Environmental Partners GROUP

A partnership for engineering solutions

Memorandum

Date November 14, 2019

To Mr. Maurice Goulet – Director, Town of Medfield Department of Public Works

From Eric Kelley, PE – Project Manager, Environmental Partners

CC Medfield Water and Sewerage Board
Paul Millett, PE – Principal, Environmental Partners
Robert Rafferty, PE – Principal, Environmental Partners
File

Subject Medfield State Hospital Development
Review of Proposed Water and Sewer Utilities Plans

This technical memorandum presents Environmental Partners' review and evaluation of the preliminary water and sewer utilities proposed for the Medfield State Hospital Development project. This technical memorandum summarizes our findings and recommendations from our initial evaluation of the proposed water and sewer utility improvements.

PROJECT UNDERSTANDING

The Town of Medfield purchased the Medfield State Hospital (MSH) property from the State of Massachusetts in 2014. The Town created the Medfield State Hospital Planning Committee (MSHPC) to lead the Town's master planning efforts, which resulted in the issuance of a Strategic Reuse Master Plan in August 2018.

The Town has recently proposed amending the Town Zoning Bylaws to create the Medfield State Hospital Zoning District. The proposed zoning amendments are the subject of a warrant article for the Special Town Meeting scheduled for November 18, 2019.

The Town through the MSHPC has contracted with Pare Corporation (Pare) to develop preliminary water and sewer utility plans for the MSH redevelopment. The preliminary utilities are based upon a development approach including 40 buildings providing for 323 residential units (698 bedrooms) and 8 non-residential units. Pare estimated a peak daily water system demand of 114,012 gallons per day (GPD) and a peak sewer system flow of 96,910 GPD. The estimated water and sewer system demands were developed based upon Massachusetts Title V requirements (Residential Sewer Flow: 110 GPD per bedroom; Non-residential sewer flow: 75 GPD per 1,000 square feet; Water usage = sewer flow/0.85).

Environmental Partners was provided with Pare's preliminary utility plans (September 26, 2019, Attachment A), opinion of probable construction cost (September 2019, Attachment B), and water and sewer system daily demand estimates (September 2019, Attachment C). In addition to these preliminary design materials, Environmental Partners reviewed Town water and sewer system documents including:

- 2012 Water System Master Plan
- 2012 Sewer System Master Plan
- Annual Statistical Reports for Water System (2011 through 2018)
- Monthly wastewater treatment facility monitoring reports (2015-2019)
- Sewer system plans for Hospital Road, Copperwood Road, and Ice House Road
- Country Estates development site and utility plans (January 2017)

WATER SYSTEM

Proposed Improvements

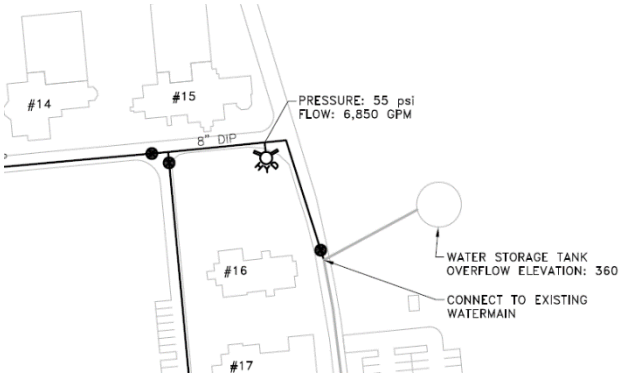


Figure 1 – Proposed Hospital Tank Transmission Main Connection

The MSH project's preliminary water system improvements consist of a network of 8-inch ductile iron water main, gate valves, and fire hydrants located along the various access roads of the MSH property. The plans proposed three primary connections to the Town's existing water system: one at the 16-inch Hospital Tank transmission main (Figure 1); one to a 16-inch main at the southern end of Tower Street (Figure 2); and one off the 16-inch Hospital Tank transmission main near the intersection of Cottage Street and Stonegate Drive (Figure 3). The plans also include an optional system loop connecting the Cottage Street network to the existing 12-inch water main on Hospital Road (Figure 3). In total the preliminary plans include approximately 7,500 linear feet of 8-inch water main and appurtenances. In general the proposed layout of the MSH water system improvements appears appropriate for planning purposes. The proposed connection at the southern end of Tower Street is shown connecting to an existing 16-inch water main, which was abandoned as part of the Hospital Tank and Water Main Improvements project completed in 2015. The southern Tower Street system connection should be revised based upon the January 2016 record drawings (Attachment D).

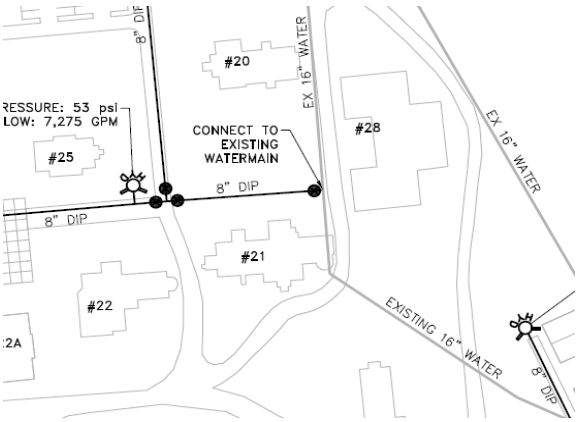


Figure 2 - Proposed Tower Street Connection

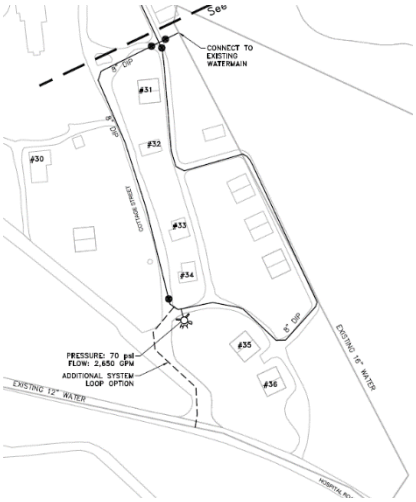


Figure 3 - Proposed Cottage Street/Stonegate Connection

Water System Demand Evaluation

The MSH project is estimated to have a peak day demand of 114,012 GPD (0.114 MGD). It is assumed that the estimated peak day demands does not include any irrigation system demands. The proposed MSH water system improvements and demands were not evaluated in the Town's water system hydraulic model. Environmental Partners reviewed the Town's Annual Statistical Reports between 2011 and 2018 to evaluate the potential impact that a demand of this scale could have on the Town's water management limits.

Conservatively, Environmental Partners assumed an additional 0.114 MGD in average daily demand due to the MSH project. Table 1 summarizes the reported average annual day demand (2011 through 2018), the estimated average annual day demands including the additional 114,012 GPD demand from the MSH project, and the Town's current Water Management Act (WMA) limits authorized by the Department of Environmental Protection (DEP).

Table 1 – Summary of Estimated Water System Demands

Year	Actual Reported Average Annual Day (MGD)	Estimated Average Annual Day with MSH 0.114 MGD Demand (MGD)	Water Management Act Average Annual Day Limit (MGD)	Variance (MGD)
2018	1.16	1.28	1.51	0.23
2017	1.25	1.36		0.15
2016	1.31	1.42		0.09
2015	1.48	1.59		*(0.08)*
2014	1.46	1.57		*(0.06)*
2013	1.40	1.51		0.00
2012	1.30	1.41		0.10
2011	1.24	1.36		0.15

Note: Estimated hypothetical exceedances of WMA limits shown in italicized parentheses.

SEWER SYSTEM

Proposed Improvements

The MSH project's sewer system improvements consist primarily of a 6-inch and 8-inch PVC gravity sewer network. Two grinder pump stations are proposed for two buildings at lower elevations on the western side of the site. The MSH sewer system would connect to an extension of the Town's existing 8-inch PVC gravity sewer locate along Hospital Road. Overall the sewer system improvements include 2,850 linear feet of 6-inch PVC sewer, 9,100 linear feet of 8-inch PVC sewer, 350 linear feet of 2-inch PVC forcemain, and appurtenances. The MSH development is located within the Town's Sewershed Area 1. The proposed Hospital Road sewer extension is shown in Figure 4.

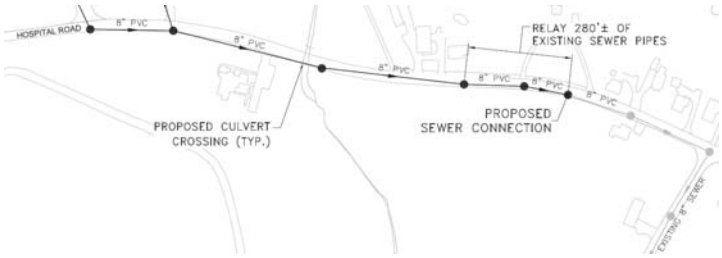


Figure 4 – Proposed Hospital Road Sewer Extension

Sewer Flow Evaluation

The MSH sewer extension is proposed to connect to the Town's existing 8-inch PVC sewer on Hospital Road. Based on available records, the Town's sewer in this area extends from Hospital Road down Copperwood Road to Ice House Road before discharging into the existing 24-inch sewer interceptor on West Mill Street. The existing 8-inch sewer system also collects flow from 8-inch PVC sewers on Clayton Street and Bishop Lane. The oldest portion of the existing system is on Copperwood Road, which was installed in the late 1980s. The Hospital Road and Ice House Road 8-inch PVC sewers were installed in the early 2000s. The condition of the existing sewer system was not evaluated by Environmental Partners and historical inspection records were not available for review. Infiltration and Inflow estimates for the sewer system were also not available for the project area sewers. Environmental Partners assumed there is minimal infiltration in the existing 8-inch PVC sewer network.

The existing sewer system appears to serve approximately 29 single-family residences, one commercial facility (the Kingsbury Club), one municipal facility (the Center), and the 49 unit Country Estates development on Hospital Road. Assuming 4 bedrooms per single family residence and the 182 bedrooms proposed for Country Estates, the existing residential sewer flow is approximately 32,780 GPD (110 GPD per bedroom). This does not include any flows from the Kingsbury Club or the Center. The design capacity for an 8-inch PVC sewer is approximately 250,000 gallons per day (assuming minimum slope per TR-16 and flowing 50% full to allow for future system expansion and infiltration), but can accommodate approximately 500,000 GPD at full capacity. The MSH estimated sewer flow is 96,910 GPD. Therefore, the combined flow of the MSH development plus downstream residential properties is estimated to be approximately 130,000 GPD. Title V flows are approximately two-times the average daily flow, which represents 65,000 GPD for the existing residential flows plus the MSH project. Sewers are designed for peak hourly flow, which in this case is estimated to be 5.6-times the average daily flow of 65,000 (per TR-16). Therefore, the peak hourly flow for the combined MSH and residential flow is 364,000 GPD (65,000 GPD x 5.6 = 364,000 GPD). While the peak hourly flow estimate is greater than the conventional design capacity (250,000 GPD), it does not exceed the full capacity of the sewer at minimum slope (worst case situation).

A review of the Town wastewater treatment facility's monthly flow monitoring reports for the past four years indicates that April average daily flows are approximately twice as high as those observed in September. The peaking factor for April and September periods ranges from approximately 1.5 to 2.5 as shown in Table 2.

Table 2 – Summary of April and September Wastewater Treatment Facility Flows

Year	Month	Monthly Average Flow (MGD)	Peak Daily Flow (MGD)	Peaking Factor
2015	April	0.935	1.4	1.5
	September	0.413	0.7	1.7
2016	April	0.759	1.6	2.1
	September	0.357	0.7	2.0
2017	April	0.941	2.2	2.3
	September	0.498	0.8	1.6
2018	April	0.871	1.8	2.1
	September	0.547	0.9	1.6
2019	April	0.85	1.3	1.5
	September	0.39	1	2.6

FINDINGS AND RECOMMENDATIONS

Water System – Proposed Peak Daily Demand of 114,012 Gallons Per Day

Environmental Partners' initial evaluation finds that the MSH project's estimated peak day water demands of 0.114 MGD could be accommodated under current authorized limits provided that the Town continues to be proactive with its water conservation programs. The Town should consider the following findings and recommendations to evaluate the MSH project's water system impacts further:

- Conservative estimates for annual average day demands for 2011 to 2018 including the additional daily demand of 0.114 MGD from the MSH project indicates the following:
    - The additional peak MSH daily demand of 0.114 MGD could have been accommodated under the Town's existing authorized average daily withdrawal limit of 1.51 MGD in 5 of 8 years and was at or above the withdrawal limit in 3 of 8 years.
    - In 2016 through 2018, the remaining system withdrawal capacity, based on average annual day, ranged from 0.10 MGD (7% remaining in 2016) to 0.25 MGD (19% remaining 2018).
- The Town should continue its proactive water system management strategies including meter replacement, semi-annual leak detection, and water main replacement to continue reducing Unaccounted For Water (UAW). Further reductions in UAW can increase available water system capacity for future development at this location or other locations in town.
- The Town should continue to evaluate its water conservation measures to address peak seasonal demands (April to September).
- The proposed Hospital development demands are for typical residential use (Title V) and do not include any specific projections for lawn irrigation use. Due to the size of the project's peak demands (approximately 7% of the 1.51 MGD withdrawal capacity) the Town should consider limiting the Hospital development from connecting irrigation systems to the public water system.
- When more details of the Hospital development become available, the Town's water hydraulic model should be used to evaluate system impacts concerning water storage tank levels, fire flows, and water quality.
- Proposed water system connections should be reviewed for accuracy against available water system record drawings.
- Proposed water system layout (isolation valves, hydrants, loops) should be discussed with the Water System operations staff.
- Preliminary geotechnical investigations should be completed along proposed watermain alignments to evaluate subsurface conditions due to presence of shallow bedrock at Hospital Tank site.

Sewer System – Proposed Peak Daily Wastewater Flow of 96,910 Gallons Per Day

Environmental Partners' initial evaluation finds that the MSH project's daily sewer flow of 96,910 GPD could be accommodated by the existing 8-inch PVC sewer system from Hospital Road to West Mill Street based on the assumptions identified in this memorandum. The Town should consider the following findings and recommendations to evaluate the MSH project's sewer system impacts further:

- The design capacity of an 8" PVC sewer at the minimum recommended TR-16 slopes (0.004) is approximately 250,000 gallons per day (pipe flowing 50% full), but over time systems routinely operate at greater flows.
- The existing sewer serves approximately 29 single family residences, 1 commercial property (Kingsbury Club), and 1 municipal property (The Center). The existing sewer also serves the Country Estates development's 49 residential units on Hospital Road (status of occupancy not confirmed). Assuming that the sewer flows from these properties and any existing I/I contributions along the sewer alignment is less than 150,000 gallons per day, the existing 8-inch sewer has capacity for the MSH development and remain at or below the design capacity of 250,000 GPD.
- The Town should review the recent metered water flows for the existing properties to estimate their average daily sewer flows.
- The existing sewer manhole inverts along the 8-inch sewer should be verified to confirm the existing pipe slopes to confirm the available sewer capacity.
- The Town should conduct the physical inspection (visual and CCTV) of the existing 8-inch sewer, sewer manholes, and its connection to the West Mill Street interceptor.
- The 8-inch sewer should be evaluated for Inflow/Infiltration (I/I) including the depth of flow within the 24-inch interceptor where the 8-inch sewer discharges to allow for hydraulic modeling of the 8-inch sewer under free discharge and high interceptor level conditions.
- The Town is currently working on reducing I/I issues in the sanitary sewer system. The MSH development is located in Sewershed Area 1. The Town should identify an equivalent level of I/I reductions in Sewershed Areas 1 and 2 (contributes to Area 1) to offset the proposed MSH development flows.
- The Town's wastewater master plan should be updated when more details of the MSH development become available and to reflect the Town's I/I program.
- Preliminary geotechnical investigations should be completed along proposed sewer alignments to evaluate subsurface conditions due to presence of shallow bedrock at Hospital Tank site.

ATTACHMENTS

Attachment A – Medfield State Hospital Utility Design Plans (Pare Corporation, September 2019)

Attachment B – Medfield State Hospital Utility Opinion of Probable Construction Cost (Pare Corporation, September 2019)

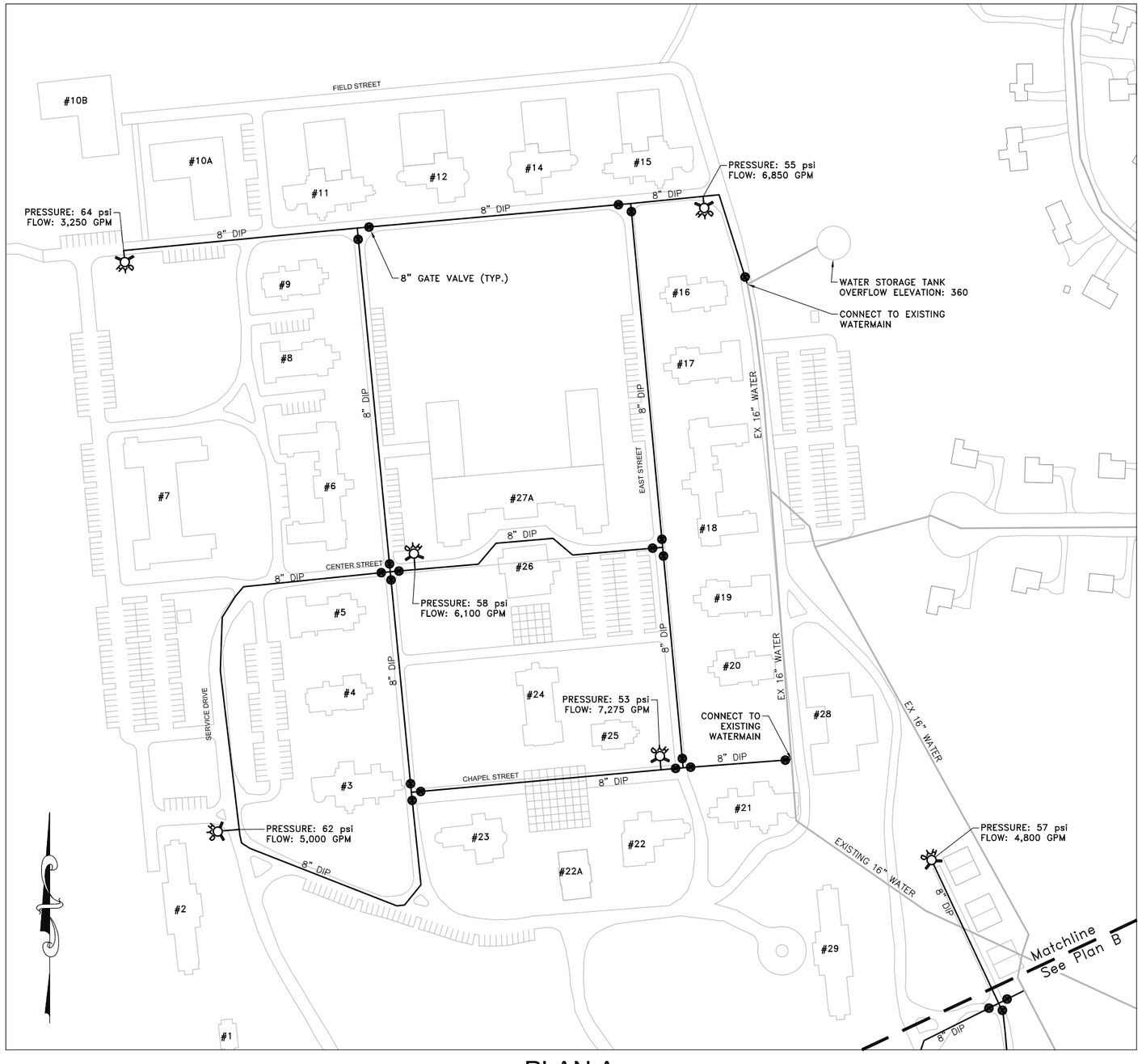
Attachment C – Medfield State Hospital Water and Wastewater Demands (Pare Corporation, September 2019)

Attachment D – Hospital Road Water Main Improvements Record Drawings (Environmental Partners, January 2016)

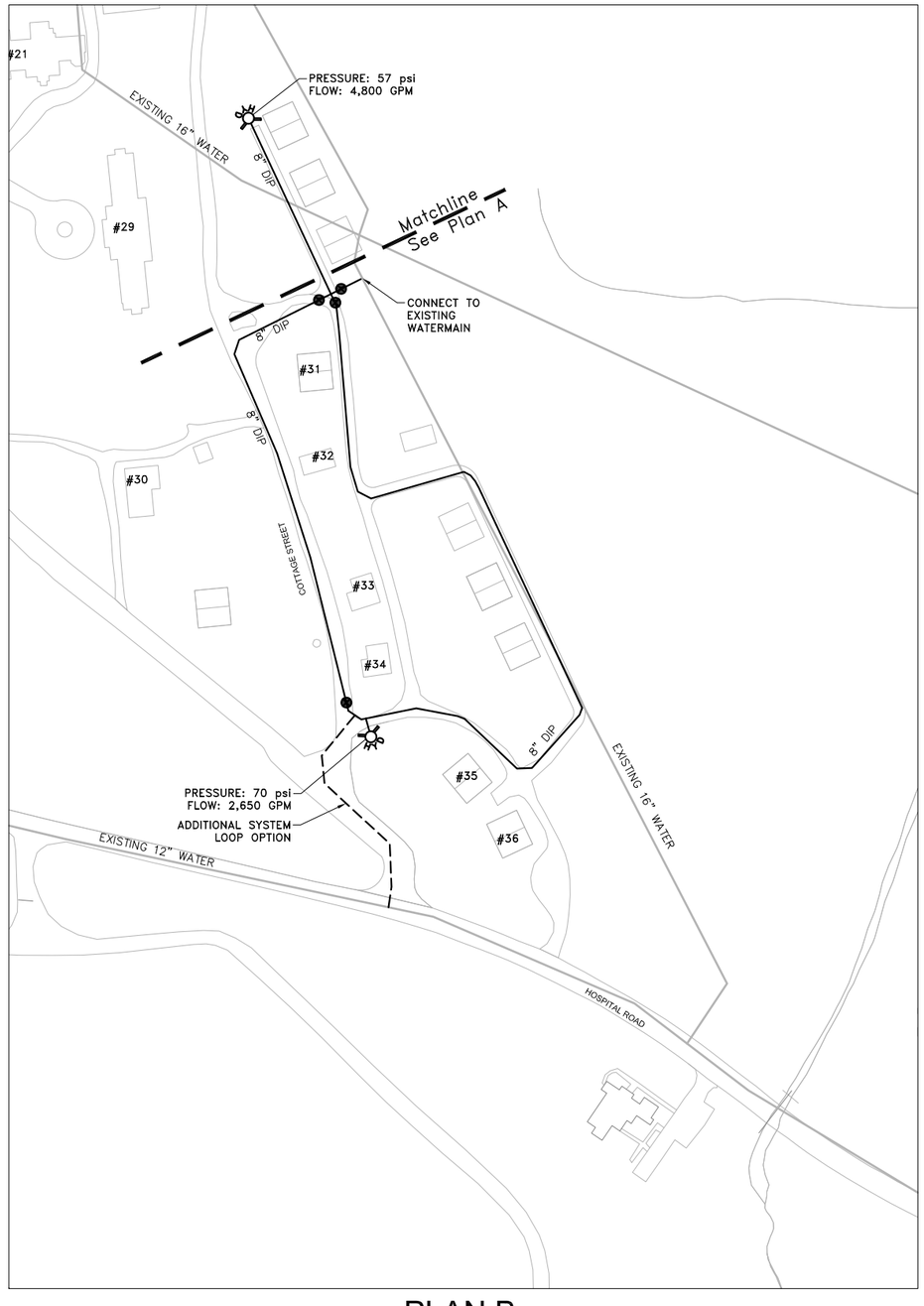
Attachment A

Medfield State Hospital Utility Design Plans

(Pare Corporation, September 2019)



PLAN A



PLAN B

Scale:

0 100' 200' 400'

ESTIMATED WATER DEMAND (MAX DAY): 114,012 GPD

PARE ENGINEERING CORPORATION
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401 - 334 - 4100

SCALE:	AS SHOWN
DATE:	9/25/2019
PROJECT NO.:	17014.02
DESIGNED BY:	LMG
DRAWN BY:	LMG/CRL
CHECKED BY:	LMG

Medfield State Hospital
Utility Design

PROPOSED WATER PLAN

Medfield, MA

FIGURE NO.

1

Scale:
0 75' 150' 300'

ESTIMATED WASTEWATER FLOW: 96,910 GPD

PARE ENGINEERING CORPORATION
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401 - 334 - 4100

SCALE:	AS SHOWN
DATE:	9/25/2019
PROJECT NO.:	17014.02
DESIGNED BY:	CRL
DRAWN BY:	CRL
CHECKED BY:	LMG

Medfield State Hospital
Utility Design

PROPOSED SEWER PLAN

Medfield, MA

FIGURE NO.
2

HOSPITAL ROAD

8" PVC

8" PVC

8" PVC

8" PVC

8" PVC

8" PVC

RELAY 280'± OF EXISTING SEWER PIPES

PROPOSED CULVERT CROSSING (TYP.)

PROPOSED SEWER CONNECTION

EXISTING 8" SEWER

CLAYTON STREET

COPPERWOOD ROAD

EXISTING 8" SEWER

HARDING STREET

EXISTING SEWER MANHOLE (TYP.)

EXISTING 8" SEWER

EXISTING 8" SEWER

ICE HOUSE ROAD

WEST MILL STREET

EXISTING 24" SEWER

Scale:
0 75' 150' 300'

ESTIMATED WASTEWATER FLOW: 96,910 GPD

PARE ENGINEERING CORPORATION
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401 - 334 - 4100

SCALE:	AS SHOWN
DATE:	9/25/2019
PROJECT NO.:	17014.02
DESIGNED BY:	CRL
DRAWN BY:	CRL
CHECKED BY:	LMG

Medfield State Hospital
Utility Design

PROPOSED SEWER PLAN

Medfield, MA

FIGURE NO.
3

Attachment B

Medfield State Hospital Utility Opinion of Probable Construction Costs

(Pare Corporation, September 2019)

Preliminary Opinion of Probable Construction Cost
Water/Sewer Schematic Design

Medfield State Hospital
Medfield, MA
Pare Project No. 17014.02

Prepared By: CL
Checked By: LMG
Date: September 2019

No.	Work Item	Quantity	Unit Price	Unit	Total
Water Distribution System					
1	Site Mobilization & Demobilization (5%)	1	$ 97,100.00	LS	$ 97,100.00
2	Test Pits (Assume 1 per 500 feet of water main)	15	$ 750.00	EACH	$ 12,000.00
3	Erosion and Sediment Controls	1	$ 2,500.00	LS	$ 2,500.00
4	8" Ductile Iron Water Main	7,500	$ 135.00	LF	$ 1,012,500.00
5	8" Gate Valves and Boxes	23	$ 2,500.00	EA	$ 57,500.00
6	Fire Hydrant Assembly	7	$ 5,500.00	EA	$ 38,500.00
7	4" Fire Services	59	$ 4,000.00	EA	$ 236,000.00
8	1" Copper Services	59	$ 3,200.00	EA	$ 188,800.00
9	Rock Excavation (Assume 10% trench volume)	620	$ 200.00	CY	$ 124,000.00
10	Unsuitable Material (Assume 5% trench volume)	310	$ 40.00	CY	$ 12,400.00
11	Temporary Trench Pavement - 2" Thick	3,400	$ 20.00	SY	$ 68,000.00
12	Permanent Trench Pavement - 4" Thick	4,200	$ 45.00	SY	$ 189,000.00
			SUBTOTAL		***$ 2,038,300.00***
Sewer Collection System					
13	Site Mobilization & Demobilization (5%)	1	$ 139,900.00	LS	$ 139,900.00
14	Test Pits (Assume 1 per 500 feet of sewer main)	25	$ 750.00	EACH	$ 18,450.00
15	Erosion and Sediment Controls	1	$ 5,000.00	LS	$ 5,000.00
16	8" SDR 35 Gravity Sewer	9,100	$ 150.00	LF	$ 1,365,000.00
17	6" SDR 35 Gravity Sewer	2,850	$ 140.00	LF	$ 399,000.00
18	Wye Fittings/Service Laterals	57	$ 3,500.00	EA	$ 199,500.00
19	2" SDR 21 Force Main	350	$ 100.00	LF	$ 35,000.00
20	4-Foot Diameter Sewer Manhole	34	$ 6,500.00	EA	$ 221,000.00
21	Grinder Pump Station	2	$ 10,000.00	EA	$ 20,000.00
22	Rock Excavation (Assume 10% trench volume)	980	$ 200.00	CY	$ 196,000.00
23	Unsuitable Material (Assume 5% trench volume)	510	$ 40.00	CY	$ 20,400.00
24	Non-Pavement Restoration (Loam and Seed)	2,000	$ 25.00	SY	$ 50,000.00
25	Temporary Trench Pavement - 2" Thick	3,500	$ 20.00	SY	$ 70,000.00
26	Permanent Trench Pavement - 4" Thick	4,400	$ 45.00	SY	$ 198,000.00
			SUBTOTAL		***$ 2,937,300.00***
			SUBTOTAL		***$ 4,975,600.00***
27	Contingency (20%)				$ 995,000.00
			SUBTOTAL		$ 5,970,600.00
28	Engineering Design (18%)				$ 1,075,000.00
29	Construction Administration & Observation (15%)				$ 896,000.00
			TOTAL		**$ 7,941,600.00**

Attachment C

Medfield State Hospital Utility Water and Wastewater Demands

(Pare Corporation, September 2019)

MEDFIELD STATE HOSPITAL MASTER PLAN
WATER AND WASTE WATER FLOW GENERATION NUMBERS

Building #	Name	Res. Units	Bdrms	Res. Unit Types	SF	Waste Water (GPD)	Water Use (GPD)	Water Use (GPM)
1	Hillside House	-			2,336	**175.20**	**206**	**0.14**
2	West Hall	20	40	20 2-bdrm	28,075	**4,400**	**5,176**	**3.59**
3	C-2 Bldg Opt A	10	20	10 2-bdrm	16,226	**2,200**	**2,588**	**1.80**
4	D-2 Bldg	9	18	9 2-bdrm	8,975	**1,980**	**2,329**	**1.62**
5	E-2 Bldg	10	20	10 2-bdrm	14,670	**2,200**	**2,588**	**1.80**
6	F-2 Ward	24	48	24 2-bdrm	29,733	**5,280**	**6,212**	**4.31**
7	; Bldg Training Academ	-	-		47,423	**8,407**	**9,890**	**6.87**
8	L-2 Ward	10	20	10 2-bdrm	17,495	**2,200**	**2,588**	**1.80**
9	D-3 Ward	8	16	8 2-bdrm	8,975	**1,760**	**2,071**	**1.44**
10	Machine Shop	-	-		18,000	**900**	**1,059**	**0.74**
10-B		12	36	12 3-bdrm	27,000	**3,960**	**4,659**	**3.24**
10-C		18	54	18 3-bdrm	27,000	**5,940**	**6,988**	**4.85**
10- D	Paint Shop	-	-		600	**45**	**53**	**0.04**
11	C-3 Ward	9	18	9 2-bdrm	16,226	**1,980**	**2,329**	**1.62**
12	B-3 Ward	9	18	9 2-bdrm	14,425	**1,980**	**2,329**	**1.62**
14	B-4 Ward	9	18	9 2-bdrm	14,425	**1,980**	**2,329**	**1.62**
15	C-4 Ward	9	18	9 2-bdrm	16,226	**1,980**	**2,329**	**1.62**
16	D-4 Ward	8	8	8 1-bdrm	8,975	**600**	**706**	**0.49**
17	L-1 Bldg	9	9	9 1-bdrm	17,495	**675**	**794**	**0.55**
18	F-1 Bldg	24	24	24 1-bdrm	29,733	**2,643**	**3,109**	**2.16**
19	E-1 Bldg	10	10	10 1-bdrm	14,670	**750**	**882**	**0.61**
20	D-1 Bldg	9	9	9 1-bdrm	8,975	**990**	**1,165**	**0.81**
21	C-1 Bldg	10	10	10 1-bdrm	16,226	**750**	**882**	**0.61**
22	B-1 Bldg Southgate	8	8	8 1-bdrm	15,272	**880**	**1,035**	**0.72**
22-A	Administration A Bldg	-	-		15,412	**1,156**	**1,360**	**0.94**
23	B-2 Bldg (office)	8	8	8 1-bdrm	15,272	**880**	**1,035**	**0.72**
24	Lee Chapel/Aud)	-	-		15,593	**1,169**	**1,376**	**0.96**
25	Infirmary	-	-		8,311	**623**	**733**	**0.51**
26	Clubhouse / Canteen	-	-		11,834	**888**	**1,044**	**0.73**
27A -- Option 2		42	84	42 2-bdrm	95,224	**13,299**	**15,646**	**10.87**
28-N		-	100	100 beds	40,500	**15,000**	**17,647**	**12.25**
29	East Hall (office)	12	24	12 2-bdrm	20,459	**2,640**	**3,106**	**2.16**
30	Supt's House	2	4	2 2-bdrm	4,369	**440**	**518**	**0.36**
31 Opt B		2	4	2 2-bdrm	2,200	**440**	**518**	**0.36**
32	Employee Cottage 3	1	3	1 3-bdrm	2,560	**330**	**388**	**0.27**
33	Employee Cottage 5	1	3	1 3-bdrm	2,526	**330**	**388**	**0.27**
34 Opt. B		2	6	2 3-bdrm	4,000	**660**	**776**	**0.54**
35 Opt.B		2	6	2 3-bdrm	4,000	**660**	**776**	**0.54**
36 Opt. B		2	6	2 3-bdrm	4,000	**660**	**776**	**0.54**
SE Quad Opt.B		14	28	14 2-bdrm	12,600	**3,080**	**3,624**	**2.52**
	TOTAL	**323**	**698**			**96,910**	**114,012**	**79.18**

Attachment D

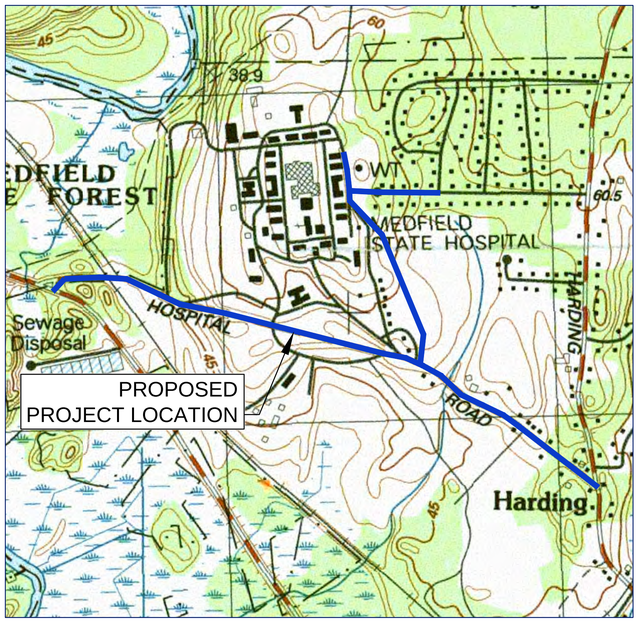
Hospital Road Water Main Improvements Record Drawings

(Environmental Partners Group, Inc., January 2016)

TOWN OF MEDFIELD, MASSACHUSETTS

HOSPITAL ROAD WATER MAIN IMPROVEMENTS

RECORD DRAWINGS
JANUARY 2016



LOCUS PLAN

SCALE: 1" = 750'

LIST OF DRAWINGS

SHEET NUMBER	DRAWING TITLE
G-1	GENERAL NOTES AND LEGEND
C-1	HOSPITAL ROAD SHEET 1
C-2	HOSPITAL ROAD SHEET 2
C-3	HOSPITAL ROAD SHEET 3
C-4	MEDFIELD STATE HOSPITAL EASEMENT
C-5	LONGMEADOW ROAD
C-6	WATER MAIN DETAIL SHEET 1
C-7	WATER MAIN DETAIL SHEET 2

DEPARTMENT OF PUBLIC WORKS

KENNETH P. FEENEY
SUPERINTENDENT OF PUBLIC WORKS

Environmental Partners GROUP
A partnership for engineering solutions.
Quincy, MA Hyannis, MA www.envpartners.com

GENERAL NOTES

1. BASE MAP INFORMATION IS BASED ON FIELD SURVEY COMPLETED BY ENVIRONMENTAL PARTNERS GROUP, INC. IN JANUARY 2014. RESOURCE AREAS DEPICTED ON PLANS WERE IMPORTED FROM CURRENT MASSGIS DATALAYERS.
2. UNLESS SPECIFICALLY APPROVED BY THE MEDFIELD DEPARTMENT OF PUBLIC WORKS, ALL WATER LINES INSTALLED UNDER THIS CONTRACT SHALL BE AT A DEPTH OF NO LESS THAN 5 FEET AS MEASURED FROM THE TOP OF PIPE TO FINISHED GRADE. WHERE NECESSARY, NEW WATER MAINS SHALL BE INSTALLED AT A GREATER DEPTH TO CLEAR OBSTACLES SHOWN ON THE DRAWINGS AT NO ADDITIONAL COST TO THE OWNER. MINIMUM CLEARANCES TO UTILITIES, AS SHOWN ON THE DRAWINGS SHALL BE MAINTAINED.
3. ALL HYDRANT BRANCHES SHALL HAVE VALVES AS SHOWN ON THE HYDRANT DETAIL ON SHEET C-6.
4. ALL EXISTING UTILITIES SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES. CONTRACTOR SHALL NOTIFY DIG SAFE AT LEAST 72 HOURS IN ADVANCE, EXCLUDING WEEKENDS AND HOLIDAYS, PRIOR TO ANY EXCAVATION.
5. DO NOT SCALE DRAWINGS UNLESS OTHERWISE NOTED. WRITTEN DIMENSION AND STATIONING SHALL PREVAIL. REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY.
6. REFER TO SPECIFICATION SECTION 02220 (EARTHWORK) OR DETAIL SHEETS FOR BEDDING AND BACK FILL REQUIREMENTS. REFER TO SPEC SECTION 01110 (ENVIRONMENTAL PROTECTION MEASURES) FOR ENVIRONMENTAL CONTROLS.
7. PROPERTY LINE INFORMATION IS APPROXIMATE. IN AREAS WHERE CONSTRUCTION ACTIVITIES ARE ANTICIPATED TO OCCUR WITHIN PRIVATE PROPERTY, THE APPROXIMATE PROPERTY LINE LOCATIONS ARE TO BE REVIEWED WITH THE TOWN OF MEDFIELD PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES.
8. TEST BORINGS WERE OVERSEEN BY ENVIRONMENTAL PARTNERS GROUP, INC. ON JANUARY 29TH AND 30TH.
9. ALL VALVES, TEES, BENDS, CAPS, AND HYDRANTS SHALL HAVE RESTRAINED JOINTS WITH MEGALUGS.

LEGEND

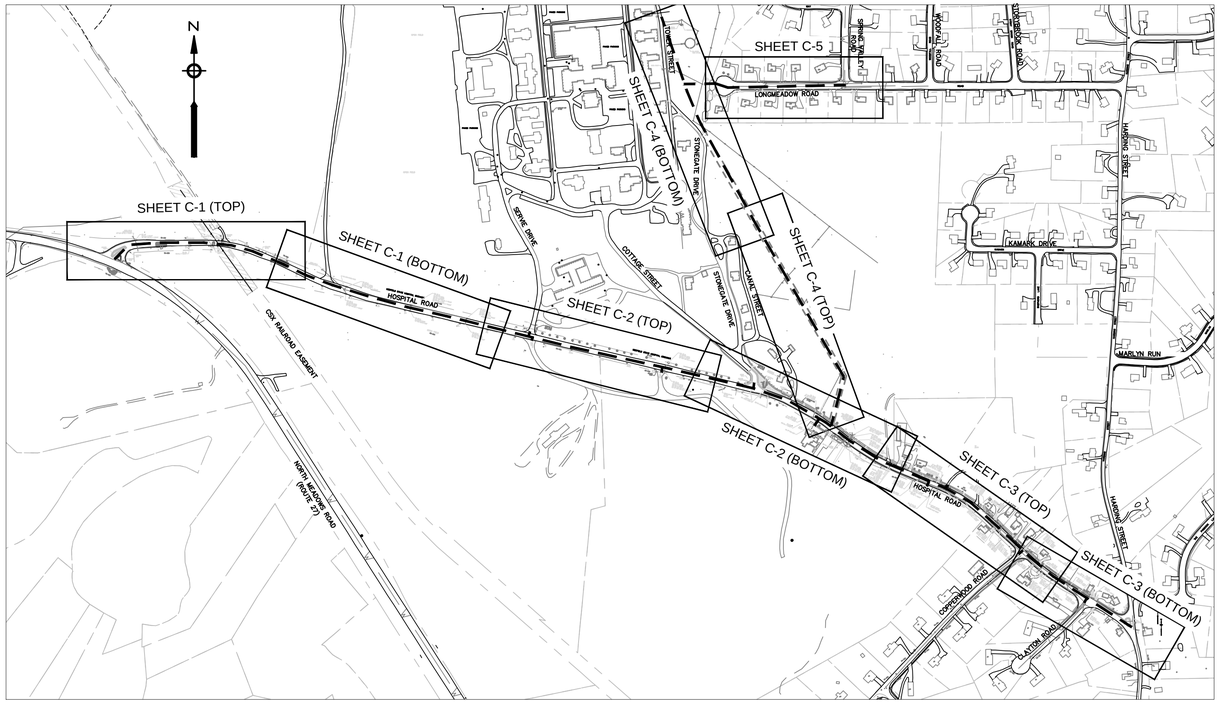
EXISTING

- TREE LINE
- RIVER/STREAM MEAN HIGH WATER LINE
- 200' RIVER FRONT BUFFER ZONE
- RETAINING WALL
- WL WL WL WL WL MADEP WETLAND BOUNDARY
- 50' WETLAND NO DISTURB BUFFER
- 100' WETLAND BUFFER
- GUARDRAIL
- STONEWALL/DECORATIVE WALL
- FENCE
- GRASS/LANDSCAPING
- D D DRAIN PIPE
- E E ELECTRIC CONDUIT
- OH OH OVERHEAD WIRES
- W W WATER MAIN
- S S SEWER PIPE
- SFM SFM SANITARY FORCE MAIN
- PARCEL LINE
- BERM/CURB ALONG ROAD

- PAVED ROADWAY
- PAVED DRIVEWAY
- DIRT DRIVEWAY
- TREE
- DRAIN MANHOLE
- SEWER MANHOLE
- CATCH BASIN
- UTILITY POLE
- GUY WIRE
- LAMP POST
- ROAD SIGN
- HYDRANT
- WATER GATE VALVE
- WATER SERVICE/SHUT-OFF
- GV GAS VALVE
- REDUCER/INCREASER
- GAS SERVICE/SHUT-OFF
- MAILBOX
- B-XX BORING LOCATION

PROPOSED

- W PROPOSED WATER MAIN
- HYDRANT
- CAP
- COUPLING
- INCREASER/REDUCER
- HYDRANT GATE VALVE
- GATE VALVE
- WATER SERVICE
- LIMIT OF WORK



MARK	DATE	DESCRIPTION
1	7/1/1	RECORD DRAWINGS

Scale	1" = 400'
Date	JANUARY 2016
Job No.	134-1404.00
Designed by	RJP
Drawn by	RJP
Checked by	ZFK
Approved by	PCM

THIS LINE IS ONE INCH LONG WHEN PLOTTED AT FULL SCALE ON A 22" X 34" DRAWING

Environmental Partners GROUP
A partnership for engineering solutions.

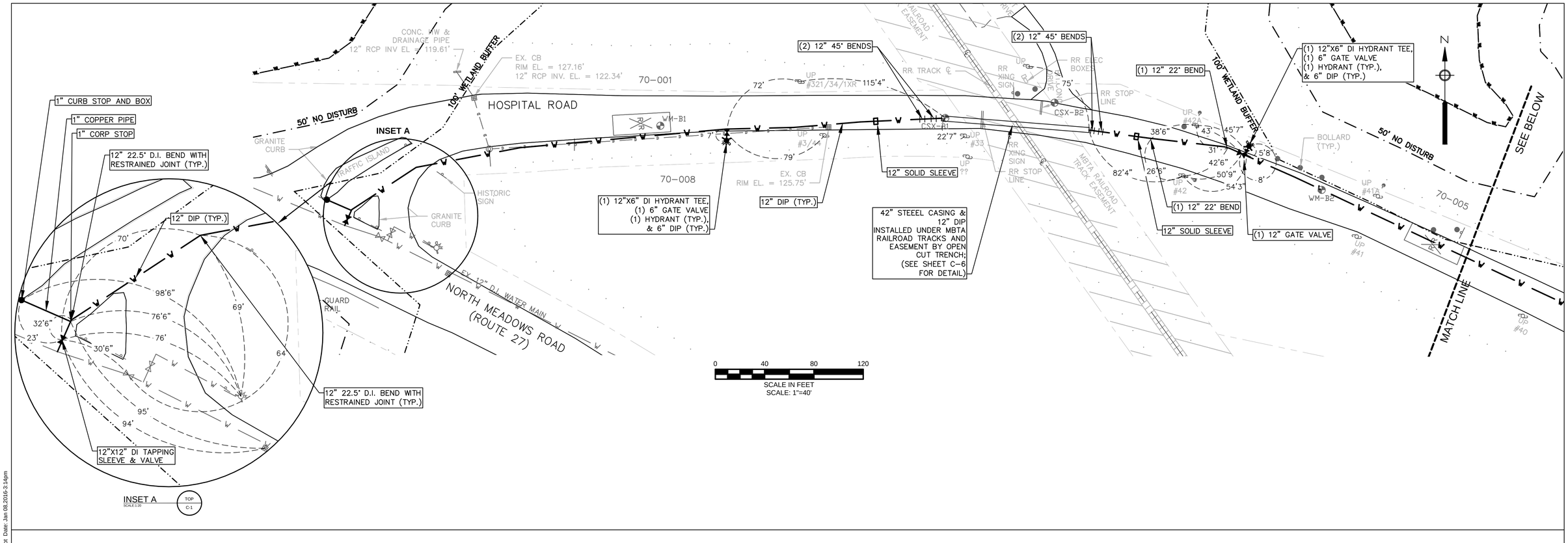
HOSPITAL ROAD
WATER MAIN IMPROVEMENTS
TOWN OF MEDFIELD, MASSACHUSETTS

GENERAL NOTES AND LEGEND

RECORD DRAWING

Sheet No.
G-1

Drawing file: I:\Medfield\134\Water System\134-1301 - Tank and Water Main\Hospital Road Water Main Design\9. Construction - Ph\134-1404\06. Record RD-Hospital Road Water Main Design.dwg Plot: Date: Jan 08,2016 3:14pm



Drawing file: I:\Medfield\134\Water System\134-1301 - Tank and Water Main\Hospital Road Water Main Design\9. Construction - Ph\134-1404\06. Record RD-Hospital Road Water Main Design.dwg Plot Date: Jan 08,2016-3:14pm

TOWN OF MEDFIELD 1651

Environmental Partners GROUP
A partnership for engineering solutions.

MARK	DATE	DESCRIPTION
△	1/15/16	RECORD DRAWINGS

Scale	1"=40'
Date	JANUARY 2016
Job No.	134-1404.00
Designed by	RJP
Drawn by	RJP
Checked by	ZFK
Approved by	PCM

THIS LINE IS ONE INCH LONG WHEN PLOTTED AT FULL SCALE ON A 22" X 34" DRAWING

HOSPITAL ROAD
WATER MAIN IMPROVEMENTS
TOWN OF MEDFIELD, MASSACHUSETTS

HOSPITAL ROAD SHEET 1

RECORD DRAWING

Sheet No.
C-1

SEE SHEET C-1

MATCH LINE

SERVICE DRIVE

CURB
182.90'
= N/A
. EL. = 178.85'

(2) 12"X8" DI TEE,
12" DIP,
(1) 12" GATE VALVE,
(2) 8" GATE VALVES,
(2) 8" DI CAPS,
& 8" DIP (TYP.)

GATE

HYDRANT &
GATE VALVE
NOT IN USE

(1) 12"X6" DI HYDRANT TEE,
(1) 6" GATE VALVE
(1) HYDRANT (TYP.),
& 6" DIP (TYP.)

(1) 12"X6" DI HYDRANT TEE,
(1) 6" GATE VALVE
(1) HYDRANT (TYP.),
& 6" DIP (TYP.)

MEDFIELD STATE HOSPITAL GROUNDS
71-001

(1) 12"X8" DI TEE,
(1) 8" GATE VALVE,
(1) 8" DI CAP,
& 8" DIP (TYP.)

EX. CB &
5' GRANITE CURB
RIM EL. = 175.13'
12" RCP INV. EL. = 172.2

HOSPITAL ROAD

WM-B5

WM-B6

WM-B7

12" DIP (TYP.)

63-004

63-009

GRANITE
POST

BIT. CONC.
DRIVE

EX. CB &
5' GRANITE CURB
RIM EL. = 175.26'
(N) 12" RCP INV. EL. = 170.63'

SEE BELOW

MATCH LINE

RB
.79'

0 40 80 120
SCALE IN FEET
SCALE: 1"=40'

COTTAGE STREET

MATCH LINE

(1) 12"X6" DI HYDRANT TEE,
(1) 6" GATE VALVE
(1) HYDRANT (TYP.),
& 6" DIP (TYP.)

HYDRANT &
GATE VALVE
NOT IN USE

ABANDONED
FARMHOUSE

MEMORIAL
STONE

(2) 12" SOLID SLEEVES,
12" DIP

GRANITE
WALL

BIT. CONC.
DRIVE

EX. CB &
5' GRANITE CURB
RIM EL. = 177.85'

HYDRANT NOT
IN USE

INSET A

INSET B

MATCH LINE

12" DIP (TYP.)

SEE SHEET C-4

TOWN ROW TO EXISTING
TANK SITE

MEAN ANNUAL
HIGH WATER LINE OF
PERENNIAL STREAM
(USGS QUADRANGLE
MAP #Q217882)

WM DIRECTED UNDER EX. 5'
DIA. CONCRETE CULVERT AND DRAIN PIPE.
(SEE DETAIL ON SHEET C-6)

EX. 5' DIA. RCP CULVERT
W/CONC. HEADWALLS
INV. EL. = 163.25'

EX. CB &
5' GRANITE CURB
RIM EL. = 171.18'
12" RCP INV. EL. = 166.98'

EX. CB &
5' GRANITE CURB
RIM EL. = 171.27'
12" RCP INV. EL. = 167.77'

12" DIP (TYP.)

HISTORIC
SIGN

CL-B1

CL-B2

WM-B10

8"X6" REDUCER

63-008

STONE
WALL

EX. DMH
RIM EL. = 172.29'

EX. DMH
RIM EL. = 172.45'

EX. CB &
5' GRANITE CURB
RIM EL. = 171.52'
(N) 12" RCP INV. EL. = N/A
(S) 12" RCP INV. EL. = 167.55'

EX. DMH
RIM EL. = 174.71'

EX. CB &
5' GRANITE CURB
RIM EL. = 174.06'
INV. EL. = 170.56'

EX. CB &
5' GRANITE CURB
RIM EL. = 174.49'
INV. EL. = 170.49'

200' RIVER FRONT BUFFER

DIRT DRIVE

SEE SHEET C-3

GARAGE

MATCH LINE

63-009

10" CORR ME
OUTLET

HOSPITAL ROAD

SEE ABOVE

STONE HW &
8" RCP
INV. EL. = 169.17'

BOUND

START OF
BIT. CONC. CURB

(1) 12"X8" DI TEE,
(1) 8" GATE VALVE,
(1) 8" DI CAP,
& 8" DIP (TYP.)

0 40 80 120
SCALE IN FEET
SCALE: 1"=40'

INSET A

8" D.I. WM CAPPED
AND ABANDONED IN
PLACE

12"X8" DI TEE

12" DIP (TYP.)

8" GATE VALVE

8" DIP (TYP.)

8" DI SOLID SLEEVE

SCALE 1:20

INSET B

12" DIP (TYP.)

12"X6" DI HYDRANT TEE

6" GATE VALVE

HYDRANT

6" DIP (TYP.)

12" DIP (TYP.)

12" GATE VALVE

12"X12" DI TEE

12" GATE VALVE

SCALE 1:20

Environmental Partners GROUP
A partnership for engineering solutions.

MARK	DATE	DESCRIPTION
△	7/1/1	RECORD DRAWINGS

Scale	1"=40'
Date	JANUARY 2016
Job No.	134-1404.00
Designed by	RJP
Drawn by	RJP
Checked by	ZFK
Approved by	PCM

THIS LINE IS ONE INCH LONG WHEN PLOTTED AT FULL SCALE ON A 22" X 34" DRAWING

HOSPITAL ROAD
WATER MAIN IMPROVEMENTS
TOWN OF MEDFIELD, MASSACHUSETTS

HOSPITAL ROAD SHEET 2

RECORD DRAWING

Sheet No.
C-2

Drawing file: I:\Medfield.134\Water System\134-1301 - Tank and Water Main\Hopital Road Water Main Design\0 Construction - Ph134-1404\06. Record RD-Hospital Road Water Main Design.dwg Plot Date: Jan 08,2016-3:15pm

(1) 12"X8"DI TEE, 12" DIP
(1) 12" GATE VALVE,
(1) 8" GATE VALVE,
8" DIP, &
(1) 8" DI CAP

(1) 1" CORP STOP,
(1) 1" CURB STOP AND BOX,
& 1" COPPER PIPE (TYP.)
(SEE NOTE 4)

(1) 12"X6" HYDRANT TEE,
(1) 6" GATE VALVE,
(1) HYDRANT,
& 6" DIP (TYP.)

(1) 12"X8" DI TEE
(1) 8" GATE VALVE
(2) 8" SOLID SLEEVES
8"DIP (TYP.)

(1) 12"X6" DI HYDRANT TEE,
(1) 6" GATE VALVE,
(1) HYDRANT,
& 6" DIP (TYP.)

(1) 45° D.I. BEND WITH
RESTRAINED JOINTS (TYP.)

(1) 1" CORP STOP,
(1) 1" CURB STOP AND BOX,
& 1" COPPER PIPE (TYP.)
(SEE NOTE 4)

SCALE IN FEET
SCALE: 1"=40'

△	7/1/1	RECORD DRAWINGS	Scale	1"=40'
			Date	JANUARY 2016
			Job No.	134-1404.00
			Designed by	RJP
			Drawn by	RJP
			Checked by	ZFK
MARK	DATE	DESCRIPTION	Approved by	PCM

THIS LINE IS ONE INCH LONG WHEN PLOTTED AT FULL SCALE ON A 22" X 34" DRAWING

Environmental Partners GROUP
A partnership for engineering solutions.

HOSPITAL ROAD
WATER MAIN IMPROVEMENTS
TOWN OF MEDFIELD, MASSACHUSETTS

HOSPITAL ROAD SHEET 3

RECORD DRAWING

Sheet No.

C-3

APPROXIMATE LOCATION OF EX. 16" C.I. WM

CANAL STREET

N

SEE BELOW

OPEN FIELD

16" DIP (TYP.)

LOCATION OF VALVES:
42° 12' 30.4812" N, 71° 19' 48.9288" W
42° 12' 30.4848" N, 71° 19' 49.0260" W

INSET A

CUT EXISTING 16" CI WM (1) AND CONNECTED TO NEW 16" DIP USING SOLID SLEEVE (TYP.)

16" DI SOLID SLEEVE

16" GATE VALVE

16" DIP (TYP.)

267'

SEE SHEET C-2

251'

MATCH LINE

(1) 12" 45° D.I. BEND WITH RESTRAINED JOINTS (TYP.)

12" DIP (TYP.)

25' WATER MAIN EASEMENT

12" 45° DI BEND WITH RESTRAINED JOINTS (TYP.)

3'6"

5'4"

5'

5'4"

5'

12" DIP (TYP.)

16"X12" DI REDUCER

16"X16" DI CROSS

16" GATE VALVE

16" 45° DI BEND WITH RESTRAINED JOINTS (TYP.)

MATCH LINE

INSET A

TOP C-4

0 40 80 120

SCALE IN FEET
SCALE: 1"=40'

N

MATCH LINE

OPEN FIELD

SEE ABOVE

APPROXIMATE TOWN OF MEDFIELD PROPERTY LINE

STONEGATE DRIVE

16" DIP (TYP.)

STONE WALL

OPEN FIELD

STATE OWNED HYDRANT NOT IN USE

APPROXIMATE LOCATION OF EX. 16" WATER MAIN

ELECTRICAL VAULT

(1) 16" 45° DI BEND WITH RESTRAINED JOINTS (TYP.)

LOCATION OF VALVES:
42° 12' 42.0588" N, 71° 19' 57.0612" W
42° 13' 0.1920" N, 71° 19' 57.0756" W

(1) 16"X12" DI TEE,
(2) 16" GATE VALVES,
& 16" DIP (TYP.)

16" DIP (TYP.)

93'

93'

8'

93'8"

(1) 16" 45° DI BEND WITH RESTRAINED JOINTS

MATCH LINE

SEE SHEET C-5

STATE OWNED HYDRANT NOT IN USE

63'8"

47'

47'

TOWER STREET

76'8"

150'

69'6"

61'6"

EX. ALTITUDE VALVE VAULT

APPROXIMATE LOCATION OF EX. 16" WATER MAIN

40' DIA. WATER TANK

EX. SCADA SHED

EX. GENERATOR AND CONC PAD

LIMIT OF HOSPITAL ROAD WM IMPROVEMENTS CONTRACT

STATE HOSPITAL BUILDING

(1) 16" GATE VALVE, 16" DIP,
(1) 16"X6" DI HYDRANT TEE,
(1) 6" GATE VALVE,
(1) HYDRANT &
6" DIP (TYP.)

48'6"

46'6"

61'8"

52'3"

4'

STATE OWNED HYDRANT NOT IN USE

0 40 80 120

SCALE IN FEET
SCALE: 1"=40'

TOWN OF MEDFIELD 1651

Environmental Partners GROUP

A partnership for engineering solutions.

MARK	DATE	DESCRIPTION
△	10/6/14	REVISED WATER MAIN DECAM EASEMENT

Scale	1"=40'
Date	JANUARY 2016
Job No.	134-1404.00
Designed by	RJP
Drawn by	RJP
Checked by	ZFK
Approved by	PCM

THIS LINE IS ONE INCH LONG WHEN PLOTTED AT FULL SCALE ON A 22" X 34" DRAWING

HOSPITAL ROAD
WATER MAIN IMPROVEMENTS
TOWN OF MEDFIELD, MASSACHUSETTS

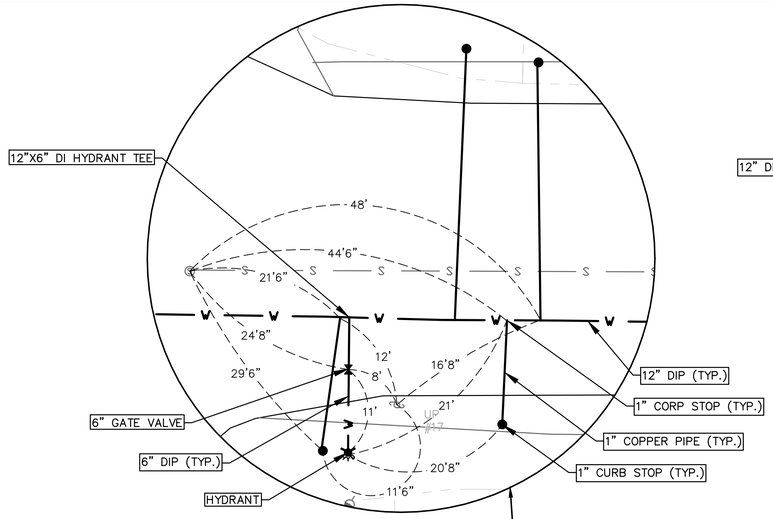
STATE HOSPITAL WATER MAIN EASEMENT

RECORD DRAWING

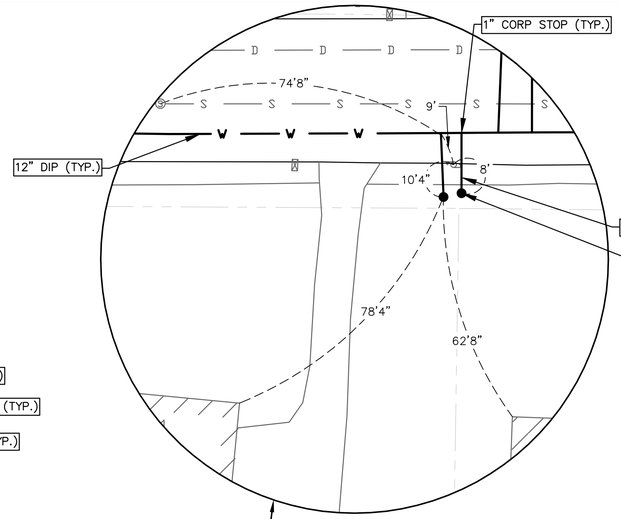
Sheet No.

C-4

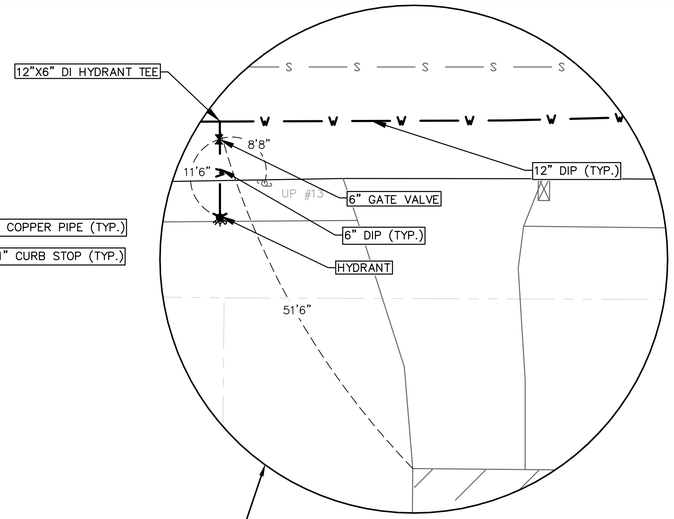
Drawing file: I:\Medfield.134\Water System\134-1301 - Tank and Water Main\Hopital Road Water Main Design\9 Construction - PH134-140406. Record RD-Hospital Road Water Main Design.dwg Plot Date: Jan 08,2016-3:17pm



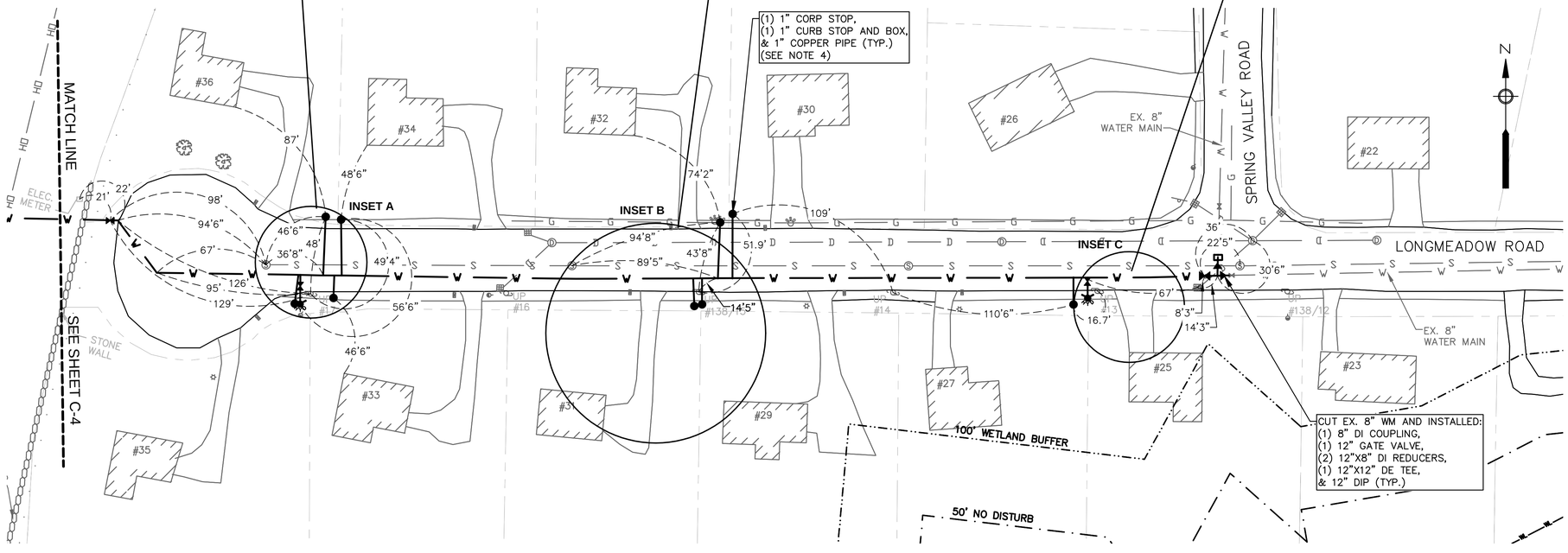
INSET A
SCALE 1:20
TOP C-5



INSET B
SCALE 1:20
TOP C-5



INSET C
SCALE 1:20
TOP C-5



0 40 80 120
SCALE IN FEET
SCALE: 1"=40'

MARK	DATE	DESCRIPTION
△	7/1/1	RECORD DRAWINGS

Scale	1"=40'
Date	JANUARY 2016
Job No.	134-1404.00
Designed by	RJP
Drawn by	RJP
Checked by	ZFK
Approved by	PCM

THIS LINE IS ONE INCH LONG WHEN PLOTTED AT FULL SCALE ON A 22" X 34" DRAWING

Environmental Partners GROUP
A partnership for engineering solutions.

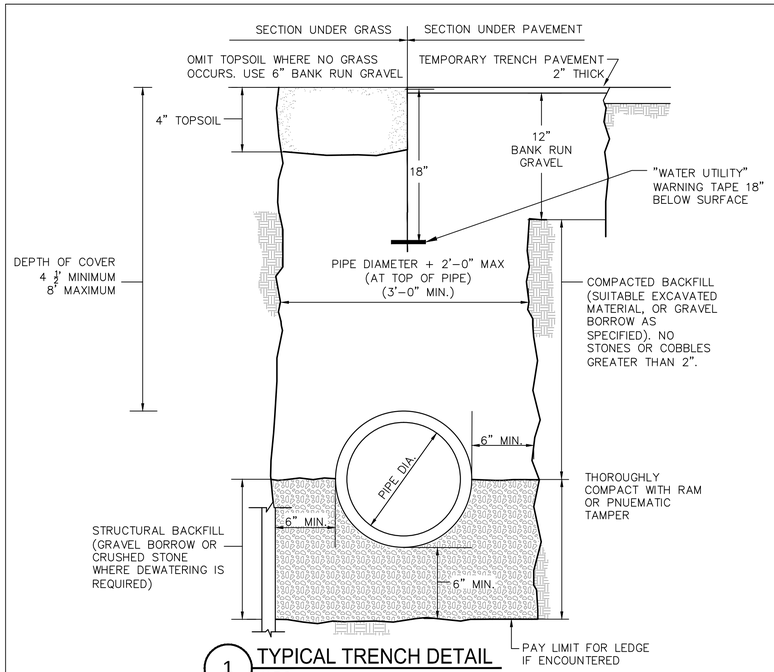
HOSPITAL ROAD
WATER MAIN IMPROVEMENTS
TOWN OF MEDFIELD, MASSACHUSETTS

LONGMEADOW ROAD

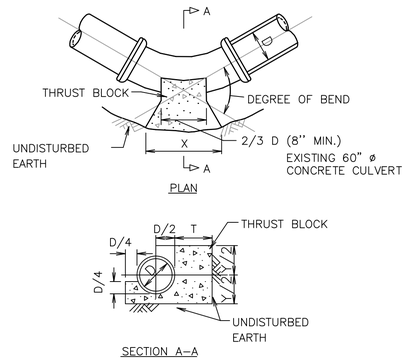
RECORD DRAWING

Sheet No.
C-5

Drawing file: I:\Medfield,134\Water System\134-1301 - Tank and Water Main\Hopital Road Water Main Design\0 Construction - Ph\134-1404\06. Record RD-Hospital Road Water Main Design.dwg Plot Date: Jan 08,2016 3:17pm



1 TYPICAL TRENCH DETAIL
N.T.S.



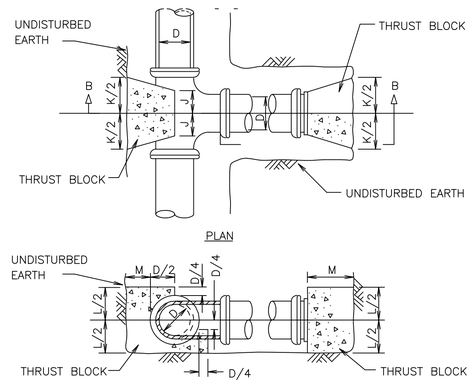
NOTES:

1. ALL CONCRETE SHALL BE 3000 P.S.I. @ 28 DAYS (CLASS "A" CONCRETE)
2. DIMENSIONS SHOWN ARE MINIMUM AND ARE BASED UPON SOIL PRESSURE OF 1500 P.S.F. AND TOTAL PRESSURE OF 250 P.S.I. TOTAL PRESSURE IS WORKING PRESSURE PLUS SURGE PRESSURE.
3. THRUST BLOCKS SHALL BEAR AGAINST UNDISTURBED EARTH.

TABLE OF DIMENSIONS

DIMENSION	90° BEND						45° BEND						22 1/2° BEND						11 1/4° BEND					
D (in.)	4	6	8	10	12	16	4	6	8	10	12	16	4	6	8	10	12	16	4	6	8	10	12	16
X (in.)	35	35	50	56	72	80	24	24	35	45	51	60	28	28	30	32	37	42	12	12	19	21	27	33
Y (in.)	20	20	24	32	35	40	16	16	19	21	27	33	13	13	13	16	19	22	8	8	9	12	13	16
T (in.)	11	11	14	16	19	22	11	11	14	16	19	22	11	11	13	16	19	22	11	11	13	16	19	22

2 CONCRETE THRUST BLOCK DETAIL AT BEND
N.T.S.



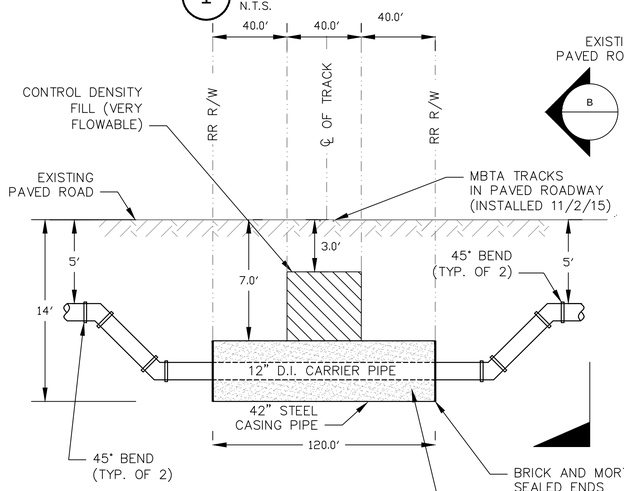
NOTES :

1. ALL CONCRETE SHALL BE 3000 PSI @ 28 DAYS (CLASS 'A' CONCRETE).
2. DIMENSIONS SHOWN ARE MINIMUM AND ARE BASED UPON SOIL PRESSURE OF 1500 PSF AND TOTAL PRESSURE OF 250 PSI. TOTAL PRESSURE IS WORKING PRESSURE PLUS SURGE PRESSURE.
3. THRUST BLOCKS SHALL BEAR AGAINST UNDISTURBED EARTH.

TABLE OF DIMENSIONS

D (in)	4	6	8	10	12	16
J (in)	6	6	7	9	10	12
K (in)	16	16	20	26	32	36
L (in)	16	16	21	24	29	34
M (in)	11	11	14	16	19	22

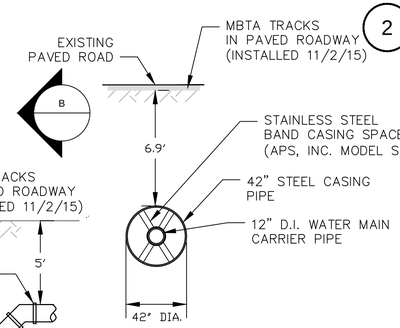
3 CONCRETE THRUST BLOCK DETAIL AT TEE/CAP
N.T.S.

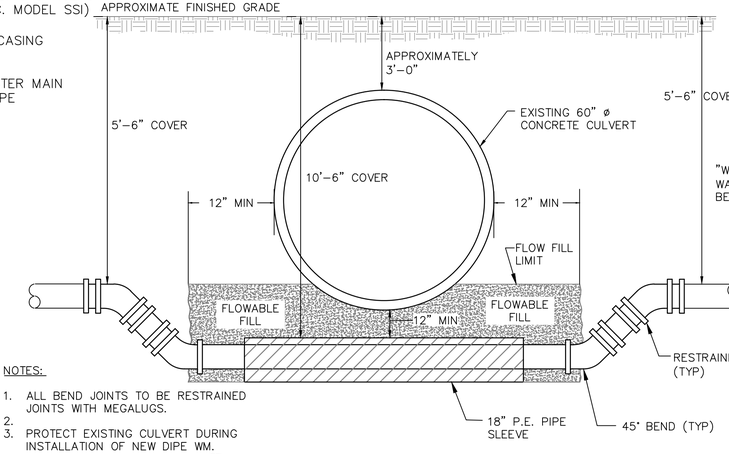


NOTES:

1. 40LF OF 42" STEEL CASING PIPE INSTALLED 2' BENEATH MBTA RAILROAD CENTER LINE ON 10/30/15. MASS COASTAL RAILROAD INSTALLED NEW RAILROAD TRACKS AND TRACK BEDDING ACROSS HOSPITAL ROAD FROM 10/31/15 TO 11/2/15.
2. 42" STEEL CASING PIPE WAS DELIVERED IN 20' SECTIONS AND WELDED ON INSIDE AND OUTSIDE ON SITE.

4 MBTA RAILROAD CROSSING DETAIL
N.T.S.

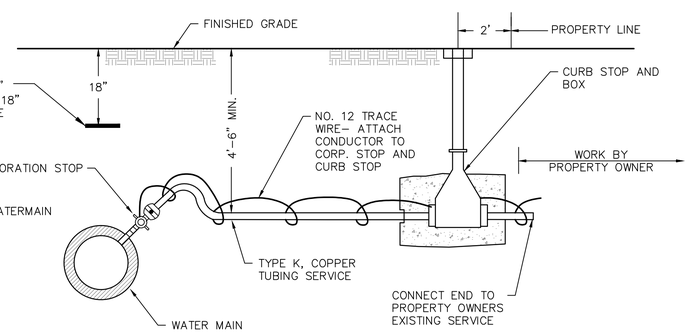




NOTES:

1. ALL BEND JOINTS TO BE RESTRAINED JOINTS WITH MEGALUGS.
2.
3. PROTECT EXISTING CULVERT DURING INSTALLATION OF NEW DIPE WM.

5 5' CONCRETE CULVERT CROSSING DETAIL
N.T.S.



6 TYPICAL SERVICE CONNECTION
N.T.S.

Environmental Partners GROUP
A partnership for engineering solutions.

MARK	DATE	DESCRIPTION
△	7/1/1	RECORD DRAWINGS

Scale	N.T.S.
Date	JANUARY 2016
Job No.	134-1404.00
Designed by	RJP
Drawn by	RJP
Checked by	ZFK
Approved by	PCM

THIS LINE IS ONE INCH LONG WHEN PLOTTED AT FULL SCALE ON A 22" X 34" DRAWING

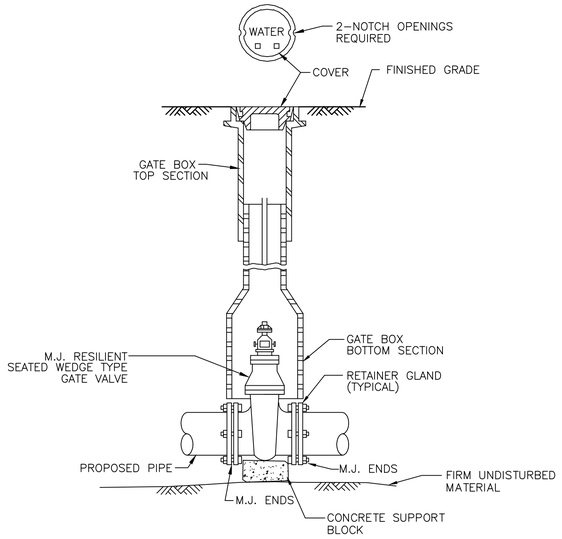
HOSPITAL ROAD
WATER MAIN IMPROVEMENTS
TOWN OF MEDFIELD, MASSACHUSETTS

WATER MAIN DETAIL SHEET 1

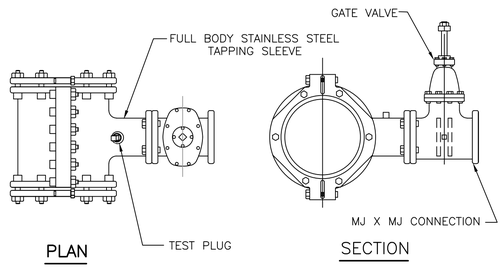
RECORD DRAWING

Sheet No.

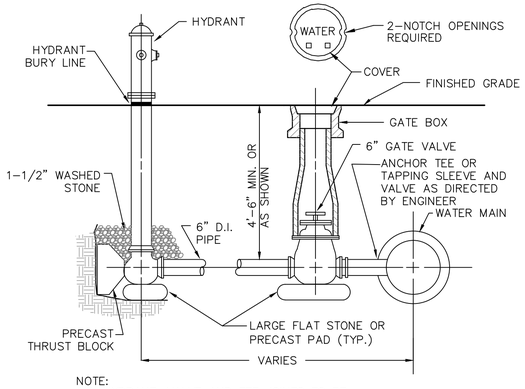
C-6



1 GATE VALVE AND VALVE BOX DETAIL
N.T.S.

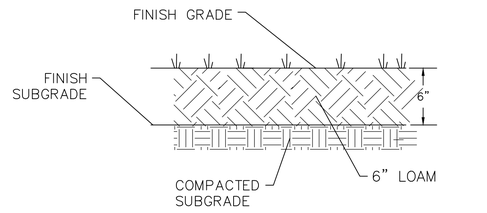


2 TAPPING SLEEVE AND VALVE
N.T.S.

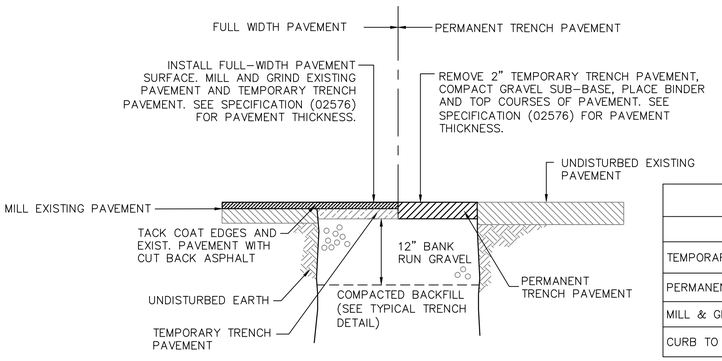


NOTE:
ALL HYDRANT, VALVE AND TEE JOINTS TO BE RESTRAINED MECHANICAL JOINTS WITH MEGALUGS.

3 HYDRANT ASSEMBLY DETAIL
N.T.S.

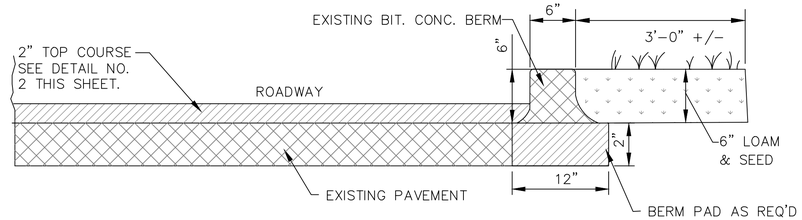


4 TYPICAL LOAM AND SEED DETAIL
N.T.S.



PAVING REQUIREMENTS	
DESCRIPTION	THICKNESS
TEMPORARY TRENCH PAVEMENT	2"
PERMANENT TRENCH PAVEMENT	5"
MILL & GRIND	–2"
CURB TO CURB OVERLAY	2"

5 FULL WIDTH AND TRENCH PERMANENT PAVEMENT DETAIL
N.T.S.



6 PERMANENT PAVEMENT/BIT. CONCRETE CAPE COD BERM DETAIL
N.T.S.

Drawing file: I:\Medfield\134\Water System\134-1301 - Tank and Water Main\Hopital Road Water Main Design\9. Construction - Ph\134-1404#06. Record RD-Hospital Road Water Main Design.dwg Plot: Date: Jan 08, 2016 3:18pm

Environmental Partners GROUP
A partnership for engineering solutions.

MARK	DATE	DESCRIPTION
△	7/1/1	RECORD DRAWINGS

Scale	N.T.S.
Date	JANUARY 2016
Job No.	134-1404.00
Designed by	RJP
Drawn by	RJP
Checked by	ZFK
Approved by	PCM

THIS LINE IS ONE INCH LONG WHEN PLOTTED AT FULL SCALE ON A 22" X 34" DRAWING

HOSPITAL ROAD
WATER MAIN IMPROVEMENTS
TOWN OF MEDFIELD, MASSACHUSETTS

WATER MAIN DETAIL SHEET 2

RECORD DRAWING

Sheet No.
C-7