

## O&M Manual Changes as of July 1, 2019

- Entire “Manual” is no longer recorded, eliminates approximately 30 pages of the manual.
- Yearly inspection and maintenance cards are no longer required to be submitted to County or SEMSWA on a yearly basis. Inspections are still required to be done, kept on file with the owner and should be available at such time that verification required.
- If using one of the standard Control Measures (CMs), as per the Arapahoe County Stormwater Management Manual chapter 14, Maintenance and Inspection procedures have been removed from the manual and are now available on the County website at:  
<https://www.arapahoegov.com/553/Engineering-Services-Division>
- O&M Manual not consists of the O&M Agreement (eff date 7-1-19) and the O&M site plan, lists as “Exhibit A” to the agreement.
  - See O&M Site plan exhibit checklist for requirements
- If using one of the standard CM, as per the Arapahoe County Stormwater Management Manual chapter 14, no further exhibits are required in the manual.
- If using a non-standard Control Measures, as per the Arapahoe County Stormwater Management Manual chapter 14, design engineer to create a Standard Operating Procedure (SOP) to be attached as “Exhibit B” of the O&M Manual. The SOP must be drafted to discuss maintenance and approved by the County.
- Staff will still prepare the standardized O&M Agreement as part of the land use case.



# OPERATIONS AND MAINTENANCE SITE PLAN CHECKLIST

June 2019

An Operation and Maintenance (O&M) Site Plan shall be prepared for all projects that include post-construction water quality and/or detention facilities. The purpose of an O&M Site Plan is to document pertinent information for the Owner/Operator to assist in long-term maintenance of control measures (CMs), including identification of all functional elements, how to access the CM, and any unique maintenance considerations of the stormwater facility. Please submit a completed checklist along with, but separate from, the O&M Site Plan and Maintenance Agreement. O&M Site Plans shall, at a minimum, include the following information:

## **GENERAL PLAN REQUIREMENTS**

- Vicinity Map with north arrow (no copyrighted materials)
- Legend for identifying features/linetypes on drawing
- Labels for all streets/roadways, including linework for edge of street, street name, and right-of-way width; and jurisdictional boundaries
- Linework for right-of-way lines, lot lines, easements, tracts, and major drainageways
- Labels for all control measures (CMs)
- Include summary table when multiple CMs are present, table to include CM name, treatment area, and type of treatment provided (WQCV, 20/10, Pollutant Removal, etc.).
- Labels for all stormwater infrastructure consistent with construction drawings
- Site grading to a level of detail sufficient to show drainage patterns
- For sites utilizing a regional facility, provide a note stating the location and name of the regional facility
- Include Case Number(s) on the lower left-hand corner of the sheet

## **ACCESS REQUIREMENTS**

- Show the means for the County, or its designated representative, to legally access the CM from the right-of-way. This can be accomplished with notes and arrows depicting the access path to the CMs.
- If the CM is proposed to be located in an enclosed or fenced area, include notes that specify how the CM can be accessed, including any contact information necessary for access (name, title, phone number, etc.)
- If the site has secure areas (such as within an airport, gated community, or school), note coordination requirements to access the property, including any contact information necessary for access (name, title, phone number, etc.)

## **CONTROL MEASURE DETAILS**

- Include notes if specific vegetation is required for the CM to function appropriately

## **ADDITIONAL INFORMATION**

- Include a note to "Refer to Standard Operating Procedures (SOPs) for each Control Measure, available on County's website at [www.arapahoegov.com](http://www.arapahoegov.com) for the maintenance required for each water quality facility."
- Include a note if there are special considerations for the maintenance of the CM
- If the CM is utilized by more than one property, include a note that references the properties and specifies maintenance responsibilities for each property (in accordance with the Maintenance Agreement)



# OPERATIONS AND MAINTENANCE SITE PLAN CHECKLIST

June 2019

## **EXTENDED DETENTION BASIN (EDB) or MODIFIED EXTENDED DETENTION BASIN (MEDB)**

Include the following additional information, at a minimum:

### PLAN VIEW REQUIREMENTS

- Location and labels for all functional elements of EDB: inflow structure(s), forebay, micropool, trickle channel, access road, outlet works, spillway, maintenance access ramps, embankment
- Contours
- Utilities in vicinity of EDB

### PROFILE VIEW REQUIREMENTS

- Location and labels for all major features of EDB: inflow structure(s), forebay, micropool, trickle channel, maintenance access road and ramps, outlet works, spillway, embankment
- Invert elevations at major features of EDB (inflow structure(s), forebay, micropool, outlet work(s))
- Water surface elevation of all applicable storm events (100-yr, EURV, WQCV and the micropool elevations)
- Label for upper and bottom stages for EDB

### DETAIL REQUIREMENTS

- Seed mix
- Water quality and orifice plate details
- Maintenance access road detail
- Trickle channel typical section
- Forebay cross sections
- Forebay release structure detail
- Spillway detail(s), including cutoff wall



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## **SAND FILTER BASIN (SF)**

Include the following additional information, at a minimum:

### PLAN VIEW REQUIREMENTS

- Location and labels for all functional elements of SF: inflow structure(s), forebay and/or energy dissipation structures, outlet works, walls, maintenance access, underdrain
- Contours
- Utilities in vicinity of SF

### PROFILE VIEW REQUIREMENTS

- Location and labels for all functional elements of SF: inflow structure(s), forebay and/or energy dissipation structures, outlet works, walls, fabric or impermeable liners, maintenance access, underdrain, all infiltration media (can be summarized in a table)
- Invert elevations at major features of SF (inflow structure(s), forebay, energy dissipation, outlet work(s))
- Water surface elevation of all applicable storm events (100-yr, EURV, WQCV)

### DETAIL REQUIREMENTS

- Side slope seed mix or vegetation tables
- Outlet structure detail/typical section
- Orifice Plate detail
- Typical SF cross section
- Underdrain detail including labels for the depth and type of fill media and diameter of perforated pipe
- Wall details, including any spray on or impermeable liner



# OPERATIONS AND MAINTENANCE SITE PLAN CHECKLIST

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## **BIORETENTION OR RAIN GARDEN (RG)**

Include the following additional information, at a minimum:

### PLAN VIEW REQUIREMENTS:

- Location and labels for all functional elements of RG: inflow structure(s), forebay and/or energy dissipation structures, outlet works, walls, maintenance access, vegetation, irrigation-, underdrain
- Contours
- Utilities in vicinity of RG

### PROFILE VIEW REQUIREMENTS

- Location and labels for all functional elements of RG: inflow structure(s), forebay and/or energy dissipation structures, outlet works, walls, fabric or impermeable liners, maintenance access, underdrain, all infiltration media (can be summarized in a table)
- Invert elevations at major features of RG (inflow structure(s), forebay, energy dissipation, outlet work(s))
- Water surface elevation of all applicable storm events (100-yr, EURV, WQCV)

### DETAIL REQUIREMENTS

- Seed mix, sod, or vegetation tables
- Outlet structure detail/typical section
- Overflow details
- Orifice Plate detail
- Typical RG cross section
- Underdrain detail including labels for the depth and type of fill media and diameter of perforated pipe
- Wall details, including any spray on or impermeable liner



# OPERATIONS AND MAINTENANCE SITE PLAN CHECKLIST

June 2019

## **GRASS BUFFER (GB)**

Include the following additional information, at a minimum:

### PLAN VIEW REQUIREMENTS

- Location and labels for all functional elements of GB: inflow structure(s) including level spreader, vegetation, underdrain associated with swale if applicable, slopes, irrigation
- Contours
- Utilities in the vicinity of GB

### PROFILE VIEW REQUIREMENTS

- Location and labels for all functional elements of GB: inflow structure(s) including level spreader, underdrain, slopes, infiltration media (can be summarized in a table)
- Invert elevations at inflow or level spreader, swale, outlet structure and slope throughout buffer

### DETAIL SHEET REQUIREMENTS

- Seed mix, sod, or vegetation tables
- Typical GB section including typical horizontal and vertical dimensions, slopes, infiltration media, and underdrain.
- Inflow or level spreader detail(s) and/or cross section
- Underdrain detail including labels for the depth and type of fill media and diameter of perforated pipe



# OPERATIONS AND MAINTENANCE SITE PLAN CHECKLIST

June 2019

## **GRASS SWALE (GS)**

Include the following additional information, at a minimum:

### PLAN VIEW REQUIREMENTS

- Location and labels for all functional elements of GS: inflow structure(s), vegetation, underdrain, side slopes, irrigation
- Contours
- Utilities in the vicinity of GS

### PROFILE VIEW REQUIREMENTS

- Location and labels for all functional elements of GS: inflow structure(s), underdrain, slopes with arrows, infiltration media (can be summarized in a table)
- Invert elevations at major features of GS (inflow structure(s))
- Water surface elevation of all applicable storm events (100-yr, 2-yr)

### DETAIL SHEET REQUIREMENTS

- Seed mix, sod, or vegetation tables
- Typical GS section including typical horizontal and vertical dimensions, side slopes, infiltration media, and underdrain.
- Underdrain detail including labels for the depth and type of fill media and diameter of perforated pipe