

OPERATION & MAINTENANCE MANUAL BEST MANAGEMENT PRACTICES

*Site Improvement Plans
For
C Bennett Premium Building
Supplies
O'fallon, Missouri*



Architecture
Civil Engineering
Land Surveying
Site Development
Construction Inspection Testing

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November 22, 2016
REVISED: 2-14-17

Cochran Project No. M16-7229A

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1. PROJECT INTRODUCTION

This project is known as the “C Bennett Premium Building Supplies” project and is located in Saint Peters, Missouri. The project consists of a new commercial retail building with new concrete parking, storm improvements and a dry detention basin.

As required by the City of O’fallon, this site includes several engineered features to treat and control the stormwater generated by the project. BMP 1 is located in western portion of the site and functions as a dry detention pond.

2. RESPONSIBILITY FOR MAINTENANCE

Since this is a private project the maintenance of the project site and the incorporated BMP’s will be the responsibility of the owner.

3. SUMMARY OF DRAINAGE AREAS AND TREATMENT FACILITIES

BMP 1 is a dry detention basin located in the western portion of the site. This BMP receives storm water drainage from 2.66 acres of the site, see Appendix A. The stormwater will be collected by several curb and area inlets and swales and is transferred to BMP 1 via enclosed storm sewers and said swales. The storm water enters the detention area where it is detained and metered by the outfall structure.

4. MAINTENANCE REQUIREMENTS

The following contains information and routine inspection procedures for BMP maintenance required for each basin:

BMP 1

Dry detention ponds are constructed basins that do not have a permanent pool of water with significant depth throughout the year. In order to maintain the pond’s design capacity, sediment must be removed occasionally and adequate resources must be committed to properly maintain aquatic vegetation and maintain effective pool volume. If the dry detention pond is not properly maintained it can become a public nuisance due to mosquito breeding. A routine maintenance plan is critical to ensure the pool does not become a public nuisance. A vegetated buffer should also be maintained around the perimeter of the basin to protect the banks from erosion. Any sediment removed from the pond should be tested for hazardous characteristics and disposed of properly. A guideline for maintenance can be found in Section 5.

5. FACILITY MAINTENANCE SCHEDULE

Following are recommended maintenance schedules for each of the BMP devices:

BMP 1

Dry Detention Pond

Inspection Activities

- | | Suggested Frequency |
|---|---|
| <ul style="list-style-type: none">● Inspect after several storm events to confirm that the drainage system functions, and bank stability and vegetation growth are sufficient. | Post Construction |
| <ul style="list-style-type: none">● Inspect for invasive vegetation, trash and debris, clogging of inlet/outlet structures, excessive erosion, sediment buildup in basin or outlet, cracking or settling of the dam, bank stability, tree growth on dam or embankment, vigor and density of the grass turf on the basin side slopes and floor, differential settlement, leakage, subsidence, damage to the emergency spillway, mechanical component condition and graffiti. | Semi-annual, after significant storms, or more frequent as needed |
| <ul style="list-style-type: none">● Inspect condition of inlet and outlet structures, pipes, sedimentation basin, and upstream and downstream channel conditions. Monitor drain time, and check for algal growth, signs of pollution such as oil sheens, discolored water, or unpleasant odors, and signs of flooding. | Annual Inspection |
| <ul style="list-style-type: none">● During inspections, note changes to the dry pond or the contributing watershed as these may affect basin performance. | |

Maintenance Activities

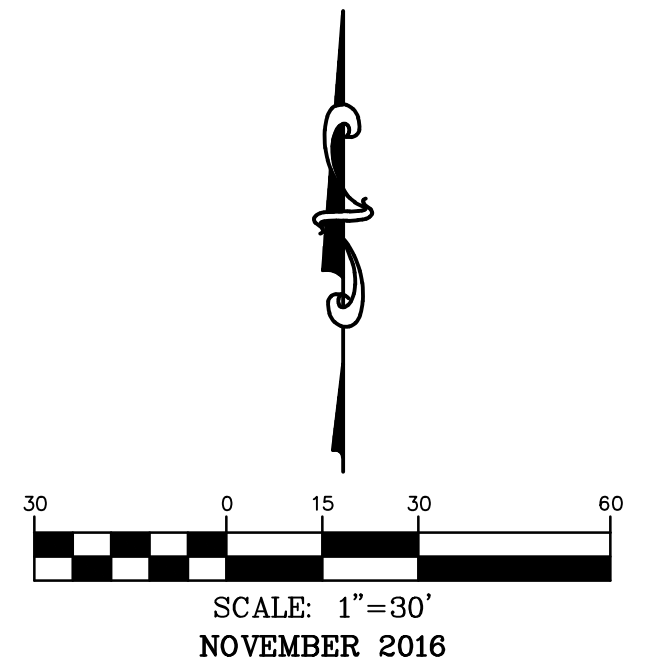
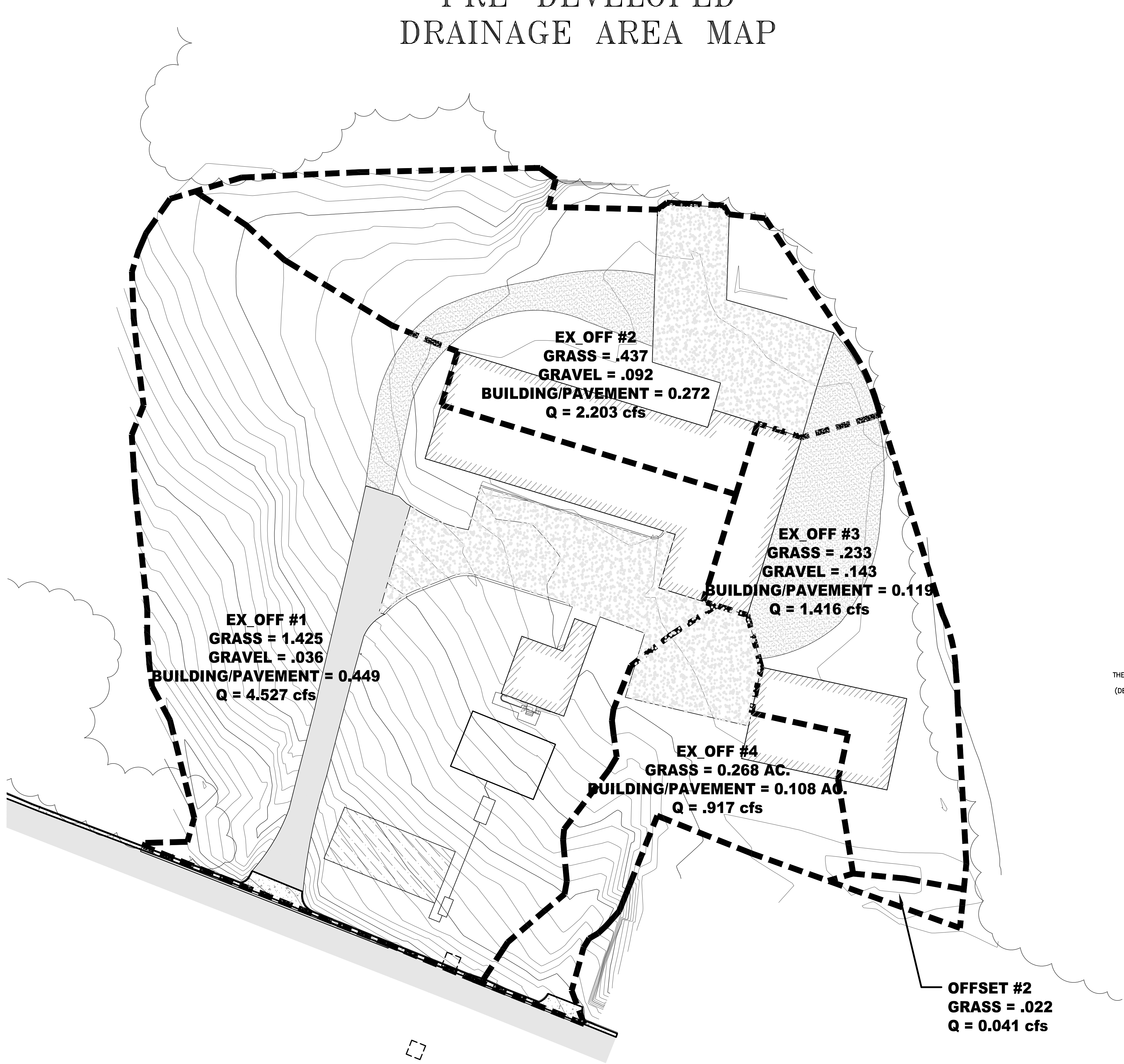
- | | |
|--|--|
| <ul style="list-style-type: none">● Perform vector control, if necessary. Remove sediment from outlet structure and properly dispose. Remove accumulated trash and debris in the basin, inlet/outlet structures, side slopes, and collection system. Repair undercut areas and erosion to banks and basin. | Semi-annual after significant storm events |
| <ul style="list-style-type: none">● Remove sediment from outlet structure and properly dispose. Remove accumulated trash and debris in the basin, inlet/outlet structures, side slopes, and collection system. Repair undercut areas and erosion to banks and basin. | Semi-annual after significant storm events |
| <ul style="list-style-type: none">● Maintain protected vegetated buffer around pond. Mow side slopes and maintain vegetation in and around basin to prevent any erosion or | Annual Maintenance |

aesthetic problems. Minimize use of fertilizers and pesticides. Reseed if necessary. Manage and harvest wetland plants. Structural repair and replacement, as needed.

- Remove sediment when the permanent pool volume has become reduced significantly (sediment accumulation exceeds 25% of design depth), resuspension is observed, or the pond becomes eutrophic. >5 year Maintenance

APPENDIX A
DRAINAGE AREA MAP

PRE-DEVELOPED DRAINAGE AREA MAP



EX_OFF #1
GRASS = 1.425
GRAVEL = .036
BUILDING/PAVEMENT = 0.449
Q = 4.527 cfs

EX_OFF #2
GRASS = .437
GRAVEL = .092
BUILDING/PAVEMENT = 0.272
Q = 2.203 cfs

EX_OFF #3
GRASS = .233
GRAVEL = .143
BUILDING/PAVEMENT = 0.119
Q = 1.416 cfs

EX_OFF #4
GRASS = 0.268 AC.
BUILDING/PAVEMENT = 0.108 AC.
Q = .917 cfs

OFFSET #2
GRASS = .022
Q = 0.041 cfs

N/F
 THE EMERALD REALTY
 GROUP, LLC
 (DB 4045, PG 782)

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 Registered Professional Engineer
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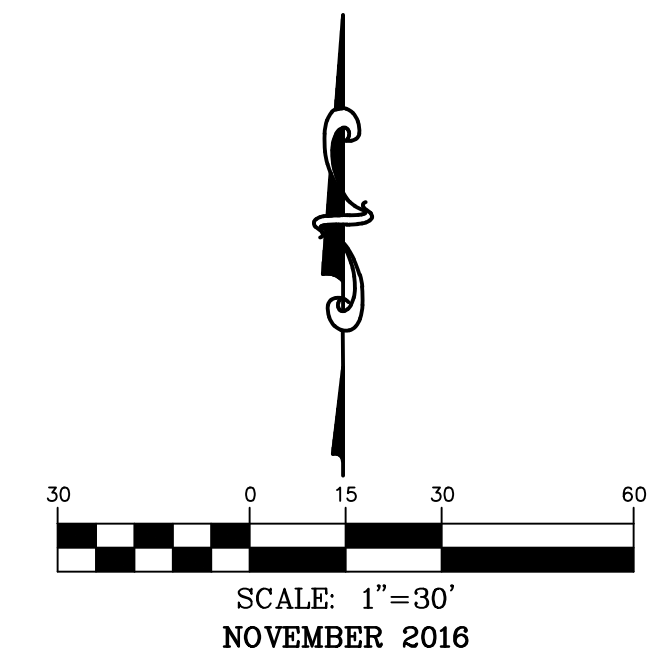
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 O'Fallon, MO 63366

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POST-DEVELOPED TRIBUTARY DRAINAGE AREA MAP



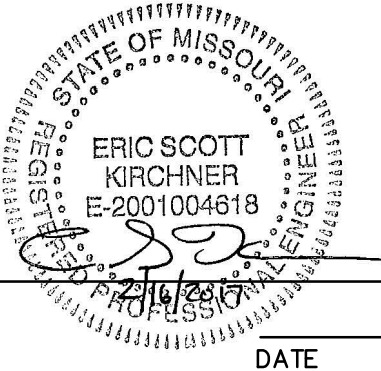
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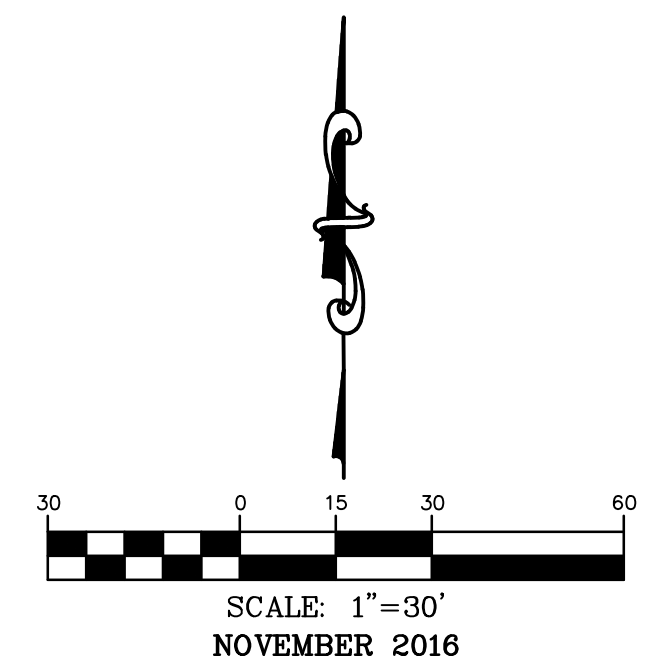
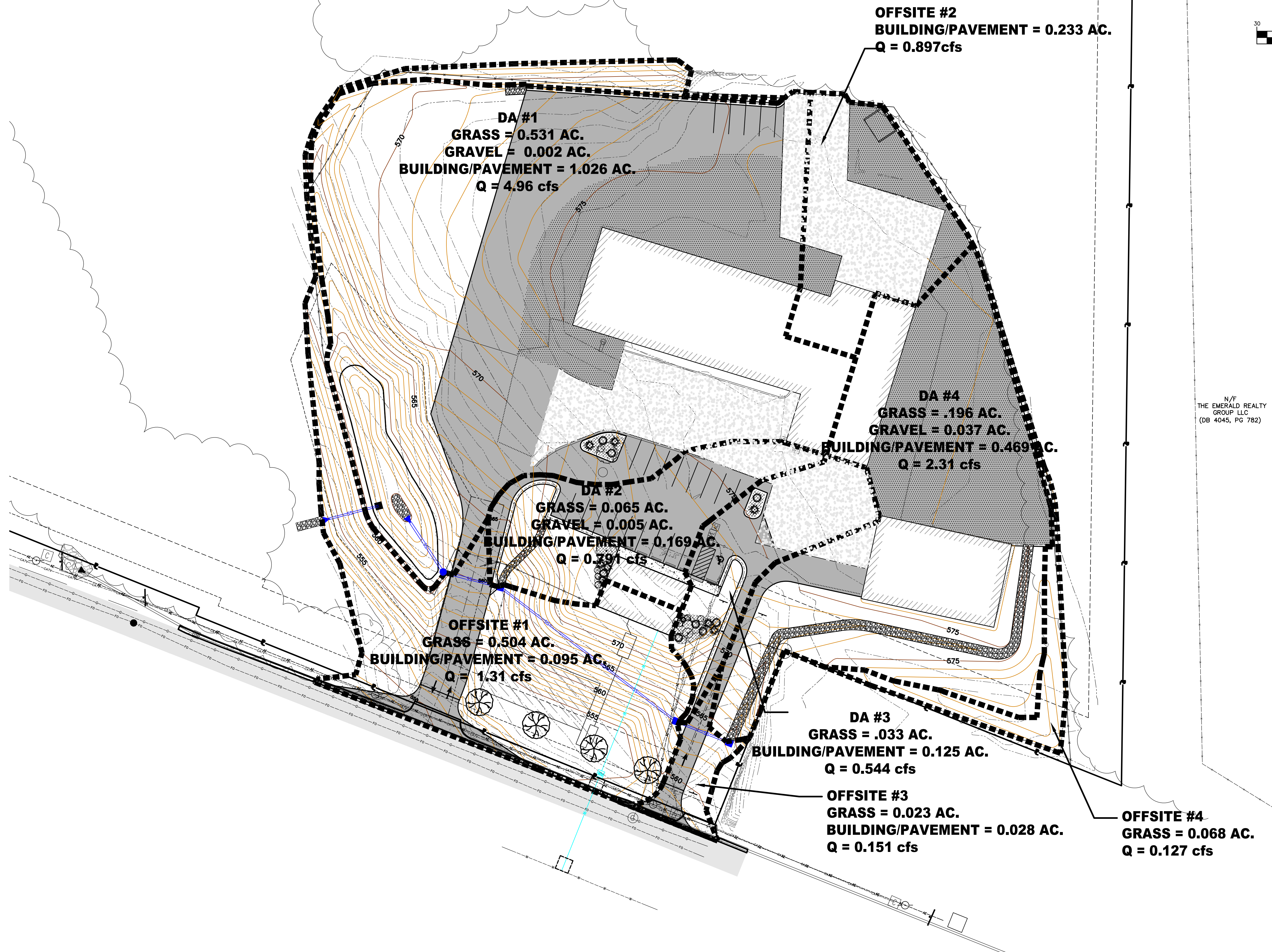
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STORM SEWER DRAINAGE AREA MAP



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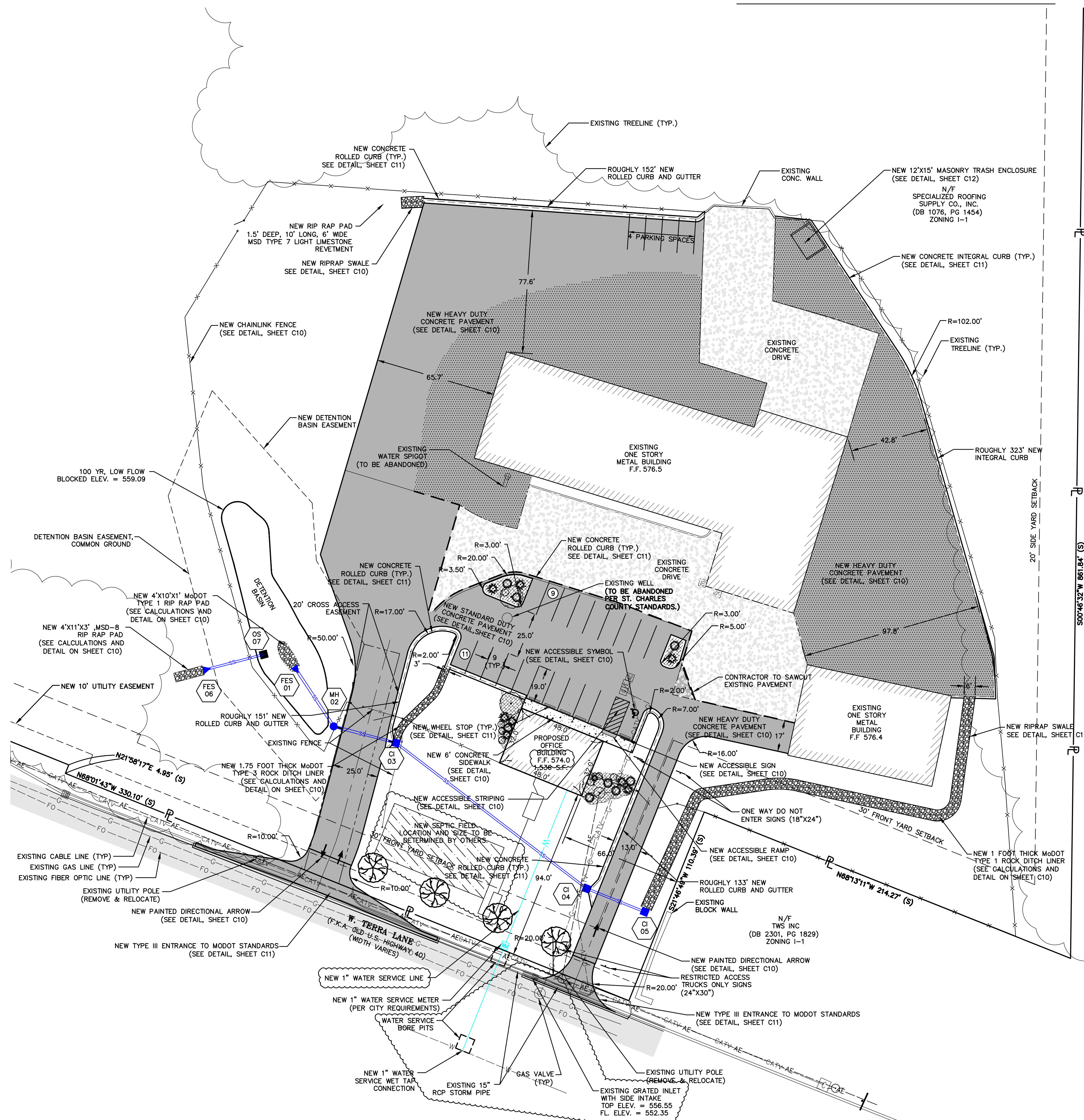
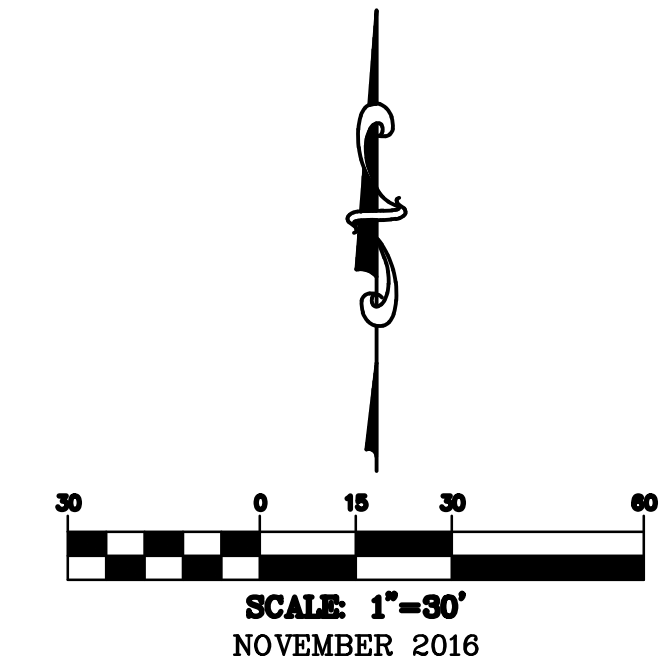
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APPENDIX B
Site/Utility Plan

SITE/UTILITY PLAN



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NOTE:
SANITARY FLOW
200 GPD/1000 FT² OF FLOOR AREA
= (1,536)(200) = 308 GPD

NOTE:
ALL PAVING TO BE IN ACCORDANCE WITH
ST. CHARLES COUNTY STANDARDS AND
SPECIFICATIONS EXCEPT AS MODIFIED BY
THE CITY OF O'FALLON ORDINANCES.

NOTE:
SEPTIC SYSTEM TO BE CONVERTED TO
GRAVITY/PUMPED SANITARY SEWER AT
PROPERTY OWNERS COST WHEN THE
SANITARY SEWER MAIN IS CONSTRUCTED
WITHIN 200' OF SUBJECT PROPERTY.

PARKING DATA:
PARKING REQUIRED:
EXISTING WAREHOUSE 1 PER 1,000 S.F. = 18 SPACES
OFFICE 1 PER 300 S.F. = 6 SPACES
TOTAL REQ. = 24 SPACES
PARKING PROVIDED = 24 SPACES

NOTE:
A NEW ON-SITE SEPTIC SYSTEM IS
TO BE INSTALLED. THE SIZE AND LOCATION
ARE TO BE DETERMINED BY THE SEPTIC
INSTALLER AND SUBMITTED FOR PERMIT.
SEPTIC SYSTEM TO BE INSPECTED AND
APPROVED BY ST. CHARLES COUNTY.

NOTE:
ALL DRIVE AND CURB DIMENSIONS ARE TO
BACK OF CURB UNLESS OTHERWISE NOTED.

NOTE:
WATER SERVICE LINE TO BE BORED UNDER
EXISTING PAVEMENT. NO OPEN CUTTING OF
WEST TERRA LANE IS TO BE ALLOWED.

LOT SIZE	AREA CALCULATION
	=742,393 S.F.
BUILDING AREA	=116,399 S.F.
PAVEMENT AREA	=78,440 S.F.
TOTAL IMPERVIOUS AREA	=97,484 S.F.
LANDSCAPE/GREENSPACE AREA	=18,914 S.F.
GREENSPACE AREA	= 16%

All OSHA rules & regulations
established for the type of
construction required by these
plans shall be strictly followed
(ie. Trenching, Blasting, etc.)

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APPENDIX C
CONTACT INFORMATION AND
UPDATE FORM

ATTACHMENT 2
CONTACT INFORMATION FORM

Designation of Individuals Responsible for Stormwater Treatment BMP Operation and Maintenance	
Date Completed	
Facility Name	
Facility Address	
Designated Contact for Operation and Maintenance	
Name:	Title or Position:
Telephone:	Alternate Telephone:
Email:	
Off Hours or Emergency Contact	
Name:	Title or Position:
Telephone:	Alternate Telephone:
Email:	
Corporate Officer (authorized to execute contracts with the City)	
Name:	Title or Position:
Address:	
Telephone:	Alternate Telephone:
Email:	

APPENDIX D
INSPECTION AND MAINTENANCE LOG

APPENDIX E
INSPECTOR'S ANNUAL INSPECTION
REPORT

ATTACHMENT 4
ANNUAL INSPECTION REPORT FORMAT

- I. General
 - A. Date and time of site visit
 - B. Reason for inspection (e.g., routine/annual, follow-up, by City request, or response to complaint)
 - C. Weather/rainfall
 - D. Personnel participating
 - E. Ability to obtain access to the site

- II. Review of Stormwater Control Operation and Maintenance Plan
 - A. Ability to obtain and review on-site copy of plan
 - B. Date of last update to plan
 - C. Sections out-of-date and updates needed
 - 1. Contact information for site personnel
 - 2. Information on BMPs
 - 3. Records of previous inspections
 - D. Review of maintenance logs
 - 1. Comparison to maintenance schedule. Note exceptions.

- III. Results of Site Inspection
 - A. Overall condition of site and any exceptional circumstances (e.g., construction in progress, flooding)
 - B. For each BMP listed in the Stormwater Control Operation and Maintenance Plan
 - 1. Items inspected
 - 2. Exceptions noted
 - 3. Corrective actions needed
 - a. Exceptions not affecting BMP performance (correct and re-inspect in one year)
 - b. Exceptions affecting BMP performance (correct and re-inspect immediately)

- IV. Compliance Status
 - A. In compliance—no corrective actions required, or
 - B. In compliance—implement corrective actions and re-inspect in one year, or
 - C. Not in compliance—implement corrective actions and re-inspect

- V. Summary and Recommendations
 - A. Note any required follow-up and schedule re-inspection if necessary