

RECEIVED
NOV 08 2017
1736 EAST SUNSHINE ST., SUITE 417
SPRINGFIELD, MO

STORMWATER RUNOFF SUMMARY:

TOTAL PROPERTY AREA = 0.98 ACRES
 TOTAL DISTURBED AREA = 0.70 ACRES < 1.0 ACRES THEREFORE A NOI IS NOT REQUIRED.
 REFER TO STORMWATER REPORT PREPARED BY ANDERSON ENGINEERING FOR COMPLETE STORMWATER CALCULATIONS.

PER THE PREVIOUSLY APPROVED WAFFLE HOUSE SITE PLAN (SPR 14-03 APPROVED BY HANOVER COUNTY PLANNING DEPARTMENT ON NOVEMBER 21, 2003), THE O'REILLY SITE IS SPLIT BETWEEN TWO EXISTING STORMWATER STRUCTURES, STRUCTURE EX 3 AND 30. SEE BELOW FOR DESIGNED VS PROPOSED DRAINAGE CALCULATIONS:

1. AREAS & RUNOFF COEFFICIENTS:	
STRUCTURE "EX 3"	STRUCTURE "30"
DESIGN: TOTAL AREA = 0.47 ACRES COMPOSITE RUNOFF COEFFICIENT, C = 0.77	DESIGN: TOTAL AREA = 0.55 ACRES COMPOSITE RUNOFF COEFFICIENT, C = 0.75
PROPOSED: IMPERVIOUS AREA = 0.32 ACRES IMPERVIOUS RUNOFF COEFFICIENT, C = 0.95 PERVIOUS AREA = 0.16 ACRES PERVIOUS RUNOFF COEFFICIENT, C = 0.22 TOTAL AREA = 0.39 ACRES COMPOSITE RUNOFF COEFFICIENT, C = 0.82	PROPOSED: IMPERVIOUS AREA = 0.39 ACRES IMPERVIOUS RUNOFF COEFFICIENT, C = 0.95 PERVIOUS AREA = 0.16 ACRES PERVIOUS RUNOFF COEFFICIENT, C = 0.22 TOTAL AREA = 0.55 ACRES COMPOSITE RUNOFF COEFFICIENT, C = 0.74

2. TIME OF CONCENTRATION:	
STRUCTURE "EX 3"	STRUCTURE "30"
DESIGN: TC = 5 MINS	DESIGN: TC = 10 MINS
PROPOSED: TC = 10 MINS	PROPOSED: TC = 10 MINS

3. PRECIPITATION DATA: NOAA ATLAS 14, VOLUME 2, VERSION 3	
	RAINFALL INTENSITY, (IN/HR)
	STORM EVENT
DURATION	1 YR 2 YR 10 YR 100 YR
5-MIN	4.44 5.20 6.90 9.01
15-MIN	2.95 3.52 4.65 6.03
30-MIN	2.02 2.43 3.37 4.62
60-MIN	1.26 1.52 2.19 3.16

4. STRUCTURE "EX 3" SITE RUNOFF:	
FLOW, cfs	1 YR 2 YR 10 YR 100 YR
Q design =	1.53 1.81 2.39 3.12
Q proposed =	1.14 1.35 1.80 2.36

5. STRUCTURE "30" SITE RUNOFF:	
FLOW, cfs	1 YR 2 YR 10 YR 100 YR
Q design =	1.46 1.75 2.32 3.05
Q proposed =	1.45 1.72 2.29 3.01

THE PROPOSED DRAINAGE AREA CONVEYED TO THE "EX 3" STRUCTURE CONSISTS OF THE AREA CAPTURED BY INLET C4 AND C2. THE PROPOSED DRAINAGE CONVEYED TO THE "30" STRUCTURE CONSISTS OF THE AREA CAPTURED BY INLET C5 AND THE SURFACE RUNOFF FROM THE BUILDING DOWNSPUTS AND PRIVATE DRIVE. ALL PROPOSED DISCHARGE RATES FOR BOTH DRAINAGE AREAS ARE LESS THAN THE DESIGN DISCHARGE RATES FOR THE EXISTING SYSTEM. THEREFORE NO DETENTION HAS BEEN PROVIDED.

PER THE "WAFFLE HOUSE RESTAURANT" SITE PLAN SPR 14-03, APPROVED BY THE HANOVER COUNTY PLANNING DEPARTMENT ON NOVEMBER 21, 2003, AND PER THE "WAWA AT SLIDING HILL ROAD AND ATLEE STATION ROAD" SITE PLAN SPR 21-05 AM. 1-10, APPROVED BY THE HANOVER COUNTY PLANNING DEPARTMENT ON MAY 12, 2011, THIS PROPOSED O'REILLY AUTO PARTS SITE IS GRANDFATHERED PER SECTION 9VAC25-870-48 OF THE VSMP REGULATIONS BY THE VSMP AUTHORITY AND IS SUBJECT TO THE PART IIC TECHNICAL CRITERIA. THERE WILL BE NO INCREASE IN THE AMOUNT OF PHOSPHORUS LEAVING THE SITE, AND THERE WILL BE NO INCREASE IN THE VOLUME OR RATE OF RUNOFF, WHEN COMPARING THIS PROPOSED DESIGN TO THE ASSUMPTIONS PROVIDED WITHIN THESE PREVIOUSLY APPROVED PLANS. THIS SITE PLAN COMPLIES WITH THE CONDITIONS SPECIFIED WITHIN THE VSMP REGULATIONS FOR A GRANDFATHERED SITE.

IF THE EXISTING DOWNSTREAM STORM SEWER LOCATED WITHIN PUBLIC DRAINAGE EASEMENTS IS IMPACTED BY THE SITE SEDIMENT DURING CONSTRUCTION, THE CONTRACTOR MAY BE REQUIRED TO REMOVE THE SEDIMENT AND PERFORM TV MONITORING TO VERIFY THE SEDIMENT HAS BEEN ADEQUATELY REMOVED.

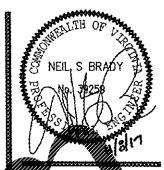
GIVEN THE PROPOSED AREA OF LAND DISTURBANCE IS LESS THAN ONE ACRE, AND THIS SITE IS LOCATED OUTSIDE A CHESAPEAKE BAY PRESERVATION AREA (CBPA), THERE IS NO WATER QUALITY REQUIREMENT FOR THIS DEVELOPMENT.



PIPES NOTES:

- PIPE MATERIALS SHALL BE IN ACCORDANCE WITH AND AS APPROVED BY THE CITY OR APPLICABLE AUTHORITY. REINFORCED CONCRETE PIPE (RCP) CLASS III AND SOLID WALLED PLASTIC PIPE MAY BE USED AS ALLOWED BY LOCAL GUIDELINES.
- ALL PIPE IS TO BE INSTALLED PER THE MANUFACTURER'S REQUIREMENTS AND MEET COVER REQUIREMENTS PER THE MANUFACTURER.

ANDERSON ENGINEERING
 EMPLOYEE OWNED
 ENGINEERS - SURVEYORS - LABORATORIES - DRILLING
 2045 W. WOODBURN SPRINGFIELD, MISSOURI 65807 PHONE (417) 886-2741
 ANDERSON COUNTY, MISSOURI
 NEIL S. BRADY, P.E.
 PROJ # 100117 DRAWING # WB-110-811



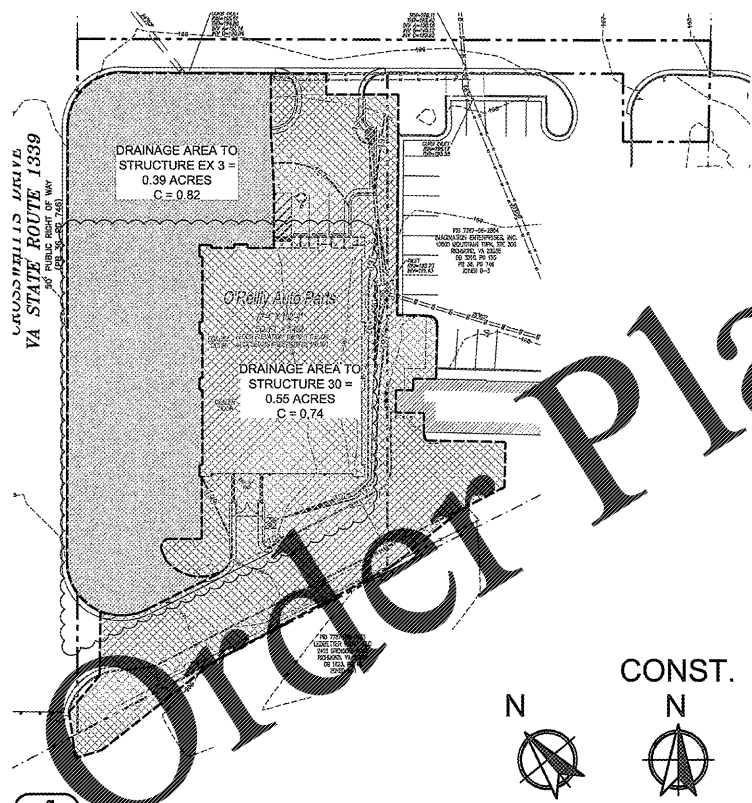
CRAIG A. SCHNEIDER, AIA
 ARCHITECT
 1736 East Sunshine, Suite 417
 Springfield, Missouri 65804
 e-mail: architect@estertyschneider.com

PROJECT:
NEW O'REILLY AUTO PARTS STORE
SLIDING HILL PLACE
ASHLAND, VA #2 - ASHLAND MAGISTERIAL DISTRICT
DRAINAGE PLAN

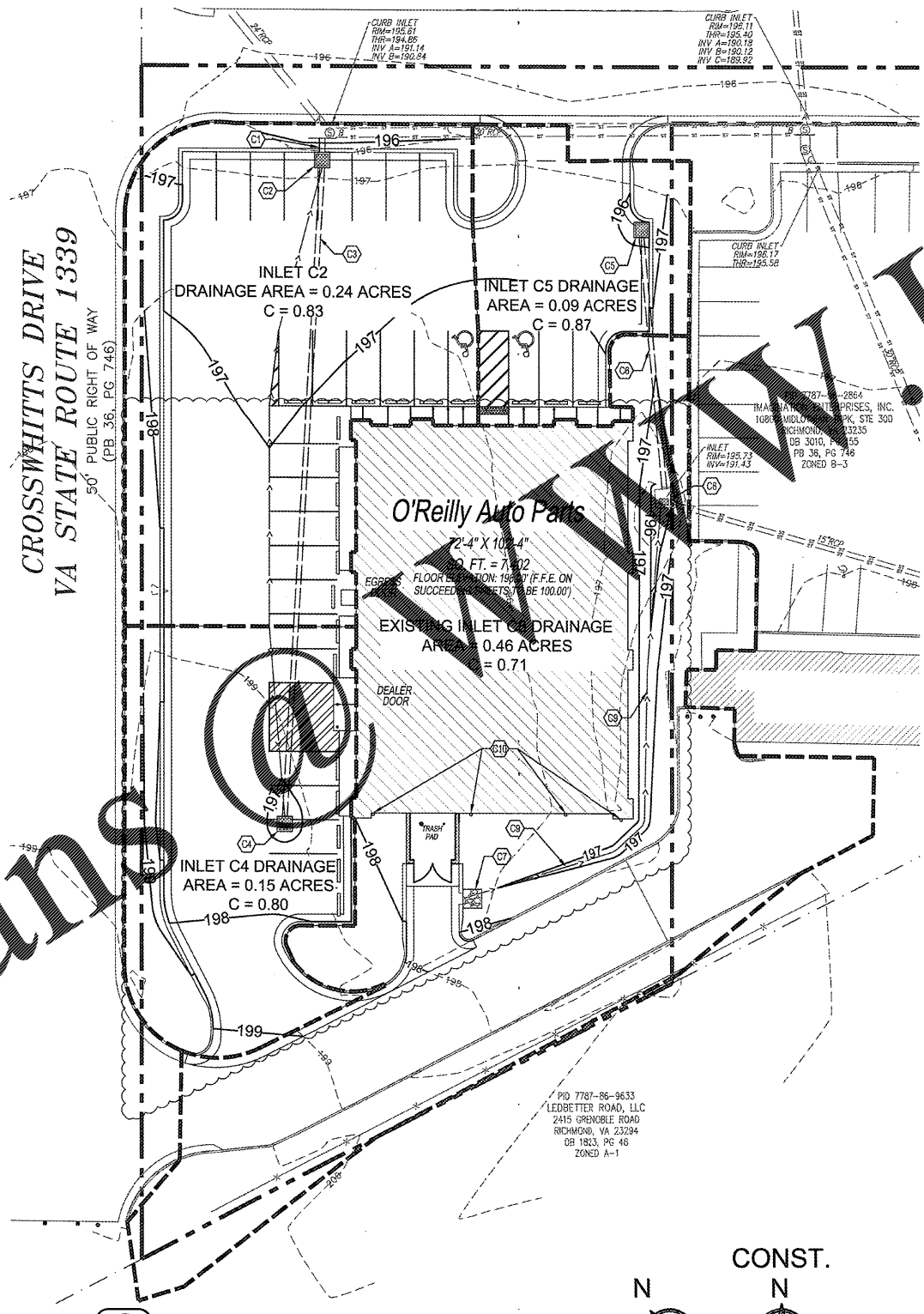
O'Reilly AUTO PARTS
 CORPORATE OFFICES
 233 SOUTH PATTERSON
 SPRINGFIELD, MISSOURI 65802
 (417) 862-2674 TELEPHONE

COMM # 3993
 DATE: 2-24-17
 REVISION
 DATE: 8-16-17
 11-3-17

C1.5

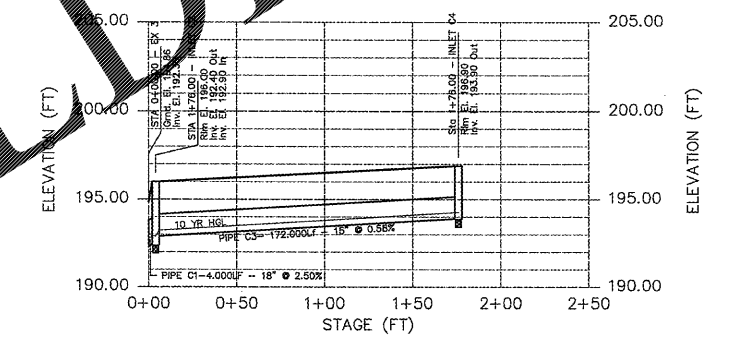


1 OFF-SITE DRAINAGE MAP
 C1.5 SCALE: 1" = 40"



2 ON-SITE DRAINAGE MAP
 C1.5 SCALE: 1" = 20"

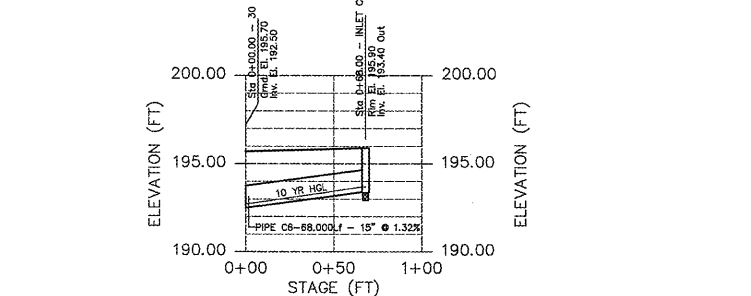
Line No.	Line ID	Line Size (in)	Line Slope (%)	Invert (ft)	Invert Up (ft)	Capac Full (cfs)	Runoff Coeff (C)	Drng Area (ac)	Total Area (ac)	Inlet Time (min)	Incr Q (cfs)	Total Runoff (cfs)	Vel Ave (ft/s)	J-Loss Coeff	HGL Up (ft)	HGL Dn (ft)	HGL Jct (ft)
1	Pipe C3	15	0.58	192.30	193.00	5.33	0.82	0.15	0.15	5.0	0.83	0.83	3.61	1.00	194.28	193.23	194.28



USE ACTUAL TAIL WATER/OUTLET CONDITIONS OR 0.8D, WHICHEVER IS GREATER.
 DEPTH OF TAIL WATER PER WAFFLE HOUSE: 193.79-191.88 = 1.81' (O'REILLY ELEVATION = 192.65')
 0.8D = 0.8*30" = 24" = 2.0' (O'REILLY ELEVATION = 192.84')
 THEREFORE 0.8D WAS USED IN CALCULATIONS.

3 STORM PROFILE TO STRUCTURE EX 3
 C1.5 HORIZONTAL SCALE: 1" = 50', VERTICAL SCALE: 1" = 5'

Line No.	Line ID	Line Size (in)	Line Slope (%)	Invert (ft)	Invert Up (ft)	Capac Full (cfs)	Runoff Coeff (C)	Drng Area (ac)	Total Area (ac)	Inlet Time (min)	Incr Q (cfs)	Total Runoff (cfs)	Vel Ave (ft/s)	J-Loss Coeff	HGL Up (ft)	HGL Dn (ft)	HGL Jct (ft)
1	Pipe C5	15	1.32	192.50	193.40	8.05	0.87	0.09	0.09	5.0	0.54	0.54	3.14	1.00	193.69	192.72	193.69



USE ACTUAL TAIL WATER/OUTLET CONDITIONS OR 0.8D, WHICHEVER IS GREATER.
 DEPTH OF TAIL WATER PER WAFFLE HOUSE: 193.19-192.52 = 0.67' (O'REILLY ELEVATION = 192.11)
 0.8D = 0.8*15" = 12" = 1.0' (O'REILLY ELEVATION = 192.43')
 THEREFORE 0.8D WAS USED IN CALCULATIONS.

4 STORM PROFILE TO STRUCTURE 30
 C1.5 HORIZONTAL SCALE: 1" = 50', VERTICAL SCALE: 1" = 5'

DEVELOPER INFO:

O'REILLY AUTOMOTIVE STORES, INC.
 233 SOUTH PATTERSON
 SPRINGFIELD, MO 65802
 PHONE: (417) 882-3333

PROJECT ADMINISTRATOR:
 ROBERT TURRENTINE
 PHONE: (417) 868-4248
 FAX: (417) 874-7112

SPR-7-17
 HTE 17-3000019