111 INDUSTRIAL VILLAGE RD BEAUFORT, SOUTH CAROLINA, 29906

## **SCOPE OF WORK:**

- THE CONSTRUCTION OF 1,970 SQUARE FOOT OFFICE ADDITION TO THE REAR / NORTH OF THE EXISTING 4,105 SQUARE FOOT, SINGLE STORY, BEAUFORT **COUNTY DNA LABORATORY**
- THE ADDITION WILL UTILIZE SPREAD FOOTING, MASONRY FOUNDATION WALLS WITH MASONRY INTERIOR PIERS. ENGINEERED WOOD FLOOR JOIST. WOOD FRAMED INTERIOR AND EXTERIOR WALLS, WITH A PRE-ENGINNERED **WOOD TRUSS ROOF**
- DEMOLITION INCLUDES THE REMOVAL OF THE EXTERIOR STAIRS, WALKS, LANDSCAPING, AND EXTERIOR DOORS AS INDICATED ON DRAWING AD-101
- THE EXISITNG BUILDING WILL REMAIN OCCUPIED AND FULLY OPERATIONAL THROUGHOUT THE CONSTRUCTION PERIOD

## **ALTERNATE BID ITEM 01:**

THIS ALTERNATE REDUCES THE PROPOSED BUILDING **FOOTPRINT BY 426 GROSS SQUARE FEET AND IT ELIMINATES THREE (3) OFFICES.** 

- ELIMINATE ALL GENERAL CONSTRUCTION LABOR AND MATERIALS ASSOCIATED WITH THE SMALLER BUILDING FOOTPRINT INCLUDING SITE WORK, STRUCTURE, BUILDING SHELL, INTERIOR WALLS, FINISHES, DOORS AND OTHER RELATED ELEMENTS AND COMPONENTS
- 2. THIS ALTERNATE DOES NOT CHANGE THE PLUMBING SCOPE OF WORK
- 3. THIS ALTERNATE DOES NOT CHANGE THE MECHANICAL SCOPE OF WORK EXCEPT THAT DUCTWORK AND DEVICES SERVING THOSE OFFICES THAT ARE REMOVED ARE TO BE ELIMINATED
- 4. ELIMINATE LIGHT FIXTURES, WALL MOUNTED DEVICES INCLUDING OUTLETS AND SWITCHES AND ALL
- WIRING, CONDUIT, ETC. SERVING THOSE OFFICES THAT ARE REMOVED
- 5. IF THE ALTERNATE IS ACCEPTED, REVISED MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS WILL BE ISSUED TO THE CONTRACTOR AND THE CITY.

### **GENERAL CONSTRUCTION NOTES:**

- 1. ALL WORK SHALL BE CARRIED OUT ACCORDING TO GOOD CONSTRUCTION PRACTICES
- 2. ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE FOLLOWING CODES AND STANDARDS
- 2.1. BUILDING: 2018 SOUTH CAROLINA STATE BUILDING CODE
- MECHANICAL: 2018 INTERNATIONAL MECHANICAL CODE
- **ELECTRICAL: 2017 NATIONAL ELECTRICAL CODE**
- 2.4. PLUMBING: 2018 INTERNATIONAL PLUMBING CODE
- 2.5. FIRE CODE: 2018 INTERNATIONAL FIRE CODE
- **ENERGY CODE: 2009 INTERNATIONAL ENERGY CONSERVATION CODE**
- NFPA 101 LIFE SAFETY CODE 2.8. ICC A11.7-2017 AND THE AMERICAN WITH DISABILITIES ACT (ADA)
- 2.9. LOCAL PLANNING AND ZONING
- 3. ALL WORK SHALL BE UNDERTAKEN AND MANAGED IN ACCORDANCE WITH OSHA STANDARDS FOR THE
- 4. GENERAL CONTRACTOR IS RESPONSIBLE FOR ALL LIFE SAFETY ELEMENTS NECESSARY TO SATISFY LOCAL, STATE AND FEDERAL STANDARDS, CODES AND GUIDELINES.
- 5. GENERAL CONTRACTOR IS RESPONSIBLE FOR ALL PERMITS AND FEES
- 6. GENERAL CONTRACTOR SHALL REPORT, TO THE ARCHITECT, ANY AND ALL DISCREPANCIES REGARDING EXISTING CONDITIONS OR WITHIN THE DRAWINGS AND THE SPECIFICATIONS. FAILURE TO DO SO WILL RELIEVE THE ARCHITECT OF ANY RESPONSIBILITY REGARDING ANY CONSEQUENCES THAT MIGHT RESULT FROM SUCH DISCREPANCIES.
- 7. GENERAL CONTRACTOR SHALL SUBMIT, FOR OWNER AND ARCHITECT APPROVAL, SAMPLES AND PRODUCT DATA FOR ANY SUBSTITUTED PRODUCTS AND / OR SYSTEMS.
- 8. GENERAL CONTRACTOR IS SOLELY RESPONSIBLE FOR COORDINATION OF ALL DISCIPLINES AND TRADES AND THEIR POTENTIAL IMPACT ON THE PROJECT.
- 9. GENERAL CONTRACTOR IS RESPONSIBLE FOR COORDINATING, BETWEEN TRADES, ALL CUTTING AND PATCHING RESPONSIBILITIES.
- 10. DUE TO MANUFACTURER VARIATIONS ON TYPE AND SIZES OF EQUIPMENT, CASEWORK, FIXTURES, ETC., ALL DIMENSIONS AND CONDITIONS SHALL BE FIELD VERIFIED BY THE GENERAL CONTRACTOR AND APPROPRIATE COORDINATE WITH THE SUBCONTRACTORS AND SUPPLIERS.
- 11. CONSTRUCTION DRAWINGS TAKE PRECEDENCE OVER SPECIFICATIONS, LARGE SCALE DETAILS TAKE PRECEDENCE OVER PLANS AND ELEVATIONS AND ENGINEERING DRAWINGS TAKE PRECEDENCE OVER ARCHITECTURAL GRAPHIC REPRESENTATIONS.
- 12. GENERAL CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL CONSTRUCTION DEBRIS AND FINAL
- 13. GENERAL CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE OWNER FOR LOCATION OF TEMPORARY RESTROOM, DUMPSTER OTHER TEMPORARY FACILITIES AND EQUIPMENT.
- 14. GENERAL CONTRACTOR IS RESPONSIBLE FOR KNOWING AND COMPLYING WITH ALL LOCAL ORDINANCES REGARDING NOISE, WORK HOURS, ETC.
- 15. THE BUILDING INTERIOR IS OFF LIMITS TO CONSTRUCTION PERSONNEL DURING CONSTRUCTION WORK
- 16. WATER AND POWER WILL BE AVAILABLE FOR USE BY THE CONTRACTOR. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DELIVER THESE UTILITIES FROM THEIR SOURCE AT THE BUILDING TO THE POINT OF **USE IN A SAFE AND SECURE MANNER**

## **DESIGN TEAM**

### **ARCHITECT**

BEAUFORT DESIGN BUILD. LLC. 2 FIRE STATION LANE. SEABROOK, SC, 29940 P: 843-466-3664

### MECHANICAL, ELECTRICAL **AND PLUMBING**

**OPTIMA ENGINEERING** 1927 SOUTH TRYON STREET SUITE 300 CHARLOTTE, NC. 27601 704.338.1292

## **ABBREVIATIONS**

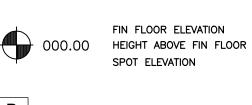
- AMERICAN SOCIETY FOR TESTING AND MATERIALS
- CONCRETE MASONRY UNIT CONT. CONTINUOUS
- DHEC DEPARTMENT OF HEALTH & ENVIRONMENTAL CONTROL
- EQUIP EQUIPMENT EXISTING OR EXTERIOR FIRE EXTINGUISHER
- GWB GYPSUM WALL BOARD INTERNATIONAL BUILDING CODE
- N/A NOT APPLICABLE NFPA NATIONAL FIRE PROTECTION ASSOCIATION

V.I.F. VERIFY IN FIELD

POUNDS PER SQUARE FOOT SCSBC SOUTH CAROLINA STATE BUILDING CODE SQUARE FEET (FOOT)

# (CORRESPONDS WITH ROOM NUMBER)

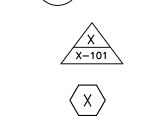




PARTITION TYPE INDICATOR

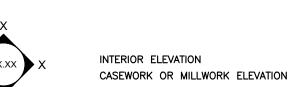
BUILDING EQUIPMENT SYMBOL

**LOCATION MAP**  $\oplus$ 





EXISTING CONDITIONS PHOTOGRAPH



## **SHEET INDEX:**

COVER SHEET. SHEET INDEX AND SCOPE OF WORK 2018 INTERNATIONAL BUILDING CODE SUMMARY

SUPPORTING DOCUMENTS

**EXISTING CONDITIONS AND DEMO FLOOR PLAN** 

**FOUNDATION PLAN** 

FIRST FLOOR FRAMING PLAN

**ALT 01 FLOOR PLAN** 

**EXTERIOR ELEVATIONS** 

**BUILDING AND WALL SECTIONS** 

**ENLARGED PLANS, INT. ELEVATIONS AND FINISH SCHEDULES** 

**SCHEDULES AND LEGEND - MECHANICAL** 

**ELECTRICAL NOTES & LEGENDS SPECIFICATIONS** 

**ELECTRICAL DETAILS** FLOOR PLAN - LIGHTING

PLUMBING LEGEND, NOTES, SCHEDULES AND SPECIFICATIONS FLOOR PLAN - PLUMBING



Know what's **below. Call before you dig.** 

FIRE SPRINKLER, PROPOSED ADDITION WILL NOT BE PROVIDED WITH A FIRE SPRINKLER SYSTEM

### **GENERAL**

## **ARCHITECTURAL**

FLOOR PLAN

**REFLECTED CEILING PLAN** 

A-302 **WALL SECTIONS** 

DOOR AND HARDWARE SCHEDULES AND DETAILS

## **MECHANICAL**

FLOOR PLAN AND DETAILS - MECHANICAL

## **ELECTRICAL**

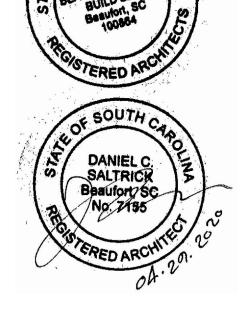
**WALL PENETRATION DETAILS** 

**FLOOR PLAN - POWER** 

## **PLUMBING**



**EXISTING BUILDING IS NOT** 



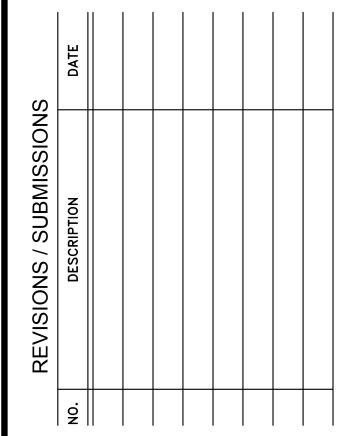


**BEAUFORT COUNTY ENGINEERING** BEAUFORT COUNTY DNA

LABORATORY ADDITION

111 INDUSTRIAL VILLAGE RD BEAUFORT, SC 29906

CONSTRUCTION



SHEET INFORMATION APRIL 29, 2020 JOB NUMBER

COVER SHEET, SHEET INDEX AND SCOPE OF WORK

### 2018 APPENDIX B BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS (EXCEPT 1 AND 2-FAMILY DWELLINGS AND TOWNHOUSES) FIRE PROTECTION REQUIREMENTS (CONT.) **ENERGY SUMMARY** 111 INDUSTRIAL VILLAGE ROAD, BEAUFORT SC. E-Mail DANGBEAUFORTDESIGNBUILD.COM FIRE RATING DETAIL # DESIGN # SHEET # SEPARATION REQUIRED PROVIDED AND FOR RATED FOR R The following data shall be considered minimum and any special attribute required to meet the North Carolina BUILDING ELEMENT SHEET # | ASSEMBLY | PENETRATION | JOINTS Energy Conservation Code shall also be provided. Each Designer shall furnish the required portions of the project Code Enforcement Jurisdiction: CITY OF BEAUFORT REDUCTION) information for the plan data sheet. If performance method, state the annual energy cost for the standard reference design vs. annual energy cost for the proposed design N/A N/A rridor Separation ccupancy/Fire Barrier N/A N/A Exempt Building: N/A N/A N/A rty/Fire Wall Separation N/A N/A noke Barrier Separation (If "Other" specify source here) N/A N/A nant Separation \_\_\_\_\_\_N/A \_\_\_\_N/A \_\_\_\_N/A \_\_\_\_N/A N/A N/A N/A idental Separation THERMAL ENVELOPE: (Prescriptive method only) <u>17011</u> <u>(919) 926–2200</u> Roof/Ceiling Assembly (each assembly) \* Indicate section number permitting reduction Description of assembly: GEORGE FOWLER 21021 (704) 338–1292 U-Value of total assembly: STEVE DALEY 22151 (704) 338-1292 SDALEY@OPTIMAPAENGINEERING.COI R-Value of insulation: Skylights in each assembly PERCENTAGE OF WALL OPENING CALCULATIONS U-Value of skylight: Total square footage of skylight in each assembly Exterior Walls (each assembly) \_\_\_\_\_N/A FIRE SEPARATION DEGREE OF OPENING ALLOWABLE AREA ACTUAL SHOWN ON PLANS Description of assembly: ("Other" should include firms and individuals such as truss, precast, pre-engineered, interior designers, etc.) DISTANCE (FEET) FROM U-Value of total assembly: PROPERTY LINES R-Value of insulation: NORTH 133'-6" NO LIMIT Openings (windows or doors with glazing) U-Value of assembly: 2018 BUILDING CODE: 2018 INTERNATIONAL BUILDING CODE Solar hear gain coefficient: WEST 30'-0" NO LIMIT Projection Factor: 2018 EXISTING BUILDING CODE: N/A NO LIMIT Door R-values: CONSTRUCTED: (date) \_\_\_\_\_ CURRENT OCCUPANCY(S) (Ch.3) \_\_\_\_\_ B Walls below grade (each assembly) RENOVATED: (date) \_\_\_\_\_N/A PROPOSED OCCUPANCY(S) (Ch.3) \_\_\_\_\_B Description of assembly: U-Value of total assembly: OCCUPANCY CATEGORY (Table 1604.5): Current: \_\_\_\_\_B Proposed: \_\_\_ R-Value of insulation: LIFE SAFETY SYSTEMS REQUIREMENTS Floors over unconditioned space (each assembly) Description of assembly: **Emergency Lighting:** BASIC BUILDING DATA U-Value of total assembly: Exit Signs: R-Value of insulation: Special Inspections Required: NO Construction Type: Fire Alarm: Floors slab on grade Floor Hazard Area: NO Smoke Detection Systems: Description of assembly: U-Value of total assembly: Carbon Monoxide Detection: NO R-Value of insulation: Primary Fire District: BURTON Horizontal/vertical requirement: Slab heated: GROSS BUILDING AREA TABLE LIFE SAFETY PLAN REQUIREMENTS STRUCTURAL DESIGN (PROVIDE ON THE STRUCTURAL SHEETS IF APPLICABLE) EXISTING (SQ FT) NEW (SQ FT) RENOVATED Life Safety Plan Sheet #: \_\_\_\_\_G\_103 DESIGN LOADS: ☐ Fire and /or smoke rated wall locations (Chapter 7) Assumed and real property line locations (if not on the site plan) ☐ Exterior wall opening area with respect to distance to assumed property lines (705.8) Occupancy Use for each area as it relates to occupant load calculation (Table 1004.1.2) ○ Occupant load for each area 4,105 1,970 ⊠ Exit access travel distances (1017) □ Common path of travel distances (Tables 1006.2.1 & 1006.3.2(1)) Ground Snow Load: 1,970 □ Dead end lengths (1020.4) Basic Wind Speed: ALLOWABLE AREA Maximum calculated occupant load capacity each exit door can accommodate based on egress SEISMIC DESIGN CATEGORY: Primary Occupancy Classification(s): (B) BUSINESS Provide the following Seismic Design Parameters: □ Actual occupant load for each exit door Accessory Occupancy Classification(s): N/A Occupancy Category: (Table 1604.5) ☐ A separate schematic plan indicating where fire rated floor/ceiling and/or roof structure is Incidental Uses (Table 509): N/A provided for purpose of occupancy separation Special Uses (Chapter 4 – List Code Sections): N/A ☐ Location of doors with panic hardware (1010.1.10) Special Provisions: (Chapter 5 – List Code Sections): N/A ☐ Location of doors with delayed egress locks and the amount of delay (1010.1.9.7) Mixed Occupancy: N/A Basic Structural System (Check one) Separation: N/A Exception: N/A ☐ Location of doors with electromagnetic egress locks (1010.1.9.9) Analysis Procedure: Actual Area of Occupancy A Allowable Area of Occupancy A + Actual Area of Occupancy B Allowable Area of Occupancy B ≤ 1.00 ☐ Location of doors equipped with hold-open devices Architectural, Mechanical, Components anchored? $\square$ Location of emergency escape windows (1030) \_\_\_ + \_\_... = N/A < 1.00 LATERAL DESIGN CONTROL: \_\_\_\_ N/A $\Box$ The square footage of each fire area (202) ☐ The square footage of each smoke compartment for Occupancy Classification I-2 (407.5) SOIL BEARING CAPACITIES: DESCRIPTION AND (A) BLDG AREA (C) AREA FOR (D) ALLOWABLE □ Note any code exceptions or table notes that may have been utilized regarding the items above ALLOWABLE<sup>4</sup> PER STORY FRONTAGE AREA AREA PER Pile sizes, type, and capacity \_\_\_\_\_ STORY OR (ACTUAL) TABLE 506.2 INCREASE 1,5 UNLIMITED<sup>\*</sup> BUSINESS OFFICE (NEW) 1,970 SF 9,000 SF 7,897 SF 11,700 SF ACCESSIBLE DWELLING UNITS MECHANICAL DESIGN BUSINESS OFFICE (EXISTING) 4,105 SF 9,000 SF 7,897 SF 11,700 SF (SECTION 1107) (PROVIDE ON THE MECHANICAL SHEETS IF APPLICABLE) 11,700 SF TOTAL BUILDING AREA 6,075 SF 9,000 SF MECHANICAL SUMMARY Frontage area increases from Section 506.2 are computed thus: TOTAL UNITS MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT a. Perimeter which fronts a public way or open space having 20 feet minimum width = 187.25 (F) | REQUIRED | PROVIDED | REQUIRED | PROVIDED | PROVIDED | PROVIDED | PROVIDED | Thermal Zone N/A b. Total Building Perimeter (P) = 341.25 (P) SEE MECHANICAL SHEET M-001 Winter dry bulb: c. Ratio (F/P) = .55 (F/P)SEE MECHANICAL SHEET M-001 Summer dry bulb: d. Minimum width of public way (W) = 30 (W)nterior design conditions e. Percent of frontage increase $I_f = 100 [F/P - 0.25] \times W/30 = 30$ (%) SEE MECHANICAL SHEET M-001 ACCESSIBLE PARKING Winter dry bulb: Unlimited area applicable under conditions of Section 507. SEE MECHANICAL SHEET M-001 Summer dry bulb: (SECTION 1106) <sup>3</sup> Maximum Building Area = total number of stories in the building x D (maximum3 stories) (506.2). SEE MECHANICAL SHEET M-001 Relative humidity: The maximum area of open parking garages must comply with Table 406.5.4. The maximum area of air traffic control towers must comply SEE MECHANICAL SHEET M-001 Building heating load: TOTAL # OF PARKING SPACES # OF ACCESSIBLE SPACES PROVIDED TOTAL # SEE MECHANICAL SHEET M-001 Building cooling load: REGULAR WITH VAN SPACES WITH ACCESSIBLE Frontage increase is based on the unsprinklered area value in Table 506.2 REQUIRED PROVIDED Mechanical Spacing Conditioning System 5' ACCESS AISLE | 132" ACCESS | 8' ACCESS SEE MECHANICAL SHEET M-001 Description of unit: NO CHANGE TO THE PARKING COUNT AND ACCESSIBLE PARKING ASSOCIATED WITH THE EXISTING BUILDING ALLOWABLE HEIGHT SEE MECHANICAL SHEET M-001 SEE MECHANICAL SHEET M-001 SEE MECHANICAL SHEET M-001 ALLOWABLE SHOWN ON PLANS CODE REFERENCE uilding Height in Feet (Table 504.3) Feet: 40 Size category. If oversized, state reason: N/A PLUMBING FIXTURES REQUIREMENTS Building Height in Stories (Table 504.4) Stories: 2 <sup>1</sup> Provide code reference if the "Shown on Plans" quantity is not based on Table 504.3 or 504.4. Size category. If oversized, state reason: SERVICE DRINKING FOUNTAINS MALE FEMALE UNISEX MALE FEMALE UNISEX REGULAR ACCESSIBLE FIRE PROTECTION REQUIREMENTS (CHAPTER 7) 1 1 N/A 0 1 1 N/A 1 1 1 1 ELECTRICAL DESIGN (PROVIDE ON THE ELECTRICAL SHEETS IF APPLICABLE) FIRE RATING TABLE 601 DETAIL # DESIGN # SHEET # SHEET # FOR RATED DISTANCE PROVIDED (W/ \* SHEET # ASSEMBLY PENETRATION JOINTS ELECTRICAL SUMMARY BUILDING ELEMENT ELECTRICAL SYSTEM AND EQUIPMENT REDUCTION) SEE ELECTRICAL SHEET E-001 Method of compliance: TOTAL REQUIRED | 1 | 1 | N/A | 0 | 1 | 1 | N/A | 1 | 1 | 1 Structural Frame including columns 32'-2" Lighting Schedule (each fixture type) | 1.5 | N/A | 0 | 1.5 | 1.5 | N/A | 1 | 1 | 1 girders, trusses SEE ELECTRICAL SHEET E-001 Lamp type required in fixture Bearing Walls SEE ELECTRICAL SHEET E-001 Number of lamps in fixture SEE ELECTRICAL SHEET E-001 Ballast type used in the fixture SEE ELECTRICAL SHEET E-001 Number of ballasts in fixture SEE ELECTRICAL SHEET E-001 Total wattage per fixture SPECIAL APPROVALS Total interior wattage specified vs. allowed SEE ELECTRICAL SHEET E-001 (whole building or space by space) Total exterior wattage specified vs. allowed \_\_\_\_\_SEE\_ELECTRICAL\_SHEET\_E-001 Special approval: (Local Jurisdiction, Department of Insurance, OSC, DPI, DHHS, ICC, etc., describe below) Nonbearing Walls and Partitions (When using the 2018 NCECC; not required for ASHRAE 90.1) C406.2 More Efficient HVAC Equipment Performance C406.3 Reduced Lighting Power Density C406.4 Enhanced Digital Lighting Controls C406.5 On-Site Renewable Energy C406.6 Dedicated Outdoor Air System C406.7 Reduced Energy Use in Service Water Heating

including supporting beams and joists

including supporting

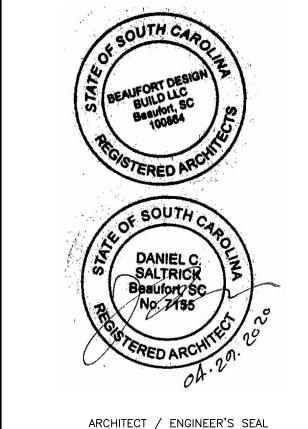
beams and joists Roof Ceiling Assembly

Columns Supporting Floors

N/A

**EXISTING BUILDING IS NOT** FIRE SPRINKLER, PROPOSED ADDITION WILL **NOT BE PROVIDED WITH A** FIRE SPRINKLER SYSTEM



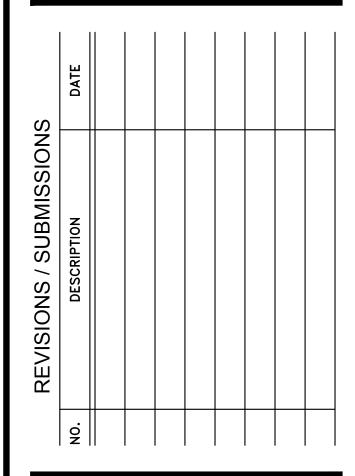


**BEAUFORT COUNTY ENGINEERING** 

BEAUFORT COUNTY DNA LABORATORY ADDITION

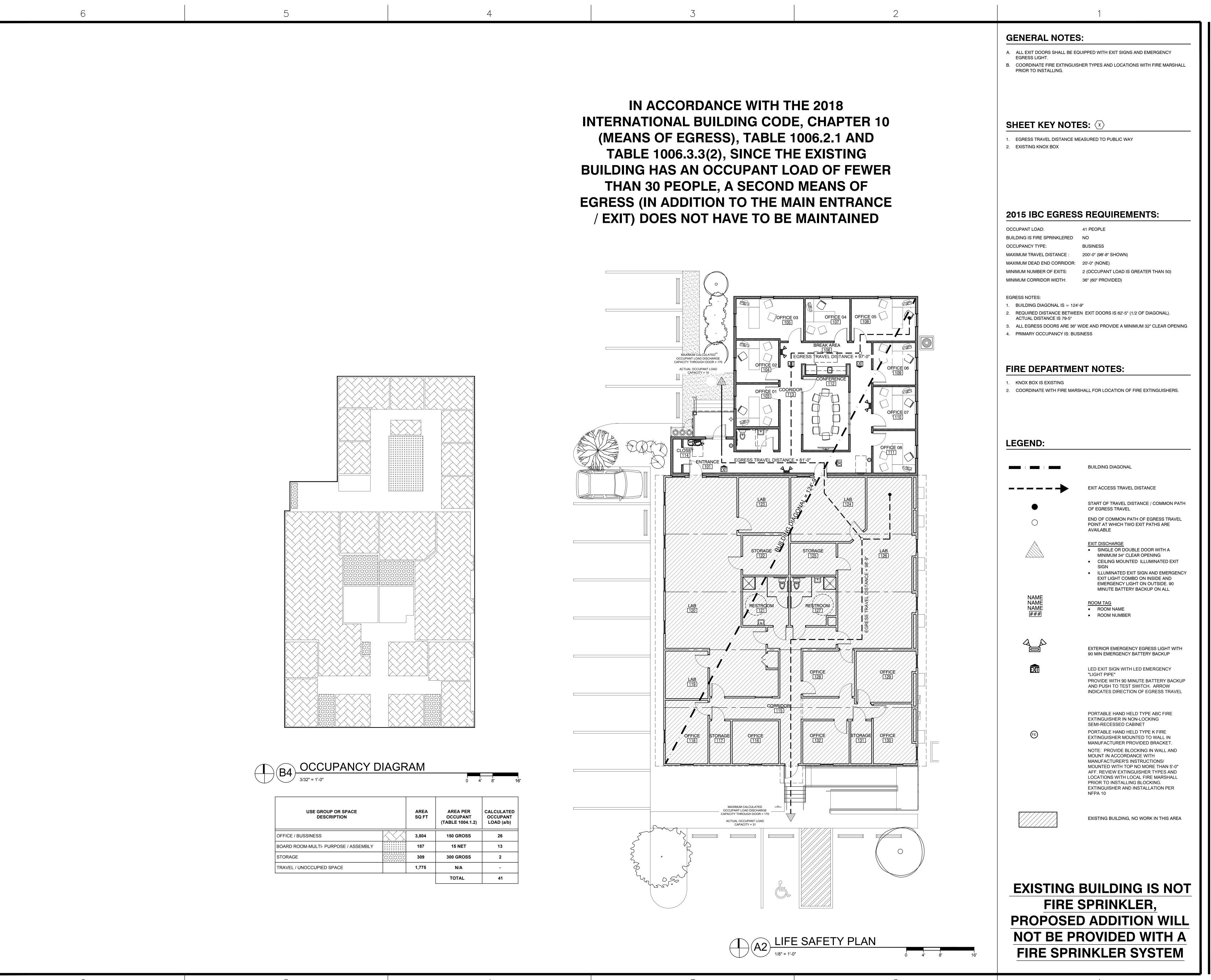
111 INDUSTRIAL VILLAGE RD BEAUFORT, SC 29906

CONSTRUCTION



SHEE	T INFORMATION
DATE	APRIL 29, 2020
JOB NUMBER	19044.00
DRAWN	ADB
CHECKED	ADB
APPROVED	DCS
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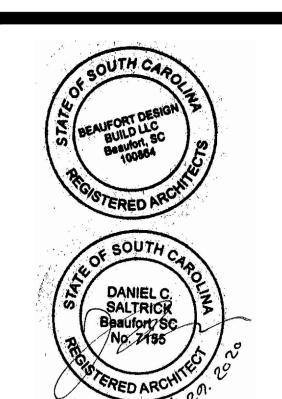
2018 IBC **BUILDING CODE SUMMARY** 



**EAUFORT**Fire Station Lane eabrook, SC 29940

Cornelius, NC 280 (843) 466-3664 info@beaufortdesignb www.beaufortdesignb





ARCHITECT / ENCINEER'S SEAL

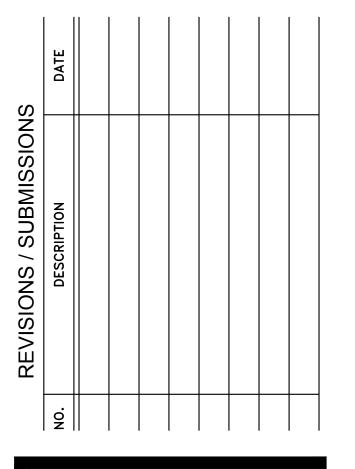


BEAUFORT COUNTY ENGINEERING

BEAUFORT COUNTY DNA LABORATORY ADDITION

111 INDUSTRIAL VILLAGE RD BEAUFORT, SC 29906

FOR CONSTRUCTION



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	APRIL	29,	2020
MRFR		190	<u>44 nc</u>

JOB NUMBER 19044.00

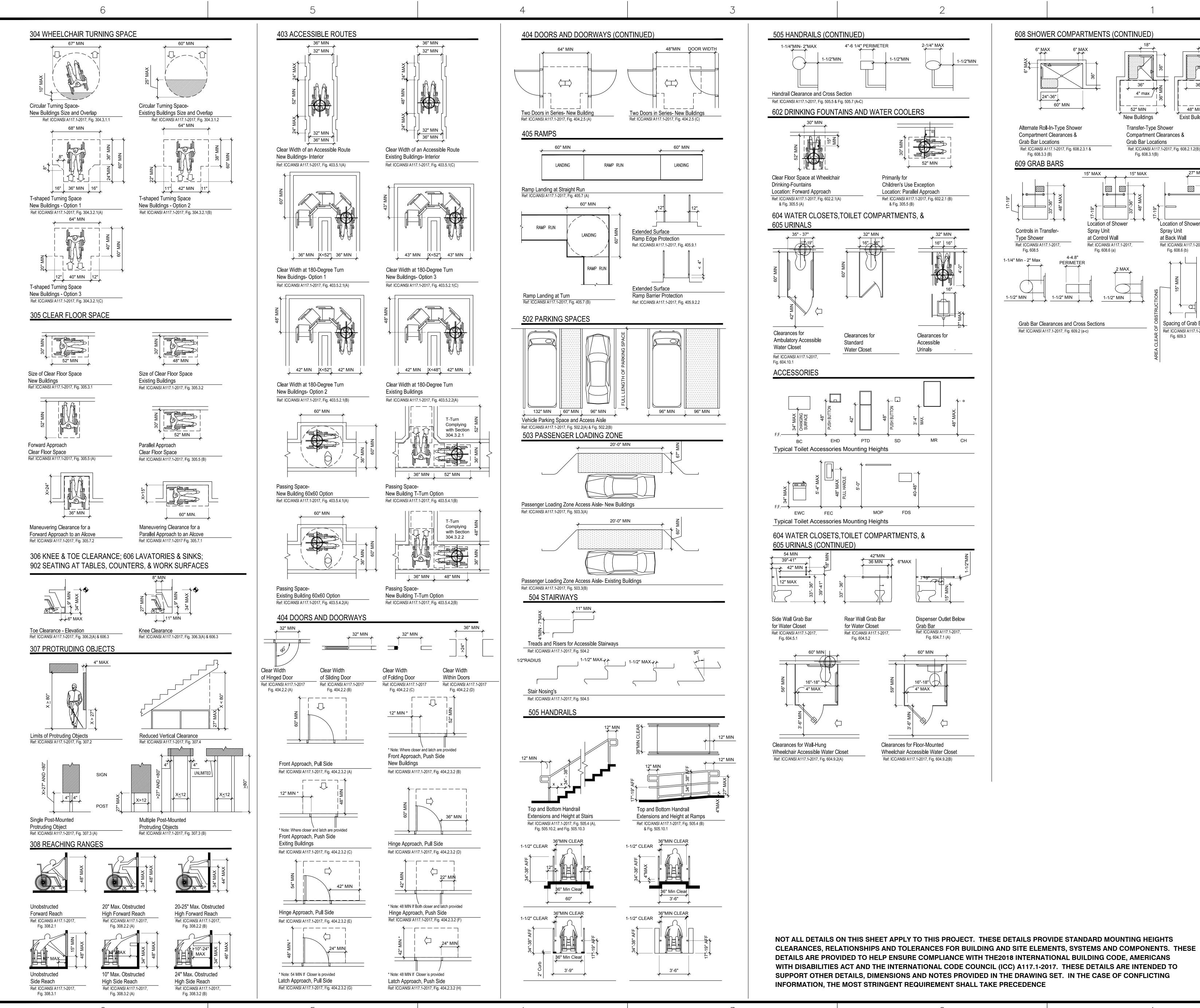
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APPROVED DCS

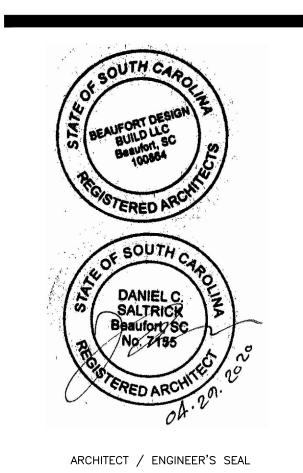
DATE

LIFE SAFETY PLAN



36" 48" MIN Exist Buildings Transfer-Type Shower Compartment Clearances & Grab Bar Locations Ref: ICC/ANSI A117.1-2017, Fig. 608.2.1.2(B) & Location of Shower Spray Unit at Back Wall Ref: ICC/ANSI A117.1-2017, Fig. 608.6 (b) Spacing of Grab Bars Ref: ICC/ANSI A117.1-2017, Fig. 609.3







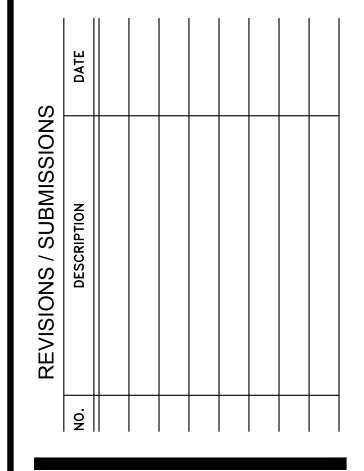
**BEAUFORT COUNTY ENGINEERING** 

**BEAUFORT COUNTY DNA LABORATORY ADDITION** 

111 INDUSTRIAL VILLAGE RD BEAUFORT, SC 29906

FOR

CONSTRUCTION

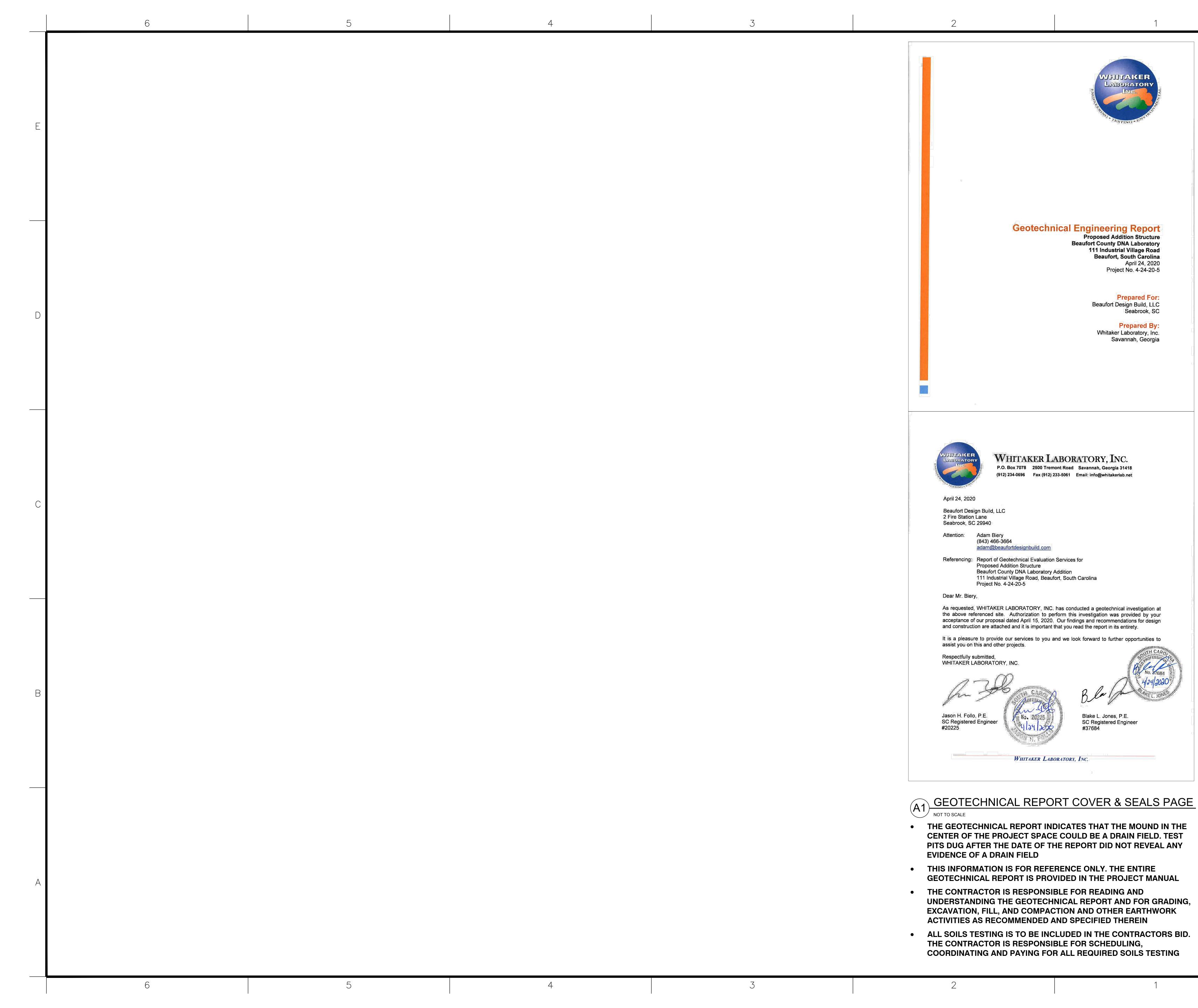


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DATE	APRIL 29, 2020
JOB NUMBER	19044.00
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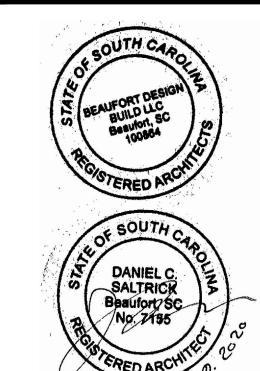
DCS

**TYPICAL ACCESSIBILITY DETAILS** 

CHECKED APPROVED







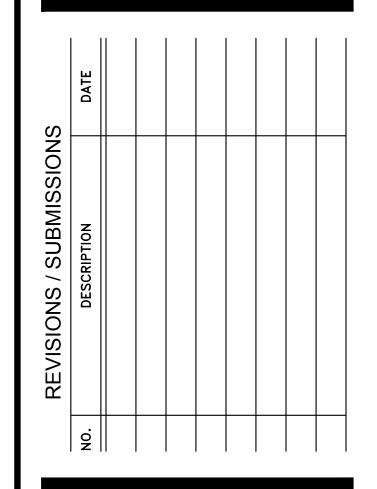


**BEAUFORT COUNTY ENGINEERING BEAUFORT COUNTY DNA** 

LABORATORY ADDITION

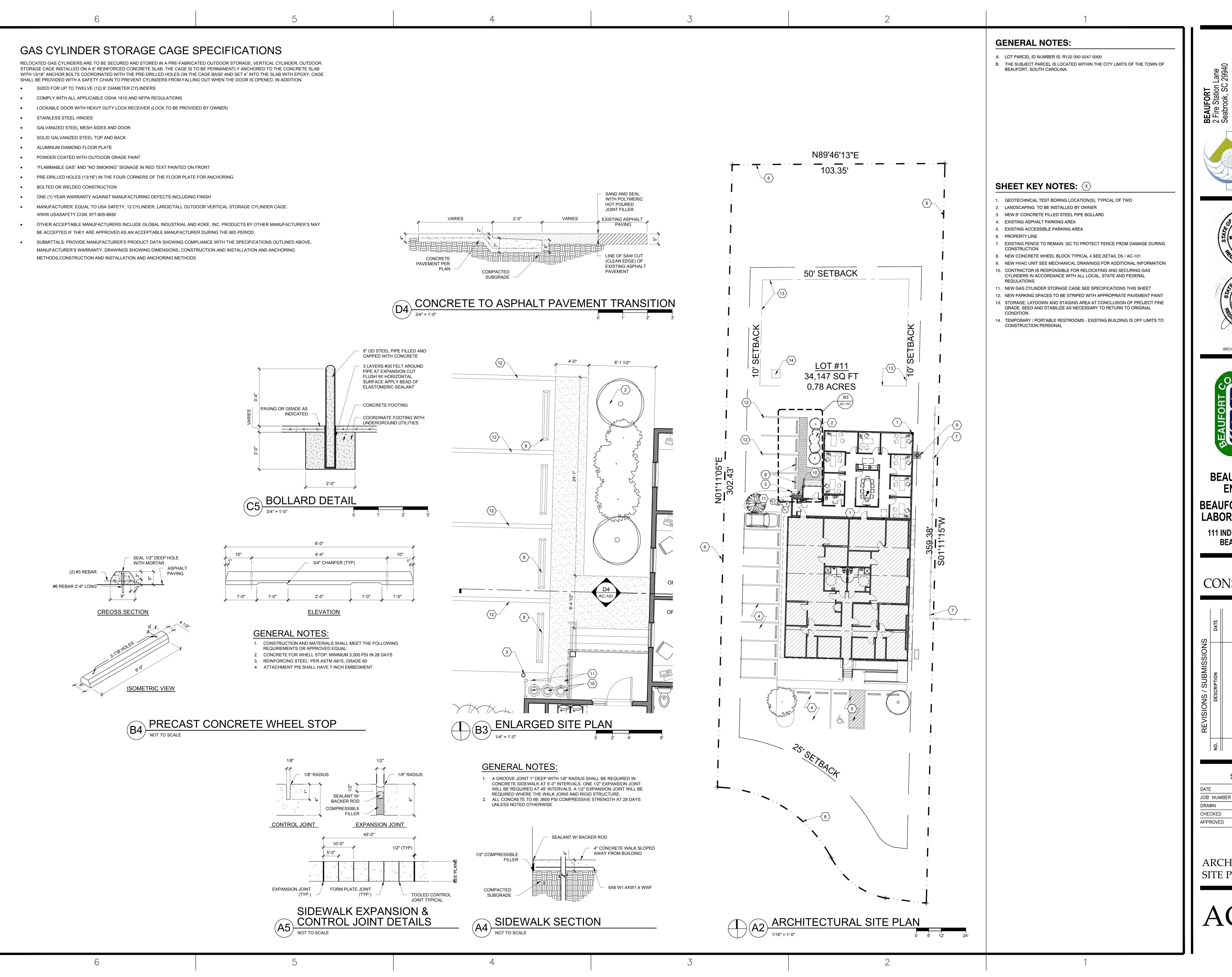
111 INDUSTRIAL VILLAGE RD BEAUFORT, SC 29906

CONSTRUCTION



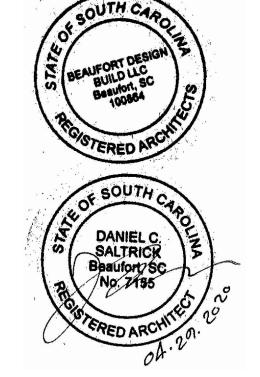
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DATE	APRIL 29, 2020
JOB NUMBER	19044.00
DRAWN	ADB
CHECKED	ADB
APPROVED	DCS

SUPPORTING DOCUMENTS



BEAL 2 Fire Seab CHA 7315 Com (843)





ARCHITECT / ENGINEER'S SEAL

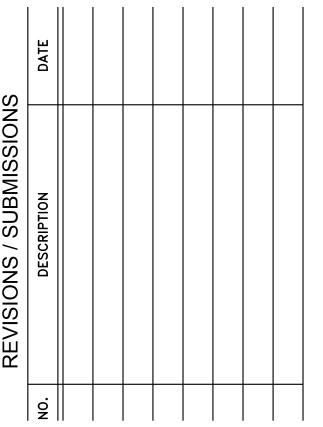


BEAUFORT COUNTY ENGINEERING

BEAUFORT COUNTY DNA LABORATORY ADDITION

111 INDUSTRIAL VILLAGE RD BEAUFORT, SC 29906

FOR CONSTRUCTION

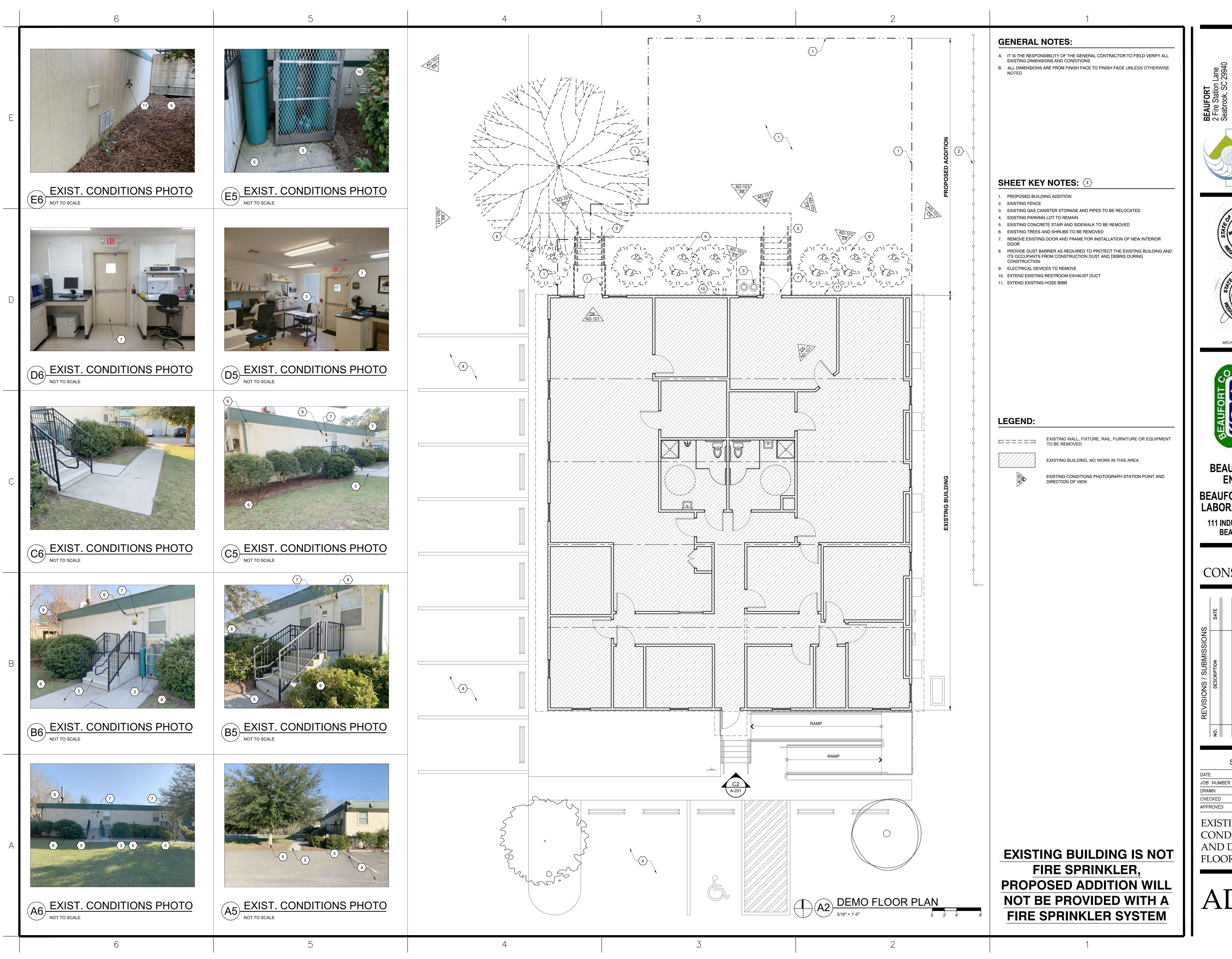


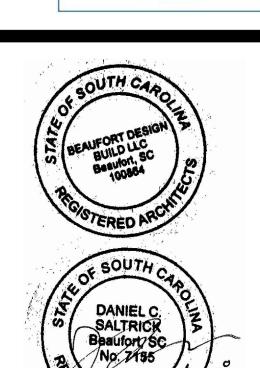
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JOB NUMBER	19044.00
DRAWN	
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APPROVED	DCS

ARCHITECTURAL SITE PLAN

AC-101





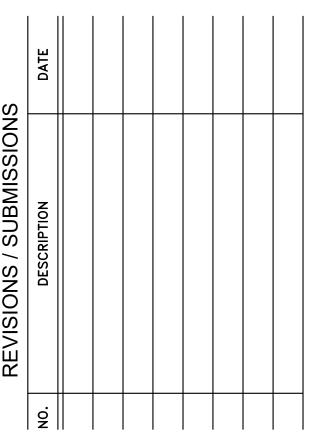


**BEAUFORT COUNTY ENGINEERING** 

**BEAUFORT COUNTY DNA** LABORATORY ADDITION

111 INDUSTRIAL VILLAGE RD BEAUFORT, SC 29906

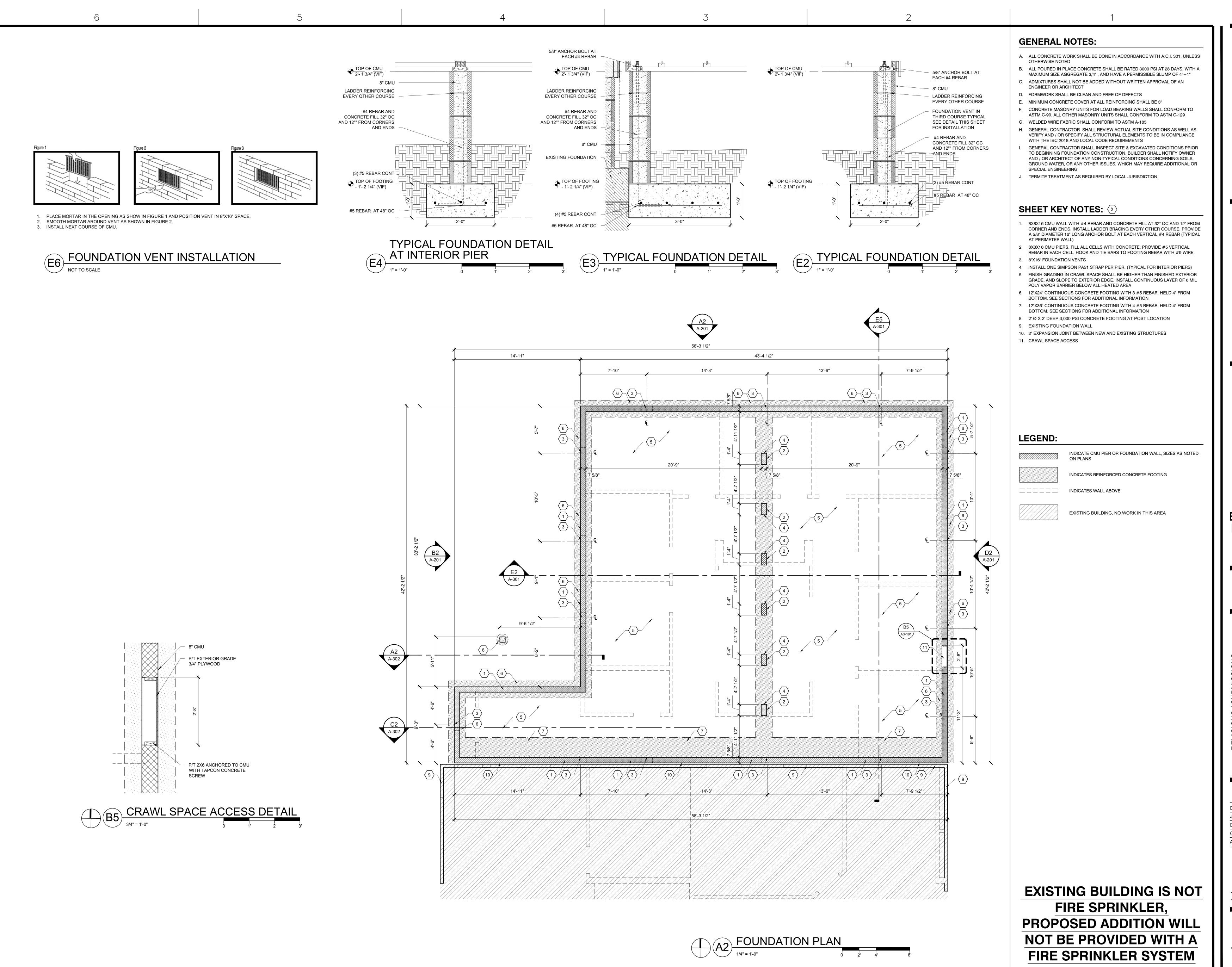
CONSTRUCTION



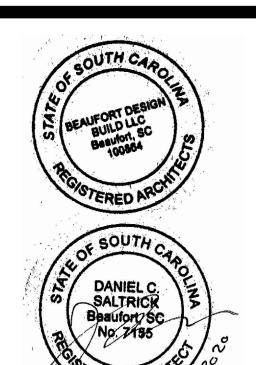
SHEET INFORMATION APRIL 29, 2020

**EXISTING** CONDITIONS AND DEMO FLOOR PLAN

AD-101







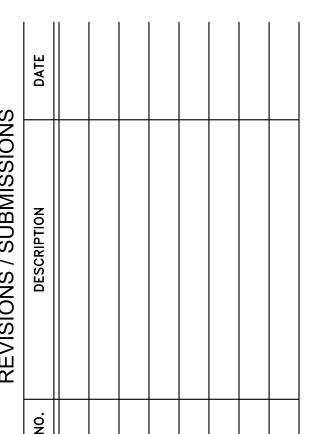


**BEAUFORT COUNTY ENGINEERING** 

**BEAUFORT COUNTY DNA** LABORATORY ADDITION

111 INDUSTRIAL VILLAGE RD BEAUFORT, SC 29906

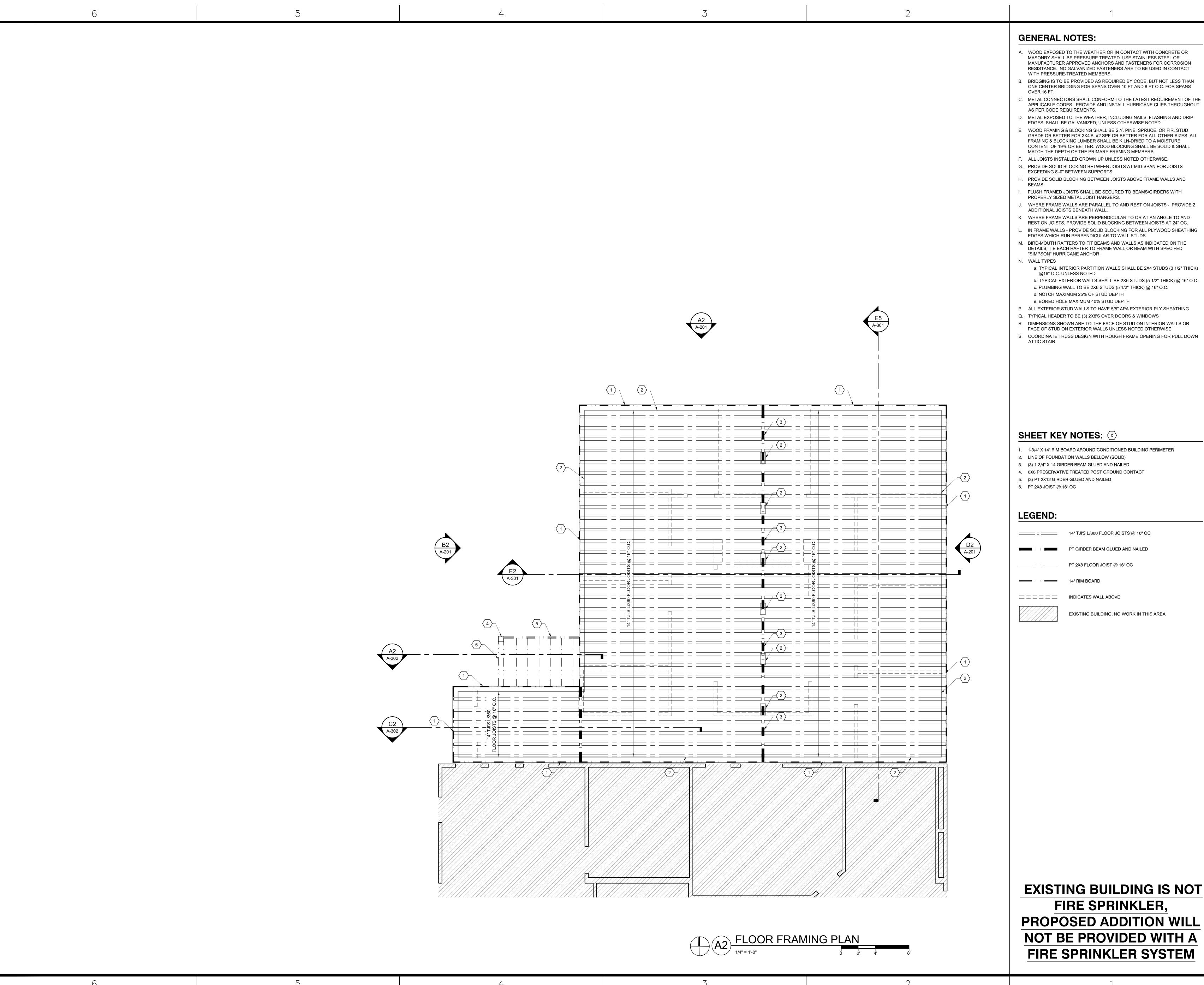
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DATE	APRIL 29, 2020
JOB NUMBER	19044.00
DRAWN	ADB
CHECKED	ADB
APPROVED	DCS

FOUNDATION PLAN

AS-101



- A. WOOD EXPOSED TO THE WEATHER OR IN CONTACT WITH CONCRETE OR MASONRY SHALL BE PRESSURE TREATED. USE STAINLESS STEEL OR MANUFACTURER APPROVED ANCHORS AND FASTENERS FOR CORROSION RESISTANCE. NO GALVANIZED FASTENERS ARE TO BE USED IN CONTACT
- ONE CENTER BRIDGING FOR SPANS OVER 10 FT AND 8 FT O.C. FOR SPANS
- C. METAL CONNECTORS SHALL CONFORM TO THE LATEST REQUIREMENT OF THE APPLICABLE CODES. PROVIDE AND INSTALL HURRICANE CLIPS THROUGHOUT
- D. METAL EXPOSED TO THE WEATHER, INCLUDING NAILS, FLASHING AND DRIP
- E. WOOD FRAMING & BLOCKING SHALL BE S.Y. PINE, SPRUCE, OR FIR, STUD GRADE OR BETTER FOR 2X4'S, #2 SPF OR BETTER FOR ALL OTHER SIZES. ALL FRAMING & BLOCKING LUMBER SHALL BE KILN-DRIED TO A MOISTURE CONTENT OF 19% OR BETTER. WOOD BLOCKING SHALL BE SOLID & SHALL
- H. PROVIDE SOLID BLOCKING BETWEEN JOISTS ABOVE FRAME WALLS AND
- I. FLUSH FRAMED JOISTS SHALL BE SECURED TO BEAMS/GIRDERS WITH
- J. WHERE FRAME WALLS ARE PARALLEL TO AND REST ON JOISTS PROVIDE 2
- REST ON JOISTS, PROVIDE SOLID BLOCKING BETWEEN JOISTS AT 24" OC.
- DETAILS, TIE EACH RAFTER TO FRAME WALL OR BEAM WITH SPECIFED
- b. TYPICAL EXTERIOR WALLS SHALL BE 2X6 STUDS (5 1/2" THICK) @ 16" O.C.
- P. ALL EXTERIOR STUD WALLS TO HAVE 5/8" APA EXTERIOR PLY SHEATHING
- R. DIMENSIONS SHOWN ARE TO THE FACE OF STUD ON INTERIOR WALLS OR

SHEET INFORMATION APRIL 29, 2020 JOB NUMBER

ARCHITECT / ENGINEER'S SEAL

**BEAUFORT COUNTY** 

**ENGINEERING** 

BEAUFORT COUNTY DNA

LABORATORY ADDITION

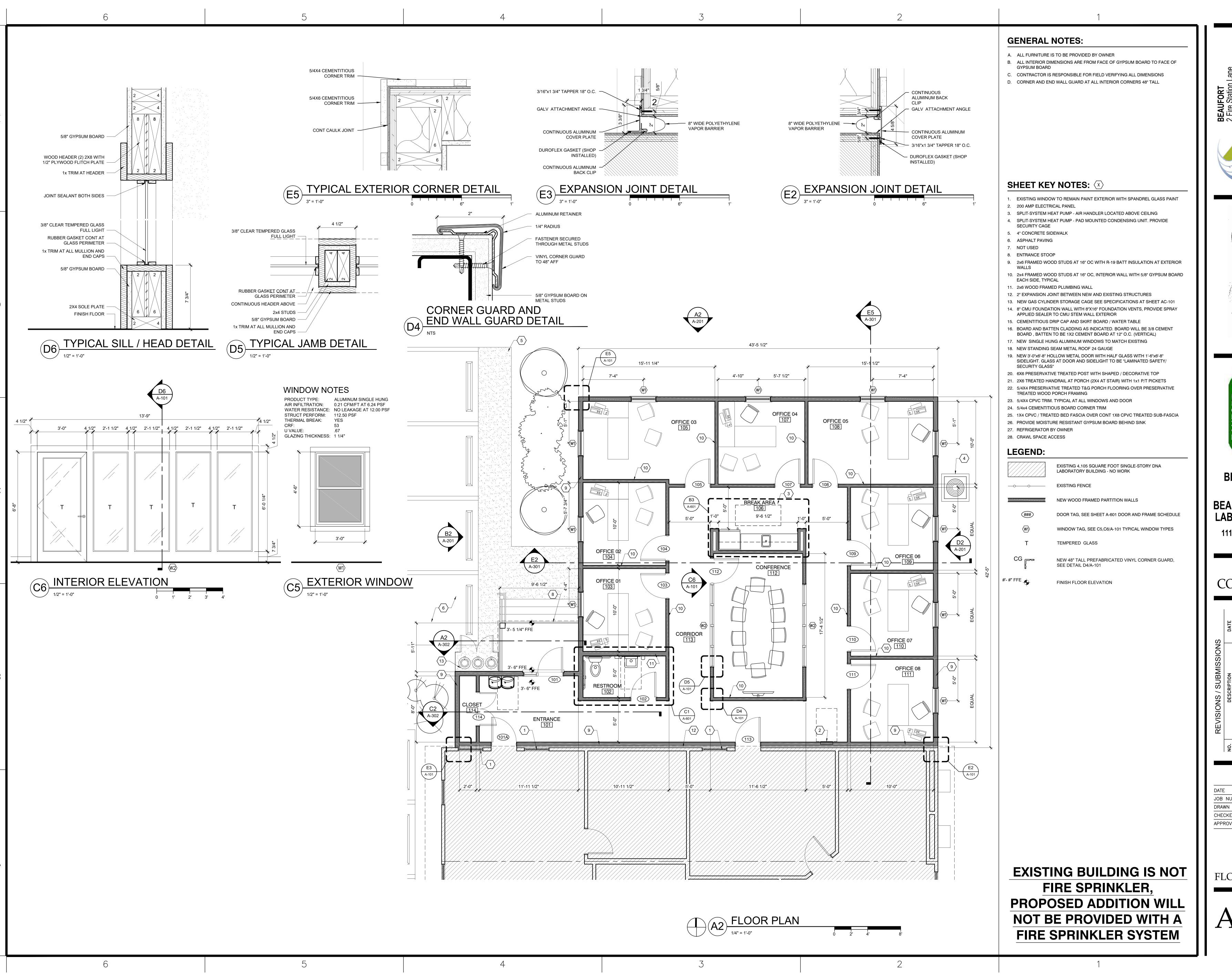
111 INDUSTRIAL VILLAGE RD

BEAUFORT, SC 29906

CONSTRUCTION

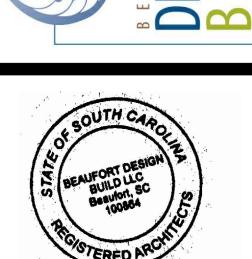
FLOOR FRAMING PLAN

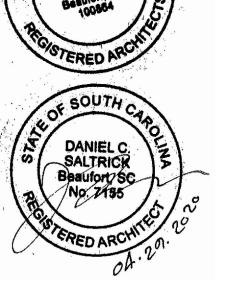
AS-102



BEAL 2 Fire Seabl CHAI 7315







ARCHITECT / ENGINEER'S SEAL

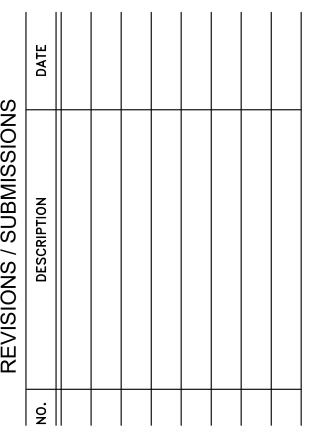


BEAUFORT COUNTY ENGINEERING

BEAUFORT COUNTY DNA LABORATORY ADDITION

111 INDUSTRIAL VILLAGE RD BEAUFORT, SC 29906

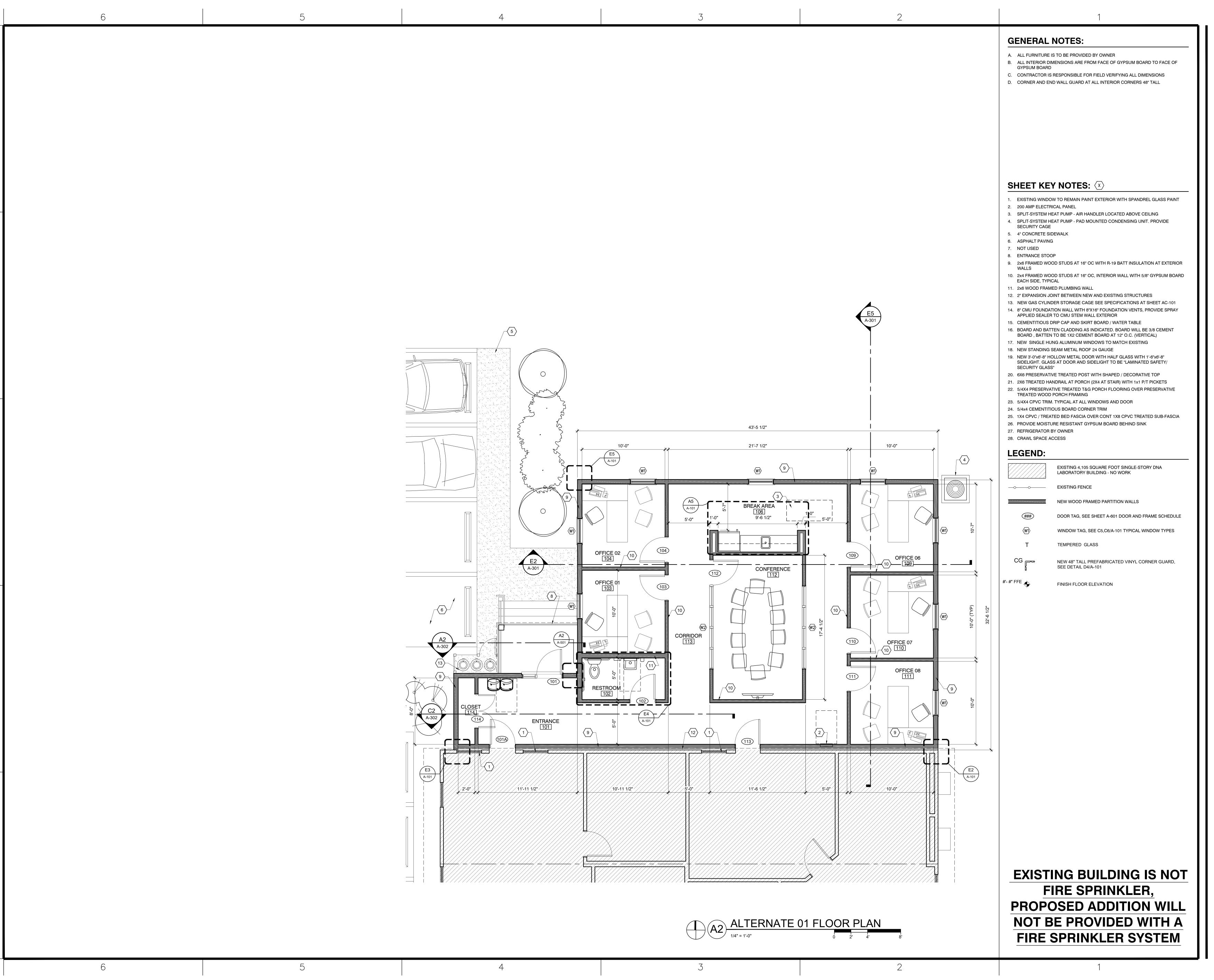
FOR CONSTRUCTION



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DATE	APRIL 29, 2020
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FLOOR PLAN

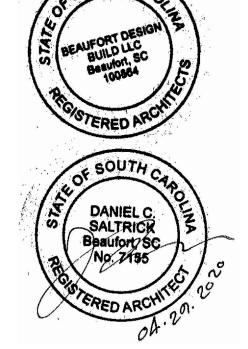
A-101



e Station Lane prook, SC 29940 **RLOTTE** Swansea Lane elius, NC 28031 466-3664

BEAUFC 2 Fire St Seabroo CHARL 7315 Sw 7315 Sw Corneliu (843) 466-info@bear





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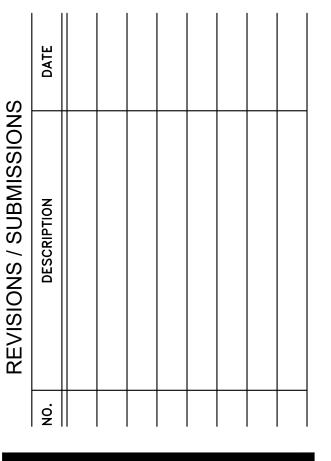


BEAUFORT COUNTY ENGINEERING

BEAUFORT COUNTY DNA LABORATORY ADDITION

111 INDUSTRIAL VILLAGE RD BEAUFORT, SC 29906

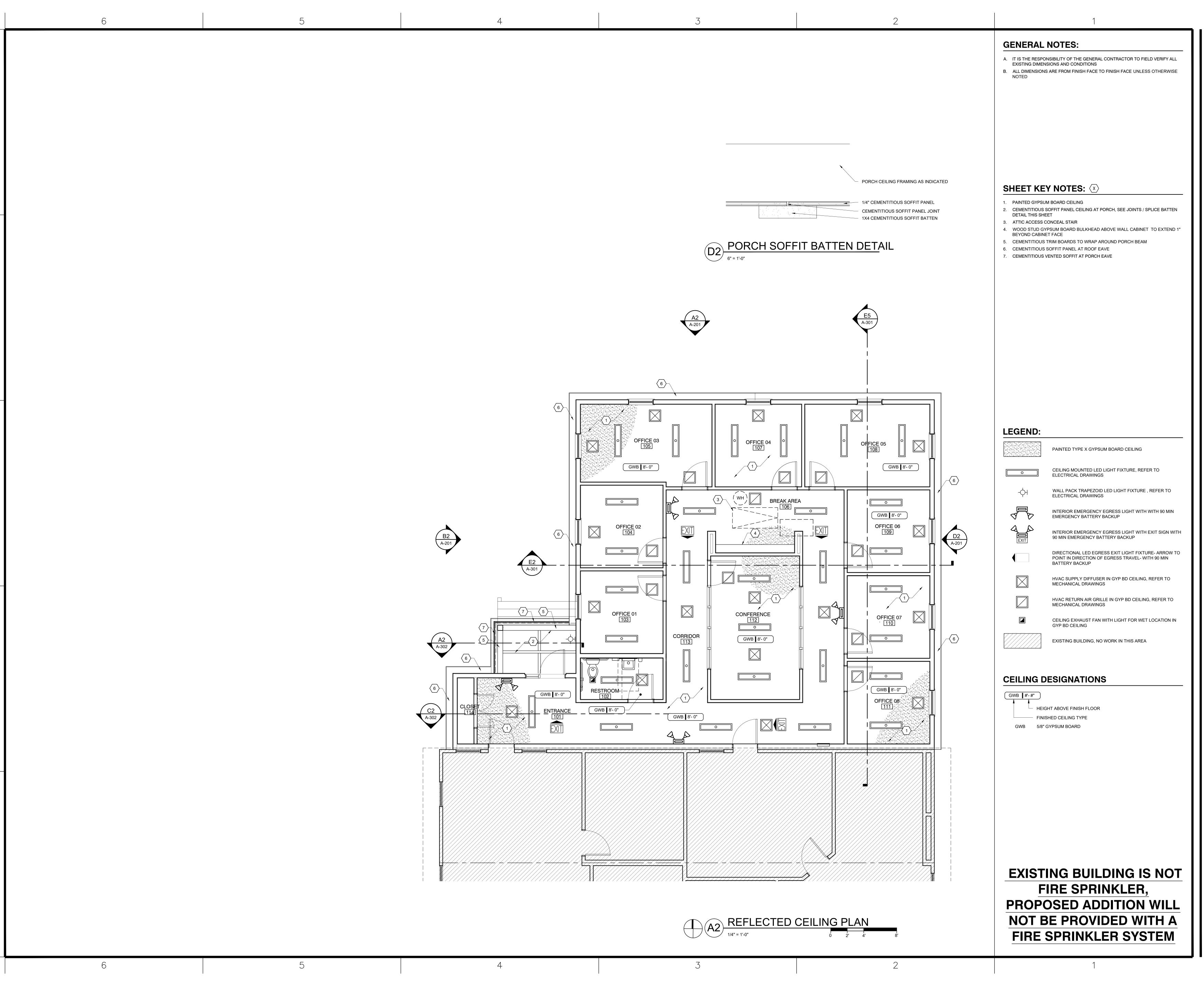
FOR CONSTRUCTION



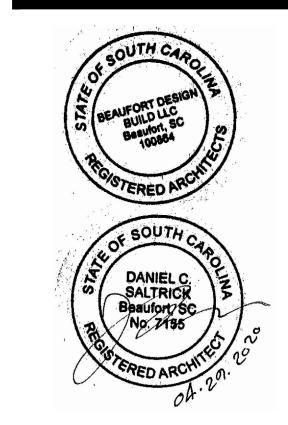
SHEE	T INFORMATION
DATE	APRIL 29, 2020
JOB NUMBER	19044.00
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ALTERNATE 01 FLOOR PLAN

A-101.1







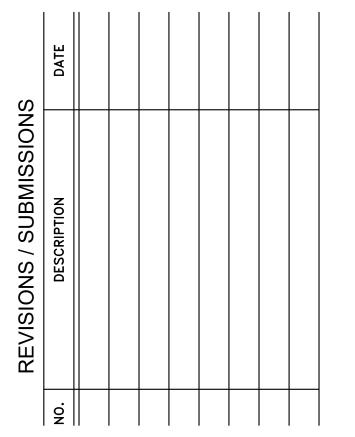


**BEAUFORT COUNTY ENGINEERING** 

**BEAUFORT COUNTY DNA** LABORATORY ADDITION

111 INDUSTRIAL VILLAGE RD BEAUFORT, SC 29906

CONSTRUCTION

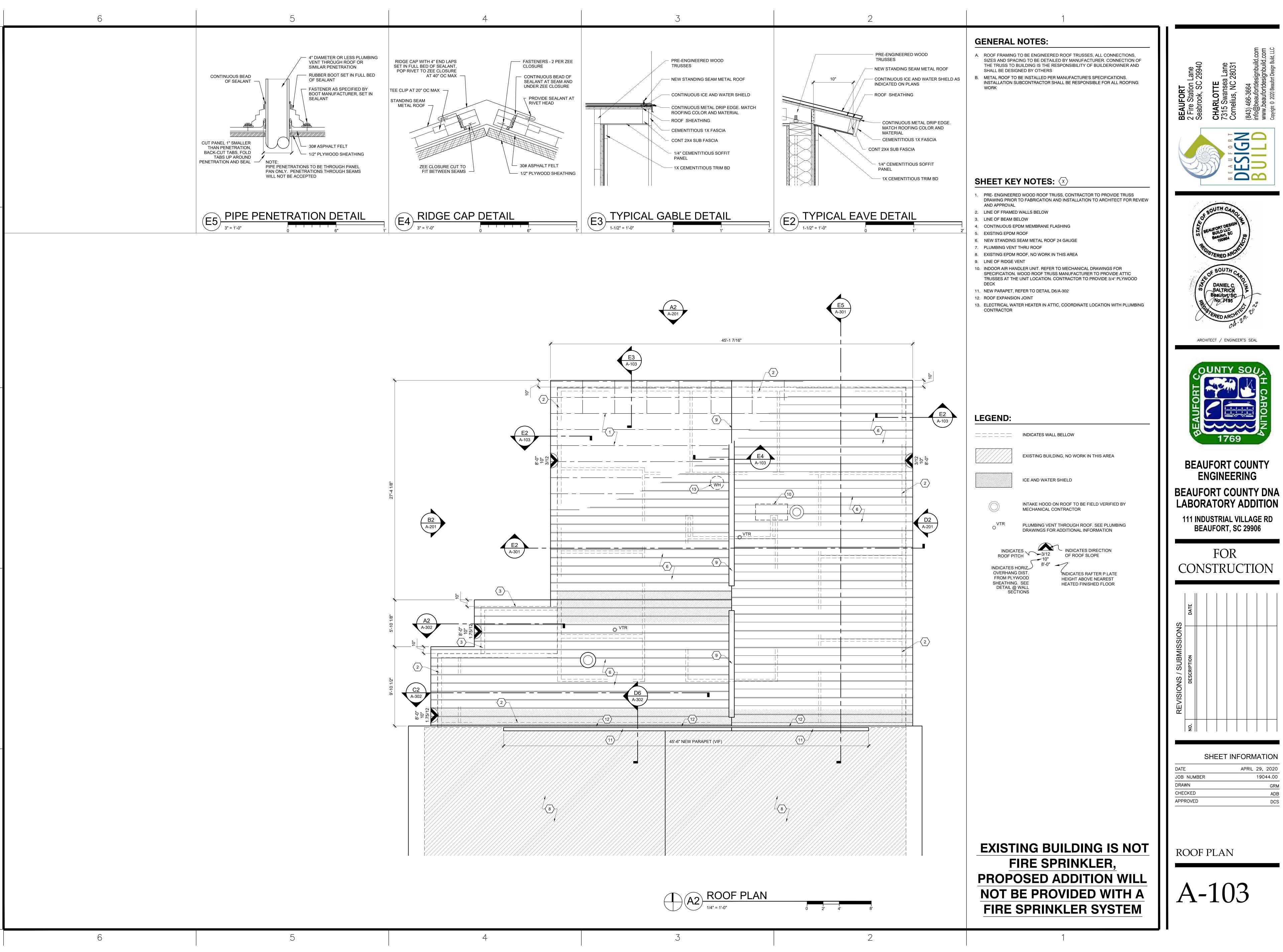


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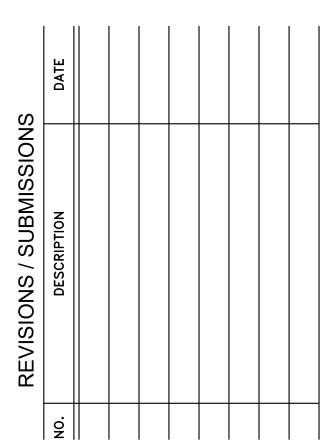
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REFLECTED CEILING PLAN

A-102



CONSTRUCTION



ARCHITECT / ENGINEER'S SEAL

**ENGINEERING** 

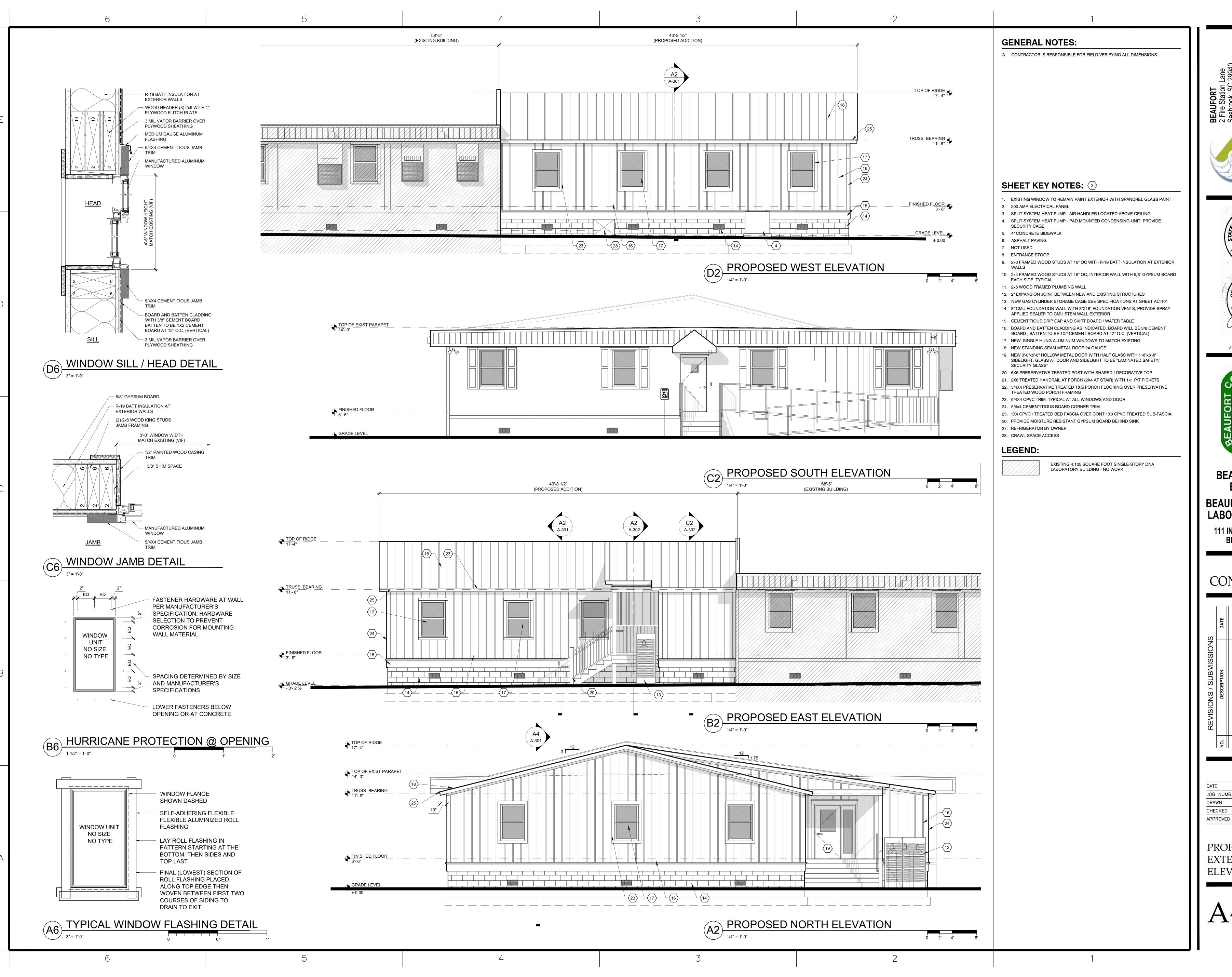
BEAUFORT, SC 29906

SHEET INFORMATION

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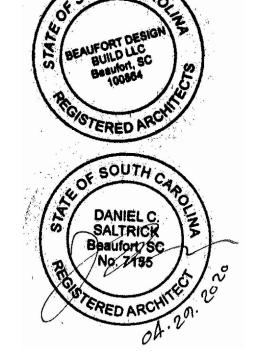
ROOF PLAN

A-103









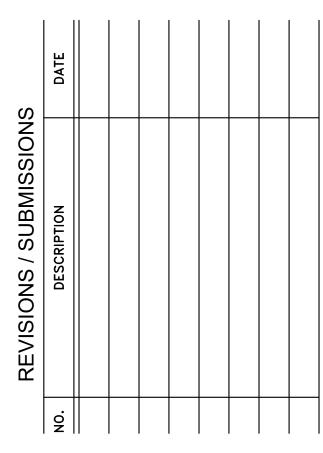


**BEAUFORT COUNTY ENGINEERING** 

**BEAUFORT COUNTY DNA** LABORATORY ADDITION

111 INDUSTRIAL VILLAGE RD BEAUFORT, SC 29906

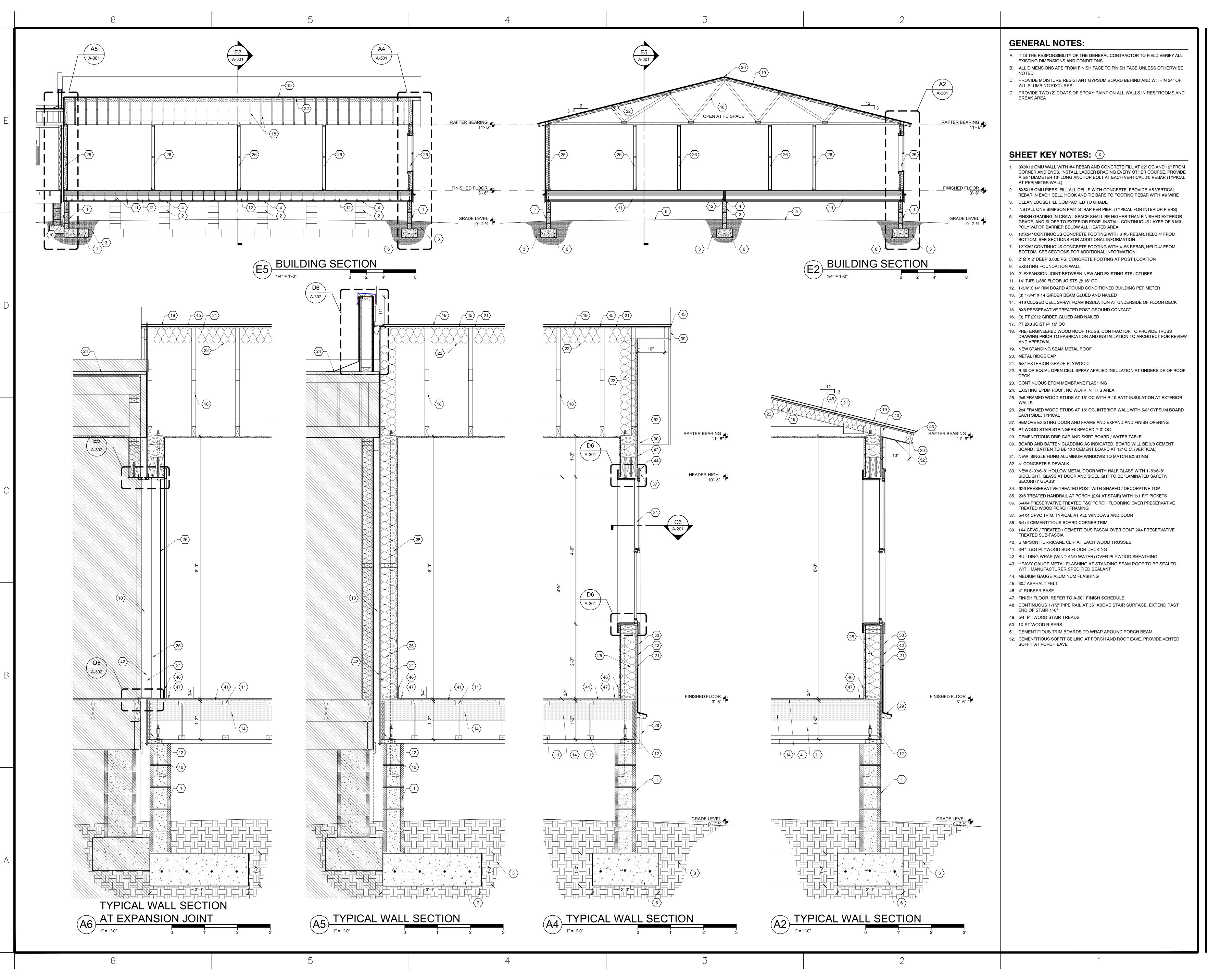
CONSTRUCTION



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	APRIL	29,	2020	
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JOB NUMBER	19044.00
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APPROVED	DCS

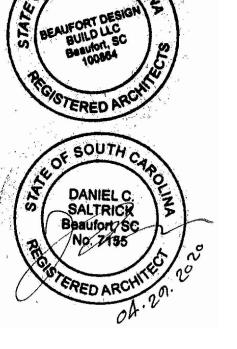
PROPOSED **EXTERIOR ELEVATIONS** 



ire Station Lane abrook, SC 29940 **ARLOTTE** 15 Swansea Lane

Seabroo Seabroo Seabroo CHARL(7315 Sw T Cornelliu (843) 466 info@beal





ARCHITECT / ENGINEER'S SEAL



BEAUFORT COUNTY ENGINEERING

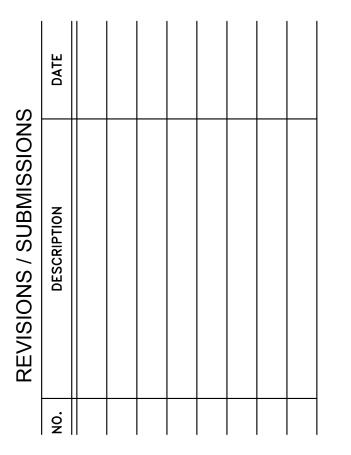
LABORATORY ADDITION

111 INDUSTRIAL VILLAGE RD

**BEAUFORT COUNTY DNA** 

BEAUFORT, SC 29906

FOR CONSTRUCTION

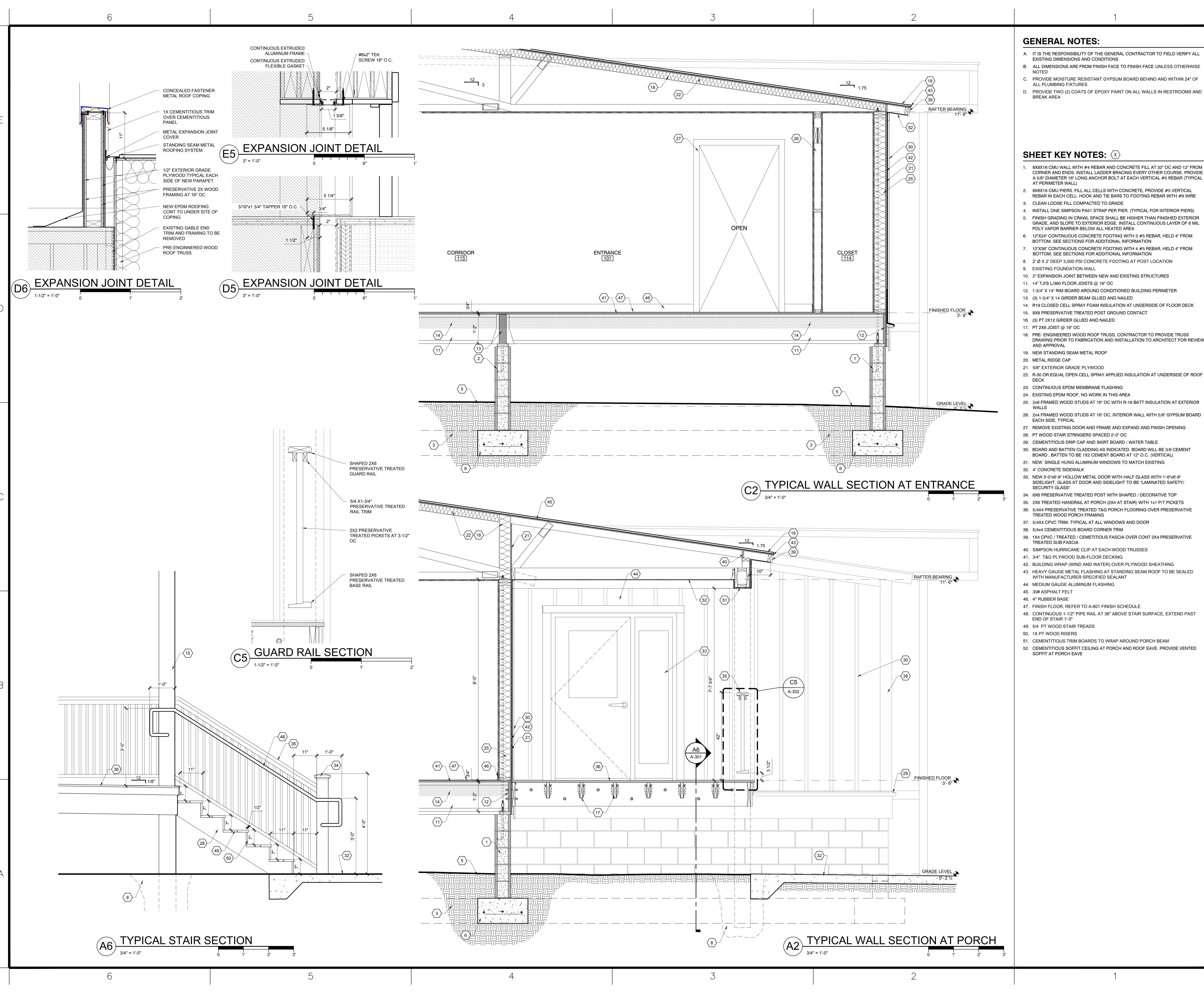


HEET	INFORMATION	

DATE	APRIL 29, 2020
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DRAWN	ADB
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APPROVED	DCS

BUILDING AND WALL SECTIONS

A-301



B. ALL DIMENSIONS ARE FROM FINISH FACE TO FINISH FACE UNLESS OTHERWISE

C. PROVIDE MOISTURE RESISTANT GYPSUM BOARD BEHIND AND WITHIN 24" OF

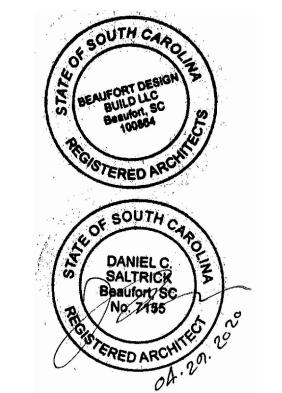
D. PROVIDE TWO (2) COATS OF EPOXY PAINT ON ALL WALLS IN RESTROOMS AND

- 8X8X16 CMU WALL WITH #4 REBAR AND CONCRETE FILL AT 32" OC AND 12" FROM CORNER AND ENDS. INSTALL LADDER BRACING EVERY OTHER COURSE. PROVIDE A 5/8" DIAMETER 16" LONG ANCHOR BOLT AT EACH VERTICAL #5 REBAR (TYPICAL
- REBAR IN EACH CELL. HOOK AND TIE BARS TO FOOTING REBAR WITH #9 WIRE
- 4. INSTALL ONE SIMPSON PA51 STRAP PER PIER. (TYPICAL FOR INTERIOR PIERS)

- DRAWING PRIOR TO FABRICATION AND INSTALLATION TO ARCHITECT FOR REVIEW

- 52. CEMENTITIOUS SOFFIT CEILING AT PORCH AND ROOF EAVE. PROVIDE VENTED





ARCHITECT / ENGINEER'S SEAL

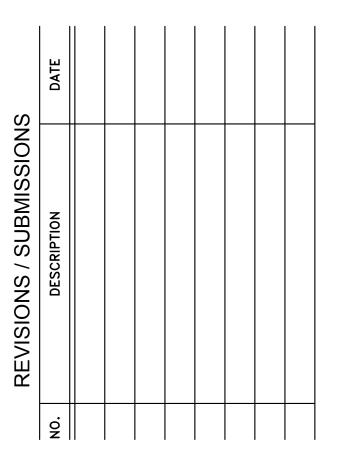


**BEAUFORT COUNTY ENGINEERING** 

**BEAUFORT COUNTY DNA** LABORATORY ADDITION

111 INDUSTRIAL VILLAGE RD BEAUFORT, SC 29906

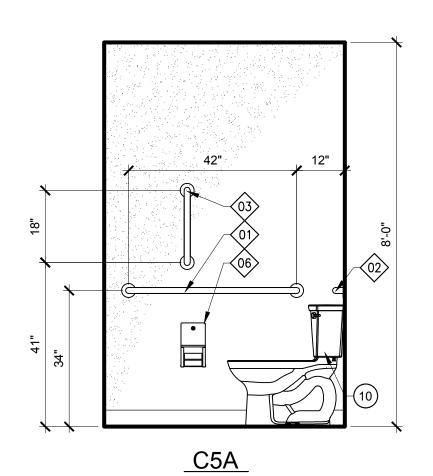
CONSTRUCTION

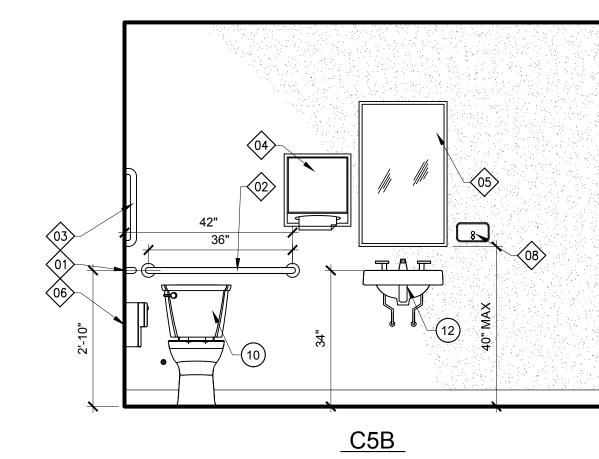


SHEET INFORMATION

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CHECKED			ADB
APPROVED			DCS

WALL SECTIONS





### **INTERIOR PAINT SCHEDULE**

### PT1 PAINTED GYPSUM BOARD WALLS (UON)

SHERWIN WILLIAMS - MULTI-PURPOSE LATEX PRIMER WHITE

TNEMEC SERIES 113 TNEMC-TUFCOAT

### TOPCOAT:

1. SHERWIN WILLIAMS - PRO INDUSTRIAL PRECATALYZED WATERBASED **EPOXY EG-SHELL** 

2. TNEMEC SERIES 113 TNEME-TUFCOAT

3. PPG 16-310 PITT-GLAZE WB1 PRECATALYZED WATERBASED EGGSHELL EPOXY

### PT2 GYPSUM BOARD CEILINGS (UON)

PRIME AND TOPCOAT:

1. SHERWIN WILLIAMS - PROMAR 200 ZERO VOC INTERIOR LATEX FLAT

2. TNEMEC SERIES 113 TNEMC-TUFCOAT

3. PPG 6-4110XI SPEEDHIDE NO VOC LATEX FLAT

### PT4 PAINTED GYPSUM BOARD WALLS IN RESTROOMS

1. SHERWIN WILLIAMS - PREPRITE® PROBLOCK® INTERIOR/EXTERIOR

LATEX PRIMER/SEALER 2. TNEMEC SERIES 113 TNEMC-TUFCOAT

3. PPG 17-921 SEAL GRIP LATEX INTERIOR/EXTERIOR UNIVERSAL PRIMER

### TOPCOAT:

1. SHERWIN WILLIAMS - PRO INDUSTRIAL PRECATALYZED WATERBASED

**EPOXY SEMI-GLOSS** 2. TNEMEC SERIES 113 TNEME-TUFCOAT

3. PPG 16-510 PITT-GLAZE WB1 PRECATALYZED WATERBASED SEMI-GLOSS EPOXY

### PT5 WOOD TRIM & FRAMES

1. SHERWIN WILLIAMS - PRO INDUSTRIAL PRO-CRYL UNIVERSAL ACRYLIC PRIMER

2. TNEMEC SERIES 115 UNI-BOND

3. PPG 17-921 SEAL GRIP LATEX INTERIOR/EXTERIOR UNIVERSAL PRIMER

### TOPCOAT:

1. SHERWIN WILLIAMS - PRO INDUSTRIAL DTM ACRYLIC SEMI-GLOSS

**EPOXY** 2. TNEMEC SERIES 1029 ENDURATONE

3. PPG 90-1210 PITT-TECH PLUS DTM SEMI-GLOSS

### PT6 WOOD DOORS - TRANSPARENT FINISH - CLEAR COAT

MINWAX PERFORMANCE SERIES TINTABLE WOOD STAIN

2. GENERAL FINISHES - WATER BASED WOOD STAIN 3. RUST-OLEUM -ULTIMATE WOOD STAIN

### FINISH:

1. SHERWIN WILLIAMS A68V00091 - WOOD CLASSICS® WATERBORNE

POLYURETHANE VARNISH GLOSS CLEAR

2. TNEMEC SERIES 1079 CLEARCOAT 3. PPG DEFT 157 INTERIOR WATER BASED POLYURETHANE GLOSS

### PT7 METAL DOORS AND FRAMES

PRIME:

1. CLOVERDALE PAINT - 7104 LINE- HIGH SOLIDS LOW VOC PRIMER 71044

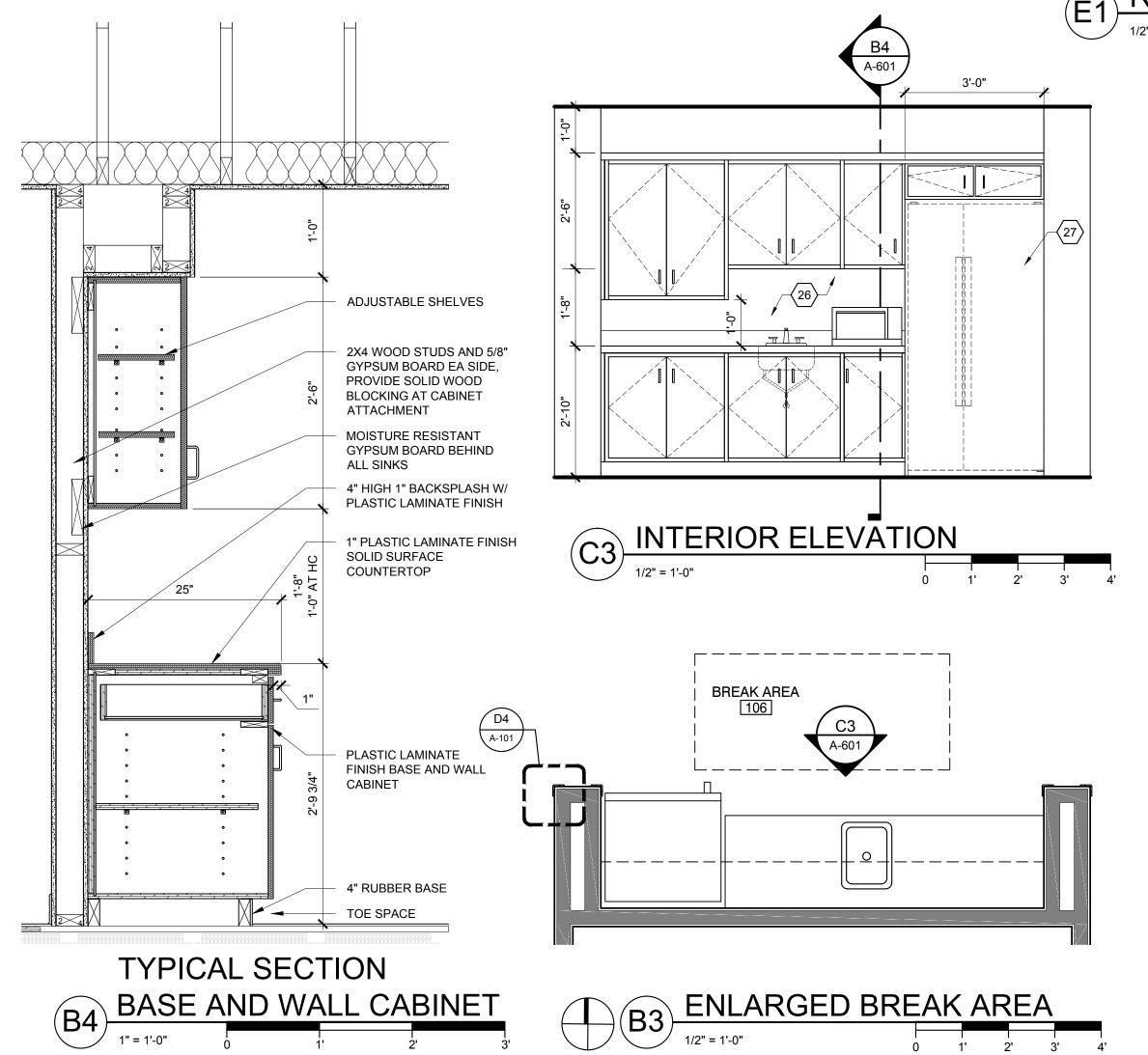
2. MATERCHEM INDUSTRIES - KILZ COMPLETE L1012 3. RUST-OLEUM - UNIVERSAL ALKYD PRIMER 301240

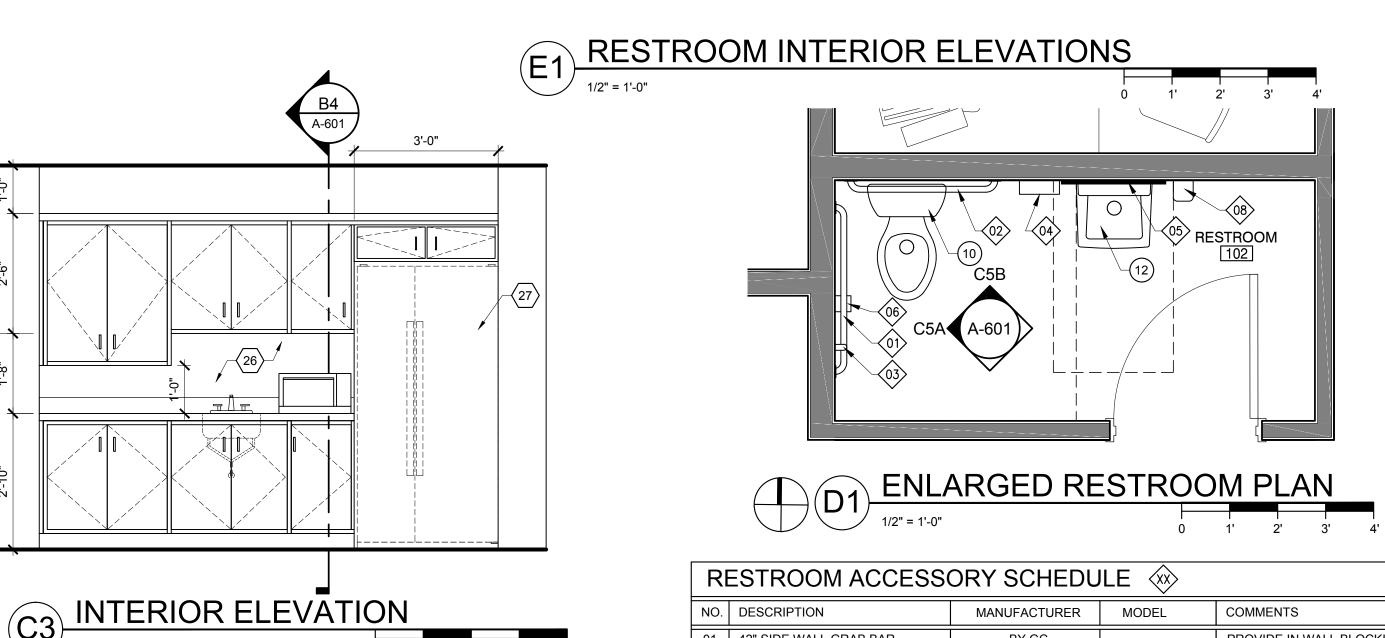
TOPCOAT:

1. SHERWIN WILLIAMS - PRO INDUSTRIAL DTM ACRYLIC SEMI-GLOSS

**EPOXY** 2. TNEMEC SERIES 1029 ENDURATONE

3. PPG 90-1210 PITT-TECH PLUS DTM SEMI-GLOSS





		ORY SCHEDU	JLE 🕸	
NO.	DESCRIPTION	MANUFACTURER	MODEL	COMMENTS
01	42" SIDE WALL GRAB BAR	BY GC	-	PROVIDE IN WALL BLOCKING
02	36" REAR WALL GRAB BAR	BY GC	-	PROVIDE IN WALL BLOCKING
03	18" VERTICAL GRAB BAR	BY GC	-	PROVIDE IN WALL BLOCKING
04	TRASH RECEPTACLE	BY OWNER	-	NOT SHOWN
05	MIRROR	BY OWNER	-	TILTED, ACCESSIBLE TYPE
06	TOILET PAPER HOLDER	BY OWNER	-	PROVIDE IN WALL BLOCKING
07	COAT HOOK	BY OWNER	-	-
80	SOAP DISPENSER	BY OWNER	-	PROVIDE IN WALL BLOCKING
09	PAPER TOWEL DISPENSER	BY OWNER	-	PROVIDE IN WALL BLOCKING
Pl	LUMBING FIXTURE	SCHEDULE (	##)	
NO.	DESCRIPTION	MANUFACTURER	MODEL	COMMENTS
10	WATER CLOSET (ADA)	SLOAN	WETS-2029-STG	REFER TO PLUMBING DRAWINGS
11	LAVATORY (ADA)	SLOAN	SS-3003-STG	PROVIDE INSULATED COVER AT PLUMBING L
	SINK	ELKAY	LRAD2219	REFER TO PLUMBING DRAWINGS
12	9			

SEE G-104 FOR RESTROOM ACCESSORY MOUNTING HEIGHTS AND BLOCKING. ALL RESTROOM FIXTURES AND ACCESSORIES ARE TO BE MOUNTED IN ACCORDANCE WITH ICC A117.1-2017

2. PROVIDE SOLID WOOD PRESSURE TREATED BLOCKING IN WALL FOR ALL RESTROOM ACCESSORIES

3. COORDINATE ALL OWNER PROVIDED RESTROOM ACCESSORIES FOR INSTALLATION AND PROVIDE REQUIRED MOUNTING HARDWARE. ALL RESTROOM ACCESSORIES PROVIDED BY GC OR OWNER ARE TO BE MOUNTED IN ACCORDANCE WITH ICC 117.1-2017

4. ALL NEW SINKS ARE TO BE PROVIDED WITH 5. PROVIDE INSULATION KIT, FOR ACCESSIBILITY AT ALL EXPOSED WATER AND WASTE PIPING

6. PROVIDE MOISTURE RESISTANT GYPSUM BOARD AND 2 COATS OF SEMI-GLOSS EPOXY PAINT AT ALL 7. PROVIDE MINERAL WOOL BATT INSULATION AT RESTROOM WALLS AND CEILING FOR SOUND DEADENING

ROOM FINISH SCHEDULE

ROOM NUMBER	ROOM NAME	BASE	WALLS	WALL FINISH	CLG	CLG FINISH	FLOOR	FLOOR FINISH	REMARKS
101	ENTRANCE	RBR	GWB	PT /GB	GWB	PT /GB	WD	LVT	<del>-</del>
102	RESTROOM	RBR	GWB	PT /GB	GWB	PT /GB	WD	LVT	-
103	OFFICE 01	RBR	GWB	PT /GB	GWB	PT /GB	WD	CPT	-
104	OFFICE 02	RBR	GWB	PT /GB	GWB	PT /GB	WD	CPT	-
105	OFFICE 03	RBR	GWB	PT /GB	GWB	PT /GB	WD	CPT	-
106	BREAK AREA	RBR	GWB	PT /GB	GWB	PT /GB	WD	LVT	-
107	OFFICE 04	RBR	GWB	PT /GB	GWB	PT /GB	WD	CPT	-
108	OFFICE 05	RBR	GWB	PT /GB	GWB	PT /GB	WD	CPT	-
109	OFFICE 06	RBR	GWB	PT /GB	GWB	PT /GB	WD	CPT	-
110	OFFICE 07	RBR	GWB	PT /GB	GWB	PT /GB	WD	CPT	-
111	OFFICE 08	RBR	GWB	PT /GB	GWB	PT /GB	WD	CPT	<del>-</del>
112	CONFERENCE	RBR	GWB	PT /GB	GWB	PT /GB	WD	CPT	-
113	CORRIDOR	RBR	GWB	PT /GB	GWB	PT /GB	WD	LVT	-
114	CLOSET	RBR	GWB	PT /GB	GWB	PT /GB	WD	LVT	-

ABBREVIATIONS: ALUM ALUMINUM EXIST EXISTING

TEMPERED GLASS HOLLOW METAL INSULATED METAL

MFR MANUFACTURER SCW SOLID CORE WOOD HCW HOLLOW CORE WOOD HCW-L HOLLOW CORE WOOD LOUVERED

CONC REINFORCED CONCRETE SLAB VPT VINYL PLANK TILE EPB FLOORING GWB 5/8" TYPE X GYPSUM WALL BOARD SHEATHING

WD WOOD 1x8 WD WOOD TRIM BOARD SG SHADOW GAP SHIPLAP W-1 WALL TILE / WALL FINISH 1

EPP EPOXY WALL PAINT BEAD BOARD TERR TERRAZO

> SC SEALED CONCRETE LVT LUXURY VINYL TILE

RBR RUBBER BASE ACT ACOUSTICAL CEILING TILE

FRP FIBER REINFORCED PLASTIC WALL PANEL

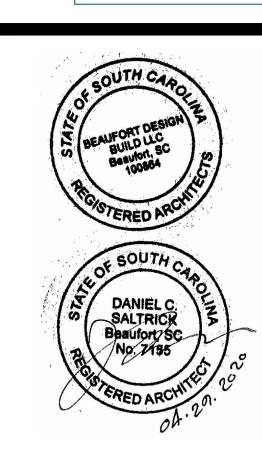
CPT CARPET CT CERAMIC TILE

VCT VINYL COMPOSITE TILE

PT/GB PAINTED GYPSUM BOARD







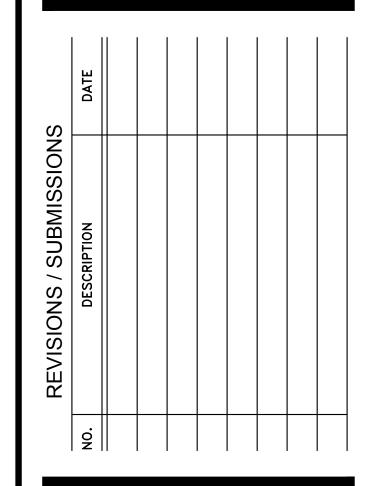


**BEAUFORT COUNTY ENGINEERING** BEAUFORT COUNTY DNA

LABORATORY ADDITION

111 INDUSTRIAL VILLAGE RD BEAUFORT, SC 29906

CONSTRUCTION



	SHEET IN	NFORM	/IAT	ION
DATE		APRIL	29,	2020
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ENLARGED PLANS INT. ELEVATIONS AND FINISH SCHEDULES

BARRIER ON 1/2" 2x6 FRAMED WALL @ 16" **EXTERIOR GRADE** O.C. W/ R-19 BATT PLYWOOD SHEATHING INSULATION MEDIUM GAUGE METAL FLASHING 5/8 TYPE "X" GYP BD REFER TO FINISH PAINTED 5/4x4 SCHEDULE FOR FINAL **CEMENTITIOUS TRIM** PAINT SELECTION WITH 6/4x1 TRIM CAP WELDED HOLLOW METAL DOOR FRAME INSULATED METAL 2X6 FRAMED WALL @ 16" 5/8 TYPE "X" GYP BD O.C. W/ R-19 BATT INSULATION REFER TO FINISH SCHEDULE FOR FINAL SEALANT AT GAP OF PAINT SELECTION CEM BD AND TRIM PER MANUFACTURER'S SPECIFICAITONS 2x6 WD JAMB FRAMING W/ (2) KING STUDS & (1) JACK STUD INSULATED METAL DOOR WELDED HOLLOW INSULATED METAL METAL DOOR FRAME METAL THRESHOLD SET IN FULL BED OF SEALANT MEDIUM GAUGE METAL FLASHING (2) 2X4 P/T CONTINUOUS BEHIND CEMENTITIOUS 5/4"X4 P/T DECK BOARD THRESHOLD T1

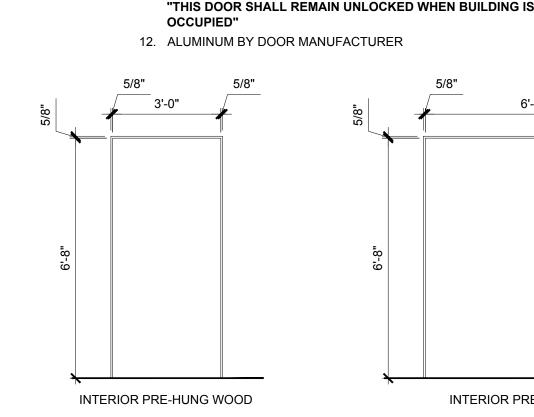
EXT METAL FRAME DETAILS

3/8" CEMENT BOARD

OVER 3 MIL VAPOR

DOORS 7'-0" OR LESS PROVIDE 3 HINGES, DOORS TALLER THAN 7'-0" PROVIDE 4 HINGES A=B=1'-10" MAX JAMB ANCHOR DOORS 7'-0" OR LESS PROVIDE 3 HINGES, DOORS TALLER THAN 7'-0" PROVIDE 4 HINGES A=B=1'-10" MAX THRESHOLD, SILL, OR REDUCER STRIP 9WHERE INDICATED) 1/2" MAX (HEIGHT ABOVE FINISHED FLOOR0 OR 1:12 SLOPE LEVER, PUSH PULL OF PANIC DEVICE

	GLAZING	SCHEDULE
SYMBOL	THICKNESS	DESCRIPTION
Т	3/8"	CLEAR TEMPERED GLASS
TIG	1"	CLEAR TEMPERED INSULATING GLASS
IG	1"	CLEAR INSULATING GLASS
LOCATED	WITHIN 24" OF A DO	USED IN ALL OPENINGS THAT ARE DOR OR FLOOR. BE LOW EMISSION GLASS



**HARDWARE SCHEDULE:** 

DOOR TYPE:

DOOR NUMBERS: FIRE RATING: HARDWARE:

HARDWARE SET: 02

HARDWARE SET: 03

**GENERAL NOTES**:

WITH TENANT.

REFERENCED NOTES: AUTOMATIC CLOSURE

3. UNDER CUT DOOR 1"

TIGHT SEAL

DEAD BOLT LOCK

10. EXIT ONLY HARDWARE

BACKGROUND ON

DOOR TYPE:

FIRE RATING:

HARDWARE:

DOOR NUMBERS:

DOOR FUNCTION:

DOOR NUMBERS:

HARDWARE:

DOOR FUNCTION: BUILDING ENTRANCE AND EXIT DOORS

(3) SII FNCFR

(1) WALL STOP

INSULATED METAL DOOR

(1) CONTINUOUS HINGE

(1) METAL THRESHOLD

(1 1/2) PAIR BUTT HINGES 1) RESTROOM PUSH / PULL

1) WALL STOP (3) SILENCER

DOOR FUNCTION: OFFICES, CONFERENCE ROOM AND CLOSET

1) WALL STOP

(3) SILENCER

5. SEE SIGNAGE DETAILS ON THIS SHEET

2. PANIC HARDWARE - PUSH BARS

5. 1/4 " TEMPERED GLASS DOOR

(1 ½) PAIR BUTT HINGES

(1) OFFICE FUNCTION LOCKSE

1. ALL DOORS TO BE KEYLESS IN THE DIRECTION OF EGRESS

3. RE-KEY ALL EXISTING HARDWARE - COORDINATE KEYING WITH

4. INTERIOR DOORS STAINED TO MATCH MILLWORK COORDINATE

4. ACCESSIBLE LEVER HANDLE ON EXTERIOR SIDE OF DOOR

'. DOORS TO HAVE WEATHER STRIPPING & BE INSTALLED TO ENSURE

8. CHROME DOOR PULL OUTSIDE, CHROME PUSH PAD ON INSIDE AND

6. ACCESSIBLE LEVER HANDLE ON BOTH SIDES OF DOOR

9. STAINLESS STEEL KICK PLATE ON BOTH SIDES OF DOOR

11. PROVIDE SIGNAGE WITH 1" LETTERS ON CONTRASTING

STOREFRONT EXITS WHICH READS:

2. ALL HARDWARE TO BE LOCATED 34" MIN. TO 48" MAX. ABOVE FLOOR

1) OVERHEAD CLOSER (NORTON 1601 OR EQUAL)

(1) MANUFACTURER'S STANDARD "BENT BAR" PULL

(1) 8" BRUSHED KICKPLATE TO MATCH THRESHOLD

SOLID CORE WOOD IN HOLLOW METAL FRAME

(1) OVER HEAD CLOSER (NORTON 1601 OR EQUAL)

SOLID CORE WOOD IN HOLLOW METAL FRAME

101A, 103, 104, 105, 106, 107, 108, 109, 110, 112, 113

IS LOCKED BY THE INSIDE TOGGLE OR OUTSIDE KEY

(1) WEATHER STRIPPING AND DOOR SWEEP TO MATCH THRESHOLD

1. ACTIVATION OF EXIT / PANIC DEVICE TO RETRACT LATCH BOLT.

1. LATCHBOLT TO BE RETRACTED BY INSIDE LEVER OR WHEN DOOR CLOSES. LATCHBOLT TO BE

1. LATCHBOLT TO BE RETRACTED BY INSIDE AND OUTSIDE LEVER UNLESS THE OUTSIDE LEVER

SET BY TOGGLE AFTER DOOR IS CLOSED. DOOR IS NEVER LOCKED FROM OUTSIDE

(1) CONCEALED ROD EXIT / PANIC DEVICE

6'-0" INTERIOR PRE-HUNG WOOD

W/ LITE

EMERGENCY EXIT PANIC BAR DEVICE ON ALL DESIGNATED EXIT DOORS 8" STAINLESS STEEL (OR AS SELECTED BY OWNER) KICK PLATE ON EACH SIDE FLUSH, INSULATED PAINTED SOLID CORE WOOD SOLID CORE WOOD

HOLLOW METAL

## DOOR AND FRAME SCHEDULE

DOORS						FRAM	E							
ROOM NUMBER	FIRE RATING	SIZE	TYPE	MATERIAL	FINISH	TYPE	MATERIAL	FINISH	HEAD DETAIL	JAMB DETAIL	THRESHOLD DETAIL	TRANSITION DETAIL	HARDWARE SETS	REMARKS
101	0	3'-0" X6'-8"	HM	HM	PAINT	F1	HM	PAINT	H1	J1	T1	-	1	1
101A	0	3'-0" X6'-8"	D2	SCW	STAIN	F2	WOOD	PAINT	H2	J2	-	-	2	-
102	0	3'-0" X6'-8"	D2	SCW	STAIN	F2	WOOD	PAINT	H2	J2	-	-	3	-
103	0	3'-0" X6'-8"	D2	SCW	STAIN	F2	WOOD	PAINT	H2	J2	-	-	2	-
104	0	3'-0" X6'-8"	D2	SCW	STAIN	F2	WOOD	PAINT	H2	J2	-	-	2	-
105	0	3'-0" X6'-8"	D2	SCW	STAIN	F2	WOOD	PAINT	H2	J2	-	-	2	-
106	0	3'-0" X6'-8"	D2	SCW	STAIN	F2	WOOD	PAINT	H2	J2	-	-	2	-
107	0	3'-0" X6'-8"	D2	SCW	STAIN	F2	WOOD	PAINT	H2	J2	-	-	2	-
108	0	3'-0" X6'-8"	D2	SCW	STAIN	F2	WOOD	PAINT	H2	J2	-	-	2	-
109	0	3'-0" X6'-8"	D2	SCW	STAIN	F2	WOOD	PAINT	H2	J2	-	-	2	-
110	0	3'-0" X6'-8"	D2	SCW	STAIN	F2	WOOD	PAINT	H2	J2	-	-	2	-
111	0	3'-0" X6'-8"	D2	SCW	STAIN	F2	WOOD	PAINT	H2	J2	-	-	2	-
112	0	3'-0" X6'-8"	D3	SCW	STAIN	F2	WOOD	PAINT	H2	J2	-	-	2	-
113	0	3'-0" X6'-8"	D2	SCW	STAIN	F2	WOOD	PAINT	H2	J2	-	-	2	-
114	0	(2) 3'-0" X6'-8"	D2	SCW	STAIN	F3	WOOD	PAINT	H2	J2	-	-	-	-

ABBREVIATIONS: ALUM ALUMINUM

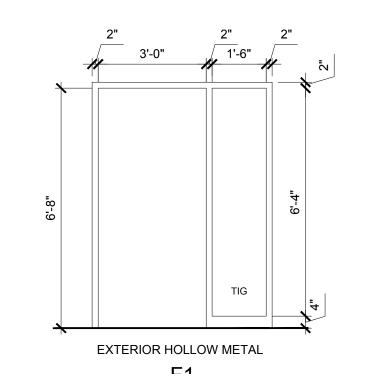
EXIST EXISTING

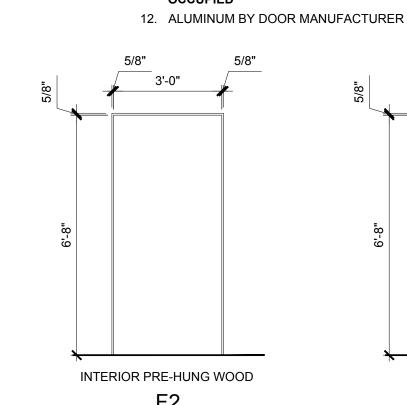
MFR MANUFACTURER SCW SOLID CORE WOOD

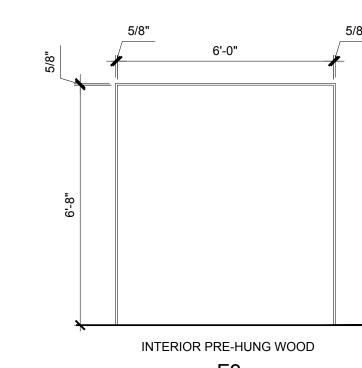
INSULATED METAL

1. ALL HOLLOW METAL FRAMES TO BE FULLY WELDED, KNOCK DOWN FRAMES WILL NOT BE ACCEPTED 2. ALL DOOR HARDWARE FINISHES TO MATCH THE EXISTING BUILDING HARDWARE 3. ALL HARDWARE MOUNTING COMPLY WITH A117.1-2017

SYMBOL	THICKNESS	DESCRIPTION
I	3/8"	CLEAR TEMPERED GLASS
TIG	1"	CLEAR TEMPERED INSULATING GLASS
IG	1"	CLEAR INSULATING GLASS
	D GLASS SHALL BE WITHIN 24" OF A DO	USED IN ALL OPENINGS THAT ARE OOR OR FLOOR.
<ol><li>ALL EXTER</li></ol>	RIOR GLASS SHALL	BE LOW EMISSION GLASS







LABORATORY ADDITION 111 INDUSTRIAL VILLAGE RD BEAUFORT, SC 29906

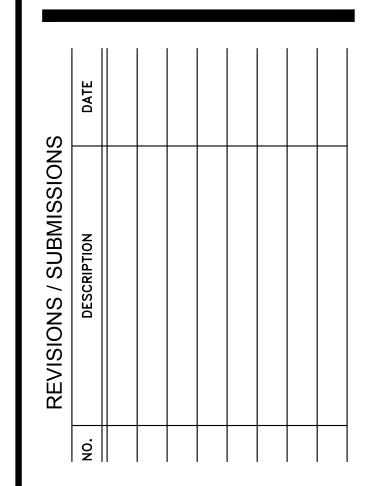
CONSTRUCTION

**BEAUFORT COUNTY** 

**ENGINEERING** 

BEAUFORT COUNTY DNA

ARCHITECT / ENGINEER'S SEAL



SHEET INFORMATION
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DATE	APRIL	29,	2020
JOB NUMBER		190	44.00
DRAWN			ADB
CHECKED			ADB
APPROVED			DCS

DOOR AND **HARDWARE SCHEDULES** AND DETAILS

## DOOR HARDWARE REQUIREMENTS

A. ALL HARDWARE SHALL COMPLY WITH UFAS, (UNIFORM FEDERAL ACCESSIBLE

STANDARDS) UNLESS SPECIFIED OTHERWISE PROVIDE RATED DOOR HARDWARE ASSEMBLIES WHERE REQUIRED BY MOST CURRENT VERSION OF THE 2018 INTERNATIONAL BUILDING CODE (2018 IBC).

HARDWARE FOR LABELED FIRE DOORS AND EXIT DOORS: CONFORM TO REQUIREMENTS OF NFPA 80 FOR LABELED FIRE DOORS AND TO NFPA 101 FOR EXIT DOORS, AS WELL AS TO OTHER REQUIREMENTS SPECIFIED. PROVIDE HARDWARE LISTED BY UL, EXCEPT WHERE HEAVIER MATERIALS, LARGE SIZE, OR BETTER GRADES ARE SPECIFIED HEREIN UNDER PARAGRAPH HARDWARE SETS. IN LIEU OF UL LABELING AND LISTING, TEST REPORTS FROM A NATIONALLY RECOGNIZED TESTING AGENCY MAY BE SUBMITTED SHOWING THAT HARDWARE HAS BEEN TESTED IN ACCORDANCE WITH UL TEST METHODS AND THAT IT CONFORMS TO NFPA REQUIREMENTS.

HARDWARE FOR APPLICATION ON METAL AND WOOD DOORS AND FRAMES SHALL BE MADE TO STANDARD TEMPLATES. FURNISH TEMPLATES TO THE FABRICATOR OF THESE ITEMS IN SUFFICIENT TIME SO AS NOT TO DELAY THE CONSTRUCTION.

THE FOLLOWING ITEMS SHALL BE OF THE SAME MANUFACTURER, EXCEPT AS

OTHERWISE SPECIFIED: MORTISE LOCKSETS.

HINGES FOR HOLLOW METAL AND WOOD DOORS.

SURFACE APPLIED OVERHEAD DOOR CLOSERS. EXIT DEVICES.

E.4. E.5. FLOOR CLOSERS.

ANSI A156.1. PROVIDE ONLY THREE-KNUCKLE HINGES, EXCEPT FIVE-KNUCKLE WHERE THE REQUIRED HINGE TYPE IS NOT AVAILABLE IN A THREE-KNUCKLE VERSION (E.G., SOME TYPES OF SWING-CLEAR HINGES). THE FOLLOWING TYPES OF BUTT HINGES SHALL BE USED FOR THE TYPES OF DOORS LISTED, EXCEPT WHERE OTHERWISE

SPECIFIED A.1. EXTERIOR DOORS: TYPE A2112/A5112 FOR DOORS 3 FEET WIDE OR LESS AND TYPE A2111/A5111 FOR DOORS OVER 3 FEET WIDE. HINGES FOR EXTERIOR OUTSWING DOORS SHALL HAVE NON-REMOVABLE PINS. INTERIOR DOORS: TYPE A8112/A5112 FOR DOORS 3 FEET WIDE OR LESS AND TYPE

A8111/A5111 FOR DOORS OVER 3 FEET WIDE. HINGES FOR DOORS EXPOSED TO HIGH HUMIDITY AREAS (SECOND FLOOR SHOWER ROOM) SHALL BE OF STAINLESS

PROVIDE QUANTITY AND SIZE OF HINGES PER DOOR LEAF AS FOLLOWS: DOORS UP TO 7 FEET HIGH: 3 HINGES MINIMUM.

DOORS GREATER 7 FEET HIGH: 4 HINGES. DOORS UP TO 3 FEET WIDE, STANDARD WEIGHT: 4-1/2 INCHES X 4-1/2 INCHES A.3.3. HINGES.

DOORS OVER 3 FEET TO 3 FEET 6 INCHES WIDE, STANDARD WEIGHT: 5 INCHES X 4-1/2 A.3.5. DOORS OVER 3 FEET 6 INCHES TO 4 FEET, HEAVY WEIGHT: 5 INCHES X 4-1/2

## INCHES.

THE CLOSER SHALL HAVE MINIMUM 50 PERCENT ADJUSTABLE CLOSING FORCE OVER MINIMUM VALUE FOR THAT CLOSER AND HAVE ADJUSTABLE HYDRAULIC BACK CHECK EFFECTIVE BETWEEN 60 DEGREES AND 85 DEGREES OF DOOR OPENING.

SIZE REQUIREMENTS: PROVIDE MULTI-SIZE CLOSERS, SIZES 1 THROUGH 6, EXCEPT WHERE MULTI-SIZE CLOSER IS NOT AVAILABLE FOR THE REQUIRED APPLICATION. MATERIAL OF CLOSER BODY SHALL BE FORGED OR CAST.

ARM AND BRACKETS FOR CLOSERS SHALL BE STEEL, MALLEABLE IRON OR HIGH STRENGTH DUCTILE CAST IRON. WHERE CLOSERS ARE EXPOSED TO THE EXTERIOR OR ARE MOUNTED IN ROOMS THAT EXPERIENCE HIGH HUMIDITY, PROVIDE CLOSER BODY AND ARM ASSEMBLY OF

STAINLESS STEEL MATERIAL CLOSERS SHALL HAVE ADJUSTABLE HYDRAULIC BACK-CHECK, SEPARATE VALVES FOR CLOSING AND LATCHING SPEED, ADJUSTABLE BACK-CHECK POSITIONING VALVE, AND

ADJUSTABLE DELAYED ACTION VALVE. PROVIDE CLOSERS WITH ANY ACCESSORIES REQUIRED FOR THE MOUNTING APPLICATION, INCLUDING (BUT NOT LIMITED TO) DROP PLATES, SPECIAL SOFFIT PLATES. SPACERS FOR HEAVY-DUTY PARALLEL ARM FIFTH SCREWS. BULLNOSE OR OTHER REGULAR ARM BRACKETS, LONGER OR SHORTER ARM ASSEMBLIES, AND SPECIAL FACTORY TEMPLATING. PROVIDE SPECIAL ARMS, DROP PLATES, AND TEMPLATING AS NEEDED TO ALLOW MOUNTING AT DOORS WITH OVERHEAD STOPS

AND/OR HOLDERS. 8. ALL CLOSERS SHALL HAVE A 1 ½" MINIMUM PISTON DIAMETER.

DOOR STOPS

A. CONFORM TO ANSI A156.16. PROVIDE DOOR STOPS WHEREVER AN OPENED DOOR OR ANY ITEM OF HARDWARE THEREON WOULD STRIKE A WALL COLUMN, EQUIPMENT OR OTHER PARTS OF BUILDING

C. WHERE CYLINDRICAL LOCKS WITH TURN PIECES OR PUSHBUTTONS OCCUR, EQUIP WALL BUMPERS TYPE L02251 (RUBBER PADS HAVING CONCAVE FACE) TO RECEIVE

D. PROVIDE FLOOR STOPS TYPE L02141 OR L02161. FLOOR STOPS MUST BE INSTALLED WITHIN 4-INCHES OF THE WALL FACE AND IMPACT THE DOOR WITHIN THE LEADING HALF

OF ITS WIDTH E. WHERE A FLOOR STOP CANNOT BE USED, BECAUSE IT WOULD CAUSE A TRIP HAZARD OR IMPEDE ACCESSIBILITY

PROVIDE WALL BUMPER TYPE L02251. G. PROVIDE STOP TYPE L02011, AS APPLICABLE FOR EXTERIOR DOORS. AT OUTSWING DOORS WHERE STOP CAN BE INSTALLED IN CONCRETE, PROVIDE STOP MATED TO CONCRETE ANCHOR SET IN 3-INCH CORE-DRILLED HOLE AND FILLED WITH

A. CONFORM TO ANSI A156.2. LOCKS AND LATCHES FOR DOORS 1-3/4 INCH THICK OR OVER SHALL HAVE BEVELED FRONTS. LOCK CYLINDERS SHALL HAVE NOT LESS THAN SIX PINS. CYLINDERS FOR ALL LOCKSETS SHALL BE REMOVABLE CORE TYPE.CONSTRUCT ALL CORES SO THAT THEY WILL BE INTERCHANGEABLE INTO THE CORE HOUSINGS OF ALL MORTISE LOCKS, RIM LOCKS, CYLINDRICAL LOCKS, AND ANY OTHER TYPE LOCK

INCLUDED IN THE GREAT GRAND MASTER KEY SYSTEM. B. IN ADDITION TO ABOVE REQUIREMENTS, LOCKS AND LATCHES SHALL COMPLY WITH FOLLOWING REQUIREMENTS:

B.A. MORTISE LOCK AND LATCH SETS: CONFORM TO ANSI/BHMA A156.13. MORTISE LOCKSETS SHALL BE SERIES 1000, MINIMUM GRADE 2. ALL LOCKSETS AND LATCHSETS SHALL HAVE LEVER HANDLES FABRICATED FROM CAST STAINLESS

B.B. CYLINDRICAL LOCK AND LATCH SETS: LEVERS SHALL MEET ADA (AMERICANS WITH DISABILITIES ACT) REQUIREMENTS. CYLINDRICAL LOCKSETS SHALL BE SERIES 4000 GRADE I. ALL LOCKS AND LATCHSETS SHALL BE FURNISHED WITH 4-7/8-INCH CURVED LIP STRIKE AND WROUGHT BOX. AT OUTSWING PAIRS WITH OVERLAPPING ASTRAGALS, PROVIDE FLAT LIP STRIP WITH 7/8-INCH LIP-TO-CENTER DIMENSION. PROVIDE LEVER DESIGN TO MATCH BEST 9K37RDS3 (LEVER DESIGN ONLY,

### ARMOR PLATES, KICK PLATES, MOP PLATES AND DOOR EDGING

A. CONFORM TO ANSI STANDARD A156.6.

B. PROVIDE PROTECTIVE PLATES AS SPECIFIED BELOW: B.1. KICK PLATES, MOP PLATES AND ARMOR PLATES OF METAL, TYPE J100 SERIES. PROVIDE KICK PLATES WHERE SPECIFIED. KICK PLATES SHALL BE 10 INCHES HIGH AND 0.050 INCHES THICK. ON PUSH SIDE OF DOORS WHERE JAMB STOP EXTENDS TO FLOOR, MAKE KICK PLATES 1-1/2 INCHES LESS THAN WIDTH OF DOOR, EXCEPT PAIRS OF METAL DOORS WHICH SHALL HAVE PLATES 1 INCH LESS THAN WIDTH OF

EACH DOOR. EXTEND ALL OTHER KICK PLATES TO WITHIN 1/4 INCH OF EACH EDGE

OF DOORS.

A. CONFORM TO ANSI STANDARD A156.3. EXIT DEVICES SHALL BE GRADE 1; TYPE AND FUNCTION ARE SPECIFIED IN HARDWARE SETS. PROVIDE FLUSH WITH FINISHED FLOOR STRIKES FOR VERTICAL ROD EXIT DEVICES IN INTERIOR OF BUILDING. TRIM SHALL HAVE CAST SATIN STAINLESS STEEL LEVER HANDLES OF DESIGN SIMILAR TO LOCKSETS,

UNLESS OTHERWISE SPECIFIED. PROVIDE KEY CYLINDERS FOR KEYED OPERATING TRIM AND, WHERE SPECIFIED, CYLINDER DOGGING. B. SURFACE VERTICAL ROD PANICS SHALL ONLY BE PROVIDED LESS BOTTOM ROD; PROVIDE FIRE PINS AS REQUIRED BY EXIT DEVICE AND DOOR FIRE LABELS. DO NOT

PROVIDE SURFACE VERTICAL ROD PANICS AT EXTERIOR DOORS. C. AT NON-RATED OPENINGS WITH PANIC HARDWARE, PROVIDE PANIC HARDWARE WITH

KEY CYLINDER DOGGING FEATURE. D. EXIT DEVICES FOR FIRE DOORS SHALL COMPLY WITH UNDERWRITERS LABORATORIES, INC., REQUIREMENTS FOR FIRE EXIT HARDWARE. SUBMIT PROOF OF COMPLIANCE.

### FLUSH BOLTS (LEVER EXTENSION)

A. CONFORM TO ANSI A156.16. FLUSH BOLTS SHALL BE TYPE L24081 UNLESS OTHERWISE SPECIFIED. FURNISH PROPER DUSTPROOF STRIKES CONFORMING TO ANSI A156.16, FOR FLUSH BOLTS REQUIRED ON LOWER PART OF DOORS.

B. LEVER EXTENSION MANUAL FLUSH BOLTS SHALL ONLY BE USED AT NON-FIRE-RATED

PAIRS FOR ROOMS ONLY ACCESSED BY MAINTENANCE PERSONNEL. C. FACE PLATES FOR CYLINDRICAL STRIKES SHALL BE RECTANGULAR AND NOT LESS

USED ONLY WHERE METAL THRESHOLDS OCCUR.

THAN 1 INCH BY 2-1/2 INCHES. D. FRICTION-FIT CYLINDRICAL DUSTPROOF STRIKES WITH CIRCULAR FACE PLATE MAY BE

### FLUSH BOLTS (AUTOMATIC)

 A. CONFORM TO ANSI A156.3. DIMENSION OF FLUSH BOLTS SHALL CONFORM TO ANSI A115. BOLTS SHALL CONFORM TO UNDERWRITERS LABORATORIES, INC., REQUIREMENTS FOR FIRE DOOR HARDWARE. FLUSH BOLTS SHALL AUTOMATICALLY LATCH AND UNLATCH. FURNISH DUSTPROOF STRIKES CONFORMING TO ANSI A156.16 FOR BOTTOM LUSHBOLT FACE PLATES FOR DUSTPROOF STRIKE SHALL BE RECTANGULAR AND NOT LESS THAN

1-1/2 BY 3-1/2 INCHES. B. AT INTERIOR DOORS, PROVIDE AUTO FLUSH BOLTS LESS BOTTOM BOLT, UNLESS OTHERWISE SPECIFIED, EXCEPT AT WOOD PAIRS WITH FIRE-RATING GREATER THAN 20 MINUTES; PROVIDE FIRE PINS AS REQUIRED BY AUTO FLUSH BOLT AND DOOR FIRE

### DOOR PULLS WITH PLATES

LABELS.

A. CONFORM TO ANSI A156.6. PULL TYPE J401, 6 INCHES CTC LENGTH BY 3/4 INCHES DIAMETER MINIMUM WITH PLATE TYPE J302, 3-1/2 INCHES BY 15 INCHES, UNLESS OTHERWISE SPECIFIED. PROVIDE PULL WITH PROJECTION OF 2 1/4 INCHES MINIMUM AND A CLEARANCE OF 1 1/2 INCHES MINIMUM. CUT PLATES OF DOOR PULL PLATE FOR CYLINDERS, OR TURN PIECES WHERE REQUIRED.

 CONFORM TO ANSI A156.6. METAL, TYPE J302, 8 INCHES WIDE BY 16 INCHES HIGH. PROVIDE METAL TYPE J302 PLATES 4 INCHES WIDE BY 16 INCHES HIGH WHERE PUSH PLATES ARE SPECIFIED FOR DOORS WITH STILES LESS THAN 8 INCHES WIDE. CUT

## PLATES FOR CYLINDERS, AND TURN PIECES WHERE REQUIRED.

 CONFORM TO ANSI A156.21, MILL FINISH EXTRUDED ALUMINUM, EXCEPT AS OTHERWISE SPECIFIED. IN EXISTING CONSTRUCTION, THRESHOLDS SHALL BE INSTALLED IN A BED OF SEALANT WITH 1/4-20 STAINLESS STEEL MACHINE SCREWS AND EXPANSION SHIELDS. IN NEW CONSTRUCTION, EMBED ALUMINUM ANCHORS COATED WITH EPOXY IN CONCRETE TO SECURE THRESHOLDS. FURNISH THRESHOLDS FOR THE FULL WIDTH OF

THE OPENINGS B. FOR THRESHOLDS AT ELEVATORS ENTRANCES SEE MANUFACTURER SPECIFICATIONS. C. AT EXTERIOR DOORS AND ANY INTERIOR DOORS EXPOSED TO MOISTURE, PROVIDE

THRESHOLD WITH NON-SLIP ABRASIVE FINISH. D. PROVIDE WITH MITER RETURNS WHERE THRESHOLD EXTENDS MORE THAN 0.5 INCH BEYOND FACE OF FRAME.

### WEATHERSTRIPS (FOR EXTERIOR DOORS)

C. MISCELLANEOUS FINISHES:

A. CONFORM TO ANSI A156.22. AIR LEAKAGE SHALL NOT TO EXCEED 0.50 CFM PER FOOT OF CRACK LENGTH(0.000774M<sub>3</sub>/S/M).

A. EXPOSED SURFACES OF HARDWARE SHALL HAVE ANSI A156.18, FINISHES AS SPECIFIED BELOW. FINISHES ON ALL HINGES, PIVOTS, CLOSERS, THRESHOLDS, ETC., SHALL BE AS SPECIFIED BELOW UNDER "MISCELLANEOUS FINISHES." FOR FIELD PAINTING (FINAL

COAT) OF FERROUS HARDWARE, SEE SECTION 09 91 00, PAINTING. B. 626 OR 630: ALL SURFACES ON EXTERIOR AND INTERIOR OF BUILDINGS, EXCEPT WHERE OTHER FINISHES ARE SPECIFIED.

C.1. HINGES --EXTERIOR DOORS: STEEL OR STAINLESS STEEL. HINGES --INTERIOR DOORS: STEEL OR STAINLESS STEEL. C.3.

PIVOTS: MATCH DOOR TRIM. DOOR CLOSERS: FACTORY APPLIED PAINT FINISH. DULL OR SATIN ALUMINUM COLOR.

COVER PLATES FOR FLOOR HINGES AND PIVOTS: STAINLESS STEEL.

TEMPERED GLASS HM HOLLOW METAL

HCW HOLLOW CORE WOOD HCW-L HOLLOW CORE WOOD LOUVERED

VENTILATION CALCULATI	ONS (IMC 20	)12, SECT /	<del>103</del> ):						
OCCUPANCY CLASSIFICATION	PEOPLE O/A RATE IN BREATHING ZONE (CFM/PERSON)	AREA O/A RATE IN BREATHING ZONE (CFM/SQ. FT.)	DEFAULT OCCUPANCY DENSITY (PEOPLE/1000 SQ. FT.)	EXHAUST AIRFLOW RATE (CFM/SQ. FT.)	AREA (SQ. FT.)	CALCULATED OCCUPANCY (PEOPLE)	CALCULATED PEOPLE O/A (CFM)	CALCULATED AREA O/A (CFM)	CALCULATED AREA E/A (CFM)
CONFERENCE ROOMS	5	0.060000	50	0.000000	187	9	47	11	0
OFFICE SPACES	5	0.060000	5	0.000000	942	5	24	57	0
CORRIDORS	0	0.060000	0	0.000000	605	0	0	36	0
TOILET ROOMS - PUBLIC	0	0.00000	0	70.000000	1	(FIXTURES)	0	0	70
			BLDG TOTAL C	DUTSIDE AIR REQ'D	) (Ez=0.8, Cl	<u></u> FM)	2	18	
		!	BUILDING TOT/	AL OUTSIDE AIR F	ROVIDED (CF	M)	2!	55	
		'			BUILDING	TOTAL EXHAL	JST AIR REQUI	RED (CFM)	70
					BUILDING	TOTAL EXHAL	JST AIR PROVI	DED (CFM)	75
						T			

INE		R UI	VIT	SCI	HEDU	LE															
CVADOL	NOMINAL	CEM	O.A.		COOLING	CAPACITY	HEATING CAPACITY	ELE	CTRIC AU	XILIARY	HEAT	FAN	І мотс	<u>)R</u>	ELEC	TRICAL	DATA	<u>MANUFACTURER</u>		<u>REFRIGERANT</u>	<u>MATCHING</u>
SYMBOL	TONNAGE	<u>CFM</u>	<u>CFM</u>	<u>E.S.P.</u>	TC (BTUH)	SHC (BTUH)	(BTUH)	<u>KW</u>	STAGES	<u>AMPS</u>	<u>VOLTAGE</u>	<u>FLA</u>	<u>MCA</u>	<u>FUSE</u>	<u>AMPS</u>	<u>FUSE</u>	<u>VOLTAGE</u>	<u>CARRIER</u>	<u>WEIGHT</u>	<u>TYPE</u>	OUTDOOR UNIT
<u>IDU-1</u>	5	2000	255	0.4"	54,180	44,640	54,960	11.3	2	31.3	208V-3ø	6.0	7.5	15	51.8	60	208V-3ø	FB4CNP061	198 LBS.	R-410A	<u>HP-1</u>

- COOLING CAPACITY BASED ON 80°/67° ENTERING AIR. PROVIDE UNITS WITH: ELECTRONIC 7-DAY PROGRAMMABLE THERMOSTAT, 1" THICK DISPOSABLE FILTER (MERV 8 MINIMUM), FIELD INSTALLED HEATER, U.L. LABEL, SINGLE POINT ELECTRICAL CONNECTION, 1-INCH INSULATION.
- SEQUENCE OF OPERATION: UNIT SHALL BE CONTROLLED BY ITS ELECTRONIC 7-DAY PROGRAMMABLE THERMOSTAT. UNIT SUPPLY FAN SHALL RUN CONTINUOUSLY IN THE OCCUPIED MODE, CYCLE WITH HEATING AND COOLING WHILE UNOCCUPIED. UPON A RISE IN SPACE TEMPERATURE, UNIT COMPRESSOR AND CONDENSER FAN SHALL ACTIVATE TO SATISFY SPACE. UPON A DROP IN SPACE TEMPERATURE, UNIT COMPRESSOR SHALL ACTIVATE IN REVERSE CYCLE FOR HEATING. UPON A FURTHER DROP IN SPACE TEMPERATURE, ELECTRIC HEAT SHALL BE ENERGIZED TO SATISFY SPACE TEMPERATURE. THERMOSTATS SHALL PROVIDE A DEADBAND OF 5°, WITHIN WHICH THE SUPPLY OF HEATING OR COOLING ENERGY TO THE ZONE CAN BE REDUCED TO THE MINIMUM. OCCUPANCY SCHEDULES SHALL BE SET TO OCCUPED MONDAY THRU FRIDAY, 7 AM TO 7 PM, UNOCCUPIED NIGHTS AND WEEKENDS. THERMOSTATS SHALL BE SET FOR OCCUPIED COOLING 75', OCCUPIED HEATING 70', UNOCCUPIED COOLING 85', UNOCCUPIED HEATING 55°. ALL TIME AND TEMPERATURE SETPOINTS SHALL BE VERIFIED BY THE OWNER PRIOR TO PROGRAMMING. THERMOSTATS SHALL BE PROGRAMMED BY MECHANICAL CONTRACTOR IN THE PRESENCE OF OWNER'S REPRESENTATIVE PRIOR TO PROJECT COMPLETION.
- PROVIDE OFFICE IDU-1 WITH HONEYWELL TRUEZONE ZONING SYSTEM MODEL HZ432 CONSISTING OF MULTIPLE-ZONE EQUIPMENT CONTROLLER (SEE PLANS FOR TOTAL NUMBER OF ZONES PER UNIT), MASTER USER INTERFACE, REMOTE ROOM SENSORS, OUTDOOR TEMPERATURE SENSOR, DUCT SENSOR, FOUR MOTORIZED DAMPERS, BYPASS DAMPER (DAMPER SIZES SHALL MATCH DUCT SIZES, SEE FLOOR PLANS), AND RETURN AIR
- PROVIDE EACH UNIT WITH A IONIZATION TYPE SMOKE DETECTOR, INSTALLED IN THE RETURN DUCT WIRED TO SHUT DOWN THE UNIT UPON ACTIVATION. SMOKE DETECTOR SHALL BE SUPPLIED, WIRED FOR INTERFACE WITH FIRE ALARM SYSTEM AND UNIT SHUTDOWN BY THE ELECTRICAL CONTRACTOR. SMOKE DETECTOR SHALL BE INSTALLED IN THE RETURN DUCT BY THE MECHANICAL CONTRACTOR.

44001	NOMINAL	COOLING C	<u>CAPACITY</u>	Ef	FICIENCY	HEATING CAPACITY	<u>EFFI</u>	CIENCY	COMP	RESSOR	<u>FAN</u>	ELE	CTRICAL	<u>DATA</u>	<u>OPERATING</u>	<b>MANUFACTURER</b>	<u>MATCHING</u>
<u>MBOL</u>		TC (BTUH)	SHC (BTUH)	EER	SEER IEE	R (BTUH)	COP	HSPF	<u>LRA</u>	RLA	<u>FLA</u>	<u>MCA</u>	<u>FUSE</u>	<u>VOLTAGE</u>	<u>WEIGHT</u>	CARRIER MODEL	INDOOR UNI
<u>P-1</u>	5	54,180	44,640	11.5	14.0 -	- 54,960	3.70	8.2	110.0	16.0	1.52	21.5	30	208V-3ø	260 LBS	25HCE460	<u>IDU-1</u>
0TES:	_	APACITY @ 95	5° AMBIENT														
2.	ALL UNITS	SHALL BE U.	L. LISTED ANI	O ASHRA	E 90.1 CC	MPLIANT											
4.	DURING HE LOCKED OL THE INDOO MOUNT UNI	AT PUMP DEF T WHEN THE R TEMPERATU TS ON A 4"	ROST CYCLE. OUTDOOR TE IRE SETPOINT THICK CONCR	SUPPL MPERATI IS INCR ETE PAD	EMENTAL E JRE IS BET EASED.	BE ALLOWED TO OPER LECTRIC HEAT SHALL WEEN 35°F AND 40°F  VIDE MANUFACTURER'S	BE AND										
			ICES AROUND INDENSER COI		GUARDS AN	D LOW AMBIENT CONT	ROLS.										
	THE FOLLO	WING ACCESS	APPLICATIONS ORIES SHALL (CASE HEATER	BE PRO		UIVALENT LENGTH BET	ΓWEEN :	50'-0"	AND 175'-	-0"							
		RROW POINTII	NG TOWARD (	OUTDOOR	UNIT. V	INE SOLENOID WITHIN POR LINE SHOULD SLO	OPE TO	WARD IN	IDOOR UN	IIT.							

### GRILLE AND DIFFUSER SCHEDULE SYMBOL | SERVICE | CFM RANGE | FACE SIZE | NECK SIZE A SUPPLY (SEE PLANS FOR SIZE AND CFM) DBL. DEFL. YES B RETURN (SEE PLANS FOR SIZE AND CFM) FIXED BLADE

. ALL CEILING AND WALL MOUNTED DEVICES SHALL BE FURNISHED WITH AN ENAMEL OFF—WHITE FINISH. 2. ALL DEVICES SHALL BE FURNISHED WITH FRAMES SUITABLE FOR TYPE

OF INSTALLATION REQUIRED.

3. ALL NEW CEILING MOUNTED DEVICES SHALL MATCH EXISTING BUILDING STANDARDS.

FA	N SCHE	DULE										
YMBOL	LOCATION	TYPE	<u>CFM</u>	APPROX.	DRIVE	FAN RPM	ELEC	CTRICAL	_ DATA	<u>MANUFACTURER</u>	ACCESSORIES	<u>CONTROLS</u>
TWIDOL	LOCATION	<u> </u>	CIWI	<u>S.P.</u>	DIXIVE	I AN INFIM	<u>WATTS</u>	<u>H.P.</u>	<u>VOLTAGE</u>	<u>GREENHECK</u>	ACCESSORIES	CONTROLS
<u>F-1</u>	BATHROOM	EXHAUST	75	0.25"	DIRECT	900	15	_	120V-1ø	SP-A90	A,B,G,O	2
ACCESS(	<u>ORIES</u>							<u>co</u>	<u>ONTROLS</u>			
A: DISC	CONNECT SWITCH			M: 2" WAS	HABLE ALL	JMINUM FILTER	 ≀S			ED THERMOSTAT		
B: GRA	VITY BACKDRAFT	DAMPER		N: MOTORS	IDE FAN G	UARD			(REVERSE AC	TING, SET FOR 80°)		
C: MOTO	ORIZED BACKDRA	AFT DAMPER		O: EXHAUS	T CRILLE					ITH ROOM LIGHT SWITCH	<b></b>	
D: PREF	FAB. ROOF CURB	3		P: U.L. 762						OPERATE WHEN LIGHT IS ( 1 SERVED BY FAN)	)N	
E: BIRDS	SCREEN			0: VENTED	_				FD ON/OFF SWITCH WITH			

WITH VIBRATION ISOLATION H: WL, WALL LOUVER DISCHARGE J: RCC OR GRS ROOF CAP (FLAT ROOF) OR RJ ROOF CAP (PITCHED ROOF)

: ACOUSTICAL LINING

G: HANGING BRACKETS

Q: VENTED ROOF CURB EXTENSION

IDENTIFICATION LABÉL R: COMBINATION KITCHEN HOOD FAN CURB : WALL MOUNTED MUSHROOM PUSH BUTTON S: INTERLOCK WITH FUME HOOD SWITCH/STARTER WITH IDENTIFICATION LABEL T: PROVIDE DRAIN PLUG ACCESSORY 5: CONTROLLED BY BUILDING AUTOMATION SYSTEM

6: CONTINUOUS OPERATION

7: INTERLOCK WITH KITCHEN HOOD CONTROLS K: WALL MOUNTING COLLAR 8: INTERLOCK WITH DISHWASHER 9: INTERLOCK WITH FUME HOOD

### NOTES:

: INLET GUARD

ALL FANS SHALL BE U.L. LISTED AND LABELED AND SHALL BE AMCA CERTIFIED FOR SOUND AND AIR FLOW. ALL FANS INSTALLED INSIDE, ABOVE, OR ADJACENT TO OCCUPIED SPACES SHALL HAVE A MAXIMUM 9.0 INLET SONE LEVEL.

ALL FANS SHALL BE SUPPLIED BY ONE MANUFACTURER UNLESS NOTED OTHERWISE.

### EQUIVALENT MANUFACTURERS LISTING

LISTING OF MANUFACTURER'S NAME DOES NOT GUARANTEE APPROVAL. ALL EQUIPMENT MUST MEET OR EXCEED QUALITY AND CAPACITIES OF SPECIFIED EQUIPMENT. FINAL APPROVAL WILL BE BASED ON EQUIPMENT SUBMITTALS. ANY MANUFACTURER NOT LISTED BUT WISHING TO BID THIS PROJECT SHALL SUBMIT A WRITTEN REQUEST A MINIMUM OF 7 DAYS PRIOR TO BID DATE OR AS INDICATED IN THE SPECIFICATIONS, PRIOR APPROVAL IS REQUIRED FOR ALL MANUFACTURERS NOT LISTED.

DUCTED SPLIT SYSTEMS: CARRIER, TRANE, YORK FANS: ACME, COOK, GREENHECK, PENN, TWIN CITY

AIR DISTRIBUTION: CARNES, METAL\*AIRE, NAILOR, PRICE, TITUS, TUTTLE & BAILEY, KRUEGER

ALL COST ASSOCIATED WITH SUBSTITUTED EQUIPMENT TO COMPLY WITH BASIS OF DESIGN, INCLUDING PROVIDING MAINTENANCE ACCESS, CLEARANCE, PIPING, SHEET METAL, ELECTRICAL, REPLACEMENT OF OTHER SYSTEM COMPONENTS, BUILDING ALTERATIONS, ETC., SHALL BE INCLUDED IN THE ORIGINAL BASE BID. NO ADDITIONAL COST ASSOCIATED WITH SUBSTITUTED EQUIPMENT WILL BE APPROVED DURING CONSTRUCTION AND ALL COST WILL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR.

### 2009 INTERNATIONAL ENERGY CONSERVATION CODE COMMERCIAL ENERGY EFFICIENCY - MECHANICAL SUMMARY

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT METHOD OF COMPLIANCE:

91 ° F.

SEE EQUIPMENT SCHEDULE

PRESCRIPTIVE X PERFORMANCE ENERGY COST BUDGET THERMAL ZONE: 3A BEAUFORT COUNTY, SC

EXTERIOR DESIGN CONDITIONS

winter dry bulb summer dry bulb

summer dry bulb

INTERIOR DESIGN CONDITIONS winter dry bulb

50% R.H. relative humidity 36,840 BTUH (peak) BUILDING HEATING LOAD

BUILDING COOLING LOAD 55,260 BTUH (peak)

### MECHANICAL SPACING CONDITIONING SYSTEM

HEAT PUMP SPLITS/DUCTLESS SPLIT description of unit heating efficiency 96.7% PER ASHRAE 90.1 cooling efficiency SEE EQUIPMENT SCHEDULE heat output of unit

BOILER total boiler output of unit total chiller capacity N/A

### LIST EQUIPMENT EFFICIENCIES

cooling output of unit

Equipment schedules with motors (mechanical systems) motor horsepower number of phases minimum efficiency motor type # of poles

NAME: STEVEN R. DALEY, P.E.

TITLE: MECHANICAL ENGINEER

20x14

8"ø

## MECHANICAL LEGEND

ECHANICAL	LEGEND
SYMBOL	DESCRIPTION
<b>(A)</b>	AUDIO/VISUAL ALARM WIRED TO DUCT SMOKE DETECTOR
T	THERMOSTAT (4'-0" ABOVE FLOOR)
(E)	EQUIPMENT CONTROLLER (4'-0" A.F.F.)
M	MASTER USER INTERFACE (4'-0" A.F.F.)
S	REMOTE ZONE SENSOR (4'-0" A.F.F.)
<b>(</b>	MOTORIZED ZONE DAMPER IN DUCT
B	BAROMETRIC BYPASS DAMPER IN DUCT
<b>©</b>	DUCT MOUNTED SMOKE DETECTOR W/ ACCESS DOOR
D	CONDENSATE DRAIN
$\boxtimes$	SUPPLY AIR DIFFUSER (4-WAY)
	RETURN AIR GRILLE
	EXHAUST AIR GRILLE
7	DOUBLE LINE DUCTWORK

SINGLE LINE DUCTWORK

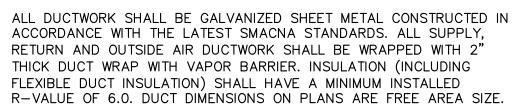
20"x14" RECTANGULAR DUCT

8" DIAMETER ROUND DUCT

### MECHANICAL GENERAL NOTES

- DO NOT SCALE DRAWINGS. SEE ARCHITECTURAL DRAWINGS AND CEILING DIFFUSERS, ETC.
- ALL COST ASSOCIATED WITH SUBSTITUTED EQUIPMENT TO COMPLY WITH BASIS OF DESIGN, INCLUDING PROVIDING MAINTENANCE ACCESS, CLEARANCE, PIPING, SHEET METAL, ELECTRICAL, REPLACEMENT OF OTHER SYSTEM COMPONENTS, BUILDING ALTERATIONS, ETC., SHALL BE INCLUDED IN THE ORIGINAL BASE BID. NO ADDITIONAL COST ASSOCIATED WITH SUBSTITUTED EQUIPMENT WILL BE APPROVED DURING CONSTRUCTION AND ALL COST WILL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR. THIS INCLUDES ANY MODIFICATIONS TO ANY ASSOCIATED MECHANICAL, PLUMBING, OR ELECTRICAL SYSTEMS REQUIRED BY THIS SPECIFIC MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- ACCORDANCE WITH THE LATEST SMACNA STANDARDS. ALL SUPPLY, RETURN AND OUTSIDE AIR DUCTWORK SHALL BE WRAPPED WITH 2" THICK DUCT WRAP WITH VAPOR BARRIER. INSULATION (INCLUDING FLEXIBLE DUCT INSULATION) SHALL HAVE A MINIMUM INSTALLED
- ALL DUCTWORK SHALL BE SEALED PER THE REQUIREMENTS OF THE INTERNATIONAL MECHANICAL CODE. SEAL LOW PRESSURE SUPPLY. RETURN, OUTSIDE AIR, AND EXHAUST DUCTWORK FOR POSITIVE/NEGATIVE 2" PRESSURE CLASS, SMACNA SEAL CLASS A,
- ALL PIPING AND DUCTWORK LOCATIONS SHALL BE COORDINATED WITH THE WORK UNDER OTHER DIVISIONS OF THE SPECIFICATIONS, TO AVOID
- THE MECHANICAL CONTRACTOR SHALL BALANCE ALL MECHANICAL SYSTEMS TO THE PERFORMANCE SPECIFICATIONS INDICATED ON PLANS AND PROVIDE THE ENGINEER WITH THREE COPIES OF A COMPLETE TEST AND BALANCE REPORT. THE REPORT IS TO BE ISSUED A MINIMUM OF TWO WEEKS PRIOR TO PROJECT COMPLETION. THE TEST AND BALANCE REPORT WILL BE SUBJECT TO REVIEW AND APPROVAL BY THE ENGINEER. ANY ADDITIONAL TESTING, ADJUSTING AND BALANCING REQUIRED (AT ENGINEER'S REQUEST) AFTER REVIEW OF THE INITIAL REPORT SHALL BE PROVIDED AT NO ADDITIONAL COST. TESTING AND BALANCING CONTRACTOR TO CONFIRM FILTERS ARE CLEAN, AND FREE OF DEBRIS PRIOR TO BEGINNING WORK. THE MECHANICAL CONTRACTOR SHALL REPLACE ANY DIRTY FILTERS, AS NEEDED.
- RESPONSIBLE FOR PROVIDING THE OWNER INSTALLATION INFORMATION INCLUDING RECORD SUBMITTALS (WITH ANY SUBMITTAL REVIEW COMMENTS ADDRESSED) AND O&M MANUALS FOR EACH PIECE OF EQUIPMENT INCLUDING ALL SELECTED OPTIONS, THE NAME AND ADDRESS OF AT LEAST ONE SERVICE AGENCY, FULL CONTROL SYSTEM O&M AND CALIBRATION INFORMATION INCLUDING WIRING DIAGRAMS. SCHEMATICS, FULL SEQUENCE OF OPERATION, AND PROGRAMMED SETPOINTS.
- ON THE DAY THE SYSTEM IS COMPLETELY OPERATIONAL AND
- EQUIPMENT FOR MAINTENANCE AND FILTER REMOVAL.
- . CONDENSATE DRAIN PIPING SHALL BE SCHEDULE 40 PVC PIPE AND FITTINGS. DRAINS FROM AIR HANDLING UNITS SHALL BE TRAPPED. MINIMUM DRAIN SIZE SHALL BE 3/4".
- 12. ALL REFRIGERANT PIPE SHALL BE NITROGENIZED ACR COPPER TUBE. SIZE, INSULATE, AND INSTALL REFRIGERANT PIPING PER EXPOSED OUTDOORS SHALL BE COVERED WITH AN OUTER ALUMINUM
- 4. INSTALL THE TOP OF ALL THERMOSTATS, SENSORS, AND SWITCHES AT 4'-0" (MAXIMUM) ABOVE FINISH FLOOR. COORDINATE EXACT
- 15. CONTRACTOR SHALL VERIFY LOCATION OF ALL ROOF PENETRATIONS WITH ARCHITECT & OWNER PRIOR TO INSTALLATION.
- 5. ROOF CURBS SHALL ALLOW A MINIMUM OF 8" ABOVE ROOF INSULATION FOR FLASHING, OR AS INDICATED ON THE DRAWINGS, WHICHEVER IS GREATER. IN ADDITION, ALL ROOF CURBS OR EQUIPMENT SUPPORT RAILS THAT SUPPORT EQUIPMENT, PIPING, CONDUIT, ETC. EXPOSED ON THE ROOF SHALL HAVE SUFFICIENT HEIGHT TO MAINTAIN A MINIMUM OF 18" CLEARANCE BELOW SUPPORTED EQUIPMENT FOR ROOF MAINTENANCE.
- 7. CONTRACTOR SHALL LOCATE EXHAUST FANS, OUTLETS, AND GAS FLUES A MINIMUM OF 10'-0" FROM ANY OUTSIDE AIR INTAKE.
- 8. EQUIPMENT OPERATED DURING CONSTRUCTION SHALL USE FILTERED MEDIA TO PREVENT CONSTRUCTION DEBRIS FROM ENTERING COILS. DUCTWORK SYSTEMS, AIR TERMINALS ETC. AT COMPLETION OF CONSTRUCTION, MECHANICAL CONTRACTOR SHALL CLEAN ALL SYSTEMS WITH ALL CONTROL DEVICES WIDE OPEN AND REMOVE ANY REMAINING DEBRIS PRIOR TO TEST AND BALANCING. MECHANICAL CONTRACTOR SHALL REPLACE ALL FILTRATION WITH NEW FILTERS AT COMPLETION OF CONSTRUCTION. ANY DUCTWORK, AIR TERMINALS, AND/OR OTHER EQUIPMENT UPSTREAM OF FILTRATION SHALL BE CLEANED THOROUGHLY
- . THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING RESTRAINTS TO RESIST THE EARTHQUAKE EFFECTS ON THE MECHANICAL SYSTEMS. THE REQUIREMENTS FOR THOSE RESTRAINTS ARE FOUND IN THE LOCAL BUILDING CODE AND ASCE 7. THE ANCHORAGE OF THE MECHANICAL SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF THE LOCAL BUILDING CODE AND ASCE 7.

REFLECTED CEILING PLANS FOR EXACT LOCATION OF DOORS, WINDOWS,



- SMACNA LEAKAGE CLASS 4.
- ALL PIPING, DUCTS, VENTS, ETC., EXTENDING THROUGH WALLS AND ROOF SHALL BE FLASHED AND COUNTERFLASHED IN A WATERPROOF
- INTERFERENCE.
- UPON PROJECT COMPLETION, THE MECHANICAL CONTRACTOR IS
- PROVIDE A ONE YEAR WARRANTY FOR ALL WORK PERFORMED BEGINNING ACCEPTABLE BY THE OWNER.
- O. PROVIDE MANUFACTURER'S RECOMMENDED CLEARANCES AROUND ALL
- MANUFACTURER'S RECOMMENDATIONS. REFRIGERANT PIPING INSULATION
- 3. ANY DEVICE REQUIRING A THERMOSTAT FOR CONTROL SHALL BE FURNISHED WITH A THERMOSTAT WHETHER INDICATED ON THE DRAWINGS
- THERMOSTAT LOCATION WITH OWNER PRIOR TO INSTALLATION.

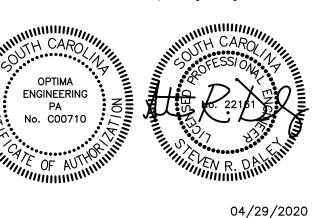
- OF CONSTRUCTION DEBRIS BEFORE HANDING OVER TO OWNER.

CHARLOTTE 7315 Swansea









ARCHITECT / ENGINEER'S SEAL

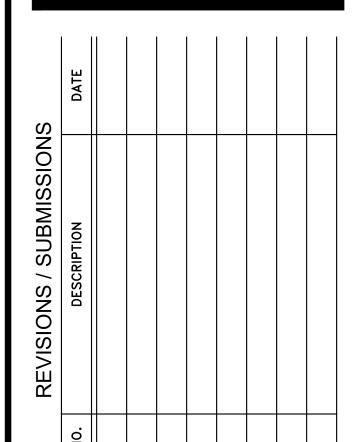


**BEAUFORT COUNTY ENGINEERING** 

## BEAUFORT COUNTY DNA LABORATORY ADDITION

111 INDUSTRIAL VILLAGE RD BEAUFORT, SC 29906

## CONSTRUCTION



SHEET	INFORMATION
DATE	APRIL 29, 2020
JOB NUMBER	19044.00
DRAWN	SJR

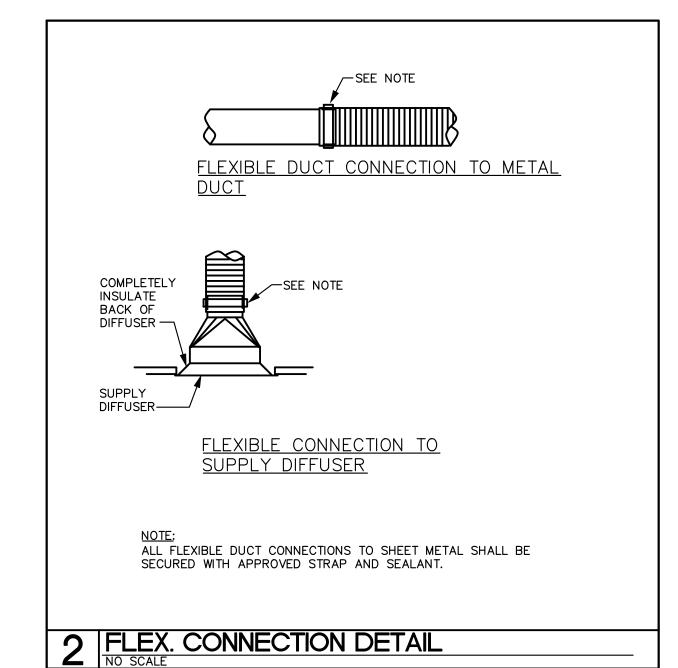
**SCHEDULES** AND LEGEND **MECHANICAL** 

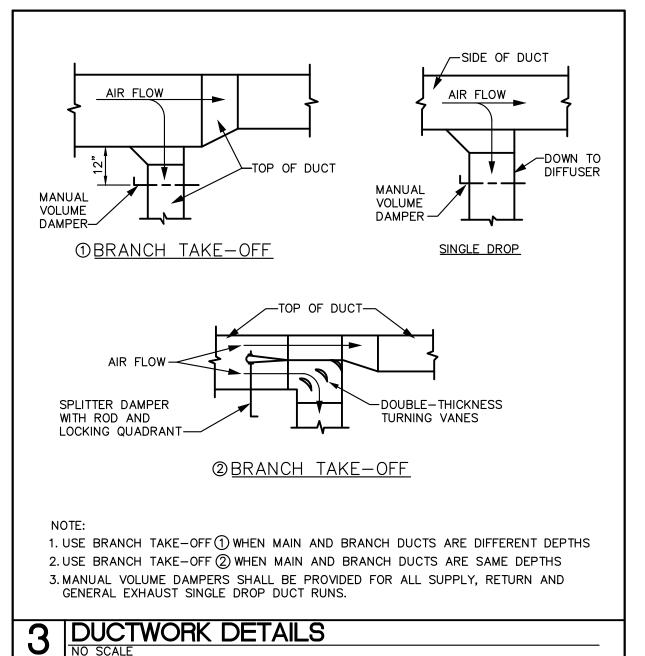
CHECKED APPROVED

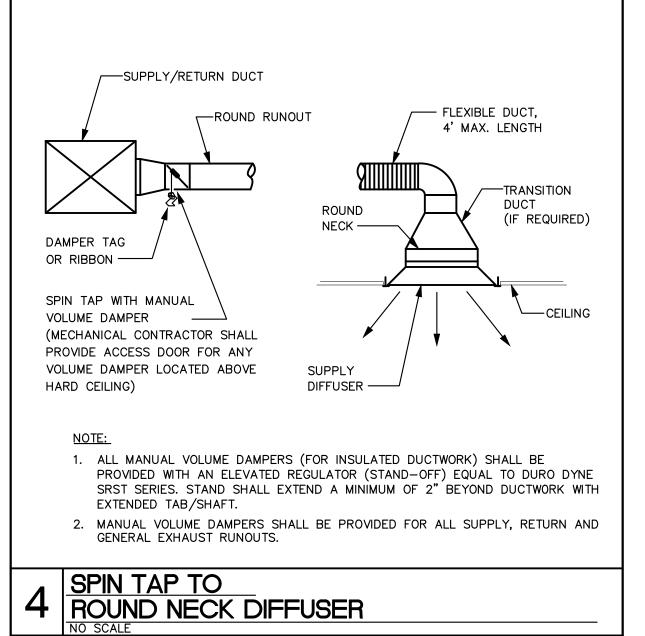
OPTIMA #: 20-0104

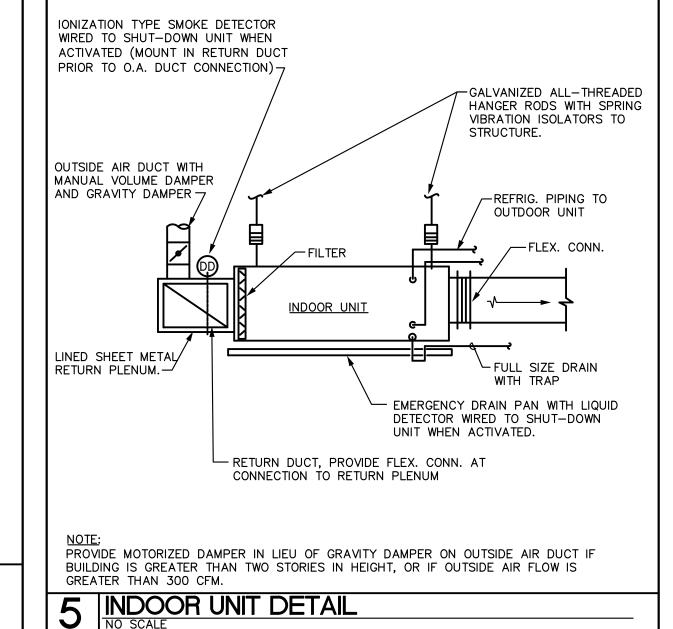
MEH

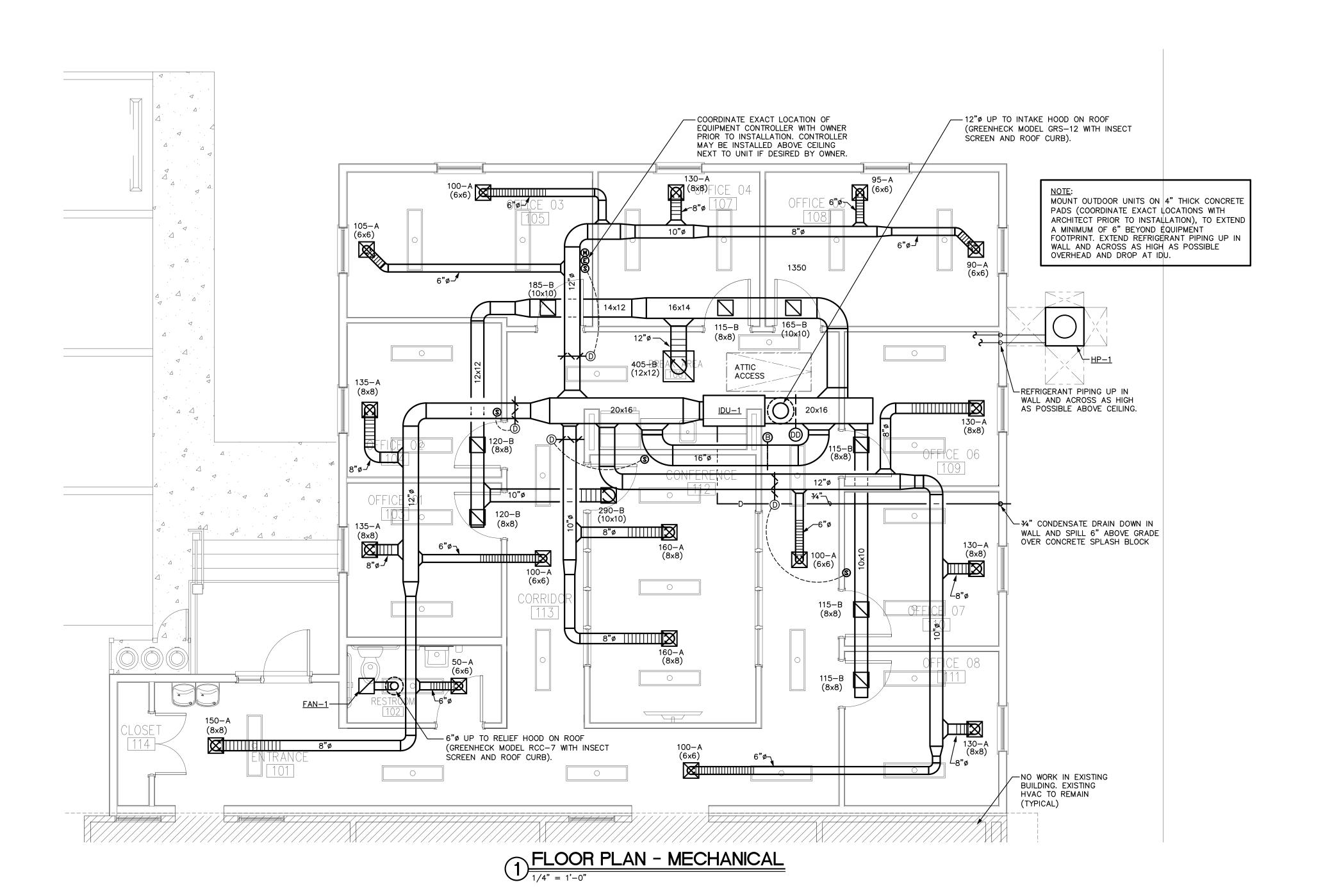
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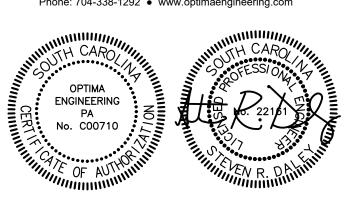


**EAUFORT**Fire Station Lane eabrook, SC 29940

**CHARLOTTE**7315 Swansea Lane
Cornelius, NC 2803
(843) 466-3664







ARCHITECT / ENGINEER'S SEAL

04/29/2020

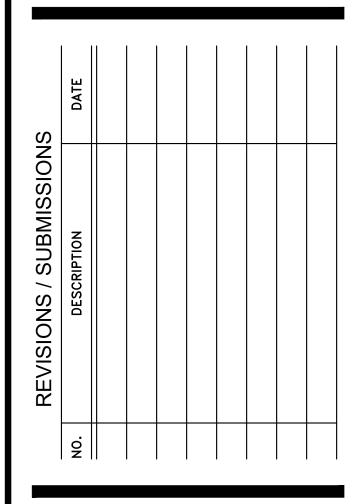


BEAUFORT COUNTY ENGINEERING

## BEAUFORT COUNTY DNA LABORATORY ADDITION

111 INDUSTRIAL VILLAGE RD BEAUFORT, SC 29906

FOR CONSTRUCTION



SHEE	T INFORMATION
DATE	APRIL 29, 2020
JOB NUMBER	19044.00
DRAWN	SJR
CHECKED	MEH
APPROVED	MEH

FLOOR PLAN AND DETAILS -MECHANICAL

M-101

2 OF 2 OPTIMA #: 20-0104

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### 2009 INTERNATIONAL ENERGY CONSERVATION CODE

COMMERCIAL ENERGY EFFICIENCY - ELECTRICAL SUMMARY

501.1 METHOD OF COMPLIANCE 2009 IECC CHAPTER 5

COMPLIANCE WITH ASHRAE 90.1-2010

501.2 APPLICATION COMPLIANCE

506 EFFICIENT HVAC PERFORMANCE 506 EFFICIENT LIGHTING SYSTEM

### (PARTIAL RENOVATION)

505.2 - INTERIOR LIGHTING CONTROLS (MANDATORY REQUIREMENTS):

- INTERIOR LIGHTING SYSTEMS ARE PROVIDED WITH CONTROLS AS REQUIRED PER SECTION 505.2.1 EXCEPT WHERE EXEMPT.
- NOT APPLICABLE
- 505.3 TANDEM WIRING (MANDATORY REQUIREMENTS):
- 7 FLUORESCENT LUMINARIES LOCATED WITHIN THE SAME AREA ARE TANDEM ☐ WIRED AS REQUIRED PER SECTION 505.3, EXCEPT WHERE EXEMPT.
- NOT APPLICABLE 505.4 - EXIT SIGNS (MANDATORY REQUIREMENTS):
- INTERNALLY ILLUMINATED EXIT SIGNS DO NOT EXCEED 5 WATTS PER SIDE. □ NOT APPLICABLE
- 505.5 INTERIOR LIGHTING POWER REQUIREMENTS (PRESCRIPTIVE) (NON-EXEMPT): NOT APPLICABLE PER 2009 IECC 101.4.3, EXCEPTION 7
- 505.5.1 TOTAL CONNECTED INTERIOR LIGHTING POWER: \_\_\_\_\_960 WATTS SPECIFIED
- 505.5.2 TOTAL <u>ALLOWABLE</u> INTERIOR LIGHTING POWER:
- METHOD OF COMPLIANCE:
- BUILDING AREA METHOD ☐ SPACE-BY-SPACE METHOD
- 2000 WATTS ALLOWED
- 505.6.1 EXTERIOR BUILDING GROUNDS LIGHTING:
- LAMPS OPERATING AT GREATER THAN 100 WATTS FOR EXTERIOR BUILDING ] GROUNDS LUMINARIES HAVE A MINIMUM EFFICACY OF 60 LUMENS PER WATT,
- EXCEPT WHERE EXEMPT. NOT APPLICABLE
- 505.6.2 EXTERIOR BUILDING LIGHTING POWER (NON-EXEMPT):
- NOT APPLICABLE
- TOTAL <u>CONNECTED</u> EXTERIOR LIGHTING POWER:
- 47 WATTS SPECIFIED TOTAL ALLOWABLE EXTERIOR LIGHTING POWER:
- 600 WATTS ALLOWED (TRADABLE)
- 505.6.3 SHIELDING OF EXTERIOR BUILDING LIGHTING FIXTURES: ONLY FULLY SHIELDED EXTERIOR BUILDING LIGHTING FIXTURES ARE PROVIDED,
- ☐ EXCEPT WHERE EXEMPT.
- ALTERNATIVE EXTERIOR BUILDING LIGHTING FIXTURES ARE PROVIDED FOR GREATER ENERGY EFFICIENCY OVER FULLY SHIELDED EXTERIOR BUILDING LIGHTING FIXTURES.
- NOT APPLICABLE
- 505.7 ELECTRICAL ENERGY CONSUMPTION (DWELLING UNITS):
- SEPARATE TENANT METERING TO DETERMINE ELECTRICAL ENERGY CONSUMPTION HAS BEEN PROVIDED FOR BUILDINGS HAVING INDIVIDUAL DWELLING UNITS.
- NOT APPLICABLE

### ABBREVIATIONS

- DIMENSION INDICATES HEIGHT ABOVE FINISHED FLOOR AT WHICH CENTER OF DEVICE IS TO MOUNTED. SEE PLANS.
- NEMA 3R
- AFF ABOVE FINISHED FLOOR AHJ AUTHORITY HAVING JURISDICTION
- AIR HANDLER UNIT AHU
- C.B. CIRCUIT BREAKER EC EMPTY CONDUIT WITH PULL CORD
- E.C. ELECTRICAL CONTRACTOR EWC ELECTRIC WATER COOLER
- ELECTRIC WATER HEATER FACP FIRE ALARM CONTROL PANEL
- FPN FUSE PER NAMEPLATE
- LC LIGHTING CONTACTOR M.C. MECHANICAL CONTRACTOR
- P.C. PLUMBING CONTRACTOR U.G. UNDERGROUND
- WEATHERPROOF S.E. SERVICE ENTRANCE
- EMERGENCY FIXTURE WITH BATTERY OR GEN. BACK-UP EXISTING ITEM RELOCATED TO THIS LOCATION.
- EXISTING ITEM TO BE RELOCATED.
- EXISTING ITEM TO REMAIN. EXISTING ITEM TO BE REPLACED.
- EXISTING ITEM TO BE REMOVED.
- RMS SYMMETRICAL SHORT CIRCUIT CURRENT AMPERE INTERRUPTING CAPACITY (EQUIPMENT RATING)

### DEVICES AND PATHWAYS

- WIRING SYSTEM CONCEALED IN WALL OR CEILING. WHEN SHOWN, CROSS LINES INDICATE NUMBER OF WIRES. (GROUND WIRES ARE NOT SHOWN)
- WIRING SYSTEM CONCEALED IN OR UNDER SLAB OR UNDERGROUND.
- WIRING SYSTEM EXPOSED
- CONDUIT TURNED UP TO FLOOR ABOVE.
- CONDUIT TURNED DOWN TO FLOOR BELOW.
- BRANCH CIRCUIT HOMERUN TO PANEL.
- JUNCTION BOX WITH CONNECTION TO EQUIPMENT SERVED. 4" SQUARE BOX WITH A SINGLE-GANG OPENING AND PLASTER RING. JUNCTION BOX FOR HAND DRYER CONNECTION; SEE MOUNTING HEIGHTS
- DETAIL FOR EXACT HEIGHT; SEE ARCH. SHEETS FOR COORDINATION 4" SQUARE BOX WITH A SINGLE-GANG OPENING AND PLASTER RING. DUPLEX RECEPTACLE, 20 AMP, 120 VOLT (USE 20 AMP FOR SINGLE
- RECEPTACLE ON A CIRCUIT.) HUBBELL 5352, OR EQUAL. DUPLEX RECEPTACLE MOUNTED ABOVE COUNTER BACKSPLASH, OR AT
- QUAD RECEPTACLE. TWO NEMA 5-20R DUPLEX RECEPTACLES.
- STANDARD TWO NEMA 5-20R DUPLEX RECEPTACLE FOR ELECTRIC WATER COOLER. COORDINATE LOCATION WITH PLUMBING CONTRACTOR.
- GROUND FAULT RECEPTACLE. NEMA 5-20R DUPLEX. ALL RECEPTACLES
- INSTALLED OUTSIDE, WITHIN 6' OF A SINK OR IN A KITCHEN SHALL BE GFCI. ISOLATED GROUND RECEPTACLE. NEMA 5-20R DUPLEX.
- WEATHERPROOF RECEPTACLE. NEMA 5-20R GFI DUPLEX. COVER SHALL BE
- INTERMATIC #WP1020 (CLEAR) OR SPECIFICATION EQUAL. DUPLEX RECEPTACLE, 20 AMP, 120 VOLT (USE 20 AMP FOR SINGLE
- RECEPTACLE ON A CIRCUIT.) COOPER 5352, OR EQUAL. T.V. RECEPTACLE MOUNTED AT 88" AFF.
- DUPLEX SWITCHED TAMPER RESISTANT RECEPTACLE, 20 AMP, 120 VOLT. SURGE PROTECTION DEVICE (SPD); SEE DETAIL
- WIREMOLD 2400 PLUGMOLD. NEMA 5-15R RECEPTACLES ON 12" CENTERS. ALTERNATE CIRCUITS.
- KITCHEN RECEPTACLE. SEE KITCHEN EQUIPMENT SCHEDULE.
- SPECIAL OUTLET. SEE PLANS. MODULAR FURNITURE CONNECTION. PROVIDE DOUBLE-GANG BARRIERED J-BOX FOR POWER & TELE/DATA. EXTEND 1-1/4" EC TO ABOVE ACCESSIBLE
- CEILING FOR TELE/DATA. CONNECT POWER AS INDICATED. ELECTRICAL POWER POLE
- M MOTOR OPERATED DAMPER, INTERLOCK WITH FAN AS INDICATED. (DAMPER BY
- GROUNDING BAR PER DIAGRAM. SIX GANG FLUSH MOUNTED FLOOR BOX WITH ACCESSIBLE COVER FOR POWER AND COMMUNICATIONS. PROVIDE FIVE NEMA 5-20R DUPLEX RECEPTACLES AND ONE COMM. PLATE WITH PROVISION FOR SIX RJ45 CAT6 JACKS. EQUAL TO WIREMOLD RFB6E-OG-8CT. ARCHITECT TO SELECT FINISH. STUB FROM

### BOX ONE CONCEALED 11/4"C ROUTED TO WHICHEVER IS NEAREST, BB, J-HOOKS, OR CABLE TRAY. EQUALS: HUBBELL, THOMAS & BETTS, OR SPECIFICATION EQUAL.

CONNECTION TO MOTOR. STARTER PROVIDED BY OTHERS UNLESS

PANELS, DISCONNECTS

- FRACTIONAL HORSEPOWER MANUAL MOTOR STARTER, WITH OVERLOAD PROTECTION
- NON-FUSED HEAVY DUTY DISCONNECT SWITCH. NUMERALS INDICATE SWITCH RATING. NEMA 1 ENCLOSURE, UNLESS OTHERWISE NOTED.
- FUSED HEAVY DUTY DISCONNECT SWITCH. NUMERALS INDICATE SWITCH
- RATING/FUSE SIZE. NEMA 1 ENCLOSURE, UNLESS OTHERWISE NOTED. CIRCUIT BREAKER. NUMERALS INDICATE RATING. NEMA 1 ENCLOSURE, UNLESS OTHERWISE NOTED.
- PLYWOOD TELEPHONE BACKBOARD. SIZE AS INDICATED ON RISER. PANELBOARD. SEE SCHEDULE FOR MOUNTING. TOP OF PANEL AT 6'-6" AFF. DOOR MOTOR CONTROL. MOUNT +48" AFF, CONTROLS SHALL BE UP,

DOWN, AND STOP MOUNTED ON 4" SQUARE BOX (FLUSH BOX)

## SECURITY

- SECURITY CAMERA. PROVIDE 3/4" CONDUIT TO LOCAL ACCESSIBLE CEILING. PROVIDE DOUBLE GANG JUNCTION BOX WITH SINGLE GANG OPENING PLATE. PROVIDE PULL STRING.
- PIR MOTION DETECTOR, PROVIDE MINIMUM 1/2" CONDUIT TO LOCAL ACCESSIBLE CEILING. PROVIDE SINGLE GANG JUNCTION BOX AND PULL

ADDITIONAL REQUIREMENTS OF PATHWAYS AND CABLING.

CARD READER, MINIMUM 1/2" CONDUIT. PROVIDE SINGLE GANG JUNCTION BOX AND PULL STRING. SEE CARD READER DETAIL FOR ADDITIONAL REQUIREMENTS OF PATHWAYS AND CABLING. DOOR CONTACT, MINIMUM 1/2" CONDUIT. PROVIDE SINGLE GANG JUNCTION BOX AND PULL STRING. SEE CARD READER DETAIL FOR

## SYMBOL SCHEDULE

### FIRE ALARM

- FIRE ALARM CONTROL PANEL WITH LOCAL SMOKE DETECTOR FIRE ALARM REMOTE ANNUNCIATOR. PROVIDE BOX AS REQUIRED PER MANUFACTURER RECOMMENDATION. PROVIDE 1"C CONDUIT FOR CABLING.
- FIRE ALARM MANUAL STATION. PROVIDE PROTECTION DEVICE CEILING MOUNTED SMOKE DETECTOR. FA VENDOR PROVIDED.
- CEILING MOUNTED MULTI-CRITERIA SMOKE DETECTOR. FA VENDOR PROVIDED. CEILING MOUNTED HEAT DETECTOR.
- DUCT MOUNTED SMOKE DETECTOR. FURNISHED AND CONNECTED BY ELECTRICAL CONTRACTOR, INSTALLED BY MECHANICAL CONTRACTOR. CUTTING OF DUCT, INSTALLATION OF DETECTOR. AND DETERMINATION OF SAMPLING TUBE LENGTH SHALL BE THE MECHANICAL CONTRACTOR. PROVIDE REMOTE INDICATING LIGHT WITH EACH DETECTOR.
- CEILING MOUNTED CARBON MONOXIDE DETECTOR (CENTRAL SYSTEM CONNECTED)

CONTR. PROVIDE A SMOKE DETECTOR WITHIN 5 FT. OF BOTH SIDES

- SPRINKLER SYSTEM FLOW SWITCH. SPRINKLER SYSTEM TAMPER SWITCH.
- SMOKE DAMPER. FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR, CONNECTED TO FIRE ALARM SYSTEM BY ELECTRICAL CONTRACTOR. MAGNETIC DOOR HOLDER, PROVIDED BY ELECTRICAL CONTR, INSTALLED BY
- OF DOORS TO LOCALLY ACTIVATE DOOR UPON SMOKE SIGNAL. ADA COMPLIANT WALL MOUNT FIRE ALARM HORN WITH STROBE LIGHT, 15CD UNLESS OTHERWISE NOTED. WHITE FINISH.\*\*
- ADA COMPLIANT WALL MOUNT FIRE ALARM STROBE LIGHT, 15CD UNLESS ADA COMPLIANT CEILING MOUNTED FIRE ALARM HORN STROBE LIGHT, 15cd, UNLESS OTHERWISE NOTED. WHITE FINISH.\*\*
- ADA COMPLIANT CEILING MOUNTED FIRE ALARM STROBE LIGHT, 15cd, UNLESS OTHERWISE NOTED. WHITE FINISH. DUCT DETECTOR REMOTE INDICATING LIGHT.
- ADA COMPLIANT FIRE ALARM MINI HORN. WHITE FINISH.\*\*
- ADA COMPLIANT CEILING MOUNTED FIRE ALARM SPEAKER ONLY. WHITE FINISH. ADA COMPLIANT CEILING MOUNTED FIRE ALARM SPEAKER STROBE LIGHT, 15cd, UNLESS OTHERWISE NOTED. WHITE FINISH.
- CEILING MOUNTED SMOKE DETECTOR WITH LOW FREQUENCY SOUNDER BASE.\*\* ADA COMPLIANT WALL MOUNTED FIRE ALARM SPEAKER ONLY. WHITE FINISH.
- ADA COMPLIANT WALL MOUNTED FIRE ALARM SPEAKER STROBE LIGHT, 15cd, UNLESS OTHERWISE NOTED. WHITE FINISH.
- AREA OF RESCUE MASTER STATION. LOCATE AS DIRECTED BY THE AHJ. AREA OF RESCUE CALL STATION. LOCATE AT EACH "AREA OF RESCUE" AS INDICATED ON THE ARCHITECTURAL PLANS. MOUNT SIGN ON WALL ABOVE.
- AUDIBLE DEVICES WITHIN SLEEPING ROOMS SHALL BE SUBJECT TO LOW FREQUENCY REQUIREMENTS. A SQUARE WAVE 520HZ TONE COMPLATIBLE WITH NFPA 72 18.4.5.3. CORRDINATE WITH LOCAL CODES AND REQUIREMENTS.

### SPECIAL SYSTEMS

- MICROPHONE JACK: 1" CONDUIT TO LOCAL SOUND SYSTEM CLOSET FLUSH-MOUNTED CEILING SPEAKER.
- WALL-MOUNTED SPEAKER.3/4" CONDUIT TO LOCAL CABLE TRAY
- EXTERIOR WEATHERPROOF SPEAKER; 3/4" CONDUIT TO LOCAL CABLE TRAY PROVIDE WEATHERPROOF J-BOX CEILING-MOUNTED SPEAKER-GYM; 3/4" CONDUIT TO LOCAL CABLE TRAY lacksquareVOLUME CONTROL; SINGLE GANG BOX AND 3/4"C CONDUIT TO ABOVE CEILING
  - WITH PULL STRING. SEE APPLICABLE DETAIL AND/OR SPECIFICATIONS FOR ADDITIONAL CONDUIT AND CABLING REQUIREMENTS. SEE TV DETAIL FOR TYPE AND REQUIREMENTS. MINIMUM 1" CONDUIT FOR CABLING AND 3/4" CONDUIT FOR POWER. PROVIDE PULL STRING FOR LOW VOLTAGE CABLING TO
- ACCESSIBLE CEILING. GA GENERATOR ANNUNCIATOR PANEL; 3/4" CONDUIT TO ATS. PROVIDE BOX AS REQUIRED PER MANUFACTURER RECOMMENDATION PROVIDE CABLING PER MANUFACTURER RECOMMENDATIONS
- ACCESSIBLE DOOR OPENER PUSH BUTTON. PROVIDE MINIMUM (2) GANG BOX WITH SINGLE GANG OPENING. 3/4"C TO DOOR OPERATOR. COORDINATE WITH EQUIPMENT PROVIDED. SEE DETAIL.

### **TELECOMMUNICATIONS**

TELE/DATA OUTLET. 1" EC TO ABOVE NEAREST ACCESSIBLE CEILING FOR

LOW VOLTAGE CABLING. 4" SQUARE BOX WITH A TWO-GANG OPENING. STUB 1

- TELE/DATA OUTLET ABOVE COUNTER OR HEIGHT SPECIFIED. 1" EC TO ABOVE NEAREST ACCESSIBLE CEILING FOR J-HOOK SYSTEM OR TO LOCAL CABLE TRAY (WITHIN 6") AS APPLICABLE WITH PULL STRING. 4" SQUARE BOX WITH A SINGLE-GANG OPENING AND PLASTER RING.
- J-HOOK SYSTEM OR TO LOCAL CABLE TRAY (WITHIN 6") AS APPLICABLE WITH PULL STRING. 4" SQUARE BOX WITH A SINGLE-GANG OPENING AND PLASTER ABOVE CEILING, STRUCTURE MOUNTED JUNCTION BOX FOR WIRELESS ACCESS
- EC FROM BOX TO J-HOOKS OR CABLETRAY ABOVE ACCESSIBLE CEILING. PROVIDE CABLING, TERMINATIONS, AND FACEPLATE PER SPECIFICATIONS. CABLE TRAY LADDER STYLE CABLE TRAY 12" WIDE X 4" DEEP (8" RUNG SPACING) SUSPENDED FROM CEILING STRUCTURE UNLESS OTHERWISE NOTED CABLE TRAY SHALL BE COORDINATED WITH MECHANICAL DUCTWORK IN FIELD PRIOR TO INSTALLATION; CONTRACTOR SHALL PRODUCE COORDINATION DRAWINGS AND FIELD ADJUST AS REQUIRED TO MEET INTENT OF DRAWINGS

### LIGHTING (SEE FIXTURE SCH.)

### LED LIGHTING FIXTURE. SEE FIXTURE SCHEDULE. SUSPEND FOUR CORNERS WITH WIRE TO STRUCTURE. DO NOT ALLOW GRID ALONE TO SUPPORT FIXTURE.

LED STRIP FIXTURE.  $\vdash$ 

- LED LIGHTING FIXTURE.
- WALL MOUNTED LED LIGHTING FIXTURE.
- LED FIXTURE WITH EMERGENCY BATTERY BALLAST OR DRIVER. PROVIDE 1100 LUMEN INVERTER RATED FOR 90 MINUTE OPERATION. SEE FIXTURE SCHEDULE FOR FIXTURE TYPE, EMERGENCY DEVICE SHALL SUPPLEMENT FIXTURE.
- LED DOWNLIGHT WITH AN EMERGENCY BATTERY BALLAST OR DRIVER. BASED ON 1100 LUMEN INVERTER (SEE SCHEDULE FOR FIXTURE LUMEN MAXIMUM.)
- EMERGENCY DEVICE SHALL SUPPLEMENT FIXTURE. EXIT LIGHT WITH ARROWS AND NUMBERS OF FACES AS INDICATED ON PLANS. 90 MIN BATTERY BACKUP. SEE LIGHTING FIXTURE SCHEDULE.

EMERGENCY BATTERY PACK/EXIT COMBO FIXTURE WITH 90 MINUTE BATTERY

- EMERGENCY BATTERY PACK FIXTURE. 90 MINUTE EMERGENCY INTEGRAL BATTERY. SEE LIGHTING FIXTURE SCHEDULE
- BACKUP, SEE FIXTURE SCHÉDULE. EXTERIOR EMERGENCY FIXTURE WITH EMERGENCY BALLAST OR DRIVER. PROVIDE 100 LUMEN INVERTER RATED FOR 90 MINUTE OPERATION. SEE FIXTURE
- SCHEDULE FOR FIXTURE TYPE, EMERGENCY DEVICE SHALL SUPPLEMENT FIXTURE. SINGLE HEAD POLE FIXTURE. SEE FIXTURE SCHEDULE.
- LIGHT BOLLARD OR POLE TOP FIXTURE. SEE FIXTURE SCHEDULE.

DOUBLE HEAD POLE FIXTURE. SEE FIXTURE SCHEDULE.

- SINGLE POLE SWITCH, 20 AMP, 120/277 VOLT, COOPER AH 1221, OR EQUAL BY HUBBELL, LEVITON, AND PASS & SEYMOUR.
- DOUBLE POLE SWITCH, 20 AMP, 120/277 VOLT, COOPER 1222, OR EQUAL. THREE WAY SWITCH, 20 AMP, 120/277 VOLT, COOPER 1223, THREE WAY
- SWITCH, 20 AMP, 120/277 VOLT, COOPER 1223, OR EQUAL BY HUBBELL, LEVITON, AND PASS & SEYMOUR. FOUR WAY SWITCH, 20 AMP, 120/277 VOLT, COOPER 1224, OR EQUAL.
- PILOT LIGHT SWITCH KEY OPERATED SWITCH 2-HR TIMER SWITCH, 20 AMP, 120/277 VOLT, EQUAL TO INTERMATIC FF SERIES

3-POSITION ROCKER SWITCH 120V (UP/NORMAL/DOWN) LEVITON SINGLE POLE

- DOUBLE THROW (CENTER OFF) MAINTAINED CONTACT 5685-2-W OR APPROVED EQUAL(1/2HP MAX) LOW VOLTAGE (24V): 56081-2W, E.C. TO VERIFY WITH SPECIFIED SCREEN TYPE DIMMER SWITCH. LUTRON SERIES, OR EQUAL. VERIFY LOAD ON CIRCUIT AND MATCH DIMMER SIZE TO LOAD AND DEVICE QUANTITY. PROVIDE DOUBLE GANG
- J-BOX WITH SINGLE GANG TRIM PLATE. PROVIDE DIMMING SWITCH AS RECOMMENDED BY LIGHTING MANUFACTURER. MATCH SWITCH TYPE TO SOURCE (LED, FLUORESCENT, OR INCANDESCENT,) WATTAGE, AND QUANTITY. LOW VOLTAGE DIMMER SWITCH MOUNTED IN FLUSH JUNCTION BOX. TYPE DOUBLE POLE DOUBLE THROW MOMENTARY-ON ACTUATION SWITCH. PROVIDE JUNCTION BOX AND JUMPER FROM LOCAL LIGHTING CIRCUIT TO LOW VOLTAGE TRANSFORMER/MOTOR ON TUBULAR SKYLIGHT. PROVIDE 20 GAUGE (4)

CONDUCTOR CABLE IN 3/4"C FROM SWITCH TO BAFFLE CONTROLLER. PROVIDE

- 20 GAUGE JUMPER FROM EACH SUCCESSIVE CONTROL UNIT TO DAISY CHAIN MULTIPLE SKYLIGHT BAFFLES. INDICATES TWO LEVEL SWITCHING. SWITCH OUTER TWO LAMPS OF FIXTURES
- TOGETHER AND THE INNER LAMP(S) TOGETHER. WALL MOUNTED VACANCY SENSOR AND SWITCH (MANUAL ON/AUTOMATIC OFF). INFRARED TECHNOLOGY, 120/277 RATED. SENSOR SWITCH WSX, WATT STOPPER
- PW-301, LEVITON, COOPER OR EQUAL. CEILING MOUNTED OCCUPANCY SENSOR, DUAL TECHNOLOGY, SENSOR SWITCH CM PDT 10, WATT STOPPER #DT-300, COOPER OAC-DT OR EQUAL. CEILING MOUNTED OCCUPANCY SENSOR. INFRARED TECHNOLOGY. WATT STOPPER
- #CI-300-1 OR EQUAL. CEILING MOUNTED OCCUPANCY SENSOR, ULTRASONIC WATT STOPPER #WT-2255 OR EQUAL.
- WALL MOUNTED OCCUPANCY SENSOR, DUAL TECHNOLOGY. SENSOR SWITCH WV-PDT, WATT STOPPER #DT-200, LEVITON, GREENGATE OR EQUAL. CONICAL PATTERN, MOUNT AS CLOSE TO CORNER OF ROOM AS POSSIBLE. MOUNT 10' AFF OR 6" BELOW CEILING (IF LOWER THAN 10'.)
- CEILING MOUNTED VACANCY SENSOR, DUAL TECHNOLOGY. SENSOR SWITCH, WATT STOPPER, COOPER OR EQUAL. WALL MOUNTED OCCUPANCY SENSOR AND SWITCH. INFRARED TECHNOLOGY WITH NEUTRAL, 120/277V RATED. WATT STOPPER #WS-250, OR EQUAL BY SENSOR
- SWITCH, AND LEVITON. WALL MOUNTED OCCUPANCY SENSOR AND SWITCH. INFRARED TECHNOLOGY, WATT STOPPER #PW-200, SENSOR SWITCH, COOPER CONTROLS OR EQUAL. FOR
- INBOARD/OUTBOARD SWITCHING OR STEP BALLAST. SWITCH SHALL BE INSTALLED IN SINGLE GANG BOX. 120/277V RATED. LIGHT LEVEL SENSOR WATT STOPPER LS-101 OR APPROVED EQUAL
- PHOTO CONTROL, EXTERIOR, MOUNT FACING NORTH.
- CEILING MOUNTED OCCUPANCY SENSOR POWER PACK. SENSOR SWITCH PP-20, WATT STOPPER #BZ-100, COOPER SP-20, OR EQUAL.
- SWITCHING DEVICE INDICATOR; INDICATES SWITCH AND ASSOCIATED FIXTURES CONTROLLED BY DEVICE
- (90 DEGREE) OR EQUAL. GENERATOR EMERGENCY RELAY DEVICE FOR NORMAL LIGHTING CONTROL, SEE EMERG. LTG RELAY DETAIL. CONNECT TO LOCAL LIFE SAFETY BRANCH LIGHTING CIRCUIT. NORMAL CIRCUIT IS THE SWITCH CONTROL. BASED ON BODINE

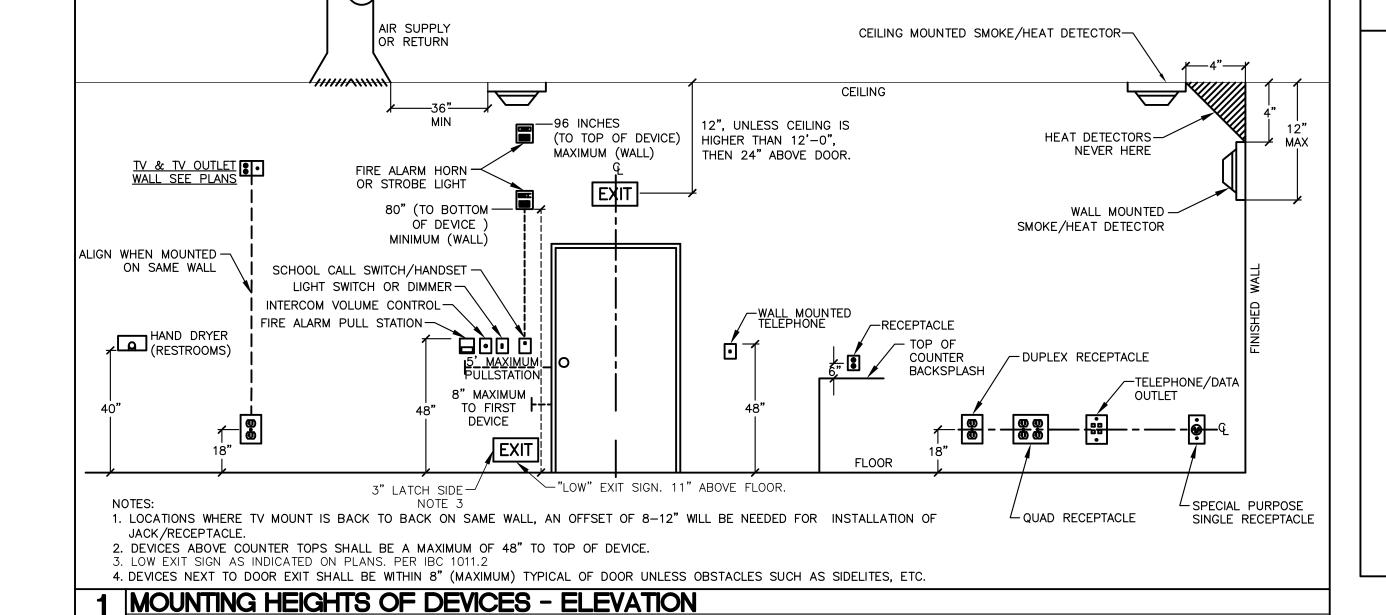
BLCD-20B, EQUALS BY: LEGRAND, ETC, OR APPROVED EQUAL.

EXTERIOR MOUNTED LINE VOLTAGE MOTION SENSOR WATT STOPPER #EN-100

## ELECTRICAL SHEET INDEX

PLAN NUMBER <u>PLAN NAME</u> ELECTRICAL NOTES & LEGENDS

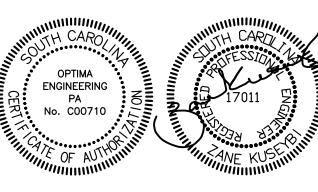
ELECTRICAL SPECIFICATIONS WALL PENETRATION DETAILS E004 ELECTRICAL DETAILS



FLOOR PLAN - LIGHTING FLOOR PLAN - POWER







ARCHITECT / ENGINEER'S SEAL

04/29/2020



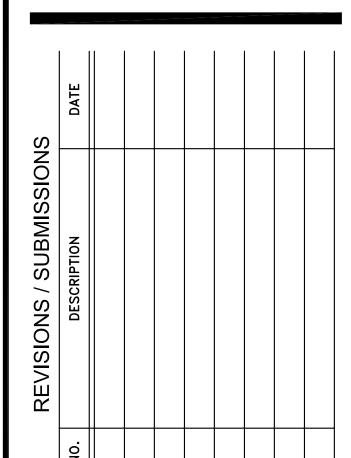
BEAUFORT COUNTY **ENGINEERING** 

**BEAUFORT COUNTY DNA** 

LABORATORY ADDITION 111 INDUSTRIAL VILLAGE RD

BEAUFORT, SC 29906

**CONSTRUCTION** 



SHEET INFORMATION

APRIL 29, 2020 19044.00 JOB NUMBER DRAWN SKL CHECKED ZK APPROVED ZK

& LEGENDS

**ELECTRICAL NOTES** 

OPTIMA #: 20-0104

A. THE WORK COVERED BY THESE SPECIFICATIONS CONSISTS OF FURNISHING ALL

LABOR, EQUIPMENT, MATERIAL, S AND SUPPLIES AS NECESSARY FOR THE COMPLETE AND SATISFACTORY OPERATING ELECTRICAL SYSTEMS AS SHOWN ON B. ALL WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE,

NFPA, STATE BUILDING CODE, AND ANY OTHER LOCAL REQUIREMENTS THAT MAY

C. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL ELECTRICAL PERMITS AND D. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND SHALL BE LISTED BY THE UNDERWRITER'S LABORATORIES, INC. OR BY A STATE APPROVED THIRD PARTY TESTING AGENCY FOR THE USE INTENDED WHERE A STANDARD FOR SUCH

BE IDENTICAL AND OF THE SAME MANUFACTURER. E. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND CATALOG DATA IN ELECTRONIC FORMAT (PDF) FOR ALL ELECTRICAL ITEMS IN THE SCOPE OF WORK, INCLUDING, BUT NOT LIMITED TO, RACEWAYS, BOXES, FITTINGS, CONDUCTORS, LUMINAIRES, LAMPS, BALLASTS, WIRING DEVICES, SAFETY SWITCHES, DISCONNECTS, TRANSFORMERS, PANEL BOARDS, FIRE ALARM, TELECOMMUNICATIONS, ETC. FOR APPROVAL AS APPLICABLE FOR THE PROJECT. ONE COMPLETE SET OF

APPROVED SUBMITTALS SHALL BE MAINTAINED AT THE JOB SITE. ALL COST ASSOCIATED WITH SUBSTITUTED EQUIPMENT TO COMPLY WITH THE BASIS OF DESIGN, INCLUDING PROVIDING MAINTENANCE ACCESS, CLEARANCE CONDUIT, WIRING, REPLACEMENT OF OTHER SYSTEM COMPONENTS, BUILDING ALTERATIONS, METHODS, ETC., SHALL BE INCLUDED IN THE ORIGINAL BASE BID. NO ADDITIONAL COSTS ASSOCIATED WITH SUBSTITUTED EQUIPMENT WILL BE APPROVED AFTER BIDS HAVE BEEN ACCEPTED AND ALL COSTS WILL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR. CREDITS SHALL BE GIVEN TO THE OWNER WHERE SUCH EQUIPMENT AND METHODS RESULT IN LESS EXPENSE

G. ONE COMPLETE SET OF THE LATEST CONSTRUCTION PLANS OF ALL TRADES SHALL BE MAINTAINED AT THE JOB SITE. IN ADDITION, ALL ADDENDUMS, BULLETINS, AND/OR SKETCHES SHALL BE INCORPORATED INTO THE ON-SITE

CONSTRUCTION PLANS AS THE JOB PROGRESSES. H. COMPLETELY ADEQUATE HOUSING SHALL BE PROVIDED FOR ALL MATERIALS STORED ON JOB SITE. ONLY CONDUIT MAY BE STORED OUTSIDE, BUT NOT IN

THE CONDUIT AND NEUTRAL SYSTEM SHALL BE GROUNDED AT THE MAIN SERVICE EQUIPMENT. GROUNDING ELECTRODE SYSTEM SHALL BE INSTALLED PER NEC

J. PROVIDE AN INTERSYSTEM BONDING TERMINATION DEVICE AT THE MAIN ELECTRICAL SERVICE PER NEC 250.94. K. WIRING SHALL BE TESTED FOR CONTINUITY AND GROUNDS BEFORE BEING ENERGIZED. FAULTY WIRING SHALL BE REPLACED AT NO ADDITIONAL EXPENSE

PROVIDE ALL CUTTING AND PATCHING FOR INSTALLATION OF WORK AND REPAIR M. THE ELECTRICAL CONTRACTOR SHALL CONNECT ALL EQUIPMENT REQUIRING

ELECTRICAL CONNECTIONS (UNLESS OTHERWISE NOTED), EXCEPT FOR CONTROL WIRING FOR EQUIPMENT NOT PROVIDED BY THE ELECTRICAL CONTRACTOR. CONTROL WIRING FOR SUCH EQUIPMENT SHALL BE PROVIDED BY THE RESPECTIVE

N. ALL ELECTRICAL JUNCTION BOXES, SWITCHGEAR, CABLING, VOICE/DATA OUTLETS, LOW VOLTAGE CABINETS, EMERGENCY RECEPTACLES, ETC. SHALL BE LABELED ACCORDING TO PANEL/RACK AND CIRCUIT NUMBER. O. UPON COMPLETION OF WORK, CONTRACTOR SHALL PRESENT ENGINEER WITH

CERTIFICATE OF APPROVAL FROM LOCAL INSPECTOR AND/OR AUTHORITY HAVING JURISDICTION BEFORE WORK WILL BE APPROVED FOR FINAL PAYMENT. P. CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS FOR A PERIOD OF ONE YEAR EFFECTIVE THE DATE THE PROJECT IS ACCEPTED BY THE OWNER. ANY IMPERFECT MATERIALS OR WORKMANSHIP SHALL BE REPLACED WITHOUT

Q. IT SHALL NOT BE THE INTENT OF ISSUED PLANS AND/OR SPECIFICATIONS TO SHOW EVERY MINOR DETAIL OF CONSTRUCTION. THE ELECTRICAL CONTRACTOR IS EXPECTED TO FURNISH AND INSTALL ALL NECESSARY ITEMS FOR A COMPLETE AND OPERATING SYSTEM.

R. THE WORD "PROVIDE" MEANS THAT THIS CONTRACTOR SHALL FURNISH, FABRICATE. ERECT. CONNECT. AND COMPLETELY INSTALL SYSTEMS IN PROPER OPERATING CONDITION. ALL LABOR, PRODUCT OPTIONS, ACCESSORIES AND INCIDENTAL MATERIALS REQUIRED SHALL BE INCLUDED AS PART OF THIS WORK TO COMPLETE THE INSTALLATION.

S. THE WORD "CONNECT" MEANS THAT THIS CONTRACTOR SHALL PROVIDE (SEE DEFINITION ABOVE) ALL DISCONNECTING MEANS, OVERCURRENT PROTECTION AND WIRING REQUIRED TO PLACE THE EQUIPMENT AND SYSTEMS IN PROPER OPERATING CONDITION AND TO COMPLY WITH CODE REQUIREMENTS

T. CONTRACTOR SHALL COORDINATE THE ROUGH-IN OF ALL OUTLET LOCATIONS WITH ARCHITECTURAL FLOOR PLANS, ELEVATIONS, AND MILLWORK SHOP DRAWINGS PRIOR TO ROUGH-IN. U. ELECTRICAL CONTRACTOR SHALL NOT SCALE PLANS. CONTRACTOR SHALL REFER

TO ARCHITECTURAL PLANS AND ELEVATIONS FOR EXACT LOCATIONS OF ALL EQUIPMENT, UNLESS OTHERWISE NOTED. V. CONTRACTOR SHALL TEST ALL "LIFE SAFETY" EQUIPMENT AND SYSTEMS FOR PROPER FUNCTION AND OPERATION. UPON SUCCESSFUL COMPLETION OF TESTS CONFIRMATION SHALL BE SENT TO THE ENGINEER OF RECORD IN THE FORM OF A

LETTER STATING THE TESTS PERFORMED, THE RESULTS, AND THE DATE TESTS WERE SUCCESSFULLY COMPLETE. "LIFE SAFETY" EQUIPMENT AND SYSTEMS CONSIST OF THOSE AS SPECIFIED IN THE STATE BUILDING CODE, THE NATIONAL ELECTRICAL CODE (NEC), NFPA 101, AND ANY OTHER LOCAL REQUIREMENTS

W. IF DURING THE COURSE OF WORK, THE CONTRACTOR DISCOVERS A PROBLEM WITH THE PERFORMANCE OF THE INSTALLATION RELATIVE TO THE PLANS AND SPECIFICATIONS, THE NEC, OR OTHER CODES OR REQUIREMENTS, THE CONTRACTOR SHALL IMMEDIATELY BRING THE PROBLEM TO THE ATTENTION OF THE ARCHITECT AND/OR ENGINEER FOR RESOLUTION PRIOR TO THE EXECUTION

WHERE THERE ARE CONFLICTS BETWEEN THE PLANS AND SPECIFICATIONS, THE CONTRACTOR SHALL BRING THE ISSUE TO THE ATTENTION OF THE ENGINEER FOR RESOLUTION PRIOR TO THE EXECUTION OF THE WORK OR ORDERING ANY MATERIALS. NO ADDITIONAL COSTS SHALL BE WARRANTED WITHOUT A CHANGE TO THE PROJECT SCOPE.

A. CONDUIT SHALL BE MANUFACTURED BY ALLIED, WHEATLAND, REPUBLIC CONDUIT WESTERN TUBE, OR APPROVED EQUIVALENT B. FOR INTERIOR WORK, CONDUIT SHALL BE ZINC COATED EMT EXCEPT WHERE NOT PERMITTED BY CODE. USE SCHEDULE 40 PVC BELOW CONCRETE SLAB, IN DUCTBANKS, AND FOR EXTERIOR WORK WHERE NOT SUBJECT TO DAMAGE. USE

. EMT FITTINGS SHALL BE COMPRESSION GLAND TYPE, OF MALLEABLE STEEL. CONNECTORS SHALL HAVE INSULATED THROATS. CAST, SET SCREW, OR INDENTER TYPE FITTINGS ARE NOT ACCEPTABLE. ALL FITTINGS FOR EMT SHALL

D. ALL RACEWAY SHALL BE RUN CONCEALED, UNLESS OTHERWISE NOTED. FISH ALL NEW OUTLETS IN EXISTING WALLS, WHERE POSSIBLE. ALL RUNS SHALL BE NEAT

E. LOW VOLTAGE CABLING NOT SPECIFIED TO BE INSTALLED IN CONDUIT, SHALL BE INSTALLED IN A CABLE TRAY SYSTEM OR J-HOOK SYSTEM CONSISTING OF MINIMUM 2" DIAMETER HOOKS LOCATED ON 3'-0" CENTERS IN ALL ACCESSIBLE CEILINGS. WHERE THERE ARE INACCESSIBLE CEILINGS, PROVIDE CONDUIT FOR

FIRE ALARM, SECURITY, CCTV, CONTROLS, AND SIMILAR CONDUITS ABOVE THE CEILING AND BACKBOARD(S) SHALL BE PROVIDED WITH INSULATED THROAT BUSHINGS AT EACH CONDUIT TERMINATION. THESE BUSHINGS SHALL BE BE INSTALLED PRIOR TO PULLING LOW-VOLTAGE CABLES.

RACEWAY PENETRATIONS THROUGH FLOOR SLABS AND FIRE-RATED WALLS SHALL BE FILLED WITH IMPERVIOUS, NON-SHRINK GROUT SUFFICIENTLY TIGHT TO PREVENT THE TRANSFER OF SMOKE, WATER, AND DUST. ROOF PENETRATIONS SHALL BE WITHIN THE EQUIPMENT ROOF CURB.

H. SUPPORT ALL CONDUIT WITH STRAPS AND CLAMPS. ALL CONDUIT SHALL BE RUN PARALLEL OR PERPENDICULAR TO BUILDING LINES. WHETHER EXPOSED OR NOT AND SUPPORTED FROM STRUCTURE AND PROPERLY

J. WHERE CONDUITS PASS THROUGH A BUILDING EXPANSION JOINT, PROVIDE GALVANIZED EXPANSION FITTINGS WITH BONDING JUMPERS.

K. MINIMUM CONDUIT SIZE SHALL BE 3/4" FOR INTERIOR WORK, 1" FOR EXTERIOR L. PROVIDE MINIMUM 210# TEST NYLON PULL CORD AND NYLON BUSHINGS IN ALL

M. LIQUID-TIGHT METAL CONDUIT SHALL ONLY BE USED FOR FINAL CONNECTIONS TO EQUIPMENT AND ALL OTHER ROTATING AND VIBRATING EQUIPMENT, MAXIMUM N. FLEXIBLE METAL CONDUIT, MINIMUM SIZE 3/8", SHALL ONLY BE USED FOR FINAL CONNECTION TO LIGHTING FIXTURES, MAXIMUM LENGTH OF 6'-0".

PROVIDE PULL BOXES, SUCH THAT NO SINGLE CONDUIT RUN HAS BENDS IN EXCESS OF 360°. PULL BOXES SHALL BE SUITABLE AND APPROVED FOR THE INTENDED USE. WHERE CONDUITS PASS UNDER PAVED AREAS, THEY SHALL BE

P. ALL CONDUIT BENDS/ELBOWS EMERGING FROM UNDERGROUND SHALL BE IMC AND SHALL EXTEND A MINIMUM OF 18" BELOW GRADE. Q. ALL UNDERGROUND RACEWAYS SHALL BE THOROUGHLY COATED WITH TWO COATS 7. OF ASPHALTUM BITUMASTIC.

R. ALL CONDUITS INSTALLED UNDERGROUND OR IN CONCRETE SHALL HAVE JOINTS MADE WATERTIGHT BY USE OF POLYETRA-FLUOROETHYLENE TAPE. S. THE USE OF AC OR NM CABLE IS NOT PERMITTED.

**OUTLET BOXES:** 

### A. JUNCTION AND PULL BOXES SHALL BE CODE GAUGE GALVANIZED STEEL. ACCEPTED MANUFACTURERS SHALL BE STEEL CITY (THOMAS & BETTS), RACO,

CROUSE-HINDS, APPLETON (EMERSON), OR APPROVED EQUIVALENT. B. OUTLET BOXES SHALL NOT BE MOUNTED BACK TO BACK IN COMMON WALLS. C. ATTACH EMT WITH CONNECTORS HAVING INSULATED THROAT.

D. ATTACH BOXES TO STUD WORK USING CADDY BAR STRAPS THAT CONNECT TO TWO ADJACENT STUDS TO PREVENT TWISTING OF BOX IN WALL. E. ALL OUTLET BOXES (INCLUDING TELEPHONE, CABLE TV, AND COMPUTER) SHALL

HAVE COVER PLATES, BLANK IF NOT USED. F. ALL EXTERIOR BOXES SHALL BE WATER-TIGHT.

SHALL BE STRANDED.

A. CONDUCTORS SHALL BE MANUFACTURED BY SOUTHWIRE (SIMPULL), ENCORE (SUPERSLICK), UNITED COPPER (SLK), CERRO (SLP), OR APPROVED EQUAL, "PRE-LUBRICATED" BY THE MANUFACTURER.

B. ALL CONDUCTORS SHALL BE COPPER, RATED 75° C WET/DRY EXCEPT WHERE OTHERWISE NOTED OR REQUIRED BY U.L. OR OTHER CODES. C. ALL CONDUCTORS SHALL BE SINGLE INSULATED CONDUCTOR, THHN/THWN-2. SIZES #10 AWG AND SMALLER SHALL BE SOLID, SIZES #8 AWG AND LARGER

D. BRANCH CIRCUITS SHALL NOT BE SMALLER THAN #12 AWG. CONTROL WIRING MAY BE #14 AWG. E. CONDUCTORS SHALL BE COLOR CODED BLACK/RED/BLUE FOR 120/208 VOLT SYSTEMS AND BROWN/ORANGE/YELLOW FOR 277/480 VOLT SYSTEMS FOR A, B,

AND C PHASES, RESPECTIVELY. NEUTRAL SHALL BE WHITE FOR 120/208 VOLT SYSTEMS AND NATURAL GRAY FOR 277/480 VOLT SYSTEMS. GROUND CONDUCTOR SHALL BE GREEN ON ALL SYSTEMS. ALL CONDUCTOR SIZES SHALL HAVE COLOR-CODED INSULATION. THE USE OF COLORED TAPE ON LARGER WIRE SIZES SHALL NOT BE ALLOWED.

F. INSULATION SHALL BE DUAL RATED TYPE THHN/THWN-2 FOR FEEDERS AND BRANCH CIRCUITS. FIXTURE TAPS SHALL BE #12 THHN/THWN-2 IN FLEX WITH GREEN #12 AWG GROUNDING CONDUCTOR. G. ALL CONDUCTORS SHALL BE IN CONDUIT

H. WIRING TO LIGHTING FIXTURES SHALL BE AS REQUIRED BY UL LABEL I. MULTI-WIRE BRANCH CIRCUITS SHALL NOT BE ALLOWED, UNLESS EXPLICITLY INDICATED ON THE DRAWINGS. WHERE EXPLICITLY INDICATED ON THE DRAWINGS: 1) ALL 20A MULTI-WIRE RECEPTACLE CIRCUITS SHALL UTILIZE A #10 AWG NEUTRAL CONDUCTOR.

2) ONLY WHERE PERMITTED UNDER "RACEWAYS", MC CABLE ASSEMBLIES CAN BE AFC "SUPER NEUTRAL" OR EQUAL, UNLESS OTHERWISE INDICATED ON THE DRAWINGS. WHERE MULTI-WIRE BRANCH CIRCUITS ARE EXPLICITLY INDICATED ON THE DRAWINGS, THEY SHALL BE INSTALLED PER NEC 210.4 MEANS SHALL BE PROVIDED TO SIMULTANEOUSLY DISCONNECT ALL UNGROUNDED CONDUCTORS AT THE POINT WHERE THE BRANCH CIRCUIT ORIGINATES IN ADDITION TO OTHER REQUIREMENTS PER NEC 210.4.

J. JOINTS IN #10 AWG AND SMALLER SHALL BE MADE UP WITH CRIMPED CONNECTORS WITH INSULATING CAPS (NO TAPE) OR WIRENUTS (MAXIMUM OF 3 CONDUCTORS UNDER ANY CONNECTOR OR WIRENUT). LARGER WIRE SHALL USE SPLIT BOLTS OR BOLTED CLAMPS

K. ALL WIRING LUGS THROUGHOUT THE PROJECT, INCLUDING, BUT NOT LIMITED TO, BREAKERS, PANELBOARD/SWITCHBOARD LUGS, SAFETY SWITCH LUGS, MOTOR STARTER LUGS, TRANSFORMERS LUGS, WIRING DEVICE TERMINALS, AND ALL EQUIPMENT LUGS/TERMINALS SHALL BE RATED FOR USE WITH 75 DEGREE INSULATED CONDÚCTORS AT THEIR 75 DEGREE AMPACITY AND SHALL BE SIZED AND SELECTED TO MATCH THE CONDUCTOR SIZE AND MATERIAL.

\_. CIRCUIT JOINTS SHALL NOT BE MADE ON DEVICE TERMINALS. M. WIRE WITHIN PANELBOARDS SHALL BE NEATLY TRAINED, SQUARED, BUNCHED, AND TAGGED. N. ALL SYSTEM FURNITURE CONNECTIONS SHALL COMPLY WITH NEC 605.

O. GROUND ALL EQUIPMENT PER NEC ARTICLE 250. BOND WHERE CONDUITS ENTER ENCLOSURES THROUGH CONCENTRIC KNOCKOUTS. ALL FLEX, INCLUDING FIXTURE TAPS, SHALL INCLUDE GREEN GROUNDING CONDUCTOR, #12 AWG MINIMUM. PROVIDE GREEN INSULATED EQUIPMENT GROUNDING CONDUCTOR IN EACH

CONDUIT AND FOR EACH CIRCUIT, SIZED PER NEC 250-122. P. ALL CONDUCTORS INSTALLED IN VERTICAL RACEWAYS SHALL BE SUPPORTED AT INTERVALS AS REQUIRED PER NEC 300-19.

Q. THE ELECTRICAL CONTRACTOR SHALL FOLLOW AND APPLY THE TABLE BELOW. REGARDLESS WHAT THE PANEL SCHEDULE INDICATES, FOR SIZING ALL 120V & 277V. 20 AMP BRANCH CIRCUITS (COPPER CONDUCTORS) TO ALLOW A MAXIMUM OF 3% VOLTAGE DROP FROM THE CIRCUIT BREAKER TO THE FIRST DEVICE ON THE BRANCH CIRCUIT AND ACHIEVE A MAXIMUM OF 5% VOLTAGE DROP ACROSS THE ENTIRE BRANCH CIRCUIT:

<u>CONDUCTOR LENGTH \* BRANCH CIRCUIT</u> 120 0' - 50' #12 51' - 90' 120 #10 120 91' - 140' 141' - 225'

\* - THE LENGTH IS MEASURED FROM THE CIRCUIT BREAKER TO THE FIRST DEVICE WHICH THE BRANCH CIRCUIT SERVES. WHERE THE DISTANCE EXCEEDS ABOVE, CONSULT WITH THE ENGINEER.

### WIRING DEVICES:

A. WIRING DEVICES SHALL BE SPECIFICATION GRADE, MINIMUM, EQUAL TO COOPER QUALITY INDICATED BELOW OR AS MANUFACTURED BY HUBBELL, LEGRAND-PASS & SEYMOUR, LEVITON, OR APPROVED EQUAL, UNLESS OTHERWISE NOTED:

SWITCHES (120/277V) SHALL BE AS FOLLOWS:

SINGLE-POLE 20 AMP COOPER AH1221 DOUBLE-POLE 20 AMP COOPER AH1222 THREE-WAY 20 AMP COOPER AH1223 FOUR-WAY 20 AMP COOPER AH1224

DUPLEX RECEPTACLES SHALL HAVE A NYLON FACE AND SHALL BE AS FOLLOWS: 20 AMP DUPLEX COOPER 5352 20 AMP DUPLEX GFCI COOPER SGF20F

THE PART NUMBERS ABOVE ARE FOR WIRING DEVICE TYPE ONLY. SEE BELOW FOR WIRING DEVICE COLOR AND PLATE MATERIAL/COLOR.

B. SEE MOUNTING HEIGHT ELEVATION DETAIL FOR STANDARD MOUNTING HEIGHTS OF ALL DEVICES, UNLESS OTHERWISE NOTED.

C. THE COLOR OF ALL WIRING DEVICES (SWITCHES AND RECEPTACLES) SHALL BE AS DIRECTED BY THE ARCHITECT, UNLESS OTHERWISE NOTED. ALL COVER PLATES SHALL BE 302 STAINLESS STEEL. COVER PLATES IN MASONRY WALLS SHALL BE 12. <u>DISCONNECTS:</u> JUMBO SIZE. D. EACH DUPLEX RECEPTACLE INDICATED TO BE ON A DEDICATED CIRCUIT SHALL

BE 20 AMP TYPE. E. ADJACENT DEVICES SHALL HAVE A COMMON WALL PLATE F. WEATHERPROOF COVERS SHALL BE "WHILE—IN—USE" SO PLUGS MAY BE INSTALLED WITHOUT COMPROMISING THE WP FUNCTION. COOPER #WIU-2

DOUBLE-GANG WITH CLEAR COVER OR APPROVED EQUAL. G. A MAXIMUM OF 10 GENERAL PURPOSE RECEPTACLES SHALL BE ON EACH BRANCH CIRCUIT. H. DIMMERS SHALL BE LINEAR SLIDE, PRESENT ON/OFF, SQUARE LAW DIMMING,

W/RFI FILTERING AND VOLTAGE COMPENSATION CIRCUITING. I. ALL WALL MOUNTED OCCUPANCY/VACANCY SENSORS/SWITCHES SHALL BE INSTALLED WITH AN EQUIPMENT GROUNDING CONDUCTOR. J. GROUND-FAULT CIRCUIT-INTERRUPTER (GFCI) PROTECTION FOR PERSONNEL

THE GFCI PROTECTION SHALL BE PROVIDED WITH THE BREAKER SERVING THE K. ALL GFCI RECEPTACLES SHALL HAVE AUTO-MONITORING / SELF-TEST FUNCTION AND REVERSE LINE-LOAD MISFIRE FUNCTION AND MEET ALL REQUIREMENTS OF UL 943 (LATEST EDITION).

SHALL BE PROVIDED FOR ALL LOCATIONS PER NEC 210.8, INSTALLED IN A

READILY ACCESSIBLE LOCATION. WHERE A DEVICE LOCATION IS NOT ACCESSIBLE,

A. ALL EQUIPMENT SHALL BE ADEQUATELY SUPPORTED FROM STRUCTURE

B. INSERTS IN MASONRY SHALL BE LEAD OR FIBER IN DRILLED HOLES, OR CAST IN PLACE. C. NAILS OR POWDER ACTUATED FASTENERS SHALL NOT BE USED.

D. EMT/IMC/RGS SUPPORTS SHALL BE A MAXIMUM OF 8'-0" APART AND A MAXIMUM OF 3'-0" FROM BOXES.

E. LIGHTING FIXTURES MOUNTED IN OR ON CEILING SHALL BE SUPPORTED FROM STRUCTURE VIA 12 GAUGE STEEL WIRE. PROVIDE A MINIMUM OF FOUR WIRES, ONE ATTACHED TO EACH CORNER OF LAY-IN FIXTURES. RECESSED DOWNLIGHT FIXTURES SHALL BE SUPPORTED THE SAME. DO NOT SUPPORT RACEWAY OR FIXTURES FROM CEILING GRID OR DUCT WORK. USE U.L. LISTED GRID CLIPS ON ALL LAY-IN FIXTURES.

### <u>PAINTING:</u>

A. SUITABLE FINISH COAT SHALL BE PROVIDED FOR ALL EQUIPMENT. PANEL TUBS, COVERS, ETC. SHALL BE PRIMED AND ENAMELED TO BLEND WITH ADJACENT SURFACES, OR SHALL BE MANUFACTURER'S STANDARD COLOR BAKED ENAMEL FINISH. OR AS DIRECTED BY THE ARCHITECT.

### 8. TELECOMMUNICATIONS:

A. FURNISH A COMPLETE TELEPHONE CONDUIT SYSTEM AS INDICATED ON THE

DRAWINGS. B. TELECOMMUNICATION OUTLETS SHALL CONSIST OF A 4" SQUARE DEEP BOX WITH SINGLE GANG PLASTER RING. PROVIDE BLANK PLATE WITH KNOCKOUTS FOR OUTLETS, AS PERMANENT COVERS WILL BE PROVIDED BY A SEPARATE

C. PROVIDE MINIMUM 1" RACEWAY, UNLESS OTHERWISE NOTED, FROM EACH BOX TO ABOVE NEAREST ACCESSIBLE CEILING SPACE FOR J-HOOK SYSTEM OR TO CABLE TRAY AS APPLICABLE. PROVIDE MINIMUM 210# TEST NYLON PULL CORD AND NYLON BUSHINGS IN ALL EMPTY RACEWAYS.

D. PROVIDE RACEWAYS FOR ALL EXTERIOR AND/OR EXPOSED LOCATIONS. E. PROVIDE GROUNDING FOR ALL TELEPHONE/DATA SYSTEMS AND EQUIPMENT PER REQUIREMENTS AND SPECIFICATIONS PROVIDED BY THE OWNERS DESIGNATED

F. ALL LOW-VOLTAGE CABLING SHALL BE PLENUM-RATED.

### <u>LIGHTING FIXTURES:</u>

A. TYPES AND MANUFACTURERS ARE SCHEDULED ON THE PLANS. EQUIVALENT FIXTURES BY OTHERS MAY BE SUBMITTED ONLY AS INDICATED ON THE PLANS AND ARE SUBJECT TO THE APPROVAL OF THE OWNER AND ENGINEER.

B. ALL FIXTURES SHALL BE U.L. LISTED AND LABELED C. LAMPS SHALL BE GENERAL ELECTRIC, PHILIPS, OR OSRAM/SYLVANIA EXCEPT WHERE OTHERWISE NOTED IN THE LIGHTING FIXTURE SCHEDULE OR OTHERWISE NOTED. ALL FIXTURES SHALL BE EQUIPPED WITH LAMPS.

D. BALLASTS SHALL BE AS INDICATED IN THE LIGHTING FIXTURE SCHEDULE OR AS OTHERWISE NOTED. E. ALL FIXTURES SHALL BE PROVIDED FOR PROPER VOLTAGE BASED ON THE CIRCUIT ASSIGNMENT INDICATED ON THE PLANS.

F. CATALOG NUMBERS ARE FOR GENERAL IDENTIFICATION OF FIXTURES ONLY. ALL RELATED PARTS, SUCH AS PLASTER RINGS, JUNCTION BOXES, LOUVERS, SHIELDS, MOUNTING STEMS, CANOPIES, CONNECTORS, STRAPS, NIPPLES, HARDWARE, ACCESSORIES, ETC., TO FIT THEM PROPERLY TO THE CONSTRUCTION, SHALL BE FURNISHED AND INSTALLED BY THIS CONTRACTOR. CONTRACTOR SHALL PROVIDE SUITABLE TRIM AND APPURTENANCES TO MOUNT FIXTURES IN TYPE OF CEILING OR WALL AS SPECIFIED IN ARCHITECTURAL FINISH SCHEDULES REGARDLESS OF CATALOG NUMBER GIVEN. G. ALL FIXTURES SHALL BE GROUNDED PER THE NEC.

H. FIXTURES CONNECTED WITH FLEX TO THE RIGID RACEWAY PORTION OF THE WIRING SYSTEM SHALL CARRY A GREEN BONDING JUMPER WITHIN THE FLEX. THE JUMPER SHALL BE FASTENED TO BOTH THE FIXTURE AND THE RACEWAY SYSTEM WITH A STEEL CITY "G" CLIP OR APPROVED EQUIVALENT. PHASE AND GROUND CONDUCTORS RUN IN FLEX SHALL BE #12 AWG MINIMUM. MAXIMUM FLEX LENGTH SHALL BE 6'-0".

I. SURFACE-MOUNTED FLUORESCENT FIXTURES INSTALLED ON COMBUSTIBLE MATERIAL SHALL BE MOUNTED AT LEAST 1/4" FROM THE SURFACE OF THE MATERIAL, EXCEPT FOR FIXTURES WHICH ARE PLAINLY MARKED AS U.L. APPROVED FOR MOUNTING DIRECTLY TO SUCH SURFACES.

J. MOUNT ALL FIXTURES PLUMB AND SQUARE WITH ROWS ALIGNED.

K. FLUORESCENT LUMINAIRES THAT UTILIZE DOUBLE-ENDED LAMPS AND CONTAIN BALLAST(S) THAT CAN BE SERVICED IN PLACE SHALL HAVE A DISCONNECTING MEANS WITHER INTEGRAL OR EXTERNAL TO EACH LUMINAIRE PER NEC 410.130(G).

L. SEE ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF M. CONTRACTOR SHALL COORDINATE FIXTURE TYPE AND TRIM WITH CEILING CONSTRUCTION AND ADJUST ACCORDINGLY WITHOUT ADDITIONAL EXPENSE. N. ALL LIGHTING FIXTURES SHALL BE THERMALLY PROTECTED PER THE NEC.

### 10. <u>LIGHTING CONTROLS:</u>

A. FURNISH AND INSTALL WHERE SHOWN AN ELECTRONIC TIME CONTROLLER AS MANUFACTURED BY TORK (NSI), PARAGON, INTERMATIC, OR APPROVED EQUAL. CONTACTS SHALL BE SPST OR AS INDICATED. RATED 120/277V AT 20A BALLAST LOAD, AND MINIMUM 30,000 SWITCHING CYCLES. PROVIDE WITH THE NUMBER OF CHANNELS INDICATED (MINIMUM 2 CHANNELS) OR AS REQUIRED TO MEET THE INTENT OF THE DRAWINGS. EACH CHANNEL SHALL BE INDIVIDUALLY PROGRAMMABLE WITH 128 ON-OFF OPERATIONS PER WEEK PLUS FOUR SEASONAL SCHEDULES TO MODIFY THE BASIC PROGRAM AND A HOLIDAY SCHEDULE THAT OVERRIDES THE WEEKLY OPERATION. THE CONTROLLER SHALL BE PROVIDED WITH A PHOTOELECTRIC SENSOR. ASTRONOMIC DIAL. AND A

BATTERY BACKED-UP, NON-VOLITILE MEMORY FOR SCHEDULES AND TIME CLOCK. B. LIGHTING CONTACTORS SHALL SWITCH LOADS AT THE VOLTAGE AND AMPERE RATING INDICATED AND SHALL HAVE THE NUMBER OF POLES INDICATED ON THE DRAWINGS OR AS REQUIRED. THE CONTACTOR AND CONTACTS SHALL BE CONTINUOUSLY RATED FOR THE LOAD SERVED, INCLUDING TUNGSTEN FILAMENT, INDUCTIVE, AND HIGH-INRUSH BALLAST LOADS.

C. ALL LIGHTING CONTACTORS SHALL BE ELECTRICALLY HELD AND BE INSTALLED IN A NEMA 1 ENCLOSURE, UNLESS OTHERWISE NOTED.

### 11. <u>EQUIPMENT IDENTIFICATION:</u>

A. PROVIDE ENGRAVED PHENOLIC NAMEPLATES FOR ALL ELECTRICAL EQUIPMENT SUPPLIED FOR THE PROJECT, INCLUDING BUT NOT LIMITED TO, WIRING TROUGHS, SAFETY SWITCHES, DISCONNECTS, TRANSFORMERS, PANELBOARDS, ETC. NAMEPLATE SHALL INDICATE THE DEVICE NAME, SYSTEM VOLTAGE (VOLTAGE/PHASE/WIRE), AND UPSTREAM DEVICE AND CIRCUIT. PROVIDE NAMEPLATES FOR CIRCUIT BREAKERS IN SWITCHGEARS, SWITCHBOARDS AND DISTRIBUTION PANELS.

B. NAMEPLATE COLORS SHALL BE AS FOLLOWS: 120/208V EQUIPMENT BLUE SURFACE WITH WHITE CORE BLACK SURFACE WITH WHITE CORE 277/480V EQUIPMENT EMERGENCY SYSTEMS GREEN SURFACE WITH WHITE CORE FIRE ALARM SYSTEM BRIGHT RED SURFACE WITH WHITE CORE SECURITY SYSTEMS BURGUNDY SURFACE WITH WHITE CORE ORANGE SURFACE WITH WHITE CORE TELEPHONE SYSTEMS BROWN SURFACE WITH WHITE CORE DATA SYSTEMS TV SYSTEMS PURPLE SURFACE WITH WHITE CORE WHITE SURFACE WITH BLACK CORE PAGING SYSTEMS

C. NAMEPLATES UP TO 8 SQUARE INCHES SHALL NOT BE LESS THAN 1/16" THICK. NAMEPLATES LARGER THAN 8 SQUARE INCHES SHALL NOT LESS THAN 1/8"

D. LETTERING HEIGHT SHALL BE 1/2" MINIMUM. E. NAMEPLATES SHALL BE ATTACHED WITH SELF-DRILLING/SELF-TAPPING SCREWS, EXCEPT RIVETS SHALL BE USED WHERE END OF SCREW IS NOT PROTECTED. QUANTITY AS FOLLOWS: UP TO 5 SQUARE INCHES: 2 SCREWS 5 TO 12 SQUARE INCHES: 4 SCREWS.

A. DISCONNECT SWITCHES SHALL BE HEAVY-DUTY TYPE IN NEMA 1 ENCLOSURES, UNLESS OTHERWISE NOTED, FUSED OR NON-FUSED AS INDICATED. SWITCHES SHALL HAVE REJECTION-TYPE FUSE CLIPS. SWITCHES SHALL BE BY EATON, SQUARE-D. GENERAL ELECTRIC, OR APPROVED EQUAL. WHERE FED FROM A

ABOVE 12 SQUARE INCHES: 6 SCREWS.

LOAD CENTER, GENERAL-DUTY SWITCHES SHALL BE PERMITTED. B. FUSES LESS THAN 60A SHALL BE CLASS RK5, DUAL-ELEMENT, TIME-DELAY WITH

C. FUSES GREATER THAN 60A SHALL BE CLASS J, DUAL-ELEMENT, TIME-DELAY WITH INDICATION. D. A SET OF 3 SPARE FUSES OF EACH SIZE AND TYPE SHALL BE FURNISHED TO THE OWNER

### 13. PANELBOARDS:

A. PANELBOARDS SHALL BE PROVIDED AS MANUFACTURED BY EATON, SQUARE-D, GENERAL ELECTRIC, OR APPROVED EQUAL. ALL NEW EQUIPMENT FOR THE PROJECT SHALL BE BY THE SAME MANUFACTURER. LOAD CENTER TYPE PANELBOARDS SHALL BE USED WHERE THE PANELBOARD SERVES A DWELLING

B. ALL BUSSING, INCLUDING NEUTRAL AND GROUND, SHALL BE COPPER. C. ALL BREAKERS SHALL BE AUTOMATIC THERMAL—MAGNETIC TYPE MOLDED CASE BOLT-ON TYPE, CALIBRATED FOR 40 DEGREE C, OR AMBIENT COMPENSATION, UNLESS OTHERWISE NOTED.

D. PANELS SHALL BE FULLY RATED (AIC). NO SERIES AIC RATINGS ARE ALLOWED. E. PANELS SHALL HAVE FULL SIZE EQUIPMENT GROUNDING BARS AND NEUTRAL BARS, EXCEPT WHERE INDICATED TO BE 200%. F. ALL PANELBOARD AND BREAKER LUGS SHALL BE SIZED AND RATED PER THE

CONDUCTOR SIZE AND MATERIAL. G. LIGHTING AND APPLIANCE PANELS (100A-600A) SHALL HAVE FRONT ACCESSIBLE HINGED DOOR-IN-DOOR COVERS WITH DEAD FRONT, SHALL BE 20" WIDE MINIMUM WITH MINIMUM 4" WIDE WIRING GUTTERS.

H. DISTRIBUTION PANELS (600A-1200A) SHALL HAVE FRONT ACCESSIBLE DEAD FRONT COVERS. I. PROVIDE HANDLE LOCK-ON DEVICES FOR ALL CIRCUIT BREAKERS CONNECTED TO EMERGENCY, EXIT, NIGHT LIGHTING, FIRE ALARM, TELEPHONE BOARDS. AND SECURITY SYSTEMS.

J. BREAKERS USED FOR SWITCHING SHALL BE SWITCHING DUTY (SWD) RATED. K. BREAKERS USED FOR HEATING, AIR-CONDITIONING AND/OR REFRIGERATION SHALL BE HACR RATED. L. GROUND-FAULT CIRCUIT-INTERRUPTER (GFCI) PROTECTION FOR PERSONNEL

SHALL BE PROVIDED FOR ALL LOCATIONS PER NEC 210.8. INSTALLED IN A

THE GFCI PROTECTION SHALL BE PROVIDED WITH THE BREAKER SERVING THE

READILY ACCESSIBLE LOCATION. WHERE A DEVICE LOCATION IS NOT ACCESSIBLE.

M. ARC-FAULT CIRCUIT-INTERRUPTER (AFCI) PROTECTION SHALL BE PROVIDED FOR ALL LOCATIONS PER NEC 210.12, INSTALLED IN A READILY ACCESSIBLE LOCATION. THIS INCLUDES ALL 120V, 15A AND 20A BRANCH CIRCUITS IN DWELLING UNITS, DORMITORY/STUDENT HOUSING UNITS AND HOTEL/MOTEL GUEST ROOMS/SUITES AS DEFINED BY THE NEC.

N. ALL OVERCURRENT DEVICES WHICH COMPRISE THE EMERGENCY SYSTEM OR LEGALLY REQUIRED STANDBY SYSTEM SHALL BE SELECTIVELY COORDINATED THE ELECTRICAL CONTRACTOR SHALL PROVIDE MANUFACTURER DOCUMENTATION INDICATING COMPLIANCE WITH THE SELECTIVE COORDINATION REQUIREMENTS PER

O. ALL PANELBOARDS SHALL HAVE METAL DIRECTORY FRAME. FOR EACH PANELBOARD, PROVIDE TYPED CIRCUIT DIRECTORY PER NEC 408.4. SPARE CIRCUIT BREAKERS SHALL BE LABELED SPARE AND IN THE OFF POSITION.

### 15. <u>FIRE ALARM SYSTEM:</u>

N. SYSTEM IS EXISTING. ALL FINAL CONNECTIONS, TESTING AND ADJUSTMENTS SHALL BE PERFORMED BY OR UNDER DIRECT SUPERVISION OF AN AUTHORIZED FACTORY REPRESENTATIVE. SYSTEM SHALL BE SIMPLEX, NOTIFIER, SIEMENS, OR APPROVED EQUAL AS ACCEPTED BY THE ENGINEER. SYSTEM SHALL HAVE A 24HR MINIMUM BATTERY BACKUP. ALL FINAL CONNECTIONS, TESTING AND ADJUSTMENTS SHALL BE PERFORMED BY OR UNDER DIRECT SUPERVISION OF AN AUTHORIZED FACTORY REPRESENTATIVE. SYSTEM SHALL BE SIMPLEX, NOTIFIER, SIEMENS, OR APPROVED EQUAL AS ACCEPTED BY THE ENGINEER. SYSTEM SHALL HAVE A 24HR MINIMUM BATTERY BACKUP. ALL FINAL CONNECTIONS, TESTING AND ADJUSTMENTS SHALL BE PERFORMED BY OR UNDER DIRECT SUPERVISION OF AN AUTHORIZED FACTORY REPRESENTATIVE. NEW DEVICES SHALL BE COMPATIBLE WITH THE EXISTING FIRE ALARM SYSTEM. THE CONTRACTOR SHALL FIELD VERIFY EXACT SYSTEM MANUFACTURER AND TYPE

AND CAPABILITY TO MEET THE INTENT INDICATED ON THE DRAWINGS. O. INITIATING DEVICE ACTIVATION SHALL CAUSE OPERATION OF THE PROPER ALARM CIRCUIT IN THE CONTROL PANEL, AND OPERATE ALL AUDIBLE AND VISUAL INDICATING ALARMS. ALL AIR HANDLING UNITS SHALL BE STOPPED UPON ANY ALARM INPUT. EACH AIR HANDLER UNIT SHALL BE PROVIDED WITH A SYSTEM CONTROLLED RELAY TO EFFECT SHUTDOWN. ALL ALARM DEVICES AND LAMPS SHALL CONTINUE TO OPERATE UNTIL THE INITIATING DEVICE IS RESET. SUBSEQUENT ALARMS SHALL RESOUND THE SYSTEM. AN AUDIBLE AND VISUAL SIGNAL SHALL INDICATE SYSTEM TROUBLE. THE CONTROL PANEL SHALL PROVIDE FOR ACTIVATING A UL LISTED CENTRAL STATION SIGNAL FOR NOTIFYING THE FIRE

DEPARTMENT. P. MANUAL STATIONS SHALL BE NON-CODED, WITH DUAL-ACTION PULL AND KEY TYPE RESET, SEMI-FLUSH MOUNTED. COMBINATION LIGHT AND HORN SIGNALS SHALL BE FLUSH MOUNTED. WIRING SHALL BE IN CONDUIT AS PREVIOUSLY SPECIFIED, #14 AWG MINIMUM, THHN. ALL J—BOXES USED FOR THE FIRE ALARM SYSTEM SHALL BE PAINTED RED.

Q. CONDUCTORS SHALL BE PLENUM-RATED AND INSTALLED IN CONDUIT AND INSTALLED IN COMPLIANCE WITH NFPA 70, ARTICLE 760; IN ADDITION TO WIRING METHODS 300.4.

S. PROVIDE ALL REQUIRED MODULES, POWER EXTENDERS, PROGRAMMING, ETC. FOR A COMPLETE AND OPERATIONAL SYSTEM. T. SUBMIT FIRE ALARM SHOP DRAWINGS CONSISTING OF PRODUCT DATA, TO THE ENGINEER AND FOR APPROVAL.

R. ALL FIRE ALARM WIRING SHALL BE CLASS B.

U. FILL OUT NFPA 72 CERTIFICATION REPORT AND SUBMIT TO ENGINEER AND AUTHORITY HAVING JURISDICTION. V. WARRANTY — ALL WORK PERFORMED AND ALL MATERIALS AND EQUIPMENT FURNISHED UNDER THIS CONTRACT SHALL BE FREE FROM DEFECTS AND SHALL REMAIN SO FOR A PERIOD OF AT LEAST TWO (2) YEARS FROM THE DATE OF ACCEPTANCE BY THE PROFESSIONAL ENGINEER AND/OR OWNER. THE FULL COST OF MAINTENANCE, LABOR, AND MATERIALS REQUIRED TO CORRECT ANY DEFECT DURING THIS TWO YEAR PERIOD SHALL BE IMMEDIATELY CORRECTED AT NO ADDITIONAL COST TO THE OWNER. ANY DEFECTS THAT RENDER THE SYSTEM INOPERATIVE SHALL BE REPAIRED WITHIN 24 HOURS OF THE OWNER NOTIFYING THE CONTRACTOR. OTHER DEFECTS SHALL BE REPAIRED WITHIN 48 HOURS OF THE OWNER NOTIFYING THE CONTRACTOR.

A. ALL PENETRATIONS OF RATED ASSEMBLIES SHALL BE SEALED WITH RATED MATERIALS MEETING ASTM E-814. B. PROVIDE FIRESTOPPING DEVICE(S) OR SYSTEM(S) WHICH HAVE BEEN TESTED AND

**ELECTRICAL COORDINATION WITH OTHER TRADES:** 

UNLESS OTHERWISE NOTED.

LISTED AS COMPLYING WITH ASTM E-814. INSTALL THE DEVICE(S) OR SYSTEM(S) IN ACCORDANCE WITH THE CONDITIONS OF THEIR LISTING. PROVIDE THE APPROPRIATE DEVICE(S) OR SYSTEM(S) WITH AN 'F' RATING EQUAL TO THE RATING OF THE ASSEMBLY BEING PENETRATED. C. DEVICE(S) AND/OR SYSTEM(S) SHALL BE BY HILTI, 3M OR EQUIVALENT.

A. THE ELECTRICAL CONTRACTOR SHALL CONNECT AND/OR PROVIDE FINAL CONNECTIONS TO ALL EQUIPMENT SUPPLIED BY OTHERS APPLICABLE TO THE PROJECT, INCLUDING BUT NOT LIMITED TO, MECHANICAL, PLUMBING, FIRE PROTECTION AND SUPPRESSION, OWNER FURNISHED, KITCHEN, LABORATORY, ETC.

B. THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL CONNECTIONS PRIOR TO ROUGH-IN USING APPROVED CATALOG SHEETS AND SHOP DRAWINGS. C. THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANUAL MOTOR STARTER SWITCHES, DISCONNECT SWITCHES, RECEPTACLES, ETC. TO MECHANICAL AND PLUMBING EQUIPMENT. ALL STARTERS, OTHER THAN MANUAL STARTER SWITCHES, SHALL BE PROVIDED BY OTHERS, BUT INSTALLED BY THE ELECTRICAL

CONTRACTOR. D. ALL DISCONNECT SWITCHES AND FUSE SIZES SHALL BE COORDINATED WITH SHOP DRAWINGS PRIOR TO ORDERING OR INSTALLING. ANY EQUIPMENT INSTALLED INCORRECTLY BECAUSE OF LACK OF COORDINATION WILL BE REMOVED AND INSTALLED CORRECTLY AT THE EXPENSE OF THE ELECTRICAL CONTRACTOR. E. THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL CONDUIT RUNS AND LIGHT

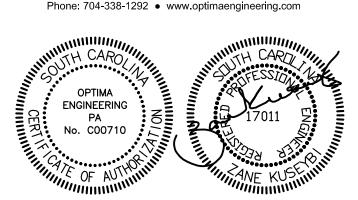
FIXTURE LOCATIONS ABOVE THE CEILING WITH OTHER TRADES PRIOR TO

F. ALL DUCT SMOKE DETECTORS SHALL BE PROVIDED AND CONNECTED BY THE

ELECTRICAL CONTRACTOR, BUT INSTALLED BY THE MECHANICAL CONTRACTOR.







ARCHITECT / ENGINEER'S SEAL

04/29/2020

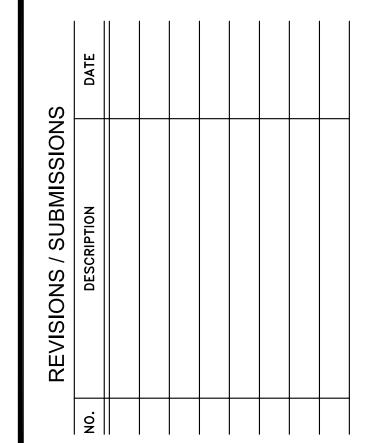


**BEAUFORT COUNTY ENGINEERING** 

BEAUFORT COUNTY DNA

LABORATORY ADDITION 111 INDUSTRIAL VILLAGE RD BEAUFORT, SC 29906

## CONSTRUCTION

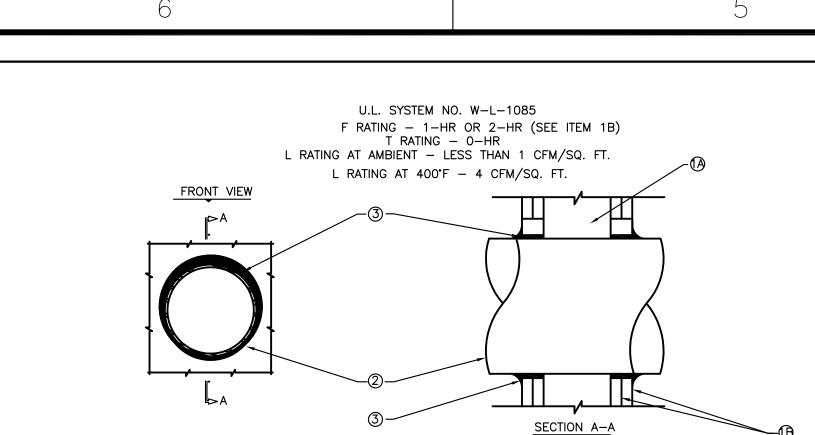


SHEET INFORMATION

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DATE		APRIL 29, 2020
JOB NUMB	ER	19044.00
DRAWN	SKL	
CHECKED	ZK	
APPROVED	7K	

**SPECIFICATIONS** 

2 OF 6 OPTIMA # 20-0104



1. WALL ASSEMBLY - THE 1 OR 2 HR FIRE-RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED U300 OR U400 SERIES WALL AND PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION

A. STUDS - WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN. LUMBER SPACED 16 IN. OC. STEEL STUDS TO BE MIN 2-1/2 IN. WIDE AND SPACED MAX 24 IN. OC.

B. GYPSUM BOARD\* - 5/8 IN. THICK, 4 FT WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM WALLBOARD TYPE, NUMBÉR OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL WALL AND PARTITION DESIGN. MAX DIA OF OPENING IS 13-1/4 IN. DIA OF CIRCULAR OPENING CUT THROUGH GYPSUM WALLBOARD OF EACH SIDE OF WALL ASSEMBLY BE MIN 1/4 IN. TO MAX 1/2 IN. LARGER THAN OUTSIDE DIA OF THROUGH PENETRANT (ITEM 2). THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS EQUAL TO THE HOURLY FIRE RATING OF THE WALL

2. THROUGH PENETRANTS - ONE METALLIC PIPE. CONDUIT OR TUBING TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE ANNUIAR SPACE BETWEEN THE THROUGH-PENETRANT AND THE PERIPHERY OF THE OPENING SHALL BE MIN 0 IN. TO MAX 1/4 IN. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED:

A. STEEL PIPE - NOM 12 IN. DIA (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE. B. IRON PIPE - NOM 12 IN. DIA (OR SMALLER) CAST OR DUCTILE IRON PIPE. C. CONDUIT - NOM 6 IN. DIA (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING OR STEEL CONDUIT. D. COPPER TUBING - NOM 5 IN. DIA (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.

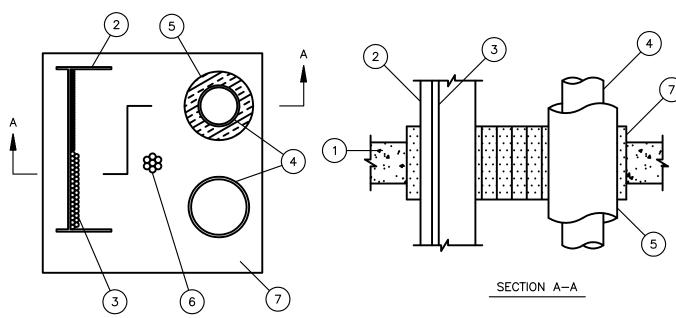
E. COPPER TUBING — NOM 6 IN. DIA (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.

3. FILL, VOID, OR CAVITY MATERIAL\* - SEALANT - FILL MATERIAL TO BE FORCED INTO THE ANNULUS TO MAXIMUM EXTENT POSSIBLE. ADDITIONAL FILL MATERIAL TO BE INSTALLED SUCH THAT A MIN 1/2 IN. CROWN IS FORMED AROUND THE PENETRATING ITEM AND LAPPING 1/4 IN. BEYOND THE PERIPHERY OF THE OPENING.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS—ONE SEALANT \*BEARING THE UL CLASSIFICATION MARK

ASSEMBLY IN WHICH IT IS INSTALLED.

System No. C-AJ-8056 F Rating -- 3 Hr T Rating —— 0 Hr L Rating At Ambient -- 5 CFM/sq ff L Rating At 400 F -- 2 CFM/sq ft



1. FLOOR OR WALL ASSEMBLY -- 4-1/2 IN. THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS\*. MAX AREA OF OPENING IS 1296 IN. SQ WITH MAX DIMENSION OF 36 IN. SEE CONCRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS. 2. CABLE TRAY\* -- MAX 18 IN. WIDE BY MAX 6 IN. DEEP OPEN-LADDER OR SOLID-BACK CABLE TRAY WITH CHANNEL-SHAPED SIDE RAILS FORMED OF 0.060 IN. THICK ALUMINUM OR STEEL AND WITH 1-1/2 IN. WIDE BY 1 IN. CHANNEL SHAPE RUNGS SPACED 9 IN. OC OR A 0.029 IN. THICK STEEL SOLID BACK, RESPECTIVELY, ONE CABLE TRAY TO BE INSTALLED IN THE OPENING. THE MAX ANNULAR SPACE BETWEEN THE CABLE TRAYS IS 9 IN. AND BETWEEN THE PERIPHERY OF THE OPENING SHALL BE MIN 1-1/2 IN. TO MAX 4-1/2 IN. CABLE TRAY TO BE RIGIDLY SUPPORTED ON

BOTH SIDES OF FLOOR OR WALL ASSEMBLY. 3. CABLES -- AGGREGATE CROSS-SECTIONAL AREA OF CABLES IN CABLE TRAY TO BE MAX 30 PERCENT OF THE CROSS-SECTIONAL AREA OF THE CABLE TRAY BASED ON A MAX 3 IN. CABLE LOADING DEPTH WITHIN THE CABLE TRAY ANY COMBINATION OF THE FOLLOWING TYPES AND SIZES OF COPPER CONDUCTOR OR FIBER OPTIC CABLES MAY BE

A. 7/C NO. 12 AWG WITH POLYVINYL CHLORIDE (PVC) INSULATION AND PVC JACKET. B. 300 PAIR - NO. 24 AWG CABLE WITH PVC INSULATION AND JACKET. C. 1/C, 350 KCMIL WITH CROSS-LINKED POLYETHYLENE (XLPE) INSULATION AND JACKET. ). 1/C, 500 KCMIL WITH THERMO PLASTIC INSULATION AND POLYVINYL CHLORIDE (PVC) JACKET.

. TWENTY FOUR FIBER OPTIC CABLE WITH PVC SUB UNIT AND JACKET. 4. THROUGH—PENETRANTS -- ONE OR MORE PIPE, CONDUIT OR TUBE TO BE INSTALLED WITHIN THE OPENING. THE TOTAL NUMBER OF THROUGH-PENETRANTS IS DEPENDENT ON THE SIZE OF THE OPENING AND TYPES AND SIZES OF THE PENETRANTS. ANY COMBINATION OF THE PENETRANTS DESCRIBED BELOW MAY BE USED PROVIDED THAT THE FOLLOWING PARAMETERS RELATIVE TO THE ANNULAR SPACES AND THE SPACING BETWEEN THE PIPES ARE MAINTAINED THE SPACE BETWEEN PIPES, CONDUITS OR TUBING AND BETWEEN THE PERIPHERY OF THE OPENING AND THE PIPES ( CONDUITS SHALL BE MIN 1 IN. TO MAX 4-1/2 IN. PIPE, CONDUIT OR TUBE TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING

A. NOM 6 IN. DIA (OR SMALLER) RIGID GALV STEEL CONDUIT. B. NOM 4 IN. DIA (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING

C. NOM 4 IN. DIA (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE. D. NOM 4 IN. DIA (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBE.

E. NOM 6 IN. DIA (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE. F. NOM 6 IN. DIA (OR SMALLER) CAST OR DUCTILE IRON PIPE.

5. PIPE COVERING - NOM 1-1/2 IN. THICK HOLLOW CYLINDRICAL HEAVY DENSITY (MIN 3.5 PCF) GLASS FIBER UNITS JACKETED ON THE OUTSIDE WITH AN ALL SERVICE JACKET. LONGITUDINAL JOINTS SEALED WITH METAL FASTENERS OR FACTORY APPLIED SELF-SEALING LAP TAPE. TRANSVERSE JOINTS SECURED WITH METAL FASTENERS OR WITH BUTT TAPE SEE PIPE AND EQUIPMENT COVERING AND MATERIALS (BRGU) CATEGORY IN THE BUILDING MATERIALS DIRECTORY FOR NAMES OF MANUFACTURERS. ANY PIPE COVERING MATERIAL MEETING THE ABOVE SPECIFICATIONS AND BEARING THE UL CLASSIFICATION MARKING WITH A FLAME SPREAD INDEX OF 25 OR LESS AND A SMOKE DEVELOPED INDEX OF 50 MAY 6. CABLES -- MAX 2 IN. DIA TIGHT BUNDLE OF CABLES CENTERED IN OPENING AND RIGIDLY SUPPORTED ON BOTH SURFACES OF FLOOR AND WALL. ANY COMBINATION OF THE FOLLOWING TYPES AND SIZES OF CABLES MAY BE USED: A. 7/C NO. 12 AWG WITH POLYVINYL CHLORIDE (PVC) INSULATION AND PVC JACKET. B. 25 PAIR - NO. 24 AWG CABLE WITH PVC INSULATION AND JACKET.

C. 2/C NO. 10 AWG WITH PVC INSULATION AND JACKET. D. 3/C NO. 8 AWG ALUMINUM CLAD CABLE WITH CROSS-LINKED POLYETHYLENE (XLPE) INSULATION AND PVC JACKET. E. TYPE RC - 62 A/U COAXIAL CABLE WITH AIR CORE AND PVC JACKET. F. 24 FIBER OPTIC CABLE WITH PVC SUB UNIT AND OUTER JACKET.

7. FIRESTOP SYSTEM -- THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING: A. FILL, VOID OR CAVITY MATERIAL\* -- FIRE BLOCKS INSTALLED WITH LONG DIMENSION PASSED THROUGH THE OPENING EXTENDING MIN 1-1/2 IN. FROM EACH SURFACE. BLOCKS TO COMPLETELY FILL THE ENTIRE OPENING. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC -- FS-FIRE BLOCK B. FILL, VOID OR CAVITY MATERIAL\* -- FILL MATERIAL TO BE FORCED INTO INTERSTICES OF CABLES AND BETWEEN CABLES AND CABLE TRAYS TO MAX EXTENT POSSIBLE ON BOTH SURFACES OF THE PENETRATION.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC -- FS-ONE SEALANT C. WIRE MESH (NOT SHOWN) -- WHEN THE ANNULAR SPACE EXCEEDS 4-1/2 IN. TO THE PERIPHERY, A NOM 2 IN. SQ WIRE FENCING SHALL BE USED TO KEEP THE FIRE BLOCKS IN PLACE. THE WIRE FENCING IS FABRICATED FROM MIN NO. 16 SWG (0.060 IN.) GALV STEEL WIRE. THE WIRE IS CUT TO FIT THE CONTOUR OF THE PENETRATING ITEM WITH A MIN 3 IN. LAP BEYOND THE PERIPHERY OF THE OPENING. WIRE FENCING SECURED TO TOP SURFACE OF FLOOR AND BOTH SURFACES OF WALL ASSEMBLY BY MEANS OF 1/4 IN. DIA BY 1 IN. LONG CONCRETE ANCHORS AND 1/4 IN. BY 1-1/2 IN. DIA FENDER WASHERS SPACED MAX 8 IN. OC. \*BEÁRING THE UL CLASSIFICATION MARK

REPRODUCED BY HILTI, INC. COURTESY OF UNDERWRITERS LABORATORIES, INC.

Ratings — 1 and 2 Hr (See Item 1) Γ Rating — Ο Hr L Rating At Ambient — 5 CFM/Sa Ft L Rating At 400 F - 2 CFM/Sq Ft

WALL ASSEMBLY — THE 1 OR 2 HR FIRE-RATED GYPSUM BOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES WALL AND PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES: . STUDS - WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS  $^{ au}$ CONSIST OF NOM 2 IN. (51 MM) BY 4 IN. (102 MM) LUMBER SPACED 16 IN. (406 MM) OC. STEEL STUDS TO BE MIN 2-1/2 IN. (64 MM) WIDE AND SPACED MAX 24 IN. (610 MM) OC. ADDITIONAL STUDS INSTALLED TO B. GYPSUM BOARD\* -5/8 IN. (16 MM) THICK, 4 FT (1219 MM) WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM BOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL WALL AND PARTITION DESIGN. MAX AREA OF OPENING IS 352 SQ IN. (2271 SQ CM) WITH MAX DIMENSION OF 22 IN. (559 MM) WIDE.

THÉ HOURLY F RATING OF THE FIRESTOP SYSTÉM IS EQUAL TO THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED. 2. CABLE TRAY\* — MAX 18 IN. (457 MM) WIDE BY MAX 6 IN. (152 MM) DEEP OPEN—LADDER OR SOLID—BACK CABLE TRAY WITH CHANNEL—SHAPED SIDE RAILS FORMED OF 0.065 IN. (1.65 MM) THICK ALUMINUM OR 0.060 IN. (1.52 MM) THICK STEEL AND WITH 1-1/2 IN. (38 MM) WIDE BY 1 IN. (25 MM) CHANNEL SHAPE RUNGS SPACED 9 IN. (229 MM) OC OR A 0.029 IN. (0.74 MM) THICK STEEL SOLID BACK, RESPECTIVELY. ONE CABLE TRAY TO BE INSTALLED IN THE OPENING. THE MAX ANNULAR SPACE BETWEEN THE CABLE TRAY AND THE PERIPHERY OF THE OPENING SHALL BE MIN 1 IN. (25 MM) TO MAX 7 IN. (178 MM) CABLE TRAY TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. 3. CABLES - AGGREGATE CROSS-SECTIONAL AREA OF CABLES IN CABLE TRAY TO BE MAX 30 PERCENT OF THI CROSS-SECTIONAL AREA OF THE CABLE TRAY. ANY COMBINATION OF THE FOLLOWING TYPES AND SIZES OF COPPER CONDUCTOR CABLES MAY BE USED:

A. 7/C NO. 12 AWG WITH POLYVINYL CHLORIDE (PVC) INSULATION AND PVC JACKET.

B. 100 PAIR - NO. 24 AWG CABLE WITH PVC INSULATION AND JACKET.

C. TYPE R GU/59 COAXIAL CABLE WITH PVC OUTER JACKET.

D. 24 FIBER OPTIC CABLE WITH PVC SUB UNIT AND OUTER JACKET.

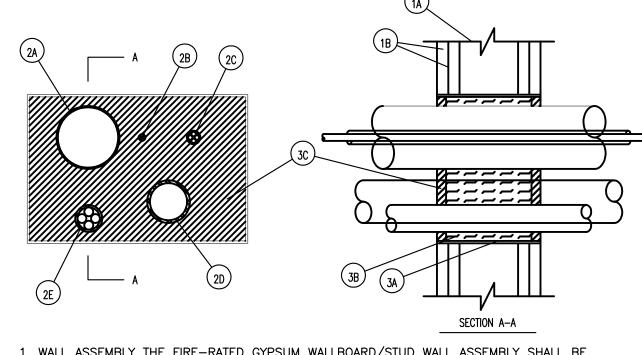
ANSI/UL1479 (ASTM E814)

1/C, 750 KCMIL (OR SMALLER) WITH PVC INSULATION AND JACKET. THROUGH-PENETRANTS - ONE OR MORE PIPE OR TUBE TO BE INSTALLED WITHIN THE OPENING. THE TOTAL NUMBER OF THROUGH-PENETRANTS IS DEPENDENT ON THE SIZE OF THE OPENING AND TYPES AND SIZES OF THE PENETRANTS. ANY COMBINATION OF THE PENETRANTS DESCRIBED BELOW MAY BE USED PROVIDED THAT THE FOLLOWING PARAMETERS RELATIVE TO THE ANNULAR SPACES AND THE SPACING BETWEEN THE PIPES ARE MAINTAINED. THE SPACE BETWEEN THE PIPE OR TUBE AND THE PERIPHERY OF THE OPENING SHALL BE MIN 1-1/2 in. (38 mm) to max 9-1/4 in. (235 mm). Pipe or tube to be rigidly supported on both sides OF FLOOR OR WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF NON-METALLIC OR METALLIC PIPES, OR  $\mid$  A. POLYVINYL CHLORIDE (PVC) PIPE - MAX 3 IN. (76 MM) DIA SCHEDULE 40 SOLID CORE PVC PIPE (OR SMALLER) FOR USE IN CLOSED (PROCESS OR SUPPLY) OR VENTED (DRAIN, WASTE OR VENT) PIPING SYSTEM. B. STEEL PIPE — NOM 6 IN. (152 MM) DIA (OR SMALLER) SCHEDULE 40 (OR HEAVIER) STEEL PIPE. C. CONDUIT — NOM 4 IN. (102 MM) DIA (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING OR 6 IN. (152

D. COPPER PIPE — NOM 4 IN. (102 MM) DIA (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.  $\mid$  E. COPPER TUBE - NOM  $^{4}$  IN. (102 MM) DIA (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBE.  $\mid$  4A. PIPE COVERING - (NOT SHOWN) NOM 1-1/2 IN. (38 MM) THICK HOLLOW CYLINDRICAL HEAVY DENSITY (MIN 3.5 PCF) (56KG/M3) GLASS FIBER UNITS JACKETED ON THE OUTSIDE WITH AN ALL SERVICE JACKET. ONGITUDINAL JOINTS SEALED WITH METAL FASTENERS OR FACTORY APPLIED SELF—SEALING LAP TAPE. TRANSVERSE JOINTS SECURED WITH METAL FASTENERS OR WITH BUTT TAPE SUPPLIED WITH THE PRODUCT. SEE PIPE AND EQUIPMENT COVERING AND MATERIALS (BRGU) CATEGORY IN THE BUILDING MATERIALS DIRECTOR FOR NAMES OF MANUFACTURERS. ANY PIPE COVERING MATERIAL MEETING THE ABOVE SPECIFICATIONS AND BEARING THE UL CLASSIFICATION MARKING WITH A FLAME SPREAD INDEX OF 25 OR LESS AND A SMOKE

DEVELOPED INDEX OF 50 MAY BE USED. 5. CABLES — MAX 1-1/2 IN. (38 MM) DIA TIGHT BUNDLE OF CABLES INSTALLED WITHIN THE OPENING AND RIGIDLY SUPPORTED ON BOTH SURFACES OF WALL. THE SPACE BETWEEN THE CABLES AND PERIPHERY OF THE OPENING SHALL RANGE FROM 1-3/16 IN. (30.2 MM) MIN TO A MAX OF 1-1/2 IN. (38 MM). ANY COMBINATION OF THE FOLLOWING TYPES AND SIZES OF CABLES MAY BE USED: A. 7/C NO. 12 AWG WITH POLYVINYL CHLORIDE (PVC) INSULATION AND JACKET B. 25 PAIR - NO. 24 AWG CABLE WITH PVC INSULATION AND JACKET.

 $oxed{6}$ . FIRESTOP SYSTEM -THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING: A. FILL, VOID OR CAVITY MATERIAL\* — FIRE BLOCKS FOR WALLS INCORPORATING MAX 3-5/8 IN. (92 MM) STEEL STUDS OR MAX 2 (51 MM) BY 4 IN. (102 MM) WOOD STUDS, FIRE BLOCK INSTALLED WITH 5 IN. (127 MM) DIMENSION PROJECTING THROUGH AND CENTERED IN OPENING. FOR WALLS CONSTRUCTED OF LARGER STEEL OR WOOD STUDS, FIRE BLOCK INSTALLED WITH LONG DIMENSION PASSING THROUGH AND CENTERED IN OPENING. BLOCKS MAY OR MAY NOT BE CUT FLUSH WITH BOTH SURFACES OF WALL. WHEN MULTIPLE LAYERS OF GYPSUM BOARD ARE USED, BLOCKS MAY BE RECESSED 1/2 IN. (13 MM) FROM SURFACE OF WALL. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS 657 FIRE BLOCK B. FILL, VOID OR CAVITY MATERIAL\* — SEALANT OR PUTTY — FILL MATERIAL TO BE FORCED INTO INTERSTICES OF CABLES, BETWEEN CABLES AND CABLE TRAYS, AROUND EACH PENETRANT AND WHERE OBVIOUS VOIDS ARE OBSERVED TO MAX EXTENT POSSIBLE ON BOTH SURFACES OF THE PENETRATION. | HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC - FS-ONE SEALANT, CP 618 PUTTY STICK OR CP620 FIRE \*BEARING THE UL CLASSIFICATION MARK



System No. W-L-8004

F Rating — 2 Hr

T Rating - 1/4 Hr

1. WALL ASSEMBLY THE FIRE-RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES WALL AND PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES: A. STUDS WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNE STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN. LUMBER SPACED 16 IN. OC. STEEL STUDS TO BE MIN 2-1/2 IN. WIDE AND SPACED MAX 24 IN. OC. ADDITIONAL FRAMING (NOT SHOWN) MAY BE INSTALLED AROUND THE PERIMETER OF THE OPENING IN LIEU OF THE STEEL WIRE MESH (ITEM NO. 3A). B. GYPSUM BOARD\* TWO LAYERS OF NOM 5/8 IN. THICK GYPSUM WALLBOARD, AS SPECIFIED IN THE INDIVIDUAL WALL AND PARTITION DESIGN. MAX AREA OF OPENING

2. THROUGH PENETRANTS THE FOLLOWING TYPES AND SIZES OF PIPES, CONDUITS, TUBING OR CABLES MAY BE USED: A. NOM 3 IN. DIA (OR SMALLER) ELECTRICAL METALLIC TUBING (EMT). B. MAX 25 PAIR -- NO. 24 AWG (OR SMALLER) TELEPHONE CABLE WITH POLYVINYL CHLORIDE (PVC) INSULATION AND JACKET. C. MAX 3/C WITH GROUND -- NO. 10 AWG (OR SMALLER) TYPE NM CABLE WITH

STUD WALLS IS LIMITED TO 12 IN.

IS 96 SQ IN. WITH MAX DIMENSION OF 12 IN. MAX WIDTH OF OPENING IN WOOD

PVC INSULATION AND JACKET. D. NOM 2 IN. DIA (OR SMALLER) SCHEDULE 40 PVC PIPE FOR USE IN CLOSED (PROCESS OR SUPPLY) PIPING SYSTEMS ONLY. E. MAX 300 KCMIL (OR SMALLER) POWER CABLE WITH PVC INSULATION AND NYLON JACKET. THE THROUGH PENETRATING ITEMS TO BE RIGIDLY SUPPORTED ON BOTH

SIDES OF WALL ASSEMBLY AND LOCATED AS SHOWN IN THE TABLE BELOW: DISTANCE DISTANCE DISTANCE BETWEEN ADJACENT ADJACENT THROUGH THROUGH PEN. ITEM IN. PEN. ITEM IN. OPENING IN. OPENING IN. 7-7/16 1-11/16 7-7/16 7-7/16 1-11/16 7-7/16 7-7/16 1-11/16 7-7/16 7-7/16 1-11/16 7-7/16 7-7/16 1-11/16 7-7/16

REQUIRED THICKNESS OF FILL MATERIAL.

3. FIRESTOP SYSTEM THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING: A. STEEL WIRE MESH NO. 8 STEEL WIRE MESH HAVING A MIN 1 IN. LAP ALONG THE LONGITUDINAL SEAM. LENGTH OF STEEL WIRE MESH TO BE 4-3/4 IN., CENTERED AND FORMED TO FIT PERIPHERY OF THROUGH OPENING. STEEL WIRE MESH IS NOT REQUIRED WHEN ADDITIONAL FRAMING MEMBERS (ITEM NO. 1A) ARE USED. B. PACKING MATERIAL MIN 4.0 IN. THICKNESS OF MIN 3.5 PCF MINERAL WOOL BATT INSULATION FIRMLY PACKED INTO OPENING AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM BOTH SURFACES OF WALL AS REQUIRED TO ACCOMMODATE THE

C. FILL, VOID OR CAVITY MATERIAL\* - SEALANT MIN 1/2 IN. THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH BOTH SURFACES OF WALL. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC - FS-ONE SEALANT \*BEARING THE UL CLASSIFICATION MARKING





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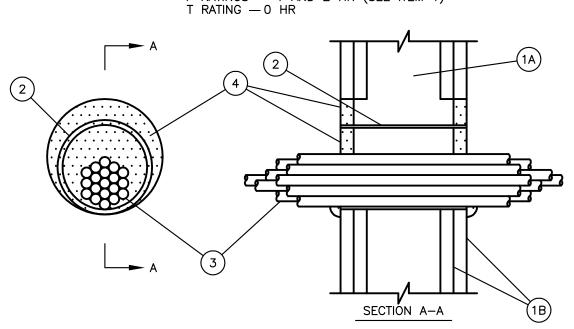




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CAN/ULC S115

## SYSTEM NO. W-L-3065 F RATINGS — 1 AND 2 HR (SEE ITEM 1)



1. WALL ASSEMBLY — THE 1 OR 2 FIRE-RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL U300, U400 OR V400 SERIES WALL AND PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES: A. STUDS — WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN. (51 BY 102 MM) LUMBER SPACED 16 IN. (406 MM) OC. STEEL STUDS TO BE MIN 2-1/2 IN. (64 MM) WIDE AND SPACED MAX 24 IN. (610 MM) OC. B. GYPSUM BOARD\* — NOM 5/8 IN. (16 MM) THICK GYPSUM BOARD, WITH SQUARE OR TAPERED EDGES. THE GYPSUM BOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL U300, U400 OR V400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX DIA OF OPENING IS 5-1/2 IN. (138 MM) WHEN SLEEVE (ITEM 2) IS EMPLOYED. MAX DIA OF OPENING IS 4 IN. (102 MM) WHEN SLEEVE (ITEM 2) IS NOT EMPLOYED. THE F RATING OF THE FIRESTOP SYSTEM IS EQUAL TO THE FIRE RATING OF THE WALL ASSEMBLY 2. METALLIC SLEEVE — (OPTIONAL) - NOM 4 IN. (102 MM) DIA (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING (EMT) OR SCHEDULE 5 (OR HEAVIER) STEEL PIPE OR MIN 0.016 IN. THICK (0.41 MM, NO. 28 GA) GALV STEEL SLEEVE INSTALLED FLUSH WITH WALL SURFACES. THE ANNULAR SPACE BETWEEN STEEL SLEEVE AND PERIPHERY OF OPENING SHALL BE MIN 0 IN. (0 MM, POINT CONTACT) TO MAX 1 IN. (25MM). WHEN SCHEDULE 5 STEEL PIPE OR EMT IS USED, SLEEVE MAY EXTEND UP TO 18 IN. (457 MM) BEYOND THE WALL SURFACES. 3. CABLÉS — AGGREGATE CROSS—SECTIONAL AREA OF CABLE IN OPENING TO BE MAX 45 PERCENT OF THE CROSS—SECTIONAL AREA OF THE OPENING. THE ANNULAR SPACE BETWEEN THE CABLE BUNDLE AND THE PERIPHERY OF THE OPENING TO BE MIN O IN. (O MM, POINT CONTACT) TO MAX 1 IN. (25 MM) CABLES TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF THE WALL ASSEMBLY. ANY COMBINATION OF THE FOLLOWING TYPES AND SIZES OF COPPER CONDUCTOR CABLES MAY BE USED: A. MAX 7/C NO. 12 AWG WITH POLYVINYL CHLORIDE (PVC) INSULATION AND JACKET B. MAX 25 PAIR NO. 24 AWG TELEPHONE CABLE WITH PVĆ INSULATION AND JACKET.

B1. MAX 4 PR NO. 22 AWG CAT 5 OR CAT 6 COMPUTER CABLES. C. TYPE RG/U COAXIAL CABLE WITH POLYETHYLENE (PE) INSULATION AND PVC JACKET HAVING A MAX OUTSIDE DIAMETER OF 1/2 C1. MAX RG 6/U COAXIAL CABLE WITH FLUORINATED ETHYLENE INSULATION AND JACKETING. . MULTIPLE FIBER OPTICAL COMMUNICATION CABLE JACKETED WITH PVC AND HAVING A MAX OD OF 5/8 IN. (16 MM). E. THROUGH PENETRATING PRODUCTS\*— MAX THREE COPPER CONDUCTOR NO. 8 AWG . METAL-CLAD CABLE+.

F. MAX 3/C (WITH GROUND)(OR SMALLER) NO. 8 AWG COPPER CONDUCTOR CABLE WITH PVC INSULATION AND JACKETING. G. MAX 3/4 IN. (19 MM) DIA COPPER GROUND CABLE WITH OR WITHOUT A PVC JACKET. H. FIRE RESISTIVE CABLES\* - MAX 1-1/4 IN. (32 MM) DIA SINGLE CONDUCTOR OR MULTI CONDUCTOR TYPE MI CABLE. A MIN 1/8 IN. (3 MM) SEPARATION SHALL BE MAINTAINED BETWEEN MI CABLES AND ANY OTHER TYPES OF CABLE. I. MAX 4/C WITH GROUND 300KCMIL (OR SMALLER) ALUMINUM SER CABLE WITH PVC INSULATION AND JACKET. J. THROUGH PENETRATING PRODUCT\* - ANY CABLÉS, METAL-CLAD CABLE+ OR ARMORED CABLE+ CURRENTLY CLASSIFIED

UNDER THE THROUGH PENETRATING PRODUCTS CATEGORY. SEE THROUGH PENETRATING PRODUCT (XHLY) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS. 4. FILL, VOID OR CAVITY MATERIAL\*— SÈALANT OR PUTTY — FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH EACH END OF THE STEEL SLEEVE OR WALL SURFACE. FILL MATERIAL INSTALLED SYMMETRICALLY ON BOTH SIDES OF THE WALL. A MIN 5/8 IN. (16 MM) THICKNESS OF SEALANT IS REQUIRED FOR THE 1 OR 2 HR F RATING . AN ADDITIONAL 1/2 IN. (13 MM) DIA BEAD OF FILL MATERIAL SHALL BE APPLIED AROUND THE PERIMETER OF SLEEVE ON BOTH SIDES OF THE WALL WHEN SLEEVE EXTENDS BEYOND SURFACE OF WALL HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP601S, CP606, FS-ONE SEALANTS OR CP618 PUTTY \*BEARING THE UL CLASSIFICATION MARK

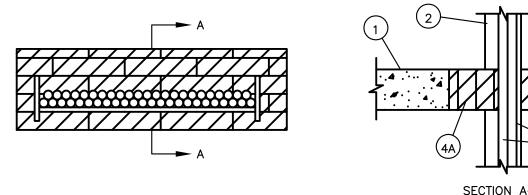
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HILTI FIRESTOP SYSTEMS DRAWING ORIGINATION DATE: 03-21, 2011

+BEARING THE UL LISTING MARK



### SYSTEM NO. C-AJ-4035 F RATING - 3 HR. T RATING = 0 HR.



FLOOR OR WALL ASSEMBLY MIN 4-1/2 IN. THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS\*. MAX AREA OF OPENING IS 270 SQ IN WITH MAX DIMENSION OF 30 IN. SEE CONCRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS. 2. CABLE TRAY\* MAX 24 IN. WIDE BY MAX 4 IN. DEEP OPEN-LADDER OR SOLID-BACK CABLE TRAY WITH CHANNEL-SHAPED SIDE RAILS FORMED OF 0.10 IN. THICK ALUMINUM OR 0.060 IN. THICK GALV STEEL AND WITH 1-1/2 IN. WIDE BY 1 IN. CHANNEL SHAPE RUNGS SPACED 9 IN. OC OR A 0.029 IN. THICK STEEL SOLID BACK, RESPECTIVELY. THE ANNULAR SPACE BETWEEN THE CABLE TRAY AND THE PERIPHERY OF THE OPENING SHALL BE MIN 1 IN. TO MAX 4 IN. CABLE TRAY TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF 3. CABLES AGGREGATE CROSS-SECTIONAL AREA OF CABLES IN CABLE TRAY TO BE MAX 40 PERCENT OF THE CROSS—SECTIONAL AREA OF THE CABLE TRAY. ANY COMBINATION OF THE FOLLOWING TYPES AND SIZES OF COPPER CONDUCTOR OR FIBER OPTIC CABLES MAY BE USED:

B. 300 PAIR -- NO. 24 AWG CABLE WITH PVC INSULATION AND JACKET. C. 24 FIBEROPTIC CABLE WITH PVC SUBUNIT AND JACKET. D. THREE 1/C NO. 12 AWG WIRE, INSULATED WITH POLYVINYL CHLORIDE, IN A NOMINAL 3/4 IN. FLEXIBLE METAL CONDUIT. 4. FIRESTOP SYSTEM THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING: A. FILL, VOID OR CAVITY MATERIAL\* FIRE BLOCKS INSTALLED WITH THE LONG DIMENSION PLACED HORIZONTALLY WITHIN THE OPENING, FLUSH WITH BOTTOM OF FLOOR ASSEMBLIES. BLOCKS TO COMPLETELY FILL THE ENTIRE WIDTH OF OPENING OF WALL ASSEMBLIES. HILTI CONSTRUCTION CHEMICALS. DIV OF HILTI INC -- FS-FIRE BLOCK B. FILL. VOID OR CAVITY MATERIAL\* -SEALANT ON PUTTY- NOT SHOWN FILL MATERIAL TO BE FORCED INTO

. 500 KCMIL WITH THERMOPLASTIC INSULATION AND PVC JACKET

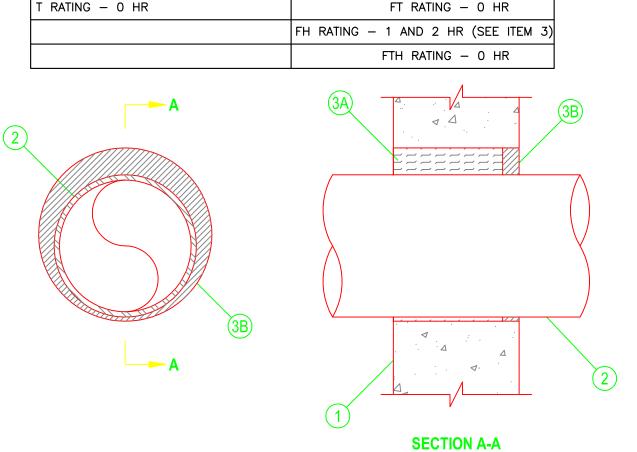
INTERSTICES OF CABLES AND BETWEEN CABLES AND CABLE TRAYS TO MAX EXTENT POSSIBLE ON BOTH SURFACES OF THE PENETRATION. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC -- FS-ONE SEALANT OR CP618 FIRESTOP PUTTY STICK (NOTE: L RATING ONLY WHEN FS-ONE SEALANT IS USED) \*BEARING THE UL CLASSIFICATION MARK

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SYSTEM NO. W-J-1088

RATING - 1 AND 2 HR (SEE ITEM 3) $\mid$  F RATING - 1 AND 2 HR (SEE ITEM  $\Im$ 



WALL ASSEMBLY - MIN 3-3/4 IN. (95 MM) THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-15 PCF OR 1600-2400 KG/M3) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRET BLOCKS\*. MAX DIAMETER OF OPENING 10-1/2 IN. (267 MM). SEE CONCRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS. THROUGH-PENETRANTS — ONE METALLIC PIPE, CONDUIT OR TUBING TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. AN ANNULAR SPACE OF MIN 1/4 IN. TO MAX 1-5/8 IN. (41 MM) IS REQUIRED WITHIN FIRESTOP SYSTEM. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED: A. STEEL PIPE - NOM 8 IN. (203 MM) DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.

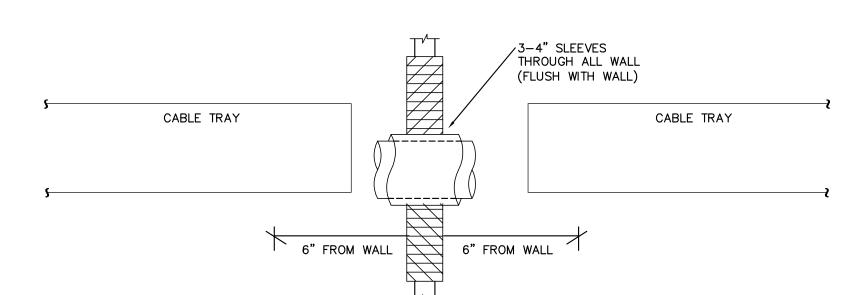
B. IRON PIPE — NOM 8 IN. (203 MM) DIAM (OR SMALLER) CAST OR DUCTILE IRON PIPE. C. CONDUIT — NOM 4 IN. (102 MM) DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING (EMT) OR 6 IN. DIAM STEEL CONDUIT. D. COPPER TUBING — NOM 4 IN. (102 MM) DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING. E. COPPER PIPE — NOM 4 IN. (102 MM) DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE. F. FLEXIBLE STEEL CONDUIT+ — NOM 2 IN. (51 MM) DIAM (OR SMALLER) FLEXIBLE STEEL CONDUIT. SEE FLEXIBLE METAL CONDUIT (DXUZ) CATEGORY IN THE ELECTRICAL CONSTRUCTION EQUIPMENT DIRECTORY



FOR NAMES OF MANUFACTURERS.



CABLE TRAY WALL INTERSECTION DETAIL



SHEET INFORMATION

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ARCHITECT / ENGINEER'S SEAL

**BEAUFORT COUNTY** 

**ENGINEERING** 

**BEAUFORT COUNTY DNA** 

LABORATORY ADDITION

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BEAUFORT, SC 29906

CONSTRUCTION

04/29/2020

Phone: 704-338-1292 • www.optimaengineering.com

ENGINEERIN

DATE	APRIL 29, 2020
JOB NUMBER	19044.00
DRAWN SKL	
CHECKED ZK	
APPROVED ZK	

WALL PENETRATION **DETAILS** 

3 OF 6

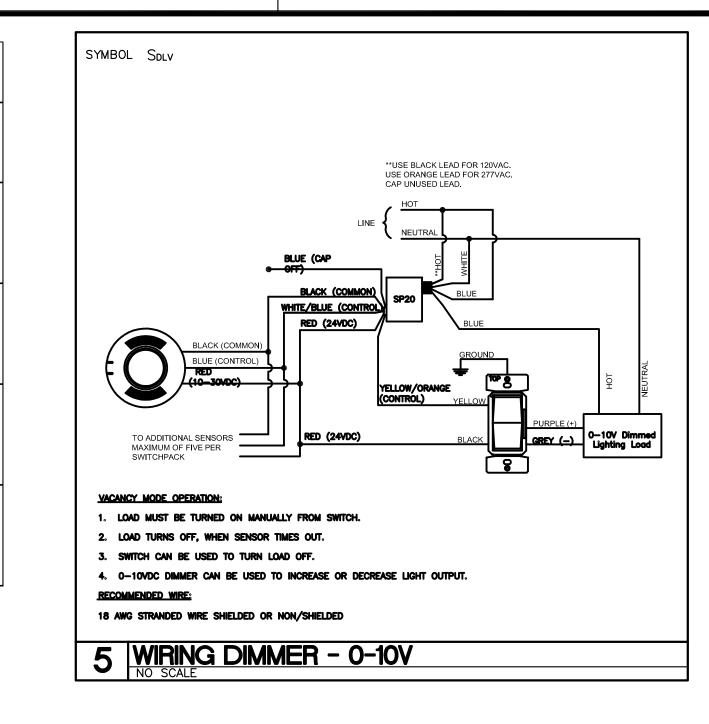
HILTI FIRESTOP SYSTEMS

OPTIMA # 20-0104

LIGHT FIXTURE SCHEDULE TOTAL # OF TYPE LAMP/LUMEN OUTPUT **FIXTURE** BALLAST/DRIVER MANUFACTURER MODEL **REMARKS EXAMPLE** DESCRIPTION VOLTAGE **LAMPS** WATTAGE LITHONA APPROVED EQUAL TEST SWITCH PROVIDED HUBBELL INTERIOR EMERGENCY BATTERY SEALED 90 MINUTE BATTERY JUNO APPROVED EQUAL LED LED INTEGRAL LED DRIVER EMB1 EGRESS LIGHT AIMABLE 20' (ON CENTER) X 6'W DESIGN PATH COOPER APPROVED EQUAL SELF TEST SDRT WITH RTKIT LITHONA QUANTUM LQM S W R 120/277 EL N NICKEL CADMIUM BATTERY EXIT SIGN HUBBELL DUAL LITE LX U R W E 90 MINUTE OPERATION; RED NAVILLITE NXPBA R WH LED BATTERY THERMOPLASTIC EXIT SIGN LED 1W INTEGRAL LED DRIVER EX1B TEST SWITCH PROVIDED COOPER SURE-LITES LPX 7 UL LISTED FOR DAMP LOCATIONS PHILIPS CHLORIDE VE LITHONIA WST LED 2 700 mA SR2 MVOLT COLOR CHOSEN BY ARCHITECT HUBBELL LS 101 EMERGENCY COMPLIANT TRPC-13LU 5K BZ JUNO 3000 LUMENS OWL1 WALL PACK TRAPEZOID LED 2-MODULE LED LED 47W INTEGRAL LED DRIVERS (2) 120 BATTERY BACKUP COOPER MCGRAW IST B02 LED E1 GZW GARDCO 101L-DCC-2-55LA-NW-UNV-OC LITHONIA LITHONIA BLT4 40L ADP 120V 80 CRI, 4000 LUMENS WILLIAMS APPROVED EQUAL MERCURY APPROVED EQUAL RTL1 RECESSED LED 1X4 LED 32W LED 0-10V DIMMING COOPER APPROVED EQUAL

DAY-BRITE

APPROVED EQUAL



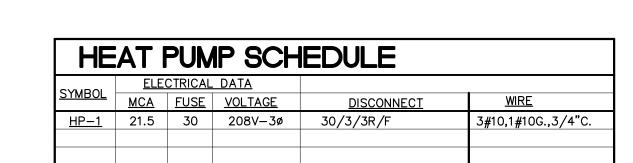
											<u> </u>												<u> </u>		
FIRE ALARM SYST	ΓΕ	M	<b>\</b>	<b>N</b>	47	ΓR	<b>( </b>						BUI	LDI	ING	i SY	STE	МС						CENTRA COMM	
				(5) V		5   5   5   5   5   5   5   5   5   5											/~								\$ / / S
MANUAL FIRE ALARM PULL BOXES	X	Х					Х	Х	Х	Х							Х	Х	Х						
BUILDING SMOKE DETECTOR	X	X					Χ	Χ	Χ	Χ							Х	Х	Х						
DUCT SMOKE DETECTOR			X	Χ				Χ			X					Х	Х	X		Х					
SPRINKLER WATER FLOW	X	X					Χ	Χ	Χ	Χ						Х	Х	Х	Х						
SPRINKLER TAMPER			X	Χ				Χ			X						Χ	Х		Х					
ELEV. EQ. ROOM SMOKE DETECTOR	X	X					Χ	Χ	Χ	Χ				X			Х	Х	Х						
ELEV. EQ. ROOM HEAT DETECTOR	X	X					Χ	Χ	Χ	Χ				X	Χ		Х	X	Х						
ELEV. SHAFT HEAT DETECTOR	X	X					Χ	Χ	Χ	Χ					Χ		Χ	Х	Χ						
1ST FLOOR ELEV. LOBBY SMOKE DET.	X	X					Χ	Х	Χ	Х			Χ				Х	Х	Х						
UPPER FLR. ELEV. LOBBY SMOKE DET.	X	X					Χ	Χ	Χ	Χ				X			Х	Х	Х						
HOOD SUPPRESSION SYSTEM	X	Х					Χ	Χ	Χ	Χ							Х	Х	Х						
NOTIFICATION DEVICE SHORT CIRCUIT					Χ	Χ		Χ				Х					Х	Х							
OPEN CIRCUIT					Χ	Χ		Χ				Χ					Х	Х			Х				
GROUND FAULT					Χ	Χ		Χ				Х					Х	Х			Х				
FIRE ALARM A.C. POWER FAILURE					Χ	Χ		Χ				Χ					Х	Х			Х				
FIRE ALARM SYSTEM LOW BATTERY					Χ			Χ				Χ					Χ	Χ			X	 			

							PAI	NE	L:	PA	NEL	- 6			EXTG	MFG
		VOLTA	AGE:	120 /	208		3 F	PHAS	SE		4	WIRE			EXTG	TYP
		MOUNT	ING:	SURF	ACE		<b>200</b> A	MP			MAIN	CIRCL	JIT BR	EAKER	18,000	AIC
						田(+					三(					
LOAD				WIRE	TRIP	FRAME (Note 1)	кт			СКТ	FRAME (Note 1)	TRIP	WIRE			LOA
KVA	LOAD SEF	RVED		≶	<u> </u>	<u>  변공   1</u>	NO	A B	3 C	NO	<u> </u>	<u> </u>	⋝	LOAD SERVED		KV
0.18	EXTERIOR RECEPT	ACLE		12	20	1	~~•	<del>•</del>	+	<u> </u>		20	12	NEW RECEPTACLES		0.7
1.44	NEW RECEPTACLE	S		12	20	3		+	+	<u> </u> 4		20	12	NEW RECEPTACLES		1.20
1.26	NEW RECEPTACLE	S		12	20	5	_/ \		$-\phi$	<u> </u>		20	12	NEW RECEPTACLES		1.0
1.08	NEW RECEPTACLE	S		12	20	7	~ \ /4	•	+	<u> </u> 8		20	12	NEW RECEPTACLES		1.20
0.80	REFRIGERATOR			12	20	9	_/ \	<del>│</del> •	+	<u></u> 10		20	12	BATHROOM RECEPTACLE		0.18
0.02	F-1			12	20	1.	_		<b>-</b>	<u> </u>		20	12	ABOVE CTR RECEPTS		0.36
0.42	NEW LIGHTING			12	20	1:	^		$-\frac{1}{2}$	<u> </u>		20	12	NEW LIGHTING		0.5
0.03	EXTERIOR LIGHTING	3		12	20	1:	•	1		<u> </u>		30	10	WH-1		2.80
2.00				10		1 1 1	7 - [-		<b>-</b>	<u> </u>			4			6.23
2.00	HP-1			10	30	1 1	9 – 🏳	•	$\top$	<u></u> 20		60	4	IDU-1		6.23
2.00				10		2	_	+	一,	<u></u> 22			4			6.23
	OUTDOOR RECEPT	ACLE		12	20	23	_		<b>-•</b> ∕`	<b>└</b> 24		20	12	WATER FOUNTAIN		1.20
	SPARE			20	25		•	-	<b>└</b> 26		20		SPARE		0.00	
	SPARE				20	2	_	1		<b>└</b> 28		20		SPARE		0.00
	SPARE				20	29	_			<u></u> 30		20		SPARE		0.00
	SPARE				20	3′	_		-	<b>−</b> 32		20		SPARE		0.00
0.00	SPARE				20	33	_	1		<u></u> 34		20		SPARE		0.00
	SPARE				20	35				<u> </u>		20		SPARE		0.00
	SPARE				20		7		$\top$	<b>−</b> 38		20		SPARE		0.00
	SPARE				20	39	_	<b>│</b>	$\top$	<u></u> 40		20		SPARE		0.00
	SPARE				20	4'	1 –⁄ \		- P	<u> </u>		20		SPARE		0.00
11.4	1045 (104)	Το		T		FOTAL 10			OTALS	<u> </u>	NOT					28.0
	LOAD (KVA)	Conn.	D.F.	Dmd	<u> </u>	TOTAL LO			HASE:		NOT			ME OUAL DE 40 DEOID DED DA		- A - T.A .
	LIGHTS	1.0	1.25	1.3			NNECT		20.4.4					ME SHALL BE AS REQ'D PER PAI		
	HEATING	6.0	1.00	6.0	A =	12.4 K\			03.1 A					LY RATED - SERIES RATINGS NOT		
	COOLING	18.7	1.00	18.7	B =	14.7 K\			22.7 A				,	INCL GND AND NEUTRAL, SHALL		
	VENTILATION	0.0	1.00	0.0	C =	12.3 K\			)2.6 A					PANEL & BRKR LUGS SHALL MA		
	MOTORS	0.0	1.00	0.0			EMAN		)4 O ^					ED DOOR-IN-DOOR WITH OUTER	DOOK LC	JUN.
	KITCHEN REC. (1st 10kVA)	0.0 10.0	0.65 1.00	0.0 10.0	A = B =	12.5 K\ 14.6 K\			04.0 A 21.5 A					AL DIRECTORY FRAME. IALL BE U.L. LISTED FOR USE AS	SEEO	II IID
	1			0.5	C =				21.5 A 01.2 A						, J.L. LU	OII.
	REC. (>10kVA) WATER HEATER	1.0	0.50 1.00	2.8	<u> </u>	12.1 K\ DEMANI			71.2 A					ESIGNED FOR ? kVA. AKER WITH HANDLE LOCK-ON DE	VICE	
	MISC.	1		0.0		15.6 K\			29.9 A						VICE.	
	SPARE	0.0	1.00	0.0	A = B =	18.2 KV			51.8 A					AKER WITH SHUNT TRIP. D-THRU LUGS.		
	TOTAL (KVA)	39.4	1.00	39.2	C =	15.2 KV			26.4 A					MODES" SPD (40kA / MODE, 80k <i>i</i>	\	E1

						P/	<b>ANE</b>	L:	MD	P				EXTG MFGR
		VOLTA	AGE:	120 /	208	3	PHAS	SE		4	WIRE			EXTG TYPE
		MOUNT	ING:	SURF	ACE	600	AMP			MAIN	CIRCL	JIT BR	EAKER	<b>22,000</b> AIC
LOAD KVA	LOAD SE	ERVED		WIRE	TRIP	FRAME (Note 1) OX LXO	АВ	вс	CKT NO	FRAME (Note 1)	TRIP	WIRE	LOAD SERVED	LOAE KVA
12.38 14.74 12.33	NEW PANEL 6				200	1 - 1 3 - 1 5 - 1			└ 2 └ 4 └ 6		200		PANEL 1	8.00 8.00 8.00
8.00 8.00 8.00	PANEL 5				200	7 - 1 9 - 1 11 - 1			└ 8 └ 10 └ 12		200		PANEL 2	8.00 8.00 8.00
8.00 8.00 8.00	PANEL 4				200	13 <del>-</del> 15 <del>- </del> 17 <del>- </del> 17 <del>- </del>			─ 14 └ 16 └ 18		200		PANEL 3	8.00 8.00 8.00
1.00	SPARE			12	20	19 –	$\rightarrow$	$+ \uparrow \uparrow$	<b>└</b> 20				SPACE ONLY	0.00
1.00	SPARE			12	20	21 –	$\uparrow$	一,	<b>└</b> 22				SPACE ONLY	0.00
0.00	SPACE ONLY					23 –		-					SPACE ONLY	0.00
	NO SPACE					25 –	$^{\downarrow}$	-	<b>└</b> 26				NO SPACE	0.00
	NO SPACE					27 –	\ <del>\</del>	$\perp$	<b>└</b> 28				NO SPACE	0.00
	NO SPACE					29 –	.	$\rightarrow \uparrow \uparrow$	- 00				NO SPACE	0.00
	NO SPACE					31 –	T I		<b>└</b> 32				NO SPACE	0.00
	NO SPACE					33 –	.	一,	<u></u> 34				NO SPACE	0.00
	NO SPACE					35 –	_	$\rightarrow \uparrow \uparrow$					NO SPACE	0.00
	NO SPACE					37 –	\ <del>\</del>	一,`	<u></u> 38				NO SPACE	0.00
	NO SPACE					39 –	\ <del>\</del>	一,	<b>\</b> 40				NO SPACE	0.00
	NO SPACE					41 –			<b>└</b> 42				NO SPACE	0.00
89.4							SUB-TO		;					72.0
	LOAD (KVA)	Conn.	D.F.	Dmd	Т	OTAL LOAD F		HASE:		NOTI				
	LIGHTS	1.0	1.25	1.3		CONNE							ME SHALL BE AS REQ'D PER PA	
	HEATING	6.0	1.00	6.0	A =	53.4 KVA		14.5 A					Y RATED - SERIES RATINGS NO	
	COOLING	18.7	1.00	18.7	B =	55.7 KVA		64.2 A					NCL GND AND NEUTRAL, SHALL	
	VENTILATION	0.0	1.00	0.0	C =	52.3 KVA		35.7 A					PANEL & BRKR LUGS SHALL MA	
	MOTORS	0.0	1.00	0.0		DEMA							ED DOOR-IN-DOOR WITH OUTER	R DOOR LOCK.
	KITCHEN	0.0	0.65	0.0	A =	53.5 KVA		15.4 A					L DIRECTORY FRAME.	
	REC. (1st 10kVA)	10.0	1.00	10.0	B =	55.6 KVA		32.9 A		7.	THIS PA	ANEL SH	ALL BE U.L. LISTED FOR USE A	S S.E. EQUIP.
	REC. (>10kVA)	1.0	0.50	0.5	C =	52.1 KVA	ı	34.2 A		8.	PANEL	WAS DE	SIGNED FOR ? kVA.	
	WATER HEATER	2.8	1.00	2.8		DEMAND @				9.	PROVID	E BREA	KER WITH HANDLE LOCK-ON D	EVICE.
	MISC.	120.0	1.00	120.0	A =	66.9 KVA		6.7 A		10.	PROVID	E BREA	KER WITH SHUNT TRIP.	
	SDARE	20	1.00	1 20 1	R-	60 5 KV/A	1 57	78 A A		11	PROVID	E EEED	THRITTIGS	

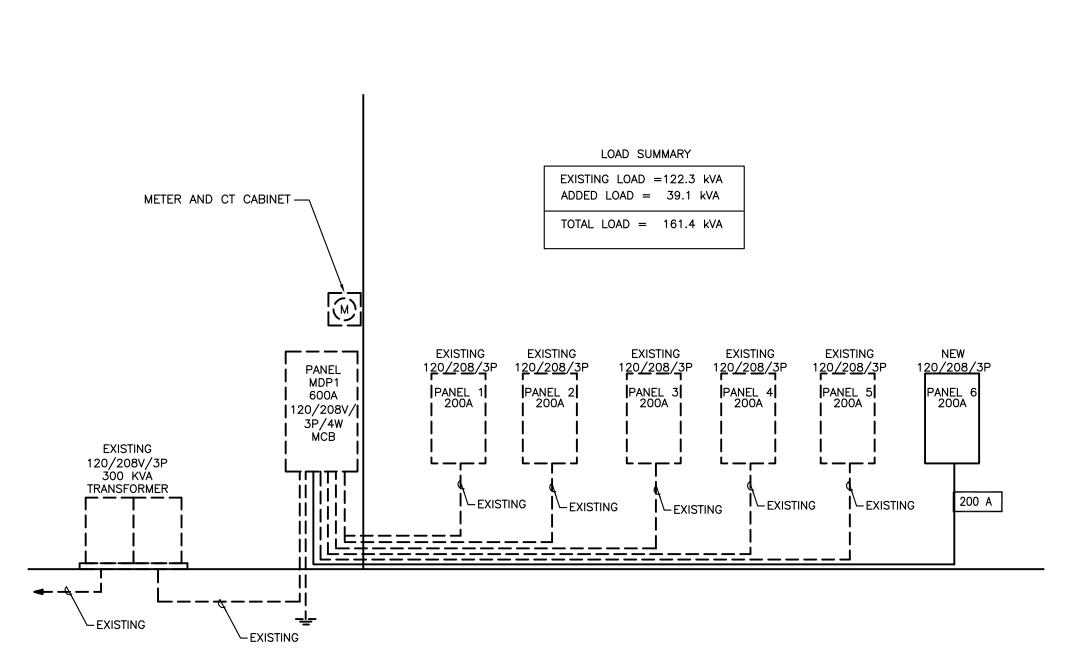
 SPARE
 2.0
 1.00
 2.0
 B =
 69.5 KVA
 578.6 A

 TOTAL (KVA)
 161.4
 161.2
 C =
 65.2 KVA
 542.8 A



INE		R U	NIT S	SCHE	DU	LE						
CVADOL	ELECTRIC AUXILIARY HEAT FAN MOTOR		ELEC	CTRICAL	<u>DATA</u>	<u>DISCONNECT</u>	<u>WIRE</u>					
SYMBOL	<u>KW</u>	<u>STAGES</u>	<u>AMPS</u>	<u>VOLTAGE</u>	<u>FLA</u>	<u>MCA</u>	<u>FUSE</u>	<u>AMPS</u>	<u>FUSE</u>	<u>VOLTAGE</u>		
<u>IDU-1</u>	11.3	2	31.3	208V-3ø	6.0	7.5	15	51.8	60	208V-3ø	60/3/3R/F	3#6,1#10G.,1"C.

FAN SCHEDULE									
CVADOL	LOCATION	ELEC	TRICAL	_ DATA	<u>DISCONNECT</u>	<u>WIRE</u>			
SYMBOL	<u>LOCATION</u>	<u>WATTS</u>	<u>H.P.</u>	<u>VOLTAGE</u>	20/1/1/F	2#12,1#12G.,3/4"C.			
<u>F-1</u>	BATHROOM	15	-	120V-1ø					



120	/208/3F	ONE-LINE	DIAGRAM
120/	/ <b>ZUO</b> / OF		

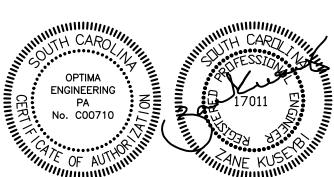
BREAKER SIZE	THREE PHASE (COPPER) WIRE/CONDUIT SIZE	BREAKER SIZE	THREE PHASE (COPPER) WIRE/CONDUIT SIZE
20 A	4#12,1#12 G 3/4"C	225 A	4#4/0,1#4G,2-1/2"C.
25 A	4#10,1#10G 3/4°C	250 A	4-250KCMIL,1#4G,2-1/2"C.
30 A	4#10,1#10 G 3/4°C	300 A	4-350KCMIL,1#4G,3"C.
35 A	4#8,1#10 G 3/4°C	350 A	4-500KCMIL,1#3G,3-1/2"C.
40 A	4#8,1#10 G 3/4°C	400 A	(2) 4#3/0,1#3G,2"C.
45 A	4#6,1#10 G 1"C	450 A	(2) 4#4/0,1#2G,2-1/2°C.
50 A	4#6,1#10 G 1"C	500 A	(2) 4-250KCMIL,1#2G,2-1/2"C.
60 A	4#4,1#10 G 1-1/4"C	600 A	(2) 4-350 KCMIL,1#1G,3"C.
70 A	4#4,1#8 G 1-1/4 <b>"</b> C	700 A	(2) 4-500 KCMIL,1#1/0G,3-1/2°C.
80 A	4#3,1#8 G 1-1/4 <b>"</b> C	800 A	(3) 4-300 KCMIL,1#1/0G,3°C.
90 A	4#2,1#8 G 1-1/4 <b>"</b> C.	1000 A	(3) 4-400 KCMIL,1#2/0G,3-1/2°C.
100 A	4#1,1#8 G 1-1/2°C.	1200 A	(4) 4-350 KCMIL,1#3/0G,3°C.
110 A	4#1,1#6 G 1-1/2°C.	1600 A	(5) 4-400 KCMIL,1#4/0G,3-1/2°C.
125 A	4#1,1#6 G 1-1/2°C.	2000 A	(6) 4-400 KCMIL,1#250 KCMIL G, 3-1/2
150 A	4#1/0,1#6 G, 2"C.	2500 A	(7) 4-500 KCMIL,1#350 KCMIL G,3-1/2"C
175 A	4#2/0,1#6 G, 2"C	3000 A	(8) 4-500 KCMIL,1#400 KCMIL G,3-1/2"C
200 A	4#3/0,1#6 G, 2-1/2°C	3500 A	(10) 4-500 KCMIL, 1#500 KCMIL G, 4"C

12. PROVIDE "ALL MODES" SPD (40kA / MODE, 80kA / PHASE).

11. PROVIDE FEED-THRU LUGS.







04/29/2020

ARCHITECT / ENGINEER'S SEAL

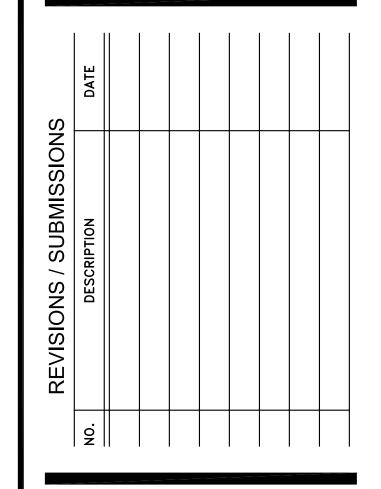


**BEAUFORT COUNTY ENGINEERING** 

**BEAUFORT COUNTY DNA** LABORATORY ADDITION

111 INDUSTRIAL VILLAGE RD BEAUFORT, SC 29906

## CONSTRUCTION



SHEET INFORMATION

DATE	APRIL 29, 2020
JOB NUMBER	19044.00
DRAWN SKL	
CHECKED ZK	
APPROVED ZK	

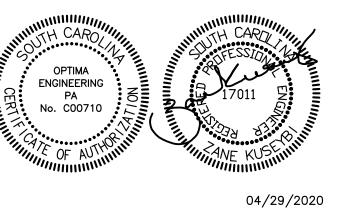
ELECTRICAL **DETAILS** 

### **GENERAL LIGHTING NOTES:**

- 1. REFER TO E001 FOR ABBREVIATIONS, NOTES, AND LEGENDS. CONTRACTOR SHALL COORDINATE ALL LIGHT FIXTURE LOCATIONS AND LIGHTING CONTROL LOCATIONS IWTH OTHER TRADES PRIOR TO INSTALLATION.
- 3. LIGHT FIXTURES DESIGNATED AS AN EMERGENCY EGRESS FIXTURE AND CONNECTED TO AN EMERGENCY LIGHTING CIRCUIT SHALL BE CONTROLLED BY LOCAL LIGHTING CONTROLS SERVING THE SPACE WHERE EMERGENCY FIXTURE IS LOCATED DURING NORMAL OPERATION. UPON POWER LOSS, EMERGENCY EGRESS LIGHT FIXTURES SHALL REMAIN ON.
- 4. ALL EXITS SIGNS SHALL BE CONNECTED TO EMERGENCY LIGHTING CIRCUIT SERVING AREA AND CONNECTED AHEAD OF LOCAL SWITCHING.







ARCHITECT / ENGINEER'S SEAL

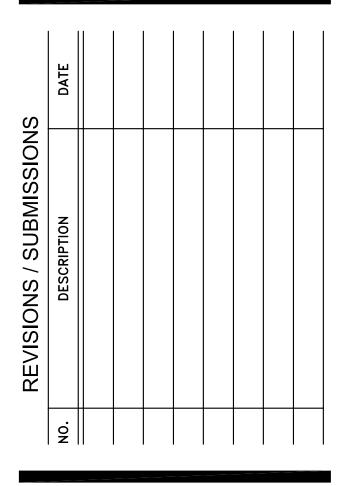


**BEAUFORT COUNTY ENGINEERING** 

## BEAUFORT COUNTY DNA LABORATORY ADDITION

111 INDUSTRIAL VILLAGE RD BEAUFORT, SC 29906

## FOR CONSTRUCTION



SHEET INFORMATION

DATE	APRIL 29, 2020
JOB NUMBER	19044.00
DRAWN SKL	
CHECKED ZK	
APPROVED ZK	

FLOOR PLAN - LIGHTING

E-101

FLOOR PLAN - LIGHTING

1/8" = 1'-0"

RTL1

NO WORK AIN THIS AREA

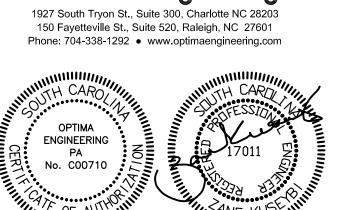
**GENERAL POWER NOTES:** 1. REFER TO E001 FOR ABBREVIATIONS, NOTES, AND LEGENDS. CONTRACTOR SHALL COORDINATE ALL DEVICE LOCATIONS WITH OTHER TRADES PRIOR TO INSTALLATION. 3. WHERE CONNECTED TO A 20A. BRANCH CIRCUIT SUPPLYING AN INDIVIDUAL RECEPTACLE (SIMPLEX OR DUPLEX), THE RECEPTACLE SHALL BE RATED AT 20A. ADD NEW FIRE ALARM DEVICES TO EXISTING PANEL. KEY NOTES: ⊙ (1) WATER HEATER LOCATED IN ATTIC. COORDINATE FINAL LOCATION WITH ARCHITECT AND PLUMBING DRAWINGS BEFORE INSTALLATION. NO WORK AIN THIS AREA FLOOR PLAN - POWER

1/8" = 1'-0"

Prire Station Lane
Seabrook, SC 29940
CHARLOTTE
7315 Swansea Lane
Cornelius, NC 28031
843) 466-3664
nfo@beaufortdesignbuild.col







04/29/2020

ARCHITECT / ENGINEER'S SEAL

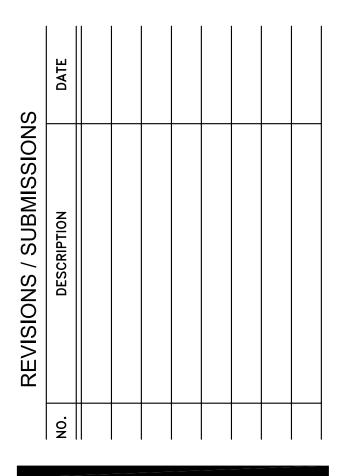


BEAUFORT COUNTY ENGINEERING

## BEAUFORT COUNTY DNA LABORATORY ADDITION

111 INDUSTRIAL VILLAGE RD BEAUFORT, SC 29906

FOR CONSTRUCTION



SHEET INFORMATION

DATE	APRIL 29, 2020
JOB NUMBER	19044.00
DRAWN SKL	
CHECKED ZK	
APPROVED ZK	
	· · · · · · · · · · · · · · · · · · ·

FLOOR PLAN - POWER

E-201

6 OF 6

### PROVIDE PRE-MANUFACTURED INSULATION KIT FOR EXPOSED TRIM UNDER SINK.

### APPROVED MANUFACTURERS:

THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE MODEL WHICH MOST CLOSELY MATCHES THE SPECIFIED PRODUCT. PROVIDE PRODUCTS MADE BY ANY OF THE MANUFACTURER'S LISTED. NO PRIVATE LABELED MATERIALS WILL BE ACCEPTED AS EQUALS TO PRODUCTS SPECIFIED HEREIN. ALL FIXTURES OF THE SAME TYPE AND/OR MATERIAL SHALL BE PROVIDED BY A SINGLE MANUFACTURER.

VITREOUS CHINA FIXTURES TOILET SEATS MANUAL FAUCETS STAINLESS STEEL SINKS

REMARKS:

AMERICAN STANDARD, KOHLER, ZURN, TOTO, SLOAN CHURCH, OLSONITE, BEMIS, CENTOCO MOEN COMMERCIAL, DELTA COMMERCIAL, T&S BRASS, CHICAGO, ZURN ELKAY, JUST, ADVANCE-TABCO ELECTRIC WATER COOLERS/DRINKING FOUNTAINS ELKAY, OASIS, HALSEY TAYLOR, HAWS (DRINKING FOUNTAINS ONLY) FIAT. FLORESTONE, STERN WILLIAMS JTILITY SINKS (MOP BASINS, LAUNDRY SINKS) McGUIRF, BRASSCRAFT, KFENFY

SUPPLY STOPS, P-TRAPS ADA INSULATING KITS FOR EXPOSED TRIM BARRIER TYPE FLOOR DRAIN TRAP SEALER DRAINS, CARRIERS, CLEANOUTS TRAP PRIMERS, SHOCK ARRESTORS WALL HYDRANTS/HOSE BIBBS

TRUEBRO, PLUMBEREX, KEENEY PROVENT, JAY R. SMITH, SURESEAL, MIFAB ZURN, J.R. SMITH, WADE, JOSAM, WATTS PPP, SIOUX CHIEF, ZURN, WATTS WOODFORD, ZURN, WATTS

	WATER HEATER SCHEDULE - ELECTRIC  STORAGE (GALLONS) GPH RECOVERY (GALLONS) @ 80°F RISE KW VOLTS PHASE HERTZ MANUFACTURER MODEL  ELECTRIC WATER HEATER 10 12.8 2.5 120 1 60 A.O. SMITH EJCS-20 1,2									
		STORAGE	GPH RECOVERY	Е	LECTRIC	AL DAT	Ā	BASIS OF	DESIGN	
SYM.	DESCRIPTION			KW	VOLTS	PHASE	HERTZ	MANUFACTURER	MODEL	REMARKS
<u>WH1</u>	ELECTRIC WATER HEATER	10	12.8	2.5	120	1	60	A.O. SMITH	EJCS-20	1,2

EQUIVALENT MANUFACTURERS: STATE, LOCHINVAR, BRADFORD WHITE, RHEEM. WATER HEATER SHALL MEET OR EXCEED THE REQUIREMENTS OF ASHRAE 90.1.

	EX	PANS	ION TA	NK SC	HEDULE		
CVA	DECODIDATION	VOLUME	DIAMETER	HEIGHT	BASIS OF	DESIGN	DEMARKS
SYM.	DESCRIPTION	(GALLONS)	(INCHES)	(INCHES)	MANUFACTURER	MODEL	REMARKS
<u>ET1</u>	BLADDER TYPE EXPANSION TANK	2	8	13	AMTROL	ST-5	1

EQUIVALENT MANUFACTURERS: BELL & GOSSETT, WESSELS COMPANY.

### PLUMBING MATERIALS AND NOTES

A. TYPE 'L' HARD DRAWN SEAMLESS COPPER TUBING (ASTM B 88) AND CAST COPPER ALLOY

### DOMESTIC WATER PIPING:

- DOMESTIC WATER PIPING AND JOINTS ABOVE GRADE <u>PIPE 2" AND SMALLER:</u>
- FITTINGS (ASME B16.18) WITH LEAD FREE 95-5 TIN/SILVER SOLDER JOINTS (ASTM B 32) STERILIZE THE DOMESTIC WATER SYSTEM IN ACCORDANCE WITH THE AMERICAN WATER WORKS
- ASSOCIATION'S SPECIFICATIONS AND LOCAL HEALTH DEPARTMENT REGULATIONS. INSULATE DOMESTIC WATER PIPING ABOVE GRADE (EXCEPT EXPOSED CONNECTIONS TO PLUMBING FIXTURES) WITH GLASS FIBER INSULATION HAVING A VAPOR BARRIER AND JACKET. PIPE
- INSULATION SHALL HAVE A CONDUCTIVITY NOT EXCEEDING 0.27 BTUH x SQ. FT. FOLLOW SCHEDULE BELOW: SERVICE TYPE DOMESTIC HOT WATER 1/2" - 11/4" 1/2" - 11/4" DOMESTIC COLD WATER
- DOMESTIC WATER PIPING INSULATION, JACKETS, COVERINGS, SEALERS, MASTICS AND ADHESIVES ARE REQUIRED TO MEET A FLAME-SPREAD RATING OF 25 OR LESS AND A SMOKE-DEVELOPED RATING OF 50 OR LESS, AS TESTED BY ASTM E84 (NFPA 255) METHOD AND SHALL BE PLENUM RATED. PROVIDE PVC JACKET FOR EXPOSED PIPING IN MECHANICAL ROOMS. INSULATION SHALL BE CONTINUOUS AT ALL HANGERS. PROVIDE GALVANIZED STEEL SHIELD BETWEEN PIPE HANGER AND
- PROVIDE TWO-PIECE, BRONZE OR BRASS BODY, FULL PORT, 600 PSI WOG, BALL TYPE SHUT-OFF VALVES WITH BLOW-OUT PROOF STEMS AND ADJUSTABLE PACKING GLANDS. VALVES SHALL BE LEAD FREE PER NSF 61, ANNEX G REQUIREMENTS. INSTALL VALVES IN A LOCATION THAT
- PERMITS ACCESS FOR SERVICE WITHOUT DAMAGE TO THE BUILDING OR FINISHED MATERIALS. PROTECT COPPER PIPING AGAINST CONTACT WITH DISSIMILAR METALS. ALL HANGERS, SUPPORTS, ANCHORS AND CLIPS SHALL BE COPPER OR COPPER PLATED. WHERE COPPER PIPING IS

CARRIED ON TRAPEZE HANGERS WITH OTHER PIPING, PROVIDE A PERMANENT ELECTROLYTIC

PROTECT COPPER PIPING AGAINST CONTACT WITH ALL MASONRY. WHERE COPPER IS SLEEVED THROUGH MASONRY, PROVIDE COPPER OR RED BRASS SLEEVES. WHERE COPPER MUST BE CONCEALED IN OR AGAINST MASONRY PARTITIONS, PROVIDE A HEAVY COATING OF ASPHALTIC ENAMEL ON THE COPPER PIPING AND 15# ASPHALT SATURATED FELT BETWEEN THE PIPING AND

ISOLATION MATERIAL TO PREVENT CONTACT WITH DISSIMILAR OTHER METALS.

- . DOMESTIC WATER PIPING SHALL BE SLOPED FOR DRAINAGE WITH DRAIN VALVES INSTALLED AT LOW POINTS.
- DOMESTIC WATER SUPPLY PIPING SHALL BE TESTED AND PROVED WATERTIGHT UNDER A WATER PRESSURE OF NO LESS THAN THE WORKING PRESSURE OF THE SYSTEM, OR AN AIR TEST OF NO LESS THAN ONE—HUNDRED (100) PSI. THIS PRESSURE SHALL BE HELD FOR AT LEAST FIFTEEN (15) MINUTES. WATER USED IN TESTING SHALL BE OBTAINED FROM A POTABLE SOURCE OF

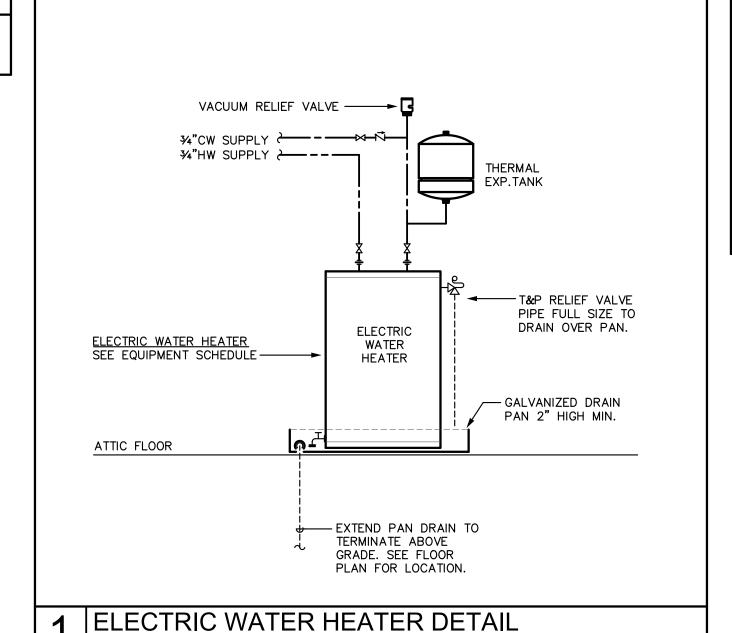
### SANITARY WASTE AND VENT PIPING:

NO LESS THAN 15 MINUTES.

- SANITARY WASTE AND STORM DRAIN PIPING BELOW GRADE: A. SERVICE WEIGHT CAST IRON NO-HUB PIPE AND FITTINGS (CISPI 301) WITH NEOPRENE GASKET/STAINLESS STEEL CLAMP JOINTS (CISPI 310) . SCHEDULE 40 PVC PIPE AND SOCKET FITTINGS (ASTM D 2665) WITH SOLVENT WELD JOINTS
- A. SERVICE WEIGHT CAST IRON NO-HUB PIPE AND FITTINGS (CISPI 301) WITH NEOPRENE
- GASKET/STAINLESS STEEL CLAMP JOINTS (CISPI 310) B. SCHEDULE 40 PVC PIPE AND SOCKET FITTINGS (ASTM D 2665) WITH SOLVENT WELD JOINTS (ASTM D2855). FOAM CORE PIPE IS NOT APPROVED.
- . SLOPE ALL DRAINAGE PIPING AT 1/4" PER FOOT MINIMUM FOR PIPING 21/2" AND SMALLER AND 1/8"

(ASTM D2855). INSTALL PLASTIC PIPE BELOW GRADE PER ASTM D2321.

- PER FOOT MINIMUM FOR PIPING 3" AND LARGER UNLESS NOTED OTHERWISE. PROVIDE CLEAN-OUTS AT EVERY TURN IN PIPING IN EXCESS OF 45° AND NO FURTHER THAN 100'-0'
- APART IN A LOCATION THAT PERMITS ACCESS FOR SERVICE WITHOUT DAMAGE TO THE BUILDING OR
- PROVIDE FLOOR CLEANOUTS WITH TOPS DESIGNED TO MATCH SPECIFIC FLOOR FINISHES SUCH AS CARPET, TILE, ETC. YARD CLEANOUTS SHALL BE PROVIDED IN AN 18"x18"x6" CONCRETE PAD.
- WHERE WASTE PIPING IS EXPOSED IN REST ROOM AREAS, PROVIDE CHROME PLATED BRASS PIPING, REMOVABLE P-TRAPS, MATCHING STOPS AND ESCUTCHEONS FOR ALL LAVATORIES.
- SANITARY WASTE AND VENT SYSTEMS SHALL BE TESTED AND PROVED WATER TIGHT UNDER A HEAD PRESSURE OF NO LESS THAN 10 FT. THIS PRESSURE SHALL BE HELD FOR A PERIOD OF



### PLUMBING GENERAL NOTES

### GENERAL REQUIREMENTS:

- PLUMBING WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE SOUTH CAROLINA STATE PLUMBING CODE AND WITH THE REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION.
- SCOPE: PROVIDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED FOR THE COMPLETION AND OPERATION OF ALL PLUMBING SYSTEMS IN ACCORDANCE WITH ALL APPLICABLE CODES.
- PERMITS: APPLY AND PAY FOR ALL NECESSARY PERMITS, FEES AND INSPECTIONS REQUIRED BY ANY PUBLIC AUTHORITY HAVING JURISDICTION. ACREAGE CHARGES, FACILITIES CHARGES AND BOND PROPERTY ASSESSMENTS ARE NOT TO BE CONSTRUED TO BE A PART OF THIS CONTRACT.
- WARRANTY: PROVIDE A ONE YEAR WARRANTY, FROM THE DATE OF ACCEPTANCE OF WORK BY
- THE OWNER, FOR ALL PLUMBING MATERIALS AND EQUIPMENT. COORDINATE ALL PLUMBING PIPING LOCATIONS, ROUGH-IN LOCATIONS AND EQUIPMENT LOCATIONS
- WITH OTHER TRADES TO AVOID CONFLICTS AND INTERFERENCES. FINAL PIPING AND EQUIPMENT LOCATIONS SHALL BE A CODE COMPLIANT INSTALLATION FOR ALL TRADES. FIELD VERIFY PROPER OPERATION OF EXISTING SYSTEMS BEFORE STARTING CONSTRUCTION. NOTIFY THE ARCHITECT / ENGINEER OF RECORD OF ANY PROBLEMS OR DISCREPANCIES BETWEEN
- OBSERVED BEFORE CONTINUING WORK IN THE EFFECTED AREAS. WHERE DISCREPANCIES ARE FOUND IN THE DRAWINGS AND SPECIFICATIONS THE MORE STRINGENT SHALL APPLY. CONTACT ENGINEER FOR CLARIFICATION.

THE CONSTRUCTION DOCUMENTS AND EXISTING CONDITIONS AND/OR ANY POTENTIAL PROBLEMS

- ALL PIPING SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA.
- ALL VALVES, BACKFLOW PREVENTERS, BOOSTER PUMPS, ETC. SERVING THE DOMESTIC WATER SYSTEM SHALL MEET LEAD FREE STANDARDS PER ANSI/NSF 372 AND NSF 61, ANNEX G.
- D. CUT WALLS, FLOORS AND CEILINGS AS REQUIRED FOR INSTALLATION OF PLUMBING WORK. ALL CUTTING SHALL BE HELD TO A MINIMUM. PATCH AND FINISH SURFACES TO MATCH ADJOINING
- PLUMBING PLANS SHALL NOT BE SCALED. REFERENCE THE ARCHITECTURAL PLANS FOR ALL LOCATIONS OF PLUMBING FIXTURES, WALLS, DOORS, WINDOWS, ETC.
- . PLUMBING PIPING AND SPECIALTIES SHALL BE LOCATED CONCEALED IN WALLS, PARTITIONS OR ABOVE CEILINGS UNLESS NOTED OTHERWISE. PLUMBING PIPING IN EXPOSED AREAS SHALL BE RUN TIGHT TO UNDERSIDE OF STRUCTURE. PROVIDE ACCESS DOORS FOR CONCEALED SPECIALTIES.
- 3. PLUMBING PIPING, VENTS, ETC. EXTENDING THROUGH EXTERIOR WALLS AND/OR THE ROOF SHALL BE FLASHED AND COUNTER FLASHED IN A WATERPROOF MANNER. COORDINATE FLASHING WITH THE
- 14. DO <u>NOT</u> INSTALL PLUMBING PIPING IN AREAS SUBJECT TO FREEZING TEMPERATURES. INSTALL PLUMBING PIPING SHOWN IN EXTERIOR WALLS ON THE CONDITIONED SIDE OF THE WALL INSULATION.
- 15. PROVIDE NON—CONDUCTING DIELECTRIC UNIONS WHENEVER CONNECTING DISSIMILAR METALS. 16. ATTACH HANGERS TO STRUCTURE, HANGERS SHALL NOT ATTACH TO THE DECK. 7. PROVIDE ACCESS DOORS FOR VALVES, WATER HAMMER ARRESTORS, TRAP PRIMERS, ETC.
- CONCEALED IN MASONRY WALLS, GYPBOARD WALLS AND/OR CEILINGS THAT WILL REQUIRE MAINTENANCE ACCESS. 18. PLUMBING SYSTEMS INCLUDE, BUT ARE NOT LIMITED TO:
- PLUMBING FIXTURES AND EQUIPMENT, PIPE IDENTIFICATION, DOMESTIC WATER SYSTEM, SANITARY WASTE AND VENT SYSTEM. PLUMBING FIXTURES AND EQUIPMENT:
- PROVIDE COMPLETE PLUMBING FIXTURES AND EQUIPMENT. INCLUDE SUPPLIES, STOPS, VALVES, FAUCETS, DRAINS, TRAPS, TAIL PIECES, ESCUTCHEONS, ETC.
- PLUMBING FIXTURES AND EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURER'S
- RECOMMENDATIONS AND INSTALLATION INSTRUCTIONS.
- NO PRIVATE LABELED MATERIALS WILL BE ACCEPTED AS EQUALS TO PRODUCTS SPECIFIED THE PLUMBING CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH SUBSTITUTIONS TO
- SPECIFIED PLUMBING FIXTURES AND EQUIPMENT INCLUDING BUT NOT LIMITED TO; PROVIDING MAINTENANCE ACCESS CLEARANCE, PIPING, ELECTRICAL, REPLACEMENT OF OTHER SYSTEM COMPONENTS, BUILDING ALTERATIONS, ETC. AND ANY MODIFICATIONS TO ASSOCIATED MECHANICAL, ELECTRICAL OR PLUMBING SYSTEMS REQUIRED BY THE EQUIPMENTS INSTALLATION INSTRUCTIONS. ALL COSTS ASSOCIATED WITH SUBSTITUTIONS SHALL BE INCLUDED IN THE ORIGINAL BASE BID.
- FIRE STOPPING:
- FIRE STOP ALL PENETRATIONS, BY PIPING OR CONDUITS, OF FIRE RATED WALLS, FLOORS AND PARTITIONS. PROVIDE A DEVICE(S) OR SYSTEM(S) WHICH HAS BEEN TESTED AND LISTED AS COMPLYING WITH ASTM E-814 AND INSTALL IN ACCORDANCE WITH THE CONDITIONS OF THEIR LISTING. PROVIDE A DEVICE(S) OR SYSTEM(S) WITH AN 'F' RATING EQUAL TO THE RATING OF THE ASSEMBLY BEING PENETRATED. REFER TO ARCHITECTURAL PLANS FOR WALL AND FLOOR TYPES.
- PROPERLY SUPPORT AND BRACE VERTICALLY AND HORIZONTALLY ALL PIPING, APPARATUS, EQUIPMENT, ETC. IN ACCORDANCE WITH APPLICABLE CODES TO PREVENT EXCESSIVE MOVEMENT DURING SEISMIC CONDITIONS. PIPE IDENTIFICATION:
- PIPE IDENTIFICATION SHALL MATCH THE FACILITY'S EXISTING STANDARD. IF NO STANDARD EXISTS, THEN THE PIPE IDENTIFICATION SHALL BE IN ACCORDANCE WITH ANSI A13.1.
- PROVIDE PIPING LABELS FOR ALL PLUMBING PIPING. PIPING LABELS SHALL BE ACRYLIC FACED, WRAP-AROUND TYPE. EACH LABEL SHALL INDICATE THE PIPING CONTENTS, DIRECTION OF FLOW AND SHALL BEAR THE MANUFACTURER'S STANDARD COLOR FOR THE SERVICE INDICATED.

### PLUMBING LEGEND NEW PIPING \_\_\_\_

EXISTING PIPING

—— (E)

HORSE POWER

INVERT ELEVATION

ABBR. <u>DESCRIPTION</u> COLD WATER PIPING CW HOT WATER PIPING \_\_\_\_ HW SANITARY WASTE PIPING SANITARY VENT PIPING \_\_\_\_\_ ELBOW DOWN ELBOW UP PIPE CONTINUES PIPE CAP BALL VALVE CV CHECK VALVE

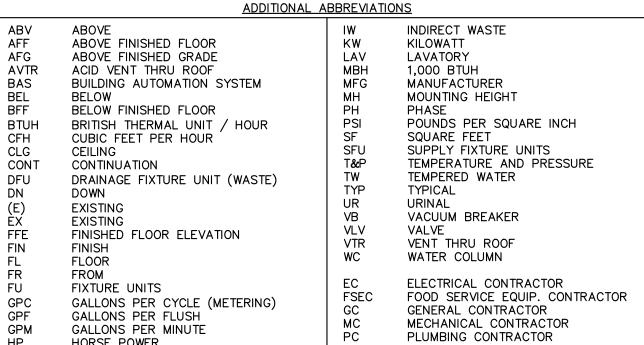
DIRECTION OF FLOW

CONNECT TO EXISTING

PIPE REDUCER FLOOR CLEAN OUT WALL CLEAN OUT END OF LINE CLEAN OUT YARD CLEAN OUT HOSE BIBB/WALL HYDRANT ——<del>—</del> <u>SA−#</u> SHOCK ARRESTOR - SUFFIX INDICATES PDI SIZE

THERMOMETER PRESSURE GAUGE

CTE



### SHOCK ARRESTOR TABLE DRAWING FIXTURE ARRESTOR STANDARD MANUFACTURERS SYMBOL UNITS DESIGNATION

SA-A	1–11	Α	1/2"	- SIOUX CHIEF - WATTS
SA-B	12-32	В	3/4"	- PPP INC.
SA-C	33–60	С	1"	
<u>SA-D</u>	61–113	D	11⁄4"	REMARKS
<u>SA-E</u>	114–154	Е	1½"	INSTALL SHOCK ARRESTORS
<u>SA-F</u>	155-330	F	2"	PER PDI WH201 GUIDELINES
	_			]

### DI LIMPINIO DE AVAINIO INDEV

	PLUMBING DRAWING INDEX							
SHT. NO.	SHEET NAME	<u>SCALE</u>						
P001 P101	PLUMBING LEGEND, NOTES, SCHEDULES, AND SPECIFICATIONS FLOOR PLAN — PLUMBING	 1/8" = 1'-0"						

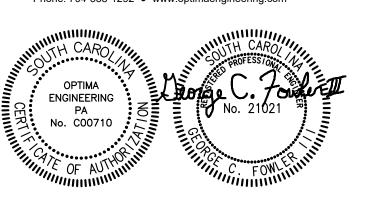
FORT Station

RLOTTE Swansea









04/29/2020 ARCHITECT / ENGINEER'S SEAL

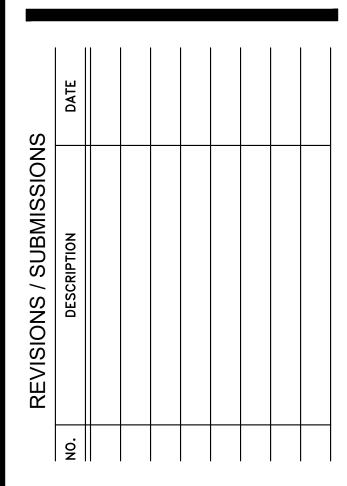


**BEAUFORT COUNTY ENGINEERING** 

**BEAUFORT COUNTY DNA** LABORATORY ADDITION

111 INDUSTRIAL VILLAGE RD BEAUFORT, SC 29906

## CONSTRUCTION



SHEET INFORMATION		
	APRII 29. 20	20

DATE	APRIL 29, 2020
JOB NUMBER	19044.00
DRAWN	DAR
CHECKED	DAR
APPROVED	DAR

AND SPECIFICATIONS

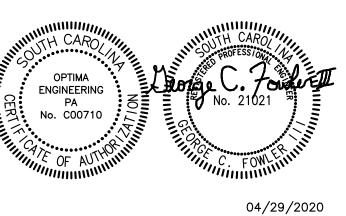
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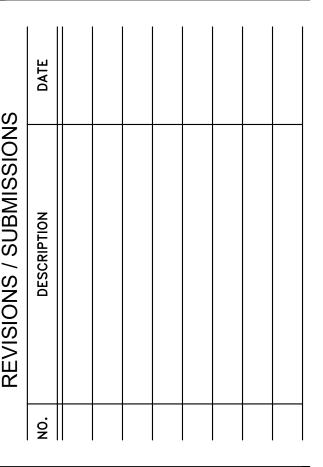


**BEAUFORT COUNTY ENGINEERING** 

## BEAUFORT COUNTY DNA LABORATORY ADDITION

111 INDUSTRIAL VILLAGE RD BEAUFORT, SC 29906

CONSTRUCTION



SHEET I	NFORMATION
	APRIL 29, 2020
UMBER	19044.00
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FLOOR PLAN - PLUMBING