

TOWN OF BEDFORD

BEDFORD, MASSACHUSETTS

RICHARD ROAD CULVERT REPLACEMENT

ISSUED FOR BID

JUNE 2024



Woodard & Curran

40 Shattuck Road, Suite 110
Andover, Massachusetts 01810
866.702.6371 | www.woodardcurran.com

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Scott Salucci

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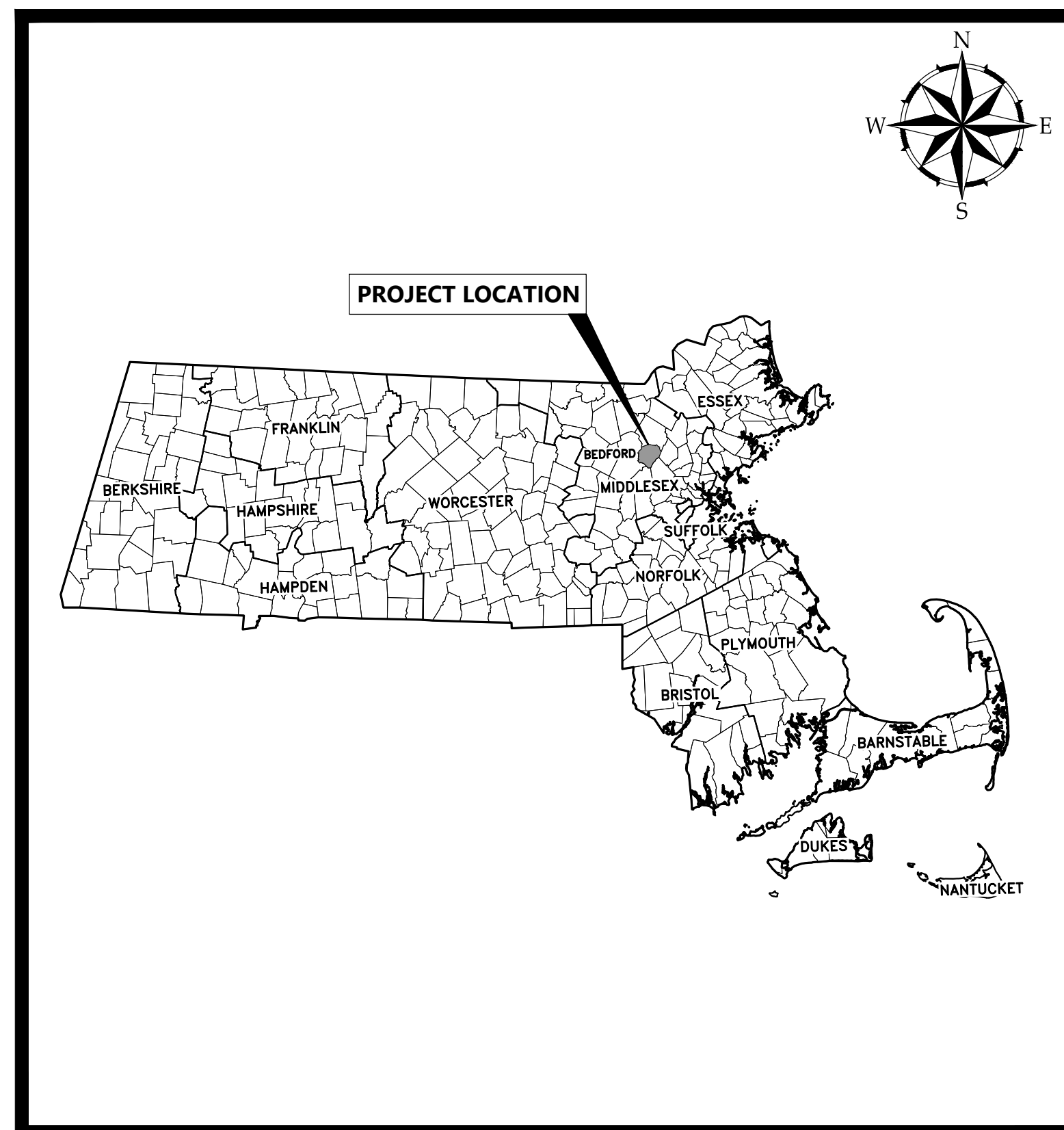
**TOWN OF BEDFORD
BEDFORD, MASSACHUSETTS**
**RICHARD ROAD
CULVERT REPLACEMENT**

REV MM/DD/YY DESCRIPTION

JOB NO: 0235172.01
DATE: JUNE 2024
SCALE: NONE
DESIGNED BY: KLR
DRAWN BY: JBC
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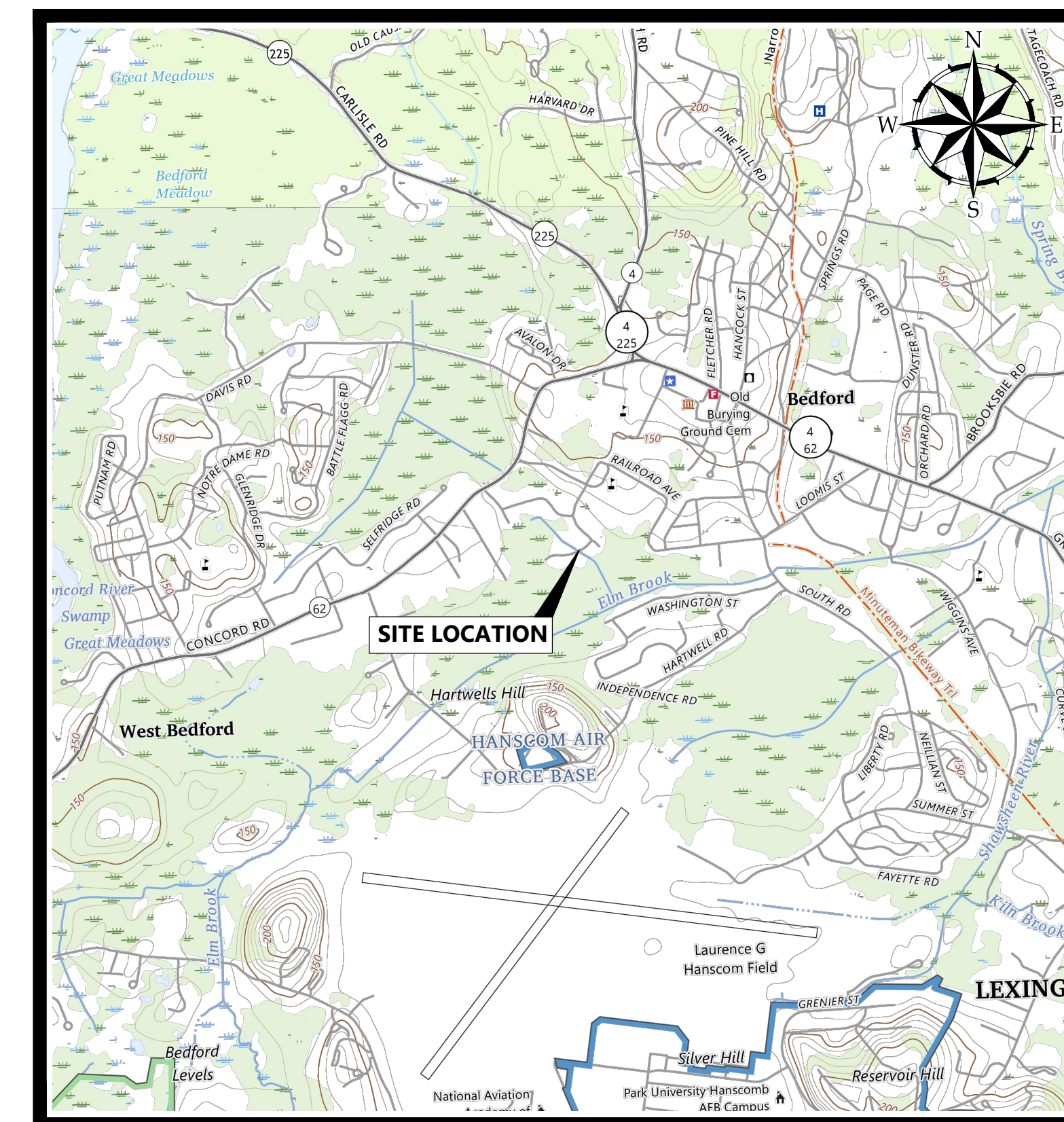
DRAWING TITLE:
**GENERAL
COVER SHEET**

DRAWING NO:
G-000



PROJECT LOCATION MAP

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SITE LOCATION MAP

SOURCE: USGS TOPO QUADRANGLE

\\woodardcurran.net\shared\Projects\0235172.01 Bedford, MA Richard Road Culvert Replacement\Drawings\General\0235172.01 G000.dwg, Jun 18, 2024 - 9:44am KCULLOMRE

GENERAL NOTES

- 1. EXISTING CONDITIONS ARE BASED ON A SURVEY PERFORMED BY CHAPPEL ENGINEERING ASSOCIATES. TOPOGRAPHIC DRAWING FILES DATED DECEMBER 2023.
2. WETLAND DELINEATION WAS PREPARED BY ECOTEC, INC. THE WETLAND RESOURCE EVALUATION REPORTS ARE DATED NOVEMBER 1, 2023 AND WETLAND FIELD INSPECTION WAS CONDUCTED ON OCTOBER 24, 2023.
3. THE HORIZONTAL AND VERTICAL DATUM DEPICTED ON THE MAPS HEREON IS BASED ON THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, MAINLAND ZONE, REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD 83).
4. ANY PROPERTY AND RIGHT OF WAY LOCATIONS THAT MAY BE SHOWN HEREON ARE APPROXIMATE AND DO NOT REPRESENT A PROPERTY BOUNDARY SURVEY.
5. WOODARD & CURRAN ASSUMES NO RESPONSIBILITY FOR DAMAGES INCURRED AS A RESULT OF UTILITIES OMITTED OR INACCURATELY SHOWN.
6. COORDINATE CONSTRUCTION ACTIVITY WITH UTILITY COMPANIES, EMERGENCY SERVICES AND TOWN. CONTRACTOR SHALL NOTIFY ALL UTILITIES PRIOR TO COMMENCING WORK, ALLOWING SUFFICIENT TIME TO LOCATE AND MARK THE LOCATION OF BURIED UTILITIES. CONTRACTOR SHALL CONTACT "DIG SAFE", TELEPHONE 811, PRIOR TO EXCAVATION.
7. RESTORE ALL AREAS DISTURBED BY CONTRACTOR'S OPERATIONS TO ORIGINAL FINISH (GRAVEL, PAVEMENT, GRASS, ETC.) UNLESS NOTED OTHERWISE ON THE PLANS. RESTORATION OF PAVED SURFACES, GRAVEL SURFACES, DRIVEWAYS, AND LAWNS DAMAGED BY CONSTRUCTION ACTIVITIES SHALL BE PERFORMED AT NO ADDITIONAL COST TO OWNER. ANY CURB DAMAGED BY CONSTRUCTION ACTIVITIES SHALL BE REPLACED IN KIND AND SHALL CONFORM TO TOWN OF BEDFORD AND MASSACHUSETTS DOT SPECIFICATIONS AT NO ADDITIONAL COST TO OWNER.
8. PROPERLY PROTECT AND DO NOT DISTURB PROPERTY IRONS AND MONUMENTS. IF DISTURBED, THE PROPERTY MONUMENT SHALL BE RESET AT THE CONTRACTOR'S EXPENSE BY A LICENSED LAND SURVEYOR ACCEPTABLE TO THE TOWN.
9. EXISTING FACILITIES (I.E. TREES, POLES, LIGHT POSTS, CATCH BASINS, STONE FROM CULVERT, ETC.) SHALL BE REMOVED AND PROTECTED DURING CONSTRUCTION. THE TOWN RETAINS RIGHT TO KEEP ANY AND ALL REMOVED FACILITIES. CONTRACTOR SHALL DISPOSE OF ANY REMOVED FACILITY AT THE REQUEST OF THE TOWN AT NO ADDITIONAL COST TO OWNER.
10. ALL TREES NOT NOTED TO BE REMOVED OR RELOCATED SHALL BE PROTECTED BY CONTRACTOR DURING CONSTRUCTION.
11. DO NOT PARK, IMPEDE ACCESS TO, OR STORE EQUIPMENT BEYOND LIMIT OF WORK, UNLESS PERMISSION HAS BEEN GRANTED IN WRITING BY TOWN AND/OR LAND OWNER.
12. RESTRICT ACCESS TO SITE THROUGH THE USE OF APPROPRIATE SIGNAGE, BARRIERS, FENCES, ETC. SITE SHALL BE LEFT WITH APPROPRIATE SAFETY MEASURES IN PLACE DURING NON-WORKING HOURS. SITE SAFETY IS THE RESPONSIBILITY OF CONTRACTOR, DURING BOTH WORKING AND NON-WORKING HOURS.
13. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY CONSTRUCTION PERMITS INCLUDING "PERMIT TO OPEN OR OCCUPY STREET/SIDEWALK" FROM THE TOWN. PERMIT APPLICATIONS SHALL BE SUBMITTED WITH ADEQUATE TIME SO AS NOT TO DELAY CONSTRUCTION.
14. ALL WORK ASSOCIATED WITH THE PROJECT SHALL BE COMPLETED IN ACCORDANCE WITH THE TOWN OF BEDFORD BYLAW AND LOCAL REGULATIONS AND MASSACHUSETTS DOT STANDARD SPECIFICATIONS.
15. UPON COMPLETION OF CONSTRUCTION, A COMPLETE SET OF "RECORD" DRAWINGS SHALL BE SUBMITTED TO THE TOWN ENGINEER. THESE DRAWINGS SHALL BE SUBMITTED IN BOTH DIGITAL AND HARD COPY FORMAT AS DEFINED IN THE SPECIFICATIONS PRIOR TO PAYMENT OF FINAL RETAINAGE.
16. PROTECTION OF EXISTING UTILITIES DURING CONSTRUCTION SHALL BE PROVIDED AT NO ADDITIONAL COST.
17. CONTRACTOR SHALL BE RESPONSIBLE FOR SWEEPING RICHARD ROAD EVERY FRIDAY AND AS NECESSARY DURING THE DURATION OF THE WORK.
18. AT LEAST 24 HOURS PRIOR TO THE START OF CONSTRUCTION, CONTRACTOR SHALL ATTEND A PRE-CONSTRUCTION MEETING HELD AT THE PROJECT SITE WITH THE CONTRACTOR, ENGINEER, OWNER, AND CONSERVATION OFFICE TO REVIEW THE CONSTRUCTION SCHEDULE AND SEQUENCING, ORDER OF CONDITIONS, STOCKPILE LOCATIONS AND CRITICAL ASPECTS OF THE PROJECT.
19. PRIOR TO THE START OF WORK, CONTRACTOR SHALL CONFIRM EXISTING WETLAND FLAGS ARE IN PLACE AND SHALL BE MAINTAINED DURING CONSTRUCTION. MISSING FLAGS SHALL BE RESET PRIOR TO CONSTRUCTION. AN AUTOCAD FILE OF THE WETLAND FLAG LOCATIONS SHALL BE PROVIDED FOR CONTRACTOR'S USE IN RESETTING WETLAND FLAGS.
20. NO EQUIPMENT IS TO CROSS OR ENTER WETLAND RESOURCE AREAS AT ANY TIME UNLESS THE LOCATION OF DISTURBANCE IS MARKED ON THE PLANS REFERENCE IN THE ORDER OF CONDITIONS AND FLAGGED IN THE FIELD.
21. ALL DISTURBED UPLAND AREAS SHALL BE BROUGHT TO FINAL GRADE AND SHALL BE PERMANENTLY STABILIZED WITHIN 30 DAYS AFTER DISTURBANCE. BARE GROUND AND DISTURBED AREAS THAT CANNOT BE PERMANENTLY VEGETATED WITHIN 30 DAYS SHALL BE TEMPORARILY STABILIZED BY AN APPROVED METHOD.
22. PRIOR TO PLANTING OR SEEDING RESTORATION AREA, A LICENSED SURVEYOR SHALL SURVEY FINAL GRADES TO ENSURE GRADES HAVE BEEN ACHIEVED AS SHOWN ON PLANS.
23. CONTRACTOR SHALL DEMARCAT CONSTRUCTION EQUIPMENT AND MATERIAL STORAGE AREAS PRIOR TO CONSTRUCTION.
24. THE CONSTRUCTION SITE SHALL BE MAINTAINED IN CLEAN CONDITIONS AT ALL TIMES AND CONSTRUCTION REFUSE AND DEBRIS SHALL BE DISPOSED OF PROMPTLY AND IN A LEGAL MANNER.
25. STORING, SERVICING, OR CLEANING OF TRUCKS OR EQUIPMENT SHALL BE PERFORMED IN AN UPLAND AREA AT A HORIZONTAL DISTANCE GREATER THAN 100 FEET FROM THE WETLAND RESOURCE AREAS. ALL FUELING SHALL TAKE PLACE ON HARD/PAVED SURFACES AND OUTSIDE THE 100-FOOT BORDERING VEGETATED WETLAND BUFFER. THE CONTRACTOR SHALL MAINTAIN A MINIMUM OF 2 SPILL KITS ON SITE AND HAVE A SPILL KIT WITHIN REACH DURING REFUELING OPERATIONS.
26. THE CONTRACTOR, SITE ENGINEER, OR OTHER INDIVIDUAL IN CHARGE OF WORK ON THE SITE SHALL HAVE A COPY OF THE ORDER OF CONDITIONS AT ALL TIMES.
27. CLEANING OF TREES 3" OR GREATER IS PROHIBITED FROM JUNE 1 THROUGH JULY 31.
28. THE CONTRACTOR, SITE ENGINEER, OR OTHER INDIVIDUAL IN CHARGE OF WORK ON THE SITE SHALL HAVE A COPY OF THE ORDER CONDITIONS AT ALL TIME. DEP FILE #103-0925
29. CONTRACTOR SHALL PROVIDE A SIGN TO BE DISPLAYED AT THE SITE THAT BEARS THE FOLLOWING: "MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION FILE NUMBER: 103-0925". CONTRACTOR SHALL POST A COPY OF THE PLANS AND SPECIFICATIONS WITHIN A WEATHER TIGHT STORAGE DEVISE TO THE SIGN. DO NOT AFFIX SIGN TO A LIVING TREE. THE SIGN SHALL REMAIN VISIBLE UNTIL THE CONSERVATION COMMISSION ISSUES A CERTIFICATE OF COMPLIANCE.

EROSION CONTROL NOTES

- 1. EROSION CONTROL DEVICES SHALL REMAIN IN PLACE, UNTIL ALL DISTURBED SURFACES HAVE BEEN STABILIZED WITH FINAL VEGETATION COVER OR THE COMMISSION HAS AUTHORIZED THEIR REMOVAL.
2. EROSION CONTROL MEASURES AND BARRIERS SHALL BE MONITORED DAILY AND MAINTAINED, OR REINFORCED AS NECESSARY TO ENSURE AND PREVENT EROSION AND SILTATION OF SOILS TO WETLAND RESOURCE AREAS. ADDITIONAL FILTER FABRIC AND STRAW WATTLES SHALL BE STORED ON SITE FOR EMERGENCY USE.
3. DURING ALL PHASES OF CONSTRUCTION, ALL DISTURBED OR EXPOSED AREAS OUTSIDE THE ROADWAY SHALL BE BROUGHT TO FINISHED GRADE AND EITHER A) LOAMED AND SEEDED FOR PERMANENT STABILIZATION, IN ACCORDANCE WITH U.S. SOIL CONSERVATION SERVICE PROCEDURES, OR B) STABILIZED IN ANOTHER WAY APPROVED BY THE COMMISSION. AREAS THAT CANNOT BE PERMANENTLY STABILIZED WITHIN 30 DAYS OF DISTURBANCE SHALL BE STABILIZED WITH HAY, STRAW, MULCH OR ANY OTHER PROTECTIVE COVERING AND/OR METHOD APPROVED BY THE U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE OR BY OTHER TEMPORARY MEASURES ACCEPTABLE TO THE COMMISSION.
4. PROJECT IS SUBJECT TO THE CONDITIONS SET FORTH IN PERMITS ISSUED BY THE US ARMY CORPS OF ENGINEERS, BEDFORD CONSERVATION COMMISSION, AND MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION, SPECIFICALLY RELATED TO LIMITS OF IMPACT, EROSION CONTROL MEASURES, RESTORATION ACTIVITIES, AND TIMEFRAME RESTRICTIONS. CONTRACTOR SHALL READ PERMIT DOCUMENTS FULLY AND CARRY OUT WORK IN ACCORDANCE WITH PERMIT DOCUMENTS. COPIES OF PERMIT DOCUMENTS ARE APPENDED TO THE PROJECT SPECIFICATIONS.
5. AN ADEQUATE STOCKPILE OF EROSION AND SEDIMENTATION CONTROL MATERIALS SHALL BE ON SITE AT ALL TIMES FOR EMERGENCY OR ROUTINE REPLACEMENT.
6. ANY DAMAGE CAUSED AS A DIRECT RESULT OF CONSTRUCTION TO THE WETLAND RESOURCE AREAS SHALL BE REPAIRED, RESTORED AND/OR REPLACED. SEDIMENTATION OR EROSION SHALL BE CONSIDERED DAMAGE TO THE WETLAND RESOURCE AREAS. IF SEDIMENTATION REACHES THESE AREAS, THE CONSERVATION COMMISSION SHALL BE CONTACTED AND A PLAN FOR THE PROPOSED RESTORATION SHALL BE SUBMITTED FOR APPROVAL.
7. THE SILT FENCE AND STRAW BALES MUST BE INSPECTED PRIOR TO THE START OF ANY WORK DAY OR A \$100 PER DAY FINE WILL BE LEVIED ON THE CONTRACTOR.

DEWATERING NOTES

- 1. AT LEAST 1 WEEK PRIOR TO THE PRECONSTRUCTION CONFERENCE THE CONTRACTOR SHALL PROVIDE THE CONSERVATION OFFICE WITH A DEWATERING & BYPASS PLAN SPECIFIC TO EACH SITE. EACH DEWATERING PLAN MUST INCLUDE DETAILS AND SPECIFICATION ON THE PROPOSED COFFER DAM TO BE EMPLOYED. THE PLAN SHALL BE APPROVED BY THE OWNER AND ENGINEER PRIOR TO IMPLEMENTATION.
2. ALL DEWATERING ACTIVITIES SHALL MEET LOCAL, STATE, AND FEDERAL REGULATIONS.
3. THE CONTRACTOR IS RESPONSIBLE FOR ALL LABOR AND EQUIPMENT REQUIRED TO PERFORM THE WORK INCLUDING BUT NOT LIMITED TO PROPER SHORING, DEWATERING EQUIPMENT, AND WATER TREATMENT EQUIPMENT IN ACCORDANCE WITH THE SPECIFICATIONS AND ALL LOCAL, STATE, AND FEDERAL REGULATIONS.
4. ALL DREDGING OPERATIONS SHALL BE CONDUCTED FROM UPLAND AREAS.
5. ALL DREDGE SPOILS SHALL BE DEWATERED AND DISPOSED OF AT AN UPLAND LOCATION (OR OTHER APPROVED LOCATION).
6. THE REMOVAL OF MATERIAL FROM THE STREAM BOTTOM SHALL BE DONE IN SUCH A MANNER AS TO ENSURE THAT THE RECONFIGURED BOTTOM AREA WILL NOT IMPEDE OR OBSTRUCT FISH MIGRATION, OR INTERFERE WITH THE NATURAL FLOW OF THE BROOK.
7. DEWATERING ACTIVITIES SHALL BE CONDUCTED AS SHOWN ON THE APPROVED PLANS AND SHALL BE MONITORED DAILY TO ENSURE THAT SEDIMENT LADEN WATER IS APPROPRIATELY SETTLED PRIOR TO DISCHARGE TOWARD THE RESOURCE AREAS. NO DISCHARGE OF WATER IS ALLOWED DIRECTLY INTO AN AREA SUBJECT TO JURISDICTION OF THE WETLANDS PROTECTION ACT. IF EMERGENCY DEWATERING REQUIREMENTS ARISE, THE APPLICANT SHALL SUBMIT A CONTINGENCY PLAN TO THE COMMISSION FOR APPROVAL WHICH PROVIDES FOR THE PUMPED WATER TO BE CONTAINED IN A SETTLING BASIN, TO REDUCE TURBIDITY TO DISCHARGE INTO A RESOURCE AREA.

TEMPORARY DETOUR NOTES

- 1. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND MAINTAINING DETOUR SIGNAGE THROUGHOUT THE DURATION OF CONSTRUCTION.
2. ALL CONSTRUCTION SIGNAGE SHALL BE IN ACCORDANCE WITH MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS.

LINE TYPES LEGEND

Table with 3 columns: DESCRIPTION, EXISTING, PROPOSED. Includes entries for CONTOUR (1' INTERVAL), CONTOUR (INDEX), STORM DRAIN, EDGE OF PAVEMENT, GAS LINE, SEWER MAIN, WATER LINE, OVERHEAD ELECTRIC, RIGHT OF WAY/ PROPERTY LINE, LIMIT OF WORK, COFFERDAM, SEDIMENT BARRIER/SILTSOXX/ SILT FENCE, TURBIDITY CURTAIN, SAWCUT, TREE LINE, BITUMINOUS PAVEMENT, TEMPORARY GRADING EASEMENT, RIPRAP SLOPE STABILIZATION, DEMOLISH BIT. PAVEMENT, CLEAR AND GRUB.

RESOURCE AREA LEGEND

Table with 2 columns: DESCRIPTION, LEGEND. Includes entries for BORDERING LAND SUBJECT TO FLOODING (100-YEAR FLOOD ZONE, NO BASE FLOOD ELEVATION, DEFINED BY FEMA), BORDERING VEGETATED WETLAND, ORDINARY HIGH WATER MARK (OHWM) / BANK/ MEAN ANNUAL HIGH WATER (MAHW).

SYMBOLS LEGEND

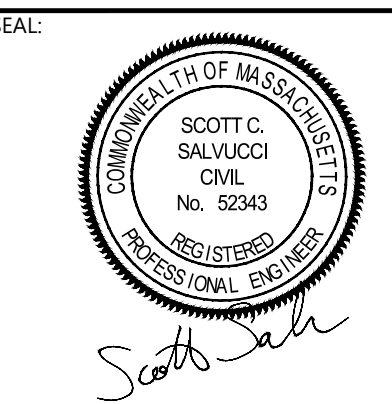
Table with 3 columns: DESCRIPTION, EXISTING, PROPOSED. Includes entries for DRAIN MANHOLE, SEWER MANHOLE, CLEANOUT, PIPE CAP, HYDRANT, CATCH BASIN, WETLAND FLAG LOCATION, DRAIN MANHOLE, SEWER MANHOLE, WATER GATE, GAS GATE, UTILITY POLE, LIGHT POLE, BENCHMARK, TREE, CB INLET PROTECTION, MAIL BOX, TEST PIT.

ABBREVIATIONS

Table with 2 columns: A.G., AND ABOVE GROUND. Includes entries for BIT, B/W, BWV, CB, CI, CMP, CONC, D, DI, DIA, DMH, DOT, DTL, E, EL, E.O.P., EXIST., FF, FT, G, GS, GALV., GRAN., HDPE, HDPP, HYD, INV., LF, MASSDEP, MADOT, MAX, MB, MIN, MON, N.I.C., NO., NR, N.T.S., OE, OH, ±, LLS, PROP., PT, PVC, R.O.W., RCP, REINF., REQ'D, RPP, S, S, SMH, SCH, STA, TYP., UNO, UP, VC, VIT., W, WATER, W/W, W, WATERMAIN, WS, WATER SERVICE, WW, WATER VALVE.



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CLIENT INFO: TOWN OF BEDFORD BEDFORD, MASSACHUSETTS RICHARD ROAD CULVERT REPLACEMENT

Table with 2 columns: REV, MM/DD/YY, DESCRIPTION. Includes entries for JOB NO: 0235172.01, DATE: JUNE 2024, SCALE: AS NOTED, DESIGNED BY: KLR, DRAWN BY: JBC, CHECKED BY: GB, FILENAME: 0235172.01 G001.dwg.

DRAWING TITLE: GENERAL GENERAL NOTES, LEGEND, AND ABBREVIATIONS

DRAWING NO: G-001



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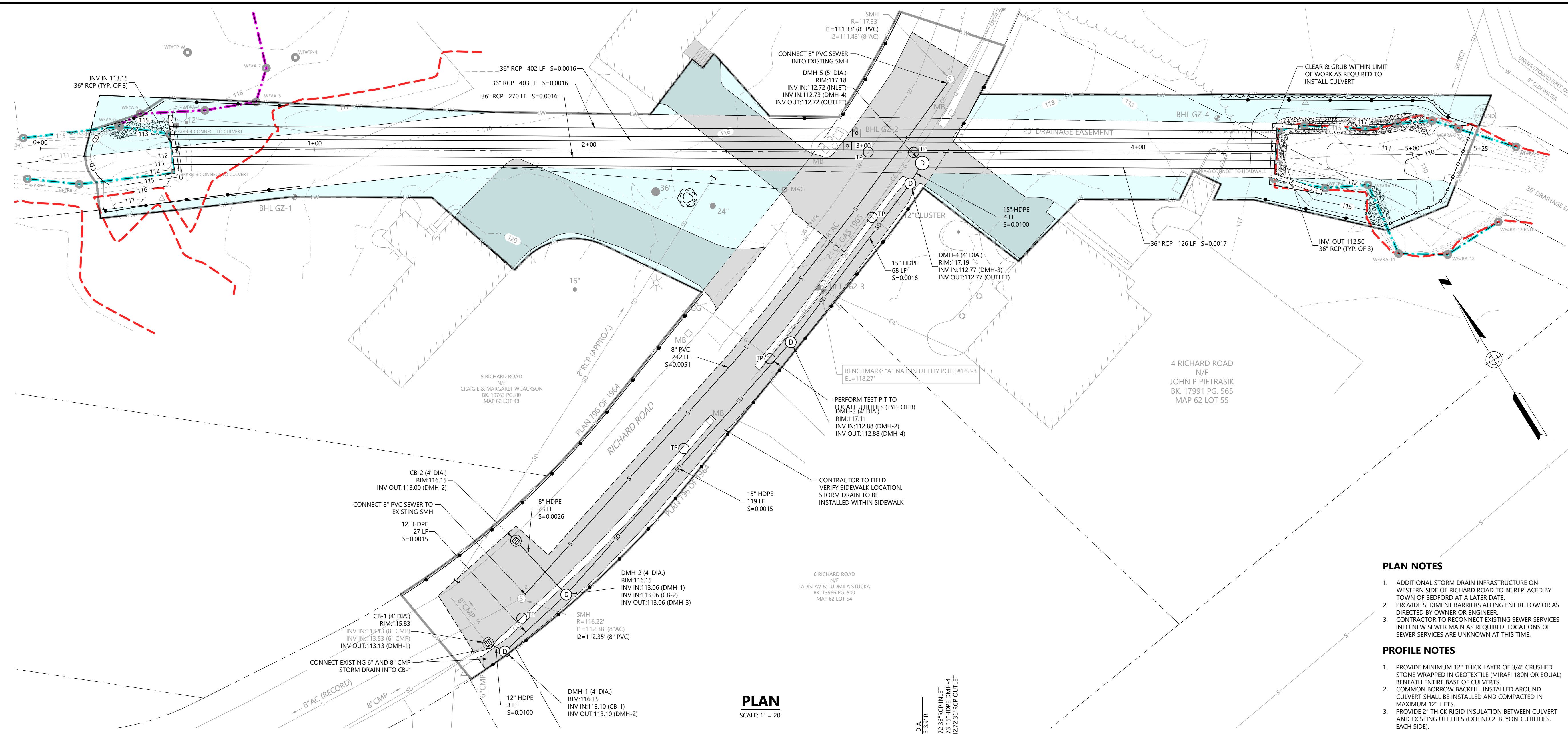
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DRAWING TITLE:
**CIVIL
CULVERT PLAN & PROFILE**

DRAWING NO:

C-200



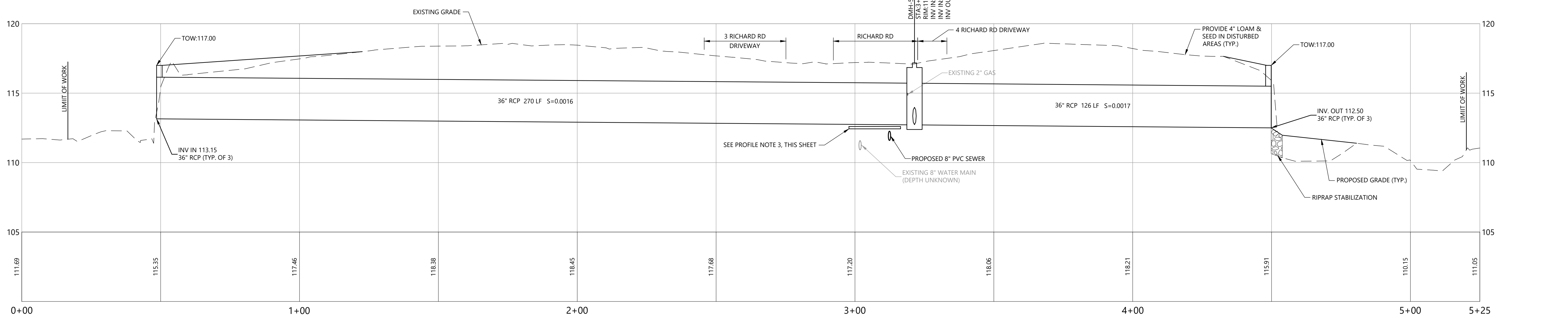
PLAN
SCALE: 1" = 20'

PLAN NOTES

- ADDITIONAL STORM DRAIN INFRASTRUCTURE ON WESTERN SIDE OF RICHARD ROAD TO BE REPLACED BY TOWN OF BEDFORD AT A LATER DATE.
- PROVIDE SEDIMENT BARRIERS ALONG ENTIRE LOW OR AS DIRECTED BY OWNER OR ENGINEER.
- CONTRACTOR TO RECONNECT EXISTING SEWER SERVICES INTO NEW SEWER MAIN AS REQUIRED. LOCATIONS OF SEWER SERVICES ARE UNKNOWN AT THIS TIME.

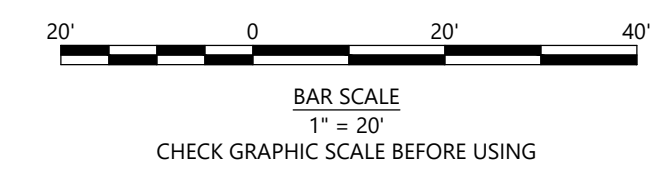
PROFILE NOTES

- PROVIDE MINIMUM 12" THICK LAYER OF 3/4" CRUSHED STONE WRAPPED IN GEOTEXTILE (MIRAFI 180N OR EQUAL) BENEATH ENTIRE BASE OF CULVERTS.
- COMMON BORROW BACKFILL INSTALLED AROUND CULVERT SHALL BE INSTALLED AND COMPACTED IN MAXIMUM 12" LIFTS.
- PROVIDE 2" THICK RIGID INSULATION BETWEEN CULVERT AND EXISTING UTILITIES (EXTEND 2' BEYOND UTILITIES, EACH SIDE).



PROFILE STA. 0+00 TO STA. 5+25

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 4'



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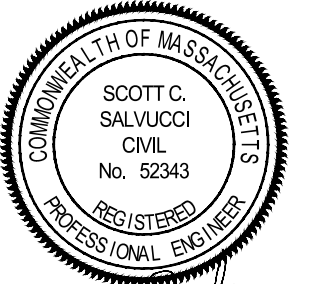


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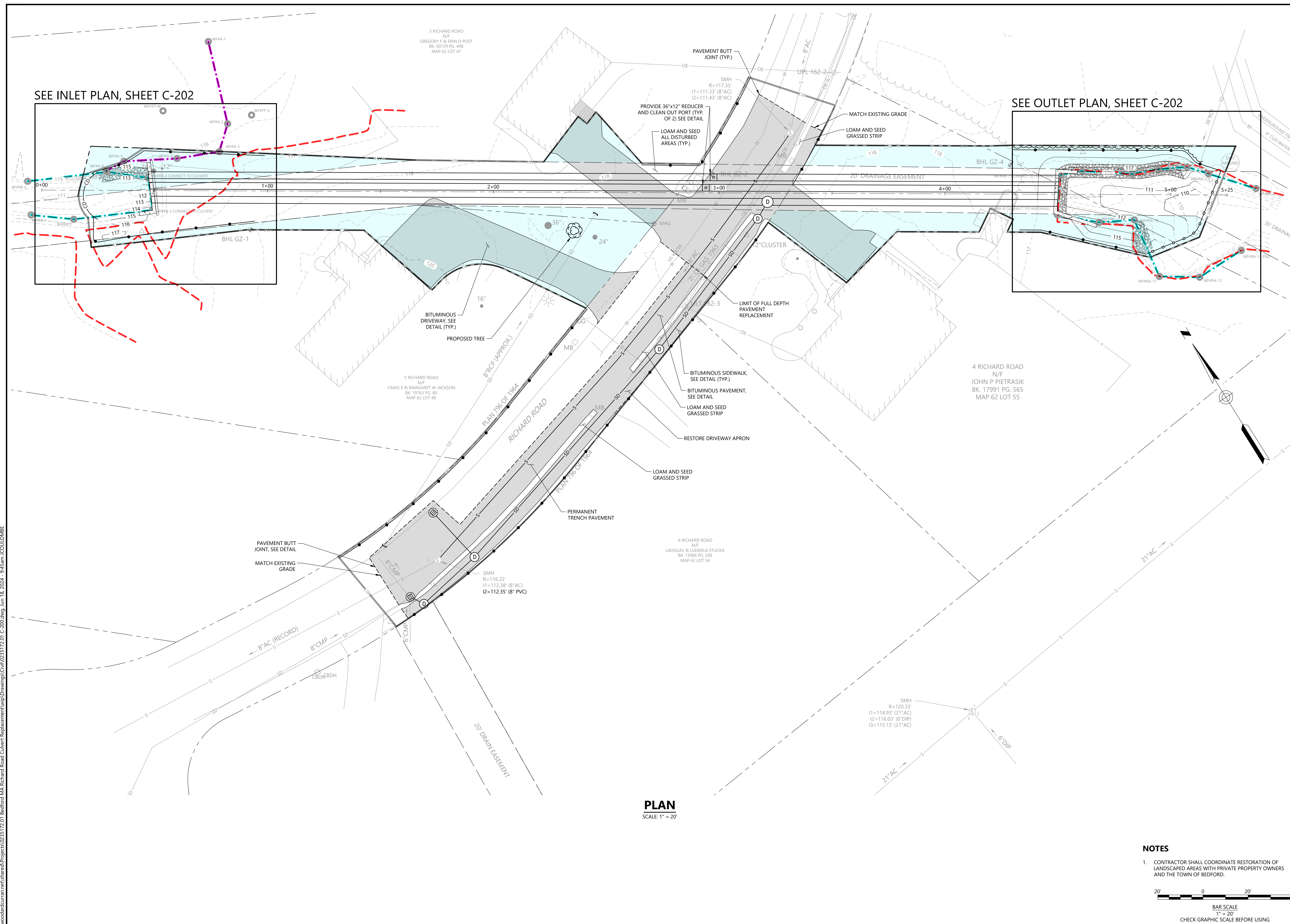
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DRAWING TITLE:
**CIVIL
SITE RESTORATION PLAN**

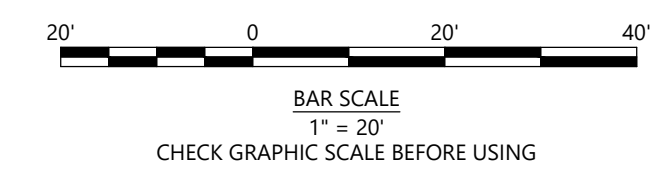
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C-201



NOTES

- CONTRACTOR SHALL COORDINATE RESTORATION OF LANDSCAPED AREAS WITH PRIVATE PROPERTY OWNERS AND THE TOWN OF BEDFORD.



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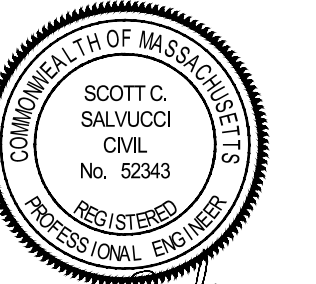


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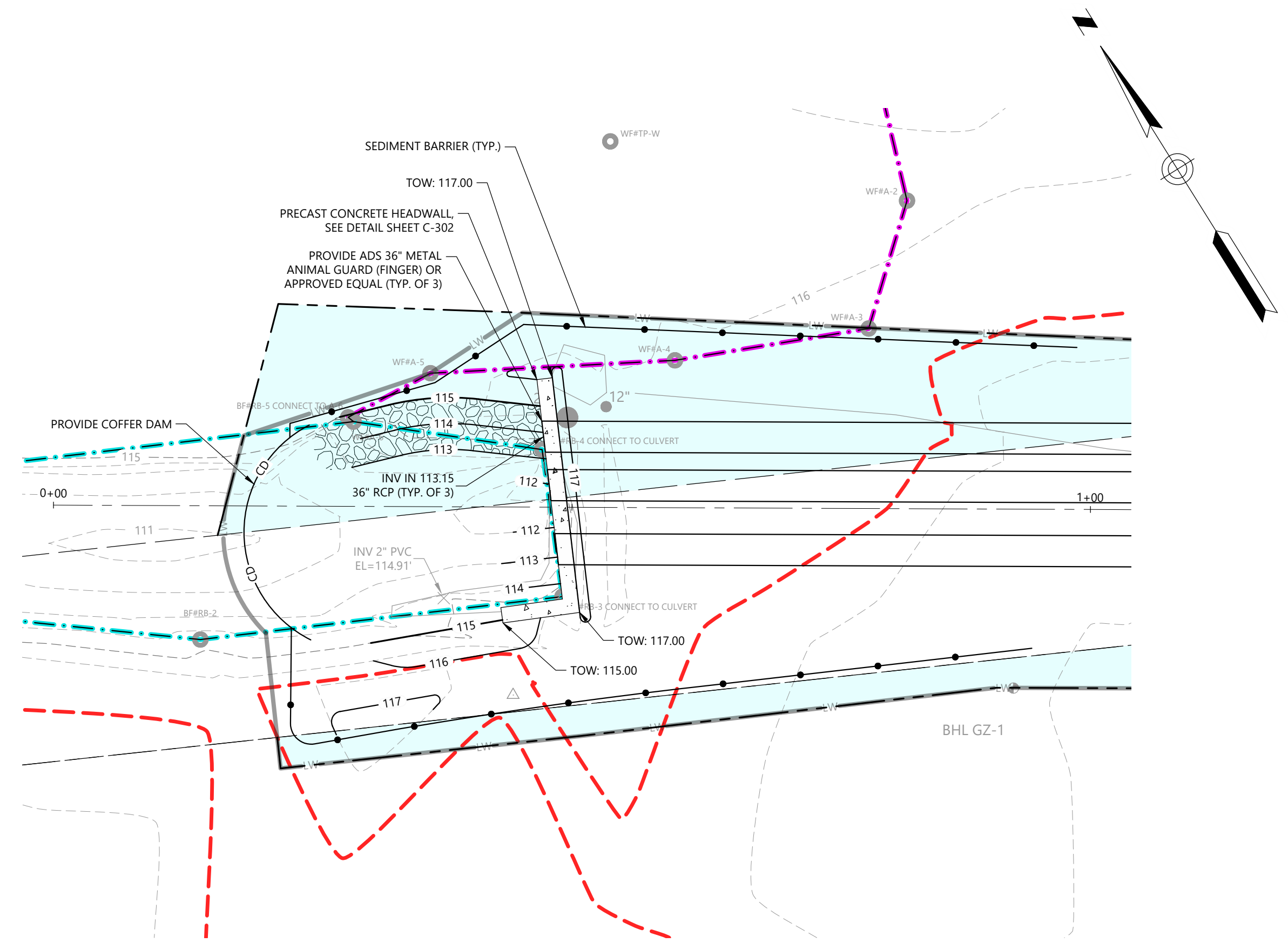
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**CIVIL
CULVERT INLET
AND OUTLET PLANS**

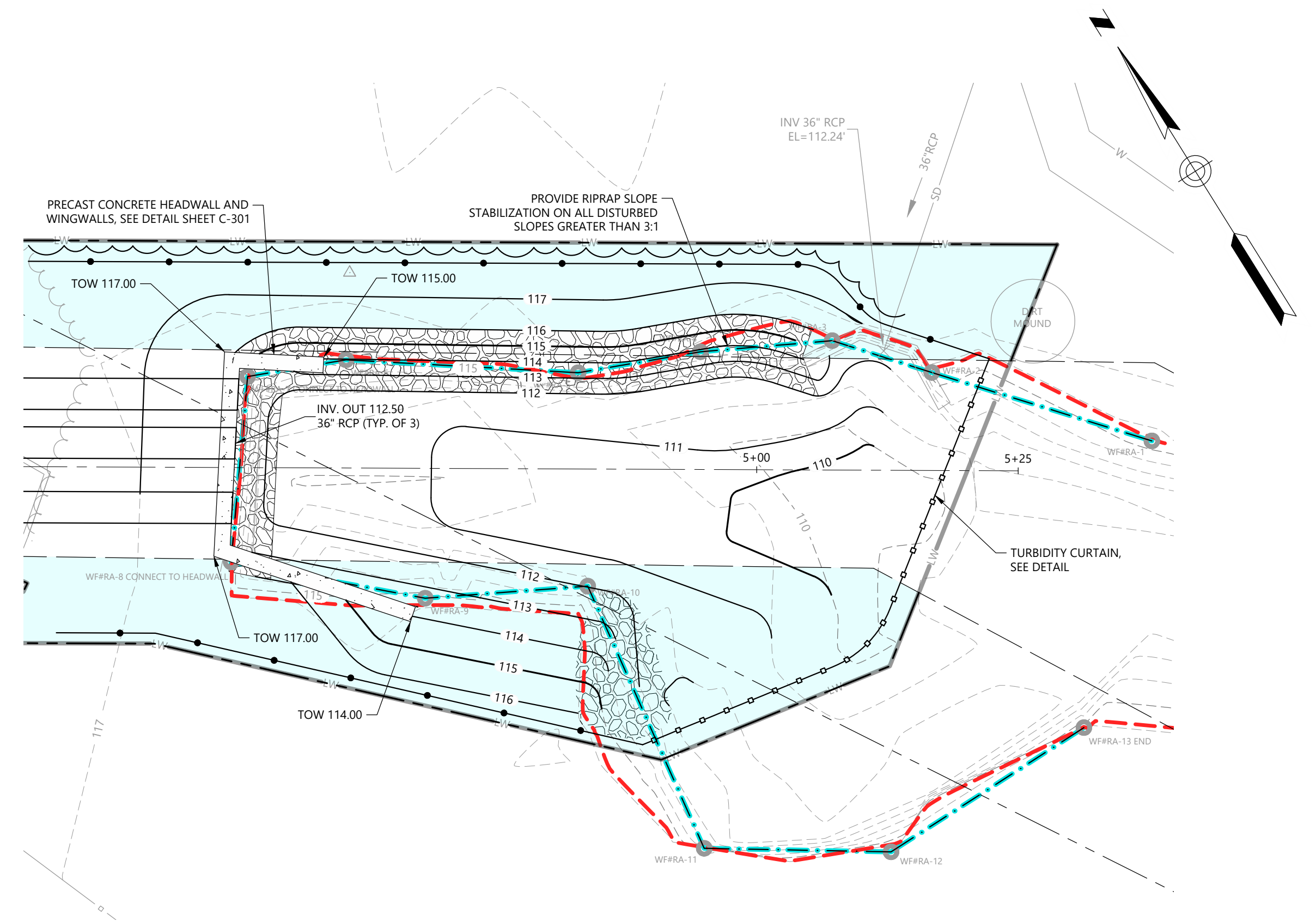
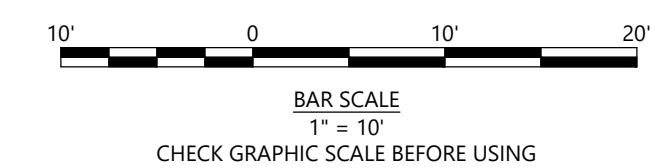
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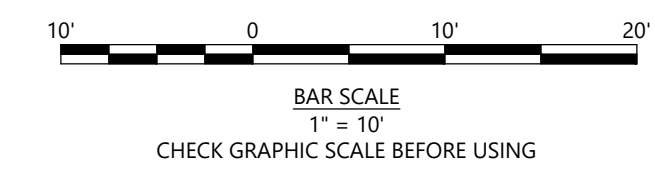
CULVERT INLET PLAN

SCALE: 1" = 10'



CULVERT OUTLET PLAN

SCALE: 1" = 10'



EROSION AND SEDIMENT CONTROL NOTES

Temporary Erosion Control

Measure	Dates For Use	Timing, Activity, and Location
Sedimentation Barrier	ALL	Before soil disturbance, install downhill of areas to be disturbed and around material stockpiles.
Up-slope Diversion	ALL	Before soil disturbance, install uphill of areas to be disturbed and material stockpiles.
Catch Basin Protection	ALL	Before soil or pavement disturbance, install ACF Environmental, Inc. High Flow Siltsock, Silt-saver Inlet Filter, or equal, installed per manufacturer's requirements.
Dust Control	ALL	During dry weather, apply water and calcium chloride to control dust.
Temporary Seeding	April 15 to Oct. 15	Soil stockpiles that are not covered and disturbed areas that will not be disturbed again within 14 days. If grass growth provides less than 95% soil coverage by Nov. 1, apply mulch and anchor with erosion control blanket.
Mulch	April 15 to Sept. 15	On all areas of exposed soil prior to rain events apply 100-150 lbs (2.5 bales) per 1,000 sq ft. by mechanical blower.
Winter Mulch	Sept. 16 to Oct. 31	On all areas of exposed soil prior to precipitation apply 150 to 170 lbs. mulch (4 bales) per 1,000 sq. ft. by mechanical blower. Erosion control blanket may be used as a substitute for winter mulch.
	Nov. 1 to April 14	On all areas of exposed soil, apply 150 to 170 lbs. mulch (4 bales) per 1,000 sq. ft. and anchor with netting at the end of each working day. Erosion control blanket may be used as a substitute for winter mulch.
Inspection	Until site is permanently stabilized	Inspect the erosion and sedimentation control measures daily, and after rainfall of half inch or greater in a 24-hour period, and maintain and repair as necessary.

Permanent Erosion Control:

Measure	Dates For Use	Timing, Activity, and Location
Pavement - Base Course - Final Course	When no frost is in ground	Install only in areas shown on the plan, shortly after pavement base is brought to final grade. Install near completion of project.
Permanent Seeding	April 15 to Sept. 15	On final grade areas, within 7 days of grade preparation, prepare topsoil, followed by seed and mulch application.
Dormant Seeding	Sept. 16 to April 15	On final grade areas, with prepared topsoil. Apply seed at double the specified rate on bare soil, and follow with an application of winter mulch.
Ground Cover, Trees, Shrubs	April 15 to Nov. 1	Install with final landscaping.
Permanent Mulch	ALL	Install with final landscaping.

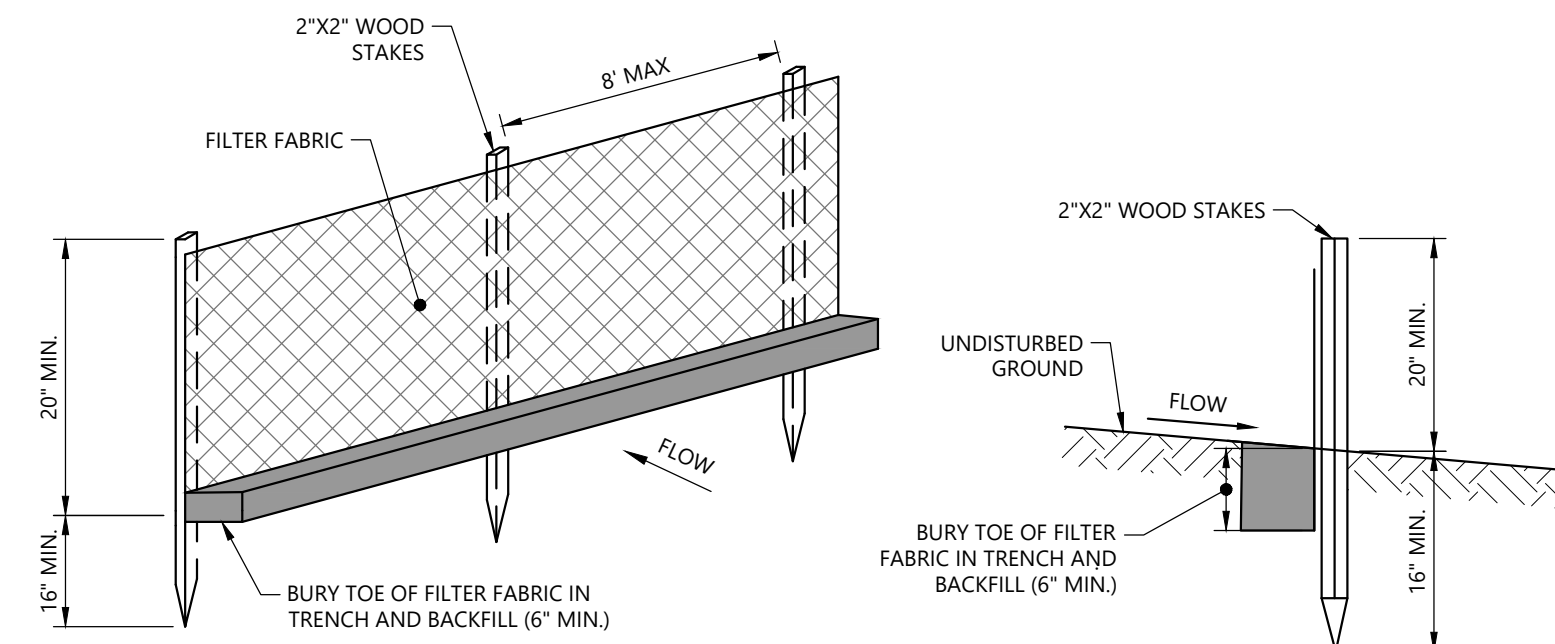
Inspections:

Regular inspections of all erosion and sedimentation controls shall be made at least weekly and prior to and following storm events. Minimum inspections shall be made as listed in the table below.

Inspected Item	Look For
Mulched Surfaces	Thin mulch or inadequate application. Wind movement.
Seeded Surfaces	Poor seed germination. Loss of mulch. Development of rivulets.
Sediment Barrier	Sediment build-up to one half the height of the barrier. Undermining of the barrier. Supporting stakes loose, toppled, or unmarked. Breaks in barrier.
Perimeter Diversion	Discharge is to stabilized area. Erosion or breaks in barrier. Supporting stakes loose, toppled or unmarked.
Catch Basin Protection	Sediment build-up and structure blockages. Slow flow/Ponding water. Breaks in fabric or voids in barrier.
Dewatering Filter	Breaks in fabric or supporting structure. Slow flow, indicating high sediment build-up.
Construction Entrance	Sedimentation of roadways. Off-site dust complaints.

DEWATERING NOTES

- LOCATE DISCHARGE SITE ON FLAT UPLAND AREAS AS FAR AWAY AS POSSIBLE FROM STREAMS, WETLANDS, OTHER RESOURCES AND POINTS OF CONCENTRATED FLOW.
- NEVER DISCHARGE TO AREAS THAT ARE BARE OR NEWLY VEGETATED.
- DIRT BAG MATERIAL BASED ON PARTICLE SIZE IN DIRTY WATER, I.E., FOR COARSE PARTICLES A WOVEN MATERIAL; FOR SILTS/CLAYS A NON-WOVEN MATERIAL.
- DO NOT OVER PRESSURIZE DIRT BAG OR USE BEYOND CAPACITY.
- CHANNELS DUG FOR DISCHARGING WATER FROM THE EXCAVATED AREA NEED TO BE STABLE. IF FLOW VELOCITIES CAUSE EROSION WITHIN THE CHANNEL THEN A DITCH LINING SHOULD BE USED.
- BUCKETED WATER SHOULD BE DISCHARGED IN A STABLE MANNER TO THE SEDIMENT REMOVAL AREA. A SPLASH PAD OF RIPRAP UNDERLAIN WITH GEOTEXTILE MAY BE NECESSARY TO PREVENT SCOURING OF SOIL.
- DEWATERING IN PERIODS OF INTENSE, HEAVY RAIN, WHEN THE INFILTRATIVE CAPACITY OF THE SOIL IS EXCEEDED, SHOULD BE AVOIDED.
- INSTALL DIVERSION DITCHES OR BERMS TO MINIMIZE THE AMOUNT OF CLEAN STORMWATER RUNOFF ALLOWED INTO THE EXCAVATED AREA.
- DURING THE ACTIVE DEWATERING PROCESS, INSPECTION OF THE DEWATERING FACILITY SHOULD BE REVIEWED FREQUENTLY. SPECIAL ATTENTION SHOULD BE PAID TO THE BUFFER AREA FOR ANY SIGN OF EROSION AND CONCENTRATION OF FLOW THAT MAY COMPROMISE THE BUFFER AREA. OBSERVE WHERE POSSIBLE THE VISUAL QUALITY OF THE EFFLUENT AND DETERMINE IF ADDITIONAL TREATMENT CAN BE PROVIDED.
- EROSION CONTROL REQUIRED AROUND DEWATERING DISCHARGE SEDIMENT CONTROL DEVICE.



ISOMETRIC VIEW

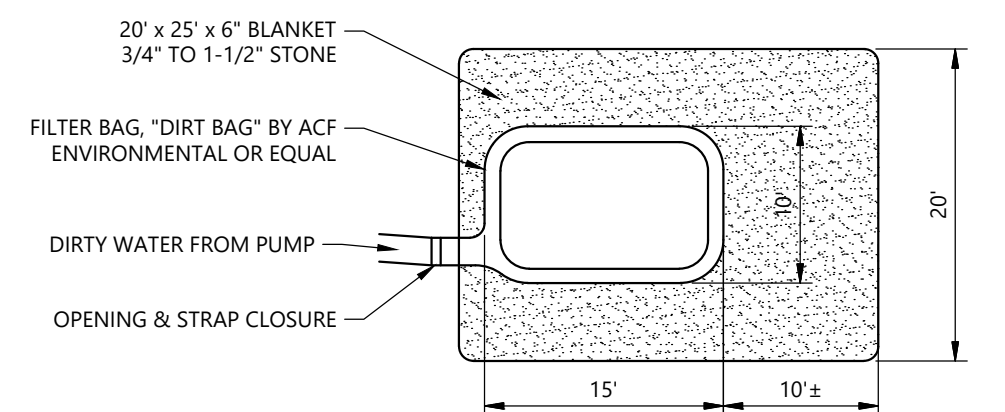
SECTION VIEW

NOTES

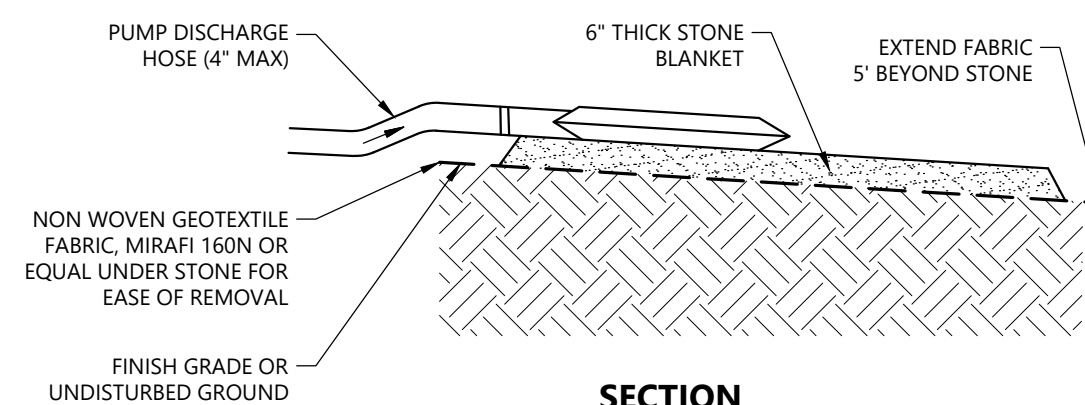
- INSTALL FABRIC ON UPHILL SIDE OF WOOD STAKES.
- SPACING BETWEEN WOOD STAKES PER MANUFACTURER'S RECOMMENDATION.
- SILT FENCE WILL NOT BE USED IN DRAINAGE WAYS.
- MAINTENANCE: INSPECT FOR TEARS IN THE FABRIC OR DAMAGE TO SUPPORTS. REPAIR AS NECESSARY. REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES A DEPTH OF SIX-INCHES OR MORE.
- REMOVAL: WHEN UPSLOPE AREAS ARE STABILIZED, THE STRUCTURE AND ANY ACCUMULATED SEDIMENT WILL BE REMOVED.

SEDIMENT BARRIER - SILT FENCE (CONTRACTOR OPTION)

N.T.S.



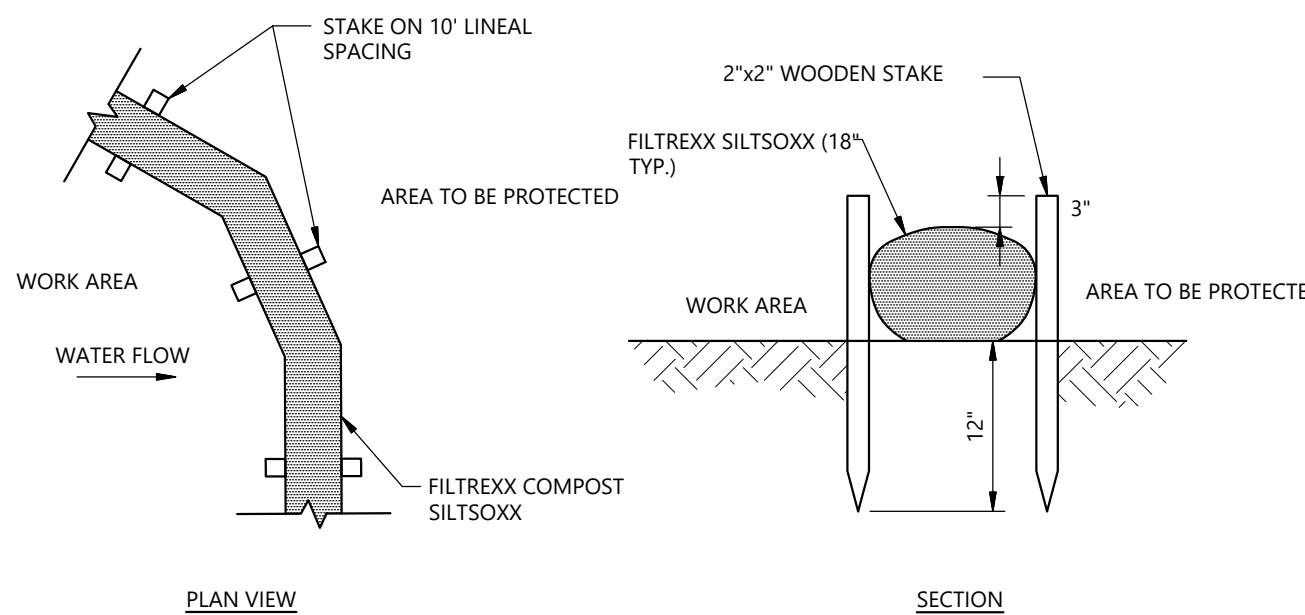
PLAN



SECTION

DEWATERING DISCHARGE SEDIMENT CONTROL DEVICE

N.T.S.

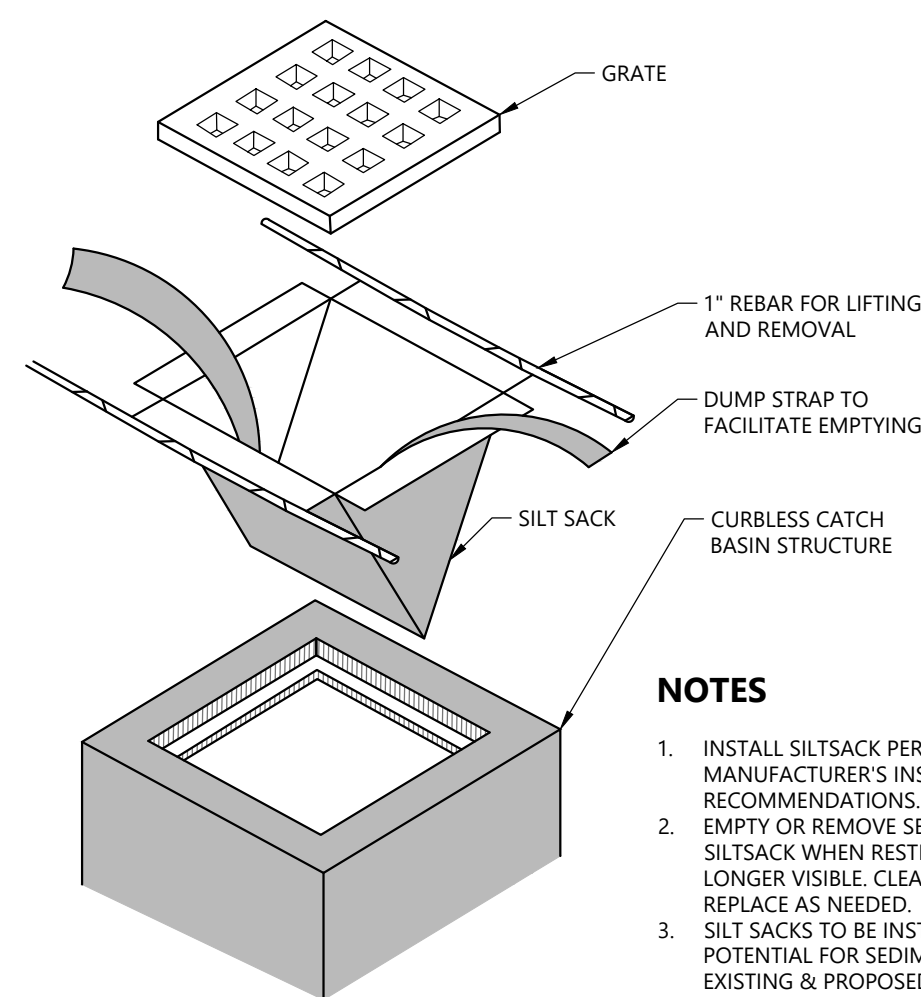


PLAN VIEW

SECTION

SEDIMENT BARRIER - SILTSOXX (CONTRACTOR OPTION)

N.T.S.

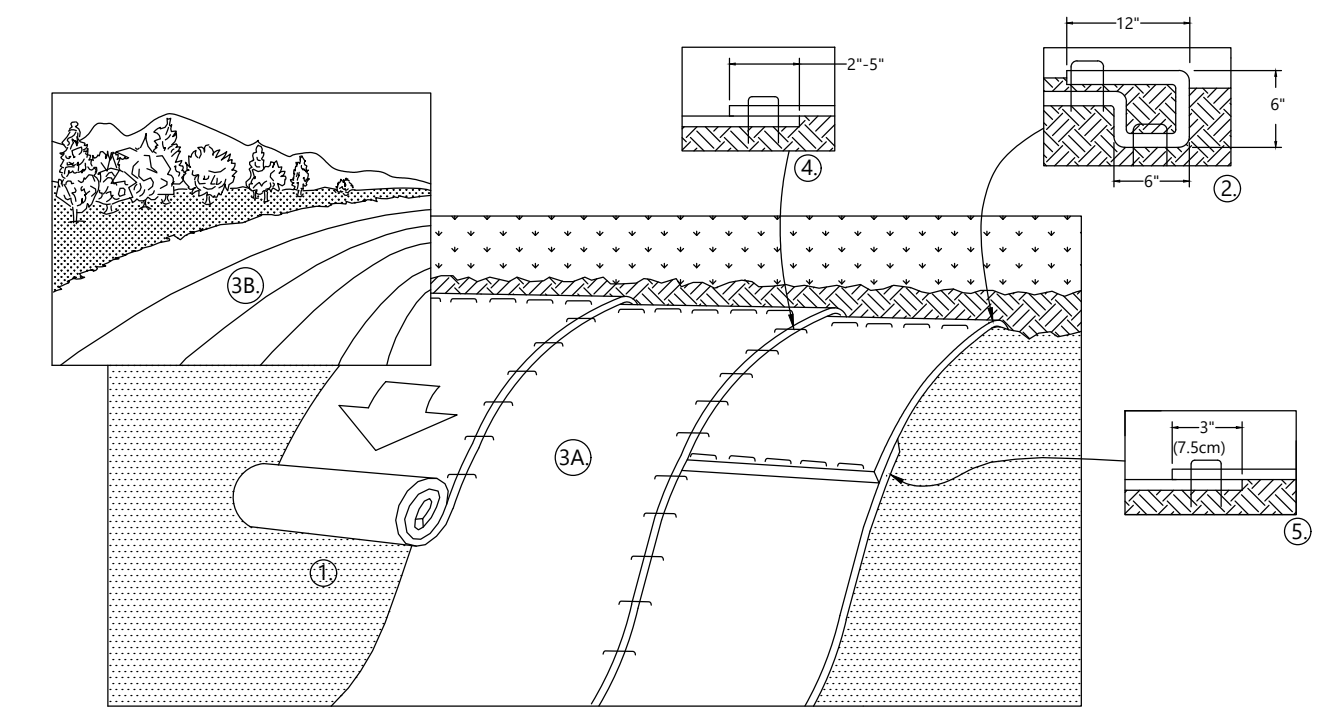


NOTES

- INSTALL SILTSACK PER MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.
- EMPTY OR REMOVE SEDIMENT FROM SILTSACK WHEN RESTRAINT CORD IS NO LONGER VISIBLE. CLEAN, RINSE, AND REPLACE AS NEEDED.
- SILTSACKS TO BE INSTALLED WHEN THE POTENTIAL FOR SEDIMENT TO ENTER EXISTING & PROPOSED BASINS EXISTS.

SILTSACK- CURBLESS INLET

N.T.S.

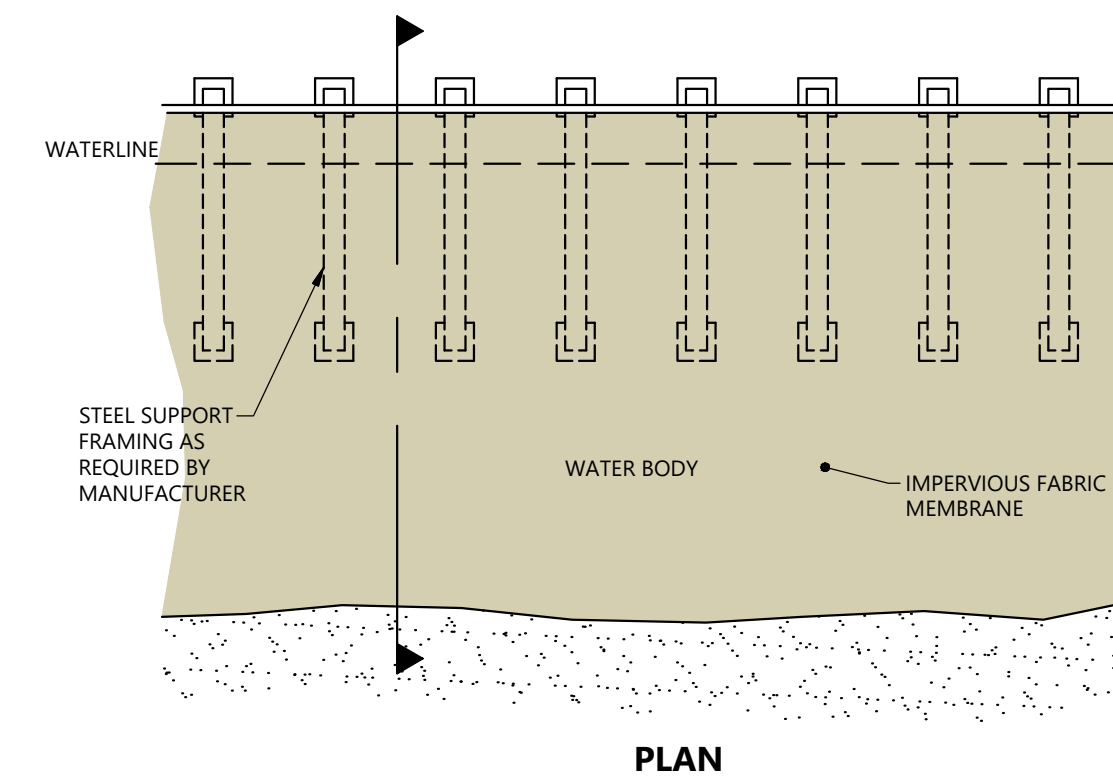


- PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP'S), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED AS WELL AS REMOVING ANY PROTRUDING ROCKS, STUMPS OR ROOTS. DURING THE GROWING SEASON (APRIL 15 - SEPTEMBER 15) USE RECP'S ON SLOPES HAVING A GRADE GREATER THAN 15%, OR ANYWHERE WHERE HAY MULCH HAS PROVEN TO BE INEFFECTIVE AT CONTROLLING SHEET EROSION. RECP'S ARE A MANUFACTURED COMBINATION OF MULCH AND NETTING DESIGNED TO PREVENT EROSION AND RETAIN SOIL MOISTURE. FOR OVER WINTER PROTECTION, APPLY RECP'S ON SLOPES STEEPER THAN AN 8% GRADE.
- BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECP'S IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF RECP'S EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP'S WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH (USE OF METAL STAPLES IS PROHIBITED). BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF RECP'S BACK OVER SEED AND COMPACTED SOIL. SECURE RECP'S OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE RECP'S.
- ROLL THE RECP'S (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. RECP'S WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP'S MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
- THE EDGES OF PARALLEL RECP'S MUST BE STAPLED WITH APPROXIMATELY 2" - 5" OVERLAP DEPENDING ON RECP'S TYPE.
- CONSECUTIVE RECP'S SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE RECP'S WIDTH. NOTE: IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE RECP'S.
- UNTIL GRASS HAS GOOD COVERAGE, INSPECT PERIODICALLY AND AFTER EACH RAINSTORM TO CHECK FOR EROSION. IMMEDIATELY REPAIR AND ADD MORE MULCH UNTIL GRASSES ARE FIRMLY ESTABLISHED. DO NOT MOW THE FIRST YEAR.
- EROSION CONTROL MATTING AND GROUND FASTENERS SHALL BE 100% BIODEGRADABLE.

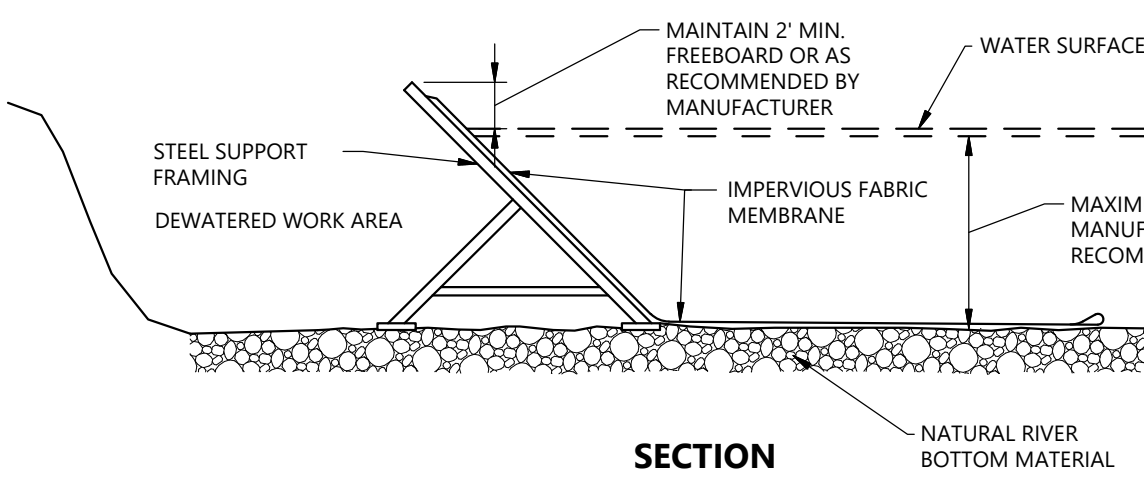
EROSION CONTROL MATTING

N.T.S.

TO BE INSTALLED AROUND WORK AREA IN ACCORDANCE WITH CONTRACTOR'S WORK PLAN



PLAN



SECTION

NOTE

COFFERDAM DETAIL SHOWN FOR REFERENCE PURPOSES. CONTRACTOR SHALL PROVIDE DESIGN OF ALTERNATIVE COFFERDAM MATERIALS OR METHODS FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.

COFFER DAM DETAIL

N.T.S.

TO BE INSTALLED AROUND WORK AREA IN ACCORDANCE WITH CONTRACTOR'S WORK PLAN



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PE SEAL:



Scott Salucci

ISSUED FOR BID

CLIENT INFO:

TOWN OF BEDFORD
BEDFORD, MASSACHUSETTS
RICHARD ROAD
CULVERT REPLACEMENT

REV MM/DD/YY DESCRIPTION

JOB NO:	0235172.01
DATE:	JUNE 2024
SCALE:	AS NOTED
DESIGNED BY:	KLR
DRAWN BY:	JBC
CHECKED BY:	GB
FILENAME:	0235172.01 DETAILS.dwg

DRAWING TITLE:
CIVIL
CIVIL DETAILS - 1

DRAWING NO:

C-300



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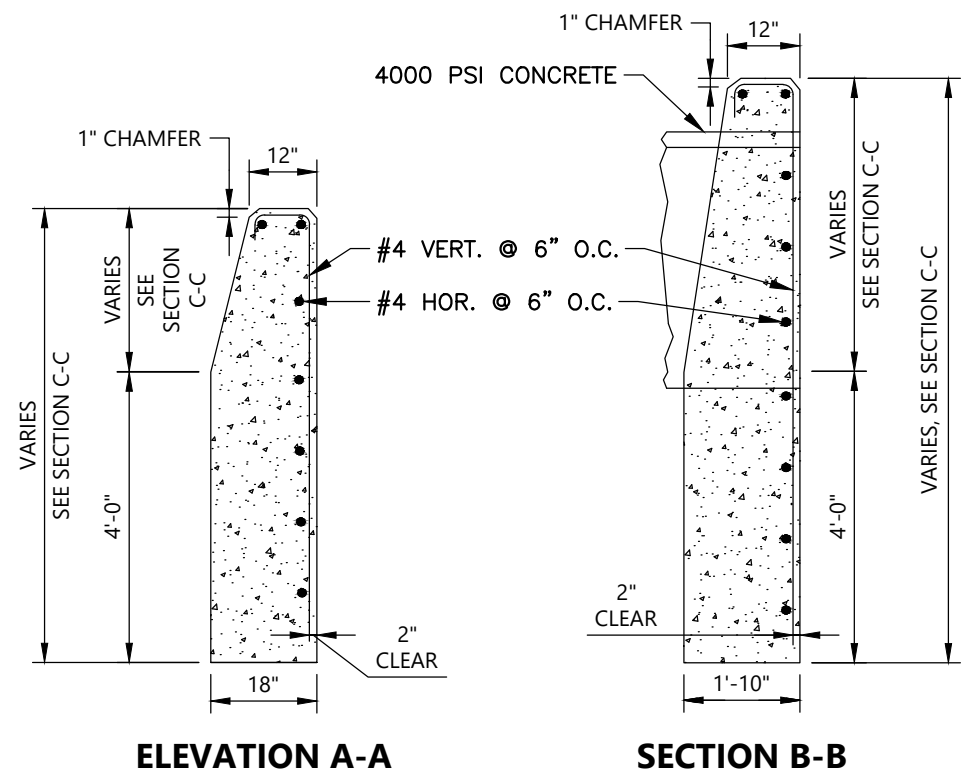
**RICHARD ROAD
CULVERT REPLACEMENT**

REV	MM/DD/YY	DESCRIPTION

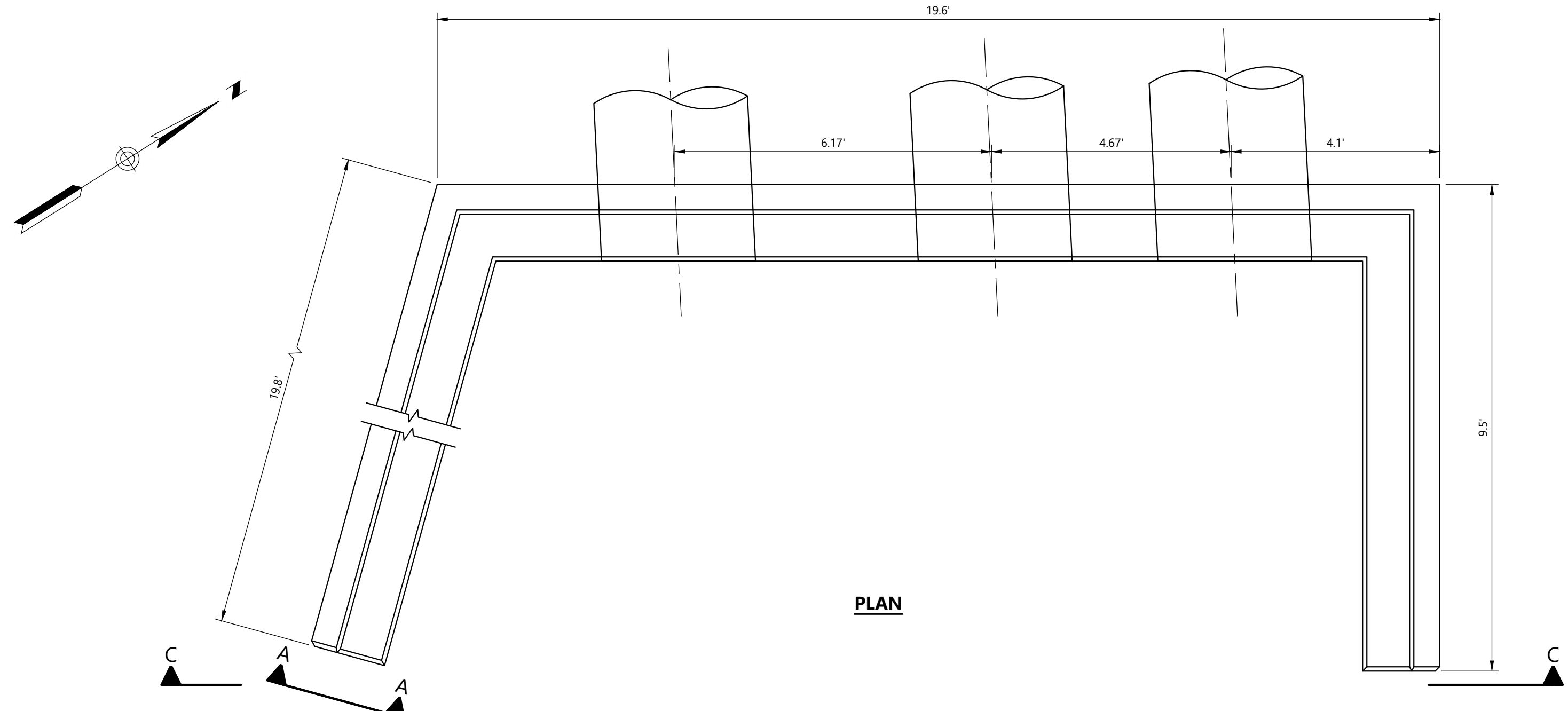
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DATE:	JUNE 2024
SCALE:	AS NOTED
DESIGNED BY:	KLR
DRAWN BY:	JBC
CHECKED BY:	GB
FILENAME:	0235172.01 DETAILS.dwg

DRAWING TITLE:
**CIVIL
CIVIL DETAILS - 2**

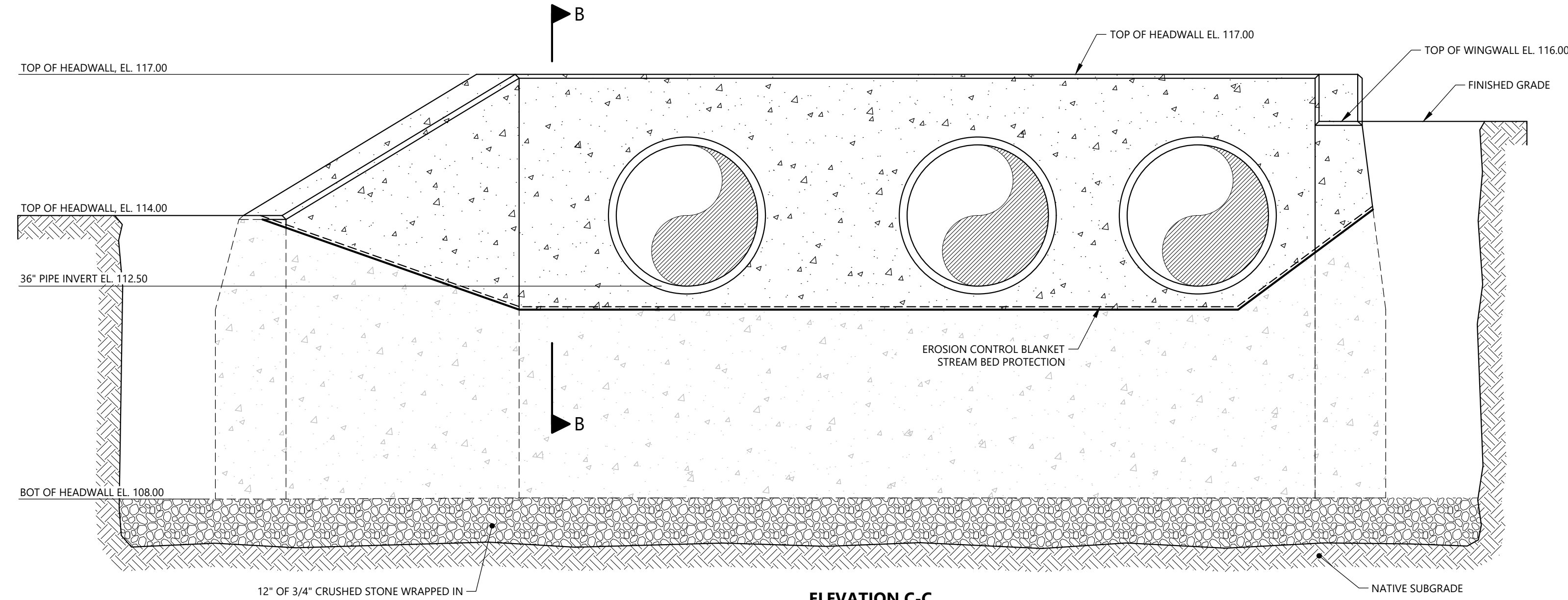
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C-301



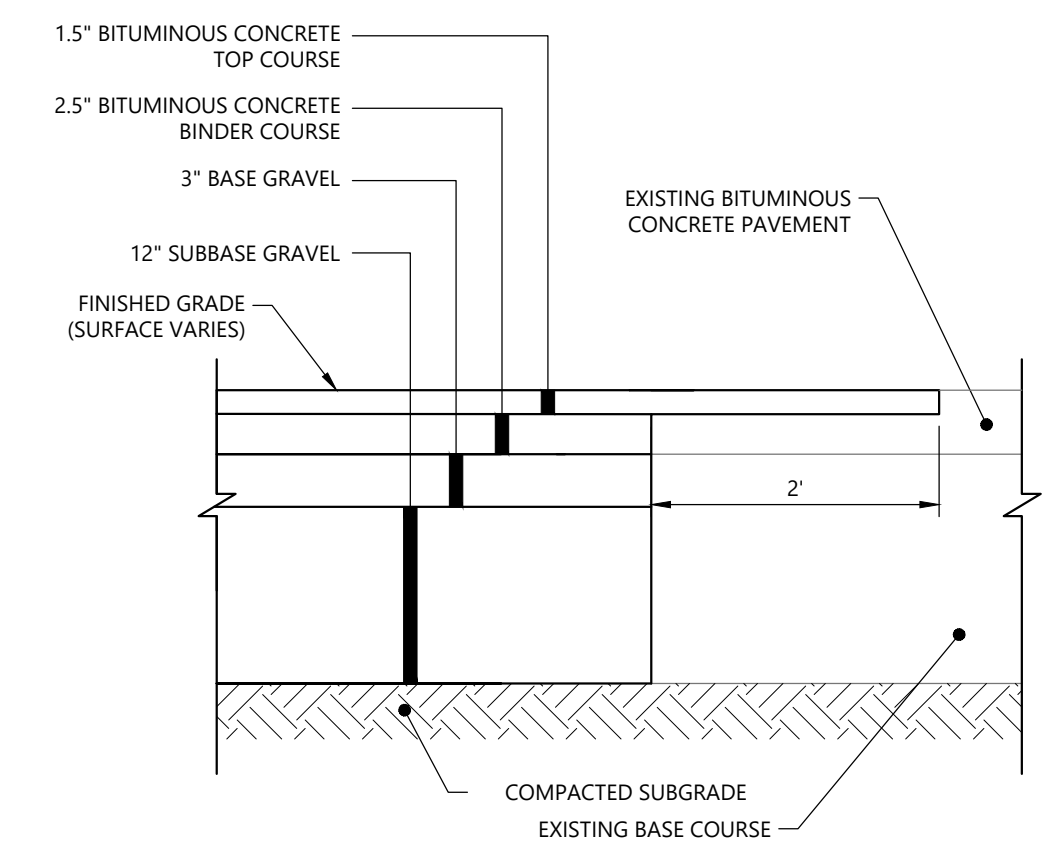
CONCRETE ENDS
N.T.S.



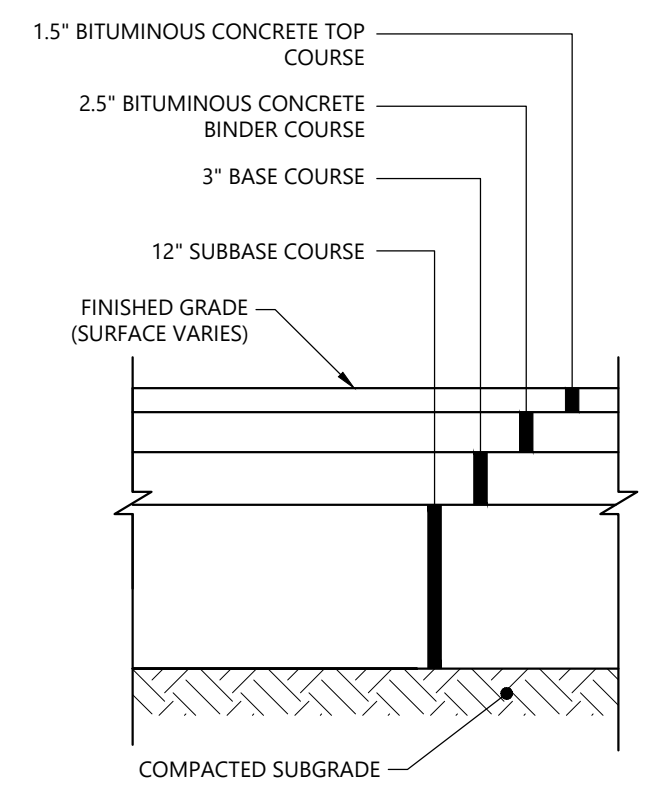
PLAN



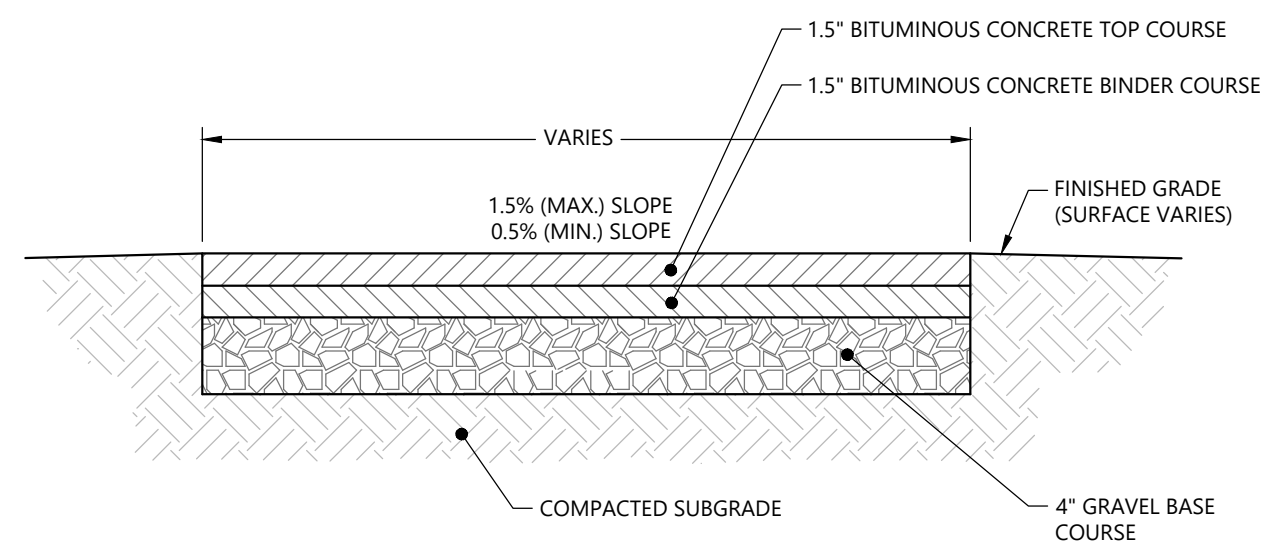
CONCRETE HEADWALL OUTLET DETAIL
N.T.S.



BITUMINOUS PAVEMENT BUTT JOINT
N.T.S.



BITUMINOUS PAVEMENT ROADWAY SECTION
N.T.S.



BITUMINOUS CONCRETE SIDEWALK
N.T.S.

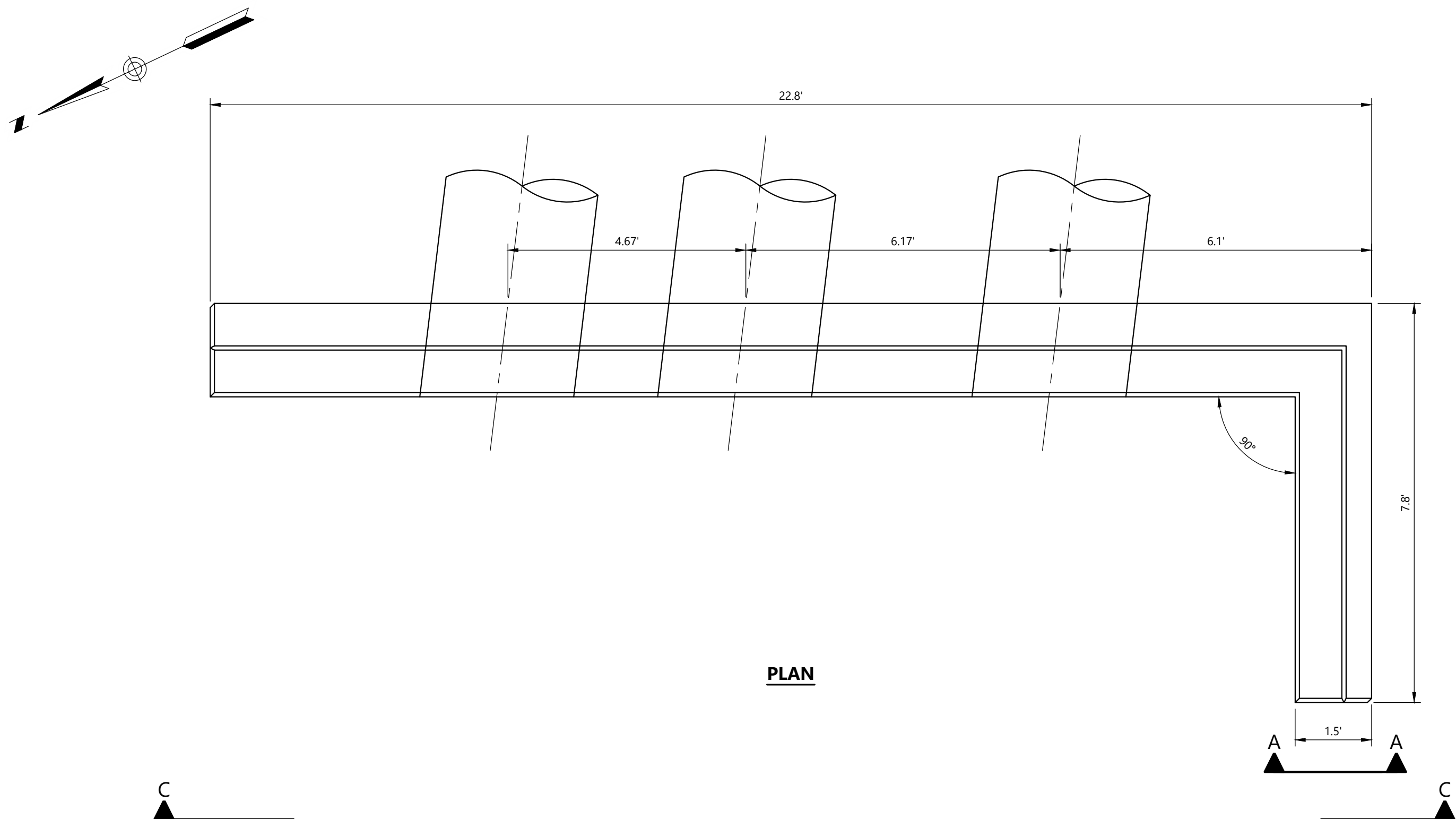
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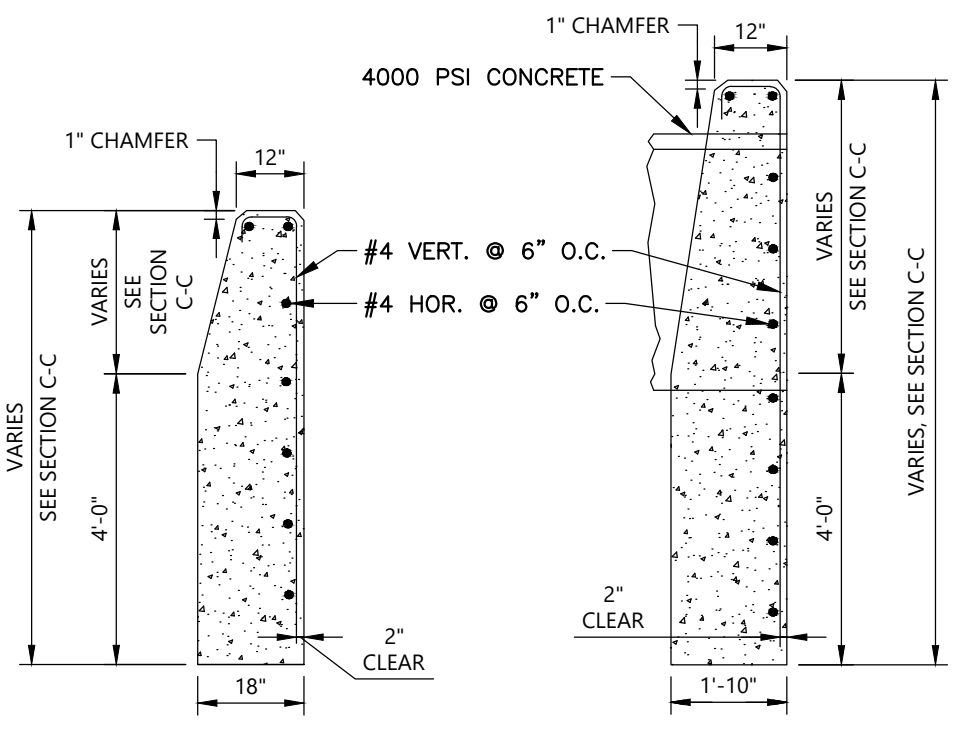
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PLAN



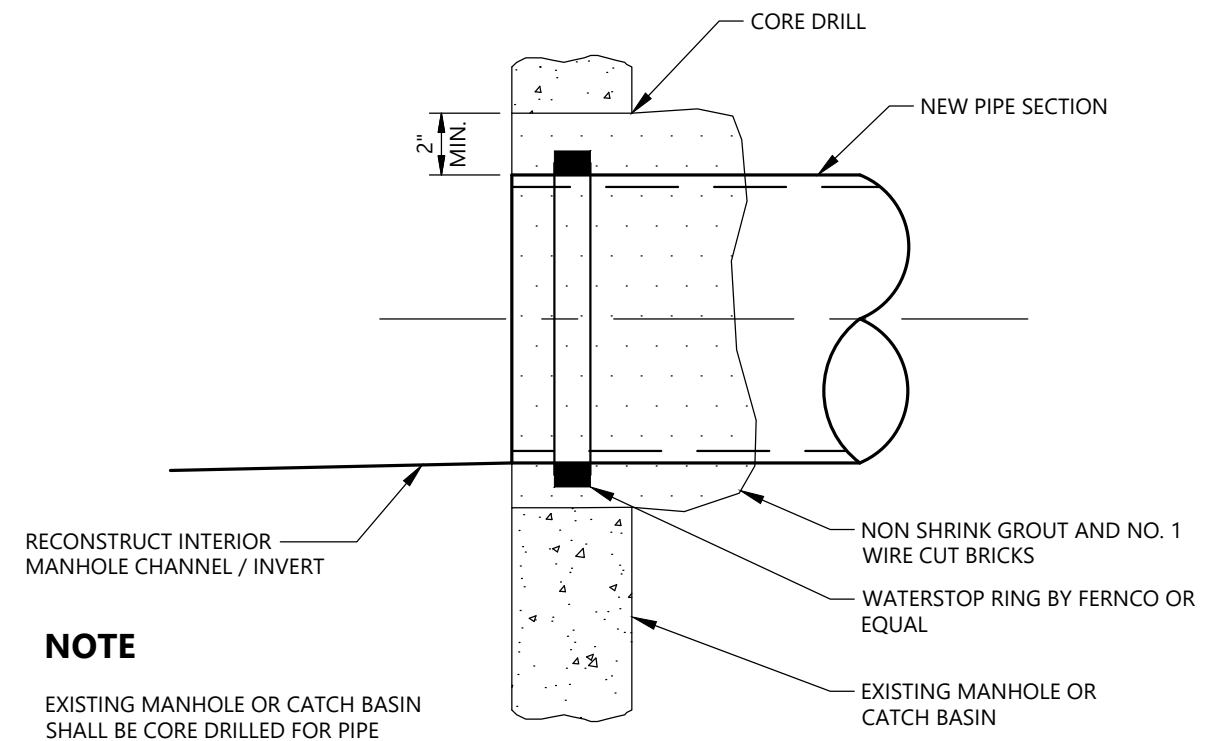
ELEVATION A-A

SECTION B-B

NOTE

- 1. FIELD STONE NOT SHOWN FOR CLARITY.

CONCRETE ENDS

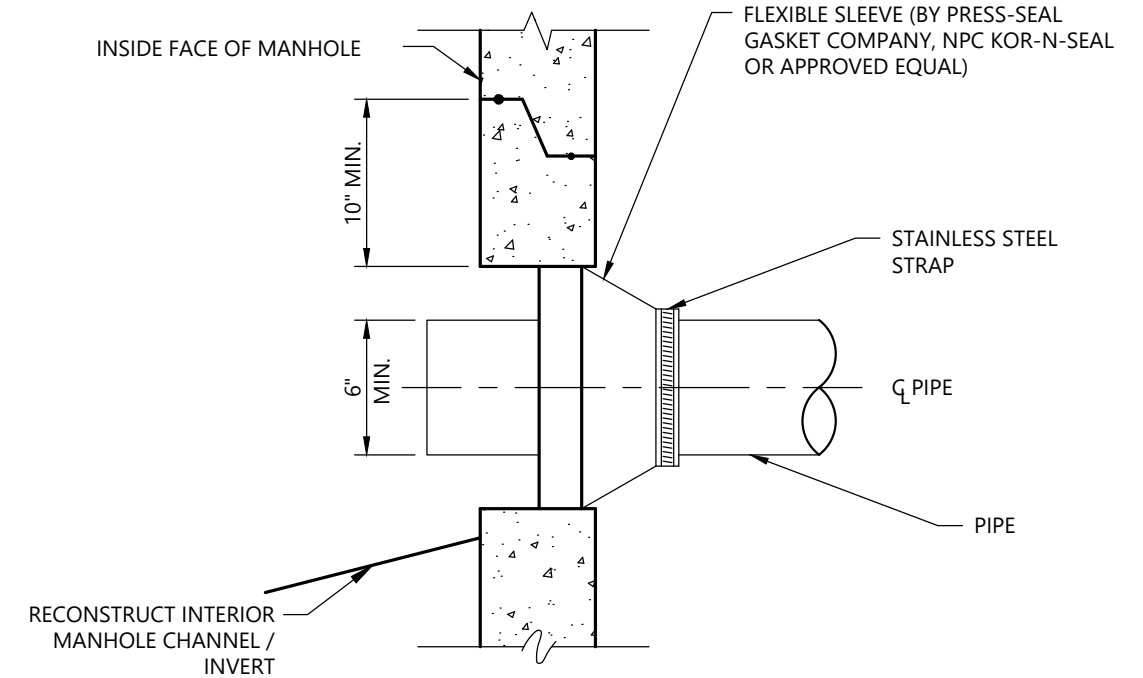


NOTE

EXISTING MANHOLE OR CATCH BASIN SHALL BE CORE DRILLED FOR PIPE INSTALLATION

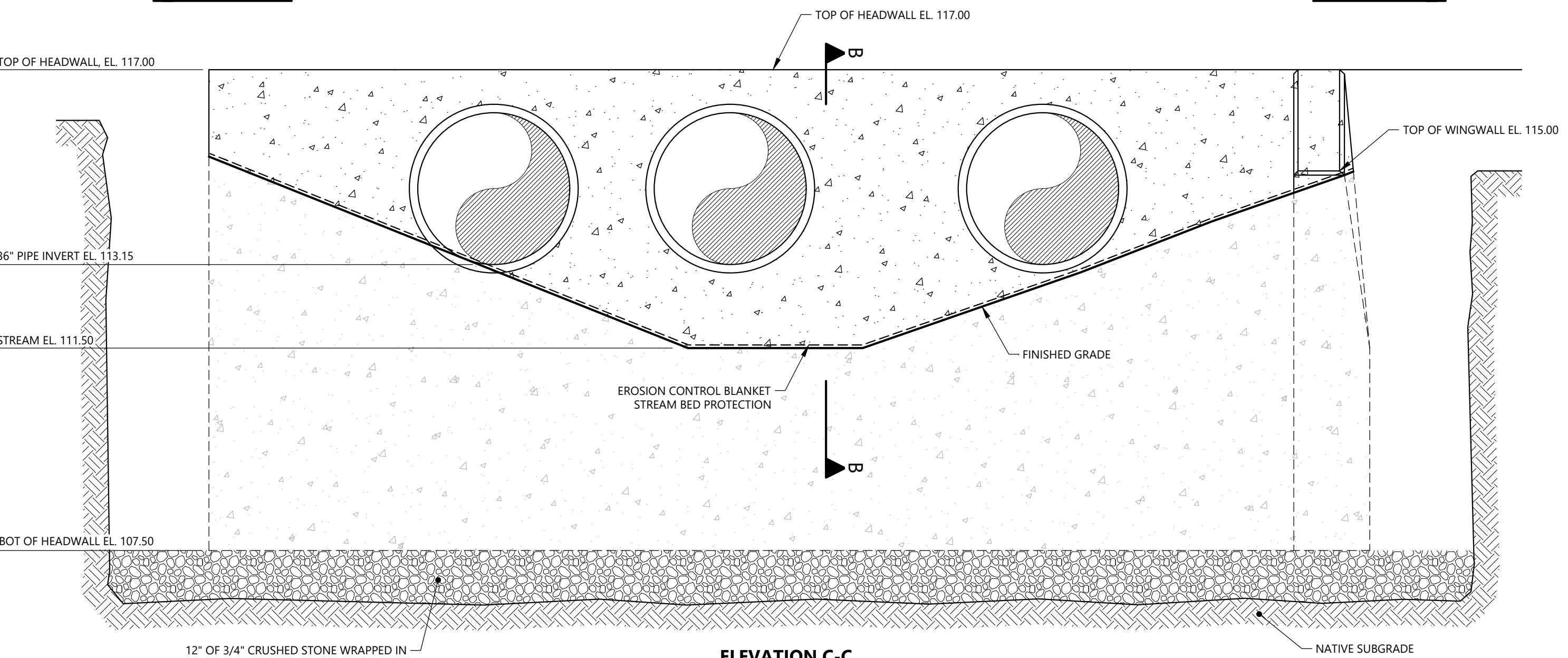
NEW DRAIN PIPE TO EXISTING STRUCTURE

N.T.S.



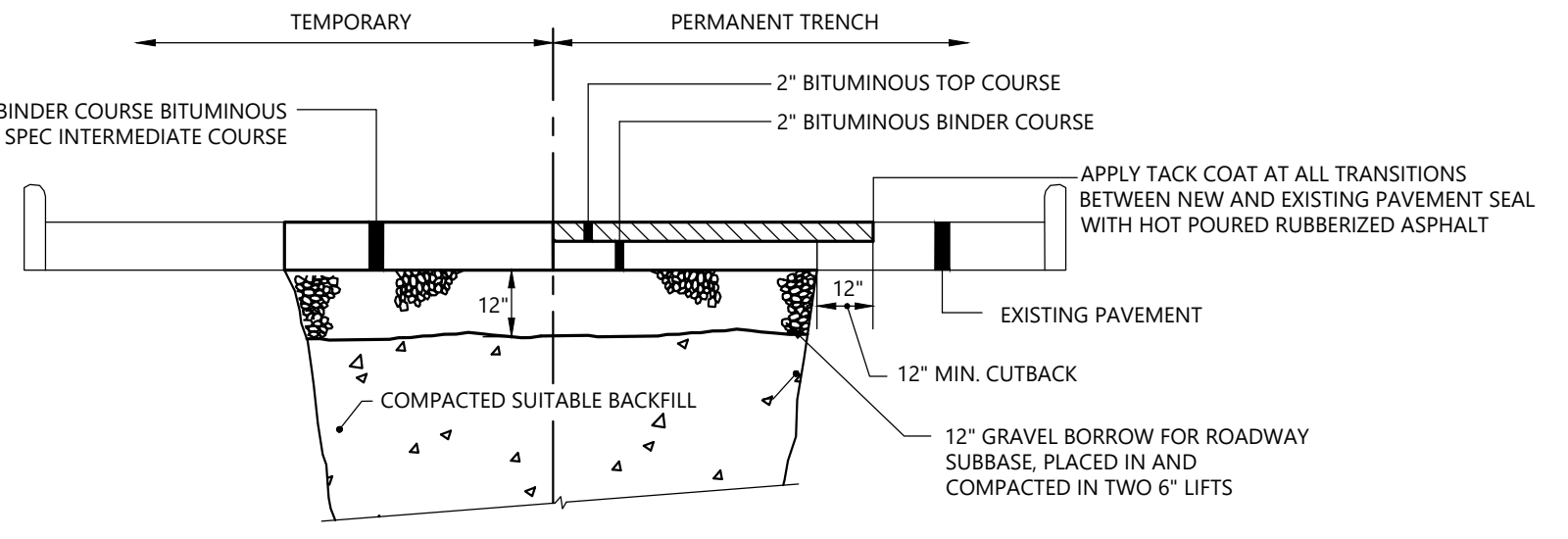
NEW DRAIN PIPE TO NEW DRAIN STRUCTURE CONNECTION DETAIL

N.T.S.



ELEVATION C-C CONCRETE HEADWALL DETAIL

N.T.S.

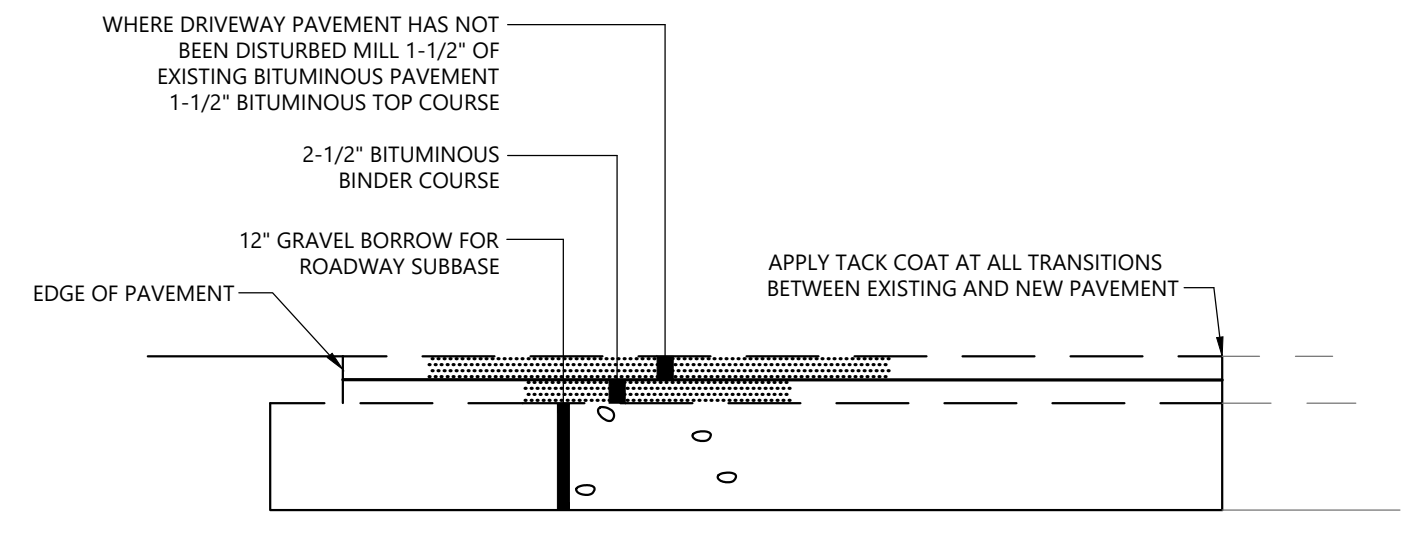


NOTES

- 1. SEE LIMITS OF TRENCH PAVEMENT ON PLANS FOR PAY LIMIT.
- 2. PAVEMENT THICKNESS SHALL EQUAL DEPTH SPECIFIED OR MATCH EXISTING, WHICHEVER IS GREATER. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL NEW TEMPORARY AND PERMANENT PAVEMENT THROUGHOUT THE DURATION OF THE PROJECT.

TEMPORARY AND PERMANENT TRENCH PAVEMENT DETAIL

N.T.S.

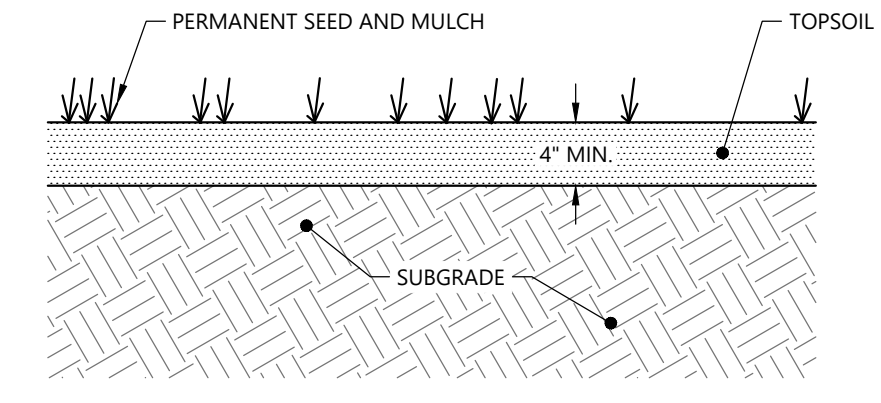


NOTES

- 1. PROVIDE COMPACTION FOR GRAVEL AND PAVEMENT IN ACCORDANCE WITH THE SPECIFICATIONS.
- 2. INSTALL PAVING IN MAX. 2-INCH LIFTS.
- 3. MILL AND INSTALL SURFACE COURSE AFTER ONE WINTER SEASON. PROVIDE LEVELING AS REQUIRED FOR DRAINAGE.

DRIVEWAY PAVEMENT DETAIL

N.T.S.



NOTES

- 1. AVOID COMPACTION, UNLESS OTHERWISE NOTED ON PLANS.
- 2. TOPSOIL SHALL BE FERTILE, FRIABLE SOIL, TYPICAL OF PRODUCT SOILS IN THE SURROUNDING AREA AND SHALL CONTAIN BETWEEN 5% AND 20% ORGANIC MATTER.
- 3. TOPSOIL SHALL HAVE A MAXIMUM STONE SIZE OF 1" AND SHALL CONFORM TO THE FOLLOWING GRADATION:

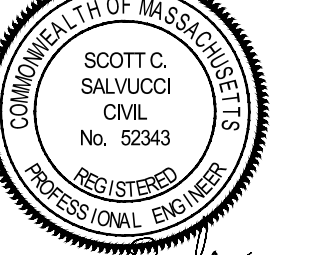
SIEVE	% PASSING
NO. 4	85-100
NO. 40	60-85
NO. 100	38-60
NO. 200	28-40

- 4. TOPSOIL SHALL NOT BE DISTRIBUTED OVER PARTLY OR FULLY FROZEN, MUDDY, SNOWY, ICY OR EXCESSIVELY WET SURFACES.
- 5. SOD AND SEED MIXTURES SHALL BE APPROPRIATE FOR GROWING SEASON, CLIMATE AND SOIL CONDITIONS, AND SURFACE USAGE. REFER TO STATE GUIDELINES.
- 6. SEED SHALL BE APPLIED AT RATES RECOMMENDED BY STATE GUIDELINES.
- 7. APPLY MULCH OVER SEEDED AREAS IN ACCORDANCE WITH SUPPLIER'S GUIDELINES.
- 8. SODDING SHALL BE INSTALLED IN ACCORDANCE WITH SUPPLIER'S GUIDELINES. AT A MINIMUM, LAY SOD IN STAGGERED ROWS OVER DAMPENED AND LOOSENED/SCARIFIED TOPSOIL. PLACE STRIPS PERPENDICULAR TO THE DIRECTION OF FLOW. ON SLOPES, ANCHOR SOD TO HOLD IN PLACE UNTIL SECURED BY PLANT GROWTH.
- 9. INSTALL AND/OR REPAIR EROSION AND SEDIMENT CONTROL MEASURES BEFORE LAYING TOPSOIL. MAINTAIN EROSION CONTROL MEASURES DURING TOPSOILING.
- 10. MAXIMUM SLOPE TOPSOIL CAN BE USED IS 2:1.

TOPSOIL RESTORATION DETAIL

N.T.S.

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BEDFORD, MASSACHUSETTS
RICHARD ROAD
CULVERT REPLACEMENT**

REV	MM/DD/YY	DESCRIPTION

JOB NO:	0235172.01
DATE:	JUNE 2024
SCALE:	AS NOTED
DESIGNED BY:	KLR
DRAWN BY:	JBC
CHECKED BY:	GB
FILENAME:	0235172.01 DETAILS.dwg

DRAWING TITLE:
**CIVIL
CIVIL DETAILS - 3**

DRAWING NO:
C-302

\\woodardcurran.com\shared\Projects\0235172.01 Bedford MA Richard Road Culvert Replacement\Drawings\Civil\0235172.01 Details.dwg, Jun 18, 2024, 9:45am, JC0UL0MBE



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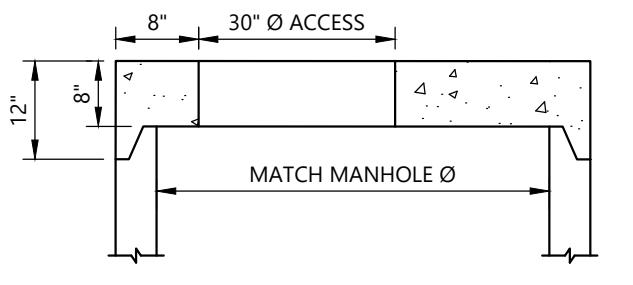
**TOWN OF BEDFORD
BEDFORD, MASSACHUSETTS
RICHARD ROAD
CULVERT REPLACEMENT**

REV MM/DD/YY DESCRIPTION

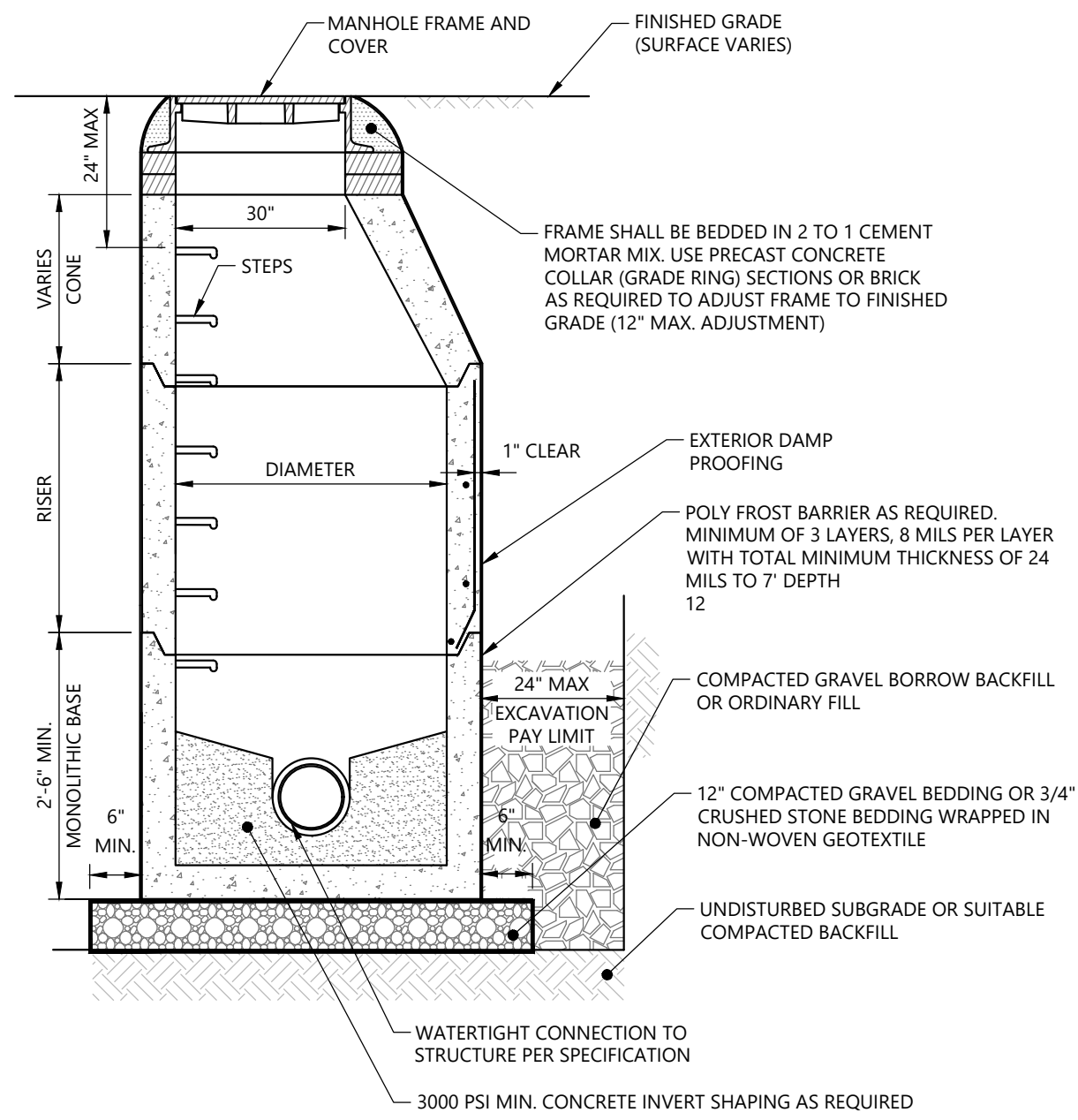
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DATE:	JUNE 2024
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**CIVIL
CIVIL DETAILS - 4**

DRAWING NO:
C-303



SHALLOW ALTERNATE TOP SLAB

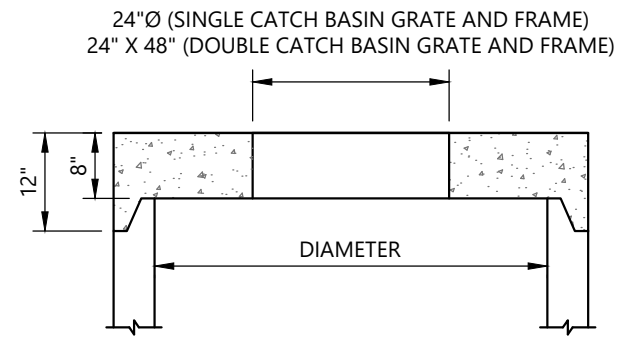


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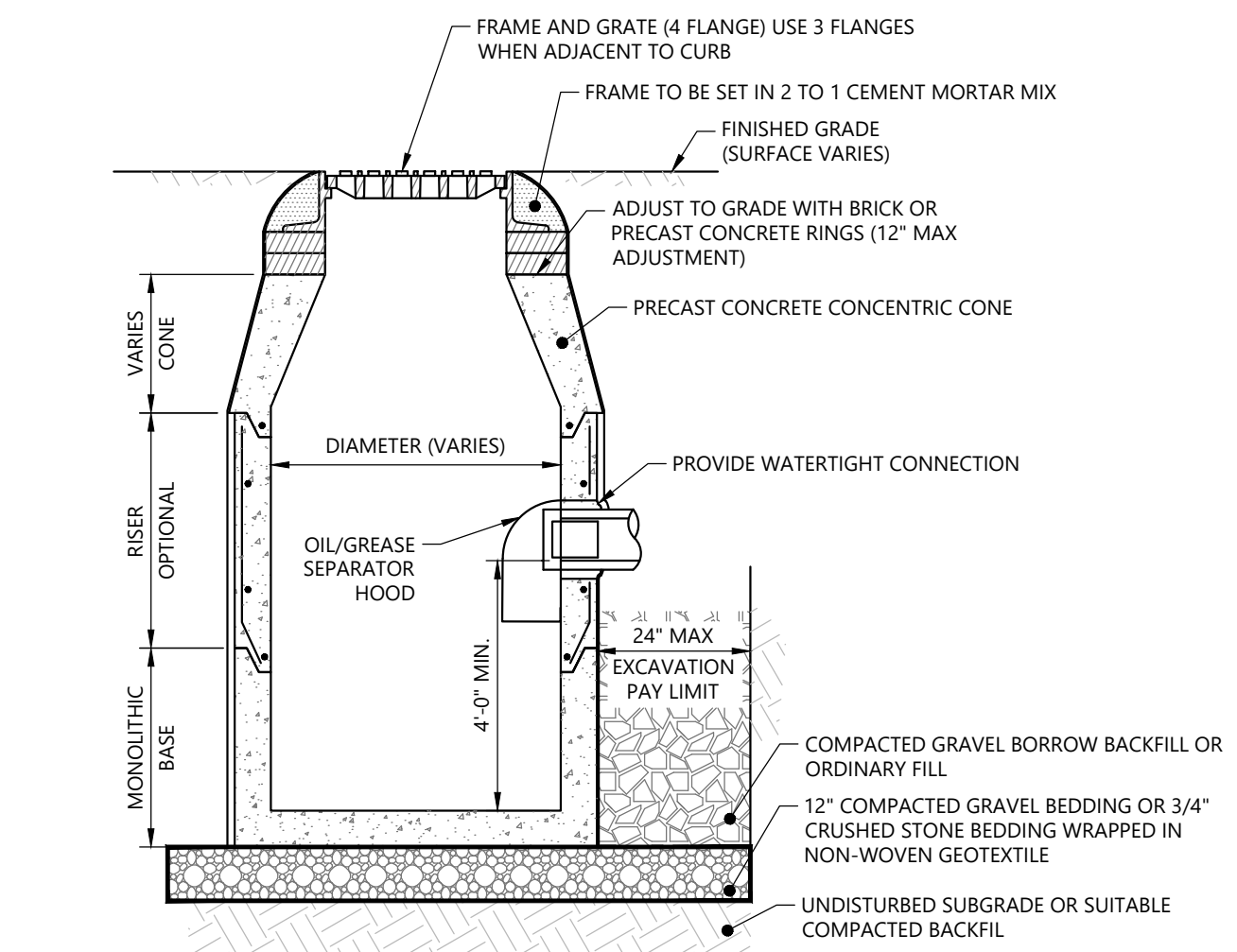
1. PRECAST CONCRETE STRUCTURES AND CASTINGS SHALL BE SUITABLE FOR HS-20 LOADINGS.
2. PRECAST CONCRETE STRUCTURES SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM C-478.
3. ALTERNATE TOP SLAB MAY BE USED AS DICTATED BY DESIGN AND/OR FIELD CONDITIONS.
4. MANHOLE FRAME AND GRATES SHALL MEET MUNICIPAL AND STATE SPECIFICATIONS WHEN APPLICABLE.
5. REFER TO PROJECT SPECIFICATIONS FOR MORE DRAINAGE MANHOLE INFORMATION.
6. JOINT SEALANT BETWEEN SECTIONS SHALL BE BUTYL RUBBER.
7. PROVIDE ANTIFLOATATION SLAB EXTENSION AS REQUIRED TO SATISFY ANTIFLOATATION REQUIREMENTS.

PRECAST CONCRETE DRAINAGE MANHOLE

N.T.S.



SHALLOW ALTERNATIVE TOP SLAB

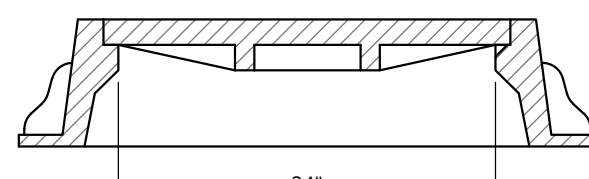


NOTES

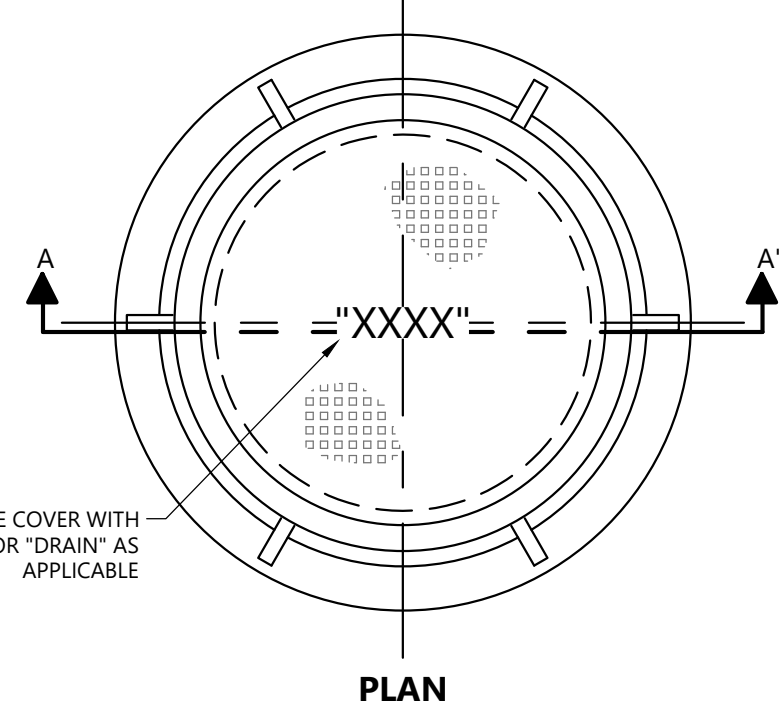
1. PRECAST CONCRETE STRUCTURES AND CASTINGS SHALL BE SUITABLE FOR HS-20 LOADINGS.
2. PRECAST CONCRETE STRUCTURES SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM C-478.
3. ALTERNATE TOP SLAB MAY BE USED AS DICTATED BY DESIGN AND/OR FIELD CONDITIONS.
4. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE BUTYL RUBBER.
5. PROVIDE MINIMUM 24" DIAMETER OPENING.
6. PROVIDE ANTIFLOATATION SLAB EXTENSION AS REQUIRED TO SATISFY ANTIFLOATATION REQUIREMENTS.

PRECAST CONCRETE CATCH BASIN

N.T.S.



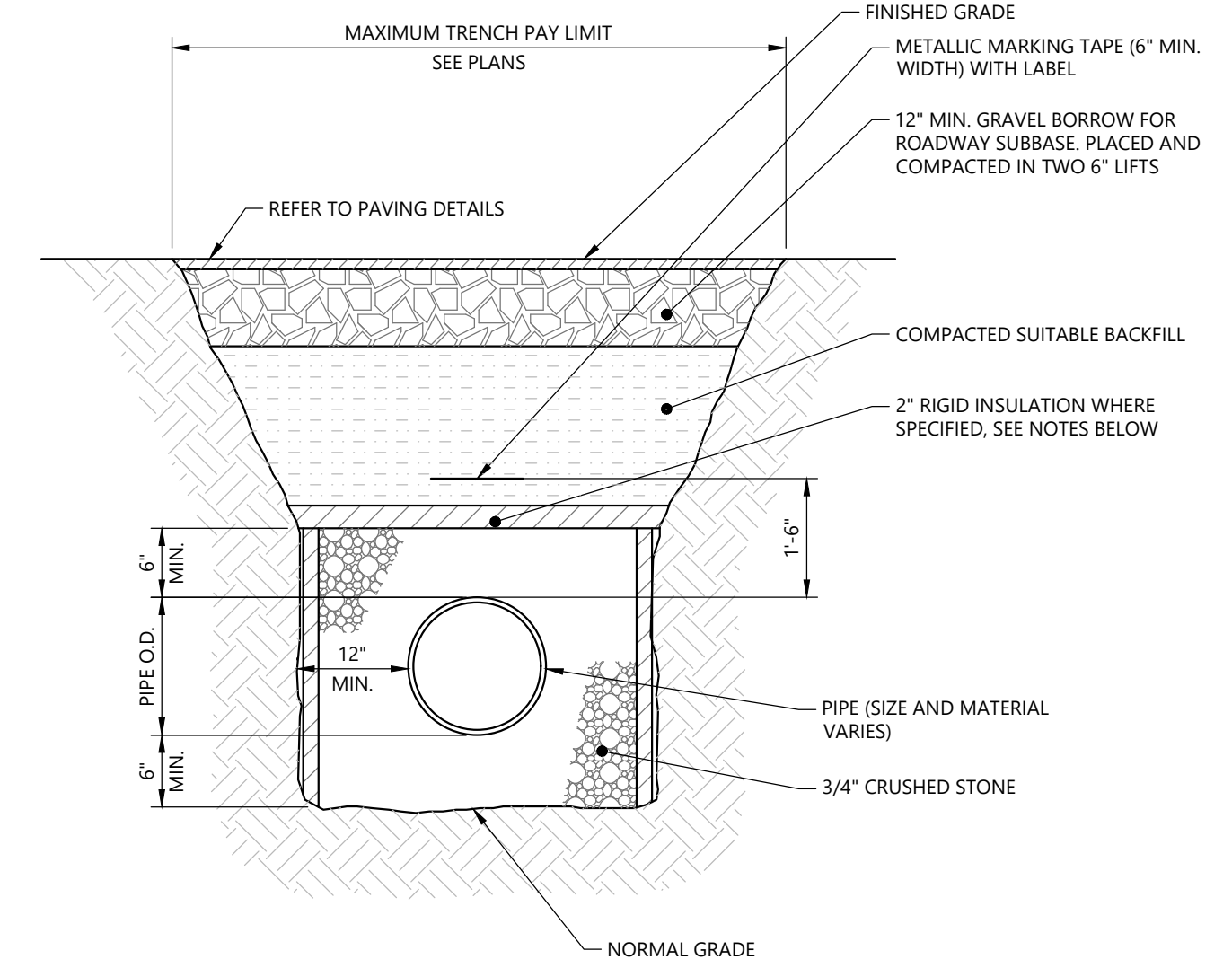
**SECTION A-A'
STANDARD COVER**



PLAN

**STANDARD SEWER/RAIN
MANHOLE FRAME AND COVER**

N.T.S.

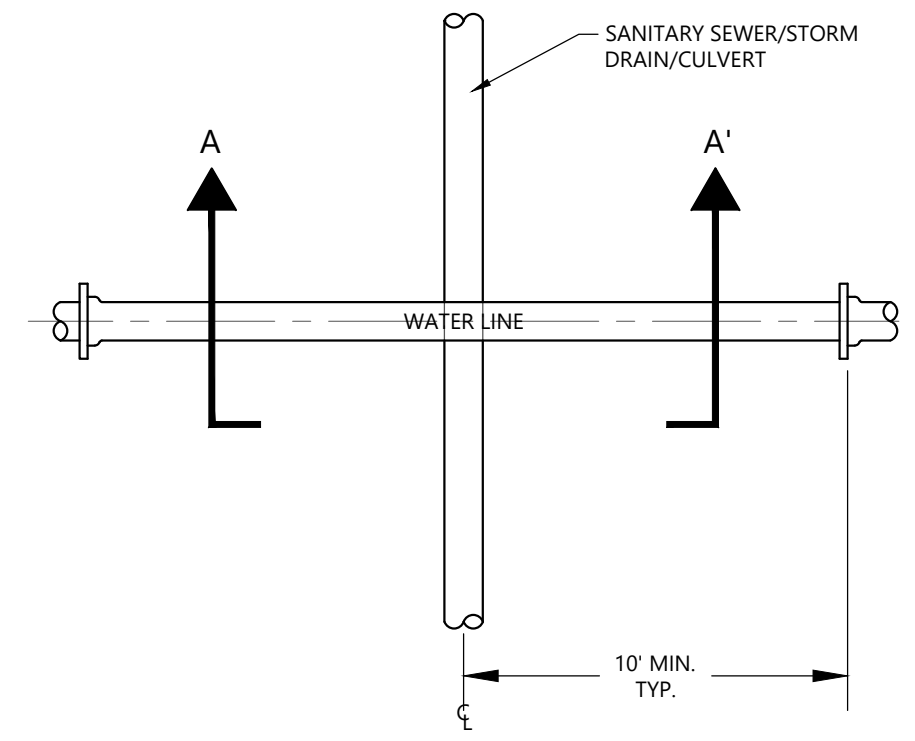


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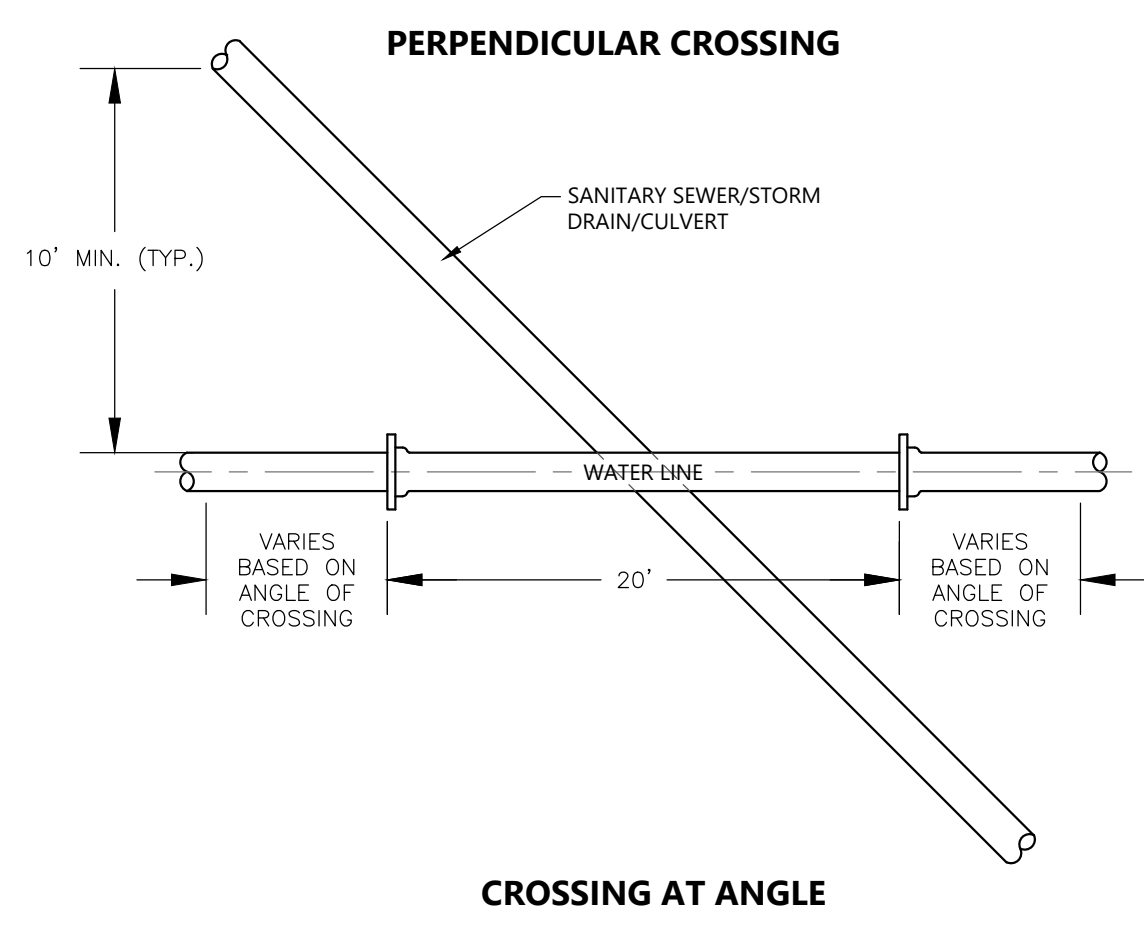
1. MAINTAIN UNIFORM TRENCH WIDTH TO 6" OVER PIPE.
2. SEE PAVEMENT DETAILS FOR PAVING AND PATCHING REQUIREMENTS. OPEN TRENCHES MUST BE PAVED AT THE END OF EACH WEEK AND PRIOR TO HOLIDAYS.
3. MAINTAIN MINIMUM OF 4'-0" FT. OF COVER OVER PIPE.
4. IF EXCAVATION BELOW NORMAL GRADE IS REQUIRED, PROVIDE SHEETING 2' BELOW TRENCH BOTTOM. BACKFILL TRENCH FROM TRENCH BOTTOM TO NORMAL GRADE WITH COMPACTED GRAVEL (6" COMPACTED LIFTS).
5. A 2" RIGID INSULATION WILL BE REQUIRED IN AREAS WHERE LESS THAN 4'-0" OF COVER OVER TOP OF PIPE OR WHERE REQUIRED BY ENGINEER.
6. NO PAYMENT WILL BE MADE FOR SHEETING LEFT IN PLACE UNLESS DIRECTED BY ENGINEER.
7. EXCAVATION PAVING LIMIT TO BE EQUAL TO THE TEMPORARY TRENCH PAVING WIDTH

SEWER AND DRAIN TRENCH

N.T.S.



SECTION A-A' - WATER BELOW

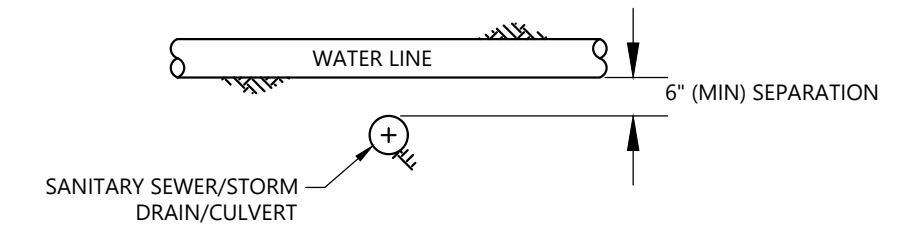


WATER AND SEWER CROSSING DETAILS

N.T.S.

NOTES

1. CONCRETE ENCASE WATER MAIN IF SEPARATION TO CULVERT/STORM DRAIN IS LESS THAN 12 INCHES. COORDINATE DEPTH OF CONCRETE ENCASEMENT WITH ENGINEER PRIOR TO INSTALLATION.
2. INSTALL FULL 20-FOOT LENGTH OF WATER MAIN ENCASEMENT AT REQUIRED CROSSINGS, CENTERED OVER STORM DRAIN OR CULVERT.



SECTION A-A' - WATER ABOVE

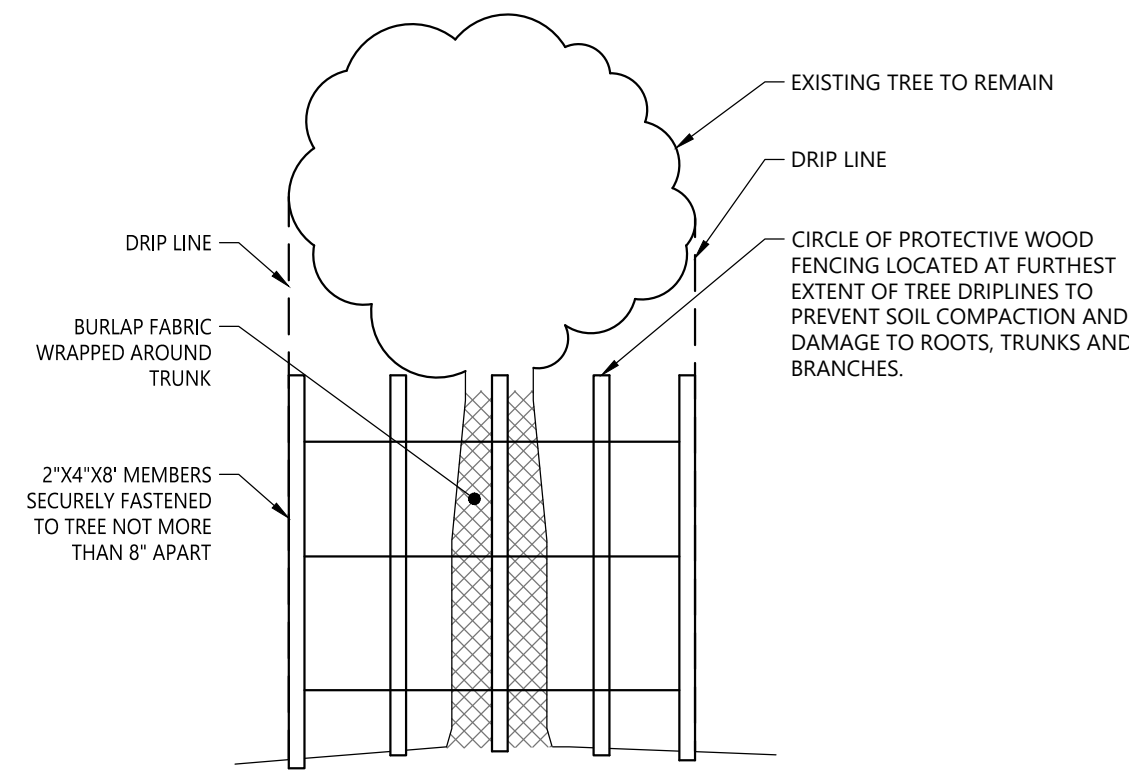
\\woodardcurran.net\shared\Projects\0235172.01 Bedford MA Richard Road Culvert Replacement\Drawings\Civil\0235172.01 Details.dwg, Jun 18, 2024, 9:45am, JCOULOMBE



Woodard & Curran

40 Shattuck Road, Suite 110
Andover, Massachusetts 01810
866.702.6371 | www.woodardcurran.com

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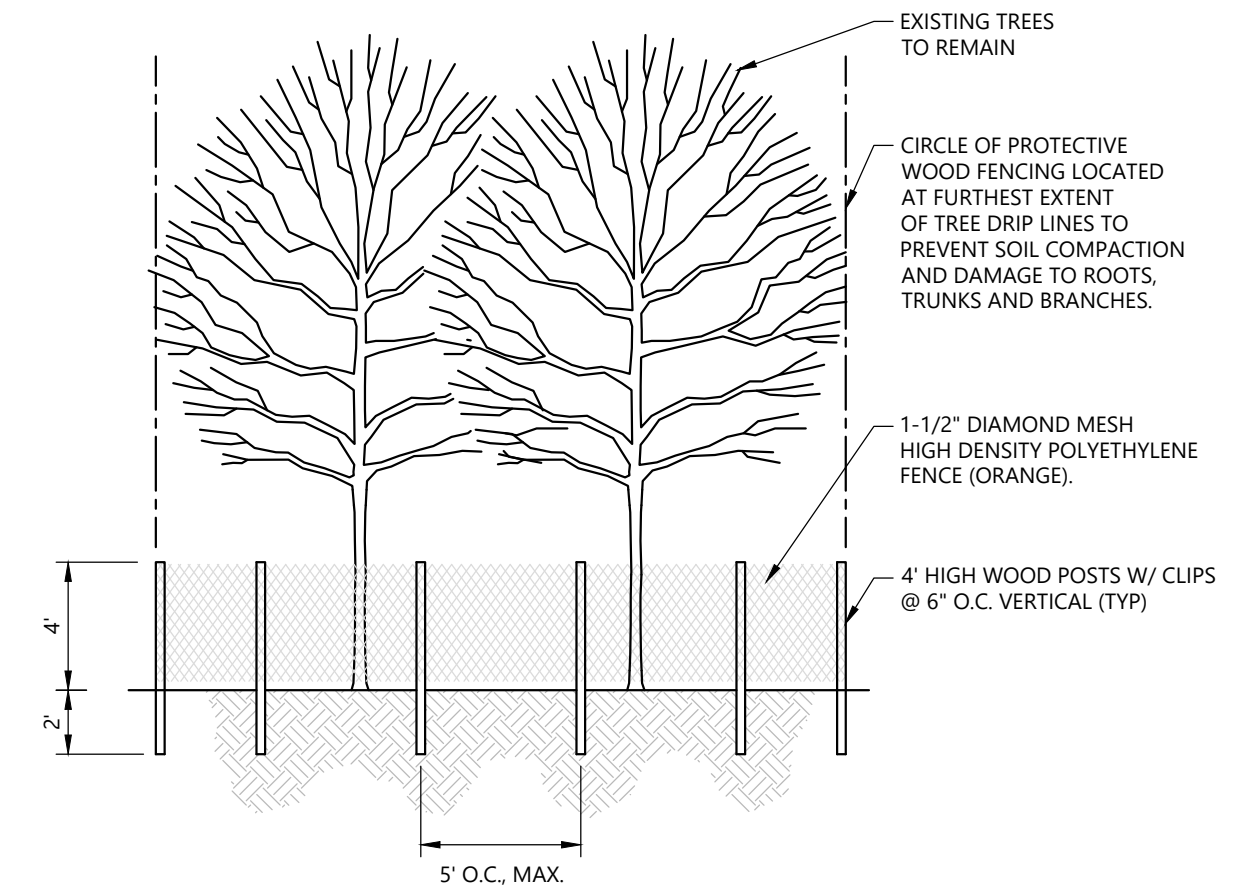


NOTES

1. LOCATE FENCING AS SHOWN ON PLANS.
2. NO MATERIAL OR EQUIPMENT SHALL BE STORED OR STOCKPILED WITHIN THE AREA SURROUNDED BY TREE PROTECTION FENCING.
3. FENCE MUST REMAIN AND BE MAINTAINED THROUGHOUT ENTIRE BUILDING PHASES DURING WHICH CONSTRUCTION MAY AFFECT TREES.

TREE PROTECTION

N.T.S.

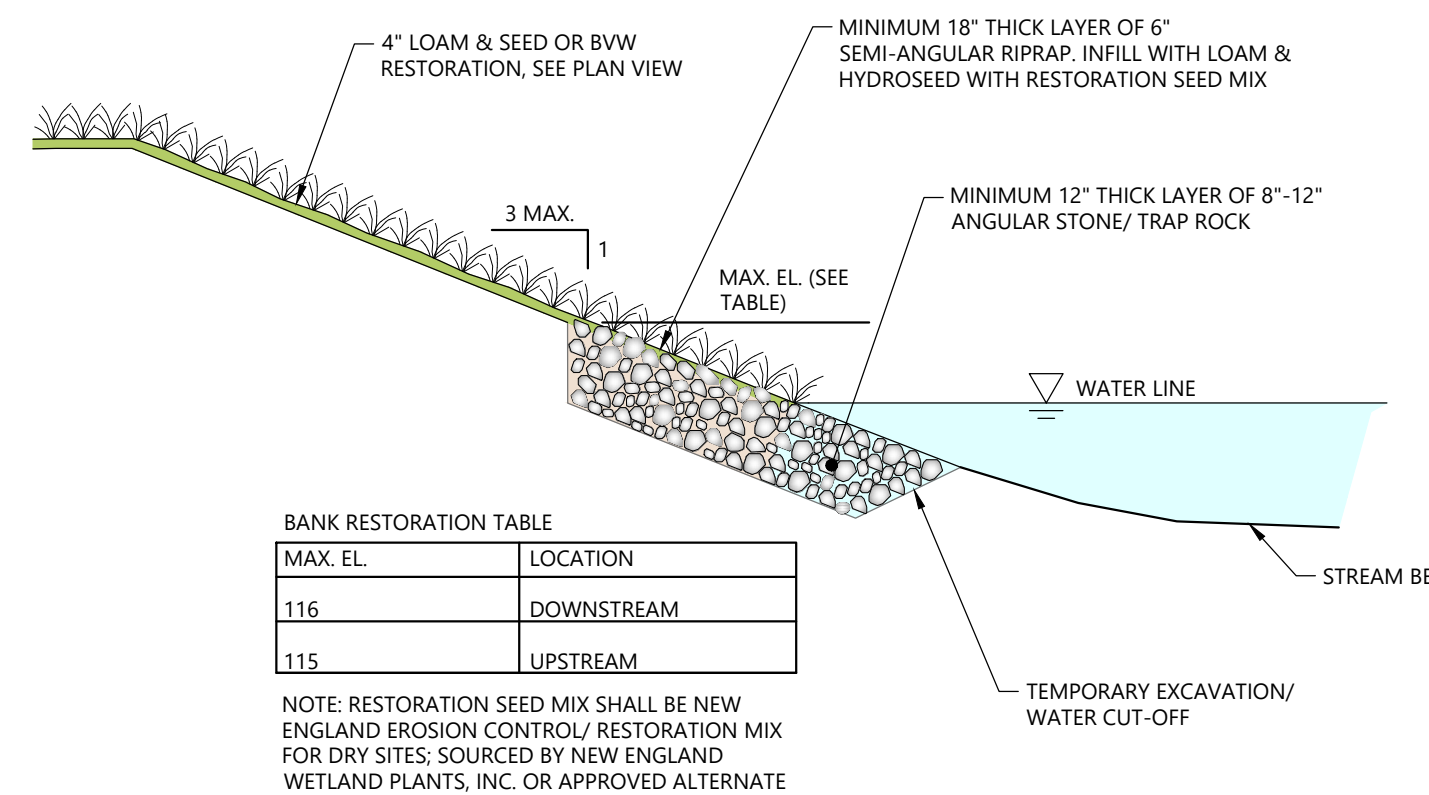


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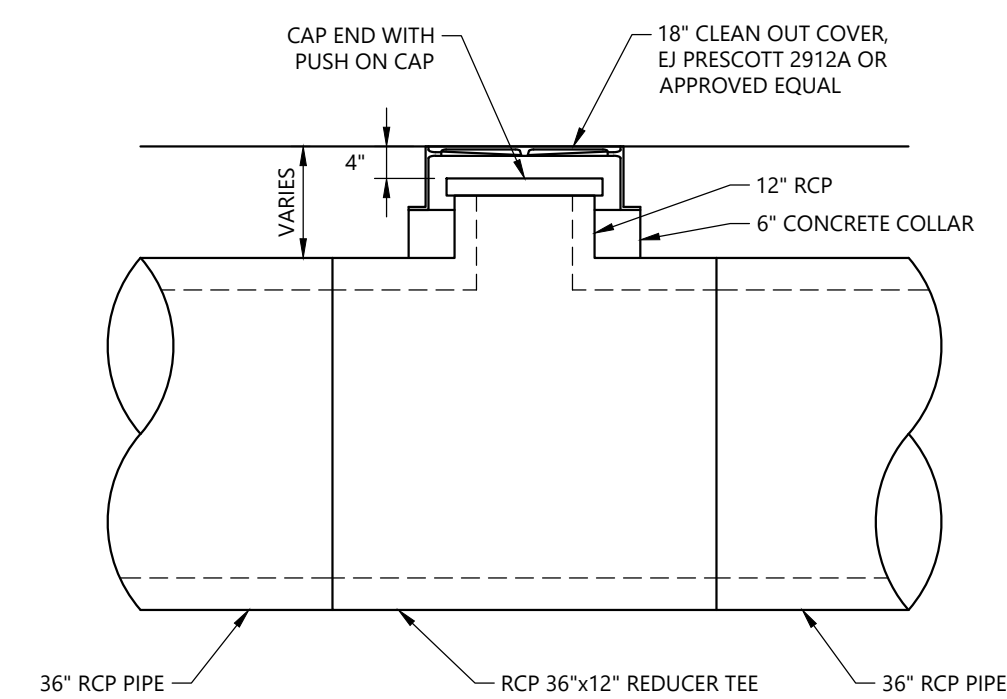


BANK RESTORATION TABLE	
MAX. EL.	LOCATION
116	DOWNSTREAM
115	UPSTREAM

NOTE: RESTORATION SEED MIX SHALL BE NEW ENGLAND EROSION CONTROL/ RESTORATION MIX FOR DRY SITES; SOURCED BY NEW ENGLAND WETLAND PLANTS, INC. OR APPROVED ALTERNATE

BANK RESTORATION DETAIL

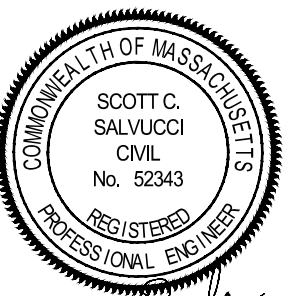
N.T.S.



CULVERT REDUCER & CLEAN OUT

N.T.S.

PE SEAL:



Scott Salucci

ISSUED FOR BID

CLIENT INFO:

**TOWN OF BEDFORD
BEDFORD, MASSACHUSETTS**

**RICHARD ROAD
CULVERT REPLACEMENT**

REV	MM/DD/YY	DESCRIPTION

JOB NO:	0235172.01
DATE:	JUNE 2024
SCALE:	AS NOTED
DESIGNED BY:	KLR
DRAWN BY:	JBC
CHECKED BY:	GB
FILENAME:	0235172.01 DETAILS.dwg

DRAWING TITLE:
**CIVIL
CIVIL DETAILS - 5**

DRAWING NO:
C-304