GENERAL NOTES

PROJECT INFORMATION

1. An addition to an existing 100' x 200' open metal framed warehouse structure. The addition off the back will include offices and support space for town employees associated with Public Works. The Warehouse will be updated to house vehicles and other equipment.
2. Site Plan is for General reference only. See record survey and Civil drawings for information on meets & bounds, utilities, landscaping, parking, and impervious calculations.
3. Building information is based on GIS data, Owner supplied information, and measurements by the Architect.

ADMINISTRATIVE & GENERAL REQUIREMENTS

1. Prior to beginning work, the General Contractor shall identify all critical deadlines regarding information or decisions to be coordinated by Architect which may affect scheduling. For items with long lead times that may affect the schedule, GC may suggest similar products that would be an acceptable ("or equal") substitute.
2. The contract documents include the working drawings, modifications, the conditions of the construction contract, and specifications on drawings.
3. The contract documents are instruments of service and shall remain the property of the Architect, whether the project for which they are prepared is executed or not. The contract documents are not to be used by the Owner for other projects or extensions to the project, nor are they to be modified in any manner except by agreement in writing and appropriate compensation to the Architect.
4. The General Contractor is to ensure that all applicable ordinances and regulations are adhered to including, but not limited to, the required licensing of subcontractors.
5. Where the contract, notes or drawings call for any work of a more stringent nature than that required by the building code or Authority having jurisdiction, the work of the more stringent nature called for in the contract, construction notes or drawings shall be furnished, unless approved by the Owner or Architect.
6. The General Contractor shall be fully and solely responsible for the removal, replacement, and rectification of all damaged and defective material and workmanship in connection with the contract work. The Contractor shall replace or repair as directed all such damaged or defective materials which shall appear within a period of one year from the date of substantial completion.
7. The General Contractor is responsible for and shall provide protection of existing building(s). Any damaged caused by the General Contractor or sub-contractors shall be repaired by the General Contractor.
8. The General Contractor shall make all necessary provisions for items to be furnished by Owner, and provide protection for these items and coordinate their installation with appropriate trades.
9. The General Contractor shall carry all required liability, builder's risk, worker's compensation, or any other insurance as required by law and hold harmless the Architect from any loss, liability claim, or demand for damages arising out of or relating to the performance of the work as described by these drawings and specifications.
10. The General Contractor shall obtain all permits and licenses and pay all fees necessary for the execution of the work.
11. All work performed by the contractor/sub-contractor shall conform to the requirements of municipal, local, or federal and state laws, as well as any other governing requirements, whether or not specified on the drawings. Requirements within the following publications apply:
    A. International Building Code
    B. NC Building Code - 2018
    C. National Fire Protection Assoc.
    D. American National Standards Institute
    E. Americans With Disabilities Act
    F. NFPA 101
12. CONTRACTOR COORDINATION OF PROJECT: The General Contractor's fundamental purpose is to manage, coordinate, plan, conduct, layout and supervise the entire work of the Contract. The Contractor shall:
    A. Check, verify and coordinate all dimensions and construction details before starting construction and report any discrepancies to the Architect as required.
    B. Plan and coordinate all work, the construction sequence, all subcontractors, and the actual installed location and interface of all work.
    C. Plan and coordinate all systems and equipment with structure, architecture, ceiling heights, door swings, and other work. Any Mechanical, Electrical, Plumbing, Sprinkling, etc. equipment to be exposed shall be located and reviewed with the Architect in field prior to construction.
13. Do Not Scale Drawings. Dimensions on drawings govern. In the event of conflicts or discrepancies between the drawings and the specifications, the specifications shall govern. Detail drawings take precedence over smaller scale drawings. Any errors or discrepancies discovered between dimensions on drawings and field conditions, or specifications and drawings, or any other information, shall be brought to the attention of the Architect and clarified before work can proceed.
14. The General Contractor shall remove all rubbish and waste materials left by self and subcontractors' employees, and provide for its removal from the site.
15. The General Contractor shall provide all necessary protection for work until turned over to the Owner.
16. The construction drawings and notes are supplied to illustrate the design and the general type of construction desired and are intended to apply to the finest quality of construction, material, and workmanship throughout.
17. References to makes, brands, finishes etc. is to establish type and quality desired. Substitutions of acceptable alternatives will be permitted unless specifically noted otherwise, when made according to procedures for substitutions.
18. The finished work shall be well anchored, aligned, true, plumb, level, smooth, clean, uniform in appearance; without waves, distortions, holes, marks, cracks, stains or discolor. Joints shall be close fitting, neat and well scribed. The finish work shall have no exposed, unsightly anchors or fasteners (unless intended by design) and shall not present hazardous or unsafe corners.
19. All work shall have the provisions for expansion, contraction and shrinkage as necessary to prevent cracks, buckling and warping due to temperature and humidity changes. Confirm all masonry expansion joint locations with the Architect prior to the start of construction.
20. Defective work will not be deemed acceptable upon the Owner's or Architect's failure to discover or to point out such work during construction. No payment, partial or in full, shall be construed as an acceptance of defective work or improper materials.
21. "Common Practice" or "common usage" as construction criteria shall be waived by contractor wherever details and contract documents or governing codes, ordinances, etc. require greater quality or quantity, or show different intent, than "common practice" or "common usage".
22. The General Contractor shall maintain a current and complete set of permitted construction drawings on site during all phases of construction for use by all trades.
23. Upon completion of the work the General Contractor shall:
    A. Make inspections
    B. Assemble operations and maintenance manuals
    C. Prepare and coordinate completion of Punch List
    D. Coordinate systems and equipment startup
    E. Arrange systems and equipment demonstrations to Owner or staff
    F. Assemble close-out documents
    G. Complete final cleaning
    H. Provide Architect of record with as-built drawings
24. All required exits, ways of approach, and ways of travel from the exit onto the street shall continuously be maintained during the entire period of construction, free from obstructions for egress in the case of fire or other emergencies. All exit ways shall comply with the ADA and NCHC codes.
25. The General Contractor shall provide and install fire extinguishers as required by Federal Occupational Safety and Health Act (OSHA) and by Fire Department regulations.
26. Insurance and bonding shall be as directed by and to the satisfaction of the Owner.
27. The General Contractor shall provide complete sets of working drawing to sub-contractors, or assume full responsibility for coordination of work when complete sets are not available to sub-contractors.
28. Supervision:
    A. The General Contractor's representative shall be the last person at the construction site each day to confirm all lights are off and the common areas are clean.
    B. All after-hours deliveries shall be supervised by the General Contractor.
    C. A General Contractor representative shall be on site to supervise all work performed in occupied spaces unless otherwise directed by Owner.
    D. The General Contractor shall have a representative on site each morning for deliveries, unlocking of doors, and directing sub-contractors.
    E. The General Contractor shall have a representative on site to direct subcontractors during the punch-list completion process.

Hauch Design PLLC does not express or imply any warranty or guarantee in regards to the interpretation or changes to the ADA. Hauch Design has taken great care to provide general compliance with the intent of the ADA, however, the Architect and our retained consultants assume no legal responsibility for the outcome of decisions, contracts, or commitments made on the basis of these documents.

SAMPLES & SUBMITTALS

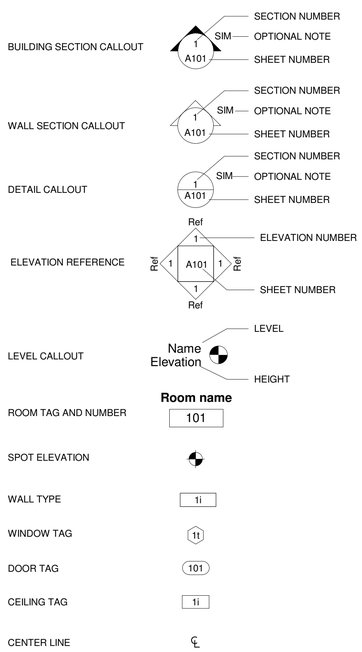
SAMPLES

1. FLOOR FINISHES AND BASE
2. CEILING TILE
3. PAINT SAMPLES - 12" X 12"
4. MILLWORK
5. ARCHITECTURAL METAL

SUBMITTALS

1. MILLWORK SHOP DRAWINGS
2. DOOR AND HARDWARE SCHEDULE
3. LIGHTING
4. MECHANICAL
5. PLUMBING
6. GLASS AND GLAZING
7. ELECTRICAL GEAR
8. STEEL SHOP DRAWINGS
9. TRUSS SHOP DRAWINGS

ANNOTATION SYMBOLS



1 SITE
1" = 100'-0"

PUBLIC WORKS FACILITY

TOWN OF BENSON, 303 E. CHURCH ST.
BENSON, NC 27504

ARCHITECTURAL DRAWINGS INDEX

L-001	COVER
G-101	CODE SUMMARY (APPENDIX B)
G-102	LIFE SAFETY/ ADA CLEARANCES
S0.0	STRUCTURE GENERAL NOTES
S0.1	STRUCTURE GENERAL NOTES
S1	STRUCTURE OVERALL FLOOR PLAN
S2	STRUCTURE FOUNDATION PLAN
S3	STRUCTURE FLOOR PLAN
S4	STRUCTURE ROOF PLAN
S5	STRUCTURE DETAILS
S6	STRUCTURE DETAILS
A-101	WAREHOUSE FLOOR PLAN
A-111	FLOOR PLAN OFFICES
A-112	MEZZANINE PLAN/ OFFICES ROOF
A-121	REFLECTED CEILING PLAN - OFFICES, MEZZANINE
A-201	BUILDING ELEVATIONS
A-202	BUILDING ELEVATIONS
A-211	ELEVATIONS - OFFICES
A-301	BUILDING SECTIONS
A-311	ENLARGED SECTIONS
A-312	WALL SECTIONS
A-601	DOOR AND WINDOW SCHEDULE
A-603	ROOM FINISHES
D-101	MAIN LEVEL EXISTING/ DEMO PLAN
P001	PLUMBING SCHEDULE AND NOTES
P002	PLUMBING DETAILS
P101	PLUMBING FIRST FLOOR OFFICE AREA
P102	PLUMBING FIRST FLOOR WASH BAY
P201	PLUMBING RISERS
M001	MECHANICAL SCHEDULES & NOTES
M101	MECH. & GAS PIPING FIRST FLOOR PLAN
M102	MECH. FIRST FLOOR ENLARGED
M201	MECHANICAL DETAILS
E001	ELEC. SCHEDULES & NOTES
E101	ELEC. LIGHTING PLAN
E102	ELEC. POWER PLAN
E201	ELEC. PANEL SCHED. & RISER

OWNER
TOWN OF BENSON
303 E. CHURCH ST.
BENSON, NC 27504
919.894.3553

ARCHITECT
HAUCH DESIGN PLLC
1118 NORRIS STREET
RALEIGH, NC 27604
919.413.0136

STRUCTURE
TYNDALL ENGINEERING
250 SHIPWASH DR. STE. 104
GARNER, NC 27529
919.773.1200

PM&E
MAPLE ENGINEERING
708 ST. MARY'S ST.
P.O. BOX 10443
RALEIGH, NC 27605
919.341.4247

HAUCH DESIGN architecture
1118 Norris Street Raleigh, NC 27604
www.hauchdesign.com
919.598.3132

ALL DRAWINGS, SPECIFICATIONS, DESIGNS AND IDEAS REPRESENTED OR INDICATED BY THESE DRAWINGS ARE THE PROPERTY OF **HAUCH DESIGN PLLC**, DEVELOPED AND ISSUED EXCLUSIVELY FOR USE ON, AND IN CONNECTION WITH THE SPECIFIED PROJECT, AND SHALL NOT BE DUPLICATED OR USED ON OTHER PROJECTS, IN WHOLE OR PART, WITHOUT WRITTEN CONSENT OF THE ARCHITECT.

HAUCH DESIGN PLLC
Registered Architectural Firm
No. 53019
North Carolina
RALEIGH, NC

JEREMY RAESON HAUCH
REGISTERED ARCHITECT
NO. 13054
12/16/19
NORTH CAROLINA
RALEIGH, NC

BID/ PERMIT/
CONSTRUCTION
Issue Dates / Revisions:

No:	Description:	Date:

Date: 12-16-19 Project No: 18-303-01

Public Works Facility - Benson

Owner: Town of Benson
303 E. Church St. Benson
NC 27504

COVER

L-001

Sheet Scale: As indicated

Printed: 12/18/19 11:07:38 PM

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS

(EXCEPT 1 AND 2 FAMILY DWELLINGS AND TOWNHOUSES)

Name of Project: Town of Benson, Public Works Facility
Address: Market Street, Benson NC Zip Code: 27504
Proposed Use: S1 (B Accessory) Motor Vehicle Repair Garage with attached Offices
Owner/Authorized Agent: Tim Robbins Phone #:919 894-3553 E-Mail: trobbins@townofbenson.com
Owned By: ☒ City/County ☐ Private ☐ State
Code Enforcement Jurisdiction: ☐ City ☒ County Johnston ☐ State

CONTACT: Jeremy Hauch RA

Designer	Firm	Name	Lic. #	Phone #	Email
Architectural	Hauch Design PLLC	Jeremy Hauch	13054	919 413 0136	jeremy@hauchdesign.com
Civil	T.B.D.	-	-	-	-
Electrical	Maple Engineering PLLC	Zack Tomlin	037509	919 341 4247	ztl@maple-eng.com
Fire Alarm	-	-	-	-	-
Plumbing	Maple Engineering PLLC	Zack Tomlin	037509	919 341 4247	ztl@maple-eng.com
Mechanical	Maple Engineering PLLC	Zack Tomlin	037509	919 341 4247	ztl@maple-eng.com
Sprinkler-Standpipe					
Structural	Tyndall Engineering PLLC	Prentice Tyndall	024889	919 773 1200	ptyndall@tyndallengineering.com
Pre-Cast Deck	-	-	-	-	-
Truss					
Landscape	-	-	-	-	-
Kitchen Design			-		
Hood Design/Fire Suppression			-		

2018 NC BUILDING CODE FOR: ☒ New Building ☐ Addition ☐ Renovation
☐ 1st Time Interior Completion
☐ Shell/Core - contact the local inspection jurisdiction for possible additional procedures & requirements
☐ Phased Construction - Shell/Core - contact the local inspection jurisdiction for possible additional procedures & requirements

2018 NC EXISTING BUILDING CODE: ☐ Prescriptive ☐ Repair ☐ Chapter 14
Alteration: ☐ Level 1 ☐ Level II ☒ Level III
☐ Historic Property ☐ Change of Use

CONSTRUCTED (date): 1985 **CURRENT OCCUPANCY(S)** (Ch.3): VACANT
RENOVATED (date): ____ **PROPOSED USES(S)** (Ch.3): S1 (B Acessory)

RISK CATEGORY (Table 1604.5): **Current:** ☒ I ☐ II ☐ III ☐ IV
Proposed: ☐ I ☐ II ☐ III ☒ IV

BASIC BUILDING DATA
Construction Type: ☐ I-A ☐ II-A ☐ III-A ☐ IV ☐ V-A
(check all that apply) ☐ I-B ☒ II-B ☐ III-B ☐ V-B
Sprinklers: ☒ No ☐ Partial ☐ Yes ☐ NFPA 13 ☐ NFPA 13R ☐ NFPA 13D
Standpipes: ☒ No ☐ Yes ☐ Class I ☐ Class II ☐ Class III ☐ Wet ☐ Dry
Fire District: ☒ No ☐ Yes (Primary) **Flood Hazard Area:** ☒ No ☐ Yes
Special Inspections Required: ☒ No ☐ Yes (Contact local inspection jurisdiction for additional procedures and requirements.
Gross Building Area:

FLOOR	EXISTING (SF)	NEW HEATED (SF)	NEW UNHTD (SF)	SUBTOTAL
Floor 3				
Floor 2	--	--	-	-
Mezzanine	865	--	-	-
Floor 1	20,157	1,988 (B Offices)	-	22,145
Basement	--	--	-	-
TOTAL		--	--	23,010

* Existing floor total 20,157 currently unheated. New heated area within warehouse space: 2,198 sf.

ALLOWABLE AREA

Occupancy:
Assembly: ☐ A-1 ☐ A-2 ☐ A-3 ☐ A-4 ☐ A-5
Business: ☐
Educational: ☐
Factory: ☐ F-1 Moderate ☐ F-2 Low
Hazardous: ☐ H-1 Detonate ☐ H-2 Deflagrate ☐ H-3 Combust ☐ H-4 Health ☐ H-5 HPM
Institutional: ☐ I-1 ☐ I-2 ☐ I-3 ☐ I-4
I-3 Condition ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
Mercantile: ☐
Residential: ☐ R-1 ☐ R-2 ☐ R-3 ☐ R-4
Storage: ☒ S-1 Moderate ☐ S-2 Low ☐ High-Piled
☐ Parking Garage ☐ Open ☐ Enclosed ☐ Repair Garage
Utility and Miscellaneous: ☐

Accessory Occupancies Classification(s): B - Offices
Incidental Uses (Table 509): N/A
Special Uses (Chapter 4 - List Code Selections): N/A
Special Provisions: (Chapter 5 - List Code Selections): N/A
Special Provisions: (Chapter 5 - List Code Selections): N/A

Mixed Occupancy: ☒ No ☐ Yes Separation: -- hr Exception: --

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

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

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

_____ + _____ + ... = _____ ≤ 1.00

STORY NO.	DESCRIPTION AND USE	(A) BLDG AREA PER STORY (ACTUAL)	(B) TABLE 506.2[4] AREA	(C) AREA FOR FRONTAGE INCREASE [1,5]	(D) ALLOWABLE AREA PER STORY OR UNLIMITED [2,3]
1	S-1 (B access.)	22,145	17,500	13,125	30,625

1 - Frontage area increases from Section 506.3 are computed thus:
a. Perimeter which fronts a public way or open space having 20 feet minimum width = 600 (F)
b. Total Building Perimeter = 600 (P)
c. Ratio (F/P) = 1 (F/P)
d. Minimum Width of Public Way = 30 (W)
e. Percent of frontage increase I [5] = 100 [(F/P) - 0.25] x W/30 = 75 (%)

2 - Unlimited area applicable under conditions of Section 507
3 - Maximum Building Area = total number of stories in the building x E (506.2)
4 - The maximum area of open parking garages must comply with 406.5.4.

ALLOWABLE HEIGHT

	ALLOWABLE	SHOWN ON PLANS	CODE REFERENCE [1]
Building Height in Feet (Table 504.3)[2]	55'-0"	29'-0"	--
Building Height in Stories (Table 504.4)[3]	2	1 + Mezz	--

[1] Provide code reference if the "Shown on Plans" quantity is not based on Table 504.3 or 504.4
[2] The maximum height of air traffic control towers must comply with Table 412.3.1.
[3] The maximum height of open parking garages must comply with Table 406.5.4.

FIRE PROTECTION REQUIREMENTS

BUILDING ELEMENT	FIRE SEPARATION DISTANCE (FEET)	RATING REQ'D	RATING PROVIDED (W/ REDUCTION)	DETAIL # AND SHEET #	DESIGN # FOR RATED ASSEMBLY	DESIGN # FOR RATED PENETRATION	DESIGN # FOR RATED JOINTS
Structural Frame Including Columns, Girders, Trusses	--	--	--	--	--	--	--
Bearing Walls							
Exterior							
North	--	--	--	--	--	--	--
East	--	--	--	--	--	--	--
West	--	--	--	--	--	--	--
South	--	--	--	--	--	--	--
Interior	--	--	--	--	--	--	--
Nonbearing Walls and Partitions							
Exterior							
North	--	--	--	--	--	--	--
East	--	--	--	--	--	--	--
West	--	--	--	--	--	--	--
South	--	-	--	--	--	--	--
Interior walls and partitions	--	--	--	--	--	--	--
Floor Construction Including supporting beams and joists		--	--	--	--	--	--
Floor Ceiling Assembly		--	--	--	--	--	--
Column Supporting Roof		--	--	--	--	--	--
Roof Construction Including supporting beams and joists		--	--	--	--	--	--
Roof Ceiling Assembly		--	--	--	--	--	--
Columns Supporting Roof		--	--	--	--	--	--
Shaft Enclosure - Exit		--	--	--	--	--	--
Shaft Enclosure - Other		--	--	--	--	--	--
Corridor Separation		--	--	--	--	--	--
Occupancy/ Fire Barrier Separation		--					--
Party/Fire Wall Separation		--	--	--	--	--	--
Smoke Barrier Separation		--	--	--	--	--	--
Smoke Partition		--	--	--	--	--	--
Tenant/Dwelling Unit/ Sleeping Unit Separation		--	--	--	--	--	--
Incidental Use Separation		--	--	--	--	--	--

* Indicate section number permitting reduction

PERCENTAGE OF WALL OPENING CALCULATIONS

FIRE SEPARATION DISTANCE (FEET) FROM PROPERTY LINES	DEGREE OF OPENINGS PROTECTION (TABLE 705.8)	ALLOWABLE AREA (%)	ACTUAL SHOWN ON PLANS (%)
	-	-	--
	-	-	--

LIFE SAFETY SYSTEM REQUIREMENTS

Emergency Lighting: ☐ No ☒ Yes
Exit Signs: ☐ No ☒ Yes
Fire Alarm: ☒ No ☐ Yes
Smoke Detection Systems: ☒ No ☐ Yes ☐ Partial _____
Carbon Monoxide Detection: ☒ No ☐ Yes

LIFE SAFETY PLAN REQUIREMENTS

Life Safety Plan Sheet #: G-102

☐ 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 loads for each area
☒ Exit access travel distances (1017)
☒ Common path of travel distances (1006.2.1 & 1006.3.2(1))
☒ Dead end lengths (1020.4)
☒ Clear exit widths for each exit door
☒ Maximum calculated occupant load capacity each exit door can accommodate based on egress width (1005.3)
☒ Actual occupant load for each exit door
☐ A separate schematic plan indicating where fire rated floor/ceiling and/or roof structure is provided for purposes of occupancy separation
☐ Location of doors with panic hardware (1010.1.10)
☐ Location of doors with delayed egress locks and the amount of delay (1010.1.9.7)
☐ Location of doors with electromagnetic egress locks (1010.1.9.9)
☐ Location of doors equipped with hold-open devices
☐ Location of emergency escape windows (1030)
☐ The square footage of each fire area (202)
☐ The square footage of each smoke compartment for Occupancy Classifications I-2 (407.5)
☐ Note any code exceptions or table notes that may have been utilized regarding the items above

ACCESSBILE DWELLING UNITS (Section 1107) N/A

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

ACCESSBILE PARKING (Section 1106)

LOT OR AREA OF PARKING	TOTAL # OF PARKING SPACES		# OF ACCESSIBLE SPACES PROVIDED			TOTAL # ACCESSIBLE PROVIDED
	REQUIRED	PROVIDED	REGULAR WITH 5' ACCESS AISLE	VAN SPACES WITH 132" ACCESS AISLE	VAN SPACES WITH 8' ACCESS AISLE	
--	10	10	1	--	--	1
--	--	--	--	--	--	--
TOTAL	10	10	1			1

PLUMBING FIXTURE REQUIREMENTS (Table 2902.1)

USE		WATER CLOSETS MALE	WATER CLOSETS FEMALE	WATER CLOSETS UNISEX	URINALS	LAVATORIES MALE	LAVATORIES FEMALE	LAVATORIES UNISEX	SHOWERS / TUBS	DRINKING FOUNTAINS REGULAR	DRINKING FOUNTAINS ACCESSIBLE
B - 19 Occupants	EXIST'G	--	--		--	--		--	--	--	--
	NEW			3	0			3	3	0	0
	REQ'D			1	0			1	0	0	0
S1- 40 Occupants	EXIST'G	--	--		--	--		--	--	--	--
	NEW			1	0			1	0	0	0
	REQ'D			1	0			1	0	0	0

SPECIAL APPROVALS

Special Approval: (Local Jurisdiction, Department of Insurance, OSC, DPI, DHHS, ICC, etc.)
Describe Below:
--

ENERGY SUMMARY

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

Existing Building envelope complies with code: ☐ No ☐ Yes (The remainder of this section is not applicable)
Exempt Building: ☒ No ☐ Yes (Provide code or statutory reference): _____

Climate Zone: ☒ 3 ☐ 4 ☐ 5
Method of Compliance: Energy Code ☐ Performance ☒ Prescriptive
(ASHRAE 90.1) ☐ Performance ☐ Prescriptive

THERMAL ENVELOPE (Prescriptive method only)

Roof/Ceiling Assembly (each assembly)
Description of assembly: Exist. Warehouse: rolled batt above heated areas; Office Addition: Rigid above deck - Tectum Product
U-Value of total assembly: 0.039
R-Value of insulation: 33 c.i.
Skylights in each assembly: 3 in Offices
U-Value of skylight: .60 Max
Total square footage of skylights in each assembly: 24 SF

Exterior Walls (each assembly)
Description of assembly: Warehouse: Metal panel on structural framing; Offices: 8" CMU with filled cores and 1/2" c.i.
U-Value of total assembly: 0.1
R-Value of insulation: 9.1 + 3 c.i.
Openings (windows or doors with glazing)
U-Value of assembly: .45
Solar heat gain coefficient: .40
Projection factor: .21
Door R-Values: 2.0

Walls below grade (each assembly)
Description of assembly: N/A
U-Value of total assembly: --
R-Value of insulation: --

Floors over unconditioned space (each assembly)
Description of assembly: N/A
U-Value of total assembly: --
R-Value of insulation: --

Floors slabs on grade (each assembly)
Description of assembly: 4" slab on grade over vapor barrier
U-Value of total assembly: NR
R-Value of insulation: NR
Horizontal / vertical requirement: NR
Slab heated: NR

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS

STRUCTURAL DESIGN

DESIGN LOADS: *SEE STRUCTURAL DRAWINGS*

Importance Factors: Snow (I_S) -- ; Seismic (I_E) -- ; ---

Live Loads: Roof -- psf; Mezzanine -- psf; Floor -- psf

GroundSnow Load: -- psf

Wind Load: Ultimate Wind Speed _____ mph (ASCE-7)
Exposure Category

SEISMIC DESIGN CATEGORY: ☐ A ☐ B ☐ C ☐ D
Provide the following Seismic Design Parameters:
Risk Category (Table 1604.5) ☐ I ☐ II ☐ III ☐ IV
Spectral Response Acceleration Ss = -- %g S = -- %g
Site Classification (Table1613.5.2) ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F
Data Source: ☐ Field Test ☐ Presumptive ☐ Historical Data

Basic Structural System (check one) ☐ Bearing Wall ☐ Dual with Special Moment Frame
☐ Building Frame ☐ Dual with Intermediate R/C or Special Steel
☐ Moment Frame ☐ Inverted Pendulum

Analysis Procedure: ☐ Simplified ☐ Equivalent Lateral Force ☐ Dynamic

Architectural, Mechanical, Components anchored? ☐ Yes ☐ No

LATERAL DESIGN CONTROL: Earthquake ☐ Wind ☐

SOIL BEARING CAPACITIES:
Field Test (provide copy of test report) -- psf
Presumptive Bearing capacity -- psf
Pile size, type, and capacity --

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS

MECHANICAL DESIGN

MECHANICAL SUMMARY *SEE MECHANICAL DRAWINGS SHEET M001*

MECHANICAL SYSTEMS, SERVICE SYSTEMS, AND EQUIPMENT

Thermal Zone
winter dry bulb _____
summer dry bulb _____

Interior design conditions
winter dry bulb _____
summer dry bulb _____
relative humidity _____

TENANT heating load: _____
TENANT cooling load: _____

Mechanical Spacing Conditioning System *SEE SCHEDULES
Unitary
description of unit --
heating efficiency --
cooling efficiency --
size category of unit --
Boiler
Size category, If oversized state reason.: N/A
Chiller
Size category, If oversized state reason.: N/A

List equipment efficiencies SEE SCHEDULES

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS

ELECTRICAL DESIGN

ELECTRICAL SUMMARY *SEE ELECTRICAL DRAWINGS SHEET E001*

ELECTRICAL SYSTEM AND EQUIPMENT

Method of Compliance: Energy Code: ☐ Performance ☒ Prescriptive
ASHRAE 90.1: ☐ Performance ☐ Prescriptive

Lighting Schedule *SEE SCHEDULES
Lamp type required in fixture --
Number of lamps in fixture --
Ballast type used in fixture --
Number of ballasts in fixture --
Total wattage per fixture --
Total interior wattage specified vs. allowed (whole building or space by space) --
Total exterior wattage specified vs. allowed --

Additional Efficiency Package Options (When using 2018 NCECC; not req'd 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

HAUCH DESIGN architecture
1119 Norris Street Raleigh, NC 27604
www.hauchdesign.com
919.598.3132

ALL DRAWINGS, SPECIFICATIONS, DESIGNS AND IDEAS REPRESENTED OR INDICATED BY THESE DRAWINGS ARE THE PROPERTY OF **HAUCH DESIGN PLLC**, DEVELOPED AND ISSUED EXCLUSIVELY FOR USE ON, AND IN CONNECTION WITH THE SPECIFIED PROJECT, AND SHALL NOT BE DUPLICATED OR USED ON OTHER PROJECTS, IN WHOLE OR PART, WITHOUT WRITTEN CONSENT OF THE ARCHITECT.

HAUCH DESIGN PLLC Registered Architectural Firm No. 53019 North Carolina RALEIGH NC

JEREMY RAESON HAUCH NO. 13054 NORTH CAROLINA RALEIGH, NC

BID/ PERMIT/ CONSTRUCTION
Issue Dates / Revisions:

No:	Description:	Date:

Date: 12-16-19 Project No: 18-303-01

Public Works Facility - Benson

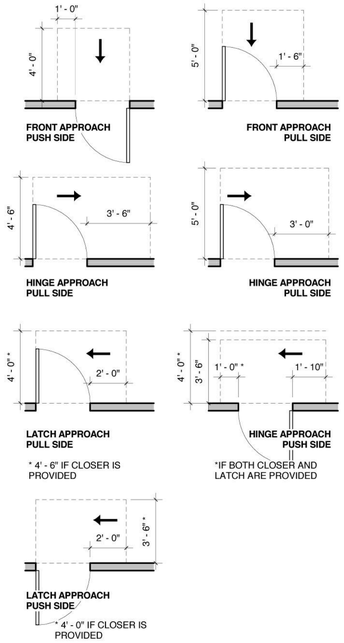
Owner: Town of Benson
303 E. Church St. Benson
NC 27504

CODE SUMMARY (APPENDIX B)

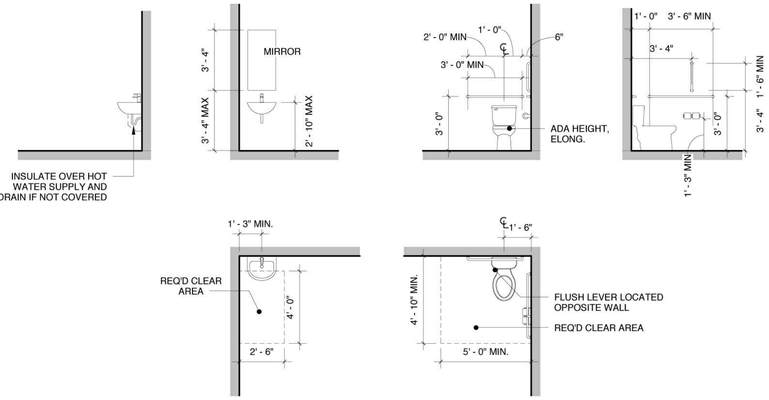
G-101

Sheet Scale:

Printed: 12/18/19 11:07:33 PM



2 ACCESSIBILITY CLEARANCES/ DOORS
1/4" = 1'-0"



1 ACCESSIBILITY CLEARANCES/ RESTROOMS
1/4" = 1'-0"

AS IDENTIFIED BY THE CRITERIA IN NC BUILDING CODE, CHAPTER 11 / ANSI A117.1 (2009), THE ENTIRE BUILDING WILL BE MADE TO COMPLY. NORMAL HANDICAPPED ACCESSIBLE AND VAN PARKING SPACE WILL BE PROVIDED IN ACCORDANCE WITH NCBC CHAPTER 11/ ANSI A117.1 (2009).

MEANS OF EGRESS - MAXIMUM FLOOR AREA ALLOWANCES - 2018
NCBC TABLE 1004.1.2

WAREHOUSE/GARAGE/MEZZ - EXISTING BUILDING (500 GROSS/ 20,000SF) = 40 OCCUPANTS
OFFICES - NEW CONSTRUCTION - BUSINESS (100 GROSS/1,945 SF) = 19 OCCUPANTS

REQUIRED EGRESS WIDTHS AND LENGTHS

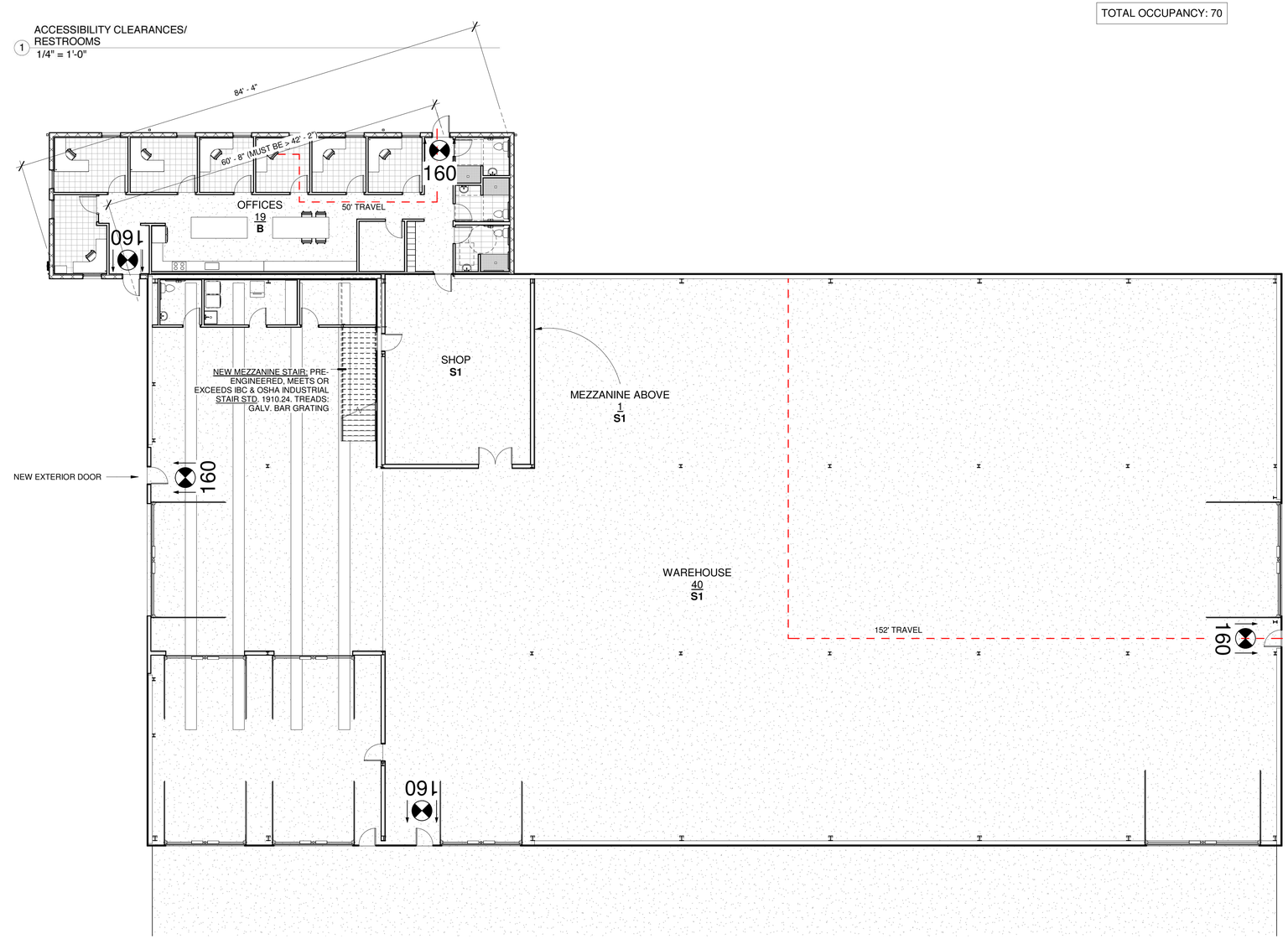
OTHER COMPONENTS .2" / OCCUPANT
COMMON PATH OF EGRESS TRAVEL 75' MAX
EXIT ACCESS TRAVEL DISTANCE 200' MAX
DEAD-END LENGTHS 20' MAX
*ALL EXTERIOR EXIT DOORS ARE 3-0 DOORS, 32" CLEAR EXIT WIDTH.
TOTAL OCCUPANCY - 59

EGRESS/OCCUPANCY LEGEND

NAME — ROOM/SPACE NAME
#P — OCCUPANT LOAD
O — CLASSIFICATION

DIRECTION OF EXIT TRAVEL
160 — CAPACITY OF EXIT

TOTAL OCCUPANCY: 70



1 LIFE SAFETY
3/32" = 1'-0"

HAUCH DESIGN architecture
1119 Norris Street Raleigh, NC 27604
www.hauchdesign.com
919.588.3132

ALL DRAWINGS, SPECIFICATIONS, DESIGNS AND IDEAS REPRESENTED OR INDICATED BY THESE DRAWINGS ARE THE PROPERTY OF **HAUCH DESIGN PLLC**, DEVELOPED AND ISSUED EXCLUSIVELY FOR USE ON, AND IN CONNECTION WITH THE SPECIFIED PROJECT, AND SHALL NOT BE DUPLICATED OR USED ON OTHER PROJECTS, IN WHOLE OR PART, WITHOUT WRITTEN CONSENT OF THE ARCHITECT.

HAUCH DESIGN PLLC Registered Architectural Company No. 53019 North Carolina RALEIGH NC

JEREMY RAESON HAUCH REGISTERED ARCHITECT NO. 13054 12/16/19 NORTH CAROLINA RALEIGH, NC

BID/ PERMIT/ CONSTRUCTION
Issue Dates / Revisions:

No:	Description:	Date:

Date: 12-16-19 Project No: 18-303-01

Public Works Facility - Benson

Owner: Town of Benson
303 E. Church St. Benson
NC 27504

LIFE SAFETY/ ADA CLEARANCES

G-102

Sheet Scale: As indicated

Printed: 12/18/19 11:07:37 PM

GENERAL CONSTRUCTION SPECIFICATION

1. THE FOLLOWING DOCUMENTS ARE THE PROPERTY OF TYNDALL ENGINEERING & DESIGN, P.A. FOR USE SOLELY FOR THIS PROJECT AND SHALL NOT BE REPRODUCED, COPIED, OR USED FOR OTHER PURPOSES WITHOUT WRITTEN PERMISSION FROM TYNDALL ENGINEERING & DESIGN, P.A.

2. THE DESIGN PROFESSIONAL WHOSE SEAL APPEARS ON THESE DRAWINGS IS THE STRUCTURAL ENGINEER OF RECORD(SER) FOR THIS PROJECT. THE SER BEARS THE RESPONSIBILITY FOR THE PRIMARY STRUCTURAL ELEMENTS AND THE PERFORMANCE OF THIS STRUCTURE. NO OTHER PARTY MAY REVISE, ALTER, OR DELETE THESE CONSTRUCTION DOCUMENTS WITHOUT WRITTEN PERMISSION FROM TYNDALL ENGINEERING & DESIGN, P.A. OR THE SER. FOR THE PURPOSES OF THESE CONSTRUCTION DOCUMENTS THE SER AND TYNDALL ENGINEERING & DESIGN, P.A. SHALL BE CONSIDERED THE SAME ENTITY.

3. THIS STRUCTURE IS ONLY STABLE IN ITS COMPLETED FORM. THE CONTRACTOR SHALL PROVIDE ALL REQUIRED TEMPORARY BRACING DURING CONSTRUCTION TO STABILIZE THE STRUCTURE. TEMPORARY SHORING AND BRACING METHODS ARE NOT THE RESPONSIBILITY OF TYNDALL ENGINEERING & DESIGN, P.A. AND ARE BEYOND THE SCOPE OF THESE DRAWINGS.

4. THE SER IS NOT RESPONSIBLE FOR CONSTRUCTION SEQUENCES, METHODS, OR TECHNIQUES IN CONNECTION WITH THE CONSTRUCTION OF THIS STRUCTURE. THE SER WILL NOT BE HELD RESPONSIBLE FOR THE CONTRACTOR'S FAILURE TO CONFORM TO THE CONSTRUCTION DOCUMENTS, SHOULD ANY NON-CONFORMITIES OCCUR.

5. ANY STRUCTURAL ELEMENTS OR DETAILS NOT FULLY DEVELOPED ON THE CONSTRUCTION DRAWINGS SHALL BE COMPLETED UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER. THESE SHOP DRAWINGS SHALL BE SUBMITTED TO TYNDALL ENGINEERING & DESIGN, P.A. FOR REVIEW BEFORE ANY CONSTRUCTION BEGINS. SEE THE "SUBMITTALS" SECTION OF THESE SPECIFICATIONS.

6. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH AND COORDINATED WITH THE ARCHITECTURAL, MECHANICAL, PLUMBING, ELECTRICAL, AND CIVIL DRAWINGS. THIS COORDINATION IS NOT THE RESPONSIBILITY OF THE SER. SHOULD ANY DISCREPANCIES BECOME APPARENT THE CONTRACTOR SHALL NOTIFY TYNDALL ENGINEERING & DESIGN, P.A. BEFORE ANY CONSTRUCTION BEGINS.

7. VERIFICATION OF ASSUMED FIELD CONDITIONS IS NOT THE RESPONSIBILITY OF THE STRUCTURAL ENGINEER OF RECORD. THE CONTRACTOR SHALL VERIFY THE FIELD CONDITIONS FOR ACCURACY AND REPORT ANY DISCREPANCIES TO TYNDALL ENGINEERING & DESIGN, P.A. BEFORE CONSTRUCTION BEGINS.

8. THE STRUCTURAL ENGINEER OF RECORD IS NOT RESPONSIBLE FOR ANY SECONDARY STRUCTURAL ELEMENTS OR NON-STRUCTURAL ELEMENTS, EXCEPT FOR THE ELEMENTS SPECIFICALLY NOTED ON THE STRUCTURAL DRAWINGS.

9. THIS STRUCTURE AND ALL CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE SECTIONS OF THE INTERNATIONAL BUILDING CODE AND ANY LOCAL LAWS WHERE THE STRUCTURE IS TO BE CONSTRUCTED.

SCOPE OF STRUCTURAL ENGINEERING SERVICES

TYNDALL ENGINEERING & DESIGN, P.A. HAS PERFORMED THE STRUCTURAL DESIGN AND PREPARED THE STRUCTURAL WORKING DRAWINGS FOR THIS PROJECT. "CONSTRUCTION REVIEW" SERVICES ARE NOT ALSO A PART OF OUR CONTRACT.

PORTIONS OF THE STRUCTURAL DESIGN (AS NOTED ON THE DRAWINGS) ARE THE RESPONSIBILITY OF THE MATERIAL SUPPLIERS.

THE SER IS RESPONSIBLE FOR THE DESIGN OF THE PRIMARY STRUCTURAL SYSTEM, EXCEPT FOR THE COMPONENTS NOTED ABOVE. THE STRUCTURAL ENGINEER IS NOT RESPONSIBLE FOR ANY SECONDARY STRUCTURAL AND NON-STRUCTURAL SYSTEMS NOT SHOWN ON THE STRUCTURAL PLANS.

THE SER HAS NOT DONE A SUBSURFACE INVESTIGATION. THE FOUNDATION DESIGN IS BASED UPON AN ASSUMED ALLOWABLE BEARING PRESSURE AS SHOWN IN THE "FOUNDATION" STRUCTURAL NOTES. THIS ALLOWABLE BEARING PRESSURE MUST BE VERIFIED BY THE CONTRACTOR OR OWNER. IF PROBLEMS ARE ENCOUNTERED, A SOILS ENGINEER SHALL BE RETAINED TO EVALUATE THE CONDITIONS AND RECOMMEND THE APPROPRIATE FOUNDATION SYSTEM.

THE SER IS NOT RESPONSIBLE FOR, AND WILL NOT HAVE CONTROL OF, CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES, OR FOR SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE CONSTRUCTION WORK; NOR WILL THE SER BE RESPONSIBLE FOR THE CONTRACTOR'S FAILURE TO CARRY OUT THE CONSTRUCTION WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

FIELD MEASUREMENTS AND THE VERIFICATION OF FIELD DIMENSIONS ARE NOT PART OF TYNDALL ENGINEERING & DESIGN, P.A.'S RESPONSIBILITY. THE CONTRACTOR MUST CHECK ALL (ASSUMED) EXISTING CONDITIONS SHOWN ON THESE DRAWINGS FOR ACCURACY AND NOTIFY THE STRUCTURAL ENGINEER OF ANY DISCREPANCIES.

THE SER HAS ANALYZED THE NEW STRUCTURAL SLAB CONSTRUCTION FOR CONCENTRATED LOADS DUE TO VEHICLES. THE SLAB IS DESIGNED FOR UNIFORM LOADING AS NOTED IN THE "DESIGN LOADS" PORTION OF THE STRUCTURAL NOTES AND CONCENTRATED LOADS IN ACCORDANCE WITH REQUIREMENTS OF THE BUILDING CODE.

THE SER HAS NOT DESIGNED THE STRUCTURE TO SUPPORT DYNAMIC LOADS FROM VIBRATING MACHINERY OR EQUIPMENT. ALL VIBRATING EQUIPMENT AND MACHINERY MUST BE ISOLATED FROM THE STRUCTURE.

THE SER HAS NOT PREFORMED AN ANALYSIS OF THE EXISTING BUILDING STRUCTURE ADJACENT TO THE NEW STRUCTURE. THE NEW BUILDING IS DESIGNED AS AN INDEPENDENT SELF-SUPPORTING STRUCTURE.

SUBMITTALS

1. SHOP DRAWINGS AND SUBMITTALS SHALL BE SUBMITTED TO TYNDALL ENGINEERING & DESIGN, P.A. FOR REVIEW BEFORE ANY CONSTRUCTION BEGINS. THESE SUBMITTALS WILL BE REVIEWED FOR OVERALL COMPLIANCE AS IT RELATES TO THE STRUCTURAL DESIGN OF THIS PROJECT. VERIFICATION OF THE SHOP DRAWINGS FOR DIMENSIONS, OR FOR ACTUAL FIELD CONDITIONS IS NOT THE RESPONSIBILITY OF TYNDALL ENGINEER & DESIGN, P.A.

2. ALLOW ENOUGH TIME FOR SUBMITTAL REVIEW, INCLUDING TIME FOR RESUBMITTALS. TIME FOR REVIEW SHALL COMMENCE UPON TYNDALL ENGINEERING & DESIGN'S RECEIPT OF SUBMITTAL. ALLOW 15 DAYS FOR INITIAL REVIEW OF EACH SUBMITTAL AND 15 DAYS FOR REVIEW OF EACH RESUBMITTAL.

3. CONTRACTOR SHALL HIGHLIGHT, ENCIRCLE, OR OTHERWISE SPECIFICALLY IDENTIFY DEVIATIONS FROM THE CONTRACT DOCUMENTS ON SUBMITTALS.

4. CONTRACTOR SHALL REVIEW EACH SUBMITTAL AND CHECK FOR COORDINATION WITH OTHER TRADES AND FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS. NOTE CORRECTIONS AND FIELD DIMENSIONS. MARK WITH APPROVAL STAMP BEFORE SUBMITTING TO TYNDALL ENGINEERING & DESIGN, P.A. STAMP SHALL INCLUDE NAME OF REVIEWER, DATE OF CONTRACTOR'S APPROVAL, AND STATEMENT CERTIFYING THAT SUBMITTAL HAS BEEN REVIEWED, CHECKED, AND APPROVED FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS.

5. WHERE PROFESSIONAL DESIGN SERVICE OR CERTIFICATIONS BY A DESIGN PROFESSIONAL ARE SPECIFICALLY REQUIRED OF THE CONTRACTOR BY THE CONTRACT DOCUMENTS, PROVIDE PRODUCTS AND SYSTEMS COMPLYING WITH SPECIFIC PERFORMANCE AND DESIGN CRITERIA INDICATED. IN ADDITION, SUBMIT COPIES OF A STATEMENT, SIGNED AND SEALED BY THE RESPONSIBLE DESIGN PROFESSIONAL, FOR EACH PRODUCT AND SYSTEM SPECIFICALLY ASSIGNED TO THE CONTRACTOR TO BE DESIGNED OR CERTIFIED BY A DESIGN PROFESSIONAL.

6. REVIEW OF SHOP DRAWINGS BY THE ENGINEER IS LIMITED TO COMPLIANCE OF THE COMPLETED STRUCTURE WITH THE DESIGN CONCEPT AND INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR DIMENSIONS, QUANTITIES, PERFORMANCE, SAFETY, COORDINATION WITH OTHER WORKS, AND ALL OTHER REQUIREMENTS OF THE CONTRACT DOCUMENTS. REVIEW DOES NOT AUTHORIZE CHANGES TO THE CONTRACT.

7. PROVIDE THE FOLLOWING SUBMITTALS FOR THIS PROJECT:

   a. CAST-IN-PLACE CONCRETE
   i. IN ADDITION TO THE FOLLOWING, COMPLY WITH REQUIREMENTS IN ACI 301
   ii. PRODUCT DATA FOR EACH TYPE OF PRODUCT INDICATED
   iii. DESIGN MIXTURES FOR EACH CONCRETE MIXTURE
   iv. REBAR SHOP DRAWINGS
   v. SHOP DRAWINGS FOR THE DESIGN, ERECTION, AND REMOVAL OF FORMWORK, SHORES AND RESHORES PREPARED BY OR UNDER THE SUPERVISION OF A QUALIFIED PROFESSIONAL ENGINEER. SHOP DRAWINGS, INCLUDING STRUCTURAL ANALYSIS DATA, SIGNED AND SEALED BY THE QUALIFIED PROFESSIONAL ENGINEER RESPONSIBLE FOR THEIR PREPARATION. COMPLY WITH REQUIREMENTS IN "ACI MANUAL OF CONCRETE PRACTICE".

   b. STRUCTURAL STEEL
   i. PRODUCT DATA FOR EACH TYPE OF PRODUCT INDICATED
   ii. SHOP DRAWINGS: SHOW FABRICATION OF STRUCTURAL STEEL COMPONENTS
   iii. WELDING CERTIFICATES

   c. UNIT MASONRY ASSEMBLIES
   i. PRODUCT DATA FOR EACH TYPE OF PRODUCT INDICATED

   d. COLD-FORMED METAL FRAMING
   i. PRODUCT DATA FOR EACH TYPE OF COLD-FORMED METAL FRAMING PRODUCT AND ACCESSORY INDICATED
   ii. SHOP DRAWINGS FOR TRUSSES PREPARED BY OR UNDER THE SUPERVISION OF A QUALIFIED PROFESSIONAL ENGINEER. SHOW FABRICATION AND INSTALLATION DETAILS FOR TRUSSES. INCLUDING LOCATION, PITCH, SPAN, CAMBER, CONFIGURATION, SPACING, AND SPLICE DETAILS AND BEARING DETAILS FOR EACH TYPE OF TRUSS REQUIRED. ALSO, INDICATE LOCATIONS OF PERMANENT BRACING REQUIRED TO PREVENT BUCKLING OF INDIVIDUAL TRUSS MEMBERS DUE TO DESIGN LOADS.
   iii. PRODUCT DATA FOR EACH TYPE OF PRODUCT INDICATED.

FOUNDATIONS

1. THE SCOPE OF SERVICES FOR THIS PROJECT PROVIDED BY TYNDALL ENGINEERING & DESIGN, P.A. BEGINS FROM THE BOTTOM OF THE FOUNDATION ELEMENTS. SUBSURFACE INVESTIGATIONS ARE BEYOND THE SCOPE OF THE STRUCTURAL SERVICES PROVIDED. THE FOUNDATION SYSTEM SHOWN ON THESE DRAWINGS ARE BASED UPON THE ASSUMED SOIL PROPERTIES LISTED BELOW. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR, OWNER OR OWNER'S AGENT TO CONTACT TYNDALL ENGINEERING & DESIGN, P.A. IF ANY ADVERSE SOIL CONDITIONS ARE ENCOUNTERED DURING CONSTRUCTION. VERIFICATION OF THIS ASSUMED VALUE IS ALSO THE RESPONSIBILITY OF THE CONTRACTOR, OWNER OR OWNER'S AGENT.

a. ALLOWABLE SOIL BEARING PRESSURE	2000 PSF
b. SUB GRADE MODULUS (k)	100 PCI
c. ULTIMATE FRICTION COEFFICIENT BETWEEN CONCRETE FOUNDATIONS AND SOIL	0.30
d. UNIT WEIGHT OF SOIL	120 PCF
e. AT REST EARTH PRESSURE, Ko	60 PSF/FT

2. THE BOTTOM OF ALL FOOTINGS SHALL EXTEND BELOW THE FROST LINE FOR THE REGION IN WHICH THE STRUCTURE IS TO BE CONSTRUCTED. HOWEVER, THE TOP OF FOOTING SHALL BE A MINIMUM OF 12" BELOW GRADE.

3. EXCAVATE TO INDICATED ELEVATIONS AND DIMENSIONS WITHIN A TOLERANCE OF +/- 1". IF APPLICABLE, EXTEND EXCAVATIONS A SUFFICIENT DISTANCE FROM STRUCTURES FOR PLACING AND REMOVING CONCRETE FORMWORK, FOR INSTALLING SERVICES AND OTHER CONSTRUCTION, AND FOR INSPECTIONS. DO NOT DISTURB BOTTOM OF EXCAVATION. EXCAVATE BY HAND TO FINAL GRADE JUST BEFORE PLACING CONCRETE REINFORCEMENT. TRIM BOTTOMS TO REQUIRED LINES AND GRADES TO LEAVE SOLID BASE TO RECEIVE OTHER WORK.

4. ANY FILL SHALL BE PLACED UNDER THE DIRECTION OR RECOMMENDATION OF A LICENSED PROFESSIONAL ENGINEER USING SUITABLE SOILS OR ENGINEERED FILL. PLOW, SCARIFY, BENCH, OR BREAK UP SLOPED SURFACES STEEPER THAN 1 VERTICAL TO 4 HORIZONTAL SO FILL MATERIAL WILL BOND WITH EXISTING MATERIAL. PLACE BACKFILL AND FILL SOIL MATERIALS IN LAYERS NOT MORE THAN 8" IN LOOSE DEPTH FOR MATERIAL COMPACTED BY HEAVY COMPACTION EQUIPMENT, AND NOT MORE THAN 4" IN LOOSE DEPTH FOR MATERIAL COMPACTED BY HAND-OPERATED TAMPERS. COMPACT SOIL MATERIALS TO NOT LESS THAN 95% OF MAXIMUM DRY UNIT WEIGHT ACCORDING TO ASTM D698, UNLESS A HIGHER PERCENTAGE IS RECOMMENDED BY THE GEOTECHNICAL ENGINEER. UNDER SLABS-ON-GRADE AND STEPS, SCARIFY AND RECOMPACT TOP 12" OF EXISTING SUBGRADE AND EACH LAYER OF BACKFILL OR FILL SOIL AT 98%.

5. IT IS STRONGLY RECOMMENDED THAT A QUALIFIED INDEPENDENT GEOTECHNICAL ENGINEERING TESTING AGENCY INSPECT AND TEST SUBGRADES AND EACH FILL OR BACKFILL LAYER, AND AT FOOTING SUBGRADES PERFORM TESTING TO VERIFY DESIGN BEARING CAPACITIES.

6. EXCAVATION FOR FOOTINGS SHALL BE LINED TEMPORARILY WITH A 6 MIL POLYETHYLENE IF PLACEMENT OF CONCRETE DOES NOT OCCUR WITHIN 24 HOURS OF EXCAVATION.

7. CONCRETE SHALL NOT BE POURED AGAINST ANY SUB GRADE CONTAINING WATER, ICE, FROST, OR LOOSE MATERIAL.

5. IT IS STRONGLY RECOMMENDED THAT A QUALIFIED INDEPENDENT GEOTECHNICAL ENGINEERING TESTING AGENCY INSPECT AND TEST SUBGRADES AND EACH FILL OR BACKFILL LAYER, AND AT FOOTING SUBGRADES PERFORM TESTING TO VERIFY DESIGN BEARING CAPACITIES.

6. EXCAVATION FOR FOOTINGS SHALL BE LINED TEMPORARILY WITH A 6 MIL POLYETHYLENE IF PLACEMENT OF CONCRETE DOES NOT OCCUR WITHIN 24 HOURS OF EXCAVATION.

7. CONCRETE SHALL NOT BE POURED AGAINST ANY SUB GRADE CONTAINING WATER, ICE, FROST, OR LOOSE MATERIAL.

CONCRETE FLOOR AND SLABS

1. REQUIREMENTS NOTED IN THIS SECTION APPLY TO CONCRETE SLABS ON GRADE AND ELEVATED FLOOR SLABS. REFER TO THE CONCRETE SECTION OF THESE SPECIFICATIONS FOR FURTHER REQUIREMENTS.

2. CONCRETE SLABS ON GRADE SHALL BE CONSTRUCTED IN ACCORDANCE WITH ACI 302.1R-04 "GUIDE FOR CONCRETE FLOOR AND SLAB CONSTRUCTION".

3. SLABS ON GRADE DEPEND ON THE INTEGRITY OF BOTH THE SLAB AND FILL SOIL SUPPORT. PROVIDE SATISFACTORY SOIL MATERIALS UNDER SLABS ON GRADE ACCORDING TO GEOTECHNICAL ENGINEER'S WRITTEN RECOMMENDATIONS. PROOF-ROLL SUBGRADE BELOW THE BUILDING SLABS WITH HEAVY PNEUMATIC-TIRED EQUIPMENT TO IDENTIFY SOFT POCKETS AND AREAS OF EXCESS YIELDING.

4. COMPACT SOIL MATERIALS AND SUBGRADE TO NOT LESS THAN 98% OF MAXIMUM DRY UNIT WEIGHT, UNLESS OTHERWISE RECOMMENDED BY THE GEOTECHNICAL ENGINEER.

5. PROVIDE PLASTIC VAPOR RETARDER OVER THE SUBGRADE OR SUBBASE BUT UNDER THE BASE COURSE (GRANULAR FILL). VAPOR RETARDER SHALL CONFORM TO ASTM E1745, CLASS C, OR POLYETHYLENE SHEET, ASTM D4397, NOT LESS THAN 6 MILS THICK. VAPOR RETARDER MAY BE OMITTED ONLY WHEN STATED IN THE GEOTECHNICAL ENGINEER'S WRITTEN INSTRUCTIONS.

6. PROVIDE A MINIMUM OF 4" OF GRANULAR FILL DIRECTLY UNDER SLABS ON GRADE. FILL SHALL CONSIST OF A CLEAN MIXTURE OF CRUSHED STONE OR CRUSHED OR UNCRUSHED GRAVEL PER ASTM D448, SIZE 57, WITH 100% PASSING A 1-1/2" SIEVE AND 0% TO 5% PASSING A #8 SIEVE.

7. REINFORCE CONCRETE SLABS ON GRADE WITH WELDED WIRE FABRIC REINFORCEMENT (FABRIC) AS INDICATED. WELDED WIRE REINFORCEMENT SHALL BE SUPPLIED IN FLAT SHEETS AND INSTALLED IN LONGEST PRACTICAL LENGTHS ON BAR SUPPORTS SPACED TO MINIMIZE SAGGING. LAP EDGES AND ENDS OF ADJOINING SHEETS FOR AT LEAST ONE MESH SPACING. OFFSET LAPS OF ADJOINING SHEET WIDTHS TO PREVENT CONTINUOUS LAPS IN EITHER DIRECTION. LACE OVERLAPS WITH WIRE TIES AND DO NOT EXTEND REINFORCEMENT THROUGH JOINTS.

8. DEPOSIT AND CONSOLIDATE CONCRETE FOR FLOORS AND SLABS IN A CONTINUOUS OPERATION, WITHIN LIMITS OF CONSTRUCTION JOINTS, UNITL PLACEMENT OF A PANEL OR SECTION IS COMPLETE AND AS FOLLOWS:

   a. CONSOLIDATE CONCRETE DURING PLACEMENT OPERATIONS SO CONCRETE IS THOROUGHLY WORKED AROUND REINFORCEMENT AND OTHER EMBEDDED ITEMS AND INTO CORNERS.
   b. MAINTAIN REINFORCEMENT IN POSITION ON CHAIRS DURING CONCRETE PLACEMENT.
   c. SCREED SLAB SURFACES UNIFORMLY TO DRAINS WHERE REQUIRED.
   d. SLOPE SURFACES UNIFORMLY TO DRAINS WHERE REQUIRED.
   e. BEGIN INITIAL FLOATING USING BULL FLOATS OR DARBIES TO FORM A UNIFORM AND OPEN-TEXTURED SURFACE PLANE, BEFORE EXCESS BLEEDWATER APPEARS ON THE SURFACE. DO NOT FURTHER DISTURB SLAB SURFACES BEFORE STARTING FINISHING OPERATIONS.

9. APPLY A TROWEL FINISH TO CONCRETE SLAB ON GRADE SURFACES UNLESS OTHERWISE NOTED. VERIFY THIS FINISH WITH THE ARCHITECTURAL REQUIREMENTS BEFORE CONSTRUCTION. AFTER APPLYING FLOAT FINISH, APPLY FIRST TROWELING AND CONSOLIDATE CONCRETE BY HAND OR POWER-DRIVEN TROWEL. CONTINUE TROWELING PASSES AND RESTRAIGHTEN UNTIL SURFACE IS FREE OF TROWEL MARKS AND UNIFORM IN TEXTURE AND APPEARANCE. GRIND SMOOTH ANY SURFACE DEFECTS THAT WOULD TELEGRAPH THROUGH APPLIED COATING OR FLOOR COVERINGS.

10. FORM WEAKENED-PLANE CONTRACTION JOINTS, SECTIONING CONCRETE INTO AREAS AS INDICATED BUT NOT MORE THAN 20'-0 O.C. CONSTRUCT CONTRACTION JOINTS FOR A DEPTH EQUAL TO AT LEAST ONE-FOURTH OF CONCRETE THICKNESS. FORM CONTRACTION JOINTS WITH POWER SAWS EQUIPPED WITH SHATTERPROOF ABRASIVE OR DIAMOND-RIMMED BLADES WITHIN 4 TO 12 HOURS AFTER THE SLAB HAS BEEN FINISHED. CUT 1/8" WIDE JOINTS INTO CONCRETE WHEN CUTTING ACTION WILL NOT TEAR, ABRADE, OR OTHERWISE DAMAGE SURFACE AND BEFORE CONCRETE DEVELOPS RANDOM CONTRACTION CRACKS.

11. CURE CONCRETE SLABS ON GRADE FOR AT LEAST SEVEN DAYS BY ONE OF THE FOLLOWING METHODS: MOISTURE CURING, MOISTURE-RETAINING-COVER CURING, APPLICATION OF A CURING COMPOUND, OR BY APPLICATION OF A CURING AND SEALING COMPOUND.

12. THE CONCRETE SLAB ON GRADE HAS BEEN DESIGNED USING A SUBGRADE MODULUS OF K=100 pci AND A DESIGN LOADING AS NOTED IN THE "DESIGN LOADS" SECTION OF THESE SPECIFICATIONS. THE SER IS NOT RESPONSIBLE FOR DIFFERENTIAL SETTLEMENT, SLAB CRACKING, OR OTHER FUTURE DEFECTS RESULTING FROM UNREPORTED CONDITIONS MITIGATING THE ABOVE ASSUMPTIONS.

UNIT MASONRY ASSEMBLIES

1. CONCRETE MASONRY UNITS (CMU) SHALL BE ERECTED AS LOAD BEARING CONCRETE MASONRY. COMPLY WITH ACI 530.1 "SPECIFICATIONS FOR MASONRY STRUCTURES" FOR MATERIALS, METHODS, WORKMANSHIP AND ERECTION TOLERANCES.

2. PROVIDE CONCRETE MASONRY UNIT ASSEMBLIES (CMUS) AS INDICATED ON THE DRAWINGS THAT DEVELOPS A MINIMUM NET-AREA COMPRESSIVE STRENGTH (F'M) OF 1500 PSI AT 28 DAYS AND AS FOLLOWS:

   a. CONCRETE MASONRY UNITS SHALL CONFORM TO ASTM C90 WITH A MINIMUM AVERAGE NET-AREA COMPRESSIVE STRENGTH OF 1900 PSI.
   b. WEIGHT CLASSIFICATION: NORMAL WEIGHT, UNLESS OTHERWISE NOTED.
   c. SIZE: MANUFACTURED TO DIMENSIONS 3/8" LESS THAN NOMINAL DIMENSIONS.

3. BRICK MASONRY ON THIS PROJECT IS A NON-STRUCTURAL VENEER. REFER TO ARCHITECTURAL PLAN AND SPECS FOR ALL MASONRY VENEER REQUIREMENTS, INCLUDING BUT NOT LIMITED TO, FLASHING REQUIREMENTS, COURSING, COBBLING REQUIREMENTS, EXPANSION/CONTROL JOINT REQUIREMENTS AND SPACING AND WEEP LOCATION AND SPACING.

4. PROVIDE MORTAR AND GROUT MATERIALS AS INDICATED ON THE DRAWINGS AND CONFORMING TO THE REQUIREMENTS LISTED BELOW. ALL CELLS CONTAINING REINFORCEMENT, CELLS BELOW GRADE, AND ANY LOCATIONS NOTED ON THE DRAWINGS SHALL BE GROUTED SOLID. DO NOT USE ADMIXTURES, INCLUDING AIR-ENTRAINING AGENTS, ACCELERATORS, RETARDERS, WATER-REPELLENT AGENTS, ANTIFREEZE COMPOUNDS, OR OTHER ADMIXTURES UNLESS OTHERWISE NOTED. DO NOT USE CALCIUM CHLORIDE IN MORTAR OR GROUT.

   a. MORTAR FOR MASONRY ASSEMBLIES SHALL BE TYPE S, CONFORMING TO ASTM C270
   b. GROUT FOR UNIT MASONRY SHALL BE FINE GROUT CONFORMING TO ASTM C476 AND HAVE MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 2000 PSI. GROUT SHALL HAVE SLUMP OF 8 TO 11 INCHES AS MEASURED ACCORDING TO ASTM C143. COMPLY WITH TABLE 1.15.1 IN ACI 530.1 FOR DIMENSIONS OF GROUT SPACES AND POUR HEIGHT.

5. LAY HOLLOW CONCRETE MASONRY UNITS IN A BOND PATTERN COMPLYING WITH THE ARCHITECTURAL DRAWINGS AND AS FOLLOWS:

   a. WITH FACE SHELLS FULLY BEDDED IN MORTAR AND WITH HEAD JOINTS OF DEPTH EQUAL TO BED JOINTS.
   b. WITH WEBS FULLY BEDDED IN MORTAR IN ALL COURSES OF PIERS, COLUMNS, AND PILASTERS.
   c. WITH WEBS FULLY BEDDED IN MORTAR IN GROUTED MASONRY, INCLUDING STARTING COURSE ON FOOTINGS.
   d. WITH ENTIRE UNITS, INCLUDING AREAS UNDER CELLS, FULLY BEDDED IN MORTAR AT STARTING COURSE ON FOOTINGS WHERE CELLS ARE NOT GROUTED.

6. LAY SOLID MASONRY UNITS WITH COMPLETELY FILLED BED AND HEAD JOINTS; BUTTER ENDS WITH SUFFICIENT MORTAR TO FILL HEAD JOINTS AND SHOVE INTO PLACE. DO NOT DEEPLY FURROW BED JOINTS OR SLUSH HEAD JOINTS.

7. PROVIDE VERTICAL REINFORCING AS NOTED PER THE CMU WALL REINFORCING SCHEDULE AND PER THE REQUIREMENTS BELOW. PROVIDE MATCHING DOWELS INTO THE FOOTING OR FOUNDATION CONSTRUCTION. PROVIDE TWO ADDITIONAL BARS AND DOWELS UNDER POINT LOADS, LINTELS AND BEAMS WHICH HAVE A REACTION EXCEEDING 10 KIPS, WHETHER OR NOT NOTED ON THE FRAMING PLANS.

   a. ALL REBAR SHALL BE UNCOATED STEEL REINFORCING BARS: ASTM A615, GRADE 60
   b. REINFORCING STEEL SHALL BE PLACED IN COMPLIANCE WITH ACI 530.1.
   c. GROUT ALL CELLS CONTAINING REINFORCEMENT AND DO NOT PLACE GROUT UNTIL THE ENTIRE HEIGHT OF MASONRY TO BE GROUTED HAS ATTAINED ENOUGH STRENGTH TO RESIST GROUT PRESSURE. LIMIT HEIGHT OF VERTICAL GROUT POURS TO NOT MORE THAN 60 INCHES.
   d. PROVIDE AN OPEN BOTTOM BOND BEAM REINFORCED WITH 2 NO. 5 CONTINUOUS BARS AT THE FOLLOWING LOCATIONS AND AS NOTED ON THE DRAWINGS:
   i. AT THE TOP OF ALL WALL ELEVATIONS
   ii. AT ALL JOIST AND FRAMING BEARING ELEVATIONS
   iii. EQUALLY SPACED BETWEEN LATERAL SUPPORTS OR AT 10'-0" O.C. MAXIMUM VERTICALLY, IF THE DISTANCE BETWEEN LATERAL SUPPORTS EXCEEDS 10'-0".

8. PROVIDE MASONRY JOINT REINFORCING AT 16" O.C. VERTICALLY, IN ADDITION TO CONTINUOUS REINFORCEMENT, AND NOT MORE THAN 8" ABOVE AND BELOW OPENINGS IN MASONRY WALLS AND EXTENDING 12" BEYOND SAID OPENING. INTERRUPT JOINT REINFORCEMENT AT CONTROL AND EXPANSION JOINTS, UNLESS OTHERWISE INDICATED. CUT AND BEND REINFORCING UNITS AS DIRECTED BY MANUFACTURER FOR CONTINUITY AT CORNERS, RETURNS, OFFSETS, COLUMN FIREPROOFING, PIPE ENCLOSURES, AND OTHER SPECIAL CONDITIONS. JOINT REINFORCING SHALL CONSIST OF HOT-DIPPED GALVANIZED, CARBON STEEL CONFORMING TO ASTM A951 AND PER REQUIREMENTS BELOW:

   a. JOINT REINFORCEMENT FOR SINGLE WYTHE WALLS SHALL CONSIST OF EITHER LADDER OR TRUSS TYPE WITH A SINGLE PAIR OF SIDE RODS. SIDE AND CROSS RODS SHALL BE W1.7 DIAMETER.
   b. JOINT REINFORCEMENT FOR MULTIWYTHE WALLS SHALL CONSIST OF TAB TYPE, EITHER LADDER OR TRUSS DESIGN, WITH 1 SIDE ROD AT EACH FACE SHELL OF BACKING WYTHE AND WITH RECTANGULAR TABS SIZED TO EXTEND AT LEAST HALFWAY THROUGH FACING WYTHE BUT WITH AT LEAST 5/8-INCH COVER ON OUTSIDE FACE. SIDE AND CROSS RODS SHALL BE W1.7 DIAMETER.

9. PROVIDE MISCELLANEOUS ANCHORS AS INDICATED AND COMPLY WITH THE FOLLOWING:

   a. ANCHOR BOLTS: HEADED OR L-SHAPED STEEL BOLTS COMPLYING WITH ASTM A307, GRADE A; WITH ASTM A563 HEX NUTS AND, WHERE INDICATED, FLAT WASHERS; HOT-DIPPED GALVANIZED TO COMPLY WITH ASTM A153, CLASS C.
   b. POST INSTALLED ANCHORS: PROVIDE CHEMICAL ANCHORS, WITH CAPABILITY TO SUSTAIN, WITHOUT FAILURE, A LOAD EQUAL TO SIX TIMES THE LOAD IMPOSED WHEN INSTALLED IN SOLID OR GROUTED UNIT MASONRY AND EQUAL TO FOUR TIMES THE LOAD IMPOSED WHEN INSTALLED IN CONCRETE.

10. PROVIDE STEEL, MASONRY, AND CONCRETE LINTELS AS NOTED ON THE LINTEL SCHEDULE.

11. PROVIDE CONTROL AND EXPANSION JOINTS AS NOTED ON THE ARCHITECTURAL DRAWINGS, BUT NOT GREATER THAN 20'-0" O.C. INSTALL CONTROL AND EXPANSION JOINT MATERIALS IN UNIT MASONRY AS MASONRY PROGRESSES. DO NOT ALLOW MATERIALS TO SPAN CONTROL AND EXPANSION JOINTS WITHOUT PROVISION TO ALLOW FOR IN-PLANE WALL OR PARTITION MOVEMENT.

12. DURING CONSTRUCTION, COVER TOPS OF WALLS, PROJECTIONS, AND SILLS WITH WATERPROOF SHEETING AT THE END OF EACH DAY'S WORK. COVER PARTIALLY COMPLETED MASONRY WHEN CONSTRUCTION IS NOT IN PROGRESS.

13. DO NOT APPLY UNIFORM FLOOR OR ROOF LOADS FOR AT LEAST 12 HOURS AND CONCENTRATED LOADS FOR AT LEAST 3 DAYS AFTER BUILDING MASONRY WALLS OR COLUMNS.

14. DO NOT USE FROZEN MATERIALS OR MATERIALS MIXED OR COATED WITH ICE OR FROST. DO NOT BUILD ON FROZEN SUBSTRATES. REMOVE AND REPLACE UNIT MASONRY DAMAGED BY FROST OR FREEZING CONDITIONS. COMPLY WITH COLD-WEATHER CONSTRUCTION REQUIREMENTS CONTAINED IN ACI 530.1.

15. COMPLY WITH HOT-WEATHER CONSTRUCTION REQUIREMENTS CONTAINED IN ACI 530.1.

CONCRETE

1. CONCRETE SHALL BE PROPORTIONED, MIXED, PLACED, AND TESTED IN ACCORDANCE WITH THE ACI MANUAL OF CONCRETE PRACTICE INCLUDING BUT NOT LIMITED TO ACI 318-02 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE" AND ACI 301-05 "SPECIFICATIONS FOR STRUCTURAL CONCRETE." COMPLY WITH ACI 117-90 "SPECIFICATIONS FOR TOLERANCES FOR CONCRETE CONSTRUCTION AND MATERIALS."

2. STEEL REINFORCEMENT SHALL COMPLY WITH THE FOLLOWING SPECIFICATIONS:

a. REINFORCING BARS DEFORMED	ASTM A615, GRADE 60,
b. PLAIN-STEEL WIRE	ASTM A82, AS DRAWN
c. EPOXY COATED BARS	ASTM A775
d. PLAIN-STEEL WELDED WIRE REINFORCEMENT	ASTM A185, FLAT SHEETS ONLY

3. CONCRETE DENOTED AS "LIGHTWEIGHT CONCRETE" ON THESE DESIGN DOCUMENTS SHALL HAVE A UNIT WEIGHT OF 115 PCF. CONCRETE NOT SPECIFICALLY NOTED AS "LIGHTWEIGHT" SHALL HAVE A UNIT WEIGHT OF 145 PCF. CONCRETE MATERIALS SHALL COMPLY WITH THE FOLLOWING:

a. PORTLAND CEMENT	ASTM C150, TYPE I OR II
b. FLY ASH	ASTM C618, CLASS F
c. BLENDED HYDRAULIC CEMENT PORTLAND	ASTM C595, TYPE I POZZOLAN-MODIFIED
d. NORMAL-WEIGHT AGGREGATE	ASTM C33, GRADED, $1\frac{1}{2}$" NOMINAL MAXIMUM AGGREGATE SIZE
e. LIGHTWEIGHT AGGREGATE	ASTM C330, GRADED, $\frac{3}{4}$" NOMINAL MAXIMUM AGGREGATE SIZE
f. WATER	POTABLE

4. NO ADMIXTURES SHALL BE ADDED TO ANY STRUCTURAL CONCRETE WITHOUT THE EXPRESS WRITTEN PERMISSION OF TYNDALL ENGINEERING & DESIGN, P.A. ALL PROPOSED ADMIXTURES SHALL BE SUBMITTED TO TYNDALL ENGINEERING & DESIGN, P.A. FOR APPROVAL. THE ADMIXTURE MUST BE CERTIFIED BY THE MANUFACTURER THAT IT IS COMPARABLE TO OTHER ADMIXTURES AND DOES NOT CONTRIBUTE TO WATER-SOLUBLE CHLORIDE IONS EXCEEDING THOSE PERMITTED IN HARDENED CONCRETE. DO NOT USE CALCIUM CHLORIDE OR ANY ADMIXTURE CONTAINING CALCIUM CHLORIDE.

5. NORMAL-WEIGHT CONCRETE MIXTURES SHALL HAVE THE FOLLOWING PROPERTIES:

ELEMENT	MINIMUM STRENGTH @ 28 DAYS	MAXIMUM COMP. WATER-CEMENT RATIO	SLUMP LIMIT	AIR CONTENT
a. FOOTINGS	3000 PSI	0.45	4"	0.0%
b. RETAINING WALLS	3000 PSI	0.45	4"	4.5%
c. SLABS-ON-GRADE	3000 PSI	0.45	4"	0.0%

NOTE: IT IS RECOMMENDED THAT INTERIOR SLABS BE GIVEN A SMOOTH, DENSE, HARD-TROWELED FINISH NOT CONTAINING ENTRAINED AIR SINCE BLISTERING OR DELAMINATION MAY OCCUR. IF SLAB WILL BE EXPOSED TO DEICING OR OTHER AGGRESSIVE CHEMICALS, CONTACT TYNDALL ENGINEERING & DESIGN, P.A. FOR PROPER AIR ENTRAINMENT REQUIREMENTS.

6. LIGHTWEIGHT CONCRETE MIXTURES SHALL HAVE THE FOLLOWING PROPERTIES:

ELEMENT	MINIMUM STRENGTH @ 28 DAYS	MAXIMUM COMP. WATER-CEMENT RATIO	SLUMP LIMIT	AIR CONTENT
a. ELEVATED SLABS, OVER DECKING	3000 PSI	0.63	5"	0.0%

7. COMPLY WITH THE MINIMUM CONCRETE COVER FOR REINFORCEMENT AS FOLLOWS:

   a. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 3"
   b. CONCRETE EXPOSED TO EARTH OR WEATHER
   i. No. 5 BARS AND SMALLER $1\frac{1}{2}$"
   ii. No. 6 BARS AND LARGER 2"
   c. CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND
   i. SLABS, WALLS, JOISTS, No. 11 BARS AND SMALLER $\frac{3}{4}$"
   ii. SLABS, WALLS, JOISTS, No. 14 AND No. 18 BARS $1\frac{1}{2}$"
   iii. PRIMARY REINFORCEMENT, TIES, STIRRUPS, AND SPIRALS FOR BEAMS OR COLUMNS $1\frac{1}{2}$"

8. SPLICE REINFORCEMENT AS DETAILED OR AUTHORIZED BY TYNDALL ENGINEERING & DESIGN, P.A. MAKE BARS CONTINUOUS AROUND CORNERS. SPLICES SHALL BE MADE BY CONTACT TENSION LAP SPLICES, UNLESS OTHERWISE NOTED.

9. PLACING SLEEVES THROUGH CONCRETE ELEMENTS IS NOT PERMITTED UNLESS SHOWN ON THE DESIGN DOCUMENTS, ON APPROVED SLEEVE SHOP DRAWINGS, OR AS AUTHORIZED BY TYNDALL ENGINEERING & DESIGN, P.A.

10. LOCATE CONSTRUCTION JOINTS FOR MILD-REINFORCED ELEVATED CONCRETE WITHIN THE MIDDLE THIRD OF THE SPANS OF SLABS, BEAMS, AND GIRDERS. INDICATE PROPOSED CONSTRUCTION JOINT LOCATIONS ON REINFORCING STEEL SHOP DRAWINGS. LOCATE CONSTRUCTION JOINTS NOT FARTHER THAN 60 FEET APART IN ANY DIRECTION IN WALLS, SLABS, OR BEAMS. OFFSET JOINTS IN GIRDERS A MINIMUM DISTANCE OF TWO TIMES THE WIDTH OF INTERSECTING BEAMS. MAKE STOPS IN CONCRETE PLACEMENT WITH VERTICAL BULKHEADS AND HORIZONTAL KEYS, UNLESS OTHERWISE SHOWN. SUBMIT SHOP DRAWINGS INDICATING PROPOSED JOINT LOCATIONS AND REINFORCING STEEL TO BE PLACED IN THE SLAB. ANY STOP IN CONCRETE WORK MUST BE MADE WITH VERTICAL BULKHEADS, UNLESS OTHERWISE SHOWN.

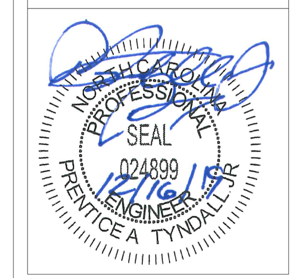
11. COMPLY WITH ACI 301 FOR MEASURING, BATCHING, MIXING, TRANSPORTING, AND PLACING CONCRETE, BEFORE TEST SAMPLING AND PLACING CONCRETE. WATER MAY BE ADDED AT THE PROJECT SITE, SUBJECT TO LIMITATIONS OF ACI 301.

12. SEE ARCHITECTURAL DRAWINGS FOR FINISHING REQUIREMENTS OF FORMED CONCRETE SURFACES. FOR UNFORMED SURFACES, COMPLY WITH ACI 302.1R FOR SCREEDING, RESTRAIGHTENING, AND FINISHING OPERATIONS UNLESS OTHERWISE NOTED ON THE ARCHITECTURAL DRAWINGS.

13. CURE FORMED AND UNFORMED CONCRETE FOR AT LEAST SEVEN DAYS BY ONE OF THE FOLLOWING METHODS: MOISTURE CURING, MOISTURE-RETAINING-COVER CURING, APPLICATION OF A CURING COMPOUND, OR BY APPLICATION OF A CURING AND SEALING COMPOUND.

14. ENGAGE A QUALIFIED INDEPENDENT TESTING AGENCY TO SAMPLE MATERIALS, PERFORM TESTS, AND SUBMIT REPORTS DURING CONCRETE PLACEMENT ACCORDING TO ACI 301 AND IRC BUILDING CODE.

*Engineers seal does not include construction means, methods, techniques, sequences, procedures or safety precaution.
*Any deviations or discrepancies on plans are to be brought to the immediate attention of Tyndall Engineering & Design, P.A. Failure to do so will void Tyndall Engineering & Design, P.A. liability.
*Please review these documents carefully. Tyndall Engineering & Design, P.A. will interpret that all dimensions, recommendations, etc. presented in these documents were deemed acceptable once construction begins.



TYNDALL
ENGINEERING & DESIGN, P.A.
250 Shipwash Drive • Garner • North Carolina • 27529
T 919 773-1200 • F 919 773-9658
www.tyndallengineering.com

Client:
HAUCH DESIGN
1118 NORRIS ST
RALEIGH, NC 27604

Plan:
PUBLIC WORKS FACILITY
303 EAST CURCH STREET
BENSON, NC 27504

GENERAL NOTES

Project #: 1901-010022
Date: 04/17/19
Drawn/Design By: AWL
DWG. Checked By: PTII
Scale: SEE PLAN

REVISIONS

No.	Date:	Remarks
1		
2		
3		
4		

Sheet Number
S0.0
1 of 8

FILENAME: C:\USERS\TYNDALL ENGINEERING\DESKTOP\1901-010022.DWG SAVED BY: TYNDALL ENGINEERING LAST PLOT DATE:12/19/2019 12:43 PM

METAL PLATE CONNECTED WOOD TRUSSES

1. STRUCTURAL WOOD ROOF TRUSSES ARE TO BE DESIGNED AND FABRICATED PER THE STANDARD DESIGN SPECIFICATION FOR METAL PLATE CONNECTED WOOD TRUSSES TPI-95 AS PREPARED PER THE TRUSS PLATE INSTITUTE, INC. ALL TRUSSES SHALL BE DESIGNED FOR THE LOADS LISTED BELOW (SEE PLANS FOR ADDITIONAL LOADS):
   TOP CHORD LIVE LOAD: 20 PSF.
   TOP CHORD DEAD LOAD: 10 PSF.
   BOTTOM CHORD DEAD LOAD: 10 PSF.
   SEE PLAN FOR EXTENT OF ATTIC LOADING.

2. BOTTOM CHORDS SHALL BE 2"x6" MINIMUM AND THEIR DESIGN SHALL NOT EXCEED 95% OF ALLOWABLE COMBINED STRSSES.

   SUBMIT SHOP DRAWINGS, INCLUDING DESIGN CALCULATIONS, MEMBER FORCES AND CONTROL POINTS, FOR REVIEW PRIOR TO FABRICATION ON ALL TRUSSES, SEALED BY A STATE OF NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER.

3. METAL PLATE CONNECTED TRUSSES ARE UNSTABLE UNTIL PROPERLY BRACED. PROPER HANDLING, SAFETY PRECAUTIONS AND TEMPORARY BRACING ARE THE RESPONSIBILITY OF THE CONTRACTOR. PROVIDE TEMPORARY BRACING IN ADDITION TO PERMANENT LATERAL BRACING (SHOWN ON TRUSS SHOP DRAWINGS TO REDUCE MEMBER UNBRACED LENGTH) AND ANY PERMANENT BRACING SHOWN ON THESE DRAWINGS.

4. THE CONTRACTOR SHALL NOT CUT ANY MEMBER, DRILL HOLES, INSTALL LAG SCREWS OR INSTALL NAILS IN EXCESS OF 16D WITHOUT PRIOR APPROVAL OF THE STRUCTURAL ENGINEER.

STRUCTURAL STEEL

1. STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE FOLLOWING STANDARDS AND THE LATEST EDITIONS OF SAID STANDARDS:

   a. AISC'S "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES"
   b. AISC 'S "SEISMIC PROVISIONS FOR STRUCTURAL STEEL BUILDINGS" AND "SUPPLEMENT NO.2", IF THE RESPONSE MODIFICATION FACTOR IS GREATER THAN 3.0
   c. AISC'S "LOAD AND RESISTANCE FACTORED DESIGN SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS"
   d. AISC'S "SPECIFICATION FOR THE DESIGN OF STEEL HOLLOW STRUCTURAL SECTIONS"
   e. RCSC'S "SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS"
   f. AWS'S STRUCTURAL WELDING CODE AWS D1.1

2. STEEL FABRICATORS FOR THIS PROJECT SHALL PARTICIPATE IN THE AISC QUALITY CERTIFICATION PROGRAM AND HAVE A MINIMUM DESIGNATION OF SBD. STEEL INSTALLERS FOR THIS PROJECT SHALL PARTICIPATE IN THE AISC QUALITY CERTIFICATION PROGRAM AND HAVE A MINIMUM DESIGNATION OF CSE. ALL PERSONNEL PERFORMING WELDING ON THIS PROJECT SHALL CONFORM TO THE QUALITY PROCEDURES ACCORDING TO AWS D1.1 "STRUCTURAL WELDING CODE - STEEL".
3. ALL STRUCTURAL STEEL MATERIALS SHALL CONFORM TO THE FOLLOWING:

a. WIDE FLANGE SHAPES	ASTM A992
b. CHANNELS, ANGLES, M-SHAPES, S-SHAPES	ASTM A36
c. PLATE AND BAR	ASTM A36
d. COROSION-RESISTING STRUCTURAL STEEL	ASTM A588
e. COLD-FORMED HOLLOW STRUCTURAL SECTIONS	ASTM A500, GRADE B
f. STEEL PIPE	ASTM A53
g. WELDING ELECTRODES	CLASS E70XX

4. UNLESS OTHERWISE NOTED ON THE DESIGN DOCUMENTS, APPLY A ONE-COAT NON-ASPHALTIC PRIMER COMPLYING WITH SSPC-PS GUIDE 7.00 "PAINTING SYSTEM GUIDE 7.00: GUIDE FOR SELECTING ONE-COAT SHOP PAINTING SYSTEMS", TO PROVIDE A DRY FILM THICKNESS OF NOT LESS THAN 1.5 MILS TO ALL STEEL SURFACES NOT EXPOSED TO WEATHER EXCEPT THE FOLLOWNG:

   a. SURFACES EMBEDDED IN CONCRETE OR MORTAR. EXTEND PRIMING OF PARTIALLY EMBEDDED MEMBERS TO A DEPTH OF 2".
   b. SURFACES TO BE FIELD WELDED.
   c. SURFACES TO BE HIGH-STRENGTH BOLTED WITH SLIP-CRITICAL CONNECTIONS.
   d. SURFACES TO RECEIVE SPRAYED-ON FIRE RESISTIVE MATERIALS.
   e. GALVANIZED SURFACES.

5. APPLY A ZINC COATING BY THE HOT-DIPPED PROCESS ACCORDING TO ASTM A123 TO LOOSE ANGLE LINTELS, RELIEVING ANGLES (SHELF ANGLES) AND ALL STEEL EXPOSED TO WEATHER. FILL VENT HOLES AND GRIND SMOOTH AFTER GALVANIZING AS REQUIRED. REPAIR DAMAGED GALVANIZING COATINGS WITH GALVANIZED REPAIR PAINT ACCORIND TO ASTM A780 AND MANUFACTURER'S WRITTEN INSTRUCTIONS.

6. BOLTS, CONNECTORS, AND ANCHORS SHALL CONFORM TO THE FOLLWONG:

   a. <u>ASTM A325 BOLTED CONNECTIONS</u>:
   i. ASTM A325, TYPE 1 HEAVY HEX NUT STEEL STRUCTURAL BOLTS
   ii. ASTM A563 HEAVY HEX CARBON-STEEL NUTS
   iii. ASTM F436 HARDENED CARBON-STEEL WASHERS
   THE FINISH FOR THESE BOLTED CONNECTIONS SHALL BE PLAIN UNLESS CONNECTING HOT-DIPPED GALVANIZED MATERIALS AND THEN SHALL HAVE A HOT-DIPPED ZINC COATING CONFORMING TO ASTM A153.

   b. <u>ASTM A490 BOLTED CONNECTIONS</u>:
   i. ASTM A490, TYPE 1 HEAVY HEX NUT STEEL STRUCTURAL BOLTS
   ii. ASTM A563 HEAVY HEX CARBON-STEEL NUTS
   iii. ASTM F436 HARDENED CARBON-STEEL WASHERS
   THE FINISH FOR THESE BOLTED CONNECTIONS SHALL BE PLAIN.

   c. <u>ANCHOR RODS</u>: ASTM F1554, GRADE 36
   i. NUTS: ASTM A563
   ii. PLATE WASHERS: 3/8" MINIMUM THICKNESS, ASTM A36 CARBON STEEL.

   d. <u>THREADED RODS</u>: ASTM A307, GRADE A
   i. NUTS: ASTM A563
   ii. WASHERS: ASTM A36
   iii. FINISH: PLAIN

   e. <u>CLEVISES AND TURNBUCKLES</u>: ASTM A108, GRADE 1035, COLD-FINISHED CARBON STEEL

   f. <u>EYE BOLTS AND NUTS</u>: ASTM A108, GRADE 1030, COLD-FINISHED CARBON STEEL

7. SELECT AND COMPLETE STEEL TO STEEL CONNECTIONS USING FULL-DEPTH CONNECTION AS INDICATED IN AISC'S "MANUAL OF STEEL CONSTRUCTION, 13TH EDITION"

8. IN BOLTED CONNECTIONS, PROVIDE HIGH STRENGTH BOLTS, NUTS, AND WASHERS IN BOLTED STEEL CONNECTIONS AND INSTALL CONNECTORS ACCORDING TO RCSC'S "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS". CUT, DRILL, OR PUNCH BOLT HOLES PERPENDICULAR TO METAL SURFACES. EITHER ASTM A325 OR A490 BOLTS MAY BE USED FOR SNUG TIGHTENED CONNECTIONS. ALL CONNECTIONS EXCEPT LISTED BELOW SHALL BE SNUG TIGHTENED:

   a. JOINTS THAT UTILIZE OVERSIZED HOLES
   b. JOINTS THAT CONNECT BRACING MEMBERS FOR LATERAL RESISTING SYSTEM
   c. JOINTS THAT UTILIZE SLOTTED HOLES EXCEPT THOSE WITH APPLIED LOAD APPROXIMATELY NORMAL TO THE DIRECTION OF THE LONG DIMENSION OF THE SLOT.

9. IN WELDED CONNECTIONS, COMPLY WITH AWS D1.1 FOR WELDING PROCEDURE SPECIFICATIONS, TOLERANCES, APPEARANCE, AND QUALITY OF WELDS AND FOR METHODS USED IN CORRECTING WELDING WORK. COMPLY WITH AISC MINIMUM WELDING REQUIREMENTS.

10. SHEAR CONNECTORS (SHEAR STUDS) SHALL BE OF THE HEIGHT AND DIAMETER AS NOTED ON THE COMPOSITE FLOOR DECK DETAIL ON THESE DRAWINGS. CONNECTORS SHALL BE ASTM A108, GRADE 1015 THROUGH 1020, HEADED STUD, COLD-FINISHED CARBON STEEL; AWS D1.1, TYPE B. SPACE CONNECTORS UNIFORMLY ON EACH SIDE OF THE BEAM MIDSPAN IN THE PORTION OF THE DECK RIB CLOSEST TO THE NEAREST END OF THE BEAM, UNLESS OTHERWISE NOTED. IN ADDITION TO THE TESTING AND INSPECTIONS LISTED BELOW, TEST AND INSPECT FIELD WELDED SHEAR CONNECTORS ACCORDING TO REQUIREMENTS IN AWS D1.1 FOR STUD WELDING AND AS FOLLOWS:

    a. PERFORM BEND TESTS IF VISUAL INSPECTIONS REVEAL EITHER A LESS THAN CONTINUOUS 360 DEGREES FLASH OR WELDING REPAIRS TO ANY SHEAR CONNECTOR.
    b. CONDUCT TESTS ON ADDITIONAL SHEAR CONNECTORS IF WELD FRACTURE OCCURS ON SHEAR CONNECTORS ALREADY TESTED, ACCORDING TO REQUIREMENTS IN AWS D1.1.
    c. CORRECT DEFICIENCIES IN WORK THAT TEST REPORTS AND INSPECTIONS INDICATE SHEAR CONNECTORS NOT IN COMPLIANCE WITH THESE DOCUMENTS.

11. BASE AND BEARING PLATES WHICH ARE SUPPORTED OVER CONCRETE OR MASONRY SHALL BE PLACED OVER 2" OF GROUT WITH A TOLERANCE OF +/− $\frac{1}{2}$" UNLESS OTHERWISE NOTED. CLEAN CONCRETE AND MASONRY SURFACES OF BOND REDUCING MATERIAL AND ROUGHEN SURFACES. SET PLATES FOR STRUCTURAL MEMBERS ON WEDGES, SHIMS, OR SETTING NUTS AS REQUIRED. TIGHTEN ANCHOR RODS AFTER MEMBER IS POSITIONED AND PLUMBED. DO NOT REMOVE WEDGES, BUT IF PROTRUDING, CUT OFF FLUSH WITH BASE PLATE. PROMPTLY PACK GROUT SOLIDLY BETWEEN BEARING SURFACES SO NO VOIDS REMAIN. GROUT SHALL CONFORM TO ASTM C1107, FACTORY-PACKAGED, NONMETALLIC AGGREGATE GROUT, NONCORROSIVE, NON STAINING, MIXED WITH WATER TO CONSISTENCY SUITABLE FOR APPLICATIONS. GROUT SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI.

12. FURNISH ANCHORAGE ITEMS EMBEDDED OR ATTACHED TO OTHER CONSTRUCTION BY USE OF SETTING DIAGRAMS AND TEMPLATES. DO NOT FLOAT-IN THESE ITEMS.

13. ACCURATELY FINISH ENDS OF COLUMNS AND OTHER MEMBERS TRANSMITTING BEARING LOADS.

14. PROVIDE TEMPORARY SHORES, GUYS, BRACES, AND OTHER SUPPORTS DURING ERECTION TO KEEP STRUCTURAL STEEL SECURE, PLUMB, AND IN ALIGNMENT AGAINST TEMPORARY CONSTRUCTION LOADS AND LOADS EQUAL IN INTENSITY TO DESIGN LOADS. ALSO, PROVIDE TEMPORARY SUPPORTS IN STEEL TO STEEL CONNECTIONS AND ALL OTHER LOCATIONS PER OSHA REQUIREMENTS.

15. MAINTAIN ERECTION TOLERANCES OF STRUCTURAL STEEL WITHIN AISC'S "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES".

16. ONLY SPLICE MEMBERS WHERE INDICATED ON THE DESIGN DOCUMENTS.

17. ENGAGE A QUALIFIED INDEPENDENT TESTING AND INSPECTION AGENCY TO INSPECT FIELD WELDS AND HIGH-STRENGTH BOLTED CONNECTIONS. SHOP-BOLTED CONNECTIONS SHALL BE INSPECTED ACCORDING TO RCSC'S "SPECIFICATION FOR STRUCTURAL JOINTS USING ASSTM A325 OR A490 BOLTS". FIELD WELDS SHALL BE VISUALLY INSPECTED ACCORDING TO AWS D1.1, EXCEPT FULL PENETRATION WELDS SHALL ALSO BE INSPECTED PER ULTRASONIC INSPECTION PER ASTM E164.

COLD FORMED METAL FRAMING

1. LIGHT GAGE STRUCTURAL STEEL FRAMING SHALL BE DESIGNED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISI'S "STANDARD FOR COLD-FORMED STEEL FRAMING GENERAL PROVISIONS".

2. LIGHT GAGE STRUCTURAL STEEL FRAMING AS SHOWN ON THESE PLANS CONFORMS TO THE INDUSTRY-STANDARD NOMENCLATURE. EXPLANATION OF THIS NOMENCLATURE IS SHOWN BELOW FOR REFERENCE.

   <u>INDUSTRY-STANDARD NOMENCLATURE</u>
   600 S 162 −43 (16")
   DEPTH OF MEMBER
   TYPE OF MEMBER
   SPACING OF MEMBERS, in
   MINIMUM METAL THICKNESS, mils
   FLANGE WIDTH

   a. THE FIRST SET OF NUMBERS REPRESENTS THE DEPTH OF THE MEMBER TO TWO (2) DECIMAL PLACES WITHOUT THE USE OF A DECIMAL POINT, I.E. 600 = 6". 1000 = 10", 362 = $3\frac{5}{8}$", ETC.
   b. THE LETTER REPRESENTS THE TYPE OF MEMBER. THERE ARE ONLY FOUR LETTERS USED, S = "C" MEMBERS, T = TRACK, F = FURRING CHANNEL, AND U = "U" CHANNEL.
   c. THE SECOND SET OF NUMBERS REPRESENTS THE FLANGE WIDTH OF THE MEMBER TO TWO (2) DECIMAL PLACES WITHOUT THE USE OF A DECIMAL POINT, I.E. 162 = $1\frac{5}{8}$", 200 = 2", 125 = $1\frac{1}{4}$", ETC.
   d. THE THIRD NUMBER REPRESENTS THE MINIMUM UNCOATED METAL THICKNESS EXPRESSED IN MILS. (0.001 in.). THESE CORRESPOND TO THE REFERENCE GAGES AS FOLLOWS: −18 (24ga.), −27 (22ga.), −33 (20ga.), −43 (18ga.), −54 (16ga.), −68 (14ga.), AND −97 (12ga.). THE MILS DEFINE THE MINIMUM ALLOWABLE UNCOATED METAL THICKNESS AND ARE 5% LESS THAN THE DESIGN THICKNESS. THE 5% VARIANCE IN METAL THICKNESS IS PERMITTED PER SECTION A 3.4 OF THE AISI SPECIFICATION.
   e. THE LAST NUMBER DENOTED IN (#), IS NOT PART OF THE INDUSTRY-STANDARD NOMENCLATURE, HOWEVER THIS NUMBER IT SO REPRESENT THE MAXIMUM SPACING OF THE MEMBERS IN THE SYSTEM.

3. PREPARATION OF SHOP DRAWINGS IS REQUIRED FOR THIS PROJECT, SEE "SUBMITTALS". THE SHOP DRAWINGS SHALL BE BASED UPON THE MEMBER SIZES AND SPACINGS INDICATED ON THESE DRAWINGS AND SHALL BE SIMILAR TO THOSE INDICATED FOR THIS PROJECT IN MATERIAL, DESIGN, AND EXTENT. SHOP DRAWINGS SHALL ALSO INCLUDE MISCELLANEOUS FRAMING, AND CONNECTIONS, INCLUDING SUPPLEMENTARY FRAMING, WEB STIFFENERS, CLIP ANGLES, CONTINUOUS ANGLES, ANCHORS, AND FASTENERS, TO PROVIDE A COMPLETE AND COLD FORMED METAL FRAMING SYSTEM. COLD-FORMED METAL FRAMING CAPABLE OF WITHSTANDING DESIGN LOADS WITHOUT DEFLECTIONS GREATER THAN THE REQUIREMENTS AS NOTED IN THE NORTH CAROLINA STATE BUILDING CODE ARE INDICATED AS SHOWN.

4. PROVIDE COLD FORMED METAL FRAMING AS FOLLOWS:

   a. STEEL SHEET PER ASTM A1003, STRUCTURAL GRADE, TYPE H, METALLIC COATED. STEEL SHALL BE GRADE ST33H AND COATED WITH A G60 MINIMUM COATING.
   b. STEEL SHEET FOR VERTICAL DEFLECTION AND DRIFT CLIPS PER ASTM A 653, STRUCTURAL STEEL, ZINC COATED. STEEL SHALL BE GRADE 50 AND COATED WITH A G90 MINIMUM COATING.
   c. STRUCTURAL MEMBERS SHALL HAVE THE MINIMUM YIELD STRESS AS FOLLOWS:
   i. 33 mil, 43 mil = 33 KSI
   ii. 54 mil, 68 mil, 97 mil = 50 KSI

5. PROVIDE ANCHORS, CLIPS, AND FASTENERS AS FOLLOWS:

   a. STEEL ANCHOR HEX-HEADED BOLTS AND CARBON-STEEL NUTS; AND FLAT, HARDENED-STEEL WASHERS; ZINC COATED BY MECHANICAL DEPOSITION ACCORDING TO ASTM B695, CLASS 50.
   b. EXPANSION ANCHORS FABRICATED FROM CORROSION-RESISTANT MATERIALS, WITH CAPABILITY TO SUSTAIN, WITHOUT FAILURE, A LOAD EQUAL TO 5 TIMES DESIGN LOAD, AS DETERMINED BY TESTING PER ASTM E 488.
   c. POWDER-ACTUATED ANCHORS: FASTENER SYSTEM OF TYPE SUITABLE FOR APPLICATION. FASTENER SHALL HAVE A SHANK DIAMETER OF 0.177" AND A 1-$\frac{1}{2}$" MINIMUM EMBEDMENT. SCREW SHALL HAVE A MINIMUM TENSION VALUE OF 205 lbs. AND A SHEAR VALUE OF 285 lbs. INTO 3000 PSI CONCRETE.
   d. MECHANICAL FASTENERS: ASTM C 1513, CORROSION-RESISTANT-COATED, SELF-DRILLING, SELF-TAPPING STEEL DRILL SCREWS. UNLESS OTHERWISE NOTED AND A SHEAR VALUE OF 263 lbs. IN 0.043" (43 mil) MATERIAL.
   e. POWDER ACTUATED FASTENERS: KNURL SHANKED POWDER ACTUATED FASTENERS. FASTENER SHALL HAVE A SHANK DIAMETER OF 0.177". SCREW SHALL HAVE A MINIMUM TENSION VALUE OF 330 lbs. AND A SHEAR VALUE OF 359 lbs. IN A MINIMUM STRUCTURAL STEEL THICKNESS OF $\frac{3}{16}$".

6. INSTALL COLD-FORMED METAL FRAMING AND ACCESSORIES PLUMB, SQUARE, AND TRUE TO LINE, AND WITH CONNECTIONS SECURELY FASTENED.

7. LOCATE MECHANICAL FASTENERS AND INSTALL ACCORDING TO SHOP DRAWINGS, AND COMPLYING WITH REQUIREMENTS FOR SPACING, EDGE DISTANCES, AND SCREW PENETRATION AS NOTED ON THESE DRAWINGS.

8. COMPLY WITH THE FOLLOWING FOR EXTERIOR NON-LOAD-BEARING WALL INSTALLATION.

   a. INSTALL CONTINUOUS TRACKS SIZED TO MATCH STUDS, ALIGN TRACKS ACCURATELY AND SECURELY ANCHOR AT CORNERS AND ENDS, AND AT SPACINGS AS INDICATED.
   b. FASTEN BOTH FLANGES OF STUDS TO BOTTOM TRACK, UNLESS OTHERWISE INDICATED. SPACE STUDS PER THE WALL FRAMING SCHEDULE.
   c. ISOLATE NON-LOAD-BEARING STEEL FRAMING FROM BUILDING STRUCTURE TO PREVENT TRANSFER OF VERTICAL LOADS WHILE PROVIDING LATERAL SUPPORT. CLIPS SHALL ALLOW FOR AN UPWARD AND DOWNWARD MOVEMENT OF 1", UNLESS OTHERWISE NOTED.
   d. WALLS UNLESS NOTED OTHERWISE SHALL BE SHEATHED WITH PAPER-SURFACED GYPSUM WALL SHEATHING, CONFORMING TO ASTM C 79 OR ASTM C 1396, GYPSUM SHEATHING; WITH WATER-RESISTANT-TREATED CORE AND WITH WATER-REPELLENT PAPER BONDED TO CORE'S FACE, BACK, AND LONG EDGES. FASTEN GYPSUM SHEATHING TO STUDS PER ICC'S "INTERNATIONAL BUILDING CODE."
   e. INSTALL HORIZONTAL BRIDGING IN STUD SYSTEM, SPACED AS INDICATED ON SHOP DRAWINGS BUT NOT GREATER THAN 48" O.C. FASTEN AT EACH STUD INTERSECTION.

ABBREVIATIONS

+/−	PLUS OR MINUS	GA	GAUGE
@	AT	GALV	GALVANIZED
&	AND	HD	HEADED
Ý	DIAMETER	HI	HIGH
AB	ANCHOR BOLTS	HORIZ	HORIZONTAL
ACI	AMERICAN CONCRETE INSTITUTE	HSS	HOLLOW STRUCTURAL SYSTEM
ADDL	ADDITIONAL	INT	INTERIOR
AFF	ABOVE FINISHED FLOOR	JT	JOINT
AISC	AMER. INSTITUTE OF STEEL CONSTRUCTION	K	KIP(S)
AISI	AMER. IRON & STEEL INSTITUTE	KB	KNEE BRACE
ALT	ALTERNATE	KSI	KIPS PER SQ. INCH
ARCH	ARCHITECTURAL/ARCHITECT'S	LB	LONG BAR
ASTM	AMER. SOCIETY FOR TESTING & WELDING	LBS	POUNDS
AWS	AMERICAN WELDING SOCIETY	LLH	LONG LEG HORIZONTAL
B/ OR BOT	BOTTOM	LLV	LONG LEG VERTICAL
BCX	BOTTOM CHORD EXTENSION	LO	LOW
BFF	BELOW FINISHED FLOOR	LOC	LOCATION
BLDG	BUILDING	LWC	LIGHT WEIGHT CONCRETE
BM	BEAM	MAX	MAXIMUM
BOS	BOTTOM OF STEEL	MC	MOMENT CONNECTION
BRG	BEARING	MECH	MECHANICAL
BTWN	BETWEEN	MFR	MANUFACTURER
MECH	MECHANICAL	MID	MIDDLE
CANT	CANTILEVER BEAM	MIN	MINIMUM
CJ	CONTROL JOINT	MISC	MISCELLANEOUS
CL	CENTERLINE	MOW	MIDDLE OF WALL
CLR	CLEAR	MP	MASONRY PILASTER
CMU	CONCRETE MASONRY UNIT	No OR #	NUMBER
COL	COLUMN	NS	NEAR SIDE
CONC	CONCRETE	NTS	NOT TO SCALE
CONN	CONNECTION	NWC	NORMAL WEIGHT CONCRETE
CONST JT	CONSTRUCTION JOINT	OC	ON CENTER
CONT	CONTINUOUS	OPNG	OPENING
CONTR	CONTRACTOR	OPP	OPPOSITE HAND
CTRD	CENTERED	PAF	POWDER ACTUATED FASTENER
d	NAILS (PENNY)	PED	PEDESTAL
DBA	DEFORMED BAR ANCHOR	Ü	PLATE
DEFLECTION	DEFLECTION	PSF	POUNDS PER SQUARE FOOT
DEPR	DEPRESSION / DEPRESSED	PSI	POUNDS PER SQUARE INCH
DET	DETAIL	PT	PRESSURE TREATED
DIAG	DIAGONAL	REF	REFERENCE
DIM	DIMENSION	REINF	REINFORCING
DIST	DISTANCE	REQ'D	REQUIRED
DWG (S)	DRAWING (S)	SB	SHORT BAR
DWL (S)	DOWEL (S)	SCHD	SCHEDULE
EA	EACH	SIM	SIMILAR
EE	EACH END	SOG	SLAB ON GRADE
EF	EACH FACE	SPEC (S)	SPECIFICATION (S)
EJ	EXPANSION JOINT	SQ	SQUARE
ELEV	ELEVATION	STD	STANDARD
EMBED	EMBEDDED / EMBEDMENT	STIFF	STIFFENER
ENGR	ENGINEER	STIRR	STIRRUP (S)
EOD	EDGE OF DECK	STL	STEEL
EOS	EDGE OF SLAB	STR	STRUCTURAL
EQ	EQUAL	T/	TOP
EQUIP	EQUIPMENT	TCX	TOP CHORD EXTENSION
EW	EACH WAY	TOC	TOP OF CONCRETE
EXIST	EXISTING	TOS	TOP OF STEEL
EXP	EXPANSION	TOW	TOP OF WALL
EXT	EXTERIOR	TYP	TYPICAL
FDN	FOUNDATION	UNO	UNLESS NOTED OTHERWISE
FFE	FINISHED FLOOR ELEVATION	VERT	VERTICAL
FOM	FACE OF MASONRY	VIF	VERIFY IN FIELD
FOW	FACE OF WALL	W/	WITH
FS	FAR SIDE	WWF	WELDED WIRE FABRIC
FTG	FOOTING		

*Engineers seal does not include construction means, methods, techniques, sequences, procedures or safety precaution.
*Any deviations or discrepancies on plans are to be brought to the immediate attention of Tyndall Engineering & Design, P.A. Failure to do so will void Tyndall Engineering & Design, P.A. liability.
*Please review these documents carefully. Tyndall Engineering & Design, P.A. will interpret that all dimensions, recommendations, etc. presented in these documents were deemed acceptable once construction begins.

NORTH CAROLINA PROFESSIONAL SEAL 024899 ENGINEER PRENTICE A TYNDALL JR
12/16/19

TYNDALL ENGINEERING & DESIGN, P.A.
250 Shipwash Drive • Garner • North Carolina • 27529
T 919 773-1200 • F 919 773-9658
www.tyndallengineering.com

Client: HAUCH DESIGN
1118 NORRIS ST
RALEIGH, NC 27604

Plan: PUBLIC WORKS FACILITY
303 EAST CURCH STREET
BENSON, NC 27504

GENERAL NOTES

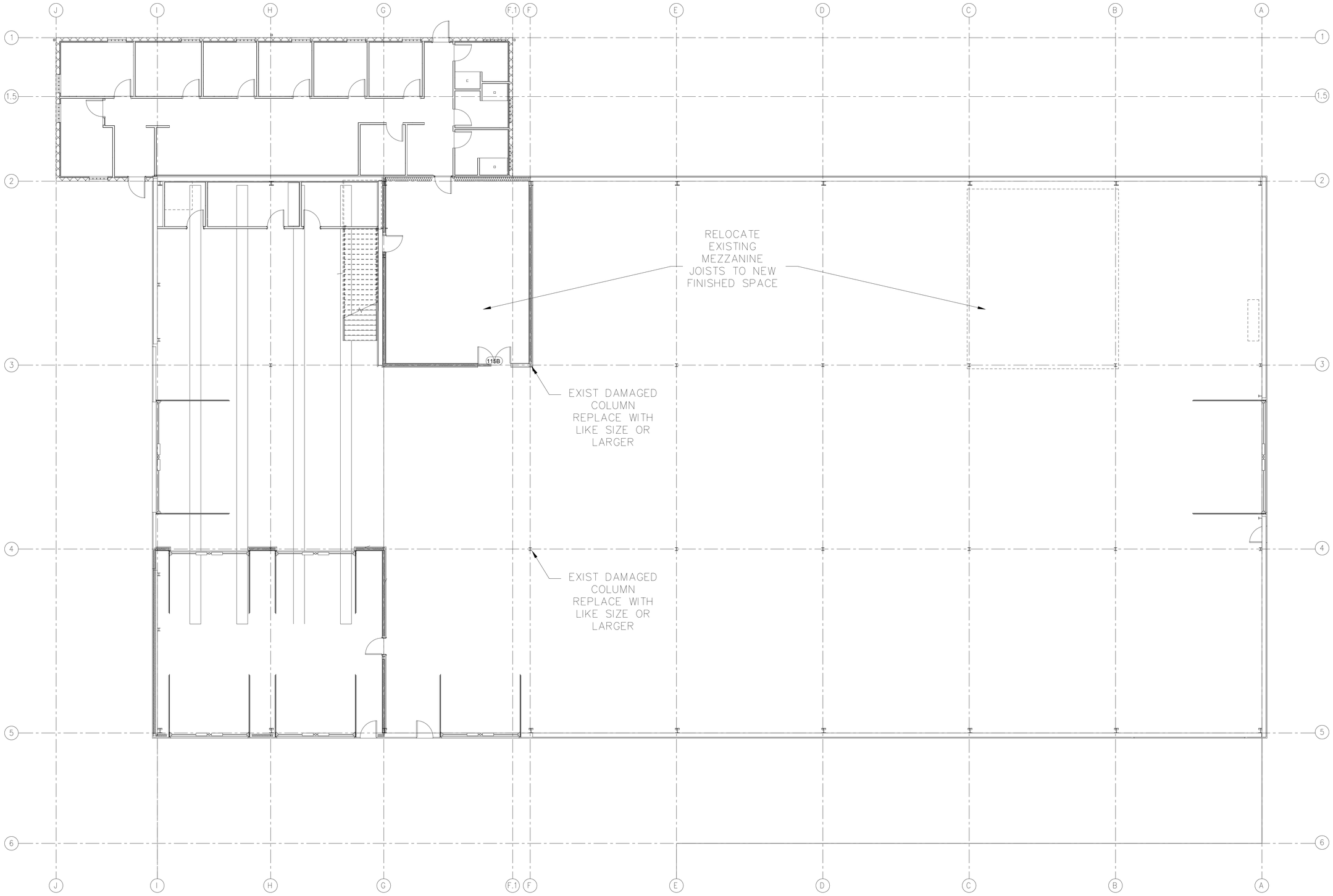
Project #: 1901-010022
Date: 04/17/19
Drawn/Design By: AWL
DWG. Checked By: PTII
Scale: SEE PLAN

REVISIONS

No.	Date:	Remarks
1		
2		
3		
4		

Sheet Number
S0.1

FILENAME: C:\USERS\TYNDALL ENGINEERING\DESKTOP\1901-010022.DWG SAVED BY: TYNDALL ENGINEERING LAST PLOT DATE:12/19/2019 12:43 PM



1 OVERALL FIRST FLOOR PLAN

1/8"=1'-0

*Engineers seal does not include construction means, methods, techniques, sequences, procedures or safety precaution.
* Any deviation or discrepancies on plans are to be brought to the immediate attention of Tyndall Engineering & Design, P.A. Failure to do so will void Tyndall Engineering & Design, P.A. liability.
* Contractor shall review these documents carefully; Tyndall Engineering & Design, P.A. will interpret that all dimensions, recommendations, etc; presented in these documents were deemed acceptable once construction begins.

NORTH CAROLINA PROFESSIONAL SEAL 024899 ENGINEER PRETTICE A TYNDALL

TYNDALL
ENGINEERING & DESIGN, P.A.
250 Shipwatch Drive • Garner • North Carolina • 27529
• (919) 772-2203 • F (919) 772-9600
www.tyndallengineering.com

Client:
HAUCH DESIGN
1118 NORRIS ST
RALEIGH, NC 27604

Plan:
PUBLIC WORKS FACILITY
303 EAST CURCH STREET
BENSON, NC 27504

OVERALL FLOOR PLAN

Project #:
1901-010022

Date:
04/17/19

Drawn/Design By:
AWL

DWG. Checked By:
PTII

Scale:
SEE PLAN

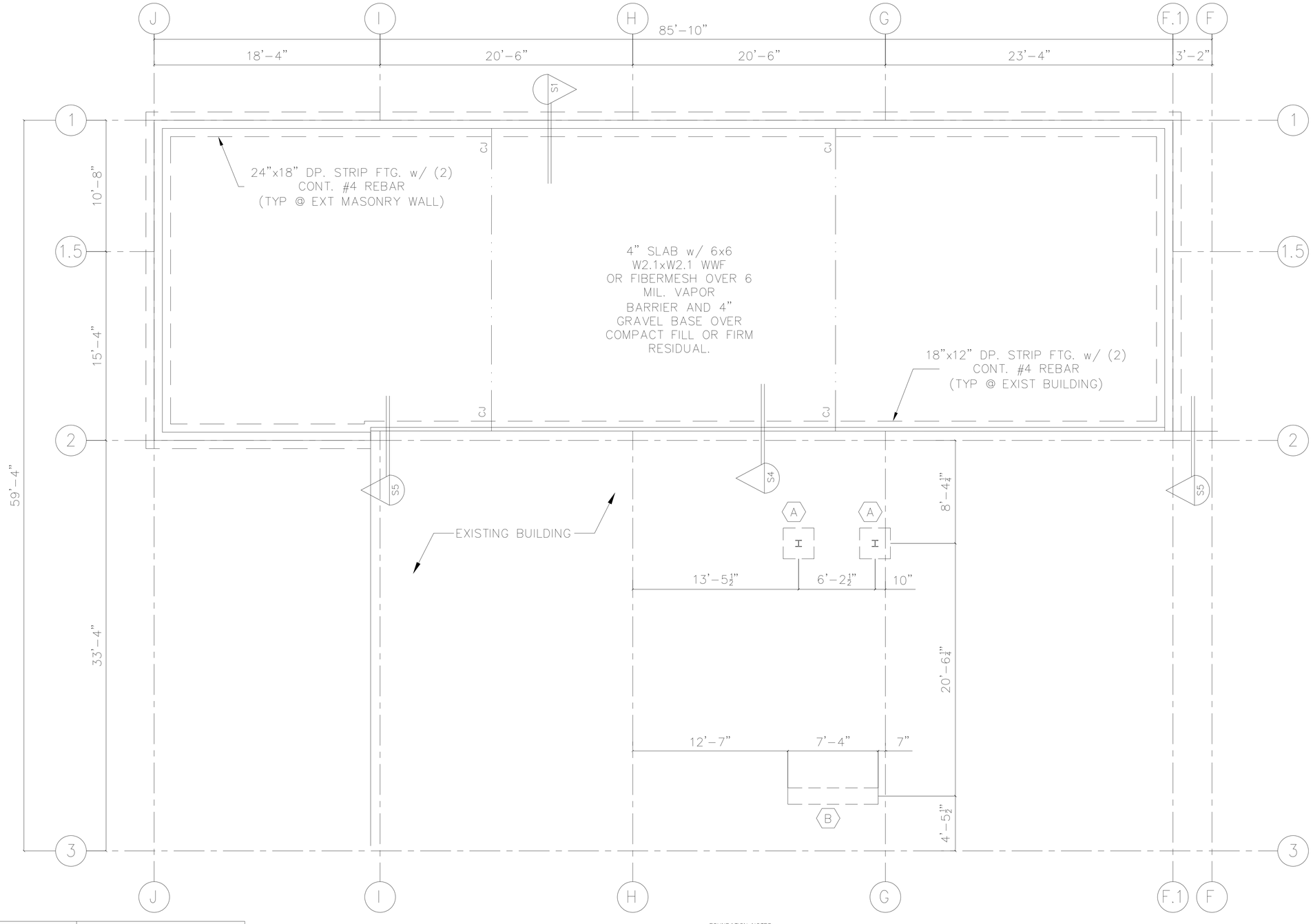
REVISIONS

No.	Date:	Remarks
1		
2		
3		
4		

Sheet Number

S1

FILENAME: C:\USERS\TYNDALL ENGINEERING\DESKTOP\1901-010022.DWG SAVED BY: TYNDALL ENGINEERING LAST PLOT DATE:12/19/2019 12:43 PM



SCHEDULE	FOOTING SIZE	REINFORCEMENT
A	30"x30"x12" DP.	(4)#4 REBAR EA. WAY, 3" ABOVE BTM. & 3" BELOW TOP OF FTG.
B	16"x88"x12" DP.	(2)#4 LONG. REBAR, 3" ABOVE BTM. OF FTG.

1 FOUNDATION PLAN

1/4"=1'-0

FOUNDATION NOTES:

1.) FOOTING DESIGN BASED ON NET ALLOWABLE SOIL BRG. CAPACITY OF 3000 PSF

2.) USE TYPE "M" OR "S" MORTAR – TYPICAL @ EXTERIOR WALLS.

3.) STEP FOOTING AS REQUIRED IN ORDER TO KEEP TOP OF FOOTING A MIN. OF 1'-0" BELOW FINISHED GRADE.

4.) SLAB ON GRADE IS ASSUMED 4" NORMAL WEIGHT CONCRETE WITH 6x6 W 2.1xW 2.1 WELDED WIRE FABRIC (OR FIBERMESH CONCRETE) ON 4" POROUS GRAVEL AND AND 6 MIL POLY VAPOR BARRIER.

5.) ALL CONCRETE SHALL BE A MINIMUM STRENGTH OF 3000 PSI MEETING ACI 301 AND ACI 318. ALL CONCRETE SHALL BE MIXED, HANDLED, SAMPLED, TESTED, AND PLACED IN ACCORDANCE WITH ACI STANDARDS.

6.) ALL REINFORCING BARS SHALL BE GRADE 60 CONFORMING TO ASTM 615. LAP BARS WHERE REQUIRED USING CLASS B TENSION LAP SPLICES, OR 40 BAR DIAMETERS.

7.) ALL MASONRY AND MORTAR SHALL COMPLY WITH ASCE 5-05 AND ASCE 6-05 STANDARDS. FULL MORTAR COVERAGE ON HORIZONTAL AND VERTICAL BRICK SURFACES IS REQUIRED AT ALL MORTAR JOINTS. ALL CORNERS SHALL BE TIED BY TOOTHED MASONRY BOND.

8.) CONTRACTOR SHALL VERIFY AND COORDINATE THE LOCATION, SIZE, TYPE AND DIRECTION OF ALL THICKENED SLABS, PADS, DEPRESSIONS, RECESSED SLABS, BOLTS, SLEEVES, ANCHORS, INSERTS, OPENINGS, ETC. TO BE SET OR CAST IN CONCRETE, PRIOR TO CONCRETE PLACEMENT.

*Engineers seal does not include construction means, methods, techniques, sequences, procedures or safety precaution.
* Any deviation or discrepancies on plans are to be brought to the immediate attention of Tyndall Engineering & Design, P.A. Failure to do so will void Tyndall Engineering & Design, P.A. liability.
* Contractor: these documents carefully. Tyndall Engineering & Design, P.A. will interpret that all dimensions, recommendations, etc. presented in these documents were deemed acceptable once construction begins.

JOSHUA C. TYNDALL PROFESSIONAL SEAL 024899 ENGINEER PRETICE A. TYNDALL

TYNDALL ENGINEERING & DESIGN, P.A.
250 Shepard Drive • Garner • North Carolina • 27529
• 919-772-2203 • 919-772-9000
www.tyndallengineering.com

Client:
HAUCH DESIGN
1118 NORRIS ST
RALEIGH, NC 27604

Plan:
PUBLIC WORKS FACILITY
303 EAST CURCH STREET
BENSON, NC 27504

FOUNDATION PLAN

Project #: 1901-010022

Date: 04/17/19

Drawn/Design By: AWL

DWG. Checked By: PTII

Scale: SEE PLAN

REVISIONS

No.	Date:	Remarks
1		
2		
3		
4		

Sheet Number

S2

FILENAME: C:\USERS\TYNDALL ENGINEERING\DESKTOP\1901-010022.DWG SAVED BY: TYNDALL ENGINEERING LAST PLOT DATE:12/19/2019 12:43 PM

DESIGN LOADS

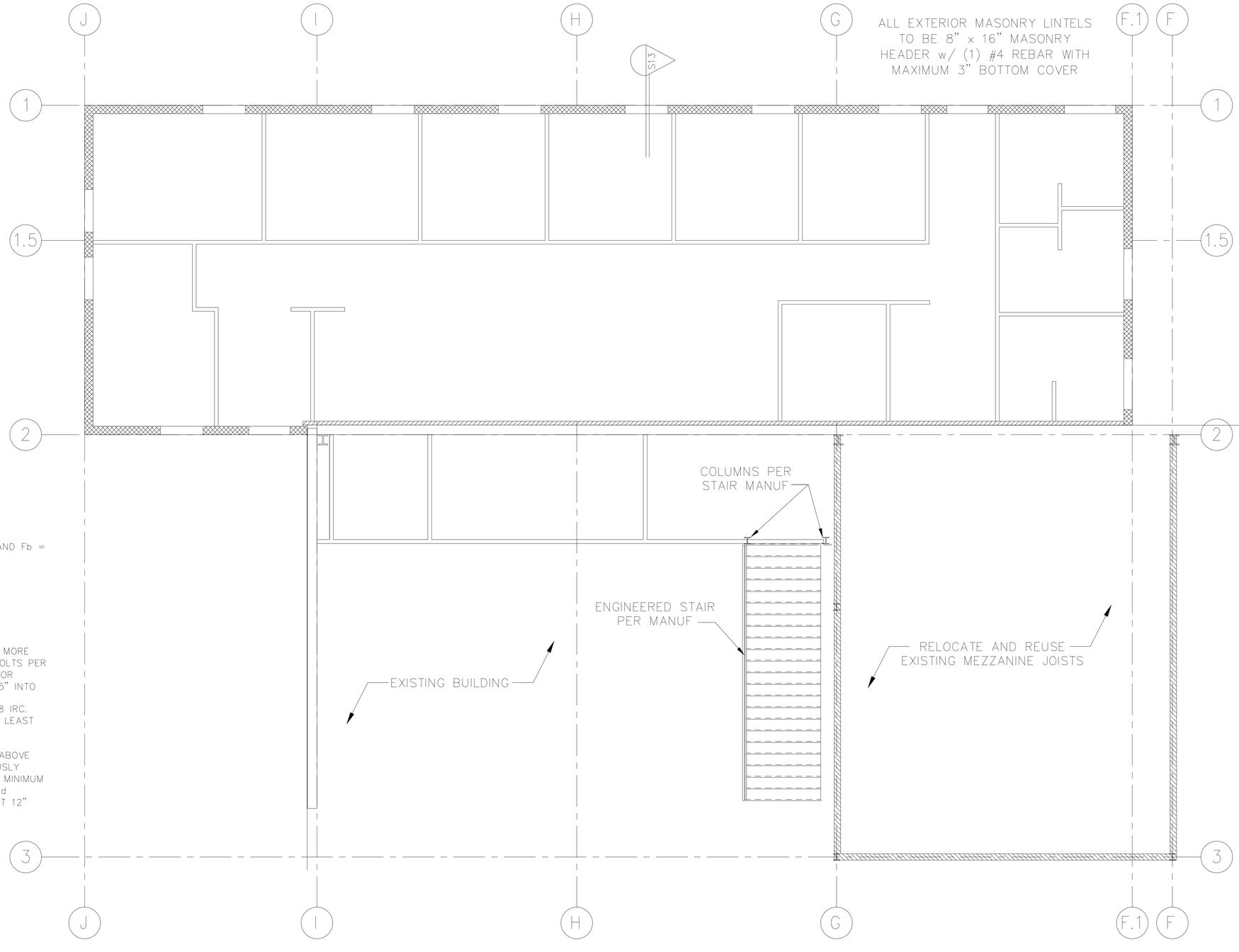
1. BUILDING CODES
a. NORTH CAROLINA BUILDING CODE 2018 EDITION
b. MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES, ASCE 7-05

2. ROOF DEAD LOAD	20 PSF
3. ROOF LIVE LOAD	20 PSF
4. ROOF SNOW LOAD	
a. FLAT-ROOF SNOW LOAD, Pf	15 PSF
b. SNOW EXPOSURE FACTOR, Ce	0.9
c. SNOW IMPORTANCE FACTOR, Is	1.0
d. THERMAL FACTOR, Ct	1.0
5. TYPICAL FLOOR DEAD LOAD	10 PSF
6. LIVE LOADS	
a. SLAB-ON-GRADE	100 PSF
7. WIND LOADS/DATA	
a. BASIC WIND SPEED (3 SECOND GUST)	110 MPH
b. WIND IMPORTANCE FACTOR, Iw	1.0
c. EXPOSURE	B
d. INTERNAL PRESSURE COEFFICIENT, GCpi	+-0.18
e. TOPOGRAPHY FACTOR, Kzt	1.00
f. APPLIED DIRECTIONALITY FACTOR, Kd	0.85
g. WIND BASE SHEAR	
Wx	14.6 KIPS
Wy	5.6 KIPS
8. SEISMIC LOADS/DATA	
a. ANALYSIS PROCEDURE	EQUIVALENT LATERAL FORCE
b. SITE CLASS	D
c. SEISMIC IMPORTANCE FACTOR Is	1.0
f. SITE COEFFICIENT, Fa	1.6
g. SITE COEFFICIENT, Fv	2.2
h. SPECTRAL RESPONSE COEFFICIENT, Sds	0.27
i. SPECTRAL RESPONSE COEFFICIENT, Sd1	0.20
j. SEISMIC USE GROUP	I
k. SEISMIC DESIGN CATEGORY	B
BASIC STRUCTURAL SYSTEM	BEARING WALL
l. RESPONSE MODIFICATION FACTOR, R	2.0
m. SYSTEM OVER-STRENGTH FACTOR	2.5
n. DEFLECTION AMPLIFICATION FACTOR, Cd	1.75
q. SEISMIC BASE SHEARS	
Sx	12.5 KIPS
Sy	6.1 KIPS

WALL FRAMING LEGEND:

- 8" MASONRY 13'-0" TALL (MAX) EXTERIOR WALL
- 350S162-43 @ 16" OC. LOAD BEARING INTERIOR WALL
- 350S162-33 @ 24" OC. NON-LOAD BEARING INTERIOR WALL
- 600S162-33 @ 24" OC. NON-LOAD BEARING INTERIOR WALL

1) ALL LUMBER SHALL BE SPF #2 (UNO)
ALL LVL LUMBER TO BE 1.75" WIDE NOMINAL EACH SINGLE MEMBER AND Fb = 2600 PSI, E = 1.9M PSI
(I.E. iLEVEL MICROLAM)
ALL LSL LUMBER IS TO BE 1.55E (Fb = 2325 PSI)
2) ALL STRUCTURAL STEEL SHALL BE ASTM A992 GRADE 50
Fy = 50 KSI MIN. (UNO)
3) ALL EXTERIOR LUMBER TO BE #2 SYP PT
4) ALL CONCRETE, fc = 3000 PSI MIN.
5) PRESUMPTIVE BEARING CAPACITY = 2000 PSF
6) 1/2"ø ANCHOR BOLTS SPACED AT MAXIMUM OF 6'-0" O.C. AND NOT MORE THAN 12" FROM THE CORNER. THERE SHALL BE A MINIMUM OF (2) BOLTS PER PLATE SECTION. ANCHOR BOLTS SHALL BE SPACED AT 3'-0" O.C. FOR BASEMENTS. ANCHOR BOLT SHALL EXTEND 7" INTO CONCRETE AND 15" INTO MASONRY.
7) PROVIDE CONTINUOUS SHEATHING PER SECTION 602.10.4 OF THE 2018 IRC.
8) MAXIMUM MASONRY PIER HEIGHT SHALL NOT EXCEED FOUR TIMES ITS LEAST HORIZONTAL DIMENSION.
9) METAL HANGERS SHALL BE SIMPSON OR APPROVED EQUAL.
10) ALL SHEATHABLE SURFACES OF EXTERIOR WALLS (INCLUDING AREAS ABOVE AND BELOW OPENINGS AND GABLE END WALLS) SHALL BE CONTINUOUSLY SHEATHED WITH WOOD STRUCTURAL PANEL (WSP) SHEATHING WITH A MINIMUM THICKNESS OF 5/8". SHEATHING SHALL BE SECURED WITH MINIMUM 6d COMMON NAILS SPACED AT 6" O.C. AT PANEL EDGES AND SPACED AT 12" O.C. AT INTERMEDIATE SUPPORTS.
11) SC = WOOD STUD COLUMN



1 FIRST FLOOR PLAN
1/4"=1'-0

*Engineers seal does not include construction means, methods, techniques, sequences, procedures or safety precaution.
*Any deviation or discrepancies on plans are to be brought to the immediate attention of Tyndall Engineering & Design, P.A. Failure to do so will void Tyndall Engineering & Design, P.A. liability.
*Contractor: Review these documents carefully. Tyndall Engineering & Design, P.A. will interpret that all dimensions, recommendations, etc. presented in these documents were deemed acceptable once construction begins.

NORTH CAROLINA PROFESSIONAL SEAL 024899 ENGINEER PATRICE A. TYNDALL

TYNDALL ENGINEERING & DESIGN, P.A.
250 Shepwash Drive • Garner • North Carolina • 27529
• 919.772.2035 • 919.772.9049
www.tyndallengineering.com

Client: HAUCH DESIGN
1118 NORRIS ST
RALEIGH, NC 27604

Place: PUBLIC WORKS FACILITY
303 EAST CURCH STREET
BENSON, NC 27504

FLOOR PLAN

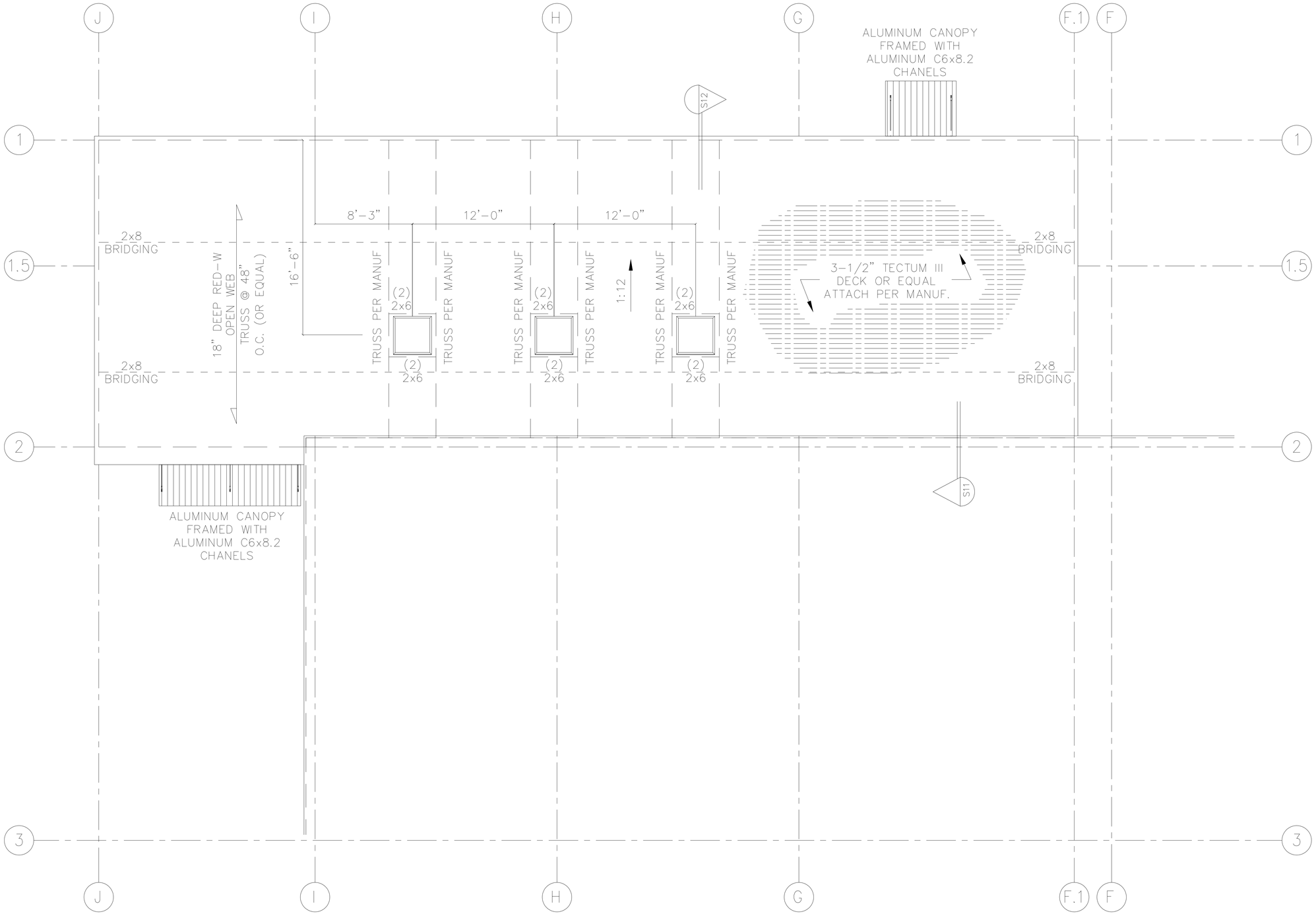
Project #: 1901-010022
Date: 04/17/19
Drawn/Design By: AWL
DWG. Checked By: PTII
Scale: SEE PLAN

REVISIONS

No.	Date:	Remarks
1		
2		
3		
4		

Sheet Number
S3

FILENAME: C:\USERS\TYNDALL ENGINEERING\DESKTOP\1901-010022.DWG SAVED BY: TYNDALL ENGINEERING LAST PLOT DATE:12/19/2019 12:43 PM



1 ROOF FRAMING PLAN

1/4"=1'-0

-SEE MANUFACTURER DRAWINGS FOR TRUSS DETAILS

*Engineers seal does not include construction means, methods, techniques, sequences, procedures or safety precaution.
*Any deviation or discrepancies on plans are to be brought to the immediate attention of Tyndall Engineering & Design, P.A. Failure to do so will void Tyndall Engineering & Design, P.A. liability.
*Contractor shall verify these documents carefully; Tyndall Engineering & Design, P.A. will interpret that all dimensions, recommendations, etc; presented in these documents were deemed acceptable once construction begins.

NORTH CAROLINA PROFESSIONAL SEAL 024899 ENGINEER PATRICK A. TYNDALL

TYNDALL
ENGINEERING & DESIGN, P.A.
250 Shepard Drive • Garner • North Carolina • 27529
• 919-772-2035 • 919-772-9009
www.tyndallengineering.com

Client:
HAUCH DESIGN
1118 NORRIS ST
RALEIGH, NC 27604

Plan:
PUBLIC WORKS FACILITY
303 EAST CURCH STREET
BENSON, NC 27504

ROOF PLAN

Project #:
1901-010022

Date:
04/17/19

Drawn/Design By:
AWL

DWG. Checked By:
PTII

Scale:
SEE PLAN

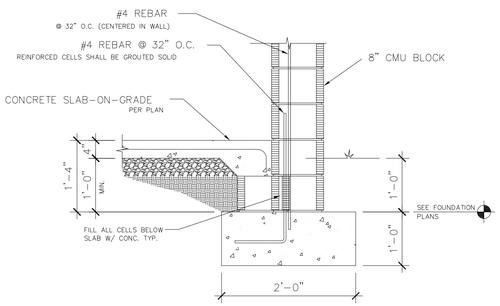
REVISIONS

No.	Date:	Remarks
1		
2		
3		
4		

Sheet Number

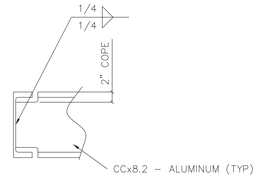
S4

FILENAME: C:\USERS\TYNDALL ENGINEERING\DESKTOP\1901-010022.DWG SAVED BY: TYNDALL ENGINEERING LAST PLOT DATE:12/19/2019 12:43 PM



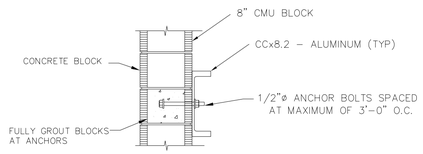
1 TYPICAL EXTERIOR FOUNDATION

NTS



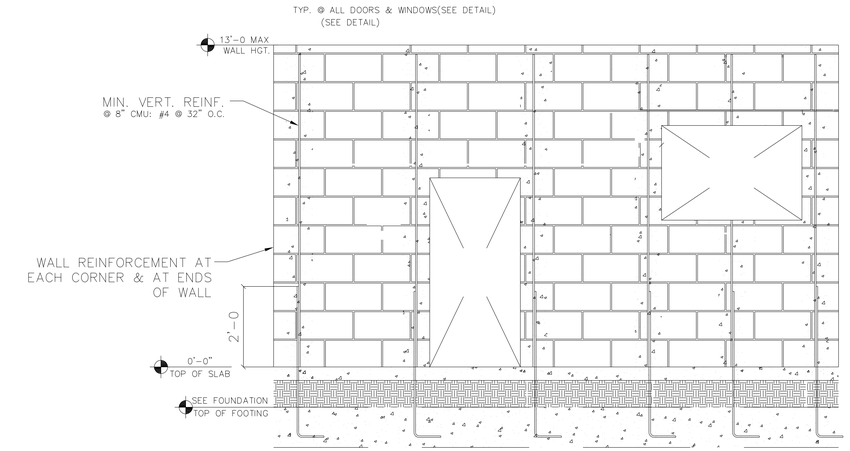
17 CHANNEL FRAMING DETAIL

NO SCALE



18 CANOPY WALL CONNECTION DETAIL

NO SCALE



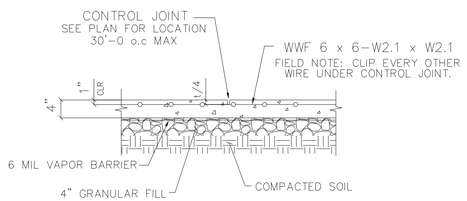
6 REINFORCED MASONRY WALL– ELEVATION

NTS

GENERAL:
1. EXTEND JAMB BARS TO TOP OF WALL WHERE OPENING WIDTH EXCEEDS 1'-4". OTHERWISE, EXTEND 40 BAR DIAMETERS OR 2'-0" MIN PAST OPENINGS.

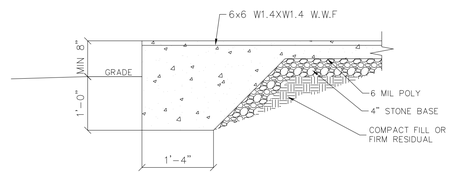
VERTICAL REINFORCING:
1. PROVIDE TYP. REINFORCING SHOWN IN TYP. WALL SECTION.
VERTICAL BARS SPECIFIED ABOVE ARE #4 BARS U.N.O.
2. PROVIDE (2)–BARS FULL HGT. @ EA. SIDE OF WALL OPENING UNLESS SHOWN ON PLAN. REINFORCING TO CLEAR END OF LINTEL.
3. PROVIDE (1) BAR @ EACH CORNER.
4. PROVIDE (1) BAR @ EACH SIDE OF A CONTROL JOINT.
5. PROVIDE (1) BAR WITHIN 8" OF ENDS OF WALLS.
6. ALL VERTICAL BARS SHALL HAVE DOWELS TO MATCH.

HORIZONTAL REINFORCING:
1. PROVIDE HORIZONTAL JOINT REINFORCING GALVANIZED 9 GA. SIDE & CROSS RODS SPACED @ 16" O.C. VERTICALLY, LADDER TYPE.



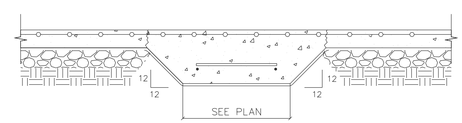
2 TYPICAL SLAB–ON–GRADE AT INTERIOR

NTS



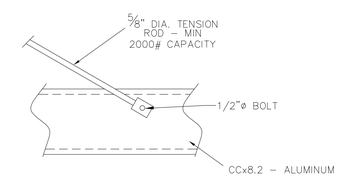
3 TYPICAL TURN DOWN SLAB

NTS



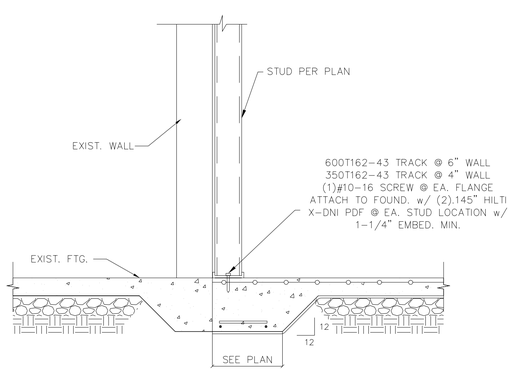
7 NEW FOOTING AT EXIST SLAB

NO SCALE



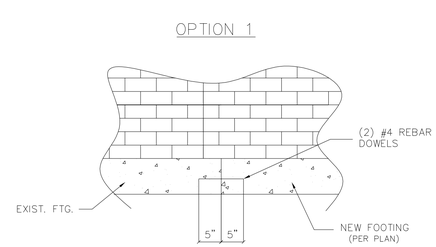
19 CHANNEL SUPPORT DETAIL

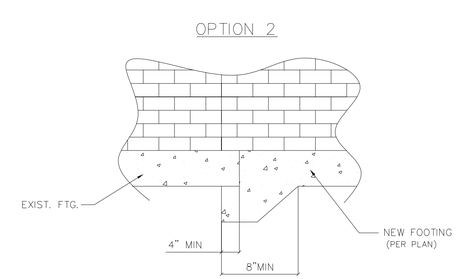
NO SCALE



4 NEW STUD WALL AT EXIST WALL

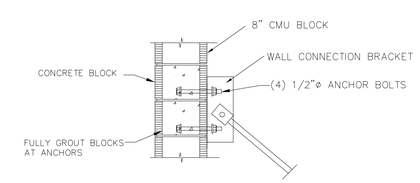
NO SCALE





5 NEW TO EXITING FOOTING DETAIL

NO SCALE



20 CANOPY SUPPORT CONNECTION DETAIL

NO SCALE

FILENAME: C:\USERS\TYNDALL ENGINEERING\DESKTOP\1901-010022.DWG SAVED BY: TYNDALL ENGINEERING, LAST PLOT DATE:12/19/2019 12:43 PM

*Engineers seal does not include construction means, methods, techniques, sequences, procedures or safety precaution.
*Any deviations or discrepancies on plans are to be brought to the immediate attention of Tyndall Engineering & Design, P.A. Failure to do so will void Tyndall Engineering & Design, P.A. liability.
*Carefully review these documents carefully. Tyndall Engineering & Design, P.A. will interpret that all dimensions, recommendations, etc; presented in these documents were deemed acceptable once construction begins.

NORTH CAROLINA PROFESSIONAL SEAL 024899 ENGINEER PRETTIS A. TYNDALL

TYNDALL ENGINEERING & DESIGN, P.A.
250 Shepard Drive • Garner • North Carolina • 27529
• 919-772-2035 • 919-772-9049
www.tyndallengineering.com

Client: HAUCH DESIGN
1118 NORRIS ST
RALEIGH, NC 27604

Plan: PUBLIC WORKS FACILITY
303 EAST CURCH STREET
BENSON, NC 27504

DETAILS

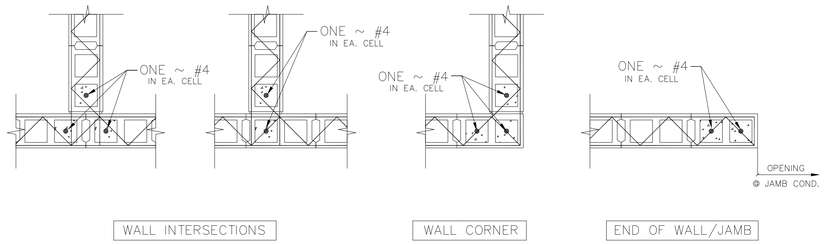
Project #:	1901-010022
Date:	04/17/19
Drawn/Design By:	AWL
DWG. Checked By:	PTH
Scale:	SEE PLAN

REVISIONS

No.	Date:	Remarks
1		
2		
3		
4		

Sheet Number

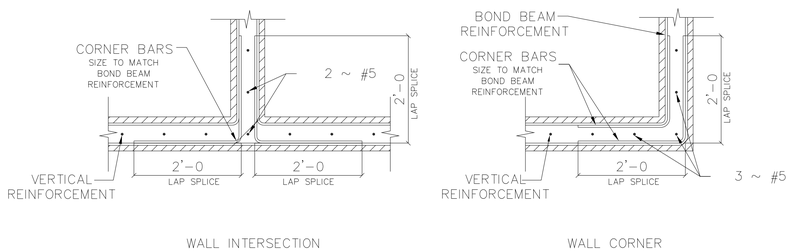
S5



8 TYPICAL CMU WALL CONDITIONS

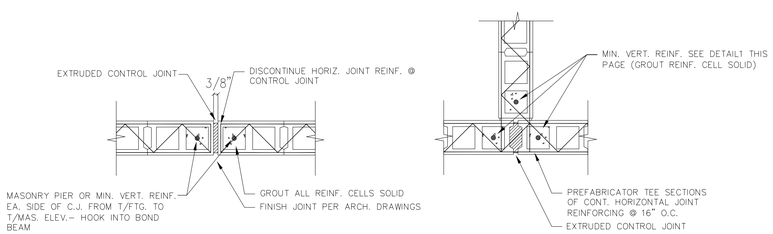
NO SCALE

GENERAL:
1. SPACING OF VERTICAL REINFORCEMENT NOT TO EXCEED SPACING IN WALL SECTION
2. WEB MAY BE REMOVED TO FACILITATE PLACEMENT OF FULL HGT. REINFORCEMENT
3. FILL CELLS AT WALL INTERSECTIONS OR END OF WALL/JAMB AS SHOWN



9 BOND BEAM REINFORCING @ WALL INTERSECTIONS

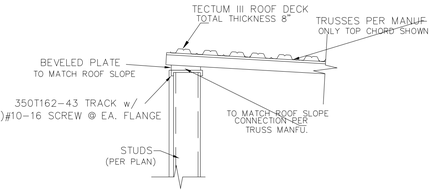
0"=1'-0"



10 WALL CONTROL JOINT DETAILS

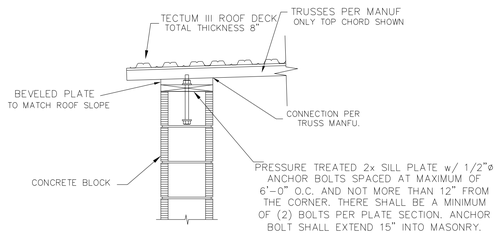
NTS

GENERAL:
1. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF CONTROL JOINTS
2. CMU WALL WIDTH PER PLAN
1. LADDER TYPE REINFORCEMENT IS DISCONTINUOUS AT JOINT. 50% OF BOND BEAM REINFORCEMENT IS DISCONTINUOUS AT JOINT.
2. CONTROL JOINT IS CONTINUOUS FULL HEIGHT OF WALL.
3. PLACE CONCRETE MASONRY CONTROL JOINT 35'-0" CENTERS & WITHIN 16'-0" OF CORNERS UNO. PLACE CONTROL JOINTS AT LEAST ONE HALF THE OPENING WIDTH AWAY FROM OPENINGS.



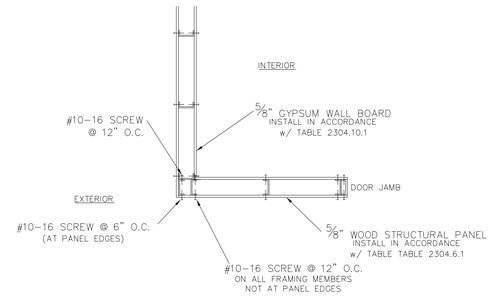
11 TOP OF WOOD WALL FRAMING

NO SCALE

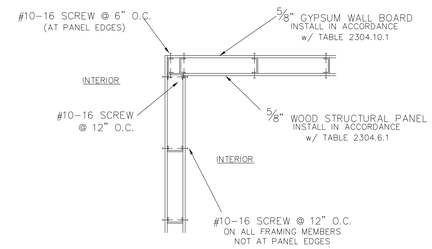


12 EXTERIOR MASONRY WALL

NO SCALE @ METAL DECK



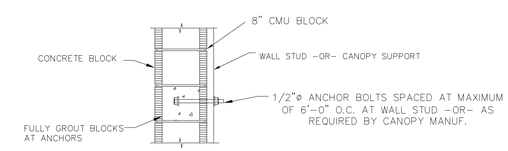
(A) OUTSIDE CORNER DETAIL



(B) INSIDE CORNER DETAIL

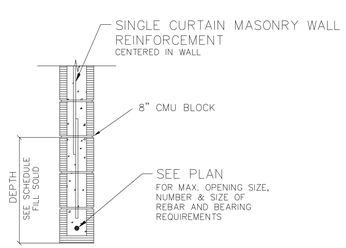
14 WALL BRACING DETAIL 602.10.3(4)b

NO SCALE



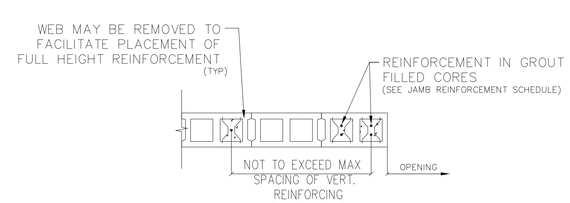
15 CONNECTION TO MASONRY WALL

NO SCALE AT STUD WALL AND EXTERIOR CANOPY



13 CMU LINTEL SECTION

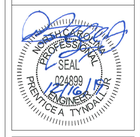
NTS



16 TYP. MASONRY JAMB

NTS

*Engineers seal does not include construction means, methods, techniques, sequences, procedures or safety precaution.
*Any deviation or discrepancies on plans are to be brought to the immediate attention of Tyndall Engineering & Design, P.A. Failure to do so will void Tyndall Engineering & Design, P.A. liability.
*Contractor shall review these documents carefully; Tyndall Engineering & Design, P.A. will interpret that all dimensions, recommendations, etc; presented in these documents were deemed acceptable once construction begins.



TYNDALL
ENGINEERING & DESIGN, P.A.
250 Shepard Drive • Garner • North Carolina • 27529
• 919-772-7200 • 919-772-7400
www.tyndallengineering.com

Client: HAUCH DESIGN
1118 NORRIS ST
RALEIGH, NC 27604

Plan: PUBLIC WORKS FACILITY
303 EAST CURCH STREET
BENSON, NC 27504

DETAILS

Project #:	1901-010022
Date:	04/17/19
Drawn/Design By:	AWL
DWG. Checked By:	PTH
Scale:	SEE PLAN

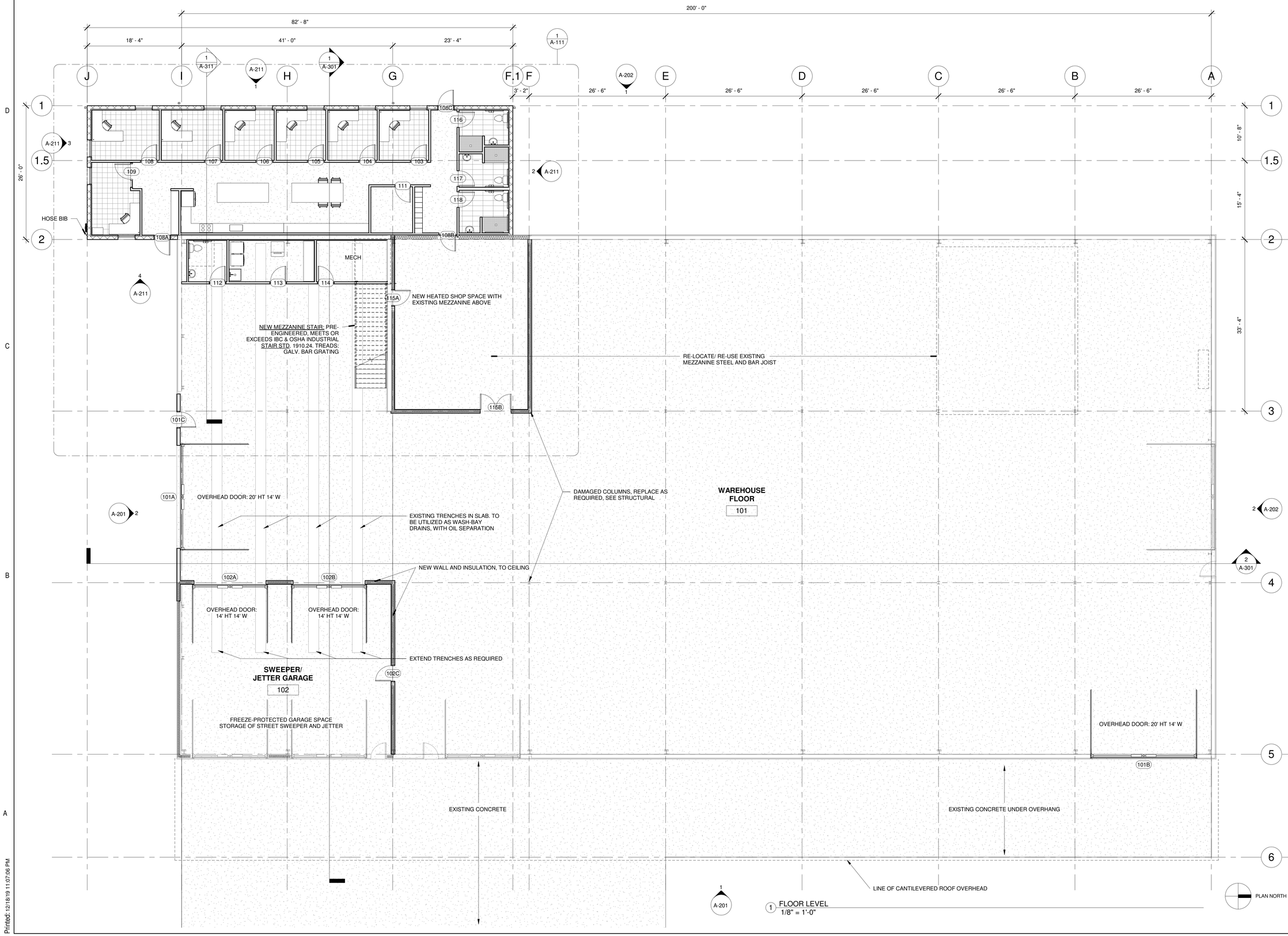
REVISIONS

No.	Date:	Remarks
1		
2		
3		
4		

Sheet Number

S6

FILENAME: C:\USERS\TYNDALL ENGINEERING\DESKTOP\1901-010022.DWG SAVED BY: TYNDALL ENGINEERING LAST PLOT DATE:12/19/2019 12:43 PM



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

HAUCH DESIGN architecture
1119 Norris Street Raleigh, NC 27604
www.hauchdesign.com
919.588.3132

ALL DRAWINGS, SPECIFICATIONS, DESIGNS AND IDEAS REPRESENTED OR INDICATED BY THESE DRAWINGS ARE THE PROPERTY OF **HAUCH DESIGN PLLC**, DEVELOPED AND ISSUED EXCLUSIVELY FOR USE ON, AND IN CONNECTION WITH THE SPECIFIED PROJECT, AND SHALL NOT BE DUPLICATED OR USED ON OTHER PROJECTS, IN WHOLE OR PART, WITHOUT WRITTEN CONSENT OF THE ARCHITECT.

HAUCH DESIGN PLLC Registered Architectural Company No. 53019 North Carolina RALEIGH NC

JEREMY RAESON HAUCH REGISTERED ARCHITECT NO. 13054 12/16/19 NORTH CAROLINA RALEIGH, NC

BID/ PERMIT/ CONSTRUCTION
Issue Dates / Revisions:

No:	Description:	Date:

Date: 12-16-19 Project No: 18-303-01

Public Works Facility - Benson

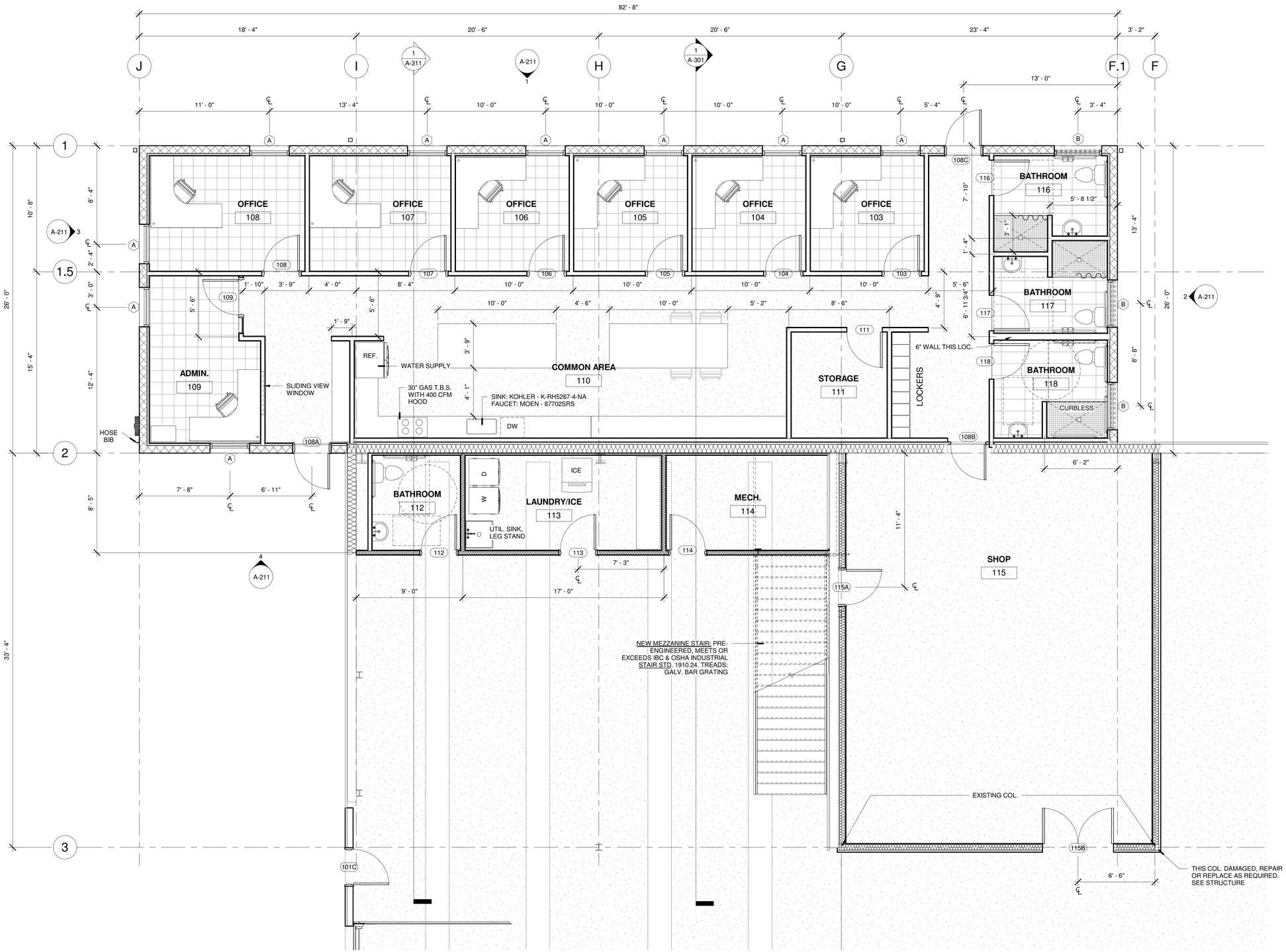
Owner: Town of Benson
303 E. Church St. Benson
NC 27504

WAREHOUSE FLOOR PLAN

A-101

Sheet Scale: 1/8" = 1'-0"

Printed: 12/18/19 11:07:06 PM



1 PLAN - OFFICES/ SHOP
1/4" = 1'-0"

PLAN NORTH

HAUCH DESIGN
architecture
1119 Norris Street Raleigh, NC 27604
www.hauchdesign.com
919.599.3132

ALL DRAWINGS, SPECIFICATIONS, DESIGNS AND IDEAS REPRESENTED OR INDICATED BY THESE DRAWINGS ARE THE PROPERTY OF **HAUCH DESIGN PLLC**, DEVELOPED AND ISSUED EXCLUSIVELY FOR USE ON, AND IN CONNECTION WITH THE SPECIFIED PROJECT, AND SHALL NOT BE DUPLICATED OR USED ON OTHER PROJECTS, IN WHOLE OR PART, WITHOUT WRITTEN CONSENT OF THE ARCHITECT.

HAUCH DESIGN PLLC
Registered Architectural Company
No. 53019
North Carolina
RALEIGH, NC

JEREMY RAESON HAUCH
REGISTERED ARCHITECT
NO. 13054
12/16/19
NORTH CAROLINA
RALEIGH, NC

BID/ PERMIT/ CONSTRUCTION
Issue Dates / Revisions:

No:	Description:	Date:

Date: 12-16-19 Project No: 18-303-01

Public Works Facility - Benson

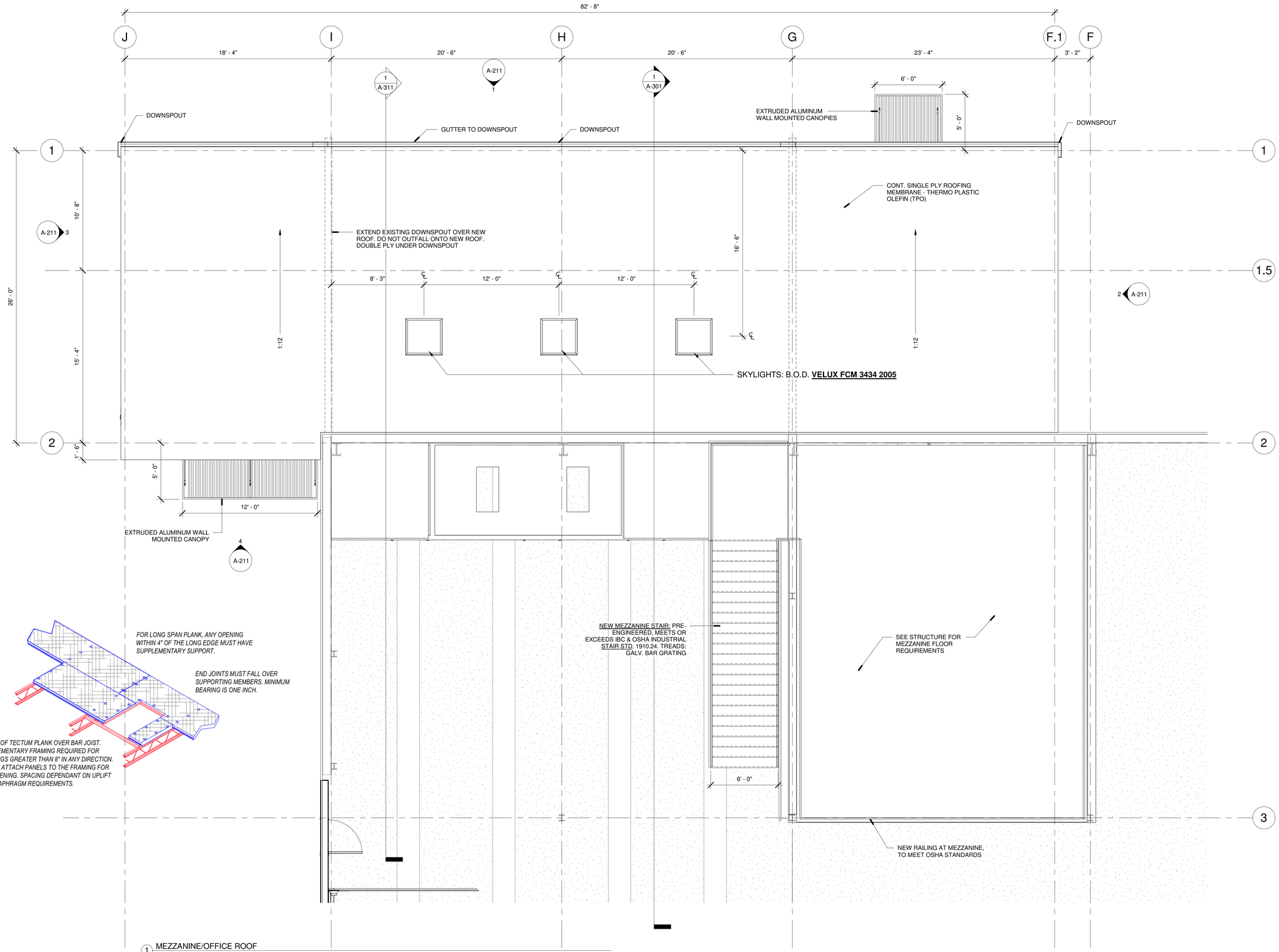
Owner: Town of Benson
303 E. Church St. Benson
NC 27504

FLOOR PLAN OFFICES

A-111

Sheet Scale: 1/4" = 1'-0"

Printed: 12/18/19 11:07:10 PM



1 MEZZANINE/OFFICE ROOF
1/4" = 1'-0"

HAUCH DESIGN
architecture
1119 Norris Street Raleigh, NC 27604
www.hauchdesign.com
919.588.3132

ALL DRAWINGS, SPECIFICATIONS, DESIGNS AND IDEAS REPRESENTED OR INDICATED BY THESE DRAWINGS ARE THE PROPERTY OF **HAUCH DESIGN PLLC**, DEVELOPED AND ISSUED EXCLUSIVELY FOR USE ON, AND IN CONNECTION WITH THE SPECIFIED PROJECT, AND SHALL NOT BE DUPLICATED OR USED ON OTHER PROJECTS, IN WHOLE OR PART, WITHOUT WRITTEN CONSENT OF THE ARCHITECT.

HAUCH DESIGN PLLC
Registered Architectural Company
No. 53019
North Carolina
RALEIGH NC

JEREMY RAESON HAUCH
NO. 13054
12/16/19
NORTH CAROLINA
RALEIGH, NC

BID/ PERMIT/ CONSTRUCTION
Issue Dates / Revisions:

No:	Description:	Date:

Date: 12-16-19 Project No: 18-303-01

Public Works Facility - Benson

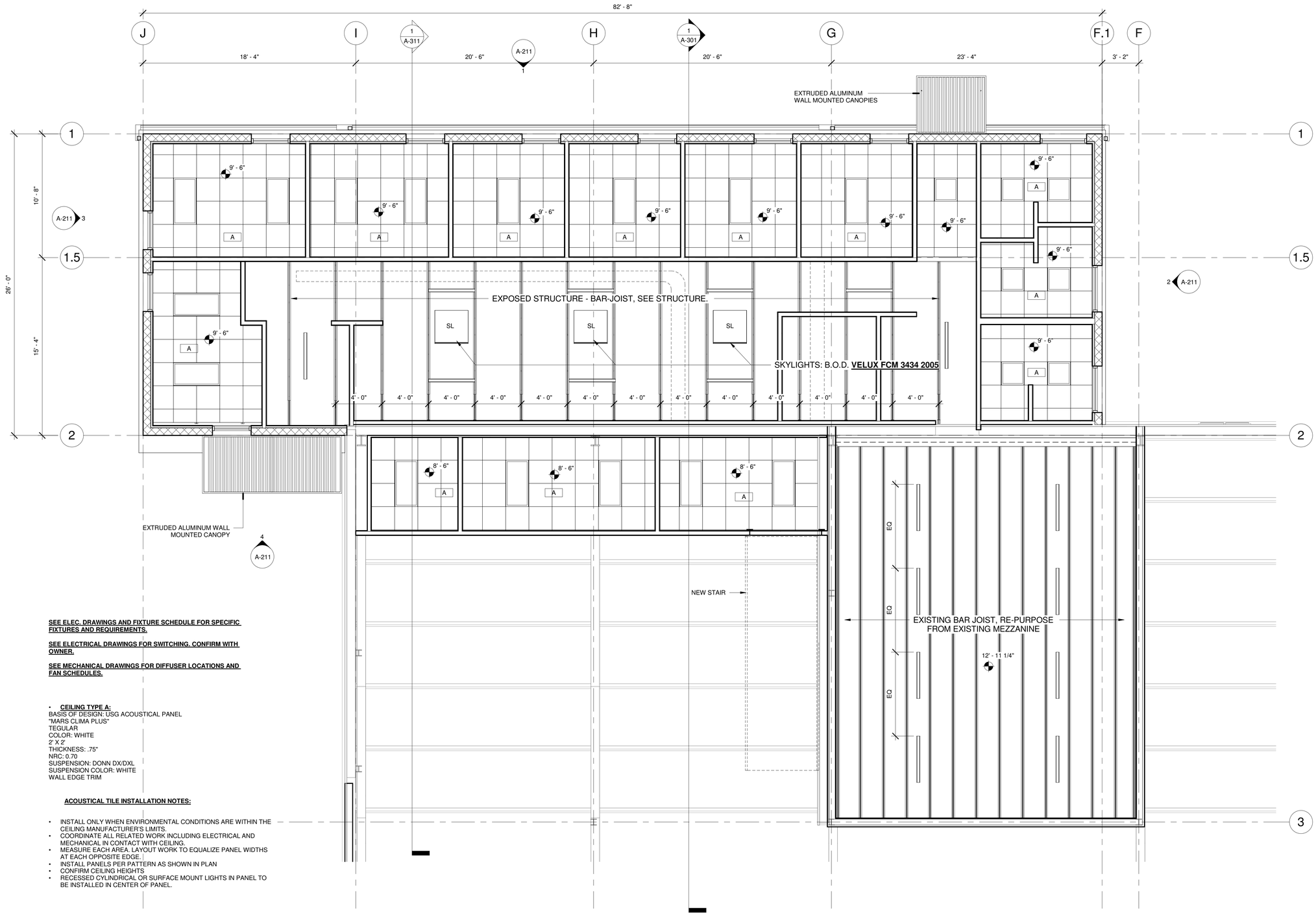
Owner: Town of Benson
303 E. Church St. Benson
NC 27504

MEZZANINE PLAN/ OFFICES ROOF

A-112

Sheet Scale: As indicated

Printed: 12/18/19 11:07:12 PM



1 FLOOR LEVEL
1/4" = 1'-0"

SEE ELEC. DRAWINGS AND FIXTURE SCHEDULE FOR SPECIFIC FIXTURES AND REQUIREMENTS.

SEE ELECTRICAL DRAWINGS FOR SWITCHING. CONFIRM WITH OWNER.

SEE MECHANICAL DRAWINGS FOR DIFFUSER LOCATIONS AND FAN SCHEDULES.

- **CEILING TYPE A:**

BASIS OF DESIGN: USG ACOUSTICAL PANEL
"MARS CLIMA PLUS"
TEGULAR
COLOR: WHITE
2' X 2'
THICKNESS: .75"
NRC: 0.70
SUSPENSION: DONN DX/DXL
SUSPENSION COLOR: WHITE
WALL EDGE TRIM

ACOUSTICAL TILE INSTALLATION NOTES:

- INSTALL ONLY WHEN ENVIRONMENTAL CONDITIONS ARE WITHIN THE CEILING MANUFACTURER'S LIMITS.
- COORDINATE ALL RELATED WORK INCLUDING ELECTRICAL AND MECHANICAL IN CONTACT WITH CEILING.
- MEASURE EACH AREA. LAYOUT WORK TO EQUALIZE PANEL WIDTHS AT EACH OPPOSITE EDGE.
- INSTALL PANELS PER PATTERN AS SHOWN IN PLAN
- CONFIRM CEILING HEIGHTS
- RECESSED CYLINDRICAL OR SURFACE MOUNT LIGHTS IN PANEL TO BE INSTALLED IN CENTER OF PANEL.

PLAN NORTH

HAUCH DESIGN
architecture
1119 Norris Street Raleigh, NC 27604
www.hauchdesign.com
919.598.3132

ALL DRAWINGS, SPECIFICATIONS, DESIGNS AND IDEAS REPRESENTED OR INDICATED BY THESE DRAWINGS ARE THE PROPERTY OF **HAUCH DESIGN PLLC**, DEVELOPED AND ISSUED EXCLUSIVELY FOR USE ON, AND IN CONNECTION WITH THE SPECIFIED PROJECT, AND SHALL NOT BE DUPLICATED OR USED ON OTHER PROJECTS, IN WHOLE OR PART, WITHOUT WRITTEN CONSENT OF THE ARCHITECT.

HAUCH DESIGN PLLC
Registered Architectural Company
No. 53019
North Carolina
RALEIGH NC

JEREMY RAESON HAUCH
REGISTERED ARCHITECT
NO. 13054
12/16/19
NORTH CAROLINA
RALEIGH, NC

BID/ PERMIT/
CONSTRUCTION
Issue Dates / Revisions:

No:	Description:	Date:

Date: 12-16-19 Project No: 18-303-01

Public Works Facility - Benson

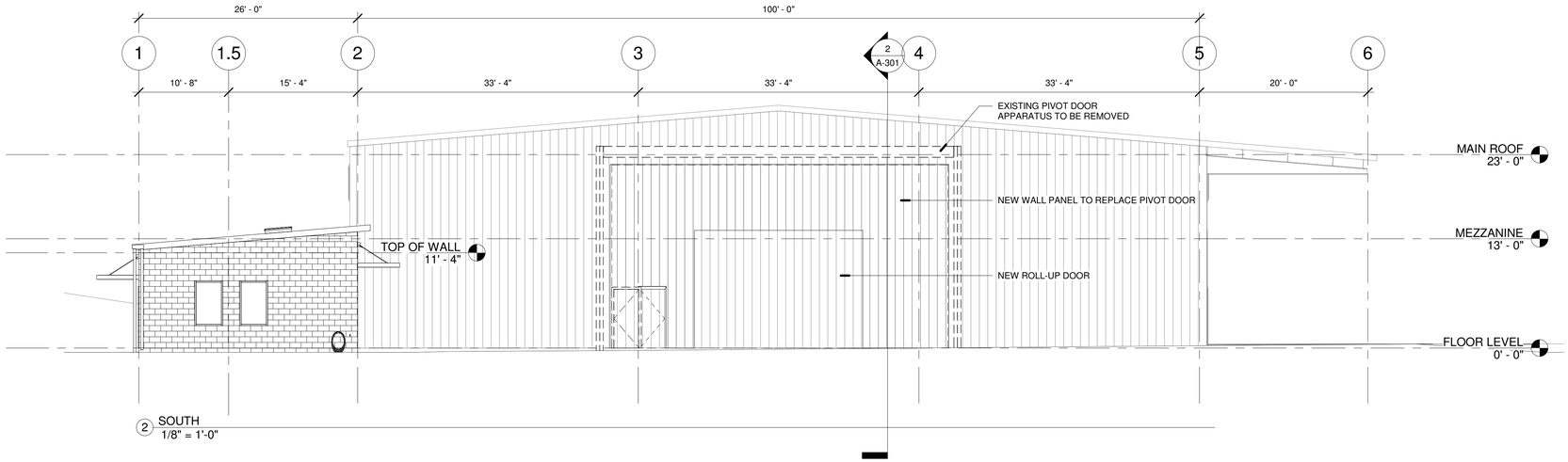
Owner: Town of Benson
303 E. Church St. Benson
NC 27504

REFLECTED CEILING PLAN - OFFICES, MEZZANINE

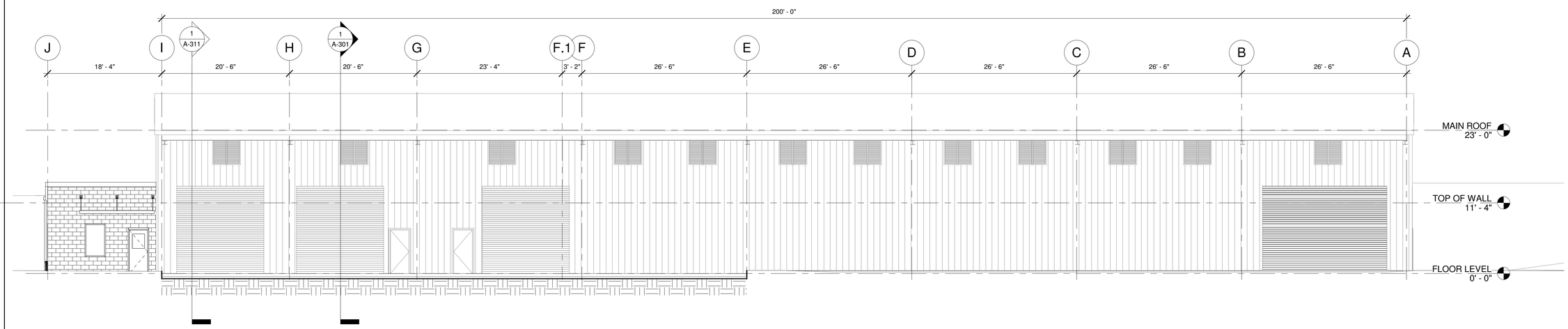
A-121

Sheet Scale: 1/4" = 1'-0"

Printed: 12/18/19 11:07:13 PM



2 SOUTH
1/8" = 1'-0"



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

HAUCH DESIGN
architecture
1119 Norris Street Raleigh, NC 27604
www.hauchdesign.com
919.598.3132

ALL DRAWINGS, SPECIFICATIONS, DESIGNS AND IDEAS REPRESENTED OR INDICATED BY THESE DRAWINGS ARE THE PROPERTY OF **HAUCH DESIGN PLLC**, DEVELOPED AND ISSUED EXCLUSIVELY FOR USE ON, AND IN CONNECTION WITH THE SPECIFIED PROJECT, AND SHALL NOT BE DUPLICATED OR USED ON OTHER PROJECTS, IN WHOLE OR PART, WITHOUT WRITTEN CONSENT OF THE ARCHITECT.

HAUCH DESIGN PLLC
Registered Architectural Corporation
No. 53019
North Carolina
RALEIGH NC

JEREMY RAESON HAUCH
REGISTERED ARCHITECT
NO. 13054
12/16/19
NORTH CAROLINA
RALEIGH, NC

BID/ PERMIT/
CONSTRUCTION
Issue Dates / Revisions:

No:	Description:	Date:

Date: 12-16-19 Project No: 18-303-01

Public Works Facility - Benson

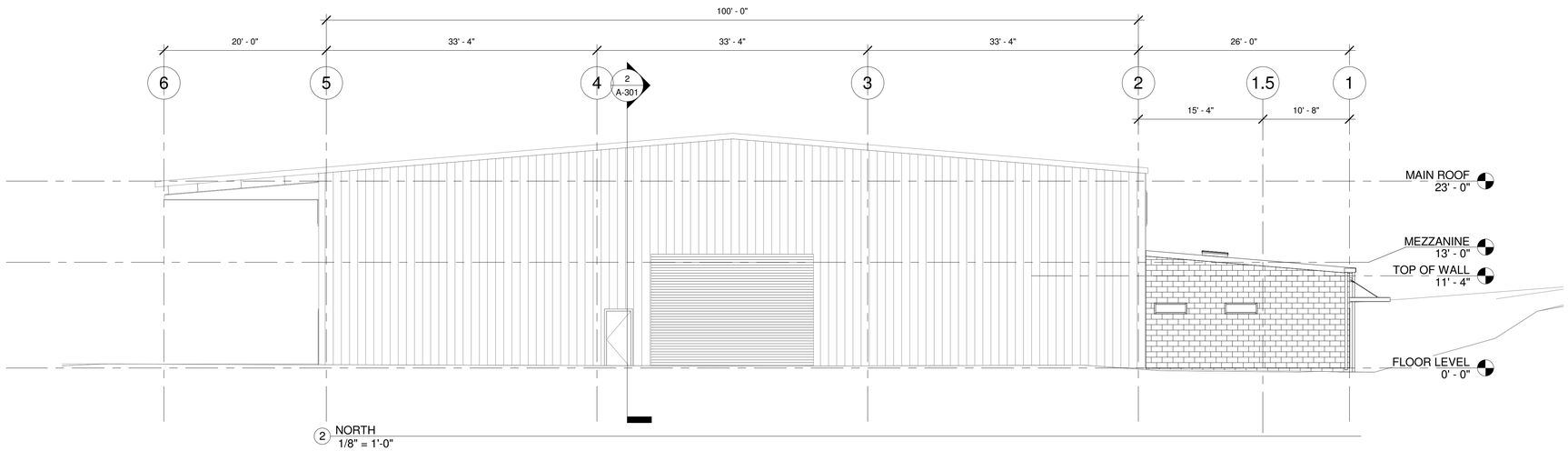
Owner: Town of Benson
303 E. Church St. Benson
NC 27504

BUILDING ELEVATIONS

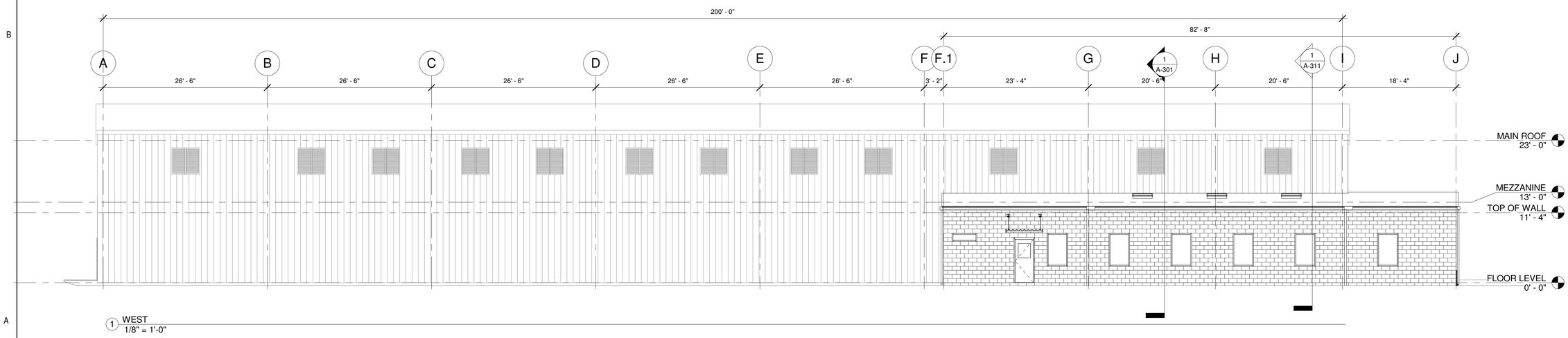
A-201

Sheet Scale: 1/8" = 1'-0"

Printed: 12/18/19 11:07:17 PM



2 NORTH
1/8" = 1'-0"



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

HAUCH DESIGN
architecture
1119 Norris Street Raleigh, NC 27604
www.hauchdesign.com
919.588.3132

ALL DRAWINGS, SPECIFICATIONS, DESIGNS AND IDEAS REPRESENTED OR INDICATED BY THESE DRAWINGS ARE THE PROPERTY OF **HAUCH DESIGN PLLC**, DEVELOPED AND ISSUED EXCLUSIVELY FOR USE ON, AND IN CONNECTION WITH THE SPECIFIED PROJECT, AND SHALL NOT BE DUPLICATED OR USED ON OTHER PROJECTS, IN WHOLE OR PART, WITHOUT WRITTEN CONSENT OF THE ARCHITECT.

HAUCH DESIGN PLLC
Registered Architectural Corporation
No. 53019
North Carolina
RALEIGH NC

JEREMY RAESON HAUCH
REGISTERED ARCHITECT
NO. 13054
12/16/19
NORTH CAROLINA
RALEIGH, NC

BID/ PERMIT/
CONSTRUCTION
Issue Dates / Revisions:

No:	Description:	Date:

Date: 12-16-19 Project No: 18-303-01

Public Works Facility - Benson

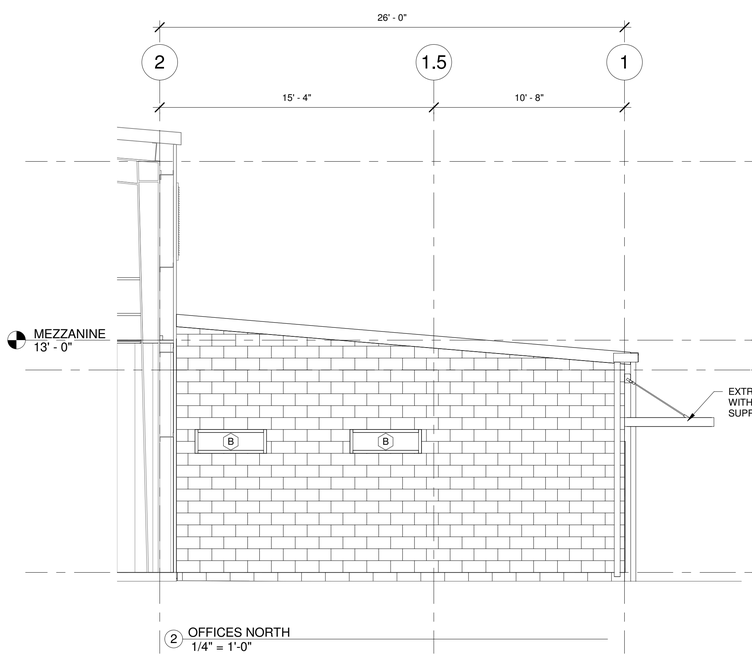
Owner: Town of Benson
303 E. Church St. Benson
NC 27504

BUILDING ELEVATIONS

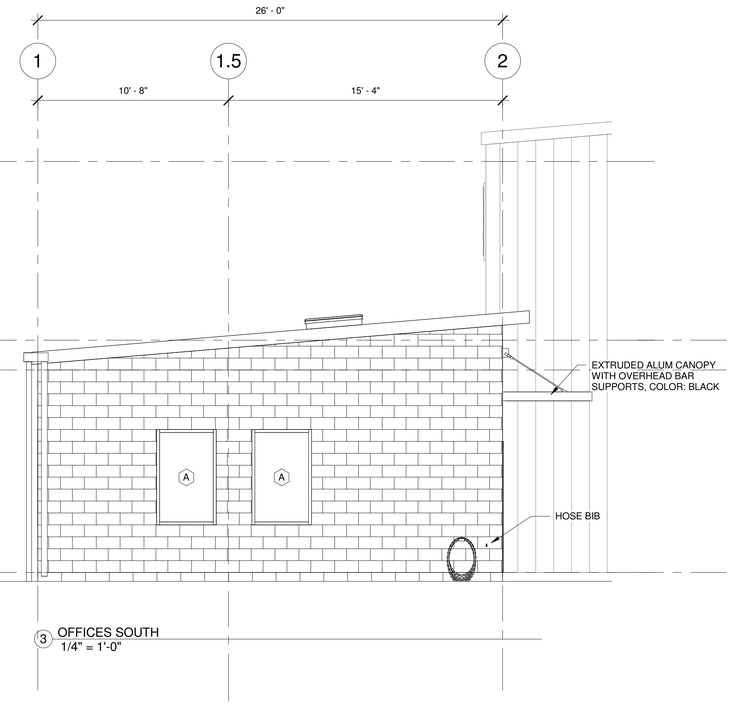
A-202

Sheet Scale: 1/8" = 1'-0"

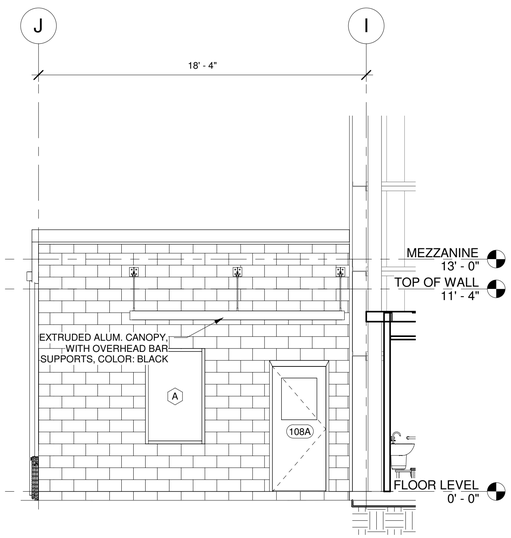
Printed: 12/18/19 11:07:19 PM



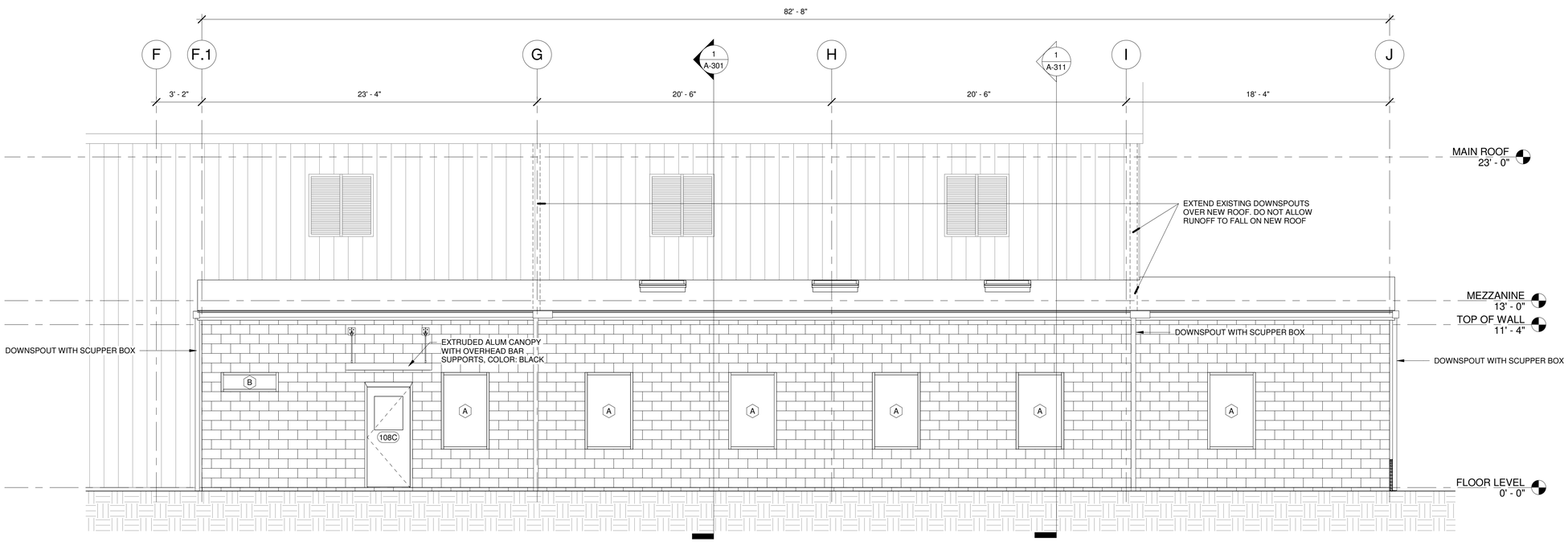
2 OFFICES NORTH
1/4" = 1'-0"



3 OFFICES SOUTH
1/4" = 1'-0"



4 OFFICES EAST ENTRANCE
1/4" = 1'-0"



1 OFFICES WEST
1/4" = 1'-0"

HAUCH DESIGN
architecture
1119 Norris Street Raleigh, NC 27604
www.hauchdesign.com
919.598.3132

ALL DRAWINGS, SPECIFICATIONS, DESIGNS AND IDEAS REPRESENTED OR INDICATED BY THESE DRAWINGS ARE THE PROPERTY OF **HAUCH DESIGN PLLC**, DEVELOPED AND ISSUED EXCLUSIVELY FOR USE ON, AND IN CONNECTION WITH THE SPECIFIED PROJECT, AND SHALL NOT BE DUPLICATED OR USED ON OTHER PROJECTS, IN WHOLE OR PART, WITHOUT WRITTEN CONSENT OF THE ARCHITECT.

HAUCH DESIGN PLLC
Registered Architectural Company
No. 53019
North Carolina
RALEIGH NC

JEREMY RAESON HAUCH
REGISTERED ARCHITECT
NO. 13054
12/16/19
NORTH CAROLINA
RALEIGH, NC

BID/ PERMIT/
CONSTRUCTION
Issue Dates / Revisions:

No:	Description:	Date:

Date: 12-16-19 Project No: 18-303-01

Public Works Facility - Benson

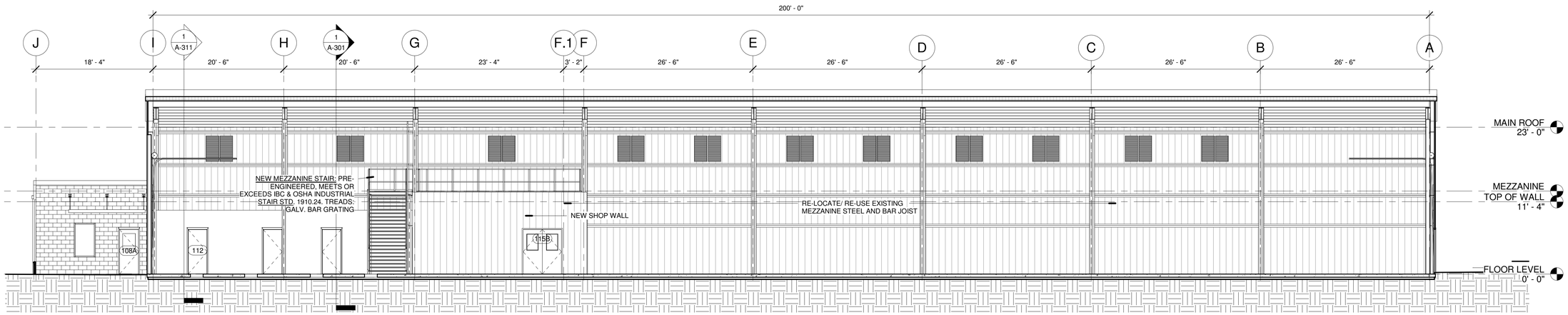
Owner: Town of Benson
303 E. Church St. Benson
NC 27504

ELEVATIONS - OFFICES

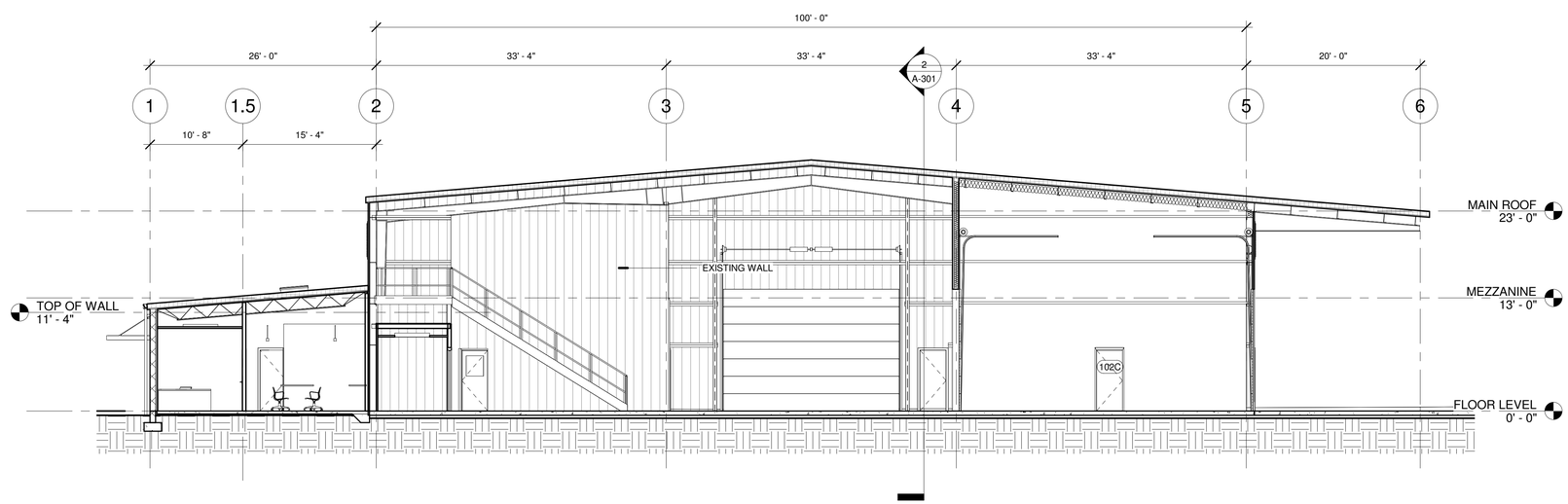
A-211

Sheet Scale: 1/4" = 1'-0"

Printed: 12/18/19 11:07:22 PM



2 LONG 02
1/8" = 1'-0"



1 LATERAL 02
1/8" = 1'-0"

HAUCH DESIGN
architecture
1119 Norris Street Raleigh, NC 27604
www.hauchdesign.com
919.588.3132

ALL DRAWINGS, SPECIFICATIONS, DESIGNS AND IDEAS REPRESENTED OR INDICATED BY THESE DRAWINGS ARE THE PROPERTY OF **HAUCH DESIGN PLLC**, DEVELOPED AND ISSUED EXCLUSIVELY FOR USE ON, AND IN CONNECTION WITH THE SPECIFIED PROJECT, AND SHALL NOT BE DUPLICATED OR USED ON OTHER PROJECTS, IN WHOLE OR PART, WITHOUT WRITTEN CONSENT OF THE ARCHITECT.

HAUCH DESIGN PLLC
Registered Architectural Company
No. 53019
North Carolina
RALEIGH NC

JEREMY RAESON HAUCH
REGISTERED ARCHITECT
NO. 13054
12/16/19
NORTH CAROLINA
RALEIGH, NC

BID/ PERMIT/
CONSTRUCTION
Issue Dates / Revisions:

No:	Description:	Date:

Date: 12-16-19 Project No: 18-303-01

Public Works Facility - Benson

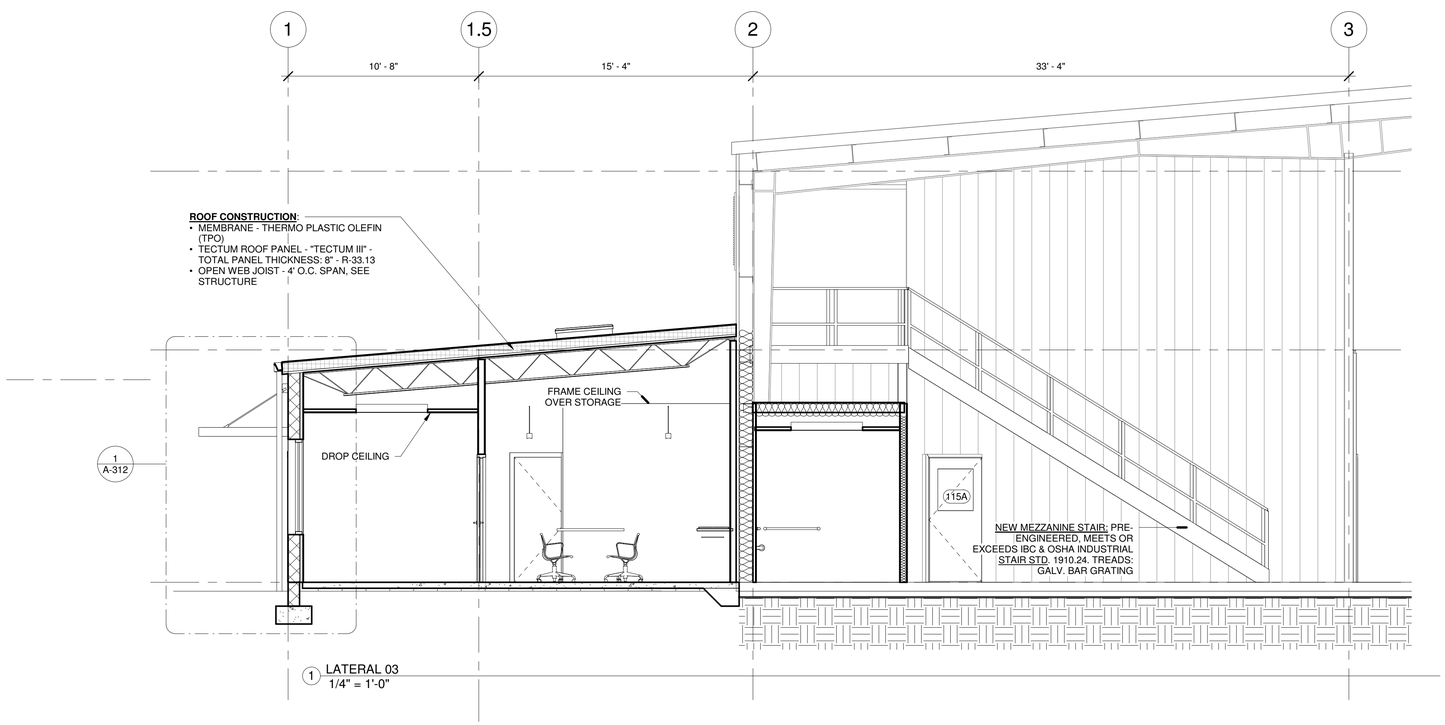
Owner: Town of Benson
303 E. Church St. Benson
NC 27504

BUILDING SECTIONS

A-301

Sheet Scale: 1/8" = 1'-0"

Printed: 12/18/19 11:07:26 PM



1 LATERAL 03
1/4" = 1'-0"

HAUCH DESIGN
architecture
1119 Norris Street Raleigh, NC 27604
www.hauchdesign.com
919.588.3132

ALL DRAWINGS, SPECIFICATIONS, DESIGNS AND IDEAS REPRESENTED OR INDICATED BY THESE DRAWINGS ARE THE PROPERTY OF **HAUCH DESIGN PLLC**, DEVELOPED AND ISSUED EXCLUSIVELY FOR USE ON, AND IN CONNECTION WITH THE SPECIFIED PROJECT, AND SHALL NOT BE DUPLICATED OR USED ON OTHER PROJECTS, IN WHOLE OR PART, WITHOUT WRITTEN CONSENT OF THE ARCHITECT.

HAUCH DESIGN PLLC
Registered Architectural Corporation
No. 53019
North Carolina
RALEIGH NC

JEREMY RAESON HAUCH
REGISTERED ARCHITECT
NO. 13054
12/16/19
NORTH CAROLINA
RALEIGH, NC

BID/ PERMIT/
CONSTRUCTION
Issue Dates / Revisions:

No:	Description:	Date:

Date: 12-16-19 Project No: 18-303-01

Public Works Facility - Benson

Owner: Town of Benson
303 E. Church St. Benson
NC 27504

ENLARGED SECTIONS

A-311

Sheet Scale: 1/4" = 1'-0"

Printed: 12/18/19 11:07:27 PM

SECTION 07214

FOAMED-IN-PLACE MASONRY WALL INSULATION

PART 1 - GENERAL

DESCRIPTION OF WORK:

A. Applications of insulation specified in this section include the following:

Foamed-In-Place masonry insulation for thermal, sound and fire resistance values.

QUALITY ASSURANCE:

A. Insulation shall be installed as per manufacture's recommendation and must come from the manufacturer pre-mixed to ensure consistency. Upon request, a one year product and installation warranty will be issued by both the manufacturer and installer.

B. Engage an experienced dealer/applicator who has been trained and licensed by the product manufacturer and which has not less than three years direct experience in the installation of the product used.

PART 2 - PRODUCTS

ACCEPTABLE MANUFACTURERS

A. ***"Core-Fill 500™"*** as manufactured by Tailored Chemical Products, P.O. Box 4186, Hickory, N.C. 28603, (800) 627-1687. No substitutions allowed.

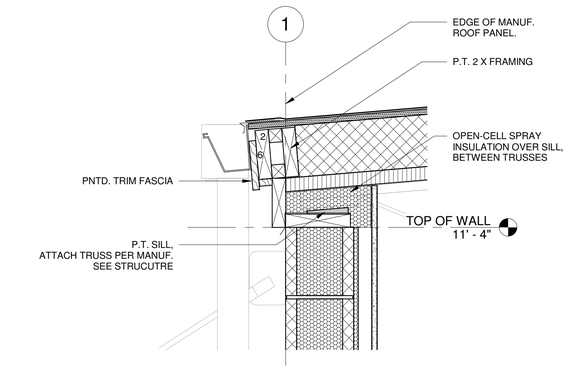
MINIMUM PRODUCT PERFORMANCE STANDARDS

(1) Surface Burning Characteristics: Maximum flame spread, smoke developed and fuel contributed of 0, 5 and 0 respectively. (2) Combustion Characteristics: Must be noncombustible, Class A building material. (3) Thermal Values: "R" Value of 4.91/inch @ 32 degrees F mean; ASTM C-177. (4) Sound Abatement: Minimum Sound Transmission Class ("STC") rating of 53 and a minimum Outdoor Indoor Transmission Class ("OITC") rating of 44 for 8" wall assembly ASTM E90-90).

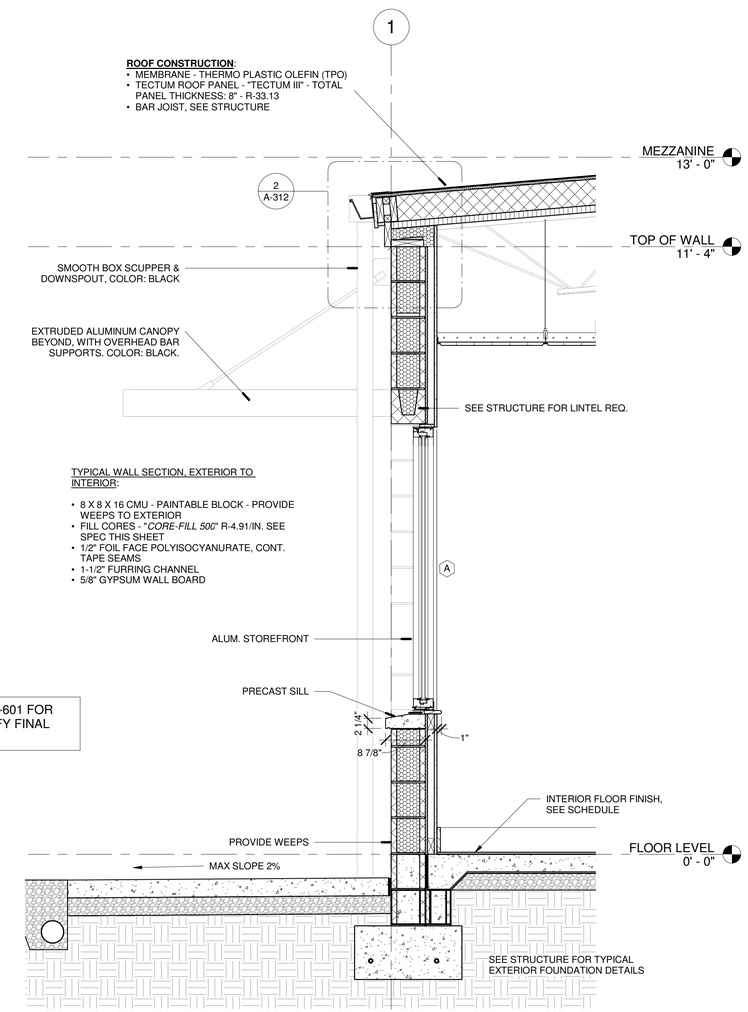
PART 3 - EXECUTION

INSTALLATION GUIDELINES

Fill all open cells and voids in hollow concrete masonry walls where shown on drawings. The foam insulation shall be pressure injected through a series of 5/8" to 7/8" holes drilled into every vertical column of block cells (every 8" on center) beginning at an approximate height of four (4) feet from finished floor level. Repeat this procedure at an approximate height of ten (10) feet above the first horizontal row of holes (or as needed) until the void is completely filled. Patch holes with mortar and score to resemble existing surface.



2 DETAIL AT EAVE
1 1/2" = 1'-0"



NOTE: SEE WINDOW SCHEDULE SHEET A-601 FOR ALUMINUM STOREFRONT SYSTEM - VERIFY FINAL SELECTION WITH OWNER

1 WALL SECTION 01
3/4" = 1'-0"

HAUCH DESIGN architecture
1119 Norris Street Raleigh, NC 27604
www.hauchdesign.com
919.598.3132

ALL DRAWINGS, SPECIFICATIONS, DESIGNS AND IDEAS REPRESENTED OR INDICATED BY THESE DRAWINGS ARE THE PROPERTY OF **HAUCH DESIGN PLLC**, DEVELOPED AND ISSUED EXCLUSIVELY FOR USE ON, AND IN CONNECTION WITH THE SPECIFIED PROJECT, AND SHALL NOT BE DUPLICATED OR USED ON OTHER PROJECTS, IN WHOLE OR PART, WITHOUT WRITTEN CONSENT OF THE ARCHITECT.

HAUCH DESIGN PLLC Registered Architectural Firm No. 53019 North Carolina RALEIGH NC

JEREMY RAESON HAUCH Registered Architect NO. 13054 12/16/19 North Carolina RALEIGH, NC

BID/ PERMIT/ CONSTRUCTION

Issue Dates / Revisions:

No:	Description:	Date:

Date: 12-16-19 Project No: 18-303-01

Public Works Facility - Benson

Owner: Town of Benson
303 E. Church St. Benson
NC 27504

WALL SECTIONS

A-312

Sheet Scale: As indicated

Printed: 12/18/19 11:07:28 PM

DOOR & FRAME SCHEDULE

Door No.	Room	DOOR Type: Material	DOOR Height	DOOR Width	DOOR Finish	FRAME Type	FRAME Material	FRAME Finish	Comments	Hardware Set	Door No.
101C	WAREHOUSE	HG-HM	7' - 0"	3' - 0"	Painted	ST1	Hollow Mtl.	Painted			101C
102C	SWEEPER/ JETTER		7' - 0"	3' - 0"	Painted	ST1	Hollow Mtl.	Painted	INSULATED CORE	LS	102C
103	OFFICE	FG-Wood	7' - 0"	3' - 0"	Transparent	ST1	Hollow Mtl.	Painted		PR	103
104	OFFICE	FG-Wood	7' - 0"	3' - 0"	Transparent	ST1	Hollow Mtl.	Painted		PR	104
105	OFFICE	FG-Wood	7' - 0"	3' - 0"	Transparent	ST1	Hollow Mtl.	Painted		PR	105
106	OFFICE	FG-Wood	7' - 0"	3' - 0"	Transparent	ST1	Hollow Mtl.	Painted		PR	106
107	OFFICE	FG-Wood	7' - 0"	3' - 0"	Transparent	ST1	Hollow Mtl.	Painted		PR	107
108	OFFICE	FG-Wood	7' - 0"	3' - 0"	Transparent	ST1	Hollow Mtl.	Painted		PR	108
108A	ENTRY	HG-HM	7' - 0"	3' - 0"	Painted	ST1	Hollow Mtl.	Painted	KEYPAD ENTRY - INSULATED CORE	LS	108A
108B	OFFICE -SHOP	HG-HM	7' - 0"	3' - 0"	Painted	ST1	Hollow Mtl.	Painted	KEYPAD ENTRY - INSULATED CORE	LS	108B
108C	BACK ENTRY	HG-HM	7' - 0"	3' - 0"	Painted	ST1	Hollow Mtl.	Painted	KEYPAD ENTRY - INSULATED CORE	LS	108C
109	ADMIN	FG-Wood	7' - 0"	3' - 0"	Transparent	ST1	Hollow Mtl.	Painted	INTERIOR GLAZING	PR	109
111	STORAGE	F-Wood	7' - 0"	3' - 0"	Transparent	ST1	Hollow Mtl.	Painted		CL	111
112	BATHROOM		7' - 0"	3' - 0"	Painted	ST1	Hollow Mtl.	Painted	INSULATED CORE	PR	112
113	LAUNDRY/ICE		7' - 0"	3' - 0"	Painted	ST1	Hollow Mtl.	Painted	INSULATED CORE	CL	113
114	MECHANICAL		7' - 0"	3' - 0"	Painted	ST1	Hollow Mtl.	Painted	INSULATED CORE	CL	114
115A	SHOP	HG-HM	7' - 0"	3' - 0"	Painted	ST1	Hollow Mtl.	Painted	KEYPAD ENTRY - INSULATED CORE	LS	115A
115B	SHOP	HG-HM	7' - 0"	6' - 0"	Painted	ST1	Hollow Mtl.	Painted	KEYPAD ENTRY - INSULATED CORE	LS	115B
116	BATHROOM	F-Wood	7' - 0"	3' - 0"	Transparent	ST1	Hollow Mtl.	Painted		PR	116
117	BATHROOM	F-Wood	7' - 0"	3' - 0"	Transparent	ST1	Hollow Mtl.	Painted		PR	117
118	BATHROOM	F-Wood	7' - 0"	3' - 0"	Transparent	ST1	Hollow Mtl.	Painted		PR	118

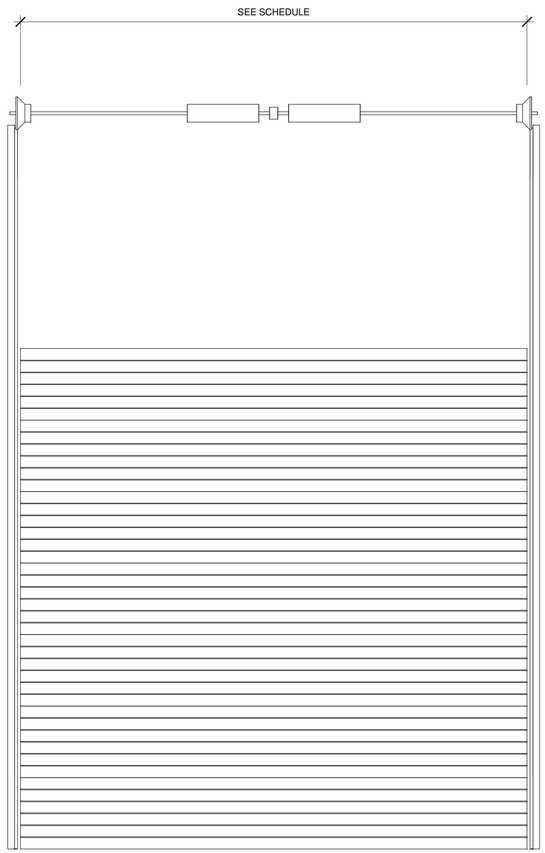
HM - HOLLOW METAL

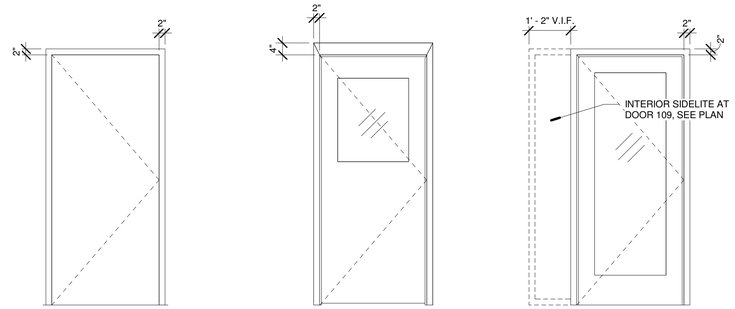
GARAGE DOORS

Door No.	Room	DOOR Type: Material	DOOR Height	DOOR Width	DOOR Finish	FRAME Type	FRAME Material	FRAME Finish	Comments	Hardware Set	Door No.
101A	WAREHOUSE	MTL - Manuf	14' - 0"	20' - 0"	Factory Color	G-1	Per Manuf	Factory Color	Overhead Garage Doors to be Equiped with Automatic Openers. See Notes	Per Manuf	101A
101B	WAREHOUSE	MTL - Manuf	14' - 0"	20' - 0"	Factory Color	G-1	Per Manuf	Factory Color	Overhead Garage Doors to be Equiped with Automatic Openers. See Notes	Per Manuf	101B
102A	SWEEPER/ JETTER	MTL - Manuf	14' - 0"	14' - 0"	Factory Color	G-1	Per Manuf	Factory Color	Overhead Garage Doors to be Equiped with Automatic Openers. Insulated, See Notes	Per Manuf	102A
102B	SWEEPER/ JETTER	MTL - Manuf	14' - 0"	14' - 0"	Factory Color	G-1	Per Manuf	Factory Color	Overhead Garage Doors to be Equiped with Automatic Openers. Insulated, See Notes	Per Manuf	102B

GARAGE DOORS: PRODUCTS/MANUF OPTIONS - TO BE SELECTED:
A. "DOORLINK"
B. "C.H.I."
C. "D.B.C.I."

NOTE: RETROFIT EXISTING GARAGE DOORS TO REMAIN WITH OVERHEAD AUTOMATIC OPENERS





F - HM OR WOOD, SEE SCHEDULE **HG** **FG**

DOOR TYPES

NOTES:
1. WOOD DOORS - ROTARY CUT WHITE BIRCH - CLEAR FACTORY FINISH
2. PROVIDE ADA SIGNAGE AT BATHROOMS

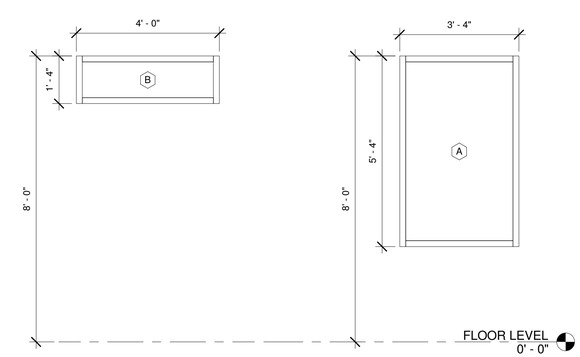
FRAMES:
1. HOLLOW METAL FRAMES: 16 GA KNOCK-DOWN FRAMES
2. HM DOOR AND WINDOW FRAME COLOR TO MATCH ADJACENT WALL COLOR - SHOP PRIMER COAT PLUS TWO COATS SEMI-GLOSS ENAMEL.

DOOR HARDWARE:
1. PROVIDE ADA LEVER TRIM THROUGHOUT - SATIN NICKEL FINISH.
2. ALL LOCKS TO BE KEYED INTO A MASTER KEYING SYSTEM. KEYPAD AT EXTERIOR DOORS TO OFFICE.
3. LOCATE HARDWARE ON DOORS AND FRAMES IN ACCORDANCE WITH MANUFACTURERE'S STANDARDS.
4. PROVIDE DOOR STOPS WHERE APPROPRIATE. FINISH TO MATCH
5. PROVIDE FULL HARDWARE SBMITTAL FOR APPROVAL
6. HARDWARE TO BE FINALIZED WITH OWNER PRIOR TO ORDERING, AND SHALL BE FULLY CORRDINATED WITH OWNER'S SECURITY SYSTEM

LS: LOCKSET **PR**: PRIVACY SET **CL**: CLOSET

ALUMINUM STORE FRONT SYSTEM:

A. Basis of Design: Oldcastle "Series 3000 Thermal MultiPlane, Center Set"
B. Frame Size: 2 inches sightline, 4.5 inches deep, U.N.O. see elevations for sizes.
C. Glass Position: Center.
D. Assembly Method: Screw spline or shear block.
E. Color: Dark Bronze or Black - Standard Manuf. Color



2 WINDOW TYPE B
1/2" = 1'-0"

1 WINDOW TYPE A
1/2" = 1'-0"

HAUCH DESIGN
architecture
1119 Norris Street Raleigh, NC 27604
www.hauchdesign.com
919.598.3132

ALL DRAWINGS, SPECIFICATIONS, DESIGNS AND IDEAS REPRESENTED OR INDICATED BY THESE DRAWINGS ARE THE PROPERTY OF **HAUCH DESIGN PLLC**, DEVELOPED AND ISSUED EXCLUSIVELY FOR USE ON, AND IN CONNECTION WITH THE SPECIFIED PROJECT, AND SHALL NOT BE DUPLICATED OR USED ON OTHER PROJECTS, IN WHOLE OR PART, WITHOUT WRITTEN CONSENT OF THE ARCHITECT.

HAUCH DESIGN PLLC
Registered Architectural Corporation
No. 53019
North Carolina
RALEIGH NC

JEREMY RAESON HAUCH
NC REGISTERED ARCHITECT
NO. 13054
12/16/19
NORTH CAROLINA
RALEIGH, NC

BID/ PERMIT/ CONSTRUCTION
Issue Dates / Revisions:

No:	Description:	Date:

Date: 12-16-19 Project No: 18-303-01

Public Works Facility - Benson

Owner: Town of Benson
303 E. Church St. Benson
NC 27504

DOOR AND WINDOW SCHEDULE

A-601

Sheet Scale: 1/2" = 1'-0"

Printed: 12/18/19 11:07:29 PM

ROOM FINISH SCHEDULE

Level	Room No.	Room Name	FLOOR		WALLS								CEILING		Comments
					NORTH		EAST		SOUTH		WEST				
			Floor Material	Base Material	Material	Finish	Material	Finish	Material	Finish	Material	Finish	Type	Height	
FLOOR LEVEL	101	WAREHOUSE FLOOR	X-CONC	--	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	VARIES	
FLOOR LEVEL	102	SWEEPER/ JETTER GARAGE	X-CONC	--	MTL.	FACTORY	MTL.	FACTORY	MTL.	FACTORY	MTL.	FACTORY	UNFIN	VARIES	ADD INSULATION TO CEILING
FLOOR LEVEL	103	OFFICE	CPT-1	RUBBER	GWB-1	PTD-1	GWB-1	PTD-1	GWB-1	PTD-1	GWB-1	PTD-1	ACT	9' 6"	
FLOOR LEVEL	104	OFFICE	CPT-1	RUBBER	GWB-1	PTD-1	GWB-1	PTD-1	GWB-1	PTD-1	GWB-1	PTD-1	ACT	9' 6"	
FLOOR LEVEL	105	OFFICE	CPT-1	RUBBER	GWB-1	PTD-1	GWB-1	PTD-1	GWB-1	PTD-1	GWB-1	PTD-1	ACT	9' 6"	
FLOOR LEVEL	106	OFFICE	CPT-1	RUBBER	GWB-1	PTD-1	GWB-1	PTD-1	GWB-1	PTD-1	GWB-1	PTD-1	ACT	9' 6"	
FLOOR LEVEL	107	OFFICE	CPT-1	RUBBER	GWB-1	PTD-1	GWB-1	PTD-1	GWB-1	PTD-1	GWB-1	PTD-1	ACT	9' 6"	
FLOOR LEVEL	108	OFFICE	CPT-1	RUBBER	GWB-1	PTD-1	GWB-1	PTD-1	GWB-1	PTD-1	GWB-1	PTD-1	ACT	9' 6"	
FLOOR LEVEL	109	ADMIN.	CPT-1	RUBBER	GWB-1	PTD-1	GWB-1	PTD-1	GWB-1	PTD-1	GWB-1	PTD-1	ACT	9' 6"	
FLOOR LEVEL	110	COMMON AREA	CONC-1	RUBBER	GWB-1	PTD-1	GWB-1/TILE-2	PTD-1	GWB-1	PTD-1	GWB-1	PTD-1	EXPOSED	VARIES	
FLOOR LEVEL	111	STORAGE	CONC-1	RUBBER	GWB-1	PTD-1	GWB-1	PTD-1	GWB-1	PTD-1	GWB-1	PTD-1	EXPOSED	VARIES	
FLOOR LEVEL	112	BATHROOM	CONC-1	RUBBER	GWB-2	PTD-2	GWB-2	PTD-2	GWB-2	PTD-2	GWB-2	PTD-2	ACT	8' 6"	CLEAN AND SEAL EXISTING CONCRETE WITH HARDENER/DUSTPROOFER
FLOOR LEVEL	113	LAUNDRY/ICE	CONC-1	RUBBER	GWB-1	PTD-1	GWB-1	PTD-1	GWB-1	PTD-1	GWB-1	PTD-1	ACT	8' 6"	CLEAN AND SEAL EXISTING CONCRETE WITH HARDENER/DUSTPROOFER
FLOOR LEVEL	114	MECH.	CONC-1	---	GWB-1	PTD-1	GWB-1	PTD-1	GWB-1	PTD-1	GWB-1	PTD-1	EXPOSED	8' 6"	CLEAN AND SEAL EXISTING CONCRETE WITH HARDENER/DUSTPROOFER
FLOOR LEVEL	115	SHOP	CONC-1	---	PLY-1	UNFIN	PLY-1	UNFIN	PLY-1	UNFIN	PLY-1	UNFIN	EXPOSED	12'-0"	CLEAN AND SEAL EXISTING CONCRETE WITH HARDENER/DUSTPROOFER
FLOOR LEVEL	116	BATHROOM	TILE-1	RUBBER	GWB-2	PTD-2	GWB-2	PTD-2	GWB-2	PTD-2	GWB-2	PTD-2	ACT	9' 6"	
FLOOR LEVEL	117	BATHROOM	TILE-1	RUBBER	GWB-2	PTD-2	GWB-2	PTD-2	GWB-2	PTD-2	GWB-2	PTD-2	ACT	9' 6"	
FLOOR LEVEL	118	BATHROOM	TILE-1	RUBBER	GWB-2	PTD-2	GWB-2	PTD-2	GWB-2	PTD-2	GWB-2	PTD-2	ACT	9' 6"	

LEGEND:

GWB - GYPSUM WALL BOARD
PTD - PAINTED
ACT - ACOUSTICAL CEILING TILE

NOTES:

- **CONC-1 -** SEALED WITH CLEAR ACRYLIC HARDENER, SEALER, DUSTPROOFER. INSTALL PER MANF. REQUIREMENTS.
  BASIS OF DESIGN: "MASTERKURE HD 200WB" - 0 VOC. DRY BUFF AFTER 24 HRS WITH NON-AGGRESSIVE PAD. FILL JOINTS WITH FILLER PRIOR TO APPLICATION OF SEALER
- **CPT-1** - CARPET TILE: BASIS OF DESIGN: MILLIKEN - SURGE IN STRIKE - SUR106 25 CM X 1M PLANKS
  www.milliken.com
- **TILE-1** - BASIS OF DESIGN: 12 X 24 DAL-TILE PORTFOLIO SERIES - ASH GREY PF05. GROUT TO MATCH TILE COLOR.
  RECESS CONCRETE SUBFLOOR TO ACCOMODATE THICKNESS OF TILE, RESULTING IN MATCHING FINISH FLOOR HEIGHTS WITH CONCRETE TRANSITION WITH "SCHIENE" STAINLESS MATCHING HEIGHT TRANSITION STRIP - SCHLUTER SYSTEMS
- **TILE-2** - BASIS OF DESIGN: 2 X 2 DAL-TILE MOSAIC PORTFOLIO SERIES - ASH GREY OR MATCH BATHROOM FLOOR
- **TILE-3** - BASIS OF DESIGN, "DALTILE" CLEAR BRIGHT WHITE 3" X 12" CERAMIC MODULAR WALL TILE - GROUT COLOR : WHITE.
- **GROUT** - USE INTEGRAL ANTI-MOLD, ANTI-STAIN SEALER INSTEAD OF WATER TO MIX. COLORS TO BE SELECTED.
- **RUBBER BASE** - COLOR TO BE SELECTED - BASIS OF DESIGN - JOHNSONITE - TRADITIONAL 4". INSTALL WITH 100 PERCENT COVERAGE OF ADHESIVE APPLIED WITH NOTCHED TROWEL.
- **GWB-1 -** STANDARD PERFORMANCE 5/8" GYPSUM WALL BOARD
- **GWB-2 -** HIGH-PERFORMANCE, MOISTURE AND MOLD RESISTANT 5/8" GYPSUM WALL BOARD "PURPLE BOARD"
- **PTD-1 -** EGGSHELL - ASTM D523 STANDARD TEST METHOD FOR SPECULAR GLOSS, BASIS OF DESIGN - SHERWIN WILLIAMS
- **PTD-2** - SEMI-GLOSS - HIGH PERFORMANCE - BASIS OF DESIGN SHERWIN WILLIAMS
  COAT 1: "PROMAR 200 LATEX PRIMER B28W8200".
  COAT 2: "PRO INDUSTRIAL K45-150 SERIES"
  COAT 3: SAME AS ABOVE

CEILING NOTES:

- TYPE A: 2 X 2 TEGULAR (RECESSED GRID) IN LOCATIONS AS SHOWN.

CEILING TYPE A: BASIS OF DESIGN

USG ACOUSTICAL PANEL - "MARS CLIMA PLUS"
TEGULAR
COLOR: WHITE
2' X 2'
THICKNESS: .75"
NRC: 0.70
SUSPENSION: DONN DX/DXL
SUSPENSION COLOR: WHITE
WALL EDGE TRIM

HAUCH DESIGN architecture
1119 Norris Street Raleigh, NC 27604
www.hauchdesign.com
919.588.3132

ALL DRAWINGS, SPECIFICATIONS, DESIGNS AND IDEAS REPRESENTED OR INDICATED BY THESE DRAWINGS ARE THE PROPERTY OF **HAUCH DESIGN PLLC**, DEVELOPED AND ISSUED EXCLUSIVELY FOR USE ON, AND IN CONNECTION WITH THE SPECIFIED PROJECT, AND SHALL NOT BE DUPLICATED OR USED ON OTHER PROJECTS, IN WHOLE OR PART, WITHOUT WRITTEN CONSENT OF THE ARCHITECT.

HAUCH DESIGN PLLC Registered Architectural Company No. 53019 North Carolina RALEIGH NC

JEREMY RAESON HAUCH REGISTERED ARCHITECT NO. 13054 12/16/19 NORTH CAROLINA RALEIGH, NC

BID/ PERMIT/ CONSTRUCTION
Issue Dates / Revisions:

No:	Description:	Date:

Date: 12-16-19 Project No: 18-303-01

Public Works Facility - Benson

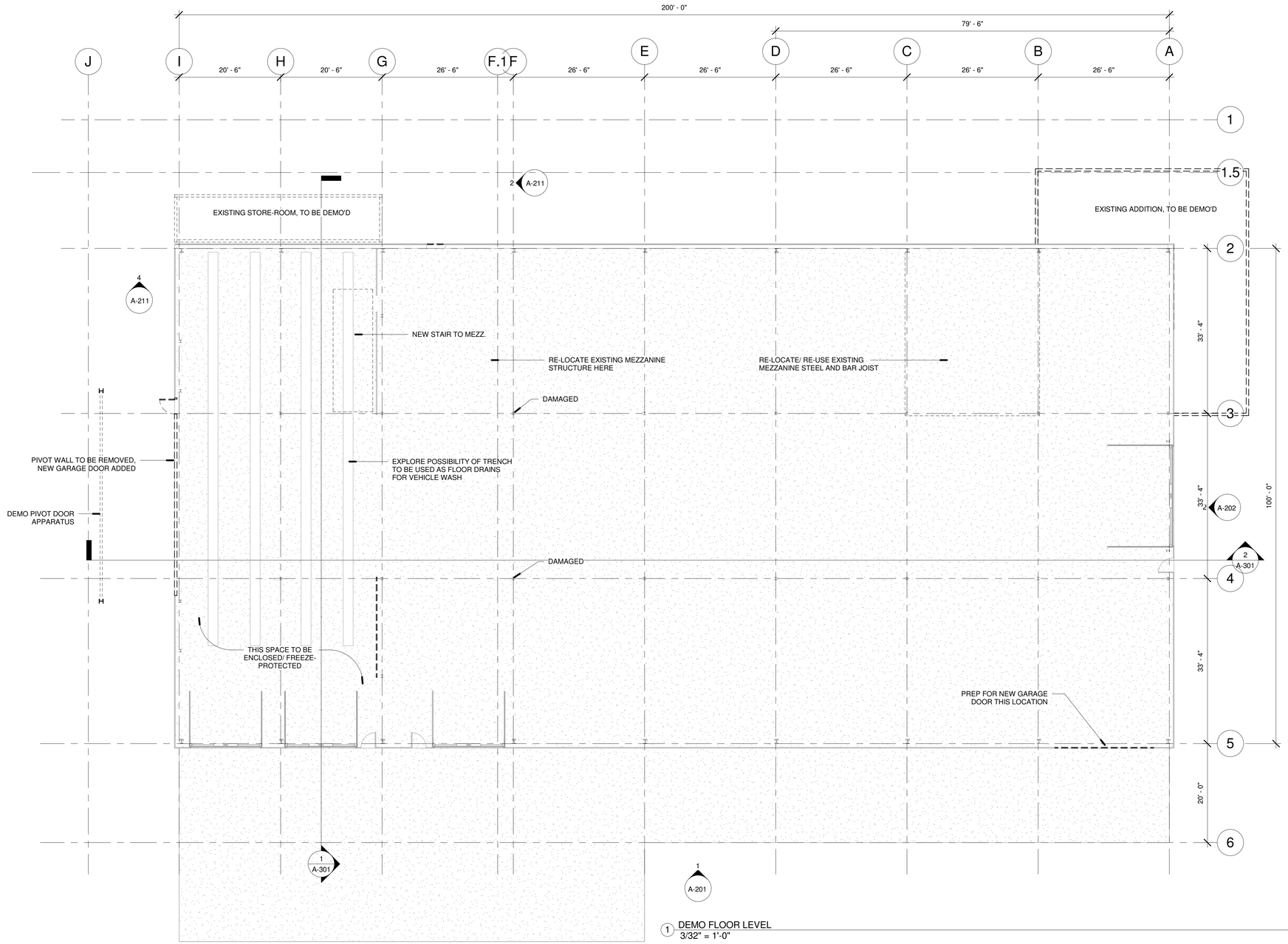
Owner: Town of Benson
303 E. Church St. Benson
NC 27504

ROOM FINISHES

A-603

Sheet Scale:

Printed: 12/18/19 11:07:30 PM



1 DEMO FLOOR LEVEL
3/32" = 1'-0"

PLAN NORTH

Printed: 12/18/19 11:07:33 PM

HAUCH DESIGN
architecture
1119 Norris Street Raleigh, NC 27604
www.hauchdesign.com
919.598.3132

ALL DRAWINGS, SPECIFICATIONS, DESIGNS AND IDEAS REPRESENTED OR INDICATED BY THESE DRAWINGS ARE THE PROPERTY OF **HAUCH DESIGN PLLC**, DEVELOPED AND ISSUED EXCLUSIVELY FOR USE ON, AND IN CONNECTION WITH THE SPECIFIED PROJECT, AND SHALL NOT BE DUPLICATED OR USED ON OTHER PROJECTS, IN WHOLE OR PART, WITHOUT WRITTEN CONSENT OF THE ARCHITECT.

HAUCH DESIGN PLLC
Registered Architectural Corporation
No. 53019
North Carolina
RALEIGH NC

JEREMY RAESON HAUCH
REGISTERED ARCHITECT
NO. 13054
12/16/19
NORTH CAROLINA
RALEIGH, NC

BID/ PERMIT/
CONSTRUCTION

Issue Dates / Revisions:

No:	Description:	Date:

Date: 12-16-19 Project No: 18-303-01

Public Works Facility - Benson

Owner: Town of Benson
303 E. Church St. Benson
NC 27504

MAIN LEVEL EXISTING/
DEMO PLAN

D-101

Sheet Scale: 3/32" = 1'-0"

GENERAL PLUMBING NOTES

I. GENERAL REQUIREMENTS:

1. PLUMBING CONTRACTOR IS TO FURNISH & PAY FOR ALL LABOR, MATERIAL, EQUIPMENT, PERMITS, & FEES REQUIRED FOR THE COMPLETE INSTALLATION OF ALL SYSTEMS IN THIS SECTION OF WORK.
2. ALL WORK IS TO BE PERFORMED IN ACCORDANCE W/ 2018 NCPC & ALL OTHER APPLICABLE CODES. P.C. IS TO COORDINATE W/ G.C. IN REGARDS TO PROJECT TIMELINE, WORK HOURS, AS WELL AS ANY BONDING OR INSURANCE REQUIREMENTS.
3. ALL PLUMBING FIXTURES & PLUMBING SYSTEM EQUIPMENT SHALL BE PROVIDED COMPLETE W/ ALL ACCESSORIES, HANGERS, VALVES, STOPS, TAILPIECES, TRAPS, FAUCETS, STRAINERS, ETC. REGARDLESS OF PRESENCE ON PLANS. SEE FIXTURE SCHEDULE.
4. ALL EQUIPMENT, MATERIALS, & INSTALLATION SHALL BE GUARANTEED TO BE FREE OF DEFECTS FOR A PERIOD OF ONE (1) YEAR AFTER FINAL ACCEPTANCE OF WORK OR IN ACCORDANCE W/ THE MANUFACTURER'S STANDARD GUARANTEE, IF LONGER. EXISTING EQUIPMENT IS EXCLUDED FROM WARRANTY REQUIREMENT.
5. THESE DRAWINGS ARE DIAGRAMMATIC & SHOW GENERAL LOCATION & ARRANGEMENT OF ALL MATERIALS & EQUIPMENT. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS BUILDING CONSTRUCTION & ALL OTHER WORK WILL PERMIT.
6. DO NOT SCALE DRAWINGS FOR MEASUREMENT.
7. INFORMATION GIVEN IN SCHEDULES INCLUDES BOTH DESCRIPTION OF PRODUCT & MANUFACTURER'S MODEL NUMBER. IF CONFLICT IS PRESENT BETWEEN DESCRIPTION & MODEL NUMBER, EQUIPMENT DESCRIPTION SHALL TAKE PRECEDENT. IN CASE OF CONFLICT BETWEEN THE PLANS & NOTES/ SPECIFICATIONS OR CONFLICT BETWEEN INFORMATION PRESENTED ON THE PLANS OR IN THE NOTES/SPECIFICATIONS, THEN THE MOST RESTRICTIVE SHALL TAKE PRECEDENT.
8. BEFORE BID P.C. IS RESPONSIBLE FOR CLARIFYING W/ G.C. ANY CONFUSION IN REGARDS TO RESPONSIBILITY OF WORK TO BE PERFORMED OR MATERIALS TO BE PROVIDED. THE SUBMITTAL OF THE BID BY THE CONTRACTOR WILL BE HELD AS PROOF THAT THE CONTRACTOR UNDERSTANDS THOROUGHLY & COMPLETELY THE SCOPE OF THE WORK INVOLVED, & HAS INCLUDED ON THE BID ALL THE NECESSARY ITEMS TO CARRY OUT THIS SECTION OF WORK.
9. AS SOON AS POSSIBLE (& NOT MORE THAN 30 DAYS) AFTER CONTRACT IS SIGNED, THE P.C. SHALL PROVIDE SUBMITTALS OF PLUMBING EQUIPMENT HE/SHE INTENDS TO PURCHASE FOR REVIEW & COMMENT BY THE ENGINEER. ENGINEER IS TO APPROVE SUBMITTALS BEFORE EQUIPMENT IS ORDERED.
10. ALL QUESTIONS MUST BE SUBMITTED IN RFI FORMAT TO THE ARCHITECT & MUST BE ADDRESSED BY THE APPROPRIATE DESIGNER OF RECORD PRIOR TO BECOMING A PROPOSED CHANGE ORDER.
11. P.C. IS TO REVIEW COMPLETE DRAWING SET. P.C. IS RESPONSIBLE FOR WORK EXPLICITLY SHOWN & WORK IMPLIED. UNLESS OTHERWISE NOTED, FINAL PLUMBING CONNECTION TO ALL EQUIPMENT, FIXTURES, ETC. IS THE RESPONSIBILITY OF THE P.C..

II. DIVISION OF WORK:

1. ALL ROOF PENETRATIONS, FLASHING, ETC. ARE TO BE PERFORMED BY ROOFING CONTRACTOR.
2. G.C. TO BE RESPONSIBLE FOR PROVIDING & INSTALLING ANY ACCESS DOORS RELATED TO PLUMBING SYSTEM (W/ EXCEPTION OF CLEANOUT COVERS, BY P.C.). P.C. RESPONSIBLE FOR COMMUNICATING TO G.C. SIZE & LOCATION OF REQUIRED ACCESS DOOR(S).
3. PLUMBING CONTRACTOR IS TO EMPLOY THE SERVICES OF THE G.C. FOR CUTTING & PATCHING OF WALLS, FLOORS, & CEILINGS RELATED TO THE INSTALLATION OF PLUMBING EQUIPMENT & SYSTEMS.
4. ALL GAS PIPING IS BY MECHANICAL CONTRACTOR.
5. WATER HEATER VENT BY PLUMBING CONTRACTOR.

III. MATERIALS:

1. ALL MATERIALS SHALL BE NEW UNLESS OTHERWISE SHOWN OR SPECIFIED.
2. PIPING MATERIALS & FITTINGS SHALL BE AS FOLLOWS:
   WASTE & VENT (ABOVE & BELOW SLAB):
   PVC PIPE, PVC SOCKET FITTINGS, & SOLVENT-CEMENTED FITTINGS.
   DOMESTIC WATER (BELOW SLAB):
   TYPE 'K' COPPER.
   OR
   CONTINUOUS PEX.
   DOMESTIC WATER (ABOVE SLAB):
   TYPE 'L' COPPER W/ SWEATED SOCKET FITTINGS. THREADED FITTINGS MAY BE USED AT VALVES, FIXTURES, & SIMILAR.
   OR
   CPVC PIPING W/ SOLVENT-CEMENTED FITTINGS. THREADED FITTINGS MAY BE USED AT VALVES, FIXTURES, & SIMILAR.
   OR
   PEX PIPING W/ FLARED OR MECHANICAL JOINTS/FITTINGS.
3. PROVIDE HANGERS & SUPPORTS APPROVED FOR USE PER NCPC.

IV. COORDINATION:

1. BEFORE BEGINNING WORK, INVERT ELEVATIONS SHALL BE ESTABLISHED. P.C. IS TO ENSURE PROPER SLOPES OF ALL WASTE & STORM PIPING CAN BE MAINTAINED. CONTACT ENGINEER IMMEDIATELY IF PROBLEM/ISSUE IS DISCOVERED.
2. P.C. TO COORDINATE W/ G.C. & ARCH PLANS TO ENSURE NECESSARY BACKING/SUPPORTS ARE INSTALLED TO ALLOW INSTALLATION OF PLUMBING FIXTURES.
3. THE PLUMBING CONTRACTOR SHALL COORDINATE CLOSELY W/ ALL OTHER TRADES TO AVOID CONFLICT & ENSURE OTHER TRADES PROVIDE MEASURES TO ACCOMMODATE PLUMBING WORK (I.E. ACCESS DOORS, SLAB/WALL/ROOF OPENINGS, ELECTRICAL CONNECTIONS, ETC.)
4. PIPING SHOULD BE COORDINATED W/ ALL STRUCTURAL FOOTINGS & FOUNDATIONS. PIPE SHOULD BE OFFSET TO AVOID CONTACT W/ FOOTINGS & FOUNDATION WALLS. IF PIPING MUST RUN UNDER A FOOTING OR THROUGH A FOUNDATION WALL, THE PIPE MUST BE INSTALLED W/ A RELIEVING ARCH OR IN A PIPE SLEEVE PER NCPC 305.3.
5. P.C. TO REFER TO ARCHITECTURAL DRAWINGS FOR MOUNTING HEIGHTS OF PLUMBING FIXTURES.

V. EXECUTION:

1. P.C. TO FOLLOW MANUFACTURER'S INSTRUCTIONS WHEN INSTALLING PLUMBING EQUIPMENT. ENSURE REQUIRED MAINTENANCE ACCESS & CLEARANCES ARE MAINTAINED. IF CONFLICT EXISTS BETWEEN THESE PLANS & MANUFACTURER'S INSTRUCTIONS, CONTACT ENGINEER.
2. P.C. RESPONSIBLE FOR EXECUTING ALL CODE REQUIRED TESTS & INSPECTIONS, INCLUDING BUT NOT LIMITED TO, LEAK & PRESSURE TESTING OF WASTE, VENT, & WATER PIPING, & SANITIZING OF WATER PIPING.
3. WATER SERVICE & BUILDING SEWER PIPING MUST BE SEPARATED PER NCPC 603.2.
4. ALL WATER PIPING INSTALLED BELOW GRADE TO BE PROTECTED AGAINST FREEZING BY BURYING NOT LESS THAN 6" BELOW THE FROST LINE OR NOT LESS THAN 12" BELOW FINISHED GRADE, WHICHEVER IS GREATER PER NCPC 305.4
5. ANY NOTCHING, DRILLING, BORING, OR OTHER ALTERATION TO BUILDING STRUCTURE SHALL BE PERFORMED IN A CODE APPROVED METHOD & NOT THREATEN THE INTEGRITY OF THE BUILDING STRUCTURE.
6. SUPPORT ALL PIPING IN ACCORDANCE W/ NCPC. ANY SUSPENDED MATERIALS SHALL BE DIRECTLY SUPPORTED BY THE BUILDING STRUCTURE. DO NOT ATTACH ANYTHING TO THE ROOF DECK.
7. PENETRATIONS OF ALL EXTERIOR WALLS, FLOORS, & CEILINGS SHALL BE SEALED IN AN AIR TIGHT MANNER & IN ACCORDANCE W/ 2018 NCECC.
8. CLEANOUT PLUGS SHALL BE INSTALLED IN ACCORDANCE W/ PLUMBING CODE REQUIREMENTS. PROVIDE CLEANOUTS AS PLANS INDICATED & AT THE BASE OF ALL WASTE STACKS, AT EVERY FOUR 45 DEGREE TURNS IN SERIES (W/ ONE 90° ELBOW COUNTING AS TWO 45° BENDS), AT EVERY 100 FEET, & AT THE BASE OF ALL ROOF LEADERS. CLEANOUTS SHALL BE PLACED IN READILY ACCESSIBLE LOCATIONS.
9. SUPPLY BRANCH LINES SERVING MORE THAN ONE (1) FIXTURE SHALL INCLUDE SHUT-OFF VALVE. LABEL VALVE & LOCATE AS CLOSE TO RISER/MAIN AS POSSIBLE. (NCPC 606.2.1)
10. VALVES NOT DIRECTLY AT EQUIPMENT SHALL BE LABELED INDICATING THE FIXTURE OR AREA SERVED. (NCPC 606.4)
11. PROVIDE SHUT-OFF VALVES ON THE FIXTURE SUPPLY TO EACH PLUMBING FIXTURE, APPLIANCE, OR MECHANICAL EQUIPMENT.
12. COPPER PIPING SHALL BE PROTECTED AGAINST CONTACT W/ MASONRY OR DISSIMILAR METALS. ALL HANGERS, SUPPORTS, ANCHORS, & CLIPS SHALL BE COPPER OR COPPER PLATED. WHERE COPPER PIPING IS CARRIED ON IRON TRAPEZE HANGERS W/ OTHER PIPING, SATISFACTORY & PERMANENT ELECTROLYTIC ISOLATION MATERIAL SHALL PROTECT THE COPPER AGAINST CONTACT W/ OTHER METALS.
13. WHERE COPPER PIPING IS SLEEVED THROUGH MASONRY, SLEEVES SHALL BE COPPER OR RED BRASS. WHERE COPPER MUST BE CONCEALED IN A MASONRY PARTITION OR AGAINST MASONRY, CONTACT SHALL BE PREVENTED BY COATING THE COPPER HEAVILY W/ ASPHALTIC ENAMEL & PROVIDING 15# ASPHALT SATURATED FELT BETWEEN THE PIPE & MASONRY.
14. ALL PIPE INSULATION SHALL RUN CONTINUOUSLY THROUGH FLOORS, WALLS, & PARTITIONS. PIPE INSULATION SHALL BE MITERED AT ELBOWS & TEES TO ENSURE COMPLETE COVERAGE OF PIPING.
15. VACUUM BREAKERS SHALL BE PROVIDED FOR ALL FIXTURES TO WHICH HOSES MAY BE ATTACHED. VACUUM BREAKERS SHALL BE PERMANENTLY ATTACHED.
16. THE PLUMBING CONTRACTOR SHALL PROVIDE WATER HAMMER PROTECTION ON ALL WATER DISTRIBUTION PIPING SERVING EQUIPMENT W/ QUICK CLOSING VALVES (ICE MAKERS, DISHWASHERS, FLUSH VALVES, WASHING MACHINES, WATER COOLERS, ETC.) SEE SHOCK ARRESTOR SCHEDULE.
17. ACCESS DOORS TO BE PROVIDED FOR ALL VALVES & DEVICES REQUIRING ACCESS WHEN LOCATED IN WALLS OR ABOVE INACCESSIBLE CEILING CONSTRUCTION. ACCESS DOORS TO BE RATED WHERE INSTALLED IN RATED ASSEMBLIES.
18. P.C. IS TO ENSURE THAT THEIR INSTALLATION OF NEW CONDUITS, PIPES, DUCTWORK, & SIMILAR DOES NOT BLOCK ACCESS TO NEW OR EXISTING AREA EQUIPMENT & THAT THE FORE MENTIONED DOES NOT INTERFERE W/ THE REQUIRED SERVICE CLEARANCE OF NEW OR EXISTING EQUIPMENT. COORDINATE W/ OTHER TRADE CONTRACTORS & CONTACT ENGINEER IF UNCERTAINTY EXISTS REGARDING EQUIPMENT SERVICE CLEARANCE REQUIREMENTS.
19. THE PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL PLUMBING EQUIPMENT FROM FOREIGN MATERIAL DURING CONSTRUCTION (PAINT, SPACKLE, ETC.). UPON COMPLETION OF WORK, THE PLUMBING CONTRACTOR SHALL CLEAN, WASH, ETC. ALL ITEMS & EQUIPMENT WITHIN HIS SCOPE OF WORK & LEAVE ALL ITEMS BRIGHT & CLEAN.
20. PROVIDE PRESSURE REDUCING VALVE IF INCOMING WATER PRESSURE EXCEEDS 80 PSI.

PLUMBING FIXTURE SPECIFICATIONS AND CONNECTION SCHEDULE

MARK	FIXTURE	TYPE	MANUFACTURER	MODEL NO.	MATERIAL	STYLE	FAUCET/VALVE				DRAIN		SUPPLIES AND STOPS	PIPE SIZES				MOUNTING	REMARKS
							MANUFACT. MODEL NO.	SPOUT	HANDLES	CENTERS	TYPE	SIZE		WASTE	VENT	CW	HW		
P-1	WATER CLOSET	FLUSH TANK	AMERICAN STANDARD	270AA.101	VITREOUS CHINA	ADA ELONGATED	-	-	-	-	-	-	BRASSCRAFT OCR1912DL	3"	2"	1/2"	–	FLOOR	PROVIDE OPEN FRONT SEAT WITH NO LID.
P-2	LAVATORY	WALL MOUNT	AMERICAN STANDARD	0355.012	VITREOUS CHINA	ADA D-SHAPE	CFG 40717	CENTER	LEVER	4" 3-HOLE	GRID	1-1/2"	BRASSCRAFT OCR1912A	2"	1-1/2"	1/2"	1/2"	WALL	W/ WALL BRACKET. 0.5 GPM. MOUNT AT ADA HEIGHT.
P-3	SINK (33" x 22")	DROP-IN	ELKAY	LRAD332265	STAINLESS STEEL	ADA 2-BOWL	CFG 40513	CENTER	LEVER	4" O.C. 4-HOLE	CRUMB CUP	1-1/2"	BRASSCRAFT OCR1912A	2"	1-1/2"	1/2"	1/2"	COUNTER	W/ OFFSET DRAIN, REAR CENTER. BOWL DEPTH = 6-1/2" W/ SPRAYER.
P-4	MOP SINK	FLOOR MOUNT	FIAT	MSB2424	MOLDED STONE	ONE-PIECE 24x24	FIAT 830AA (W/ CHECK VALVES)	CENTER	2	8" 2-HOLE	DOME	3"	-	3"	1-1/2"	1/2"	1/2"	FLOOR	W/ WALL BRACKET. W/ MOP HANG. W/ HOSE & HOSE BRACKET. W/ VACUUM BREAKER.
P-6	VALVE BOX	SUPPLY BOX	OATEY	-	POLYSTYRENE	PLASTIC, RECESSED	-	-	-	-	-	-	-	-	-	1/2"	–	WALL	MATCH PIPING MATERIALS. W/ QTR TURN VALVE & SHOCK ARRESTOR. W/ FACEPLATE.
P-7	WASHER BOX	SUPPLY BOX	OATEY	-	PVC	PLASTIC, RECESSED	-	-	-	-	-	-	-	2" V 3" H	1-1/2"	1/2"	1/2"	WALL	MATCH PIPING MATERIALS. W/ QTR TURN VALVE & SHOCK ARRESTORS. W/ FACEPLATE. W/ TAIL PIECE.
P-8	SHOWER HEAD	-	-	-	-	STANDARD	SYMMONS 9601-PLR	-	LEVER	-	-	-	-	-	-	1/2"	1/2"	FLOOR	TILED SHOWER BY G.C. W/ 2.0 GPM SHOWER HEAD.
P-8A	SHOWER HEAD	-	-	-	-	ADA	SYMMONS 9603-PLR	-	LEVER	-	-	-	-	-	-	1/2"	1/2"	FLOOR	TILED SHOWER BY G.C. PROVIDE W/ GRAB BARS & SEAT. COORD. SEAT & BARS W/ ARCH.
FD-1	FLOOR DRAIN	FINISHED FLOOR	ZURN	FD1	PVC	ADJUSTABLE	-	-	-	-	-	-	-	SEE PLAN	-	-	–	FLOOR	W/ DEEP SEAL TRAP. W/ TRAP PRIMER.
FD-2	FLOOR DRAIN	FINISHED FLOOR	ZURN	FD1	PVC	ADJUSTABLE	-	-	-	-	-	-	-	SEE PLAN	-	-	–	FLOOR	W/ DEEP SEAL TRAP.
FCO	FLOOR CLEANOUT	ADJUSTABLE	ZURN	CO-2450	PVC BODY, NICKEL CVR.	FINISHED FLOOR	-	-	-	-	-	-	-	SEE PLAN	-	-	–	FLOOR	
FPHB	HOSE BIB	EXPOSED, ANTI-SIPHON	ZURN	Z1346	BRONZE	NON-FREEZE	-	-	-	-	-	-	-	-	-	1/2"	-	WALL	VERIFY WALL DEPTH. INTEGRAL VACUUM BREAKER. LOOSE KEY TYPE.
HB	HOSE BIB	EXPOSED, ANTI-SIPHON	ZURN	Z1341	BRONZE	-	-	-	-	-	-	-	-	-	-	1/2"	-	WALL	INTEGRAL VACUUM BREAKER.
GCO	GRADE CLEANOUT	ADJUSTABLE	ZURN	CO-2450	PVC BODY, NICKEL CVR.	-	-	-	-	-	-	-	-	SEE PLAN	-	-	–	GRADE	W/ CONCRETE PAD.
SD	SHOWER DRAIN	FINISHED FLOOR	ZURN	FD1	PVC	ADJUSTABLE	-	-	-	-	-	-	-	SEE PLAN	-	-	–	FLOOR	W/ DEEP SEAL TRAP. W/ STAINLESS STEEL STRAINER. W/ CLAMP COLLAR & WEEP HOLES.
WCO	WALL CLEANOUT	TEE	CHARLOTTE PIPE	PVC-445	PVC	FLUSH PLUG	-	-	-	-	-	-	-	SEE PLAN	-	-	–	WALL	W/ ZURN CO-2530 WALL COVER. W/ PVC PLUG W/ THREADED TAP.
WH-1	WATER HEATER	DIR. VENT GAS	RINNAI WATER HEATERS	CU160i (W/ CONDENSATE NEUTRALIZER KIT)	TANKLESS GAS	WALL MTD.	-	-	-	-	-	-	-	-	-	1"	1"	WALL	160 MBH INPUT. 115V. 6.2GPM @ 50°F RISE. SET TO 110°F. SEE DETAIL.

NOTES:
1. ALL FIXTURE COLORS & FINISHES TO BE APPROVED BY OWNER & ARCHITECT BEFORE PURCHASING.
2. PROVIDE P-TRAP AND SUPPLY LINE SAFETY COVERS FOR ALL ADA SINK AND LAVATORY INSTALLATIONS.
3. WATER CLOSET HANDLES TO BE LOCATED ON "WIDE SIDE" OF STALL FOR ADA FIXTURES.
4. SEE DETAILS FOR ADDITIONAL ITEMS TO BE PROVIDED/INSTALLED W/ FIXTURES LISTED ABOVE.

SHOCK ARRESTOR SCHEDULE

FIXTURE UNITS	UNIT SIZE (CONN. SIZE)	MFG & MODEL (OR EQUAL)
1-4	AA (1/2")	SIOUX CHIEF "MINI-RESTER"
5-11	A (1/2")	SIOUX CHIEF "HYDRA-RESTER"

NOTES:
1. LOCATE SHOCK ARRESTORS IN ACCESSIBLE LOCATION OR PROVIDE SHOCK ARRESTORS THAT ALLOW CONCEALMENT PER MANUFACTURER'S GUIDELINES.
2. SEE PLAN, RISERS, & SCHEDULES FOR ARRESTOR LOCATIONS. IF LOCATION NOT INDICATED, INSTALL IN ACCORDNCE W/ MANUFACTURER'S GUIDELINES.
3. SHOCK ARRESTORS **NOT** REQUIRED ON PLASTIC PIPE PER 2018 NCPC 604.9.

VALVE SCHEDULE

TAG	DESCRIPTION	MFG & MODEL (OR EQUAL)
BV-1	FULL-PORT BALL VALVE	WATTS LFB6081 (1/2" TO 2")
CV-1	DUAL CHECK VALVE	WATTS SD-2 (ASSE 1032; <1/2") WATTS 9D (ASSE 1012; 1/2" & 3/4")
PRV-1	PRESS. RED. VALVE	WATTS LF223-S (SET TO 50 PSI; ASSE 1003; 1/2" TO 2-1/2")

NOTES:
1. SEE PLAN FOR SIZE. VALVE SIZE TO EQUAL LINE SIZE.
2. BALL VALVES TO INCLUDE REMOVABLE HANDLES.
3. IF AVAILABLE, VALVES MAY BE THREADED OR SWEATED CONNECTIONS. USE EXTREME CARE & LOW TEMP SOLDER TO PROTECT VALVE SEATS IF SWEATED CONNECTIONS ARE USED.

PLUMBING LEGEND

- DOMESTIC COLD WATER PIPING
- DOMESTIC HOT WATER PIPING
- VENT PIPING
- WASTE (SANITARY SEWER)
- EXISTING PIPING/EQUIPMENT
- DEMO PIPING/EQUIPMENT
- VALVE
- VALVE
- CHECK VALVE
- PIPE UP/DOWN
- FLOOR DRAIN
- CLEANOUT
- CONNECT TO EXISTING POINT

AAV	AIR ADMITTANCE VALVE
ABV	ABOVE
AHJ	AUTHORITY HAVING JURISDICTION
AFF	ABOVE FINISHED FLOOR
BFF	BELOW FINISHED FLOOR
BFP	BACK FLOW PREVENTER
BV	BALL OR BALANCING VALVE (SEE SCHED)
CV	CHECK VALVE
CW	COLD WATER
DN	DOWN
E.C.	ELECTRICAL SUB-CONTRACTOR
FCO	FLOOR CLEAN OUT
FD	FLOOR DRAIN
G.C.	GENERAL CONTRACTOR
HB	HOSE BIBB
HW	HOT WATER
M.C.	MECHANICAL SUB-CONTRACTOR
P.C.	PLUMBING SUB-CONTRACTOR
SS	SANITARY SEWER
TV	TEMPERING VALVE
WF	WALL FAUCET
WH	WATER HEATER

PLUMBING FIXTURE REQUIREMENTS

WASTE			WATER			
BUILDING DRAIN SIZE	NUMBER OF BUILDING DRAINS	TOTAL FIXTURE UNIT LOAD	WATER SERVICE SIZE	NUMBER OF WATER SERVICES	TOTAL FIXTURE UNIT LOAD	NOTES
4"	1	32	1"	1	46	-

TRENCH DRAIN (TD-1) SPEC

1. TRENCH DRAIN SHALL BE EQUAL TO ZURN Z886 PERMA-TRENCH LINEAR TRENCH DRAIN.
2. END DRAIN WITH (1) 2" NO-HUB END OUTLET. PROVIDE WITH CLOSED END CAP(S).
3. LENGTH OF TRENCH DRAIN SHALL BE 3'-4". CUT TO LENGTH.
4. STAINLESS STEEL GRATE.

TRENCH DRAIN (TD-2) SPEC

1. TRENCH DRAIN SHALL BE EQUAL TO ZURN Z890 SANI-FLO LINEAR TRENCH DRAIN.
2. END DRAIN WITH (1) 4" NO-HUB END OUTLET. PROVIDE WITH CLOSED END CAP(S).
3. LENGTH OF TRENCH DRAIN SHALL BE 15'-0". CUT TO LENGTH.
4. GRATE SELECTED BY OWNER.

OIL/SAND SEPARATOR (OS-1) SPEC

1. OIL SEPARATOR TO BE EQUAL TO STRIEM OS-100.
2. 4" INLET AND OUTLET.
3. FLOW RATE = 100 GPM.
4. MAX CAPACITIES: LIQUID = 250 GALLONS; OIL = 144 GALLONS; SAND = 95 GALLONS
5. PROVIDE W/ NECESSARY RISERS AND COVERS; COVER TO BE RATED FOR AUTO TRAFFIC.
6. INSTALL PER MANUFACTURER'S INSTRUCTIONS.

© 2019 MAPLE ENGINEERING, PLLC EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THESE PLANS. THESE PLANS ARE NOT TO BE REPRODUCED, CHANGED OR COPIED IN ANY FORM OR MANNER WHATSOEVER, NOR ARE THEY TO BE ASSIGNED TO ANY THIRD PARTY WITHOUT FIRST OBTAINING THE EXPRESSED WRITTEN PERMISSION AND CONSENT OF MAPLE ENGINEERING, PLLC.

HAUCH DESIGN
architecture
1118 Norris Street Raleigh, NC 27604
www.hauchdesign.com
919.589.3132

ALL DRAWINGS, SPECIFICATIONS, DESIGNS AND IDEAS REPRESENTED OR INDICATED BY THESE DRAWINGS ARE THE PROPERTY OF **HAUCH DESIGN PLLC**, DEVELOPED AND ISSUED EXCLUSIVELY FOR USE ON, AND IN CONNECTION WITH THE SPECIFIED PROJECT, AND SHALL NOT BE DUPLICATED OR USED ON OTHER PROJECTS, IN WHOLE OR PART, WITHOUT WRITTEN CONSENT OF THE ARCHITECT.

MAPLE
ENGINEERING, PLLC
708 ST. MARYS ST
RALEIGH, NC 27605 LIC.#: P-0990
P:919-341-4247 F:919-890-3797
PLUMBING MECHANICAL ELECTRICAL

NORTH CAROLINA PROFESSIONAL SEAL 044528 ENGINEER DUSTIN M. METAYER
12/16/19

BID DOCUMENTS
Issue Dates / Revisions:

No:	Description:	Date:

Drawn: WAM Checked: DMM

Date: 12-16-19 Project No: 17-5832-02

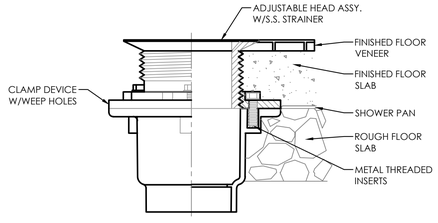
PUBLIC WORKS FACILITY - BENSON

Owner: TOWN OF BENSON
Address: 303 E. CHURCH ST.
BENSON NC 27504

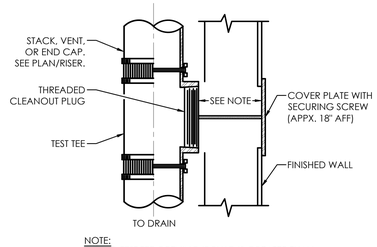
PLUMBING SCHEDULES AND NOTES

P001

12/16/2019 5:29 PM
ZYY-1919-P001.DWG

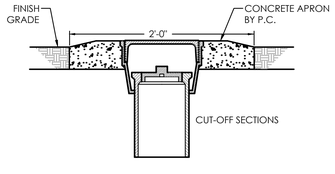


6 SHOWER DRAIN DETAIL
NO SCALE



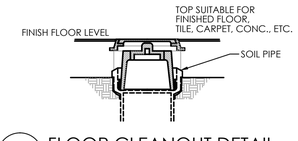
NOTE:
EXTEND TEST TEE OPENING IF PLUG IS GREATER THAN 8" FROM FINISHED WALL.

5 WALL CLEANOUT DETAIL
NO SCALE

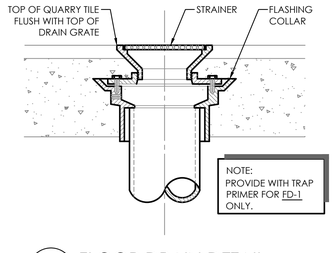


SECTION
GCO , YCO - EXTERIOR

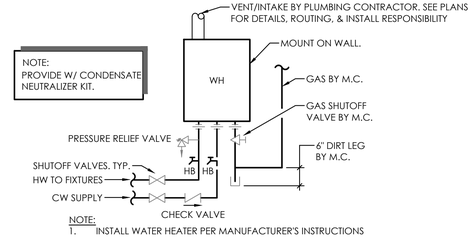
4 EXTERIOR CLEANOUT DETAIL
NO SCALE



3 FLOOR CLEANOUT DETAIL
NO SCALE



2 FLOOR DRAIN DETAIL
NO SCALE



NOTE:
1. INSTALL WATER HEATER PER MANUFACTURER'S INSTRUCTIONS

1 INSTANTANEOUS WATER HEATER DETAIL
NO SCALE

HAUCH DESIGN architecture
1118 Norris Street Raleigh, NC 27604
www.hauchdesign.com
919.589.3132

ALL DRAWINGS, SPECIFICATIONS, DESIGNS AND IDEAS REPRESENTED OR INDICATED BY THESE DRAWINGS ARE THE PROPERTY OF **HAUCH DESIGN PLLC**, DEVELOPED AND ISSUED EXCLUSIVELY FOR USE ON, AND IN CONNECTION WITH THE SPECIFIED PROJECT, AND SHALL NOT BE DUPLICATED OR USED ON OTHER PROJECTS, IN WHOLE OR PART, WITHOUT WRITTEN CONSENT OF THE ARCHITECT.

MAPLE ENGINEERING, PLLC
708 ST. MARYS ST
RALEIGH, NC 27605 LIC.#: P-0990
P:919.341.4247 F:919.890.3797
PLUMBING MECHANICAL ELECTRICAL

NORTH CAROLINA PROFESSIONAL SEAL 044528 ENGINEER WILLIAM A. METKO
12/16/19

BID DOCUMENTS
Issue Dates / Revisions:

No:	Description:	Date:

Drawn: WAM Checked: DMM

Date: 12-16-19 Project No: 17-5832-02

PUBLIC WORKS FACILITY - BENSON

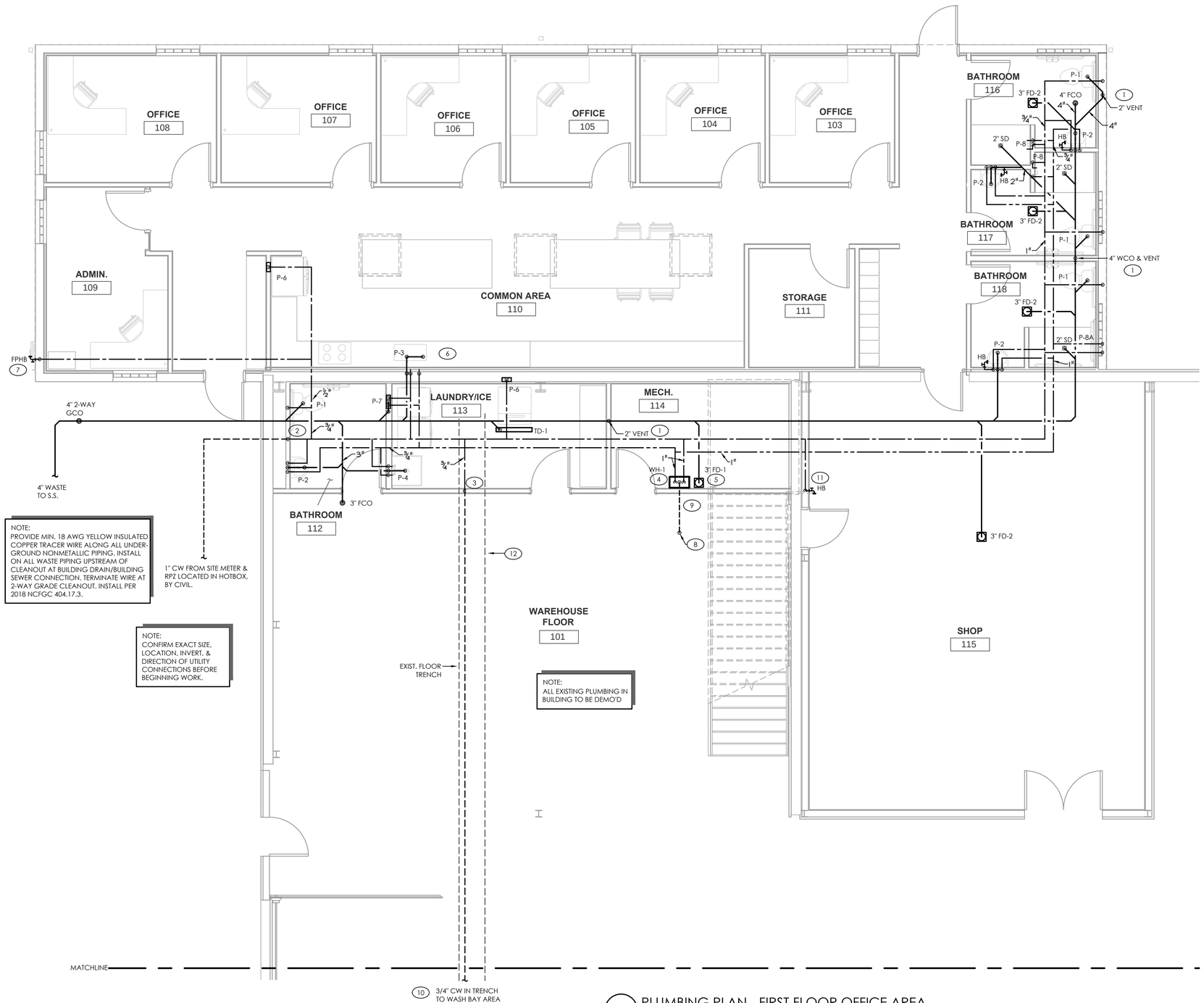
Owner: TOWN OF BENSON
Address: 303 E. CHURCH ST. BENSON NC 27504

PLUMBING DETAILS

P002

© 2019 MAPLE ENGINEERING, PLLC EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THESE PLANS. THESE PLANS ARE NOT TO BE REPRODUCED, CHANGED OR COPIED IN ANY FORM OR MANNER WHATSOEVER, NOR ARE THEY TO BE ASSIGNED TO ANY THIRD PARTY WITHOUT FIRST OBTAINING THE EXPRESSED WRITTEN PERMISSION AND CONSENT OF MAPLE ENGINEERING, PLLC.

12/20/2019 5:29 PM
WM-CD-17-5832-02-P002.DWG

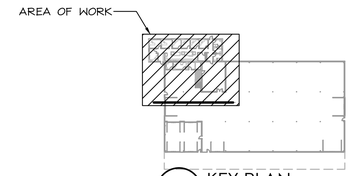


NOTE:
PROVIDE MIN. 18 AWG YELLOW INSULATED COPPER TRACER WIRE ALONG ALL UNDER-GROUND NONMETALLIC PIPING. INSTALL ON ALL WASTE PIPING UPSTREAM OF CLEANOUT AT BUILDING DRAIN/BUILDING SEWER CONNECTION. TERMINATE WIRE AT 2-WAY GRADE CLEANOUT. INSTALL PER 2018 NCFGC 404.17.3.

NOTE:
CONFIRM EXACT SIZE, LOCATION, INVERT, & DIRECTION OF UTILITY CONNECTIONS BEFORE BEGINNING WORK.

NOTE:
ALL EXISTING PLUMBING IN BUILDING TO BE DEMO'D

1 PLUMBING PLAN - FIRST FLOOR OFFICE AREA
SCALE: 1/4" = 1'-0"



K KEY PLAN
NO SCALE

GENERAL NOTES - THIS SHEET

1. WATER SERVICE & BUILDING SEWER PIPING MUST BE SEPARATED PER 2018 NCPC 603.2.

TAGGED NOTES - THIS SHEET

1. PORTION OF BRANCH LINE IS PART OF CIRCUIT VENT SYSTEM, MAXIMUM SLOPE 8%. TURN DOWN AS NECESSARY AFTER MOST DOWNSTREAM FIXTURE. IF SLOPE REQUIREMENTS CANNOT BE MAINTAINED, ADDITIONAL VENTS WILL BE REQUIRED.
2. 1" CW UP IN WALL TO ABOVE CEILING FROM BELOW SLAB. PROVIDE WITH BV-1 IN ACCESS PANEL LOW ON WALL.
3. 3/4" CW DOWIN IN WALL. EXTEND 3/4" CW IN TRENCH TO WASH BAY AREA. PROVIDE WITH BV-1 LOW ON WALL.
4. TANKLESS WATER HEATER. WH-1. LOCATED ON WALL. ENSURE ADA CLEARANCES ARE MAINTAINED.
5. POSITION FLOOR DRAIN TIGHT TO WALL FOR WATER HEATER DRAIN. SEE DETAIL.
6. PROVIDE DISHWASHER CONNECTIONS
7. CW DOWN IN WALL TO FREEZE-PROOF HOSE BIB. ENSURE PIPING IS ON WARM SIDE OF INSULATION. PROVIDE W/ BV-1 IN ACCESS PANEL, LOW ON WALL.
8. INSTALL CONCENTRIC INTAKE/EXHAUST FOR WATER HEATER AND ROUTE UP THRU ROOF. SIZE AND INSTALL PER WATER HEATER MFG'S INSTRUCTIONS.
9. CONCENTRIC WATER HEATER VENT UP THRU ROOM CEILING AND TURN TIGHT TO ROOF STRUCTURE. SIZE AND INSTALL PER WATER HEATER MFG'S INSTRUCTIONS.
10. SEE P102 FOR PLUMBING CONTINUATION.
11. 1/2" CW DOWN IN WALL TO HOSE BIB. PROVIDE WITH BV-1 LOW ON WALL IN ACCESS PANEL.
12. EXISTING TRENCH IN FLOOR TO BE UTILIZED FOR ROUTING OF CW PIPING AS SHOWN. COORDINATE ROUTING OF THE PIPING WITH THE G.C. TO ENSURE THAT THE PIPING IS INSTALLED PRIOR TO THE TRENCH BEING FILLED IN. P.C. TO BE PRESENT AT TIME OF TRENCH INFILL TO ENSURE CW PIPING IS UNDAMAGED.

HAUCH DESIGN architecture
1118 Norris Street Raleigh, NC 27604
www.hauchdesign.com
919.589.3132

ALL DRAWINGS, SPECIFICATIONS, DESIGNS AND IDEAS REPRESENTED OR INDICATED BY THESE DRAWINGS ARE THE PROPERTY OF **HAUCH DESIGN PLLC**. DEVELOPED AND ISSUED EXCLUSIVELY FOR USE ON, AND IN CONNECTION WITH THE SPECIFIED PROJECT, AND SHALL NOT BE DUPLICATED OR USED ON OTHER PROJECTS, IN WHOLE OR PART, WITHOUT WRITTEN CONSENT OF THE ARCHITECT.

MAPLE ENGINEERING, PLLC
708 ST. MARYS ST
RALEIGH, NC 27605 LIC.#: P-0990
P:919.341.4247 F:919.890.3797
PLUMBING MECHANICAL ELECTRICAL

NORTH CAROLINA PROFESSIONAL SEAL 044528 ENGINEER
12/16/19

BID DOCUMENTS
Issue Dates / Revisions:

No:	Description:	Date:

Drawn: WAM Checked: DMM

Date: 12-16-19 Project No: 17-5832-02

PUBLIC WORKS FACILITY - BENSON

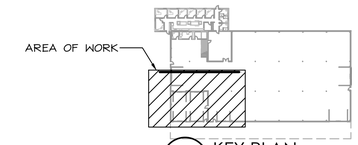
Owner: TOWN OF BENSON
Address: 303 E. CHURCH ST.
BENSON NC 27504

PLUMBING
FIRST FLOOR
OFFICE AREA

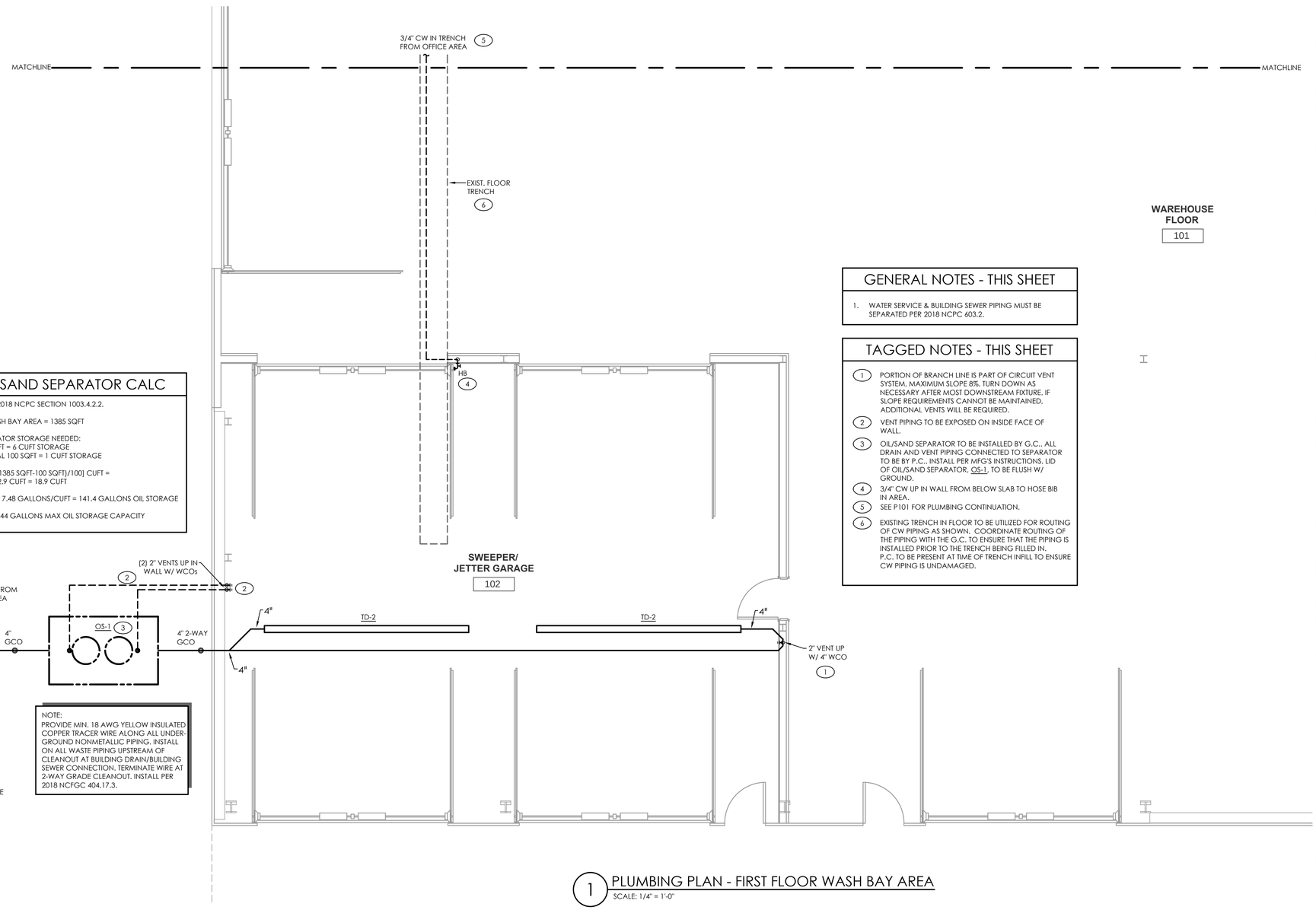
P101

© 2019 MAPLE ENGINEERING, PLLC EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THESE PLANS. THESE PLANS ARE NOT TO BE REPRODUCED, CHANGED OR COPIED IN ANY FORM OR MANNER WHATSOEVER, NOR ARE THEY TO BE ASSIGNED TO ANY THIRD PARTY WITHOUT FIRST OBTAINING THE EXPRESSED WRITTEN PERMISSION AND CONSENT OF MAPLE ENGINEERING, PLLC.

12/16/2019 5:29 PM
ZTI-1919-P101.DWG



K KEY PLAN
NO SCALE



OIL/SAND SEPARATOR CALC

SIZED PER 2018 NCPC SECTION 1003.4.2.2.

TOTAL WASH BAY AREA = 1385 SQFT

OIL SEPARATOR STORAGE NEEDED:
1ST 100 SQFT = 6 CUFT STORAGE
ADDITIONAL 100 SQFT = 1 CUFT STORAGE

6 CUFT + [(1385 SQFT-100 SQFT)/100] CUFT =
6 CUFT + 12.9 CUFT = 18.9 CUFT

18.9 CUFT x 7.48 GALLONS/CUFT = 141.4 GALLONS OIL STORAGE

OS-1 HAS 144 GALLONS MAX OIL STORAGE CAPACITY

NOTE:
CONFIRM EXACT SIZE, LOCATION, INVERT, & DIRECTION OF UTILITY CONNECTIONS BEFORE BEGINNING WORK.

NOTE:
PROVIDE MIN. 18 AWG YELLOW INSULATED COPPER TRACER WIRE ALONG ALL UNDER-GROUND NONMETALLIC PIPING. INSTALL ON ALL WASTE PIPING UPSTREAM OF CLEANOUT AT BUILDING DRAIN/BUILDING SEWER CONNECTION. TERMINATE WIRE AT 2-WAY GRADE CLEANOUT. INSTALL PER 2018 NCFGC 404.17.3.

GENERAL NOTES - THIS SHEET

1. WATER SERVICE & BUILDING SEWER PIPING MUST BE SEPARATED PER 2018 NCPC 603.2.

TAGGED NOTES - THIS SHEET

1. PORTION OF BRANCH LINE IS PART OF CIRCUIT VENT SYSTEM, MAXIMUM SLOPE 8%. TURN DOWN AS NECESSARY AFTER MOST DOWNSTREAM FIXTURE. IF SLOPE REQUIREMENTS CANNOT BE MAINTAINED, ADDITIONAL VENTS WILL BE REQUIRED.
2. VENT PIPING TO BE EXPOSED ON INSIDE FACE OF WALL.
3. OIL/SAND SEPARATOR TO BE INSTALLED BY G.C.. ALL DRAIN AND VENT PIPING CONNECTED TO SEPARATOR TO BE BY P.C.. INSTALL PER MFG'S INSTRUCTIONS. LID OF OIL/SAND SEPARATOR, OS-1, TO BE FLUSH W/ GROUND.
4. 3/4" CW UP IN WALL FROM BELOW SLAB TO HOSE BIB IN AREA.
5. SEE P101 FOR PLUMBING CONTINUATION.
6. EXISTING TRENCH IN FLOOR TO BE UTILIZED FOR ROUTING OF CW PIPING AS SHOWN. COORDINATE ROUTING OF THE PIPING WITH THE G.C. TO ENSURE THAT THE PIPING IS INSTALLED PRIOR TO THE TRENCH BEING FILLED IN. P.C. TO BE PRESENT AT TIME OF TRENCH INFILL TO ENSURE CW PIPING IS UNDAMAGED.

1 PLUMBING PLAN - FIRST FLOOR WASH BAY AREA
SCALE: 1/4" = 1'-0"

HAUCH DESIGN architecture
1118 Norris Street Raleigh, NC 27604
www.hauchdesign.com
919.589.3132

ALL DRAWINGS, SPECIFICATIONS, DESIGNS AND IDEAS REPRESENTED OR INDICATED BY THESE DRAWINGS ARE THE PROPERTY OF **HAUCH DESIGN PLLC**. DEVELOPED AND ISSUED EXCLUSIVELY FOR USE ON, AND IN CONNECTION WITH THE SPECIFIED PROJECT, AND SHALL NOT BE DUPLICATED OR USED ON OTHER PROJECTS, IN WHOLE OR PART, WITHOUT WRITTEN CONSENT OF THE ARCHITECT.

MAPLE ENGINEERING, PLLC
708 ST. MARYS ST
RALEIGH, NC 27605 LIC.#: P-0990
P:919.341.4247 F:919.890.3797
PLUMBING MECHANICAL ELECTRICAL

NORTH CAROLINA PROFESSIONAL SEAL 044528 ENGINEER USAMA M. METWALLY
12/16/19

BID DOCUMENTS
Issue Dates / Revisions:

No:	Description:	Date:

Drawn: WAM Checked: DMM

Date: 12-16-19 Project No: 17-5832-02

PUBLIC WORKS FACILITY - BENSON

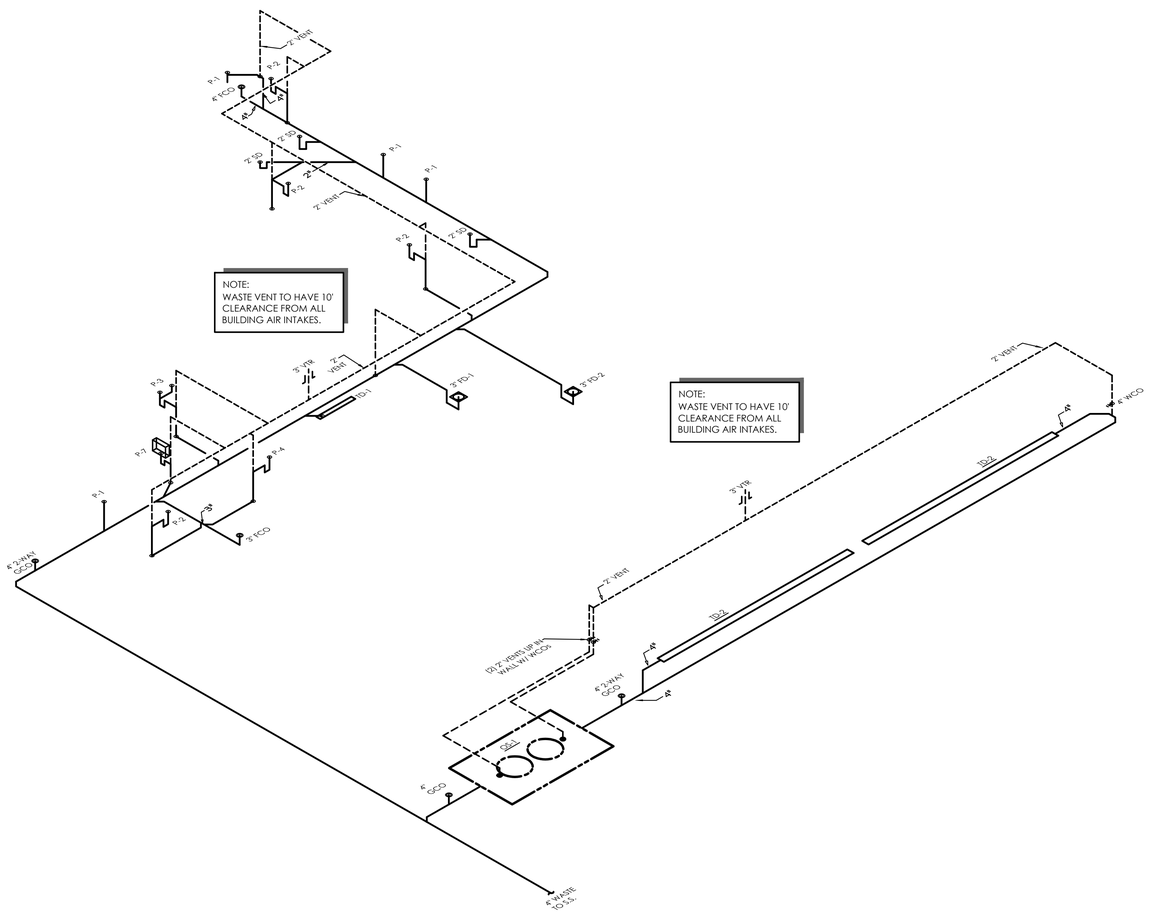
Owner: TOWN OF BENSON
Address: 303 E. CHURCH ST.
BENSON NC 27504

PLUMBING
FIRST FLOOR
WASH BAY AREA

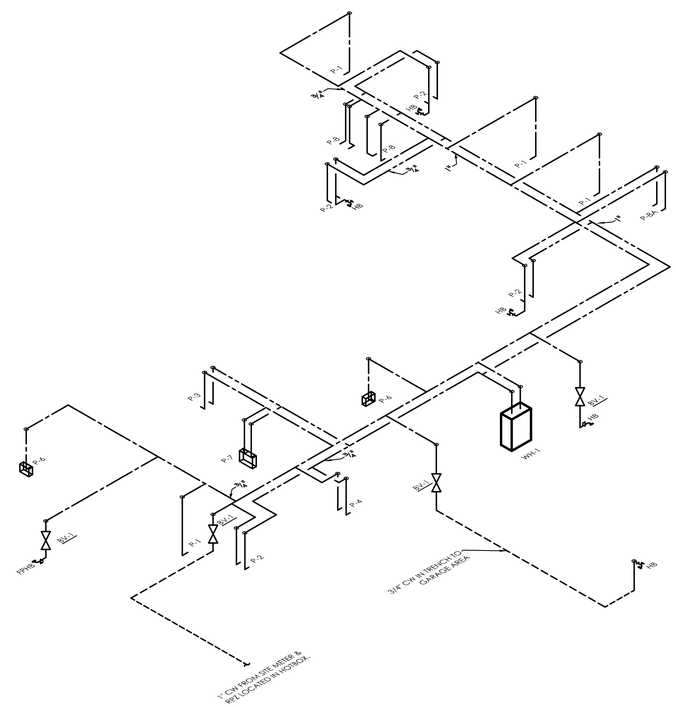
P102

© 2019 MAPLE ENGINEERING, PLLC EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THESE PLANS. THESE PLANS ARE NOT TO BE REPRODUCED, CHANGED OR COPIED IN ANY FORM OR MANNER WHATSOEVER, NOR ARE THEY TO BE ASSIGNED TO ANY THIRD PARTY WITHOUT FIRST OBTAINING THE EXPRESSED WRITTEN PERMISSION AND CONSENT OF MAPLE ENGINEERING, PLLC.

12/16/2019 5:29 PM
ZT1-1919-P102.DWG



2 PLUMBING RISER - WASTE
NO SCALE



1 PLUMBING RISER - WATER
NO SCALE

12/16/2019 5:29 PM
2T1-1919-P201.DWG

HAUCH DESIGN
architecture
1118 Norris Street Raleigh, NC 27604
www.hauchdesign.com
919.589.3132

ALL DRAWINGS, SPECIFICATIONS, DESIGNS AND IDEAS REPRESENTED OR INDICATED BY THESE DRAWINGS ARE THE PROPERTY OF **HAUCH DESIGN PLLC**, DEVELOPED AND ISSUED EXCLUSIVELY FOR USE ON, AND IN CONNECTION WITH THE SPECIFIED PROJECT, AND SHALL NOT BE DUPLICATED OR USED ON OTHER PROJECTS, IN WHOLE OR PART, WITHOUT WRITTEN CONSENT OF THE ARCHITECT.

MAPLE
ENGINEERING, PLLC
708 ST. MARYS ST
RALEIGH, NC 27605
LIC.#: P-0990
P:919.341.4247
F:919.890.3797
PLUMBING MECHANICAL ELECTRICAL

NORTH CAROLINA PROFESSIONAL SEAL 044528 ENGINEER D. M. METNER
12/16/19

BID DOCUMENTS
Issue Dates / Revisions:

No:	Description:	Date:

Drawn: WAM Checked: DMM

Date: 12-16-19 Project No: 17-5832-02

PUBLIC WORKS FACILITY - BENSON

Owner: TOWN OF BENSON
Address: 303 E. CHURCH ST.
BENSON NC 27504

PLUMBING RISERS

P201

© 2019 MAPLE ENGINEERING, PLLC EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THESE PLANS. THESE PLANS ARE NOT TO BE REPRODUCED, CHANGED OR COPIED IN ANY FORM OR MANNER WHATSOEVER, NOR ARE THEY TO BE ASSIGNED TO ANY THIRD PARTY WITHOUT FIRST OBTAINING THE EXPRESSED WRITTEN PERMISSION AND CONSENT OF MAPLE ENGINEERING, PLLC.

GENERAL HVAC NOTES

GENERAL REQUIREMENTS:

1. MECHANICAL CONTRACTOR IS TO FURNISH AND PAY FOR ALL LABOR, MATERIAL, EQUIPMENT, PERMITS & FEES REQUIRED FOR THE COMPLETE INSTALLATION OF ALL SYSTEMS IN THIS SECTION OF WORK.
2. ALL WORK IS TO BE PERFORMED IN ACCORDANCE WITH NC MECHANICAL CODES AND ALL OTHER APPLICABLE CODES. MC IS TO COORDINATE W/ G.C. IN REGARDS TO PROJECT TIMELINE, WORK HOURS, AS WELL AS ANY BONDING OR INSURANCE REQUIREMENTS.
3. ALL MECHANICAL EQUIPMENT SHALL BE PROVIDED COMPLETE WITH ALL ACCESSORIES, HANGERS, SUPPORTS, CONTROLS, ETC FOR A FULLY FUNCTIONING SYSTEM REGARDLESS OF PRESENCE ON PLANS.
4. ALL EQUIPMENT, MATERIALS AND INSTALLATION SHALL BE GUARANTEED TO BE FREE OF DEFECTS FOR A PERIOD OF ONE (1) YEAR AFTER FINAL ACCEPTANCE OF WORK OR IN ACCORDANCE WITH THE MANUFACTURER'S STANDARD GUARANTEE, IF LONGER. ALL COMPRESSORS ARE TO INCLUDE FIVE (5) YEAR WARRANTY. EXISTING EQUIPMENT IS EXCLUDED FROM WARRANTY REQUIREMENT.
5. THESE DRAWINGS ARE DIAGRAMMATIC AND SHOW GENERAL LOCATION AND ARRANGEMENT OF ALL MATERIALS AND EQUIPMENT. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS BUILDING CONSTRUCTION AND ALL OTHER WORK WILL PERMIT.
6. DO NOT SCALE DRAWINGS FOR MEASUREMENT.
7. ALL DUCT DIMENSIONS SHOWN ARE INTERIOR DUCT DIMENSIONS.
8. INFORMATION GIVEN IN SCHEDULES INCLUDES BOTH DESCRIPTION OF PRODUCT AND MANUFACTURER'S MODEL #. IF CONFLICT IS PRESENT BETWEEN DESCRIPTION AND MODEL #, EQUIPMENT DESCRIPTION SHALL TAKE PRECEDENT. IN CASE OF CONFLICT BETWEEN THE PLANS AND NOTES/SPECIFICATIONS OR CONFLICT BETWEEN INFORMATION PRESENTED ON THE PLANS OR IN THE NOTES/SPECIFICATIONS, THEN THE MOST RESTRICTIVE SHALL TAKE PRECEDENT.
9. BEFORE BID MC IS RESPONSIBLE FOR CLARIFYING W/ G.C. ANY CONFUSION IN REGARDS TO RESPONSIBILITY OF WORK TO BE PERFORMED OR MATERIALS TO BE PROVIDED. THE SUBMITTAL OF THE BID BY THE CONTRACTOR WILL BE HELD AS PROOF THAT THE CONTRACTOR UNDERSTANDS THOROUGHLY AND COMPLETELY THE SCOPE OF THE WORK INVOLVED, AND HAS INCLUDED ON THE BID ALL THE NECESSARY ITEMS TO CARRY OUT THIS SECTION OF WORK.
10. M.C. & G.C. SHALL CONSULT OWNER OR OWNER'S REPRESENTATIVE REGARDING DISPOSAL, STORING OR RESALE OF ALL DEMO/REMOVED EQUIPMENT AND MATERIALS.
11. ALL QUESTIONS MUST BE SUBMITTED IN RFI FORMAT TO THE ARCHITECT AND MUST BE ADDRESSED BY THE APPROPRIATE DESIGNER OF RECORD PRIOR TO BECOMING A PROPOSED CHANGE ORDER.
12. UPON COMPLETION OF WORK M.C. IS TO PROVIDE OWNER W/ COMPLETE BOUND SET OF ALL EQUIPMENT OPERATION & MAINTENANCE MANUALS. PACKAGE IS ALSO TO INCLUDE AND WARRANTY & GUARANTEE INFORMATION.
13. M.C. IS TO PROVIDE TRAINING TO OWNER OR OWNER'S REPRESENTATIVE IN REGARDS TO OPERATION, FUNCTION, AND MAINTENANCE OF ALL MECHANICAL EQUIPMENT, CONTROLS, ETC.
14. M.C. IS TO REVIEW COMPLETE DRAWING SET. M.C. IS RESPONSIBLE FOR WORK EXPLICITLY SHOWN AND WORK IMPLIED.

DIVISION OF WORK:

1. ALL ROOF WORK INCLUDING PENETRATIONS, OPENINGS, FLASHING, CURB INSTALLS, ETC ARE TO BE PERFORMED BY ROOFING CONTRACTOR. M.C. RESPONSIBLE FOR PROVIDING ANY ROOF CURBS, EQUIPMENT RAILS, VENTS, ETC AND COMMUNICATING ALL REQ'S WITH G.C. & ROOFING CONTRACTOR.
2. ALL LOW VOLTAGE WIRING RELATED TO MECHANICAL EQUIPMENT AND SYSTEMS IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR (ANY LOW VOLTAGE FIRE ALARM WIRING TO BE BY E.C.). ALL HIGH VOLTAGE CONNECTIONS TO MECHANICAL EQUIPMENT, TO BE PROVIDED AND INSTALLED BY E.C. (SEE EQUIPMENT SCHEDULE FOR DISCONNECT RESPONSIBILITY).
3. MECHANICAL CONTRACTOR IS TO EMPLOY THE SERVICES OF THE G.C. FOR CUTTING AND PATCHING OF WALLS, FLOORS & CEILINGS RELATED TO THE INSTALLATION OF MECHANICAL EQUIPMENT & SYSTEMS.
4. G.C. RESPONSIBLE FOR PAINTING OF ANY EXPOSED DUCT, PIPING, GRILLES, ETC. M.C. RESPONSIBLE FOR CLEANING AND PREPARING ITEMS FOR PAINT, COORDINATE W/ G.C.
5. G.C. TO BE RESPONSIBLE FOR PROVIDING AND INSTALLING ANY ACCESS PLATFORMS, GUARD RAILS, LADDERS, CONCRETE PADS. M.C. TO COMMUNICATE REQ'S TO G.C.
6. G.C. TO BE RESPONSIBLE FOR PROVIDING ANY WALL LOUVERS, BRICK VENTS OR SIMILAR. M.C. TO PROVED AND INSTALL ANY WALL CAPS.
7. ALL GAS PIPING IS BY MECHANICAL CONTRACTOR. SEE GAS MATERIAL AND EXECUTION NOTES.
8. WATER HEATER VENT BY PLUMBING CONTRACTOR.

COORDINATION:

1. THE MECHANICAL CONTRACTOR SHALL COORDINATE CLOSELY WITH ALL OTHER TRADES TO AVOID CONFLICT AND ENSURE OTHER TRADES PROVIDE MEASURES TO ACCOMMODATE MECHANICAL WORK (I.E. ACCESS DOORS, SLAB/WALL/ROOF OPENINGS, ELECTRICAL CONNECTIONS, ETC).
2. MECHANICAL CONTRACTOR SHALL VERIFY LOCATION OF ALL PENETRATIONS FOR RELIEF HOODS, OUTSIDE AIR HOODS, LOUVERS, AND WALL CAPS W/ ARCHITECT & OWNER PRIOR TO INSTALLATION.
3. M.C. TO COORDINATE LOCATION OF ALL ROOF PENETRATIONS W/ ROOFING CONTRACTOR. P.C. & M.C. TO COORDINATE TO ENSURE NO PLUMBING VENTS OR ANY OTHER SOURCES OF BUILDING EXHAUST ARE LOCATED WITHIN 10' OF ANY OUTSIDE AIR INTAKES.

MATERIALS:

1. ALL MATERIALS SHALL BE NEW UNLESS OTHERWISE SHOWN OR SPECIFIED.
2. PROVIDE HANGERS & SUPPORTS APPROVED FOR USE BY 2018 NC MECHANICAL CODE.
3. ALL MAIN DUCTWORK (SUPPLY, RETURN, EXHAUST, OUTSIDE AIR) SHALL BE GALVANIZED SHEET METAL CONSTRUCTED IN ACCORDANCE WITH SMACNA STANDARDS.
4. RUNOUTS FROM MAIN/BRANCH DUCTS MAY BE FLEXIBLE DUCT CONFORMING TO THE REQUIREMENTS OF UL 181 FOR CLASS 1.
   - 4.1. FLEXIBLE AIR DUCTS SHALL BE LIMITED TO 14' IN LENGTH.
   - 4.2. FLEXIBLE AIR CONNECTORS SHALL BE LIMITED TO 14' IN LENGTH. FLEXIBLE AIR CONNECTORS SHALL NOT PASS THROUGH ANY WALL, FLOOR OR CEILING.
5. ALL SUPPLY AND RETURN DUCTWORK AND PLENUMS SHALL BE INSULATED. INSULATION OF DUCTWORK IN UNCONDITIONED SPACE SHALL BE MINIMUM R-6 PER 2018 NCECC. INSULATION OF DUCTWORK OUTSIDE BUILDING THERMAL ENVELOPE (I.E. ROOF, ATTIC, CRAWLSPACE) SPACE SHALL BE MINIMUM R-8 (CLIMATE ZONES 3 & 4) OR R-12 (CLIMATE ZONE 5) PER NCECC.
6. CONCEALED SHEET METAL SUPPLY & RETURN DUCT MAY BE EXTERNALLY INSULATED WITH MINERAL FIBER BOARD OR BLANKET OR MAY BE INTERNALLY INSULATED WITH ACOUSTICAL DUCT LINER.
7. OUTSIDE AIR DUCTWORK SHALL BE WRAPPED WITH 1" FIBERGLASS DUCT WRAP WITH VAPOR BARRIER.
8. ALL MAIN DUCTWORK (INCLUDING EXHAUST) TO BE SEALED ACCORDING TO NCECC AND AT A MINIMUM INCLUDE SEALING OF ALL DUCT SEAMS W/ NON-HARDENING MASTIC. SEALING BY TAPE ALONE NOT ALLOWED.
9. DUCTWORK ELBOWS SHALL BE FULL RADIUS OR MITERED WITH TURNING VANES.
10. CONDENSATE DRAIN PIPING AND FITTINGS NOT IN A RETURN PLENUM SHALL BE SCHEDULE 40 PVC. DRAINS FROM AIR HANDLING UNITS SHALL BE TRAPPED (2" MINIMUM). TRAPS ON INTERIOR OF BUILDINGS TO BE INSULATED. PIPING IN RETURN PLENUM TO BE COPPER OR PLENUM RATED CPVC.
11. CONDENSATE PUMPS TO BE 120V W/ 24' LIFT. RECEPTACLE TYPE WHERE EXPOSED. HARD WIRED WHERE ABOVE CEILING.
12. ALL DAMPERS TO INCLUDE SET SCREW OR SIMILAR FEATURE FOR LOCKING IN POSITION.
13. ALL REFRIGERANT LINE MATERIAL AS PER MFG'S REQUIREMENTS. SIZE PER MFG INSTRUCTIONS. SUCTION LINE INSULATION TO BE MINIMUM 1-1/2" THICK W/ THERMAL CONDUCTIVITY (K) LESS THAN OR EQUAL TO 0.27 PER NCECC COMMERCIAL PROVISIONS. SUCTION LINE INSULATION TO BE HAVE MINIMUM R-VALUE OF 3.0 W/ NO LIMITATION ON THICKNESS OR CONDUCTIVITY PER NCECC RESIDENTIAL PROVISIONS. INSULATION SHALL HAVE TAPED OR SEALED SEAMS.
14. ALL PROGRAMMABLE THERMOSTATS TO INCLUDE BATTERY BACK-UP AND HAVE CAPABILITY TO SETBACK TO 55°F (HEATING) & 85°F (COOLING). AUTO-CHANGEOVER THERMOSTATS TO HAVE A MIN. 5°F DEADBAND.
15. WITH THE EXCEPTION OF THE DRYER FLEX CONNECTION ALL DRYER EXHAUST DUCT SHALL BE 4Ø RIGID SHEET METAL, 26 GAUGE OR THICKER. JOIN DUCTS WITH HIGH TEMP & WATER RESISTANCE UL-181 APPROVED FOIL TAPE OR BLIND POP-RIVETS.

EXECUTION:

1. M.C. TO FOLLOW MANUFACTURER'S INSTRUCTIONS WHEN INSTALLING MECHANICAL EQUIPMENT. ENSURE REQUIRED MAINTENANCE ACCESS AND CLEARANCES ARE MAINTAINED. IF CONFLICT EXISTS BETWEEN THESE PLANS AND MFG INSTRUCTIONS CONTACT ENGINEER.
2. ALL PENETRATIONS THROUGH EXTERIOR WALLS & ROOF SHALL BE FLASHED & COUNTER-FLASHED IN A WATERPROOF MANNER.
3. INSTALL ALL CONTROL DEVICES, INCLUDING THERMOSTATS AND SWITCHES, 4'-0" ABOVE FINISHED FLOOR.
4. INDEPENDENT CERTIFIED TEST AND BALANCE CONTRACTOR SHALL BALANCE SYSTEM TO AIR QUANTITIES INDICATED ON PLANS AND IN ACCORDANCE W/ 2018 NCECC C408.2.2. M.C. TO PROVIDE OWNER'S REPRESENTATIVE & ENGINEER WITH COMPLETE BALANCE REPORT. MC RESPONSIBLE FOR PROVIDING ANY DAMPERS, VALVES, PORTS, ETC. NECESSARY FOR A COMPLETE SYSTEM BALANCE.
5. ALL REFRIGERANT PIPING SHALL BE INSTALLED PER MFG'S INSTRUCTIONS IN REGARDS TO SUPPORTS, BENDS, FITTINGS, OIL TRAPS, ETC. NAIL (SHIELDING) PLATES ARE TO BE PROVIDED AT ANY POINT REFRIGERANT PIPING PASSES THROUGH WALL, FLOOR OR ATTIC/ROOF FRAMING.
6. PENETRATIONS OF NON-RATED WALLS, PARTITIONS AND FLOOR OF COMBUSTIBLE CONSTRUCTION SHALL BE FIRESTOPPED WITH MATERIALS EQUIVALENT TO TWO INCHES OF WOOD. FIRESTOPPING SHALL COMPLY WITH ASTM E-814.
7. ANY NOTCHING, DRILLING, BORING OR OTHER ALTERATION TO BUILDING STRUCTURE SHALL BE PERFORMED IN A CODE APPROVED METHOD AND NOT THREATEN THE INTEGRITY OF THE BUILDING STRUCTURE.
8. SUPPORT ALL DUCTWORK AND PIPING IN ACCORDANCE W/ 2018 NC MECHANICAL CODE. ANY SUSPENDED MATERIALS SHALL BE DIRECTLY SUPPORTED BY THE BUILDING STRUCTURE. DO NOT ATTACH ANYTHING TO THE ROOF DECK.
9. PENETRATIONS OF ALL EXTERIOR WALLS, FLOORS AND CEILINGS SHALL BE SEALED IN AN AIR TIGHT MANNER AND IN ACCORDANCE W/ 2018 NCECC. ALL PENETRATIONS OF WALLS, FLOORS & CEILINGS IN RETURN OR EXHAUST PLENUMS SHALL BE SEALED IN AN AIR TIGHT MANNER.
10. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL MECHANICAL EQUIPMENT FROM FOREIGN MATERIAL DURING CONSTRUCTION (PAINT, SPACKLE, ETC.). UPON COMPLETION OF WORK THE MECHANICAL CONTRACTOR SHALL CLEAN, WASH, ETC ALL ITEMS AND EQUIPMENT WITHIN HIS SCOPE OF WORK AND LEAVE ALL ITEMS BRIGHT AND CLEAN.
11. M.C. IS TO ENSURE THAT THEIR INSTALLATION OF NEW CONDUITS, PIPES, DUCTWORK, AND SIMILAR DOES NOT BLOCK ACCESS TO NEW OR EXISTING AREA EQUIPMENT AND THAT THE FORE MENTIONED DOES NOT INTERFERE WITH THE REQUIRED SERVICE CLEARANCE OF NEW OR EXISTING EQUIPMENT. COORDINATE WITH OTHER TRADE CONTRACTORS AND CONTACT ENGINEER IF UNCERTAINTY EXISTS REGARDING EQUIPMENT SERVICE CLEARANCE REQUIREMENTS.
12. MALE END OF ALL OVERLAPPING DRYER DUCT JOINTS ARE TO BE DIRECTED AWAY FROM DRYER. HORIZONTAL DUCT SECTIONS ARE TO HAVE THE LONGITUDINAL (LONG WAYS) SEAM FACING UP. IF POP-RIVETS ARE USED DUCT JOINTS ARE TO BE SEALED WITH NON-HARDENING MASTIC OR SIMILAR.

DUAL FUEL SPLIT SYSTEM GAS FURNACE SCHEDULE

AIR HANDLING UNIT DATA														HEAT PUMP							
			FAN DATA				COOLING			HEAT		ELECTRICAL DATA			GENERAL DATA			ELECTRICAL DATA			
UNIT TAG	AREA SERVED	MANUF. MODEL	FAN CFM	ESP (WG)	MOTOR (HP)	OA (CFM)	TOTAL (MBH)	SENS. (MBH)	COIL MODEL #	INPUT (MBH)	OUTPUT (MBH)	VOLTAGE (V/PH)	MCA (A)	MOCP (A)	UNIT TAG	MANUF. MODEL	TONNAGE	EFF. (SEER)	VOLTAGE (V/PH)	MCA (A)	MOCP (A)	NOTES
FUR-1	OFFICES	TRANE TUD1C080	1400	0.65"	3/4	100	41.7	31.5	4TXCC005	80.0	64.0	120V/1Ø	13.8	15	HP-1	TRANE 4TWR4042	3.5	14.0	240V/1Ø	25.0	40	1,2,3,5,6,7,8,9,10
FUR-2	COMMON AREA	TRANE TUD18060	800	0.55"	1/3	75	24.7	18.3	4TXCB003	60.0	47.0	120V/1Ø	9.0	15	HP-2	TRANE 4TWR4024	2.0	14.0	240V/1Ø	14.0	25	1,2,3,4,6,7,8,9,10

NOTES:

1. COOLING CAPACITIES ARE RATED IN ACCORDANCE WITH AHRI STANDARD 210/240 AT 95°F AMBIENT OUTDOOR AIR TEMP., 80°F DRY BULB, 67°F WET BULB ENTERING AIR TEMP., AND AIR QUANTITY LISTED BY MFG. UNITS ABOVE 5 TONS ARE RATED IN ACCORDANCE WITH AHRI STANDARD 340/360.
2. REFRIG. PIPING TO BE SIZED PER TOTAL INSTALL. EQUIV. LENGTH. LONG-LINE APP.TO BE PROVIDED WHENEVER MFG. RECOMM. LENGTHS ARE EXCEEDED, INCL. LIQ. LINE SOLENOID VALVES, ACCUMULATOR, ETC. MAX T.E.L. IS PER MFG.
3. PROVIDE 3 SETS OF NEW FILTERS FOR EACH UNIT. PROVIDE ONE AT INSTALLATION, ONE PRIOR TO AIR BALANCE AND ONE AT TURNOVER TO OWNER.
4. PROVIDE HONEYWELL TH8321 SERIES 7 DAY PROGRAMMABLE THERMOSTAT W/ MANUAL OVERRIDE.
5. PROVIDE HONEYWELL TH8321 SERIES 7 DAY PROGRAMMABLE THERMOSTAT W/ MANUAL OVERRIDE, AND WIRELESS REMOTE TEMPERATURE SENSOR.
6. OUTDOOR UNITS SHALL HAVE A MINIMUM 13.0 SEER RATING.
7. SUPPORT AHU ON REINFORCED SHEET METAL RETURN AIR PLENUM.
8. AHU TO USE UPFLOW APPLICATION.
9. PROVIDE W/ CONDENSATE PUMP. CONDENSATE TO BE ROUTED TO EXTERIOR GRADE AWAY FROM FOOT TRAFFIC.
10. PROVIDE BI-FLOW TXV FOR HEAT PUMP OPERATION.

FAN SCHEDULE

UNIT NO.	SERVICE	AREA SERVED	CFM	S.P.	RPM	TYPE & ARRANGEMENT	MIN. MOTOR HP & VOLTAGE	MANUFACTURER & MODEL NO.	DRIVE	CONTROL SCHEME	NOTES
EF-1	EXHAUST	BATHROOM 116	150	0.35"	MFG	CEILING, CENTRIFUGAL	113 WATTS 120V/1Ø	GREENHECK SPA-190	DIRECT	A	1,2,3,4
EF-2	EXHAUST	BATHROOM 117	150	0.35"	MFG	CEILING, CENTRIFUGAL	113 WATTS 120V/1Ø	GREENHECK SPA-190	DIRECT	A	1,2,3,4
EF-3	EXHAUST	BATHROOM 118	150	0.35"	MFG	CEILING, CENTRIFUGAL	113 WATTS 120V/1Ø	GREENHECK SPA-190	DIRECT	A	1,2,3,4
EF-4	EXHAUST	BATHROOM 112	75	0.35"	MFG	CEILING, CENTRIFUGAL	49 WATTS 120V/1Ø	GREENHECK SPA-110	DIRECT	A	1,2,3,4
EF-5	INTAKE	SHOP 115	50	0.35"	MFG	INLINE, CENTRIFUGAL	1/6 HP 120V/1Ø	GREENHECK SQ-60-VG	DIRECT	B	1,2,3,4,5

NOTES:

1. SCREEN
2. BACKDRAFT DAMPER
3. COLOR BY ARCHITECT
4. INTEGRAL DISCONNECT SWITCH
5. SPEED CONTROLLER

CONTROL OPTIONS:

A. CONTROL W/ ROOM LIGHTS
B. CONTINUOUS OPERATION DURING OCCUPIED HOURS VIA TIME CLOCK.

DIFFUSER SCHEDULE

SYMBOL	CFM	NECK SIZE	MODULE SIZE	FRAME TYPE	PATTERN	DAMPER	MATERIAL	SERVICE	FINISH	MANUFACTURER & MODEL NO.	NOTES
A	AS NOTED	AS NOTED	24x24	LAY-IN	4-WAY	NO	STEEL	SUPPLY	NOTE 2	TITUS TDC	1,2,3
B	AS NOTED	N/A	AS NOTED	SURFACE	DBL. DEFL.	YES	STEEL	SUPPLY	NOTE 2	TITUS 300RS	1,2,4
C	AS NOTED	AS NOTED	24x24	LAY-IN	PLAQUE	YES	STEEL	SUPPLY	NOTE 2	ACUTHERM TF-HC	1,2,3,5
D	AS NOTED	N/A	AS NOTED	SURFACE	LOUVERED	NO	STEEL	FILTER RETURN	NOTE 2	TITUS 350RLF	1,2,3
E	AS NOTED	N/A	AS NOTED	SURFACE	LOUVERED	NO	STEEL	TRANSFER	NOTE 2	TITUS 350RL	1,2,3
F	AS NOTED	AS NOTED	24x24	LAY-IN	PERF.	NO	STEEL	TRANSFER	NOTE 2	TITUS PAR	1,2,3

NOTES:

GENERAL - MC RESPONSIBLE FOR VERIFYING QTY, COLOR & FRAME TYPE OF DIFFUSERS/GRILLES BEFORE ORDERING. PROVIDE SQR TO RND TRANSTIONS & PLENUMS AS NECESSARY.

1. DIFFUSER DESIGNATIONS ON PLANS AS FOLLOWS:

   DIFFUSER OR NECK SIZE. — 8x4 0° — VERTICAL BLADE SPREAD (WHERE APPLICABLE)
   A
   AIR QUANTITY — 75 — DIFFUSER TYPE AS NOTED ABOVE

2. FINISH TO MATCH / BE ABLE MATCH CEILING OR WALL OR DOOR.
3. FACTORY INSULATION BACKING ON GRILLES EXPOSED TO NON-CONDITIONED AREAS. ALTERNATELY, FIELD SUPPLY AND INSTALL.
4. W/ INSULATED PLENUM/REGISTER BOX.
5. VAV DIFFUSER W/ HEAT & COOL SET POINTS. INTERNAL TEMPERATURE ADJUSTMENTS.

UNIT HEATER SCHEDULE

TAG	LOCATION	TYPE	INPUT (BTUH)	OUTPUT (BTUH)	ELECTRICAL DATA				MANUFACTURER & MODEL NO.	NOTES
					W	V	PH	HZ		
UH-1	SHOP 115	GAS	25,000	20,000	60	120	1Ø	60	REZNOR, F-25	1,3,4,5,6
UH-2	SWEEPER/JETTER GARAGE 102	GAS	50,000	40,000	95	120	1Ø	60	REZNOR, F-50	2,3,4,5,6

NOTES:

1. REMOTE THERMOSTAT SET TO 60°F
2. REMOTE THERMOSTAT SET TO 40°F
3. SUSPENDED UNIT HEATER
4. COORDINATE EXACT MOUNTING HEIGHT W/ ARCH AND G.C..
5. UNIT DISCONNECT
6. U.L. LISTED

NOTE:
SEE SHEET M102 FOR OUTSIDE AIR CALCS.

NOTE:
SEE SHEET M101 FOR GAS PIPING MATERIAL AND EXECUTION NOTES.

MECHANICAL LEGEND

- 18x14 — RECTANGULAR DUCT
- 6Ø — ROUND METAL DUCT
- 6Ø — FLEX/RIGID ROUND DUCT
- ELBOW WITH TURNING VANES
- VOLUME DAMPER
- SUPPLY TAP WITH VOLUME DAMPER
- SUPPLY TAP
- SUPPLY DIFFUSER/GRILLE OR RISER
- RETURN REGISTER/GRILLE OR RISER
- SIDEWALL DIFFUSER/GRILLE
- CEILING EXHAUST FAN
- T — T-STAT
- R — WIRELESS REMOTE TEMPERATURE SENSOR
- LOUVERED DOOR (SEE ARCHITECTURAL DRAWINGS)
- 3/4" DOOR UNDER CUT
- FD — U.L. FIRE DAMPER W/ ACCESS DOOR
- EXISTING EQUIP. OR DUCT TO BE REMOVED
- EXISTING EQUIPMENT/DUCTWORK
- G — GAS PIPING

ENERGY REQUIREMENTS:

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

METHOD OF COMPLIANCE

PRESCRIPTIVE ☒ ENERGY COST BUDGET ☐

THERMAL ZONE	3A	3A
EXTERIOR DESIGN CONDITIONS		
WINTER DRY BULB	16	16
SUMMER DRY BULB	95	95
INTERIOR DESIGN CONDITIONS		
WINTER DRY BULB	70	60
SUMMER DRY BULB	76	N/A
RELATIVE HUMIDITY	50%	50%
	OFFICE	WAREHOUSE
AREA OF WORK HEATING LOAD (MBH)	35.8	26.9
AREA OF WORK COOLING LOAD (MBH)	50.6	N/A
MECHANICAL SPACING CONDITIONING SYSTEM		
UNITARY		
DESCRIPTION OF UNIT	SEE SCHEDULES	NA
HEATING EFFICIENCY	SEE SCHEDULES	NA
COOLING EFFICIENCY	SEE SCHEDULES	NA
HEAT OUTPUT OF UNIT	SEE SCHEDULES	SEE SCHEDULES
COOLING OUTPUT OF UNIT	SEE SCHEDULES	NA
BOILER		
TOTAL BOILER OUTPUT	NA	NA
CHILLER		
TOTAL CHILLER OUTPUT	NA	NA
LIST EQUIPMENT EFFICIENCIES	SEE SCHEDULES	NA

DESIGNER'S STATEMENT:
TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE DESIGN OF THIS BUILDING COMPLIES WITH THE MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT REQUIREMENTS OF THE N.C.S. ENERGY CODE.

SIGNED: Dustin M. Metayer

NAME: DUSTIN M. METAYER, PE

TITLE: MECHANICAL ENGINEER

HAUCH DESIGN architecture
1118 Norris Street Raleigh, NC 27604
www.hauchdesign.com
919.589.3132

ALL DRAWINGS, SPECIFICATIONS, DESIGNS AND IDEAS REPRESENTED OR INDICATED BY THESE DRAWINGS ARE THE PROPERTY OF **HAUCH DESIGN PLLC**. DEVELOPED AND ISSUED EXCLUSIVELY FOR USE ON, AND IN CONNECTION WITH THE SPECIFIED PROJECT, AND SHALL NOT BE DUPLICATED OR USED ON OTHER PROJECTS, IN WHOLE OR PART, WITHOUT WRITTEN CONSENT OF THE ARCHITECT.

MAPLE ENGINEERING, PLLC
708 ST. MARYS ST
RALEIGH, NC 27605 LIC.#: P-0990
P:919.341.4249 F:919.890.3797
PLUMBING MECHANICAL ELECTRICAL

NORTH CAROLINA PROFESSIONAL SEAL 044528 ENGINEER DUSTIN M. METAYER
12/16/19

BID DOCUMENTS
Issue Dates / Revisions:

No:	Description:	Date:

Drawn: RMH Checked: DMM

Date: 12-16-19 Project No: 17-5832-02

PUBLIC WORKS FACILITY - BENSON

Owner: TOWN OF BENSON

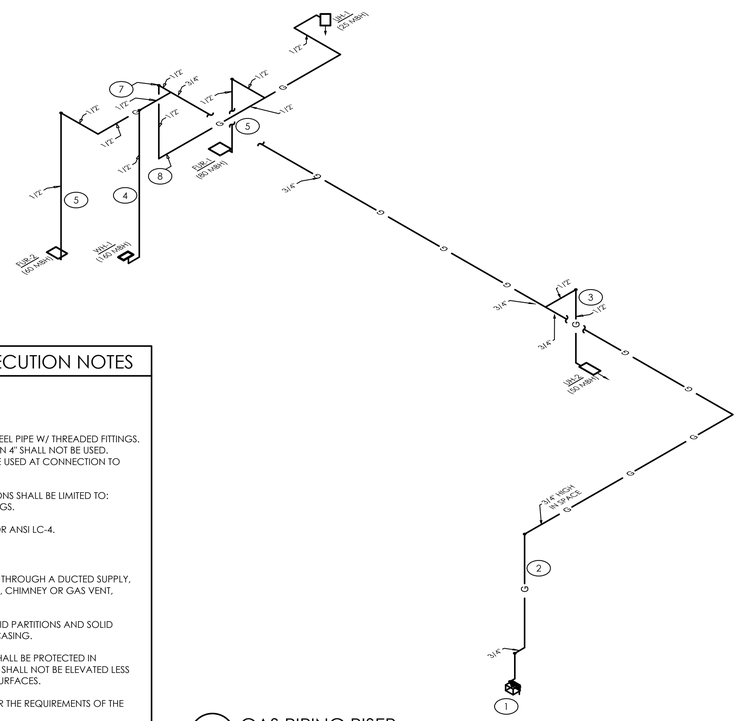
Address: 303 E. CHURCH ST. BENSON NC 27504

MECHANICAL SCHEDULES AND NOTES

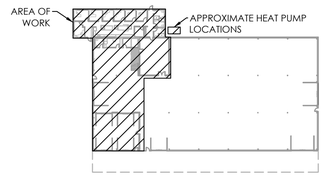
M001

© 2019 MAPLE ENGINEERING, PLLC EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THESE PLANS. THESE PLANS ARE NOT TO BE REPRODUCED, CHANGED OR COPIED IN ANY FORM OR MANNER WHATSOEVER, NOR ARE THEY TO BE ASSIGNED TO ANY THIRD PARTY WITHOUT FIRST OBTAINING THE EXPRESSED WRITTEN PERMISSION AND CONSENT OF MAPLE ENGINEERING, PLLC.

12/16/2019 5:29 PM
ZTI-1919-M001.DWG



3 GAS PIPING RISER
NO SCALE



K KEY PLAN
NO SCALE

GAS MATERIAL AND EXECUTION NOTES

MATERIALS:

1. GAS PIPING TO BE:

1.1. ABOVE GRADE - SCHEDULE 40 BLACK STEEL PIPE W/ THREADED FITTINGS. THREADED FITTINGS IN SIZES LARGER THAN 4" SHALL NOT BE USED. APPROVED FLEXIBLE GAS PIPING MAY BE USED AT CONNECTION TO EQUIPMENT.

2. GAS PIPE FITTINGS IN CONCEALED LOCATIONS SHALL BE LIMITED TO:
2.1. THREADED, ELBOWS, TEES AND COUPLINGS.
2.2. WELDED FITTINGS.
2.3. FITTINGS LISTED TO ANSI LC-1/CSA 6.26 OR ANSI LC-4.

EXECUTION:

1. GAS PIPING SHALL NOT BE INSTALLED IN OR THROUGH A DUCTED SUPPLY, RETURN OR EXHAUST, OR A CLOTHES CHUTE, CHIMNEY OR GAS VENT, DUMBWAITER OR ELEVATOR SHAFT.

2. GAS PIPING SHALL NOT BE LOCATED IN SOLID PARTITIONS AND SOLID WALLS, UNLESS INSTALLED IN A CHASE OR CASING.

3. ABOVE-GROUND OUTDOOR GAS PIPING SHALL BE PROTECTED IN ACCORDANCE WITH NCFGC 404.9. PIPING SHALL NOT BE ELEVATED LESS THAN 3-1/2" ABOVE GROUND AND ROOF SURFACES.

4. EXPOSED GAS PIPING SHALL BE LABELED PER THE REQUIREMENTS OF THE 2018 NCFGC 401.5.

5. SUPPORT ALL PIPING IN ACCORDANCE W/ 2018 NC FUEL GAS CODE. ANY SUSPENDED MATERIALS SHALL BE DIRECTLY SUPPORTED BY THE BUILDING STRUCTURE. DO NOT ATTACH ANYTHING TO THE ROOF DECK.

6. WHERE A SEDIMENT TRAP IS NOT INCORPORATED AS PART OF THE APPLIANCE, SEDIMENT TRAPS SHALL BE INSTALLED PER THE REQUIREMENTS OF NCFGC 408.4.

7. EACH GAS-FIRED APPLIANCE SHALL BE PROVIDED WITH A SHUTOFF VALVE IN ACCORDANCE WITH NCFGC 409.5 AND SHALL BE LOCATED WITHIN 6 FEET OF THE APPLIANCE.

8. GAS SHUTOFF VALVES SHALL BE OF AN APPROVED TYPE; SHALL BE CONSTRUCTED OF MATERIALS COMPATIBLE WITH THE PIPING; AND SHALL COMPLY WITH THE STANDARD THAT IS APPLICABLE FOR THE PRESSURE AND APPLICATION IN ACCORDANCE WITH NCFGC TABLE 409.1.1. SHUTOFF VALVES SHALL BE ACCESSIBLE AND PROTECTED PER NCFGC 409.1.3.

9. M.C. RESPONSIBLE FOR EXECUTING ALL CODE REQUIRED TESTS AND INSPECTIONS INCLUDING BUT NOT LIMITED TO THE LEAK AND PRESSURE TESTING OF GAS AS DESCRIBED IN NCFGC SECTION 406. PURGING OF GAS LINES SHALL BE PERFORMED IN ACCORDANCE WITH NCFGC 406.7.

NATURAL GAS CALCULATIONS TABLE 402.4(5)

PIPE SIZE (IN.)	MAX CAPACITY OF PIPE IN MBH
	EQUIV. LENGTH = 300 FT
1/2"	253 MBH
3/4"	528 MBH

BASED UPON CHAPTER 4 OF THE 2018 NORTH CAROLINA FUEL GAS CODE, 2.0 PSI INLET PRESSURE, 1.0 PSI PRESSURE DROP.

GAS SYSTEM LOAD

EQUIPMENT	MBH (INPUT)
FUR-1	80.0
FUR-2	60.0
UH-1	25.0
UH-2	50.0
WH-1	160.0
TOTAL:	375.0

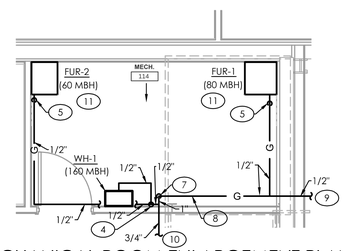
TAGGED NOTES - THIS SHEET

1. NEW GAS METER AND 2.0 PSI REGULATOR BY UTILITY. M.C. TO COORDINATE. GAS PIPING SYSTEM DESIGNED FOR 375 MBH TOTAL LOAD AND 300 FT EQUIVALENT LENGTH.
2. GAS LINE UP INTERIOR SIDE OF EXTERIOR WALL TO BOTTOM OF ROOF STRUCTURE.
3. GAS LINE DOWN TO SUSPENDED UNIT HEATER CONNECTION.
4. GAS LINE DOWN TO WATER HEATER CONNECTION.
5. GAS LINE DOWN TO FURNACE CONNECTION.
6. SEE DWG #2 THIS SHEET FOR ENLARGED MECHANICAL ROOM PLANS.
7. GAS LINE DOWN TO BELOW MEZZANINE.
8. GAS LINE BELOW MEZZANINE TO BE ROUTED TIGHT TO BOTTOM OF STRUCTURE.
9. GAS LINE CONTINUES BELOW MEZZANINE TO SUSPENDED UNIT HEATER. SEE DWG #1 THIS SHEET FOR CONTINUED LINE ROUTING.
10. GAS LINE HIGH IN SPACE FROM METER. SEE DWG #1 THIS SHEET FOR CONTINUED LINE ROUTING.
11. FURNACE TO BE INSTALLED VERTICALLY ON 18x18 INSULATED PLENUM BOX IN MECHANICAL CLOSET. ENSURE FUR IS POSITIONED SO THAT REQ'D MAINTENANCE CLEARANCES ARE MAINTAINED. SEE DETAIL.
12. HEAT PUMP TO BE INSTALLED AT GRADE. COORDINATE MOUNTING PAD REQUIREMENTS W/ G.C.. ENSURE ALL MFG MAINTENANCE CLEARANCES ARE MAINTAINED.
13. SUSPENDED UNIT HEATER TO BE INSTALLED TIGHT TO BOTTOM OF MEZZANINE STRUCTURE. ENSURE ALL MFG CLEARANCES ARE MAINTAINED.
14. SUSPENDED UNIT HEATER TO BE INSTALLED HIGH IN SPACE. COORDINATE EXACT MOUNTING HEIGHT W/ ARCH AND C.G..
15. EXISTING OUTSIDE AIR INTAKE LOUVER LOUVER TO REMAIN. ENSURE IN GOOD WORKING ORDER.
16. EXISTING OUTSIDE AIR INTAKE LOUVER LOUVER TO BE DEMO'D. COORDINATE W/ G.C. TO PATCH AND SEAL EXTERIOR WALL.

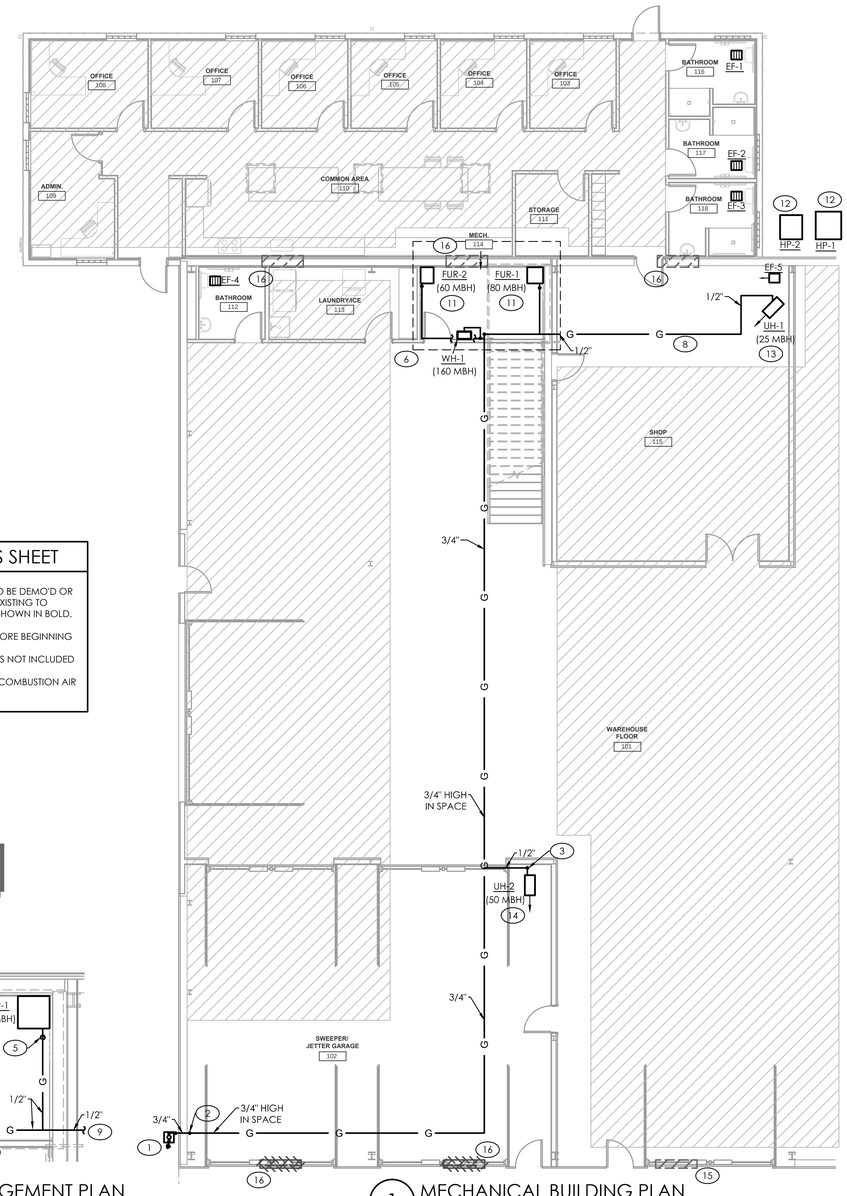
GENERAL NOTES - THIS SHEET

1. ITEMS SHOWN IN BOLD & HATCHED ARE TO BE DEMO'D OR RELOCATED. ITEMS SHOWN IN FAINT ARE EXISTING TO REMAIN. NEW OR RELOCATED ITEMS ARE SHOWN IN BOLD. SEE LEGEND.
2. M.C. TO VERIFY EXISTING CONDITIONS BEFORE BEGINNING WORK.
3. HATCHED AREA INDICATES EXISTING AREAS NOT INCLUDED IN SCOPE OF WORK.
4. SEE SHEET M102 FOR VENT ROUTING AND COMBUSTION AIR CALCULATIONS.

NOTE:
SEE M102 SHEET FOR FULL MECHANICAL PLANS



2 MECHANICAL ROOM ENLARGEMENT PLAN
SCALE: 1/4" = 1'-0"



1 MECHANICAL BUILDING PLAN
SCALE: 1/8" = 1'-0"

HAUCH DESIGN architecture
1118 Norris Street Raleigh, NC 27604
www.hauchdesign.com
919.589.3132

ALL DRAWINGS, SPECIFICATIONS, DESIGNS AND IDEAS REPRESENTED OR INDICATED BY THESE DRAWINGS ARE THE PROPERTY OF **HAUCH DESIGN PLLC**. DEVELOPED AND ISSUED EXCLUSIVELY FOR USE ON, AND IN CONNECTION WITH THE SPECIFIED PROJECT, AND SHALL NOT BE DUPLICATED OR USED ON OTHER PROJECTS, IN WHOLE OR PART, WITHOUT WRITTEN CONSENT OF THE ARCHITECT.

MAPLE ENGINEERING, PLLC
708 ST. MARYS ST
RALEIGH, NC 27605 LIC.#: P-0990
P:919.341.4247 F:919.890.3797
PLUMBING MECHANICAL ELECTRICAL

NORTH CAROLINA PROFESSIONAL SEAL 044528 ENGINEER
12/16/19

BID DOCUMENTS
Issue Dates / Revisions:

No:	Description:	Date:

Drawn: RMH Checked: DMM

Date: 12-16-19 Project No: 17-5832-02

PUBLIC WORKS FACILITY - BENSON

Owner: TOWN OF BENSON
Address: 303 E. CHURCH ST.
BENSON NC 27504

MECHANICAL AND GAS PIPING FIRST FLOOR PLAN

M101

© 2019 MAPLE ENGINEERING, PLLC EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THESE PLANS. THESE PLANS ARE NOT TO BE REPRODUCED, CHANGED OR COPIED IN ANY FORM OR MANNER WHATSOEVER, NOR ARE THEY TO BE ASSIGNED TO ANY THIRD PARTY WITHOUT FIRST OBTAINING THE EXPRESSED WRITTEN PERMISSION AND CONSENT OF MAPLE ENGINEERING, PLLC.

12/16/2019 5:46 PM
2019-1919-M101.DWG

GENERAL NOTES - THIS SHEET

1. ENSURE THAT ALL SOURCES OF BUILDING EXHAUST ARE A MINIMUM OF 10' HORIZONTALLY FROM OR A MINIMUM OF 3' ABOVE ANY AREA OUTSIDE AIR INTAKES.

TAGGED NOTES - THIS SHEET

1. PROVIDE WALL CAP WITH INSECT SCREEN AND BDD. CAULK BEHIND AND AROUND CAP WITH 100% SILICONE. MAINTAIN 10' CLEARANCE FROM ALL BUILDING AIR INTAKES.
2. PROVIDE WALL CAP WITH INSECT SCREEN. CAULK BEHIND AND AROUND CAP WITH 100% SILICONE. MAINTAIN 10' CLEARANCE FROM ALL BUILDING AIR EXHAUST.
3. SUSPENDED INLINE FAN TO BE INSTALLED EXPOSED HIGH IN SHOP SPACE. ENSURE ALL MFG CLEARANCES ARE MAINTAINED. SEE DETAIL.
4. OUTSIDE AIR DUCTWORK TO BE ROUTED TIGHT TO BOTTOM OF MEZZANINE STRUCTURE IN SHOP SPACE.
5. "TYPE B" FURNACE VENT TO BE ROUTED ABOVE LAY-IN CEILING AND BELOW GYPSUM CEILING UNTIL CLEAR OF MEZZANINE AND MEZZANINE STAIR. SIZE AND INSTALL PER FURNACE MFG'S INSTRUCTIONS.
6. FURNACE TO BE INSTALLED VERTICALLY ON 18x18 INSULATED PLENUM BOX IN MECHANICAL CLOSET. ENSURE FUR IS POSITIONED SO THAT REQ'D MAINTENANCE CLEARANCES ARE MAINTAINED. SEE DETAIL. CONDENSATE TO BE PUMPED TO EXTERIOR GRADE, AWAY FROM FOOT TRAFFIC.
7. 4Ø FURNACE VENT TO BE ROUTED UP HIGH IN WAREHOUSE SPACE. INSTALL PER FURNACE MFG'S INSTRUCTIONS.
8. 4Ø FURNACE VENT TO TURN UP TO BE ROUTED HIGH IN WAREHOUSE SPACE.
9. 4Ø FURNACE VENT TO MFG ROOF JACK. INSTALL PER FURNACE MFG'S INSTRUCTIONS.
10. 4Ø UNIT HEATER TYPE "B" VENT TO MFG ROOF JACK. SIZE AND INSTALL PER UNIT HEATER MFG INSTALLATION INSTRUCTIONS.
11. SUSPENDED UNIT HEATER. SEE SHEET M101 FOR ADDITIONAL INFORMATION.
12. G.C. TO PROVIDE LOUVERED DOOR. ENSURE LOUVER HAS A MINIMUM FREE AREA OF 100 SQ IN. COORDINATE W/ G.C..
13. 4Ø DRYER VENT UP WALL. PROVIDE RECESSED DRYER BOX. SEE DETAIL.
14. MAIN RETURN DUCTWORK TO BE ROUTED ALONG THE FLOOR OF THE MECHANICAL CLOSET.
15. OUTSIDE AIR DUCTWORK UP TO MFG ROOF JACK W/ INSECT SCREEN. ENSURE 10' HORIZONTAL CLEARANCE FROM ALL SOURCES OF BUILDING AIR EXHAUST IS MAINTAINED.
16. TRANSFER GRILLE(S) AND DUCTWORK. DUCTWORK TO BE ROUTED TO LOUVERED TRANSFER GRILLE CENTERED ABOVE DOORWAY. TURN LOUVER BLADES UP. SEE DETAIL.
17. VAV DIFFUSER W/ INTERNAL HEAT AND COOL SET POINTS.
18. (4) TOTAL LOUVERED TRANSFER GRILLES TO BE INSTALLED ON WALL BENEATH STAIRS FOR COMBUSTION AIR.(2018 NCFGC SEC. 305.3.1) (2) GRILLES TO BE INSTALLED WITHIN 12" OF CEILING IN MECH. 114. TURN LOUVER BLADES UP. (2) GRILLES TO BE INSTALLED WITHIN 12" OF FLOOR OF WAREHOUSE. TURN LOUVER BLADES DOWN. GRILLES TO HAVE A MINIMUM FREE AREA OF 140 SQ IN.
19. MAIN SUPPLY AIR DUCTWORK TO BE EXPOSED HIGH IN SPACE. DUCTWORK TO BE SINGLE WALL SPIRAL DUCTWORK.
20. MAIN SUPPLY AIR DUCTWORK TO PENETRATE TO DECK WALL. DUCTWORK TO TRANSITION TO INTERNALLY LINED RECTANGULAR DUCTWORK.
21. MAIN SUPPLY AIR DUCTWORK ABOVE LAY-IN CEILING AND BELOW GYPSUM CEILING TO BE INTERNALLY LINED RECTANGULAR DUCTWORK. COORDINATE DUCT ROUTING W/ AREA STRUCTURE.
22. WALLS SURROUNDING STORAGE CLOSET NOT TO DECK. COORDINATE W/ ARCH.
23. LOUVERED RETURN GRILLE TO BE INSTALLED LOW IN WALL BELOW COUNTERTOP. TURN LOUVER BLADES DOWN.
24. SUPPLY GRILLE W/ INSULATED PLENUM BOX TO BE INSTALLED ON EXPOSED DUCTWORK HIGH IN SPACE. TYPICAL OF TYPE "B" DIFFUSERS.
25. WIRELESS REMOTE TEMPERATURE SENSOR. MAIN THERMOSTAT CONTROLS LOCATED IN COMMON AREA.
26. PROVIDE WALL CAP WITH BDD AND NO SCREEN. CAULK BEHIND AND AROUND CAP WITH 100% SILICONE. MAINTAIN 10' CLEARANCE FROM ALL BUILDING AIR INTAKES.
27. DRYER DUCT TO BE ROUTED ABOVE LAY-IN CEILING AND BELOW GYPSUM CEILING.
28. HEAT PUMP TO BE INSTALLED AT GRADE. SEE SHEET M101 FOR ADDITIONAL INFORMATION.

Ventilation Calculations

Calc's Based on the 2018 NCMC Chapter 4

AH/RTU: **FUR-1** Spaces: **Office**

Occupancy	Area (sqft)	Occ. Density (ppl/1000 sqft)	# People	CFM/Sqft	CFM/Person	Area CFM	People CFM	Total Gross CFM	Vent. Eff*	Req'd CFM
Office 103	32	5	1	0.06	5	2	5	7	1.0	7
Office 104	32	5	1	0.06	5	2	5	7	1.0	7
Office 105	32	5	1	0.06	5	2	5	7	1.0	7
Office 107	46	5	1	0.06	5	3	5	8	1.0	8
Office 108	53	5	1	0.06	5	3	5	8	1.0	8
Admin 109	45	5	1	0.06	5	3	5	8	1.0	8
Common Area 110	41	0	0	0.06	0	2	0	2	1.0	2
									Total Req'd CFM	47
									Supplied CFM	100

*Ceiling or Floor Supply Cool Air (Space will be unoccupied or only partially occupied when in heating) (2018 NCMC 403.3.1.1.2)

AH/RTU: **FUR-2** Spaces: **Common Area**

Occupancy	Area (sqft)	Occ. Density (ppl/1000 sqft)	# People	CFM/Sqft	CFM/Person	Area CFM	People CFM	Total Gross CFM	Vent. Eff*	Req'd CFM
Common Area 110	223	5	1	0.06	5	13	6	19	1.0	19
									Total Req'd CFM	19
									Supplied CFM	75

*Ceiling or Floor Supply Cool Air (Space will be unoccupied or only partially occupied when in heating) (2018 NCMC 403.3.1.1.2)

AH/RTU: **EF-5** Spaces: **Shop**

Occupancy	Area (sqft)	Occ. Density (ppl/1000 sqft)	# People	CFM/Sqft	CFM/Person	Area CFM	People CFM	Total Gross CFM	Vent. Eff*	Req'd CFM
Shop 115	635	0	0	0.06	0	38	0	38	1.0	38
									Total Req'd CFM	38
									Supplied CFM	50

*Ceiling or Floor Supply Cool Air (Space will be unoccupied or only partially occupied when in heating) (2018 NCMC 403.3.1.1.2)

DRYER VENT LENGTH

2018 NCMC SEC 504.8

"LAUNDRY"
(2) 90° BEND + (0) 45° BEND = 10' + 9'(V) + 12' (H) = 31' < 35'

1. INSTALLED DRYER MUST BE RATED BY MFG FOR VENT LENGTH OF 31' OR GREATER WHEN INSTALLED W/ (2) 4Ø 90° ELBOW(S).
2. PROVIDE SHIELD PLATES ON THE FACE OF ALL FRAMING MEMBERS WHERE THERE IS LESS THAN 1-1/4" OF MATERIAL BETWEEN DRYER DUCT AND FACE OF FRAMING MEMBER. SHIELD PLATES ARE TO BE OF STEEL AND HAVE A MINIMUM THICKNESS OF 0.062 INCHES AND EXTEND A MINIMUM OF 2 INCHES ABOVE SOLE PLATES AND BELOW TOP PLATES. (2018 NCMC 504.7)

SHOP 115 COMBUSTION AIR CALC'S

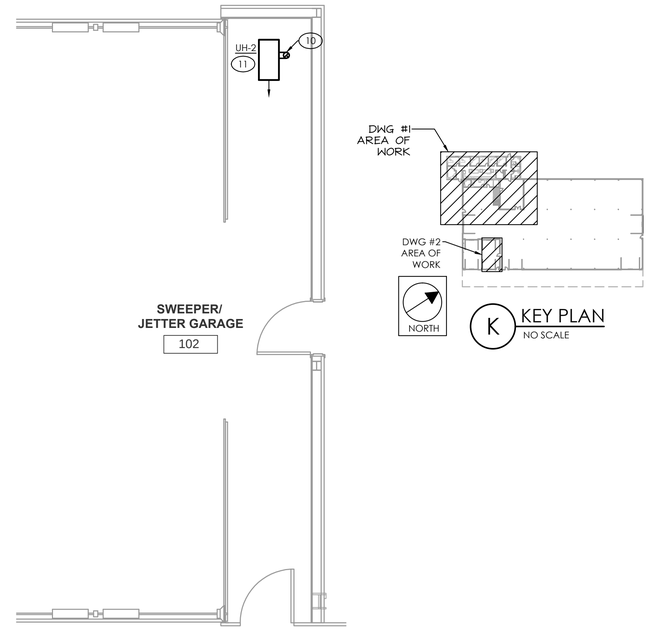
BASED ON 2018 NCFGC SEC 304	
SPACE:	MBH (INPUT)
APPLIANCES	MBH (INPUT)
UH-1	25.0
TOTAL:	25.0
ROOM AIR (SEC 304.5)	
REQ'D VOLUME @ 50 CU. FT PER 1,000 BTUH:	1250
ROOM VOLUME:	8540

SWEEPER/JETTER 102 COMBUSTION AIR CALC'S

BASED ON 2018 NCFGC SEC 304	
SPACE:	MBH (INPUT)
APPLIANCES	MBH (INPUT)
UH-2	50.0
TOTAL:	50.0
ROOM AIR (SEC 304.5)	
REQ'D VOLUME @ 50 CU. FT PER 1,000 BTUH:	2500
ROOM VOLUME:	27500

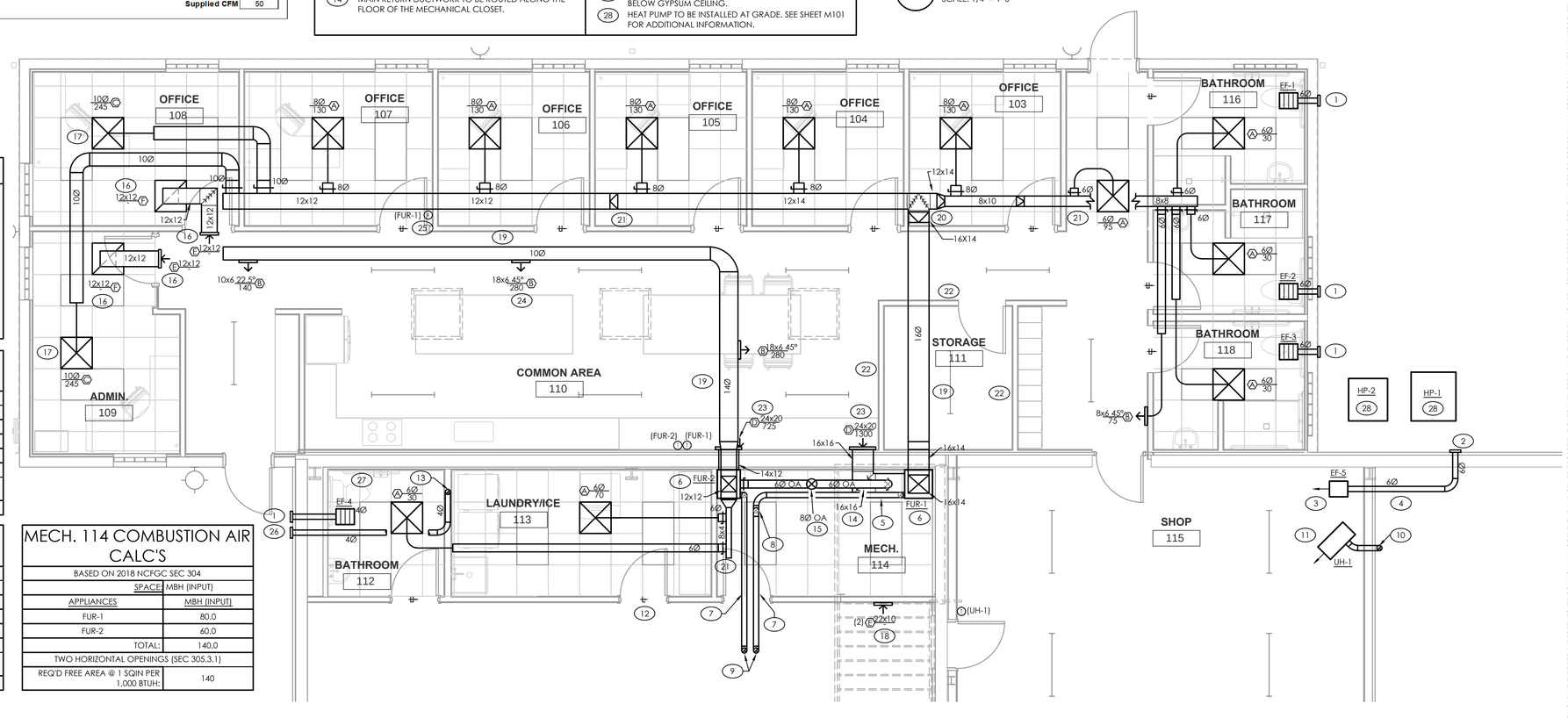
MECH. 114 COMBUSTION AIR CALC'S

BASED ON 2018 NCFGC SEC 304	
SPACE:	MBH (INPUT)
APPLIANCES	MBH (INPUT)
FUR-1	80.0
FUR-2	60.0
TOTAL:	140.0
TWO HORIZONTAL OPENINGS (SEC 305.3.1)	
REQ'D FREE AREA @ 1 SQIN PER 1,000 BTUH:	140



K KEY PLAN
NO SCALE

2 MECHANICAL PLAN - SWEEPER/JETTER GARAGE ENLARGEMENT
SCALE: 1/4" = 1'-0"



1 MECHANICAL PLAN - OFFICE ENLARGEMENT
SCALE: 1/4" = 1'-0"

HAUCH DESIGN architecture
1118 Norris Street Raleigh, NC 27604
www.hauchdesign.com
919.589.3132

ALL DRAWINGS, SPECIFICATIONS, DESIGNS AND IDEAS REPRESENTED OR INDICATED BY THESE DRAWINGS ARE THE PROPERTY OF **HAUCH DESIGN PLLC**, DEVELOPED AND ISSUED EXCLUSIVELY FOR USE ON, AND IN CONNECTION WITH THE SPECIFIED PROJECT, AND SHALL NOT BE DUPLICATED OR USED ON OTHER PROJECTS, IN WHOLE OR PART, WITHOUT WRITTEN CONSENT OF THE ARCHITECT.

MAPLE ENGINEERING, PLLC
708 ST. MARYS ST
RALEIGH, NC 27605 LIC.#: P-0990
P:919.341.4247 F:919.890.3797
PLUMBING MECHANICAL ELECTRICAL

NORTH CAROLINA PROFESSIONAL SEAL 044528 ENGINEER R. S. METZ
12/16/19

BID DOCUMENTS
Issue Dates / Revisions:

No:	Description:	Date:

Drawn: RMH Checked: DMM

Date: 12-16-19 Project No: 17-5832-02

PUBLIC WORKS FACILITY - BENSON

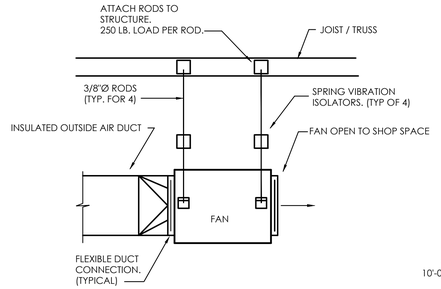
Owner: TOWN OF BENSON
Address: 303 E. CHURCH ST.
BENSON NC 27504

MECHANICAL
FIRST FLOOR
ENLARGEMENT

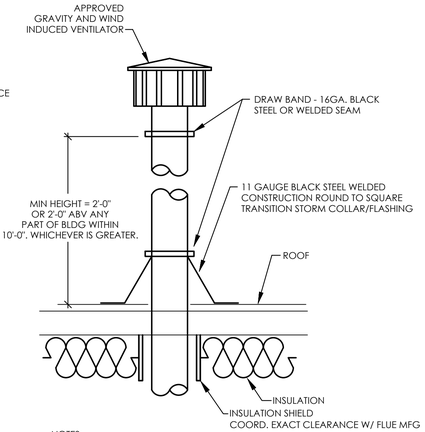
M102

© 2019 MAPLE ENGINEERING, PLLC EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THESE PLANS. THESE PLANS ARE NOT TO BE REPRODUCED, CHANGED OR COPIED IN ANY FORM OR MANNER WHATSOEVER, NOR ARE THEY TO BE ASSIGNED TO ANY THIRD PARTY WITHOUT FIRST OBTAINING THE EXPRESSED WRITTEN PERMISSION AND CONSENT OF MAPLE ENGINEERING, PLLC.

12/16/2019 5:29 PM
17-1919-M102.DWG

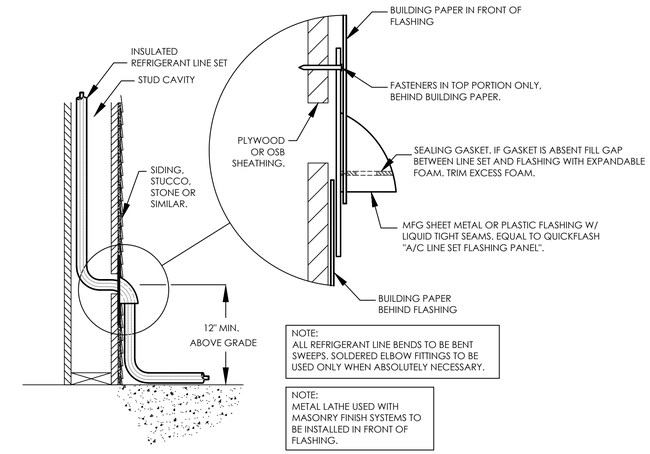


11 SUSPENDED IN LINE FAN DETAIL
NO SCALE



NOTES:
1. EXTEND FLASHING TO "SEAM TO SEAM" FOR INSTALLATION ON STANDING SEAM METAL ROOFS.
2. ENSURE FLUE IS 10' FROM ANY BUILDING AIR INTAKES.
3. FLUE MAY REQUIRE ADDITIONAL BRACING IN HIGH WIND AREAS.
4. SEAL AROUND FLUE & FLASHING AS REQUIRED.

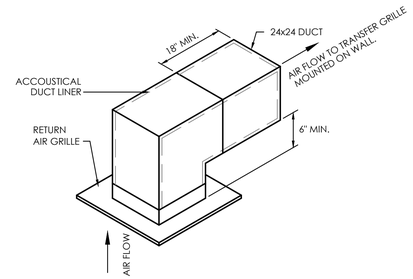
9 GAS FLUE DETAIL
NO SCALE



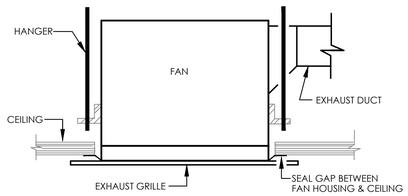
NOTE:
ALL REFRIGERANT LINE BENDS TO BE BENT SWEEPS. SOLDERED ELBOW FITTINGS TO BE USED ONLY WHEN ABSOLUTELY NECESSARY.

NOTE:
METAL LATHE USED WITH MASONRY FINISH SYSTEMS TO BE INSTALLED IN FRONT OF FLASHING.

8 HVAC LINE SET PENETRATION DETAIL (NON-MASONRY)
NO SCALE

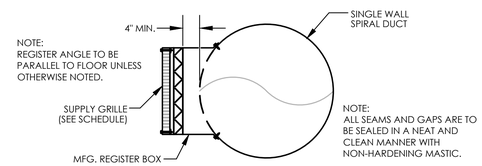


10 TRANSFER BOOT DETAIL
NO SCALE

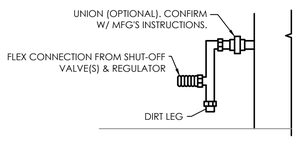


NOTES:
1. IF FAN IS EQUIPPED W/ INTERNAL BDD ENSURE BDD IS NOT TAPED SHUT.
2. ENSURE NO PORTION OF TAPE, SEALING, ETC EXTENDS PAST EDGE OF EXHAUST GRILLE.
3. INSTALLATION IN HARD-CEILING SIMILAR. FAN TO BE FASTENED TO RAFTER/JOIST. SEE MFG INSTRUCTIONS.

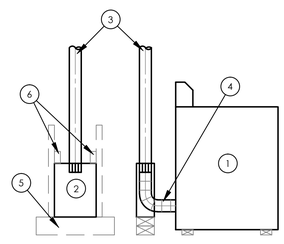
7 EXHAUST FAN (CEILING) DETAIL
NO SCALE



6 SPIRAL DUCT REGISTER (PLENUM)
NO SCALE

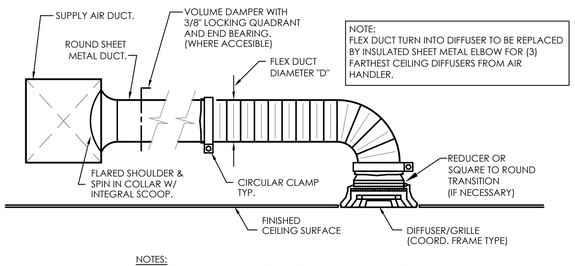


5 GAS CONNECTION DETAIL
NO SCALE



1. RESIDENTIAL DRYER
2. RECESSED METAL BOX (18"x14"x5-1/2")
3. 4" DRYER VENT
4. DRYER FLEX HOSE
5. ONE 2x6 BLOCK ON BOTTOM PLATE
6. 2x4 BLOCKING

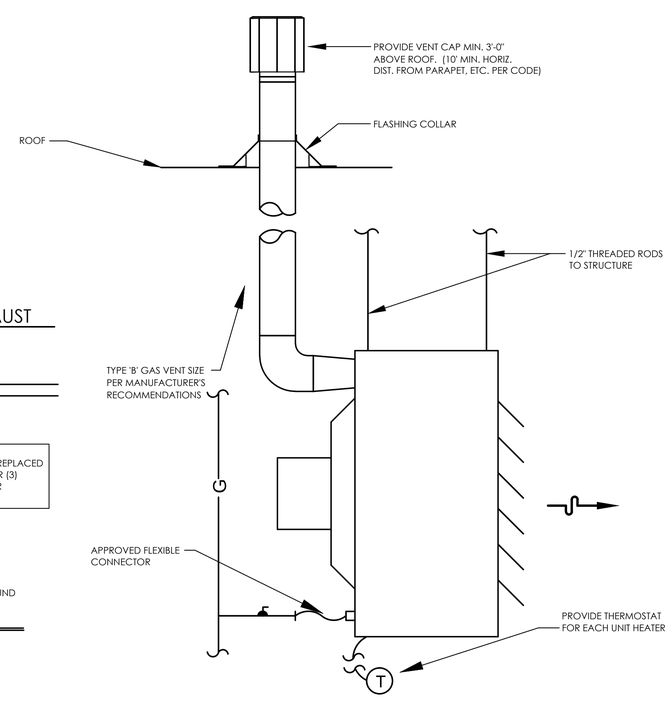
4 RECESSED METAL BOX FOR DRYER EXHAUST
NO SCALE



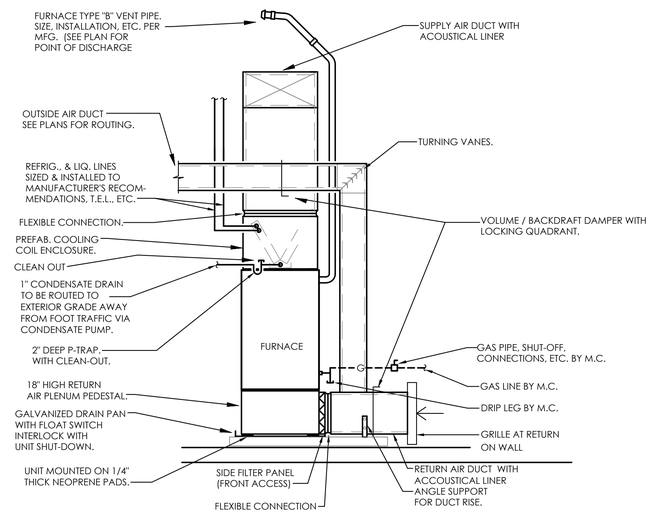
NOTE:
FLEX DUCT TURN INTO DIFFUSER TO BE REPLACED BY INSULATED SHEET METAL ELBOW FOR (3) FARTHEST CEILING DIFFUSERS FROM AIR HANDLER.

NOTES:
1. PROVIDE INSULATED REGISTER BOOT/PLENUM BOX IF NECESSARY.
2. RETURN APPLICATION IS SIMILAR. ALL ELBOWS IN RETURN APPLICATION TO BE INSULATED SHEET METAL (NO FLEX ELBOWS).

3 DIFFUSER DETAIL
NO SCALE



2 GAS FIRED UNIT HEATER
NO SCALE



1 FURNACE DETAIL
NO SCALE

HAUCH DESIGN architecture
1118 Norris Street Raleigh, NC 27604
www.hauchdesign.com
919.589.3132

ALL DRAWINGS, SPECIFICATIONS, DESIGNS AND IDEAS REPRESENTED OR INDICATED BY THESE DRAWINGS ARE THE PROPERTY OF **HAUCH DESIGN PLLC**, DEVELOPED AND ISSUED EXCLUSIVELY FOR USE ON, AND IN CONNECTION WITH THE SPECIFIED PROJECT, AND SHALL NOT BE DUPLICATED OR USED ON OTHER PROJECTS, IN WHOLE OR PART, WITHOUT WRITTEN CONSENT OF THE ARCHITECT.

MAPLE ENGINEERING, PLLC
708 ST. MARYS ST
RALEIGH, NC 27605 LIC.#: P-0990
P:919.341.4249 F:919.890.3797
PLUMBING MECHANICAL ELECTRICAL

NORTH CAROLINA PROFESSIONAL SEAL 044528 ENGINEER J. M. METINKO
12/16/19

BID DOCUMENTS
Issue Dates / Revisions:

No:	Description:	Date:

Drawn RMH Checked: DMM

Date: 12-16-19 Project No: 17-5832-02

PUBLIC WORKS FACILITY - BENSON

Owner: TOWN OF BENSON
Address: 303 E. CHURCH ST. BENSON NC 27504

MECHANICAL DETAILS

M201

© 2019 MAPLE ENGINEERING, PLLC EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THESE PLANS. THESE PLANS ARE NOT TO BE REPRODUCED, CHANGED OR COPIED IN ANY FORM OR MANNER WHATSOEVER, NOR ARE THEY TO BE ASSIGNED TO ANY THIRD PARTY WITHOUT FIRST OBTAINING THE EXPRESSED WRITTEN PERMISSION AND CONSENT OF MAPLE ENGINEERING, PLLC.

12/16/2019 5:29 PM
21-1919-M201.DWG

GENERAL ELECTRICAL NOTES

I. GENERAL REQUIREMENTS:

1. ELECTRICAL CONTRACTOR IS TO FURNISH AND PAY FOR ALL LABOR, MATERIAL, EQUIPMENT, PERMITS & FEES REQUIRED FOR THE COMPLETE INSTALLATION OF ALL SYSTEMS IN THIS SECTION OF WORK.
2. ALL WORK IS TO BE PERFORMED IN ACCORDANCE WITH NEC AND ALL OTHER APPLICABLE CODES. EC IS TO COORDINATE W/ G.C. IN REGARDS TO PROJECT TIMELINE, WORK HOURS, AS WELL AS ANY BONDING OR INSURANCE REQUIREMENTS.
3. ALL ELECTRICAL & LIGHTING EQUIPMENT SHALL BE PROVIDED COMPLETE WITH ALL ACCESSORIES, HANGERS, SUPPORTS, CONTROLS, ETC FOR A FULLY FUNCTIONING SYSTEM REGARDLESS OF PRESENCE ON PLANS.
4. ALL EQUIPMENT, MATERIALS AND INSTALLATION SHALL BE GUARANTEED TO BE FREE OF DEFECTS FOR A PERIOD OF ONE (1) YEAR AFTER FINAL ACCEPTANCE OF WORK OR IN ACCORDANCE WITH THE MANUFACTURER'S STANDARD GUARANTEE, IF LONGER. EXISTING EQUIPMENT IS EXCLUDED FROM WARRANTY REQUIREMENT.
5. THESE DRAWINGS ARE DIAGRAMMATIC AND SHOW GENERAL LOCATION AND ARRANGEMENT OF ALL MATERIALS AND EQUIPMENT. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS BUILDING CONSTRUCTION AND ALL OTHER WORK WILL PERMIT.
6. DO NO SCALE DRAWINGS FOR MEASUREMENT.
7. INFORMATION GIVEN IN SCHEDULES INCLUDES BOTH DESCRIPTION OF PRODUCT AND MANUFACTURER'S MODEL #. IF CONFLICT IS PRESENT BETWEEN DESCRIPTION AND MODEL #, EQUIPMENT DESCRIPTION SHALL TAKE PRECEDENT. IN CASE OF CONFLICT BETWEEN THE PLANS AND NOTES/SPECIFICATIONS OR CONFLICT BETWEEN INFORMATION PRESENTED ON THE PLANS OR IN THE NOTES/SPECIFICATIONS, THEN THE MOST RESTRICTIVE SHALL TAKE PRECEDENT.
8. BEFORE BID EC IS RESPONSIBLE FOR CLARIFYING W/ G.C. ANY CONFUSION IN REGARDS TO RESPONSIBILITY OF WORK TO BE PERFORMED OR MATERIALS TO BE PROVIDED. THE SUBMITTAL OF THE BID BY THE CONTRACTOR WILL BE HELD AS PROOF THAT THE CONTRACTOR UNDERSTANDS THOROUGHLY AND COMPLETELY THE SCOPE OF THE WORK INVOLVED, AND HAS INCLUDED ON THE BID ALL THE NECESSARY ITEMS TO CARRY OUT THIS SECTION OF WORK.
9. AS SOON AS POSSIBLE (AND NOT MORE THAN 30 DAYS) AFTER CONTRACT IS SIGNED, THE EC SHALL PROVIDE SUBMITTALS OF EQUIPMENT HE/SHE INTENDS TO PURCHASE FOR REVIEW AND COMMENT BY THE ENGINEER. ENGINEER IS TO APPROVE SUBMITTALS BEFORE EQUIPMENT IS ORDERED.
10. E.C. & G.C. SHALL CONSULT OWNER OR OWNER'S REPRESENTATIVE REGARDING DISPOSAL, STORING OR RESALE OF ALL DEMO/REMOVED EQUIPMENT AND MATERIALS.
11. ALL EXISTING EQUIPMENT AND SYSTEMS ARE ASSUMED BY ENGINEER TO BE IN GOOD WORKING ORDER. BEFORE BEGINNING WORK E.C. IS TO ENSURE ANY EQUIPMENT & SYSTEMS TO REMAIN ARE PROPERLY FUNCTIONING. NOTIFY G.C. IMMEDIATELY IF PROBLEMS ARE DISCOVERED.
12. ALL QUESTIONS MUST BE SUBMITTED IN RFI FORMAT TO THE ARCHITECT AND MUST BE ADDRESSED BY THE APPROPRIATE DESIGNER OF RECORD PRIOR TO BECOMING A PROPOSED CHANGE ORDER.
13. E.C. IS TO REVIEW COMPLETE DRAWING SET. E.C. IS RESPONSIBLE FOR WORK EXPLICITLY SHOWN AND WORK IMPLIED, UNLESS OTHERWISE NOTED FINAL ELECTRICAL CONNECTION TO ALL EQUIPMENT, FURNITURE (I.E. CUBICLES, WORKSTATIONS, ETC) IS THE RESPONSIBILITY OF THE E.C..

II. DIVISION OF WORK:

1. ALL ROOF WORK INCLUDING PENETRATIONS, OPENINGS, FLASHING, CURB INSTALLS, ETC ARE TO BE PERFORMED BY ROOFING CONTRACTOR. E.C. RESPONSIBLE FOR PROVIDING ANY ROOF CURBS, EQUIPMENT RAILS, VENTS, ETC AND COMMUNICATING ALL REQ'S WITH G.C. & ROOFING CONTRACTOR.
2. ALL LOW VOLTAGE WIRING RELATED TO MECHANICAL EQUIPMENT AND SYSTEMS IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR (ANY LOW VOLTAGE FIRE ALARM WIRING TO BE BY E.C.). ALL HIGH VOLTAGE CONNECTIONS TO MECHANICAL EQUIPMENT, TO BE PROVIDED AND INSTALLED BY E.C. (SEE EQUIPMENT SCHEDULE FOR DISCONNECT RESPONSIBILITY).
3. G.C. TO BE RESPONSIBLE FOR PROVIDING AND INSTALLING ANY ACCESS DOORS (WALL, FLOOR, CEILING) RELATED TO ELECTRICAL SYSTEM. E.C. RESPONSIBLE FOR COMMUNICATING TO G.C. SIZE AND LOCATION OF REQ'D ACCESS DOOR(S).
4. ELECTRICAL CONTRACTOR IS TO EMPLOY THE SERVICES OF THE G.C. FOR CUTTING AND PATCHING OF WALLS, FLOORS & CEILINGS RELATED TO THE INSTALLATION OF ELECTRICAL EQUIPMENT & SYSTEMS.
5. G.C. RESPONSIBLE FOR PAINTING OF ANY EXPOSED CONDUIT, WIRE, BOXES ETC. E.C. RESPONSIBLE FOR CLEANING AND PREPARING ITEMS FOR PAINT. COORDINATE W/ G.C.
6. E.C. TO COORDINATE W/ G.C. PRIOR TO BID REGARDING HIRING OF FIRE ALARM, DATA/TELE & SECURITY SUB-CONTRACTORS (IF APPLICABLE).

III. MATERIALS:

1. ALL MATERIAL, DEVICES, APPLIANCES, AND EQUIPMENT SHALL BE NEW UNLESS OTHERWISE NOTED AND SHALL CONFORM TO THE STANDARDS OF THE UNDERWRITER'S LABORATORIES, INC., AND THE NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION.
2. PROVIDE HANGERS & SUPPORTS APPROVED FOR USE BY NEC.
3. CONDUCTORS SHALL BE COPPER RATED AT NOT LESS THAN 600 VOLTS.MINIMUM SIZE SHALL BE #12 AWG UNLESS OTHERWISE NOTED ON THE DRAWINGS. ALL WIRE #8 AWG AND LARGER SHALL BE STRANDED. ALL CONDUCTORS #10 AND SMALLER MAY BE SOLID OR STRANDED, UNLESS OTHERWISE NOTED. CONDUCTOR INSULATION SHALL BE TYPE THHN UNLESS OTHERWISE NOTED. ALL EXTERIOR CABLE OR OTHER WIRE EXPOSED TO SUNLIGHT SHALL BE RATED FOR EXTERIOR USE & SUNLIGHT RESISTANT.
4. ALL WIRING SHALL BE INSTALLED IN GALVANIZED RIGID CONDUIT, INTERMEDIATE METAL CONDUIT, OR EMT, EXCEPT AS ALLOWED BELOW. EMT SHALL NOT BE USED IN OR UNDER CONCRETE SLABS, OR IN MASONRY WALLS. USE SCHEDULE 40 PVC OUTDOORS WHERE NOT SUBJECT TO PHYSICAL DAMAGE OR BELOW FLOOR SLAB. PVC NOT TO BE USED IN PATIENT CARE AREAS. MINIMUM CONDUIT SIZE TO BE 1/2". TYPE MC AND AC CABLE MAY BE USED WHERE PERMISSIBLE BY NEC. FLEXIBLE CONDUIT SHALL BE USED FOR CONNECTIONS TO VIBRATING EQUIPMENT AND LUMINAIRES, BUT SHALL NOT EXCEED 6' IN LENGTH.
5. METAL CONDUIT COUPLINGS TO BE COMPRESSION TYPE OR THREADED WHEN ACCESSIBLE TO BUILDING OCCUPANTS. METAL COUNDUIT COUPLINGS MAY BE SET-SCREW TYPE WHEN CONCEALED IN BUILDING STRUCTURE OR LOCATED MORE THAN 10' AFF. PLASTIC CONDUIT COUPLINGS TO BE SOCKET GLUED TYPE.
6. FUSES 0 - 600 AMPS SHALL BE UL CLASS "RK-1" LOW PEAK DUAL ELEMENT TIME DELAY WITH 200,000 AMPERE INTERRUPTING RATING AS MANUFACTURED BY BUSSMANN, UNLESS NOTED OTHERWISE.
7. ALL TERMINALS/LUGS SHALL BE 60/75° RATED. ALL TERMINALS, SPLICING CONNECTORS, LUGS, ETC SHALL BE IDENTIFIED FOR USE WITH THE MATERIAL (CU/AL) OF THE CONDUCTOR AND SHALL BE PROPERLY INSTALLED.
8. RECEPTACLES IN COMMERCIAL AREAS SHALL BE 20 AMP COMMERCIAL SPECIFICATION GRADE EQUAL TO HUBBELL SERIES. GROUND FAULT RECEPTACLES SHALL BE EQUAL TO COOPER VGF SERIES.
9. LIGHTING SWITCHES IN COMMERCIAL AREAS SHALL BE 20 AMP COMMERCIAL SPECIFICATION GRADE EQUAL TO HUBBELL SERIES.
10. ALL EXTERIOR FIXTURES AND DEVICES SHALL BE RATED FOR OPERATION AT 0° F AND SHALL BE DAMP OR WET LABELED AS REQUIRED.
11. ANY MULTI-WIRE BRANCH CIRCUITS ARE TO PROVIDED WITH MULTI-POLE BREAKERS.

IV. COORDINATION:

1. THE ELECTRICAL CONTRACTOR SHALL COORDINATE CLOSELY WITH ALL OTHER TRADES TO AVOID CONFLICT AND ENSURE OTHER TRADES PROVIDE MEASURES TO ACCOMMODATE ELECTRICAL WORK (I.E. ACCESS DOORS, SLAB/WALL/ROOF OPENINGS, ETC).
2. E.C. TO COORDINATE ELEVATION OF WALL MOUNTED LIGHTS (INTERIOR & EXTERIOR) W/ ARCHITECT/ARCH PLANS.
3. E.C. TO COORDINATE W/ P.C. & M.C. REGARDING POWER AND FIRE ALARM CONNECTIONS TO MECHANICAL AND PLUMBING EQUIPMENT.
4. E.C. TO VERIFY ALL REQUIREMENTS AND COORDINATE EXACT LOCATION OF INCOMING ELECTRICAL SERVICE WITH LOCAL POWER COMPANY PRIOR TO PROJECT START-UP. NOTIFY ENGINEER OF ANY CHANGES AS MAY BE REQUIRED.
5. E.C. TO VERIFY DEVICE PLATE COLOR AND MATERIAL WITH ARCHITECT PRIOR TO PURCHASE.

V. EXECUTION:

1. E.C. TO FOLLOW MANUFACTURER'S INSTRUCTIONS WHEN INSTALLING ELECTRICAL EQUIPMENT. ENSURE REQUIRED MAINTENANCE ACCESS AND CLEARANCES ARE MAINTAINED. IF CONFLICT EXISTS BETWEEN THESE PLANS AND MFG INSTRUCTIONS CONTACT ENGINEER.
2. E.C. IS TO ENSURE THAT THEIR INSTALLATION OF NEW CONDUITS, PIPES, DUCTWORK, AND SIMILAR DOES NOT BLOCK ACCESS TO NEW OR EXISTING AREA EQUIPMENT AND THAT THE FORE MENTIONED DOES NOT INTERFERE WITH THE REQUIRED SERVICE CLEARANCE OF NEW OR EXISTING EQUIPMENT. COORDINATE WITH OTHER TRADE CONTRACTORS AND CONTACT ENGINEER IF UNCERTAINTY EXISTS REGARDING EQUIPMENT SERVICE CLEARANCE REQUIREMENTS.
3. A COMPLETE GROUNDING SYSTEM SHALL BE PROVIDED AND INSTALLED IN ACCORDANCE WITH ARTICLE 250 OF THE NEC, AND AS SHOWN ON THE DRAWINGS.
4. PROVIDE A PULLWIRE IN ALL EMPTY CONDUITS.
5. PROVIDE A TYPED DIRECTORY IN ALL PANELBOARDS CLEARLY DESCRIBING THE LOCATION OF AND TYPE OF LOAD BEING SERVED FOR ALL CIRCUITS. PROVIDE ENGRAVED PHENOLIC NAMEPLATES FOR ALL PANELBOARDS AND DISCONNECT SWITCHES, WHITE LETTERS ON BLACK BACKGROUND.
6. ALL PENETRATIONS THROUGH EXTERIOR WALLS & ROOF SHALL BE FLASHED & COUNTER-FLASHED IN A WATERPROOF MANNER.
7. PENETRATIONS OF NON-RATED WALLS, PARTITIONS AND FLOOR OF COMBUSTIBLE CONSTRUCTION SHALL BE FIRESTOPPED WITH MATERIALS EQUIVALENT TO TWO INCHES OF WOOD. FIRESTOPPING SHALL COMPLY WITH ASTM E-814.
8. ANY NOTCHING, DRILLING, BORING OR OTHER ALTERATION TO BUILDING STRUCTURE SHALL BE PERFORMED IN A CODE APPROVED METHOD AND NOT THREATEN THE INTEGRITY OF THE BUILDING STRUCTURE.
9. SUPPORT ALL CONDUIT AND EQUIPMENT IN ACCORDANCE W/ NEC. ANY SUSPENDED MATERIALS SHALL BE DIRECTLY SUPPORTED BY THE BUILDING STRUCTURE. DO NOT ATTACH ANYTHING TO THE ROOF DECK.
10. PENETRATIONS OF ALL EXTERIOR WALLS, FLOORS AND CEILINGS SHALL BE SEALED IN AN AIR TIGHT MANNER AND IN ACCORDANCE W/ 2018 NCECC C402.5.1.1 FOR COMMERCIAL PROJECTS & R402.4.2 FOR RESIDENTIAL PROJECTS.
11. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL ELECTRICAL EQUIPMENT FROM FOREIGN MATERIAL DURING CONSTRUCTION (PAINT, SPACKLE, ETC.). UPON COMPLETION OF WORK THE ELECTRICAL CONTRACTOR SHALL CLEAN, WASH, ETC ALL ITEMS AND EQUIPMENT WITHIN HIS SCOPE OF WORK AND LEAVE ALL ITEMS BRIGHT AND CLEAN.
12. UNLESS OTHERWISE INDICATED THE ELECTRICAL CONTRACTOR AT HIS/HER DISCRETION MAY COMBINE MULTIPLE CIRCUITS INTO A SINGLE CONDUIT AND DE-RATE WIRE. COMBINING AND DE-RATING IS TO BE DONE IN STRICT ACCORDANCE W/ NEC.
13. DEVICES INCLUDING GFCI PROTECTION MUST HAVE THEIR TESTING MEANS READILY ACCESSIBLE. PROVIDE REMOTE TESTING MEANS OR GFCI BREAKER FOR GFCI RECEPTACLES AND SIMILAR DEVICES WHICH ARE NOT READILY ACCESSIBLE (I.E. BEHIND EQUIPMENT, AT CEILING, ETC). (NEC 210.8).
14. COORDINATE WITH THE CABLE TV AND TELEPHONE UTILITIES FOR SERVICE ENTRANCE AND CABLING REQUIREMENTS PRIOR TO ANY PURCHASING. INSTALLATION MUST COMPLY WITH THEIR RESPECTIVE REGULATIONS AND REQUIREMENTS.
15. ALL EXIT & EMERGENCY LIGHTS ARE TO BE CIRCUITED TO UN-SWITCHED LEG OF LOCAL NORMALLY ON LIGHTING CIRCUIT.
16. RECEPTACLE, LIGHT SWITCHES AND OTHER CONTROL DEVICES ARE TO BE INSTALLED IN ACCORDANCE W/ ANSI A117.1 AND ADA REQ'S CONCERNING HEIGHT AND ACCESSIBILITY. FHA REQ'S TO BE FOLLOWED FOR MULTI-FAMILY AND RESIDENTIAL PROJECTS.
17. E.C. IS TO CONFIRM EXACT ELECTRICAL NAMEPLATE DATA OF ALL PLUMBING, MECHANICAL AND ELECTRICAL EQUIPMENT INCLUDING, BUT NOT LIMITED TO, MCA, MOCP, VOLTAGE & PHASE BEFORE BEGINNING WORK.
18. CEILING MOUNTED ELECTRICAL FIXTURES SHALL BE A MINIMUM OF 80 INCHES ABOVE THE FINISHED FLOOR UNLESS ABOVE COUNTERTOPS OR SIMILAR FIXED OBSTRUCTIONS.
19. E.C. TO IDENTIFY AND PERMANENTLY MARK BOXES, ENCLOSURES, EXPOSED CABLE, AND RACEWAY SYSTEMS SERVING EMERGENCY SYSTEMS IN ACCORDANCE TO NEC 700.10. E.C. TO ALSO PROVIDE CLEARLY IDENTIFIED LABEL OF EMERGENCY BRANCH CIRCUIT AT PANEL (NEC 700.12(F)(2)(4)).

LIGHTING FIXTURE SCHEDULE

MARK	MANUF.	CATALOG NUMBER	LAMP DATA NO.	LAMP DATA TYPE	VOLTS	BALLAST DATA NO.	BALLAST DATA TYPE	INPUT WATTS	MOUNTING	DESCRIPTION
A1	LITHONIA	EPANL 2X4	-	LED	MVOLT	1	DRIVER	39	LAY-IN	2x4 LED ACRYLIC LENSED LAY-IN RECESSED FLAT PANEL TROFFER. 4000 LUMENS. 3500K COLOR TEMP. 80 CRI.
A2	LITHONIA	EPANL 2X4	-	LED	MVOLT	1	DRIVER	28	LAY-IN	2x4 LED ACRYLIC LENSED LAY-IN RECESSED FLAT PANEL TROFFER. 3000 LUMENS. 3500K COLOR TEMP. 80 CRI.
A3	LITHONIA	EPANL 2X4	-	LED	MVOLT	1	DRIVER	39	LAY-IN	2x4 LED ACRYLIC LENSED LAY-IN RECESSED FLAT PANEL TROFFER. 4000 LUMENS. 3500K COLOR TEMP. 80 CRI. 0-10V DIMMING TO 10%.
B	LITHONIA	DMW2	-	LED	120-277	1	DRIVER	58	SUSPENDED	4' LED VAPOR PROOF GASKETED FIXTURE. -40°F AND WET LOCATION RATED. 4000 LUMENS. 3500K COLOR TEMP. 80 CRI. POLY. DIFF. W/ PENDANT MOUNT.
C	LITHONIA	EPANL 2X2	-	LED	MVOLT	1	DRIVER	19	LAY-IN	2x2 LED ACRYLIC LENSED LAY-IN RECESSED FLAT PANEL TROFFER. 2000 LUMENS. 3500K COLOR TEMP. 80 CRI.
E	LITHONIA	WST LED	-	LED	MVOLT	1	DRIVER	25	WALL	ARCHITECTURAL EXTERIOR LED WALL SCONCE. 3000 LUMENS. 3000K COLOR TEMP. WIDE THROW DISTRIBUTION. BLACK FINISH. COLD/WET LOC. LISTED.
L1	LITHONIA	ZL1D	-	LED	MVOLT	1	DRIVER	30	SUSPENDED	4' LED STRIP LIGHT. DROP LENS DIFFUSER. 3000 LUMENS. 3500K COLOR TEMP.. 80 CRI. WHITE FINISH.
L2	LITHONIA	ZL1D	-	LED	MVOLT	1	DRIVER	41	SUSPENDED	4' LED STRIP LIGHT. DROP LENS DIFFUSER. 5000 LUMENS. 3500K COLOR TEMP.. 80 CRI. WHITE FINISH.
L3	LITHONIA	ZL1N	-	LED	MVOLT	1	DRIVER	48	SURFACE	8' LED STRIP LIGHT. DROP LENS DIFFUSER. 6000 LUMENS. 3500K COLOR TEMP.. 80 CRI. WHITE FINISH. DAMP LOCATION LISTED. COLD LOCATION LISTED.
W1	LITHONIA	IBE	-	LED	MVOLT	1	DRIVER	128	SUSPENDED	4' LED HIGH BAY. 4000K COLOR TEMPERATURE. 18000 LUMENS. ACRYLIC LENS. MEDIUM DISTRIBUTION. 80 CRI. INTEGRAL 360° PRE-WIRED MOTION SENSOR.
W2	LITHONIA	IBE	-	LED	MVOLT	1	DRIVER	128	SUSPENDED	4' LED HIGH BAY. 4000K COLOR TEMPERATURE. 18000 LUMENS. ACRYLIC LENS. MEDIUM DISTRIBUTION. 80 CRI.
	LITHONIA	LHQM LED	2	1.5W	120, 277	-	-	3.0	WALL	LED EXIT-EMERGENCY LIGHT COMBO. (2) ADJ. HEADS. BATTERY BACK-UP. RED ILLUMINATED EXIT SIGN. HOUSING COLOR BY ARCH.
	LITHONIA	LQM	1	LED	120, 277	-	-	1.2	WALL	EXIT LIGHT W/ BATTERY BACK-UP. RED ILLUMINATED EXIT SIGN. HOUSING COLOR BY ARCH.
	BARRON LIGHTING GROUP	TR-WB-BR-CL	2	6W XENON	120, 277	-	-	-	WALL	REMOTE EXTERIOR EMERGENCY LIGHT. PAINTABLE. COLD WEATHER OPTION. BATTERY BACK-UP. W/ TEST SWITCH. WET LOC LISTED. NEC 700.16 COMPLIANT.
	LITHONIA	ELM2 LED	2	1.5 W	120, 277	-	-	1.4	SEE PLAN	GEN. PURPOSE EMERGENCY LED LIGHT. (2) ADJ. HEADS. BATTERY BACK-UP.
EMG-INV	-	-	-	-	120, 277	-	-	MFG	-	FIXTURE TO BE WIRED VIA EMERGENCY LIGHTING INVERTER WITH 90 MINUTE BATTERY BACK-UP. SEE RISER(S) AND DETAIL(S).

NOTES:
1. UNLESS OTHERWISE NOTED COLOR & FINISH OF FIXTURE HOUSING, BAFFLE, OR SIMILAR EXPOSED ELEMENTS TO BE BY ARCHITECT.
2. EXIT AND EMERGENCY LIGHTING FIXTURES SHALL BE CIRCUITED TO AN UNSWITCHED LEG OF A NORMALLY ON LOCAL LIGHTING CIRCUIT (UNLESS NOTED OTHERWISE).INCLUDE 90 MINUTE BATTERY BACKUP & TESTING MEANS.
3. FIXTURES WIRED VIA EMERGENCY LIGHTING INVERTER WHERE "EMG-INV" IS SHOWN.
4. ALL LAMPS OF A SINGLE FIXTURE TYPE INSTALLED IN EACH AREA/ROOM/SPACE ARE TO BE OF SAME TEMPERATURE/COLOR.

LIGHTING SYSTEMS

NCECC SECTION C405 & C406

LIGHTING POWER DENSITY CALCULATION COMPLIANCE

INTERIOR LIGHTING POWER DENSITY CALCULATION PER TABLE C405.4.2. SEE LIGHTING FIXTURE SCHEDULE FOR FIXTURE INFORMATION.

INTERIOR WATTAGE SPECIFIED VS. ALLOWED — 4032 VS. 15613

EXTERIOR LIGHTING POWER DENSITY CALCULATION PER TABLE C405.5.1. SEE LIGHTING FIXTURE SCHEDULE FOR FIXTURE INFORMATION.

TRADABLE EXTERIOR WATTAGE SPECIFIED VS. ALLOWED — 534 VS. 600

NONTRADABLE EXTERIOR WATTAGE SPECIFIED VS. ALLOWED — NA VS. NA

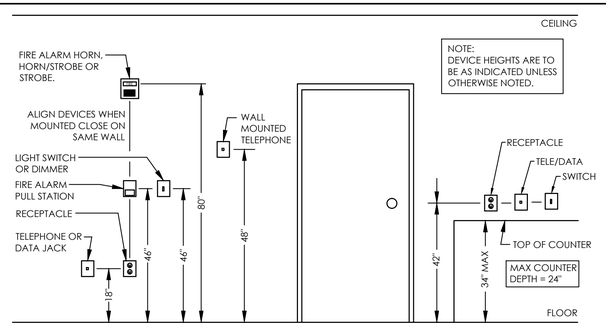
DESIGNER STATEMENT:

TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE DESIGN OF THIS BUILDING COMPLIES WITH THE LIGHTING SYSTEMS REQUIREMENTS OF THE NORTH CAROLINA ENERGY CONSERVATION CODE, SECTION C405 & C406 AND ANY LOCAL AMENDMENTS THEREOF.

SIGNED: Dustin M. Metayer
NAME: DUSTIN M. METAYER, PE
TITLE: ELECTRICAL ENGINEER

ADDITIONAL PRESCRIPTIVE COMPLIANCE

NOT APPLICABLE (RENOVATION PROJECT)		C406.5 ON-SITE RENEWABLE ENERGY	
C406.2 MORE EFFICIENT MECHANICAL EQUIPMENT		C406.6 DEDICATED OUTDOOR AIR SYSTEM	
C406.3 REDUCED LIGHTING POWER DENSITY	X	C406.7 REDUCED ENERGY USE IN SERVICE WATER HEATING	
C406.4 ENHANCED DIGITAL LIGHTING CONTROLS			



NOTE:
MOUNTING LOCATIONS OF RECEPTACLES, SWITCHES AND ALL OTHER CONTROL DEVICES SHALL BE IN ACCORDANCE WITH ANSI A117.1 AND ADA REQUIREMENTS (FHA REQ'S FOR MULTI-FAMILY AND RESIDENTIAL PROJECTS)

1 TYPICAL DEVICE MOUNTING HEIGHTS
NO SCALE

MOTION SENSOR LEGEND

MS	WALL SWITCH DUAL TECH. (INFRARED AND ULTRASONIC) OCCUPANCY SENSOR EQUAL TO SENSOR SWITCH MODEL WSX PDT. 120/277V. TIME DELAYS 15 MINUTES FOR ON/OFF. LINE VOLTAGE.
MS	DIMMING WALL SWITCH DUAL TECH. (INFRARED AND ULTRASONIC) OCCUPANCY SENSOR EQUAL TO SENSOR SWITCH MODEL WSX D PDT. 120/277V. TIME DELAYS 15 MINUTES FOR ON/OFF. LINE VOLTAGE. TO BE USED WITH 0-10V DIMMING FIXTURES ONLY.
	NOTE: THE CONTRACTOR IS TO PROVIDE AND INSTALL ALL RELAYS, CONTROLS, SWITCHES, ETC FOR A FULLY FUNCTIONING SYSTEM REGARDLESS OF PRESENCE OR ABSENCE ON PLANS.

ELECTRICAL SYMBOL LEGEND

	CIRCUIT CONDUCTORS CONCEALED IN FLOOR, WALL OR CEILING.
	ARROWHEAD INDICATES HOMERUN TO PANEL NOTED.
//	INDICATES HOT LEG OF CIRCUIT TO BE CARRIED OVER TO NEXT DEVICE. SEE PLANS FOR CONTROL SCHEME.
J	JUNCTION BOX CEILING MOUNTED.
J	JUNCTION BOX FLOOR MOUNTED.
J	JUNCTION BOX WALL MOUNTED AT HEIGHT INDICATED ON DRAWINGS.
S	SINGLE POLE SWITCH, 20A, 120/277 VOLT, 48" A.F.F. TO CENTER. "3" INDICATES 3-WAY SWITCH. "4" INDICATES 4-WAY SWITCH. "D" INDICATES DIMMER SWITCH OF TYPE TO SUIT LOAD. "M" INDICATES 120V, 20A MOTOR RATED TOGGLE SWITCH. "DP" INDICATES DOUBLE POLE
SS	INDICATES FLUORESCENT FIXTURES DUAL SWITCHED, INBOARD/OUTBOARD SWITCHED SEPARATELY.
	SINGLE RECEPTACLE, 20 AMP, 120 VOLT, 18" A.F.F. TO CENTER.
	DUPLEX RECEPTACLE, 20 AMP (15 AMP RESIDENTIAL, UON), 120 VOLT, 18" A.F.F. TO CENTER. "GFI" INDICATES GROUND FAULT CIRCUIT INTERRUPTER TYPE. "WP" INDICATES WEATHERPROOF. "EWC" INDICATES RECEPTACLE INSIDE ENCLOSURE OF ELECTRIC WATER COOLER PROVIDE GFI BREAKER FOR CIRCUIT. "ASW" INDICATES ABOVE SHOW WINDOW, PER NEC SHOW WINDOW REQ'S.
	QUADRUPLEX RECEPTACLE, AS ABOVE, 18" A.F.F.
	DUPLEX RECEPTACLE, AS ABOVE, SPLIT WIRED, TOP HALF SWITCHED, 18" A.F.F.
	DUPLEX RECEPTACLE, AS ABOVE, MOUNTED 6" ABOVE COUNTER TOP OR 4" ABOVE BACKSPLASH, AS APPROPRIATE, OR AT HEIGHT INDICATED.
	DUPLEX RECEPTACLE, AS ABOVE, MOUNTED 6" ABOVE COUNTER TOP OR 4" ABOVE BACKSPLASH, AS APPROPRIATE, OR AT HEIGHT INDICATED, WITH GFI PROTECTION.
	RECESSED FLUSH FLOOR DUPLEX RECEPTACLE WITH BRASS COVERPLATE. COORDINATE EXACT FINISH WITH ARCHITECT AND OWNER.
	208V RECEPTACLE, SEE PLANS FOR NEMA CONFIGURATION.
	TELEPHONE/DATA OUTLET, 18" A.F.F. TO CENTER OR ALIGN MOUNTING HEIGHT WITH ADJACENT DEVICE, UNLESS OTHERWISE NOTED. COORDINATE EXACT DEVICE TYPE AND REQUIRED FACEPLATE W/ OWNER/TENANT.
30/3/FPN	HEAVY DUTY FUSIBLE/NON-FUSIBLE DISCONNECT SWITCH, NUMBERS INDICATE FRAME SIZE, NUMBER OF POLES AND FUSING. PROVIDE NEMA 1 ENCLOSURE INSIDE. PROVIDE NEMA 3 ENCLOSURE FOR ALL SWITCHES LOCATED OUTSIDE. "FPN" INDICATES FUSE PER EQUIPMENT NAMEPLATE "NF" INDICATES NON-FUSED. "MS" INDICATES MOTOR STARTER OF TYPE TO SUIT LOAD.
	208Y/120V PANEL, SURFACE OR RECESS MOUNTED, SEE SCHEDULE FOR DETAILS.
	480Y/277V PANEL, SURFACE OR RECESS MOUNTED, SEE SCHEDULE FOR DETAILS.
EF	FAN, PROVIDED AND INSTALLED BY MECHANICAL CONTRACTOR, WIRED BY ELECTRICAL CONTRACTOR. PROVIDE DISCONNECTING MEANS AS REQUIRED.
	RECESSED MOUNTED 2x4 FLUORESCENT TROFFER, SEE FIXTURE SCHEDULE FOR DETAILS.
	TRACK LIGHTING FIXTURE, SEE FIXTURE SCHEDULE FOR DETAILS.
	SURFACE MOUNTED FLUORESCENT STRIP, SEE FIXTURE SCHEDULE FOR DETAILS.
	WALL MOUNTED LIGHTING FIXTURE, SEE FIXTURE SCHEDULE FOR DETAILS.
	SURFACE, RECESSED OR GROUND MOUNTED LIGHTING FIXTURE, SEE FIXTURE SCHEDULE FOR DETAILS.
	ELECTRIC UTILITY METER LOCATION.
###	KITCHEN EQUIPMENT TAG.
	DEMO'D LIGHT FIXTURE OR SIMILAR.
	DEMO'D RECEPTACLE OR SIMILAR.
TV	CABLE TV OUTLET, 18" A.F.F. TO CENTER, UNLESS OTHERWISE NOTED.

ELECTRICAL ABBREVIATIONS

18"	DIMENSION INDICATES HEIGHT ABOVE FINISHED FLOOR AT WHICH CENTER OF DEVICE IS TO BE MOUNTED.
AFF	ABOVE FINISHED FLOOR.
AFG	ABOVE FINISHED GRADE.
E.C.	ELECTRICAL CONTRACTOR.
FPN	FUSE PER EQUIPMENT NAMEPLATE REQUIREMENTS.
G.C.	GENERAL CONTRACTOR.
M.C.	MECHANICAL CONTRACTOR.
P.C.	PLUMBING CONTRACTOR.
WP	INDICATES DEVICE TO HAVE WEATHERPROOF COVER.
UON	UNLESS OTHERWISE NOTED.
FACP	FIRE ALARM CONTROL PANEL.
SMP	SPRINKLER MONITORING PANEL.
NL	NIGHT LIGHT, LIGHT NOT SWITCHED.
WP	WEATHER PROOF

HAUCH DESIGN architecture
1118 Norris Street Raleigh, NC 27604
www.hauchdesign.com
919.589.3132

ALL DRAWINGS, SPECIFICATIONS, DESIGNS AND IDEAS REPRESENTED OR INDICATED BY THESE DRAWINGS ARE THE PROPERTY OF **HAUCH DESIGN PLLC**. DEVELOPED AND ISSUED EXCLUSIVELY FOR USE ON, AND IN CONNECTION WITH THE SPECIFIED PROJECT, AND SHALL NOT BE DUPLICATED OR USED ON OTHER PROJECTS, IN WHOLE OR PART, WITHOUT WRITTEN CONSENT OF THE ARCHITECT.

MAPLE ENGINEERING, PLLC
708 ST. MARYS ST
RALEIGH, NC 27605 LIC.#: P-0990
P:919.341.4247 F:919.890.3797
PLUMBING MECHANICAL ELECTRICAL

NORTH CAROLINA PROFESSIONAL SEAL 044528 ENGINEER DUSTIN M. METAYER
12/16/19

BID DOCUMENTS
Issue Dates / Revisions:

No:	Description:	Date:

Drawn: TEL Checked: DMM

Date: 12-16-19 Project No: 17-5832-02

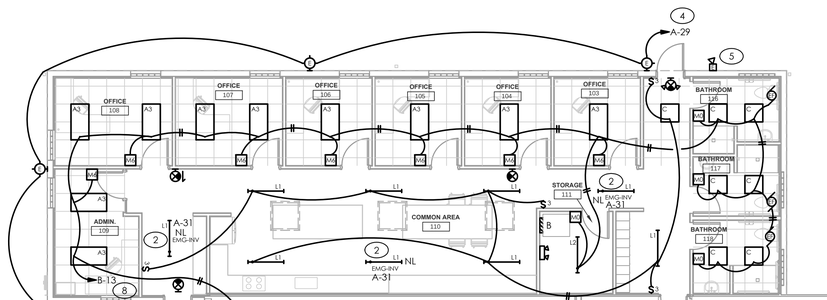
PUBLIC WORKS FACILITY - BENSON

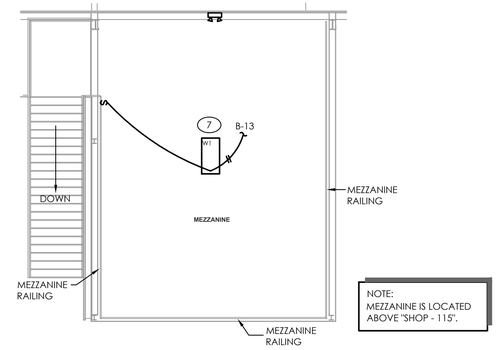
Owner: TOWN OF BENSON
Address: 303 E. CHURCH ST. BENSON NC 27504

ELECTRICAL SCHEDULES AND NOTES

E001

© 2019 MAPLE ENGINEERING, PLLC EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THESE PLANS. THESE PLANS ARE NOT TO BE REPRODUCED, CHANGED OR COPIED IN ANY FORM OR MANNER WHATSOEVER, NOR ARE THEY TO BE ASSIGNED TO ANY THIRD PARTY WITHOUT FIRST OBTAINING THE EXPRESSED WRITTEN PERMISSION AND CONSENT OF MAPLE ENGINEERING, PLLC.





NOTE:
MEZZANINE IS LOCATED ABOVE "SHOP - 115".

2 ELEC. LIGHTING PLAN - 2ND FLOOR MEZZANINE

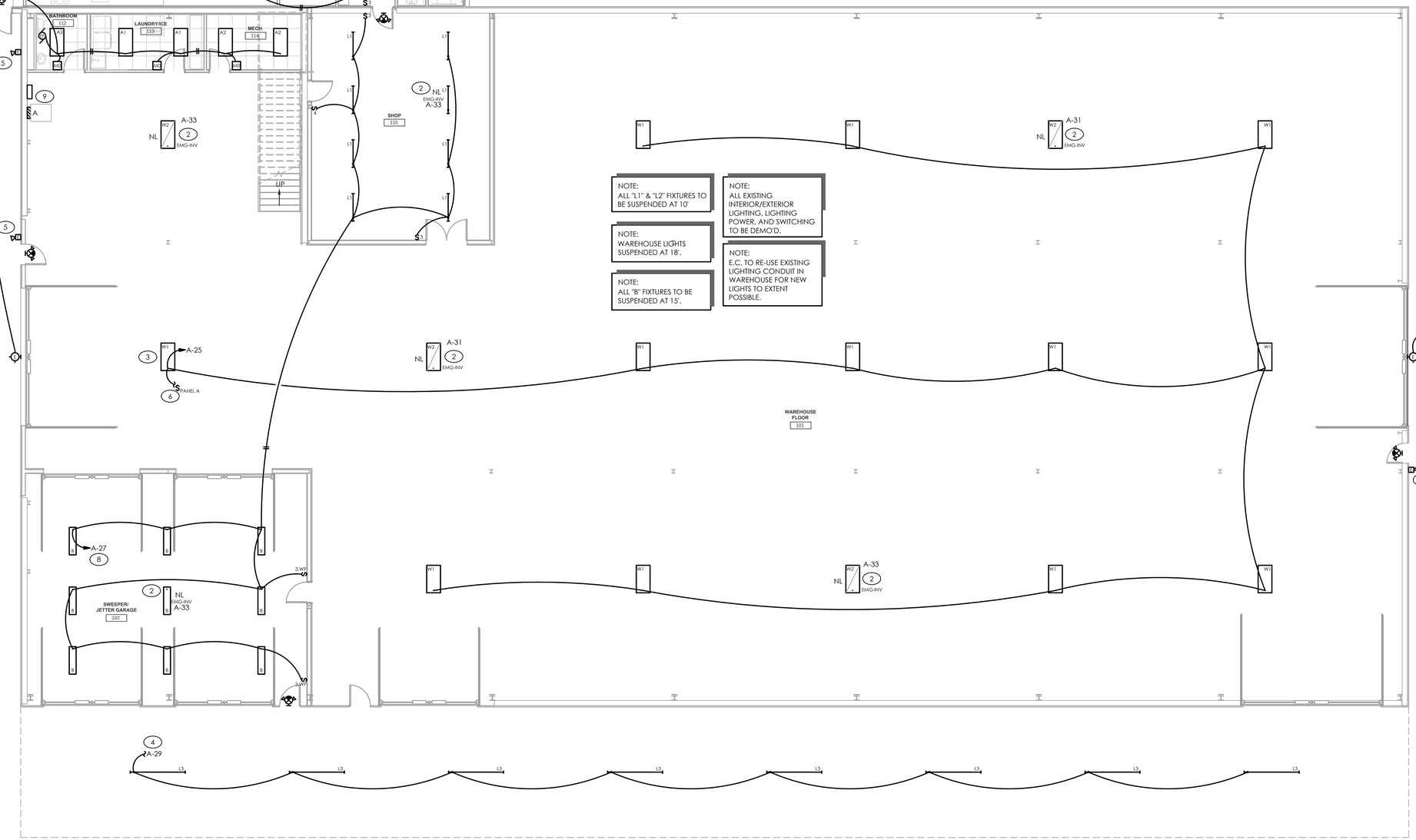
SCALE: 1/8" = 1'-0"

TAGGED NOTES - THIS SHEET

1. POWER CIRCUIT FOR AREA LIGHT FIXTURE TO BE WIRED VIA AREA MOTION SENSOR. MOTION SENSOR TO BE UPSTREAM OF AREA SWITCHES. SEE DETAIL.
2. FIXTURE TO BE WIRED AS A NIGHT LIGHT. NIGHT LIGHT CIRCUIT TO BE WIRED VIA CENTRAL EMERGENCY INVERTER WITH BATTERY BACK-UP. SEE PANEL SCHEDULE.
3. FIXTURE "W1" TO HAVE BUILT-IN MOTION SENSOR. TYPICAL OF ALL "W1" FIXTURES. SEE SHEET E001.
4. LIGHTING CIRCUIT TO BE CONTROLLED VIA PHOTOCELL. SEE PANEL SCHEDULE.
5. PROVIDE EXTERIOR EMERGENCY LIGHT.
6. CIRCUIT TO BE SWITCHED AT PANEL "A". SEE RISER.
7. LIGHT TO BE MOUNTED A MINIMUM OF 10' ABOVE MEZZANINE FINISHED FLOOR HEIGHT.
8. TIME CLOCK FOR CIRCUIT TO BE LOCATED AT PANEL. SEE PANEL SCHEDULE FOR MORE INFO.
9. PANEL "A" AND LIGHTING INVERTER(S). SEE RISER.

GENERAL NOTES - THIS SHEET

1. E.C. TO VERIFY EXISTING CONDITIONS BEFORE BEGINNING WORK.
2. ENSURE THAT ALL EXIT AND EMERGENCY LIGHTS ARE CONNECTED TO LOCAL NORMALLY ON LIGHTING CIRCUIT AND ARE WIRED UPSTREAM OF ALL SWITCHES, CONTACTORS, AND SIMILAR.



NOTE:
ALL "L1" & "L2" FIXTURES TO BE SUSPENDED AT 10'

NOTE:
WAREHOUSE LIGHTS SUSPENDED AT 18'.

NOTE:
ALL "B" FIXTURES TO BE SUSPENDED AT 15'.

NOTE:
ALL EXISTING INTERIOR/EXTERIOR LIGHTING, LIGHTING POWER, AND SWITCHING TO BE DEMO'D.

NOTE:
E.C. TO RE-USE EXISTING LIGHTING CONDUIT IN WAREHOUSE FOR NEW LIGHTS TO EXTENT POSSIBLE.

1 ELEC. LIGHTING PLAN - WAREHOUSE/OFFICE

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

HAUCH DESIGN architecture
1118 Norris Street Raleigh, NC 27604
www.hauchdesign.com
919.589.3132

ALL DRAWINGS, SPECIFICATIONS, DESIGNS AND IDEAS REPRESENTED OR INDICATED BY THESE DRAWINGS ARE THE PROPERTY OF **HAUCH DESIGN PLLC**. DEVELOPED AND ISSUED EXCLUSIVELY FOR USE ON, AND IN CONNECTION WITH THE SPECIFIED PROJECT, AND SHALL NOT BE DUPLICATED OR USED ON OTHER PROJECTS, IN WHOLE OR PART, WITHOUT WRITTEN CONSENT OF THE ARCHITECT.

MAPLE ENGINEERING, PLLC
708 ST. MARYS ST
RALEIGH, NC 27605 LIC.#: P-0990
P:919.341.4249 F:919.890.3797
PLUMBING MECHANICAL ELECTRICAL

NORTH CAROLINA PROFESSIONAL SEAL 044528 ENGINEER D. M. METNER
12/16/19

BID DOCUMENTS

Issue Dates / Revisions:

No:	Description:	Date:

Drawn: TEL Checked: DMM

Date: 12-16-19 Project No: 17-5832-02

PUBLIC WORKS FACILITY - BENSON

Owner: TOWN OF BENSON

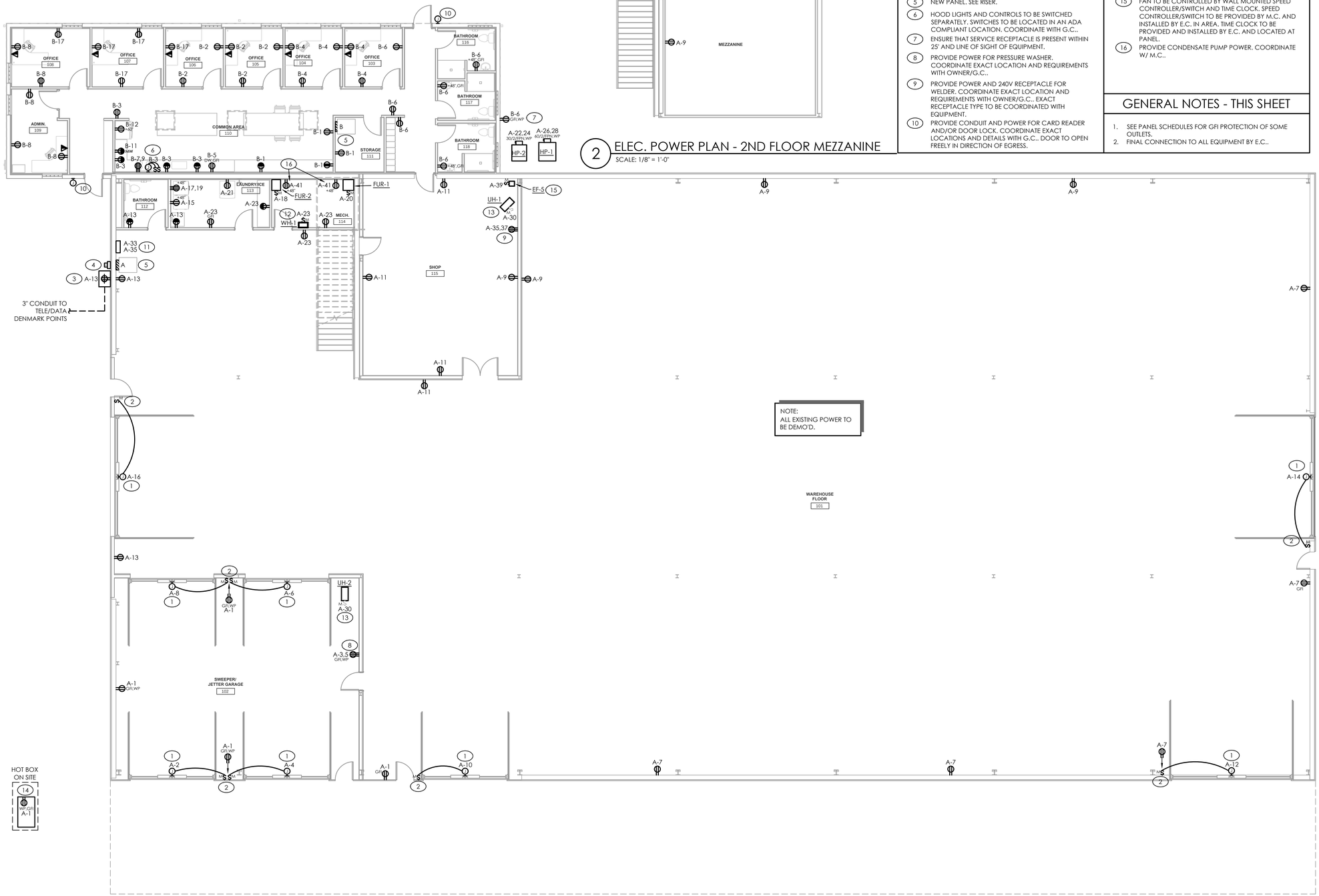
Address: 303 E. CHURCH ST. BENSON NC 27504

ELECTRICAL LIGHTING PLAN

E101

© 2019 MAPLE ENGINEERING, PLLC EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THESE PLANS. THESE PLANS ARE NOT TO BE REPRODUCED, CHANGED OR COPIED IN ANY FORM OR MANNER WHATSOEVER, NOR ARE THEY TO BE ASSIGNED TO ANY THIRD PARTY WITHOUT FIRST OBTAINING THE EXPRESSED WRITTEN PERMISSION AND CONSENT OF MAPLE ENGINEERING, PLLC.

12/16/2019 5:41 PM
Z:\17-5832\E101.DWG



1 ELEC. POWER PLAN - FIRST FLOOR
SCALE: 1/8" = 1'-0"

2 ELEC. POWER PLAN - 2ND FLOOR MEZZANINE
SCALE: 1/8" = 1'-0"

TAGGED NOTES - THIS SHEET

1. PROVIDE POWER FOR MOTORIZED DOOR OPENER. COORDINATE EXACT REQUIREMENTS W/ MFG SPECS.
2. PROVIDE CONTROL SWITCH AT WALL FOR DOOR OPENER. COORDINATE EXACT REQUIREMENTS AND LOCATION WITH MFG SPECS AND G.C..
3. NEW TELE/DATA CABINET. COORDINATE EXACT REQUIREMENTS WITH OWNER/G.C..
4. NEW METER. SEE RISER.
5. NEW PANEL. SEE RISER.
6. HOOD LIGHTS AND CONTROLS TO BE SWITCHED SEPARATELY. SWITCHES TO BE LOCATED IN AN ADA COMPLIANT LOCATION. COORDINATE WITH G.C..
7. ENSURE THAT SERVICE RECEPTACLE IS PRESENT WITHIN 25' AND LINE OF SIGHT OF EQUIPMENT.
8. PROVIDE POWER FOR PRESSURE WASHER. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH OWNER/G.C..
9. PROVIDE POWER AND 240V RECEPTACLE FOR WELDER. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH OWNER/G.C.. EXACT RECEPTACLE TYPE TO BE COORDINATED WITH EQUIPMENT.
10. PROVIDE CONDUIT AND POWER FOR CARD READER AND/OR DOOR LOCK. COORDINATE EXACT LOCATIONS AND DETAILS WITH G.C.. DOOR TO OPEN FREELY IN DIRECTION OF EGRESS.
11. (2) STACKED EMG INVERTERS MOUNTED ON WALL. SEE RISER.
12. PROVIDE POWER FOR WATER HEATER. COORDINATE W/ P.C..
13. UNIT HEATER INCLUDES MFG INTEGRAL SWITCH. COORDINATE WITH M.C..
14. PROVIDE POWER TO WEATHER PROOF GFI RECEPTACLE AT HOT BOX FOR HEAT TAPE. COORDINATE EXACT LOCATION W/ P.C..
15. FAN TO BE CONTROLLED BY WALL MOUNTED SPEED CONTROLLER/SWITCH AND TIME CLOCK. SPEED CONTROLLER/SWITCH TO BE PROVIDED BY M.C. AND INSTALLED BY E.C. IN AREA. TIME CLOCK TO BE PROVIDED AND INSTALLED BY E.C. AND LOCATED AT PANEL.
16. PROVIDE CONDENSATE PUMP POWER. COORDINATE W/ M.C..

GENERAL NOTES - THIS SHEET

1. SEE PANEL SCHEDULES FOR GFI PROTECTION OF SOME OUTLETS.
2. FINAL CONNECTION TO ALL EQUIPMENT BY E.C..

HAUCH DESIGN architecture
1118 Norris Street Raleigh, NC 27604
www.hauchdesign.com
919.589.3132

ALL DRAWINGS, SPECIFICATIONS, DESIGNS AND IDEAS REPRESENTED OR INDICATED BY THESE DRAWINGS ARE THE PROPERTY OF **HAUCH DESIGN PLLC**, DEVELOPED AND ISSUED EXCLUSIVELY FOR USE ON, AND IN CONNECTION WITH THE SPECIFIED PROJECT, AND SHALL NOT BE DUPLICATED OR USED ON OTHER PROJECTS, IN WHOLE OR PART, WITHOUT WRITTEN CONSENT OF THE ARCHITECT.

MAPLE ENGINEERING, PLLC
708 ST. MARYS ST
RALEIGH, NC 27605 LIC.#: P-0990
P:919.341.4247 F:919.890.3797
PLUMBING MECHANICAL ELECTRICAL

NORTH CAROLINA PROFESSIONAL SEAL 044528 ENGINEER R. M. METNER
12/16/19

BID DOCUMENTS
Issue Dates / Revisions:

No:	Description:	Date:

Drawn: TEL Checked: DMM

Date: 12-16-19 Project No: 17-5832-02

PUBLIC WORKS FACILITY - BENSON

Owner: TOWN OF BENSON
Address: 303 E. CHURCH ST. BENSON NC 27504

ELECTRICAL POWER PLAN

E102

© 2019 MAPLE ENGINEERING, PLLC EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THESE PLANS. THESE PLANS ARE NOT TO BE REPRODUCED, CHANGED OR COPIED IN ANY FORM OR MANNER WHATSOEVER, NOR ARE THEY TO BE ASSIGNED TO ANY THIRD PARTY WITHOUT FIRST OBTAINING THE EXPRESSED WRITTEN PERMISSION AND CONSENT OF MAPLE ENGINEERING, PLLC.

12/16/2019 5:41 PM
Z:\17-19\19-E102.DWG

PANEL B LOAD SUMMARY

LOAD TYPE		kVA CONN.	DEM. FACT.	kVA DEM.
LOADS ON 150 AMP BREAKER @ PANEL "A"				
LIGHTS (1845 SQFT @ 3.5 W/SQFT > CONN. LOAD)		6.5	1.25	8.1
RECEPTACLES	1st 10 kVA	7.0	1.0	7.0
	REMAINDER	0.0	0.5	0.0
DISHWASHER, RANGE, MICROWAVE, FRIDGE		11.2	1.0	11.2
	TOTALS	24.7		26.3
TOTAL AMPS @ 240 V 1 PHASE		109.7		

		STORAGE 111												1 PHASE, 3 WIRE	
	VOLTAGE: 240/120V	PANEL: B												SURFACE MOUNTED	
	AMPS: 150-MLO					LOAD PER PHASE								NEMA 1	
	-DESCRIPTION-	POLE	WIRE SIZE	BRK SIZE	CKT #	A		B		CKT#	BRK SIZE	WIRE SIZE	POLE	-DESCRIPTION-	
	REC: COMMON/HALL	1	12	20	1	0.8	1.0			2	20	12	1	REC: OFFICE 105/106	
	REC: COUNTER/RNG HOOD	1	12	20	3			1.2	1.0	4	20	12	1	REC: OFFICE 103/104	
	REC: DISHWASHER	1	12	20	5	1.2	1.0			6	20	12	1	REC: BATHROOM/EXT	
#3	RANGE	2	6	50	7			4.0	1.0	8	20	12	1	REC: OFFICE 108/109	
					9	4.0	0			10	20	-	1	SPARE	
	REC: MICROWAVE	1	12	20	11			1.0	1.0	12	20	12	1	REC: FRIDGE	GFI
TC	LTS: OFFICE	1	12	20	13	1.4	0			14	20	-	1	SPARE	
	SPARE	1	-	20	15			1.0	0	16	-	-	1	SPACE	
	REC: OFFICE 108/107/106	1	12	20	17	1.0	0			18	-	-	1	SPACE	
	SPACE	1	-	-	19			0	0	20	-	-	1	SPACE	
						10.4		10.2							
	TOTAL CONNECTED kVA:					20.6				DEMAND kVA:				26.3	
	PANEL RMS SYM. AMPS:					SEE RISER				DEMAND AMPS:				109.7	

1. PANEL SHALL BE EQUAL TO SQUARE D NQ.
2. GFI - PROVIDE GFCI BREAKER FOR CIRCUIT. GFCI RECEPTACLES MAY BE USED IN LIEU OF GFCI BREAKERS SO LONG AS THE DEVICE(S) CONFORM TO NEC CODE REQUIREMENTS FOR GFCI PROTECTION & ACCESSIBILITY.
3. VERIFY BREAKER AND WIRE SIZE REQUIREMENTS WITH EQUIPMENT NAMEPLATE BEFORE BEGINNING WORK.
4. TC - CIRCUIT THROUGH 7-DAY PROGRAMMABLE ASTRONOMICAL TIME SWITCH WITH AUTO-DUSK, AUTO-DAWN FEATURE EQUAL TO LEVITON VPT24-1PZ. SWITCH TO INCLUDE MANUAL OVERRIDE AND BATTERY BACK-UP. LOCATE AT PANEL.

PANEL A LOAD SUMMARY

LOAD TYPE		kVA CONN.	DEM. FACT.	kVA DEM.
LOADS ON 400 AMP MCB				
LIGHTS (20100 SQFT @ 0.25 W/SQFT > CONN. LOAD) (1845 SQFT @ 3.5 W/SQFT > CONN. LOAD)		11.5	1.25	14.4
RECEPTACLES	1st 10 kVA	10.0	1.0	10.0
	REMAINDER	2.8	0.5	1.4
HVAC & R	ELEC HEAT	0.0	1.0	0.0
	LARGEST MOTOR	4.8	1.25	6.0
	REMAINDER	4.8	1.0	4.8
WATER HEATER (GAS)		0.1	1.25	0.1
LAUNDRY EQUIPMENT	WASHERS	1.2	1.0	1.2
	DRYERS (# OF ELECTRIC DRYERS: 1)	5.0	1.0	5.0
FUTURE WELDER, PRESSURE WASHER, POWER DOORS, ICE MAKER, DISH WASHER, FRIDGE, MICROWAVE, RANGE, UNIT HEATERS, HOT BOX, CONDENSATE PUMPS, EF-5		30.6	1.0	30.6
	TOTALS	70.8		73.5
TOTAL AMPS @ 240 V 1 PHASE		306.3		

		WAREHOUSE FLOOR 101												3 PHASE, 4 WIRE	
	VOLTAGE: 240/120V	PANEL: A												SURFACE MOUNTED	
	AMPS: 400-MCB					LOAD PER PHASE								NEMA 1	
	-DESCRIPTION-	POLE	WIRE SIZE	BRK SIZE	CKT #	A		B		CKT #	BRK SIZE	WIRE SIZE	POLE	-DESCRIPTION-	
	REC: GARAGE	1	12	20	1	1.0	0.7			2	20	12	1	POWER DOOR	#6
#6	PRESSURE WASHER	2	12	20	3			1.0	0.7	4	20	12	1	POWER DOOR	#6
					5	1.0	0.7			6	20	12	1	POWER DOOR	#6
	REC: WAREHOUSE	1	12	20	7			1.0	0.7	8	20	12	1	POWER DOOR	#6
	REC: WAREHOUSE/SHOP	1	12	20	9	1.2	0.7			10	20	12	1	POWER DOOR	#6
	REC: SHOP	1	12	20	11			0.8	0.7	12	20	12	1	POWER DOOR	#6
	REC: LAUNDRY/ICE/TELE	1	12	20	13	1.2	0.7			14	20	12	1	POWER DOOR	#6
GFI	REC: WASHER	1	12	20	15			1.2	0.7	16	20	12	1	POWER DOOR	#6
#6	REC: DRYER	2	10	30	17	2.5	0.8			18	15	12	1	FUR-2	
					19			2.5	1.3	20	15	12	1	FUR-1	
#6,GFI	REC: ICE MAKER	1	12	20	21	0.8	1.4			22	25	10	2	HP-2	
	REC: LAUNDRY/MECH	1	12	20	23			0.9	1.3	24					
SWD	LTS: WAREHOUSE	1	12	20	25	1.9	2.4			26	40	8	2	HP-1	
TC	LTS: SHOP/MECH/ICE/WASH	1	12	20	27			1.0	2.4	28					
PC	LTS: EXTERIOR	1	12	20	29	0.5	0.2			30	20	12	1	UH-1,UH-2	
LO	LTS: EMG INVERTER A	1	12	20	31			0.3	10.2	32	150	1/0	2	PANEL B	
LO	LTS: EMG INVERTER B	1	12	20	33	0.3	9.8			34					
#6	FUTURE WELDER	2	8	40	35			5.0	0	36	20	-	1	SPARE	
					37	5.0	0			38	20	-	1	SPARE	
TC	EF-5	1	12	20	39			0.2	0	40	-	-	1	SPACE	
	CONDENSATE PUMPS	1	12	20	41	0.4	0			42	-	-	1	SPACE	
						33.2		31.9							
	TOTAL CONNECTED kVA:					65.1				DEMAND kVA:				73.5	
	PANEL RMS SYM. AMPS:					SEE RISER				DEMAND AMPS:				306.3	

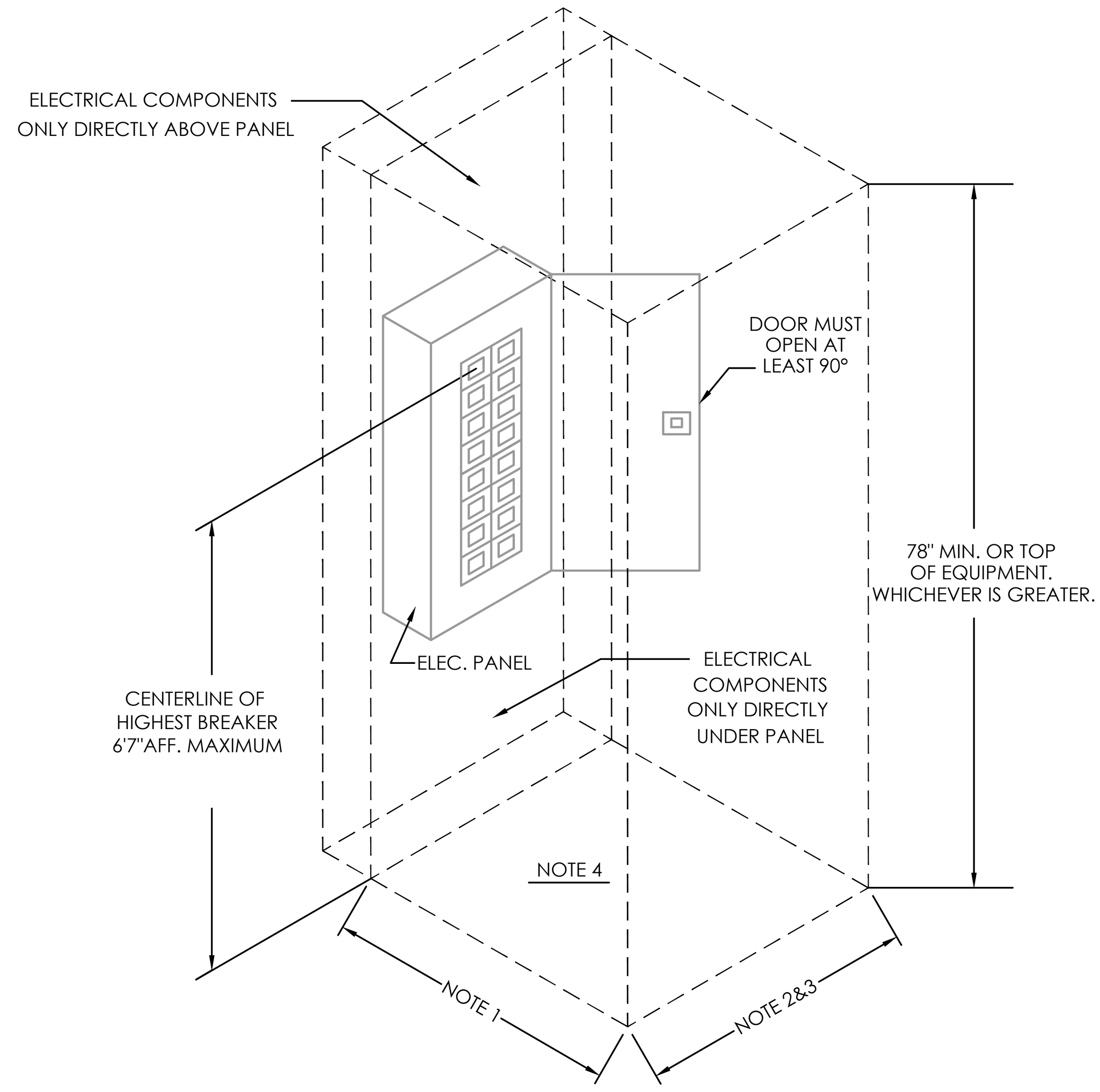
1. PANEL SHALL BE SERVICE ENTRANCE RATED, EQUAL TO SQUARE D NQ.
2. TC - CIRCUIT THROUGH 7-DAY PROGRAMMABLE ASTRONOMICAL TIME SWITCH WITH AUTO-DUSK, AUTO-DAWN FEATURE EQUAL TO LEVITON VPT24-1PZ. SWITCH TO INCLUDE MANUAL OVERRIDE AND BATTERY BACK-UP. LOCATE AT PANEL.
3. PROVIDE HACR BREAKERS FOR HVAC & REFRIGERATION EQUIPMENT.
4. GFI - PROVIDE GFCI BREAKER FOR CIRCUIT. GFCI RECEPTACLES MAY BE USED IN LIEU OF GFCI BREAKERS SO LONG AS THE DEVICE(S) CONFORM TO NEC CODE REQUIREMENTS FOR GFCI PROTECTION & ACCESSIBILITY.
5. PC - CIRCUIT THROUGH PHOTOCELL LOCATED ON NORTH FACE OF BUILDING.
6. VERIFY BREAKER AND WIRE SIZE REQUIREMENTS WITH EQUIPMENT NAMEPLATE BEFORE BEGINNING WORK.
7. LO - INDICATES LOCK-ON ATTACHMENT REQUIRED.
8. PROVIDE SWD RATED BREAKERS FOR LIGHTING CIRCUITS.

INVERTER "A" CALC

FIXTURE	QTY	WATTAGE	TOTAL
W1	2	128	256
L1	3	17	51
		TOTAL	307

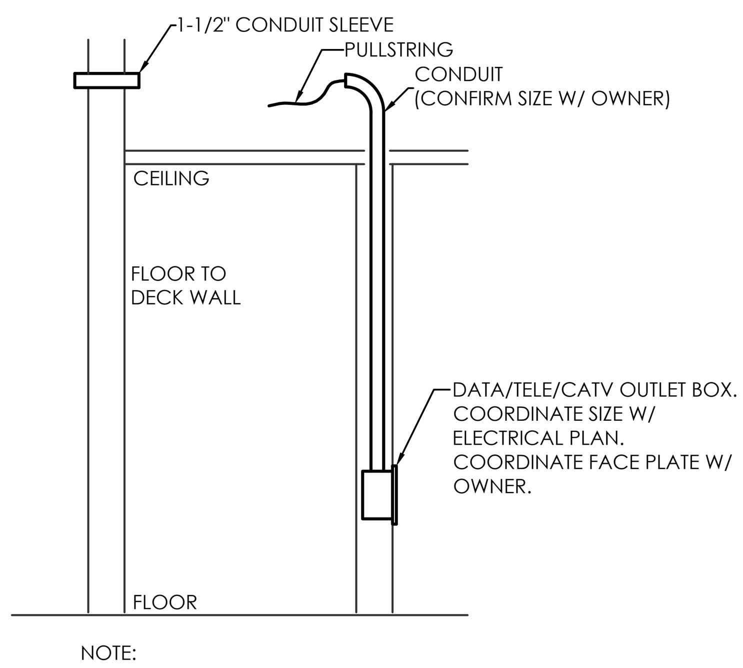
INVERTER "B" CALC

FIXTURE	QTY	WATTAGE	TOTAL
W1	2	128	256
L1	1	17	17
B	1	58	58
		TOTAL	331



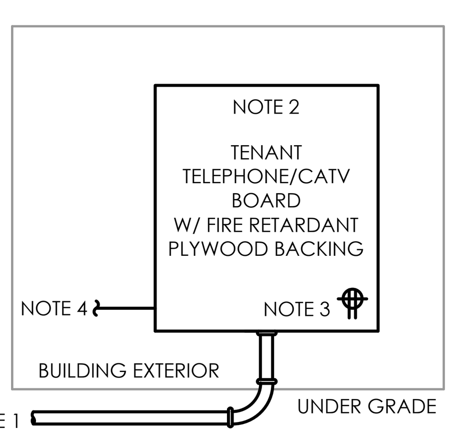
NOTES:
1. FROM FACE OF PANEL: 42" MIN FOR 480/277V AND 240/120V 3Ø HIGH LEG DELTA SYSTEMS. 36" MIN FOR 208/120V AND 240/120V SYSTEMS.
2. THE WIDTH OF THE WORKING SPACE IN FRONT OF THE ELECTRICAL EQUIPMENT SHALL BE THE WIDTH OF THE EQUIPMENT OR 30", WHICHEVER IS GREATER.
3. WORKING SPACE DOES NOT HAVE TO BE CENTERED ON PANEL BUT MUST EXTEND TO/PAST EACH EDGE OF PANEL.
4. OTHER AREA PANELS MAY SHARE CLEARANCE SPACE.

6 ELECTRICAL PANEL MOUNTING DETAIL
NO SCALE



NOTE:
FOR INTERIOR WALLS WITHOUT INSULATION. E.C. MAY OMIT CONDUIT & OUTLET BOX. PROVIDE PULL STRING & PLASTER RING.

5 DATA/TELE/CATV OUTLET
NO SCALE

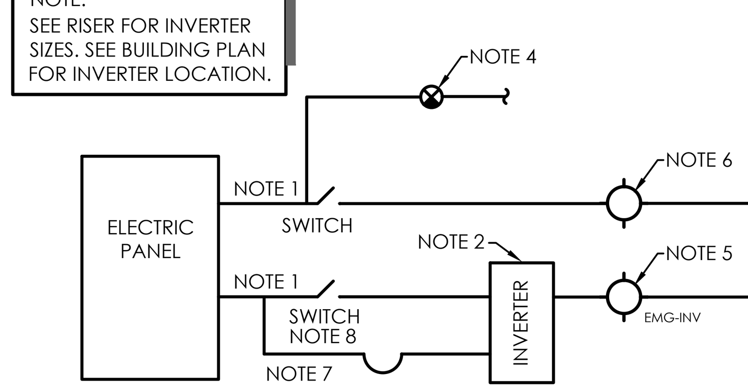


4 TELEPHONE OR CATV RISER
NO SCALE

NOTES:

1. PROVIDE 3" CONDUIT FROM UTILITY DEMARC POINT(S) W/ PULL STRING. CLEARLY LABEL AND COORDINATE EXACT TERMINATION LOCATION AND DETAILS WITH OWNER AND UTILITY.
2. 3/4" FINISH GRADE PLYWOOD BACKBOARD PAINTED WITH FLAME RETARDANT PAINT. COORDINATE SIZE & EXACT LOCATION W/ OWNER.
3. PROVIDE 120V QUAD RECEPTACLE FOR TELEPHONE AND OTHER COMMUNICATION EQUIPMENT (SEE POWER PLANS).
4. PROVIDE #6 CU GROUNDING/BONDING CONDUCTOR IN ¾" CONDUIT TO INTERSYSTEM BONDING TERMINATION (IBT) AT BUILDING ELECTRICAL SERVICE. BOND CONDUIT/CONDUCTOR AT EACH END OF CONDUIT IF METAL RACEWAY IS USED. INSTALL PER NEC 250.94 & NEC 800.100. CONFIRM INSTALLATION W/ UTILITY BEFORE BEGINNING WORK.

NOTE:
SEE RISER FOR INVERTER SIZES. SEE BUILDING PLAN FOR INVERTER LOCATION.

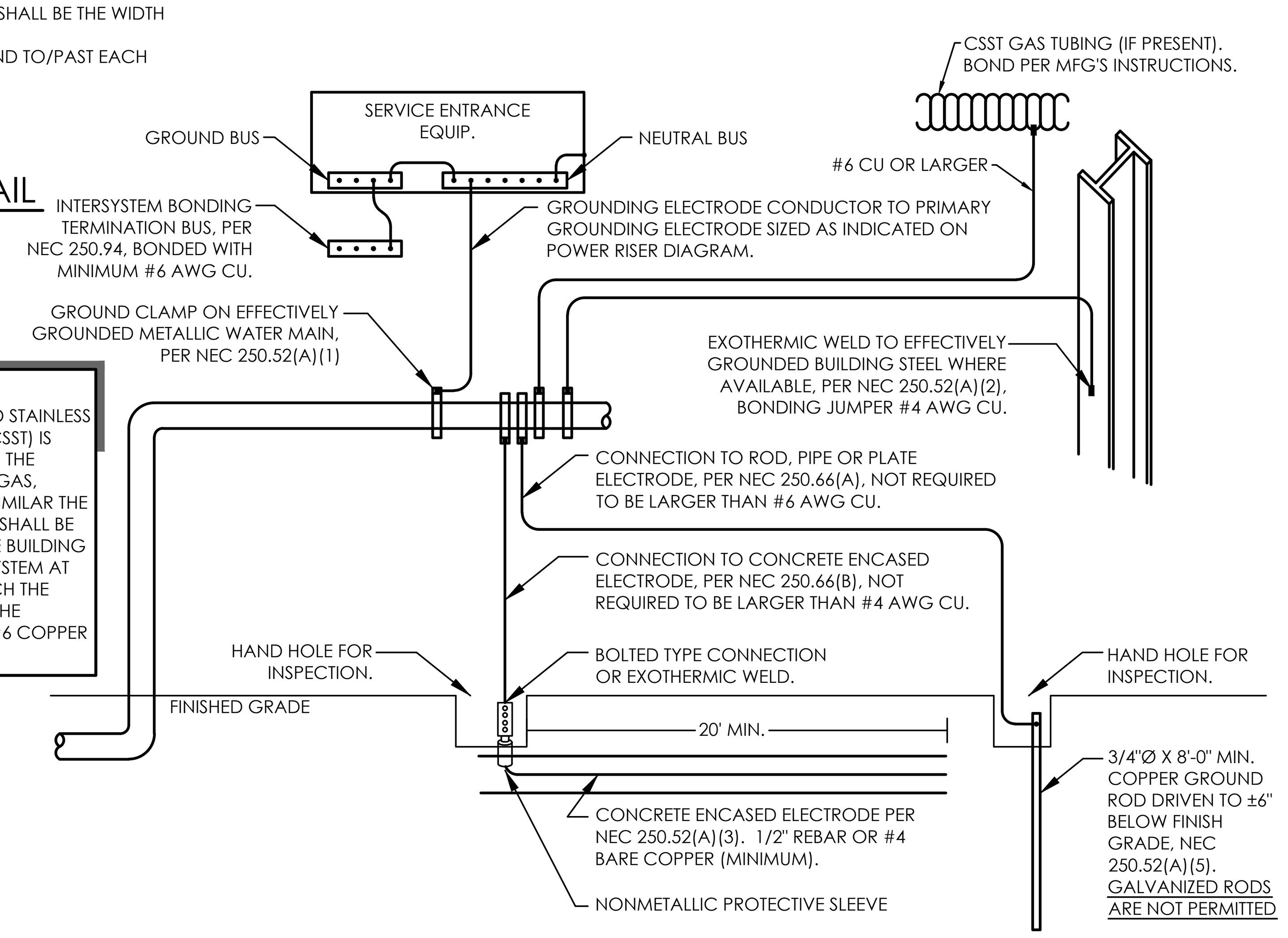


NOTE:
DETAIL IS GENERIC. MULTIPLE INVERTERS OR CONFIGURATIONS MAY BE PRESENT. SEE PLANS AND PANEL SCHEDULES.

NOTE:
1. AREA LIGHTING CIRCUIT.
2. EMERGENCY LIGHTING INVERTER WITH BATTERY BACK-UP. SEE RISER FOR SPEC.
3. NOT USED.
4. EXIT SIGNS (WITH INTEGRAL BATTERY) NOT WIRED TO INVERTER.
5. AREA LIGHT(S) TO BE USED AS EMERGENCY LIGHT.
6. AREA LIGHT(S), NON-EMERGENCY.
7. HOT LEG TO INVERTER FOR MONITORING.
8. SWITCH MAY BE ABSENT FOR AREA NIGHT LIGHTS. SEE PLAN.

3 EMERGENCY LIGHTING INVERTER DETAIL
NO SCALE

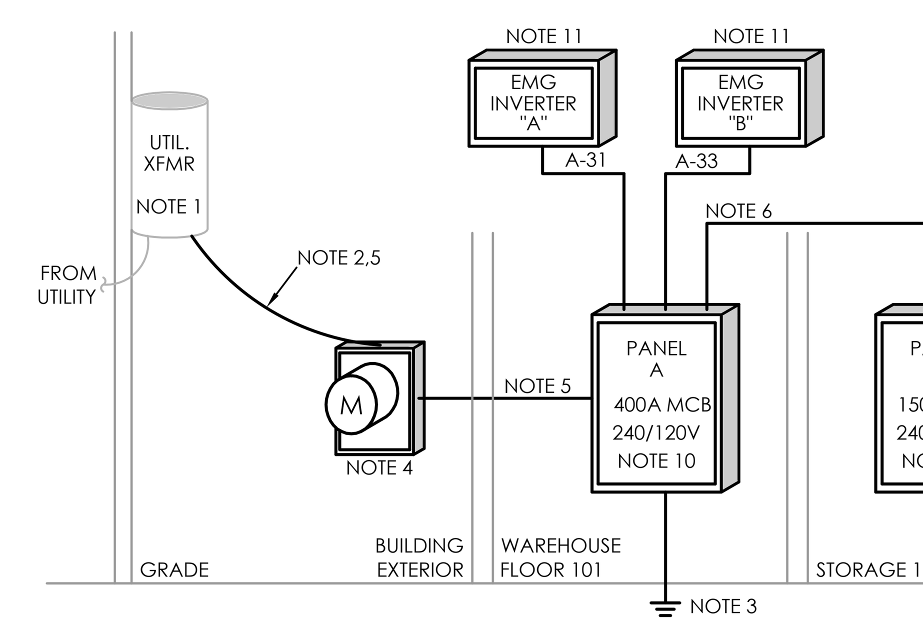
NOTE:
IF CORRUGATED STAINLESS STEEL TUBING (CSST) IS USED TO SUPPLY THE BUILDING WITH GAS, PROPANE, OR SIMILAR THE TUBING SYSTEM SHALL BE BONDED TO THE BUILDING GROUNDING SYSTEM AT THE POINT WHICH THE PIPING ENTERS THE BUILDING. USE #6 COPPER OR LARGER.



NOTE:
GROUNDING ELECTRODES SHALL BE PROVIDED IN ACCORDANCE WITH NEC SECTION 250. ALL GROUNDING ELECTRODE CONDUCTORS SIZED AS INDICATED ON POWER RISER DIAGRAM. ALL METHODS OF CREATING THE GROUNDING SYSTEM MAY NOT BE REQUIRED OR AVAILABLE.

2 GROUNDING DETAIL
NO SCALE

NOTE:
E.C. TO COORDINATE POSSIBLE UPGRADE OF UTILITY TRANSFORMER WITH UTILITY BEFORE BEGINNING WORK.



1 ELECTRICAL POWER RISER
NO SCALE

NOTE:
SERVICE CONDUCTORS MUST ENTER DIRECTLY INTO BACK OF PANEL "A".

RISER DIAGRAM NOTES:
1. POLE MOUNTED TRANSFORMER BY UTILITY.
2. SECONDARY CONDUCTORS SIZED, PROVIDED & INSTALLED BY E.C.. CONFIRM INSTALLATION W/ UTILITY BEFORE BEGINNING WORK.
3. #1/0 CU MAIN GROUNDING ELECTRODE CONDUCTOR TO GROUNDING SYSTEM (SEE DETAIL). BUILDING SHALL HAVE ONE GROUNDING ELECTRODE SYSTEM.
4. 400A METER BASE PER UTILITY REQUIREMENTS. METER BY UTILITY.
5. (3) 500kcmil CU, 3" CONDUIT.
6. (3) #1/0 CU, #6 CU GND, 1 1/4" CONDUIT.
7. PROVIDE PLACARD AT PANEL(S)/DISCONNECT(S) INDICATING SUITE/TENANT & PANEL SERVED.
8. PROVIDE PLACARD INDICATING AVAILABLE AIC FAULT CURRENT (NEC 110.24).
9. PROVIDE PLACARD INDICATING ARC-FLASH HAZARD AT PANEL(S)/DISCONNECT(S). (NEC 110.16)
10. UTILITY TRANSFORMER SPECS UNKNOWN AT TIME OF DESIGN COMPLETION. DESIGN IS BASED ON 42,000AIC. E.C. TO VERIFY TRANSFORMER PROPERTIES WITH UTILITY PRIOR TO PURCHASING EQUIPMENT. IF TRANSFORMER AIC IS LESS LOWER RATED EQUIPMENT MAY BE USED. IF HIGHER CONTACT ENGINEER. CIRCUIT BREAKERS WITH A LESSER LABELED AIC RATING MAY BE USED IF THOSE BREAKERS ARE PAIRED WITH AN UPSTREAM BREAKER OR FUSE AS PART OF A UL SERIES RATED COMBINATION. PAIRED DEVICES MUST BE IN ACCORDANCE WITH NEC 240.86. LABEL PER NEC 110.22(C). CONFIRM W/ EQUIPMENT MFG BEFORE PURCHASE. E.C. TO PROVIDE FIELD INSPECTOR WITH MFG'S DOCUMENTATION REGARDING UL SERIES RATING OF PAIRED BREAKERS/FUSES.
11. EMERGENCY LIGHTING INVERTER WITH BATTERY BACK-UP EQUAL TO IOTA IIS-375-I 375 WATT MODEL. NORMALLY ON, .SEE DETAIL FOR MORE INFORMATION.

© 2019 MAPLE ENGINEERING, PLLC EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THESE PLANS. THESE PLANS ARE NOT TO BE REPRODUCED, CHANGED OR COPIED IN ANY FORM OR MANNER WHATSOEVER, NOR ARE THEY TO BE ASSIGNED TO ANY THIRD PARTY WITHOUT FIRST OBTAINING THE EXPRESSED WRITTEN PERMISSION AND CONSENT OF MAPLE ENGINEERING, PLLC.

HAUCH DESIGN
architecture
1118 Norris Street Raleigh, NC 27604
www.hauchdesign.com
919.589.3132

ALL DRAWINGS, SPECIFICATIONS, DESIGNS AND IDEAS REPRESENTED OR INDICATED BY THESE DRAWINGS ARE THE PROPERTY OF **HAUCH DESIGN PLLC**, DEVELOPED AND ISSUED EXCLUSIVELY FOR USE ON, AND IN CONNECTION WITH THE SPECIFIED PROJECT, AND SHALL NOT BE DUPLICATED OR USED ON OTHER PROJECTS, IN WHOLE OR PART, WITHOUT WRITTEN CONSENT OF THE ARCHITECT.

MAPLE
ENGINEERING, PLLC
708 ST. MARYS ST
RALEIGH, NC 27605 LIC.#: P-0990
P:919-341-4247 F:919-890-3797
PLUMBING MECHANICAL ELECTRICAL

NORTH CAROLINA PROFESSIONAL SEAL 044528 ENGINEER DUSTIN M. METAYER
12/16/19

BID DOCUMENTS
Issue Dates / Revisions:

No:	Description:	Date:

Drawn: TEL Checked: DMM

Date: 12-16-19 Project No: 17-5832-02

PUBLIC WORKS FACILITY - BENSON

Owner: TOWN OF BENSON
Address: 303 E. CHURCH ST.
BENSON NC 27504

ELECTRICAL PANEL SCHEDULE AND RISER

E201

12/16/2019 5:42 PM
ZYY-1919-E201.DWG