**DURING CONSTRUCTION INSPECTION CHECKLIST**

**To be completed by Construction Superintendent**

***This checklist is to be completed during construction and included with the Overall Site and Drainage Certification.***

* Use “Yes” for items completed as described.
* Use “N/A” for items that are not applicable to the site being certified.
* If any blanks are “No,” attach an explanation referencing the item number below.

Project Name: Date:

Building Permit Numbers:

1. **Compaction**
   1. All berms and embankments meet the compaction requirements as specified in the project geotechnical report or comply with the City’s standard, which is “soils should be compacted within a moisture content range of 2% below to 2% above optimum moisture content and compacted to 95% of the Maximum Standard Proctor Density (ASTM D698).” ***Compaction requires verification during construction***. Provide testing log from contractor/engineer.
2. **Storm Drain Pipe Installation Requirements**
   1. The pipe trenches have been compacted in accordance with Section 02225-3.07.A.1. of the Fort Collins Development Construction Standards for Water, Wastewater, Stormwater (e.g., the trenches in the roadways are to be 95% of maximum density and all other areas are to be at 90%, both in accordance with ASTM D698).
3. **Energy Dissipation and Erosion Protection** - FCSCM Chapter 9, Section 7.0
   1. Riprap
      1. The riprap bedding is a granular bedding of the gradation and thickness indicated on the approved construction plans.
      2. A filter fabric was installed instead of granular bedding and is the material shown on the approved construction plans or was an approved equal. Provide documentation for an approved equal.
      3. The riprap is the gradation shown on the approved construction plans with a D50 of .
      4. The riprap thickness is as shown on the approved construction plans and extends to the horizontal limits shown.
      5. The riprap is buried to the depth indicated on the approved construction plans. (A minimum of 6 inches of soil is required.)
   2. Permanent Erosion Control Fabric- FCSCM Vol.1, Ch.7
      1. All fabric was installed per manufacturer’s specifications.
4. **Other Permanent BMPs**
   1. All ***cut-off walls*** have been installed in accordance with the approved construction plans. (Cut-off walls are required for irrigation ditch crossings of storm drain pipes.)
5. **Extended Detention Basins** 
   1. Installation of this facility was verified via inspection by a City-Stormwater Inspector at the point of installation of the water quality control box(es). Provide date of inspection and name of inspector:



**Included certification sheet(s):**Please check the appropriate box(es) for the Low Impact Development (LID) facilities found on this site and complete the corresponding certification sheets.

Permeable Interlocking Concrete Pavers

Bioretention Cells (Rain Gardens)

Sand Filters

Vegetated Buffers

Underground Infiltration

Other LID – For certification of Dry Wells, Tree Filters, Constructed Wetland Channels & Ponds, etc., contact City Staff to determine requirements to exhibit the LID facility has been constructed and functions as intended per the approved drainage report.

**\*Please provide photographic documentation of the installation of all stages of all LID facilities.**

**\*\*Please contact the City Stormwater Inspector at** [**stormwaterinspection@fcgov.com**](file:///C:\Users\dmogen\Desktop\Certification%20Update\stormwaterinspection@fcgov.com) **to discuss inspection requirements for each LID facility and request inspections.**

**\*\*\*All facilities being certified must be “clean” – free of sediment & construction debris – prior to certification or acceptance of the facility.**

**Completed by:**

Name:

Title:

Email:

Phone:

Company:

Address:

**Permeable Interlocking Concrete Pavers**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Item/Activity** | **Yes** | **No** | **N/A** | **Submittal Requirements** | **Submitted?/Response** |
| **Stormwater Inspection** | | | | | |
| **Pre-construction meeting** was held with City-Stormwater Inspector to discuss installation, inspection, checklist, and protection from sedimentation |  |  |  | Record date, inspector name, meeting location (i.e. DCP, initial erosion control inspection, etc.) |  |
| **Sub-surface inspection(s):** Installation of this facility was verified via inspection by a City-Stormwater Inspector at the point of installation of the outlet, underdrain, geomembrane layer, and sub-base courses (per design in Final Plan Documents) |  |  |  | Record date(s) of inspection and inspector’s name |  |
| **Surface inspection(s):** Installation of this facility was verified via inspection by a City-Stormwater Inspector at the point of installation of the pavers and joint fill material |  |  |  | Record date(s) of inspection and inspector’s name |  |
| **Excavation** | | | | | |
| Heavy equipment did not encroach into the excavated area (prevents over-compaction) |  |  |  |  |  |
| Bottom of cell was “ripped” after excavation |  |  |  | Provide photographs before and after “ripping” |  |
| Bottom surface of cell is flat and level |  |  |  | Provide photograph |  |
| **Impermeable Liner** | | | | | |
| Impermeable liner meets design specifications |  |  |  | Provide specifications of delivered material |  |
| Impermeable liner is attached to concrete perimeter wall |  |  |  | Provide photograph |  |
| Impermeable liner is buried with no exposure |  |  |  |  |  |
| Any penetrations of the impermeable liner have been sealed and checked for water-tightness |  |  |  | Provide photograph (if necessary) |  |
| **Edge Restraint and Concrete Cut-Off Wall** | | | | | |
| The required edge restraint meets design specifications |  |  |  | Provide specification of installation |  |
| Concrete cut-off wall meets design specifications for: |  |  |  | Provide specification of installation |  |
| - Dimensions |  |  |  |  |  |
| - Reinforcement |  |  |  |  |  |
| - Footings |  |  |  |  |  |
| **Underdrain System** | | | | | |
| Underdrain pipe meets design specifications |  |  |  | Provide photograph |  |
| At least one cleanout is provided per underdrain lateral |  |  |  | Provide photograph |  |
| Cleanout pipe is solid (not perforated/slotted) |  |  |  | Provide photograph |  |
| Cleanout covers are installed and watertight |  |  |  | Provide photograph |  |
| Verify the underdrain is NOT wrapped in geotextile fabric |  |  |  | Provide photograph |  |
| Verify there is no orifice plate on the underdrain outfall |  |  |  | Provide photograph |  |
| Underdrain integrity tested after backfilling using TV and/or water test |  |  |  | Provide documentation of test results |  |
| **Aggregate** | | | | | |
| Sub-base Course(e.g., #2/4): - Has 90% fractured faces  - Is thoroughly washed (virtually free of fine sediment) - Is installed to the required design depth |  |  |  | Provide load ticket, photographs, and record depth installed |  |
| Basecourse (e.g., #57): - Has 90% fractured faces - Is thoroughly washed (virtually free of fine sediment) - Is installed to the required design depth |  |  |  | Provide load ticket, photographs, and record depth installed |  |
| Leveling Course / Joint Fill (e.g., crushed #89): - Has 90% fractured faces - Is thoroughly washed (virtually free of fine sediment) - Is dry screened - Is installed to the required design depth and to the top of the paver joints |  |  |  | Provide load ticket, photographs, and record depth installed |  |
| Aggregate materials are installed and compacted according to manufacturer’s and/or design specifications |  |  |  | Provide photographs and documentation of compaction |  |
| **Protection During Construction** | | | | | |
| PICP area is protected from construction site sediment, including runoff from the upstream catchment and construction equipment traffic |  |  |  | Specify how the area was covered and/or otherwise protected to prevent construction runoff from entering the pavement |  |
| **Close Out** | | | | | |
| Cracked/broken paver units have been removed and replaced |  |  |  |  |  |
| Paver height offsets are no more than 1/4” between adjacent units & surface contains no deformations (depressions/settlement) exceeding 1/2" |  |  |  |  |  |
| Upstream catchment is stabilized prior to diverting runoff into PICP system |  |  |  |  |  |
|  | | | | | |

**Bioretention Cells (Rain Gardens)**

|  |  |  |  |  |  |
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| **Item/Activity** | **Yes** | **No** | **N/A** | **Submittal Requirements** | **Submitted?/Response** |
| **Stormwater Inspection** | | | | | |
| **Pre-construction meeting** was held with City-Stormwater Inspector to discuss installation, inspection, checklist, and protection from sedimentation |  |  |  | Record date, inspector name, meeting location (i.e. DCP, initial erosion control inspection, etc.) |  |
| **Underdrain and basecourse inspection(s):** Installation of this facility was verified via inspection by a City-Stormwater Inspector at the point of installation of the outlet, underdrain, geomembrane layer, and base course (per design in Final Plan Documents) |  |  |  | Record date(s) of inspection and inspector’s name |  |
| **Pea gravel and BSM inspection(s):** Installation of this facility was verified via inspection by a City-Stormwater Inspector at the point of installation of the pea gravel and bioretention sand media |  |  |  | Record date(s) of inspection and inspector’s name |  |
| **Excavation** | | | | | |
| Heavy equipment did not encroach into the excavated area (prevents over-compaction) |  |  |  |  |  |
| Bottom of cell was “ripped” after excavation |  |  |  | Provide photographs before and after “ripping” |  |
| Bottom surface of cell is flat and level |  |  |  | Provide photograph |  |
| Excavated area is protected/surrounded by sediment/runoff control measures during construction |  |  |  | Provide photograph |  |
| **Intake** | | | | | |
| Upstream catchment drains to inlet/bioretention cell per plan and flows are fully captured |  |  |  |  |  |
| **Forebay** | | | | | |
| Forebay is installed according to design specifications |  |  |  | Provide photograph |  |
| There is a minimum 3” drop at the forebay entrance |  |  |  | Provide photograph |  |
| Forebay will drain fully and not hold standing water |  |  |  |  |  |
| **Outlet Structure/Overflow** | | | | | |
| Emergency overflow elevation is confirmed |  |  |  | Measure and record distance from overflow to top of media filter; provide photograph |  |
| Overflow inlet elevation is set above bioretention media per plan |  |  |  | Provide photograph |  |
| Overflow inlet invert elevation is at least 3 inches below containment wall/berm (to direct overflow into inlet) |  |  |  | Measure and record distance between inlet and top of containment wall/berm; provide photograph |  |
| Overflow path and check dams, if used, are armored to protect from erosion and maintain elevations |  |  |  | Provide photograph |  |
| **Impermeable Liner** | | | | | |
| Impermeable liner meets design specifications |  |  |  | Provide specifications of delivered material |  |
| Impermeable liner is appropriately anchored |  |  |  | Provide photograph |  |
| Impermeable liner is buried with no exposure |  |  |  |  |  |
| Any penetrations of the impermeable liner have been sealed and checked for water-tightness |  |  |  | Provide photograph (if necessary) |  |
| **Underdrain System** | | | | | |
| Underdrain pipe meets design specifications |  |  |  | Provide photograph |  |
| At least one cleanout is provided per underdrain lateral |  |  |  | Provide photograph |  |
| Cleanout pipe is solid (not perforated/slotted) |  |  |  | Provide photograph |  |
| Cleanout covers are installed and watertight |  |  |  | Provide photograph |  |
| Verify the underdrain is NOT wrapped in geotextile fabric |  |  |  | Provide photograph |  |
| Verify there is no orifice plate on the underdrain outfall |  |  |  | Provide photograph |  |
| Underdrain integrity tested after backfilling using TV and/or water test |  |  |  | Provide documentation of test results |  |
| **Filter Media and Aggregate** | | | | | |
| Reservoir aggregate layer (ASTM #57 or #67):   * meets design specifications * is installed to the required design depth |  |  |  | Provide load ticket, photographs, and record depth installed |  |
| Diaphragm aggregate layer (“Pea Gravel” with gradation ASTM #8, #89, or #9):   * meets design specifications * is installed to the required design depth |  |  |  | Provide load ticket, photographs, and record depth installed |  |
| Bioretention Sand Media (BSM) composition:   * meets design specifications * is installed to the required design depth |  |  |  | Provide load ticket, photographs, and record depth installed |  |
| BSM was “machine mixed” by supplier prior to delivery |  |  |  | Provide load ticket |  |
| BSM is installed flat and level |  |  |  | Provide photograph |  |
| **Other Structural Components** | | | | | |
| Containment wall/berm is continuous and level |  |  |  |  |  |
| **Landscaping** | | | | | |
| Verify final landscaping is free of sod |  |  |  | If sod is used, it must be shown to be “sand-grown” |  |
| Final landscaping (non-floatable mulch) is flat and level |  |  |  | Provide photograph |  |
| Vegetation is planted according to landscape design specifications and final landscaping plan |  |  |  | Provide photograph |  |
| Verify that weed barrier is NOT installed |  |  |  |  |  |
| Temporary irrigation installed |  |  |  | If N/A, then verify that permanent irrigation is installed to establish/maintain vegetation |  |
| **Close Out** | | | | | |
| Upstream catchment stabilized prior to diverting runoff into bioretention cell |  |  |  |  |  |
|  | | | | | |

**Vegetated Buffers**

|  |  |  |  |  |  |
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| **Item/Activity** | **Yes** | **No** | **N/A** | **Submittal Requirements** | **Submitted?/Response** |
| **Construction** | | | | | |
| Buffer area was sectioned off to eliminate site disturbance and compaction during construction |  |  |  | Provide photograph(s) |  |
| Level spreader has been installed per plan (if applicable) |  |  |  | Provide photograph |  |
| Soils in the buffer area have been amended |  |  |  | Record soil amendment certification with Environmental & Regulatory Affairs |  |
| Vegetation is planted according to landscape design specifications and final landscaping plan |  |  |  | Provide photograph |  |
|  | | | | | |

**Sand Filters**

|  |  |  |  |  |  |
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| **Item/Activity** | **Yes** | **No** | **N/A** | **Submittal Requirements** | **Submitted?/Response** |
| **Stormwater Inspection** | | | | | |
| **Pre-construction meeting** was held with City-Stormwater Inspector to discuss installation, inspection, checklist, and protection from sedimentation |  |  |  | Record date, inspector name, meeting location (i.e. DCP, initial erosion control inspection, etc.) |  |
| **Underdrain and basecourse inspection(s):** Installation of this facility was verified via inspection by a City-Stormwater Inspector at the point of installation of the outlet, underdrain, geomembrane layer, and base course (per design in Final Plan Documents) |  |  |  | Record date(s) of inspection and inspector’s name |  |
| **Pea gravel and filter media inspection(s):** Installation of this facility was verified via inspection by a City-Stormwater Inspector at the point of installation of the pea gravel and filter media |  |  |  | Record date(s) of inspection and inspector’s name |  |
| **Excavation** | | | | | |
| Heavy equipment did not encroach into the excavated area (prevents over-compaction) |  |  |  |  |  |
| Bottom of cell was “ripped” after excavation |  |  |  | Provide photographs before and after “ripping” |  |
| Bottom surface of cell is flat and level |  |  |  | Provide photograph |  |
| Excavated area is protected/surrounded by sediment/runoff control measures during construction |  |  |  | Provide photograph |  |
| **Intake** | | | | | |
| Upstream catchment drains to inlet/sand filter per plan and flows are fully captured |  |  |  |  |  |
| **Forebay (If Applicable)** | | | | | |
| Forebay is installed according to design specifications |  |  |  | Provide photograph |  |
| There is a minimum 3” drop at the forebay entrance |  |  |  | Provide photograph |  |
| Forebay will drain fully and not hold standing water |  |  |  |  |  |
| **Outlet Structure/Overflow** | | | | | |
| Overflow inlet elevation is set above sand filter media per plan (typically 1 to 3 feet) |  |  |  | Provide photograph |  |
| Overflow inlet invert elevation is at least 3 inches below containment wall/berm (to direct overflow into inlet) |  |  |  | Measure and record distance between inlet and top of containment wall/berm; provide photograph |  |
| Overflow path and check dams, if used, are armored to protect from erosion and maintain elevations |  |  |  | Provide photograph |  |
| **Impermeable Liner (If Applicable)** | | | | | |
| Impermeable liner meets design specifications |  |  |  | Provide specifications of delivered material |  |
| Impermeable liner is appropriately anchored to the perimeter wall |  |  |  | Provide photograph |  |
| Impermeable liner is buried with no exposure |  |  |  |  |  |
| Any penetrations of the impermeable liner have been sealed and checked for water-tightness |  |  |  | Provide photograph (if necessary) |  |
| **Underdrain System** | | | | | |
| Underdrain pipe meets design specifications |  |  |  | Provide photograph |  |
| At least one cleanout is provided per underdrain lateral |  |  |  | Provide photograph |  |
| Cleanout pipe is solid (not perforated/slotted) |  |  |  | Provide photograph |  |
| Cleanout covers are installed and watertight |  |  |  | Provide photograph |  |
| Verify the underdrain is NOT wrapped in geotextile fabric |  |  |  | Provide photograph |  |
| Verify there is no orifice plate on the underdrain outfall |  |  |  | Provide photograph |  |
| Underdrain integrity tested after backfilling using TV and/or water test |  |  |  | Provide documentation of test results |  |
| **Filter Media** | | | | | |
| Filter media composition (e.g. ASTM C 33 Sand):   * meets design specifications * is installed to the required design depth |  |  |  | Provide load ticket, photographs, and record depth installed |  |
| Pea gravel layer:   * meets design specifications * is installed to the required design depth |  |  |  | Provide load ticket, photographs, and record depth installed |  |
| Filter Media is installed flat and level |  |  |  |  |  |
| **Other Structural Components** | | | | | |
| Containment wall/berm is continuous and level |  |  |  |  |  |
| **Landscaping** | | | | | |
| Verify final landscaping is free of sod |  |  |  | If sod is used, it must be shown to be “sand-grown” |  |
| Final landscaping (non-floatable mulch) is flat and level |  |  |  | Provide photograph |  |
| Vegetation is planted according to landscape design specifications and final landscaping plan |  |  |  | Provide photograph |  |
| Verify that weed barrier is NOT installed |  |  |  |  |  |
| Temporary irrigation installed |  |  |  | If N/A, then verify that permanent irrigation is installed to establish/maintain vegetation |  |
| **Close Out** | | | | | |
| Upstream catchment stabilized prior to diverting runoff into sand filter cell |  |  |  |  |  |
|  | | | | | |

**Underground Infiltration**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Item/Activity** | **Yes** | **No** | **N/A** | **Submittal Requirements** | **Submitted?/Response** |
| **Stormwater Inspection** | | | | | |
| **Manufacturer’s representative pre-construction meeting:** A pre-construction meeting was completed with the manufacturer’s representative and installers |  |  |  | Record date and who was present at the meeting |  |
| **Pre-construction meeting** was held with City-Stormwater Inspector to discuss installation, inspection, checklist, and protection from sedimentation |  |  |  | Record date, inspector name, meeting location (i.e. DCP, initial erosion control inspection, etc.) |  |
| **Inspection(s):** Installation of this facility was verified via inspection by a City-Stormwater Inspector at the point at which the chambers had been laid/prior to backfilling.  Correct fabric placement was confirmed. |  |  |  | Record date(s) of inspection and inspector’s name |  |
| **Excavation** | | | | | |
| Heavy equipment did not travel across underground cell area during excavation (prevents over-compaction) |  |  |  |  |  |
| Bottom of cell was “ripped” after excavation |  |  |  | Provide photographs before and after “ripping” |  |
| Bottom of cell is flat and level, or graded per approved grading plans |  |  |  | Provide photograph |  |
| Non-woven fabric is installed per manufacturer’s specifications and was not damaged during construction (around system) |  |  |  | Provide photograph |  |
| Woven fabric is installed per manufacturer’s specifications and was not damaged during construction (beneath chambers) |  |  |  | Provide photograph |  |
| Excavated area is protected/surrounded by sediment/runoff control BMPs during construction |  |  |  | Provide photograph |  |
| **Impermeable Liner** | | | | | |
| Impermeable liner meets design specifications |  |  |  | Provide specifications of delivered material |  |
| Impermeable liner is not exposed |  |  |  |  |  |
| Any penetrations of the impermeable liner have been sealed and checked for water-tightness. |  |  |  | Provide photograph (if necessary) |  |
| **Aggregate** | | | | | |
| Foundation and embedment materials are installed and compacted according to design and manufacturer’s specifications |  |  |  | Provide load ticket and photograph(s) |  |
| **Underdrain System** | | | | | |
| Underdrain pipe meets design specifications |  |  |  | Provide photograph |  |
| At least one cleanout is provided per underdrain lateral |  |  |  | Provide photograph |  |
| Cleanout pipe is solid (not perforated/slotted) |  |  |  | Provide photograph |  |
| Cleanout covers are installed and watertight |  |  |  | Provide photograph |  |
| Verify the underdrain is NOT wrapped in geotextile fabric |  |  |  | Provide photograph |  |
| Verify there is no orifice plate on the underdrain outfall |  |  |  | Provide photograph |  |
| Underdrain integrity tested after backfilling using TV and/or water test |  |  |  | Provide documentation of test results |  |
| **Manifold system** | | | | | |
| Overflow weir elevation is set at/above water quality storm elevation |  |  |  | Record weir elevation on survey |  |
| Maintenance access is provided for each Isolator Row |  |  |  |  |  |
| At least one inspection port has been provided for each Isolator Row (located in middle third of each row) |  |  |  |  |  |
| Upstream catchment drains to inlet/intake properly |  |  |  |  |  |
| **Underground Detention Chambers** | | | | | |
| All chambers were installed per approved Utility Plans and manufacturer’s specifications |  |  |  | Photograph |  |
| **Close Out** | | | | | |
| Upstream catchment is stabilized prior to diverting runoff into Underground Detention system |  |  |  |  |  |
| All Isolator Rows, chambers, and pipes are cleaned and sediment/debris has been removed |  |  |  |  |  |
|  | | | | | |