EXHIBIT B

Long-Term Stormwater Management Plan

for:

Maverik Fuel Station
I-25 & County Line Road
El Paso County, Colorado

For:

Maverik, Inc.
185 South State Street
Salt Lake City, Utah 84111

Prepared by:

Horrocks Engineering
5670 Greenwood Plaza Blvd., Suite 125W
Greenwood Village, CO 80111
303-967-0353

Site Manager
Phone Number:
Email:

PURPOSE AND RESPONSIBILTY

As required by the Clean Water Act and resultant local regulations, those who develop land are required to build and maintain systems to minimize litter and contaminants in stormwater runoff that pollute waters of the State.

This Long-Term Stormwater Management Plan (LTSWMP) describes the systems, operations and the minimum standard operating procedures (SOPs) necessary to manage pollutants originating from or generated on this property. Any activities or site operations at this property that contaminate water entering the City's stormwater system, groundwater and generate loose litter must be prohibited.

CONTENTS

SECTION 1: SITE DESCRIPTION, USE AND IMPACT
SECTION 2: TRAINING
SECTION 3: RECORDKEEPING
SECTION 4 APPENDICES

SECTION 1: SITE DESCRIPTION, USE AND IMPACT

Our site infrastructure is limited at controlling and containing pollutants. If our property and operations are managed improperly we will contaminate our water resources. This LTSWMP includes standard operations procedures (SOP)s intended to compensate for the limitations of our site infrastructure and direct our maintenance operations to responsibly manage our grounds. SOPs are filed in appendix B.

Parking, Sidewalk and flatwork

Any sediment, leaves, debris, spilt fluids or other waste that collects on our parking areas and sidewalks will be carried by runoff to our flood and water quality control system. These solids will fill in our detention system requiring future dredging and cleaning. Also any liquids and dissolved solids can contaminate groundwater.

Landscaping

Our landscape operations can result in grass clippings, sticks, branches, dirt, mulch, fertilizers, pesticides and other pollutants to fall or be left on our paved areas. These solids will fill in our detention system requiring future dredging and cleaning. Also any liquids and dissolved solids can contaminate groundwater.

Flood and Water Quality Control System

Our flood and water quality control system includes directing runoff into landscaping areas as possible. Directing runoff to our landscape areas is a low impact system intended to trap and treat our urban pollutants on the surface to protect downstream water resources. Our system includes underground detention storage, oil/sediment/trash traps and an underground infiltration system. The infiltration system is design to drain the first ½" of runoff into the ground required by Clean Water Act regulation. Infiltrating some of our runoff helps keep streams and rivers clean but if we are not careful can contaminate groundwater. Anything we put or allow to be left on our pavements will eventually be carried to our oil/sediment/trash traps and underground infiltration system filling it with sediment and debris increasing maintenance cost. Also by-passing dissolved and liquid pollutants can increase the risk for contaminating groundwater for which we are responsible. In addition, very intense storm events can scour debris and silt from our system and spill to the impacted waterways. It is important our flood control volume and water quality system is adequately maintained to function properly.

Waste Management

Good waste management systems, if managed improperly, can become the source of the very pollution it was intended to manage. The lids of our dumpster and trash receptacles are intended to prevent light weight trash carried off by wind and precipitation exposure minimizing liquids that can leak to our pavement and from haul trucks. In addition, our dumpster pad slopes toward our pavement and any leaks can leach into runoff staining our pavement, causing smell and increasing groundwater contamination risk.

Utility System

Our roof top utility system is exposed to our roof drains which drain to our pavements. This heating and air conditioner unit contains oils and other chemicals that can harm groundwater and the impacted waterways if allowed to drain off our property.

Snow and Ice Removal Management

Salt is a necessary pollutant and is vital to ensuring a safe parking and pedestrian walkways. However, salt and other ice management chemicals if improperly managed will unnecessarily increase our salt impact to our own vegetation and local water resources. Much of the runoff drains to our landscape swales. We need to minimize salt to maintain healthy root systems needed for optimum infiltration rates.

SECTION 2: TRAINING

Ensure that all employees and maintenance contractors know and understand the SOPs specifically written to manage and maintain the property. Maintenance contractors must use the stronger of their Company and the LTSWMP SOPs. File all training records in Appendix C.

SECTION 3: RECORDKEEPING

Maintain records of operation and maintenance activities in accordance with SOPs.

SECTION 4: APPENDICES

Appendix A- Site Drawings and Details
Appendix B- SOPs
Appendix C- Recordkeeping Documents
Appendix D – ADS Stormtech Operations Requirements

APPENDIX A – SITE DRAWINGS AND DETAILS

HORROCKS ENGINEERS
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(435) 986-7888
www.horrocks.com

SHEET NOTES:

1. SEE ARCHITECTURAL PLANS FOR BUILDING AND CODE SUMMARY INFORMATION.
2. TURNING TEMPLATE USING WB-67 TRUCK SHOWN FOR INFORMATION ONLY.
3. PARKING STALLS: 43, ADA STALLS: 2
4. FOLLOW M.U.T.C.D REQUIREMENTS FOR ALL PAVEMENT MARKINGS.

CONSTRUCTION KEY NOTES:

1. STRAIGHT FORECOURT FUEL ISLAND AND CANOPY (SEE ARCHITECTURAL PLANS)
2. STRAIGHT COMMERCIAL COURT FUEL ISLAND AND CANOPY (SEE ARCHITECTURAL PLANS)
3. ON-SITE ASPHALT PAVING MODERATE DUTY (DETAIL 3, SHEET C.4.0)
4. ON-SITE ASPHALT PAVING HEAVY DUTY (DETAIL 4, SHEET C.4.0)
5. CONCRETE PARKING STALL (DETAIL 5, SHEET C.4.0)
6. BIKE RACK (DETAIL 34, SHEET C.5.3)
7. CONCRETE WALKWAY - BUILDING (DETAIL 7, SHEET C.4.0)
8. CATCH TYPE CURB & GUTTER (DETAIL 1, SHEET C.4.0)
9. SPILL TYPE CURB & GUTTER (DETAIL 2, SHEET C.4.0)
10. CONCRETE PAD UNDER FUEL CANOPY (DETAIL 9, SHEET C.4.0)
11. CONCRETE PAD OVER UNDERGROUND FUEL TANKS (DETAIL 10, SHEET C.4.0)
12. REBOUNDING BOLLARD (DETAIL 15 AND 16-B, SHEET C.4.1)
13. HOOP BOLLARD (DETAIL 11, SHEET C.4.0)
14. WEDGE BOLLARD (DETAIL 13, SHEET C.4.1)
15. ADA PARKING SIGN WITH BOLLARD (DETAIL 16-A, SHEET C.4.1)
16. FUEL DISPENSER BASE (DETAIL 12, SHEET C.4.0)
17. XACTAIR AIR STATION FOUNDATION (DETAIL 20, SHEET C.4.1, PROVIDED BY MAVERIK)
18. ADA PARKING (DETAIL 17 & 18, SHEET C.4.1)
19. TRASH ENCLOSURE (SEE ARCHITECTURAL AND STRUCTURAL PLANS AND DETAIL 40, SHEET C.4.4)
20. PICNIC TABLE (PROVIDED BY MAVERIK)
21. CONCRETE RUNOUT PAD AND MOUNTABLE CURB (DETAIL 26, SHEET C.4.2)
22. 3' CONCRETE WATERWAY (DETAIL 8, SHEET C.4.0)
23. PETROLEUM TRENCH CAP. COORDINATE FINAL LOCATION WITH FUEL SYSTEM DRAWINGS SHEET PE.10 (DETAIL 25, SHEET C.4.2)
24. TYPICAL LIGHT POLE (DETAIL 19, SHEET C.4.1)
25. 6" PIPE BOLLARD (DETAIL 35, SHEET C.4.4)
26. CAT SCALE (SEE STRUCTURAL PLANS)
27. CURB AND GUTTER - TYPE A (SEE DETAIL 27, SHEET C.4.2)
28. 4 INCH WHITE SOLID LINE (PER MUTCD STANDARDS)
29. PROPOSED HOUSEKEEPING PAD. REFERENCE STRUCTURAL DRAWINGS FOR CONCRETE FOUNDATION. REFERENCE ARCHITECTURAL AND ELECTRICAL DRAWINGS FOR EQUIPMENT DETAILS AND INSTALLATION. REFERENCE GRADING PLAN FOR SPOT ELEVATIONS.
30. PAVEMENT MARKINGS (PER MUTCD STANDARDS)

SHEET LEGEND:

- ASPHALT PAVEMENT (HEAVY DUTY)
- ASPHALT PAVEMENT
- CONCRETE SURFACE
- ADA AREA NOT TO EXCEED 1.5% SLOPE IN ANY DIRECTION
- ADA ROUTE NOT TO EXCEED 4.5% RUNNING SLOPE OR 1.5% CROSS SLOPE
- ASPHALT PAVEMENT SECTION TRANSITION
- SPILL TYPE CURB & GUTTER
- ## PARKING STALL COUNT

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

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DRAWING INFO

DATE	AUG 20, 2021
DESIGNED	TMD
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CHECKED	##
PROJECT	CO-2658-2008

PRELIMINARY
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MAVERIK, INC. - SITE CODE CO-0258

I-25 & COUNTY LINE ROAD MONUMENT, CO

SITE PLAN

MAVERIK

C.1.2

Q:\!2020\CO-2658-2008 Maverik County Line Road (Monument)\Project Data\02 CAD\2.03 Sheet Files\Construction Drawings\CO-2658-SITE.dwg - C.1.2 - 8/20/2021 11:01am, taylord

SHEET NOTES:

1. STORM DRAIN AND UTILITIES SHOWN ON THIS SHEET FOR REFERENCE ONLY. SEE SHEET C.2.1 FOR STORM DRAIN DESIGN AND SHEET C.3.0 FOR UTILITIES.
2. SEE SHEET C.2.2 FOR CROSS SECTIONS AND STORM DRAIN PROFILES.
3. RAISE TO GRADE ALL MANHOLES, INLETS AND OTHER UTILITY COVERS.
4. SEE C.2.1 FOR BLOW UP VIEWS OF FUEL DESPENSER PADS.

GRADING KEYNOTES

- G1 APPROXIMATE LIMITS OF DISTURBANCE
- G2 MATCH TO EXISTING (SAWCUT AS REQUIRED TO PROVIDE SMOOTH TRANSITION)
- G3 GRADING HIGH POINT
- G4 GRADING LOW POINT

CUT / FILL SUMMARY				
NAME	2D AREA (FT^2)	CUT (YD^3)	FILL (YD^3)	NET CUT (YD^3)
FG vs. EXG	268,848	532	75,649	75,117

1. EARTHWORK VOLUMES SHOWN FOR INFORMATION ONLY. CONTRACTOR TO INDEPENDENTLY VERIFY CUT / FILL QUANTITIES.
2. UNADJUSTED EARTHWORK VOLUME SHOWN DOES NOT ACCOUNT FOR SHRINK AND/OR SWELL.
3. EARTHWORK VOLUMES SHOWN ARE BASED ON COMPARISON OF FINISH GRADE TO EXISTING GRADE AND DOES NOT ACCOUNT FOR BACK-OUT VOLUMES BENEATH PAVEMENT SECTIONS, SIDEWALKS, FOOTINGS, TRENCH SPOILS, ETC.

NOTES:
1. TOP OF CONCRETE TO TOP OF SPOT & SPREAD FOOTING SEPARATION IS 36"

2. 6" RAISED VERTICAL CONCRETE ISLAND WITH 1 $\frac{1}{2}$ -INCH TOOLED EDGES AND CORNERS TO BE POURED FIRST 5'-0" x 3'-0" CONCRETE ISLAND (NO METAL FORM - VERIFY SIZE WITH DISPENSER MANUFACTURER)

3. AFTER THE 5'-0" - 3'-0" FUEL ISLAND HAS BEEN POURED, SLOPE CONCRETE AWAY FROM ISLAND IN ALL (4) DIRECTIONS

4. EVERY OTHER DISPENSER TO BE EQUIPPED WITH A FIRE EXTINGUISHER

FUEL DESPENSER ELEVATIONS			
COLUMN #	TOC @ COLUMN	TOP OF COLUMN FTG.	TOP OF ISLAND CURB
C1	7339.84	7336.84	7340.34
C2	7340.24	7337.24	7340.74
C3	7340.60	7337.60	7341.10
C4	7340.89	7337.89	7341.39
C5	7341.17	7338.17	7341.67
C6	7341.45	7338.45	7341.95
C7	7341.99	7338.99	7342.49
C8	7342.13	7339.13	7342.63
C9	7342.27	7339.27	7342.77
C10	7342.42	7339.42	7342.92
C11	7342.56	7339.56	7343.06
C12	7342.70	7339.70	7343.20

NOTE: PRIOR TO CONSTRUCTION, CONTRACTOR SHALL FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES. CONTRACTOR SHALL NOTIFY ENGINEER IF FIELD CONDITIONS DO NOT MATCH PLANS.

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GRADING PLAN

C.2.0

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SHEET NOTES:

1. UTILITIES SHOWN ON THIS SHEET FOR REFERENCE ONLY. SEE UTILITY PLAN SHEET C.3.0 FOR COMPLETE UTILITY DESIGN INFORMATION.
2. WHILE EVERY EFFORT HAS BEEN MADE TO ACCURATELY DEPICT THE LOCATIONS OF SEWER LATERAL CLEAN-OUTS, WATER METERS, IRRIGATION METERS, POWER BOXES AND FACILITIES, AND ALL OTHER SERVICES, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONSTRUCT ALL SUCH FACILITIES IN ACCORDANCE WITH THE APPLICABLE CITY (OR OTHER GOVERNING AGENCY) STANDARDS AND SPECIFICATIONS. IT IS REQUIRED THAT THE CONTRACTOR MEET WITH THE ENGINEER SUFFICIENTLY PRIOR TO INSTALLING THESE FACILITIES TO ENSURE PROPER COORDINATION AND PLACEMENT.
3. SEE SHEET C.2.2 FOR STORM DRAIN PROFILES.

STORM DRAIN CONSTRUCTION KEY NOTES:

66. ROOF DRAIN CLEANOUT, FRAME AND COVER - UT-2 (SEE DETAIL 22, SHEET C.4.2)
67. 8" HDPE ROOF DRAIN LINE (SEE DETAIL 23, SHEET C.4.2)
68. 12" HDPE DRAIN LINE (SEE DETAIL 23, SHEET C.4.2)
69. 18" HDPE DRAIN LINE (SEE DETAIL 23, SHEET C.4.2)
70. SINGLE GRATE CATCH BASIN INLET (SEE DETAIL 36, SHEET C.4.4)
71. STORM DRAIN CLEANOUT, FRAME AND COVER - UT-2 (SEE DETAIL 22, SHEET C.4.2)
72. STORM DRAIN MANHOLE (SEE DETAILS 29, 30, AND 31 SHEET C.4.3 AND DETAIL 28, SHEET C.4.2)
73. STORMTECH CHAMBER
74. 2'X2' AREA DRAIN (SEE DETAIL 39, SHEET C.4.4)
75. 4'X4' AREA DRAIN (SEE DETAIL 39, SHEET C.4.4)
76. RIPRIP OUTLET PROTECTION. EXTEND TO BOTTOM OF SLOPE (SEE DETAIL 21, SHEET C.4.2)

STRUCTURE TABLE

STRUCTURE NAME	DETAILS	DESCRIPTION
AD-1	RIM = 7341.59 INV OUT = 7338.14	AREA DRAIN
AD-2	RIM = 7339.89 INV OUT = 7336.37	AREA DRAIN
AD-3	RIM = 7341.68 INV OUT = 7339.58	AREA DRAIN
CB-1	RIM = 7341.13 INV IN = 7332.87 INV OUT = 7332.77	CATCH BASIN INLET
CB-3	RIM = 7337.40 INV OUT = 7333.25	CATCH BASIN INLET
CB-4	RIM = 7339.17 INV OUT = 7334.04	CATCH BASIN INLET
RDCO-1	RIM = 7342.90	ROOF DRAIN CLEANOUT
RDCO-2	RIM = 7342.76	ROOF DRAIN CLEANOUT
RDCO-3	RIM = 7342.61	ROOF DRAIN CLEANOUT
RDCO-4	RIM = 7342.38	ROOF DRAIN CLEANOUT
RDCO-5	RIM = 7342.24	ROOF DRAIN CLEANOUT
RDCO-6	RIM = 7342.10	ROOF DRAIN CLEANOUT
RDCO-7	RIM = 7341.65	ROOF DRAIN CLEANOUT
RDCO-8	RIM = 7341.39	ROOF DRAIN CLEANOUT
RDCO-9	RIM = 7341.12	ROOF DRAIN CLEANOUT
RDCO-10	RIM = 7340.88	ROOF DRAIN CLEANOUT
RDCO-11	RIM = 7340.61	ROOF DRAIN CLEANOUT
RDCO-12	RIM = 7340.33	ROOF DRAIN CLEANOUT
RDCO-13	RIM = 7342.23	ROOF DRAIN CLEANOUT
RDCO-14	RIM = 7342.22	ROOF DRAIN CLEANOUT
RDCO-15	RIM = 7342.25 INV OUT = 7339.58	ROOF DRAIN CLEANOUT
RDCO-16	RIM = 7342.19 INV OUT = 7333.29	ROOF DRAIN CLEANOUT
SDCO-1	RIM = 7343.08 INV OUT = 7340.44	STORM DRAIN CLEANOUT
SDMH-1	RIM = 7341.72 INV IN = 7336.00 INV IN = 7337.76 INV IN = 7337.76 INV OUT = 7335.90	STORM DRAIN MANHOLE
SDMH-2	RIM = 7340.08 INV IN = 7334.14 INV IN = 7335.99 INV OUT = 7334.04	STORM DRAIN MANHOLE
SDMH-3	RIM = 7341.64 INV IN = 7332.61 INV IN = 7332.61 INV OUT = 7332.51	STORM DRAIN MANHOLE
SDMH-4	RIM = 7342.04 INV IN = 7337.44 INV OUT = 7337.34	STORM DRAIN MANHOLE

NOTE: PRIOR TO CONSTRUCTION, CONTRACTOR SHALL FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES. CONTRACTOR SHALL NOTIFY ENGINEER IF FIELD CONDITIONS DO NOT MATCH PLANS.

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FUEL DESPENSER GRADING PLAN

C.2.2

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HORZ. SCALE: 1" = 30'
VERT. SCALE 1"=6'

1 / C.2.2 **STORM DRAIN PROFILE**
SDCO-1 TO NORTH STORMTECH

2 / C.2.2 **STORM DRAIN PROFILE**
RDCO-13 TO SDMH-3

3 / C.2.2 **STORM DRAIN PROFILE**
CB-4 TO SOUTH STORMTECH CHAMBER

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I-25 & COUNTY LINE ROAD MONUMENT, CO

SECTIONS & PROFILES

MAVERIK

C.2.4

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NOTES:
1. REFER TO THE SITE SPECIFIC GEOTECHNICAL REPORT AND SPECIFY CROSS SECTION TO THE MOST STRINGENT
2. ADD EXPANSION JOINTS EVERY ±25 FEET ALONG CURB. SEE DETAIL C-1 SEE SITE SPECIFICATIONS

1 / C.4.0 ON-SITE CATCH TYPE CURB & GUTTER
SCALE: NTS, MAVERIK STANDARDS 20_01: C-6

NOTES:
1. REFER TO THE SITE SPECIFIC GEOTECHNICAL REPORT AND SPECIFY CROSS SECTION TO THE MOST STRINGENT
2. ADD EXPANSION JOINTS EVERY ±25 FEET ALONG CURB
SEE DETAIL C-1
SEE SITE SPECIFICATIONS

2 / C.4.0 ON-SITE SPILL TYPE CURB & GUTTER
SCALE: NTS, MAVERIK STANDARDS 20_01: C-7

NOTES:
1. REFER TO THE SITE SPECIFIC GEOTECHNICAL REPORT AND SPECIFY CROSS SECTION TO THE MOST STRINGENT

3 / C.4.0 TYPICAL ON-SITE ASPHALT PAVING
SCALE: NTS, MAVERIK STANDARDS 20_01: AS-1

NOTES:
1. REFER TO THE SITE SPECIFIC GEOTECHNICAL REPORT AND SPECIFY CROSS SECTION TO THE MOST STRINGENT
2. TO BE USED AT ALL LOCATIONS WHERE CUSTOMER TRUCKS WILL TRAVEL

4 / C.4.0 TYPICAL ON-SITE ASPHALT PAVING (HEAVY DUTY)
SCALE: NTS, MAVERIK STANDARDS 20_01: AS-2

NOTES:
1. REFER TO THE SITE SPECIFIC GEOTECHNICAL REPORT AND SPECIFY CROSS SECTION TO THE MOST STRINGENT
2. THICKEN SLAB @ ALL OUTSIDE EDGES.

5 / C.4.0 CONCRETE PARKING STALL
SCALE: NTS, MAVERIK STANDARDS 20_01: C-3

NOTES:
1. REFER TO THE SITE SPECIFIC GEOTECHNICAL REPORT AND SPECIFY CROSS SECTION TO THE MOST STRINGENT

6 / C.4.0 CONCRETE WALKWAY
SCALE: NTS, MAVERIK STANDARDS 20_01: C-4

NOTES:
1. REFER TO THE SITE SPECIFIC GEOTECHNICAL REPORT AND SPECIFY CROSS SECTION TO THE MOST STRINGENT

7 / C.4.0 CONCRETE WALKWAY AT BUILDING
SCALE: NTS, MAVERIK STANDARDS 20_01: C-5

NOTES:
1. REFER TO THE SITE SPECIFIC GEOTECHNICAL REPORT AND SPECIFY CROSS SECTION TO THE MOST STRINGENT

8 / C.4.0 3' CONCRETE WATERWAY
SCALE: NTS, MAVERIK STANDARDS 20_01: C-9

NOTES:
1. REFER TO THE SITE SPECIFIC GEOTECHNICAL REPORT AND SPECIFY CROSS SECTION TO THE MOST STRINGENT
2. THICKEN SLAB @ ALL OUTSIDE EDGES.
3. 12-INCH CHAMFER AT EACH CONCRETE CORNER.

9 / C.4.0 CONCRETE PAD UNDER FUEL CANOPY
SCALE: NTS, MAVERIK STANDARDS 20_01: C-10

NOTES:
1. REFER TO THE SITE SPECIFIC GEOTECHNICAL REPORT AND SPECIFY CROSS SECTION TO THE MOST STRINGENT
2. 12-INCH CHAMFER AT EACH CONCRETE CORNER.
3. PAD TO EXTEND 12-INCH MIN. BEYOND TANKS IN ALL DIRECTIONS.

10 / C.4.0 CONCRETE PAD OVER UNDERGROUND FUEL TANKS
SCALE: NTS, MAVERIK STANDARDS 20_01: C-11

11 / C.4.0 "HOOP" BOLLARD
SCALE: NTS, MAVERIK STANDARDS 20_01: SF-2

NOTES:
1. TOP OF CONCRETE TO TOP OF SPOT & SPREAD FOOTING SEPARATION IS 36"

2. 6" RAISED VERTICAL CONCRETE ISLAND WITH 1 1/2 -INCH TOOLED EDGES AND CORNERS TO BE POURED FIRST 5'-0" x 3'-0" CONCRETE ISLAND (NO METAL FORM - VERIFY SIZE WITH DISPENSER MANUFACTURER)

3. AFTER THE 5'-0" - 3'-0" FUEL ISLAND HAS BEEN POURED, SLOPE CONCRETE AWAY FROM ISLAND IN ALL (4) DIRECTIONS

4. EVERY OTHER DISPENSER TO BE EQUIPPED WITH A FIRE EXTINGUISHER

12 / C.4.0 FUEL DISPENSER BASE
SCALE: NTS, MAVERIK STANDARDS 19_04: SF-7

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I-25 & COUNTY LINE ROAD MONUMENT, CO
SITE DETAILS

C.4.0

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13 C.4.1 **WEDGE BOLLARD**
SCALE: NTS, MAVERIK STANDARDS 20_01: SF-3

NOTE:
1. THIS DETAIL DEPICTS MINIMUM MAVERIK STANDARDS. LOCAL JURISDICTION MAY HAVE MORE STRINGENT REQUIREMENTS THAT SHALL BE VERIFIED AND ADHERED TO

14 C.4.1 **TYPICAL BOLLARD SPACING AT BUILDING**
SCALE: NTS, MAVERIK STANDARDS 20_01: SF-4

15 C.4.1 **REBOUNDING BOLLARD**
SCALE: NTS, MAVERIK STANDARD 20_01: SF-1A, SF-1B, SF-1C & SF-4

16-A C.4.1 **ADA PARKING SIGN WITH BOLLARD**
SCALE: NTS, MAVERIK STANDARDS 20_01: SF-5

16-B C.4.1 **REBOUNDING BOLLARD CONNECTION**
SCALE: NTS, MAVERIK STANDARDS 20_01: SF-5

NOTE:
1. THIS DETAIL DEPICTS MINIMUM MAVERIK STANDARDS. LOCAL JURISDICTION MAY HAVE MORE STRINGENT REQUIREMENTS THAT SHALL BE VERIFIED AND ADHERED TO
2. WHILE CONCRETE PAD MAY EXTEND BEYOND THE DESIGNATED ADA PARKING STALLS, THE ADA PARKING STALLS THEMSELVES MUST BE ENCOMPASSED COMPLETELY BY CONCRETE PAD.

17 C.4.1 **ADA PARKING**
SCALE: NTS, MAVERIK STANDARDS 20_01: SF-11

NOTES:
1. THIS DETAIL DEPICTS MINIMUM MAVERIK STANDARDS. LOCAL JURISDICTION MAY HAVE MORE STRINGENT REQUIREMENTS THAT SHALL BE VERIFIED AND ADHERED TO
2. PROVIDE TWO COATS OF PAINT
3. BLUE BACKGROUND WITH WHITE SYMBOL

18 C.4.1 **PAINTED ADA PARKING SYMBOL**
SCALE: NTS, MAVERIK STANDARDS 20_01: SF-12

NOTES:
1. POLE BASE IN NATURAL UNDISTURBED SOIL
2. WHEN POLE IS 3'-0" OR GREATER FROM CURB, PROVIDE SEAL TO TOP OF POLE FOOTING FLUSH WITH GRADE. SEAL OFFS AS REQUIRED IF IN HAZARDOUS AREA, SEE ELECTRICAL PLAN. CUT OFF SHIELDS AND/OR HEADS MAY BE REQUIRED UPON FIELD INSPECTION

19 C.4.1 **TYPICAL LIGHT POLE AND BASE**
SCALE: NTS, MAVERIK STANDARDS 20_01: SF-6

UTILITY REQUIREMENTS: OUTDOOR APPROVED ELECTRICAL CONDUIT. REFER TO ELECTRICAL SPECIFICATIONS INFORMATION ON SPECIFIC MACHINE INSTALLATION REQUIREMENTS.

20 C.4.1 **XACTAIR AIR STATION FOUNDATION**
SCALE: NTS, MAVERIK STANDARDS 20_01: SF-9

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MAVERIK, INC. - SITE CODE CO-0258

I-25 & COUNTY LINE ROAD
MONUMENT, CO

SITE DETAILS

C.4.1

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21 / C.4.2 RIPRAP OUTLET PROTECTION
SCALE: NTS

H-8030 Cleanout Frame and Cover

22 / C.4.2 CLEAN-OUT FRAME AND COVER
SCALE: NTS, MAVERIK STANDARDS 20_01: UT-2

NOTES:
1. REFER TO THE SITE SPECIFIC GEOTECHNICAL REPORT
2. USE LOCAL JURISDICTION DETAIL

23 / C.4.2 ON-SITE PIPE BED SECTION
SCALE: NTS, MAVERIK STANDARDS 19_04: UT-3

24 / C.4.2 OFF-SITE ASPHALT PAVING - CDOT
SCALE: NTS

NOTES:
1. REFER TO THE SITE SPECIFIC GEOTECHNICAL REPORT AND SPECIFY CROSS SECTION TO THE MOST STRINGENT
2. THICKEN SLAB @ ALL OUTSIDE EDGES.
3. INSTALL "UNDERGROUND PETROLEUM" MARKERS EVERY 20 FEET ABOVE FUEL LINES OR PER NFPA CODE

25 / C.4.2 PETROLEUM TRENCH CAP SECTION
SCALE: NTS, MAVERIK STANDARDS 20_01: C-12

DESIGNER NOTES:
1. ENGINEER OF RECORD TO REFER TO THE SITE SPECIFIC GEOTECHNICAL REPORT AND SPECIFY, CROSS SECTION TO THE MOST STRINGENT

26 / C.4.2 CONCRETE RUNOUT PAD AND MOUNTABLE CURB
SCALE: NTS, MAVERIK STANDARDS DETAIL C-8

27 / C.4.2 TYPICAL CURB AND GUTTER - TYPE A
SCALE: NTS, EL PASO COUNTY

28 / C.4.2 STORM SEWER MANHOLE
SCALE: NTS, EL PASO COUNTY

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NOTES:
1. A 1-INCH DEEP BY ⅛-INCH WIDE SAWED JOINT MUST BE USED AND MUST BE DONE NO LATER THAN 24 HOURS AFTER INITIAL SET OF CONCRETE.
2. EXPANSION JOINTS IN CONCRETE CURBS AND SIDEWALKS EVERY ±25 FEET, SEE SITE SPECIFICATIONS

CONTROL JOINT
EXPANSION JOINT
CONSTRUCTION JOINT

(THIS DETAIL IS FOR REFERENCE)

29 C.4.3 **TYPICAL ON-SITE CONCRETE JOINT**
SCALE: NTS, MAVERIK STANDARDS 20_01: C-1

8/11/11 DATE APPROVED André P. Brackin DEPARTMENT OF TRANSPORTATION	Grate Inlet for Common Areas (guidance) Standard Drawing REVISION DATE 11/10/04 FILE NAME SD_3-8	EL PASO COUNTY DEPARTMENT OF TRANSPORTATION

30 C.4.3 **STORM SEWER MANHOLE**
SCALE: NTS, EL PASO COUNTY

9/16/10 DATE APPROVED André P. Brackin DEPARTMENT OF TRANSPORTATION	Storm Sewer Manhole Details Standard Drawing REVISION DATE 9/16/10 FILE NAME SD_3-5	EL PASO COUNTY DEPARTMENT OF TRANSPORTATION

31 C.4.3 **STORM SEWER MANHOLE**
SCALE: NTS, EL PASO COUNTY

8/11/11 DATE APPROVED André P. Brackin DEPARTMENT OF TRANSPORTATION	Storm Sewer Manhole Riser and Cover Detail Standard Drawing REVISION DATE 11/23/04 FILE NAME SD_3-7	EL PASO COUNTY DEPARTMENT OF TRANSPORTATION

32 C.4.3 **STORM SEWER MANHOLE**
SCALE: NTS, EL PASO COUNTY

8/11/11 DATE APPROVED André P. Brackin DEPARTMENT OF TRANSPORTATION	Utility Trench Repair Detail Asphalt Pavement Standard Drawing REVISION DATE 11/10/04 FILE NAME SD_4-20	EL PASO COUNTY DEPARTMENT OF TRANSPORTATION

33 C.4.3 **UTILITY TRENCH REPAIR ASPHALT PAVEMENT**
SCALE: NTS, EL PASO COUNTY

NOTES:
1. IF STORAGE OF MORE THAN 2 BICYCLES IS REQUIRED, PLACE ADDITIONAL BIKE RACKS, AS NECESSARY.

34 C.4.3 **"HI-ROLLER" BIKE RACK**
SCALE: NTS, MAVERIK STANDARDS 20_01: SF-8

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NOTES:
1. VERIFY BOLLARD LOCATION WITH SUB-GRADE AND SURFACE CONDITIONS. ADJUST ACCORDINGLY

35 / C.4.4 PIPE BOLLARD
SCALE: NTS, MAVERIK STANDARDS

36 / C.4.4 APWA PLAN 315 CATCH BASIN
SCALE: NTS

STANDARD PLAN REFERENCE No.	L	W
304	44 1/2"	16 1/2"
305	47 1/2"	21 3/4"
309	47 3/4"	16"
310	44 1/2"	16 1/2"

37 / C.4.4 APWA PLAN 331 CLEANOUT
SCALE: NTS

LEGEND

No.	*	ITEM	DESCRIPTION
A		FIRE HYDRANT	AWWA C502
B		VALVE BOX WITH LID	2-PIECE CAST IRON
C		GATE VALVE WITH 2" X 2" NUT	AWWA C509
D		TEE WITH 125 # FLANGE	AWWA C110

* FURNISHED BY UTILITY AGENCY

SECTION

38 / C.4.4 APWA PLAN 511 FIRE HYDRANT WITH VALVE
SCALE: NTS

SPECIFIER CHART

MODEL NO. STANDARD DEPTH	STANDARD & SHALLOW DEPTH (Data in these columns is the same for both STANDARD & SHALLOW versions) INLET ID Inside Dimension (inch x inch)	GRATE OD Outside Dimension (inch x inch)	TOTAL BYPASS CAPACITY (cu. ft./ sec.)	STANDARD DEPTH -20 Inches- SOLIDS STORAGE CAPACITY (cu. ft.)	FILTERED FLOW (cu. ft. / sec.)	MODEL NO. SHALLOW DEPTH	SHALLOW DEPTH -12 Inches- SOLIDS STORAGE CAPACITY (cu. ft.)	FILTERED FLOW (cu. ft. / sec.)
FGP-1836W	18 X 36	18 X 40	6.9	2.3	1.6	FGP-1836W8	1.3	.9
FGP-2436	24 X 24	24 X 27	6.1	2.2	1.5	FGP-2436	1.25	.85
FGP-2436W	24 X 36	24 X 40	8.0	3.4	2.0	FGP-2436W8	1.95	1.15
FGP-48W	48 X 48	54 X 54	18.6	8.8	4.8	FGP-48W8	5.0	2.7

NOTES:
1. Filter insert shall have a high flow bypass feature.
2. Filter support frame shall be constructed from stainless steel Type 304.
3. Filter medium shall be *Fossil Rock* ™, installed and maintained in accordance with manufacturer specifications.
4. Storage capacity reflects 80% of maximum solids collection prior to impeding filtering bypass.

FloGard® Catch Basin Insert Filter Wall Mount Style — Inlet Filtration

U.S. PATENT

Oldcastle® Stormwater Solutions
7521 Southpark Plaza, Suite 200 | Littleton, CO | 80120 | Ph: 800.579.8819 | oldcastlestormwater.com

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DRAWING NO.	REV.	ECO	DATE
FGP-0005	B	ECO-0142 JPR 7/13/16	JPR 1/25/13

SHEET 1 OF 1

39 / C.4.4 OLDCASTLE CATCH BASIN INSERT FILTER
SCALE: NTS

40 / C.4.4 DUPSTER ENCLOSURE PLAN
SCALE: NTS

POLY-LOK SEALS USED FOR INLET & OUTLET

NOTES:
1. INLET & OUTLET ARE IDENTIFIED.
2. TANK IS MARKED 1,500 GALLON.
3. ACTUAL TANK CAPACITY IS 1,500 GALLONS (5,678L) AT A LIQUID DEPTH OF 5'-0" (1524mm).
4. INLET & OUTLET BAFFLES WILL ACCEPT A NOM. 4" SCH. 40 PVC PIPE.
5. IT IS RECOMMENDED THAT BITUMINOUS MASTIC BE USED AT JOINT.
6. OPENINGS MAY BE SIZED & LOCATED AS SPECIFIED WITHIN STRUCTURAL LIMITATIONS.
7. BAFFLES ARE TO BE INSTALLED BY OTHERS.
8. DESIGNED FOR 6'-0" MAX. BURY.

Oldcastle Precast®
2240 S. Yellowstone Hwy, Idaho Falls, Idaho 83402
Phone: 208-522-8150 Fax: 208-522-9701

Septic Tank
FILE NAME: 230TBST05
ISSUE DATE: 11/2016
www.oldcastleprecast.com

1500 Gal 5' X 8'
(HS-20 Traffic Rated)
ISO View
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41 / C.4.4 1500 GAL 5' x 8'
SCALE: NTS

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42 / C.4.4 1500 GAL 5' x 8'
SCALE: NTS

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SITE INFORMATION AND CALCULATIONS

TOTAL SITE AREA: 4.93 ACRES / 215,161 SF

PROVIDED LANDSCAPE AREA: 1.70 ACRES / 74,332 SF

REQUIREMENT	CALCULATION
5% OF THE LOT OR PARCEL SHALL BE LANDSCAPED	10,737 REQUIRED LANDSCAPE AREA, 74,332 SF PROVIDED (SOME FOR OFFSITE GRADING RESTORATION)
1 TREE PER 500 SF OF REQUIRED INTERNAL LANDSCAPE AREA	WELL SITE, PERMIT DOES NOT ALLOW FOR EXTERNAL WATERING. NO TREES PROPOSED.
50% OF REQUIRED TREES MAY BE SUBSTITUTED WITH SHRUBS. 10 (5 GALLON) SHRUBS PER TREE	WELL SITE, PERMIT DOES NOT ALLOW FOR EXTERNAL WATERING. NO SHRUBS PROPOSED. PROPOSED NATIVE SEED MIX CONTAINS SOME WOODY SHRUBS
75% LIVE COVER, 25% MAY BE ROCK STONE, BARK, OR OTHER LANDSCAPE MATERIALS.	13,133 SF OF DECORATIVE LANDSCAPE ROCK (18%) OF TOTAL LANDSCAPE AREA. 61199 SF OF NATIVE SEED MIX (82%)

GENERAL LANDSCAPE NOTES

1. LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR VERIFYING QUANTITIES OF ALL MATERIALS FOR BIDDING AND INSTALLATION PURPOSES. IF DISCREPANCIES EXIST, THE PLAN SHALL DICTATE QUANTITIES TO BE USED.
2. OMIT WEED BARRIER FABRIC FROM ALL ROW TREE PLANTING AREAS.
3. PLANT MATERIAL TO BE INSTALLED PER PLANT LEGEND. IF SUBSTITUTIONS ARE WANTED, PROPOSED CHANGES MUST BE SUBMITTED TO THE LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO PLANTING.
4. TOPSOIL TO BE IMPLEMENTED AT THE FOLLOWING DEPTHS:
   - 4.1. 6" DEPTH IN ALL PLANTER BED AREAS
   - 4.2. 4" DEPTH IN ALL TURF SOD AREAS
   - 4.3. 4" DEPTH IN ALL NEW SEED AREAS.
   - 4.4. 2" DEPTH IN ALL RESTORATION AREAS THAT WERE PREVIOUSLY VEGETATED.
5. EDGING SHALL BE IMPLEMENTED BETWEEN ALL VARYING LANDSCAPE MATERIALS SUCH AS TURF GRASS AND BARK MULCH, BARK MULCH AND ROCK MULCH, TURF GRASS AND BROADCAST SEED, ETC. EXACT TYPE OF EDGING SHALL BE INDICATED ON THE PLANS. IF NO EDGING IS INDICATED ON THE PLANS A 6" X 6" SLIP FORMED, SQUARE CONCRETE CURB SHALL BE USED.
6. LANDSCAPE ROCK AND BARK MULCH COLOR AND TYPE TO BE APPROVED BY OWNER. SUBMIT SAMPLES FOR APPROVAL PRIOR TO INSTALLATION. MULCH MATERIAL SHALL BE IMPLEMENTED IN ALL PLANTER BED AREAS INDICATED ON THE PLANS AT THE FOLLOWING DEPTHS.
   - 6.1. SHREDDED BARK MULCH : 4"
   - 6.2. 1-2" DIAMETER FRACTURED STONE : 4"
   - 6.3. 2-4" DIAMETER FRACTURED STONE: 4"
   - 6.4. 1-2" COBBLE MULCH: 4"
   - 6.5. 2-4" COBBLE MULCH: 6"
   - 6.6. PULL MULCH MIN. OF 3" AWAY FROM BASE OF ALL PERENNIALS AND SHRUBS AND MIN. 6" AWAY FROM ALL TREES.
7. ALL TREES SHALL BE INSTALLED IN PLANTER BED AREAS WITH SHREDDED BARK MULCH TOP DRESSING AND PER CITY DETAILS ON SHEET L.2.0.
8. INSTALLATION SHALL COMPLY WITH ALL NATIONAL, STATE AND LOCAL LAWS AND ORDINANCES.
9. ALL MATERIALS SHALL BE NEW AND WITHOUT FLAWS OR DEFECTS OF THE QUALITY AND PERFORMANCE SPECIFIED, AND SHALL MEET THE REQUIREMENTS OF THIS SYSTEM. USE MATERIALS AS SPECIFIED, NO SUBSTITUTIONS SHALL BE PERMITTED WITHOUT WRITTEN PERMISSION OF THE OWNER OR LANDSCAPE ARCHITECT
10. BASE PLAN & LOCATION OF EXISTING EQUIPMENT ARE SCHEMATIC IN NATURE. FIELD VERIFY ALL BASE & EXISTING ELEMENTS PRIOR TO CONSTRUCTION & PROVIDE NECESSARY ADJUSTMENTS.
12. ALL PLANTS SHALL BE WATERED THOROUGHLY TWICE DURING THE FIRST 24 HOUR PERIOD AFTER PLANTING. ALL PLANTS SHALL THEN BE WATERED ON A REGULAR SCHEDULE DURING THE FIRST GROWING SEASON.
13. THE CONTRACTOR SHALL WARRANTY ALL PLANT MATERIAL FOR ONE-YEAR AFTER DATE OF FINAL ACCEPTANCE.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE VERIFICATION AND AVOIDANCE OF ALL UNDERGROUND UTILITIES DURING THE INSTALLATION OF LANDSCAPE AND IRRIGATION ELEMENTS. SHOULD ANY DAMAGE OCCUR TO UNDERGROUND UTILITIES THE CONTRACTOR SHALL REPLACE OR REPAIR THE DAMAGE AT NO ADDITIONAL COST TO THE OWNER.
15. TREES PLANTED ON SLOPES EXCEEDING 3:1 SHALL HAVE BOULDER RETAINING ON THE DOWNHILL PORTION OF THE SLOPE TO CREATE A LEVEL PLANTING AREA PER DETAILS.
16. AREAS DISTURBED BY GRADING ACTIVITIES WHICH ARE NOT SHOWN ON THIS PLAN MUST BE STABILIZED VIA BROADCAST SEED WITH TACKIFIER PER DETAILS AND THE SEED MIX IN THE PLANS. SLOPES STEEPER THAN 2:1 SHALL HAVE EROSION CONTROL BLANKETS OVER THE SEED MIX AREAS PER DETAILS.

LEGEND

SYMBOL	DESCRIPTION	QTY
	3-5' ACCENT BOULDER	42

SYMBOL	DESCRIPTION	QTY
	4" DEPTH OF 1-2" FRACTURED LANDSCAPE ROCK SUBMIT SAMPLES TO OWNER PRIOR TO INSTALLATION	13,133 SF
	BROADCAST SEED MIX	61,199 SF

REVEGETATION SEED MIX

GRASSES/FORBS	SEED NAME			% OF MIX
	SEED NO.	COMMON NAME	BOTANICAL NAME	
G	1	Indian Ricegrass	Achnatherum hymenoides	10.00%
G	2	Crested Wheatgrass	Agropyron desertorum	15.00%
G	3	Blue Grama	Sporobolus cryptandrus	15.00%
G	4	Sideoats Grama	Bouteloua gracilis	15.00%
G	5	Mountain Brome	Bouteloua curtipendula	15.00%
F	6	Rocky Mountain Beeplant	Cleome serrulata	3.00%
G	7	Sulphur-Flower Buckwheat	Eriogonum umbellatum	3.00%
F	8	Blue Flax	Linum lewisii	3.00%
F	9	Chokecherry Lupine	Lupinus prunophilus	3.00%
G	10	Western Wheatgrass	Pascopyrum smithii	15.00%
F	11	Rocky Mountain Penstemon	Penstemon strictus	3.00%
				100.00%
				27 lbs/acre

SCALE: 1" = 30'

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LANDSCAPE PLAN

MAVERIK

L.1.0

Q:\!2020\CO-2658-2008 Maverik County Line Road (Monument)\Project Data\02 CAD\2.03 Sheet Files\Construction Drawings\CO-2658-LANDSCAPE.dwg - L.1.0 LANDSCAPE PLAN - 8/20/2021 11:05am, taylord

User Inputs

Chamber Model:	MC-3500
Outlet Control Structure:	No
Project Name:	Maverik - Monument
Engineer:	N/A
Project Location:	Colorado
Measurement Type:	Imperial
Required Storage Volume:	5600 cubic ft.
Stone Porosity:	40%
Stone Foundation Depth:	9 in.
Stone Above Chambers:	12 in.
Average Cover Over Chambers:	18 in.
Design Constraint Dimensions:	(35 ft. x 140 ft.)

Results

System Volume and Bed Size

Installed Storage Volume:	5791.88 cubic ft.
Storage Volume Per Chamber:	109.90 cubic ft.
Number Of Chambers Required:	29
Number Of End Caps Required:	4
Chamber Rows:	2
Maximum Length:	117.18 ft.
Maximum Width:	15.33 ft.
Approx. Bed Size Required:	1747.21 square ft.

System Components

Amount Of Stone Required:	235.66 cubic yards
Volume Of Excavation (Not Including Fill):	355.91 cubic yards

*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 24"

User Inputs

Chamber Model:	MC-3500
Outlet Control Structure:	No
Project Name:	Maverik - Monument
Engineer:	N/A
Project Location:	Colorado
Measurement Type:	Imperial
Required Storage Volume:	2900 cubic ft.
Stone Porosity:	40%
Stone Foundation Depth:	9 in.
Stone Above Chambers:	12 in.
Average Cover Over Chambers:	18 in.
Design Constraint Dimensions:	(50 ft. x 140 ft.)

Results

System Volume and Bed Size

Installed Storage Volume:	2905.35 cubic ft.
Storage Volume Per Chamber:	109.90 cubic ft.
Number Of Chambers Required:	14
Number Of End Caps Required:	2
Chamber Rows:	1
Maximum Length:	106.08 ft.
Maximum Width:	8.42 ft.
Approx. Bed Size Required:	892.87 square ft.

System Components

Amount Of Stone Required:	123.79 cubic yards
Volume Of Excavation (Not Including Fill):	181.88 cubic yards

*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 24"

APPENDIX B – SOPs

Pavement Sweeping

General:
These SOPs are not expected to cover all necessary procedure actions. Operators are allowed to adapt SOPs to unique site conditions in good judgment when it is necessary for safety, and the proper, and effective containment of pollutants. However, any changes of routine operations must be amended in these SOPs.

1. Purpose:

a) One of the primary contaminates downstream is organic material.
b) Any sediment, leaves, debris, spilt fluids or other waste that collects on our parking areas and sidewalks will fill in our oil/sediment/trash traps and our underground infiltration system increasing our maintenance cost.

2. Regular Procedure:

a) Remain aware of minor sediment/debris and hand sweep or remove material by other means as needed. Significant deposits will likely collect in autumn with leaf fall and early spring after winter thaw. Usually sweeping machinery is the best tool for this application.
b) Regularly manage outside activities that spread fugitive debris on our pavements. This involves outside functions including but not limited to: Yard sales, yard storage, fund raisers, etc.
c) Limit car wash fund raiser or other related activities. Detergents will damage water resources and washed pollutants will fill our storm drain system and drain into the ground which we are responsible.

4. Disposal Procedure:

a) Dispose of hand collected material in dumpster
b) Use licensed facilities when haul off is necessary

5. Training:

a) Annually and at hire
b) Inform staff and service contractors when incorrect SOP implementation is observed.

Landscape Maintenance

General:
This SOP is not expected to cover all necessary procedure actions. Operators are allowed to adapt SOPs to unique site conditions in good judgment when it is necessary for safety, and the proper, and effective containment of pollutants. However, any changes of routine operations must be amended in this SOP.

1. Purpose:

a) One of the primary contaminates downstream is organic material.
b) Grass clippings, sticks, branches, dirt, mulch, fertilizers, pesticides and other pollutants will fill our landscaping swales, sediment/trash traps and underground infiltration system requiring future dredging and cleaning increasing our maintenance cost. Removing these debris after they have washed to our flood and water quality system will in very expensive.

2. Maintenance Procedure:

a) Maintain healthy vegetation root systems. Healthy root systems will help improve permeable soils maintaining more desirable infiltration rates of our landscape areas receiving runoff from our pavements.
b) Grooming
   - Lawn Mowing – Immediately following operation sweep or blow clippings onto vegetated ground.
   - Fertilizer Operation – Prevent overspray. Sweep or blow granular fertilizer onto vegetated ground immediately following operation.
   - Herbicide Operation – Prevent overspray. Sweep or blow granular herbicide onto vegetated ground immediately following operation.
c) Remove or contain all erodible or loose material prior forecast wind and precipitation events, before any non-stormwater will pass through the property and at end of work period. Light weight debris and landscape materials can require immediately attention when wind or rain is expected.
d) Landscape project materials and waste can usually be contained or controlled by operational best management practices.
   - Operational; including but not limited to:
     - Strategic staging of materials eliminating exposure, such as not staging on pavement
     - Avoiding multiple day staging of landscaping backfill and spoil on pavements
     - Haul off spoil as generated and daily
     - Scheduling work when weather forecast are clear.

e) Cleanup:
   - Use dry cleanup methods, e.g. square nose shovel and broom. Conditions are usually sufficient when no more material can be swept onto the square nosed shovel.
   - Power blowing tools

3. Waste Disposal:

a) Dispose of waste according to General Waste Management SOP, unless superseded by specific SOPs for the operation.

4. Equipment:

a) Tools sufficient for proper containment of pollutants and removal.

5. Training:

a) Annually and at hire
b) Inform staff and service contractors when incorrect SOP implementation is observed.
c) Landscape Service Contractors must use equal or better SOPs.

Waste Management

General:
This SOP is not expected to cover all necessary procedure actions. Operators are allowed to adapt SOPs to unique site conditions in good judgment when it is necessary for safety, and the proper, and effective containment of pollutants. However, any changes of routine operations must be amended in this SOP.

1. Purpose:

a) Trash can easily blow out of our dumpster and trash receptacles.
b) Liquids can leak from our dumpster polluting waterways, subsurface soils, stain our pavement and cause smell.

2. Procedure:

a) Remain aware of the lids and keep them closed.
b) Remain aware of leaking and fix. Minimize allowing disposal of liquids in our receptacles and dumpster. Also liquids can leak from the waste haul trucks.
c) Beware of dumpster capacity. Solve capacity issues. Leaving bags outside of dumpster is not acceptable.

3. Waste Disposal Restrictions for all waste Scheduled for the Local Landfill:

a) Generally most waste generated at this property, and waste from spill and clean up operations can be disposed in our dumpsters under the conditions listed in this SOP. Unless specific disposal requirements are identified by the product SDS or otherwise specified in other SOPs.
b) Know the facility disposal requirements and restrictions. It should not be assumed that all waste disposed in collection devices will be disposed at properly.
c) Review landfill regulations for additional restrictions and understand what waste is prohibited in the local landfill. Ensure the SDS and local landfill regulations are not contradictory.

Generally the waste prohibited by local landfill are:

- Liquid:
  - paint
  - pesticides/fertilizers
  - oil (all types)
  - antifreeze
  - batteries
  - liquid chemicals
  - etc.

(Generally, *all the above hazardous waste when involved in minor spill cleanup operations can be disposed in covered dumpsters and our waste bays, if the liquid is contained in absorbent material, e.g. sand, dirt, loose absorbent, pads, booms etc., and transformed or dried such that it will not drip. This is not intended for whole sale disposal of out dated or spent liquid hazardous waste. When disposal of out dated or spent liquid is needed or for questions of how to dispose of other waste, contact the local Health Department*

4. Training:

a) Annually and at hire
b) Inform staff and service contractors when incorrect SOP implementation is observed.

Flood and Water Quality System

General:
These SOPs are not expected to cover all necessary procedure actions. Operators are allowed to adapt SOPs to unique site conditions in good judgment when it is necessary for safety, and the proper, and effective containment of pollutants. However, any changes of routine operations must be amended in these SOPs.

1. Purpose:

a) Our storm drain system will collect anything we leave in the way of runoff which will fill our oil/sediment/trash traps and underground infiltration system increasing maintenance cost.
b) Any liquids or dissolved pollutants can increase the risk for contaminating groundwater for which we are responsible.
c) During very intense storm events pollutants in excess runoff can by-pass our system increasing risk of contaminating groundwater and the rivers downstream.

2. Inspections:

a) Inspect oil/sediment/trash trap. Remove any floating trash at each inspection interval with rake or other means. Remove sediments accumulations when 2" and more. Removed oil accumulations with the heavy sediment unless oil amounts are excessive. Oil can also be removed with absorbent materials but sediments will require vacuum operated machinery.
b) Inspect oil/sediment/trash trap for mosquito larvae.
c) Inspect underground infiltration system for water. Water should not remain for more than 48 hours. Contact an engineer or equal industry with adequate knowledge when water is not draining.
d) Inspect underground infiltration system for sediment accumulations. Remove sediment and debris accumulation when volume capacities drop below 90%. Removal will require hydro-vacuum machinery.
e) Inspect for sediment accumulations in above ground detention and retention infrastructure. Remove sediment and debris accumulation when volume capacities drop below 90%.
f) Inspect low impact flood control swale and landscape area infrastructure for sediment accumulation. Remove sediment accumulation when volume capacities drop below 90%.
g) Inspect low impact flood control swale and landscape area for adequate drainage and vegetation coverage. Poor drainage can be improved by maintaining healthy plant root systems.

h) Regularly remove trash and debris from above ground detention/retention and low impact flood control swale and landscape infrastructure. Remove accumulations with regular grooming operations.

2. Disposal Procedure:

a) Remove and dispose sediment and debris at licensed facilities. Also dry waste can be disposed in your dumpster as permitted by the local landfill facility.
b) Disposal of hazardous waste
    1. Dispose of hazardous waste at regulated disposal facilities. Follow SDS Sheets. Also see Waste Management and Spill Control SOP

3. Training:

a) Annually and at hire
b) Inform staff and service contractors when incorrect SOP implementation is observed.

Pavement Washing

General:
These SOPs are not expected to cover all necessary procedure actions. Operators are allowed to adapt SOPs to unique site conditions in good judgment when it is necessary for safety, and the proper, and effective containment of pollutants. However, any changes of routine operations must be amended in these SOPs.

1. Purpose:

a) Pavement washing involving detergents can potentially contaminate groundwater with phosphates and with whatever we are washing.
b) Pavement washing can fill our low impact flood control swale and landscape area, oil/sediment/trash traps and infiltration system with detergents, including sediment and debris increasing our maintenance cost.

2. Procedure:

a) Prevent waste fluids and any detergents if used from entering storm drain system. The following methods are acceptable for this operation.
   - Dam the inlet using a boom material that seals itself to the pavement and pick up the wastewater with shop-vacuum or absorbent materials.
   - Collect wastewater with shop-vacuum simultaneous with the washing operation.
   - Collect wastewater with vacuum truck or trailer simultaneous with the washing operation.
b) This procedure must not used to clean the initial spills. First apply the Spill Containment and cleanup SOP following by pavement washing when desired or necessary.

3. Disposal Procedure:

a) Small volumes of diluted washing waste can usually be drained to the local sanitary sewer. Contact the Berkeley Sewer District.
b) Large volumes must be disposed at regulated facilities.

4. Pavement Cleaning Frequency:

a) There is no regular pavement washing regimen. Pavement washing is determined by conditions that warrant it, including but not limited to: prevention of slick or other hazardous conditions or restore acceptable appearance of pavements.

5. Training:

a) Annually and at hire

b) Inform staff and service contractors when incorrect SOP implementation is observed.

Snow and Ice Removal Management

General:
This SOP is not expected to cover all necessary procedure actions. Operators are allowed to adapt SOPs to unique site conditions in good judgment when it is necessary for safety, and the proper, and effective containment of pollutants. However, any changes of routine operations must be amended in this SOP.

1. Purpose:

a) Salt and other ice management chemicals if improperly managed will unnecessarily increase our salt impact to our own vegetation and local water resources.
b) We need to maintain healthy root systems to help maintain optimum infiltration rates.

2. De-Icing Procedure:

a) Do not store or allow salt or equivalent to be stored on outside paved surfaces.
b) Minimize salt use by varying salt amounts relative to hazard potential.
c) Sweep excessive piles left by the spreader.
d) Watch forecast and adjust salt amounts when warm ups are expected the same day.

3. Training:

a) Annually and at hire.
b) Require snow and ice service contractors to follow the stronger this SOP and their company SOPs.

General Construction Maintenance

General:
This SOP is not expected to cover all necessary procedure actions. Operators are allowed to adapt SOPs to unique site conditions in good judgment when it is necessary for safety, and the proper, and effective containment of pollutants. However, any changes of routine operations must be amended in this SOP.

1. Purpose:

a) Any sediment, debris, or construction waste will fill in our landscaping swales, sediment/trash traps and our underground infiltration system increasing our maintenance cost.

2. Construction Procedure:

a) Remove or contain all erodible or loose material prior forecast wind and precipitation events or before non-stormwater will pass through the project site. For light weight debris maintenance can require immediately attention for wind and runoff events. Many times daily maintenance is necessary or as needed per random, precipitation or non-stormwater events.

b) Project materials and waste can be contained or controlled by operational or structural best management practices.
   - Operational; including but not limited to:
     - Strategic staging of materials eliminating exposure, such as not staging on pavement
     - Avoiding multiple day staging of backfill and spoil
     - Haul off spoil as generated or daily
     - Schedule work during clear forecast
   - Structural; including but not limited to:
     - Inlet protection, e.g. wattles, filter fabric, drop inlet bags, boards, planks
     - Gutter dams, e.g. wattles, sandbags, dirt dams
     - Boundary containment, e.g. wattles, silt fence
     - Dust control, e.g. water hose,
     - Waste control, e.g. construction solid or liquid waste containment, dumpster, receptacles

c) Inspection often to insure the structural best management practices are in good operating condition and at least prior to the workday end. Promptly repair damaged best management practices achieving effective containment.

d) Cleanup:
   - Use dry cleanup methods, e.g. square nose shovel and broom.

- Wet methods are allowed if wastewater is prevented from entering the stormwater system, e.g. wet/dry vacuum, disposal to our landscaped areas.

e) Cleanup Standard:
- When a broom and a square nosed shovel cannot pick any appreciable amount of material.

3. Waste Disposal:

a) Dispose of waste according to General Waste Management SOP, unless superseded by specific SOPs for the operation.
b) Never discharge waste material to storm drains

4. Equipment:

a) Tools sufficient for proper containment of pollutants and cleanup.
b) Push broom and square blade shovel should be a minimum.

5. Training:

a) Annually and at hire.
b) Require snow and ice service contractors to follow the stronger this SOP and their company SOPs.

Spill Control

General:

This SOP is not expected to cover all necessary procedure actions. Operators are allowed to adapt SOPs to unique site conditions in good judgment when it is necessary for safety, and the proper, and effective containment of pollutants. However, any changes of routine operations must be amended in this SOP.

1. Purpose:

a) Spilt liquids and solids will reach our low impact flood control landscaping areas, oil/sediment/trash traps and infiltration system potentially contaminating groundwater which we are responsible.
b) It is vital we contain all spills on the surface. Spills reaching our underground flood control storage system can result in expensive spill mitigation, including potential tear out and replacement.

2. Containment Procedure:

a) Priority is to dam and contain flowing spills.
b) Use spill kits booms if available or any material available to stop flowing liquids; including but not limited to, nearby sand, dirt, landscaping materials, etc.
c) Hazardous or unknown waste material spills
    1. Critical Emergency constitutes large quantities of flowing uncontained liquid that people at risk or reach storm drain systems. Generally burst or tipped tanks and containment is still critical. Call HAZMAT, DWQ, City.
    Also report spills to DWQ of quantities of 25 gallons and more and when the spill of lesser quantity causes a sheen on downstream water bodies
    2. Minor Emergency constitutes a spill that is no longer flowing but has reached a storm drain and adequate cleanup is still critical. Call City
    3. Spills that are contained on the surface, typically do not meet the criteria for Critical and Minor Emergencies and may be managed by the responsible implementation of this SOP.
    4. Contact Numbers:
    HAZMAT -
    DWQ –
    HD –
    City –

3. Cleanup Procedure:

a) NEVER WASH SPILLS TO THE STORM DRAIN SYSTEMS.
b) Clean per SDS requirements but generally most spills can be cleaned up according to the following:

- Absorb liquid spills with spill kit absorbent material, sand or dirt until liquid is sufficiently converted to solid material.
- Remove immediately using dry cleanup methods, e.g. broom and shovel, or vacuum operations.
- Cleanup with water and detergents may also be necessary depending on the spilled material. However, the waste from this operation must be vacuumed or effectively picked up by dry methods or vacuum machinery. See Pavement Washing SOP.
- Repeat process when residue material remains.

4. DISPOSAL:

a) Follow SDS requirements but usually most spills can be disposed per the following b. & c.
b) Generally most spills absorbed into solid forms can be disposed to the dumpster and receptacles. Follow Waste Management SOP.
c) Generally liquid waste from surface cleansing processes may be disposed to the sanitary sewer system after the following conditions have been met:
   - Dry cleanup methods have been used to remove the bulk of the spill and disposed per the Waste Management SOP.
   - The liquid waste amounts are small and diluted with water. This is intended for spill cleanup waste only and never for the disposal of unused or spent liquids.

5. Documentation:

a) Document all spills in Appendix C.

6. SDS sheets:

a) SDS Manual is filed in break room.

7. Materials:

a) Generally sand or dirt will work for most cleanup operations and for containment. However, it is the responsibility of the owner to select the absorbent materials and cleanup methods required by the SDS Manuals for chemicals used by the company.

8. Training:

a) Annually and at hire.
b) Require snow and ice service contractors to follow the stronger this SOP and their company SOPs.

APPENDIX C – PLAN RECORDKEEPING DOCUMENTS

MAINTENANCE/INSPECTION SCHEDULE

Frequency	Site Infrastructure.
	Replace text with the infrastructure / system that must be maintained; repeat

Inspection Frequency Key: A=annual, Q=Quarterly, M=monthly, W=weekly, S=following appreciable storm event, U=Unique infrastructure specific (specify)

RECORD INSPECTIONS IN THE MAINTENANCE LOG

Inspection Means: Either; Traditional walk through, Awareness/Observation, and during regular maintenance operations while noting efficiencies/inefficiencies/concerns found, etc.

MAINTENANCE LOG

Date	Maintenance Performed/Spill Events. Perform Maintenance per SOPs	Observation Notes, including but not limited to; Inspection results, Observations, System Performance (effectiveness/inefficiencies), SOP Usefulness, Concerns, Necessary Changes…	Initials

Annual Summary of LTSWMP effectiveness, inefficiencies, problems, necessary changes etc.

*You may create your own form that provides this same information or request a word copy of this document.

Annual SOP Training Log per Section 2

SOP	Trainer	Employee Name / Maintenance Contractor Co	Date

*You may create your own form that provides this same information or request a word copy of this document.

APPENDIX D – ADS ISOLATOR ROW O&M MANUAL

StormTech®
Detention • Retention • Water Quality
An ADS company

Isolator® Row O&M Manual

SC-740

MC-3500

MC-4500

THE MOST **ADVANCED** NAME IN WATER MANAGEMENT SOLUTIONS™

ADS®

THE ISOLATOR® ROW

INTRODUCTION

An important component of any Stormwater Pollution Prevention Plan is inspection and maintenance. The StormTech Isolator Row is a technique to inexpensively enhance Total Suspended Solids (TSS) removal and provide easy access for inspection and maintenance.

THE ISOLATOR ROW

The Isolator Row is a row of StormTech chambers, either SC-160LP, SC-310, SC-310-3, SC-740, DC-780, MC-3500 or MC-4500 models, that is surrounded with filter fabric and connected to a closely located manhole for easy access. The fabric-wrapped chambers provide for settling and filtration of sediment as storm water rises in the Isolator Row and ultimately passes through the filter fabric. The open bottom chambers and perforated sidewalls (SC-310, SC- 310-3 and SC-740 models) allow storm water to flow both vertically and horizontally out of the chambers. Sediments are captured in the Isolator Row protecting the storage areas of the adjacent stone and chambers from sediment accumulation.

Two different fabrics are used for the Isolator Row. A woven geotextile fabric is placed between the stone and the Isolator Row chambers. The tough geotextile provides a media for storm water filtration and provides a durable surface for maintenance operations. It is also designed to prevent scour of the underlying stone and remain intact during high pressure jetting. A non-woven fabric is placed over the chambers to provide a filter media for flows passing through the perforations in the sidewall of the chamber. The non-woven fabric is not required over the SC-160LP, DC-780, MC-3500 or MC-4500 models as these chambers do not have perforated side walls.

The Isolator Row is typically designed to capture the "first flush" and offers the versatility to be sized on a volume basis or flow rate basis. An upstream manhole not only provides access to the Isolator Row but typically includes a high flow weir such that storm water flowrates or volumes that exceed the capacity of the Isolator Row overtop the over flow weir and discharge through a manifold to the other chambers.

The Isolator Row may also be part of a treatment train. By treating storm water prior to entry into the chamber system, the service life can be extended and pollutants such as hydrocarbons can be captured. Pre-treatment best management practices can be as simple as deep sump catch basins, oil-water separators or can be innovative storm water treatment devices. The design of the treatment train and selection of pretreatment devices by the design engineer is often driven by regulatory requirements. Whether pretreatment is used or not, the Isolator Row is recommended by StormTech as an effective means to minimize maintenance requirements and maintenance costs.

Note: See the StormTech Design Manual for detailed information on designing inlets for a StormTech system, including the Isolator Row.

Looking down the Isolator Row from the manhole opening, woven geotextile is shown between the chamber and stone base.

StormTech Isolator Row with Overflow Spillway (not to scale)

ISOLATOR ROW INSPECTION/MAINTENANCE

INSPECTION

The frequency of inspection and maintenance varies by location. A routine inspection schedule needs to be established for each individual location based upon site specific variables. The type of land use (i.e. industrial, commercial, residential), anticipated pollutant load, percent imperviousness, climate, etc. all play a critical role in determining the actual frequency of inspection and maintenance practices.

At a minimum, StormTech recommends annual inspections. Initially, the Isolator Row should be inspected every 6 months for the first year of operation. For subsequent years, the inspection should be adjusted based upon previous observation of sediment deposition.

The Isolator Row incorporates a combination of standard manhole(s) and strategically located inspection ports (as needed). The inspection ports allow for easy access to the system from the surface, eliminating the need to perform a confined space entry for inspection purposes.

If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted to determine the depth of sediment. When the average depth of sediment exceeds 3 inches throughout the length of the Isolator Row, clean-out should be performed.

MAINTENANCE

The Isolator Row was designed to reduce the cost of periodic maintenance. By "isolating" sediments to just one row, costs are dramatically reduced by eliminating the need to clean out each row of the entire storage bed. If inspection indicates the potential need for maintenance, access is provided via a manhole(s) located on the end(s) of the row for cleanout. If entry into the manhole is required, please follow local and OSHA rules for a confined space entries.

Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row while scouring and suspending sediments. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45" are best. Most JetVac reels have 400 feet of hose allowing maintenance of an Isolator Row up to 50 chambers long. **The JetVac process shall only be performed on StormTech Isolator Rows that have AASHTO class 1 woven geotextile (as specified by StormTech) over their angular base stone.**

StormTech Isolator Row (not to scale)

Note: Non-woven fabric is only required over the inlet pipe connection into the end cap for SC-160LP, DC-780, MC-3500 and MC-4500 chamber models and is not required over the entire Isolator Row.

ISOLATOR ROW STEP BY STEP MAINTENANCE PROCEDURES

STEP 1
Inspect Isolator Row for sediment.
- A) Inspection ports (if present)
  - i. Remove lid from floor box frame
  - ii. Remove cap from inspection riser
  - iii. Using a flashlight and stadia rod,measure depth of sediment and record results on maintenance log.
  - iv. If sediment is at or above 3 inch depth, proceed to Step 2. If not, proceed to Step 3.
- B) All Isolator Rows
  - i. Remove cover from manhole at upstream end of Isolator Row
  - ii. Using a flashlight, inspect down Isolator Row through outlet pipe
    1. Mirrors on poles or cameras may be used to avoid a confined space entry
    2. Follow OSHA regulations for confined space entry if entering manhole
  - iii. If sediment is at or above the lower row of sidewall holes (approximately 3 inches), proceed to Step 2. If not, proceed to Step 3.

STEP 2
Clean out Isolator Row using the JetVac process.
- A) A fixed floor cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable
- B) Apply multiple passes of JetVac until backflush water is clean
- C) Vacuum manhole sump as required

STEP 3
Replace all caps, lids and covers, record observations and actions.

STEP 4
Inspect & clean catch basins and manholes upstream of the StormTech system.

SAMPLE MAINTENANCE LOG

Date	Stadia Rod Readings		Sediment Depth (1)–(2)	Observations/Actions	Inspector
	Fixed point to chamber bottom (1)	Fixed point to top of sediment (2)			
3/15/11	6.3 ft	none		New installation. Fixed point is CI frame at grade	DJM
9/24/11		6.2	0.1 ft	Some grit felt	SM
6/20/13		5.8	0.5 ft	Mucky feel, debris visible in manhole and in Isolator Row, maintenance due	NV
7/7/13	6.3 ft		0	System jetted and vacuumed	DJM

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