REQUEST FOR PROPOSALS

Bethany Lutheran Church and Redford Theatre Green Stormwater Infrastructure (GSI) Parking Lot Bioretention Design and Construction

JANUARY 26, 2026
FRIENDS OF THE ROUGE
650 Church Street, Plymouth, MI 48170

Request for Proposal (RFP)
Design and Installation of Green Stormwater Infrastructure
Bethany Lutheran Church, 11475 Outer Drive E, Detroit
Redford Theatre, 17360 Lahser Rd, Detroit

Issue Date: January 26, 2026
Proposal Due Date: February 13, 2026 by 5 PM

1. Overview

Combined Sewer Overflows (CSO) are a persistent environmental and public health challenge in the City of Detroit. During wet weather events, lack of capacity in the city's combined sanitary and storm sewer system can lead to discharge of untreated or partially treated sanitary sewage to local waterbodies, where it contributes to ongoing water quality impairments in the Detroit and Rouge Rivers. Untreated CSOs represent a significant public health concern due to the loading of pollutants - such as fecal coliforms, E. coli, nutrients, and suspended solids - to surface waterbodies. These pollutants also have detrimental impacts on the aquatic ecosystem by decreasing dissolved oxygen and contributing to downstream eutrophication issues. Furthermore, CSOs create aesthetic impairments in waterbodies from discoloration, unpleasant smells, and the presence of sanitary debris. In Southeast Michigan, these impairments have a disproportionate impact on low-income communities and communities of color, due to the location of CSO outfalls in proximity to these communities and a historical lack of investment toward addressing CSO issues in low-income areas. These impacts are compounded by an increase in the number of large storm events, which often trigger CSOs, as a result of climate change.

This project will directly address these issues by implementing GSI Best Management Practices (BMPs) in priority areas for managing CSOs in the City of Detroit on several properties of community-based organizations. Designs for these projects will leverage site concepts created through the City of Detroit's Capital Partnership Program, which developed customized stormwater management plans to generate stormwater credits for site owners via the implementation of GSI. Friends of the Rouge (FOTR), who has an extensive profile of green infrastructure work in Detroit and has previously been engaged in helping property owners at these sites implement GSI practices, will work with Department of Environment, Great Lakes, and Energy (EGLE) Nonpoint Source (NPS) Program staff to provide overall project coordination, including communication with local partners, selection of contractors, and planning/coordination for community and volunteer events. They will also be responsible for developing the planting plans and species lists for bioretention BMPs and short-term maintenance activities. Long term maintenance (outside of grant scope) will be performed by site property owners, in accordance with maintenance plans developed during the project. Engineering designs

and construction services will be provided by contractors chosen through a competitive bid process.

The overall goal of this project is to reduce flow to the combined sewer and subsequently improve water quality through the implementation of GSI. FOTR will implement GSI BMPs at 3 project sites in the City of Detroit, including 6 bioretention areas, 1 permeable paver system, and pavement removal in contributing areas. These projects will be located in high-priority areas for GSI implementation to support CSO reduction activities. Where possible, projects will be designed to the required basis of design for EGLE Nonpoint Source Program grants, in order to optimize impact on CSO reduction and water quality benefits.

Bethany Lutheran Church (11475 Outer Drive E, Detroit) – this project will install 2 bioretention practices near the right-of-way area at the Bethany Lutheran Church, a large Lutheran parish on Detroit's East Side. These practices will capture flow rerouted from a parking lot through regrading. Additionally, pavement removal will occur in the contributing areas to these BMPs to promote stormwater management capacity. The bioretention practices will be designed to capture the pre-post settlement runoff difference for a 2-year, 24-hour storm event, resulting in a stormwater capture volume of up to 7,480 gallons per storm event. This will result in an estimated annual volume capture of 179,000 gallons each year. For bioretention practices, overflow structures will be installed and perforated underdrains used to ensure adequate capacity and promote infiltration under variable local soil conditions.

Redford Theatre (17360 Lahser Rd, Detroit) – this project will install a single bioretention practice at Redford Theatre, a historic structure and community gathering place in Detroit's Old Redford Neighborhood. This practice will be designed to capture the pre-post settlement runoff difference for a 2-year, 24-hour storm event, resulting in a stormwater capture volume of up to 25,000 gallons per storm event. This will yield an estimated annual volume capture of 500,000 gallons each year. The existing parking lot will be regraded to route stormwater to the practice as part of a planned parking lot retrofit. An overflow structure will be installed and perforated underdrains used to ensure adequate capacity and promote infiltration under variable local soil conditions.

2. Project Locations

Bethany Lutheran Church
11475 Outer Dr E, Detroit, MI 48224

Redford Theatre
17360 Lahser Rd, Detroit 48219

3. Scope of Work

Site #1 – Bethany Lutheran Church (11475 Outer Drive E, Detroit) – this project will install 2 bioretention practices near the right-of-way area at the Bethany Lutheran Church, a large Lutheran parish on Detroit's East Side. These practices will capture flow rerouted from a parking lot through regrading. Additionally, pavement removal will occur in the contributing areas to these BMPs to promote stormwater management capacity. The bioretention practices will be designed to capture the pre-post settlement runoff difference for a 2-year, 24-hour storm event, resulting in a stormwater capture volume of up to 7,480 gallons per storm event. This will result in an estimated annual volume capture of 179,000 gallons each year. For bioretention practices, overflow structures will be installed and perforated underdrains used to ensure adequate capacity and promote infiltration under variable local soil conditions.

Site #2 – Redford Theatre (17360 Lahser Rd, Detroit) – this project will install a single bioretention practice at Redford Theatre, a historic structure and community gathering place in Detroit's Old Redford Neighborhood. This practice will be designed to capture the pre-post settlement runoff difference for a 2-year, 24-hour storm event, resulting in a stormwater capture volume of up to 25,000 gallons per storm event. This will yield an estimated annual volume capture of 500,000 gallons each year. The existing parking lot will be regraded to route stormwater to the practice as part of a planned parking lot retrofit. An overflow structure will be installed and perforated underdrains used to ensure adequate capacity and promote infiltration under variable local soil conditions.

The selected consultant or firm will:

- Complete engineering designs for BMPs and pavement removal at Bethany Lutheran and Redford Theatre. Participate in 3 community input sessions (1 at Bethany Lutheran and 2 at Redford Theatre) and incorporate the input into the final designs.
- Obtain all required permits for project activities. Local permits may be required for projects that involve modification or use of existing infrastructure in design.
- Procure material for the construction of the BMPs (excluding the plant material).
- Construct GSI BMPs according to approved plans.

Friends of the Rouge will:

- Plan and facilitate the community input session.
- Oversee design and construction contact.
- Create the planting plans and species lists.

- Submit the construction documents for EGLE review. Note: EGLE requires a nine week review period to review and approve the construction/engineering documents.
- Procure plant material.
- Plant the prepared bioretention areas with volunteers from the community.

A. Design Services

- Participate in 3 community input sessions (1 at Bethany Lutheran and 2 at Redford Theatre) and incorporate the input into the design.
- Complete engineering designs (construction documents) for BMPs and pavement removal at Bethany Lutheran Church.
    - BMPs include asphalt removal and implementation of two bioretention basins in the right-of-way adjacent to the parking lot. The two practice areas receive rainwater from approximately 6,631 sq. ft. of impervious area. Reference documents provided in the appendix.
- Complete engineering designs (construction documents) for BMPs and pavement removal at Redford Theatre.
    - BMPs include asphalt removal and implementation of a single bioretention basin in the northeast end of the parking lot. The practice area will receive rainwater from approximately 28,818 sq. ft. of impervious area. Reference documents provided in the appendix.
- Projects will be designed to the required basis of design for EGLE Nonpoint Source Program grants, in order to optimize impact on CSO reduction and water quality benefits. EGLE review and approval is required. EGLE requires 9 weeks to review projects.

B. Construction

- Construct GSI BMPs at both locations according to approved plans.

4. Reference documents

Reference documents and metrics are provided for reference only. Selected contractor to verify all calculations and measurements.

5. Proposal Requirements

Friends of the Rouge seeks proposals for design and construction the upcoming GSI projects at Bethany Lutheran Church and Redford Theatre. Complete proposals must include:

- Background and Relevant Experience
- Project Team Qualifications
- Design and Implementation Approach
- Timeline
- Detailed Cost Estimate, broken down by design vs. construction
- At least Two Project References

6. Submission Instructions

1. **Bid date:** All proposals must be received by 5 PM eastern time on Friday, February 13, 2026.
2. **Submission Instructions:** Submit bids via email to: Cyndi Ross, cross@therouge.org with "Bethany Lutheran Church and Redford Theatre GSI Design and Installation bid" in the subject line.
3. **Bid Opening**: Bids will be reviewed and opened privately, the results of which may or may not be disclosed at Friends of the Rouge and EGLE's discretion and with no liability to the bidders.

7. Evaluation Criteria

Proposals will be evaluated based on:

- Experience designing bioretention basins in urban settings.
- Familiarity with EGLE/EPA/GLRI requirements.
- Demonstrated stormwater management expertise.
- Cost-effectiveness.
- Ability to meet timeline and grant reporting requirements.
- Quality of prior work and references.
- Friends of the Rouge is not obligated to accept the lowest or any other bid. FOTR reserves the right to reject any and all bids and to waive any informality in the Proposals.

8. Anticipated Project Timeline (Subject to Change)

- RFP Issued: January 26, 2026
- Questions: January 30, 2026
- Proposal Due: February 13, 2026 at 5 PM

- Selection Notification: February 20, 2026
- Design Phase Complete: May 15, 2026
- Construction complete: September 11, 2026

9. Funding Acknowledgement

This project is funded by the **Michigan Department of Environment, Great Lakes, and Energy (EGLE)** through the **Green Infrastructure to Reduce Stormwater Runoff in Detroit Communities** initiative, supported by the **U.S. EPA Great Lakes Restoration Initiative (GLRI)**.

10. Contact for Questions

For more information, contact: Cyndi Ross | cross@therouge.org | 734.927.4905

APPENDIX

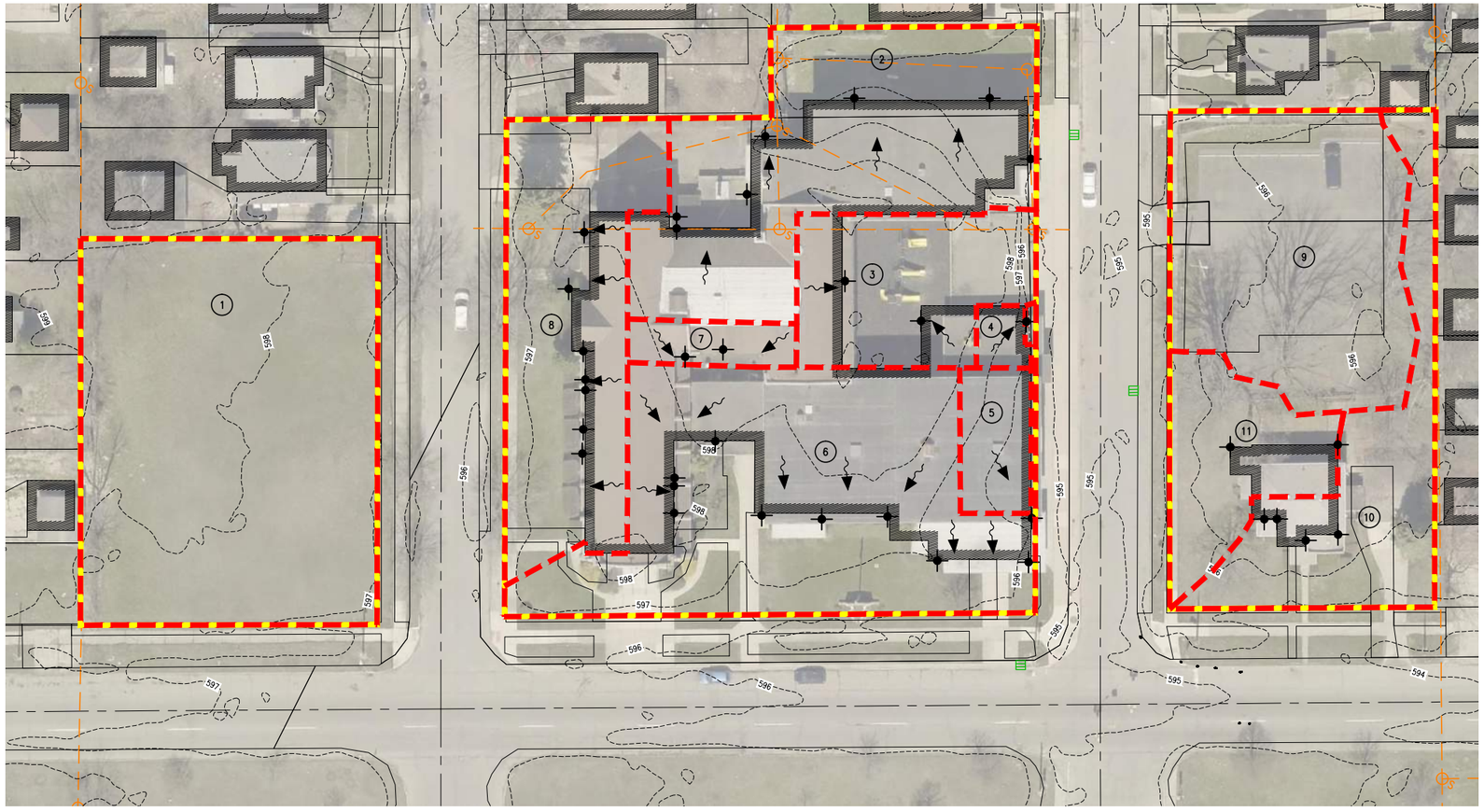
Bethany Lutheran Church and Redford Theatre Green Stormwater Infrastructure (GSI) Parking Lot Bioretention Design and Construction

BETHANY LUTHERAN CHURCH

EXISTING CONDITIONS

CHATSWORTH ST

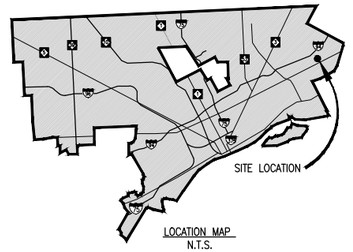
BERKSHIRE ST



GRAPHIC SCALE: 1 inch = 30 feet

0 15 30 60 90

E OUTER DR



LOCATION MAP
N.T.S.

N

EXISTING DRAINAGE AREA SUMMARY		
DRAINAGE AREA	DRAINAGE AREA (SFT)	IMPERVIOUS AREA (SFT)
1	20645	0
2	13954	10149
3	6000	6000
4	578	578
5	1838	1838
6	17641	11009
7	1336	1336
8	10377	5057
9	11804	7439
10	7357	1535
11	4579	909
Total (sft.)	96109	45850
Total (acres)	2.20	**1.05**

LEGEND

- STORM CATCH BASIN
- COMBINED CATCH BASIN (Cs)
- DOWNSPOUT
- DRAINAGE BOUNDARY
- ELEVATION CONTOUR (622)
- PARCEL BOUNDARY
- DRAINAGE AREA NUMBER (X)

Know what's below. Call before you dig.

OHM
ARCHITECTS ENGINEERS PLANNERS
1234 Washington Blvd, 6th Floor
Detroit, MI 48226
P (313) 481-1250
OHM-ADVISORS.COM

PROJECT SUBCONSULTANTS

DRUMMOND CARPENTER engineering + research

livingLAB:

ONYX ENTERPRISES, INC. — Execute the Results!

REVISIONS:

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE	HORIZ DATUM
3/19/18	005-11-0010	HDS	PRO	ALL	WAYNE	CITY OF DETROIT	H: 1"=30'	V: 1"=5'

VERT DATUM: NAVD 88

HORIZ DATUM: NAVD 88

DETROIT WATER & SEWERAGE DEPARTMENT

GI SITE EVALUATIONS

11475 E OUTER DR - EXISTING CONDITIONS

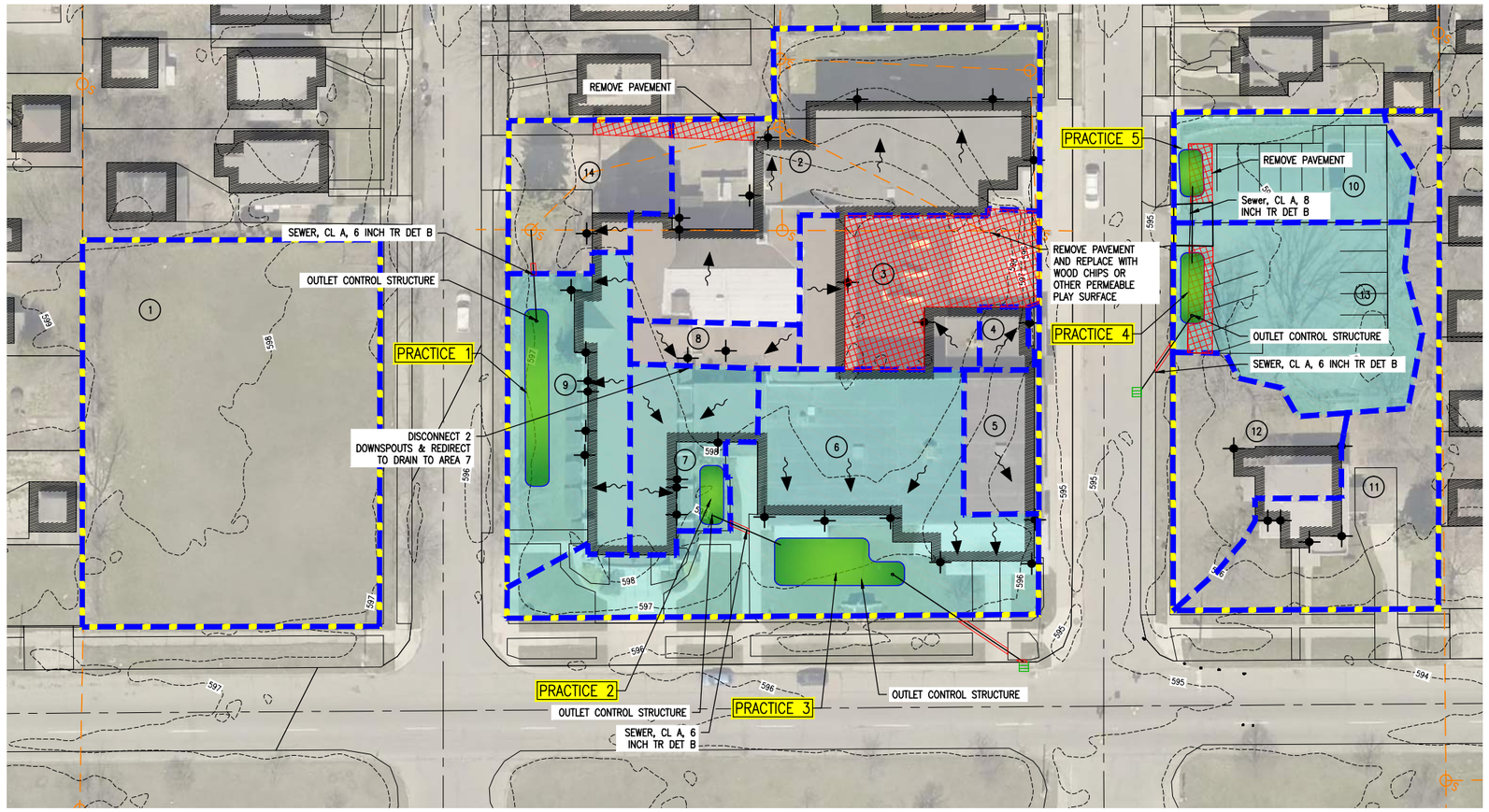
SHEET

BETHANY LUTHERAN CHURCH

PROPOSED PRACTICES

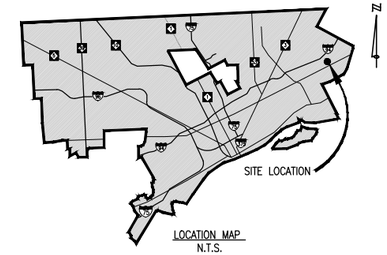
CHATSWORTH ST

BERKSHIRE ST



GRAPHIC SCALE: 1 inch = 30 feet

0 15 30 60 90



LOCATION MAP
N.T.S.

N

E OUTER DR

PROPOSED DRAINAGE AREA SUMMARY

DRAINAGE AREA	DRAINAGE AREA (SFT)	IMPERVIOUS AREA (SFT)
1	20645	0
2	13954	9853
3	6000	1871
4	578	578
5	1838	1838
6	14130	8325
7	3511	2684
8	1336	1336
9	6474	2633
10	4581	2849
11	7357	1535
12	4579	909
13	7219	3882
14	3901	2194
Total (sft.)	96103	40487
Total (acres)	2.20	0.92

		Total Site Credit	37.8%
Impervious Area (sft):	45850	Estimated Current Payment (per month):	$687.44
Impervious Area Removal (sft):	5361	Proposed Payment (per month):	$426.81
New Impervious Area (sft):	40489		

Practice Credit Summary

Practice	Impervious Area (sft)	Credit Calculation Method	Volume Credit	Peak Flow Credit	Practice Credit	Site Credit
Practice 1	5057	Bioretention/Detention	93.4%	91.2%	73.8%	9.2%
Practice 2	4020	Bioretention/Detention	68.0%	45.9%	45.6%	4.5%
Practice 3	8325	Bioretention/Detention	87.6%	99.8%	75.0%	15.4%
Practice 4	3782	Bioretention/Detention	81.5%	53.5%	54.0%	5.0%
Practice 5	2849	Bioretention/Detention	77.6%	49.9%	51.0%	3.6%

LEGEND

STORM CATCH BASIN
DOWNSPOUT
PRACTICE NUMBER — PRACTICE #
DRAINAGE AREA NUMBER — X
BIORETENTION/DETENTION
AREA MANAGED
DRAINAGE BOUNDARY
ELEVATION CONTOUR — 622
PAVEMENT REMOVAL
COMBINED MANHOLE
RUNOFF FLOW PATH
PARCEL BOUNDARY

811 Know what's below. Call before you dig.

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DRUMMOND CARPENTER engineering + research

livingLAB: collaborative design studio

ONYX ENTERPRISE, INC. — Execute the Results!

REVISIONS:

DATE 3/15/18 | ENG MGS | PROJ MGR PMD | CADD ALL | COUNTY WAYNE | CITY/VILLAGE/TOWNSHIP CITY OF DETROIT | SCALE H: 1"=30' V: 1"=5' | HORZ DATUM NAD 83 | VERT DATUM NAVD 88

SHEET

DETROIT WATER & SEWERAGE DEPARTMENT
GI SITE EVALUATIONS
11475 E OUTER DR

PROD NUMBER 0001-17-0010

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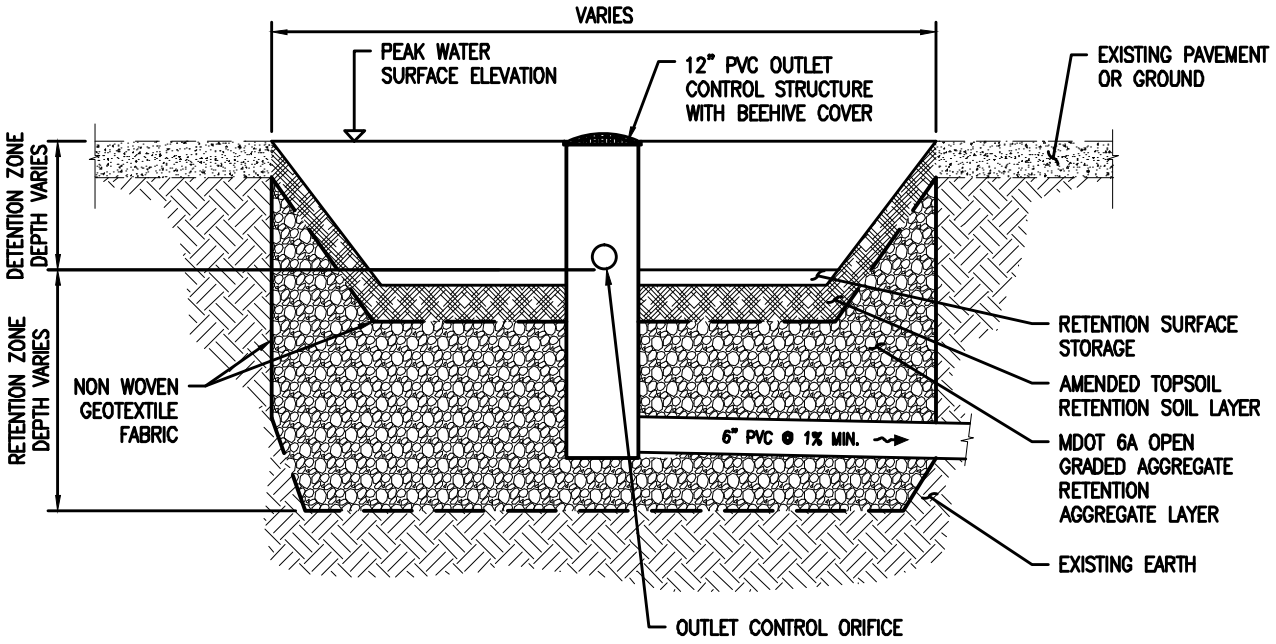
Lot flows to street could redirect to PA areas
Roof flows to disconnected downspouts at grade
Roof flows to drains that connect to sewer
Install permeable playground surface
Roof flows to connected downspouts at grade
Roof flows to disconnected downspouts at grade
PA
Practice Area
Berkshire St
Chatsworth St
Outer Dr E

Image 4: Parking lot; Practice 4 & 5 located at the front, just inside the fence.



BIORETENTION WITH DETENTION DETAIL FOR GREENBELT AREAS

NOT TO SCALE

GI SITE EVALUATIONS ---	SCALE H: 1"=40' V: 1"=4' SHEET --- OF Value		OHM
CLIENT: DETROIT WATER & SEWERAGE DEPARTMENT	JOB # 005-17-0010		

34000 Plymouth Road | Livonia, MI 48150 | P (734) 522-6711 | F (734) 522-6427 | WWW.OHM-ADVISORS.COM

DRAWING PATH: P:\0000_0100\0051170010_GI_Site_Evaluations_(CS_1830)\Drawings\Civil\Details\170010DET.dwg Feb 05, 2018 - 11:10am

Practice #4

Bioretention/Detention

Date: 03/08/18

Last updated by: HDS

Site Address:	11475 Outer Dr E		
Site Owner:	Bethany Lutheran Church		
Site Description:	Church & School; parking lot & parsonage; grass lot		
Parcel Number(s):	21080561, 21069320, 21080562, 21080560, 21069209		
Total Site Area (acres):	2.2	Total Site Area (sft):	96,109
Site Impervious Area (acres):	1.04	Ex Impervious Area (sft):	45,850
Number of Practices:	5	New Impervious Area (sft)	40,489

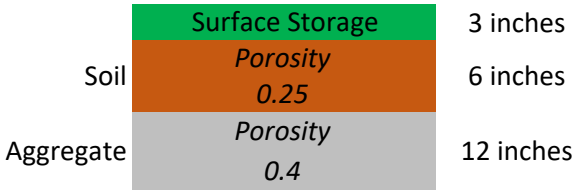
Areas		C Value	Notes
Total Proposed Drainage Area	7219 ft^2		*drainage area 13*
Pavement/Sidewalk Area	4247 ft^2	0.95	
Rooftop Area	0 ft^2	0.95	
Misc	0 ft^2		
Permenant Pavement Removal	465 ft^2		
Pervious Area	2972 ft^2		
Total Impervious Area	3782 ft^2	0.95	
New Pervious Area	3437 ft^2	0.3	*C value based on soil type*

Retention Pond

		Notes
Practice Area (PA)	300 ft^2	
Infiltration Rate	0.26 in/hr	*1.832 micrometers/sec*
Infiltration Rate (F.S. 2)	0.13 in/hr	
Drain Time	72 hrs	
Equivalent Water Depth	9.3 in	
Retention Volume	232.5 ft^3	
Equivalent Rainfall Depth	0.7 in	

Retention EWD

Equivalent Water Depth Maximum	9.3 in
Surface Storage	3 in
Soil Depth	6 in
Aggregate Depth	12 in
Calculated EWD	9.3 in



Detention Pond

List of Variables		Notes
A: Tributary area to the detention practice area	0.17 acres	
C: Combined Rational Coefficient (omit if >75% impervious)	0.64	
Q_r: Peak allowable discharge rate for the 100 year storm event	0.15 cfs/acre	

Practice #4

Bioretention/Detention

Date: 03/08/18

Last updated by: HDS

Site Address:	11475 Outer Dr E		
Site Owner:	Bethany Lutheran Church		
Site Description:	Church & School; parking lot & parsonage; grass lot		
Parcel Number(s):	21080561, 21069320, 21080562, 21080560, 21069209		
Total Site Area (acres):	2.2	Total Site Area (sft):	96,109
Site Impervious Area (acres):	1.04	Ex Impervious Area (sft):	45,850
Number of Practices:	5	New Impervious Area (sft)	40,489

Areas		C Value	Notes	
Total Proposed Drainage Area	7219 ft^2		*drainage area 13*	
Pavement/Sidewalk Area	4247 ft^2	0.95		
D: Critical Storm Duration				
	208.56 min			
t: Recurrence interval	2 years			
	100 years			
I: Rainfall intensity (2 years)	0.47 in/hr			
Rainfall intensity (100 years)	1.07 in/hr			
V_2: Required detention volume for a 2 year event	324 ft^3			
V_{100}: Required detention volume for a 100 year event	1122 ft^3			
$V_{provided}$	600 ft^3		*inches depth*	*24*

Peak Flow Credit	53.5%
Volume Credit	81.5%
Practice Credit	54.0%
Site Credit	**5.0%**

Practice #5

Bioretention/Detention

Date: 03/08/18

Last updated by: HDS

Site Address:	11475 Outer Dr E		
Site Owner:	Bethany Lutheran Church		
Site Description:	Church & School; parking lot & parsonage; grass lot		
Parcel Number(s):	21080561, 21069320, 21080562, 21080560, 21069209		
Total Site Area (acres):	2.2	Total Site Area (sft):	96,109
Site Impervious Area (acres):	1.04	Ex Impervious Area (sft):	45,850
Number of Practices:	5	New Impervious Area (sft)	40,489

Areas		C Value	Notes
Total Proposed Drainage Area	4581 ft^2		*drainage area 10*
Pavement/Sidewalk Area	3090 ft^2	0.95	
Rooftop Area	0 ft^2	0.95	
Misc	0 ft^2		
Permenant Pavement Removal	241 ft^2		
Pervious Area	1491 ft^2		
Total Impervious Area	2849 ft^2	0.95	
New Pervious Area	1732 ft^2	0.3	*C value based on soil type*

Retention Pond

		Notes
Practice Area (PA)	200 ft^2	
Infiltration Rate	0.26 in/hr	*1.832 micrometers/sec*
Infiltration Rate (F.S. 2)	0.13 in/hr	
Drain Time	72 hrs	
Equivalent Water Depth	9.3 in	
Retention Volume	155.0 ft^3	
Equivalent Rainfall Depth	0.7 in	

Retention EWD

Equivalent Water Depth Maximum	9.3 in
Surface Storage	3 in
Soil Depth	6 in
Aggregate Depth	12 in
Calculated EWD	9.3 in

	Surface Storage	3 inches
Soil	*Porosity* *0.25*	6 inches
Aggregate	*Porosity* *0.4*	12 inches

Detention Pond

List of Variables		Notes
A: Tributary area to the detention practice area	0.11 acres	
C: Combined Rational Coefficient (omit if >75% impervious)	0.70	
Q_r: Peak allowable discharge rate for the 100 year storm event	0.15 cfs/acre	

Practice #5

Bioretention/Detention

Date:	03/08/18
Last updated by:	HDS

Site Address:	11475 Outer Dr E		
Site Owner:	Bethany Lutheran Church		
Site Description:	Church & School; parking lot & parsonage; grass lot		
Parcel Number(s):	21080561, 21069320, 21080562, 21080560, 21069209		
Total Site Area (acres):	2.2	Total Site Area (sft):	96,109
Site Impervious Area (acres):	1.04	Ex Impervious Area (sft):	45,850
Number of Practices:	5	New Impervious Area (sft)	40,489

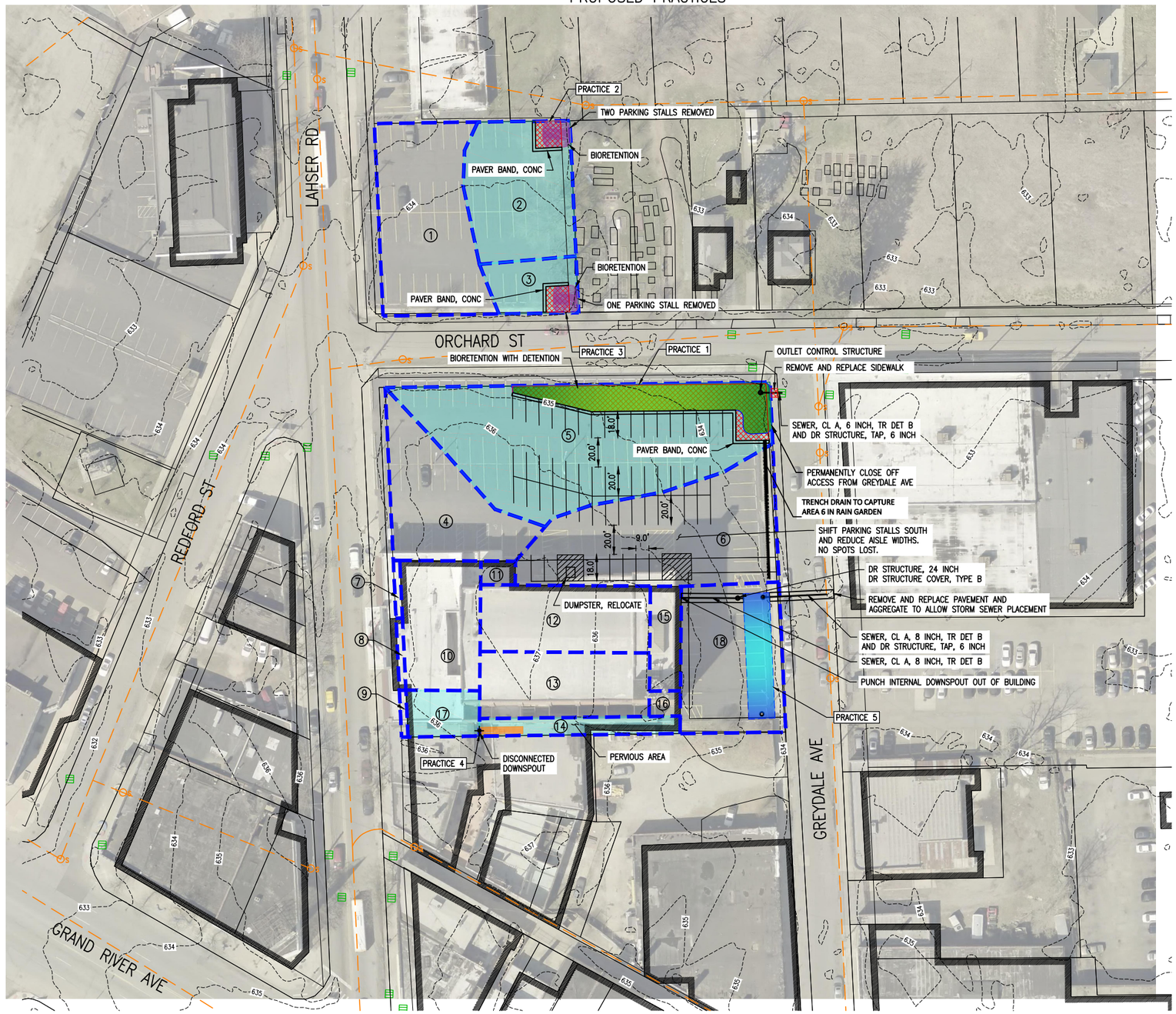
Areas		C Value	Notes	
Total Proposed Drainage Area	4581 ft^2		*drainage area 10*	
Pavement/Sidewalk Area	3090 ft^2	0.95		

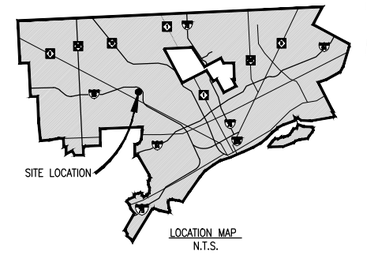
D: Critical Storm Duration	228.96	min		
t: Recurrence interval	2	years		
	100	years		
I: Rainfall intensity (2 years)	0.44	in/hr		
Rainfall intensity (100 years)	0.99	in/hr		
V_2: Required detention volume for a 2 year event	235	ft^3		
V_{100}: Required detention volume for a 100 year event	802	ft^3		
$V_{provided}$	400	ft^3	*inches depth*	*24*

Peak Flow Credit	49.9%
Volume Credit	77.6%
Practice Credit	51.0%
Site Credit	**3.6%**

DWSD SITE ASSESSMENT MAP/DOCUMENTS - ONLY PRACTICE 1 BEING PURSUED FOR THIS GRANT

REDFORD THEATRE
17360 LAHSER RD
PROPOSED PRACTICES





LOCATION MAP
N.T.S.

EXISTING DRAINAGE AREA SUMMARY		
DRAINAGE AREA	DRAINAGE AREA (SFT)	IMPERVIOUS AREA (SFT)
1	8686	8586
2	6799	5967
3	2230	1910
4	6502	6302
5	12590	12340
6	16228	15768
7	177	177
8	222	222
9	144	144
10	4731	4731
11	384	384
12	5340	5340
13	5217	5217
14	1653	1653
15	1526	1526
16	369	369
17	1577	1577
18	6948	6772
Total (sft.)	81323	78985
Total (acres)	1.87	1.81

Total Site Credit	31.4%

Impervious Area (sft):	78985	Estimated Current Payment (per month):	$1,196.41
Impervious Area Removal (sft):	5495	Proposed Payment (per month):	$816.31
New Impervious Area (sft):	73490		

Practice Credit Summary

Practice	Impervious Area (sft)	Credit Calculation Method	Volume Credit	Peak Flow Credit	Practice Credit	Site Credit
Practice 1	14197	Bioretention/Detention	91.3%	100.0%	76.5%	14.8%
Practice 2	5642	Bioretention	54.0%		21.6%	1.7%
Practice 3	1626	Bioretention	76.8%		30.7%	0.7%
Practice 4	1577	Disconnected Downspout				0.1%
Practice 5	19608	Bioretention/Detention	47.9%	84.6%	53.0%	14.1%

LEGEND

- BIORETENTION
- DISCONNECTED DOWNSPOUT/IMPERVIOUS
- BIORETENTION/DETENTION
- UNDERGROUND ARCH DETENTION
- STORM CATCH BASIN
- DOWNSPOUT
- PRACTICE NUMBER (P_X)
- DRAINAGE AREA NUMBER (X)
- DRAINAGE BOUNDARY
- ELEVATION CONTOUR (622)
- PAVEMENT REMOVAL

Know what's below. Call before you dig.

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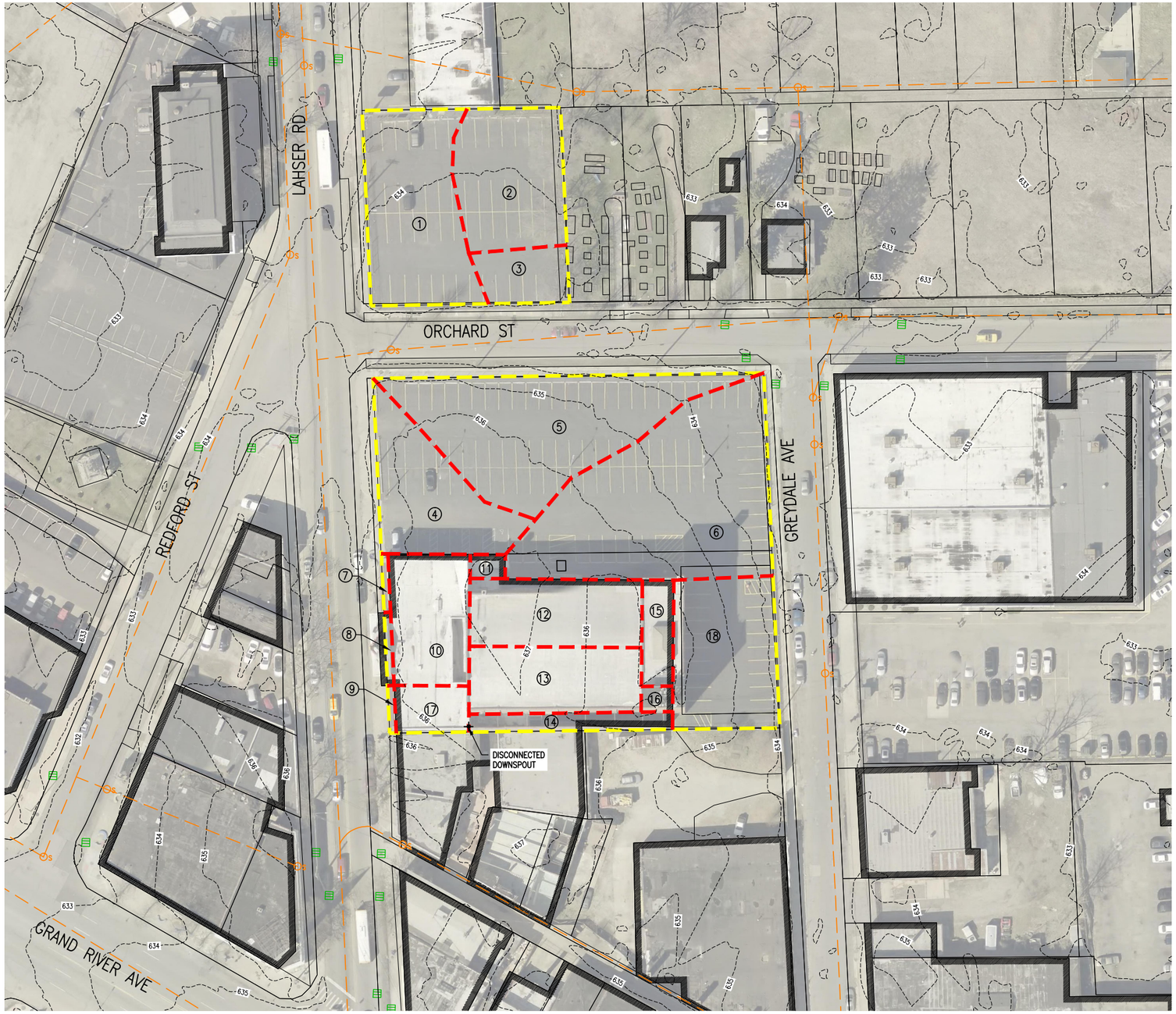
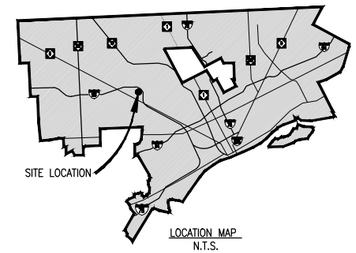
DETROIT WATER & SEWERAGE DEPARTMENT
GI SITE EVALUATIONS
REDFORD THEATER - PROPOSED PRACTICES

DRAWING PATH: P:\0000_0100\005117\0100_GI_Site_Evaluations_(CS_1830)_Civil\Sites\Batch 2 (October 2017)\100673 - Redford Theater - 17360 Lahser\Redford Theater\17360_LAHSER.dwg May 03, 2018 - 8:33am

DATE	2/2018
PROJ NUMBER	005-17-0010
KHS	
PROJ MGR	
AHB	
CADD	
PWD	
COUNTY	ALL
	WAYNE
CITY/VILLAGE/TOWNSHIP	CITY OF DETROIT
SCALE	
H:	1"=40'
V:	NA
HORIZ DATUM	NA
VERT DATUM	NA

REDFORD THEATRE
17360 LAHSER RD
EXISTING CONDITIONS





LOCATION MAP
N.T.S.

N

EXISTING DRAINAGE AREA SUMMARY		
DRAINAGE AREA	DRAINAGE AREA (SFT)	IMPERVIOUS AREA (SFT)
1	8686	8586
2	6799	5967
3	2230	1910
4	6502	6302
5	12590	12340
6	16228	15768
7	177	177
8	222	222
9	144	144
10	4731	4731
11	384	384
12	5340	5340
13	5217	5217
14	1653	1653
15	1526	1526
16	369	369
17	1577	1577
18	6948	6772
Total (sft.)	81323	78985
Total (acres)	1.87	1.81

LEGEND

- STORM CATCH BASIN
- COMBINED CATCH BASIN
- DOWNSPOUT
- DRAINAGE BOUNDARY
- ELEVATION CONTOUR 622
- PARCEL BOUNDARY

Know what's **below.** **Call** before you dig.

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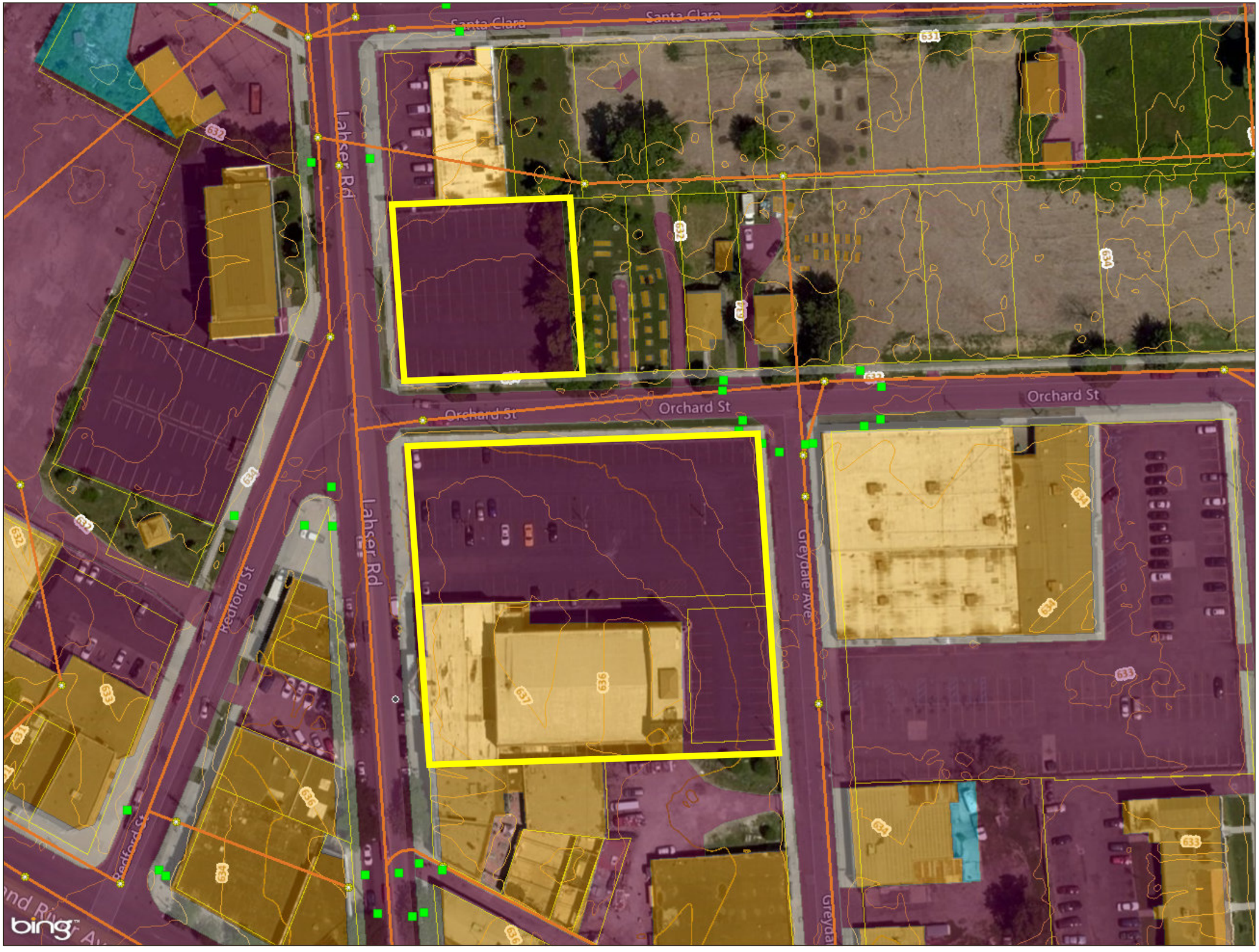
REVISIONS

DETROIT WATER & SEWERAGE DEPARTMENT
GI SITE EVALUATIONS
REDFORD THEATER - EXISTING CONDITIONS

DATE	PROJ NUMBER	KHS	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE			HORIZ DATUM	VERT DATUM
2/2018	0051-17-0010	AKB	PMD	ALL	WAYNE	CITY OF DETROIT	H:	1"=40'	V:	NAD	NA

SHEET: Page 28 of 51

DRAWING PATH: P:\0000_0100\0051170010_GI_Site_Evaluations_(CS_1830)_Civil\Sites\Batch 2 (October 2017)\100673 - Redford Theater - 17360 Lahser\Redford Theater\17360_LAHSER.dwg May 03, 2018 - 8:34am



Catch Basins

Manhole

Gravity Main

Parcels

Detroit Impervious 2015

Pavement

Buildings

Sidewalks

Other

DWSD_GI_OneFootContours - 94

1

0

N

Source: Data provided by the GIS Department at OHM Advisors. OHM Advisors does not warrant the accuracy of the data and/or the map. This document is intended to depict the approximate spatial location of the mapped features within the Community and all use is strictly at the user's own risk.

Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere

Map Published: February 26, 2018

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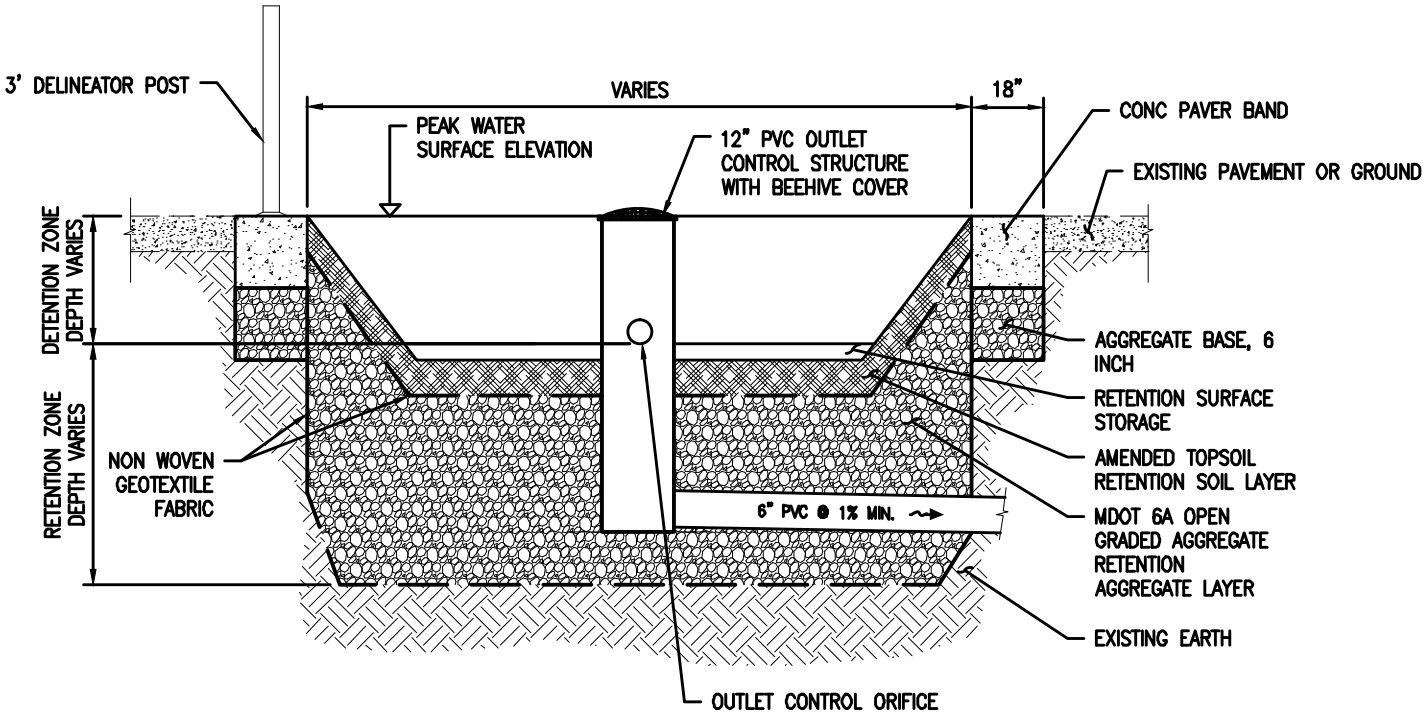

BIORETENTION WITH DETENTION DETAIL IN PAVEMENT AREAS

NOT TO SCALE

GI SITE EVALUATIONS ---	SCALE H: 1"=40' V: 1"=4'		
	SHEET --- OF Value		
CLIENT: DETROIT WATER & SEWERAGE DEPARTMENT	JOB # 005-17-0010		

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DRAWING PATH: P:\0000_0100\0051170010_GI_Site_Evaluations_(CS_1830)\Drawings\Civil\Details\170010DET.dwg Feb 05, 2018 - 11:19am

Practice 1

Bioretention/Detention

Date: 11/01/21

Last updated by: SDR

Site Address:	17360 Lahser Rd		
Site Owner:	Redford Theatre		
Site Description:	Theatre with attached parking and separate parcel with parking		
Parcel Number(s):	22005890, 22113380, 22112897, 21061902		
Total Site Area (acres):	1.87	Total Site Area (sft):	81,323
Site Impervious Area (acres):	1.81	Ex Impervious Area (sft):	78,985
Number of Practices:	4	New Impervious Area (sft)	75,752

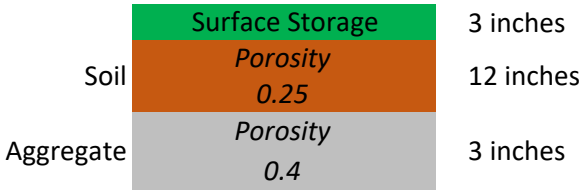
Areas		C Value	Notes
Total Proposed Drainage Area	28,818 ft^2		*drainage area 5*+6
Pavement/Sidewalk Area	24,875 ft^2	0.95	
Rooftop Area	ft^2	0.95	
Misc	ft^2		
Permenant Pavement Removal	3233 ft^2		
Pervious Area	710 ft^2		
Total Impervious Area	24,875 ft^2	0.95	
New Pervious Area	3943 ft^2	0.3	*C value based on soil type*

Retention Pond

		Notes
Practice Area (PA)	3219 ft^2	
Infiltration Rate	0.1 in/hr	
Infiltration Rate (F.S. 2)	0.1 in/hr	
Drain Time	72 hrs	
Equivalent Water Depth	7.2 in	
Retention Volume	1931 ft^3	
Equivalent Rainfall Depth	0.82 in	

Retention EWD

Equivalent Water Depth Maximum	7.2 in
Surface Storage	3 in
Soil Depth	12 in
Aggregate Depth	3 in
Calculated EWD	7.2 in



Detention Pond

List of Variables		Notes
A: Tributary area to the detention practice area	0.57 acres	
C: Combined Rational Coefficient (omit if >75% impervious)	1.00	
Q_r: Peak allowable discharge rate for the 100 year storm event	0.15 cfs/acre	

Practice 1

Bioretention/Detention

Date: 02/23/18

Last updated by: AMB

Site Address:	17360 Lahser Rd		
Site Owner:	Redford Theatre		
Site Description:	Theatre with attached parking and separate parcel with parking		
Parcel Number(s):	22005890, 22113380, 22112897, 21061902		
Total Site Area (acres):	1.87	Total Site Area (sft):	81,323
Site Impervious Area (acres):	1.81	Ex Impervious Area (sft):	78,985
Number of Practices:	4	New Impervious Area (sft)	73,490

Areas			C Value	Notes
Total Proposed Drainage Area	28,818	ft^2		*drainage area 5*+6
Pavement/Sidewalk Area	24,875	ft^2	0.95	

D: Critical Storm Duration	323.29	min
t: Recurrence interval	2	years
	100	years
I: Rainfall intensity (2 years)	0.33	in/hr
Rainfall intensity (100 years)	0.75	in/hr
V_2: Required detention volume for a 2 year event	2,410	ft^3
V_{100}: Required detention volume for a 100 year event	6,710	ft^3
$V_{provided}$	5,955	ft^3

Total volume detention + retention:

15 inches detention depth +
18 inches retention depth below

Volume Requirements:

Pre-post 2-year, 24 hour volume: 3,100 CF

Water Quality Volume = 2,402 CF

Volume Provided:

Total Volume Capacity: 5,955 CF

Retention Volume Capacity: 1,931 CF

Detention Volume Capacity: 4,024 CF