CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS

HIGH HILL RESERVOIR REHABILITATION

PROJECT NO. DWSRF-4214
BID NO. 18450518

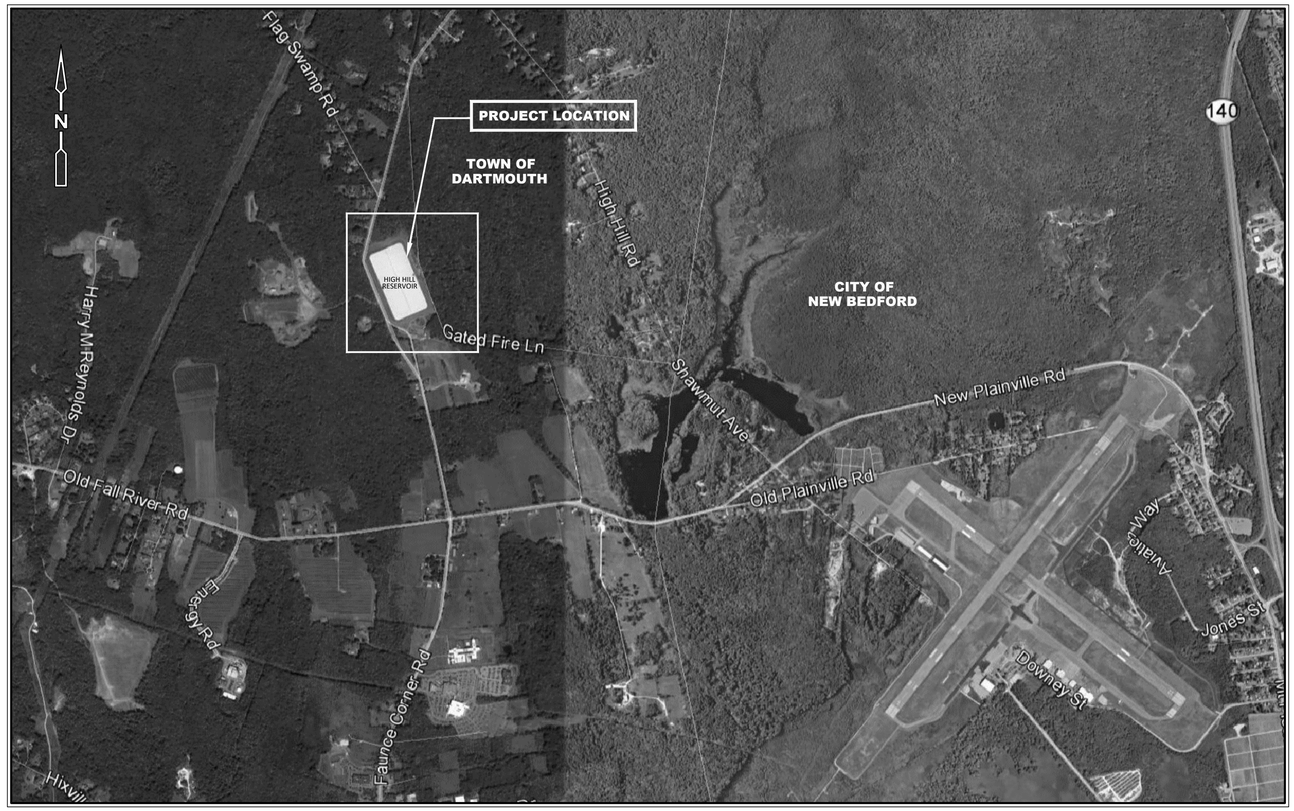
MAYOR

HONORABLE JONATHAN F. MITCHELL

DEPARTMENT OF PUBLIC INFRASTRUCTURE

JAMIE PONTE (COMMISSIONER)
YMANE GALOTTI, P.E. (SUPERINTENDENT OF WATER)

MAY 2018



LOCUS MAP
NTS

LIST OF DRAWINGS

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PROVIDENCE, RHODE ISLAND

Water Environment Transportation Energy Facilities

IMAGE OBTAINED FROM GOOGLE EARTH PRO JANUARY 2018

0309–101381

LEGEND

PROPOSED

- NEW WATER MAIN
- NEW HYDRANT ASSEMBLY
- NEW HORIZONTAL BEND
- NEW GATE VALVE AND BOX
- NEW BUTTERFLY VALVE AND BOX
- NEW CAP OR PLUG
- NEW CROSS
- NEW TEE
- NEW TAPPING SLEEVE & VALVE
- NEW COUPLING
- NEW REDUCER
- NEW CHECK VALVE AND MANHOLE ASSEMBLY
- NEW WATER SERVICE CONNECTION
- 100 — PROPOSED CONTOUR

EXISTING

- W — EXISTING WATER MAIN
- D — EXISTING STORM DRAIN
- S — EXISTING SANITARY SEWER
- G — EXISTING GAS
- E — EXISTING UNDERGROUND ELECTRIC
- CATV — EXISTING UNDERGROUND CABLE TV
- T — EXISTING UNDERGROUND TELEPHONE
- OHW — EXISTING OVERHEAD WIRE
- DECIDUOUS TREES
- EVERGREEN TREES
- HEDGE
- EDGE OF WOODS
- WET AREA
- (S) SANITARY SEWER MANHOLE
- (D) STORM DRAIN MANHOLE
- (T) TELEPHONE MANHOLE
- (W) WATER MANHOLE
- (E) ELECTRIC MANHOLE
- UTILITY POLE

EXISTING (CONT'D)

- LIGHT POLE
- CATCH BASIN
- TP-1 — BORING/TEST PIT
- WIRE FENCE
- S — SIGN
- HYDRANT
- STONE WALL
- RETAINING WALL
- 1 STORY # 1020 — EXISTING BUILDING
- LIMITS OF CONSTRUCTION
- PROPERTY LINE
- N — NORTH ARROW
- ROAD RIGHT-OF-WAY
- X 122.5 — SPOT ELEVATIONS
- PVMT — PAVED ROADS
- STREAM
- PK NAIL
- 100 — EXISTING CONTOUR

ABBREVIATIONS

AC	ASBESTOS CEMENT
CI	CAST IRON
℄	CENTER LINE
CMP	CORRUGATED METAL PIPE
DI	DUCTILE IRON
DMH	DRAIN MANHOLE
EMH	ELECTRIC MANHOLE
EPC	ELASTOMER PIPE CONNECTOR
FCA	FLANGED COUPLING ADAPTOR
GV	GATE VALVE
HDPE	HIGH DENSITY POLYETHYLENE
I	INVERT
INV. EL.	INVERT ELEVATION
MH	MANHOLE
PVC	POLYVINYL CHLORIDE
RC	REINFORCED CONCRETE
SD	STORM DRAIN
SF	SILT FENCE
SMH	SEWER MANHOLE
TMH	TELEPHONE MANHOLE
VC	VITRIFIED CLAY
WG	WATER GATE
WMH	WATER MANHOLE
(R)	RECORD INFORMATION

GENERAL NOTES

1. SEE SPECIFICATION SECTION 01010 – SUMMARY OF WORK FOR A SUMMARY OF THE WORK TO BE PERFORMED FOR THIS PROJECT.
2. SEE SPECIFICATION SECTION 01014 – SUGGESTED CONSTRUCTION SEQUENCE AND SPECIAL WORK REQUIREMENTS FOR A DESCRIPTION OF SITE CONDITIONS, OPERATIONAL CONSTRAINTS, SCHEDULING CONSTRAINTS, SPECIAL CONDITIONS AND WORK REQUIREMENTS, AND A SUGGESTED WORK SEQUENCE.
3. WORK FOR THIS PROJECT GENERALLY INVOLVES ALL REQUIRED ENVIRONMENTAL PROTECTION; EROSION AND SEDIMENTATION CONTROL; TEMPORARY FACILITIES; DUST CONTROL; PIPE PREPARATION; DEWATERING AND DECHLORAMINATION; DEWATERING AND DRAINAGE; EXCAVATION, BACKFILLING AND COMPACTION; MAINTAINING UN-INTERUPTED WATER SERVICE TO THE ENTIRE WATER SYSTEM; INSTALLATION OF NEW PIPING, FITTINGS, VALVES, HYDRANTS AND APPURTENANCES; PIPELINE TESTING, CLEANING AND DISINFECTION; PAVEMENT REPAIR AND RESURFACING; LOAMING AND SEEDING; CLEANING THE RESERVOIR, INCLUDING REMOVAL AND DISPOSAL OF SEDIMENT ON THE RESERVOIR FLOOR; VALVE REPLACEMENTS IN THE INLET AND OUTLET CHAMBERS; STRUCTURAL REPAIRS TO THE RESERVOIR ROOF; STRUCTURAL REPAIRS AND REHABILITATION TO THE RESERVOIR; AND ALL OTHER MISCELLANEOUS WORK REQUIRED.
4. THE HIGH HILL RESERVOIR SITE AND PROJECT LOCATION IS LOCATED IN THE TOWN OF DARTMOUTH, MASSACHUSETTS.
5. DRAWINGS ARE BASED ON AVAILABLE RECORDS, DRAWINGS AND INFORMATION FROM THE OWNER AND ARE NOT BASED ON SURVEY. THE LOCATION AND SIZE OF EXISTING PIPES, CONDUITS, DUCTS, SERVICES AND OTHER UNDERGROUND STRUCTURES SHOWN ON THE DRAWINGS ARE NOT WARRANTED TO BE CORRECT NOR IS IT WARRANTED THAT ALL UNDERGROUND UTILITIES, SERVICES, STRUCTURES AND VERTICAL BENDS ARE SHOWN ON THE DRAWINGS. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL EXISTING UNDERGROUND UTILITIES, SERVICES AND STRUCTURES. CONTRACTOR MUST CONTACT DIG SAFE (DIAL 811) AND NOTIFY ALL PUBLIC AND PRIVATE UTILITIES IN WRITING AT LEAST 72 HOURS IN ADVANCE OF ANY EXCAVATION. IT IS ALSO NOT WARRANTED THAT THE DRAWINGS SHOW ALL EXISTING CONDITIONS THAT MAY BE ENCOUNTERED BY THE CONTRACTOR. CONTRACTOR SHALL VISIT THE SITE TO BECOME FAMILIAR WITH ALL EXISTING CONDITIONS.
6. CONTRACTOR SHALL CONDUCT INVESTIGATIONS AS CONTRACTOR DEEMS NECESSARY TO SATISFY HIMSELF AS TO THE CONDITIONS EXISTING ON THE PROJECT SITE AND AS REQUIRED TO PERFORM ALL WORK REQUIRED AS PART OF THIS PROJECT.
7. CONTRACTOR SHALL BE FAMILIAR WITH THE CONDITIONS EXISTING WITHIN THE PROJECT AREAS; THE TYPE OF EQUIPMENT NEEDED TO PERFORM THE WORK; THE CHARACTER, QUALITY, AND QUANTITY OF SUBSURFACE MATERIALS TO BE ENCOUNTERED INSOFAR AS THIS INFORMATION IS REASONABLY ASCERTAINABLE; AND SHALL PERFORM AN INSPECTION OF THE SITE. CONTRACTOR SHALL MAKE ANY INVESTIGATIONS AS HE/SHE DEEMS NECESSARY TO INVESTIGATE THE EXISTING CONDITIONS IN THE PROJECT AREAS.
8. CONTRACTOR IS RESPONSIBLE FOR BRACING, PROTECTING AND SUPPORTING ALL EXISTING UTILITIES, SERVICES AND STRUCTURES AND FOR PROTECTING ALL PIPING, STRUCTURES AND APPURTENANCES AGAINST DAMAGE AND FLOTATION. CONTRACTOR SHALL USE CAUTION TO AVOID DAMAGE TO ALL EXISTING UTILITIES, SERVICES AND STRUCTURES AND SHALL REPAIR ANY DAMAGE AT NO ADDITIONAL COST TO THE OWNER.
9. CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE CAUSED BY CONTRACTOR'S WORK AND OPERATIONS AT NO ADDITIONAL COST TO THE OWNER. ANY MODIFICATIONS TO EXISTING FACILITIES THAT CONTRACTOR DEEMS NECESSARY TO CONSTRUCT THE PROJECT AND PERFORM THE WORK REQUIRED BASED ON CONTRACTOR'S PROPOSED MEANS AND METHODS SHALL BE REPLACED IN-KIND WITH A QUALITY EQUAL TO OR BETTER THAN WHAT EXISTED BEFORE CONSTRUCTION. CONTRACTOR SHALL INCLUDE ALL COSTS ASSOCIATED WITH RESTORATION WORK REQUIRED AS A RESULT OF HIS PROPOSED AND PLANNED MEANS AND METHODS AND CONTRACTOR'S BID PRICES FOR THE WORK.
10. NOTES AND NEW WORK PERTAINING TO NEW WORK FOR THIS PROJECT ARE SHOWN IN BOLD.
11. CONTRACTOR MUST OBTAIN ALL PERMITS AND APPROVALS NEEDED TO PERFORM THE WORK.
12. A SUGGESTED CONSTRUCTION SEQUENCE IS PROVIDED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S SEQUENCE OF WORK AND WORK PLAN IS SUBJECT TO THE APPROVAL OF THE ENGINEER AND OWNER. THE SAFETY AND INTEGRITY OF THE OWNER'S WATER SYSTEM IS OF PRIME IMPORTANCE.
13. CONTRACTOR SHALL LIMIT ALL WORK TO THE AREAS SHOWN ON THE DRAWINGS AND SHALL TAKE ALL NECESSARY MEASURES TO PREVENT DAMAGE TO ADJACENT AND NEARBY PROPERTY AND STRUCTURES DURING CONSTRUCTION.
14. CONTRACTOR MAY BE REQUIRED TO WORK DURING PERIODS OTHER THAN NORMAL WORKING HOURS TO FACILITATE WORK ON THIS PROJECT.
15. CONTRACTOR IS REQUIRED TO EXCAVATE TESTS PITS WHERE SHOWN ON THE DRAWINGS AND AS DIRECTED BY THE ENGINEER. WHERE AN EXISTING UTILITY IS FOUND IN CONFLICT WITH THE PROPOSED WORK, THE SIZE, ELEVATION, AND LOCATION SHALL BE DETERMINED BY THE CONTRACTOR AND FURNISHED TO THE ENGINEER WITHOUT DELAY FOR RESOLUTION OF THE CONFLICT.
16. THE OWNER IS RESPONSIBLE FOR OPERATION OF ALL EXISTING VALVES AND HYDRANTS. THE CONTRACTOR SHALL NOTIFY THE OWNER AT LEAST 72 HOURS IN ADVANCE FOR ANY NEEDED VALVE OR HYDRANT OPERATION.
17. THE OWNER DOES NOT GUARANTEE A TIGHT SHUT DOWN OF EXISTING VALVES. THE CONTRACTOR IS RESPONSIBLE FOR DEWATERING EXISTING WATER FACILITIES AND MAINS, CONTROL OF LEAKAGE AND DISPOSAL OF WATER IN ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL REQUIREMENTS. CONTRACTOR IS REQUIRED TO HANDLE A LEAKAGE OF UP TO 100 GALLONS PER MINUTE (GPM) AT EACH VALVE THAT IS CLOSED TO FACILITATE THE WORK.
18. CONTRACTOR IS RESPONSIBLE FOR DEWATERING, DECHLORAMINATING, DECHLORINATING AND DISPOSING OF ALL WATER FROM EXISTING WATER FACILITIES AND MAINS SHUT DOWN FOR THE CONSTRUCTION OF NEW WORK.
19. THE OWNER AND ENGINEER RESERVE THE RIGHT TO LIMIT THE TOTAL AMOUNT OF EXISTING WATER FACILITIES AND MAINS THAT MAY BE OFFLINE AT ANY TIME DURING CONSTRUCTION. DISRUPTION TO THE EXISTING WATER SYSTEM SHALL BE KEPT TO A MINIMUM AND THE SAFETY AND INTEGRITY OF THE WATER SYSTEM IS OF PRIME IMPORTANCE.
20. CONTRACTOR SHALL TAKE APPROPRIATE PRECAUTIONS AND INSTALL ENVIRONMENTAL PROTECTION AND EROSION CONTROL MEASURES IN ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL REQUIREMENTS.
21. CONTRACTOR MUST SECURELY COVER ALL OPEN EXCAVATIONS DURING NON-WORKING HOURS OR WHEN THEY ARE NOT ATTENDED.
22. CONTRACTOR SHALL DISPOSE OF EXISTING PIPING, FITTINGS, VALVES, EQUIPMENT APPURTENANCES AND STRUCTURES THAT ARE REMOVED IN ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL REQUIREMENTS.
23. NEW VALVES, PIPING, FITTINGS, HYDRANTS AND APPURTENANCES SHALL BE INSTALLED AS SHOWN ON THE DRAWINGS. LOCATIONS OF NEW VALVES, PIPING, FITTINGS, HYDRANTS AND APPURTENANCES MAY BE ADJUSTED BY THE ENGINEER TO AVOID CONFLICTS. NEW VERTICAL BENDS ARE NOT SHOWN ON THE DRAWINGS BUT MUST BE INSTALLED BY THE CONTRACTOR AS NEEDED TO CROSS EXISTING UTILITIES AND/OR COMPLETE ALL CONNECTIONS.
24. CONTRACTOR MUST FIELD VERIFY ALL EXISTING PIPE DIAMETERS AND CONDITIONS BEFORE PROCURING ANY VALVES, COUPLINGS, SPECIAL FITTINGS, ETC.
25. ALL NEW FITTINGS AND VALVES MUST BE RESTRAINED. MINIMUM THRUST RESTRAINT REQUIREMENTS ARE SHOWN ON THE DRAWINGS.
26. CONTRACTOR MUST TEST AND DISINFECT ALL NEW PIPING AND VALVES AS SPECIFIED BEFORE PLACING THEM INTO SERVICE.
27. CONTRACTOR SHALL MAINTAIN RECORDS OF ACTUAL AS-BUILT CONDITIONS, LOCATIONS AND DIMENSIONS ON A DAILY BASIS. ENGINEER AND/OR OWNER'S REPRESENTATIVE WILL MONITOR TO MAKE SURE RECORDS ARE UP-TO-DATE AND REPRESENTATIVE OF ACTUAL WORK COMPLETED.
28. CONTRACTOR SHALL RESTORE ALL TRENCHES, SURFACE FEATURES, CROSS-COUNTRY AREAS, PAVEMENT, PAVEMENT MARKINGS, SIDEWALKS, UTILITIES, FENCES, WALLS AND ANY OTHER ITEMS DISTURBED BY CONSTRUCTION TO THE REQUIRED GRADES AND TO CONDITIONS EXISTING OR BETTER THAN PRIOR TO CONSTRUCTION. ALL AREAS OUTSIDE OF THE PROJECT LIMITS DISTURBED BY THE CONTRACTOR SHALL BE RESTORED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
29. CONTRACTOR SHALL RESTORE ALL EXISTING FACILITIES TO THE CONDITIONS THAT EXISTED BEFORE CONSTRUCTION. ANY FACILITY THAT IS MODIFIED BASED ON CONTRACTOR'S MEANS AND METHODS TO CONSTRUCT THE NEW WORK SHALL BE REPAIRED IN-KIND TO A CONDITION EQUAL TO OR BETTER THAN WHAT EXISTED PRIOR TO CONSTRUCTION.

COMMONWEALTH OF MASSACHUSETTS — PATRICK G. HUGHES — No. 50633 — REGISTERED PROFESSIONAL ENGINEER

5/8/18

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: M. GALLANT
DRAWN BY: J. CABRERA
SHEET CHK'D BY: M. GALLANT
CROSS CHK'D BY: J. PESCATORE
APPROVED BY: P. HUGHES
DATE: MAY 2018

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CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS

HIGH HILL RESERVOIR REHABILITATION

LEGEND AND GENERAL NOTES

PROJECT NO. 0309-101381
FILE NAME: LEGEND
SHEET NO. LGN

XREFs: [CDMS_2436] Images: []
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TO STORM DRAIN OUTFALL (NOT SHOWN) (APPROX. 553' TO OUTFALL FROM DRAIN MANHOLE)

48" WATER TRANSMISSION MAINS FROM WTP

30" R.C. STORM DRAIN OUTFALL

CONNECTION BETWEEN 48" TRANSMISSION MAIN AND 36" HIGH HILL RESERVOIR INLET BYPASS

36" GATE VALVE ON 36" HIGH HILL RESERVOIR INLET BYPASS WATER TRANSMISSION MAIN

8" DRAIN PIPE FROM HIGH HILL RESERVOIR

36" VALVE ON 36" RESERVOIR INLET BYPASS MAIN–NEW BUTTERFLY VALVE INSTALLED IN 2016 (NORMALLY CLOSED)

36" CI HIGH HILL RESERVOIR INLET BYPASS WATER TRANSMISSION MAIN

36" GATE VALVES ON 48" TRANSMISSION MAIN

24" R.C. STORM DRAIN FROM HIGH HILL RESERVOIR ROOF DRAINS

CONNECTION BETWEEN 48" TRANSMISSION MAIN AND 36" HIGH HILL RESERVOIR INLET BYPASS

30" R.C. STORM DRAIN OUTFALL

48" GATE VALVE

30" R.C. STORM DRAIN

36" GATE VALVES ON 48" TRANSMISSION MAIN

24" R.C. STORM DRAIN FROM HIGH HILL RESERVOIR ROOF DRAINS

36" R.C. STORM DRAIN

HIGH HILL RESERVOIR INLET STRUCTURE. SEE SHEET M–1 FOR DETAILS.

DRAINAGE LINE

HIGH HILL RESERVOIR 75–MG STORAGE FACILITY

DRAINAGE LINE

RESERVOIR DIVIDING WALL

HIGH HILL RESERVOIR OUTLET STRUCTURE SEE SHEET M–2 FOR DETAILS.

24" R.C. STORM DRAIN FROM HIGH HILL RESERVOIR ROOF DRAINS

4' SQ. DRAINAGE STRUCTURE (TYP.)

24" CI WATER TRANSMISSION MAIN TO TOWN OF DARTMOUTH WHOLESALE CONNECTION AND TO TRANSMISSION MAINS (TWIN 36" AND 42") DOWNSTREAM OF HIGH HILL RESERVOIR

36" R.C. STORM DRAIN FROM HIGH HILL RESERVOIR ROOF DRAINS

36" VALVE

24" BUTTERFLY VALVES

FAUNCE CORNER ROAD

36" CI SOUTH WATER TRANSMISSION MAIN TO DISTRIBUTION SYSTEM

36" CI NORTH WATER TRANSMISSION MAIN TO DISTRIBUTION SYSTEM

FAUNCE CORNER ROAD

36" CI NORTH WATER TRANSMISSION MAIN TO DISTRIBUTION SYSTEM

36" CI SOUTH WATER TRANSMISSION MAIN TO DISTRIBUTION SYSTEM

SEE ENLARGED PLAN SHEET C–2

CONNECTION BETWEEN 36" HIGH HILL RESERVOIR INLET BYPASS AND 36" NORTH TRANSMISSION MAIN

36" GATE VALVES

CONNECTION BETWEEN 36" SOUTH WATER TRANSMISSION MAIN AND 36" HIGH HILL RESERVOIR INLET BYPASS

CONNECTION BETWEEN 42" WATER TRANSMISSION MAIN AND 36" NORTH WATER TRANSMISSION MAIN

SERVICE CONNECTIONS FOR CHLORAMINATION BUILDING (TYP.)

36" R.C. STORM DRAIN

CHLORAMINATION BUILDING

42" PCCP WATER TRANSMISSION MAIN TO DISTRIBUTION SYSTEM

36" GATE VALVES

SEE ENLARGED PLAN SHEET C–2

36" VALVE (INSTALLED ON 42" MAIN APPROX. 2003)

42" VALVE

CONNECTION BETWEEN 42" WATER TRANSMISSION MAIN AND 42" WATER TRANSMISSION MAIN

CONNECTION BETWEEN 42" WATER TRANSMISSION MAIN AND 24" WATER TRANSMISSION MAIN

24" VALVE

42" VALVE

CHEMICAL FEED LINES FROM CHLORIMINATION BUILDING

CONNECTION BETWEEN 42" WATER TRANSMISSION MAIN AND 36" SOUTH TRANSMISSION MAIN

4" DRAIN LINE FROM 24" WATER TRANSMISSION MAIN

42" VALVE

36" GATE VALVES

OLD CHLORINATION FACILITY (CHEMICAL INJECTION POINTS FROM CHLORAMINATION FACILITY IN BASEMENT)

36" R.C. STORM DRAINS

24" VALVES

4" DRAIN LINE VALVE

TOWN OF DARTMOUTH 24" WHOLESALE CONNECTION OFF OF 24" TRANSMISSION MAIN

TOWN OF DARTMOUTH PUMPING STATION

PLAN
1" = 50'
25 0 50

PATRICK G. HUGHES
COMMONWEALTH OF MASSACHUSETTS
No. 50033
REGISTERED PROFESSIONAL ENGINEER
5/9/18

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: M. GALLANT
DRAWN BY: J. CABRERA
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CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS

HIGH HILL RESERVOIR REHABILITATION

EXISTING CONDITIONS SITE PLAN

PROJECT NO. 0309–101381
FILE NAME: C001STPL.DWG

SHEET NO.
C-1

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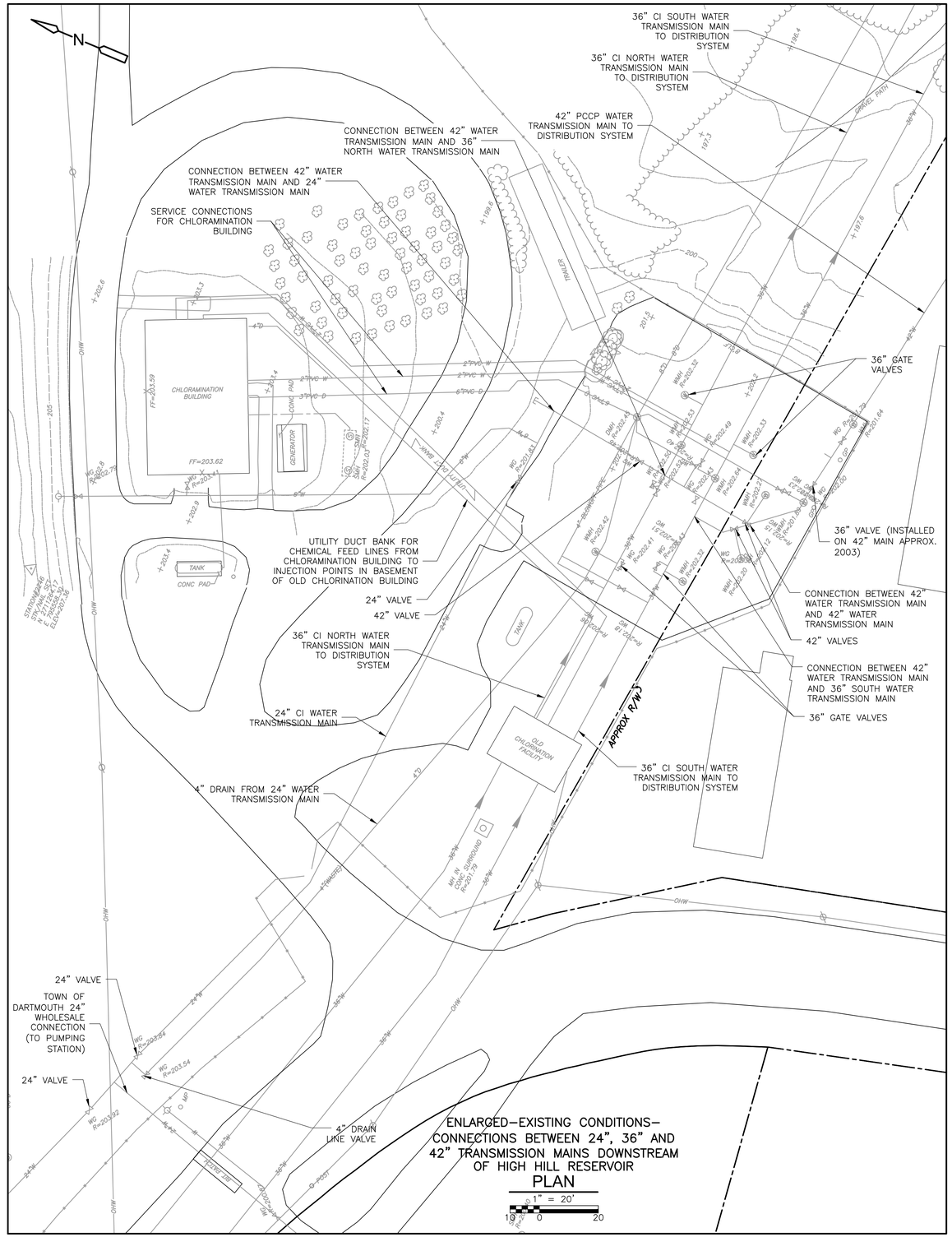
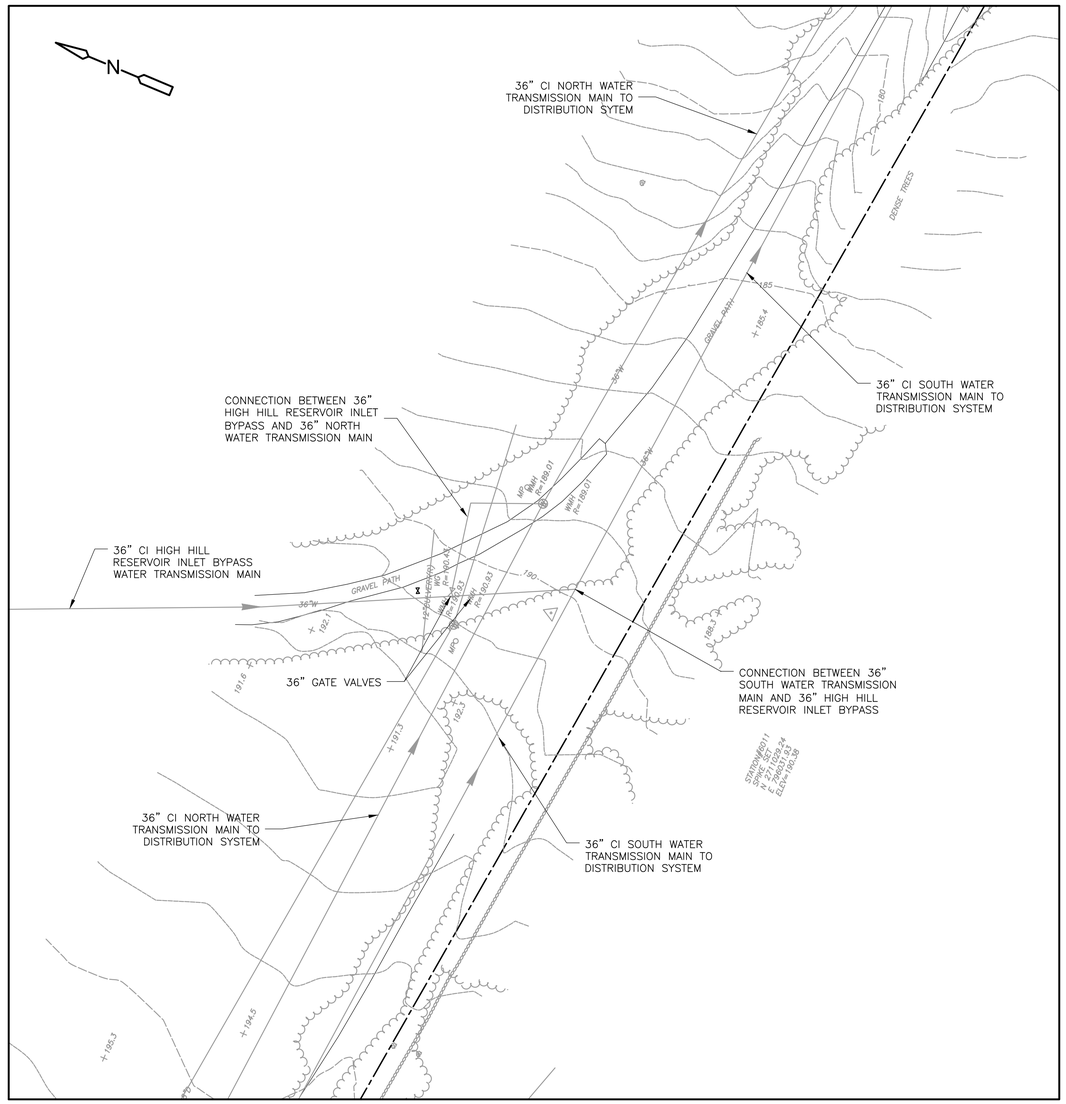


ENLARGED–EXISTING CONDITIONS–
CONNECTIONS BETWEEN 24", 36" AND
42" TRANSMISSION MAINS DOWNSTREAM
OF HIGH HILL RESERVOIR

PLAN

1" = 20'



ENLARGED–EXISTING CONDITIONS–
36" TRANSMISSION MAINS
DOWNSTREAM OF HIGH HILL RESERVOIR

PLAN

1" = 20'

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COMMONWEALTH OF MASSACHUSETTS
PATRICK J. HUGHES
No. 30033
REGISTERED PROFESSIONAL ENGINEER
5/9/18

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: M. GALLANT
DRAWN BY: J. CABRERA
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DATE: MAY 2018

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CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS

HIGH HILL RESERVOIR REHABILITATION

EXISTING CONDITIONS
ENLARGED SITE PLANS

PROJECT NO. 0309–101381
FILE NAME: C002STPL.DWG
SHEET NO.
C-2

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3. ALL NEW WATER MAIN JOINTS SHALL BE RESTRAINED AS SPECIFIED.
4. CONTRACTOR IS RESPONSIBLE FOR CONFIRMING ALL PIPE DIAMETERS BEFORE ORDERING ANY PIPE, FITTINGS, VALVES AND COUPLINGS.

TWO NEW 8" INSERTION GATE VALVES ON 8" DRAIN LINE FROM HIGH HILL RESERVOIR. EXACT LOCATION TO BE REVIEWED AND CONFIRMED WITH THE ENGINEER IN THE FIELD DURING CONSTRUCTION.

EXCAVATE TEST PITS TO CONFIRM LOCATION AND DEPTH OF UTILITIES AND EXISTING 8" DRAIN LINE

APPROX. OUTFLOW FROM MANHOLE TO DETROIT

36" COUPLING
36" DI PIPE
36" BUTTERFLY VALVE
36" DI PIPE
36"X24" TEE
36" DI PIPE
36" BUTTERFLY VALVE
36" DI PIPE
36" COUPLING

24" DI PIPE
24" BUTTERFLY VALVE
24" DI PIPE

NEW FIRE HYDRANT ASSEMBLY FOR FLUSHING

HYDRANT
6" DI PIPE
6" GATE VALVE
6" DI PIPE
24"X6" TEE

NEW 24" DI WATER MAIN

24" DI PIPE
24" 1/8 BEND
24" DI PIPE
24" 1/8 BEND
24" DI PIPE

36" DI PIPE
36" BUTTERFLY VALVE
36" DI PIPE
36" 1/8 BEND
36" DI PIPE
36" 1/16 BEND
36" DI PIPE
36" 1/8 BEND
36" DI PIPE

HYDRANT
6" DI PIPE
6" GATE VALVE
6" DI PIPE
36"X6" TEE

NEW FIRE HYDRANT ASSEMBLY FOR FLUSHING

36" COUPLING
36" DI PIPE
36" BUTTERFLY VALVE
36" DI PIPE
36"X36" TEE
36" DI PIPE
36" 1/16 BEND
36" DI PIPE
36" BUTTERFLY VALVE
36" DI PIPE

36" COUPLING
36" DI PIPE
36" BUTTERFLY VALVE
36" DI PIPE
36"X36" TEE
36" DI PIPE
36" BUTTERFLY VALVE
36" DI PIPE
36" COUPLING

NEW 36" WATER TRANSMISSION MAIN VALVES. SEE ENLARGED PLAN "E" SHEET C-5.

SEE ENLARGED PLAN "A" SHEET C-4.

SEE SHEET M-1 FOR INLET STRUCTURE MODIFICATIONS.

24" CHECK VALVE IN NEW 8' DIA. PRECAST CONCRETE MANHOLE. SEE DETAIL SHEETS. CHECK VALVE SHALL BE ORIENTED TO ALLOW FLOW FROM 36" INLET BYPASS MAIN TO 24" MAIN BUT CLOSE TO PREVENT FLOW FROM 24" MAIN TO 36" BYPASS MAIN.

24" DI PIPE
24" BUTTERFLY VALVE
24" DI PIPE

PROTECT AND SUPPORT ALL UTILITY POLES (TYP.)

24" COUPLING
24" DI PIPE
24" BUTTERFLY VALVE
24" DI PIPE
24" COUPLING

PROTECT EXISTING BUILDING DURING CONSTRUCTION

NEW 36" AND 24" WATER TRANSMISSION MAIN VALVES. SEE ENLARGED PLAN "B" SHEET C-4.

HIGH HILL RESERVOIR
75-MG
STORAGE FACILITY

DRAINAGE LINE

NEW 36" WATER TRANSMISSION MAIN VALVES. SEE ENLARGED PLAN "D" SHEET C-5.

NEW 24" DI WATER MAIN

REMOVE AND REPLACE EXISTING 24" VALVE

HYDRANT
6" DI PIPE
6" GATE VALVE
6" DI PIPE
24"X6" TEE

NEW FIRE HYDRANT ASSEMBLY FOR FLUSHING

24" DI PIPE
24" BUTTERFLY VALVE
24" DI PIPE
24" 1/8 BEND
24" DI PIPE

24" COUPLING
24" DI PIPE
24" BUTTERFLY VALVE
24" DI PIPE
24"X24" TEE
24" DI PIPE
24" BUTTERFLY VALVE
24" DI PIPE

LINE STOP WITH CONCRETE THRUST BLOCK. SUBMIT DESIGN CALCULATIONS AND REQUIRED SIZE BASED UPON LINE STOP REQUIREMENTS AS SPECIFIED. EXACT LOCATION FOR LINE STOP TO BE DETERMINED IN THE FIELD BASED UPON TEST PIT EXCAVATIONS AND LOCATIONS OF EXISTING PIPE JOINTS. THE EXACT LOCATION IS SUBJECT TO REVIEW AND APPROVAL BY ENGINEER (TYP. OF 2)

SEE SHEET M-2 FOR OUTLET STRUCTURE MODIFICATIONS.

24" COUPLING
24" DI PIPE
24" BUTTERFLY VALVE
24" DI PIPE
24"X24" TEE
24" DI PIPE
24" COUPLING

24" DI PIPE
24" BUTTERFLY VALVE
24" DI PIPE

36" COUPLING
36" DI PIPE
36" BUTTERFLY VALVE
36" DI PIPE
36"X24" TEE
36" DI PIPE
36" BUTTERFLY VALVE
36" DI PIPE
36" COUPLING

36" COUPLING
36" DI PIPE
36" BUTTERFLY VALVE
36" DI PIPE

REMOVE AND RESET EXISTING STONE BLOCK STEPS AS REQUIRED TO FACILITATE INSTALLATION OF NEW BUTTERFLY VALVES AND CONCRETE THRUST BLOCKS.

36" COUPLING
36" DI PIPE
36" BUTTERFLY VALVE
36" DI PIPE
36"X24" TEE
36" DI PIPE
36" BUTTERFLY VALVE
36" DI PIPE
36" COUPLING

PROTECT AND SUPPORT EXISTING WATER TRANSMISSION MAINS

PROTECT AND SUPPORT EXISTING WATER TRANSMISSION MAINS

EXCAVATE TEST PITS TO VERIFY LOCATION AND DEPTH OF UTILITIES

PROTECT AND SUPPORT EXISTING WATER MAINS DURING CONSTRUCTION

EXCAVATE TEST PITS TO VERIFY LOCATION AND DEPTH OF UTILITIES

24" COUPLING
24" DI PIPE
24" BUTTERFLY VALVE
24" DI PIPE

NEW 24" WATER TRANSMISSION MAIN VALVES. SEE ENLARGED PLAN "C" SHEET C-5.

REMOVE AND REPLACE EXISTING 24" VALVES

24" COUPLING
24" DI PIPE
24" BUTTERFLY VALVE
24" DI PIPE
24"X24" TEE

36" COUPLING
36" DI PIPE
36" BUTTERFLY VALVE
36" DI PIPE
36" COUPLING

42" COUPLING
42" DI PIPE
42" BUTTERFLY VALVE
42" DI PIPE
42" COUPLING

42" COUPLING
42" DI PIPE
42" BUTTERFLY VALVE
42" DI PIPE
42" 1/8 BEND
42" DI PIPE

EXCAVATE TEST PITS TO VERIFY LOCATION WHERE 42" CI WATER TRANSMISSION MAIN TRANSITIONS TO 42" PCCP WATER TRANSMISSION MAIN

CONNECT NEW 42" DI PIPING TO EXISTING 42" CI WATER TRANSMISSION MAIN BEFORE PIPELINE TRANSITIONS FROM CI TO PCCP.

42" COUPLING
42" DI PIPE
42" BUTTERFLY VALVE
42" DI PIPE
42"X42" TEE
42" DI PIPE
42" COUPLING

36" COUPLING
36" DI PIPE
36" BUTTERFLY VALVE
36" DI PIPE
36" COUPLING

24" COUPLING
24" DI PIPE
24" BUTTERFLY VALVE
24" DI PIPE

EXCAVATE TEST PITS TO CONFIRM LOCATION AND DEPTH OF EXISTING PIPING AND VALVES

REMOVE AND REPLACE EXISTING PIPING AND VALVES

24" COUPLING
24" DI PIPE
24" BUTTERFLY VALVE
24" DI PIPE

EXCAVATE TEST PITS TO CONFIRM LOCATION AND DEPTH OF EXISTING PIPING AND VALVES

FAUNCE CORNER ROAD

FAUNCE CORNER ROAD

PLAN
1" = 50'
25 0 50

PATRICK D. HUGHES No. 20033 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS
5/9/18

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: M. GALLANT
DRAWN BY: J. CABRERA
SHEET CHK'D BY: M. GALLANT
CROSS CHK'D BY: J. PESCATORE
APPROVED BY: P. HUGHES
DATE: MAY 2018

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Tel: (401) 751-5360

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS

HIGH HILL RESERVOIR REHABILITATION

VALVE REPLACEMENTS SITE PLAN

PROJECT NO. 0309-101381
FILE NAME: C003STPL.DWG
SHEET NO. C-3

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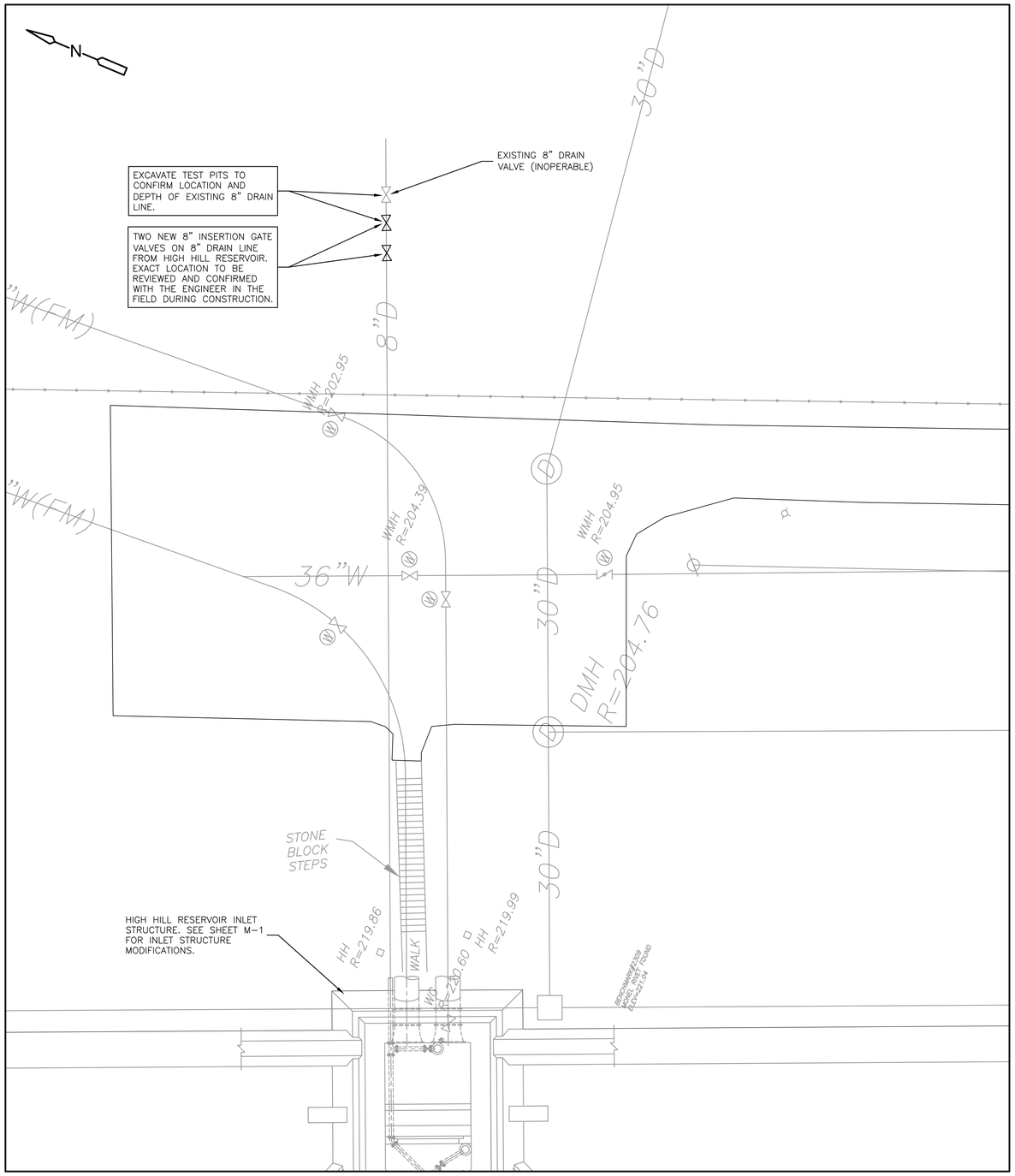
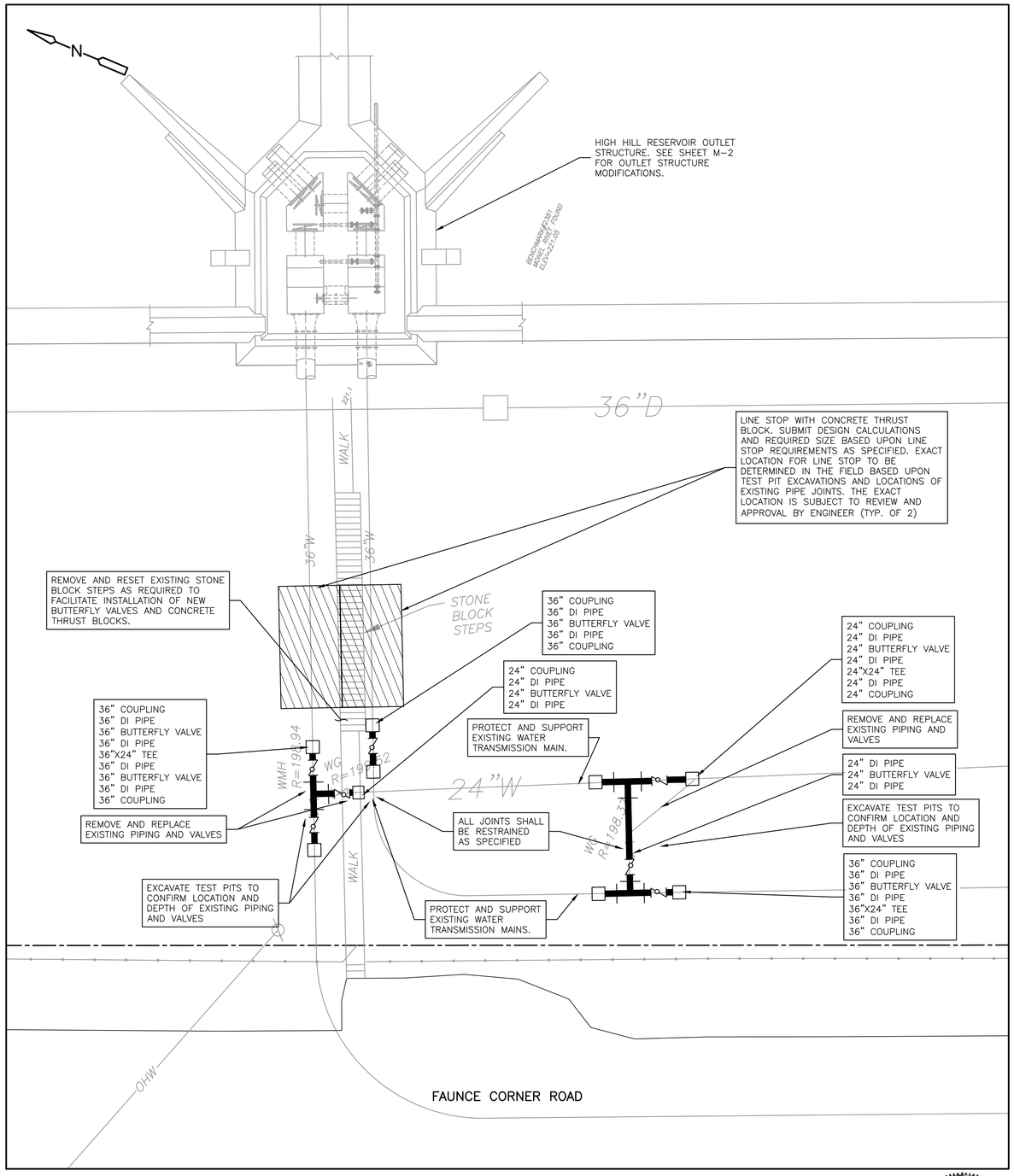


VALVE REPLACEMENTS - ENLARGED PLAN "A"

1" = 10'

5 0 10



VALVE REPLACEMENTS - ENLARGED PLAN "B"

1" = 10'

5 0 10

NOTES:

1. ALL NEW WATER MAIN JOINTS SHALL BE RESTRAINED AS SPECIFIED.
2. CONTRACTOR IS RESPONSIBLE FOR CONFIRMING ALL PIPE DIAMETERS BEFORE ORDERING ANY PIPE, FITTINGS, VALVES AND COUPLINGS.

COMMONWEALTH OF MASSACHUSETTS
PATRICK D. HUGHES
No. 30533
REGISTERED PROFESSIONAL ENGINEER
5/9/18

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: M. GALLANT
DRAWN BY: J. CABRERA
SHEET CHK'D BY: M. GALLANT
CROSS CHK'D BY: J. PESCATORE
APPROVED BY: P. HUGHES
DATE: MAY 2018

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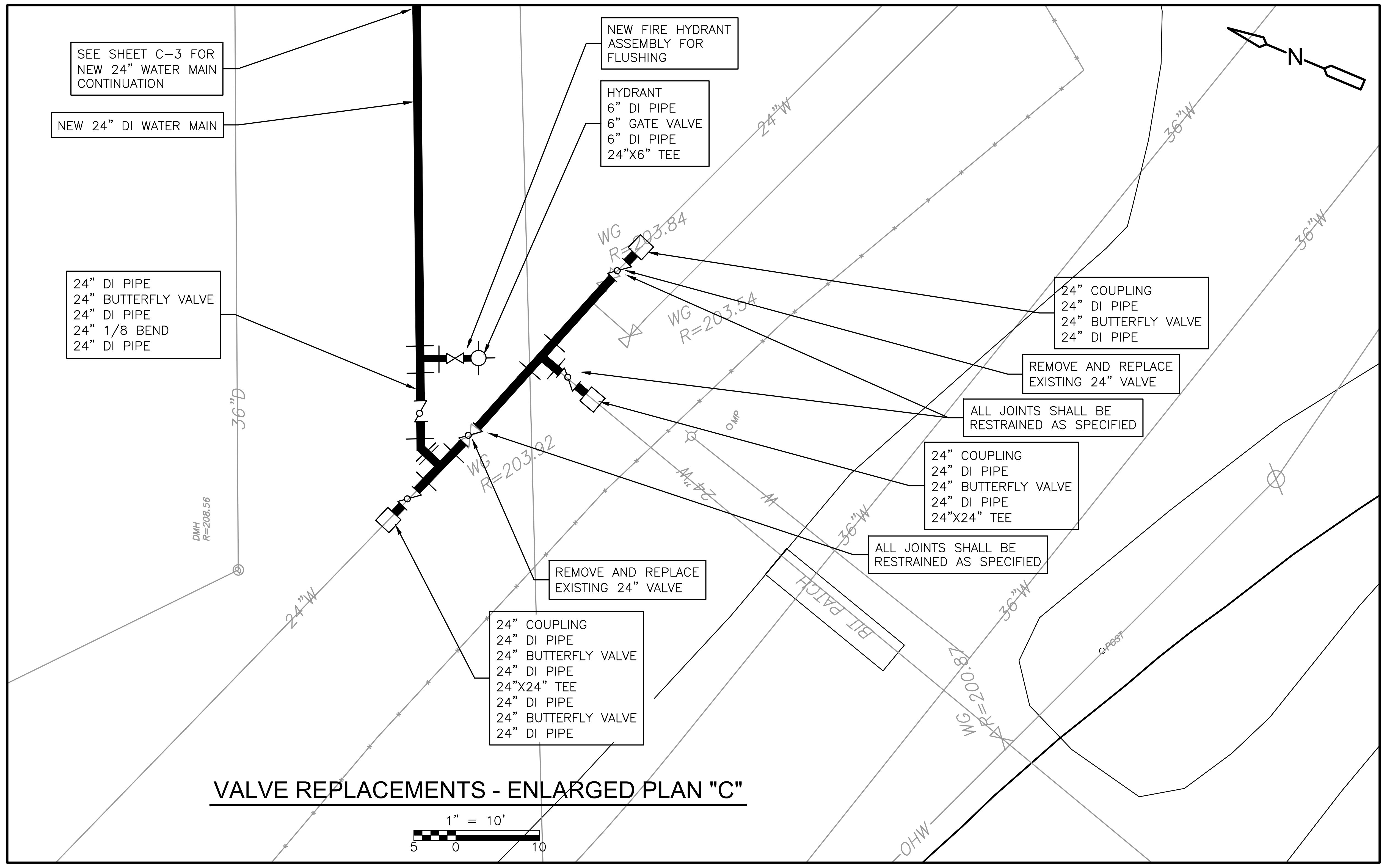
CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS

HIGH HILL RESERVOIR REHABILITATION

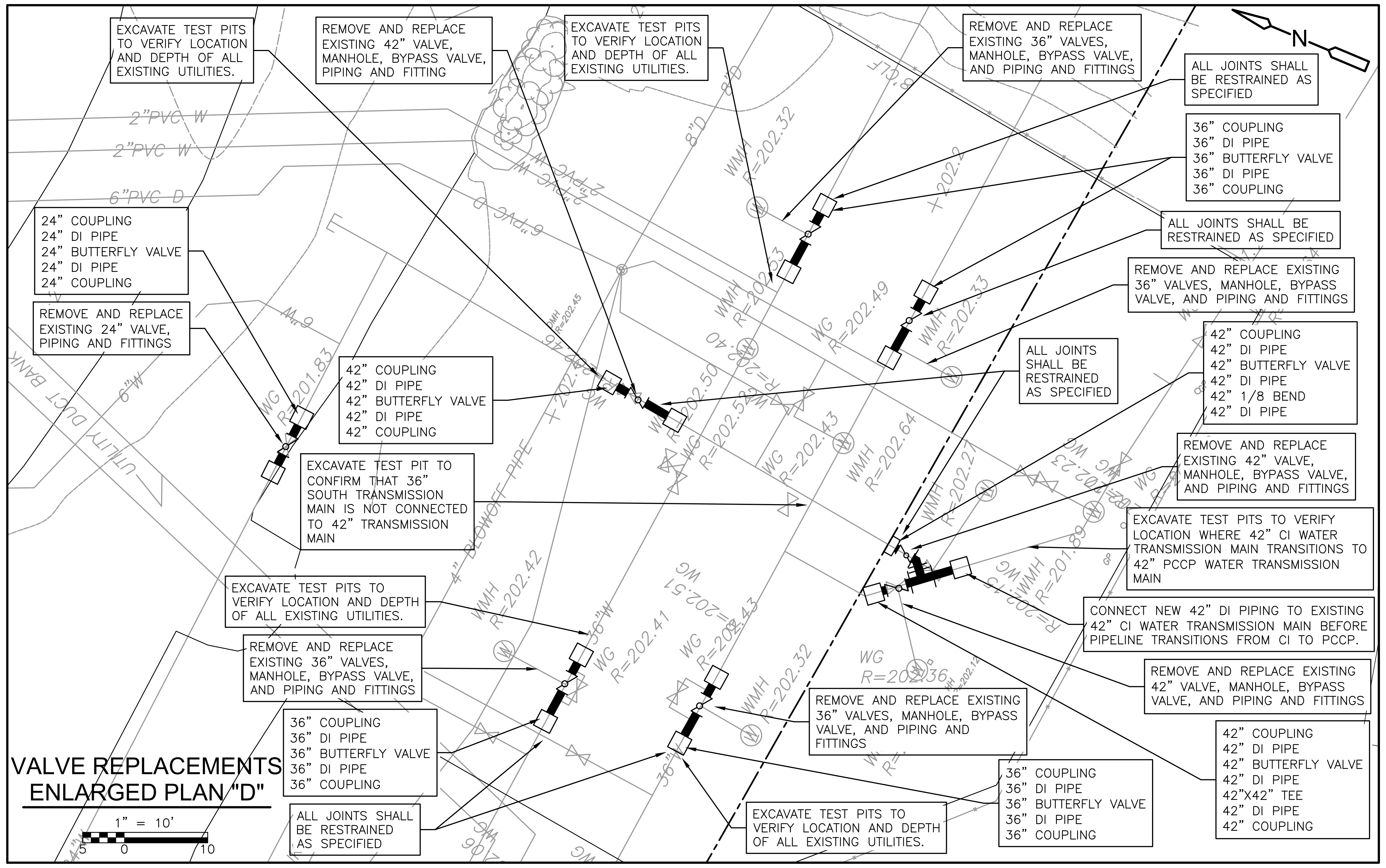
VALVE REPLACEMENTS
ENLARGED PLANS I

PROJECT NO. 0309-101381
FILE NAME: C004STPL.DWG

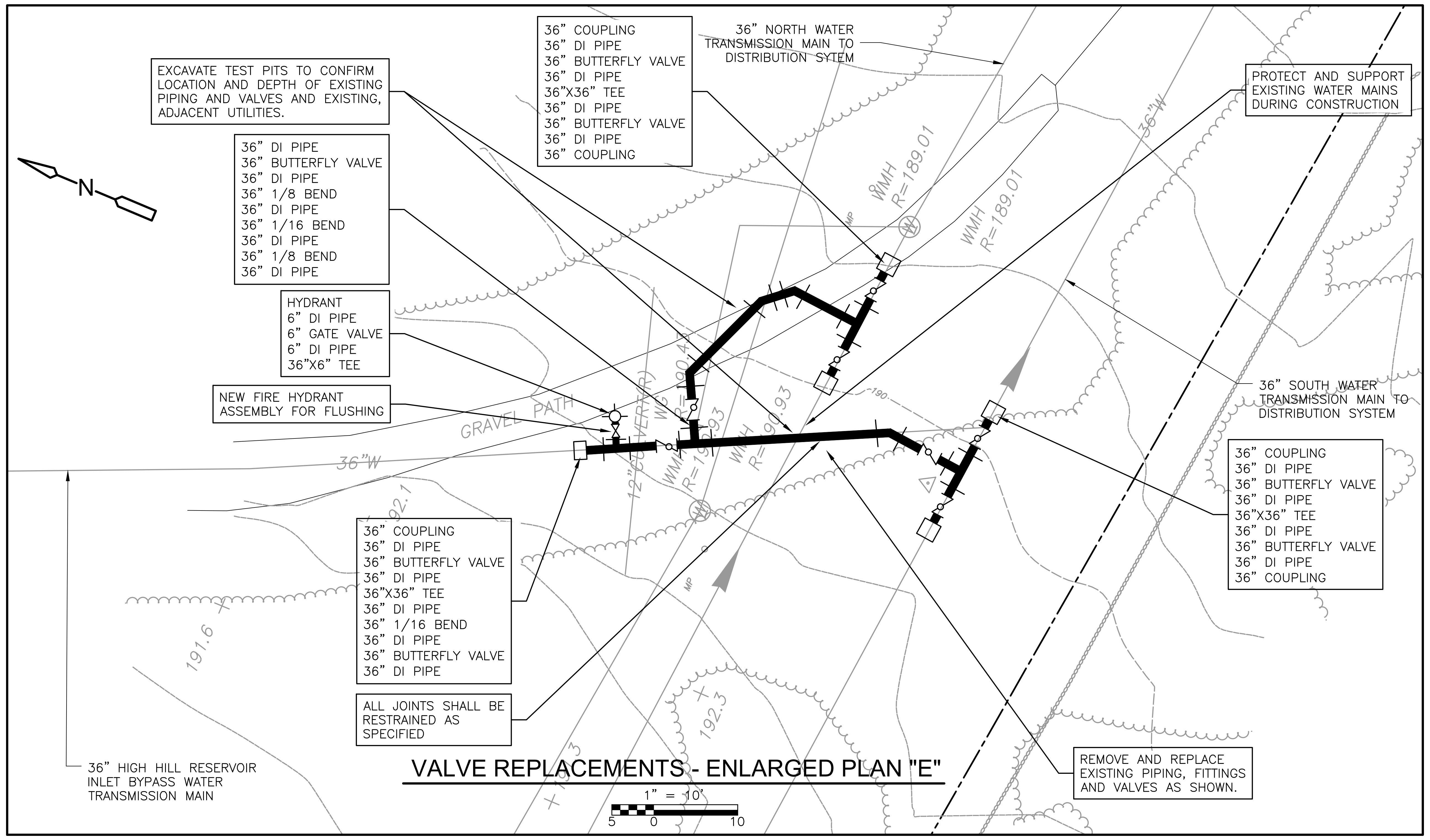
SHEET NO.
C-4



VALVE REPLACEMENTS - ENLARGED PLAN "C"



VALVE REPLACEMENTS ENLARGED PLAN "D"



VALVE REPLACEMENTS - ENLARGED PLAN "E"

NOTES:

1. ALL NEW WATER MAIN JOINTS SHALL BE RESTRAINED AS SPECIFIED.
2. CONTRACTOR IS RESPONSIBLE FOR CONFIRMING ALL PIPE DIAMETERS BEFORE ORDERING ANY PIPE, FITTINGS, VALVES AND COUPLINGS.

PATRICK D. HUGHES No. 50633
5/8/18

REV. NO.	DATE	DRWN	CHKD	REMARKS

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DRAWN BY: J. CABRERA
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CROSS CHK'D BY: J. PESCATORE
APPROVED BY: P. HUGHES
DATE: MAY 2018

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CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS

HIGH HILL RESERVOIR REHABILITATION

VALVE REPLACEMENTS
ENLARGED PLANS II

PROJECT NO. 0309-101381
FILE NAME: C005STPL.DWG
SHEET NO.
C-5

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NOTE:

1. THIS DRAWING IDENTIFIES ALL VALVES (BOTH NEW AND EXISTING) FOR THE PURPOSE OF ISOLATING HIGH HILL RESERVOIR DURING CONSTRUCTION FOR REPAIRS INSIDE THE RESERVOIR AND FOR MAINTAINING WATER SUPPLY TO THE ENTIRE WATER SYSTEM. SEE SPECIFICATION SECTION 01014.

VALVE 48-2
VALVE 36-1
VALVE 48-3
VALVE 36-2 (NORMALLY CLOSED)
VALVE 48-1
INLET 48-1
INLET 48-2
HIGH HILL RESERVOIR 75-MG STORAGE FACILITY
DRAINAGE LINE
DRAINAGE LINE
OUTLET 36-1
OUTLET 36-2
OUTLET 36-3
OUTLET 36-4
OUTLET 30-1
OUTLET 36-6
OUTLET 36-5
OUTLET 12-1
OUTLET 12-2
VALVE 36-5
VALVE 36-7
VALVE 36-6
VALVE 24-4
VALVE 24-5
VALVE 36-8
VALVE 24-3
FAUNCE CORNER ROAD
VALVE 36-3
VALVE 36-4
VALVE 24-1 (NORMALLY CLOSED)
VALVE 24-2
VALVE 36-19
VALVE 36-16
VALVE 36-15
VALVE 36-14
VALVE 36-18 (NORMALLY CLOSED)
VALVE 36-17
VALVE 36-13
VALVE 36-12
VALVE 24-11
VALVE 36-11
VALVE 42-2
VALVE 36-10
VALVE 42-1
VALVE 42-3
VALVE 36-9
VALVE 24-6 (NORMALLY CLOSED)
VALVE 24-7
VALVE 24-9
VALVE 24-10
VALVE 24-8
FAUNCE CORNER ROAD

PLAN
1" = 50'
25 0 50

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REV. NO.	DATE	DRWN	CHKD	REMARKS

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CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS

HIGH HILL RESERVOIR REHABILITATION

VALVE IDENTIFICATION PLAN

PROJECT NO. 0309-101381
FILE NAME: C006STPL.DWG

SHEET NO.
C-6

COMMONWEALTH OF MASSACHUSETTS
PATRICK G. HUGHES
No. 30033
REGISTERED PROFESSIONAL ENGINEER
Sanitary
5/9/18

PHOTO 1
24" WATER MAIN ROUTE
(LOOKING SOUTHWEST - ALONG ACCESS ROAD FROM 36" BYPASS MAIN)

PHOTO 2
24" WATER MAIN ROUTE
(LOOKING SOUTHWEST - NEAR CHLORAMINATION BUILDING)

PHOTO 3
24" WATER MAIN ROUTE
(LOOKING SOUTHWEST - BEHIND CHLORAMINATION BUILDING)

PHOTO 4
24" WATER MAIN ROUTE
(LOOKING SOUTHWEST - BEHIND CHLORAMINATION BUILDING)

PHOTO 5
24" WATER MAIN ROUTE
(LOOKING SOUTHWEST - TOWARDS DARTMOUTH PUMPING STATION)

NOTE:

1. THESE PHOTOS HAVE BEEN PROVIDED FOR THE CONTRACTORS CONVENIENCE ONLY AND IT IS NOT WARRANTED THAT THEY REPRESENT ALL EXISTING CONDITIONS. CONTRACTOR IS RESPONSIBLE FOR VISITING THE SITE, AS SPECIFIED, TO CONFIRM ALL EXISTING CONDITIONS AND TO MAKE ANY INVESTIGATIONS AS CONTRACTOR DEEMS NECESSARY.

COMMONWEALTH OF MASSACHUSETTS
PATRICK D. HUGHES
No. 36633
REGISTERED PROFESSIONAL ENGINEER
5/8/18

REV. NO.	DATE	DRWN	CHKD	REMARKS

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CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS

HIGH HILL RESERVOIR REHABILITATION

PHOTOS OF 24" WATER MAIN ROUTE

PROJECT NO. 0309-101381
FILE NAME: C007STPL.DWG

SHEET NO.
C-7

XREFs: [CDMS_2436] Images: [01 - 24-inch Water Main Route Looking Southwest Along Access Road from 36-inch Bypass Main, 02 - 24-inch Water Main Route Looking Southwest Near Chloramination Building, 03 - 24-inch Water Main Route Looking Southwest Behind Chloramination Building, 04 - 24-inch Water Main Route Looking Southwest Behind Chloramination Building, 05 - 24-inch Water Main Route Looking Southwest Towards Dartmouth Pumping Station]
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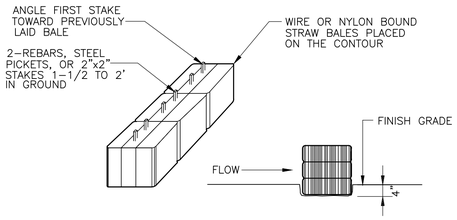
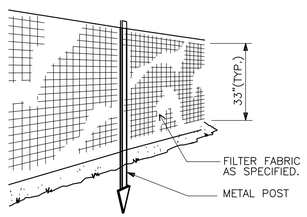
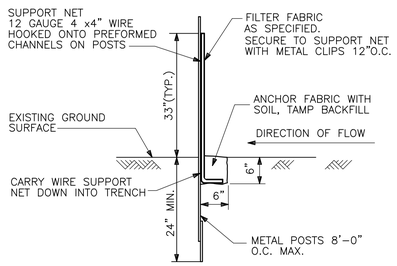
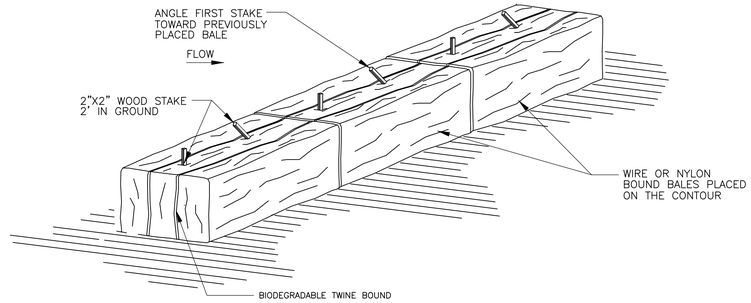


STRAW BALE
NTS

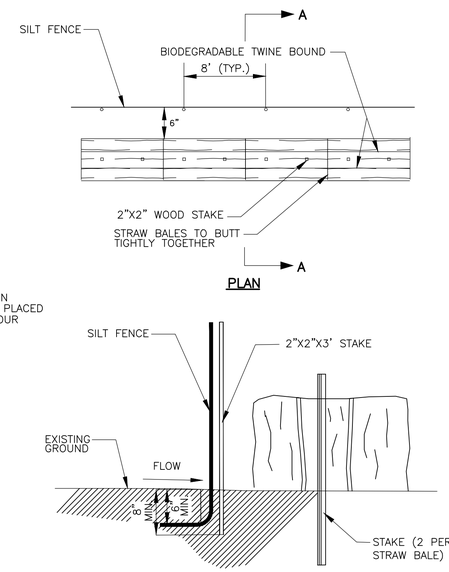




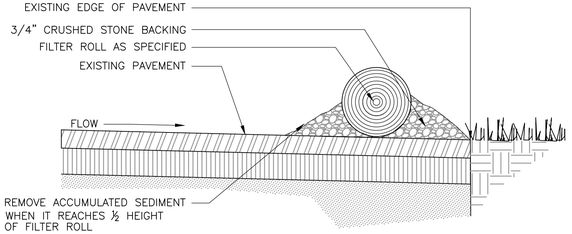
SILT/SEDIMENT FENCE
NTS



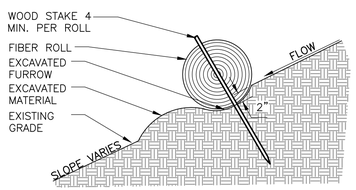
STAKED STRAW BALES–ANCHORING
NTS



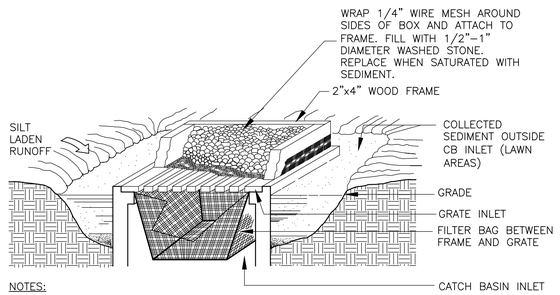
EROSION BARRIER
STRAW BALES AND SILT FENCE
NTS



PAVEMENT APPLICATIONS



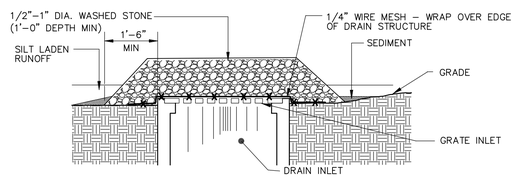
LANDSCAPE APPLICATIONS
SILT ROLL / SILT SOCK
NTS



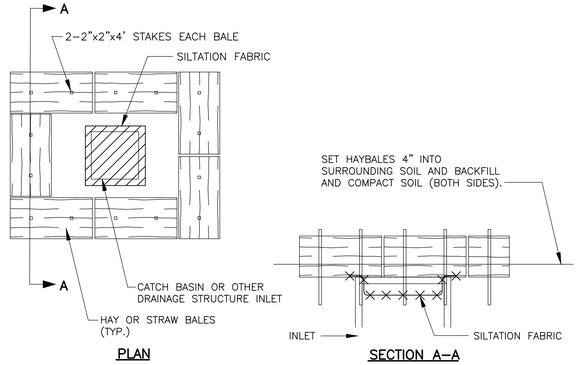
NOTES:

1) IN LAWN AREAS, USE MESH, WOOD FRAME BOX, AND STONE FOR INLET PROTECTION (NO BAG REQUIRED).
2) IN CONTAINMENT AREAS, USE FILTER BAG FOR INLET PROTECTION (NO MESH, BOX STONE REQUIRED).
3) INSTALL CATCH BASIN SEDIMENT FILTERS WITHIN EACH CATCH BASIN IN AND ADJACENT TO (WITHIN 50') THE LIMITS OF WORK AS WELL AS THOSE IMMEDIATELY DOWN GRADIENT OF THE LIMIT OF WORK AREAS.

CATCH BASIN SEDIMENT FILTER
NTS



DROP INLET SEDIMENT FILTER
NTS



CATCH BASIN STRAW BALE TREATMENT (CROSS–COUNTRY AREAS)
NTS

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: M. GALLANT
DRAWN BY: J. CABRERA
SHEET CHK'D BY: M. GALLANT
CROSS CHK'D BY: J. PESCATORE
APPROVED BY: P. HUGHES
DATE: MAY 2018

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CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS

HIGH HILL RESERVOIR REHABILITATION

ENVIRONMENTAL PROTECTION DETAILS

PROJECT NO. 0309–101381
FILE NAME: CSTDT001.DWG

SHEET NO.
CD-1

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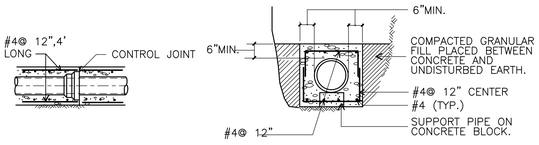


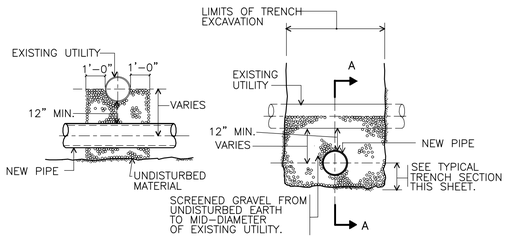
PLAN SECTION

NOTES:

1. CONTROL JOINTS AND PIPE JOINTS FOR ENCASEMENT SHALL COINCIDE FOR SPACING. MAX. DISTANCE BETWEEN CONTROL JOINTS SHALL BE 24'.
2. REINFORCING STEEL TO BE USED ONLY WHEN DEPTH OF COVER TO TOP OF SURFACE OF CONCRETE IS 4'-0" OR LESS.

CONCRETE ENCASEMENT

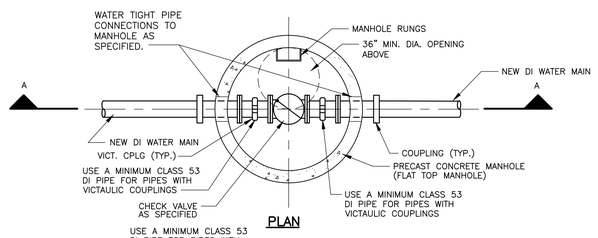
NTS



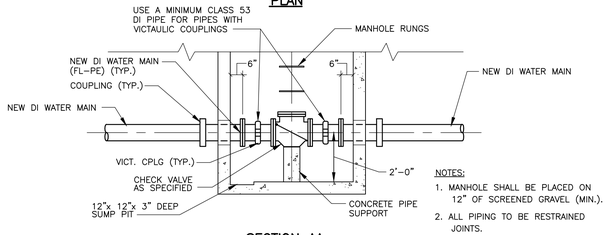
SECTION A-A TYPICAL ELEVATION

UTILITIES CROSSING

NTS



PLAN



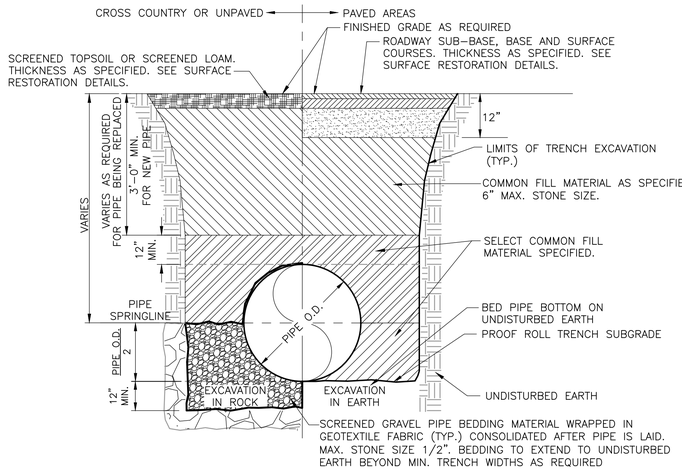
SECTION AA

NOTES:

1. MANHOLE SHALL BE PLACED ON 12" OF SCREENED GRAVEL (MIN.).
2. ALL PIPING TO BE RESTRAINED JOINTS.

CHECK VALVE AND MANHOLE DETAIL

NTS

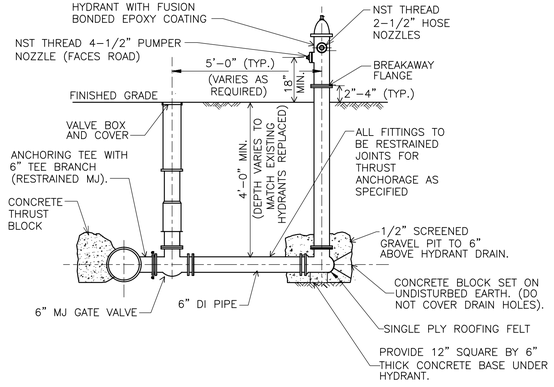


NOTE:

1. BEDDING AND BACKFILL MATERIALS SHALL BE AS SPECIFIED AND PLACED IN MAX. 6" LIFTS COMPACTED TO MIN. STANDARD PROCTOR AS SPECIFIED IN SECTION 02221.
2. FOR NEW PIPE REPLACING EXISTING PIPE. NEW PIPES SHALL BE INSTALLED IN SAME LOCATION.

DUCTILE-IRON PIPE TRENCH

NTS

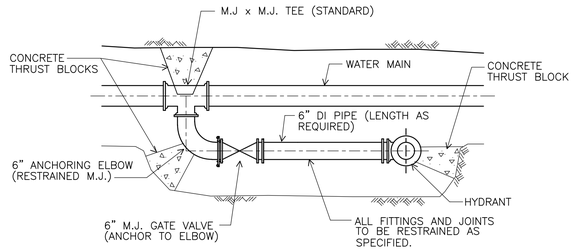


FIRE HYDRANT-STANDARD CONNECTION

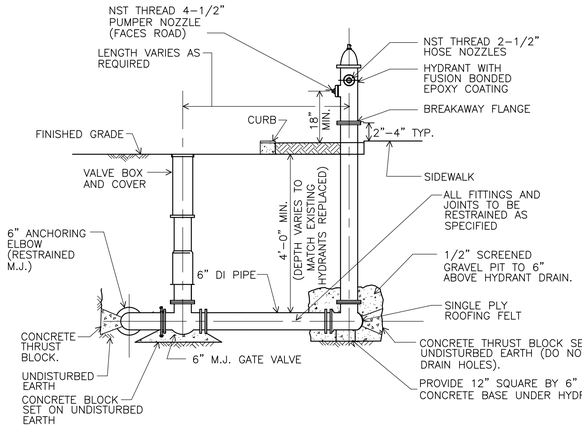
NTS

NOTES:

1. HYDRANTS SHOULD NOT BE INSTALLED WHERE THERE MAY BE SUBJECT TO DAMAGE FROM TRAFFIC, PLOWING, ETC.
2. HYDRANTS SHALL BE LOCATED TO ALLOW COMPLETE/FREE TURNING OF A STANDARD HYDRANT WRENCH.
3. SHOULD FIELD ADJUSTMENTS BE REQUIRED TO PROPOSED HYDRANT LOCATIONS SHOWN ON THE DRAWINGS, CONTRACTOR SHALL CONSULT WITH THE OWNER FOR REVIEW AND APPROVAL.
4. CONCRETE THRUST BLOCKS TO BE USED ONLY WHERE THEY WILL BEAR UPON UNDISTURBED EARTH. USE RESTRAINED JOINTS (MECHANICAL JOINT RETAINER GLANDS) FOR ALL HYDRANTS.



PLAN



ELEVATION

FIRE HYDRANT-ALTERNATE CONNECTION

NTS

NOTES:

1. HYDRANTS SHOULD NOT BE INSTALLED WHERE THERE MAY BE SUBJECT TO DAMAGE FROM TRAFFIC, PLOWING, ETC.
2. HYDRANTS SHALL BE LOCATED TO ALLOW COMPLETE/FREE TURNING OF A STANDARD HYDRANT WRENCH.
3. SHOULD FIELD ADJUSTMENTS BE REQUIRED TO PROPOSED HYDRANT LOCATIONS SHOWN ON THE DRAWINGS, CONTRACTOR SHALL CONSULT WITH THE OWNER FOR REVIEW AND APPROVAL.
4. CONCRETE THRUST BLOCKS TO BE USED ONLY WHERE THEY WILL BEAR UPON UNDISTURBED EARTH. USE RESTRAINED JOINTS (MECHANICAL JOINT RETAINER GLANDS) FOR ALL HYDRANTS.

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REV. NO.	DATE	DRWN	CHK'D	REMARKS

DESIGNED BY: M. GALLANT
DRAWN BY: J. CABRERA
SHEET CHK'D BY: M. GALLANT
CROSS CHK'D BY: J. PESCATORE
APPROVED BY: P. HUGHES
DATE: MAY 2018

CDM Smith
260 West Exchange Street, Suite 300
Providence, RI 02903
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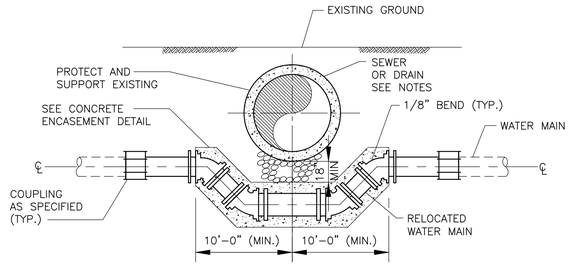
CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS

HIGH HILL RESERVOIR REHABILITATION

WATER MAIN DETAILS I

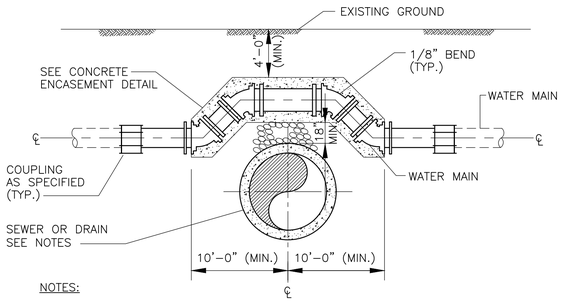
PROJECT NO. 0309-101381
FILE NAME: CSTDT002.DWG

SHEET NO.
CD-2



NOTES:

1. ALL WATER MAIN JOINTS SHALL BE RESTRAINED.
2. AT MINIMUM, WATER MAINS MUST BE ENCASED IN 6" OF CONCRETE 10'-0" EACH SIDE OF SEWER OR DRAIN.

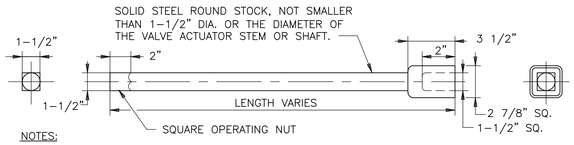


NOTES:

1. ALL WATER MAIN JOINTS SHALL BE RESTRAINED.
2. AT MINIMUM, WATER MAINS MUST BE ENCASED IN 6" OF CONCRETE 10'-0" EACH SIDE OF SEWER OR DRAIN.

WATER MAIN RELOCATION WITH CONCRETE ENCASEMENT

NTS

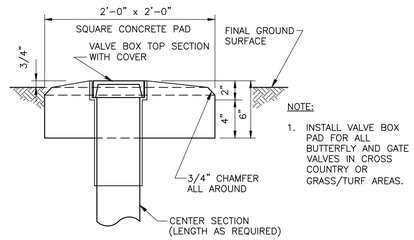


NOTES:

1. DETERMINE LENGTH OF THE EXTENSION STEMS BY FIELD MEASUREMENTS AFTER VALVE HAS BEEN INSTALLED. EXTENSION STEMS SHALL HAVE SOLID SHAFTS.
2. EXTENSION STEMS FOR VALVES 16" AND LARGER SHALL BE 1-1/2" DIAMETER SOLID STEEL ROUND STOCK AND PINNED, CUT TO LENGTH (12" BELOW FINISHED GRADE).

EXTENSION STEM

NTS

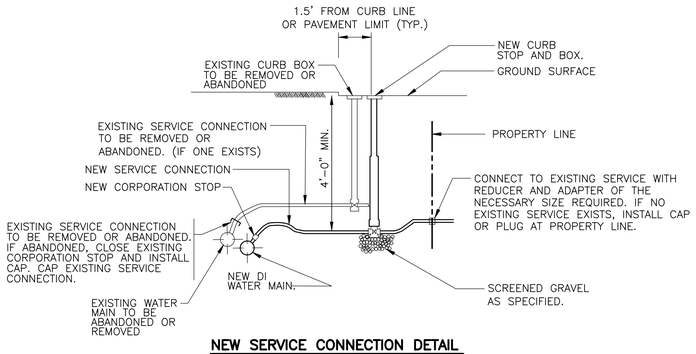


NOTE:

1. INSTALL VALVE BOX PAD FOR ALL BUTTERFLY AND GATE VALVES IN CROSS COUNTRY OR GRASS/TURF AREAS.

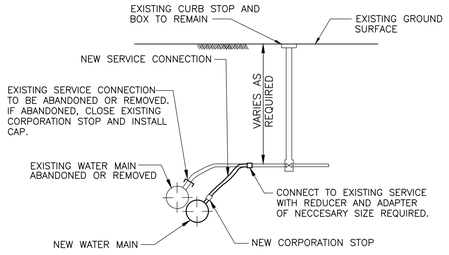
VALVE BOX PAD

NTS



NEW SERVICE CONNECTION DETAIL

NTS



CONNECTION TO EXISTING SERVICE CONNECTION

NTS

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REV. NO.	DATE	DRWN	CHKD	REMARKS

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DRAWN BY: J. CABRERA
SHEET CHK'D BY: M. GALLANT
CROSS CHK'D BY: J. PESCATORE
APPROVED BY: P. HUGHES
DATE: MAY 2018

CDM Smith
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CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS

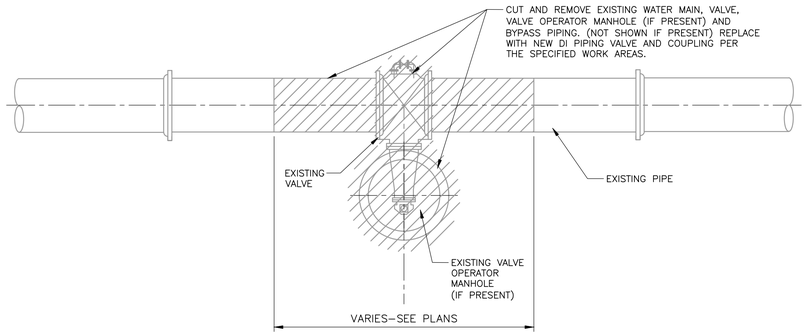
HIGH HILL RESERVOIR REHABILITATION

WATER MAIN DETAILS II

PROJECT NO. 0309-101381
FILE NAME: CSTDT003.DWG

SHEET NO.
CD-3

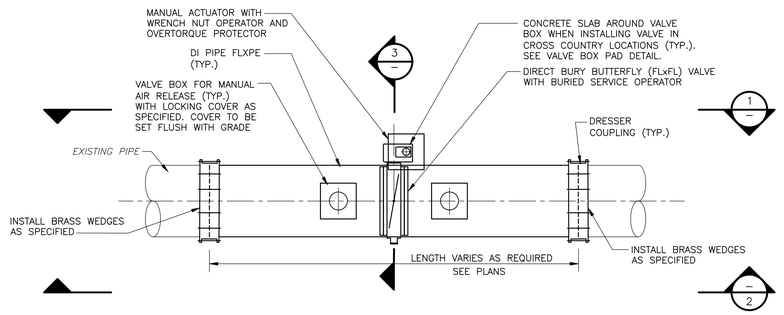
COMMONWEALTH OF MASSACHUSETTS
PATRICK G. HUGHES
No. 50633
REGISTERED PROFESSIONAL ENGINEER
5/8/18



NOTE:

1. THIS DETAIL SHOWS TYPICAL CONDITIONS FOR EXISTING VALVES. CONDITIONS MAY VARY FOR EACH EXISTING VALVE.

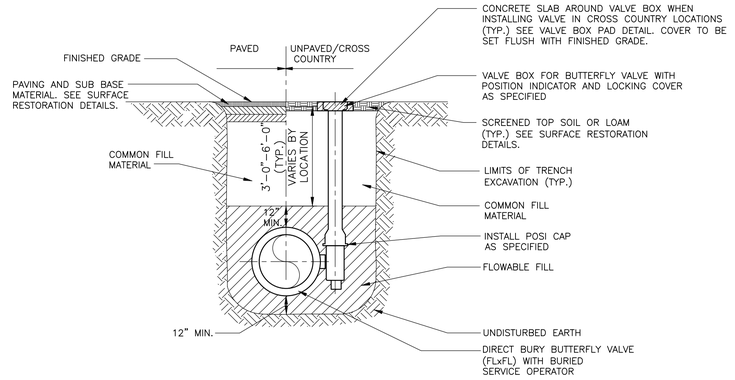
REMOVAL OF EXISTING VALVE AND MANHOLE
NTS



NEW BUTTERFLY VALVE (24" TO 42" BUTTERFLY VALVES)
NTS

NOTES:

1. ALL BUTTERFLY VALVES SHALL PASS THE SPECIFIED ON–SITE PRESSURE TESTING PRIOR TO INSTALLATION.
2. ALL PIPE, FITTING AND VALVE JOINTS SHALL BE RESTRAINED.
3. MANUAL AIR RELEASE VALVES SHALL BE PROVIDED AT EACH BUTTERFLY VALVE INSTALLATION FOR ALL 24", 36" AND 42" BUTTERFLY VALVES.
4. THIS IS A TYPICAL VALVE REPLACEMENT DETAIL. SEE WORK AREAS FOR SPECIFIC PIPING AND FITTING THAT VARY TO SUIT EACH SPECIFIC LOCATION.
5. CONTRACTOR SHALL EXCAVATE TEST PITS AS REQUIRED TO CONFIRM ALL DIMENSIONS, MEASUREMENTS AND PIPE OUTSIDE DIAMETER PRIOR TO ORDERING AND FABRICATION OF NEW MATERIALS.



SECTION 3 / –
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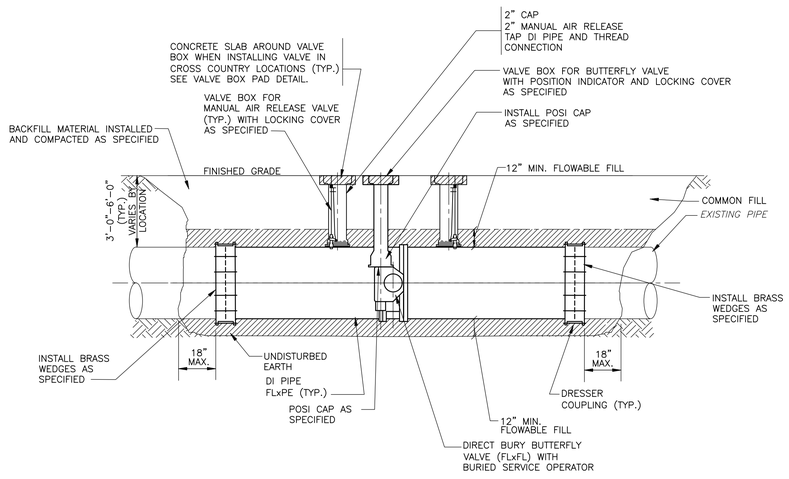

SECTION 1 / –
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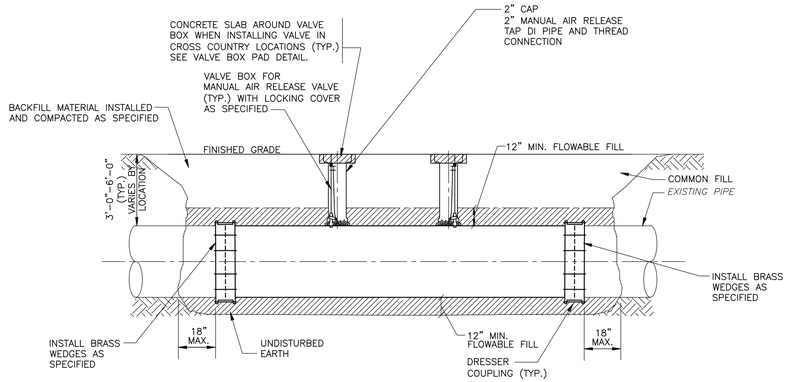

SECTION 2 / –
NTS

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REV. NO.	DATE	DRWN	CHKD	REMARKS

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DRAWN BY: J. CABRERA
SHEET CHK'D BY: M. GALLANT
CROSS CHK'D BY: J. PESCATORE
APPROVED BY: P. HUGHES
DATE: MAY 2018

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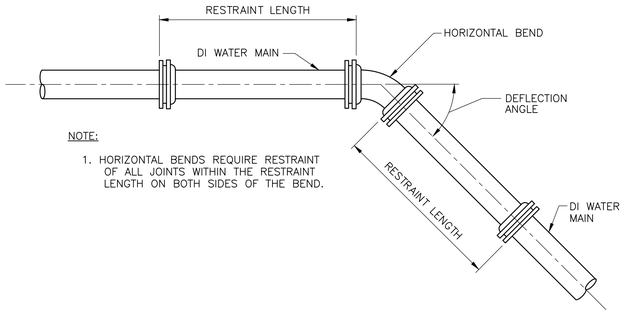
CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS

HIGH HILL RESERVOIR REHABILITATION

VALVE DEMOLITION AND INSTALLATION DETAILS

PROJECT NO. 0309–101381
FILE NAME: CSTDT004.DWG

SHEET NO.
CD-4



NOTE:

1. HORIZONTAL BENDS REQUIRE RESTRAINT OF ALL JOINTS WITHIN THE RESTRAINT LENGTH ON BOTH SIDES OF THE BEND.

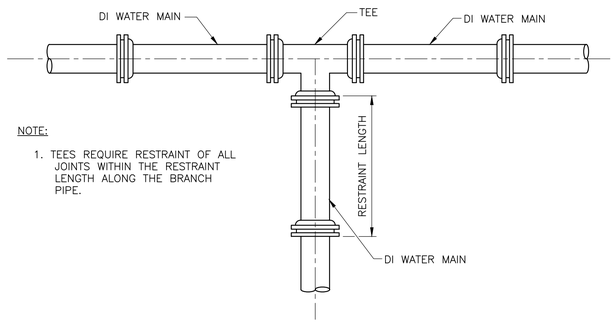
PLAN

RESTRAINT OF HORIZONTAL BENDS

NTS

RESTRAINT LENGTH VALUES FOR DUCTILE IRON HORIZONTAL BENDS

PIPE DIAMETER (INCHES)	BEND ANGLE (DEGREES)	RESTRAINT LENGTH (FEET)
6	11.25	5
	22.5	9
	45	18
	90	43
8	11.25	6
	22.5	12
	45	24
	90	57
10	11.25	7
	22.5	14
	45	28
	90	67
12	11.25	8
	22.5	16
	45	33
	90	78
16	11.25	10
	22.5	20
	45	41
	90	99
24	11.25	14
	22.5	28
	45	57
	90	136
30	11.25	16
	22.5	32
	45	67
	90	160
36	11.25	18
	22.5	37
	45	76
	90	183
42	11.25	20
	22.5	41
	45	84
	90	202
48	11.25	22
	22.5	44
	45	92
	90	220



NOTE:

1. TEES REQUIRE RESTRAINT OF ALL JOINTS WITHIN THE RESTRAINT LENGTH ALONG THE BRANCH PIPE.

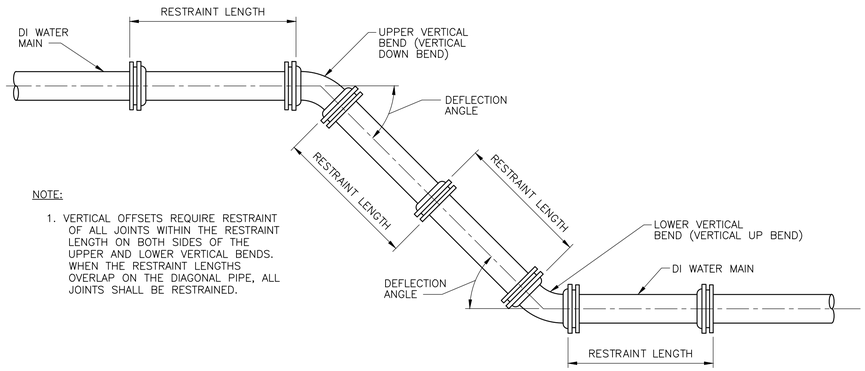
PLAN

RESTRAINT OF TEES

NTS

RESTRAINT LENGTH VALUES FOR DUCTILE IRON TEES

RUN DIAMETER (INCHES)	BRANCH DIAMETER (INCHES)	RESTRAINT LENGTH (FEET)
6	4	65
	6	91
8	6	91
	8	120
10	6	91
	8	120
	10	143
12	6	91
	8	120
	10	143
	12	168
16	6	91
	8	120
	10	143
	12	168
	16	214
24	8	120
	10	143
	12	168
	16	214
	24	300
30	12	168
	16	214
	24	300
	30	357
36	6	91
	8	120
	10	143
	12	168
	16	214
	24	300
	30	357
	36	411
42	6	91
	8	120
	10	143
	12	168
	16	214
	24	300
	30	357
	36	411
	42	458
48	6	91
	8	120
	10	143
	12	168
	16	214
	24	300
	30	357
	36	411
	42	458
	48	504



NOTE:

1. VERTICAL OFFSETS REQUIRE RESTRAINT OF ALL JOINTS WITHIN THE RESTRAINT LENGTH ON BOTH SIDES OF THE UPPER AND LOWER VERTICAL BENDS. WHEN THE RESTRAINT LENGTHS OVERLAP ON THE DIAGONAL PIPE, ALL JOINTS SHALL BE RESTRAINED.

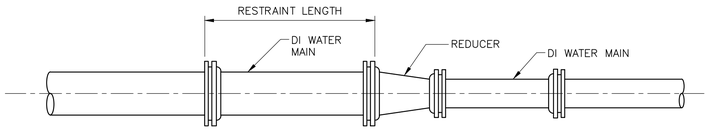
ELEVATION

RESTRAINT OF VERTICAL OFFSETS

NTS

RESTRAINT LENGTH VALUES FOR DUCTILE IRON VERTICAL OFFSETS

PIPE DIAMETER (INCHES)	BEND ANGLE (DEGREES)	UPPER BEND RESTRAINT LENGTH (FEET)	LOWER BEND RESTRAINT LENGTH (FEET)
6	11.25	18	8
	22.5	37	17
	45	76	35
8	11.25	24	11
	22.5	48	22
	45	99	46
10	11.25	29	13
	22.5	57	26
	45	119	55
12	11.25	33	15
	22.5	67	31
	45	139	64
16	11.25	43	19
	22.5	86	39
	45	178	81
24	11.25	59	26
	22.5	120	54
	45	249	112
30	11.25	71	31
	22.5	142	63
	45	296	132
36	11.25	81	35
	22.5	164	72
	45	340	150
42	11.25	91	40
	22.5	183	81
	45	380	167
48	11.25	100	44
	22.5	201	88
	45	417	183



NOTE:

1. REDUCERS REQUIRE RESTRAINT OF ALL JOINTS WITHIN THE RESTRAINT LENGTH EXTENDING FROM THE REDUCER ALONG THE SIDE OF THE LARGER PIPE.

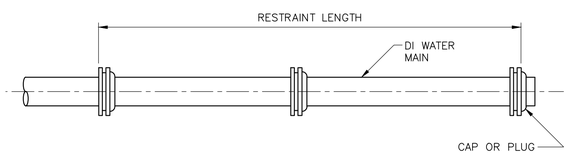
PLAN

RESTRAINT OF REDUCERS

NTS

RESTRAINT LENGTH VALUES FOR DUCTILE IRON REDUCERS

LARGE PIPE DIAMETER (INCHES)	SMALL PIPE DIAMETER (INCHES)	RESTRAINT LENGTH (FEET)
6	4	47
8	4	86
	6	51
10	4	116
	6	88
	8	48
12	6	122
	8	89
	10	50
16	6	181
	8	156
	10	127
	12	91
20	6	231
	8	212
	10	190
	12	162
	16	91
24	8	263
	10	245
	12	222
	16	164
30	12	296
	16	252
	20	195
	24	125
36	16	326
	20	280
	24	225
42	20	351
	24	305
	30	222
	36	119
48	30	304
	36	218
	42	118



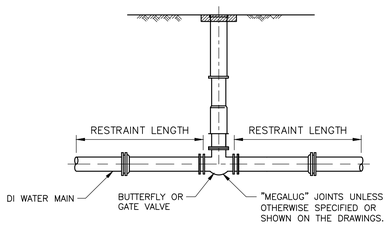
NOTE:

1. CAPS AND PLUGS REQUIRE RESTRAINT OF ALL JOINTS WITHIN THE RESTRAINT LENGTH EXTENDING FROM THE CAP OR PLUG.

PLAN

RESTRAINT OF CAPS AND PLUGS (DEAD ENDS)

NTS



NOTE:

1. VALVES REQUIRE RESTRAINT OF ALL JOINTS WITHIN THE RESTRAINT LENGTH ON BOTH SIDES OF THE VALVE.

ELEVATION

RESTRAINT OF VALVES

NTS

RESTRAINT LENGTH VALUES FOR VALVES, CAPS AND PLUGS

VALVE OR PIPE DIAMETER (INCHES)	RESTRAINT LENGTH (FEET)
6	91
8	120
10	143
12	168
16	214
24	300
30	357
36	411
42	458
48	504

COMMONWEALTH OF MASSACHUSETTS — PATRICK R. HUGHES — No. 50031 — REGISTERED PROFESSIONAL ENGINEER

Sanitary 5/9/18

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: M. GALLANT
DRAWN BY: J. CABRERA
SHEET CHK'D BY: M. GALLANT
CROSS CHK'D BY: J. PESCATORE
APPROVED BY: P. HUGHES
DATE: MAY 2018

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CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS

HIGH HILL RESERVOIR REHABILITATION

JOINT THRUST RESTRAINT DETAILS

PROJECT NO. 0309-101381
FILE NAME: CSTDT005.DWG

SHEET NO.
CD-5

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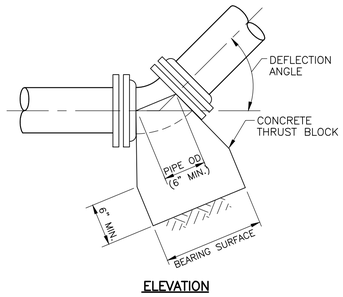
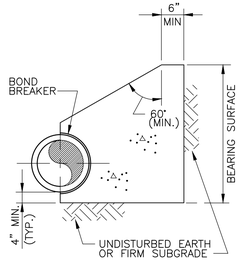
THRUST BLOCK BEARING AREAS FOR DUCTILE IRON HORIZONTAL BENDS		
PIPE DIAMETER (INCHES)	BEND ANGLE (DEGREES)	BEARING AREA (SQUARE FEET)
6	11.25	1
	22.5	1
	45	2
	90	3
8	11.25	1
	22.5	2
	45	3
	90	6
10	11.25	2
	22.5	3
	45	5
	90	9
12	11.25	2
	22.5	4
	45	7
	90	12
20	11.25	5
	22.5	10
	45	19
	90	34
24	11.25	7
	22.5	14
	45	26
	90	48
30	11.25	11
	22.5	21
	45	41
	90	75
36	11.25	15
	22.5	30
	45	59
	90	108
42	11.25	21
	22.5	41
	45	80
	90	147
48	11.25	27
	22.5	53
	45	104
	90	192

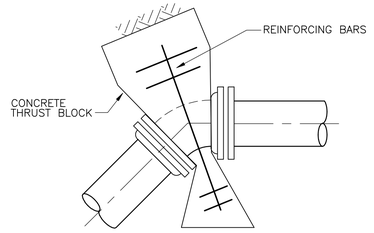


ELEVATION



SECTION

VERTICAL BENDS



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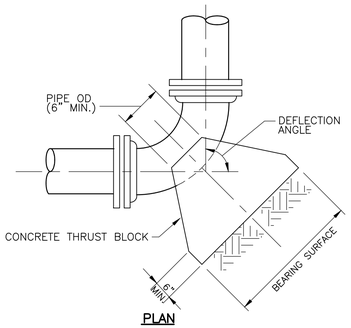
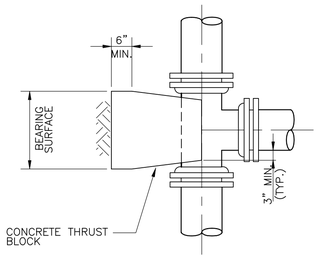


PLAN

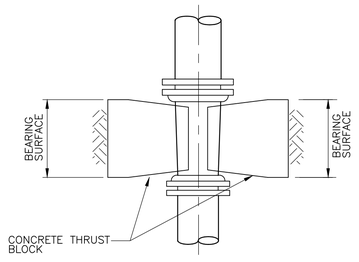
THRUST BLOCK BEARING AREAS AND VOLUMES FOR DUCTILE IRON VERTICAL OFFSETS			
PIPE DIAMETER (INCHES)	BEND ANGLE (DEGREES)	BEARING AREA (SQUARE FEET)	VOLUME OF BLOCK (CUBIC FEET)
6	11.25	1	11
	22.5	1	21
	45	1	38
8	11.25	1	19
	22.5	1	37
	45	2	67
10	11.25	1	29
	22.5	1	57
	45	2	105
12	11.25	1	42
	22.5	1	82
	45	3	150
16	11.25	1	74
	22.5	2	145
	45	5	267
24	11.25	1	166
	22.5	3	325
	45	10	600
30	11.25	2	259
	22.5	5	508
	45	16	938
36	11.25	2	373
	22.5	6	731
	45	23	1350
42	11.25	2	510
	22.5	8	995
	45	31	1840
48	11.25	3	665
	22.5	11	1300
	45	40	2400

THRUST BLOCK BEARING AREAS FOR DUCTILE IRON REDUCERS		
LARGE PIPE DIAMETER (INCHES)	SMALL PIPE DIAMETER (INCHES)	BEARING AREA (SQUARE FEET)
6	4	2
8	4	3
	6	2
10	4	5
	6	4
	8	3
12	6	7
	8	5
	10	3
16	6	13
	8	12
	10	10
	12	7
20	6	22
	8	20
	10	18
	12	16
	16	9
24	8	31
	10	29
	12	26
	16	19
30	12	45
	16	38
	20	30
	24	20
36	16	62
	20	53
	24	43
	30	24
42	20	81
	24	70
	30	51
	36	28
48	30	83
	36	60
	42	32

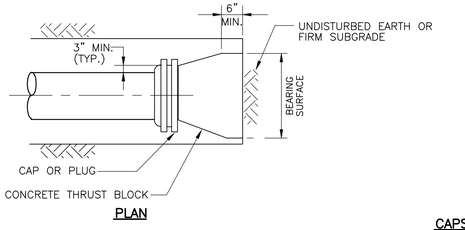
THRUST BLOCK BEARING AREAS FOR DUCTILE IRON TEES		
RUN DIAMETER (INCHES)	BRANCH DIAMETER (INCHES)	BEARING AREA (SQUARE FEET)
6	4	1
	6	3
8	6	3
	8	4
10	6	3
	8	4
	10	6
12	6	3
	8	4
	10	6
	12	9
16	6	3
	8	4
	10	6
	12	9
	16	16
24	6	3
	8	4
	10	6
	12	9
	16	16
	20	24
	24	34
36	6	3
	8	4
	10	6
	12	9
	16	16
	24	34
	30	54
	36	77
42	6	3
	8	4
	10	6
	12	9
	16	16
	24	34
	30	54
	36	77
	42	104
48	6	3
	8	4
	10	6
	12	9
	16	16
	24	34
	30	54
	36	77
	42	104
	48	136



TEES



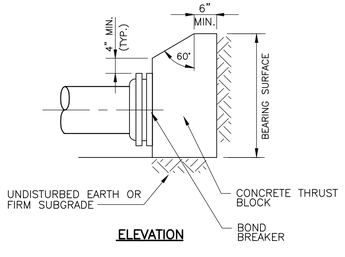
REDUCERS



PLAN

HORIZONTAL BENDS

CAPS OR PLUGS



ELEVATION

CONCRETE THRUST BLOCKS

NTS

THRUST BLOCK BEARING AREAS FOR VALVES, CAPS & PLUGS	
PIPE DIAMETER (INCHES)	BEARING AREA (SQUARE FEET)
6	3
8	4
10	6
12	9
16	16
24	34
30	54
36	77
42	104
48	136

NOTES:

1. BEARING SURFACE, WHERE POSSIBLE, SHOULD BE PLACED AGAINST UNDISTURBED SOIL. WHERE THIS IS NOT POSSIBLE, THE FILL BETWEEN THE BEARING SURFACE AND UNDISTURBED SOIL MUST BE COMPACTED TO AT LEAST 90% STANDARD PROCTOR DENSITY.
2. THRUST BLOCK HEIGHT SHOULD BE EQUAL TO OR LESS THAN ONE-HALF THE TOTAL DEPTH TO THE BOTTOM OF THE BLOCK, BUT NOT LESS THAN THE PIPE DIAMETER.
3. THRUST BLOCK HEIGHT SHOULD BE SELECTED SUCH THAT THE BLOCK WIDTH VARIES BETWEEN ONE AND TWO TIMES THE BLOCK HEIGHT.
4. CONCRETE FOR THRUST BLOCKS SHALL HAVE A MINIMUM DENSITY OF 120 POUNDS PER CUBIC FOOT AND COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS.
5. BEARING AREA FOR THRUST BLOCKS SHOWN IN THESE TABLES IS TOTAL BEARING AREA.

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REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: M. GALLANT
DRAWN BY: J. CABRERA
SHEET CHK'D BY: M. GALLANT
CROSS CHK'D BY: J. PESCATORE
APPROVED BY: P. HUGHES
DATE: MAY 2018

CDM Smith
260 West Exchange Street, Suite 300
Providence, RI 02903
Tel: (401) 751-5360

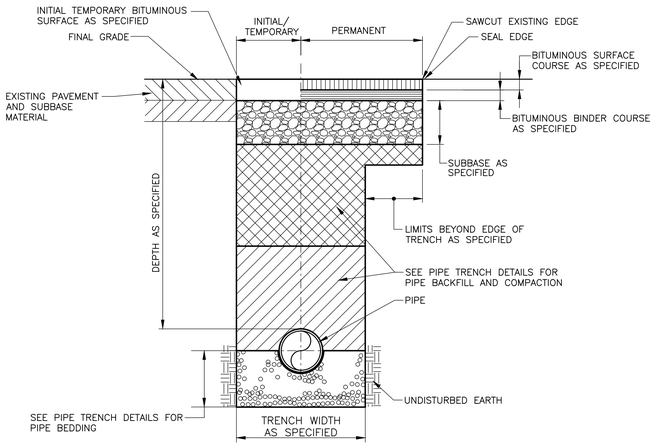
CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS

HIGH HILL RESERVOIR REHABILITATION

CONCRETE THRUST BLOCK DETAILS

PROJECT NO. 0309-101381
FILE NAME: CSTDT006.DWG

SHEET NO.
CD-6

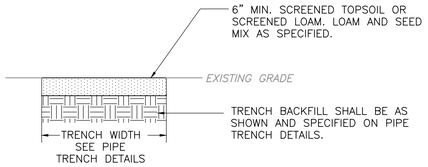


TRENCH AND PAVEMENT RESTORATION

NTS

NOTES:

1. BACKFILL, COMPACTION AND PAVEMENT RESTORATION SHALL BE AS SPECIFIED.
2. SEE PIPE TRENCH DETAILS FOR PIPE BEDDING, BACKFILL AND COMPACTION.
3. SEE INITIAL AND PERMANENT TRENCH PAVEMENT RESTORATION DETAILS THIS SHEET.

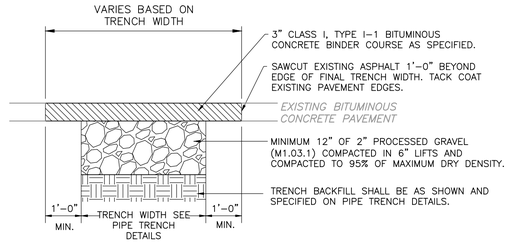


NOTE:

1. CROSS-COUNTRY, AND GRASS AREAS OUTSIDE OF PIPE TRENCH WIDTH SHALL ALSO BE LOAMED AND SEEDED WITH 6" MIN. SCREENED TOPSOIL OR SCREENED LOAM AND LOAM AND SEED MIX AS SPECIFIED.

LOAMING AND SEEDING TRENCH RESTORATION

NTS

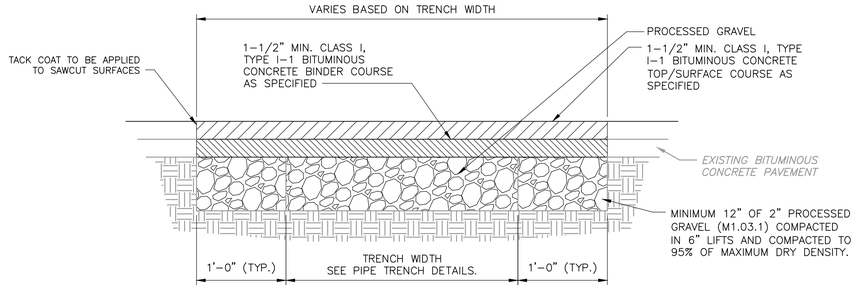


NOTE:

1. NEW PAVEMENT SHALL BE 3" MINIMUM THICK.

INITIAL TEMPORARY TRENCH PAVEMENT

NTS

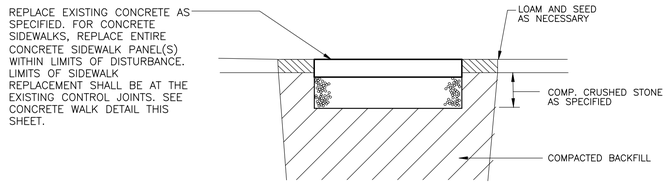


NOTE:

1. NEW PAVEMENT SHALL BE MINIMUM 3" THICK.

PERMANENT TRENCH PAVEMENT

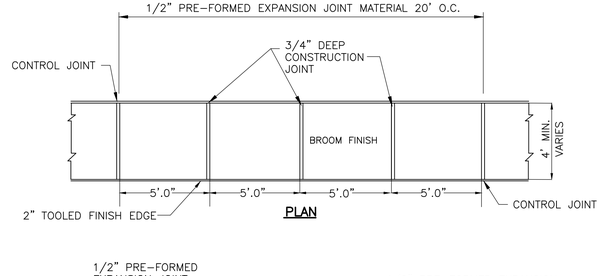
NTS



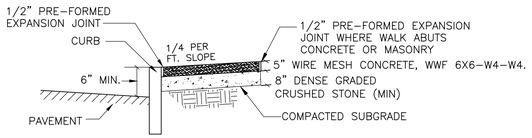
CONCRETE SIDEWALK

SIDEWALK REPAIR

NTS



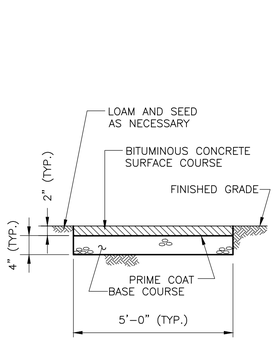
PLAN



SECTION

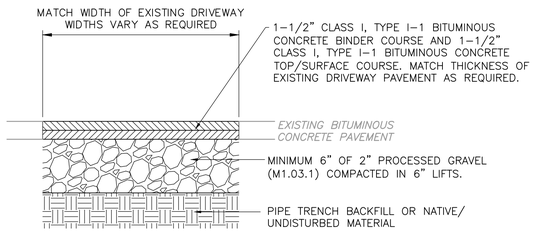
CONCRETE WALK

NTS



BITUMINOUS CONCRETE WALKWAY

NTS

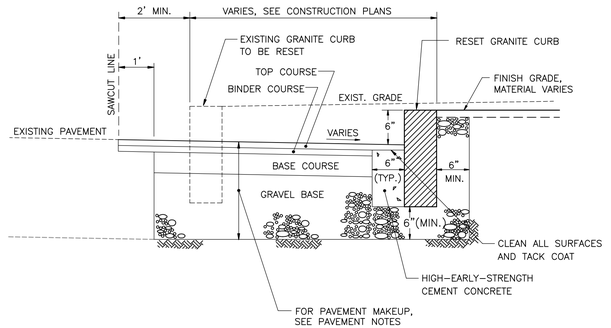


NOTES:

1. NEW PAVEMENT SHALL BE 3" MINIMUM TOTAL THICKNESS BUT SHALL BE INCREASED AS REQUIRED TO MEET THE THICKNESS OF EXISTING DRIVEWAY PAVEMENT.
2. LENGTH OF PAVED DRIVEWAY RESTORATION AS SPECIFIED, SHOWN ON THE DRAWINGS OR REQUIRED.

PAVED DRIVEWAY RESTORATION

NTS

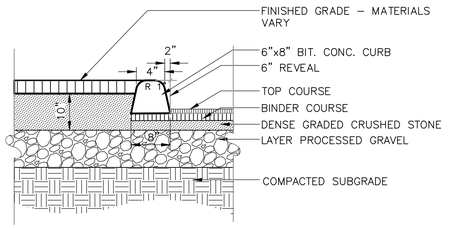


NOTE:

1. THE PROCEDURE SHOWN IS APPLICABLE ONLY IF CURB IS TO BE SET AFTER BASE AND/OR BINDER COURSE ARE IN PLACE OTHERWISE CEMENT CONCRETE WILL BE ELIMINATED AND GRAVEL BROUGHT UP TO BOTTOM OF BASE COURSE.

GRANITE CURB RESET

NTS

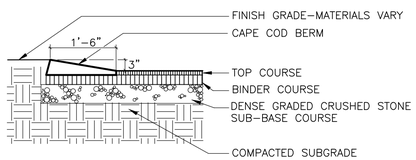


NOTE:

1. HOT-MIX ASPHALT CURB SHALL BE TYPE 3 IN ACCORDANCE WITH MASSDOT STANDARD SPECIFICATIONS.

ASPHALT CURB

NTS



CAPE COD BERM

NTS

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: M. GALLANT
DRAWN BY: J. CABRERA
SHEET CHK'D BY: M. GALLANT
CROSS CHK'D BY: J. PESCATORE
APPROVED BY: P. HUGHES
DATE: MAY 2018

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260 West Exchange Street, Suite 300
Providence, RI 02903
Tel: (401) 751-5360

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS

HIGH HILL RESERVOIR REHABILITATION

SURFACE RESTORATION DETAILS

PROJECT NO. 0309-101381
FILE NAME: CSTDT007.DWG

SHEET NO.
CD-7

XREFs: [CDMS_2436] Images: []
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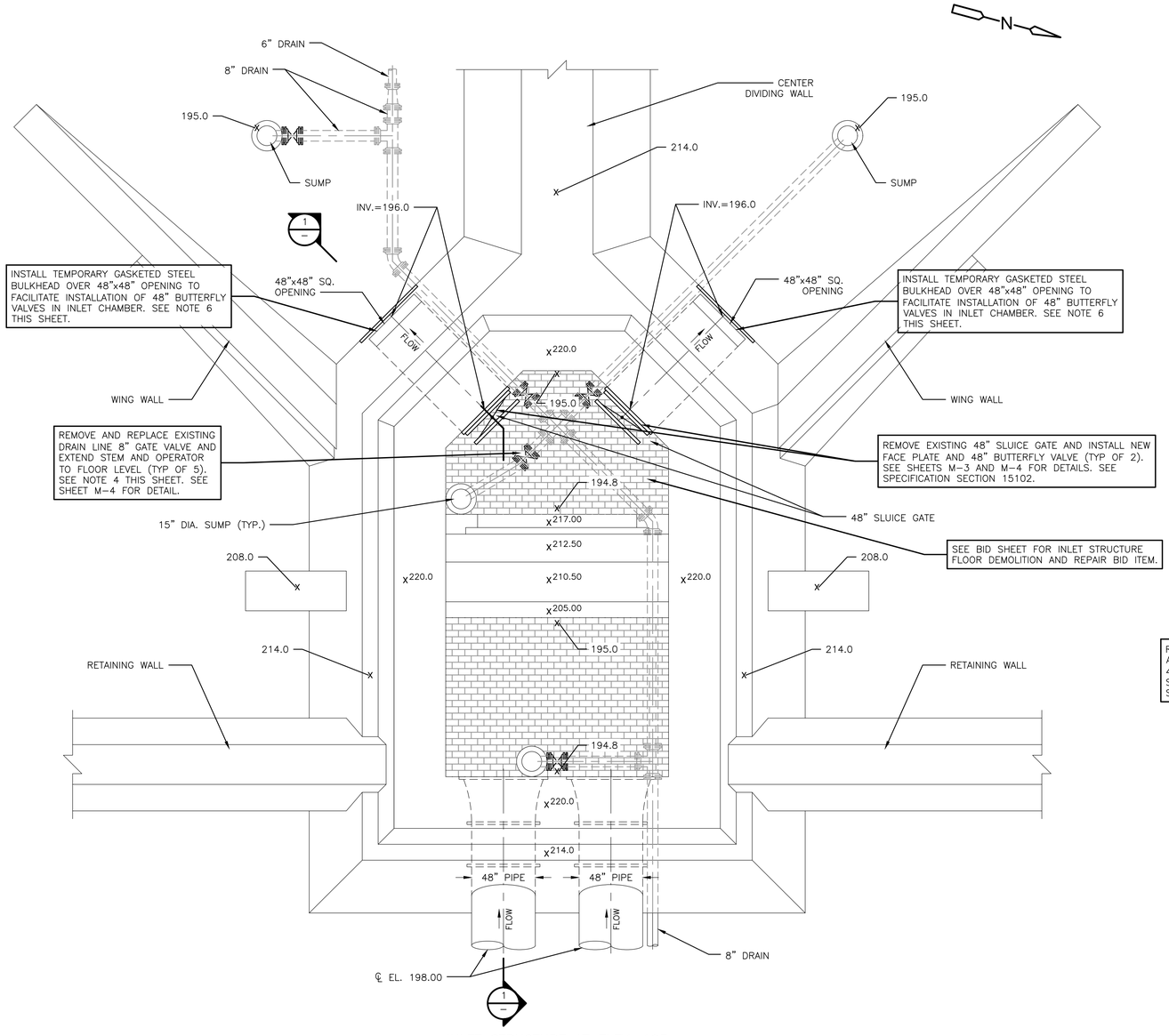
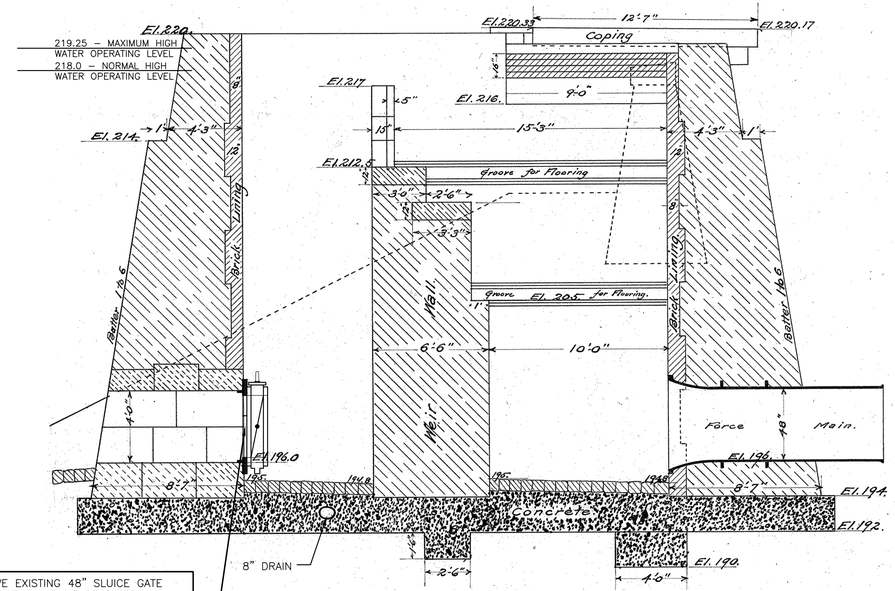


INLET STRUCTURE AT ELEV. 195

PLAN

1/4" = 1'-0"



INLET STRUCTURE

SECTION

1/4" = 1'-0"

1
–

NOTE:

1. DRAWINGS ARE BASED ON AVAILABLE RECORDS, DRAWINGS AND INFORMATION FROM THE OWNER. IT IS NOT WARRANTED THAT THE DRAWINGS SHOW ALL EXISTING CONDITIONS THAT MAY BE ENCOUNTERED BY THE CONTRACTOR. CONTRACTOR SHALL CONDUCT INVESTIGATIONS AS CONTRACTOR DEEMS NECESSARY TO SATISFY HIMSELF AS TO THE CONDITIONS EXISTING ON THE PROJECT SITE AND AS REQUIRED TO PERFORM ALL WORK REQUIRED AS PART OF THIS PROJECT. CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE CONDITIONS EXISTING WITHIN THE PROJECT AREAS; THE TYPE OF EQUIPMENT NEEDED TO PERFORM THE WORK; AND THE CHARACTER, QUALITY, AND QUANTITY OF MATERIALS TO BE ENCOUNTERED INSOFAR AS THIS INFORMATION IS REASONABLY ASCERTAINABLE. CONTRACTOR SHALL RESTORE ALL EXISTING AREAS AND FACILITIES TO THE CONDITIONS THAT EXISTED BEFORE CONSTRUCTION. ANY FACILITY THAT IS MODIFIED BASED ON CONTRACTOR'S MEANS AND METHODS TO CONSTRUCT THE NEW WORK SHALL BE REPAIRED IN-KIND TO A CONDITION EQUAL TO OR BETTER THAN WHAT EXISTED PRIOR TO CONSTRUCTION.
2. SEE BID SHEET FOR INLET STRUCTURE FLOOR DEMOLITION AND REPAIR BID ITEM.
3. ALL EXISTING FLOOR STAND VALVE OPERATORS TO BE REMOVED AND REPLACED. SEE SHEET M-4 AND SPECIFICATION SECTION 15102 FOR DETAILS.
4. AS REQUIRED, CONTRACTOR TO REMOVE EXISTING BRICK AND CONCRETE AROUND EXISTING DRAIN VALVES IN ORDER TO CUT OUT THE EXISTING DRAIN VALVES, ADD SPOOL PIECES AS REQUIRED, INSTALL NEW MECHANICAL JOINT GATE VALVE, AND REPLACE THE CONCRETE AND BRICK TO MATCH THE EXISTING.
5. ALL GATE VALVE STEMS AND OPERATOR TO BE BROUGHT UP TO FLOOR LEVEL AS SHOWN IN DETAIL D, SHEET M-4.
6. TEMPORARY BULK HEAD
   - 6.1. DESIGN OF TEMPORARY STRUCTURES ARE THE RESPONSIBILITY OF THE CONTRACTOR. THIS INCLUDES THE BULKHEAD(S) NEEDED FOR SUCCESSFUL SEQUENCING OF THE BUTTERFLY VALVE INSTALLATION WORK.
   - 6.2. TEMPORARY BULKHEADS ARE TO BE DESIGNED BY THE CONTRACTOR MEETING THE FOLLOWING DESIGN CRITERIA.
     - 6.2.1. BULKHEADS TO CONFORM TO THE REQUIREMENTS OF SPECIFICATION SECTION 05500.
     - 6.2.2. CONTRACTOR'S CALCULATIONS ARE TO DEMONSTRATE THAT THE PLANNED BOLT LOADS FOR THE INSTALLATION ARE WITHIN THE ALLOWABLE BOLT LOADS PROVIDED HEREIN AND/OR IN SPECIFICATION SECTION 05500.
     - 6.2.3. DESIGN SUBMITTAL FOR THE BULKHEAD TO INCLUDE: SEALED STRUCTURAL CALCULATIONS FOR THE BULKHEAD, GASKET AND BOLT PERFORMANCE, SEALED CONSTRUCTION DRAWINGS FOR THE BULKHEAD, MANUFACTURING TOLERANCES FOR THE BULKHEAD AND THE SEATING SURFACE, INSTALLATION METHODS, BOLT TIGHTENING SEQUENCE AND PLAN.
     - 6.2.4. PROVIDE LIFTING HOOKS/LUGS NEEDED TO HANDLE THE BULKHEADS DURING INSTALLATION AND REMOVAL OF THESE BULKHEADS, AND THEIR DESIGN.

1/4" = 1'-0"

2 1 0 2 4

COMMONWEALTH OF MASSACHUSETTS
PATRICK G. HUGHES
No. 50033
REGISTERED PROFESSIONAL ENGINEER
5/9/18

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: D. MARTIN
DRAWN BY: A. WELDON
SHEET CHK'D BY: M. GALLANT
CROSS CHK'D BY: J. PESCATORE
APPROVED BY: P. HUGHES
DATE: MAY 2018

CDM Smith
260 West Exchange Street, Suite 300
Providence, RI 02903
Tel: (401) 751-5360

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS

HIGH HILL RESERVOIR REHABILITATION

INLET STRUCTURE MODIFICATIONS

PROJECT NO. 0309-101381
FILE NAME: M001ICPL.DWG

SHEET NO.
M-1

XREFs: [CDMS_2436_MWP002IS] Images: []
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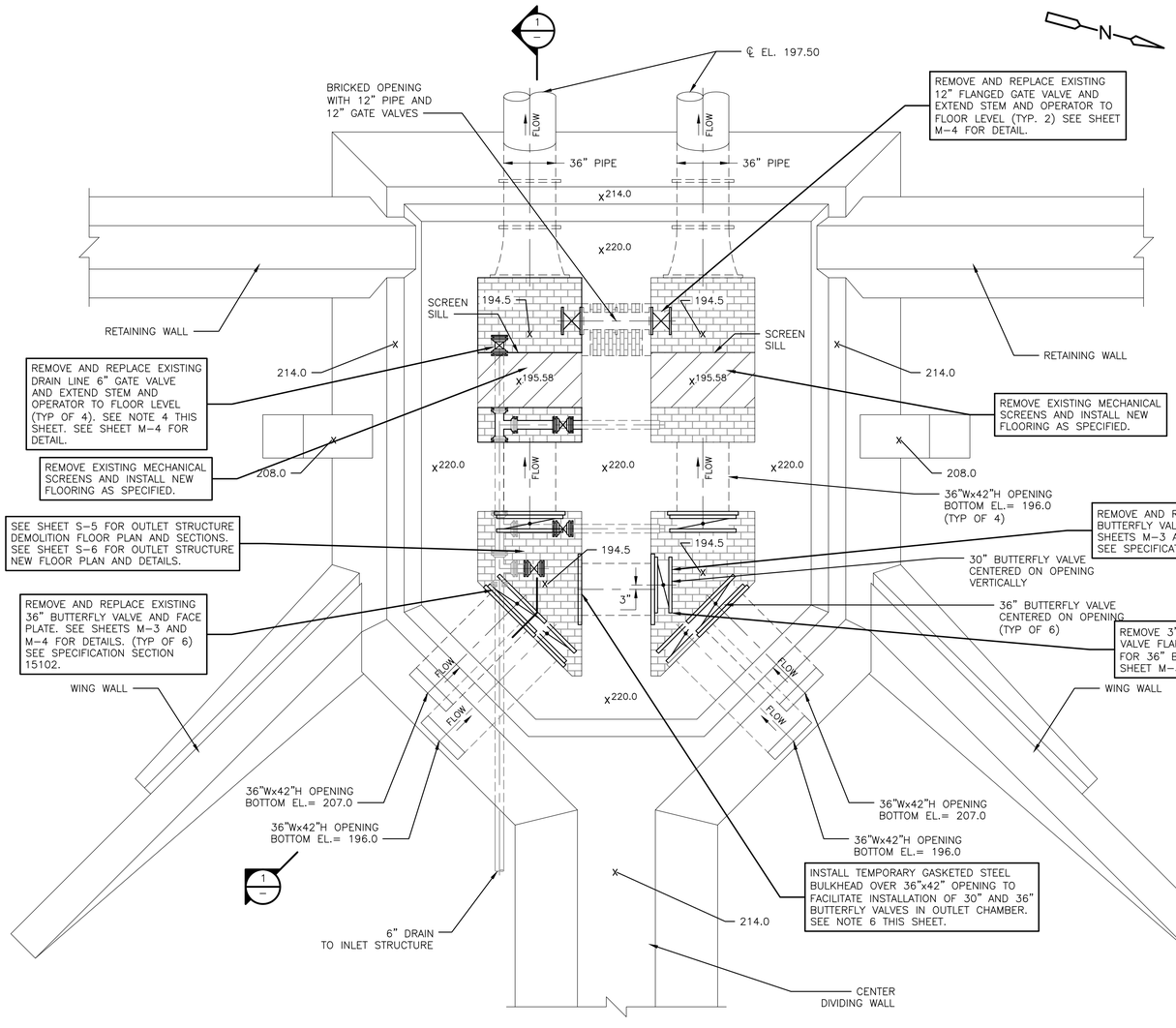
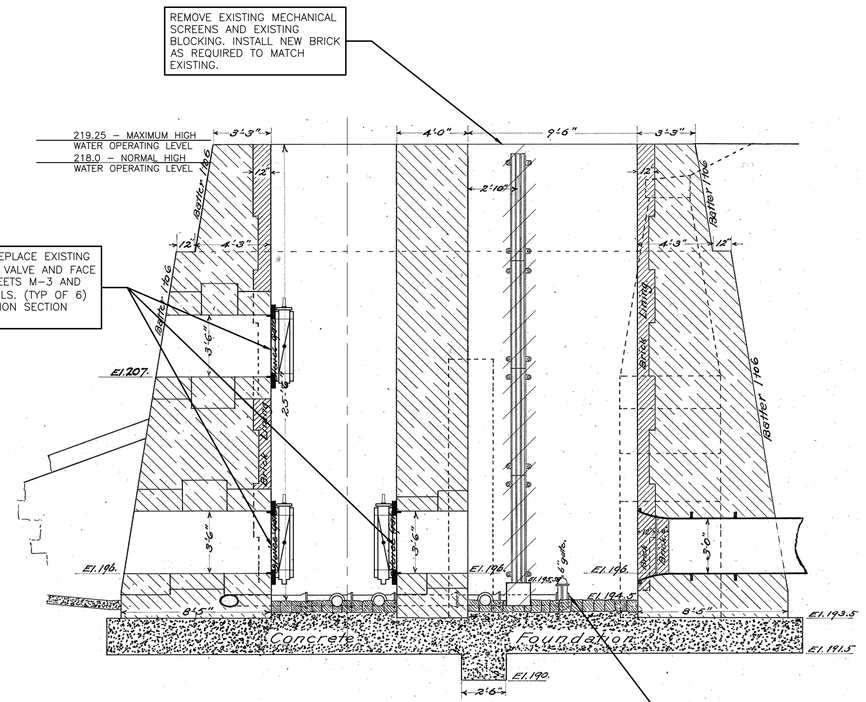


OUTLET STRUCTURE AT ELEV. 197.5

PLAN

1/4" = 1'-0"



OUTLET STRUCTURE

SECTION 1/4" = 1'-0" — 1

NOTE:

1. DRAWINGS ARE BASED ON AVAILABLE RECORDS, DRAWINGS AND INFORMATION FROM THE OWNER. IT IS NOT WARRANTED THAT THE DRAWINGS SHOW ALL EXISTING CONDITIONS THAT MAY BE ENCOUNTERED BY THE CONTRACTOR. CONTRACTOR SHALL CONDUCT INVESTIGATIONS AS CONTRACTOR DEEMS NECESSARY TO SATISFY HIMSELF AS TO THE CONDITIONS EXISTING ON THE PROJECT SITE AND AS REQUIRED TO PERFORM ALL WORK REQUIRED AS PART OF THIS PROJECT. CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE CONDITIONS EXISTING WITHIN THE PROJECT AREAS; THE TYPE OF EQUIPMENT NEEDED TO PERFORM THE WORK; AND THE CHARACTER, QUALITY, AND QUANTITY OF MATERIALS TO BE ENCOUNTERED INSOFAR AS THIS INFORMATION IS REASONABLY ASCERTAINABLE. CONTRACTOR SHALL RESTORE ALL EXISTING AREAS AND FACILITIES TO THE CONDITIONS THAT EXISTED BEFORE CONSTRUCTION. ANY FACILITY THAT IS MODIFIED BASED ON CONTRACTOR'S MEANS AND METHODS TO CONSTRUCT THE NEW WORK SHALL BE REPAIRED IN-KIND TO A CONDITION EQUAL TO OR BETTER THAN WHAT EXISTED PRIOR TO CONSTRUCTION.
2. SEE SHEET S-5 FOR OUTLET STRUCTURE DEMOLITION FLOOR PLAN AND SECTIONS. SEE SHEET S-6 FOR OUTLET STRUCTURE NEW FLOOR PLANS AND DETAILS.
3. ALL EXISTING FLOOR STAND VALVE OPERATORS TO BE REMOVED AND REPLACED. SEE SPECIFICATION SECTION 15102.
4. AS REQUIRED, CONTRACTOR TO REMOVE EXISTING BRICK AND CONCRETE AROUND EXISTING DRAIN VALVES IN ORDER TO CUT OUT THE EXISTING DRAIN VALVES, ADD SPOOL PIECES AS REQUIRED, INSTALL NEW MECHANICAL JOINT GATE VALVE, AND REPLACE THE CONCRETE AND BRICK TO MATCH THE EXISTING.
5. ALL GATE VALVE STEMS AND OPERATOR TO BE BROUGHT UP TO FLOOR LEVEL AS SHOWN IN DETAIL D, SHEET M-4.
6. TEMPORARY BULK HEAD
   - 6.1. DESIGN OF TEMPORARY STRUCTURES ARE THE RESPONSIBILITY OF THE CONTRACTOR. THIS INCLUDES THE BULKHEAD(S) NEEDED FOR SUCCESSFUL SEQUENCING OF THE BUTTERFLY VALVE INSTALLATION WORK.
   - 6.2. TEMPORARY BULKHEADS ARE TO BE DESIGNED BY THE CONTRACTOR MEETING THE FOLLOWING DESIGN CRITERIA.
     - 6.2.1. BULKHEADS TO CONFORM TO THE REQUIREMENTS OF SPECIFICATION SECTION 05500.
     - 6.2.2. CONTRACTOR'S CALCULATIONS ARE TO DEMONSTRATE THAT THE PLANNED BOLT LOADS FOR THE INSTALLATION ARE WITHIN THE ALLOWABLE BOLT LOADS PROVIDED HEREIN AND/OR IN SPECIFICATION SECTION 05500.
     - 6.2.3. DESIGN SUBMITTAL FOR THE BULKHEAD TO INCLUDE: SEALED STRUCTURAL CALCULATIONS FOR THE BULKHEAD, GASKET AND BOLT PERFORMANCE, SEALED CONSTRUCTION DRAWINGS FOR THE BULKHEAD, MANUFACTURING TOLERANCES FOR THE BULKHEAD AND THE SEATING SURFACE, INSTALLATION METHODS, BOLT TIGHTENING SEQUENCE AND PLAN.
     - 6.2.4. PROVIDE LIFTING HOOKS/LUGS NEEDED TO HANDLE THE BULKHEADS DURING INSTALLATION AND REMOVAL OF THESE BULKHEADS, AND THEIR DESIGN.

1/4" = 1'-0"

2 1 0 2 4

COMMONWEALTH OF MASSACHUSETTS — PATRICK G. HUGHES — No. 50033 — REGISTERED PROFESSIONAL ENGINEER

5/8/18

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: D. MARTIN
DRAWN BY: A. WELDON
SHEET CHK'D BY: M. GALLANT
CROSS CHK'D BY: J. PESCATORE
APPROVED BY: P. HUGHES
DATE: MAY 2018

CDM Smith
260 West Exchange Street, Suite 300
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Tel: (401) 751-5360

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS

HIGH HILL RESERVOIR REHABILITATION

OUTLET STRUCTURE MODIFICATIONS

PROJECT NO. 0309-101381
FILE NAME: M0020CPL.DWG

SHEET NO.
M-2

XREFs: [CDMS_2436, NWP003OS] Images: []
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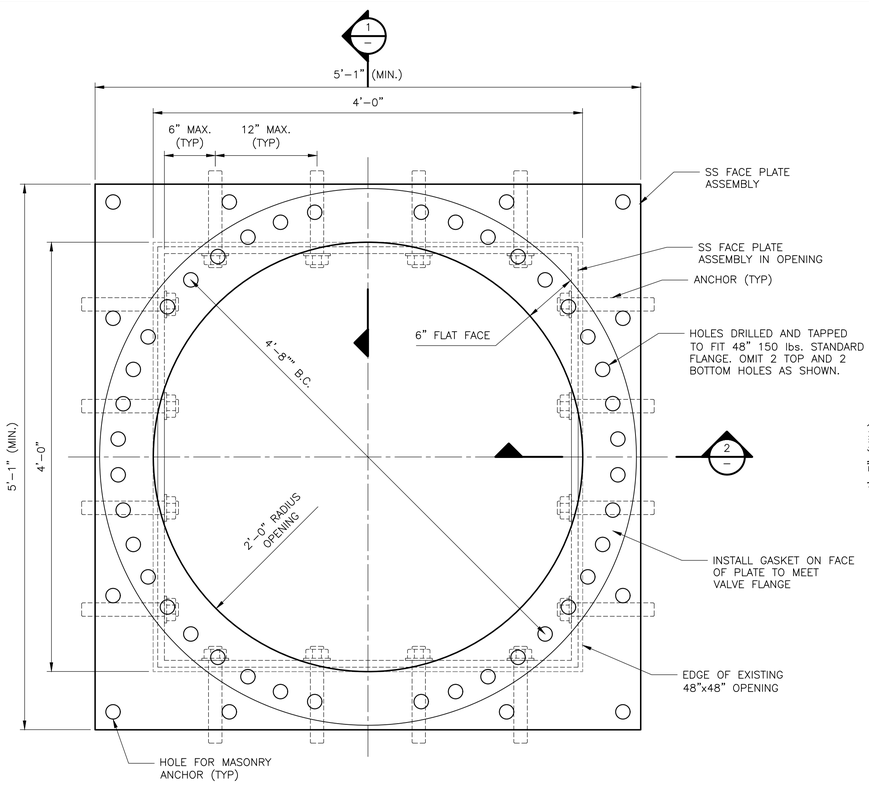
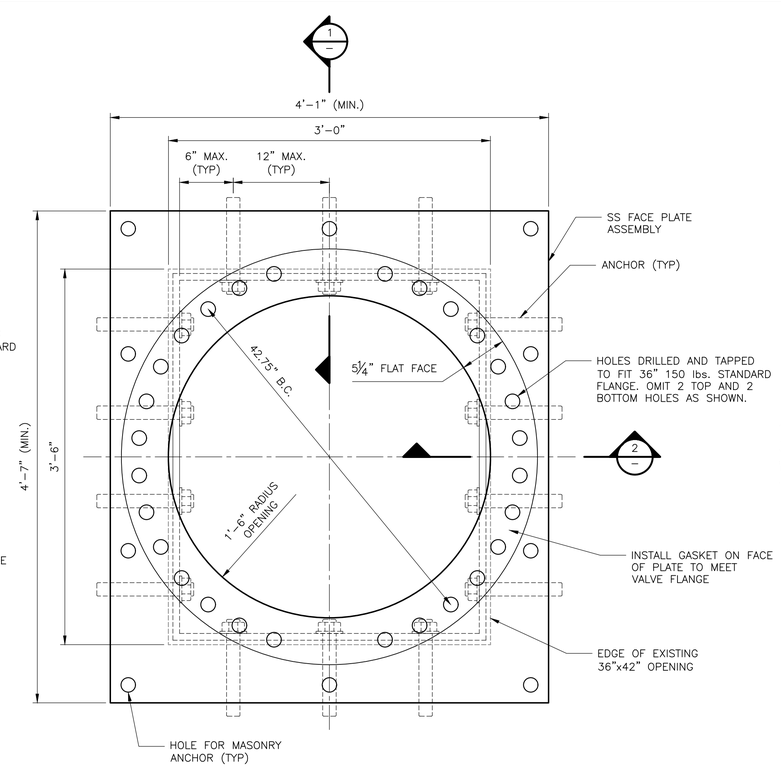


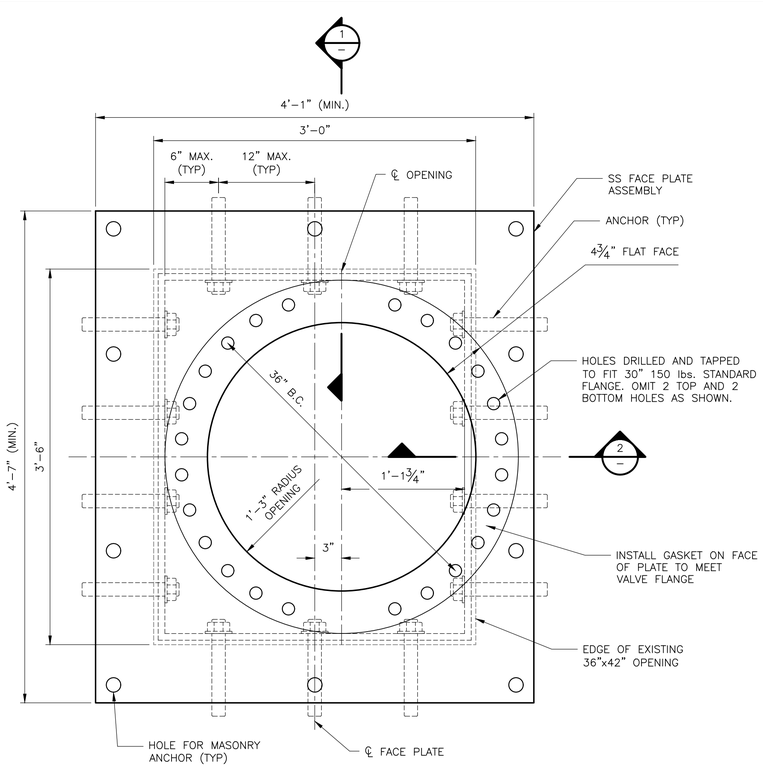
STAINLESS STEEL FACE PLATE FOR 48" VALVE (2 REQUIRED)

DETAIL A
1-1/2" = 1'-0"



STAINLESS STEEL FACE PLATE FOR 36" VALVE (6 REQUIRED)

DETAIL B
1-1/2" = 1'-0"

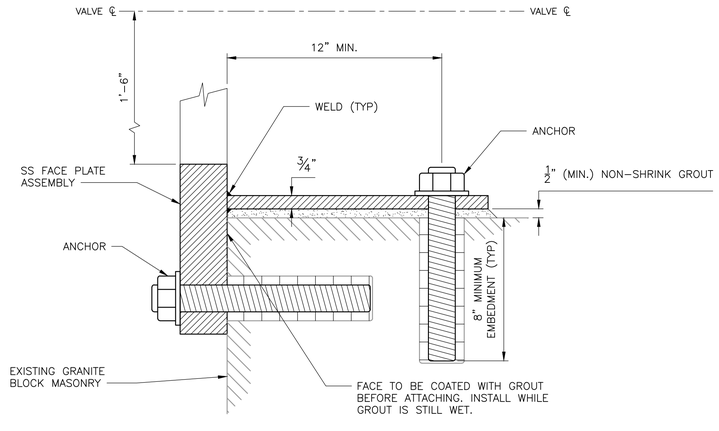


STAINLESS STEEL FACE PLATE FOR 30" VALVE (1 REQUIRED)

DETAIL C
1-1/2" = 1'-0"

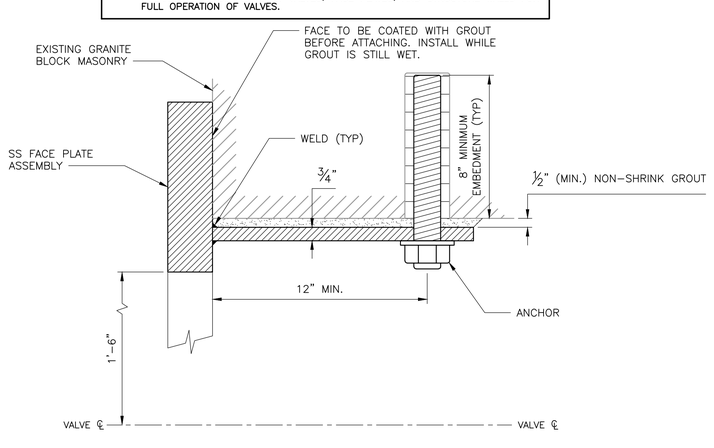
NOTES:

1. ALL DIMENSIONS SHOWN ARE MINIMUM UNLESS OTHERWISE NOTED.
2. CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF THE FACE PLATES ASSEMBLY, SEE SPECIFICATION 15102. CONTRACTOR TO COORDINATE FACE PLATE ASSEMBLY DIMENSIONS WITH BUTTERFLY VALVE MANUFACTURER AND ALLOW FOR SUFFICIENT CLEARANCES FROM ADJACENT VALVES, FACE PLATES, AND STRUCTURE WALLS FOR FULL OPERATION OF VALVES.



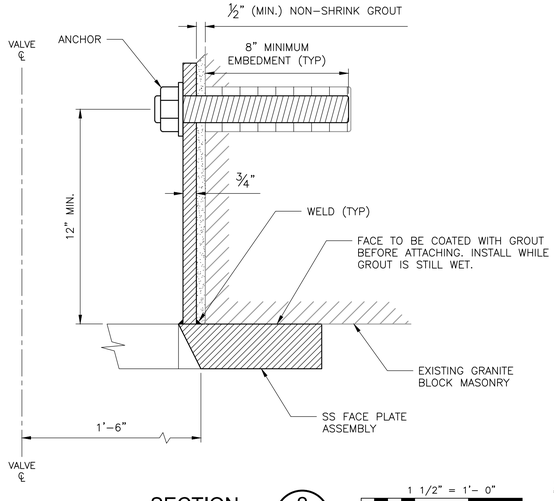
FACE PLATE FASTENING

DETAIL D
3" = 1'-0"



(36" SHOWN – 30" AND 48" SIMILAR)

SECTION 1
3" = 1'-0"



SECTION 2
3" = 1'-0"

1 1/2" = 1'- 0"
.5 0 .5 1
3" = 1'- 0"
.25 0 .25 .5

COMMONWEALTH OF MASSACHUSETTS
PATRICK G. HUGHES
No. 50033
REGISTERED PROFESSIONAL ENGINEER
5/9/18

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: D. MARTIN
DRAWN BY: A. WELDON
SHEET CHK'D BY: M. GALLANT
CROSS CHK'D BY: J. PESCATORE
APPROVED BY: P. HUGHES
DATE: MAY 2018

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CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS

HIGH HILL RESERVOIR REHABILITATION

FACE PLATE ASSEMBLY INSTALLATION DETAILS

PROJECT NO. 0309-101381
FILE NAME: M003FPDT.DWG

SHEET NO.
M-3

XREFs: [CDMS_2436] Images: []
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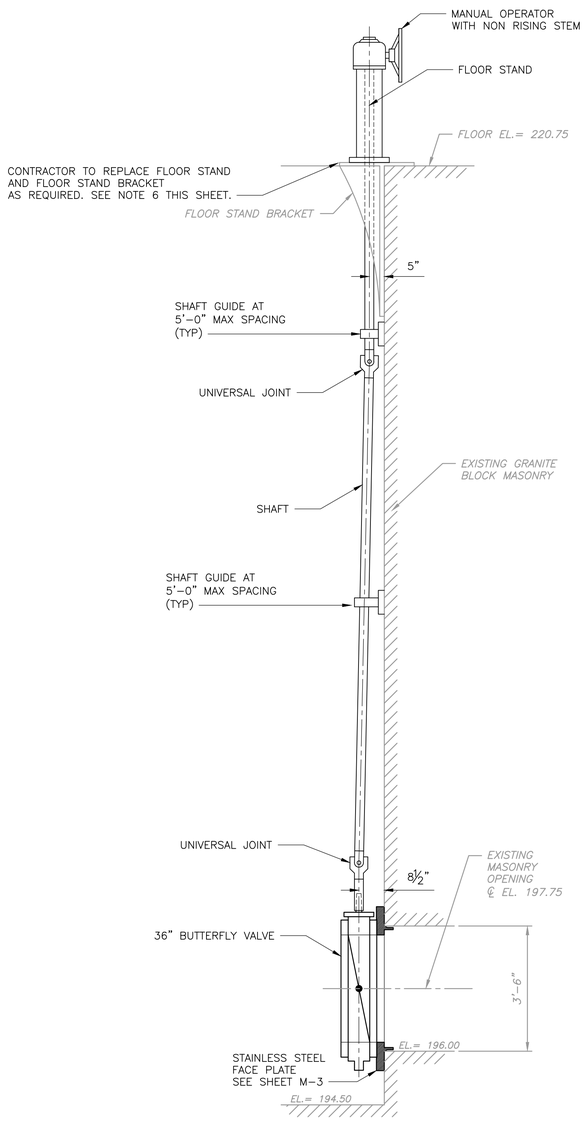
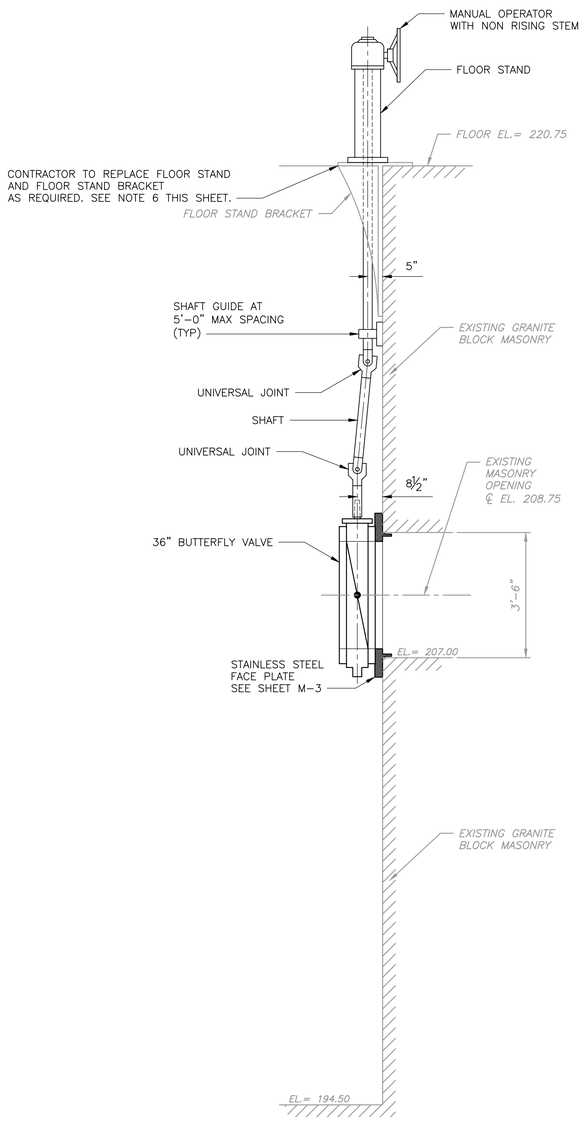


NOTE:
NEW 36–INCH BUTTERFLY VALVE INSTALLATION SHOWN, 30–INCH AND 48–INCH SIMILAR.

LOWER VALVE OPERATOR INSTALLATION

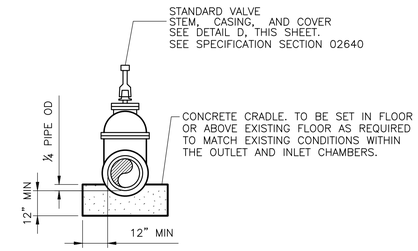
DETAIL A
1/2" = 1'–0"



NOTE:
NEW 36–INCH BUTTERFLY VALVE INSTALLATION SHOWN, 30–INCH AND 48–INCH SIMILAR.

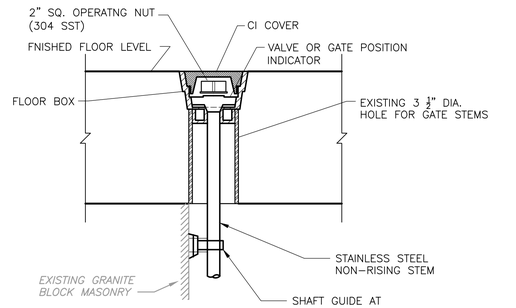
UPPER VALVE OPERATOR INSTALLATION

DETAIL B
1/2" = 1'–0"



VERTICAL GATE VALVE INSTALLATION

DETAIL C
NTS



RECESSED NUT
GATE OPERATOR

DETAIL D
NTS

NOTE:

1. DRAWINGS ARE BASED ON AVAILABLE RECORDS, DRAWINGS AND INFORMATION FROM THE OWNER. IT IS NOT WARRANTED THAT THE DRAWINGS SHOW ALL EXISTING CONDITIONS THAT MAY BE ENCOUNTERED BY THE CONTRACTOR. CONTRACTOR SHALL CONDUCT INVESTIGATIONS AS CONTRACTOR DEEMS NECESSARY TO SATISFY HIMSELF AS TO THE CONDITIONS EXISTING ON THE PROJECT SITE AND AS REQUIRED TO PERFORM ALL WORK REQUIRED AS PART OF THIS PROJECT. CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE CONDITIONS EXISTING WITHIN THE PROJECT AREAS; THE TYPE OF EQUIPMENT NEEDED TO PERFORM THE WORK; AND THE CHARACTER, QUALITY, AND QUANTITY OF MATERIALS TO BE ENCOUNTERED INSOFAR AS THIS INFORMATION IS REASONABLY ASCERTAINABLE. CONTRACTOR SHALL RESTORE ALL EXISTING AREAS AND FACILITIES TO THE CONDITIONS THAT EXISTED BEFORE CONSTRUCTION. ANY FACILITY THAT IS MODIFIED BASED ON CONTRACTOR'S MEANS AND METHODS TO CONSTRUCT THE NEW WORK SHALL BE REPAIRED IN-KIND TO A CONDITION EQUAL TO OR BETTER THAN WHAT EXISTED PRIOR TO CONSTRUCTION.
2. SEE BID SHEET FOR INLET STRUCTURE FLOOR DEMOLITION AND REPAIR BID ITEM.
3. SEE SHEET S-5 FOR OUTLET STRUCTURE DEMOLITION FLOOR PLAN AND SECTIONS. SEE SHEET S-6 FOR OUTLET STRUCTURE NEW FLOOR PLANS AND DETAILS.
4. ALL EXISTING FLOOR STAND VALVE OPERATORS TO BE REMOVED AND REPLACED. SEE SPECIFICATION SECTION 15102.
5. AS REQUIRED, CONTRACTOR TO REMOVE EXISTING BRICK AND CONCRETE AROUND EXISTING DRAIN VALVES IN ORDER TO CUT OUT THE EXISTING DRAIN VALVES, ADD SPOOL PIECES AS REQUIRED, INSTALL NEW MECHANICAL JOINT GATE VALVE, AND REPLACE THE CONCRETE AND BRICK TO MATCH THE EXISTING.
6. ALL GATE VALVE STEMS AND OPERATOR TO BE BROUGHT UP TO FLOOR LEVEL AS SHOWN IN DETAIL D, SHEET M-4.
7. CONTRACTOR IS RESPONSIBLE FOR HAVING A REGISTERED PROFESSIONAL ENGINEER SUBMIT A DESIGN FOR ENGINEERS REVIEW AND APPROVAL FOR THE REPLACEMENT OF THE FLOOR STAND AND FLOOR STAND BRACKET BASED ON THE SPECIFIC PROPOSED EQUIPMENT TO BE PROVIDED BY THE CONTRACTOR.

1/2" = 1'– 0"
1 0 1 2

COMMONWEALTH OF MASSACHUSETTS
PATRICK G. HUGHES
No. 50033
REGISTERED PROFESSIONAL ENGINEER
5/9/18

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: D. MARTIN
DRAWN BY: A. WELDON
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APPROVED BY: P. HUGHES
DATE: MAY 2018

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Tel: (401) 751-5360

CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS

HIGH HILL RESERVOIR REHABILITATION

VALVE INSTALLATION DETAILS

PROJECT NO. 0309–101381
FILE NAME: M004BVDT.DWG

SHEET NO.
M-4

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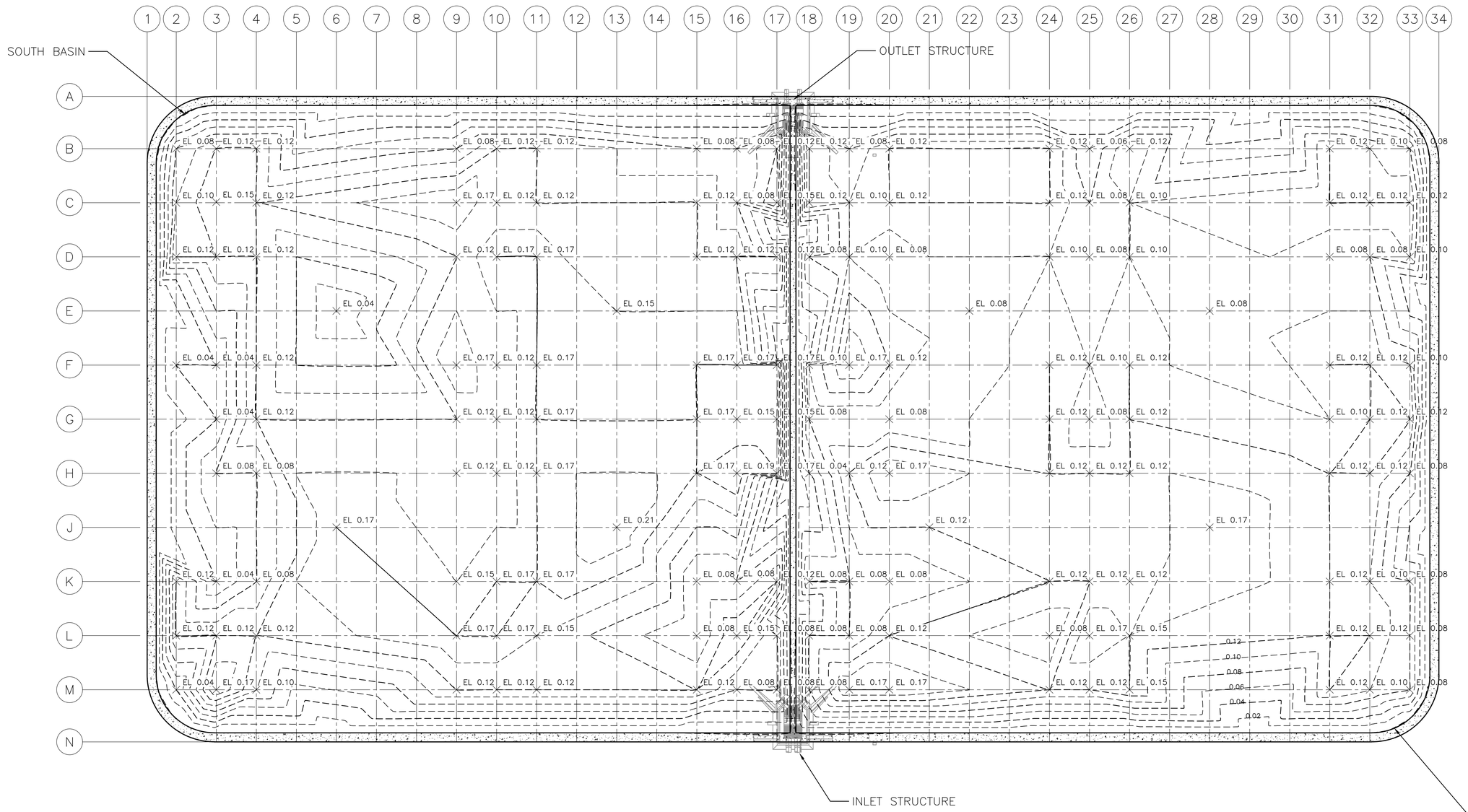

PLAN

1" = 40'

20 0 40

NOTES:

1. SEDIMENT DEPTHS AND THE ESTIMATED SEDIMENT CONTOURS SHOWN ON THIS DRAWING ARE AN ESTIMATE BASED ON DEPTH MEASUREMENTS TAKEN BY A DIVER DURING AN UNDERWATER INSPECTION PERFORMED IN DECEMBER 2013 AND JANUARY 2014. IT IS NOT WARRANTED THAT THIS ESTIMATION IS CORRECT. IT IS PROVIDED SOLELY FOR CONTRACTOR'S CONVENIENCE.
2. BOTTOM OF TANK ELEVATION IS 196.00 FEET.
3. MEASURED DEPTHS OF SEDIMENT IS IN FEET. ELEVATIONS SHOWN RELATIVE TO A TANK BOTTOM ELEVATION OF 0.0–FT.
4. DRAWINGS ARE BASED ON AVAILABLE RECORDS, DRAWINGS AND INFORMATION FROM THE OWNER. IT IS NOT WARRANTED THAT THE DRAWINGS SHOW ALL EXISTING CONDITIONS THAT MAY BE ENCOUNTERED BY THE CONTRACTOR. CONTRACTOR SHALL CONDUCT INVESTIGATIONS AS CONTRACTOR DEEMS NECESSARY TO SATISFY HIMSELF AS TO THE CONDITIONS EXISTING ON THE PROJECT SITE AND AS REQUIRED TO PERFORM ALL WORK REQUIRED AS PART OF THIS PROJECT. CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE CONDITIONS EXISTING WITHIN THE PROJECT AREAS; THE TYPE OF EQUIPMENT NEEDED TO PERFORM THE WORK; AND THE CHARACTER, QUALITY, AND QUANTITY OF MATERIALS TO BE ENCOUNTERED INSOFAR AS THIS INFORMATION IS REASONABLY ASCERTAINABLE. CONTRACTOR SHALL RESTORE ALL EXISTING AREAS AND FACILITIES TO THE CONDITIONS THAT EXISTED BEFORE CONSTRUCTION. ANY FACILITY THAT IS MODIFIED BASED ON CONTRACTOR'S MEANS AND METHODS TO CONSTRUCT THE NEW WORK SHALL BE REPAIRED IN–KIND TO A CONDITION EQUAL TO OR BETTER THAN WHAT EXISTED PRIOR TO CONSTRUCTION.

COMMONWEALTH OF MASSACHUSETTS
PATRICK D. HUGHES
No. 50533
REGISTERED PROFESSIONAL ENGINEER
5/9/18

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: D. MARTIN
DRAWN BY: A. WELDON
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CROSS CHK'D BY: J. PESCATORE
APPROVED BY: P. HUGHES
DATE: MAY 2018

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CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS

HIGH HILL RESERVOIR REHABILITATION

EXISTING SEDIMENT PROFILE

PROJECT NO. 0309–101381
FILE NAME: M005RVPL.DWG

SHEET NO.
M-5

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PHOTO 1
INLET STRUCTURE
(EXTERIOR)

PHOTO 2
INLET STRUCTURE
(INTERIOR - LOOKING INSIDE FROM DOOR)

PHOTO 3
INLET STRUCTURE
(INTERIOR - LOOKING INSIDE FROM DOOR)

PHOTO 4
OUTLET STRUCTURE
(EXTERIOR)

PHOTO 5
OUTLET STRUCTURE
(INTERIOR - LOOKING INSIDE FROM DOOR)

PHOTO 6
OUTLET STRUCTURE
(INTERIOR - EXISTING MECHANICAL SCREEN)

PHOTO 7
OUTLET STRUCTURE
(INTERIOR - EXISTING VALVE OPERATORS ON NORTH SIDE)

PHOTO 8
OUTLET STRUCTURE
(INTERIOR - EXISTING VALVE OPERATORS ON SOUTH SIDE)

NOTE:

1. THESE PHOTOS HAVE BEEN PROVIDED FOR THE CONTRACTORS CONVENIENCE ONLY AND IT IS NOT WARRANTED THAT THEY REPRESENT ALL EXISTING CONDITIONS. CONTRACTOR IS RESPONSIBLE FOR VISITING THE SITE, AS SPECIFIED, TO CONFIRM ALL EXISTING CONDITIONS AND TO MAKE ANY INVESTIGATIONS AS CONTRACTOR DEEMS NECESSARY.

COMMONWEALTH OF MASSACHUSETTS
PATRICK D. HUGHES
No. 50633
REGISTERED PROFESSIONAL ENGINEER
5/9/18

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: D. MARTIN
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CROSS CHK'D BY: J. PESCATORE
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DATE: MAY 2018

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CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS

HIGH HILL RESERVOIR REHABILITATION

EXISTING INLET AND OUTLET STRUCTURE PHOTOS

PROJECT NO. 0309-101381
FILE NAME: M006STDT.DWG

SHEET NO.
M-6

XREFs: [CDMS_2436] Images: [01 - Inlet Structure - Exterior, 02 - Inlet Structure - Interior (Looking Inside from Door), 03 - Inlet Structure - Interior (Looking Inside from Door), 04 - Outlet Structure - Exterior, 05 - Outlet Structure - Interior (Looking Inside from Door), 06 - Outlet Structure - Interior (Existing Mechanical Screen), 07 - Outlet Structure - Interior (Existing Valve Operators on North Side), 08 - Outlet Structure - Interior (Existing Valve Operators on South Side)]
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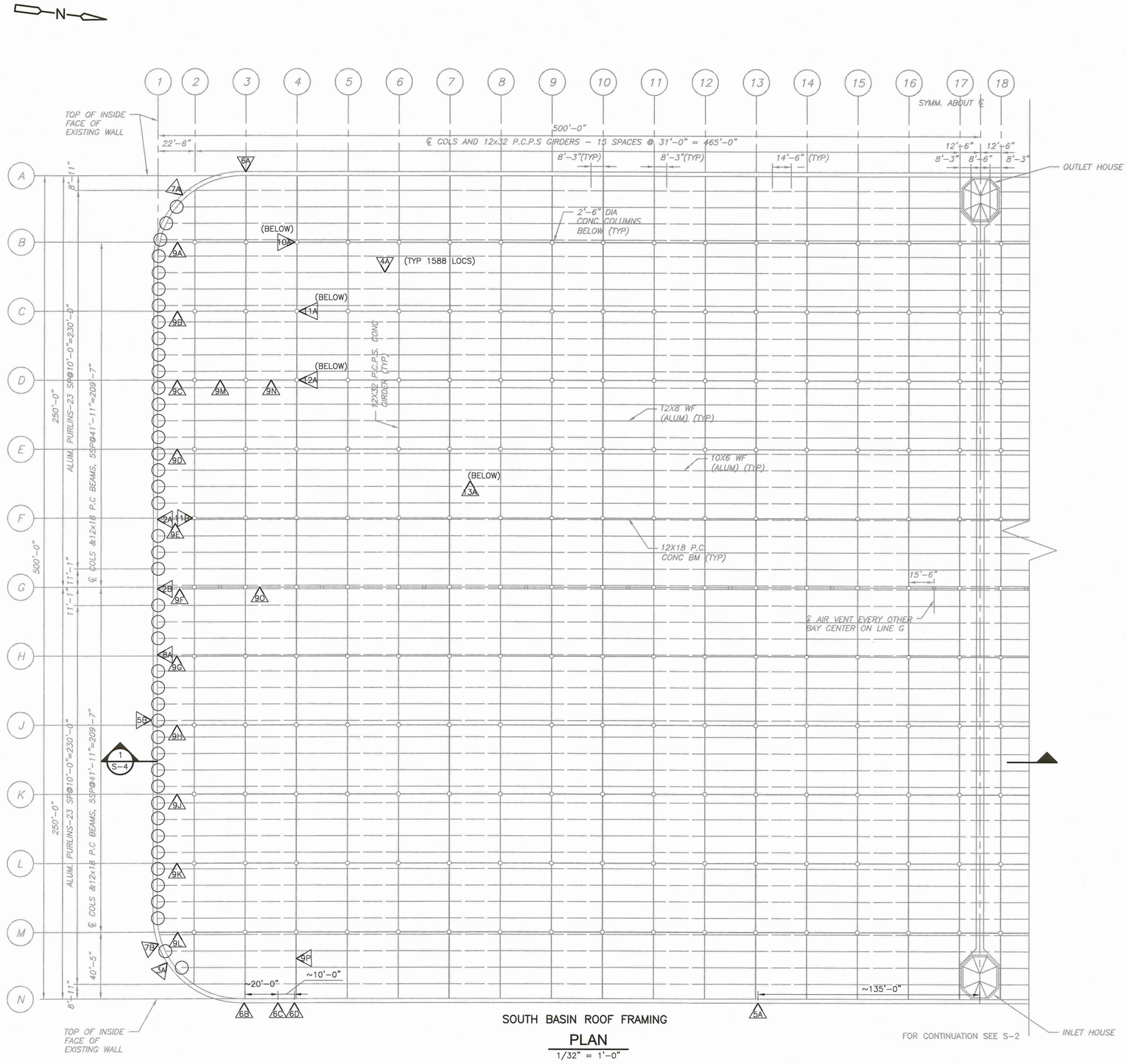

SOUTH BASIN ROOF FRAMING

PLAN

1/32" = 1'-0"

NOTES FOR RESERVOIR MODIFICATIONS AND REPAIRS:

1. IN ADDITION TO REPAIRS NOTED ON SHEETS S–1 AND S–2 REPAIR OF THE CONCRETE IN THE RESERVOIR ARE ANTICIPATED TO CONSIST OF CRACK REPAIR, SPALLED/DETERIORTATED CONCRETE REPAIR, REMOVAL AND REPLACEMENT OF SEALANT AT JOINTS, AND/OR REPAIR OF EXPOSED REBARS AS INDICATED IN THE DETAILS ON SHEET S–3 AND S–4 AND AS SPECIFIED. ACTUAL TYPES, QUANTITIES AND LOCATIONS OF THE REQUIRED REPAIRS WILL BE DETERMINED DURING CONSTRUCTION AS DESCRIBED BELOW.
2. THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH COMPLETE ACCESS TO THE RESERVOIR FOR INSPECTION, AND SHALL PROVIDE ALL LABOR, MATERIALS, AND EQUIPMENT REQUIRED BY THE ENGINEER TO PERFORM THESE INSPECTIONS. THIS INCLUDES, BUT IS NOT LIMITED TO, PROVIDING AND MOVING ACCESS LADDERS AND SCAFFOLDING TO ALLOW ENGINEER SAFE ENTRY AND SAFE ACCESS TO ALL ELEMENTS, PROVIDING LIGHTING WITHIN THE RESERVOIR, AND ANY OTHER REQUIREMENTS, NECESSARY FOR THE ENGINEER TO WORK SAFELY FOR AN EXTENDED PERIOD OF TIME. THE CONTRACTOR SHALL ALSO PREPARE THE RESERVOIR FOR INSPECTION BY CLEANING ALL SURFACES. REMOVE ALL COATINGS, EFFLORESCENCE, DIRT AND FOREIGN MATTER SO THE CONCRETE SURFACE IS FREE OF ALL LAITENCE BY POWER WASHING OR OTHER MEANS ACCEPTABLE TO THE ENGINEER, DISPOSE ALL SEDIMENT IN THE RESERVOIR, AND DEWATER LOW SPOTS USING PUMPS SO NO STANDING WATER IS PRESENT. FOR ADDITIONAL REQUIREMENTS SEE SPECIFICATION SECTION 03740.
3. THE CONTRACTOR SHALL GIVE THE ENGINEER TWO WEEKS NOTICE WHEN THE RESERVOIR WILL BE CLEANED AND READY FOR THE INSPECTION.
4. WITHIN 6 WEEKS AFTER INSPECTING THE CONCRETE, THE ENGINEER WILL IDENTIFY THE REQUIRED LOCATIONS, QUANTITIES, AND TYPES OF REPAIR. IF NECESSARY, THE ENGINEER WILL REVISE THE REPAIRS SPECIFICATIONS, REVISE THE REPAIR DETAILS ON SHEET S–3 AND S–4 AND/OR PROVIDE ADDITIONAL REPAIRS DETAILS OR SPECIFICATIONS.

TYPE 1 REPAIRS – SEE DETAIL A/S–3

DENOTED BY ◯ – 43 LOCATIONS ANCHOR BOLTS CONNECTING AL BEAMS TO CONCRETE ARE BENT OR BROKEN, LIFT AL BEAM & RETURN TO ORIGINAL LOCATION AND PROVIDE NEW CONNECTION SHOWN IN DETAIL A/S–3.

TYPE 2 REPAIRS – SEE DETAIL C/S–3 UON

2A 12"x12"x12" SPALL.

2B 12"x12"x12" SPALL.

TYPE 3 REPAIRS – SEE DETAIL E/S–3

3A 6" L EXPOSED REBAR.

TYPE 4 REPAIRS – SEE DETAIL B/S–3

4A REPLACE AL CONNECTION PLATES AND BOLTS (TYP 1588 LOCATIONS).

TYPE 5 REPAIRS – SEE DETAIL D/S–3 (UNIT PRICE BID FORM – ITEM 13A)

5A 12"Hx1"Wx2"D VOID JUST ABOVE GRADE.

5B 6"Hx4"Wx4"D SPALL UNDER PRECAST BEAM PENETRATION.

TYPE 6 REPAIRS – SEE DETAIL M ON S–4 UNIT PRICE BID FORM – ITEM 14

6A REMOVE AND REPLACE EAVE CLOSURE SEAL.

6B REMOVE AND REPLACE EAVE CLOSURE SEAL.

6C REMOVE AND REPLACE EAVE CLOSURE SEAL.

6D REMOVE AND REPLACE EAVE CLOSURE SEAL.

TYPE 7 REPAIRS – SEE DETAIL G/S–3

7A REATTACH 9 COVER BRACKETS.

7B REATTACH 7 COVER BRACKETS.

TYPE 8 REPAIRS – SEE DETAIL A/S–3

8A ANCHOR BOLTS CONNECTING AL BEAMS TO CONCRETE ARE BENT OR BROKEN, LIFT AL BEAM & RETURN TO ORIGINAL LOCATION AND PROVIDE NEW CONNECTION SHOWN IN DETAIL A/S–3.

TYPE 9 REPAIRS (SEE DETAIL L/S–4)

9A LIFT 12"x18" PRECAST CONC BEAM RETURN TO ORIGINAL POSITION.

9B LIFT 12"x18" PRECAST CONC BEAM RETURN TO ORIGINAL POSITION.

9C LIFT 12"x18" PRECAST CONC BEAM RETURN TO ORIGINAL POSITION.

9D LIFT 12"x18" PRECAST CONC BEAM RETURN TO ORIGINAL POSITION.

9E LIFT 12"x18" PRECAST CONC BEAM RETURN TO ORIGINAL POSITION.

9F LIFT 12"x18" PRECAST CONC BEAM RETURN TO ORIGINAL POSITION.

9G LIFT 12"x18" PRECAST CONC BEAM RETURN TO ORIGINAL POSITION.

9H LIFT 12"x18" PRECAST CONC BEAM RETURN TO ORIGINAL POSITION.

9J LIFT 12"x18" PRECAST CONC BEAM RETURN TO ORIGINAL POSITION.

9K LIFT 12"x18" PRECAST CONC BEAM RETURN TO ORIGINAL POSITION.

9L LIFT 12"x18" PRECAST CONC BEAM RETURN TO ORIGINAL POSITION.

9M LIFT 12"x18" PRECAST CONC BEAM RETURN TO ORIGINAL POSITION.

9N LIFT 12"x18" PRECAST CONC BEAM RETURN TO ORIGINAL POSITION.

9O LIFT 12"x18" PRECAST CONC BEAM RETURN TO ORIGINAL POSITION.

9P LIFT 12"x32" PRECAST CONC GIRDER RETURN TO ORIGINAL POSITION.

TYPE 10 REPAIRS (UNIT PRICE BID FORM – ITEM 13B)

10A REPAIR CIRCUMFERENTIAL CRACKS AT BASE OF COLUMNS USING EPOXY GROUT INJECTION. LOCATIONS TO BE DETERMINED DURING ENGINEER INSPECTION.

TYPE 11 REPAIRS – SEE DETAIL D/S–3 (UNIT PRICE BID FORM – ITEM 13C)

11A REPAIR SPALLED CONCRETE ON COLUMNS. LOCATIONS TO BE DETERMINED DURING ENGINEER INSPECTION.

11B 6"Hx6"Wx1"D SPALL AT TOP OF COLUMN.

TYPE 12 REPAIRS – SEE DETAIL E/S–3 (UNIT PRICE BID FORM – ITEM 13D)

12A REPAIR EXPOSED REBAR ON COLUMNS. LOCATIONS TO BE DETERMINED DURING ENGINEER INSPECTION.

TYPE 13 REPAIRS – SEE DETAIL H AND K ON S–4 (UNIT PRICE BID FORM – ITEM 13E)

13A REPAIR CRACK IN CONCRETE FLOOR AND WALL LINER USING INJECTION GEL EPOXY. LOCATIONS TO BE DETERMINED DURING ENGINEER INSPECTION.

TYPE 14 REPAIRS – SEE DETAIL J AND K ON S–4 (UNIT PRICE BID FORM – ITEM 13F)

14A REMOVE AND REPLACE SEALANT IN CONC LINER JOINTS.

COMMONWEALTH OF MASSACHUSETTS
DAVID L. HARRIS
No. 34570
REGISTERED PROFESSIONAL ENGINEER
5/10/18

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: K.GALLERIE
DRAWN BY: B.G.M.PAUL
SHEET CHK'D BY: K.GALLERIE
CROSS CHK'D BY: M.GALLANT
APPROVED BY: D.L.HARRIS
DATE: MAY 2018

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CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS

HIGH HILL RESERVOIR REHABILITATION

STRUCTURAL REPAIRS AND MODIFICATIONS TOP PLAN - SOUTH BASIN

PROJECT NO. 0309–101381
FILE NAME: S001TRMPL.DWG

SHEET NO.
S-1

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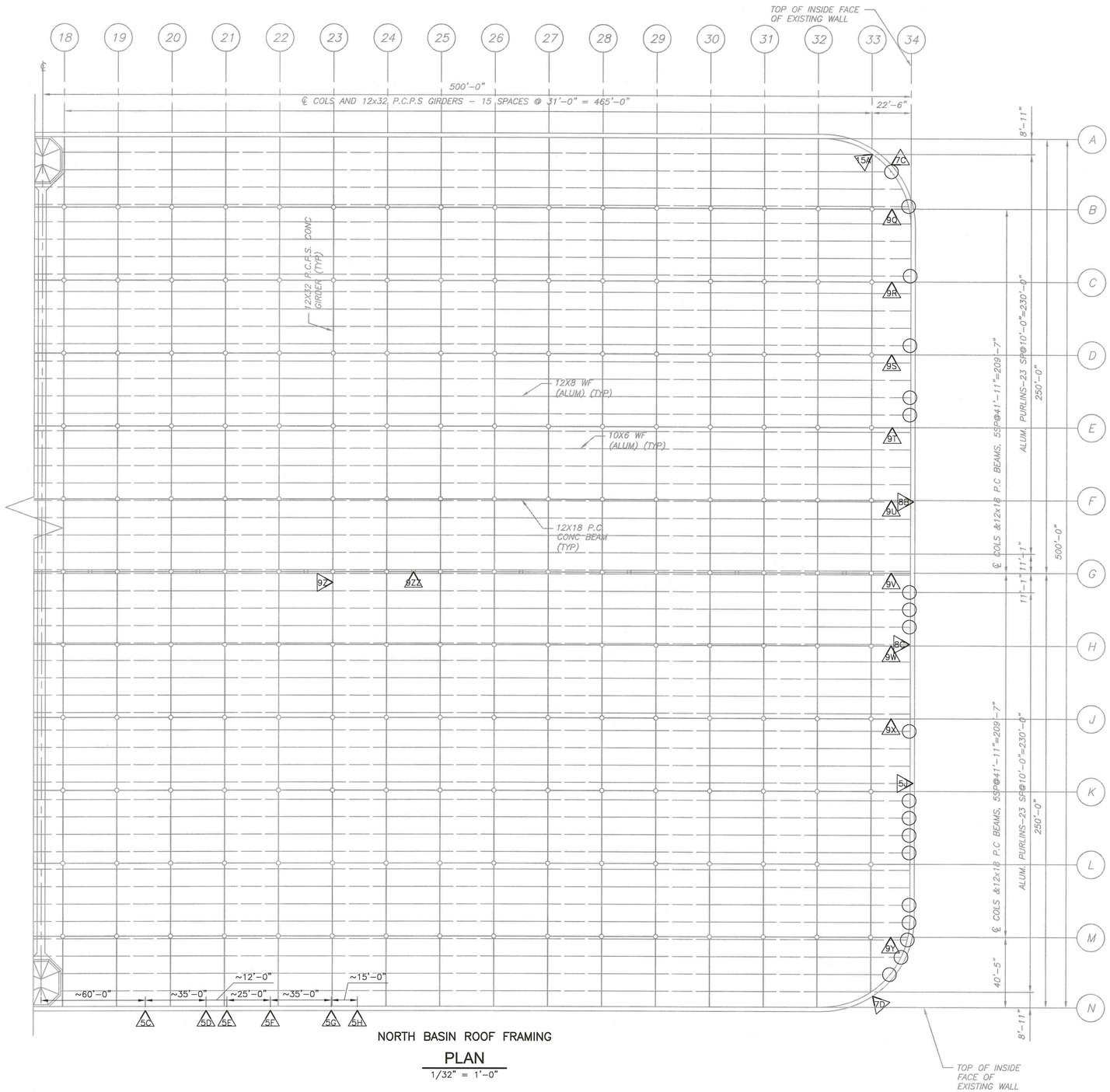

NORTH BASIN ROOF FRAMING

PLAN

1/32" = 1'-0"

TYPE 1 REPAIRS – SEE DETAIL A/S-3

DENOTED BY ◯ – 19 LOCATIONS ANCHOR BOLTS CONNECTING AL BEAMS TO CONCRETE ARE BENT OR BROKEN, LIFT AL BEAM & RETURN TO ORIGINAL LOCATION AND PROVIDE NEW CONNECTION SHOWN IN DETAIL A/S-3.

TYPE 4 REPAIRS

SEE DWG S-1

TYPE 5 REPAIRS – SEE DETAIL D/S-3 (UNIT PRICE BID FORM – ITEM 13A)

5C 3'-0"Wx1'-6"H AREA OF CRACKED/UNSOUND CONCRETE.
5D 3'-0"Wx1'-6"H AREA OF CRACKED/UNSOUND CONCRETE.
5E 2'-0"Wx3'-0"H AREA OF CRACKED/UNSOUND CONCRETE.
5F 5'-0"Wx2'-0"H AREA OF CRACKED/UNSOUND CONCRETE.
5G 4'-0"Wx1'-0"H AREA OF CRACKED/UNSOUND CONCRETE.
5H 6'-0"Wx3'-0"H AREA OF CRACKED/UNSOUND CONCRETE.
5J 1'-0"Wx0'-6"H AREA OF CRACKED/UNSOUND CONCRETE.

TYPE 7 REPAIRS – SEE DETAIL G/S-3

7C REPLACE 9 BENT COVER BRACKETS AND REATTACH.
7D REATTACH 11 COVER BRACKETS.

TYPE 8 REPAIRS – SEE DETAIL A/S-3

8B ANCHOR BOLTS CONNECTING AL BEAMS TO CONCRETE ARE BENT OR BROKEN, LIFT AL BEAM & RETURN TO ORIGINAL LOCATION AND PROVIDE NEW CONNECTION SHOWN IN DETAIL A/S-3.
8C ANCHOR BOLTS CONNECTING AL BEAMS TO CONCRETE ARE BENT OR BROKEN, LIFT AL BEAM & RETURN TO ORIGINAL LOCATION AND PROVIDE NEW CONNECTION SHOWN IN DETAIL A/S-3.

TYPE 9 REPAIRS – SEE DETAIL L/S-4

9Q LIFT 12"x18 PRECAST CONC BEAM AND RETURN TO ORIGINAL POSITION.
9R LIFT 12"x18" PRECAST CONC BEAM AND RETURN TO ORIGINAL POSITION.
9S LIFT 12"x18" PRECAST CONC BEAM AND RETURN TO ORIGINAL POSITION.
9T LIFT 12"x18" PRECAST CONC BEAM AND RETURN TO ORIGINAL POSITION.
9U LIFT 12"x18" PRECAST CONC BEAM AND RETURN TO ORIGINAL POSITION.
9V LIFT 12"x18" PRECAST CONC BEAM AND RETURN TO ORIGINAL POSITION.
9W LIFT 12"x18" PRECAST CONC BEAM AND RETURN TO ORIGINAL POSITION.
9X LIFT 12"x18" PRECAST CONC BEAM AND RETURN TO ORIGINAL POSITION.
9Y LIFT 12"x18" PRECAST CONC BEAM AND RETURN TO ORIGINAL POSITION.
9Z LIFT 12"x32" PRECAST CONC GIRDER AND RETURN TO ORIGINAL POSITION.
8ZZ LIFT 12"x18" PRECAST CONC BEAM AND RETURN TO ORIGINAL POSITION.

TYPE 10 REPAIRS (UNIT PRICE BID FORM – ITEM 13B)

SEE DWG S-1.

TYPE 11 REPAIRS (UNIT PRICE BID FORM – ITEM 13C) – SEE DETAIL D/S-3

SEE DWG S-1

TYPE 12 REPAIRS (UNIT PRICE BID FORM – ITEM 13D) – SEE DETAIL E/S-3

SEE DWG S-1.

TYPE 13 REPAIRS (UNIT PRICE BID FORM – ITEM 13E) – SEE DETAIL H AND K ON S-4

SEE DWG S-1.

TYPE 14 REPAIRS – SEE DETAIL J AND K ON S-4
(UNIT PRICE BID FORM – ITEM 13F)

SEE DWG S-1

TYPE 15 REPAIR

5Y 12"x32" PRECAST GIRDER HAS CRACKED AT THE END. REPAIR CRACK BY INJECTING FLOWABLE NON-SHRINK GROUT INTO THE CRACK.

COMMONWEALTH OF MASSACHUSETTS
PAUL M. GALLERIE
STRUCTURAL
No. 44819
REGISTERED
PROFESSIONAL ENGINEER

5/10/18

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DATE: MAY 2018

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CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS

HIGH HILL RESERVOIR REHABILITATION

STRUCTURAL REPAIRS AND MODIFICATIONS
TOP PLAN - NORTH BASIN

PROJECT NO. 0309-101381
FILE NAME: S002RMPL.DWG

SHEET NO.
S-2

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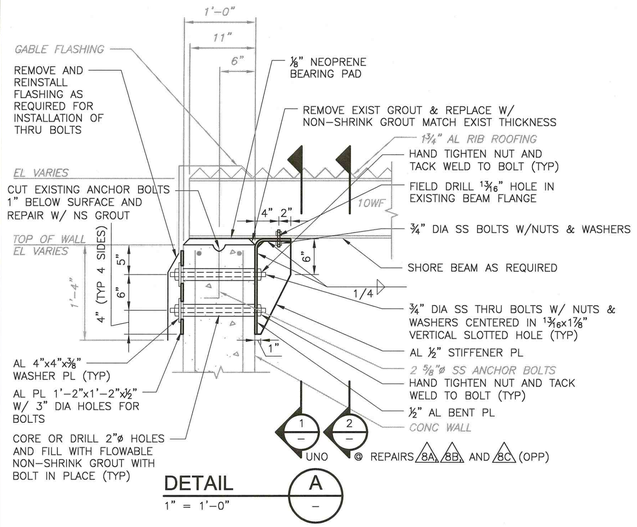
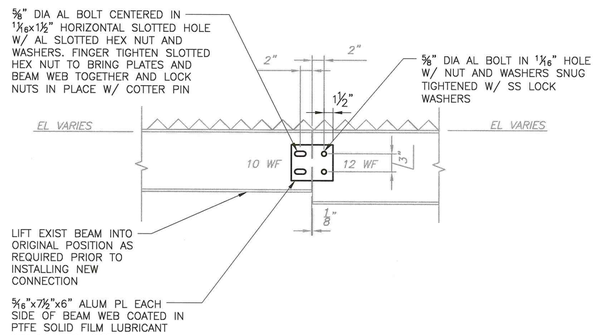
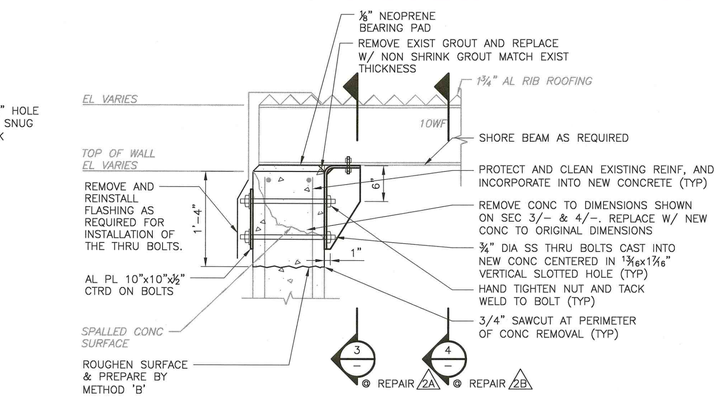


DETAIL A
1" = 1'-0"



NOTE: REPLACE CONNECTION PLATE AND BOLTS AT ALL ALUMINUM BEAM TO ALUMINUM BEAM CONNECTIONS (TYP 1588 LOCATIONS)

DETAIL B
1" = 1'-0"



REPAIR OF SPALLED CONCRETE AT BEAM SUPPORTS

SEE DETAIL A/- FOR INFORMATION NOT SHOWN

DETAIL C
1" = 1'-0"

GENERAL NOTES:

1. SLANTED TEXT INDICATES INFORMATION OR DIMENSIONS TAKEN FROM DRAWINGS PRODUCED BY CAMP DRESSER & McKEE INC CONSULTING ENGINEERS, TITLED "COVERING & LINING HIGH HILL RESERVOIR", DATED JUNE 1973. ALL EXISTING INFORMATION AND DIMENSIONS SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO FABRICATION AND CONSTRUCTION.

2. THE CONNECTION PLATES SHALL BE COATED IN A PTFE SOLID FILM LUBRICANT COATING WITH A POLYAMIDE-IMIDE BINDER SYSTEM AND SHALL BE NSF 61 CERTIFIED. THE COATING SHALL BE APPLIED WITH A 3 MIL DRY FILM THICKNESS TO ALL SURFACES OF THE PLATES INCLUDING INSIDE OF BOLT HOLES. THE COATING SHALL BE APPLIED TO THE PLATES BY A ISO 9001 CERTIFIED SHOP EXPERIENCED IN THE APPLICATION OF CLOSE-TOLERANCE PTFE COATINGS. THE SURFACE PREPARATION, APPLICATION AND CURING OF FOR THE COATING SHALL BE IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. THE PTFE SOLID FILM LUBRICANT COATING SHALL BE EVERLUBE R-75 BY CURTISS-WRIGHT CORP. OR EQUAL. SUBMIT PRODUCT DATA AND APPLICATOR'S QUALIFICATIONS FOR APPROVAL IN ACCORDANCE WITH SPECIFICATION SECTION 01300.

MODIFICATION AND REPAIR TO CONCRETE NOTES:
CONNECTION METHODS:

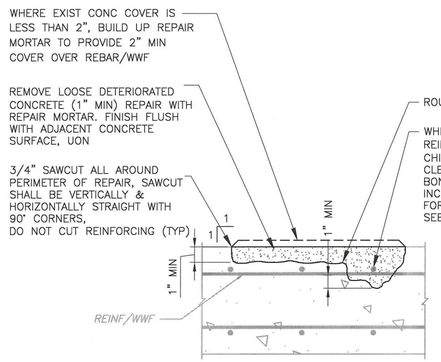
METHOD B – BONDING BY USING EPOXY BONDING AGENT

SEE CONCRETE SPECIFICATIONS SECTION 03740 FOR EXPLANATION OF CONCRETE REMOVAL METHODS, CONNECTION METHODS AND MATERIALS USED.

1. INSTALLATION OF ALL REPAIRS SHALL BE IN STRICT ACCORDANCE WITH ALL MANUFACTURERS' RECOMMENDATIONS AND SPECIFICATION SECTION 03740.

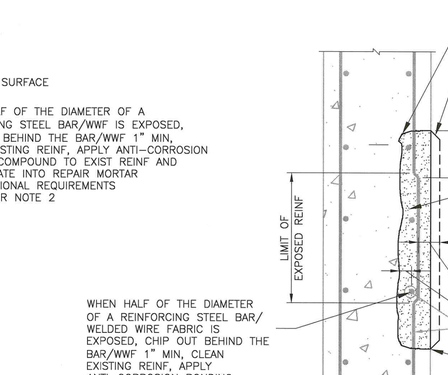
2. REINFORCEMENT BARS OR WELDED WIRE FABRIC EXPOSED DURING CONCRETE REPAIR TO REMAIN IN PLACE WHICH ARE FOUND TO HAVE LOST MORE THAN 15% CROSS SECTIONAL AREA DUE TO CORROSION OR WHICH ARE DAMAGED BY THE CONCRETE REMOVAL PROCESS, SHALL BE REPLACED WITH NEW BARS/WWF PER DETAIL F THIS SHEET. THE CONTRACTOR SHALL HAVE ON SITE AN ADEQUATE AMOUNT OF REPLACEMENT BARS.

3. DURING CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO DRAIN AND CLEAN THE RESERVOIR TO ALLOW THE ENGINEER TO INSPECT THE CONDITION OF THE RESERVOIR BELOW THE WATER LEVEL. TYPES AND QUANTITIES OF REPAIRS WILL BE DETERMINED BY THE ENGINEER DURING CONSTRUCTION. SEE NOTES ON SHEET S-1.



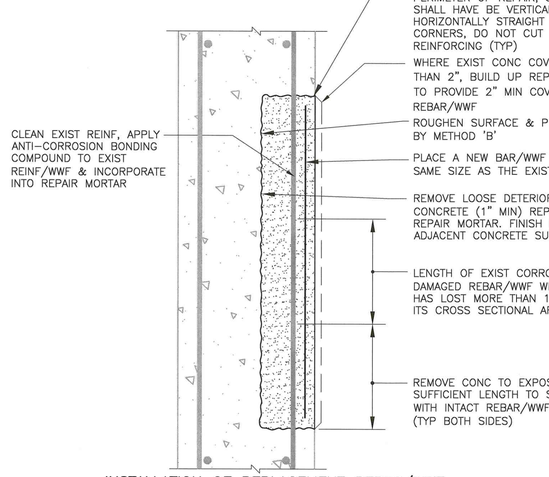
REPAIR OF CRACKED/SPALLED/VOID/UNSOUND CONCRETE

DETAIL D
NTS



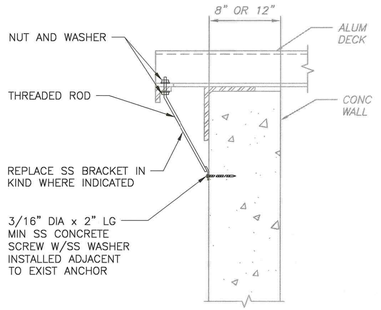
EXPOSED REINFORCING

DETAIL E
NTS



INSTALLATION OF REPLACEMENT REBAR/WWF

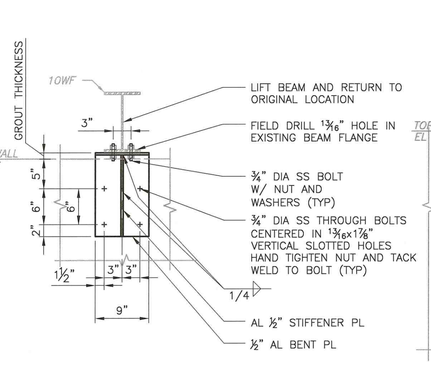
DETAIL F
NTS



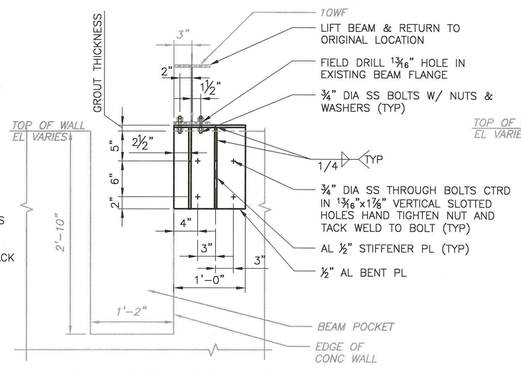
NOTE: CONCRETE SCREW SHALL BE STAINLESS STEEL TAPCON CONCRETE SCREW ANCHOR BY ITW BUILDEX OR EQUAL.

COVER BRACKET REPAIR

DETAIL G
1 1/2"=1'-0"

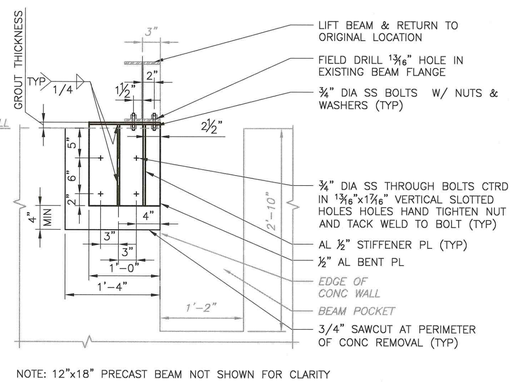


SECTION 1
1" = 1'-0"



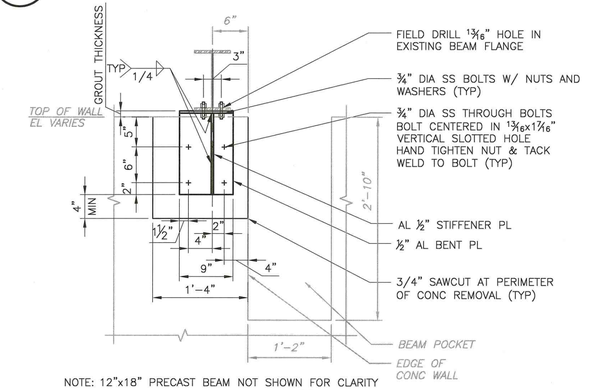
NOTE: 12"x18" BEAM NOT SHOWN FOR CLARITY

SECTION 2
1" = 1'-0"



NOTE: 12"x18" PRECAST BEAM NOT SHOWN FOR CLARITY

SECTION 3
1" = 1'-0"



NOTE: 12"x18" PRECAST BEAM NOT SHOWN FOR CLARITY

SECTION 4
1" = 1'-0"

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: K.GALLERIE
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CROSS CHK'D BY: M.GALLANT
APPROVED BY: D.L.HARRIS
DATE: MAY 2018

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CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS

HIGH HILL RESERVOIR REHABILITATION

STRUCTURAL REPAIRS AND MODIFICATIONS
REPAIR DETAILS

PROJECT NO. 0309-101381
FILE NAME: S003RMDT.DWG
SHEET NO.
S-3

5/16/18

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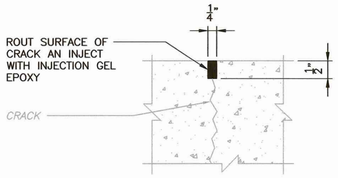
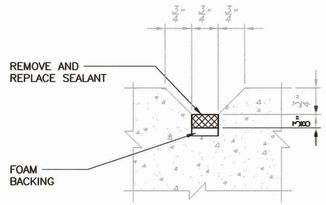


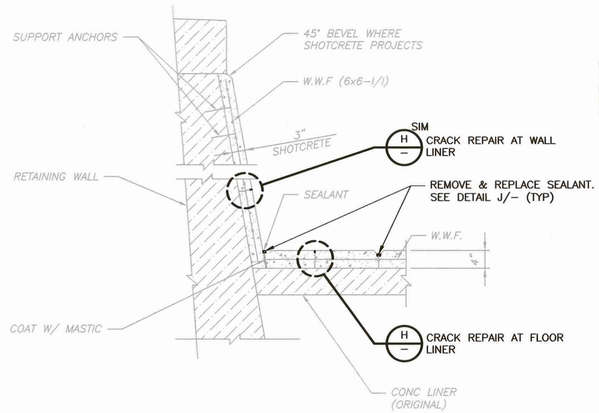
CONCRETE LINER CRACK REPAIR

DETAIL H / – NTS



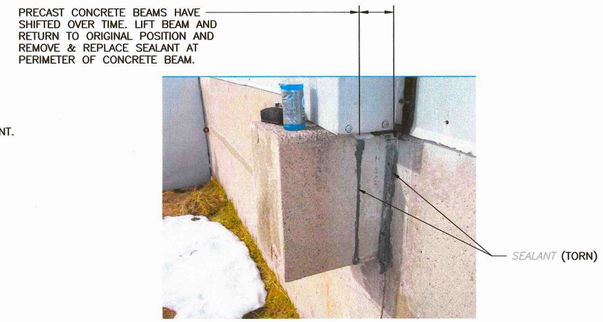
CONCRETE JOINT LINER SEALANT REPLACEMENT

DETAIL J / – NTS



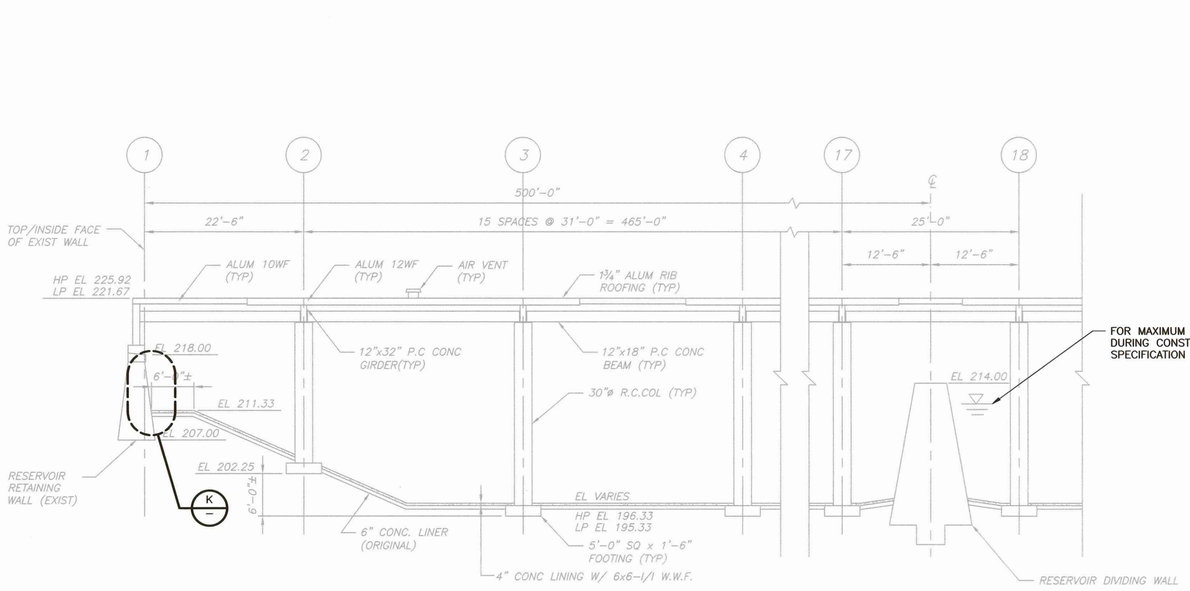
EXTERIOR WALL

DETAIL K / – NTS

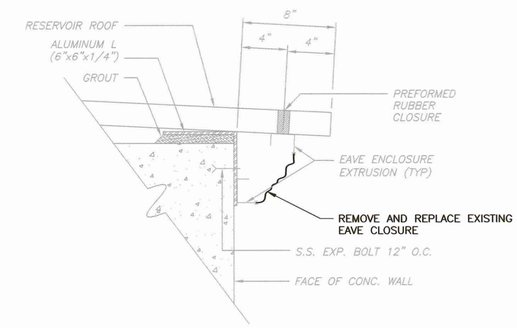


BEAM SHIFT

DETAIL L / – NTS



SECTION 1 / S–1
1" = 10'–0"



EAVE CLOSURE

DETAIL M / – NTS

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DRAWN BY: R. GAVAS
SHEET CHK'D BY: K.GALLERIE
CROSS CHK'D BY: M.GALLANT
APPROVED BY: D.L.HARRIS
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CITY OF NEW BEDFORD, MASSACHUSETTS
WATER SYSTEM IMPROVEMENTS

HIGH HILL RESERVOIR REHABILITATION

STRUCTURAL REPAIRS AND MODIFICATIONS REPAIR DETAILS II

PROJECT NO. 0309–101381
FILE NAME: S004RMDT.DWG
SHEET NO. S-4

DANIEL L. HARRIS STRUCTURAL No. 39250 REGISTERED PROFESSIONAL ENGINEER
5/10/18