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PROPOSED GRADE

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PROPOSED GRADE
SOIL RIPRAP PAD
SEE DRAINAGE DETAILS
UTILITIES OF UNDERGROUND MEMBER OR EXCAVATE FOR THE MARKING
ADVANCE BEFORE YOU DIG, GRADE,
CALL 2-BUSINESS DAYS IN
CALL UTILITY NOTIFICATION CENTER OF COLORADO

REVISIONS:

4043.SEPT12C36
P-N-117

HW 10-YR = 6576.17
HW 100-YR = 6576.38
Q 100 = 3 CF  S
Q 10 = 2 CF  S
@ 8.5 9%
24" RCP
REQ'D 41 LF  OF
6560
6570
6580
6590
6600
6560
6570
6580
6590
6600

INV = 6572.17
24" RCPS
STA 252 + 85.86, 26.27' LT
FES-N-117-D

253 + 20.86, 17.44' RT
HEAD WALL XX
CANYON DR.
FOURMILE

60% SET

SEE DRAINAGE DETAIL
SOIL RIPRAP
SEE DRAINAGE DETAIL
RIPRAP OUTLET PROTECTION
PROPOSED GRADE
EXISTING GROUND

JAM

134
134

FURMILE CANYON DR (NORTH)
DRAINAGE PROFILES
(3 OF 3)
NOTES:
1. SEE DRAINAGE PLANS FOR ADDITIONAL NOTES.
PROPOSED PERMANENT EASEMENT TOE OF FILL (TOP)

PROPOSED TEMPORARY EASEMENT

EXISTING GROUND

PRIVATE DRIVEWAY

SOIL RIPRAP D 50

= 18"

= 12"

SOIL RIPRAP D 33 LF OF 48" RCP @ 0.50'

= 50 LF

= 230 CF

Q100 = 79 CFS

Q10 = 20 CFS

@ 17.98%

42" RC

P REQ'D 33 LF OF

INV OUT = 6504.00 (P-N-108B - SW)

INV IN = 6512.00 (P-N-108A - NE)

RIM = 6510.00'

MH SLAB BASE, STA 237 + 83.82, 61.29' RT

MH-N-109

Q100 = 87 CFS

Q10 = 23 CFS

@ 0.50%

48" RCP

P REQ'D 53 LF

INV OUT = 6491.33 (P-N-108C - S)

INV IN = 6495.00 (P-N-108B - NE)

RIM = 6505.00'

MH SLAB BASE, STA 237 + 47.5, 21.40' RT

MH-N-108

Q100 = 82 CFS

Q10 = 21 CFS

@ 1.91%

48" RCP

P REQ'D 145 LF

INV OUT = 6495.81'

TYPE SPECIAL, STA 235 + 94.81, 20.84' RT

IN-N-107

Q100 = 79 CFS

Q10 = 20 CFS

@ 18.97%

48" RCP

P REQ'D 47 LF

INV IN = 6502.35 (P-N-109 - N)

Q10 = 20 CFS

@ 1.91%

48" RCP

P REQ'D 145 LF

TW 100-YR = 6488.37

TW 10-YR = 6485.87

48" RCP (53 LF)

P-N-107 - 48" RCP

WITH GRATED LID

IN-N-107 - MANHOLE SLAB BASE

P-N-109 - 18" RCP (7 LF)

P-N-108A - 42" RCP (33 LF)

MANHOLE SLAB BASE

MANHOLE SLAB BASE

15 HORIZONTAL SCALE: 1" = 30'
**NOTES:**

1. SOIL RIPRAP AND RIPRAP DETAILS ARE APPLICABLE TO SLOPED AREAS REFER TO THE DRAINAGE PLANS FOR ACTUAL LOCATIONS AND LIMITS.

2. MIX UNIFORMLY 85% RIPRAP BY VOLUME WITH 35% OF APPROVED SOIL OR GRAVEL BY VOLUME PRIOR TO PLACEMENT.

3. PLACE SOIL, RIPRAP OR RIPRAP MIX TO RESULT IN SECURELY INTERLOCKED ROCK AT THE DESIGN THICKNESS AND GRADE COMPACT AND LEVEL TO ELIMINATE ALL VOIDS AND ROCKS PROJECTING ABOVE DESIGN RIPRAP TOP GRADE.

4. CRIMP OR TACKIFY MULCH ON SOIL, RIPRAP OR AS CALLED FOR IN THE PLANS AND SPECIFICATIONS.

5. SEE STORMWATER MANAGEMENT PLAN FOR SEEDING MIXTURE AND DETAILS.

6. BENCH RIPRAP AS NECESSARY TO MATCH EXISTING GRADE AND PLACE SOIL-GRAVEL OR SOIL-MULCH-AIR MIX TO RESULT IN SECURELY INTERLOCKED ROCK AT THE DESIGN THICKNESS AND GRADE COMPACT AND LEVEL TO ELIMINATE ALL VOIDS AND ROCKS PROJECTING ABOVE FINISHED GRADE.

**NOTES:**

1. FLOW DIRECTION MAY VARY. SEE DRAINAGE PLANS.

2. DIMENSIONS OF DITCH FEATURES ARE LOCATION SPECIFIC. SEE DRAINAGE PLANS AND TABLES.
KEYNOTES:

1. **F.F. HEADWALL IS VERTICAL.**

NOTES:

1. **FOR REINFORCING AND ADDITIONAL INFORMATION, REFER TO COST STANDARD PLAN NO. M-206-1, M-206-2, M-206-3.**
2. **FOR ARCHITECTURAL DETAILS, SEE STRUCTURES PLANS.**
3. **SEE HEADWALL AND WINGWALL DATA TABLE FOR PARAMETER VALUES.**
4. **THE WALL MAY BE SLATED WHEN FOOTINGS ARE ON BEDROCK AS AUTHORIZED BY THE ENGINEER.**
5. **ALL CONCRETE SHALL BE CONCRETE CLASS D.**
6. **FOR LEDGER AND MECHANICAL ANCHORS, SEE STRUCTURES PLANS.**
7. **STRUCTURAL CONCRETE COATING SHALL BE DARK BROWN, FEDERAL STANDARD 595C COLOR NO. 30045 OR APPROVED EQUAL.**
8. **STRUCTURAL CONCRETE COATING LIMITS ALSO APPLY AT END OF HEADWALL/WINGWALL.**
9. **6" NATIVE SOIL (IF PRESENT).**

**PAY LIMITS OF ITEM 601: STRUCTURAL CONCRETE COATING AND STRUCTURAL CONCRETE COATING (ANTI-GRAFFITI).**
NOTES:
1. ALL REINFORCING AND DETAILS SHOWN FOR ADDITIONAL INFORMATION, SEE SCALE STANDARD PLAN NO. 5-600-008, 5-600-009, 5-600-010, 5-600-011, AND 5-600-012.
2. FOR ARCHITECTURAL DETAILS, SEE ARCHITECTURAL PLANS.
3. SEE HEADWALL AND WINGWALL DATA TABLE FOR PARAMETER VALUES.
4. TOE WALL MAY BE OMITTED WHEN FOOTINGS ARE ON BEDROCK AS PERMITTED BY THE ENGINEER.
5. ALL CONCRETE SHALL BE CONCRETE CLASS D.
6. X2 DIMENSION AS SHOWN ON SCALE STANDARD PLAN NO. 5-600-010 SHALL BE FOR THE WIDTH OF THE PIPE.
7. FOR LEDGER DETAILS, SEE TYPICAL PRECAST BOX CULVERT END DETAILS SHEET.
8. FOR LEDGER AND MECHANICAL ANCHORS, SEE STRUCTURAL PLANS.
9. STRUCTURAL CONCRETE COATING SHALL BE DARK BROWN, FEDERAL STANDARD 595C COLOR NO. 30045 OR APPROVED EQUAL.
10. STRUCTURAL CONCRETE COATING LIMITS ALSO APPLY AT END OF HEADWALL/WINGWALL AND EXPOSED END OF PIPE.
11. NATIVE SOIL (IF PRESENT) NOT ALL CULVERTS HAVE 6" OF NATIVE SOIL FILL. SEE HEADWALL AND WINGWALL DATA TABLE FOR INVERT AND FINISHED GRADE ELEVATIONS.

KEYNOTES:
1. F.F. HEADWALL IS VERTICAL.
2. PROVIDE X2 DIMENSION FOR BOTH FRONT AND BACK FACE OF HEADWALL AT LIMITS OF PIPE.

SCALE: ‰" = 1'-0"
## HEADWALL AND WINGWALL DATA TABLE

<table>
<thead>
<tr>
<th>HEADWALL</th>
<th>CL NORTHING</th>
<th>CL EASTING</th>
<th>INVERT ELEV (IN CULVERT)</th>
<th>FILL DEPTH (IN CULVERT)</th>
<th>FINISHED GRADE ELEV</th>
<th>W (FEET)</th>
<th>ANGLE (M, S)</th>
<th>L (FEET)</th>
<th>WINGWALL</th>
<th>ANGLE (M, S)</th>
<th>ELEV. mT</th>
<th>ELEV. mB</th>
<th>m (FEET)</th>
<th>FINISHED GRADE</th>
<th>ELEV. mTOP</th>
<th>ELEV. mB</th>
<th>ELEV. mB</th>
<th>FINISHED GRADE</th>
<th>ELEV. mTOP</th>
<th>FINISHED GRADE</th>
<th>ELEV. mTOP</th>
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TO BE POPULATED
TO BE POPULATED

PIPE CULVERT HEADWALL DATA TABLE

<table>
<thead>
<tr>
<th>HEADWALL</th>
<th>CULVERT CL</th>
<th>CULVERT CL</th>
<th>SHEW ANGLE (D M S)</th>
<th>H (FEET)</th>
<th>T (FEET)</th>
<th>W1 (FEET)</th>
<th>W2 (FEET)</th>
<th>L1 (FEET)</th>
<th>L2 (FEET)</th>
<th>ELEV. mT</th>
<th>INVERT ELEV</th>
<th>ELEV A</th>
<th>ELEV B</th>
<th>ELEV C</th>
<th>ELEV D</th>
</tr>
</thead>
</table>

NOTES:
1. FOR ADDITIONAL INFORMATION, MATERIALS AND DIMENSIONS, REFER TO COST STANDARDS PLAN NO. M-206-12.
2. SEE PIPE CULVERT HEADWALL DATA TABLE FOR PARAMETER VALUES.
3. ELEV. mT IS TAKEN AT THE TOP OF HEADWALL ON THE CENTERLINE OF THE PIPE CULVERT. THE TOP OF HEADWALL SHALL BE CONSTRUCTED 6" +/- ABOVE EDGE OF PAVEMENT IN ALL OTHER AREAS NOT NOTED.
4. ALL CONCRETE SHALL BE CLASS B.
5. GENERIC DETAILS FOR PIPE CULVERT HEADWALL WITH CUT STONE VENEER SHOWN. FOR ADDITIONAL AESTHETIC DETAILS INCLUDING STRUCTURAL CONCRETE COATINGS, SEE TYPICAL ELLIPTICAL CULVERT ENDS DETAILS SHEET.

TYPICAL PIPE CULVERT HEADWALL

PERSPECTIVE

CUT STONE VENEER NOT SHOWN

SAME AS TYPICAL PIPE CULVERT HEADWALL EXCEPT AS SHOWN.

FOR ADDITIONAL INFORMATION, MATERIAL AND DIMENSIONS, REFER TO COST STANDARDS PLAN NO. M-206-12.

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION

FOURMILE CANYON DRIVE

ENGINEERING DIVISION

PROJECT NO.
DATE:
CHECKED:
REV.
SHEET NO:

60% SET

DATE

REVISION DESCRIPTION

60% SET

PROJECTING AEREOGRAPHIC SHEET NO. 141
NOTES:
1. SEE GEOMETRIC LAYOUT (2 OF 2) FOR ALIGNMENT DATA.
2. FOR ROADWAY ALIGNMENT AND INFORMATION, REFER TO ROADWAY PLANS.
### WALL S-1 HORIZONTAL ALIGNMENT DATA TABLE

<table>
<thead>
<tr>
<th>CURVE NUMBER</th>
<th>POINT TYPE</th>
<th>STATION</th>
<th>NORTHING</th>
<th>EASTING</th>
<th>BEARING</th>
<th>DISTANCE</th>
<th>RADIUS</th>
<th>LENGTH</th>
<th>DELTA</th>
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</thead>
<tbody>
<tr>
<td>S-1-1</td>
<td>PC</td>
<td>10000400.00</td>
<td>252409.94</td>
<td>47177.86</td>
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<tr>
<td>S-1-2</td>
<td>PT</td>
<td>10000402.79</td>
<td>252422.43</td>
<td>47180.22</td>
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<tr>
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<td>PT</td>
<td>10000403.16</td>
<td>252431.02</td>
<td>47205.43</td>
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<td>135.59'</td>
<td>52.09'</td>
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<td>S-1-4</td>
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<td>252448.43</td>
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<th>BEARING</th>
<th>DISTANCE</th>
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<td>PC</td>
<td>25000400.00</td>
<td>252449.1</td>
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<td>25000408.82</td>
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<td>S-2-3</td>
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<td>25000401.29</td>
<td>252453.75</td>
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<td>25000403.76</td>
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### WALL S-3 HORIZONTAL ALIGNMENT DATA TABLE

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<th>BEARING</th>
<th>DISTANCE</th>
<th>RADIUS</th>
<th>LENGTH</th>
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<tr>
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### WALL S-4 HORIZONTAL ALIGNMENT DATA TABLE

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### WALL S-5 HORIZONTAL ALIGNMENT DATA TABLE

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### GENERIC DATA

- **Date**: 8/30/2016
- **Location**: Boulder County Transportation Department
- **Division**: Engineering Division
- **Department**: Boulder County Transportation Department
- **Division**: Geometric Layout
- **Page**: 2 of 2
- **Set**: 60%
NOTES:
1. SEE GEOMETRIC LAYOUT (2 OF 2) FOR ALIGNMENT DATA.
2. FOR ROADWAY ALIGNMENT AND INFORMATION, REFER TO ROADWAY PLAN.
### WALL N-1 HORIZONTAL ALIGNMENT DATA TABLE

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NOTES:
1. FOR FINISHED GRAADING REFER TO DRAINAGE PLANS.
2. FOR REMOVALS, UTILITY, AND SURROUNDING INFORMATION REFER TO ROADWAY PLANS.
3. FOR ROADWAY GEOMETRICS, REFER TO ROADWAY PLANS.
4. A GEOTECHNICAL INVESTIGATION FOR A WALL AT THIS LOCATION HAS NOT BEEN COMPLETED AT THIS TIME.
5. FOR WALL TYPICAL SECTION, SEE TYPICAL SECTIONS SHEET.
6. FOR WALL HCL DATA, SEE GEOMETRIC LAYOUT SHEET.
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1. FOR FINISHED GRADING REFER TO DRAINAGE PLANS.
2. FOR REMOVALS, UTILITY, AND GUARDRAIL INFORMATION REFER TO ROADWAY PLANS.
3. FOR ROADWAY GEOMETRIES, REFER TO ROADWAY PLANS.
4. FOR WALL TYPICAL SECTIONS, SEE TYPICAL SECTIONS SHEET.
5. FOR WALL MCIR DATA, SEE GEOMETRIC LAYOUT SHEET.
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1. FOR FINISHED GRAADING REFER TO ORDINANCE PLANS.
2. FOR REMOVALS, UTILITY, AND SUBURBAN INFORMATION REFER TO ROADWAY PLANS.
3. FOR ROADWAY GEOMETRIES, REFER TO ROADWAY PLANS.
4. FOR WALL TYPICAL SECTION SEE TYPICAL SECTIONS SHEET.
5. FOR WALL HCL DATA SEE GEOMETRIC LAYOUT SHEET.

PLAN

1750'-0" LIMITS OF RETAINING WALL N-4

ELEV. 6474.82
ELEV. 6455.00

TOP OF WALL
FINISHED GRADE
(F.F. WALL)

BUTT OF RETAINING WALL N-4 / F.F. WALL

10' 0" 8' 0" 6' 0" 4' 0" 2' 0" 0' 0"
6' 0" 8' 0" 10' 0" 12' 0" 14' 0" 16' 0"
24' 0" 26' 0" 28' 0" 30' 0" 32' 0" 34' 0" 36' 0"
37' 0" 39' 0" 41' 0" 43' 0" 45' 0" 47' 0" 49' 0"
6450 6460 6470 6480

ELEV. 6465.58

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION

60% SET

RETAINING WALL N-4
GENERAL LAYOUT

400' = 1" - 30" = 1'-0"

Scale: 1:200" (1" = 10')
NOTES:
1. FOR FINISHED GRADES REFER TO DRAINAGE PLANS.
2. FOR REMOVALS, UTILITY, AND GUARDRAIL INFORMATION REFER TO ROADWAY PLANS.
3. FOR ROADWAY GEOMETRIES, REFER TO ROADWAY PLANS.
4. A GEOTECHNICAL INVESTIGATION FOR A WALL AT THIS LOCATION HAS NOT BEEN COMPLETED AT THIS TIME.
5. FOR WALL TYPICAL SECTION, SEE TYPICAL SECTIONS SHEET.
6. FOR WALL MSE DATA, SEE GEOMETRIC LAYOUT SHEET.
WALL WITH BRIDGE RAIL TYPICAL SECTION

WALLS 1-4, 5-5, 7-5, N-1

NOTE:
1. SEE WALL GENERAL LAYOUT SHEETS FOR PLAN AND ELEVATION VIEWS.
2. SEE DRAINAGE PLANS FOR FINISHED GRADE.
3. SEE ROOFTOP PLANS FOR ROOFAL ALLENTMENT, PROFILE AND SUEPERELEVATION INFORMATION.
CONSTRUCTION PHASING AND TRAFFIC CONTROL GENERAL NOTES

1. THIS IS THE PHASING PLAN TO BE USED IN CONSTRUCTION OF THE PROJECT. THE DATES AND THEIR QUANTITIES REFLECT UTILIZATION OF THIS PHASING PLAN. THE CONTRACTOR SHALL SUBMIT AN ALTERNATE PHASING PLAN FOR APPROVAL BY THE ENGINEER AFTER AWARDS OF THE PROJECT.

2. THE SUGGESTED CONSTRUCTION PHASING PLANS ARE INTENDED TO BE A GUIDE AND SUGGESTION FOR THE CONTRACTOR TO FOLLOW, THEY ARE NOT ALL INCLUSIVE AND MAY NOT REPRESENT ALL OF THE WORK ACTIVITY REQUIRED TO COMPLETE THE PROJECT.


5. APPROPRIATE ADVANCE WARNING SIGNS SHALL BE PLACED AS NECESSARY. THESE SIGNS SHALL BE SHOWN IN THE WORK FOR CONSTRUCTION AS NECESSARY.

6. THE NATURE AND TYPE OF LINES SHOWN IN THE SUGGESTED CONSTRUCTION PHASING PLANS SHALL BE MAINTAINED AT ALL TIMES AND SHOWN IN THE CONTRACTORS WORK, UNLESS OTHERWISE APPROVED BY THE ENGINEER.

7. A MINIMUM TRAVEL LANE WIDTH OF 10 FEET SHALL BE MAINTAINED AT ALL TIMES UNLESS APPROVED BY THE ENGINEER.

8. A MINIMUM SHOULDER WIDTH OF 1 FOOT SHALL BE PROVIDED BETWEEN THE TRAVELING DEVICE OR CONCRETE BARRIER AND EDGE OF TRAVEL LANE AT ALL TIMES.

9. PROMINENT SIGNS TO BE USED AT TIMES OF TRAVEL LANE WIDTH OF 10 FEET OR LESS.

10. IF THE END OF CONCRETE BARRIER (TEMPORARY) IS WITHIN CLEAR ZONE, IT SHALL BE SHIELDED BY EXISTING SHRUBS, PROTECTED BY AN IMPACT ATTENUATOR (TEMPORARY) OR TOPOGRAPHY OUTSIDE OF CLEAR ZONE PER THE MANUAL ON URBAN TRAFFIC CONTROL DEVICES.

11. CONCRETE BARRIERS (TEMPORARY) MAY REQUIRE MULTIPLE METER DEVICES FOR THE WORK OF THE PROJECT MULTIPLE METER DEVICES SHALL NOT BE USED FOR SEPARATELY, SEE SPECIFICATION 820, CONCRETE BARRIERS (TEMPORARY) SHALL BE USED ONLY WHERE.

12. TEMPORARY PAVEMENT MARKINGS WILL NOT BE ALIGNED ON FINAL PAVEMENT SURFACES. CONCRETE BARRIERS SHALL BE USED TO DELIMIT TEMPORARY LANES THROUGH THE CONSTRUCTION ZONE ON FINAL PAVEMENT.

13. REMOVAL OF PAVEMENT MARKINGS FOR TEMPORARY LANES WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF THE WORK. PAVEMENT REMOVALS MUST BE PERFORMED BY CONTRACTOR OFF SITE.

14. THE CONTRACTOR SHALL BEAR ALL RESPONSIBILITY AND COSTS FOR PROVIDING TEMPORARY Crossings AND PAVING TO ENSURE SAFE movement AND SCHEDULED CONDITIONS AT ALL TIMES. STORM DRAINAGE SHALL NOT BE DREDGED INTO THE ROADSIDE OF PRIVATE PROPERTY. CONCRETE BARRIERS (TEMPORARY) SHALL BE PLACED IN THE ROADWAY AT TIME OF PAVING, WHERE REQUIRED TO PROVIDE DRAINAGE. THIS WORK WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF THE RELATED WORK.

15. THE CONTRACTOR SHALL DESIGNATE AN INDIVIDUAL OTHER THAN THE SUPERVISOR TO BE THE TRAFFIC CONTROL SUPERVISOR (TCS) FOR THE DURATION OF THE PROJECT. ONLY THE DESIGNATED TRAFFIC CONTROL SUPERVISOR WILL BE ALLOWED FOR THIS ROLE. MULTIPLE TCS WILL NOT BE ALLOWED FOR THIS PROJECT.

16. THE CONTRACTOR SHALL MAINTAIN SAFE AND REASONABLE ACCESS TO PRIVATE PROPERTIES AT ALL TIMES UNLESS OTHERWISE APPROVED IN WRITING BY THE PROPERTY OWNER AND BOULDER COUNTY. FINAL ROADSIDE CLOSURES SHALL BE PRE-APPROVED BY BOULDER COUNTY AND ADVANCE NOTIFICATION GIVEN TO THE PUBLIC. NO ROAD CLOSURES SHALL BE EFFECTED UNLESS APPROVED BY BOULDER COUNTY AND ADVANCE NOTIFICATION GIVEN TO THE PUBLIC.

17. TRAFFIC CONTROL DEVICES SHALL BE PLACED IN ACCORDANCE WITH THE MANUAL ON URBAN TRAFFIC CONTROL DEVICES.

18. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF TRAFFIC CONTROL DEVICES.

19. EXISTING LINES IN CONFLICT WITH THE TEMPORARY LANES SHALL BE COVERED OR REDUCED AS CONFLICTING LINES FOR EACH CONSTRUCTION PHASE AND AS DIRECTED BY BOULDER COUNTY. MARKING OF EXISTING LINES INCLUDING THE GUIDANCE MATERIALS AND PAVEMENT DEVICES WILL NOT BE MEASURED AND PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF THE WORK.

20. ALL CONSTRUCTION ACTIVITIES ARE ALLOWED BETWEEN THE HOURS OF 6AM AND 7PM. DURING THE HOURS OF 7PM TO 8AM. THE CONSTRUCTION ACTIVITY IS ALLOWED AS DIRECTED BY THE ENGINEER.

21. TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE PLACED IN ACCORDANCE WITH THE REQUIREMENTS OF THE MANUAL ON URBAN TRAFFIC CONTROL DEVICES.

22. ALL TRAFFIC CONFLICTING LINES SHALL BE COVERED OR REDUCED AS CONFLICTING LINES FOR EACH CONSTRUCTION PHASE AND AS DIRECTED BY BOULDER COUNTY.
1. SITE DESCRIPTION
The Contractor shall comply with all CDOT contractual requirements and all requirements associated with the CDPS-SCP on this project. The SWMP Administrator shall update to reflect current project site conditions.

A. PROJECT SITE LOCATION:
The Fourmile Canyon Drive South section (approximately 3600 feet long) starts a mile west of Boulder Canyon Road and extends to Poomran Road. The Fourmile North section (approximately 3000 feet long) begins at approximately 40°02'44"N, 105°31'45"W and ends just south of Salina Junction. The proposed project limits will be between Sections 17, 21, and 28 Township 1 North, Range 71 West of the 4th Principal Meridian.

B. PROJECT SITE DESCRIPTION:
The proposed construction activities would recreate and improve the road and drainage along Fourmile Canyon Drive resulting in increased safety for vehicle and home owners in the area. Boulder County Task Order 3 project limits extend along Fourmile Canyon Drive (CR 118) from the CR 118 intersection with County Road 119 to Salina Junction. Fourmile Canyon Drive (CR 118) is approximately 6 miles in length with a paved 20-foot-wide roadway in a narrow mountain valley characterized by residential development along Fourmile Creek. The roadway improvements will include a 27-foot-wide typical section consisting of 12 of 11-foot lanes with a 4-foot bike lane/shoulder and a 2-foot pedestrian shoulder. In addition, there will be several wall constructions to retain the roadway above Fourmile Creek. Roadside drainage design will be incorporated as well, including conveyance into ditches and culverts/storm sewer systems that outfall into Fourmile Creek. Drainage project improvements will include adding, replacing, and restyling the existing drainage culverts with slope protection.

C. PROPOSED SEQUENCING FOR MAJOR CONSTRUCTION ACTIVITIES:
Construction of the project will come in phases, as outlined by the contractor. Sequencing for the construction of the project shall include the following steps: clearing and grubbing, rerouting wells, curbs, roadway, grading and stabilization with seeding and planting native plants. All traffic phasing and planning before, during and after the completion of the project shall be coordinated with Boulder County and managed by the contractor. Activities throughout the construction will be determined by the contractor and are subject to change.

D. ACRES OF DISTURBANCE:
The total area of disturbance includes areas of grading and stabilization, stockpiling of fill material, demolition, access roads, excavation, areas with heavy equipment vehicle traffic and staging areas. The sum of the areas includes both segments (north and south) of Fourmile Canyon Drive.

1. Total area of construction site (LOC: PERMITTED AREA): 12.9 acres
2. Total area of proposed disturbance (LOD): 11.6 acres
3. Total area of excavation: 5.9 acres
4. Total area of impervious surface: 5.7 acres
5. Total area of NEW impervious surface: 4.7 acres

E. EXISTING SOIL DATA:
According to the Soil Survey of Boulder County, Colorado, the site consists of 7 soil types. The information was collected from the USDA (http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx). The soil types are:

1. Juelg-Rock outcrop complex
2. Typic Hapludalfs-Cathedral Family-Rock outcrop complex
3. Pachic Argudalfs-Aquic Argudalf complex

F. EXISTING VEGETATION:
Existing vegetation: Elevation within the project area range from 6,590 ft to 7,723 ft rsl. Dominant trees and shrubs within the project area include Ponderosa pine (Pinus ponderosa), Douglas fir (Pseudotsuga menziesi), and Mountain Juniper (Juniperus scopulorum), aspen (Populus tremuloides), mountain alder (Alnus tenuifolia), and several species of willow (Salix sp.). Common herbaceous vegetation within the project area include downy brome (Bromus tectorum), western wheatgrass (Pascopyrum smithii), bull thistle (Cirsium vulgare), common mule fern (Verbasum thapsus), yucca, smooth brome (Bromus inermis), and rose (Rosa woodsii). Existing vegetation makes up approximately 40% of the existing ground cover within the project area.

Pre-Construction Date of Survey: % Dense: 
Description of existing vegetation:
Map or table showing transect locations in SWMP notebook tab 1:

Post-Construction Date of Survey: % Dense: 
Description of existing vegetation:
Map or table showing transect locations in SWMP notebook tab 1:

G. POTENTIAL POLLUTANT SOURCES:
See First Construction Activities under Potential Pollutant Sources. The SWMP Administrator shall prepare a list of all potential pollutants and their locations in accordance with subsection 107.25.

H. RECEIVING WATER:

<table>
<thead>
<tr>
<th>Drainage System</th>
<th>Size</th>
<th>Type</th>
<th>Location</th>
<th>Ultimate Receiving Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-100</td>
<td>24' RCP</td>
<td>Culvert</td>
<td>St. Vrain Creek</td>
<td></td>
</tr>
<tr>
<td>A-101</td>
<td>30' x 19' RCP</td>
<td>Culvert</td>
<td>St. Vrain Creek</td>
<td></td>
</tr>
<tr>
<td>A-104</td>
<td>30' x 19' RCP</td>
<td>Culvert</td>
<td>St. Vrain Creek</td>
<td></td>
</tr>
<tr>
<td>A-106</td>
<td>18' RCP</td>
<td>Culvert</td>
<td>St. Vrain Creek</td>
<td></td>
</tr>
<tr>
<td>A-107</td>
<td>30' x 19' RCP</td>
<td>Culvert</td>
<td>St. Vrain Creek</td>
<td></td>
</tr>
<tr>
<td>A-108</td>
<td>30' RCP</td>
<td>Culvert</td>
<td>St. Vrain Creek</td>
<td></td>
</tr>
<tr>
<td>A-110</td>
<td>24' RCP</td>
<td>Culvert</td>
<td>St. Vrain Creek</td>
<td></td>
</tr>
<tr>
<td>A-113</td>
<td>23' x 4' RCP</td>
<td>Culvert</td>
<td>St. Vrain Creek</td>
<td></td>
</tr>
<tr>
<td>A-N-100</td>
<td>42' RCP</td>
<td>Culvert</td>
<td>St. Vrain Creek</td>
<td></td>
</tr>
<tr>
<td>A-N-103</td>
<td>18' RCP</td>
<td>Culvert</td>
<td>St. Vrain Creek</td>
<td></td>
</tr>
<tr>
<td>A-N-104</td>
<td>24' RCP</td>
<td>Culvert</td>
<td>St. Vrain Creek</td>
<td></td>
</tr>
<tr>
<td>A-N-106</td>
<td>18' RCP</td>
<td>Culvert</td>
<td>St. Vrain Creek</td>
<td></td>
</tr>
<tr>
<td>A-N-110</td>
<td>30' x 24' RCP</td>
<td>Culvert</td>
<td>St. Vrain Creek</td>
<td></td>
</tr>
<tr>
<td>A-N-111</td>
<td>18' RCP</td>
<td>Culvert</td>
<td>St. Vrain Creek</td>
<td></td>
</tr>
<tr>
<td>A-N-115</td>
<td>8' x 5' RCBC</td>
<td>Culvert</td>
<td>St. Vrain Creek</td>
<td></td>
</tr>
<tr>
<td>A-N-116</td>
<td>24' RCP</td>
<td>Culvert</td>
<td>St. Vrain Creek</td>
<td></td>
</tr>
<tr>
<td>A-N-117</td>
<td>24' RCP</td>
<td>Culvert</td>
<td>St. Vrain Creek</td>
<td></td>
</tr>
</tbody>
</table>

2 Names of receiving waters: on site: Fourmile Canyon Creek
3 Ultimate receiving water: St. Vrain Creek
4 Horizontal distance nearest water of the state is from project: approximately 21 miles

I. NON-STORMWATER DISCHARGES:
Potential non-stormwater discharges for this site include potable water used for grading, dust suppression and erosion control (permanent and temporary) within the entire site.
1. ALLOWABLE:
   1. Groundwater and stormwater dewatering: Discharges to the ground of water from construction dewatering activities may be authorized provided that:
      a. The source is groundwater and/or stormwater combined with stormwater that does not contain pollutants.
      b. The source and BMP/Control Measures are identified in the SWMP.
      c. Discharges do not leave the site at surface runoff or to surface water.
      d. The contractor shall protect all work areas and facilities from water at all times. Areas and facilities subject to flooding, regardless of the source of water, shall be promptly dewatered and restored at no cost to the owner. This shall include removal of any debris caused by flooding. Any dewatering shall be done in accordance with subsection 107.25.

2. SITE MAP COMPONENTS:
   Pre-construction
   a. PROJECT CONSTRUCTION POTENTIAL SITE BOUNDARIES - See Stormwater Management Plan
   b. ALL AREAS OF GROUND SURFACE DISTURBANCE - See Stormwater Management Plan
   c. AREAS OF CUT AND FILL - See Stormwater Management Plan
   d. LOCATION OF ALL STRUCTURAL BMP/CONTROL MEASURES IDENTIFIED IN THE SWMP - See Stormwater Management Plan
   e. LOCATION OF NON-STRUCTURAL BMP/CONTROL MEASURES AS APPLICABLE IN THE SWMP - See Stormwater Management Plan
   f. SPRINGS, STREAMS, WETLANDS AND OTHER SURFACE WATER - See Stormwater Management Plan
   g. PROTECTION OF TREES, SHRUBS, CULTURAL RESOURCES AND MATURE VEGETATION - See Stormwater Management Plan
   h. AREAS USED FOR STORING AND STOCKPILEING OF MATERIALS, STAGING AREAS, FIELD TRAILER, FUELING, ETC. - See Stormwater Management Plan

3. SWMP ADMINISTRATOR:
   a. SWMP ADMINISTRATOR FOR DESIGN:
      Name/Title: Michael Baker International
      Contact Information: (720) 419-3165

   b. SWMP ADMINISTRATOR FOR CONSTRUCTION: As defined in Subsection 208. The contractor shall designate a SWMP Administrator for Construction upon ownership of the SWMP. The SWMP Administrator shall become the owner/operator and assume responsibility for all design changes to the SWMP implementation and maintenance in accordance with 208.03. The SWMP Administrator shall be responsible for implementing, maintaining and revising SWMP, including the title and contact information. The activities and responsibilities of the SWMP administrator shall address all aspects of the project SWMP. (Update the information below for each new SWMP Administrator.) (Copy of TCEQ Certification must also be included in the SWMP Notebook.)

C. EROSION CONTROL INSPECTOR: (As defined in Subsection 208) The contractor may designate an Erosion Control Inspector. The Erosion Control Inspector shall complete duties in accordance with subsection 208.03(c).

4. STORMWATER MANAGEMENT CONTROLS FIRST CONSTRUCTION ACTIVITIES
   THE CONTRACTOR SHALL PERFORM THE FOLLOWING:
   a. POTENTIAL POLLUTANT SOURCES
      Evaluate, identify, locate and describe all potential sources of pollutants at the site in accordance with subsection 107.25. BMP/SCP and place in the SWMP notebook. All BMP/Control Measures related to potential pollutants shall be shown on the SWMP site map by the Contractor’s SWMP Administrator.
   b. OFFSITE DRAINAGE (RUN ON WATER)
      1. Describe and record BMP/Control Measures on the SWMP site map that have been implemented to address off-site run-on water in accordance with subsection 208.03.
   c. VEHICLE TRACKING/PAVEMENT TRACKING CONTROL
      1. BMP/Control Measures shall be implemented in accordance with subsection 208.04.
   d. PERIMETER CONTROL
      1. Perimeter control shall be established as the first item on the SWMP to prevent the potential for pollutants leaving the construction site boundaries, entering the stormwater discharge system, or discharging to state waters.
      2. Perimeter control may consist of vegetation buffers, berms, side fence, erosion bags, existing barriers, or other BMP/Control Measures as approved.
      3. Perimeter control shall be in accordance with subsection 208.04.

5. DURING CONSTRUCTION
   RESPONSIBILITIES OF THE SWMP ADMINISTRATOR DURING CONSTRUCTION
   The SWMP should be considered a “living document” that is continuously reviewed and modified. During construction the following items shall be added, updated, or amended as needed by the SWMP Administrator in accordance with subsection 208.

   a. STOCKPILE MANAGEMENT: Shall be done in accordance with subsection 107.25 and 208.07.
   b. CONCRETE WASHOUT: Concrete washout water or waste from field laboratories and paving equipment shall be contained in accordance with subsection 208.05.
C. SAW CUTTING: Shall be done in accordance with subsection 107.25, 208.04, 208.05.

D. STREET SWEEPING: Shall be done in accordance with subsection 208.04.

6. INSPECTIONS
A. Inspections shall be in accordance with subsection 208.03 (c).

7. BMP/CONTROL MEASURE MAINTENANCE
A. Maintenance shall be in accordance with subsection 208.04 (f).

8. RECORD KEEPING
A. Records shall be kept in accordance with subsection 208.03 (d).

9. INTERIM AND PERMANENT STABILIZATION
A. SEEDING PLAN
Soil preparation, soil conditioning or topsoil, seeding (native), mulching (weed free) and mulch tackifier will be required for an estimated 1000 cubic yards of disturbed area within the right-of-way limits which are not surfaced. The following types and rates shall be used:

<table>
<thead>
<tr>
<th>Plants Seed Mix (5,000 Feet to 7,000 Feet Elevation)</th>
<th>COMMON NAME</th>
<th>BOTANICAL NAME</th>
<th>Variety</th>
<th>LBS./PLS. PER ACRE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seeded Oat Grass</td>
<td>Bouteloua curtipendula</td>
<td>Vauxian</td>
<td>182</td>
<td></td>
</tr>
<tr>
<td>Blue Grass</td>
<td>Bouteloua gracilis</td>
<td>North Star, Blackstar, Northwind, Native, Alma or Hitchita</td>
<td>182</td>
<td></td>
</tr>
<tr>
<td>Sticker Wheatgrass</td>
<td>Elymus trachycaulus</td>
<td>San Luis</td>
<td>438</td>
<td></td>
</tr>
<tr>
<td>Junegrass</td>
<td>Koeleria macrantha</td>
<td>Native</td>
<td>0.15</td>
<td></td>
</tr>
<tr>
<td>Western Wheatgrass</td>
<td>Pascopyrum smithii</td>
<td>Ancha, Northstar</td>
<td>0.37</td>
<td></td>
</tr>
<tr>
<td>Western Wheatgrass</td>
<td>Pascopyrum smithii</td>
<td>Native</td>
<td>0.37</td>
<td></td>
</tr>
<tr>
<td>Switchgrass</td>
<td>Panicum virgatum</td>
<td>Blackbuck or Nebraska 28</td>
<td>0.63</td>
<td></td>
</tr>
<tr>
<td>Little Bluegrass</td>
<td>Schizachne scoparia</td>
<td>Cimarron or Pastura</td>
<td>0.67</td>
<td></td>
</tr>
<tr>
<td>Green Needlegrass</td>
<td>Stipa viridula</td>
<td>Lymann or Native</td>
<td>1.56</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td>3.00</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Plants Seed Mix (7,000 Feet and Above Elevation)</th>
<th>COMMON NAME</th>
<th>BOTANICAL NAME</th>
<th>Variety</th>
<th>LBS./PLS. PER ACRE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Grass</td>
<td>Bouteloua gracilis</td>
<td>Native, Alma or Hitchita</td>
<td>0.084</td>
<td></td>
</tr>
<tr>
<td>Canary Grass</td>
<td>Elymus canadensis</td>
<td>Native</td>
<td>0.63</td>
<td></td>
</tr>
<tr>
<td>Blackspike Wheatgrass</td>
<td>Elymus lanceolatus</td>
<td>Blackmanna</td>
<td>0.58</td>
<td></td>
</tr>
<tr>
<td>Sticker Wheatgrass</td>
<td>Elymus trachycaulus</td>
<td>San Luis</td>
<td>0.48</td>
<td></td>
</tr>
<tr>
<td>Junegrass</td>
<td>Koeleria macrantha</td>
<td>Native</td>
<td>0.15</td>
<td></td>
</tr>
<tr>
<td>Sandberg's Bluegrass</td>
<td>Poa secunda</td>
<td>Native</td>
<td>0.38</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td>0.63</td>
<td></td>
</tr>
</tbody>
</table>

B. SEEDING APPLICATION: Drill seed 0.25 inch to 0.5 inch into the soil; or small areas not accessible to a drill, broadcast or hydroseed at double the rate and 0.25 inch to 0.5 inch into the soil per subsection 212.

C. MULCHING APPLICATION: Apply a minimum of 2.0 tons of certified weed free hay or 2.1 to 2.5 tons of certified weed free straw per acre and in accordance with Section 213, and mechanically crimp it into the soil in combination with an organic mulch tackifier.

D. SPECIAL REQUIREMENTS:
1. Due to steep slopes (>2:1), hydroseeding will be allowed on this project for permanent stabilization. Hydroseeding rate shall be at double the seeding rate. Hydroseeding shall be applied in two applications. The first application is a slurry which contains seed, organic amendment and fertilizer. The second application is a slurry of mulch and tackifiers. Both slurry applications shall be applied from the bottom of the slope downwards in 50' vertical lifts, unless otherwise approved by the engineer.

E. SOIL CONDITIONING AND FERTILIZER REQUIREMENTS: Minimum requirements for all disturbances to receive seeding (native).

<table>
<thead>
<tr>
<th>Soil conditioners paid for as Item 212: Soil Conditioning (Acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological nutrient organic based fertilizer (lbs/acre)*</td>
</tr>
<tr>
<td>Humate (lbs/acre)</td>
</tr>
<tr>
<td>Compost (cy/acre)</td>
</tr>
<tr>
<td>(1/2 inch depth)</td>
</tr>
</tbody>
</table>

*Biological nutrients shall not exceed 8-8-8 (N-P-K).

Hummate basic material shall be in accordance with Standard Special Provision 312 and compost shall be in accordance with Standard Special Provision 212.

F. SOIL RETENTION COVERING: On slopes and ditches requiring a blanket or turf reinforcement mat (TRM), the blanket/trim shall be placed in lieu of mulch and mulch tackifiers and placed after seeding (native). See SWMP site maps for blanket/trim locations.

G. RESEEDING OPERATIONS/CORRECTIVE STABILIZATION
Prior to partial acceptance, every
1. All seeded areas shall be inspected during the 14 day inspections by the SWMP Administrator and the Erosion Control Inspector to identify any deficiencies caused by surface or gully erosion, blown away mulch, etc. shall be reseeded sheets, and have the designated mulching applied as necessary, at no additional cost to the project.
2. The Contractor shall maintain seed/mulch/blanket/trim, them to control weeds in the seeded areas until Partial Acceptance of the temporary construction work.

10. PRIOR TO PROJECT FINAL ACCEPTANCE
A. Partial Acceptance shall be in accordance with subsection 107.25 (d), 206.10 and 214.04 at the Partial Acceptance of the project, it shall be determined by the SWMP Administrator and the Engineer which Temporary BMPs/Control Measures will remain until 70% revegetation is established or which shall be removed.
B. At the end of the project, all ditch checks shall either consist of temporary erosion logs or equivalent permanent rip-rap.
C. All storm drains shall be cleaned prior to the Final Acceptance of the project. Work shall be included in 222 Clean Culvert.

11. NARRATIVES
A. ADDITIONAL BMP/CONTROL MEASURES AND NARRATIVES: BMP/Control Measure details and narratives not covered by the SWMP or Standard Plan M-208, M-216 shall be added to the SWMP notebook by the SWMP Administrator.
### BMP Matrix:

1. M-Standards have been included along with standard BMP narratives. If a Non-Standard BMP will be used, the SWMP Administrator shall write a Non-Standard BMP narrative place an "X" in the column complete a Non-Standard BMP Specification and Narrative for the SWMP Handbook.
2. The SWMP Administrator shall place an "X" in the column in the Use on Site when the BMP/Control Measure has been installed.
3. Place an "X" in the column BMP/Control Measure to be located by SWMP Administrator if the SWMP Administrator shall locate the BMP/Control Measure during construction. These BMP/Control Measures are not currently located on SWMP Plans but are anticipated to be used during construction (i.e., vehicle tracking, test, batch plants, etc.). The SWMP Administrator shall locate these prior to or during construction and reflect on SWMP Maps.
4. Place an "X" in the column when installation BMP/Control Measure Pre-Construction if the BMP/Control Measure is to be installed prior to construction activity.

#### STRUCTURAL BMPs/Control Measures that may be potentially used on the project for erosion and sediment control; practices may include, but are not limited to:

<table>
<thead>
<tr>
<th>APPLICATION, BMP/CONTROL MEASURE</th>
<th>NARRATIVE</th>
<th>M-STANDARD NON-STANDARD</th>
<th>IN USE ON SITE</th>
<th>BMP/CONTROL MEASURE TO BE LOCATED BY SWMP ADMINISTRATOR</th>
<th>INSTALLATION BMP/CONTROL MEASURE PRE-CONSTRUCTION</th>
<th>BMP/CONTROL MEASURE PHASING</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROTECTION OF EXISTING WETLANDS</td>
<td>Fence (plastic) and erosion logs</td>
<td>Placed adjacent to the wetland; erosion logs shall be placed between the plastic fence and disturbance area. Logs shall be placed to direct flow away from or filter water running into wetlands from disturbance areas.</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>PROTECTION OF EXISTING TREES/LANDSCAPING Fence (plastic)</td>
<td>Fence (plastic) shall be used in areas indicated in the plans to prevent encroachment of construction traffic and sediment for the protection of mature trees and/or existing landscaping prior to start of construction.</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>CHECK DAM/DITCH CHECK</td>
<td>Erosion log, silt fence, silt fence, rock check dam</td>
<td>Placed in ditches immediately upon completion of ditch grading to reduce velocity of runoff in ditches. For existing ditches, place prior to start of construction disturbances.</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>TYPE A, TYPE B &amp; INLET PROTECTION</td>
<td>Storm drain inlet protector (Types 1, 2 &amp; 3)</td>
<td>Placed prior to construction disturbances as detailed in M-208-1, to protect existing inlets or immediately upon completion of new inlets to prevent sediment from entering the inlet throughout construction.</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>CULVERT INLET/OUTLET PROTECTION Erosion logs, aggregate bags</td>
<td>Placed at outlet of culvert and over top of outlet at inlet and outlet where disturbance may be occurring adjacent to pipe to prevent sediment laden water from entering pipe or drainage. Place prior to start of construction disturbances.</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>TYPE C, TYPE D &amp; TYPE 13 PROTECTION Erosion logs, aggregate bags, erosion bales</td>
<td>Placed around inlet grate or slope and ditch pavers to prevent sediment from entering inlet. Place prior to start of construction disturbances.</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>STOCKPILE PROTECTION Temporary berm, erosion logs, aggregate bags*</td>
<td>Placed within specified distance, in accordance with subsection 208.66, from Toe to contain sediment around stockpile. Aggregate bags are easily moved and replaced for access during the work day. Place prior to start of check dam, increase control or slide pile increases size.</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>TOE OF FILL PROTECTION Erosion logs, temporary berm, silt fence, topsoil window*</td>
<td>Placed prior to slope/embankment work to capture sediment and protect and delineate undisturbed areas. *Can be used to stockpile topsoil for salvage.</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>PERIMETER CONTROL Erosion logs, silt fence, temporary berm, topsoil window*</td>
<td>Placed prior to construction commencing to protect potential runoff from off-site, and to divert around disturbed area. *Can be used to stockpile topsoil for salvage.</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>SEDIMENT CONTROL SLOPE CONTROL Silt fence, erosion bags</td>
<td>Place on the contour of a slope to contain and slow down construction runoff. Place prior to start of construction disturbances.</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Feature</td>
<td>Description</td>
<td>M-20B</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TEMPORARY SEDIMENT TRAP</strong></td>
<td>Used to capture sediment laden runoff from disturbed areas &lt; 5 acres during construction. Place prior to start of construction disturbances.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PERMANENT SEDIMENT BASIN</strong></td>
<td>Extended detention basin or other Permanent Water Quality features Embankment Protection or Temporary Slope Drain</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>OUTLET PROTECTION</strong></td>
<td>Material placed as energy dissipater to prevent erosion at outlet structure.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CONCRETE WASHOUT</strong></td>
<td>In-ground or fabricated Construction control, used for waste management of concrete and concrete equipment: cleaning. Place prior to start of concrete activities.</td>
<td></td>
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</tr>
<tr>
<td><strong>VEHICLE TRACKING PAD</strong></td>
<td>Source control placed to prevent tracking of sediment from disturbed area to offsite surface. Place prior to start of construction disturbances.</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Sweeping</strong></td>
<td>Source control used to remove sediment tracked onto paved surfaces and to prevent sediment from entering drainage system. Sweep daily and at the end of the construction shift as needed. Kick brooms shall not be permitted.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>DEWATERING</strong></td>
<td>Shalt be done in such a manner to prevent potential pollutants from entering state waters.</td>
<td></td>
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</tr>
<tr>
<td><strong>TEMPORARY STREAM CROSSING</strong></td>
<td>Constructed over stream or drainage to prevent discharge of pollutants from construction equipment into water.</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>CLEAN WATER DIVERSION</strong></td>
<td>Placed to divert clean surface or ground water around disturbance area to prevent it from mixing with construction runoff.</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td><strong>UPPER</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APPLICATION, BMP/CONTROL MEASURE</td>
<td>NARRATIVE</td>
<td>M-STANDARD</td>
<td>IN USE ON SITE</td>
<td>BMP/CONTROL MEASURE TO BE LOCATED ON SWMP</td>
<td>INSTALLATION BMP/CONTROL MEASURE PRE-CONSTRUCTION</td>
<td>BMP/CONTROL MEASURE PHASING</td>
</tr>
<tr>
<td>----------------------------------</td>
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<td>------------------------------------------</td>
<td>-----------------------------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td><strong>VEGETATIVE BUFFER STRIP</strong></td>
<td>Filter sediment laden runoff from disturbance area. Area to be identified on SWMP prior to construction starting.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Fence (plastic)</td>
<td>Existing landforms may be used as a BMP/Control Measure if they prevent sediment from entering or leaving the disturbance area. If a landform directs flow of water to a concentrated outfall point, the outfall point shall be protected to prevent erosion. Area to be identified on SWMP prior to construction starting.</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td><strong>LANDFORM</strong> (SWMP Administrator or shall add locations to SWMP site maps)</td>
<td>Prior to embankment work commencing, existing topsoil shall be scraped to a depth of 4 inches. and placed in stockpiles or windows. Upon completion of slope work/finish grading (less 4 inches), topsoil shall be evenly distributed over embankment to a depth of 4 inches.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOPSOIL MANAGEMENT</strong></td>
<td>Bracing, backhoe, dozing, combination loader.</td>
<td></td>
<td></td>
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<tr>
<td><strong>STOCKPILE/SALVAGE</strong> Window or stockpile</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SURFACE ROUGHENING / GRADING</strong></td>
<td>Temporary stabilization of disturbance and to minimize wind and erosion.</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TECHNIQUES</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td><strong>SEEDING (TEMPORARY)</strong></td>
<td>Temporarily stabilization used for over watering of disturbance or used to control erosion to areas scheduled for future construction.</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BONDED FIBER MATRIX HYDRAULIC</strong></td>
<td>Not to be used in areas of concentrated flows, i.e. ditch lines. To be used in combination with surface roughening for temporary stabilization of disturbed soils when work is temporarily halted and as approved by the Engineer. May be used as surface cover for temporary topsoil stockpiles</td>
<td></td>
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</tr>
<tr>
<td><strong>MULCH/MULCH TACKIFIER</strong></td>
<td>Temporarily or final stabilization placed as a surface cover for erosion control and or seeding establishment. To be installed as temporary surface cover when work is temporarily halted and as approved by the Engineer.</td>
<td></td>
<td>X</td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>SPRAY-ON MULCH BLANKET (Not to be used in areas of concentrated flows, i.e. ditch lines.)</strong></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>SEEDING PERMANENT (NATVE)</strong></td>
<td>Final Stabilization of disturbance and to reduce runoff and control erosion on disturbed areas.</td>
<td></td>
<td></td>
<td>M-215</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SOIL RETENTION BLANKET (STB)</strong></td>
<td>Final Stabilization of disturbance and to reduce runoff and control erosion on disturbed areas.</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TURF REINFORCEMENT MAT (TRM)</strong></td>
<td>Final Stabilization of disturbance and to reduce runoff and control erosion on disturbed areas. Placed in channels or on slopes for erosion control, channel liner and seeding establishment.</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
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</tr>
<tr>
<td><strong>OTHER</strong></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
12. TABULATION OF STORMWATER QUANTITIES
A. BMP/Control Measure sediment removal and disposal shall be paid for as: 206 Removal and Disposal of Sediment (Equipment) and 206 Removal and Disposal of Sediment Labor. All other BMP/Control Measure maintenance shall be included in the cost of the BMP/Control Measure.

B. It is estimated that 100 hours of labor, blading (200 horsepower), dozing (104 horsepower) combination loader (93 horsepower) and/or backhoe (93 horsepower) may be required for miscellaneous erosion control work as directed by the Engineer. Work shall be paid for as: 203 Labor, 203 Blading, 203 Dozing, 203 Combination Loader or 203 Backhoe.

C. Establishment of seeded areas shall be paid for as: 212 Seeding (Native). This shall include mowing, weed control, reseeding/mulch/tracker.

<table>
<thead>
<tr>
<th>Spec. Pay Item</th>
<th>Description</th>
<th>Pay Unit</th>
<th>Initial Const.</th>
<th>Interim Const.</th>
<th>Permanence Stabilization</th>
<th>*Total Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSP 223-01500</td>
<td>Blading</td>
<td>Hour</td>
<td>20</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>SSP 223-01510</td>
<td>Backhoe</td>
<td>Hour</td>
<td>5</td>
<td>5</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>SSP 223-01550</td>
<td>Dozing</td>
<td>Hour</td>
<td>5</td>
<td>15</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>PSP 223-01594</td>
<td>Combination Loader</td>
<td>Hour</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>SSP 223-02300</td>
<td>Laborer</td>
<td>Hour</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>PSP 227-00205</td>
<td>Topsoil</td>
<td>CY</td>
<td>1435</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>PSP 227-00215</td>
<td>Stockpile Topsoil</td>
<td>CY</td>
<td>1250</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SSP 228-00002</td>
<td>Erosion Log Type 1 (12 inch)</td>
<td>LF</td>
<td>300</td>
<td>5400</td>
<td>1700</td>
<td></td>
</tr>
<tr>
<td>SSP 228-00000</td>
<td>Site Fence</td>
<td>LF</td>
<td>2910</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SSP 228-00045</td>
<td>Concrete Washout Structure</td>
<td>Each</td>
<td>5</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>SSP 228-00070</td>
<td>Vehicle Tracking Pad</td>
<td>Each</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

*It is anticipated that additional BMPs/Control Measures and BMP/Control Measure quantities not shown on the SWMP Site Maps shall be required on the project for unforeseen conditions and replacement of items that are beyond their useful service life, see subsection 208.33 and 208.04. Quantities for all BMPs/Control Measures shown above are estimated, and have been increased for unforeseen conditions and normal BMP/Control Measure life expectancy. Quantities shall be adjusted according to the conditions encountered in the field as directed and approved by the Engineer. Payment shall be for the actual work completed and material used.

13. BIOLOGIC IMPACTS
A. ENVIRONMENTAL IMPACTS:
1. Wetland Impacts: NO
2. Streams Impacts: YES
3. Threatened and Endangered Species: NO
4. If YES to any of the above items, are any permits required or additional actions needed (404, etc.): A 404 Permit will be required.

14. NOTES