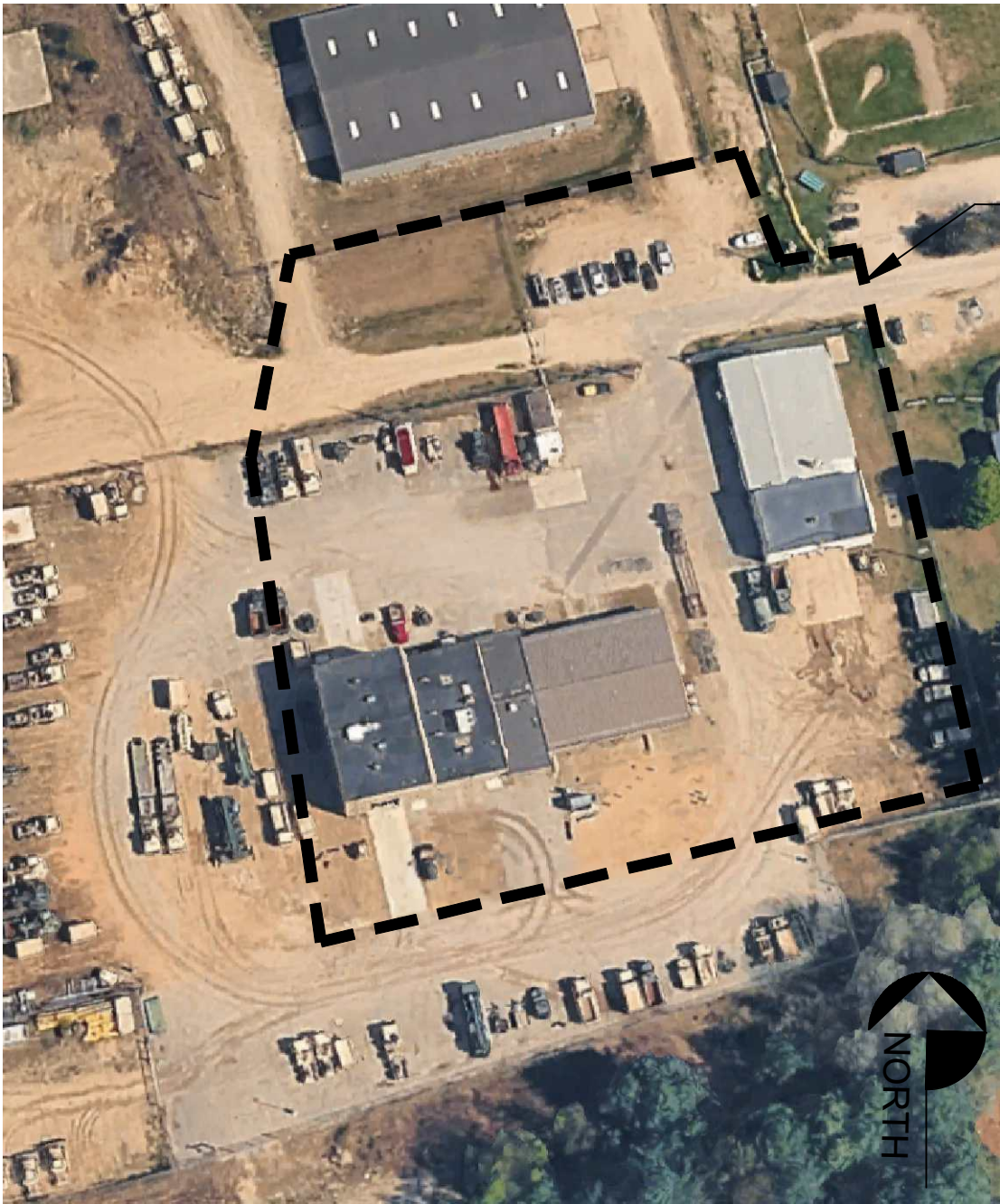
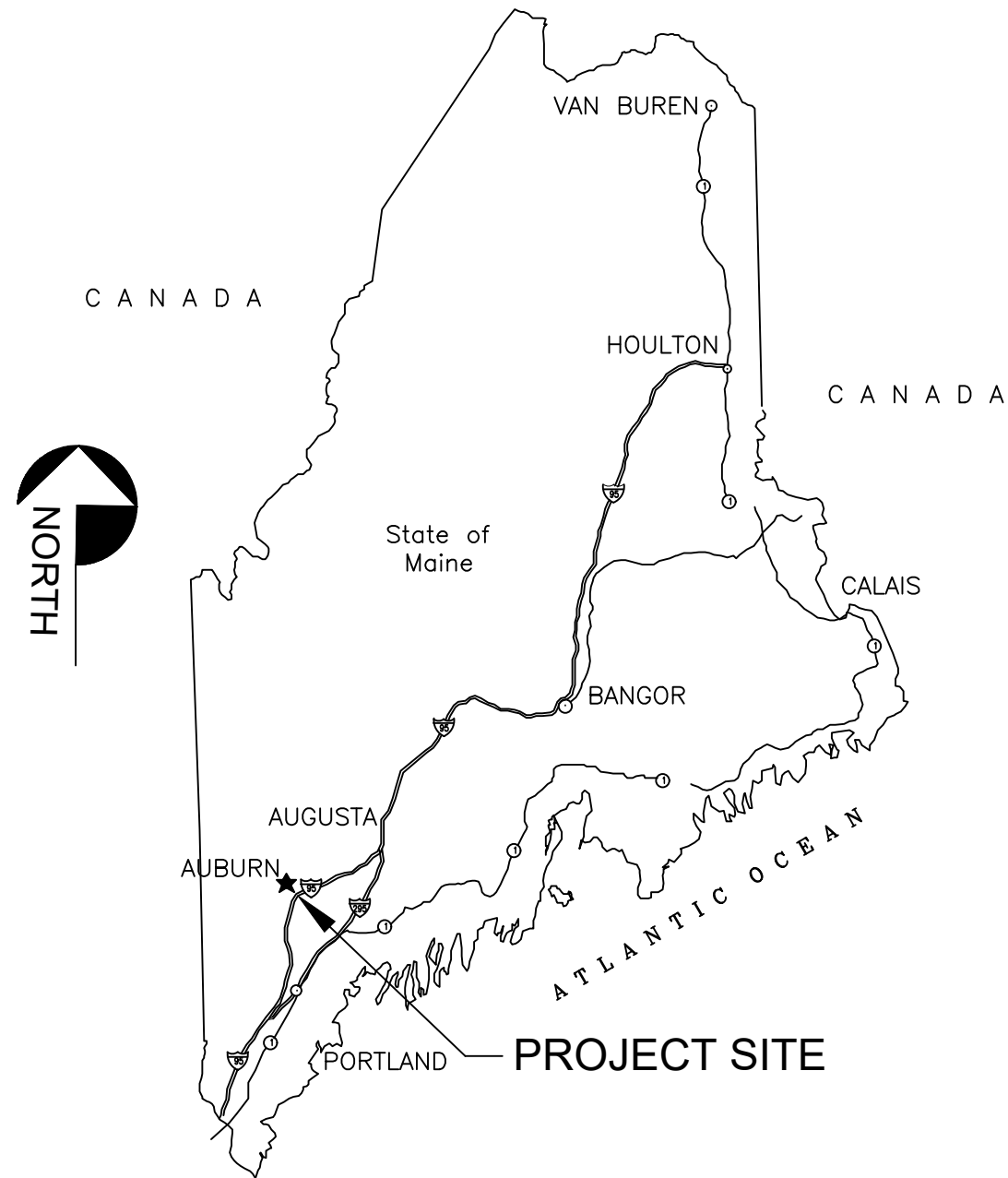
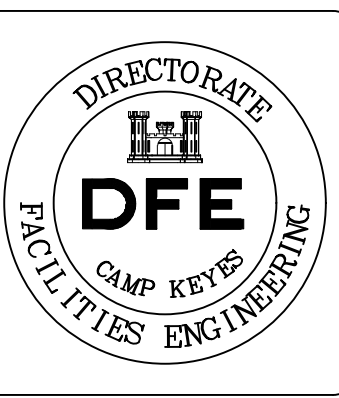
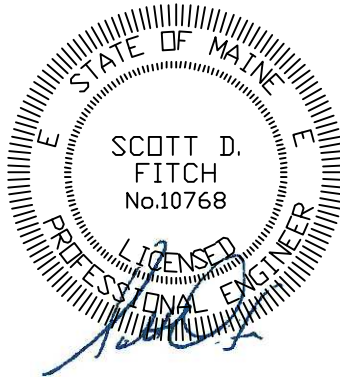




PROJECT SITE



DEPARTMENT OF DEFENSE, VETERANS AND EMERGENCY MANAGEMENT
FIELD MAINTENANCE SHOP #2, AUBURN, MAINE.
AUBURN SOLAR & CHP MICRO-GRID PROJECT

OWNER:

MAINE ARMY NATIONAL GUARD (MEARNG)
CAMP KEYES
194 WINTHROP STREET
AUGUSTA, ME 04333-0033

DESIGN ENGINEER:

INNOVATIVE CONSTRUCTION &
DESIGN SOLUTIONS, LLC
10 WHITE WOOD LANE
NORTH BRANFORD, CT 06471
(203) 453-8596

PROJECT NUMBERS:

23SC21-307-D (DFE), 3920 (BGS)

SUBMITTAL:

ISSUED FOR BIDDING

PROJECT DESIGN BASIS

- DUCT: SMACNA DUCT CONSTRUCTION STANDARDS: METAL AND FLEXIBLE, LATEST ED.
- PIPING: ASME B31.9 "BUILDING SERVICES PIPING"
- ASME N8&PV CODE SECTION IX "WELDING & BRAZING QUALIFICATIONS"
- AWS D1.4, "STRUCTURAL WELDING CODE-REINFORCING STEEL"
- NFPA 54- 2021 "NATIONAL FUEL GAS CODE"
- GENERAL: NFPA 90A & 90B
- CODES: MAINE UNIFORM BUILDING AND ENERGY CODE "MUBEC"
- 2021 INTERNATIONAL BUILDING CODE
- 2021 INTERNATIONAL MECHANICAL CODE
- 2021 UNIFORM PLUMBING CODE
- 2021 INTERNATIONAL ENERGY CONSERVATION CODE
- 2026 NATIONAL ELECTRICAL CODE (NFPA-70)

PROJECT SCOPE OF WORK

- THIS PROJECT INCLUDES THE INSTALLATION OF A SUSTAINABLE MICRO-COMBINED HEAT AND POWER (mCHP) CO-GENERATION SYSTEM AND NEW TRACKING SOLAR PV ARRAYS.
- BASE BID SCOPE:
- ONE (1) 24 KW RECIP ENGINE GENERATOR WITH HEAT RECOVERY IN TO HEATING HOT WATER AND DOMESTIC HOT WATER SYSTEMS
 - CIRCULATING PUMP, P-mCHP
 - NEW GAS FEED FOR mCHP UNIT WITH LINE REGULATOR
 - NIAGARA 4 BASED BUILDING AUTOMATION AND CONTROLS FOR THE NEW mCHP INCLUDING:
 - GAS METER
 - ELECTRIC METER
 - BTU METER
 - MODBUS COMMUNICATIONS WITH THE mCHP AND PV SOLAR INVERTERS
 - TEMPERATURE SENSORS
 - CONTROL VALVES
 - RELAYS
 - TWO (2) 17.3 KW DUAL-AXIS SOLAR TRACKING PHOTOVOLTAIC ARRAYS WITH STRUCTURAL BASEFOOTING IN THE CONTROLLED HUMIDITY PROTECTION BUILDING SITE AREA (ACROSS MT. APATITE/STEVEN MILL RD. FROM FMS #2).
 - NEW DISTRIBUTED GENERATION (DG) ELECTRICAL PANEL AND INVERTERS LOCATED OUTSIDE IN FROM OF FMS #2 AND PROTECTION BOLLARDS.
 - INTERCONNECTION OF DG EQUIPMENT TO MDP.
 - DG METERING (PQUBE POWER ANALYZER).
 - COMMISSIONING
- ALTERNATE BID ITEMS:
- ABI #1: NEW FENCE ISOLATING PUBLIC ENTRY FROM STEVENS MILL RD. INCLUDING A STAFF/DELIVERY GATE, A SEPARATE UTILITY ACCESS GATE AND A GATE INTO A DESIGNATED SNOW REMOVAL AREA.
- ABI #2: EXTEND/ENLARGE CONCRETE PAD IN THE MECHANICAL ROOM FOR ALL NEW mCHP EQUIPMENT.

PROJECT INSTALLATION NOTES

- THE GENERAL, MECHANICAL ELECTRICAL AND BACS CONTRACTOR SHALL BE FAMILIAR WITH ALL CONTRACT DOCUMENTS FOR ALL TRADES AND SHALL COORDINATE WITH OTHER CONTRACTORS.
- DRAWINGS ARE DIAGRAMMATIC ONLY, FINAL ROUTING OF DUCTWORK, PIPING AND EQUIPMENT LOCATIONS SHALL BE DETERMINED IN THE FIELD. ADDITIONAL OFFSETS, ELBOWS, ETC., SHALL BE PROVIDED AND INSTALLED WITHOUT ADDITIONAL COST TO THE OWNER.
- REFER TO THE MECHANICAL (DIV 23) AND ELECTRICAL (DIV 26) PROJECT SPECIFICATIONS FOR ALL INSTALLATION REQUIREMENTS NOT SPECIFICALLY SHOW ON THE DRAWINGS. REFER TO "S" DRAWINGS FOR A STRUCTURAL REQUIREMENTS.
- ALL NEW BACNET COMPONENTS SHALL INCLUDE THE BACNET/SC SECURED PROTOCOL, IF AVAILABLE. ALL EXISTING AND NEW JACE CONTROLLERS SHALL BE UPDATED TO NIAGARA 4.11 OR LATER TO SUPPORT THIS, IF NOT ALREADY COMPLETED. ALL IP BASED CONTROLLERS SHALL UTILIZE THE IPV6 ADDRESSING IN ACCORDANCE WITH THE FERC INTERNET PROTOCOL VERSION 6 (IPV6) POLICY.
- IF NOT ALREADY, ALL JACE CONTROLLERS SHALL BE UPGRADED/LICENSED TO SUPPORT NIAGARA ANALYTICS 2.1. ALTERNATE TO THIS MAY INCLUDE VOLUME ANALYTIC POINT LICENSING FOR THE A SUPERVISOR.
- THE MECHANICAL AND BACS SUBCONTRACTOR SHALL COORDINATE ALL ELECTRICAL AND PLUMBING REQUIREMENTS WITH THE ELECTRICAL AND PLUMBING SUBCONTRACTORS.
- THE GENERAL CONTRACTOR SHALL COORDINATE ALL SITE AND STRUCTURAL WORK FOR THE NEEDS OF THE ELECTRICAL AND MECHANICAL WORK.
- THE MECHANICAL AND BACS CONTRACTOR SHALL FURNISH AND INSTALL ALL INCIDENTAL ACCESSORIES NECESSARY TO MAKE THE MECHANICAL AND CONTROLS WORK COMPLETE AND READY FOR OPERATION.
- ALL MECHANICAL, ELECTRICAL, AND PLUMBING WORK SHALL BE IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL CODES.
- THE MECHANICAL CONTRACTOR SHALL FURNISH TO THE GENERAL CONTRACTOR ALL INFORMATION REQUIRED FOR SETTING OF ANY WALL, ROOF AND PARTITION OPENINGS.
- INSTALL ALL EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
- COORDINATE ANY AND ALL ALL MECHANICAL INSTALLATION WORK WITH ANY EXISTING FIRE SPRINKLER SYSTEM AND/OR FIRE ALARM SYSTEM. RELOCATE ANY HEADS THAT MAY BE OBSTRUCTED DUE TO NEW EQUIPMENT, PIPING, DUCTWORK, ELECTRICAL, ETC. IT SHALL BE THE RESPONSIBILITY OF THE PRIME CONTRACTOR TO ENGAGE A FIRE SUPPRESSION AND/OR FIRE ALARM SUBCONTRACTOR TO SUPPORT THIS WORK, AS NEEDED.
- A CERTIFIED AIR AND/OR WATER BALANCE TEST SHALL BE PERFORMED VERIFYING ANY AND ALL NEW OR MODIFIED HVAC SYSTEMS. THE TECHNICIAN RESPONSIBLE FOR PERFORMING THE WATER BALANCE TEST SHALL BE CERTIFIED WITH AABC (ASSOCIATED AIR BALANCE COUNCIL) OR NEBB (NATIONAL ENVIRONMENTAL AIR BALANCING BUREAU), SHALL BE AN INDEPENDENT THIRD PARTY INDIVIDUAL OR FIRM, AND SHALL NOT BE THE INSTALLING CONTRACTOR.
- COMMISSIONING OF THE SYSTEMS SHALL BE COMPLETED ON-SITE WITH THE OWNER (DFE), GC, AND ALL APPROPRIATE SUBCONTRACTORS WITH REMOTE (VIRTUAL) CONNECTION BY ICDS TO VERIFY THE FOLLOWING:
 - VERIFY PROPER SYSTEM SEQUENCE OF OPERATION AS DETAILED WITHIN THE CONTRACT DOCUMENTS
 - VERIFY AND DOCUMENT THE FUNCTIONAL PERFORMANCE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS (POINT TO POINT BACS VERIFICATION TO BE COMPLETED BY DFE)
 - VERIFY GUI IS ACCURATE AND ALL USER FUNCTIONALITY IS AS INTENDED IN THE CONTRACT DOCUMENTS
 - REFER TO M0.0 FOR ADDITIONAL CX DETAILS

DRAWING INDEX

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| CS1.0 | PROJECT COVER SHEET |
| GA2.0 | GENERAL ARRANGEMENT CHP |
| GA2.1 | GENERAL ARRANGEMENT SOLAR TRACKERS |
| S2.0 | STRUCTURAL PLAN |
| S3.0 | STRUCTURAL DETAILS |
| M0.0 | MECHANICAL NOTES AND EQUIPMENT SCHEDULE |
| M0.1 | MECHANICAL mCHP EQUIPMENT SPECS AND DETAILS |
| M2.0 | MECHANICAL mCHP MECHANICAL PLANS |
| M3.0 | MECHANICAL mCHP SYSTEM PIPING DETAILS |
| M4.0 | MECHANICAL mCHP STSTEM CONTROLS |
| E1.0 | ELECTRICAL ONE-LINE DIAGRAM |
| E2.0 | ELECTRICAL PLAN CHP |
| E2.1 | ELECTRICAL PLAN SOLAR TRACKERS |
| E2.2 | ELECTRICAL PLAN SINGLE PHASE CIRCUIT |
| E3.0 | ELECTRICAL DETAILS |

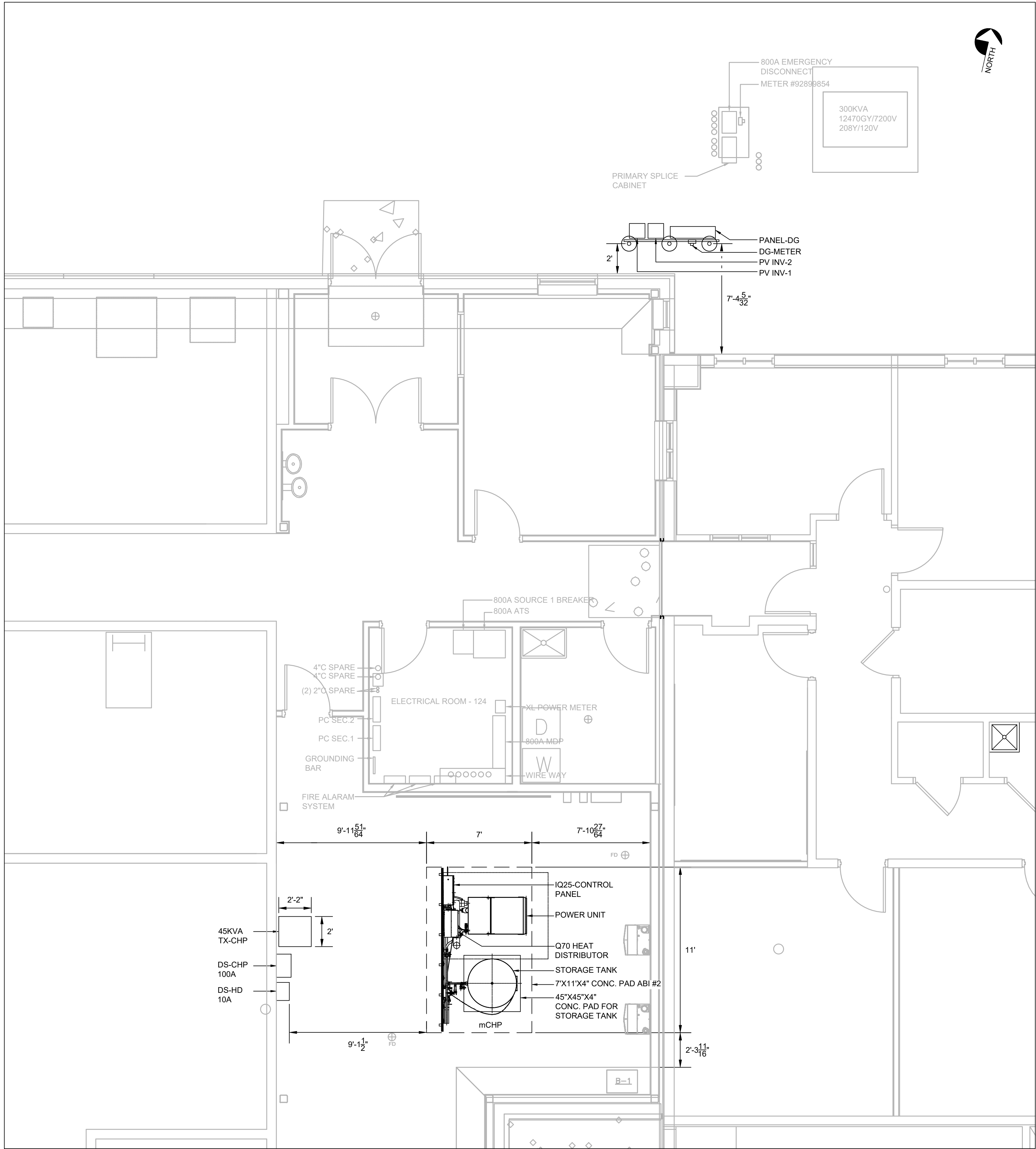
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Rev#	Description	Date			

DESIGNED BY: SDF	STATE OF MAINE DEPARTMENT OF DEFENSE, VETERANS AND EMERGENCY MANAGEMENT INNOVATIVE CONSTRUCTION & DESIGN SOLUTIONS, LLC 10 WHITE WOOD LANE NORTH BRANFORD, CT 06471 203.453.8596 / SFITCH@ICDSLLC.COM
DRAWN BY: SDF	
CHECKED BY: DSF	
DATE: 09/10/2026	
SCALE: AS LISTED	COVER SHEET
DPE PROJECT NO: 23SC21-307-D	

AUBURN SOLAR & CHP MICRO-GRID PROJECT MAINE DVEM FMS #2 64 MT. APATITE PARK AUBURN, ME 04210	COVER SHEET
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PLAN PROGRESS
☐ TYPE A SKETCHES
☐ 35% REVIEW
☐ 65% REVIEW
☐ 95% REVIEW
☐ FINAL REVIEW
☒ FOR BIDDING
☐ ISSUED FOR CONSTRUCTION
☐ RECORD DRAWINGS

SHEET ID: CS1.0
SHEET: 1 OF 15

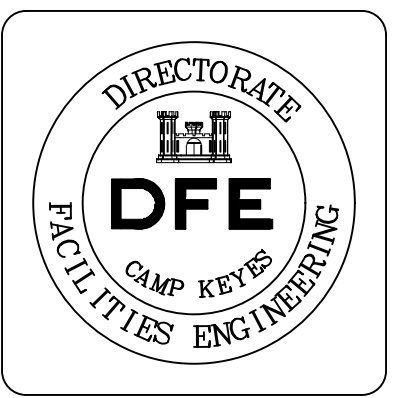
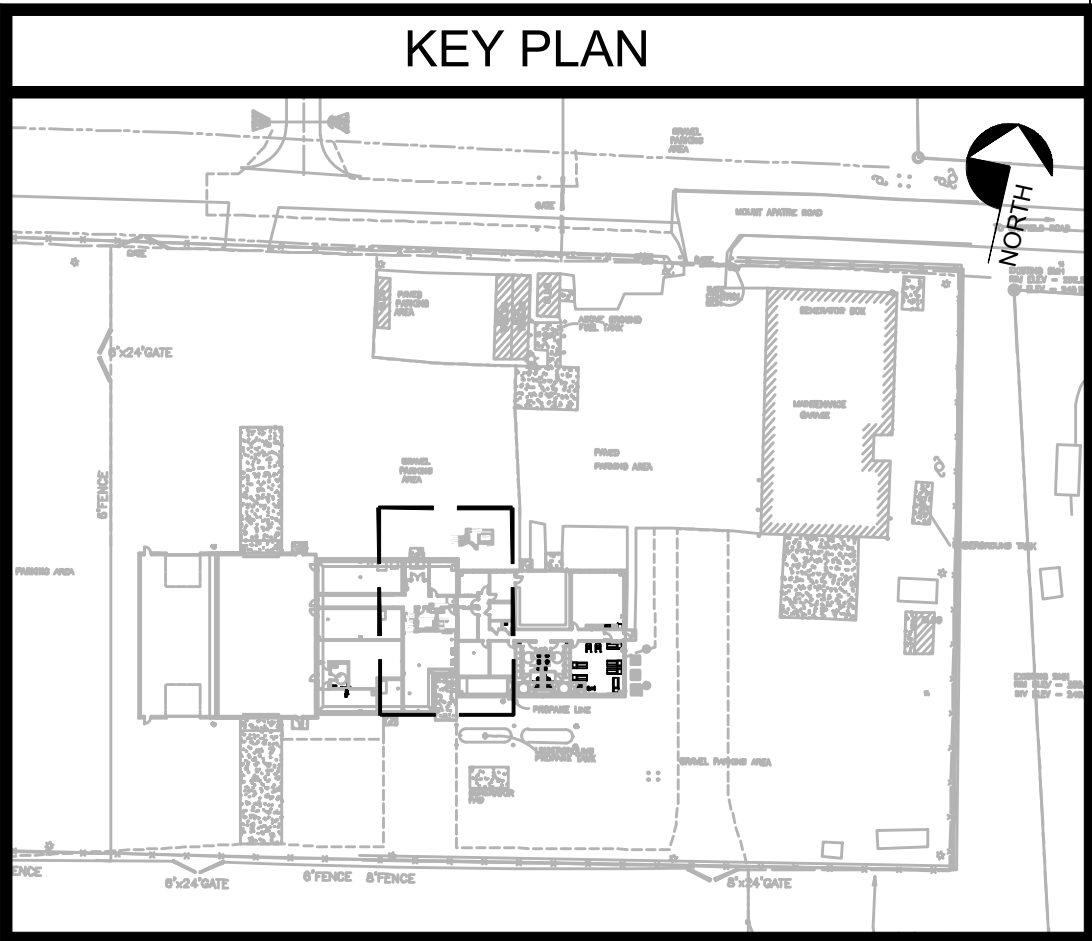


1 CHP - GENERAL ARRANGEMENT
Scale: 1/4" = 1'-0"

- GENERAL NOTES:**
1. CONTRACTOR SHALL VERIFY ALL SITE DIMENSIONS, EASEMENTS, EASEMENT LOCATIONS ETC.
 2. CONTRACTOR SHALL HAND DIG IN ALL LOCATIONS WHERE POWER CONDUITS, CONTROL CONDUITS, AND PIPING EXISTING.
 3. CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" AND A PRIVATE UTILITY LOCATOR SERVICE PRIOR TO START OF WORK.
 4. EXISTING UTILITIES ARE PRESENT ON THIS SITE. CONTRACTOR SHALL EXERCISE EXTREME CAUTION NEAR OVERHEAD POWER LINES AND WHEN EXCAVATING AND DIGGING TRENCHES.
 5. PROVIDE PIPE / UNISTRUT SUPPORT STAND AS REQUIRED FOR INVERTERS , PANEL BOARD AND CHP EQUIPMENT.

LEGEND

---	LIGHT INDICATES EXISTING
---	BOLD INDICATES NEW
GC	GRID CONNECT
GI	GRID INDEPENDENT



PLAN REVISIONS

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DESIGNED BY: SDF	DESIGNED BY: SDF	DESIGNED BY: SDF	DESIGNED BY: SDF
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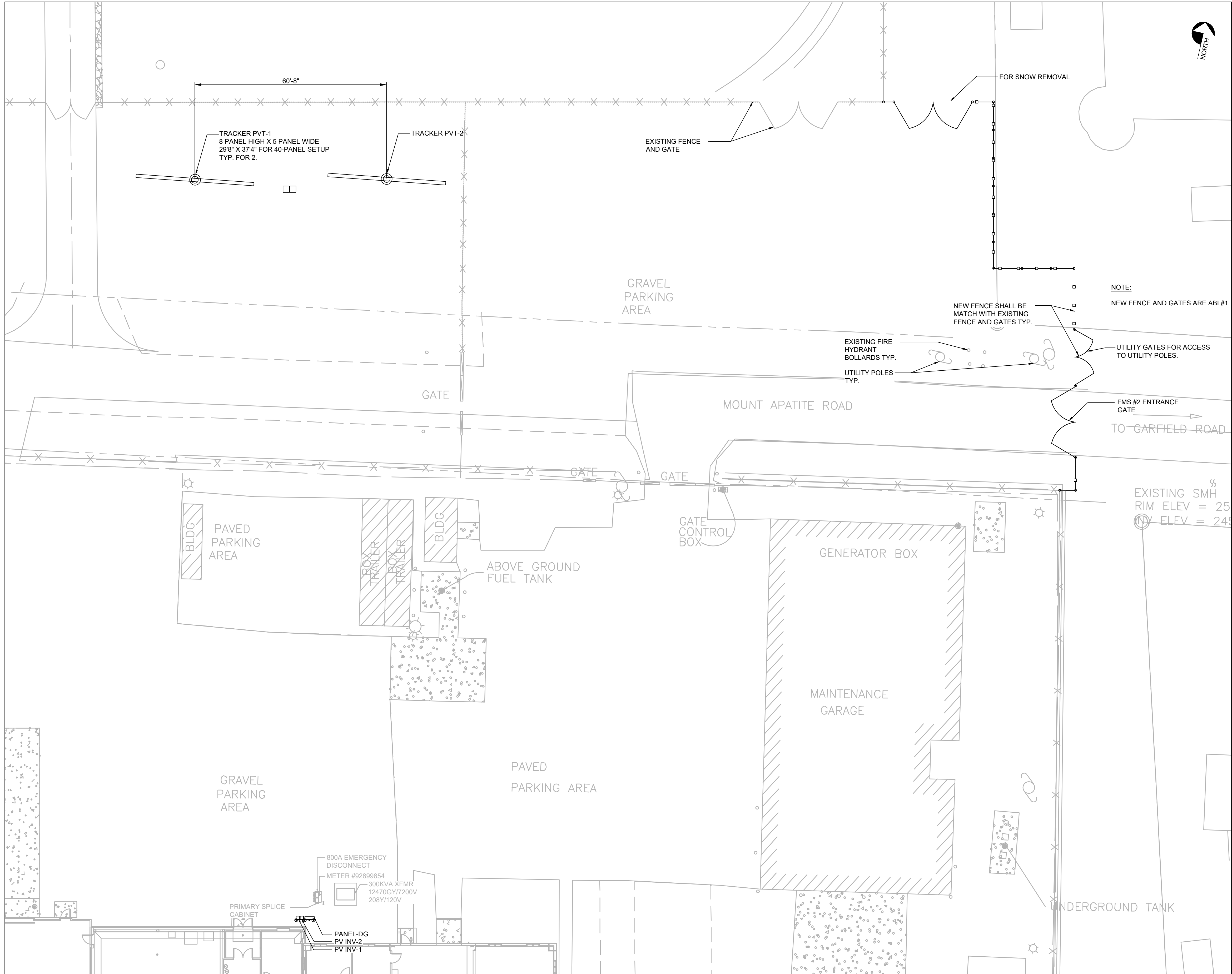
STATE OF MAINE
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AND EMERGENCY MANAGEMENT
INNOVATIVE CONSTRUCTION &
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10 WHITE WOOD LANE
NORTH BRANFORD, CT 06471
203.453.8596 / SFITCH@ICDSLLC.COM

AUBURN SOLAR & CHP MICRO-GRID PROJECT MAINE DDEM FMS #2 64 MT. APATITE PARK AUBURN, ME 04210	GENERAL ARRANGEMENT - CHP
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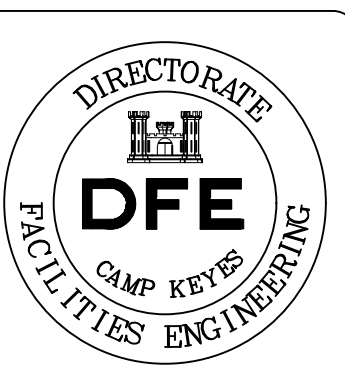
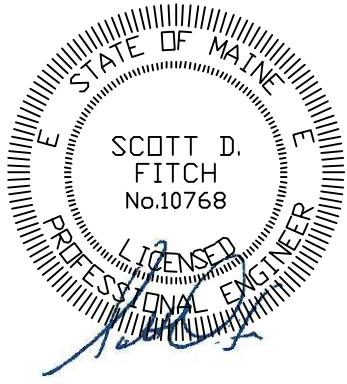
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SHEET ID:
GA2.0
SHEET: 2 OF 15



1 SOLAR TRACKERS - GENERAL ARRANGEMENT

Scale: 1/16" = 1'-0"



PLAN REVISIONS				
Rev#	Description	Date	Appr.	

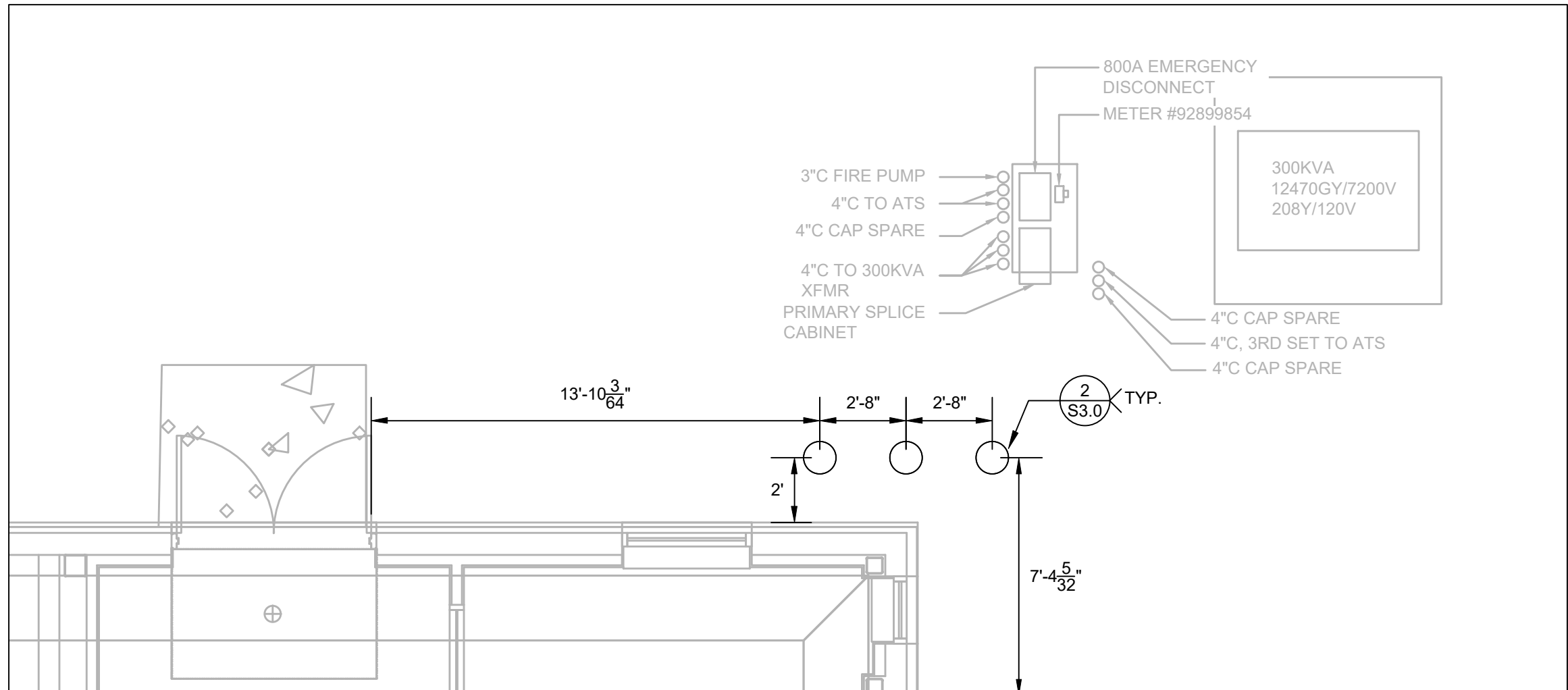
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SCALE: AS LISTED	SCALE: AS LISTED
DPE PROJECT NO: 23SC21-307-D	DPE PROJECT NO: 23SC21-307-D

STATE OF MAINE
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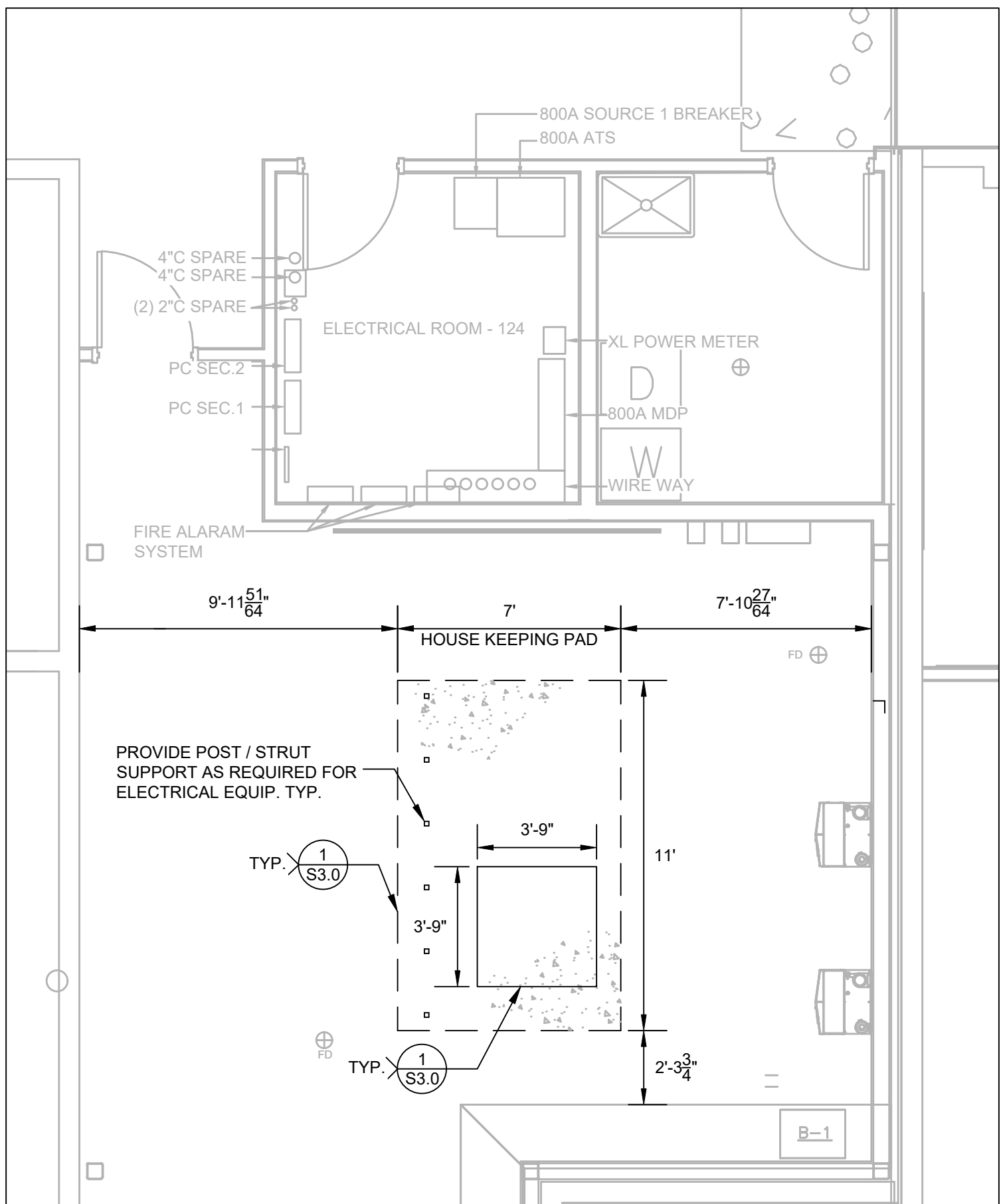
AUBURN SOLAR & CHP MICRO-GRID PROJECT MAINE DPEM FMS #2 64 MT. APATITE PARK AUBURN, ME 04210	GENERAL ARRANGEMENT SOLAR TRACKERS
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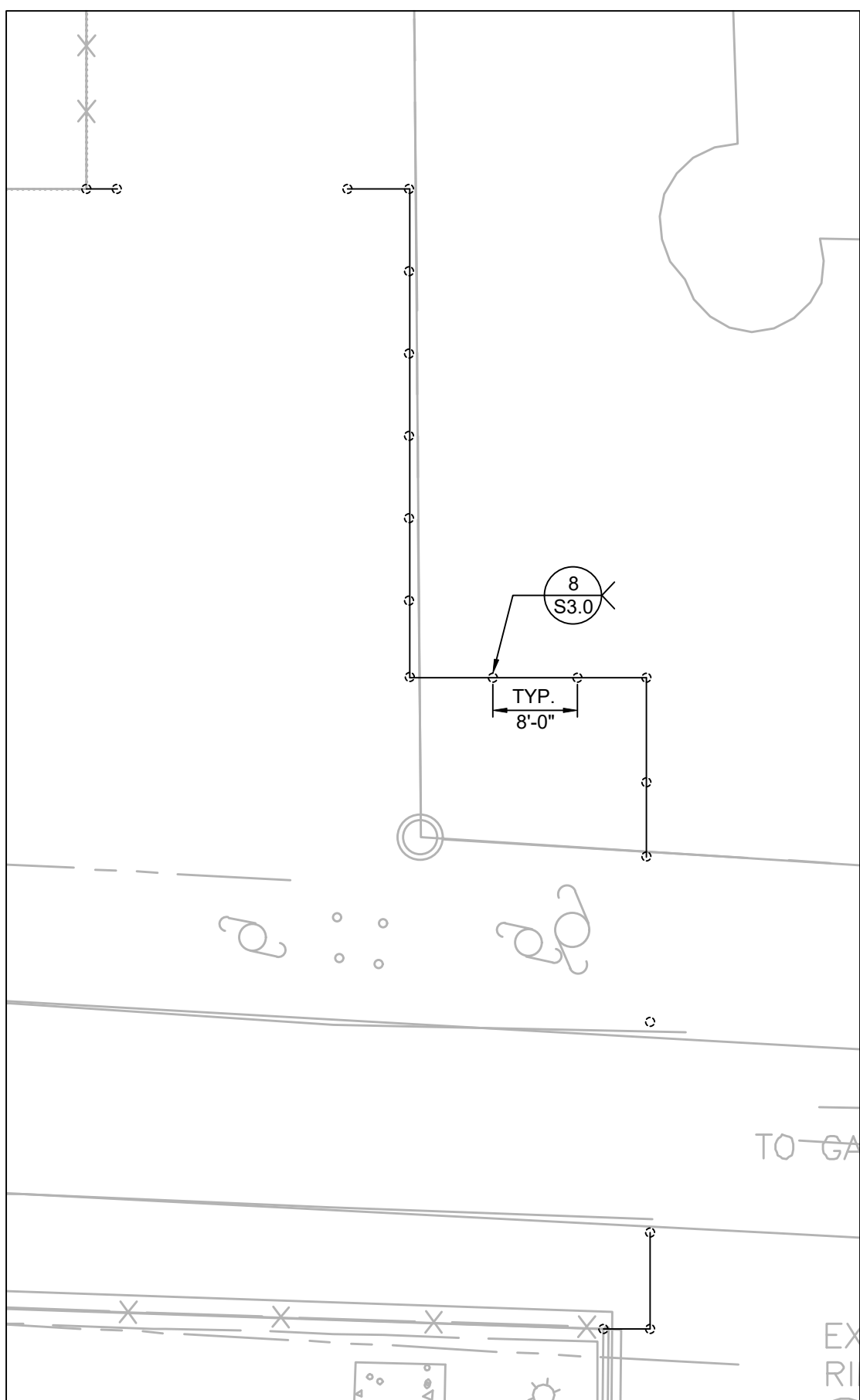
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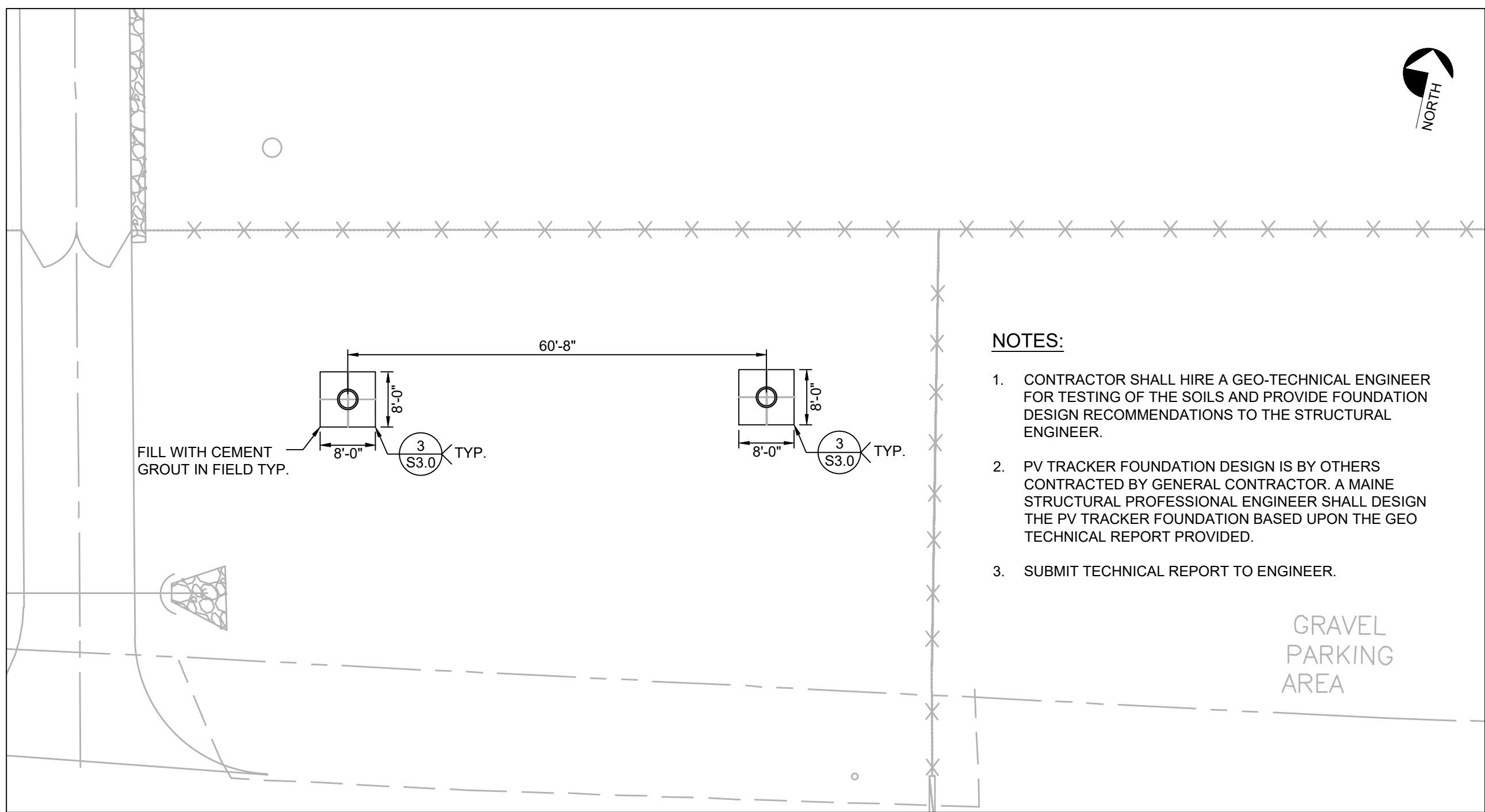
4 EQUIPMENT STRUCTURAL PLAN
Scale: 1/4" = 1'-0"



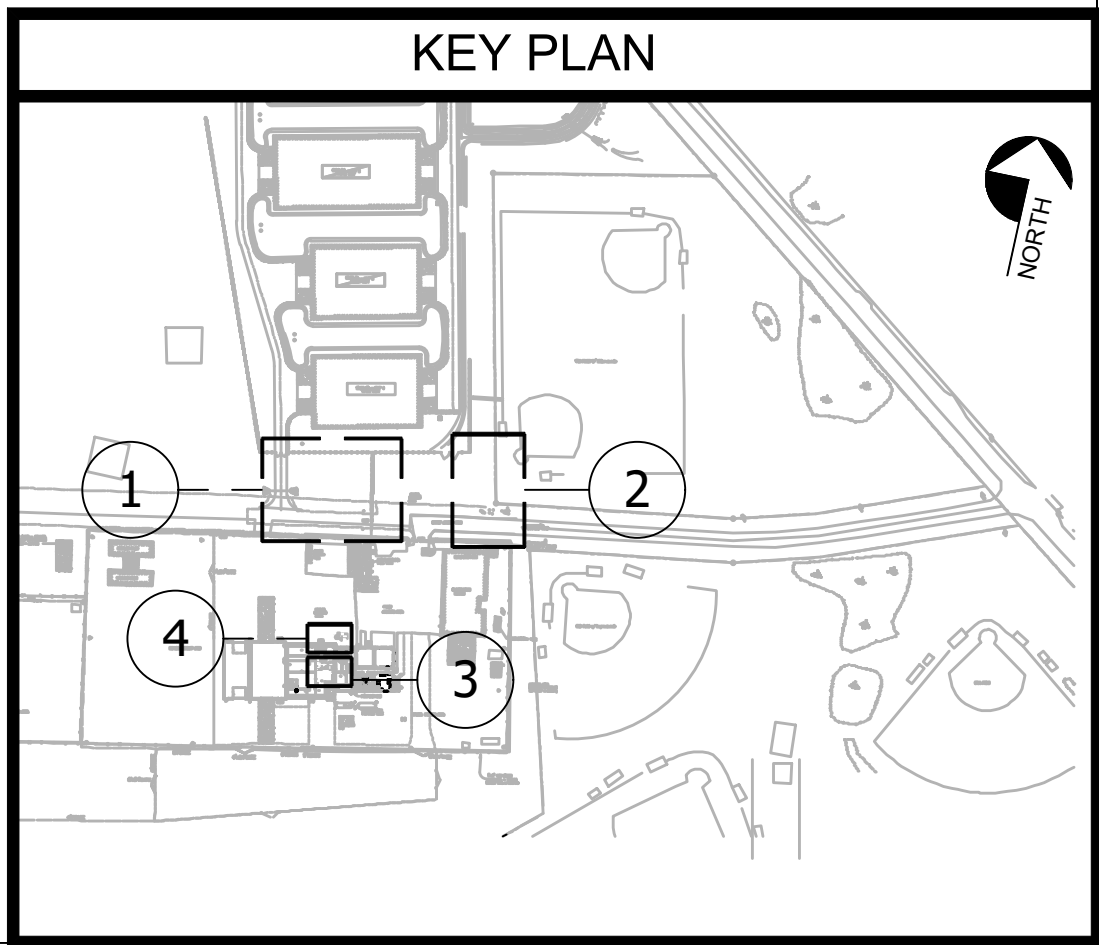
3 CHP AND EQUIPMENT STRUCTURAL PLAN
Scale: 1/4" = 1'-0"



2 FENCE STRUCTURAL PLAN (ABI #1)
Scale: 1/4" = 1'-0"

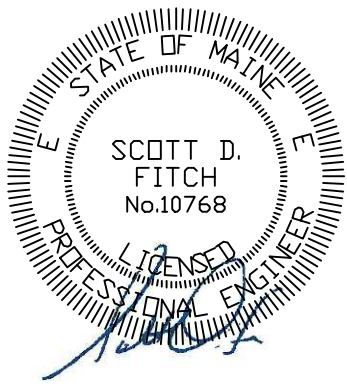


1 SOLAR TRACKERS STRUCTURAL PLAN
Scale: 1/16" = 1'-0"



- GENERAL NOTES:**
- THE STRUCTURAL DRAWINGS AND SPECIFICATIONS, TO THE BEST OF OUR KNOWLEDGE, COMPLY WITH THE APPLICABLE REQUIREMENTS OF MAINE UNIFORM BUILDING AND ENERGY CODES, INCLUDING THE 2021 INTERNATIONAL BUILDING CODE.
 - THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE 2021 INTERNATIONAL BUILDING CODE AND ALL APPLICABLE FEDERAL AND STATE CODES, STANDARDS, REGULATIONS AND LAWS.
 - CONTRACTOR SHALL VERIFY THAT ALL UNDERGROUND PIPING AND ELECTRICAL CONDUITS ARE IN PLACE PRIOR TO POURING CONCRETE.
 - ALL EXISTING CONSTRUCTION AND UTILITIES SHALL BE SAFEGUARDED AND PROTECTED FROM DRAINAGE OR SETTLEMENT DURING EXCAVATION AND CONSTRUCTION.
 - THE SUB GRADES SHALL BE PROOF COMPACTED BY AT LEAST FIVE PASSES OF A VIBRATORY COMPACTOR HAVING A STATIC WEIGHT OF AT LEAST 2 TONS.

- CONCRETE NOTES:**
- ALL CONCRETE CONSTRUCTION SHALL CONFORM TO AMERICAN CONCRETE INSTITUTE'S "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" (ACI 318 - LATEST EDITION) & "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" (ACI 315 - LATEST EDITION).
 - ALL CONCRETE SHALL HAVE MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF 4500 PSI (UNLESS NOTED ON DRAWINGS).
 - REINFORCEMENT SHALL CONFORM TO ASTM "SPECIFICATION FOR DEFORMED & PLAIN BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT" - A615 GRADE 60, MINIMUM YIELD STRENGTH OF 60,000 PSI.
 - ANCHOR BOLT STEEL SHALL CONFORM TO ASTM SPECIFICATION A36 OR A307.
 - ALL EXPOSED CORNERS SHALL HAVE 3/4" CHAMFER UNLESS NOTED ON PLAN.
 - ALL EXTERIOR CONCRETE SHALL HAVE AIR-ENTRAINING ADMIXTURE PROVIDING 4% TO 6% TOTAL AIR CONTENT.
 - ALL EXPOSED CONCRETE SURFACES SHALL BE CURED IMMEDIATELY AFTER FINISHING. CONCRETE SHALL BE KEPT CONTINUOUSLY MOIST FOR A MINIMUM OF 7 DAYS OR APPLY TWO COATS OF CURING COMPOUND WITH A SECOND COAT APPLIED AT RIGHT ANGLE TO FIRST COAT. ALTERNATE METHODS MAY BE USED WITH PRIOR APPROVAL.
 - WELDING OF REINFORCEMENT (INCLUDING TACK WELDS) SHALL NOT BE PERMITTED UNLESS NOTED ON PLAN.
 - DETAILING OF REINFORCEMENT SHALL BE PERFORMED USING STANDARD END HOOKS AND WITH LAP SPLICE & EMBEDMENT LENGTHS ONLY AS INDICATED ON DRAWINGS.
 - ALL EXTERIOR SLAB SURFACES SHALL HAVE A WOOD FLOAT FINISH.
 - SLOPE PAD IN ONE DIRECTION.
 - SLAB LEVEL TOLERANCE SHALL BE LESS THAN 1%.
 - SLAB SHALL HAVE A MINIMUM OF 7 DAYS CURE BEFORE ANY LOADS ARE APPLIED.
 - AFTER SETTING DOWN THE CHP POWER MODULE APPLY RTV CAULKING TO THE PERIMETER OF THE BASE FRAME, SEALING THE BASE FRAME TO THE PAD.
 - ALLOWABLE BEARING PRESSURE = 4000 PSF.
 - ALL REBAR SUPPORTS SHALL CONFORM TO SPECIFICATIONS OF THE CONCRETE REINFORCING STEEL INSTITUTE AND COMPLY WITH AMERICAN CONCRETE INSTITUTE (ACI) ACI-50-66, ACI-315, AND ACI-315R. REBAR AND WIRE MESH SHALL BE SUPPORTED BY DAYTON SUPERIOR INDIVIDUAL HIGH CHAIR - HC OR APPROVED EQUAL.



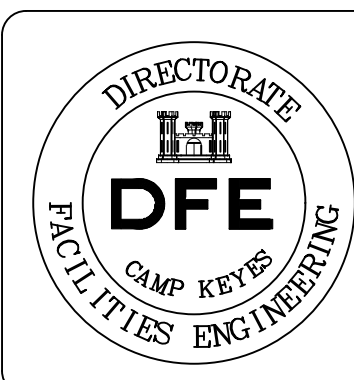
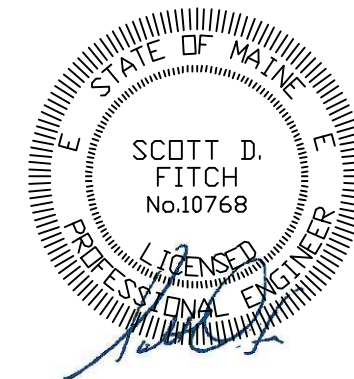
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Rev#	Description				

DESIGNED BY: SDF	DRAWN BY: SDF	CHECKED BY: DSF	DATE: 09/10/2026	SCALE: AS LISTED	DATE PROJECT NO: 23SC21-307-D
STATE OF MAINE DEPARTMENT OF DEFENSE, VETERANS AND EMERGENCY MANAGEMENT INNOVATIVE SOLUTIONS, LLC 10 WHITE WOOD LANE NORTH BRANFORD, CT 06471 203.453.8586 / SFITCH@CDSLLC.COM					

AUBURN SOLAR & CHP MICRO-GRID PROJECT MAINE DDEM FMS #2 64 MT. APATITE PARK AUBURN, ME 04210	STRUCTURAL PLAN
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PLAN PROGRESS
☐ TYPE A SKETCHES
☐ 35% REVIEW
☐ 65% REVIEW
☐ 95% REVIEW
☐ FINAL REVIEW
☒ FOR BIDDING
☐ ISSUED FOR CONSTRUCTION
☐ RECORD DRAWINGS

SHEET ID: S2.0
SHEET: 4 OF 15



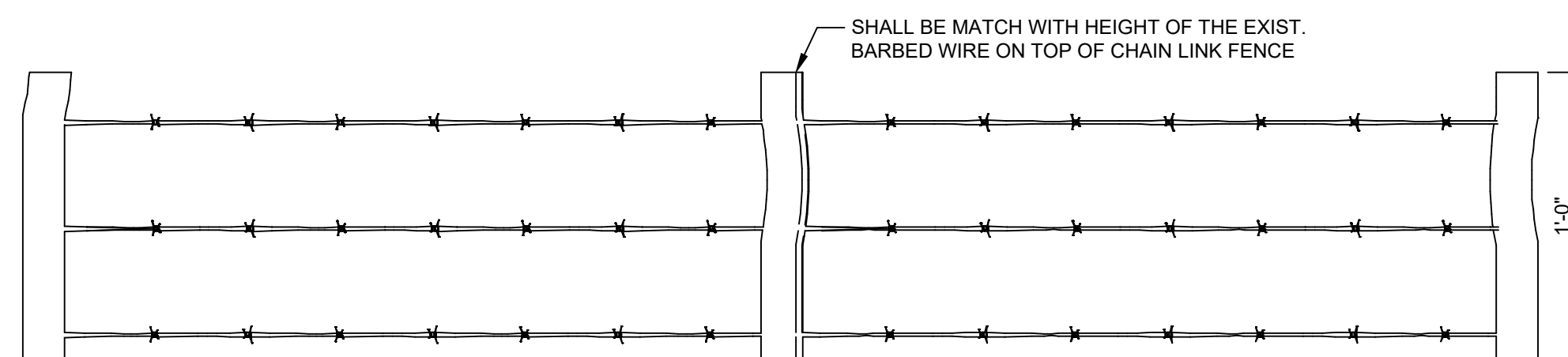
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Rev#	Description	Date			

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STATE OF MAINE DEPARTMENT OF DEFENSE, VETERANS AND EMERGENCY MANAGEMENT INNOVATIVE CONSTRUCTION & DESIGN SOLUTIONS, LLC 10 WHITE WOOD LANE NORTH BRANFORD, CT 06471 203.453.8586 / SFITCH@CDSLLC.COM					

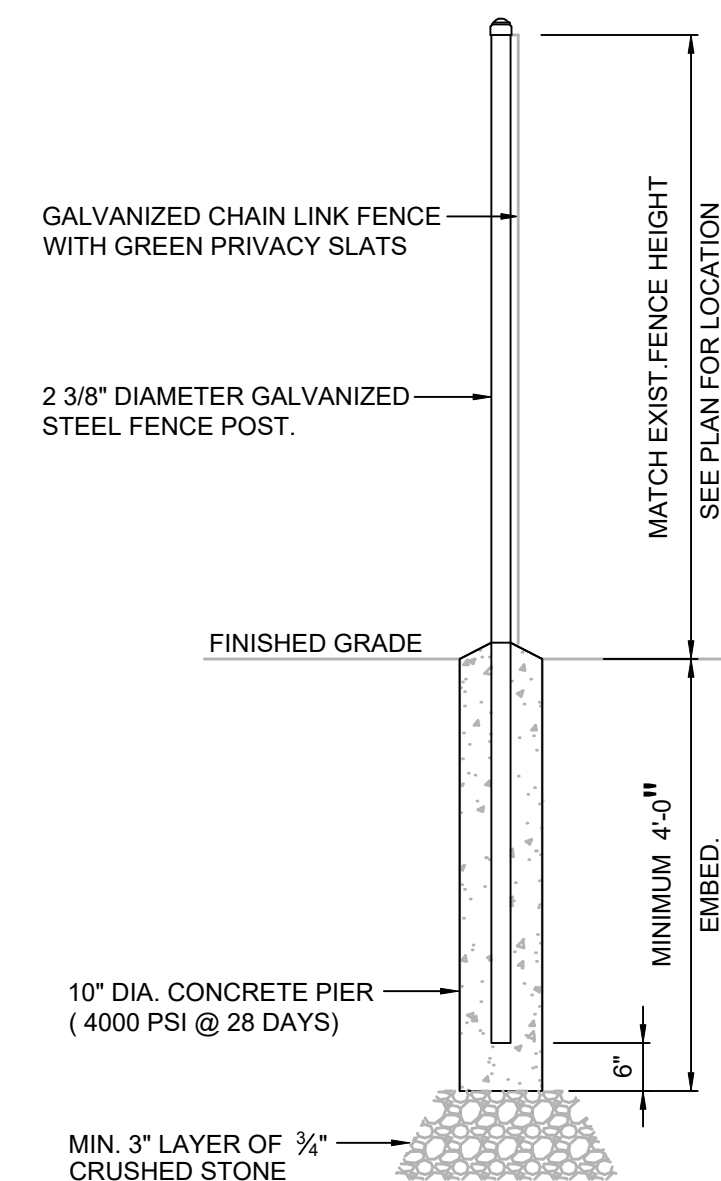
AUBURN SOLAR & CHP MICRO-GRID PROJECT MAINE DDEM FMS #2 64 MT. APATITE PARK AUBURN, ME 04210	STRUCTURAL DETAILS
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PLAN PROGRESS	
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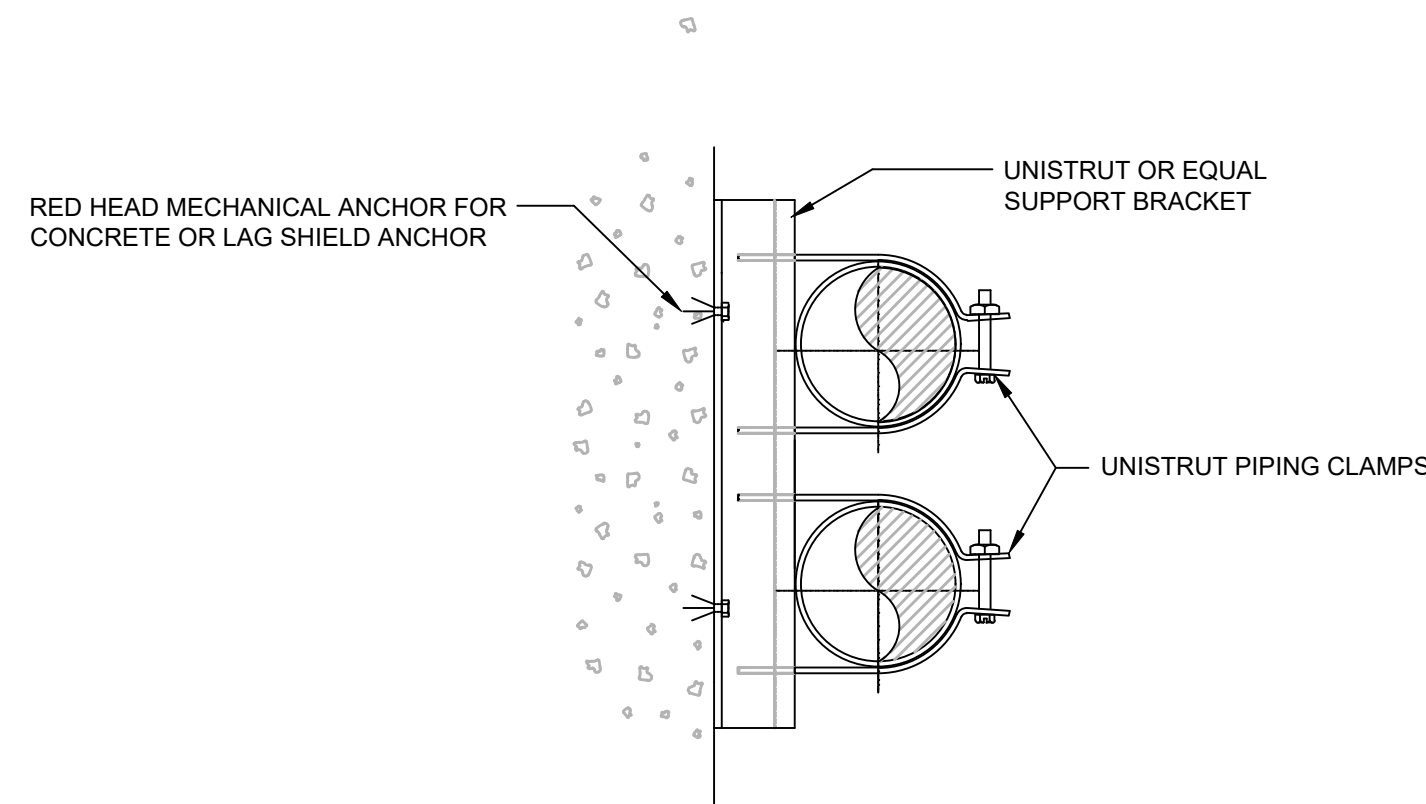
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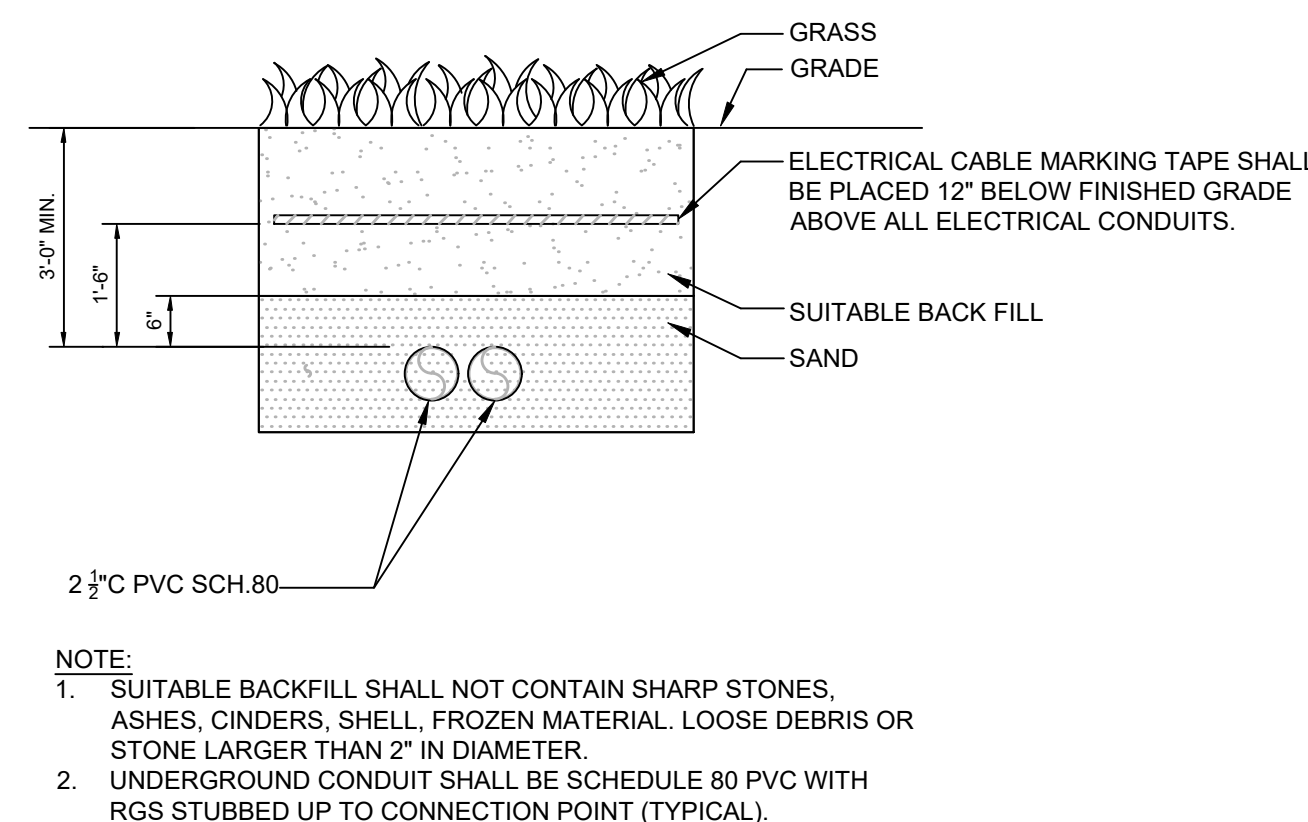
9 FENCE BARBED WIRE DETAIL (ON TOP OF CHAIN LINK) (ABI #1)
SCALE: N.T.S.



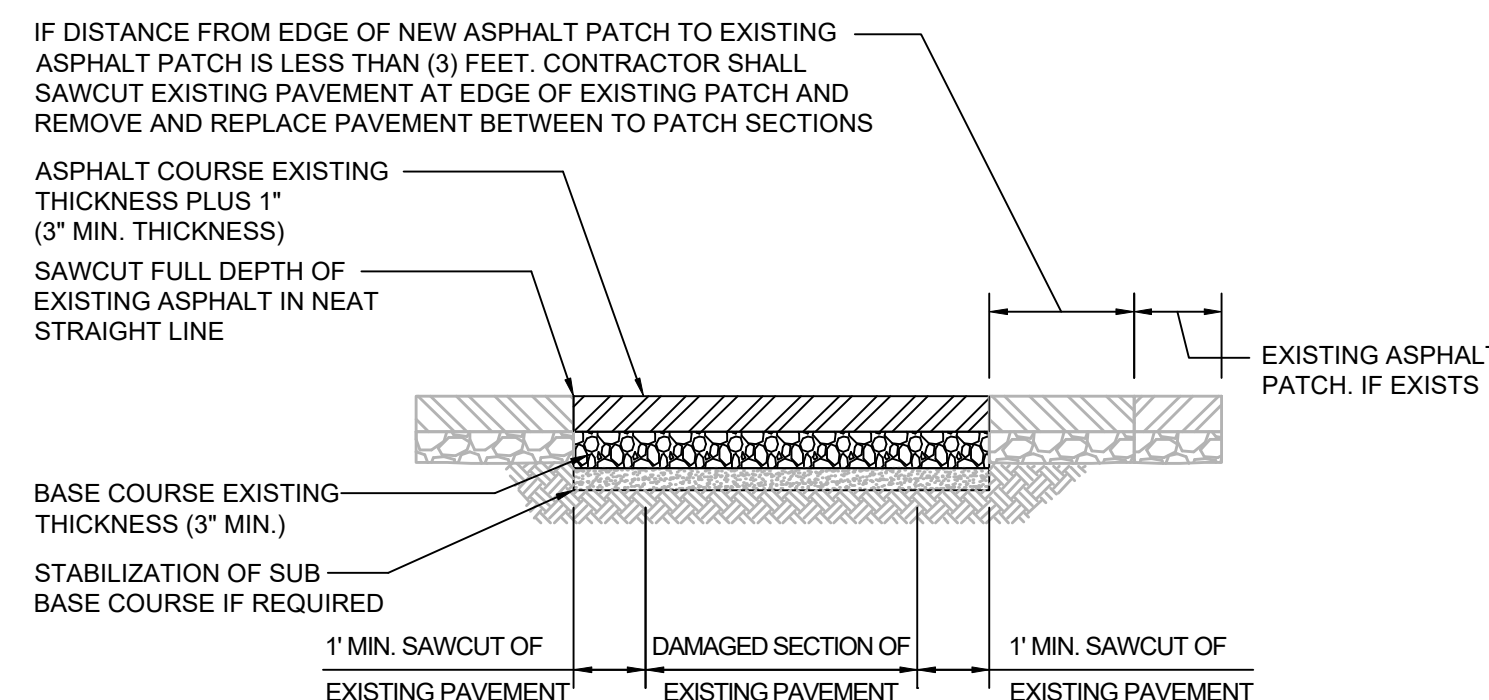
8 FENCE POST DETAIL (ABI #1)
SCALE: N.T.S.



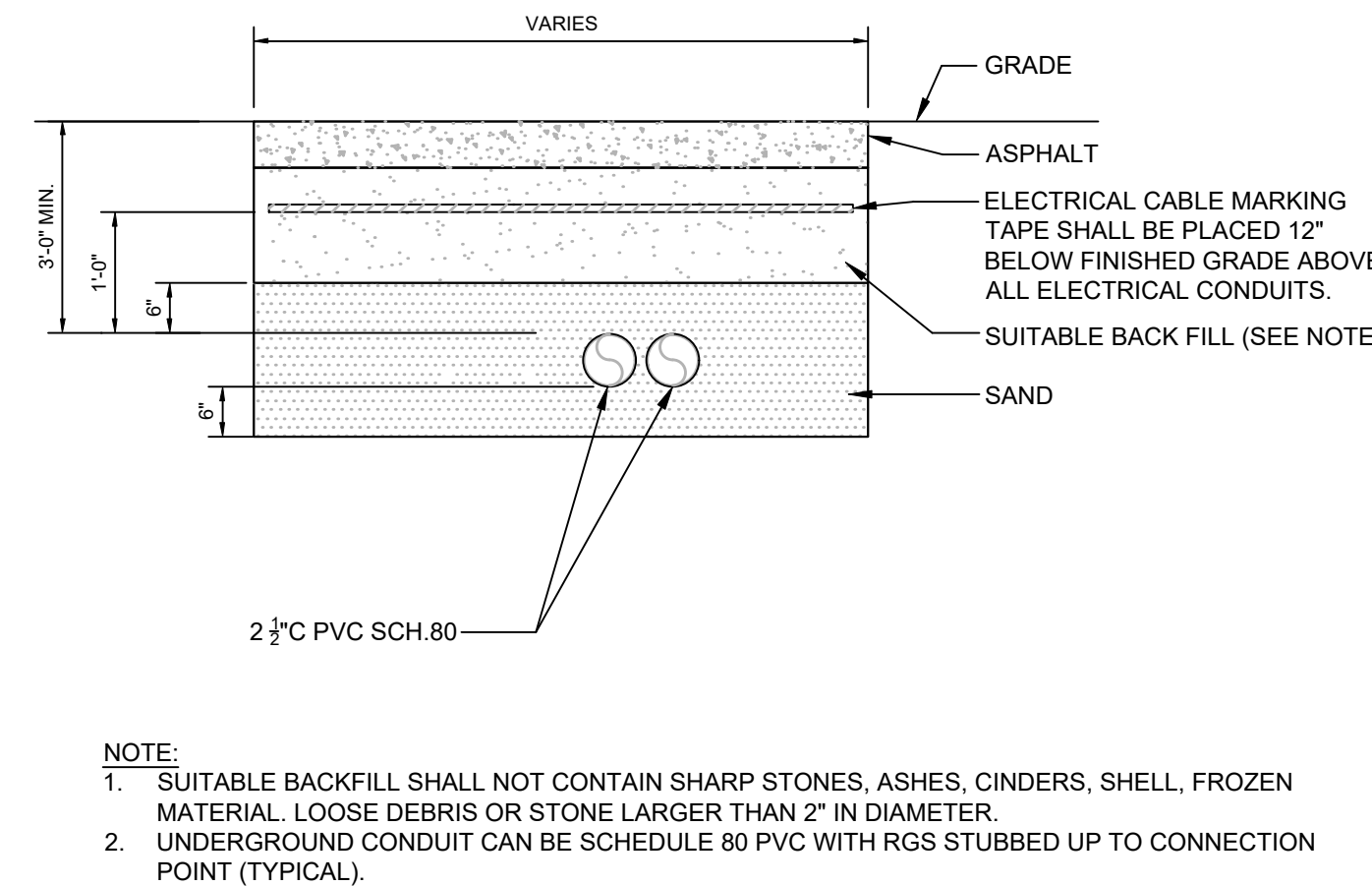
7 WALL MOUNTED CONDUIT SUPPORT
Scale: NTS



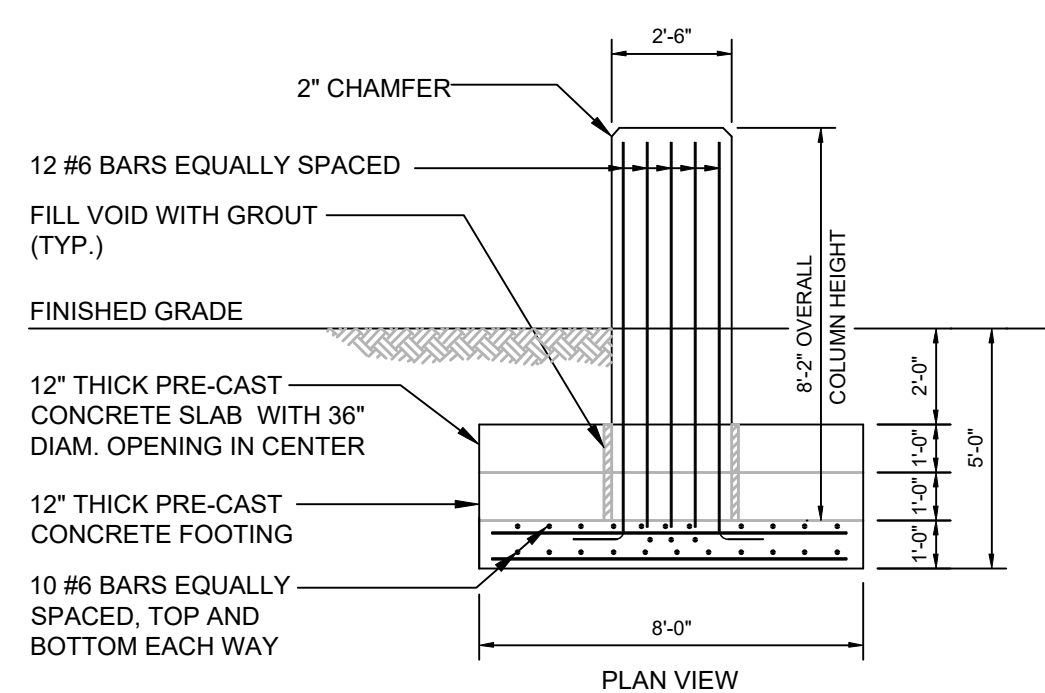
6 TYP. UNDERGROUND GRASS TRENCH DETAIL
Scale: NTS



5 TYP. ASPHALT PATCH DETAILS
SCALE: NTS

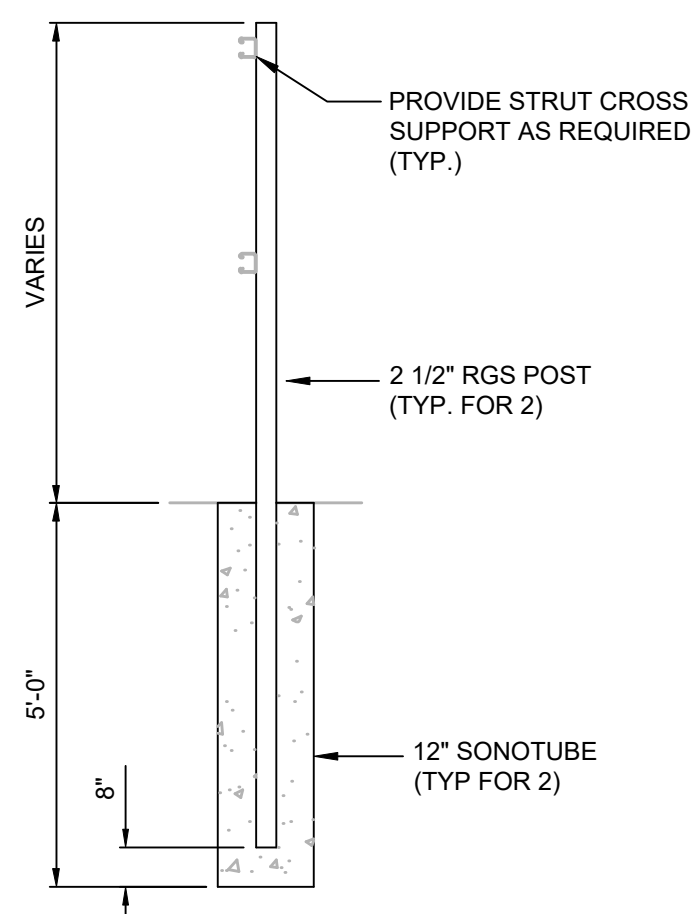


4 TYP. UNDERGROUND CONDUIT TRENCH DETAIL
Scale: NTS

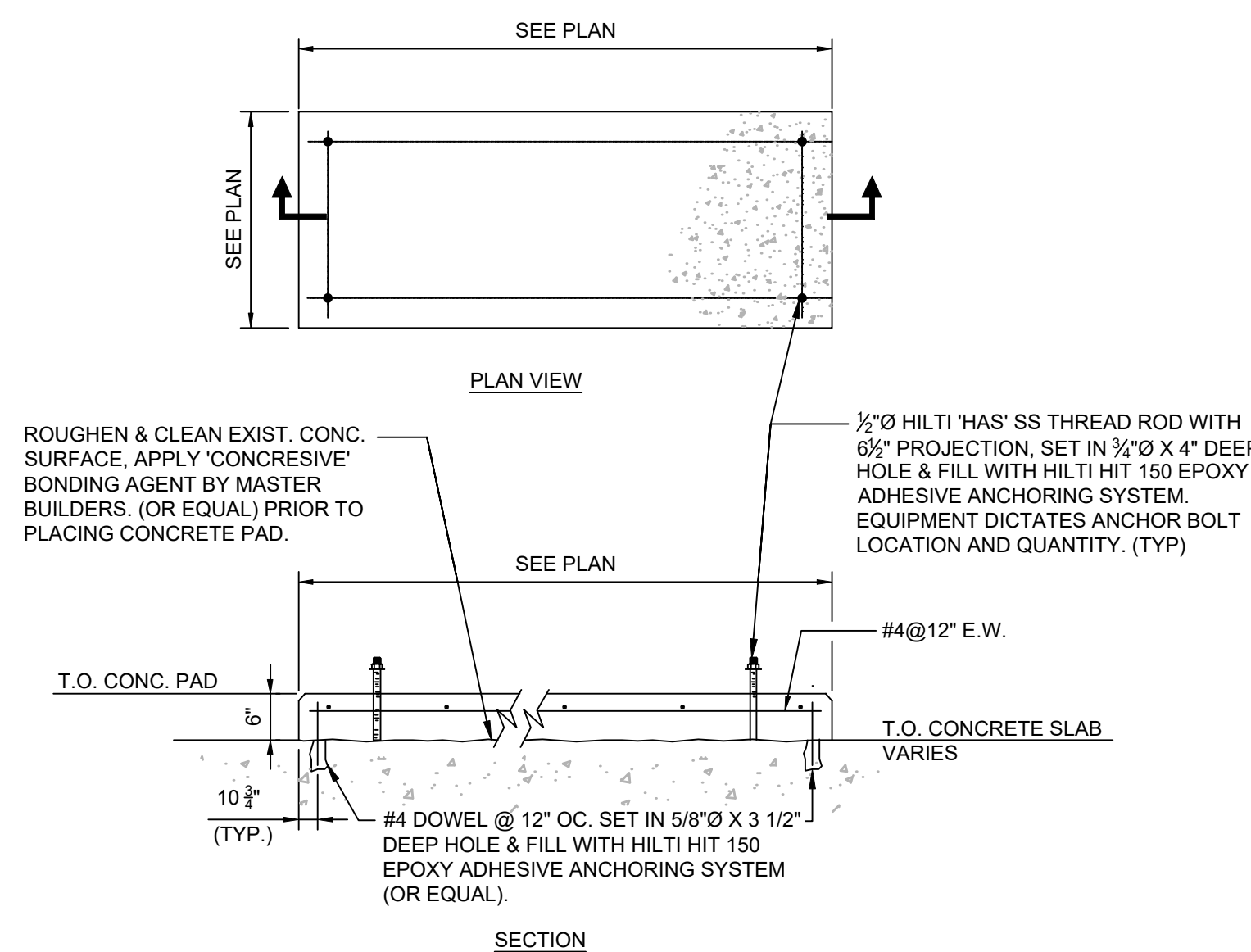


- THIS IS A DELEGATED DESIGN BASED UPON GEO TECHNICAL REPORT FINDINGS.
- CONCRETE SHALL BE 5000 PSI (MIN.) 28 DAY COMPRESSIVE STRENGTH.
- REINFORCING STEEL SHALL BE GRADE 60.
- BOTTOM OF FOOTING SHALL BE GRADE 60.
- BACKFILL SHALL CONSIST OF CLEAN SAND & GRAVEL AND WILL BE COMPACTED TO 95% STD. PROCTOR.
- PV TRACKER FOUNDATION DESIGN IS BY OTHERS CONTRACTED BY GENERAL CONTRACTOR. A MAINE STRUCTURAL PROFESSIONAL ENGINEER SHALL DESIGN THE PV TRACKER FOUNDATION BASED UPON THE GEO TECHNICAL REPORT PROVIDED.
- SUBMIT TECHNICAL REPORT TO ENGINEER.

3 CONCEPTUAL SOLAR TRACKER CONCRETE FOUNDATION
SCALE: N.T.S.



2 ELECTRICAL EQUIP. SUPPORT DETAIL
SCALE: NTS



1 HOUSE KEEPING PAD SECTION
SCALE: NTS

DUCT: SMACNA DUCT CONSTRUCTION STANDARDS: METAL AND FLEXIBLE, 2020.
PIPING: ASME B31.9 "BUILDING SERVICES PIPING"

ASME N&PV CODE SECTION IX "WELDING & BRAZING QUALIFICATIONS"

AWS D1.4, "STRUCTURAL WELDING CODE-REINFORCING STEEL"

NFPA 54- 2021 "NATIONAL FUEL GAS CODE"

NFPA 37- 2021 "STANDARD FOR THE INSTALLATION AND USE OF STATIONARY COMBUSTION ENGINES AND GAS TURBINES"

GENERAL: NFPA 90A & 90B

CODES: MAINE UNIFORM BUILDING AND ENERGY CODE "MUBEC"
2021 INTERNATIONAL BUILDING CODE
2021 INTERNATIONAL MECHANICAL CODE
2021 UNIFORM PLUMBING CODE
2021 INTERNATIONAL ENERGY CONSERVATION CODE

THE CONTRACTOR SHALL INCLUDE AS PART OF THE BID (OR AS A SUBCONTRACT) LABOR TO SUPPORT COMMISSIONING ACTIVITIES FOR ALL MECHANICAL SYSTEMS, ASSOCIATED AUTOMATION SYSTEMS, AND MEASUREMENT AND VERIFICATION SYSTEMS. COMMISSIONING OF THE PV AND CHPs UNITS SHALL BE BY THE SUPPLIER / MANUFACTURER. THE PURPOSE OF THE COMMISSIONING SERVICES IS TO:

1. PURPOSE
 - 1.1. VERIFY THAT APPLICABLE EQUIPMENT AND SYSTEMS ARE INSTALLED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS AND TO INDUSTRY ACCEPTED MINIMUM STANDARDS AND THAT THEY RECEIVE ADEQUATE OPERATIONAL CHECKOUT BY INSTALLING CONTRACTORS.
 - 1.2. VERIFY AND DOCUMENT PROPER PERFORMANCE OF EQUIPMENT AND SYSTEMS.
 - 1.3. VERIFY THAT O&M DOCUMENTATION LEFT ON SITE IS COMPLETE.
 - 1.4. VERIFY THAT THE FMS #2 MAINTENANCE/OPERATING PERSONNEL AND OTHERS OF THE NATIONAL GUARD AND DVEN ARE ADEQUATELY TRAINED.
1. COMMISSIONING SCOPE OF WORK
 - 2.1. ENSURE ALL INSTALLED WORK IS SATISFACTORY AND VERIFY THAT IT IS READY FOR START-UP / OPERATION
 - 2.1.1. PROVIDE DOCUMENTATION TO SUPPORT THIS BY SUPPLYING AND/OR COMPLETING
 - 2.1.1.1. TEST REPORTS (AS REQUIRED PER SPECIFICATIONS)
 - 2.1.1.2. MFR PRE-START-UP CHECKLISTS
 - 2.1.1.3. BACS POINT-TO-POINT AND COMMISS VERIFICATION
 - 2.1.1.4. OPERATIONS AND MAINTENANCE MANUALS
 - 2.1.1.5. OPERATIONS TRAINING
 - 2.2. COMPLETE FUNCTIONAL TEST PROCEDURES (PROVIDED BY OTHERS) TO VERIFY OPERATION THE FOLLOWING EQUIPMENT AND SYSTEMS MEET THE INTENDED DESIGN:
 - 2.2.1. PUMPS
 - 2.2.2. VARIABLE SPEED DRIVES
 - 2.2.3. ALL NEW CONTROL DEVICES (CONTROL VALVES, RELAYS, CSRs, SENSORS, TRANSMITTERS, ETC.)
 - 2.5.4. ALL EXISTING CONTROLS THAT ARE MODIFIED, INCLUDING ANY EXISTING BUILDING AUTOMATION SYSTEM PROGRAMMING, FRONT-END GRAPHIC INTERFACE, AND BACNET COMMUNICATIONS.
 - 2.5.5. NEW BACS CONTROL PROGRAMMING AND SEQUENCE OF OPERATIONS
 - 2.5.6. NEW FRONT-END GRAPHIC INTERFACE
 - 2.5.7. ALL MEASUREMENT AND VERIFICATION SYSTEMS (DG METERS, GAS METERS, ETC.)
- 2.6. PROVIDE ALL COMPLETED DOCUMENTS FOR INCORPORATION INTO COMMISSIONING REPORT
- 2.7. REFER TO DIV 23 AND 26 SPECIFICATIONS FOR ANY COMMISSIONING TASKS
- 2.7. REFER TO SPECIFICATION 23 09 00 FOR ADDITIONAL DFE COMMISSIONING REQUIREMENTS

THE MECHANICAL CONTRACTOR SHALL BE FAMILIAR WITH ALL CONTRACT DOCUMENTS FOR ALL TRADES AND SHALL COORDINATE WITH OTHER CONTRACTORS.

1. DRAWINGS ARE DIAGRAMMATIC ONLY. FINAL ROUTING OF DUCTWORK, PIPING AND EQUIPMENT LOCATIONS SHALL BE DETERMINED IN THE FIELD. ADDITIONAL OFFSETS, ELBOWS, ETC., SHALL BE PROVIDED AND INSTALLED WITHOUT ADDITIONAL COST TO THE OWNER.
2. REFER TO THE MECHANICAL PROJECT SPECIFICATIONS (DIV 23) FOR ALL INSTALLATION REQUIREMENTS NOT SPECIFICALLY SHOW ON THE DRAWINGS.
3. THE MECHANICAL CONTRACTOR SHALL COORDINATE ALL ELECTRICAL AND PLUMBING REQUIREMENTS WITH THE ELECTRICAL AND PLUMBING CONTRACTORS.
4. THE MECHANICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL INCIDENTAL ACCESSORIES NECESSARY TO MAKE THE CHP WORK COMPLETE AND READY FOR OPERATION.
5. ALL MECHANICAL WORK SHALL BE IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL CODES.
6. THE MECHANICAL CONTRACTOR SHALL FURNISH TO THE GENERAL CONTRACTOR ALL INFORMATION REQUIRED FOR SETTING OF WALL, ROOF AND PARTITION OPENINGS FOR CHP WORK.
7. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
8. COORDINATE ALL MECHANICAL INSTALLATION WORK WITH FIRE SPRINKLER CONTRACTOR. RELOCATE ANY HEADS THAT MAY BE OBSTRUCTED DUE TO NEW EQUIPMENT, PIPING, DUCTWORK, ETC.
9. ALL PIPING INSULATION SHALL SHALL CONFORM TO THE PIPING SCHEDULE ON THIS SHEET OR THE SPECIFICATIONS, WHICHEVER IS MORE STRINGENT.

PROVIDE A GRAPHICAL USER INTERFACE (GUI) DAILY REPORT THAT INCLUDES ALL THE REAL-TIME AND TOTALIZED ELECTRICAL (KW) AND THERMAL (KBTU/H) ENERGY BY THE DISTRIBUTED ENERGY RESOURCES (DERS) FOR EACH BUILDING AND A SEPARATE REPORT GUI THAT COMBINES ALL DER ELECTRICAL (KW) AND THERMAL (KBTU/H) LOADS FOR THE MICRO GRID. DERS INCLUDE THE FOLLOWING:

- CHP UNIT - ELECTRICAL AND THERMAL
- TRACKING SOLAR PV - ELECTRICAL

THE REPORTING SHALL INCLUDE THE FOLLOWING:

1. BLDG CHP GUI REPORT (BLDG FMS #2): TOTAL BUILDING POWER USE (KW), ASSOCIATED DER GENERATED KW, BUILDING NET KW IN / OUT, DAILY BLDG PEAK DEMAND (KW), AS WELL AS ITEM 6 BELOW.
2. SITE DER GUI REPORT (MICRO-GRID): TOTAL SITE POWER USE (KW), INDIVIDUAL AND TOTAL DER GENERATED KW, SITE UTILITY IMPORT / POWER PURCHASED (KW), DAILY SITE PEAK DEMAND (KW)
3. PROPANE CONSUMPTION (GALLONS)
3. THIS DATA ABOVE SHOULD HAVE A LINK ON THE GUI TO DOWN LOAD IN EXCEL FORMAT FOR DAILY, WEEKLY, MONTHLY, QUARTERLY AND ANNUALLY REPORTS FOR ANALYSIS.
4. SEE THE ATTACHMENT TO SPECIFICATION 23 09 00 FOR EXAMPLES OF EXISTING GRAPHICAL ENERGY REPORTS
 - A. BLDG: YESTERDAYS ENERGY REPORT
 - B. SITE: YESTERDAYS ENERGY REPORT
 - C. BLDG: DASHBOARD OF ITEMS LISTED 1 ABOVE AND 6 BELOW.
 - D. SITE: DASHBOARD OF ITEMS LISTED IN 2 AND 3 ABOVE.
5. FOR NATURAL GAS - PROVIDE A GRAPHICAL USER INTERFACE (GUI) DASH BOARD AND A DAILY REPORT THAT INCLUDES:
 - A. PROPANE CONSUMED BY THE CHP
 - B. BTU'S INJECTED BY THE CHP
 - C. PROPANE PURCHASED (BLDG METER)
 - D. OUTSIDE AIR TEMPERATURE
 - E. DEGREE DAYS
 - F. THIS DATA ABOVE SHOULD HAVE A LINK ON THE GUI TO DOWN LOAD IN EXCEL FORMAT BASED ON DAILY, WEEKLY, MONTHLY, QUARTERLY, ANNUALLY FOR REPORTS ANALYSIS.
6. UPON COMPLETION OF THE BACS INSTALLATION, THE CONTRACTOR SHALL LOAD ALL SYSTEM SOFTWARE AND START-UP THE SYSTEM.

- THIS CONTRACTOR SHALL PERFORM ALL NECESSARY CALIBRATION, TESTING AND DE-BUGGING AND PERFORM ALL REQUIRED OPERATIONAL CHECKS TO INSURE THAT THE SYSTEM IS FUNCTIONING IN FULL ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. EACH STEP TO BE CERTIFIED IN WRITING AND APPROVED.
- THE BACS FUNCTIONAL TESTING SHOULD INCLUDE VERIFICATION THAT ALL POINTS ARE OPERATIONAL, VIEWABLE ON THE GRAPHICAL USER INTER FACE AND TRENDABLE. EACH STEP TO BE CERTIFIED IN WRITING AND APPROVED.
- ONCE THIS IS COMPLETE THE SEQUENCE OF OPERATION TESTING OF ALL THE REQUIRED HVAC AND OTHER EQUIPMENT AS INDICATED IN THE PLANS AND SPECIFICATIONS WILL BE COMPLETED. EACH STEP TO BE CERTIFIED IN WRITING AND APPROVED.
- ONCE CONTRACTOR HAS DETERMINED THE SYSTEM IS FULLY FUNCTIONAL, THEY WILL CERTIFY IN WRITING TO THE OWNER THAT THE SYSTEM HAS MET THE REQUIREMENTS IN THE PLANS AND SPECIFICATIONS AND IS READY FOR COMMISSIONING. EACH STEP TO BE CERTIFIED IN WRITING AND APPROVED.

PIPING, INSULATION & FLUIDS SCHEDULE							
SERVICE	LINE TYPE	MATERIAL	CONNECTIONS	FLUID	INSULATION TYPE / TEMP	JACKET	NOTES
CHP INDOOR	CHS CHR	A53 GR B ERW SCH 40 STEEL	THREADED (OR NOTE 3)	WATER	2" FIBERGLASS / 190 °F	ALL SERVICE JACKET INSIDE / PVC FITTING COVERS	
BLDG HOT WATER	HWS HWR	A53 GR B ERW SCH 40 STEEL	THRD / FLANGE / WELD (OR NOTE 3)	WATER	2" FIBERGLASS / 190 °F	ALL SERVICE JACKET INSIDE / PVC FITTING COVERS	
LP GAS	GAS	A53 GR B ERW STEEL	SCREWED	LIQUID PROPANE	N/A	N/A	
GEN EXHAUST		AL29-4C (UL 1738)	BY MFR	ENGINE EXHAUST	DOUBLE WALL INDOORS	ALUMINIZED STEEL	

GENERAL PIPING NOTES

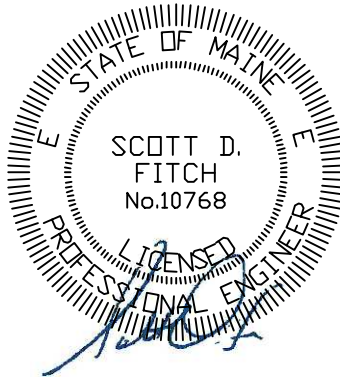
1. REFER TO SPEC. 23 07 19 FOR ADDITIONAL REQUIREMENTS FOR PIPE INSULATION
2. REFER TO SPEC. 23 21 13 FOR ADDITIONAL REQUIREMENTS FOR HYDRONIC PIPING
3. VIEGA (OR EQUAL) "PRO-PRESS" OR "MEGA-PRESS" SYSTEM ACCEPTABLE

PUMPS																
IDENTIFICATION			PUMP							MOTOR				MOTOR CONTROL		
TAG NO.	SERVICE	LOCATION	TYPE	MFR	MODEL NO.	GPM	HEAD (FT)	IMP. DIA (IN)	RPM	HP	RPM	VOLTAGE	Ø	TYPE	CONTROL	STATUS
P-mCHP	CHP LOOP (CHS/R)	MECH RM 125	IN-LINE CENTRIFUGAL	BELL & GOSSETT	ECOCIRCL 36-45	18	25	-	3805	1/6	3805	115	1	ECM	0-10 VDC	RUN/ALM

MICRO-COMBINED HEAT AND POWER SYSTEM																						
IDENTIFICATION		MFR / MODEL		PERFORMANCE DATA								THERMAL				ELECTRICAL			PHYSICAL			
TAG NO.	SERVICE	MFR	MODEL	FUEL	FUEL INPUT (SCFH)	FUEL PRESSURE (INCHES W.C.)	THERMAL OUTPUT (MBH)	ELECTRICAL OUTPUT (kW)	GENERATOR TYPE	MIN OUTPUT (kW)	ELECTRICAL EFF % (LHV)	CHP CYCLE EFF % (LHV)	GPM	EWT (°F)	LWT (°F)	OUTPUT (MBH)	VOLTAGE	PHASE	CONDUCTORS	WEIGHT (LBS)	DIMENSIONS (INCHES)	SOUND (dBA)
mCHP	HOT WATER / POWER	EC POWER	XRGI 25	LP	291.9	7 TO 9	163.8	24	INDUCTION	12	31.2%	93.4%	18	167	185	163.8	480	3	4-WIRE	1685	SEE GA1.0	-

CHP NOTES

1. SEE ADDITIONAL DETAIL ON M0.1
2. UNIT IS AN INDOOR MODEL
3. BASIS OF DESIGN IS EC POWER.
4. NOTE THERE ARE NO OTHER KNOWN PROPANE-FIRED mCHP UNITS IN THIS SIZE RANGE SO THERE IS NO DIV 23 OR 26 SPECIFICATION. IF A COMPETITIVE PROPANE-FIRE PRODUCT BECOMES AVAILABLE, THEN IT MUST MEET THE BASIS OF DESIGN CAPABILITIES.



PLAN REVISIONS					
Rev#	Description	Date	Appr.		

STATE OF MAINE DEPARTMENT OF DEFENSE, VETERANS AND EMERGENCY MANAGEMENT	DESIGNED BY: SDF
	DRAWN BY: SDF
	CHECKED BY: SDF
	DATE: 09/10/2026
INNOVATIVE CONSTRUCTION & DESIGN SOLUTIONS, LLC 10 WHITE WOOD LANE NORTH BRANFORD, CT 06471 203.453.8596 / SFTCH@ICDLSO.COM	SCALE: AS LISTED
	DTE PROJECT NO: 23SC21-307-D

AUBURN SOLAR & CHP MICRO-GRID PROJECT
MAINE DVEM FMS #2
64 MT. APATITE PARK
AUBURN, ME 04210

MECHANICAL
NOTES AND EQUIPMENT SCHEDULES

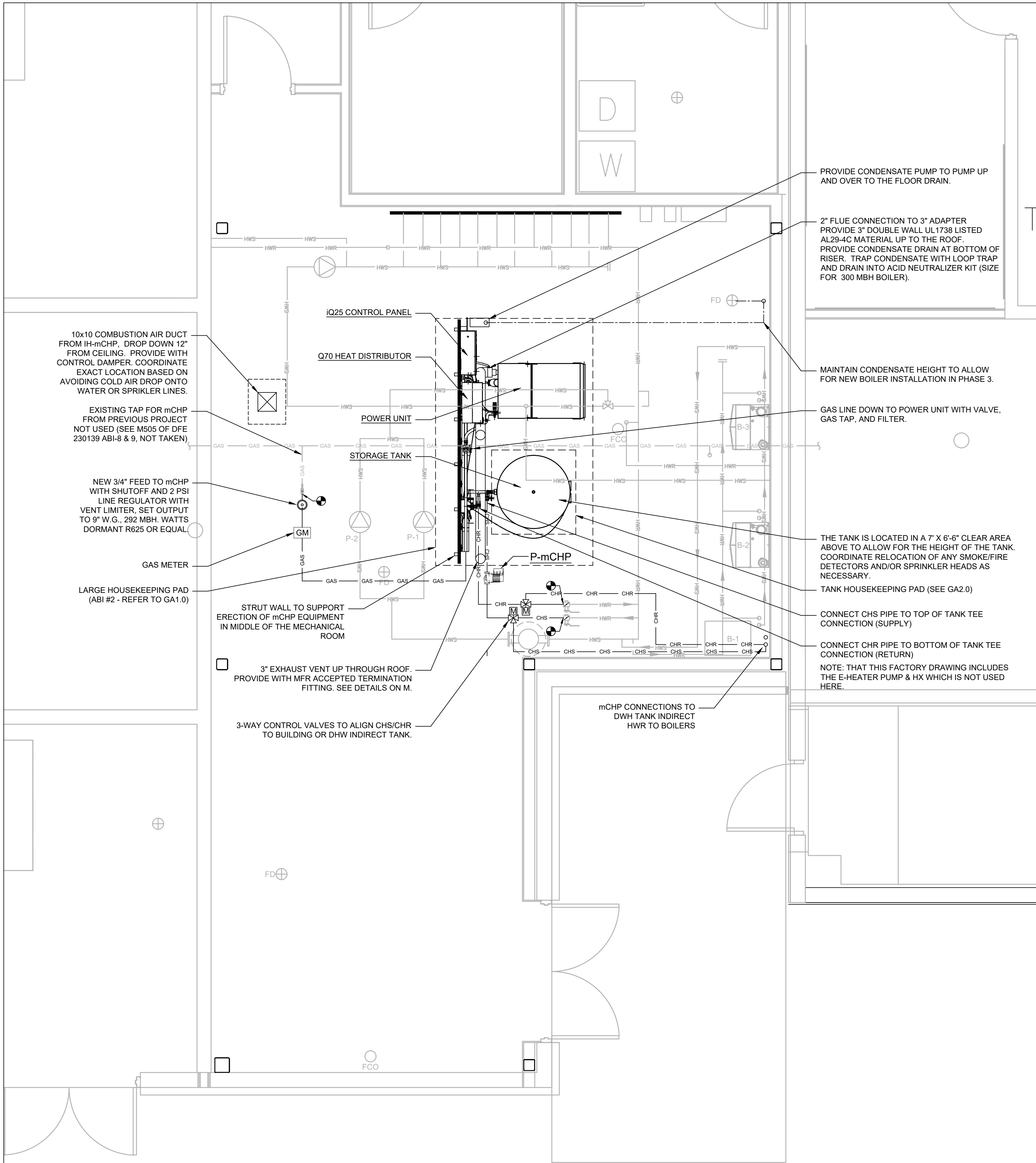
PLAN PROGRESS

- ☐ TYPE A SKETCHES
☐ 35% REVIEW
☐ 65% REVIEW
☐ 95% REVIEW
☐ FINAL REVIEW
☒ FOR BIDDING
☐ ISSUED FOR CONSTRUCTION
☐ RECORD DRAWINGS

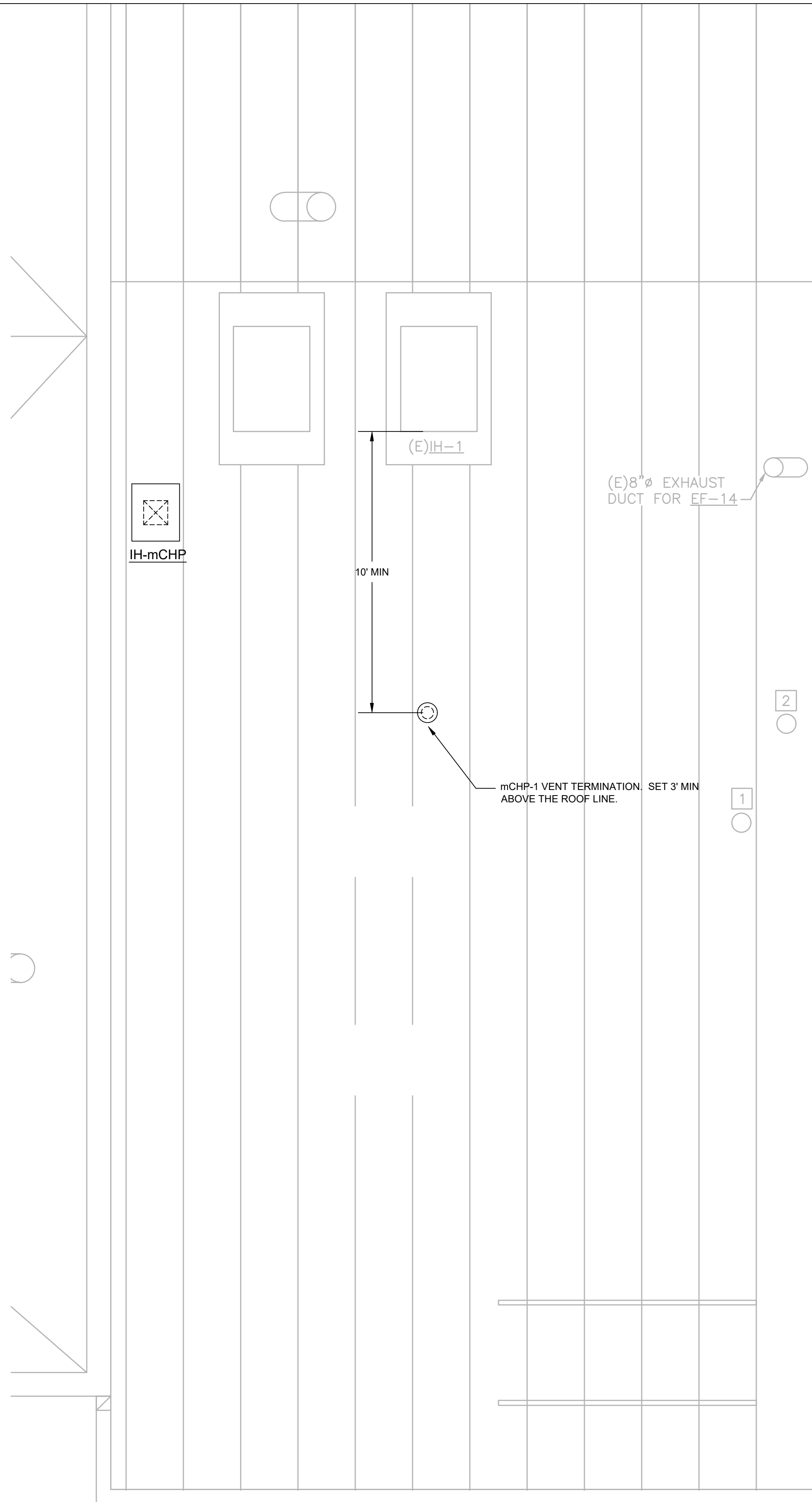
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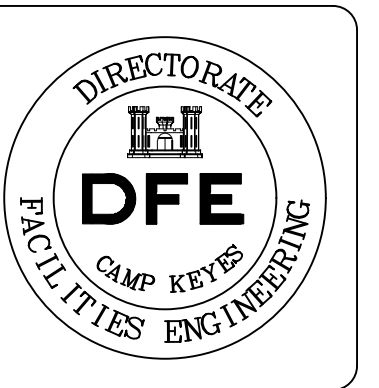
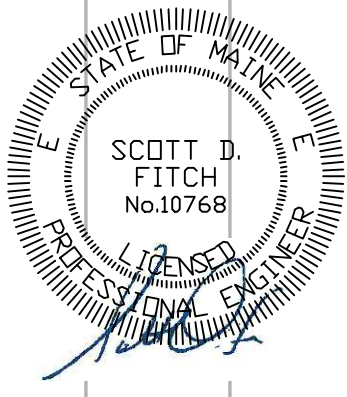
SHEET: 6 OF 15



1 FMS #2 MECHANICAL ROOM 125 PIPING PART PLAN (MER RM 125)
SCALE: 3/8" = 1'-0"



2 FMS #2 MECHANICAL PIPING PART PLAN (ROOF)
SCALE: 3/8" = 1'-0"



PLAN REVISIONS			
Rev#	Description	Date	Appr.

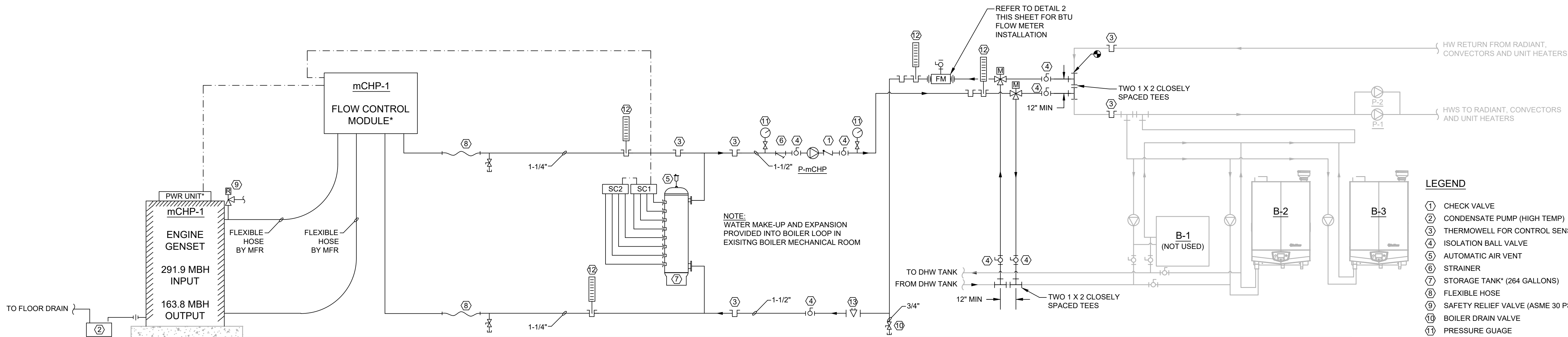
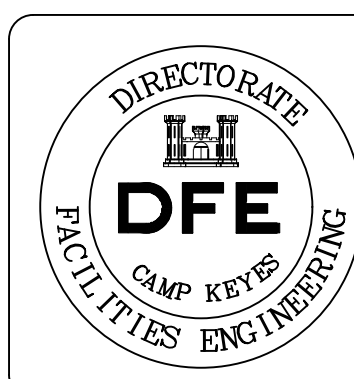
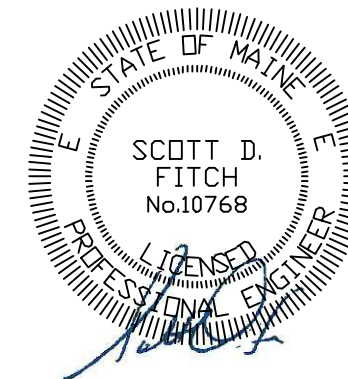
DESIGNED BY: SDF	DESIGNED BY: SDF
DRAWN BY: SDF	DRAWN BY: SDF
CHECKED BY: DSF	CHECKED BY: DSF
DATE: 09/10/2026	DATE: 09/10/2026
SCALE: AS LISTED	SCALE: AS LISTED
DFE PROJECT NO: 23SC21-307-D	DFE PROJECT NO: 23SC21-307-D

STATE OF MAINE
DEPARTMENT OF DEFENSE, VETERANS
AND EMERGENCY MANAGEMENT
INNOVATIVE CONSTRUCTION &
DESIGN SOLUTIONS, LLC
10 WHITE WOOD LANE
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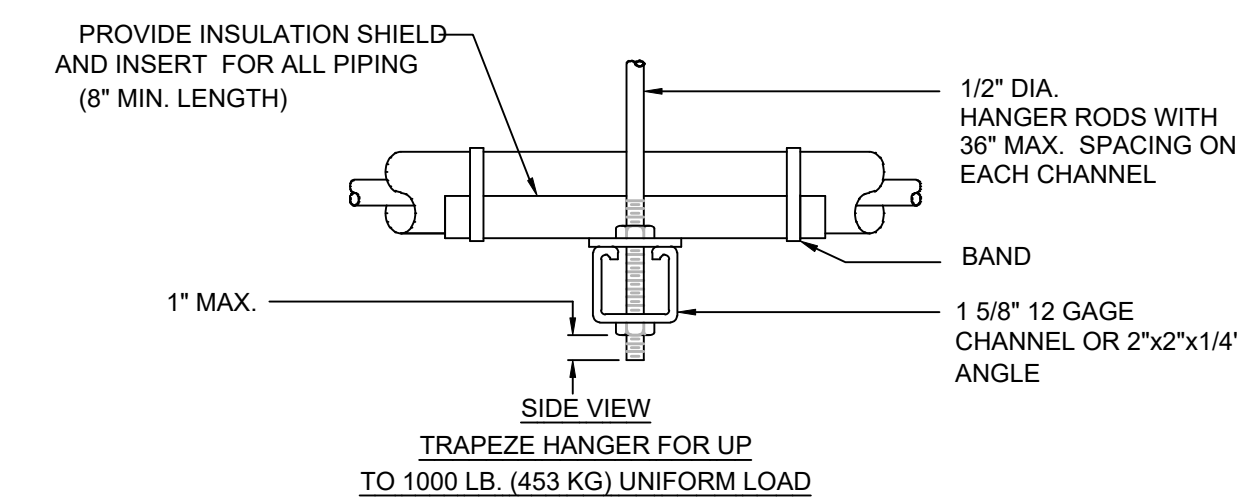
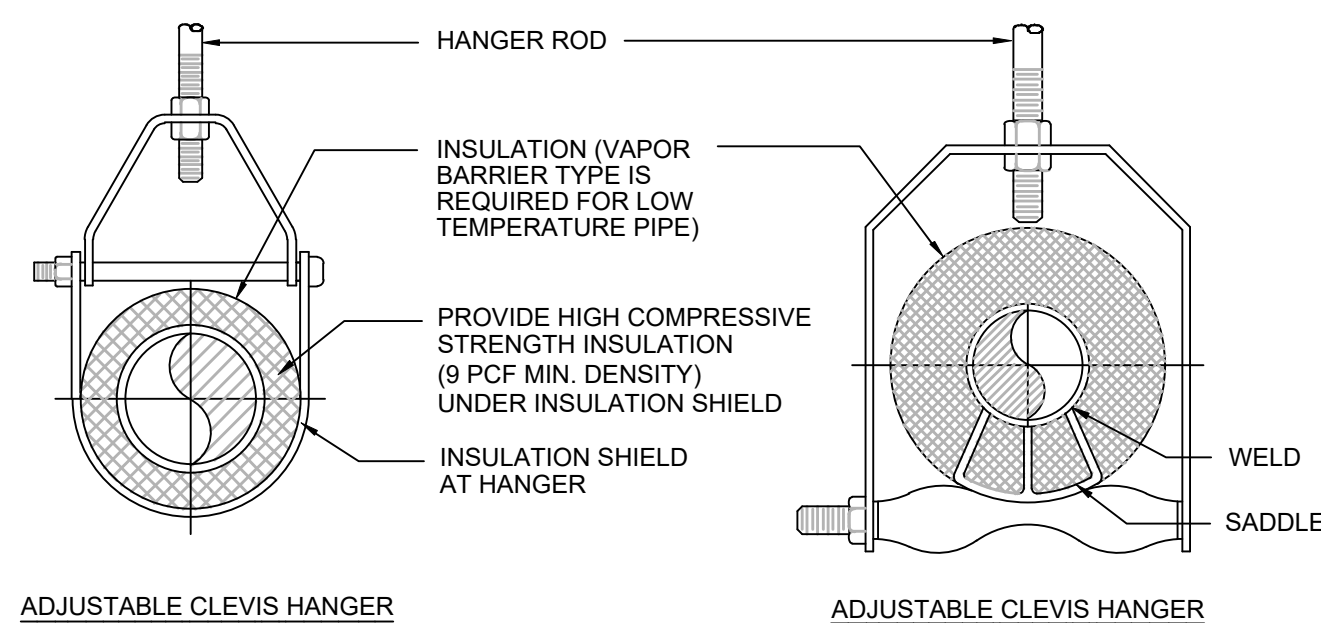
AUBURN SOLAR & CHP MICRO-GRID PROJECT MAINE DDEM FMS #2 64 MT. APATITE PARK AUBURN, ME 04210	MECHANICAL mCHP MECHANICAL PLANS
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PLAN PROGRESS
☐ TYPE A SKETCHES
☐ 35% REVIEW
☐ 65% REVIEW
☐ 95% REVIEW
☐ FINAL REVIEW
☒ FOR BIDDING
☐ ISSUED FOR CONSTRUCTION
☐ RECORD DRAWINGS

SHEET ID:
M2.0
SHEET: 8 OF 15



1 mCHP HOT WATER PIPING SCHEMATIC
SCALE: NTS

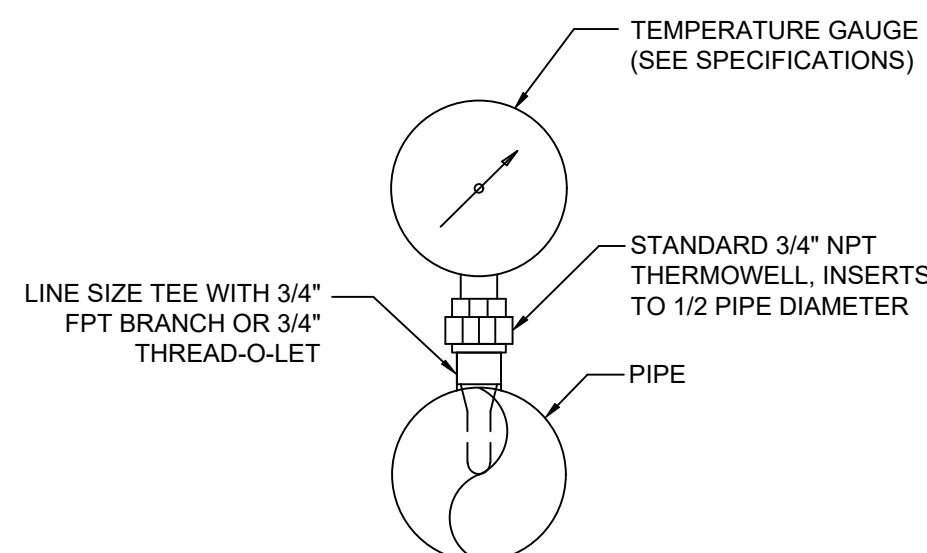


TYPICAL PIPE HANGERS

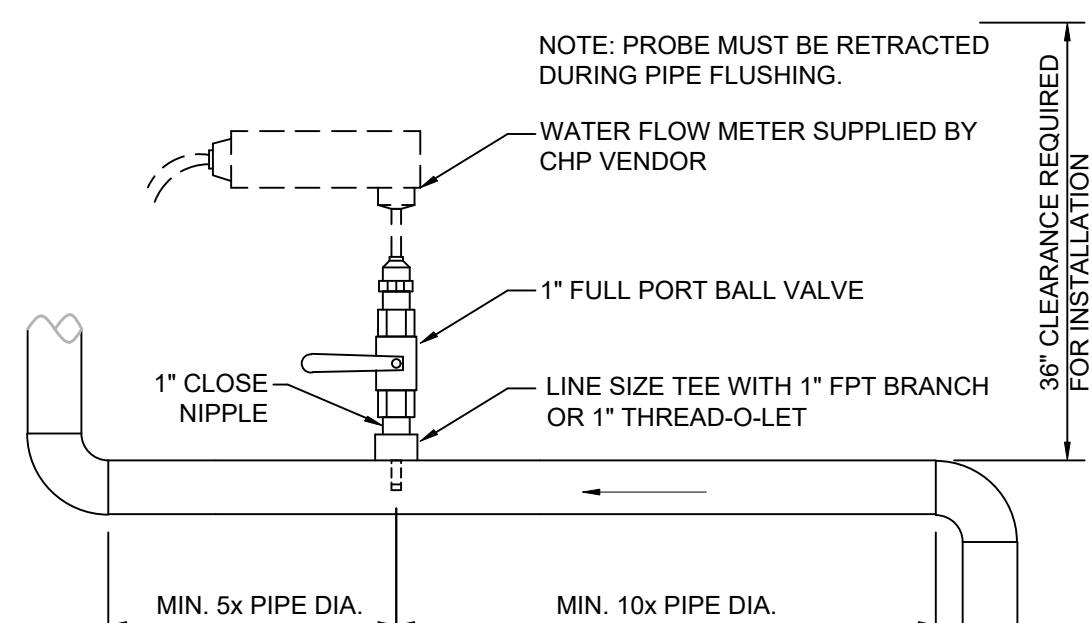
MAXIMUM PIPE/TUBING SUPPORT SPACING																		
NOM. SIZE IN.	THRU 3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24
STL PIPE	7 FT	7	7	9	10	11	12	14	16	17	19	22	23	25	27	28	30	32
CU TUBING	5 FT	6	7	8	8	9	10	12	13	14	16	-	-	-	-	-	-	-
NOTE: FOR TRAPEZE HANGER TAKE SPACING OF SMALLEST SIZE ON TRAPEZE.																		

NOTE: FOR TRAPEZE HANGER TAKE SPACING OF SMALLEST SIZE ON TRAPEZE.
NOTES:
1. FOR TRAPEZE HANGER TAKE SPACING OF SMALLEST SIZE ON TRAPEZE
2. REFER TO SPEC 23 05 29 FOR ADDITIONAL REQUIREMENTS ON PIPE HANGERS
3. REFER TO SPEC 23 07 19 FOR INSULATION THICKNESS REQUIREMENTS ON PIPING (AS APPLICABLE)
4. PIPE SPACING ABOVE REFLECTS MSS SP-69 REQUIREMENTS (PER IMC 305.4)

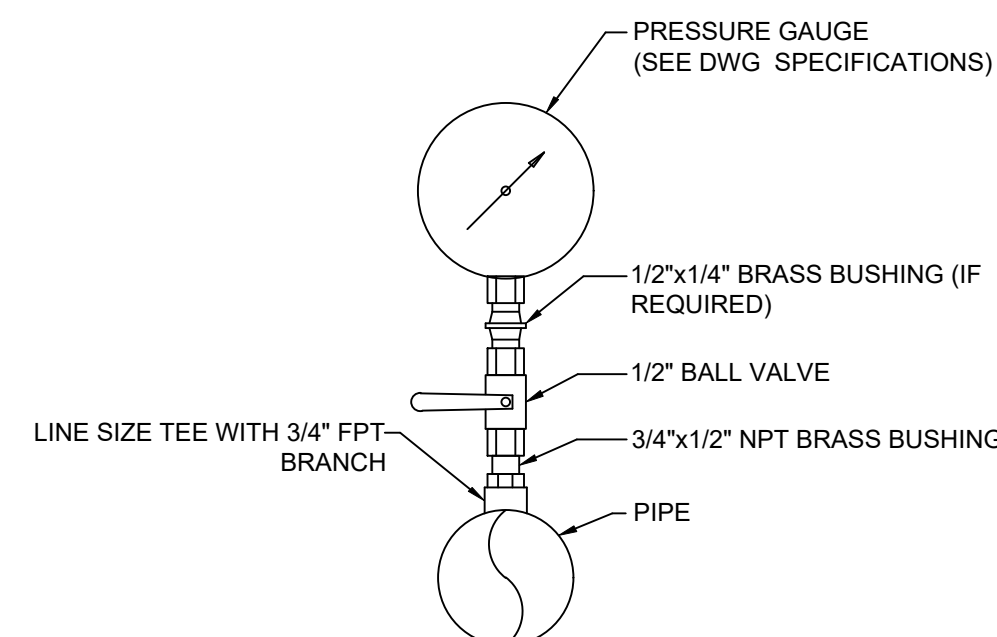
5 PIPE SUPPORT DETAIL
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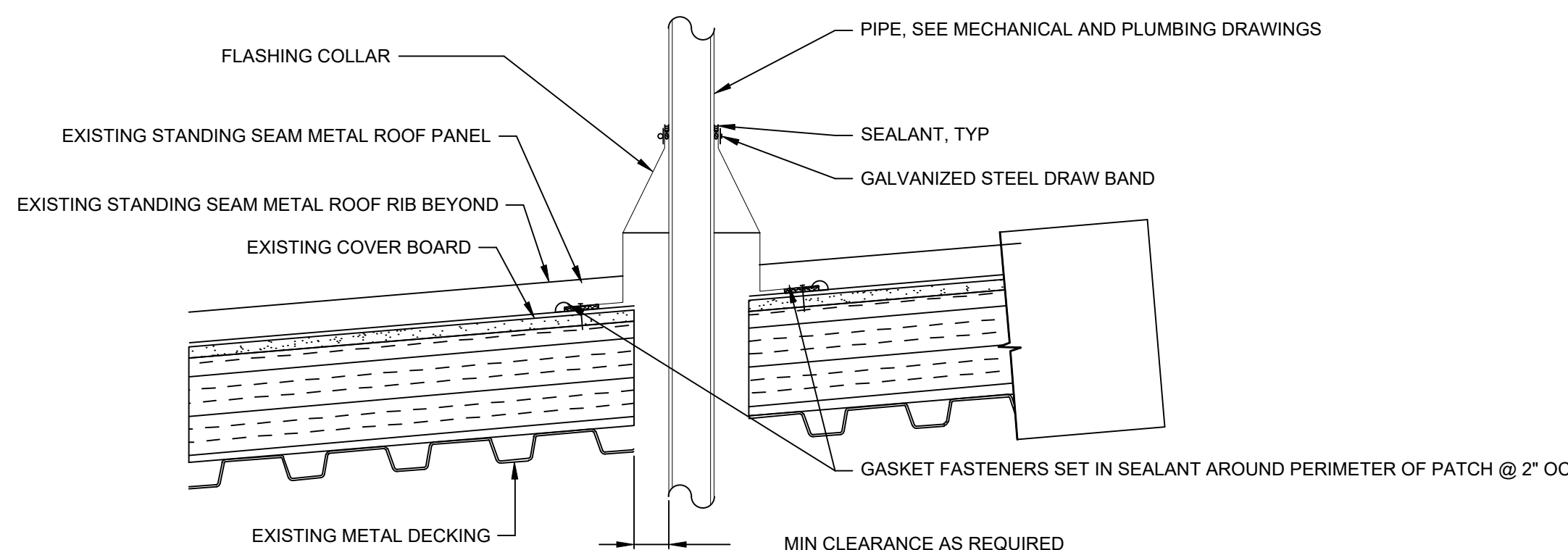
4 THERMOMETER AND WELL DETAIL
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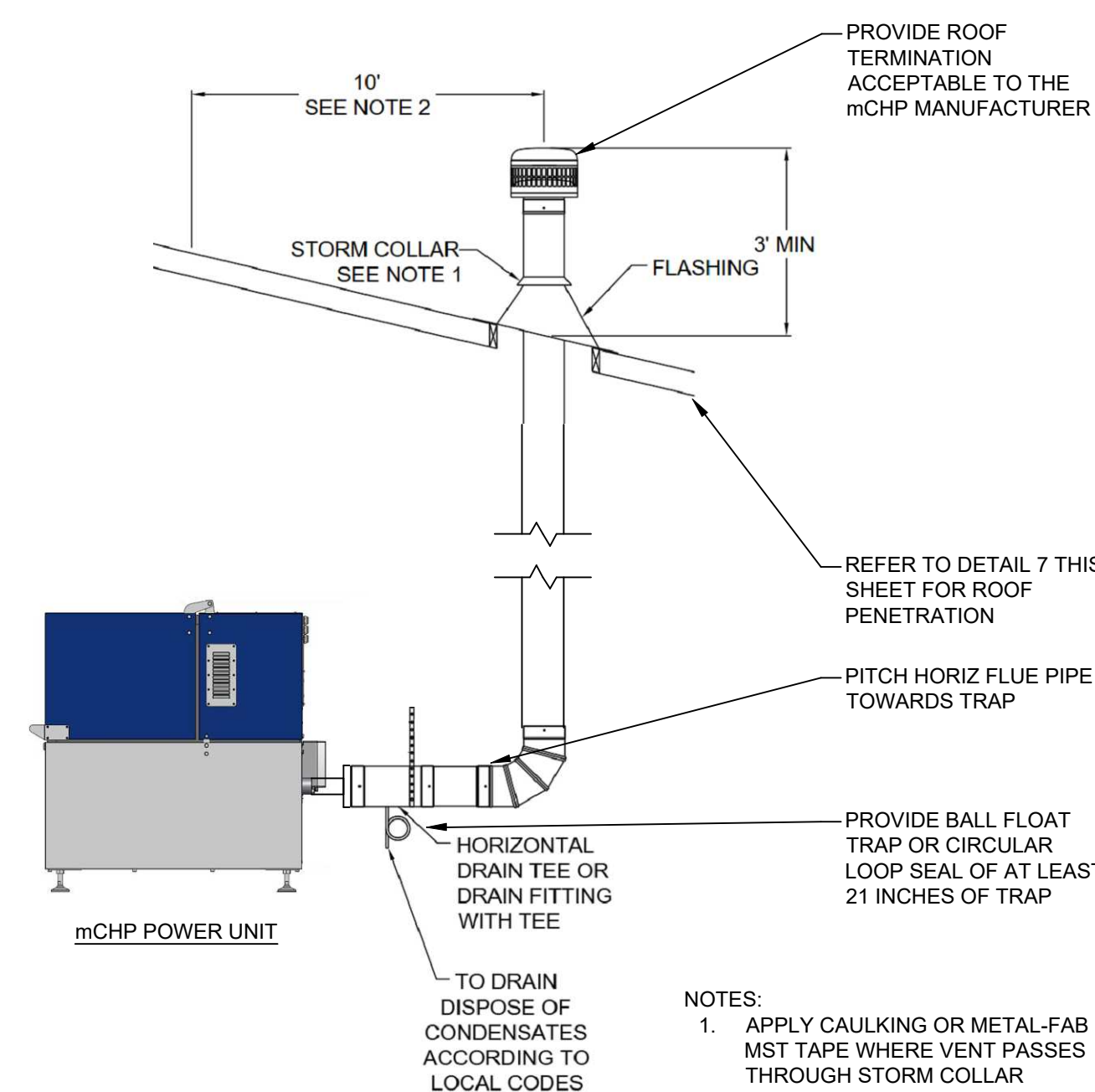
2 WATER FLOW METER DETAIL
SCALE: NTS



3 PRESSURE GAUGE CONNECTION DETAIL
SCALE: NTS



7 STANDING SEAM PENETRATION DETAIL
SCALE: NTS



6 mCHP EXHAUST VENT DETAIL
SCALE: NTS

PLAN REVISIONS				Appr.
Rev#	Description	Date		

DESIGNED BY: SDF	DRAWN BY: SDF	CHECKED BY: DSF	DATE: 09/10/2026	SCALE: AS LISTED	DFE PROJECT NO: 23SC21-307-D
STATE OF MAINE DEPARTMENT OF DEFENSE, VETERANS AND EMERGENCY MANAGEMENT INNOVATIVE CONSTRUCTIONS & DESIGN SOLUTIONS, LLC 10 WHITE WOOD LANE NORTH BRANFORD, CT 06471 203.453.8586 / SFITCH@CDSILLC.COM					

AUBURN SOLAR & CHP MICRO-GRID PROJECT MAINE DDEM FMS #2 64 MT. APATITE PARK AUBURN, ME 04210	MECHANICAL mCHP SYSTEM PIPING DETAILS
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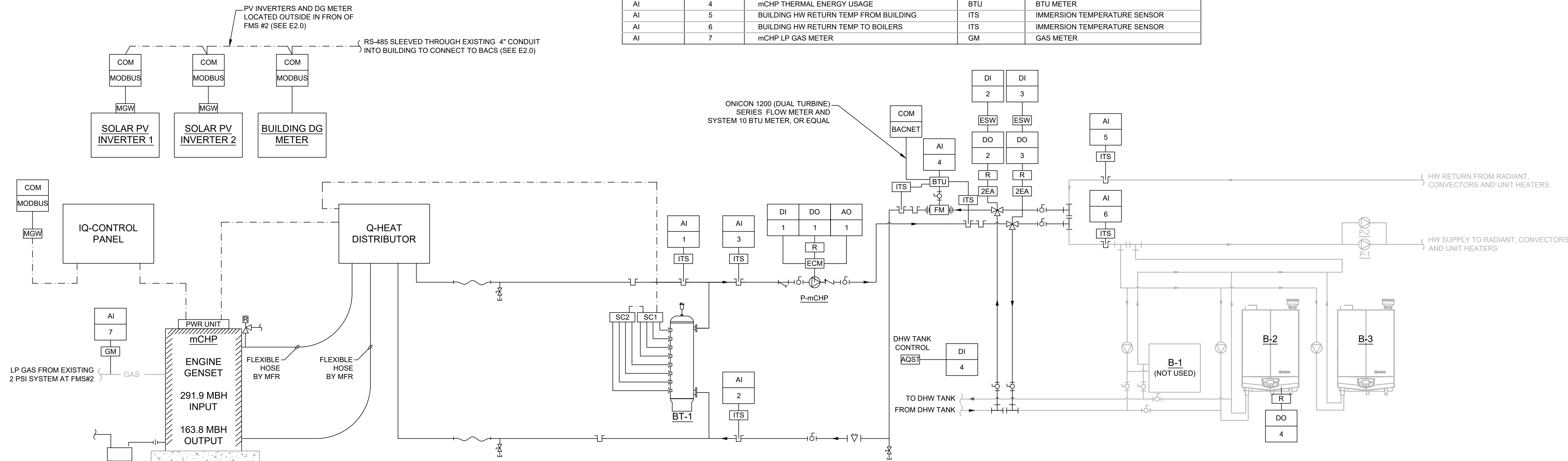
PLAN PROGRESS
☐ TYPE A SKETCHES
☐ 35% REVIEW
☐ 65% REVIEW
☐ 95% REVIEW
☐ FINAL REVIEW
☒ FOR BIDDING
☐ ISSUED FOR CONSTRUCTION
☐ RECORD DRAWINGS

NEW CONTROL SYMBOLS

SYMBOL	DESCRIPTION
	NEW CONTROL POINT TYPE DASHED CIRCLE = EXISTING POINT REUSED FOR NEW EQPMT NO CIRCLE = NEW POINT AND NEW EQUIPMENT CIRCLE ONLY = EXISTING BACS POINTS NEW CONTROL POINT ID NUMBER FIELD DEVICE (REFER TO POINT LIST FOR DEFINITIONS)
AI	ANALOG INPUT
AO	ANALOG OUTPUT
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT

CONTROL POINTS LIST

POINT TYPE	POINT NUMBER	CONTROL FUNCTION	DEVICE CODE	DEVICE TYPE
DO	1	P-mCHP ENABLE	R / ECM	RELAY TO ECM INPUT
DO	2	mCHP RETURN DHW DIVERTING VALVE	R / 2EA	INTERPOSING RELAY TO 2-POS VALVE
DO	3	mCHP SUPPLY DHW DIVERTING VALVE	R / 2EA	INTERPOSING RELAY TO 2-POS VALVE
DO	4	BOILER B-2 TANK STAT INPUT	R / BLR	INTERPOSING RELAY TO BOILER INPUT
DI	1	P-mCHP CIRC PUMP ECM RUN STATUS	VFD	RELAY OUTPUT FROM VFD
DI	2	mCHP RETURN DHW DIVERTING VALVE POSITION	ESW	ENDSWITCH
DI	3	mCHP SUPPLY DHW DIVERTING VALVE POSITION	ESW	ENDSWITCH
DI	4	DHW TANK DEMAND	AQST	AQUASTAT
AO	1	P-mCHP CIRC PUMP ECM SPEED SIGNAL	VFD	ANALOG INPUT TO VFD
AI	1	Q-HEAT SUPPLY TEMP	ITS	IMMERSION TEMPERATURE SENSOR
AI	2	mCHP SYSTEM RETURN TEMP	ITS	IMMERSION TEMPERATURE SENSOR
AI	3	mCHP SYSTEM SUPPLY TEMP	ITS	IMMERSION TEMPERATURE SENSOR
AI	4	mCHP THERMAL ENERGY USAGE	BTU	BTU METER
AI	5	BUILDING HW RETURN TEMP FROM BUILDING	ITS	IMMERSION TEMPERATURE SENSOR
AI	6	BUILDING HW RETURN TEMP TO BOILERS	ITS	IMMERSION TEMPERATURE SENSOR
AI	7	mCHP LP GAS METER	GM	GAS METER



1 mCHP SYSTEM CONTROL SCHEMATIC
SCALE: NTS

mCHP SYSTEM SEQUENCE OF OPERATION

THE mCHP IS FULLY CONTROLLED BY THE ON BOARD CONTROLS (IQ CONTROL PANEL). THE SYSTEM OPERATES BASED ON THERMAL LOAD FOLLOWING FROM 100% POWER TO 50% POWER. SINCE THERE IS NO RADIATOR, A TALL STORAGE TANK PROVIDED INCLUDES ADDITIONAL CONTROLS TO OPTIMIZE RUNTIME USING THE TANK VOLUME AND EFFECTIVE STRATIFICATION THROUGH MONITORING EIGHT SENSORS LOCATED VERTICALLY THROUGH THE TANK. THIS ALLOWS THE GENERATOR (POWER UNIT) TO CONTINUE PRODUCING POWER UNDER LOW THERMAL LOADS AS WELL AS HELP TO SCHEDULE OPERATION ACCORDING TO POWER LOAD PATTERNS ON SITE.

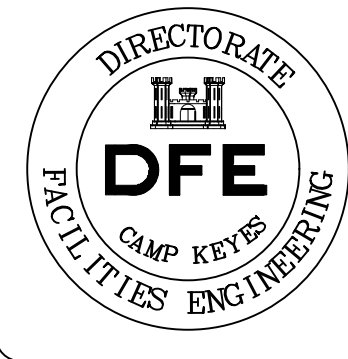
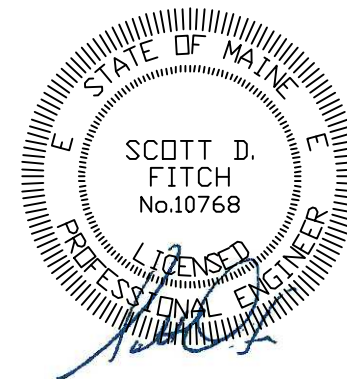
BACS CONTROLS

LOAD CONTROL

WHEN THE mCHP SYSTEM IS ONLINE AND THE mCHP SUPPLY TEMPERATURE FROM THE FLOW CONTROL MODULE IS GREATER THAN THE BUILDING HOT WATER RETURN, PUMP P-mCHP SHALL ENERGIZE AND RUN TO PROVIDE LOAD AHEAD OF BOILERS B-2 AND B-3. UPON A CALL FOR DOMESTIC HOT WATER FROM THE INDIRECT TANK, THE THREE-WAY VALVES SHALL DIVERT THE mCHP THERMAL TO THE INDIRECT TANK UNTIL SATISFIED. THE DHW TANK AQUASTAT OUTPUT SHALL BE SENT TO THE BACS WHICH WILL DECIDE IF THE mCHP OR THE EXISTING BOILER B-2 SHOULD BE USED FOR HEAT.

POWER, ENERGY AND FUEL MONITORING

- A BTU METER SHALL MONITOR ALL THERMAL ENERGY DELIVERED BY THE mCHP.
- A PROPANE GAS METER (GM) SHALL MONITOR ALL USE OF PROPANE BY THE mCHP.
- THE IQ-CONTROL SHALL PROVIDE mCHP POWER INFORMATION TO THE BACS OVER MODBUS VIA A MODBUS GATEWAY (MGW).
- THE TWO (2) TRACKING SOLAR PV SYSTEMS SHALL OUTPUT POWER INFORMATION TO THE BACS OVER MODBUS VIA A MODBUS GATEWAY (MGW). POWER PROVIDED BY THE SOLAR PV SHALL BE DOCUMENTED SEPARATELY FROM THE mCHP AND BUILDING TOTAL POWER.
- A BUILDING DG METER SHALL OUTPUT PV AND mCHP POWER INFORMATION TO THE BACS OVER MODBUS ALONG WITH PV INVERTER MODBUS DATA.



PLAN REVISIONS	Appr.
	Date
	Rev# Description

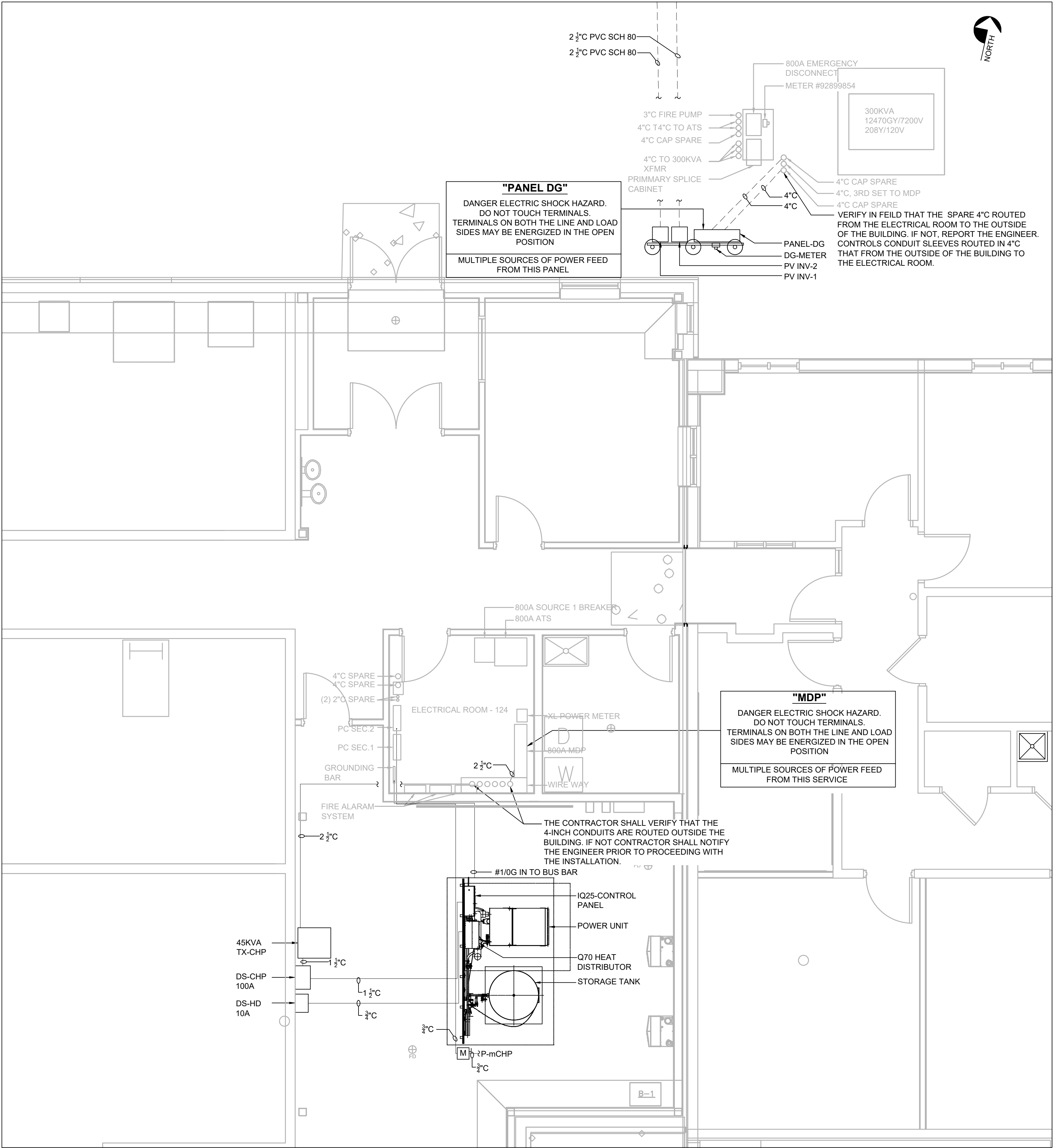
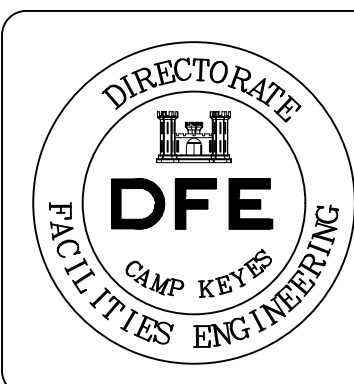
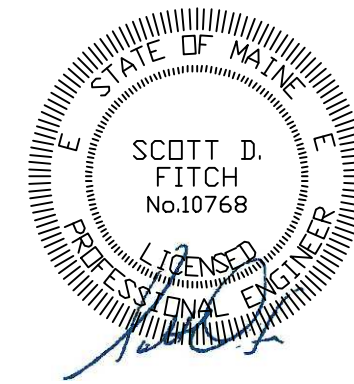
DESIGNED BY: SDF	DRAWN BY: SDF	CHECKED BY: DSF	DATE: 09/10/2026	AS LISTED	DFE PROJECT NO: 23SC21-307-D
STATE OF MAINE DEPARTMENT OF DEFENSE, VETERANS AND EMERGENCY MANAGEMENT INNOVATIVE CONSTRUCTION & DESIGN SOLUTIONS, LLC 10 WHITE WOOD LANE NORTH BRANFORD, CT 06471 203.453.8596 / SFITCH@IDSLLC.COM					

AUBURN SOLAR & CHP MICRO-GRID PROJECT MAINE DDEM FMS #2 64 MT. APATITE PARK AUBURN, ME 04210	MECHANICAL mCHP SYSTEM CONTROLS
---	------------------------------------

PLAN PROGRESS
☐ TYPE A SKETCHES
☐ 35% REVIEW
☐ 65% REVIEW
☐ 95% REVIEW
☐ FINAL REVIEW
☒ FOR BIDDING
☐ ISSUED FOR CONSTRUCTION
☐ RECORD DRAWINGS

SHEET ID:
M4.0
SHEET: 10 OF 15

SHEET ID:
E1.0
ET: 11 OF 15



LEGEND	
---	LIGHT INDICATES EXISTING
---	BOLD INDICATES NEW
GC	GRID CONNECT
GI	GRID INDEPENDENT

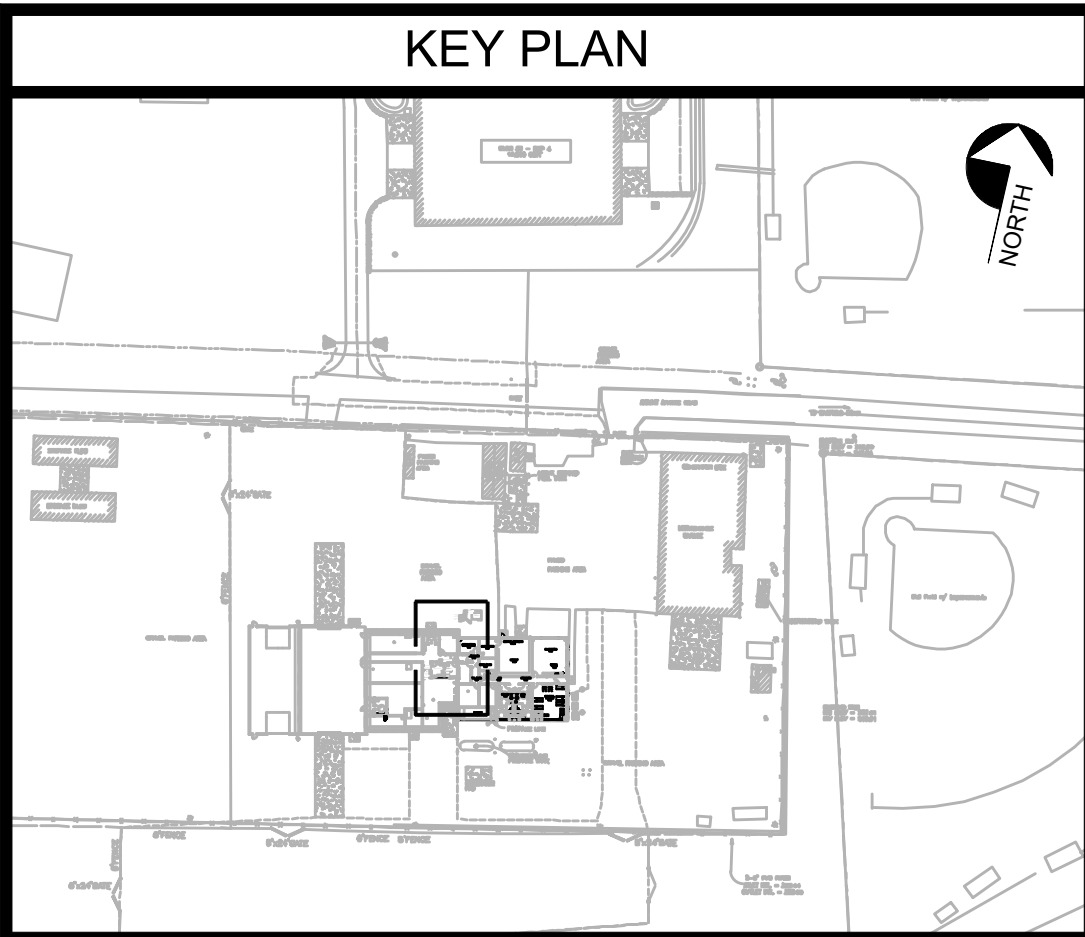
PLAN REVISIONS		Rev#	Description	Date	Appr.

DESIGNED BY: SDF	DESIGNED BY: SDF	CHECKED BY: DSF	DATE: 09/10/2026	SCALE: AS LISTED	DPE PROJECT NO: 23SC21-307-D
STATE OF MAINE DEPARTMENT OF DEFENSE, VETERANS AND EMERGENCY MANAGEMENT INNOVATIVE CONSTRUCTION & DESIGN SOLUTIONS, LLC 10 WHITE WOOD LANE NORTH BRANFORD, CT 06471 203.453.8596 / SFITCH@ICDSLLC.COM					

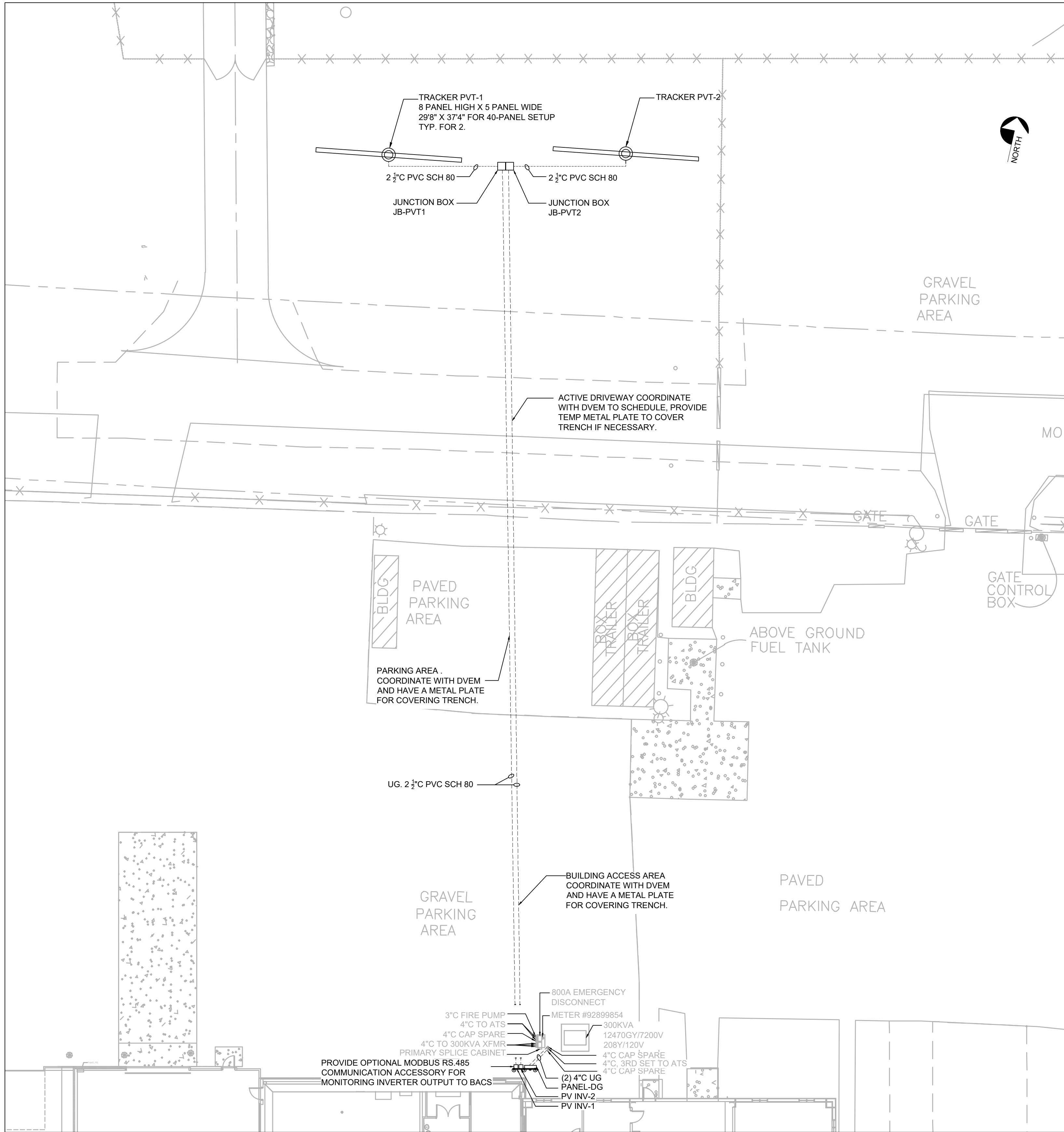
AUBURN SOLAR & CHP MICRO-GRID PROJECT MAINE DDEM FMS #2 64 MT. APATITE PARK AUBURN, ME 04210	ELECTRICAL PLAN CHP
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PLAN PROGRESS	
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☐ RECORD DRAWINGS	

SHEET ID: E2.0
SHEET: 12 OF 15



1 mCHP - ELECTRICAL PLAN
Scale: 1/4" = 1'-0"



2 SOLAR TRACKERS - ELECTRICAL PLAN
Scale: 1/16" = 1'-0"

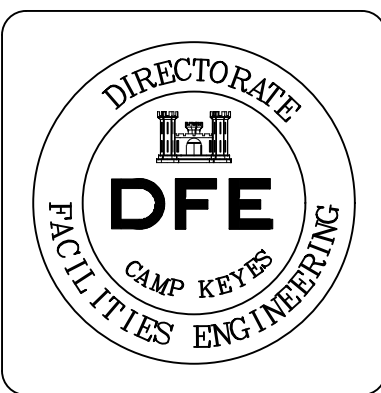
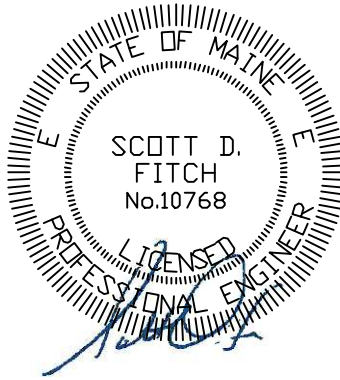
LEGEND

LIGHT INDICATES EXISTING

BOLD INDICATES NEW

GRID CONNECT

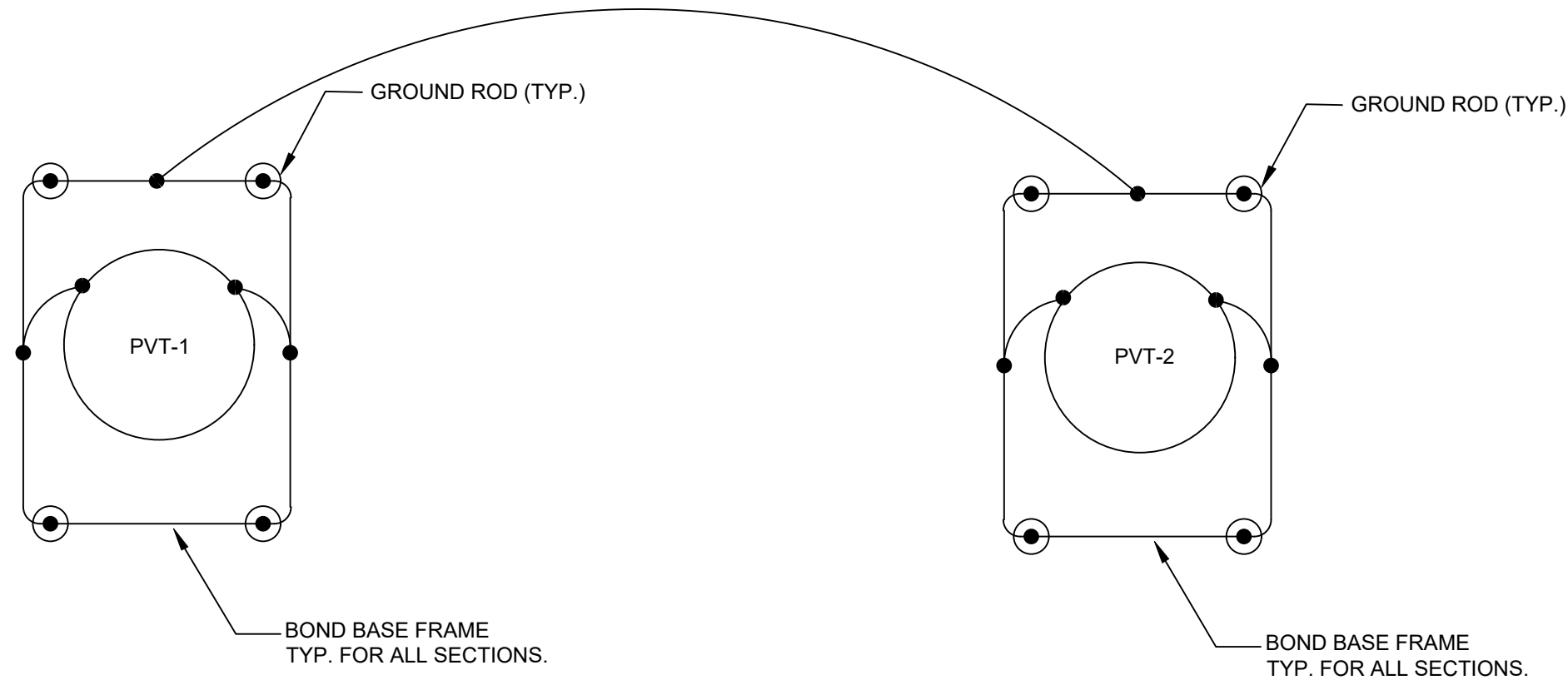
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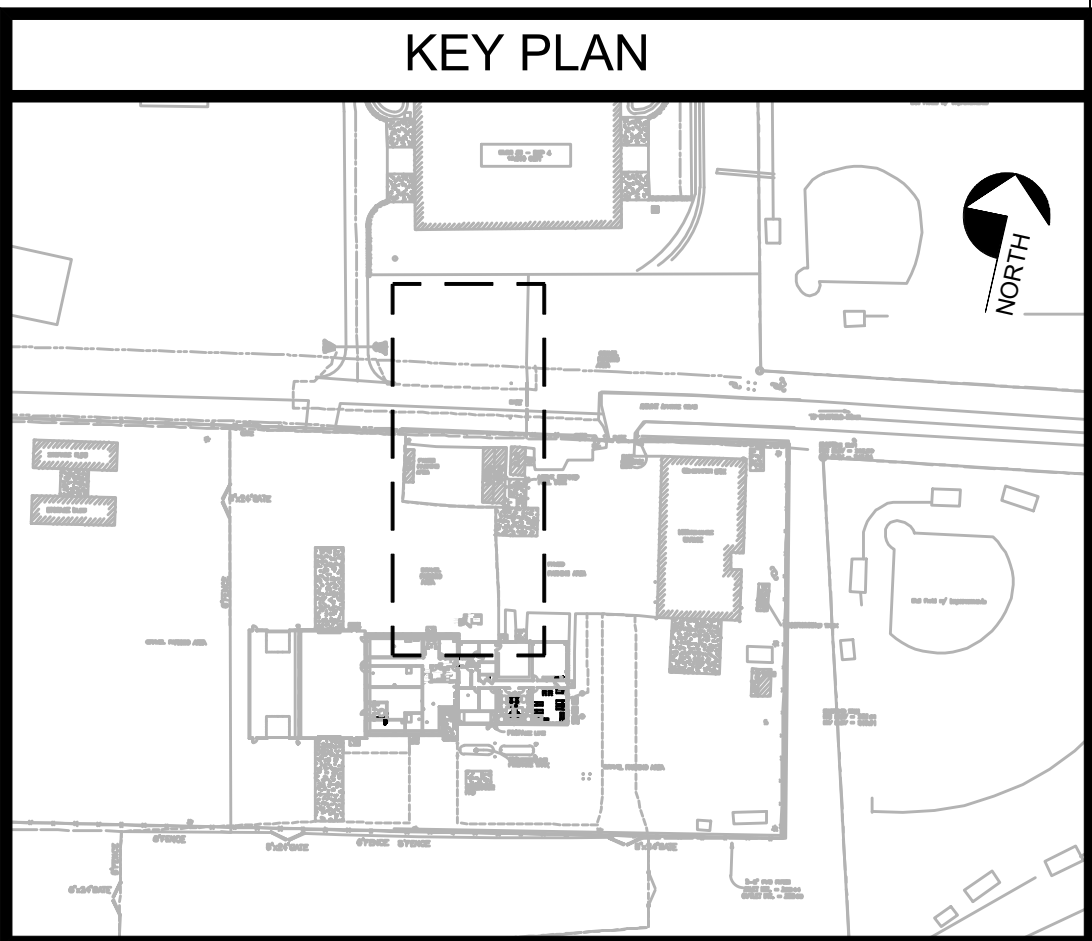
PLAN REVISIONS					Appr.
Rev#	Description	Date			

GROUNDING DETAIL NOTES:

- GROUND RING CONDUCTOR SIZE SHALL BE #4/0 AWG BARE, COPPER, U.N.O. BURIED AT LEAST 24" BELOW GRADE.
- ALL GROUNDING ELECTRODE CONDUCTORS FROM GROUNDING RING TO THE EQUIPMENT GROUND BUS SHALL BE #3/0 AWG MIN.
- CONNECTORS SHALL BE MECHANICAL, HI-PRESS, UL LISTED FOR INTENDED USE.
- GROUND RODS SHALL BE 3/4"Ø x 10 FT. COPPER CLAD STEEL.
- MINIMUM DISTANCE BETWEEN ADJACENT GROUND RODS IS 10 FT. MAXIMUM 50 FT.
- GROUND RING IS INSTALLED ALONG THE FENCE PERIMETER.
- BOND CHAIN LINK FENCE POSTS TO THE GROUND RING USING #6 BARE COPPER CONDUCTORS, AT NO MORE THAN 20 FT SPACING.
- COMPLY WITH NEC 250.
- TEST GROUNDING ELECTRODE SYSTEM PER NETA-ATS USING FALL OF POTENTIAL METHOD. AUGMENT GROUNDING ELECTRODE SYSTEM UNTIL SATISFACTORY RESULTS ARE ACHIEVED. (LESS THAN 3 OHMS GROUND RESISTANCE)



1 SOLAR TRACKERS - GROUNDING PLAN
Scale: NTS



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DATE: 09/10/2026
SCALE: AS LISTED
DTE PROJECT NO: 23SC21-307-D

STATE OF MAINE
DEPARTMENT OF DEFENSE, VETERANS
AND EMERGENCY MANAGEMENT
INNOVATIVE CONSTRUCTION &
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10 WHITE WOOD LANE
NORTH BRANFORD, CT 06471
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AUBURN SOLAR & CHP MICRO-GRID PROJECT
MAINE DVEFM FMS #2
64 MT. APATITE PARK
AUBURN, ME 04210

ELECTRICAL PLAN
SOLAR TRACKERS

PLAN PROGRESS

☐ TYPE A SKETCHES

☐ 35% REVIEW

☐ 65% REVIEW

☐ 95% REVIEW

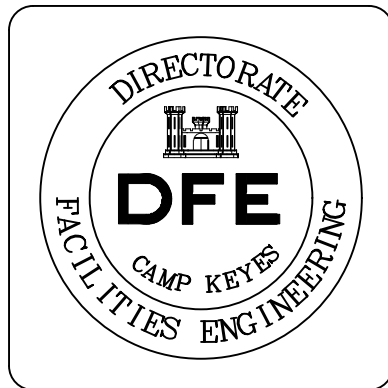
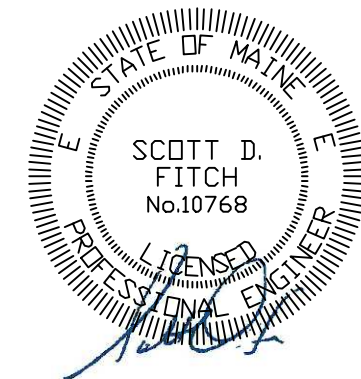
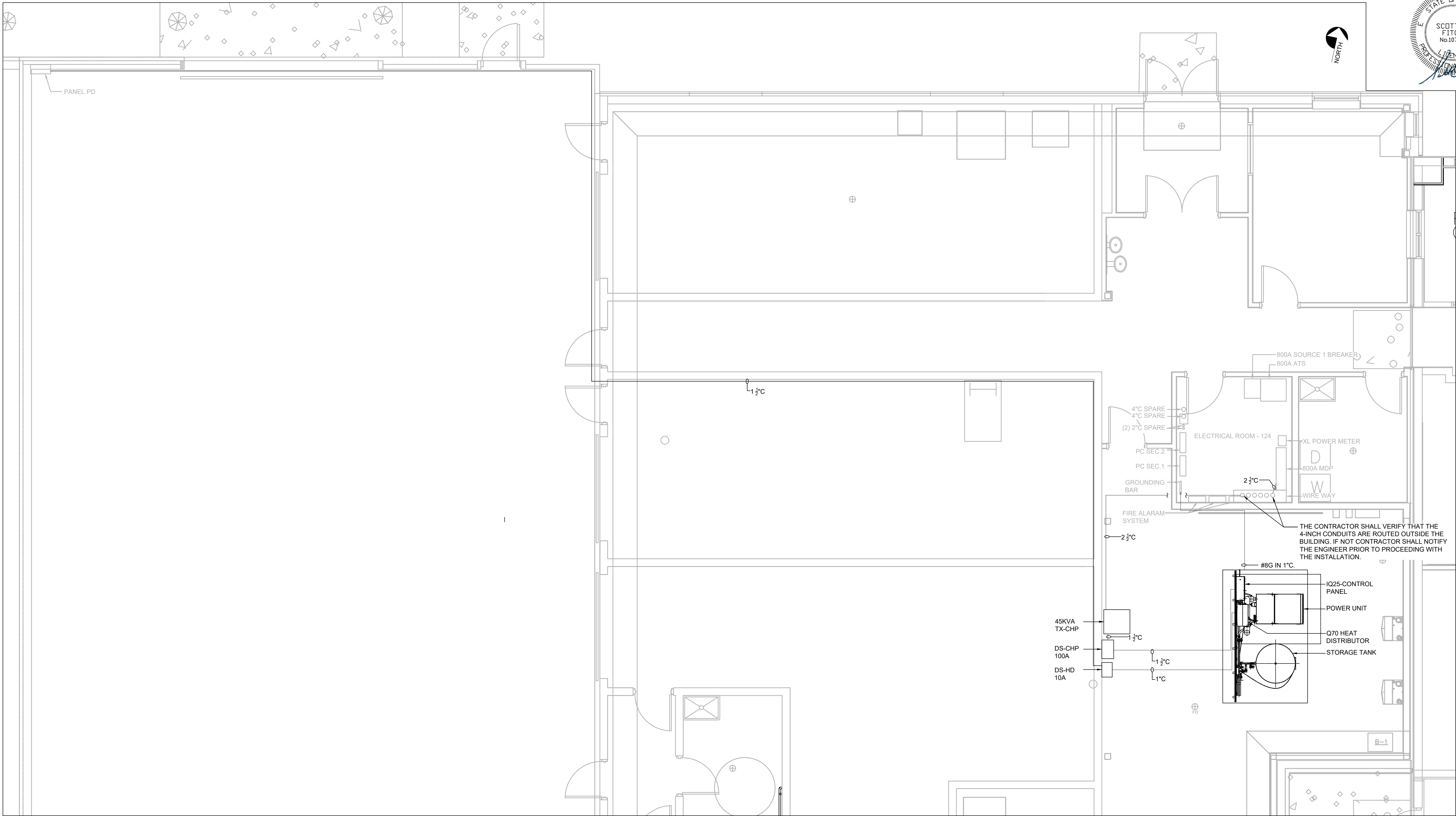
☐ FINAL REVIEW

☒ FOR BIDDING

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☐ RECORD DRAWINGS

SHEET ID:
E2.1
SHEET: 13 OF 15



PLAN REVISIONS			
Rev#	Description	Date	Appr.

DESIGNED BY: SDF	DESIGNED BY: SDF
DRAWN BY: SDF	DRAWN BY: SDF
CHECKED BY: DSF	CHECKED BY: DSF
DATE: 09/10/2026	DATE: 09/10/2026
SCALE: AS LISTED	SCALE: AS LISTED
DFE PROJECT NO: 23SC21-307-LD	DFE PROJECT NO: 23SC21-307-LD

STATE OF MAINE
DEPARTMENT OF DEFENSE, VETERANS
AND EMERGENCY MANAGEMENT

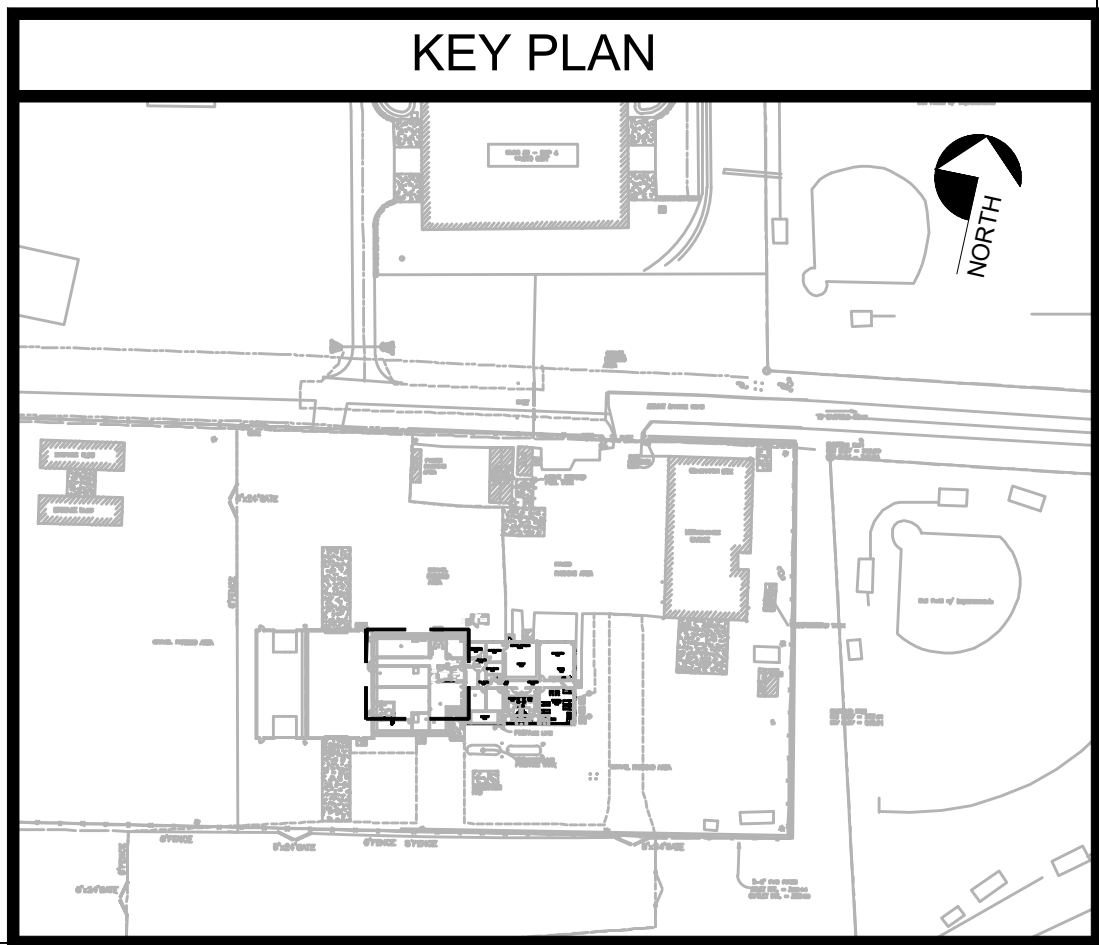
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10 WHITE WOOD LANE
NORTH BRANFORD, CT 06471
203.453.8596 / SFITCH@ICDSLLC.COM

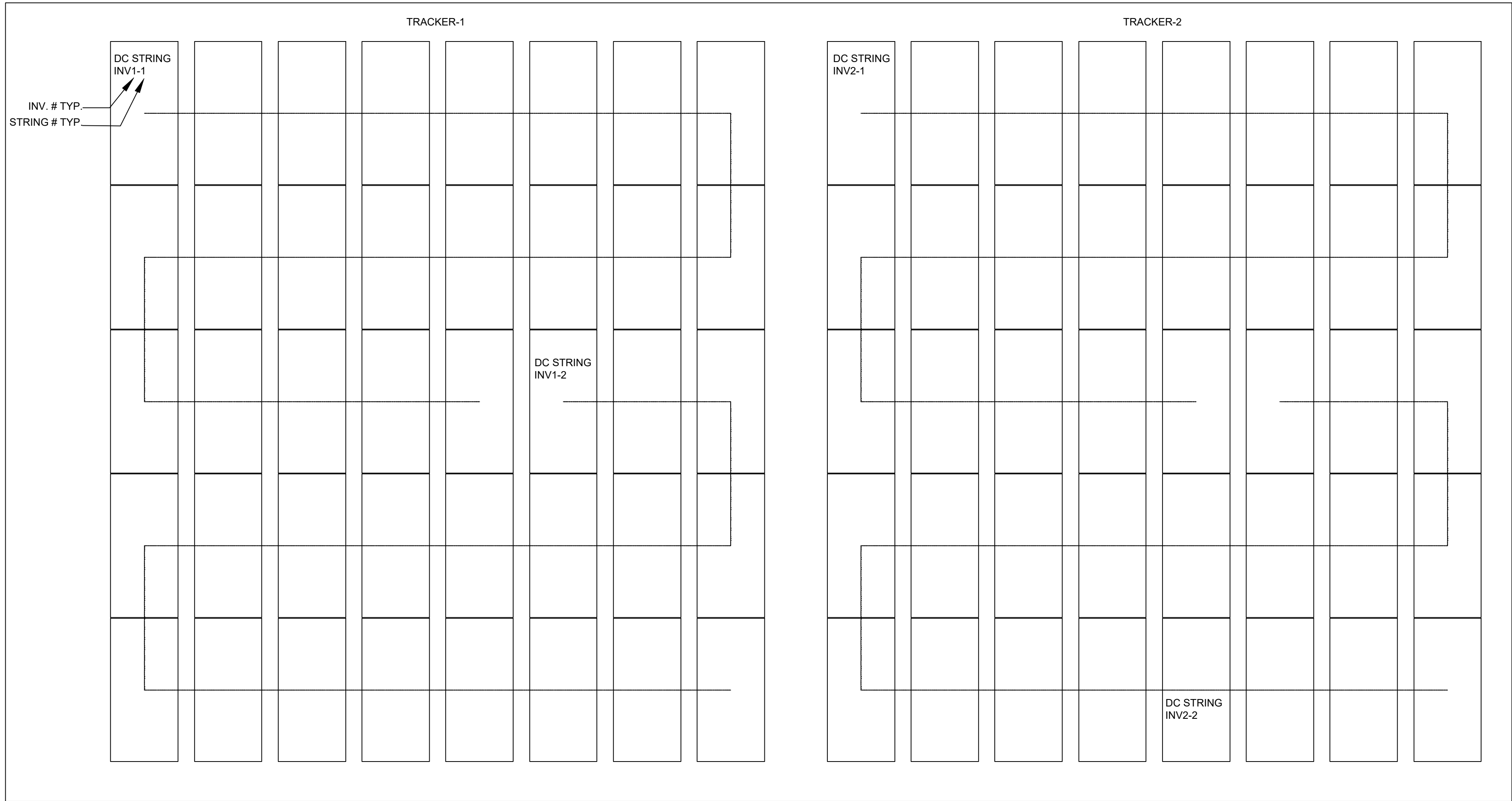
AUBURN SOLAR & CHP MICRO-GRID PROJECT MAINE DVEFM FMS #2 64 MT. APATITE PARK AUBURN, ME 04210	PART. ELECTRICAL PLAN
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PLAN PROGRESS
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SHEET ID: E2.2
SHEET: 14 OF 15

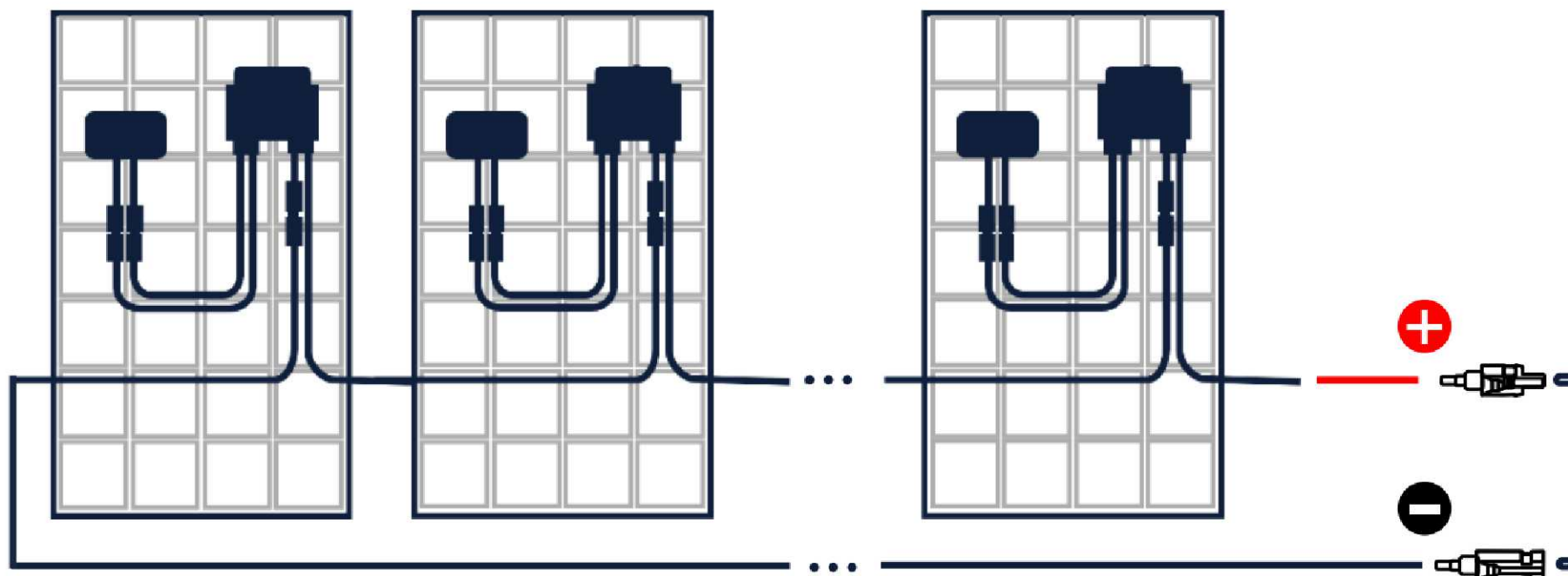
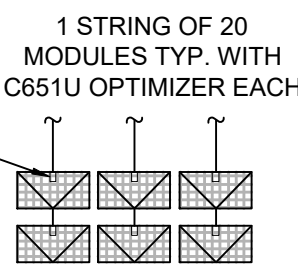
1 PART. ELECTRICAL PLAN
Scale: 1/4" = 1'-0"





3 PV STRING CONFIGURATION
Scale: NTS

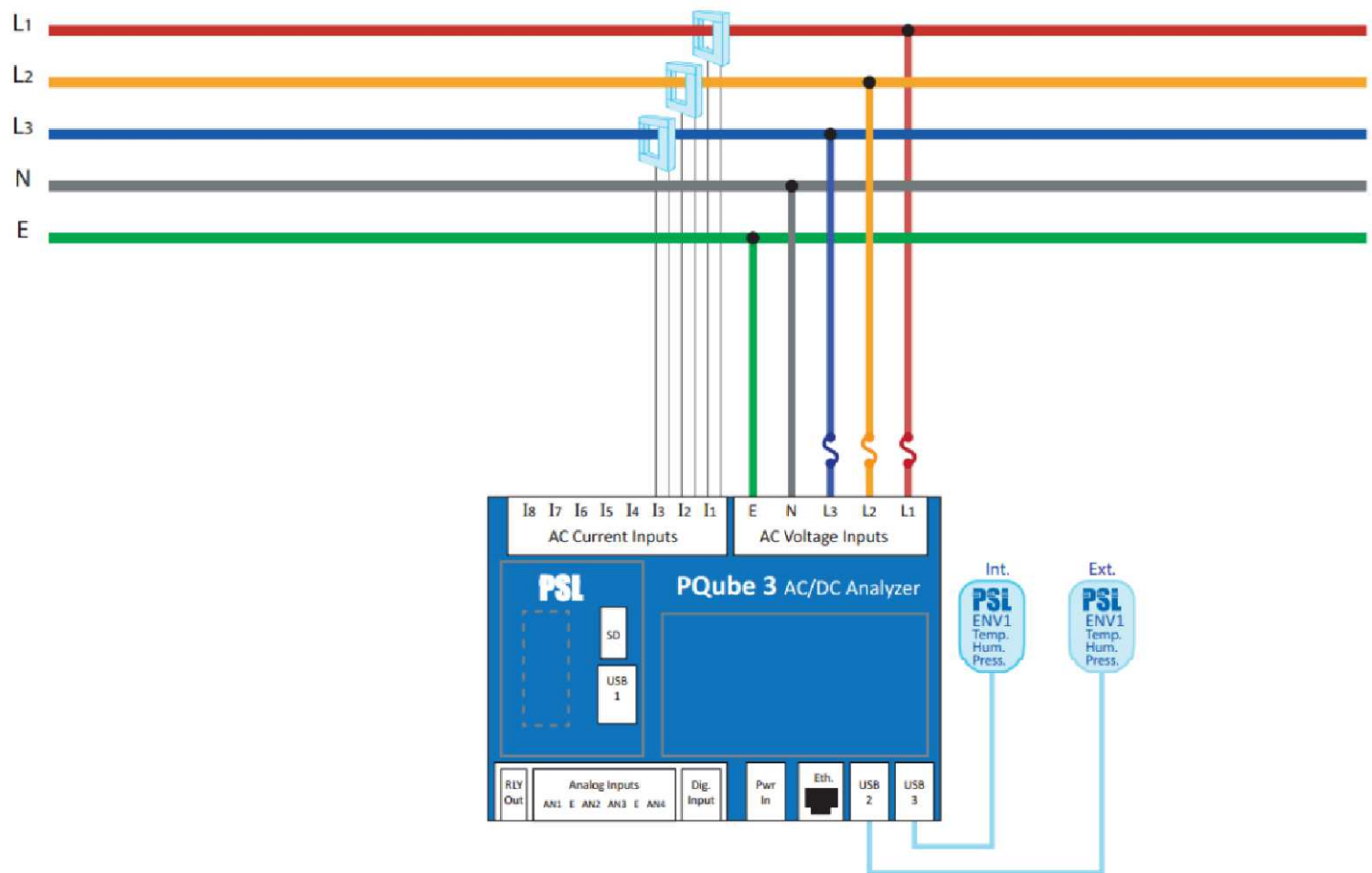
POWER OPTIMIZER MEETS NEC REQUIREMENTS FOR ARC FAULT PROTECTION (NEC 690.11) AND RAPID SHUTDOWN (NEC 690.12 (B)(2)). TYPICAL



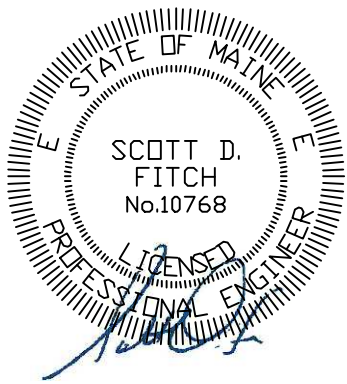
2 MODULE AND OPTIMIZER CONNECTION
Scale: NTS

STRING LAYOUT SUMMARY			
INVERTER No.	STRING No.	MODULES PER STRING	No. OF POWER OPTIMIZERS
INV-1	1	20	20
INV-1	2	20	20
INV-2	1	20	20
INV-2	2	20	20

PV SYSTEM CONFIGURATION SUMMARY			
MAIN FEATURES:		ELECTRICAL CONFIGURATION:	
NOMINAL AC POWER:	34.6 KWAC	MODULES PER STRING:	20
PEAK DC POWER:	60.55 KWp	QUANTITY OF TRACKERS:	2
MODULE TECHNOLOGY:	N-TYPE MONO 144PCS	MAX. DC VOLTAGE:	600 V
INVERTER TOPOLOGY:	TRANSFORMERLESS, UL1741SB	QUANTITY OF STRINGS:	4
PV MODULES:		INVERTER CONFIGURATION:	
MANUFACTURER:	SEG SOLAR	DESIGNATION:	"INV1" & "INV2"
MODEL:	SEG-595-BTA-BG	MANUFACTURER:	SOLAREEDGE
PEAK POWER:	595 Wp	MODEL:	SE17.3KUS
QUANTITY:	80 MODULES	NOMINAL POWER:	17.3 KW AC EACH
OPTIMIZER:	SOLAREEDGE - C651U	QUANTITY:	2 INVERTER
PHYSICAL CONFIGURATION:		OUTPUT POWER:	208V (3Ø, 4W)
METHODOLOGY:	TRACKING (DUAL AXIS)	ARRAY COMBINER:	INTEGRATED
TRACKING AXES :	VERTICAL: 0° TO 60° AZIMUTH: -135° TO 135°	DC DISCONNECT:	INTEGRAL / LOCKABLE OFF
RACKING SYSTEM:	TRACKER MOUNT RACKING SYSTEM	AC DISCONNECT:	EXTERNAL



1 PQUBE 3 METER WIRINIG DIAGRAM
Scale: NTS



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AUBURN SOLAR & CHP MICRO-GRID PROJECT MAINE DDEM FMS #2 64 MT. APATITE PARK AUBURN, ME 04210	ELECTRICAL DETAILS
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E3.0
SHEET: 15 OF 15