

# TRANQUILITY ESTATES COOPERATIVE

## LEISURE VILLAGE MHP

### WATER SYSTEM IMPROVEMENTS PROJECT

RAYMOND, NEW HAMPSHIRE

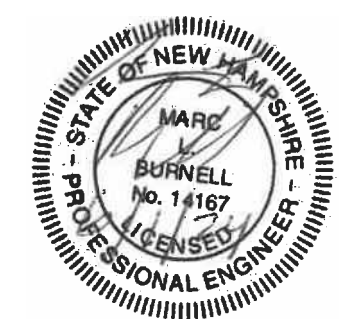
MAY 2024

OWNER:

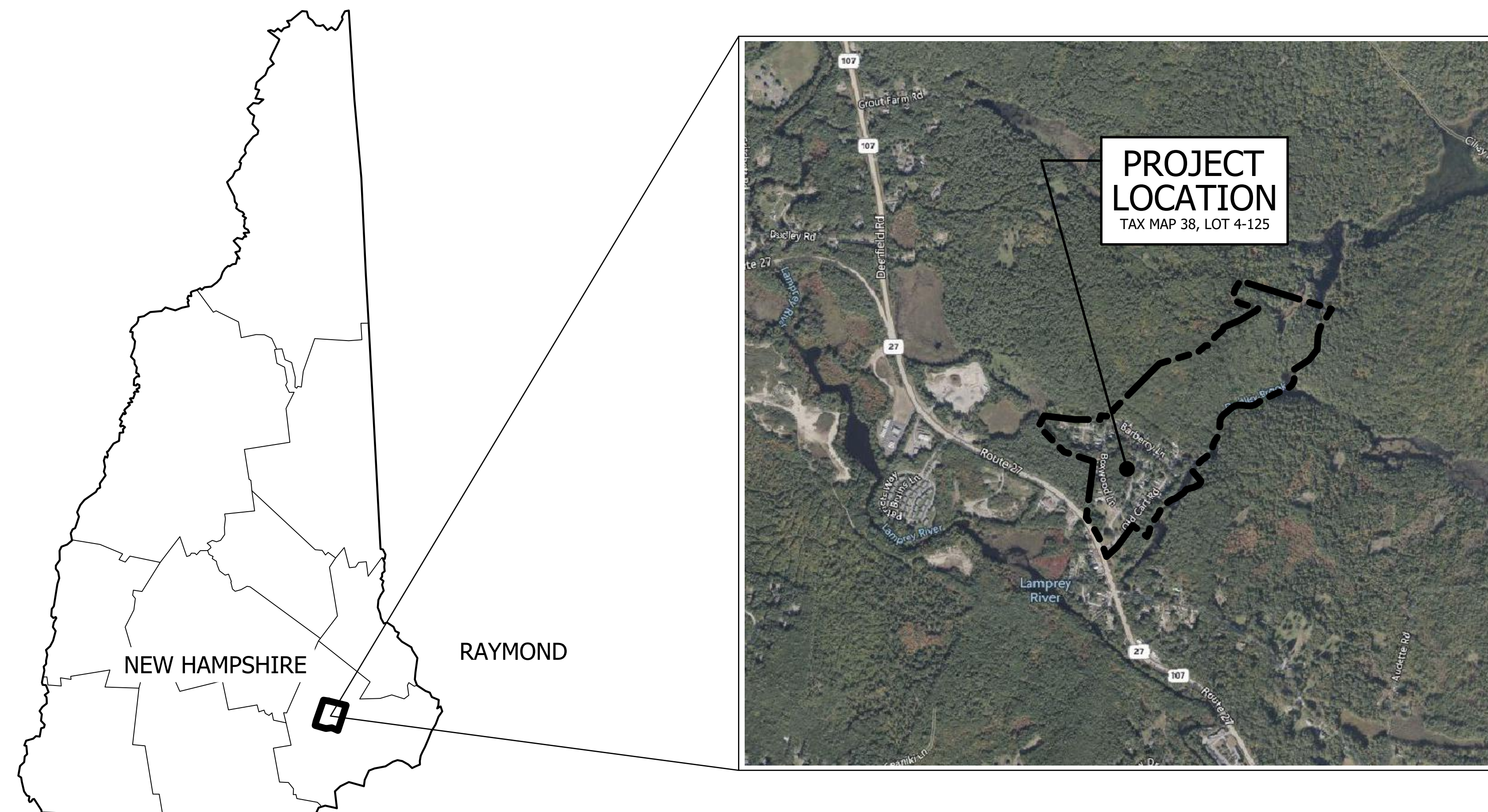
TRANQUILITY ESTATES COOPERATIVE  
 C/O FIRE FOX PROPERTY MANAGEMENT  
 ATTN: JODI CHAMPAGNE  
 PO BOX 1438  
 CONCORD, NEW HAMPSHIRE 03302

ENGINEER & SURVEYOR:

**horizons**  
*Engineering*



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



LOCATION PLAN

SCALE: 1" = 1000'

INDEX OF SHEETS

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DETAIL SHEETS

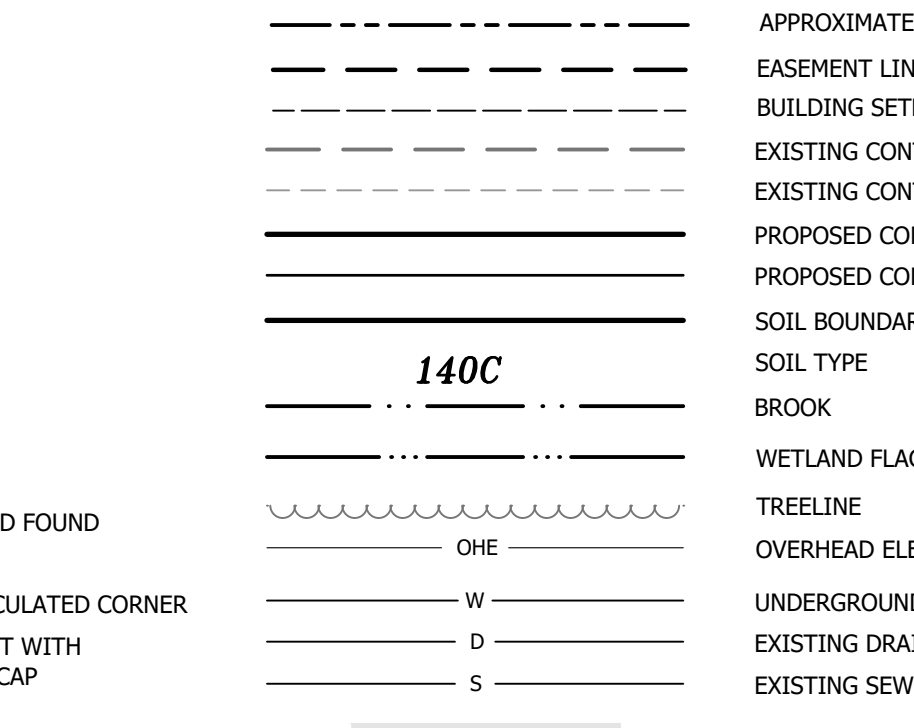
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FOR REVIEW  
 NOT FOR CONSTRUCTION

DATE OF PRINT  
 MAY 28 2024  
 HORIZONS ENGINEERING

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- LEGEND**
- AIR CONDITIONING
  - UTILITY METER
  - ELECTRIC CABINET
  - TELEPHONE CABINET
  - CONIFEROUS TREE
  - STUMP
  - DECIDUOUS TREE
  - GATE VALVE
  - W/S/KEY VALVE (ASBUILT PLANS)
  - SEWER MANHOLE
  - CATCH BASIN
  - LIGHT POLE
  - MANHOLE
  - TELEPHONE MANHOLE
  - UTILITY POLE
  - HYDRANT
  - WELL
  - MONITORING WELL
  - DRAINAGE MANHOLE
  - BOLLARD
  - BORING
  - MAIL BOX
  - SIGN
  - IRON PIPE FOUND
  - IRON ROD FOUND
  - REBAR FOUND
  - GRANITE/STONE BOUND FOUND
  - STONE PILE FOUND
  - REBAR TO BE SET/CALCULATED CORNER
  - 5/8-INCH IRON ROD SET WITH PLASTIC IDENTIFYING CAP
  - APPROXIMATE PROPERTY LINE
  - EASEMENT LINE BOUNDARY
  - BUILDING SETBACK
  - EXISTING CONTOUR - MAJOR INTERVAL
  - EXISTING CONTOUR - MINOR INTERVAL
  - PROPOSED CONTOUR - MAJOR INTERVAL
  - PROPOSED CONTOUR - MINOR INTERVAL
  - SOIL BOUNDARY
  - SOIL TYPE
  - BROOK
  - WETLAND FLAGS
  - TREELINE
  - OVERHEAD ELECTRIC
  - UNDERGROUND WATERLINE
  - EXISTING DRAIN
  - EXISTING SEWER LINE
  - PAVEMENT



**NRCS SOIL SURVEY MAP UNIT KEY**

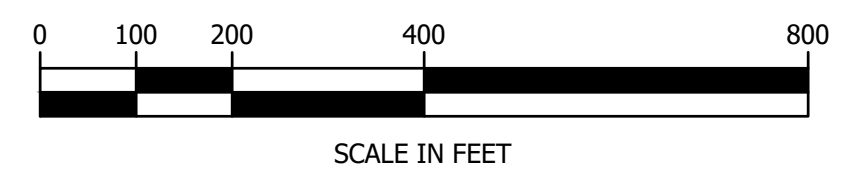
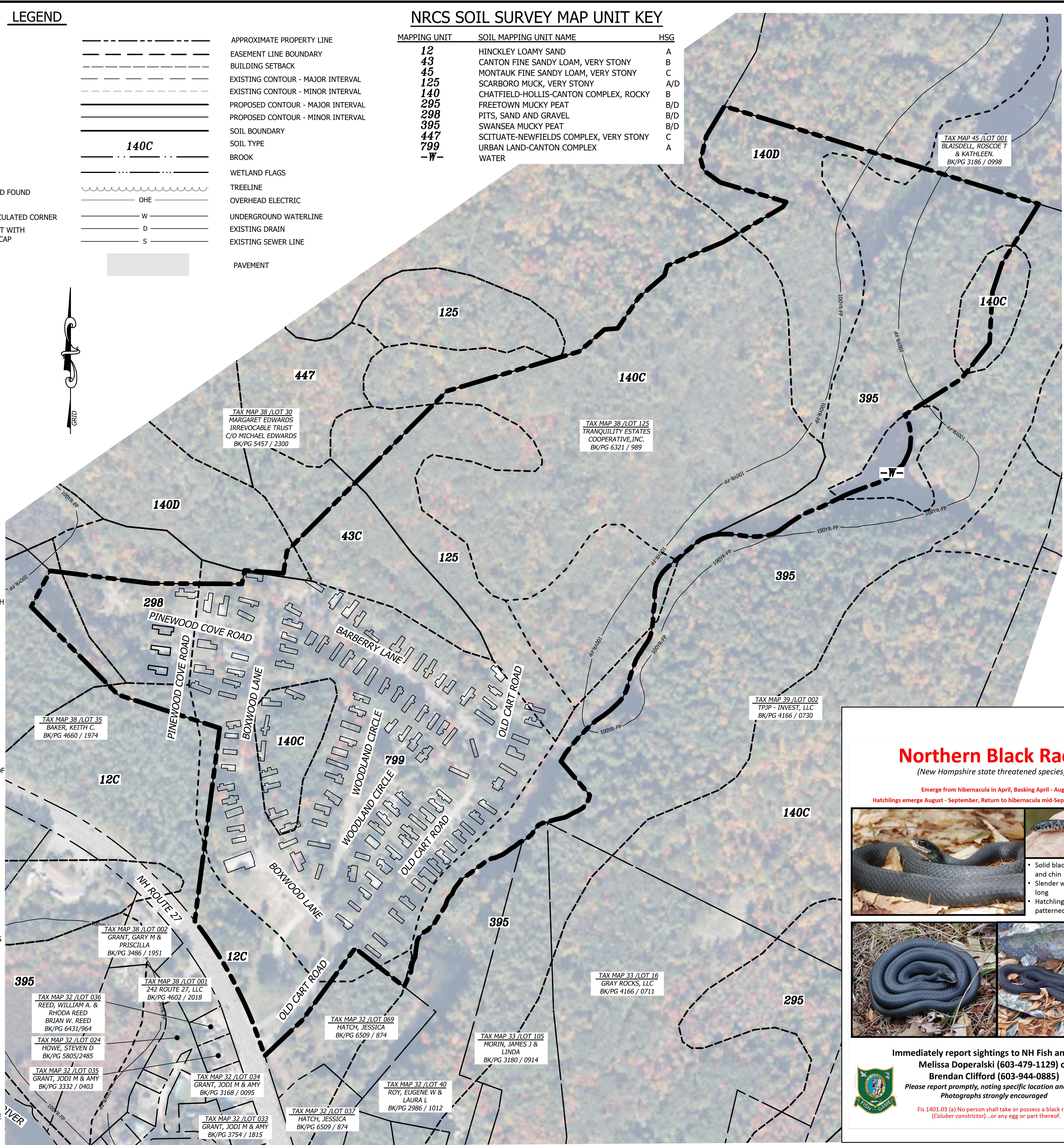
MAPPING UNIT	SOIL MAPPING UNIT NAME	HSG
12	HINCKLEY LOAMY SAND	A
43	CANTON FINE SANDY LOAM, VERY STONY	B
45	MONTAUK FINE SANDY LOAM, VERY STONY	C
125	SCARBORO MUCK, VERY STONY	A/D
140	CHATFIELD-HOLLIS-CANTON COMPLEX, ROCKY	B
295	FREETOWN MUCKY PEAT	B/D
298	PITS, SAND AND GRAVEL	B/D
395	SWANSEA MUCKY PEAT	B/D
447	SCITUATE-NEWFIELDS COMPLEX, VERY STONY	C
799	URBAN LAND-CANTON COMPLEX	A
-W-	WATER	

**GENERAL NOTES**

- 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 WHICH 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.
- ALL WORKMANSHIP AND MATERIALS INCORPORATED INTO THE CONSTRUCTION OF IMPROVEMENTS SPECIFIED ON THIS PLAN SHALL CONFORM TO STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (LATEST EDITION), AS PUBLISHED AND AMENDED BY THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION
- THE BEARINGS SHOWN HEREON REFER TO THE NEW HAMPSHIRE COORDINATE SYSTEM, GRID NORTH. THE VERTICAL DATUM IS THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAV88).
- THIS PLAN IS BASED ON A FIELD SURVEY COMPLETED BY HORIZONS ENGINEERING, INC. IN OCTOBER/NOVEMBER OF 2023 WITH LEICA TS13 AND TS16 ROBOTIC TOTAL STATIONS.
- APPROXIMATE EXISTING UNDERGROUND WATER SYSTEM LOCATIONS ARE SHOWN FROM "AS-BUILT" WATER DISTRIBUTION SYSTEM FOR LEISURE VILLAGE PROVIDED BY THE CLIENT AS HAND DRAWN SKETCHES AND NOTES FOR ILLUSTRATION PURPOSES ONLY AND IS NOT FIELD VERIFIED.
- SOIL MAPPING FROM THE NATIONAL COOPERATIVE SOIL SURVEY, BY UNITED STATES DEPARTMENT OF AGRICULTURE (USDA) NATURAL RESOURCES CONSERVATION SERVICE (NRCS)
- THE SUBJECT PROJECT DOES NOT RESIDE WITHIN THE 100 YEAR FLOOD ZONE.
- THERE ARE NO DEED RESTRICTIONS, EASEMENTS, COVENANTS, RIGHT OF WAY ASSOCIATED WITH THIS PROJECT.
- SUBJECT PROPERTY IS LOCATED WITHIN ZONE C1.

**DESIGN INTENT**

- THE ENGINEERS CONSTRUCTION APPROACH IS DIRECTIONAL BORING. IT IS PLANNED TO BE UTILIZED TO THE EXTENTS SHOWN ON DESIGN PLANS.
- OPEN CUT TRENCHING IS OPTIONAL AT THE RISK OF THE CONTRACTOR. OPEN CUT TRENCHING DIFFERING FROM THE SHOWN EXTENTS MAY BE PERFORMED AT THE RISK AND EXPENSE OF THE CONTRACTOR PROVIDED THE FOLLOWING:
- THE CONTRACTOR HAS APPLIED AND OBTAIN THE NECESSARY PERMITS, INCLUDING BUT NOT LIMITED TO:
    - NHDES WETLANDS PERMIT
    - NHDES SWPPP PERMITTING
- PROJECT PHASING FOR WATER MAIN REPLACEMENT AND CONNECTIONS USING THE DIRECTIONAL BORING METHOD ARE AS FOLLOWS.
- DIRECTIONAL BORE AND INSTALL ALL PROPOSED 3" AND 2" WATER MAIN.
  - INSTALL PROPOSED FLUSHING HYDRANTS LOCATED ON SAME SIDE OF ROAD AS PROPOSED WATER MAIN IN LOCATIONS SHOWN ON DESIGN PLANS.
  - COMPLETE NECESSARY TESTING BEFORE WATER MAIN IS PUT INTO SERVICE.
  - INSTALL AND CONNECT ALL WATER SERVICES LOCATED ON SAME SIDE ROAD AS PROPOSED WATER MAIN.
  - OPEN CUT AND CONNECT REMAINING WATER MAIN WHERE DIRECTIONAL BORE IS NOT FEASIBLE.
  - COMPLETE INTERCONNECTION OF PROPOSED WATER MAIN TO EXISTING WATER MAIN STARTING AT STATION 3+53 ON BOXWOOD LANE AT MAINTENANCE BUILDING.
  - COMMENCE DIRECTIONAL BORING AND CONNECTIONS OF SERVICES AND STREET INTERCONNECTIONS.
  - COMPLETE NECESSARY TESTING BEFORE WATER MAINS ARE PUT INTO SERVICE.
  - ISOLATE CAPPED SECTIONS OF EXISTING WATER MAINS (1 1-1/2") AT THE EXISTING MAINTENANCE BUILDING / BOXWOOD LANE AND ACTIVATE THE INSTALLED 4" WATER MAIN.



**NEW HAMPSHIRE FISH AND GAME (NHFG) THREATENED AND ENDANGERED WILDLIFE NOTES:**

- NH FISH AND GAME (NHFG) RECOMMENDS THAT THE FOLLOWING CONSERVATION MEASURES BE INCORPORATED INTO THE PROJECT PLAN SET/PROJECT DESIGN:
- BLANDING'S TURTLE (STATE ENDANGERED), NORTHERN BLACK RACER (STATE THREATENED), AND SPOTTED TURTLE (STATE THREATENED) OCCUR WITHIN THE VICINITY OF THE PROJECT AREA. ALL OPERATORS AND PERSONNEL WORKING ON OR ENTERING THE SITE SHALL BE MADE AWARE OF THE POTENTIAL PRESENCE OF THESE SPECIES AND SHALL BE PROVIDED FLYERS IN THIS PLAN SET THAT HELP TO IDENTIFY THESE SPECIES, ALONG WITH NHFG CONTACT INFORMATION.
  - RARE SPECIES INFORMATION (E.G. IDENTIFICATION, OBSERVATION AND REPORTING OF OBSERVATIONS, WHEN TO CONTACT NHFG IMMEDIATELY AND NHFG CONTACT INFORMATION SHALL BE COMMUNICATED DURING MORNING TAILGATE MEETINGS PRIOR TO WORK COMMENCEMENT DURING THE CONSTRUCTION PHASE OF THE PROJECT. FLYERS ARE INCLUDED ON PLAN SHEET C1.1 OF THIS PLAN SET.
  - OBSERVATIONS OF NORTHERN BLACK RACERS SHALL BE REPORTED IMMEDIATELY TO THE NEW HAMPSHIRE FISH AND GAME DEPARTMENT NONGAME AND ENDANGERED WILDLIFE REVIEW PROGRAM. PLEASE CONTACT (CALL OR TEXT) MELISSA WINTERS (603) 479-1129 OR BRENDAN CLIFFORD (603) 944-0885. PLEASE INCLUDE PHOTOGRAPH WITH TEXT IF FEASIBLE.
  - TURTLES AND SNAKES MAY BE ATTRACTED TO DISTURBED GROUND DURING NESTING SEASON. TURTLE NESTING SEASON OCCURS APPROXIMATELY MAY 15TH - JUNE 30TH. ALL TURTLE SPECIES NESTS AND NORTHERN BLACK RACER NESTS ARE PROTECTED BY NH LAWS. IF A NEST IS OBSERVED OR SUSPECTED, OPERATORS SHALL CONTACT MELISSA WINTERS (603) 479-1129 OR JOSH MEGEY (978) 578-0802 AT NHFG IMMEDIATELY FOR FURTHER CONSULTATION.
  - THE NEST OR SUSPECTED NEST SHALL BE MARKED (SURROUNDING ROPED OFF OR CONE BUFFER DEPLOYED) AND AVOIDED; THIS SHALL BE COMMUNICATED TO ALL PERSONNEL ONSITE. SITE ACTIVITIES SHALL NOT OCCUR IN THE AREA SURROUNDING THE NEST OR SUSPECTED NEST UNTIL FURTHER GUIDANCE IS PROVIDED BY NHFG.
  - SITE WORK IN THE SANDY AREA SURROUNDING THE NEW PUMP STATION SHALL BE PERFORMED BETWEEN OCTOBER 15TH-MARCH 31ST.
  - ALL MANUFACTURED EROSION AND SEDIMENT CONTROL PRODUCTS, WITH THE EXCEPTION OF TURF REINFORCEMENT MATS, UTILIZED FOR, BUT NOT LIMITED TO, SLOPE PROTECTION, RUNOFF DIVERSION, SLOPE INTERRUPTION, PERIMETER CONTROL, INLET PROTECTION, CHECK DAMS, AND SEDIMENT TRAPS SHALL NOT CONTAIN PLASTIC, OR MULTIFILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH WITH AN OPENING SIZE OF GREATER THAN 1/8 INCHES.
  - ALL OBSERVATIONS OF THREATENED OR ENDANGERED SPECIES ON THE PROJECT SITE SHALL BE REPORTED IMMEDIATELY TO THE NHFG NONGAME AND ENDANGERED WILDLIFE ENVIRONMENTAL REVIEW PROGRAM BY PHONE AT (603) 271-2461 AND BY EMAIL AT NHFGREVIEW@WILDLIFE.NH.GOV, WITH THE EMAIL SUBJECT LINE CONTAINING NH DATACHECK TOOL RESULTS LETTER ASSIGNED NUMBER NHB23-0318, TRANQUILITY ESTATES WATER SYSTEM IMPROVEMENTS, AND THE TERM WILDLIFE SPECIES OBSERVATION.
  - PHOTOGRAPHS OF THE OBSERVED SPECIES AND NEARBY ELEMENTS OF HABITAT OR AREAS OF LAND DISTURBANCE SHALL BE PROVIDED TO NHFG IN DIGITAL FORMAT AT THE ABOVE EMAIL ADDRESS FOR VERIFICATION, AS FEASIBLE.
  - IN THE EVENT A THREATENED OR ENDANGERED SPECIES IS OBSERVED ON THE PROJECT SITE DURING THE TERM OF THE PERMIT, THE SPECIES SHALL NOT BE DISTURBED, HANDLED, OR HARMED IN ANY WAY PRIOR TO CONSULTATION WITH NHFG AND IMPLEMENTATION OF CORRECTIVE ACTIONS RECOMMENDED BY NHFG.
  - SITE OPERATORS SHALL BE ALLOWED TO RELOCATE WILDLIFE ENCOUNTERED IF DISCOVERED WITHIN THE ACTIVE WORK ZONE IF IN DIRECT HARM FROM PROJECT ACTIVITIES. WILDLIFE SHALL BE RELOCATED IN CLOSE PROXIMITY TO THE CAPTURE LOCATION BUT OUTSIDE OF THE WORK ZONE AND IN THE DIRECTION THE INDIVIDUAL WAS HEADING. NHFG SHALL BE CONTACTED IMMEDIATELY IF THIS ACTION OCCURS.
  - THE NHFG, INCLUDING ITS EMPLOYEES AND AUTHORIZED AGENTS, SHALL HAVE ACCESS TO THE PROPERTY DURING THE TERM OF THE PERMIT. SKETCHES AND NOTES FOR ILLUSTRATION PURPOSES ONLY AND IS NOT FIELD VERIFIED.

NO.	DATE	REVISION DESCRIPTION



**TRANQUILITY ESTATES COOPERATIVE LEISURE VILLAGE MHP WATER SYSTEM IMPROVEMENTS PROJECT**  
TAX MAP 38, LOT 4, 125  
RAYMOND, NEW HAMPSHIRE

**OVERVIEW, GENERAL NOTES & LEGEND**

**Northern Black Racer**  
*(New Hampshire state threatened species)*

Emerge from hibernacula in April, Basking April - August, Hatchlings emerge August - September, Return to hibernacula mid-September - mid-October

- Solid black with a white throat and chin
- Slender with glossy scales, 3-6 ft. long
- Hatchlings are very small and patterned

**Immediately report sightings to NH Fish and Game**  
Melissa Doperalski (603-479-1129) or  
Brendan Clifford (603-944-0885)  
Please report promptly, noting specific location and date  
Photographs strongly encouraged

Fis 1401.03 (a) No person shall take or possess a black racer (Coluber constrictor)...or any egg or part thereof.

**PLEASE REPORT OBSERVATIONS OF RARE TURTLES**  
*The NH Fish & Game Department is requesting observations of the following turtle species*

Turtles may be attracted to disturbed ground during nesting season (May 15th - June 30th)  
Turtles are most active from April 15th - October 15th - maintain silt fences during this time

**Blanding's turtle**  
(State Endangered)

Large, dark/black domed shell with lighter speckles.  
Distinct yellow throat/chin.  
Aquatic but often moves on land.

**Spotted turtle**  
(State Threatened)

Small, mostly aquatic with black or dark brown with yellow spots.  
Fairly flat shell compared to Blanding's turtle.  
Spots vary in color and number.

Fis 1401.03 (a) No person shall take or possess a spotted turtle (Clemmys guttata)...Blanding's turtle (Emydoidea blandingii)...or any egg or part thereof.

Report sightings immediately to NHFG Wildlife Division at 603-271-2461 (M-F 8-4) or to NHFG Wildlife Biologist Melissa Winters 603-479-1129 (cell) anytime.  
Please report promptly, noting specific location and date - Photographs strongly encouraged

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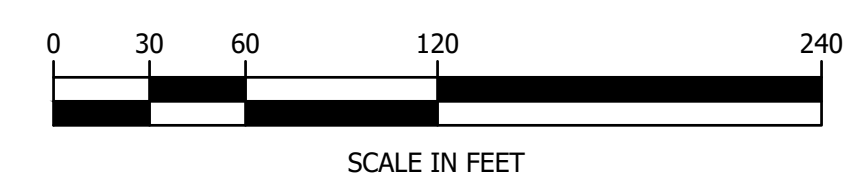
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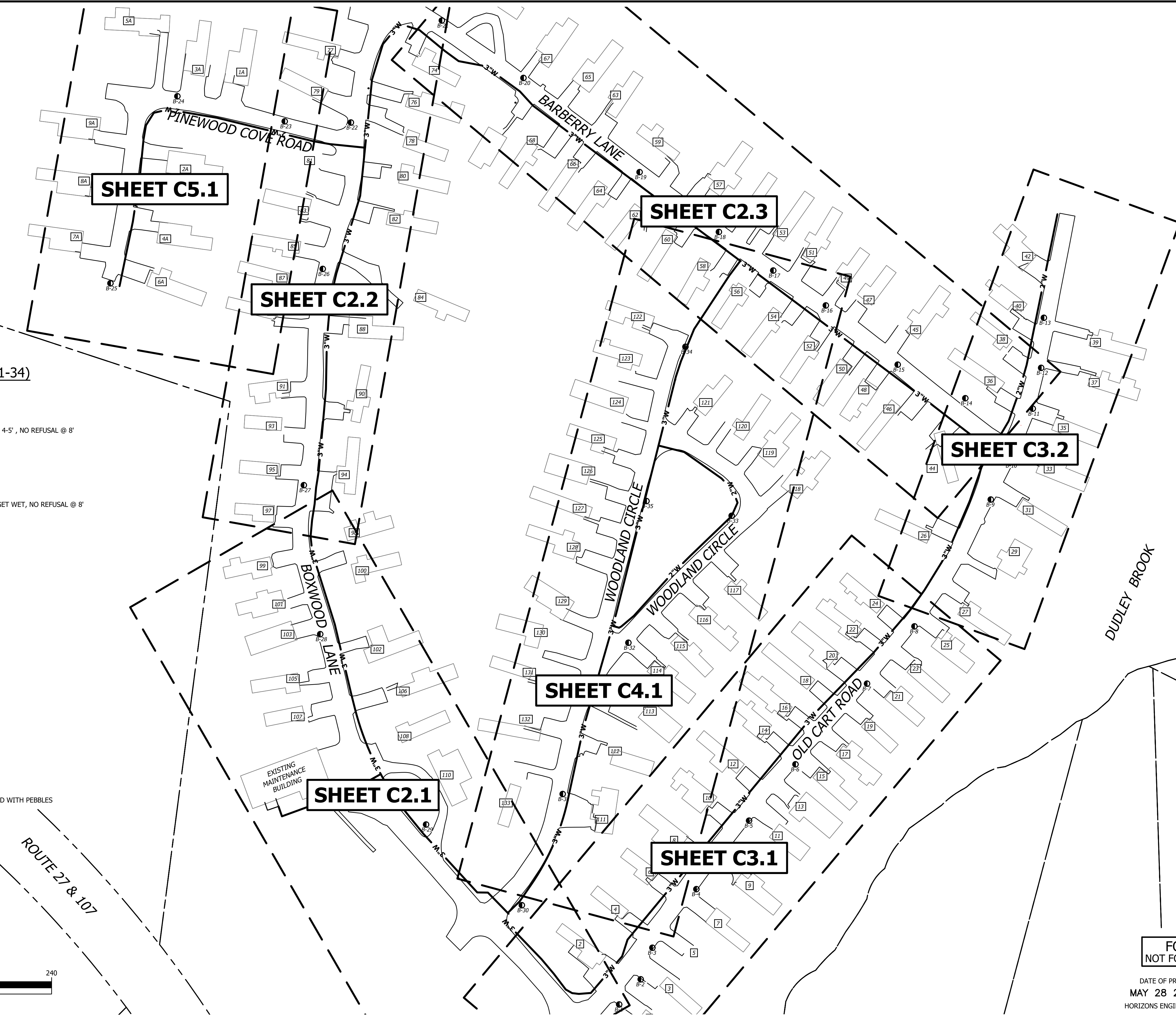
**BORING LOGS (1-34)**

- B1- ROCK @ 5'
- B2- ROCK @ 4.5', NO REFUSAL @ 8'
- B3- NO REFUSAL @ 8'
- B4- SANDY GRAVEL, FRESH SAND / WATER LINE @ 4.5', NO REFUSAL @ 8'
- B5- NO REFUSAL @ 8'
- B6- FINE SAND / COVERED PIPES @ 6'
- B7- NO REFUSAL @ 8'
- B8- FINE SAND, NO REFUSAL @ 8'
- B9- NO REFUSAL @ 8'
- B10- LITTLE ROCK @ 6', NO LEDGE, STARTED TO GET WET, NO REFUSAL @ 8'
- B11- ROCK @ 1-3', FINE SAND, NO REFUSAL @ 8'
- B12- NO REFUSAL @ 8'
- B13- NO REFUSAL @ 8'
- B14- NO WATER, CLEAN SAND, NO REFUSAL
- B15- NO REFUSAL
- B16- NO REFUSAL
- B17- HOLES FILLING WITH WATER, NO REFUSAL
- B18- WETTER, NO REFUSAL
- B19- NO REFUSAL
- B20- NO REFUSAL
- B21- NO REFUSAL
- B22- REDDISH SANDY GRAVEL, NO REFUSAL
- B23- REDDISH SANDY GRAVEL, NO REFUSAL
- B24- NO REFUSAL
- B25- NO REFUSAL
- B26- BOULDERS ON SURFACE, NO REFUSAL
- B27- NO REFUSAL
- B28- NO REFUSAL
- B29- NO REFUSAL
- B30- NO REFUSAL
- B31- NO REFUSAL
- B32- NO REFUSAL
- B33- ROCKS, NO LEDGE, NO REFUSAL
- B34- BOULDERS, NO LEDGE, LIGHTER BROWN SAND WITH PEBBLES

ROUTE 27 & 107



SCALE IN FEET



**SHEET C5.1**

**SHEET C2.2**

**SHEET C2.3**

**SHEET C3.2**

**SHEET C4.1**

**SHEET C2.1**

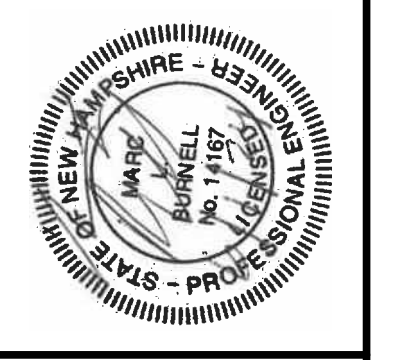
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HORIZONS ENGINEERING



NO.	DATE	REVISION DESCRIPTION	ENG. DWG.
221032	MAY 2024		



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 NEW LONDON NH • POMFRET VT

TRANQUILITY ESTATES COOPERATIVE  
 LEISURE VILLAGE MHP  
 WATER SYSTEM IMPROVEMENTS PROJECT  
 TAX MAP 58, LOT 4.1-25  
 RAYMOND, NEW HAMPSHIRE

SHEET LAYOUT & BORING LOCATION PLAN

SHEET C1.2

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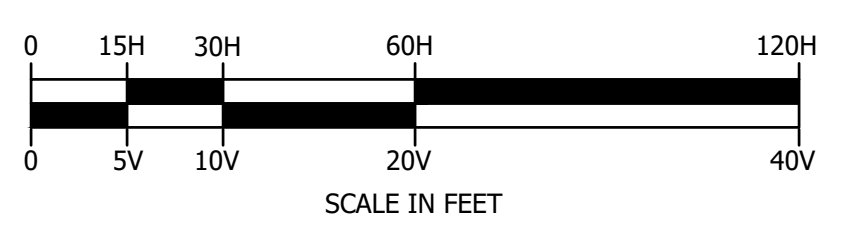
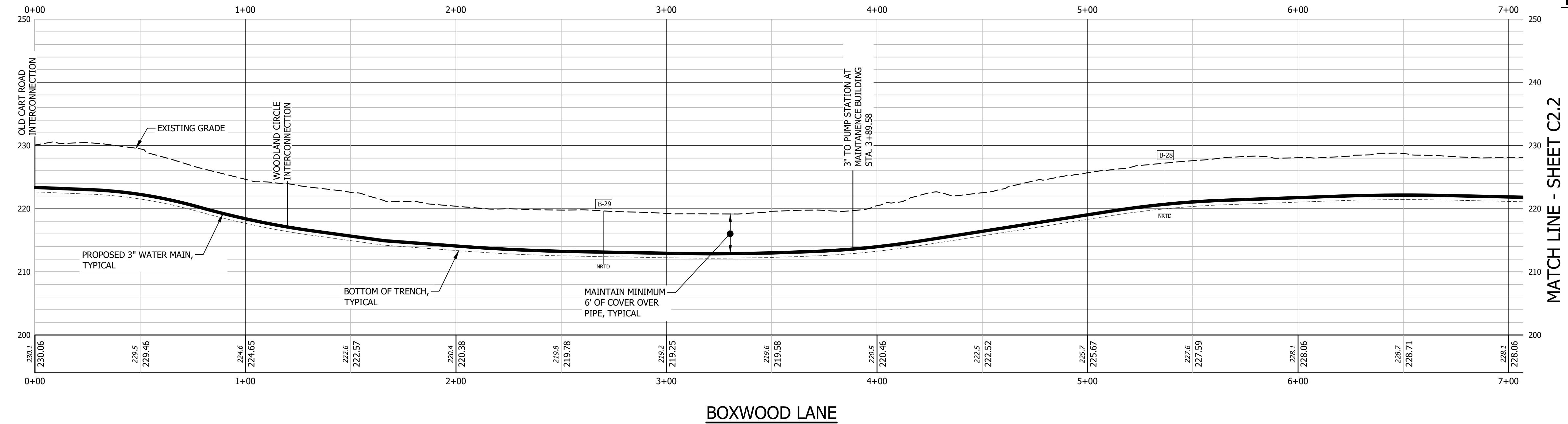
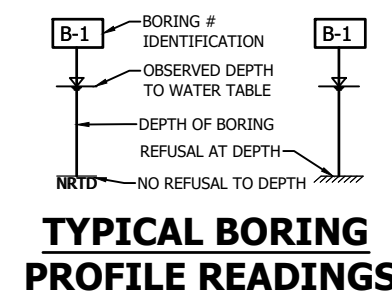
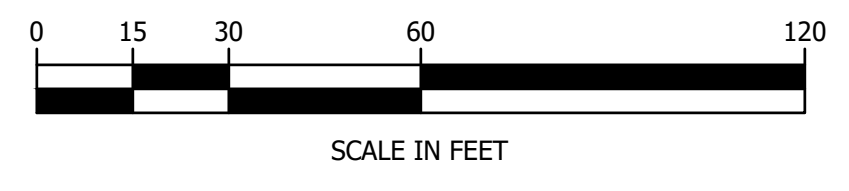
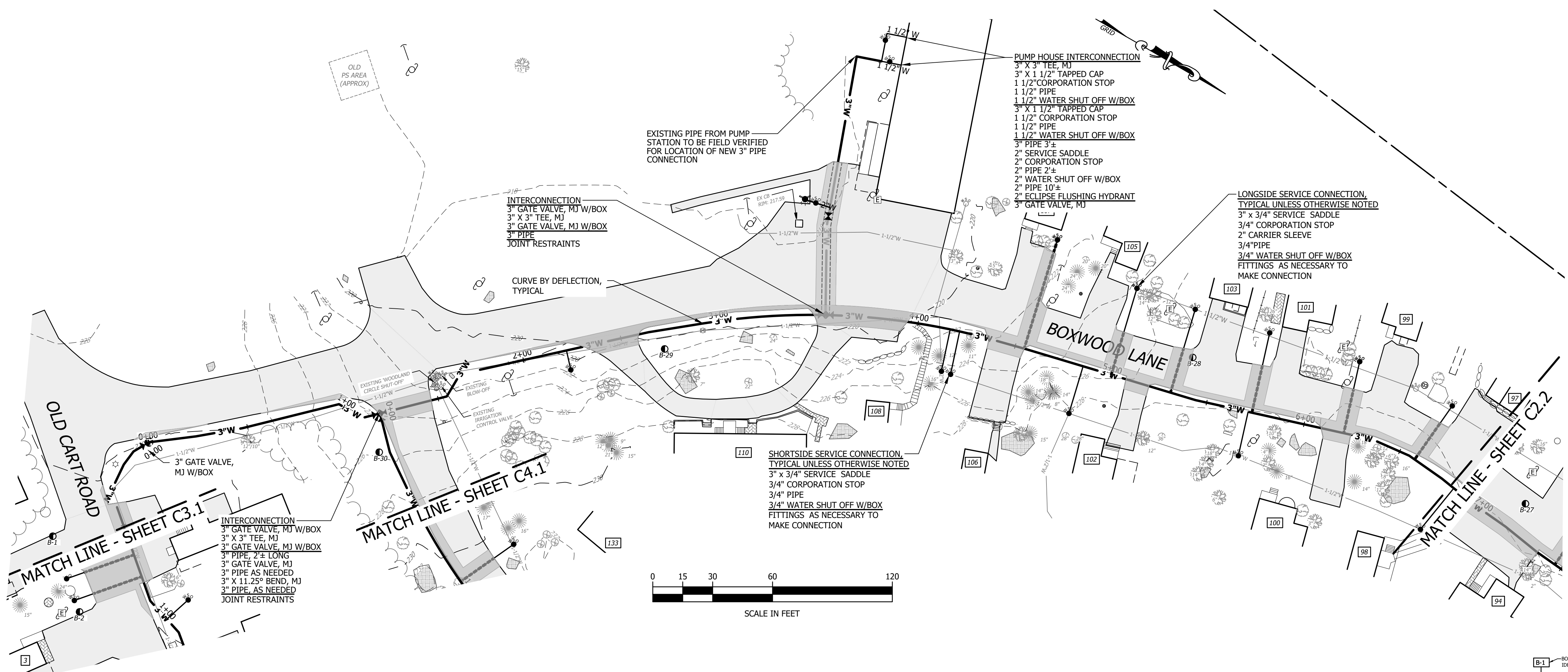
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DATE:	MAY 2024
SURVEYED BY:	HEI
ENGINEERED BY:	MLB
DRAWN BY:	LJM
CHECKED BY:	CFC

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 NEW LONDON NH • POMFRET VT • KENNEBUNK ME

TRANQUILITY ESTATES COOPERATIVE  
 LEISURE VILLAGE WHP  
 WATER SYSTEM IMPROVEMENTS PROJECT  
 TAX MAP 38, LOT 4.1-2.5  
 RAYMOND, NEW HAMPSHIRE

BOXWOOD LANE  
 PLAN & PROFILE - STA. 0+00 TO 7+00

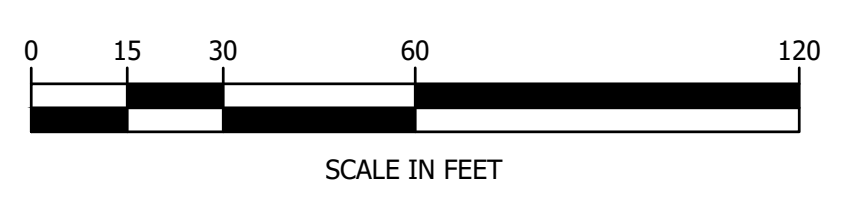
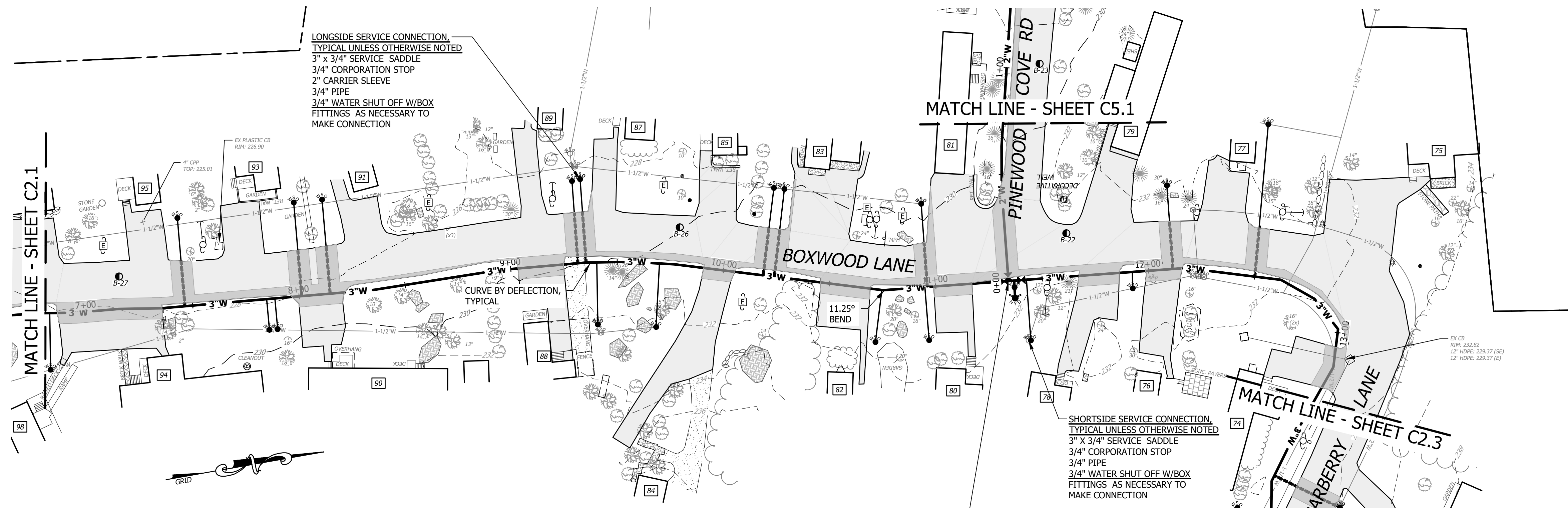
SHEET C2.1



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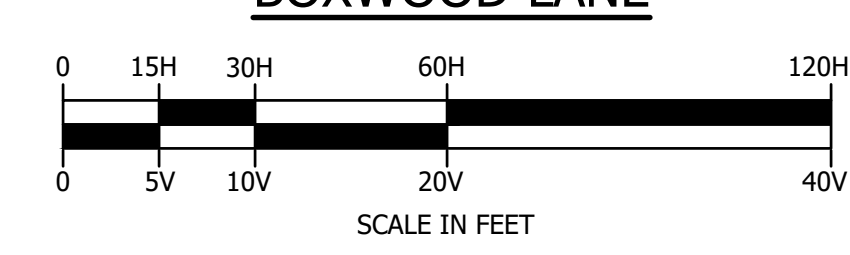
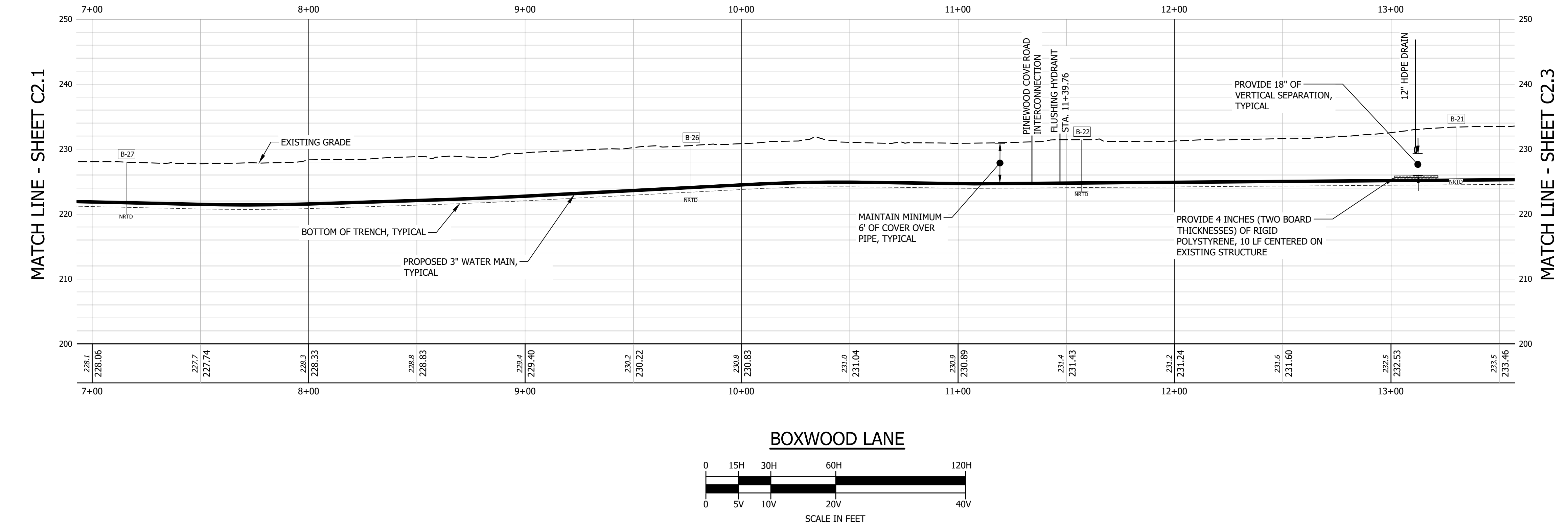
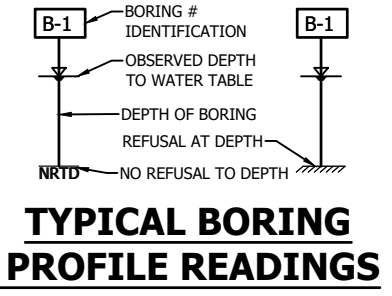
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- INTERCONNECTION**  
 3" GATE VALVE, MJ W/BOX  
 3" X 3" TEE, MJ  
 3" GATE VALVE, MJ W/BOX  
 FLUSHING HYDRANT, TYPICAL  
 3" X 2" SERVICE SADDLE  
 2" CORPORATION  
 2" PIPE  
 2" WATER SHUT OFF  
 2" PIPE, 2' ±  
 2" ECLIPSE FLUSHING HYDRANT  
 FITTINGS AS NECESSARY TO MAKE CONNECTION
- 3" X 2" TAPPED CAP, MJ**  
 2" CORPORATION STOP  
 2" PIPE  
 2" CURB STOP W/BOX

**SHORTSIDE SERVICE CONNECTION, TYPICAL UNLESS OTHERWISE NOTED**  
 3" X 3/4" SERVICE SADDLE  
 3/4" CORPORATION STOP  
 3/4" PIPE  
 3/4" WATER SHUT OFF W/BOX  
 FITTINGS AS NECESSARY TO MAKE CONNECTION

**LONGSIDE SERVICE CONNECTION, TYPICAL UNLESS OTHERWISE NOTED**  
 3" X 3/4" SERVICE SADDLE  
 3/4" CORPORATION STOP  
 2" CARRIER SLEEVE  
 3/4" PIPE  
 3/4" WATER SHUT OFF W/BOX  
 FITTINGS AS NECESSARY TO MAKE CONNECTION



NO.	DATE	REVISION DESCRIPTION	ENG	DWG

PROJECT #: 221032  
 DATE: MAY 2024  
 SURVEYED BY: HEI  
 ENGINEERED BY: MLB  
 DRAWN BY: LJM  
 CHECKED BY: CFC

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 NEW LONDON NH • POMFRET VT • KENNEBUNK ME

TRANQUILITY ESTATES COOPERATIVE  
 LEISURE VILLAGE WHP  
 WATER SYSTEM IMPROVEMENTS PROJECT  
 TAX MAP 38, LOT 4-125  
 RAYMOND, NEW HAMPSHIRE

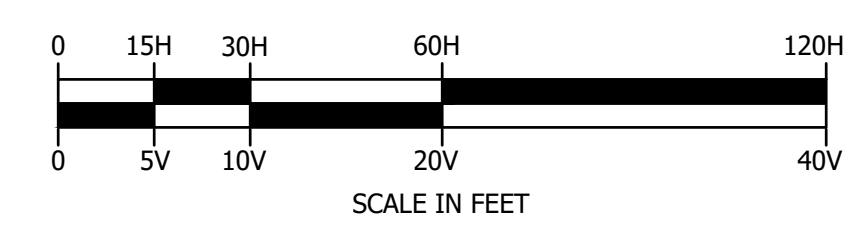
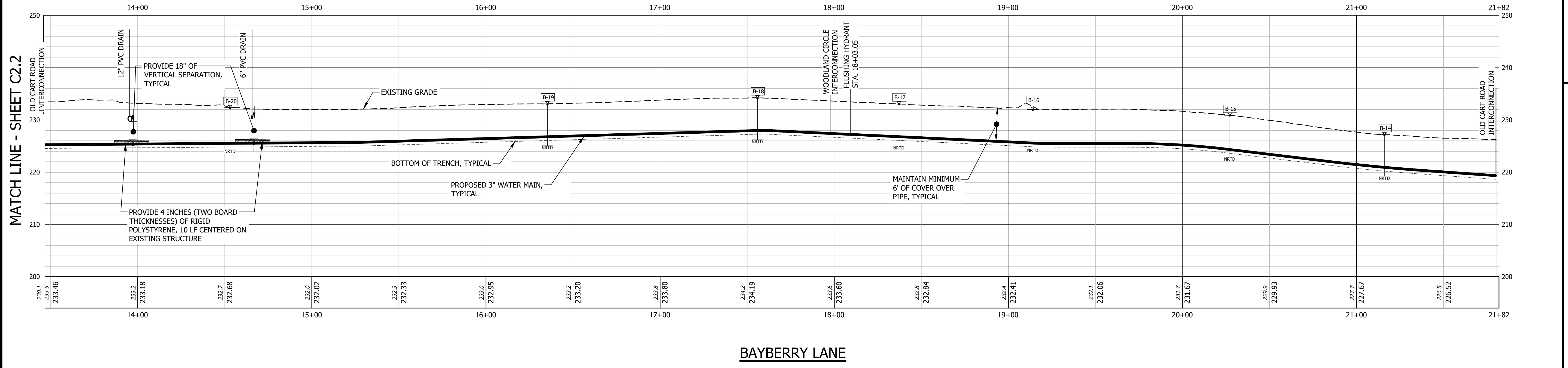
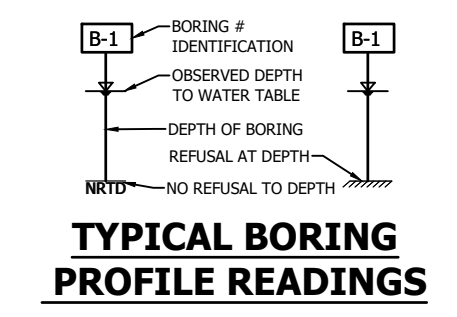
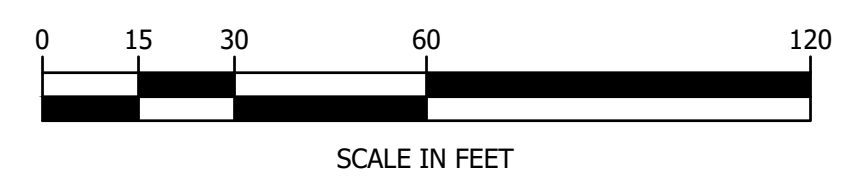
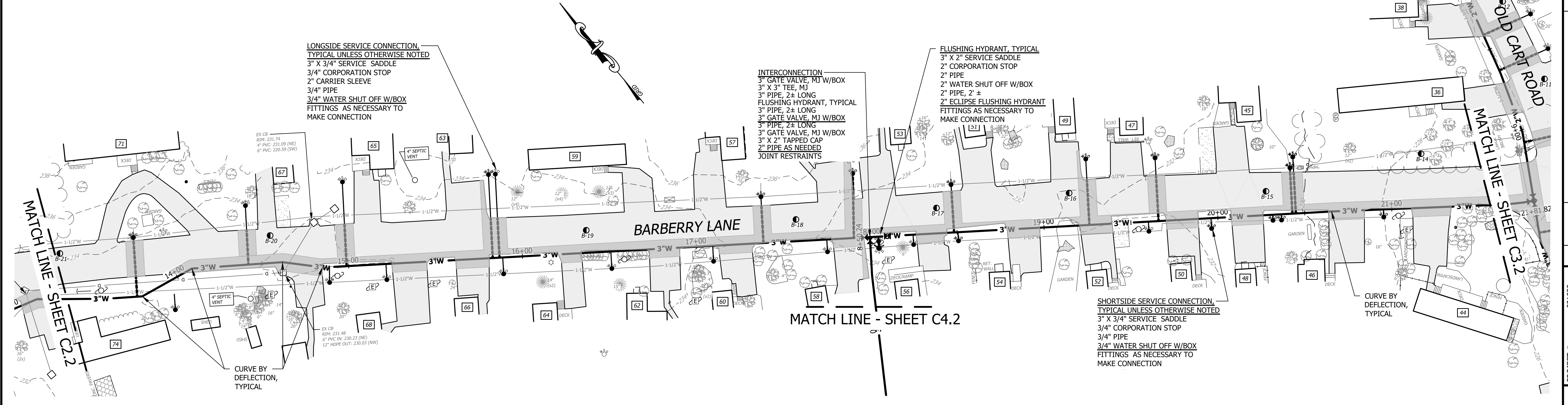
BOXWOOD LANE  
 PLAN & PROFILE - STA. 7+00 TO 13+50

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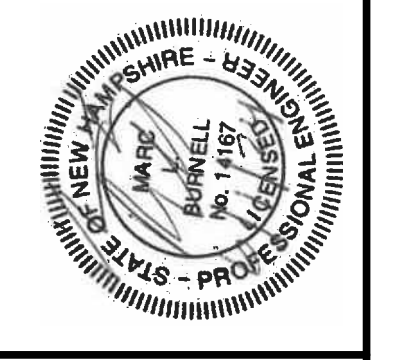
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SHEET C2.2

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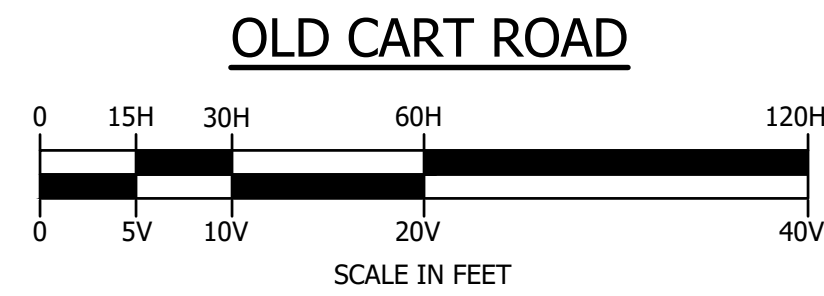
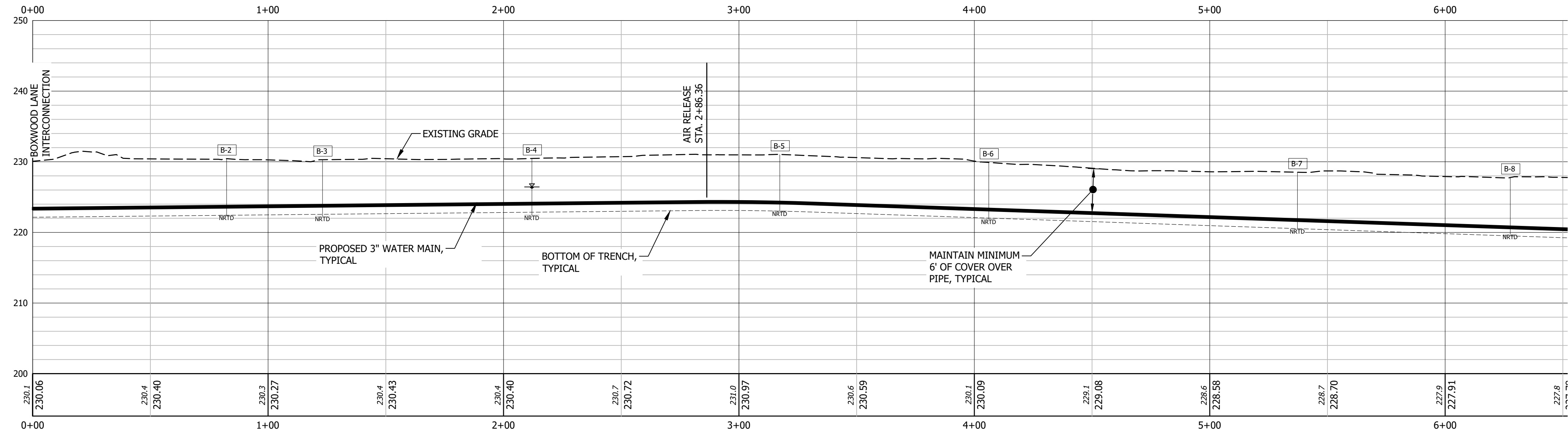
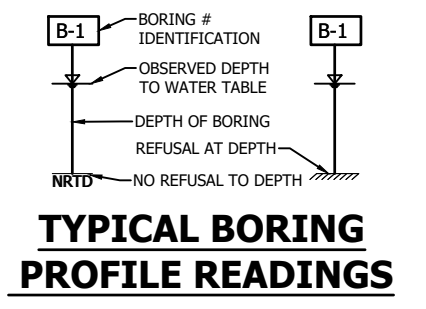
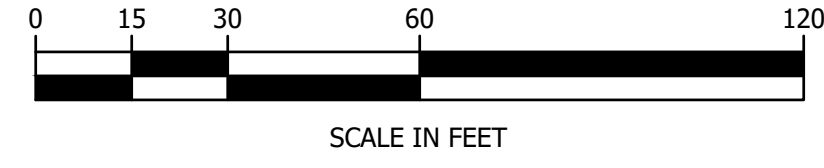
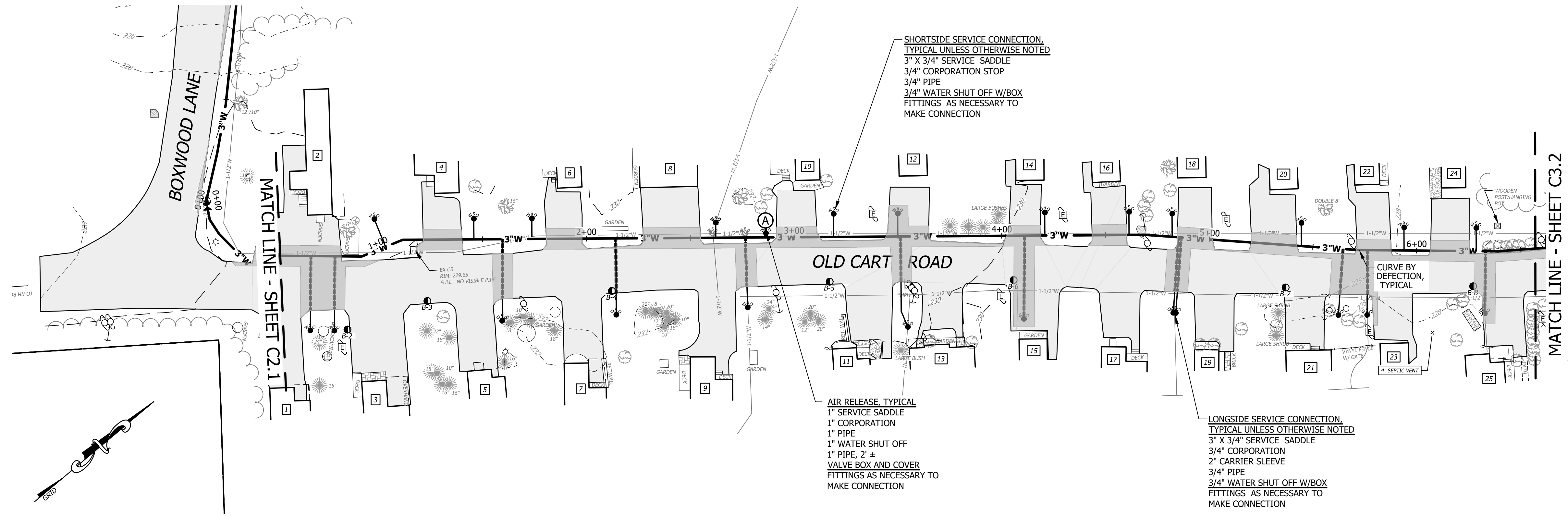
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 WATER SYSTEM IMPROVEMENTS PROJECT  
 TAX MAP 38, LOT 4-135  
 RAYMOND, NEW HAMPSHIRE

BARBERRY LANE  
 PLAN & PROFILE - STA. 13+50 TO 22+00.40

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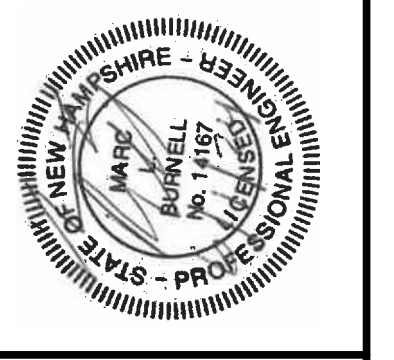
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SHEET C2.3



MATCH LINE - SHEET C3.2

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ENGINEERED BY:	MLB
DRAWN BY:	LJM
CHECKED BY:	CFC

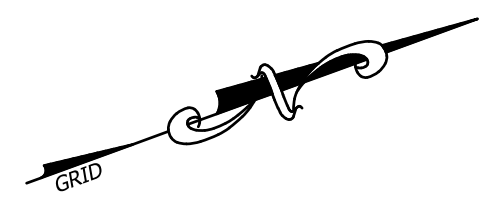
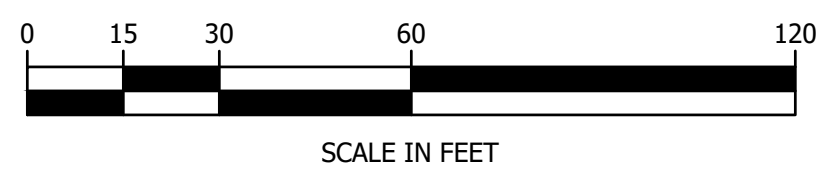
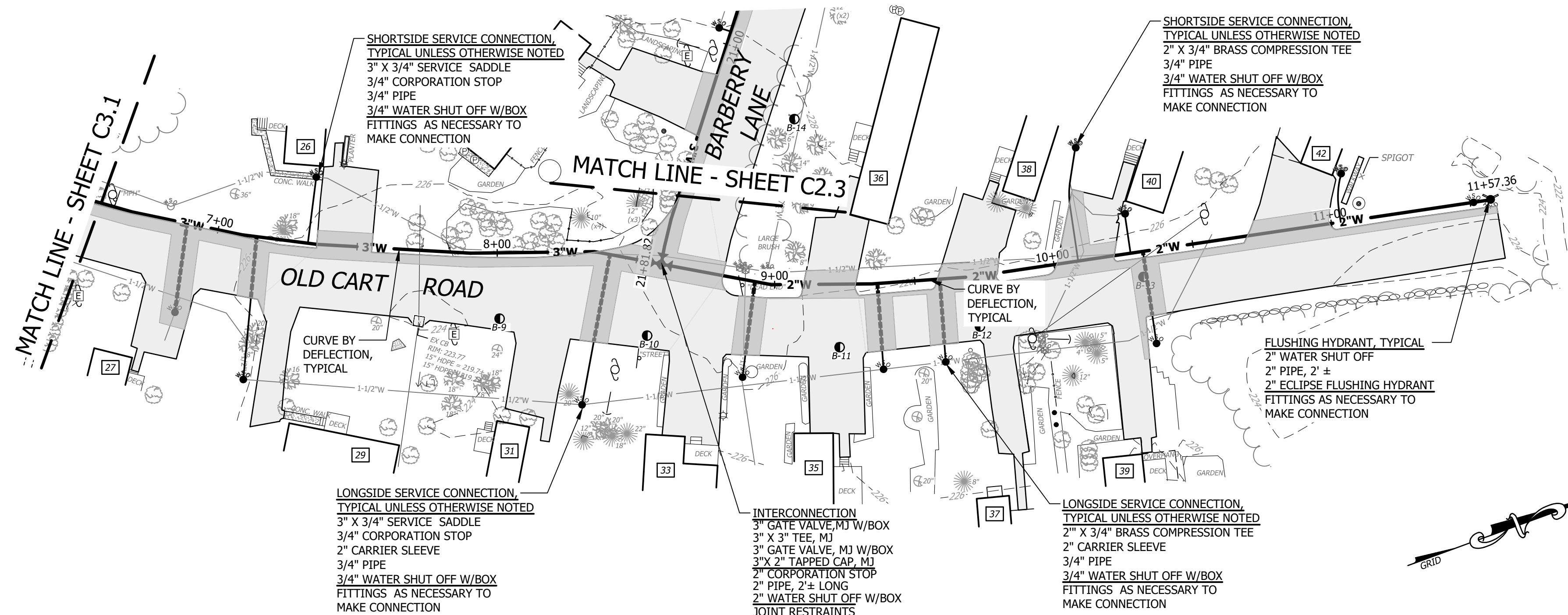


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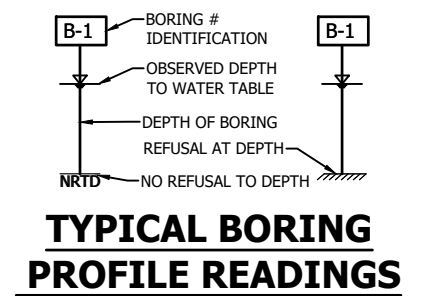
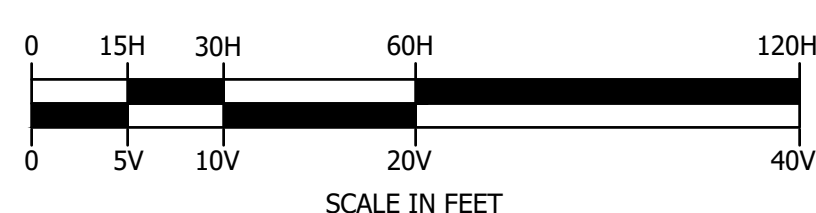
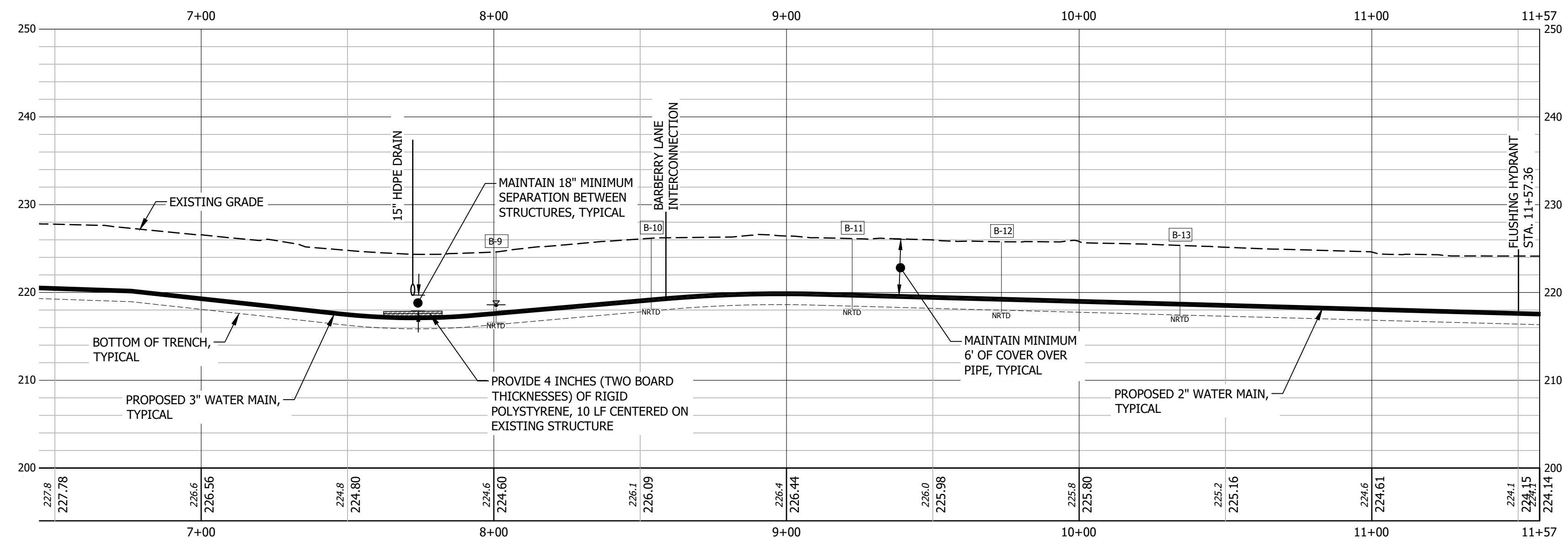
TRANQUILITY ESTATES COOPERATIVE  
 LEISURE VILLAGE MHP  
 WATER SYSTEM IMPROVEMENTS PROJECT  
 TAX MAP 38, LOT 4-125  
 RAYMOND, NEW HAMPSHIRE

OLD CART ROAD  
 PLAN & PROFILE - STA. 0+00 TO 6+50

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MATCH LINE - SHEET C3.1



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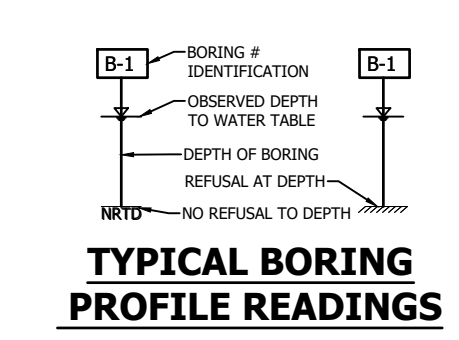
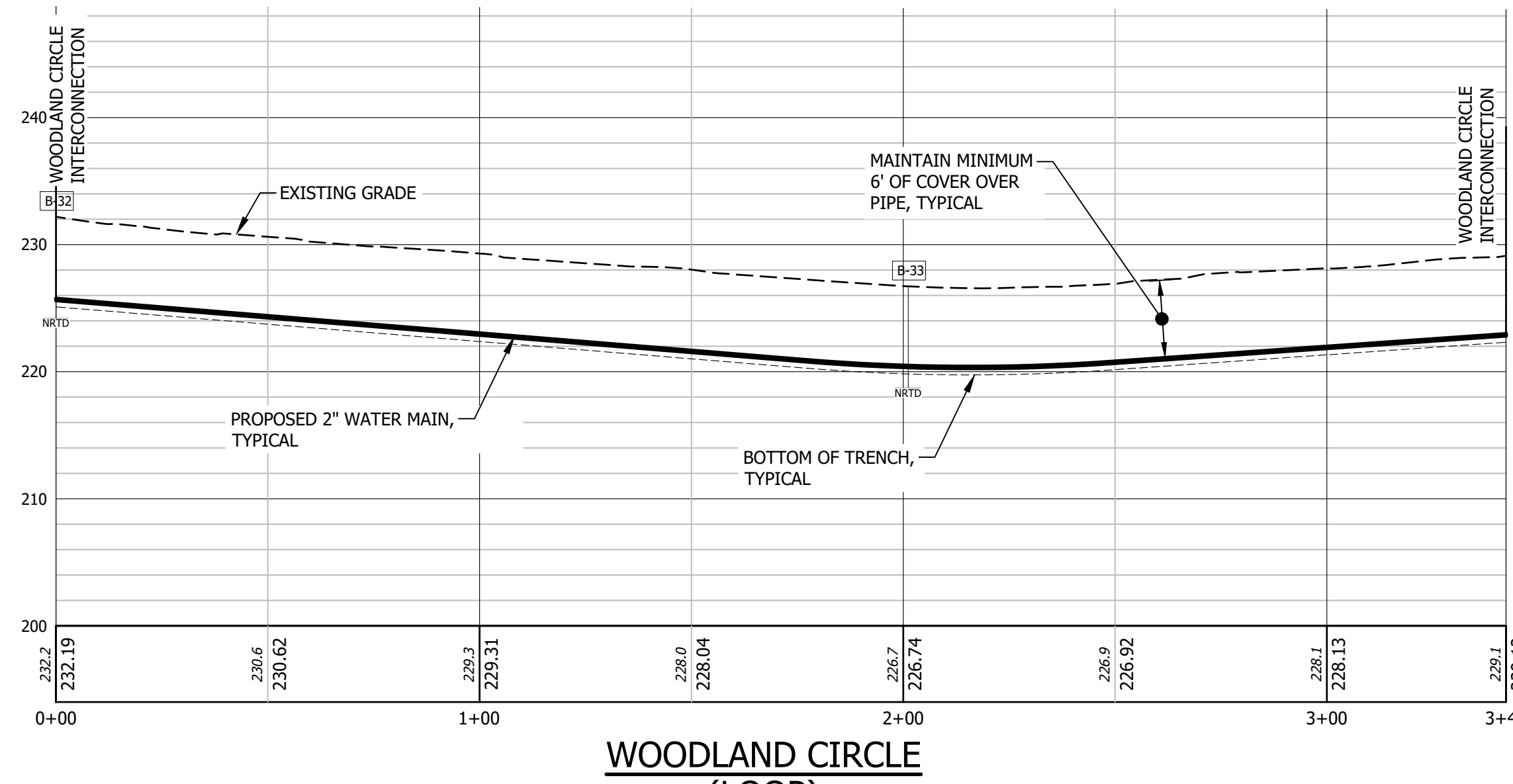
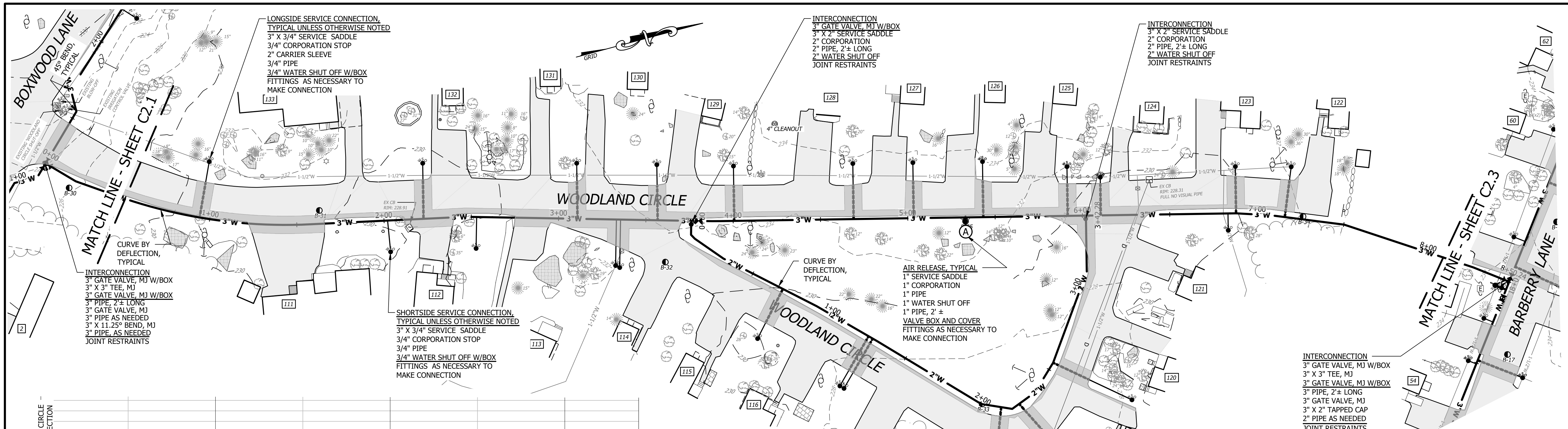
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RAYMOND, NEW HAMPSHIRE  
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PLAN & PROFILE - STA. 6+50 TO 11+51.57

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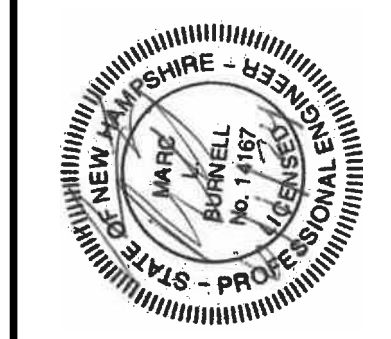
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PROJECT #:	221032
DATE:	MAY 2024
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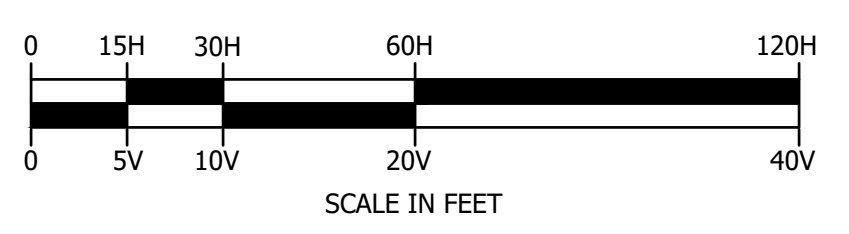
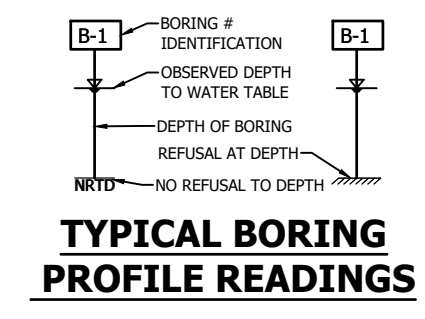
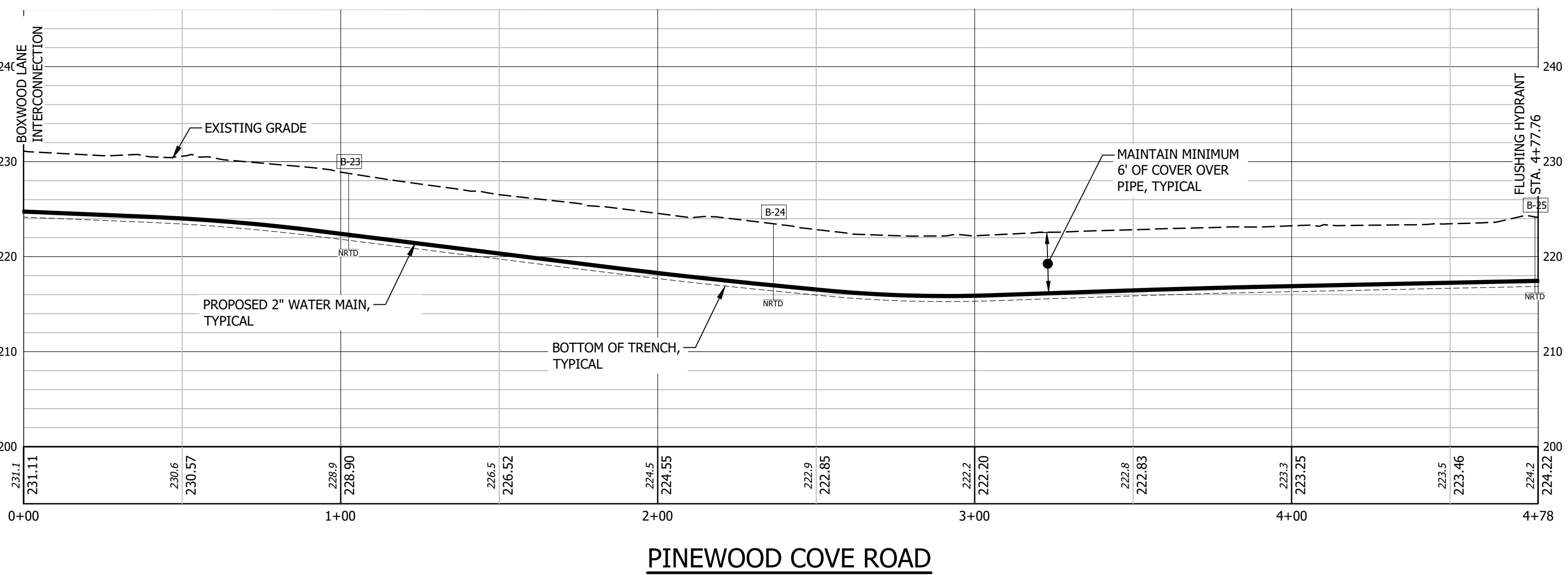
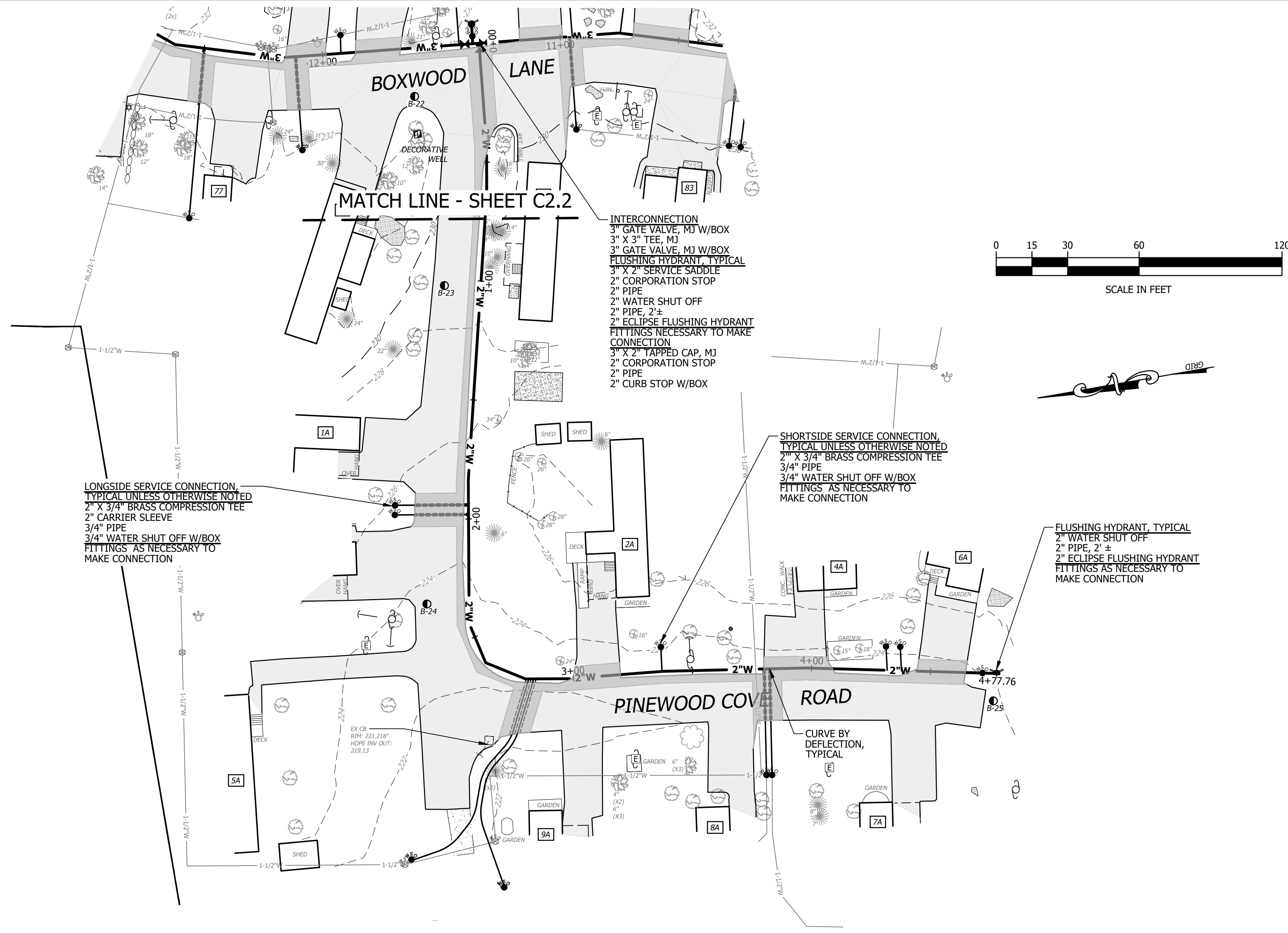
TRANQUILITY ESTATES COOPERATIVE  
 LEISURE VILLAGE MHP  
 WATER SYSTEM IMPROVEMENTS PROJECT  
 TAX MAP 38, LOT 4-125  
 RAYMOND, NEW HAMPSHIRE

WOODLAND CIRCLE  
 PLAN & PROFILE - STA. 0+00 TO 8+50.24

SHEET C4.1



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TRANQUILITY ESTATES COOPERATIVE  
LEISURE VILLAGE MHP  
WATER SYSTEM IMPROVEMENTS PROJECT  
TAX MAP 38, LOT 4-1, 2, 3  
RAYMOND, NEW HAMPSHIRE

PINEWOOD COVE ROAD  
PLAN & PROFILE - STA. 0+00 TO 4+77.76

SHEET C5.1

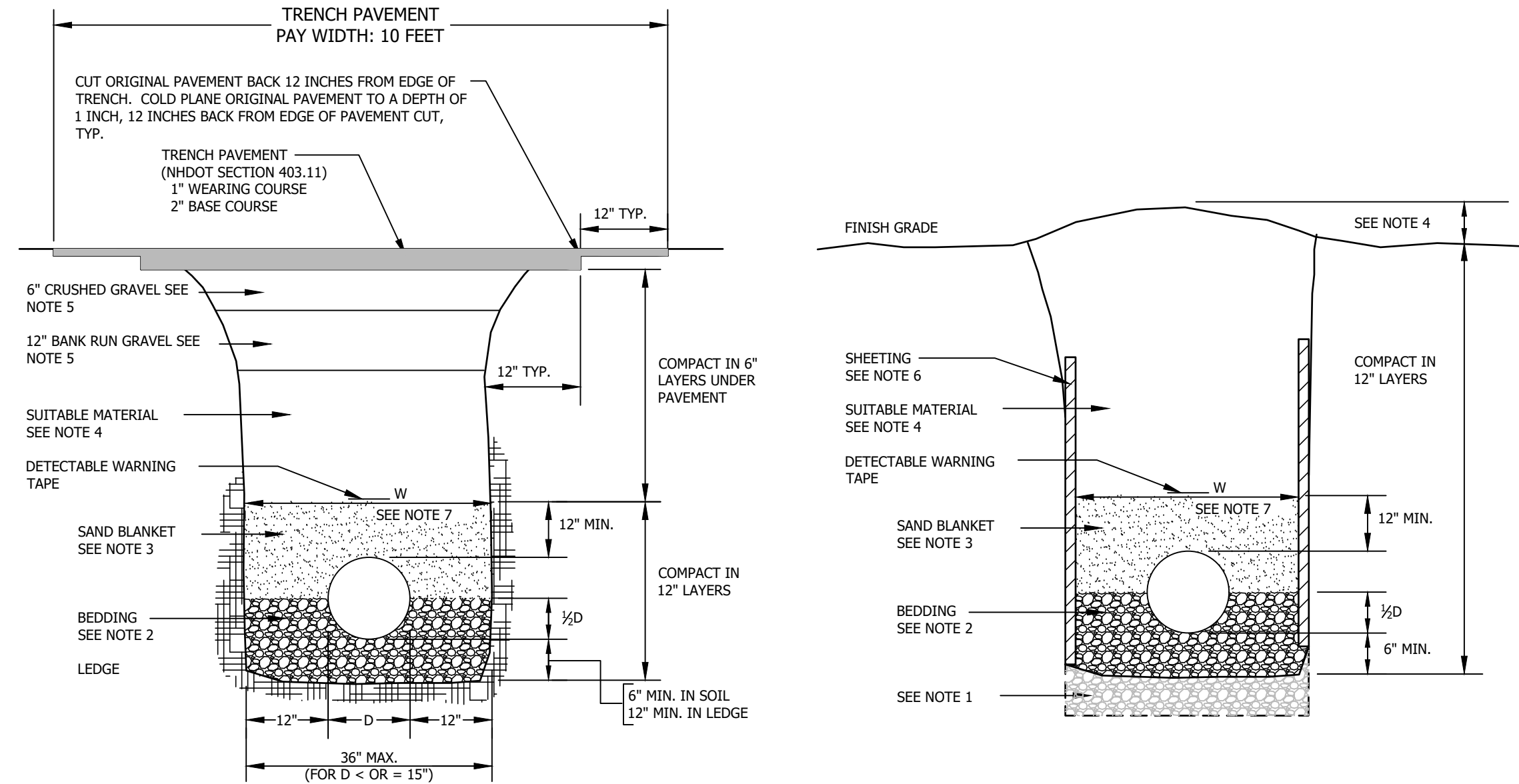


## STANDARD TRENCH NOTES - WATER

- ORDERED EXCAVATION OF UNSUITABLE MATERIAL** BELOW GRADE SHALL BE REPLACED WITH BEDDING MATERIAL. SEE ALSO NOTE 4.
- 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	¾ INCH SCREEN
0-10% PASSING	#4 SIEVE
0-5% PASSING	#8 SIEVE
- 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.
- 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
- 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.
- SHEETING:** ALL TRENCH SUPPORTS SHALL CONFORM TO OSHA STANDARDS. CONTRACTOR IS RESPONSIBLE FOR OSHA COMPLIANCE AND WORKER SAFETY THROUGHOUT CONSTRUCTION.
- 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.
- 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.
- PIPE COVER:** COVER OVER WATER SHALL BE 6 FEET MINIMUM IN ALL LOCATIONS.



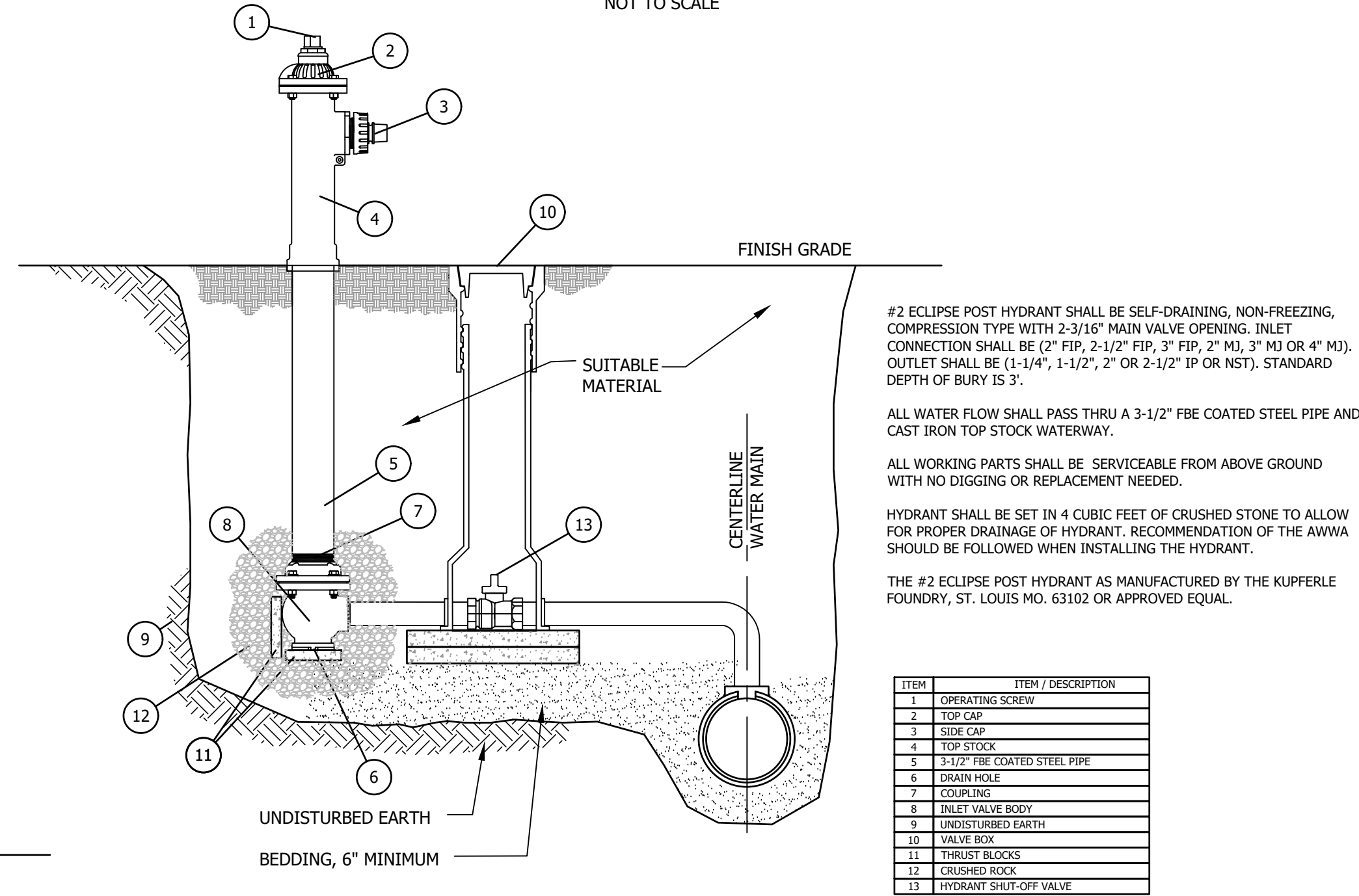
NOTE:  
MINIMUM BEDDING DEPTH AND MAXIMUM PAYMENT LIMIT FOR LEDGE EXCAVATION = ¼D (12\"/>

**LEDGE/SUB PAVEMENT CONSTRUCTION**

**EARTH CONSTRUCTION WITH OR WITHOUT SHEETING**

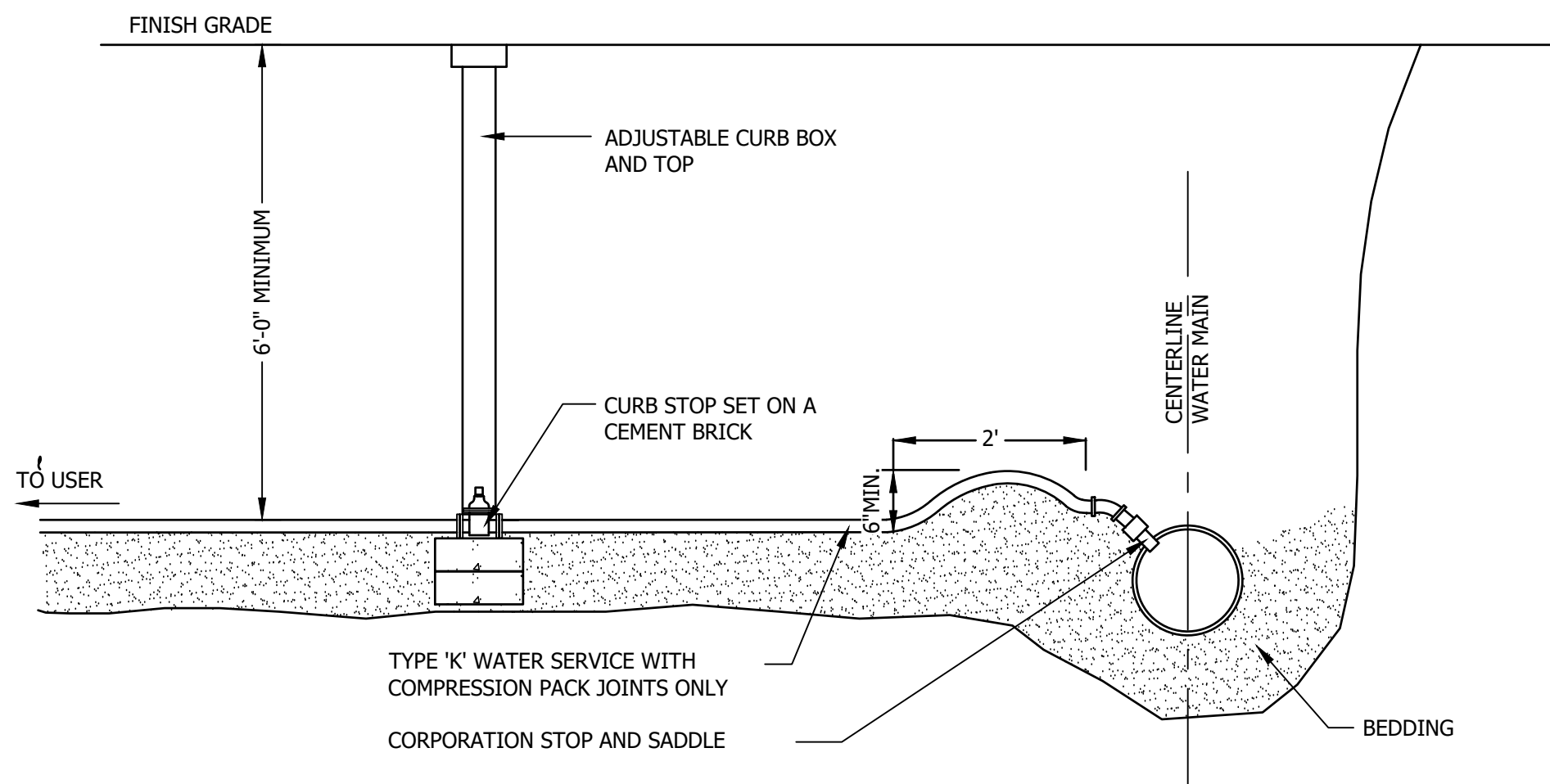
## STANDARD TRENCH SECTIONS

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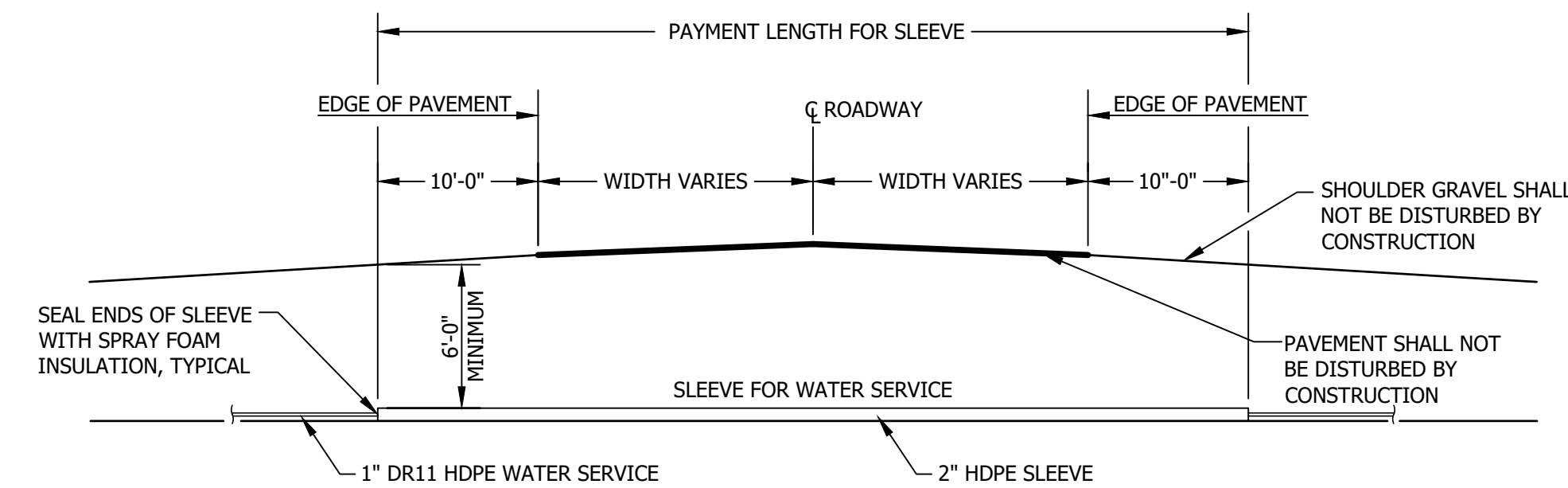
## ECLIPSE POST HYDRANT

NOT TO SCALE



## WATER SERVICE CONNECTION

NOT TO SCALE



## BORED SERVICE DETAIL

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.

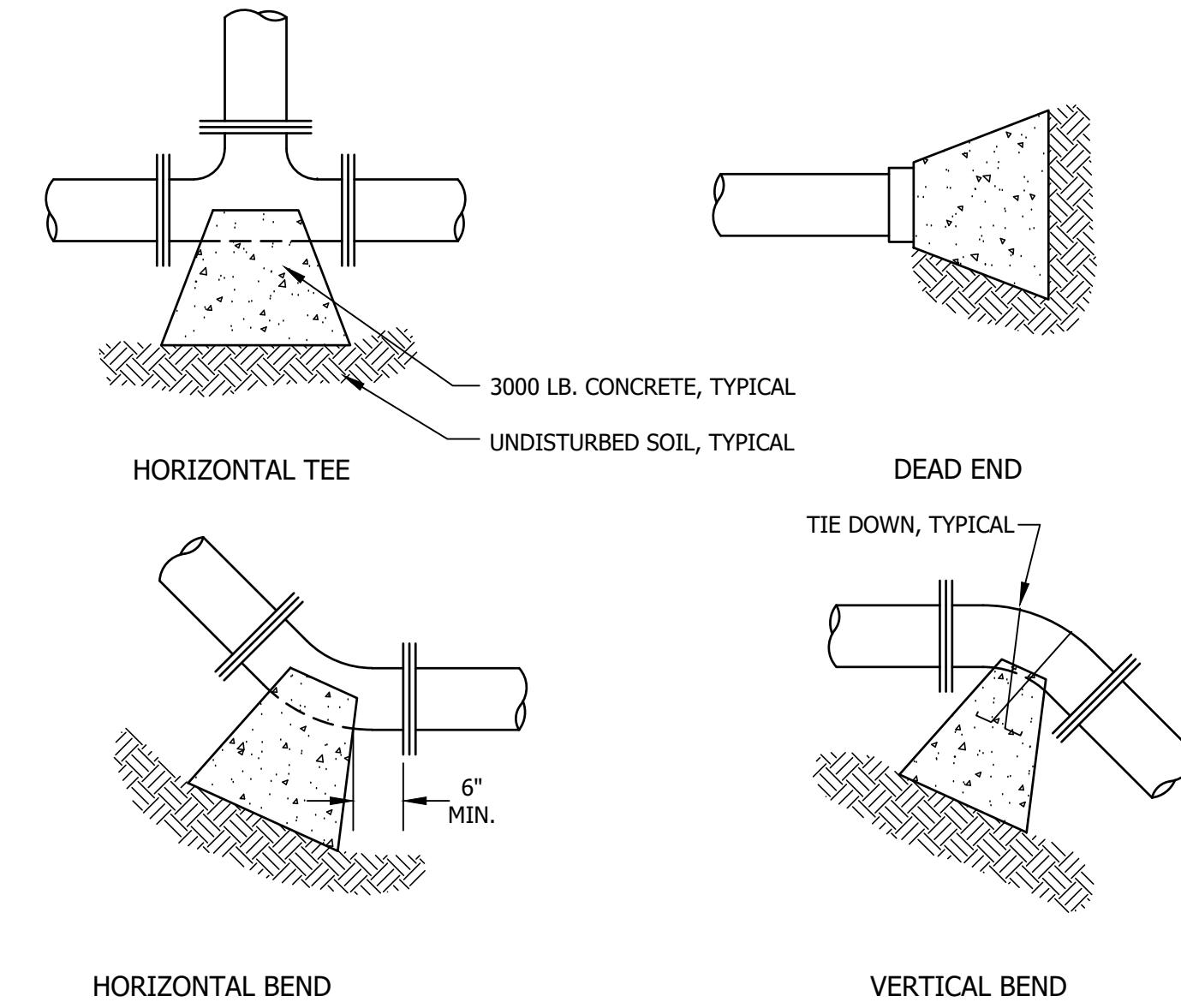
RESTRAINED JOINTS MAY BE USED FOR RESISTING THRUST FORCES WHERE THERE IS A SHORTAGE OF SPACE OR WHERE THE SOIL BEHIND A FITTING WILL NOT PROVIDE ADEQUATE SUPPORT. THIS RESTRAINING METHOD INVOLVES PLACEMENT OF THESE SPECIAL JOINTS AT APPROPRIATE FITTINGS AND FOR A PREDETERMINED NUMBER OF PIPE LENGTHS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

NOMINAL PIPE DIA. (INCHES)	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

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

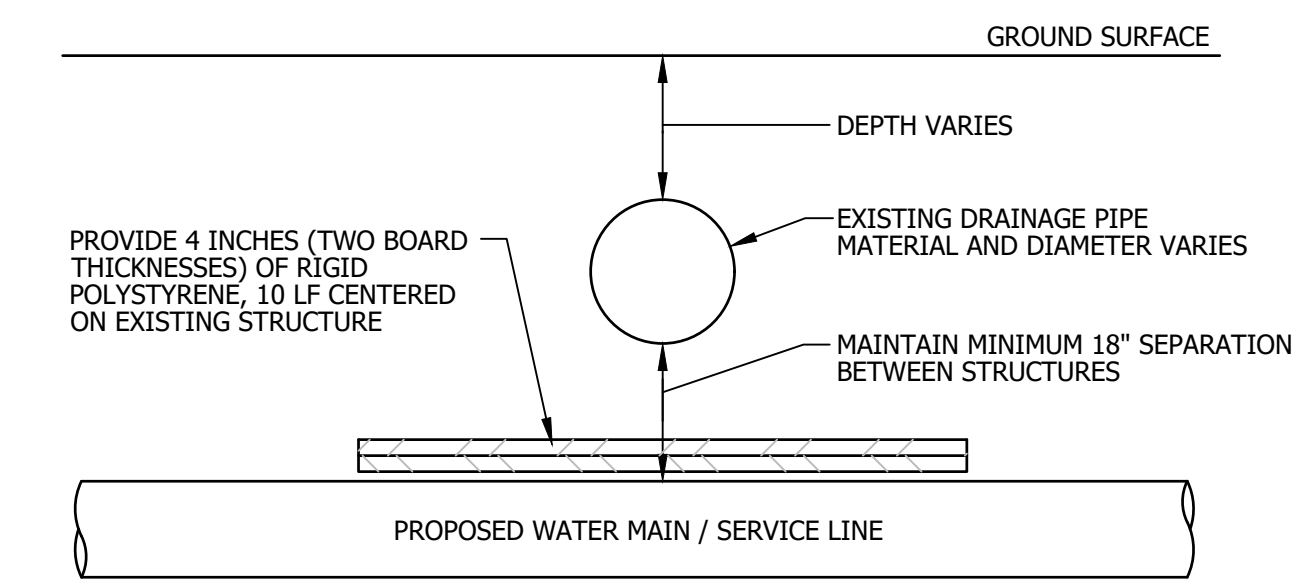


## THRUST BLOCK NOTES & DETAILS

NOT TO SCALE

## DRAINAGE CROSSING NOTES

- INSULATION THICKNESS AT DRAINAGE CROSSINGS SHALL BE 4 INCHES (TWO BOARD THICKNESS) OF RIGID POLYSTYRENE) UNLESS DIRECTED OTHERWISE IN FIELD. THE CONTRACTOR SHALL NOTIFY TOWN AT LEAST 24 HOURS IN ADVANCE OF ANY CROSSING OF ANY DRAINAGE STRUCTURE.
- MINIMUM SEPARATION BETWEEN EXISTING DRAINAGE STRUCTURES AND NEW WATER MAIN AND APPURTENANCES SHALL BE 18 INCHES.



## TYPICAL DRAINAGE CROSSING DETAIL

NO SCALE

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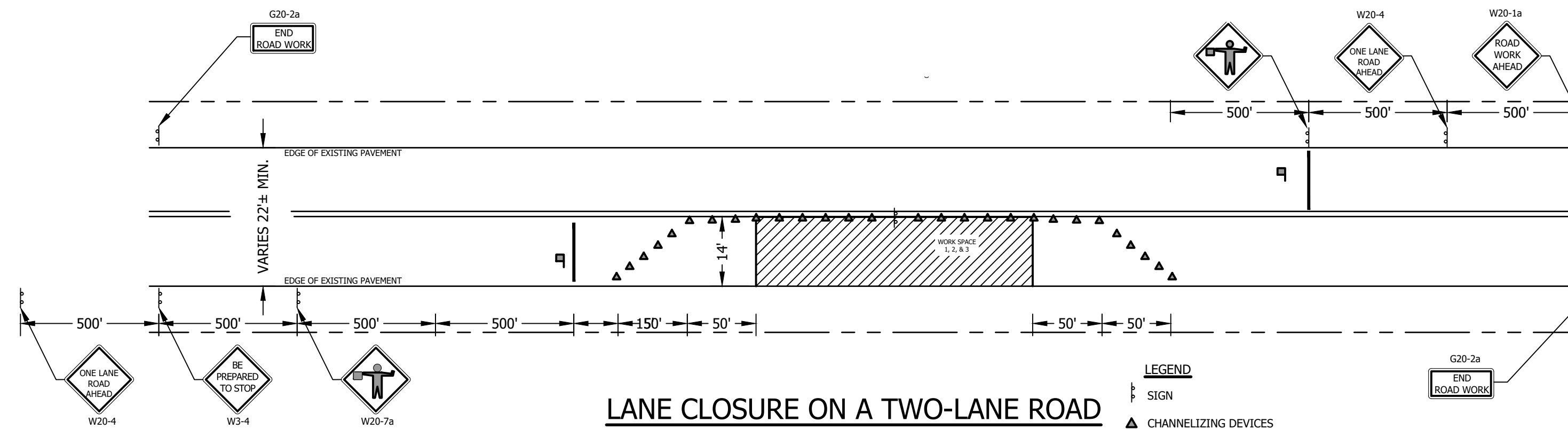
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TAX MAP 38, LOT 41-125  
RAYMOND, NEW HAMPSHIRE

STANDARD WATER SYSTEM NOTES & DETAILS



**LANE CLOSURE ON A TWO-LANE ROAD  
USING FLAGGERS (TA-10)**

NOT TO SCALE

**NOTES:**

1. CONTRACTOR TO NOTIFY LOCAL EMERGENCY SERVICES, NHDOT DISTRICT ONE OFFICE AND ROAD FORMAN 24 TO 48 HOURS PRIOR TO CONSTRUCTION OF WORK WITHIN THE RIGHT OF WAY.

**LEGEND**  
 ↓ SIGN  
 ▲ CHANNELIZING DEVICES  
 □ FLAGGER

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TAX MAP 38, LOT 4-1,2,5  
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TRAFFIC CONTROL PLAN & LANE CLOSURE DETAIL



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SHEET D1.3

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last revised: 2007 DEC 26