

Operation & Maintenance Manual

Project:

LITTLE ANGELS DAYCARE EXPANSION

925 Hendricks Dr.
Lebanon, Indiana 46052

Prepared For:

The Progress Studio

1103 E. 10th St.
Indianapolis, IN 46202

Prepared By:

CIVIL & ENVIRONMENTAL CONSULTANTS, INC. Indianapolis, Indiana

Civil Engineer:
Aaron Hurt, PE, AICP

CEC Project 316-249

**JANUARY 2022
REVISED FEBRUARY 2022**



Civil & Environmental Consultants, Inc.

TABLE OF CONTENTS

1.0	OWNER CONTACT INFORMATION	1
2.0	INTRODUCTION.....	1
3.0	STORMWATER INFRASTRUCTURE MAINTENANCE.....	1
3.1	Storm Inlets and Sewers.....	1
	3.1.1 Storm Inlets, Culvert and Sewer Checklist	1
3.2	Water Quality Swale Maintenance	2
	3.2.1 BMP Checklist – Swale.....	2
4.0	INSPECTION REQUIREMENTS AND RESPONSIBILITIES	2
5.0	SUMMARY	3

APPENDICES

Appendix A – Sample Inspection Checklist

Appendix B – BMP Map

1.0 OWNER CONTACT INFORMATION

Owners Name: Little Angels, LLC
C/O: Holly Maxwell
Owners Address: 925 Hendrick Drive, Lebanon, IN 46052
Business Phone: (765) 481-2703
Email: rhmaxx@yahoo.com

2.0 INTRODUCTION

The City of Lebanon Stormwater Technical Manual provides a variety of options for improving water quality using Best Management Practices (BMPs). In order to maintain water quality within the BMP, light maintenance activities are needed to manipulate hydrology. This document defines responsibilities for operating, inspecting and maintaining the storm water BMPs for the Little Angels Daycare Expansion project. The project consists of an addition to a daycare facility, with additional parking and site improvements. The water quality BMP is a vegetated swale system. It is the responsibility of the project owner, Little Angels Daycare, LLC to inspect and maintain the stormwater infrastructure of the sites.

3.0 STORMWATER INFRASTRUCTURE MAINTENANCE

3.1 STORM INLETS AND SEWERS

Storm sewer inlets should be regularly maintained and cleaned of debris. All parking lot inlet castings should be inspected monthly and after each rainfall event. These inlets should be inspected more regularly when falling leaves are present. Sample inspection logs are included in **Appendix A**.

3.1.1 Storm Inlets, Culvert and Sewer Checklist

- A. Drains (square, circular, dome, & trench) – Inspect all grates and pipes for clogging or leaks. Remove all debris to ensure infrastructure is clear and operating properly.
- B. The maximum sediment depth should be no more than $\frac{1}{4}$ of the pipe diameter and up to a maximum depth of 3-inch in the sewer piping.
- C. Cleanouts (C.O.) at the end of roof drain and underdrain pipes should be utilized for debris removal.

- D. Outlet pipe - attempt to clear by flushing with water or by pipe cleaner rods. For major debris blockages, apply multiple passes of a JetVac process until backflush water is clean.
- E. Water and sediment from cleaning procedures should NOT be dumped into a sanitary sewer. Disposal of all sediment must be in accordance with all federal, state and local requirements.

3.2 WATER QUALITY SWALE MAINTENANCE

A BMP swale (or vegetated swale) is a shallow stormwater channel that is densely planted with a variety of grasses, shrubs, and/or trees designed to slow, filter, and infiltrate stormwater runoff.

Using native plants to vegetate an area is an effective method of improving the quality and reducing the volume of site runoff. The swale should be inspected every 6 months at a minimum using the following checklist. Sample inspection logs are included in **Appendix A**.

3.2.1 BMP Checklist – Swale

- A. Monitor vegetation growth – this includes all turf vegetation within the boundary of the BMPs. Some species of plants are considered invasive and should be eradicated. Species such as reed canary grass (*Phalaris arundinacea*), purple loosestrife (*Lythrum salicaria*), *common reed* (*Phragmites australis*), and cattails (*Typha* spp.) would be considered fast colonizing and invasive species. Remove as necessary.
- B. Annually mow and trim vegetation to ensure safety, aesthetics, proper swale operation, or to suppress weeds and invasive vegetation. Dispose of cuttings in a local composting facility; mow only when swale is dry to avoid rutting.
- C. Inspect culvert pipes and end sections. Clear by flushing with water or by pipe cleaner rods.
- D. Remove trash and other debris from vegetation, culvert swale bottom
- E. Inspect and correct erosion problems, damage to vegetation, and sediment and debris accumulation (address when > three inches at any spot or covering vegetation).
- F. Check for displacement of riprap material, erosion blankets and filter fabric
- G. Check for bank slumping and erosion along the edges, especially on the down-slope side.
- H. Adequate access must be provided and maintained for inspection and maintenance.

4.0 INSPECTION REQUIREMENTS AND RESPONSIBILITIES

The Best Management Practices (BMP) require certain items to be inspected on a monthly or annual basis during the existence of the BMPs. This is the responsibility of the owner. More frequent inspections may need to take place during periods of heavy rainfall. Any needed repairs,

even minor ones, are the responsibility of the owner and should be made as soon as possible so the BMPs may continue to function properly. Documentation of all repairs should be kept on file.

Right of Entry - The City of Lebanon may inspect the premises at any time necessary to determine the functionality of any BMPs onsite.

City of Lebanon Note

The BMPs shall be owned by the developer/property owner; any and all maintenance and repair activities shall be paid for by the owner. The requirements of the O&M manual shall remain in effect regardless of change in ownership of the development. It shall be the responsibility of the BMP owner to provide the O&M manual to future parties who will assume responsibility for the operation and maintenance of the post-construction storm water quality measures.

Little Angels Daycare, LLC, or representative, will perform annual compliance inspections of the BMPs. In the event that the City of Lebanon finds a BMPs in need of maintenance or repair, the City will notify the landowner in writing of the necessary maintenance or repairs and give the landowner a timeframe for completing the maintenance or repairs. If the maintenance or repairs are not completed within the designated timeframe, the City of Lebanon shall perform the repairs or maintenance and bill the landowner for the actual costs for the work.

5.0 SUMMARY

The objective of the operation and maintenance manual is to allow the owner of the storm management system to manage the system to the City of Lebanon specifications. The City requires minimal information for their records:

1. Maintenance agreement. The agreement requires the owner to comply with the maintenance set forth in the manual.
2. Monthly and annual data sheets and repair documentation must be kept on site for the City Inspectors to review during their annual inspection of the site.

Data sheets are included to ensure that all the required maintenance is conducted to maintain the integrity and design features of the BMP(s).

APPENDIX A
INSPECTION CHECKLIST

**Stormwater Operation, Maintenance, and Management
Inspection Checklist for Owners**

Note: Minimum inspection frequency shall be every 6 months.

Project: Little Angels Daycare
Location: 925 Hendricks Drive, Lebanon, IN 46052
Site Status: _____
Date: _____
Time: _____
Inspector: _____

<u>Maintenance Item</u>	<u>Satisfactory/ Unsatisfactory (Circle)</u>	<u>Comments</u>
Storm Sewer System		
1. Encroachment into pond or easement	S or U	_____
2. Complaints from residents	S or U	_____
3. Public hazards (describe)	S or U	_____
4. Storm Sewer Inlets (Debris)	S or U	_____
5. Storm Sewer Castings (Debris)	S or U	_____
6. Storm Sewer Pipes	S or U	_____
7. Diversion Structure	S or U	_____
8. Drains clear and functioning	S or U	_____
9. Swale basin (Debris)	S or U	_____
10. Swale soil stability	S or U	_____
11. Swale grasses, vegetation	S or U	_____

See following sheets for additional swale checklist items from the City of Lebanon

Additional Comments:

Actions To Be Taken:

Bioswale, Filter Strip Inspection Checklist*

Project Location: 309 S. Lebanon Street, Lebanon, IN

Date/Time: _____

Inspector: _____

Maintenance Item	Satisfactory/ Unsatisfactory	Recommended Inspection Frequency	Comments
Inlet/Outlet			
Structural integrity of inlet/outlet		A	
Inlet/outlet clear of debris		M	
Pretreatment / Energy Dissipators			
No evidence of flow going around structures		A	
No evidence of erosion		A	
Device functioning to trap sediment		A	
Remove accumulated sediment		A	
BMP surface			
Area free of debris?		M	
No evidence of erosion		A	
Does sediment accumulation currently require removal?			

Inspection frequency key — A = Annual, M = Monthly, S = After major storm

* Prior to field inspection, it is recommended to review the as-built plans.

Maintenance Item	Satisfactory/ Unsatisfactory	Recommended Inspection Frequency	Comments
Overall functionality			
Ensure swale is functioning properly (professional civil engineer is recommended)		A	
Optional considerations			
Inspect BMP for invasive species.		A	
Qualified professional applicator selectively herbicide invasive species		A	
Increase plant diversity by planting additional vegetation		A	
Complaints from residents (note on back)		A	

Inspection frequency key — A = Annual, M = Monthly, S = After major storm

* Prior to field inspection, it is recommended to review the as-built plans.

Summary

Inspector's remarks:

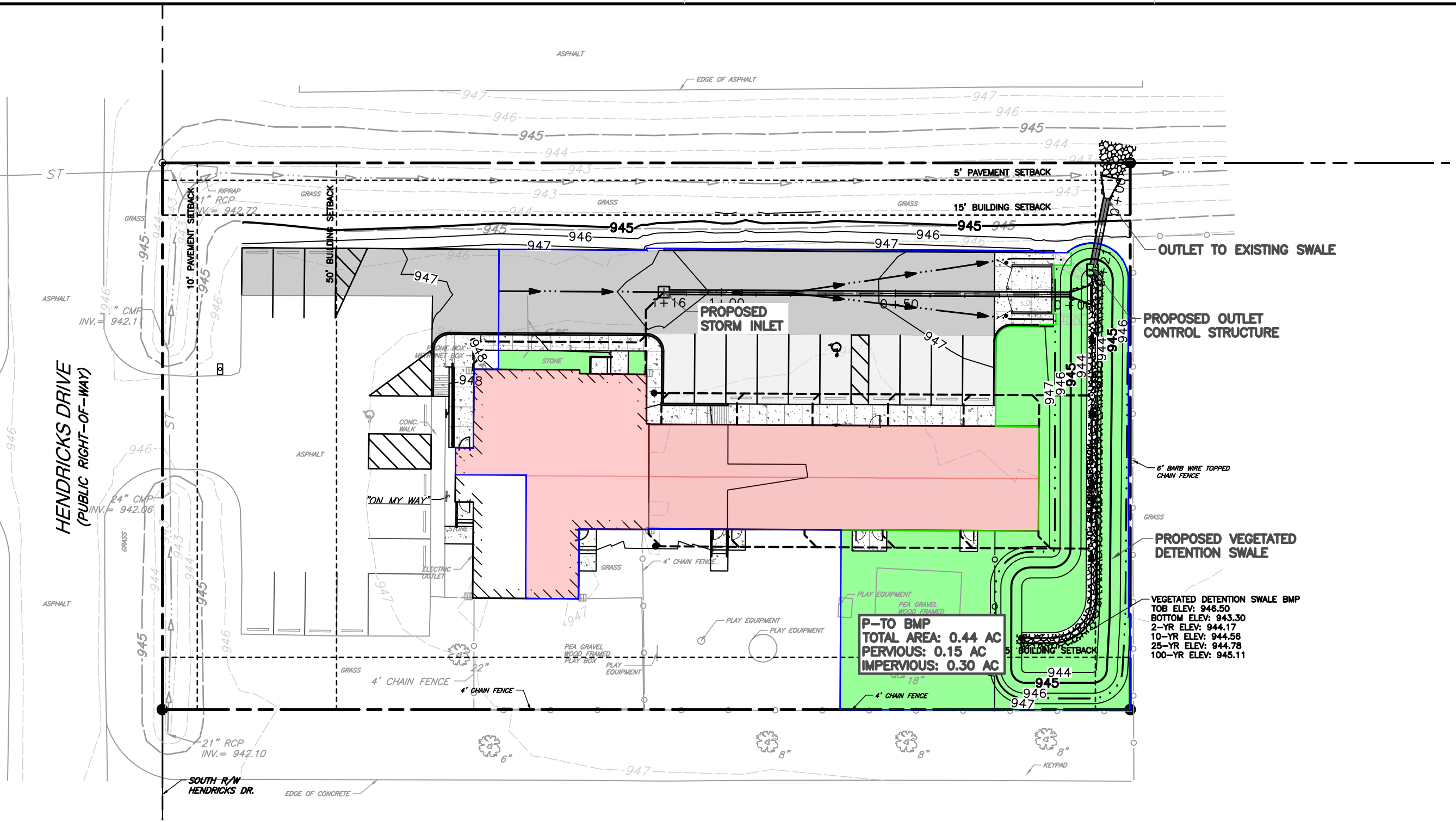
Overall condition of facility (acceptable or unacceptable): _____

Dates any maintenance must be completed by: _____

APPENDIX B
BMP MAP & DETAILS



P:\310-000\316-249\Calculations\O&M Manual\316249\VR-CV01-BMP.dwg[B-1] LS:(2/11/2022 - bedwards) - LP: 2/11/2022 11:46 AM



MAP LEGEND:

- PROPOSED PERVIOUS AREA
- ROOF AREA
- PROPOSED BMP BASIN

REFERENCE

TOPOGRAPHIC INFORMATION BASED UPON 316249-SV01-BNDRY-TOPO SURVEY CONDUCTED BY CIVIL & ENVIRONMENTAL CONSULTANTS, INC IN DECEMBER 2021.



CEC
Civil & Environmental Consultants, Inc.
 530 E. Ohio Street, Suite G - Indianapolis, IN 46204
 317-655-7777 · 877-746-0749
 www.cecinc.com

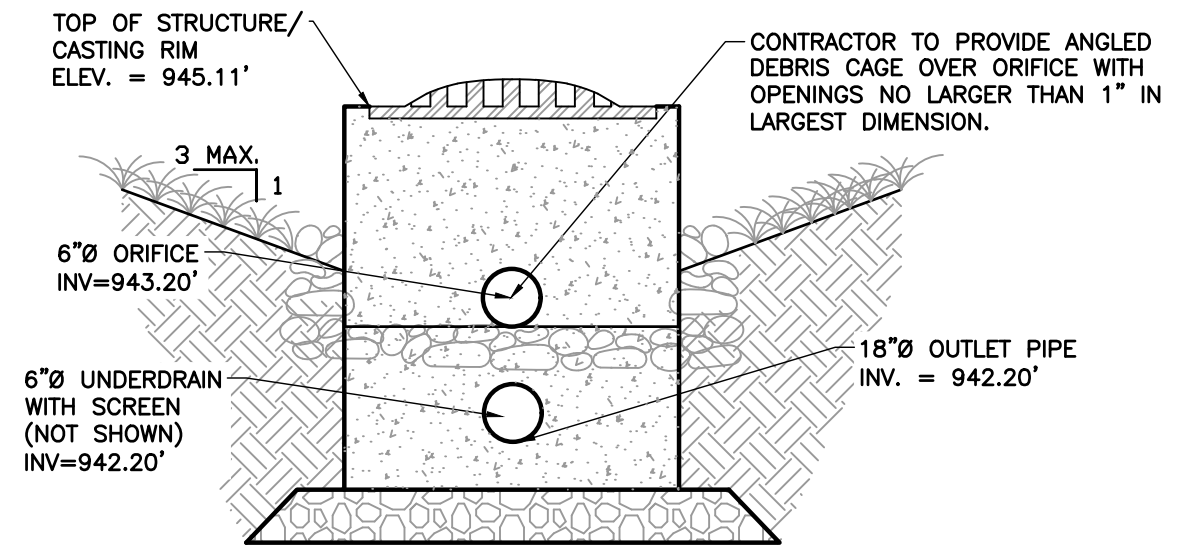
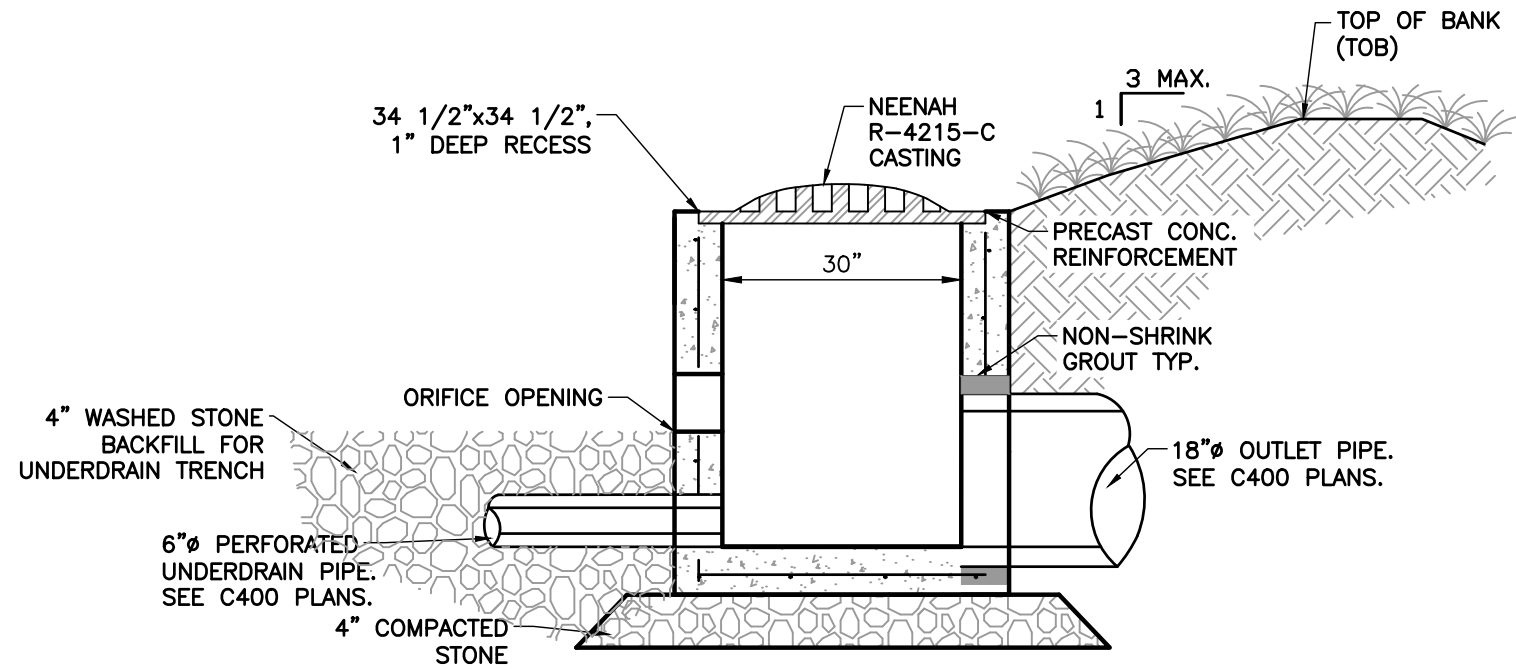
DRAWN BY:	BEE	CHECKED BY:	DRAFT
DATE:	FEBRUARY 2022	DWG SCALE:	1"=30'

THE PROGRESS STUDIO
 LITTLE ANGELS
 DAYCARE EXPANSION
 925 HENDRICKS DRIVE, LEBANON, IN

**PROPOSED CONDITIONS
 BMP MAP**

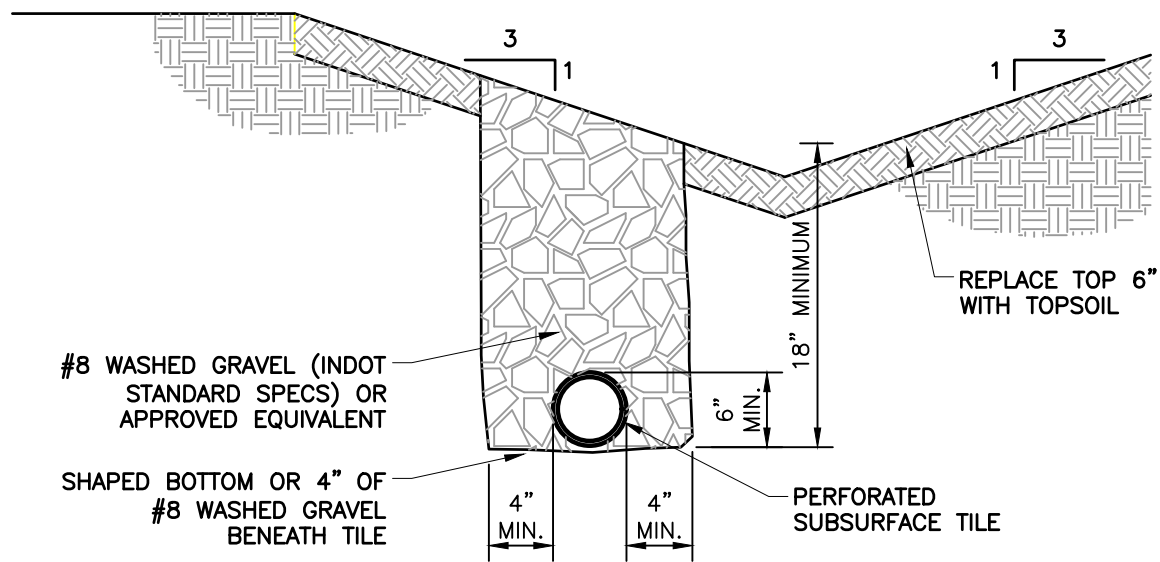
APPROVED BY:	DRAFT	FIGURE NO.:	B-1
PROJECT NO.:	316-249		

F:\310-000\316-249\CADD\Draw\construction documents\316249-CV01-C800.dwg\B-2} LS:(2/11/2022 - backwards) - LP: 2/11/2022 11:47 AM




PROFILE
DETAIL 404 - DETENTION OUTLET CONTROL STRUCTURE
 NOT TO SCALE

FRONT



DETAIL 400 - SWALE UNDERDRAIN
 NOT TO SCALE

 Civil & Environmental Consultants, Inc. 530 E. Ohio Street, Suite G - Indianapolis, IN 46204 317-655-7777 · 877-746-0749 www.cecinc.com		THE PROGRESS STUDIO LITTLE ANGELS DAYCARE EXPANSION 925 HENDRICKS DRIVE, LEBANON, IN	
		BMP DETAILS	
DRAWN BY: BEE DATE: FEBRUARY 2022	CHECKED BY: DRAFT DWG SCALE: NTS	APPROVED BY: DRAFT PROJECT NO: 316-249	FIGURE NO.: B-2