

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	Bc (BAYMEADE FINE SAND), Se (SEAGATE FINE SAND) Kt (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

GENERAL NOTES:

- 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.
- 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).
- 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.
- 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)
- SEE SUPPLEMENTARY GENERAL CONDITIONS FOR ALLOWABLE WORKING HOURS AND EXCLUDED WORKING DATES.
- ALL MATERIALS, CONSTRUCTION, WORKMANSHIP SHALL MEET PROJECT SPECIFICATIONS FOR STANDARDS AND DESIGN.
- CONTRACTOR SHALL COMPLY WITH AND THE SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION ISSUED BY THE U.S. DEPARTMENT OF LABOR.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ANY PAVEMENT OR EXISTING UTILITIES THAT MAY BE DAMAGED DUE TO CONSTRUCTION ACTIVITY. EXERCISE CAUTION.
- ALL UTILITIES SHALL BE PROTECTED AND REMAIN ACTIVE UNLESS OTHERWISE NOTED.
- 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.
- 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.
- 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.
- 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.

STATE OF NORTH CAROLINA
DB. 6151, PG. 842

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

JENNIE L STEELE
DB. 5576, PG. 2180

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

DANIEL MEDFORD
DB. 5336, PG. 871

SUSAN GARNER
DB 6109, PG. 2906

BEVERLY G HORRELL
DB 6128, PG. 1453

ALAN L GAY
DB 6109, PG. 2902

MARTHA J BELLAMY
DB 6109, PG. 1427

LEWIS DREW ROSEN
DB. 4785, PG. 209

GENERAL NOTES:

- 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
- PARKING SPACE COUNT
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- CENTERLINE
- HEAVY DUTY ASPHALT PAVEMENT
- ACCESSIBLE RAMPS
- ACCESSIBLE ROUTE

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

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION



VICINITY MAP
N.T.S.



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PHONE: 910.962.3761

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



REVISIONS		
NO.	DATE	ADDENDUM #1
1	09.27.2019	

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

SHEET
C2.01
SITE PLAN



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SCALE	1"=40'
DATE	09.19.2019

SHEET

GRADING AND STORM
DRAINAGE PLAN

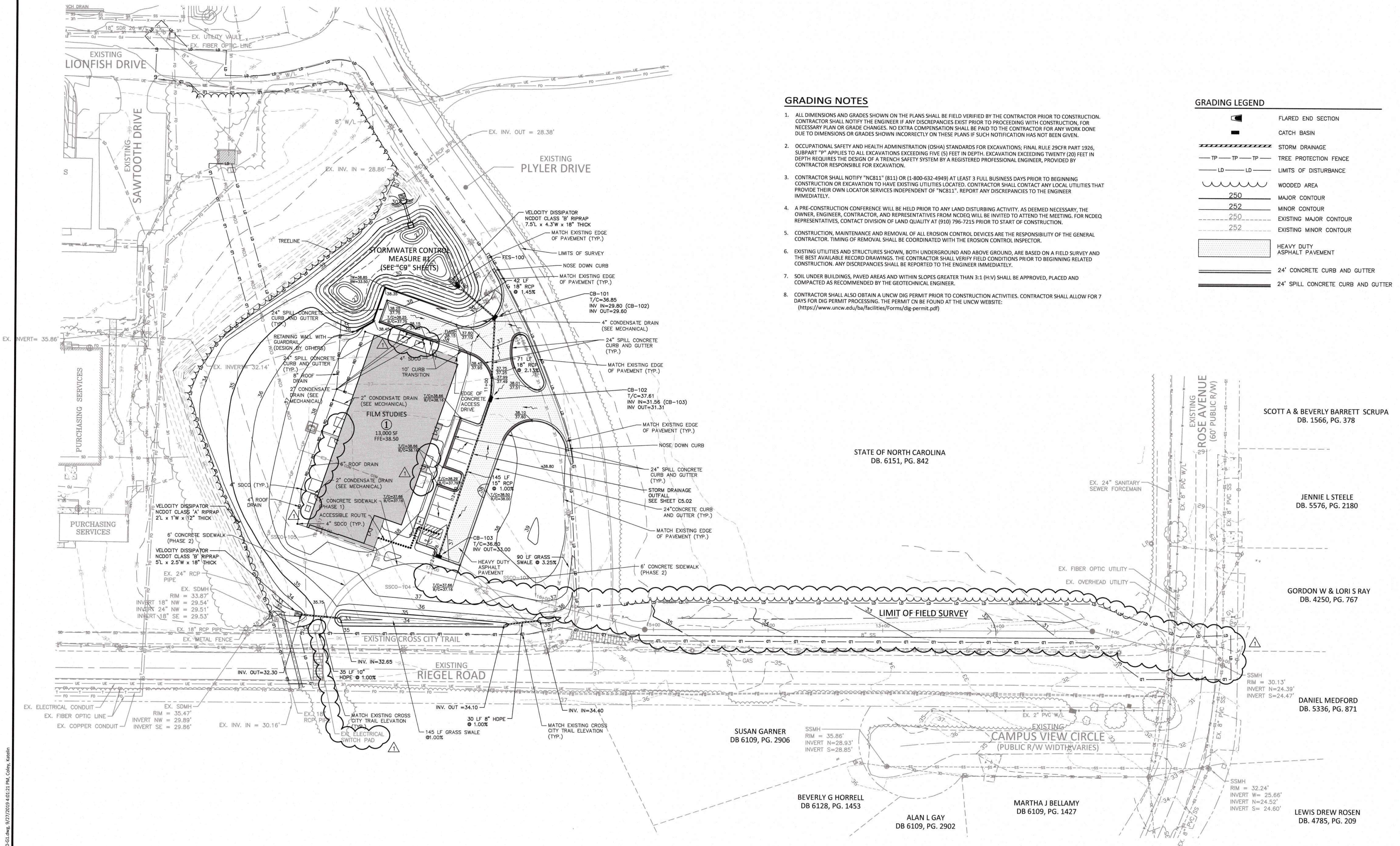
C3.01

GRADING NOTES

- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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: (<https://www.uncw.edu/ba/facilities/forms/dig-permit.pdf>)

GRADING LEGEND

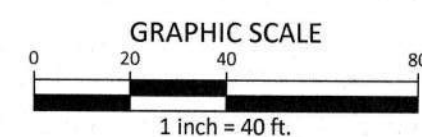
	FLARED END SECTION
	CATCH BASIN
	STORM DRAINAGE
	TREE PROTECTION FENCE
	LIMITS OF DISTURBANCE
	WOODED AREA
	MAJOR CONTOUR
	MINOR CONTOUR
	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	HEAVY DUTY ASPHALT PAVEMENT
	24" CONCRETE CURB AND GUTTER
	24" SPILL CONCRETE CURB AND GUTTER



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DISTURBED AREA = 2.75 AC.



PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION



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REVISIONS

NO.	DATE	DESCRIPTION
1	09.27.2019	ADDENDUM #1

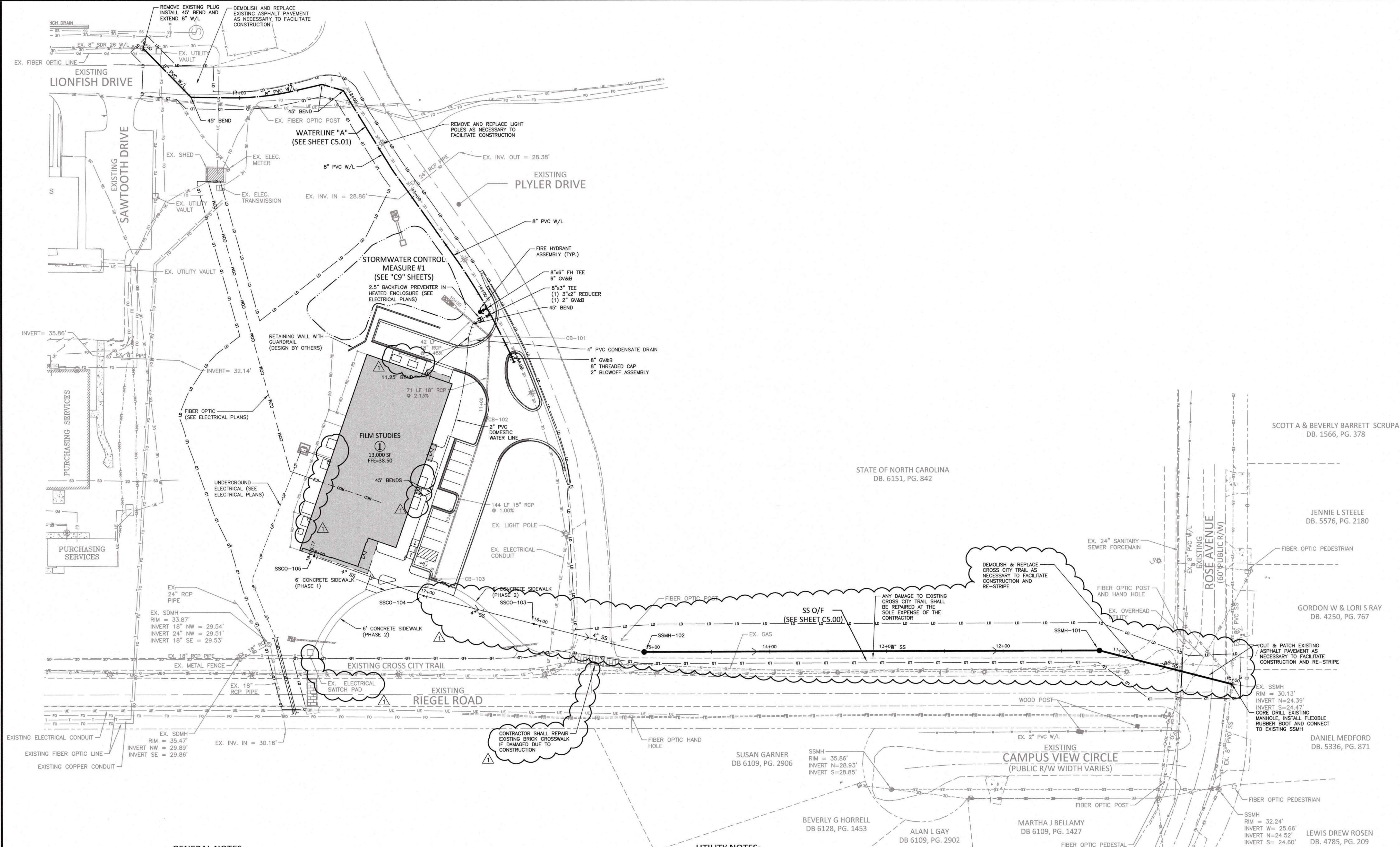
PLAN INFORMATION

PROJECT NO.	BMG-19000
FILENAME	BMG19000-U1
CHECKED BY	DTR
DRAWN BY	KNC
SCALE	1"=40'
DATE	09.19.2019

SHEET

UTILITY PLAN

C4.01



GENERAL NOTES:

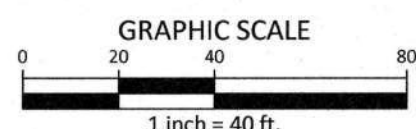
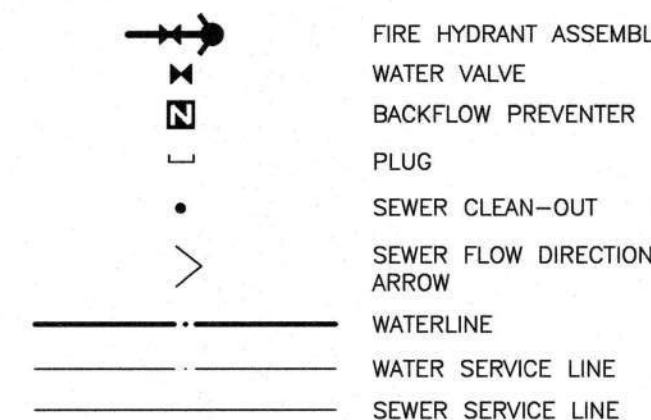
1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO GAS OR WATER PIPES, PUBLIC OR PRIVATE SEWERS, DRAINS OR CULVERTS, RAILROAD OR TRAFFIC SIGNAL CABLES, TELEPHONE OR POWER CONDUITS, OR OTHER STRUCTURES. WHEN UTILITY LINES THAT ARE TO BE REMOVED ARE ENCOUNTERED WITHIN THE AREA OF OPERATIONS, THE 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.

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.

UTILITY NOTES:

1. ALL SITE WATER & SEWER IMPROVEMENTS SHALL BE IN ACCORDANCE WITH CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS. CONTRACTOR SHALL COORDINATE WITH UNCW 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 UNCW 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 UNCW 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.

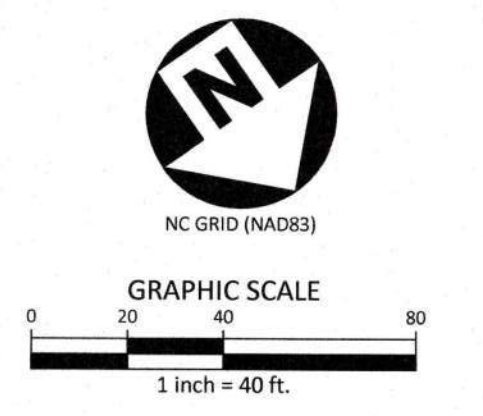
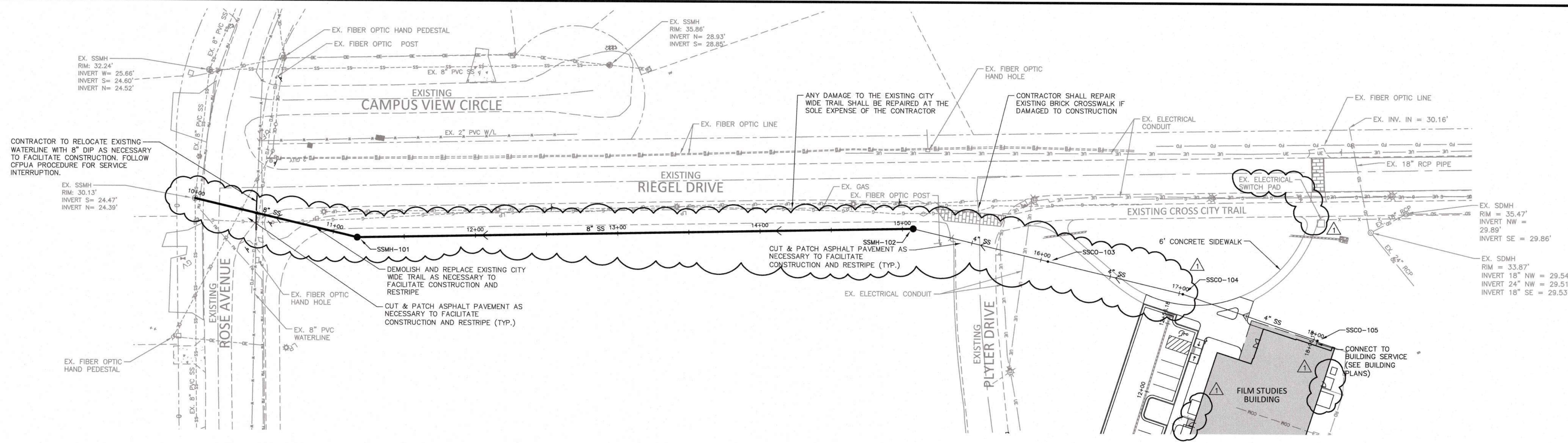
UTILITY LEGEND



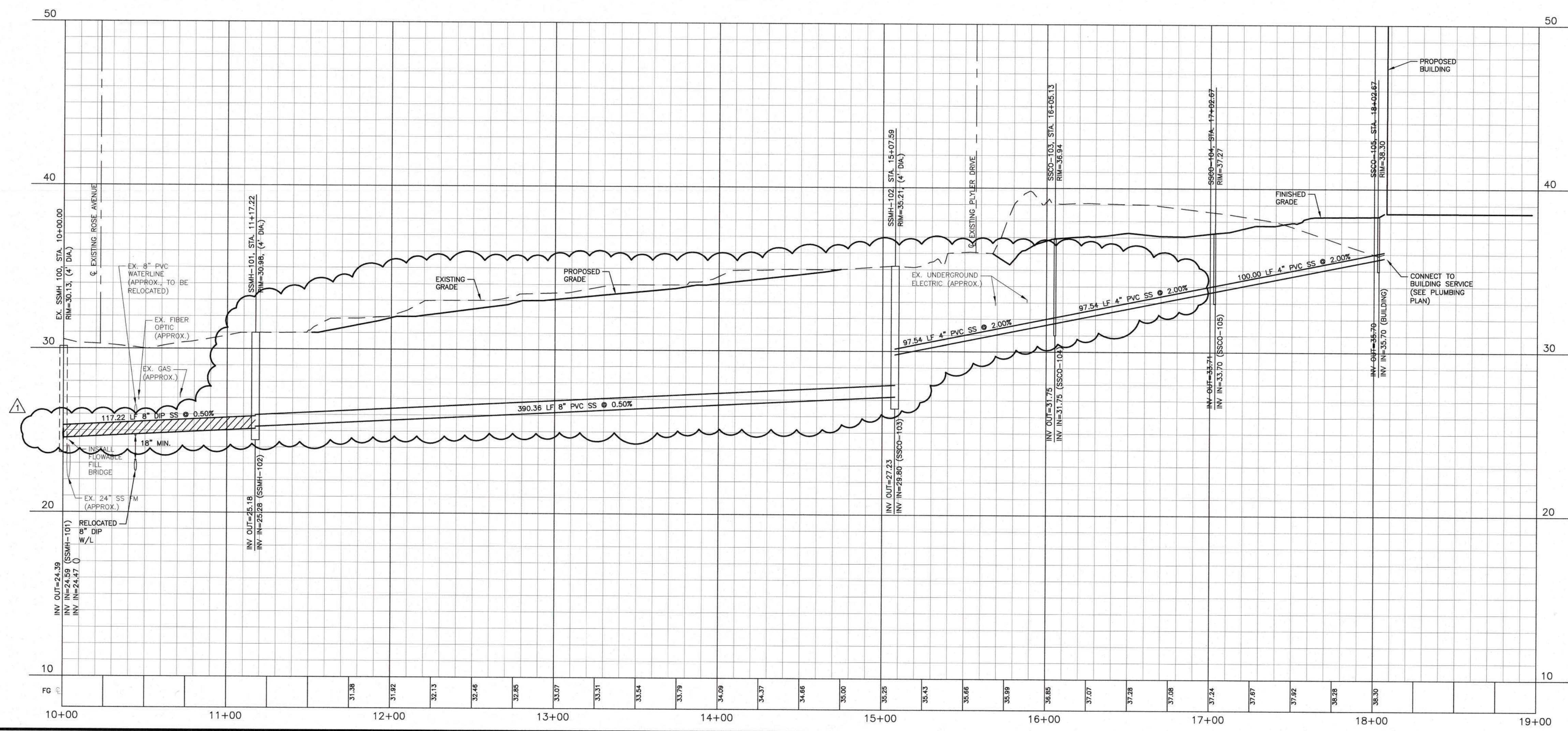
PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION



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SANITARY SEWER OUTFALL



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UNCW - FILM STUDIES BUILDING

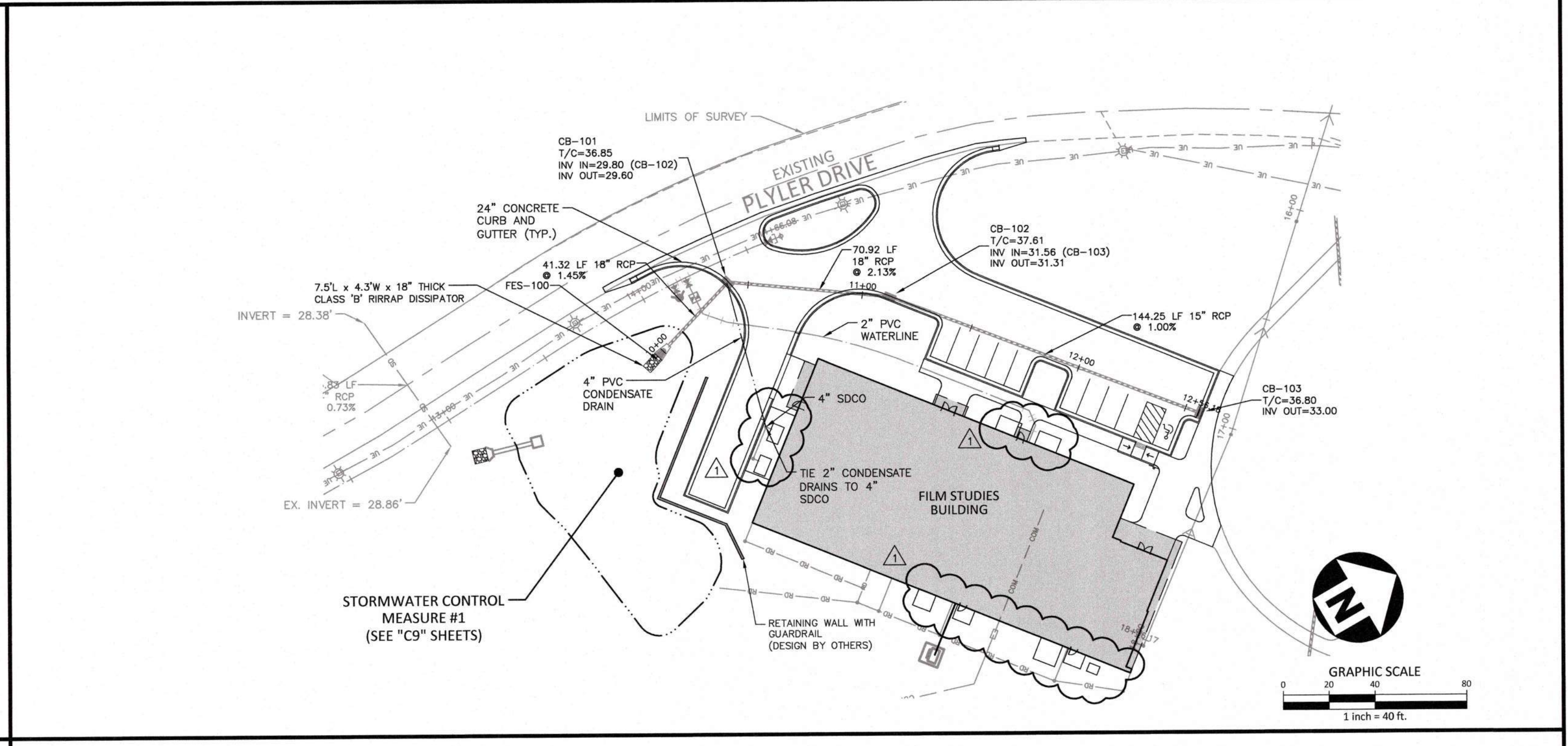
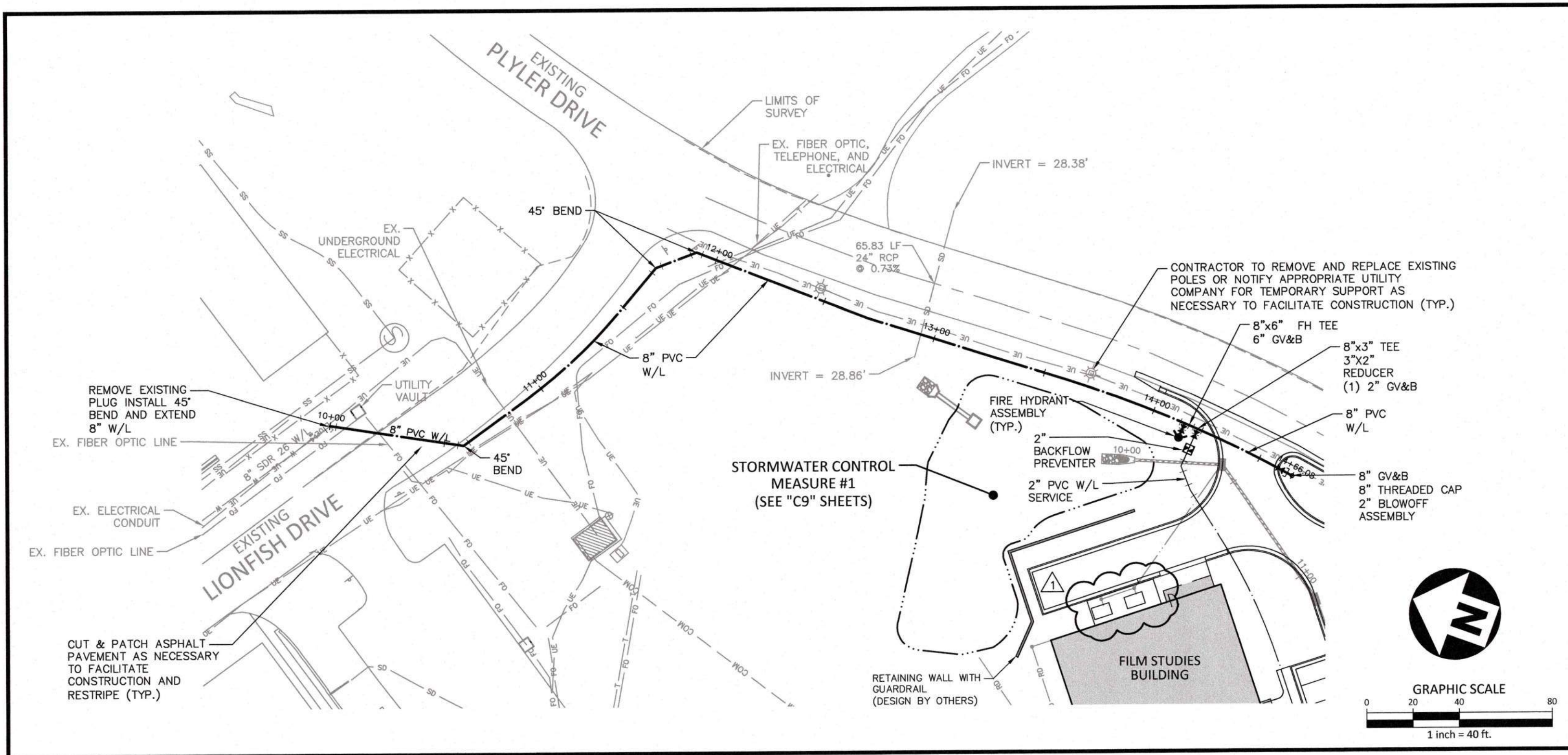
CONSTRUCTION DRAWINGS
901 SOUTH COLLEGE ROAD
WILMINGTON, NORTH CAROLINA, 28403-5620

PLAN INFORMATION

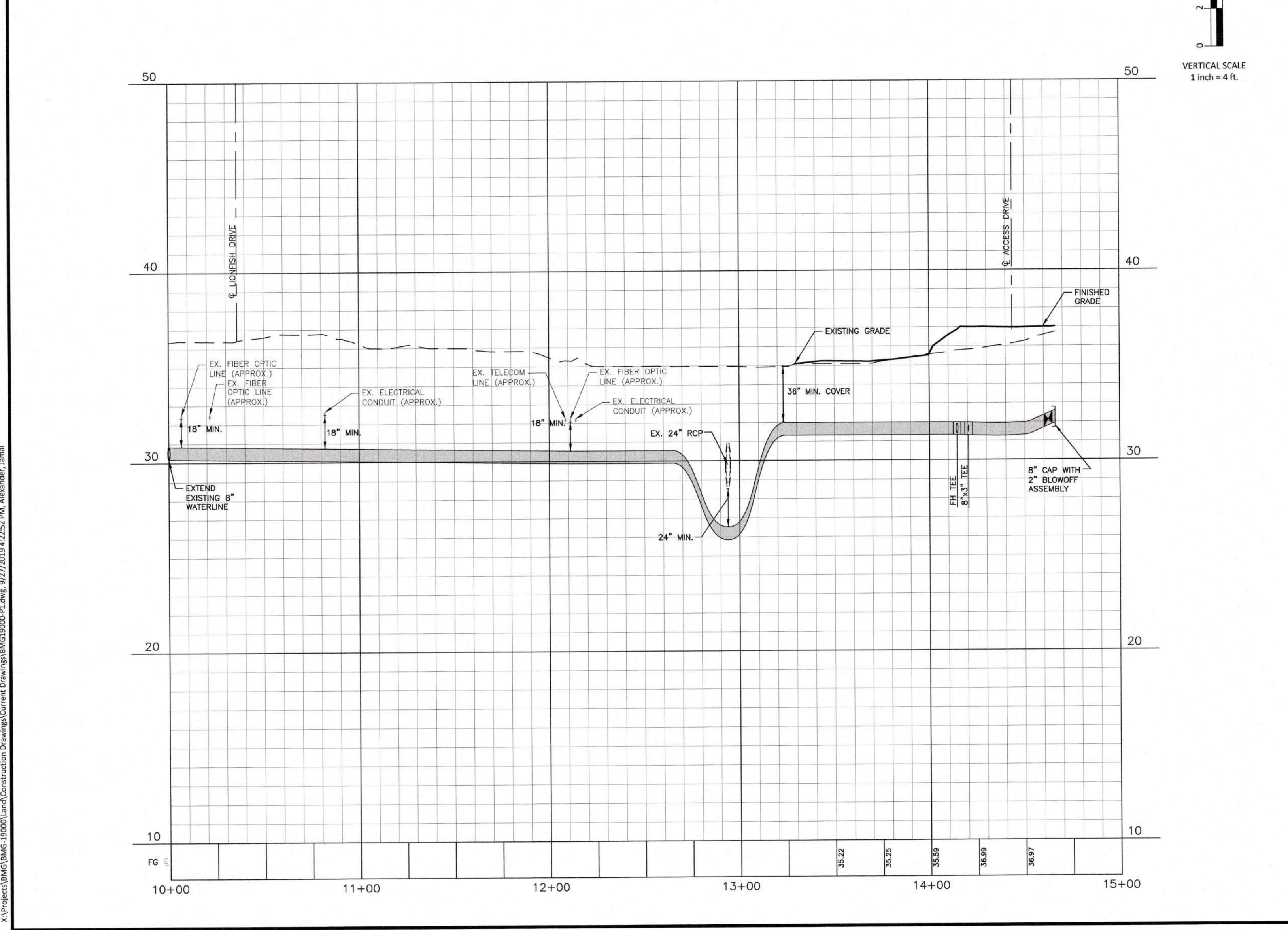
PROJECT NO.	BMG-19000
FILENAME	BMG19000-P1
CHECKED BY	DTR
DRAWN BY	KNC
SCALE	1"=40'/1"=4'
DATE	09.13.2019

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

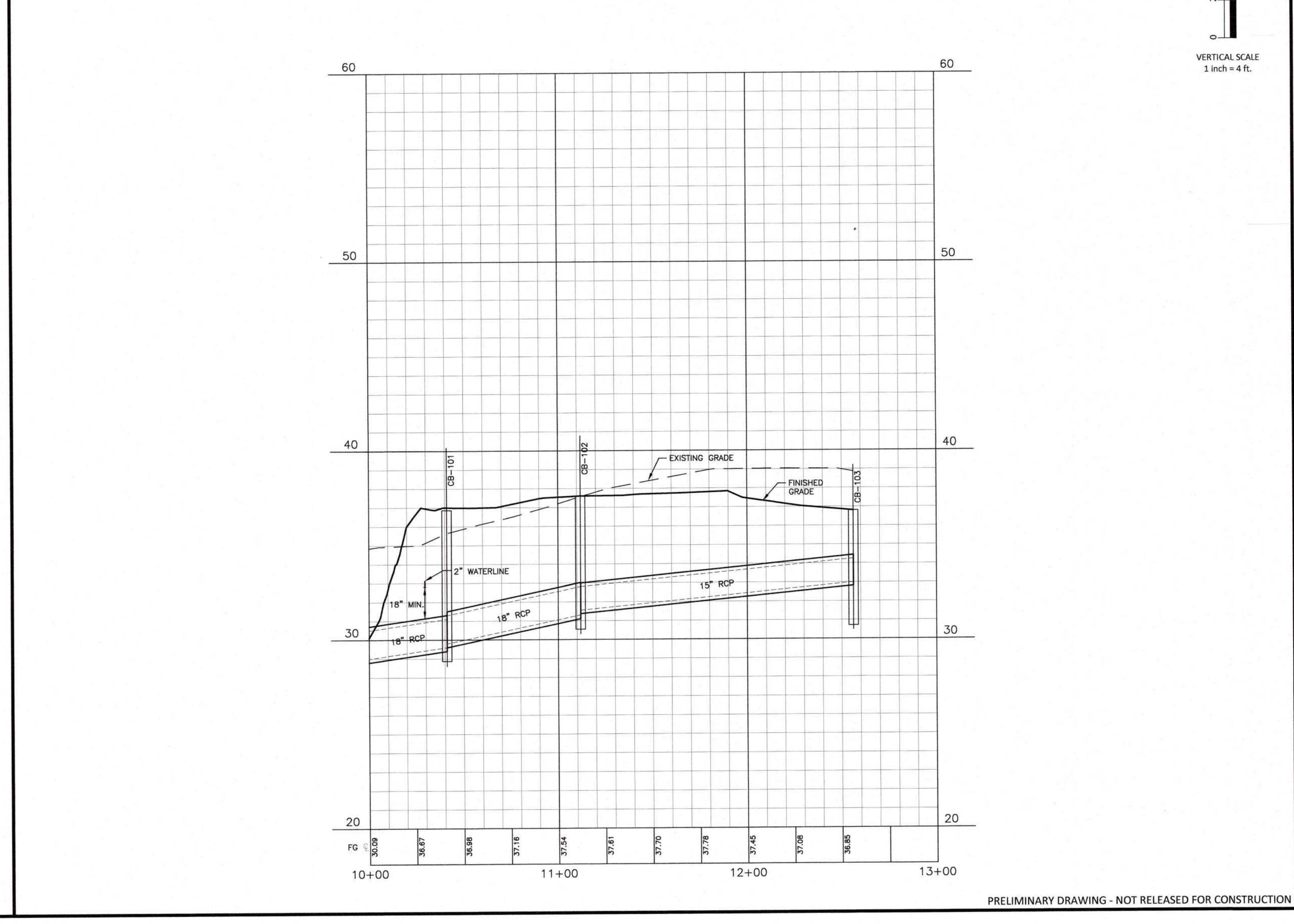
C5.01



WATERLINE "A"



STORM DRAINAGE OUTFALL



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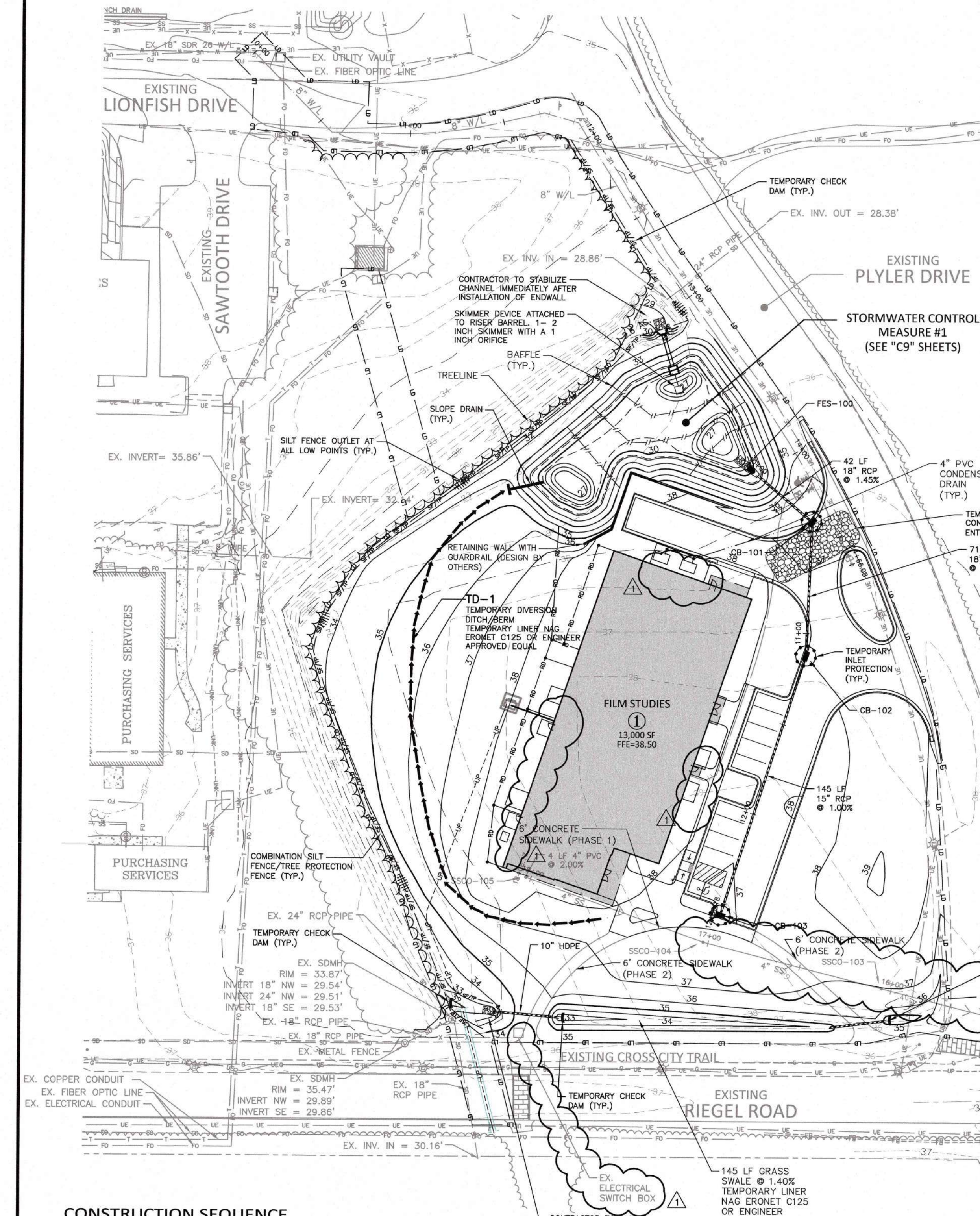
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DATE	09.13.2019

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

X:\Projects\UNCW\UNCW 190001\Land Construction Drawings\Current Drawings\UNCW190001-EC.dwg, 9/27/2019 4:22:39 PM, Alexander, Jamal



SEEDBED PREPARATION

AREAS TO BE SEEDBED 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 GROUND COVER SUFFICIENT TO PERMANENTLY RESTRAIN EROSION SHALL BE RE-ESTABLISHED WITHIN 21 CALENDAR DAYS AFTER COMPLETION OF ANY PHASE OF GRADING. PERMANENT GROUND COVER 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 FERTILIZER. MOW REGULARLY TO A HEIGHT OF 2-4 INCHES.

EROSION CONTROL NOTES:

- 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.
- 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.
- 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.
- A COPY OF THE APPROVED EROSION CONTROL PLAN MUST BE ON FILE AT THE JOB SITE AT ALL TIMES.
- INSTALL A RAIN GAUGE (6" CAPACITY OR GREATER) ONSITE.
- CONSTRUCTION, MAINTENANCE, AND REMOVAL OF ALL EROSION CONTROL DEVICES ARE THE RESPONSIBILITY OF THE GRADING CONTRACTOR UNLESS OTHERWISE NOTED.
- 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.
- 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 GROUND COVER 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 SEEDBED & COMPOST LAID WITHIN 7 DAYS OF COMPLETION OF GRADING. ALL REMAINING DISTURBED AREAS ARE TO BE SEEDBED AND COMPOST LAID WITHIN 14 DAYS. PERMANENT SWALES ARE TO BE STABILIZED WITHIN 7 DAYS. SEE THE GROUND STABILIZATION CHART FOR ADDITIONAL REQUIREMENTS.
- 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.
- 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.
- CONTRACTOR WILL FIELD LOCATE SILT FENCE OUTLETS AT LOW POINTS IN SILT FENCE AS REQUIRED TO PROVIDE RELIEF FROM CONCENTRATED FLOWS.
- 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.
- REQUIRED CONSTRUCTION/SAFETY FENCING SHALL BE INSTALLED PRIOR TO BEGINNING LAND DISTURBANCE.
- 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.
- ALL CONSTRUCTION DEBRIS SHALL BE TESTED AND DISPOSED OF OFF-SITE IN A STATE PERMITTED LINED LANDFILL.

CONSTRUCTION SEQUENCE

- OBTAIN AN EROSION CONTROL PERMIT FROM THE N.C. DEPARTMENT OF ENVIRONMENT QUALITY (NCDEQ).
- IF NECESSARY, OBTAIN DIG PERMIT FROM THE UNIVERSITY OF NORTH CAROLINA AT WILMINGTON.
- CONTRACTOR TO POST "NO INTERACTION" SIGNS (PROVIDED BY THE OWNER) AT THE JOB SITE TRAILER AND AT JOB SITE ENTRANCE.
- CONTRACTOR SHALL HAVE THE LIMITS OF DISTURBANCE FLAGGED PRIOR TO THE PRE-CONSTRUCTION MEETING FOR LAND DISTURBANCE.
- 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.
- 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.
- ONCE INITIAL EROSION CONTROL MEASURES HAVE BEEN INSTALLED TO ACCESS THE SITE, INSTALL REMAINING EROSION CONTROL MEASURES.
- 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.
- BEGIN FILLING SITE. AS FILL IS BROUGHT IN, ADJUST TEMPORARY DIVERSIONS SUCH THAT POSITIVE DRAINAGE TO THE SEDIMENT BASINS OCCUR.
- INSTALL STORM DRAINAGE WITH INLET PROTECTION.
- 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.
- 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.
- FILL, STONE AND PAVE PARKING LOT.
- STABILIZE ANY REMAINING AREAS AND INSTALL ALL REMAINING PERMANENT EROSION CONTROL MEASURES.
- WHEN CONSTRUCTION IS COMPLETE AND ALL AREAS ARE STABILIZED COMPLETELY, CALL FOR INSPECTION BY NCDEQ, THE OWNER, AND ENGINEER.
- 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.
- SEED AND STABILIZE ALL REMAINING AREAS.
- 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 (PQW) 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 PQW ZONES)

EROSION CONTROL NARRATIVE

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

PROJECT NUMBER: BMC-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.

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.

SEDIMENT TRAP DESIGN TABLE	
SEDIMENT TRAP ID	SB-1
Q _{ss} (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 Slopes	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

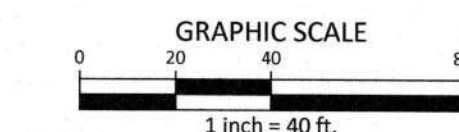
Notes:

- Side slopes pertain only for the vertical height from the base to the top of berm, 2H:1V above that.
- See details regarding skimmer design specifications
- 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
	SILT FENCE
	TREE PROTECTION FENCE
	LIMITS OF DISTURBANCE
	WOODED AREA
	CONSTRUCTION ENTRANCE/EXIT



PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION



McADAMS

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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



REVISIONS

NO.	DATE	ADDENDUM #1
1	09.27.2019	

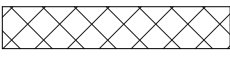
PLAN INFORMATION

PROJECT NO. BMC-19000
FILENAME: BMC19000-EC1
CHECKED BY: DTR
DRAWN BY: KNC
SCALE: 1"=40'
DATE: 09.19.2019

SHEET

EROSION CONTROL PLAN

C6.01

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

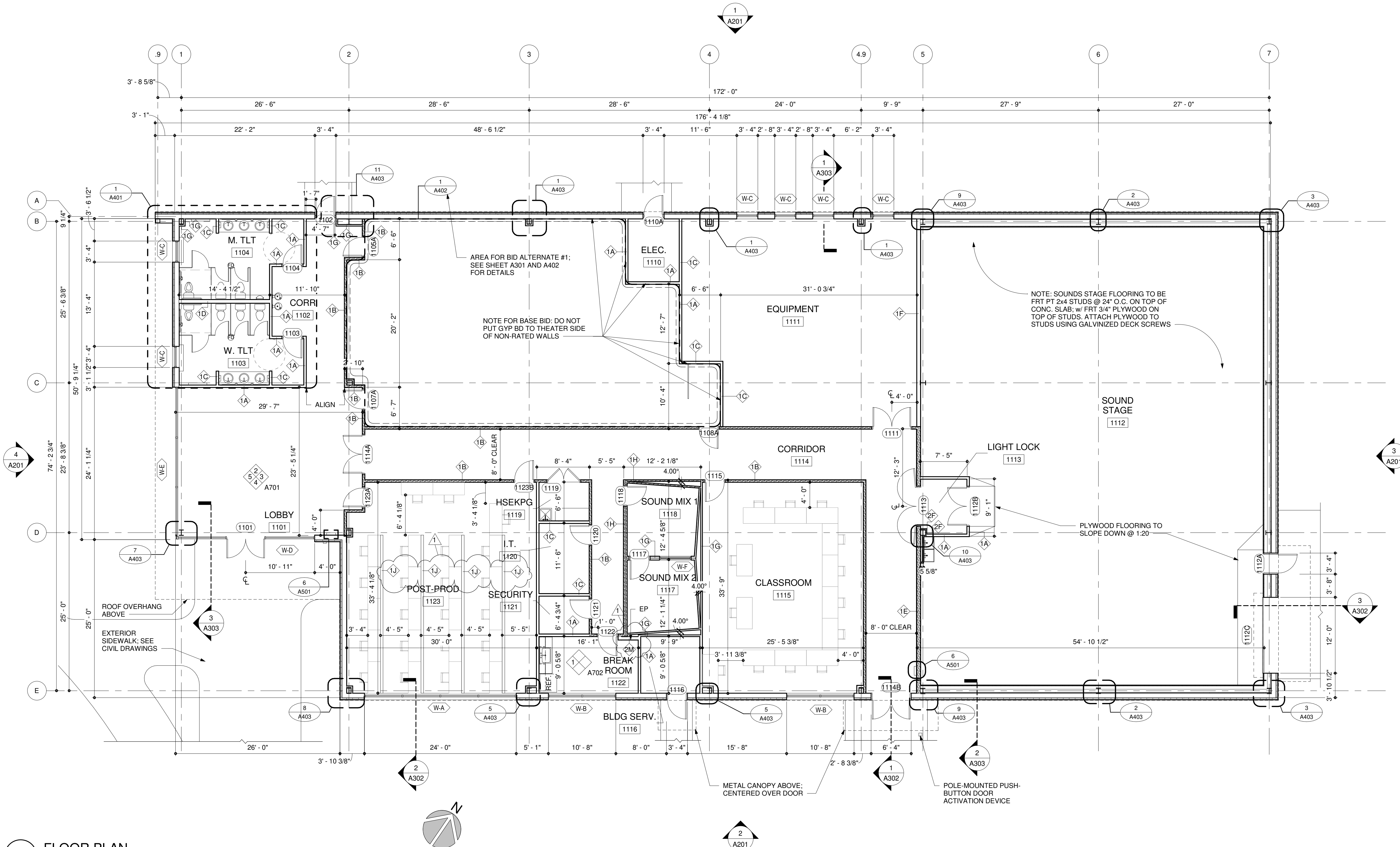
CONSTRUCTION NOTES:

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 RATINGS, 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.

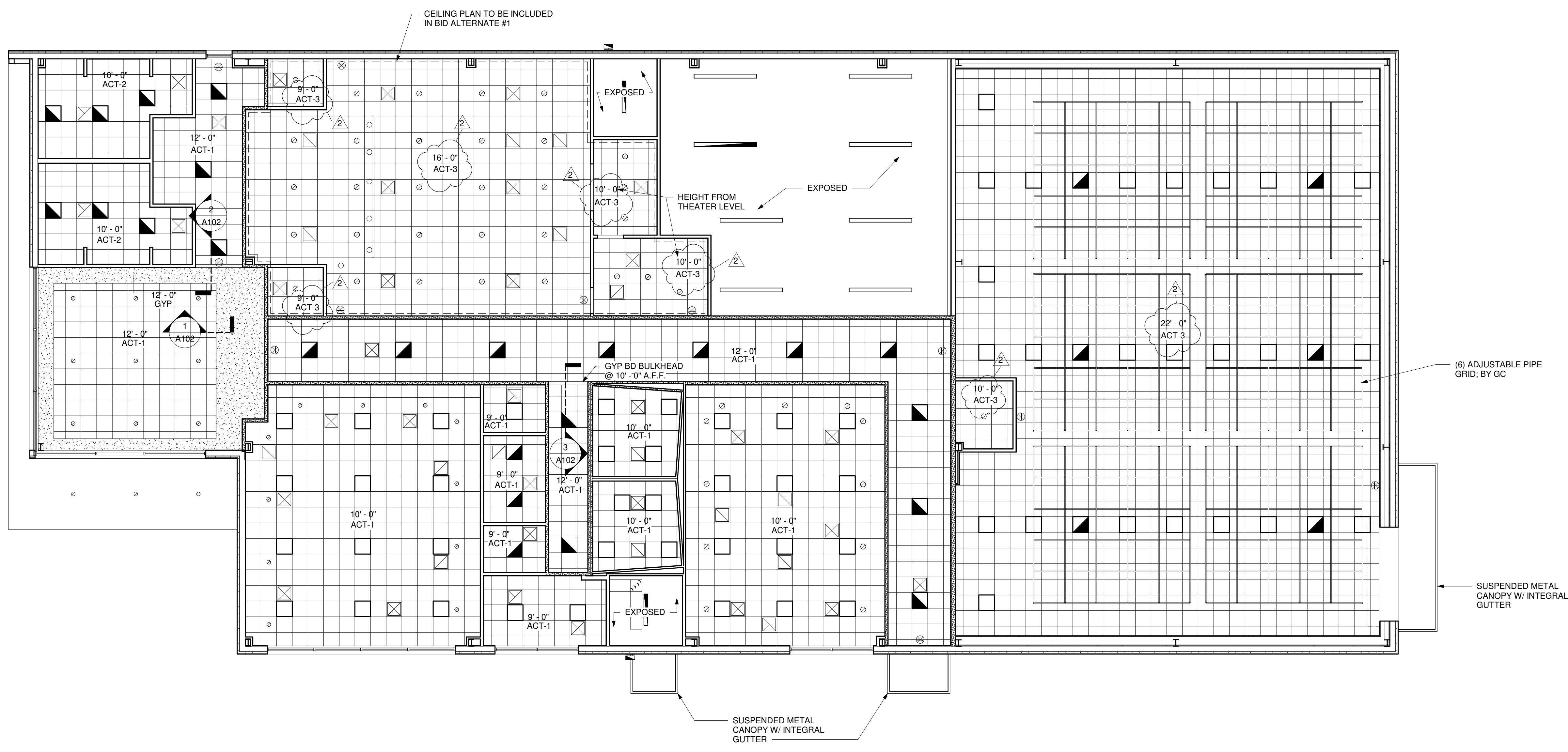
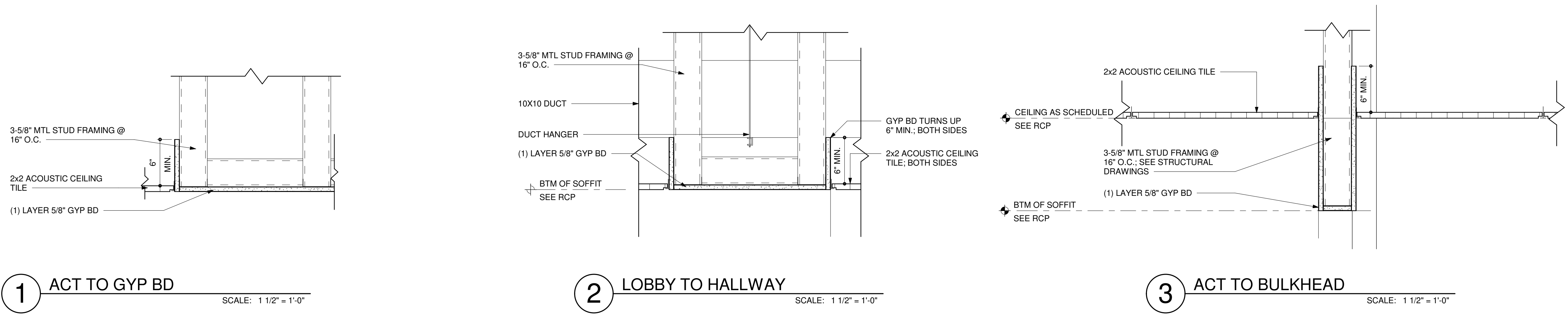


CEILING LEGEND

- ACT-1: 2x2 ACT CEILING
- ACT - 2: MOISTURE RESISTANT ACOUSTIC CEILING TILE
- GYPSUM BOARD CEILING
- DOWNLIGHT FIXTURE
- FLUORESCENT LIGHT FIXTURE
- EMERGENCY FLUORESCENT LIGHT FIXTURE
- RETURN AIR
- SUPPLY AIR
- EXHAUST AIR
- 1 HR RATED FIRE PARTITION / FIRE BARRIER - UL DESIGN UL#419

CEILING NOTES

1. SEE FINISH SCHEDULE FOR ACT TYPES.
2. SEE MECHANICAL DRAWINGS FOR G.R.D. TYPES AND ADDITIONAL WORK.
3. SEE ELECTRICAL DRAWINGS FOR LIGHT FIXTURE TYPES.
4. CEILING HEIGHTS INDICATED ARE FROM FINISH FLOOR. CEILINGS AT LANDINGS, RAMPS ETC., REFER TO NEAREST FLOOR LEVEL. COORDINATE WITH EXG. WINDOW MULLION LOCATIONS.
5. ALL EXPOSED LINTELS SHALL BE PAINTED.



4 FIRST FLOOR PLAN - REFLECTED CEILING SCALE: 1/8" = 1'-0"



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CIVIL ENGINEERING

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WOODS ENGINEERING

STRUCTURAL ENGINEERING

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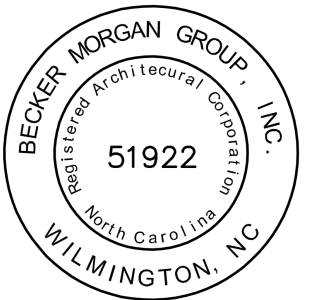
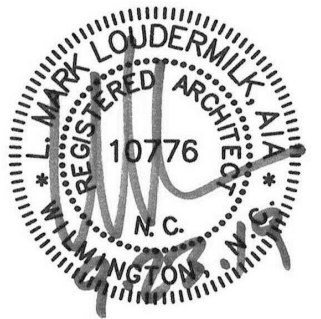
910-343-8007 fax 910-343-8088

SUD ASSOCIATES, P.A.

PME ENGINEERING

1813 CHAPEL HILL ROAD
DURHAM, NC 27707

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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

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

PROJECT NO: 2018070.01

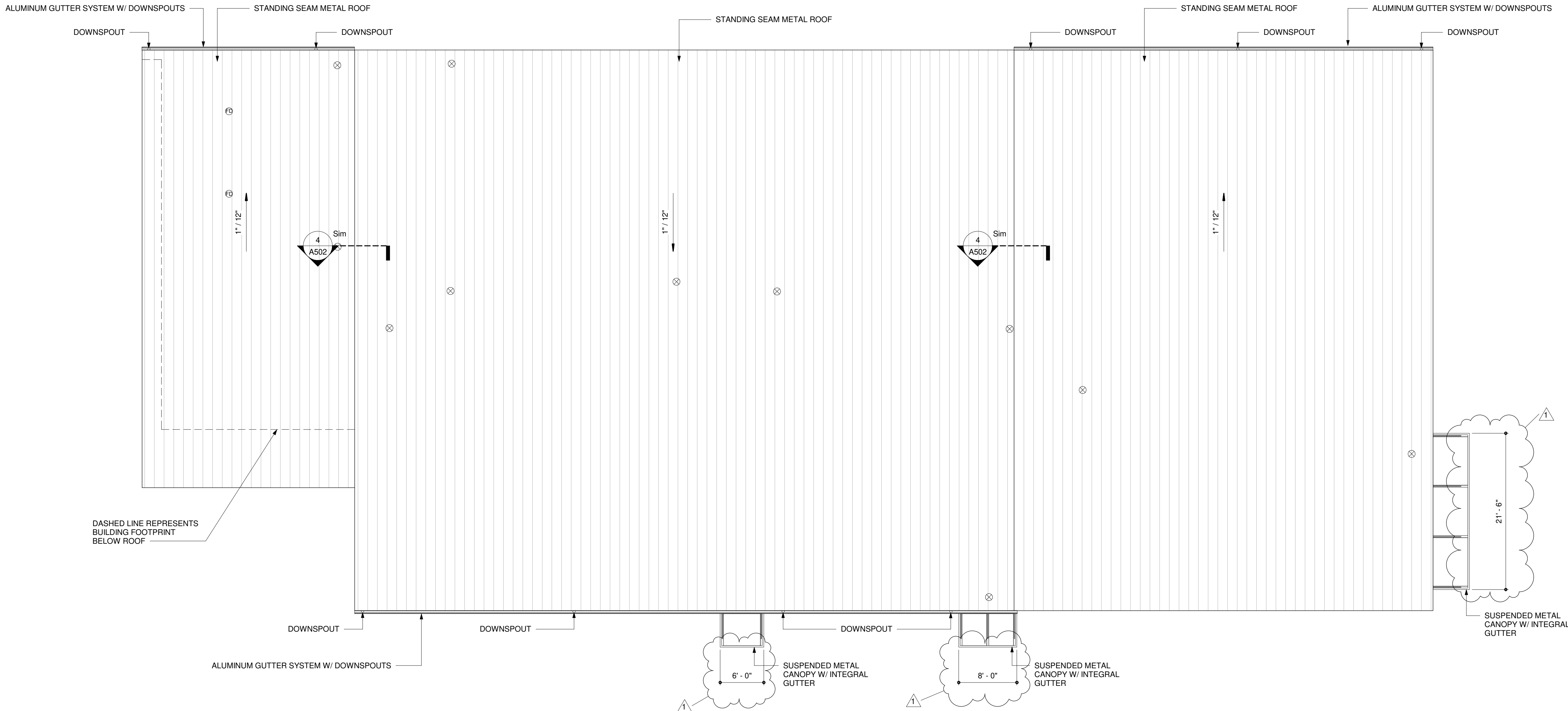
DATE: 9/23/2019

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

DRAWN BY: JDF PROJ MGR: LML

A103

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

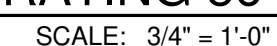
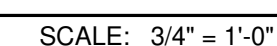
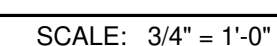
NOTE: COORDINATE ROOF PENETRATIONS WITH PME

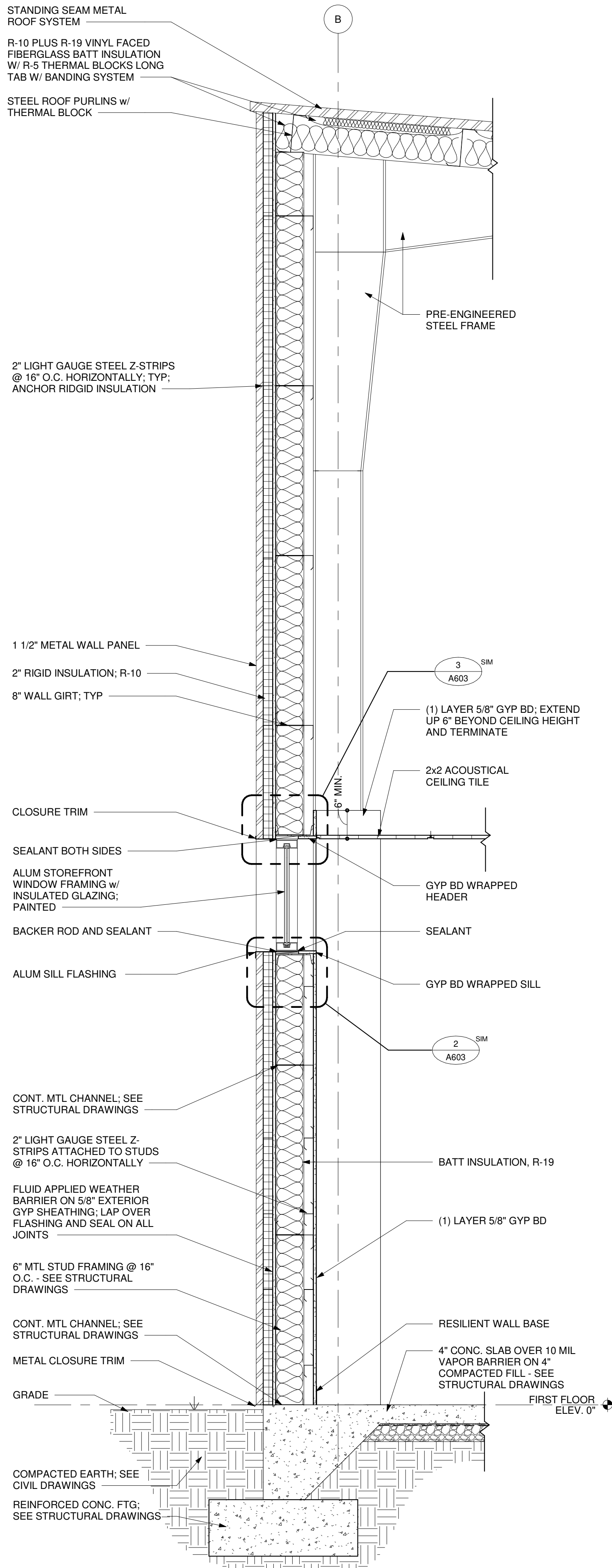
1 ROOF PLAN

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



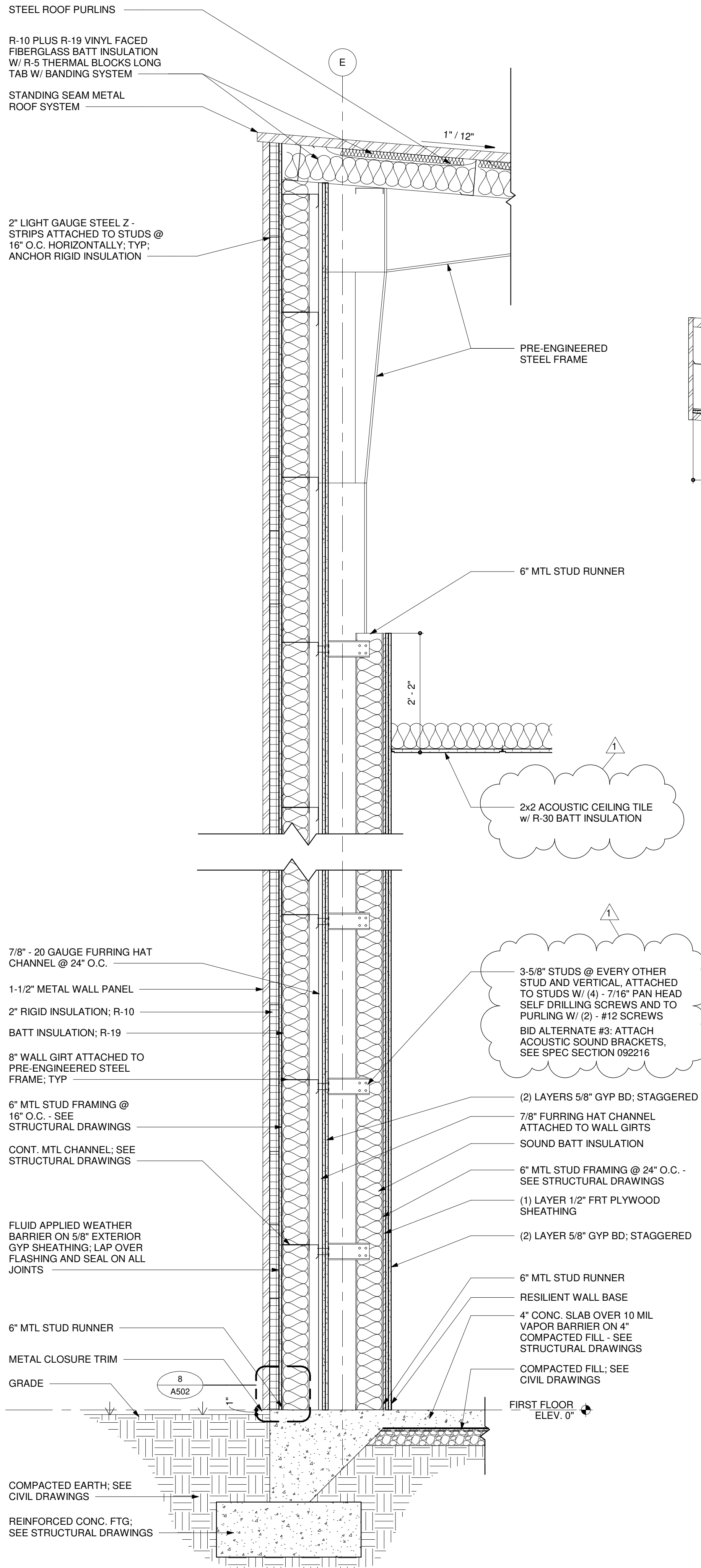
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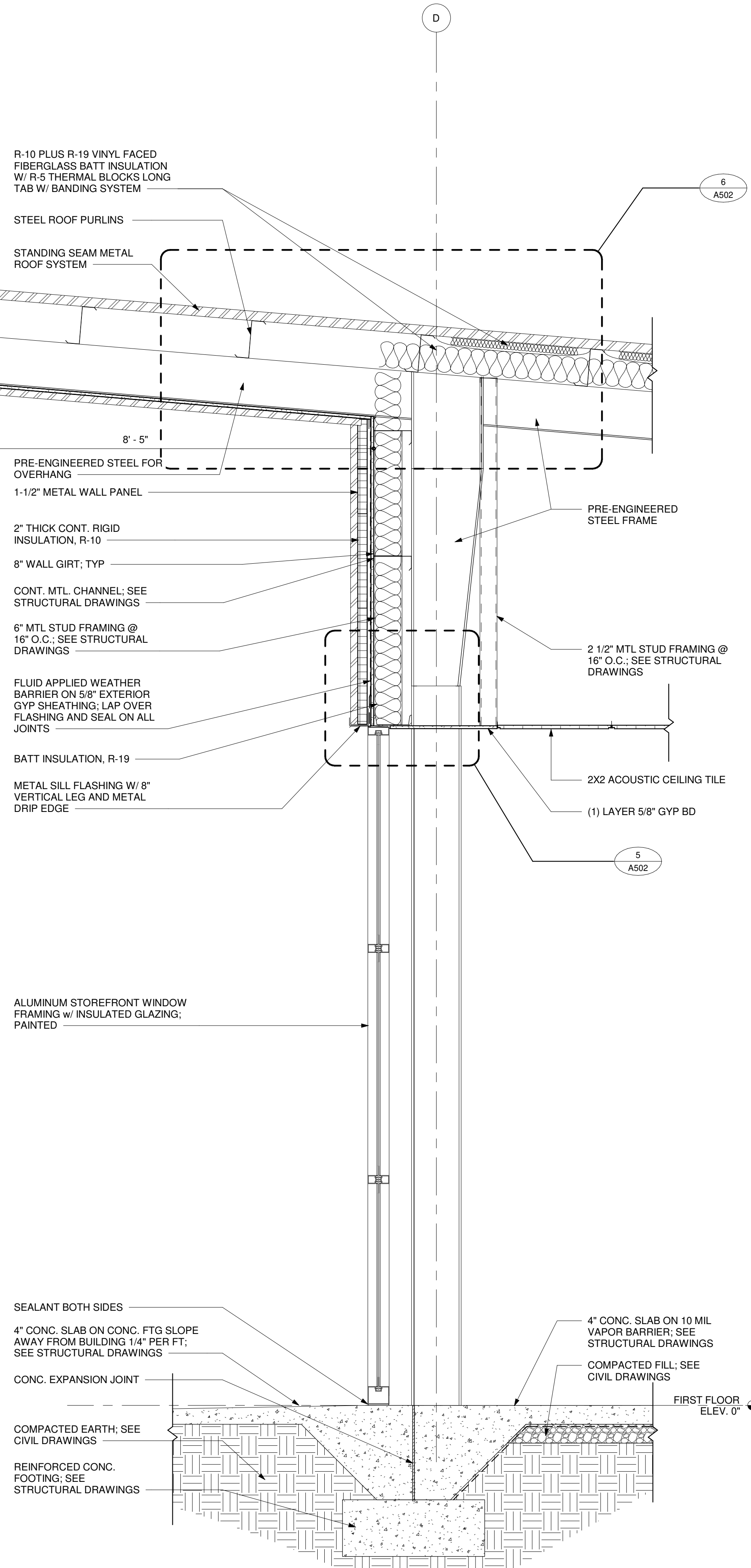
1 WALL SECTION - EQUIPMENT ROOM

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



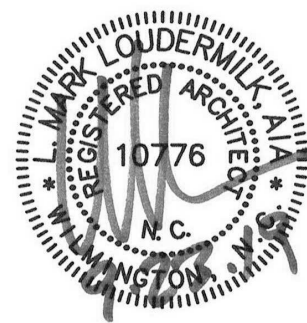
2 WALL SECTION - SOUND STAGE

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

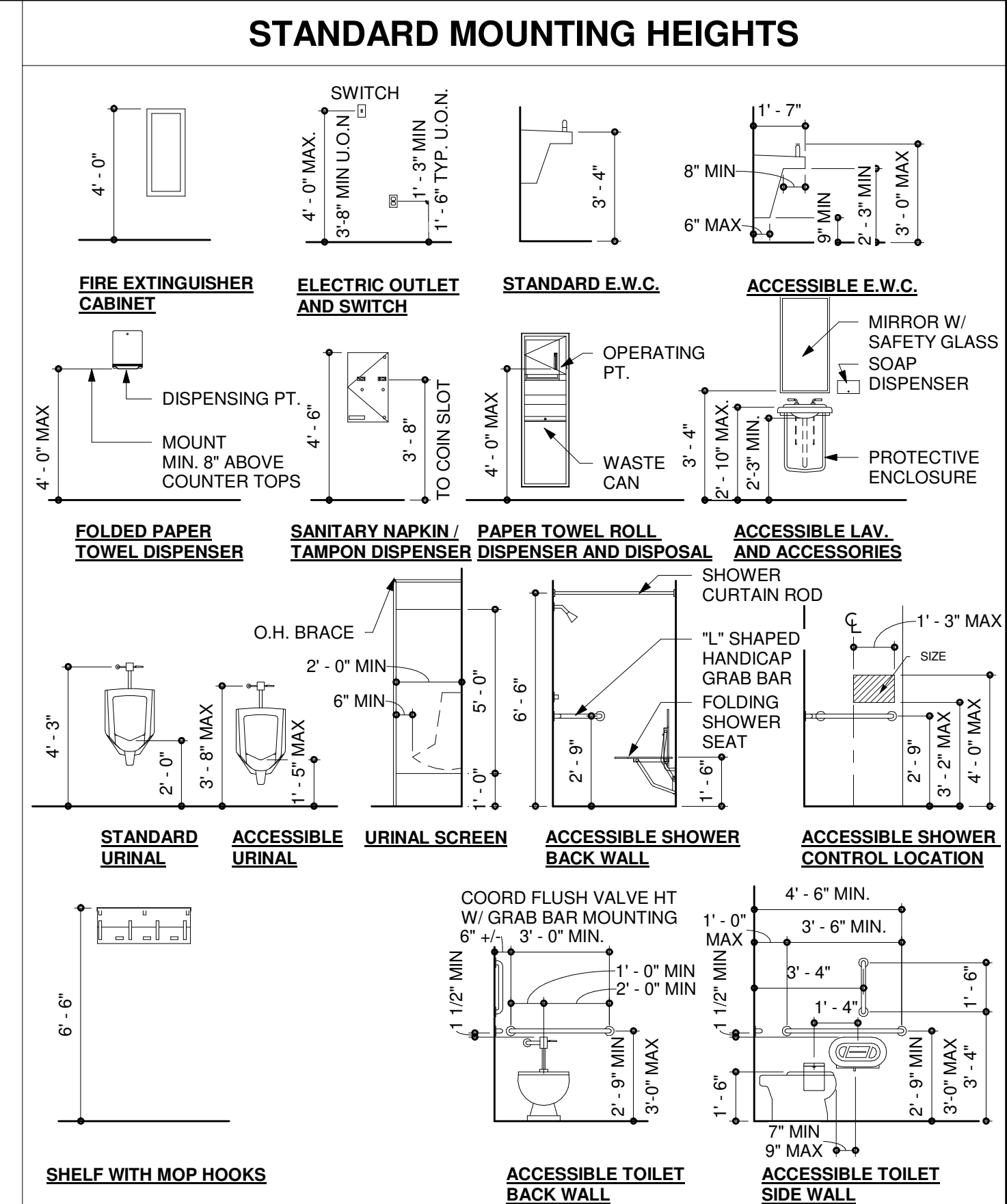
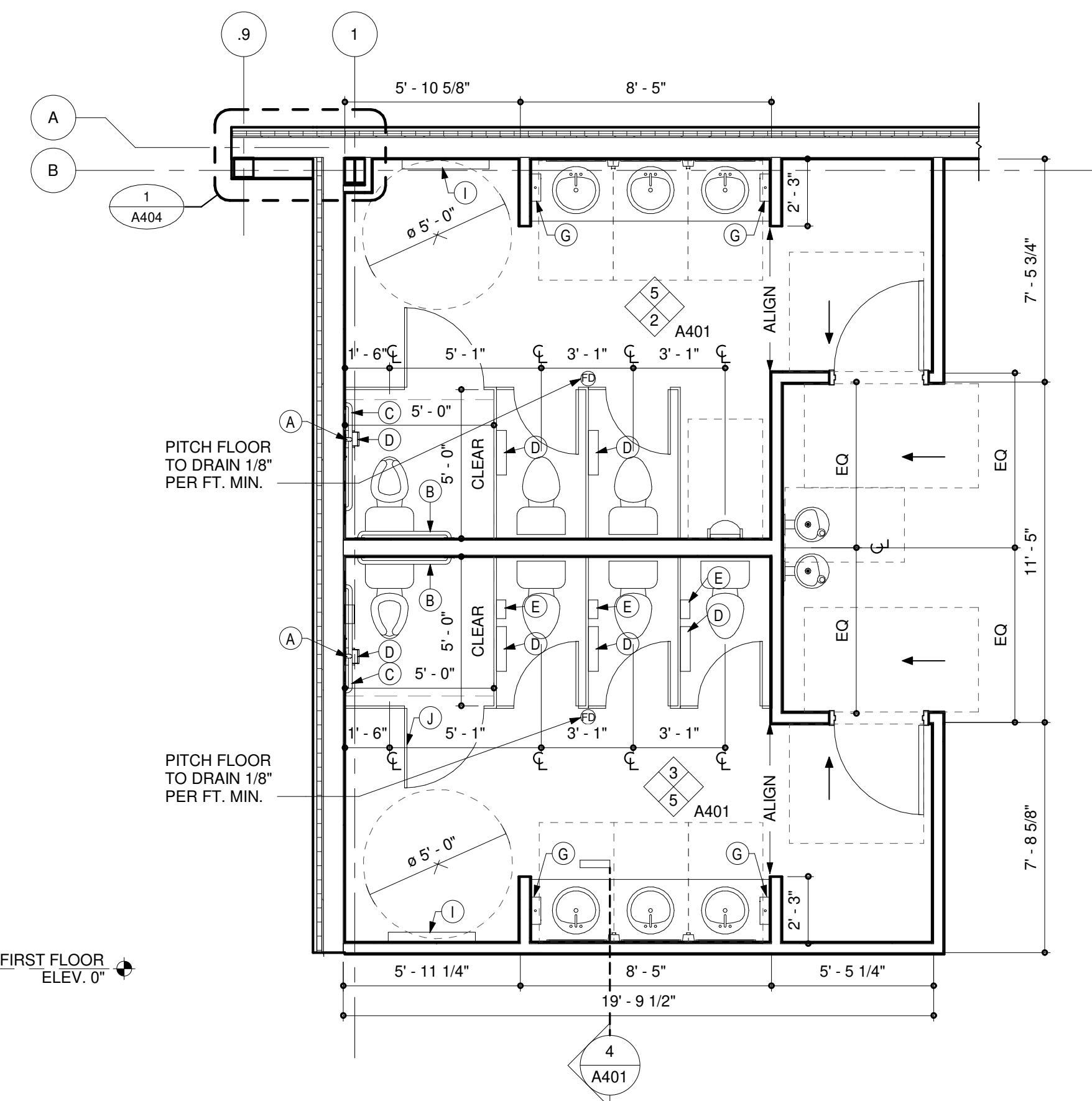
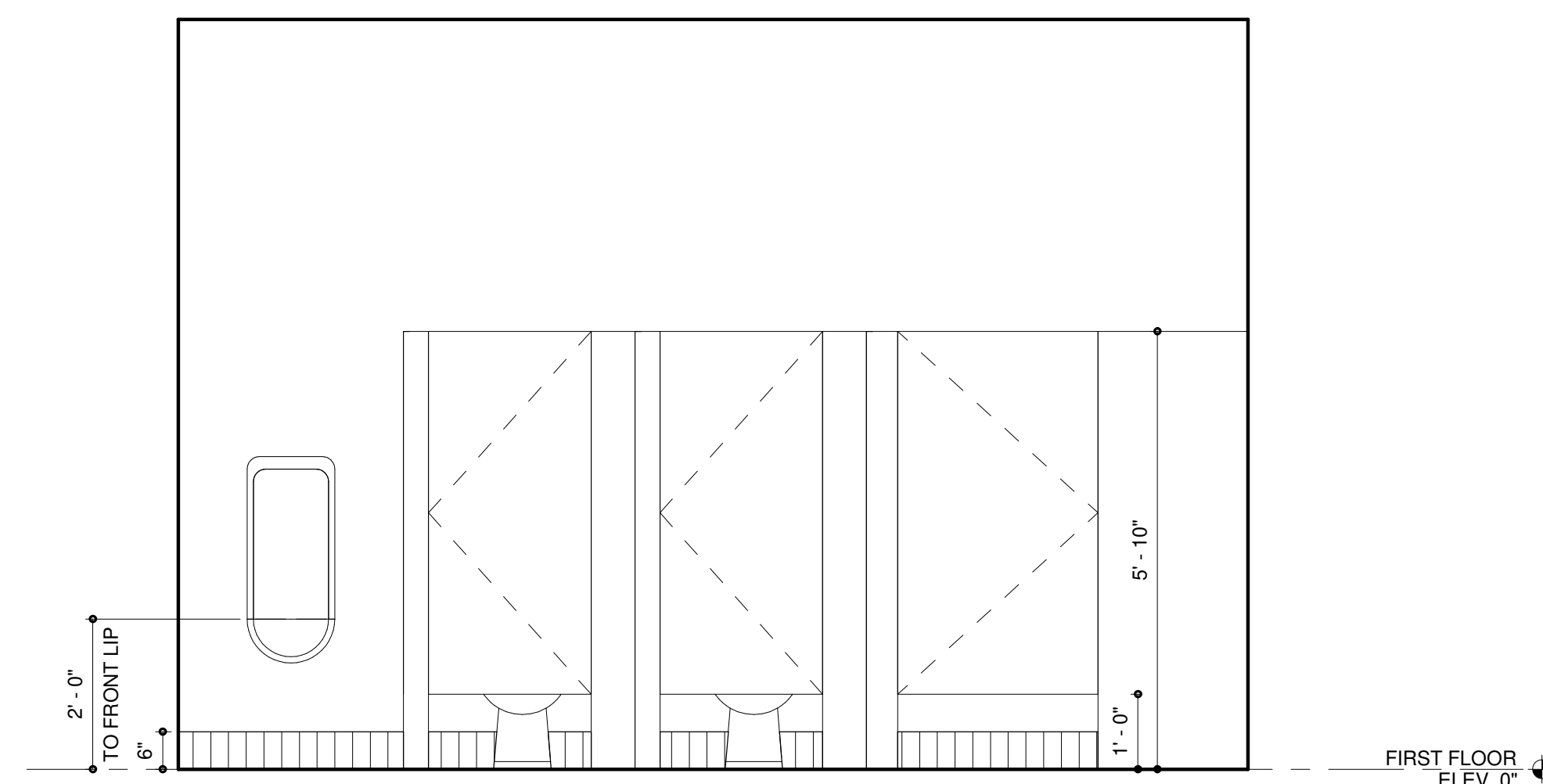
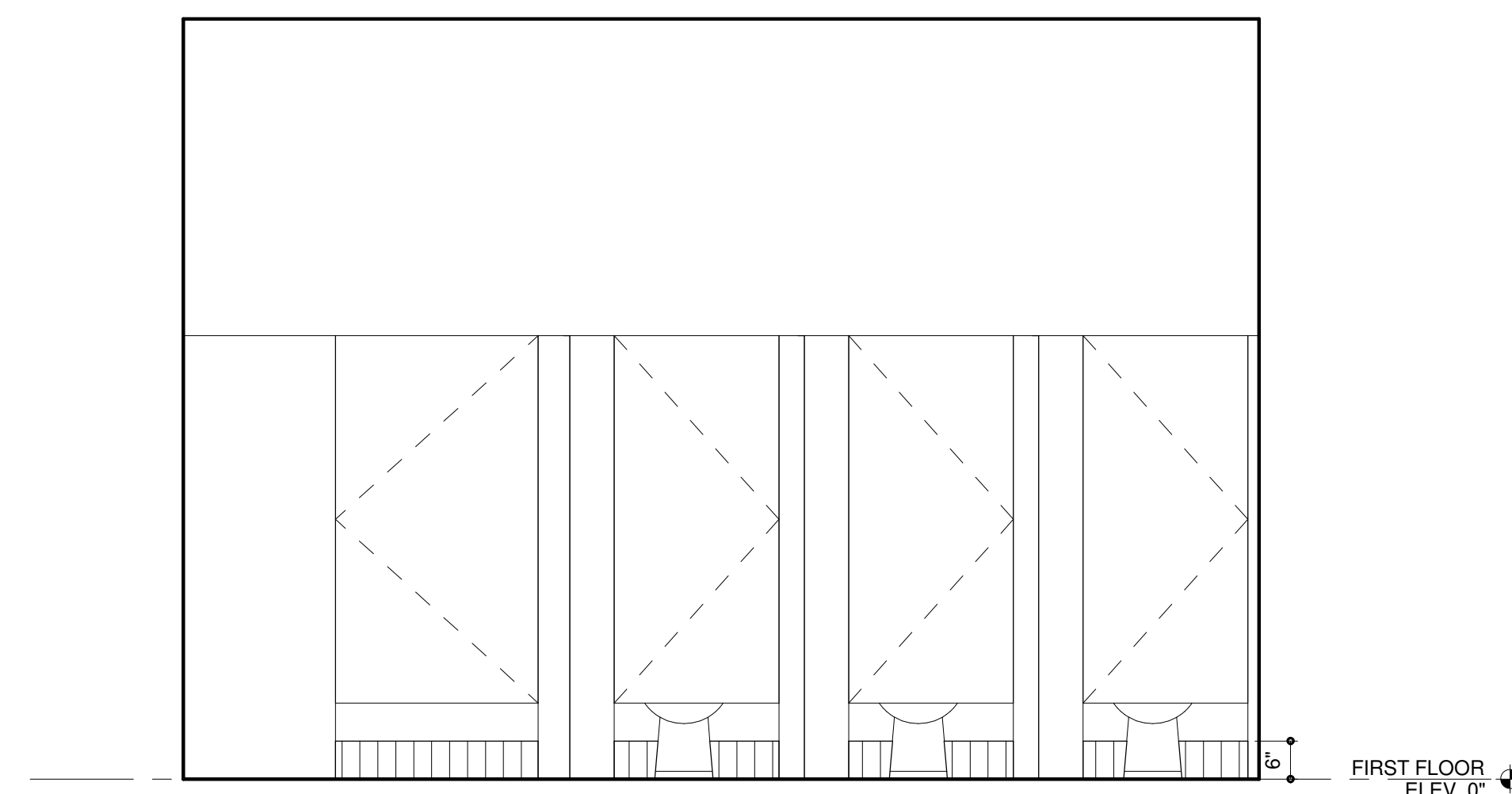
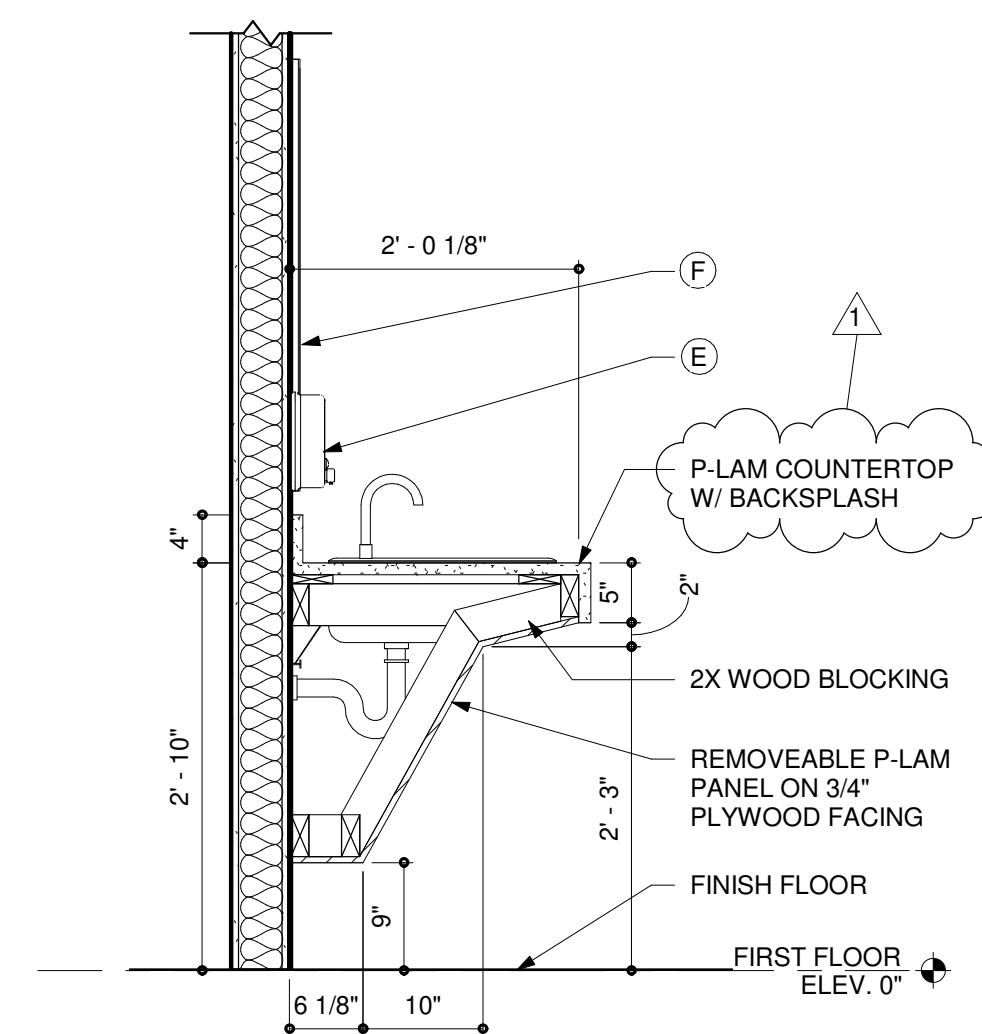
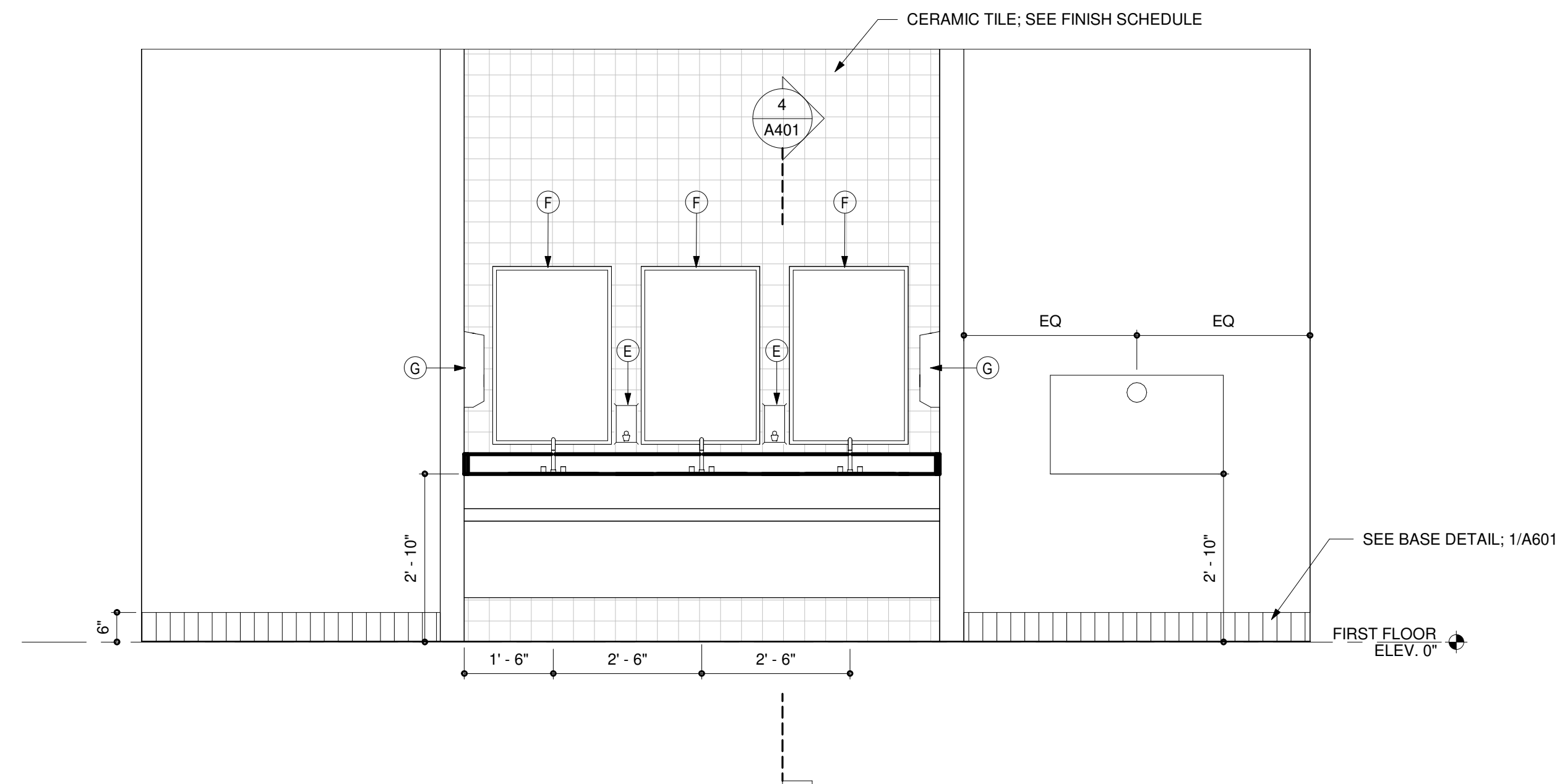


3 WALL SECTION - LOBBY

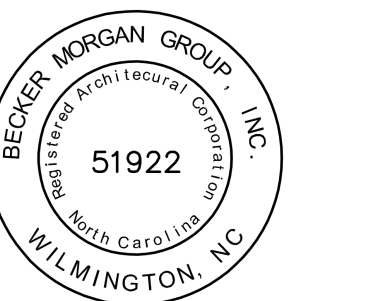
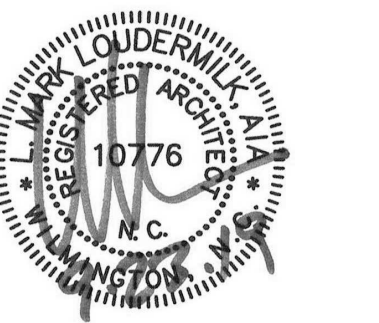
SCALE: 3/4" = 1'-0"

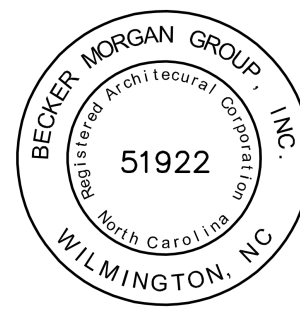
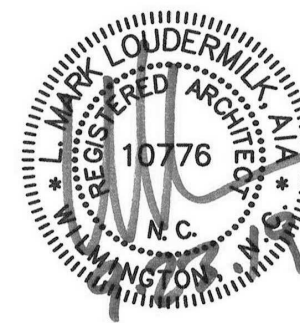


Mark	Date	Description
1	10/2/19	ADDENDUM #1
2	9/23/2019	
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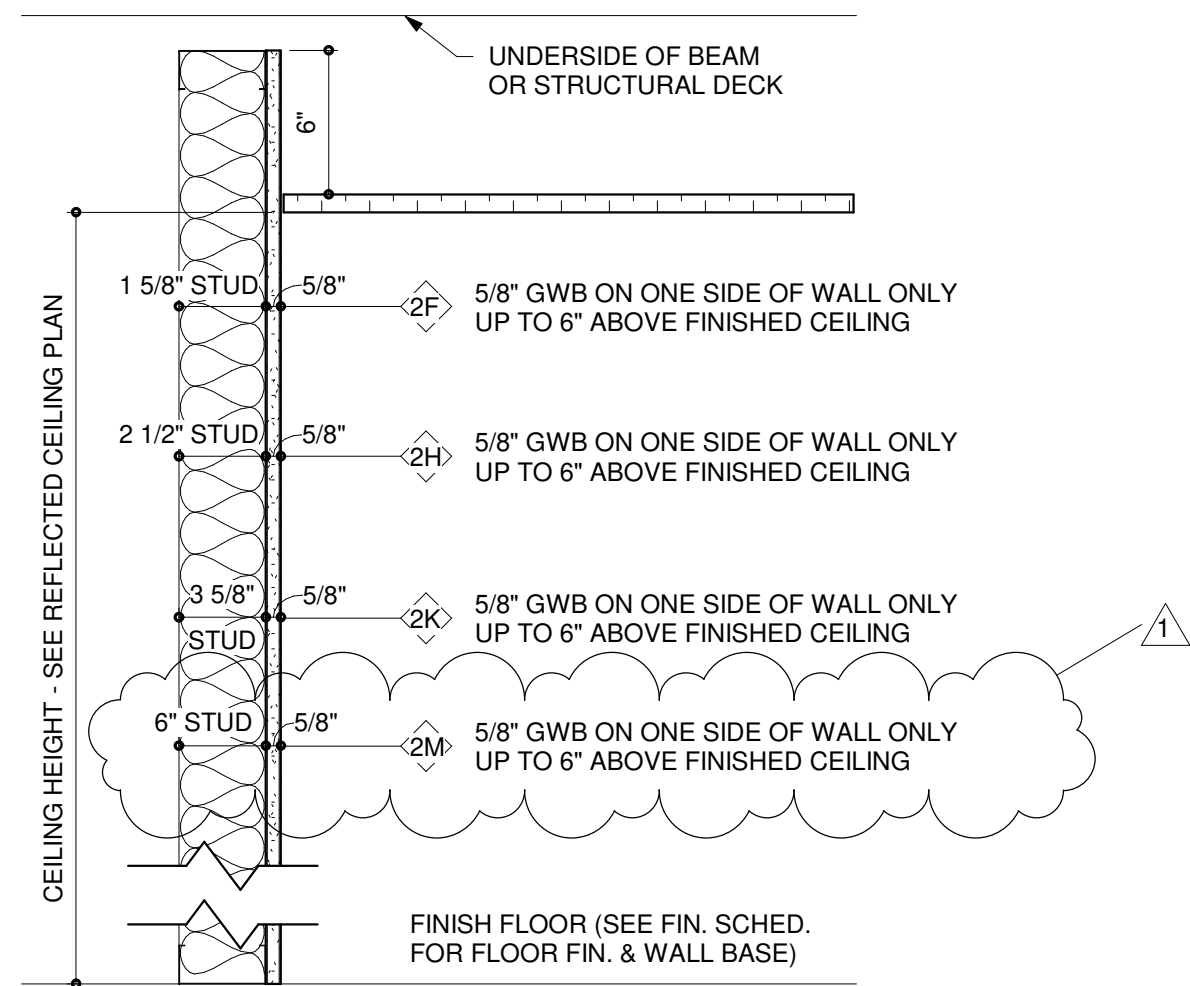
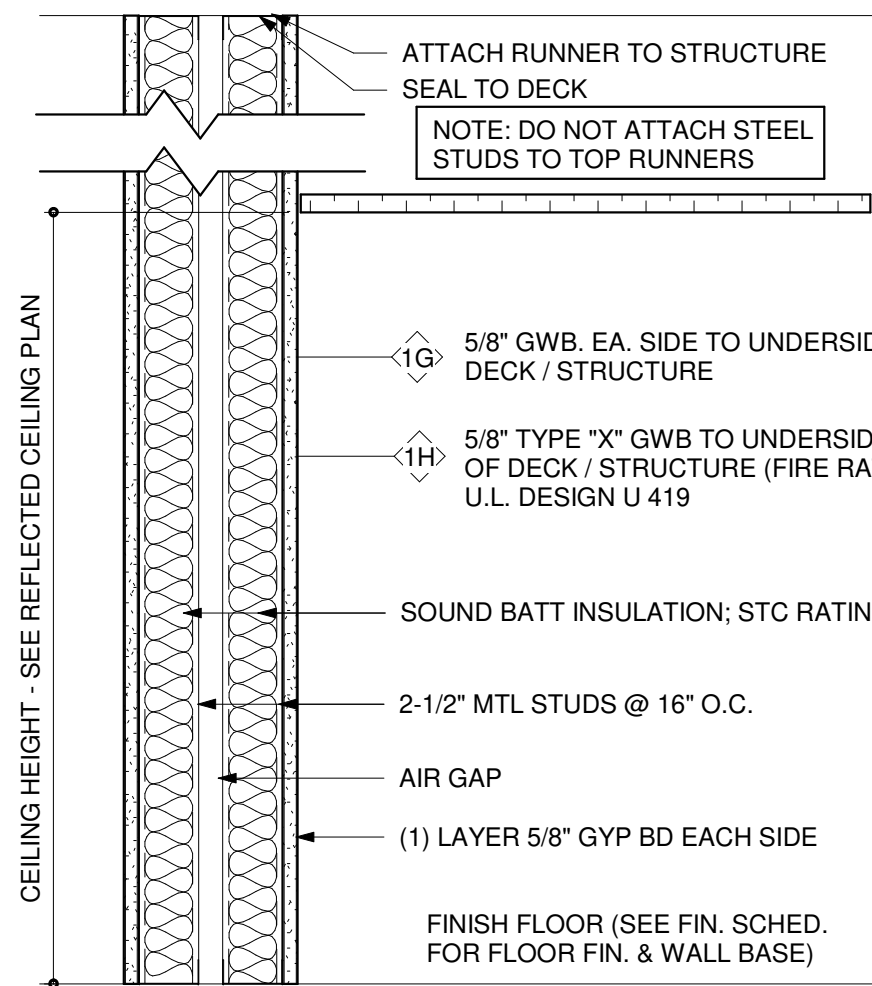
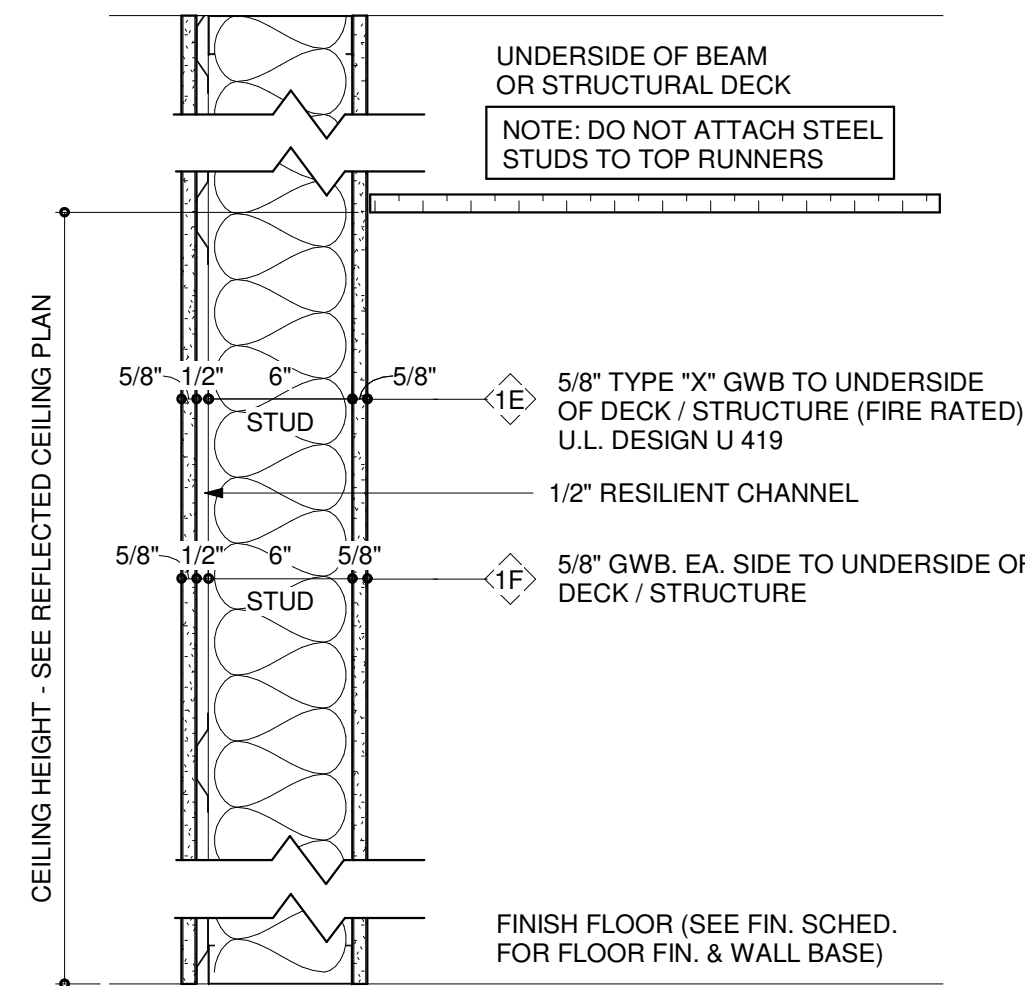
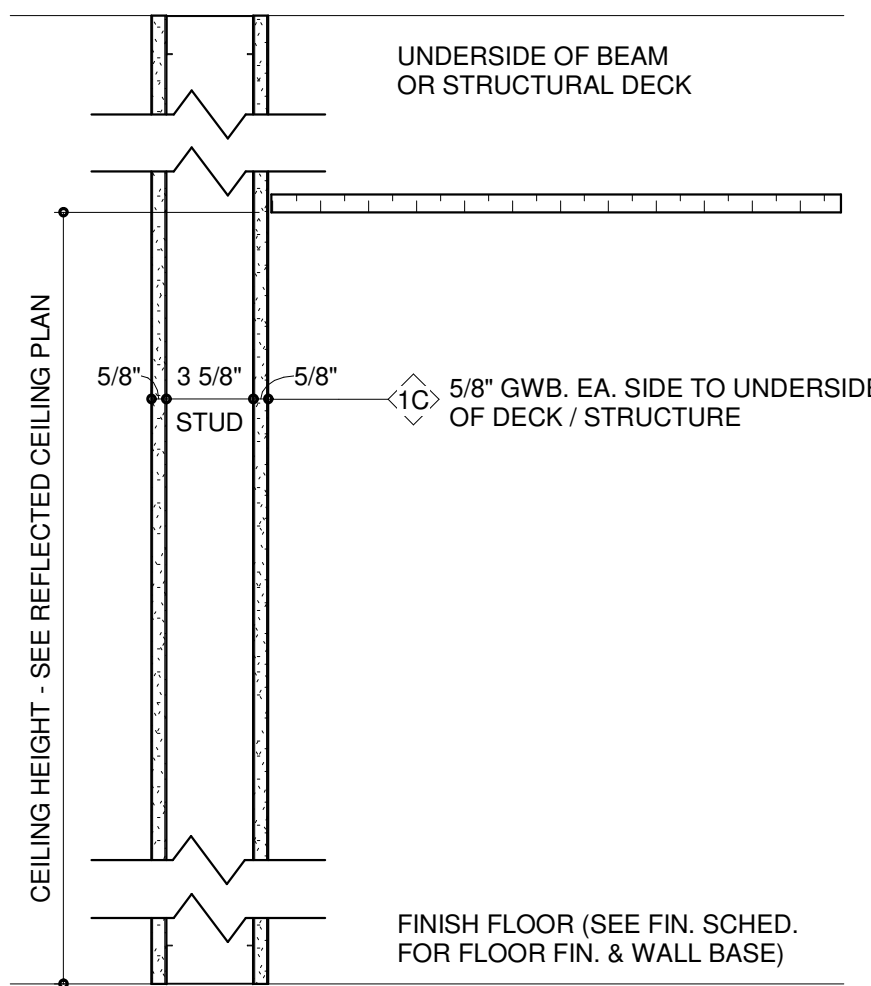
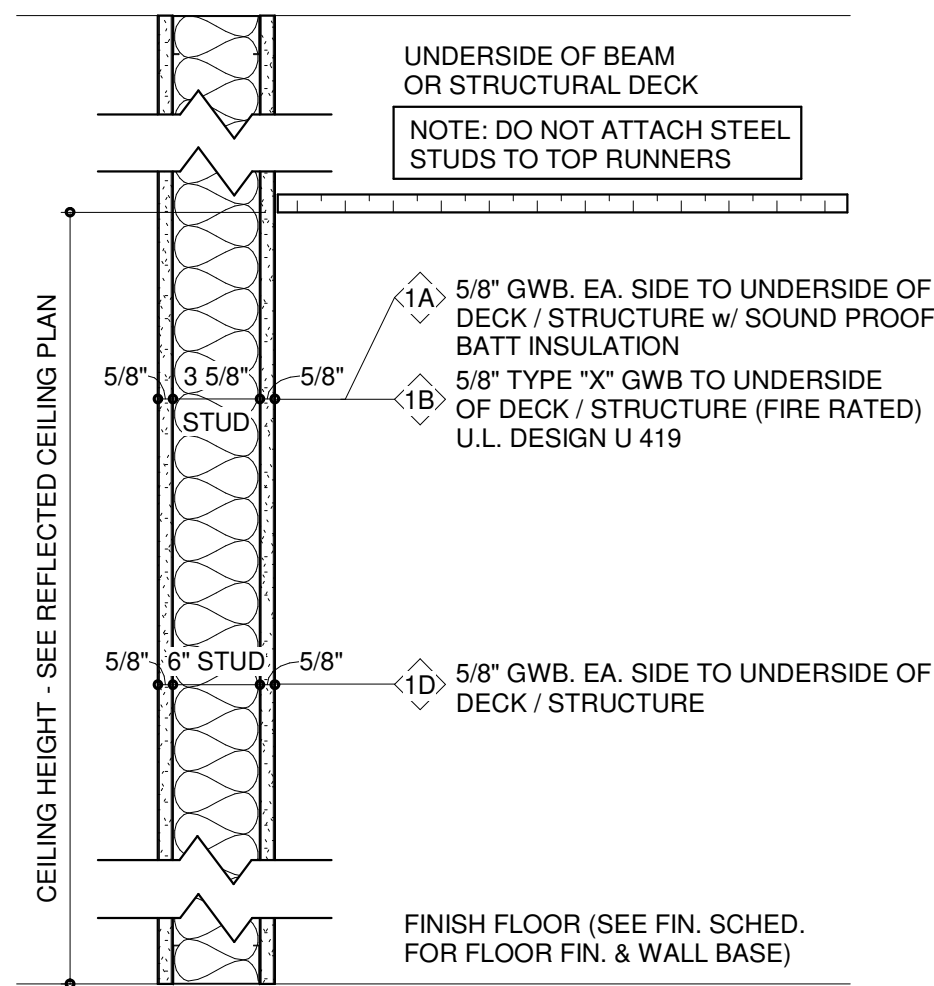


KEYNOTES: TOILET ACCESSORIES	
A	18" VERTICAL GRAB BAR
B	36" HORIZONTAL GRAB BAR
C	42" HORIZONTAL GRAB BAR
D	TOILET PAPER DISPENSER
E	WALL MOUNTED SOAP DISPENSER
F	18" x 36" MIRROR
G	PAPER TOWEL DISPENSER
H	SANITARY NAPKIN DISPOSALS
I	BABY CHANGING TABLE
J	COAT HOOKS ON PARTITION DOOR, TYP.





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



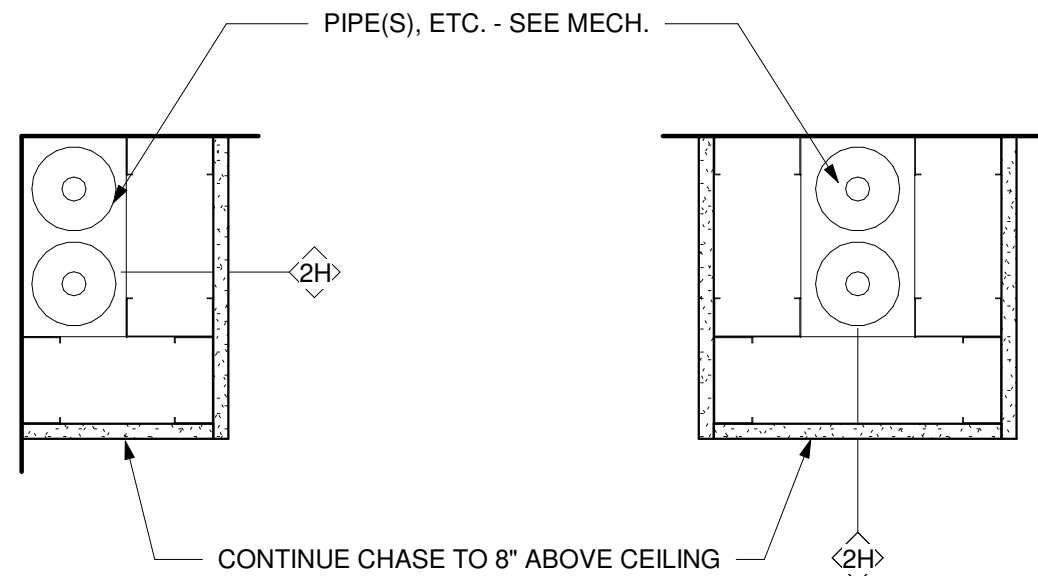
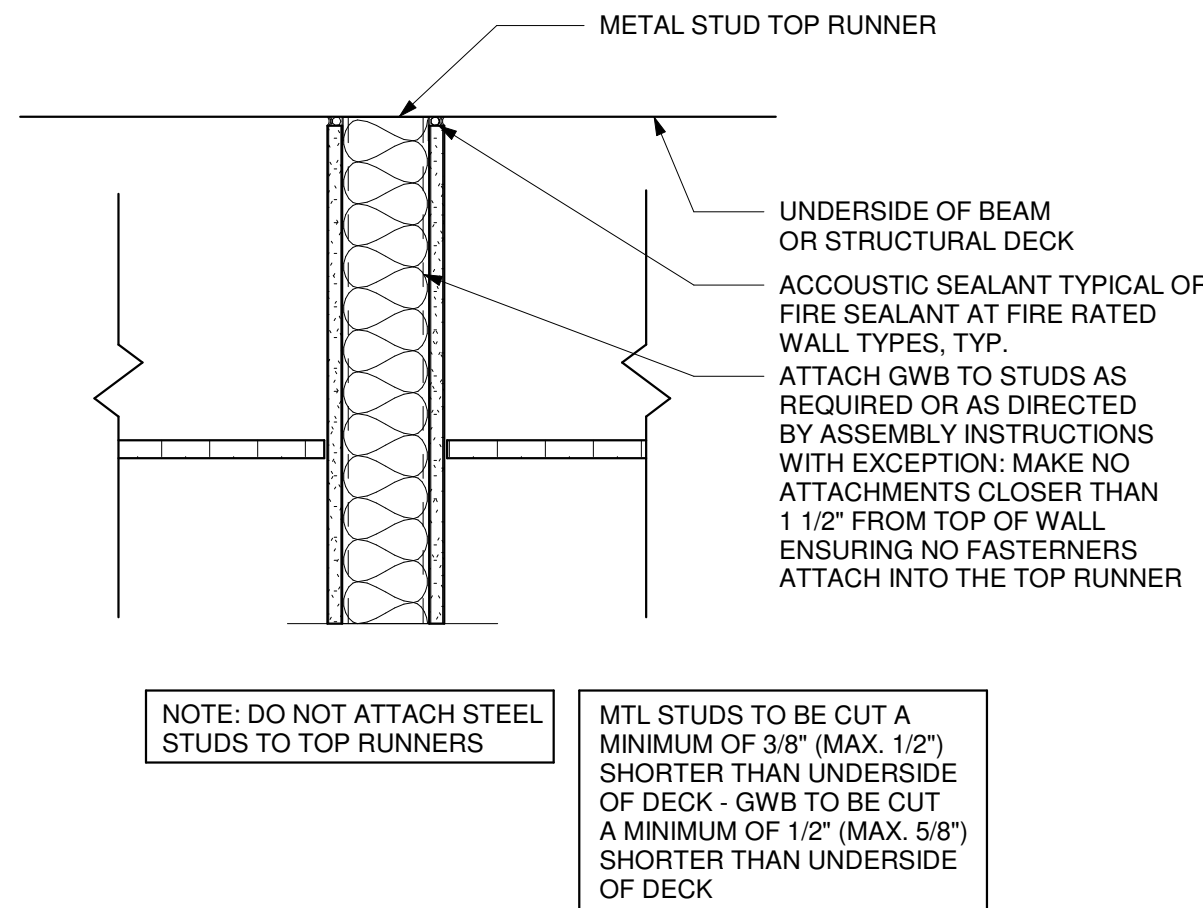
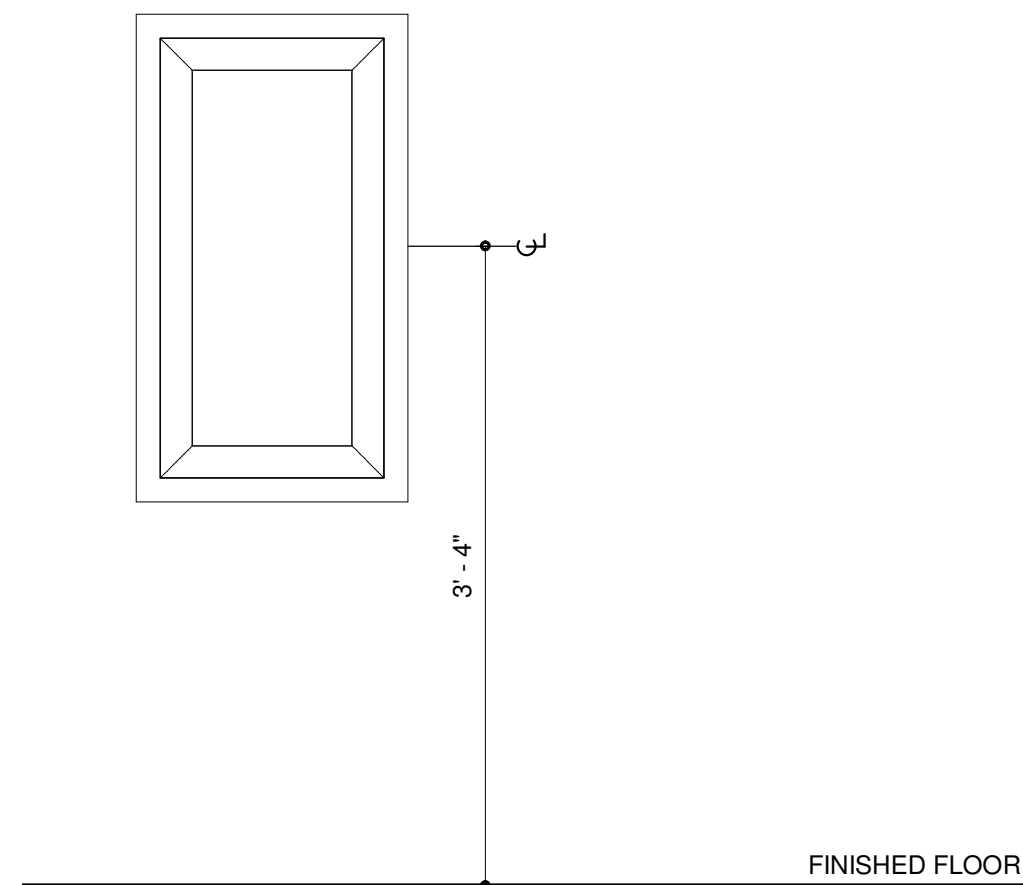
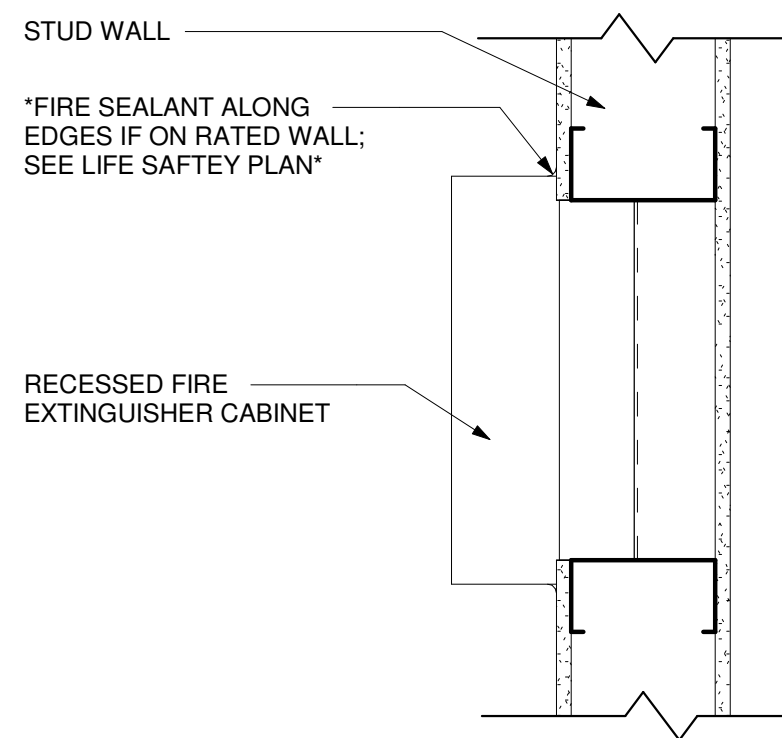
1 WALL TYPES 1A x 1B x 1D

2 WALL TYPES 1C

3 WALL TYPES 1E x 1F

4 WALL TYPES 1G x 1H

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



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.

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

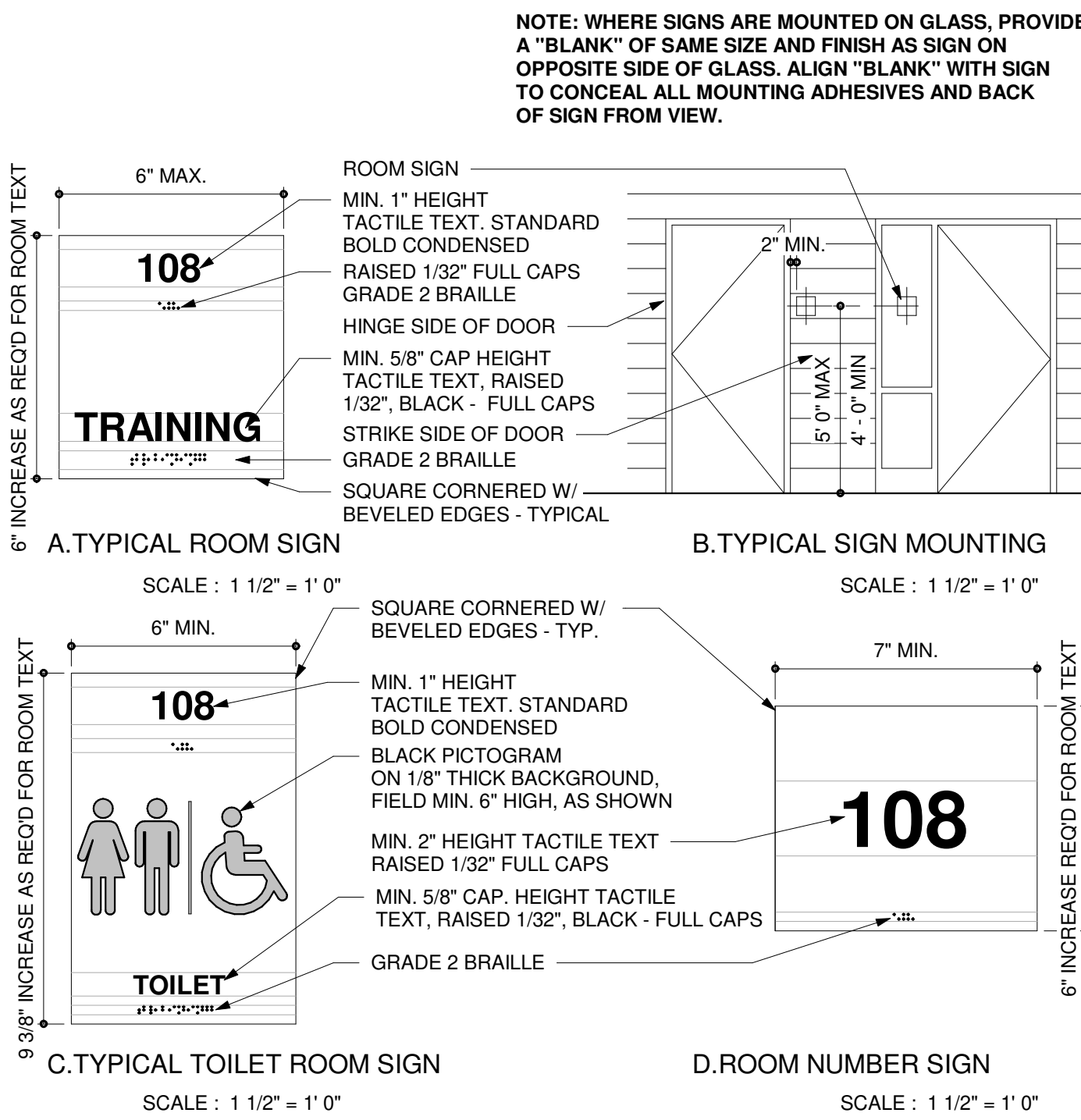
7 RECESSED FIRE EXTINGUISHER ELEVATION SCALE : 1" = 1' 0"

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

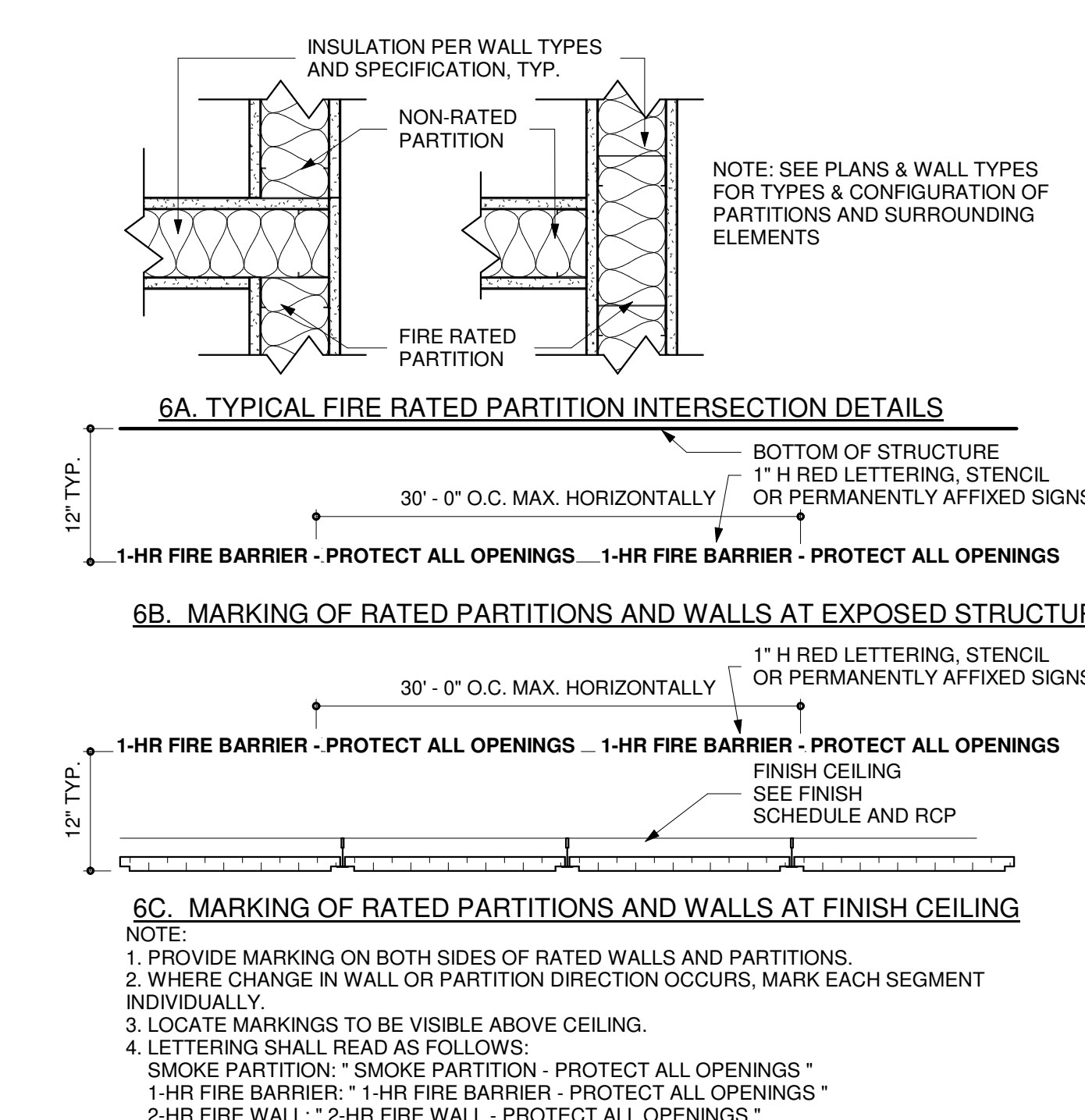
9 TYPICAL CHASE DETAILS SCALE : 1 1/2" = 1' 0"

WALL TYPE GENERAL NOTES

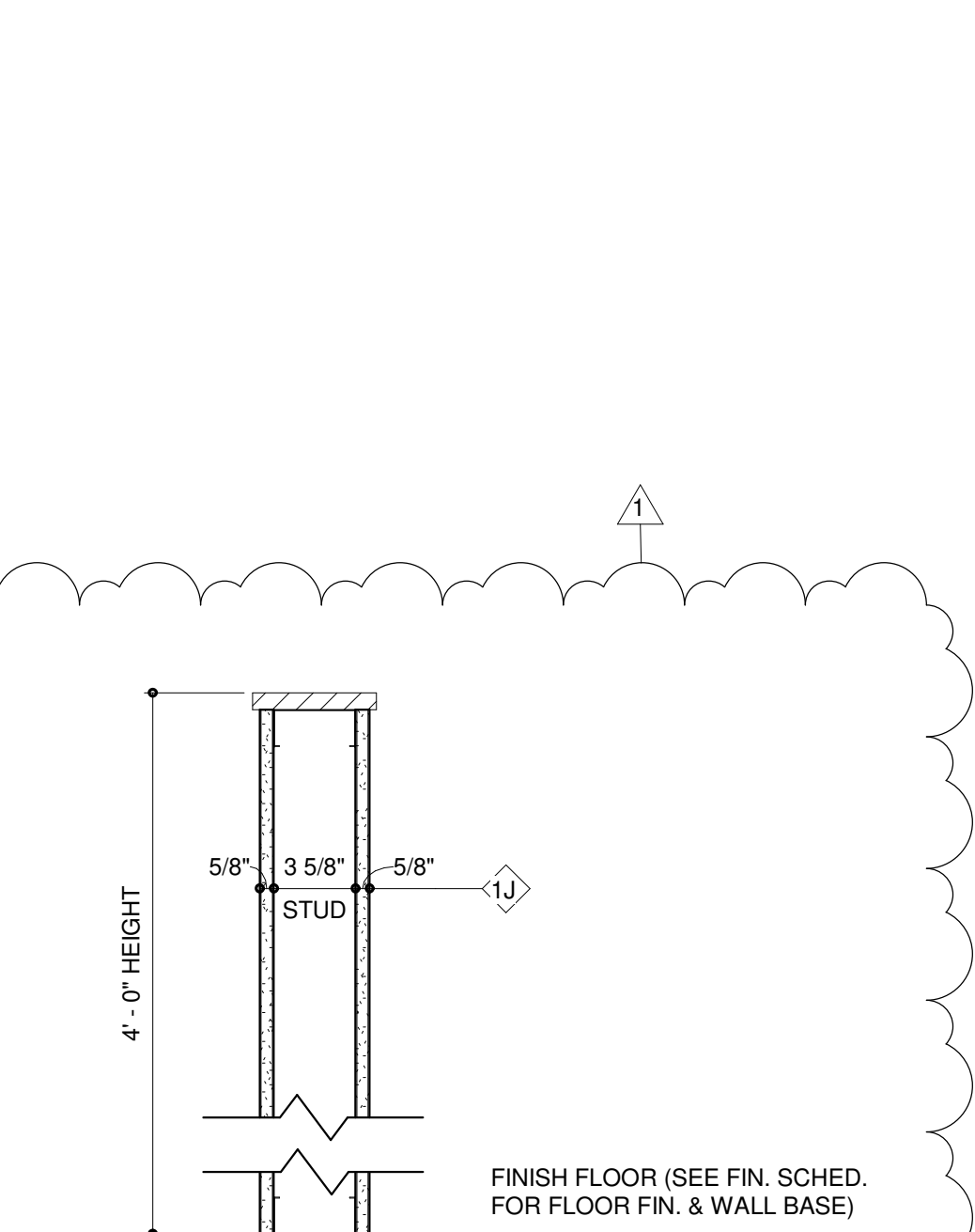
- SEE CODE SHEETS, AND WALL TYPES FOR REQUIRED FIRE RATINGS OF ALL WALL ASSEMBLIES. MULTIPLE LAYERS OF GWB MAY BE REQUIRED AT RATED PARTITIONS.
- PROVIDE SOUND-ATTENUATING BATT INSULATION OR SOUND-ATTENUATING FIRE BATT INSULATION IN METAL STUD PARTITIONS, U.O.N.
- PROVIDE MOLD AND MOISTURE RESISTANT 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.
- BRACE METAL STUD PARTITIONS WHERE REQUIRED. SEE SPECIFICATIONS AND STRUCTURAL DRAWINGS.
- PROVIDE ACOUSTICAL SEALANT AT PARTITIONS IN THE FOLLOWING LOCATIONS: ALL MECHANICAL ROOMS AND MEZZANINES, AND ELEVATOR MACHINE ROOM. SEE SPECIFICATIONS.
- LABEL ALL FIRE-RATED WALLS ABOVE CEILING W/ 4" THICK RED STENCIL LETTERING



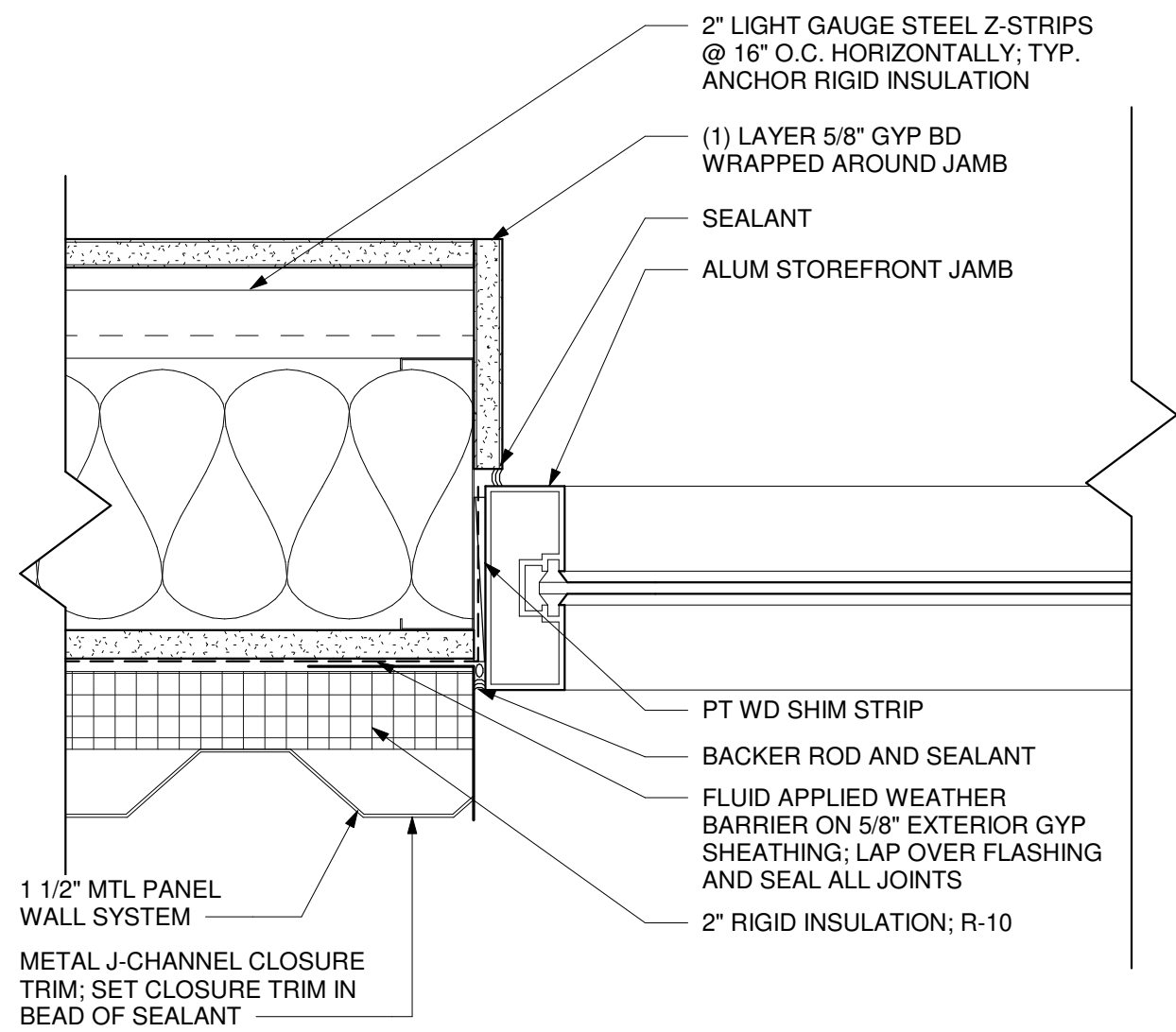
10 TYPICAL SIGN DETAIL SCALE : 1 1/2" = 1' 0"



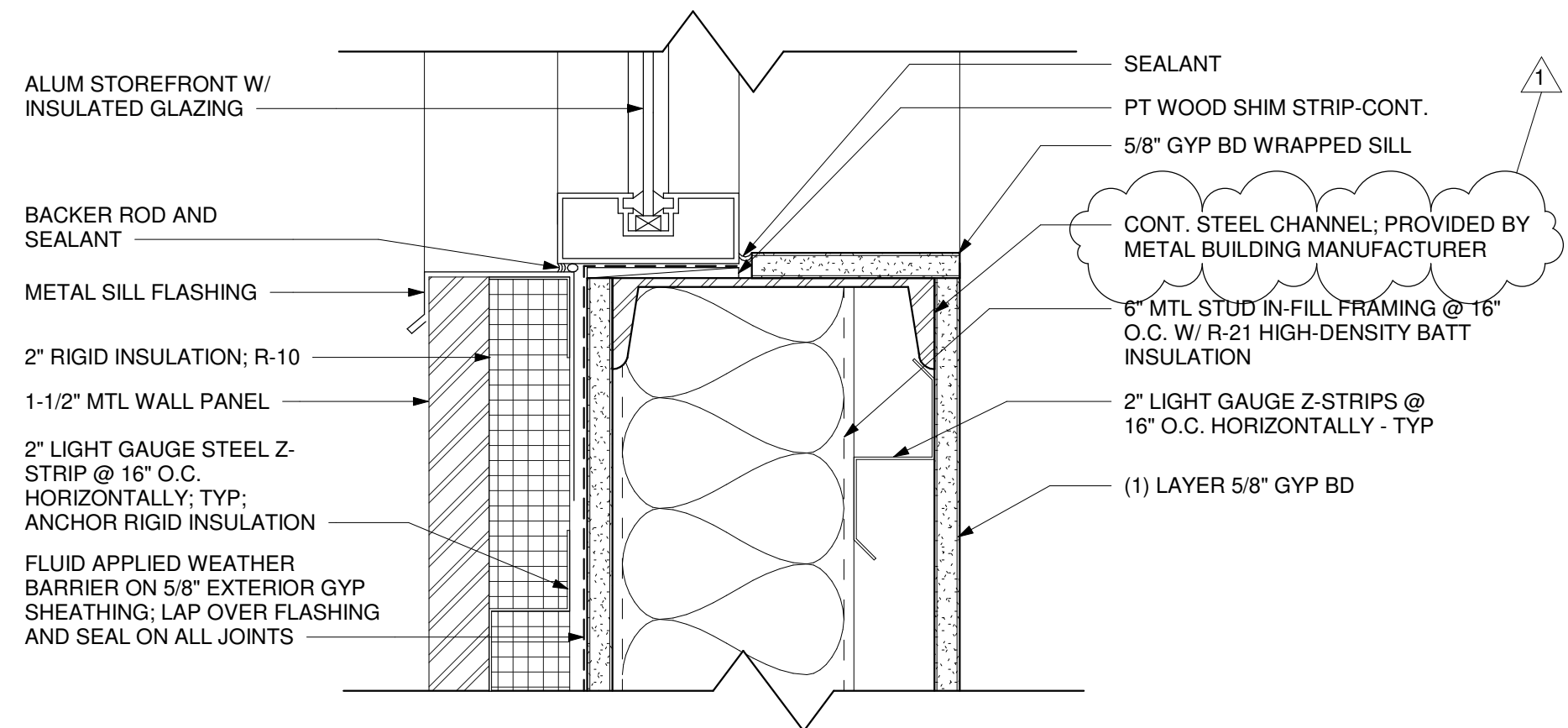
11 TYPICAL RATED PARTITION DETAILS SCALE : N.T.S.



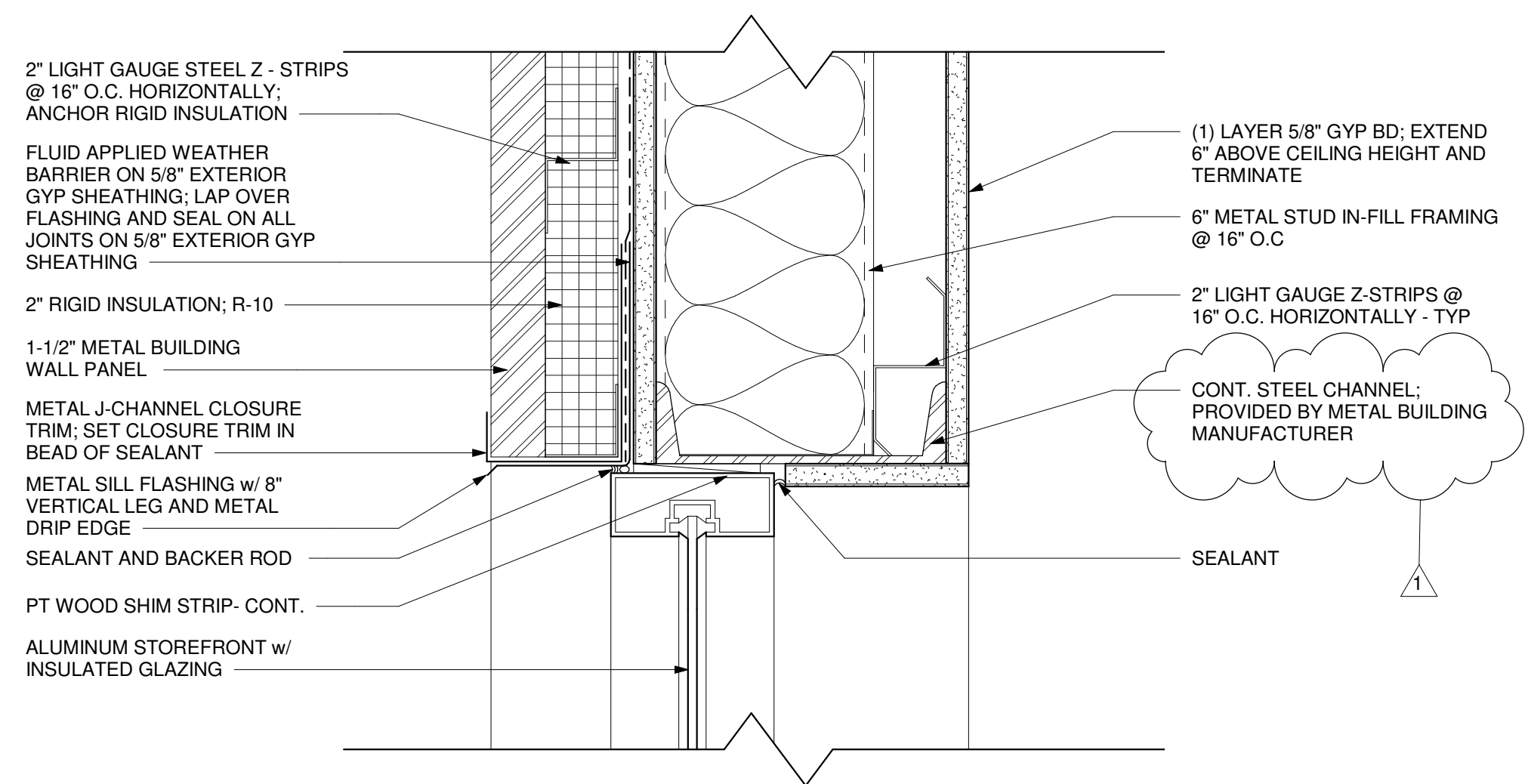
12 WALL TYPES 1J



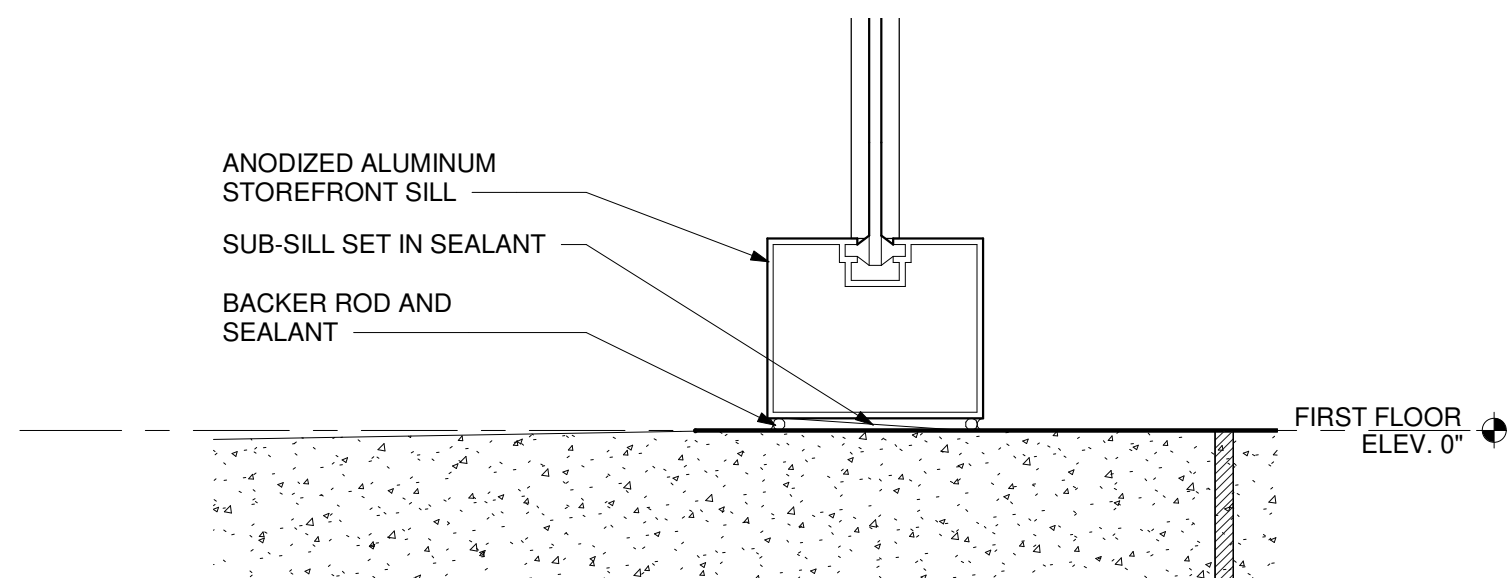
1 WINDOW JAMB DETAIL
SCALE: 3" = 1'-0"



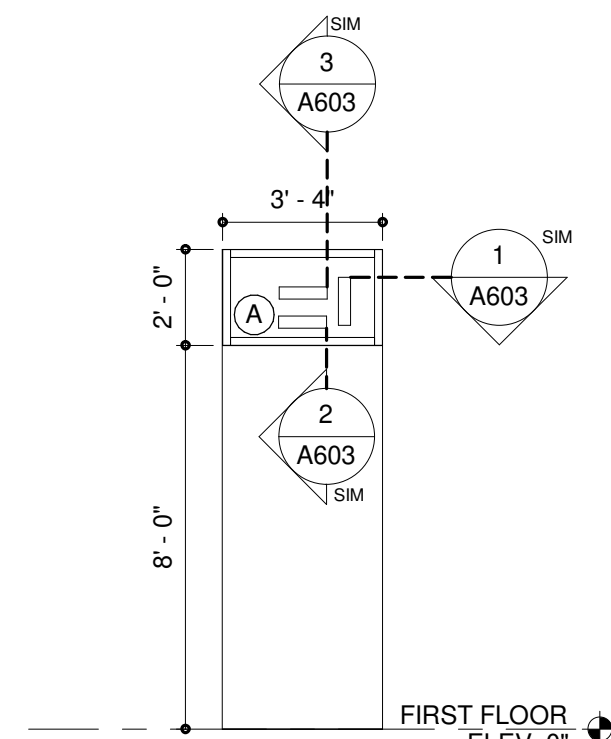
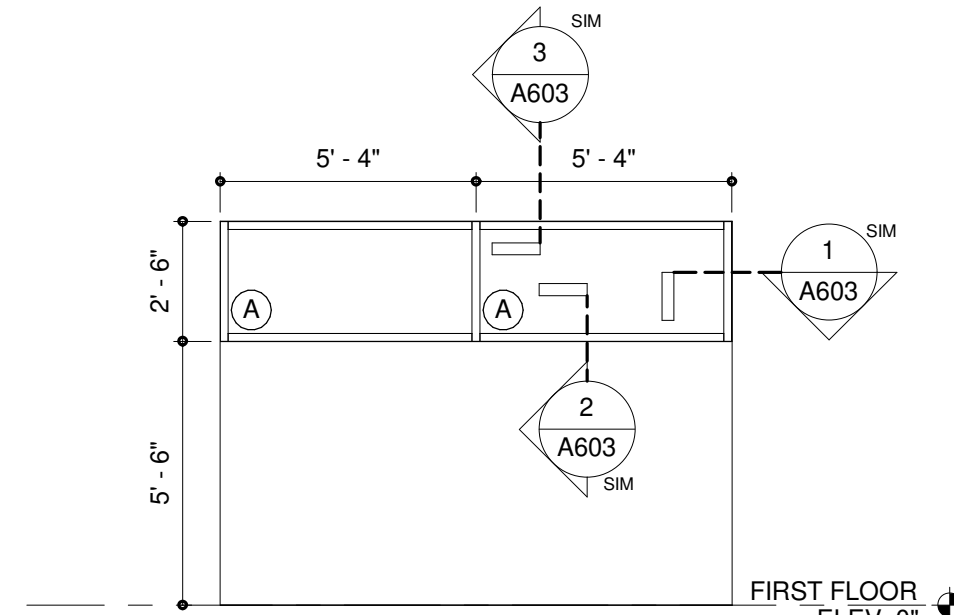
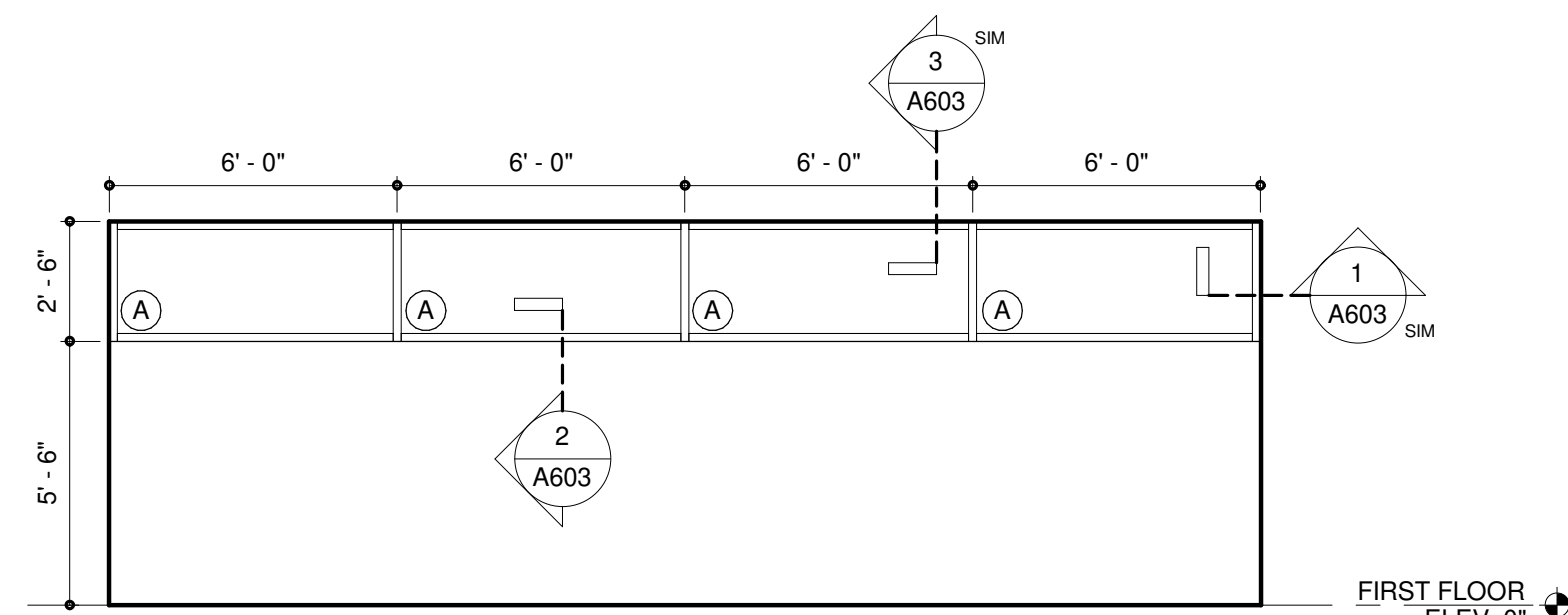
2 WINDOW SILL DETAIL
SCALE: 3" = 1'-0"



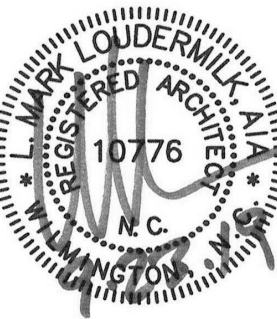
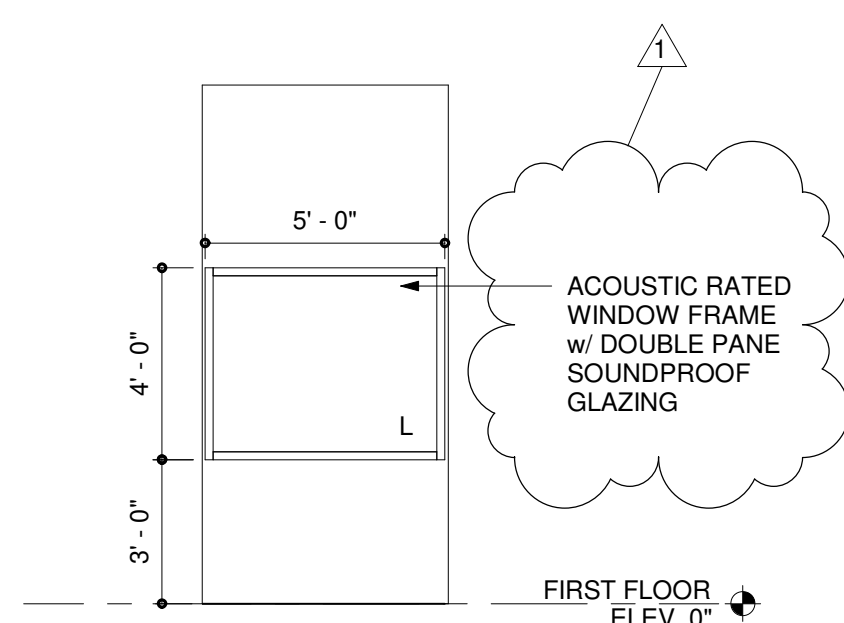
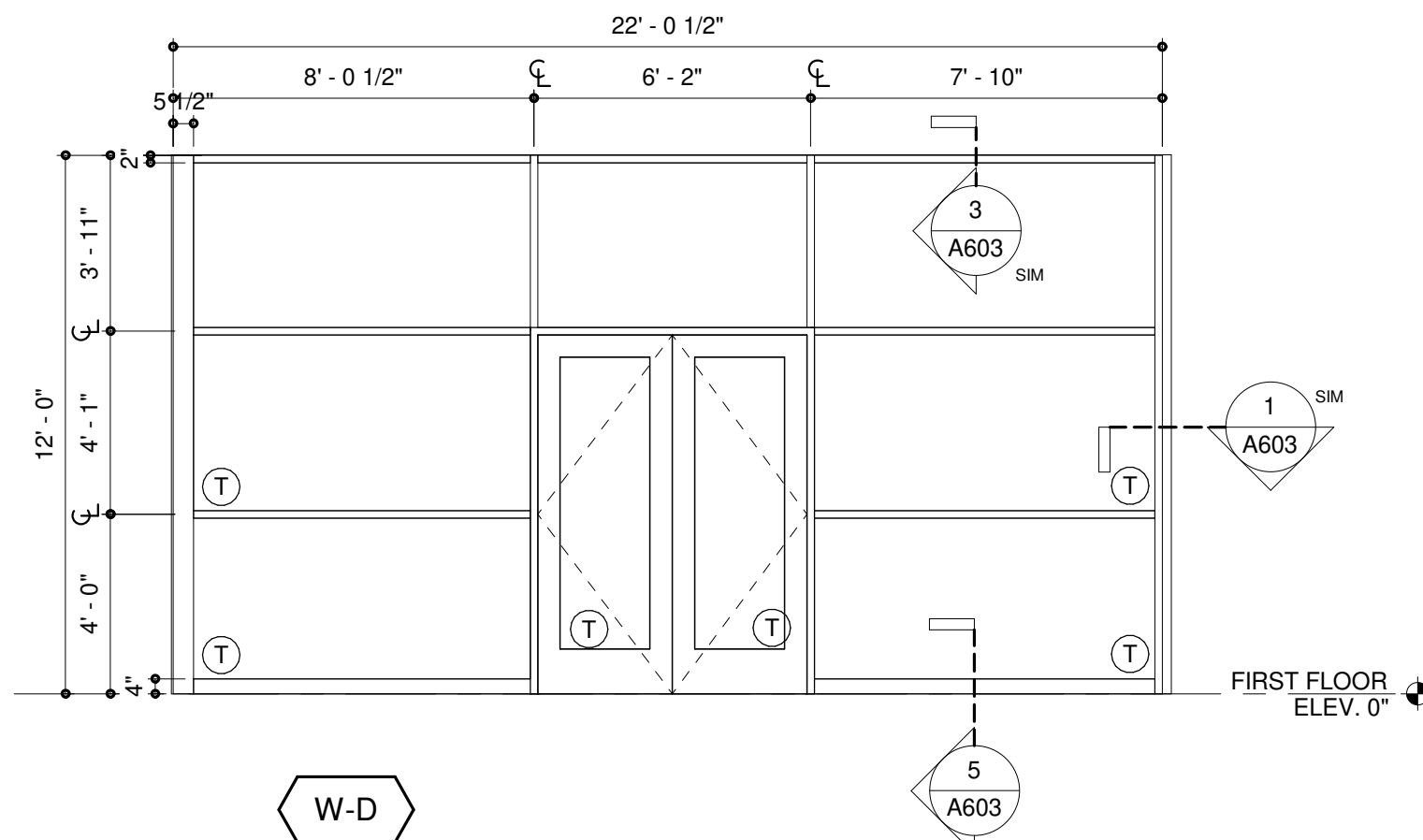
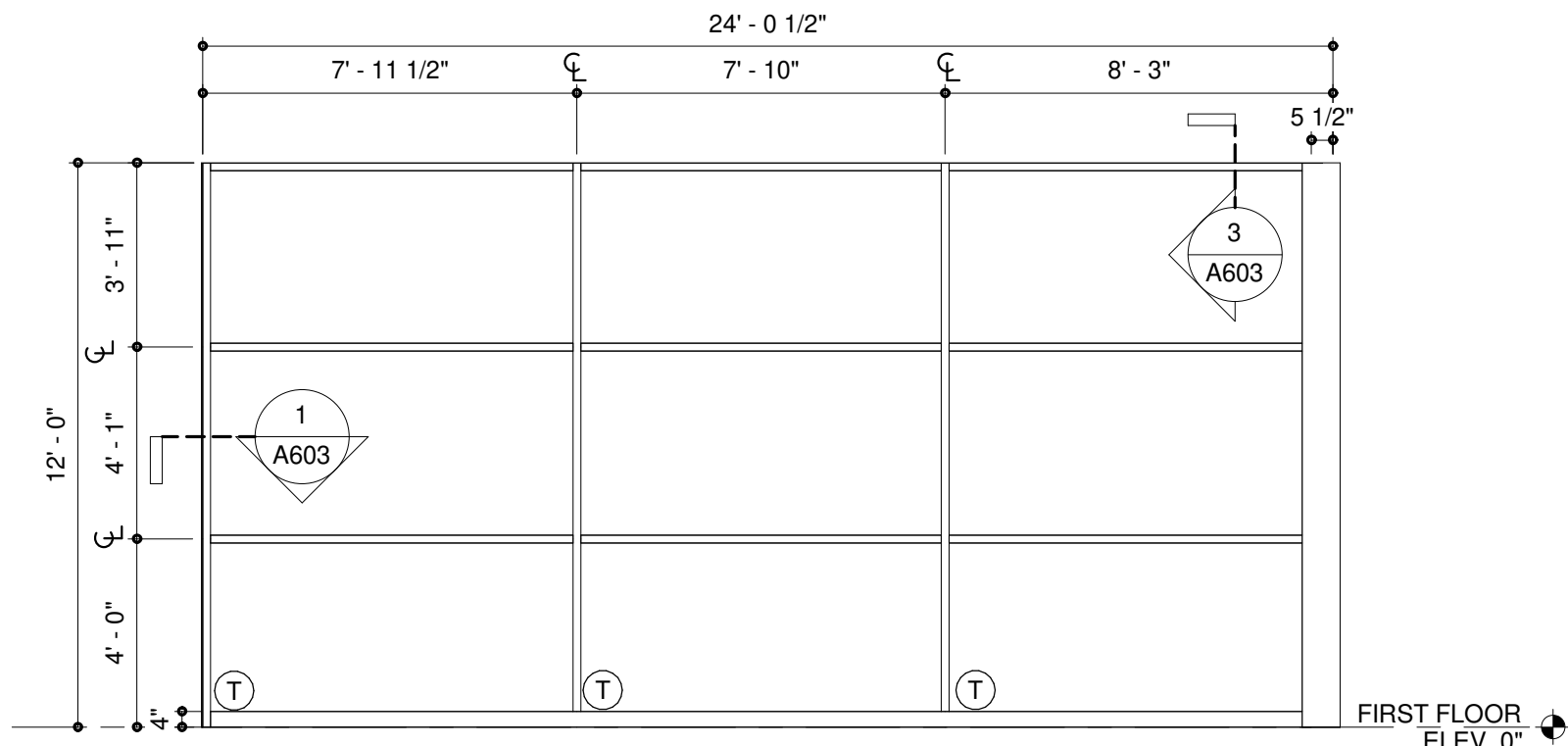
3 WINDOW HEAD DETAIL
SCALE: 3" = 1'-0"



5 STOREFRONT SILL DETAIL
SCALE: 3" = 1'-0"

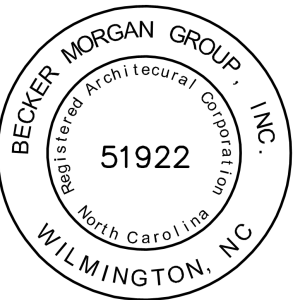
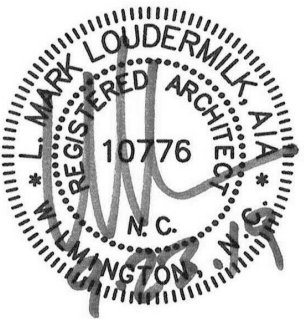


CODE LEGEND	
(T)	= TEMPERED GLAZING
(A)	= ANNEALED GLAZING
(L)	= LAMINATED GLASS



Mark	Date	Description
1	10/2/19	ADDENDUM #1
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PROJECT NO:	2018070.01
DATE:	9/23/2019
SCALE:	As indicated
DRAWN BY:	AVB
PROJ MGR:	LML



PROJECT TITLE



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

UNCW FILM STUDIES

601 S College Rd, Wilmington,
NC, 28403

SHEET TITLE

INTERIOR ELEVATIONS

ISSUE BLOCK

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

PROJECT NO: 2018070.01

DATE: 9/23/2019

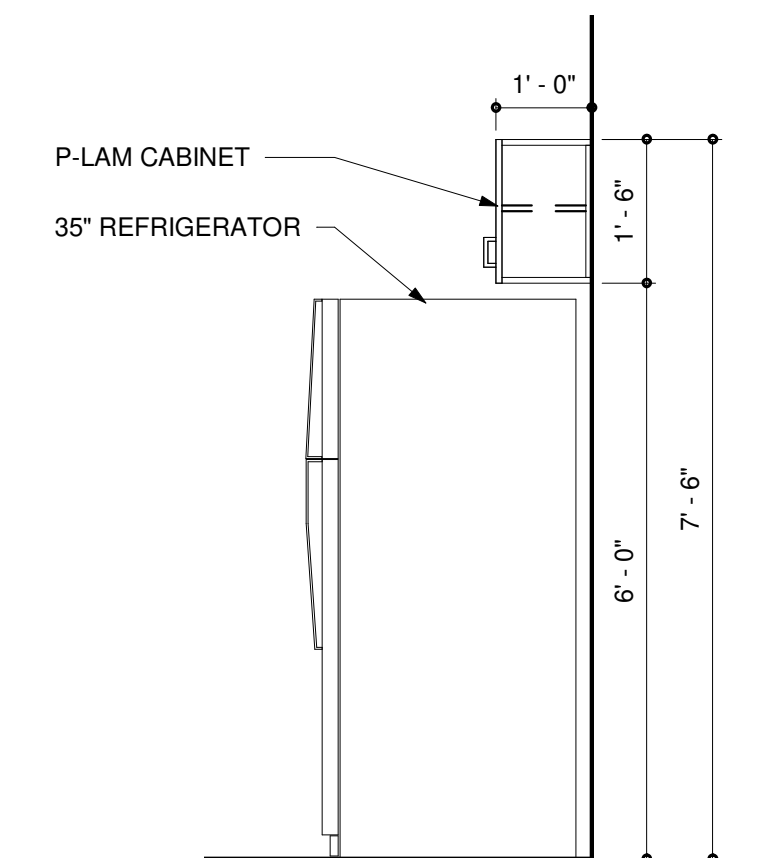
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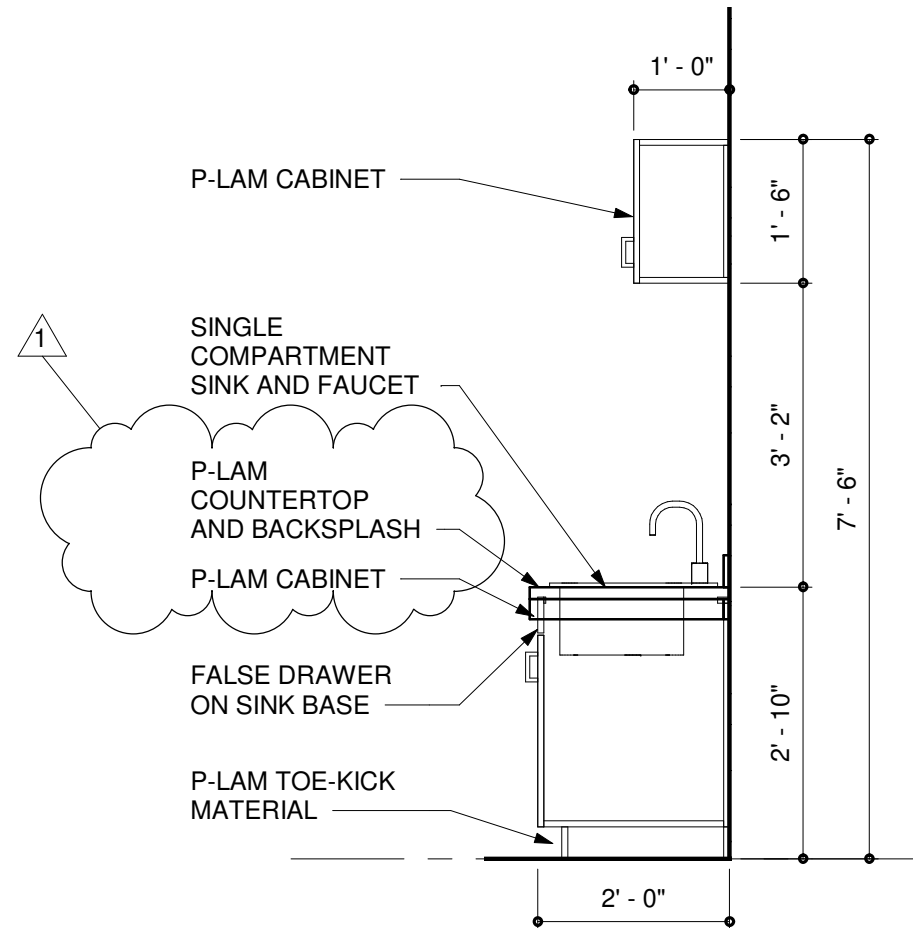
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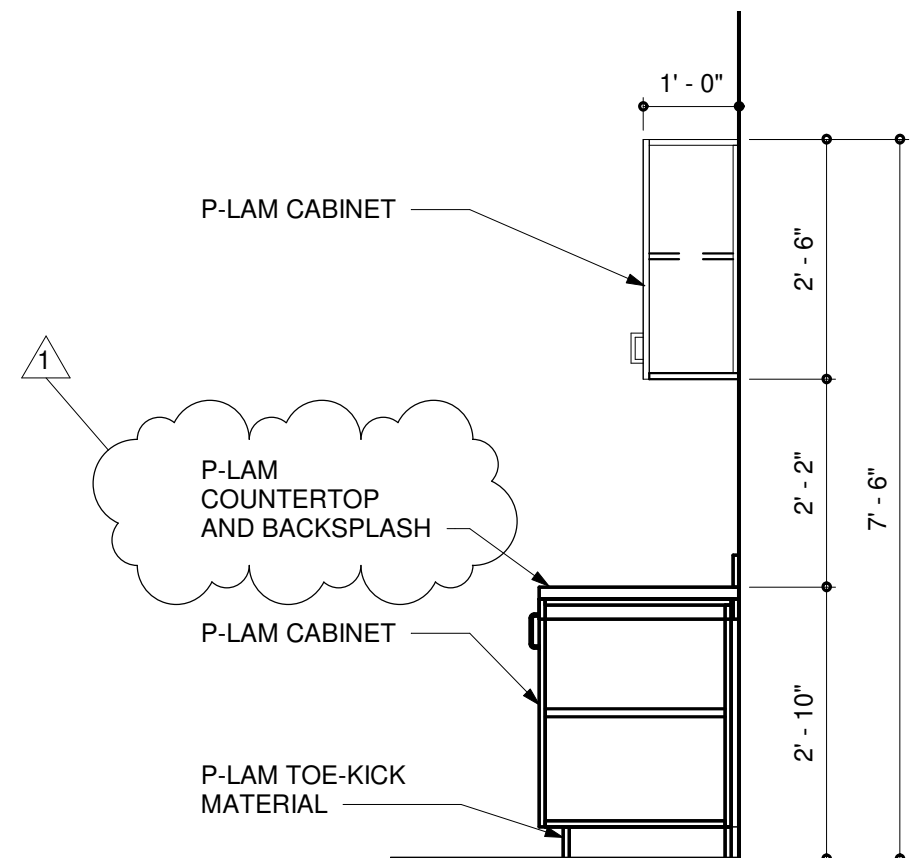
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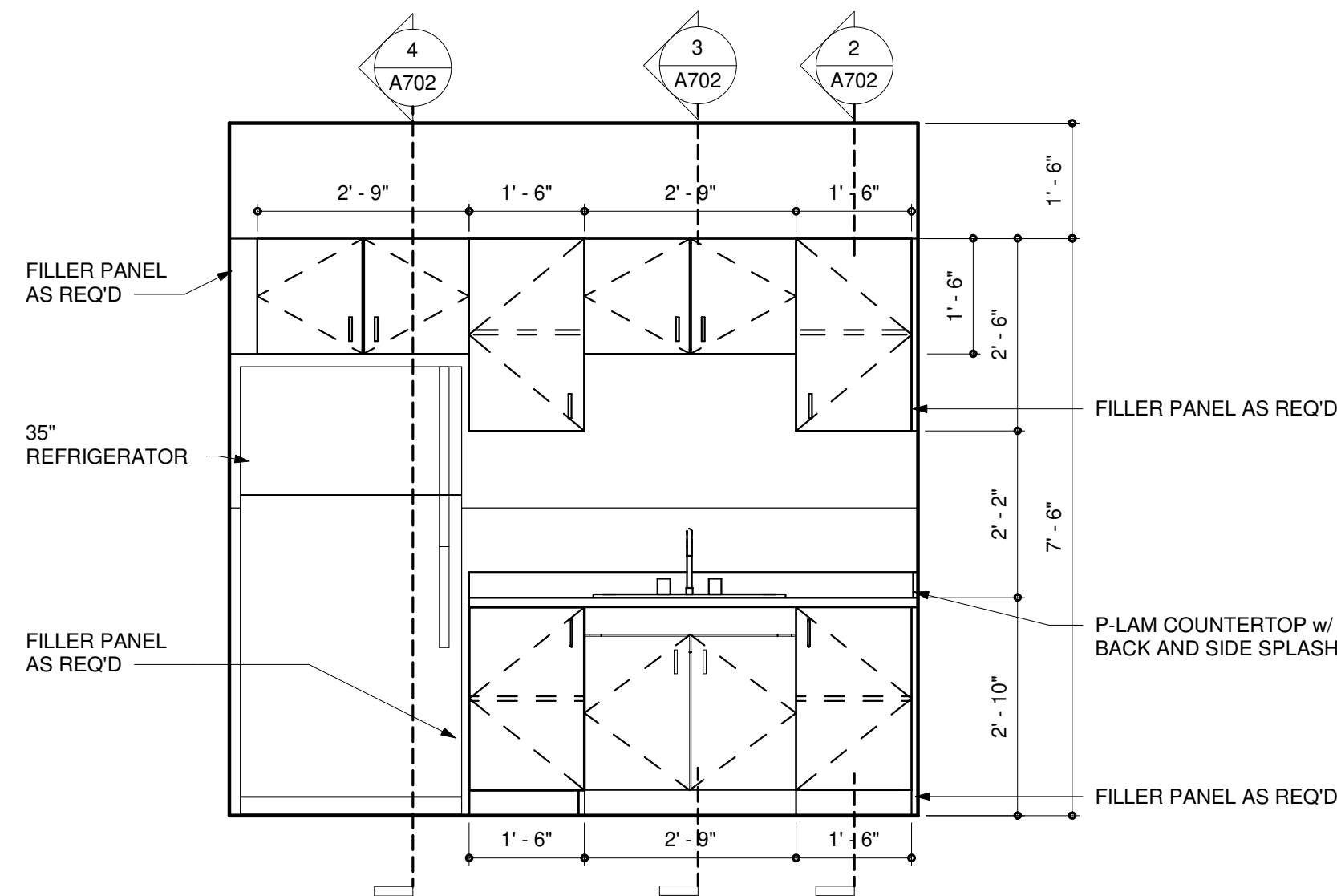
4 CASEWORK SECTION 3
SCALE: 1/2" = 1'-0"



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



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



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

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
	RECEPTACLE, DUPLEX
	RECEPTACLE, QUAD
	RECEPTACLE, SINGLE
	RECEPTACLE, GFI
	RECEPTACLE, SPECIAL (NEMA CONFIGURATION INDICATED)
	FLUSH RECEPTACLE, C.F. INDICATES CEILING, FLOOR MOUNTED, DUPLEX NEMA5-20 U.O.N.
	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
	NON-FUSED DISCONNECT SWITCH
	FUSED DISCONNECT SWITCH
	COMBINATION STARTER/DISCONNECT SWITCH (F* INDICATES FUSED)
	KEY OPERATED CONTROL STATION (BY OTHERS, U.O.N.)
	ELECTRICALLY OPERATED, MECHANICALLY HELD STARTER C INDICATES CONTRACTOR WITH n POLES
	MOTOR RATED SWITCH
	FRACTIONAL HP STARTER
	MOTOR (# INDICATES HORSEPOWER)
	CIRCUIT BREAKER IN ENCLOSURE
	CIRCUIT BREAKER
	ADJUSTABLE FREQUENCY DRIVE WITH INTEGRAL DISCONNECT SWITCH
	EQUIPMENT TERMINATION, SEE MECHANICAL DRAWINGS FOR DETAILS.
	ELECTRIC UTILITY METER
	CURRENT TRANSFORMER
	DIGITAL METER MONITOR

\$	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
\$ _{DS}	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

OS	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
H	LOW VOLTAGE DIMMER SW.
ED	EMERGENCY ILLUMINATION STRIKE BUTTON.
HF	FIRST RESPONDER KEYED LIGHT SWITCH.
H5	LOW VOLTAGE 6-PRESET SCENE PLUS DIMMER SW.
HG	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
—X—X—	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.

HMSB	MASTER GROUND BUS BAR ON INSULATORS. PRE-DRILLED 8"X12"X1/4"
HAB	A/V SYSTEM GROUND BUS BAR ON INSULATORS. PRE-DRILLED 4"X12"X1/4"
HGB	SECURITY SYSTEM GROUND BUS BAR ON INSULATORS. PRE-DRILLED 4"X12"X1/4"
HBB	CLASS A FIRE RATED TELECOM BACKBOARD WITH WHITE ENAMEL, MASKED STAMP.
HGB	I.T. SYSTEM GROUND BUS BAR ON INSULATORS. PRE-DRILLED 4"X12"X1/4"
HTR	2-POST 96"X24" I.T. RACK W/ (2) 6" SQ. VERTICAL CABLE MANAGERS EA.
HJ	(2) 4X4-J-BOXES 18" & 60" AFF CONNECTED BY 1" C. FOR COLOR CORR. MONITOR
HTS	TIME CLOCK SWITCH
HAC	ACCESS CONTROL SERVER.
HFR	FIRE ALARM DOOR RELEASE INTERFACE
HVR	NETWORK VIDEO RECORDER
HMC	MULTI-SYSTEM SWITCHABLE MONITOR / KEYBOARD / MOUSE INTERFACE
HMP	SECURITY SYSTEM ACCESS CONTROL KEYPAD.
HFK	SECURITY SYSTEM PoIP CAMERA, PTZ: PAN, TILT, ZOOM FIX: FIXED MOUNTING. CAT6A CABLE.
HCR	SECURITY SYSTEM CARD READER
HDC	SECURITY SYSTEM DOOR CONTACTS
HCB	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 TO SLAB VIA CONCEALED FASTENERS.
HBI	SECURITY SYSTEM TRANSFER HINGE

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
F	FIRE ALARM SPEAKER WALL, CEILING MOUNTED
IM	ISOLATION MODULE
AIM	ADDRESSABLE INPUT MODULE
AOM	ADDRESSABLE OUTPUT MODULE
?	PHOTO-ELECTRIC TYPE SMOKE DETECTOR.
BR	BT & BR INDICATE BEAM TRANSMITTER & RECEIVER.
SB	SB INDICATES SOUNDER BASE.
HA	HEAT DETECTOR (COMBINATION FT/RR U.O.N., A=ANTICIPATOR TYPE, AC=ABOVE CEILING.)
R	HEAT DETECTOR (FIXED TEMPERATURE)
R	HEAT DETECTOR (RATE OF RISE)
IG	PHOTO-ELECTRIC TYPE DUCT SMOKE DETECTOR WITH REMOTE ANNUNCIATING TEST STATION 'RAIL'.
RAIL	REMOTE ANNUNCIATING TEST STATION 'RAIL'
nV: (n)	RJ-11 TELEPHONE OUTLET
(2) CAT6A UTP PER WALL PLATE "MON" = 5'-4" AFF, "TV" = 7'-0" AFF.	
RJ-45 ETHERNET DATA OUTLET.	
nT: (n) CAT6A UTP PER WALL PLATE	
nAV: (n) CAT6A UTP PER WALL PLATE. "A" = 3'-0" AFF.	
WAP	CEILING MTD DATA OUTLET. WAP: WIRELESS ACCESS POINT W/ (2) CAT6A TERMINATIONS
CAM	A/V CAMERA. 2-GANG WALL BOX. W/ CAT6A PoE TO PROJ. BOOTH A/V RACK.
HVR	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.
HVS	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.
P6	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.
HCS	3-BUTTON SHADE / CURTAIN CONTROL STATION. 1-GANG WALL BOX W/ 3/4" C
HSPK	SPEAKER WALL MOUNTED. 2-0" BFC.
6	SPEAKER CEILING MOUNTED. 1-GANG WALL BOX W/ 3/4" C.
1	MICROPHONE OUTLET. 1-GANG CEILING MOUNTED BOX W/ (4) CAT6 DROPS BACK TO PROJ. BOOTH 1109. VERTICAL ROUTING BELOW CEILINGS IN 1" C.

LOWER CASE LETTERS INDICATE ASSOCIATED LIGHT FIXTURES. TWO COMMA SEPARATED LOWER CASE LETTERS INDICATE INBOARD/OUTBOARD SWITCHING.

ON LIGHTING PLANS, DISCONNECTS, INDICATE UNSWITCHED CIRCUIT LEGS

PROVIDE ROUGH-IN WITH CAT6a CABLES IN 1" RACEWAY TO SECURITY RM U.O.N. COORDINATE ROUTING AND TERMINATIONS WITH OWNERS REPRESENTATIVE. TERMINATIONS AND TESTING OF CHANNELS IS BY CONTRACTOR.

GENERAL NOTES

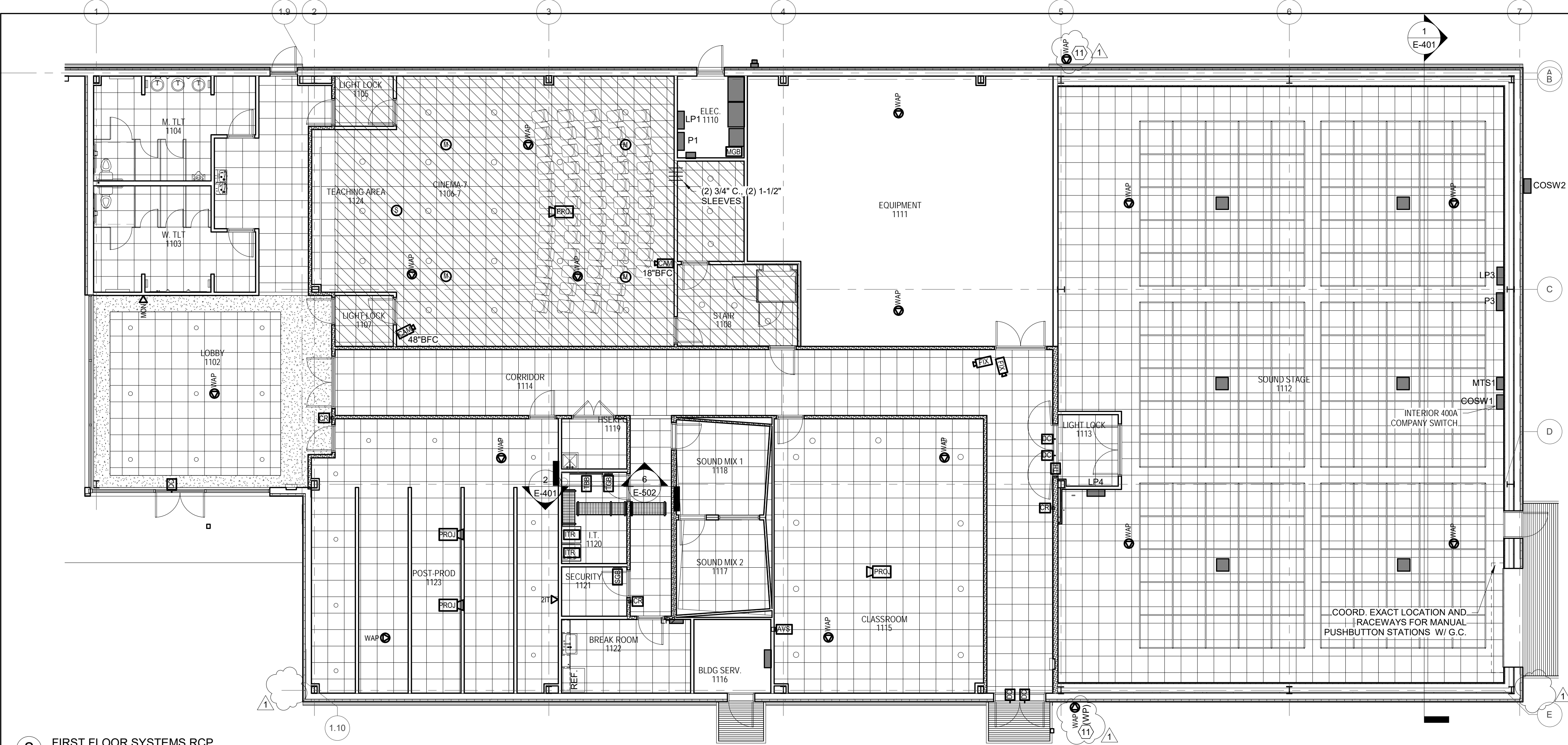
- THIS WORK SHALL COMPLY WITH STATE CONSTRUCTION OFFICE AND NORTH CAROLINA DEPARTMENT OF INSURANCE STANDARDS AND ALL OTHER STATE AND LOCAL BUILDING, ELECTRIC, AND FIRE CODES AND REGULATIONS.
- ELECTRICAL EQUIPMENT SHALL BE INSTALLED AND GROUNDED IN ACCORDANCE WITH THE LATEST REQUIREMENTS OF THE NATIONAL 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.
- CONDUITS AND ELECTRICAL EQUIPMENT ARE SHOWN DIAGRAMMATICALLY AND MAY BE ALTERED TO SUIT FIELD CONDITIONS PENDING ENGINEER'S APPROVAL.
- 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.
- 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.
- DIMENSIONS SHOWN ARE APPROXIMATE AND MUST BE VERIFIED IN THE FIELD BY THE CONTRACTOR.
- CONTRACTOR SHALL CHECK FOR OBSTRUCTIONS AND CLEAN OUT ALL CONDUITS PRIOR TO PULLING IN CABLES.
- 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.
- 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.
- 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.
- NO CONDUIT SMALLER THAN 1/2" SHALL BE USED UNLESS OTHERWISE SPECIFIED.
- ALL JOINTS BETWEEN DISSIMILAR METALS SHALL BE COATED WITH A LITHIUM BASED THREAD LUBRICANT.
- RACEWAYS SHALL BE PROVIDED WITH EXPANSION-DEFLECTION FITTINGS WHERE CROSSING BUILDING CONSTRUCTION EXPANSION JOINTS AND WHERE NECESSARY TO COMPENSATE FOR THERMAL EXPANSION AND CONTRACTION.
- FURNISH AND INSTALL 4" CONCRETE PADS WITH 1" CAMFERS EXTENDING 2" ON ALL SIDES FOR FLOOR MOUNTED ELECTRICAL EQUIPMENT.
- 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.
- 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.
- 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.
- INSTALL AN 1/8 INCH POLY PROPYLENE (PULL-IN-ROPE) IN ALL SPARE CONDUITS.
- INSULATED GREEN COPPER CONDUCTORS FOR EQUIPMENT GROUNDING SHALL BE ROUTED WITH ALL POWER CONDUCTORS.
- MULTIWIRE BRANCH CIRCUITS ARE NOT PERMISSIBLE. PROVIDE DEDICATED NEUTRAL WIRES WITH ALL SINGLE PHASE BRANCH CIRCUITS.
- 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.
- CONTRACTOR SHALL PROVIDE ALL NECESSARY SAFETY EQUIPMENT AND EXERCISE PRECAUTIONARY PROCEDURES WHEN WORKING WITH OR NEAR ENERGIZED EQUIPMENT.
- 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.
- 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.
- 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.
- 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.
- 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.		

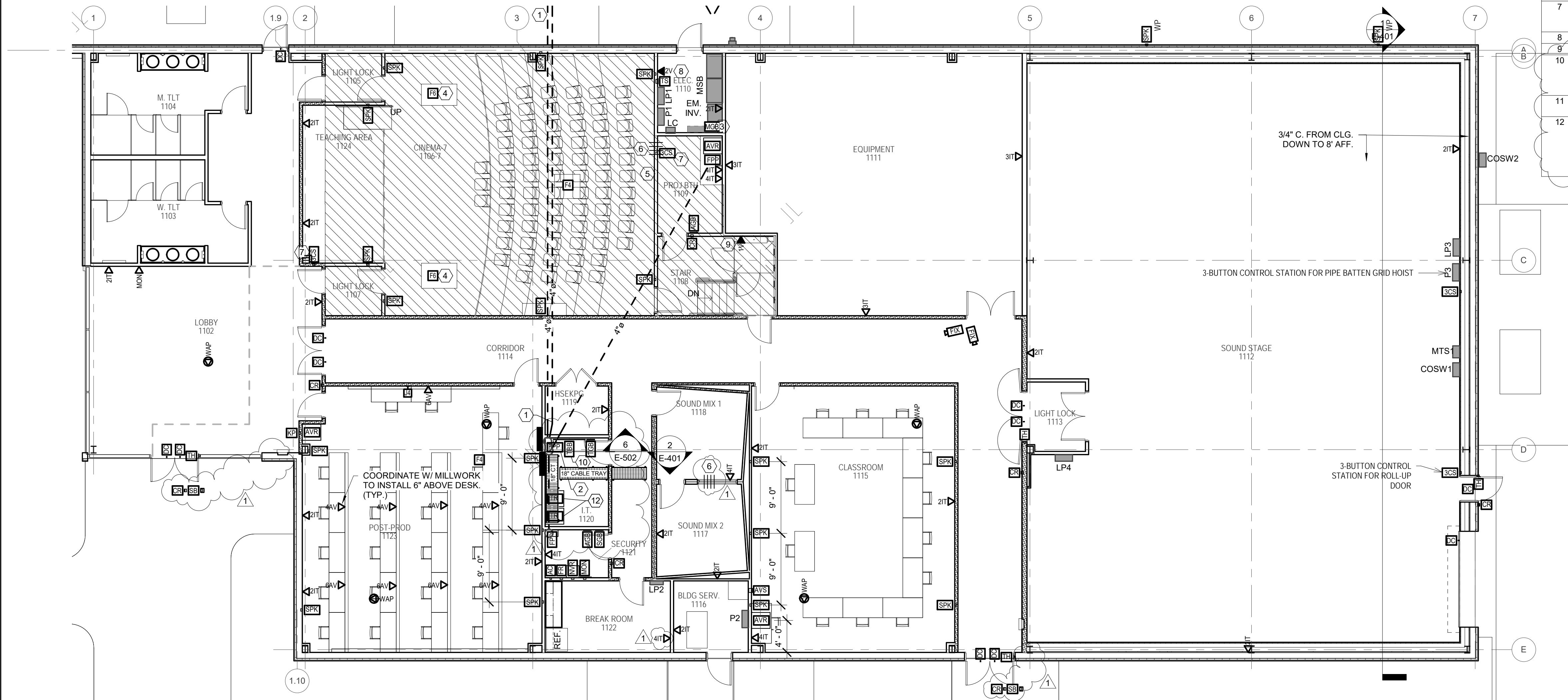
STANDARD MOUNTING HEIGHTS	
MOUNTING HEIGHTS FOR EQUIPMENT SHALL BE AS LISTED BELOW UNLESS OTHERWISE SPECIFICALLY LABELED. (UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE TO THE CENTERLINE OF BOXES.) ALL PROTRUSIONS BELOW 7" A.F.F. SHALL BE LESS THAN 4" FOR ADA COMPLIANCE.	
SWITCHES	3'-10" A.F.F.
TELEPHONE - 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

ABBREVIATIONS

%	PERCENT	CLG.	CEILING	EQ.	EQUAL	INC.	INCANDESCENT	NAT'L	NATIONAL	SEC.	SECONDARY
Ø	AND	CO.	COMPANY	INSUL.	INSULATION	INSUL.	INSULATION/INSULATED	NAC	F.A. NOTIFICATION APPLIANCE CKT.	SEC.	SECTION
Ø, PH	PHASE	COAX.	COAXIAL CABLE	EST.	ESTIMATE	IT.	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	KMIL	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	POLE	POLY	SQ.	SQUARE
AL	ALTERNATING CURRENT	CORR.	CORRIDOR	FLOR.	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	P/V	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	OW	CLOCKWISE, COOL WHITE	FC	FOOT/CANDLE	LRA	LOOKED ROTOR AMPERES	PNL	PANEL BOARD	SYM.	SYMMETRICAL
AHU	AIR HANDLING UNIT	D	DEPTH	FT.	FEET	LT.	LIGHT	PORC.	POWER OVER ETHERNET	TC	TIME CLOCK
AHU	AUTHORITY HAVING JURISDICTION	DEM	DEMAND	FU.	FUSE/FUSED	LTG.	LIGHTING	PRI.	PORCELAIN	TEL.	TELEPHONE
AL.	ALUMINUM	DIA.	DIAMETER	G.C.	GENERAL CONTRACTOR	M.L.O.	MAIN LUGS ONLY	PRI.	PRIMARY	THRU	THROUGH



2 FIRST FLOOR SYSTEMS RCP
1/8" = 1'-0"



1 FIRST FLOOR SYSTEMS FLOOR PLAN
1/8" = 1'-0"

GENERAL POWER CONSTRUCTION NOTES:

- 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.
- AV SYSTEM COMPONENTS ARE NIC. PROVIDE RACEWAYS, WIRING, TERMINATIONS, TEST REPORTS FOR EA COMMUNICATION CHANNEL.
- 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.
- AVOID BACK-TO-BACK INSTALLATION OF DEVICES.
- EXPOSED CONDUITS IN UTILITY SPACES SHALL BE PRIMED AND PAINTED TO MATCH ADJACENT FINISHES.
- 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.
- 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.
- FOR CLASS 2 WIRING PROVIDE 1" C. DROPS TO INDIVIDUAL DATA AND AV OUTLETS U.O.N. PROVIDE 48 PORT CAT6A PATCH PANELS IN RACKS WITH CABLE MANAGEMENT, COMBS, SUPPORTS, CABLE INSTALLATION, TERMINATIONS, TESTING, COORDINATION AND EXTENDED WARRANTY FOR AN END-TO-END STRUCTURED CABLING SOLUTION.
- SEAL PENETRATIONS OF ARCHITECTURAL ASSEMBLIES FOR SOUND PROOFING IN NON-FIRE RATED ASSEMBLIES.
- PROVIDE FIRE STOPPING TO MAINTAIN THE FIRE RATING OF ARCHITECTURAL ASSEMBLIES. REFER TO DETAIL SHEET FOR UL FIRE RATED PENETRATIONS.
- TELE/DATA PATHWAYS SHALL BE INSTALLED BELOW DUCTWORK. COORDINATE CABLE TRAY ROUTING W/ G.C. AND M.C. E.G. FOR HANGER SPACES.
- PROVIDE CLOSED SYSTEM CONDUIT DATA PATHWAY FOR INTERIOR AND EXTERIOR SECURITY CAMERAS BACK TO SECURITY RM. 1118. (TYP.)
- COORDINATE CONCEALMENT OF PATHWAYS FOR WIRING OF DOOR HARDWARE, E.G. TRANSFER HINGES WITH G.C. COORDINATE EXACT LOCATIONS, LAYOUT AND DETAILS OF AUDIOVISUAL PATHWAYS WITH OWNER'S AV REPRESENTATIVE.
- COORDINATE EXACT LAYOUT AND DETAILS OF TELECOM PATHWAYS WITH OWNER'S TELECOM REPRESENTATIVE. PROVIDE CONDUIT FOR IN-WALL AND BELOW-SLAB PATHWAYS. USE 4" J-HOOKS FOR CONCEALED HORIZONTAL PATHWAYS BACK TO IT ROOM VIA CABLE TRAYS.
- PATCH CORDS ARE CAT 6A FOR A TOTAL END-TO-END STRUCTURED CABLE SOLUTION.
- 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. LOOKUPS, 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" 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 AV 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 AV 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/O 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) R.U.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 |

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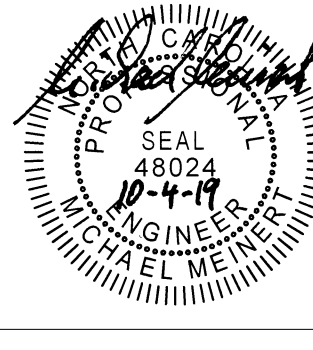
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PROJECT TITLE

UNCW FILM STUDIOS

601 S College Rd, Wilmington,
NC, 28403

SHEET TITLE

ELECTRICAL SYSTEMS PLANS

ISSUE BLOCK

Mark	Date	Addendum #1	Description
1	10/4/19		

PROJECT NO: 2018070.01

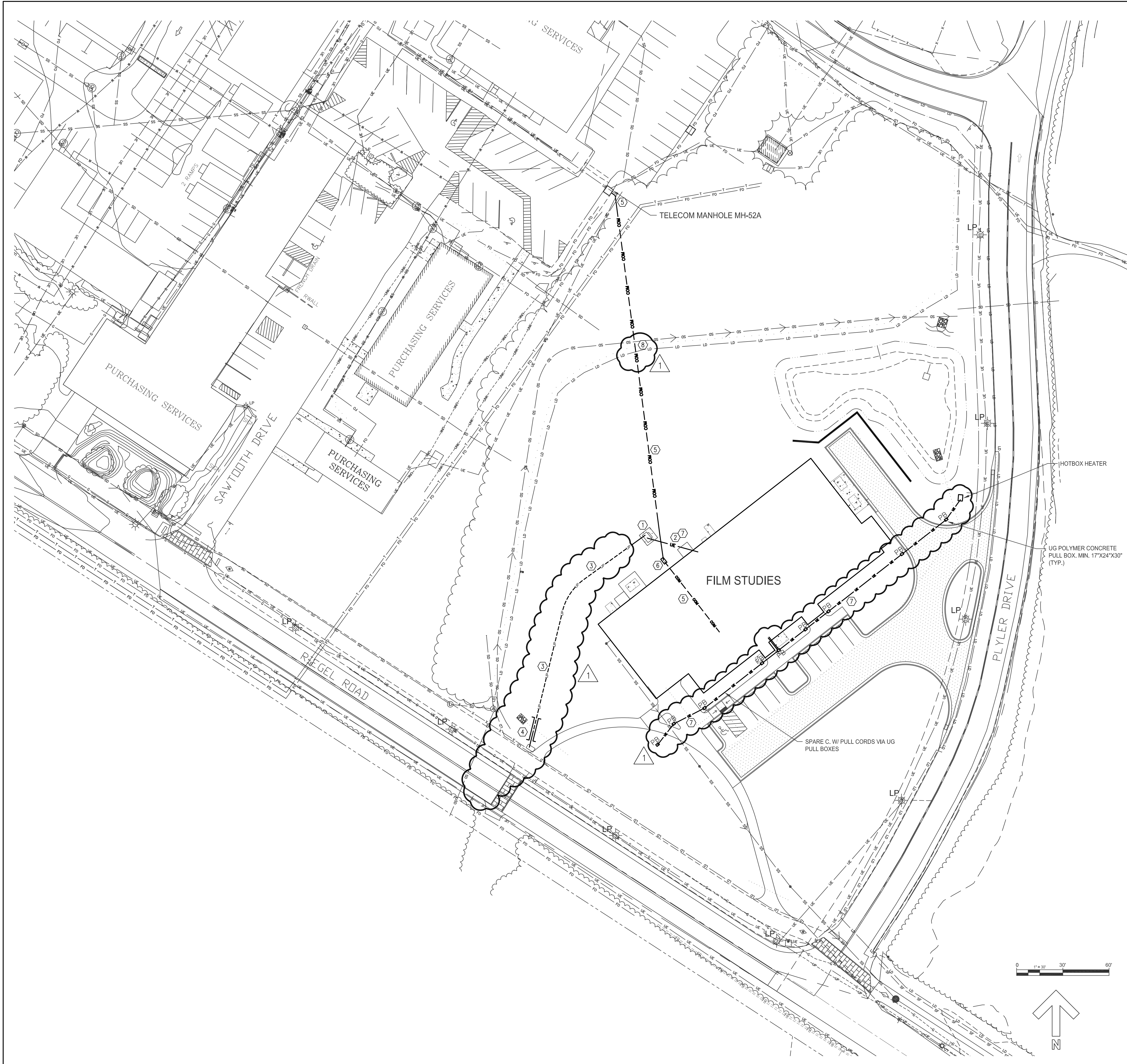
DATE: 9/23/2019

SCALE: As indicated

DRAWN BY: MM PROJ MGR: IS

E-103

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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.)



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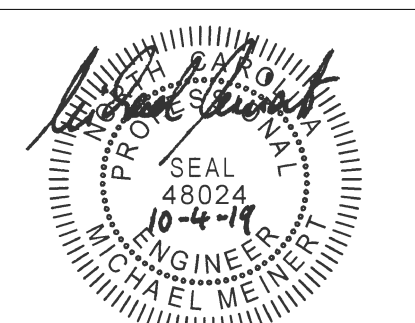
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PROJECT TITLE

UNCW FILM STUDIOS

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

ES-101

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SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1. Operation and maintenance documentation directory.
 - 2. Emergency manuals.
 - 3. Systems and equipment operation manuals.
 - 4. Systems and equipment maintenance manuals.
 - 5. Product maintenance manuals.
 - 6. Asset data collection records.
- B. Related Sections include the following:
 - 1. Section 013300 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
 - 2. Section 017700 "Closeout Procedures" for submitting operation and maintenance manuals.
 - 3. Section 017839 "Project Record Documents" for preparing Record Drawings for operation and maintenance manuals.
 - 4. Divisions 02 through 49 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.3 DEFINITIONS

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 CLOSEOUT SUBMITTALS

- A. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections, and as reviewed and approved at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
 - 1. Architect will comment on whether content of operation and maintenance submittals is acceptable.
 - 2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.

- B. Format: Submit operation and maintenance manuals in the following format:
 - 1. Submit by uploading to web-based project software site. Enable reviewer comments on draft submittals.
- C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Architect will comment on whether general scope and content of manual are acceptable.
- D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect will return copy with comments.
 - 1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's comments and prior to commencing demonstration and training.
- E. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

1.5 FORMAT OF OPERATION AND MAINTENANCE MANUALS

- A. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
 - 1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
 - 2. File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.
- B. Manuals, Paper Copy: Submit manuals in the form of hard-copy, bound and labeled volumes.
 - 1. Binders: Heavy-duty, three-ring, vinyl-covered, **[loose-leaf]** **[post-type]** binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary, to provide essential information for proper operation or maintenance of equipment or system.
 - b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.
4. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

1.6 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

- A. Organization of Manuals: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
 1. Title page.
 2. Table of contents.
 3. Manual contents.
- B. Title Page: Include the following information:
 1. Subject matter included in manual.
 2. Name and address of Project.
 3. Name and address of Owner.
 4. Date of submittal.
 5. Name and contact information for Contractor.
 6. Name and contact information for Construction Manager.
 7. Name and contact information for Architect.
 8. Name and contact information for Commissioning Authority.
 9. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
 10. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
 1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

1.7 EMERGENCY MANUALS

- A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- B. Content: Organize manual into a separate section for each of the following:
 - 1. Type of emergency.
 - 2. Emergency instructions.
 - 3. Emergency procedures.
- C. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
 - 1. Fire.
 - 2. Flood.
 - 3. Gas leak.
 - 4. Water leak.
 - 5. Power failure.
 - 6. Water outage.
 - 7. System, subsystem, or equipment failure.
 - 8. Chemical release or spill.
- D. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- E. Emergency Procedures: Include the following, as applicable:
 - 1. Instructions on stopping.
 - 2. Shutdown instructions for each type of emergency.
 - 3. Operating instructions for conditions outside normal operating limits.
 - 4. Required sequences for electric or electronic systems.
 - 5. Special operating instructions and procedures.

1.8 SYSTEMS AND EQUIPMENT OPERATION MANUALS

- A. Systems and Equipment Operation Manual: Assemble a complete set of data indicating operation of each system, subsystem, and piece of equipment not part of a system. Include information required for daily operation and management, operating standards, and routine and special operating procedures.
 - 1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.

2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- B. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
 2. Performance and design criteria if Contractor has delegated design responsibility.
 3. Operating standards.
 4. Operating procedures.
 5. Operating logs.
 6. Wiring diagrams.
 7. Control diagrams.
 8. Piped system diagrams.
 9. Precautions against improper use.
 10. License requirements including inspection and renewal dates.
- C. Descriptions: Include the following:
1. Product name and model number. Use designations for products indicated on Contract Documents.
 2. Manufacturer's name.
 3. Equipment identification with serial number of each component.
 4. Equipment function.
 5. Operating characteristics.
 6. Limiting conditions.
 7. Performance curves.
 8. Engineering data and tests.
 9. Complete nomenclature and number of replacement parts.
- D. Operating Procedures: Include the following, as applicable:
1. Startup procedures.
 2. Equipment or system break-in procedures.
 3. Routine and normal operating instructions.
 4. Regulation and control procedures.
 5. Instructions on stopping.
 6. Normal shutdown instructions.
 7. Seasonal and weekend operating instructions.
 8. Required sequences for electric or electronic systems.
 9. Special operating instructions and procedures.
- E. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- F. Piped Systems: Diagram piping as installed and identify color coding where required for identification.

1.9 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Systems and Equipment Maintenance Manuals: Assemble a complete set of data indicating maintenance of each system, subsystem, and piece of equipment not part of a system. Include manufacturers' maintenance documentation, preventive maintenance procedures and frequency, repair procedures, wiring and systems diagrams, lists of spare parts, and warranty information.
 - 1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 - 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- B. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranties and bonds as described below.
- C. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- D. Manufacturers' Maintenance Documentation: Include the following information for each component part or piece of equipment:
 - 1. Standard maintenance instructions and bulletins; include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
 - a. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
 - 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 - 3. Identification and nomenclature of parts and components.
 - 4. List of items recommended to be stocked as spare parts.
- E. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
 - 1. Test and inspection instructions.
 - 2. Troubleshooting guide.
 - 3. Precautions against improper maintenance.
 - 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - 5. Aligning, adjusting, and checking instructions.
 - 6. Demonstration and training video recording, if available.

- F. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
 - 1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
 - 2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
- G. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- H. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- I. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 - 1. Include procedures to follow and required notifications for warranty claims.
- J. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
 - 1. Do not use original project record documents as part of maintenance manuals.

1.10 PRODUCT MAINTENANCE MANUALS

- A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- B. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- C. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- D. Product Information: Include the following, as applicable:
 - 1. Product name and model number.
 - 2. Manufacturer's name.
 - 3. Color, pattern, and texture.
 - 4. Material and chemical composition.
 - 5. Reordering information for specially manufactured products.

E. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

F. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

G. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

H. Include procedures to follow and required notifications for warranty claims.

1.11 ASSET DATA COLLECTION

A. Contractor is responsible for providing UNCW with a list of equipment/assets to be installed and/or replaced on the project. The attached Asset Data Collection Process document are instructions for completing the Multiple Assets Profile form, which may be obtained from the University's website: <https://uncw.edu/projectmanagement/>

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 017823

- ASSET DATA COLLECTION PROCESS -

All equipment that is maintained and replaceable is considered a serialized asset. Asset information should be provided on all equipment that will require service and/or preventative maintenance. These assets are stored in AiM and require certain information to be associated with each asset for tracking purposes. When these assets are installed and/or replaced the data that is needed will be collected as soon as the information is available. This is critical for up-to-date system available asset status.

PROJECTS

The project managers will determine at the onset if there will be any assets that will require data collection. When the equipment is being installed or replaced by a vendor/contractor who is associated to a project, the project manager in cooperation with the vendor/contractor will be responsible for providing the required information.

PHYSICAL PLANT WORK

If the equipment that is being installed/replaced is not a project such as repair work order, the required information will be provided by the shop technician or shop supervisor in cooperation with the vendor/contractor (if applicable).

FORMS

The required information must be entered on the provided forms. For projects, these forms will be provided in the project folders. If you are only adding/replacing one piece of equipment, please use the Single Asset Profile Form. When you have two or more pieces of equipment, you must use the Multiple Asset Profile Form. If you have any questions or need help with the form, please contact the Maintenance Operations Coordinator or the Systems Operations Manager.

REQUIRED INFORMATION FOR MULTIPLE ASSET PROFILE FORM

- CONTRACTOR / VENDOR NAME, PHONE NUMBER, AND EMAIL
- SUB-CONTRACTOR NAME AND PHONE NUMBER
- ACTION REQUESTED (*select **New Equipment** if being added, **Inactivate** if being removed*).
- EQUIPMENT NAME FROM CONTRACT DOCUMENTS (*name must be from drawings (Ex: AHU #4, P3)*).
- CONTRACTOR / SUB-CONTRACTOR WARRANTY END DATE (*this may differ from the manufacturer warranty dates*).
- DATE PLACED IN SERVICE (*startup / acceptance date*).

- O&M MANUAL LINK OR SPECIFY FILE NAME *(provide a direct Link to the specific O&M file for the equipment OR provide the file name for O&M file provided in separate folder. File name should refer to the Project name & line # on the Multiple Asset Profile Form (Ex: Osprey hall 7 OM).*
- PICTURE OF EQUIPMENT LINK OR SPECIFY FILE NAME *(provide pictures in a separate folder. File names should refer to project name and line # on the Multiple Asset Profile Form (Ex: Osprey hall 7 Pic).*
- ROOM # WHERE LOCATED AND/OR AREA SERVED *(enter Room # from contract documents or roof / outside).*
- MANUFACTURER WARRANTY BEGIN AND END DATE *(may differ from project warranty dates / depending on manufacturer, may be start-up or ship date.)*
- EQUIPMENT MANUFACTURER NAME / MODEL NUMBER / SERIAL NUMBER

PROCESSING INFORMATION

All completed forms must be sent to the Maintenance Operations Coordinator. The Maintenance Operations Coordinator is responsible for ensuring that the forms are completed correctly and will be the contact person for any questions or concerns. This person establishes the appropriate shop assignment, Master Format, pm standard, etc. for the new asset and completes edits and inactivations. The appropriate shop supervisor will be notified by the Maintenance Operations Coordinator if any assistance is needed.

The Systems Operations Manager (Clete Hayes) will be the back-up for the Maintenance Operations Coordinator. The Systems Operations Manager is also the one responsible for activating new assets when requested by the Maintenance Operations Coordinator.

EXAMPLES OF ASSETS TO INCLUDE BUT NOT LIMITED TO THAT REQUIRE INFORMATION

HVAC	PLUMBING	ELECTRIC
Cooling Towers	Water Coolers (Fountains)	Generators
Pumps	Water Heaters	Emergency Lights
Strainers (Large Automated)	Backflow Preventers	Exit Lights
Variable Frequency Drives (VFDS)	Fire Pumps	
Chillers	Lift Stations	
Boilers		
Heat Exchangers		
Variable Air Volume (VAV)		
Constant Air Volume (CAV)		
Terminal Units		

<i>HVAC</i>	<i>PLUMBING</i>	<i>ELECTRIC</i>
Air Handlers		
Humidifiers		
Dehumidifiers		
Purifiers		
Exhaust Fans (except bathroom fans)		
Makeup Air Units / Fans		
Exhaust & Laboratory Hoods		
Condensing Units		
Evaporator Units		
Package Units		
Leak Detection Systems		
Building Automation Systems		
Chemical Delivery/Monitoring		
Ice Machines		
Power Ventilators		
Gas Domestic Water Heaters (Navien)		
Fan Coil Unit		
Cabinet Unit Heaters		
Walk-In Coolers / Freezers		
Air Compressor		
Air Dryer		

Note: Light systems such as parking lot lights, exit lights, street lights are considered System Type Assets and we are in the process of identifying those.

SECTION 312317 – TRENCHING

PART 1 GENERAL

1.1 GENERAL NOTES

- A. Prior to beginning Work, Contractor to request a field inspection with the Owner and Engineer for inspection before project start and before project acceptance.
- B. Trenches for underground piping, where necessary shall be excavated to the required depth and bell holes shall be provided where necessary to insure uniform bearing. Trench excavation lines shall provide sufficient clearance for proper execution of underground work.
- C. Trenches shall be open cut from the surface. Irregularities at bottom of trench, or where excavation is below required depth shall be refilled to required grade with compacted soil, or flowable fill at direction of onsite geotechnical engineer.
- D. The Contractor shall be held responsible for the sufficiency of sheeting and bracing and for all damages to property or injury to persons resulting from improper quality, strength, placing and maintenance of trench shoring, sheeting or bracing.
- E. Existing utility lines to be retained that are shown on construction drawings or locations of which are made known to the Contractor prior to excavation operations, shall be protected from damage during excavation and backfilling, and if damaged shall be repaired by Contractor, at own expense.
- F. Existing utility lines found during excavations that were not shown on construction drawings or made known to Contractor prior to excavation shall be protected and remain uninterrupted until approval by Owner or Engineer to proceed.
- G. The Contractor shall be responsible for providing and maintaining a pedestrian and traffic control plan in accordance with University standards.
- H. All underground utilities encountered during the projects construction shall be located by a Professional Land Surveyor licensed in North Carolina.

1.2 DEFINITIONS

- A. Standard Specifications: When referenced in this section, shall mean North Carolina Department of Transportation Road and Bridge Specifications, January 2012. Parts of these Standard Specifications that are specifically referenced shall become part of this section as though stated herein in full. In case of a discrepancy between the requirements of the Standard Specifications and the requirements stated herein, the requirements herein shall prevail.

1.3 SUMMARY

- A. Section Includes:
 - 1. Excavating trenches for utilities from 5 feet outside any building to terminating connection.

2. Compacted fill from top of utility bedding to finished grade.
3. Backfilling and compaction.
- B. Related sections:
 1. Section 312000 – “Earth Moving”
 2. Section 312919 – “Dewatering”
 3. Section 312500 – “Erosion and Sedimentation Control”

1.4 SUBMITTALS

- A. Excavation Protection Plan: Describe sheeting, shoring, and bracing materials and installation required to protect excavations and adjacent structures and property; include structural calculations to support plan.
- B. Product Data: Geotextile fabric indicating fabric and construction.
- C. Materials Source: Name of imported fill materials suppliers.

1.5 QUALITY ASSURANCE

- A. Perform Work according to NCDOT and City of Wilmington standards.
- B. Prepare excavation protection plan under direct supervision of professional engineer experienced in design of this Work and licensed in State of North Carolina.

1.6 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

1.7 COORDINATION

- A. Verify Work associated with lower elevation utilities is complete before placing higher elevation utilities.

PART 2 PRODUCTS

2.1 FILL MATERIALS

- A. Subsoil Fill: Type as specified in Standard Specifications.
- B. Structural Fill: Type as specified in Standard Specifications.
- C. Granular Fill: Type as specified in Standard Specifications.
- D. Concrete:
 1. Lean concrete.

2.2 ACCESSORIES

- A. Geotextile Fabric: Non-biodegradable, non-woven. Use NCDOT standard for fabric application and type by use.

PART 3 EXECUTION

3.1 LINES AND GRADES

- A. Lay pipes to lines and grades indicated.
 - 1. Engineer may make changes in lines, grades, and depths of utilities when changes are required for Project conditions.
- B. Use laser-beam instrument with qualified operator to establish lines and grades.

3.2 PREPARATION

- A. Call local utility line information service at 811 not less than three working days before performing Work.
 - 1. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Obtain UNCW "Dig Permit".
- C. Identify required lines, levels, contours, and datum locations.
- D. Protect plant life, lawns, and other features remaining as portion of final landscaping.
- E. Protect bench marks, existing structures, trees, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- F. Maintain and protect above and below grade utilities indicated to remain.
- G. Establish temporary traffic control and detours when trenching is performed in public right-of-way. Relocate controls and reroute traffic as required during progress of Work.

3.3 TRENCHING

- A. Excavate subsoil required for utilities.
- B. Remove lumped subsoil, boulders, and rock over 6 inches.
- C. Perform excavation within 24 inches of existing utility service according to utility's requirements.
- D. Do not advance open trench more than 200 feet ahead of installed pipe.
- E. Cut trenches sufficiently wide to enable installation and allow inspection. Remove water or materials that interfere with Work, dewater in accordance with Section 31 23 19.
- F. Excavate bottom of trenches to a maximum of 2 feet past outside diameter dimensions or outside of concrete cradle.
- G. Excavate trenches to depth indicated on Drawings. Provide uniform and continuous bearing and support for bedding material and pipe.

- H. When Project conditions permit, slope side walls of excavation starting 24 inches above top of pipe. When side walls cannot be sloped, provide sheeting and shoring to protect excavation as specified in this Section.
- I. When subsurface materials at bottom of trench are loose or soft, excavate to greater depth as directed by onsite Geotechnical Engineer until suitable material is encountered.
- J. Cut out soft areas of subgrade not capable of compaction in place. Backfill with flowable fill or geotechnical engineer approved fill and compact to density equal to or greater than requirements for subsequent backfill material.
- K. Trim excavation. Hand trim for bell and spigot pipe joints. Remove loose matter.
- L. Correct areas over excavated areas with compacted backfill as specified for authorized excavation or replace with fill concrete as directed by Engineer.
- M. Remove excess subsoil not intended for reuse, from Site.
- N. Stockpile excavated material in area designated on Site according to Section 31 25 00.

3.4 SHEETING AND SHORING

- A. Sheet, shore, and brace excavations to prevent danger to persons, structures and adjacent properties and to prevent caving, erosion, and loss of surrounding subsoil.
- B. Support trenches excavated through unstable, loose, or soft material. Provide sheeting, shoring, bracing, or other protection to maintain stability of excavation or at direction of onsite geotechnical engineer.
- C. Design sheeting and shoring to be removed at completion of excavation Work.
- D. Repair damage caused by failure of sheeting, shoring, or bracing and for settlement of filled excavations or adjacent soil.
- E. Repair damage to new and existing Work from settlement, water or earth pressure or other causes resulting from inadequate sheeting, shoring, or bracing.

3.5 BACKFILLING

- A. Backfill trenches to contours and elevations with unfrozen fill materials.
- B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.
- C. Place fill material in continuous layers and compact.
- D. Protect open trench to protect the public.

3.6 FIELD QUALITY CONTROL

- A. Perform laboratory material tests according to ASTM D1557.
- B. Perform in place compaction tests according to following:
 - 1. Density Tests: ASTM D1556.
 - 2. Moisture Tests: ASTM D3017.
- C. When tests indicate Work does not meet specified requirements, remove Work, replace, compact, and retest.

- D. Test as required in Section 014000.

3.7 PROTECTION OF FINISHED WORK

- A. Reshape and re-compact fills subjected to vehicular traffic during construction.

END OF SECTION 312317

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: Five years from date of Substantial Completion.

1.9 MAINTENANCE SERVICE

- A. Continuing Service: Provide a proposal for continuing service, including monitoring, inspection, and retreatment for occurrences of termite activity, from applicator to Owner, in

the form of a standard yearly (or other period) continuing service agreement, starting on the date of Substantial Completion. 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 termiticide, complying with requirements of state and local authorities having jurisdiction, in a soluble or emulsible concentrated formulation that dilutes with water or foaming agent, and formulated to prevent termite infestation. Provide quantity required for application at the label volume and rate for the maximum termiticide concentration allowed for each specific use, according to the product's EPA-Registered Label.
 - 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 five 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. 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



ARCHITECTURE
PLANNING

Addendum No. 1

UNIVERSITY OF NORTH CAROLINA WILMINGTON FILM STUDIES BUILDING

Wilmington, North Carolina

PM #6034

SCO #19-20473-01A

BMG Project No. 2018070.010

October 4, 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 - the following sheets have been added or revised and are attached to this addendum in PDF format:

- a. 02 201807001 C2.01 rev01
- b. 02 201807001 C3.01 rev01
- c. 02 201807001 C4.01 rev01
- d. 02 201807001 C5.01 rev01
- e. 02 201807001 C5.02 rev01
- f. 02 201807001 C6.01 rev01
- g. 05 201807001 A101 rev01
- h. 05 201807001 A102 rev01
- i. 05 201807001 A103 rev01
- j. 05 201807001 A302 rev01
- k. 05 201807001 A303 rev01
- l. 05 201807001 A401 rev01
- m. 05 201807001 A402 rev01
- n. 05 201807001 A501 rev01
- o. 05 201807001 A603 rev01
- p. 05 201807001 A702 rev01
- q. 08 201807001 E100 rev01
- r. 08 201807001 E103 rev01
- s. 08 201807001 E502 rev01
- t. 08 201807001 ES101 rev01

Item No. 2 SPECIFICATIONS - the following specifications have been added or revised and are attached to this addendum in PDF format:

- a. Geotechnical report
- b. 017823 Operation and Maintenance Data
- c. 312317 Trenching
- d. 313116 Terminate Control specification has been added to project.

Item No. 3 BIDDER QUESTIONS

- a. Specification 134119 Metal Building Systems does not list any manufacturers. Please advise which manufacturers are acceptable and any that were used as the basis of design. **Response: There is no list of approved manufacturers or a basis of design. Pre-engineered building must meet the specifications and shop drawings must be submitted for approval.**
- b. Sheet C4.01 shows a new 8" sanitary sewer line running along Riegel Rd. Why is the line being run underneath the Cross-City Trail so the trail has to be demolish and replaced? We have also been unable to locate replacement details or striping information if in fact it does need to be removed. Please advise. **Response: See revised civil engineering sheets. Sewer line has been relocated.**
- c. Sheet C4.01 has note to remove and replace light poles as necessary to facilitate construction. Why would the new lines be run in the path as the light poles? Please confirm we will be able to run the new lines as to not need to remove and replace light poles. **Response: If needed, the water line can go around the existing light pole foundations.**
- d. Sheet A402 details 3 & 4, show the corridor for the raised theater platform/projection booth with slab on grade steps and "earth in-filled" conditions, however the structural drawings on S-202 show it being a metal deck condition with metal framing. Please confirm the structural drawings are correct. **Response: See revised sheet A402.**
- e. Please advise what type of construction the steps of the theater corridor to the projection booth is. Detail 4 on A402 seems to indicate on-grade concrete, however the structural drawings on sheet S-202 seems to indicate the platform is metal framing with concrete slab on metal decking. Stair on grade detail on S-103 does not seem to match the metal framing/metal decking scenario on shown on S-202. Specification 055000 also mentions steel stairs. Please advise/clarify with a detail. **Response: See revised sheet A402. Revise stair to a metal pan stair type.**
- f. Sheet C4.01 makes a reference to C5.00, however we have not been able to locate a C5.00. Please advise. **Response: The correct sheet reference is C5.01.**
- g. Specification 101423.13-Room identification signage-2.2-4. Framed horizontal retainers (Aluminum Convex-Curved Frame). However, Sheet A501 detail 10, Sign types A, C & D do no have frame details). Secondly, the drawings call for square corners and beveled edges (typical acrylic ADA signage) but the Division 10 spec's call for convex curved frames as well as photopolymer with second surface graphics laminated to 0.125" thick composite sheet (which is too thick to be utilized in a curved frame). The spec's and drawings are contradictory to each other. Please advise which is correct. **Response: Please use drawings for bidding.**
- h. It doesn't appear that Sign Type D shown on A501 will be necessary as all rooms are permanent in nature and will require Sign Type A. Please clarify. **Response: This is a standard detail in case an instance is needed.**

- i. We have been unable to locate a specification for soil treatment/soil poisoning? Please advise. **Response: See attached TERMITE CONTROL specification.**
- j. Specification 144200-D. Lists the platform size to be 36"x54" which does not meet the ADA requirements that most Universities are seeking which is 36x60" or A117.1 which is 42x60". In addition, the specification is quiet on power door requirements as it is ADA or A117.1 requirement to have full power doors/gates at all landings. Please advise. **Response: ANSI A117.1-2009 only requires a 30"x48" clear floor space. The power gate should be provided by the lift manufacturer.**
- k. Specification 144200 Part 2.2-L It calls for a Fixed ramp at the Lower level of the Lift. In looking at the drawings a ramp at the lower level will create a tripping hazard at the bottom of the stairs adjacent to the lift. Drawing A402. 2. Please advise. **Response: A ramp is not required. The slab will be recessed to allow level travel for a wheelchair.**
- l. Specification 010090- Article 40. Please confirm the temporary electric and water consumption used for construction of the building will be paid for by the University. **Response: Temporary water will be paid by UNCW. However, power is provided by Duke Energy and is the responsibility of the contractor.**
- m. Specification 011000- Please confirm carpet tile, rubber wall base and VCT flooring are owner provided/contractor installed? Specifications 096513, 096519 & 096813 do not read that the products are install only. **Response: These are provided by the contractor.**
- n. General conditions of the contract article 10.c says that for projects constructed by the state the building permits shall be obtained at no cost. Please confirm this is correct for this project and the GC is not required to cover that cost. Please confirm if this would also be true for any tap/impact fees for utilities? **Response: Correct.**
- o. Please advise why there is no geotechnical report included in the documents? Please provide. With the specifications indicating an unclassified site, a geotec report is a must. **Response: See attached.**
- p. Specification 312000 3.3-B says Changes in the contract sum for the contract time will be in accordance with allowances and unit price provisions for removal and replacement of unsuitable soils, however the bid form does not have such allowances. Please advise. **Response: The final bid form, not yet issued, will contain these line items.**
- q. In specification 084113, the finish as indicated on page 5, paragraph 2.3 / #4 indicates that finish is to be clear anodized, but page 9, paragraph 2.9 / #A indicates a 2-coat painted finish. Please advise which is correct. **Response: Clear anodized.**
- r. Sheet A603 shows an elevation for window (W-F). We are not aware of any glass makeup that will get to an STC 56 rating. The glass makeup listed in the spec appears it will only get the rating to STC 39.

1/4" clear monolithic
.060 laminated
1/4" clear monolithic

This makeup is 9/16" overall.

Please advise. **Response: The makeup in the specification is adequate. Disregard the higher STC rating.**

- s. Drawings indicate sidewalks that are part of (Phase 2). Please clarify if those are part of this project. **Response: Sidewalks indicated as phase 2 are not part of this project.**
- t. Sheet C2.01 indicates a retaining wall with guardrail (Design by others), however we have not been able to locate any specs or construction type information on it. Please provide/advise. **Response: Wall to be segmental block construction type.**
- u. Please confirm irrigation is not part of the project. **Response: Confirmed.**
- v. Specification 329200 gives information on SOD, however the drawings do not indicate any. Please confirm there is not SOD on the project. **Response: Sod is not part of this project.**
- w. Independent testing agencies are mentioned in the specification. Please confirm owner is hiring these 3rd party independent testing agencies? **Response: Confirmed.**
- x. Elevation 1/A702, the countertops are identified as plastic laminate. But in the two details 2/A702 and 3/A702, they are identified as solid surface. Please clarify the desired material type for these countertops. **Response: All countertops to be plastic laminate.**
- y. We have been unable to locate dimensions for the aluminum canopies. Please provide. **Response: Please see updated roof plan, attached.**
- z. Elevations on A201 show a pre-cast stone header, however we have not been able to locate any specifications. The cut sections 3/A303 & 5/A502 also do not have pre-cast shown in the details. Please advise. **Response: Please disregard stone header.**
- aa. Would it be a consideration to push the bid date a week? There is currently a project that is bidding a Camp Lejeune on 10/17/19 that is a SEED project for the +900 million MACC project. We have already encountered subcontractors that will not be able to bid this project due to the bid dates currently being so close. **Response: Bid date will not be revised at this time.**
- bb. Sheet A603 details 2 & 3 show a continual steel channel and refers to the structural drawings, however those do not show up on the structural drawings? Please advise. **Response: This should be provided by the metal building manufacturer.**
- cc. There seem to be various cuts that show batt insulation above the ACT in the sound stage. Please clarify R value and locations of batt insulation above ACT on the reflective ceiling plan. **Response: R30**
- dd. Alternate #3 is asking for installation on acoustic isolation brackets in exterior walls of sound stage 1112. We have not been able to locate a detail for this alternate vs

base bid for clarification. Please clarify. **Response: See specification section 092216.**

- ee. Sheet A602 notes ACT3, however the reflected ceiling plan does not indicate any. Please confirm ACT3 is not used. **Response: It is used. See updated sheet A102.**
- ff. At the pre-bid meeting it was brought up that there could possibly be knee walls in room 1123. Sheet A101 seems to show walls, however there are no wall types shown indicating the wall construction. Please clarify. **Response: See updated wall type details, attached.**
- gg. Sheet A702 shows a refrigerator. Please confirm this is by owner. **Response: This is to be provided by the contractor. Please hold an allowance of \$750.00 for this appliance.**
- hh. Sheet ES-101 Notes #3 & #4 show running sleeves for power. During the pre-bid site visit, wasn't it mentioned that there is existing power on the new building side of the road that was recently put in? Just confirming these drawings are correct. Please advise. **Response: See revised sheet ES101 attached.**
- ii. Please confirm projectors and projector screens are owner furnished/owner installed. **Response: Confirmed**
- jj. Sheet E-100 lists various items: Wall mounted speakers, ceiling mounted speakers, projector screens, etc. that don't have associated specifications. Are sound systems, projector screens, theater equipment by owner? Please clarify what the owner will be providing/installing in the base bid and alternate #1. **Response: A/V equipment is part of owner FF&E package.**

Item No. 4 INSTRUCTIONS TO BIDDERS

- a. Revisions of E-100 and E-103 move the H/C strike buttons and card readers from the facade to a post outside the door swing.
- b. Revisions of ES-101 include the following:
 - i. Permit pre-cast utility transformer pad to better align with Duke Energy Manual for coastal regions.
 - ii. Expected termination of utility primary and routing has been revised.
 - iii. Directional boring below Riegel Rd. has been eliminated.
 - iv. Conduit sleeve below a culvert line has been added per keyed note
 - v. The scope of the telecom duct bank has been amended per keyed note
 - vi. References have been added per keyed notes 7 and 8.
- c. Revisions of E-103 include the following:
 - i. H/C strike button, and card reader locations have changed.
 - ii. Locations of exterior wireless access points have changed.
 - iii. Elevation of Telecom Demarc. has been added per detail 6/E-502, clarifying pull box dimensions and vertical cable management.
 - iv. Telecom Backboard size has been increased to 4'x4'.
 - v. All cable trays are 18" wide.
 - vi. 6-fiber fiber patch panel and below-slab 4" C. back to Telecom Demarc. has been added to Security 1121.
 - vii. Conduit sleeves between Sound Mix rooms have been added.

viii. Data drop in Break Room has been added.

d. Additional details on sheet E-502 clarifies the following:

- i. I.T. Room Building Demarcation Point Elevation Detail.
- ii. Elimination of 2" telecom duct.
- iii. Telecom Duct bank configuration, details and cabling.

e. Receptacles type NEMA L6-20 with circuit LP2:13,15 in I.T. Room 1120 is 82" AFF.

f. Add convenience receptacle to circuit LP2:7 at 18" AFF on jamb side of door in I.T. Room 1120.

g. Recess panel 'LP2' in Break Room. Coordinate framing w/ G.C..

h. Specification Section 26 08 00:

- i. Eliminate paragraphs 1.3.B.3 through 1.3.B.7. Items 1.) Lighting Control Systems and 2.) Electrical Metering System remain.

End of Addendum No. 1



ECS Southeast, LLP

Geotechnical Engineering Report

UNCW – Film Studies Building

Wilmington, New Hanover County, North Carolina

ECS Project Number # 22:27978

June 13, 2019





ECS SOUTHEAST, LLP

Geotechnical • Construction Materials • Environmental • Facilities

"Setting the Standard for Service"

NC Registered Engineering Firm F-1078
NC Registered Geologists Firm C-406
SC Registered Engineering Firm 3252

June 13, 2019

Mr. Mark Loudermilk, AIA
Becker Morgan Group, Inc.
312 West Main Street, Suite 300
Salisbury, Maryland 21801

ECS Project No. 22:27978

Reference: Geotechnical Engineering Report
UNCW – Film Studies Building
Wilmington, New Hanover County, North Carolina

Dear Mr. Loudermilk:

ECS Southeast, LLP (ECS) has completed the subsurface exploration, and geotechnical engineering analyses for the above-referenced project. Our services were performed in general accordance with our Proposal No. 22:23085, dated February 12, 2019. This report presents our understanding of the geotechnical aspects of the project along, the results of the field exploration conducted, and our design and construction.

It has been our pleasure to be of service to Becker Morgan Group during the design phase of this project. We would appreciate the opportunity to remain involved during the continuation of the design phase, and we would like to provide our services during construction phase operations as well to verify the assumptions of subsurface conditions made for this report. Should you have any questions concerning the information contained in this report, or if we can be of further assistance to you, please contact us.

Respectfully submitted,

ECS Southeast, LLP

Annemarie Crumrine, E.I.
Project Manager
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APPENDICES

Appendix A – Drawings & Reports

- Site Location Diagram
- Exploration Location Diagram

Appendix B – Field Operations

- Reference Notes for Sounding Logs
- CPT Sounding Logs (S-1 through S-3)
- Hand Auger Boring Logs (K-1 through K-3)
- Kessler DCP Test Results

Appendix C – Seasonal High Water Table and Infiltration Testing Report

- Seasonal High Water Table and Infiltration Testing Results

Appendix D – Supplemental Report Documents

- GBA Document

EXECUTIVE SUMMARY

The following summarizes the main findings of the exploration, particularly those that may have a cost impact on the planned development. Further, our principal foundation recommendations are summarized. Information gleaned from the executive summary should not be utilized in lieu of reading the entire geotechnical report.

- The geotechnical exploration performed for the site included three (3) electronic cone penetration test (CPT) soundings drilled to termination and refusal depths of approximately 25 to 45.6 feet. Three (3) Kessler dynamic cone penetrometer (DCP) tests were performed in the proposed pavement areas.
- The soundings and borings generally encountered coastal plain soils consisting of very loose to very dense, Silty, and Clean SAND (SM, SP).
- The proposed structures at the site can be supported by conventional shallow foundations consisting of column or strip footings bearing on firm natural soil and/or approved structural fill. We recommend a maximum net allowable bearing pressure of 3,000 psf be used for design. Details of the assumed foundation subgrade elevations and loads are contained in the body of the report.
- Groundwater was encountered in the borings at depths ranging from about 12.25 to 14.5 feet below existing grades.
- Due to the roots encountered in the upper 1.25 to 1.75 feet of the hand auger borings, undercutting to remove the roots should be anticipated prior to construction.

Please note this Executive Summary is an important part of this report and should be considered a **“summary”** only. The subsequent sections of this report constitute our findings, conclusions, and recommendations in their entirety.

1.0 INTRODUCTION

1.1 GENERAL

The purpose of this study was to provide geotechnical information for the preliminary design of the proposed film studies building located off of Plyler Drive in Wilmington, New Hanover County, North Carolina.

The recommendations developed for this report are based on project information supplied by Mr. Mark Loudermilk of Becker Morgan Group, Inc. and Mr. Don Woods of Woods Engineering, PA. This report contains the results of our subsurface explorations, site characterization, engineering analyses, and recommendations for the design and construction of the proposed development.

1.2 SCOPE OF SERVICES

To obtain the necessary geotechnical information required for design of the proposed project, three (3) (CPT) soundings were performed. The soundings were advanced to termination and refusal depths of approximately 25 to 45.6 feet beneath the ground surface. Additionally, three (3) Kessler dynamic cone penetrometer (DCP) tests were performed in the proposed pavement areas.

This report discusses our exploratory and testing procedures, presents our findings and evaluations and includes the following.

- A brief review and description of our field test procedures and the results of testing conducted;
- A review of surface topographical features and site conditions;
- A review of area and site geologic conditions;
- A review of subsurface soil stratigraphy with pertinent available physical properties;
- Preliminary foundation recommendations;
 - Allowable bearing pressure;
 - Settlement estimates (total and differential);
- Site development recommendations;
- Suitability of soils for use as fill material;
- Pavement design recommendations;
- Seismic site class and liquefaction recommendations;
- Discussion of groundwater impact;
- Seasonal high water table and infiltration testing results;
- Compaction recommendations;
- Special conditions encountered;
- Site vicinity map;
- Exploration location plan; and
- CPT sounding logs.

1.3 AUTHORIZATION

Our services were provided in accordance with our Proposal No. 22.23085, dated February 12, 2019, as authorized by Mr. Ernest W. Olds, AIA of Becker Morgan Group, Inc. on June 6, 2019, and include the Terms and Conditions of Service outlined with our Proposal.

2.0 PROJECT INFORMATION

2.1 PROJECT LOCATION

The proposed site is located off of Plyler Drive in Wilmington, New Hanover County, North Carolina. The site is bounded on the east by Plyler Drive, on the north by Lionfish Drive, on the west by existing university buildings, and on the south by Riegel Road. Figure 2.1.1 below shows an image of where the site is located.



Figure 2.1.1 Site Location

2.2 CURRENT SITE CONDITIONS

The site currently consists of a wooded lot with paths running through it. On the north and west edges of the site there is an existing ditch. Based on our site visit, provided plans, and approximate elevations taken from Google Earth, the site is relatively level with the site slightly sloping down toward the ditches on the north and west edges of the site, with typical elevations in the area of proposed development ranging from around 32 to 39 feet.

2.3 PROPOSED CONSTRUCTION

The project is proposed to consist of construction of proposed new 13,000 square foot building for the film studies program with associated paved drives and parking lots. The building is proposed to be a steel framed building. On the northern portion of the site a stormwater control measure (SCM) is proposed.

2.3.1 Structural Information/Loads

At the time of this report, additional project information was not available. The following information explains our assumed finished floor elevations based on the provided plans and the provided anticipated structural loads for the purpose of the recommendations made in this report:

Table 2.3.2.1 Structural Design Values

SUBJECT	DESIGN INFORMATION / EXPECTATIONS
Usage	Educational
Finished Floor Elevation	Approximately 38 feet (+/- 2 feet of existing grades)
Column Loads	Up to 30 kips
Wall Loads	Up to 1 kip/ft.

3.0 FIELD EXPLORATION

3.1 FIELD EXPLORATION PROGRAM

The field exploration was planned with the objective of characterizing the project site in general geotechnical and geological terms and to evaluate subsequent field data to assist in the determination of geotechnical recommendations.

3.1.1 Cone Penetrometer Soundings

The subsurface conditions were explored by drilling three (3) electronic cone penetration test (CPT) soundings on the proposed site. The soundings were advanced to termination and refusal depths of approximately 25 to 45.6 feet.

Sounding locations were located in the field by an ECS representative using a hand held GPS unit and referencing existing site features. The approximate as-drilled sounding location is shown on the Exploration Location Diagram in Appendix A.

The CPT soundings were conducted in general accordance with ASTM D 5778. The cone used in the soundings has a tip area of 10 cm² and a sleeve area of 150 cm². The CPT soundings recorded tip resistance and sleeve friction measurements to assist in determining pertinent index and engineering properties of the site soils. The ratio of the sleeve friction to tip resistance is then used to aid in assessing the soil types through which the tip is advanced. The results of the CPT soundings are presented in Appendix B.

Within sounding S-2, seismic tests were performed at approximately three foot intervals to termination depth to measure the shear wave velocity (v_s) of the subsurface materials to aid in assessing the dynamic response properties of the site subsurface materials. The seismic shear waves are generated by making impact with a 20-pound sledgehammer onto a steel beam. The impacts are initiated on the right and left sides of the CPT rig and the corresponding wave traces recorded on an oscilloscope are analyzed to determine the shear wave velocity of the tested material. The waves are measured with three geophones that are installed in the cone. The results of the CPT soundings are presented in Appendix B.

3.1.2 Kessler Dynamic Cone Penetrometer Tests

Three (3) Kessler Dynamic Cone Penetrometer (DCP) tests were performed in the location of the drive and parking lot areas. The Kessler DCP is used to estimate the strength characteristics of soils. The Kessler DCP was continuously driven approximately 2 to 3 feet below the existing ground surface. The Kessler DCP is driven into the soil by dropping a Dual-Mass 17.6 lb Hammer from a height of 22.6 inches. The depth of cone penetration is measured at selected penetration or hammer drop intervals and the soil shear strength is reported in terms of the Kessler DCP index. The Kessler DCP index is based on the average penetration depth resulting from one blow of the 17.6 lb hammer. The Kessler DCP index can be correlated to CBR and modulus of rigidity. The individual results of the Kessler DCP tests are presented in Appendix B.

3.2 REGIONAL/SITE GEOLOGY

The site is located in the Coastal Plain Physiographic Province of North Carolina. The Coastal Plain is composed of seven terraces, each representing a former level of the Atlantic Ocean. Soils in this area generally consist of sedimentary materials transported from other areas by the ocean or rivers. These deposits vary in thickness from a thin veneer along the western edge of the region to more than 10,000 feet near the coast. The sedimentary deposits of the Coastal Plain rest upon consolidated rocks similar to those underlying the Piedmont and Mountain Physiographic Provinces. In general, shallow unconfined groundwater movement within the overlying soils is largely controlled by topographic gradients. Recharge occurs primarily by infiltration along higher elevations and typically discharges into streams or other surface water bodies. The elevation of the shallow water table is transient and can vary greatly with seasonal fluctuations in precipitation.

Based on the U.S. Geological Survey^{1,2} the site of the proposed construction is underlain by the Castle Hayne Formation (Tec). The formation generally consists of bluish gray to tan, loosely consolidate fossiliferous sand with silt and clay underlain by limestone. The coastal plain soils encountered generally consist of silty and clean sands. Sounding S-2 encountered refusal on limestone at approximately 45.6 feet. An overview of the general site geology is illustrated in Figure 3.2.1 below.

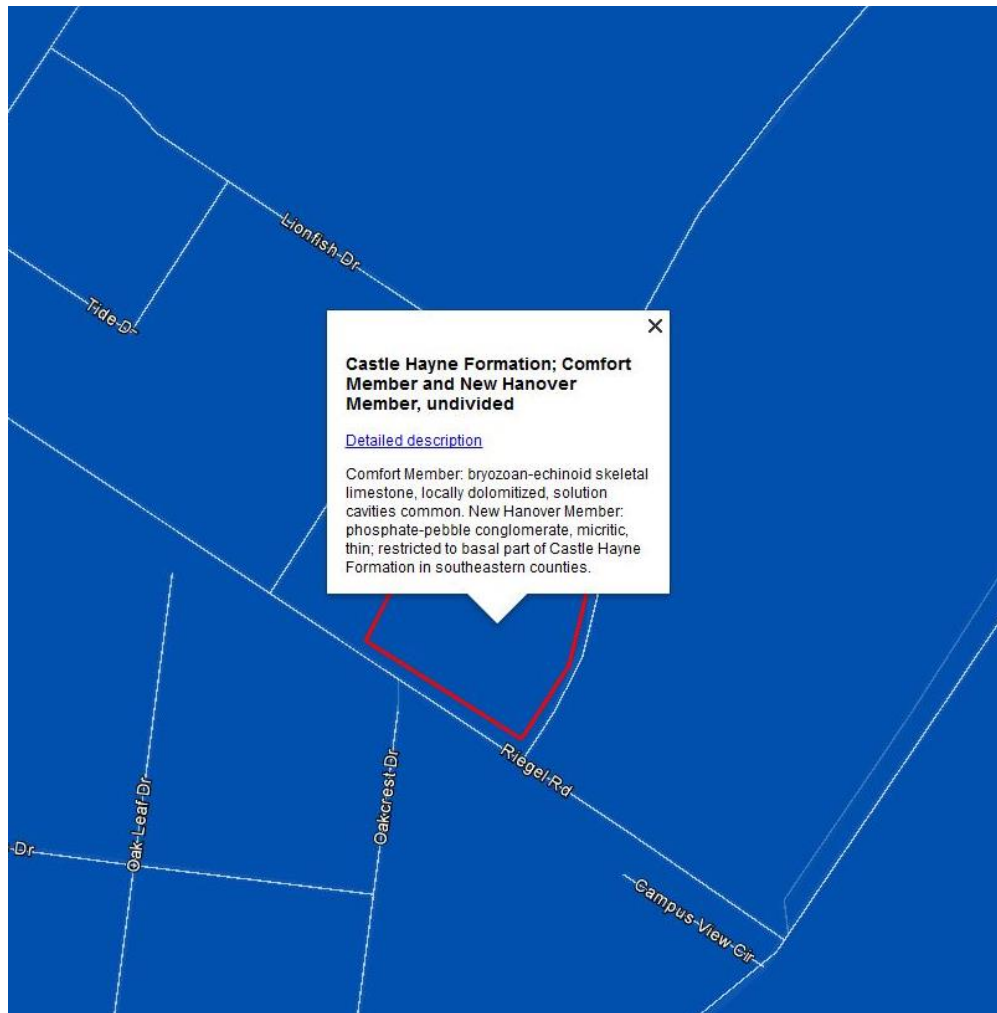


Figure 3.2.1

Geologic map for Figure 3.2.1 obtained from The North Carolina Dept. of Environment, Health, and Natural Resources, Division of Land Resources, NC Geological Survey, in cooperation with the NC Center for Geographic Information and Analysis, 1998, Geology - North Carolina (1:250,000), coverage data file geol250 and Google Earth.

¹ The North Carolina Dept. of Environment, Health, and Natural Resources, Division of Land Resources, NC Geological Survey, in cooperation with the NC Center for Geographic Information and Analysis, 1998, Geology - North Carolina (1:250,000), coverage data file geol250. The data represents the digital equivalent of the official State Geology map (1:500,000 scale), but was digitized from (1:250,000 scale) base maps.

² Rhodes, Thomas S., and Conrad, Stephen G., 1985, Geologic Map of North Carolina: Department of Natural Resources and Community Development, Division of Land Resources, and the NC Geological Survey, 1:500,000-scale, compiled by Brown, Philip M., et al, and Parker, John M. III, and in association with the State Geologic Map Advisory Committee.

3.3 SUBSURFACE CHARACTERIZATION

The subsurface conditions encountered were generally consistent with published geological mapping. The following sections provide generalized characterizations of the soil encountered during our subsurface exploration. For subsurface information at a specific location, refer to the CPT Sounding Logs in Appendix B.

Table 3.3.1 Subsurface Stratigraphy

Approximate Depth Range	Stratum	Description	Ranges of N*-Values(1) blows per foot (bpf)
0 to (0.2-0.33) (Surface cover)	N/A	Soundings contained an observed thickness of 2 to 4 inches of topsoil. Deeper topsoil or organic laden soils are most likely present in wet, poorly drained areas and potentially unexplored areas of the site.	N/A
(0.2-0.33) to 10	I	Very Loose to Medium Dense, Silty and Clean SAND (SM, SP). Roots were encountered in the upper 1.25 to 1.75 feet in the hand auger borings performed.	1 to 20
10 to 25	II	Loose to Very Dense, Silty and Clean SAND (SM, SP)	9 to 53
25 to 45.6	III	Medium Dense to Very Dense, Silty and Clean SAND (SM, SP)	19 to 54

Notes: (1) Equivalent Corrected Standard Penetration Test Resistances

3.4 GROUNDWATER OBSERVATIONS

Porewater pressure measurements were made at the sounding locations during exploration as noted on the CPT sounding logs in Appendix B. The apparent groundwater depths were observed at the time of drilling and during field exploration to have approximately ranged from 12.25 to 14.5 feet below ground surface.

The highest groundwater observations are normally encountered in the late winter and early spring. Variations in the long-term water table may occur as a result of changes in precipitation, evaporation, surface water runoff, construction activities, and other factors not immediately apparent at the time of this exploration. If long term water levels are crucial to the development of this site, it would be prudent to verify water levels with the use of perforated pipes or piezometers.

3.5 SEASONAL HIGH WATER TABLE AND INFILTRATION TESTING

The results of the seasonal high water table and infiltration testing are shown in the report included in Appendix C of this report.

4.0 DESIGN RECOMMENDATIONS

4.1 BUILDING DESIGN

The following sections provide recommendations for foundation design, soil supported slabs, seismic site classification, and pavement design.

4.1.1 Foundations

Provided subgrades and structural fills are prepared as discussed herein, the proposed structures can be supported by conventional shallow foundations: individual column footings and continuous wall footings. The design of the foundation shall utilize the following parameters:

Table 4.1.1.1 Foundation Design

Design Parameter	Column Footing	Wall Footing
Net Allowable Bearing Pressure ¹	3,000 psf	3,000 psf
Acceptable Bearing Soil Material	Stratum I Soils (SANDS) or Approved Structural Fill	Stratum I Soils (SANDS) or Approved Structural Fill
Minimum Width	30 inches	12 inches
Minimum Footing Embedment Depth (below slab or finished grade)	12 inches	12 inches
Estimated Total Settlement	1 inch	1 inch
Estimated Differential Settlement	Less than 0.5 inches	Less than 0.5 inches

1. Net allowable bearing pressure is the applied pressure in excess of the surrounding overburden soils above the base of the foundation.

It will be important to have the geotechnical engineer of record observe the foundation subgrade prior to placing foundation concrete; to confirm the bearing soils are what was anticipated. If soft or unsuitable soils are observed at the footing bearing elevations, the unsuitable soils should be undercut and removed. The undercut areas should be backfilled with approved structural fill up to the original design bottom of footing elevation; the original footing shall be constructed on top of the structural fill. The depth and lateral extent of the undercut should be determined in the field during undercutting operation. An ECS representative must be on site during the undercut and backfill of the areas in order to provide a report stating that the repairs were in accordance with our recommendations. Undercutting to depths of 1.25 to 1.75 feet should be anticipated on site prior to construction due to the roots encountered.

4.1.2 Floor Slabs

The on-site soils are generally considered suitable for support of the floor slabs. Moisture control during earthwork operations, including the use of discing or appropriate drying equipment, may be necessary. Assuming the lowest finished floor elevation is around 38 feet, it appears that the slabs for the structures will likely bear on the Stratum I soils – SANDS (SM, SP) or approved structural fill. These materials are suitable for the support of a slab-on-grade, however, there may be areas of soft or yielding soils that should be removed and replaced with compacted structural fill in accordance with the recommendations included in this report. The following graphic depicts our soil-supported slab recommendations:

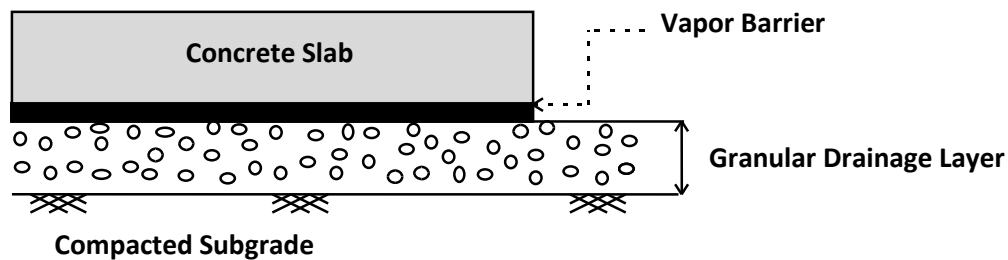


Figure 4.1.2.1

1. Drainage Layer Thickness: 6 inches
2. Drainage Layer Material: GRAVEL (GP, GW), SAND containing <20% fines (SP, SW, SM)
3. Subgrade compacted to 98% maximum dry density per ASTM D698

Subgrade Modulus: Provided the placement of structural fill and granular drainage layer per the recommendations discussed herein, the slab may be designed assuming a modulus of subgrade reaction, k of 150 pci (lbs/cu. inch). The modulus of subgrade reaction value is based on a 1 ft by 1 ft plate load test basis.

Slab Isolation: Ground-supported slabs should be isolated from the foundations and foundation-supported elements of the structures so that differential movement between the foundations and slab will not induce excessive shear and bending stresses in the floor slab. Where the structural configuration (turn down slabs or post tension mats) prevents the use of a free-floating slab, the slab should be designed with suitable reinforcement and load transfer devices to preclude overstressing of the slab. Maximum differential settlement of soils supporting interior slabs is anticipated to be less than 0.5 inches in 50 feet.

4.1.3 Seismic Design Considerations

Liquefaction: When a saturated soil with little to no cohesion liquefies during a major earthquake, it experiences a temporary loss of shear strength as a result of a transient rise in excess pore water pressure generated by strong ground motion. Flow failure, lateral spreading, differential settlement, loss of bearing, ground fissures, and sand boils are evidence of excess pore pressure generation and liquefaction.

The potential for liquefaction at the site is considered high based upon the CPT results and the liquefaction index procedure developed by Iwasaki (1982). Based on our CPT results and our evaluation using a site peak ground acceleration of 0.17 (PGA_m), an earthquake event with a magnitude of 7.3 and procedures developed by Robertson (2009) and Boulanger & Idriss (2014), the liquefaction induced settlement at the subject site is estimated to be approximately 3 inches.

Across the site, potential liquefiable layers are present around 13 to 32 feet beneath the existing ground surface across the site. Liquefaction can create two potential problems: ground surface disruption and volumetric compression. When soils susceptible to liquefaction are located within approximately 10 feet of the surface, ground surface disruptions (i.e. sand boils) are possible. Such disruptions beneath at-grade structures would result in bearing capacity failure. Since the potentially liquefiable sands are not located in the upper 10 feet at this site, there is low risk of ground surface disruption.

Section 1613.3.2 of the IBC 2015 classifies sites with the potential for liquefaction as Seismic Site Class F. However, Chapter 20 of ASCE 7 allows the design spectral response accelerations for a site to be determined without regard to liquefaction provided structures have a fundamental period of less than or equal to 0.5 seconds and the risks of liquefaction are considered in design. The structures should meet this criterion; however, this must be confirmed by the structural engineer.

Seismic Site Classification: The International Building Code (IBC) 2015 requires site classification for seismic design based on the upper 100 feet of a soil profile. Three methods are utilized in classifying sites, namely the shear wave velocity (v_s) method; the unconfined compressive strength (s_u) method; and the Standard Penetration Resistance (N-value) method. The first method (shear wave velocity) was used in classifying this site.

The seismic Site Class for the site was determined by calculating a weighted average of the shear velocities of the overburden to the depth of rock/refusal. The CPT test data indicates that the existing natural, overburden soils at the site have shear velocities ranging from approximately 396 ft/sec to 950 ft/sec. The method for determining the weighted average value is presented in Section 1613.5.5 of the IBC 2015. The weighted average value for the site is 708 ft/sec. Based on the results of the CPT soundings, it is our interpretation the site may be considered a Site Class D.

The results of the shear wave velocity profiles are contained in Appendix C. The seismic site class definitions for the weighted average of shear wave velocity or SPT N-value in the upper 100 feet of the soil profile are shown in the following table:

Table 4.1.3.1: Seismic Site Classification

Site Class	Soil Profile Name	Shear Wave Velocity, V_s , (ft./s)	N value (bpf)
A	Hard Rock	$V_s > 5,000$ fps	N/A
B	Rock	$2,500 < V_s \leq 5,000$ fps	N/A
C	Very dense soil and soft rock	$1,200 < V_s \leq 2,500$ fps	>50
D	Stiff Soil Profile	$600 \leq V_s \leq 1,200$ fps	15 to 60
E	Soft Soil Profile	$V_s < 600$ fps	<15

Ground Motion Parameters: In addition to the seismic site classification noted above, ECS has determined the design spectral response acceleration parameters following the IBC 2015 methodology. The mapped responses were estimated from the free ATC Hazards by Location Tool available from the USGS website (<http://earthquake.usgs.gov/designmaps/us/application.php>). The design responses for the short (0.2 sec, S_{DS}) and 1-second period (S_{D1}) are noted in bold at the far right end of the following table.

Table 4.1.3.2: Ground Motion Parameters (IBC 2015) Site Class D

Period (sec)	Mapped Spectral Response Accelerations (g)		Values of Site Coefficient for Site Class		Maximum Spectral Response Acceleration Adjusted for Site Class (g)		Design Spectral Response Acceleration (g)	
Reference	Figures 1613.3.1 (1) & (2)		Tables 1613.3.3 (1) & (2)		Eqs. 16-37 & 16-38		Eqs. 16-39 & 16-40	
0.2	S_s	0.213	F_a	1.6	$S_{MS}=F_a S_s$	0.341	$S_{DS}=2/3 S_{MS}$	0.227
1.0	S_1	0.090	F_v	2.4	$S_{M1}=F_v S_1$	0.216	$S_{D1}=2/3 S_{M1}$	0.144

The Site Class definition should not be confused with the Seismic Design Category designation, which the structural engineer typically assesses.

4.2 SITE DESIGN CONSIDERATIONS

4.2.1 Pavement Sections

Subgrade Characteristics: Based on the results of our soundings, it appears that the soils that will likely be exposed as pavement subgrades consisting of sands (SP, SM) or approved structural fill. Based on the soils on site and provided the recommendation for undercutting is followed, a CBR value of 10 has been selected to model the in place subgrade soils. The pavement design assumes subgrades consist of suitable materials evaluated by ECS and placed and compacted to at least 98 percent of the maximum dry density as determined by the Standard Proctor test (ASTM D 698) in accordance with the project specifications. Due to the roots encountered in the upper 1.25 to 1.75 feet of the hand auger borings, undercutting to remove the roots should be anticipated prior to construction of pavements.

Design Considerations: For the design and construction of exterior pavements, the subgrades should be prepared in strict accordance with the recommendations in the “Subgrade Preparation” and “Engineered Fill Placement” sections of this report. An important consideration with the design and construction of pavements is surface and subsurface drainage. Where standing water develops, either on the pavement surface or within the base course layer, softening of the subgrade and other problems related to the deterioration of the pavement can be expected. Furthermore, good drainage should reduce the possibility of the subgrade materials becoming saturated during the normal service period of the pavement.

Anticipated traffic conditions were not provided to ECS. However, based on our experience on similar projects, the following flexible pavement sections may be utilized:

Light Duty: 2” surface mix asphalt overlying 6” of compacted stone base.

Heavy Duty: 3” surface mix asphalt overlying 8” compacted stone base.

The following rigid pavement sections may be utilized:

Light Duty: 5” 4,000 psi compressive strength concrete overlying 4” of compacted stone base.

Heavy Duty: 6” 4,000 psi compressive strength concrete overlying 4” of compacted stone base.

Aggregate base course materials beneath pavements should be compacted to at least 98 percent of their Modified Proctor maximum dry density (ASTM D 1557).

Regardless of the section and type of construction utilized, saturation of the subgrade materials and asphalt pavement areas results in a softening of the subgrade material and shortened life span for the pavement. Therefore, we recommend that both the surface and subsurface materials for the pavement be properly graded to enhance surface and subgrade drainage. By quickly removing surface and subsurface water, softening of the subgrade can be reduced and the performance of the parking area can be improved. Site preparation for the parking areas should be similar to that for the building areas including stripping, proofrolling, and the placement of compacted structural fill.

Please note that large, front-loading trash dumpsters frequently impose concentrated front-wheel loads on pavements during loading. This type of loading typically results in rutting of bituminous pavements and ultimately pavement failures and costly repairs. Concrete pavements should be properly jointed and reinforced as needed to help reduce the potential for cracking and to permit proper load transfer.

Weather Restrictions: In this region, asphalt plants may close during the months of December, January, and/or February if particularly cold weather conditions prevail. However, this can change based on year to year temperature fluctuations. Daily temperatures from December to February will often stay below 40°F, limiting the days that asphalt placement can occur.

5.0 SITE CONSTRUCTION RECOMMENDATIONS

5.1 SUBGRADE PREPARATION

5.1.1 Stripping and Grubbing

The subgrade preparation should consist of stripping vegetation, rootmat, topsoil, and any other soft or unsuitable materials from the 10-foot expanded building and 5-foot expanded pavement limits and to 5 feet beyond the toe of structural fills. The soundings and borings performed at the site encountered approximately 2 to 4 inches of topsoil. Deeper topsoil or organic laden soils are typically present in wet, low-lying, and poorly drained areas. ECS should be called to verify that topsoil and unsuitable surficial materials have been removed prior to the placement of structural fill or construction of structures.

5.1.2 Proofrolling

After removing unsuitable surface materials, cutting to the proposed grade, and prior to the placement of any structural fill or other construction materials, the exposed subgrade should be examined by the geotechnical engineer or authorized representative. The exposed subgrade should be proofrolled with previously approved construction equipment having a minimum axle load of 10 tons (e.g. fully loaded tandem-axle dump truck). The areas subject to proofrolling should be traversed by the equipment in two perpendicular (orthogonal) directions with overlapping passes of the vehicle under the observation of the geotechnical engineer or authorized representative. This procedure is intended to assist in identifying any localized yielding materials. In the event that unstable or “pumping” subgrade is identified by the proofrolling, those areas should be marked for repair prior to the placement of any subsequent structural fill or other construction materials. Methods of repair of unstable subgrade, such as undercutting or moisture conditioning, should be discussed with the geotechnical engineer to determine the appropriate procedure with regard to the existing conditions causing the instability. A test pit(s) may be excavated to explore the shallow subsurface materials in the area of the instability to help in determining the cause of the observed unstable materials and to assist in the evaluation of the appropriate remedial action to stabilize the subgrade. Due to the roots encountered in the upper 1.25 to 1.75 feet of the hand auger borings, undercutting to remove the roots should be anticipated prior to construction.

5.2 EARTHWORK OPERATIONS

5.2.1 Structural Fill Materials

Product Submittals: Prior to placement of structural fill, representative bulk samples (about 50 pounds) of on-site and off-site borrow should be submitted to ECS for laboratory testing, which will include Atterberg limits, natural moisture content, grain-size distribution, and moisture-density relationships for compaction. Import materials should be tested prior to being hauled to the site to determine if they meet project specifications.

Satisfactory Structural Fill Materials: Materials satisfactory for use as structural fill should consist of inorganic soils classified as SM, SC, SW, SP, GW, GP, GM and GC, or a combination of these group symbols, per ASTM D 2487. Natural fine-grained soils classified as clays or silts (CL, ML) should not be considered for use as engineered fill, but may be evaluated by the geotechnical engineer to determine their suitability at the contractor's request. The materials should be free of organic matter, debris, and should contain no particle sizes greater than 4 inches in the largest dimension. Open graded materials, such as gravels (GP), which contain void space in their mass should not be used in structural fills unless properly encapsulated with filter fabric. Suitable structural fill material should have the index properties shown in Table 5.2.1.1.

Table 5.2.1.1 Structural Fill Index Properties

Location with Respect to Final Grade	Liquid Limit	Plasticity Index
Building Areas, upper 4 feet	35 max	9 max
Pavement Areas, upper 2 feet	35 max	9 max

Unsatisfactory Materials: Materials that should not be used as engineered fill include topsoil, organic materials (OH, OL), and high plasticity clays and silts (CH, MH). Such materials removed during grading operations should be either stockpiled for later use in landscape fills, or placed in approved on or off-site disposal areas.

On-Site Borrow Suitability: Near surface on-site sands should be suitable for re-use as structural fill. However, moisture conditioning should be anticipated for the soils to achieve the optimum moisture content for fill placement.

5.2.2 Compaction

Structural Fill Compaction: Structural fill within the expanded building and pavement limits should be placed in maximum 8-inch loose lifts, moisture conditioned as necessary to within -3 and +3 % of the soil's optimum moisture content, and be compacted with suitable equipment to a dry density of at least 98% of the Standard Proctor maximum dry density (ASTM D698). Beyond these areas, compaction of at least 95% should be achieved. ECS should be called to document that proper fill compaction has been achieved.

Fill Compaction Control: The expanded limits of the proposed construction areas should be well defined, including the limits of the fill zones for buildings, pavements, and slopes, etc., at the time of fill placement. Grade controls should be maintained throughout the filling operations. Filling operations should be observed on a full-time basis by a qualified representative of the geotechnical engineer or construction testing laboratory to determine that the minimum compaction requirements are being achieved. Field density testing of fills should be performed at the frequencies shown in Table 5.2.2.1, but not less than one test per lift.

Table 5.2.2.1 Frequency of Compaction Tests in Fill Areas

Location	Frequency of Tests
Expanded Building Limits	1 test per 2,500 sq. ft. per lift
Pavement Areas	1 test per 5,000 sq. ft. per lift
Utility Trenches	1 test per 200 linear ft. per lift
Other Non-Critical Areas	1 test per 10,000 sq. ft. per lift

Compaction Equipment: Compaction equipment suitable to the soil type being compacted should be used to compact the subgrades and fill materials. A vibratory steel drum roller should be used for compaction of coarse-grained soils (Sands and Gravels) as well as for sealing compacted surfaces.

Fill Placement Considerations: Fill materials should not be placed on frozen soils, on frost-heaved soils, and/or on excessively wet soils. Borrow fill materials should not contain frozen materials at the time of placement, and frozen or frost-heaved soils should be removed prior to placement of structural fill or other fill soils and aggregates. Excessively wet soils or aggregates should be scarified, aerated, and moisture conditioned.

At the end of each work day, fill areas should be graded to facilitate drainage of any precipitation and the surface should be sealed by use of a smooth-drum roller to limit infiltration of surface water.

Drying and compaction of wet soils is typically difficult during the cold, winter months. Accordingly, earthwork should be performed during the warmer, drier times of the year, if practical. Proper drainage should be maintained during the earthwork phases of construction to prevent ponding of water which has a tendency to degrade subgrade soils.

Fill material should be placed in horizontal lifts. In confined areas such as utility trenches, portable compaction equipment and thin lifts of 3 inches to 4 inches may be required to achieve specified degrees of compaction.

We recommend that the grading contractor have equipment on site during earthwork for both drying and wetting fill soils. We do not anticipate significant problems in controlling moisture within the fill during dry weather, but moisture control may be difficult during winter months or extended periods of rain. The control of moisture content of higher plasticity soils is difficult when these soils become wet. Further, such soils are easily degraded by construction traffic when the moisture content is elevated.

5.3 FOUNDATION OBSERVATIONS

Protection of Foundation Excavations: Exposure to the environment may weaken the soils at the footing bearing level if the foundation excavations remain open for too long a time. Therefore, foundation concrete should be placed the same day that excavations are made. If the bearing soils are softened by surface water intrusion or exposure, the softened soils must be removed from the foundation excavation bottom immediately prior to placement of concrete. If the excavation must remain open overnight, or if rainfall becomes imminent while the bearing soils are exposed, a 1 to 3-inch thick “mud mat” of “lean” concrete should be placed on the bearing soils before the placement of reinforcing steel.

Footing Subgrade Observations: It will be important to have the geotechnical engineer of record observe the foundation subgrade prior to placing foundation concrete, to confirm the bearing soils are what was anticipated. Soft or unsuitable soils observed at the footing bearing elevations should be undercut and removed. Any undercut should be backfilled with approved structural fill or DOT size No. 57 stone up to the original design bottom of footing elevation; the original footing shall be constructed on top of the approved fill. The depth and lateral extent of the undercut should be determined in the field during undercutting operation. An ECS representative must be on site during the undercut and backfill of the areas in order to provide a report stating that the repairs were in accordance with our recommendations.

Slab Subgrade Verification: A representative of ECS should be called to observe exposed subgrades within the expanded building limits prior to structural fill placement to confirm that adequate subgrade preparation has been achieved. Proofrolling using a drum roller or loaded dump truck should be performed in their presence at that time. Once subgrades have been prepared to the satisfaction of ECS, subgrades should be properly compacted and new structural fill can be placed.

Structural fill should be moisture conditioned to within -3/+3 percentage points of optimum moisture content then be compacted to the required density. If there will be a significant time lag between the site grading work and final grading of concrete slab areas prior to the placement of the subbase stone and concrete, a representative of ECS should be called to verify the condition of the prepared subgrade. Prior to final slab construction, the subgrade may require scarification, moisture conditioning, and re-compaction to restore stable conditions.

5.4 UTILITY INSTALLATIONS

Utility Subgrades: The soils encountered in our exploration are expected to be generally suitable for support of utility pipes. The pipe subgrade should be observed and probed for stability by ECS to evaluate the suitability of the materials encountered. Any loose or unsuitable materials encountered at the utility pipe subgrade elevation should be removed and replaced with suitable compacted structural fill or pipe bedding material.

Utility Backfilling: Granular bedding material, if required, should be at least 4 inches thick, but not less than that specified by the project drawings and specifications. Fill placed for support of the utilities, as well as backfill over the utilities, should satisfy the requirements for structural fill given in this report. Compacted backfill should be free of topsoil, roots, ice, or any other material designated by ECS as unsuitable. The backfill should be moisture conditioned, placed, and compacted in accordance with the recommendations of this report.

Utility Excavation Dewatering: It is likely that groundwater will be encountered by utility excavations which extend more than 7 feet below existing grades. It is expected that removal of water which seeps into excavations could be accomplished by pumping from sumps excavated in the trench bottom and which are backfilled with DOT size No. 57 stone or open graded bedding material. Should water conditions beyond the capability of sump pumping be encountered, the contractor should submit a Dewatering Plan in accordance with project specifications.

5.5 GENERAL CONSTRUCTION CONSIDERATIONS

Moisture Conditioning: During the cooler and wetter periods of the year, delays and additional costs should be anticipated. At these times, reduction of soil moisture may need to be accomplished by mechanical manipulation in order to lower moisture contents to levels appropriate for compaction. Alternatively, during the drier times of the year, such as the summer months, moisture may need to be added to the soil to provide adequate moisture for successful compaction according to the project requirements.

Subgrade Protection: Measures should also be taken to limit site disturbance, especially from rubber-tired heavy construction equipment, and to control and remove surface water from development areas, including structural and pavement areas.

Surface Drainage: Surface drainage conditions should be properly maintained. Surface water should be directed away from the construction area, and the work area should be sloped away from the construction area at a gradient of 1 percent or greater to reduce the potential of ponding water and the subsequent saturation of the surface soils. At the end of each work day, the subgrade soils should be sealed by rolling the surface with a smooth drum roller to minimize infiltration of surface water.

Excavation Safety: Cuts or excavations associated with utility excavations may require forming or bracing, slope flattening, or other physical measures to control sloughing and/or prevent slope failures. Contractors should comply with applicable OSHA regulations to confirm that adequate protection of the excavations and trench walls is provided. The contractor is solely responsible for designing and constructing stable, temporary excavations and slopes and should shore, slope, or bench the sides of the excavations and slopes as required to maintain stability of both the excavation sides and bottom. The contractor's responsible person, as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations. ECS is providing this information solely as a service to our client. ECS is not assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.

Excavation Considerations: Based on the results of the borings, we expect that the natural Coastal Plain soils encountered on this site can be excavated with conventional earth moving equipment such as loaders, bulldozers, rubber tired backhoes, etc.

The site soils are OSHA Type C soils for the purpose of temporary excavation support. Excavations should be constructed in compliance with current OSHA standards for excavation and trenching safety. Excavations should be observed by a “competent person,” as defined by OSHA, who should evaluate the specific soil type and other conditions, which may control the excavation side slopes or the need for shoring or bracing. Regardless, site safety shall be the sole responsibility of the contractor and their subcontractors. Exposed earth slopes shall be protected during periods of inclement weather.

Erosion Control: The surface soils may be erodible. Therefore, the contractor should provide and maintain good site drainage during earthwork operations to maintain the integrity of the surface soils. Erosion and sedimentation controls should be in accordance with sound engineering practices and local requirements.

6.0 CLOSING

ECS has prepared this report of findings, evaluations, and recommendations to guide geotechnical-related design and construction aspects of the project.

The description of the proposed project is based on information provided to ECS by Mr. Mark Loudermilk of Becker Morgan Group, Inc. and Mr. Don Woods of Woods Engineering, PA. If any of this information is inaccurate, either due to our interpretation of the documents provided or site or design changes that may occur later, ECS should be contacted immediately so that we can review the report in light of the changes and provide additional or alternate recommendations as may be required to reflect the proposed construction.

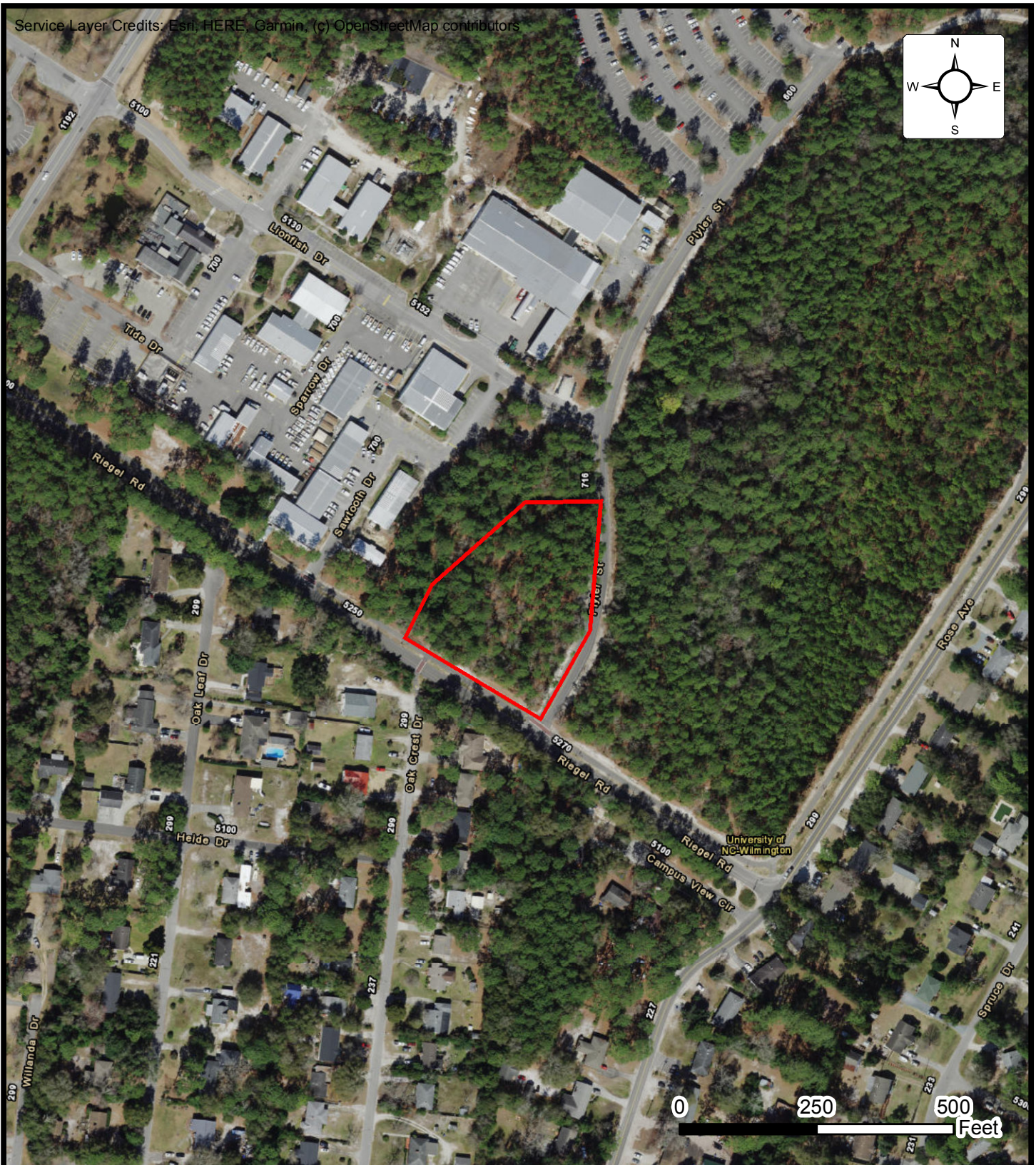
We recommend that ECS review the project's plans and specifications pertaining to our work so that we may ascertain consistency of those plans/specifications with the intent of the geotechnical report.

Field observations, monitoring, and quality assurance testing during earthwork and foundation installation are an extension of and integral to the geotechnical design recommendation. We recommend that the owner retain these quality assurance services and that ECS be allowed to continue our involvement throughout these critical phases of construction to provide general consultation as issues arise. ECS is not responsible for the conclusions, opinions, or recommendations of others based on the data in this report.

APPENDIX A – Drawings & Reports

Site Location Diagram

Exploration Location Diagram



Site Location Diagram UNCW - FILM STUDIES BUILDING

901 SOUTH COLLEGE ROAD, WILMINGTON, NC

BECKER MORGAN GROUP

ENGINEER
WEG

SCALE
1" = 250'

PROJECT NO.
22:27978

SHEET
1 OF 2

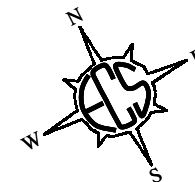
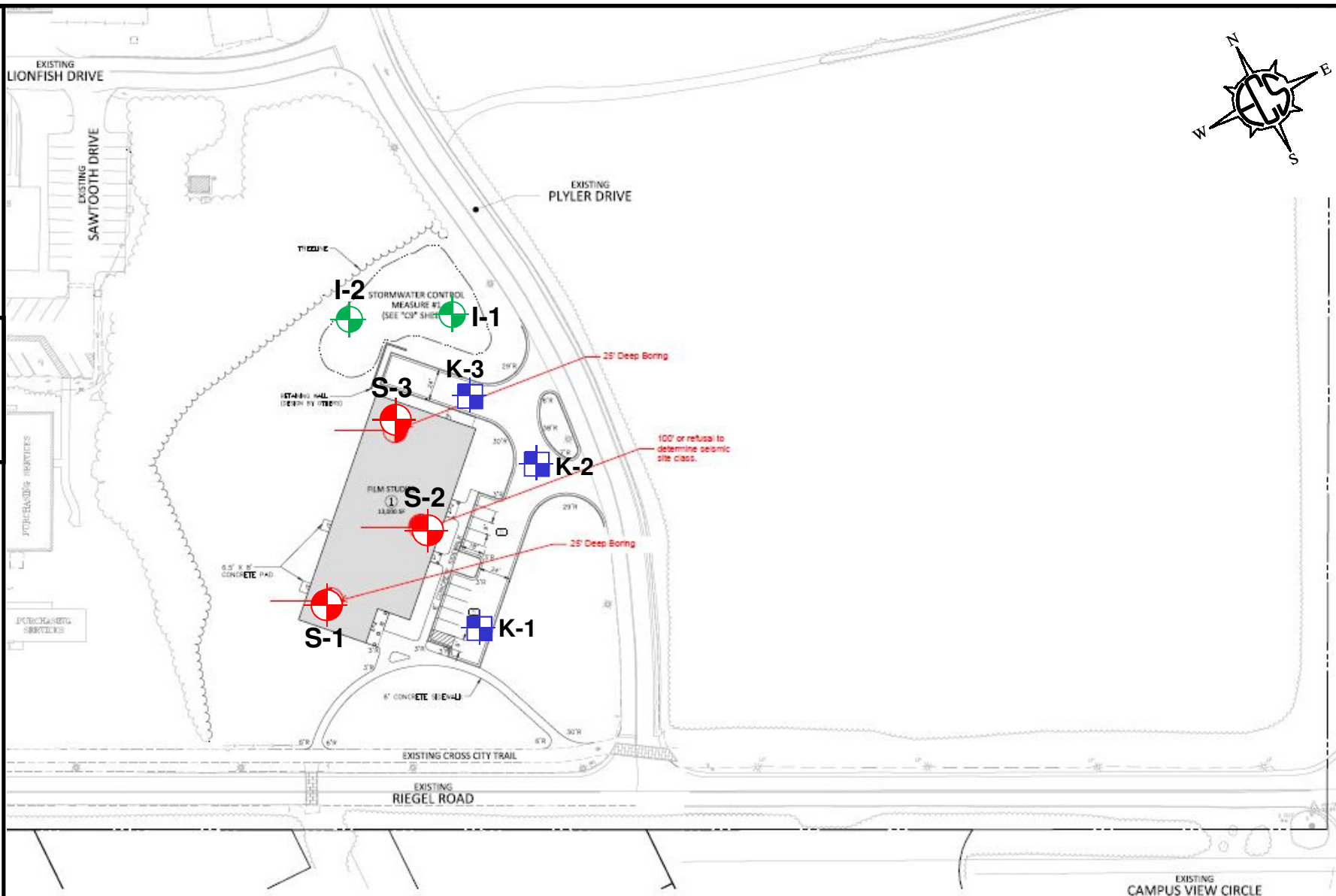
DATE
6/13/2019

EXPLORATION LOCATION DIAGRAM



UNCW – Film Studies Building
Wilmington, North Carolina

ENGINEER	DRAFTING
WEG	ACC
SCALE	NTS
PROJECT NO.	22-27978
SHEET	2 of 2
DATE	6/13/2019



**DENOTES APPROXIMATE LOCATION OF CPT
SOUNDING**



**DENOTES APPROXIMATE LOCATION OF SHWT
AND INFILTRATION TESTS**



**DENOTES APPROXIMATE LOCATION OF HAND
AUGER BORING WITH KESSLER DCP TEST**

APPENDIX B – Field Operations

Reference Notes for Sounding Logs

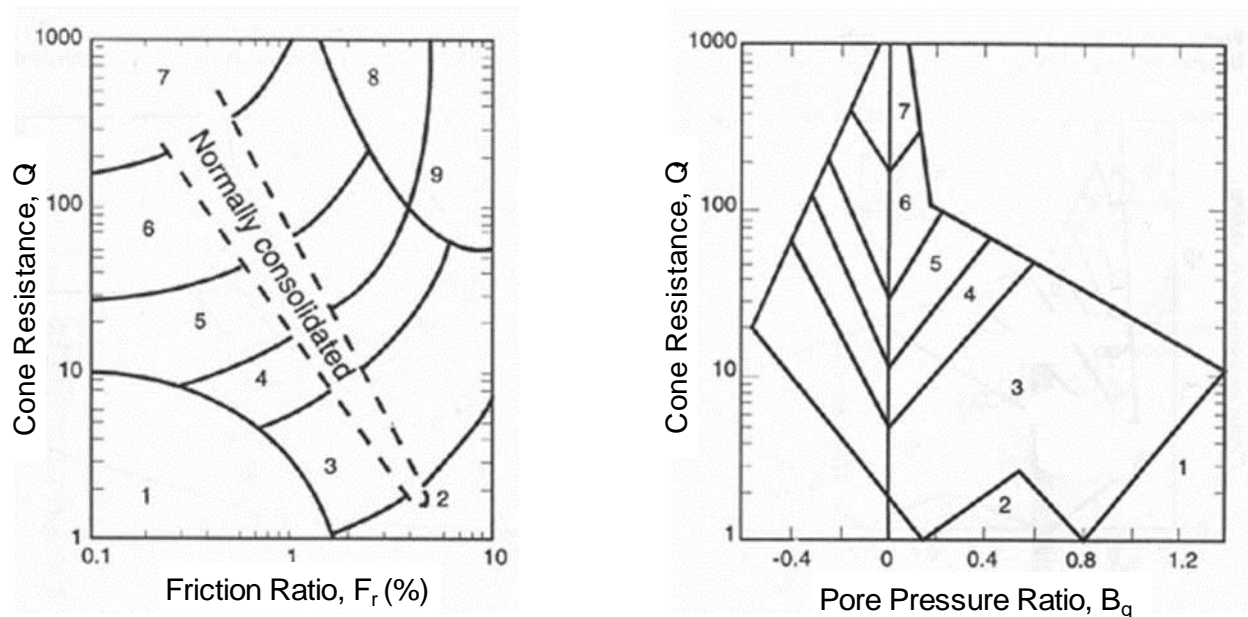
CPT Sounding Logs (S-1 through S-3)

Hand Auger Boring Logs (K-1 through K-3)

Kessler DCP Test Results

REFERENCE NOTES FOR CONE PENETRATION TEST (CPT) SOUNDINGS

In the CPT sounding procedure (ASTM-D-5778), an electronically instrumented cone penetrometer is hydraulically advanced through soil to measure point resistance (q_c), pore water pressure (u_2), and sleeve friction (f_s). These values are recorded continuously as the cone is pushed to the desired depth. CPT data is corrected for depth and used to estimate soil classifications and intrinsic soil parameters such as angle of internal friction, preconsolidation pressure, and undrained shear strength. The graphs below represent one of the accepted methods of CPT soil behavior classification (Robertson, 1990).



1. Sensitive, Fine Grained
2. Organic Soils-Peats
3. Clays; Clay to Silty Clay
4. Clayey Silt to Silty Clay
5. Silty Sand to Sandy Silt

6. Clean Sands to Silty Sands
7. Gravelly Sand to Sand
8. Very Stiff Sand to Clayey Sand
9. Very Stiff Fine Grained

The following table presents a correlation of corrected cone tip resistance (q_c) to soil consistency or relative density:

SAND		SILT/CLAY	
Corrected Cone Tip Resistance (q_c) (tsf)	Relative Density	Corrected Cone Tip Resistance (q_c) (tsf)	Relative Density
<20	Very Loose	<5	Very Soft
20-40	Loose	5-10	Soft
40-120	Medium Dense	10-15	Firm
		15-30	Stiff
120-200	Dense	30-45	Very Stiff
		45-60	Hard
>200	Very Dense	>60	Very Hard



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6714 Netherlands Drive
Wilmington, NC 28403
ECS Project # 22-27978

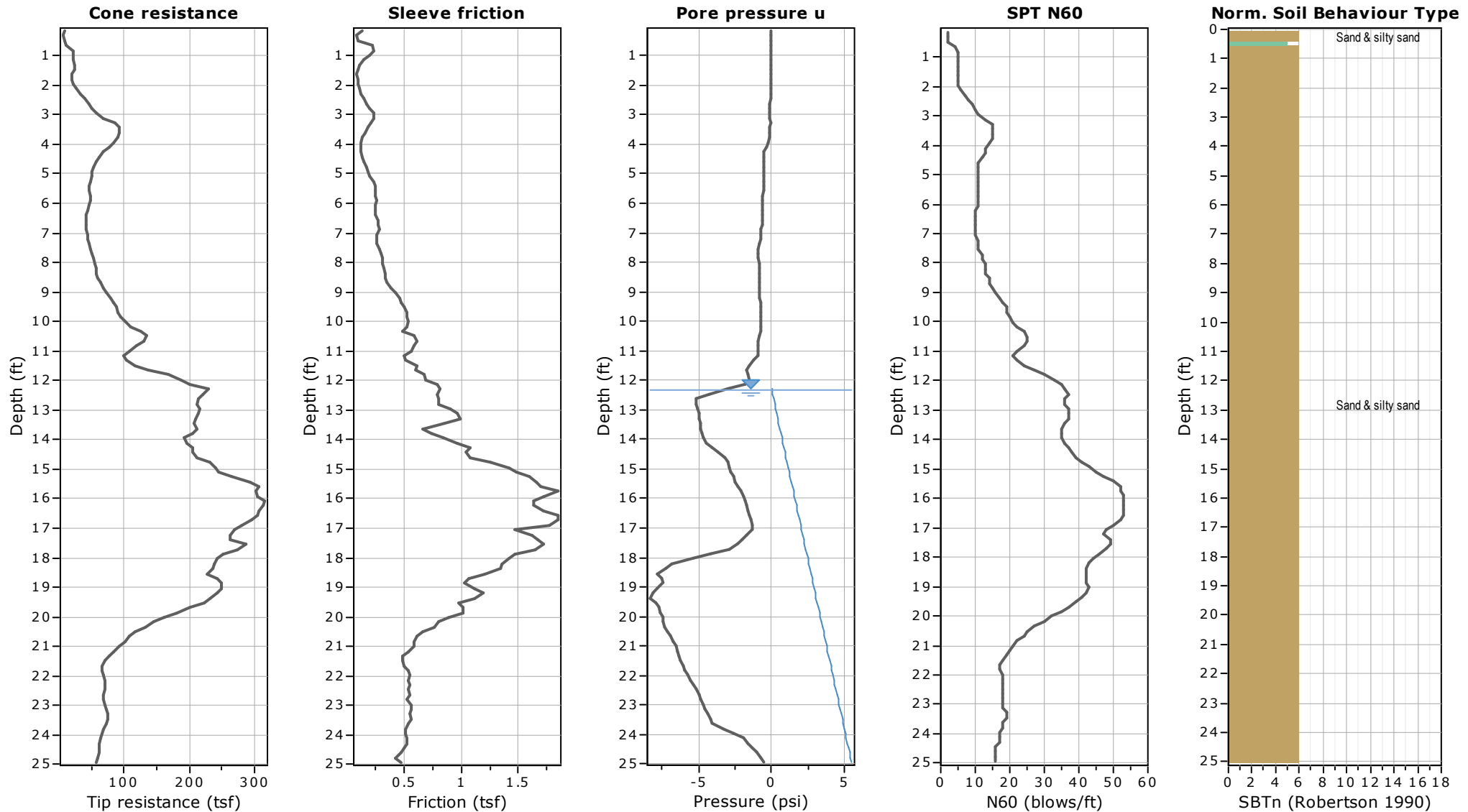
Project: **UNCW Film Studies Building**

Location: **Wilmington, New Hanover County, North Carolina**

CPT: S-1

Total depth: 24.93 ft, Date: 6/4/2019

Cone Operator: Luke Winslow





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ECS Project # 22-27978

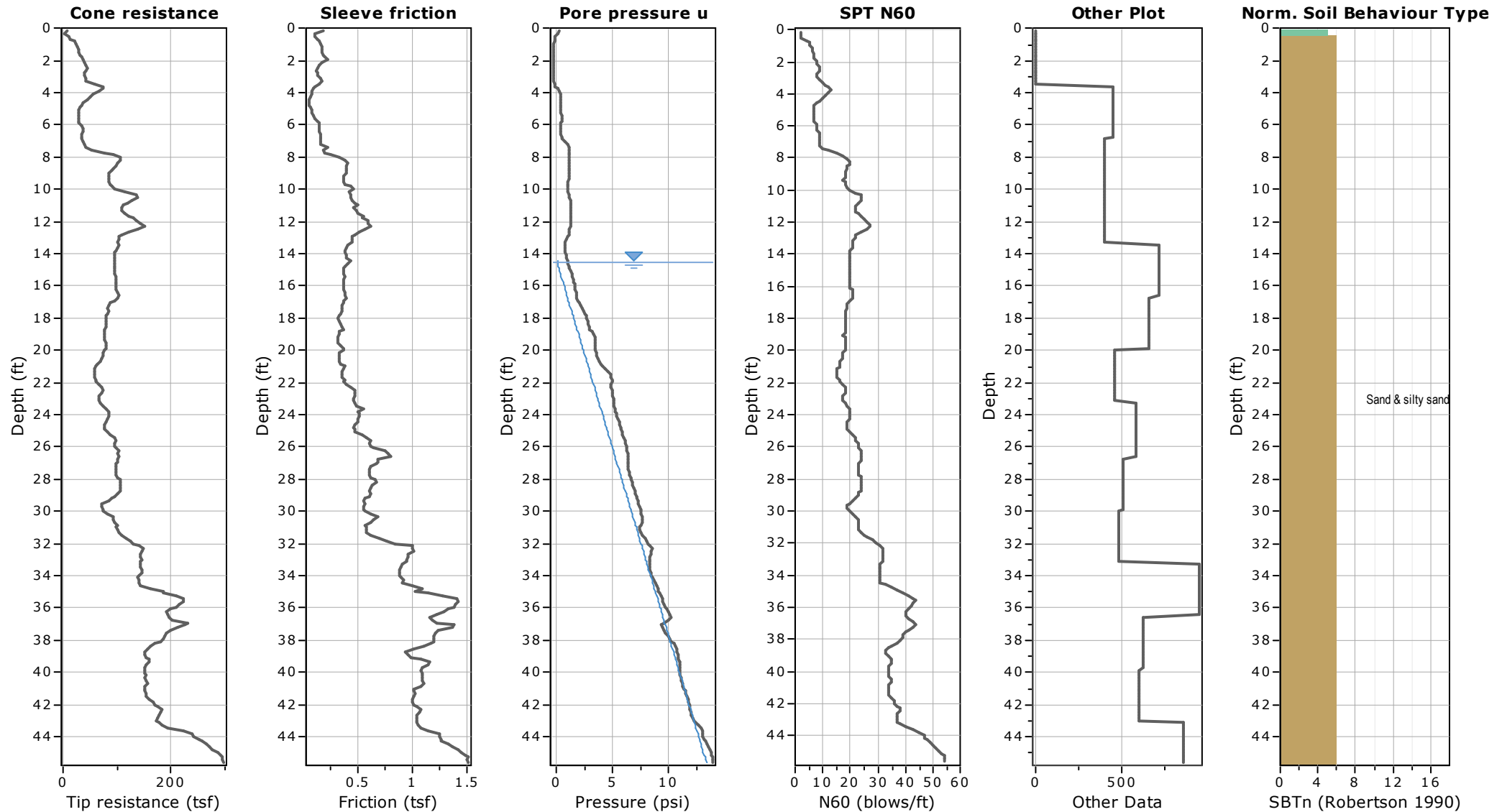
Project: UNCW Film Studies Building

Location: Wilmington, New Hanover County, North Carolina

CPT: S-2

Total depth: 45.60 ft, Date: 6/4/2019

Cone Operator: Luke Winslow





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Wilmington, NC 28403
ECS Project # 22-27978

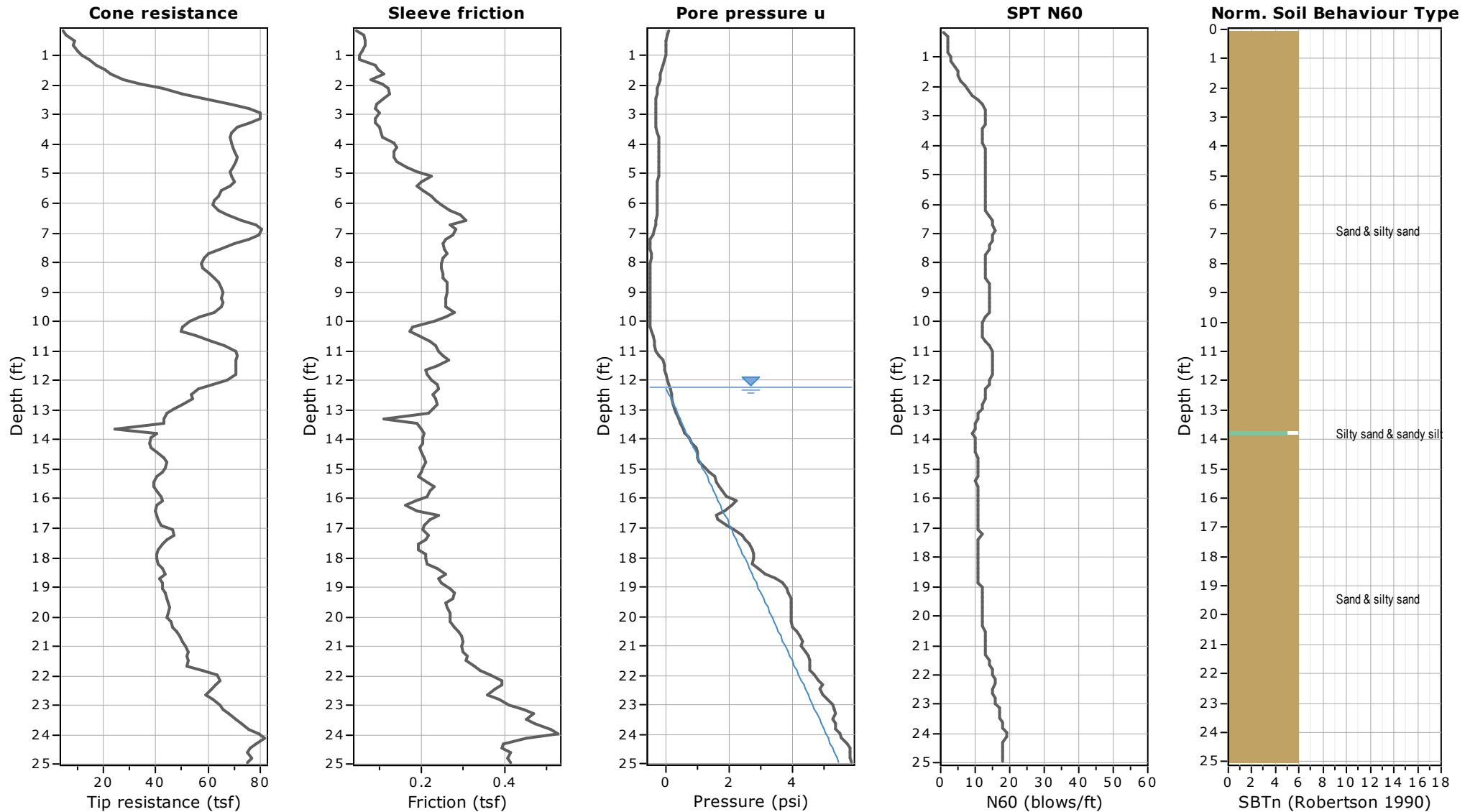
Project: UNCW Film Studies Building




Location: Wilmington, New Hanover County, North Carolina

CPT: S-3

Total depth: 24.93 ft, Date: 6/4/2019

Cone Operator: Luke Winslow



CLIENT Becker Morgan Group, Inc.				Job #: 22:27978		BORING # K-1		SHEET 1 OF 1			
PROJECT NAME UNCW - Film Studies Building				ARCHITECT-ENGINEER							
SITE LOCATION Plyler Drive, Wilmington, New Hanover County, North Carolina											
NORTHING				EASTING		STATION				○ CALIBRATED PENETROMETER TONS/FT ² ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC% ———	
DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL		ENGLISH UNITS		WATER LEVELS ELEVATION (FT)	BLOWS/6"	PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT% ✕ ● △ ⊗ STANDARD PENETRATION BLOWS/FT
					BOTTOM OF CASING  LOSS OF CIRCULATION 		SURFACE ELEVATION				
0					Topsoil/Rootmat [4"]		[Pattern]				
					(SP) FINE SAND, Gray, Dry, Contains Roots		[Pattern]				
1							[Pattern]				
					(SP) FINE SAND, Tan, Dry to Moist		[Pattern]				
2							[Pattern]				
3							[Pattern]				
4							[Pattern]				
5							[Pattern]				
6							[Pattern]				
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.											
WL		WS <input type="checkbox"/> WD <input type="checkbox"/>		BORING STARTED 6/3/19				CAVE IN DEPTH			
WL(SHW)		WL(ACR)		BORING COMPLETED 6/3/19				HAMMER TYPE			
WL				RIG FOREMAN				DRILLING METHOD Hand Auger			

DCP TEST DATA			
Project:	<u>UNCW - Film Studies Building</u>	Date:	<u>3-Jun-19</u>
Location:	<u>K-1</u>	Soil Type(s):	<u>SAND (SP)</u>
Hammer <input type="radio"/> 10.1 lbs. <input checked="" type="radio"/> 17.6 lbs. <input type="radio"/> Both hammers used		Soil Type <input type="radio"/> CH <input type="radio"/> CL <input checked="" type="radio"/> All other soils	

Date: 3-Jun-19

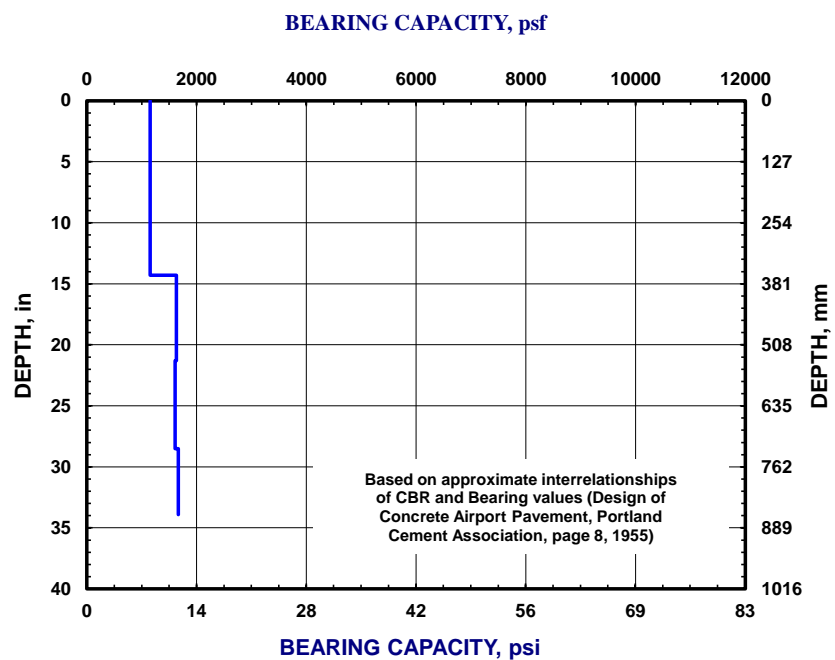
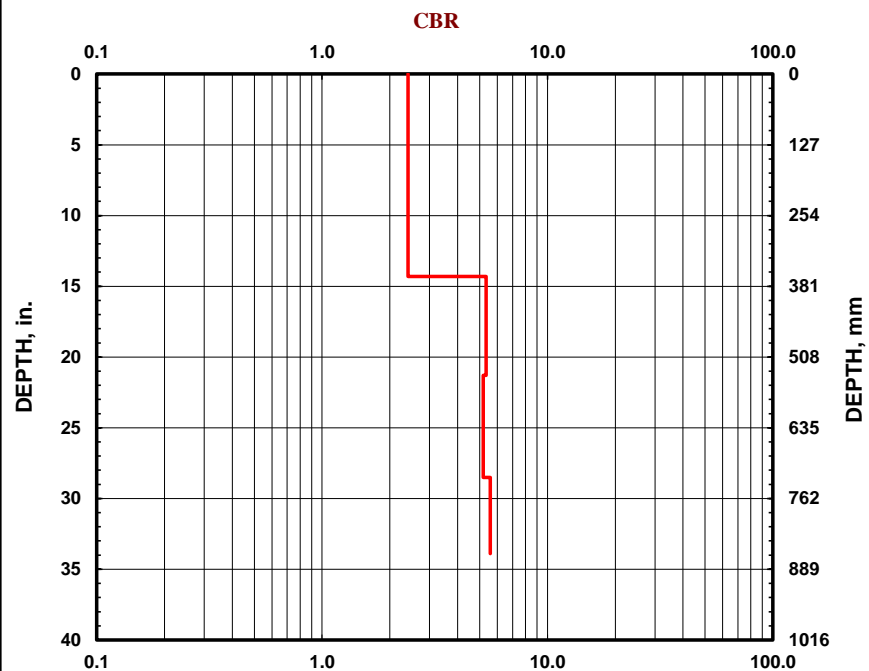
Soil Type(s): SAND (SP)









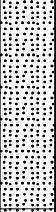
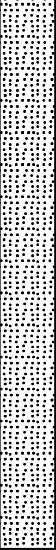




Soil Type

☐ CH

☐ CL

☒ All other soils

[illegible]

CLIENT Becker Morgan Group, Inc.				Job #: 22:27978		BORING # K-2		SHEET 1 OF 1			
PROJECT NAME UNCW - Film Studies Building				ARCHITECT-ENGINEER							
SITE LOCATION Plyler Drive, Wilmington, New Hanover County, North Carolina											
NORTHING				EASTING		STATION				○ CALIBRATED PENETROMETER TONS/FT ² ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC% ———	
DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL		ENGLISH UNITS		WATER LEVELS ELEVATION (FT)	BLOWS/6"	PLASTIC LIMIT%  ———  WATER CONTENT% ———  LIQUID LIMIT%  STANDARD PENETRATION BLOWS/FT
					BOTTOM OF CASING  LOSS OF CIRCULATION 		SURFACE ELEVATION				
0					Topsoil/Rootmat [2"]						
					(SP) FINE SAND, Gray, Dry, Contains Roots						
1					(SP) FINE SAND, Tan, Dry to Moist						
2											
3											
4											
5											
6											
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.											
 WL		WS <input type="checkbox"/> WD <input type="checkbox"/>		BORING STARTED 6/3/19				CAVE IN DEPTH			
 WL(SHW)		 WL(ACR)		BORING COMPLETED 6/3/19				HAMMER TYPE			
 WL				RIG FOREMAN				DRILLING METHOD Hand Auger			

DCP TEST DATA			
Project:	<u>UNCW - Film Studies Building</u>	Date:	<u>3-Jun-19</u>
Location:	<u>K-2</u>	Soil Type(s):	<u>SAND (SP)</u>
Hammer <input type="radio"/> 10.1 lbs. <input checked="" type="radio"/> 17.6 lbs. <input type="radio"/> Both hammers used		Soil Type <input type="radio"/> CH <input type="radio"/> CL <input checked="" type="radio"/> All other soils	

CBR

DEPTH, in. 0 5 10 15 20 25 30 35 40

DEPTH, mm 0 127 254 381 508 635 762 889 1016

0.1 1.0 10.0 100.0

BEARING CAPACITY, psf




0 2000 4000 6000 8000 10000 12000

DEPTH, in. 0 5 10 15 20 25 30 35 40

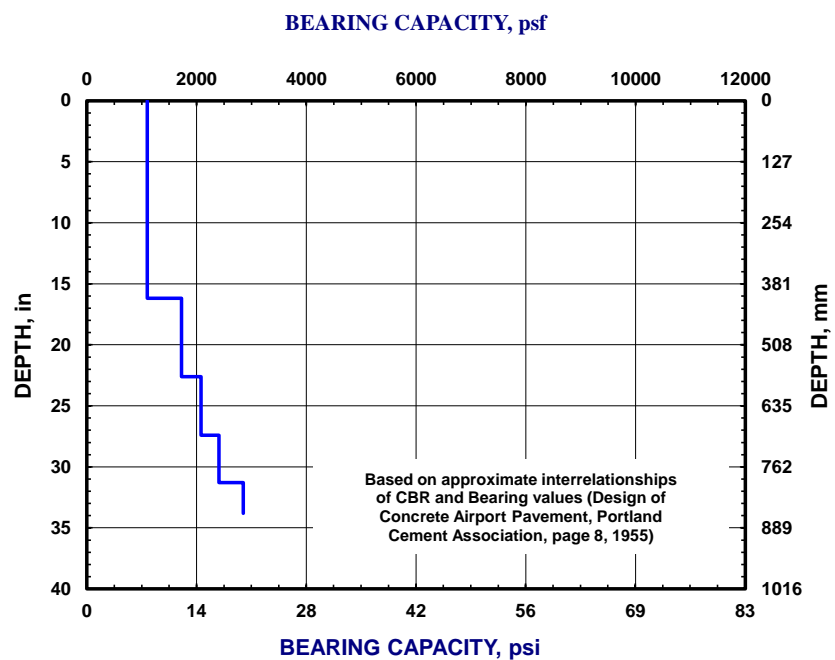
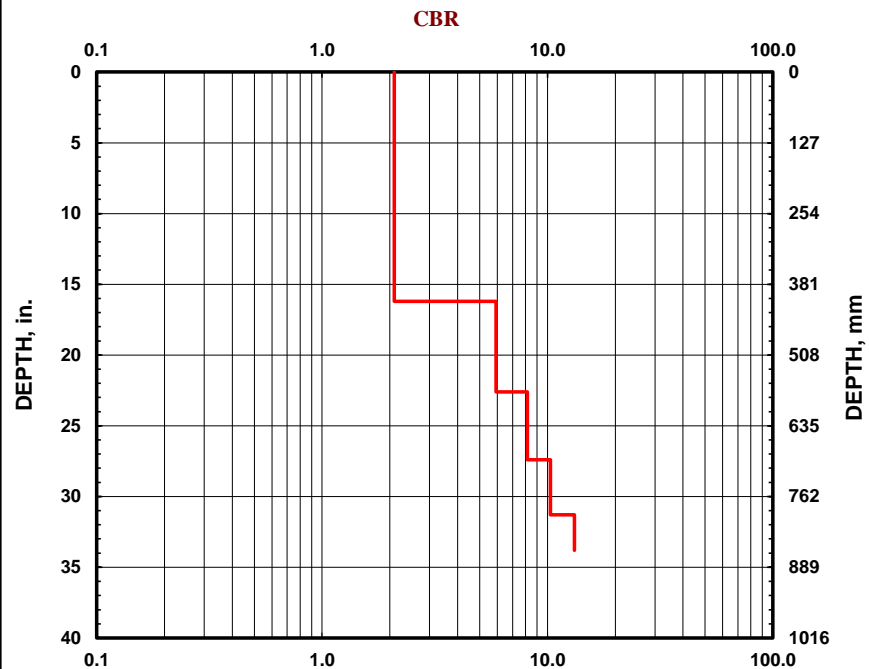
DEPTH, mm 0 127 254 381 508 635 762 889 1016

0 14 28 42 56 69 83

Based on approximate interrelationships of CBR and Bearing values (Design of Concrete Airport Pavement, Portland Cement Association, page 8, 1955)

CLIENT Becker Morgan Group, Inc.				Job #: 22:27978		BORING # K-3		SHEET 1 OF 1				
PROJECT NAME UNCW - Film Studies Building				ARCHITECT-ENGINEER								
SITE LOCATION Plyler Drive, Wilmington, New Hanover County, North Carolina												
NORTHING				EASTING		STATION				○ CALIBRATED PENETROMETER TONS/FT ² ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC% ———		
DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL		ENGLISH UNITS		WATER LEVELS ELEVATION (FT)	BLOWS/6"	PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT% ✕ ————— ● ————— △ ⊗ STANDARD PENETRATION BLOWS/FT	
					BOTTOM OF CASING  LOSS OF CIRCULATION 		SURFACE ELEVATION					
0					Topsoil/Rootmat [4"]		[Pattern]					
					(SP) FINE SAND, Gray, Dry, Contains Roots		[Pattern]					
1					(SP) FINE SAND, Tan, Dry to Moist		[Pattern]					
2							[Pattern]					
3							[Pattern]					
4							[Pattern]					
5							[Pattern]					
6							[Pattern]					
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.												
WL		WS <input type="checkbox"/>		WD <input type="checkbox"/>		BORING STARTED 6/3/19			CAVE IN DEPTH			
WL(SHW)		WL(ACR)					BORING COMPLETED 6/3/19			HAMMER TYPE		
WL							RIG FOREMAN			DRILLING METHOD Hand Auger		

DCP TEST DATA			
Project:	<u>UNCW - Film Studies Building</u>	Date:	<u>3-Jun-19</u>
Location:	<u>K-3</u>	Soil Type(s):	<u>SAND (SP)</u>
Hammer _____ <input type="radio"/> 10.1 lbs. <input checked="" type="radio"/> 17.6 lbs. <input type="radio"/> Both hammers used		Soil Type _____ <input type="radio"/> CH <input type="radio"/> CL <input checked="" type="radio"/> All other soils	

[illegible]

APPENDIX C – Seasonal High Water Table and Infiltration Testing Report

Seasonal High Water Table and Infiltration Testing Results



June 11, 2019

Mr. Ernie Olds
Becker Morgan Group
3333 Jaeckle Drive
Wilmington, North Carolina 28403

Reference: Report of Seasonal High Water Table Estimation and Infiltration Testing
UNCW – Film Studies Building
Wilmington, New Hanover County, North Carolina
ECS Project No. 22.27978

Dear Mr. Olds:

ECS Southeast, LLP (ECS) recently conducted a seasonal high water table (SHWT) estimation and infiltration testing within the stormwater control measure (SCM) area(s) off of Plyler Drive in Wilmington, New Hanover County, North Carolina. This letter, with attachments, is the report of our testing.

Field Testing

On June 5, 2019, ECS conducted an exploration of the subsurface soil and groundwater conditions, in accordance with the NCDEQ Stormwater Design Manual section A-2, at two requested locations shown on the attached Boring Location Plan (Figure 1). ECS used GPS equipment in order to determine the boring locations. The purpose of this exploration was to obtain subsurface information of the in situ soils for the SCM area(s). ECS explored the subsurface soil and groundwater conditions by advancing one hand auger boring into the existing ground surface at each of the requested boring locations. ECS visually classified the subsurface soils and obtained representative samples of each soil type encountered. ECS also recorded the SHWT and groundwater elevation observed at the time of the hand auger borings. The attached Infiltration Testing Form provides a summary of the subsurface conditions encountered at the hand auger boring locations.

The SHWT and groundwater elevation was estimated at the boring locations below the existing grade elevation. A summary of the findings are as follows:

Location	SHWT	Groundwater
I-1	90 inches	100 inches
I-2	92 inches	100 inches

ECS has conducted two infiltration tests utilizing a compact constant head permeameter near the hand auger borings in order to estimate the infiltration rate for the subsurface soils. Infiltration tests are typically conducted at two feet above the SHWT or in the most restrictive soil horizon. Tests in clayey conditions are conducted for durations of up to 30 minutes. If a more precise hydraulic conductivity value is desired for these locations, then ECS recommends collecting samples by advancing Shelby tubes and performing laboratory permeability testing.

Field Test Results

Below is a summary of the infiltration test results:

Location	Description	Depth	Inches/ hour
I-1	Brown silty SAND	60 inches	0.24
I-2	Brown silty SAND	36 inches	0.32

Infiltration rates and SHWT may vary within the proposed site due to changes in elevation and subsurface conditions.

Closure

ECS's analysis of the site has been based on our understanding of the site, the project information provided to us, and the data obtained during our exploration. If the project information provided to us is changed, please contact us so that our recommendations can be reviewed and appropriate revisions provided, if necessary. The discovery of any site or subsurface conditions during construction which deviate from the data outlined in this exploration should be reported to us for our review, analysis and revision of our recommendations, if necessary. The assessment of site environmental conditions for the presence of pollutants in the soil and groundwater of the site is beyond the scope of this geotechnical exploration.

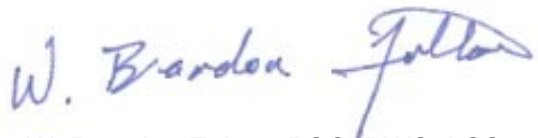
ECS appreciates the opportunity to provide our services to you on this project. If you have any questions concerning this report or this project, please contact us.

Respectfully,

ECS SOUTHEAST, LLP

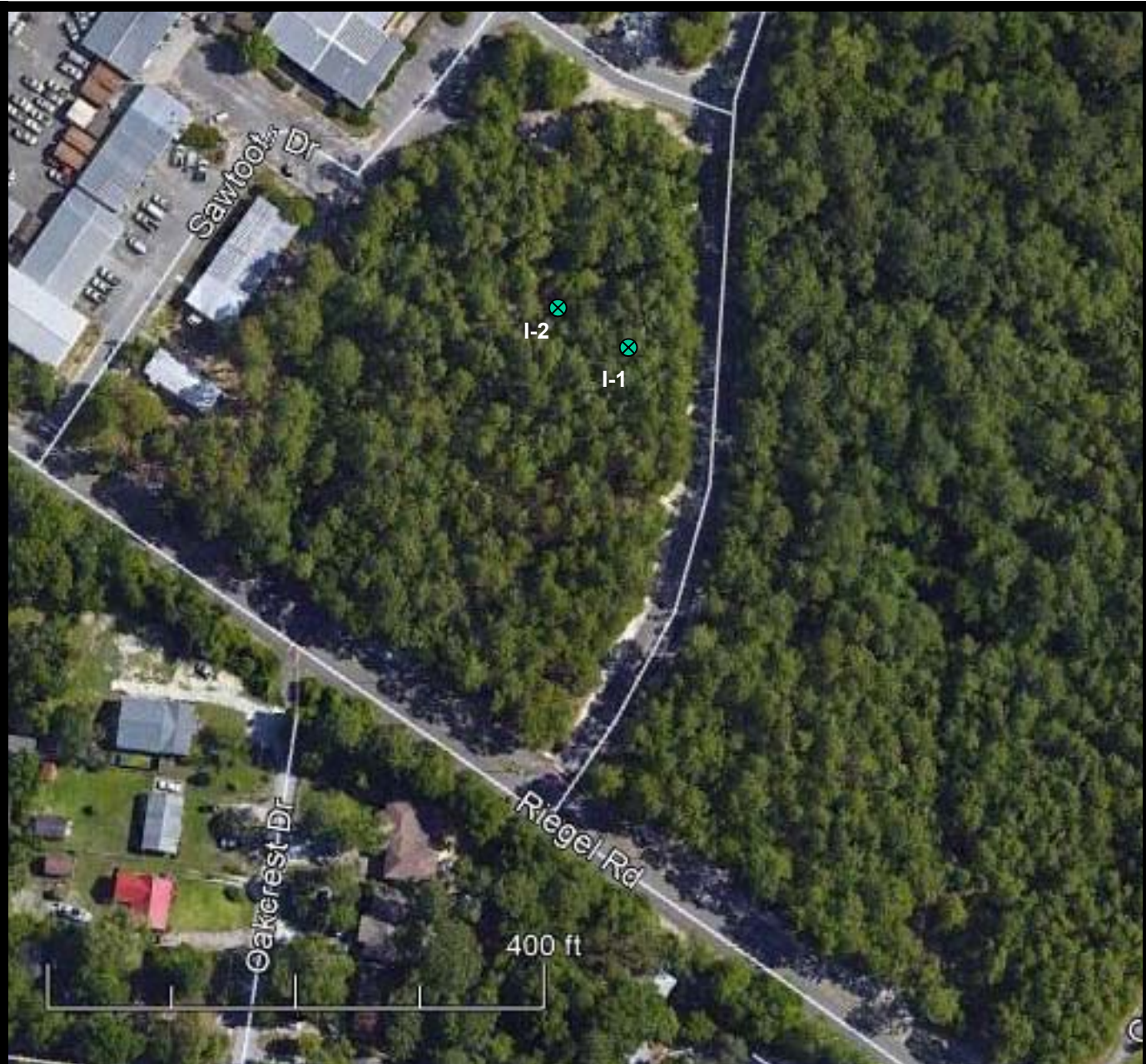


K. Brooks Wall
Project Manager
bwall@ecslimited.com
910-686-9114



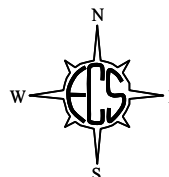
W. Brandon Fulton, PSC, PWS, LSS
Environmental Department Manager
bfulton@ecslimited.com
704-525-5152

Attachments: Figure 1 - Boring Location Plan
Infiltration Testing Form
GBA Document



APPROXIMATE BORING LOCATIONS

SCALE SHOWN ABOVE



UNCW – Film Studies Building
Wilmington, New Hanover County,
North Carolina

ECS Project # 22.27978
June 5, 2019
KBW



Figure 1– Boring Location Plan

Provided by: Google Earth

Infiltration Testing Form
UNCW – Film Studies Building
Wilmington, New Hanover County, North Carolina
ECS Project No. 22.27978
June 5, 2019

<u>Location</u>	<u>Depth</u>	<u>USCS</u>	<u>Soil Description</u>
I-1	0-24"	SP	Gray fine to med. SAND
	24"-78"	SM	Brown silty SAND
	78"-100"	SP	Brown fine SAND

Seasonal High Water Table was estimated to be at 90 inches below the existing grade elevation.

Groundwater was encountered at 100 inches below the existing grade elevation.

Test was conducted at 60 inches below existing grade elevation

Infiltration Rate: 0.24 inches per hour

<u>Location</u>	<u>Depth</u>	<u>USCS</u>	<u>Soil Description</u>
I-2	0-30"	SP	Gray fine to med. SAND
	30"-70"	SM	Brown silty SAND
	70"-100"	SP	Brown fine SAND

Seasonal High Water Table was estimated to be at 92 inches below the existing grade elevation.

Groundwater was encountered at 100 inches below the existing grade elevation.

Test was conducted at 36 inches below existing grade elevation

Infiltration Rate: 0.32 inches per hour

APPENDIX D – Supplemental Report Documents

GBA Document

Important Information about This Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, clients can benefit from a lowered exposure to the subsurface problems that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed below, contact your GBA-member geotechnical engineer. Active involvement in the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Geotechnical-Engineering Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. *Those who rely on a geotechnical-engineering report prepared for a different client can be seriously misled.* No one except authorized client representatives should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one – not even you – should apply this report for any purpose or project except the one originally contemplated.*

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read it *in its entirety*. Do not rely on an executive summary. Do not read selected elements only. *Read this report in full.*

You Need to Inform Your Geotechnical Engineer about Change

Your geotechnical engineer considered unique, project-specific factors when designing the study behind this report and developing the confirmation-dependent recommendations the report conveys. A few typical factors include:

- the client's goals, objectives, budget, schedule, and risk-management preferences;
- the general nature of the structure involved, its size, configuration, and performance criteria;
- the structure's location and orientation on the site; and
- other planned or existing site improvements, such as retaining walls, access roads, parking lots, and underground utilities.

Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

This Report May Not Be Reliable

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, that it could be unwise to rely on a geotechnical-engineering report whose reliability may have been affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If your geotechnical engineer has not indicated an "apply-by" date on the report, ask what it should be, and, in general, if you are the least bit uncertain about the continued reliability of this report, contact your geotechnical engineer before applying it.* A minor amount of additional testing or analysis – if any is required at all – could prevent major problems.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface through various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing were performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgment to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team from project start to project finish, so the individual can provide informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, *they are not final*, because the geotechnical engineer who developed them relied heavily on judgment and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* revealed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a full-time member of the design team, to:

- confer with other design-team members,
- help develop specifications,
- review pertinent elements of other design professionals' plans and specifications, and
- be on hand quickly whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction observation.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for informational purposes only*. To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report, but they may rely on the factual data relative to the specific times, locations, and depths/elevations referenced. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may

perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely*. Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures*. If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. As a general rule, *do not rely on an environmental report prepared for a different client, site, or project, or that is more than six months old*.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, none of the engineer's services were designed, conducted, or intended to prevent uncontrolled migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, *proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration*. Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. *Geotechnical engineers are not building-envelope or mold specialists*.



Telephone: 301/565-2733

e-mail: info@geoprofessional.org www.geoprofessional.org