CIRCULATING PUMPS

A. Inline, approved for potable water service, stainless steel body, maintenance free, permanently lubricated, with variable speed ECM spherical motor, onboard intelligence that automatically adjusts speed to maximize efficiency.

B. Provide pump and motor size and capacity as scheduled on the drawings.

C. Manufacturer: Pump shall be ecocirc® 19-16 by Bell & Gossett, or approved equal by Armstrong, Taco, or Grundfos.

PART 3: EXECUTION

3.1 EXAMINATION

A. Verify that excavations are required grade, dry, and not over-excavated.

3.2 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and dirt, on inside and outside, before assembly.

C. Prepare piping connections to equipment with flanges or unions.

D. Coordinate cutting and forming of roof and floor construction to receive drains to required invert elevations.

3.3 INSTALLATION

A. Install all equipment in accordance with manufacturer's instructions.

B. Provide non-conducting dielectric connections wherever joining dissimilar metals. Protect insulating material if heat is applied to fitting.

C. Route piping in orderly manner. Grade piping to low points and provide drain valves.

D. Install piping to conserve building space and not interfere with use of space.

E. Group piping whenever practical at common elevations.

F. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

G. Provide Sleeves for all pipes passing through floors, walls and ceilings, of sufficient size to receive insulation and of proper length to terminate 1" outside finished surfaces. Pipe sleeves shall be caulked with non-hardening caulking to prevent transmission of noise between floors and walls.

H. Pipe Penetrations through fire partition walls and through floors shall be made by UL penetration detail as indicated with caulking with UL listed fireproof caulking.

I. Provide clearance for installation of insulation and access to valves and fittings.

J. Provide access where valves and fittings are not exposed. Coordinate size and location of access doors with those specified in Division 05.

K. Establish elevations of buried piping outside the building to ensure not less than 3 ft of cover, except where noted otherwise.

L. Piping buried under slab within building shall be installed with a minimum of joints and shall be completely encased in sand.

M. Changes in pipe sizes shall be made with reducing fittings.

N. Make copper piping joints for 1-1/4” pipe and smaller with 95-5 solder, and no corrosive solder paste. Flux and solder combinations are not permitted. Make copper piping joints for 1-1/2” to 2-1/2” with silver brazing.

O. Provide domestic water branch piping to fixtures and make final connections to fixtures provided by this or other contractors.

P. Do not rough piping inside spaces, partitions, stud wall voids, plenums, or cavities subject to potential freezing.

Q. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.

R. Provide escutcheons for piping passing into finished areas. All uninsulated piping in finished areas shall be chrome plated.

S. Hangers supports and threaded rods shall be furnished galvanized, except where attached to copper pipe. Clamps or other attachments on copper piping shall be copper or copper plated steel.

T. Prepare pipe and accessories not prefinished, ready for finish painting. Refer to Division 09 and Section 220553.

U. Excavate in accordance with Section 220510 for work of this Section.

V. Backfill in accordance with Section 220510 for work of this Section. All underground lines shall be marked with magnetic tape installed in the backfill at least 6” below grade.

W. Install bell and spigot pipe with bell end upstream.

X. Provide valves at inlet and outlet of each piece of equipment, at each fixture, on branch lines and where indicated on the drawings.

Y. Install valves with stems upright or horizontal, not inverted.

Z. Install all devices in accordance with manufacturer's instructions.

AA. Extend cleanouts to finished floor or wall surface. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil. Ensure clearance at cleanout for rodding of drainage system. Encase exterior cleanouts in concrete flush with grade.

BB. Install water hammer arrestors complete with accessible isolation valve on hot and cold-water supply piping to lavatories, sinks, and water closet flush valves.

3.4 APPLICATION

A. Use grooved mechanical couplings and fasteners only in accessible locations.

B. Install unions downstream of valves and at equipment or apparatus connections.

C. Install brass male adapters each side of valves in copper piped system. Sweat solder adapters to pipe.

D. Install gate or ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.

E. Install ball valves for throttling, bypass, or manual flow control services.

3.5 ERECTION TOLERANCES

A. Establish invert elevations, slopes for drainage to 1/8 or ¼ inch per foot, as required. Maintain gradients. Slope water piping and arrange to drain at low points.

3.6 PLUMBING SYSTEM TESTING

A. Water: Upon completion of a section of, or entire water distribution system, the system, or portion completed, shall be tested and proved tight under a water or an air test of not less than 100 psi. This pressure shall be held for not less than 15 minutes.

B. Waste and Vent: A water test shall be applied to the drainage system within the building either in its entirety or in sections. If applied to the entire system, all openings in the piping shall be tightly closed, except the highest opening, and the system shall be filled with water to the point of overflow. When testing in sections, each opening shall be tightly plugged except the highest openings of the

section under test, and each section shall be filled with water, but no section shall be tested with less than a 10-foot head of water. In testing successive sections, at least the upper 10 feet of the next preceding section shall be tested so that no joint or pipe in the building, except the uppermost 10 feet of the system, shall have been submitted to a test of less than a 10-foot head of water. This pressure shall be held for not less than 15 minutes. The system shall then be tight at all points.

3.7 POTABLE WATER SYSTEM STERILIZATION

C. All pipe and fittings connected to and forming a part of a potable water supply shall be sterilized. Sterilization shall be accomplished after the pipe has passed the hydrostatic pressure tests. The method used by the contractor shall be in full accordance with the requirements of the AWWA Specification C-601, and state and local Departments of Health.

D. All new piping shall be filled with not less than 25, nor more than 50 parts per million (ppm) of available chlorine and held in contact with such for not less than 24 hours. Final tests after 24 hours shall show minimum residual chlorine content of 25 ppm in all parts of the system. All chlorine introduced into the system shall be totally dissolved. The introduction of solid hypochlorite directly into the system is prohibited.

E. Sterilization tests shall be repeated as often as necessary and as directed by the engineer and/or Department of Health, until the minimum residual chlorine content has been maintained. The chlorine solution shall be thoroughly flushed prior to placing the new sections of piping in service. The contractor is cautioned that the spent chlorine solution must be disposed of in such as way as not to be detrimental to plant, animal of aquatic life.

F. After disinfection, the water system shall not be placed in service until bacteriological test results of representative water samples analyzed in an independent, EPA approved laboratory, are found to be satisfactory. Certification of bacteriological testing for quality of the domestic water shall be conducted, accepted by the Project Engineer and submitted to the State Construction Office prior to requesting Beneficial or Final Occupancy Permit.

END OF SECTION 221000

TERMITE CONTROL 313116 - 1

SECTION 313116 - TERMITE CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes soil treatment for termite control.

1.3 ACTION SUBMITTALS

A. Product Data: Treatments and application instructions, including EPA-Registered Label.

1.4 INFORMATIONAL SUBMITTALS

A. Product Certificates: Signed by manufacturers of termite control products certifying that treatments furnished comply with requirements of the N.C. Dept. of Agriculture, Structural Pest Control Division.

B. Qualification Data: For applicator.

C. Soil Treatment Application Report: After application of termiticide is completed, submit report for Owner's record information, including the following as applicable:

1. Date and time of application.

2. Moisture content of soil before application.

3. Brand name and manufacturer of termiticide.

4. Quantity of undiluted termiticide used.

5. Dilutions, methods, volumes, and rates of application used.

6. Areas of application.

7. Water source for application.

D. Sample Warranties: For special warranties.

1.5 QUALITY ASSURANCE

A. Applicator Qualifications: A Pest Control Operator who is licensed according to regulations of authorities having jurisdiction to apply termite control treatment in jurisdiction where Project is located and who is experienced and has completed termite control treatment similar to that indicated for this Project and whose work has a record of successful in-service performance.

B. Regulatory Requirements: Formulate and apply termiticides, and label with a Federal registration number, to comply with EPA regulations and authorities having jurisdiction.

C. Standards for Application: Current edition of North Carolina Administrative Code 2:34.0506 and North Carolina Structural Pest Control Committee Rules and Regulations.

D. Source Limitations: Obtain termite control products from single manufacturer for each product.

E. Testing: Contractor shall coordinate with the NC Department of Agriculture to provide one of the following. Allow a minimum of 2 weeks' notice to schedule inspection.

1. Prior to soil treatment, a NC Department of Agriculture Inspector shall meet with the Pest Control Operator to review products and site-specific application procedures.

2. Subsequent to soil treatment, have treated soil tested to verify application compliance. Soil samples shall be taken within time period of application as recommended by NC Department of Agriculture.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: To ensure penetration, do not treat soil that is water saturated or frozen. Do not treat soil while precipitation is occurring. Comply with EPA-Registered Label requirements and requirements of authorities having jurisdiction.

1.7 COORDINATION

A. Coordinate soil treatment application with excavating, filling, and grading and concreting operations. Treat soil under footings, grade beams, and ground-supported slabs, before construction.

1.8 WARRANTY

A. Special Warranty: Written warranty, signed by applicator and Contractor certifying that termite control work, consisting of applied soil termiticide treatment, will prevent infestation of subterranean termites. If subterranean termite activity or damage is discovered during warranty period, re-treat soil and repair or replace damage caused by termite infestation.

1. Warranty Period: 15 years from date of final acceptance.

1.9 MAINTENANCE SERVICE

A. Continuing Service: Provide a proposal for a lifetime warranty, including monitoring, inspection, and retreatment for occurrences of termite activity, from applicator to Owner, in

the form of a continuing bond agreement, starting on the date of Owner Acceptance. State services, obligations, conditions, and terms for agreement period and for future renewal options.

PART 2 - PRODUCTS

2.1 SOIL TREATMENT

A. Termiticide: Provide an EPA-registered non-repellent liquid termiticide, complying with requirements of state and local authorities having jurisdiction.

1. Use only soil treatment solutions that are not harmful to plants.

2. Use compatible dye in termiticide to provide visible evidence of treatment.

3. Service Life of Treatment: Soil treatment termiticide that is effective for not less than 15 years against infestation of subterranean termites.

B. Manufacturers: Subject to compliance with requirements of the N.C. Dept. of Agriculture, Structural Pest Control Division, provide products by one of the following:

1. BASF – Termidor.

2. AgrEvo Environmental Health, Inc.

2. Bayer Corp.

3. Dow AgroSciences.

4. FMC Corp.

5. Zeneca Ag Products.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for moisture content of the soil, interfaces with earthwork, slab and foundation work, landscaping, and other conditions affecting performance of termite control.

B. Proceed with application only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. General: Comply with the most stringent requirements of authorities having jurisdiction and with manufacturer's written instructions for preparing substrate. Remove all extraneous sources of wood cellulose and other edible materials such as wood debris, tree stumps and roots, stakes, formwork, and construction waste wood from soil and around foundations.

B. Soil Treatment Preparation: Remove foreign matter and impermeable soil materials that could decrease treatment effectiveness on areas to be treated. Loosen, rake, and level soil to be treated, except previously compacted areas under slabs and footings. Termiticides may be applied before placing compacted fill under slabs if recommended by termiticide manufacturer.

C. Fit filling hose connected to water source at the site with a backflow preventer, complying with requirements of authorities having jurisdiction.

3.3 APPLICATION, GENERAL

A. General: Comply with the most stringent requirements of authorities having jurisdiction and with manufacturer's EPA-Registered Label for products.

3.4 APPLYING SOIL TREATMENT

A. Application: Mix soil treatment termiticide solution to a uniform consistency. Provide quantity required for application at the label volume and rate for the maximum specified concentration of termiticide, according to manufacturer's EPA-Registered Label, to the following so that a continuous horizontal and vertical termiticidal barrier or treated zone is established around and under building construction. Distribute the treatment evenly.

1. Slabs-on-Grade: Underground-supported slab construction, including footings, building slabs, and attached slabs as an overall treatment. Treat soil materials before concrete footings and slabs are placed.

2. Foundations: Soil adjacent to and along the entire inside perimeter of foundation walls; along both sides of interior partition walls; around plumbing pipes and electric conduit penetrating the slab; around interior column footers, piers, and chimney bases; and along the entire outside perimeter, from grade to bottom of footing.

3. Masonry: Treat voids.

4. Penetrations: At expansion joints, control joints, and areas where slabs and below-grade walls will be penetrated.

B. Post warning signs in areas of application.

C. Reapply soil treatment solution to areas disturbed by subsequent excavation, grading, landscaping, or other construction activities following application.

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Owner may engage a qualified independent testing agency to perform field quality- control testing and provide report to Architect.

B. Allow testing agency to inspect and test subgrades and each fill or backfill layer receiving termiticide treatment. Proceed with subsequent work only after inspections for previously completed work comply with requirements.

C. When testing agency reports that subgrades, fills, or backfills have not been adequately treated with termiticide, reapply treatment and retest until specified treatment has been achieved.

3.6 PROTECTION

A. Avoid disturbance of treated soil after application. Keep off treated areas until completely dry.

B. Protect termiticide solution, dispersed in treated soils and fills, from being diluted until ground-supported slabs are installed. Use waterproof barrier according to EPA-Registered Label instructions.

END OF SECTION 313116