ADDENDUM NO. 1

TO

CITY OF AUBURN, MAINE

Engine 2 CMAR

Bid #2024-008

April 17, 2024

This addendum amends and /or supplements the bid documents as indicated below. Only these items alter the bid documents. Any verbal discussions or responses are hereby declared null and void. Please acknowledge this addendum on the Bid Proposal Form.

Design Documents have been updated, including Schematic Design Drawings (civil and architectural) plus Mechanical, Plumbing, Electrical and Structural Narratives as well as the Preliminary Geotechnical Report.

Respondents should refer to these documents as the most current and disregard the "Draft Site Plan" posted on 4/9/24.

24x36

CITY OF AUBURN
180 SOUTH MAIN STREET
AUBURN, MAINE 04210

AUBURN ENGINE 2

SCHEMATIC DESIGN NOT FOR CONSTRUCTION

APRIL 2024

PROJECT LOCATION MAP

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CIVIL	
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ARCHITECTURAL	
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A2.2	**MEZZANINE FLOOR PLAN**
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A3.1	**BUILDING ELEVATIONS**
A4.1	**BUILDING SECTIONS**
A4.2	**WALL SECTIONS**
A8.1	**FIRST FLOOR RCP**

Surveyor
Main-Land Development Consultants, Inc.
69 Main St.
Livermore Falls, ME 04254

Geotechnical Engineering
S.W. Cole Engineering, Inc.
286 Portland Road
Gray, ME 04039

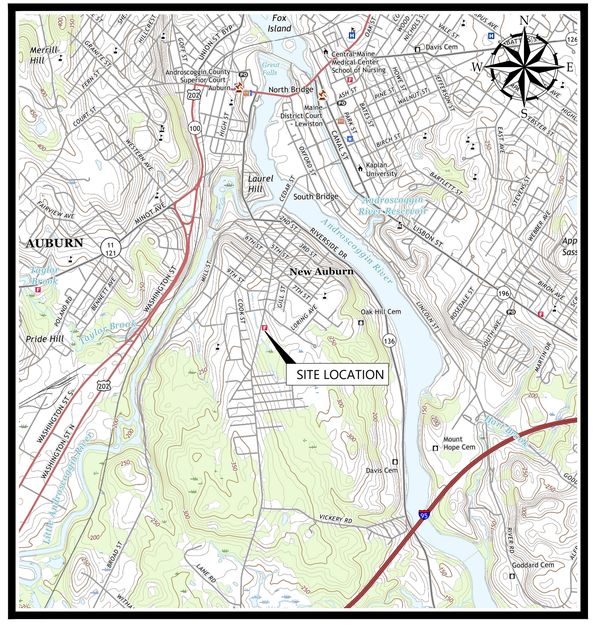
Civil
Woodard & Curran, Inc.
12 Mountfort Street
Portland, ME 04101

Architect
Simons Architects
75 York Street
Portland, ME 04101

Architect
Context Architecture
65 Franklin Street
Boston, MA 02110

Structural
Thornton Tomasetti
14 York Street, Suite 201
Portland, ME 04101

MEP
Allied Engineering
160 Veranda Street
Portland, ME 04103



SITE LOCATION MAP

SOURCE: USGS TOPO QUADRANGLE

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PE SEAL:

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CLIENT INFO:

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180 SOUTH MAIN STREET
AUBURN, MAINE 04210

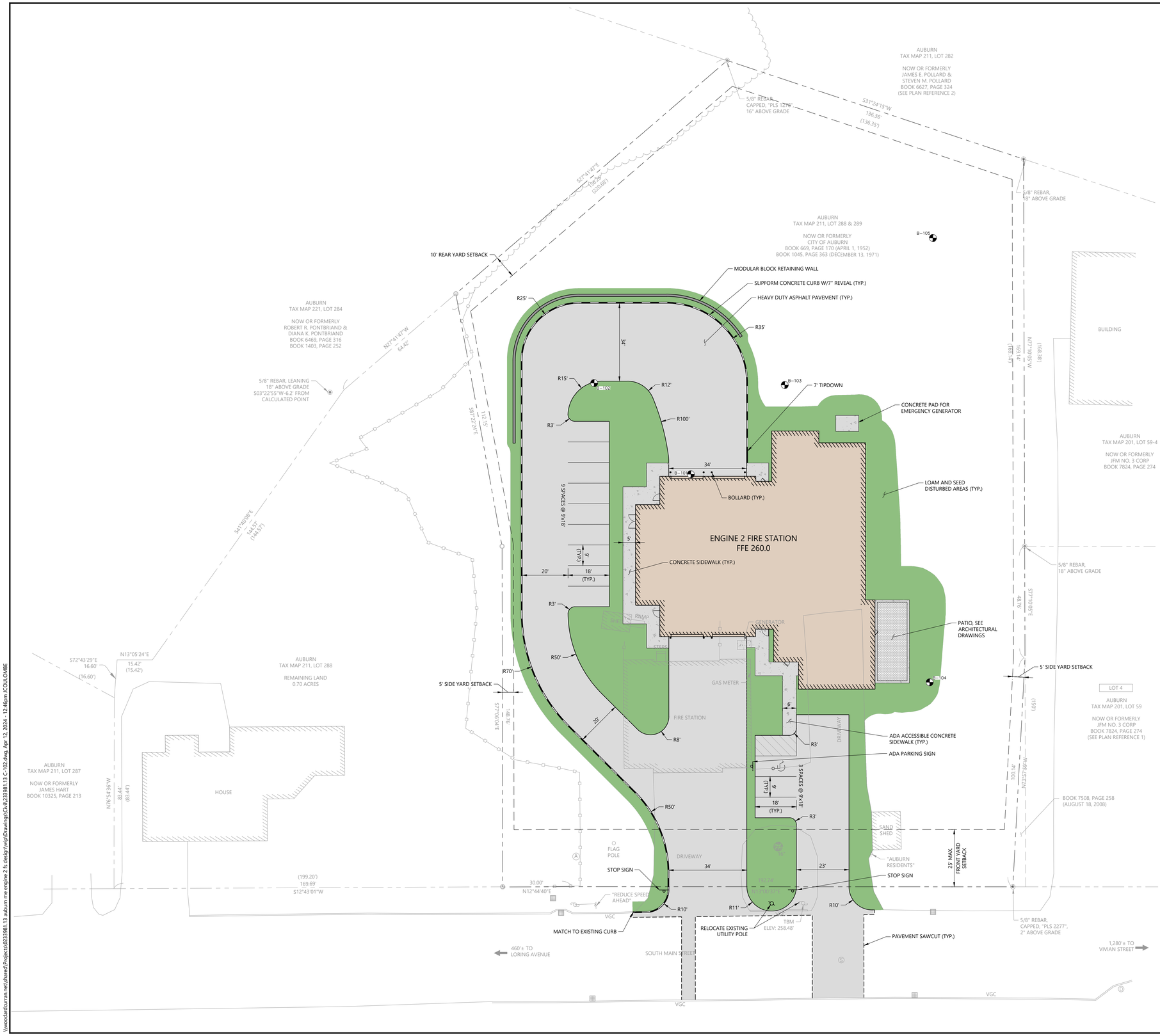
AUBURN ENGINE 2

REV	MM/DD/YY	DESCRIPTION

JOB NO:	233981.33
DATE:	APRIL 2024
SCALE:	AS NOTED
DESIGNED BY:	CG
DRAWN BY:	JBC
CHECKED BY:	CG
FILENAME:	233981.13 G-000.dwg

DRAWING TITLE:
GENERAL
COVER SHEET

DRAWING NO:
G-000



GENERAL NOTES:

1. EXISTING FIRE STATION TO REMAIN IN OPERATION DURING CONSTRUCTION OF NEW BUILDING. CONTRACTOR SHALL SUBMIT A CONSTRUCTION PHASING PLAN PRIOR TO CONSTRUCTION FOR ENGINEER AND CITY REVIEW.

20' 0 20' 40'

BAR SCALE
1" = 20'
CHECK GRAPHIC SCALE BEFORE USING

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AUBURN, MAINE 04210

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JOB NO:	233981.33
DATE:	APRIL 2024
SCALE:	AS NOTED
DESIGNED BY:	CG
DRAWN BY:	JBC
CHECKED BY:	CG
FILENAME:	233981.13 C-102.dwg

DRAWING TITLE:

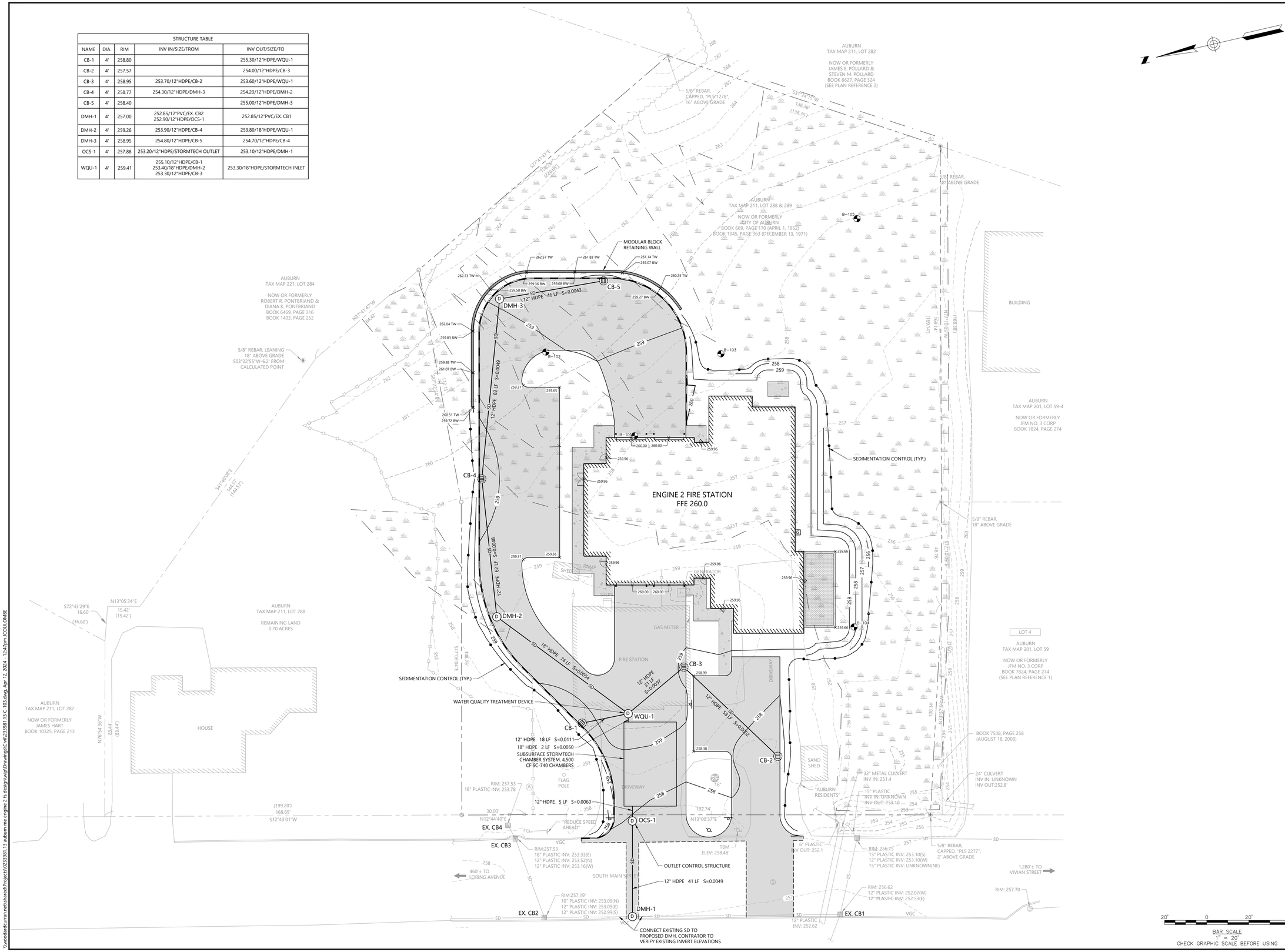
CIVIL
LAYOUT AND MATERIALS PLANS

DRAWING NO:

C-102

24x36

STRUCTURE TABLE				
NAME	DIA.	RIM	INV IN/SIZE/FROM	INV OUT/SIZE/TO
CB-1	4'	258.80		255.30/12"HDPE/WQU-1
CB-2	4'	257.57		254.00/12"HDPE/CB-3
CB-3	4'	258.95	253.70/12"HDPE/CB-2	253.60/12"HDPE/WQU-1
CB-4	4'	258.77	254.30/12"HDPE/DMH-3	254.20/12"HDPE/DMH-2
CB-5	4'	258.40		255.00/12"HDPE/DMH-3
DMH-1	4'	257.00	252.85/12"PVC/EX. CB2 252.90/12"HDPE/OCS-1	252.85/12"PVC/EX. CB1
DMH-2	4'	259.26	253.90/12"HDPE/CB-4	253.80/18"HDPE/WQU-1
DMH-3	4'	258.95	254.80/12"HDPE/CB-5	254.70/12"HDPE/CB-4
OCS-1	4'	257.88	253.20/12"HDPE/STORMTECH OUTLET	253.10/12"HDPE/DMH-1
WQU-1	4'	259.41	255.10/12"HDPE/CB-1 253.40/18"HDPE/DMH-2 253.30/12"HDPE/CB-3	253.30/18"HDPE/STORMTECH INLET



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AUBURN ENGINE 2

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CHECKED BY:	CG
FILENAME:	233981.13 C-103.dwg

DRAWING TITLE:

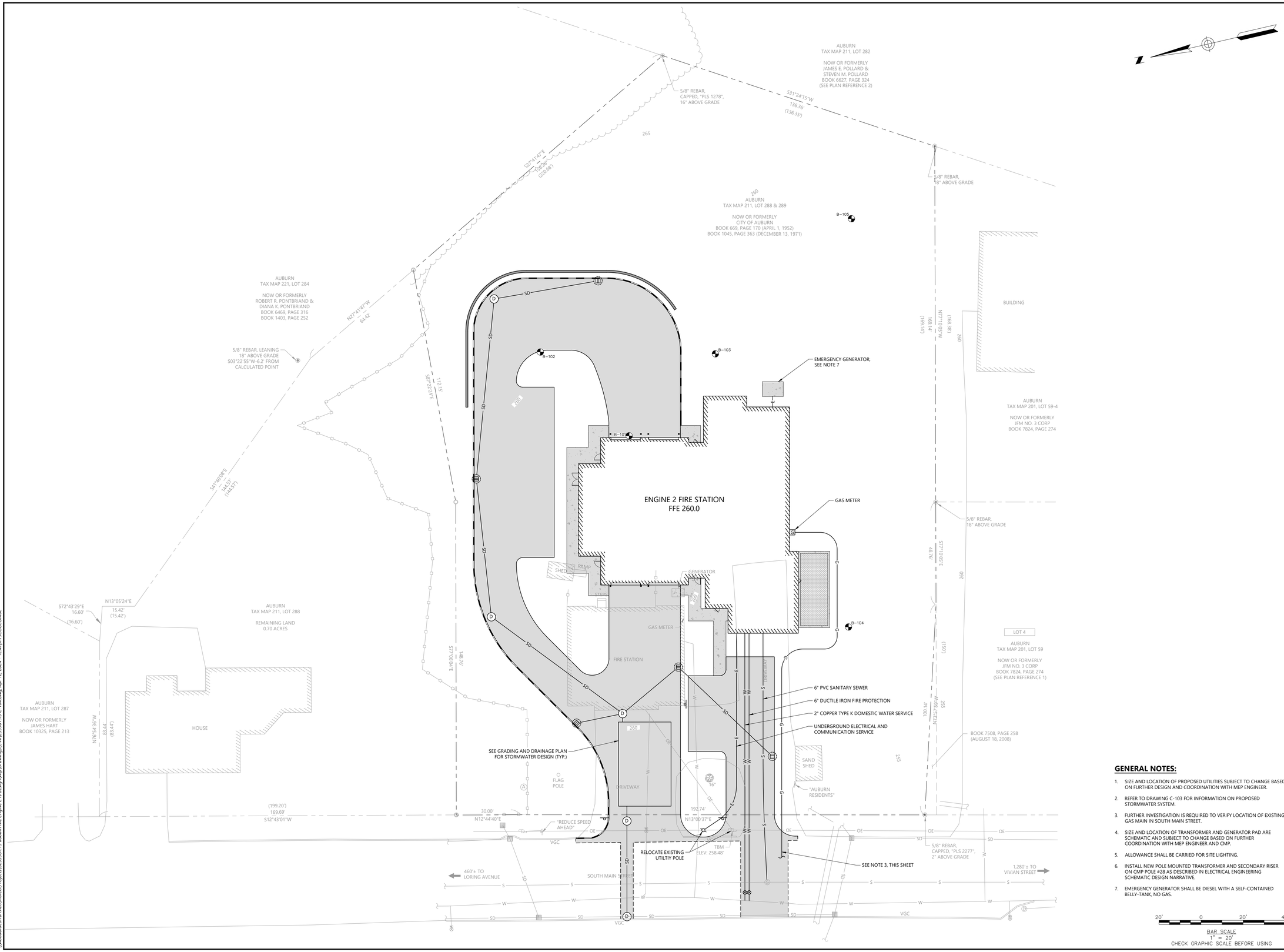
CIVIL
GRADING AND DRAINAGE PLAN

DRAWING NO:

C-103

20' 0 20' 40'
BAR SCALE
1" = 20'
CHECK GRAPHIC SCALE BEFORE USING

\\woodardcurran.net\shared\Projects\02\233981.13 auburn me engine 2 fs design\wip\Drawings\Civil\233981.13 C-103.dwg, Apr 12, 2024 - 12:47pm JCOULOMBE



GENERAL NOTES:

1. SIZE AND LOCATION OF PROPOSED UTILITIES SUBJECT TO CHANGE BASED ON FURTHER DESIGN AND COORDINATION WITH MEP ENGINEER.
2. REFER TO DRAWING C-103 FOR INFORMATION ON PROPOSED STORMWATER SYSTEM.
3. FURTHER INVESTIGATION IS REQUIRED TO VERIFY LOCATION OF EXISTING GAS MAIN IN SOUTH MAIN STREET.
4. SIZE AND LOCATION OF TRANSFORMER AND GENERATOR PAD ARE SCHEMATIC AND SUBJECT TO CHANGE BASED ON FURTHER COORDINATION WITH MEP ENGINEER AND CMP.
5. ALLOWANCE SHALL BE CARRIED FOR SITE LIGHTING.
6. INSTALL NEW POLE MOUNTED TRANSFORMER AND SECONDARY RISER ON CMP POLE #28 AS DESCRIBED IN ELECTRICAL ENGINEERING SCHEMATIC DESIGN NARRATIVE.
7. EMERGENCY GENERATOR SHALL BE DIESEL WITH A SELF-CONTAINED BELLY-TANK, NO GAS.

20' 0 20' 40'

BAR SCALE
1" = 20'
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CLIENT INFO:

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AUBURN ENGINE 2

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CHECKED BY:	CG
FILENAME:	233981.13 C-104.dwg

DRAWING TITLE:
CIVIL
UTILITY PLAN

DRAWING NO:
C-104

AUBURN ENGINE 2

180 South Main Street
Auburn, ME 04210

PROJECT DIRECTORY

OWNER
CITY OF AUBURN — PHONE 207.333.6601
60 COURT STREET — FAX 207.333.6623
AUBURN, ME 04210 — www.auburnmaine.gov

USER
AUBURN FIRE DEPARTMENT — PHONE 207.333.6633
550 MINOT AVENUE — www.auburnmaine.gov/pages/
AUBURN, ME 04210 — government/fire-department

OWNERS PROJECT MANAGER
WOODARD & CURRAN — PHONE 800.426.4262
12 MOUNTFORT STREET — FAX 207.774.6635
PORTLAND, ME 04101 — www.woodardcurran.com

ARCHITECT ON RECORD
SIMONS ARCHITECTS — PHONE 207.772.4656
75 YORK STREET — FAX 207.828.4656
PORTLAND, ME 04101 — www.simonsarchitects.com

DESIGNER
CONTEXT ARCHITECTURE — PHONE 617.423.1400
65 FRANKLIN STREET — FAX 617.423.2939
BOSTON, MA 02110 — www.contextarc.com

PROJECT DESCRIPTION

CONSTRUCTION OF A NEW APPROXIMATELY 9,014 SF, 2 BAY FIRE SUB STATION AND ASSOCIATED SITE WORK IN AUBURN, ME.

PRICING ALTERNATES

ALTERNATIVE 1: URETHANE TRAFFIC COATING FOR APPARATUS BAY AND SUPPORT ROOM FLOOR, IN LIEU OF CONCRETE SEALER.
ALTERNATIVE 2: SHALLOW FOUNDATION W/ ADDITIONAL UNDER SLAB INSULATION AND PERIMETER HORIZONTAL INSULATION, AS SHOWN IN ALTERNATIVE DETAILING.
ALTERNATIVE 3: HIGH PERFORMANCE WALL INSULATION: ADDITIONAL 3" CLOSED CELL SPRAY INSULATION IN STUD CAVITY.
ALTERNATIVE 4: RADIANT HEAT AT DORMITORY AREA SLAB.
ALTERNATIVE 5: APPARATUS BAY APRON SNOW MELT 10' WIDE.

GENERAL CONTRACTOR & ALL TRADES SHALL MAKE NOTE OF REQUIREMENTS DESCRIBED ON SHEET A1.1 WHICH APPLY TO ALL DRAWINGS & SPEC SECTIONS.

DRAWING LIST

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PE SEAL:

CLIENT INFO:

REV	MM/DD/YY	DESCRIPTION

JOB NO: 2315
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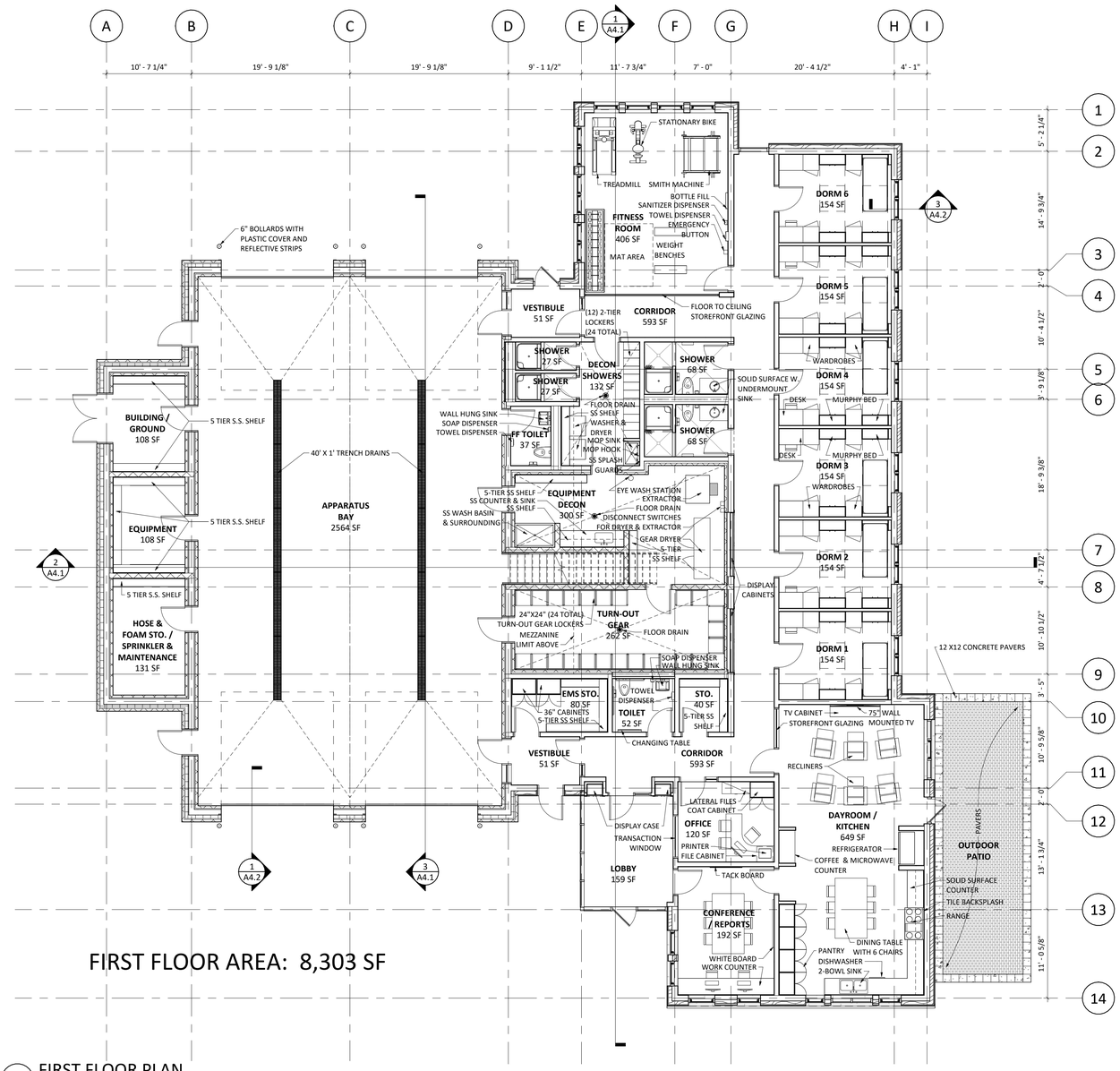
DESIGNED BY:
DRAWN BY:
CHECKED BY:
FILENAME:

DRAWING TITLE:

COVER SHEET

DRAWING NO:

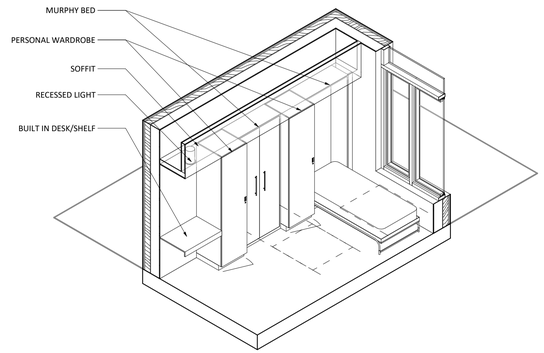


FIRST FLOOR AREA: 8,303 SF

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

FINISH SCHEDULE - FIRST FLOOR

ROOM NO.	ROOM NAME	FLOOR	BASE	WALL	COMMENTS
101	LOBBY	PORCELAIN OR STONE TILE	TILE	MILLWORK WALL PANELS	
102	OFFICE	CARPET TILE	RUBBER	GWB, PAINTED	
103	CONFERENCE / REPORTS	CARPET TILE	RUBBER	GWB, PAINTED	
104	DAYROOM / KITCHEN	PORCELAIN TILE	RUBBER	GWB, PAINTED	
105	VESTIBULE	RUBBER TILE	TILE	GWB, PAINTED	
106	EMS STO.	RUBBER TILE	RUBBER	GWB, PAINTED	
107	TOILET	CERAMIC TILE	CERAMIC TILE	CERAMIC TILE	
108	STO.	RUBBER TILE	RUBBER	GWB, PAINTED	
109	DORM 1	CARPET	RUBBER	GWB, PAINTED	
110	DORM 2	CARPET	RUBBER	GWB, PAINTED	
111	DORM 3	CARPET	RUBBER	GWB, PAINTED	
112	DORM 4	CARPET	RUBBER	GWB, PAINTED	
113	DORM 5	CARPET	RUBBER	GWB, PAINTED	
114	DORM 6	CARPET	RUBBER	GWB, PAINTED	
115	FITNESS ROOM	RUBBER	RUBBER	GWB, PAINTED	
116	SHOWER	CERAMIC TILE	CERAMIC TILE	CERAMIC TILE	
117	SHOWER	CERAMIC TILE	CERAMIC TILE	CERAMIC TILE	
118	VESTIBULE	RUBBER TILE	TILE	GWB, PAINTED	
119	DECON SHOWERS	RUBBER TILE	RUBBER	CERAMIC TILE	URETHANE TRAFFIC COATING (ALT. 1)
120	SHOWER	CERAMIC TILE	CERAMIC TILE	CERAMIC TILE	
121	SHOWER	CERAMIC TILE	CERAMIC TILE	CERAMIC TILE	
122	FF TOILET	CERAMIC TILE	CERAMIC TILE	CERAMIC TILE	URETHANE TRAFFIC COATING (ALT. 1)
123	EQUIPMENT DECON	CONCRETE W/ HARDENER	RUBBER	CMU w/ EPOXY PAINT	URETHANE TRAFFIC COATING (ALT. 1)
124	TURN-OUT GEAR	CONCRETE W/ HARDENER	RUBBER	CMU w/ EPOXY PAINT	URETHANE TRAFFIC COATING (ALT. 1)
125	APPARATUS BAY	CONCRETE W/ H.D. HARDENER	RUBBER	CMU w/ EPOXY PAINT	URETHANE TRAFFIC COATING (ALT. 1)
126	BUILDING / GROUND	CONCRETE W/ HARDENER	RUBBER	CMU w/ EPOXY PAINT	URETHANE TRAFFIC COATING (ALT. 1)
127	EQUIPMENT	CONCRETE W/ HARDENER	RUBBER	CMU w/ EPOXY PAINT	URETHANE TRAFFIC COATING (ALT. 1)
128	HOSE & FOAM STO. / SPRINKLER & MAINTENANCE	CONCRETE W/ HARDENER	RUBBER	CMU w/ EPOXY PAINT	URETHANE TRAFFIC COATING (ALT. 1)
C-1	CORRIDOR	RUBBER TILE	RUBBER	GWB, PAINTED	



TYPICAL DORM ISOMETRIC

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PE SEAL:

CLIENT INFO:

REV	MM/DD/YY	DESCRIPTION

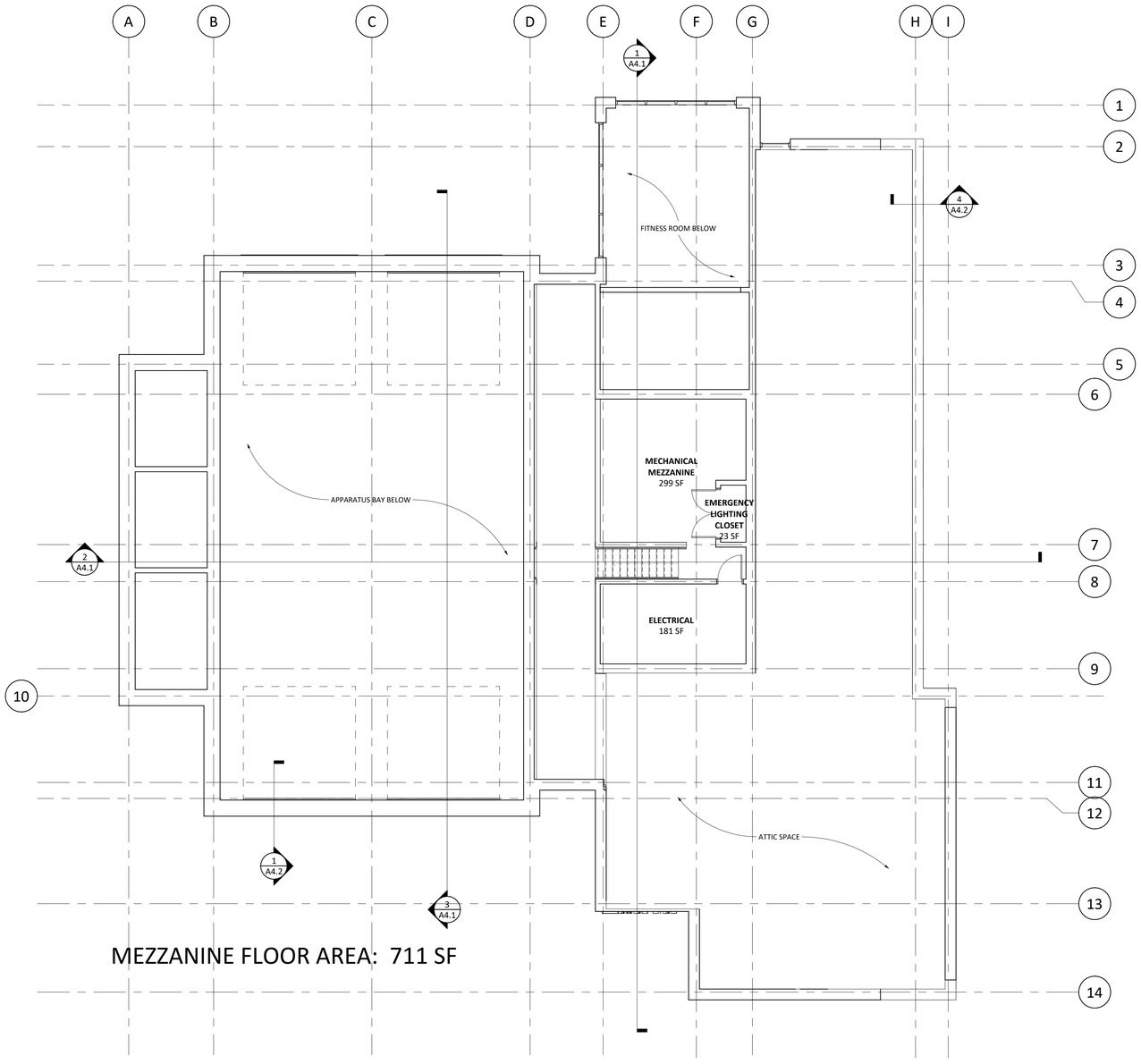
JOB NO: 2315
DATE: 12.13.2023
SCALE: 1/8" = 1'-0"
DESIGNED BY:
DRAWN BY:
CHECKED BY:
FILENAME:

DRAWING TITLE:
FIRST FLOOR PLAN

DRAWING NO: A2.1

FINISH SCHEDULE - MEZZANINE FLOOR

ROOM NO.	ROOM NAME	FLOOR	BASE	WALL	COMMENTS
130	ELECTRICAL	CONCRETE W/ HARDENER	RUBBER	GWB, PAINTED	
131	MECHANICAL MEZZANINE	CONCRETE W/ HARDENER	RUBBER	GWB, PAINTED	
133	EMERGENCY LIGHTING CLOSET	CONCRETE W/ HARDENER	RUBBER	GWB, PAINTED	
134	STAIR	RUBBER	RUBBER	GWB, PAINTED	



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

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PE SEAL:

CLIENT INFO:

REV	MM/DD/YY	DESCRIPTION

JOB NO: 2315
DATE: 12.13.2023
SCALE: 1/8" = 1'-0"
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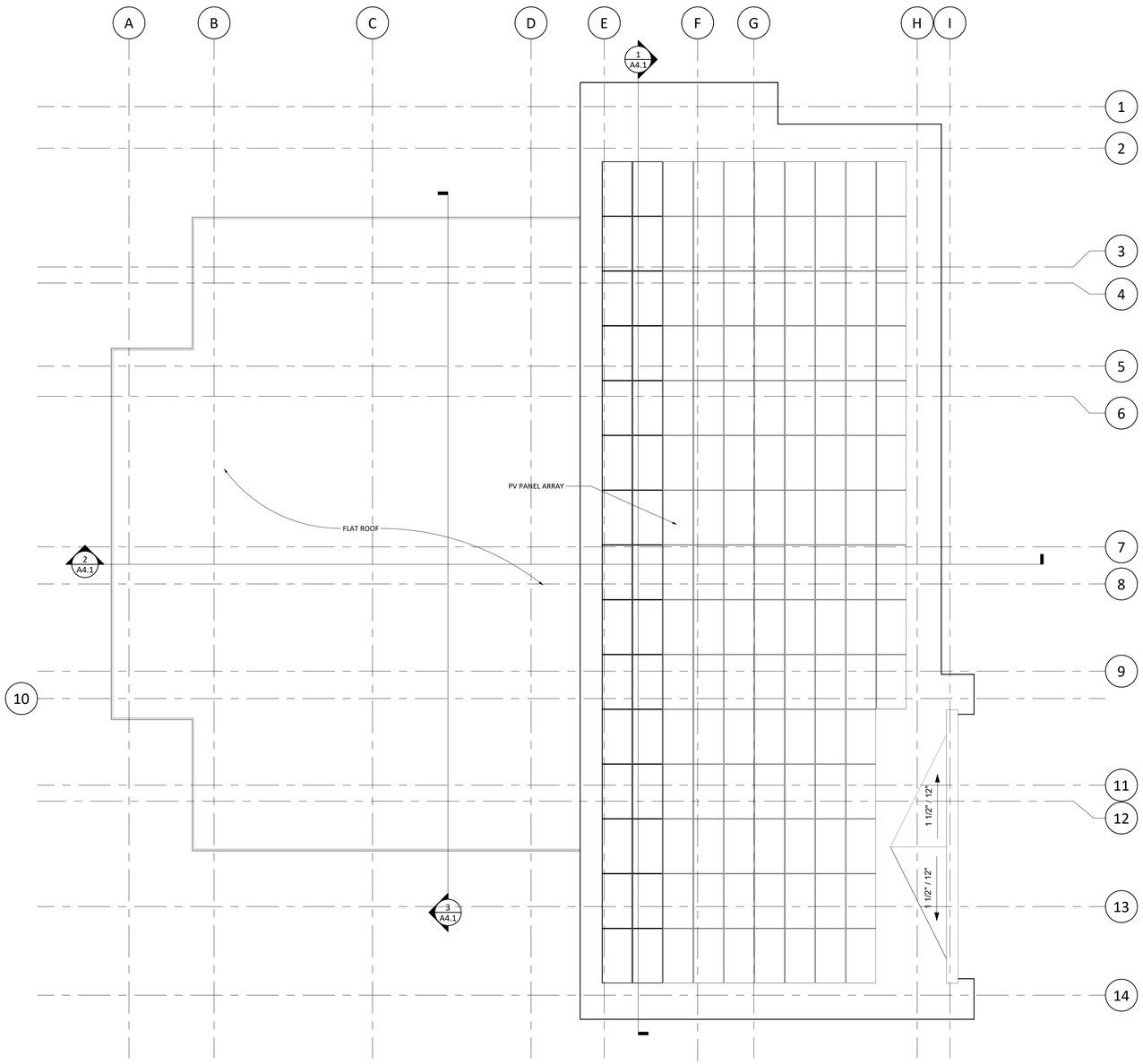
CHECKED BY:
FILENAME:

DRAWING TITLE:

MEZZANINE FLOOR PLAN

DRAWING NO: A2.2



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

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PE SEAL:

CLIENT INFO:

REV	MM/DD/YY	DESCRIPTION

JOB NO: 2315
DATE: 12.13.2023
SCALE: 1/8" = 1'-0"
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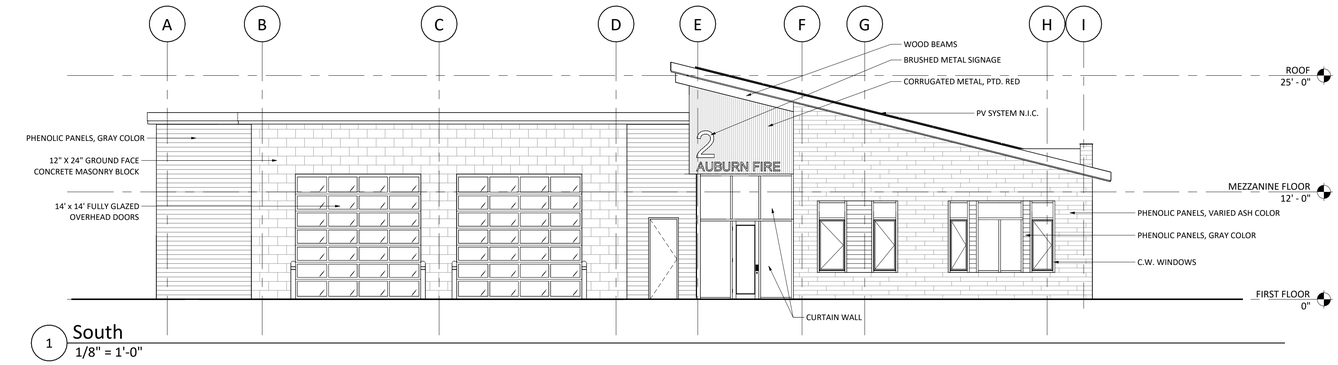
CHECKED BY:
FILENAME:

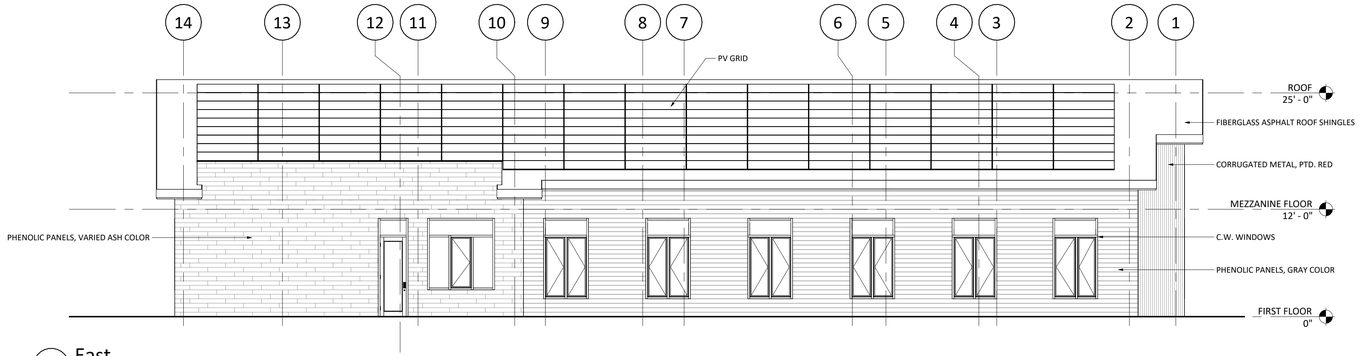
DRAWING TITLE:

ROOF PLAN

DRAWING NO: A2.3

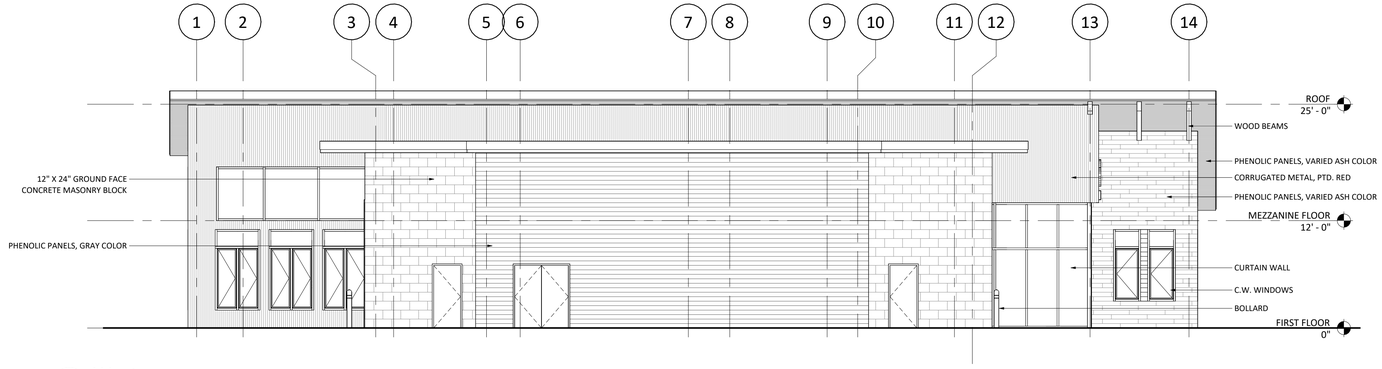


1 South
1/8" = 1'-0"



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

3 North
1/8" = 1'-0"



4 West
1/8" = 1'-0"

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PE SEAL:

CLIENT INFO:

REV	MM/DD/YY	DESCRIPTION

JOB NO: 2315
DATE: 12.13.2023
SCALE: 1/8" = 1'-0"
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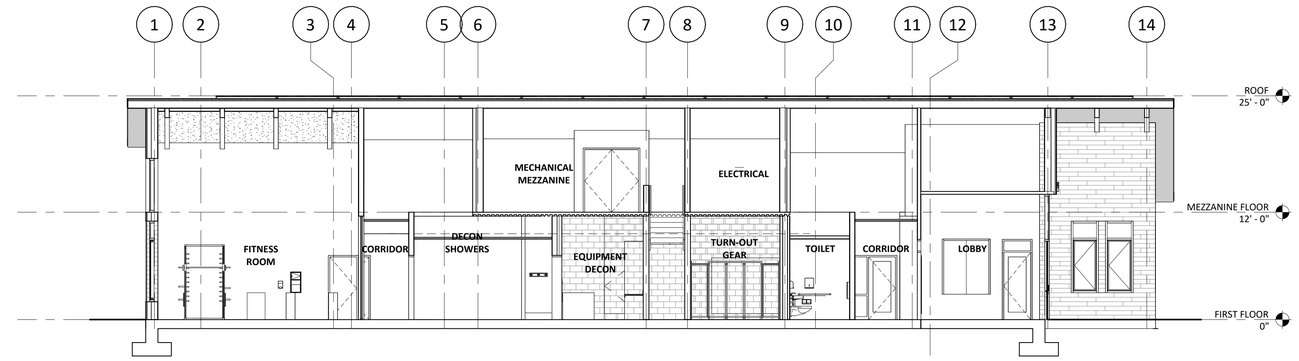
DRAWN BY:
CHECKED BY:
FILENAME:

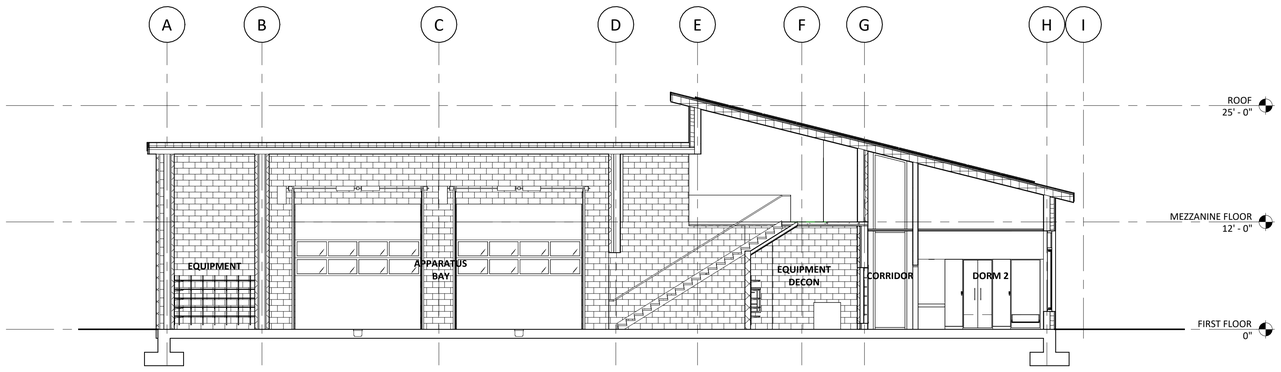
DRAWING TITLE:

BUILDING ELEVATIONS

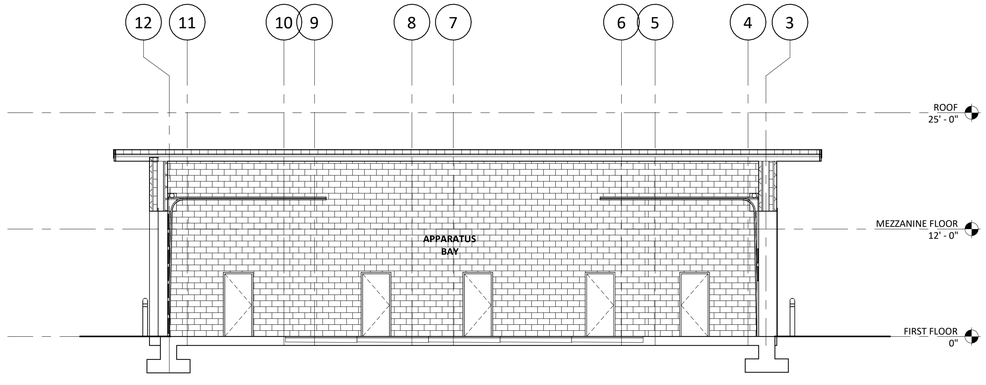
DRAWING NO: A3.1



1 BUILDING SECTION - NORTH SOUTH
1/8" = 1'-0"



2 BUILDING SECTION - EAST WEST
1/8" = 1'-0"



3 BUILDING SECTION - APPARATUS BAY
1/8" = 1'-0"

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Thornton Tomasetti

PE SEAL:

CLIENT INFO:

REV	MM/DD/YY	DESCRIPTION

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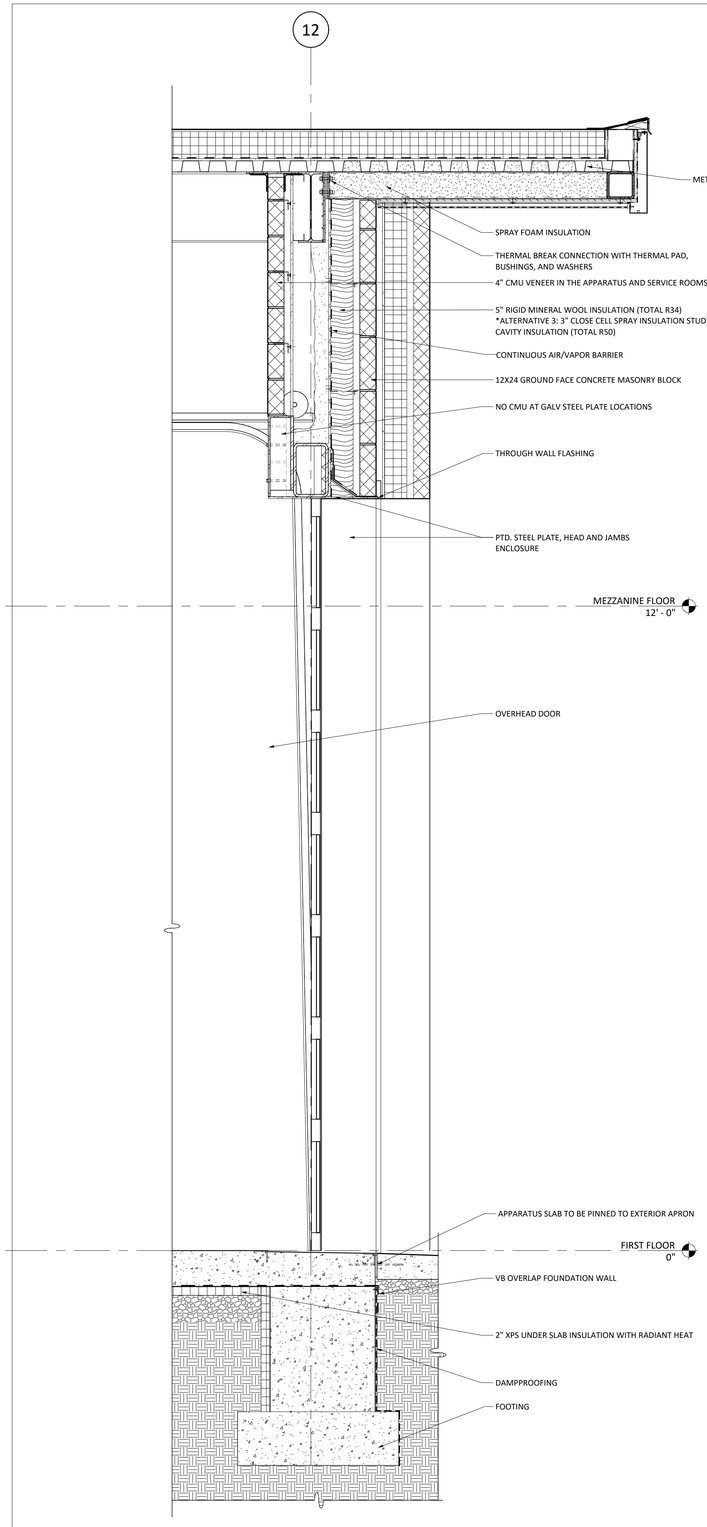
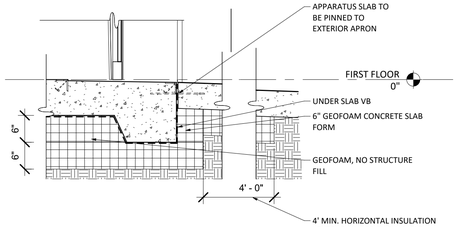
DATE: 12.13.2023
SCALE: 1/8" = 1'-0"
DESIGNED BY:
DRAWN BY:
CHECKED BY:
FILENAME:

DRAWING TITLE:
BUILDING SECTIONS

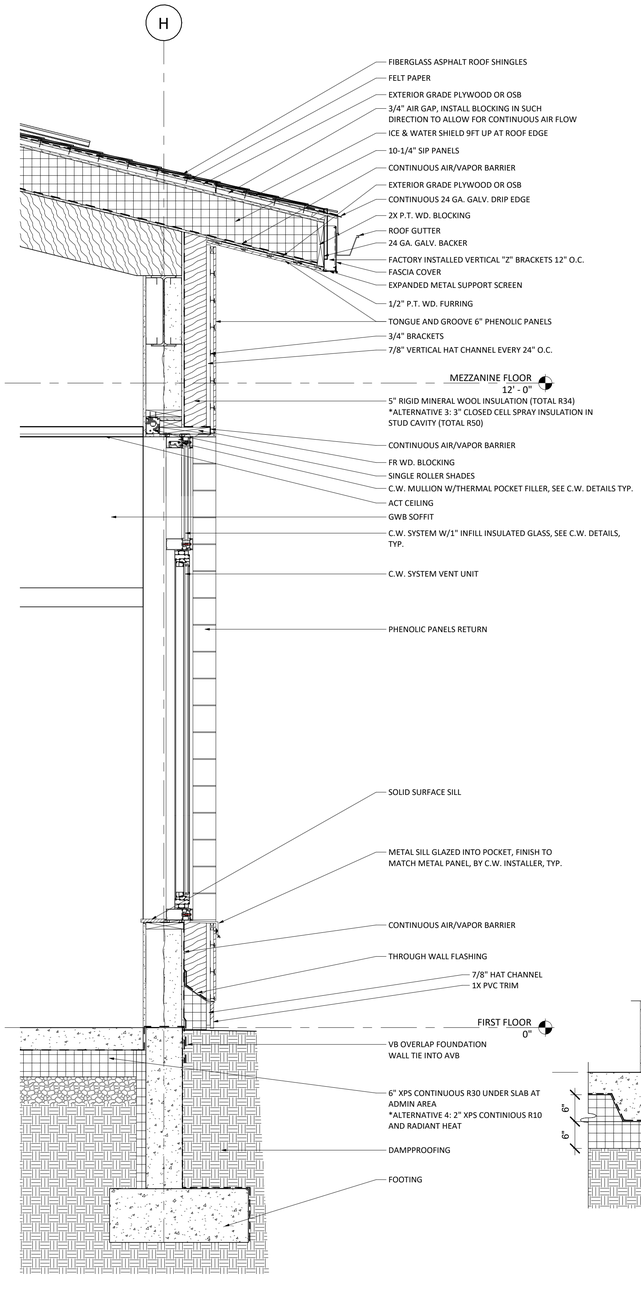
DRAWING NO:
A4.1



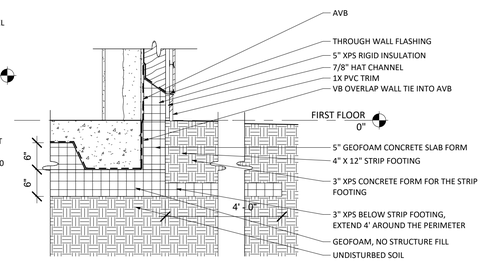
1 WALL SECTION - APPARATUS BAY
3/4" = 1'-0"



2 APPARATUS BAY SLAB (ALT. 2)
3/4" = 1'-0"



4 WALL SECTION - DORM AND ADMIN AREA
3/4" = 1'-0"



3 DORM AND ADMIN AREA (ALT. 2)
3/4" = 1'-0"

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Thornton Tomasetti

PE SEAL:

CLIENT INFO:

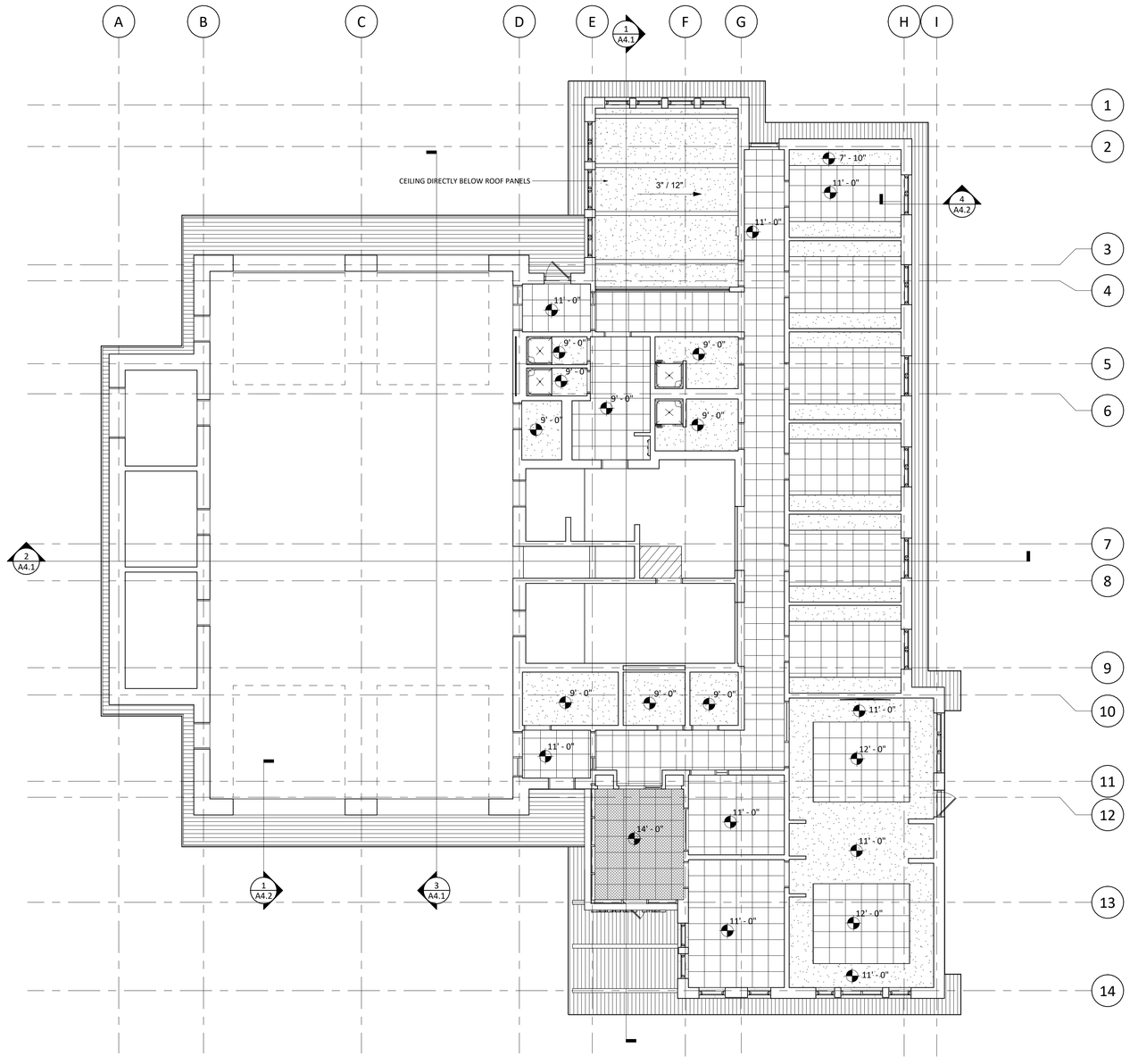
REV	MM/DD/YY	DESCRIPTION

JOB NO: 2315
DATE: 12.13.2023
SCALE: 3/4" = 1'-0"
DESIGNED BY:
DRAWN BY:
CHECKED BY:
FILENAME:

DRAWING TITLE:

WALL SECTIONS

DRAWING NO: A4.2



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

CEILING LEGEND

- 6" X 2' LIGHT FIXTURE
- 6" X 4' LIGHT FIXTURE
- W — WALL MOUNTED LIGHT FIXTURE
- EXTERIOR LIGHT FIXTURE
- 2' X 2' LIGHT FIXTURE
- 2' X 4' LIGHT FIXTURE
- RECESSED CAN LIGHT FIXTURE
- SH — RECESSED SHOWER CAN LIGHT FIXTURE
- 2' X 2' ACOUSTIC CEILING TILE (ACT)
- GWB CEILING OR SOFFIT
- 3/16" THICK METAL CEILING
- (2) LAYERS GWB CEILING
- OPEN CELL CEILING METAL PANELS
- HVAC AIR SUPPLY
- HVAC AIR RETURN
- CLG. MOUNTED EXIT SIGN
- S — CLG. MOUNTED SMOKE DETECTOR
- SP — CLG. MOUNTED SPEAKER
- CLG. MOUNTED OCCUPANCY SENSOR

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PE SEAL:

CLIENT INFO:

REV	MM/DD/YY	DESCRIPTION

JOB NO:	2315
DATE:	12.13.2023
SCALE:	As indicated
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
FILENAME:	

DRAWING TITLE:

FIRST FLOOR RCP

DRAWING NO:

A8.1

Allied Engineering
A Salas O'Brien Company

Auburn Fire Department – Engine 2

Concept (SD) Specification / Basis of Design Document – Divisions 21,22,23

January 25, 2024

DIVISION 21 – FIRE SUPPRESSION

A. Codes, Standards and Authorities Having Jurisdiction:
1. International Building Code
2. Maine Uniform Building Code
3. NFPA 1 – Fire Prevention Code
4. NFPA13 - Installation of Sprinkler Systems
5. NFPA 24 – Installation of Private Fire Service Mains and the Appurtenances
6. NFPA 101 – Life Safety Code
7. NFPA 2001: Standard on Clean Agent Fire Extinguishing Systems
8. State of Maine Fire Marshal's Office
9. Local Fire Department
10. Local Water District
11. Owner's Insurance Agent
12. State of Maine Internal Plumbing Code, Based on the 2015 Uniform Plumbing Code

A. Fire Protection Systems
1. Provide a complete, tested, and operational NFPA 13 fire protection system.
2. Fire protection systems shall be a wet system, including the IT room.
3. A Maine licensed fire protection contractor shall fully design the facility fire protection systems based on the codes, standards, and authority with jurisdiction.
4. Obtain all permits and gain approvals from Authorities Having Jurisdiction for designs and installations.
5. Fire Protection installations shall be seismically braced per IBC 2015 and NFPA 13. The systems are in or attached to a building that has been assigned to Occupancy Category IV, i.e., essential or critical facilities, and are required for the continued operation of that facility following an earthquake. A Component Importance Factor of 1.5 shall be assigned to all systems and components.

B. Water Supply
1. Water supply will be municipal. Conduct a flow test to serve as the basis of system designs. Hydrant Flow Test Data: Unavailable - need to schedule. Assume that adequate water pressure is available with no need for a fire pump.
2. Provide service entrance including underground OS&Y valve and double-check backflow prevention. Provide design and components as necessary to meet NFPA 13 and local codes.
3. Fire service thrust restraint will be provided by Division 31, in accordance with the Water District standard details.

C. Materials
1. Fire department connection will be located as per Local Fire Department requirements.

2. Above ground piping 2-1/2 inch and smaller shall be Schedule 40 steel with threaded joints. Above ground piping 3-inch and larger shall be Schedule 10 or 40 steel with roll grooved mechanical joints.
3. Sprinkler heads to be standard spray, quick response type.
4. System valves and flow switches to be supervised by the facility fire alarm system.
5. Comply with MSS SP-69 for pipe hanger selections and applications. Support piping and tubing according to MSS SP-69 and manufacturer's written instructions.
6. Install all equipment in accordance with manufacturer's recommendations and the standards listed above. Equipment shall be started, tested, and checked per manufacturers' recommendations.
7. Seal all penetrations with acoustical and/or fire sealant as required. Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe and duct penetrations. Seal penetrations with fire stop materials. Seal all penetrations through fire-or smoke-rated wall, partition, ceiling, or roof assemblies with firestopping system. Provide fire dampers as required. Refer to Architectural plans for location of rated assemblies.

Allied Engineering
A Salas O'Brien Company

DIVISION 22 – PLUMBING

A. Codes, Standards and Authorities Having Jurisdiction:
   1. International Building Code
   2. Maine Uniform Building Code
   3. NFPA 54: Fuel Gas Code
   4. State of Maine Internal Plumbing Code
   5. Local water district
   6. Local natural gas supplier.

B. Provide complete plumbing systems in accordance with Maine plumbing code and local requirements.

C. Storm Water:
   1. Piping to be no-hub CISPI 301 cast iron or Schedule 40 PVC.
   2. Connect to site piping five feet beyond the building wall. See Site Plan for utility connection locations.
   3. Secondary drainage: spill over roof edge.

D. Sanitary Waste and Vent:
   1. Piping to be no-hub CISPI 301 cast iron or Schedule 40 PVC.
   2. Connect to site piping five feet beyond the building wall. See Site Plan for utility connection locations.
   3. Grease Interceptor - kitchen, Watts Model WD-10**,** PDI listed, all-welded epoxy coated steel interceptor, 10 GPM intermittent flow; 20 lb. grease capacity.
   4. HVAC Drains: Provide PVC drains per UPC-2021.
      a. HRV-1
      b. Heat pump/VRF indoor units
      c. DOAS-1

E. Water Service:
   1. Provide a potable water service entrance in compliance with Maine Plumbing Code and local water district regulations. The water entrance will enter the Sprinkler room, with domestic and fire branches inside the building. Service piping shall be ductile iron with a shutoff valve, RPZ backflow prevention device, pressure-regulating valve, pressure gauge and water meter.
   2. Domestic cold water to serve plumbing fixtures will be supplied by utilizing city water pressure, assume no water pressure boosting pump is necessary.
   3. HW & CW piping to be Type L copper and insulated per IECC energy standards.
   4. Pay for the Water District water meter installation charges.
   5. Preliminary water service size is 3"; reduced pressure zone backflow preventers, isolation valves, and strainers will be provided for each branch.
      a. Branch to truck fills, exterior wall hydrants, 2.5" not metered.
      b. Branch to building, 2" metered.

F. Domestic Hot Water, **DHW-1**:
   1. Heat source: Heating Plant.

2. Basis of Design: Viessmann 300-V, EVIB single coil, indirect-fired domestic hot water storage tank; 119 USG capacity.
3. Water will be stored at 145°F.
4. The system shall feed each fixture that requires hot water and shall have a continuous hot water return line back to the water heating plant. Provide the Enovative "Autohot" system to control the hot water recirculation pump. System shall be IECC-2021 compliant. Provide a 3-speed Grundfos pump, or equal.
5. Provide a master mixing valve to control the delivered hot water temperature.
6. The recirculation loop shall be piped to run within 3 feet of lavatories.

G. Plumbing Fixtures:
1. Toilets – Floor mounted tank type, ADA height, elongated, with extra heavy duty open-front seats.
2. Lavatories – white china wall hung or counter-mount with manual faucets, 0.5 GPM. Provide ADA trim.
3. Showers, ADA & standard.
4. Break Room Sinks – 18-gauge single bowl lay-in, type 302 Stainless Steel; pull out faucet with spray.
5. Janitor Sink – 24"X24" floor mounted mop sink with utility faucet, vacuum breaker, mop holder, corner guards and drop-down hardware.
6. Decontamination
   a. Hand wash sink: gooseneck faucet with sensor (hands free).
   b. SS wash basing with utility spray.
   c. Emergency eyewash/drench
7. Bottle Filling Stations, ADA high/low, refrigerated.
8. Frost Free Wall Hydrants – spaced around the building perimeter, approx. four (4) total; Watts HY-725, or equal.
9. Provide two standard hot and cold-water hose bibbs in the Apparatus Bay, Zurn Z1341XL, or equal.

H. Floor and Trench Drains
1. Floor Drains: Zurn ZN415BZ-P, or similar.
   a. Bathrooms with more than one water closet/urinal.
   b. Mechanical Room
   c. Sprinkler Room
   d. Decontamination
   e. Turnout Gear
   f. Decon Showers
   g. Shower Rooms
   h. Provide trap seal primers.
2. Apparatus Bay Trench Drains: Underneath each apparatus, parallel to the centerline - Zurn Z882 Trench Drain. Provide with DGC grates that lock down to frame. Zurn 12" wide reveal Ductile Iron Slotted Grate conforming to ASTM specification A536-84, Grade 80-55-06. Ductile Iron grate is rated Class C per the DIN EN1433 top load classifications. Connect the trench drain to a Zurn Z887-24-HD Catch Basin shall be 23-1/4" wide reveal x 24-5/8" long and 24" deep.
3. Apparatus room trench drains shall connect to an oil/sediment separator prior to discharge; either site pre-cast or: "Proceptor" (by Greenturtle), 300-gallon volume, 156-gallon max oil capacity and 103-gallon max solids capacity. Intermittent flow, 4" inlet/outlet and 3"

vent connections; removable 3/8" nonskid tread plate cover for flush with grade Installation suitable for heavy traffic load (H/20), secured with stainless steel flat head screws, heavy duty leak-proof gasket with bituminous coating outside.

I. A new natural gas service shall be brought to the building. A meter shall be located on the exterior of the building. Provide a piped natural gas system to serve the following:
   1. Kitchen range
   2. Exterior valved BBQ grille hookup.
   3. Boiler/water heater systems, **B-1**, **B-2**.
   4. Note: Emergency generator will be diesel with a self-contained belly-tank, no gas.

J. Compressed Air System: Provide a centralized compressed air system consisting of one (1) 80-gallon vertical tank; 7.5-HP compressor, filters, air dryer, and piping distribution system in apparatus bays.
   1. Provide four (4) retractable hose reels, Reelcraft Series 4000 Spring Driven Hose Reels, or equal.
   2. Plymovent vehicle exhaust extraction system.
   3. Piping: Copper Tube: ASTM B 88, Type K seamless, drawn-temper, water tube.

K. Common System Components
   1. Each water service main, branch main, riser, and branch to a group of fixtures shall have valves. Stop valves shall be provided at each fixture. Provide drains at all low points in the system.
   2. Insulation: Provide pipe and equipment insulation per IECC-2021.
   3. Install all equipment in accordance with manufacturer's recommendations and the standards listed above. Equipment shall be started, tested, and checked per manufacturers' recommendations.
   4. Seal all penetrations with acoustical and/or fire sealant as required. Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal penetrations with fire stop materials. Seal all penetrations through fire-or smoke-rated wall, partition, ceiling, or roof assemblies with firestopping system.
   5. Comply with MSS SP-69 for pipe hanger selections and applications. Support piping and tubing according to MSS SP-69 and manufacturer's written instructions.
   6. Provide pipe labeling: Seton, Brady, or approved equal; preprinted, color-coded, with lettering indicating service, and showing direction of flow. Comply with ASME A13.1 for letter size, length of color field, colors, and viewing angles of identification devices for piping.
   7. The systems are in or attached to a building that has been assigned to Occupancy Category IV, i.e., essential or critical facilities, and are required for the continued operation of that facility following an earthquake. A Component Importance Factor of 1.5 shall be assigned to all systems and components. Provide positive seismic and wind restraints on systems and components required by the applicable building code and by the local authority having jurisdiction. This section covers design, supply, installation and inspection of complete SFRS (Seismic Force Resisting System) for all systems. Seismic Delegated-Design: Calculate the load requirements for seismically rated seismic restraints. Provide detailed submittal drawings of seismic restraints.

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Allied Engineering
A Salas O'Brien Company

DIVISION 23 – HEATING, VENTILATION, AND AIR-CONDITIONING (HVAC)

A. Codes, Standards and Authorities Having Jurisdiction:
1. State of Maine Fire Marshal's Office
2. Local Fire Department
3. Owner's Insurance Agent
4. International Building Code
5. Maine Uniform Building Code
6. NFPA 1 – Fire Prevention Code
7. NFPA 54: National Fuel Gas Code
8. NFPA 72: National Fire Alarm Code
9. NFPA 90A: Standard for the Installation of Air-Conditioning and Ventilating Systems
10. NFPA 101 – Life Safety Code.
11. NFPA 211: Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances
12. ASHRAE 62.1-2019
13. IECC-2021

B. ASHRAE Design Criteria

2021 ASHRAE Handbook - Foundamentals (IP)

AUBURN-LEWISTON, ME, USA (WMO: 726184)

Lat:**44.050N** Long:**70.283W** Elev:**288** StdP: **14.54** Time zone:**-5.00 (NAE)** Period:**94-19** WBAN:**94709** Climate zone:**6A**

Annual Heating, Humidification, and Ventilation Design Conditions

Coldest Month	Heating DB		Humidification DP/MCDB and HR						Coldest month WS/MCDB				MCWS/PCWD to 99.6% DB		WSF
	99.6%	99%	99.6%			99%			0.4%		1%				
			DP	HR	MCDB	DP	HR	MCDB	WS	MCDB	WS	MCDB	MCWS	PCWD	
1	-5.9	0.1	-20.4	1.8	1.1	-14.9	2.5	3.8	24.6	19.4	21.8	19.9	3.8	10	0.546

Annual Cooling, Dehumidification, and Enthalpy Design Conditions

Hottest Month	Hottest Month DB Range	Cooling DB/MCWB						Evaporation WB/MCDB						MCWS/PCWD to 0.4% DB	
		0.4%		1%		2%		0.4%		1%		2%			
		DB	MCWB	DB	MCWB	DB	MCWB	WB	MCDB	WB	MCDB	WB	MCDB	MCWS	PCWD
7	20.3	87.8	71.5	83.8	70.0	81.2	67.7	74.2	83.3	72.1	80.4	70.3	77.4	9.0	210

Dehumidification DP/MCDB and HR									Enthalpy/MCDB						Extreme Max WB
0.4%			1%			2%			0.4%		1%		2%		
DP	HR	MCDB	DP	HR	MCDB	DP	HR	MCDB	Enth	MCDB	Enth	MCDB	Enth	MCDB	
71.6	118.1	79.6	69.8	110.9	77.1	67.7	102.7	74.9	37.8	83.2	36.0	80.0	34.3	77.1	80.1

Extreme Annual Design Conditions

Extreme Annual WS				Extreme Annual Temperature				n-Year Return Period Values of Extreme Temperature							
				Mean		Standard deviation		n=5 years		n=10 years		n=20 years		n=50 years	
1%	2.5%	5%		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
20.8	18.4	16.3	DB	-14.4	92.3	6.9	2.5	-19.3	94.1	-23.3	95.5	-27.2	96.9	-32.2	98.7
			WB	-14.5	77.2	6.0	1.9	-18.8	78.6	-22.3	79.7	-25.7	80.8	-30.1	82.2

Monthly Climatic Design Conditions

	Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
DBAvg	45.3	20.0	23.0	31.6	43.1	53.7	63.1	68.7	67.1	59.9	47.9	37.0	26.7

1. Basis of Design Outdoor design conditions:
   a. -10F winter
   b. 90DB / 74WB summer

2. Basis of Design Indoor design conditions:

SPACE	WINTER DESIGN (°F)	SUMMER DESIGN (°F)
Offices	70	75
Residential	70	75
Fitness	65	72
Other	70	75
Corridors	68	78
Mechanical Rooms	60	No AC
Storage	60	No AC
Vestibules	60	No AC
Apparatus Bays	55	No AC

3. Humidification will not be provided.

C. Indoor Air Quality
1. If the building or a portion of the building is to be occupied during the construction or renovation process, meet, or exceed the Recommended Design Approaches of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guideline for Occupied Buildings under Construction.
2. Ventilation systems shall be designed per IMC code requirements.
3. Following construction or renovations, replace all HVAC filtration media immediately prior to occupancy.
4. Ensure that permanently installed filtration media have a Minimum Efficiency Reporting Value (MERV) of at least 8.
5. Install ducted HVAC air returns to avoid the dust and microbial growth issues. The use of ceiling plenum return vents is not acceptable as part of an HVAC system design.

D. HVAC SYSTEM SELECTION
1. There are many HVAC system options that could be used for this project, including VAV, VRF, fancoil units, air source heat pumps, water source heat pump, split systems, and more. There are many factors that need to be assessed:
   a. First cost
   b. Life cycle cost
   c. Redundancy
   d. Security concerns
   e. Maintenance costs
   f. Reliability
   g. Flexibility
   h. Controllability
   i. Sustainability
   j. Acoustics
   k. Mold and mildew preventions
   l. Available physical space
   m. Available utility source
   n. Building architecture
   o. Operator knowledge and capabilities.

E. System Selection: Air source heat pumps, Mitsubishi "HyperHeat" or similar.
   1. Rationale:
      a. The building design is compacted to reduce cost, without large mechanical rooms. This necessitates a "decentralized" HVAC system with small HVAC units located throughout.
      b. Energy efficiency: The outdoor condensing units use inverter compressor technology (Variable Frequency Drive) to provide exceptional indoor high-speed cooling and heating. In response to outdoor temperature changes, the system varies the compressor speed, thereby reducing power consumption for extra energy savings. The system performs only to the level needed to maintain a constant and comfortable indoor environment.
      c. Very efficient and comfortable
      d. Efficiency Maine Rebates are available.
      e. Low first cost.
      f. Proven technology; can provide heating in a Maine climate, down to -22°F outside.
      g. Ease of installation.
      h. Limits impact of equipment failure; multiple small systems. If one system fails, it does not impact the remaining zones within the building.
      i. The HVAC units are very quiet and come in many configurations.

F. Air source heat pumps, Mitsubishi "HyperHeat" or similar.
   1. Variable Refrigerant Flow (VRF) – Mitsubishi Model PURY-HP72 with simultaneous heating and cooling capability; also, energy recovery; size: 6 tons.
      a. Indoor units: cassette type.
   2. Ductless Split Outdoor Unit: PUZ-HA24NHA1; size: 2-tons.
      a. Indoor unit - ducted: PVA-A24AA7; size: 2-tons.
      b. Indoor unit - cassette: PLA-A24EA7; size: 2-tons.
   3. Ductless Split Outdoor Unit: PUY-A24NHA7
      a. IT Room Indoor unit - ducted: PKA-A24KA7; size: 2-tons.
   4. Condensing units will be located outside on concrete pads (must be away from roof snow and ice slides). Units shall have 24" support stands to elevate them above the snow.
   5. Provide a programmable 3-phase line voltage monitor for each outdoor unit.
   6. Refrigerant piping layout and design shall be by HVAC unit manufacturer. Include design calculations with corresponding diagram of refrigerant piping and tubing sizing. Provide insulated copper refrigerant piping per IECC-2021 and HVAC unit manufacturer's recommendations. Provide refrigerant piping according to ASHRAE 15 and governing codes, including pipe testing.

G. Boiler Plant.
   1. Basis of Design: Two high efficiency condensing hot water boilers along with an insulated low-loss header.
      a. B-1: Viessmann 200-W B2HE; 187 MBH output.
      b. B-2: Viessmann 200-W B2HE; 187 MBH output.
   2. Individually direct vented (sidewall or roof, TBD), sealed combustion
   3. Natural gas fired.
   4. Boiler Pumps: Inline, with ECM motors.
   5. Distribution pumps: duplex inline ECM variable speed smart pumps, Grundfos Magna or similar; auto lead lag, automatic speed control.

6. Expansion tank, chemical feeder, air/dirt separator with magnet, and hydronic specialties.
7. Hot water will be pumped to the various terminal units. Provide shutoffs, balancing valve, strainer, unions, flexible connector, drain, vent, and at each terminal unit.
    a. DHW-1
    b. DOAS-1
    c. MUA-1
    d. Radiant Floor Heating:
        1) Apparatus Bay; Note: Radiant floor is primary heating, supplementary heat from hot water unit heaters; provide two (2) Unit Heaters in the Apparatus Bay for supplementary heat (boost of heat after doors are open).
        2) Building Grounds
        3) Equipment
        4) Hose-Foam Storage.
    e. Unit Heaters:
        1) Mechanical Mezzanine
        2) Apparatus Bay
    f. Cabinet Unit Heaters:
        1) Lobby
        2) Vestibule
        3) Vestibule

H. General Ventilation: "Dedicated Outdoor Air System" (**DOAS-1**)
1. Fresh air ducted from DOAS units to the heat pump zones. A DOAS systems allow for precise control of fresh air to the various spaces. The fresh air will be heated, cooled, and dehumidified.
2. Basis of Design: Greenheck RVE, or equal.
    a. EC Motors for both airstreams, direct drive plenum fans.
    b. Integrated programmable controls.
    c. Enthalpy based modulating economizer.
    d. Class 1 low-leakage motorized isolation dampers
    e. Energy wheel with frost control.
    f. 1" Double wall foam injected 20 ga. Galv. panel construction with R6.5 insulation.
    g. Heating: Hot water coil (with 40% propylene glycol sub-loop for freeze-prevention; brazed plate HX, air separator, expansion tank, pump, shutoffs).
    h. Cooling: DX cooling coil with stainless-steel double-sloped drain pan
    i. Dehumidification: Modulating hot gas reheat.
    j. MERV 8 exhaust filters, MERV 13 supply filters.
    k. Fused disconnect.
    l. Drain overflow switch.
    m. 24" roof curb

I. Apparatus Bay Ventilation: Classified as a "Parking Garage" in ASHRAE 62.1-2019. The mechanical ventilation system shall be automatically operated by means of a UL-2075 listed CO/N2O detector. Automatic operation shall cycle the ventilation system between two modes of operation:
1. Full airflow of not less than 0.75 CFM/SF of exhaust.
    a. Exhaust fan on roof, 1,900 CFM (0.75 CFM/SF).
    b. Louvers in wall(s). Locate hot water heater near louver for tempering.
2. Standby airflow rate of not less than 0.05 CFM/SF

a. **HRV-1**, Heat Recovery Unit: Exhaust from Apparatus Bay auxiliary spaces (Building Grounds, Equipment, & Hose-Foam Storage), fresh air to Apparatus Bay. Normal mode is continuous operation.
   1) Aldes Model H280-SRG; 195 CFM (0.077 CFM/SF is > code min.) supply air; 245 CFM exhaust air.
   2) Electronically and independently adjustable supply and exhaust blowers . Gauge ports on the door for airflow readings. Non-dust-loading backward-inclined impellers on totally enclosed motors.
   3) Easy access to core and filters for cleaning.
   4) Extremely durable polypropylene core.
   5) Recirculating defrost.
   6) Intake and exhaust dampers.
   7) Intake and exhaust wall caps.

3. Plymovent vehicle exhaust extraction system; straight rail system (SFS) designed to connect to the apparatus tail pipe and capture virtually 100% of the exhaust emissions.
   a. Exhaust hose sizes for all vehicle types
   b. Auto-disconnect at the exit door.
   c. Door-to-door removal of harmful emissions
   d. Speed absorbing shock system
   e. Front and rear door release
   f. Expandable design
   g. Adjustable release points depending on speed of call-out release.
   h. Virtually 100% source capture through a unique automatic grabber nozzle; available in sizes to fit all emergency response vehicle tailpipe sizes.
   i. Exhaust fan with automatic start-stop of fan by an exhaust sensor
   j. Safety disconnect coupling; fail safe system, easily re-connectable.

J. Kitchen Range Hood: Designed for residential appliances in commercial settings. CaptiveAire model WRH-T-48.
   1. Listed to UL507
   2. Mounting cleats to mount hood directly to wall above cooktop.
   3. HMI control panel allows manual modulation of fan speed and dimmable LED lights .
   4. Temperature sensors activate fan when specified temperatures are reached.
   5. Provide a UL300A listed Fire suppression system with continuous water spray on hazard. The system is capable of automatic detection and actuation via an electric thermal detector located in the hood capture area. When the temperature exceeds the rating of the sensors, the fire system is engaged. The superior cooling effects of water are utilized for rapid flame knockdown and quick extinguishing of the fire. Remote manual activation shall also be provided available via a remote pull station.

K. **MUA-1,** Make up Air
   1. The makeup air will be heated, cooled, and dehumidified.
      a. Kitchen Hood: 800 CFM; provide a pressure independent VAV box.
      b. Equipment Decon: 800 CFM; provide a pressure independent VAV box.
      c. Total: 1,600 CFM
   2. Basis of Design: Greenheck RV, or equal.
      a. EC Motors direct drive plenum fan

b. Integrated programmable controls.
c. Enthalpy based modulating economizer.
d. The supply blower shall have a factory mounted variable frequency drive. Minimum supply fan turndown is 50% of the design maximum operation. Supply blower shall be modulated based upon the signal from a space pressure sensor. The controller will modulate the supply fan based upon a comparison of the space static pressure set point (adj.) and the space static pressure level reported from the sensor.
e. Class 1 low-leakage motorized isolation damper
f. 1" Double wall foam injected 20 ga. Galv. panel construction with R6.5 insulation.
g. Heating: Hot water coil (with 40% propylene glycol sub-loop for freeze-prevention; brazed plate HX, air separator, expansion tank, pump, shutoffs).
h. Cooling: DX cooling coil with stainless-steel double-sloped drain pan
i. Dehumidification: Modulating hot gas reheat.
j. MERV 8 exhaust filters, MERV 13 supply filters.
k. Fused disconnect.
l. Drain overflow switch.
m. 24" roof curb

L. Miscellaneous Exhaust Systems:
1. Heat Relief Exhaust, along with associated motorized intake damper: mechanical room.
2. Turnout gear dryer
3. Non-contaminated dryer
4. Radon exhaust fan: Fantech Rn4EC-4, or equal. Provide the RadonAway RSA1 radon system alarm, or equal.

M. Building Automation System (BAS)
1. Provide a Mitsubishi EW-50A (or equal) central plant controller, a web browser-only centralized controller for managing VRF and ERUs. Provide an internet data drop connection to the central plant controller. Provide training and control setup with the facility manager's computer.
2. Central Plant Controller Features:
a. On/Off operation for a single group and batch operation
b. Temperature setting: Supports single and dual set point operation with extended set temperature range.
c. Operation Modes: Setback /Cool/Dry/Auto/Fan/Heat
d. Provide interlock with adjacent ERUs.
e. Annual, Today, and Weekly schedules
f. Trending Data: Room temperature
3. Provide all starters, disconnects, programming, controls, etc., as required for complete and functioning systems.
4. Controlled Systems
a. Boiler Plant: controller by Viessmann.
b. VRF & Ductless-Splits: controller by Mitsubishi.
c. DOAS Unit controller by Greenheck.
d. Range Hood: controller by CaptiveAire.
e. MUA-1: Energized if decontamination dryer or range hood is energized. Associated VAV box opens.
f. Radiant Floor Heating: provide a Tekmar controller; with wall and slab temperature sensors, 4 zones.

g. Hot water unit heaters: provide thermostat and aquastat,
h. Heat relief exhaust fans and associated motorized intake dampers, thermostat control.
i. Apparatus Bay Ventilation, as described in Apparatus Bay Ventilation paragraph above.
j. Gas Detectors
    1) Provide a fuel gas detector in the Mechanical Room & Kitchen (if gas range is selected). AGS Mini-Merlin-CH4CO, or equal. Provide interface with the fire alarm system.
    2) Apparatus Bay CO/NO2 Gas Detectors: Basis of Design: Brasch Model GSE.
    3) CO Gas Detectors: Provide detection in sleeping and living areas.

N. Ductwork
1. G60 galvanized steel per SMACNA; 2" pressure class, Seal Class A.
2. Volume dampers at each branch to allow for system balancing.
3. Fire dampers with access doors. Static; rated and labeled according to UL 555S; 1-1/2-hour rating.
4. Duct liner: None
5. Provide flexible connectors for air moving equipment.
6. Flexible Ducts: R6 insulation, Atco #86 or equal.
7. Dryer Exhaust: Elbows shall be sweep-type. Exhaust ducts must be assembled so the interior surfaces are smooth, so the joints do not permit the accumulation of lint. Provide rigid metal ducts. Do not use sheet metal screws or fasteners on exhaust pipe joints which extend into the duct and catch lint. Use of pop-rivets on all seams and joints is required.
8. Equipment and air distribution shall be quiet with low vibration.
9. Provide balancing dampers at branch ducts to registers-grilles-diffusers.
10. Air systems shall be fully ducted, no plenum return.

O. Common System Components
1. HVAC units shall be provided with vibration isolators. Flexible connectors shall be used between vibrating equipment and piping/ductwork.
2. Provide pipe labeling: Seton, Brady, or approved equal; preprinted, color-coded, with lettering indicating service, and showing direction of flow. Comply with ASME A13.1 for letter size, length of color field, colors, and viewing angles of identification devices for piping.
3. Insulation: Provide pipe, duct, and equipment insulation per IECC 2021.
4. Maximum noise criteria shall not exceed ASHRAE recommendations. Make provisions for sound/vibration reduction in the AC-unit supports and discharge ductwork.
5. Install all equipment in accordance with manufacturer's recommendations and the standards listed above. Equipment shall be started, tested, and checked per manufacturers' recommendations.
6. Seal all penetrations with acoustical and/or fire sealant as required. Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe and duct penetrations. Seal penetrations with fire stop materials. Seal all penetrations through fire-or smoke-rated wall, partition, ceiling, or roof assemblies with firestopping system. Provide fire dampers as required. Refer to Architectural plans for location of rated assemblies.
7. Comply with MSS SP-69 for pipe hanger selections and applications. Support piping and tubing according to MSS SP-69 and manufacturer's written instructions. Hangers and strut

located outdoors shall be hot dip galvanized after fabrication in accordance with ASTM A123. Hanger hardware shall be hot dip galvanized or stainless steel.

8. The systems are in or attached to a building that has been assigned to Occupancy Category IV, i.e., essential or critical facilities, and are required for the continued operation of that facility following an earthquake. A Component Importance Factor of 1.5 shall be assigned to all systems and components. Provide positive seismic and wind restraints on systems and components required by the applicable building code and by the local authority having jurisdiction. This section covers design, supply, installation and inspection of complete SFRS (Seismic Force Resisting System) for all systems. Seismic Delegated-Design: Calculate the load requirements for seismically rated seismic restraints. Provide detailed submittal drawings of seismic restraints.

RADIANT FLOOR HEATING SHOWN SHADED

TYP. CEILING CASSETTE INDOOR UNIT

exposed structure

EXHAUST AIR TO THE DOAS UNIT

FRESH AIR FROM THE DOAS UNIT (HEATED AND DEHUMIDIFIED)

2-TON SPLIT SYSTEM

REMAINDER OF HEAT PUMPS TO BE PART OF A 6-TON HEAT RECOVERY VRF SYSTEM.

2-TON SPLIT SYSTEM

12" DIAMETER MAKEUP AIR DUCT

RANGE HOOD WITH BUILT-IN EXHAUST FAN

HRV-1 OA & EA WALL CAPS

DOMESTIC WATER & SPRINKLER ENTRANCE

18"X12" DUCTS UP TO DOAS-1 ON ROOF ABOVE

1,900 CFM EXH FAN IN APPRARTUS BAY, WITH ASSOCIATED INTAKE LOUVER(S).

CO & N2O GAS DETECTOR ACTIVATION

175 CFM CONSTANT FRESH AIR

6" BOLLARDS WITH PLASTIC COVER AND REFLECTIVE STRIPS

40' X 1' TRENCH DRAINS

APPARATUS BAY 2526 SF

BUILDING / GROUND 108 SF

EQUIPMENT 140 SF

HOSE & FOAM STO. / SPRINKLER & MAINTENANCE 131 SF

EQUIPMENT DECON 300 SF

DECON SHOWERS 132 SF

FITNESS ROOM 406 SF

MAT AREA

STATIONARY BIKE

TREADMILL

ELLIPTICAL MACHINE

BOTTLE FILL SANITIZER DISPENSER

TOWEL DISPENSER

EMERGENCY BUTTON

WEIGHT BENCHES

CORRIDOR 593 SF

(12) 2-TIER LOCKERS (24 TOTAL)

FLOOR TO CEILING STOREFRONT GLAZING

CUH

SHOWER 27 SF

SHOWER 27 SF

SHOWER 68 SF

SHOWER 65 SF

SOLID SURFACE W. UNDERMOUNT SINK

WALL HUNG SINK SOAP DISPENSER TOWEL DISPENSER

FF TOILET 52 SF

FLOOR DRAIN

WASHER & DRYER

HOT WATER HEATER

SS SHELF

SS SHELF

SS SHELF

GUARDS

5-TIER SS SHELF

SS COUNTER & SINK

SS SHELF

SS WASH BASIN & SURROUNDING

EYE WASH STATION

EXTRACTOR

FLOOR DRAIN

DISCONNECT SWITCHES FOR DRYER & EXTRACTOR

GEAR DRYER

5-TIER SS SHELF

24"X24" (24 TOTAL) TURN-OUT GEAR LOCKER MEZZANINE LIMIT ABOVE

TURN-OUT GEAR 262 SF

FLOOR DRAIN

VAV

EXTRACTOR FAN (WALL MTD)

DISPLAY CABINETS

EMS STO. 80 SF

36" CABINETS

5-TIER SS SHELF

SOAP DISPENSER

TOILET 52 SF

STO. 40 SF

5-TIER SS SHELF

CHANGING TABLE

CORRIDOR 593 SF

CUH

CUH

TV CABINET

75" WALL MOUNTED TV

STOREFRONT GLAZING

RECLINERS

LATERAL FILES

COAT CABINET

OFFICE 120 SF

PRINTER

FILE CABINET

DISPLAY CASE

TRANSACTION WINDOW

TACK BOARD

LOBBY 159 SF

DAY ROOM / KITCHEN 649 SF

REFRIGERATOR

COFFEE & MICROWAVE

COUNTER

CONFERENCE / REPORTS 192 SF

WHITE BOARD

WORK COUNTER

PANTRY

DISHWASHER

2-BOWL SINK

DINING TABLE WITH 6 CHAIRS

+800

+800

OUTDOOR PATIO

SOLID SURFACE COUNTER

TILE BACKSPLASH

RANGE

12 X12 CONCRETE PAVERS

DORM 6 154 SF

DORM 5 154 SF

DORM 4 154 SF

WARDROBES

DESK

MURPHY BED

DORM 3 154 SF

WARDROBES

DESK

MURPHY BED

DORM 2 154 SF

DORM 1 154 SF

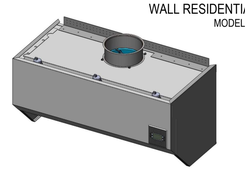
FIRST FLOOR AREA: 8,303 SF

5,430

exposed structure

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

WALL RESIDENTIAL HOOD
MODEL: WRH-T-XX



Allied Engineering, Inc.
Concept (SD) SKETCH
Divisions 21,22,23
January 25, 2024

context ARCHITECTURE
65 FRANKLIN STREET BOSTON, MA 02110 TEL 617.423.1400 WEB CONTEXTARC.COM

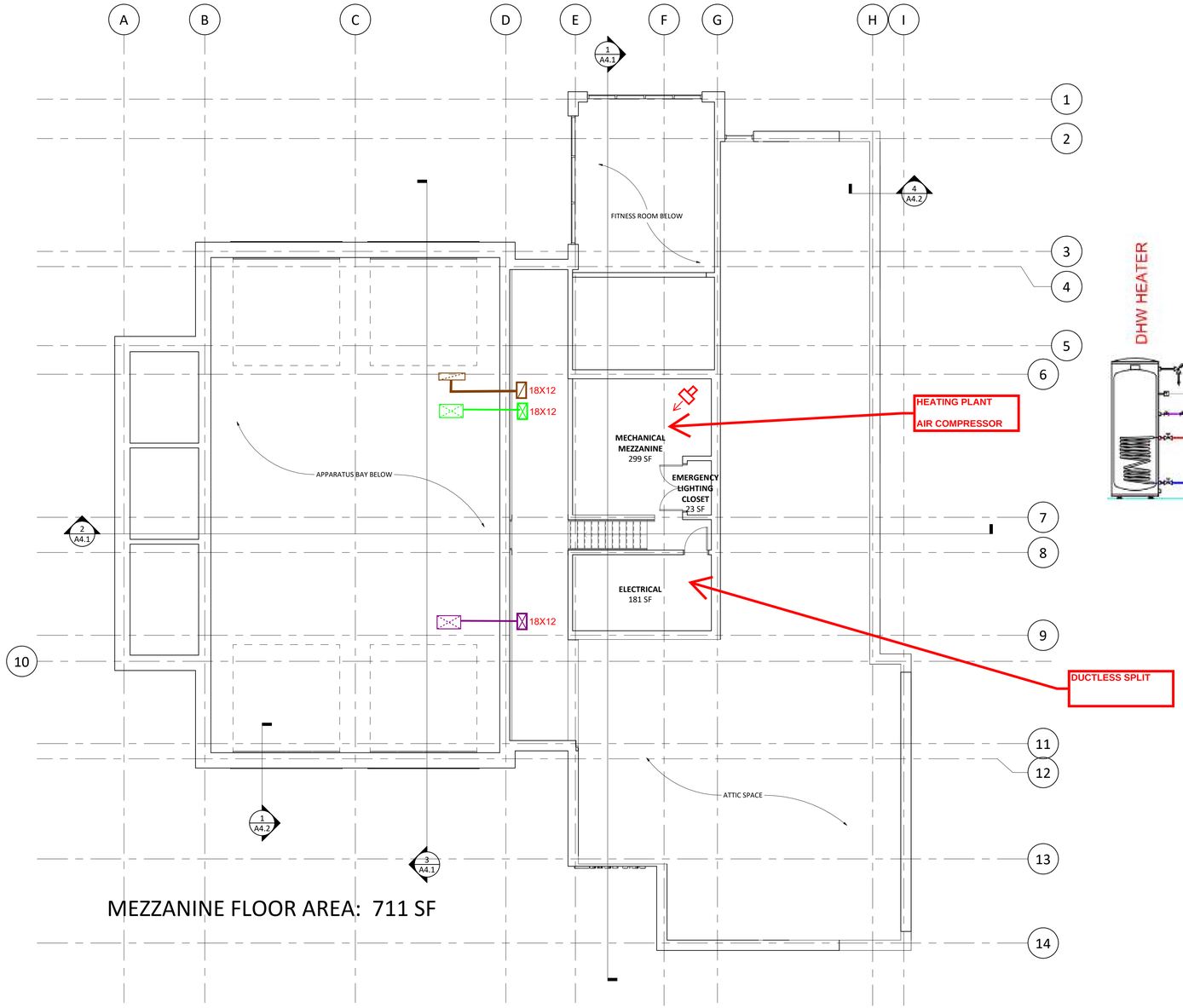
AUBURN ENGINE 2
181 South Main Street, Auburn, ME 04210
project number: 2315

FIRST FLOOR PLAN

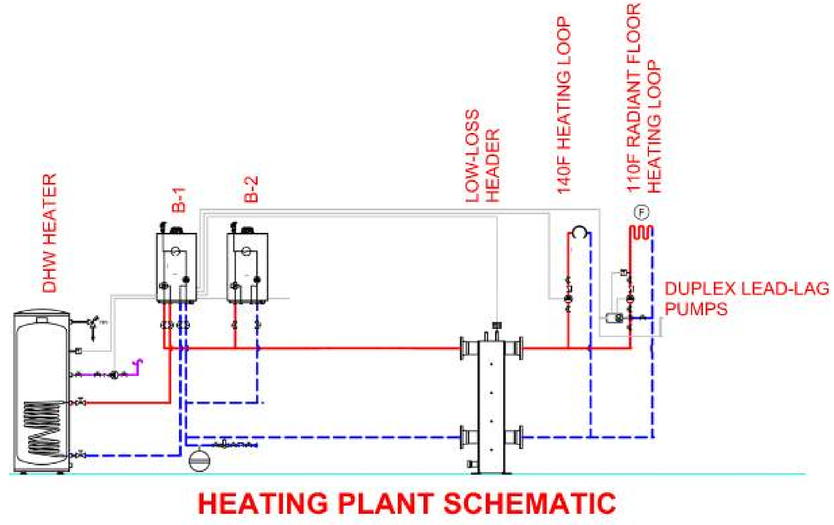
Scale: 1/8" = 1'-0"
Drawn by: MIA

No.	Issue	Date
1	SD SET	12/13/2023

M-1



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



HEATING PLANT SCHEMATIC

Allied Engineering, Inc.
Concept (SD) SKETCH
Divisions 21,22,23
January 25, 2024

context ARCHITECTURE
65 FRANKLIN STREET BOSTON, MA 02110 TEL 617.423.1400 WEB CONTEXTARC.COM

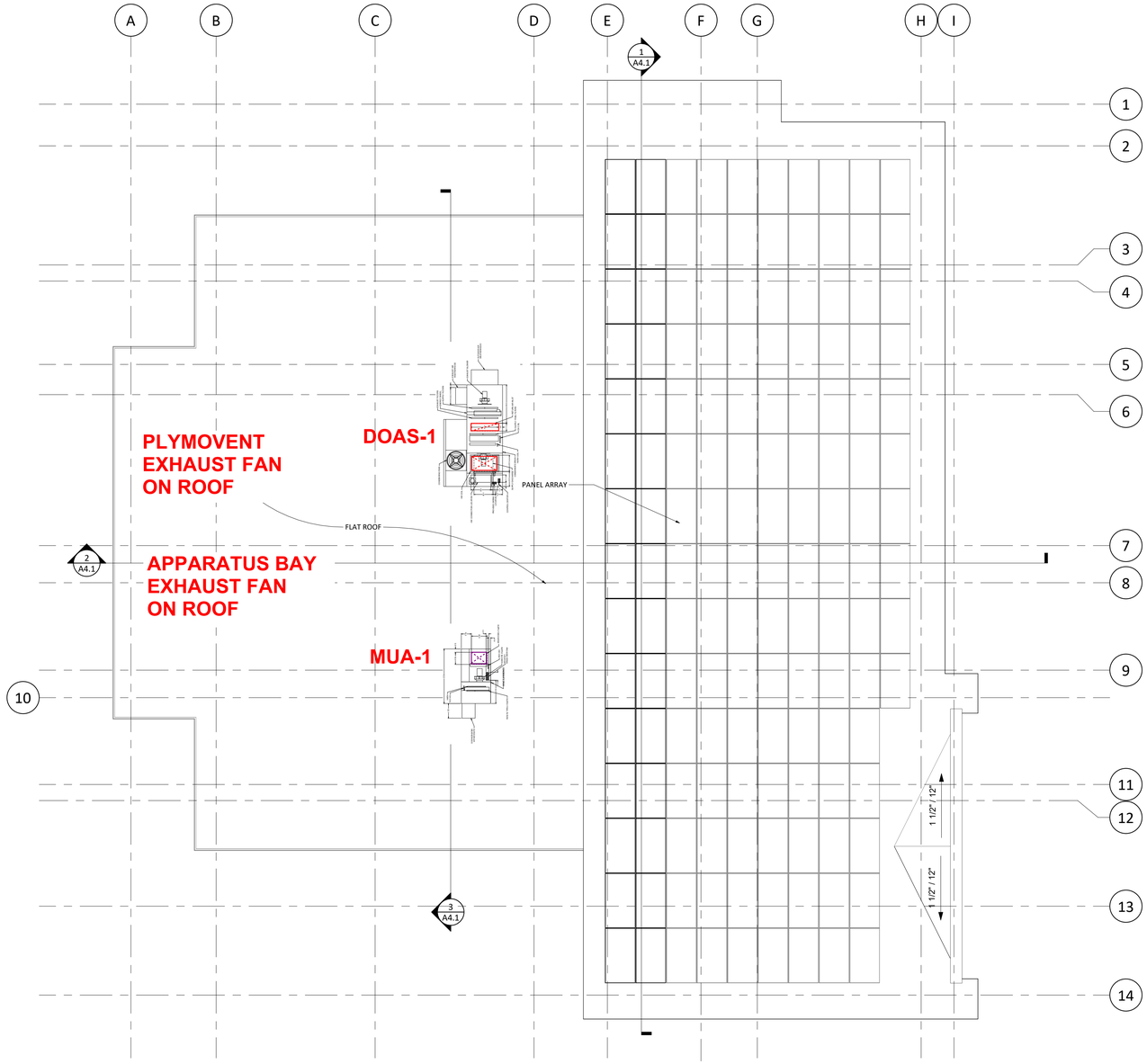
AUBURN ENGINE 2
181 South Main Street, Auburn, ME 04210
project number: 2315

MEZZANINE FLOOR PLAN

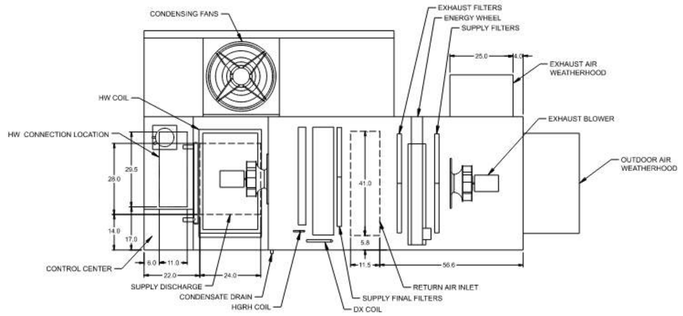
Scale: 1/8" = 1'-0"
Drawn by: MIA

No.	Issue	Date
1	SD SET	12/13/2023

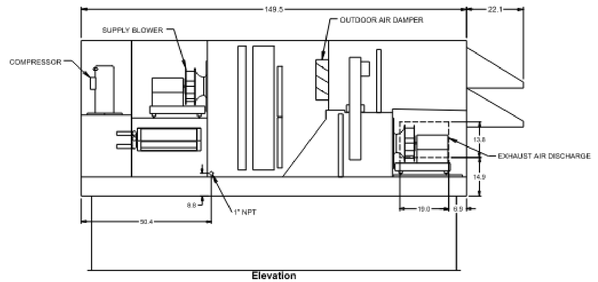
M-2



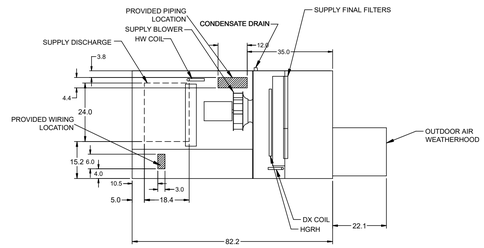
1 ROOF
1/8" = 1'-0"



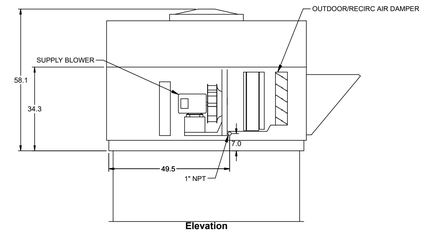
DOAS-1 **Plan**



Elevation



Plan



Elevation

MUA-1

Allied Engineering, Inc.
Concept (SD) SKETCH
Divisions 21,22,23
January 25, 2024

context ARCHITECTURE
65 FRANKLIN STREET BOSTON, MA 02110 TEL 617.423.1400 WEB CONTEXTARC.COM

AUBURN ENGINE 2
181 South Main Street, Auburn, ME 04210
project number: 2315

ROOF PLAN

Scale: 1/8" = 1'-0"
Drawn by: MIA

No.	Issue	Date

M-3

Auburn Fire Department – Engine 2

Concept (SD) Specification / Basis of Design Document – Divisions 26,27,28

January 25, 2024

DIVISION 26 – ELECTRICAL

260100 - Basic Electrical Requirements

- Minimum Requirements: The National Electrical Code (NEC), Underwriters Laboratories, Inc. (UL), the National Fire Codes, and National Fire Protection Association (NFPA) are a minimum requirement for work under this section. Design drawings and other specification sections shall govern in those instances where requirements are greater than those required by code.
- Temporary electrical service to the building during construction shall be provided under Division 26.
- Temporary Power Distribution: Provide weatherproof, grounded circuits with ground-fault interruption features, with proper power characteristics and either permanently wired or plug-in connections as appropriate for intended use. Provide overload-protected disconnect switch for each circuit at distribution panel. Space 4-gang convenience outlets (20 amp circuit) so that every portion of work can be reached with 100' extension cord.
- Temporary Lighting: Provide lighting of intensity and quality sufficient for proper and safe performance of the work and for access thereto and security thereof, minimum average illumination level in every room shall be 20 footcandles. Existing luminaires and lighting shall be permitted to be used for temporary lighting where they comply with specified requirements.
- Furnish products listed by Underwriters Laboratories, Inc., or other testing firm acceptable to authority having jurisdiction.
- Install all work according to the best practices of the trade and in accordance with NECA -1, "Standard Practices for Good Workmanship in Electrical Construction."

260519 - Low-Voltage Electrical Conductors and Cables

- All Conductors shall be copper. Conductors shall be stranded, except that solid conductors shall be permitted in type MC cable.
- Exposed branch circuit wiring in unfinished areas shall be type THWN or XHHW single conductors installed in metal raceways.
- Branch-circuit wiring shall be permitted to be type MC cable where concealed and where installed above acoustical ceilings.
- Minimum conductor size shall be #12 AWG.
- Use 10 AWG conductors for 20 ampere, 120-volt branch circuit home runs longer than 75 feet; and for 20 ampere, 208-volt branch circuit home runs longer than 200 feet.
- Use a separate neutral for each circuit.

260520 - Control-Voltage Electrical Power Cables

- Minimum Conductor size shall be 18 AWG.

260526 - Grounding and Bonding for Electrical Systems

- Provide a grounding electrode system for the electrical service in accordance with NEC Article 250. Include a perimeter ground ring around the entire building consisting of a bare, minimum #2/0 AWG copper conductor buried at least 30 inches below grade.
- Drive (3) ¾" x 10' copper ground rods spaced at least one rod length apart from one another at the service equipment. Provide a test well at one ground rod.
- Engage the services of an independent testing agency to test the resistance of the grounding system using the fall-of-potential method.
- Provide grounding electrode systems for separately derived systems including the emergency generator and dry type distribution transformers in accordance with NEC Article 250.
- Provide an insulated grounding conductor for every branch circuit.
- Connections to metal structure, ground rods and perimeter ground ring shall be made using exothermic welding except at test wells. Connections to metal piping systems shall be made using approved clamps. Equipment grounding connections shall be bolted.
- Provide a ¼" x4" x 12" long grounding bus bar in each electric room and in each MDF and IDF room. Connect the bus bars to the grounding electrode system using conductor sized to match the grounding electrode conductor.
- Provide bonding to the lightning protection system per NEC, NFPA 780 and UL 96A requirements.

260529 - Hangers and Supports for Electrical Systems

- Steel Channel: Galvanized or painted steel.
- Masonry Anchors: Rawl-Stud, Lok-Bolt, Saber-Tooth, or equal by Arro, Diamond, or Redhead.
- Hollow-Wall Anchors: Toggle bolt by Rawl or equal by Arro, Diamond, or Redhead.
- Anchors shall have sufficient holding power for intended use.
- Plastic anchors and powder actuated anchors are not permitted.
- Miscellaneous Hardware: Treat for corrosion resistance.

260533 - Raceways and Boxes for Electrical Systems

- Metal Conduit and Tubing: Hot dipped galvanized or sherardized steel.
- Minimum Size Conduit: 1/2".
- Flexible Conduit: Galvanized steel.
- Liquid tight Flexible Metallic Conduit: Flexible conduit with PVC jacket.
- Metal Fittings and Conduit Bodies: NEMA FB 1.
- Fittings for EMT: Steel. Set-screw type shall be permitted in dry locations. Use Watertight, concrete tight, compression style in damp locations.
- Fittings for Liquid tight Flexible Metallic Conduit: Galvanized steel or malleable iron, couplings and fittings threaded.
- Outlet boxes shall be metal, NEMA OS 1; galvanized steel, 4" x 4" x 2 1/8" with matching outlet or blank cover.
- Wiring in Classified Hazardous locations such as flammable storage areas shall be explosion proof and shall be sealed in accordance with NEC requirements.
- Raceways installed outdoors above grade and exposed within apparatus bays shall be galvanized rigid metal conduit (RMC) or intermediate metal conduit (IMC).

260543 - Underground Ducts and Raceways for Electrical Systems

- Underground feeders and service entrance conduits shall be concrete encased such that minimum concrete thickness is 2" around the entire conduit. (min. depth shall be 24" from finished grade top of

closest conduit to grade line) The service entrance conduits shall be encased where the underground conduit extends from the secondary side of the pole mounted utility transformer to the service equipment inside the facility.

- Underground feeders and branch-circuit conduits shall be schedule 40 PVC. Change to RMC or IMC at least 60" before stubbing above grade. Use RMC or IMC elbows for bends greater than 10 degrees.
- Proposed utility service shall be routed from a new pole mounted 150 kVA (final size by CMP) transformer and secondary riser at existing CMP pole (pole # 28) on South Main Street that is located in front of the existing fire station. Pole No. 28 currently serves the fire station electrical service by way of an existing secondary low voltage network. The existing pole mounted secondary network transformer shall be relocated from CMP pole No. 28 to CMP pole No. 27 and the secondary network will be cut back to CMP pole No. 27 to make way for the dedicated CMP pole mounted transformer installed at CMP pole No. 28 to serve the new fire station. The secondary service conductors shall be routed down the utility pole and underground to the new fire station main electrical room (via the exterior CMP CT metering cabinet). As the design progresses the proposed will plan be reviewed, confirmed and coordinated with CMP. There shall be (2) 3" conduits provided for the fire station secondary service feeder.
- Communication services are proposed to follow the same path at the secondary riser electrical service. There shall be (2) 4" conduits provided for the communication services. The conduits shall be routed down CMP pole No. 28 and underground to the main tel/com room at the mezzanine level of the new fire station.

260544 - Sleeves and Sleeve Seals for Electrical Raceways and Cabling

- Provide link-seal or approved equal sleeve seal systems where conduits penetrate foundation.

260548 - Seismic Controls for Electrical Systems

- Seismic bracing shall be provided to maintain electrical systems in place and operational after a seismic event in accordance with IBC. Coordinate seismic performance requirements with structural design.

260553 - Identification for Electrical Systems

- All Receptacles shall be labeled with Panel ID and Circuit Number with Label Maker
- All electrical panel breaker spaces on index cards shall be labeled with room numbers that they feed.
- Install wire markers on each conductor in panelboards, gutters, pull boxes, outlet and junction boxes, and at load connections.
- All Electrical Distribution Panelboard breakers shall be labeled using machine printed adhesive labels.
- Provide Arc flash hazard labelling in accordance with NFPA 70E.

260573 - Overcurrent Protective Device Coordination Study

- The work of this section includes providing an overcurrent protective device coordination study for the building power distribution system, including the standby generators. The purpose of the study shall be to ensure selective coordination of devices as required by NEC for Critical Operations Power Systems. The study shall be performed using EasyPower computer software developed by ESA, Inc. or a similar software application acceptable to the Owner.
- Overcurrent Protective Device Coordination Study Specialist Qualifications: Professional engineer in charge of performing the study, analyzing the time/current data, and documenting recommendations,

licensed in the state where Project is located. All elements of the study shall be performed under the direct supervision and control of this professional engineer.

260574 - Overcurrent Protective Device Arc-Flash Study

- The work of this section includes providing an arc-flash hazard study for the building power distribution system, including the standby generator. The study shall be performed using EasyPower computer software developed by ESA, Inc. or a similar software application acceptable to the Owner. The study shall comply with NFPA 70E and IEEE 1584 standards.
- Arc-Flash Study Specialist Qualifications: Professional engineer in charge of performing the study, analyzing the arc flash, and documenting recommendations, licensed in the state where Project is located. All elements of the study shall be performed under the direct supervision and control of this professional engineer.

260923 Lighting Control Devices

- Normally occupied spaces such as office, day room, kitchen and conference room shall utilize ceiling mounted vacancy sensors and wall mounted low voltage dimmable switches such that lighting is turned on manually and turns off automatically when the spaces are unoccupied.
- Normally unoccupied spaces such as EMS storage, storage, toilets, building/ground room shall utilize wall mounted switches with integral vacancy sensors such that lighting is turned on manually and turns off automatically when the spaces are unoccupied.
- Normally unoccupied spaces such as TOG room, Equipment Decon room, Decon Shower corridor, fitness room and apparatus bays shall utilize ceiling mounted occupancy sensors such that lighting is turned on automatically and turns off automatically when the spaces are unoccupied.
- Stairwell, vestibules and corridor lighting shall operate in normal mode at 50% output; once a building occupant triggers one of the occupancy sensors inside the respective stairwell or corridor/vestibule, the light fixture output shall increase to 100% output.
- Electrical, mechanical, equipment (air compressor) room, sprinkler & maintenance room, staff showers and Decon showers shall be equipped manual on/off switching only.
- Dorm Rooms shall be equipped with manual on/off dimmable switching.
- All emergency egress path automatic lighting controls shall be overridden upon activation of an alarm at the fire alarm control panel; bringing the automatically controlled lighting up to 100% output.
- Lighting in dorm rooms shall be automatically turned on to 50% output upon activation of the Spillman incident alarm notification system.
- All apparatus bay and TOG room automatic lighting controls shall be overridden upon activation of the Spillman incident alarm notification system; bringing all automatically controlled lighting up to 100% output.
- All occupied common area automatic lighting controls shall be overridden upon activation of the Spillman incident alarm notification system; bringing all automatically controlled lighting up to 100% output.
- Occupancy Sensors shall be Hubbell H-Moss Series with adaptive technology or approved equal.
- Exterior and lobby lighting shall be controlled by photocell. Photocells shall be Fisher Pierce, Mod. 7790B-SSS, 105-285VAC or approved equal. Provide an “Auto/Off/Manual ON” Switch to by-pass photocells and force on all exterior lights.

262413 Switchboards

- Manufacturer shall be Square D, General Electric, Eaton, or Siemens.
- Provide a 600Amp 208/120 volt, 3-phase, 4-wire distribution switchboard located in the mezzanine floor main electrical room.

- Provide switchboard with integral phase loss protection, power quality meter and surge protection device.

262416 Panelboards

- Manufacturer shall be Square D, General Electric, Eaton, or Siemens and shall be the same manufacturer as the switchboard.
- Branch-circuit panels shall be located within an electric room, electrical closet or mechanical room and IT rooms or elsewhere as required to supply branch circuits for mechanical systems, administrative areas, and support areas and equipment areas.
- Panelboard covers shall be hinged the full length of the cover. All covers shall be lockable.
- Branch-circuit overcurrent protective devices shall achieve selective coordination with upstream overcurrent protective devices.
- Provide at least 25% spare capacity in each panelboard beyond initial circuit requirements.
- Provide AFCI circuit breakers for circuits serving living areas (dorm rooms, day room, kitchen) and any other locations required by the NEC.
- Provide GFCI circuit breakers for required loads that cannot be served by an accessible GFCI receptacle; accessible as defined by the NEC.
- Provide the following panelboards (refer to one line for additional information):
    - MP1 – 120/208 volt, 3 phase, 4 wire, 100 Amp MCB, 42 poles (HVAC loads)
    - MP2 – 120/208 volt, 3 phase, 4 wire, 225 Amp MCB, 42 poles (HVAC loads)
    - LP1 – 120/208 volt, 3 phase, 4 wire, 100 Amp MCB, 42 poles (Ltg. & Misc. pwr. loads)
    - RP1 – 120/208 volt, 3 phase, 4 wire, 150 Amp MCB, 42 poles (Kitchen & IT loads)
    - OP1 – 120/208 volt, 3 phase, 4 wire, 225 Amp MCB, 42 poles (Owner equip. loads)
    - PV – 120/208 volt, 3 phase, 4 wire, 150 Amp MCB, 42 poles (PV inverter loads)
- Provide power to the following HVAC loads from panel MP2:
    - DOAS-1
    - MUA-K
    - IT (tel/com) room AC unit (1-ton split system)
    - Kitchen hood
    - Boilers and heating plant pumps
    - DHW equipment
    - EF- Plymo-vent
    - EF- Gear dryer
    - EF- clothing dryer
    - EF- mech room
    - Dorm AC unit (2-ton split system)
    - Day room/Kitchen AC unit (2-ton split system)
- Provide power to the following HVAC loads from panel MP1:
    - HP units (living space); approx. 9 units.
    - CUH units (vestibules and lobby); approx. 3 units
    - UH units (bays and mech room); approx. 3 units.
    - HRV unit (apparatus bay)
- Provide power to the following HVAC loads from panel OP1:
    - Apparatus air compressor (7.5 HP)
    - Decon washer.
    - Decon dryer.
    - Apparatus bay garage doors; 4 doors
    - Apparatus bay Ice machine

262713 Electricity Metering

- Utility metering (secondary side) and CT cabinet shall be provided at the building service entrance point. Install the CT cabinet and meter socket on the building exterior in a location and manner that aligns with the CMP meter customer installation requirements.
- Provide an electronic kilowatt-hour and kilowatt customer demand meter that is capable of ethernet connection at the service entrance switchboard.

262726 Wiring Devices

- Wiring devices shall be Specification grade and tamper proof throughout.
- Convenience receptacles shall be located according to programming needs.
- Convenience Receptacle Configuration, general use: NEMA 5-20R.
- At counter tops, receptacles shall be provided at a maximum spacing of 24" on center.
- Provide GFCI protection (receptacle type or breaker type when receptacle in inaccessible) for 120-volt receptacles located within 72" of any edge of a sink, vending machines, kitchen and laundry equipment (including range and clothes dryer), apparatus bays, fitness room, equipment decon. room, turn-out gear room, shower and toilet rooms, all technology rooms, all mechanical and electrical rooms, lobby, building exterior and other areas as required by code.
- Provide AFCI protection (breaker type) for 120-volt receptacles located in dorm rooms, day room and other areas as required by code.
- A duplex receptacle with dual USB ports will be installed in dorm rooms (at desk), day room, conference room and fitness room.
- A GFCI duplex receptacle will be installed on the wall above the top shelf of each TOG locker.
- GFCI receptacles will be installed at selected locations on the building exterior and accessible from grade (e.g. for holiday decorations, patio area, bay doors).
- GFCI work receptacles will be installed within 50 feet of any root top HVAC equipment.
- Each stairwell landing shall have a duplex convenience receptacle.
- Each hallway shall have a receptacle at least every 25 feet.
- All switches, and receptacles shall be Ivory in color. All plates shall be stainless steel.
- In apparatus bays, each convenience receptacle circuit shall not exceed four duplex receptacles per circuit. In other areas, each convenience receptacle circuit shall not exceed six duplex receptacles per circuit. Alternate circuiting such that adjacent receptacles shall be connected to different circuits to minimize outages.
- (2) Drop cord reels each with a GFCI duplex receptacle shall be provided in each apparatus bays for truck charging power (one at front each bay and one at rear of each bay)
- Wiring devices in damp or wet locations shall be weatherproof gasketed cover plates suitable for hose down.
- Receptacles dedicated for specific equipment shall be per NEMA standard configurations matched to the equipment served.

262813 Fuses

- Type RK5, time delay cartridge fuses. Provide type RK1 fast acting fuses where recommended in the overcurrent protective device coordination study.
- Provide fuses in all safety switches. Coordinate fuse ratings with equipment to be protected.

262816 Enclosed Switches and Circuit Breakers

- Manufacturer shall be Square D, General Electric, Eaton, or Siemens.
- Provide safety switches for HVAC equipment and owner furnished equipment in accordance with code requirements.
- Disconnect switches shall be heavy-duty type.
- Provide NEMA type 1 enclosures for indoor dry locations type 4X enclosures for indoor wet locations. Provide NEMA type 3R enclosures for outdoor locations.

262913 Manual and Magnetic Motor Controllers

- Manufacturer shall be Square D, General Electric, Eaton, or Siemens.
- Starters shall be combination type with integral fusible switch type disconnecting means.
- Provide hand/off/automatic switches "run" indicator light on all starters.
- Provide starters for motorized equipment that does not include integral factory-wired controls.

263213 Diesel Emergency Engine Generator

- Manufacturer shall be Caterpillar, Generac or Kohler
- Provide an 125kW/156.3 kVA 208/120-volt, 3-phase, 4-wire stand-by power generator with diesel fuel source (base tank with 72 hours of fuel available running at 100% output). The stand-by generator set will serve as the alternate power source for the facility. The exact generator capacity will be confirmed as the design advances.
- Provide a weatherproof generator enclosure with Level 2 sound attenuation.
- Configured to serve entire building operation ("business as usual" mode) during a normal power outage and is sized to support 100% of the normal power electrical service capacity.

263353 Static Uninterruptable Power Supply

- Provide power for (4) – 1,500-watt rack mounted UPS units; exact quantity and power capacity shall be confirmed as design develops (furnished and installed by City's data/com vendor)

263100 Photovoltaic (PV) Array Provisions

- Manufacturer shall be determined by PV design/build team.
- Coordinate with the PV design team to obtain a copy of their design.
- The PV array capacity is expected to be in the range of 35 to 45 kW if connected to the building electrical service behind the main circuit breaker.
- The PV array design shall include all DC components, DC wiring, Rapid shut down disconnect switch, DC to AC inverters and AC inverter output panelboard (150 Amp, 208 volts, three phase, 4 wire), inverter circuit breakers and branch feeders to the respective inverters.
- Provisions to be made by the electrical contractor will be a 150Amp-3P input circuit breaker in the main switchboard (208 volt) and a 150A feeder to the AC inverter output panel (installed and designed by others).
- The proposed 150A provision is based on maximum allowed connected to the secondary side of a potential service switchboard 600Amp MCB with an 600Amp bus per NEC.

260800 Commissioning of Electrical Systems

- Provide full building MEP system commissioning including integrated testing.
- Pre-functional checkout of normal and emergency power distribution including generators and automatic transfer switches.
- Verification of circuiting via 20% sample of distribution panels and outlet testing

- Provide specifications outlining the contractors' responsibilities to support integrated testing as defined below.
- Perform integrated testing to ensure all building systems operate per the project specifications under both normal and emergency power conditions. This includes testing of integration between HVAC DDC, fire alarm, electrical, lighting, and security systems. Systems will also be verified to operate normally without any loss of functionality under emergency power as defined by the project specifications.

263600 Transfer Switch

- Manufacturer shall be ASCO, RussElectric and ESL
- Suitable for use as service entrance equipment, with disconnecting means and overcurrent protection for both the utility and standby sources.
- The 600 Amp, three phase automatic transfer switch shall be 3-pole with solid neutral and be provided with by-pass operation feature.
- Automatic transfer switch shall be suitable for NFPA 110 level 1 emergency systems.
- Manual 600 Amp, three phase "Storm Switch" integrated into stand-by feeder to allow for connection to portable temporary generator unit (should permanent unit be off line) or connection to portable lad bank unit for periodic testing

264113 Lightning Protection for Structures

- Provide a UL master labelled roof-mounted lightning protection system for the building and its emergency generator.
- Material for conductors and air terminals shall be copper.
- Down conductors shall be installed in raceways that are concealed within building finishes.
- Comply with UL96, UL96A, and NFPA 780.

265119 LED Interior Lighting

- LED lighting and automatic controls shall be provided throughout.
- Illumination levels shall be in accordance with Illuminating Engineering Society of North America (IES) recommendations.
- Administrative areas shall be illuminated LED luminaires with high-performance optics for general lighting.
- Luminaires in classified hazardous locations such as flammable liquid and gas storage areas shall be suitable for the Class I, Division 1 locations.
- Luminaires in damp or wet locations shall be recess mounted, sealed, gasketed, and suitable for wash down.
- Lighting fixture types per space shall be as follows (refer to attached preliminary light fixture schedule for additional information):
    - Apparatus Bay – Type H8
    - Building/Ground – U4
    - Equipment Rm. – U4
    - Sprinkler & Maintenance Rm. – U4
    - Fitness Rm. – R1
    - Vestibules and Corridors – R1
    - Lobby – R2
    - Equipment Decon Rm. – S1
    - Turn Out Gear Rm. – R1

- Toilet Rms. – R2 and W1
- Shower Rms. – R2 and W1
- EMS Stor. – U2
- Stor. Rm. – U2
- Dorm Rms. – R1
- Day Rm. – R1
- Kitchen/Dining – R1 and P1 (over table)
- Offices – R1
- Conference Rm. – R1
- Electrical, mechanical and IT rms. – U4
- Exterior wall pack at egress Doors – W4
- Exterior wall pack at bay doors – W3
- Exterior wall pack around building – W5 and W6
- Stair to Mezz. – W2

265619 LED Exterior Lighting

- Exterior lighting shall be provided by wall mounted and recessed canopy LED luminaires. Luminaire optics shall provide full cutoff control.
- Parking areas and driveways shall be illuminated by pole-mounted LED luminaires with full cutoff control.
- Proposed pole heights shall be 12 to 15 feet due to proximity of adjacent residential areas.
- Each parking lot pole shall be provided with a duplex GFCI weatherproof (in-use) receptacle. Provide provisions for security cameras to be installed on strategically located poles.
- Parking lot will be provided with power and data provisions to serve (2) dual charger electric vehicle charging posts (40A-2P c/b, 7000 watt each); this provision will allow for (4) parking spaces to be outfitted with level 2 AC electric vehicle EV charging capabilities.

265219 Emergency and Exit Lighting

- Emergency egress lighting shall be provided in accordance with code requirements using two lamp head wall mounted battery back (type EBU); the emergency generator shall be a stand-by backup power source.
- Provide cast metal illuminated exit signs in accordance with code requirements to mark means of egress (type EXIT). Exit signs shall be provided with integral battery back-up power; the emergency generator shall be a stand-by backup power source.

DIVISION 27 – COMMUNICATIONS

General

- Comply with BICSI Standards.
- Coordinate with the city's vendor to obtain a copy of their data/com and WIFI design.
- Coordinate with the city's vendor to obtain a copy of their A/V design.
- Provide conduit, boxes and 120-volt power provisions to support the vendor's data/com, WIFI and A/V designs.

270528 Pathways for Communications Systems

- Provide conduit between tel/com rooms.

271100 Communications Equipment Room Fittings

- Floor mounted 19" rack.
- Category 6 patch panels with number of fields as required for the initial installation plus 25% spare capacity.
- Add a 2nd floor IT MDF/Demarc wiring room capable of supporting space for 1 rack; provide connection with single mode fiber optic from the 1st floor ITend room.

271500 Communications Copper Horizontal Cabling
- Comply with TIA/EIA-568-B.2, Category 6.
- Provide TIA/EIA-568-B.2, IDC type connecting hardware with modules designed for punch-down caps or tools. Cables shall be terminated with connecting hardware of same category or higher.
- Provide one data/com jacks per each dorm room desk.
- Provide at least one telecommunications outlet per wall in each office, day room, conference room and fitness room.
- Communications outlets damp or wet locations shall include weatherproof gasketed cover plates suitable for hose down.

DIVISION 28 – ELECTRONIC SAFETY AND SECURITY

280513 Conductors and Cables for Electronic Safety and Security
- Minimum conductor size shall be 18 AWG for power-limited circuits and 14 AWG non-power-limited circuits.

281300 Access Control
- Coordinate with the city's vendor to obtain a copy of their access control design.
- Selected doors shall be equipped with card readers.
- Provide conduit, boxes and 120-volt power provisions to support the vendor's design.

284800 Emergency Response Systems (Spillman and IAR incident alert systems)
- Coordinate with the city's vendor to obtain a copy of their paging/intercom design.
- Provide conduit, boxes and 120-volt power provisions to support the vendor's design.

283111 Digital Addressable Fire Alarm System
- An automatic, addressable alarm system shall be provided. Fire alarm system shall comply with requirements of NFPA 72, NFPA 101, the Americans with Disabilities Act, and local requirements.
- The control panel shall be located in the main electric room.
- Provide a remote annunciator at the building main entrance.
- Provide digital alarm communicator (DACT) system for alarm/trouble and supervisor signal transmission to third party monitoring station.
- Provide radio alarm communicator (AES radio master box with antennae) system for alarm signal transmission to municipality.
- Provide Knox key box; model and location selected by Auburn Fire Department

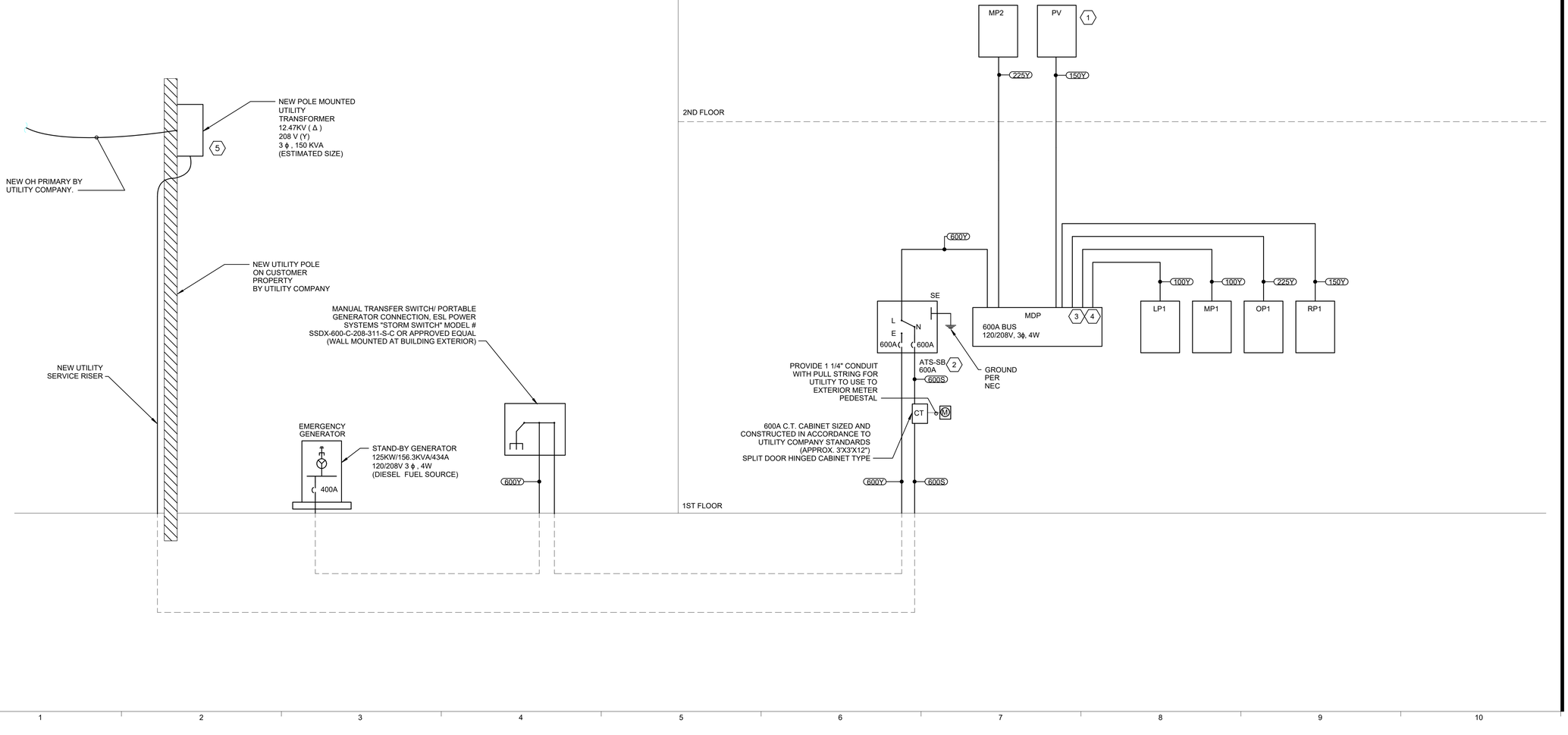
LUMINAIRE SCHEDULE

TYPE	DESCRIPTION	MFR	CATALOG SERIES NUMBER **SEE NOTE 1**	MOUNTING	VOLTS	LAMP/LIGHT ENGINE			NOTES
						WATTS	LUMENS	TYPE	
R1	2' X 2' ARCHITECTURAL LED FLAT PANEL WITH MULTIPLE LUMENS	ELITE	22-FPL1-LED-3000L-DIM10-MVOLT-35K-85	RECESSED	120	31.27	3000	LED ARRAY 3500K	
R2	4"SD LED DOWNLIGHT	INTENSE	SD4DR-L235-D101-WF-IC430HZ-SF	RECESSED	120	14	1500	LED ARRAY 3500K	
W1	24" BATHROOM VANITY WALL SCONCE	MODERN FORMS	WS-3624-35-BN	WALL ABOVE MIRROR	120	28	1650	LED ARRAY 3500K	
W2	STAIRWELL LIGHT WITH INTEGRATED BI-LEVEL OCCUPANCY SENSOR	KENAL	MLHA8-F-MW-PP-IS-MS	WALL MOUNT/SURFACE 8'-0"AFF	120	26.3	3049	LED ARRAY 3500K	
W3	EXTERIOR WALL EGRESS FIXTURE	AEL	AEL-12IN-NODIM-15W	WALL	120	10	760	LED ARRAY 3500K	6
W4	EXTERIOR WALL EGRESS FIXTURE	AEL	AEL-36IN-NODIM-15W-35K	WALL	120	26.3	3049	LED ARRAY 3500K	6,7
W5	EXTERIOR WALL PACK	CREE	XSPW-B-WM-4ME-8L	WALL	120	72	8,475	LED ARRAY 4000K	
W6	EXTERIOR WALL PACK	CREE	XSPW-B-WM-4ME-8L	WALL	120	31	4,270	LED ARRAY 4000K	
H8	8' LINEAR BAY LED FIXTURE	ORION	LMAF2818LUNVFD840LAFG	SUSPENDED 18'-0" AFF	120	104	16,390	LED ARRAY 4000K	
P1	4' PENDANT LIGHT	CORONET	LS2 CAP UPDN - 4-35-LOW-UNV-DB	SUSPENDED 7'-0" AFF	120	20	1,642	LED ARRAY 3500K	
S1	4' STRIP LIGHT	ELITE	4-ORW-LED	SURFACE	120	31.6W	4373	LED ARRAY 3500K	
U2	2' STRIP LIGHT	ELITE	2-OEC-LED	SURFACE/CHAIN	120	16.7W	2448	LED ARRAY 4000K	
U4	4' STRIP LIGHT	ELITE	4-OEC-LED	SURFACE/CHAIN	120	31.6W	4373	LED ARRAY 4000K	
EBU	TWO HEAD LED EMERGENCY BATTERY UNIT	ELITE	ELM-LED-804-X	WALL 6" BELOW CEILING	120VAC 9.6VDC	5.7	520	LED 6000K	
EXIT	RECESSED OR SURFACE MOUNT EXIT SIGN	CONTECH	REXA	RECESSED/SURFACE	120VAC 4.8VDC	3	PER CODE	LED	3,7

	NOTES
1	**NOTE THAT THESE NUMBERS ARE NOT COMPLETE CATALOG NUMBERS. PROVIDE ALL REQUIREMENTS ON SCHEDULE, NOTES, SPECS, AND DRAWINGS COMBINED.**
2	**PROVIDE SPECIFIED LUMINAIRES OR APPROVED EQUAL. PROPOSED SUBSTITUTION OF ANY SPECIFIED FIXTURE MUST BE SUBMITTED FOR REVIEW AND PRE-APPROVAL WITH ITL (INDEPENDENT TESTING LABORATORY) PHOTOMETRIC REPORT INCLUDED 10 DAYS PRIOR TO THE BID DATE. POINT-BY-POINT PHOTOMETRIC LAYOUTS FOR ROOMS WHERE LIGHTING IS SUBSTITUTED OR SAMPLE FIXTURES FOR REVIEW MAY BE REQUIRED FOR ANY PROPOSED EQUAL TO SPECIFIED FIXTURES. SUBSTITUTION SUBMITTAL SHALL INCLUDE VERIFICATION OF ANY DLC OR ENERGY STAR RATINGS THAT ARE REQUESTED ON THE DRAWINGS OR IN THE SPECIFICATIONS.**
3	PROVIDE WALL,CEILING, OR PENDANT MOUNTING AS INDICATED ON PLANS. PROVIDE NUMBER OF FACES AND ARROWS AS INDICATED.
4	VERIFY CEILING STRUCTURE AND MOUNTING HEIGHT PRIOR TO ORDERING ANY LIGHT FIXTURES.
5	PROVIDE LENGTHS AND SHAPES AS SHOWN ON PLANS. PROVIDE ALL FITTINGS, COMPONENTS, AND POWER SUPPLIES REQUIRED TO CREATE INDICATED ARRANGEMENTS.
6	PROVIDE INTEGRAL PHOTOCELL
7	PROVIDE INTEGRAL BATTERY BACK UP

1. COORDINATE WITH SOLAR ARRAY DESIGN TO PROVIDE THE REQUIRED QUANTITY AND AMPACITY CIRCUIT BREAKERS TO SUPPORT THEIR PV ARRAY DESIGN.
2. 3P, 4W SERVICE ENTRANCE RATED AUTOMATIC TRANSFER SWITCH, OPEN TRANSITION, 4 POLE
3. PROVIDE ELECTRONIC KWH/KW DEMAND METER FOR OWNER INFORMATION TO MONITOR PANEL.
4. PROVIDE PANEL WITH INTEGRAL SURGE PROTECTION DEVICE.
5. FINAL SIZE OF UTILITY TRANSFORMER SHALL BE DETERMINED BY CMP.

F8	KEY NOTES



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Allied Engineering
Structural Mechanical Electrical Commissioning

160 Veranda Street
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T: 207.221.2260
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Web: www.allied-eng.com

Allied Project No: 23071

Cad File:

PROJECT NAME:

AUBURN ENG. 2 FIRE STATION

SEAL:

NOT FOR CONSTRUCTION

△ REVISIONS

DATE OF ISSUE: JAN. 26, 2024

PROJECT NUMBER: 2000.01

STATUS: NOT FOR CONSTRUCTION

POWER ONELINE DIAGRAM

E5.0

NOT FOR CONSTRUCTION

Thornton Tomasetti

Memorandum

TO	Julia Tate, AIA, LEED AP BD+C	FROM	Ethan A. Rhile, P. E. Zachary T, Chabot, P.E.
COMPANY	Simons Architects	DATE	January 26, 2024
RE	Conceptual Structural Narrative Auburn Engine 2	PROJECT NO	
CC	Jeff Shaw, AIA LEED AP BD+C, MCPPO - Context Architecture	PROJECT NAME	Auburn Engine 2

STRUCTURAL REFERENCE CODES, STANDARDS AND RELATED DOCUMENTS

1. International Building Code, 2015 Edition
2. ASCE 7-10 Minimum Design Loads for Buildings and Other Structures
3. ACI 318-14 Building Code Requirements for Structural Concrete
4. ACI 530-13 Building Code Requirements for Masonry Structures
5. AISC Steel Construction Manual (Fourteenth Edition)
6. S100-12 North American Specification for the Design of Cold-Formed Steel Structural Members
7. AISI/AWS National Design Specification (NDS) for Wood Construction, 2015 Edition

Structural Systems

1. Building Foundation Systems

    a. Preliminary geotechnical subsurface exploratory work was conducted on the site by SW Cole Engineering of Gray, Maine as detailed in a report titled “Proposed Engine 2 Fire Station Replacement 180 South Main Street Auburn, Maine dated December 8, 2023.

        i. The area of the proposed building pad consists of a surficial layer of topsoil overlying glaciomarine soil deposits consisting of very stiff to stiff silty clay extending to depths about 10 to 15 feet below ground surface. Softer silty clays with frequent sand seams extend to the bottom of the glaciomarine soil layer between 13 and 30 feet below ground surface. There is a glacial till layer consisting of loose to medium dense silty sand or silt and sand with some gravel and cobbles underlying the glaciomarine deposits. SW Cole encountered a refusal

surface at a depth of 19.1 feet below ground surface at one of the borings which may indicate the presence of a boulder or bedrock.

ii. The soils encountered at the test borings were damp to moist from the ground surface. Wet to saturated soils were encountered below a depth of 10 feet below the ground surface. SW Cole notes that groundwater likely becomes perched on the silts and clays within the sand seams and layers of the soil profile.

iii. Based on the subsurface findings, it is anticipated the foundation subgrade soils for the proposed building will be the stiff upper crust soils in the glaciomarine deposit layer. Care should be taken in selecting the finish grades, so the foundations do not bear on the softer silty clay soils. Excavation of soil subgrades should be completed with a smooth-edged bucket to lessen subgrade disturbance.

iv. A layer of compacted Crushed Stone wrapped in geotextile filter fabric should be provided below all footings to help transition to soil bearing conditions and to help minimize differential settlement between differing subgrade materials.

v. On-grade floor slabs should bear on at least 18 inches of properly compacted Structural Fill overlying properly prepared subgrades. Underslab fill to be coordinated with radon mitigation requirements specified by a radon specialist. Radon mitigation piping may be incorporated in this fill.

vi. Perimeter foundation underdrains will be provided for the proposed building.

vii. Topsoil and soils with organics must be completely removed from beneath the proposed building and backfilled with properly compacted Structural Fill or Granular Borrow.

viii. Any grade-raise fills beneath the building should be limited to approximately 3 feet and placed a minimum of 30 days prior to excavating for foundations to reduce post-construction settlement from the compressible clay layers underlying the site.

b. Foundations: Conventional spread footing and frost wall foundations bearing on native sand, silt, and very stiff to stiff silty clay beneath compacted fills will support the building structure. Footings are to be underlain with at least 6 inches of compacted Crushed Stone and wrapped in filter fabric, bearing on properly prepared subgrades.

   i. Presumptive Design Frost Depth: 5 feet

   ii. Presumptive Allowable Soil Pressure: 3.0 ksf

   iii. Presumptive IBC Seismic Site Class: D

      1. The preliminary geotechnical report does not specify a Seismic Site Class. If the final geotechnical report indicates a Seismic Site Class of E, we recommend performing additional geotechnical testing (i.e., shear-wave velocity testing) to attempt to justify a Seismic Site Class of D or lower. A risk category IV building with Seismic Site Class E results in a Seismic Design Category D, which would trigger costly structural design requirements for seismic detailing. A lower Seismic Site Class reduces the Seismic Design Category, and does not trigger these additional seismic detailing requirements.

      2. Additional design parameters will be provided in the final geotechnical report.

      3. Presumptive geotechnical data shall be finalized by the geotechnical engineer prior to commencement of Design Development to allow for seamless delivery of the structural design.

c. Entry slabs will be surrounded with frost walls and underlain with free draining structural fill as frost mitigation measures.

d. Column Piers: At each building column that exists adjacent to the exterior, reinforced concrete piers will be detailed to be cast integral with the walls. Pier sizes and reinforcement will be determined in later design phases.

e. Slabs on Grade: Slabs on grade will bear on materials as indicated above. The slab in the Apparatus Bay will likely be 8 inches thick and reinforced with rebar. Apparatus Bay joints will be doweled with steel plate dowels. We anticipate slabs in other areas will be 4 inches thick and reinforced with welded wire reinforcement. Reinforcement sizes and spacing will be determined in later design phases.

2. Building Superstructure

a. The building will be one story in height except for a mechanical mezzanine adjacent to the Apparatus Bay and beneath the high elevation side of the monoslope roof.

b. A combination of steel bar joists and wide flanged beam construction was selected as the primary structural system based on required strength, cost, availability and expeditious construction schedule.

i. Floor Framing System: The mezzanine level will be supported by wide flange steel beams designed to act composite with the slabs. The composite action is achieved through headed steel studs welded to the top of beam flanges and cast into the concrete slabs. This method offers increased beam efficiency as well as improved floor performance. Elevated concrete slabs are anticipated to be 5 ½" total depth (3 ½" NWC over 2", 18 gage, galvanized composite steel deck). The slab on deck in this system can achieve a 1-hour fire rating without additional measures. Fire rating requirements shall be confirmed by the architect.

The attic area adjacent to the mezzanine level will be supported by the bottom chord of wood trusses and sawn lumber joists.

ii. Roof Framing System: Flat roofs above the Apparatus Bay and equipment storage rooms will be framed with open web steel joists. Long span joists will support the roof directly above the Apparatus Bay and storage spaces immediately adjacent to the Apparatus Bay excluding the monoslope roof. 1.5" deep type "B" metal roof deck and will span the roof joists. All roof decking will be galvanized.

The monoslope roof will be supported by glulam rafters in the Fitness Room and at the cantilever section at the entrance. Double 2x12 sawn

lumber will support the roof above the mechanical mezzanine and ganged wood trusses will support the remaining roof area. Structural insulated panels create the roof diaphragm and will be supported by the sawn lumber rafter, glulam rafters, and ganged wood trusses.

Alternatively, the monoslope roof could be framed with steel bar joists or wide flange steel beams.

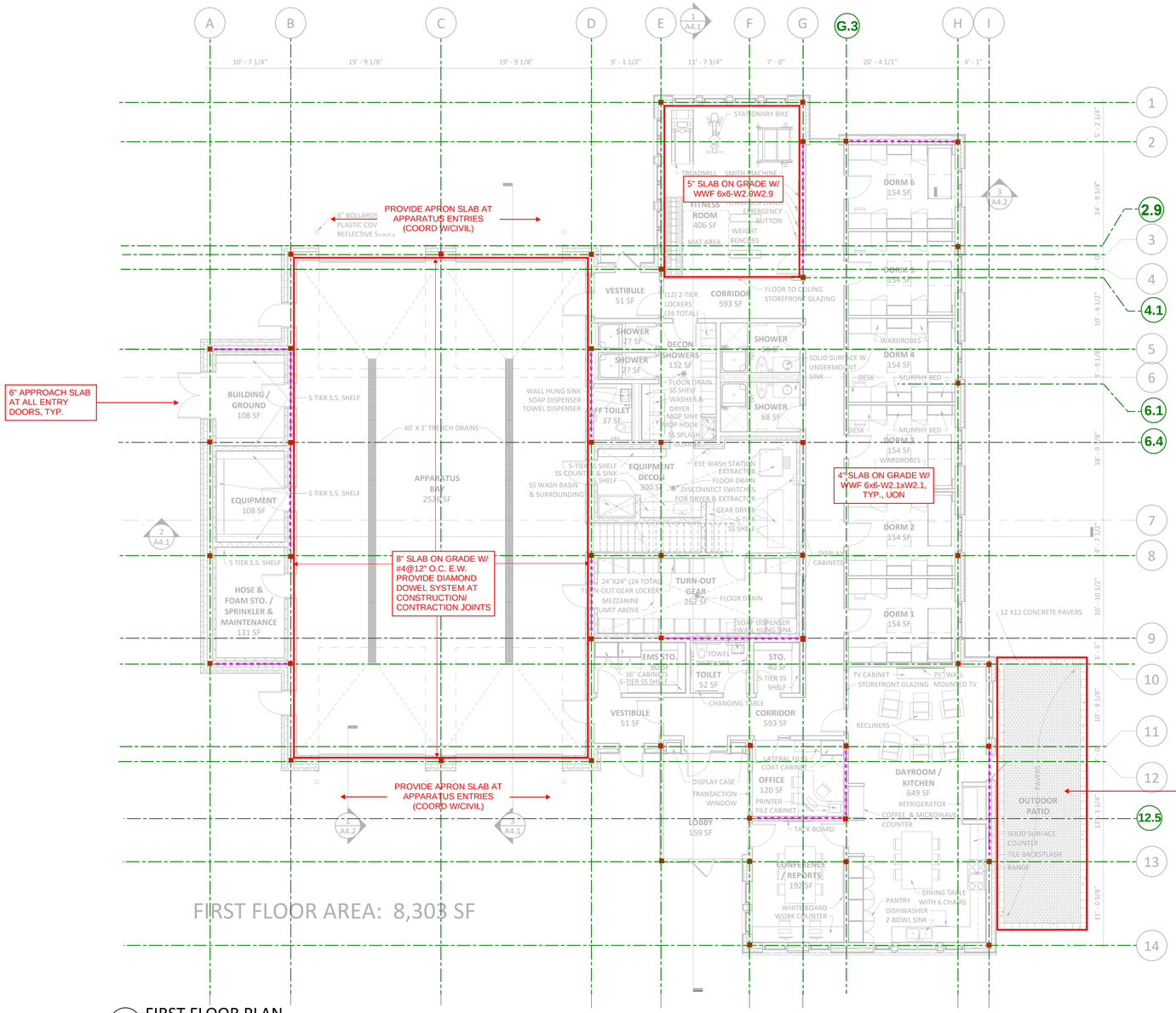
iii. PV Allowance: The roof will be designed with a load allowance to allow for the installation of photovoltaic panels.

iv. Rooftop Units: Additional structural framing will be required to support HVAC units on the flat roof above the Apparatus Bay.

c. Vertical Framing System: Building columns will be steel tube shapes. At this time, we anticipate that 6 or 8 inch square HSS tubes will be required to support the building vertically.

d. Lateral Force Resisting System (LFRS): Steel braced frames comprised of HSS tube steel sections in various configurations will serve as the LFRS for the building. Braced frames offer an economical system that is relatively stiff compared to other systems. It is critical that the Seismic Site Class be confirmed by the Geotechnical Engineer to inform decisions regarding the LFRS. Reference foundation section b.iii for additional information.

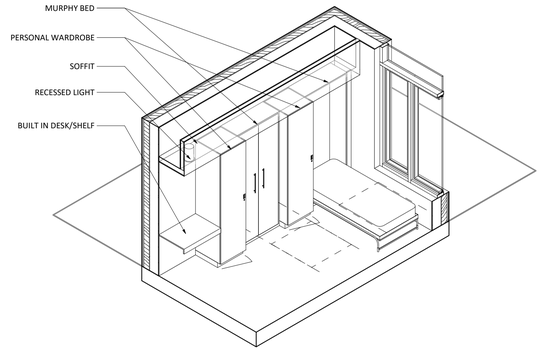
--End of Narrative—
Attachment: Concept Design Drawings



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

FINISH SCHEDULE - FIRST FLOOR

ROOM NO.	ROOM NAME	FLOOR	BASE	WALL	COMMENTS
101	LOBBY	PORCELAIN OR STONE TILE	TILE	MILLWORK WALL PANELS	
102	OFFICE	CARPET TILE	RUBBER	GWB, PAINTED	
103	CONFERENCE / REPORTS	CARPET TILE	RUBBER	GWB, PAINTED	
104	DAYROOM / KITCHEN	PORCELAIN TILE	RUBBER	GWB, PAINTED	
105	VESTIBULE	RUBBER TILE	TILE	GWB, PAINTED	
106	EMS STO.	RUBBER TILE	RUBBER	GWB, PAINTED	
107	TOILET	CERAMIC TILE	CERAMIC TILE	CERAMIC TILE	
108	STO.	RUBBER TILE	RUBBER	GWB, PAINTED	
109	DORM 1	CARPET	RUBBER	GWB, PAINTED	
110	DORM 2	CARPET	RUBBER	GWB, PAINTED	
111	DORM 3	CARPET	RUBBER	GWB, PAINTED	
112	DORM 4	CARPET	RUBBER	GWB, PAINTED	
113	DORM 5	CARPET	RUBBER	GWB, PAINTED	
114	DORM 6	CARPET	RUBBER	GWB, PAINTED	
115	FITNESS ROOM	RUBBER	RUBBER	GWB, PAINTED	
116	SHOWER	CERAMIC TILE	CERAMIC TILE	CERAMIC TILE	
117	SHOWER	CERAMIC TILE	CERAMIC TILE	CERAMIC TILE	
118	VESTIBULE	RUBBER TILE	TILE	GWB, PAINTED	
119	DECON SHOWERS	RUBBER TILE	RUBBER	CERAMIC TILE	URETHANE TRAFFIC COATING (ALT. 1)
120	SHOWER	CERAMIC TILE	CERAMIC TILE	CERAMIC TILE	
121	SHOWER	CERAMIC TILE	CERAMIC TILE	CERAMIC TILE	
122	FF TOILET	CERAMIC TILE	CERAMIC TILE	CERAMIC TILE	URETHANE TRAFFIC COATING (ALT. 1)
123	EQUIPMENT DECON	CONCRETE W/ HARDENER	RUBBER	CMU w/ EPOXY PAINT	URETHANE TRAFFIC COATING (ALT. 1)
124	TURN-OUT GEAR	CONCRETE W/ HARDENER	RUBBER	CMU w/ EPOXY PAINT	URETHANE TRAFFIC COATING (ALT. 1)
125	APPARATUS BAY	CONCRETE W/ H.D. HARDENER	RUBBER	CMU w/ EPOXY PAINT	URETHANE TRAFFIC COATING (ALT. 1)
126	BUILDING / GROUND	CONCRETE W/ HARDENER	RUBBER	CMU w/ EPOXY PAINT	URETHANE TRAFFIC COATING (ALT. 1)
127	EQUIPMENT	CONCRETE W/ HARDENER	RUBBER	CMU w/ EPOXY PAINT	URETHANE TRAFFIC COATING (ALT. 1)
128	HOSE & FOAM STO. / SPRINKLER & MAINTENANCE	CONCRETE W/ HARDENER	RUBBER	CMU w/ EPOXY PAINT	URETHANE TRAFFIC COATING (ALT. 1)
C-1	CORRIDOR	RUBBER TILE	RUBBER	GWB, PAINTED	



TYPICAL DORM ISOMETRIC

FIRST FLOOR SLAB PLAN

1. ■ INDICATES HSS COLUMN
2. - - - INDICATES VERTICAL STEEL BRACE

Thornton Tomasetti
Thornton Tomasetti, Inc.
14 York Street, Suite 201
Portland, ME 04101
T:207.245.6060 F:207.245.6061

AUBURN ENGINE 2
CONCEPT DESIGN DRAWINGS
1/26/2024

context ARCHITECTURE
65 FRANKLIN STREET BOSTON, MA 02110 TEL 617.423.1400 WEB CONTEXTARC.COM

AUBURN ENGINE 2
181 South Main Street, Auburn, ME 04210
project number: 2315

FIRST FLOOR PLAN

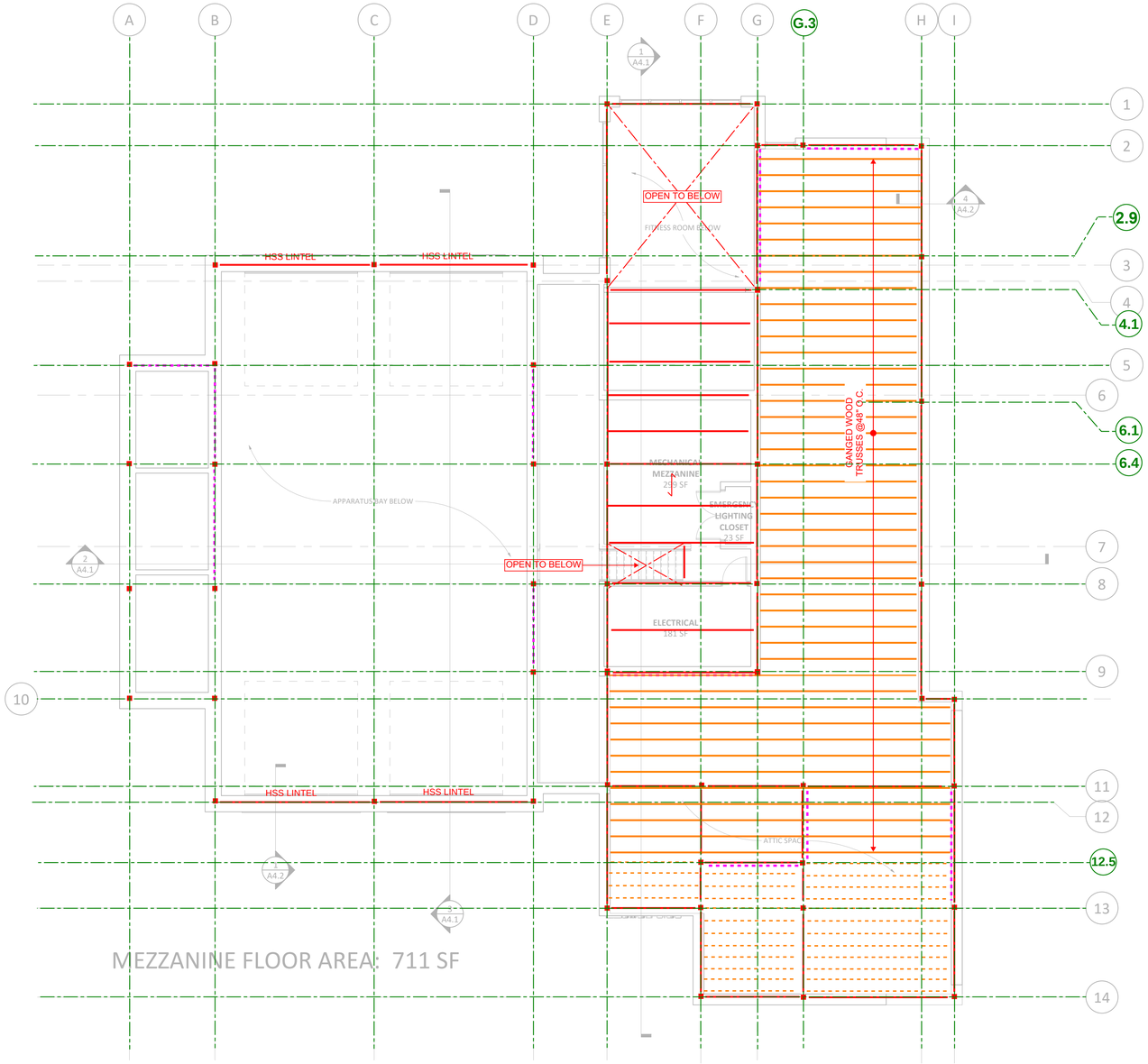
Scale: 1/8" = 1'-0"
Drawn by: MIA

No.	Issue	Date
1	SD SET	12/13/2023

A2.1

FINISH SCHEDULE - MEZZANINE FLOOR

ROOM NO.	ROOM NAME	FLOOR	BASE	WALL	COMMENTS
130	ELECTRICAL	CONCRETE W/ HARDENER	RUBBER	GWB, PAINTED	
131	MECHANICAL MEZZANINE	CONCRETE W/ HARDENER	RUBBER	GWB, PAINTED	
133	EMERGENCY LIGHTING CLOSET	CONCRETE W/ HARDENER	RUBBER	GWB, PAINTED	
134	STAIR	RUBBER	RUBBER	GWB, PAINTED	



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

MEZZANINE FRAMING PLAN

1. INDICATES SPAN DIRECTION OF 2 1/2" NORMAL WEIGHT CONC SLAB ON 1 1/2" GALV COMPOSITE METAL DECK (4" TOTAL THICKNESS) W/ WWF 6X6-W2.1xW2.1 THROUGHOUT
2. INDICATES STEEL BEAM
3. INDICATES STEEL BAR JOIST
4. INDICATES BOTTOM CHORD OF WOOD TRUSS
5. INDICATES WOOD FLOOR JOIST
6. INDICATES HSS COLUMN
7. INDICATES VERTICAL STEEL BRACE

Thornton Tomasetti
Thornton Tomasetti, Inc.
14 York Street, Suite 201
Portland, ME 04101
T:207.245.6060 F:207.245.6061

AUBURN ENGINE 2
CONCEPT DESIGN DRAWINGS
1/26/2024

context ARCHITECTURE
65 FRANKLIN STREET BOSTON, MA 02110 TEL 617.423.1400 WEB CONTEXTARC.COM

AUBURN ENGINE 2
181 South Main Street, Auburn, ME 04210
project number: 2315

MEZZANINE FLOOR PLAN

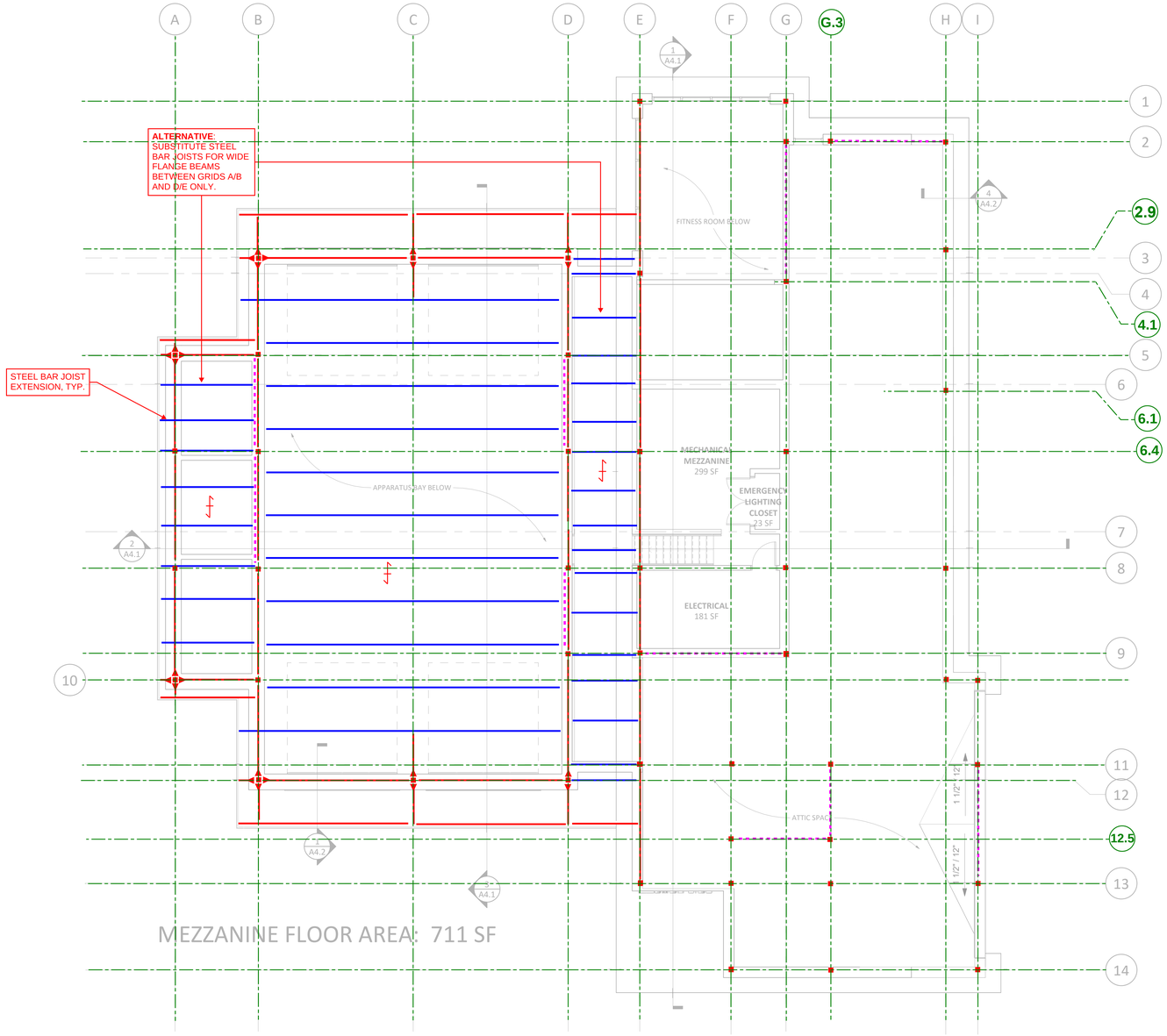
Scale: 1/8" = 1'-0"
Drawn by: MIA

No.	Issue	Date
1	SD SET	12/13/2023

A2.2

FINISH SCHEDULE - MEZZANINE FLOOR

ROOM NO.	ROOM NAME	FLOOR	BASE	WALL	COMMENTS
130	ELECTRICAL	CONCRETE W/ HARDENER	RUBBER	GWB, PAINTED	
131	MECHANICAL MEZZANINE	CONCRETE W/ HARDENER	RUBBER	GWB, PAINTED	
133	EMERGENCY LIGHTING CLOSET	CONCRETE W/ HARDENER	RUBBER	GWB, PAINTED	
134	STAIR	RUBBER	RUBBER	GWB, PAINTED	



1 LOW ROOF FRAMING
1/8" = 1'-0"

LOW ROOF FRAMING PLAN

1. INDICATES SPAN DIRECTION OF METAL ROOF DECK
2. INDICATES STEEL BEAM
3. INDICATES STEEL BAR JOIST
4. INDICATES HSS COLUMN
5. INDICATES VERTICAL STEEL BRACE

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1/26/2024

context ARCHITECTURE
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AUBURN ENGINE 2
181 South Main Street, Auburn, ME 04210
project number: 2315

MEZZANINE FLOOR PLAN

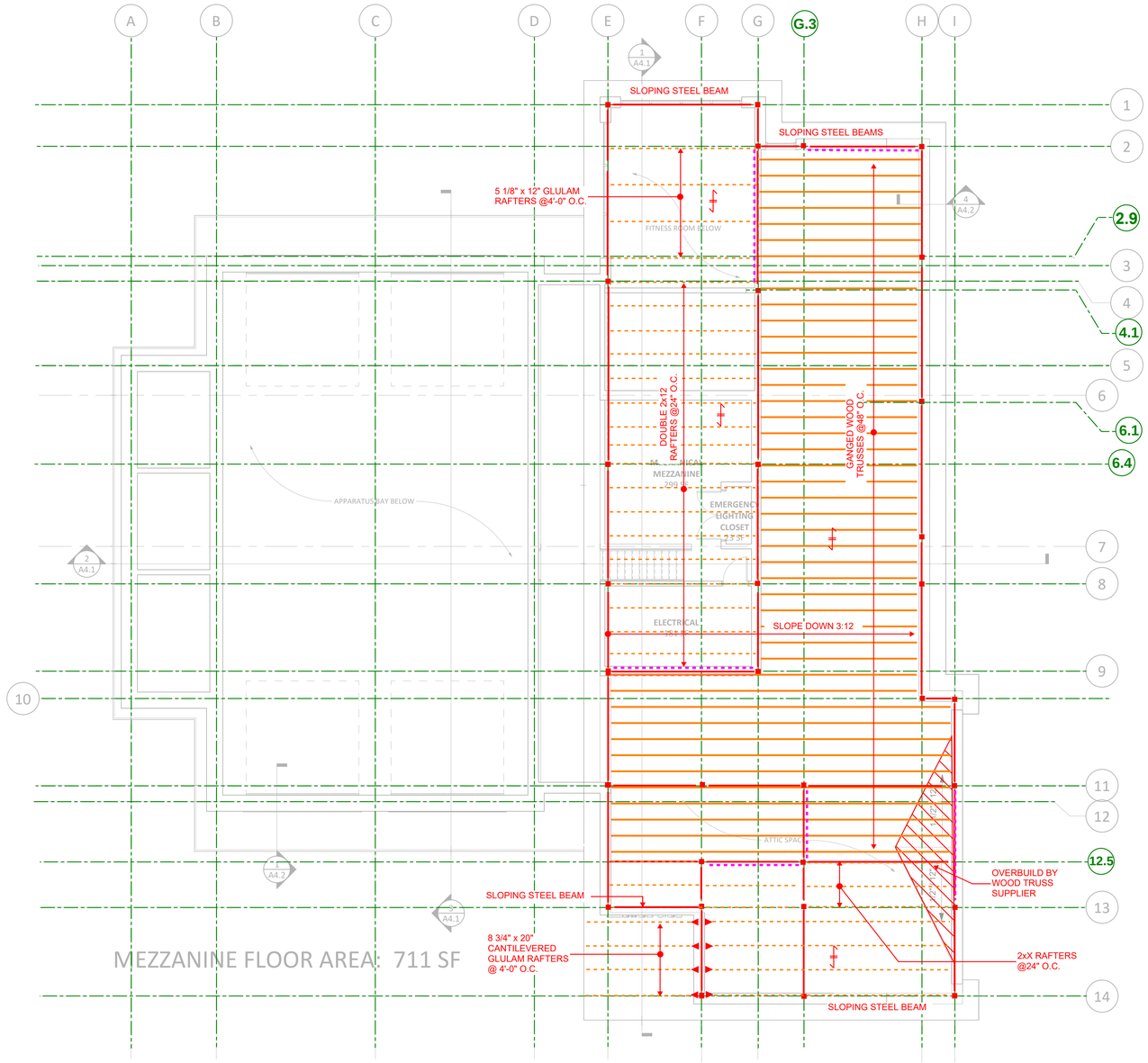
Scale: 1/8" = 1'-0"
Drawn by: MIA

No.	Issue	Date
1	SD SET	12/13/2023

A2.2

FINISH SCHEDULE - MEZZANINE FLOOR

ROOM NO.	ROOM NAME	FLOOR	BASE	WALL	COMMENTS
130	ELECTRICAL	CONCRETE W/ HARDENER	RUBBER	GWB, PAINTED	
131	MECHANICAL MEZZANINE	CONCRETE W/ HARDENER	RUBBER	GWB, PAINTED	
133	EMERGENCY LIGHTING CLOSET	CONCRETE W/ HARDENER	RUBBER	GWB, PAINTED	
134	STAIR	RUBBER	RUBBER	GWB, PAINTED	



1 HIGH ROOF FRAMING
1/8" = 1'-0"

HIGH ROOF FRAMING PLAN - OPTION 2

1. INDICATES SPAN DIRECTION STRUCTRUAL INSULATED PANEL
2. INDICATES STEEL BEAM
3. INDICATES WOOD TRUSS
4. INDICATES WOOD RAFTER
5. INDICATES HSS COLUMN
6. INDICATES VERTICAL STEEL BRACE

Thornton Tomasetti
Thornton Tomasetti, Inc.
14 York Street, Suite 201
Portland, ME 04101
T:207.245.6060 F:207.245.6061

AUBURN ENGINE 2
CONCEPT DESIGN DRAWINGS
1/26/2024

context ARCHITECTURE
65 FRANKLIN STREET BOSTON, MA 02110 TEL 617.423.1400 WEB CONTEXTARC.COM

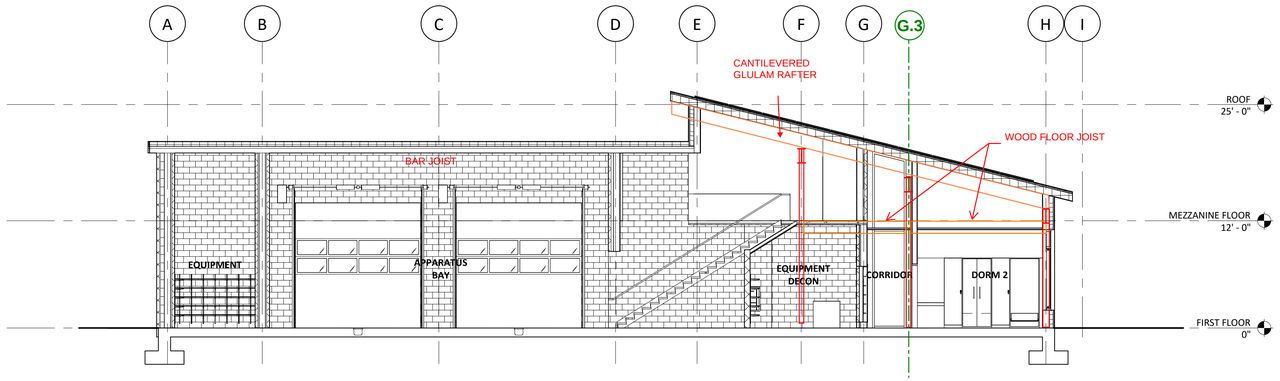
AUBURN ENGINE 2
181 South Main Street, Auburn, ME 04210
project number: 2315

MEZZANINE FLOOR PLAN

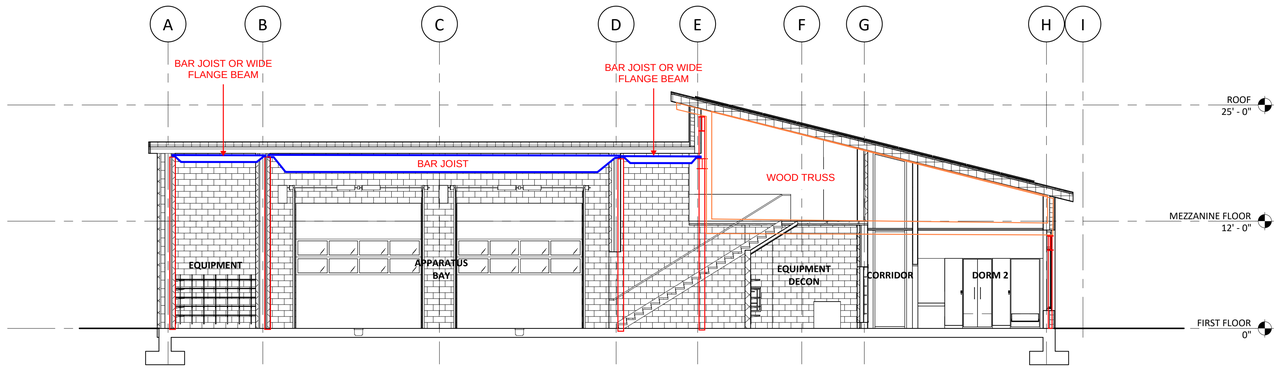
Scale: 1/8" = 1'-0"
Drawn by: MIA

No.	Issue	Date
1	SD SET	12/13/2023

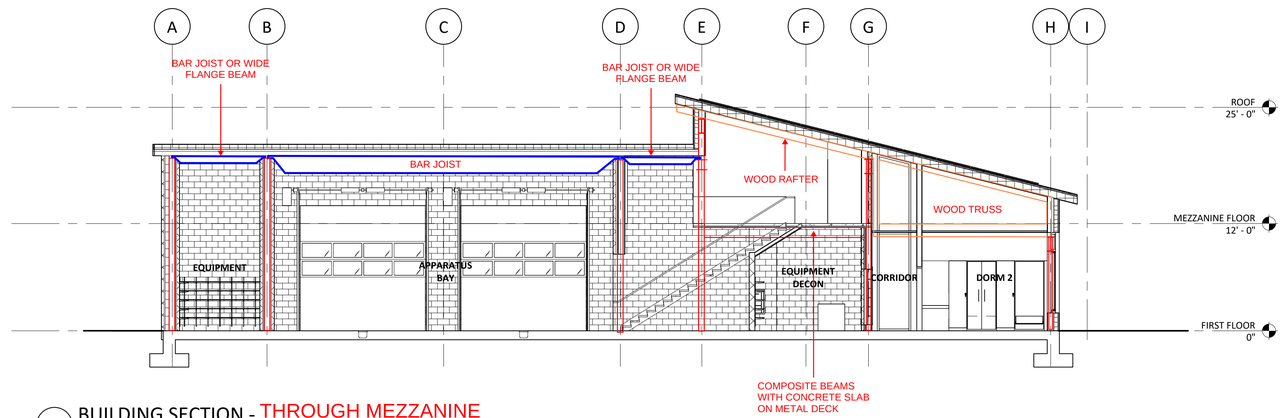
A2.2



2 BUILDING SECTION - LOBBY CANOPY
1/8" = 1'-0"



2 BUILDING SECTION - AT LINE 10
1/8" = 1'-0"



2 BUILDING SECTION - THROUGH MEZZANINE
1/8" = 1'-0"

context ARCHITECTURE
65 FRANKLIN STREET BOSTON, MA 02110 TEL 617.423.1400 WEB CONTEXTARC.COM

AUBURN ENGINE 2
181 South Main Street, Auburn, ME 04210
project number: 2315

BUILDING SECTIONS

Scale: 1/8" = 1'-0"
Drawn by: MIA

No.	Issue	Date
1	SD SET	12/13/2023

Thornton Tomasetti
Thornton Tomasetti, Inc.
14 York Street, Suite 201
Portland, ME 04101
T:207.245.6060 F:207.245.6061

AUBURN ENGINE 2
CONCEPT DESIGN DRAWINGS
1/26/2024

A4.1

REPORT

21-0920 S

June 8, 2023

Preliminary Explorations and Geotechnical Engineering Services

Proposed Engine 2 Fire Station Replacement
180 South Main Street
Auburn, Maine

Prepared For:
Woodard & Curran, Inc.
Attention: Caitlin Glass, P.E.
41 Hutchins Drive
Portland, ME 04102

Prepared By:
S. W. Cole Engineering, Inc.
286 Portland Road
Gray, ME 04039
T: 207-657-2866

TABLE OF CONTENTS

21-0920 S

June 8, 2023

Woodard & Curran, Inc.
Attention: Caitlin Glass, P.E.
41 Hutchins Drive
Portland, ME 04102

Subject: Preliminary Explorations and Geotechnical Engineering Services
Proposed Engine 2 Fire Station Replacement
180 South Main Street
Auburn, Maine

Dear Caitlin:

In accordance with our Revised Proposal, dated February 7, 2023, we have performed preliminary subsurface explorations the subject project. This report summarizes our findings and preliminary geotechnical recommendations and its contents are subject to the limitations set forth in Appendix A.

1.0 INTRODUCTION

1.1 Scope and Purpose

The purpose of our services was to obtain subsurface information in order to evaluate preliminary geotechnical considerations for foundations, earthwork, and pavement associated with the proposed construction. Our scope of services included test boring explorations, a geotechnical assessment of the subsurface findings, and preparation of this report.

1.2 Site and Proposed Construction

The site is located at 180 South Main Street in Auburn, Maine and is comprised of the existing Engine 2 Fire Station and an undeveloped open field and low laying vegetated areas south and east of the Fire Station. Existing grades generally raise to the east, ranging from approximately elevation 252 feet (project datum) in the southwest corner to elevation 269 feet in the southeast corner.

We understand development is still in the planning stages but will likely include a new rectangular shaped, on-grade fire station building in the central portion of the site with associated new landscape and paved parking and access drive areas. We understand the entrance drive will be locate along the southern edge of the site and will be designed to provide access to a future development to the east. Proposed grading is unavailable at this time; however, we anticipate proposed building pad finish grades will be within about 3 feet of existing grades.

Existing site features are shown on the "Exploration Location Plan" attached in Appendix B.

2.0 EXPLORATION AND TESTING

2.1 Explorations

Five preliminary test borings (B-101 through B-105) were made at the site on May 16, 2023 by S. W. Cole Explorations, LLC. The exploration locations were selected and established in the field by S. W. Cole Engineering, Inc. (S.W.COLE) using GPS techniques. The approximate exploration locations are shown on the "Exploration Location Plan" attached in Appendix B. Logs of the explorations and a key to the notes and symbols used on the logs are attached in Appendix C.

2.2 Testing

The test borings were drilled using hollow stem auger techniques. The soils were sampled at 2 to 5 foot intervals using a split spoon sampler and Standard Penetration Testing (SPT) methods. SPT blow counts are shown on the logs. Soil samples obtained from the borings were visually classified.

3.0 SUBSURFACE CONDITIONS

3.1 Soil and Bedrock

The test borings encountered a soils profile generally consisting of a relatively thick surficial layer of topsoil and organics, overlying native glaciomarine sand, silt, and silty clay, overlying glacial till and refusal surfaces (probable boulder or bedrock). The principal soils encountered at the explorations are summarized below. Not all of the strata were

encountered at each exploration; refer to the attached boring logs for more detailed subsurface information.

Topsoil and Organics: The borings encountered a surficial layer of topsoil, organics, and clayey silt and silty clay with roots up to about 2 feet thick. We anticipate portions of the site were once cultivated for agricultural purposes and, therefore, thicker layers of topsoil and organics may be present.

Glaciomarine Deposits: Underlying the surficial organics, the borings encountered glaciomarine soil deposits. The glaciomarine deposits generally consisted of an upper "crust" of layered sand, silt and, very stiff to stiff brown to gray-brown silty clay which extended to depths of about 10 to 15 feet below ground surface (bgs). Underlying the upper crust, the deposit transitioned to layers of relatively softer gray silty clay with frequent sand seams and layers which extended to depths of about 13 to 30 feet bgs.

Glacial Till: Underlying the glaciomarine deposits, borings B-101, B-102, B-103 encountered glacial till consisting of loose to medium dense, gray to brown, silty sand or silt and sand with varying portions of gravel and cobbles. Rod probing performed at borings B-104 and B-105 also encountered granular soils underlying the glaciomarine deposits.

Refusal Surface: Underlying the glacial till, boring B-103 encountered a refusal surface (probable boulder or bedrock) at a depth of 19.1 feet bgs.

3.2 Groundwater

The soils encountered at the test borings were generally damp to moist from the ground surface. Wet to saturated soils were encountered in the borings below a depth of about 10 feet bgs. Groundwater likely becomes perched on the silts and clays and within the sand seams and layers encountered at the test borings. Long term groundwater information is not available. It should be anticipated that groundwater levels will fluctuate, particularly in response to periods of snowmelt and precipitation, as well as changes in site use.

4.0 EVALUATION AND RECOMMENDATIONS

4.1 General Findings

Based on the subsurface findings, the proposed construction appears feasible from a geotechnical standpoint. We offer the following preliminary geotechnical recommendations and considerations for project planning.

4.2 Foundation and Floor Slab Considerations

Support of the proposed fire station building on spread footing foundations with an on-grade floor slab appears feasible. Foundations should bear on 6-inches of compacted Crushed Stone overlying undisturbed, non-organic, native soils. Floor slabs should bear on at least 18 inches of compacted Structural Fill. A foundation underdrain should be provided on the outside edge of perimeter footings.

The layer of softer gray silty clay underlying the site is compressible under new loading from grade-raise fills, building foundations, and floor slab loads; however the layer is relatively thin and likely overconsolidated. For planning purposes, we recommend that grade-raise fills beneath the building be limited to about 3 feet and that they be placed a minimum of 30 days prior to excavating for foundations to reduce post-construction settlement. A detailed design-phase settlement evaluation should be made once proposed site grades and foundation loads are available.

Additionally, finish grades should be selected so that proposed building footings bear on the stiff upper “crust” soils and don’t approach the underlying softer silty clay soils.

4.3 Excavation and Dewatering Considerations

Excavation work will generally encounter a relatively thick surficial layer of topsoil and organics, overlying native silts and clays. Considering the subsurface findings and probable prior agricultural cultivation at the site, the contractor should anticipate a relatively deep stripping and grubbing depth. Earthwork and grading activities should occur ideally during drier, non-freezing weather of Spring, Summer and Fall. Temporary haul roads overlying woven geotextile will likely be needed. Final cuts to soil subgrades should be performed with a smooth-edged bucket to help reduce strength loss from soil disturbance.

Sumping and pumping dewatering techniques should be adequate to control groundwater in foundation and shallower utility excavations. Controlling the water levels to at least one foot below planned excavation depths will help stabilize subgrades during construction. Excavations must be properly shored or sloped in accordance with OSHA Regulations to prevent sloughing and caving of the sidewalls during construction. Care must be taken to preclude undermining adjacent structures, utilities and roadways. The design and planning of excavations, excavation support systems, and dewatering is the responsibility of the contractor.

Imported Crushed Stone, Structural Fill, and Granular Borrow will be needed for construction; Granular Borrow for Underwater Backfill will be needed over wet subgrades. The site soils unsuitable for reuse in building and pavement areas, but may be suitable from a geotechnical standpoint for reuse as compacted Common Borrow landscape areas provided they are at a compactable moisture content at the time of reuse.

4.4 Pavement Considerations

Conventional flexible pavements appear feasible at the site. All topsoil and organics must be removed from beneath proposed paved areas. Pavement subgrades are anticipated to consist of a combination of native silty clay and imported Granular Borrow used to raise grades. Woven geotextile should be provided over pavement subgrades which consist of native silts and clays. The native soils are poorly drained and frost-susceptible, and design must consider positive drainage of the pavement section. We recommend proper ditching and pavement underdrains be provided.

4.5 Recommendations for Additional Study

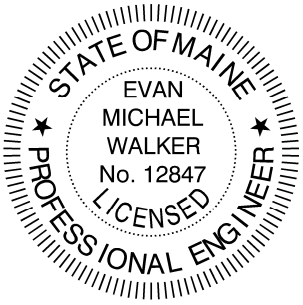
Our preliminary evaluation is based on the limited available information about the proposed development and relatively widely spaced preliminary test boring explorations. We recommend design phase explorations and geotechnical engineering services be provided as design progresses, including a detailed settlement analysis once proposed site grading and foundation loads are available.

5.0 CLOSURE

It has been a pleasure to be of assistance to you with this phase of your project. We look forward to working with you during the design phase of the project.

Sincerely,

S. W. Cole Engineering, Inc.



Evan M. Walker, P.E.
Senior Geotechnical Engineer

EMW:tjb

APPENDIX A

Limitations

This report has been prepared for the exclusive use of Woodard & Curran for specific application to the proposed Engine 2 Fire Station Replacement at 180 South Main Street in Auburn, Maine. S. W. Cole Engineering, Inc. (S.W.COLE) has endeavored to conduct our services in accordance with generally accepted soil and foundation engineering practices. No warranty, expressed or implied, is made.

The soil profiles described in the report are intended to convey general trends in subsurface conditions. The boundaries between strata are approximate and are based upon interpretation of exploration data and samples.

The analyses performed during this investigation and recommendations presented in this report are based in part upon the data obtained from subsurface explorations made at the site. Variations in subsurface conditions may occur between explorations and may not become evident until construction. If variations in subsurface conditions become evident after submission of this report, it will be necessary to evaluate their nature and to review the recommendations of this report.

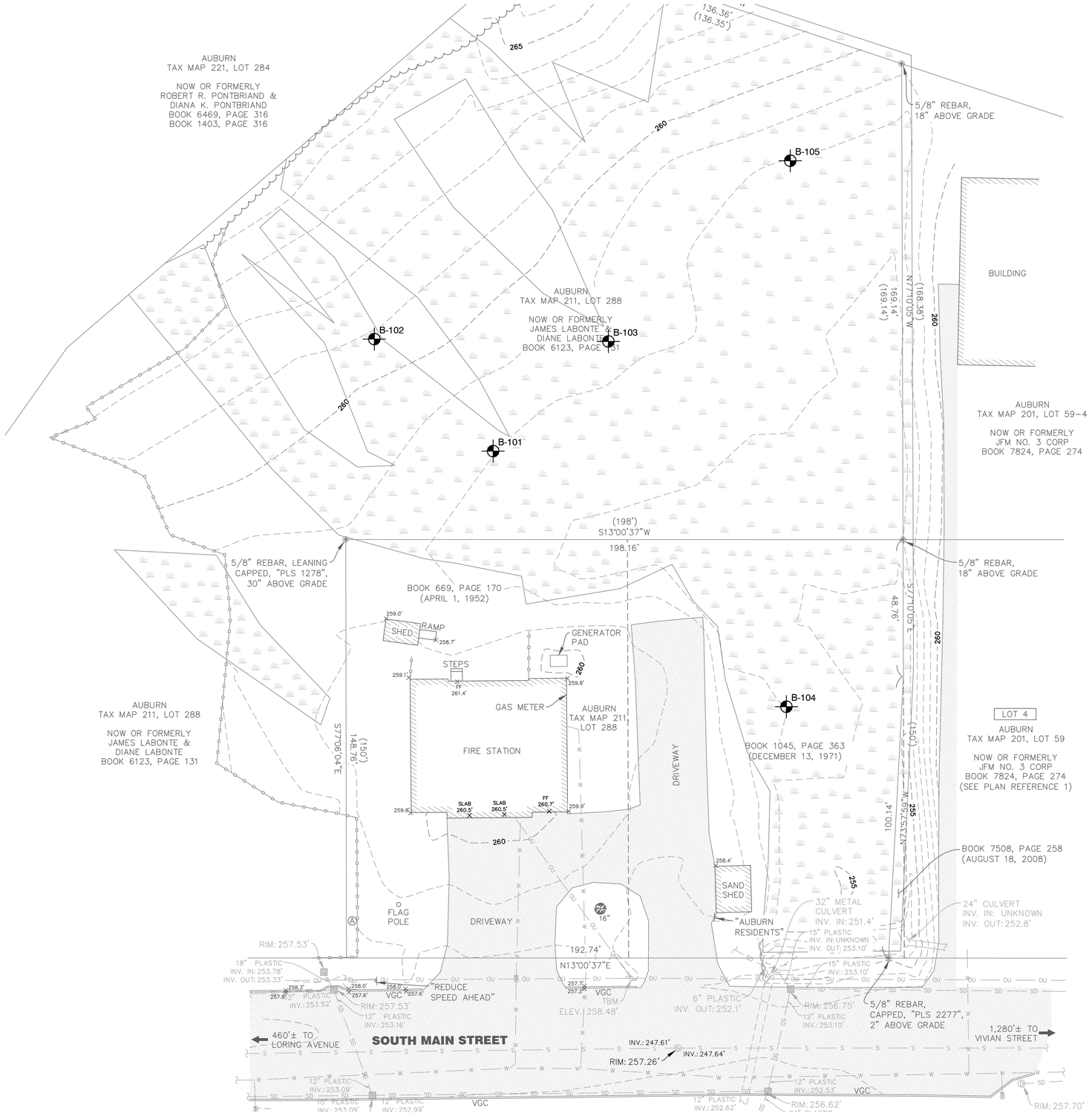
Observations have been made during exploration work to assess site groundwater levels. Fluctuations in water levels will occur due to variations in rainfall, temperature, and other factors.

S.W.COLE's scope of services has not included the investigation, detection, or prevention of any Biological Pollutants at the project site or in any existing or proposed structure at the site. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and the byproducts of any such biological organisms.

Recommendations contained in this report are based substantially upon information provided by others regarding the proposed project. In the event that any changes are made in the design, nature, or location of the proposed project, S.W.COLE should review such changes as they relate to analyses associated with this report. Recommendations contained in this report shall not be considered valid unless the changes are reviewed by S.W.COLE.

APPENDIX B

Figures



LEGEND:

APPROXIMATE BORING LOCATION

NOTES:

1. EXPLORATION LOCATION PLAN WAS PREPARED FROM A 1"=20' SCALE PLAN OF THE SITE ENTITLED "EXISTING CONDITIONS SURVEY," PREPARED BY MAIN-LAND DEVELOPMENT CONSULTANTS, INC., DATED 04/27/2022.
2. THE BORINGS WERE LOCATED IN THE FIELD BY S. W. COLE ENGINEERING, INC. USING A MAPPING GRADE GPS RECEIVER.
3. THIS PLAN SHOULD BE USED IN CONJUNCTION WITH THE ASSOCIATED S. W. COLE ENGINEERING, INC. GEOTECHNICAL REPORT.
4. THE PURPOSE OF THIS PLAN IS ONLY TO DEPICT THE LOCATION OF THE EXPLORATIONS IN RELATION TO THE EXISTING CONDITIONS AND PROPOSED CONSTRUCTION AND IS NOT TO BE USED FOR CONSTRUCTION.

0 20 40 Feet

S.W.COLE ENGINEERING, INC.

WOODARD & CURRAN, INC.

EXPLORATION LOCATION PLAN

PROPOSED ENGINE 2 FIRE STATION REPLACEMENT
180 SOUTH MAIN STREET
AUBURN, MAINE

Job No.:	21-0920	Scale:	1" = 20'
Date :	05/24/2023	Sheet:	1

APPENDIX C

Exploration Logs and Key

BORING LOG

BORING NO.: B-101
SHEET: 1 of 1
PROJECT NO. 21-0920
DATE START: 5/16/2023
DATE FINISH: 5/16/2023

CLIENT: Woodard & Curran, Inc.
PROJECT: Proposed Engine 2 Fire Station Replacement
LOCATION: 180 South Main Street, Auburn, ME

Drilling Information

LOCATION: See Exploration Location Plan **ELEVATION (FT):** **TOTAL DEPTH (FT):** 25.4 **LOGGED BY:** Evan Walker
DRILLING CO.: S. W. Cole Explorations, LLC **DRILLER:** Matt Bussey **DRILLING METHOD:** Hollow Stem Auger
RIG TYPE: Track Mounted Mobile Drill B-48 **AUGER ID/OD:** 2 1/4 in / 5 5/8 in **SAMPLER:** Standard Split-Spoon
HAMMER TYPE: Automatic **HAMMER WEIGHT (lbs):** 140 **CASING ID/OD:** N/A /N/A **CORE BARREL:**
HAMMER CORRECTION FACTOR: **HAMMER DROP (inch):** 30
WATER LEVEL DEPTHS (ft): ▽ 10 ft Soils Moist from Surface, Wet to Saturated Below 10' +/-
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS:
Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling
D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear
Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot
WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector
S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; Ø = Friction Angle (Estimated); N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
			1D		0-2	24/18	1-2-3-3			0.5 Vegetation / Topsoil		
			2D		2-4	24/22	4-6-7-11	q_P=6 to 9 ksf		2.0 Damp, loose, gray-brown, clayey SILT, some fine sand, with roots and organics Damp, very stiff to stiff, brown, silty CLAY, with frequent sand seams and layers		
	5		3D		5-7	24/22	4-3-4-6	q_P=5 to 6 ksf				
										8.0 Wet to Saturated, varved, medium gray silty CLAY, loose gray-brown silty fine SAND, and loose SILT AND FINE SAND, some clay	▽	
	10		4D		10-12	24/24	1-2-1-3					
			5D		12-14	24/24	1-1-3-3					
	15		6D		15-17	24/22	WOH-1-2-2			15.0 Saturated, stiff to medium, gray, silty CLAY, with frequent sand seams and layers		
										18.0 Saturated, loose to medium dense, gray, SILT AND SAND, trace gravel (Till)		
	20		7D		20-22	24/20	2-1-1-5					
	25		8D		25-25.4	5/4	50/5"			Bottom of Exploration at 25.4 feet		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING LOG

BORING NO.: B-102
SHEET: 1 of 1
PROJECT NO. 21-0920
DATE START: 5/16/2023
DATE FINISH: 5/16/2023

CLIENT: Woodard & Curran, Inc.
PROJECT: Proposed Engine 2 Fire Station Replacement
LOCATION: 180 South Main Street, Auburn, ME

Drilling Information

LOCATION: See Exploration Location Plan **ELEVATION (FT):** **TOTAL DEPTH (FT):** 21.3 **LOGGED BY:** Evan Walker
DRILLING CO.: S. W. Cole Explorations, LLC **DRILLER:** Matt Bussey **DRILLING METHOD:** Hollow Stem Auger
RIG TYPE: Track Mounted Mobile Drill B-48 **AUGER ID/OD:** 2 1/4 in / 5 5/8 in **SAMPLER:** Standard Split-Spoon
HAMMER TYPE: Automatic **HAMMER WEIGHT (lbs):** 140 **CASING ID/OD:** N/A /N/A **CORE BARREL:**
HAMMER CORRECTION FACTOR: **HAMMER DROP (inch):** 30
WATER LEVEL DEPTHS (ft): ▽ 10 ft Soils Damp to Moist from Surface, Wet to Saturated Below 10' +/-
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS:
Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling
D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear
Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot
WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector
S_v = Field Vane Shear Strength, kips/sq.ft.; q_U = Unconfined Compressive Strength, kips/sq.ft.; Ø = Friction Angle (Estimated); N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
			1D		0-2	24/20	1-3-3-5	q_P=7 ksf		Vegetation / Topsoil		
										1.0 Moist, very stiff, brown, silty CLAY, with roots		
			2D		2-4	24/22	4-6-5-7	q_P=5 to 6 ksf		2.0 Damp, very stiff to stiff, brown, silty CLAY, with frequent sand seams and layers		
	5		3D		5-7	24/24	2-3-3-3	q_P=2 to 5 ksf				
	10		4D		10-12	24/18	1/12"-1-1	q_P=0.5 to 1 ksf		10.0 Wet to saturated, brown to gray, varved medium silty CLAY and loose silty fine SAND	▽	
			5D		12-14	24/24	1-2-1-1	q_P=0.5 ksf		12.0 Saturated, medium, gray, silty CLAY, with frequent sand seams		
	15		6D		15-17	24/16	5-1-2-17			14.5 Saturated, gray to rust-brown, silty SAND, some gravel, with occasional cobbles (Till)		
	20		7D		20-22	24/16	18-41-50					

Bottom of Exploration at 21.3 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING LOG

BORING NO.:	**B-103**
SHEET:	1 of 1
PROJECT NO.	21-0920
DATE START:	5/16/2023
DATE FINISH:	5/16/2023

CLIENT: Woodard & Curran, Inc.
PROJECT: Proposed Engine 2 Fire Station Replacement
LOCATION: 180 South Main Street, Auburn, ME

Drilling Information

LOCATION: See Exploration Location Plan **ELEVATION (FT):** **TOTAL DEPTH (FT):** 19.1 **LOGGED BY:** Evan Walker
DRILLING CO.: S. W. Cole Explorations, LLC **DRILLER:** Matt Bussey **DRILLING METHOD:** Hollow Stem Auger
RIG TYPE: Track Mounted Mobile Drill B-48 **AUGER ID/OD:** 2 1/4 in / 5 5/8 in **SAMPLER:** Standard Split-Spoon
HAMMER TYPE: Automatic **HAMMER WEIGHT (lbs):** 140 **CASING ID/OD:** N/A /N/A **CORE BARREL:**
HAMMER CORRECTION FACTOR: **HAMMER DROP (inch):** 30
WATER LEVEL DEPTHS (ft): ▽ 10 ft Soils Damp to Moist from Surface, Wet to Saturated Below 10' +/-
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS: Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling
D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear
Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot
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Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
			1D		0-2	24/24	1-3-3-6			Vegetation / Topsoil		
										1.3		
			2D		2-4	24/22	5-7-7-10	q_P=7 ksf		Moist, stiff, brown, silty CLAY, with roots		
										2.0 Damp to wet, very stiff to stiff, brown, silty CLAY, with frequent sand seams		
	5		3D		5-7	24/24	4-3-5-6	q_P=6 to 7 ksf				
	10		4D		10-12	24/24	1-1-2-2	q_P=1 to 1.5 ksf			▽	
										10.5 Wet to saturated, stiff, gray, silty CLAY, with frequent sand seams and layers		
										12.5 Medium dense, gray, SILT AND SAND, some gravel (Till)		
	15		5D		15-17	24/24	10-7-7-6					

Refusal at 19.1 feet
Probable Boulder or Bedrock

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING NO.: B-103

BORING LOG

BORING NO.: B-104
SHEET: 1 of 1
PROJECT NO. 21-0920
DATE START: 5/16/2023
DATE FINISH: 5/16/2023

CLIENT: Woodard & Curran, Inc.
PROJECT: Proposed Engine 2 Fire Station Replacement
LOCATION: 180 South Main Street, Auburn, ME

Drilling Information

LOCATION: See Exploration Location Plan | **ELEVATION (FT):** | **TOTAL DEPTH (FT):** 29.9 | **LOGGED BY:** Evan Walker
DRILLING CO.: S. W. Cole Explorations, LLC | **DRILLER:** Matt Bussey | **DRILLING METHOD:** Hollow Stem Auger
RIG TYPE: Track Mounted Mobile Drill B-48 | **AUGER ID/OD:** 2 1/4 in / 5 5/8 in | **SAMPLER:** Standard Split-Spoon
HAMMER TYPE: Automatic | **HAMMER WEIGHT (lbs):** 140 | **CASING ID/OD:** N/A /N/A | **CORE BARREL:**
HAMMER CORRECTION FACTOR: | **HAMMER DROP (inch):** 30
WATER LEVEL DEPTHS (ft): ▽ 10 ft Soils Damp to Moist from Surface, Saturated Below 10' +/-
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS:
Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling
D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear
Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot
WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector
S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; Ø = Friction Angle (Estimated); N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
			1D		0-2	24/24	1-2-2-4			0.5 Vegetation / Topsoil Damp, stiff, brown, silty CLAY, with roots		
			2D		2-4	24/24	4-7-7-9			2.0 Damp to moist, very stiff, brown, silty CLAY, with frequent sand seams and layers		
	5		3D		5-7	24/22	3-2-3-2					
	10		4D		10-12	24/24	1-1-1-2			10.0 Saturated, stiff, gray-brown, silty CLAY, with frequent sand seams 11.0 Saturated, stiff to medium, gray, silty CLAY, with frequent sand seams	▽	
	15		5D		15-17	24/20	1-2-2-1			15.0 Saturated, loose, gray, silty fine SAND, with frequent silty clay seams and layers ROD PROBE Depth 17-29.5 / Resistance HYD / Interpreted Soil Type Silty Clay		
	20											
	25											
										29.5 ROD PROBE Depth 29.5-29.9 / Resistance 50 / Interpreted Soil Type Granular Soils Bottom of Exploration at 29.9 feet		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING LOG

BORING NO.:	**B-105**
SHEET:	1 of 1
PROJECT NO.	21-0920
DATE START:	5/16/2023
DATE FINISH:	5/16/2023

CLIENT: Woodard & Curran, Inc.
PROJECT: Proposed Engine 2 Fire Station Replacement
LOCATION: 180 South Main Street, Auburn, ME

Drilling Information

LOCATION: See Exploration Location Plan **ELEVATION (FT):** **TOTAL DEPTH (FT):** 23.0 **LOGGED BY:** Evan Walker
DRILLING CO.: S. W. Cole Explorations, LLC **DRILLER:** Matt Bussey **DRILLING METHOD:** Hollow Stem Auger
RIG TYPE: Track Mounted Mobile Drill B-48 **AUGER ID/OD:** 2 1/4 in / 5 5/8 in **SAMPLER:** Standard Split-Spoon
HAMMER TYPE: Automatic **HAMMER WEIGHT (lbs):** 140 **CASING ID/OD:** N/A /N/A **CORE BARREL:**
HAMMER CORRECTION FACTOR: **HAMMER DROP (inch):** 30
WATER LEVEL DEPTHS (ft): ▽ 10 ft Soils Moist to Wet from Surface, Saturated Below 10' +/-
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS: Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling
D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear
Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot
WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector
S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; Ø = Friction Angle (Estimated); N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_2O Depth	Remarks
			1D		0-2	24/22	WOH/12"-3-5			Vegetation / Wet, dark brown, clayey SILT, with roots and organics		
										1.5 Wet, stiff, gray-brown, silty CLAY, with roots		
			2D		2-4	24/24	5-6-7-9	q_P=6 to 7 ksf		2.0 Moist to wet, very stiff, gray-brown, silty CLAY, with frequent sand seams and layers		
	5		3D		5-7	24/20	3-3-3-5	q_P=4 to 6 ksf		5.0 Wet, very stiff to stiff, gray-brown, silty CLAY, with frequent sand seams and layers		
										8.0 Wet to saturated, varved, loose brown gravelly silty SAND, loose brown silty fine sand, and stiff brown silty CLAY		
	10		4D		10-12	24/16	4-3-4-2				▽	
	15		5D		15-17	24/24	1-1-1-2			15.0 Saturated, varved, loose gray silty fine SAND, and medium gray silty CLAY		
										ROD PROBE: Depth 17-21; Resistance HYD; Interpreted Soil Type Silty Clay		
	20									21.0		
										ROD PROBE: Depth 21-22; Resistance 52; Interpreted Soil Type Granular Soils		
										Depth 22-23; Resistance 68		
										Bottom of Exploration at 23.0 feet		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES & SYMBOLS
Test Boring and Test Pit Explorations

Stratification lines represent the approximate boundary between soil types and the transition may be gradual.

Key to Symbols Used:

w	-	water content, percent (dry weight basis)
q_u	-	unconfined compressive strength, kips/sq. ft. - laboratory test
S_v	-	field vane shear strength, kips/sq. ft.
L_v	-	lab vane shear strength, kips/sq. ft.
q_p	-	unconfined compressive strength, kips/sq. ft. – pocket penetrometer test
O	-	organic content, percent (dry weight basis)
W_L	-	liquid limit - Atterberg test
W_P	-	plastic limit - Atterberg test
WOH	-	advance by weight of hammer
WOM	-	advance by weight of man
WOR	-	advance by weight of rods
HYD	-	advance by force of hydraulic piston on drill
RQD	-	Rock Quality Designator - an index of the quality of a rock mass.
γ_T	-	total soil weight
γ_B	-	buoyant soil weight

Description of Proportions:

Trace:	0 to 5%
Some:	5 to 12%
"Y"	12 to 35%
And	35+%
With	Undifferentiated

Description of Stratified Soils

Parting:	0 to 1/16" thickness
Seam:	1/16" to 1/2" thickness
Layer:	½" to 12" thickness
Varved:	Alternating seams or layers
Occasional:	one or less per foot of thickness
Frequent:	more than one per foot of thickness

REFUSAL: **Test Boring Explorations** - Refusal depth indicates that depth at which, in the drill foreman's opinion, sufficient resistance to the advance of the casing, auger, probe rod or sampler was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

REFUSAL: **Test Pit Explorations** - Refusal depth indicates that depth at which sufficient resistance to the advance of the backhoe bucket was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

Although refusal may indicate the encountering of the bedrock surface, it may indicate the striking of large cobbles, boulders, very dense or cemented soil, or other buried natural or man-made objects or it may indicate the encountering of a harder zone after penetrating a considerable depth through a weathered or disintegrated zone of the bedrock.