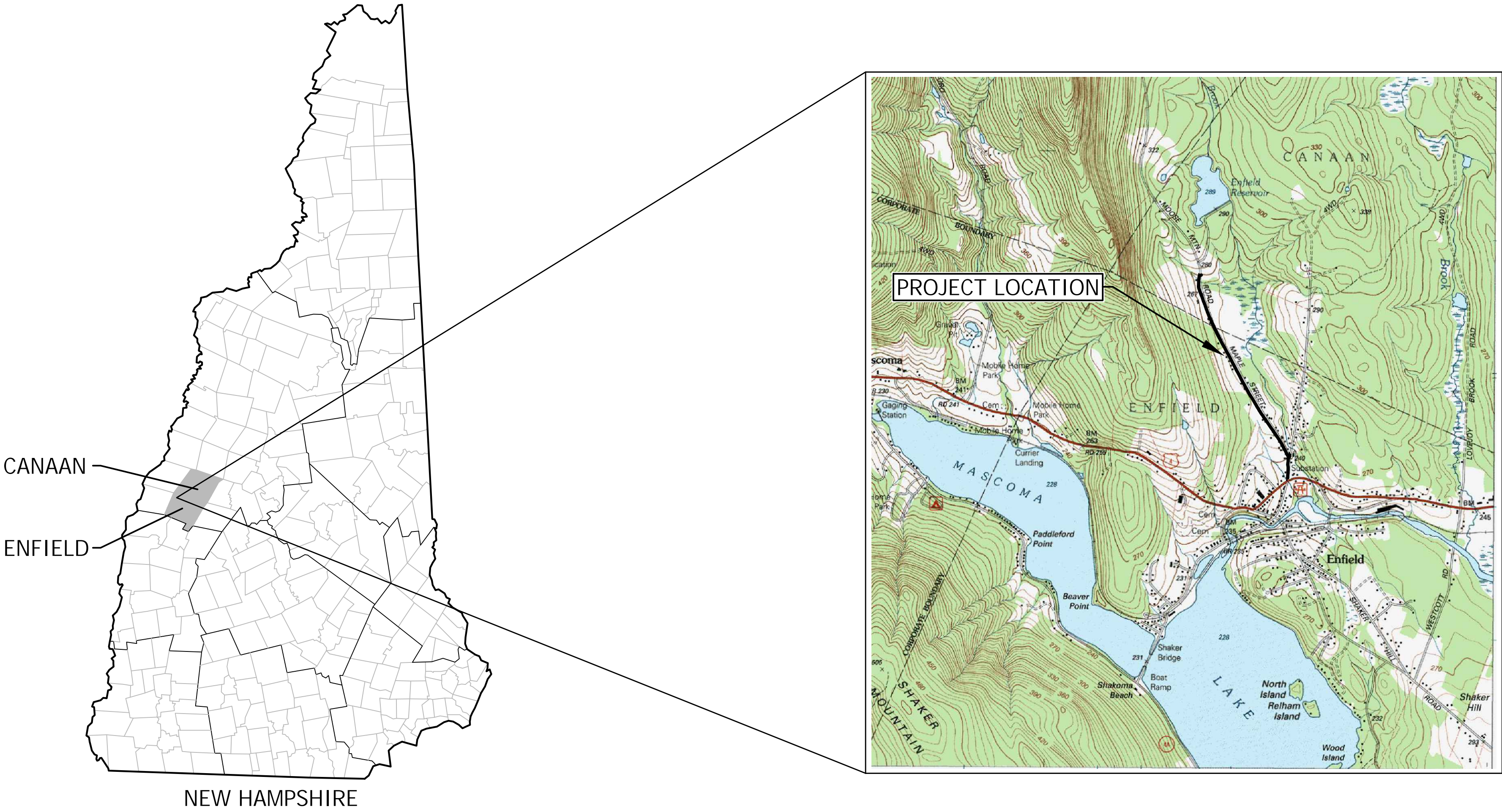


TOWN OF ENFIELD

WATER SYSTEM IMPROVEMENTS - WATER MAIN REPLACEMENT

MAPLE STREET and MOOSE MOUNTAIN ROAD

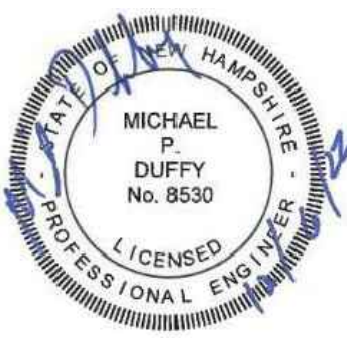
ENFIELD & CANAAN, NEW HAMPSHIRE
DECEMBER 2022



LOCATION PLAN
SCALE: 1" = 2000'

OWNER:
TOWN OF ENFIELD
PUBLIC WORKS DEPARTMENT
74 LOCKHAVEN ROAD
PO BOX 373
ENFIELD, NH 03747

ENGINEER AND SURVEYOR:



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

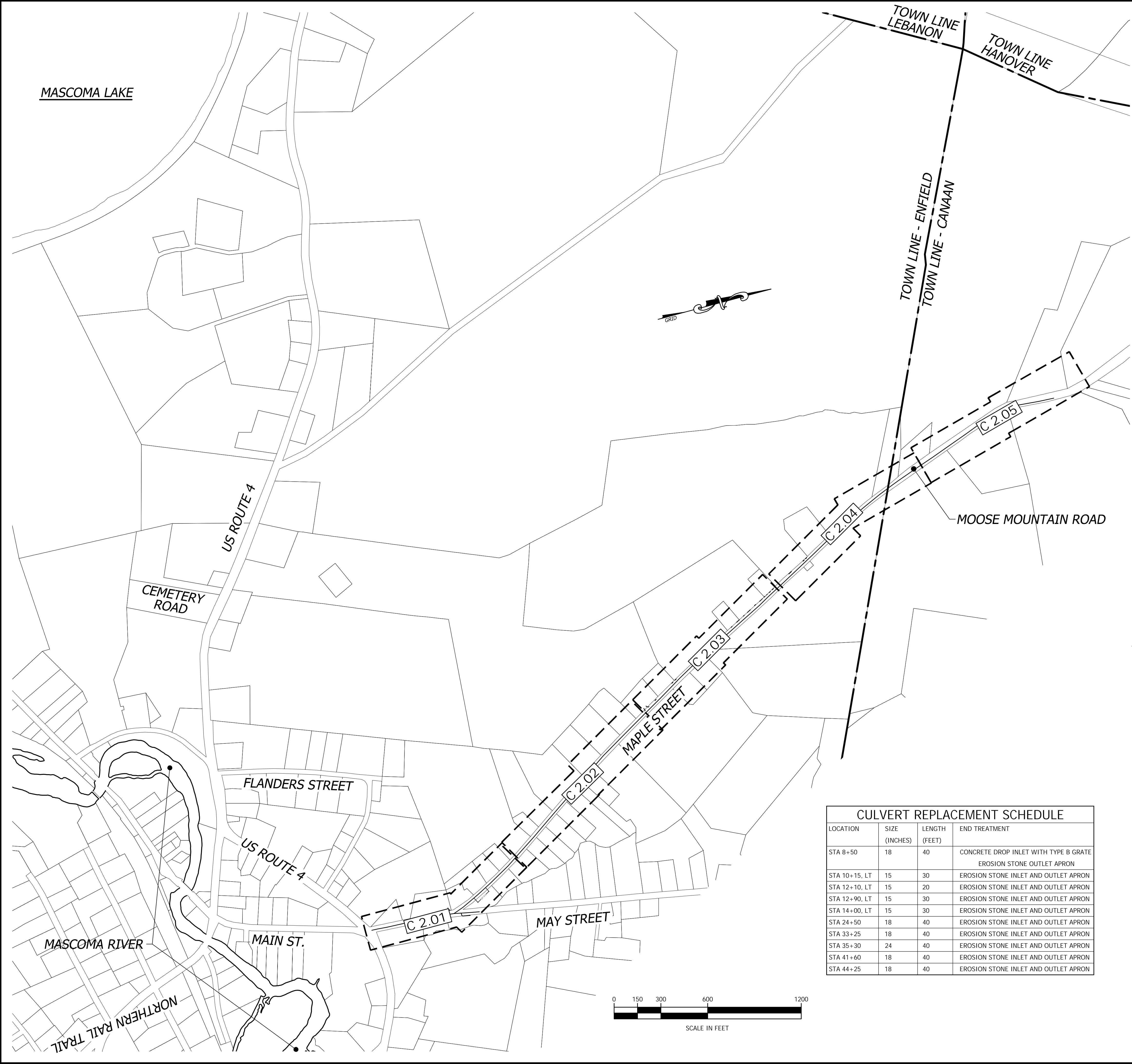
SHEET INDEX:

COVER	
C 1.1	SHEET LAYOUT, GENERAL NOTES AND LEGEND
C 2.01-2.05	WATER MAIN PLANS
C 3.1	STANDARD WATER NOTES AND DETAIL
C 3.2	STANDARD EROSION CONTROL

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GENERAL NOTES

- ALL WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THESE PLANS AND "TECHNICAL SPECIFICATIONS FOR TOWN OF ENFIELD, WATER SYSEM IMPROVEMENTS, WATER MAIN REPLACEMENT, MAPLE STREET AND MOOSE MOUNTAIN ROAD", DATED DECEMBER 2022."
- NO EXISTING MONUMENTS, BOUNDS, OR BENCHMARKS SHALL BE DISTURBED WITHOUT FIRST MAKING PROVISIONS FOR RELOCATION.
- ALL WORK SHALL BE PERFORMED WITHIN THE PROPERTY OF, AND EASEMENTS SECURED BY, THE OWNER.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DATA COLLECTION AND PREPARATION OF RECORD DRAWINGS.
- 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.
- 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.
- PLANIMETRIC FEATURES AND TOPOGRAPHY ARE BASED ON A FIELD SURVEY USING A LEICA TS12 ROBOTIC TOTAL STATION AND SOKKIA GRX3 AND TOPCON HIPER V DUAL FREQUENCY GPS RECEIVERS WITH RTK CAPABILITY, CONDUCTED IN NOVEMBER 2021 TO JANUARY 2022 BY HORIZONS ENGINEERING, INC.
- THE BASIS OF BEARING SHOWN HEREON REFERENCES GRID NORTH AND IS BASED ON THE NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM NAD 83 (2011). THE VERTICAL DATUM IS NAVD 88. BOTH DATUMS WERE DERIVED FROM STATIC GPS OBSERVATIONS THAT WERE CORRECTED USING THE NATIONAL GEODETIC SURVEY'S ONLINE USER POSITION SERVICE (OPUS). THE CONTOUR INTERVAL IS TWO FOOT.
- EXISTING CONDITIONS PLAN INFORMATION OBTAINED FROM RECORD DRAWINGS BY DCPB, INC., "ENFIELD SEWER SYSTEM, CONTRACT 3" DATED 2/88.

DESIGN INTENT

- THE OVERALL INTENT OF THE WORK IS TO REPLACE AGED 12 INCH CAST IRON WATER MAIN PIPE AND EXISTING WATER SERVICES ALONG MAPLE STREET AND MOOSE MOUNTAIN ROAD IN ENFIELD AND CANAAN, NH, WITH NEW 8 INCH DIAMETER WATER MAIN PIPE AND HDPE SERVICES.
- THE EXISTING 12 INCH WATER MAIN WILL REMAIN IN SERVICE TO MAINTAIN WATER FLOW FROM THE TOWN'S WATER SUPPLY WELL LOCATED AT 48 MOOSE MOUNTAIN ROAD UNTIL SUCH TIME THAT AN INTERCONNECTION ONTO THIS WATER SUPPLY IS MADE TO THE NEW 8 INCH WATER MAIN.
- THE DESIRED LOCATION FOR THE NEW 8 INCH WATER MAIN IS APPROXIMATELY 5 FEET OFF THE EDGE OF THE EXISTING RIGHT OF WAY, AND/OR, AS SHOWN ON THE PLANS.
- THE LOCATION FOR NEW WATER SERVICES ARE NOT SHOWN ON THE PLANS. EACH PROPERTY ALONG THE WORK WILL BE PROVIDED WITH A NEW WATER SERVICE, EXCEPT AS IDENTIFIED OTHERWISE BY THE OWNER. GENERALLY, EACH NEW WATER SERVICE WILL EXTEND FROM THE NEW WATER MAIN TO THE RIGHT OF WAY LIMIT. AT THIS LOCATION, THE NEW WATER SERVICE WILL CONNECT ONTO THE EXISTING WATER SERVICE PIPE. NEW WATER SERVICES WILL CONSIST OF A SADDLE, 3/4 INCH CORPORATION STOP, 3/4 INCH SERVICE PIPE, AND 3/4 INCH CURB STOP. SERVICES UNDER AND WITHIN 5 FEET OF PAVEMENT WILL BE INSTALLED WITHIN A 2 INCH SLEEVE.
- EXISTING TREES AND VEGETATION ALONG THE NEW WATER MAIN TRENCH SHALL BE REMOVED/TRIMMED UP TO THE RIGHT OF WAY LIMIT, WITHIN THE TOWN OF ENFIELD. IN THIS AREA, THE FINISH GRADE OVER THE NEW 8 INCH WATER MAIN WILL BE SUCH THAT IT PROVIDES AN EXTENSION TO THE SHOULDER, WITH AN APPROXIMATE 3% CROSS SLOPE AWAY FROM THE ROADWAY.
- EXISTING CULVERTS SHALL BE REPLACED AS NOTED IN THE CULVERT REPLACEMENT SCHEDULE.

LEGEND

EXISTING	PROPOSED
783	2 FOOT CONTOURS
785	10 FOOT CONTOURS
CULVERT / DRAIN PIPE	
FENCE	
PAVEMENT	
APPROX. PROPERTY LINE (TAX MAP)	
TREELINE	
SEDIMENT FENCE	
STONE WALL	
WATER MAIN	
SEWER MAIN	
WATER SERVICE	
SEWER MANHOLE	
CATCH BASIN	
HYDRANT	
WATER SHUT OFF	
WATER METER	
GATE VALVE	
UTILITY POLE	
SIGN	
MAILBOX	
DECIDUOUS TREE	
CONIFER TREE	
STONE MONUMENT	
IRON PIPE/REBAR	
BUILDING - DIGITIZED (PHOTO)	
LIMIT OF DISTURBANCE	
LIMIT OF PAVEMENT DISTURBANCE	

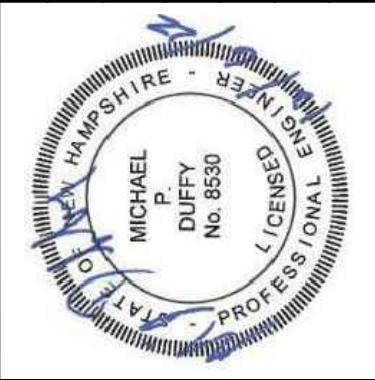
CULVERT REPLACEMENT SCHEDULE			
LOCATION	SIZE (INCHES)	LENGTH (FEET)	END TREATMENT
STA 8+50	18	40	CONCRETE DROP INLET WITH TYPE B GRATE EROSION STONE OUTLET APRON
STA 10+15, LT	15	30	EROSION STONE INLET AND OUTLET APRON
STA 12+10, LT	15	20	EROSION STONE INLET AND OUTLET APRON
STA 12+90, LT	15	30	EROSION STONE INLET AND OUTLET APRON
STA 14+00, LT	15	30	EROSION STONE INLET AND OUTLET APRON
STA 24+50	18	40	EROSION STONE INLET AND OUTLET APRON
STA 33+25	18	40	EROSION STONE INLET AND OUTLET APRON
STA 35+30	24	40	EROSION STONE INLET AND OUTLET APRON
STA 41+60	18	40	EROSION STONE INLET AND OUTLET APRON
STA 44+25	18	40	EROSION STONE INLET AND OUTLET APRON

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SURVEYED BY:	HEI- NWS
ENGINEERED BY:	MPD
DRAWN BY:	SJB/KRP
CHECKED BY:	MPD

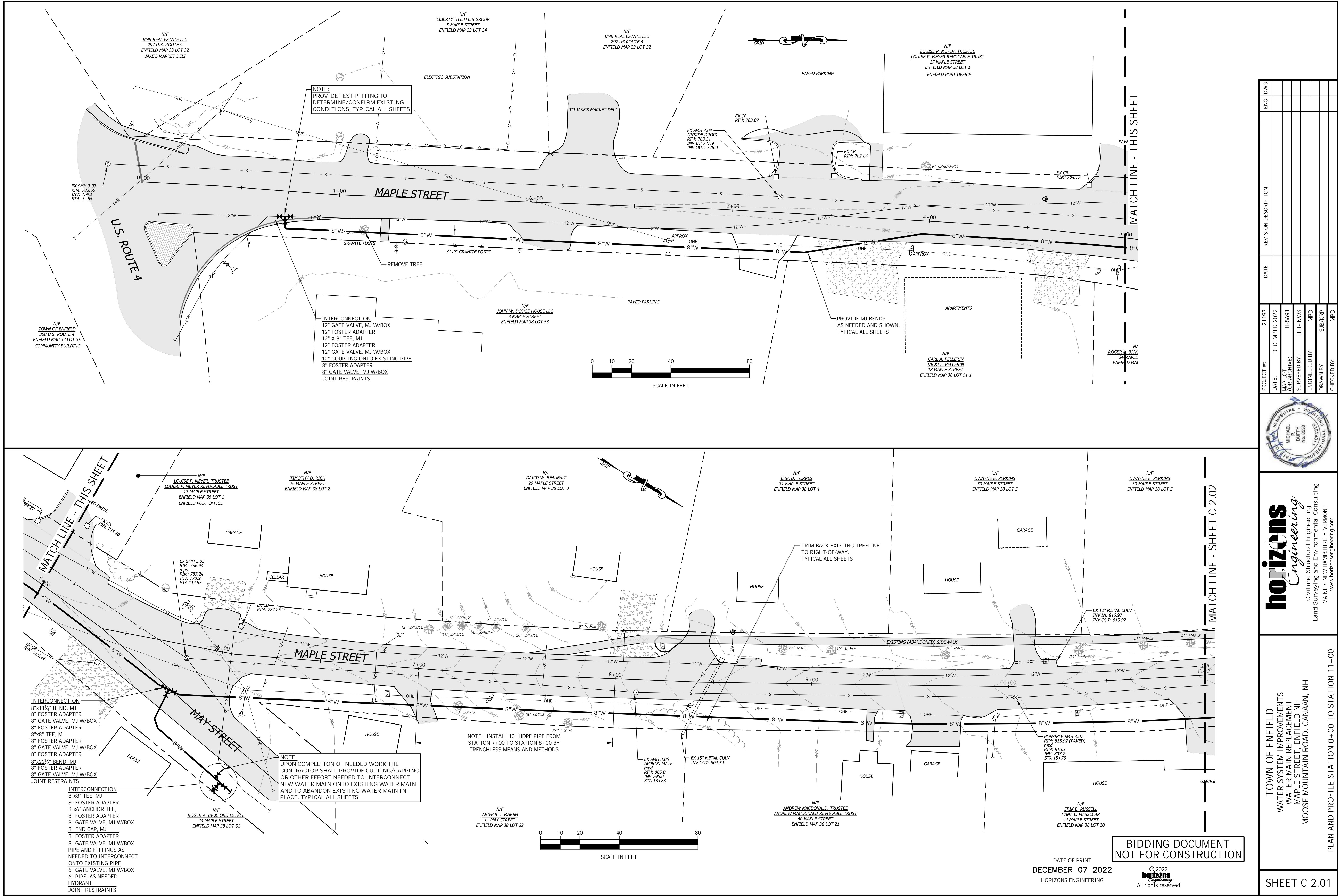


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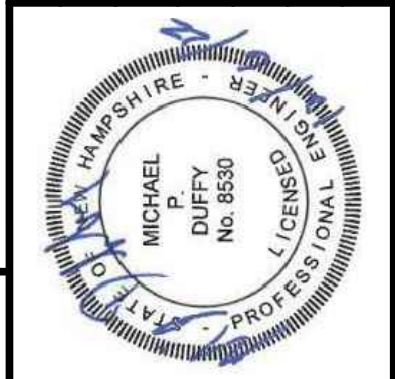
TOWN OF ENFIELD
WATER SYSTEM IMPROVEMENTS
WATER MAIN REPLACEMENT
MAPLE STREET, ENFIELD NH
MOOSE MOUNTAIN ROAD, CANAAN, NH

SHEET LAYOUT, GENERAL NOTES AND LEGEND

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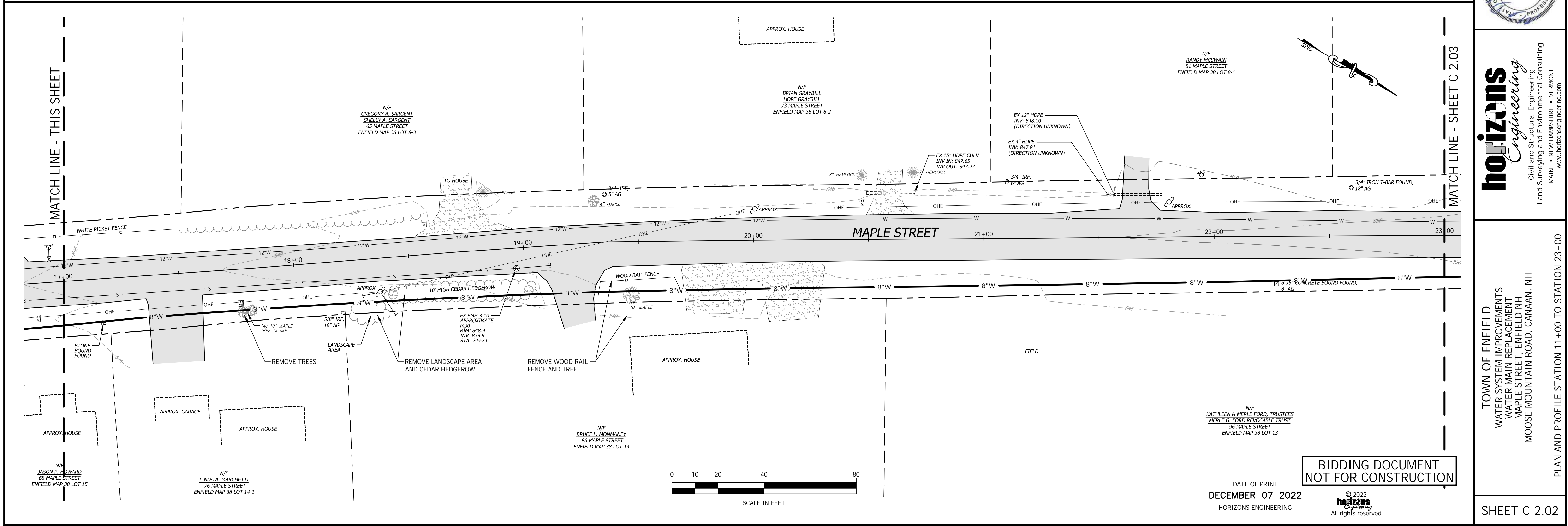
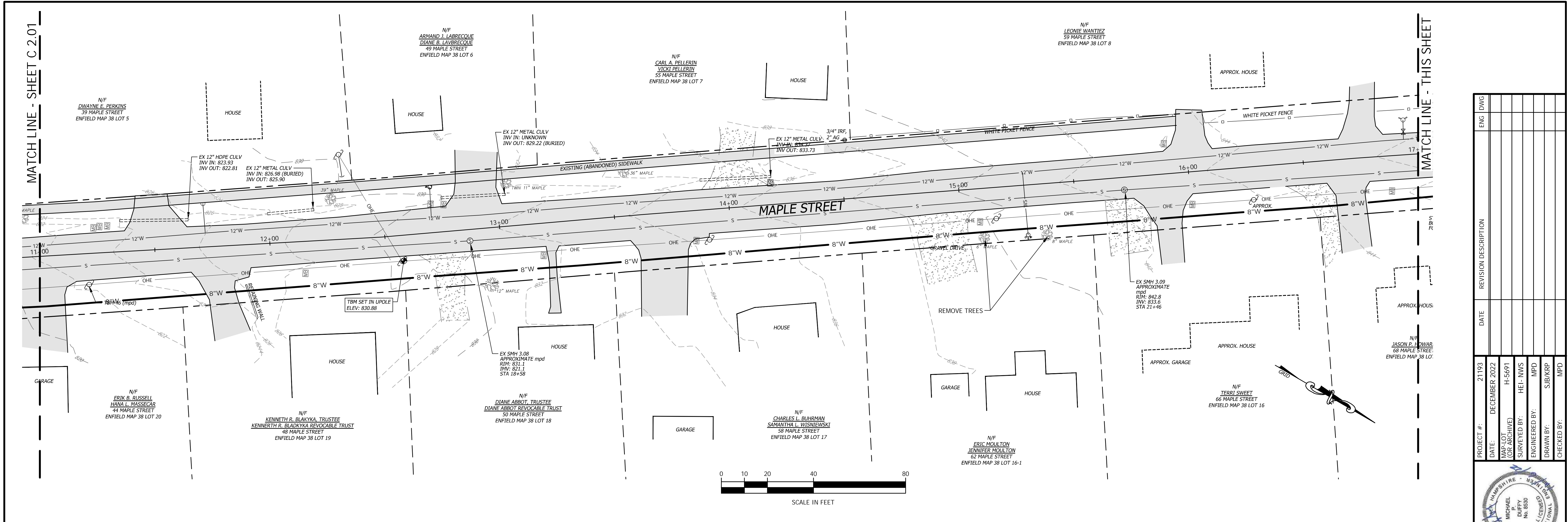
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WATER MAIN REPLACEMENT
MAPLE STREET, ENFIELD NH
MOOSE MOUNTAIN ROAD, CANAAN, NH

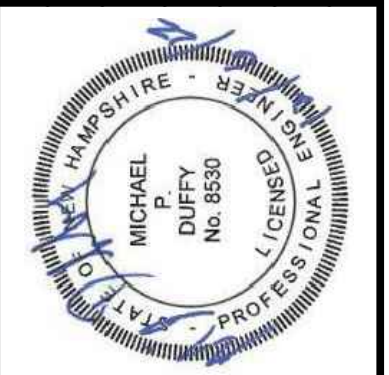
PLAN AND PROFILE STATION 0+00 TO STATION 11+00

SHEET C 2.01

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MAPLE STREET, ENFIELD NH
MOOSE MOUNTAIN ROAD, CANAAN, NH
PLAN AND PROFILE STATION 11+00 TO STATION 23+00

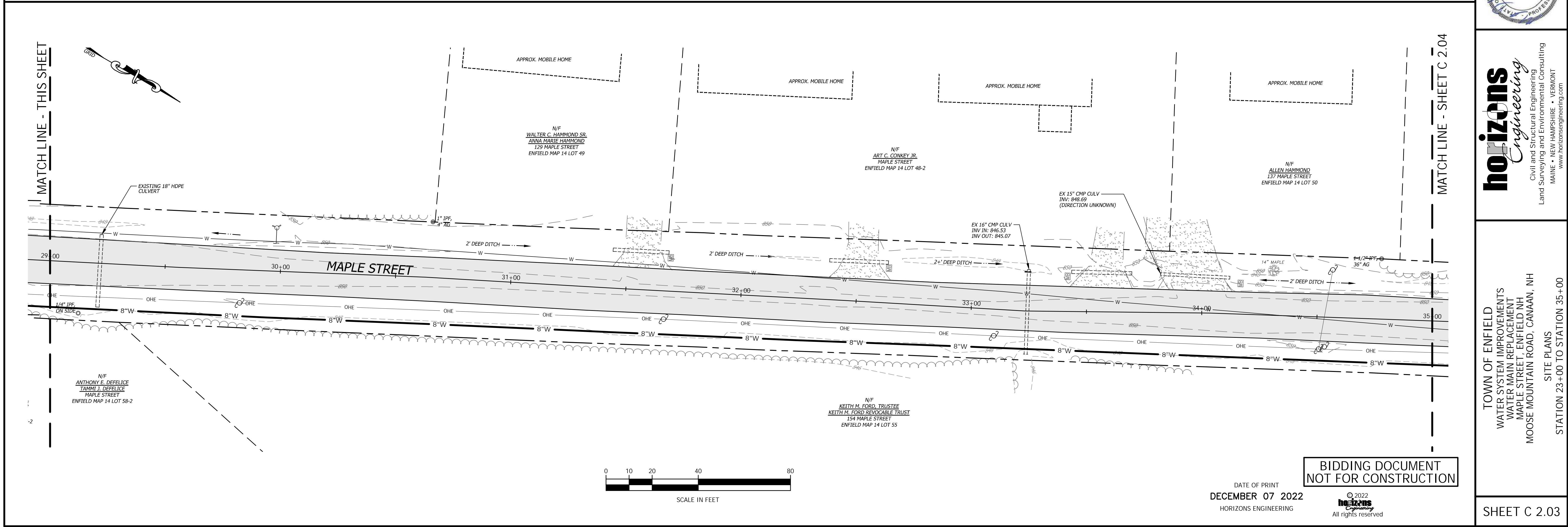
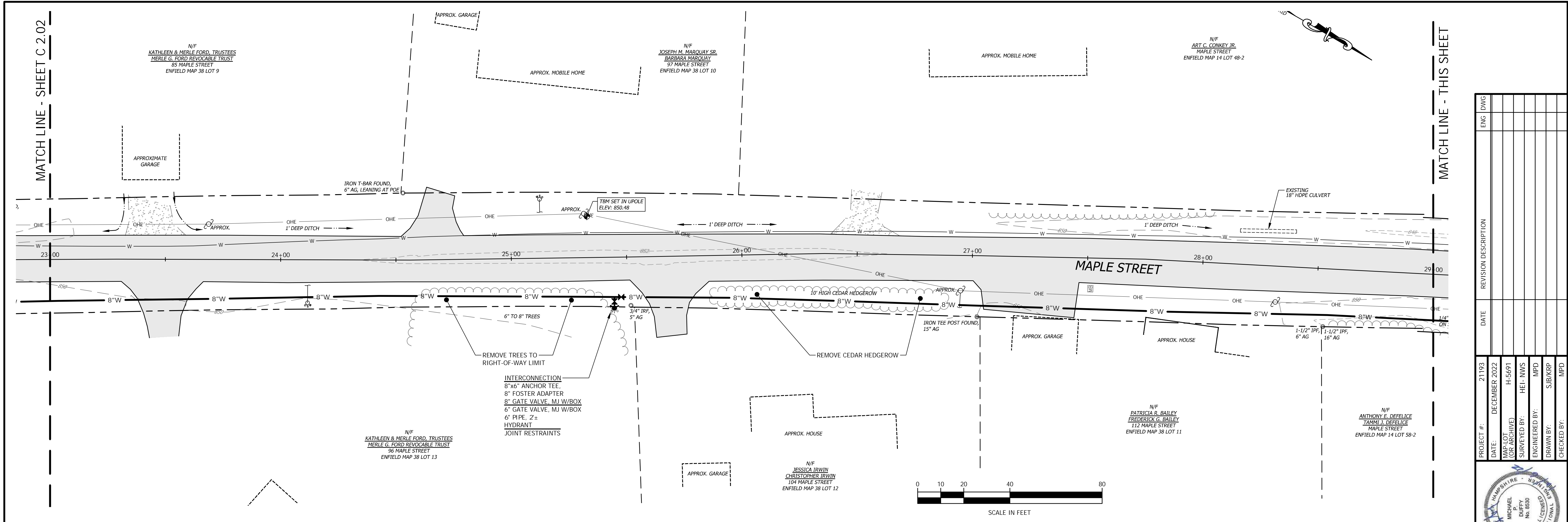
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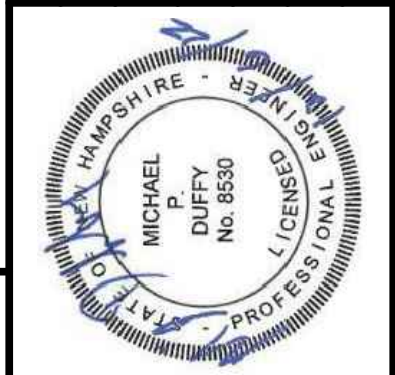
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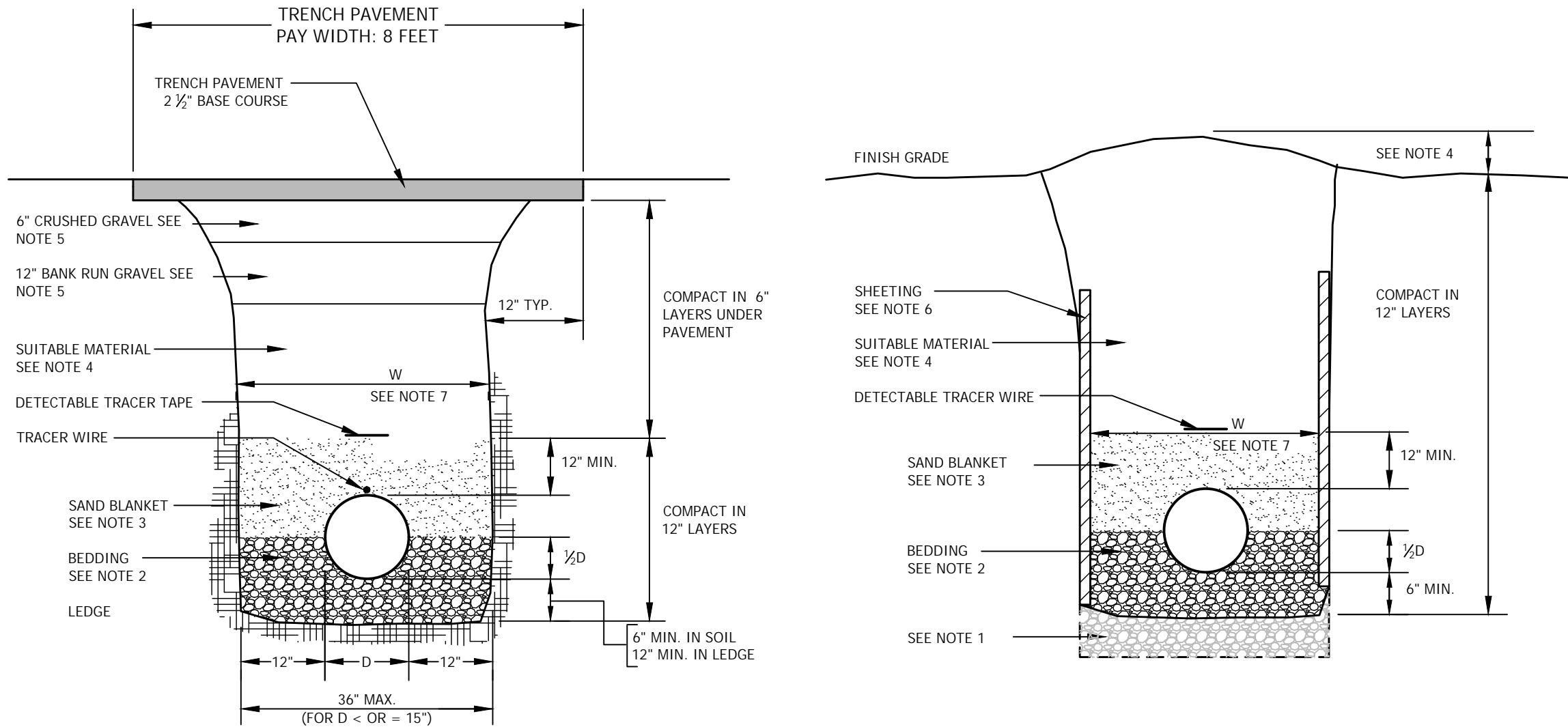


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TOWN OF ENFIELD
WATER SYSTEM IMPROVEMENTS
WATER MAIN REPLACEMENT
MAPLE STREET, ENFIELD NH
MOOSE MOUNTAIN ROAD, CANAAN, NH
SITE PLANS
STATION 23+00 TO STATION 35+00

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 3/4 INCH SCREEN
20-55% PASSING 3/8 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 1/2 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, BUT SHALL EXCLUDE 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 5.5 FEET MINIMUM IN ALL LOCATIONS. EXCEPT AS MAY BE NOTED ON PLANS.

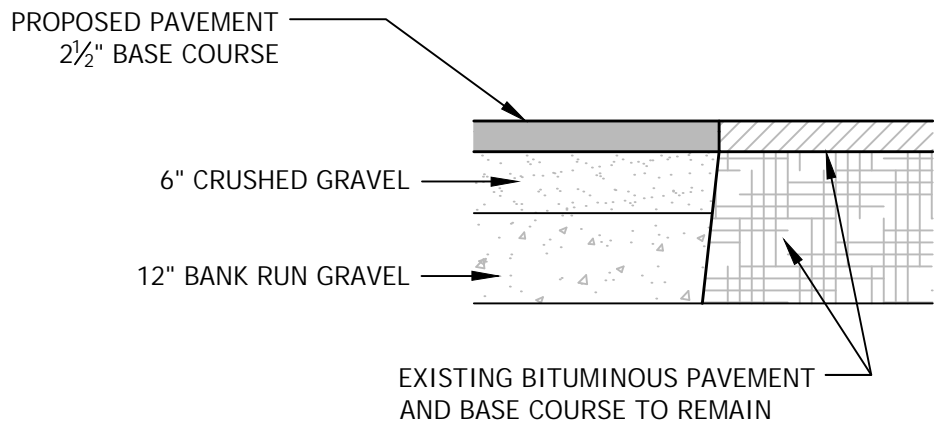


LEDGE/SUB PAVEMENT CONSTRUCTION

EARTH CONSTRUCTION
WITH OR WITHOUT SHEETING

STANDARD TRENCH SECTIONS (TOWN ROADS)

NOT TO SCALE



PAVEMENT JOINING DETAIL - TOWN ROADS

NOT TO SCALE

- BLOCKS MUST BE POURED AGAINST UNDISTURBED SOIL.
- THE PIPE JOINT AND BOLTS MUST BE ACCESSIBLE.
- CONCRETE SHOULD BE CURED FOR AT LEAST 5 DAYS AND SHOULD HAVE A COMPRESSION STRENGTH OF 3,000 LBS. AT 28 DAYS.
- BLOCKS MUST BE POSITIONED TO COUNTERACT THE DIRECTION OF THE RESULTANT THRUST FORCE.

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).

NOMINAL PIPE DIA. (INCHES)	RESULTANT THRUST AT FITTINGS AT 100 PSI WATER PRESSURE					
	DEAD END	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND	
4	1,810	2,559	1,385	706	355	
6	3,739	5,288	2,862	1,459	735	
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	

NOTE:
TO DETERMINE THRUST AT PRESSURES OTHER THAN 100 PSI, MULTIPLY THE THRUST OBTAINED IN THE TABLE BY THE RATIO OF THE PRESSURE TO 100. FOR EXAMPLE, THE THRUST ON A 12 INCH, 90° BEND AT 125 PSI IS:

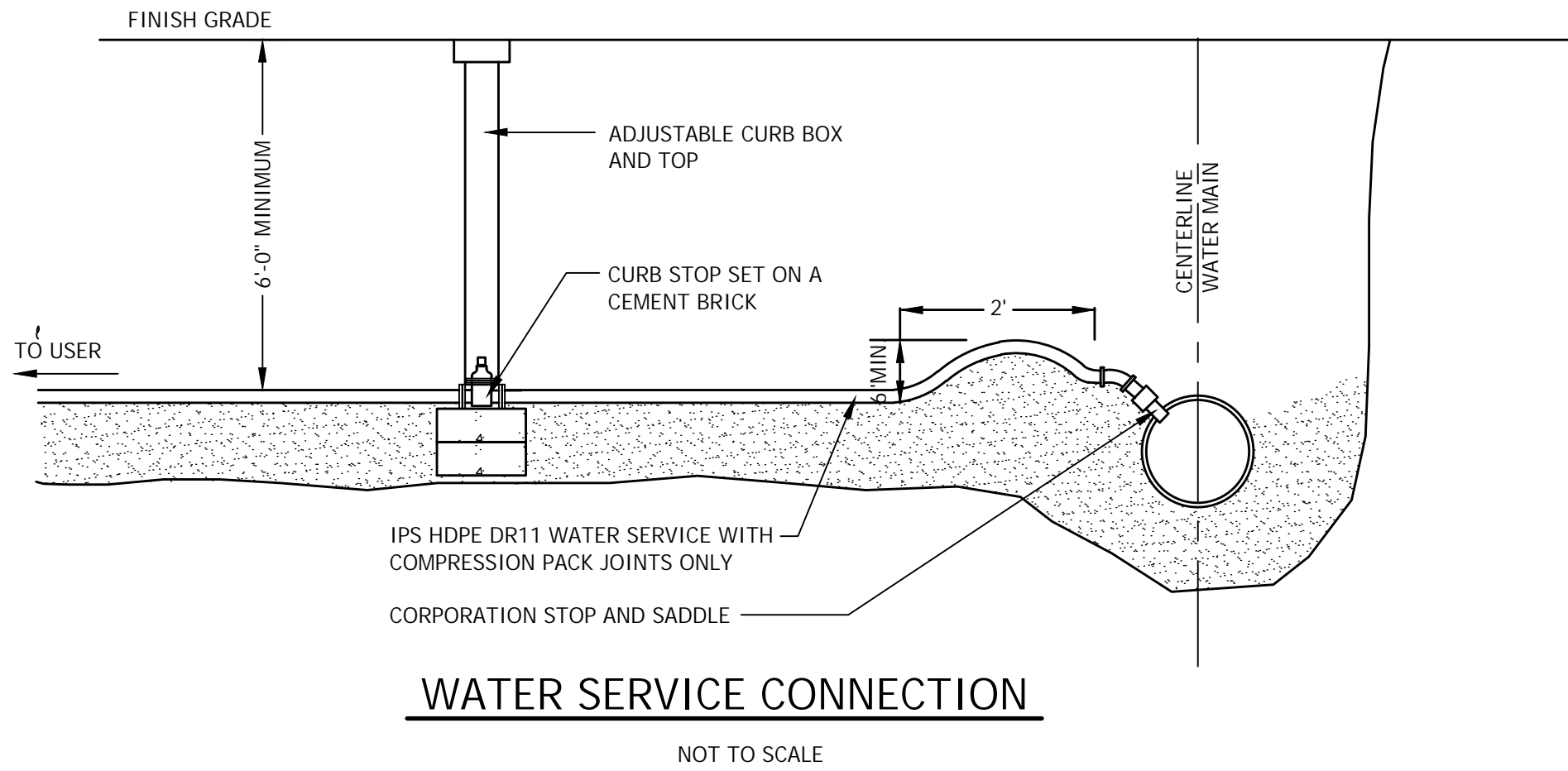
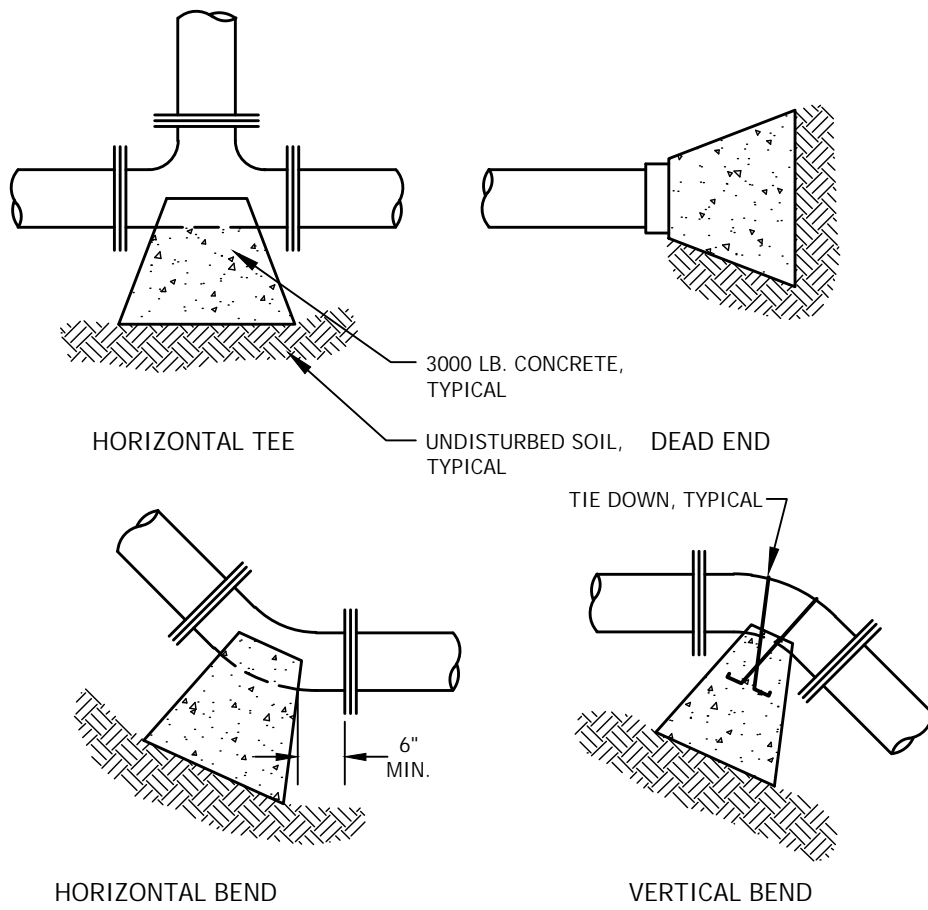
$$\frac{19,353 \times 125}{100} = 24,191 \text{ POUNDS}$$

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

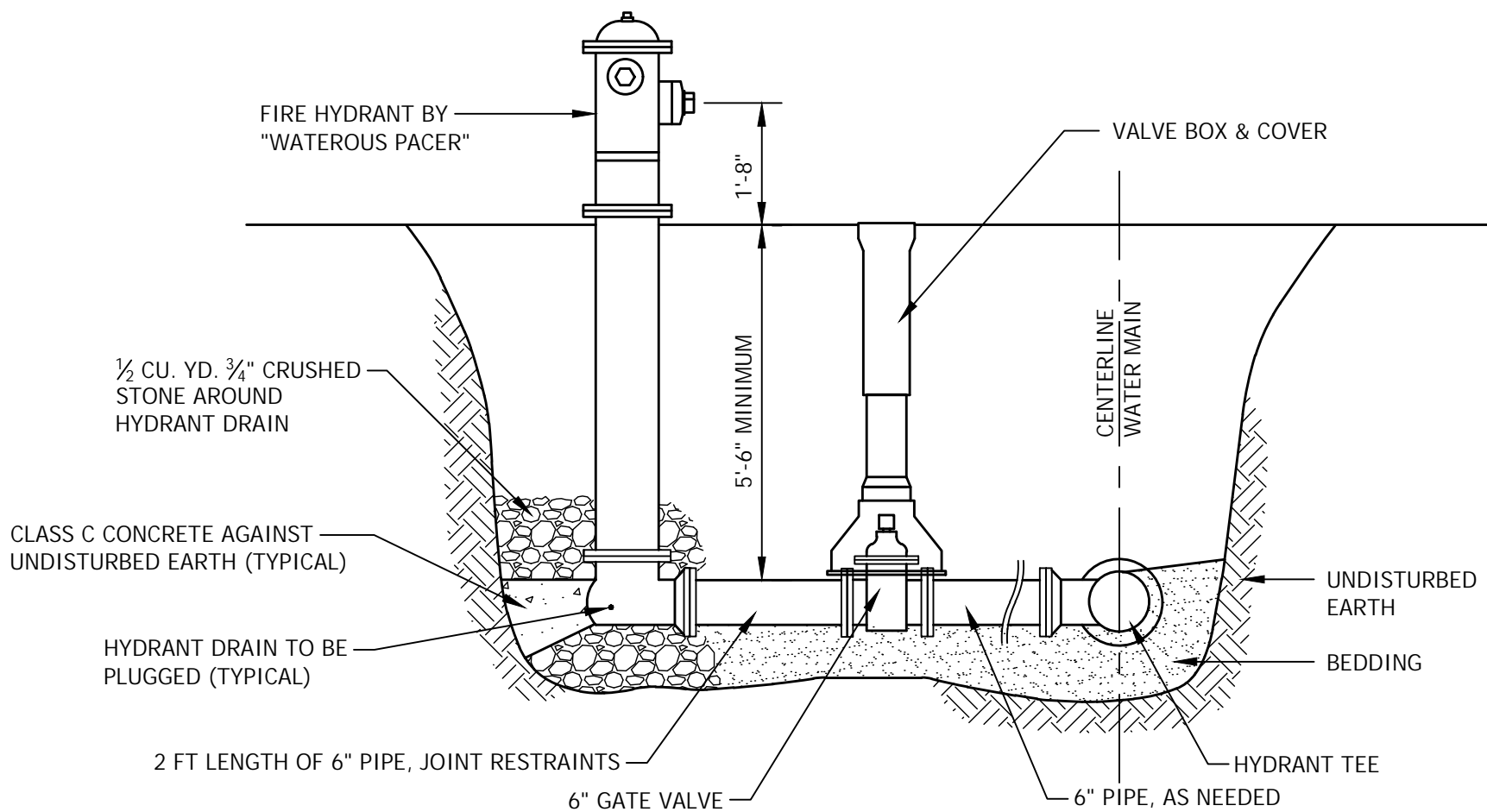
THRUST BLOCK NOTES & DETAILS

NOT TO SCALE



WATER SERVICE CONNECTION

NOT TO SCALE



FIRE HYDRANT DETAIL

NOT TO SCALE

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TOWN OF ENFIELD
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WATER MAIN REPLACEMENT
MAPLE STREET, ENFIELD NH
MOOSE MOUNTAIN ROAD, CANAAN, NH

STANDARD WATER SYSTEM DETAILS AND NOTES

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SHEET C 3.1

SEEDING RECOMMENDATIONS

1. GRADING AND SHAPING
A. SLOPES SHALL NOT BE STEEPER THAN 2:1. 3:1 SLOPES OR FLATTER ARE PREFERRED. WHERE MOWING WILL BE DONE, 3:1 SLOPES OR FLATTER ARE RECOMMENDED.
2. SEEDBED PREPARATION
A. SURFACE AND SEEPAGE WATER SHOULD BE DRAINED OR DIVERTED FROM THE SITE TO PREVENT DROWNING OR WINTER KILLING OF THE PLANTS.
B. STONES LARGER THAN 4 INCHES AND TRASH SHOULD BE REMOVED BECAUSE THEY INTERFERE WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA. WHERE FEASIBLE, THE SOIL SHOULD BE TILLED TO A DEPTH OF 6 INCHES TO INCORPORATE A SEEDBED AND MIX FERTILIZER AND LIME THOROUGHLY INTO THE SOIL. THE SEEDBED SHOULD BE LEFT IN A REASONABLY FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER PRACTICAL.

(NOTE: THIS IS THE EQUIVALENT OF 500 LBS. PER ACRE OF 10-20-20 FERTILIZER OR 1,000 LBS. PER ACRE OF 5-10-10).

- B. SEED SHOULD BE SPREAD UNIFORMLY BY THE METHOD MOST APPROPRIATE FOR THE SITE. METHODS INCLUDE BROADCASTING, DRILLING, AND HYDROSEEDING. WHERE BROADCASTING IS USED, COVER SEED WITH .25 INCH OF SOIL OR LESS, BY CULTIPACKING OR RAKING.

C. SEEDING GUIDE:

SEEDING GUIDE:	SEEDING MIXTURE (SEE 3D)	SOIL TYPE			
		DROUGHTY	WELL DRAINED	MOD. WELL DRAINED	POORLY DRAINED
STEEP CUTS AND FILLS, BORROW AND DISPOSAL AREAS	A	FAIR	GOOD	GOOD	FAIR
	B	POOR	GOOD	FAIR	FAIR
	C	FAIR	EXCELLENT	EXCELLENT	POOR
WATERWAYS, EMERGENCY SPILLWAYS, AND OTHER CHANNELS WITH FLOWING WATER	A	GOOD	GOOD	GOOD	FAIR
LIGHTLY USED PARKING LOTS, ODD AREAS, UNUSED LANDS, AND LOW INTENSITY USE RECREATION SITES	A	GOOD	GOOD	GOOD	FAIR
	B	GOOD	GOOD	FAIR	POOR

D. SEEDING RATES:

SEEDING RATES:		POUNDS PER ACRE	POUNDS PER 1,000 SQ. FT.
MIXTURE			
A	TALL FESCUE	20	0.45
	CREeping RED FESCUE	20	0.45
	REDTOP	2	0.05
	TOTAL:	42	0.95
B	TALL FESCUE	15	0.35
	CREeping RED FESCUE	10	0.25
	CROWN VETCH OR	15 OR	0.35 OR
	FLATPEA	30	0.75
	TOTAL:	40 OR 55	0.95 OR 1.35
C	TALL FESCUE	20	0.45
	FLATPEA	30	0.75
	TOTAL:	50	1.20

- E. WHEN SEEDED AREAS ARE MULCHED, PLANTINGS MAY BE MADE FROM EARLY SPRING TO SEPTEMBER 15.
WHEN SEEDED AREAS ARE NOT MULCHED, PLANTINGS SHOULD BE MADE FROM EARLY SPRING TO MAY 20 OR
FROM AUGUST 10 TO SEPTEMBER 1.

F. TEMPORARY SEEDING RATES:

SPECIES	POUNDS PER ACRE	POUNDS PER 1,000 SQ. FT.	REMARKS
WINTER RYE	112	2.5	BEST FOR FALL SEEDING. SEED FROM AUGUST TO SEPTEMBER 5TH FOR BEST COVER. SEED TO A DEPTH OF 1 INCH.
OATS	80	2.0	BEST FOR SPRING SEEDING. SEED NO LATER THAN MAY 15TH FOR SUMMER PROTECTION. SEED TO A DEPTH OF 1 INCH.
ANNUAL RYEGRASS	40	1.0	GROWS QUICKLY, BUT IS OF SHORT DURATION. USE WHERE APPEARANCES ARE IMPORTANT. SEED EARLY SPRING AND/OR BETWEEN AUGUST 15TH AND SEPTEMBER 15TH. COVER SEED WITH NO MORE THAN .025 INCH OF SOIL.
PERENNIAL RYEGRASS	30	0.7	GOOD COVER WHICH IS LONGER LASTING THAN ANNUAL RYEGRASS. SEED BETWEEN APRIL 1ST AND JUNE 1ST AND/OR BETWEEN AUGUST 15TH AND SEPTEMBER 15TH. MULCHING WILL ALLOW SEEDING THROUGHOUT THE GROWING SEASON. SEED TO A DEPTH OF APPROXIMATELY 0.5 INCH.

4. MULCH
 - A. HAY, STRAW, OR OTHER MULCH, WHEN NEEDED, SHOULD BE APPLIED IMMEDIATELY AFTER SEEDING.
 - B. MULCH WILL BE HELD IN PLACE USING APPROPRIATE TECHNIQUES FROM THE BEST MANAGEMENT PRACTICE FOR MULCHING.
5. MAINTENANCE TO ESTABLISH A STAND
 - A. PLANTED AREAS SHOULD BE PROTECTED FROM DAMAGE BY FIRE, GRAZING, TRAFFIC, AND DENSE WEED GROWTH.
 - B. FERTILIZATION NEEDS SHOULD BE DETERMINED BY ON SITE INSPECTIONS. SUPPLEMENTAL FERTILIZER IS USUALLY THE KEY TO FULLY COMPLETE THE ESTABLISHMENT OF THE STAND BECAUSE MOST PERENNIALS TAKE 2 TO 3 YEARS TO BECOME ESTABLISHED.
 - C. IN WATERWAYS, CHANNELS, OR SWALES WHERE UNIFORM FLOW CONDITIONS ARE ANTICIPATED, OCCASIONAL MOWING MAY BE NECESSARY TO CONTROL GROWTH OF WOODY VEGETATION.

EROSION CONTROL GENERAL NOTES

- A. KEEP SITE MODIFICATION TO A MINIMUM
 1. CONSIDER FITTING THE BUILDINGS AND STREETS TO THE NATURAL TOPOGRAPHY. THIS REDUCES THE NEED FOR CUTS AND FILLS. AVOID EXTENSIVE GRADING THAT WOULD ALTER DRAINAGE PATTERNS OR CREATE VERY STEEP SLOPES.
 2. EXPOSE AREAS OF BARE SOIL TO EROSION ELEMENTS FOR THE SHORTEST TIME POSSIBLE.
 3. SAVE AND PROTECT DESIRABLE EXISTING VEGETATION WHERE POSSIBLE. ERECT BARRIERS TO PREVENT DAMAGE FROM CONSTRUCTION EQUIPMENT.
 4. LIMIT THE GRADES OF SLOPES SO VEGETATION CAN BE EASILY ESTABLISHED AND MAINTAINED.
 5. AVOID SUBSTANTIAL INCREASE IN RUNOFF LEAVING THE SITE.
- B. MINIMIZE POLLUTION OF WATER DURING CONSTRUCTION ACTIVITIES
 1. STOCKPILE TOPSOIL REMOVED FROM CONSTRUCTION AREA AND SPREAD OVER ANY DISTURBED AREAS PRIOR TO REVEGETATION. TOPSOIL STOCKPILES MUST BE PROTECTED FROM EROSION.
 2. PROTECT BARE SOIL AREAS EXPOSED BY GRADING ACTIVITIES WITH TEMPORARY VEGETATION OR MULCHES.
 3. USE SEDIMENT BASINS TO TRAP DEBRIS AND SEDIMENT WHICH WILL PREVENT THESE MATERIALS FROM MOVING OFF SITE.
 4. USE DIVERSIONS TO DIRECT WATER AROUND THE CONSTRUCTION AREA AND AWAY FROM EROSION PRONE AREAS TO POINTS OF SAFE DISPOSAL.
 5. USE TEMPORARY CULVERTS OR BRIDGES WHEN CROSSING STREAMS WITH EQUIPMENT.
 6. PLACE CONSTRUCTION FACILITIES, MATERIALS, AND EQUIPMENT STORAGE AND MAINTENANCE AREAS AWAY FROM DRAINAGE WAYS.

C. PROTECT AREA AFTER CONSTRUCTION.

1. ESTABLISH GRASS OR OTHER SUITABLE VEGETATION ON ALL DISTURBED AREAS. SELECT SPECIES ADAPTED TO THE SITE CONDITIONS AND THE FUTURE USE OF THE AREA. FINAL GRADES SHALL BE SEEDDED WITHIN 72 HOURS. STABILIZATION SHALL BE DEFINED AS 85% VEGETATIVE COVER.
2. MAINTAIN VEGETATED AREAS USING PROPER VEGETATIVE 'BEST MANAGEMENT PRACTICES' DURING THE CONSTRUCTION PERIOD.
3. MAINTAIN NEEDED STRUCTURAL 'BEST MANAGEMENT PRACTICES' AND REMOVE SEDIMENT FROM DETENTION PONDS AND SEDIMENT BASINS AS NEEDED.
4. DETERMINE RESPONSIBILITY FOR LONG TERM MAINTENANCE OF PERMANENT 'BEST MANAGEMENT PRACTICES'.
5. IF CONSTRUCTION IS ANTICIPATED DURING WINTER MONTHS, GRADED AREAS ARE TO BE STABILIZED WITH NORTH AMERICAN GREEN D5150 MATTING OR EQUAL.

D. INVASIVE SPECIES MONITORING / ELIMINATION

1. PRECAUTIONS SHALL BE TAKEN TO PREVENT IMPORT OR TRANSPORT OF SOIL OR SEED STOCK CONTAINING NUISANCE OR INVASIVE SPECIES SUCH AS PURPLE LOOSESTRIFE, KNOTWEED OR PHRAGMITES. THE CONTRACTOR SHALL ADDRESS INVASIVE SPECIES IN ACCORDANCE WITH THE REPORT "NH DOT BEST MANAGEMENT PRACTICES FOR ROADSIDE INVASIVE PLANTS (2008)".
2. TO PREVENT THE INTRODUCTION OF INVASIVE PLANT SPECIES TO THE SITE, THE CONTRACTOR SHALL CLEAN ALL SOILS AND VEGETATION FROM CONSTRUCTION EQUIPMENT AND MATTING BEFORE SUCH EQUIPMENT IS MOVED TO THE SITE.
3. IF ANY INVASIVE OR NUISANCE SPECIES ARE FOUND DURING CONSTRUCTION OR DURING THE EARLY STAGES OF VEGETATIVE ESTABLISHMENT, THE CONTRACTOR WILL COORDINATE WITH NHDOT AND THE NH WETLANDS BUREAU TO DETERMINE AGREED TO CONTROL MEASURES.

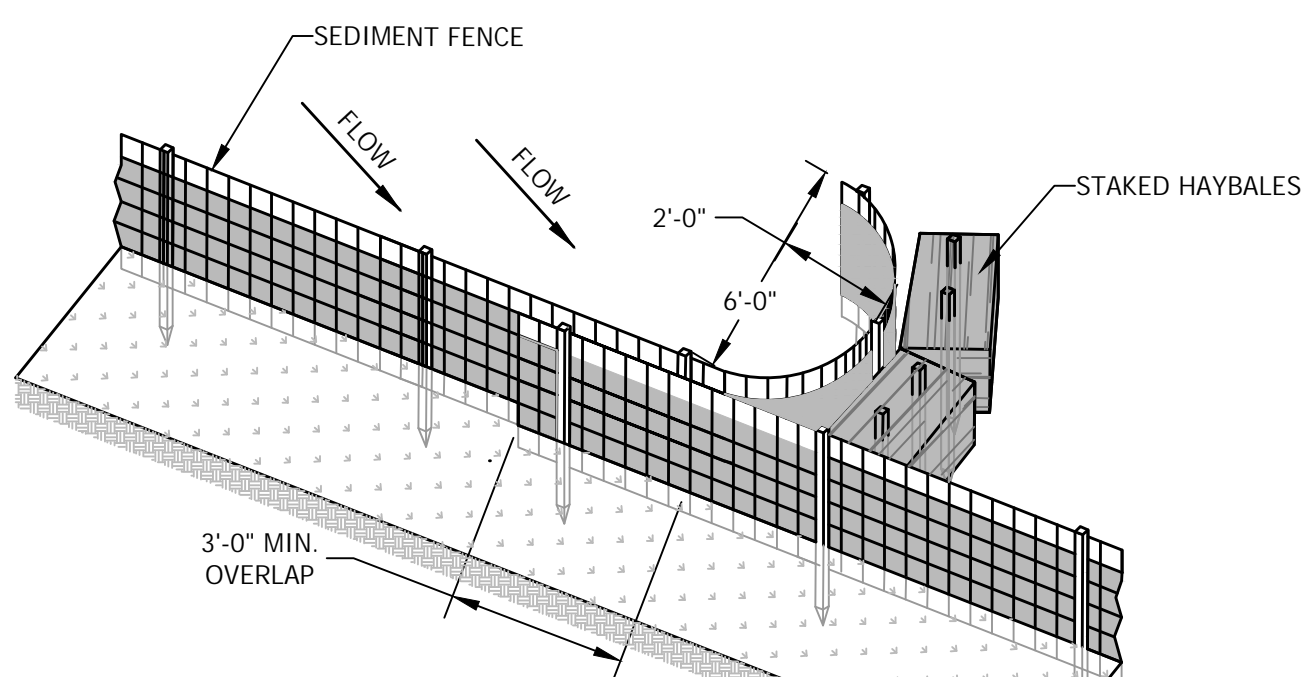
- #### E. POST CONSTRUCTION MONITORING

1. AFTER CONSTRUCTION IS COMPLETE THE DISTURBED AREAS WILL BE MONITORED FOR INVASIVE SPECIES DURING THE FIRST GROWING SEASON BUT BEFORE SEED SET. ANY INVASIVE SPECIES WILL BE MECHANICALLY REMOVED AND DISPOSED OF ACCORDING TO STANDARDS IN THE REPORT "NH DOT BEST MANAGEMENT PRACTICES FOR ROADSIDE INVASIVE PLANTS (2008)".
2. LOBBELL ASSOCIATES, INC. WILL BE RESPONSIBLE FOR POST CONSTRUCTION MONITORING OF EROSION CONTROL, REVEGETATION, AND INVASIVE SPECIES. A MONITORING REPORT WITH PHOTOS AND RECOMMENDED REMEDIAL ACTIONS, IF ANY, WILL BE SUBMITTED TO THE TOWNSHIPS OF WHITEHILLS, WITH COPIES SENT TO NHDOT, AND THE TOWN OF WHITEFIELD. THE REPORT WILL BE SUBMITTED WITH 30 DAYS OF NOTIFICATION OF PROJECT COMPLETION.

COLD WEATHER SITE STABILIZATION REQUIREMENTS

TO ADEQUATELY PROTECT WATER QUALITY DURING COLD WEATHER AND DURING SPRING RUNOFF, THE FOLLOWING ADDITIONAL STABILIZATION TECHNIQUES SHALL BE EMPLOYED DURING THE PERIOD FROM OCTOBER 15 THROUGH MAY 1:

1. THE AREA OF EXPOSED, UNSTABILIZED SOIL SHALL BE LIMITED TO 1 ACRE AND SHALL BE PROTECTED AGAINST EROSION BY THE METHODS DESCRIBED IN THIS SECTION PRIOR TO ANY THAW OR SPRING MELT EVENT. THE ALLOWABLE AREA OF EXPOSED SOIL MAY BE INCREASED IF A WINTER CONSTRUCTION PLAN, DEVELOPED BY A QUALIFIED ENGINEER OR A CPESC SPECIALIST, IS REVIEWED AND APPROVED BY NHDES.
2. ALL PROPOSED VEGETATED AREAS HAVING A SLOPE OF LESS THAN 15% WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE SEEDED AND COVERED WITH 3 TO 4 TONS OF HAY OR STRAW MULCH PER ACRE, SECURED WITH ANCHORED NETTING OR TACKIFIERS, OR 2 INCHES OF EROSION CONTROL MIX MEETING THE CRITERIA OF ENV-WQ 1506.05(D) THROUGH (H).
3. ALL PROPOSED VEGETATED AREAS HAVING A SLOPE OF GREATER THAN 15% WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE SEED AND COVERED WITH PROPERLY INSTALLED AND ANCHORED EROSION CONTROL MATTING OR WITH A MINIMUM 4 INCH THICKNESS OF EROSION CONTROL MIX MEETING THE CRITERIA OF ENV-WQ 1506.05(D) THROUGH (H).
4. INSTALLATION OF ANCHORED HAY MULCH OR EROSION CONTROL MIX, MEETING THE CRITERIA OF ENV-WQ 1506.05(D) THROUGH (H), SHALL NOT OCCUR OVER SNOW OF GREATER THAN 1 INCH IN DEPTH.
5. INSTALLATION OF EROSION CONTROL MATTING SHALL NOT OCCUR OVER SNOW OF GREATER THAN ONE INCH IN DEPTH OR ON FROZEN GROUND.
6. ALL PROPOSED STABILIZATION IN ACCORDANCE WITH NOTES 2 OR 3 ABOVE, SHALL BE COMPLETED WITHIN 1 DAY OF ESTABLISHING THE GRADE THAT IS FINAL OR THAT OTHERWISE WILL EXIST FOR MORE THAN 5 DAYS.
7. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS, AS DETERMINED BY THE OWNER'S ENGINEERING CONSULTANT.
8. AFTER OCTOBER 15, INCOMPLETE ROAD OR PARKING AREAS WHERE ACTIVE CONSTRUCTION OF THE ROAD OR PARKING AREA HAS STOPPED FOR THE WINTER SEASON SHALL BE PROTECTED WITH A MINIMUM 3 INCH LAYER OF BASE COURSE GRAVELS MEETING THE GRADATION REQUIREMENTS OF NHDOT STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION, 2016, ITEM NO. 304.1 OR 304.2.

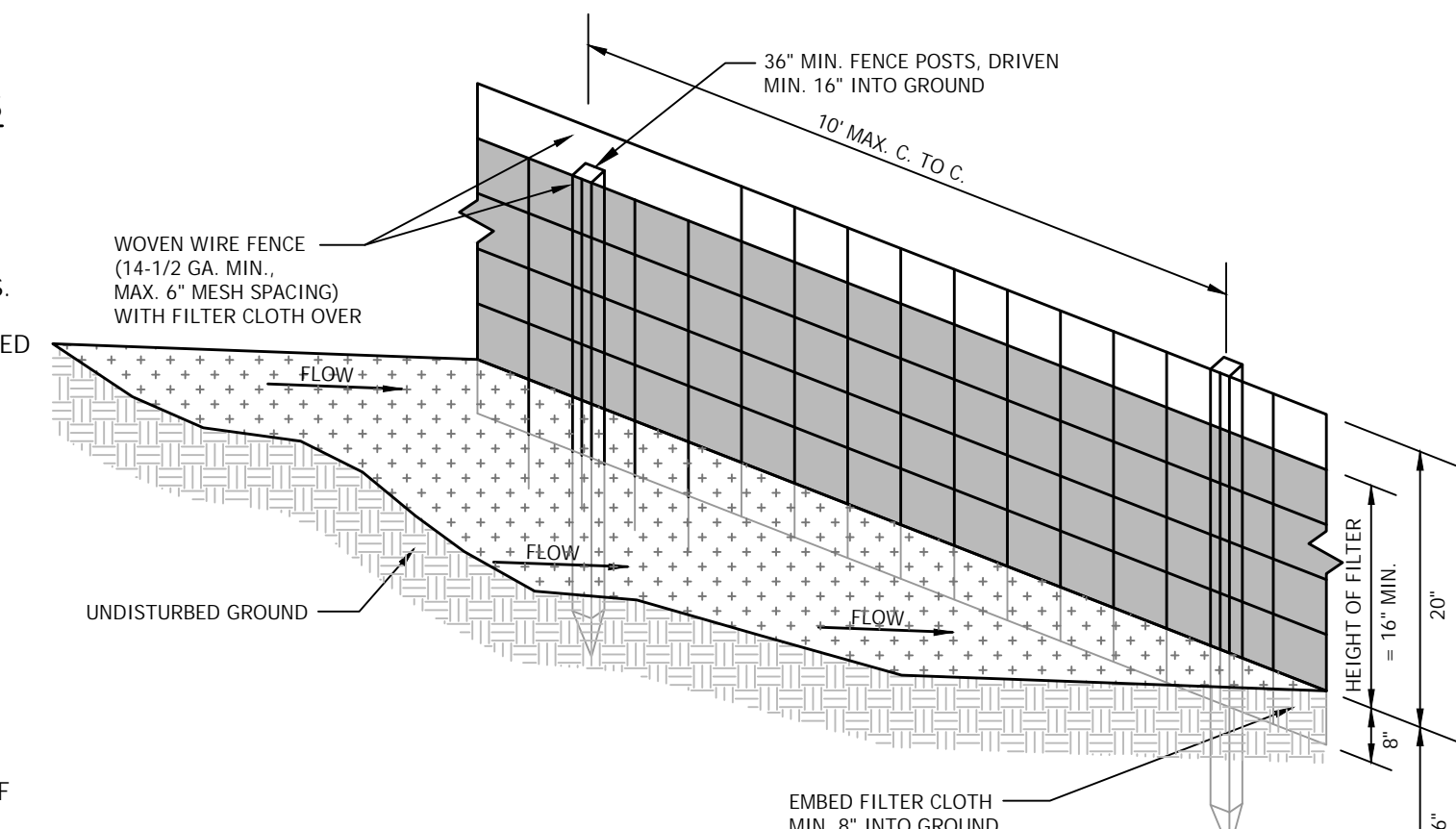


SEDIMENT FENCE POCKET

NO SCALE

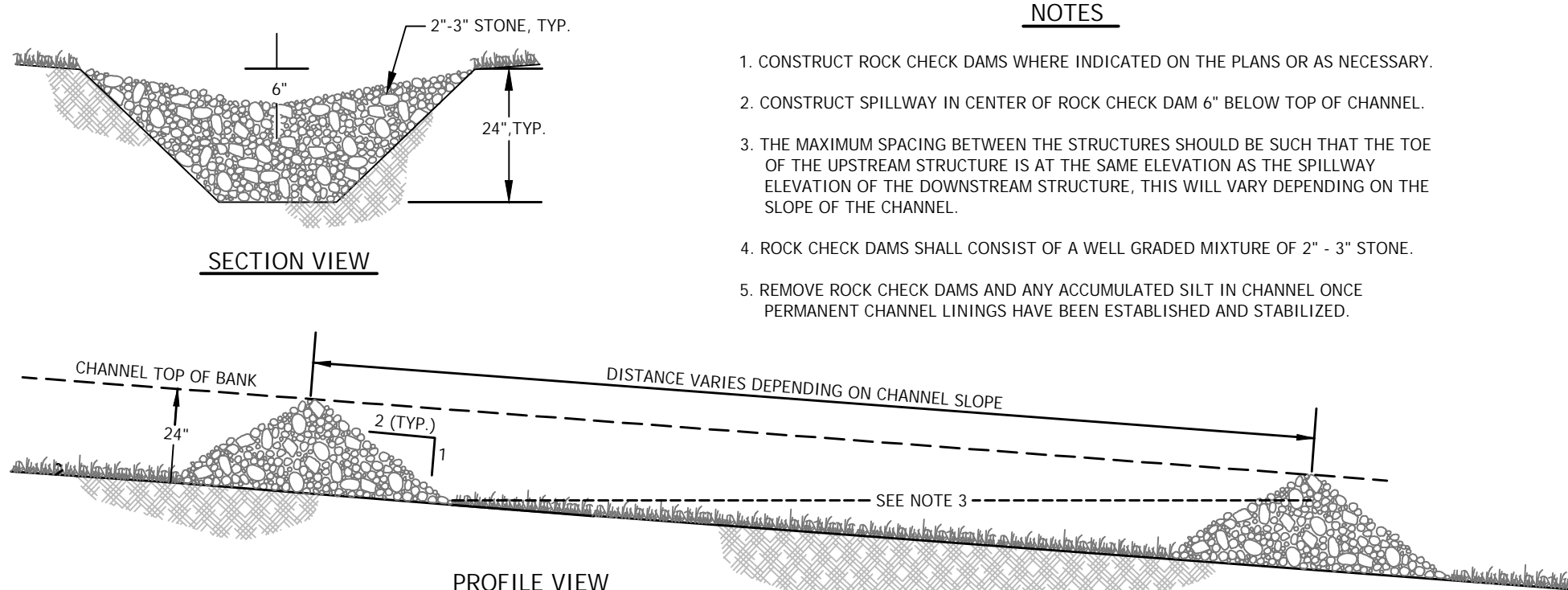
CONSTRUCTION NOTES FOR SEDIMENT FENCE

1. WOVEN WIRE FENCE, IF REQUIRED, TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP, MID SECTION, AND BOTTOM.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6 INCHES, FOLDED AND STAPLED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SEDIMENT FENCE, OR 50% OF ITS STORAGE IS USED.



SEDIMENT FENCE

NO SCALE



ROCK CHECK DAM DETAIL

NO SCALE

NOTES

1. CONSTRUCT ROCK CHECK DAMS WHERE INDICATED ON THE PLANS OR AS NECESSARY.
2. CONSTRUCT SPILLWAY IN CENTER OF ROCK CHECK DAM 6' BELOW TOP OF CHANNEL.
3. THE MAXIMUM SPACING BETWEEN THE STRUCTURES SHOULD BE SUCH THAT THE TOP OF THE UPSTREAM STRUCTURE IS AT THE SAME ELEVATION AS THE SPILLWAY ELEVATION OF THE DOWNSTREAM STRUCTURE. THIS WILL VARY DEPENDING ON THE SLOPE OF THE CHANNEL.
4. ROCK CHECK DAMS SHALL CONSIST OF A WELL GRADED MIXTURE OF 2" - 3" STONE.
5. REMOVE ROCK CHECK DAMS AND ANY ACCUMULATED SILT IN CHANNEL ONCE PERMANENT CHANNEL LININGS HAVE BEEN ESTABLISHED AND STABILIZED.