

## Bioretention Area Inspection and Maintenance Checklist

<b>Facility:</b> Cozad-Bates House			
<b>Location/Address:</b> 11508 Mayfield Road, Cleveland, OH 44106			
<b>Date:</b> 05/19/2021	<b>Time:</b> 10:30	<b>Weather Conditions:</b> Sunny	<b>Date of Last Inspection:</b> N/A
<b>Inspector:</b> Brian Uhlenbrock		<b>Title:</b> Landscape Architect	
<b>Rain in Last 48 Hours</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <b>If yes, list amount and timing:</b>			
<b>Pretreatment:</b> <input type="checkbox"/> vegetated filter strip <input type="checkbox"/> swale <input type="checkbox"/> turf grass <input type="checkbox"/> forebay <input type="checkbox"/> other, specify: <input checked="" type="checkbox"/> none			
<b>Site Plan or As-Built Plan Available:</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			

Inspection Item	Comment	Action Needed
<b>1. PRETREATMENT</b>		
Sediment has accumulated.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Trash and debris have accumulated.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<b>2. DEWATERING</b>		
Standing water is present after 24 hours. If yes, describe sheen, color, or smell.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<b>3. INLETS</b>		
Inlets are in poor structural condition.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Sediment has accumulated and/or is blocking the inlets.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Erosion is occurring around the inlets.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<b>3. VEGETATION</b>		
Vegetation is wilting, discolored, or dying due to disease or stress.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Vegetation needs to be controlled through mowing or manual removal.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<b>4. BIORETENTION MAIN INFILTRATION AREA</b>		
Trash and debris have accumulated.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Sediment has accumulated at the surface.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Topmost layer is caked or crusted over with sediment.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Erosion is evident.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Mulch is compacted.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Sinkholes or animal borrows are present.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<b>5. SIDE SLOPES AND EMBANKMENT</b>		
Erosion is evident.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Sinkholes or instability is evident.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<b>6. OUTLETS AND OVERFLOW STRUCTURE (i.e., catch basin)</b>		
Outlets or overflow structures in poor structural condition.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Sediment, trash or debris is blocking the outlets or overflow structure.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Erosion is occurring around the outlets or overflow structure.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Height from surface of practice to top of overflow structure is insufficient to allow for ponding during rain events.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

## Additional Notes

**Wet weather inspection needed**    ☐ Yes    ☒ No

**Site Sketch:**

See attached.

## Permeable Pavement Inspection and Maintenance Checklist

<b>Facility:</b> Cozad-Bates House			
<b>Location/Address:</b> 11508 Mayfield Road, Cleveland, OH 44106			
<b>Date:</b> 05/19/2021	<b>Time:</b> 10:30	<b>Weather Conditions:</b> Sunny	<b>Date of Last Inspection:</b> N/A
<b>Inspector:</b> Brian Uhlenbrock		<b>Title:</b> Landscape Architect	
<b>Rain in Last 48 Hours</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <b>If yes, list amount and timing:</b>			
<b>Pavement Type:</b> <input checked="" type="checkbox"/> permeable interlocking concrete pavement (PICP) <input type="checkbox"/> asphalt <input type="checkbox"/> concrete <input type="checkbox"/> other, specify:			
<b>Pretreatment:</b> <input type="checkbox"/> vegetated filter strip <input type="checkbox"/> swale <input type="checkbox"/> turf grass <input type="checkbox"/> forebay <input type="checkbox"/> other, specify: <input checked="" type="checkbox"/> none			
<b>Site Plan or As-Built Plan Available:</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			

\*Permeable interlocking concrete pavement (PICP)

Inspection Item		Comment	Action Needed
<b>1. PRETREATMENT</b>			
Sediment has accumulated.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Trash and debris have accumulated.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<b>2. PAVEMENT TRANSITION AREA</b>			
Non-permeable transition area at pavement edges is unstable/deteriorating.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Transition area settling flush with pavers as expected	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<b>3. DEWATERING</b>			
Standing water is visible on the surface after a rain event.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<b>4. PAVEMENT SURFACE AND JOINTS</b>			
Sediment has accumulated on pavement surface.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Trash and debris have accumulated on pavement surface or around curbing.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Pavement has deteriorated, cracked, settled, or raveled.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Sediment has accumulated in the joints of PICP.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Minimal sediment from tree litter - scheduled to be vacuumed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Vegetation is growing in the joints of PICP.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Gravel is insufficient in the joints of PICP.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

### Additional Notes

**Wet weather inspection needed** ☐ Yes ☒ No

**Site Sketch:**

See attached.





1. Permeable paver parking lot



2. Permeable pavers (close-up) w/ minor debris - vacuuming scheduled





3. Permeable pavers (close-up) clean



4. Permeable paver outlet structure - starting to accumulate debris (expected w/ no outlet flow) - yearly cleaning discussed with owner





5. No erosion observed at outlet structure



6. Bioretention basin





7. Vegetation successfully planted in and around bioretention basin



8. Bioretention outlet structure - clean, no debris





9. Minor sediment observed at corner of pedestrian walk due to unstabilized adjacent area - vacuuming scheduled



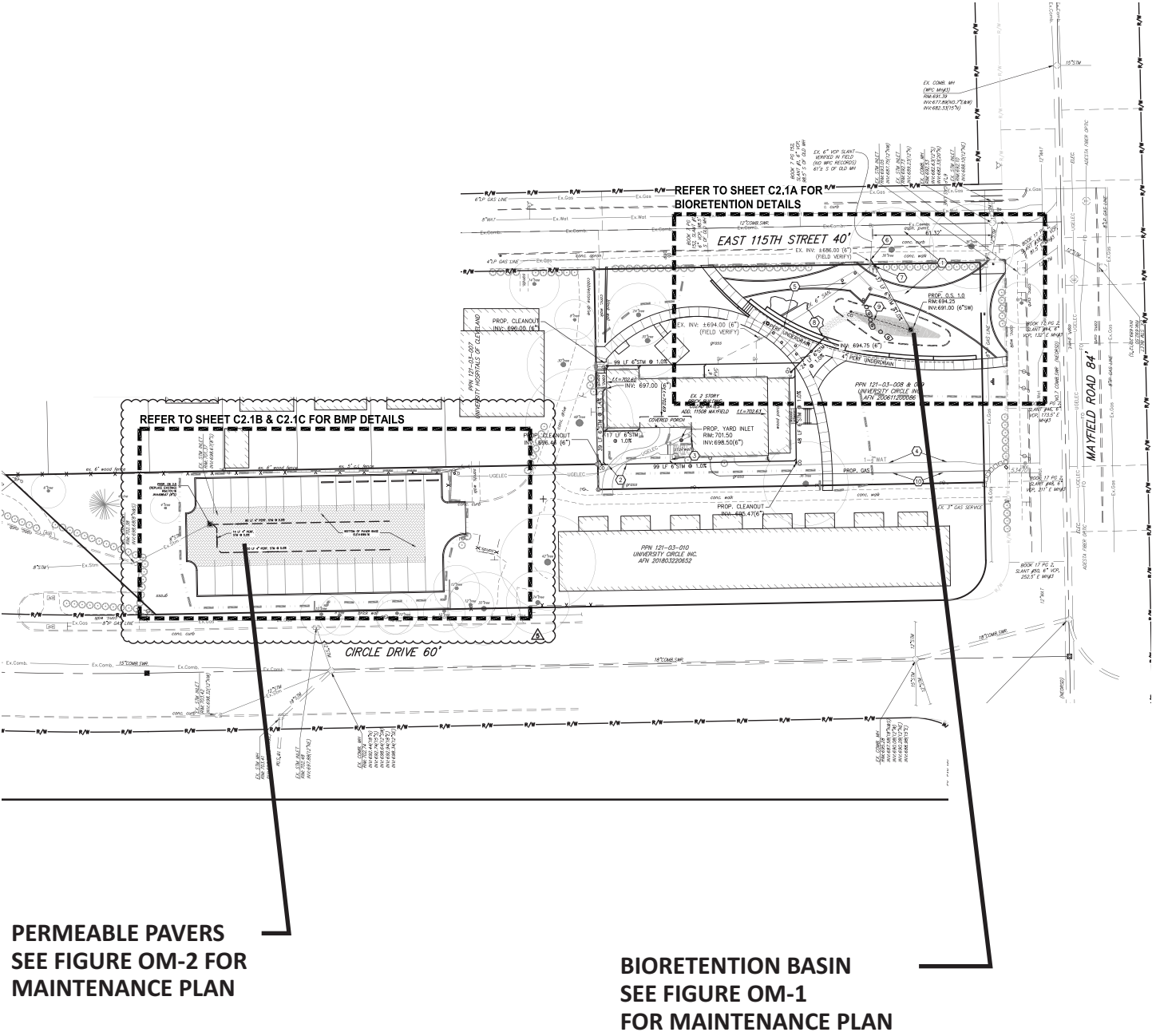
10. Up-stream stabilized to prevent future sediment in permeable paver pedestrian walk



CONZAD BATES HOUSE

# POST CONSTRUCTION MAINTENANCE PLAN

## BMP LOCATION MAP

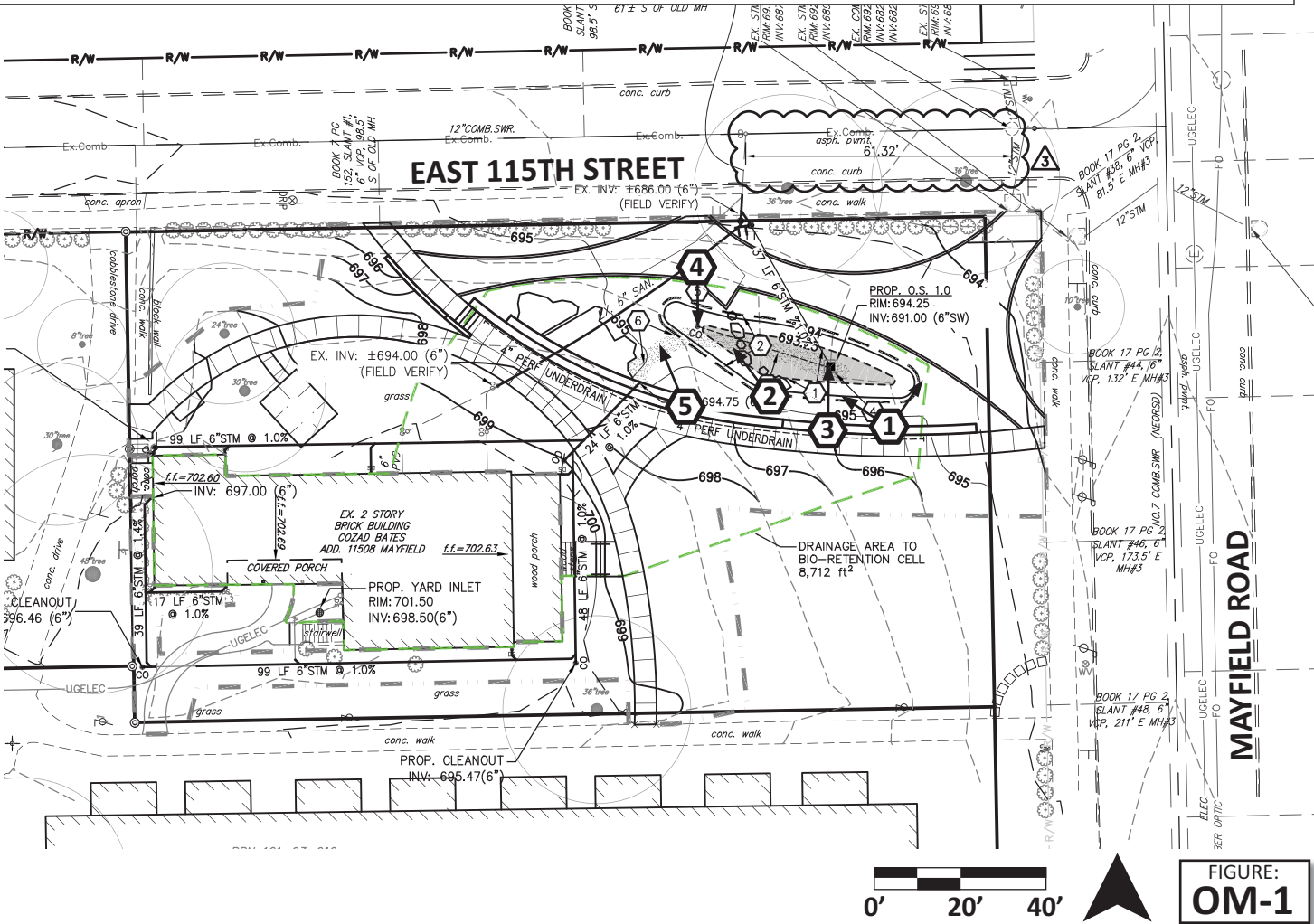


CONZAD BATES HOUSE

# POST CONSTRUCTION MAINTENANCE PLAN

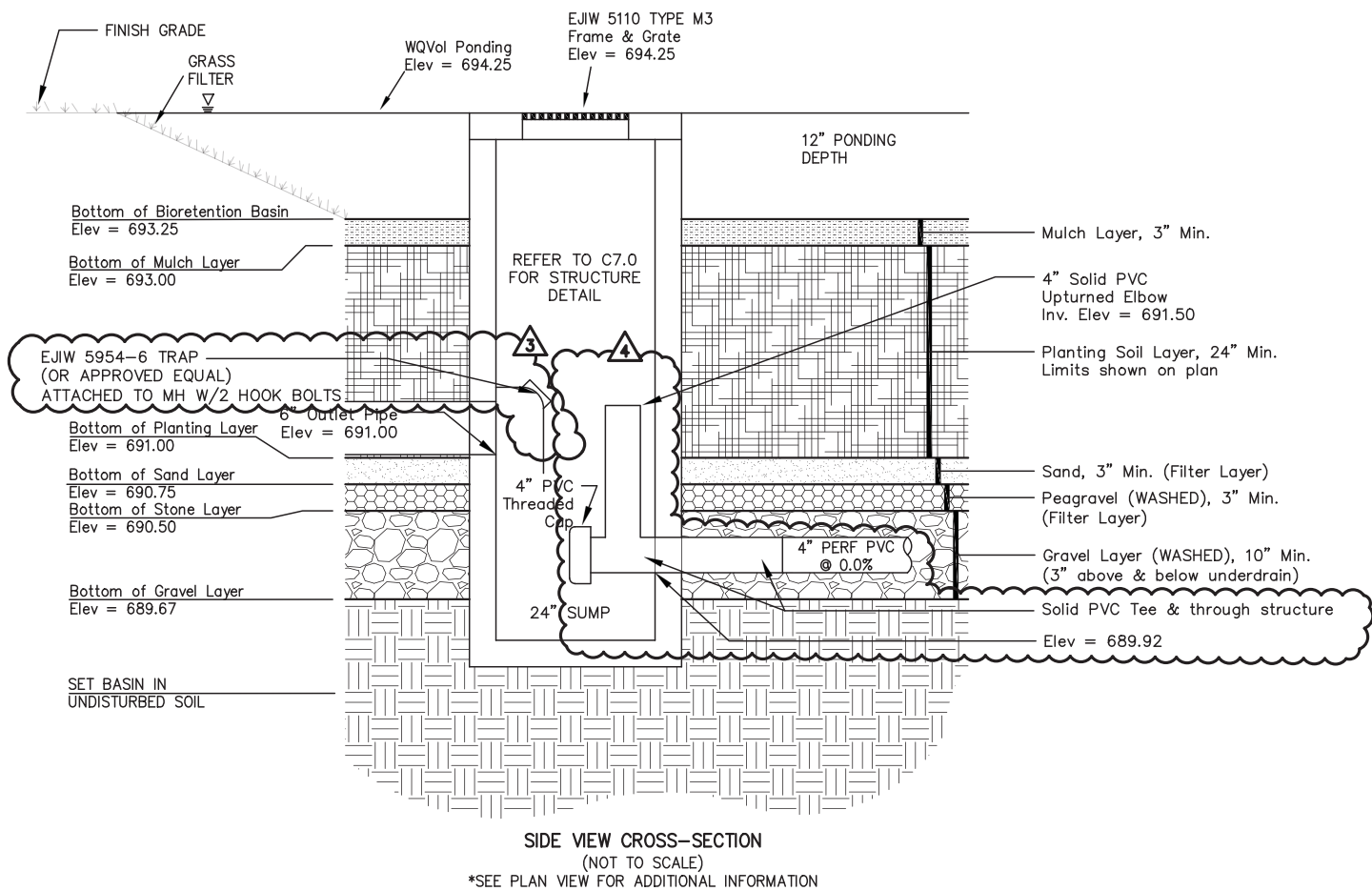
## BIORETENTION BASIN

ID	Design Feature	Frequency of Inspection (minimum)	What to Look For
1	Main Bioretention Area	Annually  Survey basin elev. Every 10-years	<ul style="list-style-type: none"> <li>Monitor the accumulation of sediment plugging bioretention soils and corresponding loss of storage capacity.</li> <li>If needed restore bioretention basin to its original design conditions, holding a minimum volume of 500 ft³ below elevation 694.25</li> <li>Ensure there is an appropriate location to dispose sediments on or off the site</li> </ul>
2	Underdrains	Annually	<ul style="list-style-type: none"> <li>Check cleanouts to ensure underdrains are cleared of debris and sediment and are functioning properly.</li> </ul>
3	Outlet Structure (Refer to attached Detail)	Annually	<ul style="list-style-type: none"> <li>Check structural integrity - ensure there are no cracks, settling, heaving, pipe separation, or blockages within structure.</li> <li>Clean sediment and trash from sump.</li> <li>Ensure all the joints/seams between riser sections and pipe penetrations within the outlet structure are watertight.</li> <li>Ensure there are no blockages caused by trash or debris build-up at rim, inlets, or outlets.</li> <li>Remove trap and check the structural integrity of the 12" HDPE pipe. Ensure there are no blockages caused by trash and debris build-up.</li> </ul>
4	Cleanout	Annually	<ul style="list-style-type: none"> <li>Check cleanouts to ensure underdrains are cleared of debris and sediment and are functioning properly.</li> </ul>
5	Stone Rip Rap	Annually	<ul style="list-style-type: none"> <li>Check for debris, clean accordingly and check for washouts.</li> </ul>



CONZAD BATES HOUSE  
POST CONSTRUCTION MAINTENANCE PLAN

BIORETENTION BASIN TYPICAL CROSS SECTION DETAIL



NOTE: DETAIL REFERENCED FROM COZAD BATES  
PLAN SET, SHEET C2.1A

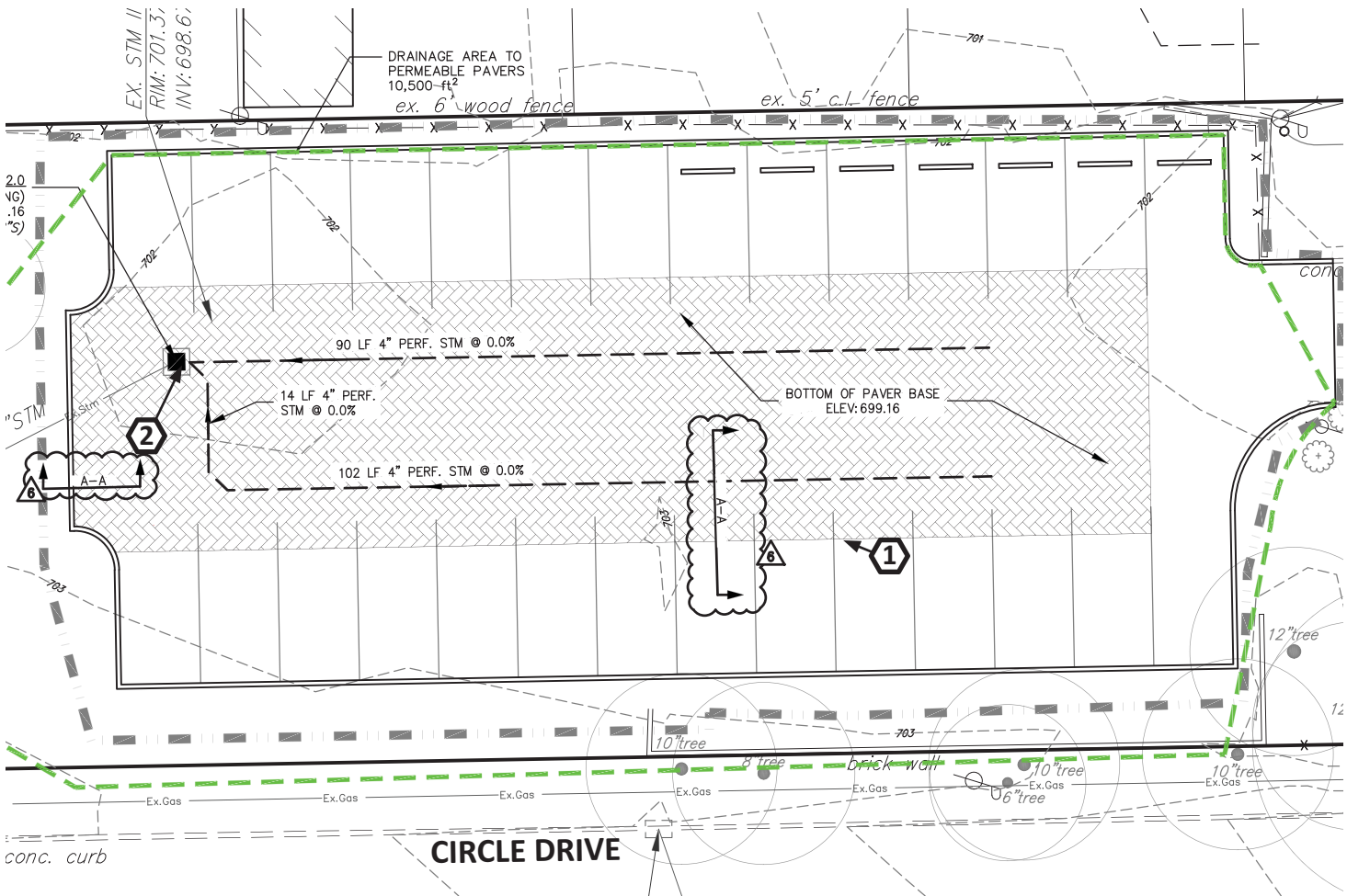


CONZAD BATES HOUSE

POST CONSTRUCTION MAINTENANCE PLAN

PERMEABLE PAVERS

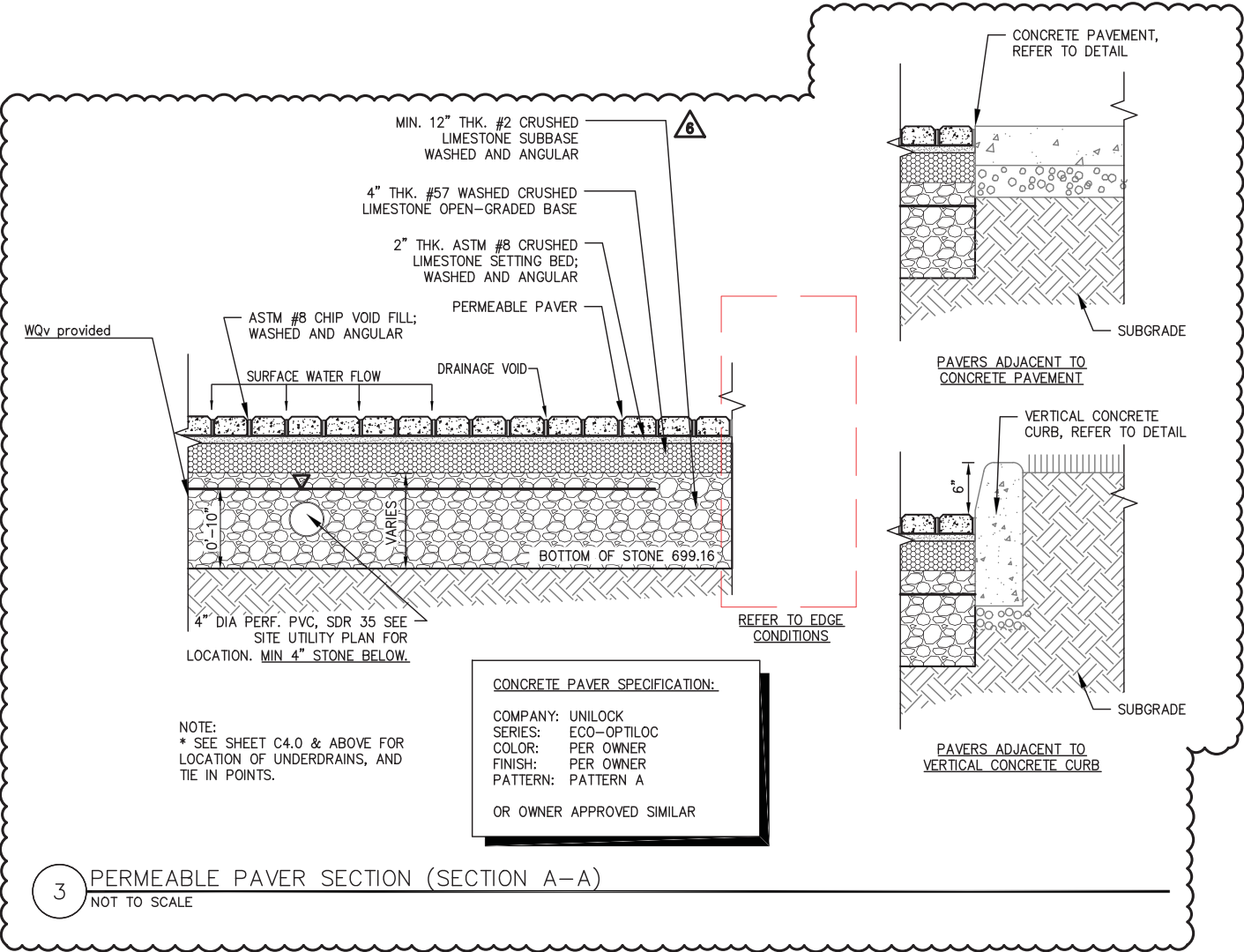
ID	Design Feature	Frequency of Inspection (minimum)	What to Look For
1	Permeable Paver Parking Lot (See Attached Detail)	Annually (2X Per Year)	<ul style="list-style-type: none"> <li>Sweep with a Regenerative Air Vacuum/ Sweeper</li> <li>See attached Appendix A: Unilock Permeable Paver Maintenance Guide</li> </ul>
2	Outlet Structure (Refer to attached detail)	Annually	<ul style="list-style-type: none"> <li>Check structural integrity - ensure there are no cracks, settling, heaving, pipe separation, or blockages within structure.</li> <li>Clean sediment and trash from sump.</li> <li>Ensure all the joints/seams between riser sections and pipe penetrations within the outlet structure are watertight.</li> <li>Ensure there are no blockages caused by trash or debris build-up at rim, inlets, or outlets.</li> <li>Remove trap and check the structural integrity of the 12" HDPE pipe. Ensure there are no blockages caused by trash and debris build-up.</li> </ul>



CONZAD BATES HOUSE

# POST CONSTRUCTION MAINTENANCE PLAN

## PERMEABLE PAVERS DETAIL



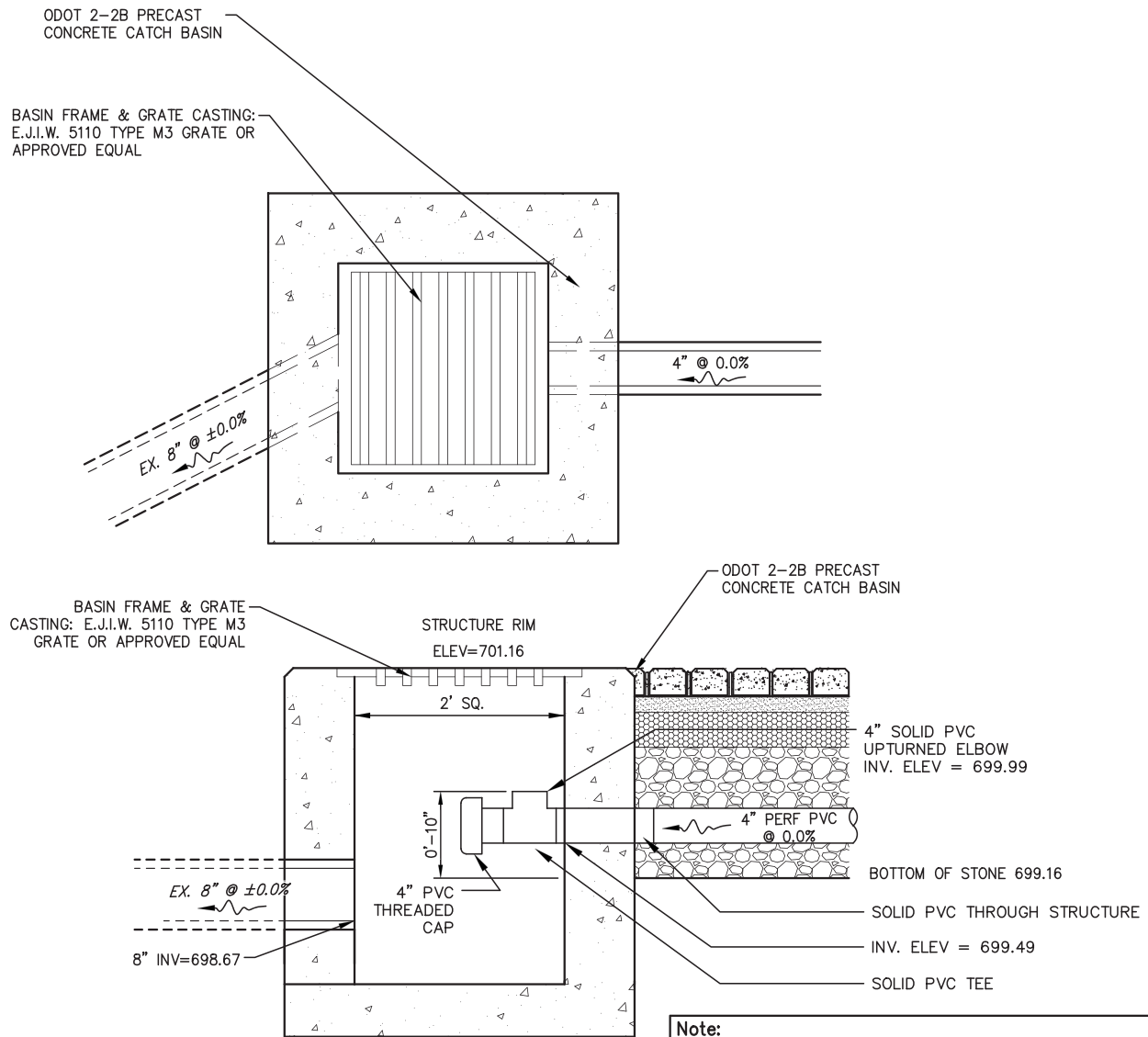
NOTE: DETAIL REFERENCED FROM COZAD BATES PLAN SET, SHEET C2.1B



FIGURE:  
**OM-2**

# POST CONSTRUCTION MAINTENANCE PLAN

## PERMEABLE PAVEMENT OUTLET STRUCTURE DETAIL


**Note:**

1. Water tight seals must be provided between all stacked, pre-cast riser sections necessary to construct the bioretention cell outlet structure to guard against leaks that would otherwise allow SCMs to dewater more quickly than what is designed for.
2. All pipe penetrations shall be water tight.

1

OUTLET STRUCTURE DETAIL (CB 2.0)  
NOT TO SCALE

NOTE: DETAIL REFERENCED FROM COZAD BATES  
PLAN SET, SHEET C2.1B