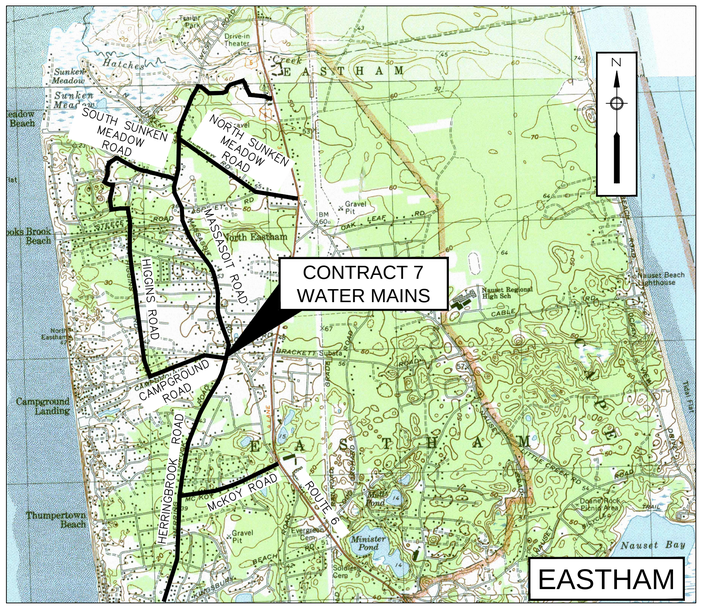
# CONTRACT 7
# WATER MAINS - NORTHERN SYSTEM BACKBONE
# EASTHAM, MASSACHUSETTS

## DECEMBER 2014




VICINITY MAP
1"= 2,000'

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TOWN OF EASTHAM
NAUSET 1620
INCORPORATED 1651

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JOHN KNIGHT
MARTIN McDONALD
WALLACE ADAMS, II
ELIZABETH GAWRON

PUBLIC WORKS SUPERINTENDENT

NEIL ANDRES, P.E.

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## GENERAL NOTES:

1. BASE MAP INFORMATION FOUND ON THE DESIGN SHEETS ARE TAKEN FROM A GIS FLYOVER CONDUCTED IN 3/20/2012. PROPERTY LINE INFORMATION AND WETLAND LIMITS ARE TAKEN FROM MASSGIS AND IT IS APPROXIMATE ONLY. GAS INFORMATION IS TAKEN FROM NATIONAL GRID. COMMUNICATION UTILITY INFORMATION IS TAKEN FROM VERIZON. IT IS NOTED THAT ADDITIONAL UTILITY PIPES AND STRUCTURES MAY EXIST.
2. IN AREAS WHERE CONSTRUCTION ACTIVITIES ARE ANTICIPATED TO OCCUR WITHIN PRIVATE PROPERTY, PROPERTY LINE LOCATIONS ARE TO BE REVIEWED WITH THE TOWN PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES.
3. THE CONTRACTOR SHALL NOT STORE ANY APPARATUS, MATERIALS, SUPPLIES, OR EQUIPMENT ON DRAINAGE STRUCTURES, PRIVATE PROPERTY OR WITHIN 100 FEET OF WETLANDS, UNLESS DIRECTED TO DO SO BY THE CONTRACT DOCUMENTS.
4. NORTH DIRECTION SHOWN IS APPROXIMATE.
5. ALL EXISTING UTILITIES SHOWN ARE APPROXIMATE, THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES. CONTRACTOR SHALL NOTIFY DIG SAFE AT LEAST 72 HOURS IN ADVANCE, EXCLUDING WEEKENDS AND HOLIDAYS, PRIOR TO ANY EXCAVATION.
6. CONTRACTOR SHALL VERIFY ALL INVERT INFORMATION.
7. DO NOT SCALE DRAWINGS UNLESS OTHERWISE NOTED. WRITTEN DIMENSIONS AND STATIONING SHALL PREVAIL. REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY.
8. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA).
9. THE CONTRACTOR SHALL RESTORE ALL PUBLIC AND PRIVATE PROPERTY TO ITS PRE-CONSTRUCTION CONDITION AT NO ADDITIONAL COST TO THE OWNER.
10. ALL EXISTING UTILITIES LINES ENCOUNTERED DURING CONSTRUCTION ARE TO REMAIN IN SERVICE. THE CONTRACTOR SHALL, AT NO ADDITIONAL COST TO THE TOWN, REPAIR ANY EXISTING SEWERS, STORM DRAIN LINES OR CULVERTS DAMAGED DURING CONSTRUCTION.
11. IN THOSE INSTANCES WHERE POWER OR TELEPHONE POLE SUPPORT IS REQUIRED, THE CONTRACTOR SHALL PROVIDE A MINIMUM 48-HOUR NOTIFICATION TO THE RESPECTIVE UTILITY COMPANY. NO ADDITIONAL PAYMENT WILL BE PROVIDED FOR TEMPORARY BRACING OF UTILITIES.
12. ALL STRUCTURES AND PIPELINES LOCATED ADJACENT TO THE TRENCH EXCAVATION SHALL BE PROTECTED AND FIRMLY SUPPORTED BY THE CONTRACTOR UNTIL THE TRENCH IS BACKFILLED. INJURY TO ANY SUCH STRUCTURE CAUSED BY, OR RESULTING FROM, THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. ALL UTILITIES REQUIRING REPAIR, RELOCATION OR ADJUSTMENT AS A RESULT OF THE PROJECT SHALL BE COORDINATED THROUGH THE RESPECTIVE UTILITY AND THE TOWN.
13. THE CONTRACTOR IS TO TAKE SPECIAL CARE NOT TO DAMAGE TREES, BUSHES, PLANTS, FLOWERS, STONEWALLS, FENCES, ETC. WITHIN THE CONSTRUCTION AREA UNLESS THEY ARE NOTED TO BE REMOVED. CONTRACTOR SHALL REPLACE AT NO COST TO OWNER, ALL DAMAGED ITEMS.
14. CONTRACTOR SHALL REMOVE AND REPLACE, OR REPAIR, ALL CURBS, SIDEWALKS, BERMS, PAVEMENT AND OTHER ITEMS DAMAGED BY HIS CONSTRUCTION ACTIVITIES TO AT LEAST THEIR ORIGINAL CONDITION, AND TO THE SATISFACTION OF THE TOWN AND ENGINEER.
15. ANY TRAFFIC SIGNAL EQUIPMENT (LIGHTS, CONDUITS, LOOP DETECTORS) DISTURBED SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AS DIRECTED BY THE TOWN AT THE CONTRACTOR'S EXPENSE.
16. THE CONTRACTOR SHALL INSTALL AND MAINTAIN TRAFFIC CONTROL DEVICES AS NECESSARY AND IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
17. THE CONTRACTOR SHALL BE REQUIRED TO FURNISH AND MAINTAIN A TELEPHONE NUMBER WHERE THE CONTRACTOR CAN BE REACHED 24 HOURS A DAY, 7 DAYS A WEEK.
18. THE LOCATION AND LIMITS OF ALL ON-SITE WORK AND STORAGE AREAS SHALL BE REVIEWED/COORDINATED WITH, AND ACCEPTABLE TO, THE TOWN. THE CONTRACTOR SHALL LIMIT HIS ACTIVITIES TO THESE AREA.
19. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FOR WORK IN ROADWAYS AND FOR BLASTING. THE CONTRACTOR IS RESPONSIBLE FOR CONFORMING TO ALL PERMITS AS AN INTEGRAL PART OF HIS WORK.
20. THE CONTRACTOR SHALL HANDLE GROUNDWATER, WHERE ENCOUNTERED, IN AN APPROVED MANNER. DURING ANY DEWATERING, THE CONTRACTOR SHALL USE STONE AROUND THE SUCTION END TO MINIMIZE DISCHARGE OF TRENCH MATERIALS. THE DISCHARGED WATER SHALL PASS THROUGH FILTER FABRIC.
21. IF ENCOUNTERED, THE CONTRACTOR SHALL HANDLE, STORE, REMOVE, TRANSPORT AND LEGALLY DISPOSE OF ANY ASBESTOS-CEMENT IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS. ASBESTOS NOTIFICATION FORMS SHALL BE COMPLETED AND SUBMITTED TO THE APPROPRIATE AGENCY/AGENCIES.

## WATER MAIN NOTES:

1. NEW WATER MAINS AND SERVICES SHALL BE INSTALLED AT THE MINIMUM DEPTH FROM FINISH GRADE TO TOP OF PIPE AS SHOWN ON THE DRAWINGS. WHERE NECESSARY, NEW WATER MAINS SHALL BE INSTALLED AT A GREATER DEPTH TO CLEAR OBSTACLES SHOWN ON THE DRAWINGS AT NO ADDITIONAL COST TO THE OWNER. MINIMUM CLEARANCES TO UTILITIES, AS SHOWN ON THE DRAWINGS SHALL BE MAINTAINED.
2. MINIMUM COVER OVER THE PROPOSED WATER MAIN AND APPURTENANCES SHALL BE 5'-0" UNLESS OTHERWISE NOTED OR DIRECTED BY ENGINEER. ANY PIPE WITHOUT 4'-0" COVER REQUIRES INSULATION.
3. TEST PITS TO LOCATE EXISTING UTILITIES MAY BE ORDERED BY THE ENGINEER TO DETERMINE WHETHER TO RAISE OR LOWER THE PROPOSED WATER MAIN TO CLEAR EXISTING UTILITIES OR MEET EXISTING WATER MAINS.
4. THE CONTRACTOR SHALL STAKE OUT ALL HYDRANT LOCATIONS AT LEAST 3 DAYS IN ADVANCE OF INSTALLATION. THE LOCATION OF ALL HYDRANTS SHALL BE VERIFIED BY THE FIRE DEPARTMENT, ENGINEER AND TOWN PRIOR TO EXCAVATION FOR INSTALLATION.
5. ALL HYDRANT BRANCHES SHALL HAVE VALVES AS SHOWN ON THE HYDRANT DETAIL.
6. ANY HYDRANT WHICH IS NOT IN SERVICE SHALL BE COVERED WITH A SECURELY FASTENED BURLAP BAG (OR EQUAL).
7. ALL WATER MAIN CAPS WHICH WILL BE REMOVED IN SUBSEQUENT CONTRACTS SHALL BE MARKED WITH A VERTICAL OAK POST (OR EQUAL) APPROXIMATELY 18" BELOW FINISHED GRADE AND MARKED WITH BLUE MARKING SPRAY PAINT.
8. CORPORATIONS SHALL NOT BE OPENED TO THE PROPOSED WATER MAIN UNTIL SATISFACTORY PRESSURE TEST AND DISINFECTION RESULTS.
9. WATER SERVICE SHALL NOT BE INTERRUPTED MORE THAN 4 HOURS WITHOUT PRIOR APPROVAL OF THE OWNER.
10. THE CONTRACTOR SHALL NOT OPEN OR CLOSE ANY VALVES OR HYDRANTS WHICH HOLD WATER IN THE SYSTEM. THE OWNER WILL, ON 24 HOURS NOTICE FROM THE CONTRACTOR, OPEN AND/OR CLOSE ANY VALVES OR HYDRANTS REQUIRED FOR DRAINING OR ADMITTING WATER TO THE VARIOUS SECTIONS OF THE WATER MAINS.
11. SOME WATER SERVICE CURB BOXES MAY NOT BE SHOWN ON THE DRAWINGS. THE ENGINEER WILL MARK THE LOCATION OF SUCH CURB BOXES, PROVIDED THE CONTRACTOR GIVES THE ENGINEER AT LEAST ONE WEEK ADVANCE NOTICE.
12. OPEN TRENCHES MUST BE BACKFILLED AT THE END OF THE WORKDAY OR COVERED AND SECURED WITH STEEL PLATES, RAMPED AS APPROVED BY THE TOWN.
13. THE CONTRACTOR IS REQUIRED TO NOTIFY AND COORDINATE WITH THE IMPACTED RESIDENTS ALL WATER MAIN SHUT DOWNS 24 HOURS IN ADVANCE.
14. THE CONTRACTOR SHALL STAKE OUT ALL CURB STOP LOCATIONS AT LEAST 3 DAYS IN ADVANCE OF INSTALLATION. THE LOCATIONS OF ALL CURB STOPS SHALL BE VERIFIED BY ENGINEER AND PROPERTY OWNER PRIOR TO EXCAVATION FOR INSTALLATION.
15. CURB STOPS SHALL BE LOCATED AT THE PROPERTY LINE AND CONNECTED TO THE PROPOSED WATER MAIN AS SHOWN ON THE DRAWINGS, UNLESS OTHERWISE DIRECTED BY THE ENGINEER. WATER SERVICE TUBING ON THE PRIVATE PROPERTY SIDE SHALL BE CAPPED AND STAKED 5'-0" FROM THE CURB BOX.
16. ALL VALVES. BENDS, PLUGS, CAPS, AND HYDRANTS SHALL BE RESTRAINED WITH A CONCRETE THRUST BLOCK AND "MEGA-LUG" (OR APPROVED EQUAL) MECHANICAL RESTRAINTS.
17. SLEEVES, NIPPLES, AND ACCESSORIES NECESSARY FOR CONNECTIONS BETWEEN EXISTING AND NEW PIPES MAY NOT BE SHOWN IN DETAIL. FURNISH AND INSTALL ITEMS NECESSARY FOR CONNECTING TO EXISTING MAINS AND AS INDICATED ON THE CONTRACT DOCUMENTS.
18. EXCEPT WHERE OTHERWISE DIRECTED, 12" MINIMUM VERTICAL SEPARATION SHALL BE PROVIDED BETWEEN THE NEW MAIN AND OTHER UTILITIES WHERE THEY CROSS. WHERE NEW MAIN PASSES UNDER UTILITIES, IT SHALL CROSS WITHOUT THE USE OF BENDS UNLESS OTHERWISE NOTED ON THE PLANS.
19. ALL HYDRANT LATERALS SHALL CROSS UNDER EXISTING UTILITIES AND WATER MAINS. HYDRANT EXTENSIONS SHALL BE INSTALLED, AS NECESSARY, AT NO ADDITIONAL COST TO THE OWNER.

## LEGEND:

### EXISTING

- HYDRANT
- DI CAP
- REDUCER
- WATER VALVE
- WATER SHUTOFF
- CATCH BASIN (CB)
- DRAIN MANHOLE (DMH)
- GAS GATE / GAS SHUTOFF
- EDGE OF STONE / SHELLS
- CAPE COD BERM (CCB)
- EDGE OF PAVEMENT (EP)
- PROPERTY LINE
- FENCE
- AC ASBESTOS CEMENT
- CI CAST IRON
- CM CORRUGATED METAL
- CP CORRUGATED PLASTIC
- CS COATED STEEL
- Cu COPPER
- DI DUCTILE IRON
- GAL GALVANIZED IRON
- PL PLASTIC
- PVC POLYVINYL CHLORIDE
- RC REINFORCED CONCRETE
- S STEEL
- HH HAND HOLE
- CCB CAPE COD BERM
- BBC BITUMINOUS CONCRETE CURB
- D DRAIN
- G GAS
- W WATER
- DTI DEPTH TO INVERT
- UTILITY POLE (UP#)
- GUY WIRE / GUY POLE
- TELECOMMUNICATION MANHOLE
- ELECTRIC TRANSFORMER
- SEWER MANHOLE COVER
- D DRAIN LINE
- E ELECTRIC LINE
- G GAS LINE
- T COMMUNICATIONS LINE
- W WATER MAIN
- STONEWALL
- 200 RIVERFRONT AREA
- 100 WETLANDS BUFFER ZONE
- FZ FEMA 100-YEAR FLOOD LINE
- EPH ESTIMATED/PRIORITY HABITAT LIMIT
- OH OVERHEAD WIRE
- EVERGREEN TREE
- DECIDUOUS TREE
- MAILBOX (MB)
- SIGN
- VEGETATION
- PROPERTY CORNER
- LIGHT POLE
- LANDSCAPED AREA
- GUARD RAIL
- GRANITE BLOCK
- RIPRAP
- WL WETLAND
- WETLAND FLAG
- CONCRETE BOLLARD
- TELEPHONE PEDESTAL
- TRAFFIC SIGNAL LIGHT SUPPORT
- SIGN
- BUSH/HEDGES
- BOUND
- ***+** MASSDOT STATIONING
- DYCL MASSDOT DOUBLE YELLOW CENTER LINE
- SWFL MASSDOT SINGLE WHITE FOG LINE
- DWLM MASSDOT DASHED WHITE LANE MARKER
- SWSL MASSDOT SINGLE WHITE STOP LINE
- SWCW MASSDOT SINGLE WHITE CROSSWALK

### PROPOSED

- W WATER MAIN
- HYDRANT
- GATE VALVE
- DI CAP
- COUPLING/SOLID SLEEVE
- REDUCER
- CURB STOP
- FILTER SOCK
- TEST PIT

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CONTRACT 7 - WATER MAINS
NORTHERN SYSTEM BACKBONE
EASTHAM, MASSACHUSETTS

GENERAL NOTES AND LEGEND

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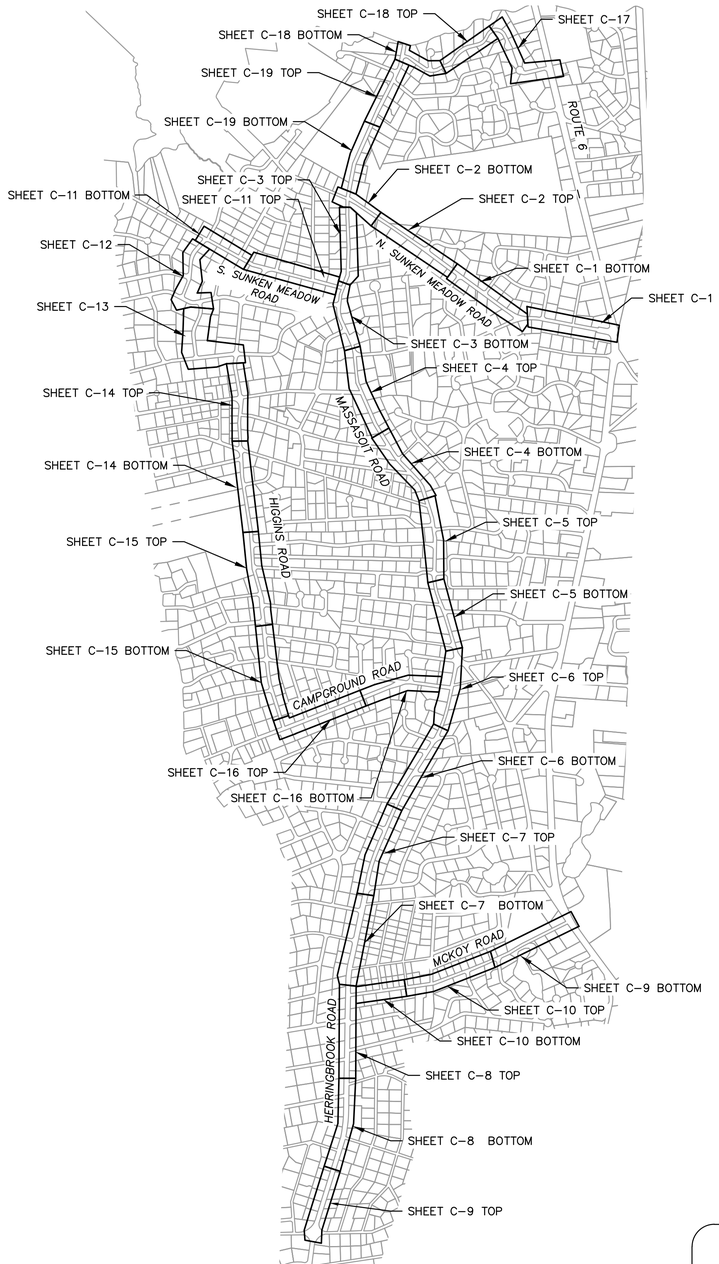
Sheet No.

G-1

## ROAD RESTORATION SCHEDULE

| SHEET | STREET | EXISTING ROAD SURFACE MATERIAL | PROPOSED ROAD SURFACE RESTORATION MATERIAL |
|---|---|---|---|
| C–1 | ASPINET ROAD | BITUMINOUS CONCRETE | |
| C–1, 2 | NORTH SUNKEN MEADOW ROAD | BITUMINOUS CONCRETE | |
| C–3, 4, 5, 19 | MASSASOIT ROAD | BITUMINOUS CONCRETE | |
| C–6, 7, 8, 9 | HERRINGBROOK ROAD | BITUMINOUS CONCRETE | |
| C–9, 10 | MCKOY ROAD | BITUMINOUS CONCRETE | |
| C–11 | SOUTH SUNKEN MEADOW ROAD | BITUMINOUS CONCRETE | |
| C–12 | TREAT ROAD (PRIVATE) | BITUMINOUS AND DIRT | |
| C–12 | QUASON DRIVE (PRIVATE) | DIRT | |
| C–13 | BANGS ROAD (PRIVATE) | SAND | |
| C–13 | WAMISCO ROAD (PRIVATE) | DIRT | |
| C–14 | OQUAMOSHOD ROAD (PRIVATE) | DIRT | |
| C–14, 15 | HIGGINS ROAD | BITUMINOUS CONCRETE | |
| C–16 | CAMPGROUND ROAD | BITUMINOUS CONCRETE | |
| C–17 | JACKIN DRIVE (PRIVATE) | BITUMINOUS CONCRETE | |
| C–17, 18 | WHELPLEY ROAD (PRIVATE) | DIRT | |

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CONTRACT 7 - WATER MAINS
NORTHERN SYSTEM BACKBONE
EASTHAM, MASSACHUSETTS

ROAD RESTORATION SCHEDULE
AND KEY PLAN

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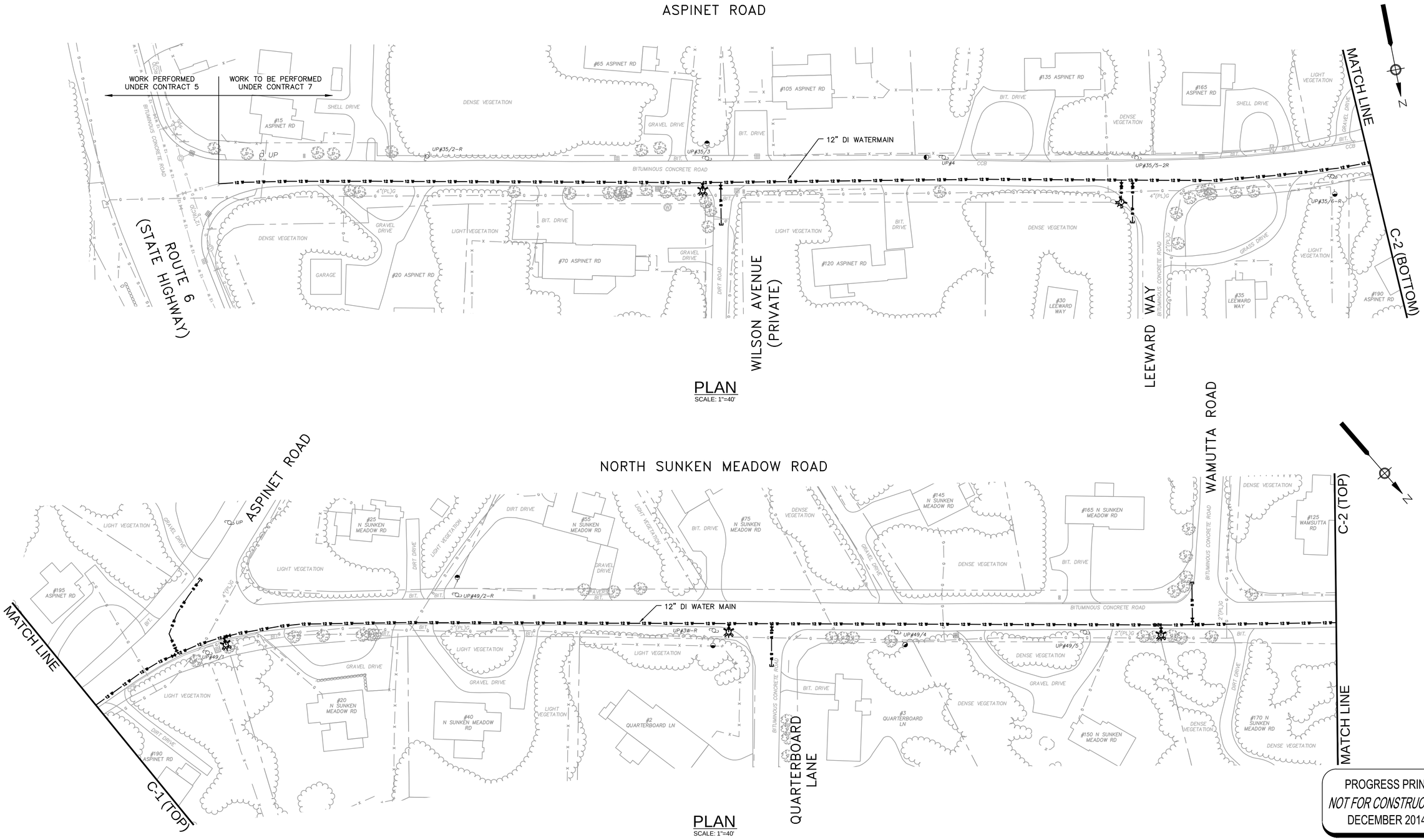
Sheet No.

G-2

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CONTRACT 7 - WATER MAINS
NORTHERN SYSTEM BACKBONE
EASTHAM, MASSACHUSETTS

ASPINET ROAD AND
NORTH SUNKEN MEADOW ROAD

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Sheet No.
C-1

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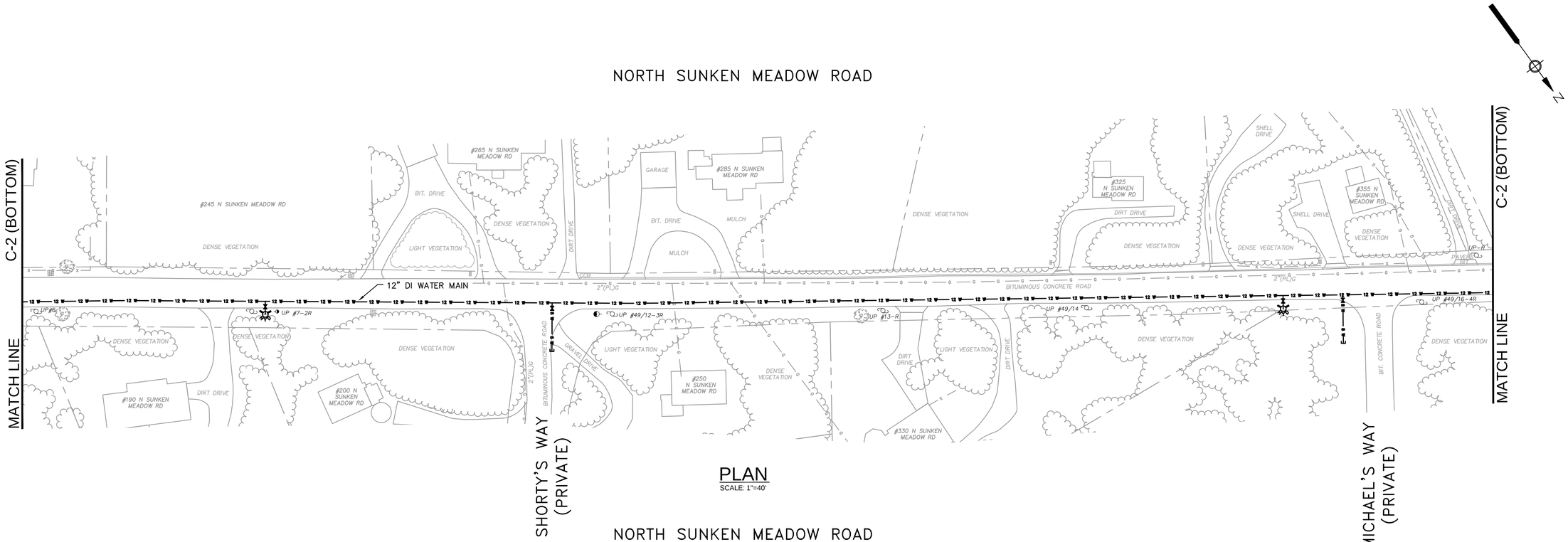
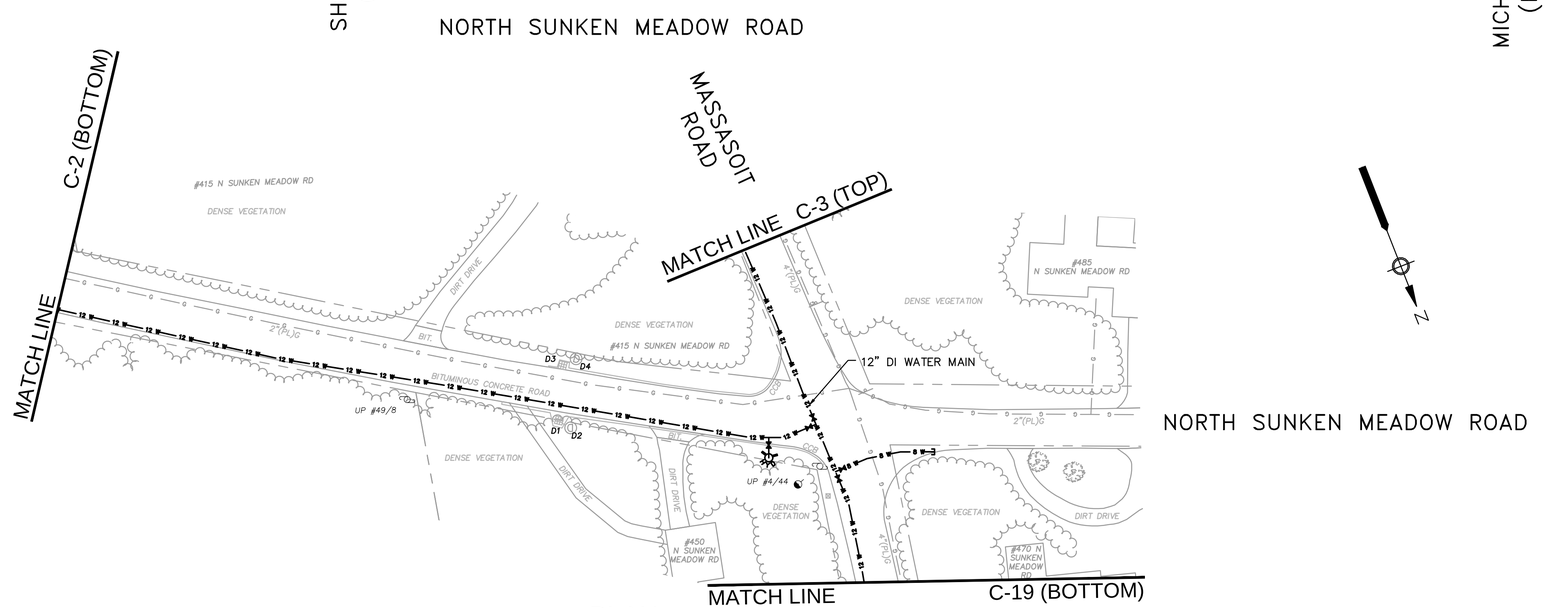



PLAN
SCALE: 1"=40'

DRAINAGE INVERTS

D1 = INV. 3.67' 12"(CP)D
D2 = INV. 2.67' 10"(CM)D
D3 = INV. 2.83' 12"(CP)D
D4 = INV. 3.13' 12"(CP)D

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CONTRACT 7 - WATER MAINS
NORTHERN SYSTEM BACKBONE
EASTHAM, MASSACHUSETTS

NORTH SUNKEN MEADOW ROAD

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Sheet No.
C-2

DRAINAGE INVERTS

D1 = INV. 2.58' 12"(CM)D
D2 = INV. 2.00' 12"(CP)D

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CONTRACT 7 - WATER MAINS
NORTHERN SYSTEM BACKBONE
EASTHAM, MASSACHUSETTS

MASSASOIT ROAD

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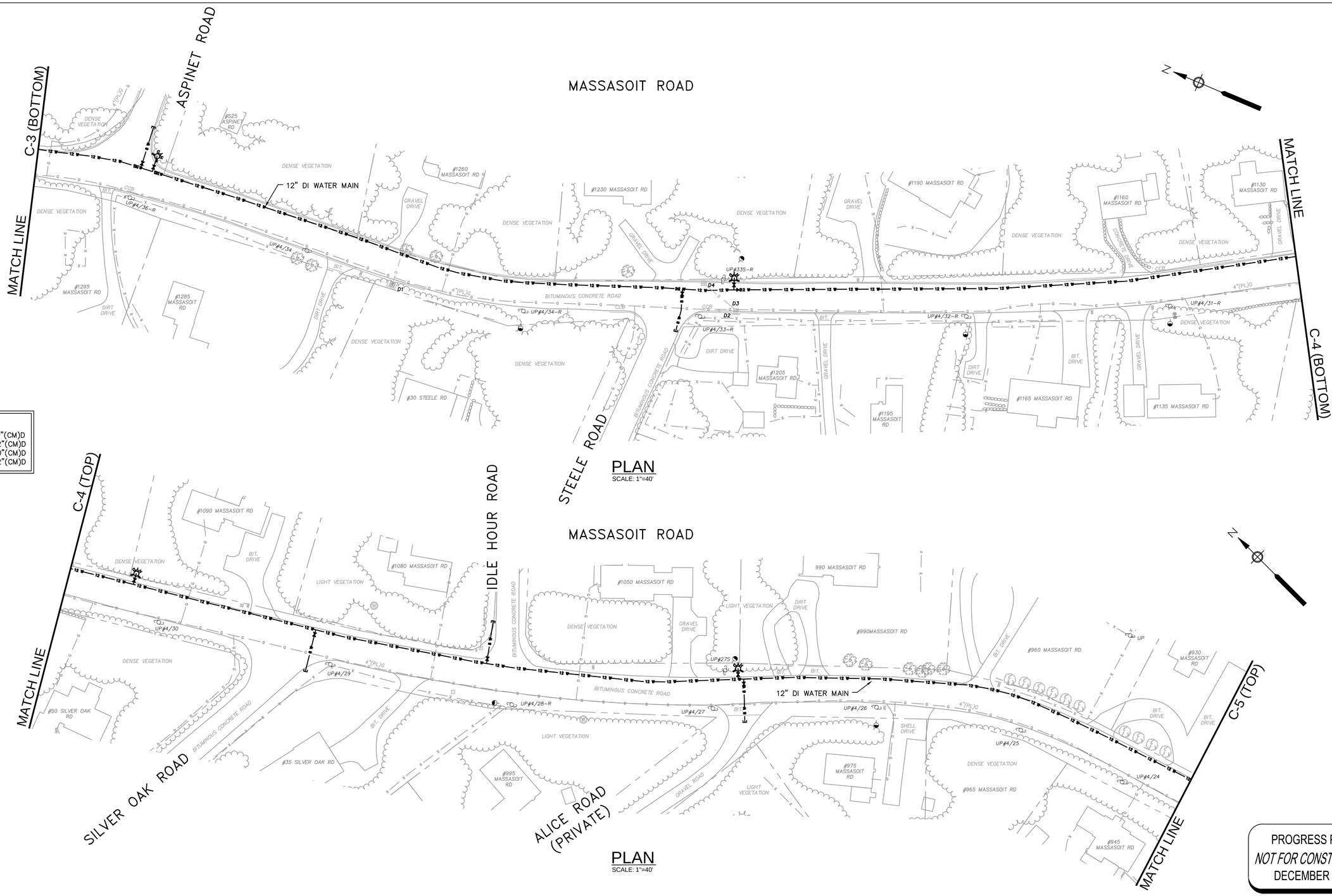
Sheet No.
C-3




DRAINAGE INVERTS

D1 = INV. 2.75' 10"(CM)D
D2 = INV. 2.67' 12"(CM)D
D3 = INV. 2.75' 10"(CM)D
D4 = INV. 2.50' 12"(CM)D

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CONTRACT 7 - WATER MAINS
NORTHERN SYSTEM BACKBONE
EASTHAM, MASSACHUSETTS

MASSASOIT ROAD

NOT FOR CONSTRUCTION

Sheet No.
C-4

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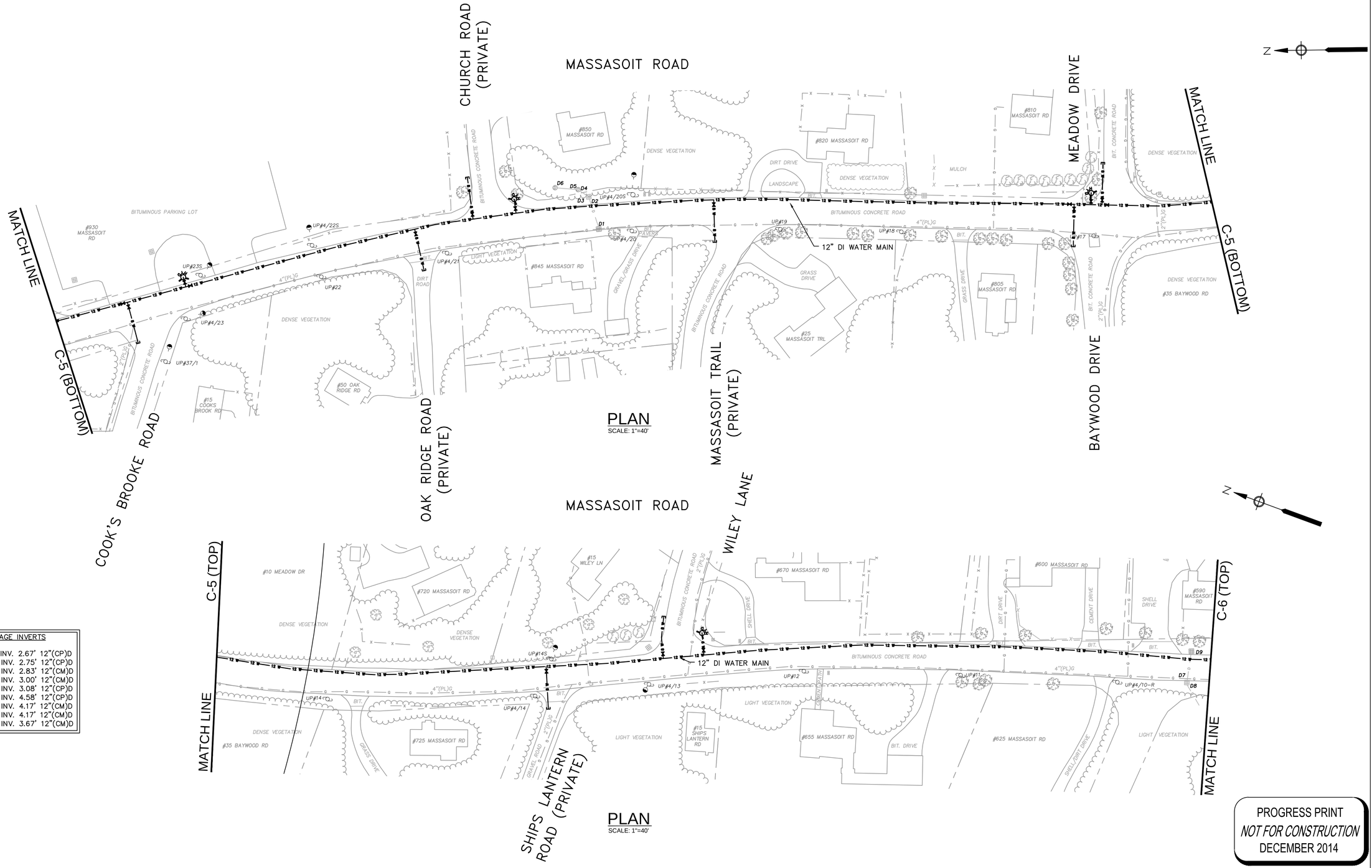


DRAINAGE INVERTS

D1 = INV. 2.67' 12"(CP)D
D2 = INV. 2.75' 12"(CP)D
D3 = INV. 2.83' 12"(CM)D
D4 = INV. 3.00' 12"(CM)D
D5 = INV. 3.08' 12"(CP)D
D6 = INV. 4.58' 12"(CP)D
D7 = INV. 4.17' 12"(CM)D
D8 = INV. 4.17' 12"(CM)D
D9 = INV. 3.67' 12"(CM)D

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CONTRACT 7 - WATER MAINS
NORTHERN SYSTEM BACKBONE
EASTHAM, MASSACHUSETTS

MASSASOIT ROAD

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Sheet No.
C-5

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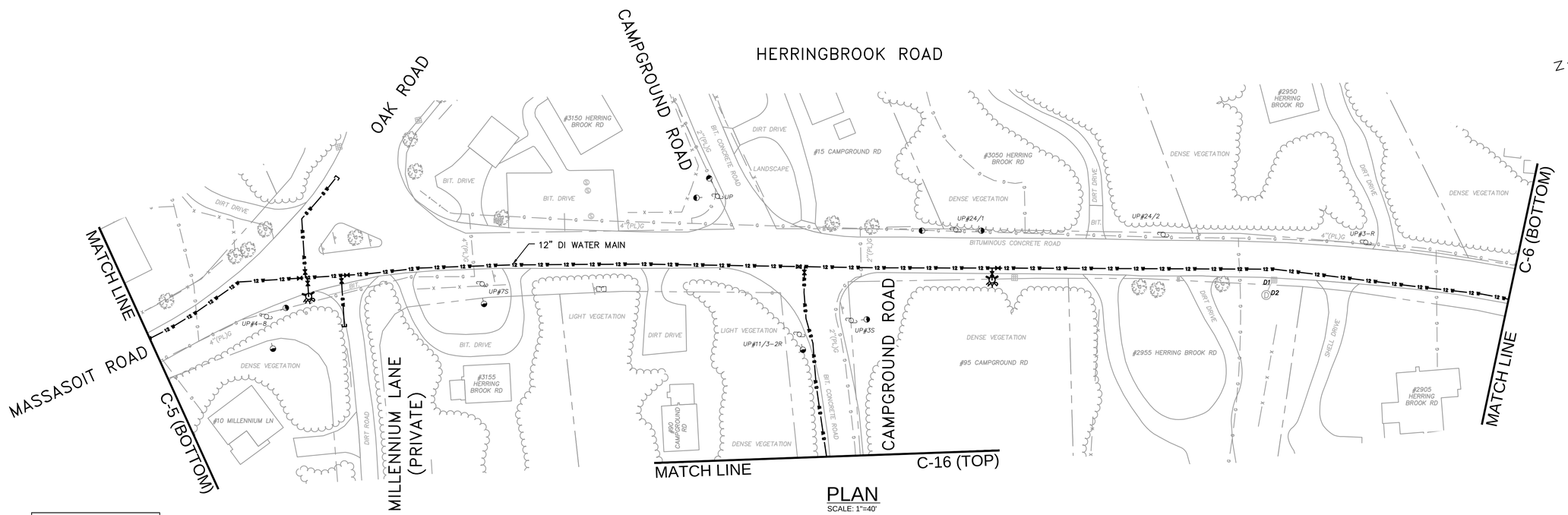
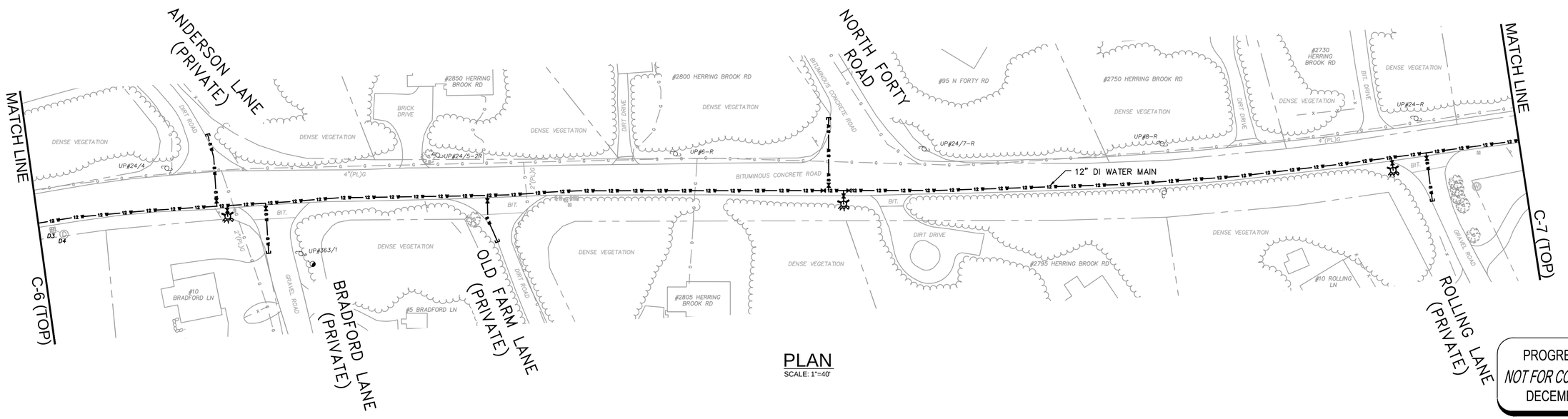



PLAN
SCALE: 1"=40'

DRAINAGE INVERTS

D1 = INV. 2.92' 12"(CM)D
D2 = INV. UNK. 12"(CM)D
D3 = INV. UNK.
D4 = INV. UNK.




PLAN
SCALE: 1"=40'

PROGRESS PRINT
*NOT FOR CONSTRUCTION*
DECEMBER 2014

TOWN OF EASTHAM INCORPORATED 1651

Environmental Partners GROUP
*A partnership for engineering solutions.*

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| Date | DECEMBER 2014 |
| Job No. | 217-1401.07 |
| Designed by | TRG |
| Drawn by | TRG |
| Checked by | RJT |
| Approved by | PCM |

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

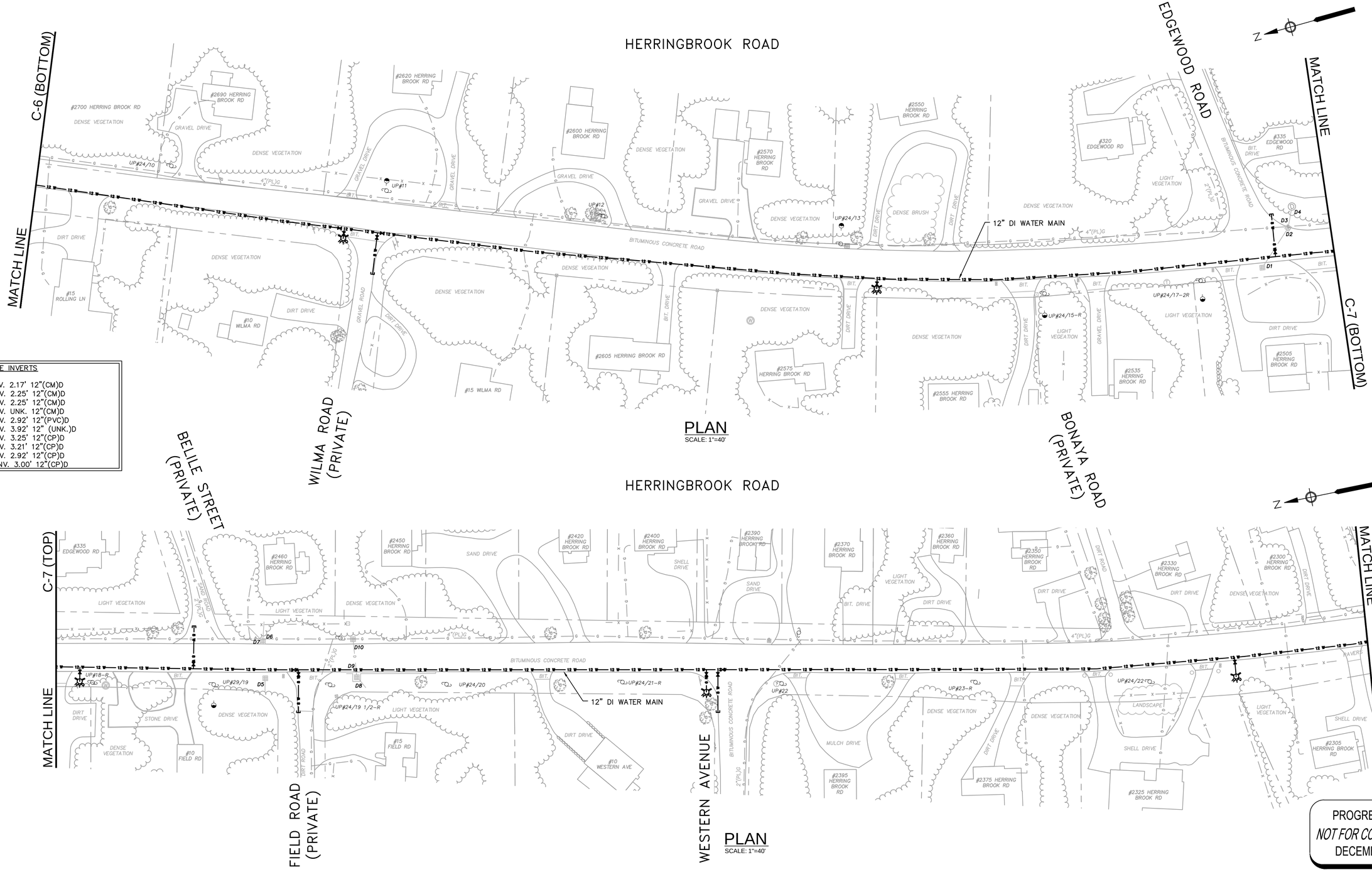
CONTRACT 7 - WATER MAINS
NORTHERN SYSTEM BACKBONE
EASTHAM, MASSACHUSETTS

HERRINGBROOK ROAD

NOT FOR CONSTRUCTION

Sheet No.
C-6

Drawing file: I:\Eastham 21.7\Phase 1 - Eastham Water System\217-1401.07 Contract 7 Phase I WM\01 CAD\07 CONTRACT WATER DESIGN.dwg Plot Date: Dec 09,2014-11:09am




DRAINAGE INVERTS

D1 = INV. 2.17' 12"(CM)D
D2 = INV. 2.25' 12"(CM)D
D3 = INV. 2.25' 12"(CM)D
D4 = INV. UNK. 12"(CM)D
D5 = INV. 2.92' 12"(PVC)D
D6 = INV. 3.92' 12" (UNK.)D
D7 = INV. 3.25' 12"(CP)D
C8 = INV. 3.21' 12"(CP)D
C9 = INV. 2.92' 12"(CP)D
C10 = INV. 3.00' 12"(CP)D

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DECEMBER 2014

TOWN OF EASTHAM INCORPORATED 1651

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| Scale | 1"=40' |
| Date | DECEMBER 2014 |
| Job No. | 217-1401.07 |
| Designed by | TRG |
| Drawn by | TRG |
| Checked by | RJT |
| Approved by | PCM |

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

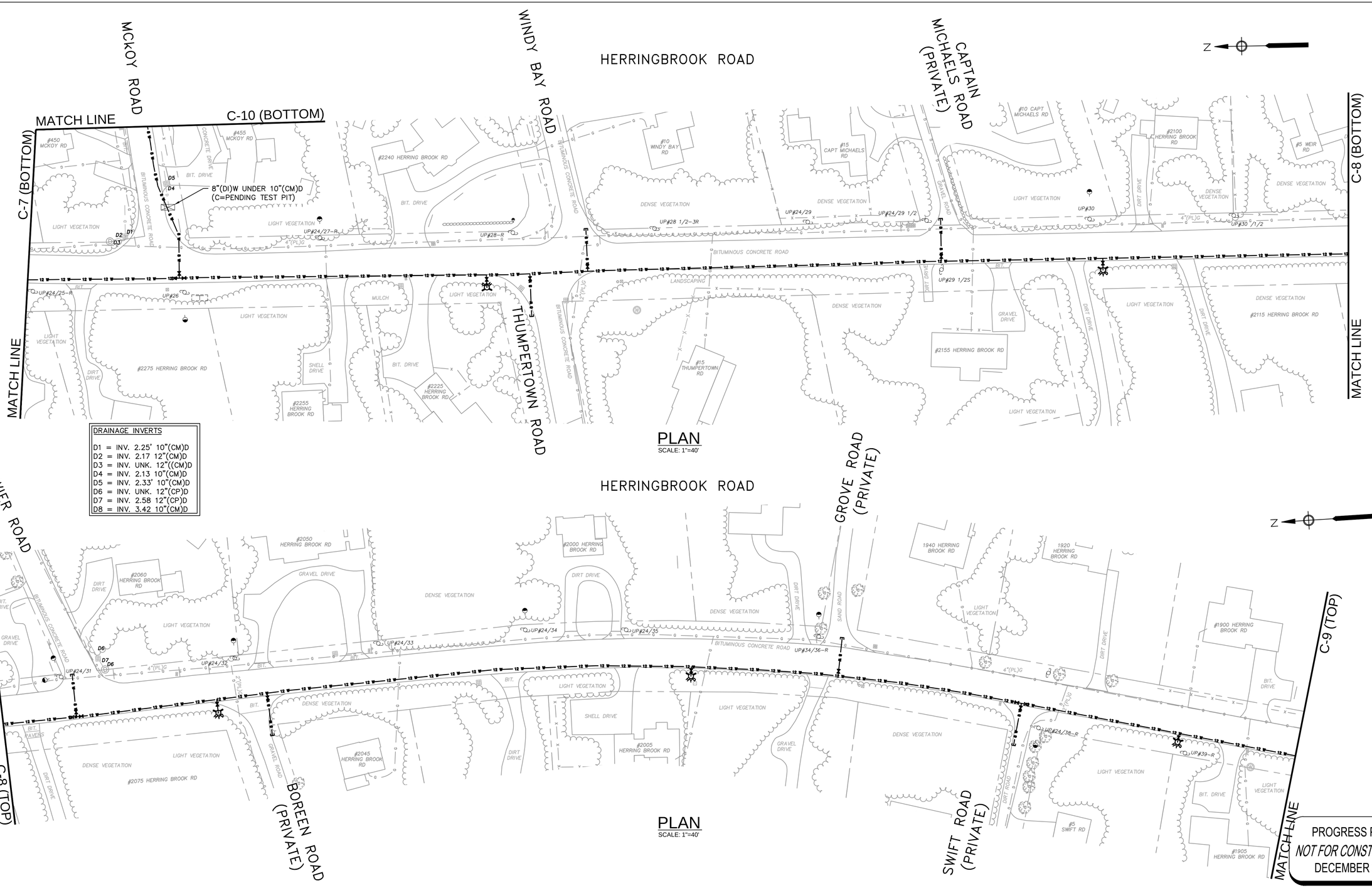
CONTRACT 7 - WATER MAINS
NORTHERN SYSTEM BACKBONE
EASTHAM, MASSACHUSETTS

HERRINGBROOK ROAD

NOT FOR CONSTRUCTION

Sheet No.
C-7

Drawing file: \\Eastham 2172\Phase 1 - Eastham Water System\217-1401.07 Contract 7 Phase I WM\01 CAD\07 CONTRACT WATER DESIGN.dwg Plot Date: Dec 09,2014-1:56pm




DRAINAGE INVERTS

D1 = INV. 2.25' 10"(CM)D
D2 = INV. 2.17 12"(CM)D
D3 = INV. UNK. 12"((CM)D
D4 = INV. 2.13 10"(CM)D
D5 = INV. 2.33' 10"(CM)D
D6 = INV. UNK. 12"(CP)D
D7 = INV. 2.58 12"(CP)D
D8 = INV. 3.42 10"(CM)D

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DECEMBER 2014

TOWN OF EASTHAM INCORPORATED 1651

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| Scale | 1"=40' |
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| Job No. | 217-1401.07 |
| Designed by | TRG |
| Drawn by | TRG |
| Checked by | RJT |
| Approved by | PCM |

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

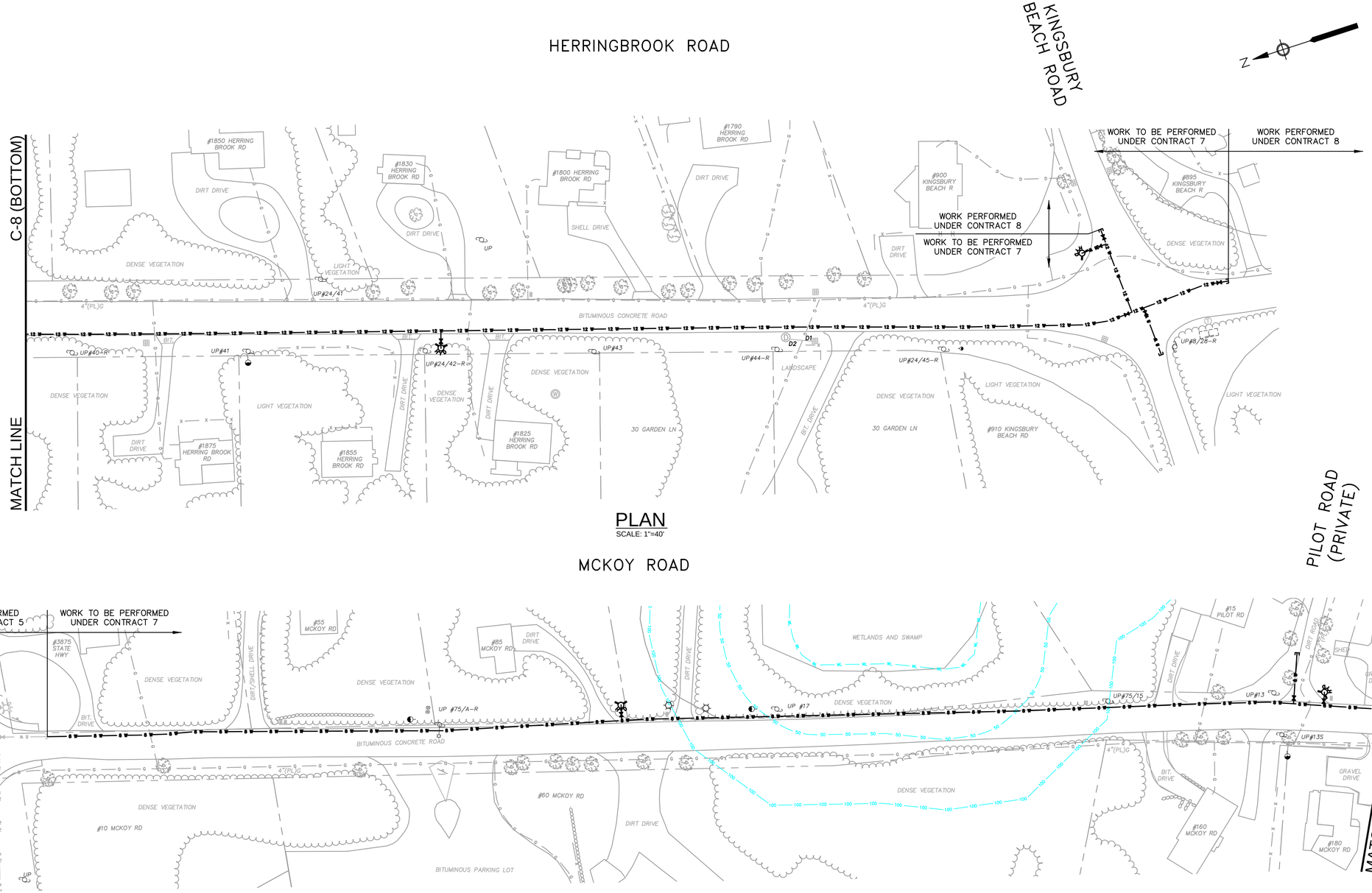
CONTRACT 7 - WATER MAINS
NORTHERN SYSTEM BACKBONE
EASTHAM, MASSACHUSETTS

HERRINGBROOK ROAD

NOT FOR CONSTRUCTION

Sheet No.
C-8

Drawing file: I:\Eastham 217\Phase 1 - Eastham Water System\217-1401.07 Contract 7 Phase I WM\01 CAD\07 CONTRACT WATER DESIGN.dwg Plot Date: Dec 09,2014-11:54am




PLAN
SCALE: 1"=40'

DRAINAGE INVERTS

D1 = INV. 2.67' 10"(CM)D
D2 = INV. UNK. 10"(CM)D

PROGRESS PRINT
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| Designed by | TRG |
| Drawn by | TRG |
| Checked by | RJT |
| Approved by | PCM |

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

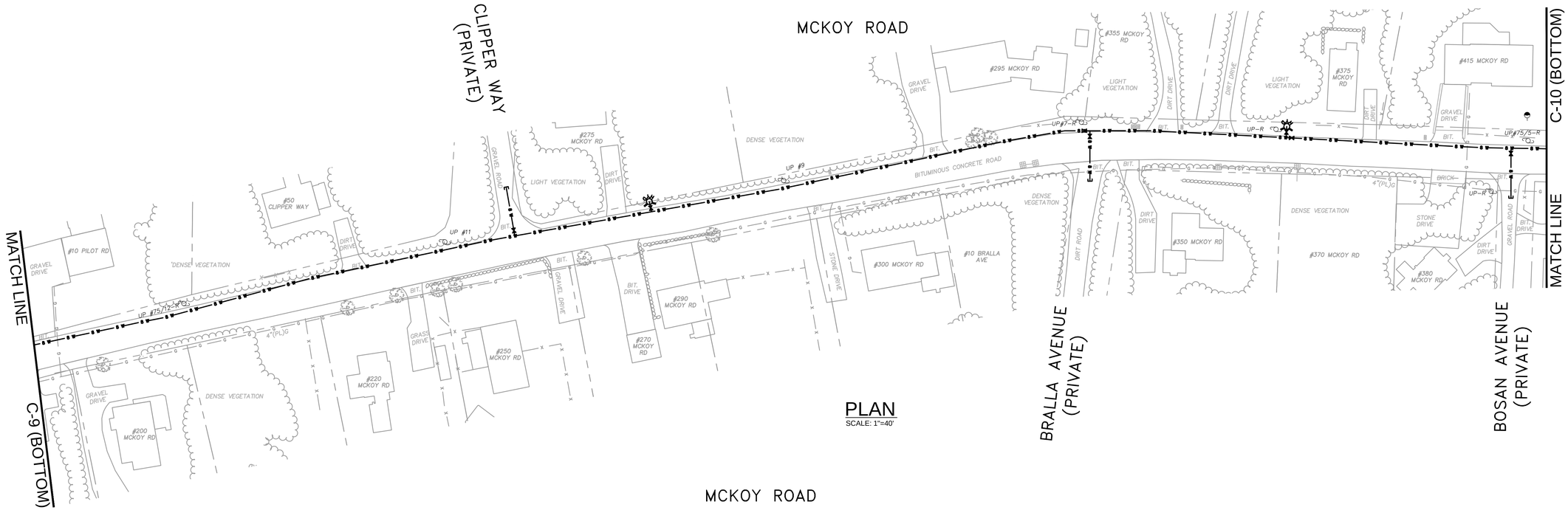
CONTRACT 7 - WATER MAINS
NORTHERN SYSTEM BACKBONE
EASTHAM, MASSACHUSETTS

HERRINGBROOK ROAD AND MCKOY ROAD

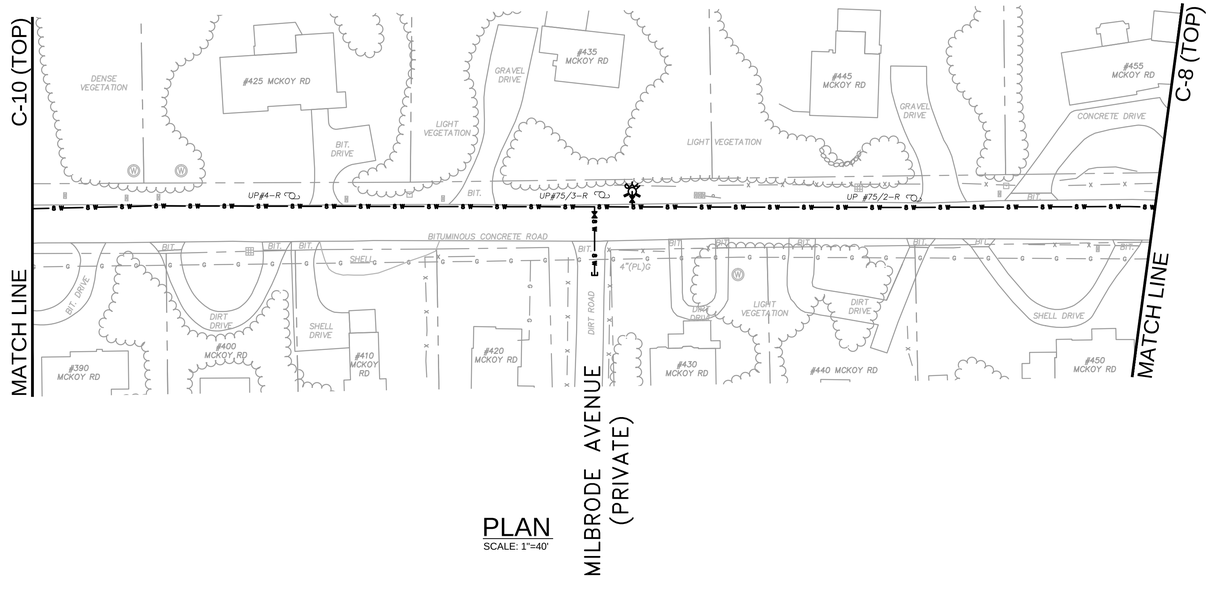
NOT FOR CONSTRUCTION

Sheet No.
C-9

Drawing file: I:\Eastham 217\Phase 1 - Eastham Water System\217-1401.07 Contract 7 Phase I WM\01 CAD\07 CONTRACT WATER DESIGN.dwg Plot Date: Dec 09,2014-11:55am




PLAN
SCALE: 1"=40'




PLAN
SCALE: 1"=40'

DRAINAGE INVERTS

D1 = INV. 2.67' 12"(CM)D
D2 = INV. 2.83' 12"(CM)D
D3 = INV. 1.83' 10"(CM)D
D4 = INV. 3.83' 10"(CM)D
D5 = INV. 4.17' 10"(CM)D

PROGRESS PRINT
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DECEMBER 2014

TOWN OF EASTHAM INCORPORATED 1651

Environmental Partners GROUP
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| Scale | 1"=40' |
| Date | DECEMBER 2014 |
| Job No. | 217-1401.07 |
| Designed by | TRG |
| Drawn by | TRG |
| Checked by | RJT |
| Approved by | PCM |

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

CONTRACT 7 - WATER MAINS
NORTHERN SYSTEM BACKBONE
EASTHAM, MASSACHUSETTS

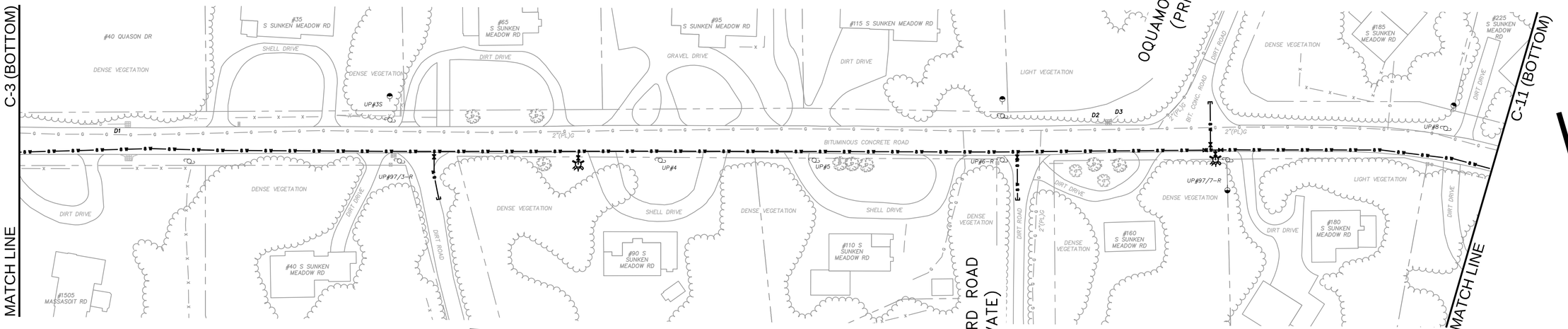
MCKOY ROAD

NOT FOR CONSTRUCTION

Sheet No.
C-10

Drawing file: \\Eastham 217\Phase 1 - Eastham Water System\217-1401.07 Contract 7 Phase I WM\01 CAD\07 CONTRACT WATER DESIGN.dwg Plot Date: Dec 09,2014-12:23pm

SOUTH SUNKEN MEADOW ROAD

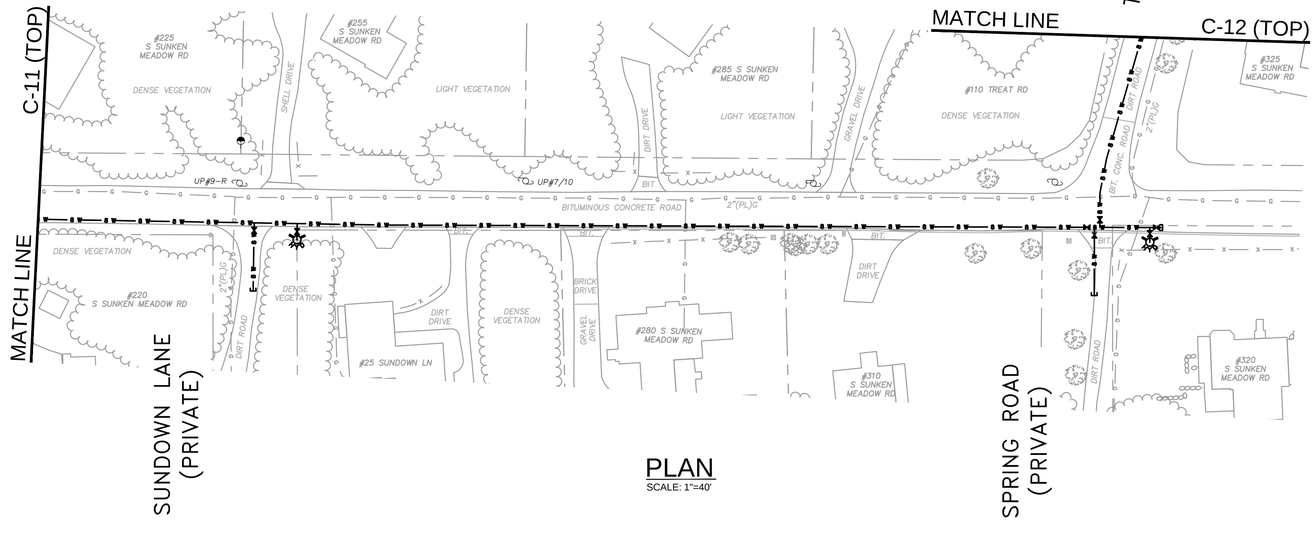



PLAN
SCALE: 1"=40'

DRAINAGE INVERTS

D1 = INV. 1.83' 12"(CM)D
D2 = INV. 2.08 12"(CM)D
D3 = INV. 1.83 12"(CM)D

SOUTH SUNKEN MEADOW ROAD




PLAN
SCALE: 1"=40'

PROGRESS PRINT
*NOT FOR CONSTRUCTION*
DECEMBER 2014

Environmental Partners GROUP
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| Scale | 1"=40' |
| Date | DECEMBER 2014 |
| Job No. | 217-1401.07 |
| Designed by | TRG |
| Drawn by | TRG |
| Checked by | RJT |
| Approved by | PCM |

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

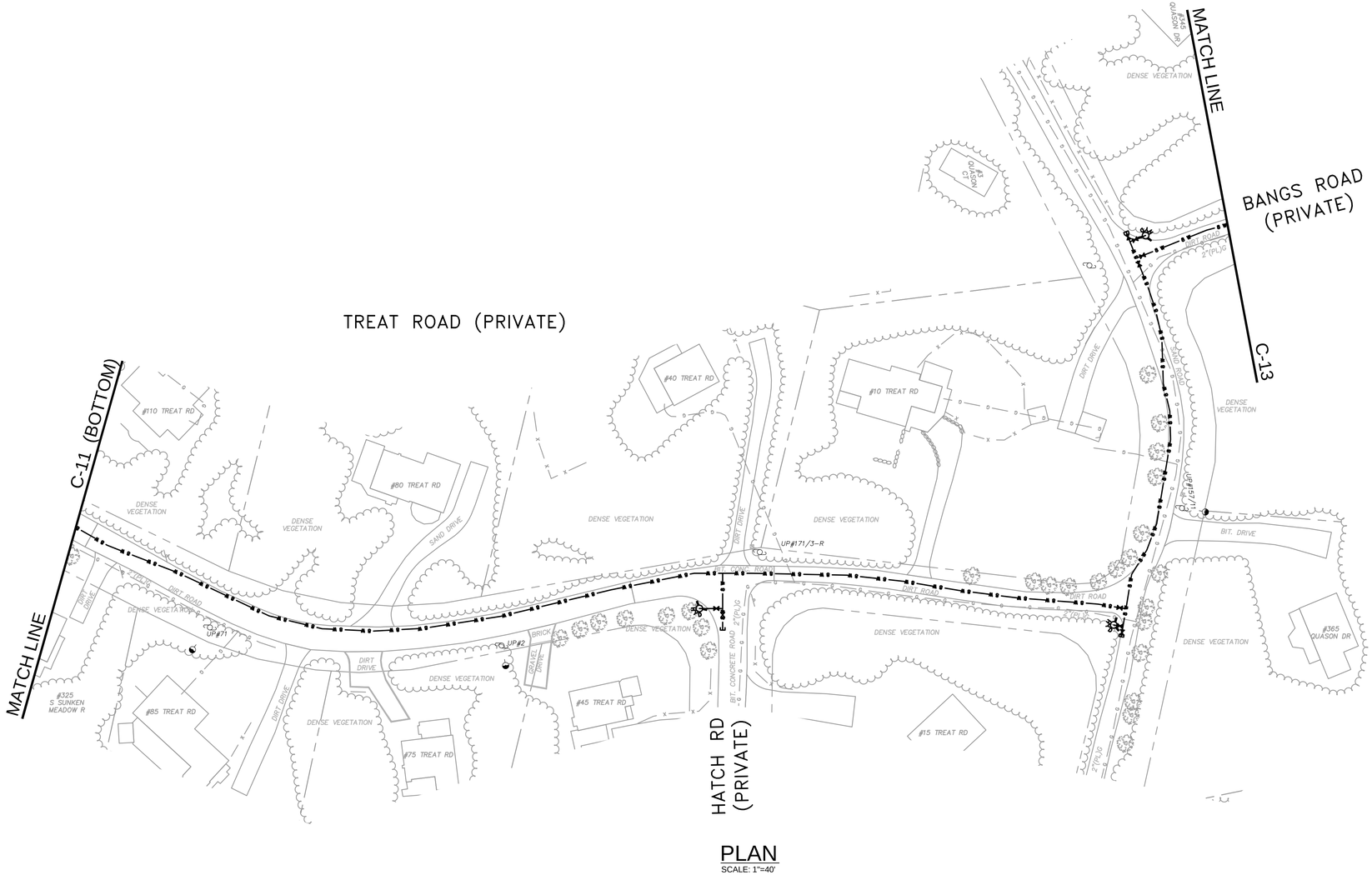
CONTRACT 7 - WATER MAINS
NORTHERN SYSTEM BACKBONE
EASTHAM, MASSACHUSETTS

SOUTH SUNKEN MEADOW ROAD

NOT FOR CONSTRUCTION

Sheet No.
C-11

Drawing file: I:\Eastham 217\Phase 1 - Eastham Water System\217-1401.07 Contract 7 Phase I WM\01 CAD\07 CONTRACT WATER DESIGN.dwg Plot Date: Dec 09,2014-12:24pm




PLAN
SCALE: 1"=40'

PROGRESS PRINT
*NOT FOR CONSTRUCTION*
DECEMBER 2014

TOWN OF EASTHAM
INCORPORATED 1651

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| Scale | 1"=40' |
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| Job No. | 217-1401.07 |
| Designed by | TRG |
| Drawn by | TRG |
| Checked by | RJT |
| Approved by | PCM |

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

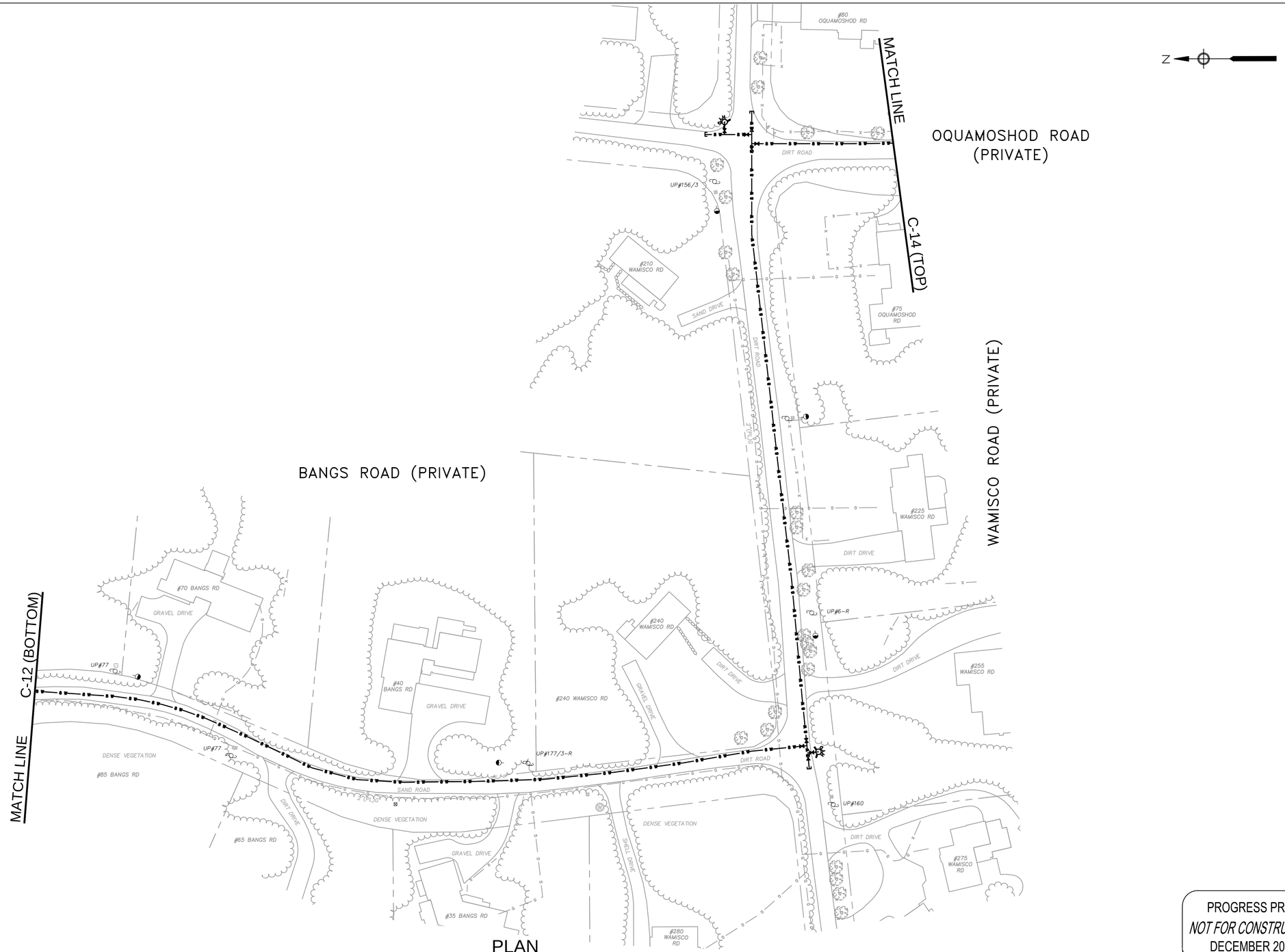
CONTRACT 7 - WATER MAINS
NORTHERN SYSTEM BACKBONE
EASTHAM, MASSACHUSETTS

TREAT ROAD AND QUASON DRIVE

NOT FOR CONSTRUCTION

Sheet No.
C-12

Drawing file: I:\Eastham 217\Phase 1 - Eastham Water System\217-1401.07 Contract 7 Phase I WM\01 CAD\07 CONTRACT WATER DESIGN - TRG 20141202.dwg Plot Date: Dec 08,2014-10:20am




PLAN
SCALE: 1"=40'

PROGRESS PRINT
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DECEMBER 2014

TOWN OF EASTHAM INCORPORATED 1651

Environmental Partners GROUP
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| MARK | DATE | DESCRIPTION | | |
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| | | | Checked by | RJT |
| | | | Approved by | PCM |

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

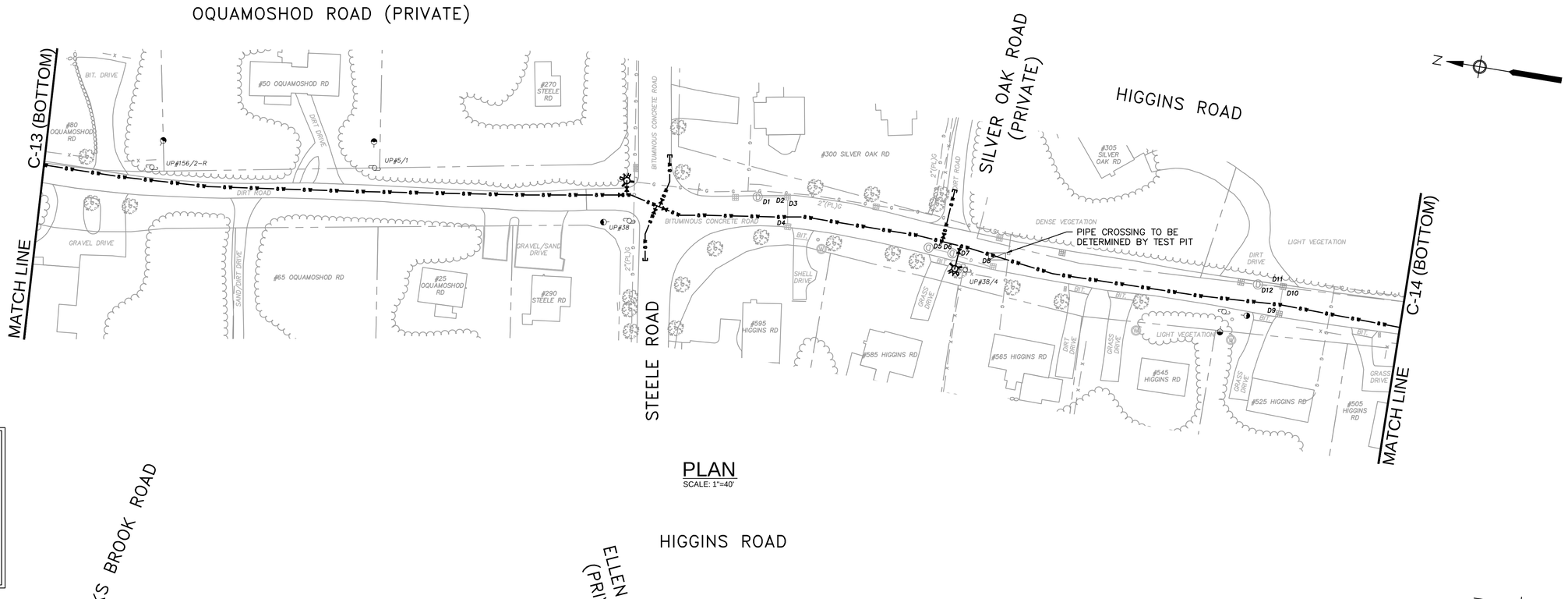
CONTRACT 7 - WATER MAINS
NORTHERN SYSTEM BACKBONE
EASTHAM, MASSACHUSETTS

BANGS ROAD AND WAMISCO ROAD

NOT FOR CONSTRUCTION

Sheet No.
C-13

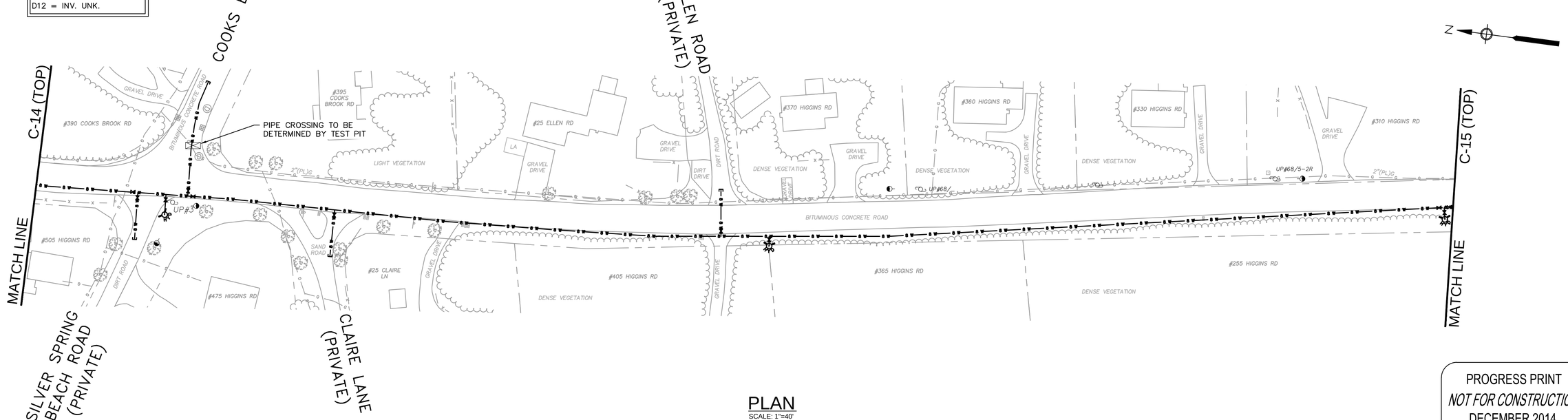
Drawing file: I:\Eastham 21\7Phase 1 - Eastham Water System\217-1401.07 Contract 7 Phase I WM\01 CAD\07 CONTRACT WATER DESIGN.dwg Plot Date: Dec 09,2014-12:43pm




PLAN
SCALE: 1"=40'

DRAINAGE INVERTS

D1 = INV. 3.33' 10"(CP)D
D2 = INV. 3.08' 10"(CP)D
D3 = INV. 3.04' 10"(CP)D
D4 = INV. 3.42' 10"(CP)D
D5 = INV. UNK. 12"(CP)D
D6 = INV. 4.17' 12"(CP)D
D7 = INV. UNK. 12"(CP)D
D8 = INV. 4.13' 12"(CP)D
D9 = INV. 4.00' 12"(CP)D
D10 = INV. 4.42' 12"(CP)D
D11 = INV. UNK.
D12 = INV. UNK.




PLAN
SCALE: 1"=40'

PROGRESS PRINT
*NOT FOR CONSTRUCTION*
DECEMBER 2014

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| MARK | DATE | DESCRIPTION | | |
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| | | | Job No. | 217-1401.07 |
| | | | Designed by | TRG |
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| | | | Checked by | RJT |
| | | | Approved by | PCM |

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

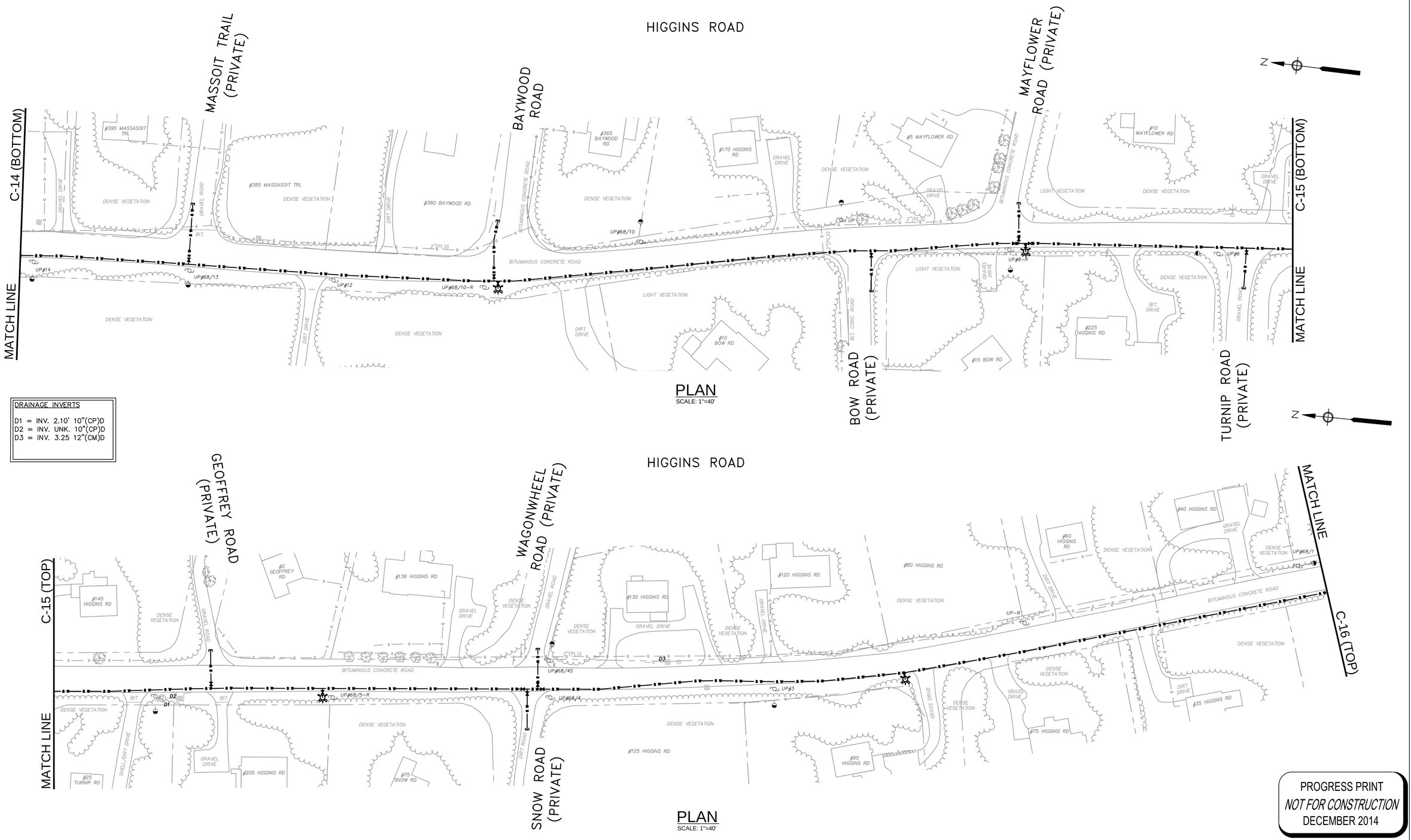
CONTRACT 7 - WATER MAINS
NORTHERN SYSTEM BACKBONE
EASTHAM, MASSACHUSETTS

HIGGINS ROAD

NOT FOR CONSTRUCTION

Sheet No.
C-14

Drawing file: I:\Eastham 21.7\Phase 1 - Eastham Water System\217-1401.07 Contract 7 Phase I WM\01 CAD\07 CONTRACT WATER DESIGN.dwg Plot Date: Dec 09,2014-12:45pm




DRAINAGE INVERTS

D1 = INV. 2.10' 10"(CP)D
D2 = INV. UNK. 10"(CP)D
D3 = INV. 3.25 12"(CM)D

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DECEMBER 2014

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

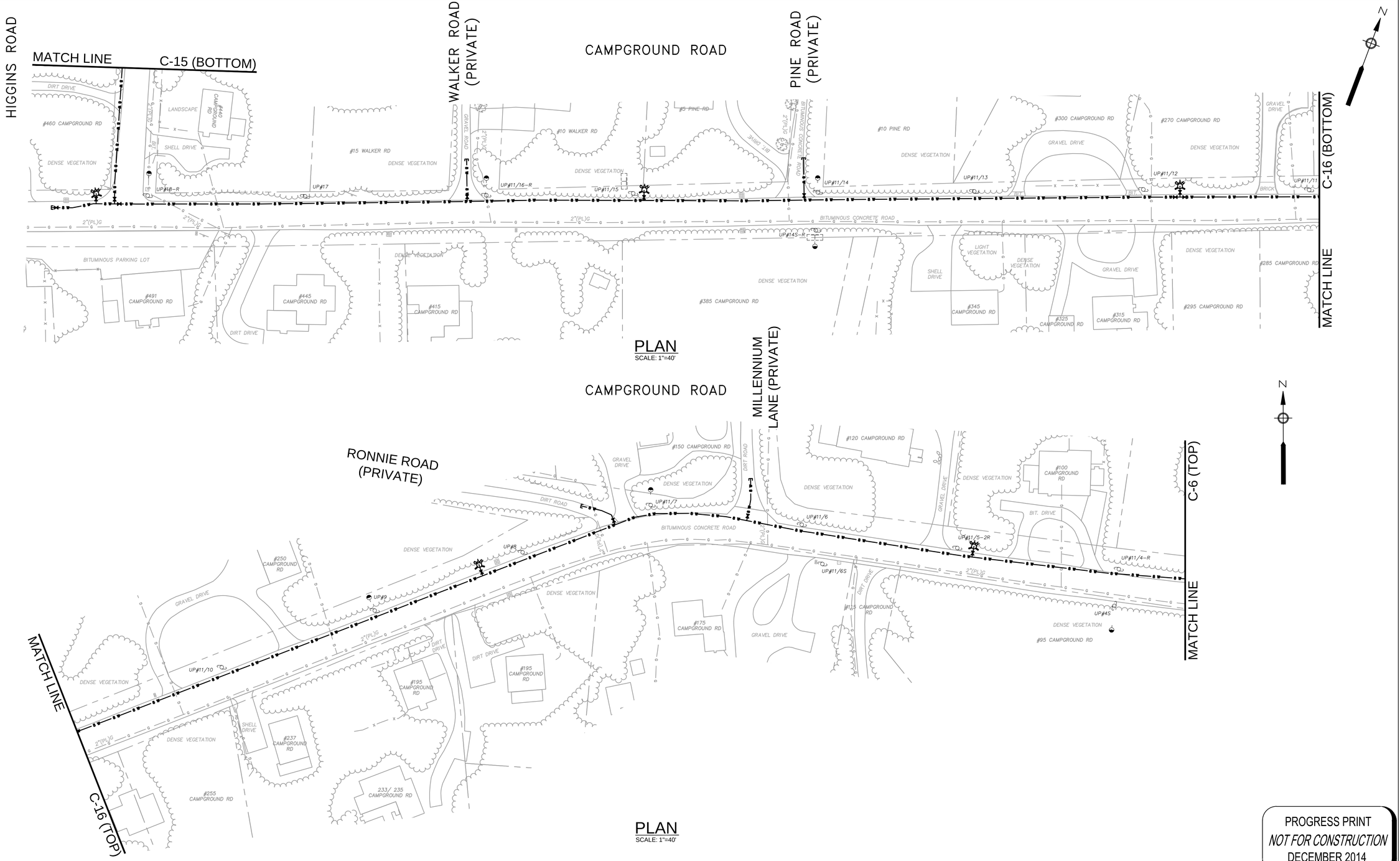
CONTRACT 7 - WATER MAINS
NORTHERN SYSTEM BACKBONE
EASTHAM, MASSACHUSETTS

HIGGINS ROAD

NOT FOR CONSTRUCTION

Sheet No.
C-15

Drawing file: I:\Eastham 217\Phase 1 - Eastham Water System\217-1401.07 Contract 7 Phase I WM\01 CAD\07 CONTRACT WATER DESIGN.dwg Plot Date: Dec 09,2014-12:50pm




PLAN
SCALE: 1"=40'




PLAN
SCALE: 1"=40'

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DECEMBER 2014

TOWN OF EASTHAM INCORPORATED 1651

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| Designed by | TRG |
| Drawn by | TRG |
| Checked by | RJT |
| Approved by | PCM |

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

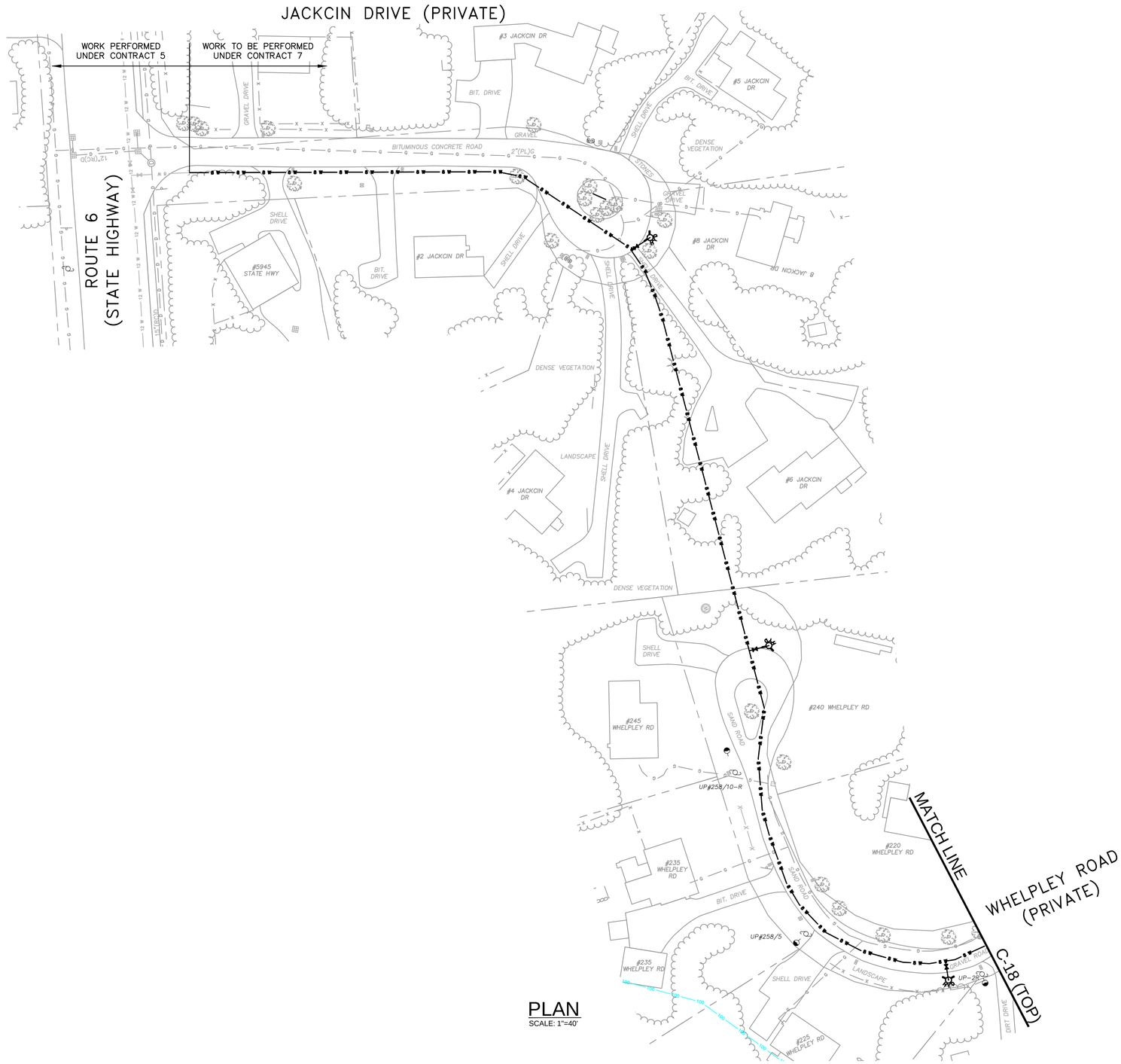
CONTRACT 7 - WATER MAINS
NORTHERN SYSTEM BACKBONE
EASTHAM, MASSACHUSETTS

HIGGINS ROAD AND CAMPGROUND ROAD

NOT FOR CONSTRUCTION

Sheet No.
C-16

Drawing file: \\Eastham 2127\Phase 1 - Eastham Water System\217-1401.07 Contract 7 Phase I WM\01 CAD\07 CONTRACT WATER DESIGN.dwg Plot Date: Dec 09,2014-12:56pm




PLAN
SCALE: 1"=40'

PROGRESS PRINT
*NOT FOR CONSTRUCTION*
DECEMBER 2014

Drawing file: I:\Eastham 217\Phase 1 - Eastham Water System\217-1401.07 Contract 7 Phase I WM\01 CAD\07 CONTRACT WATER DESIGN.dwg Plot Date: Dec 09,2014-12:56pm

TOWN OF EASTHAM INCORPORATED 1651

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| Job No. | 217-1401.07 |
| Designed by | TRG |
| Drawn by | TRG |
| Checked by | RJT |
| Approved by | PCM |

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

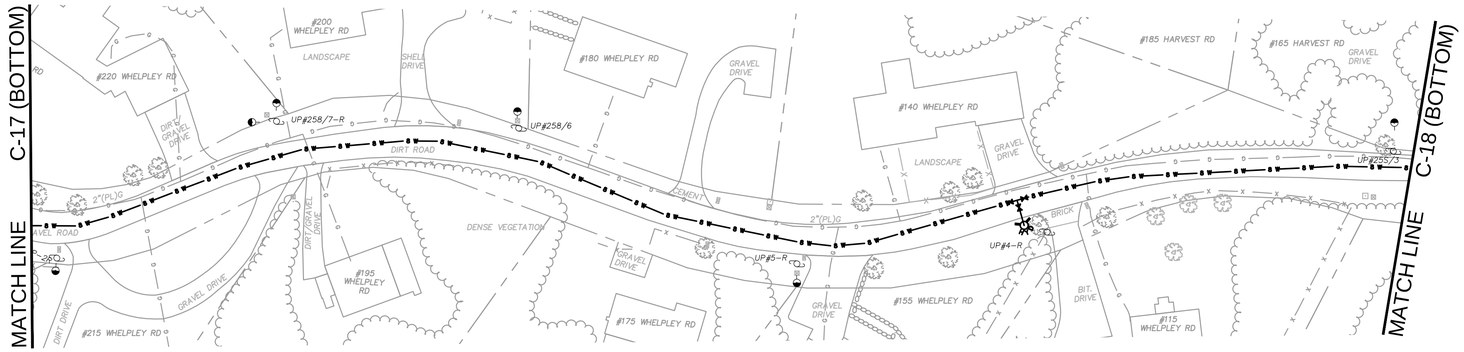
CONTRACT 7 - WATER MAINS
NORTHERN SYSTEM BACKBONE
EASTHAM, MASSACHUSETTS

JACKCIN DRIVE AND WHELPLEY ROAD

NOT FOR CONSTRUCTION

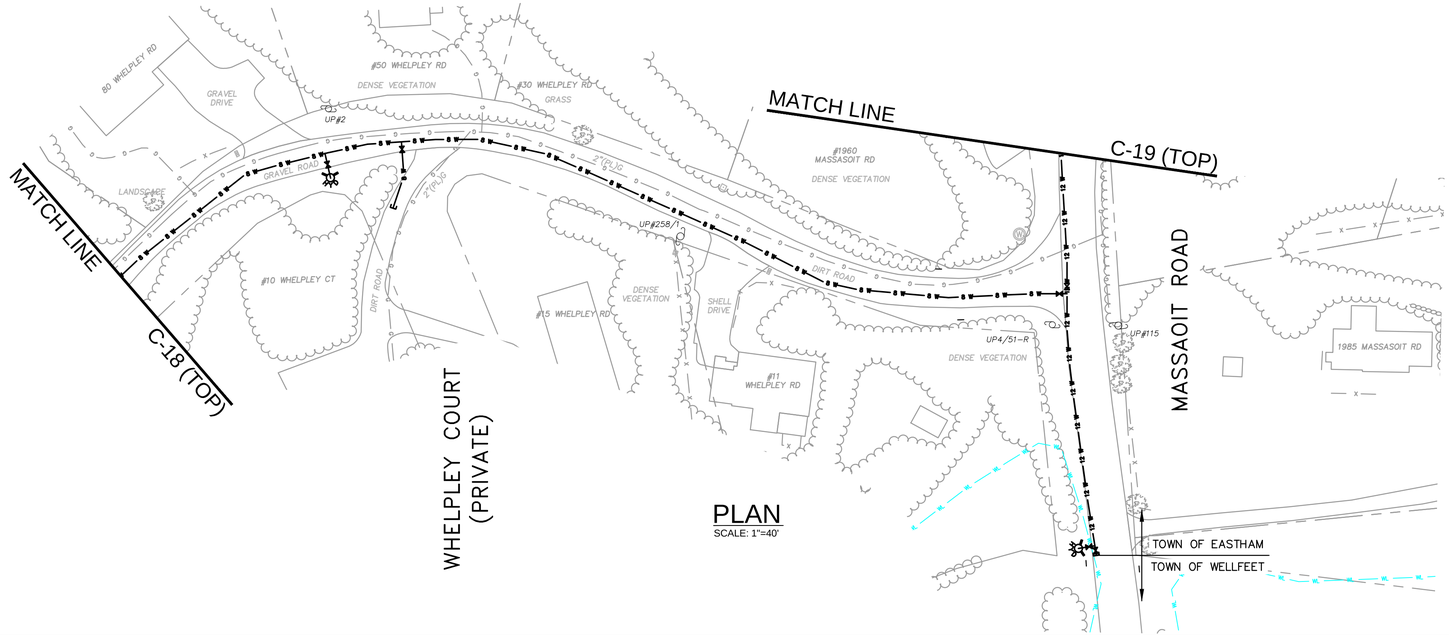
Sheet No.
C-17

WHELPLEY ROAD (PRIVATE)




PLAN
SCALE: 1"=40'

WHELPLEY ROAD (PRIVATE)




PLAN
SCALE: 1"=40'

FRODIGH LANE (PRIVATE)

PROGRESS PRINT
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DECEMBER 2014

TOWN OF EASTHAM INCORPORATED 1651

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| Date | DECEMBER 2014 |
| Job No. | 217-1401.07 |
| Designed by | TRG |
| Drawn by | TRG |
| Checked by | RJT |
| Approved by | PCM |

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

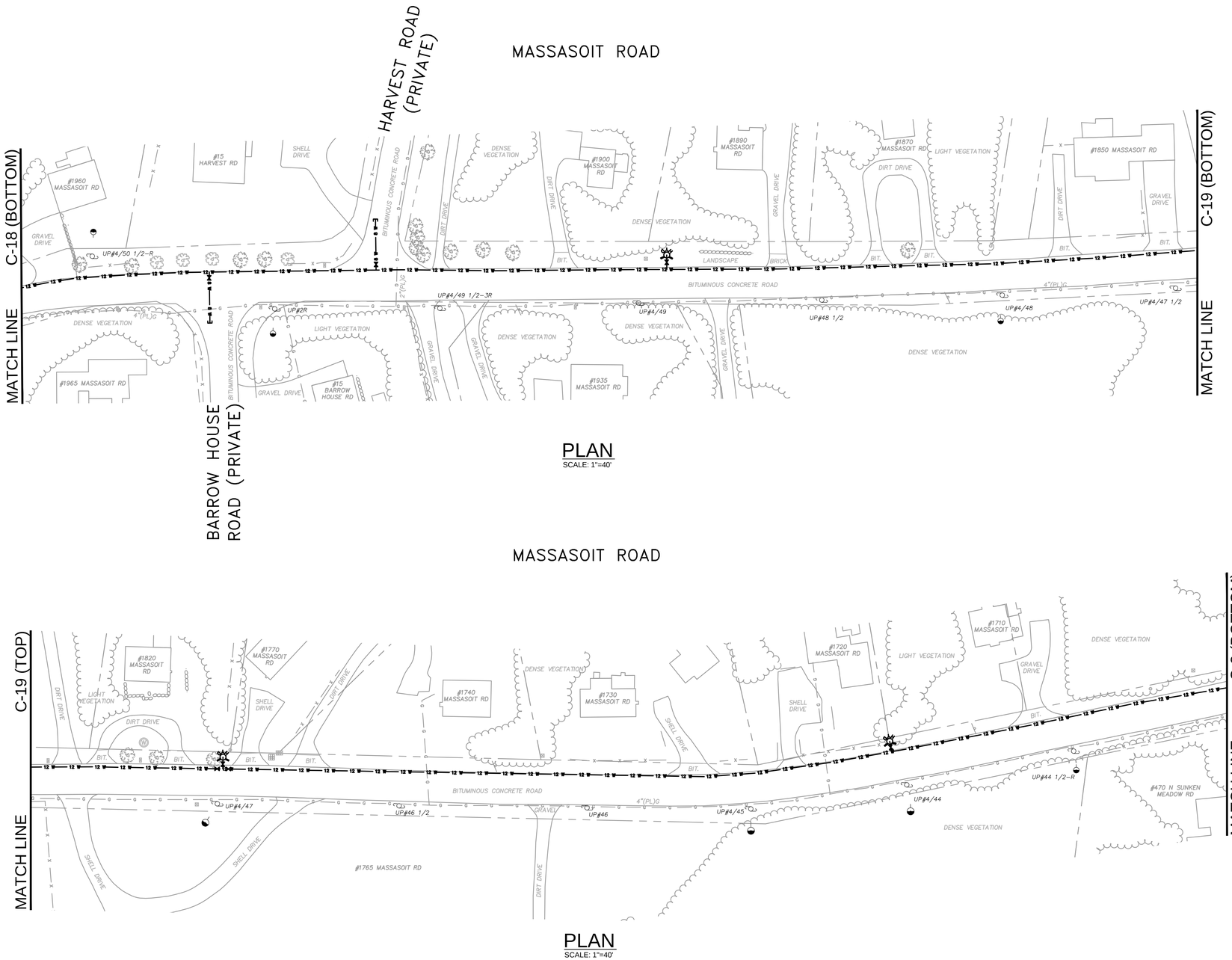
CONTRACT 7 - WATER MAINS
NORTHERN SYSTEM BACKBONE
EASTHAM, MASSACHUSETTS

WHELPLEY ROAD

NOT FOR CONSTRUCTION

Sheet No.
C-18

Drawing file: I:\Eastham.217\Phase 1 - Eastham Water System\217-1401.07 Contract 7 Phase I WM\01 CAD\07 CONTRACT WATER DESIGN.dwg Plot Date: Dec 09,2014-12:58pm




PLAN
SCALE: 1"=40'




PLAN
SCALE: 1"=40'

PROGRESS PRINT
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DECEMBER 2014

TOWN OF EASTHAM, INCORPORATED 1651, MAYFLOWER 1620

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| Scale | 1"=40' |
| Date | DECEMBER 2014 |
| Job No. | 217-1401.07 |
| Designed by | TRG |
| Drawn by | TRG |
| Checked by | RJT |
| Approved by | PCM |

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

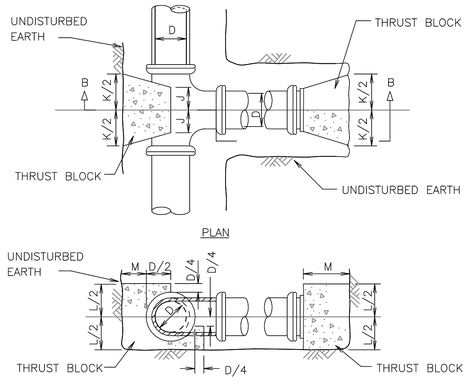
CONTRACT 7 - WATER MAINS
NORTHERN SYSTEM BACKBONE
EASTHAM, MASSACHUSETTS

MASSASOIT ROAD

NOT FOR CONSTRUCTION

Sheet No.
C-19

Drawing file: I:\Eastham 217\Phase 1 - Eastham Water System\217-1401.07 Contract 7 Phase I WM01 CAD\07 CONTRACT WATER DESIGN.dwg Plot Date: Dec 09,2014-1:18pm



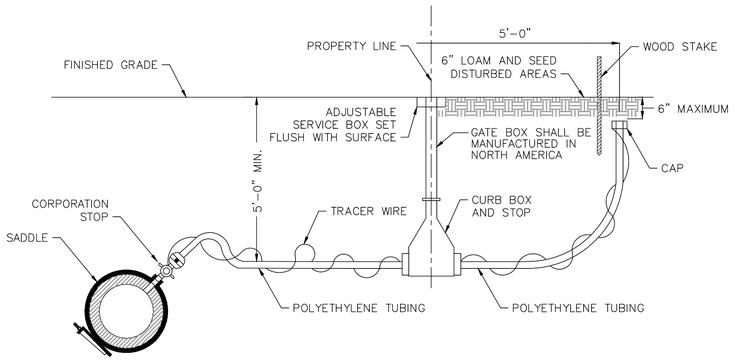

NOTES :

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

| TABLE OF DIMENSIONS | | | | | | | |
|---|---|---|---|---|---|---|---|
| D (in) | 4 | 6 | 8 | 10 | 12 | 14 | 16 |
| J (in) | 6 | 6 | 7 | 9 | 10 | 12 | 22 |
| K (in) | 16 | 16 | 20 | 26 | 32 | 36 | 64 |
| L (in) | 16 | 16 | 21 | 24 | 29 | 34 | 61 |
| M (in) | 11 | 11 | 14 | 16 | 19 | 22 | 39 |

## CONCRETE THRUST BLOCK DETAIL AT TEE / PLUG

SCALE: N.T.S.

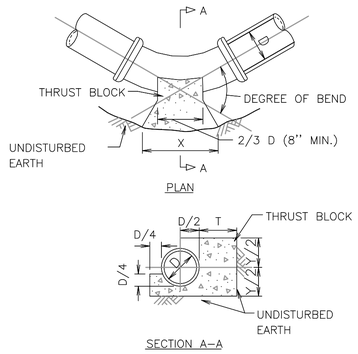



NOTES:

1. ALL JOINTS SHALL BE COMPRESSION TYPE.
2. POLYETHYLENE TUBING SHALL BE BACKFILLED WITH SAND BY HAND TO 1–FOOT ABOVE TUBING.
3. CORPORATION STOPS SHALL HAVE A SADDLE.
4. WATER SERVICES SHALL BE INSULATED IN AREAS WHERE CONNECTION TO EXISTING WATER SERVICE IS LESS THAN 4 FEET.
5. ALL WATER SERVICE PLUMBING MATERIALS SHALL BE "LEAD FREE" IN ACCORDANCE WITH SECTION 1417 OF THE SAFE DRINKING WATER ACT AND SECTION 9 OF NSF STANDARD 61.

## TYPICAL SERVICE CONNECTION HDPE WATER MAINS

SCALE: N.T.S.




NOTES:

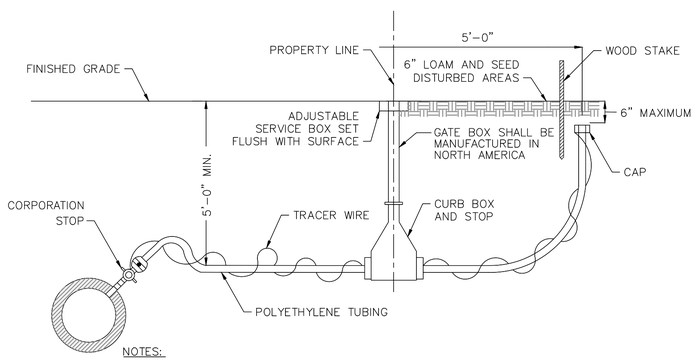
1. ALL CONCRETE SHALL BE 3000 P.S.I. @ 28 DAYS (CLASS "A" CONCRETE)
2. DIMENSIONS SHOWN ARE MINIMUM AND ARE BASED UPON SOIL PRESSURE OF 1500 P.S.F. AND TOTAL PRESSURE OF 250 P.S.I. TOTAL PRESSURE IS WORKING PRESSURE PLUS SURGE PRESSURE.
3. THRUST BLOCKS SHALL BEAR AGAINST UNDISTURBED EARTH.

TABLE OF DIMENSIONS

| DIMENSION | 90° BEND | | | | | | | 45° BEND | | | | | | | 22 1/2° BEND | | | | | | | 11 1/4° BEND | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D (in.) | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 4 | 6 | 8 | 10 | 12 | 14 | 16 |
| X (in.) | 35 | 35 | 50 | 56 | 72 | 80 | 142 | 24 | 24 | 35 | 45 | 51 | 60 | 107 | 28 | 28 | 30 | 32 | 37 | 42 | 74 | 12 | 12 | 19 | 21 | 27 | 33 | 59 |
| Y (in.) | 20 | 20 | 24 | 32 | 35 | 40 | 71 | 16 | 16 | 19 | 21 | 27 | 33 | 59 | 13 | 13 | 13 | 16 | 19 | 22 | 39 | 8 | 8 | 9 | 12 | 13 | 16 | 28 |
| T (in.) | 11 | 11 | 14 | 16 | 19 | 22 | 39 | 11 | 11 | 14 | 16 | 19 | 22 | 39 | 11 | 11 | 13 | 16 | 19 | 22 | 39 | 11 | 11 | 13 | 16 | 19 | 22 | 39 |

## CONCRETE THRUST BLOCK DETAIL AT BEND

SCALE: N.T.S.

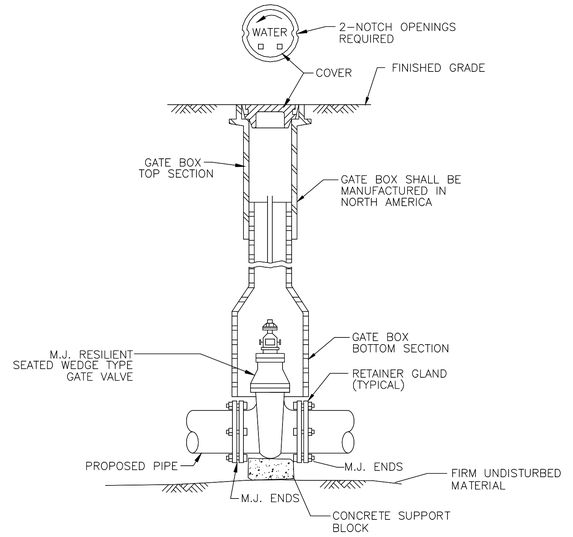



NOTES:

1. ALL JOINTS SHALL BE COMPRESSION TYPE.
2. POLYETHYLENE TUBING SHALL BE BACKFILLED WITH SAND BY HAND TO 1–FOOT ABOVE TUBING.
3. CORPORATION STOPS LARGER THAN ONE INCH SHALL HAVE A SADDLE.
4. WATER SERVICES SHALL BE INSULATED IN AREAS WHERE CONNECTION TO EXISTING WATER SERVICE IS LESS THAN 4 FEET.
5. ALL WATER SERVICE PLUMBING MATERIALS SHALL BE "LEAD FREE" IN ACCORDANCE WITH SECTION 1417 OF THE SAFE DRINKING WATER ACT AND SECTION 9 OF NSF STANDARD 61.

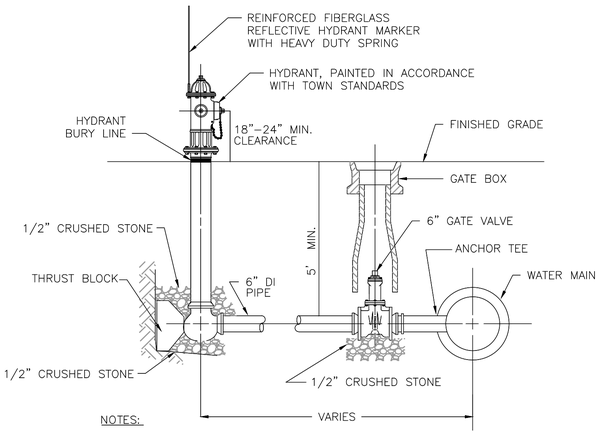
## TYPICAL SERVICE CONNECTION DUCTILE IRON WATER MAINS

SCALE: N.T.S.




## GATE VALVE AND VALVE BOX DETAIL

SCALE: N.T.S.




NOTES:

1. ALL HYDRANT, VALVE AND TEE JOINTS TO BE RESTRAINED MECHANICAL JOINTS.
2. DEPTH OF HYDRANT BURY SHALL SUIT INSTALLED DEPTH OF COVER OVER WATER MAIN. INSTALL RISERS AS NECESSARY AT NO ADDITIONAL COST TO THE OWNER.

## FIRE HYDRANT ASSEMBLY DETAIL

SCALE: N.T.S.

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| Designed by | TRG |
| Drawn by | TRG |
| Checked by | RJT |
| Approved by | PCM |

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CONTRACT 7 - WATER MAINS
NORTHERN SYSTEM BACKBONE
EASTHAM, MASSACHUSETTS

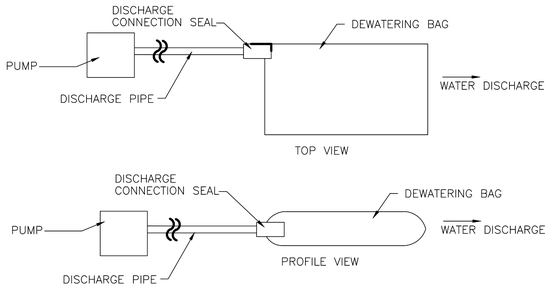
CONSTRUCTION DETAIL I

NOT FOR CONSTRUCTION

Sheet No.

CD-1

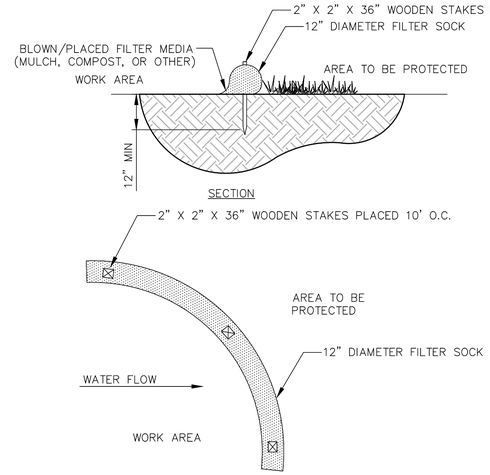
Drawing file: I:\Eastham 2\17Phase 1 - Eastham Water System\217-1401.07 Contract 7 Phase I WM\01 CAD\07 CONTRACT WATER DESIGN.dwg Plot Date: Dec 09,2014-1:18pm



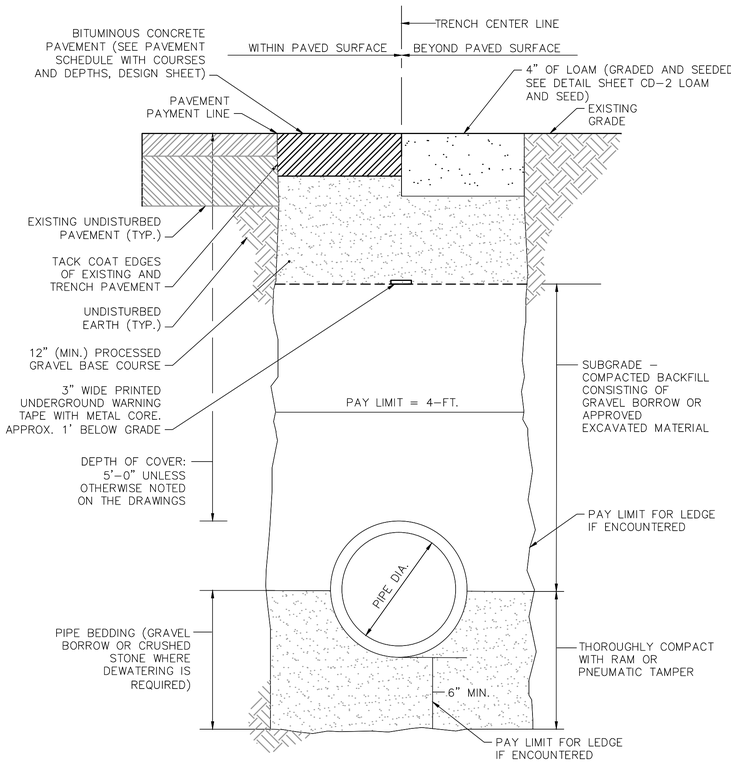

NOTES:

1. DEWATERING BAG SIZE AND QUANTITY SHALL BE AS NEEDED TO ADEQUATELY FILTER ALL PUMP EFFLUENT FROM DEWATERING ACTIVITIES. CONTRACTOR SHALL PROVIDE A REDUNDANT BAG ON SITE AT ALL TIMES.
2. EACH BAG SHALL HANDLE A 2", 3", OR 4" DISCHARGE HOSE.
3. DISCHARGE HOSES CAN BE PLACED ALONG ANY EDGE BY MAKING A SMALL INCISION INTO THE FABRIC, INSERTING THE HOSE, AND THEN CLAMPING THE FABRIC TO THE HOSE VIA WIRE, TIES, CLAMP, ROPE OR SIMILAR TO CREATE A GOOD SEAL.
4. CONTRACTOR SHALL AVOID DISCHARGING MULTIPLE PIPES INTO ONE BAG.

## DEWATERING BAGS
SCALE: N.T.S.

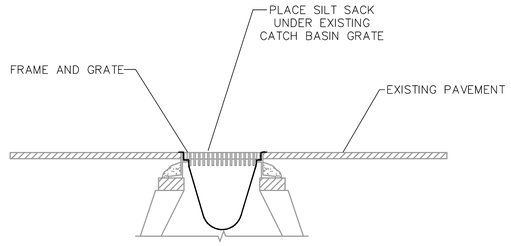



## 12" DIAMETER FILTER SOCK
SCALE: N.T.S.




SEE STANDARD PAVEMENT NOTES (THIS SHEET)
SEE PAVEMENT SCHEDULE SHEET G-2

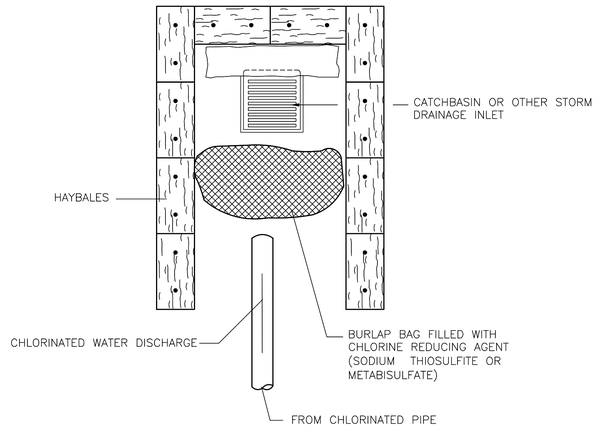
## TRENCH DETAIL 1 - TOWN RIGHT-OF-WAY AND PRIVATE WAYS
SCALE: N.T.S.



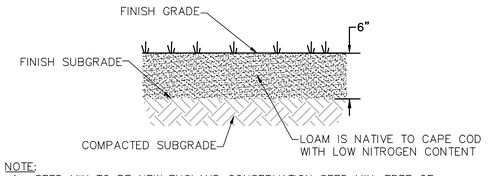

NOTES:

1. SILT SACKS SHALL BE INSPECTED WEEKLY AND ACCUMULATED SILT REMOVED TO ALLOW CATCH BASIN TO FUNCTION PROPERLY.
2. SILT SACK AS MANUFACTURED BY ACF ENVIRONMENTAL (800-448-3636) OR APPROVED EQUAL.

## SEDIMENTATION CONTROL AT CATCH BASINS SILT SACKS
SCALE: N.T.S.




## DECHLORINATION DETAIL
SCALE: N.T.S.




NOTE:
1. SEED MIX TO BE NEW ENGLAND CONSERVATION SEED MIX, FREE OF FERTILIZERS.
2. INSTALL CURLEX CL EROSION CONTROL BLANKET AS MANUFACTURED BY AMERICAN EXCELSIOR COMPANY (OR APPROVED EQUAL) ON ALL LOAM AND SEEDED SLOPES 3:1 OR STEEPER.

## LOAM AND SEED (DISTURBED AREAS)
SCALE: N.T.S.

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| Drawn by | TRG |
| Checked by | RJT |
| Approved by | PCM |

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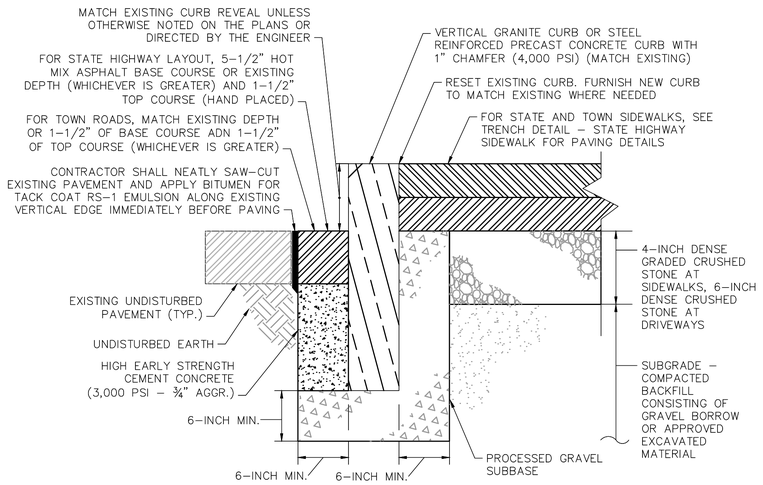
CONTRACT 7 - WATER MAINS
NORTHERN SYSTEM BACKBONE
EASTHAM, MASSACHUSETTS

CONSTRUCTION DETAIL II

NOT FOR CONSTRUCTION

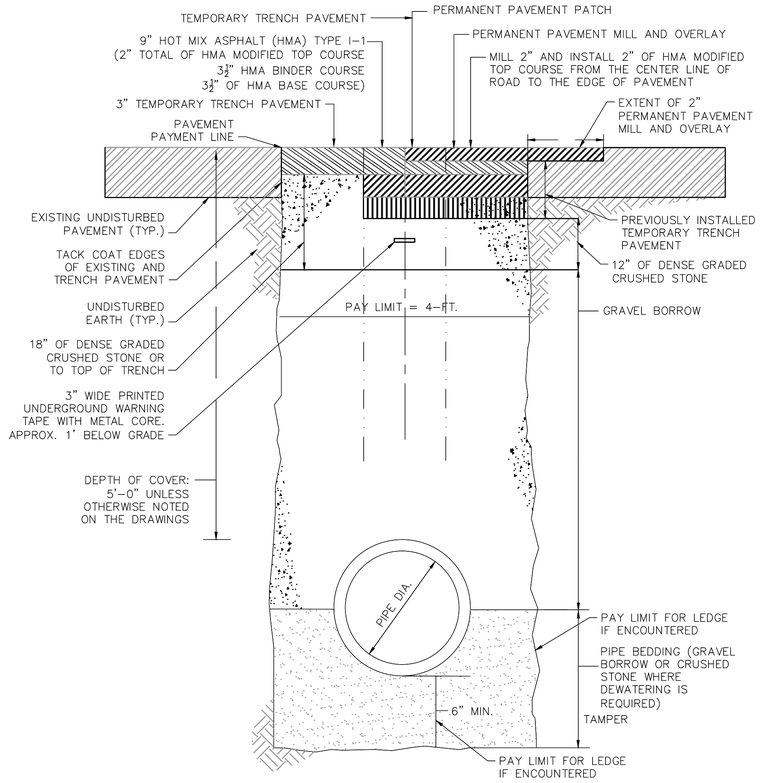
Sheet No.
CD-2

Drawing file: I:\Eastham 217\Phase 1 - Eastham Water System\217-1401.07 Contract 7 Phase I WM\01 CAD\07 CONTRACT WATER DESIGN.dwg Plot Date: Dec 09,2014-1:19pm




## SETTING VERTICAL GRANITE CURB DETAIL

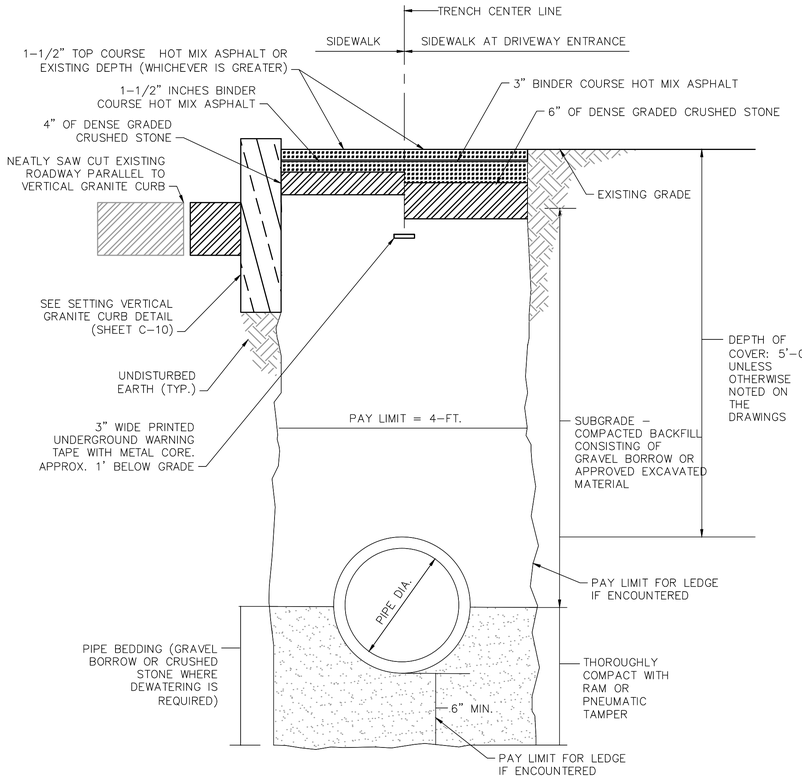
SCALE: NTS




SEE STANDARD PAVEMENT NOTES (THIS SHEET)
SEE PAVEMENT SCHEDULE SHEET G–2

## TRENCH DETAIL 2 - STATE HIGHWAY LAYOUT (WITHIN TRAVEL LANE)

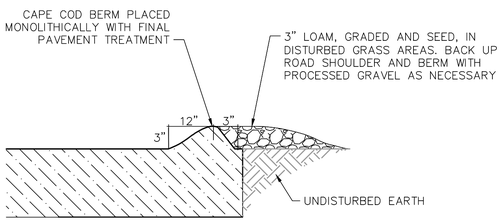
SCALE: N.T.S.




SEE STANDARD PAVEMENT NOTES (THIS SHEET)
SEE PAVEMENT SCHEDULE SHEET G–2

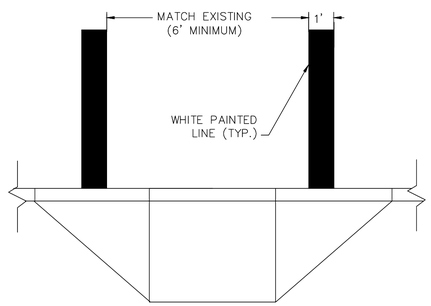
## TRENCH DETAIL 3 - STATE HIGHWAY LAYOUT (WITHIN SIDEWALK)

SCALE: N.T.S.




## BITUMINOUS CONCRETE CAPE COD BERM

SCALE: NTS




## CROSSWALK DETAIL

SCALE: NTS

STANDARD PAVEMENT CONSTRUCTION NOTES:

1. PAVEMENT INSTALLED BEYOND PAYMENT LINE MUST BE PRE–APPROVED BY THE ENGINEER.
2. THE FINISHED SURFACE OF THE MIXTURE, AFTER COMPACTION, SHALL BE TRUE TO THE ESTABLISHED LINE AND GRADE OF THE EXISTING PAVEMENT.
3. THE BINDER COURSE SHALL BE PLACED BY NORMAL CONSTRUCTION PRACTICES. THE TOP COURSE SHALL BE MACHINE LAID UTILIZING A SIDEWALK BOX SPREADER OR EQUAL; NO HAND WORK IS ALLOWED.

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CONTRACT 7 - WATER MAINS
NORTHERN SYSTEM BACKBONE
EASTHAM, MASSACHUSETTS

CONSTRUCTION DETAIL III

NOT FOR CONSTRUCTION

Sheet No.

CD-3