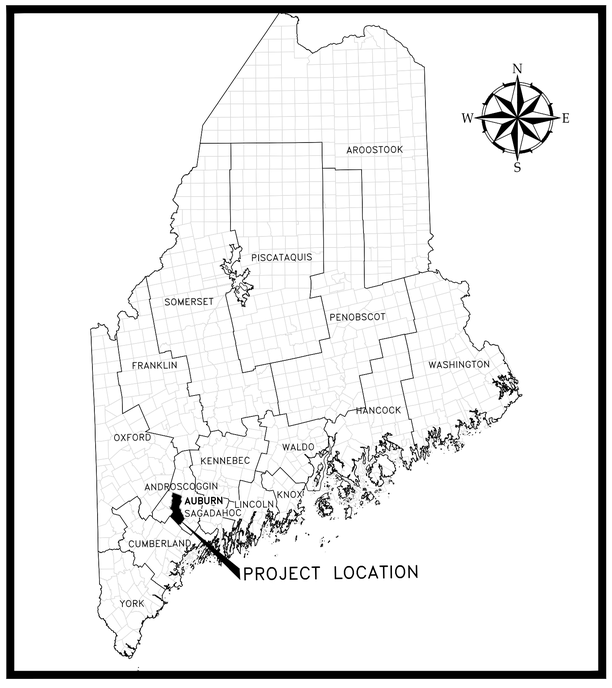
CITY OF AUBURN
ANDROSCOGGIN COUNTY

FISH HATCHERY ROAD CULVERT REPLACEMENT



PROJECT LOCATION MAP

PROJECT NO. 0230620.25

JANUARY 2022

ISSUED FOR BID

41 Hutchins Drive
Portland, Maine 04102
800.426.4262 | www.woodardcurran.com

COMMITMENT & INTEGRITY DRIVE RESULTS

STATE OF MAINE
MEGAN D.L. MCDEVITT
No. 13019
LICENSED PROFESSIONAL ENGINEER

SOURCE: USGS TOPOGRAPHIC MAP

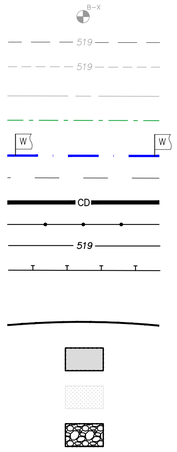
SITE LOCATION MAP

\\woodardcurran.net\shared\Projects\0230620.25 Auburn ME – Fish Hatchery Culvert Des\wip\Drawings\General\G000 – Title.dwg, Jan 11, 2022 – 1:45pm HRITMILLER

GENERAL NOTES

1. SITE AND TOPOGRAPHIC DATA PROVIDED BY SGC ENGINEERING, LLC OF WESTBROOK, MAINE BASED ON A SURVEY CONDUCTED FOR THE CITY OF AUBURN IN APRIL 2021. SURVEY CONTROL REFERENCED HORIZONTALLY WITH THE MAINE STATE PLANE COORDINATE SYSTEM, NAD '83, WEST ZONE AND VERTICALLY WITH NAVD '88.
2. TWO TEST BORINGS WERE CONDUCTED BY S.W. COLE ENGINEERING, INC. WITHIN THE VICINITY OF THE EXISTING CULVERT ON APRIL 19, 2021. THE LOCATION OF THESE BORINGS, THE SUBSURFACE CONDITIONS ENCOUNTERED, AND GEOTECHNICAL RECOMMENDATIONS ARE PROVIDED IN AN EXPLORATIONS AND GEOTECHNICAL ENGINEERING SERVICES REPORT, DATED JUNE 25, 2021.
3. THE UTILITY LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND REQUIRE FIELD VERIFICATION BY THE CONTRACTOR PRIOR TO CONSTRUCTION ACTIVITY. NOT ALL EXISTING UTILITIES ARE SHOWN ON PLANS.
4. CONTRACTOR SHALL CLEAN AND/OR FLUSH CULVERT AFTER THE WORK HAS BEEN COMPLETED. FLUSHING SHALL BE INCIDENTAL TO THE CONTRACT.
5. CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITY WITH UTILITY COMPANIES, EMERGENCY SERVICES, AND THE CITY. NOTIFY UTILITY COMPANIES AT LEAST 48 HOURS PRIOR TO WORK ACTIVITY ADJACENT TO THOSE UTILITIES.
6. 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 888-344-7233, AT LEAST 72 HOURS PRIOR TO EXCAVATION.
7. CONTRACTOR SHALL RESTORE ALL AREA DISTURBED BY CONSTRUCTION ACTITIVIES TO ORIGINAL FINISH (GRAVEL, PAVEMENT, GRASS, ETC.) UNLESS OTHERWISE NOTED ON PLANS. RESTORATION OF LAWNS DAMAGED BY CONTRACTOR OPERATIONS SHALL BE INCIDENTAL TO THE PROJECT.
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 REGISTERED LAND SURVEYOR APPROVED BY THE CITY OR ENGINEER.
9. EXISTING FACILITIES (E.G. GUARDRAILS, TREES, MAILBOXES, POLES, LIGHT POSTS, CATCH BASINS, ETC.) THAT ARE NOT SCHEDULED TO BE REMOVED SHALL BE PROTECTED DURING CONSTRUCTION AND SHALL BE INCIDENTAL TO THE CONTRACT. THE CITY RETAINS RIGHT TO KEEP ANY AND ALL REMOVED FACILITIES. CONTRACTOR TO DISPOSE OF ANY REMOVED FACILITY AT THE REQUEST OF THE CITY OR RESIDENT ENGINEER AT CONTRACTOR'S EXPENSE.
10. DO NOT PARK OR STORE EQUIPMENT ON ADJACENT CITY OR PRIVATELY OWNED LOTS, UNLESS PERMISSION HAS BEEN GRANTED IN WRITING BY CITY OR LAND OWNER.
11. RESTRICT ACCESS TO CONSTRUCTION AREA THROUGH THE USE OF APPROPRIATE SIGNAGE, GATES, BARRIERS, FENCES, ETC. SITE SHALL BE LEFT WITH APPROPRIATE SAFETY MEASURES IN PLACE DURING NON-WORKING HOURS. NO TRENCH SHALL BE LEFT OPEN DURING NON-WORKING HOURS. SITE SAFETY IS THE SOLE RESPONSIBILITY OF CONTRACTOR, DURING BOTH WORKING AND NON-WORKING HOURS.
12. PROVIDE 4 INCHES OF LOAM AND SEED IN ALL LAWN AREAS DISTURBED BY CONTRACTOR'S OPERATIONS.
13. CONTRACTOR SHALL PREPARE A COMPLETE SET OF "RECORD" DRAWINGS THAT REFLECT THE CONSTRUCTED CONDITIONS, INCLUDING PLANIMETRICS, TOPOGRAPHY AND UTILITY INFORMATION.
14. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY CONSTRUCTION PERMITS. PERMIT APPLICATIONS SHALL BE SUBMITTED WITH ADEQUATE TIME SO AS NOT TO DELAY CONSTRUCTION.
15. ALL WORK SHALL BE DONE IN ACCORDANCE WITH MAINE DEPARTMENT OF TRANSPORTATION'S BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENTATION CONTROL, MOST RECENT EDITION.
16. CONTRACTOR TO COORDINATE ROAD CLOSURE WITH THE CITY AND SHALL PROVIDE AND MAINTAIN DETOUR SIGNAGE THROUGHOUT THE DURATION OF CONSTRUCTION.
17. ALL IN-WATER WORK SHALL BE COMPLETED BETWEEN JULY 15, 2022 AND SEPTEMBER 30, 2022.
18. CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE DEPARTMENT OF THE ARMY MAINE GENERAL PERMIT NAE-2021-02980.

LEGEND



- APPROXIMATE BOREHOLE LOCATION
- EXISTING CONTOUR (MAJOR)
- EXISTING CONTOUR (MINOR)
- ROADWAY CENTERLINE
- ORDINARY HIGH WATER LINE
- WETLANDS
- STREAM
- PROPOSED COFFERDAM
- PROPOSED SEDIMENT BARRIER
- PROPOSED CONTOUR
- PROPOSED GUARDRAIL
- TURBIDITY BARRIER
- PROPOSED PAVEMENT
- WETLAND IMPACT
- PROPOSED RIP RAP

SHEET INDEX

ABBREVIATIONS

BIT.	BITUMINOUS
CONC.	CONCRETE
EOP	EDGE OF PAVEMENT
INV.	INVERT
L.O.W.	LIMIT OF WORK
OHW	OVERHEAD WIRE
N.A.V.D.	NORTH AMERICAN VERTICAL DATUM
STA	STATION
TYP.	TYPICAL

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STATE OF MAINE
MEGAN J. MCDEVITT
No. 13019
PROFESSIONAL ENGINEER
1/26/2022

REV	DESCRIPTION	DATE
DESIGNED BY: ALD	CHECKED BY: MDJM	
DRAWN BY: HAR	G001 - INDEX.dwg	

NOTES, ABBREVIATIONS, LEGEND AND SHEET INDEX

CITY OF AUBURN
ANDROSCOGGIN COUNTY

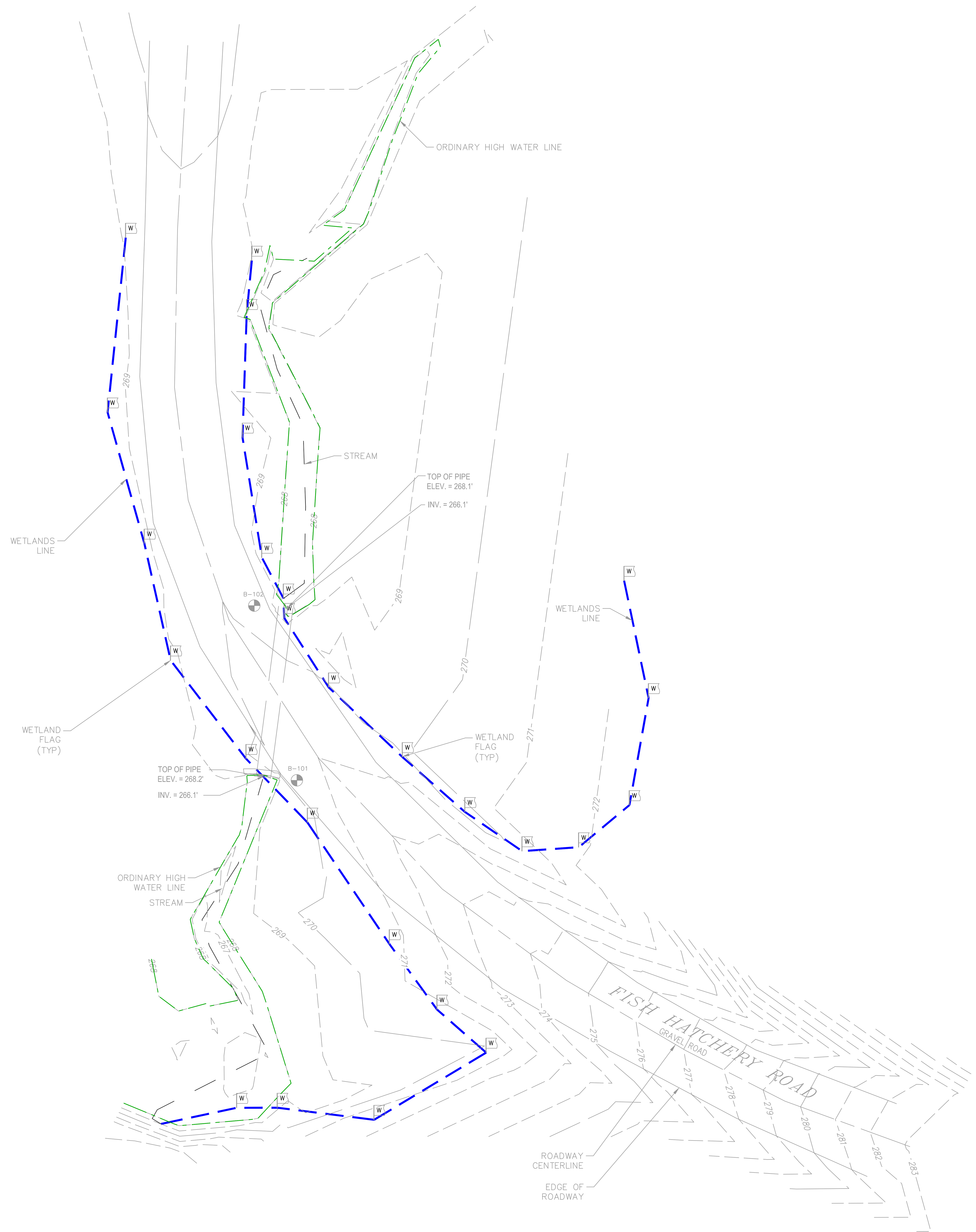
FISH HATCHERY ROAD
CULVERT REPLACEMENT

JOB NO: 0230620.25
DATE: JANUARY 2022
SCALE: NTS
SHEET: 2 OF 8

G-001

\\woodardcurran.net\shared\Projects\0230620.25 Auburn ME - Fish Hatchery Culvert Des\wip\Drawings\General\G001 - Index.dwg, Jan 11, 2022 - 1:46pm HRITMILLER

22x34 SHEET
1:1



TEMPORARY BENCHMARK
SPIKE IN GROUND
ELEVATION = 289.68'
N:485775.61'
E:2934543.59'

20' 0 20' 40'
BAR SCALE
1" = 20'
CHECK GRAPHIC SCALE BEFORE USING

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STATE OF MAINE
MEGAN D.L. MCDEVITT
No. 13019
LICENSED PROFESSIONAL ENGINEER

REV	DESCRIPTION	DATE

DESIGNED BY: KLD
CHECKED BY: MDLM
DRAWN BY: HAR
C001 - Ex.dwg

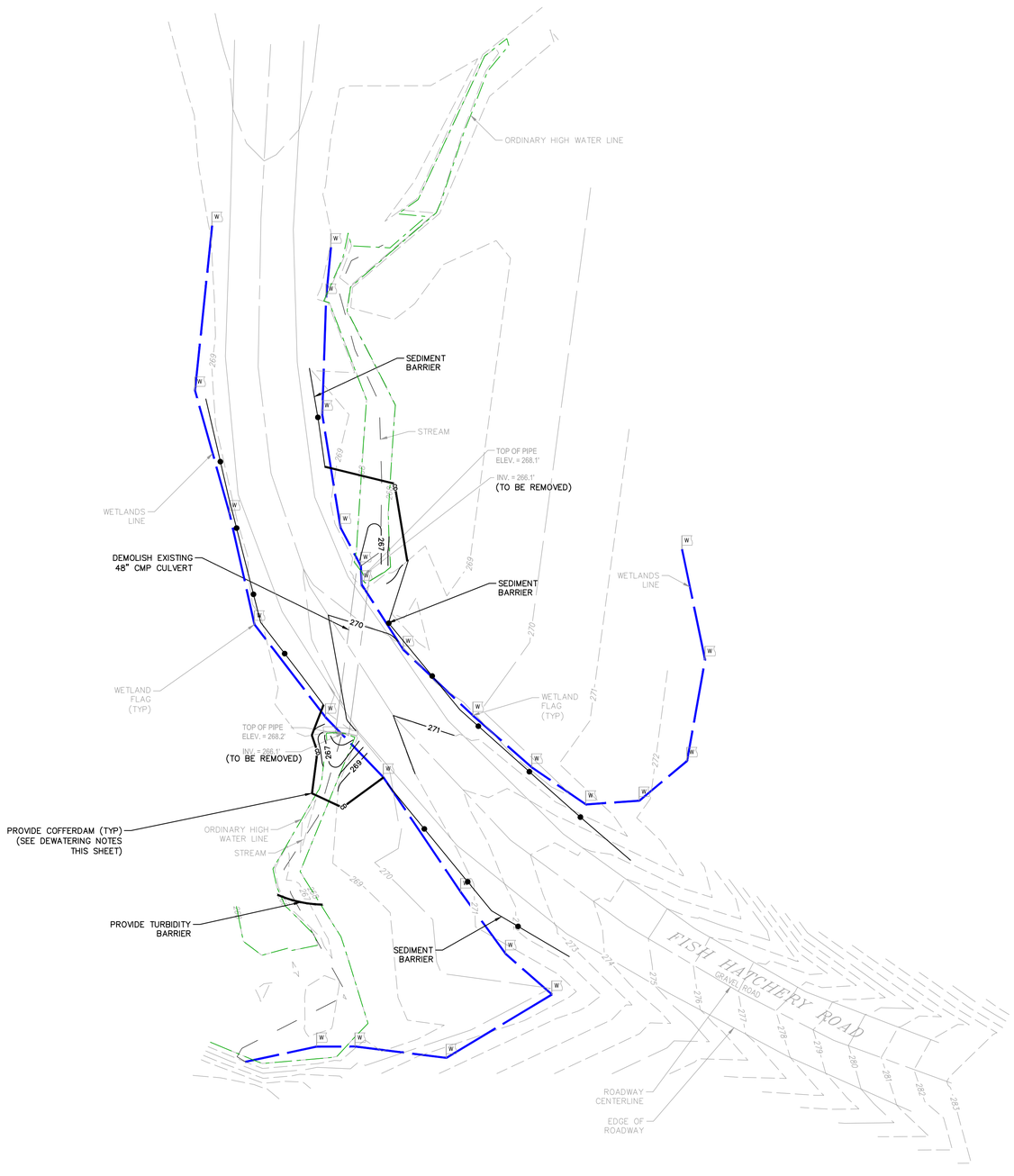
EXISTING CONDITIONS PLAN

CITY OF AUBURN
ANDROSCOGGIN COUNTY

FISH HATCHERY ROAD
CULVERT REPLACEMENT

JOB NO: 0230620.25
DATE: JANUARY 2022
SCALE: 1"=20'
SHEET: 3 OF 8

C-001



DEWATERING NOTES:

1. THE CONTRACTOR SHALL SUBMIT A WATER CONTROL MANAGEMENT PLAN FOR THE PROJECT IN ACCORDANCE WITH THE SPECIFICATIONS. THE PLAN SHALL INCLUDE A DESCRIPTION OF PROPOSED PROCEDURES FOR DEWATERING METHODS.

TEMPORARY BENCHMARK
SPIKE IN GROUND
ELEVATION = 269.68'
N:485775.61'
E:2934543.59'

20' 0 20' 40'
BAR SCALE
1" = 20'
CHECK GRAPHIC SCALE BEFORE USING

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STATE OF MAINE
MEGAN L. MCDEVITT
No. 13019
PROFESSIONAL ENGINEER

REV	DESCRIPTION	DATE
DESIGNED BY:	ALD	
DRAWN BY:	HAR	
CHECKED BY:	MDLM	
0202- E&S.dwg		

SITE PREPARATION AND EROSION & SEDIMENT CONTROL PLAN

CITY OF AUBURN
ANDROSCOGGIN COUNTY

FISH HATCHERY ROAD
CULVERT REPLACEMENT

JOB NO:	0230620.25
DATE:	JANUARY 2022
SCALE:	1"=20'
SHEET:	4 OF 8

C-002

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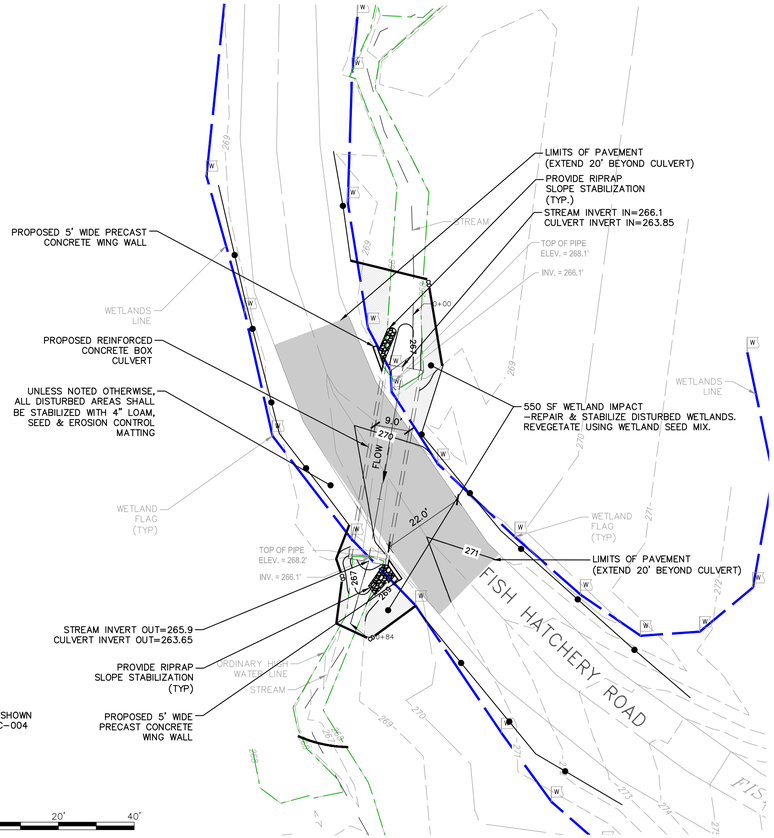


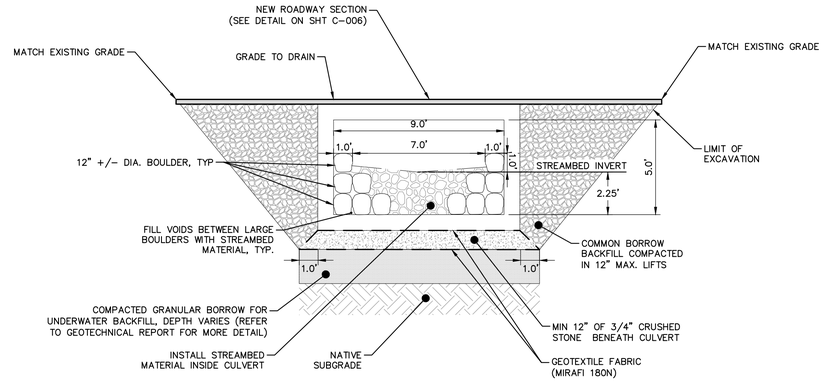
PLAN NOTE:

PROPOSED GUARDRAIL NOT SHOWN FOR CLARITY. SEE SHEET C-004 FOR PLAN & DETAILS.

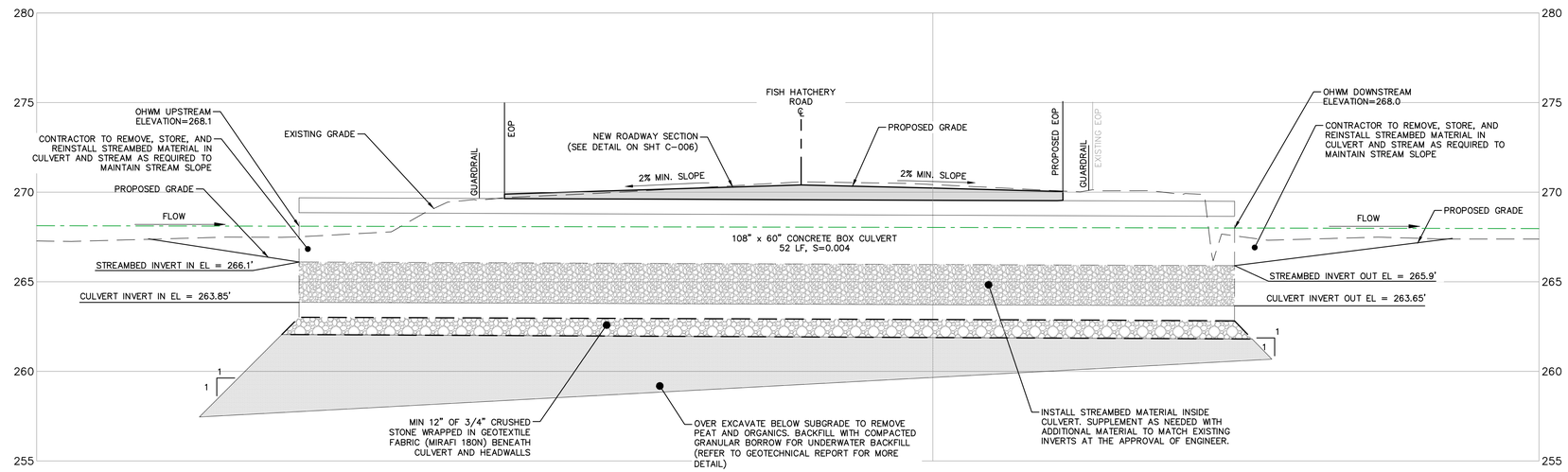
20' 0 20' 40'

BAR SCALE
1" = 20'
CHECK GRAPHIC SCALE BEFORE USING

PLAN VIEW
SCALE: 1" = 20'



TYPICAL SECTION VIEW
HORIZONTAL SCALE: 1" = 4'
VERTICAL SCALE: 1" = 4'



PROFILE STA. 0+00 TO STA. 0+84
HORIZONTAL SCALE: 1" = 4'
VERTICAL SCALE: 1" = 4'

NOTES:

1. CONDUCT WORK IN ACCORDANCE WITH GEOTECHNICAL REPORT, PREPARED BY S.W. COLE ENGINEERING, INC., DATED JUNE 25, 2021.
2. EXTENT OF PEAT REMOVAL IS APPROXIMATE AND SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR.

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STATE OF MAINE
MEGAN MCDEVITT
No. 13019
LICENSED
PROFESSIONAL ENGINEER

REV	DESCRIPTION	DATE
DESIGNED BY: KLD	CHECKED BY: MDLM	
DRAWN BY: HAR	C003-PROFILE.dwg	

CULVERT REPLACEMENT PLAN & PROFILE

CITY OF AUBURN
ANDROSCOGGIN COUNTY

FISH HATCHERY ROAD
CULVERT REPLACEMENT

JOB NO:	0230620.25
DATE:	JANUARY 2022
SCALE:	AS NOTED
SHEET:	5 OF 8

C-003

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22x34 SHEET
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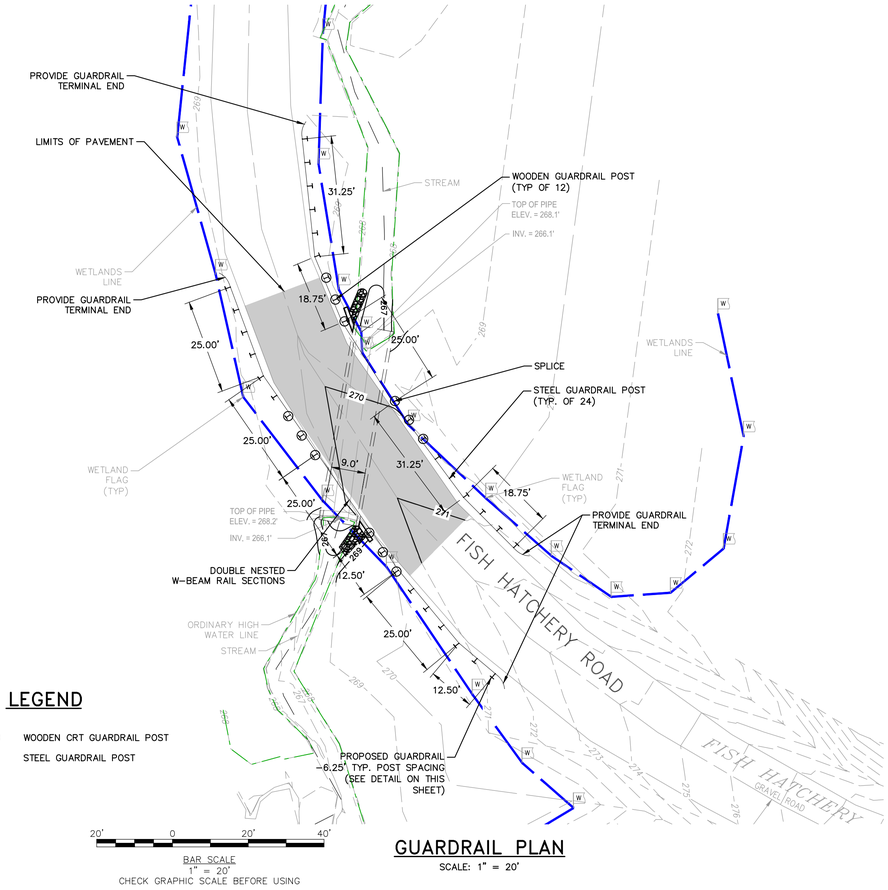
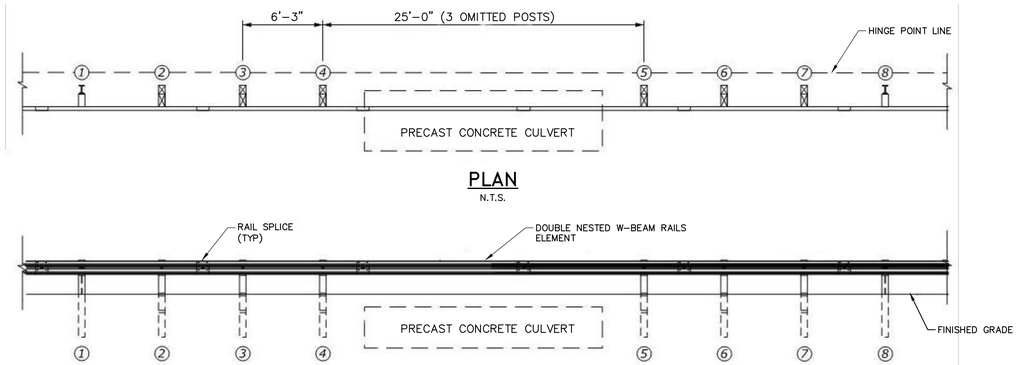


LEGEND

- WOODEN CRT GUARDRAIL POST
- STEEL GUARDRAIL POST

GUARDRAIL PLAN

SCALE: 1" = 20'

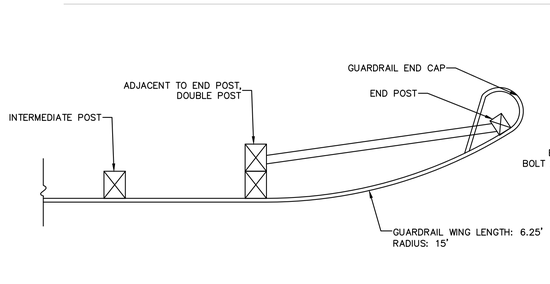


PLAN

N.T.S.

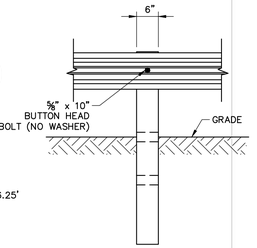
ELEVATION

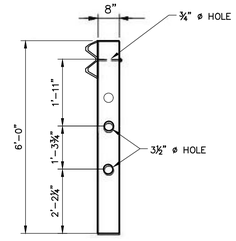
N.T.S.



GUARDRAIL TERMINAL END DETAIL

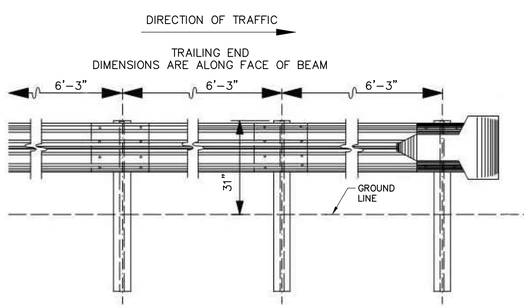
N.T.S.





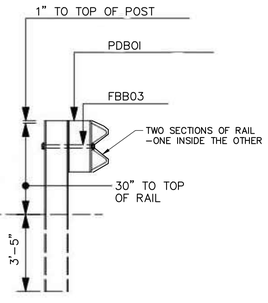
WOODEN CRT GUARDRAIL POST DETAIL

N.T.S.



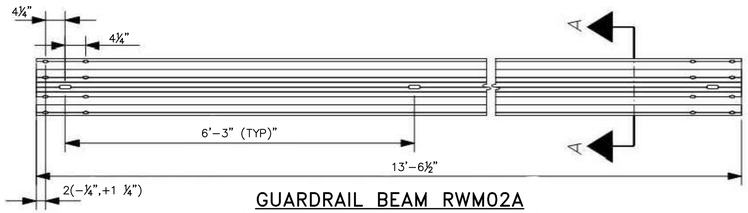
ELEVATION

N.T.S.



STEEL POST (PWE01)

N.T.S.

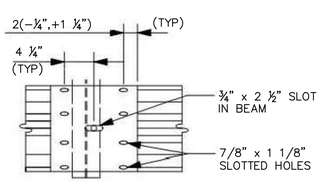


GUARDRAIL BEAM RWM02A (MINIMUM THICKNESS 0.105")

N.T.S.

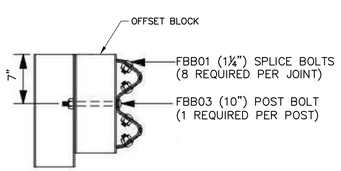
NOTE:

ALL DIMENSIONS SUBJECT TO MANUFACTURING TOLERANCES.



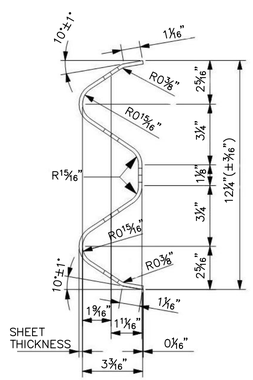
GUARDRAIL SPLICE AT POST

N.T.S.



GUARDRAIL SECTION THROUGH GUARDRAIL SPLICE

N.T.S.



SECTION A–A GUARDRAIL BEAM DETAIL RWM02A

N.T.S.

(SINGLE SECTION)

NOTES:

1. INTERMEDIATE POST SPACING SHALL BE 6'-3" UNLESS OTHERWISE SHOWN.
2. STEEL POSTS FOR GUARDRAIL SHALL BE W6x9.0 OR W6x8.5.
3. STEEL POSTS PUNCHED WITH HOLES IN ADDITION TO THOSE SPECIFIED TO ACCOMMODATE OTHER TYPES OF GUARDRAIL, WILL BE ACCEPTED SUBJECT TO THE APPROVAL OF THE RESIDENT.
4. COMPOSITE OFFSET BLOCKS MAY BE USED AS AN ALTERNATIVE TO WOOD OFFSET BLOCKS PROVIDED THAT THEY MEET NCHRP 350 REQUIREMENTS AND ARE INSTALLED IN ACCORDANCE TO MANUFACTURERS SPECIFICATIONS.
5. BEAM TYPE GUARDRAIL SET ON A RADIUS OF 150' OR LESS SHALL BE CIRCULAR GUARDRAIL.
6. OFFSET BLOCKS SHALL BE INSTALLED ON ALL POSTS.
7. IDENTIFICATION LETTERS AND NUMBERS ON DRAWINGS REFER TO THE STANDARD DETAIL DRAWINGS SHOWN IN "A GUIDE TO STANDARDIZED HIGHWAY BARRIER HARDWARE" BY AASHTO–AGC–ARTBA JOINT COMMITTEE.

ISSUED FOR BID

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STATE OF MAINE — MEGAN L. MCDEVITT No. 13019 — PROFESSIONAL ENGINEER — 03/25/2022

REV.	DESCRIPTION	DATE
DESIGNED BY: KLD	CHECKED BY: MDLM	
DRAWN BY: HAR	C004 - GUARDRAIL.dwg	

GUARDRAIL PLAN & DETAILS

CITY OF AUBURN
ANDROSCOGGIN COUNTY

FISH HATCHERY ROAD
CULVERT REPLACEMENT

JOB NO: 0230620.25
DATE: JANUARY 2022
SCALE: AS NOTED
SHEET: 6 OF 8

C-004

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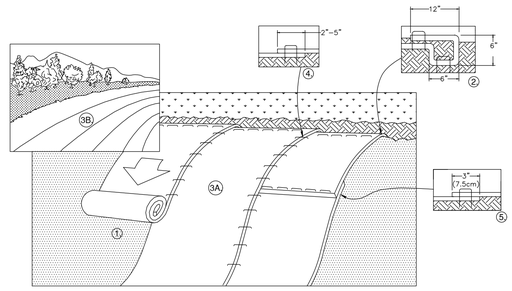
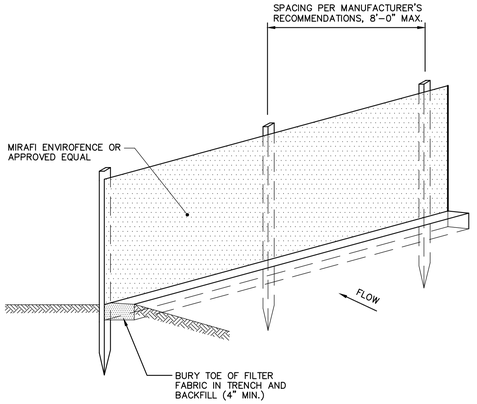


1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED AS WELL AS REMOVING ANY PROTRUDING ROCKS, STUMPS OR ROOTS.
2. DURING THE GROWING SEASON (APRIL 15– SEPTEMBER 15) USE RECP'S ON THE BASE OF GRASSED WATERWAYS, SOIL SLOPES HAVING A GRADE GREATER THAT 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.
3. FOR OVER WINTER PROTECTION, APPLY RECP'S ON THE BASE AND SIDE SLOPES OF GRASSED WATERWAYS AND ON SLOPES STEEPER THAN AN 8% GRADE.
4. 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. 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.
5. 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.
6. THE EDGES OF PARALLEL RECP's MUST BE STAPLED WITH APPROXIMATELY 2" – 5" OVERLAP DEPENDING ON RECP's TYPE.
7. 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.
8. UNTIL GRASS IS ABUNDANT, INSPECT PERIODICALLY AND AFTER EACH RAINSTORM TO CHECK FOR EROSION. IMMEDIATELY REPAIR AND ADD MORE MULCH UNTIL GRASSES ARE FIRMLY ESTABLISHED.
9. DO NOT MOW THE FIRST YEAR.
10. DETAIL SHALL BE CONSIDERED GENERAL GUIDANCE FOR RECP INSTALLATION; CONTRACTOR SHALL INSTALL RECP IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.

ROLLED EROSION CONTROL MATTING

N.T.S.



NOTES:

- INSTALL FABRIC ON UPHILL SIDE OF SUPPORT POSTS
- INSTALL SILT FENCE ACROSS SLOPES
- SILT FENCE SHALL 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 LESS.

REMOVAL: WHEN UPSLOPE AREAS ARE STABILIZED, THE STRUCTURE AND ANY ACCUMULATED SEDIMENT WILL BE REMOVED.

SEDIMENT BARRIER DETAIL SILTATION FENCE (CONTRACTOR OPTION)

N.T.S.

NOTES:

1. BARRIER WILL EXTEND ACROSS THE ENTIRE CHANNEL WHEN WORK IS PERFORMED WITHIN THE CHANNEL.
2. ROPE SHALL BE 1/2" NYLON OR MANILA.

FLOATING TURBIDITY BARRIER

N.T.S.

Erosion Control Mix Berms

Erosion control mix can be manufactured on or off the project site. It must consist primarily of organic material and may include: shredded bark, stump grindings, composted bark, or acceptable manufactured products. Wood and bark chips, ground construction debris or reprocessed wood products will not be acceptable as the organic component of the mix.

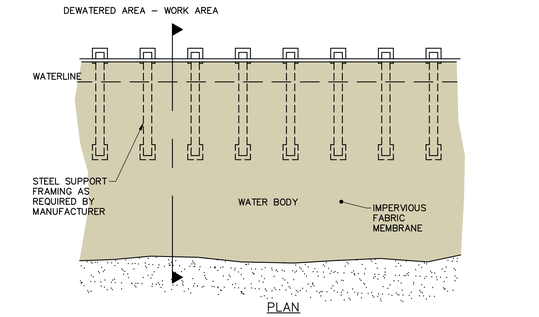
Composition

Erosion control mix shall contain a well–graded mixture of particle sizes and may contain rocks less than 4" in diameter. Erosion control mix must be free of refuse, physical contaminants, and material toxic to plant growth. The mix composition shall meet the following standards:

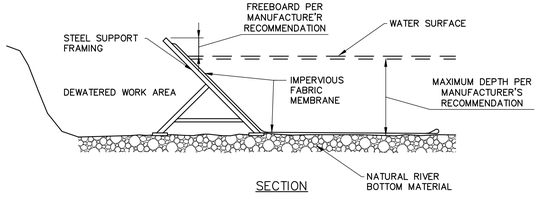
- The organic matter content shall be between 80 and 100%, dry weight basis.
- Particle size by weight shall be 100 % passing a 6" screen and a minimum of 70%, maximum of 85%, passing a 0.75" screen.
- The organic portion needs to be fibrous and elongated.
- Large portions of silts, clays or fine sands are not acceptable in the mix.
- Soluble salts content shall be < 4.0 mmhos/cm.
- The pH should fall between 5.0 and 8.0.

SEDIMENT BARRIER DETAIL EROSION CONTROL MIX BERM (CONTRACTOR OPTION)

N.T.S.



PLAN



SECTION

NOTE:

COFFERDAM DETAIL SHOWN FOR REFERENCE PURPOSES. CONTRACTOR SHALL PROVIDE DESIGN OF TEMPORARY COFFERDAMS, STAMPED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF MAINE.

TEMPORARY FRAME & FABRIC COFFERDAM DETAIL

SCALE: NOT TO SCALE

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

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 Siltsack, Siltsaver 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. 1	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.
Hay Mulch	April 15 to Sept. 15	On all areas of exposed soil that will not be actively worked for 7 days and prior to rain events, apply 70–90 lbs (2 bales) per 1,000 sq ft. by mechanical blower. Provide anchoring on slopes greater than 5%.
Winter Mulch	Sept. 16 to Oct. 31	On all areas of exposed soil that will not be actively worked for 7 days and prior to precipitation, apply 140 to 180 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.
Inspections	Until site is permanently stabilized	Inspect the erosion and sedimentation control measures daily, 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.

EROSION AND SEDIMENTATION CONTROL NOTES

TEMPORARY EROSION CONTROL MEASURES MAY INCLUDE THE USE OF STABILIZED CONSTRUCTION ENTRANCES, HYDRAULIC MULCH, HAY AND STRAW MULCH, EROSION CONTROL BLANKET, TURF REINFORCED MATTING, RIPRAP AND TEMPORARY SEEDING. TEMPORARY SEDIMENT CONTROL MEASURES INCLUDE THE USE OF SILT FENCE, EROSION CONTROL MIX BERMS, PLUNGE POOLS, CHECK DAMS, SEDIMENT TRAPS, CATCHBASIN SEDIMENT COLLECTION BAGS AND GEOTEXTILE FILTER BAGS. PERMANENT MEASURES INCLUDE THE USE OF RIPRAP AT EXPOSED STORMDRAIN AND CULVERT INLETS AND OUTLETS, ARMORED SWALES AND SLOPES AND PERMANENT VEGETATION.

GENERAL

A. THE PROJECT SHALL CONFORM WITH THE STANDARDS OF THE MAINE CONSTRUCTION GENERAL PERMIT, IF APPLICABLE.

B. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE MAINE EROSION AND SEDIMENT CONTROL BMPS HANDBOOK PUBLISHED BY THE MAINE DEP UNLESS OTHERWISE NOTED IN THESE PLANS.

C. ANY ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES DEEMED NECESSARY BY THE OWNER'S REPRESENTATIVE, DEPARTMENT OF ENVIRONMENTAL PROTECTION, AND/OR MUNICIPAL OFFICIALS SHALL BE INSTALLED BY THE CONTRACTOR.

D. THE CONTRACTOR IS RESPONSIBLE FOR ALL FINES RESULTING FROM EROSION OR SEDIMENTATION FROM THE SITE TO SURROUNDING PROPERTIES, WATER BODIES, OR WETLANDS AS A RESULT OF THIS PROJECT.

E. THE CONTRACTOR SHALL MINIMIZE DISTURBANCE TO THE SITE WHENEVER POSSIBLE WHILE ALLOWING PROPER SITE DEVELOPMENT.

F. CONSTRUCTION STAGING SHALL BE CONDUCTED IN A WAY TO MINIMIZE THE POTENTIAL FOR STORMWATER RUN–ON TO DISTURBED AREAS.

G. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR/REPLACEMENT/MAINTENANCE OF ALL EROSION CONTROL MEASURES UNTIL ALL DISTURBED AREAS ARE STABILIZED TO THE SATISFACTION OF THE ABOVE PERSONNEL. DESCRIPTIONS OF PERMANENT STABILIZATION FOR VARIOUS COVER TYPES FOLLOWS:

i. FOR SEEDED AREAS, PERMANENT STABILIZATION MEANS THAT 90% OF THE DISTURBED AREA IS COVERED WITH REASONABLY THICK UNIFORM STAND OF PERMANENT GRASS SPECIES, FREE FROM SIZABLE THIN OR BARE SPOTS.
ii. FOR SODDED AREAS, PERMANENT STABILIZATION MEANS THAT COMPLETE BINDING OF THE SOD ROOTS INTO THE UNDERLYING SOIL WITH NO SLUMPING OF THE SOD OR DIE OFF.
iii. FOR MULCHED AREAS, PERMANENT STABILIZATION MEANS TOTAL COVERAGE OF THE EXPOSED AREA WITH AN APPROVED MULCH MATERIAL.
iv. FOR AREAS STABILIZED WITH RIPRAP, PERMANENT STABILIZATION MEANS THAT SLOPES STABILIZED WITH RIPRAP HAVE AN APPROPRIATE BACKING OF A WELL–GRADED GRAVEL OR APPROVED GEOTEXTILE. STONE MUST BE SIZED APPROPRIATELY AND IN ACCORDANCE WITH SECTION E–6 OF THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL.
v. FOR PAVED AREAS, PERMANENT STABILIZATION MEANS THE PLACEMENT OF THE ASPHALT BINDER COURSE.
vi. FOR OPEN CHANNELS, LEVEL SPREADERS, ENGINEERED BUFFERS OR OTHER DESIGNED STORMWATER CONVEYANCE STRUCTURE, PERMANENT STABILIZATION MEANS THE CHANNELIZED AREA(S) IS STABILIZED WITH MATURE VEGETATION AT LEAST THREE INCHES IN HEIGHT, WITH APPROVED RIPRAP, OR WITH OTHER NON–EROSIVE LINING CAPABLE OF WITHSTANDING THE ANTICIPATED FLOW VELOCITIES AND FLOW DEPTHS WITHOUT RELIANCE ON CHECK DAMS TO SLOW FLOW. THERE SHALL BE NO EVIDENCE OF SLUMPING, UNDERCUTTING OR DOWNCUTTING OF THE DESIGNED CHANNEL.

H. IF THE AREA WILL REMAIN UNWORKED FOR MORE THAN ONE YEAR OR HAS BEEN BROUGHT TO FINAL GRADE, AND WILL NOT BE BUILT ON, THEN IMMEDIATELY PROVIDE PERMANENT STABILIZATION USING VEGETATION THROUGH PLANTING, SEEDING, SOD OR THROUGH THE USE OF PERMANENT MULCH OR RIPRAP. IF USING VEGETATION FOR STABILIZATION, SELECT THE PROPER VEGETATION FOR THE LIGHT, MOISTURE, AND SOIL CONDITIONS. AMEND AREAS OF DISTURBED, OVERLY–COMPACTED SUBSOIL WITH TOPSOIL OR COMPOST AND LIGHTLY TILL 2–3" OF SOIL AMENDMENTS INTO THE TOP 8" OF SOIL.

I. PERMANENT SEEDING SPECIFICATION: IT IS RECOMMENDED THAT PERMANENT SEEDING BE COMPLETED BETWEEN APRIL 1 AND AUGUST 15 OF EACH YEAR. LATE SEASON SEEDING MAY BE DONE BETWEEN AUGUST 15 AND SEPTEMBER 15. AREAS NOT SEEDED OR WHICH DO NOT OBTAIN A SATISFACTORY GROWTH BY OCTOBER 1 SHALL BE SEEDED WITH AROOSTOCK WINTER RYE OR MULCHED AT SPECIFIED RATES. SEE WINTER SEEDING AND MULCHING SPECIFICATIONS FOR STABILIZATION AFTER NOVEMBER 1.

i. APPLY TOPSOIL TO A DEPTH OF 4 INCHES. IN COMPACTED AREAS TILL 2–3" OF COMPOST INTO UPPER 8" OF DISTURBED SOIL AND THEN APPLY 4 INCHES OF TOPSOIL.
ii. APPLY LIME AND FERTILIZER ACCORDING TO SOIL TESTS. IN LIEU OF SOIL TESTS, APPLY GROUND LIMESTONE AT A RATE OF 33 LBS PER 1000 SQUARE FEET AND GRANULAR, COMMERCIAL–GRADE FERTILIZER 10–10–10 AT A RATE OF 18 LBS PER 1000 SQUARE FEET.
iii. UNIFORMLY APPLY SEED MIXTURE AT THE RECOMMENDED SEEDING RATES AND DATES, APPLY HAY OR STRAW MULCH AT A RATE OF 2.5 BALES PER 1000 SQUARE FEET AND ANCHOR AS NECESSARY.

J. PROTECT ALL SEEDED AREAS WITH MULCH OR EROSION CONTROL BLANKET IN AREAS OF SHEET OR CONCENTRATED FLOWS. MULCH ALL AREAS SO THAT SOIL IS NOT VISIBLE THROUGH THE MULCH REGARDLESS OF THE APPLICATION RATE. SCHEDULE SEEDING OR SODDING TO AVOID FAILURE DUE TO SUMMER DROUGHT AND FALL FROST. NEWLY SEEDED AREAS SHOULD BE PROTECTED FROM VEHICLE TRAFFIC, PEDESTRIAN TRAFFIC AND CONCENTRATED RUNOFF UNTIL THE VEGETATION IS WELL ESTABLISHED. AREAS MUST BE REWORKED AND RESTABILIZED IF GERMINATION IS SPARSE OR SURFACE EROSION IS EVIDENT.

K. DITCH LININGS AND RIPRAP INLET AND OUTLET PROTECTION SHALL BE INSTALLED WITHIN 48 HOURS OF COMPLETING THE GRADING OF THAT SECTION OF DITCH OR INSTALLATION OF THE CULVERT.

L. EROSION CONTROL BLANKET SHALL BE INSTALLED ON ALL PERMANENT SLOPES STEEPER THAN 3:1, IN THE BASE OF DITCHES AND ANY DISTURBED AREAS WITHIN 100 FEET OF A PROTECTED NATURAL RESOURCE (WETLANDS AND WATER RESOURCES). EROSION CONTROL BLANKET SHALL BE NORTH AMERICAN GREEN S150BN OR APPROVED EQUAL. EROSION CONTROL BLANKET SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

M. THE CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL TEMPORARY EROSION CONTROL MEASURE UPON STABILIZATION OF PROJECT AREA & COST SHALL BE INCIDENTAL TO CONTRACT.

WINTER CONDITIONS

A. WINTER CONSTRUCTION IS CONSTRUCTION ACTIVITY PERFORMED DURING THE PERIOD FROM NOVEMBER 1 THROUGH APRIL 1. IF AREAS WITHIN THE CONSTRUCTION AREA ARE NOT STABILIZED WITH TEMPORARY OR PERMANENT MEASURES OUTLINED ABOVE BY NOVEMBER 15 THEN THE SITE MUST BE PROTECTED WITH ADDITIONAL STABILIZATION MEASURES THAT ARE SPECIFIC TO WINTER CONDITIONS.

GOOD HOUSEKEEPING AND POLLUTION PREVENTION

A. SPILL PREVENTION CONTROLS MUST BE USED TO PREVENT POLLUTANTS FROM BEING DISCHARGED FROM MATERIALS ON SITE, INCLUDING STORAGE PRACTICES TO MINIMIZE EXPOSURE OF THE MATERIALS TO STORMWATER RUNOFF AND APPROPRIATE SPILL PREVENTION, CONTAINMENT AND RESPONSE PLANNING AND IMPLEMENTATION.

B. DURING CONSTRUCTION, PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS WITH THE POTENTIAL TO CONTAMINATE GROUND OR SURFACE WATERS MAY NOT BE STORED OR HANDLED IN AREAS OF THE SITE DRAINING TO INFILTRATION AREAS. AN 'INFILTRATION AREA' IS ANY ARE OF THE SITE THAT BY DESIGN, OR AS A RESULTS OF SOIL AND TOPOGRAPHY, ACCUMULATES RUNOFF THAT INFILTRATES IN THE SOIL. DIKES, BERMS, SUMPS AND OTHER FORMS OF TEMPORARY SECONDARY CONTAINMENT THAT PREVENT DISCHARGE TO GROUNDWATER MAY BE USED TO ISOLATE PORTIONS OF THE SITE FOR THE PURPOSES OF STORAGE AND HANDLING OF THESE MATERIALS.

C. LOCATE ALL MATERIAL STOCKPILES WITH CONSIDERATION FOR STORMWATER DRAINAGE PATTERNS AND INFRASTRUCTURE.

D. TAKE ALL REASONABLE MEASURES TO MINIMIZE DUST RESULTING FROM THE PROJECT. OIL MAY NOT BE USED FOR DUST CONTROL.

E. LOCATE ALL LITTER, CONSTRUCTION DEBRIS AND CONSTRUCTION CHEMICALS WITH CONSIDERATION FOR STORMWATER DRAINAGE PATTERNS AND INFRASTRUCTURE.

F. TRENCH OR FOUNDATION DE–WATERING MUST BE SPREAD THROUGH SUFFICIENT NATURAL BUFFERS THAT HAVE CAPACITY TO INFILTRATE THE PUMPED WATER OR SHOULD BE PUMPED TO DESIGNED CONSTRUCTION DEWATERING DEVICES AS DESCRIBED IN THE MAINE EROSION AND SEDIMENT CONTROL BMPS HANDBOOK.

G. SEDIMENTS AND SOIL MATERIALS SHOULD BE SWEPT FROM PAVED SURFACES AT THE END OF EACH WORKDAY OR PRIOR TO RAIN EVENTS, WHENEVER POSSIBLE.

INSPECTION AND MAINTENANCE

A. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROLS, INCLUDING THE STANDARDS IN THE MAINE CONSTRUCTION GENERAL PERMIT, THE MAINE EROSION AND SEDIMENT CONTROL BMPS HANDBOOK OR ANY MUNICIPAL REQUIREMENTS MUST CONDUCT THE INSPECTION. THIS PERSON MUST BE IDENTIFIED IN THE INSPECTION LOG. IF ADDITIONAL BMPS OR MODIFICATIONS TO BMPS ARE NECESSARY, THE MODIFICATIONS MUST BE IMPLEMENTED WITH 7 CALENDAR DAYS OR PRIOR TO ANY PRECIPITATION EVENT. ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION UNTIL AREAS ARE PERMANENTLY STABILIZED.

B. AN INSPECTION AND MAINTENANCE LOG MUST BE KEPT BY THE CONTRACTOR, SUMMARIZING THE SCOPE OF THE INSPECTION, DATE, AND MAJOR OBSERVATIONS RELATING TO THE OPERATION OF EROSION AND SEDIMENT CONTROL BMPS, MATERIAL STORAGE AREAS, AND VEHICLE ACCESS POINTS TO THE CONSTRUCTION AREA. THE INSPECTION LOG SHOULD BE DELIVERED TO THE PROPERTY OWNER OR RESPONSIBLE CONTRACTING ENTITY UPON COMPLETION OF THE PROJECT.

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STATE OF MAINE — MEGAN L. MCDEVITT — No. 13019 — LICENSED PROFESSIONAL ENGINEER

REV	DESCRIPTION	DATE
DESIGNED BY: KLD	CHECKED BY: MDLM	
DRAWN BY: HAR	CDBS–ES DETAILS.dwg	

CITY OF AUBURN
ANDROSCOGGIN COUNTY

FISH HATCHERY ROAD
CULVERT REPLACEMENT

EROSION & SEDIMENT CONTROL DETAILS

JOB NO: 0230620.25
DATE: JANUARY 2022
SCALE: NTS
SHEET: 7 OF 8

C-005

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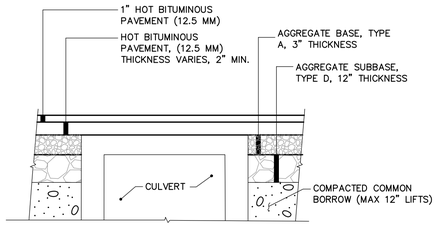
22x34 SHEET
1:1

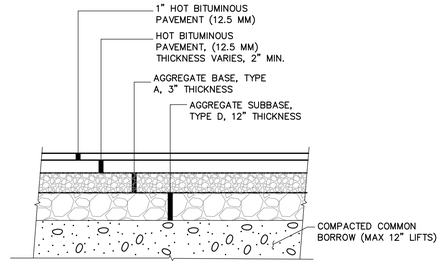


NOTE:

1. AGGREGATE TYPES PER MDOT STANDARD SPECIFICATIONS SECTION 304.02.

BITUMINOUS PAVEMENT SECTION (OVER CULVERT)

N.T.S.



BITUMINOUS PAVEMENT SECTION (BEYOND CULVERT)

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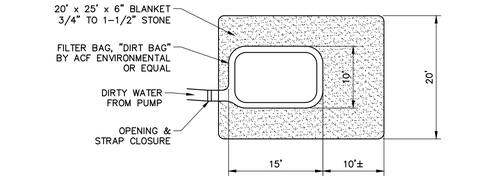
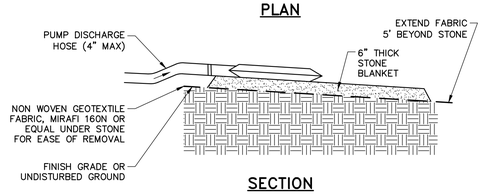


PLAN



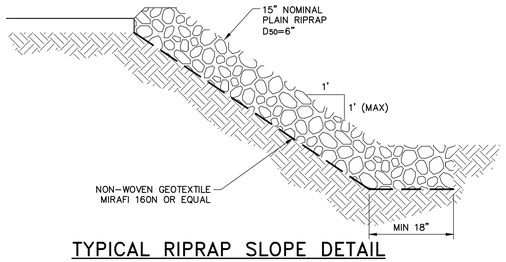
SECTION

DEWATERING DISCHARGE SEDIMENT CONTROL DEVICE

N.T.S.

DEWATERING NOTES:

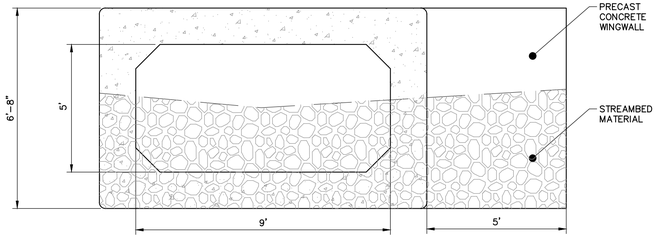
1. LOCATE DISCHARGE SITE ON FLAT UPLAND AREAS AS FAR AWAY AS POSSIBLE FROM STREAMS, WETLANDS, OTHER RESOURCES AND POINTS OF CONCENTRATED FLOW.
2. NEVER DISCHARGE TO AREAS THAT ARE BARE OR NEWLY VEGETATED.
3. DIRT BAG MATERIAL BASED ON PARTICLE SIZE IN DIRTY WATER, I.E., FOR COARSE PARTICLES A WOVEN MATERIAL; FOR SILTS/CLAYS A NON-WOVEN MATERIAL.
4. DO NOT OVER PRESSURIZE DIRT BAG OR USE BEYOND CAPACITY.
5. 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.
6. 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.
7. DEWATERING IN PERIODS OF INTENSE, HEAVY RAIN, WHEN THE INFILTRATIVE CAPACITY OF THE SOIL IS EXCEEDED, SHOULD BE AVOIDED.
8. INSTALL DIVERSION DITCHES OR BERMS TO MINIMIZE THE AMOUNT OF CLEAN STORMWATER RUNOFF ALLOWED INTO THE EXCAVATED AREA.
9. 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.
10. EROSION CONTROL REQUIRED AROUND DEWATERING DISCHARGE SEDIMENT CONTROL DEVICE.



TYPICAL RIPRAP SLOPE DETAIL

N.T.S.

1. MAXIMUM SLOPE FOR RIPRAP STABILIZATION SHALL BE 1:1.



PRECAST CULVERT WITH WINGWALL

N.T.S.

BOX CULVERT NOTES:

1. THE PRE-CAST CONCRETE BOX CULVERT SHALL BE DESIGNED AND MANUFACTURED BY AN EXPERIENCED CONCRETE BOX CULVERT MANUFACTURER AS SPECIFIED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH THE MANUFACTURER WITH REGARD TO ORDERING, MANUFACTURING, AND DELIVERING THE BOX CULVERT SECTIONS TO THE SITE. THE CONTRACTOR SHALL WORK WITH THE MANUFACTURER TO DEVELOP DETAILED SHOP DRAWINGS COMPLETE WITH DESIGN CALCULATIONS TO BE SUBMITTED FOR REVIEW AND APPROVAL BY THE ENGINEER PRIOR TO MANUFACTURE AND DELIVERY OF THE BOX CULVERT. THE DESIGN CRITERIA AND SUBMITTAL SHALL INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING:
   - DESIGNED TO MEET AASHTO HL-93 LOADS
   - 5,000 PSI, 28 DAY STRENGTH CONCRETE
   - GRADE 60 REBAR WITH 2" COVER ON ALL FACES
   - DCI CORROSION INHIBITOR ADDITIVE SHALL BE USED IN MIX DESIGN
   - PROVISION FOR LIFTING AND PLACING SECTIONS INTO PLACE (I.E. LIFTING RINGS, LIFTING HOLES, ETC.)
2. MEMBRANE WATERPROOFING WITH A WATERPROOFING PROTECTIVE COURSE SHALL BE USED WHERE ROADWAY PAVEMENT IS DIRECTLY ON THE STRUCTURE. USE BITUMINOUS DAMP-PROOFING WHERE ROADWAY PAVEMENT IS NOT DIRECTLY ON THE STRUCTURE.
3. THE HORIZONTAL AND VERTICAL HAUNCH DIMENSIONS SHALL BE EQUAL TO THE SIDEWALL THICKNESS IN INCHES. IF HAUNCHES WITH OTHER DIMENSIONS ARE USED, A SPECIAL REINFORCEMENT DESIGN FOR THE ACTUAL DIMENSIONS SHALL BE COMPLETED.
4. THE CONTRACTOR SHALL VERIFY THE DIMENSIONS SHOWN ON THE DESIGN PLANS WITH THE FIELD CONDITIONS PRIOR TO ORDERING THE BOX CULVERT. ANY DISCREPANCIES SHALL BE REPORTED TO ENGINEER IMMEDIATELY.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING THE BOX CULVERT IN GENERAL CONFORMITY TO THE LINES AND GRADES SHOWN ON THE DESIGN PLANS AND IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER.
6. ALL JOINTS SHALL BE SECURELY SEATED TOGETHER TO ACHIEVE A SILT-TIGHT JOINT ALL AROUND. A SILT-TIGHT JOINT IS DEFINED AS A JOINT IN WHICH THE GASKET IS COMPRESSED TO A MINIMUM OF ONE HALF OF ITS UNCOMPRESSED WIDTH. THE GASKET SHALL BE UNIFORMLY COMPRESSED ALONG ALL VERTICAL AND HORIZONTAL SURFACES. A POSITIVE MEANS, THROUGH THE USE OF SEATING DEVICES, SHALL BE USED FOR PULLING ONE SECTION AGAINST ANOTHER TO ASSURE AN ADEQUATE SILT-TIGHT JOINT. EACH JOINT BETWEEN TWO BOX CULVERT SECTIONS SHALL BE COVERED WITH A MINIMUM 12-INCH WIDE JOINT WRAP. THE WRAP SHALL MEET THE SPECIFICATIONS OF ASTM C-877. THE JOINT SHALL BE COVERED COMPLETE AROUND THE ENTIRE STRUCTURE.
7. INSTALLATION OF NEW BOX CULVERT SHALL OCCUR DURING DRY WEATHER OR DRY EXCAVATION CONDITIONS. CONTRACTOR IS RESPONSIBLE FOR ANY WATER DIVERSION AND MANAGEMENT REQUIRED.

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STATE OF MAINE — MEGAN L. MCDEVITT — No. 13019 — PROFESSIONAL ENGINEER

REV	DESCRIPTION	DATE
DESIGNED BY:	KLD	
DRAWN BY:	HAR	
CHECKED BY:	MDLM	
C006- SITE DETAILS.dwg		

PROJECT DETAILS

CITY OF AUBURN
ANDROSCOGGIN COUNTY

FISH HATCHERY ROAD
CULVERT REPLACEMENT

JOB NO:	0230620.25
DATE:	JANUARY 2022
SCALE:	NTS
SHEET:	8 OF 8

C-006

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