ENERGY EFFICIENCY UPGRADES

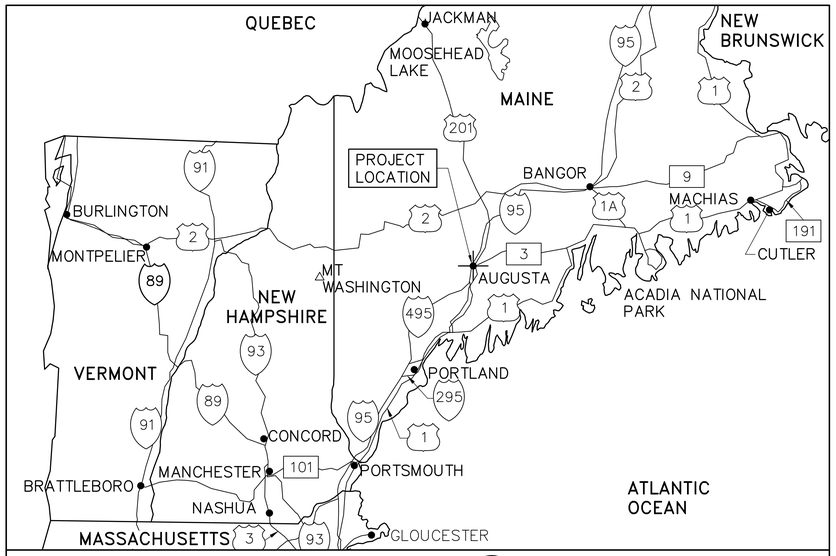
MAINE DEPARTMENT OF MARINE RESOURCES LABORATORY

BOOTHBAY HARBOR, MAINE

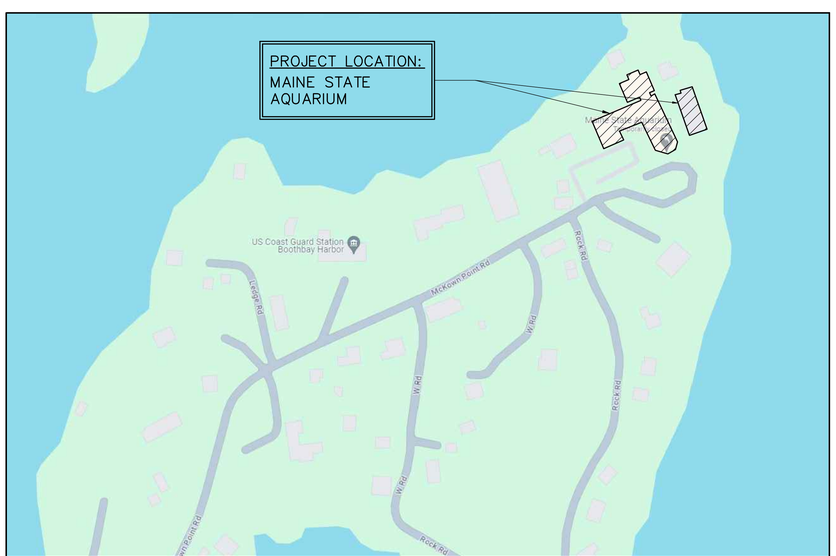
O A K P O I N T A S S O C I A T E S

ARCHITECTS - ENGINEERS

231 MAIN STREET, BIDDEFORD, MAINE, 04005



AREA MAP
NOT TO SCALE



VICINITY MAP
NOT TO SCALE

GENERAL CONSTRUCTION NOTES

1. PROTECT EXISTING TREES AND PLANTINGS. REPAIR DAMAGED LAWN AREAS.
2. ALL WORK AREAS AND CONTRACTOR LAY DOWN AREAS SHALL BE ENCLOSED IN 6 FOOT HIGH CHAIN LINK FENCE.
3. ALL ROOF, AND WALL AREAS MUST BE MAINTAINED WATERTIGHT DURING CONSTRUCTION ACTIVITIES
4. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO COMMENCING WORK. REPORT ANY DISCREPANCIES TO THE ARCHITECT PRIOR TO COMMENCING WORK.
5. ALL WORK INCLUDED IN THIS CONTRACT SHALL CONFORM TO ALL STATE, NATIONAL AND OTHER CODES AND ORDINANCES WHICH ARE APPLICABLE TO THIS PROJECT.
6. WORK FROM GIVEN DIMENSIONS AND LARGE SCALE DETAILS ONLY. DO NOT SCALE DRAWINGS.
7. BEFORE PENETRATING JOISTS, BEAMS OR OTHER STRUCTURAL MEMBERS, CONSULT WITH THE ARCHITECT FOR APPROVAL.
8. AT THE END OF EACH WORKING DAY, THE CONSTRUCTION SITE SHALL BE LEFT IN A NEAT, CLEAN AND SAFE CONDITION.
9. THE CONTRACTOR SHALL DISPOSE OF AND/OR RECYCLE ANY CONSTRUCTION DEBRIS FROM THE PROJECT AS REQUIRED BY THE STATE OF MAINE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING DISPOSAL PERMITS WHICH ARE REQUIRED. CONSTRUCTION DEBRIS FROM THE PROJECT SHALL BE DISPOSED OF IN A STATE APPROVED LANDFILL.
10. ALL WORK SHALL BE PROVIDED IN COMPLIANCE WITH THAT INDUSTRIES STANDARDS AND PERFORMED IN A WORKMANLIKE PROFESSIONAL MANNER.
11. REMOVE ACOUSTICAL CEILING PANELS FOR ACCESS TO WORK AREAS. SALVAGE AND PROTECT REMOVED CEILING PANELS FOR REINSTALLATION. ANY CEILING PANELS DAMAGED DURING REMOVAL AND STORAGE SHALL BE REPLACED WITH NEW CEILING PANELS TO MATCH EXISTING COLOR, TEXTURE, AND THICKNESS.
12. AT AREAS INDICATED TO RECEIVE NEW POLY VAPOR BARRIER SEAL ALL SEAMS, DUCTWORK PENETRATIONS, MECHANICAL AND SPRINKLER PIPING PENETRATIONS, AND ELECTRICAL CONDUIT AND WIRING PENETRATIONS WITH VAPOR BARRIER TAPE AND SEALANT.
13. CONTRACTOR IS RESPONSIBLE TO MAINTAIN SPACE TEMPERATURE, HUMIDITY, VENTILATION, AND EXHAUST RATES THROUGHOUT THE BUILDING. PROVIDE TEMPORARY HVAC SUBMITTAL FOR APPROVAL BASED ON SUBMITTED CONSTRUCTION SCHEDULE. IN THE EVENT OF BID ALTERNATE 2, PHASE WORK ON AHU-1 AFTER AHU-2 HAS BEEN INSTALLED, TESTED AND IS OPERATION.

ABBREVIATIONS

±	PLUS/MINUS
&	AND
@	AT
BD	BOARD
℄	CENTERLINE
CLG	CEILING
DIA ø	DIAMETER
DWG	DRAWING
ELEV	ELEVATION
EXIST	EXISTING
FRT	FIRE RETARDANT TREATED
GYP BD	GYPSUM BOARD
MAX	MAXIMUM
MFR	MANUFACTURER
MFRS	MANUFACTURER'S
MIN	MINIMUM
MIR	MIRROR
MTL	METAL
N	NORTH
NIC	NOT IN CONTRACT
NO. #	NUMBER
NTS	NOT TO SCALE
OC	ON CENTER
PLYWD	PLYWOOD
PNT	PAINT, PAINTED
PT	PRESERVATIVE TREATED
RCP	REFLECTED CEILING PLAN
RM	ROOM
SAT	SUSPENDED ACOUSTICAL TILE
SCH	SCHEDULE
SIM	SIMILAR
SS	STAINLESS STEEL
TYP	TYPICAL
W/	WITH
WD	WOOD

LEGEND

- DETAIL NUMBER / SHEET WHERE DETAIL IS DRAWN / SHEETS WHERE DETAIL IS TAKEN
- INDICATES DIRECTION OF CUTTING PLANE / WALL SECTION OR ELEVATION NUMBER / SHEET WHERE WALL SECTION OR ELEVATION IS DRAWN / SHEETS WHERE WALL SECTION OR ELEVATION IS TAKEN
- INTERIOR ELEVATION / SHEET WHERE INTERIOR ELEVATION IS DRAWN
- OFFICE 121 — ROOM NAME AND NUMBER
- 121 — DOOR NUMBER
- WA — WALL TYPE
- B1 — BORROWED LITE
- 5/AE101 — DETAIL NUMBER / SHEET WHERE DETAIL IS DRAWN
- 1 1 1 — KEY NOTE
- REMOVE OR DEMO ITEM
- PROVIDE OR INSTALL ITEM
- EXISTING ITEM
- 1 — PHOTO LOCATION TAG

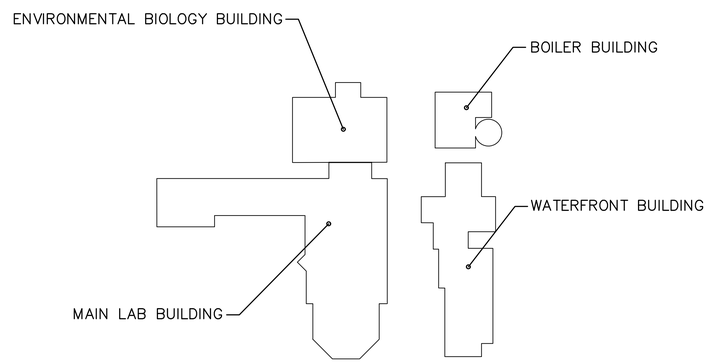
LIST OF DRAWINGS

LIST OF BID ALTERNATES

BID ALTERNATE 1: WATERFRONT BUILDING ATTIC IMPROVEMENTS

BID ALTERNATE 2: AIR HANDLING UNIT AHU-1: REMOVE EXISTING AIR HANDLING UNIT AHU-E1 AND PROVIDE AHU-1

BID ALTERNATE 3: ENVIRONMENTAL BIOLOGY BUILDING ATTIC IMPROVEMENTS



KEY PLAN
PLAN NORTH

NO.	DATE	DESCRIPTION	BY
REVISIONS			

FOR BIDDING ONLY - NOT FOR CONSTRUCTION

DRAWN BY: SMC
CHECK BY: JBL
NO.
DATE 08/05/2024

STATE OF MAINE
BGS

TITLE: ENERGY EFFICIENCY UPGRADES
MAINE DEPARTMENT OF MARINE RESOURCES LAB

LOCATION: BOOTHBAY, MAINE

TITLE THIS DWG.
TITLE, LIST OF DRAWINGS, NOTES, MAPS, LEGEND, AND ABBREVIATIONS

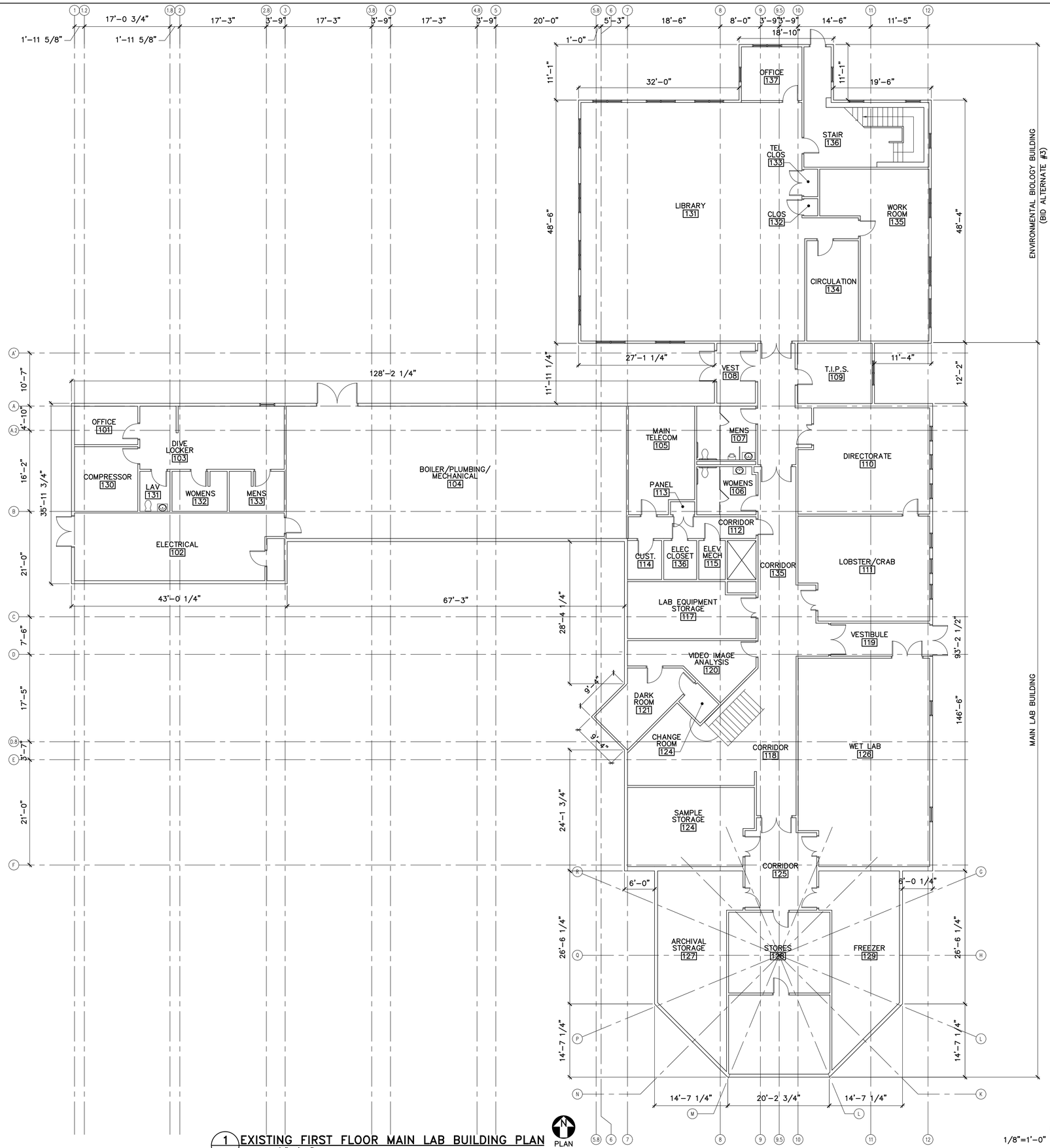
OAK POINT ASSOCIATES
ARCHITECTURE • ENGINEERING • PLANNING
231 Main Street, Biddeford, Maine 04005 207.283.6193

DRAWING NO. G-001
SHEET NO. 1 OF 30

06 Aug, 2024 - 9:48am
Y:\22405.01\22405.01-G001.dwg

GENERAL NOTES (THIS SHEET ONLY)

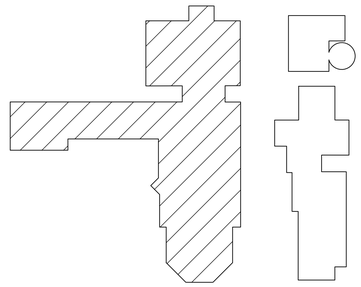
1. SEE SHEET G-001 FOR GENERAL CONSTRUCTION NOTES, LEGEND, AND ABBREVIATIONS.



1 EXISTING FIRST FLOOR MAIN LAB BUILDING PLAN
AD101 SCALE: 1/8"=1'-0"

PLAN NORTH

GRAPHIC SCALE
1/8"=1'-0"
8' 4' 0 8' 16'
CHECK GRAPHIC SCALE BEFORE USING



KEY PLAN

PLAN NORTH

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REVISIONS			

DRAWN BY: SMC
CHECK BY: JBL
NO.
DATE 08/05/2024

STATE OF MAINE
BGS

TITLE ENERGY EFFICIENCY UPGRADES
MAINE DEPARTMENT OF MARINE RESOURCES LAB

LOCATION BOOTHBAY, MAINE

TITLE THIS DWG.
EXISTING FIRST FLOOR
MAIN LAB BUILDING PLAN

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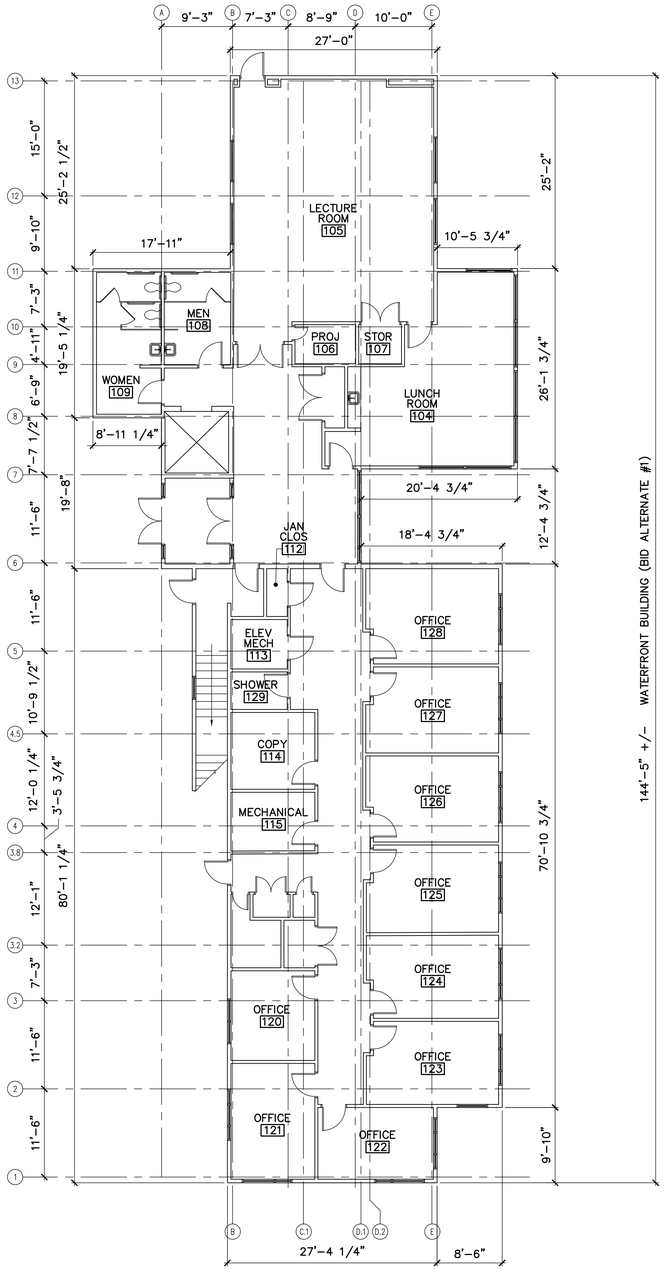
DRAWING NO. AD101
SHEET NO. 2 OF 30

02 Aug, 2024 - 1:18pm
Y:\22405.01\22405.01-AD101.dwg

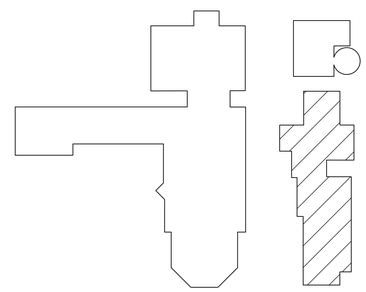
GENERAL NOTES (THIS SHEET ONLY)

1. SEE SHEET G-001 FOR GENERAL CONSTRUCTION NOTES, LEGEND, AND ABBREVIATIONS.



1 AD102 EXISTING FIRST FLOOR WATERFRONT BUILDING PLAN
SCALE: 1/8"=1'-0"

PLAN NORTH



KEY PLAN

PLAN NORTH

GRAPHIC SCALE
1/8"=1'-0" 8' 4' 0 8' 16'
CHECK GRAPHIC SCALE BEFORE USING

NO.	DATE	DESCRIPTION	BY
REVISIONS			

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CHECK BY: JBL
NO.
DATE 08/05/2024

STATE OF MAINE
BGS

TITLE ENERGY EFFICIENCY UPGRADES
MAINE DEPARTMENT OF MARINE RESOURCES LAB

LOCATION BOOTHBAY, MAINE

TITLE THIS DWG.
EXISTING FIRST FLOOR WATERFRONT BUILDING PLAN

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DRAWING NO. AD102
SHEET NO. 3 OF 30

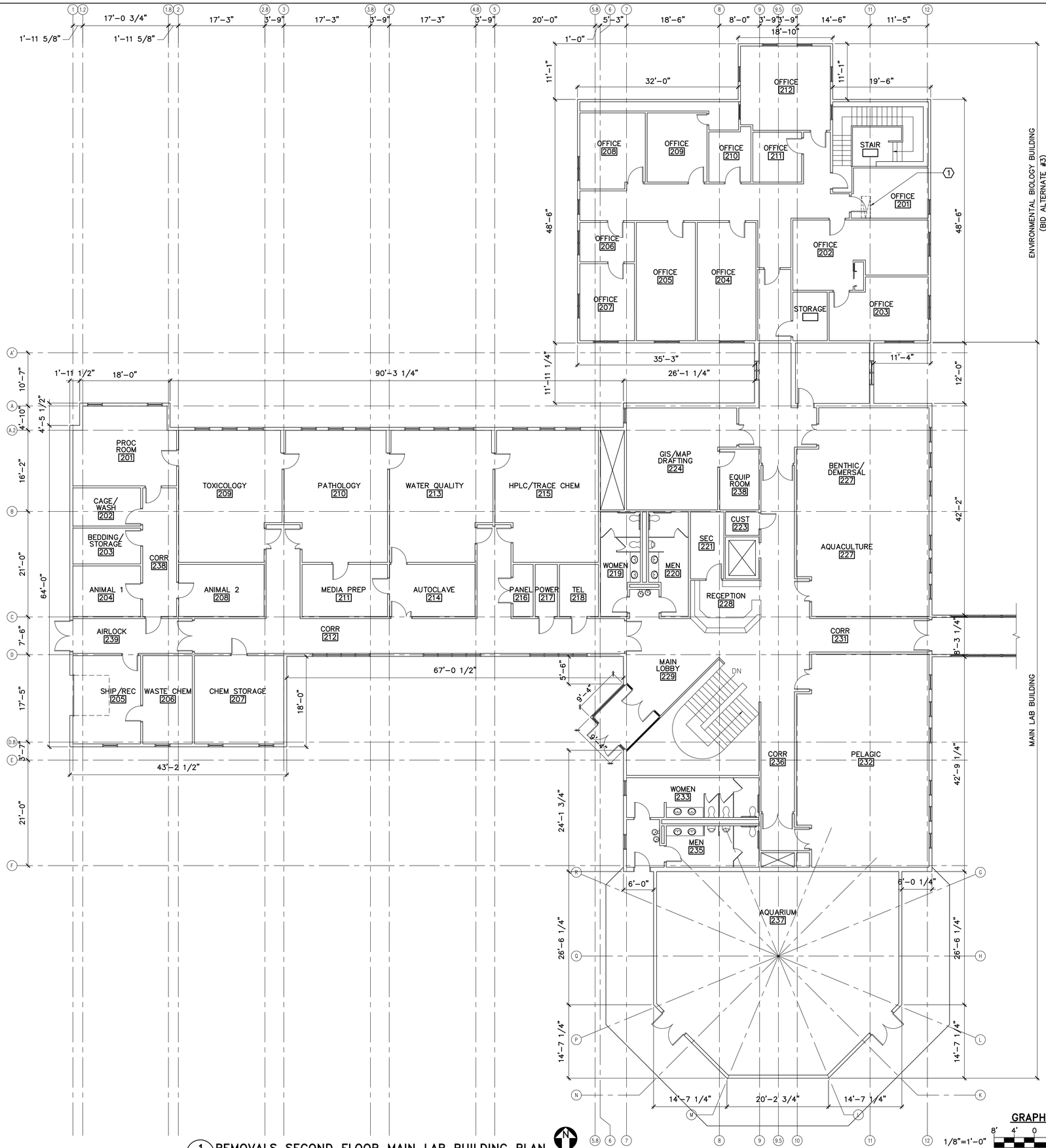
02 Aug, 2024 - 1:18pm
Y:\22405.01\22405.01-AD102.dwg

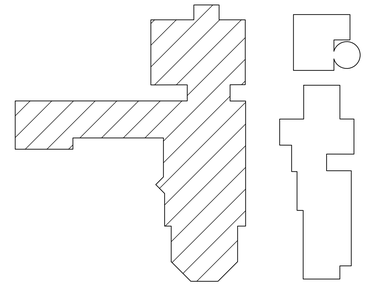
GENERAL NOTES (THIS SHEET ONLY)

1. SEE SHEET G-001 FOR GENERAL CONSTRUCTION NOTES, LEGEND, AND ABBREVIATIONS.

REMOVALS KEYNOTES (THIS SHEET ONLY)

(1) REMOVE EXISTING WOOD PULL-DOWN ATTIC STAIR FOR INSTALLATION OF NEW ALUMINUM ATTIC STAIR AND FRAMED OPENING.(BID ALTERNATE #3)





KEY PLAN

PLAN NORTH

1 REMOVALS SECOND FLOOR MAIN LAB BUILDING PLAN
AD103 SCALE: 1/8"=1'-0"

PLAN NORTH

GRAPHIC SCALE
8' 4' 0 8' 16'
1/8"=1'-0"
CHECK GRAPHIC SCALE BEFORE USING

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REVISIONS			

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NO:
DATE 08/05/2024

STATE OF MAINE
BGS

TITLE ENERGY EFFICIENCY UPGRADES
MAINE DEPARTMENT OF MARINE RESOURCES LAB

LOCATION BOOTHBAY, MAINE

TITLE THIS DWG.
EXISTING SECOND FLOOR MAIN LAB BUILDING PLAN

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DRAWING NO. AD103
SHEET NO. 4 OF 30

02 Aug, 2024 - 1:18pm
Y:\22405.01\22405.01-AD103.dwg

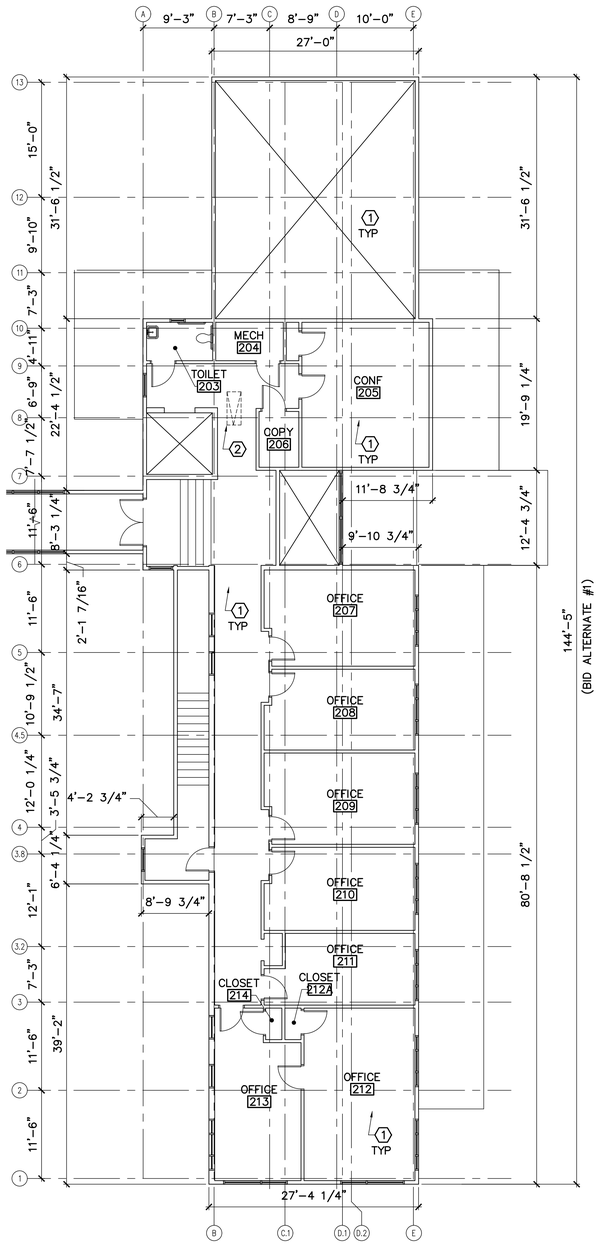
GENERAL NOTES (THIS SHEET ONLY)

1. SEE SHEET G-001 FOR GENERAL CONSTRUCTION NOTES, LEGEND, AND ABBREVIATIONS.

REMOVALS KEYNOTES (THIS SHEET ONLY)

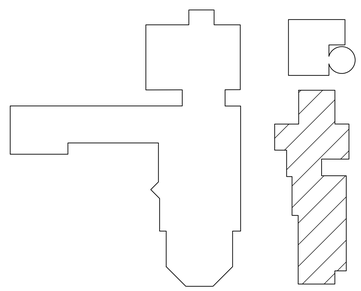
(1) REMOVE ACOUSTIC TILE CEILING PANELS FOR INSTALLATION OF VAPOR BARRIER AND INSULATION (GRID TO REMAIN).. SALVAGE AND PROTECT CEILING PANELS FOR REINSTALLATION –SEE SHEET AE102 FOR ADDITIONAL INFORMATION (BID ALTERNATE #1).

(2) REMOVE PART OF CEILING GRID AT NEW ATTIC STAIR. SEE DETAIL 3/AE102 (BID ALTERNATE #1).



1 AD104 REMOVALS SECOND FLOOR WATERFRONT BUILDING PLAN
SCALE: 1/8"=1'-0"

PLAN NORTH



KEY PLAN

PLAN NORTH

GRAPHIC SCALE
1/8"=1'-0"
8' 4' 0 8' 16'
CHECK GRAPHIC SCALE BEFORE USING

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

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NO.
DATE 08/05/2024

STATE OF MAINE
BGS

TITLE ENERGY EFFICIENCY UPGRADES
MAINE DEPARTMENT OF MARINE RESOURCES LAB

LOCATION BOOTHBAY, MAINE

TITLE THIS DWG.
EXISTING SECOND FLOOR
WATERFRONT BUILDING PLAN

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DRAWING NO. AD104
SHEET NO. 5 OF 30

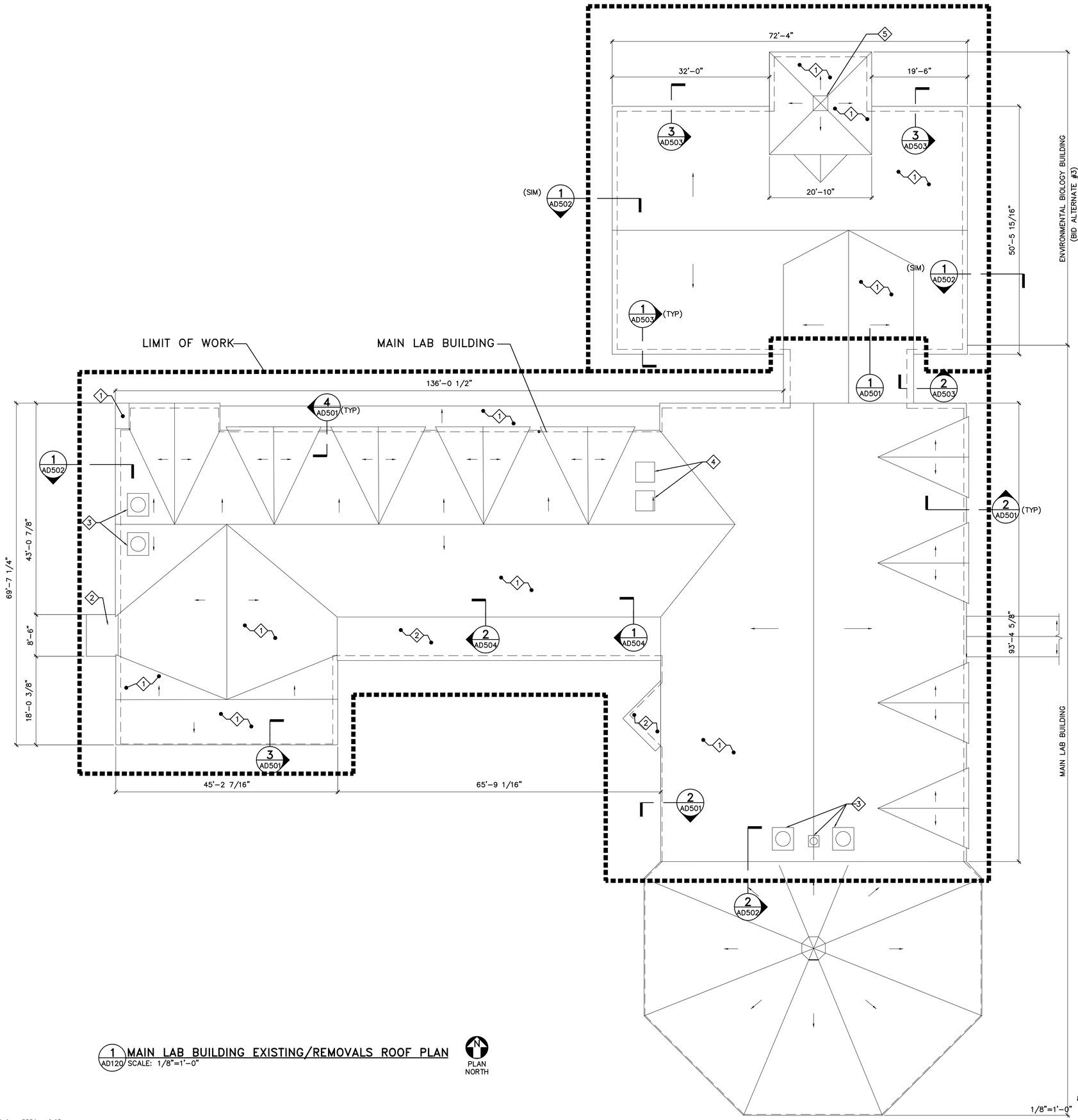
02 Aug, 2024 – 1:18pm
Y:\22405.01\22405.01–AD104.dwg

GENERAL NOTES (THIS SHEET ONLY)

1. SEE SHEET G-001 FOR GENERAL CONSTRUCTION NOTES. LEGEND AND ABBREVIATIONS.

EXISTING KEYNOTES (THIS SHEET ONLY)

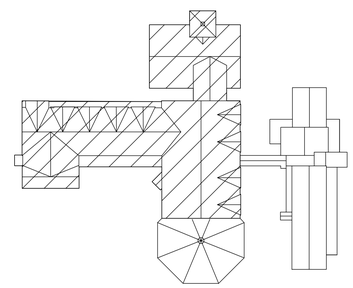
1. EXISTING ASPHALT SHINGLE ROOF
2. EXISTING MEMBRANE ROOF
3. EXISTING EXHAUST FAN
4. EXISTING LOUVERED PENTHOUSE
5. EXISTING COPPER CUPOLA



1 AD120 MAIN LAB BUILDING EXISTING/REMOVALS ROOF PLAN
SCALE: 1/8"=1'-0"

PLAN NORTH

GRAPHIC SCALE
8' 4' 0 8' 16'
1/8"=1'-0"
CHECK GRAPHIC SCALE BEFORE USING



KEY PLAN

PLAN NORTH

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		REVISIONS	

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DATE 08/05/2024

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BGS

TITLE ENERGY EFFICIENCY UPGRADES
MAINE DEPARTMENT OF MARINE RESOURCES LAB

LOCATION BOOTHBAY, MAINE

TITLE THIS DWG.
MAIN LAB BUILDING
ROOF REMOVALS PLAN

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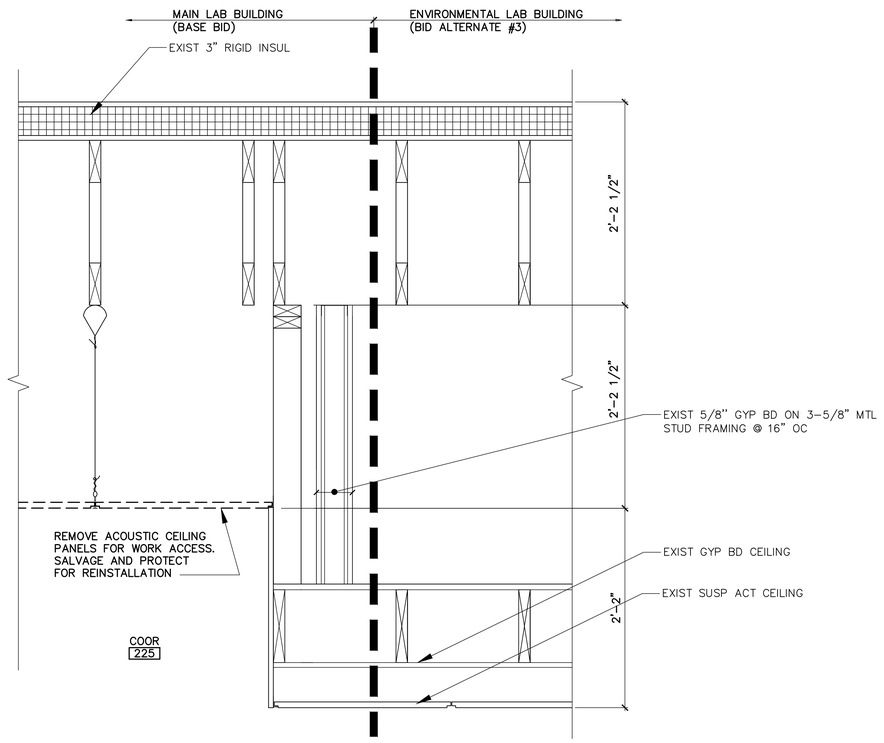
DRAWING NO. AD120
SHEET NO. 6 OF 30

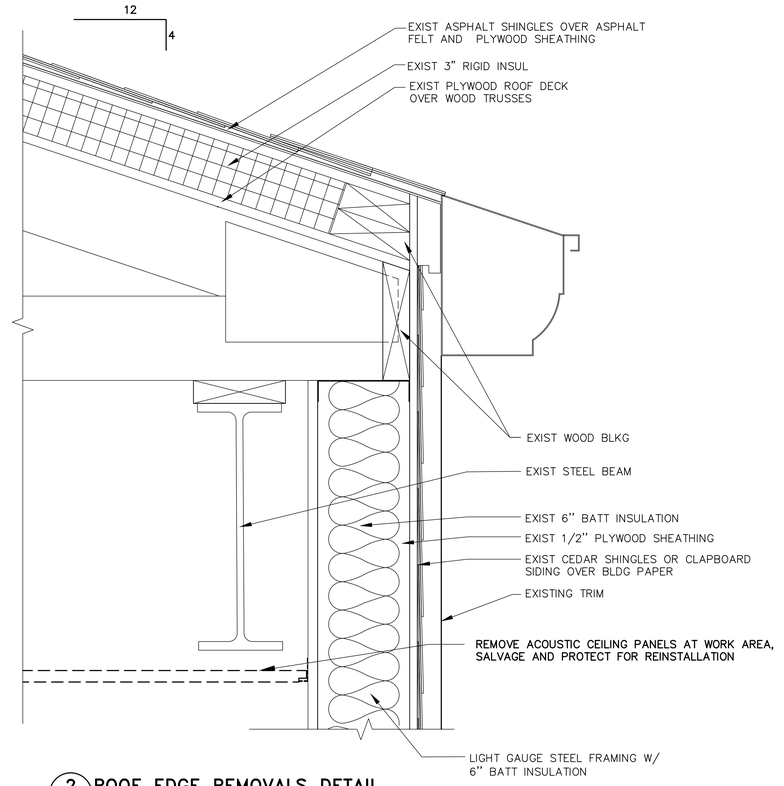
02 Aug, 2024 - 1:18pm
Y:\22405.01\22405.01-AD120.dwg

GENERAL NOTES (THIS SHEET ONLY)

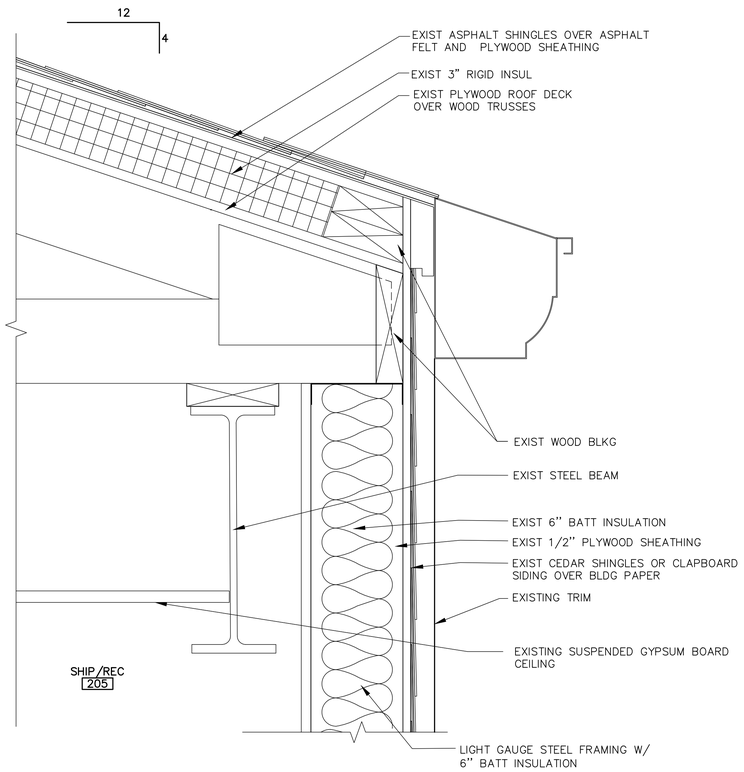
1. SEE SHEET G-001 FOR GENERAL CONSTRUCTION NOTES. LEGEND AND ABBREVIATIONS.



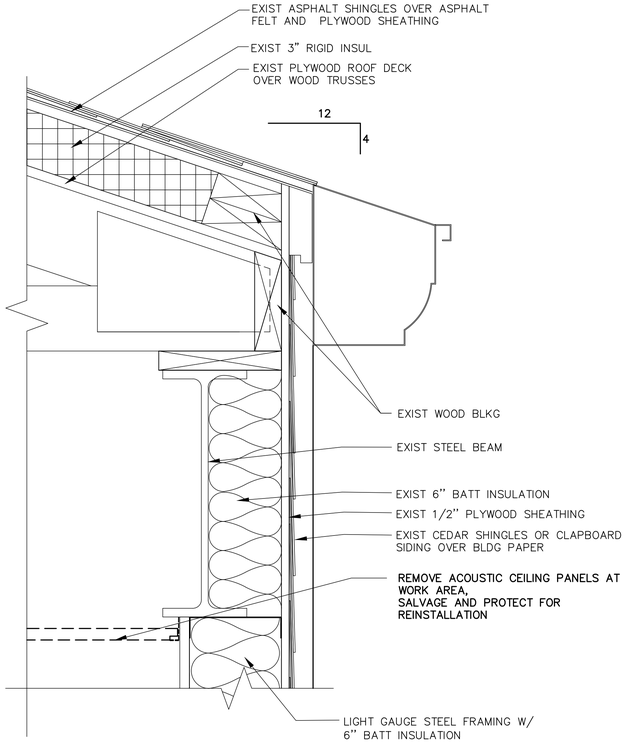
1 AD120 / AD501 **EXISTING SECTION AT LINK TO ENVIRONMENTAL**
SCALE: 1-1/2"=1'-0"



2 AD120 / AD501 **ROOF EDGE REMOVALS DETAIL**
SCALE: 3"=1'-0"



3 AD120 / AD501 **ROOF EDGE REMOVALS DETAIL**
SCALE: 3"=1'-0"



4 AD120 / AD501 **ROOF EDGE REMOVALS DETAIL**
SCALE: 3"=1'-0"

GRAPHIC SCALE
3"=1'-0"
6" 4" 2" 0 6"
CHECK GRAPHIC SCALE BEFORE USING

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DATE 08/05/2024

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TITLE ENERGY EFFICIENCY UPGRADES
MAINE DEPARTMENT OF MARINE RESOURCES LAB
LOCATION BOOTHBAY, MAINE

TITLE THIS DWG.
ROOF REMOVALS DETAILS

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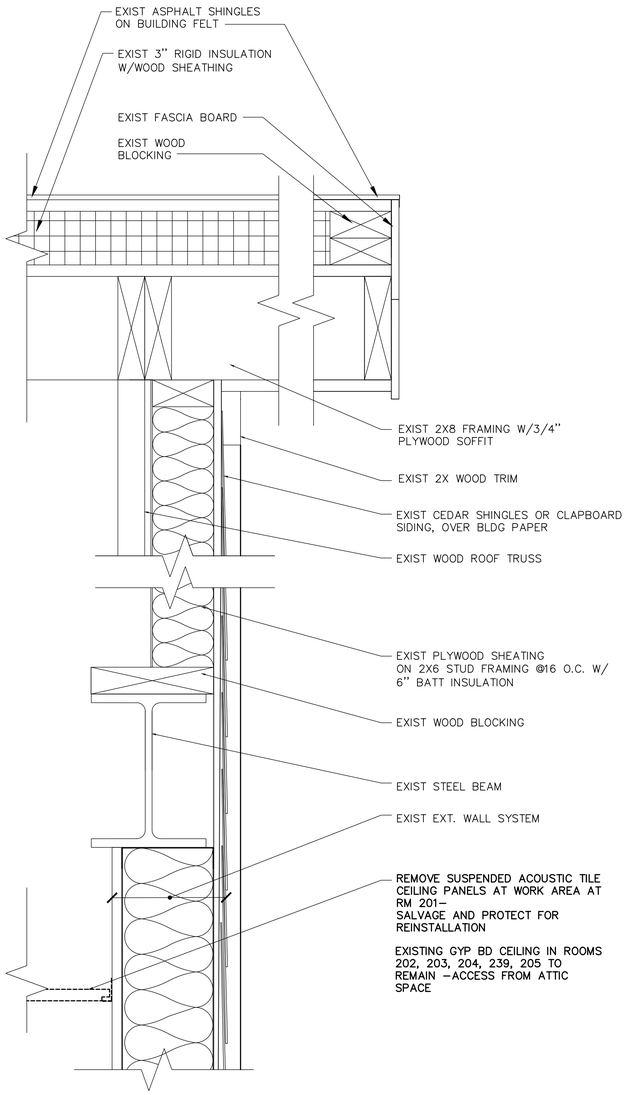
DRAWING NO. AD501
SHEET NO. 7 OF 30

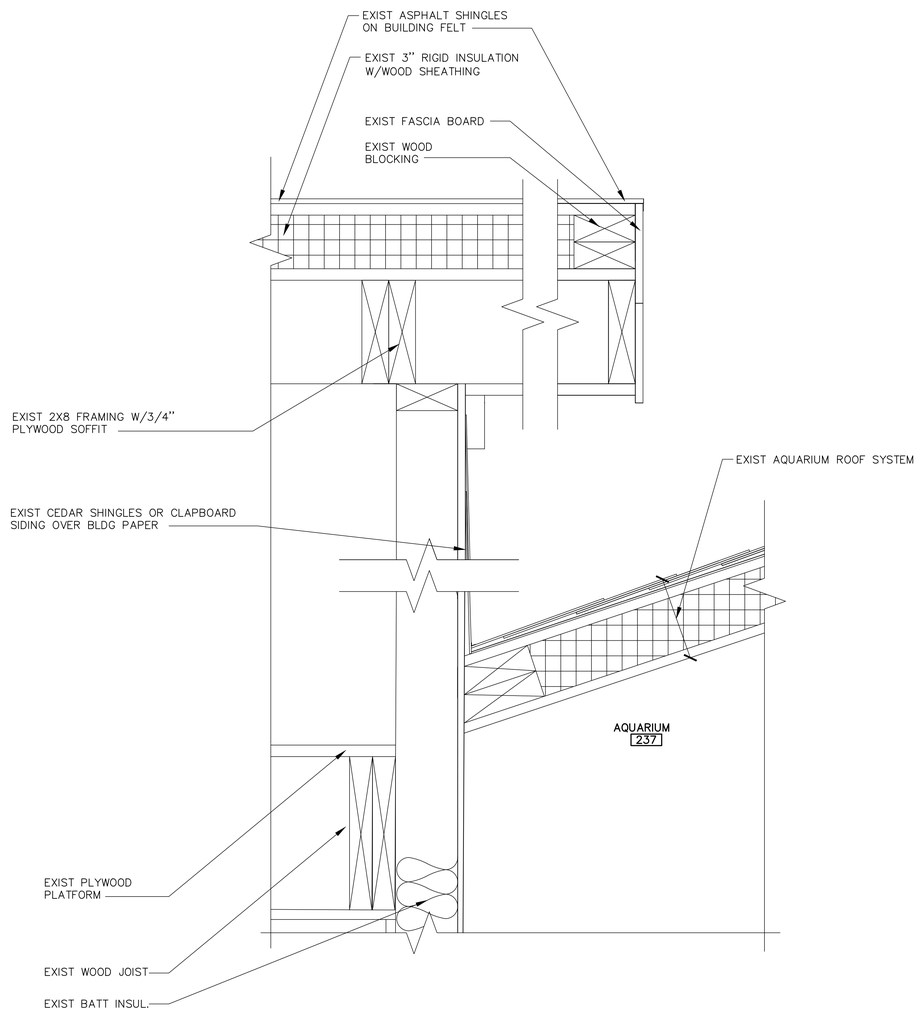
02 Aug, 2024 - 1:18pm
Y:\22405.01\22405.01-AD501.dwg

GENERAL NOTES (THIS SHEET ONLY)

1. SEE SHEET G-001 FOR GENERAL CONSTRUCTION NOTES. LEGEND AND ABBREVIATIONS.



1 AD120 / AD502 **REMOVALS ROOF DETAIL @ GABLE WALL**
SCALE: 3"=1'-0"



2 AD120 / AD502 **EXISTING ROOF DETAIL @ AQUARIUM**
SCALE: 3"=1'-0"

GRAPHIC SCALE
3"=1'-0" 6" 4" 2" 0 6"
CHECK GRAPHIC SCALE BEFORE USING

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		REVISIONS	

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DATE 08/05/2024

STATE OF MAINE
BGS

TITLE ENERGY EFFICIENCY UPGRADES
MAINE DEPARTMENT OF MARINE RESOURCES LAB
LOCATION BOOTHBAY, MAINE

TITLE THIS DWG.
ROOF REMOVALS DETAILS

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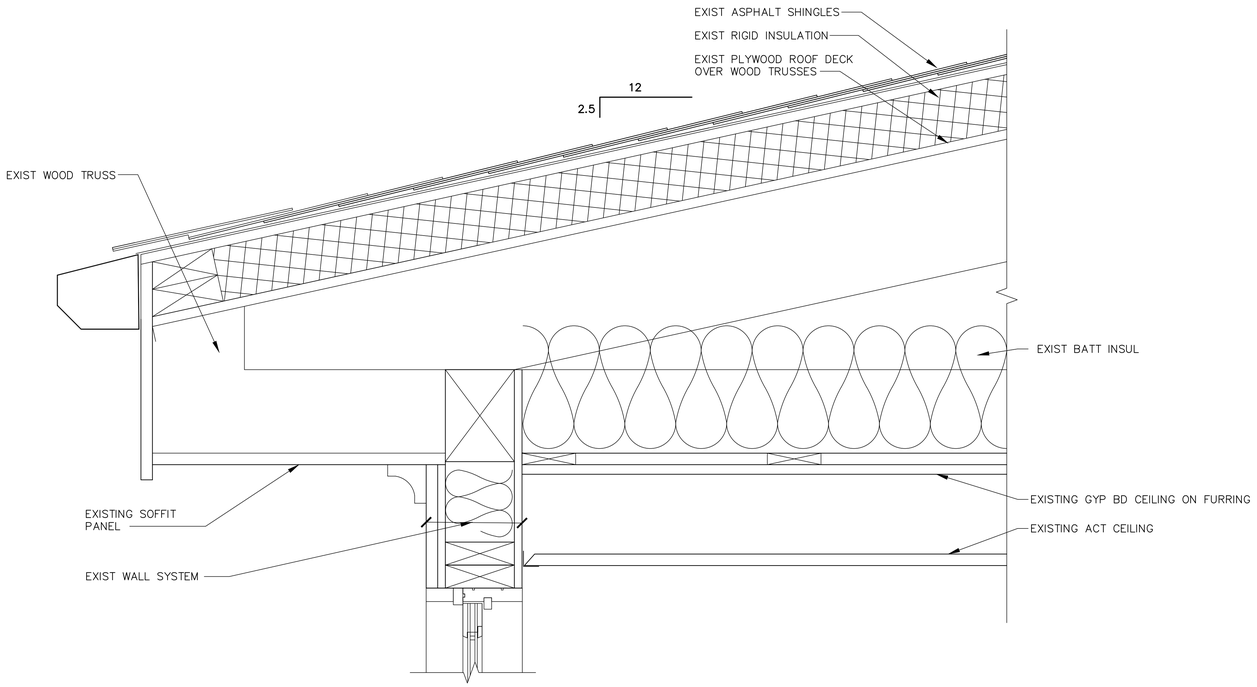
DRAWING NO. AD502
SHEET NO. 8 OF 30

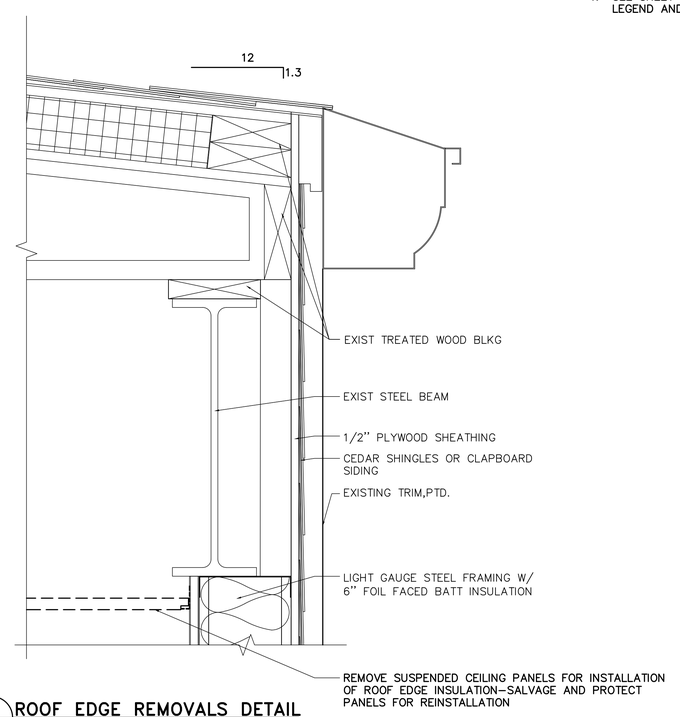
02 Aug, 2024 - 1:18pm
Y:\22405.01\22405.01-AD502.dwg

GENERAL NOTES (THIS SHEET ONLY)

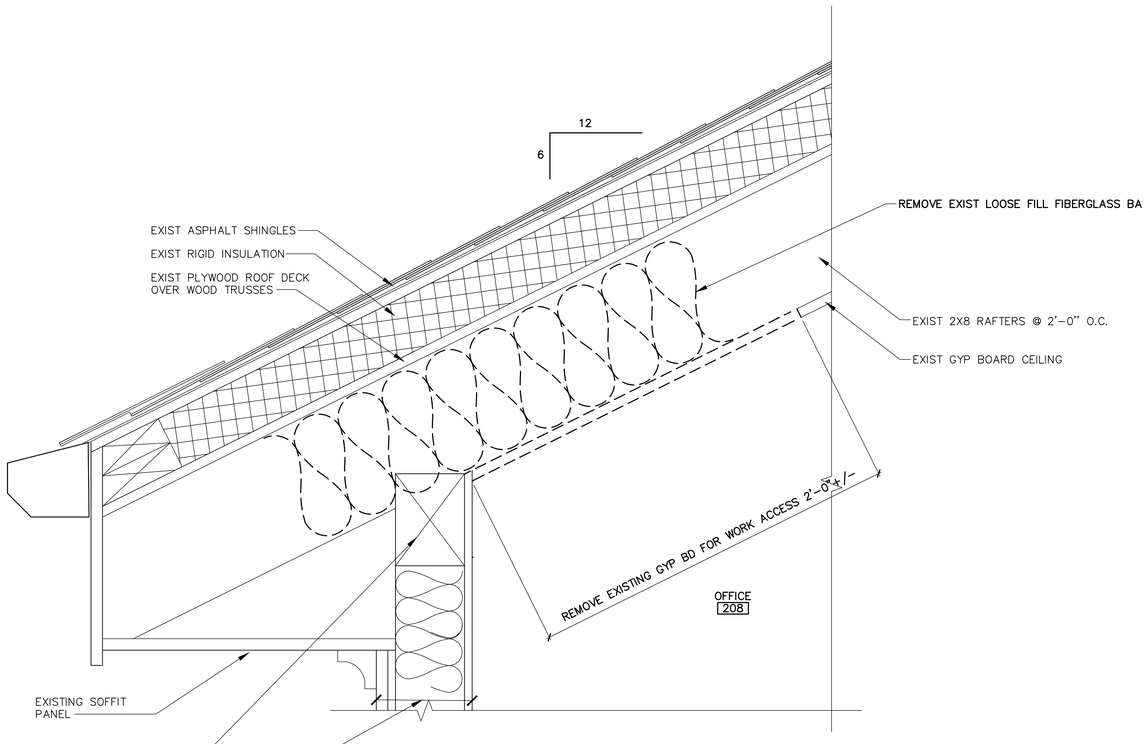
1. SEE SHEET G-001 FOR GENERAL CONSTRUCTION NOTES. LEGEND AND ABBREVIATIONS.



1 EXISTING ROOF EDGE DETAIL
AD120 AD503 SCALE: 3"=1'-0" (BID ALTERNATE #3)



2 ROOF EDGE REMOVALS DETAIL
AD120 AD503 SCALE: 3"=1'-0"



3 ROOF EDGE REMOVALS DETAIL
AD120 AD503 SCALE: 3"=1'-0" (BID ALTERNATE #3)

GRAPHIC SCALE
3"=1'-0" 6" 4" 2" 0 6"
CHECK GRAPHIC SCALE BEFORE USING

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

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DRAWN BY: SMC
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STATE OF MAINE
BGS

TITLE ENERGY EFFICIENCY UPGRADES
MAINE DEPARTMENT OF MARINE RESOURCES LAB
LOCATION BOOTHBAY, MAINE
TITLE THIS DWG.
ROOF REMOVALS DETAILS

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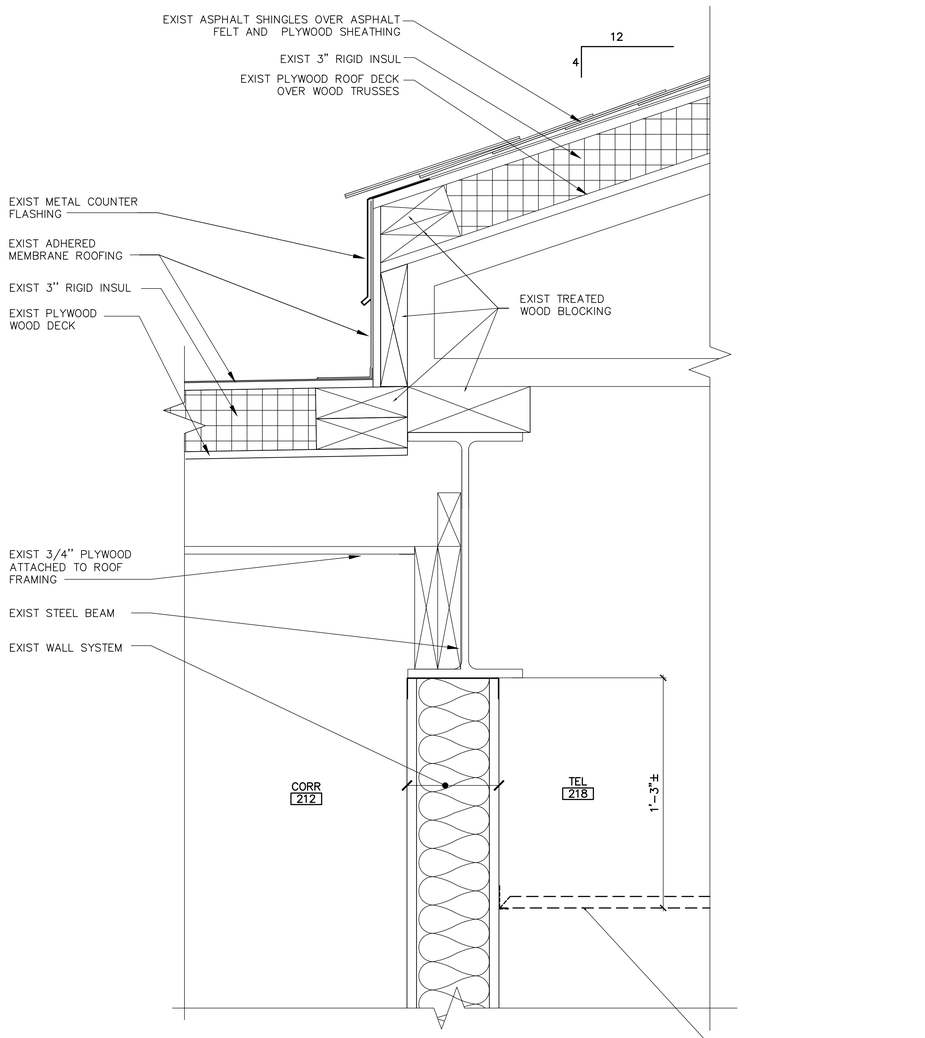
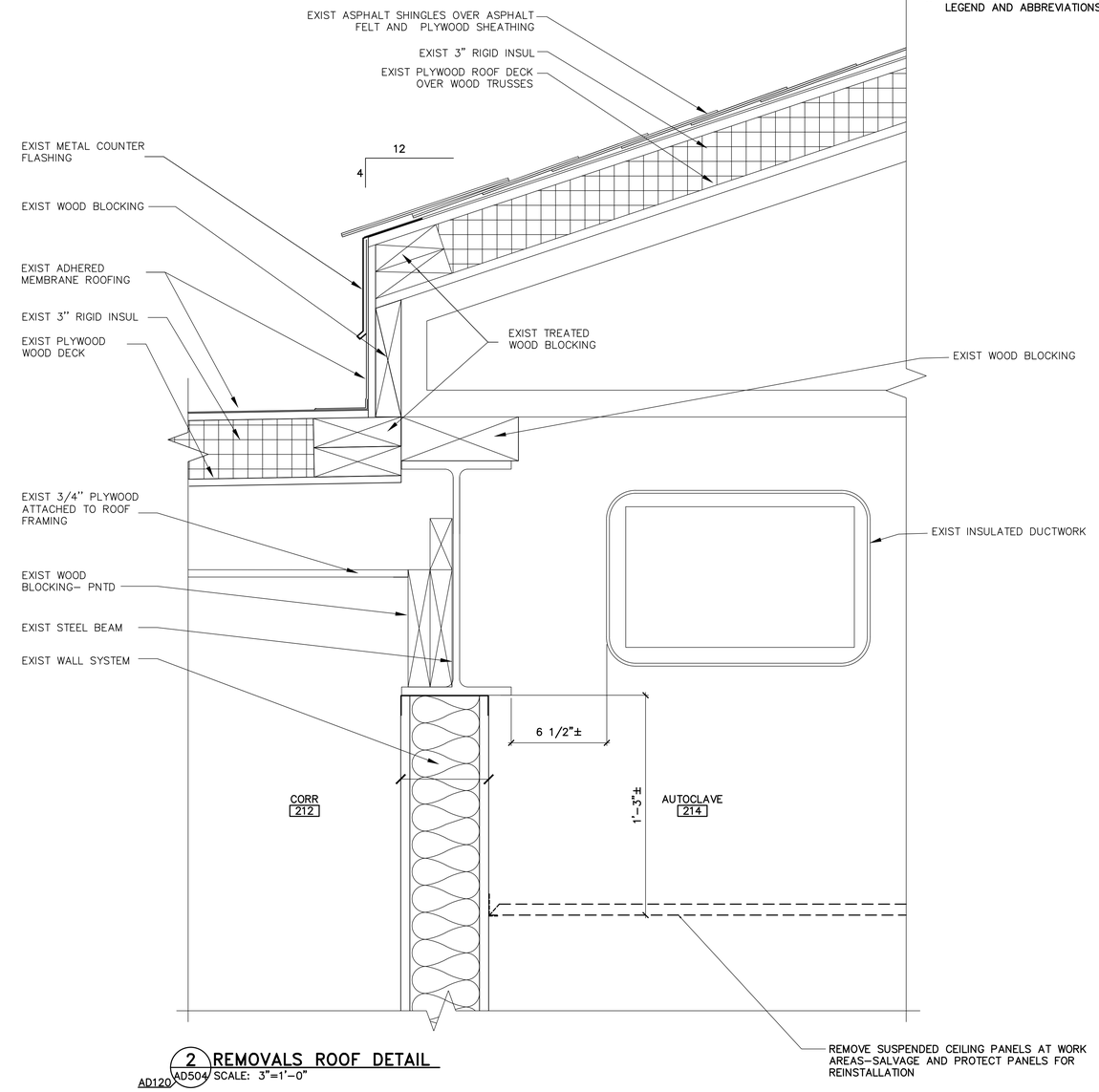
DRAWING NO. AD503
SHEET NO. 9 OF 30

02 Aug, 2024 - 1:18pm
Y:\22405.01\22405.01-AD503.dwg



1 AD504 **REMOVALS ROOF DETAIL** AD120
SCALE: 3"=1'-0"



2 AD504 **REMOVALS ROOF DETAIL** AD120
SCALE: 3"=1'-0"

GENERAL NOTES (THIS SHEET ONLY)

1. SEE SHEET G-001 FOR GENERAL CONSTRUCTION NOTES. LEGEND AND ABBREVIATIONS.

GRAPHIC SCALE

3"=1'-0" 6" 4" 2" 0 6"

CHECK GRAPHIC SCALE BEFORE USING

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

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DRAWN BY: SMC
CHECK BY: JBL
NO.
DATE 08/05/2024

STATE OF MAINE
BGS

TITLE ENERGY EFFICIENCY UPGRADES
MAINE DEPARTMENT OF MARINE RESOURCES LAB

LOCATION BOOTHBAY, MAINE

TITLE THIS DWG.
ROOF REMOVALS DETAILS

OAK POINT ASSOCIATES
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231 Main Street, Biddeford, Maine 04005 207.283.0193

DRAWING NO. AD504
SHEET NO. 10 OF 30

02 Aug, 2024 - 1:18pm
Y:\22405.01\22405.01-AD504.dwg

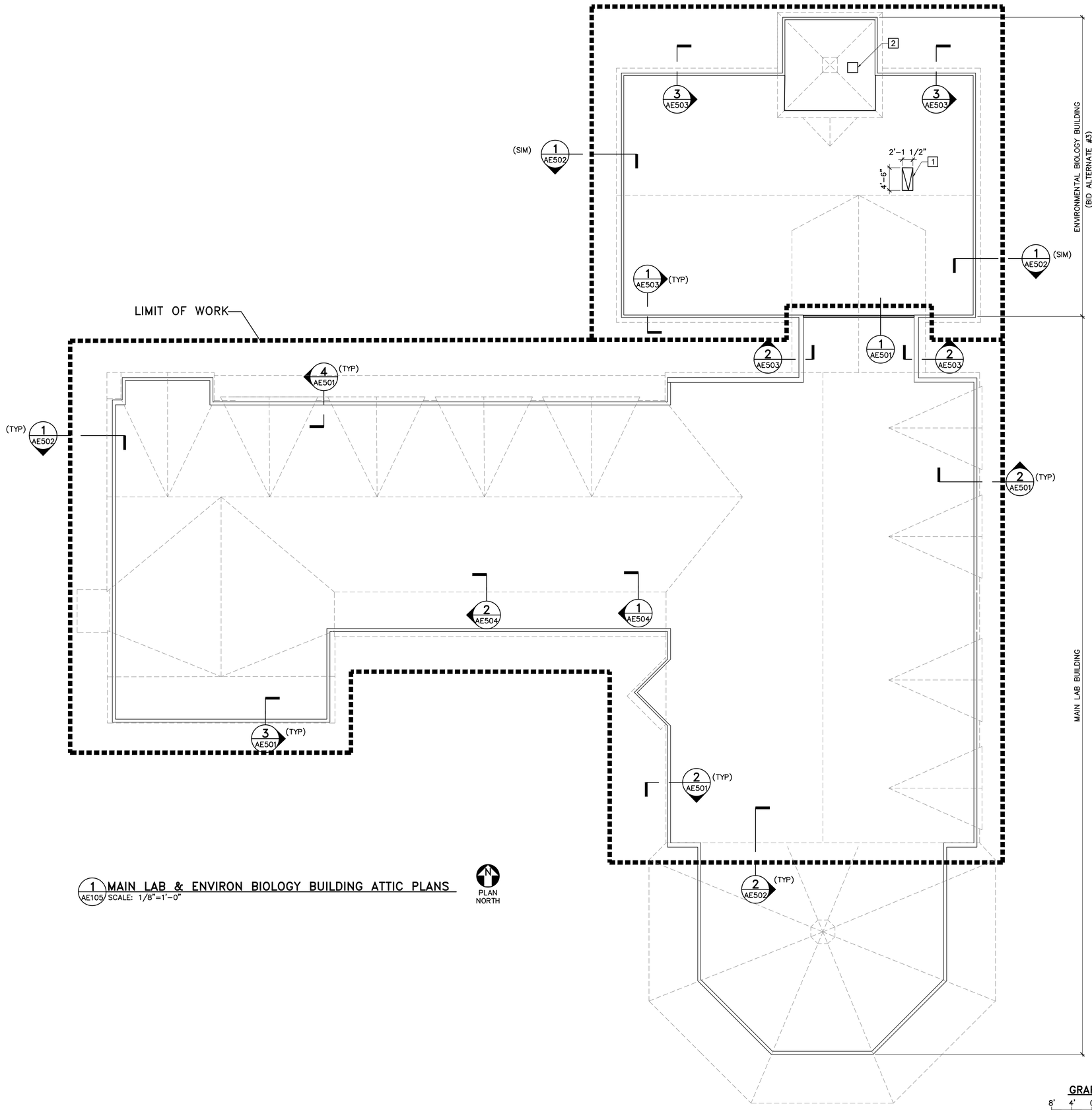
GENERAL NOTES (THIS SHEET ONLY)

1. SEE SHEET G-001 FOR GENERAL CONSTRUCTION NOTES, LEGEND, AND ABBREVIATIONS.

KEYNOTES (THIS SHEET ONLY)

[1] 25.5 IN x 54 IN RO INSULATED ALUMINUM ATTIC STAIR AND WOOD FRAMED ROUGH OPENING. BASIS OF DESIGN PRODUCT: LOUISVILLE AEE2510-R10 ALUMINUM FRAMED ATTIC LADDER WITH R10 INSULATED DOOR WITH WEATHER STRIPPING FACTORY INSTALLED. DESIGNED TO. FIT CEILING HEIGHTS FROM 7 FT. 8 IN. TO 10 FT. 3 IN. GAS PISTON SYSTEM, WORKING LOAD CAPACITY OF 375 LBS. SEE DETAIL 2/AE102 (BID ALTERNATE #3).

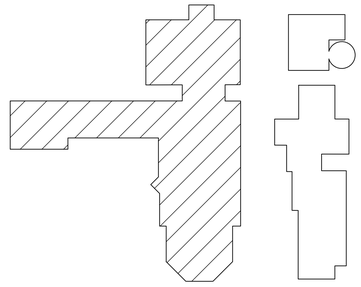
[2] 24 INCH BY 24 INCH INSULATED ALUMINUM CEILING ACCESS DOOR. BASIS OF DESIGN PRODUCT: BEST ACCESS DOORS MODEL PA-PAL-24-24, INSULATED WITH PERIMETER SEAL, SCREWDRIVER OPERATED CAM LATCH, FACTORY WHITE POWDER COAT. FIELD PAINT WITH 2 COATS WHITE GLOSS ACRYLIC LAYTEX. SEE DETAIL 4/AE102 (BID ALTERNATE #3).



1 AE105 MAIN LAB & ENVIRON BIOLOGY BUILDING ATTIC PLANS
SCALE: 1/8"=1'-0"

PLAN NORTH

GRAPHIC SCALE
8' 4' 0 8' 16'
1/8"=1'-0"
CHECK GRAPHIC SCALE BEFORE USING



KEY PLAN

PLAN NORTH

NO.	DATE	DESCRIPTION	BY
REVISIONS			

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CHECK BY: JBL
NO.
DATE 08/05/2024

STATE OF MAINE
BGS

TITLE ENERGY EFFICIENCY UPGRADES
MAINE DEPARTMENT OF MARINE RESOURCES LAB

LOCATION BOOTHBAY, MAINE

TITLE THIS DWG.
MAIN LAB BUILDING ATTIC PLAN

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ARCHITECTURE ■ ENGINEERING ■ PLANNING
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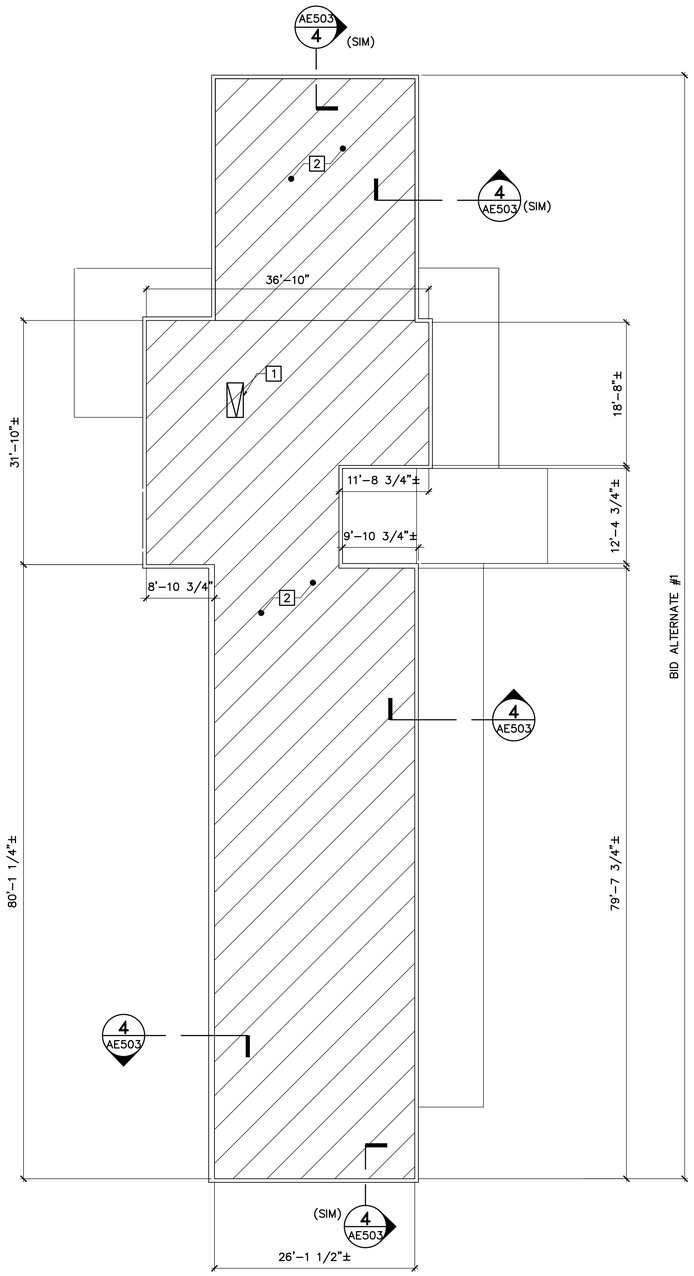
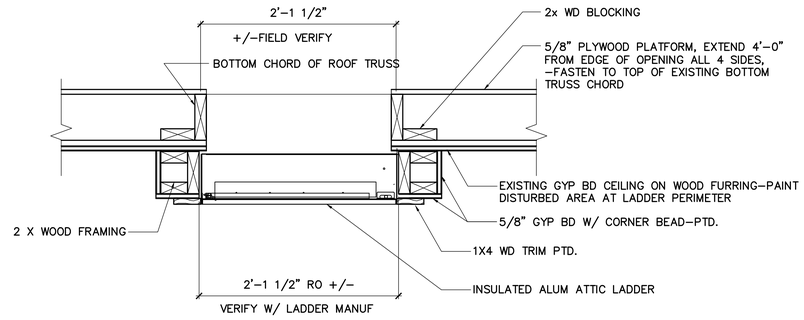
DRAWING NO. AE101
SHEET NO. 11 OF 30

02 Aug, 2024 - 1:18pm
Y:\22405.01\22405.01-AE101.dwg

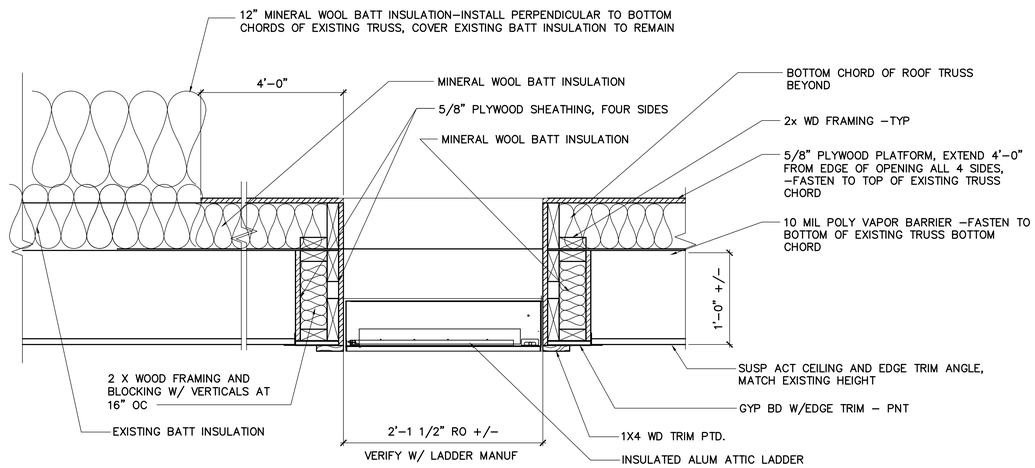


1 AE106 WATERFRONT BUILDING ATTIC PLAN
SCALE: 1/8"=1'-0" (BID ALTERNATE #1)

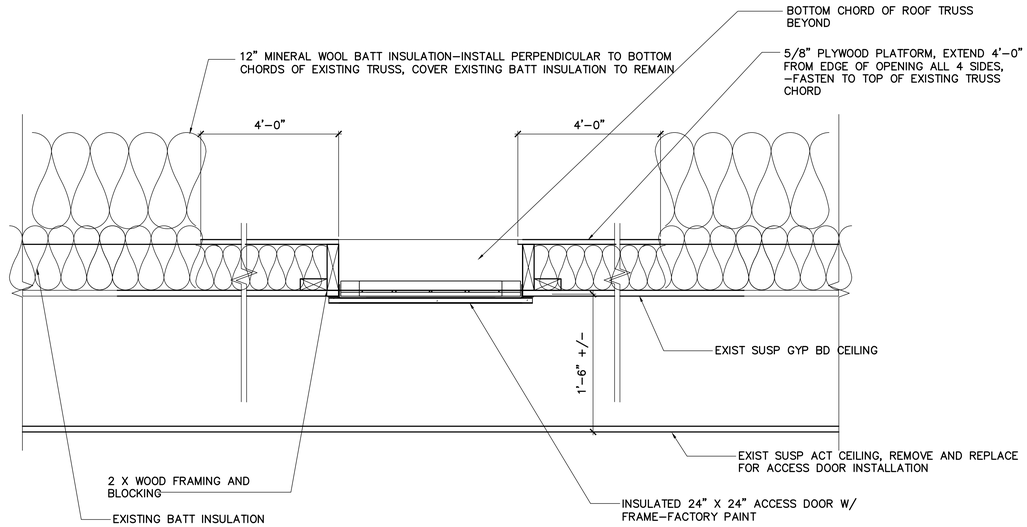
PLAN NORTH



2 AE102 INSULATED ATTIC LADDER DETAIL (@ ENVIRON BIOLOGY BLDG)
SCALE: 1-1/2"=1'-0" (BID ALTERNATE #3)



3 AE102 INSULATED ATTIC LADDER DETAIL (@ WATERFRONT BLDG)
SCALE: 1-1/2"=1'-0" (BID ALTERNATE #1)



4 AE102 INSULATED ACCESS DOOR DETAIL (@ ENVIR BIOLOGY BLDG)
SCALE: 1-1/2"=1'-0" (BID ALTERNATE #3)

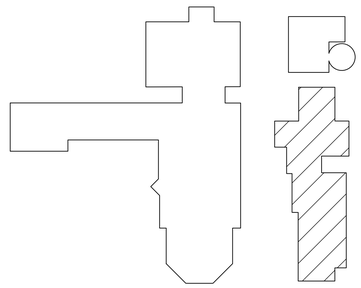
GENERAL NOTES (THIS SHEET ONLY)

1. SEE SHEET G-001 FOR GENERAL CONSTRUCTION NOTES, LEGEND, AND ABBREVIATIONS.

KEYNOTES (THIS SHEET ONLY)

[1] 25.5 IN x 54 IN RO INSULATED ALUMINUM ATTIC STAIR AND WOOD FRAMED ROUGH OPENING. BASIS OF DESIGN PRODUCT: LOUISVILLE AEE2510-R10 ALUMINUM FRAMED ATTIC LADDER WITH R10 INSULATED DOOR WITH WEATHER STRIPPING FACTORY INSTALLED. DESIGNED TO FIT CEILING HEIGHTS FROM 7 FT. 8 IN. TO 10 FT. 3 IN. GAS PISTON SYSTEM, WORKING LOAD CAPACITY OF 375 LBS. SEE DETAIL 3/AE102. (BID ALTERNATE #1)

[2] AT HATCHED AREA ADD ONE LAYER 12" MINERAL WOOL BATT INSUL OVER AND PERPENDICULAR TO EXISTING BATT INSULATION. PROVIDE NEW 10 MIL POLY VAPOR BARRIER AT BOTTOM OF BOTTOM CHORDS OF ROOF TRUSSES (EXISTING DAMAGED POLY VAPOR BARRIER TO REMAIN).. SEAL AIR TIGHT ALL MECHANICAL AND ELECTRICAL DUCTWORK AND PIPING/CONDUIT PENETRATIONS AT VAPOR BARRIER WITH VAPOR BARRIER TAPE AND SEALANT FITTED TIGHT TO PENETRATING ITEM. REINSTALL ACOUSTIC CEILING TILE PANELS,. (BID ALTERNATE #1)



KEY PLAN

PLAN NORTH

GRAPHIC SCALE
1/8"=1'-0"
8' 4' 0 8' 16'
CHECK GRAPHIC SCALE BEFORE USING

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

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CHECK BY: JBL
NO.
DATE 08/05/2024

STATE OF MAINE
BGS
TITLE ENERGY EFFICIENCY UPGRADES
MAINE DEPARTMENT OF MARINE RESOURCES LAB
LOCATION BOOTHBAY, MAINE
TITLE THIS DWG.
WATERFRONT BUILDING ATTIC PLAN AND DETAIL

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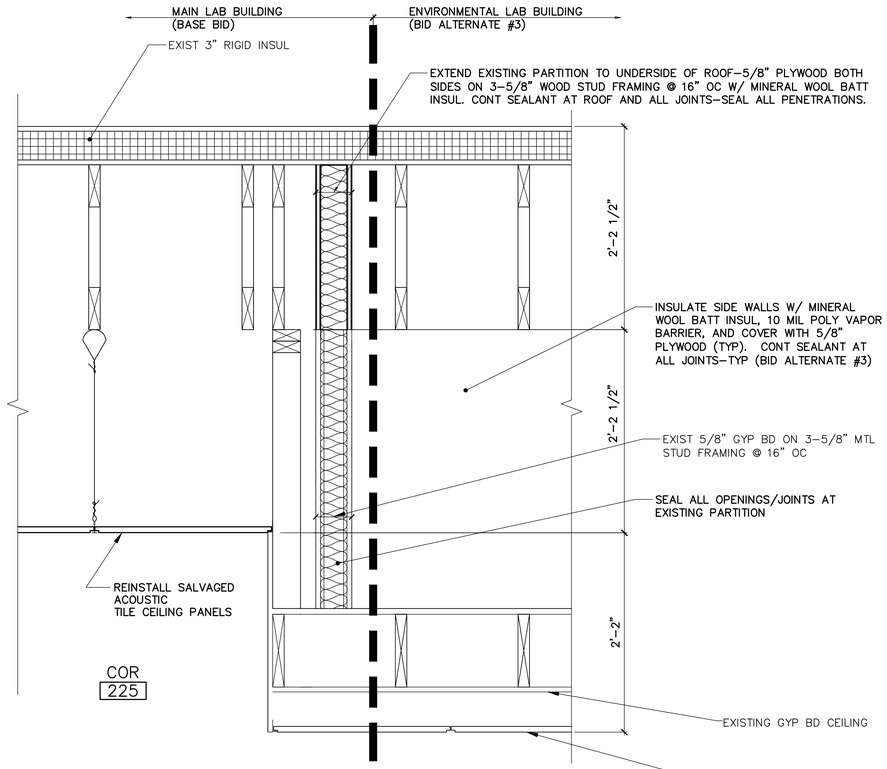
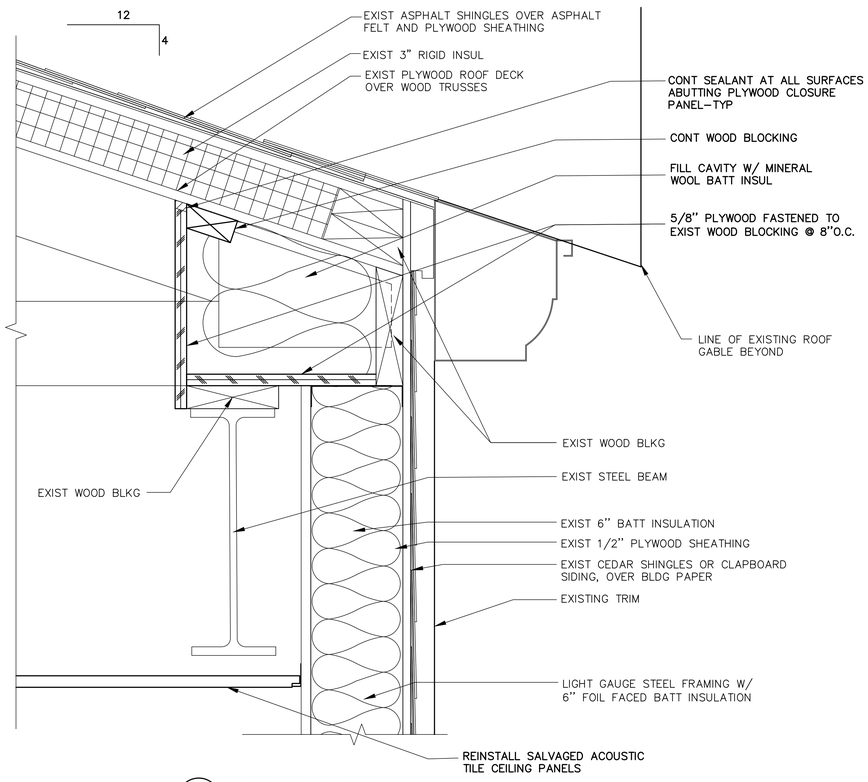
DRAWING NO. AE102
SHEET NO. 12 OF 30

02 Aug, 2024 - 1:18pm
Y:\22405.01\22405.01-AE102.dwg



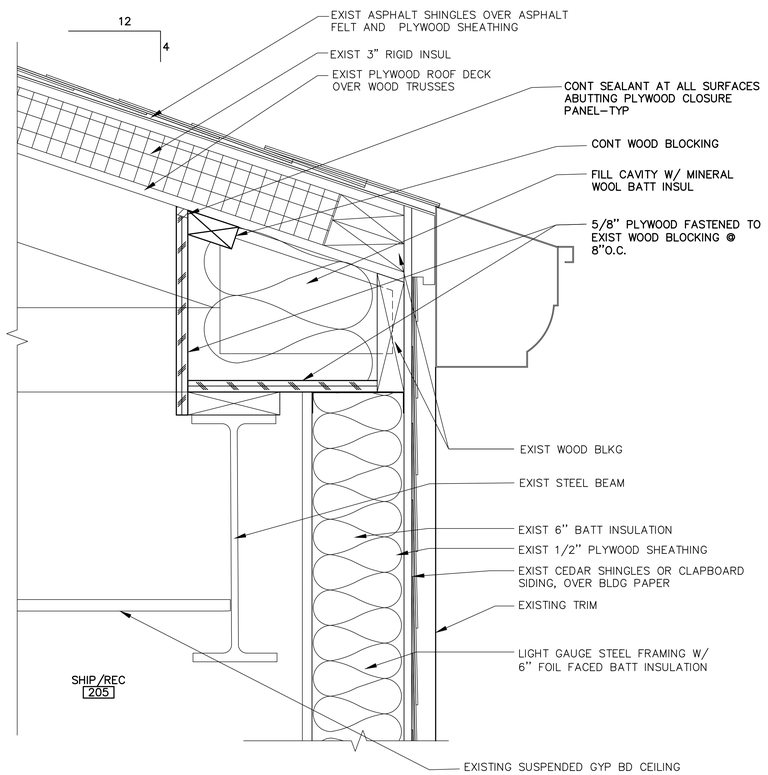
1 SECTION AT LINK TO ENVIRONMENTAL
AE101 AE501 SCALE: 1–1/2"=1'–0"



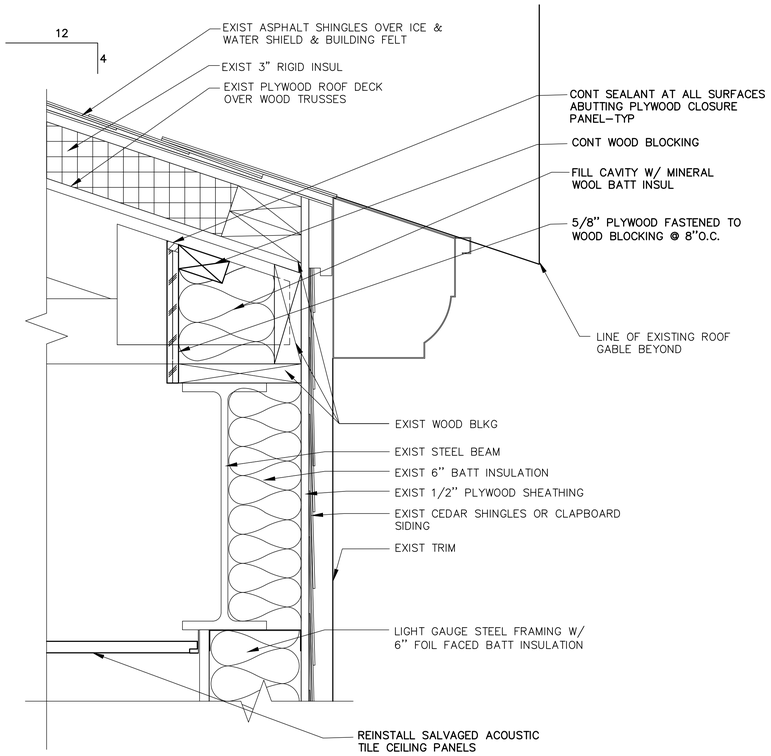
2 ROOF EDGE DETAIL
AE101 AE501 SCALE: 3"=1'–0"

GENERAL NOTES

1. SEE SHEET G–001 FOR GENERAL CONSTRUCTION NOTES. LEGEND AND ABBREVIATIONS.



3 ROOF EDGE DETAIL
AE101 AE501 SCALE: 3"=1'–0"



4 ROOF EDGE DETAIL
AE101 AE501 SCALE: 3"=1'–0"

GRAPHIC SCALES

1–1/2"=1'–0" 1' 8" 4" 0 1'

3"=1'–0" 6" 4" 2" 0 6"

CHECK GRAPHIC SCALES BEFORE USING

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

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CHECK BY: JBL
NO.
DATE 08/05/2024

STATE OF MAINE
BGS

TITLE: ENERGY EFFICIENCY UPGRADES
MAINE DEPARTMENT OF MARINE RESOURCES LAB

LOCATION: BOOTHBAY, MAINE

TITLE THIS DWG.
ROOF DETAILS

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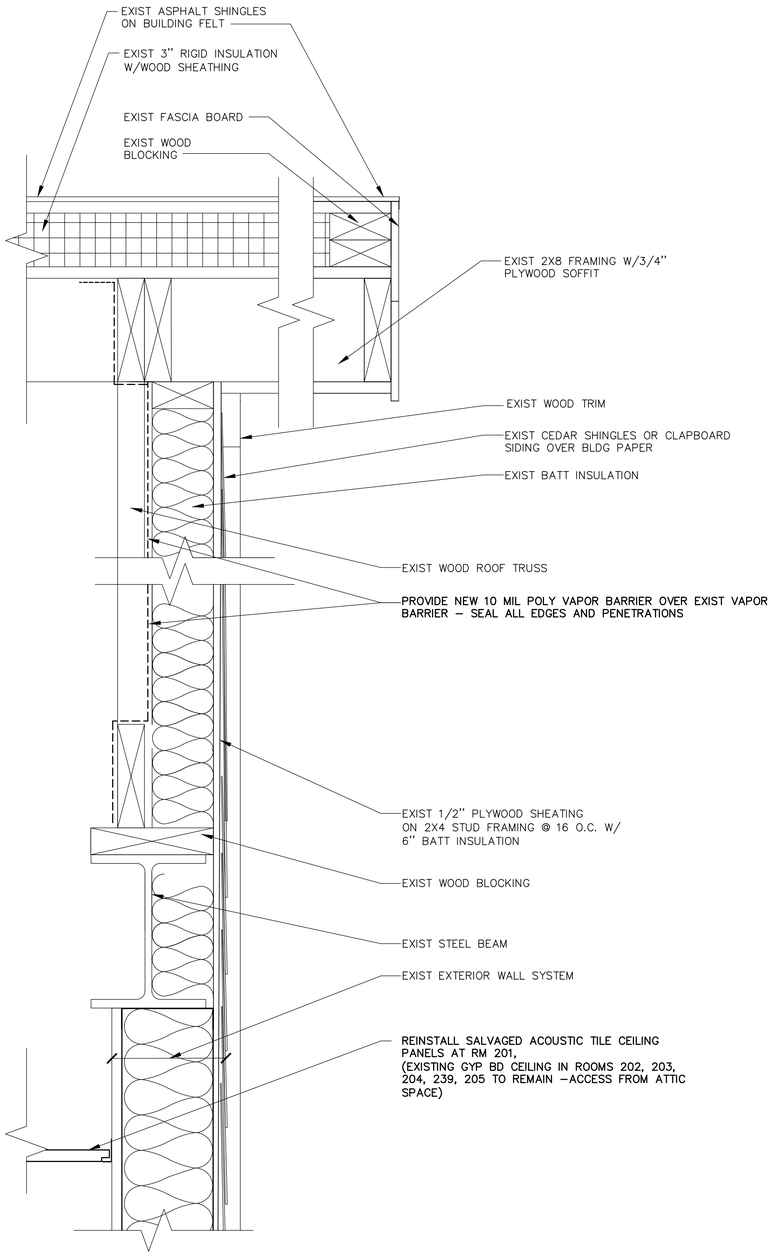
DRAWING NO. AE501
SHEET NO. 13 OF 30

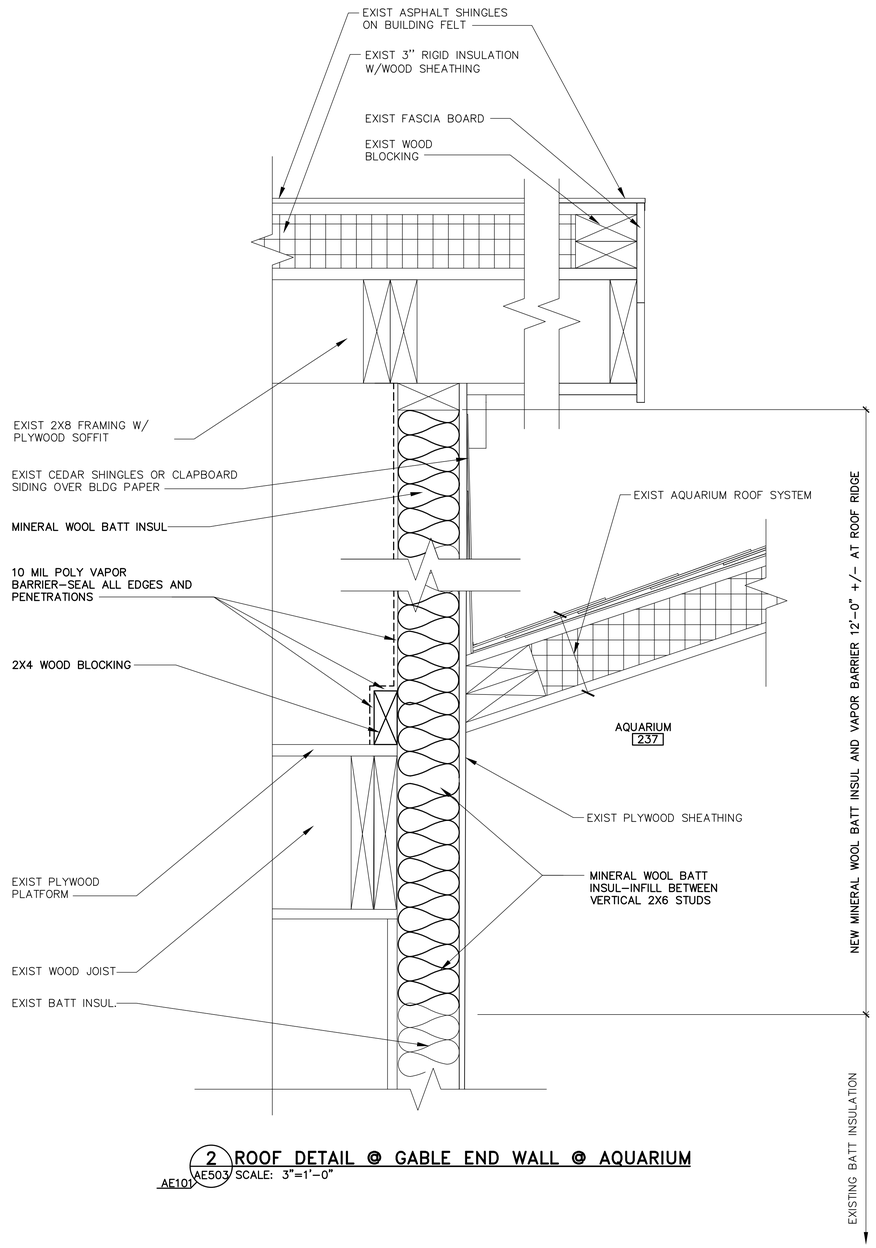
02 Aug, 2024 – 1:19pm
Y:\22405.01\22405.01–AE501.dwg

GENERAL NOTES

1. SEE SHEET G-001 FOR GENERAL CONSTRUCTION NOTES. LEGEND AND ABBREVIATIONS.



1 AE502 ROOF DETAIL @ GABLE END WALL
AE101 SCALE: 3"=1'-0"



2 AE503 ROOF DETAIL @ GABLE END WALL @ AQUARIUM
AE101 SCALE: 3"=1'-0"

GRAPHIC SCALE
3"=1'-0" 6" 4" 2" 0 6"
CHECK GRAPHIC SCALE BEFORE USING

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REVISIONS			

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DRAWN BY: SMC
CHECK BY: JBL
NO.
DATE 08/05/2024

STATE OF MAINE
BGS

TITLE ENERGY EFFICIENCY UPGRADES
MAINE DEPARTMENT OF MARINE RESOURCES LAB

LOCATION BOOTHBAY, MAINE

TITLE THIS DWG.
ROOF DETAILS

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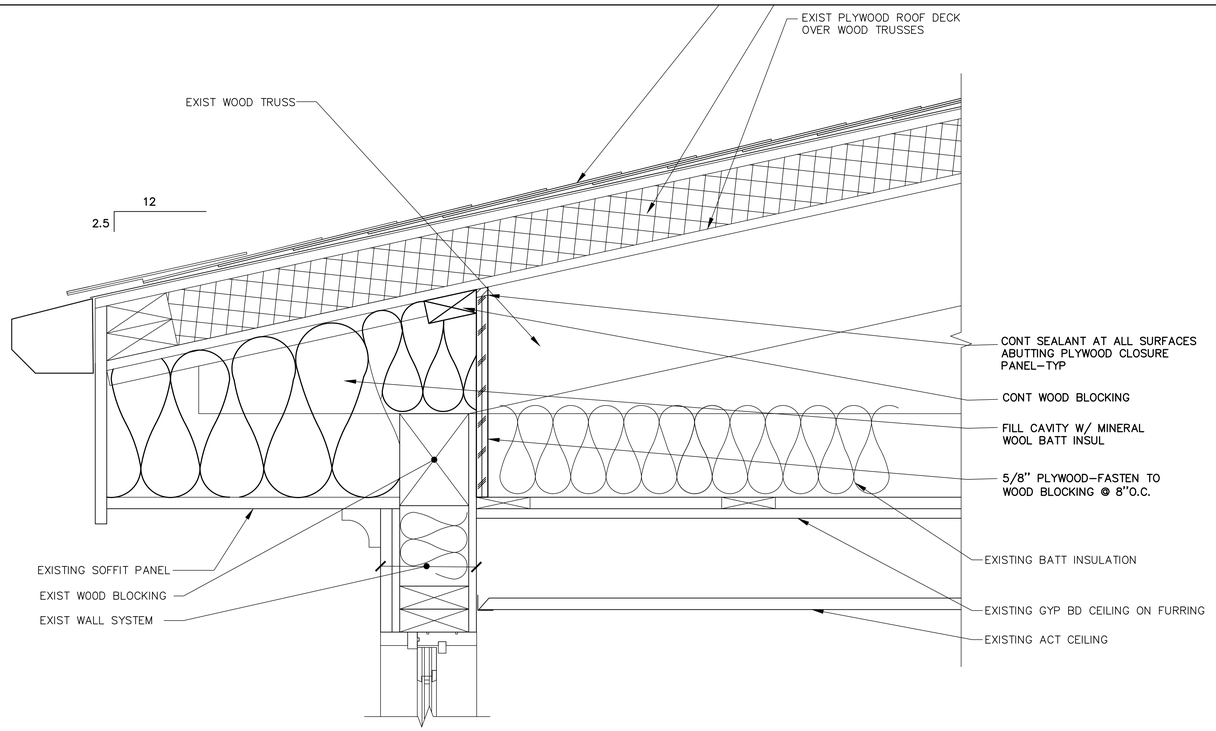
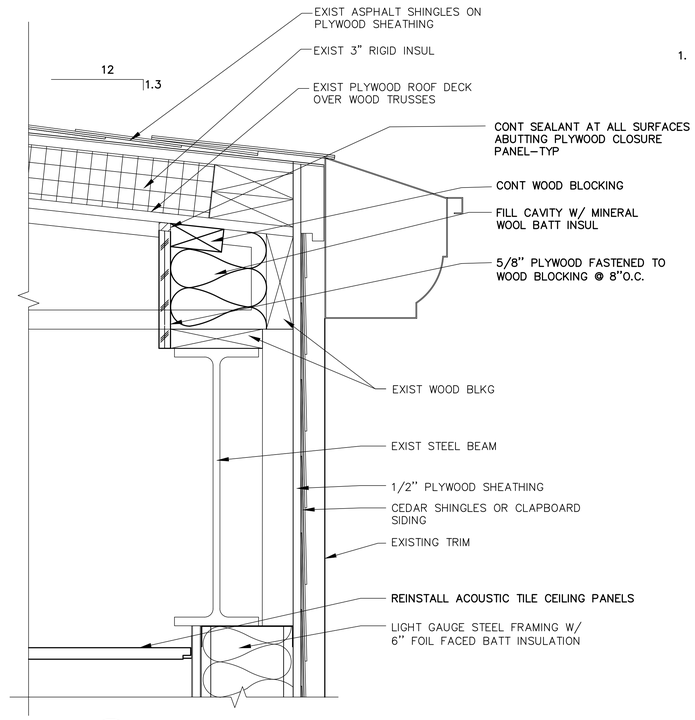
DRAWING NO. AE502
SHEET NO. 14 OF 30

02 Aug, 2024 – 1:19pm
Y:\22405.01\22405.01–AE502.dwg



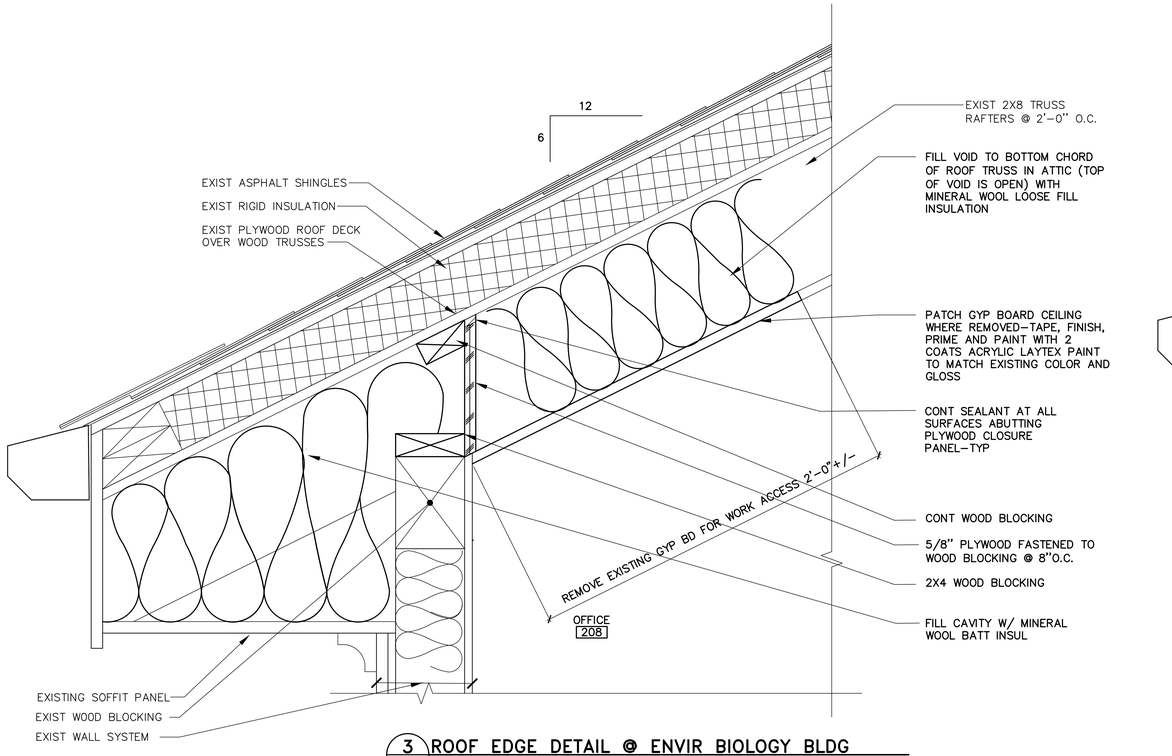
1 ROOF EDGE DETAIL @ ENVIR BIOLOGY BLDG
AE101 AE503 SCALE: 3"=1'–0" (BID ALTERNATE #3)



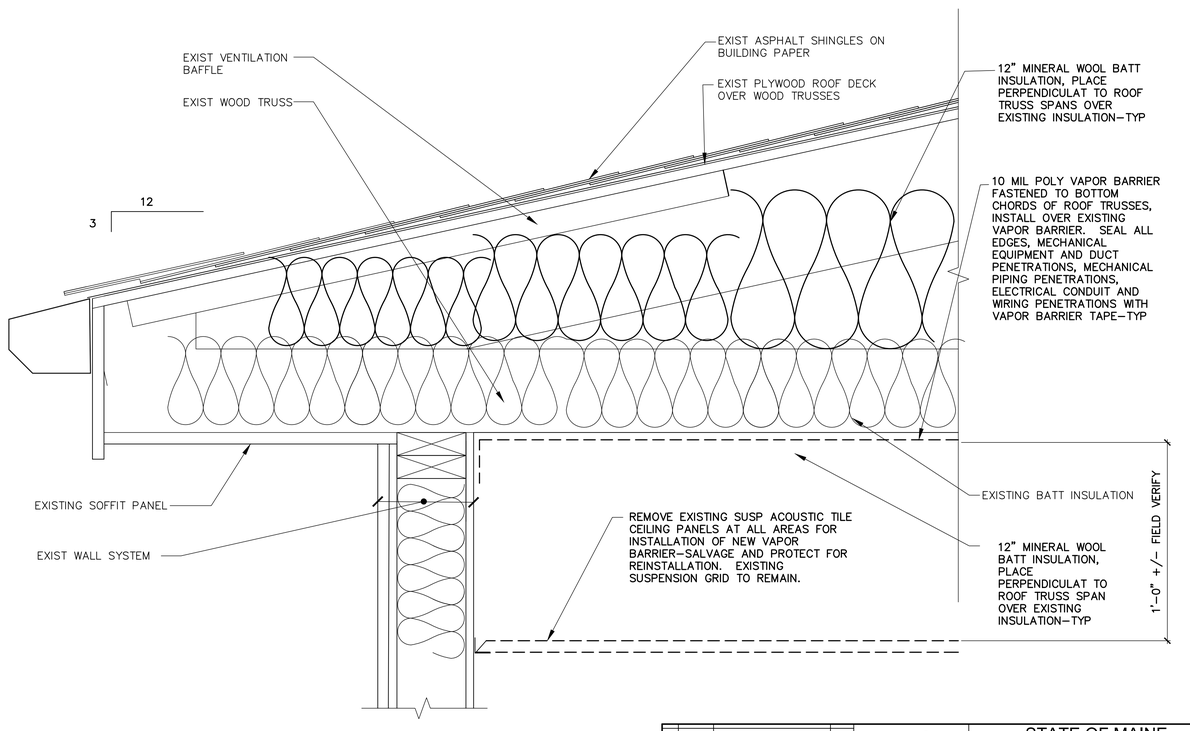
2 ROOF EDGE DETAIL @ MAIN LAB BLDG
AE101 AE503 SCALE: 3"=1'–0"

GENERAL NOTES

1. SEE SHEET G–001 FOR GENERAL CONSTRUCTION NOTES. LEGEND AND ABBREVIATIONS.



3 ROOF EDGE DETAIL @ ENVIR BIOLOGY BLDG
AE101 AE503 SCALE: 3"=1'–0" (BID ALTERNATE #3)



4 ROOF EDGE DETAIL @ WATERFRONT BLDG
AE101 AE503 SCALE: 3"=1'–0" (BID ALTERNATE #1)

GRAPHIC SCALE
6" 4" 2" 0 6"
3"=1'–0"
CHECK GRAPHIC SCALE BEFORE USING

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

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CHECK BY: JBL
NO.
DATE 08/05/2024

STATE OF MAINE
BGS

TITLE ENERGY EFFICIENCY UPGRADES
MAINE DEPARTMENT OF MARINE RESOURCES LAB

LOCATION BOOTHBAY, MAINE

TITLE THIS DWG. ROOF DETAILS

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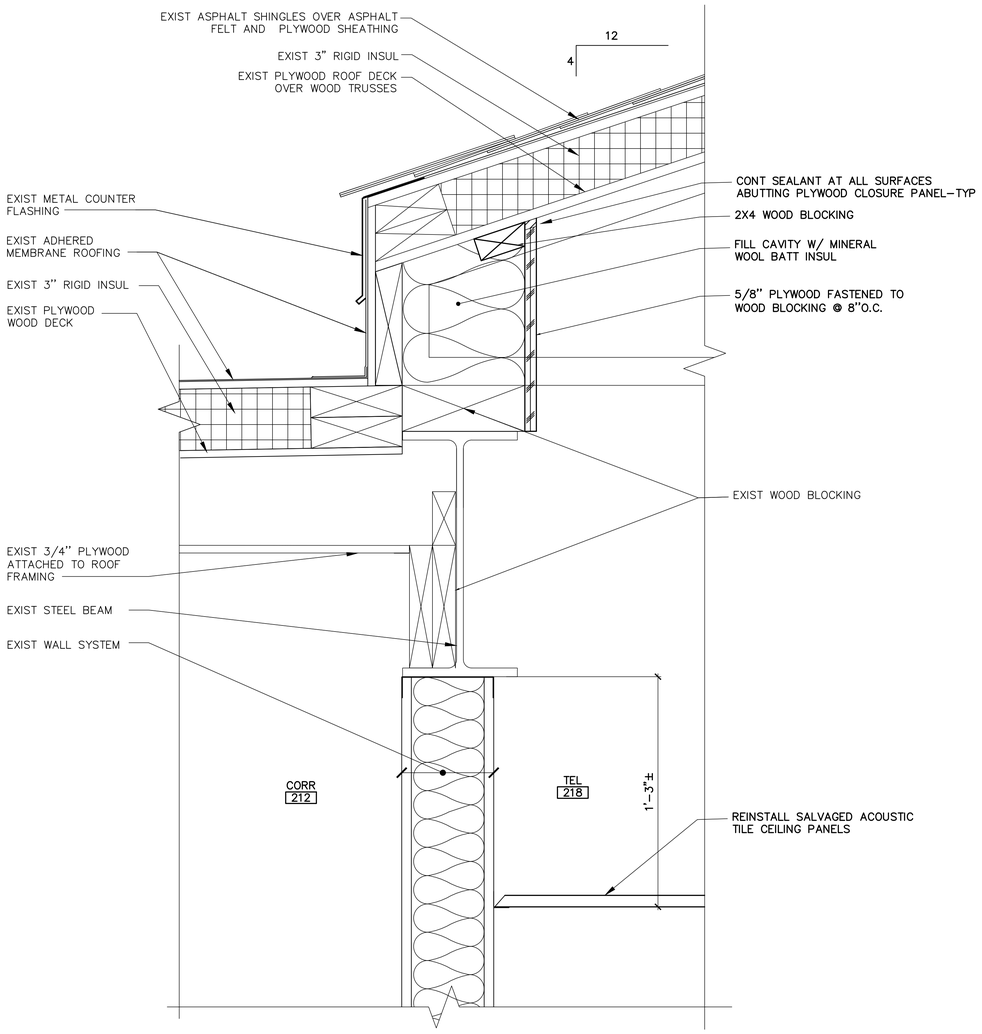
277 Main Street, Biddeford, Maine 04005 207.283.0102

DRAWING NO. AE503
SHEET NO. 15 OF 30

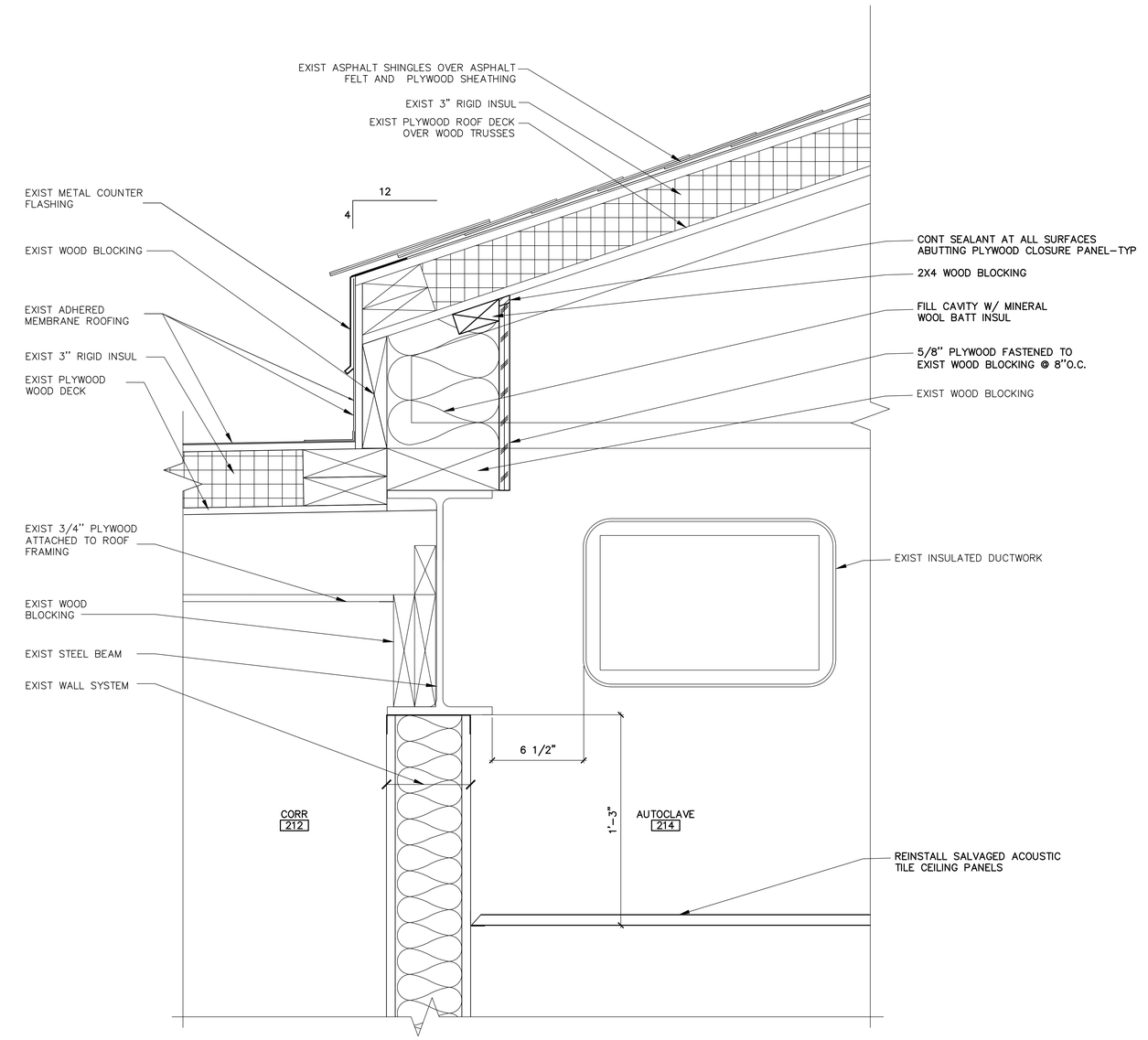
02 Aug, 2024 – 1:19pm
Y: \22405.01\22405.01–AE503.dwg

GENERAL NOTES

1. SEE SHEET G-001 FOR GENERAL CONSTRUCTION NOTES. LEGEND AND ABBREVIATIONS.



1 ROOF DETAIL
AE101 AE504 SCALE: 3"=1'-0"



2 ROOF DETAIL
AE101 AE504 SCALE: 3"=1'-0"

GRAPHIC SCALE
3"=1'-0" 6" 4" 2" 0 6"
CHECK GRAPHIC SCALE BEFORE USING

NO.	DATE	DESCRIPTION	BY
REVISIONS			

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NO.
DATE 08/05/2024

STATE OF MAINE
BGS

TITLE ENERGY EFFICIENCY UPGRADES
MAINE DEPARTMENT OF MARINE RESOURCES LAB

LOCATION BOOTHBAY, MAINE

TITLE THIS DWG.
ROOF DETAILS

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DRAWING NO. AE504
SHEET NO. 16 OF 30

02 Aug, 2024 - 1:19pm
Y:\22405.01\22405.01-AE504.dwg

1 MAIN LAB BUILDING
AE505 SCALE: N.T.S.

2 MAIN LAB BUILDING
AE505 SCALE: N.T.S.

GENERAL NOTES

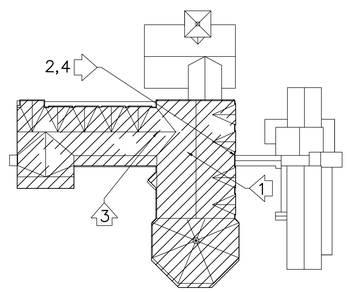
1. SEE SHEET G-001 FOR GENERAL CONSTRUCTION NOTES. LEGEND AND ABBREVIATIONS.

KEYNOTES (THIS SHEET ONLY)

1. TOP OF EXISTING INSULATED STUD WALL.
2. EXISTING ROOF TRUSSES.
3. EXISTING STEEL SUPPORT BEAM.
4. EXISTING INSULATED EXISTING ROOF DECK.
5. EXISTING WOOD BLOCKING BETWEEN ROOF TRUSSES.
6. PROVIDE 5/8" PLYWOOD CUT TO FIT BETWEEN ROOF TRUSSES– FASTENED TO WOOD BLOCKING AT 8" O.C. AND FILL CAVITY WITH MINERAL WOOL BATT INSULATION – SEE DETAIL 2/AE501.

3 MAIN LAB BUILDING
AE505 SCALE: N.T.S.

4 MAIN LAB BUILDING
AE505 SCALE: N.T.S.



KEY PLAN

PLAN NORTH

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

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DRAWN BY: SMC
CHECK BY: JBL
NO.
DATE 08/05/2024

STATE OF MAINE
BGS

TITLE ENERGY EFFICIENCY UPGRADES
MAINE DEPARTMENT OF MARINE RESOURCES LAB

LOCATION BOOTHBAY, MAINE

TITLE THIS DWG.
MAIN LAB BLDG ATTIC PHOTOS

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DRAWING NO. AE505
SHEET NO. 17 OF 30

02 Aug, 2024 – 1:19pm
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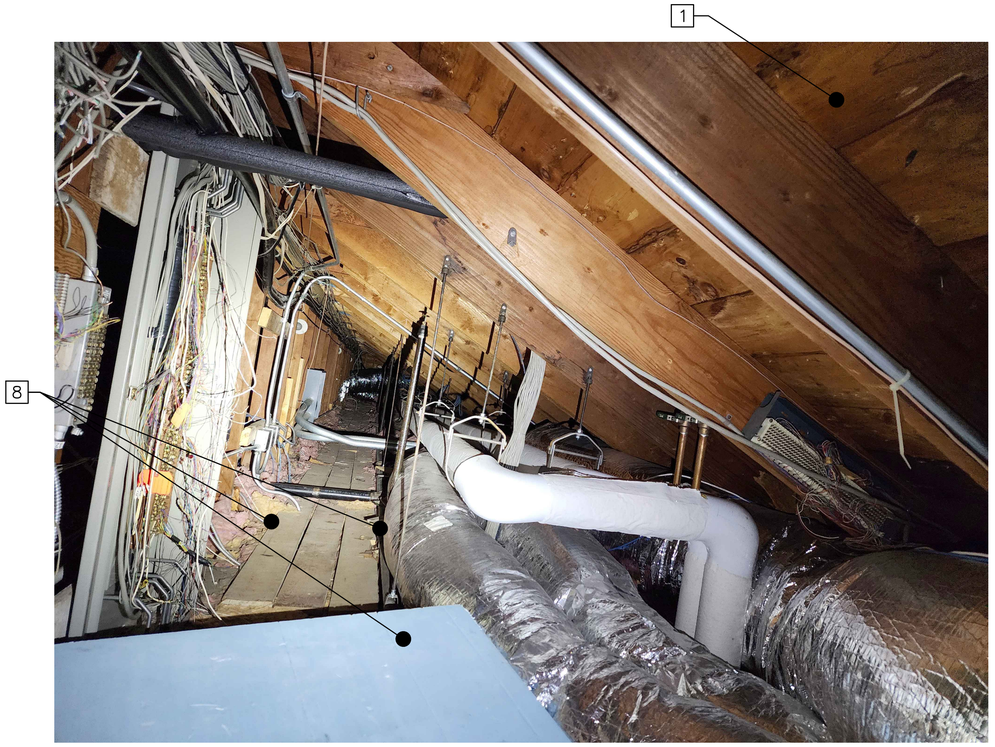


1 ENVIRONMENTAL BIOLOGY BUILDING
AE506 SCALE: N.T.S. (BID ALTERNATE #3)

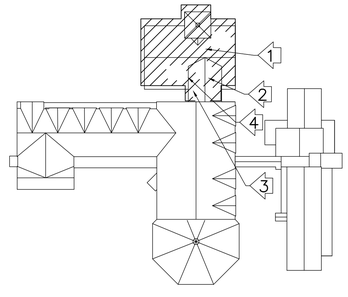
2 ENVIRONMENTAL BIOLOGY BUILDING
AE506 SCALE: N.T.S. (BID ALTERNATE #3)

KEYNOTES (THIS SHEET ONLY)

1. EXISTING ENVIRONMENTAL BIOLOGY BUILDING ROOF.
2. EXISTING MAIN LAB BUILDING ROOF.
3. PATCH HOLES IN EXISTING ROOF WITH PLYWOOD SHEATHING AND SEAL AROUND PENETRATIONS.
4. EXISTING ENVIRONMENTAL BIOLOGY BLDG ROOF SIDE WALL.
5. EXISTING WALL AT INTERSECTION OF MAIN LAB BUILDING AT ENVIRONMENTAL BIOLOGY BUILDING.
6. PROVIDE MINERAL FIBER BATT INSULATION AND PLYWOOD SHEATHING AT SIDE WALL – SEE DETAIL 1/AE501.
7. PROVIDE INSULATED PARTITION TO UNDERSIDE OF ROOF DECK – SEE DETAIL 1/AE501.
8. EXISTING MECHANICAL UNITS AND WALKWAY PLANKING AT ATTIC AT ENVIRONMENTAL BIOLOGY BLDG

3 MAIN LAB BUILDING
AE506 SCALE: N.T.S.

4 ENVIRONMENTAL BIOLOGY BUILDING
AE506 SCALE: N.T.S. (BID ALTERNATE #3)



KEY PLAN

PLAN NORTH

NO.	DATE	DESCRIPTION	BY
REVISIONS			

FOR BIDDING ONLY - NOT FOR CONSTRUCTION

DRAWN BY: SMC
CHECK BY: JBL
NO.
DATE 08/05/2024

STATE OF MAINE
BGS

TITLE ENERGY EFFICIENCY UPGRADES
MAINE DEPARTMENT OF MARINE RESOURCES LAB

LOCATION BOOTHBAY, MAINE

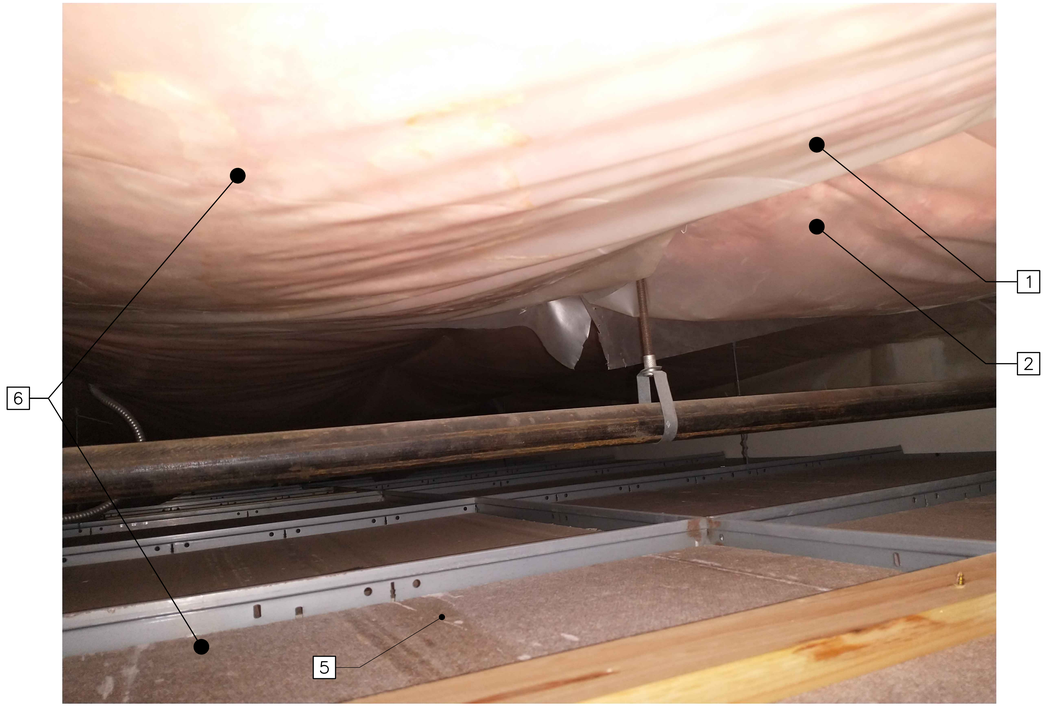
TITLE THIS DWG.
ENVIRONMENTAL BIOLOGY BLDG
ATTIC PHOTOS

OAK POINT ASSOCIATES
ARCHITECTURE ■ ENGINEERING ■ PLANNING
231 Main Street, Biddeford, Maine 04005 207.283.0193

DRAWING NO. AE506

SHEET NO. 18 OF 30

02 Aug, 2024 – 1:19pm
Y:\22405.01\22405.01–AE506.dwg



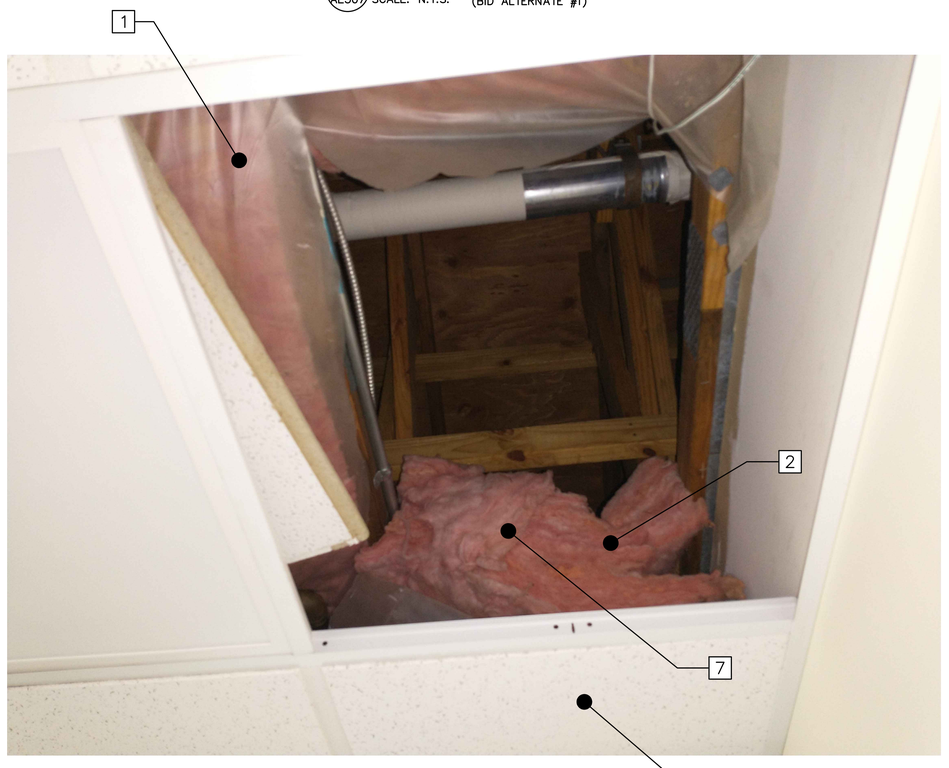
1 AE507 **WATERFRONT BUILDING**
SCALE: N.T.S. (BID ALTERNATE #1)

2 AE507 **WATERFRONT BUILDING**
SCALE: N.T.S. (BID ALTERNATE #1)

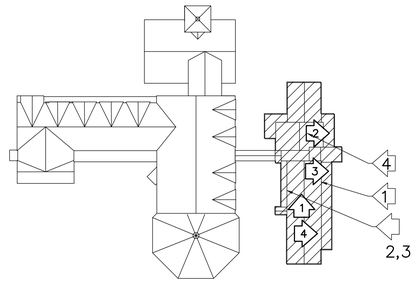
KEYNOTES (THIS SHEET ONLY)

1. EXISTING POLY VAPOR BARRIER.
2. EXISTING FIBERGLASS BATT INSULATION.
3. EXISTING ROOF TRUSS AND SHEATHING.
4. EXISTING VENTILATION BAFFLE.
5. EXISTING ACOUSTIC TILE CEILING.
6. REMOVE EXISTING ACOUSTIC TILE CEILING PANELS AND SALVAGE FOR REINSTALLATION–GRID TO REMAIN, ADD 12" MINERAL WOOL BATT INSUL OVER AND PERPENDICULAR TO EXISTING BATT INSULATION. PROVIDE 10 MIL POLY VAPOR BARRIER OVER EXISTING VAPOR BARRIER–SEAL ALL EDGES AND PENETRATIONS. REINSTALL SALVAGED ACOUSTICAL TILE CEILING PANELS. (BID ALTERNATE #1)
7. PROVIDE ALUMINUM ATTIC PULL–DOWN ATTIC STAIR AND FRAMED OPENING.SEE DETAIL 2/AE102. (BID ALTERNATE #1)

3 AE507 **WATERFRONT BUILDING**
SCALE: N.T.S. (BID ALTERNATE #1)



4 AE507 **WATERFRONT BUILDING**
SCALE: N.T.S. (BID ALTERNATE #1)



KEY PLAN

PLAN NORTH

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NO.	DATE	DESCRIPTION	BY
		REVISIONS	

DRAWN BY: SMC
CHECK BY: JBL
NO.
DATE 08/05/2024

STATE OF MAINE
BGS

TITLE: ENERGY EFFICIENCY UPGRADES
MAINE DEPARTMENT OF MARINE RESOURCES LAB

LOCATION: BOOTHBAY, MAINE

TITLE THIS DWG.: WATERFRONT BLDG ATTIC PHOTOS

OAK POINT ASSOCIATES
ARCHITECTURE ■ ENGINEERING ■ PLANNING
271 Main Street, Biddeford, Maine 04005 207.283.0102

DRAWING NO. AE507
SHEET NO. 19 OF 30

02 Aug, 2024 – 1:19pm
Y:\22405.01\22405.01–AE507.dwg

MECHANICAL ABBREVIATIONS

AI	ANALOG INPUT
AV	ANALOG VARIABLE
AO	ANALOG OUTPUT
ATC	AUTOMATIC TEMPERATURE CONTROL
AV	ANALOG VARIABLE
BHP	BRAKE HORSEPOWER
BI	BINARY INPUT
BO	BINARY OUTPUT
BV	BINARY VARIABLE
CFM	CUBIC FEET/MINUTE
CO	CLEANOUT
CPVC	CHLORINATED POLYVINYL CHLORIDE
CW	COLD WATER
DEG	DEGREES
ø,DIA	DIAMETER
DN	DOWN
E	EXISTING, EXHAUST
EA	EXHAUST AIR, EACH
EF	EXHAUST FAN
EFF	EFFICIENCY
ESP	EXTERNAL STATIC PRESSURE
EUH	ELECTRIC UNIT HEATER
°F	DEGREES FAHRENHEIT
FC	FLEX CONNECTOR
FT	FOOT/FEET
GPM	GALLONS PER MINUTE
GR	GEOTHERMAL RETURN, GRAPHIC
HDPE	HIGH DENSITY POLYETHYLENE
HP	HORSEPOWER, HEAT PUMP
IN	INCHES
KW	KILOWATT
L	LOUVER
LAT	LEAVING AIR TEMPERATURE
MAX	MAXIMUM
MBH	1000 BTU PER HOUR
MCA	MINIMUM CIRCUIT AMPERES
MIN	MINIMUM
MOP, MOCP	MAXIMUM OVER CURRENT PROTECTION
NO	NORMALLY OPEN, NUMBER
NPSH	NET POSITIVE SUCTION HEAD
OA	OUTSIDE AIR
OBD	OPPOSED BLADE DAMPER
P	PUMP, PITCH OR PRESSURE
PH	PHASE
PSI	POUNDS PER SQUARE INCH
PVC	POLY VINYL CHLORIDE
QTY	QUANTITY
R	RADIUS, RETURN
RA	RETURN AIR
RPM	REVOLUTIONS PER MINUTE
S	SUPPLY
SA	SUPPLY AIR, SOUND ATTENUATOR
SAT	SUPPLY AIR TEMPERATURE
SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION
T	THERMOSTAT
TL	TREND LOG
TYP	TYPICAL
VP	VACUUM PUMP
VFD	VARIABLE FREQUENCY DRIVE
WC	WATER COLUMN

MECHANICAL SYMBOLS LEGEND

ANNOTATION

- SYMBOL PER ABBREVIATION LIST / EQUIPMENT SEQUENCE NUMBER (H / 2)
- KEYNOTE (1 / 1)
- DIRECTION OF AIR FLOW
- CONNECT TO EXISTING

DUCTWORK

- DUCT
- FLEXIBLE CONNECTION
- RECTANGULAR TO ROUND FITTING
- LOUVER

EQUIPMENT

- UNIT HEATER
- EXHAUST FAN
- PUMP

CONTROLS AND METERING

- WALL MOUNTED THERMOSTAT WITH INTEGRAL CONTACTORS, USER–ADJUSTABLE
- HDA — HANDS–OFF–AUTOMATIC
- START/STOP

PIPING

- ELBOW DOWN
- PIPE TEE UP OR UP AND DOWN
- ELBOW UP OR UP AND DOWN
- PIPE TEE DOWN
- SOLENOID VALVE
- BALL VALVE
- BUTTERFLY VALVE
- MANUAL FLOAT VENT
- CAP
- GATE VALVE
- CHECK VALVE
- VACUUM PRIMING VALVE
- PRESSURE GAGE

MECHANICAL LINE TYPE LEGEND

- REMOVE ITEMS
- EXIST ITEMS TO REMAIN
- PROVIDE ITEMS
- CONTROL WIRING
- CWS — CONDENSER WATER SUPPLY
- CWR — CONDENSER WATER RETURN
- HPWS — HEAT PUMP WATER SUPPLY
- HPWR — HEAT PUMP WATER RETURN
- HCS — HOT/CHILLED WATER SUPPLY
- HCR — HOT/CHILLED WATER RETURN

EXPANSION TANK SCHEDULE

UNIT NO	LOCATION	SERVES	ACCEPTANCE VOLUME	DIMENSIONS	BASIS OF DESIGN	NOTES
EXT–1	129 FREEZER	CONDENSER WATER	10	25"Hx16ø	BELL AND GOSSETT HFT–30V	–
EXT–2	104 MECHANICAL	CHILLED/HOT WATER	7	24"Hx12ø	BELL AND GOSSETT B35	–

NOTES: 1.

AIR SEPARATOR SCHEDULE

UNIT NO	LOCATION	SERVES	TYPE	CAPACITY (GPM)	PRESSURE DROP (Cv)	BASIS OF DESIGN	NOTES
AS–1	129 FREEZER	CONDENSER WATER	AIR SCOOP	140	150	TACO AIR SCOOP	–
AS–2	104 MECHANICAL	CHILLED/HOT WATER	AIR SCOOP	140	150	TACO AIR SCOOP	

NOTES: 1. –

GLYCOL SCHEDULE

SYSTEM	GLYCOL TYPE	GLYCOL PERCENTAGE	TOTAL SYSTEM VOLUME (GALLONS)	FILL LOCATION	BASIS OF DESIGN
CHILLED/HOT WATER	PROPYLENE	35%	40	140 MECHANICAL	DOW FROST
CONDENSER WATER	PROPYLENE	15%	140	129 FREEZER	DOW FROST

NOTE:
SYSTEM VOLUMES INDICATED ARE BASED ON PIPING ARRANGEMENT AND SIZING INDICATED ON PLANS AS WELL AS BASIS OF DESIGN EQUIPMENT. CHANGES TO ANY OF THESE ITEMS WILL AFFECT TOTAL SYSTEM VOLUME.

PACKAGED AUTOMATIC GLYCOL FEEDER SCHEDULE

UNIT NO	LOCATION	SERVES	TANK VOLUME	SYSTEM CONNECTION	VOLTS/ PHASE	BASIS OF DESIGN	NOTES
GF–1	129 FREEZER	CONDENSER WATERT	6 GAL	1/2"	110V/1	WESSELS CO GMP–6	2,3
GF–2	104 MECHANICAL	CHILLED/HOT WATER	6 GAL	1/2"	110V/1	WESSELS CO GMP–6	1,2

NOTES: 1. SYSTEM CONTAINS 35% PROPYLENE GLYCOL.
2. PROVIDE FLOOR MOUNTING STAND.
3. SYSTEM CONTAINS 15% PROPYLENE GLYCOL.

AIR HANDLING UNIT SCHEDULE

UNIT NO	SERVES	SA FAN			DUAL TEMPERATURE COIL												CHILLED WATER COOLING COIL								HOT WATER HEATING COIL								ELECTRICAL						INSTALLED WEIGHT LBS	BASIS OF DESIGN	NOTES
					CHILLED WATER COOLING							HOT WATER HEATING																				SUPPLY FAN										
		ESP IN	MAX CFM	MIN OA	ENTERING AIR DB/WB °F	EWT/LWT °F	MIN	MAX	MAX WPD FT WC	ROWS	APD IN WC	EAT °F	EWT/LWT °F	MIN	MAX	MAX WPD FT WC	APD IN WC	ENTERING AIR DB/WB °F	LEAVING AIR DB/WB °F	TC/SC MBH	EWT/LWT °F	GPM	MAX WPD FT WC	ROWS	APD IN WC	MIN DESIGN AIRFLOW	EAT °F	LAT °F	APD IN WC	GPM	ROWS	WPD FT WC	EWT °F	LWT °F	MBH	FAN QTY	FAN HP	RPM	FLA A	MCA A	VOLTS/ PHASE			
AHU–E1	MAIN LAB BUILDING	1.5	11000	11000	–	–	–	–	–	–	–	–	–	–	–	–	–	87 / 74	54 / 53	749 / –	44 / 56	125	15.0	–	1.0	11000	–6.0	60	0.4	79	–	–	180	160	784	–	20	1760	–	–	480/3	–	CARRIER 39ED23	5
AHU–1	MAIN LAB BUILDING	1.5	11000	11000	87.0/74.0	75.0/85.0	150	150	25	4	0.5	–6.0	–	150	150	20.0	0.5	87 / 74	54 / 53	749 / –	44 / 56	125	15.0	–	1.0	11000	–6.0	60	0.4	79	–	–	180	160	784	–	20	1760	–	–	480/3	–	TRANE CSAA	6
AHU–2	MAIN LAB BUILDING	2.0	7000	7000	87.0 / 74.0	44.0/52.8	70	140	22.94	6	0.44	–6.0	110/94.7	70	140	19.8	0.32	87.0 / 74.0	54.0 / 53.9	471.2/256.4	44.0/56.0	84.9	7.50	8	0.78	7000	–6.0	66.6	0.10	57.7	2	3.43	180	160	550.9	2	8.05	3068	16.97	19.03	460/3	2993	TRANE CSAA	1,2,3

NOTES: 1. 30% PROPYLENE GLYCOL
2. VFD FOR SUPPLY FAN.
3. INTERIOR AIR HANDLING UNIT.
4. VAV SYSTEM
5. AHU–1 UNDER BID ALTERNATE 2.
5. AHU–E1 TO REMAIN UNDER BASE BID.

WATER–TO–WATER HEAT PUMP SCHEDULE

UNIT NO	TYPE	SERVES	NUMBER OF COMPRESSORS	HEATING						COOLING							WPD IN FT		ELECTRICAL				SHIPPING WEIGHT (LBS)	BASIS OF DESIGN	NOTES
				SOURCE 6° DROP		10 DEG RISE LOAD		HEATING CAPACITY MBH	HTG COP	SOURCE 10° RISE		12° DROP LOAD		COOLING CAPACITY MBH	EER		SOURCE	LOAD	VOLTS/ PHASE	MCA	FLA	MOCP A			
				GPM	EWT	GPM	EWT			GPM	EWT	GPM	EWT												
HP–1	SCROLL	AHU–2	2	70	38	70	100	533	3.5	70	65	70	56	300	19		26	13	460/3	44	55	60	–	TRANE TPWCCMV	1,2,3,4,5

NOTES: 1. REFRIGERANT: R454B.
2. LOAD SIDE FLUID: 30% PROPYLENE GLYCOL.
3. MODULAR HEAT PUMP WITH CAPABILITY FOR ONE EXTRA 25 TON MODULE TO BE ADDED IN THE FUTURE.
4. PROVIDE WITH FUSED DISCONNECT SWITCH.
5. PROVIDE WITH 125 GALLON BUFFER TANK, COORDINATE WITH HP MANUFACTURER FOR BUFFER TANK REQUIREMENTS.

PUMP SCHEDULE

UNIT NO	SERVES	TYPE	GPM		TOTAL HEAD	PUMP EFF(%)	MOTOR DATA				SUCTION/ DISCHARGE (IN)	BASIS OF DESIGN	NOTES
			MIN	MAX			BHP	HP	RPM	VOLTS/PHASE			
P–1	HX–1	SELF–PRIMING	70	140	40	63	–	5	–	208/3	3/3	AMCO RC2–3X37	1,2
P–2	HP–1	IN–LINE	70	140	40	70	4.2	7.5	1666	208/3	2.5/2.5	BEL AND GOSSETT	–
P–3	HP–1	IN–LINE	70	140	80	70	3.8	7.5	1666	208/3	2.5/2.5	BEL AND GOSSETT	–

NOTES: 1. NiAl BRONZE WITH BUNA CARBON VS CERAMIC MECHANICAL SEAL, CLOSED COUPLED.
2. PROVIDE 4" BASKET BASKET STRAINER BASIS OF DESIGN HAYWARD PVC, SOCKET THREADED, 125 PSI.

HEAT EXCHANGER SCHEDULE

UNIT NO	SALT WATER SIDE					HEAT PUMP SIDE						BASIS OF DESIGN	NOTES
	GPM	HEATING		COOLING		GPM	HEATING		COOLING				
		INLET	OUTLET	INLET	OUTLET		INLET	OUTLET	INLET	OUTLET			
HX–1	70	45	37	65	75	70	35	43	70	78	68	ALFA LAVAL TL10–BFG	1

NOTES: 1. HEAT EXCHANGER TO BE SIZED FOR 70 GPM, FRAME TO BE SIZED TO ADD ADDITIONAL PLATES TO OPERATE AT 140 GPM.

STEAM TO STEAM HUMIDIFIER SCHEDULE

UNIT NO	SERVES	AIRFLOW CFM	ENTERING AIR TEMP °F		LEAVING AIR TEMP °F		LB STEAM/HR	STEAM DISPERSION SIZE	STEAM PSI	VOLTS/PHASE	BASIS OF DESIGN	NOTES
			DRY BULB	WET BULB	DRY BULB	%RH						
H–1	AHU–1 AND 2	1800	68	43	68	50	560	60X36	10	120/1	DRISTEEM STS 400	1

NOTES: 1. 304 STAINLESS STEEL HEADER, TUBE AND TANK, INDOOR ENCLOSURE WITH BACNET INTEROPERABILITY.

GRAPHIC SCALE
8' 4' 0 8' 16'
1/8"=1'–0"
CHECK GRAPHIC SCALE BEFORE USING

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NO.	DATE	DESCRIPTION	BY
REVISIONS			

DRAWN BY: DHR
CHECK BY: MSA
NO.
DATE 08/05/2024

STATE OF MAINE
BGS

TITLE ENERGY EFFICIENCY UPGRADES
MAINE DEPARTMENT OF MARINE RESOURCES LAB
LOCATION BOOTHBAY, MAINE

TITLE THIS DWG.
MECHANICAL ABBREVIATIONS, SYMBOLS AND SCHEDULES

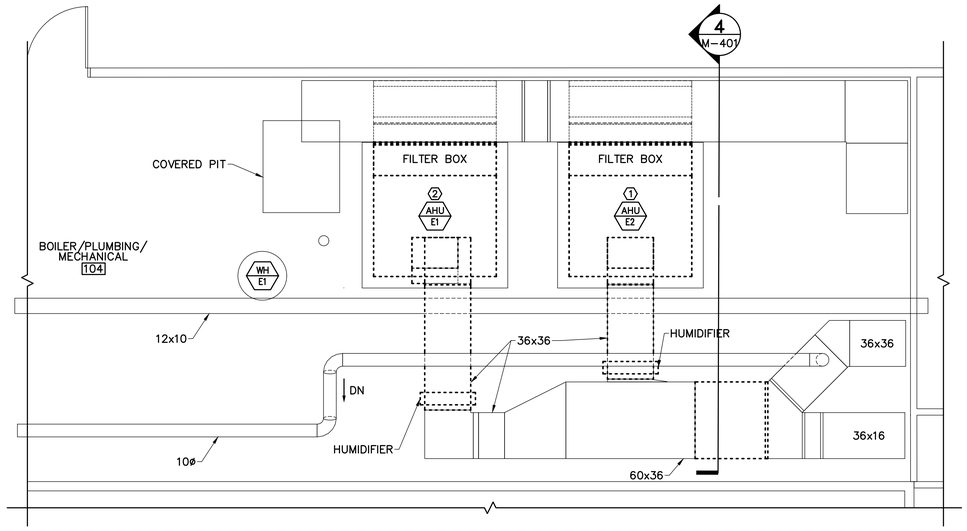
OAK POINT ASSOCIATES
ARCHITECTURE • ENGINEERING • PLANNING
251 Main Street, Biddeford, Maine 04005 207.283.0193

DRAWING NO. M–001
SHEET NO. 20 OF 30

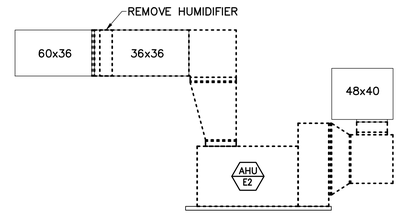
05 Aug, 2024 – 3:48pm
\\cadillac\Y\22405.01\22405.01–M001.dwg

KEYNOTES (THIS SHEET ONLY)

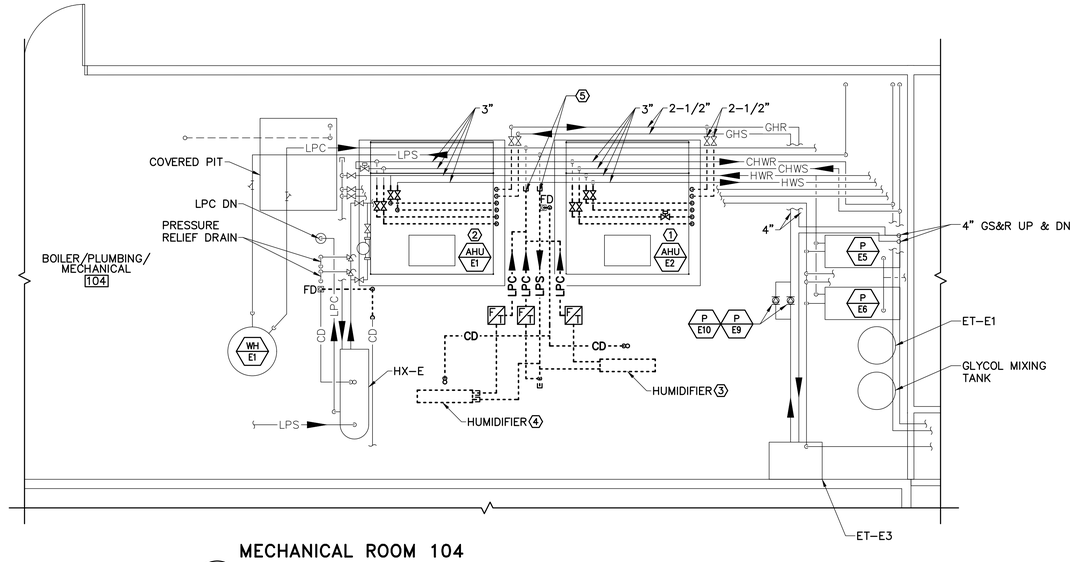
1. REMOVE AHU–2 AND ASSOCIATED DUCT, FILTER BOX, PIPING AND VALVES AS SHOWN. TEMPORARILY CAP FOR FUTURE CONNECTION.
2. REMOVE AHU–1 AND ASSOCIATED DUCT, FILTER BOX, PIPING AND VALVES AS SHOWN. TEMPORARILY CAP FOR FUTURE CONNECTION. WORK UNDER BID ALTERNATE 2. AHU–1 SHALL REMAIN ONLINE UNTIL AHU–2 IS FULLY OPERATIONAL TO PROVIDE HEATING/COOLING/VENTILATION TO BUILDING.
3. REMOVE STEAM HUMIDIFIER AND ASSOCIATION STEAM AND STEAM CONDENSATE PIPING.
4. REMOVE STEAM HUMIDIFIER UNDER BID ALTERNATIVE 2. UNDER BASE BID, REMOVE STEAM PIPING SERVING HUMIDIFIER AND CAP AS SHOWN.
5. REMOVE STEAM PIPING, TEMPORARILY CAP FOR FUTURE CONNECTION.



2 MD401 MECHANICAL ROOM 104 MECHANICAL DUCTWORK REMOVALS PLAN
SCALE: 1/4"=1'–0"



4 MD401 SECTION VIEW OF AHU–2 (SIMILAR TO AHU–1)
SCALE: 1/4"=1'–0"



3 MD401 MECHANICAL ROOM 104 MECHANICAL PIPING REMOVALS PLAN
SCALE: 1/4"=1'–0"

GRAPHIC SCALE
1/4"=1'–0" 4' 2' 0 4' 8'
CHECK GRAPHIC SCALE BEFORE USING

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		REVISIONS	

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DRAWN BY: CBM
CHECK BY: MSA
NO.
DATE 08/05/2024

STATE OF MAINE
BGS

TITLE ENERGY EFFICIENCY UPGRADES
MAINE DEPARTMENT OF MARINE RESOURCES LAB

LOCATION BOOTHBAY, MAINE

TITLE THIS DWG.
MECHANICAL REMOVALS DETAILS 1

OAK POINT ASSOCIATES
ARCHITECTURE ■ ENGINEERING ■ PLANNING
231 Main Street, Biddeford, Maine 04005 207.283.0193

DRAWING NO. MD401
SHEET NO. 21 OF 30

06 Aug, 2024 – 10:23am
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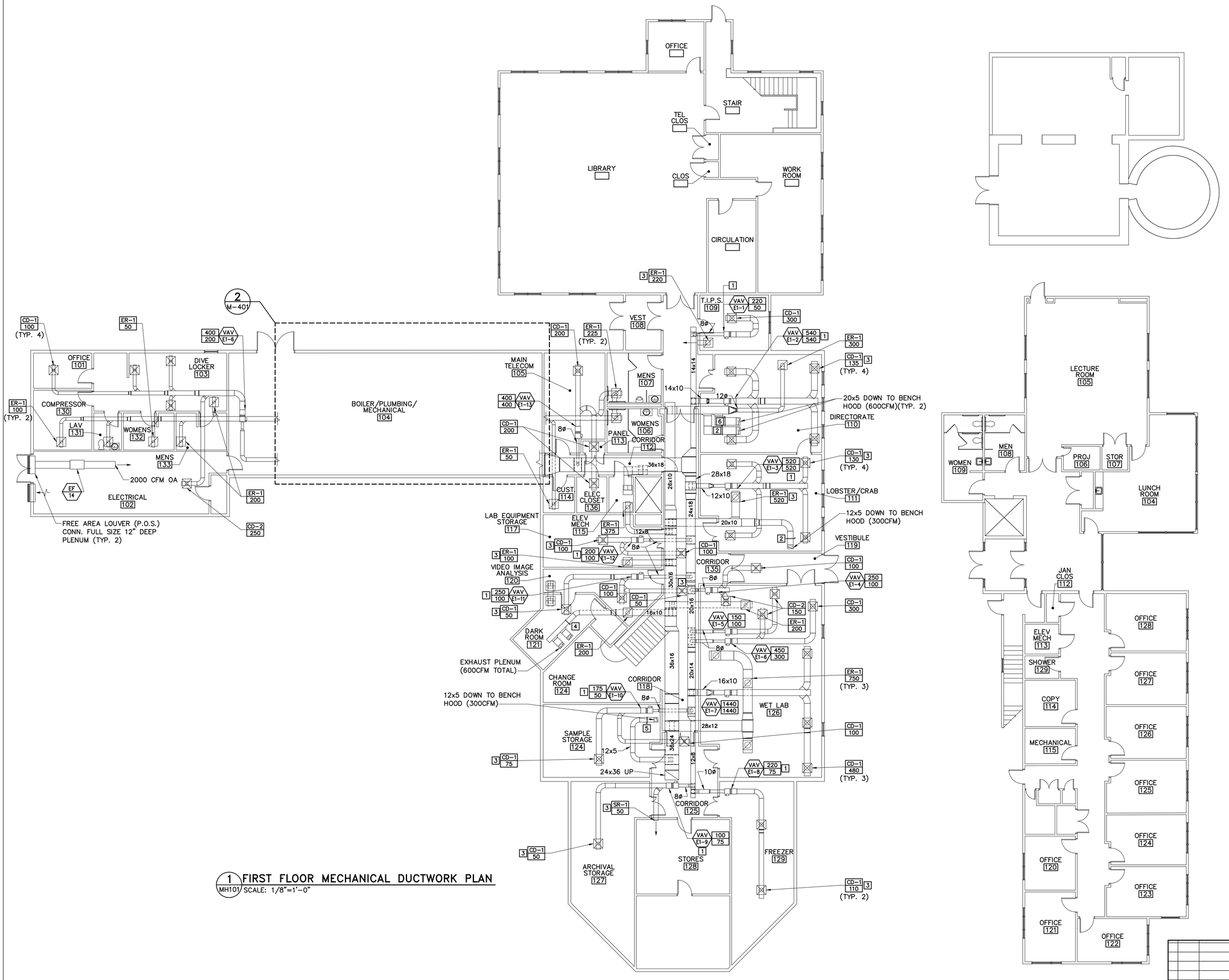

KEYNOTES (THIS SHEET ONLY)

1. PROGRAM, TEST AND BALANCE VAV BOX AND ASSOCIATED DUCT AND DIFFUSERS TO THE INDICATED AIRFLOW.
2. INSTALL BALANCE DAMPERS AND SET TO ZERO CFM.
3. BALANCE EXISTING GRILL/DIFFUSER TO AIRFLOW INDICATED.
4. INSTALL BALANCE DAMPER AND SET TO 150 CFM.
5. INSTALL BALANCE DAMPER AND SET TO 75 CFM.
6. INSTALL BALANCE DAMPER AND SET TO 240 CFM.

1 FIRST FLOOR MECHANICAL DUCTWORK PLAN

M101 SCALE: 1/8"=1'-0"

GRAPHIC SCALE

1/8"=1'-0" 8' 4' 0 8' 16'

CHECK GRAPHIC SCALE BEFORE USING

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NO.	DATE	DESCRIPTION	BY
		REVISIONS	

DRAWN BY: CBM
CHECK BY: MSA
NO.
DATE 08/05/2024

STATE OF MAINE
BGS

TITLE: ENERGY EFFICIENCY UPGRADES
MAINE DEPARTMENT OF MARINE RESOURCES LAB

LOCATION: BOOTHBAY, MAINE

TITLE THIS DWG.: FIRST FLOOR MECHANICAL DUCT PLAN

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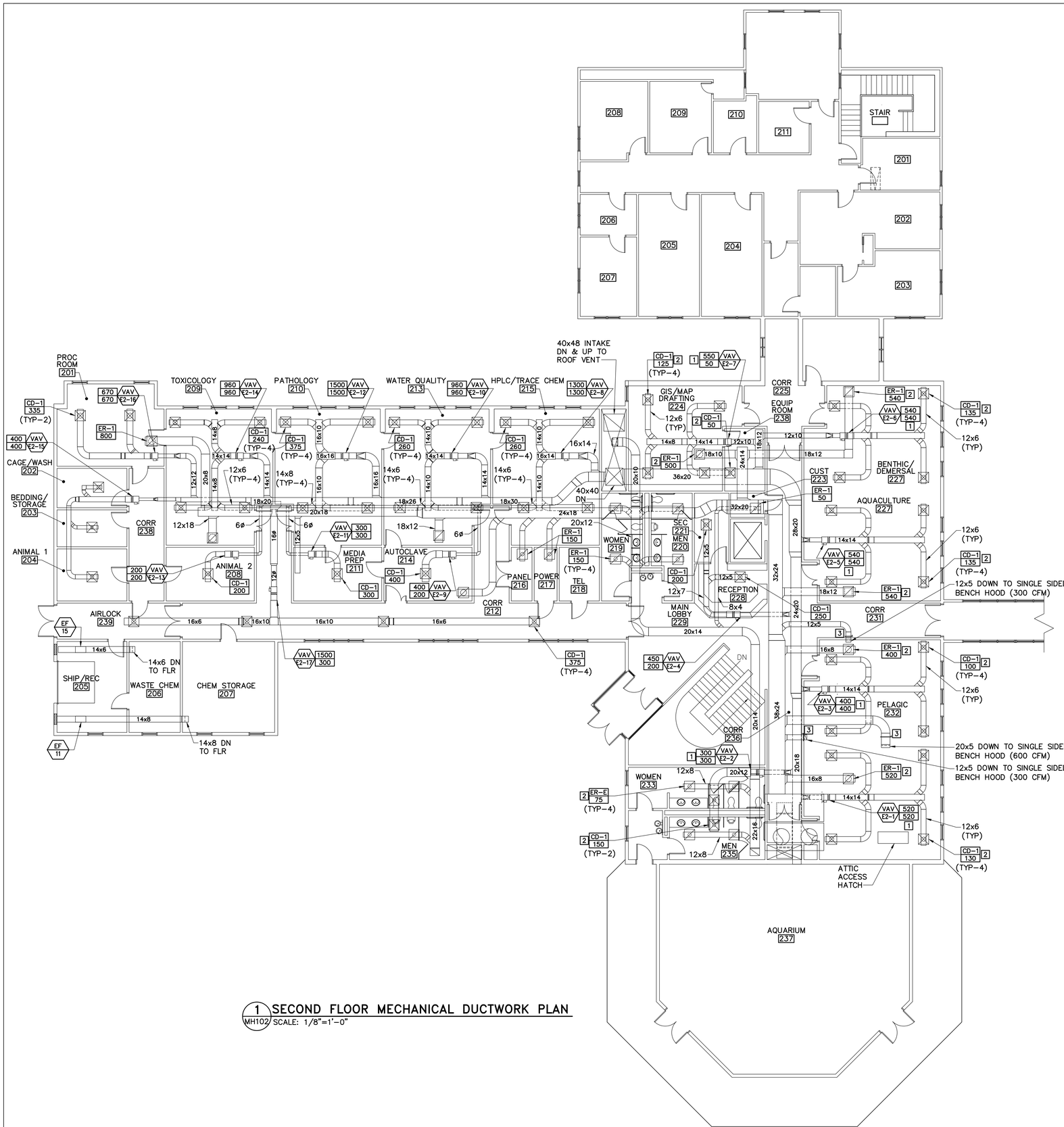
DRAWING NO. MH101
SHEET NO. 22 OF 30

05 Aug, 2024 – 11:35am
Y:\22405.01\22405.01-MH101.dwg

KEYNOTES (THIS SHEET ONLY)

1. PROGRAM, TEST AND BALANCE VAV BOX AND ASSOCIATED DUCT AND DIFFUSERS TO THE INDICATED AIRFLOW.
2. BALANCE EXISTING DIFFUSER TO AIRFLOW INDICATED.
3. INSTALL BALANCE DAMPER AND SET TO ZERO CFM.



1 SECOND FLOOR MECHANICAL DUCTWORK PLAN

MH102 SCALE: 1/8"=1'-0"

GRAPHIC SCALE

1/8"=1'-0" 8' 4' 0 8' 16'

CHECK GRAPHIC SCALE BEFORE USING

05 Aug, 2024 - 11:37am
Y:\22405.01\22405.01-MH102.dwg

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

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DRAWN BY: DHR
CHECK BY: MSA
NO.
DATE 08/05/2024

STATE OF MAINE
BGS

TITLE ENERGY EFFICIENCY UPGRADES
MAINE DEPARTMENT OF MARINE RESOURCES LAB

LOCATION BOOTHBAY, MAINE

TITLE THIS DWG.
SECOND FLOOR
MECHANICAL DUCT PLAN

DRAWING NO. MH102

SHEET NO. 23 OF 30

OAK POINT ASSOCIATES
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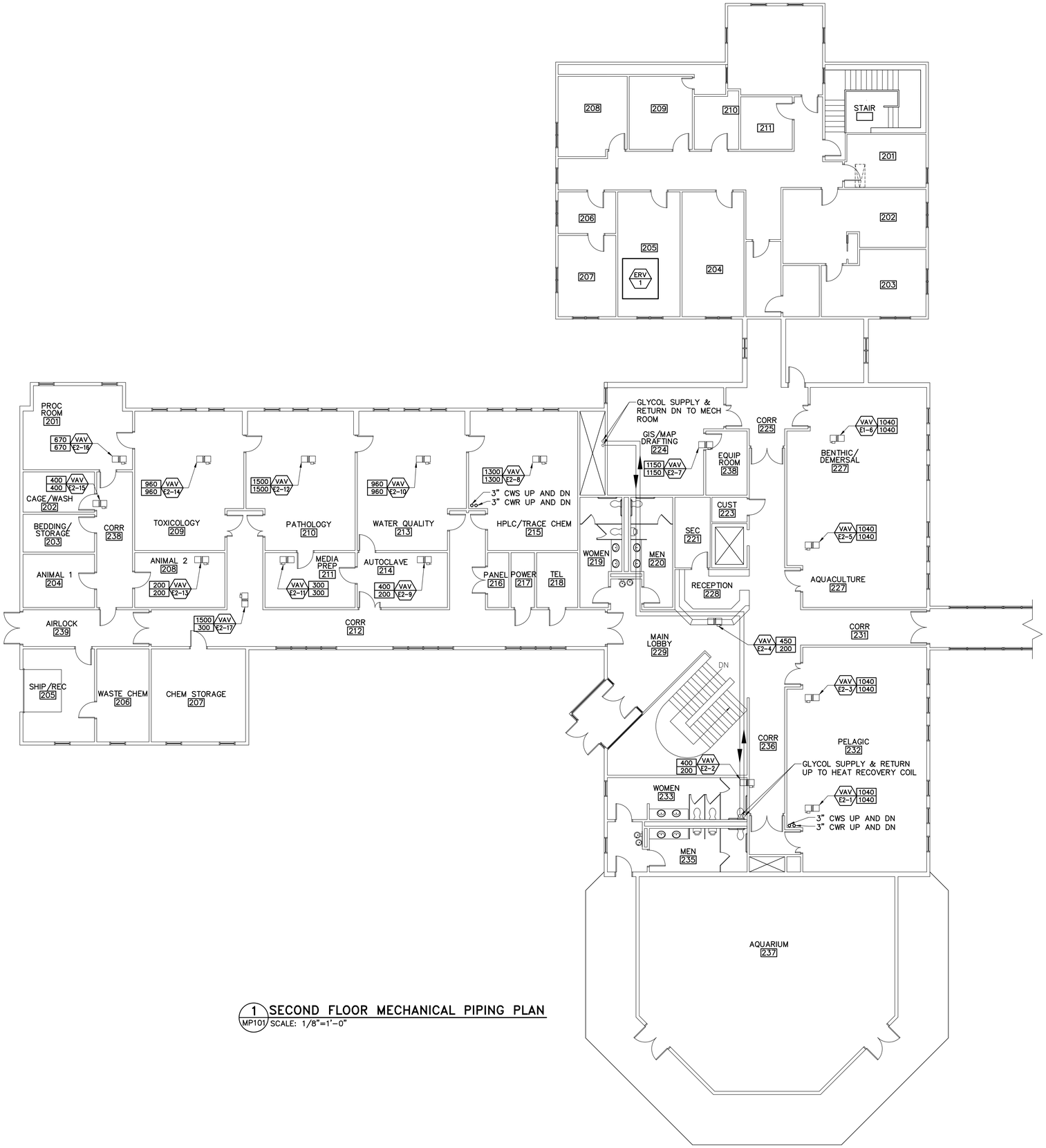
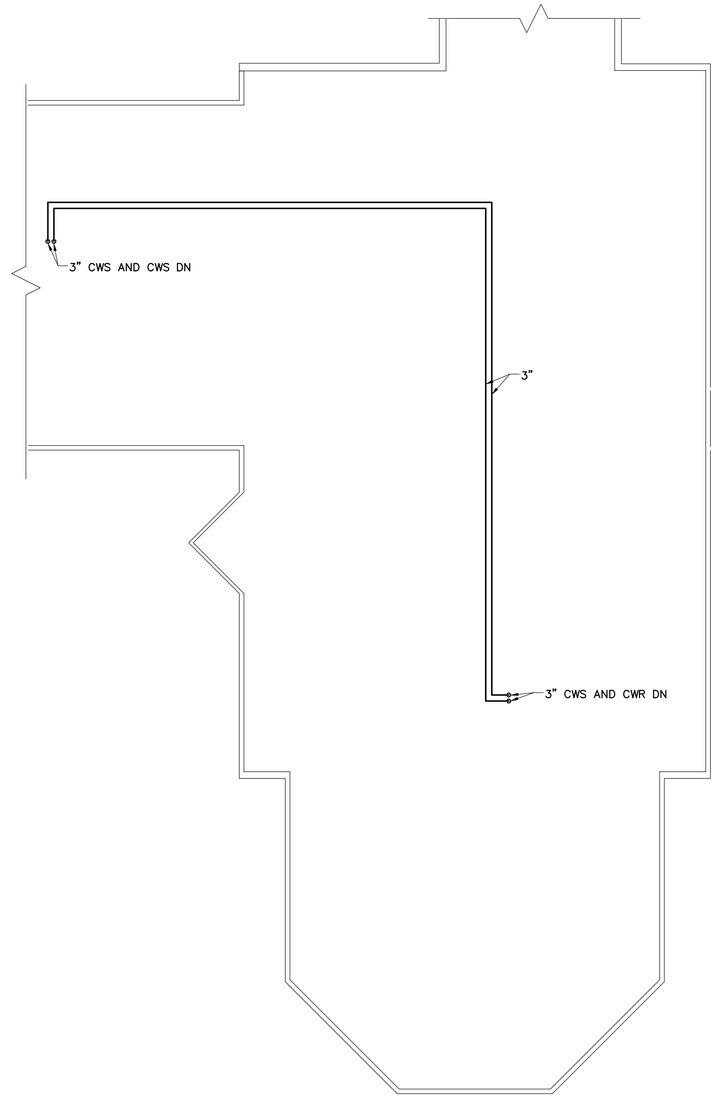
211 Main Street, Biddeford, Maine 04005 207.283.0193

KEYNOTES (THIS SHEET ONLY)

[1] PROVIDE WHITE PVC JACKET ON PIPE INSULATION WHERE EXPOSED IN SPACE.



1 MP101 SECOND FLOOR MECHANICAL PIPING PLAN
SCALE: 1/8"=1'-0"



2 MP101 ATTIC SPACE MECHANICAL PIPING PLAN
SCALE: 1/8"=1'-0"

GRAPHIC SCALE
1/8"=1'-0"
8' 4' 0 8' 16'
CHECK GRAPHIC SCALE BEFORE USING

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		REVISIONS	

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DRAWN BY: CBM
CHECK BY: MSA
NO.
DATE 08/05/2024

STATE OF MAINE
BGS

TITLE ENERGY EFFICIENCY UPGRADES
MAINE DEPARTMENT OF MARINE RESOURCES LAB

LOCATION BOOTHBAY, MAINE

TITLE THIS DWG.
SECOND FLOOR
MECHANICAL PIPING PLAN

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231 Main Street, Biddeford, Maine 04005 207.283.0103

DRAWING NO. MP101
SHEET NO. 24 OF 30

05 Aug, 2024 - 12:27pm
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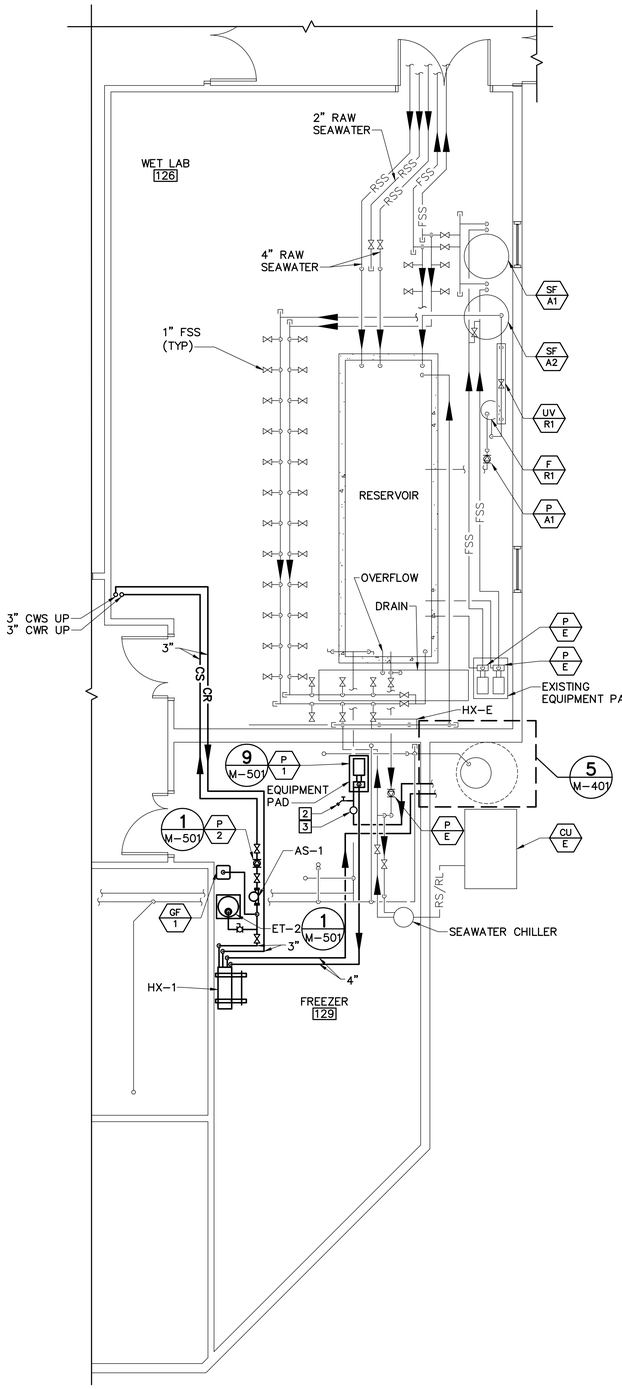
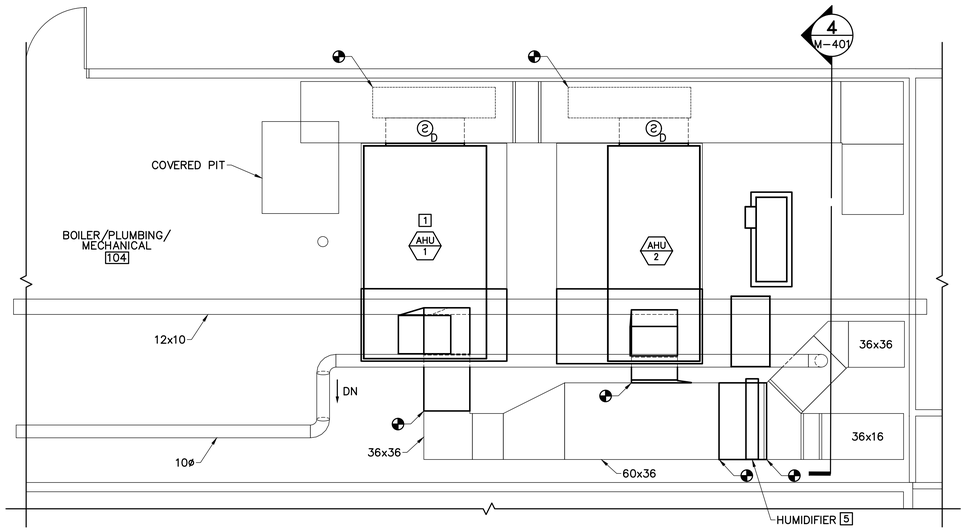


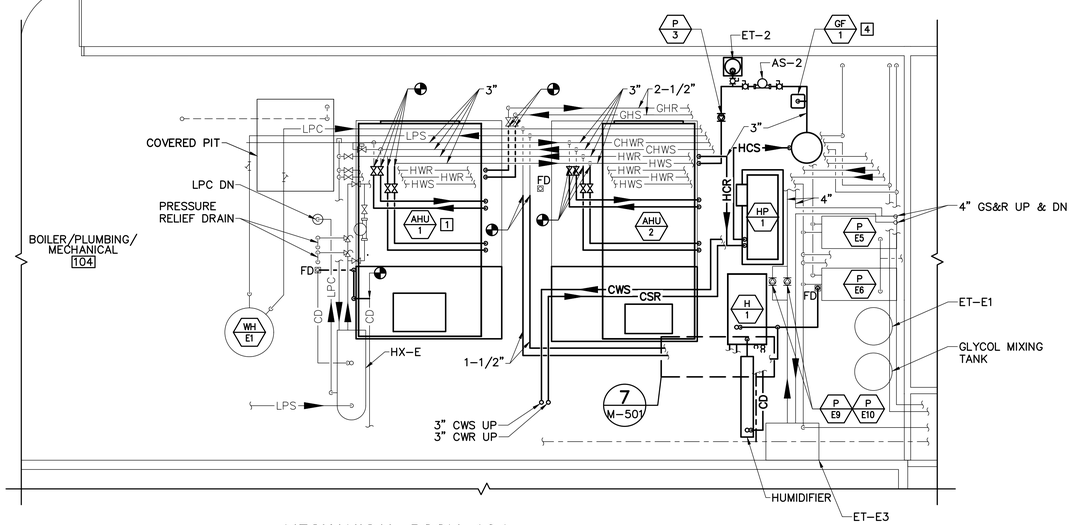
FIRST FLOOR WET LAB SEAWATER PIPING PLAN

1 M-401 SCALE: 1/4"=1'-0"



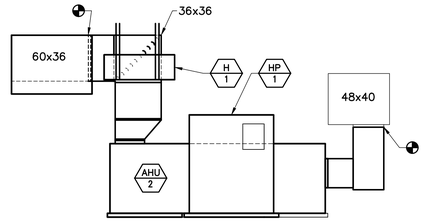
MECHANICAL ROOM 104 MECHANICAL DUCTWORK PLAN

2 M-401 SCALE: 1/4"=1'-0"



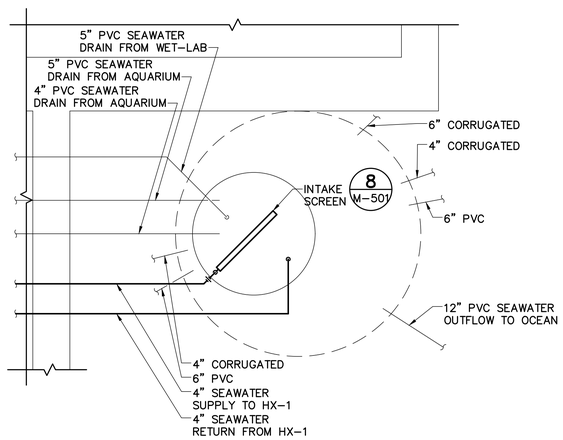
MECHANICAL ROOM 104 MECHANICAL PIPING PLAN

3 M-401 SCALE: 1/4"=1'-0"



SECTION VIEW OF AHU-2 (SIMILAR FOR AHU-1)

4 M-401 SCALE: 1/4"=1'-0"



SEAWATER PIT DETAIL

5 M-401 SCALE: 1'-0"=1'-0"

KEYNOTES (THIS SHEET ONLY)

1. PROVIDE AHU-1 UNDER BID ALTERNATE 2.
2. 3/4" DOMESTIC WATER HOSE BIBB CONNECTION FOR PUMP PRIMING.
3. BASKET STRAINER, SEE PUMP SCHEDULE.
4. FOR GF, AS, ET, AND PUMP PIPING DETAIL, SEE 5/M-501.
5. INSTALLATION OF HUMIDIFIER REQUIRES SHUTDOWN OF AHU-1. ANY SHUTDOWN OF AHU-1 MUST BE COORDINATED WITH THE CONTRACTING OFFICER AND DONE DURING NON-BUSINESS HOURS. PREP HUMIDIFIER INSTALLATION SO THE WORK CAN BE DONE OVER A WEEKEND TO AVOID SHUTDOWN OF AHU SYSTEM DURING BUSINESS HOURS.

GRAPHIC SCALE
1/4"=1'-0" 4' 2' 0 4' 8'
CHECK GRAPHIC SCALE BEFORE USING

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

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NO.
DATE 08/05/2024

STATE OF MAINE
BGS

TITLE: ENERGY EFFICIENCY UPGRADES
MAINE DEPARTMENT OF MARINE RESOURCES LAB

LOCATION: BOOTHBAY, MAINE

TITLE THIS DWG.
MECHANICAL PART PLANS 1

OAK POINT ASSOCIATES
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DRAWING NO. M-401
SHEET NO. 25 OF 30

06 Aug, 2024 - 10:27am
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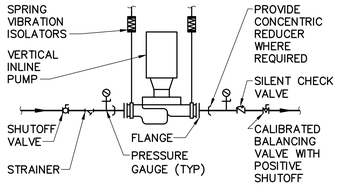
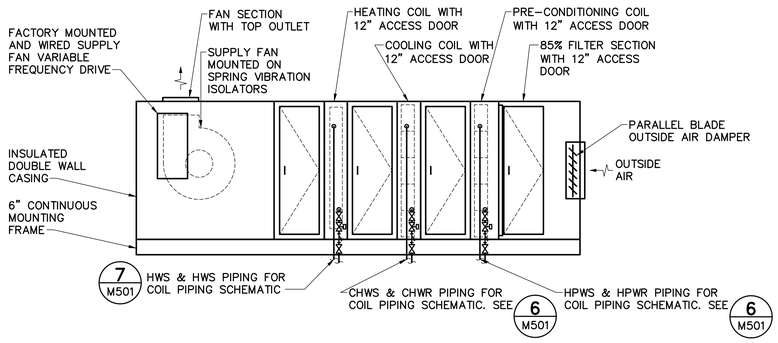


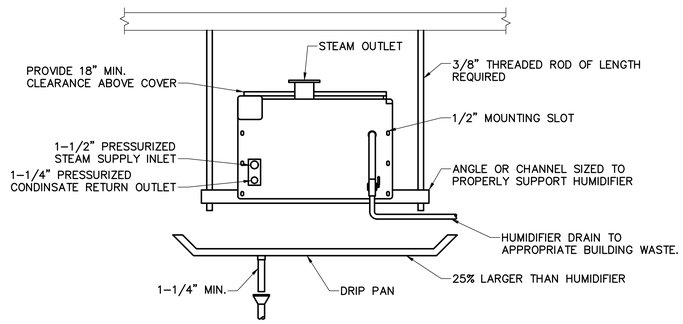
NOTES

1. VALVES SHALL BE SAME SIZE AS PIPE.
2. PROVIDE SPRING VIBRATION ISOLATORS FOR PUMP.

1 INLINE PUMP PIPING DETAIL (P-2 AND P-3)
M501 NOT TO SCALE

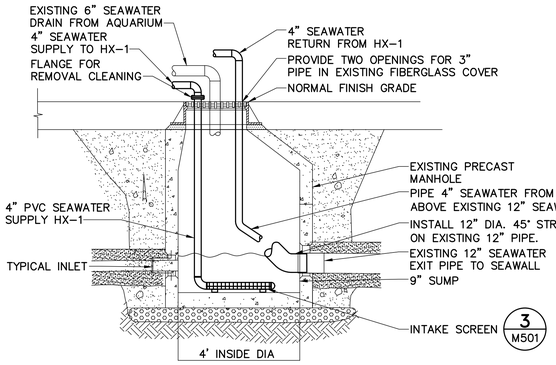


2 MAU MAKE-UP AIR HANDLING UNIT DIAGRAM
M501 NOT TO SCALE

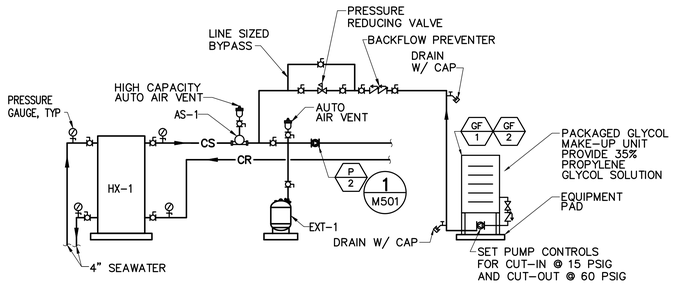


NOTE: SEE 7/M-501 FOR STEAM PIPING DIAGRAM.

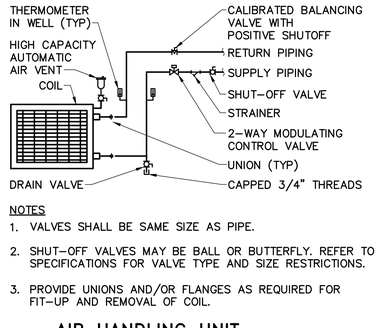
3 STEAM TO STEAM GENERATOR (FOR HUMIDIFIER) HANGING DETAIL
M501 NOT TO SCALE



4 SEAWATER MANHOLE DETAIL
M501 NOT TO SCALE



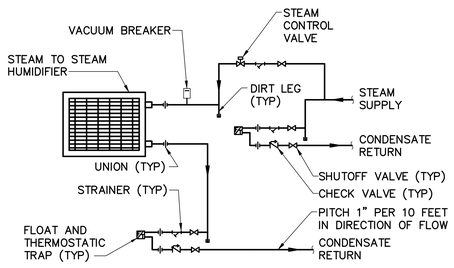
5 SEAWATER HEAT EXCHANGER PIPING SCHEMATIC
M501 NOT TO SCALE



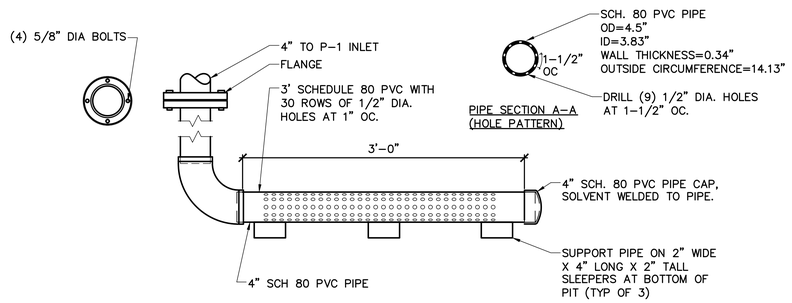
NOTES

1. VALVES SHALL BE SAME SIZE AS PIPE.
2. SHUT-OFF VALVES MAY BE BALL OR BUTTERFLY. REFER TO SPECIFICATIONS FOR VALVE TYPE AND SIZE RESTRICTIONS.
3. PROVIDE UNIONS AND/OR FLANGES AS REQUIRED FOR FIT-UP AND REMOVAL OF COIL.

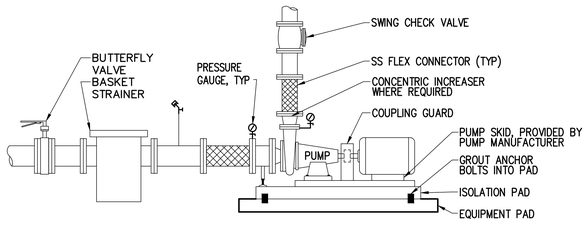
AIR HANDLING UNIT 6 COIL PIPING SCHEMATIC
M501 NOT TO SCALE



7 STEAM TO STEAM HUMIDIFIER PIPING SCHEMATIC
M501 NOT TO SCALE



8 TYPICAL SEA WATER INTAKE SCREEN DETAIL
M501 NOT TO SCALE



NOTES

1. VALVES AND SPECIALTIES SHALL BE SAME SIZE AS PIPE.
2. COORDINATE WITH M-701 FOR CONTROL DEVICES, NOT SHOWN.

9 P-1 DETAIL
M501 NOT TO SCALE

GRAPHIC SCALE
1/8"=1'-0" 8' 4' 0 8' 16'
CHECK GRAPHIC SCALE BEFORE USING

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		REVISIONS	

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DATE 08/05/2024

STATE OF MAINE
BGS

TITLE ENERGY EFFICIENCY UPGRADES
MAINE DEPARTMENT OF MARINE RESOURCES LAB

LOCATION BOOTHBAY, MAINE

TITLE THIS DWG. MECHANICAL DETAILS 1

OAK POINT ASSOCIATES
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DRAWING NO. M-501
SHEET NO. 26 OF 30

06 Aug, 2024 - 9:59am
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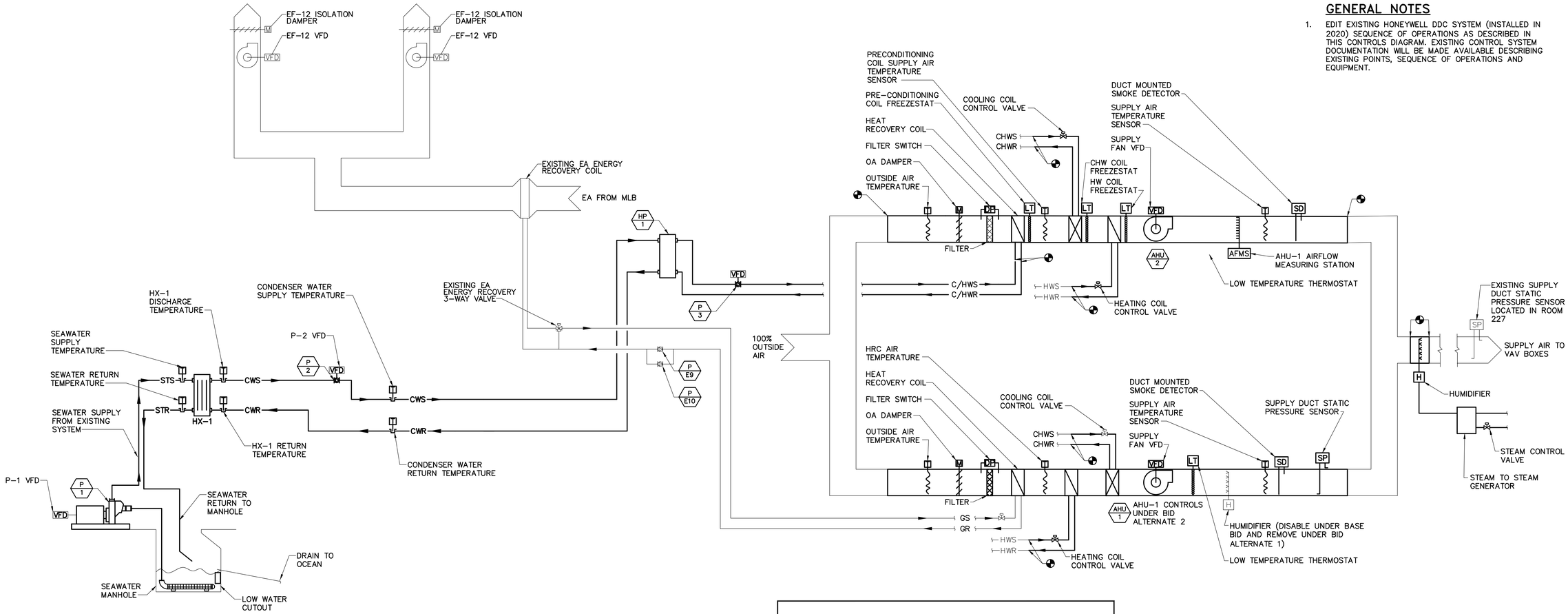
GENERAL NOTES

1. EDIT EXISTING HONEYWELL DDC SYSTEM (INSTALLED IN 2020) SEQUENCE OF OPERATIONS AS DESCRIBED IN THIS CONTROLS DIAGRAM. EXISTING CONTROL SYSTEM DOCUMENTATION WILL BE MADE AVAILABLE DESCRIBING EXISTING POINTS, SEQUENCE OF OPERATIONS AND EQUIPMENT.



1 AHU-1, AHU-2 AND SEAWATER CONTROL DIAGRAM
M-701 NOT TO SCALE

SEAWATER SYSTEM SEQUENCE OF OPERATION

BEFORE STARTUP OF SEAWATER SYSTEM, ENSURE THE AHU SYSTEM IS OPERATIONAL. THE SEAWATER SYSTEM SHALL RUN CONTINUALLY UNTIL MANUALLY DEACTIVATED, RECEIVES SHUTDOWN SIGNAL FROM THE AHU SEQUENCE, OR THE LOW WATER CUTOUT IS ACTIVATED.

SEAWATER WELL PUMP (P-1):
P-1 SHALL BE MANUALLY ENABLED (PRIME PUMP WITH DOMESTIC WATER FILL VALVE) AND SHALL RUN CONTINUOUSLY WHENEVER HP-1 IS IN OPERATION. ONCE STARTED P-1 SHALL RUN CONTINUOUSLY

P-1 SHALL BE SET TO THE VARIABLE FREQUENCY DRIVE (VFD) (ADJUSTABLE) SPEED DETERMINED BY BALANCING THE PUMP TO THE SCHEDULE FLOW RATE.

P-2 SHALL BE SET TO THE VFD SPEED (ADJUSTABLE) DETERMINED BY BALANCING THE PUMP TO THE SCHEDULE FLOW RATE.

P-3 SHALL RUN CONTINUOUSLY WHENEVER THE HEAT PUMP IS ENABLED AND THE HP ISOLATION VALVE SHALL OPEN. P-3 SHALL BE CONTROLLED BY A VFD AND THE VFD SPEED SHALL BALANCED AND SET TO THE SCHEDULED FLOW.

WITH ITS INTERNAL CONTROLS, HP-1 SHALL MODULATE TO MAINTAIN THE PRE-CONDITIONING COIL SUPPLY AIR TEMPERATURE OF 65° (ADJUSTABLE) FOR HEATING MODE AND 55° (ADJUSTABLE) FOR COOLING.

HEATING / COOLING CHANGE-OVER SHALL BE MANUALLY TRIGGERED. IN ORDER TO PREVENT THERMAL SHOCK TO THE HEAT PUMPS DURING A CHANGE-OVER FROM HEATING TO COOLING OR COOLING TO HEATING. WHEN THE CHANGE OVER IS ACTIVATED, THERE SHALL BE A 1-HOUR CHANGE-OVER DEAD-BAND MODE. DURING THE DEAD-BAND MODE THE ISOLATION VALVES ASSOCIATED SHALL BE OPEN, THE HP COMPRESSORS SHALL REMAIN OFF AND PUMPS P-1 AND P-2 SHALL RUN CONTINUOUSLY TO STABILIZE THE LOOP TEMPERATURE.

SEAWATER HEAT PUMP SYSTEM POINTS LIST

SYSTEM POINT DESCRIPTION	GRAPHIC	ANALOG INPUT	ANALOG OUTPUT	BINARY INPUT	BINARY OUTPUT	ALARM	ANALOG VARIABLE	BINARY VARIABLE	TREND LOG	NOTES
P-1 VFD ENABLE	X				X				X	
P-1 VFD SIGNAL	X		X						X	
P-1 VFD ALARM	X			X		X			X	1,5
SEAWATER SUPPLY TEMPERATURE (STS)	X	X				X			X	2
SEAWATER RETURN TEMPERATURE (STR)	X	X				X			X	2
P-2 VFD ENABLE	X				X				X	
P-2 VFD SIGNAL	X		X						X	
P-2 VFD ALARM	X			X		X			X	1,5
HX-1 DISCHARGE TEMPERATURE (CWS)	X	X							X	
HX-1 RETURN TEMPERATURE (CWR)	X	X							X	
P-3 VFD ENABLE	X				X				X	
P-3 VFD SIGNAL	X		X						X	
P-3 VFD ALARM	X			X		X			X	1,5
HP-1 ENABLE	X				X				X	
HP-1 ALARM	X			X					X	
HP-1 SUPPLY TEMPERATURE (C/HWS)	X	X							X	
HP-1 RETURN TEMPERATURE (C/HWR)	X	X							X	
PRE-CONDITIONING COIL SUPPLY AIR TEMPERATURE	X	X							X	

NOTES:
1. GENERATE AN ALARM ON THE GUI IF THE VFD INDICATES AN ALARM CONDITION.
2. GENERATE AN ALARM ON THE GUI IF THE TEMPERATURE FALLS BELOW 32°F (ADJUSTABLE).
3. GENERATE AN ALARM ON THE GUI IF THE PUMP FAILS TO SHOW PROOF OF FLOW.
4. GENERATE AN ALARM ON THE GUI IF THE STS DROPS BELOW 2 PSI (ADJUSTABLE) OR RISES ABOVE 30 PSI (ADJUSTABLE) WHILE P-10 IS RUNNING.
5. THE VFD SHALL BE PROGRAMMED TO ISSUE AN ALARM WHEN THE PUMP CURRENT INDICATES A "NO FLOW" ALARM WHICH COULD RESULT FROM NO WATER IN THE MANHOLE OR A PUMP "DEAD HEAD" CONDITION.

POINTS LIST FOR AHU SYSTEM

SYSTEM POINT DESCRIPTION	GRAPHIC	ANALOG INPUT	ANALOG OUTPUT	BINARY INPUT	BINARY OUTPUT	ALARM	ANALOG VARIABLE	BINARY VARIABLE	TREND LOG	NOTES
OUTSIDE AIR DAMPER	x		x						x	
SUPPLY FAN VFD ENABLE	x				x				x	
SUPPLY FAN VFD SIGNAL	x		x						x	
SUPPLY FAN VFD ALARM	x			x		x			x	3
OUTSIDE AIR TEMPERATURE	x	x					x	x	x	
HEATING COIL CONTROL VALVE	x		x						x	
COOLING COIL CONTROL VALVE	x		x						x	
HEATING COIL CONTROL VALVE	x		x						x	
COOLING COIL CONTROL VALVE	x		x						x	
AHU-1 GLYCOL COIL CONTROL VALVE	x		x						x	7
SUPPLY AIR TEMPERATURE	x	x					x	x	x	1
HUMIDIFIER ENABLE	x				x				x	
HUMIDIFIER STATUS	x		x						x	
HUMIDIFIER ALARM	x			x		x			x	6
HUMIDIFIER STEAM CONTROL VALVE	x		x						x	
LOW TEMPERATURE THERMOSTAT (FREEZESTAT)	x			x		x			x	2
AHU FILTER SWITCH						x				4
SMOKE DETECTOR	x			x		x			x	8,9
SUPPLY DUCT STATIC PRESSURE SENSOR	x	x					x	x	x	9

GENERAL NOTES:
EACH POINT TYPICALLY FOR AHU-1 AND AHU-2. AHU-2 POINTS UNDER BID ALTERNATE 2, UNLESS OTHERWISE NOTED.

NOTES:
1. GENERATE ALARM IF TEMPERATURE IS NOT ±5°F OF SET POINT.
2. GENERATE ALARM IF FREEZESTAT INDICATES A LOW TEMPERATURE CONDITION. (TYPICAL FOR 3 COILS ON EACH AHU)
3. GENERATE ALARM IF VFD INDICATES AN ALARM CONDITION.
4. GENERATE MAINTENANCE ALARM WHEN PRESSURE DROP EXCEEDS 0.70 IN H2O.
5. GENERATE ALARM IF SMOKE DETECTOR INDICATES AN ALARM CONDITION.
6. GENERATE ALARM IF HUMIDIFIER CONTROLLER GENERATES AN ALARM CONDITION.
7. AHU-1 GLYCOL COIL CONTROL VALVE TO BE REPLACED UNDER BID ALTERNATE 2.

AHU-1 AND AHU-2 SEQUENCE OF OPERATION

UNDER BASE BID, AHU-1 PROVIDE AHU-1 CONTROL POINTS DESCRIBED IN THIS CONTROLS DIAGRAM. AHU-2 CONTROL POINTS ARE EXISTING. ADJUST AHU-2 STARTUP SEQUENCE AS DESCRIBED BELOW AND IT SHALL OPERATE WITH ITS EXISTING CONTROL SEQUENCE.

UNDER BID ALTERNATE 1, PROVIDE AHU-1 AND AHU-2 CONTROL POINTS AS DESCRIBED IN THIS CONTROLS DIAGRAM.

UPON STARTUP, OA DAMPERS WILL OPEN 100%. AHU-1 SHALL START AND VFD SHALL MAINTAIN SCHEDULED AIRFLOW VIA AIRFLOW MEASURING STATION. AFTER 30 SECONDS, AHU-2 SHALL START AND ITS VFD SHALL MAINTAIN DUCT STATIC PRESSURE SETPOINT (EXISTING STATIC PRESSURE SENSOR) OF 1.5" WC (ADJUSTABLE). ALARM WILL BE INITIATED IF DISCHARGE STATIC RISES ABOVE 2.0" W.C. OR FALLS BELOW 0.5 W.C. WHILE UNITS ARE IN STEADY STATE.

AHU-2 PRE-CONDITIONING COIL AND ASSOCIATED TEMPERATURE SENSOR SHALL BE CONTROLLED BY THE SEAWATER HEAT PUMP CONTROL SEQUENCE.

AHU-1 PRE-CONDITIONING GLYCOL COIL SYSTEM SHALL OPERATE UNDER IT'S EXISTING CONTROL SEQUENCE (EXISTING VALVE UNDER BASE BID AND NEW VALVE UNDER BID ALTERNATE 2).

EACH AHU'S DISCHARGE TEMPERATURE SENSOR WILL MODULATE ITS CHILLED AND HOT WATER COIL CONTROL VALVES TO MAINTAIN ITS DISCHARGE TEMPERATURE. DISCHARGE SETPOINT WILL BE RESET BY SPACE SENSOR SENSING LOWEST SPACE TEMPERATURE (EXISTING SEQUENCE). ALARM WILL BE INITIATED IF DISCHARGE TEMPERATURE IS FIVE DEGREES ABOVE SETPOINT OR BELOW 45°F WHILE UNITS ARE IN STEADY STATE. BUILDING EXHAUST AIR HUMIDITY SENSOR (EXISTING) WILL MODULATE HUMIDIFIER AND COOLING COIL VALVE IN SEQUENCE TO MAINTAIN BUILDING HUMIDITY BETWEEN 35% AND 65% RH, SUBJECT TO HARDWARE HUMIDITY HIGH LIMIT (90% RH). STEAM TO STEAM GENERATOR WILL OPERATE WITH ITS INTERNAL CONTROLS WHEN ACTIVATED BY THE AHU SYSTEM.

UNITS WILL BE SHUT DOWN IF SMOKE DETECTOR IS ENERGIZED, DISCHARGE AIR TEMPERATURE FALLS BELOW SETPOINT OF LOW TEMPERATURE SAFETY, OR HIGH OR LOW STATIC LIMITS. ALARM WILL BE INITIATED WHEN FILTER PRESSURE DROP IS ABOVE 0.75" W.C.

WHEN UNIT SHUTS DOWN VFD'S WILL BE COMMANDED TO MINIMUM SPEED, HEATING VALVE WILL OPEN FULLY, COOLING VALVE WILL CLOSE FULLY AND SHALL SEND A SIGNAL TO THE SEAWATER HEAT PUMP SYSTEM TO SHUT DOWN.

GRAPHIC SCALE
8' 4' 0 8' 16'
1/8"=1'-0"
CHECK GRAPHIC SCALE BEFORE USING

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STATE OF MAINE
BGS
TITLE ENERGY EFFICIENCY UPGRADES
MAINE DEPARTMENT OF MARINE RESOURCES LAB
LOCATION BOOTHBAY, MAINE
TITLE THIS DWG.
CONTROLS DIAGRAMS

OAK POINT ASSOCIATES
ARCHITECTURE ■ ENGINEERING ■ PLANNING
231 Main Street, Biddeford, Maine 04005 207.283.0193

DRAWING NO. M-701
SHEET NO. X OF 30

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ELECTRICAL ABBREVIATIONS

A, AMP	AMPERE
AC	ALTERNATING CURRENT
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CAPACITY
AVG	AVERAGE
AWG	AMERICAN WIRE GAUGE
BKR	BREAKER
C	CONDUCTOR, CONDUIT
CAT	CATALOG, CATEGORY
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CU	COPPER
DDC	DIRECT DIGITAL CONTROL
DWG	DRAWING
ELEV	ELEVATOR
EMT	ELECTRICAL METALLIC TUBING
FACP	FIRE ALARM CONTROL PANEL
G	GROUND; GROUND FAULT CIRCUIT INTERRUPTER
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
H	HEATING LOAD TYPE FOR PANEL SCHEDULE
HP	HORSEPOWER
HVAC	HEATING, VENTILATION, AND AIR CONDITIONING
KCMIL	KILO-CIRCULAR MILS
KVA	KILO-VOLT-AMPERE
KW	KILO-WATT
L	LIGHTING LOAD TYPE FOR PANEL SCHEDULE
LTG	LIGHTING
M	MOTOR LOAD TYPE FOR PANEL SCHEDULE
MAX	MAXIMUM
MCB	MAIN CIRCUIT BREAKER
MIN	MINIMUM
MLO	MAIN LUG ONLY
N	NEUTRAL
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NO, #	NUMBER
OCC	OCCUPANCY
ø	PHASE
P	POLE
P/O	PART OF
R	RECEPTACLE LOAD TYPE FOR PANEL SCHEDULE
REC	RECEPTACLE
RGS	RIGID GALVANIZED STEEL
RM	ROOM
RMC	RIGID METAL CONDUIT
SPDT	SINGLE POLE, DOUBLE THROW
SQ	SQUARE
SW	SWITCH
THHN	HEAT RESISTANT THERMOPLASTIC WIRE WITH NYLON JACKET
THWN	MOISTURE & HEAT RESISTANT THERMOPLASTIC WIRE WITH NYLON JACKET
TYP	TYPICAL
UE	UNDERGROUND ELECTRIC
UL	UNDERWRITERS LABORATORIES
V	VOLT
VA	VOLT AMPERE
VFC	VARIABLE FREQUENCY CONTROLLER
W	WATT, WIRE
W/	WITH
WP	WEATHERPROOF

ELECTRICAL GENERAL NOTES

1. ELECTRICAL INSTALLATION MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (NEC), NFPA, AND STATE AND LOCAL CODES.
2. WORK MUST BE COORDINATED WITH ARCHITECTURAL AND MECHANICAL TRADES.
3. ELECTRICAL EQUIPMENT AND WIRING MUST BE NEW AND UL LISTED UNLESS OTHERWISE NOTED.
4. A SEPARATE GREEN GROUNDING CONDUCTOR MUST BE PROVIDED FOR EACH INDIVIDUAL CIRCUIT. METAL CONDUIT MUST BE GROUNDED BUT SHALL NOT BE USED AS THE EQUIPMENT GROUNDING CONDUCTOR.
5. CONDUCTORS MUST BE MINIMUM #12 AWG UNLESS NOTED OTHERWISE.
6. CONDUIT MUST BE MINIMUM 1/2" UNLESS OTHERWISE NOTED. COMMUNICATIONS CONDUIT MUST BE MINIMUM 1".
7. UNLESS OTHERWISE INDICATED, WIRE AND CONDUIT SIZE FOR EACH 15A 1P, 15A 2P, 20A 1P, 20A 2P BRANCH CIRCUIT MUST BE 2#12G IN 1/2"C.
8. A SEPARATE NEUTRAL CONDUCTOR MUST BE PROVIDED FOR EACH INDIVIDUAL 120V AND 277V CIRCUIT. MULTI-WIRE CIRCUITS ARE NOT PERMITTED.
9. UNLESS OTHERWISE INDICATED, WIRE AND CONDUIT SIZE FOR EACH 15A 3P AND 20A 3P BRANCH CIRCUIT MUST BE 3#12, 1#12G IN 1/2"C.
10. SEAL CONDUIT INTERIOR TO PROHIBIT PASSAGE OF MOISTURE. PROVIDE SEALANT PRODUCT INTENDED FOR SUCH USE. PROVIDE AT CONDUITS PENETRATING FOUNDATION WALLS, EXTERIOR WALLS, COLD ATTICS, KITCHEN REFRIGERATION WALL PENETRATIONS, ETC. BASIS OF DESIGN: AMERICAN POLYWATER FST.
11. DO NOT COMBINE FEEDERS AND DEDICATED HOMERUNS WITH OTHER FEEDERS OR DEDICATED HOMERUNS.

ELECTRICAL SYMBOLS

GENERAL

- NON-FUSED DISCONNECT SWITCH UNLESS OTHERWISE INDICATED. (REFER TO SCHEDULES ON DRAWING EP502).
- FUSED DISCONNECT SWITCH
- TRANSFORMER
- JUNCTION BOX F = FLOOR
- A-1 — BRANCH CIRCUIT HOMERUN, A-1 INDICATES PANEL DESIGNATION AND CIRCUIT NUMBER
- PANELBOARD
- MTS — MANUAL TRANSFER SWITCH
- FC — FIRE ALARM CONTROL PANEL
- S D — DUCT SMOKE DETECTOR
- R — REMOTE INDICATOR FOR DUCT SMOKE DETECTOR
- VFD — VARIABLE FREQUENCY DRIVE
- SIMPLEX RECEPTACLE NEMA 5-20R

LINE TYPE LEGEND

- ---------- REMOVE EXISTING ITEMS
- EXIST ITEMS TO REMAIN
- ———— PROVIDE ITEMS

SQUARE D

EXISTING PANELBOARD SCHEDULE EDP41ML

CKT NO	AMPS PER PHASE A	AMPS PER PHASE B	AMPS PER PHASE C	DESCRIPTION	LOAD TYPE	CKT BKR TRIP	CKT BKR POLE	CKT BKR TRIP	CKT BKR POLE	LOAD TYPE	DESCRIPTION	AMPS PER PHASE A	AMPS PER PHASE B	AMPS PER PHASE C	CKT NO
1	·			AIR COMPRESSOR	–	30	3	40	3	–	PUMP P5	·			2
3		·											·		4
5			·											·	6
7	·			SEWAGE PUMPS	–	40	3	50	3	–	AHU-2 [2]	·			8
9		·											·		10
11			·											·	12
13	·			BRP212ML (FREEZER RM)	–	60	3	100	3	–	PUMP P6	·			14
15		·											·		16
17			·											·	18
19	·			SPARE	–	100	3	100	3	–	XFMR T4 – FEEDS CB RP21EB	·			20
21		·											·		22
23			·											·	24
25	·			SPARE	–	100	3	100	3	–	SPARE	·			26
27		·											·		28
29			·											·	30
31	·			EL41ML	–	150	3	100	3	–	EL42ML	·			32
33		·											·		34
35			·											·	36
37	·			–	–	20	1	20	1	–	–	·			38
39		·		–	–	20	1	20	1	–	–		·		40
41			·	–	–	20	1	20	1	–	–			·	42
				TOTAL/PHASE											

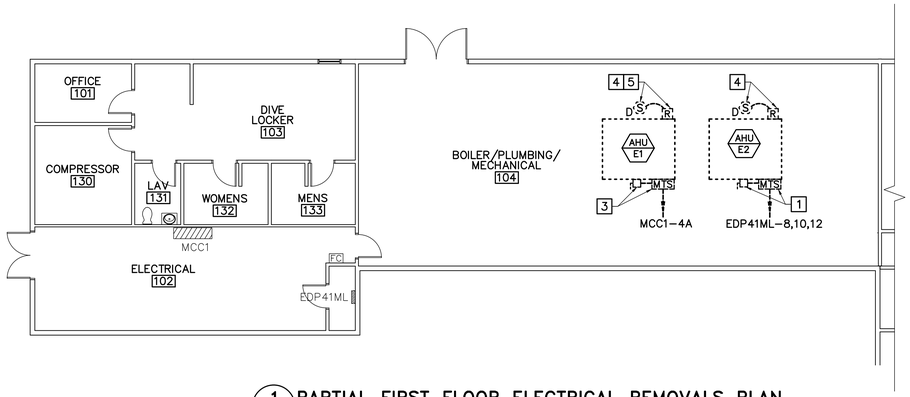
VOLTS: 277/480, 3 PHASE, 4 WIRE
MCB: ☐ MLO: ☒
MCB AMPS: 400
BUS AMPS: 400
FAULT AMPS: 42,000
DESIGNATION: EDP41ML
LOCATION: MAIN ELEC RM
MOUNTING: SURFACE

GENERAL NOTES (THIS SHEET ONLY)

1. UNLESS OTHERWISE INDICATED, REMOVE EXISTING ITEMS WITH ASSOCIATED WIRING, CABLING, AND CONDUIT BACK TO THE SOURCE.
2. REFER TO E-601 FOR PANELBOARD SCHEDULE AND ELEVATION.

DRAWING KEYNOTES (THIS SHEET ONLY)

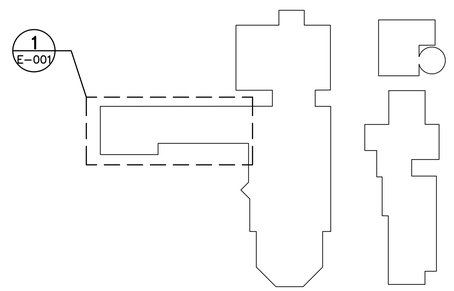
1. AHU-E2 TO BE REMOVED. AHU-E2 DISCONNECT LOCATED ON AHU-E2 UNIT. REMOVE TRANSFER SWITCH. DE-ENERGIZE CIRCUITS 8,10,12 IN PANELBOARD EDP41ML TO REMOVE AHU TRANSFER SWITCH. VERIFY ALL FEEDS HAVE BEEN DE-ENERGIZED PRIOR TO AHU TRANSFER SWITCH REMOVAL. REFER TO DETAIL 2 ON SHEET E-601 FOR WIRING DIAGRAM.
2. REMOVE AHU-E2 CIRCUIT BREAKER FROM EDP41ML PANEL. REFER TO E-601 FOR CIRCUIT BREAKER REPLACEMENT.
3. AHU-E1 TO BE REMOVED UNDER BID ALTERNATE 2, AHU-E1 DISCONNECT LOCATED ON AHU-E1 UNIT. REMOVE AHU TRANSFER SWITCH. DE-ENERGIZE CIRCUITS 4A IN MCC1 AND 8,10,12 IN PANELBOARD EDP41ML TO REMOVE AHU TRANSFER SWITCH. VERIFY ALL FEEDS HAVE BEEN DE-ENERGIZED PRIOR TO AHU TRANSFER SWITCH REMOVAL. REFER TO DETAIL 2 ON SHEET E-601 FOR WIRING DIAGRAM.
4. REMOVE EXISTING DUCT SMOKE DETECTOR AND REMOTE INDICATOR AND SALVAGE FOR REUSE.
5. BID ALTERNATE 2.



1 E-001 PARTIAL FIRST FLOOR ELECTRICAL REMOVALS PLAN
SCALE: 1/8"=1'-0"

FIRE ALARM SYSTEM NOTES

1. EXISTING FIRE-ALARM CONTROL PANEL
   - A. SIMPLEX 4020 CONTROL PANEL.
   - B. EXISTING SYSTEM SERVICED BY CUNNINGHAM SECURITY SYSTEMS.
2. FIRE ALARM INSTALLATION AND TESTING
   - A. INSTALLER QUALIFICATIONS: PERSONNEL MUST BE TRAINED AND CERTIFIED BY MANUFACTURER FOR THE REMOVAL AND REINSTALLATION OF UNITS AND DEVICES REQUIRED FOR THIS PROJECT. INSTALLATION MUST BE BY PERSONNEL CERTIFIED BY NICET AS FIRE-ALARM LEVEL III TECHNICIAN.
   - B. NFPA CERTIFICATION: OBTAIN CERTIFICATION ACCORDING TO NFPA 72 BY AN NRTL (NATIONALLY RECOGNIZED TESTING LABORATORY).
   - C. PERFORM A FULL TEST OF THE EXISTING SYSTEM PRIOR TO STARTING WORK. DOCUMENT ANY EQUIPMENT OR COMPONENTS NOT FUNCTIONING PROPERLY.
   - D. INTERRUPTION OF EXISTING FIRE-ALARM SERVICE: DO NOT INTERRUPT FIRE-ALARM SERVICE TO FACILITIES OCCUPIED BY OWNER OR OTHERS UNLESS PERMITTED UNDER THE FOLLOWING CONDITIONS AND THEN ONLY AFTER ARRANGING TO PROVIDE TEMPORARY GUARD SERVICE ACCORDING TO REQUIREMENTS INDICATED:
     1. NOTIFY OWNER NO FEWER THAN FOURTEEN DAYS IN ADVANCE OF PROPOSED INTERRUPTION OF FIRE-ALARM SERVICE.
     2. DO NOT PROCEED WITH INTERRUPTION OF FIRE-ALARM SERVICE WITHOUT OWNER'S WRITTEN PERMISSION.
   - E. USE OF DEVICES DURING CONSTRUCTION: PROTECT DEVICES DURING CONSTRUCTION UNLESS DEVICES ARE PLACED IN SERVICE TO PROTECT THE FACILITY DURING CONSTRUCTION.
   - F. COMPLY WITH NFPA 72, NFPA 101, AND REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION FOR INSTALLATION AND TESTING OF FIRE-ALARM EQUIPMENT. INSTALL ALL ELECTRICAL WIRING TO COMPLY WITH REQUIREMENTS IN NFPA 70 INCLUDING, BUT NOT LIMITED TO, ARTICLE 760, "FIRE ALARM SYSTEMS."
   - G. FIRE ALARM WIRING INSTALLATION: COMPLY WITH NECA 1 AND NFPA 72. FIRE ALARM CIRCUITS AND EQUIPMENT CONTROL WIRING ASSOCIATED WITH THE FIRE ALARM SYSTEM SHALL BE INSTALLED IN A DEDICATED PATHWAY SYSTEM. THIS SYSTEM SHALL NOT BE USED FOR ANY OTHER WIRE OR CABLE.
     1. CABLES AND PATHWAYS USED FOR FIRE ALARM CIRCUITS, AND EQUIPMENT CONTROL WIRING ASSOCIATED WITH THE FIRE ALARM SYSTEM, MAY NOT CONTAIN ANY OTHER WIRE OR CABLE.
     2. SIGNALING LINE CIRCUITS: POWER-LIMITED FIRE ALARM CABLES SHALL NOT BE INSTALLED IN THE SAME CABLE OR PATHWAY AS SIGNALING LINE CIRCUITS.
     3. WIRING WITHIN ENCLOSURES: SEPARATE POWER-LIMITED AND NON-POWER-LIMITED CONDUCTORS AS RECOMMENDED BY MANUFACTURER. INSTALL CONDUCTORS PARALLEL WITH OR AT RIGHT ANGLES TO SIDES AND BACK OF THE ENCLOSURE. BUNDLE, LACE, AND TRAIN CONDUCTORS TO TERMINAL POINTS WITH NO EXCESS. CONNECT CONDUCTORS THAT ARE TERMINATED, SPLICED, OR INTERRUPTED IN ANY ENCLOSURE ASSOCIATED WITH THE FIRE ALARM SYSTEM TO TERMINAL BLOCKS. MARK EACH TERMINAL ACCORDING TO THE SYSTEM'S WIRING DIAGRAMS. MAKE ALL CONNECTIONS WITH APPROVED CRIMP-ON TERMINAL SPADE LUGS, PRESSURE-TYPE TERMINAL BLOCKS, OR PLUG CONNECTORS.
     4. CABLE TAPS: USE NUMBERED TERMINAL STRIPS IN JUNCTION, PULL, AND OUTLET BOXES, CABINETS, OR EQUIPMENT ENCLOSURES WHERE CIRCUIT CONNECTIONS ARE MADE.
     5. COLOR CODING: COLOR CODE FIRE ALARM CONDUCTORS DIFFERENTLY FROM THE NORMAL BUILDING POWER WIRING. USE ONE COLOR CODE FOR ALARM CIRCUIT WIRING AND ANOTHER FOR SUPERVISORY CIRCUITS. COLOR CODE AUDIBLE ALARM-INDICATING CIRCUITS DIFFERENTLY FROM ALARM-INITIATING CIRCUITS. USE DIFFERENT COLORS FOR VISIBLE ALARM-INDICATING DEVICES. PAINT FIRE ALARM SYSTEM JUNCTION BOXES AND COVERS RED.
   - H. FIELD TESTS SHALL BE WITNESSED BY AUTHORITIES HAVING JURISDICTION.
   - I. AFTER INSTALLING SALVAGED DEVICES, PERFORM THE FOLLOWING TESTS AND INSPECTIONS WITH THE ASSISTANCE OF A FACTORY-AUTHORIZED SERVICE REPRESENTATIVE:
     1. VISUAL INSPECTION: CONDUCT VISUAL INSPECTION PRIOR TO TESTING. INSPECTION SHALL BE BASED ON COMPLETED RECORD DRAWINGS AND SYSTEM DOCUMENTATION THAT IS REQUIRED BY THE "COMPLETION DOCUMENTS, PREPARATION" TABLE IN THE "DOCUMENTATION" SECTION OF THE "FUNDAMENTALS" CHAPTER IN NFPA 72. COMPLY WITH THE "VISUAL INSPECTION FREQUENCIES" TABLE IN THE "INSPECTION" SECTION OF THE "INSPECTION, TESTING AND MAINTENANCE" CHAPTER IN NFPA 72; RETAIN THE "INITIAL/REACCEPTANCE" COLUMN AND LIST ONLY THE INSTALLED COMPONENTS.
     2. SYSTEM TESTING: COMPLY WITH THE "TEST METHODS" TABLE IN THE "TESTING" SECTION OF THE "INSPECTION, TESTING AND MAINTENANCE" CHAPTER IN NFPA 72.
   - J. FIRE-ALARM SYSTEM WILL BE CONSIDERED DEFECTIVE IF IT DOES NOT PASS TESTS AND INSPECTIONS.



KEY PLAN — PLAN NORTH

GRAPHIC SCALE
1/8"=1'-0"
8' 4' 0 8' 16'
CHECK GRAPHIC SCALE BEFORE USING

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

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DRAWN BY: BPD
CHECK BY: JDJ
NO.
DATE 08/05/2024

STATE OF MAINE
BGS

TITLE: ENERGY EFFICIENCY UPGRADES
MAINE DEPARTMENT OF MARINE RESOURCES LAB
LOCATION: BOOTHBAY, MAINE
TITLE THIS DWG.
ELECTRICAL SYMBOLS, ABBREVIATIONS, GENERAL NOTES, AND DEMO PLANS

OAK POINT ASSOCIATES
ARCHITECTURE ■ INTERIORS ■ PLANNING
231 Main Street, Biddeford, Maine 04005 207.283.6193

DRAWING NO. E-001
SHEET NO. x OF 30

05 Aug, 2024 - 2:56pm
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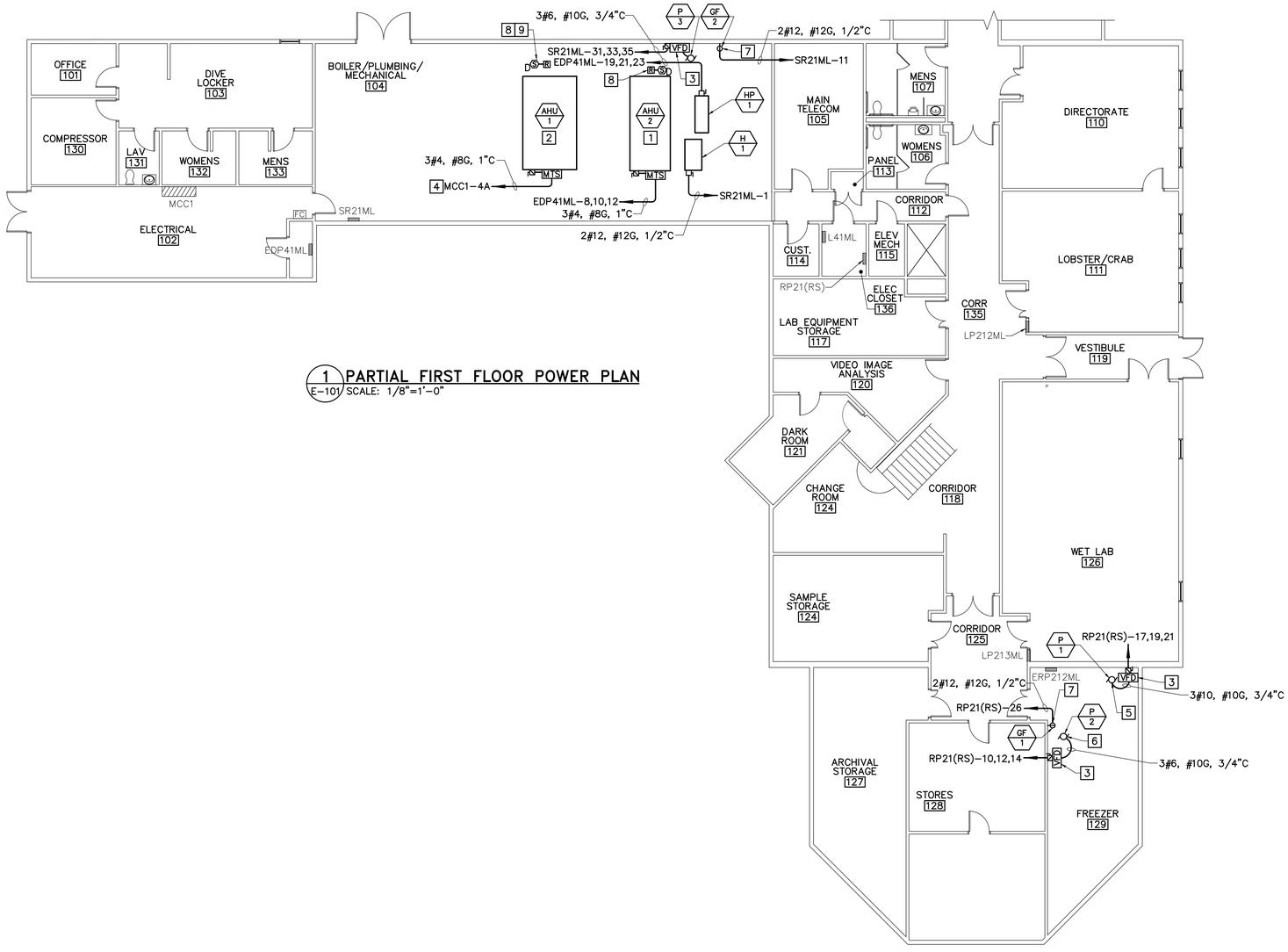
DRAWING NOTE

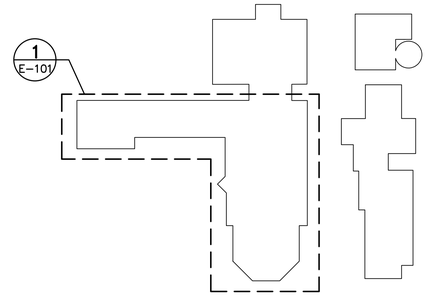
1. REFER TO E-001 FOR ELECTRICAL SYMBOLS, ABBREVIATIONS, GENERAL NOTES, AND DEMO PLANS.
2. REFER TO EP601 FOR ELECTRICAL PANELBOARD SCHEDULES AND ELEVATION.

DRAWING KEYNOTES

1. PROVIDE CONDUCTORS, CONDUIT, AND TRANSFER SWITCH FOR AHU-2 UNIT. PROVIDE CONDUIT AND CONDUCTORS TO AHU-1 TRANSFER SWITCH FROM AHU-2 TRANSFER SWITCH. REFER TO DETAIL 2 ON SHEET E-601 FOR TRANSFER SWITCH WIRING DIAGRAM.
2. PROVIDE CONDUCTORS, CONDUIT, AND TRANSFER SWITCH FOR AHU-1 UNIT UNDER BID ALTERNATE 2. PROVIDE CONDUIT AND CONDUCTORS TO AHU02 TRANSFER SWITCH FROM AHU-1 TRANSFER SWITCH. REFER TO DETAIL 2 ON SHEET E-061 FOR TRANSFER SWITCH WIRING DIAGRAM.
3. VFD FURNISHED BY MECHANICAL TRADE, INSTALLED BY ELECTRICAL TRADE.
4. CONNECT TO EXISTING OVERCURRENT DEVICE IN MCC1.
5. PROVIDE DISCONNECT SWITCH, CONDUCTORS, AND CONDUIT TO P-1.
6. PROVIDE DISCONNECT SWITCH, CONDUCTORS, AND CONDUIT TO P-2.
7. PROVIDE DEDICATED RECEPTACLE FOR GLYCOL FEEDER.
8. INSTALL SALVAGED DUCT SMOKE DETECTOR AND REMOTE INDICATOR. CONNECT TO EXISTING FIRE ALARM SYSTEM.
9. BID ALTERNATE 2.



1 PARTIAL FIRST FLOOR POWER PLAN
E-101 SCALE: 1/8"=1'-0"



KEY PLAN

PLAN NORTH

GRAPHIC SCALE
1/8"=1'-0"
8' 4' 0 8' 16'
CHECK GRAPHIC SCALE BEFORE USING

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REVISIONS			

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CHECK BY: JDJ
NO.
DATE 08/05/2024

STATE OF MAINE
BGS

TITLE ENERGY EFFICIENCY UPGRADES
MAINE DEPARTMENT OF MARINE RESOURCES LAB

LOCATION BOOTHBAY, MAINE

TITLE THIS DWG.
PARTIAL ELECTRICAL PLANS

OAK POINT ASSOCIATES
ARCHITECTURE • ENGINEERING • PLANNING
231 Main Street, Biddeford, Maine 04005 207.283.0193

DRAWING NO. E-101
SHEET NO. X OF 30

05 Aug, 2024 - 1:55pm
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REVISED PANELBOARD SCHEDULE EDP41ML (EXISTING PANELBOARD)

SQUARE D
I-LINE HCM12300811A00

CKT NO	AMPS PER PHASE A	B	C	DESCRIPTION	LOAD TYPE	CKT BKR TRIP	POLE	CKT BKR TRIP	POLE	LOAD TYPE	DESCRIPTION	AMPS PER PHASE A	B	C	CKT NO
1	·			AIR COMPRESSOR	–	30	3	40	3	–	PUMP P5	·			2
3		·											·		4
5			·											·	6
7	·			SEWAGE PUMPS	–	40	3	70	3	–	AHU–2 [1]	19			8
9		·											19		10
11			·											19	12
13	·			BRP212ML (FREEZER RM)	–	60	3	100	3	–	PUMP P6	·			14
15		·											·		16
17			·											·	18
19	44			HP–1 [4]	–	60	3	100	3	–	XFMR T4 – FEEDS CB RP21EB	·			20
21		44											·		22
23			44											·	24
25	·			SPARE	–	100	3	100	3	–	SPARE	·			26
27		·											·		28
29			·											·	30
31	·			EL41ML	–	150	3	100	3	–	EL42ML	·			32
33		·											·		34
35			·											·	36
37	·			–	–	20	1	20	1	–	–	·			38
39		·		–	–	20	1	20	1	–	–		·		40
41			·	–	–	20	1	20	1	–	–			·	42

TOTAL/PHASE | VOLTS: 277/480, 3 PHASE, 4 WIRE
MCB: ☐ | MLO: ☒ | FAULT AMPS: 42,000
MCB AMPS: 400A | BUS AMPS: 400A
DESIGNATION: EDP41ML | LOCATION: MAIN ELEC RM | MOUNTING: SURFACE

REVISED PANELBOARD SCHEDULE SR21ML (EXISTING PANELBOARD)

SQUARE D
NQOD442M225CN

CKT NO	AMPS PER PHASE A	B	C	DESCRIPTION	LOAD TYPE	CKT BKR TRIP	POLE	CKT BKR TRIP	POLE	LOAD TYPE	DESCRIPTION	AMPS PER PHASE A	B	C	CKT NO
1	3			HUMIDIFIER (H–1) [2]	–	20	1	20	1	–	OUTLETS RM 104	·			2
3		·		SPARE	–	20	1	20	1	–	OUTLETS RM 139		·		4
5			·	OUTLETS BENCH RM 104	–	20	1	30	3	–	SPACE			·	6
7	·			OUTLETS BENCH RM 104	–	20	1					·			8
9		·		OUTLETS BENCH RM 104	–	20	1						·		10
11			1	GF–2 [6]	–	15	1	50	2	–	RANGE OUTLET			·	12
13	·			SPACE	–	–	–					·			14
15		·		SPACE	–	–	–	20	1	–	SPACE		·		16
17			·	SPACE	–	–	–	20	1	–	SPACE			·	18
19	·			AIR COMPRESSOR	–	20	3	20	3	–	BAND SAW	·			20
21		·											·		22
23			·											·	24
25	·			BAND SAW	–	20	3	20	3	–	OUTLET	·			26
27		·											·		28
29			·											·	30
31	25.3			P–3 [5]	–	50	3	20	1	–	–	·			32
33		25.3						20	1	–	–		·		34
35			25.3					20	1	–	–			·	36
37	·			–	–	20	1	20	1	–	–	·			38
39		·		–	–	20	1	20	1	–	–		·		40
41			·	–	–	20	1	20	1	–	–			·	42

TOTAL/PHASE | VOLTS: 120/208, 3 PHASE, 4 WIRE
MCB: ☒ | MLO: ☐ | FAULT AMPS: 10,000
MCB AMPS: 125 | BUS AMPS: 225
DESIGNATION: SR21ML | LOCATION: MECH 104 | MOUNTING: RECESSED

REVISED PANELBOARD SCHEDULE RP21(RS) (EXISTING PANELBOARD)

SQUARE D
NQOD442L225CN

CKT NO	AMPS PER PHASE A	B	C	DESCRIPTION	LOAD TYPE	CKT BKR TRIP	POLE	CKT BKR TRIP	POLE	LOAD TYPE	DESCRIPTION	AMPS PER PHASE A	B	C	CKT NO
1	·			SPARE	–	20	1	20	1	–	ALTRONIX PANEL (FIRE DOORS)	·			2
3		·		SPARE	–	20	1	20	1	–	SPARE		·		4
5			·	SPARE	–	20	1	20	1	–	SPARE			·	6
7	·			SPARE	–	20	1	20	1	–	SPARE	·			8
9		·		SPARE	–	20	1	50	3	–	P–2 [3]		25.3		10
11			·	SPARE	–	20	1							25.3	12
13				SPARE	–	20	1					25.3			14
15		·		SPARE	–	20	1	20	3	–	COMPUTER ROOM AC		·		16
17			17.5	P–1 [2]	–	30	3							·	18
19	17.5											·			20
21		17.5						20	2	–	VIEW COMPUTER ROOM AC		·		22
23			·	SPARE	–	50	3							·	24
25	·							15	1	–	GF–1 [6]	1			26
27		·						–	–	–	–		·		28
29			·	–	–	–	–	–	–	–	–			·	30
31	·			–	–	–	–	–	–	–	–	·			32
33		·		–	–	–	–	–	–	–	–		·		34
35			·	–	–	–	–	–	–	–	–			·	36
37	·			–	–	–	–	–	–	–	–	·			38
39		·		–	–	–	–	–	–	–	–		·		40
41			·	–	–	–	–	–	–	–	–			·	42

TOTAL/PHASE | VOLTS: 120/208, 3 PHASE, 4 WIRE
CODE AMPS | MCB: ☐
TOTAL = CODE AMPS X 1.25 | MLO: ☒ | FAULT AMPS: 10,000
MCB AMPS: 150 | BUS AMPS: 225
DESIGNATION: RP21(RS) | LOCATION: ELEC 136 | MOUNTING: SURFACE

DRAWING KEYNOTES

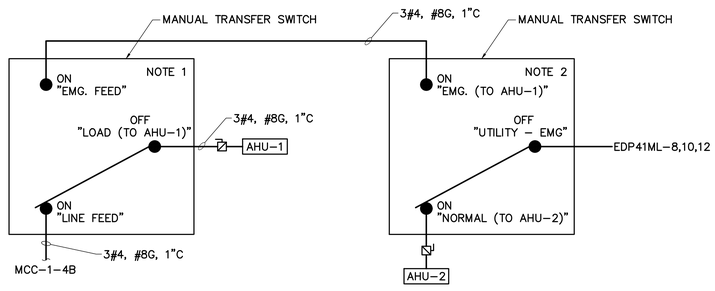
1. PROVIDE CIRCUIT BREAKER FOR AHU–2.
2. PROVIDE CONNECTION TO EXISTING BREAKER FOR P–1.
3. PROVIDE CIRCUIT BREAKER FOR P–2.
4. PROVIDE CIRCUIT BREAKER FOR HP–1.
5. PROVIDE CIRCUIT BREAKER FOR P–3.
6. PROVIDE CIRCUIT BREAKER FOR GF.

MCC1 ELEVATION (EXISTING MCC) SQUARE D – MODEL 5

480/277V, 3ø, 4W

1A. SPARE	1B. P–9
2A. EF–14	2B. P–10
3A. EF–1	3B. SPACE
4A. AHU–1	
5A. SPARE	4B. SPACE
MAIN LUGS	

1 MCC–G ELEVATION
E–601 NOT TO SCALE



AHU–1 AND AHU–2 EMERGENCY WIRING DIAGRAM NOTES:

1. LABEL ON EXISTING AHU–1 SWITCH STATES:
   "CAUTION
   AHU–1
   NORMAL TO EMERGENCY POWER
   TRANSFER SWITCH
   ONLY ONE AHU WILL OPERATE IN
   EMERGENCY".
2. LABEL ON EXISTING AHU–2 SWITCH STATES:
   "CAUTION
   AHU–2
   EMERGENCY POWER TO AHU–1
   TRANSFER SWITCH
   ONLY ONE AHU WILL OPERATE ON
   EMERGENCY POWER AT A TIME.
   BLADES OF DISCONNECT ARE ENERGIZED
   AT ALL TIMES".
3. VERIFY THAT EACH CIRCUIT HAS BEEN DE–ENERGIZED PRIOR TO REMOVAL OF ANY CONDUCTORS.
4. PROVIDE MATCHING LABELS FROM EXISTING TRANSFER SWITCHES TO NEW TRANSFER SWITCH.

2 AHU–1 AND AHU–2 EMERGENCY WIRING DIAGRAM
E–601 NOT TO SCALE

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REVISIONS			

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CHECK BY: JDJ
NO.
DATE 08/05/2024

STATE OF MAINE
BGS

TITLE: ENERGY EFFICIENCY UPGRADES
MAINE DEPARTMENT OF MARINE RESOURCES LAB
LOCATION: BOOTHBAY, MAINE
TITLE THIS DWG.
PANELBOARD SCHEDULES AND DETAILS

OAK POINT ASSOCIATES
ARCHITECTURE • ENGINEERING • PLANNING
231 Main Street, Biddeford, Maine 04005 207.283.0193

DRAWING NO. E–601
SHEET NO. X OF 30

05 Aug, 2024 – 2:10pm
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