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LAKEVIEW AVENUE CULVERT REPLACEMENT

INDEX

TOWN OF DRACUT, MA

FEBRUARY 2024

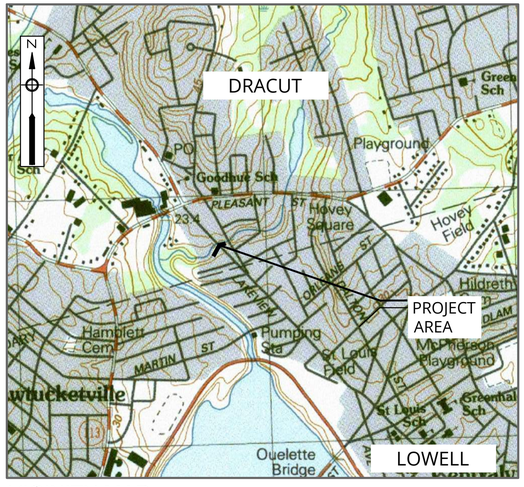
FOR BID

DRACUT DEPARTMENT OF PUBLIC WORKS

ED PATENAUDE - PUBLIC WORKS DIRECTOR

TINA RIVARD - ASSISTANT PUBLIC WORKS DIRECTOR
STORMWATER MANAGER

ENVIRONMENTAL PARTNERS
— An Apex Company —



VICINITY MAP
1"= 1000'

GENERAL NOTES:

1. BASE MAP INFORMATION BASED ON SURVEY PREPARED BY ZENITH LAND SURVEYORS IN JULY AND AUGUST 2022, ARCGIS ONLINE DATA DATED MAY 6, 2019, AND SURVEY PERFORMED BY ENVIRONMENTAL PARTNERS IN APRIL 2023. ELEVATION REFERENCES ARE NAVD88. HORIZONTAL COORDINATE SYSTEM DATUM IS MASSACHUSETTS STATE PLANE, NAD83, US SURVEY FEET.
2. EXISTING TOPOGRAPHY AND SITE CONDITIONS SHOWN ON THIS PLAN SET WERE TAKEN FROM INSTRUMENT SURVEY PERFORMED BY ZENITH LAND SURVEYORS IN JULY & AUGUST OF 2022, SUPPLEMENTED AS NOTED BELOW.

   2.1 MASS GIS INFORMATION WAS USED TO SHOW EXISTING BUILDINGS NOT LOCATED BY INSTRUMENT SURVEY. ALL SUCH STRUCTURES ARE LABELED "BUILDING PER GIS".

   2.2 SEWER, WATER AND DRAINAGE INFORMATION SUPPLEMENTED FROM RECORD PLAN ENTITLED "TOWN OF DRACUT, MASSACHUSETTS SEWAGE WORKS IMPROVEMENTS SEWERS - CONTRACT NO. 1 BEAVER BROOK INTERCEPTOR" PREPARED BY CAMP DRESSER & MCKEE INC. DATED OCTOBER 1979, WITH REVISIONS THROUGH MAY 1981.
3. RIGHT OF WAY PROPERTY LINE INFORMATION WITHIN THE LIMIT OF SURVEY TAKEN FROM PLANS ON FILE AT THE MIDDLESEX COUNTY REGISTRY OF DEEDS AND OFFICE OF THE MASSACHUSETTS LAND COURT.

   3.1 MASS GIS INFORMATION WAS USED TO SUPPLEMENT PROPERTY LINE INFORMATION.

   3.2 ALL PROPERTY LINES SHOWN ON THIS PLAN SET SHOULD BE CONSIDERED APPROXIMATE AND ARE NOT TO BE USED FOR STAKEOUT.
4. THE LIMIT OF FEMA 100-YEAR FLOOD ZONE SHOWN IS BASED ON THE FLOOD INSURANCE STUDY FLOOD PROFILE FOR PEPPERMINT BROOK, PANEL 410P, REVISED JULY 16, 2016 AND FIRM PANEL 25017C0137E, EFFECTIVE JUNE 4, 2010. THE LINEWORK SHOULD BE CONSIDERED APPROXIMATE.
5. ALL EXISTING UTILITIES SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL NOTIFY DIG SAFE AT LEAST 72 HOURS IN ADVANCE, EXCLUDING WEEKENDS AND HOLIDAYS, PRIOR TO ANY EXCAVATION.
6. DO NOT SCALE DRAWINGS UNLESS OTHERWISE NOTED. WRITTEN DIMENSIONS AND STATIONING SHALL PREVAIL. REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY.
7. THE CONTRACTOR SHALL RESTORE ALL PUBLIC AND PRIVATE PROPERTY TO ITS PRE-CONSTRUCTION CONDITION AT NO ADDITIONAL COST TO THE OWNER UNLESS NOTED TO BE ALTERED. THE CONTRACTOR SHALL TAKE SPECIAL CARE NOT TO DAMAGE TREES, BUSHES, PLANTS, PARKING METERS, FLOWERS, STONEWALLS, FENCES, ETC. WITHIN THE CONSTRUCTION AREA UNLESS THEY ARE NOTED TO BE REMOVED.
8. ALL EXISTING STORM DRAIN, SEWER, AND WATER MAIN LINES ENCOUNTERED DURING CONSTRUCTION ARE TO REMAIN IN SERVICE UNLESS OTHERWISE NOTED. THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER SHALL REPAIR ANY EXISTING SEWERS, STORM DRAIN LINES, WATER LINES OR CULVERTS DAMAGED DURING CONSTRUCTION.
9. IN THOSE INSTANCES WHERE POWER OR TELEPHONE POLE SUPPORT IS REQUIRED, THE CONTRACTOR SHALL NOTIFY AND COORDINATE WITH THE UTILITY COMPANY TO OBTAIN REQUIRED SERVICE. NO ADDITIONAL PAYMENT WILL BE PROVIDED FOR TEMPORARY BRACING OF UTILITIES OR FOR ANY RELATED DELAYS.
10. ALL STRUCTURES AND PIPELINES LOCATED ADJACENT TO THE TRENCH EXCAVATION SHALL BE PROTECTED AND SUPPORTED BY THE CONTRACTOR UNTIL THE TRENCH IS BACKFILLED. DAMAGE TO ANY SUCH STRUCTURE CAUSED BY, OR RESULTING FROM, THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE OWNER. ALL UTILITIES REQUIRING REPAIR, RELOCATION, OR ADJUSTMENT AS A RESULT OF THE PROJECT SHALL BE COORDINATED BY THE CONTRACTOR, THROUGH THE RESPECTIVE UTILITY AND THE OWNER.
11. 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.
12. THE LOCATION AND LIMITS OF ALL ON-SITE WORK AND STORAGE AREAS SHALL BE REVIEWED/COORDINATED WITH, AND ACCEPTABLE TO THE TOWN AND THE ENGINEER. THE CONTRACTOR SHALL LIMIT ACTIVITIES TO THESE AREAS. NO MATERIAL SHALL BE STORED ON THE PROJECT SITE OR WITHIN WETLAND RESOURCE AREAS OR THEIR BUFFER ZONES.
13. THE CONTRACTOR SHALL IDENTIFY AND OBTAIN ALL NECESSARY PERMITS FOR WORK IN ROADWAYS AND TRENCHES. THE CONTRACTOR IS RESPONSIBLE FOR CONFORMING TO ALL PERMITS AS AN INTEGRAL PART OF THE WORK.
14. THE CONTRACTOR SHALL SAW CUT ALL PAVEMENT TO ITS FULL DEPTH IN THE PROCESS OF INSTALLING NEW UTILITIES IN ALL PAVED AREAS INCLUDING STREETS, DRIVEWAYS, AND SIDEWALKS.
15. TEST PITS MAY BE ORDERED BY THE ENGINEER TO DETERMINE THE LOCATION OF EXISTING UTILITIES. THE CONTRACTOR MAY REQUEST TEST PITS TO VERIFY EXISTING UTILITIES AT NO ADDITIONAL COSTS TO THE OWNER.
16. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA).
17. ALL EXCAVATION SHALL BE SECURED BY THE END OF EACH WORKING DAY BY BACKFILLING, COVERING WITH STEEL PLATES, OR TEMPORARY CONSTRUCTION FENCING.
18. ALL DISTURBED SOILS SHALL BE REMOVED FROM THE PROJECT AREA. THE CONTRACTOR SHALL DELIVER ALL DISTURBED SOILS TO DPW YARD. THE TOWN DPW YARD IS LOCATED AT 833 HILDRETH STREET IN DRACUT, MA. THIS IS A TOWN REQUIREMENT.
19. DPW SHALL RETAIN ALL CASTINGS REMOVED FROM THE PROJECT AREA, INCLUDING COVERS, GRATES, FRAMES, AND BOXES.
20. CONTRACTOR SHALL PROVIDE A 1-YEAR WARRANTY FOR THE CONTRACT, AND A 2-YEAR WARRANTY PERIOD FOR PLANTINGS AND INSPECTIONS.
21. CONTRACTOR SHALL COMPLY WITH MASSDEP SUPERSEDED ORDER OF CONDITIONS (SOC) LOCATED IN APPENDIX C OF THE SPECIFICATIONS. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING A WETLAND SCIENTIST TO REVIEW AND REPORT ON THE WORK AS DESCRIBED IN THE SOC.
22. ALL EXCAVATED STREAMBED MATERIAL AND HYDRIC WETLAND SOILS SHALL BE STOCKPILED AND REUSED.

TRENCH PAY LIMITS

THE TRENCH WIDTH PAY LIMIT SHALL BE AS FOLLOWS AND TAKE PRECEDENCE OVER ANY CONFLICTS WITH PAY LIMITS:

1. PIPE ID EQUAL TO OR LESS THAN 24": MAXIMUM OF 5' WHERE DEPTH OF EXCAVATION IS 6' DEEP OR LESS, OR 7' WHERE THE EXCAVATION IS GREATER THAN 6' DEEP.
2. PIPE ID GREATER THAN 24" AND EQUAL TO OR LESS THAN 36": MAXIMUM OF 6' WHERE DEPTH OF EXCAVATION IS 6' DEEP OR LESS, OR 8' WHERE THE EXCAVATION IS GREATER THAN 6' DEEP.
3. PIPE ID GREATER THAN 36" AND BOX CULVERTS: TRENCH WIDTH PAY SHALL BE THE OUTSIDE DIAMETER (OR WIDTH) PLUS 4'.
5. TRENCH WIDTH PAY LIMIT FOR MANHOLE STRUCTURES SHALL BE 2' BEYOND OD OF STRUCTURES.
6. TRENCHES MAY BE EXCAVATED WIDER THAN THE PAY LIMIT. ANY SUCH ADDITIONAL EXCAVATION SHALL BE AT NO ADDITIONAL COST TO THE OWNER AND SHALL NOT BE MEASURED FOR PAYMENT. THIS INCLUDES BUT IS NOT LIMITED TO PAVING, PROCESSED GRAVEL, LANDSCAPING, BACKFILL, ETC.

GENERAL DEWATERING, STREAM BYPASS, AND EROSION CONTROL NOTES:

1. THE CONTRACTOR SHALL SUBMIT A DEWATERING PLAN TO THE ENGINEER FOR REVIEW PRIOR TO COMMENCEMENT OF WORK. ALL WORK SHALL BE IN COMPLIANCE WITH THE ISSUED SUPERSEDED ORDER OF CONDITIONS (SOC) BY MASSDEP. THE MASSDEP SOC WILL TAKE PRECEDENCE OVER ALL DESIGN DOCUMENTS.
2. THE CONTRACTOR SHALL HANDLE GROUNDWATER, WHERE ENCOUNTERED, AS DESCRIBED IN SECTION 02140. DURING ANY DEWATERING, THE CONTRACTOR SHALL USE TEMPORARY STONE AROUND THE SUCTION AND DISCHARGE ENDS TO MINIMIZE TRANSPORT OF TRENCH MATERIALS. THE DISCHARGED WATER SHALL PASS THROUGH FILTER FABRIC, SILT BAGS, FRAC TANKS OR A COMBINATION OF ALL.
3. DEWATERING SYSTEM DISCHARGE TO INCLUDE ENERGY DISSIPATION TO PREVENT SCOUR.
4. TEMPORARY DEWATERING SEDIMENTATION BASINS, IF REQUIRED, SHALL BE CHECKED AFTER EACH SIGNIFICANT RAINFALL AND CLEANED AS NEEDED TO RETAIN STORAGE CAPACITY.
5. CLEARING AND GRUBBING FOR CULVERT AND ACCESSORIES SHALL BE COORDINATED WITH THE ENGINEER AND THE TOWN OF DRACUT PRIOR TO ANY WORK ACTIVITIES. NO WORK SHALL BEGIN UNTIL AUTHORIZATION IS GRANTED BY ENGINEER AND APPROPRIATE CONSERVATION AGENCIES.
6. DEWATERING SHALL BE SUPPLEMENTED WITH LOCAL SUMP PUMPS AS REQUIRED TO MAINTAIN DRY WORK.
7. ALL FLOW FROM PEPPERMINT BROOK SHALL BE DIVERTED THROUGH THE GRAVITY BY-PASS SYSTEM (PRIMARY), AS SHOWN ON SHEET C-2, WHILE REPLACEMENT WORK IS BEING PERFORMED. GRAVITY BY-PASS PIPE DESIGNED TO HANDLE 2-YEAR, 24 HOUR STORM.
8. A BACK-UP BYPASS PUMPING SYSTEM (SECONDARY) SHALL BE PROVIDED AND READY FOR IMMEDIATE OPERATION AND USE IN THE EVENT OF PEAK WET WEATHER CONDITIONS. THE TEMPORARY BACK-UP BYPASS PUMPING SYSTEM SHALL BE DESIGNED TO HANDLE FLOW FOR AT LEAST 2,600 GPM.
9. PUMPS AND GENERATORS SHALL BE EQUIPPED WITH DOUBLE CONTAINMENT FUEL TANKS TO PREVENT ANY FUEL LEAKAGE IN THE RESOURCE AREA, UNDERLYING SOILS AND GROUNDWATER AND ADJACENT WATER SURFACES. FUEL TANKS SHALL HAVE A MINIMUM FUEL CAPACITY TO MAINTAIN AN UNINTERRUPTED 24-HOUR PUMPING PERIOD.
10. PUMPS SHALL BE EQUIPPED WITH SOUND ATTENUATING ENCLOSURES TO MINIMIZE NOISE LEVELS TO RESIDENTS ADJACENT TO WORK. SOUND LEVELS SHALL BE MAINTAINED AT LESS THAN 73 dB AT A DISTANCE OF 30 FEET.
11. FILTER SOCK AND OTHER EROSION AND SEDIMENT CONTROL MEASURES/DEVICES SHALL BE INSPECTED, CLEANED, REPLACED AND/OR REPAIRED AS NECESSARY, WEEKLY AND AFTER EACH SIGNIFICANT RAINFALL.
12. CONCRETE WASHOUT AREAS SHALL BE OUTSIDE THE BUFFER ZONES OF ALL RESOURCE AREAS.
13. INSTALL FILTER SOCK PRIOR TO COMMENCEMENT OF THE EARTHWORK OPERATIONS. INSPECT EROSION CONTROLS IMMEDIATELY AFTER EACH STORM AND REMOVE ACCUMULATED SEDIMENT AS REQUIRED. REPLACE DAMAGED EROSION CONTROLS AS REQUIRED.
14. SPILL KITS SHALL BE MAINTAINED ON-SITE AT ALL TIMES.
15. NO STOCKPILING OF MATERIALS IS ALLOWED ON-SITE. THE TOWN DPW YARD SHALL BE USED TO STOCKPILE MATERIAL AND DELIVERED TO THE SITE ON AN AS-NEEDED BASIS
16. ALL FOUNDATIONS AND EXCAVATIONS SHALL OCCUR IN "THE DRY". GROUNDWATER SHALL BE LOWERED BY A MINIMUM OF 2' BELOW OF THE EXCAVATION.
17. INSTALL EXCAVATION SUPPORT AS NECESSARY.

DRAINAGE CONSTRUCTION NOTES:

1. OPENINGS FOR PIPE IN PRECAST MANHOLES AND CATCH BASINS SHALL BE CAST IN THE REQUIRED LOCATIONS DURING MANHOLE MANUFACTURE. FIELD CUT OPENINGS WILL NOT BE PERMITTED UNLESS APPROVED BY THE ENGINEER.
2. CALCULATION OF PIPE SLOPES IS BASED ON ELEVATION CHANGE DIVIDED BY THE DISTANCE BETWEEN THE OUTSIDE EDGES OF THE MANHOLE WALLS. FOR FOUR FOOT DIAMETER MANHOLES, THIS DISTANCE WAS CALCULATED AS THE PIPE LENGTH MINUS FIVE FEET. FOR FIVE FOOT DIAMETER MANHOLES, THIS DISTANCE WAS CALCULATED AS THE PIPE LENGTH MINUS SIX FEET.
3. NEW STORM DRAINS SHALL BE INSTALLED AT THE MINIMUM DEPTH FROM FINISH GRADE TO TOP OF PIPE AS SHOWN ON THE DRAWINGS.
4. RIM ELEVATIONS REFLECT GROUND ELEVATIONS AS SURVEYED. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING EXISTING SURFACE ELEVATIONS PRIOR TO THE INSTALLATION OF ANY DRAINAGE STRUCTURE OR FEATURE. IF ELEVATIONS DIFFER FROM WHAT IS STATED ON THE PLANS, NOTIFY THE ENGINEER. FRAMES AND COVERS SHALL BE SET AT EXISTING GROUND ELEVATION. FRAMES AND GRATES SHALL BE SET AT 0.5" BELOW EXISTING GRADE.

SUGGESTED CONSTRUCTION SEQUENCE

1. INSTALL EROSION CONTROLS PRIOR TO ANY WORK ON THE SITE. EROSION CONTROLS SHALL BE INSPECTED AND APPROVED BY THE CONSERVATION AGENT BEFORE ANY FURTHER ACTIVITIES COMMENCE.
2. DIG TEST PITS TO CONFIRM DEPTH AND LOCATION OF UTILITIES PRIOR TO SUBMISSION OF CULVERT SHOP DRAWINGS. SEE SHEET C-1 FOR APPROXIMATE LOCATIONS OF TEST PITS.
3. INSTALL WATER MAIN ISOLATION VALVES AND CUT AND DEMOLISH WATER MAIN ABOVE CULVERT AND DRAINAGE PIPE.
4. INSTALL BYPASS AND DEWATERING SYSTEMS PRIOR TO THE START OF CULVERT, GRADING, AND DRAINAGE UTILITY WORK.
5. ROUGH GRADE UPSTREAM AND DOWNSTREAM OF THE HEADWALLS AND WINGWALLS.
6. INSTALL STREAMBED MATERIAL UPSTREAM AND DOWNSTREAM OF HEADWALLS.
7. INSTALL NATIVE ROCK TIERED WALL DOWNSTREAM OF THE CULVERT.
8. INSTALL CULVERT, HEADWALLS, AND WINGWALLS WITH STREAMBED MATERIAL INSIDE CULVERT.
9. REMOVE STREAM BYPASS AND RESTORE FLOW TO PEPPERMINT BROOK.
10. INSTALL DRAINAGE SYSTEM, INCLUDING CATCH BASINS, MANHOLE, AND PIPING.
11. RECONNECT WATER MAIN BETWEEN ISOLATION VALVES, AND REMOVE WATER MAIN BYPASS.
12. RESTORE THE SITE AS SHOWN WITH LOAM AND SEED, AND NATIVE PLANTINGS.
13. INSTALL GUARDRAILS.
14. COMPLETE FINAL PAVING AND SIDEWALKS

ABBREVIATIONS

AC	ASBESTOS CEMENT
BCC	BITUMINOUS CONCRETE CURB
CB	CATCH BASIN
CB	CONCRETE BOUND
CCB	CAPE COD BERM
CDF	CONTROLLED DENSITY FILL
CI	CAST IRON
CMP	CORRUGATED METAL PIPE
CONC	CONCRETE
D	DRAIN
DH	DRILL HOLE
DI	DUCTILE IRON
DIA	DIAMETER
DMH	DRAIN MANHOLE
DMH	DRAIN MANHOLE
EL	ELEVATION
EM	ELECTRIC METER
EOP	EDGE OF PAVEMENT
EX	EXISTING
FL	FOG LINE
FM	FORCEMAIN
GM	GAS METER
HH	HANDHOLE
ID	INSIDE DIAMETER
INV	INVERT
LD	LANDSCAPE AREA
LF	LINEAR FEET
MAX	MAXIMUM
MB	MAILBOX
MIN	MINIMUM
OC	ON CENTER
PE	POLYETHYLENE
PROP	PROPOSED
RCP	REINFORCED CONCRETE PIPE
RET WALL	RETAINING WALL
S	SEWER
SAC	SLOPED ASPHALT CURB
SB	STONE BOUND
SMH	SEWER COVER
TBP	TO BE PROVIDED
TYP.	TYPICAL
UP	UTILITY POLE
VCC	VERTICAL CONCRETE CURB
VCP	VITRIFIED CLAY PIPE
VGC	VERTICAL GRANITE CURB
W	WATER
WG	WATER GATE

LEGEND

EXISTING

- HYDRANT
- CATCH BASIN (CB)
- DRAIN MANHOLE (DMH)
- SEWER MANHOLE (SMH)
- WATER VALVE
- BITUMINOUS BERM
- EDGE OF PAVEMENT (EOP)
- PROPERTY LINE
- EASEMENT
- CONSTRUCTION ACCESS
- WOOD FENCE
- CHAINLINK FENCE (X)
- UTILITY POLE
- GUY WIRE / GUY POLE
- WATER MAIN (W)
- DRAIN LINE (D)
- GAS MAIN (G)
- GRAVITY SEWER MAIN (S)
- STONEWALL
- OVERHEAD WIRE (OHW)
- DECIDUOUS TREE
- EVERGREEN TREE
- TREE LINE
- EXISTING CONTOUR (55)
- 100' RIVERFRONT AREA (100)
- MEAN HIGH WATER/BANK LINE (MHW)
- MEAN HIGH WATER/BANK FLAG NUMBER (MHWB#)
- 200' RIVERFRONT ZONE (200)
- STONE BOUND
- BORING (B-#)
- MAILBOX
- LIGHTPOLE
- SIGN
- 100-YR FLOOD ZONE (FZ)

PROPOSED

- PRECAST CONCRETE CULVERT
- DRAIN MANHOLE (DMH)
- CATCH BASIN (CB)
- DRAIN LINE (D)
- WATER LINE (W)
- FILTER SOCK
- BYPASS PIPING (BP)
- PROPOSED CONTOUR (55)
- TEST PIT
- RIPRAP
- SOLID SLEEVE/COUPLING
- GATE VALVE
- LIMIT OF WORK
- UTILITY ABANDONMENT/DEMOLITION
- LIMITS OF FULL DEPTH PAVEMENT/SIDEWALK RESTORATION
- COFFERDAM
- LOAM AND SEED
- STONE RETAINING WALL
- STREAMBED
- GUARDRAIL
- CHAIN LINK FENCE

TOWN of DRACUT INCORPORATED 1701 MASSACHUSETTS

ENVIRONMENTAL PARTNERS — An Apex Company —

MARK	DATE	DESCRIPTION

Scale	AS SHOWN
Date	FEBRUARY 2024
Job No.	22003729
Designed by	JLV/RJP
Drawn by	JLV
Checked by	EAK
Approved by	RJP

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

LAKEVIEW AVENUE CULVERT REPLACEMENT
TOWN OF DRACUT, MA

GENERAL NOTES AND LEGEND

FOR BID

Sheet No.

G-1

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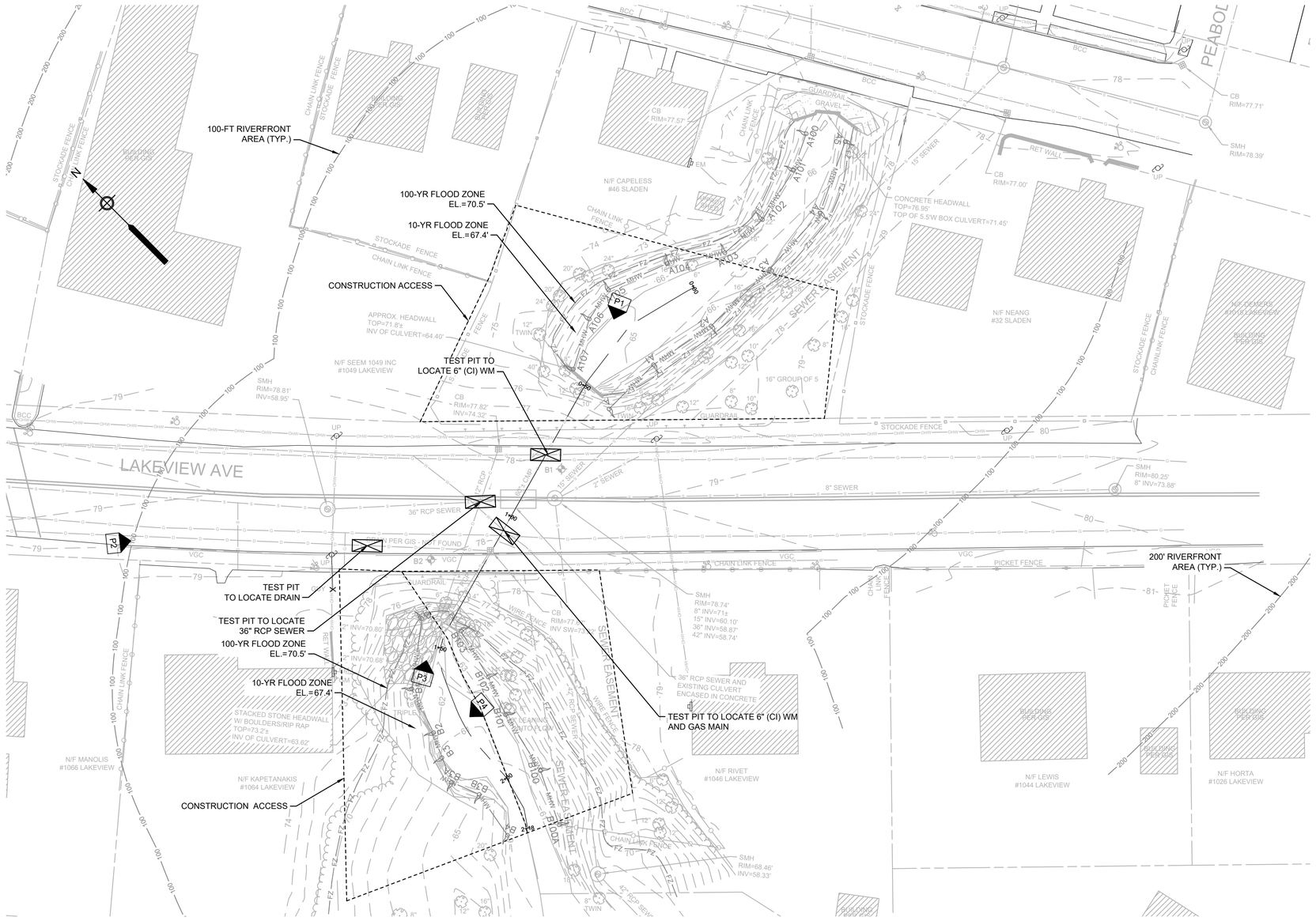

EXISTING CONDTIONS

SCALE: 1" = 20'

P1- UPSTREAM HEADWALL

P2- LAKEVIEW AVE

P3- DOWNSTREAM HEADWALL

P4- DOWNSTREAM EROSION

ENVIRONMENTAL PARTNERS — An Apex Company —

MARK	DATE	DESCRIPTION

Scale	1" = 20'
Date	FEBRUARY 2024
Job No.	22003729
Designed by	JLV/RJP
Drawn by	JLV
Checked by	EAK
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LAKEVIEW AVENUE CULVERT REPLACEMENT
TOWN OF DRACUT, MA

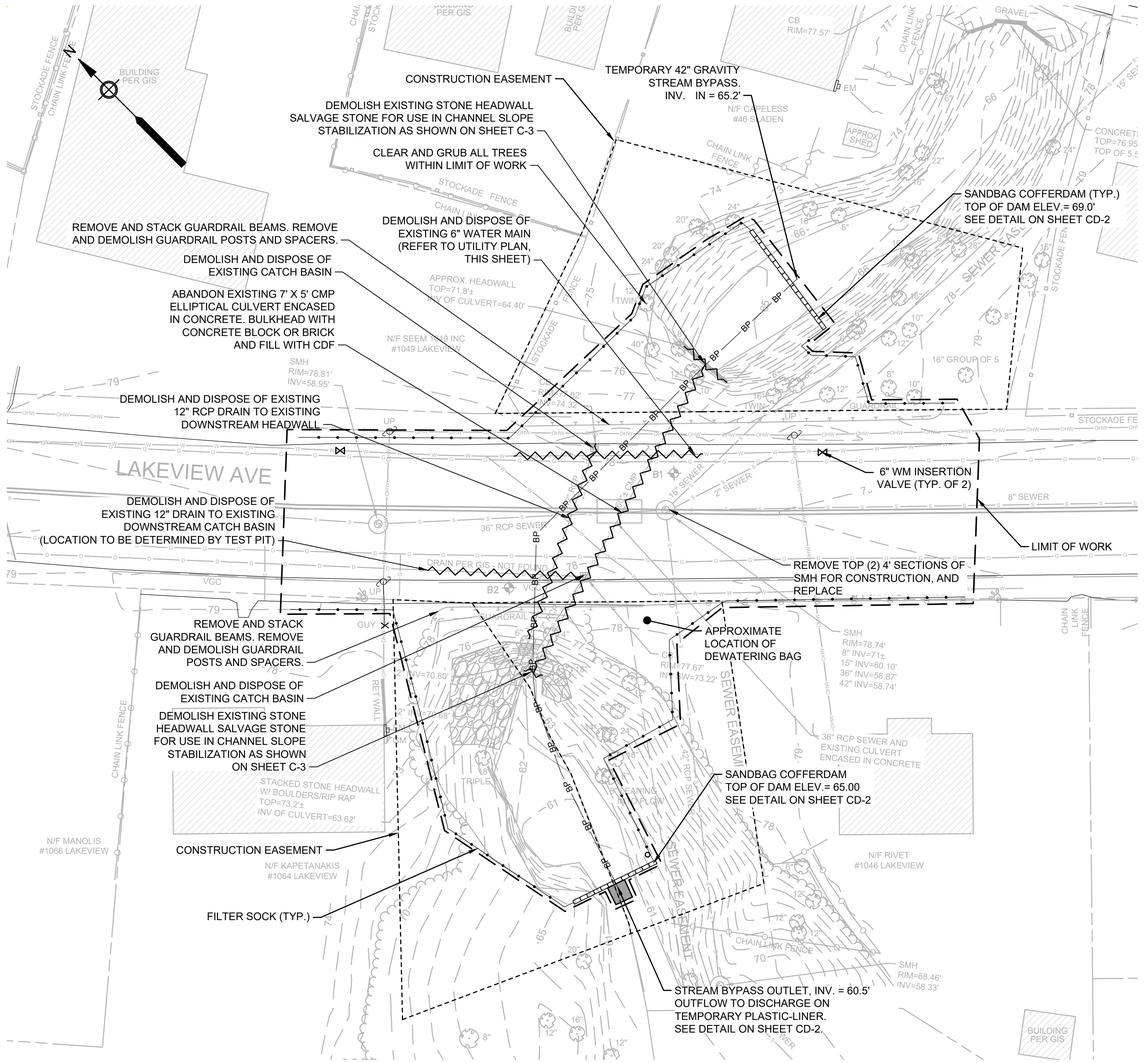
EXISTING CONDITIONS

FOR BID

Sheet No.

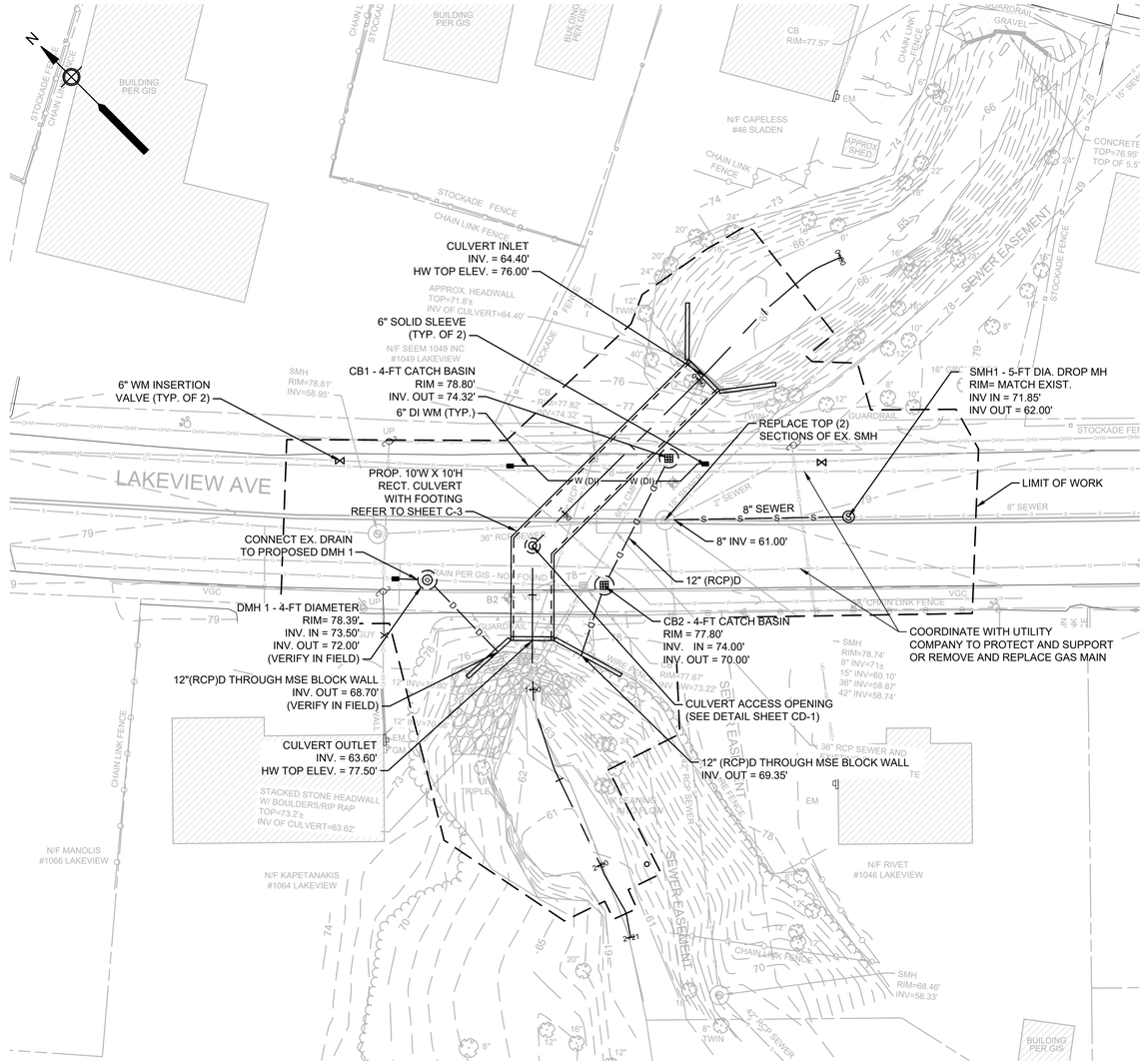
C-1

Drawing file: I:\Dracut\22003729 - Lakeview Ave Culvert\06. Plans\20240214_Draft Final Drawings\03 Civil Sheets C-1 - C-3_Lakeview Ave Culvert.dwg Plot Date: Feb 20,2024-3:49pm



SEDIMENT CONTROL, STREAM BYPASS, AND DEMOLITION PLAN

SCALE: 1" = 20'



UTILITY PLAN

SCALE: 1" = 20'

MARK	DATE	DESCRIPTION

Scale	1" = 20'
Date	FEBRUARY 2024
Job No.	22003729
Designed by	JLV/RJP
Drawn by	JLV
Checked by	EAK
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ENVIRONMENTAL PARTNERS — An Apex Company —

TOWN of DRACUT INCORPORATED 1701 MASSACHUSETTS

LAKEVIEW AVENUE CULVERT REPLACEMENT
TOWN OF DRACUT, MA

SEDIMENT CONTROL, STREAM BYPASS, DEMOLITION PLAN, AND UTILITY PLAN

FOR BID

Sheet No.

C-2

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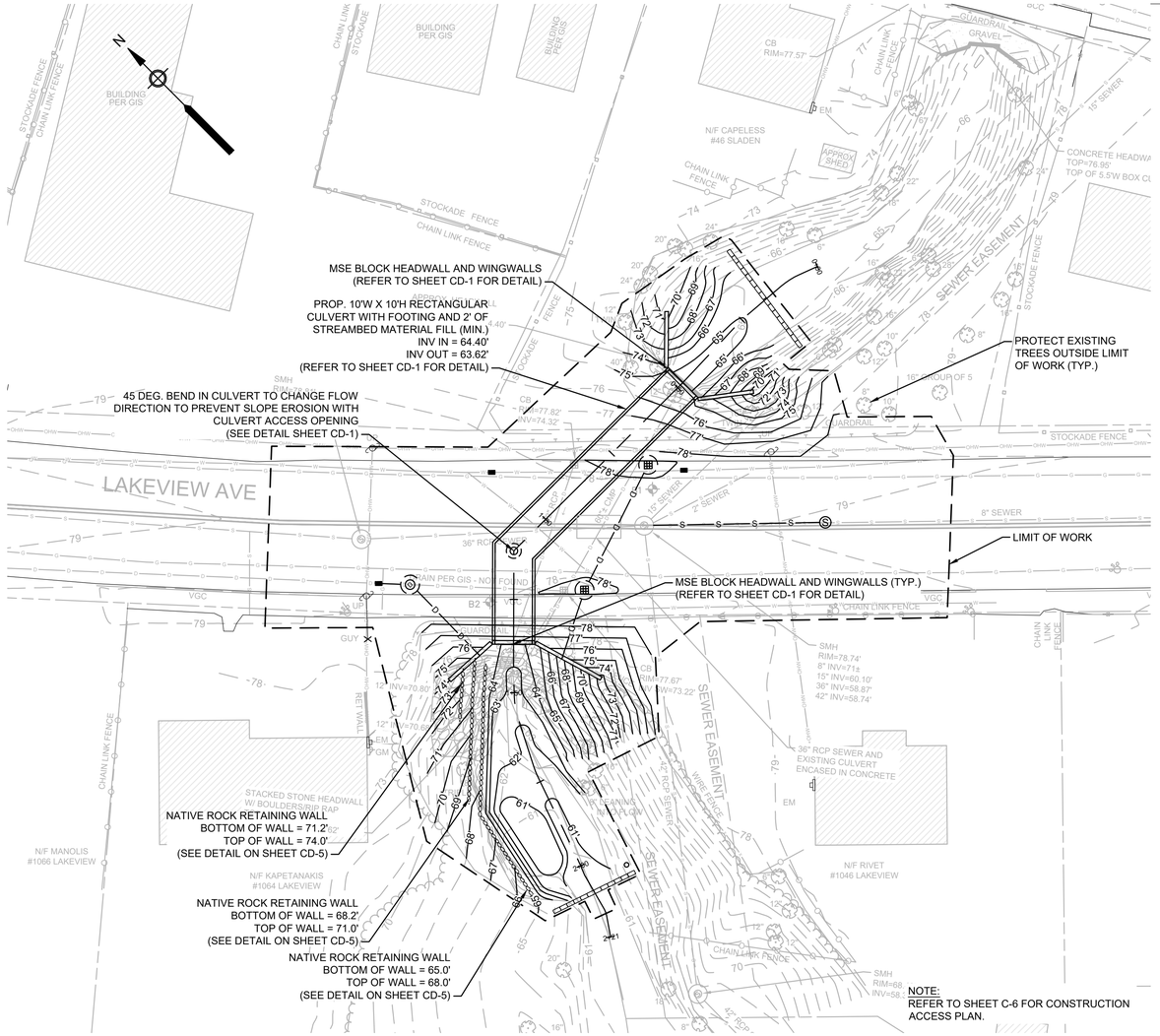
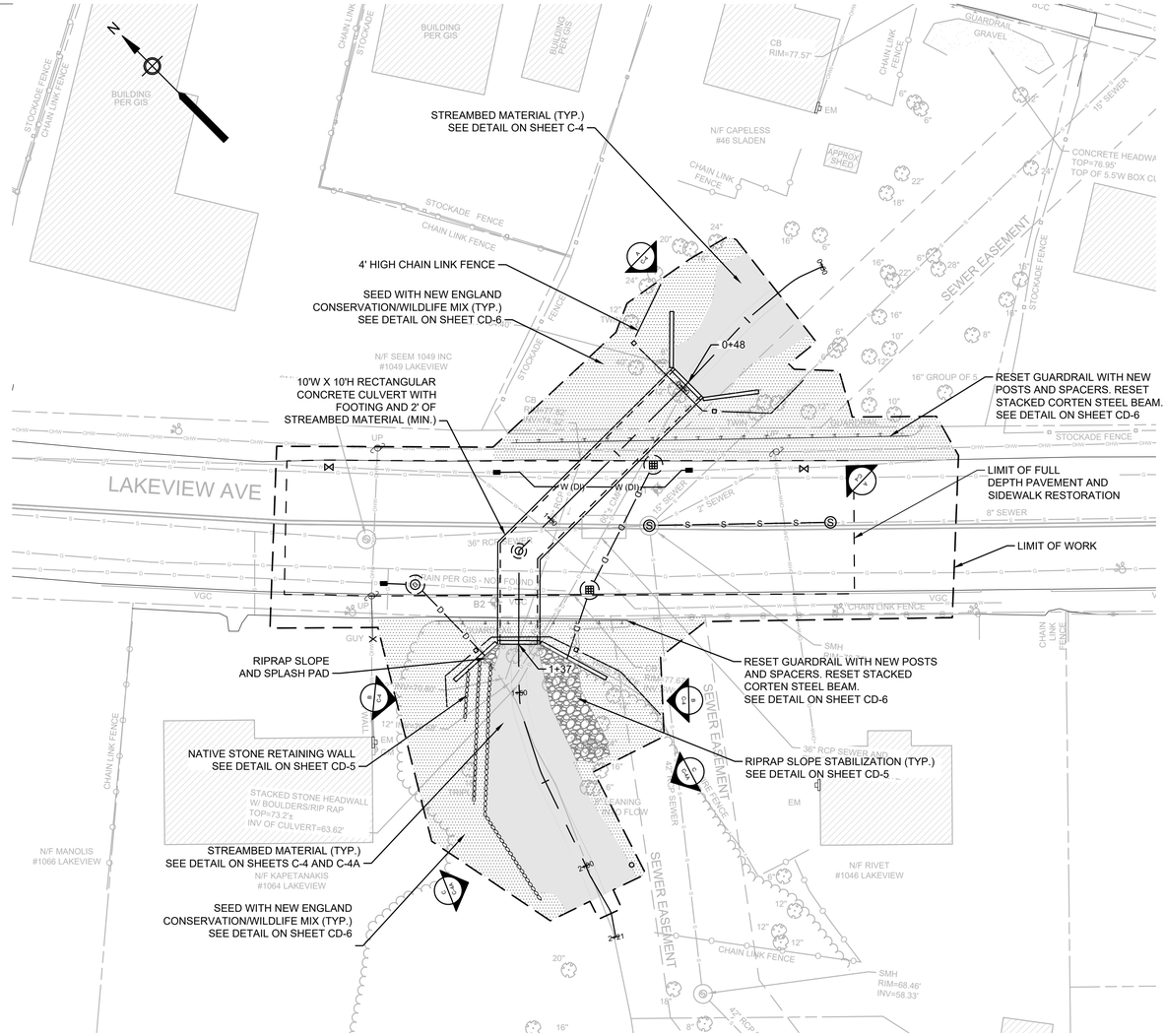


CULVERT AND GRADING PLAN

SCALE: 1" = 20'



SITE RESTORATION PLAN

SCALE: 1" = 20'

MARK	DATE	DESCRIPTION

Scale	1" = 20'
Date	FEBRUARY 2024
Job No.	22003729
Designed by	JLV/RJP
Drawn by	JLV
Checked by	EAK
Approved by	RJP

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

ENVIRONMENTAL PARTNERS — An Apex Company —

TOWN of DRACUT INCORPORATED 1701 MASSACHUSETTS

LAKEVIEW AVENUE CULVERT REPLACEMENT
TOWN OF DRACUT, MA

CULVERT AND GRADING PLAN AND SITE RESTORATION PLAN

FOR BID

Sheet No.

C-3

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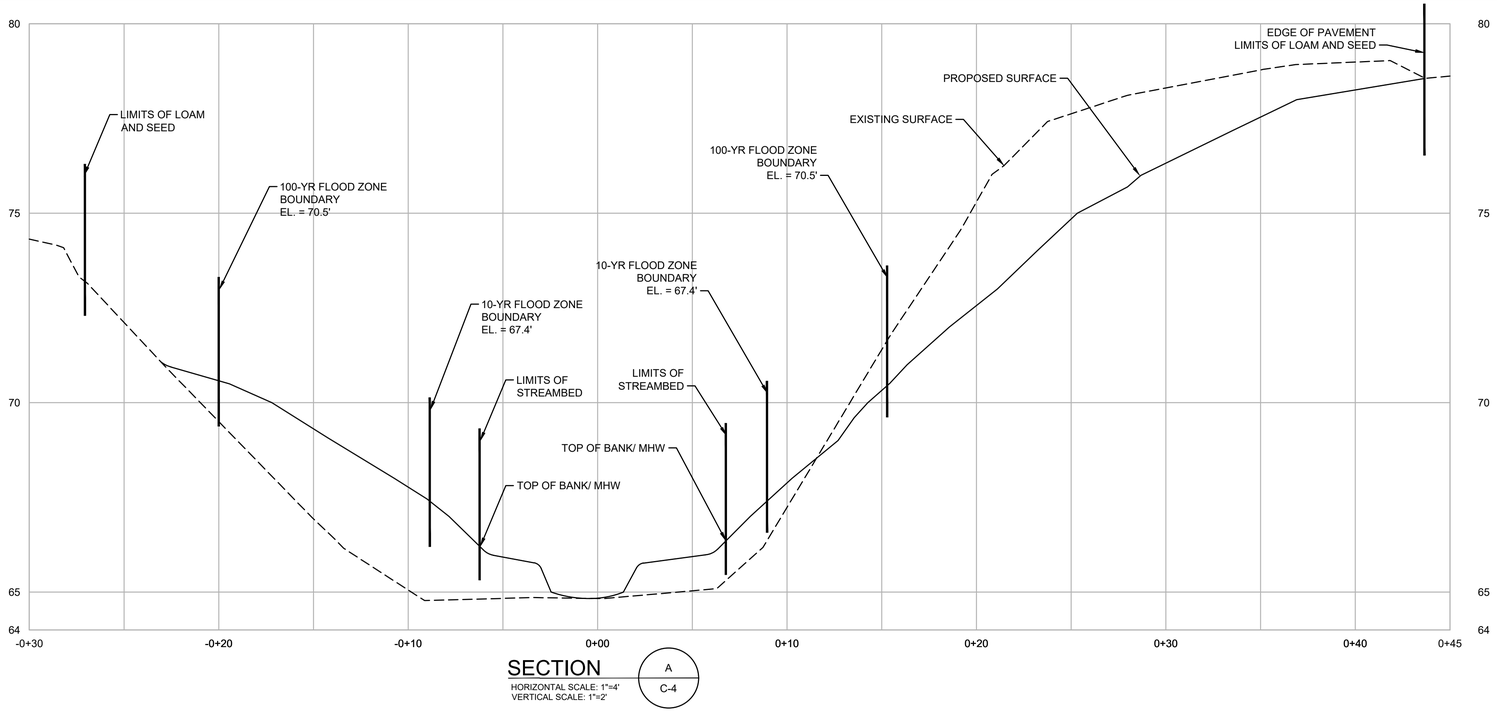
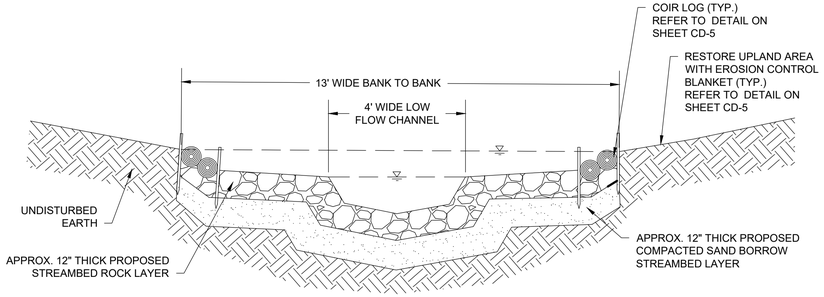


SECTION A / C-4

HORIZONTAL SCALE: 1"=4'
VERTICAL SCALE: 1"=2'



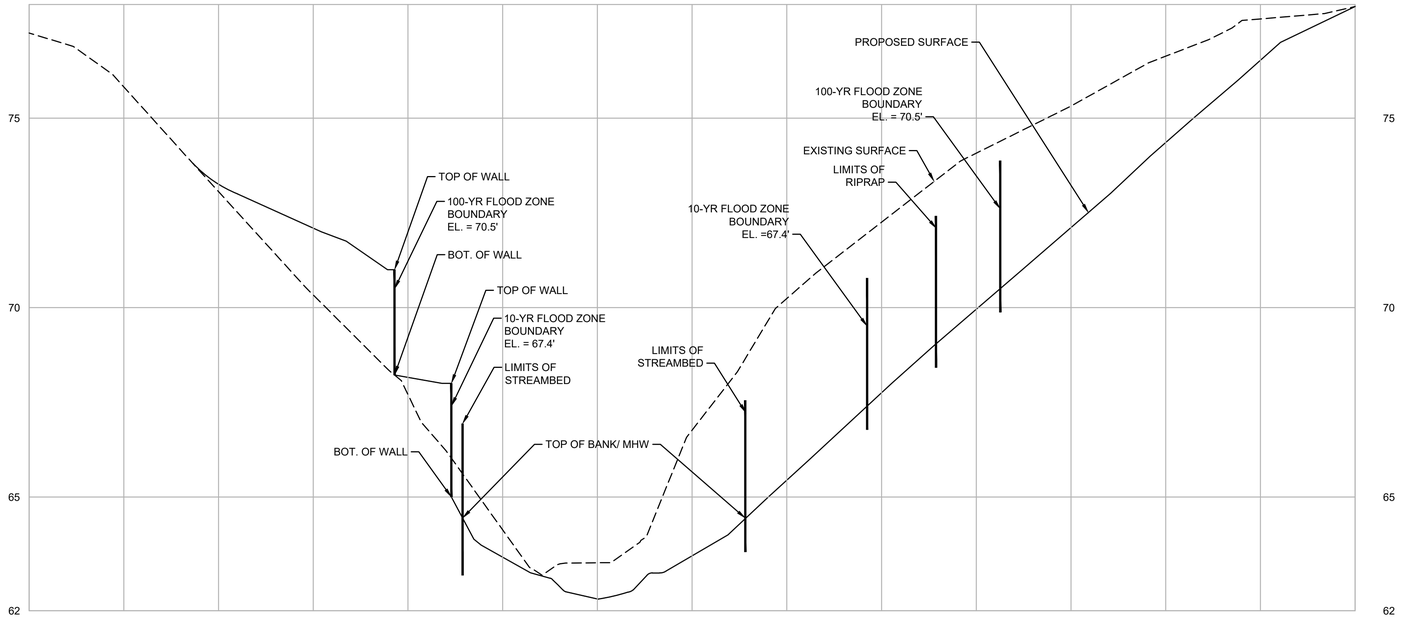
NOTES:

1. LOW FLOW CHANNEL SHALL BE 4' WIDE AND 8" TO 12" DEEP.
2. BANKFULL WIDTH AND DEPTHS SHALL MATCH THE GRADING PLAN PROVIDED ON SHEET C-3. BANKS SHALL BE A MAXIMUM OF 2H:1V SLOPE.
3. STREAMBED ROCK MATERIAL SHALL MEET THE REQUIREMENTS OF THE STREAMBED ROCK DISTRIBUTION TABLE, THIS SHEET. STREAMBED ROCK SHALL CONSIST OF ROUNDED EDGE RIVER ROCK OF SIMILAR SHAPE AND COLOR TO THE EXISTING STREAMBED ROCK.
4. STREAMBED SAND SHALL CONFORM TO SAND IN THE EARTHWORK SECTION 02200 IN THE SPECIFICATIONS.
5. STONE SHALL BE EVENLY DISTRIBUTED BY SIZE ACROSS THE STREAM BED.

STREAMBED ROCK DISTRIBUTION	
SIZE (MM)	PERCENT PASSING
2.36	4
12.5	15
19.0	30
25.0	55
37.5	75
50	90
100	95
180	100

STREAMBED RESTORATION AT SECTION A-A

SCALE: N.T.S.



SECTION B / C-4

HORIZONTAL SCALE: 1"=4'
VERTICAL SCALE: 1"=2'

NOTES:

1. LOW FLOW CHANNEL SHALL BE 4' WIDE AND 8" TO 12" DEEP.
2. BANKFULL WIDTH AND DEPTHS SHALL MATCH THE GRADING PLAN PROVIDED ON SHEET C-2. BANKS SHALL BE A MAXIMUM OF 2H:1V SLOPE.
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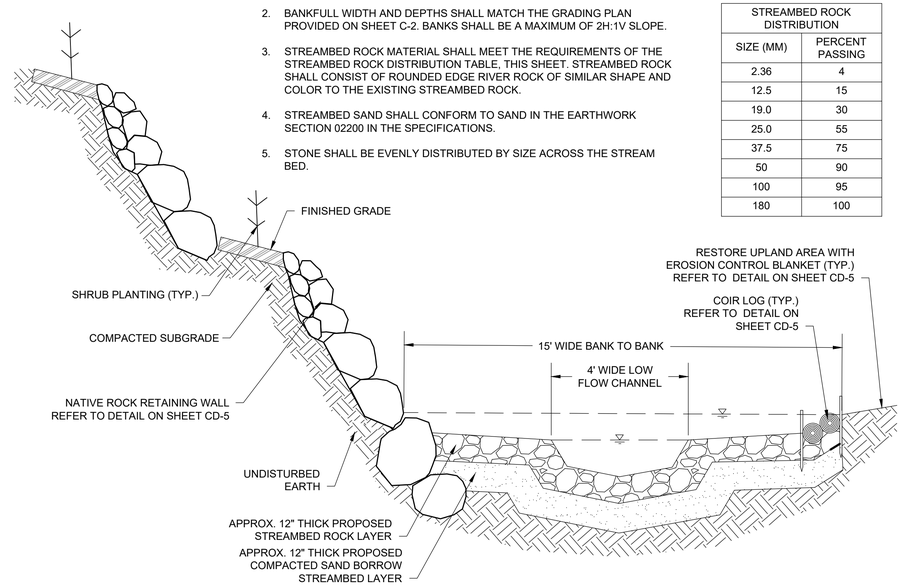
4. STREAMBED SAND SHALL CONFORM TO SAND IN THE EARTHWORK SECTION 02200 IN THE SPECIFICATIONS.
5. STONE SHALL BE EVENLY DISTRIBUTED BY SIZE ACROSS THE STREAM BED.

STREAMBED ROCK DISTRIBUTION	
SIZE (MM)	PERCENT PASSING
2.36	4
12.5	15
19.0	30
25.0	55
37.5	75
50	90
100	95
180	100



STREAMBED RESTORATION AT SECTION B-B

SCALE: N.T.S.

TOWN of DRACUT INCORPORATED 1701 MASSACHUSETTS

ENVIRONMENTAL PARTNERS
— An Apex Company —

MARK	DATE	DESCRIPTION

Scale	AS NOTED
Date	FEBRUARY 2024
Job No.	22003729
Designed by	JLV/RJP
Drawn by	JLV
Checked by	EAK
Approved by	RJP

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

LAKEVIEW AVENUE CULVERT REPLACEMENT
TOWN OF DRACUT, MA

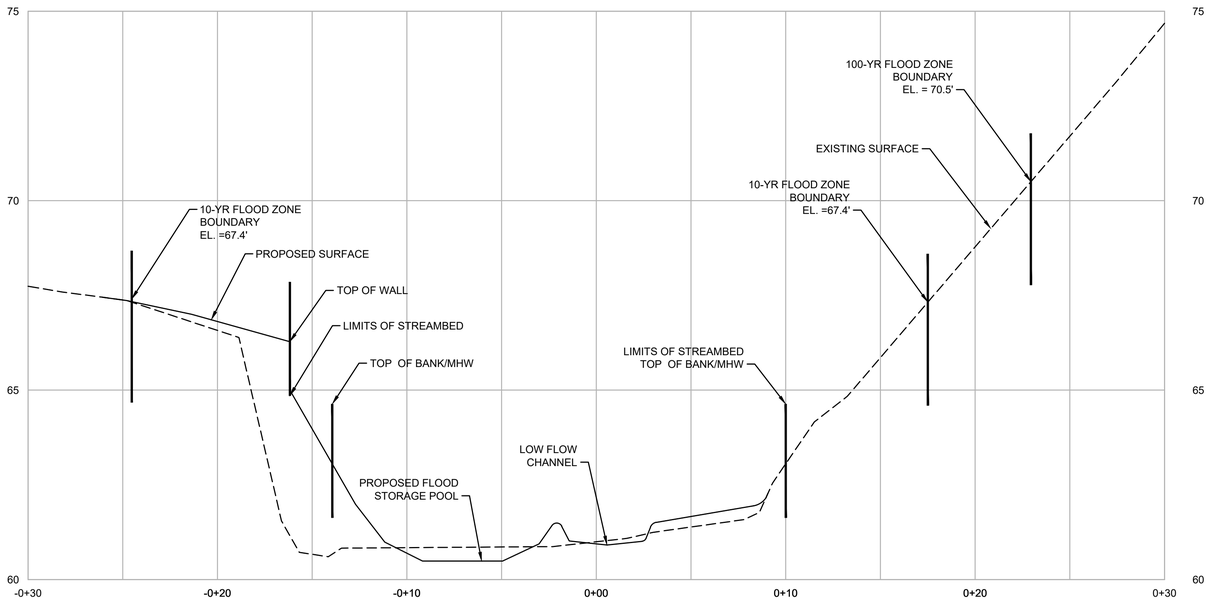
STREAM RESTORATION SECTIONS AND DETAILS

FOR BID

Sheet No.

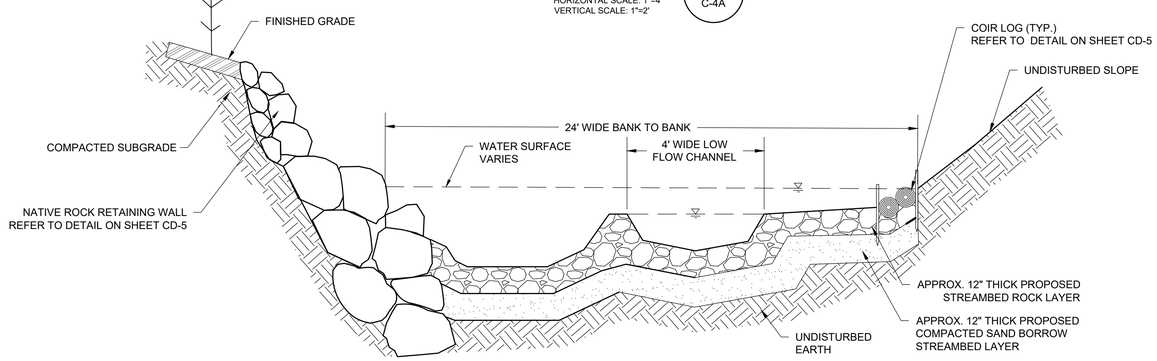
C-4

Drawing file: I:\Dracut\22003729 - Lakeview Ave Culvert\06. Plans\20240214_Draft Final Drawings\03 Civil Sheets C-4 - C-6_Lakeview Ave Culvert.dwg Plot Date: Feb 20,2024-3:59pm



SECTION C / C-4A

HORIZONTAL SCALE: 1"=4'
VERTICAL SCALE: 1"=2'



NOTES:

1. LOW FLOW CHANNEL SHALL BE 4' WIDE AND 8" TO 12" DEEP.
2. BANKFULL WIDTH AND DEPTHS SHALL MATCH THE GRADING PLAN PROVIDED ON SHEET C-2. BANKS SHALL BE A MAXIMUM OF 2H:1V SLOPE.
3. STREAMBED ROCK MATERIAL SHALL MEET THE REQUIREMENTS OF THE STREAMBED ROCK DISTRIBUTION TABLE, THIS SHEET. STREAMBED ROCK SHALL CONSIST OF ROUNDED EDGE RIVER ROCK OF SIMILAR SHAPE AND COLOR TO THE EXISTING STREAMBED ROCK.
4. STREAMBED SAND SHALL CONFORM TO SAND IN THE EARTHWORK SECTION 02200 IN THE SPECIFICATIONS.
5. STONE SHALL BE EVENLY DISTRIBUTED BY SIZE ACROSS THE STREAM BED.

STREAMBED ROCK DISTRIBUTION	
SIZE (MM)	PERCENT PASSING
2.36	4
12.5	15
19.0	30
25.0	55
37.5	75
50	90
100	95
180	100

STREAMBED RESTORATION AT SECTION C-C

SCALE: N.T.S.

ENVIRONMENTAL PARTNERS — An Apex Company —

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LAKEVIEW AVENUE CULVERT REPLACEMENT
TOWN OF DRACUT, MA

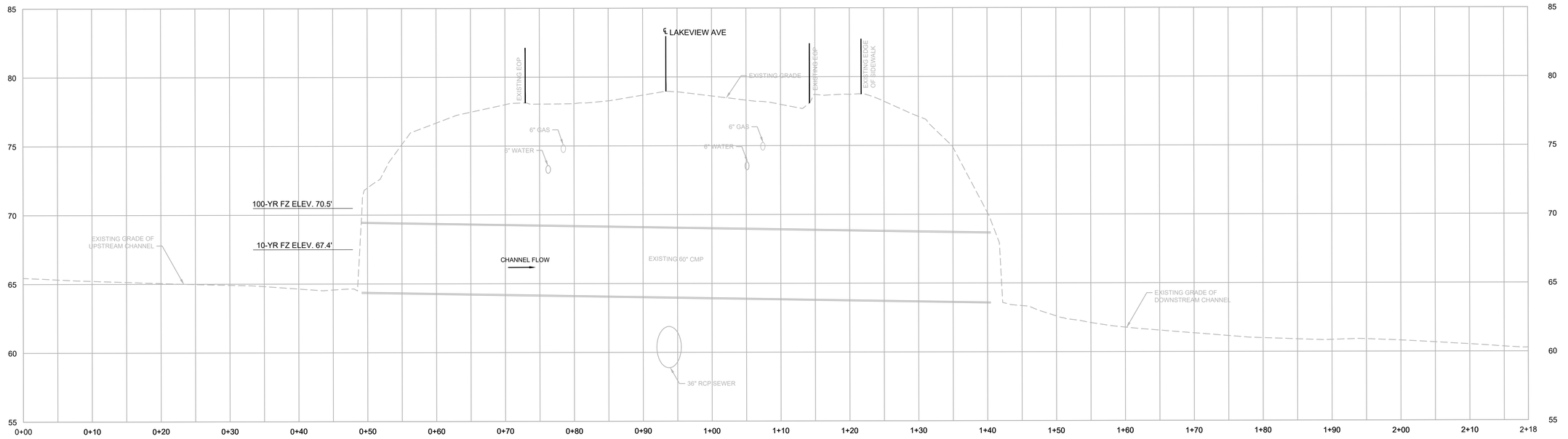
STREAM RESTORATION SECTIONS AND DETAILS

FOR BID

Sheet No.

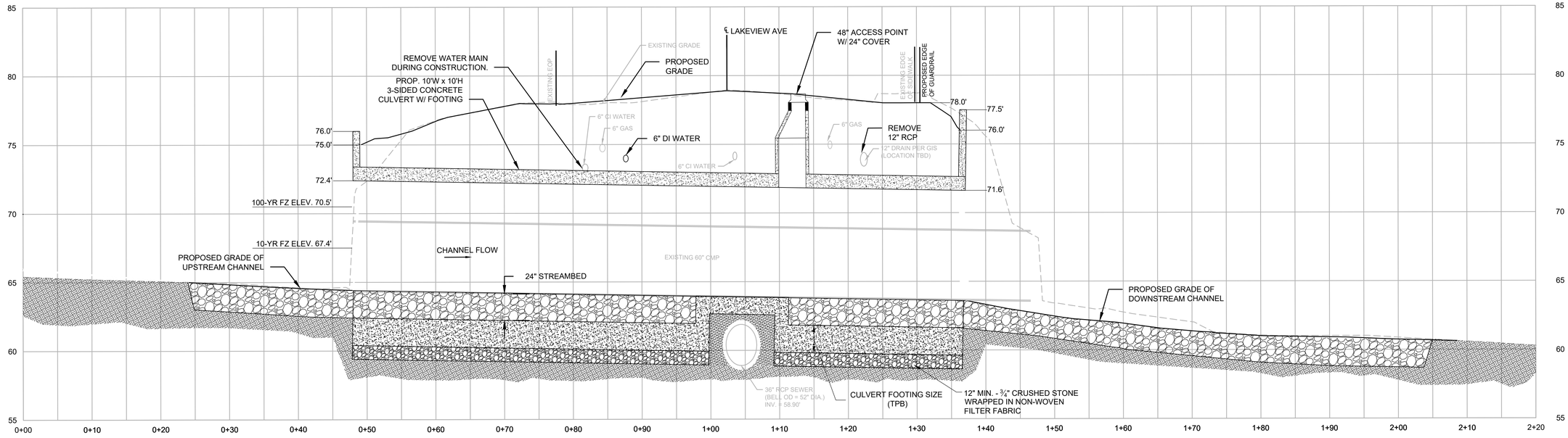
C-4A

Drawing file: I:\Dracut\22003729 - Lakeview Ave Culvert\06. Plans\20240214_Draft Final Drawings\03 Civil Sheets C-4 C-6_Lakeview Ave Culvert.dwg Plot Date: Feb 20,2024-3:59pm



LONGITUDINAL SECTION AT EXISTING CULVERT ℄

HORIZONTAL SCALE: 1"=8'
VERTICAL SCALE: 1"=4'



LONGITUDINAL SECTION AT PROPOSED CULVERT ℄

HORIZONTAL SCALE: 1"=8'
VERTICAL SCALE: 1"=4'

TOWN of DRACUT INCORPORATED 1701 MASSACHUSETTS

ENVIRONMENTAL PARTNERS
— An Apex Company —

MARK	DATE	DESCRIPTION

Scale	AS NOTED
Date	FEBRUARY 2024
Job No.	22003729
Designed by	JLV/RJP
Drawn by	JLV
Checked by	EAK
Approved by	RJP

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LAKEVIEW AVENUE CULVERT REPLACEMENT
TOWN OF DRACUT, MA

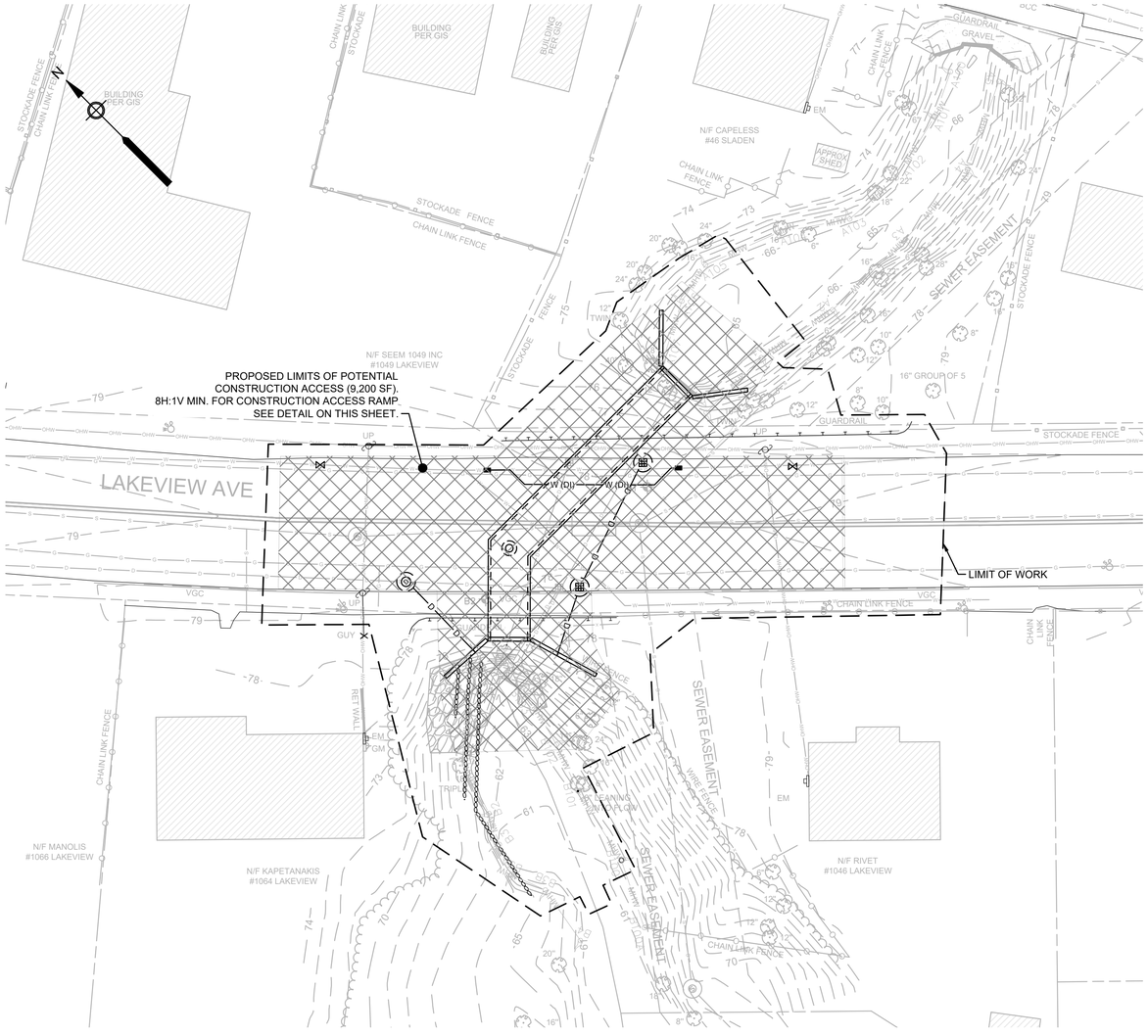
CULVERT AND STREAM PROFILES

FOR BID

Sheet No.

C-5

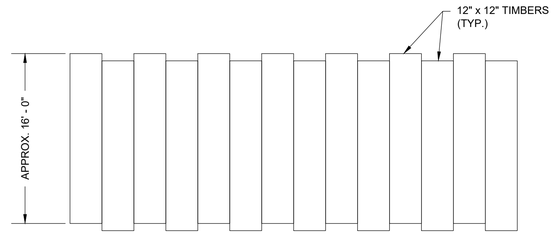
Drawing file: I:\Dracut\22003729 - Lakeview Ave Culvert\06. Plans\20240214_Draft Final Drawings\03 Civil Sheets C-4 - C-6_Lakeview Ave Culvert.dwg Plot Date: Feb 20,2024-3:50pm



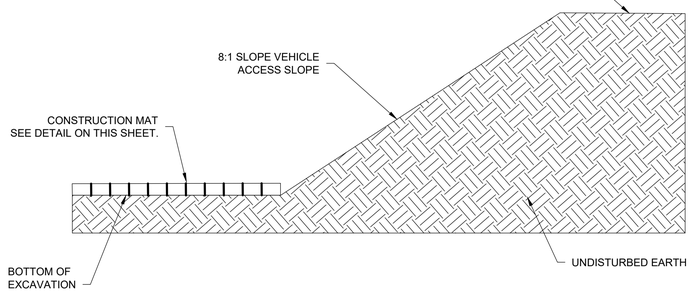
CONSTRUCTION ACCESS PLAN
SCALE: 1" = 20'

CONSTRUCTION ACCESS NOTES :

1. THE CONTRACTOR SHALL LIMIT CONSTRUCTION ACCESS DISTURBANCE TO THE STREAM BED AS SHOWN ON THE "CONSTRUCTION ACCESS PLAN" ON THIS SHEET. THIS IS A REQUIREMENT OF THE SOC.
2. THE CONTRACTOR SHALL SUBMIT A CONSTRUCTION ACCESS PLAN PRIOR TO THE START OF WORK. THE PLAN SHALL INCLUDE BUT IS INTO LIMITED TO THE EXTENTS OF DISTURBANCE, ACCESS RAMP SKETCH, TYPE OF EXCAVATION SUPPORT USED, AND METHOD FOR STABILIZING THE STREAMBED.
3. THE CONTRACTOR MAY INSTALL WOODEN CRIBBING OR MATTING FOR STABILIZING THE STREAMBED. SEDIMENT FROM CONSTRUCTION MUST REMAIN IN THE PROJECT AREA AND CLEANED PRIOR TO FINALIZING THE WORK.



TYPICAL CONSTRUCTION MAT
SCALE: N.T.S.



TYPICAL CONSTRUCTION ACCESS RAMP
SCALE: N.T.S.

ENVIRONMENTAL PARTNERS — An Apex Company —

MARK	DATE	DESCRIPTION

Scale	AS NOTED
Date	FEBRUARY 2024
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Designed by	JLV/RJP
Drawn by	JLV
Checked by	EAK
Approved by	RJP

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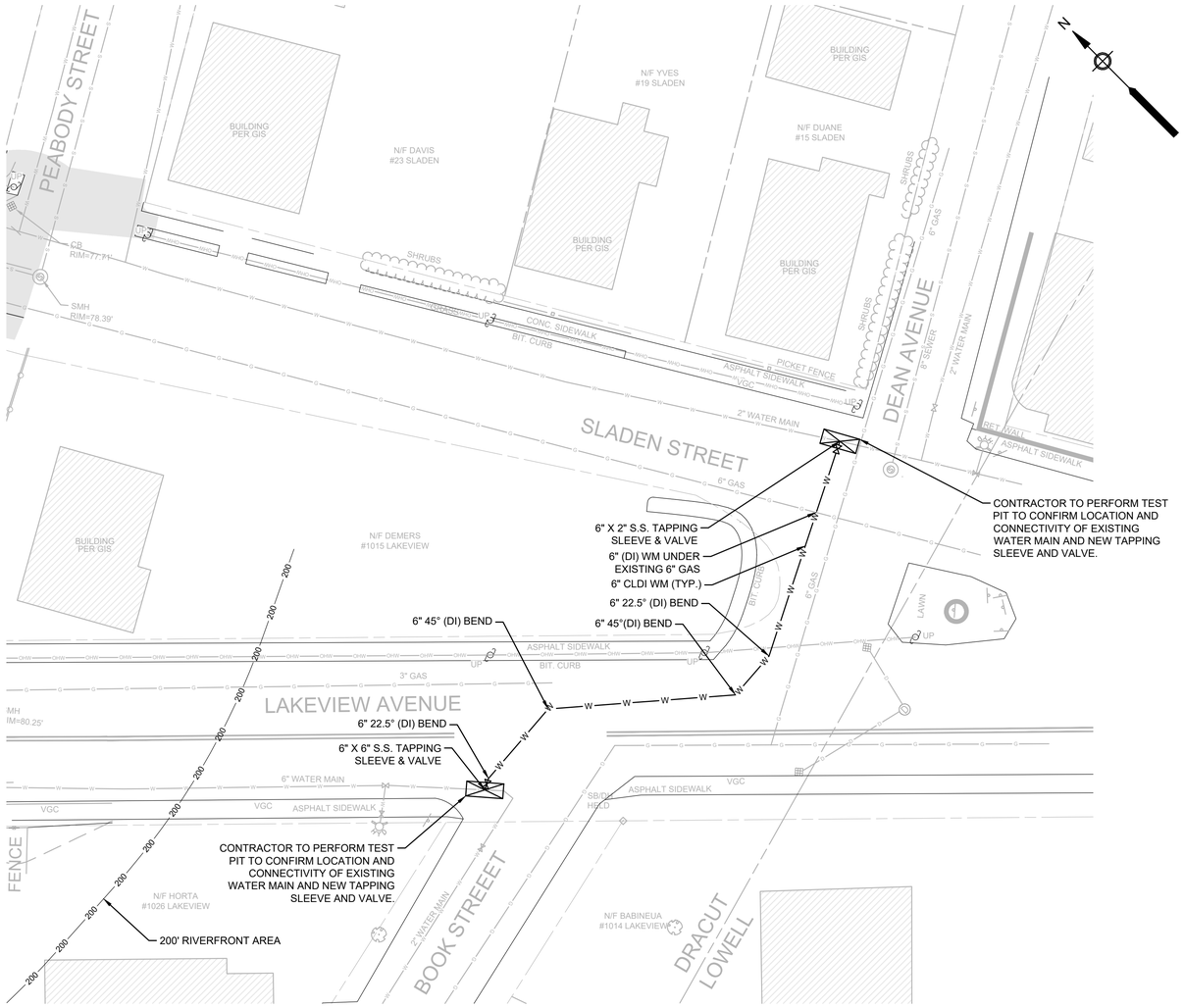
LAKEVIEW AVENUE CULVERT REPLACEMENT
TOWN OF DRACUT, MA

CONSTRUCTION ACCESS PLAN AND DETAILS

FOR BID

Sheet No. C-6

Drawing file: I:\Dracut\22003729 - Lakeview Ave Culvert\06. Plans\20240214_Draft Final Drawings\03 Civil Sheets C-4 - C-6_Lakeview Ave Culvert.dwg Plot Date: Feb 20,2024-3:50pm



MARK	DATE	DESCRIPTION

Scale	1" = 20'
Date	FEBRUARY 2024
Job No.	22003729
Designed by	JLV/RJP
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ENVIRONMENTAL PARTNERS
— An Apex Company —

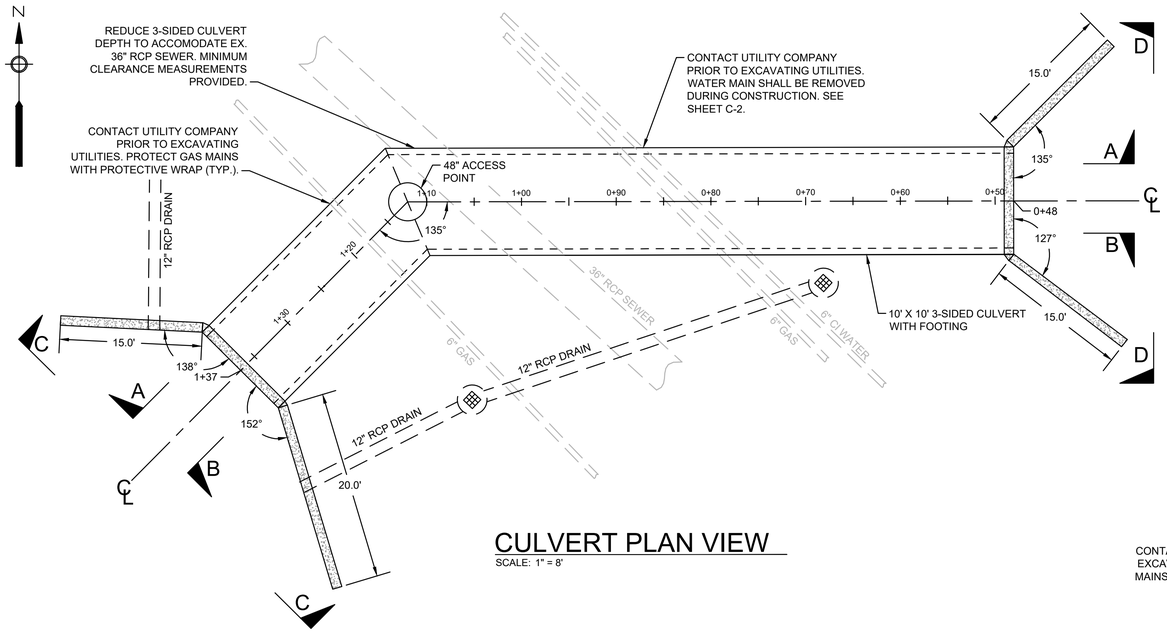
LAKEVIEW AVENUE CULVERT REPLACEMENT
TOWN OF DRACUT, MA

SLADEN STREET TO LAKEVIEW AVENUE WATER MAIN LOOP

FOR BID

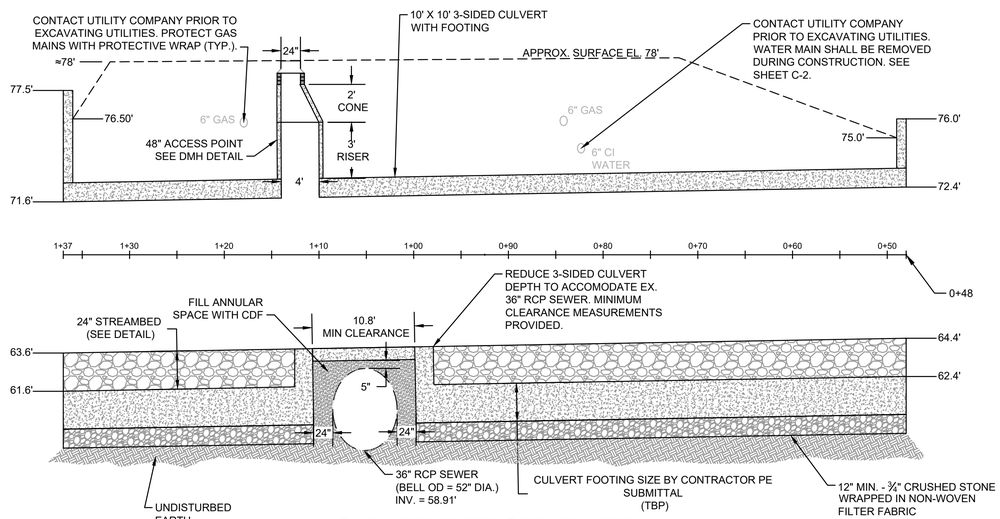
Sheet No.

C-7



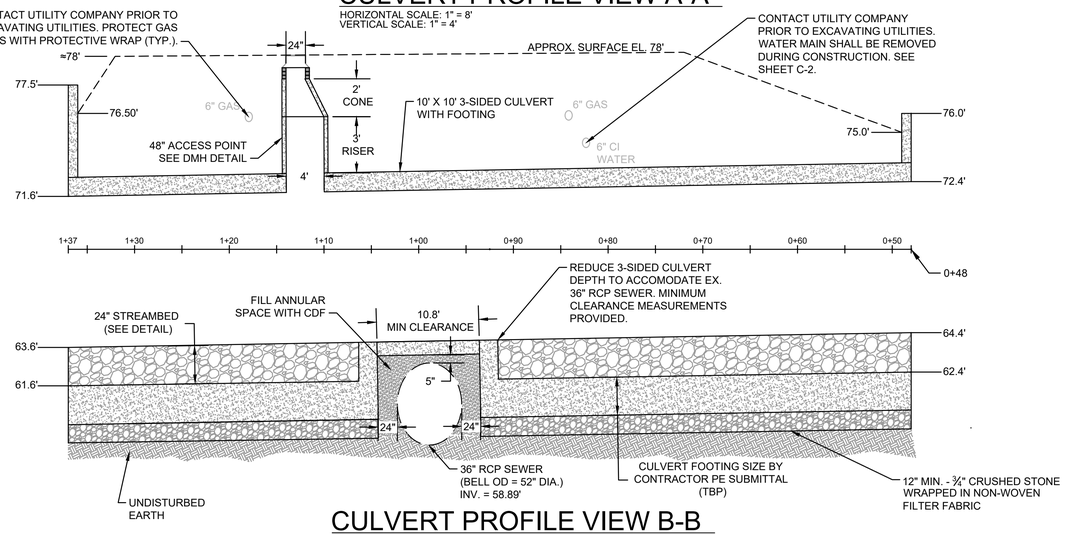
CULVERT PLAN VIEW

SCALE: 1" = 8'



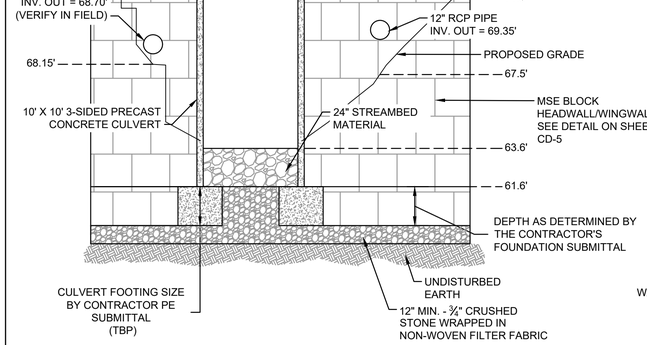
CULVERT PROFILE VIEW A-A

HORIZONTAL SCALE: 1" = 8'
VERTICAL SCALE: 1" = 4'



CULVERT PROFILE VIEW B-B

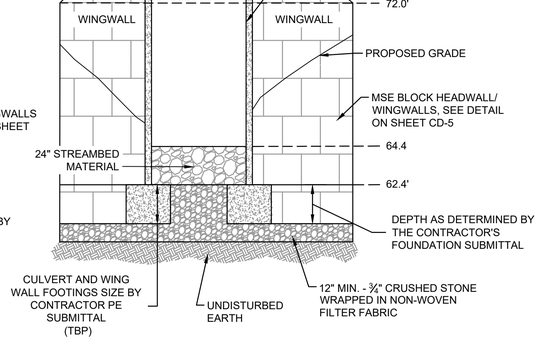
HORIZONTAL SCALE: 1" = 8'
VERTICAL SCALE: 1" = 4'



NOTE: MINIMUM 6" REVEAL ON BACKSIDE OF WALL.

DOWNSTREAM HEADWALL VIEW C-C

HORIZONTAL SCALE: 1" = 8'
VERTICAL SCALE: 1" = 4'



NOTE: MINIMUM 6" REVEAL ON BACKSIDE OF WALL.

UPSTREAM HEADWALL VIEW D-D

HORIZONTAL SCALE: 1" = 8'
VERTICAL SCALE: 1" = 4'

CULVERT NOTES:

1. CULVERT IS A 10' X 10', 3-SIDED, PRECAST CONCRETE STRUCTURE, EXCEPT AT THE 36" EXISTING RCP SEWER CROSSING. AT THE EXISTING SEWER CROSSING, THE CONTRACTOR SHALL PROVIDE CULVERT AND FOUNDATION WITH CLEARANCES SHOWN ON PROFILES.
2. THE FOOTING SHAPE SHOWN IS APPROXIMATE. CONTRACTOR SHALL PROVIDE A MASSACHUSETTS P.E. STAMPED SUBMITTAL FOR THE HEADWALL AND WINGWALL FOUNDATION SIZE, SHAPE, TIE-BACKS, AND REINFORCEMENT STEEL BASED ON THE CONTRACT DOCUMENTS.
3. ALL STRUCUTRES SHALL BE DESIGNED FOR H-20 LOADING REQUIREMENTS, AND HEADWALLS AND WINGWALLS SHALL BE DESIGNED FOR ALL TYPES OF WALL FAILURES.
4. A GEOTECHNICAL MEMORANDUM IS PROVIDED IN THE DESIGN SPECIFICATIONS APPENDICES.
5. CONCRETE REQUIREMENTS ARE PROVIDED IN DIV 03 OF THE DESIGN SPECIFICATIONS.
6. ALL CRUSHED STONE SHALL BE WRAPPED IN NON-WOVEN FILTER FABRIC.

TOWN of DRACUT MASSACHUSETTS INCORPORATED 1701

ENVIRONMENTAL PARTNERS — An Apex Company —

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LAKEVIEW AVENUE CULVERT REPLACEMENT
TOWN OF DRACUT, MA

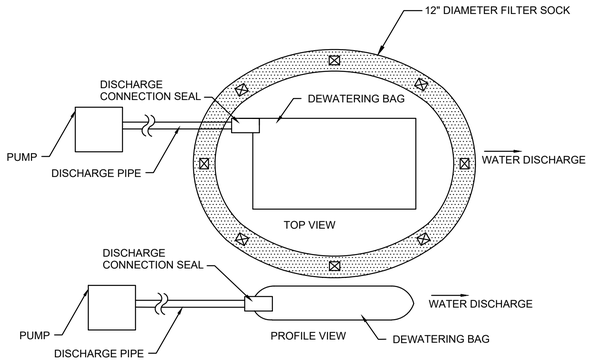
CULVERT DETAIL PLAN

FOR BID

Sheet No.

CD-1

Drawing file: I:\Dracut\22003729 - Lakeview Ave Culvert\06_Plans\20240214_Draft Final Drawings\04 Civil Detail Sheets Lakeview Ave Culvert.dwg Plot Date: Feb 20,2024-3:51pm

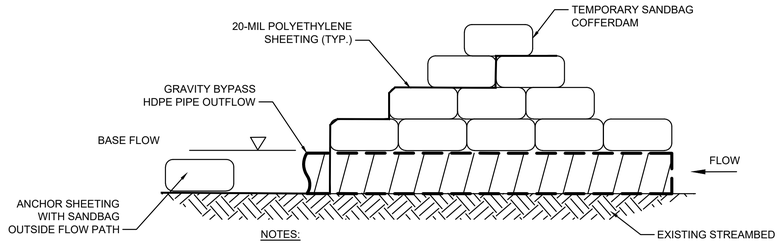


NOTES:

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.

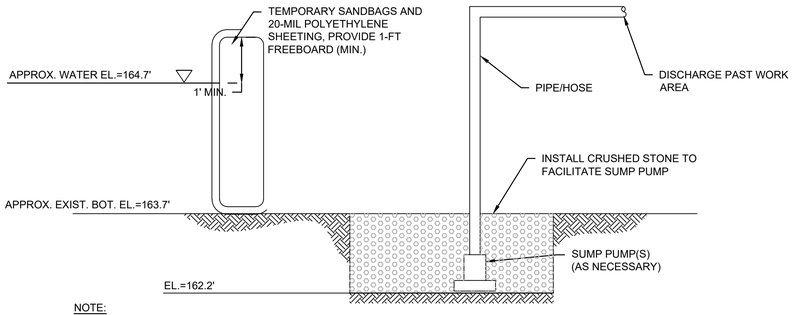


NOTES:

1. 2 BAG MINIMUM HEIGHT ABOVE BASE FLOW.

TEMPORARY SANDBAG COFFERDAM AT DOWNSTREAM SIDE

SCALE: N.T.S.

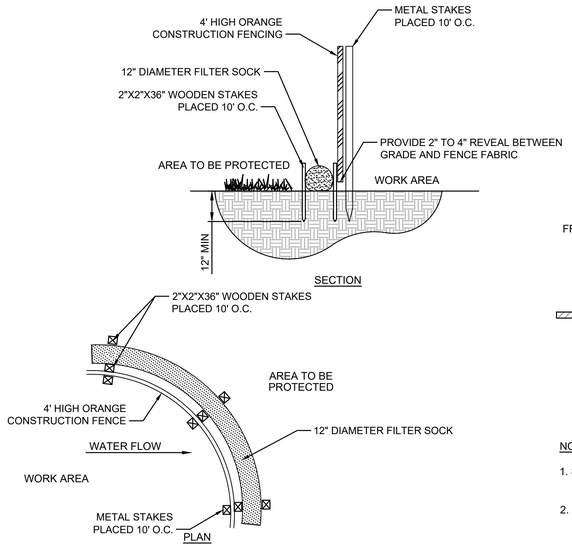


NOTE:

1. SUBMIT DEWATERING SYSTEM FOR APPROVAL BY THE ENGINEER PRIOR TO THE START OF CONSTRUCTION ACTIVITIES.

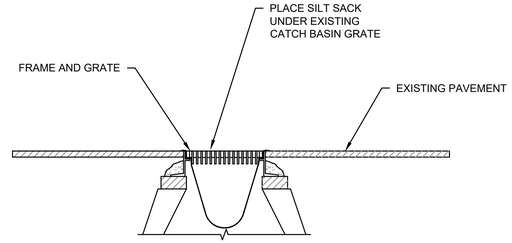
TYPICAL TEMPORARY DEWATERING SYSTEM DETAIL (DOWNSTREAM)

SCALE: N.T.S.



12" DIAMETER FILTER SOCK WITH ORANGE CONSTRUCTION FENCE

SCALE: N.T.S.

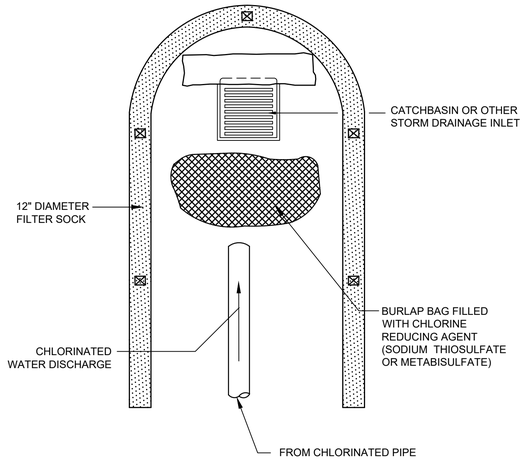


NOTES:

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 OR APPROVED EQUAL.

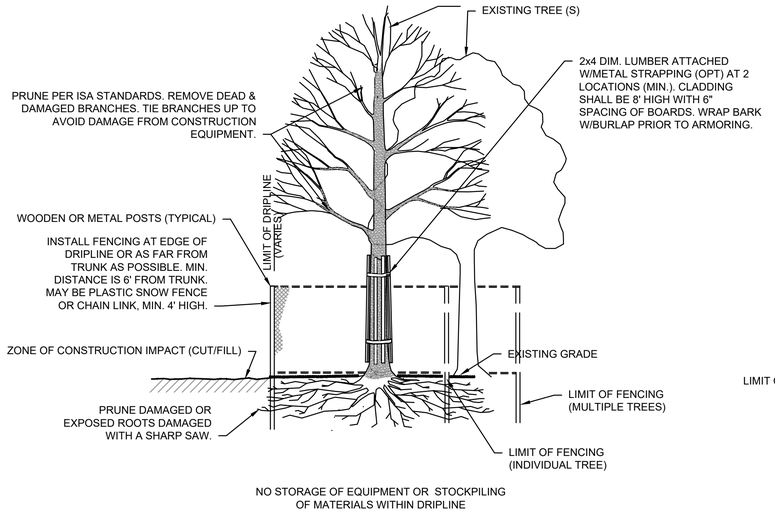
SEDIMENTATION CONTROL AT CATCH BASINS SILT SACKS

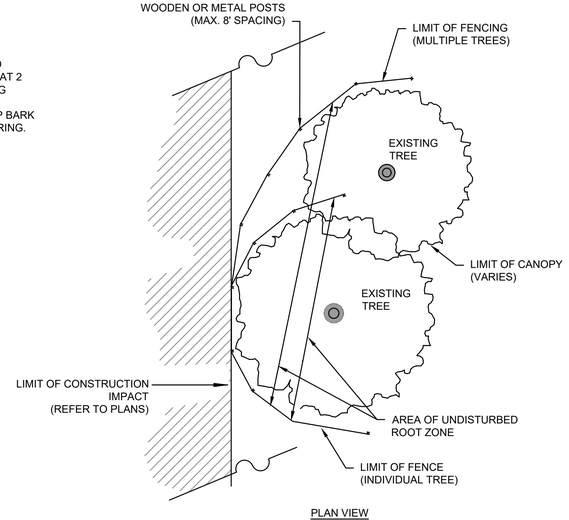
SCALE: N.T.S.



DECHLORINATION DETAIL

SCALE: N.T.S.





PLAN VIEW

NOTES:

1. ALL TREES WITH A DIAMETER OF 6" OR GREATER REMOVED DURING CONSTRUCTION ACTIVITIES SHALL BE REPLACED.
2. THE AMOUNT, SPACING, AND SIZE REQUIREMENTS OF TREES SHALL BE IN ACCORDANCE WITH THE OOC.
3. THE TYPE OF TREE PLANTING SHALL BE THE CONSERVATION COMMISSION'S CHOICE.

TREE PROTECTION DETAIL

SCALE: N.T.S.

TOWN of DRACUT INCORPORATED 1701 MASSACHUSETTS

ENVIRONMENTAL PARTNERS — An Apex Company —

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LAKEVIEW AVENUE CULVERT REPLACEMENT
TOWN OF DRACUT, MA

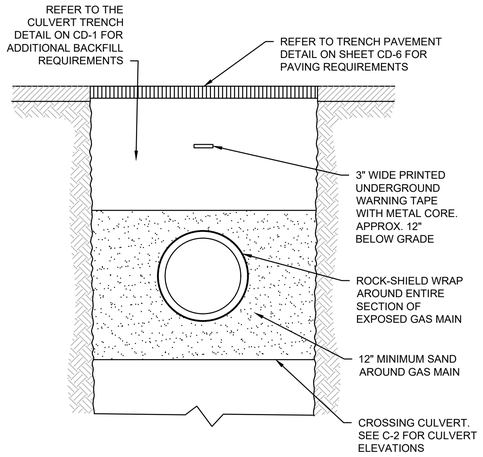
CIVIL DETAILS I

FOR BID

Sheet No.

CD-2

Drawing file: I:\Dracut\22003729 - Lakeview Ave Culvert\06. Plans\2024\0214_Draft Final Drawings\04 Civil Detail Sheets Lakeview Ave Culvert.dwg Plot Date: Feb 20,2024-3:51pm

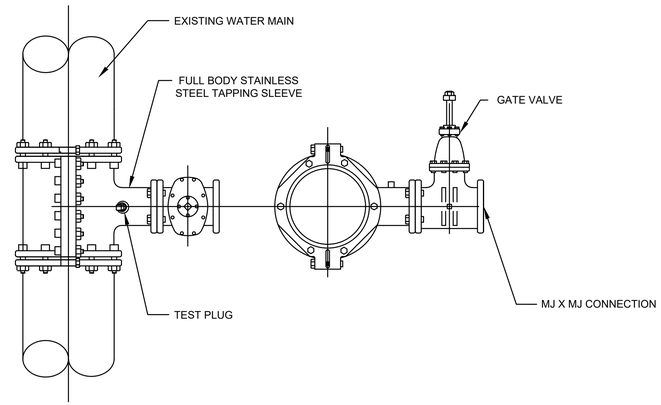


NOTES:

1. VACUUM EXCAVATION SHALL BE USED WITHIN 18" OF THE GAS MAIN.
2. ROCK SHIELD WRAP SHALL BE INSTALLED TO PROTECT THE COATING OF THE EXISTING GAS MAIN. IF THE COATING IS DAMAGED, COORDINATE WITH EVERSOURCE TO ASSESS WHAT REPAIRS ARE NEEDED.
3. EXTEND GAS MAIN PROTECTION PAST THE CULVERT ON EITHER SIDE, AS SHOWN ON C-2.

GAS MAIN PROTECTION DETAIL

SCALE: N.T.S.



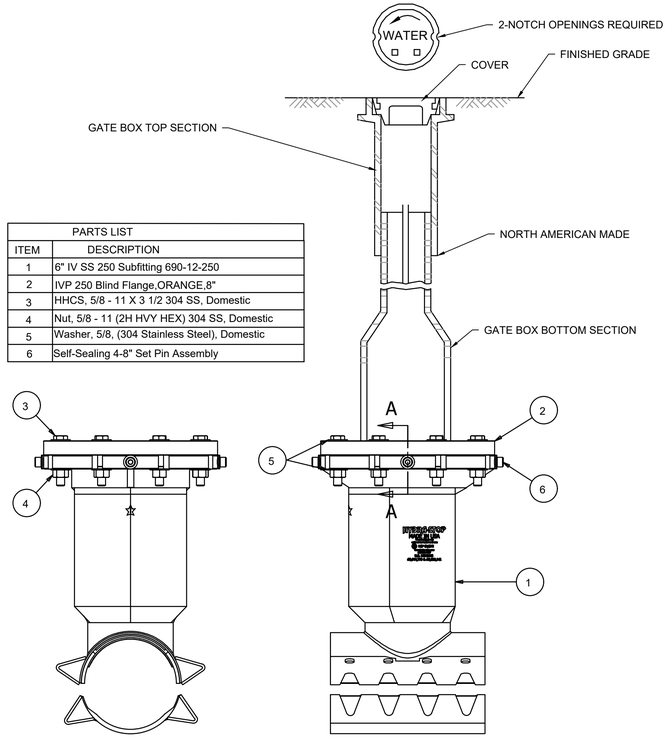
PLAN SECTION

NOTES:

1. TAPS PERFORMED ON WATER MAINS SHALL USE A FULL BODY, CORROSION RESISTANT, HIGH STRENGTH STAINLESS STEEL WITH HIGH PRESSURE CEILING, TAPPING SLEEVE.

TAPPING SLEEVE AND GATE VALVE

SCALE: N.T.S.



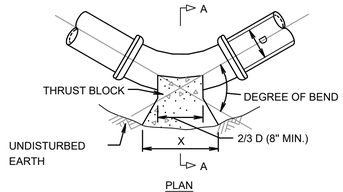
PARTS LIST	
ITEM	DESCRIPTION
1	6" IV SS 250 Subfitting 690-12-250
2	IVP 250 Blind Flange,ORANGE,8"
3	HHCS, 5/8 - 11 X 3 1/2 304 SS, Domestic
4	Nut, 5/8 - 11 (2H HVY HEX) 304 SS, Domestic
5	Washer, 5/8, (304 Stainless Steel), Domestic
6	Self-Sealing 4-8" Set Pin Assembly

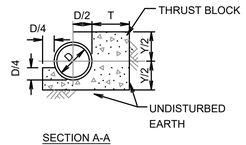
NOTES:

1. ALL COMPONENTS TO BE HYDRA-STOP OR APPROVED EQUAL
2. FLANGE HARDWARE TO BE TIGHTENED WITH WASHERS ON BOTH SIDES OF FLANGES
3. SET PINS TO BE INSERTED SO THAT THE GROMMET IS FLUSH WITH CASTING FACE

INSERTION VALVE AND GATE BOX DETAIL

SCALE: N.T.S.





NOTES:

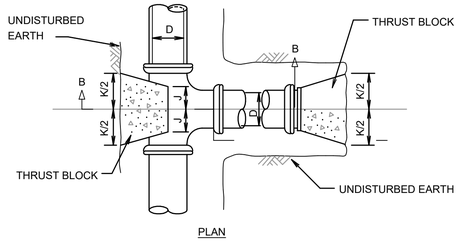
1. ALL CONCRETE SHALL BE 3000 P.S.I. @ 28 DAYS (CLASS "A" CONCRETE)
2. DIMENSIONS SHOWN ARE MINIMUM AND ARE BASED UPON SOIL PRESSURE OF 1500 P.S.F. AND TOTAL PRESSURE OF 250 P.S.I. TOTAL PRESSURE IS WORKING PRESSURE PLUS SURGE PRESSURE.
3. THRUST BLOCKS SHALL BEAR AGAINST UNDISTURBED EARTH.

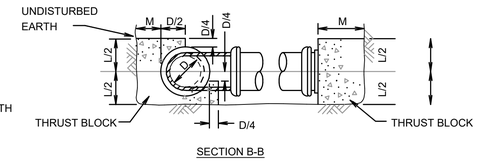
TABLE OF DIMENSIONS

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

CONCRETE THRUST BLOCK DETAIL AT BEND

SCALE: N.T.S.





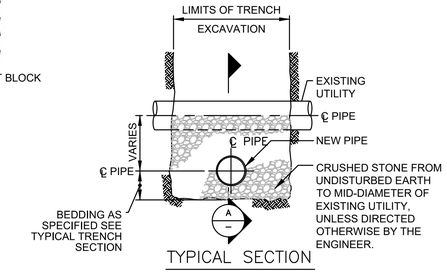
NOTES :

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

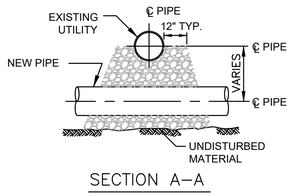
TABLE OF DIMENSIONS						
D (in)	4	6	8	10	12	14
J (in)	6	6	7	9	10	12
K (in)	16	16	20	26	32	36
L (in)	16	16	21	24	29	34
M (in)	11	11	14	16	19	22

CONCRETE THRUST BLOCK DETAIL AT TEE / PLUG / CAP

SCALE: N.T.S.



TYPICAL SECTION



SECTION A–A

NOTES:

1. CONTRACTOR SHALL HAND DIG IN ALL EXISTING GAS MAIN AND SERVICE LOCATIONS.
2. 6" SAND SHALL BE PLACED ABOVE AND BELOW ALL GAS UTILITIES.
3. REPLACE UTILITY WARNING TAPE ABOVE ALL UTILITIES.

EXISTING UTILITY CROSSING DETAIL

SCALE: NTS

TOWN of DRACUT INCORPORATED 1701 MASSACHUSETTS

ENVIRONMENTAL PARTNERS — An Apex Company —

MARK	DATE	DESCRIPTION

Scale	AS SHOWN
Date	FEBRUARY 2024
Job No.	22003729
Designed by	JLV/RJP
Drawn by	JLV
Checked by	EAK
Approved by	RJP

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

LAKEVIEW AVENUE CULVERT REPLACEMENT
TOWN OF DRACUT, MA

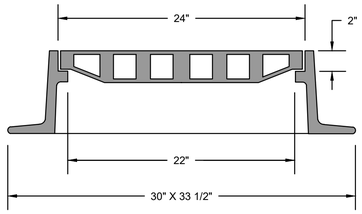
CIVIL DETAILS II

FOR BID

Sheet No.

CD-3

Drawing file: I:\Dracut\22003729 - Lakeview Ave Culvert\06. Plans\20240214_Draft Final Drawings\04 Civil Detail Sheets Lakeview Ave Culvert.dwg Plot Date: Feb 20,2024-4:45pm

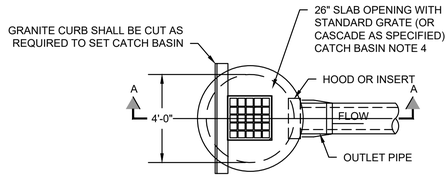


NOTES:

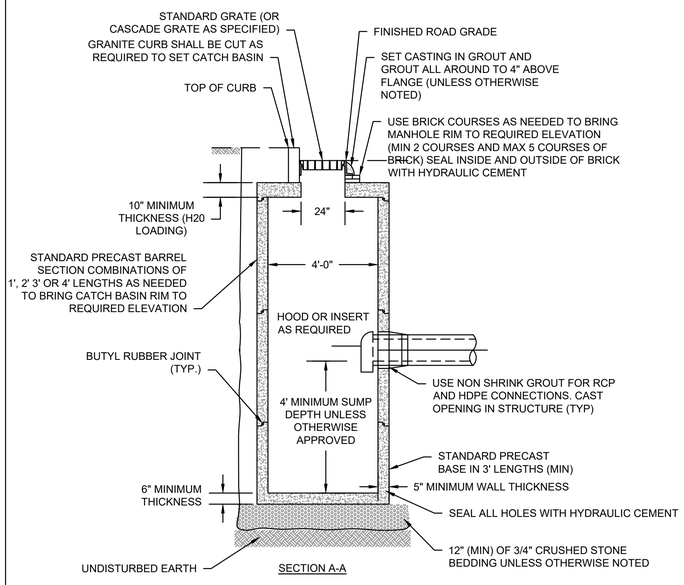
1. FRAME AND GRATE SHALL BE EJ, OR APPROVED EQUAL.
2. FRAME AND GRATE SHALL BE SET IN FULL BED OF MORTAR ON A MINIMUM OF TWO COURSES OF BRICK.
3. FRAME HEIGHT TO BE DETERMINED BY CONTRACTOR.

STANDARD CATCH BASIN FRAME AND GRATE

SCALE: N.T.S.



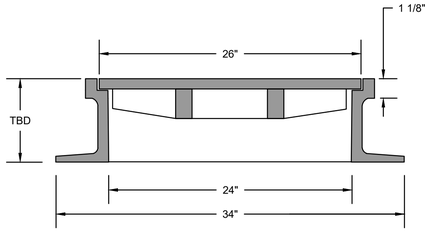
PLAN



SECTION A-A

TYPICAL CATCH BASIN

SCALE: N.T.S.

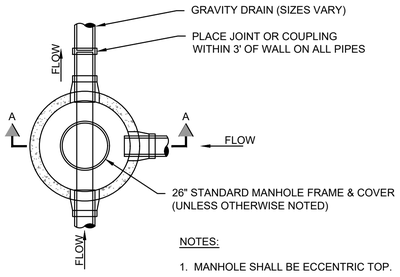


NOTES:

1. FRAME AND COVER SHALL BE EJ, OR APPROVED EQUAL.
2. EACH COVER SHALL READ DRAIN OR SEWER IN 3" LETTERING.
3. FRAME AND COVER SHALL BE SET IN FULL BED OF MORTAR.
4. FRAME HEIGHT TO BE DETERMINED BY CONTRACTOR.

STANDARD MANHOLE FRAME AND COVER

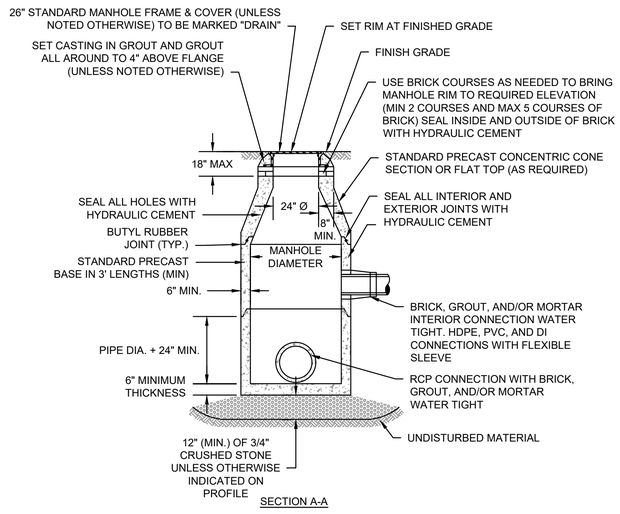
SCALE: N.T.S.



PLAN

NOTES:

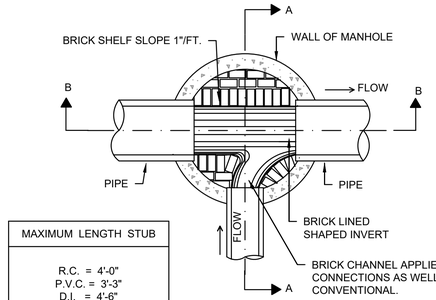
1. MANHOLE SHALL BE ECCENTRIC TOP.



SECTION A-A

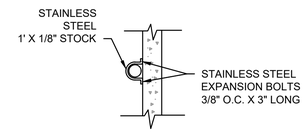
TYPICAL DRAIN MANHOLE

SCALE: N.T.S.



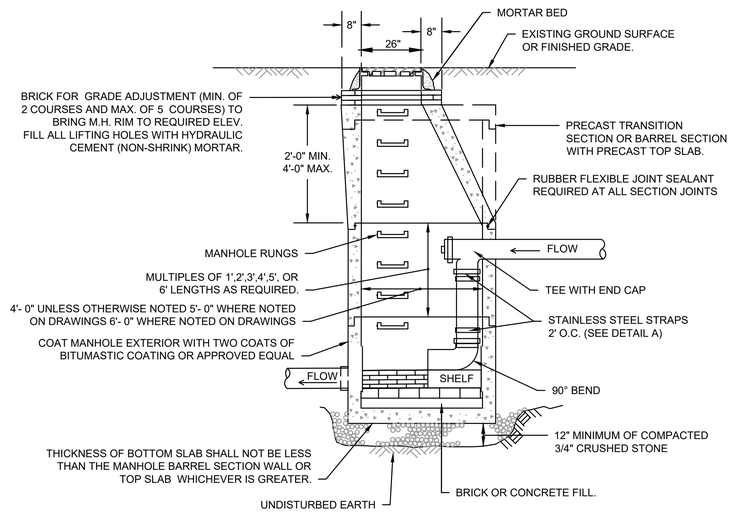
MAXIMUM LENGTH STUB
R.C. = 4'-0" P.V.C. = 3'-3" D.I. = 4'-6"

PLAN

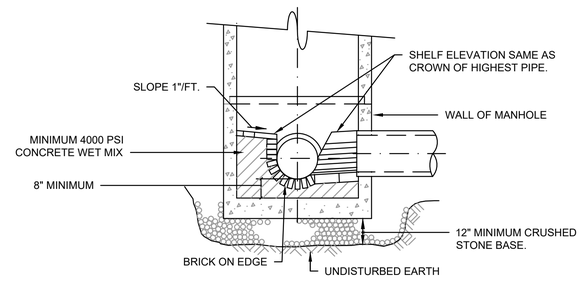


DETAIL A

PLAN - STAINLESS STEEL STRAP



SECTION B-B



SECTION A-A

INTERIOR DROP SEWER MANHOLE

SCALE: N.T.S.

TOWN of DRACUT INCORPORATED 1701 MASSACHUSETTS

ENVIRONMENTAL PARTNERS
— An Apex Company —

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Designed by	JLV/RJP
Drawn by	JLV
Checked by	EAK
Approved by	RJP

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LAKEVIEW AVENUE CULVERT REPLACEMENT
TOWN OF DRACUT, MA

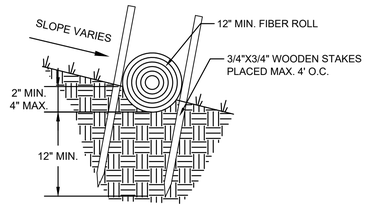
CIVIL DETAILS III

FOR BID

Sheet No.

CD-4

Drawing file: I:\Dracut\22003729 - Lakeview Ave Culvert\05. Plans\20240214_Draft Final Drawings\04 Civil Detail Sheets Lakeview Ave Culvert.dwg Plot Date: Feb 20,2024-3:51pm

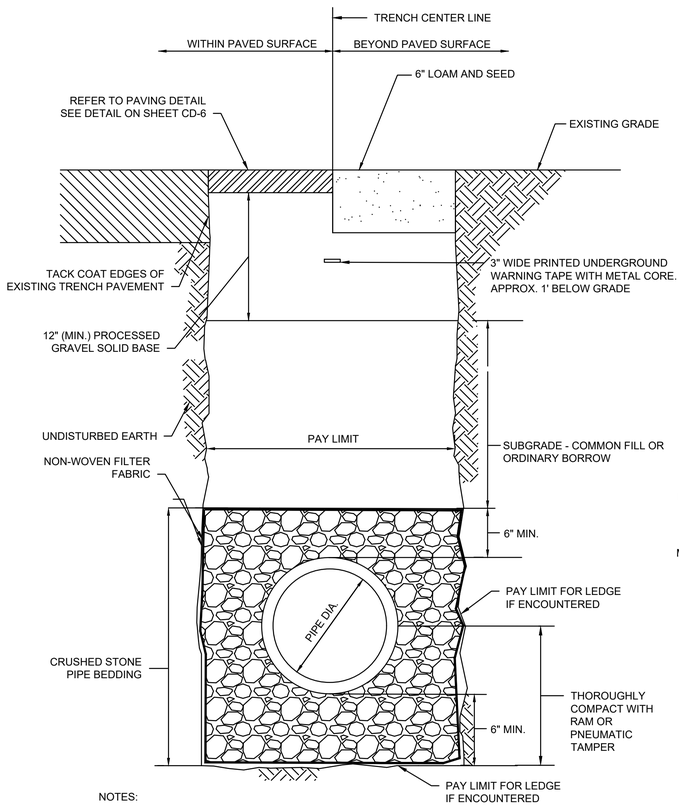


NOTES:

1. COIR LOG SHALL BE MANUFACTURED BY EAST COAST EROSION CONTROL, OR EQUAL.
2. REFER TO THE MANUFACTURER'S GUIDELINES FOR INSTALLATION.
3. THE COIR LOGS SHALL BE 100% NATURAL ORGANIC FIBER AND FREE OF SYNTHETIC NETTING OR CHMICAL ADDITIVES.
4. THE COIR LOGS SHALL BE 100% BIODEGRADABLE.
5. NETTING SHALL BE 100% COIR TWINE.

12" STANDARD COIR LOG

SCALE: N.T.S.

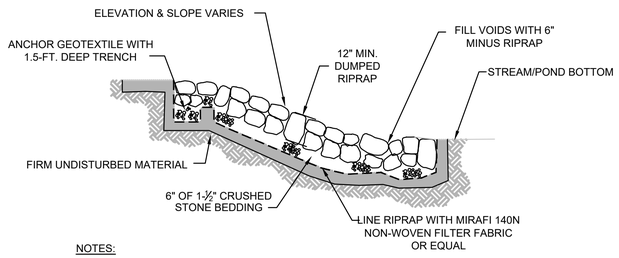


NOTES:

1. THE FINISHED SURFACE OF THE PAVEMENT, AFTER COMPACTION, SHALL BE TRUE TO THE ESTABLISHED LINE AND GRADE OF THE EXISTING PAVEMENT.
2. ANY GRASS AREAS DISTURBED SHALL BE GRADED, LOAMED TO A DEPTH OF 6 INCHES AND SEEDED, WHERE NO GRASS OCCURS USE 6" PROCESSED GRAVEL.
3. SEE SPECIFICATION SECTION 01024 FOR PAY LIMITS.

TYPICAL UTILITY TRENCH DETAIL

SCALE: N.T.S.

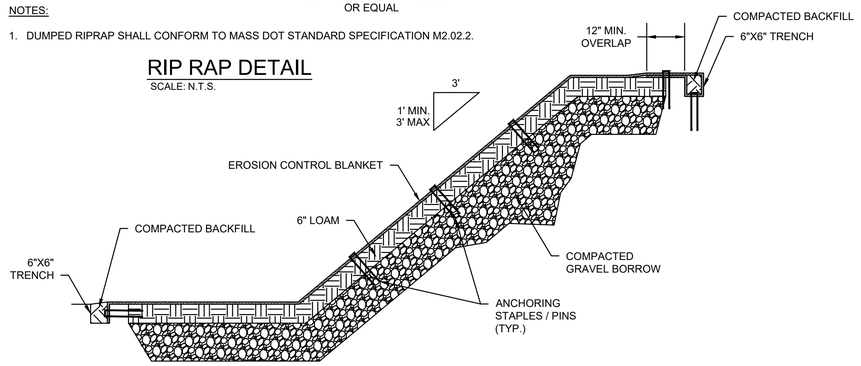


NOTES:

1. DUMPED RIPRAP SHALL CONFORM TO MASS DOT STANDARD SPECIFICATION M2.02.2.

RIP RAP DETAIL

SCALE: N.T.S.

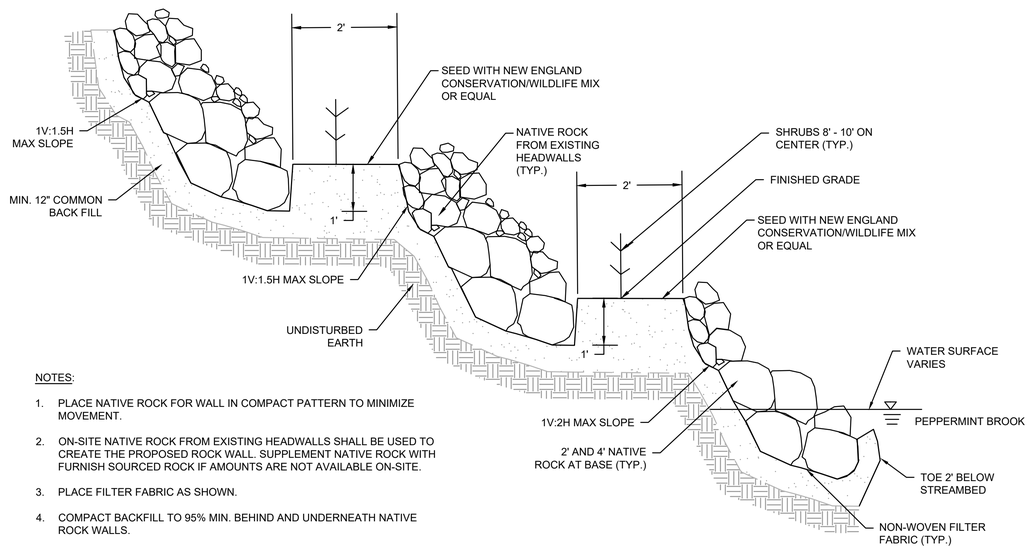


NOTES:

1. EROSION CONTROL BLANKET SHALL BE ECSC-2B BY EAST COAST EROSION CONTROL, OR EQUAL.
2. REFER TO THE MANUFACTURER'S GUIDELINES FOR STAPLE ANCHORING SPACING.

EROSION CONTROL BLANKET

SCALE: N.T.S.

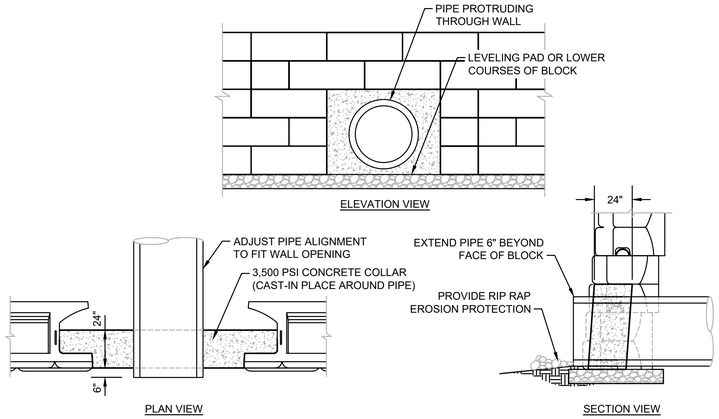


NOTES:

1. PLACE NATIVE ROCK FOR WALL IN COMPACT PATTERN TO MINIMIZE MOVEMENT.
2. ON-SITE NATIVE ROCK FROM EXISTING HEADWALLS SHALL BE USED TO CREATE THE PROPOSED ROCK WALL. SUPPLEMENT NATIVE ROCK WITH FURNISH SOURCED ROCK IF AMOUNTS ARE NOT AVAILABLE ON-SITE.
3. PLACE FILTER FABRIC AS SHOWN.
4. COMPACT BACKFILL TO 95% MIN. BEHIND AND UNDERNEATH NATIVE ROCK WALLS.

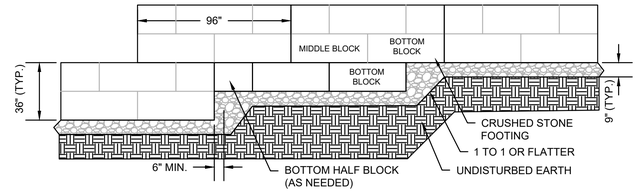
NATIVE ROCK RETAINING WALL

SCALE: N.T.S.



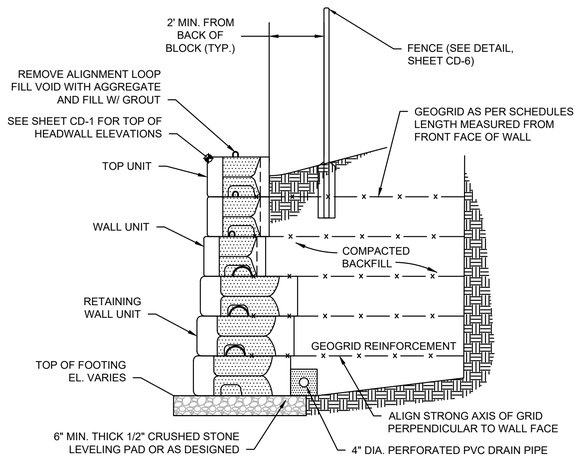
PIPE PERPENDICULAR THROUGH WALL DETAIL

SCALE: N.T.S.



TYPICAL MSE BLOCK WALL BASE STEP DETAIL

SCALE: N.T.S.



NOTES:

1. BASIS OF DESIGN: STONE STRONG BLOCK UNITS.
2. THE CONTRACTOR SHALL SUBMIT MSE BLOCK WALL SHOP DRAWINGS DESIGNED AND STAMPED BY A LICENSED MA PE.
3. PVC DRAIN PIPE MINIMUM SLOPE SHALL BE 0.005 FT/FT.
4. COORDINATE RETAINING WALL WITH CHAIN LINK FENCE INSTALLATION.
5. MINIMUM 6" REVEAL ON BACKSIDE OF WALL.

MSE BLOCK WALL CROSS SECTION

SCALE: N.T.S.

TOWN of DRACUT INCORPORATED 1701 MASSACHUSETTS

ENVIRONMENTAL PARTNERS — An Apex Company —

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LAKEVIEW AVENUE CULVERT REPLACEMENT
TOWN OF DRACUT, MA

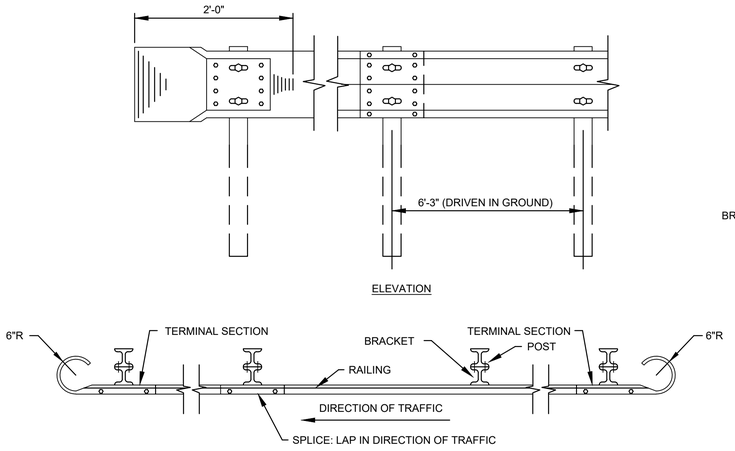
CIVIL DETAILS IV

FOR BID

Sheet No.

CD-5

Drawing file: I:\Dracut\22003729 - Lakeview Ave Culvert\06. Plans\20240214_Draft Final Drawings\04 Civil Detail Sheets Lakeview Ave Culvert.dwg Plot Date: Feb 20,2024-3:51pm

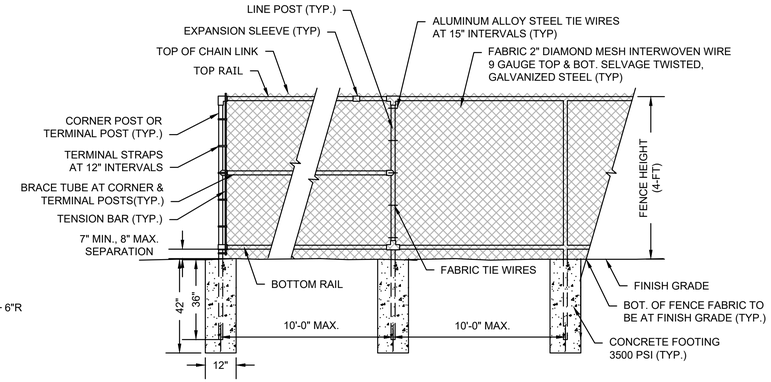


NOTES:

1. GUARD RAIL SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST MASSDOT, HIGHWAY DIVISION CONSTRUCTION DETAILS. CONTRACTOR'S BID PRICE SHALL INCLUDE THIS REQUIREMENT.
2. GUARD RAIL TO BE INSTALLED A MINIMUM OF 24" FROM THE EDGE OF ROADWAY.
3. GUARD RAIL POSTS INSTALLED IN THE GROUND SHALL BE DRIVEN TO A MINIMUM DEPTH OF FIVE FEET BELOW THE GROUND SURFACE.
4. THE UNDERSIDE OF THE GUARD RAIL SHALL BE SET A MINIMUM OF 8" ABOVE THE FINISHED ROAD SURFACE AND HEADWALL.
5. GUARDRAIL TO BE INSTALLED WITH NEW POSTS AND SPACERS. RESET STACKED CORTEN STEEL BEAM.

MHD STEEL HIGHWAY GUARD RAIL DETAIL

SCALE: N.T.S.



NOTES:

1. USE MID RAIL ON FENCES AT ALL END POSTS AND AT ALL GATES.
2. THE DESIGN OF THE CHAIN LINK HARDWARE MAY VARY FROM THE DETAIL SHOWN, HOWEVER, ALL HARDWARE AND MATERIALS USED IN A SINGLE INSTALLATION SHALL BE UNIFORM AND COMPATIBLE.
3. POST SPACING SHALL BE 10-FT MAX SPACING.

CHAIN-LINK FENCE DETAIL

SCALE: N.T.S.

GENERAL PLANTING PLAN NOTES:

1. THE PLANTING AREA SHALL BE EXCAVATED TO THE ELEVATIONS SHOWN ON THE GRADING PLAN ON SHEET C-3.
2. FOR ALL SLOPES GREATER THAN 3H:1V, ADD THE EROSION CONTROL BLANKET.
3. THE CONTRACTOR WILL WORK WITH REPRESENTATIVES OF THE DRACUT CONSERVATION COMMISSION TO IDENTIFY THE LOCATION/DISTRIBUTION OF PLANTINGS WITHIN THE PLANTING AREAS. THE CONTRACTOR WILL INITIALLY STAKE OUT PROPOSED LOCATIONS FOR REVIEW AND APPROVAL BY THE CONSERVATION COMMISSION OR ITS AGENT.
4. THE CONTRACTOR SHALL ATTEMPT TO PROTECT ALL TREES 6-INCHES IN DIAMETER OR LARGER. ALL TREES REMOVED THAT ARE 6-INCHES IN DIAMETER OR LARGER SHALL BE REPLACED AS FOLLOWS:

4.1 SIZE: 2+ GALLON(S) OR 4'-5' OR LARGER
4.2 SPACING 10'-15' ON CENTER
4.3 TOTAL NUMBER: TO BE DETERMINED DURING CONSTRUCTION
4.4 TYPE: SPECIFIED BY CONSERVATION COMMISSION

5. PLANTINGS SHALL CONSIST OF SHRUBS, AND SEED MIX. FOR SEEDING SEE DETAIL ON THIS SHEET. SHRUB SPECIES SHALL BE SELECTED FROM THE MASSACHUSETTS WETLAND PLANTING LIST AND SUBMITTED TO THE CONSERVATION COMMISSION FOR APPROVAL PRIOR TO PURCHASING AND INSTALLING PLANTINGS. SHRUBS SHALL BE INSTALLED AS FOLLOWS:

5.1 SIZE: 3'-4'
5.2 SPACING 8'-10' ON CENTER
5.3 TOTAL NUMBER: 25
5.4 SHRUBS SHALL BE GROWN NATIVE FROM THE FOLLOWING LIST:

A.	DANGLEBERRY	GAYLUSSACIA FRONDOSA
B.	SMOOTH WINTERBERRY	LLEX LAEVIGATA
C.	SPICEBUSH	LINDERA BENZOIN
D.	DWARF OR RUNNING RASPBERRY	RUBUS PUBESCENS
E.	HIGHBUSH BLUEBERRY	VACCINIUM CORYMBOSUM / VACCINIUM ATROCOCCUM

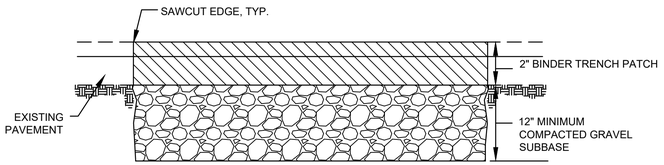
6. ALL PLANTINGS SHALL BE REMOVED FROM BURLAP SACKS, WIRE CAGES AND PLASTIC CONTAINERS PRIOR TO PLANTING.
7. EACH PLANT SHALL HAVE ITS ROOTS LOOSENED PRIOR TO PLANTING TO ENCOURAGE ROOT GROWTH AWAY FROM THE ROOT BALL..
8. PLANTING HOLES SHALL BE DUG A MINIMUM OF 2X DIAMETER OF THE ROOT BALL TO REDUCE SOIL COMPACTION AND ALLOW FOR HEALTHY ROOT ESTABLISHMENT.

NATIVE PLANTS MONITORING PLAN NOTES:

1. MONITORING AND REPORTING ASSOCIATED WITH THE COMPLETED NATIVE PLANTING AREA SHOULD FOLLOW AND BE IN COMPLIANCE WITH THE ORDER OF CONDITIONS ISSUED BY THE DRACUT CONSERVATION COMMISSION AND ANY OTHER RELEVANT PERMIT THAT APPLIES.
2. ANNUAL REPORTING AND ANY DELIVERABLES WILL BE SUBMITTED TO THE APPLICABLE PERMITTING AUTHORITIES.
3. POST PLANTING, THE AREA WILL BE MONITORED AS REQUIRED BY THE ORDER OF CONDITIONS FOR A PERIOD OF TWO YEARS, TO CONDUCT VISUAL ASSESSMENT TO DETERMINE IF FURTHER ACTION IS NECESSARY TO REMOVE AND REPLACE DEAD PLANTS, REMOVE ACCUMULATED DEBRIS, AND TO REMOVE ANY UNWANTED AND COMPETING INVASIVE PLANTS.
4. SHOULD THE AREA EXPERIENCE AN UNUSUAL FLOOD EVENT, AN ADDED SITE VISIT WILL BE CONDUCTED TO ASSESS ANY DAMAGE AND TO TAKE RADIATION ACTION.
5. THE INTENT IS TO HAVE THE PLANTED AREAS ACHIEVE 75% GROWTH IN COVER AND MATURITY AT THE END OF THE TWO YEAR MONITORING PERIOD.
6. EVERY OPPORTUNITY WILL BE TAKEN TO REMOVE INVASIVE PLANTS SO THEY ARE WEAKENED ALLOWING THE INDIGENOUS PLANTINGS TO TAKE OVER AND THRIVE.
7. IF THE PLANTS GET DISTRESSED DURING THE MONITORING PERIOD, AN EXAMINATION OF THE SOIL SHALL DETERMINE IF THE SOIL PH BALANCE NEEDS ADJUSTMENT OR PLANT FERTILIZATION IS NEEDED.

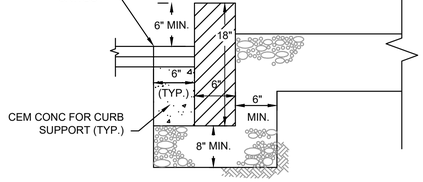
PLANTING PLAN

SCALE: N.T.S.



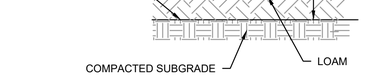
TEMPORARY TRENCH PAVING DETAIL

SCALE: N.T.S.



RESET GRANITE CURB

SCALE: N.T.S.

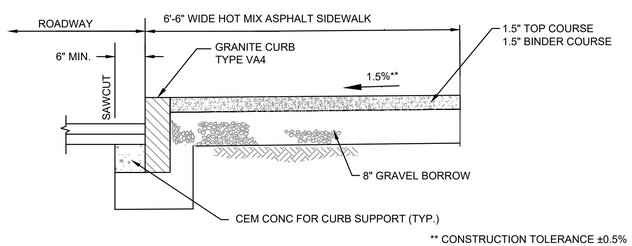


NOTES:

1. FOR ALL SLOPES GREATER THAN 3H:1V, ADD THE EROSION CONTROL BLANKET AS SHOWN IN THIS SHEET.
2. SEED MIX SHALL BE NEW ENGLAND CONSERVATION SEED MIX OR APPROVED EQUAL

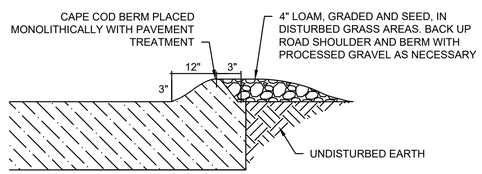
LOAM AND SEED (DISTURBED AREAS)

SCALE: N.T.S.



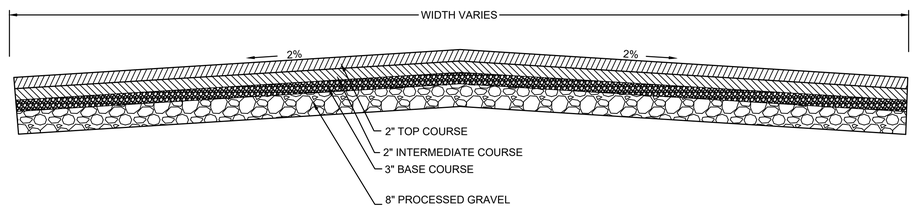
BITUMINOUS SIDEWALK

SCALE: N.T.S.



BITUMINOUS CONCRETE CAPE COD BERM

SCALE: N.T.S.



ROADWAY RECONSTRUCTION PAVEMENT SECTION

SCALE: N.T.S

ENVIRONMENTAL PARTNERS — An Apex Company —

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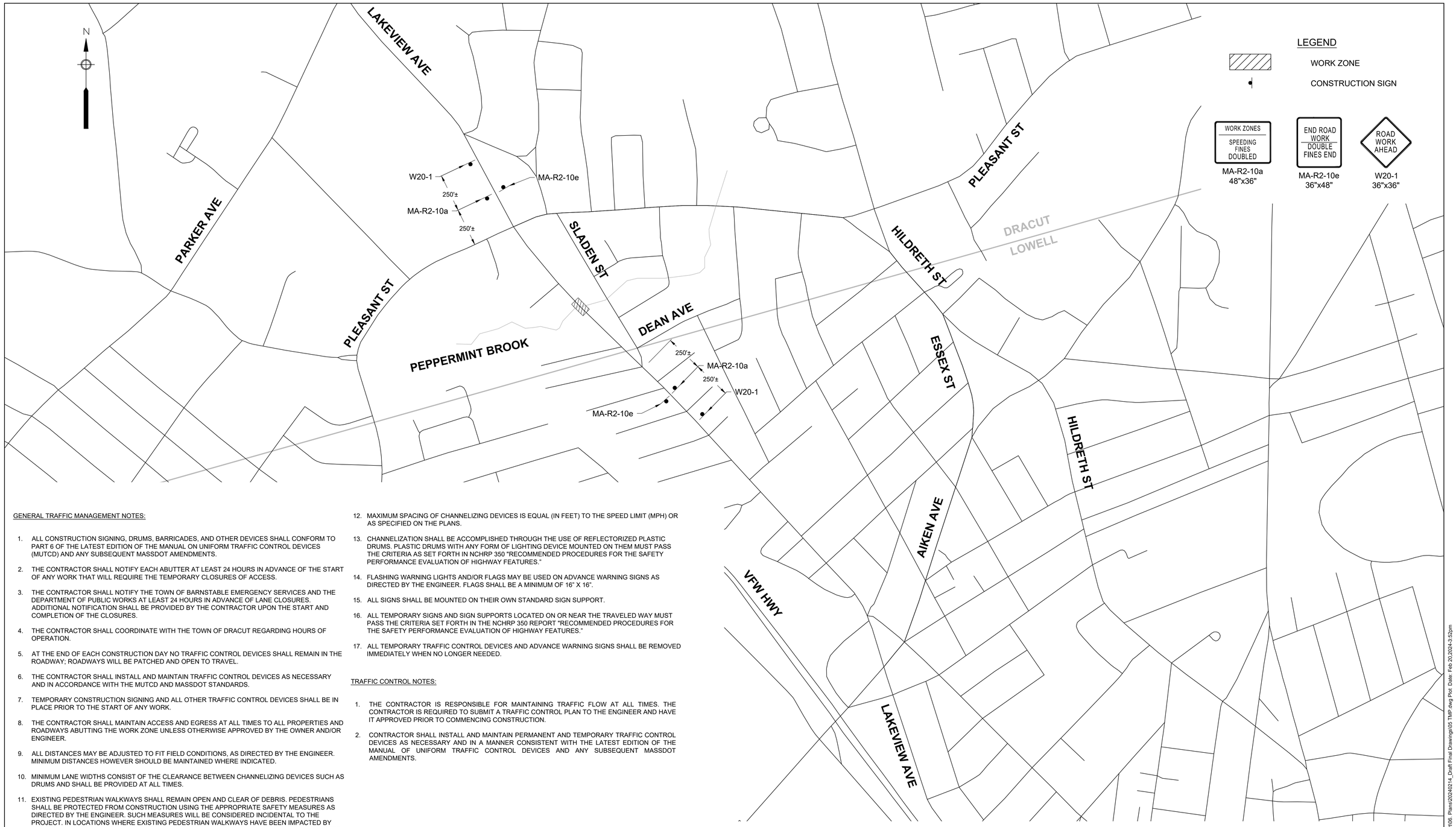
LAKEVIEW AVENUE CULVERT REPLACEMENT
TOWN OF DRACUT, MA

CIVIL DETAILS V

FOR BID

Sheet No.

CD-6



GENERAL TRAFFIC MANAGEMENT NOTES:

1. ALL CONSTRUCTION SIGNING, DRUMS, BARRICADES, AND OTHER DEVICES SHALL CONFORM TO PART 6 OF THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND ANY SUBSEQUENT MASSDOT AMENDMENTS.
2. THE CONTRACTOR SHALL NOTIFY EACH ABUTTER AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURES OF ACCESS.
3. THE CONTRACTOR SHALL NOTIFY THE TOWN OF BARNSTABLE EMERGENCY SERVICES AND THE DEPARTMENT OF PUBLIC WORKS AT LEAST 24 HOURS IN ADVANCE OF LANE CLOSURES. ADDITIONAL NOTIFICATION SHALL BE PROVIDED BY THE CONTRACTOR UPON THE START AND COMPLETION OF THE CLOSURES.
4. THE CONTRACTOR SHALL COORDINATE WITH THE TOWN OF DRACUT REGARDING HOURS OF OPERATION.
5. AT THE END OF EACH CONSTRUCTION DAY NO TRAFFIC CONTROL DEVICES SHALL REMAIN IN THE ROADWAY; ROADWAYS WILL BE PATCHED AND OPEN TO TRAVEL.
6. THE CONTRACTOR SHALL INSTALL AND MAINTAIN TRAFFIC CONTROL DEVICES AS NECESSARY AND IN ACCORDANCE WITH THE MUTCD AND MASSDOT STANDARDS.
7. TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF ANY WORK.
8. THE CONTRACTOR SHALL MAINTAIN ACCESS AND EGRESS AT ALL TIMES TO ALL PROPERTIES AND ROADWAYS ABUTTING THE WORK ZONE UNLESS OTHERWISE APPROVED BY THE OWNER AND/OR ENGINEER.
9. ALL DISTANCES MAY BE ADJUSTED TO FIT FIELD CONDITIONS, AS DIRECTED BY THE ENGINEER. MINIMUM DISTANCES HOWEVER SHOULD BE MAINTAINED WHERE INDICATED.
10. MINIMUM LANE WIDTHS CONSIST OF THE CLEARANCE BETWEEN CHANNELIZING DEVICES SUCH AS DRUMS AND SHALL BE PROVIDED AT ALL TIMES.
11. EXISTING PEDESTRIAN WALKWAYS SHALL REMAIN OPEN AND CLEAR OF DEBRIS. PEDESTRIANS SHALL BE PROTECTED FROM CONSTRUCTION USING THE APPROPRIATE SAFETY MEASURES AS DIRECTED BY THE ENGINEER. SUCH MEASURES WILL BE CONSIDERED INCIDENTAL TO THE PROJECT. IN LOCATIONS WHERE EXISTING PEDESTRIAN WALKWAYS HAVE BEEN IMPACTED BY CONSTRUCTION, THE ENTIRE WIDTH OF THE PEDESTRIAN WALKWAY SHALL BE RECONSTRUCTED IN KIND WITH A MINIMUM WIDTH OF 5 FEET EXCLUDING CURBING.
12. MAXIMUM SPACING OF CHANNELIZING DEVICES IS EQUAL (IN FEET) TO THE SPEED LIMIT (MPH) OR AS SPECIFIED ON THE PLANS.
13. CHANNELIZATION SHALL BE ACCOMPLISHED THROUGH THE USE OF REFLECTORIZED PLASTIC DRUMS. PLASTIC DRUMS WITH ANY FORM OF LIGHTING DEVICE MOUNTED ON THEM MUST PASS THE CRITERIA AS SET FORTH IN NCHRP 350 "RECOMMENDED PROCEDURES FOR THE SAFETY PERFORMANCE EVALUATION OF HIGHWAY FEATURES."
14. FLASHING WARNING LIGHTS AND/OR FLAGS MAY BE USED ON ADVANCE WARNING SIGNS AS DIRECTED BY THE ENGINEER. FLAGS SHALL BE A MINIMUM OF 16" X 16".
15. ALL SIGNS SHALL BE MOUNTED ON THEIR OWN STANDARD SIGN SUPPORT.
16. ALL TEMPORARY SIGNS AND SIGN SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY MUST PASS THE CRITERIA SET FORTH IN THE NCHRP 350 REPORT "RECOMMENDED PROCEDURES FOR THE SAFETY PERFORMANCE EVALUATION OF HIGHWAY FEATURES."
17. ALL TEMPORARY TRAFFIC CONTROL DEVICES AND ADVANCE WARNING SIGNS SHALL BE REMOVED IMMEDIATELY WHEN NO LONGER NEEDED.

TRAFFIC CONTROL NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING TRAFFIC FLOW AT ALL TIMES. THE CONTRACTOR IS REQUIRED TO SUBMIT A TRAFFIC CONTROL PLAN TO THE ENGINEER AND HAVE IT APPROVED PRIOR TO COMMENCING CONSTRUCTION.
2. CONTRACTOR SHALL INSTALL AND MAINTAIN PERMANENT AND TEMPORARY TRAFFIC CONTROL DEVICES AS NECESSARY AND IN A MANNER CONSISTENT WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES AND ANY SUBSEQUENT MASSDOT AMENDMENTS.

ADVANCED WARNING PLAN

SCALE: 1" = 300'

TOWN of DRACUT INCORPORATED 1701 MASSACHUSETTS

ENVIRONMENTAL PARTNERS — An Apex Company —

MARK	DATE	DESCRIPTION

Scale	AS NOTED
Date	FEBRUARY 2024
Job No.	22003729
Designed by	SS
Drawn by	SS
Checked by	BLH
Approved by	BLH

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

LAKEVIEW AVENUE CULVERT REPLACEMENT
TOWN OF DRACUT, MA

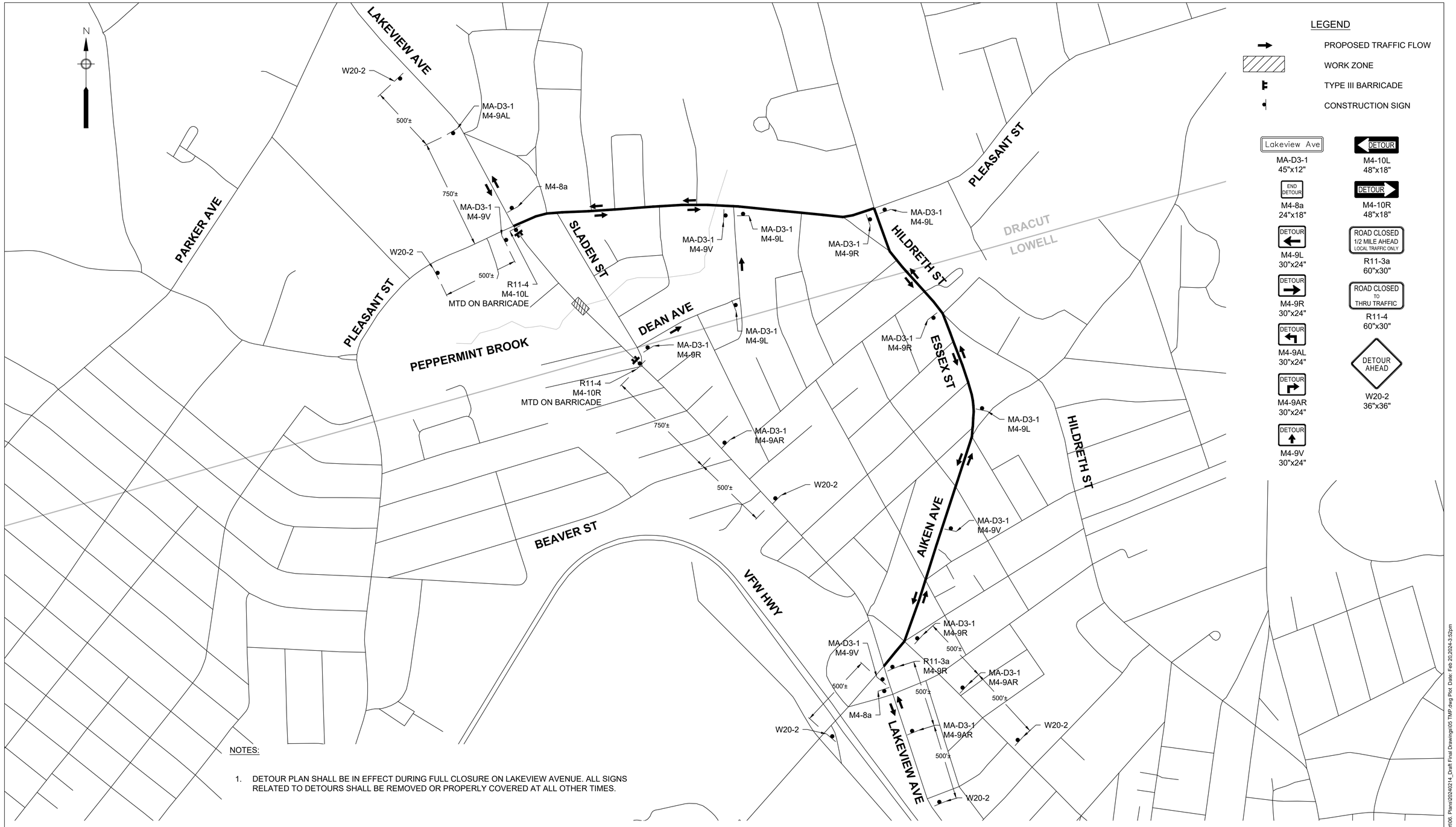
TRAFFIC MANAGEMENT PLAN - 1

FOR BID

Sheet No.

TMP-1

Drawing file: I:\Dracut\22003729 - Lakeview Ave Culvert\06 Plans\20240214_Draft Final Drawings\05 TMP.dwg Plot Date: Feb 20,2024-3:52pm



NOTES:

1. DETOUR PLAN SHALL BE IN EFFECT DURING FULL CLOSURE ON LAKEVIEW AVENUE. ALL SIGNS RELATED TO DETOURS SHALL BE REMOVED OR PROPERLY COVERED AT ALL OTHER TIMES.

DETOUR PLAN

SCALE: 1" = 300'

ENVIRONMENTAL PARTNERS — An Apex Company —

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LAKEVIEW AVENUE CULVERT REPLACEMENT
TOWN OF DRACUT, MA

TRAFFIC MANAGEMENT PLAN - 2

FOR BID

Sheet No.

TMP-2

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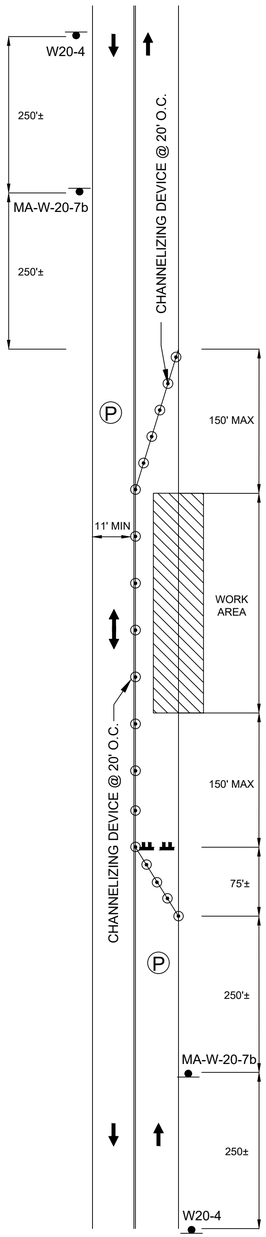
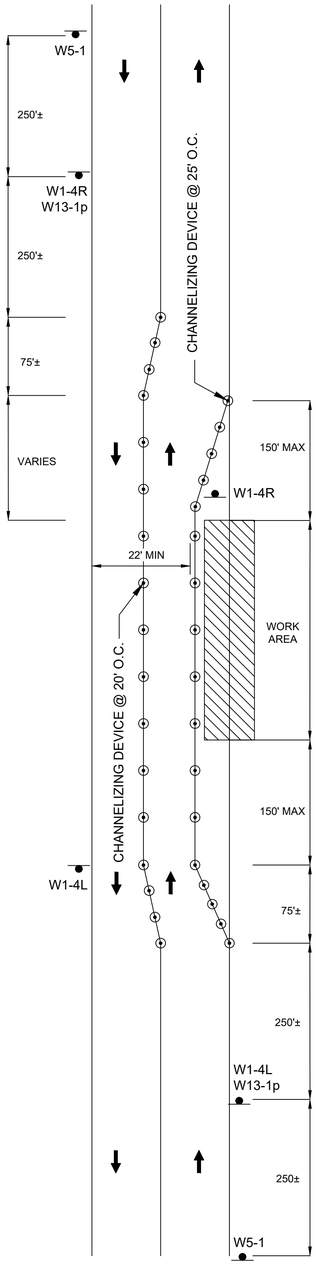
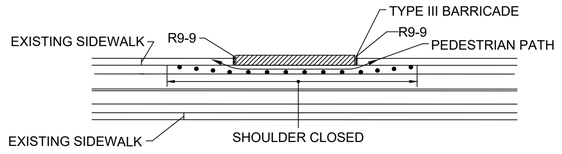


TYPICAL TWO-LANE ROAD
ONE-LANE ALTERNATING TRAFFIC
NOT TO SCALE



TYPICAL TWO-LANE ROAD
TWO-WAY LANE SHIFT
NOT TO SCALE

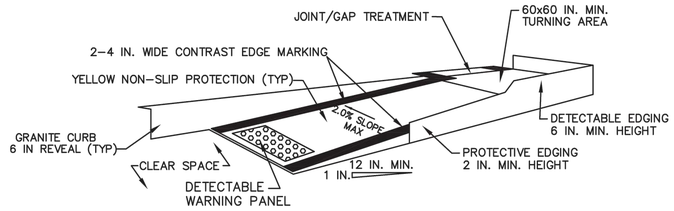


TYPE I

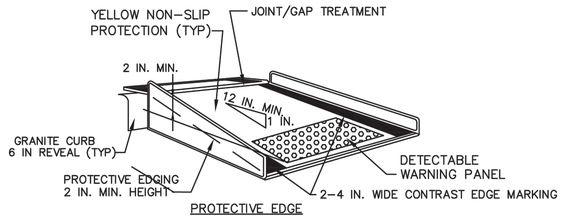
NOTES

1. ADDITIONAL ADVANCE WARNING MAY BE NECESSARY.
2. CONTROLS ONLY FOR PEDESTRIAN TRAFFIC ARE SHOWN. VEHICULAR TRAFFIC SHOULD BE HANDLED AS SHOWN ELSEWHERE.
3. IF THE WORK ZONE DOES NOT PERMIT PEDESTRIANS TO TRAVEL ADJACENT TO IT AS SHOWN, PEDESTRIANS MAY BE REQUIRED TO CROSS TO THE OPPOSITE SIDE OF THE STREET AS DIRECTED BY THE RESIDENT ENGINEER.
4. BYPASS IS TO BE USED IN CONJUNCTION WITH THE PROPOSED LANE CLOSURE DETAILS AND DURING CONSTRUCTION STAGING, AS DIRECTED BY THE RESIDENT ENGINEER.

PEDESTRIAN BYPASS
NOT TO SCALE



TEMPORARY CURB RAMP PARALLEL TO CURB
NOT TO SCALE



PROTECTIVE EDGE

TEMPORARY CURB RAMP PERPENDICULAR TO CURB
NOT TO SCALE

NOTES

1. CURB RAMPS SHALL BE 60 IN. MINIMUM WIDTH WITH A FIRM, STABLE AND NON-SLIP SURFACE.
2. PROTECTIVE EDGING WITH A 2 IN. MINIMUM HEIGHT SHALL BE INSTALLED WHEN THE CURB RAMP OR LANDING PLATFORM HAS A VERTICAL DROP OF 6 IN. OR GREATER OR HAS A SIDE APRON SLOPE STEEPER THAN 1:3 (33%). PROTECTIVE EDGING SHOULD BE CONSIDERED WHEN THE CURB RAMPS OR LANDING PLATFORMS HAVE A VERTICAL DROP OF 3 IN. OR MORE.
3. DETECTABLE EDGE WITH 6 IN. MINIMUM HEIGHT AND CONTRASTING COLOR SHALL BE INSTALLED ON ALL CURB RAMP LANDINGS WHERE THE WALKWAY CHANGES DIRECTION (TURNS).
4. THE CURB RAMP WALKWAY AND LANDING AREA SURFACE SHALL BE OF A SOLID CONTINUOUS CONTRASTING COLOR ABUTTING UP TO THE EXISTING SIDEWALK.
5. CURB RAMPS AND LANDINGS SHOULD HAVE A 1:50 (2%) MAX. CROSS-SLOPE.
6. CLEAR SPACE OF 48X48 IN. MINIMUM SHALL BE PROVIDED ABOVE AND BELOW THE CURB RAMP.
7. WATER FLOW IN THE GUTTER SYSTEM SHALL HAVE MINIMAL RESTRICTION.
8. LATERAL JOINTS OR GAPS BETWEEN SURFACES SHALL BE LESS THAN 0.5 IN. WIDTH.
9. CHANGES BETWEEN SURFACE HEIGHTS SHOULD NOT EXCEED 0.5 IN. LATERAL EDGES SHOULD BE VERTICAL UP TO 0.25 IN. HIGH, AND BEVELED AT 1:2 BETWEEN 0.25 IN. AND 0.5. IN. HEIGHT.
10. IF A TEMPORARY PEDESTRIAN RAMP LEADS TO A CROSSWALK, THEN A DETECTABLE WARNING PAD MUST BE ADHERED TO THE BASE OF THE RAMP. IF IT LEADS TO A PROTECTED PEDESTRIAN BYPASS THAT DOES NOT CONFLICT WITH VEHICULAR TRAFFIC, THEN A PAD SHALL NOT BE INSTALLED ON THE RAMP.

LEGEND

- REFLECTORIZED DRUM
- PROPOSED TRAFFIC FLOW
- WORK ZONE
- TYPE III BARRICADE
- CONSTRUCTION SIGN
- POLICE DETAIL

MA-W20-7b
36"x36"

R9-9
30"x18"

W1-4L
36"x36"

W1-4R
36"x36"

W5-1
36"x36"

W20-4
36"x36"

ENVIRONMENTAL PARTNERS
— An Apex Company —

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LAKEVIEW AVENUE CULVERT REPLACEMENT
TOWN OF DRACUT, MA

TRAFFIC MANAGEMENT PLAN - 3

FOR BID

Sheet No.

TMP-3

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