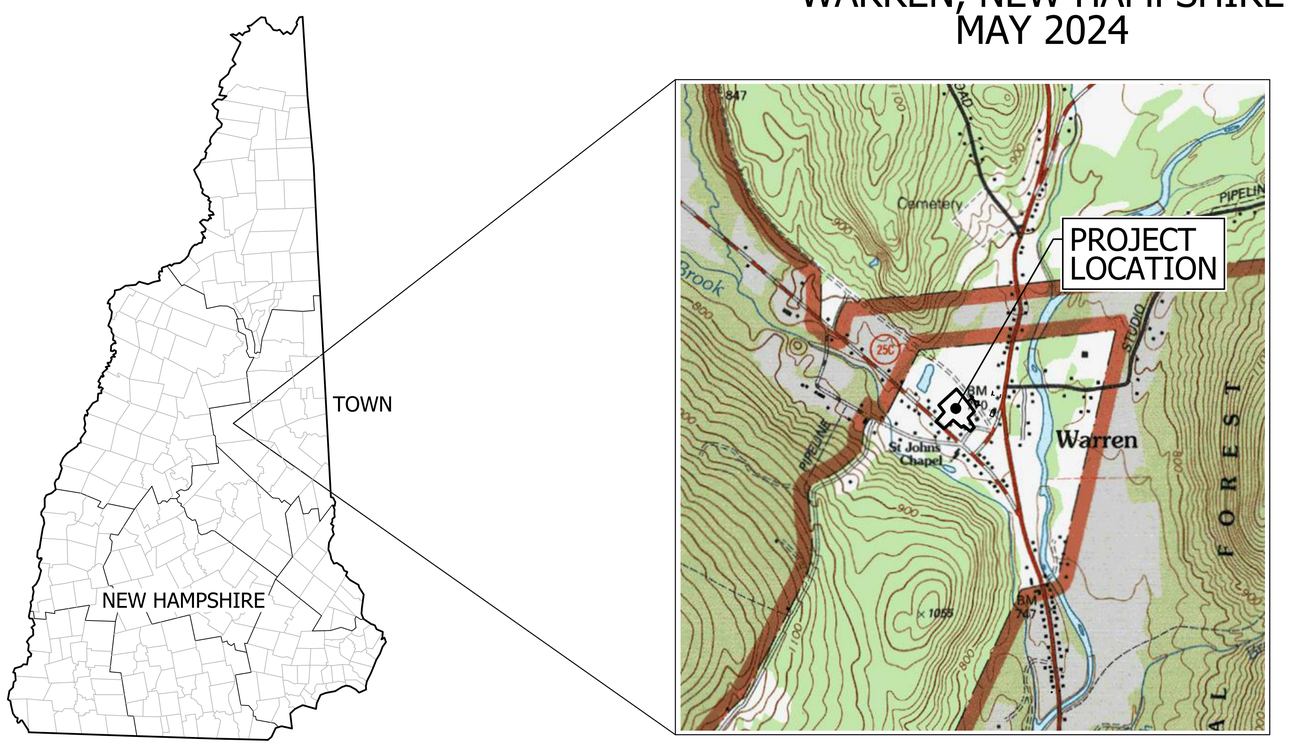
SOUTH MAIN STREET WATER DISTRICT

PUMP STATION UPGRADES - PWS ID# 2422010

FUNDING: DWSRF #2422010, DWGTF #DWGT-86, ARPA #2422010

WARREN, NEW HAMPSHIRE
MAY 2024



LOCATION PLAN
SCALE: 1" = 1000'

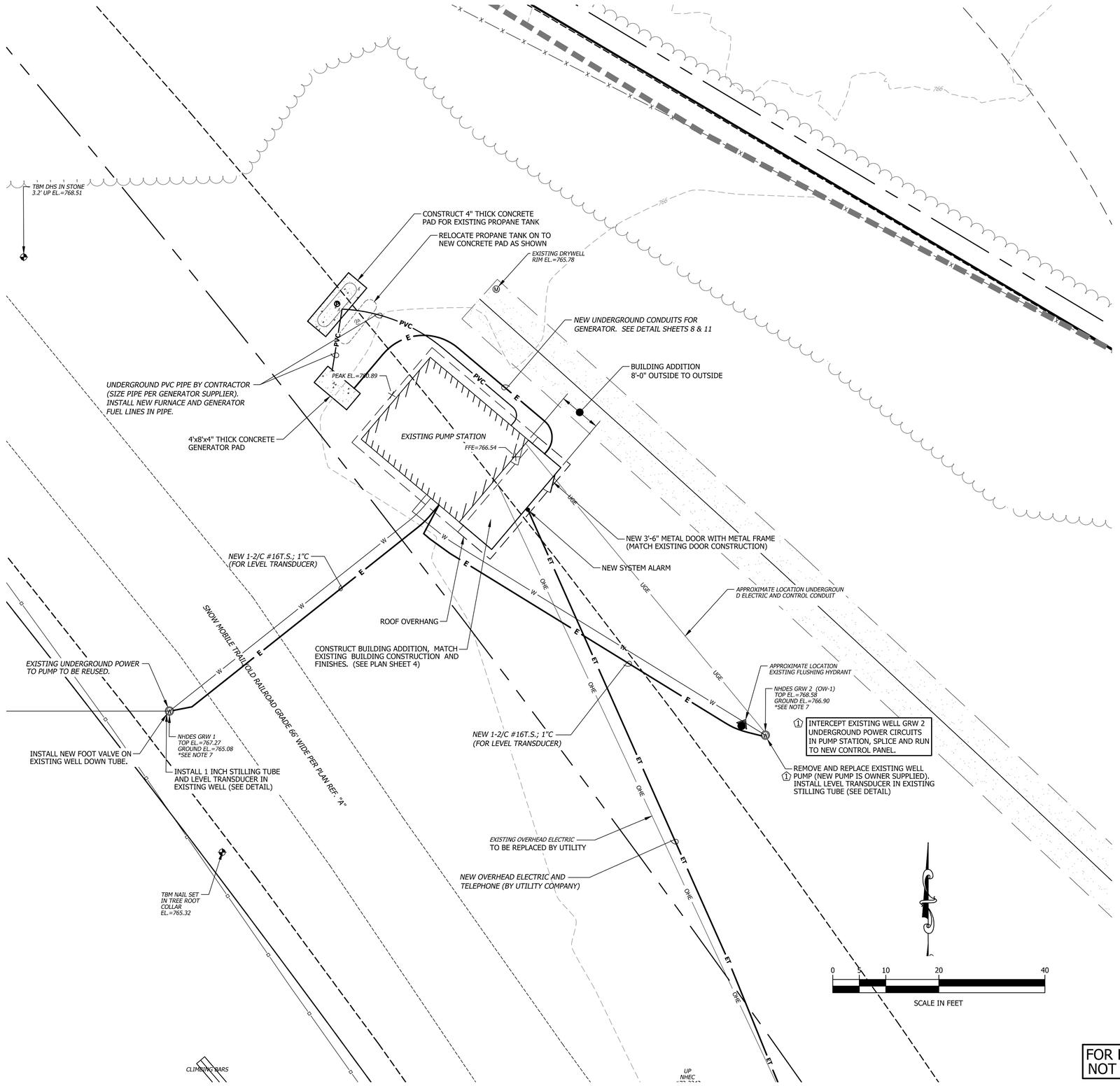
OWNER:
SOUTH MAIN STREET WATER DISTRICT
POST OFFICE BOX 35
WARREN, NH 03279

ELECTRICAL ENGINEER:
LEE F. CARROLL, PE
ELECTRICAL CONSULTANTS
P. O. BOX F
GORHAM, NH 03581-3090

ENGINEER:
horizons Engineering
34 SCHOOL STREET
LITTLETON, NH 03561
(603) 444-4111

SHEET INDEX

DATE OF PRINT
JUNE 04 2024
HORIZONS ENGINEERING



GENERAL NOTES

1. ALL WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THESE PLANS, BIDDING DOCUMENTS, CONTRACT DOCUMENTS, AND TECHNICAL SPECIFICATIONS DATED MAY 2024.
2. NO EXISTING MONUMENTS, BOUNDS, OR BENCHMARKS SHALL BE DISTURBED WITHOUT FIRST MAKING PROVISIONS FOR RELOCATION.
3. ALL WORK SHALL BE PERFORMED WITHIN THE PROPERTY OF, AND EASEMENTS SECURED BY, THE OWNER.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DATA COLLECTION AND PREPARATION OF RECORD DRAWINGS.
5. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CONTROLLING EROSION IN ALL AREAS DISTURBED BY HIS ACTIONS. COSTS FOR REQUIRED EROSION CONTROL, REGARDLESS OF WHETHER OR NOT SUCH MEASURES ARE SHOWN ON THE ENGINEERING DRAWINGS, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
6. UTILITY LOCATIONS ARE BASED ON THE BEST AVAILABLE INFORMATION. THE CONTRACTOR IS RESPONSIBLE FOR LOCATION AND PROTECTION OF EXISTING UTILITIES AND SHALL REPAIR ANY DAMAGE AS QUICKLY AS POSSIBLE AT HIS OWN EXPENSE. ALL UTILITIES ENCOUNTERED SHALL BE LOCATED BY DEPTH AND TIES AND SHOWN BY THE CONTRACTOR ON HIS "AS BUILT" DRAWINGS. HAND EXCAVATION SHALL BE DONE WHEREVER UNDERGROUND UTILITIES ARE SHOWN OR ANTICIPATED. THE CONTRACTOR SHALL CONTACT DIG SAFE AND THE APPROPRIATE AUTHORITIES PRIOR TO ANY CONSTRUCTION IN ORDER TO VERIFY EXISTING CONDITIONS AND UTILITY LOCATIONS.
7. EXISTING CONDITIONS BASE MAP WAS DEVELOPED FROM A SURVEY PERFORMED IN FEBRUARY 2024.
8. CONTRACTOR IS RESPONSIBLE FOR THE PERMITS AND ASSOCIATED FEES, INCLUDING LOCAL BUILDING PERMITS, ELECTRICAL PERMIT, NHDOT UTILITY EXCAVATION PERMIT, ELECTRICAL SERVICE (TEMPORARY AND PERMANENT) AND TELEPHONE SERVICE.

WELL NOTES

1. GRW-1 IS REPORTED ON THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENT SERVICES (NHDES) ONESTOP DATABASE AS BEING A 17-FOOT DEEP OVERBURDEN WELL WITH A REPORTED YIELD OF 31.5 GALLONS PER MINUTE(GPM) AND A PERMITTED PRODUCTION VOLUME (PPV) OF 45,360 GALLONS PER DAY (GPD). THE OPERATOR NOTED THE WELL CURRENTLY IS PUMPED AT 21 GPM.

2. THE NEW WELL, OW-1, IS CAPABLE OF A SUSTAINABLE PUMPING RATE OF 10 GALLONS PER MINUTE (GPM) OR 14,400 GALLONS PER DAY (GPD). OW-1 WILL BE USED TO SUPPLEMENT THE SUPPLY FROM GRW-1. WELL IS APPROXIMATELY 107 FEET DEEP.

WATER SYSTEMS NOTES

1. INTERIOR PIPING SHALL BE SCHEDULE 80 PVC WITH SOLVENT WELD JOINTING, EXCEPT AS OTHERWISE NOTED.
2. THE INTERNAL PLUMBING INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING:
   - 1-1/4 INCH PIPING FROM HYDRO TANKS WITH BALL VALVE AND UNION.
   - 2 INCH PIPING FROM BOOSTER PUMP(S) WITH BALL VALVE AND UNION.
   - ALL 1-1/4 INCH PIPING TO TIE INTO 2 INCH PIPING.
   - ISOLATION BALL VALVES FOR ALL MISCELLANEOUS ITEMS INCLUDING PRESSURE GAUGE(S), PRESSURE SENSOR(S), HOSE BIB(S), SAMPLE TAP(S), QUICK CONNECT COUPLING(S), CHEMICAL INJECTION PORT(S), ETC.
   - PROVIDE UNIONS AS APPROPRIATE TO ALLOW FOR EASE OF ANY FUTURE REPLUMBING/MODIFICATION OF PIPING SYSTEM.
   - PROVIDE ALL TEES, ELBOWS, REDUCERS, ETC. AS FOUND TO BE NEEDED.
   - ISOLATION BALL VALVES ARE TO BE INSTALLED ON THE INLET AND OUTLET PIPING AS THEY ENTER/EXIT BUILDING.
   - A QUICK CLOSE CHECK VALVE IS TO BE INSTALLED AFTER ISOLATION BALL VALVE ON PIPE FROM EXISTING WELLS.
   - A PRESSURE RELIEF VALVE RATED AT 100 PSI SHALL BE PROVIDED.
   - INSTALL SAMPLE TAP VALVES ON THE TWO RAW WATER WELL LINES AND ON THE FINISHED WATER TO DISTRIBUTION, AND AS NOTED ON PLAN.
   - INSTALL SAMPLE TAP VALVES BETWEEN ALL TREATMENT TRAIN VESSELS.
   - INSTALL PVC CONDUIT FOR PROPANE LINES FROM TANK TO GENERATOR AND BUILDING.
   - INSTALL BYPASS PIPE WITH BALL VALVE SHUTOFF FOR ALL TREATMENT UNITS IN ORDER TO TAKE UNIT OFFLINE FOR MAINTENANCE OR REPLACEMENT.
3. PROVIDE ALL OTHER PLUMBING WORK AS NEEDED TO MEET THE DESIGN INTENT

4. ALL PLUMBING TO BE IN COMPLIANCE WITH STATE OF NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES, PART ENV-DW 405 DESIGN STANDARDS FOR SMALL COMMUNITY.

WATER SYSTEM DESIGN CRITERIA

1. **WELL CAPACITY:**
GRW 1 (SHALLOW WELL) - 21 GALLONS PER MINUTE (GPM)
GRW 2 (EMERGENCY WELL) - 10 GPM
ESTIMATED WELL YIELD - 31 GPM
WELL LONG TERM YIELD = 10 GPM (LARGEST WELL OUT OF SERVICE)
2. **DESIGN FLOWS:**
BASED ON WATER METER READINGS. THE AVERAGE DAILY FLOW IS APPROXIMATELY 3,600 GPD. PER NHDES GUIDANCE, A FACTOR OF 2 SHOULD BE USED IF WEEKLY READINGS ARE AVAILABLE, AND 3 IF MONTHLY READINGS ARE AVAILABLE, USE A FACTOR OF 2.
DESIGN FLOW = 3,600 GPD X 2 = 7,200 GPD, 5 GPM (24 HR)
2.1. **PEAK FLOW (PF)**:
PF = 10 X DESIGN FLOW = 10 X 5 GPM = 50 GPM
3. STORAGE TANK SIZING:
3.1. THE DESIGN FLOW IS 7,200 GPD, 5 GPM
THE WELL YIELD IS 10 GPM WITH LARGEST WELL OFFLINE
10 GPM/5 GPM = 2 GREATER THAN 1.5, 50% OF DESIGN FLOW
USE 50% DESIGN FLOW = 3,600 GALLONS
4. BOOSTER PUMP SIZING
4.1. PEAK FLOW = 50 GPM
4.2. TOTAL DYNAMIC HEAD (TDH) = 60 PSI = 140 FEET
4.3. PROVIDE 2 BOOSTER PUMPS EACH PROVIDING 50 GPM AT 140 FEET TDH, GOULDS MODEL 10SV-03, 3.0HP, WITH VFD CONTROL.

FOR BIDDING PUROPOSES
NOT FOR CONSTRUCTION

DATE OF PRINT
MAY 27 2024
HORIZONS ENGINEERING

LEE F. CARROLL No. 7029 — STATE OF NEW HAMPSHIRE — 5/31/2024

ELECTRICAL DESIGN BY:
Lee F. Carroll, PE
Electrical Consultants
1 Madison Ave P.O. Box F
Gorham, NH 03581-3090
603-466-5065
lcarroll@ne.rr.com

horizons Engineering
Civil and Structural Engineering
Land Surveying and Environmental Consulting
MAINE • NEW HAMPSHIRE • VERMONT
www.horizonsengineering.com

SOUTH MAIN STREET WATER DISTRICT
PUMP STATION UPGRADES
WATER STREET, WARREN, NEW HAMPSHIRE

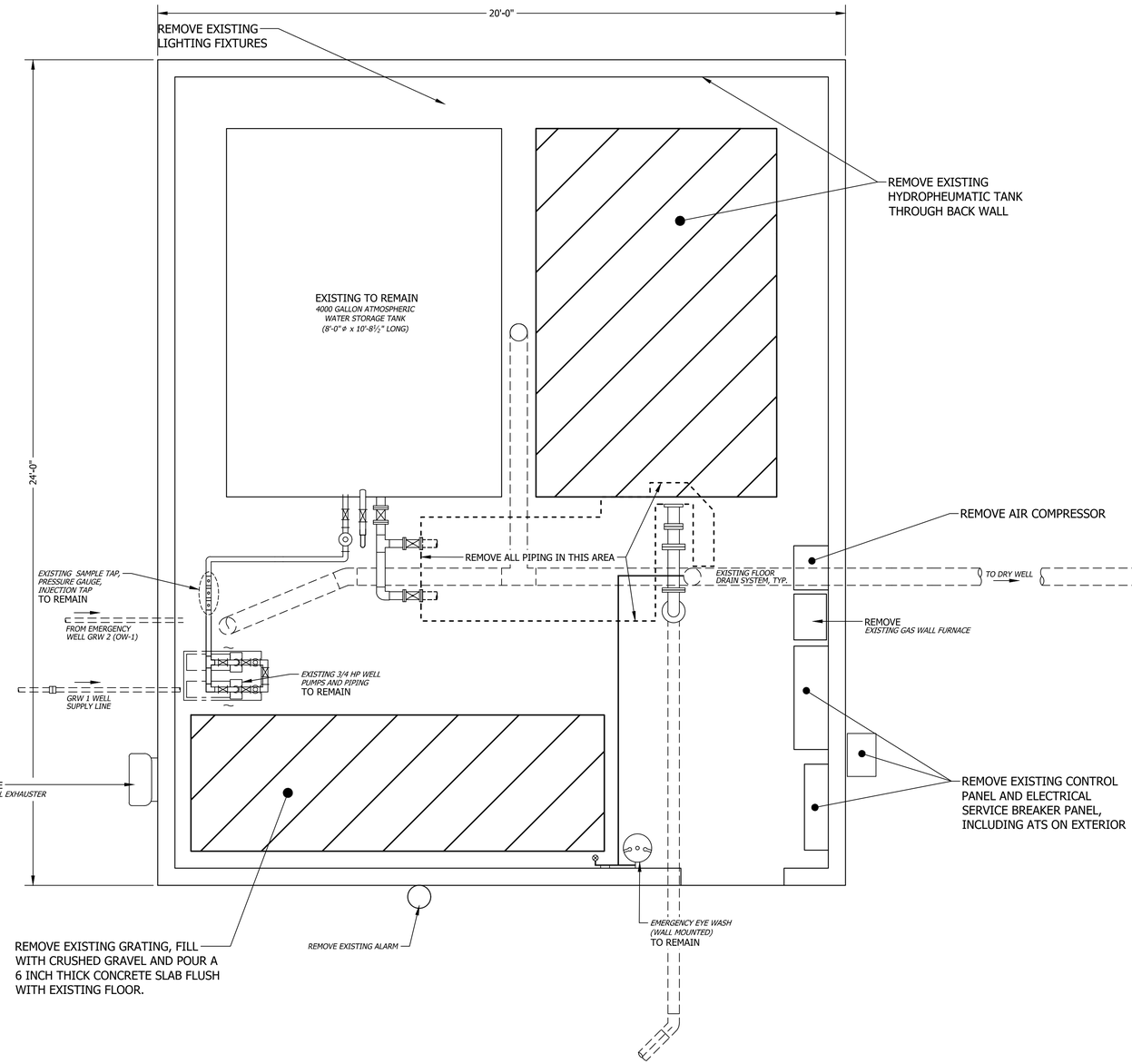
SITE PLAN

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

STATE OF NEW HAMPSHIRE — DEVAN M. CURRIER — No. 16736 — LICENSED PROFESSIONAL ENGINEER

DATE: MAY 2024	PROJECT #: 220365
ENGIN'D BY: DMC	DRAWN BY: KRP
CHECK'D BY: DMC	ARCHIVE #: H-5705

SHEET 1



EXISTING PUMP STATION DEMO PLAN

SCALE: ½" = 1'-0"

DEMOLITION NOTES:

1. DEMOLITION TO BE COORDINATED WITH OWNER PRIOR TO THE START OF WORK. CONTRACTOR TO PROVIDE 72 HOUR NOTICE PRIOR TO ANY SCHEDULED UTILITY DISRUPTION. CONTRACTOR IS RESPONSIBLE FOR PROVIDING TEMPORARY WATER SERVICE DURING THE WORK UNTIL THE NEW SYSTEM IS OPERATIONAL.
2. EQUIPMENT NOTED TO BE REMOVED WILL BE REMOVED AND DISPOSED OF OFF SITE IN A LEGAL MANNER.
3. REFER TO PROJECT SPECIFICATION 02 41 19 SELECTIVE DEMOLITION FOR ADDITIONAL REQUIREMENTS.

FOR BIDDING PUROPOSES
NOT FOR CONSTRUCTION

DATE OF PRINT
MAY 27 2024
HORIZONS ENGINEERING

horizons Engineering
Civil and Structural Engineering
Land Surveying and Environmental Consulting
MAINE • NEW HAMPSHIRE • VERMONT
www.horizonsengineering.com

SOUTH MAIN STREET
WATER DISTRICT
PUMP STATION UPGRADES
WATER STREET, WARREN, NEW HAMPSHIRE

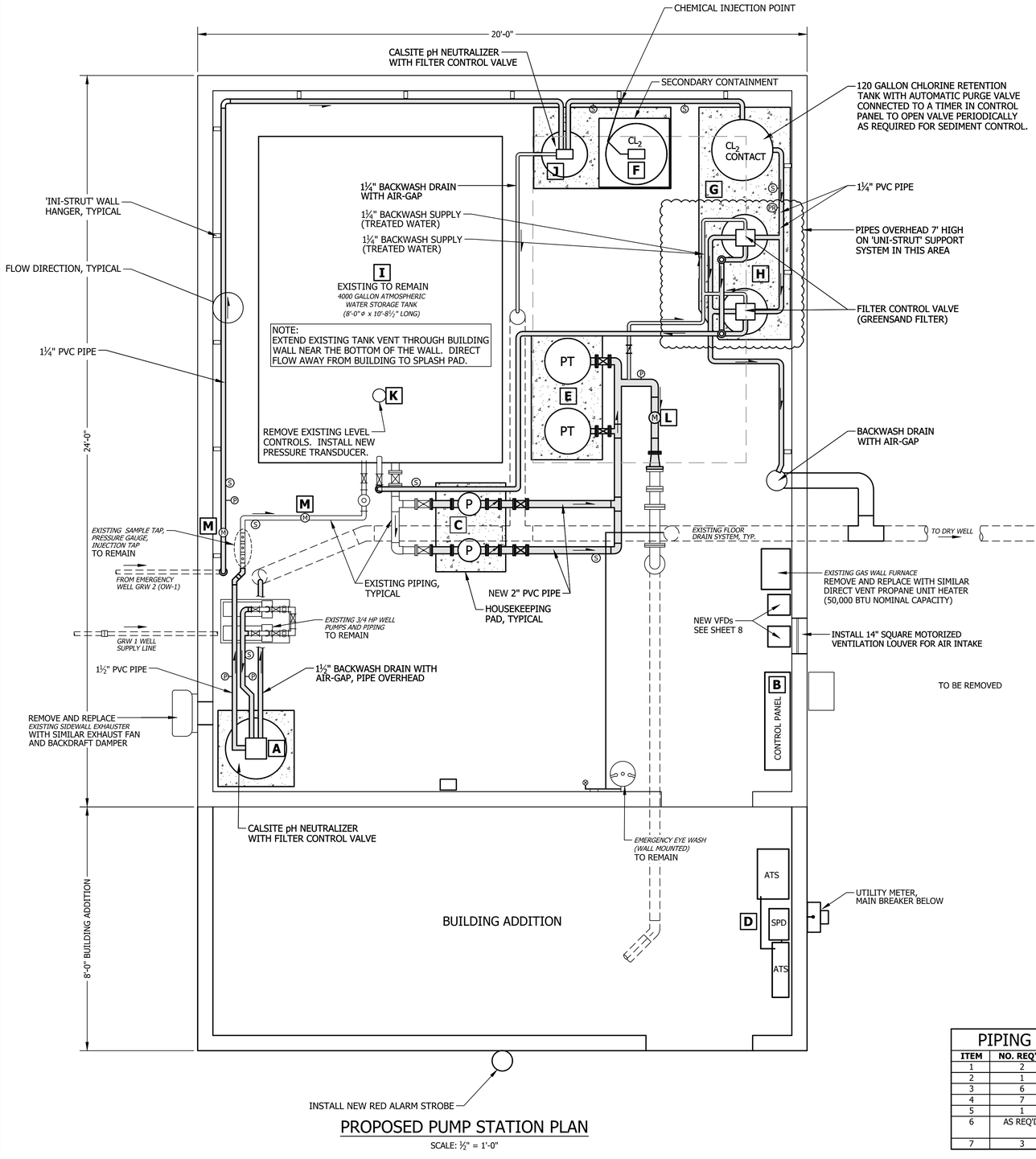
PUMP HOUSE IMPROVEMENTS PLAN

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

STATE OF NEW HAMPSHIRE
DEVAN M. CURRIER
No. 16736
LICENSED PROFESSIONAL ENGINEER

DATE:	PROJECT #:
MAY 2024	220365
ENGIN'D BY:	DRAWN BY:
DMC	KRP
CHECK'D BY:	ARCHIVE #:
DMC	H-5705

SHEET 2



PROPOSED PUMP STATION PLAN

SCALE: ½" = 1'-0"

SEQUENCE OF OPERATION FOR PUMP HOUSE CONTROLS

1. WELL PUMPS: THE SOUTH MAIN STREET PUMP HOUSE WILL BE CONNECTED TO WELL BRW-1 AND WELL OW-1. WELL BRW-1 IS PUMPED USING AN EXISTING SUCTION LIFT PUMP WITHIN THE PUMP HOUSE WHILE WELL OW-1 IS PUMPED USING A SUBMERSIBLE WELL PUMP. THE WELLS WILL BE CONTROLLED BASED ON THE LEVEL IN THE EXISTING 4000-GALLON ATMOSPHERIC STORAGE TANK. A NEW PRESSURE TRANSDUCER WILL PROVIDE THE TANK LEVEL TO A CONTROLLER THAT WILL START AND STOP THE TWO WELL PUMPS BASED ON PROGRAMMED SETPOINTS. THE OPERATOR WILL HAVE THE OPTION AS TO WHICH WELL IS IN USE, OR IF BOTH ARE IN USE, USING H-O-A PUMP CONTROLS. REDUNDANT HIGH AND LOW LEVEL FLOAT SWITCHES ARE TO BE INSTALLED. EITHER CONDITION WILL INITIATE AN ALARM THAT WILL CAUSE A RED ALARM LIGHT TO COME ON THE OUTSIDE OF THE BUILDING, ALARM WILL REQUIRE MANUAL RESET BY THE OPERATOR.
2. BOOSTER PUMPS: NEW VERTICAL TURBINE BOOSTER PUMPS ARE TO BE INSTALLED AND CONTROLLED BY A VFD CONTROLLER IN ORDER TO MAINTAIN 50-60 PSI WATER PRESSURE IN THE DISTRIBUTION SYSTEM (CONSTANT PRESSURE SYSTEM). CONTROLS WILL HAVE H-O-A PUMP CONTROLS AND REPORT STANDARD PUMP ALARMS TO THE CONTROL PANEL, ALARMS WILL BE RECORDED AND CAUSE THE STATION TO GO "INTO ALARM" WITH THE OUTSIDE LIGHT TURNING ON.
3. WATER METERS: THREE WATER METERS ARE TO BE INSTALLED (ONE METER ON EACH WELL SUPPLY AND ONE METER ON THE DISTRIBUTION SYSTEM) WITH ALL METERS REPORTING TO THE CONTROL PANEL, FLOW RATE WILL BE DISPLAYED AND A TOTALIZER WILL KEEP RECORD OF THE TOTAL FLOW FOR EACH OF THE METERS.

EXISTING DRY WELL TO REMAIN

BACKWASH RATE FOR LARGEST FILTER IS APPROXIMATELY 40 GPM FOR 10 MINUTES = 400 GALLONS TO DRY WELL. SOILS IN THE AREA WELL DRAINED SOILS AND GRAVEL. EXISTING DRY WELL IS ACCESSIBLE FOR CLEANING AND HAS A VOLUME OF APPROXIMATELY 800 GALLONS WITH 2 FEET OF CRUSHED ROCK AROUND DRY WELL FOR ADDITIONAL VOLUME.

PUMP HOUSE MODIFICATION NOTES

1. REMOVE AND REPLACE 2 EXISTING BOOSTER PUMPS WITH GOULDS 10SV-03, 3 STAGE VERTICAL, NON-SELF PRIMING, IN-LINE, CENTRIFUGAL PUMPS, OR APPROVED EQUAL. IMPELLERS TO BE STAINLESS STEEL, PUMP HEAD AND BASE TO BE CAST IRON. AC MOTOR TO BE 3 HP, 3 PHASE, OPERATING AT 3450 RPM. CONTRACTOR TO SUBMIT PUMP SELECTED FOR REVIEW AND APPROVAL OF THE ENGINEER.
2. WORK INCLUDES ALL PIPING, VALVES, UNIONS, SAMPLING POINTS, PRESSURE GAUGES, FITTINGS, AND MISCELLANEOUS MATERIALS FOR A COMPLETE INSTALLATION THAT MEETS THE INTENT OF THE PROJECT DOCUMENTS.
3. REMOVE AND REPLACE EXISTING CONTROL PANEL WITH NEW UL LISTED CONTROL PANEL. THE CONTROLS WILL PROVIDE THE CONTROL OF THE TWO BOOSTER PUMPS, TO INCLUDE H-O-A PUMP CONTROLS, NEMA 12 ENCLOSURE WITH STAINLESS STEEL HARDWARE, 208V, 120V 3 PHASE POWER, VFD FOR EACH BOOSTER PUMP, AND INDIVIDUAL THROUGH DOOR DISCONNECTS FOR EACH PUMP. PUMPS WILL OPERATE IN A LEAD LAG MANNER WITH ALTERNATION AFTER EACH PUMPING CYCLE. PANEL SHOP DRAWINGS TO BE SUBMITTED FOR APPROVAL.
4. THE INTENT OF THE WORK IS FOR THE CONTRACTOR TO PROVIDE A COMPLETE IRON AND MANGANESE TREATMENT SYSTEM (DESIGN FLOW 10 GPM) USING CALSITE NEUTRALIZER, CHLORINE ADDITION, GREENSAND PLUS PRESSURE FILTERS IN PARALLEL, PIPING, VALVES, PRESSURE GAUGES, FLOW MEASUREMENT DEVICES, AND ANCILLARY MATERIALS AND EQUIPMENT AS REQUIRED TO PROVIDE A FUNCTIONAL SYSTEM THAT MEETS THE REQUIREMENT AS SPECIFIED HEREIN. IRON AND MANGANESE TREATMENT SYSTEM SHALL BE A COMPLETE TREATMENT SYSTEM, MEET STATE WATER QUALITY STANDARDS, AND MEET THE DESIGN INTENT.
5. THE SYSTEM SHALL BE SUPPLIED BY A VENDOR WORKING IN THE WATER TREATMENT INDUSTRY FOR A MINIMUM OF 5 YEARS THAT CAN DEMONSTRATE SUCCESSFUL COMPLETION OF PROJECTS OF A SIMILAR SCOPE. COMPLETE SHOP DRAWINGS, EQUIPMENT AND MATERIAL SPECIFICATION, AND PROCESS DESCRIPTION SHALL BE SUBMITTED FOR APPROVAL BY THE ENGINEER. CONTRACTOR TO PROVIDE COMPLETE SUBMITTALS ON ALL PROCESS EQUIPMENT, PIPING, VALVES, WATER METERS, AND CHEMICAL PUMPS FOR REVIEW AND APPROVAL BY THE OWNER'S ENGINEER.
6. INSTALL NEW IRON AND MANGANESE TREATMENT SYSTEM IN THE EXISTING PUMP HOUSE. TREATMENT SYSTEM TO INCLUDE 2 - 18" DIAMETER GREENSAND FILTERS IN PARALLEL, CHLORINE INJECTION ADDITION, AND BACKWASH DRAIN PIPING WITH AIR GAP. REFER TO DRAWING FOR GENERAL LAYOUT SCHEMATIC OF EQUIPMENT AND PIPING.
7. FILTERS TO BE PENTAIR COMPOSITE PRESSURE VESSELS, OR APPROVED EQUAL. TO INCLUDE MAXIMUM OPERATING PRESSURE 150 PSI, POLYETHYLENE INNER SHELL, AND TESTED AND CERTIFIED NSF STD. 61.
8. PRESSURE FILTER CONTROL VALVE FOR EACH FILTER, CLACK WATER SPECIALIST CONTROL VALVE MATCHED TO THE APPLICATION, OR APPROVED EQUAL, 1 1/2-INCH TOP MOUNT, EPOXY COATED LEAD-FREE, BRASS VALVE BODY, BUILT IN FLOW METER, SOLID STATE MICROPROCESSOR, FRONT PANEL DISPLAY, AND FULLY PROGRAMMABLE, OR APPROVED EQUAL.
9. CHEMICAL PUMPS FOR HYPOCHLORITE INJECTION USE FLOW PACED STENNER PUMPS, OR APPROVED EQUAL.
10. CHEMICAL TANKS TO BE STENNER POLYETHYLENE, 50-GALLON TANK, OR APPROVED EQUAL AND COMPATIBLE WITH PUMP SELECTED.
11. FILTER MEDIA TO BE GREENSAND PLUS WITH 12" ANTHRACITE TOP LAYER, OR AN APPROVED EQUAL.
12. PROCESS PIPING TO BE 1¼-INCH AND 2-INCH PVC, SCHEDULE 80, GLUED JOINTS.

LEGEND

- NEW PIPING (SHADED)
- EXISTING PIPING (NOT SHADED)
- (S) SAMPLE TAP
- (M) FLOW METER
- (PRV) PRESSURE RELIEF VALVE
- (P) PRESSURE GAUGE
- (P) PUMP
- PT PRESSURE TANK
- VALVE
- CHECK VALVE

EQUIPMENT SCHEDULE

ITEM	# REQ'D	DESCRIPTION
A	1	30"ø x 65" HIGH COMP 4"TW/ BASE - CALCITE NEUTRALIZER TANK. TANK TO BE A PENTAIR COMPOSITE PRESSURE VESSEL, REINFORCED FIBERGLASS CONSTRUCTION, DESIGNED FOR COMMERCIAL SOFTENING AND FILTRATION, OR APPROVED EQUAL.
B	1	BOOSTER PUMP CONTROL PANEL WITH ALARM COMMUNICATION BY REPCO, INC., OR APPROVED EQUAL.
C	2	CONSTANT PRESSURE, VERTICAL TURBINE BOOSTER PUMP SYSTEM. BOOSTER PUMPS SHALL BE GOULDS 10SV-03 RATED FOR 140 TDH AT 50 GPM, 3 HP, 3 PHASE, OR APPROVED EQUAL.
D	1	ELECTRICAL BREAKER PANEL, REFER TO ELECTRICAL DRAWINGS AND SPECIFICATIONS.
E	2	WX-255WELL-XTROL, MANUFACTURED BY AMTROL, PRESSURE TANKS, OR APPROVED EQUAL.
F	1	CHEMICAL PUMPS FOR HYPOCHLORITE INJECTION. USE FLOW PACED STENNER PUMPS, OR APPROVED EQUAL. CONTRACTOR TO PROVIDE A SPARE CHEMICAL PUMP TO THE OWNER.
G		CHLORINE CONTACT TANK WITH INFLOW AND OUTFLOW AT THE TOP AND A DRAIN AT THE BOTTOM.
H	2	18"ø x 65" HIGH COMP 4"TW/ BASE GREENSAND FILTERS WITH AUTOMATIC CONTROL VALVES BY CLACK CORP. TANKS TO BE PENTAIR COMPOSITE PRESSURE VESSELS, REINFORCED FIBERGLASS CONSTRUCTION, DESIGNED FOR COMMERCIAL SOFTENING AND FILTRATION, TO INCLUDE MAXIMUM OPERATING PRESSURE 150 PSI, POLYETHYLENE INNER SHELL, AND TESTED AND CERTIFIED NSF STD. 61, OR APPROVED EQUAL.
I	1	EXISTING 4000 GALLON STEEL TANK TO REMAIN
J	1	18"ø x 65" HIGH COMP 4"TW/ BASE - CALCITE NEUTRALIZER TANK. TANK TO BE A PENTAIR COMPOSITE PRESSURE VESSEL, REINFORCED FIBERGLASS CONSTRUCTION, DESIGNED FOR COMMERCIAL SOFTENING AND FILTRATION, OR APPROVED EQUAL.
K	1	PRESSURE TRANSDUCER FOR TANK LEVEL CONTROL SHALL BE ASCROFT GC51 SERIES, OR APPROVED EQUAL.
L	1	ELECTROMAGNETIC FLOW METER TO BE BADGER MOD MAG M1000 WITH 4-20 MA OUTPUT, OR APPROVED EQUAL.
M	2	WELL LINE WATER METERS TO BE NUTATING DISC TYPE MEETING AWWA C700 STANDARDS WITH 4-20 MA OUTPUT TO CONTROL PANEL

PIPING AND VALVE SCHEDULE

ITEM	NO. REQ'D.	DESCRIPTION
1	2	WATER METER
2	1	MAG METER
3	6	PRESSURE GAUGE
4	7	SAMPLING PORT
5	1	CHEMICAL INJECTION PORT
6	AS REQ'D.	VALVES, AS SHOWN AND REQ'D PER WATER SYSTEM NOTES
7	3	CHECK VALVES

FOR BIDDING PUROPOSES NOT FOR CONSTRUCTION

DATE OF PRINT
MAY 27 2024
HORIZONS ENGINEERING

horizons Engineering
Civil and Structural Engineering
Land Surveying and Environmental Consulting
MAINE • NEW HAMPSHIRE • VERMONT
www.horizonsengineering.com

SOUTH MAIN STREET WATER DISTRICT

PUMP STATION UPGRADES

WATER STREET, WARREN, NEW HAMPSHIRE

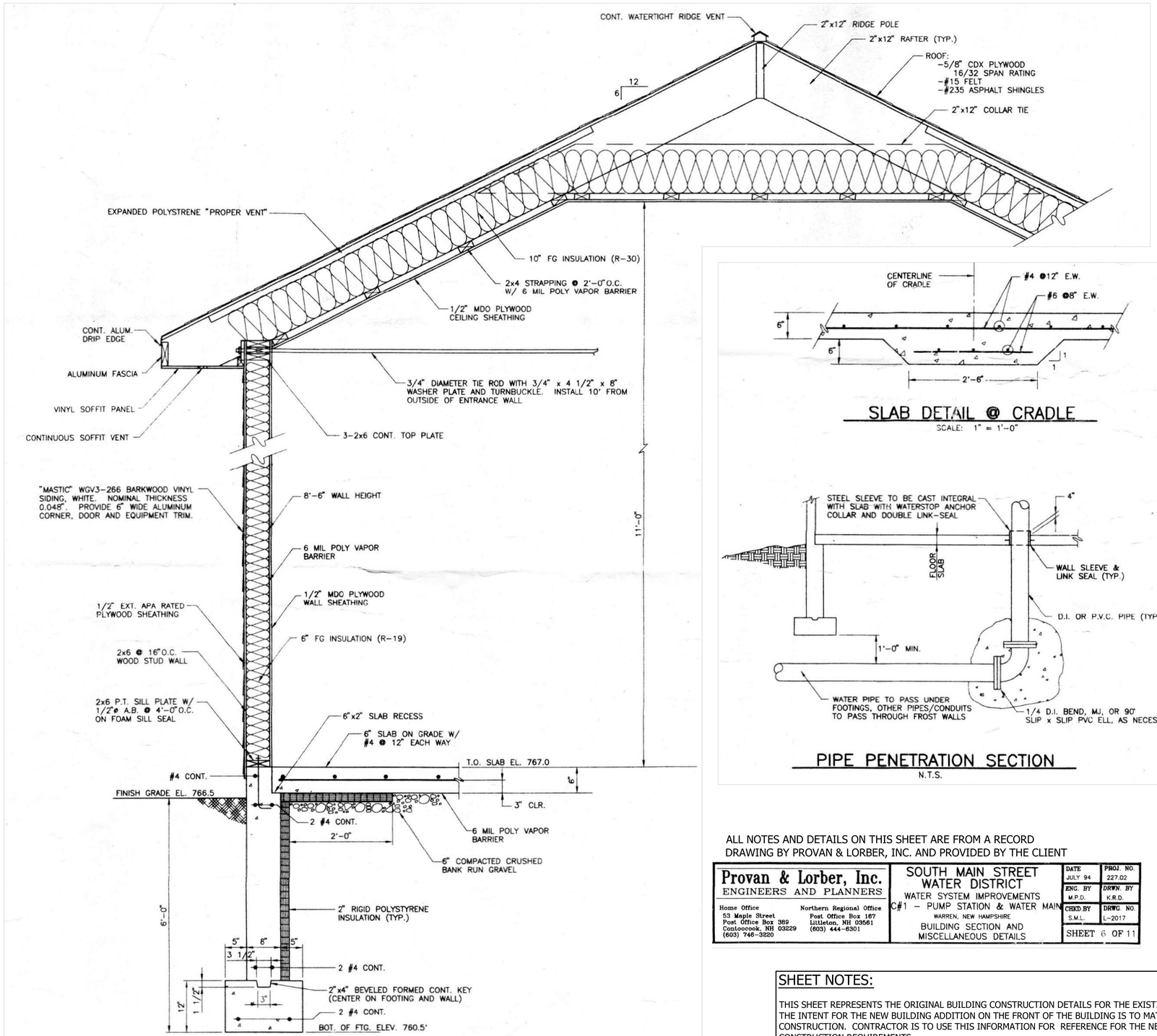
PUMP HOUSE IMPROVEMENTS PLAN

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

STATE OF NEW HAMPSHIRE — DEVAN M. CURRIER — No. 16736 — LICENSED PROFESSIONAL ENGINEER

DATE: MAY 2024	PROJECT #: 220365
ENGIN'D BY: DMC	DRAWN BY: KRP
CHECK'D BY: DMC	ARCHIVE #: H-5705

SHEET 3

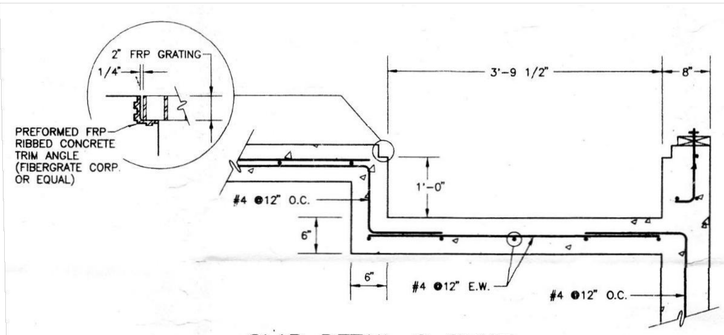


SOUTH MAIN STREET
WATER DISTRICT
P.O. BOX 35
WARREN NH 03279

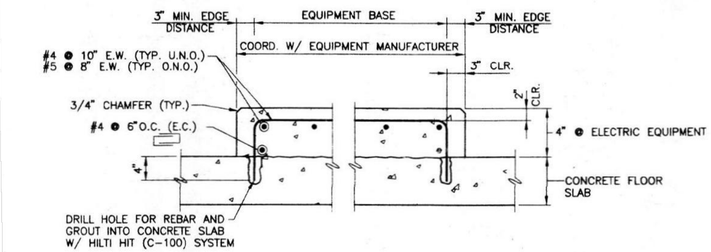
TYPICAL BUILDING SECTION
SCALE: 1" = 1'-0"

SLAB DETAIL @ CRADLE
SCALE: 1" = 1'-0"

PIPE PENETRATION SECTION
N.T.S.



SLAB DETAIL @ SUMP
SCALE: 1" = 1'-0"



TYP. INTERIOR EQUIPMENT PAD
NTS

ALL NOTES AND DETAILS ON THIS SHEET ARE FROM A RECORD DRAWING BY PROVAN & LORBER, INC. AND PROVIDED BY THE CLIENT

Provan & Lorber, Inc.
ENGINEERS AND PLANNERS

Home Office
53 Maple Street
Post Office Box 389
Contoocook, NH 03229
(603) 746-3220

Northern Regional Office
Post Office Box 167
Littleton, NH 03561
(603) 444-6301

SOUTH MAIN STREET
WATER DISTRICT
WATER SYSTEM IMPROVEMENTS
C#1 – PUMP STATION & WATER MAIN
WARREN, NEW HAMPSHIRE
BUILDING SECTION AND
MISCELLANEOUS DETAILS

DATE	PROJ. NO.
JULY 94	227.02
ENG. BY	DRWN. BY
M.P.D.	K.R.D.
CHKD.BY	DRWG. NO.
S.M.L.	L-2017
SHEET 6 OF 11	

SHEET NOTES:

THIS SHEET REPRESENTS THE ORIGINAL BUILDING CONSTRUCTION DETAILS FOR THE EXISTING PUMP HOUSE. THE INTENT FOR THE NEW BUILDING ADDITION ON THE FRONT OF THE BUILDING IS TO MATCH THE EXISTING CONSTRUCTION. CONTRACTOR IS TO USE THIS INFORMATION FOR REFERENCE FOR THE NEW ADDITION CONSTRUCTION REQUIREMENTS.

THE RIDGE LINE AND EAVES ARE TO MATCH THE EXISTING ROOF LINE, INCLUDING THE ROOF OVERHANG. IN OTHER WORDS, THE NEW ROOF WILL BE AN EXTENSION OF THE EXISTING ROOF.

FOUNDATION IS TO MATCH TTHE DETAILS ON THIS SHEET WITH THE NEW FOUNDATION WALL KEYED INTO THE EXISTING USING #6 DOWELS DRILLED AND EPOXIED INTO THE EXISTING FOUNDATION. MINIMUM2 DOWELS PER WALL IN TOP 1/3 OF WALL.

FOR BIDDING PUROPOSES
NOT FOR CONSTRUCTION

DATE OF PRINT
MAY 27 2024
HORIZONS ENGINEERING

horizons Engineering
Civil and Structural Engineering
Land Surveying and Environmental Consulting
MAINE • NEW HAMPSHIRE • VERMONT
www.horizonsengineering.com

SOUTH MAIN STREET
WATER DISTRICT
PUMP STATION UPGRADES
WATER STREET, WARREN, NEW HAMPSHIRE

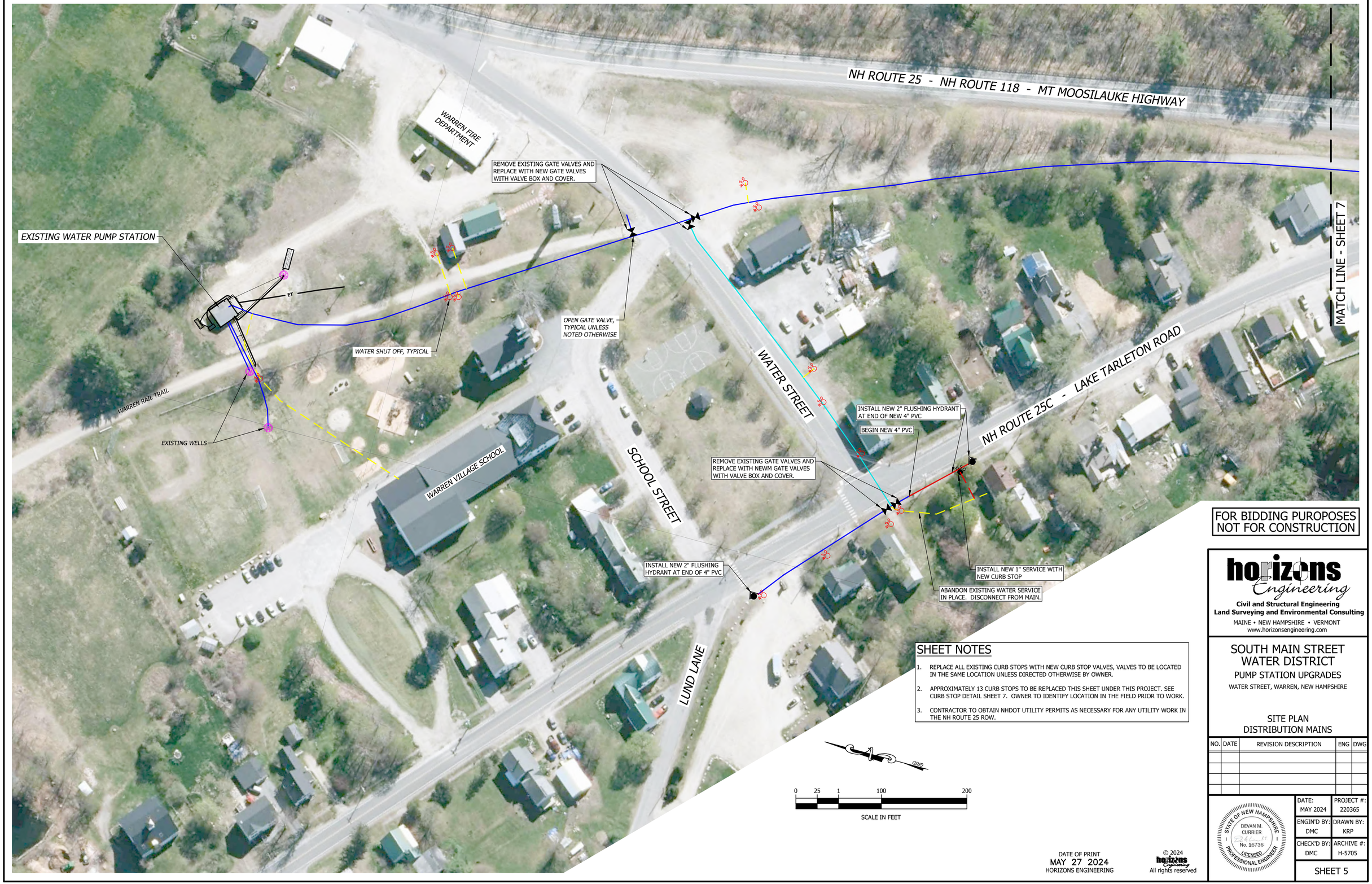
EXISTING BUILDING SECTION
FOR REFERENCE

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

STATE OF NEW HAMPSHIRE
DEVAN M. CURRIER
No. 16736
LICENSED PROFESSIONAL ENGINEER

DATE:	PROJECT #:
MAY 2024	220365
ENGIN'D BY:	DRAWN BY:
DMC	KRP
CHECK'D BY:	ARCHIVE #:
DMC	H-5705

SHEET 4



FOR BIDDING PUROPOSES
NOT FOR CONSTRUCTION

SHEET NOTES

1. REPLACE ALL EXISTING CURB STOPS WITH NEW CURB STOP VALVES, VALVES TO BE LOCATED IN THE SAME LOCATION UNLESS DIRECTED OTHERWISE BY OWNER.
2. APPROXIMATELY 13 CURB STOPS TO BE REPLACED THIS SHEET UNDER THIS PROJECT. SEE CURB STOP DETAIL SHEET 7. OWNER TO IDENTIFY LOCATION IN THE FIELD PRIOR TO WORK.
3. CONTRACTOR TO OBTAIN NHDOT UTILITY PERMITS AS NECESSARY FOR ANY UTILITY WORK IN THE NH ROUTE 25 ROW.

0 25 1 100 200

SCALE IN FEET

DATE OF PRINT
MAY 27 2024
HORIZONS ENGINEERING

horizons Engineering
Civil and Structural Engineering
Land Surveying and Environmental Consulting
MAINE • NEW HAMPSHIRE • VERMONT
www.horizonsengineering.com

SOUTH MAIN STREET WATER DISTRICT

PUMP STATION UPGRADES

WATER STREET, WARREN, NEW HAMPSHIRE

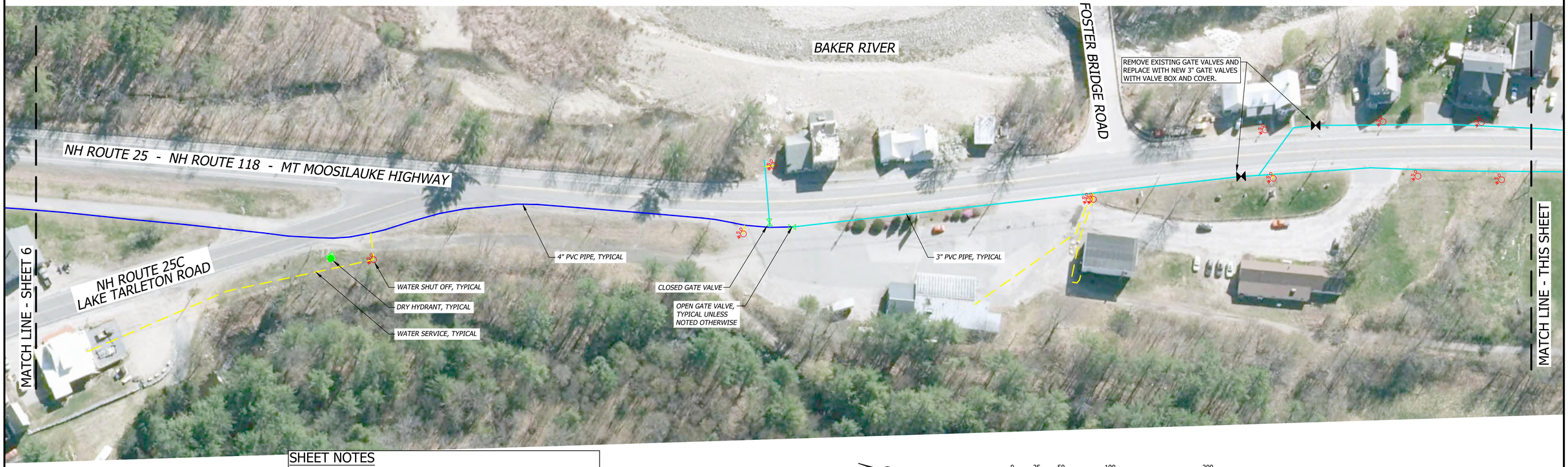
SITE PLAN
DISTRIBUTION MAINS

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

STATE OF NEW HAMPSHIRE
DEVAN M. CURRIER
No. 16736
LICENSED PROFESSIONAL ENGINEER

DATE: MAY 2024	PROJECT #: 220365
ENGIN'D BY: DMC	DRAWN BY: KRP
CHECK'D BY: DMC	ARCHIVE #: H-5705

SHEET 5



SHEET NOTES

1. REPLACE ALL EXISTING CURB STOPS WITH NEW CURB STOP VALVES, VALVES TO BE LOCATED IN THE SAME LOCATION UNLESS DIRECTED OTHERWISE BY OWNER.
2. APPROXIMATELY 36 CURB STOPS TO BE REPLACED THIS SHEET UNDER THIS PROJECT. SEE CURB STOP DETAIL SHEET 7. OWNER TO IDENTIFY LOCATION IN THE FIELD PRIOR TO WORK.
3. CONTRACTOR TO OBTAIN NHDOT UTILITY PERMITS AS NECESSARY FOR ANY UTILITY WORK IN THE NH ROUTE 25 ROW.

0 25 50 100 200

SCALE IN FEET

FOR BIDDING PUROPOSES
NOT FOR CONSTRUCTION

DATE OF PRINT
MAY 27 2024
HORIZONS ENGINEERING

horizons Engineering
Civil and Structural Engineering
Land Surveying and Environmental Consulting
MAINE • NEW HAMPSHIRE • VERMONT
www.horizonsengineering.com

SOUTH MAIN STREET WATER DISTRICT

PUMP STATION UPGRADES

WATER STREET, WARREN, NEW HAMPSHIRE

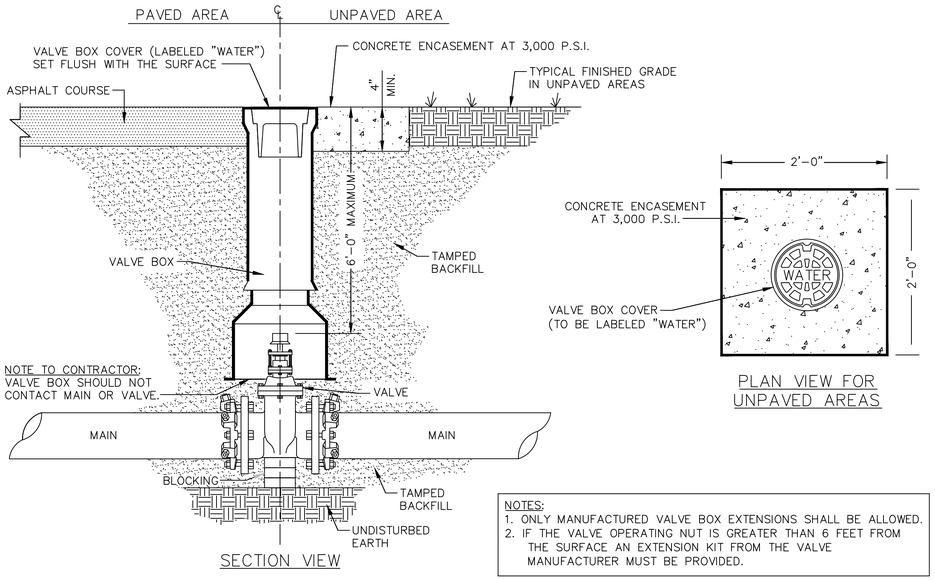
SITE PLAN DISTRIBUTION MAIN

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

STATE OF NEW HAMPSHIRE
DEVAN M. CURRIER
No. 16736
LICENSED PROFESSIONAL ENGINEER

DATE:	PROJECT #:
MAY 2024	220365
ENGIN'D BY:	DRAWN BY:
DMC	KRP
CHECK'D BY:	ARCHIVE #:
DMC	H-5705

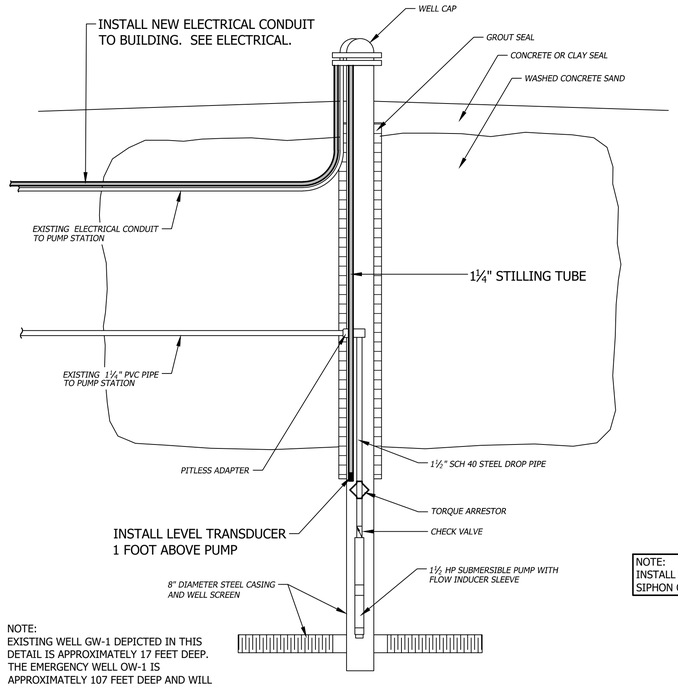
SHEET 6



NOTES:
1. ONLY MANUFACTURED VALVE BOX EXTENSIONS SHALL BE ALLOWED.
2. IF THE VALVE OPERATING NUT IS GREATER THAN 6 FEET FROM THE SURFACE AN EXTENSION KIT FROM THE VALVE MANUFACTURER MUST BE PROVIDED.

STANDARD WATER VALVE BOX INSTALLATION

NOT TO SCALE

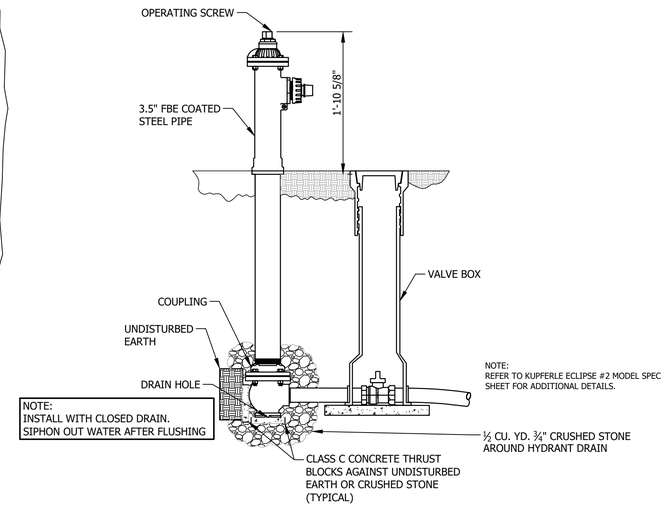


NOTE:
EXISTING WELL GW-1 DEPICTED IN THIS DETAIL IS APPROXIMATELY 17 FEET DEEP. THE EMERGENCY WELL OW-1 IS APPROXIMATELY 107 FEET DEEP AND WILL ALSO REQUIRE A NEW LEVEL SENSOR TO BE INSTALLED.

EXISTING WELL LEVEL SENSOR INSTALATION DETAIL

NOT TO SCALE

(APPLIES TO THE TWO EXISTING WELLS)



KUPFERLE ECLIPSE (OR EQUAL) POST FLUSHING HYDRANT

NOT TO SCALE

STANDARD TRENCH NOTES - WATER

1. ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE SHALL BE REPLACED WITH BEDDING MATERIAL. SEE ALSO NOTE 4.

2. BEDDING: SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM ORGANIC MATTER, CLAY, AND/OR LOAM MEETING ASTM C33 STONE SIZE NO. 67.

100% PASSING	1 INCH SCREEN
90-100% PASSING	¾ INCH SCREEN
20-55% PASSING	⅜ INCH SCREEN
0-10% PASSING	#4 SIEVE
0-5% PASSING	#8 SIEVE

3. SAND BLANKET: CLEAN SAND FREE FROM ORGANIC MATTER, SO GRADED THAT 100% PASSES A ½ INCH SIEVE AND NOT MORE THAN 15% PASSES A #200 SIEVE.

4. SUITABLE MATERIAL: IN ROADS, ROAD SHOULDERS, WALKWAYS, AND TRAVELED WAYS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED FROM THE TRENCH DURING THE COURSE OF CONSTRUCTION, AFTER EXCLUDING DEBRIS, PIECES OF PAVEMENT, ORGANIC MATTER, TOP SOIL, WET OR SOFT MUCK, PEAT OR CLAY, EXCAVATED LEDGE MATERIAL, AND ALL ROCKS OVER SIX INCHES IN LARGEST DIMENSION, OR ANY MATERIAL NOT APPROVED BY THE ENGINEER.

   TRENCH BACKFILL IN CROSS-COUNTRY LOCATIONS SHALL BE SUITABLE MATERIAL AS DESCRIBED ABOVE, EXCEPT THAT TOP SOIL, LOAM, MUCK, OR PEAT MAY BE USED PROVIDED THAT THE COMPLETED CONSTRUCTION WILL BE STABLE AND ACCESS TO THE PIPE FOR MAINTENANCE AND RECONSTRUCTION IS PRESERVED. BACKFILL SHALL BE MOUNDED TO A HEIGHT OF SIX INCHES ABOVE THE ORIGINAL GROUND SURFACE

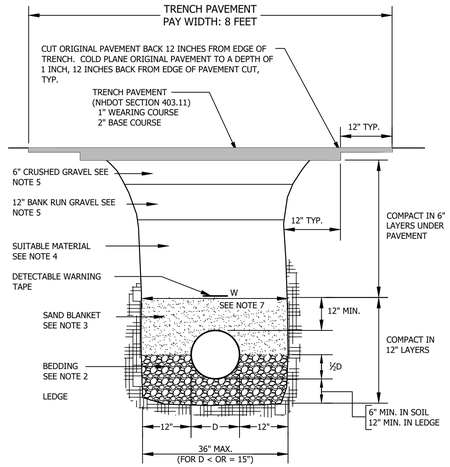
5. BASE COURSE FOR TRENCH REPAIR SHALL MEET THE REQUIREMENTS OF SECTION 300 OF THE LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION OF THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION.

6. SHEETING: ALL TRENCH SUPPORTS SHALL CONFORM TO OSHA STANDARDS. CONTRACTOR IS RESPONSIBLE FOR OSHA COMPLIANCE AND WORKER SAFETY THROUGHOUT CONSTRUCTION.

7. TRENCH DIMENSIONS: W = MAXIMUM ALLOWABLE TRENCH WIDTH MEASURED 12 INCHES ABOVE THE PIPE. FOR PIPES 15 INCHES NOMINAL DIAMETER (D) OR LESS, W SHALL BE NO MORE THAN 36 INCHES; FOR PIPES GREATER THAN 15 INCHES NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS THE PIPE OUTSIDE DIAMETER. W SHALL ALSO BE THE PAYMENT WIDTH FOR LEDGE EXCAVATION AND FOR ORDERED EXCAVATION BELOW GRADE. THE MAXIMUM ALLOWABLE TRENCH PAVEMENT PAYMENT WIDTH SHALL BE 8 FEET CENTERED OVER PIPE.

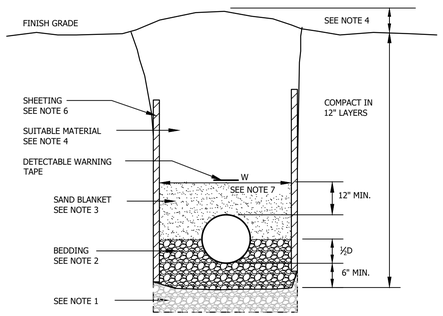
8. WATER/SEWER SEPARATION: WATER MAINS SHALL BE SEPARATED FROM SANITARY SEWER BY A MINIMUM OF 10 FEET HORIZONTALLY AND A MINIMUM OF 18 INCHES VERTICALLY, WITH THE WATER MAIN ABOVE THE SEWER.

9. PIPE COVER:
   COVER OVER WATER SHALL BE 6 FEET MINIMUM IN ALL LOCATIONS.



NOTE:
MINIMUM BEDDING DEPTH AND MAXIMUM PAYMENT LIMIT FOR LEDGE EXCAVATION = ½D (12" MINIMUM)

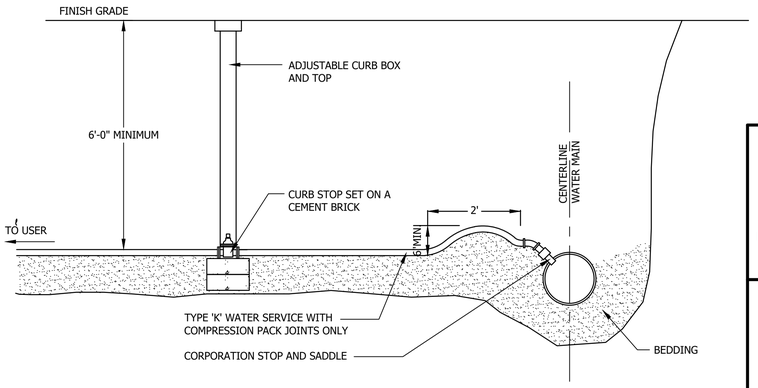
LEDGE/SUB PAVEMENT CONSTRUCTION



EARTH CONSTRUCTION
WITH OR WITHOUT SHEETING

STANDARD TRENCH SECTIONS

NOT TO SCALE



CURB STOP REPLACEMENT DETAIL

NOT TO SCALE

NOTE:

1. OVERALL SERVICE IS SHOWN FOR CLARITY. THE WORK IS TO REPLACE CURB STOPS ONLY.
2. CONTRACTOR TO REMOVE AND REPLACE THE EXISTING CURB STOPS AS INDICATED ON THE DRAWINGS. WORK INCLUDES ALL NECESSARY FITTINGS FOR A PROPER INSTALLATION. EXISTING SERVICE LINE PIPE MATERIALS WILL VARY THROUGHOUT THE AREA OF THE WORK.
3. ALL VALVES AND FITTINGS TO MEET NSF 61 POTABLE WATER STANDARDS.

DATE OF PRINT
MAY 27 2024
HORIZONS ENGINEERING

horizons Engineering
Civil and Structural Engineering
Land Surveying and Environmental Consulting
MAINE • NEW HAMPSHIRE • VERMONT
www.horizonsengineering.com

SOUTH MAIN STREET WATER DISTRICT

PUMP STATION UPGRADES

WATER STREET, WARREN, NEW HAMPSHIRE

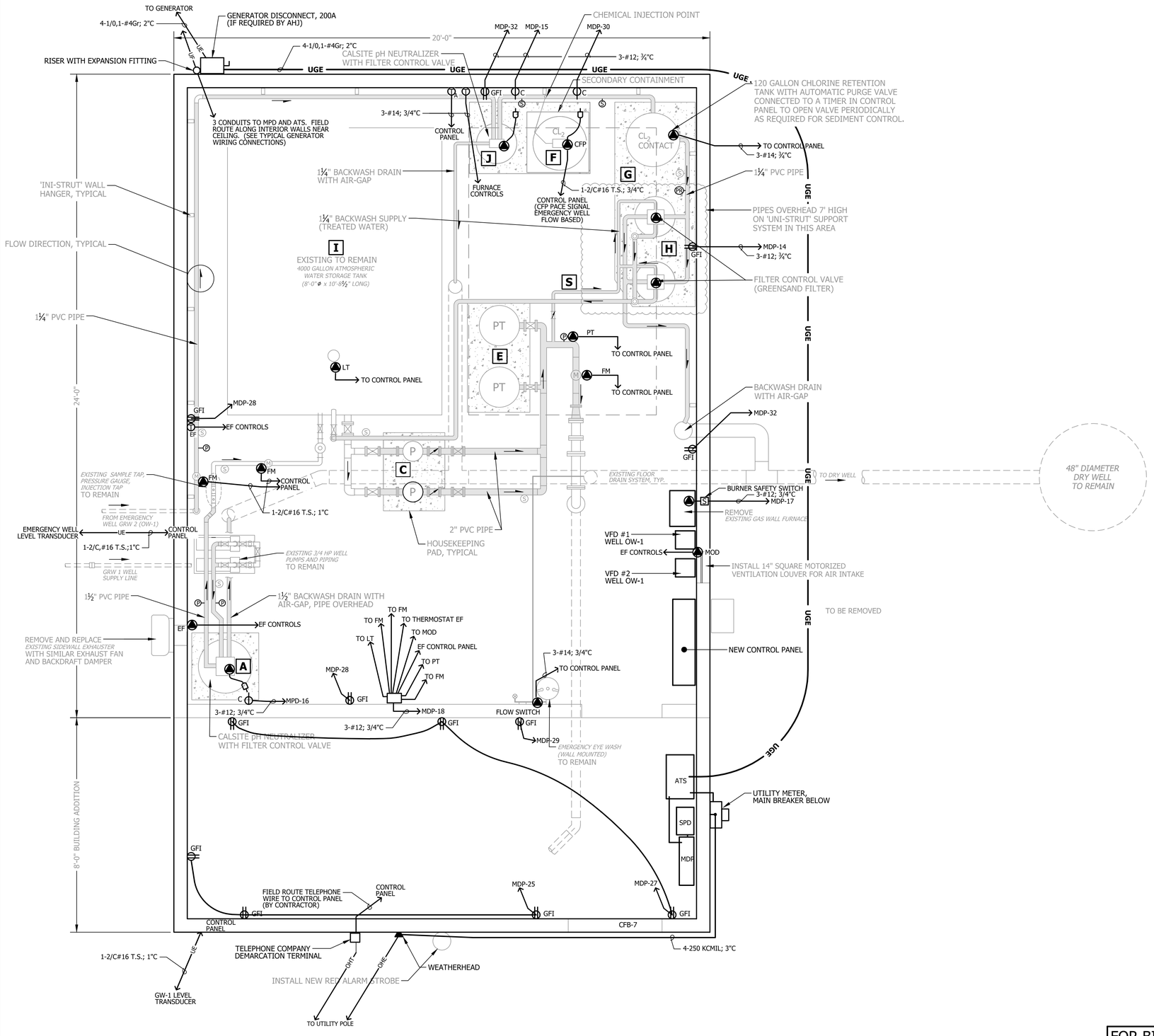
DETAILS

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

STATE OF NEW HAMPSHIRE — DEVAN M. CURRIER — No. 16736 — LICENSED PROFESSIONAL ENGINEER

DATE:	PROJECT #:
MAY 2024	220365
ENGIN'D BY:	DRAWN BY:
DMC	KRP
CHECK'D BY:	ARCHIVE #:
DMC	H-5705

SHEET 7



PROPOSED PUMP STATION PLAN

SCALE: ½" = 1'-0"

LEGEND - ELECTRIC

- A / B — LED LIGHT FIXTURE, LETTER INDICATES TYPE
- LED EMERGENCY LIGHT FIXTURE, LETTERS INDICATE TYPE
- LED EXIT SIGN
- $ — SINGLE POLE, 20A TOGGLE SWITCH, 125-277V; 48" AFF
- PANELBOARD / CONTROL PANEL / EXHAUST FAN CONTROL PANEL
- DUPLEX RECEPTACLE, 20A, 125V; - 36" AFF, OR AS DIRECTED
- SINGLE RECEPTACLE, 20A, 125V: - 36 AFF, OR AS DIRECTED
- DISCONNECT SWITCH OR CIRCUIT BREAKER, AS NOTED
- ½ — MOTOR; NUMBER INDICATES HORSE POWER
- CONNECTION TO FIXED EQUIPMENT
- T — HEATING THERMOSTAT (PROVIDED WITH FURNACE)
- T_A — LOW TEMPERATURE ALARM THERMOSTAT
- T_{EF} — EXHAUST FAN THERMOSTAT
- UTILITY METER
- OHE — OVERHEAD ELECTRICAL
- OHT — OVERHEAD TELEPHONE

AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
ATS	AUTOMATIC TRANSFER SWITCH
GFI	GROUND FAULT INTERRUPTER PROTECTED
WP	WATERPROOF
H&V	HEATING AND VENTILATING
AWG	AMERICAN WIRE GAUGE
AHJ	AUTHORITY HAVING JURISDICTION
VFD	VARIABLE FREQUENCY DRIVE
SPD	SURGE PROTECTION DEVICE
MLO	MAIN LUG ONLY
DISC	DISCONNECT
Gr	GROUND
EF	EXHAUST FAN
C	CORROSION RESISTANT
PLC	PROGRAMMABLE LOGIC CONTROLLER
OHE	OVERHEAD ELECTRIC POWER
OHT	OVERHEAD TELEPHONE
FIXT.	FIXTURE
CFP	CHEMICAL FEED PUMP
O/L	OVERLOAD

ELECTRICAL DESIGN BY:
Lee F. Carroll, PE
Electrical Consultants
1 Madison Ave P.O. Box F
Gorham, NH 03581-3090
603-466-5065
lcarroll@ne.rr.com

horizons Engineering
Civil and Structural Engineering
Land Surveying and Environmental Consulting
MAINE • NEW HAMPSHIRE • VERMONT
www.horizonsengineering.com

SOUTH MAIN STREET WATER DISTRICT

PUMP STATION UPGRADES

WATER STREET, WARREN, NEW HAMPSHIRE

PUMP HOUSE IMPROVEMENTS PLAN ELECTRICAL

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

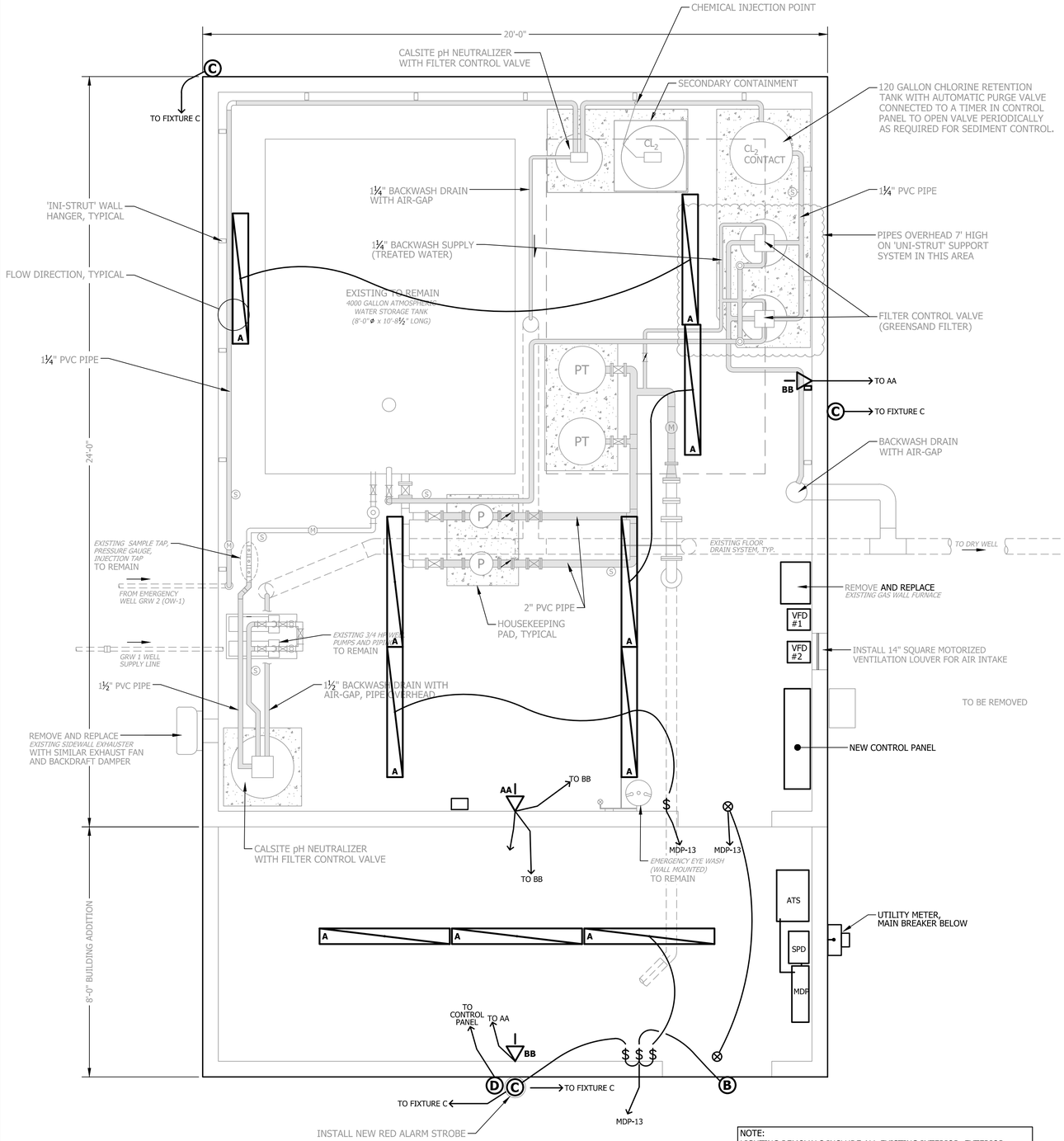
LEE F. CARROLL No. 2928 THE STATE OF NEW HAMPSHIRE REGISTERED PROFESSIONAL ENGINEER
5/27/2024

DATE: MAY 2024	PROJECT #: 220365
ENGIN'D BY: DMC	DRAWN BY: KRP
CHECK'D BY: DMC	ARCHIVE #: H-5705
SHEET 8	

FOR BIDDING PUROPOSES NOT FOR CONSTRUCTION

DATE OF PRINT
MAY 27 2024
HORIZONS ENGINEERING

Z:\proj_2022\220365 South Main Street Water District - Water Systen Improvements\Internal\Civil\Final\220365 Pump Station Plan-2.dwg, elec PmpSta, 5/27/2024 1:29:22 PM, KarenPhilbrick



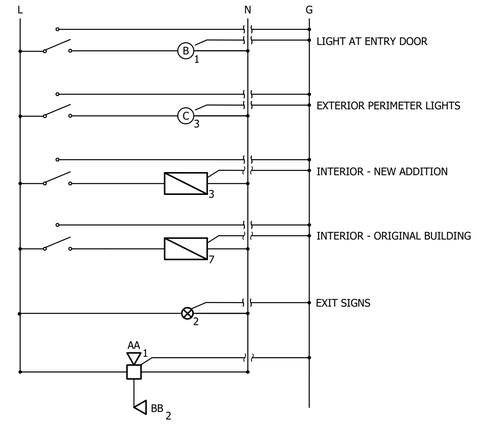
NOTE:
LIGHTING REMOVALS INCLUDE ALL EXISTING INTERIOR, EXTERIOR AND EXTERIOR ALARM LIGHTING FIXTURES, ALL SWITCHES AND WIRING. CONTRACTOR TO FIELD CONFIRM SCOPE OF REMOVALS.

PUMP STATION PLAN - LIGHTING

SCALE: ½" = 1'-0"

FIXTURE SCHEDULE

TYPE	FIXTURE MAKE/MODEL	LAMPS	MOUNTING
A	LITHONIA ZL1N L48 3000LM-FST MVOLT 40K 80CRI WH	.	CEILING SURFACE
B	RAB SLIM 12/PC	.	WALL, ABOVE DOOR
C	RAB STL3HBLED 2x13	.	WALL, 10' AFG
D	FEDERAL SIGNAL 131ST RED DOME 120V AC WITH LWMB2 WALL MOUNT BRACKET	.	WALL, 12' AFG
AA	LITHONIA ELM6L - MVOLT - LTP - SDRT - H0	.	WALL, 10' AFF
BB	LITHONIA ELMRW - SP640L - DWHxD - T	.	WALL, 10' AFF
EXIT	LITHONIA ECBR - LED - M6		WALL ABOVE DOOR



TYPICAL LIGHTING CIRCUITRY

NOT TO SCALE

FOR BIDDING PUROPOSES
NOT FOR CONSTRUCTION

DATE OF PRINT
MAY 27 2024
HORIZONS ENGINEERING

ELECTRICAL DESIGN BY:
Lee F. Carroll, PE
Electrical Consultants
1 Madison Ave P.O. Box F
Gorham, NH 03581-3090
603-466-5065
lcarroll@ne.rr.com

horizons Engineering
Civil and Structural Engineering
Land Surveying and Environmental Consulting
MAINE • NEW HAMPSHIRE • VERMONT
www.horizonsengineering.com

SOUTH MAIN STREET WATER DISTRICT

PUMP STATION UPGRADES

WATER STREET, WARREN, NEW HAMPSHIRE

PUMP HOUSE IMPROVEMENTS PLAN
LIGHTING PLAN

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

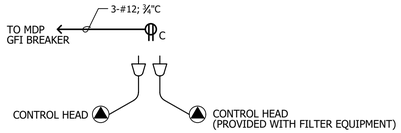
THE STATE OF NEW HAMPSHIRE — LEE F. CARROLL — No. 9628 — REGISTERED PROFESSIONAL ENGINEER

DATE: MAY 2024	PROJECT #: 220365
ENGIN'D BY: DMC	DRAWN BY: KRP
CHECK'D BY: DMC	ARCHIVE #: H-5705

SHEET 9

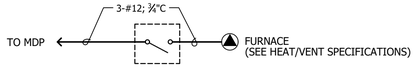
CALCITE FILTER VALVE CONTROLS INTERCONNECTION DIAGRAM

(2 REQUIRED)

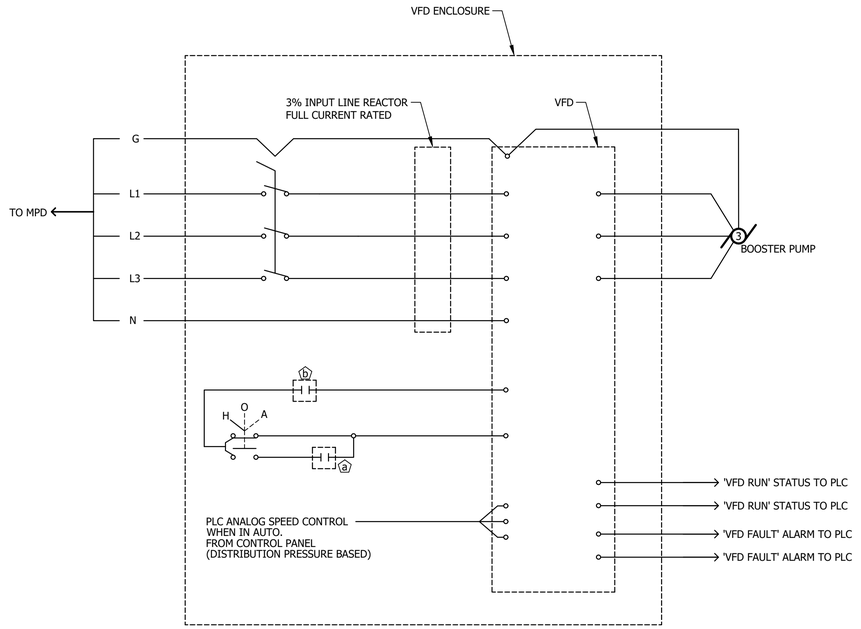


GREENSAND FILTER VALVE CONTROL INTERCONNECTION DIAGRAM

(1 REQUIRED)



FURNACE INTERCONNECTION DIAGRAM



ⓐ PLC CONTROL START/STOP PUMP WHEN IN AUTO.
CLOSES WHEN:
1) PRESSURE TRANSDUCER CALLS FRO PUMP TO MAINTAIN PRESSURE
2) PLC ALTERNATOR ALLOWS PUMP START AS LEAD PUMP
3) PRESSURE TRANSDUCER CALLS FOR PUMP RUN DUE TO LEAD PUMP NOT BEING ABLE TO SATISFY PRESSURE SET POINT.

ⓑ PLC CONTROL DOES NOT PERMIT PUMP START IN HAND OR AUTO IF ATMOSPHERIC TANK LEVEL IS LOWER THAN SET POINT.

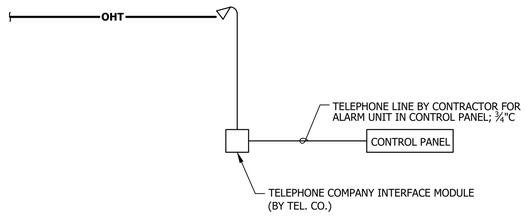
TYPICAL BOOSTER PUMP VFD INTERCONNECTION DIAGRAM

NOT TO SCALE

PANEL DIAGRAM

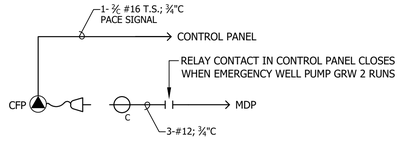
DIRECTORY	KVA LOAD A	KVA LOAD B	KVA LOAD C	AWG SIZE	CKT #	POLES	BRKR	A B C	BRKR	POLES	CKT #	AWG SIZE	KVA LOAD A	KVA LOAD B	KVA LOAD C	DIRECTORY
					1						2					
CONTROL PANEL *				#4	3	3	60		**	3	4					SPD
					5						6					
	0.5				7						8		0.5			
BOOSTER PUMP#1 VFD *		0.5		12	9	3	20		20	3	10	12		0.5		* BOOSTER PUMP #2 VFD
			0		11						12				0.5	
LIGHTING	0.5			12	13	1	20		15	1	14	12				GREEN SAND FILTER #1 & #2 ( )
CALCITE FILTER #2 (GFI)		0.07		12	15	1	15		15	1	16	12		0.07		CALCITE FILTER #1 (GFI)
FURNACE			0.3	12	17	1	25		20	1	18	12			0.7	EF & INTAKE LOUVER
DEHUMIDIFIER RECEPT. - ADDITION	1.5			12	19	1	20		20	1	20	12	1.5			DEHUMIDIFIER RECEPT. - MAIN BUILDING
EUH - ADDITION		1.5		12	21	2	20		20	1	22	10		1.5		GENERATOR ENZYME HEATER
			1.5		23				20	1	24	10			0.5	GENERATOR SERVICE RECEPTICAL
RECEPTACLE - NEW ADDITION	0.6			12	25	1	20		15	1	26	10	0.5			GENERATOR BATTERY CHARGER
RECEPTACLE - NEW ADDITION		0.6		12	27	1	20		20	1	28	12		0.7		RECEPTACLE - MAIN BUILDING
DEHUMIDIFIER - ADDITION			1.5	12	29	1	20		15	1	30	12				HYPOCHLORITE CHEM. FEED PUMP
DEHUMIDIFIER - MAIN BUILDING	1.5			12	31	1	20		20	1	32	#12				RECEPTACLE - MAIN BUILDING
SPARE					33	1	20		15	1	34	--				SPARE
SPARE					35	1	20				36					SPARE
SPACE					37						38					SPACE
SPACE					39						40					SPACE
SPACE					41						42					SPACE
SUB-TOTAL								NEUTRAL BUS GROUND BUS								SUB-TOTAL (BASE BID ONLY)

VOLTAGE:	208/120V, 3PH, 4 WIRE, 60 Hz		PANEL: **MDP**
MAIN BREAKER:	200A MLO		
MOUNTING:	SURFACE		LOCATION: NEW BUILDING ADDITION
SC RATING:	22,000 AIC MINIMUM	TOTAL KVA: .	
NOTES:	*PROVIDE WITH HANDLE LOCKS		
	** SIZE PER SPD MANUFACTURER RECOMMENDATIONS PROVIDE GFCI BREAKERS ON CIRCUITS 14, 15, 16		



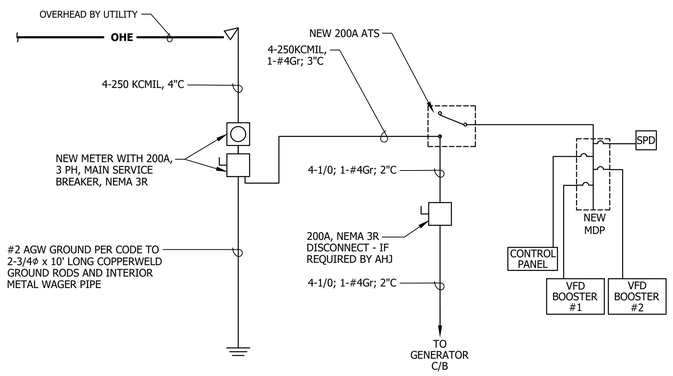
TELEPHONE UITLITY INTERCONNECTION DIAGRAM

NOT TO SCALE



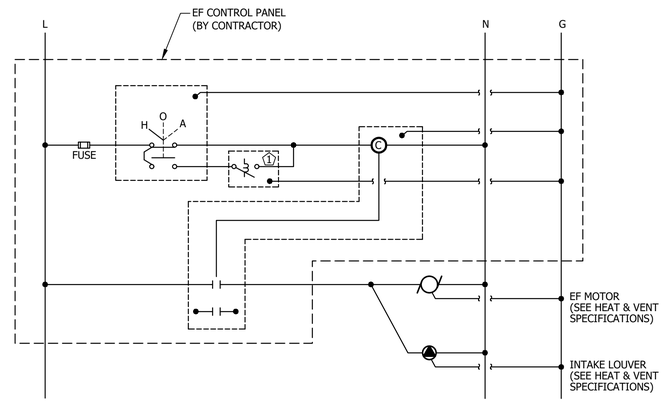
TYPICAL CHEMICAL FEED PUMP INTERCONNECTION DIAGRAM

NOT TO SCALE 1 REQUIRED



PARTIAL ONE LINE DIAGRAM

NOT TO SCALE



① THERMOSTAT IS WALL MOUNTED UNIT, NOT IN EF CONTROL PANEL
FUSE AND HOLDER: 5 AMP RATED FUSE, H-O-A NEMA 12
THERMOSTAT: SEE SPECIFICATIONS
CONTACTOR: ALLEN BRADLEY, SQUARE D, OR APPROVED EQUAL, 2 POLE, 30A CONTACTS
FAN & LOUVER: SEE SPECIFICATIONS FOR HV AC EQUIPMENT
CONTRACTOR TO PROVIDE CONTROL PANEL, NEMA 12 ENCLOSED WITH BACKPLATE FOR MOUNTING OF COMPONENTS AND TERMINALS. SEE SPECIFICATIONS.

EXHAUST FAN & INTAKE LOUVER CONTROLS

1 REQUIRED

FOR BIDDING PUROPOSES
NOT FOR CONSTRUCTION

DATE OF PRINT
MAY 27 2024
HORIZONS ENGINEERING

ELECTRICAL DESIGN BY:
Lee F. Carroll, PE
Electrical Consultants
1 Madison Ave P.O. Box F
Gorham, NH 03581-3090
603-466-5065
lcarroll@ne.rr.com

horizons Engineering
Civil and Structural Engineering
Land Surveying and Environmental Consulting
MAINE • NEW HAMPSHIRE • VERMONT
www.horizonsengineering.com

SOUTH MAIN STREET WATER DISTRICT

PUMP STATION UPGRADES

WATER STREET, WARREN, NEW HAMPSHIRE

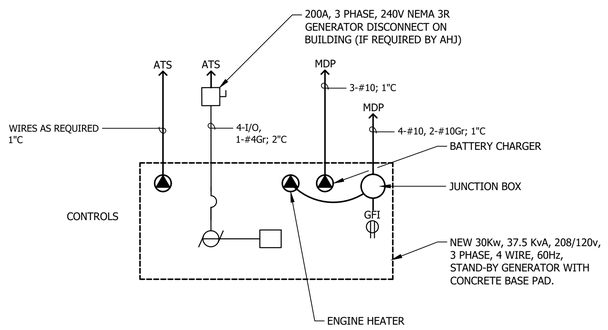
ELECTRIC DETAILS - 1

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

LEE F. CARROLL No. 9628 REGISTERED PROFESSIONAL ENGINEER THE STATE OF NEW HAMPSHIRE
5/27/2024

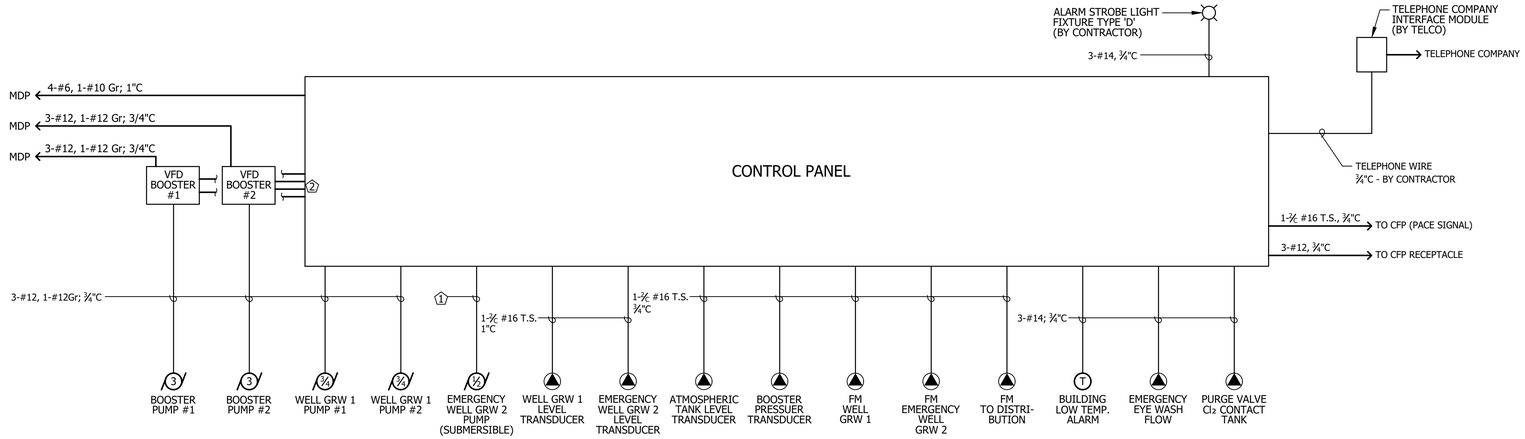
DATE: MAY 2024	PROJECT #: 220365
ENGIN'D BY: DMC	DRAWN BY: KRP
CHECK'D BY: DMC	ARCHIVE #: H-5705

SHEET 10



TYPICAL GENERATOR WIRING CONNECTIONS

NOT TO SCALE

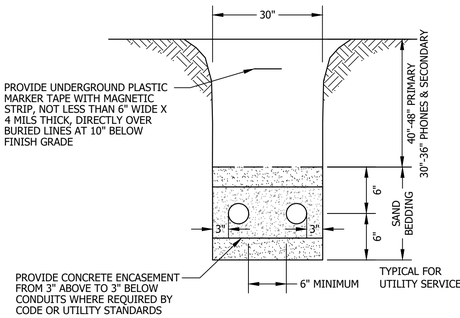


1 INTERCEPT EXISTING PUMP WIRES IN BUILDING AND RE-ROUTE TO NEW CONTROL PANEL

2 8-#14; ¾"C (CONTROL (4); ALARM (2); STATUS (2))
1-2/C #16 T.S.; ¾"C (SPEED CONTROL WHEN IN "AUTO")

CONTROL PANEL INTERCONNECTION DIAGRAM

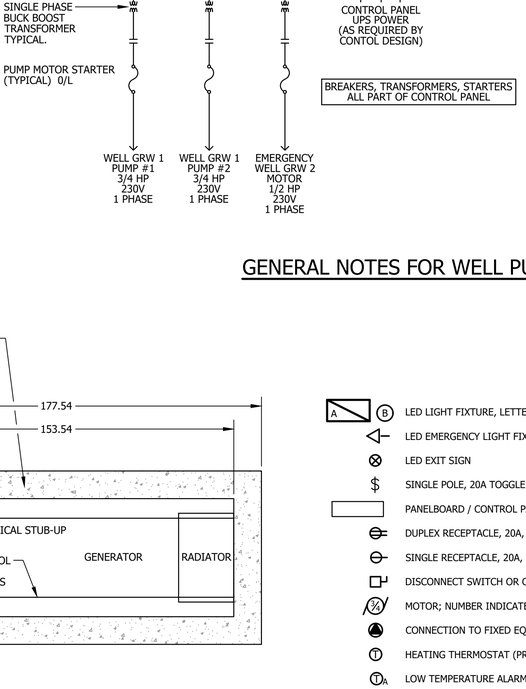
NOT TO SCALE 2 REQUIRED

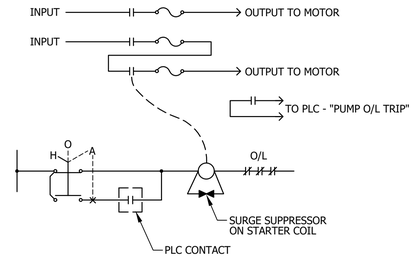


PROVIDE NUMBER AND SIZES OF CONDUITS
AS NOTED ON CONTRACT DRAWINGS

TYPICAL CONCRETE ENCASED CONDUIT DITCH DETAIL

NOT TO SCALE

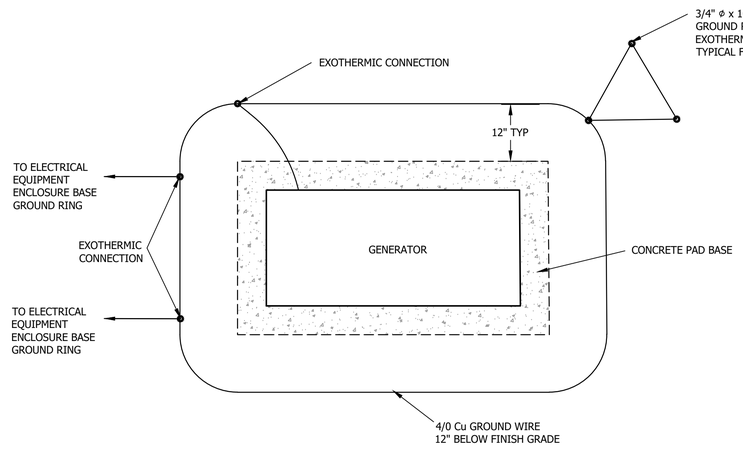




CLOSES ON ATMOSPHERIC TANK "WELL PUMP START" LEVEL, AND ALTERNATOR SELECTION.
OPENS ON ATMOSPHERIC TANK "WELL PUMP STOP" LEVEL.

NOTE:
WELL #1 AND WELL #2 PUMPS ARE LEAD/LAG. NOT TO BE BE ABLE TO BOTH SIMULATANEOUSLY START.

GENERAL NOTES FOR WELL PUMP CONTROLS AND POWER



TYPICAL GENERATOR GROUNDING

NOT TO SCALE

TYPICAL GENERATOR PAD

CONFIRM ALL DIMENSIONS AND STUB-UP LOCATIONS WITH MANUFACTURER OF ACTUAL EQUIPMENT PROVIDED

LEGEND - ELECTRIC

- A / B — LED LIGHT FIXTURE, LETTER INDICATES TYPE
- LED EMERGENCY LIGHT FIXTURE, LETTERS INDICATE TYPE
- LED EXIT SIGN
- $ — SINGLE POLE, 20A TOGGLE SWITCH, 125-277V; 48" AFF
- PANELBOARD / CONTROL PANEL / EXHAUST FAN CONTROL PANEL
- DUPLEX RECEPTACLE, 20A, 125V; - 36" AFF, OR AS DIRECTED
- SINGLE RECEPTACLE, 20A, 125V: - 36 AFF, OR AS DIRECTED
- DISCONNECT SWITCH OR CIRCUIT BREAKER, AS NOTED
- ¾ — MOTOR; NUMBER INDICATES HORSE POWER
- CONNECTION TO FIXED EQUIPMENT
- T — HEATING THERMOSTAT (PROVIDED WITH FURNACE)
- T_A — LOW TEMPERATURE ALARM THERMOSTAT
- T_{EF} — EXHAUST FAN THERMOSTAT
- UTILITY METER
- OHE — OVERHEAD ELECTRICAL
- OHT — OVERHEAD TELEPHONE

AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
ATS	AUTOMATIC TRANSFER SWITCH
GFI	GROUND FAULT INTERRUPTER PROTECTED
WP	WATERPROOF
H&V	HEATING AND VENTILATING
AWG	AMERICAN WIRE GAUGE
AHJ	AUTHORITY HAVING JURISDICTION
VFD	VARIABLE FREQUENCY DRIVE
SPD	SURGE PROTECTION DEVICE
MLO	MAIN LUG ONLY
DISC	DISCONNECT
Gr	GROUND
EF	EXHAUST FAN
C	CORROSION RESISTANT
PLC	PROGRAMMABLE LOGIC CONTROLLER
OHE	OVERHEAD ELECTRIC POWER
OHT	OVERHEAD TELEPHONE
FIXT.	FIXTURE
CFP	CHEMICAL FEED PUMP
O/L	OVERLOAD

FOR BIDDING PUROPOSES
NOT FOR CONSTRUCTION

DATE OF PRINT
MAY 27 2024
HORIZONS ENGINEERING

ELECTRICAL DESIGN BY:
Lee F. Carroll, PE
Electrical Consultants
1 Madison Ave P.O. Box F
Gorham, NH 03581-3090
603-466-5065
lcarroll@ne.rr.com

horizons Engineering
Civil and Structural Engineering
Land Surveying and Environmental Consulting
MAINE • NEW HAMPSHIRE • VERMONT
www.horizonsengineering.com

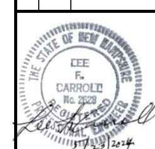
SOUTH MAIN STREET WATER DISTRICT

PUMP STATION UPGRADES

WATER STREET, WARREN, NEW HAMPSHIRE

ELECTRIC DETAILS - 2

NO.	DATE	REVISION DESCRIPTION	ENG	DWG



DATE: MAY 2024	PROJECT #: 220365
ENGIN'D BY: DMC	DRAWN BY: KRP
CHECK'D BY: DMC	ARCHIVE #: H-5705

SHEET 11

Z:\proj_2022\220365 South Main Street Water District - Water System Improvements\Internal\Civil\Final\220365 Pump Station Plan-2.dwg, ELEC 2, 5/27/2024 1:29:25 PM, KarenPhilbrick