

TOWN OF LISBON

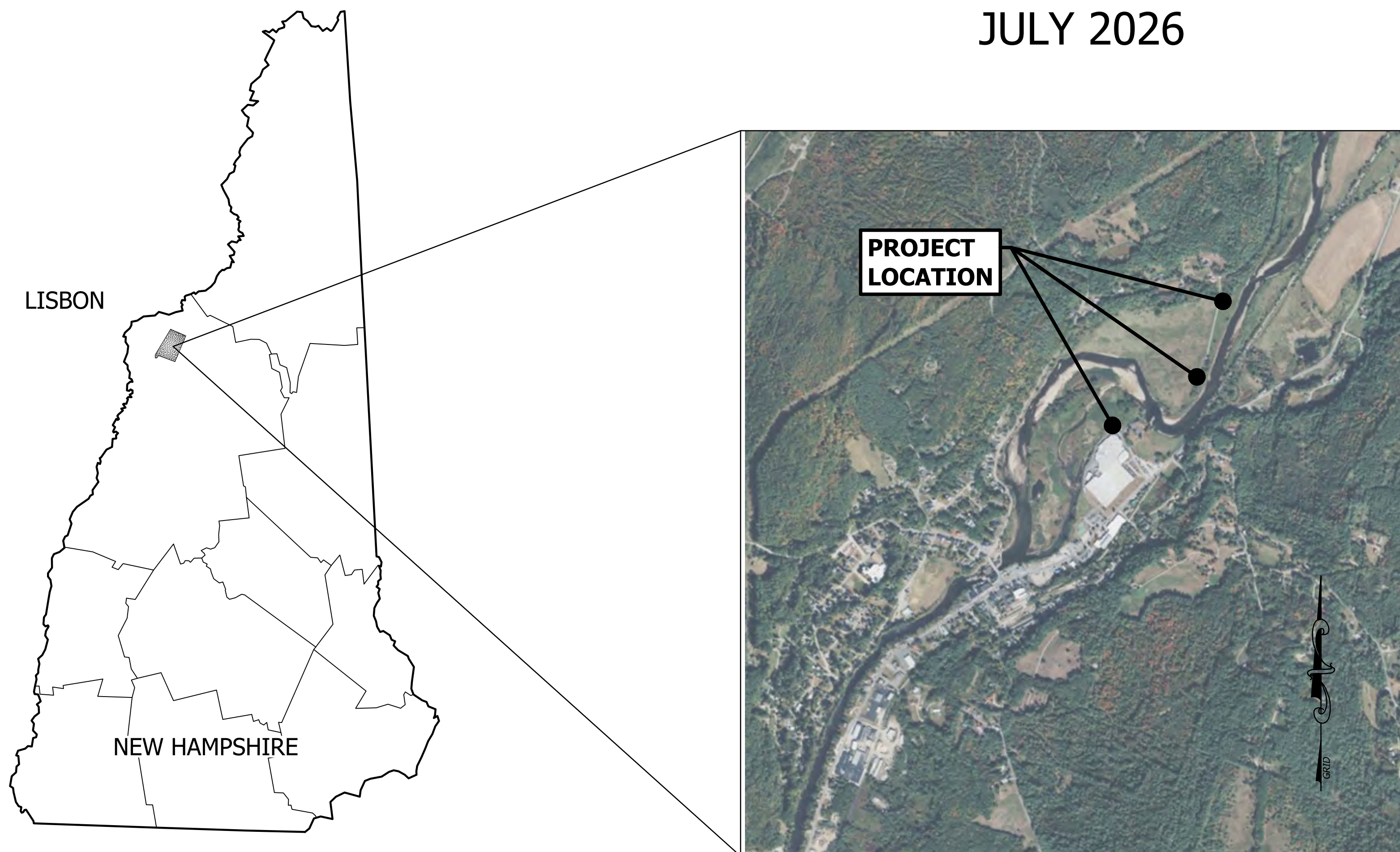
CONTRACT #2 WATER SYSTEM IMPROVEMENTS

USDA WEP, ARPA 1361010, DWSRF 1361010, DWGT-82

CHEMICAL BUILDING UPGRADES

VALLEY VIEW DRIVE
LISBON, NEW HAMPSHIRE

JULY 2026



LOCATION PLAN

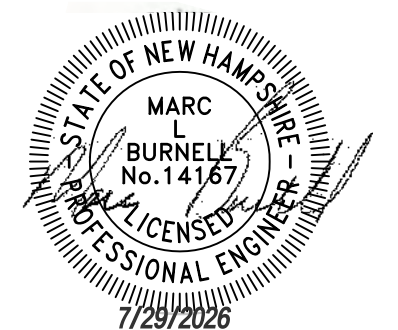
SCALE: 1" = 1000'

BIDDING PLANS
NOT FOR CONSTRUCTION

DATE OF PRINT
JULY 20 2026
HORIZONS ENGINEERING

OWNER:
LISBON WATER DEPT
153 SOUTH MAIN ST
LISBON, NH 03585
(603) 838-6376

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



SHEET INDEX:

- C1.0 COVER SHEET
- CHEMICAL BUILDING ADDITION AND MANGANESE TREATMENT
- C2.1 OVERVIEW ABUTTER MAP/ LOT, GENERAL NOTES & LEGEND
- C2.2 EXISTING CONDITIONS PLAN
- C2.3 SITE PLAN & PROFILE
- C3.1 EXISTING BUILDING LAYOUT PLAN
- C3.2 PROPOSED BUILDING LAYOUT PLAN
- C3.3 PROPOSED BUILDING SECTION & DEMOLITION PLAN
- C3.4 PROPOSED BUILDING ELEVATIONS
- CONSTRUCTION DETAILS
- D1.1 STANDARD WATER SYSTEM NOTES & DETAILS
- D1.2 STANDARD SANITARY SEWER DETAILS & NOTES
- D1.3 CONSTRUCTION SEQUENCE, EROSION CONTROL DETAILS & NOTES
- D1.4 OXIPLUS QUAD FILTER SYSTEM DETAIL
- ELECTRICAL DETAILS
- E1 ELECTRICAL LEGEND AND GENERAL NOTES
- E2 ELECTRICAL SITE POWER PLAN AND DETAILS
- E3 CHEMICAL FEED BUILDING INSTRUMENT PROCESS PLAN

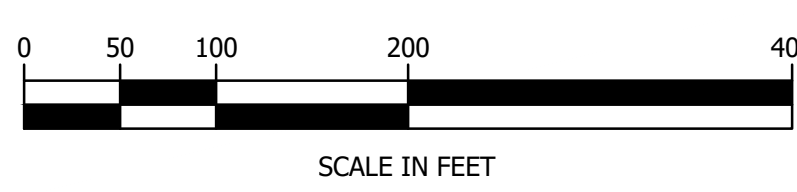
1. NO EXISTING MONUMENTS, BOUNDS, OR BENCHMARKS SHALL BE DISTURBED WITHOUT FIRST MAKING PROVISIONS FOR RELOCATION.
2. ALL WORK SHALL BE PERFORMED WITHIN THE PROPERTY OF, AND EASEMENTS SECURED BY, THE OWNER.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DATA COLLECTION AND PREPARATION OF RECORD DRAWINGS.
4. 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 BORNE BY HIM.
5. 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.
6. THE HORIZONTAL DATUM IS ON THE NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM NAD83 (2011). THE VERTICAL DATUM IS THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) .
7. THIS PLAN IS BASED ON A FIELD SURVEY COMPLETED IN MARCH OF 2022 WITH TOPCON HIPER V DUAL FREQUENCY SURVEY GRADE GPS RECEIVERS.
8. THE PROPERTY BOUNDARIES ARE APPROXIMATE PER THE TOWN OF LISBON TAX RECORDS A THE TIME THIS PLAN WAS PREPARED.

1. PARCEL IS IN DISTRICT C
2. BUILDING SETBACKS ARE 25 FEET (MINIMUM) FROM ROAD RIGHT OF WAY AND 15 FEET ALONG SIDE BOUNDARIES AND 25 FEET FROM BOUNDARY LINES. REQUIRED LOT SIZE IS 20,000 SF MINIMUM WITH 125 FT OF FRONTAGE.
3. SUBJECT PARCEL IS PARTIALLY LOCATED WITHIN THE 100-YEAR FLOOD - AE ZONE BASE ELEVATION 579.0.
4. ALL WORKSHIPMANP AND MATERIALS INCORPORATED INTO THE CONSTRUCTION OF IMPROVEMENTS SPECIFIED ON THIS SITE PLAN SHALL CONFORM TO STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (LATEST EDITION), AS PUBLISHED AND AMENDED BY THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION

APPROX PROPERTY LINE
 MAJOR CONTOUR
 MINOR CONTOUR
 OVERHEAD UTILITY LINE
 TREE LINE
 100 YEAR FLOOD PLAIN
 50 FT SHORELAND BUFFER
 150 FT SHORELAND BUFFER
 250 FT SHORELAND BUFFER

OHE
 100YR-FP
 SPB-50
 SPB-150
 SPB-250

W
 MONITORING WELL
 S
 WATER SHUTOFF
 U
 UTILITY POLE
 G
 GUY WIRE
 S
 SIGN
 M
 MAIL BOX
 D
 DECIDUOUS TREE
 C
 CONIFER TREE



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TOWN OF LISBON

CONTRACT #2 WATER SYSTEM IMPROVEMENTS
 USDA WEP, ARPA 1361010, DW SRF 1361010, DWGT-82
 CHEMICAL BUILDING UPGRADES
 VALLEY VIEW DRIVE, LISBON, NEW HAMPSHIRE

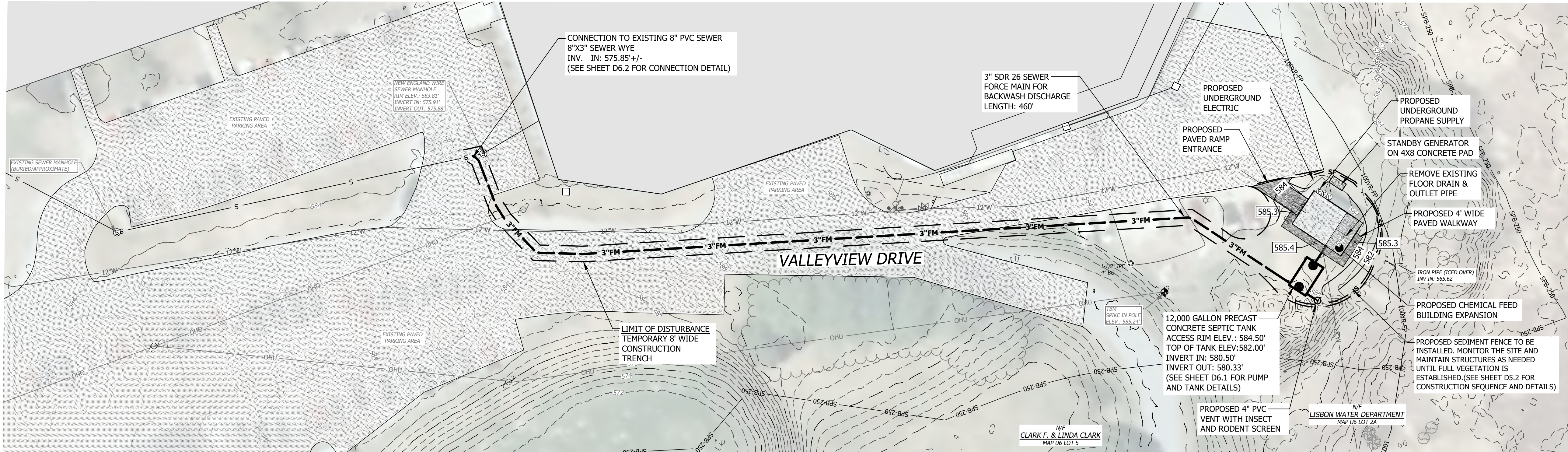
**OVERVIEW, ABUTTER MAP/LOT INFORMATION,
GENERAL NOTES & LEGEND**

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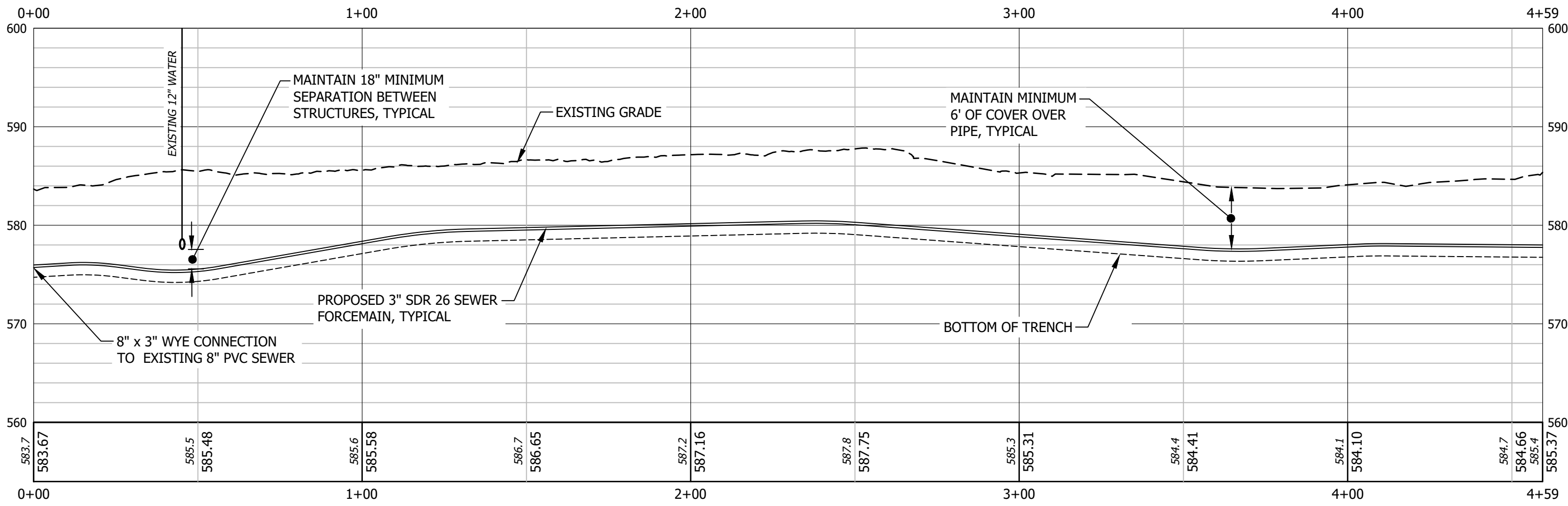
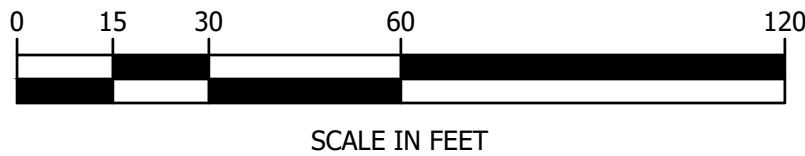
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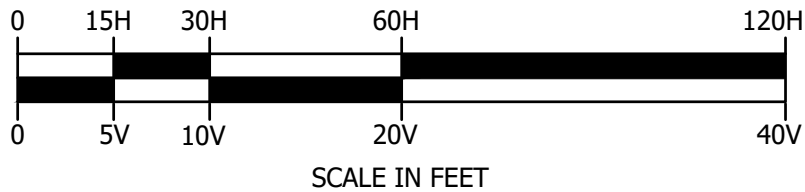
PROJECT #:	DATE:	NO.	REVISION DESCRIPTION	DWG
21215	JULY 2026			
DESIGNED BY:	MARC BURNELL (OR ARCHIVE)	*		
SURVEYED BY:	HEL DUGNWS			
ENGINEERED BY:	MLB			
DRAWN BY:	LJMI			
CHECKED BY:	CFC			



SEWER FORCE MAIN SITE PLAN
STA 0+00 TO STA 4+59.36



SEWER FORCE MAIN PROFILE
STA 5+50 TO STA 11+96.35

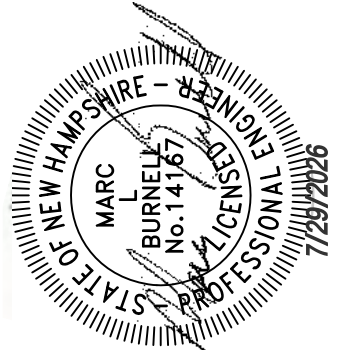


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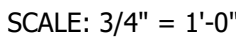
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PROJECT #:	21215	NO.	DATE	REVISION DESCRIPTION	ENG	DWG
DATE:	JULY 2026					
MAP-LOT (FOR ARCHIVE)	*					
SURVEYED BY:	HEI- D/G/NWS					
ENGINEERED BY:	MLB					
DRAWN BY:	LJM					
CHECKED BY:	CFC					

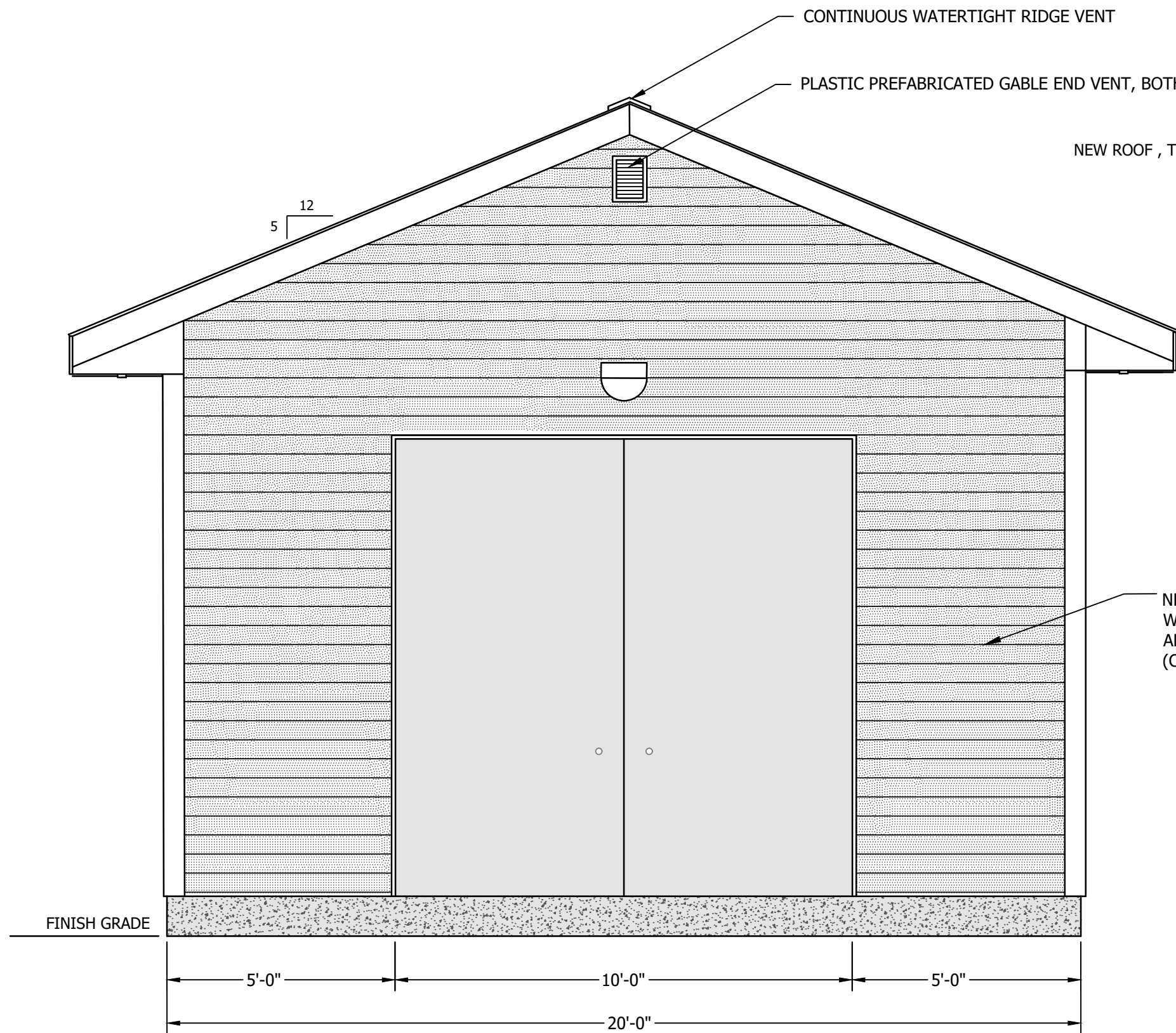


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TOWN OF LISBON
CONTRACT #2 WATER SYSTEM IMPROVEMENTS
USDA WEP AREA 13510.0, DW SDR 13510.0, DWGT-82
CHEMICAL BUILDING UPGRADES
VALLEY VIEW DRIVE, LISBON, NEW HAMPSHIRE
PLAN & PROFILE
SEWER FORCE MAIN STA 5+50 TO STA 11+96.35

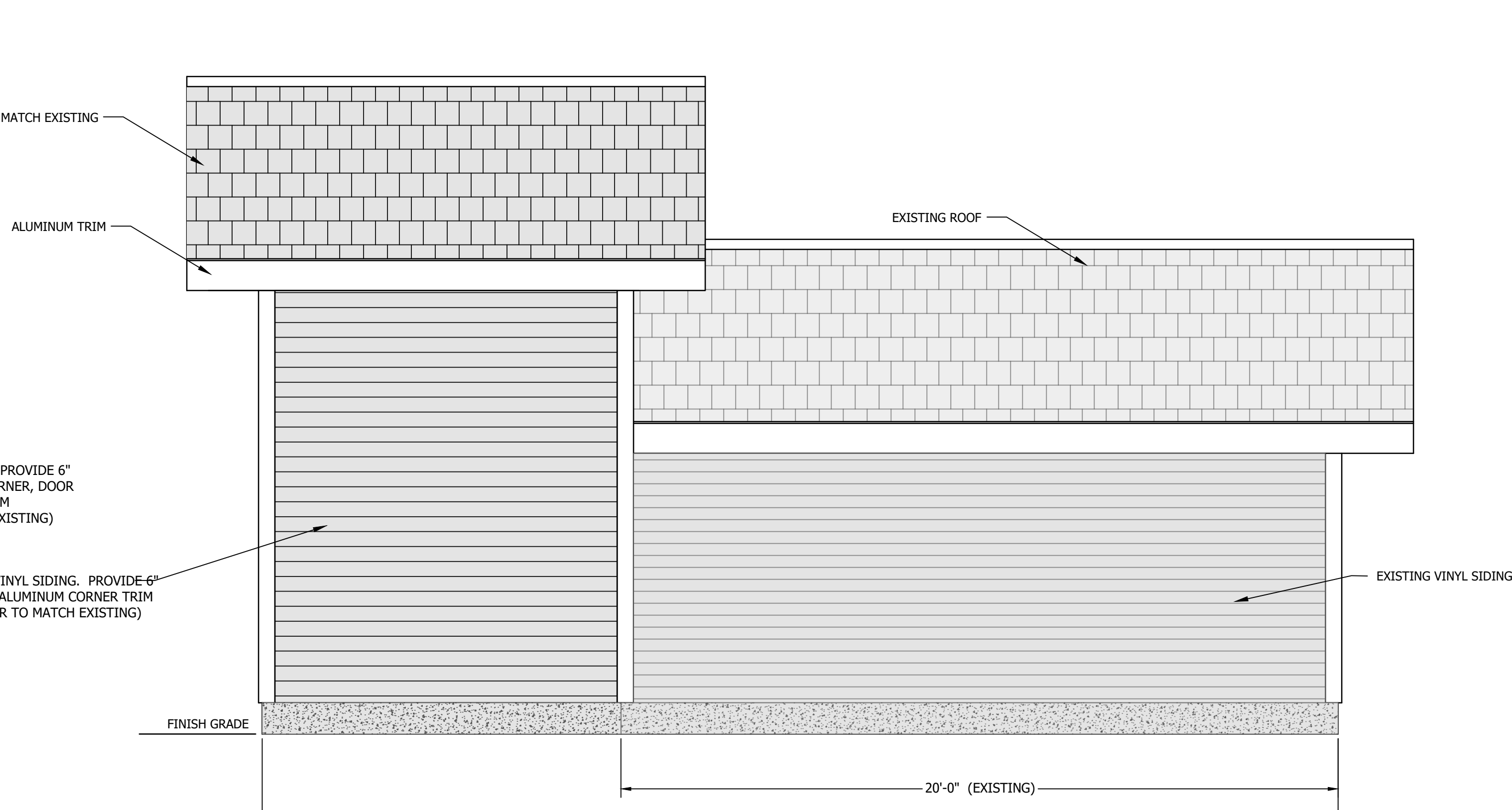
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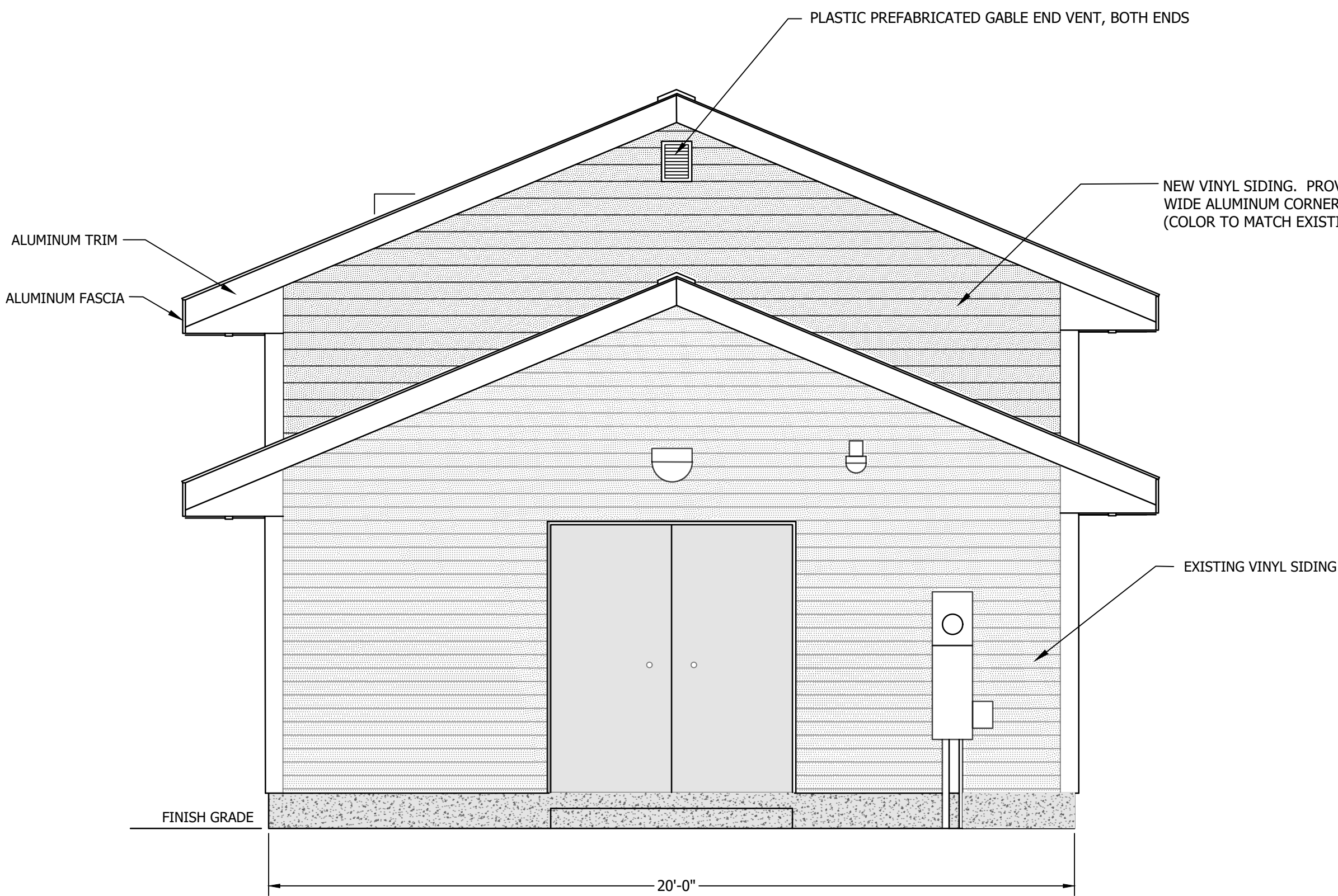
REAR ELEVATION

SCALE: 3/8" = 1'-0"



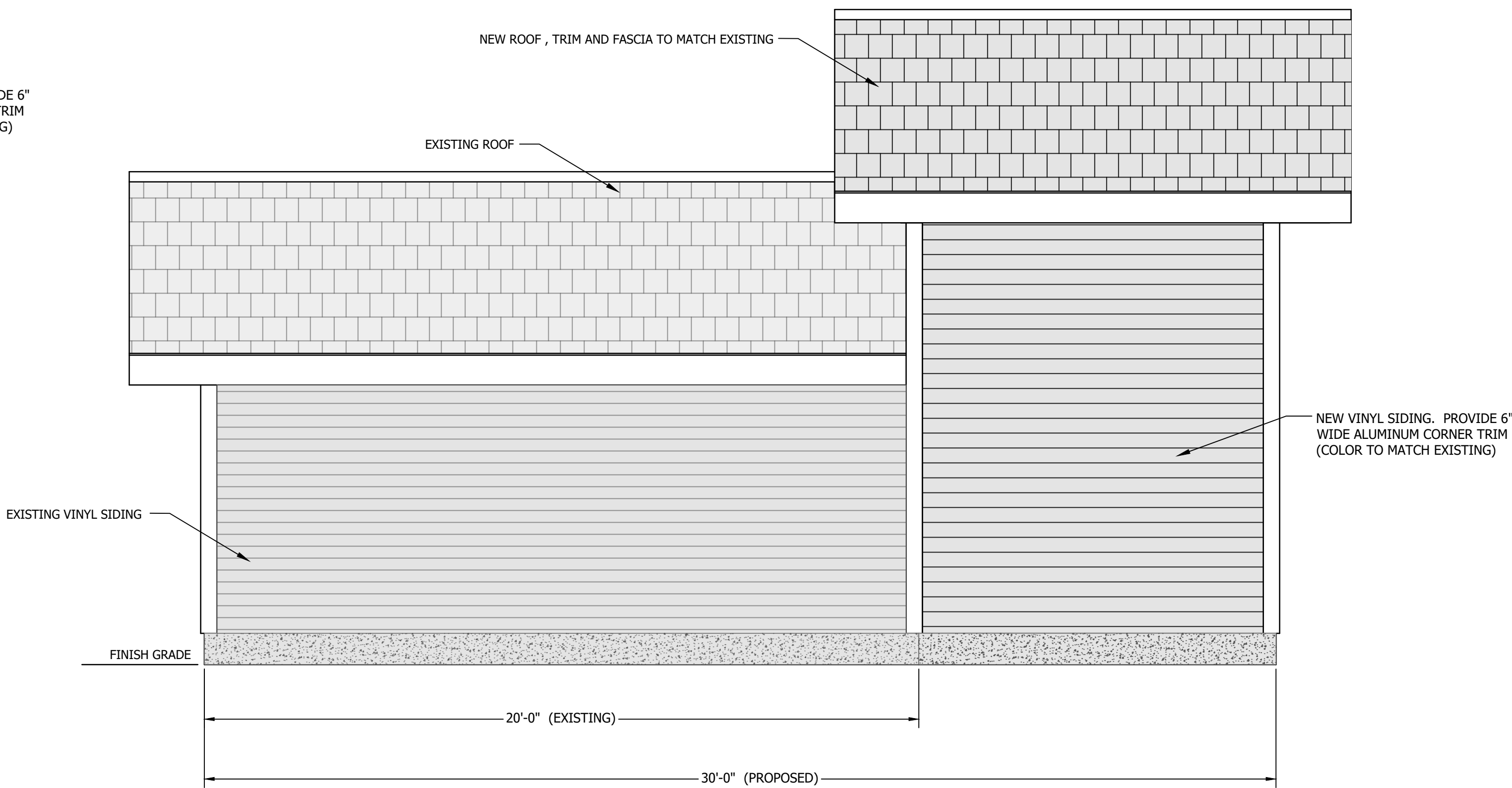
LEFT SIDE ELEVATION

SCALE: 3/8" = 1'-0"



FRONT ELEVATION

SCALE: 3/8" = 1'-0"



RIGHT SIDE ELEVATION

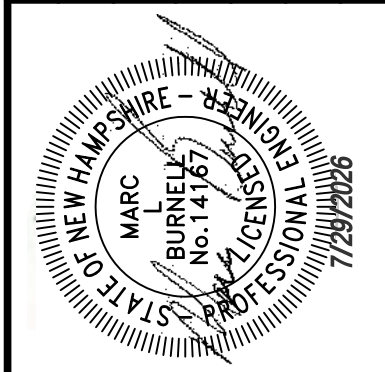
SCALE: 3/8" = 1'-0"

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(FOR ARCHIVE)						
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ENGINEERED BY:	MLB					
DRAWN BY:	LJM					
CHECKED BY:	CFC					



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TOWN OF LISBON
CONTRACT #2 WATER SYSTEM IMPROVEMENTS
USDA AREA 1360A DIVERSITY AND RURAL DEVELOPMENT
CHEMICAL BUILDING UPGRADES
VALLEY VIEW DRIVE, LISBON, NEW HAMPSHIRE

PROPOSED BUILDING ELEVATIONS

SHEET C3.4

ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE SHALL BE REPLACED WITH BEDDED 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	⅝ 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 MOUND 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.

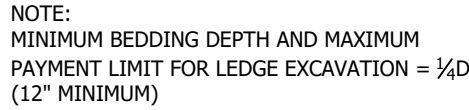
RESTRAINED JOINTS MAY BE USED FOR RESISTING THRUST FORCES WHERE THERE IS A SHORTAGE OF SPACE OR WHERE THE SOIL BEHIND A FITTING WILL NOT PROVIDE ADEQUATE SUPPORT. THIS RESTRAINING METHOD INVOLVES PLACEMENT OF THESE SPECIAL JOINTS AT APPROPRIATE FITTINGS AND FOR A PREDETERMINED NUMBER OF PIPE LENGTHS ON EACH SIDE, (MINIMUM 15 FEET).

RESULTANT THRUST AT FITTINGS AT 100 PSI WATER PRESSURE					
NOMINAL PIPE DIA. (INCHES)	TOTAL THRUST (POUNDS)				
	DEAD END	90° BEND	45° BEND	22½° BEND	11¼° BEND
4	1,810	2,559	1,385	706	355
6	3,739	5,288	2,862	1,459	733
8	6,433	9,097	4,923	2,510	1,261
10	9,677	13,685	7,406	3,776	1,897
12	13,685	19,353	10,474	5,340	2,683
14	18,385	26,001	14,072	7,174	3,604
16	23,779	33,628	18,199	9,278	4,661
18	29,865	42,235	22,858	11,653	5,855
20	36,644	51,822	28,046	14,298	7,183
24	52,279	73,934	40,013	20,398	10,249

$$\frac{19,353 \times 125}{100} = 24,191 \text{ POUNDS}$$

TO DETERMINE THE SIZE OF A CONCRETE THRUST BLOCK, DIVIDE THE TOTAL FORCE BY THE BEARING VALUE OF THE SOIL. THE QUOTIENT WILL BE THE SIZE OF THE BEARING AREA OF THE THRUST BLOCK IN SQUARE FEET. APPROXIMATE VALUES FOR VARIOUS TYPES OF SOIL ARE LISTED BELOW.

SOIL	BEARING LOAD (LBS./SQ. FT.)
MUCK	0
SOFT CLAY	1,000
SILT	1,500
SANDY SILT	3,000
SAND	4,000
SANDY CLAY	6,000



STANDARD TRENCH SECTIONS

NOT TO SCALE



NO SCALE



NO SCALE

NOTES TYPICAL CONDUIT TRENCH:

1. SELECT SAND BACKFILL SHALL CONSIST OF FINE GRANULAR MATERIAL OF WHICH 100% SHALL PASS THROUGH A 1/4" SIEVE. BACKFILL SHALL BE THOROUGHLY COMPACTED IN 6 INCH LAYERS.
2. TELEPHONE, CATV AND FIRE ALARM CONDUITS MAY RUN IN THE SAME TRENCH AS ELECTRIC SERVICE CONDUITS AND/OR BARRIER CIRCUIT CONDUITS PROVIDING A MINIMUM OF 12 INCH HORIZONTAL SEPARATION IS MAINTAINED. IF RUN IN THE SAME TRENCH AS PRIMARY CONDUITS A MINIMUM OF 12 INCHES BOTH HORIZONTAL AND VERTICAL SEPARATION SHALL BE MAINTAINED. SEE NOTE #1 ABOVE.
3. ALL CONDUIT BENDS OF 45 DEGREE OR MORE SHALL BE GALVANIZED RIGID STEEL. THE FIRST 10 FOOT SECTION OF CONDUIT BOTH HORIZONTAL AND VERTICAL AT UTILITY POLES, TRANSFORMER PADS AND AT BUILDING CONDUIT ENTRANCES, SHALL BE GALVANIZED RIGID STEEL. PROVIDE 3/8" NYLON PULL ROPE IN ALL EMPTY CONDUITS.
4. ALL NONMETALLIC CONDUIT AND FITTINGS SHALL BE ELECTRICAL GRADE, SCHEDULE 80 PVC CONDUIT SHALL CONFORM TO THE APPLICABLE SECTIONS OF NEMA TC-192-1990 AND BE UL LISTED. ONLY GRAY COLORED CONDUIT WILL BE ACCEPTED. ANY PVC CONDUIT NOT HAVING THE PROPER NEMA OR UL MARKINGS WILL NOT BE ACCEPTED. ALL STEEL CONDUITS SHALL CONFORM TO ASTM A120 AND BE RIGID GALVANIZED STEEL. ALL PVC CONDUITS MUST BE CEMENTED. STEEL FITTINGS SHALL BE SEALED WITH COMPOUND.
5. ALL CONDUIT SYSTEMS, SHOWN ON THIS DETAIL, MAY NOT BE PRESENT ON THIS PROJECT. THIS IS A TYPICAL CONDUIT TRENCH DETAIL, EACH INDIVIDUAL PROJECT MAY HAVE MORE OR LESS CONDUIT SYSTEMS.

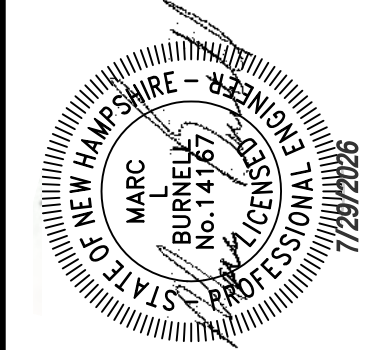
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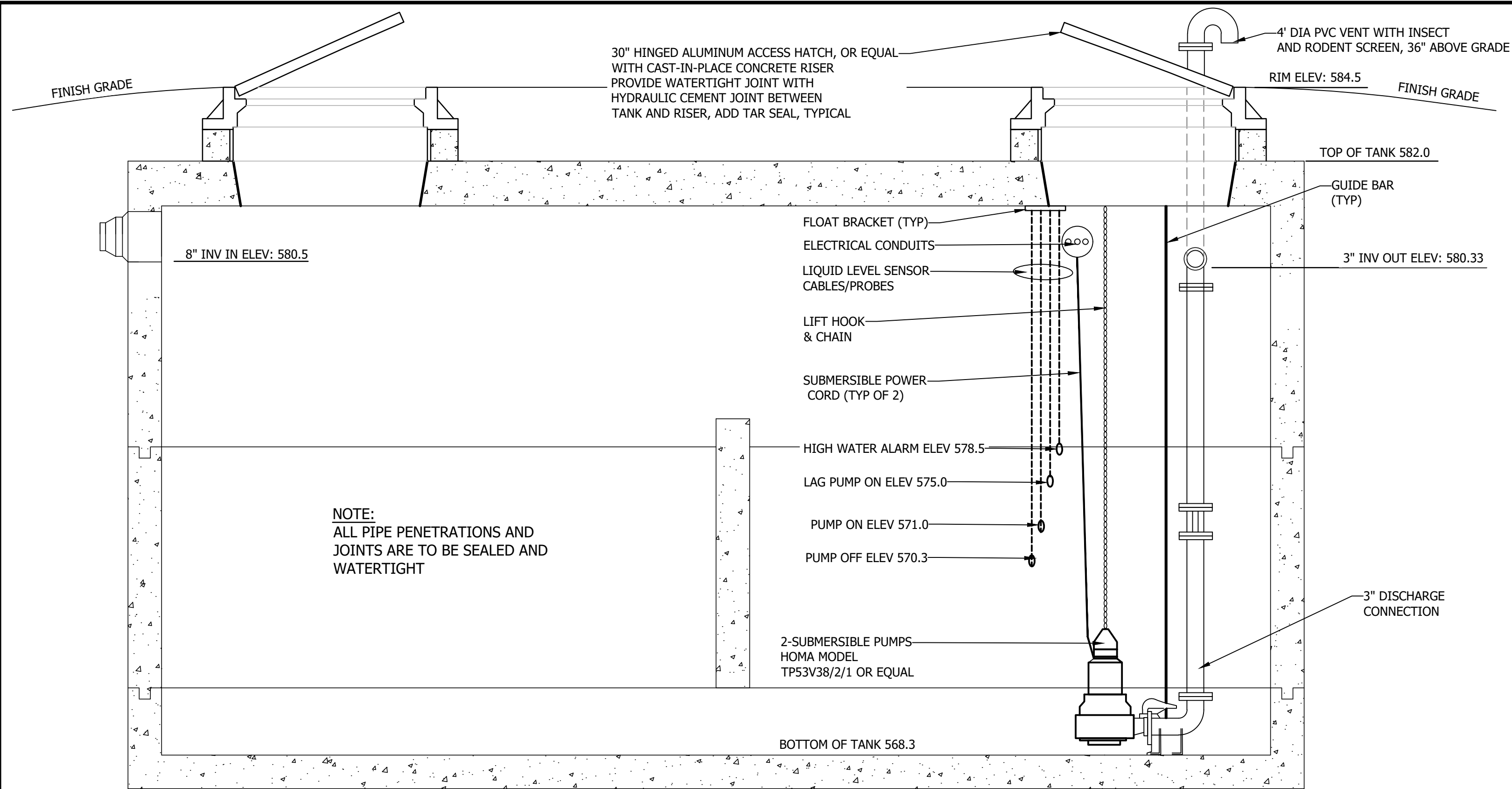
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CONTRACT #2 WATER SYSTEM IMPROVEMENTS
USDA WEP, ARPA 1361010; DW SRF 1361010; DWGT-82
CHEMICAL BUILDING UPGRADES
VALLEY VIEW DRIVE, LISBON, NEW HAMPSHIRE

STANDARD WATER SYSTEM NOTES AND DETAILS

SHEET D1.1



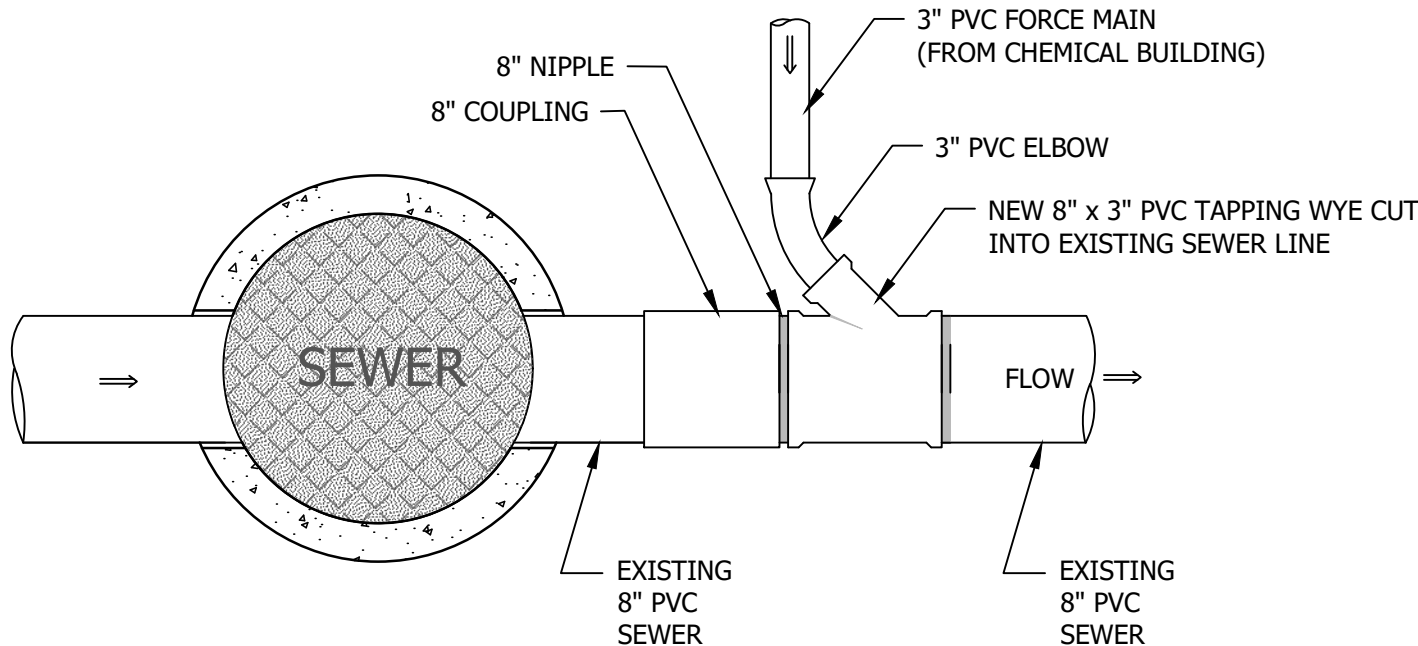
MANGANESE LIFT STATION DETAIL
NOT TO SCALE

SEWER NOTES

- 1. GENERAL
CONSTRUCTION OF ALL COMPONENTS OF THE SANITARY SEWER SYSTEM SHALL CONFORM TO THE MOST CURRENT VERSION OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES ENV-WQ 700 AND TECHNICAL SPECIFICATIONS ENTITLED "TOWN OF LISBON CONTRACT #1 WATER SYSTEM IMPROVEMENTS, DATED OCTOBER 2024, LATEST REVISED APRIL 2025.
- 2. TYPES OF SEWERS
A. THERE SHALL BE NO CONNECTION BETWEEN SANITARY SEWERS AND STORM SEWERS.
B. RUNOFF FROM ROOFS, STREETS, AND OTHER AREAS AND GROUNDWATER FROM FOUNDATION DRAINS, SUMP PUMPS, OR OTHER SUBSURFACE DRAINS SHALL BE EXCLUDED FROM SANITARY SEWERS.
- 3. SEWER SIZE AND COVER
A. MINIMUM PIPE SIZE FOR GRAVITY SEWER MAINS SHALL BE 8 INCHES.
B. MINIMUM PIPE SIZE FOR GRAVITY SEWER SERVICES SHALL BE 4 INCHES.
C. MINIMUM PIPE SIZE FOR FORCE MAIN SEWER SERVICES SHALL BE 2 INCHES.
D. SANITARY SEWERS SHALL HAVE 6 FEET MINIMUM COVER IN ALL ROADWAY LOCATIONS AND 4 FEET MINIMUM COVER IN ALL CROSS-COUNTRY LOCATIONS.
- 4. PIPE AND FITTING MATERIALS:
A. DUCTILE IRON PIPE
DUCTILE IRON PIPE AND FITTINGS SHALL CONFORM TO THE FOLLOWING STANDARDS OF THE AMERICAN WATER WORKS ASSOCIATION:
(1) AWWA C151 FOR DUCTILE IRON PIPE, CENTRIFUGALLY CAST IN METAL OR SAND LINED MOLDS, FOR WATER OR OTHER LIQUIDS;
(2) AWWA C150 FOR THICKNESS DESIGN OF DUCTILE IRON PIPE AND WITH ASTM A 536 IRON CASTINGS; AND
(3) JOINTS SHALL BE MECHANICAL TYPE, PUSH-ON TYPE, OR BALL-AND-SOCKET TYPE;
B. PVC (POLY VINYL CHLORIDE) PIPE
PVC PIPE AND FITTINGS SHALL BE APPROVED FOR SEWAGE SERVICE AND CONFORM TO THE FOLLOWING:
(1) PVC PIPE USED FOR GRAVITY SEWERS SHALL BE TYPE SDR 35 CONFORMING TO ASTM D3034;
(2) PVC PIPE USED FOR FORCE MAINS SHALL BE TYPE SDR 26 CONFORMING TO ASTM D2241 OR ASTM D1785;
(3) JOINTS SHALL BE PUSH-ON, BELL-AND-SPIGOT TYPE HAVING OIL RESISTANT COMPRESSION RINGS OF ELASTOMERIC MATERIAL CONFORMING TO ASTM D3212.
- 5. BEDDING
PIPE BEDDING SHALL BE SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM ORGANIC MATTER, CLAY, AND/OR LOAM MEETING ASTM C33 STONE SIZE NO. 67. BEDDING SHALL EXTEND FROM THE SPRING LINE OF THE PIPE TO A MINIMUM DEPTH OF 6" BELOW THE BOTTOM OF THE PIPE OUTSIDE SURFACE.

100% PASSING	1 INCH SCREEN
90-100% PASSING	3/4 INCH SCREEN
20-55% PASSING	3/8 INCH SCREEN
0-10% PASSING	#4 SIEVE
0-5% PASSING	#8 SIEVE
- 6. MANHOLES
A. PRECAST CONCRETE BARREL SECTIONS, CONES, AND BASES SHALL CONFORM TO ASTM C478.
B. MANHOLES SHALL BE DESIGNED FOR H-20 LOADING.
C. HORIZONTAL JOINTS BETWEEN BARREL SECTIONS SHALL BE OF AN OVERLAPPING TYPE WHICH SHALL DEPEND UPON A DOUBLE ROW OF ELASTOMERIC OR MASTIC-LIKE SEALANT FOR WATER TIGHTNESS.
D. PIPE TO MANHOLE JOINTS SHALL BE AS FOLLOWS:
(1) ELASTOMERIC, RUBBER SLEEVE WITH WATERTIGHT JOINTS AT THE MANHOLE OPENING AND

- PIPE SURFACES;
(2) CAST INTO THE WALL OR SECURED WITH STAINLESS STEEL CLAMPS;
(3) ELASTOMERIC SEALING RING CAST IN THE MANHOLE OPENING WITH SEAL FORMED ON THE SURFACE OF THE PIPE BY COMPRESSION OF THE RING; AND
(4) NON-SHRINK GROUTED JOINTS WHERE WATERTIGHT BONDING TO THE MANHOLE AND PIPE CAN BE OBTAINED.
- E. MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW. AT CHANGES IN DIRECTION, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST RADIUS POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPED TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL. UNDERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF BRICK MASONRY. INVERTS AND SHELVES SHALL BE PLACED AFTER TESTING.
7. PROTECTION OF WATER SUPPLIES
A. THERE SHALL BE NO PHYSICAL CONNECTION BETWEEN A PUBLIC OR PRIVATE WATER SUPPLY SYSTEM AND A SEWER OR SEWER APPURTENANCE WHICH WOULD PERMIT THE PASSAGE OF SEWAGE OR POLLUTED WATER INTO THE POTABLE SUPPLY. NO WATER PIPE SHALL PASS THROUGH OR COME IN CONTACT WITH ANY PART OF A SEWER OR SEWER MANHOLE.
B. NO SEWER SHALL BE LOCATED WITHIN THE WELL PROTECTIVE RADII ESTABLISHED IN ENV-WS 300 FOR ANY PUBLIC WATER SUPPLY WELLS OR WITHIN 100 FEET OF ANY PRIVATE WATER SUPPLY WELL.
C. SEWERS SHALL BE LOCATED AT LEAST 10 FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED WATER MAIN.
D. A DEVIATION FROM THE SEPARATION REQUIREMENTS OF (B) OR (C) ABOVE SHALL BE ALLOWED WHERE NECESSARY TO AVOID CONFLICT WITH SUBSURFACE STRUCTURES, UTILITY CHAMBERS, AND BUILDING FOUNDATIONS, PROVIDED THAT THE SEWER IS CONSTRUCTED IN ACCORDANCE WITH THE FORCE MAIN CONSTRUCTION REQUIREMENTS SPECIFIED IN ENV-WQ 704.06.
E. WHENEVER SEWERS MUST CROSS WATER MAINS, THE SEWER SHALL BE CONSTRUCTED AS FOLLOWS:
(1) VERTICAL SEPARATION OF THE SEWER AND WATER MAIN SHALL BE NOT LESS THAN 18 INCHES, WITH WATER ABOVE SEWER; AND
(2) SEWER PIPE JOINTS SHALL BE LOCATED AT LEASE 6 FEET HORIZONTALLY FROM THE WATER MAIN.



SEWER WYE DETAIL
NOT TO SCALE

MANGANESE BACKWASH LIFT STATION BASIS OF DESIGN:

DESIGN FLOW: 4 MANGANESE FILTERS BACKWASH APPROXIMATELY ONCE A WEEK IN SUCCESSION AT 884 GALLONS EACH. TOTAL FLOW: 3,536 GALLONS/WEEK.

SINCE THIS LIFT STATION WILL SEE NOTHING OUTSIDE OF BACKWASH FROM THE MANGANESE FILTERS, THERE IS NO PEAKING FACTOR ESTABLISHED. THE LIFT STATION WILL HAVE A REDUNDANT PUMPING SYSTEM AS REQUIRED BY ENV-WQ 700. THE PUMPING SYSTEM WILL MAINTAIN A VELOCITY OF AT LEAST 2.5 FEET PER SECOND. A FLOWRATE OF 80 GPM WAS CHOSEN.

MINIMUM VELOCITY CHECK:
V = Q/A WHERE
Q=80GPM/(7.48GAL/CF*60SEC/MIN) = 0.18 CFS
A = 3.14*((3/12)^2)/4 = 0.049 SF
V = 0.18CFS/0.0225SF = 3.7 FPS

ELEVATION HEAD: 12 FT
FRICTION HEAD OF 3 INCH PIPE AT 80 GPM: 9.9 FT
TOTAL DYNAMIC HEAD: 12+9.9 = 21.9 FT
PUMP DESIGN POINT: 21.9FT@80GPM

PUMP RUN TIME: 571-570.3 = 0.7 X 9 X 16 = 100.8
100.8 SF X 7.48 GAL/CF = 754 GAL
754GAL/80 = 9.4 MIN RUN TIME
8<9.4<10 . OK

PUMP MODEL: HOMA TP53V38/2/1 OR EQUAL
POWER: 3-PHASE POWER

TANK VOLUME CRITERIA:
THE MANGANESE BACKWASH ACCOUNTS FOR 3,536 GALLONS APPROXIMATELY ONCE A WEEK. A 12,000 GALLON WET WELL IS PROPOSED. PUMP ON, PUMP OFF ELEVATIONS ARE SHOWN ON THIS SHEET. THE TANK SUPPLIED SHALL BE ABLE TO HANDLE APPROXIMATELY 3 FULL BACKWASH CYCLES.

BOTTOM OF TANK: 568.3'
PUMP OFF: 570.3'
PUMP ON: 571.0'
LAG PUMP ON: 575.0'
HIGH WATER ALARM: 578.5
8" INV. IN: 580.5
MINIMUM VOLUME BETWEEN PUMP OFF AND PUMP ON: VOLUME = 9.2 MIN X 80 GPM/4=184 GAL
753 GAL>184 GAL . OK

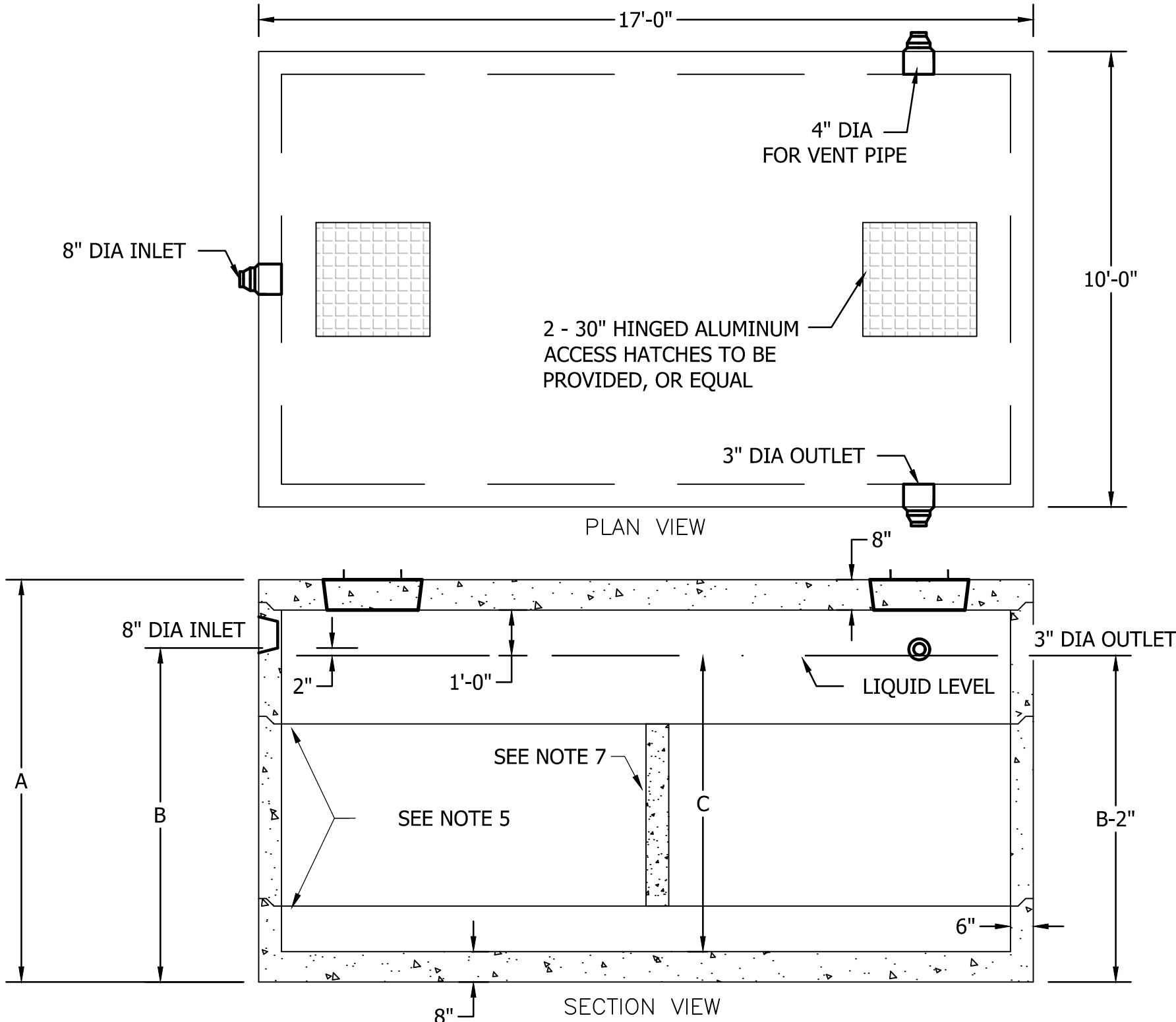
CONTROL PANELS:
SIMPLEX MUNICIPAL WASTEWATER PUMP CONTROL PANELS TO BE INSTALLED WITHIN THE CHEMICAL BUILDING.

CONTROL PANEL IS TO CONTROL 3-PHASE SUBMERSIBLE PUMPS IN A LEAD PUMP, LAG PUMP CONFIGURATION, ALTERNATING ON EACH PUMP START CYCLE ON A RISING WET WELL LEVEL, WITH THE LEAD PUMP OPERATING, THE LAG PUMP WILL COME ON UNTIL THE WET WELL LEVEL DROPS TO THE PUMP OFF LEVEL.

WET WELL LEVEL CONTROLS TO BE MECHANICALLY ACTIVATED FLOAT SWITCHES, KWIKSWITCH (PART #1055393) FLOAT SYSTEM, OR EQUAL.

CONTRACTOR SHALL SUBMIT SHOP DRAWINGS, CUT SHEETS, CONTROL DIAGRAMS, AND PUMP CURVE FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.

POWER:
3-PHASE POWER IS AVAILABLE
A PROPANE POWERED BACKUP GENERATOR SHALL BE CONSTRUCTED AS PART OF THIS PROJECT.



- NOTES:
1. CONCRETE. 5,000 PSI MINIMUM AFTER 28 DAYS.
 2. DESIGN CONFORMS WITH 310 CMR 15.00, DEP TITLE 5 REGS, FOR SEPTIC TANKS.
 3. ALL REINFORCEMENT PER ASTM C1227.
 4. DESIGNED FOR AASHTO HS-20 LOADING, COVER 1-5 FEET.
 5. TONGUE AND GROOVE JOINT SEALED WITH BUTYL RESIN. INLET HEIGHT MAY INCREASE SLIGHTLY DUE TO THE BUTYL RESIN USED.
 6. TEES AND BAFFLES SOLD SEPARATELY.
 7. SPANNERS USED IN CENTER SECTIONS FOR TANKS GREATER THAN 7000 GALLONS.

GALLONS	A (HEIGHT)	B (INLET)	C (LIQUID)	TOTAL WEIGHT	RISER 1 SIZE	RISER 2 SIZE	RISER 3 SIZE	ITEM NO.
8,000	118"	100"	90"	67,810	42"	48" W/SPAN	0	10X17-80
8,500	124"	106"	96"	69,695	48"	48" W/SPAN	0	10X17-85
9,000	130"	112"	102"	72,932	30"	30" W/SPAN	42" W/SPAN	10X17-90
9,500	136"	118"	108"	75,156	30"	30" W/SPAN	48" W/SPAN	10X17-95
10,000	140"	122"	112"	76,640	30"	34" W/SPAN	48" W/SPAN	10X17-100
10,500	146"	128"	118"	78,635	34"	42" W/SPAN	42" W/SPAN	10X17-105
11,000	152"	134"	124"	80,859	34"	42" W/SPAN	48" W/SPAN	10X17-110
11,500	158"	140"	130"	83,083	34"	48" W/SPAN	48" W/SPAN	10X17-115

New England's Premier Precaster
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12,000 GALLON SEPTIC TANK

NOT TO SCALE

DWG:

773 Salem Street-Wilmington, MA 01887
87 Haverhill Road-Amesbury, MA

153 Cranberry Hwy-Rochester, MA 01867
160 Old Turnpike Rd-Nottingham, NH

Mail to: PO Box 520-Wilmington, MA 01887

Specifications subject to change without notice

BIDDING PLANS
NOT FOR CONSTRUCTION

DATE OF PRINT
JULY 20 2026
HORIZONS ENGINEERING

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PROJECT #:

DATE: JULY 2026

MAP-LOT (OR ARCHIVE): *

SURVEYED BY: HEL- DIG/NWS

ENGINEERED BY: MLB

DRAWN BY: LJM

CHECKED BY: CFC

Civil and Structural Engineering
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TOWN OF LISBON

CONTRACT #2 WATER SYSTEM IMPROVEMENTS

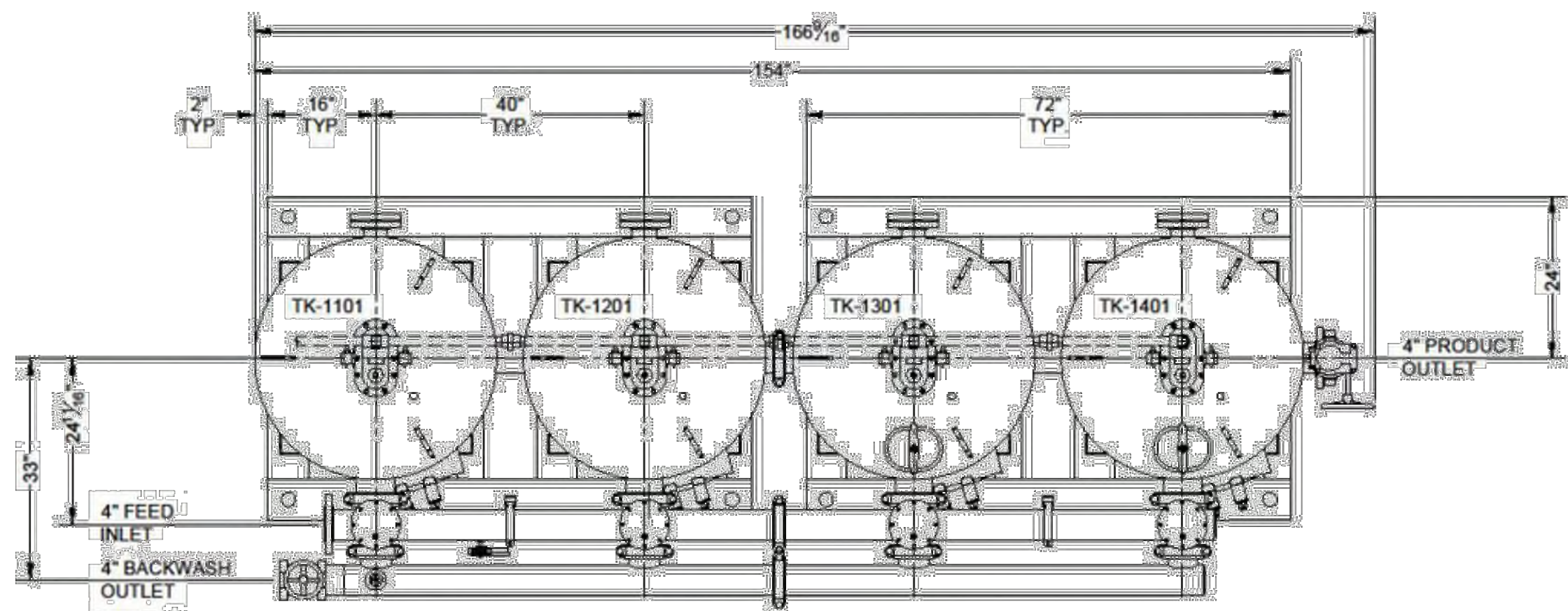
USDA NEP AREA 136010, DWY SR# 136010, DWG#-62

CHEMICAL BUILDING UPGRADES

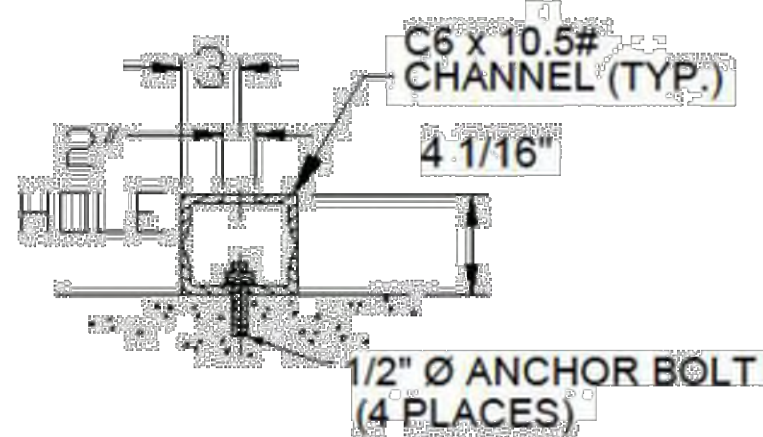
VALLEY VIEW DRIVE, LISBON, NEW HAMPSHIRE

STANDARD SANITARY SEWER DETAILS & NOTES

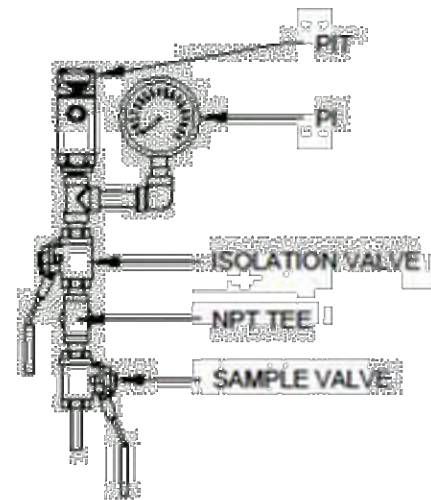
SHEET D1.2



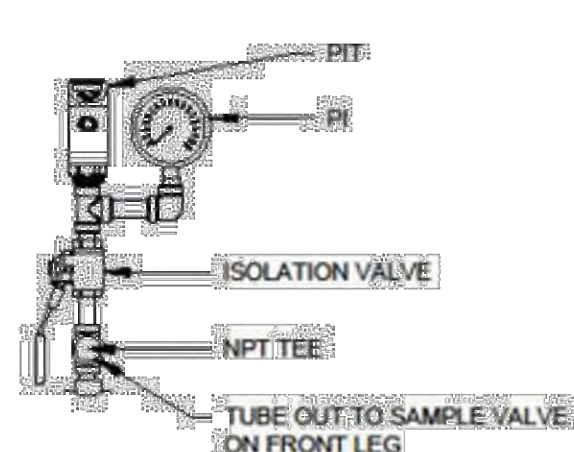
PLAN



SECTION A-A



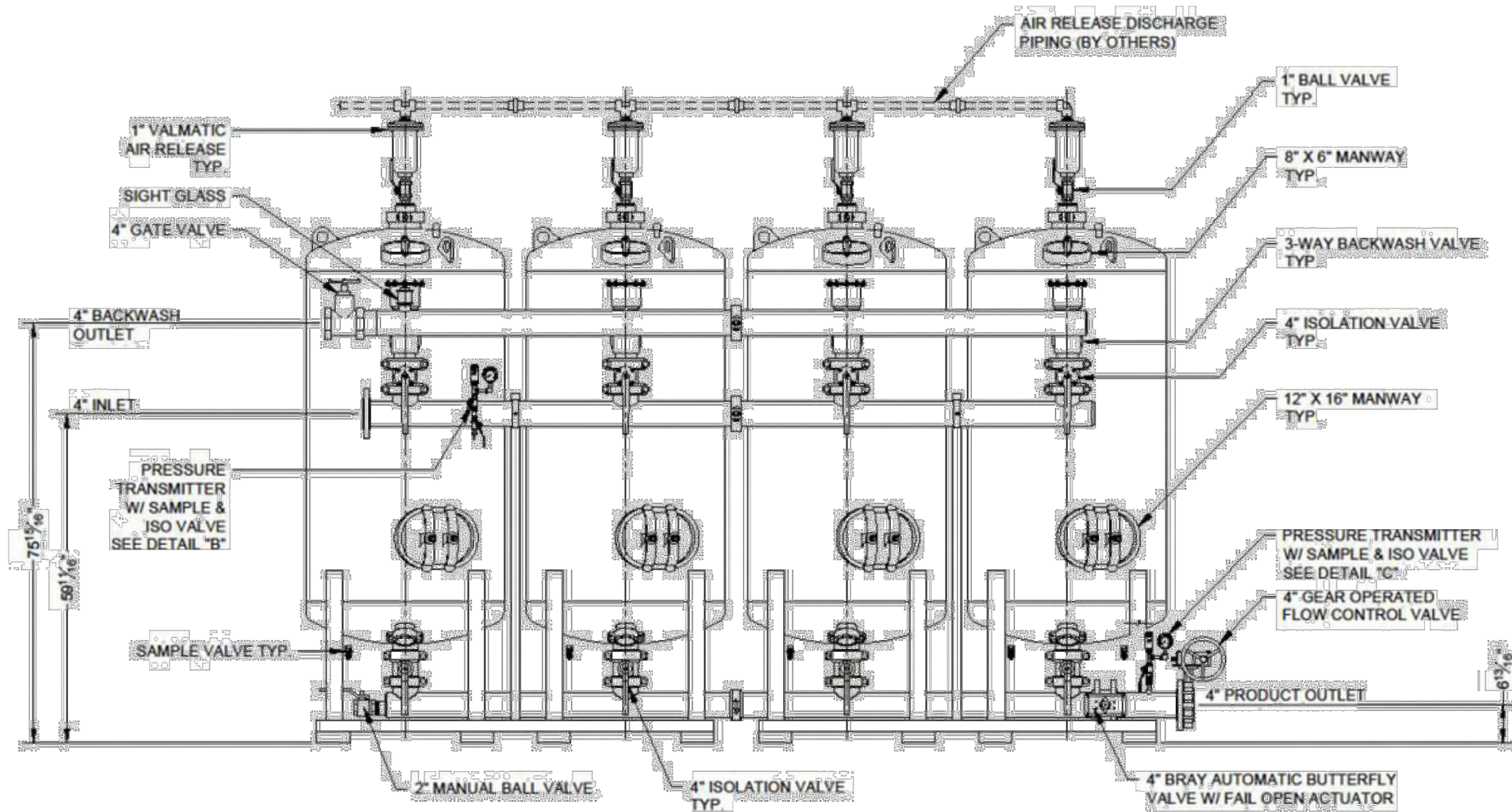
DETAIL "B"



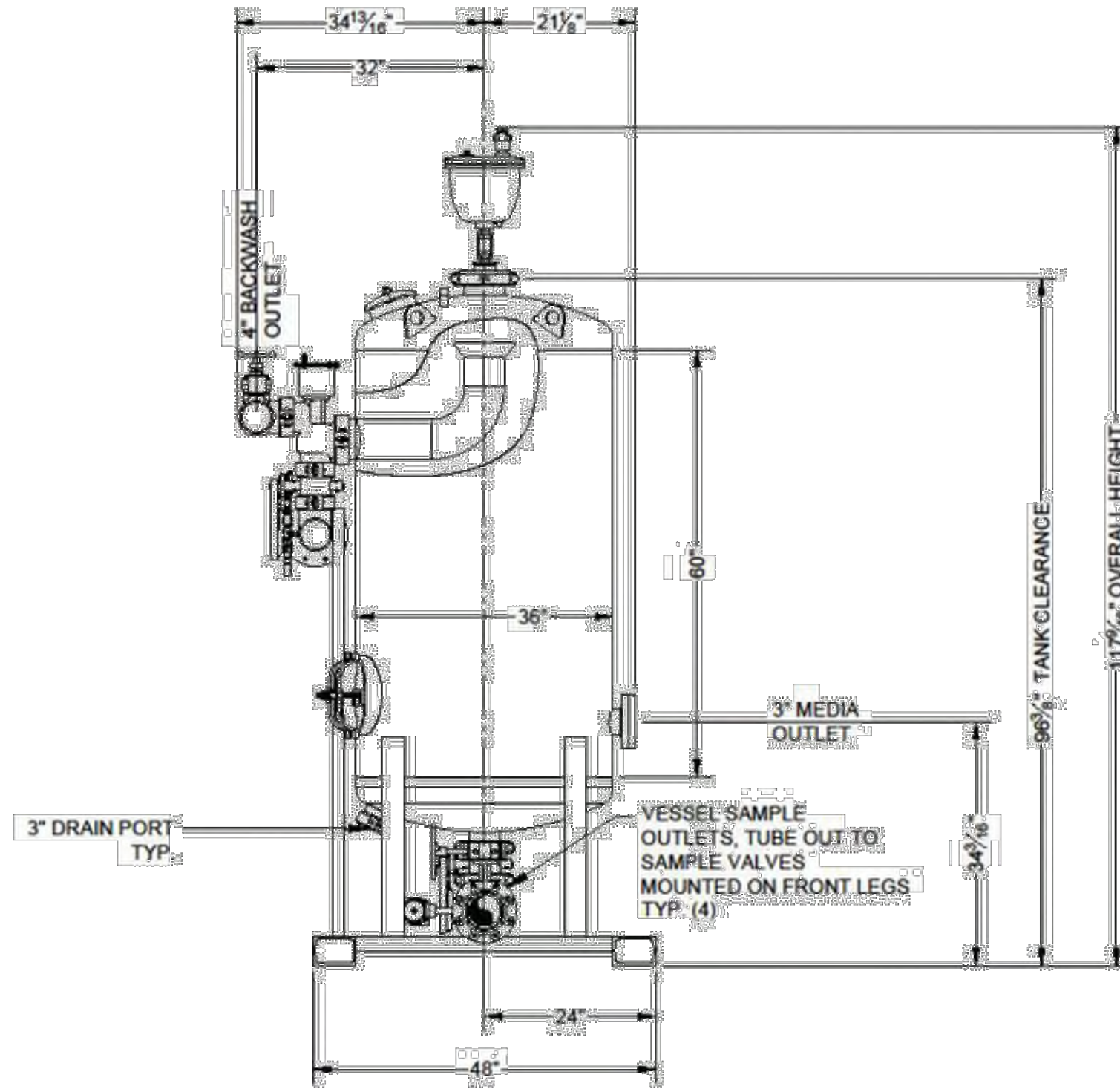
DETAIL "C"

GENERAL NOTES:
1. VESSEL MAT'L: SA36 BUTT WELD VESSEL CIRC SEAMS.
2. EXTERIOR COLOR: STANDARD BLUE, RAL 5010.
3. 304SS UNDERDRAIN LATERALS AND HUB.
4. SAMPLE VALVE ON INLET AND OUTLET PIPE HEADER, & OUTLET OF EACH TANK.
5. 100 PSIG NON CODE, HYDRO TEST 130 PSI, 1 HOUR.
6. 36"X30"X12" CONTROL PANEL (NOT SHOWN) SHIPPED LOOSE FOR ON SITE
7. INSTALLATION.
DESIGN DATA:

Flow rates per Train:		
	GPM	GPM/FT ²
Design Flow rate	xxx	xxx
Backwash Flow rate	xxx	xxx
Approx. Weight (lbs)		
A. Equipment	xxxxx	
B. Media	xxxxx	
C. Operating	xxxxx	
Media Requirements (per vessel in Ft ²)		
A. 1/2" x 1/4" Gravel	4.5	
B. 1/4" x 1/8" Gravel	2.5	
C. 1/8" x 1/16" Gravel	2.5	
D. xxxxxxxx	xxxx	



FRONT ELEVATION



RIGHT ELEVATION

REV.	DESCRIPTION	DATE	BY
------	-------------	------	----

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DRAWN BY: CAM
APPROVED BY: KB
DATE: 9-9-19

TITLE: GENERAL ARRANGEMENT
QUAD FILTER
XXXXXX

BIDDING PLANS
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DATE OF PRINT
JULY 20 2026
HORIZONS ENGINEERING

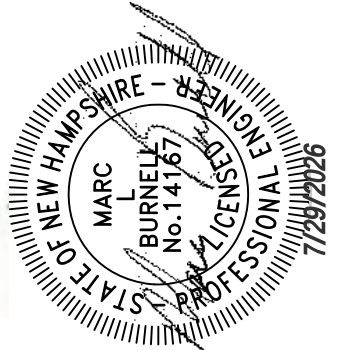
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TOWN OF LISBON
CONTRACT #2 WATER SYSTEM IMPROVEMENTS
USDA WER AREA 135010, DNR SEE 135010, DWG# 82
CHEMICAL BUILDING UPGRADES
VALLEY VIEW DRIVE, LISBON, NEW HAMPSHIRE

OXIPLUS QUAD FILTER SYSTEM DETAILS

SHEET D1.4

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PROJECT #:	21215	DATE:	JULY 2026	NO.	
DATE:	JULY 2026	NO.		DATE:	
MAP-LOT (FOR ARCHIVE):	*	NO.		DATE:	
SURVEYED BY:	HEI- D/G/NWS	NO.		DATE:	
ENGINEERED BY:	MLB	NO.		DATE:	
DRAWN BY:	LJM	NO.		DATE:	
CHECKED BY:	CFC	NO.		DATE:	

ENG	DWG
-----	-----

NOT ALL ABBREVIATIONS MAY BE USED)	
A	AMPERE(S)
A.C.	ALTERNATING CURRENT
AF	AMP FRAME
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AL	ALUMINUM
ALT	ALTERNATE
AT	AMP TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BW	BUSWAY
C	CONDUIT (SEE RACEWAYS AND CONDUCTORS)
CB	CIRCUIT BREAKER
CC	CONTROL CABINET
CATV	CABLE ACCESS TELEVISION
CKT	CIRCUIT
C.O.	CEILING
COND	CONDUCTOR
CONN	CONNECT
CP	CONTROL PANEL
CT	CURRENT TRANSFORMER
CU	COPPER
D.C.	DIRECT CURRENT
DM	DIMMER CONTROL
DISC	DISCONNECT
DN	DOWN
DP	DOUBLE POLE
DT	DOUBLE THROW
E.C.	ELECTRICAL CONTRACTOR
E.HTR	ELECTRIC HEATER
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
EOL	END LINE RESISTOR
EW	ELECTRIC WATER COOLER
EXIST	EXISTING
F	FUSE
F.P.C.	FIRE PROTECTION CONTRACTOR
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FDR	FEEDER
FL	FLOOR
FLUOR	FLUORESCENT
FS	FUSIBLE SWITCH
FVNR	FULL VOLTAGE NON-REVERSING
G.C.	GENERAL CONTRACTOR
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFP	GROUND FAULT PROTECTION
GRD	GROUND
H.D.	HOT DIPPED
H.I.D.	HIGH INTENSITY DISCHARGE
H.P.S.	HIGH PRESSURE SODIUM
HOA	HAND-OFF-AUTO
HP	HORSEPOWER
HZ	FREQUENCY IN CYCLES PER SECOND
IC	INTERCOM
IMC	INTERMEDIATE METALLIC CONDUIT
INC	INCANDESCENT
ISO	ISOLATED NEUTRAL
J	JUNCTION BOX
K	KEY OPERATED
KCMIL	THOUSAND CIRCULAR MIL(S)
kVA	KILOVOLT AMPERE(S)
KVAR	KILOVAR(S)
kW	KILOWATT(S)
L.P.S.	LOW PRESSURE SODIUM
LP	LIGHTING PANEL
LV	LOW VOLTAGE
MC	MECHANICAL CONTRACTOR
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MGST	MAGNETIC STARTER
MH	MANHOLE
MLO	MAIN LUGS ONLY
MTH	MOUNTING HEIGHT
MTR	MOTOR
MTS	MANUAL TRANSFER SWITCH
N.I.C.	NOT IN CONTRACT
NC	NORMALLY CLOSED
NF	NONFUSED
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OC	OVER COUNTER
OL	OVERLOAD ELEMENT
P	PILOT INDICATOR
PF	POWER FACTOR
PLG.C	PLUMBING CONTRACTOR
PNL	PANEL
PP	POWER PANEL
PR1	PRIMARY
PS	PULL SWITCH
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE
R	RELAY
RC	REMOTE CONTROL
RECP	RECEPTACLE
RGS	RIGID METAL CONDUIT
S.S.	SOLID STATE
SEC	SECONDARY
SMR	SURFACE METAL RACEWAY
SP	SINGLE POLE
SPK	SPEAKER
SST	SOLID STATE TRIP
ST	SINGLE THROW
SW	SWITCH
SWBD	SWITCHBOARD
T.E.	TELEPHONE
TB	TERMINAL BOX
TEMP	TEMPORARY
TV	TELEVISION
TYP	TYPICAL
UC	UNDER CABINET
UG	UNDERGROUND
UH	UNIT HEATER
UNG	UNGROUND
UPS	UNINTERRUPTED POWER SYSTEM
USB	UNIVERSAL SERIAL BUS
V	VOLT(S)
VA	VOLT AMP(S)
VAR	REACTIVE VOLT AMPERES
VP	VAPORPROOF
WG	WIRE GUARD
WP	WEATHERPROOF
XFMR	TRANSFORMER
XP	EXPLOSION PROOF

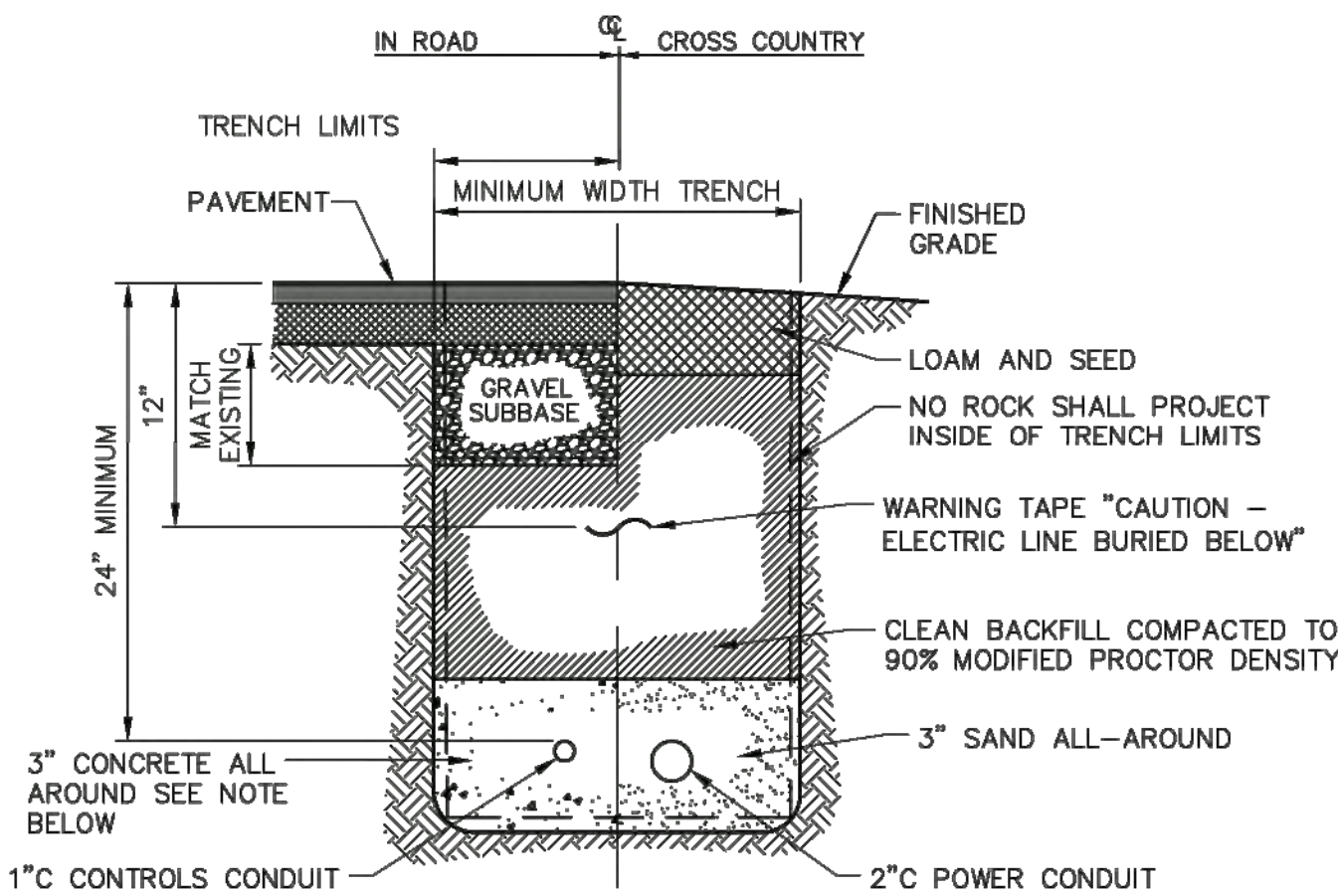
MOUNTING ABBREVIATIONS LEGEND:	
SUBSCRIPT	DESCRIPTION
AT OUTLET	
OC	OVER COUNTER OUTLET: INSTALL BOTTOM OF OUTLET BOX 1-1/2" ABOVE HIGHEST ELEMENT OF COUNTER (I.E., BACKSPASH OR COUNTER TOP IF NO BACK SPLASH).
CR	CASEWORK RECESSED OUTLET: MOUNT BOX IN CASEWORK VERTICAL SURFACE.
EQ	EQUIPMENT OUTLET: FINAL TERMINATION METHOD AND EXACT LOCATION SHALL BE DETERMINED FROM EQUIPMENT MANUFACTURER'S APPROVED SHOP DRAWINGS.
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
MTH	MOUNTING HEIGHT

SYMBOL	DESCRIPTION
	LOW VOLTAGE WIRING
	CIRCUIT IN CONDUIT RUN IN-SLAB OR UNDERGROUND
	CIRCUIT IN CONDUIT CONCEALED IN WALLS OR ABOVE CEILING WHERE POSSIBLE.
	HOMERUN TO PANELBOARD OR AS NOTED
	CONDUIT TURNING UP
	CONDUIT TURNING DOWN

SYMBOL	NUMBER BY THE SIDE OF SYMBOL DENOTES CIRCUIT NUMBER. DEVICE MOUNTING HEIGHTS ARE DENOTED BELOW UNLESS OTHERWISE NOTED ON PLANS. COORDINATE EXACT LOCATIONS AND ALL MOUNTING HEIGHTS W/ ARCHITECTURAL PLANS/SECTIONS.
	DUPLEX CONVENIENCE OUTLET. MOUNT AT +18" AFF.
	DUPLEX CONVENIENCE OUTLET. MOUNT AT +18" AFF. 'X' DENOTES REUSE LOCATION.
	DOUBLE DUPLEX OUTLET (QUADPLEX RECEPTACLE). MOUNT AT +18" AFF.
	DUPLEX OUTLET. INSTALLED ABOVE CEILING AT LOCATION SHOWN.
	SINGLE DEDICATED OUTLET. MOUNT @ 18" AFF.
	SPECIAL OUTLET AS NOTED ON DRAWINGS. MOUNT AT +18" AFF. 'R' DENOTES RANGE. 'D' DENOTES DRYER.
	WIREMOLD 3000. DUPLEX RECEPTACLES SPACED 24" ON CENTER.
	WALL MOUNT AT 36" AFF.
	GROUND FAULT CIRCUIT INTERRUPTER
OC	OVER-COUNTER
WP	WEATHERPROOF

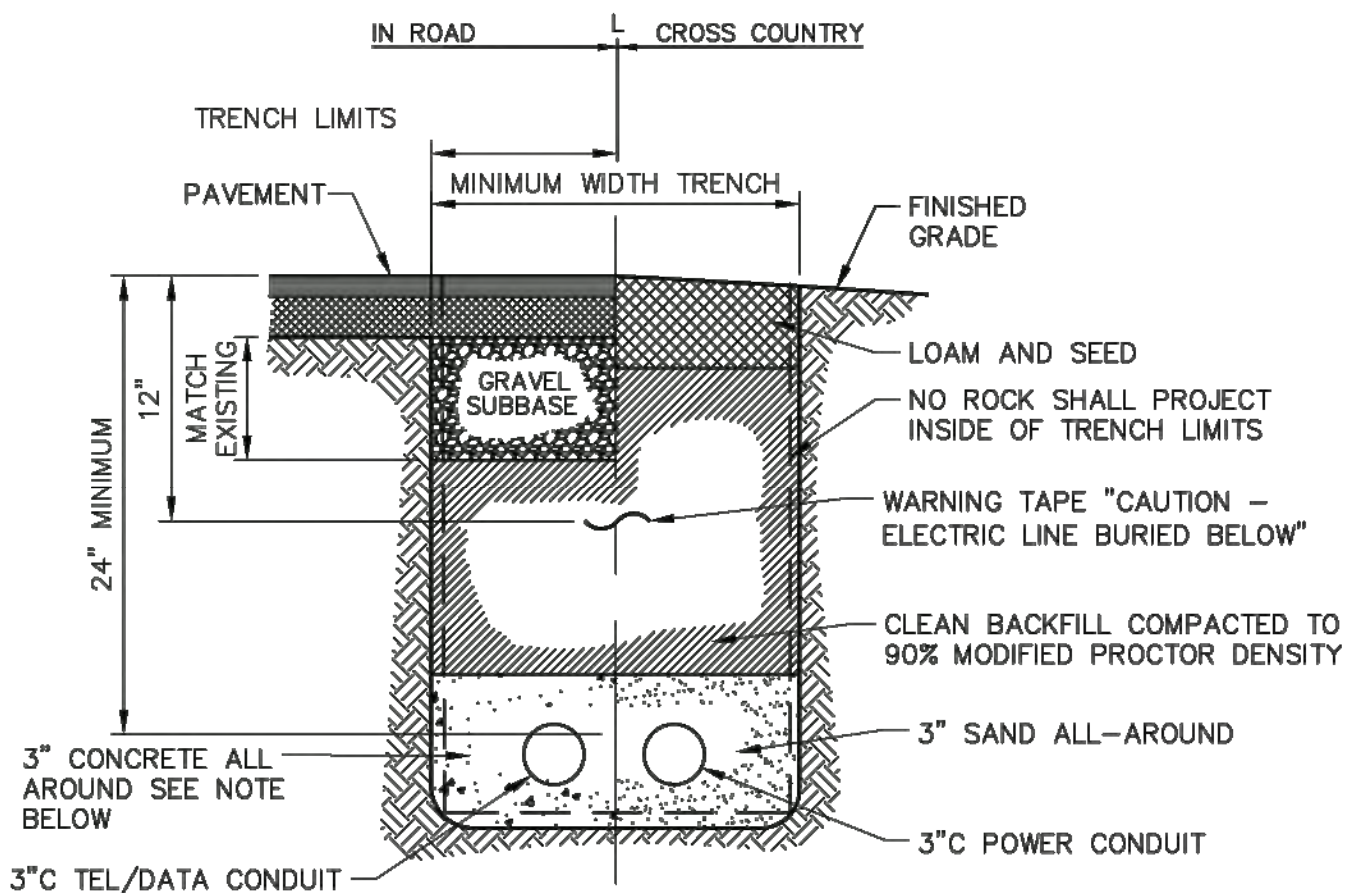
SYMBOL	REFER TO PLANS FOR EXACT QUANTITIES AND LOCATIONS.
	FLUSH MOUNTED PANELBOARD AND CABINET. MOUNT AT 6'-6" MAX. AFF TO TOP.
	SURFACE MOUNTED PANELBOARD AND CABINET. MOUNT AT 6'-6" MAX. AFF TO TOP.
	ELECTRICAL PULL BOX, SIZED AS REQUIRED OR AS SHOWN ON DRAWINGS.
	JUNCTION BOX (JB) (IN ACCESSIBLE LOCATION).
	JUNCTION BOX (JB) (IN ACCESSIBLE LOCATION) W/ FLEXIBLE CONDUIT TO EQUIPMENT AS SHOWN. - JUNCTION BOX SUBSCRIPTS: 'C' CONTROL, 'D' DATA, 'DT' DATA/TELEPHONE, 'F' FIRE ALARM, 'P' POWER, 'T' TELEPHONE.
	MOTOR. HORSEPOWER AS SHOWN ON DRAWINGS.
	H.P. RATED MANUAL MOTOR STARTER (WEATHERPROOF WHERE OUTSIDE). SINGLE OR 2 POLE AS REQUIRED
	FUSED DISCONNECT SWITCH. SIZE AND FUSES PER MANUFACTURER'S RECOMMENDATIONS. WEATHERPROOF (WP) WHEN LOCATED OUTSIDE. 30A/3P MINIMUM.
	MOTOR CONTROLLER.

NOT TO SCALE



NOTES:
1. PROVIDE 3" CONCRETE ENCASEMENT AROUND PVC CONDUITS AT ALL ROAD AND DRIVEWAY CROSSINGS TO 5' BEYOND EDGE OF PAVEMENT. TYPICAL.

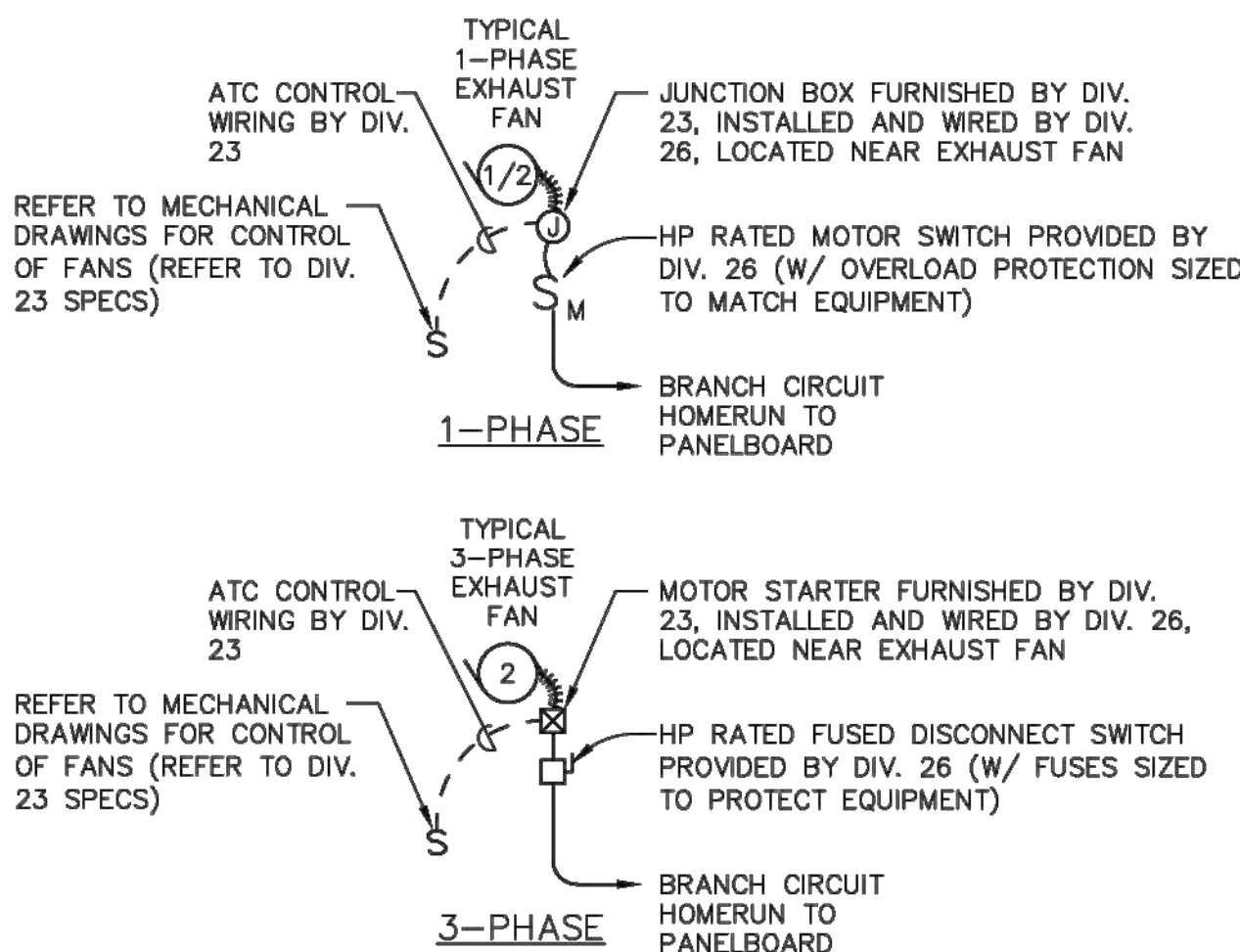
1 TYPICAL POWER AND CONTROLS TRENCH SECTION
E401 NOT TO SCALE



NOTES:

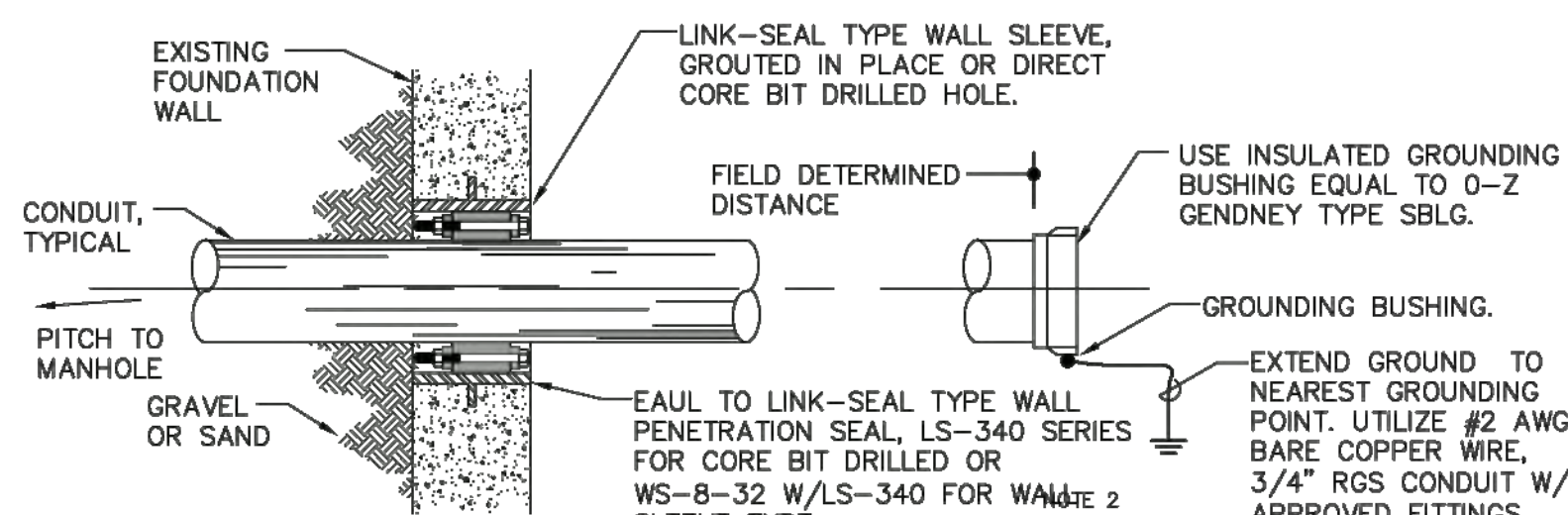
1. PROVIDE 3" CONCRETE ENCASEMENT AROUND PVC CONDUITS AT ALL ROAD AND DRIVEWAY CROSSINGS TO 5' BEYOND EDGE OF PAVEMENT. TYPICAL.

2 TYPICAL POWER TRENCH SECTION
E401 NOT TO SCALE



NOT TO SCALE

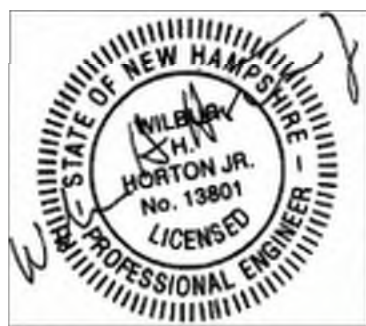
1. ALL ELECTRICAL WORK SHALL BE INSTALLED ACCORDING TO THE LATEST STATE ADOPTED NATIONAL ELECTRICAL CODE (NEC) AND ITS AMENDMENTS, NFPA AND ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.
2. THE ELECTRICAL CONTRACTOR SHALL OBTAIN AND PAY FOR ALL REQUIRED PERMITS AND INSPECTIONS.
3. ALL POWER WIRING SHALL BE IN CONDUIT OR MC CABLE (REFER TO SPECIFICATIONS). ALL RACEWAYS SHALL BE EMT (ELECTRICAL METALLIC TUBING) FOR INTERIOR AND PVC FOR UNDERGROUND. THE USE OF EXISTING CONCEALED CONDUITS FOUND TO BE IN GOOD ELECTRICAL CONDITION MAY BE USED. ALL CONDUCTORS SHALL BE COPPER GROUND (TYPICAL) WITH NUMBER OF CONDUCTORS AS REQUIRED. REFER TO PANEL SCHEDULES, TYPICAL. ALL CONDUCTORS SHALL BE COPPER, WIRE SIZE NO. 8 AWG AND SMALLER BE TYPE THHN/THWN INSULATION. SIZES LARGER THEN NO. 8 SHALL HAVE TYPE "THHN/THWN" INSULATION UNLESS OTHERWISE NOTED.
4. LIMIT 20A, 120V BRANCH CIRCUITS TO A MAXIMUM 1920VA LOAD AND 15A, 120V BRANCH CIRCUIT TO A MAXIMUM 1440VA LOAD.
5. ALL WIRING SHALL BE CONCEALED IN WALLS AND ABOVE CEILING IN FINISHED AREAS AND WHEREVER POSSIBLE. WIRING IN UTILITY AREAS (ELECTRICAL SPACE) MAY BE RUN EXPOSED AS APPROVED BY THE ARCHITECT. EXPOSED WIRING SHALL BE IN CONDUIT, BE PARALLEL TO BUILDING STRUCTURAL ELEMENTS AND PRESENT A NEAT AND COMPLETE INSTALLATION.
6. CONDUITS, RACEWAYS AND CABLES SHALL BE PROPERLY AND SECURELY ATTACHED TO BUILDING STRUCTURAL COMPONENTS AS REQUIRED BY NEC ALL FASTENERS AND HARDWARE SHALL BE APPROVED FOR THE INSTALLATION AND THE CONDITIONS ENCOUNTERED.
7. EACH OUTLET OR JUNCTION IN ANY OF THE WIRING SYSTEMS SHALL BE MADE IN AN APPROVED, METALLIC JUNCTION BOX. SUCH BOX SHALL BE SUITABLE FOR THE SIZE AND NUMBER OF CONDUCTORS AND DEVICES TO BE INSTALLED. AS WELL AS THE CONDITION ENCOUNTERED. ALL SPLICES SHALL BE MADE WITH APPROVED, ELECTRICAL CONNECTORS.
8. VERIFY ALL STRUCTURAL, ARCHITECTURAL AND ELECTRICAL CONDITIONS (DUCT CLEARANCES, COUNTER HEIGHTS, DOOR SWINGS, ETC.) PRIOR TO ROUGH IN FOR ELECTRICAL WIRING EQUIPMENT.
9. PRIOR TO ROUGH-IN OF ANY NEW PANEL BOARDS (IN NEW LOCATION) AND RECEPTACLES, THESE LOCATIONS AND MOUNTING HEIGHTS SHALL BE CLEARLY MARKED AND IDENTIFIED WITH SPRAY PAINT. ONCE COMPLETED, THE ARCHITECT/OWNER SHALL BE NOTIFIED THAT ALL LOCATIONS HAVE BEEN MARKED AND ARE READY FOR THEIR APPROVAL.
10. ALL ELECTRICAL WORK SHALL BE CAREFULLY COORDINATED WITH THE WORK OF OTHER TRADES AND ON-SITE CONDITIONS. WHERE CUTTING, DRILLING OR ALTERATION TO THE WORK OF OTHERS IS NECESSARY, FOR THE PROPER INSTALLATION OF ELECTRICAL EQUIPMENT, SUCH WORK SHALL BE PLANNED IN ADVANCE WITH THE GENERAL CONTRACTOR AND SHALL BE CAREFULLY DONE. ANY DAMAGE TO THE BUILDINGS OR EQUIPMENT SHALL BE REPAIRED BY PROPERLY TRAINED PERSONNEL, TO THE SATISFACTION OF THE ARCHITECT, AT NO ADDITIONAL COST TO THE OWNER.
11. DURING ROUGH IN AND FINISHED STAGES OF CONSTRUCTION, THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO PROTECT AND KEEP CLEAN ALL ELECTRICAL EQUIPMENT, PANELS, FIXTURES AND DEVICES.
12. THE CONTRACTOR SHALL PROVIDE ALL INFORMATION ABOUT EQUIPMENT WHICH IS BEING FURNISHED TO THE GENERAL CONTRACTOR FOR COORDINATION PURPOSES. THE CONTRACTOR SHALL PROVIDE ALL INSTALLATION DETAILS AND SUPPORT COMPONENTS TO THE GENERAL CONTRACTOR SO THAT THESE MAY BE BUILT INTO THE CONSTRUCTION IN A TIMELY MANNER.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF THE FINAL LOCATIONS OF ELECTRICAL, HVAC AND OWNER'S EQUIPMENT AND POWER CONNECTION DETAILS SO THAT THE ASSOCIATED ELECTRICAL WORK WILL BE PROPERLY COORDINATED AND INSTALLED.
14. WHERE WIRING CAN NOT BE ROUTED CONCEALED UTILIZE WIREMOLD SURFACE RACEWAY (SEE SPECIFICATIONS - WITH ALL NECESSARY FITTINGS/HARDWARE AND ATTACHMENT) WITH STRANDED TYPE TYPE THHN/THWN CONDUCTOR. ALL COMPONENTS SHALL BE PAINTED AS DIRECTED BY THE ARCHITECT. COORDINATE MOUNTING WITH ARCHITECT.
15. THE INTERIOR ELECTRICAL SYSTEM SHALL BE COMPLETELY AND EFFECTIVELY GROUNDING AS REQUIRED BY NEC. ALL METALLIC RACEWAYS SHALL BE ELECTRICALLY AND ELECTRICALLY SECURE AT ALL JOINTS AND AT ALL BOXES, CABINETS, FITTINGS, AND EQUIPMENT.
16. COMPLETE ALL PANEL BOARD CIRCUITS DIRECTORY CARDS TO REFLECT AS-BUILT CONDITIONS.
17. ALL RACEWAYS SHALL BE PROVIDED WITH EQUIPMENT GROUND CONDUCTOR. EQUIPMENT GROUNDING CONDUCTOR SHALL BE INSTALLED IN ALL ELECTRICAL RACEWAYS AND SHALL BE SPECIFIED IN ACCORDANCE WITH NEC 250-95 AND SHALL BE CONTINUOUS.
18. FURNISH, INSTALL, TEST, CALIBRATE, AND OTHERWISE MAKE OPERATIONAL ALL DEVICES AND EQUIPMENT SHOWN ON THESE DRAWINGS.
19. THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS IS TO OBTAIN A COMPLETE AND SATISFACTORY INSTALLATION. AN ATTEMPT HAS BEEN MADE TO SEPARATE AND DEFINE THE CONTRACTOR'S WORK. THESE DRAWINGS ARE DIAGRAMMATIC, BUT SHALL BE FOLLOWED AS CLOSELY AS ACTUAL CONSTRUCTION OF THE FACILITY AND THE WORK OF OTHER TRADES WILL PERMIT. THESE DRAWINGS UTILIZE SYMBOLS AND SCHEMATIC DIAGRAMS TO INDICATE VARIOUS ITEMS OF WORK. THEREFORE, NO INTERPRETATION WILL BE MADE FROM THE LIMITATION OF SYMBOLS AND DIAGRAMS THAT ANY ELEMENTS NECESSARY FOR THE COMPLETE INSTALLATION ARE EXCLUDED. THE ARCHITECT SHOULD BE NOTIFIED OF ANY DISCREPANCIES, OMISSIONS, CONFLICTS, OR INTERFERENCE WHICH MAY OCCUR BETWEEN VARIOUS DRAWINGS AND SPECIFICATIONS. IF SUCH NOTIFICATION IS NOT RECEIVED, THE INSTALLING CONTRACTOR(S) SHALL BE RESPONSIBLE FOR THEIR INTERPRETATIONS.



NOTES:

1. LINK-SEAL TYPE SEALING FITTING SHALL BE USED FOR ALL WALL PENETRATIONS. IF CORE BIT DRILLED SYSTEM IS USED, CORE DRILL IS SMOOTH AND SUITABLE THE MODULE SEALING SYSTEM MAY BE USED. USE WALL SLEEVES IF ENTRY IS SIMILAR TO DETAIL 'CE'.
2. SLOPE DUCTS TOWARDS MH.
3. ALL CONDUIT PENETRATIONS SHALL BE PERPENDICULAR THROUGH FOUNDATION FOR PROPER SEAL.

NOT TO SCALE

[illegible]

CLIENT NAME
TOWN OF LISBON
46 SCHOOL STREET
LISBON, NH 03585
(603) 838-6376

PROJECT NAME
WATER SYSTEM
IMPROVEMENTS
PROJECT

PROJECT ADDRESS
VALLEYVIEW DRIVE
LISBON, NH

SHEET TITLE

ELECTRICAL LEGEND AND GENERAL NOTES

D&K PROJECT #	PROJ. ENG.
530379	CFA

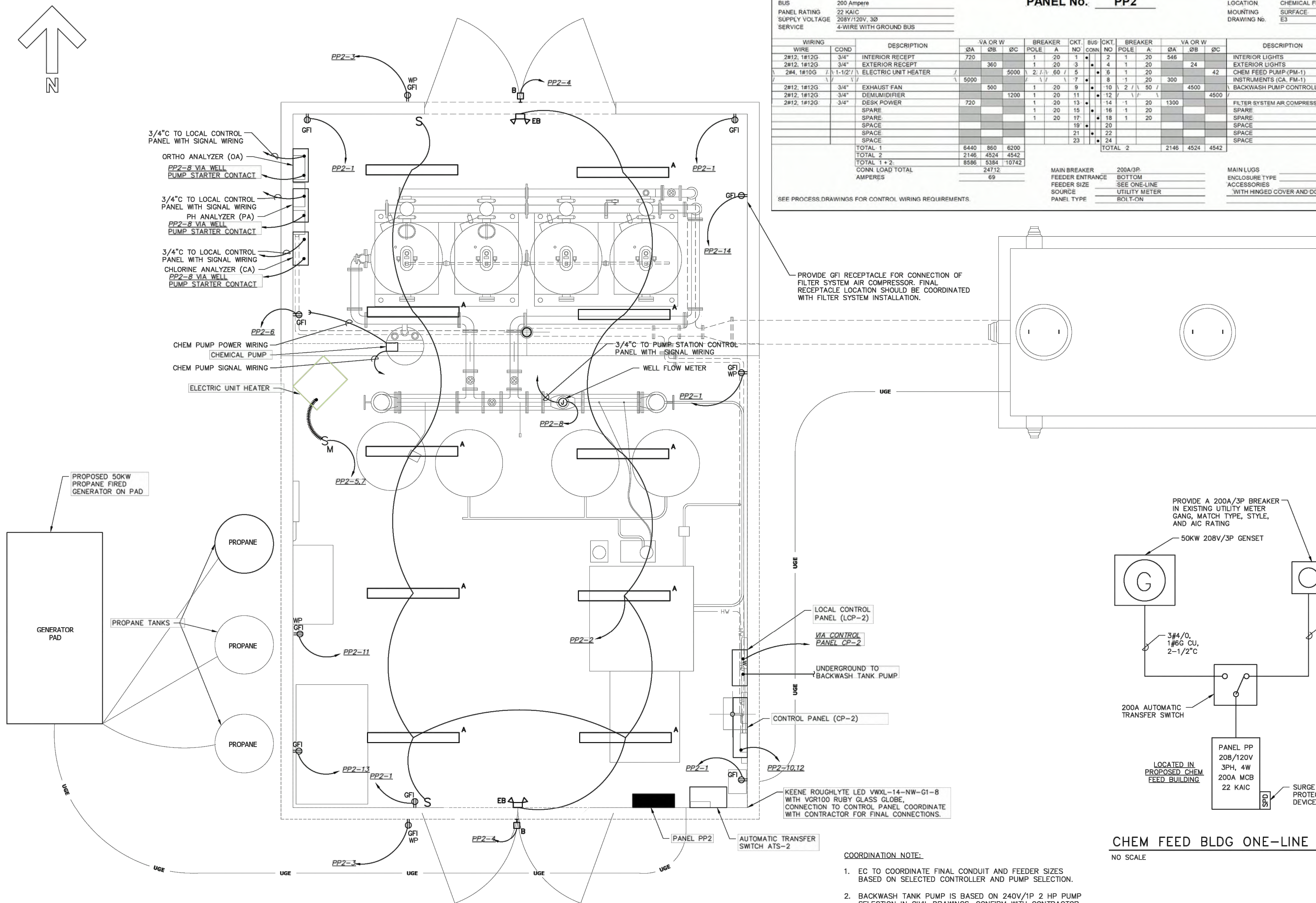
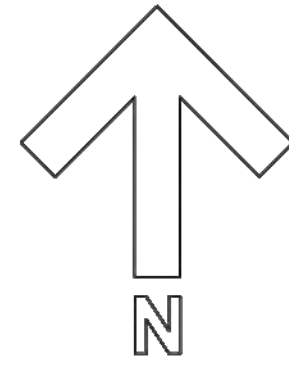
DRAWN BY EJD	CHECKED BY WHH
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DATE _____

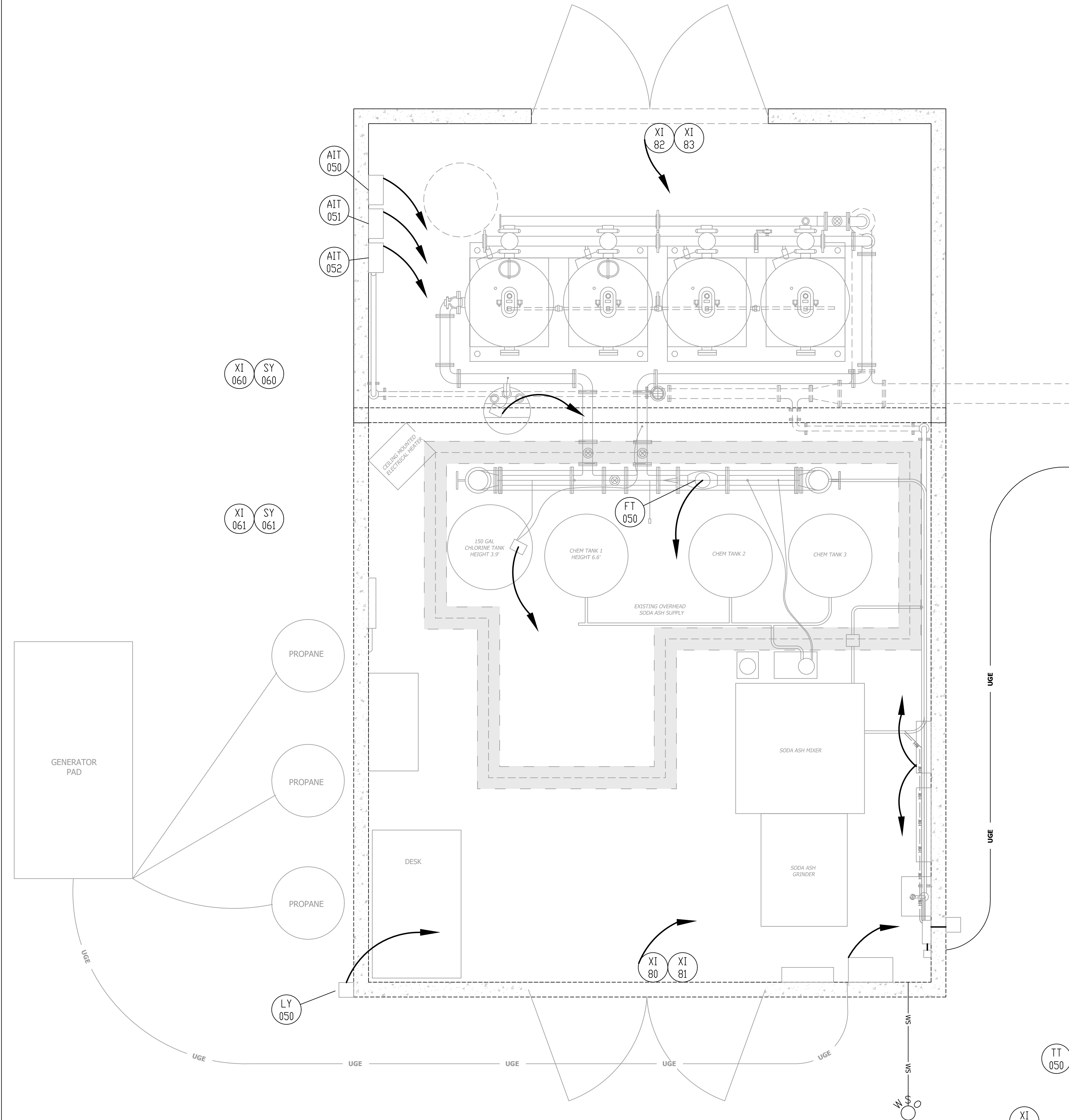
SHEET NUMBER

E1

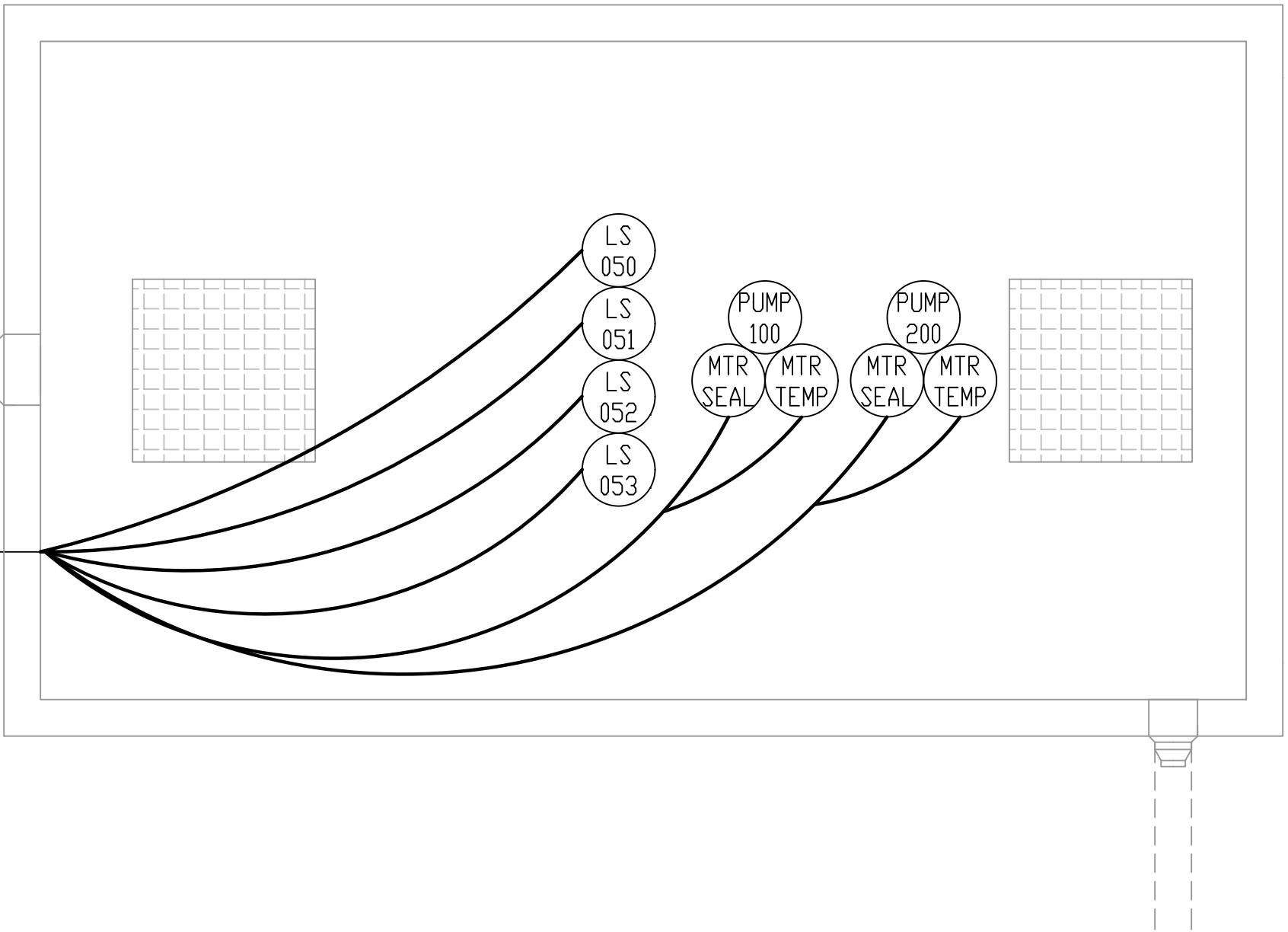
I:\5\330379L\Horizons Town of Lisbon Electrical Design Drawings\Electrical\Electrical Set.dwg 1/28/2025 8:39 PM



BUS		200 Ampere		PANEL No.		PP2		LOCATION		CHEMICAL FEED BUILDING							
PANEL RATING		22 KAIC		MOUNTING		SURFACE		DRAWING No.		E3							
SUPPLY VOLTAGE		208Y/120V, 3Ø															
SERVICE		4-WIRE WITH GROUND BUS															
WIRING		COND		DESCRIPTION		VA OR W		BREAKER		VA OR W		DESCRIPTION		COND		WIRING	
WIRE		ØA		ØB		ØC		POLE		A		ØA		ØB		ØC	
2#12, 1#12G		3/4"		INTERIOR RECEPT		720		1		20		1		20		546	
2#12, 1#12G		3/4"		EXTERIOR RECEPT		360		1		20		3		1		20	
2#4, 1#10G		1-1/2"		ELECTRIC UNIT HEATER		5000		2		60		5		6		1	
2#12, 1#12G		3/4"		EXHAUST FAN		5000		1		20		9		8		1	
2#12, 1#12G		3/4"		DEMUMIDIFIER		1200		1		20		11		10		2	
2#12, 1#12G		3/4"		DESK POWER		720		1		20		13		14		1	
				SPARE				1		20		15		16		1	
				SPARE				1		20		17		18		1	
				SPARE								19		20			
				SPARE								21		22			
				SPARE								23		24			
TOTAL 1		6440		860		6200		TOTAL 2		2146		4524		4542			
TOTAL 2		2146		4524		4542											
TOTAL 1 + 2		8586		5384		10742											
CONN. LOAD TOTAL		24712															
AMPERES		69															
								MAIN BREAKER		200A/3P		MAIN LUGS		N/A			
								FEEDER ENTRANCE		BOTTOM		ENCLOSURE TYPE		NEMA 3R			
								FEEDER SIZE		SEE ONE-LINE		ACCESSORIES					
								SOURCE		UTILITY METER		WITH HINGED COVER AND DOOR IN DOOR CONSTRUCTION					
								PANEL TYPE		BOLT-ON							
SEE PROCESS DRAWINGS FOR CONTROL WIRING REQUIREMENTS.																	



PROPOSED CHEMICAL FEED BUILDING LAYOUT
SCALE: 1/2" = 1'-0"



- NOTE:**
- THE CONTRACTOR SHALL DESIGN FABRICATE AND INSTALL THE PLC/VFD PANEL PER PANEL SPECIFICATIONS. CONTRACTOR SHALL SIZE , FURNISHED AND INSTALLED CABLE / CONDUIT FOR ALL INSTRUMENTATION AND FIELD DEVICES AND ROUTE TO THE PLC/VFD PANEL. REFER TO I/O LIST AND NOTES #2 THROUGH #6 FOR ADDITION REQUIREMENTS.
 - CONTRACTOR TO PROVIDE EQUIPMENT MAIN CONDUIT AND INSTRUMENT BRANCH CONDUITS. ALL CABLE, CONDUITS, ELECTRICAL EQUIPMENT, AND RACEWAYS SHALL BE PROPERLY INSTALLED IN ACCORDANCE TO THE NATIONAL ELECTRICAL CODE AND MFR'S DOCUMENTATION. PROVIDE ALL MATERIAL, SUPPORTS, GUA BOXES TO FACILITATE INSTRUMENTATION WIRING. PROPER WIRING METHODS AND TECHNIQUES ARE REQUIRED. FURNISH AND INSTALL CONDUIT SEAL ON ALL CONDUITS WHERE REQUIRED BY NEC.
 - PLANS ARE DIAGRAMMATIC. CONTRACTOR SHALL FIELD DETERMINE OPTIMUM ROUTING OF CONDUITS TO FIELD DEVICES. WHERE PRACTICAL, HOME RUNS OF SAME CONTROL TYPE WITH SAME DESTINATION SHALL BE COMBINED INTO COMMON CONDUITS IN ACCORDANCE WITH NEC. CONDUIT AND INSTRUMENT TUBING SHALL NOT CREATE A TRIP HAZARD OR OBSTRUCTION WITH OPERATION OR MAINTENANCE.
 - BUILDING ELECTRICAL EQUIPMENT MUST BE COORDINATED WITH PLUMBING TO AVOID CODE VIOLATIONS.
 - N/A
 - RADIO ANTENNA SHALL BE ON INSTALLED ON THE BUILDING EXTERIOR AND EXTEND PASS ROOF LINE. PROVIDE LIGHTING / SURGE PROTECTION.
 - THE CONTRACTOR SHALL MOUNT THE VENDOR PROVIDED 36" X 30" X 12" CONTROL PANEL ON INTERIOR BUILDING WALL NEAR THE PLC/MOTOR STARTER PANEL. FURNISH AND INSTALL CABLE / CONDUIT FROM CONTROL PANEL TO FILTRATION SKID INSTRUMENTATION. PROVIDE ALL HARDWARE ND MATERIAL REQUIRED TO FACILITATE THE INSTALLATION AND WIRING OF THE PANEL.

BIDDING PLANS
NOT FOR CONSTRUCTION

PROJECT #:	NO.	DATE	REVISION DESCRIPTION	ENG	DWG
21215					
JULY 2026					
MAP-LOT (OR ARCHIVE)					
HEI- D/G/NWS					
MLB					
LM					
CFC					
horizons Engineering Civil and Structural Engineering Land Surveying and Environmental Consulting MAINE • NEW HAMPSHIRE • VERMONT www.horizonsengineering.com					
TOWN OF LISBON CONTRACT #2 WATER SYSTEM IMPROVEMENTS USDA MAP AREA 136.010, DW SR# 136.010, DWGT-82 CHEMICAL BUILDING UPGRADES VALLEY VIEW DRIVE, LISBON, NEW HAMPSHIRE					
CHEMICAL FEED BUILDING INSTRUMENT PROCESS PLAN					
E3					