

WESTFORD WATER DEPARTMENT

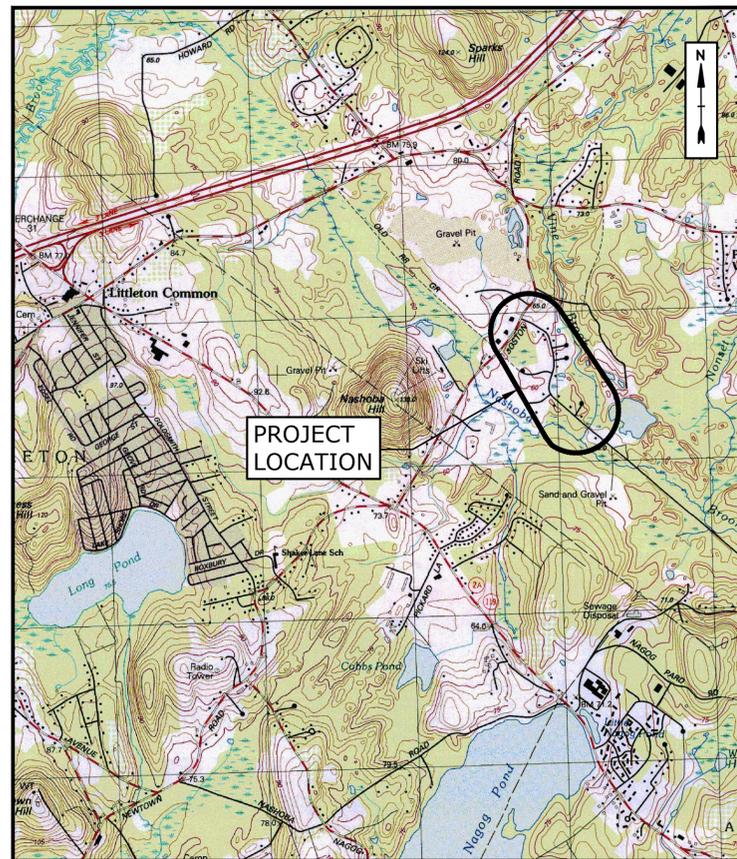
VINE BROOK

WATER SYSTEM REPLACEMENT

WESTFORD, MASSACHUSETTS

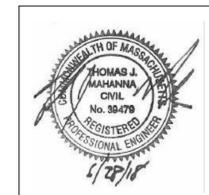
JUNE 2018

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3	TEMPORARY BYPASS PIPING PLAN (ADD ALTERNATE NO. 1)
4	VINE BROOK ROAD STA 0+00 TO STA 10+00 AND NONSET LANE
5	VINE BROOK ROAD STA 10+00 TO STA 20+00 AND ASSABET ROAD
6	VINE BROOK ROAD STA 20+00 TO STA 30+28 AND RAIL TREE TERRACE
7	BEAR HILL TERRACE AND NAGOG LANE
8 - 11	CONSTRUCTION DETAILS
12	TRAFFIC MANAGEMENT PLAN



LOCATION MAP
SCALE: 1" = 2000'

PREPARED BY:
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PREPARED FOR:

WESTFORD WATER DEPARTMENT
STEPHEN CRONIN, SUPERINTENDENT

BOARD OF WATER COMMISSIONERS
ELIZABETH DENLY, CHAIRPERSON
HUGH MAGUIRE, VICE-CHAIRPERSON
TITUS PALMER, SECRETARY
CHAUNCEY CHU, ALTERNATE

COMPLETE SET 12 SHEETS

GENERAL NOTES

- BOLD TEXT AND LINES INDICATE PROPOSED WORK.
- LIGHT TEXT AND LINES INDICATE APPROXIMATE EXISTING CONDITIONS.
- THIS PLAN WAS PREPARED FROM A FIELD SURVEY CONDUCTED BY LANDTECH CONSULTANTS IN APRIL 2018.
- WETLANDS DELINEATION WAS COMPLETED BY A TIGHE & BOND WETLANDS SCIENTIST ON MARCH 27, 2018. THE LIMITS OF ADDITIONAL MASSACHUSETTS WETLANDS PROTECTION ACT RESOURCE AREAS SHOWN ON THE PROJECT PLANS ARE APPROXIMATE BASED ON MASSGIS WETLANDS DATA.
- THE HORIZONTAL DATUM SHOWN HEREON REFERENCES THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM NAD83.
- THE VERTICAL DATUM SHOWN HEREON REFERENCES NAVD88.
- THE RIGHT OF WAY AND ABUTTERS LINES SHOWN HEREIN ARE APPROXIMATE AND ARE BASED ON A COMPILATION OF RECORD INFORMATION, OBSERVABLE EVIDENCE, AND PHYSICAL OCCUPATION. A BOUNDARY SURVEY WAS NOT PERFORMED.
- EXISTING UTILITY LOCATIONS ARE BASED ON AVAILABLE INFORMATION PRIOR TO CONSTRUCTION. EXISTING WATER MAIN ALIGNMENT IS ASSUMED BASED ON GATE VALVE BOX LOCATIONS. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF UTILITIES BY FIELD TEST PIT OR OTHER METHODS WHERE REQUIRED AND AUTHORIZED BY THE ENGINEER. IMMEDIATELY NOTIFY THE ENGINEER IN WRITING FOR RESOLUTION OF THE CONFLICTING INFORMATION. SECTIONS OF PROPOSED WATER MAIN MAY HAVE TO BE ADJUSTED BASED ON LOCATIONS AND DEPTH OF EXISTING UTILITIES.
- NOTIFY "DIGSAFE" AT 1-888-344-7233 TO ARRANGE FOR MARKING OUT EXISTING UNDERGROUND UTILITIES AT LEAST 72 HOURS IN ADVANCE OF MAKING EXCAVATION AT ANY GIVEN LOCATION. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR BE ALLOWED TO START ANY KIND OF EXCAVATION WORK PRIOR TO OBTAINING ALL THE NECESSARY INFORMATION REGARDING THE LOCATION OF UNDERGROUND UTILITIES AT THE SITE.
- THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO MAINTAIN EXISTING WATER, TELEPHONE, ELECTRIC, AND CABLE SERVICES TO RESIDENTS ALONG THE PROJECT ROUTE. DAMAGED SERVICES SHALL BE REPAIRED IMMEDIATELY AT NO ADDITIONAL COST TO THE OWNER.
- NEW WATER MAIN CROSSINGS OF EXISTING UTILITIES ALONG PROJECT ROUTE MUST BE COMPLETED IN A MANNER THAT WILL NOT INTERRUPT UTILITY SERVICE. ENGINEER AND UTILITY OWNER APPROVAL MUST BE OBTAINED TO TEMPORARILY SHUT DOWN UTILITY.
- CONTRACTOR SHALL LOCATE BY HAND EXCAVATION ALL EXISTING UTILITIES TO BE CROSSED. EXISTING UTILITIES BROKEN BY THE CONTRACTOR SHALL BE REPLACED IN-KIND AT NO ADDITIONAL COSTS TO OWNER.
- IN GENERAL, THE WATER MAIN SHALL HAVE A MINIMUM OF 5 FEET OF COVER. AT LOCATIONS WHERE GRADE CONFLICTS WITH EXISTING UNDERGROUND UTILITIES OR PIPES OCCUR, THE WATER MAIN SHALL BE INSTALLED DEEPER AS REQUIRED TO PROVIDE A MINIMUM OF 6-INCH VERTICAL CLEARANCE BETWEEN THE WATER MAIN AND THE UTILITY PIPE EXCEPT FOR A SEWER CROSSING, WHERE THE WATER MAIN SHALL BE INSTALLED 18 INCHES ABOVE THE SEWER.
- ALL WATER SERVICES SHALL BE 1" POLYETHYLENE AND CONNECT TO EXISTING RESIDENTIAL PLUMBING WITHIN EACH HOME. PROVIDE AND INSTALL NEW CORPORATION STOP, POLYETHYLENE TUBING, CURB STOP AND BOX, AND INTERIOR PLUMBING MODIFICATIONS AS NEEDED FOR EACH HOME.
- CONTRACTOR IS REQUIRED TO ENTER PRIVATE PROPERTY FOR NEW SERVICE CONNECTIONS TO HOMES. CONTRACTOR MUST PROVIDE AT LEAST 24 HOURS NOTICE TO THE HOMEOWNER PRIOR TO ENTERING PRIVATE PROPERTY, AND COORDINATE WITH THE HOMEOWNER TO GAIN ACCESS TO BASEMENT FOR INTERIOR PLUMBING WORK BY A LICENSED PLUMBER. CONTRACTOR MAY ONLY ENTER A HOME IF SOMEONE OVER THE AGE OF 18 IS PRESENT, AND SHOW AN IDENTIFICATION BADGE TO THE HOMEOWNER PRIOR TO ENTERING.
- SOME HOMEOWNERS PROVIDED THE ENGINEER WITH INFORMATION ABOUT THEIR PRIVATE PROPERTY (e.g. LOCATION OF SEPTIC SYSTEM, LANDSCAPING, PRESENCE OF SPRINKLER SYSTEM, ETC.), WHICH WAS INCORPORATED INTO THE EXISTING CONDITIONS MAPPING OF THESE DRAWINGS. IT IS FOR INFORMATIONAL PURPOSES ONLY AND MAY NOT INDICATE ACTUAL CONDITIONS. NOTE THAT SOME INFORMATION IS NOT SHOWN ON THE PLANS WITHIN PRIVATE PROPERTY (e.g. UNDERGROUND CABLE AND ELECTRIC SERVICES, ETC.) IF THAT INFORMATION WAS NOT PROVIDED BY THE HOMEOWNER. CONTRACTOR SHALL FIELD VERIFY ALL ABOVE- AND BELOW-GROUND EXISTING CONDITIONS PRIOR TO EXCAVATION ON PRIVATE PROPERTY.
- CONTRACTOR SHALL REMOVE AND RESET EXISTING GRANITE CURBING WHEN IMPACTED BY CONSTRUCTION.
- ALL DUCTILE IRON FITTINGS SHALL HAVE MECHANICAL JOINTS (MJ).
- ALL BENDS, TEES, HYDRANTS, END CAPS AND PLUGS SHALL HAVE CONCRETE THRUST BLOCKS IN ADDITION TO MECHANICAL JOINTS.
- THE CONTRACTOR SHALL REMOVE AND REPLACE FENCES, MAILBOXES, CURBING, OR ANY OTHER FEATURES THAT WERE DAMAGED AS A RESULT OF THE CONTRACTOR'S OPERATIONS. CONDITION OF REPLACED ITEMS SHALL BE EQUAL OR BETTER THAN ORIGINAL CONDITION PRIOR TO REMOVAL AND AT NO ADDITIONAL COST TO THE OWNER.
- CONTRACTOR SHALL RESTORE OR REPLACE ALL PRIVATE PROPERTY FEATURES IMPACTED BY NEW CONSTRUCTION IN-KIND.
- ALL EXCAVATION SHALL COMPLY WITH OSHA'S LATEST STANDARDS. ALL REQUIREMENTS OF OSHA'S EXCAVATION STANDARDS SHALL BE PROVIDED BY THE CONTRACTOR INCLUDING BUT NOT LIMITED TO THE PROVISION FOR A COMPETENT PERSON ON-SITE AND ANY REQUIRED DOCUMENTATION THAT MAY REQUIRE CERTIFICATION BY A PROFESSIONAL ENGINEER.
- THE CONTRACTOR WILL BE ALLOWED TO BACKFILL TRENCHES TO GRADE WITH GRAVEL DURING THE WORK WEEK, BUT WILL BE REQUIRED TO INSTALL HOT MIX ASPHALT PAVEMENT ON THESE TRENCHES A MINIMUM OF ONE TIME PER WEEK. UNDER NO CIRCUMSTANCES WILL TRENCHES WITHIN ROAD OR DRIVEWAYS BE ALLOWED A GRAVEL SURFACE OVER WEEKENDS.
- TAKE ALL NECESSARY MEASURES AND PROVIDE ALL NECESSARY CONTINUOUS BARRIERS OF SUFFICIENT TYPE, SIZE, AND STRENGTH TO PREVENT ACCESS TO ALL OPEN EXCAVATIONS AT THE COMPLETION OF EACH DAY'S WORK.
- HORIZONTAL AND VERTICAL LOCATION OF PROPOSED WATER MAIN MAY BE MODIFIED TO FIT EXISTING FIELD CONDITIONS UPON APPROVAL OF THE ENGINEER OR OWNER.
- SLEEVES, NIPPLES, COUPLINGS, AND ACCESSORIES NECESSARY FOR CONNECTIONS BETWEEN EXISTING AND NEW PIPES MAY NOT BE SHOWN IN THE DETAILS. PROVIDE AND INSTALL ITEMS NECESSARY FOR CONNECTING TO EXISTING MAINS AND AS INDICATED IN THE CONTRACT DOCUMENTS.
- SECURELY SUPPORT AND MAINTAIN EXISTING CATCH BASIN AND STORM DRAINAGE LINES AND OTHER UTILITY LINES DURING CONSTRUCTION. IF REMOVAL OR RESTORATION OF ANY PART OF THE STORM DRAINAGE SYSTEM IS NECESSARY, IT SHALL BE DONE ONLY WITH THE APPROVAL OF THE TOWN OF WESTFORD OR MASSDOT, DEPENDING ON OWNERSHIP. NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND COST OF THIS WORK SHALL BE INCLUDED UNDER THE PRICES BID FOR VARIOUS ITEMS OF WORK.
- NOTIFY THE OWNER AND THE ENGINEER OF ANY STORM, SANITARY, OR OTHER PIPE DISCOVERED DURING CONSTRUCTION THAT IS NOT SHOWN ON THE DRAWINGS.
- BEST MANAGEMENT PRACTICES SHALL BE PERFORMED (i.e. SILTSACKS) AT ALL CATCH BASINS WITHIN THE PROJECT AREA TO PREVENT SILTATION OF THE STORM DRAINAGE SYSTEM. STRAW WATTLES SHALL BE INSTALLED WHERE INDICATED ON THE PLANS TO PREVENT SILTATION OF WETLAND RESOURCE AREAS.
- CONTRACTOR SHALL NOT OPERATE EXISTING WATER VALVES. ONLY OWNER SHALL OPERATE SYSTEM VALVES.
- ABANDON EXISTING WATER MAINS ONLY ONCE PROPOSED WATER MAINS ARE INSTALLED, TESTED, AND ACCEPTED BY THE OWNER AND ENGINEER.
- ALL ABANDONED WATER MAIN OPEN ENDS SHALL BE PLUGGED WITH CONCRETE. ALL EXISTING GATE VALVES ON MAINS TO BE ABANDONED SHALL HAVE THE GATE VALVE BONNET AND GATE BOXES REMOVED.

ABBREVIATIONS

AC	ASBESTOS CEMENT	MJ	MECHANICAL JOINT
BB	BITUMINOUS BERM	MRW	MASONRY RETAINING WALL
BC	BITUMINOUS CONCRETE	NPV	NO PIPES VISIBLE
BIT	BITUMINOUS	PROP	PROPOSED
BW	BITUMINOUS WALK	PVC	POLYVINYLCHLORIDE
CB	CATCH BASIN	PW	PUBLIC WATER
CC	CONCRETE CURB	RCP	REINFORCED CONCRETE PIPE
CI	CAST IRON	RET	RETAINING
CLF	CHAIN LINK FENCE	SGC	SLOPED GRANITE CURB
CONC	CONCRETE	SRW	STONE RETAINING WALL
CW	CONCRETE WALK	SS	SANITARY SEWER
CMP	CORRUGATED METAL PIPE	SMH	SEWER MANHOLE
CPP	CORRUGATED PLASTIC PIPE	SW	SIDEWALK
CRW	CONCRETE RETAINING WALL	TS	TEMPORARY BENCHMARK
DI	DUCTILE IRON	TYP	TRAFFIC SIGNAL TYPICAL
DIA	DIAMETER	UG	UNDERGROUND
DMH	DRAIN MANHOLE	UP	UTILITY POLE
DW	DRAIN MANHOLE	UTIL	UTILITY
EL	ELEVATION	VGC	VERTICAL GRANITE CURB
ELEC	ELECTRIC	VC	VITRIFIED CLAY
EOP	EDGE OF PAVEMENT	W	WATER
HH	HANDHOLE	WG	WATER GATE
HSE	HOUSE	XFMR	TRANSFORMER
HYD	HYDRANT		
INV	INVERT		

LEGEND

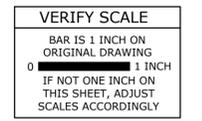
EXISTING SANITARY SEWER	SS
EXISTING STORM DRAIN	SD
EXISTING WATER MAIN	PW
PROPOSED WATER MAIN	PW
EXISTING GAS MAIN	G
EXISTING UNDERGROUND TELEPHONE	T
EXISTING UNDERGROUND ELECTRIC	E
EXISTING OVERHEAD WIRES	OE
EXISTING UNDERGROUND CABLE	CTV
EXISTING PIPE ABANDONED IN PLACE	-----RW-----
EXISTING GUARD RAIL	□ □ □ □ □ □ □ □ □ □
EXISTING CHAIN LINK FENCE	× × × × × × × × × ×
EXISTING METAL WIRE FENCE	-----+-----
PROPERTY LINE	-----+-----
EDGE OF PAVEMENT/CURB	-----+-----
EXISTING TREE/BRUSH LINE	~~~~~
EXISTING STONE WALL	○○○○○○○○○○○○○○○○○○
EXISTING SEWER MANHOLE	⊙
EXISTING STORM DRAIN MANHOLE	⊙
EXISTING CATCH BASIN	⊞
EXISTING CULVERT	◁
EXISTING ELECTRIC BOX	⊠
EXISTING TELEPHONE MANHOLE	⊙
EXISTING HYDRANT	⊕
EXISTING WATER GATE VALVE	⊕
PROPOSED HYDRANT	⊕
PROPOSED COUPLING	■
PROPOSED GATE VALVE	⊕
PROPOSED REDUCER	◁
PROPOSED WATER MAIN PLUG	⊞
EXISTING SIGN	⊞
EXISTING STONE BOUND	□ SB
EXISTING TRAFFIC SIGNAL	⊕ TS
EXISTING UTILITY POLE/LIGHT POLE	⊕
EXISTING GUY WIRE	⊕
WATER MANHOLE	⊕
WATER GATE	⊕
DECIDUOUS TREE	⊕
CONIFER TREE	⊕
SHRUB	⊕
SIGN (SINGLE POSTED)	⊕
SIGN (DOUBLE POSTED)	⊕
POST	⊕
STUMP	⊕
PROPOSED TEST PIT	⊕
APPROXIMATE GEOPROBE LOCATION	⊕ V-1
EXISTING WATER SHUTOFF VALVE	⊕
PROPOSED WATER SHUTOFF VALVE	⊕
SPRINKLER SYSTEM ON PROPERTY (CONTRACTOR TO FIELD LOCATE)	⊕ SPR
SEPTIC TANK LOCATION (APPROX-CONTRACTOR TO FIELD LOCATE ENTIRE SEPTIC SYSTEM AS NEEDED)	⊕ ST
LEACHING FIELD/TANK LOCATION (APPROX-CONTRACTOR TO FIELD LOCATE)	⊕
IRRIGATOR WELL (APPROX-CONTRACTOR TO FIELD LOCATE)	⊕
PROPOSED STRAW WATTLES	○ ○ ○ ○ ○ ○ ○ ○ ○ ○
BORDERING LAND SUBJECT TO FLOODING	-----+-----
100-FT FLOODPLAIN BUFFER ZONE	-----+-----
200-FT RIVERFRONT BOUNDARY	-----+-----
100-FT BUFFER ZONE	-----+-----
75-FT LIMITS OF BUILDING BUFFER ZONE	-----+-----
50-FT LIMITS OF WORK BUFFER ZONE	-----+-----



Westford Water Department

Vine Brook Water System Replacement

Westford, Massachusetts

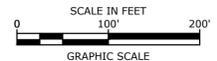


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DATE:		5/18/2018
FILE: W5005-Legend Notes.dwg		
DRAWN BY:		CFY, CLL
CHECKED:		LAS
APPROVED:		TJM

GENERAL NOTES, ABBREVIATIONS AND LEGEND

SCALE: NO SCALE

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**Westford
Water
Department**

Vine Brook
Water System
Replacement

Westford,
Massachusetts

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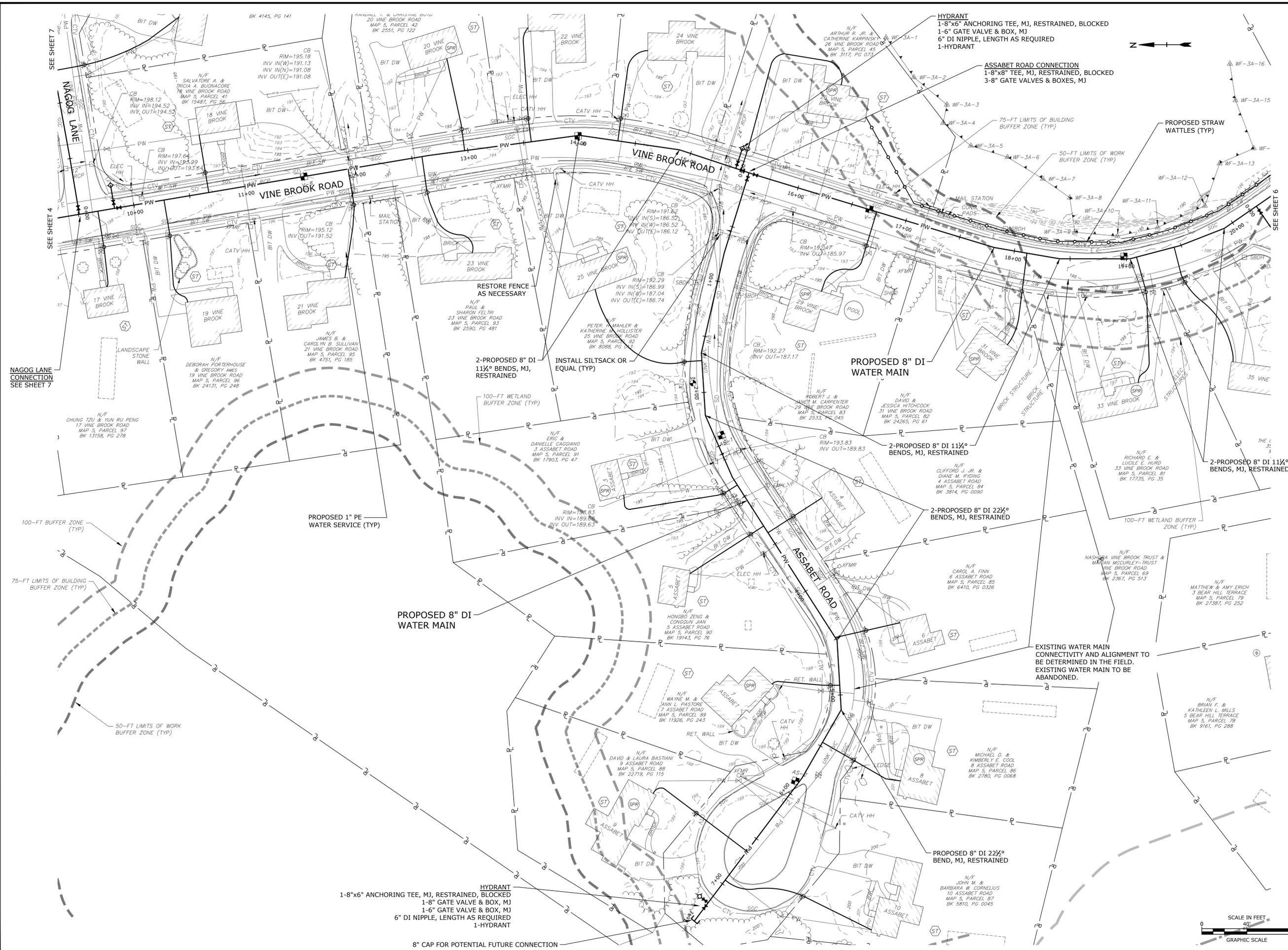
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FILE: W5005-Excon & Bypass.dwg
DRAWN BY: CFY, CLL
CHECKED: LAS
APPROVED: TJM

**TEMPORARY BYPASS
PIPING PLAN
(ADD ALTERNATE NO. 1)**

SCALE: 1"=100'

SHEET 3 OF 12

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**Westford
Water
Department**

Vine Brook
Water System
Replacement

Westford,
Massachusetts

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DATE: 5/18/2018		
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DRAWN BY: CFY, CLL		
CHECKED: LAS		
APPROVED: TJM		

VINE BROOK ROAD
STA 10+00 TO STA 20+00
AND ASSABET ROAD

SCALE: 1"=40'

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**Westford
Water
Department**

**Vine Brook
Water System
Replacement**

Westford,
Massachusetts

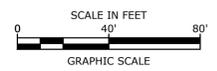
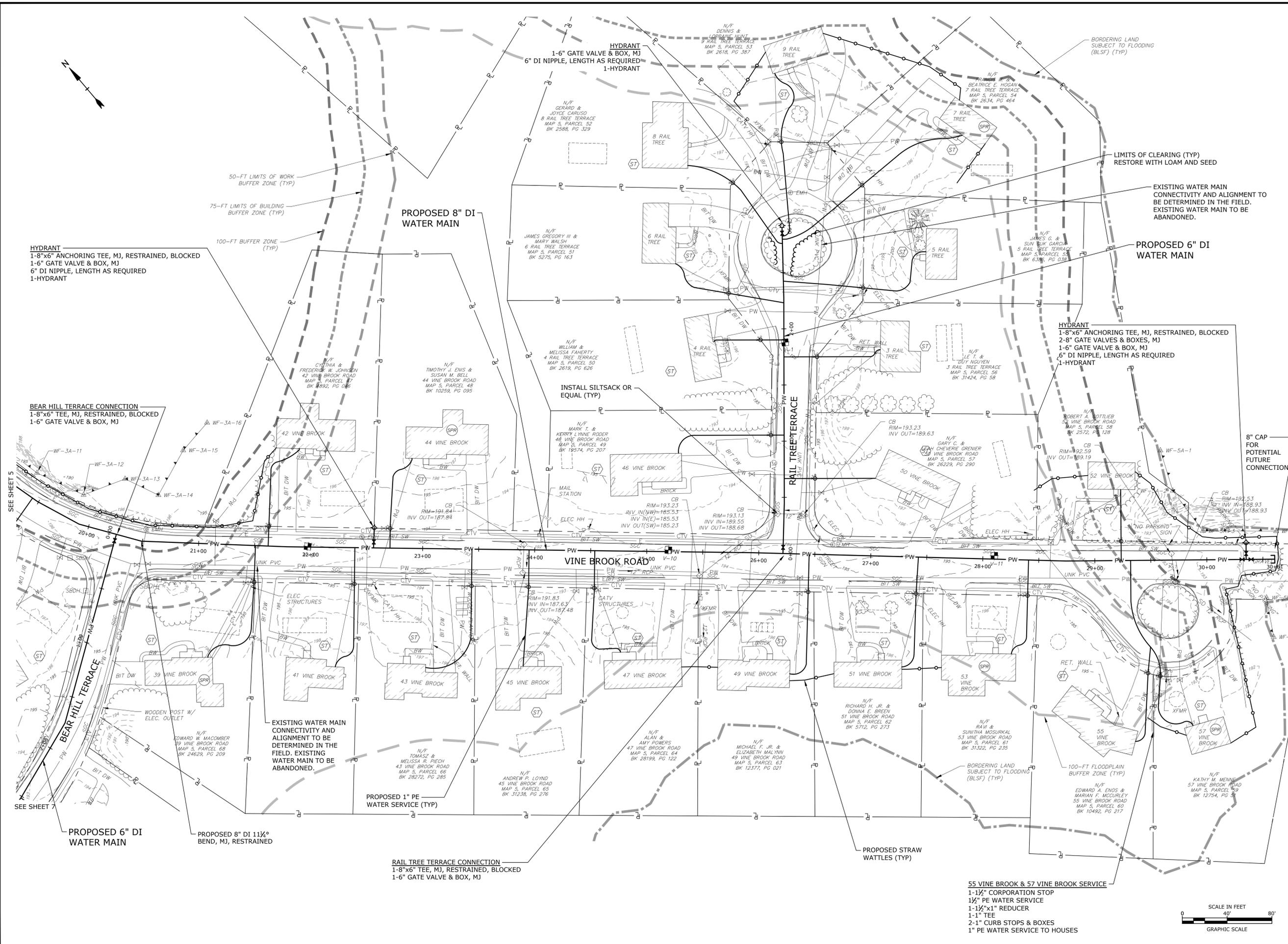
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DATE: 5/18/2018		
FILE: W5005-Vine Brook WMPPlans.dwg		
DRAWN BY: CFY, CLL		
CHECKED: LAS		
APPROVED: TJM		

VINE BROOK ROAD
STA 20+00 TO STA 20+28
AND RAIL TREE TERRACE

SCALE: 1"=40'

SHEET 6 OF 12



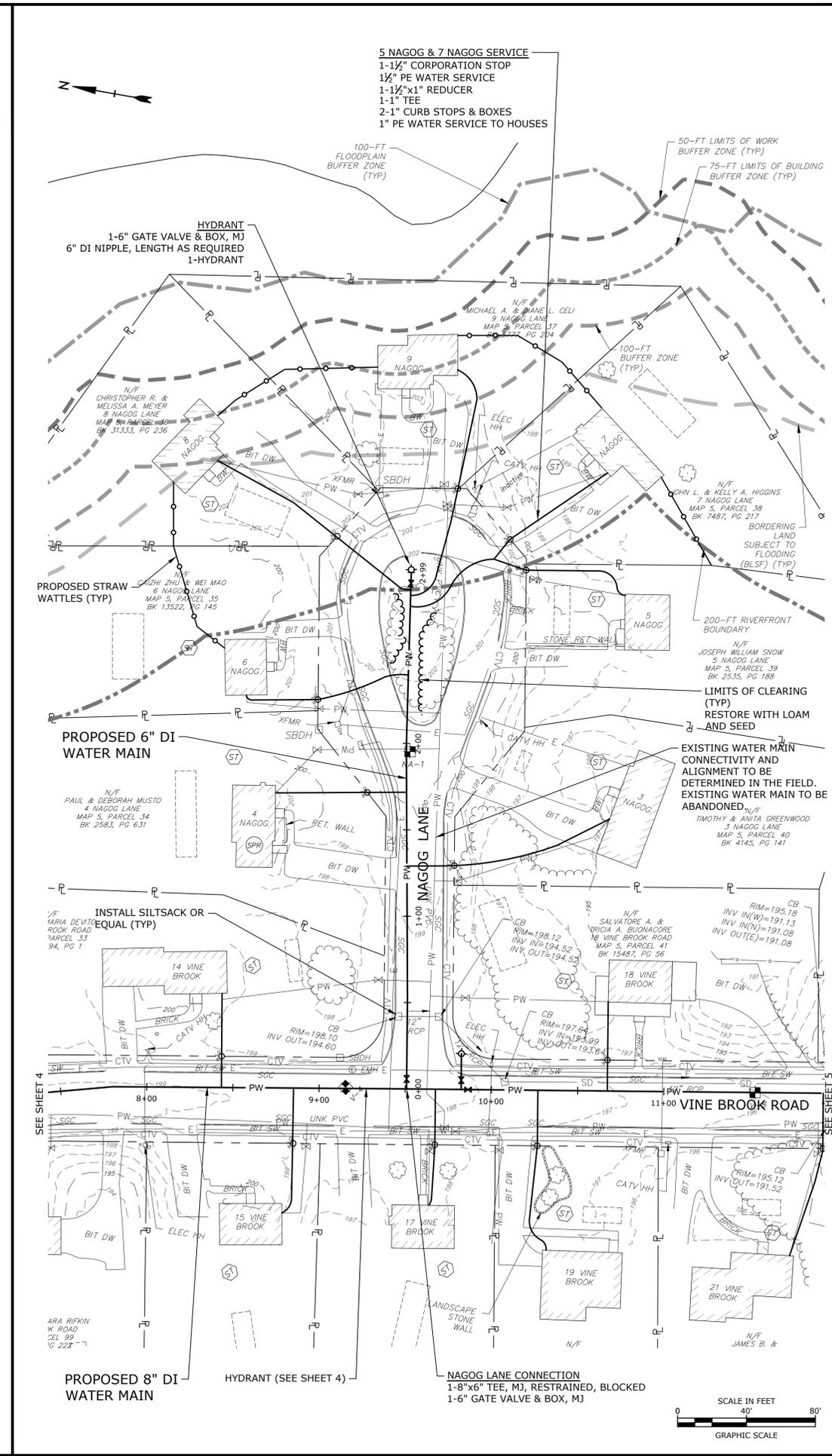
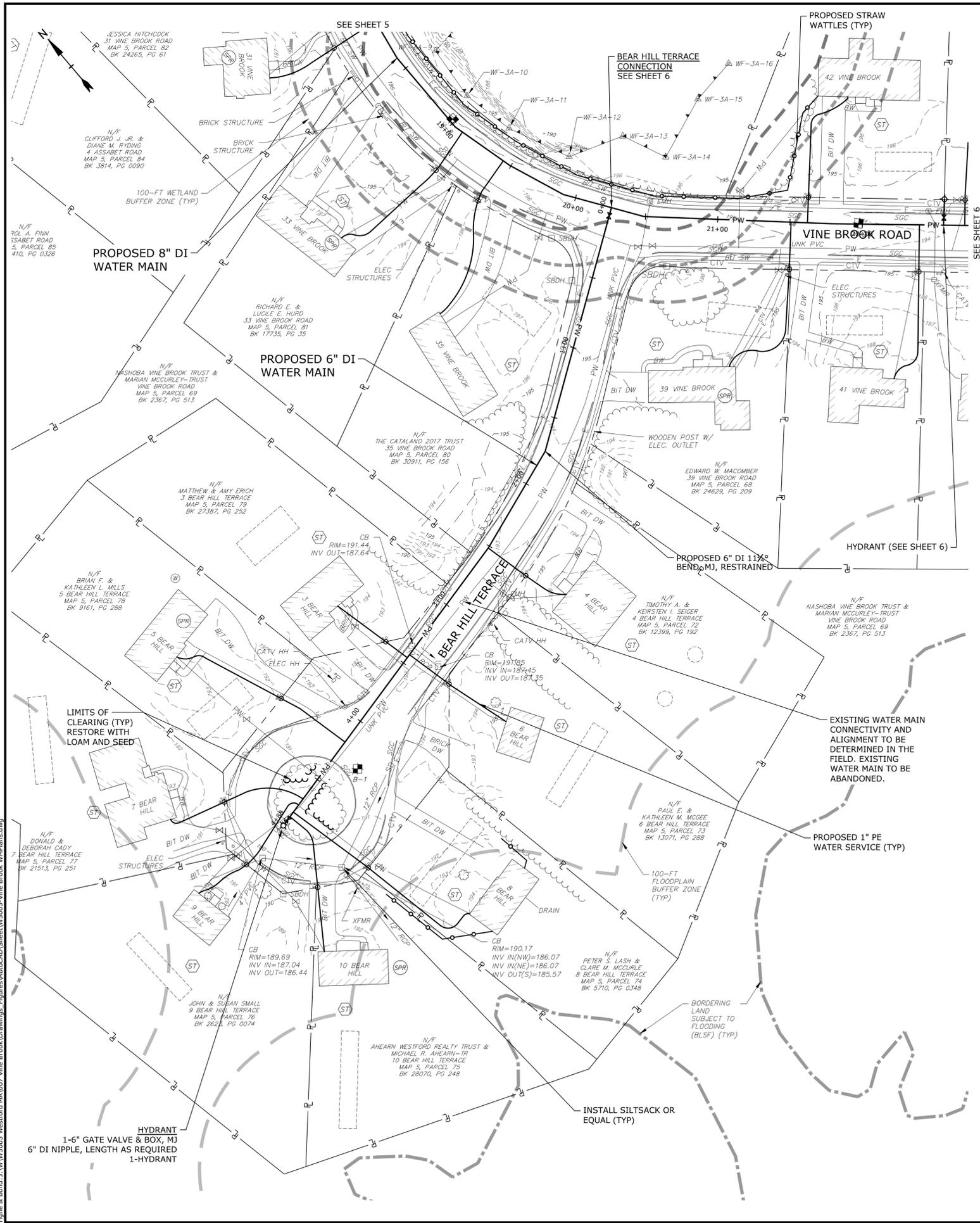
55 VINE BROOK & 57 VINE BROOK SERVICE
1-1/2" CORPORATION STOP
1/2" PE WATER SERVICE
1-1/2"x1" REDUCER
1-1" TEE
2-1" CURB STOPS & BOXES
1" PE WATER SERVICE TO HOUSES

RAIL TREE TERRACE CONNECTION
1-8"x6" TEE, MJ, RESTRAINED, BLOCKED
1-6" GATE VALVE & BOX, MJ

HYDRANT
1-8"x6" ANCHORING TEE, MJ, RESTRAINED, BLOCKED
1-6" GATE VALVE & BOX, MJ
6" DI NIPPLE, LENGTH AS REQUIRED
1-HYDRANT

BEAR HILL TERRACE CONNECTION
1-8"x6" TEE, MJ, RESTRAINED, BLOCKED
1-6" GATE VALVE & BOX, MJ

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Westford Water Department

Vine Brook Water System Replacement

Westford, Massachusetts

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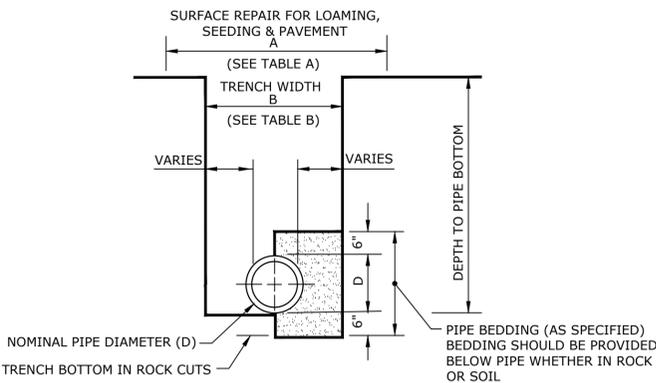
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APPROVED: TJM

BEAR HILL TERRACE AND NAGOG LANE

SCALE: 1"=40'

SHEET 7 OF 12

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TYPICAL TRENCH SECTION - EARTH AND ROCK EXCAVATION PIPE TRENCH PAYLINE LIMITS
NO SCALE

TABLE A - MAXIMUM SURFACE REPAIR PAY WIDTHS (SEE NOTES)	
NOMINAL PIPE DIAMETER 0 - 24"	
TEMPORARY PAVEMENT 5'-0" MAX.	LOAMING & SEEDING 8'-6" MAX.

TABLE B - MAXIMUM TRENCH EXCAVATION PAY WIDTHS (SEE NOTES)	
NOMINAL PIPE DIAMETER 0 - 24"	
5'-0"	

- NOTES:**
1. THE PAYLINE DIMENSIONS SHOWN REPRESENT THE MAXIMUM PAYLINE LIMITS TO BE PAID. WHEN THE ACTUAL SURFACE REPAIR OR TRENCH WIDTH IS LESS, THE ACTUAL WIDTH SHALL BE PAID FOR AT THE APPLICABLE UNIT PRICE.
 2. ALL EXCAVATION EXCLUDING ROCK THAT IS RELATED TO PIPE AND STRUCTURE INSTALLATION IS INCLUDED IN THE UNIT PRICE PER PIPE OR STRUCTURE ITEM. TRENCH PAYLINE LIMITS ARE USED FOR ROCK EXCAVATION ONLY.

TRENCH PAYLINES
NO SCALE

SIZE (IN.)	FITTING	MINIMUM RESTRAINED LENGTH, FT. *
8"	90° BEND	19
8"	45° BEND	8
8"	22 1/2° BEND	4
8"	11 1/4° BEND	2
8"	DEAD END	39
8"	45° VERTICAL UP BEND	5
8"	45° VERTICAL DOWN BEND	16
8"	8"x8" TEE	5
	8"x6" REDUCER	16
	8"x6" TEE	1
	6"x6" TEE	1

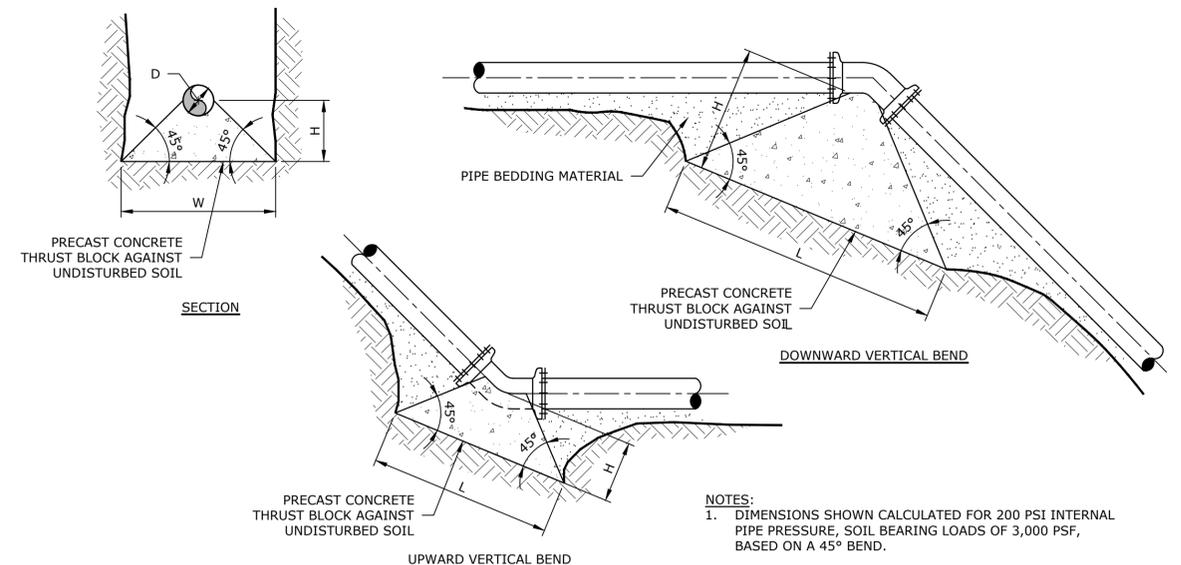
MINIMUM RESTRAINED LENGTH BASED ON EBAA IRON RESTRAINT LENGTH CALCULATOR, LATEST EDITION.

FOLLOWING CONDITIONS APPLY:
SOIL TYPE: SAND SILT
MAX. PRESSURE: 200psi
TRENCH TYPE 4
BURIED DEPTH: 5'

ALL RESTRAINED LENGTH FOR 6-INCH PIPE TO MATCH THOSE FOR 8-INCH PIPE SHOWN IN TABLE.

* TABLE SUBJECT TO RECALCULATIONS BASED ON OBSERVED FIELD CONDITIONS.

MINIMUM RESTRAINED LENGTHS FOR DI PIPE

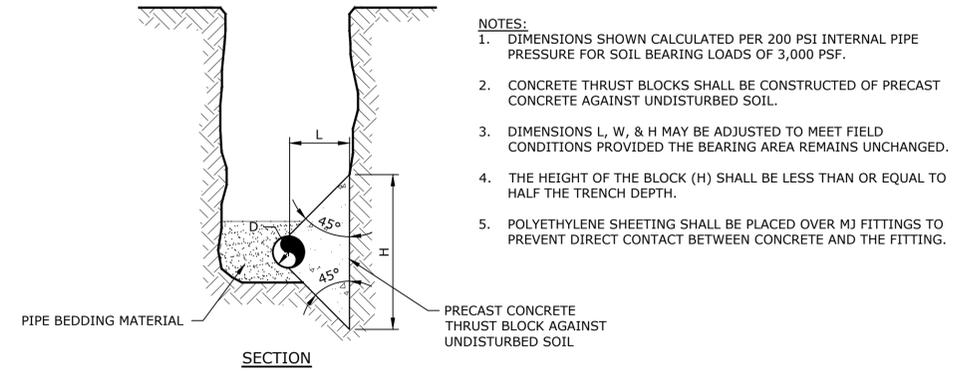
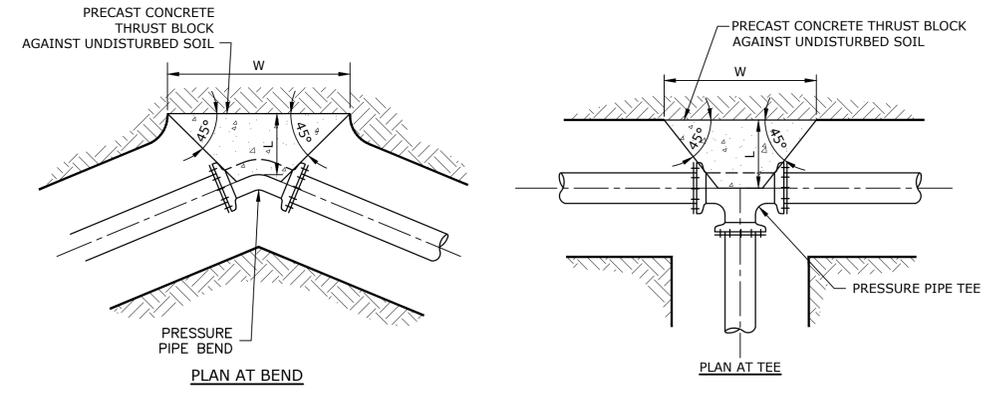


D	CONCRETE THRUST BLOCK UPWARD VERTICAL BENDS				CONCRETE THRUST BLOCK DOWNWARD VERTICAL BENDS			
	"L" (FT)	"H" (FT)	"W" (FT)	BEARING AREA (SF)	"L" (FT)	"H" (FT)	"W" (FT)	BEARING AREA (SF)
8"	2.8	2.2	1.8	4.92	6.0	3.0	5.0	15.1
6"	2.1	2.3	1.4	2.86	4.6	2.3	5.0	11.5

* THE WIDTH OF THE BLOCK (W) IS ASSUMED TO BE THE WIDTH OF THE TRENCH.

CONCRETE THRUST BLOCK FOR VERTICAL BENDS
NO SCALE

- NOTES:**
1. DIMENSIONS SHOWN CALCULATED FOR 200 PSI INTERNAL PIPE PRESSURE, SOIL BEARING LOADS OF 3,000 PSF, BASED ON A 45° BEND.
 2. CONCRETE THRUST BLOCKS SHALL BE CONSTRUCTED OF PRECAST CONCRETE MATERIAL AGAINST UNDISTURBED SOIL.
 3. DIMENSIONS L, W, & H MAY BE ADJUSTED TO MEET FIELD CONDITIONS, PROVIDED THE BEARING AREA AND VOLUME REMAIN UNCHANGED.
 4. POLYETHYLENE SHEETING SHALL BE PLACED OVER MJ FITTINGS TO PREVENT DIRECT CONTACT BETWEEN CONCRETE AND THE FITTING.



- NOTES:**
1. DIMENSIONS SHOWN CALCULATED PER 200 PSI INTERNAL PIPE PRESSURE FOR SOIL BEARING LOADS OF 3,000 PSF.
 2. CONCRETE THRUST BLOCKS SHALL BE CONSTRUCTED OF PRECAST CONCRETE AGAINST UNDISTURBED SOIL.
 3. DIMENSIONS L, W, & H MAY BE ADJUSTED TO MEET FIELD CONDITIONS PROVIDED THE BEARING AREA REMAINS UNCHANGED.
 4. THE HEIGHT OF THE BLOCK (H) SHALL BE LESS THAN OR EQUAL TO HALF THE TRENCH DEPTH.
 5. POLYETHYLENE SHEETING SHALL BE PLACED OVER MJ FITTINGS TO PREVENT DIRECT CONTACT BETWEEN CONCRETE AND THE FITTING.

D	AREA (OUTSIDE DIA.) (IN SQ)	11 1/4° BEND				22 1/2° BEND				45° BEND				TEE/DEAD END			
		"L" (FT)	"H" (FT)	"W" (FT)	BEARING AREA (SF)	"L" (FT)	"H" (FT)	"W" (FT)	BEARING AREA (SF)	"L" (FT)	"H" (FT)	"W" (FT)	BEARING AREA (SF)	"L" (FT)	"H" (FT)	"W" (FT)	BEARING AREA (SF)
8"	64.3	0.5	0.9	1.4	1.26	0.7	1.3	1.9	2.51	0.9	1.8	2.7	4.92	1.1	2.1	3.1	6.43
6"	37.4	0.4	0.7	1.0	0.73	0.5	1.0	1.5	1.46	0.7	1.4	2.0	2.86	0.8	1.6	2.3	3.74

CONCRETE THRUST BLOCK FOR HORIZONTAL BENDS AND TEES
NO SCALE

Westford Water Department

Vine Brook Water System Replacement

Westford, Massachusetts

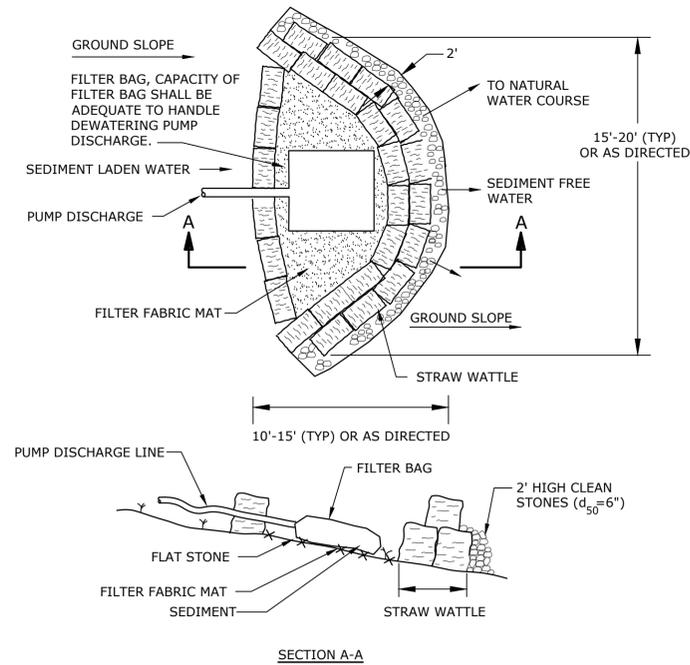
VERIFY SCALE
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

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PROJECT NO:	W5005-007	
DATE:	5/18/2018	
FILE:	W5005-WatDetails.dwg	
DRAWN BY:	CFY, CLL	
CHECKED:	LAS	
APPROVED:	TJM	

CONSTRUCTION DETAILS 1 OF 4

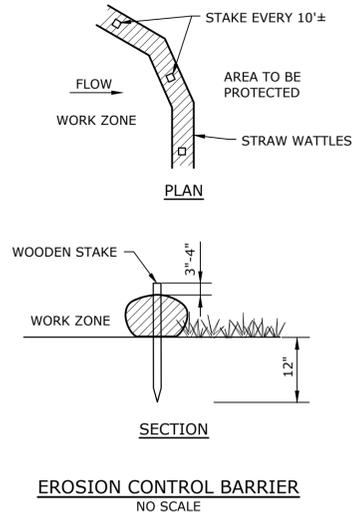
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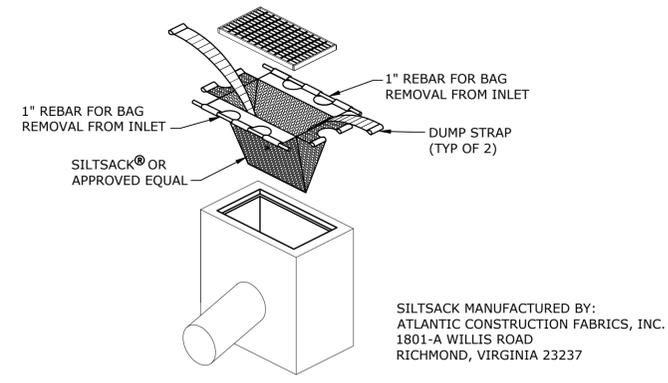


NOTES:
1. THE GROUNDWATER DISCHARGE FILTER SHALL BE INSTALLED FOR ANY DEWATERING ACTIVITY LOCATED WITHIN THE 100' WETLAND REGULATED AREA. A FILTER BAG IS REQUIRED FOR DEWATERING ACTIVITIES LOCATED OUTSIDE OF THE REGULATED AREA.

DEWATERING DISCHARGE FILTER
NO SCALE



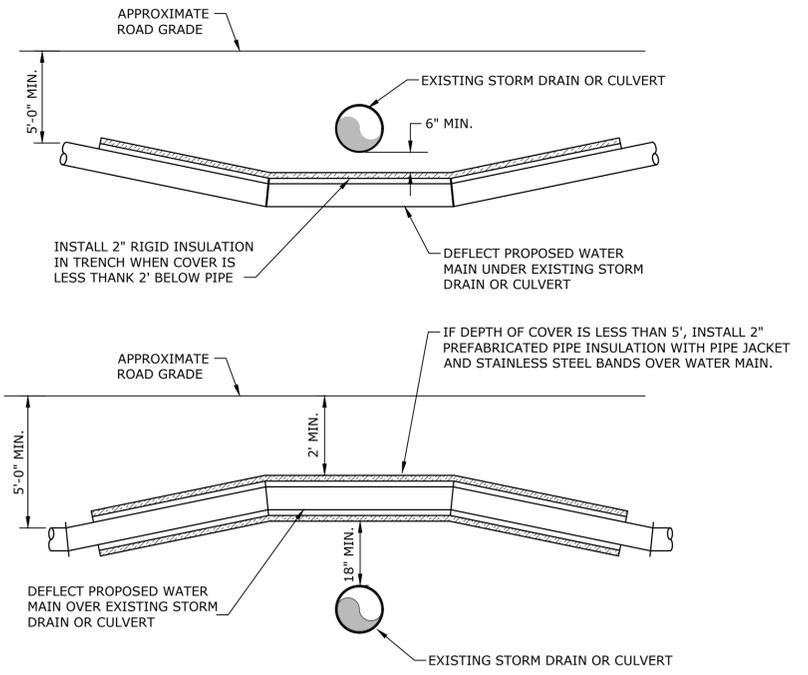
EROSION CONTROL BARRIER
NO SCALE



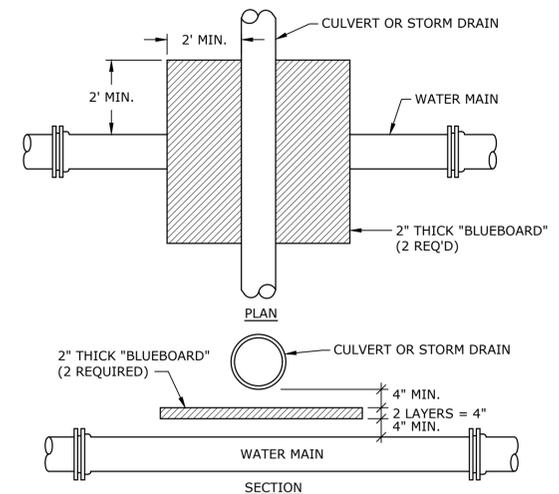
SILTSACK® EROSION CONTROL
NO SCALE

EROSION CONTROL NOTES

1. ALL EROSION CONTROL MEASURES SHOWN, SPECIFIED AND REQUIRED BY THE ENGINEER SHALL BE INSTALLED PRIOR TO ANY CONSTRUCTION OR IMMEDIATELY UPON REQUEST. THE CONTRACTOR SHALL MAINTAIN ALL SUCH CONTROL MEASURES UNTIL FINAL SURFACE TREATMENTS ARE IN PLACE AND/OR UNTIL PERMANENT VEGETATION IS ESTABLISHED.
2. PRIOR TO STARTING WORK, CLEARLY STAKE WORK LIMIT LINE(S). DO NOT DISTURB VEGETATION AND TOPSOIL BEYOND THE PROPOSED LIMIT LINE. THE CONTRACTOR SHALL ALSO COORDINATE WITH THE ENGINEER THE LOCATIONS FOR THE TEMPORARY STOCKPILING OF TOPSOIL DURING CONSTRUCTION.
3. SIDE SLOPES, SHOULDER AREAS, AND DISTURBED VEGETATED AREAS TO BE A MAXIMUM GRADE OF 2:1, COMPACTED, STABILIZED, AND LOAMED AND SEEDED AS SHOWN ON PLANS. ALL SIDE SLOPES SHALL BE IMMEDIATELY FINE GRADED AND SEEDED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
4. SILT TRAPPED AT BARRIERS SHALL BE REMOVED AND DISPOSED OF IN UPLAND AREAS OUTSIDE OF BUFFER ZONES. MATERIALS DEPOSITED IN ANY TEMPORARY SETTLING BASIN SHALL BE REMOVED AT THE COMPLETION OF THE PROJECT. ALL DISTURBED AREAS TO BE RESTORED.
5. ALL SILT-LADEN WATER MUST BE SETTLED OR FILTERED TO REMOVE ALL SEDIMENT PRIOR TO RELEASE TO THE WATERWAY, IN A SEDIMENTATION OR FILTER BAG LOCATED DOWNSTREAM OF THE DEWATERED AREAS.
6. CONTRACTOR TO DEWATER AS NECESSARY TO KEEP CONSTRUCTION AREAS FREE OF WATER, CONTRACTOR SHALL DISCHARGE WATER FROM DEWATERING TO APPROPRIATE LOCATION AND WITHOUT SEDIMENTATION.



WATER MAIN DRAIN CROSSING
NO SCALE



WATER MAIN INSULATION DETAIL
NO SCALE

Westford Water Department

Vine Brook Water System Replacement

Westford, Massachusetts

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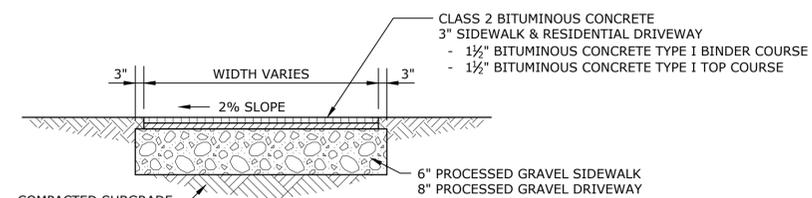
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	5/18/2018	

PROJECT NO: W5005-007
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DRAWN BY: CFY, CLL
CHECKED: LAS
APPROVED: TJM

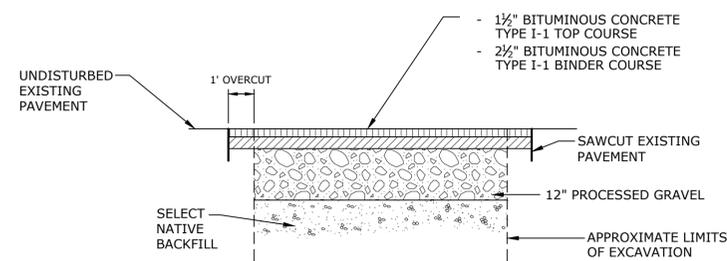
CONSTRUCTION DETAILS
2 OF 4

SCALE: AS SHOWN

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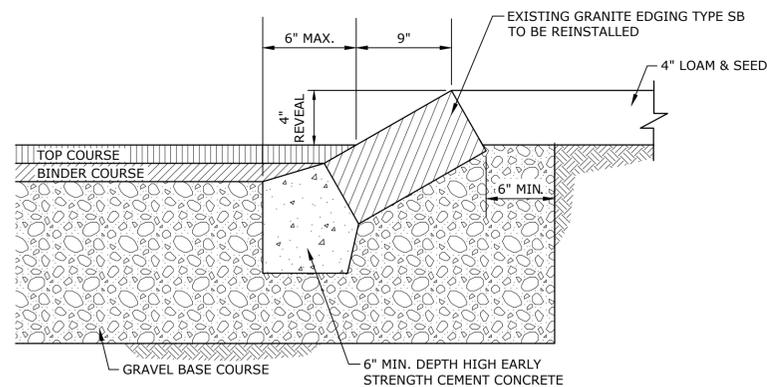


BITUMINOUS CONCRETE SIDEWALK AND DRIVEWAY DETAIL
NO SCALE

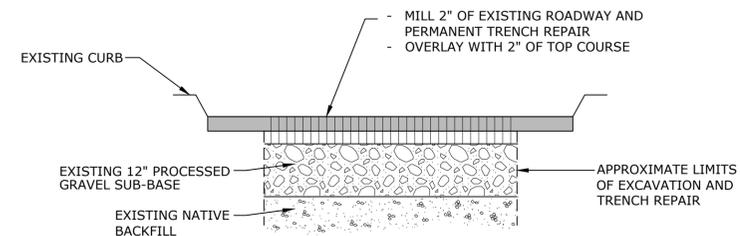


NOTES:
1. REFER TO SPECIFICATION SECTION 02740 FOR COMPLETE PAVEMENT REPAIR REQUIREMENTS.

TRENCH REPAIR
NO SCALE



GRANITE EDGING - TYPE SB
NO SCALE



NOTE:
1. AFTER ADDITIONAL SETTLEMENT PERIOD, COMPLETE 2" FULL-WIDTH MILL AND OVERLAY FOR ALL STREETS

FULL-WIDTH MILL AND OVERLAY (ADD ALTERNATE NO. 2)
NO SCALE

Westford Water Department

Vine Brook Water System Replacement

Westford, Massachusetts

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DRAWN BY: CFY, CLL		
CHECKED: LAS		
APPROVED: TJM		

CONSTRUCTION DETAILS
3 OF 4

SCALE: AS SHOWN

SHEET 10 OF 12



Westford Water Department

Vine Brook Water System Replacement

Westford, Massachusetts

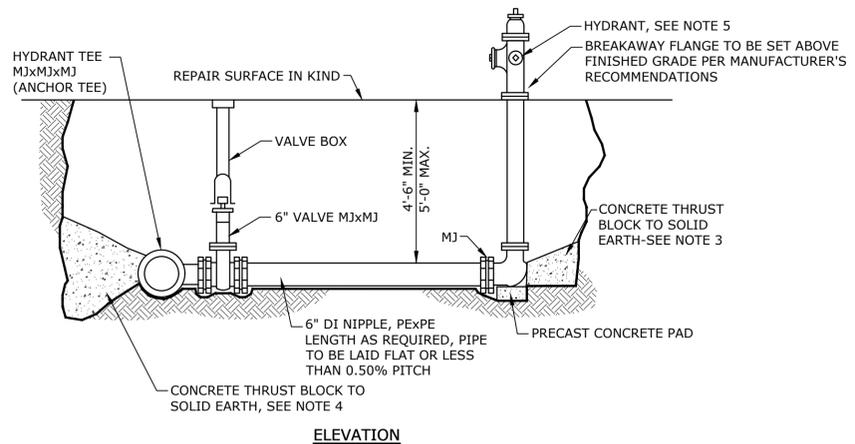
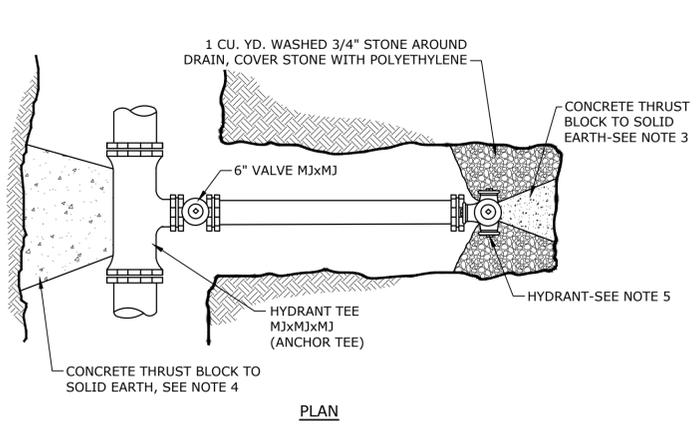
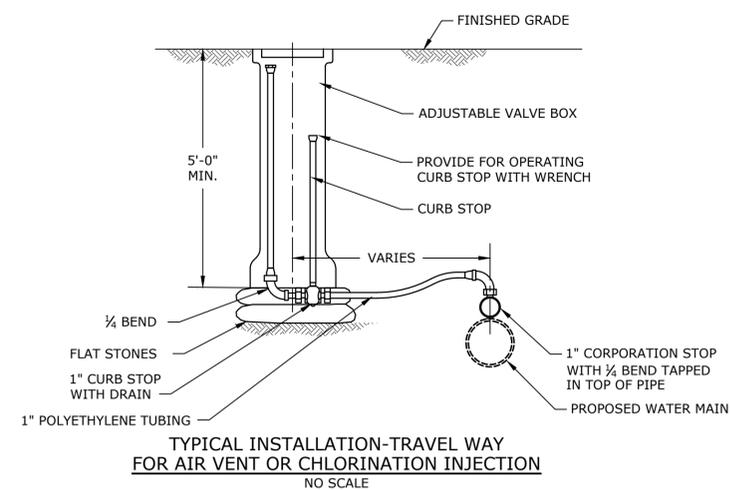
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**CONSTRUCTION DETAILS
4 OF 4**

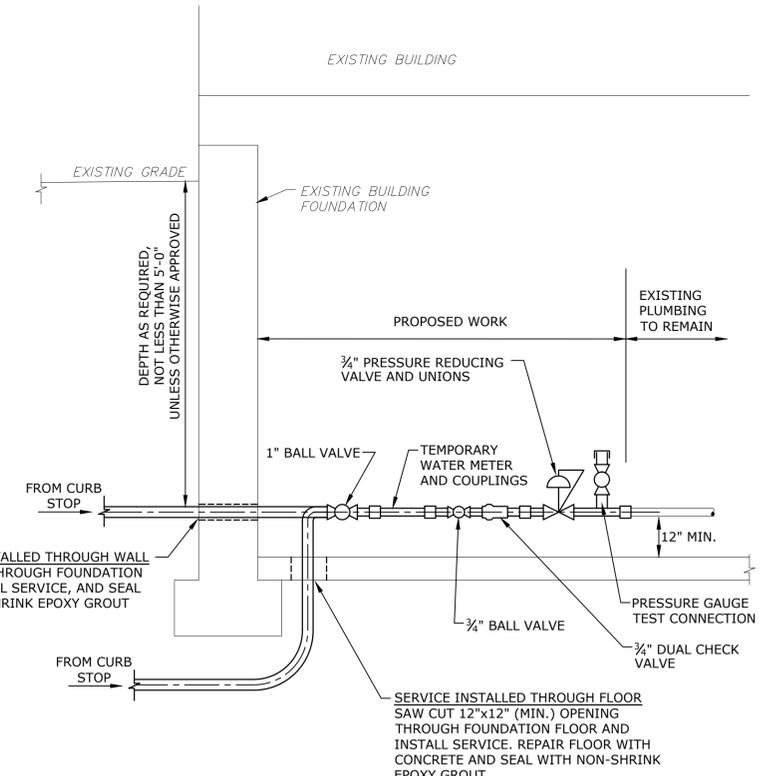
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SHEET 11 OF 12

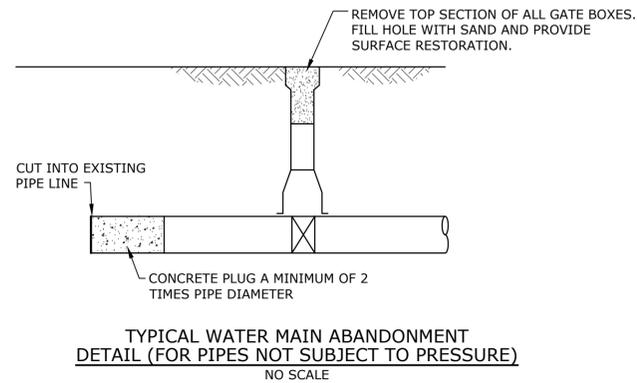
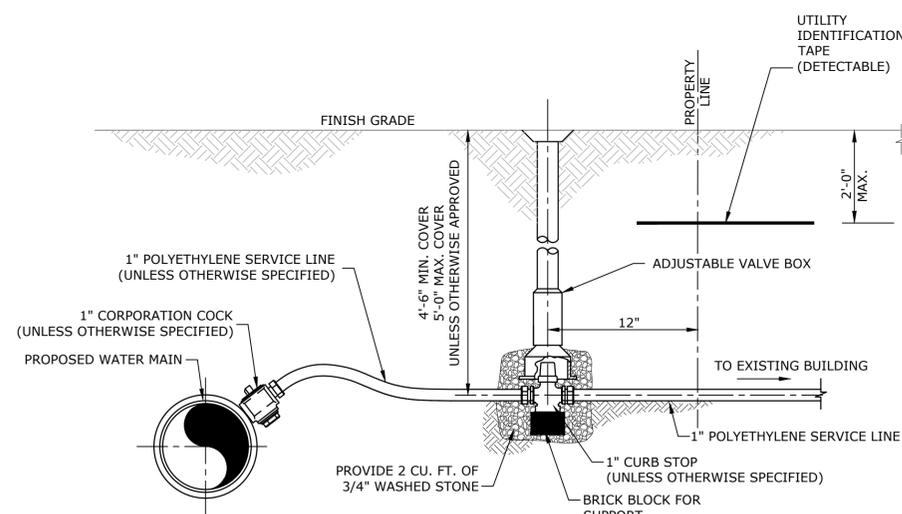
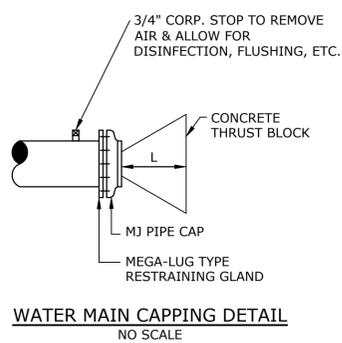


- NOTES**
1. ALL CONCRETE TO BE PRECAST (3000 PSI).
 2. ALL MJ JOINTS SHALL HAVE RETAINER GLANDS.
 3. CARE SHALL BE TAKEN TO SHIELD HYDRANT BASE DRAIN HOLES DURING PLACEMENT OF THE CONCRETE THRUST BLOCK. DRAIN HOLES SHALL BE VERIFIED AS OPEN AND FREE OF OBSTRUCTIONS PRIOR TO BACKFILLING.
 4. CARE SHALL BE TAKEN TO SHIELD ALL MECHANICAL JOINT GLANDS AND BOLTS DURING PLACEMENT OF CONCRETE THRUST BLOCK. ALL BOLTS AND GLANDS SHALL BE FREE AND UNOBSTRUCTED BEFORE BACKFILLING.
 5. HYDRANT SHALL BE SET PLUMB. VERTICAL HYDRANT EXTENSIONS SHALL BE USED AS NECESSARY TO PROPERLY LOCATE THE BREAKAWAY FLANGE PER MANUFACTURER'S RECOMMENDATIONS. HYDRANT LOCATION TO BE COORDINATED WITH THE WESTFORD WATER DEPARTMENT.

WATER MAIN HYDRANT INSTALLATION
NO SCALE



- NOTES:**
1. WATER SERVICE SHALL BE INSTALLED AT LEAST 25-FEET AWAY FROM INDIVIDUAL SEWAGE DISPOSAL SYSTEMS OR CESSPOOLS. SERVICES INSTALLED CLOSER THAN THE MINIMUM DISTANCE SHALL BE INSTALLED IN SCHEDULE 40 PVC PIPE. INTERMEDIATE JOINTS SHALL BE JOINED TOGETHER AND SEALED TO FORM A WATER TIGHT CONNECTION. END SECTIONS SHALL BE FITTED WITH A MECHANICAL DEVICE TO MAKE THE SPACE BETWEEN SERVICE PIPE AND ENCASEMENT WATER TIGHT.
 2. CONTRACTOR/LICENSED PLUMBER TO INSTALL A "TEMPORARY WATER METER," WHICH WILL BE PIPING OF EQUIVALENT LENGTH AS THE WESTFORD WATER DEPARTMENT'S SELECTED WATER METER. COORDINATE WITH WESTFORD WATER DEPARTMENT TO INSTALL METER, COMPLETE FINAL CONNECTION, AND ACTIVATE SERVICE.
 3. CONTRACTOR TO COMPLETE INSPECTION OF EVERY HOUSE THAT IS CONNECTING TO THE PROPOSED WATER MAIN PRIOR TO COMPLETING PLUMBING MODIFICATIONS TO PRIVATE HOMES.
 4. SEE SPECIFICATION SECTION 15140 DOMESTIC WATER PIPING FOR FURTHER INFORMATION ABOUT PRESSURE REDUCING VALVE AND DUAL CHECK VALVE.
 5. IF MODIFICATIONS ARE REQUIRED TO FINISHED SPACES IN ORDER TO INSTALL WATER SERVICE, WORK SHALL BE COORDINATED WITH THE HOMEOWNER, WESTFORD WATER DEPARTMENT, AND ENGINEER BEFORE PROCEEDING. COMPENSATION FOR THIS WORK SHALL BE UNDER THE "SPECIALTY PRIVATE PROPERTY SITE WORK ALLOWANCE" PAY ITEM.



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