DETROIT Water & Sewerage Department
CITY OF DETROIT

Central Services Facility
6425 Huber Street
Detroit, MI 48211

Customer Care: 313-267-8000
Emergencies: 313-267-7401
detroitmi.gov/dwsd

January 30, 2019

St. Albertus Church
4231 St. Aubin
Detroit, MI 48207

Dear Mr. Robert Duda,

RE: Site Assessment/Engineering Analysis Report

Attached please find the "Engineering Analysis Report" for your site at 2050 East Canfield Street, Detroit, Michigan. This report completes the final step in the Site Assessment process. The report contains *suggested* green stormwater infrastructure practices (GSI) with possible locations, sizes, and potential credits associated with the practices. The report also includes a recommendation which is based on customer preferences, potential credit and return on investments (ROI). This analysis only offers suggestions of GSI to implement on your site and is not a final design.

We are pleased to announce that the Detroit Water and Sewerage Department (DWSD) has launched its Capital Partnership Program (CPP). This program provides up to $5 million per year to non-residential customers who partner with DWSD by installing approved GSI projects. The CPP will reimburse non-residential customers up to 50 percent of the GSI capital costs that include professional design and construction costs, up to a maximum amount of $50,000. GSI projects that are funded through the CPP will considerably improve the ROI.

We recommend that you apply for the CPP funding. Should you choose to apply, the attached engineering analysis report can be submitted with your CPP application, however, final design documents, signed and sealed by a licensed professional engineer, will be required to receive final approval.

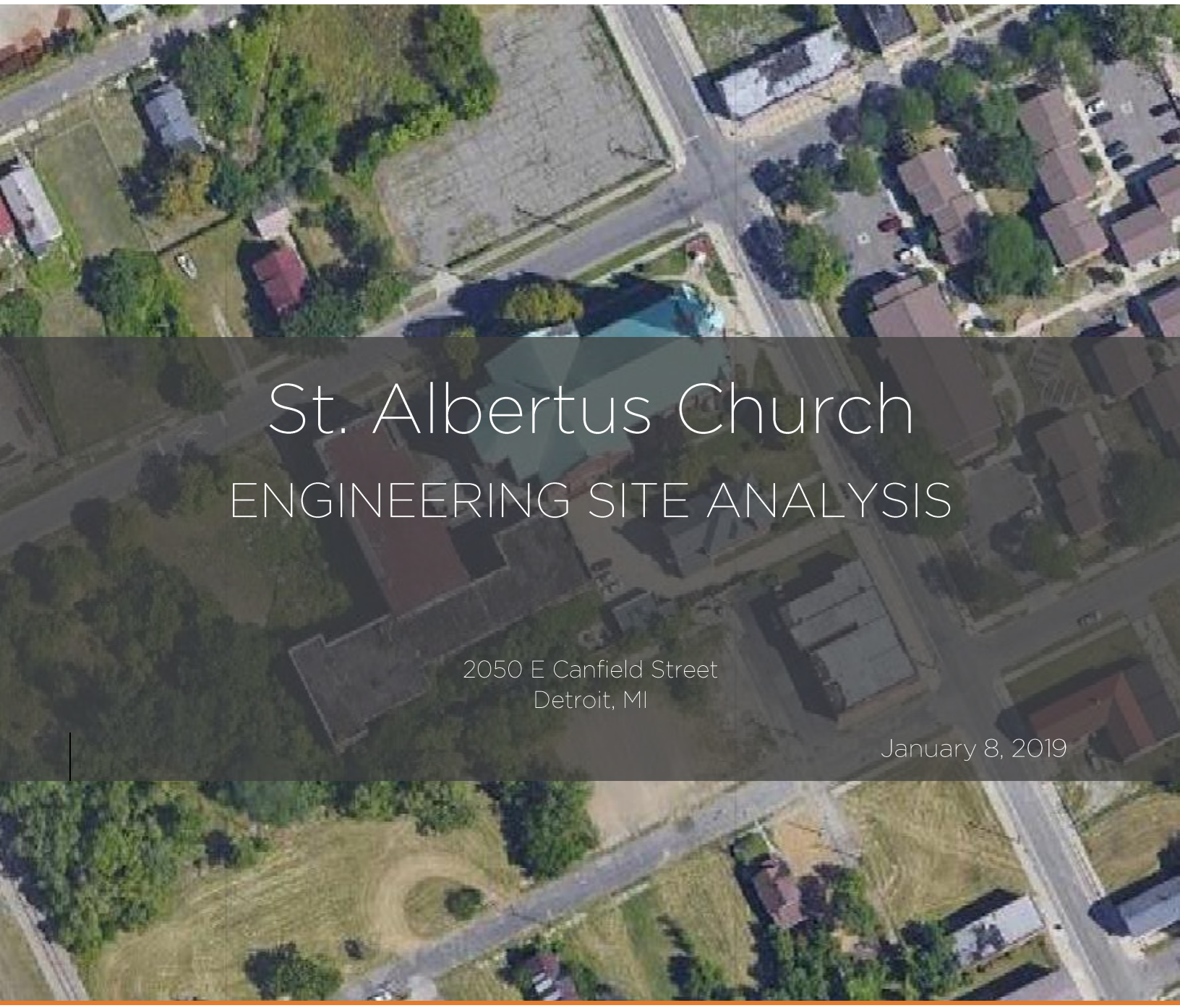
The CPP application is available online at www.detroitmi.gov/drainage and is also attached for your convenience. We have also attached a sample CPP Agreement similar to one you will be required to sign should you be selected as a partner. If you have any questions, please contact Donald Riggs at (313) 267 - 8989 or email to drainage@detroitmi.gov.

Sincerely,

Lisa Wallick, PE

Manager-Stormwater Management Group

Attachment(s): 1. Engineering Analysis Report for St. Albertus Church – 2050 East Canfield Street
2. CPP Application Form
3. Sample CPP Agreement



St. Albertus Church

ENGINEERING SITE ANALYSIS

2050 E Canfield Street
Detroit, MI

January 8, 2019

Detroit Water and Sewerage Department
735 Randolph Street
Detroit, MI 48226

Table of Contents

Analysis Prepared by:

OHM Advancing Communities®

In association with:

DRUMMOND CARPENTER engineering + research

ONYX ENTERPRISE, INC.

livingLAB: a collaborative design studio

Existing Site and Building Conditions

The Saint Albertus Church properties are located in the Forest Park neighborhood of Detroit. The properties are made up of 5 parcels, one of which (the largest parcel) houses 4 structures, the church, rectory, school building, and a garage. The second largest parcel holds the parking lot (north of Canfield). Remaining parcels are grass lots. The owner previously had a cost estimate done for potential rain gardens in their parking lot but the final cost was too high for them to implement. The specifics of the site and building are summarized in Table 1 & Table 2, respectively.

Table 1: Site Data

Site Location	West corner of Canfield and St. Aubin street
Main Site Address	2050 East Canfield Street
Parcels	09004940-2, 09004938, 09004939, 09002241-1, 09002240
Site Size	2.89 acres
Site Impervious Area[1]	2.05 acres
DWSD Monthly Drainage Rate	$598/acre impervious
Current Monthly Drainage Charge	$1,225.90/month (estimated)
Natural Resources Conservation Service (NRCS) Soil Conductivity Values[2]	0.46 inches/hour
Presence of Environmental Impairments (Noted from Michigan Department of Environmental Quality (MDEQ) Database)[3]	Known Contamination: No Leaking Underground Storage Tank (Active): No Leaking Underground Storage Tank (Closed): No Underground Storage Tank (Active): No Underground Storage Tank (Closed): No

Table 2: Building Conditions

Number of Structures	Four (4)
Internal/External Roof Drainage	External
Finished or Unfinished Ceiling / Rafters	Finished

Site Interview Findings

The Project Team met with property owner's representatives and reviewed a standard questionnaire (see Appendix A for the meeting summary). Existing site conditions and overall project goals were discussed with the property representatives. A summary of this meeting can be seen in Table 3.

[1] See Appendix D
[2] See Appendix I
[3] See Appendix C

Table 3: Property Representatives Interview Summary

Site	The parking lot north of Canfield provides enough spaces to meet the needs of the church. The lot is only used once in a while, mass is held once a month and they need 60 to 70 spaces. There is no excess pavement that can be removed. The driveway off St Aubin behind the rectory gets the most regular use, three people live there and 10 spaces are needed in this lot. The lawn areas on site are rarely used; picnics and festivals are hosted there a few times per year. The school building is currently not being used the owner would like to sell but the previous owner was the Catholic Archdiocese, and this is causing come complications. The only plans they have for the site are stormwater retrofits.
Building	All of the buildings on this property, except for the garage, have a basement. Roof runoff is managed externally, through some connected downspouts and some disconnected downspouts. The owner has indicated that the school's downspouts and gutters have all been removed. The back portion of the school has a flat roof.
Infrastructure	Previously there was a school building standing in what is now a parking lot, the owner is not sure if the old foundation is still in place there or for the current buildings. There is an underground boiler tunnel between the church and school. Age of infrastructure on site was not given.
Design Options	The owner is familiar with green infrastructure and is interested in permeable pavers behind the rectory, and rain gardens. They have no upcoming plans to resurface any part of the site. At the rectory, there is a rain barrel that has yet to be hooked up to a downspout. Ponding would only be acceptable in rain garden areas. There may be an opportunity to share a practice with the neighboring produce company Joseph Frontera & Sons Inc., but whether or not they are interested in GSI is unknown.
Maintenance	All landscape maintenance is performed by volunteers, as the owner does not have a contractor. As practices are installed, volunteers will continue to work to offset the cost.
Property Owner Goals	The property owner's main goal is to reduce their bill. The church is currently run as a non-profit so there is concern over the capital cost of implementing new stormwater practices. The owner would like to know how much money can be saved by tearing down the old school versus building green infrastructure around it. Their ideal green infrastructure can be described as a beautiful showcase example.

Field Investigations Findings

The engineering investigation revealed the following key findings:

1. The downspouts are external; some are disconnected and a few are still connected. On the abandoned school building, some of the downspouts appear to be missing and some appear attached.
2. There is a catch basin in the rectory parking lot, though the owners report it is currently clogged. This could be retrofitted to direct runoff to a practice.
3. There is an underground boiler tunnel between the abandoned school building and the church building; GSI cannot be placed there. However, pavement between this tunnel and E Canfield St could be removed to make room for a detention/retention practice.

4. There is a catch basin in the church-owned parking lot across the street from the church. This catch basin could be retrofitted as a detention/retention practice.

Photographs documenting these conditions can be found in Appendix B.

Analysis and Approach

The subsequent sections of the report include narratives and technical detailing from a preliminary engineering analysis that has been performed for the project site. The engineering analysis was completed with the following objectives:

- Provide the greatest possible site drainage charge credit while obtaining a reasonable return on investment for the owner.
- Propose green stormwater infrastructure (GSI) that can be maintained by the property owner or volunteers.
- Remove unnecessary pavement to reduce overall site runoff.
- Utilize GSI practices in a manner which complements existing uses of the property and does not hinder future uses as defined by the current property owner.

The analysis detailed in the report have been created from GIS topography, field located downspouts, catch basins and manholes, as well as observed drainage patterns. The analysis also assumes soil infiltration rates from the most recent NRCS Web Soil Survey Data for the project. The site alterations and storm water practices detailed in this report represent a preliminary, conceptual engineering solution and are not intended as construction drawings.

Probable Cost of Construction and Maintenance

The cost estimates provided in this report are based on the project team's opinion of probable costs, which has been derived from similar projects completed in recent years. Construction estimates are intended to reflect costs for a property owner to secure a private contractor to construct the proposed improvements.

Similarly, maintenance costs for the GSI practices are based on typical values from best practice studies, which generally include contractor-performed maintenance. It should be noted that certain practices may require less frequent maintenance and in some cases, maintenance that can be self-performed by the property owner thereby reducing the cost and shortening the return on investment.

The property owner shall be aware that actual design, construction, and maintenance costs will affect the term for return on investment. Further, field conditions (ground elevations, presence of utilities, contaminated soils, and other unforeseen conditions) may affect the final number of credits for which the proposed GSI practices are eligible.

Recommendations

The first step in this analysis was to screen each of the potential GSI practices and determine which were the most suitable for implementation on the site. Table 4 highlights the screening process adopted by the team. It shows all of the practices considered, indicates whether each practice is proposed or not, and briefly comments on the rationale behind each decision.

Table 4: GSI Options Screening

GSI Practice	*Proposed?*	*Rationale*
Bioretention	Yes	This option is most frequently considered when a nearby connection to the sewer is not present. This is most appropriate for one area of the site.
Bioretention w/ Detention	Yes	Three bioretention with detention practices are proposed on site.
Cisterns	No	Cisterns were considered in the development of this report, however other options provided greater credit.
Disconnected Downspouts	No	While this site does have adequate greenspace to institute this practice, other practices present more credit.
Disconnected Impervious	Yes	While this site does have adequate greenspace to institute this practice, other practices present an opportunity to obtain more credit on most of the site. Disconnected impervious is recommended for a portion of the abandoned school building, as additional investment would be minimal.
Porous Pavers	No	While this practice was considered in the development of this report, there is adequate open space to institute other surface practices.
Remove Impervious Area	Yes	There are portions of impervious area throughout the site that can be removed.
Underground Detention	No	There exists an adequate amount of greenspace to create more efficient GSI.

For this project, four techniques were developed for this site with two goals in mind; to provide a reasonable return on investment, while obtaining the highest amount of credits possible (rate charge of $598 per impervious acre per month assumed). Several types of GSI have been proposed, including bioretention with detention practices, bioretention, disconnected impervious, and removal of impervious area (this last option, though not technically a GSI practice, will lower the drainage charge). Overall credits and costs can be seen in Table 5 and Table 6, respectively. The proposed techniques are described below:

1. Impervious Area Removal

During the site investigation, it was noted that 60 – 70 parking spaces are needed in the parking lot. Removing some impervious area for implementation of a GSI practice still left space for 60 parking spaces plus an edge of parking lot that could be removed for additional savings, or used for an additional 8-10 short parking spaces. It was also noted that some of the impervious area

between the church building and the abandoned school building is not needed for parking and could be removed and replaced with a GSI practice.

2. Bioretention with Detention

Four areas of the site can be utilized for stormwater detention (peak flow reduction) and retention (volume reduction). This technique is illustrated in Figure 1. The proposed improvement will include between 18 and 30 inches of detention ponding followed by a layer of amended soil (topsoil, sand and compost) placed atop open graded stone[4]. The detention storage will hold water for up to 24 hours after a rain event while the amended soil and open graded stone layers below the restricted outlet will drain within 72 hours. The area can be restored with water tolerant native seed mixes and plug plantings.

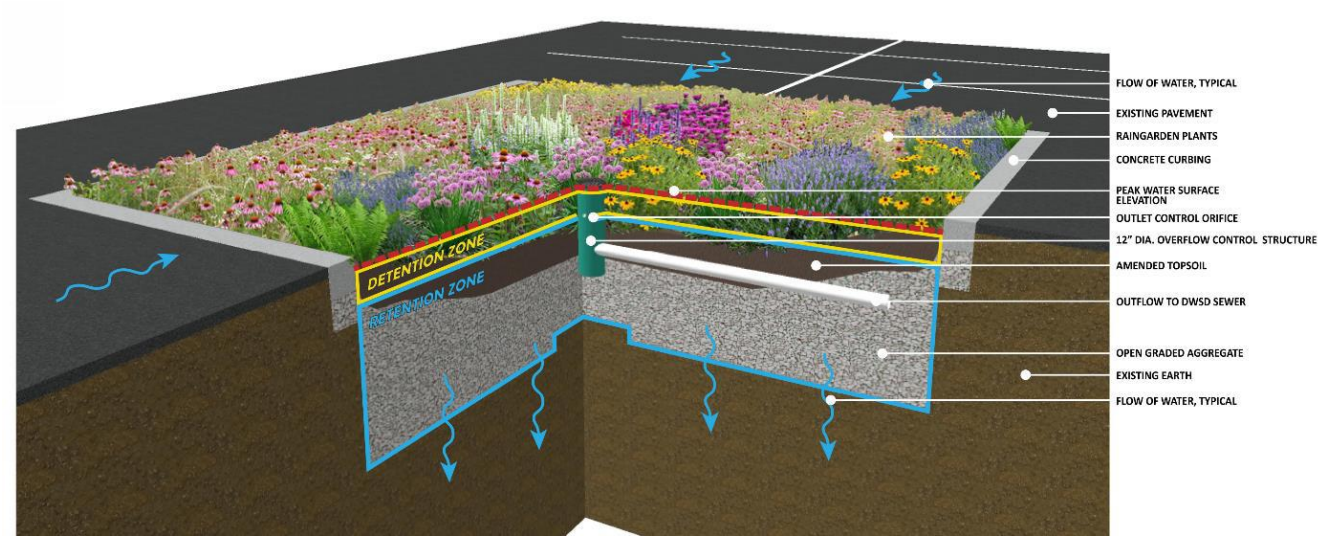


Figure 1: Bioretention with Detention

Proposed Practice 1 is located in the middle of the parking lot parcel north on the northwest corner of Canfield and St Aubin St. It will intercept the runoff from the entire parking lot. Once within Practice 1, stormwater will discharge at a restricted rate to the DWSD sewer through the existing catch basin. Prior to implementation, it should be verified whether the catch basin in the parking lot connects to the DWSD sewer in the alley or in E Canfield St. If the catch basin connects to the alley, the GSI practice may need to be re-oriented and some of the parking spaces reconfigured.

Proposed Practice 2 is located in the west side of the main parcel, between the church and the abandoned school building. This practice will collect runoff from two quadrants of the church building roof, the remaining hard surface between the church building and the abandoned school, and the portion of the abandoned school building roof slanted toward the practice. Once within Practice 2, stormwater will discharge at a restricted rate to an existing DWSD sewer extending from under the abandoned school building to the road sewer. Downspouts from the back half of the church building should be redirected or disconnected and directed as needed to flow toward Practice 2.

[4]See Appendix F for details

Proposed Practice 4 is located on the lawn between the church and rectory. It will collect runoff from the southwest quadrant of the church roof; the northwest half of the rectory roof; the sidewalk in the yard; and the parking lot behind the rectory. As currently proposed, the statue in the lawn would need to be relocated, or perhaps be incorporated into a bioretention/detention basin in an artful manner. The practice is proposed to be connected to the existing catch basin in the rectory parking lot by a pipe directing flow to the practice until it is full, then backing up and spilling over a proposed weir in the catch basin and into the DWSD sewer through the existing connection. The catch basin and connection to the sewer should be cleaned to allow appropriate flow, as currently it is clogged. Downspouts on the southeast quadrant of the church building and the northwest half of the rectory should be redirected or disconnected and directed toward Practice 4.

3. Bioretention

One practice proposed on-site is not suitable for detention storage, and thus, will only provide stormwater retention credit. This practice will include a retention layer that consists of a layer of amended soil (topsoil, sand, and compost) placed above open graded stone. The retention layer will infiltrate surface water over a 24-hour period. The subsurface portions of the practices will be fully drained within 72 hours. These areas can be restored with water tolerant native seed mixed and plug plantings.

Proposed Practice 3 is located in the northwest corner of the church parcel. It will collect runoff primarily from the north quadrant of the church building and from some of the sidewalk on this side of the church building. Downspouts from the northeast quadrant of the church building should be redirected or disconnected and directed toward Practice 3. Practice 3 should be constructed so that when it fills up and overflows, it overland flows across the sidewalk to the road, where it will flow to the catch basins in the road.

4. Disconnected Impervious

The south wing of the abandoned school building appears to drain toward the woods behind it. Additional investigation should be done to verify this disconnection, as there could be abandoned manholes or catch basins hidden in the brush. However, there appears to be a wall along the front property line; if this is a solid wall and extends along the back of the school as well, it would hinder runoff from reaching manholes or catch basins on the other side of the wall. Finally, it would be good to verify that the roof is indeed preventing most or all of the rain from entering the building and sewer drains in the basement.

For more details on these practices, please refer to the Proposed Drainage Plan in Appendix F.

Proposed Credits

Table 5 provides an overview of the credit for the practices proposed on this site. The three types of practice proposed on this site are bioretention with detention, bioretention, and disconnected impervious. The total site credit generated by these practices represent the percentage by which the drainage charge will be reduced. Some auxiliary pavement removal has been recommended for the site. More detailed credit calculation for the practice can be found in Appendix G.

Table 5: Overall Credit Summary

Total Site Credit	47.8%

Impervious Area (sft):	89298	Estimated Current Payment (per month):	$1,225.90
Impervious Area Removal (sft):	6968	Est. Prop Payment w/ Imp Removal (per month):	$1,130.24
New Impervious Area (sft):	82330	Est Prop. Payment w/ Credit (per month):	$671.29

Practice Credit Summary

Practice	Impervious Area (sft)	Credit Calculation Method	Volume Credit	Peak Flow Credit	Practice Credit	Site Credit
Practice 1	22039	Bioretention/Detention	98.7%	90.4%	75.6%	20.2%
Practice 2	15706	Bioretention/Detention	86.1%	54.4%	56.2%	10.7%
Practice 3	6328	Bioretention	95.3%		38.1%	2.9%
Practice 4	14702	Bioretention/Detention	95.3%	49.7%	58.0%	10.4%
Practice 5	11536	Disconnected Impervious	62.9%		25.1%	3.5%

Cost Estimates and Return on Investment

Table 6 provides an overview of the estimated cost of the practice followed by the annual reduction in drainage charges. The individual practice and overall return on investment period of the practices is also included in the table. For an item by item breakdown of costs, see Appendix H.

Table 6: Summary of Cost and Return on Investment

Estimated Annual Charge (per year):	$ 14,710.80	FY Drainage Charge Assumed (per impervious acre per month):	$ 598.00

PRACTICE	COST	SAVINGS PER YEAR	ROI * (YEARS)
Practice 1 - Bioretention/Detention	$ 52,239.58	$ 2,883.17	18.1
Practice 2 - Bioretention/Detention	$ 21,642.88	$ 1,804.24	12.0
Practice 3 - Bioretention	$ 6,410.20	$ 337.02	19.0
Practice 4 - Bioretention/Detention	$ 24,662.31	$ 1,153.50	21.4
Practice 5 - Disconnected Impervious	$ 375.00	$ 477.41	0.8
CONSTRUCTION COST:	**$ 105,329.98**		

	Contracted Maintenance	Self Performed Maintenance
ANNUAL MAINTENANCE COST:	$ 964.76	$ -
SAVINGS PER YEAR:	**$ 6,655.35**	**$ 7,620.11**
ROI (YEARS):	22	19
NET PRESENT VALUE:	$ 735.85	$ 3,819.01

*Final calculated ROI does factor in inflation, whereas the individual practice ROI's do not.

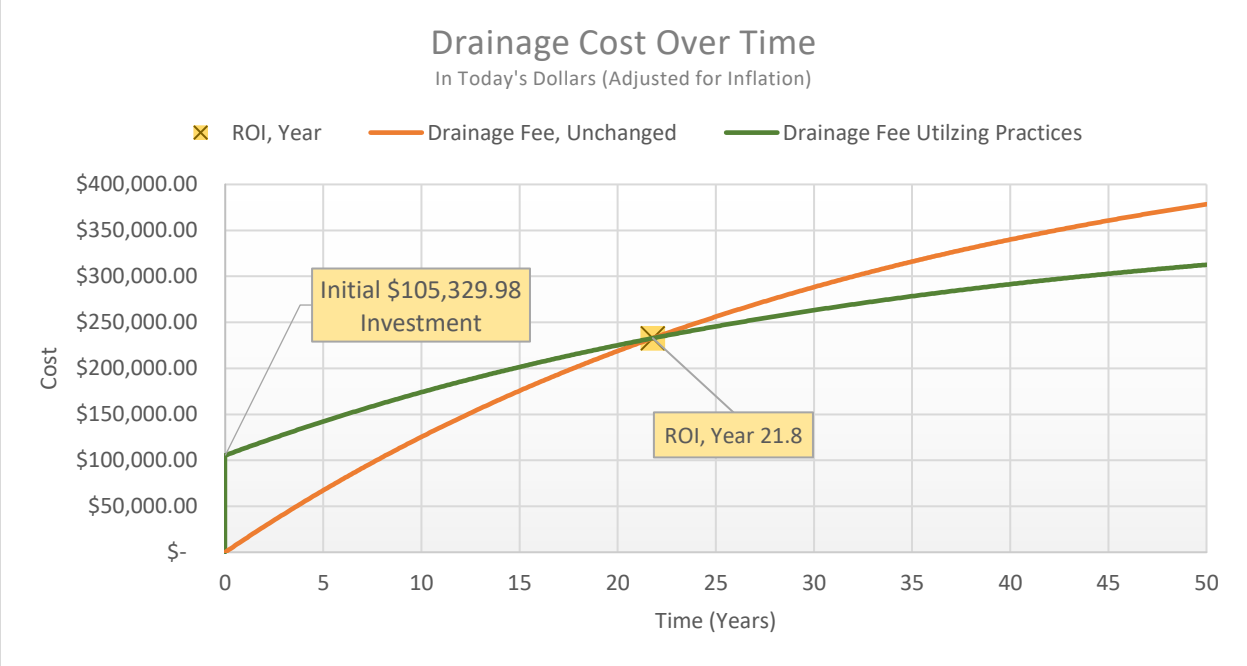


Figure 2: Drainage Cost Over Time

Note: Actual costs, ROI & NPV will vary based on actual design, owner preference and construction costs

Return-on-Investment and Net Present Value

Return on Investment (ROI) is a value representing the number of years it will take to receive a return (i.e., pay back) on the original construction cost. Figure 2 graphically represents the ROI showing the accumulated cost from the drainage charge over time for two scenarios:

- If no green infrastructure is installed and the drainage fee remains unchanged
- If all practices proposed in this analysis are installed.

The ROI occurs when these two lines cross. The separation between these two lines at any given point represents the savings possible by implementing GSI.

Net Present Value (NPV) is a tool to determine whether an investment will result in a net profit or a loss. A positive NPV represents profit over a set period of time and a negative NPV would represent a loss. The NPV is a measurement of "profit" (in the form of a drainage credit) calculated by subtracting the present values of cash outflow (including initial cost and maintenance) from the present values of cash inflow over a period of time. It compares the present value of money today to the present value of money in the future, taking 3% inflation into account for all returns.

After the cash flow for a set period of time is calculated, the present value of each one is achieved by discounting its future value at a periodic rate of return. Finally, the NPV is the sum of all the discounted future cash flows.

Table 6 includes the NPV both for scenarios where maintenance is performed contractually and where maintenance is self-performed at the point at which a return on investment (ROI) is achieved. These values represent the "profit" realized at the end of year by implementing the recommended practices.

Other Considerations

1. Abandoned School Building

The abandoned school building on the west side of the site has not been used in several years. If this building were to be demolished and replaced with pervious soil, there would be a significant drainage charge reduction. With the current drainage charge of $598 per impervious acre per month, and the 20,053 square feet of the abandoned school building, removing this impervious area would lead to a direct reduction of approximately $275.29 per month, or $3,303.50 annually.

2. Practice 3 Possibilities

Practice 3 is proposed as a Bioretention practice rather than a Bioretention/Detention combination. This decision was made due to the distance to the DWSD sewer in the opposite lane of the street and the added cost of tapping that pipe. However, if more credit is desired, detention could be added with an outlet to the DWSD sewer in E Canfield St.

3. Rain Barrel at Rectory

The property owner reported that there is a rain barrel at the rectory but it is not connected. There is potential for cisterns or additional rain barrels to be added for detention credit. To receive peak flow credit, approximately 22 more standard 55-gallon rain barrels would be needed, or larger cisterns. Of course, rain barrels can still be helpful for collecting rain to use for garden or lawn irrigation even if they do not result in credits.

4. Integrate GSI with Neighboring Property

There may be an opportunity for a shared GSI practice on the southeast edge of the property, south of the rectory driveway, in the side yard of Joseph Frontera & Son. A practice in this location could serve the building of Joseph Frontera & Son as well as the driveway and portion of the roof of the rectory and provide additional credit for both property owners.

Implementation

1. Design

The solutions detailed within this report represent a conceptual engineered solution capable of obtaining the projected monthly drainage credits. The document is based off of as-built plans, GPS survey information, photographs and aerial survey data. To construct these improvements, the property owner is required to contract a licensed engineer to develop construction drawings for permits. As part of this, in situ site soil testing is encouraged to obtain an actual infiltration rate for design.

2. Permits

Permits will be required from Building, Safety Engineering and Environmental Department for proposed modifications to the plumbing (roof drainage) and for any site alterations.

3. DWSD Credit Application

The property owner shall complete a Drainage Credit Application once design is completed. The current form can be accessed at www.detroitmi.gov/drainage. This form captures applicant's final practice sizing as well as projected credits for this site.

4. Capital Partnership Program Assistance

The Capital Partnership Program provides an opportunity for non-residential property owners to receive funds to cover 50% of the funds required for the implementation of approved GSI (subject to DWSD discretion). Applicable costs include design, installation and capital costs up to a maximum of $50,000. The current form can be accessed at www.detroitmi.gov/drainage. The following table shows the values specific to this analysis that are required for this document:

PRACTICE	TYPE OF GSI TECHNOLOGY	TOTAL IMPERVIOUS TRIBUTARY AREA (SFT)	TOTAL PROPOSED VOLUME MANAGED (CFT)	TOTAL PRACTICE COST/ TOTAL PROPOSED VOLUME MANAGED ($/gal)	TOTAL PRACTICE COST	ANNUAL MAINTENANCE COST
Practice 1	Detention Systems with Infiltration	22,039	8,888	$ 0.79	$ 52,239.58	$ 486.00
Practice 2	Detention Systems with Infiltration	15,706	3,423	$ 0.77	$ 19,642.88	$ 165.42
Practice 3	Rain Garden/Infiltration System	6,328	704	$ 1.22	$ 6,410.20	$ 56.30
Practice 4	Detention Systems with Infiltration	14,702	3,772	$ 0.87	$ 24,662.31	$ 257.04
Practice 5	Other	11,536	388	$ 0.13	$ 375.00	$ -

5. Construction

Construction of the proposed improvements should be performed by contractors familiar with the installation of green stormwater infrastructure. The property owner is encouraged to consult the DWSD starter guides located at www.detroitmi.gov/drainage for additional information on selecting a contractor and considerations for construction of specific practices.

DWSD must be contacted during construction to ensure that practices are constructed consistent with the approved design plans.

6. Maintenance

As part of final design, a maintenance plan shall be developed for the proposed GSI improvements. The maintenance plan shall conform to the aforementioned current DWSD guidance documents. The property owner needs to keep records of inspection and maintenance activities because the property owner must apply to renew credits every three (3) years. During the re-application process, maintenance records will be requested and reviewed by DWSD.

Appendices

APPENDIX A

Property Owner Interview Summary

Detroit Water and Sewerage Department

Engineering and Design Services
for Stormwater Management Practices
Property Owner Meeting Questionnaire

Property: St Albertus Church Date: 11/20/18

SUMMARY

The following questionnaire is intended to assist the field teams in collecting consistent information on sites to be reviewed as part of Engineering and Design Services for Stormwater Management Practices. The questions are designed to help obtain information about the property owner's current operations and future visions for the property. The questions also attempt to ascertain the property owner's knowledge of green infrastructure, their willingness to commit land to its implementation and their personal preferences for landscaping treatments. Responses will be logged during on site meetings and included as an appendix to the final report.

INTRODUCTION TO GREEN INFRASTRUCTURE PROJECTS

1. What would best describe a successful project for you?
   Reduce bill. Church was closed in 1990 and has been operating as a secular non-profit ever since. Holds mass 1x/month. Worried most about capital costs – have already had a cost estimate done for a rain garden in the parking lot across the street, but the costs were too high for the church to move forward with implementation.

2. Do you have any excess pavement that can be removed?
   No – need the parking lot capacity, but only use it once in awhile. Need 60-70 spaces.

3. How familiar are you with green infrastructure? *Pretty familiar – city planner*
   - Rain gardens *Yes*
   - Permeable pavers *Possibly behind rectory*
     Plans to resurface? *No*
     Pavement cross section? *Unknown*
   - Green Roofs *No*
     Can building support the weight?
     Plans to replace the existing roof?
     Benefits other than stormwater?
   - Cisterns (above/below ground) *Have a rain barrel on site that hasn't been hooked up yet – at rectory downspout*
     Is below-ground expense justified by the site constraints? *No*
     Opportunities for gray water reuse? *No*
     Any gardening or irrigation areas? *No*

4. Assuming the same drainage credits, which description of green infrastructure fits with your goals?
   Beautiful showcase example
   a. Beautiful showcase example
   b. Low maintenance
   c. Out-of-the-way
   d. Invisible
   e. Unique & creative

SITE CONSTRAINTS

5. Where are your areas of highest use? How are these areas used? *Driveway to parking lot on church parcel – 3 people live here, need 10 spaces in this lot*

6. Where are your areas of lowest use? Is any of this area paved? *Lawn areas – used for picnics and festivals, but only several times per year. The school is vacant & the church is trying to sell it but there are some complications because it used to be owned by the Catholic Archdiocese*

7. Do you have any plans for expansion or site alterations proposed in any of these areas? *No, only stormwater retrofits. Would like to know how much they would save on their bill by tearing down the school versus building green infrastructure around the school.*

8. Would you be willing to give up any of these high use spaces for a larger drainage credit? *Possibly*

9. Is off-site or alternative parking available? *Not sure if street parking is legal, currently use the lot only*

10. Is there anywhere on your site where ponding would be acceptable?
    -Parking areas/Permeable paver areas *No*
    -Grass/lawn areas *No*
    -Sidewalks *No*
    -Rain garden areas *Yes*

11. Are you aware of any underground obstructions on your site? *Not really – have been different buildings – unsure if foundations are still in place. Used to be a school on the parking lot.*
    -existing foundations
    -tanks
    -utilities

12. Are there any opportunities for shared green infrastructure practices? *Possibly the produce company? A trench drain at the end of the parking lot could drain to a shared practice with the produce company. The church has a good relationship, with the produce company, but unsure if they are interested in GSI*

SITE CONDITIONS

13. How is roof runoff managed?
    - Interior/exterior *Church, rectory, and school all, external. School's gutters and downspouts have all been scrapped.*
    - Connected/disconnected *Some connected, some disconnected*

14. Does the building have a basement? *Yes, all 3 buildings have a basement*

15. Are there any existing drainage issues on your site? *Drain clogged – not connected in parking lot on church/rectory parcel*

16. How does circulation work on your site?
    -pedestrian *Off St Aubin into parking lot*
    -parking
    -entry *Off St Aubin*
    -exit

17. Would you be open to re-routing any circulation if you would receive a larger credit? *Possibly in parking lot across the street*

MAINTENANCE

18. Do you have a landscape contractor? *No*
    -What services do they provide?
    DISCUSSION OF GSI MAINTENANCE REQUIREMENTS
    -How often do they come?
    -How much do you pay for that service?
    -What is an acceptable additional cost for maintenance of new green infrastructure?
    -Do you have any social capital or volunteer opportunities that could help offset these costs? *Yes, all landscaping currently done by volunteers*

NEXT STEPS

19. Report contents
    -Design including lowest cost/highest credit option for your site
    -Estimated construction costs
    -Estimated Drainage Credit
    -Estimated ROI – Is there a ROI timeframe that you already have in mind?
20. CPP 50/50 Match Grant

Detroit Water and Sewerage Department

Engineering and Design Services
for Stormwater Management Practices

Property Owner Meeting Sign In Sheet

Property: St Albertus Church **Date:** 11/20/18 **Time:** 10:30 AM

Job No: 170 **Location:** 2050 E Canfield

Name	Title	Company	Phone	E-Mail
LAUREN HOFFMAN	landscape architect	livingLAB	313 974 7602	lauren@livingLABdetroit.com
Matthew Baka	Pres:dent	Polish American Historic Site Assc	248 321 9241	albertus1884@gmail.com
WADE ROSE	WRS	OHM	248 291 4573	wade.rose@ohm-advisors.com

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In association with: livingLAB, UNVX, DRUMMOND CARPENTER engineering + research

APPENDIX B

Site Photographs

Image 1: The church-owned parking lot across from the church building. Practice 1 is proposed surrounding the existing catch basin in the center of the lot, to intercept runoff form the parking lot.

Image 2: The west side of the abandoned school building. Some downspouts appear to be missing (such as the one in the foreground) and some still look connected (background). The runoff from this portion of the building would be directed to proposed Practice 2.

Image 3: The church building from the north corner of the church building property, looking down E Canfield Street. Practice 3 is proposed between the fence and the church building and would intercept runoff from the visible portions of the church roof.

Image 4: Looking away from the church property past E Canfield St side of the abandoned church building. Some pavement removal is recommended here between the sidewalk and the steps of the building.

Image 5: The southeast side of the church has several downspouts; some are disconnected and some may be connected. These would be directed to proposed Practice 4.

Image 6: View into the back of the abandoned school building. The garage is on the left, other structures in the background. Practice 5 proposes the south half of the abandoned school building as disconnected impervious due to the impervious area behind it.

Image 7: Disconnected downspouts and connected downspouts are both found on the property, as shown here on the rectory. If a shared practice was implemented with Joseph Frontera & Son, it could be located to the right of the pictured driveway.

APPENDIX C

Environmental Impairments GIS Map

Manhole

Gravity Main

Parcels

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: October 26, 2018

OHM

APPENDIX D

Existing Impervious GIS Map

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: October 26, 2018

APPENDIX E

Existing Conditions Plan

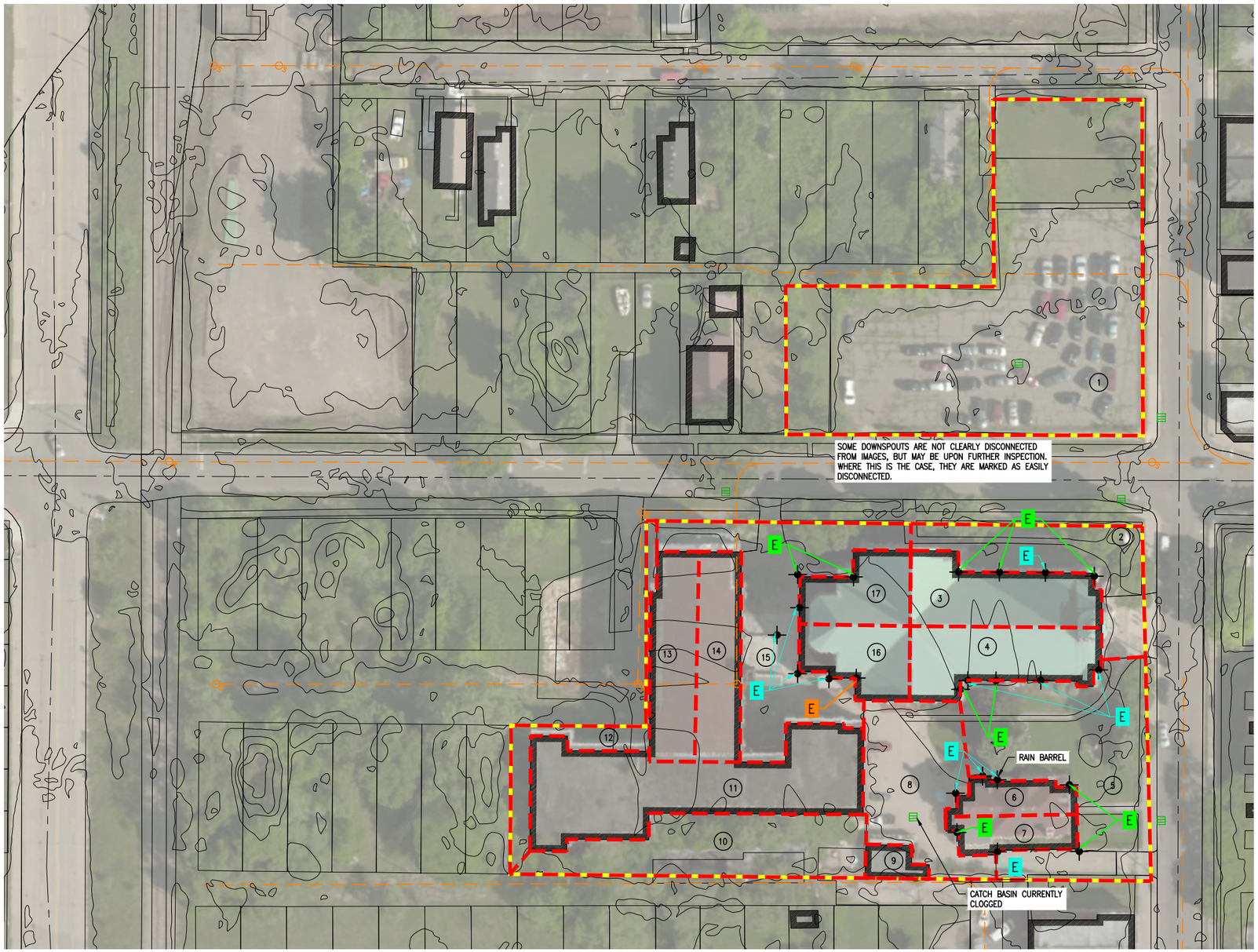
ST ALBERTUS CHURCH
2050 E CANFIELD
EXISTING CONDITIONS

DEQUINDRE ST

ST AUBIN ST

ST ALBERTUS PL

E CANFIELD AVE



GRAPHIC SCALE: 1 Inch = 40 feet
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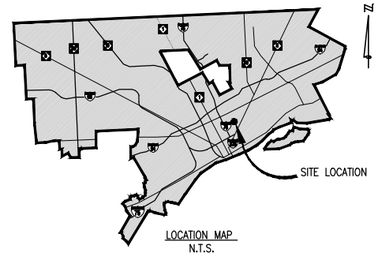

LOCATION MAP
N.T.S.

EXISTING DRAINAGE AREA SUMMARY		
DRAINAGE AREA	DRAINAGE AREA (SFT)	IMPERVIOUS AREA (SFT)
1	36570	25880
2	6192	2423
3	5119	5119
4	5128	5128
5	12876	3690
6	1819	1819
7	2013	2013
8	7322	5884
9	807	807
10	8003	1986
11	11546	11546
12	2878	195
13	4339	4339
14	4168	4168
15	10652	8451
16	3124	3124
17	3110	3110
Total (sft.)	125686	89662
Total (acres)	2.88	2.05

DOWNSPOUT DISCONNECTION LEGEND				
	EASY	MODERATE	DIFFICULT	DISCONNECTED
EXTERNAL	E	E	E	E
INTERNAL	I	I	I	I

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
2050 E CANFIELD - EXISTING CONDITIONS

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE	HORZ DATUM	VERT DATUM
12/2019	005-172013	HDS	PMD	ALL	WAYNE	CITY OF DETROIT	H: 1" = 40'	Wiha	Wiha

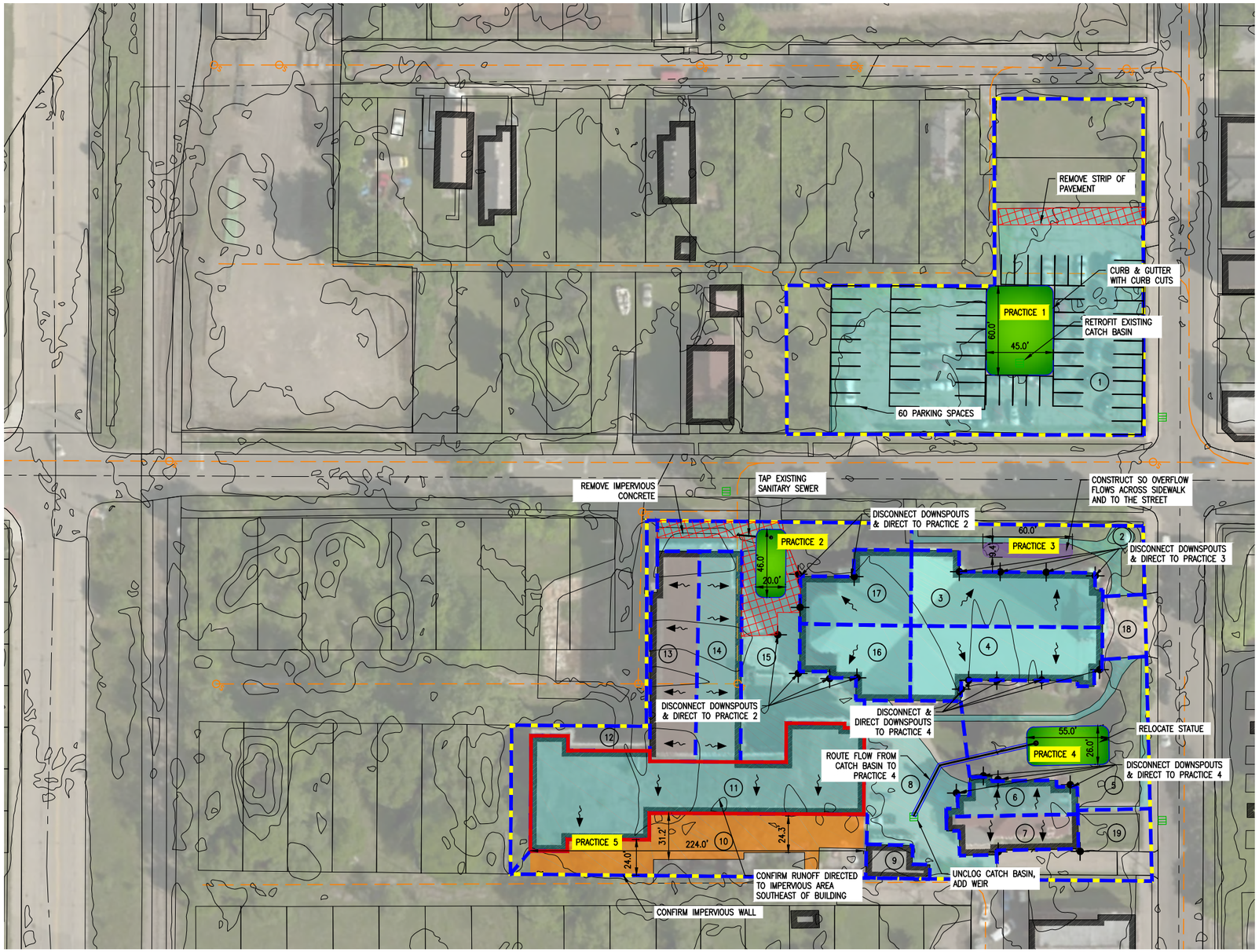
APPENDIX F

Proposed Site Drainage Plan and Standard Details

ST ALBERTUS CHURCH
2050 E CANFIELD
PROPOSED PRACTICES

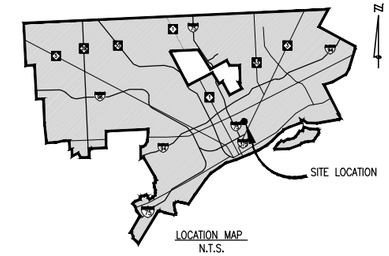
DEQUINDRE ST

ST AUBIN ST



ST ALBERTUS PL

E CANFIELD AVE



LOCATION MAP
N.T.S.

PROPOSED DRAINAGE AREA SUMMARY		
DRAINAGE AREA	DRAINAGE AREA (SFT)	IMPERVIOUS AREA (SFT)
1	36570	25860
2	4979	1209
3	5119	5119
4	5128	5128
5	9724	1562
6	1819	1819
7	2013	2013
8	7322	5884
9	807	807
10	8003	1986
11	11546	11546
12	2878	195
13	4339	4339
14	4168	4168
15	10652	5949
16	3124	3124
17	3110	3110
18	1213	1213
19	3152	2128
Total (sft.)	125866	87159
Total (acres)	2.88	2.00

LEGEND

- BIORETENTION
- DISCONNECTED IMPERVIOUS INFILTRATION AREA
- DISCONNECTED IMPERVIOUS
- BIORETENTION/DETENTION
- PAVEMENT REMOVAL
- AREA MANAGED
- STORM CATCH BASIN
- DOWNSPOUT
- PRACTICE NUMBER (PRACTICE #)
- DRAINAGE AREA NUMBER (X)
- DRAINAGE BOUNDARY
- ELEVATION CONTOUR (622)
- RUNOFF FLOW PATH

GRAPHIC SCALE: 1 Inch = 40 feet
0 20 40 80 120

Know what's below. Call before you dig.

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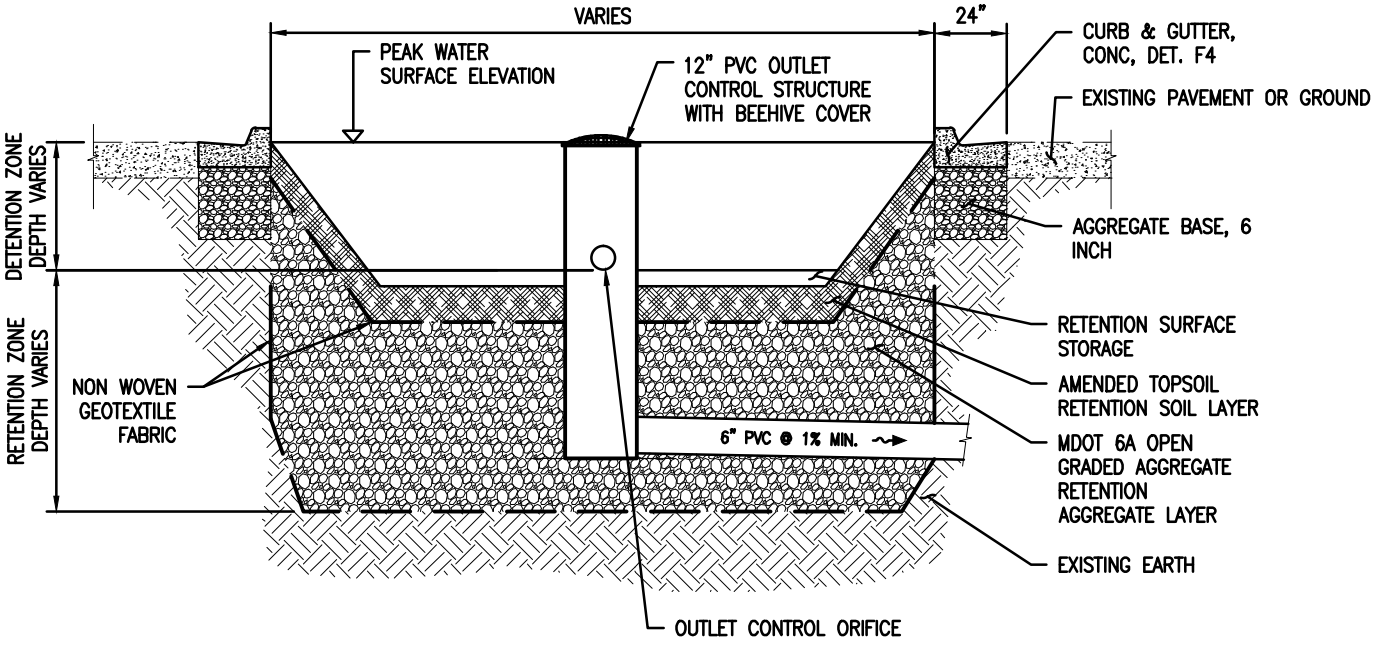
REVISIONS

DATE	PROJ.NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE	HORZ DATUM	VERT DATUM
1/2/2019	0005-17-0010	HES	PMD	ALL	WAYNE	CITY OF DETROIT	H: 1" = 40' V:	Wake	Vake

DETROIT WATER & SEWERAGE DEPARTMENT
GI SITE EVALUATIONS

2050 E CANFIELD - PROPOSED PRACTICES

DRAWING PATH: P:\0000_0100\0051\170\10_GI_Site_Evaluations_(CS_1830)_Civil Sites Batch 10 (September 2018)\170 - St Albertus Church - 2050 E. Canfield\CAD\2050_E_CANFIELD_recover.dwg Jan 08, 2019 - 1:35pm



BIORETENTION WITH DETENTION DETAIL IN PAVEMENT AREAS

NOT TO SCALE

GI SITE EVALUATIONS

SCALE H: 1"=40' V: 1"=4'

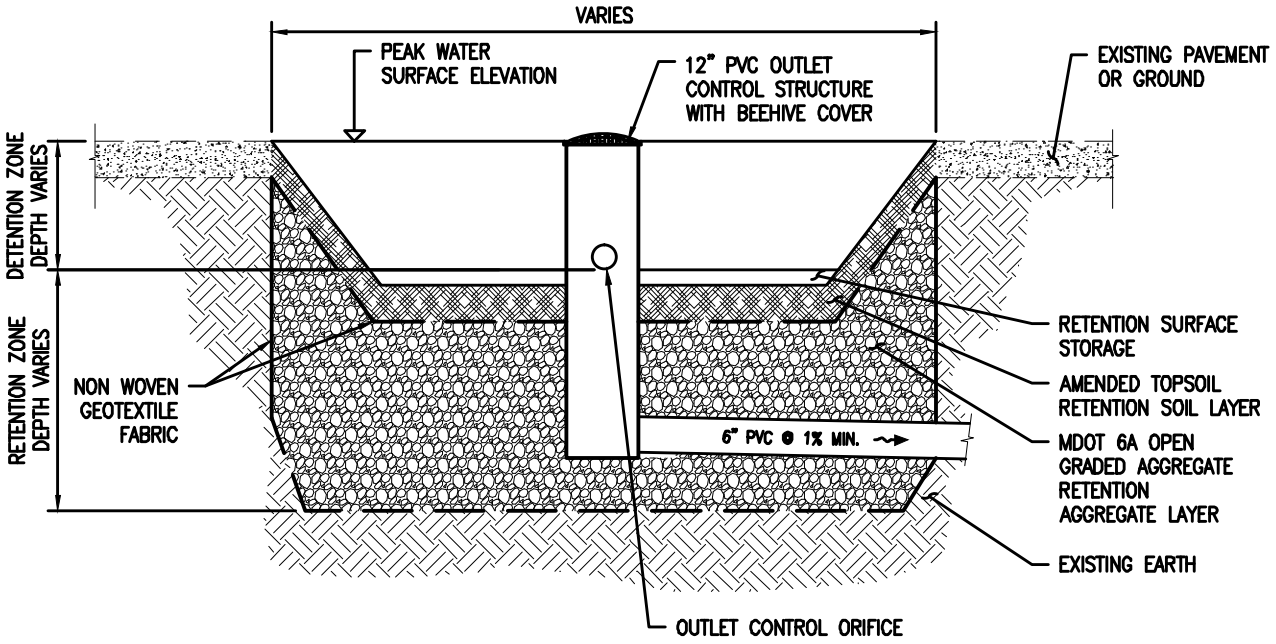
SHEET

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 Aug 23, 2018 - 1:25pm



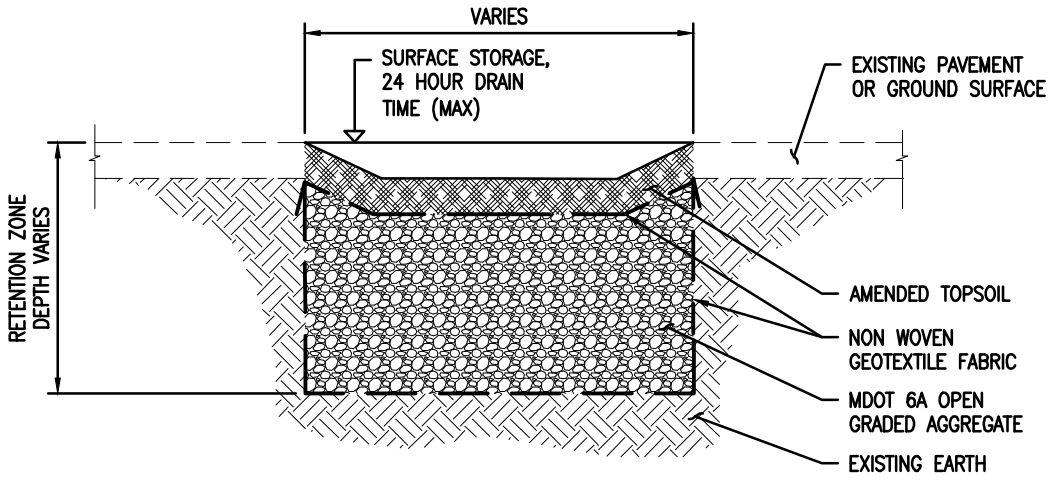
BIORETENTION WITH DETENTION DETAIL FOR GREENBELT AREAS

NOT TO SCALE

GI SITE EVALUATIONS ---	SCALE H: 1"=40' V: 1"=4'		OHM
	SHEET --- OF Value		
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



BIORETENTION DETAIL

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

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 Mar 01, 2018 – 3:10pm

APPENDIX G

Credit Worksheets

Practice # 1

Bioretention/Detention

Date: 01/02/19

Last updated by: HDS

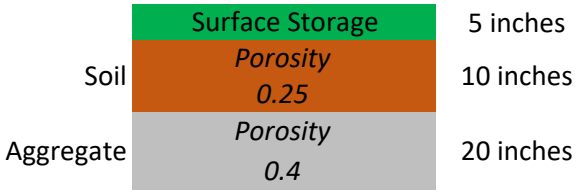
Site Address:	2050 E Canfield		
Site Owner:	St Albertus Church		
Site Description:	Church, rectory, empty school building, garage, and parking lot		
Parcel Number(s):	09004940-2, 09004938, 09004939, 09002241-1, 09002240		
Total Site Area (acres):	2.89	Total Site Area (sft):	125,888
Site Impervious Area (acres):	2.05	Ex Impervious Area (sft):	89,298
Number of Practices:	5	New Impervious Area (sft)	82,330

Areas		C Value	Notes
Total Proposed Drainage Area	25860 ft^2		*drainage area 1*
Pavement/Sidewalk Area	25860 ft^2	0.95	
Rooftop Area	0 ft^2	0.95	
Misc	0 ft^2		
Permenant Pavement Removal	3821 ft^2		
Pervious Area	0 ft^2		
Total Impervious Area	22039 ft^2	0.95	
New Pervious Area	3821 ft^2	0.3	*C value based on soil type*

Retention Pond

		Notes
Practice Area (PA)	2700 ft^2	
Infiltration Rate	0.46 in/hr	
Infiltration Rate (F.S. 2)	0.23 in/hr	
Drain Time	72 hrs	
Equivalent Water Depth	16.6 in	
Retention Volume	3487.5 ft^3	
Equivalent Rainfall Depth	1.9 in	

Retention EWD		
Equivalent Water Depth Maximum	16.6 in	
Surface Storage	5 in	
Soil Depth	10 in	
Aggregate Depth	20 in	
Calculated EWD	15.5 in	



Detention Pond

List of Variables		Notes
A: Tributary area to the detention practice area	0.51 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: 01/02/19

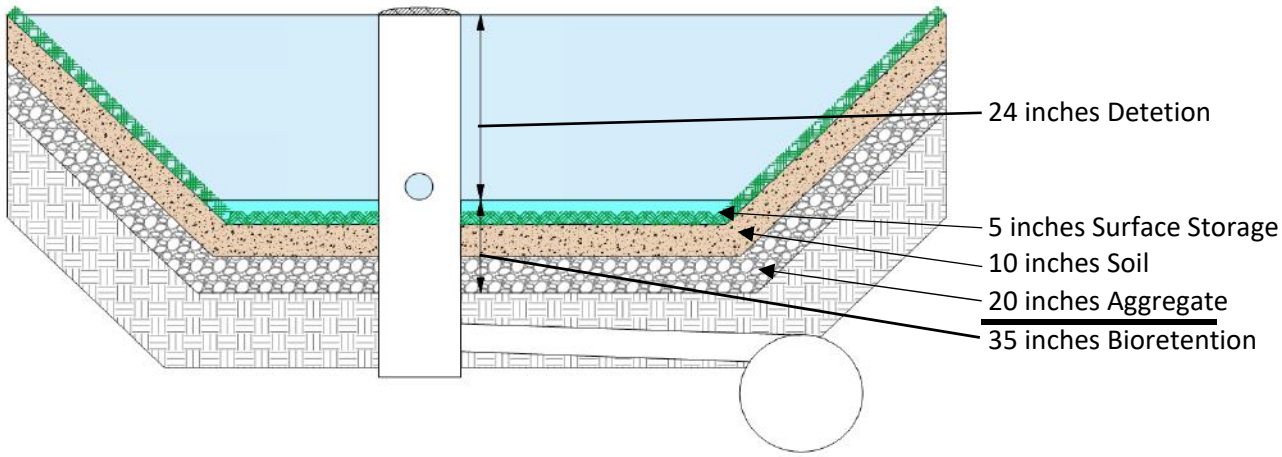
Last updated by: HDS

Site Address:	2050 E Canfield		
Site Owner:	St Albertus Church		
Site Description:	Church, rectory, empty school building, garage, and parking lot		
Parcel Number(s):	09004940-2, 09004938, 09004939, 09002241-1, 09002240		
Total Site Area (acres):	2.89	Total Site Area (sft):	125,888
Site Impervious Area (acres):	2.05	Ex Impervious Area (sft):	89,298
Number of Practices:	5	New Impervious Area (sft)	82,330

Areas		C Value	Notes
Total Proposed Drainage Area	25860 ft^2		*drainage area 1*
Pavement/Sidewalk Area	25860 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	1828	ft^3		
V_{100}: Required detention volume for a 100 year event	5976	ft^3		
$V_{provided}$	5400	ft^3	24	*inches detention*

Peak Flow Credit	90.4%
Volume Credit	98.7%
Practice Credit	75.6%
Site Credit	**20.2%**



Practice #2

Bioretention/Detention

Date: 01/02/19

Last updated by: HDS

Site Address:	2050 E Canfield		
Site Owner:	St Albertus Church		
Site Description:	Church, rectory, empty school building, garage, and parking lot		
Parcel Number(s):	09004940-2, 09004938, 09004939, 09002241-1, 09002240		
Total Site Area (acres):	2.89	Total Site Area (sft):	125,888
Site Impervious Area (acres):	2.05	Ex Impervious Area (sft):	89,298
Number of Practices:	5	New Impervious Area (sft)	82,330

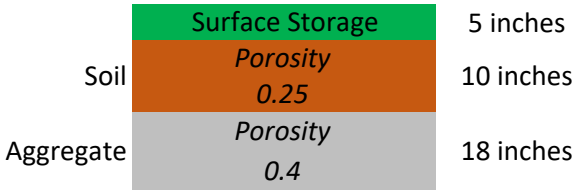
Areas		C Value	Notes
Total Proposed Drainage Area	21054 ft^2		*drainage area 14, 15, 16, 17*
Pavement/Sidewalk Area	8451 ft^2	0.95	
Rooftop Area	10402 ft^2	0.95	
Misc	0 ft^2		
Permenant Pavement Removal	3147 ft^2		
Pervious Area	2201 ft^2		
Total Impervious Area	15706 ft^2	0.95	
New Pervious Area	5348 ft^2	0.3	*C value based on soil type*

Retention Pond

		Notes
Practice Area (PA)	919 ft^2	
Infiltration Rate	0.46 in/hr	
Infiltration Rate (F.S. 2)	0.23 in/hr	
Drain Time	72 hrs	
Equivalent Water Depth	16.6 in	
Retention Volume	1125.8 ft^3	
Equivalent Rainfall Depth	0.9 in	

Retention EWD

Equivalent Water Depth Maximum	16.6 in
Surface Storage	5 in
Soil Depth	10 in
Aggregate Depth	18 in
Calculated EWD	14.7 in



Detention Pond

List of Variables		Notes
A: Tributary area to the detention practice area	0.48 acres	
C: Combined Rational Coefficient (omit if >75% impervious)	0.78	
Q_r: Peak allowable discharge rate for the 100 year storm event	0.15 cfs/acre	

Practice #2

Bioretention/Detention

Date: 01/02/19

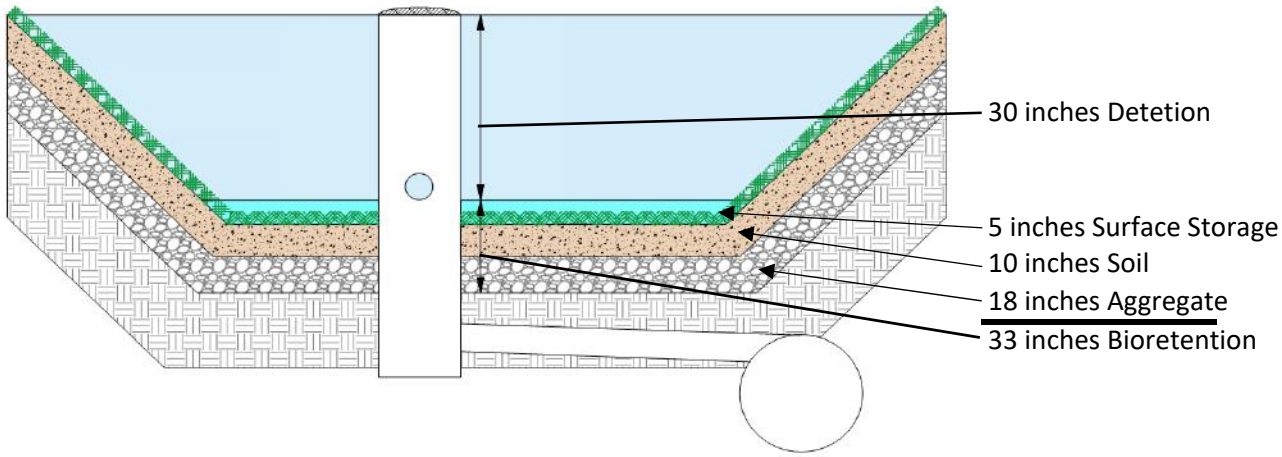
Last updated by: HDS

Site Address:	2050 E Canfield		
Site Owner:	St Albertus Church		
Site Description:	Church, rectory, empty school building, garage, and parking lot		
Parcel Number(s):	09004940-2, 09004938, 09004939, 09002241-1, 09002240		
Total Site Area (acres):	2.89	Total Site Area (sft):	125,888
Site Impervious Area (acres):	2.05	Ex Impervious Area (sft):	89,298
Number of Practices:	5	New Impervious Area (sft)	82,330

Areas		C Value	Notes
Total Proposed Drainage Area	21054 ft^2		*drainage area 14, 15, 16, 17*
Pavement/Sidewalk Area	8451 ft^2	0.95	

D: Critical Storm Duration	254.73	min	
t: Recurrence interval	2	years	
	100	years	
I: Rainfall intensity (2 years)	0.40	in/hr	
Rainfall intensity (100 years)	0.91	in/hr	
V_2: Required detention volume for a 2 year event	1254	ft^3	
V_{100}: Required detention volume for a 100 year event	4223	ft^3	
$V_{provided}$	2298	ft^3	30 *inches detention*

Peak Flow Credit	54.4%
Volume Credit	86.1%
Practice Credit	56.2%
Site Credit	**10.7%**



Practice #3

Bioretention

Date: 01/02/19

Last updated by: HDS

Site Address:	2050 E Canfield		
Site Owner:	St Albertus Church		
Site Description:	Church, rectory, empty school building, garage, and parking lot		
Parcel Number(s):	09004940-2, 09004938, 09004939, 09002241-1, 09002240		
Total Site Area (acres):	2.89	Total Site Area (sft):	125,888
Site Impervious Area (acres):	2.05	Ex Impervious Area (sft):	89,298
Number of Practices:	5	New Impervious Area (sft)	82,330

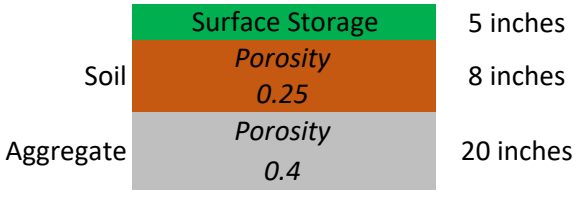
Areas		C Value	Notes
Total Proposed Drainage Area	10098 ft^2		*drainage area 1*
Pavement/Sidewalk Area	1209 ft^2	0.95	
Rooftop Area	5119 ft^2	0.95	
Misc	0 ft^2		
Permenant Pavement Removal	0 ft^2		
Pervious Area	3770 ft^2		
Total Impervious Area	6328 ft^2	0.95	
New Pervious Area	3770 ft^2	0.3	*C value based on soil type*

Retention Pond

		Notes
Practice Area (PA)	563 ft^2	
Infiltration Rate	0.46 in/hr	
Infiltration Rate (F.S. 2)	0.23 in/hr	
Drain Time	72 hrs	
Equivalent Water Depth	16.6 in	
Retention Volume	703.8 ft^3	
Equivalent Rainfall Depth	1.3 in	

Retention EWD

Equivalent Water Depth Maximum	16.6 in
Surface Storage	5 in
Soil Depth	8 in
Aggregate Depth	20 in
Calculated EWD	15.0 in



Volume Credit	95.3%
Practice Credit	38.1%
Site Credit	**2.9%**

Practice #4

Bioretention/Detention

Date: 01/02/19

Last updated by: HDS

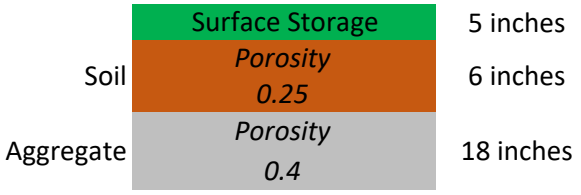
Site Address:	2050 E Canfield		
Site Owner:	St Albertus Church		
Site Description:	Church, rectory, empty school building, garage, and parking lot		
Parcel Number(s):	09004940-2, 09004938, 09004939, 09002241-1, 09002240		
Total Site Area (acres):	2.89	Total Site Area (sft):	125,888
Site Impervious Area (acres):	2.05	Ex Impervious Area (sft):	89,298
Number of Practices:	5	New Impervious Area (sft)	82,330

Areas		C Value	Notes
Total Proposed Drainage Area	27145 ft^2		*drainage area 5, 4, 8*
Pavement/Sidewalk Area	9292 ft^2	0.95	
Rooftop Area	5128 ft^2	0.95	
Misc	282 ft^2		
Permenant Pavement Removal	0 ft^2		
Pervious Area	12443 ft^2		
Total Impervious Area	14702 ft^2	0.95	
New Pervious Area	12443 ft^2	0.3	*C value based on soil type*

Retention Pond

		Notes
Practice Area (PA)	1428 ft^2	
Infiltration Rate	0.46 in/hr	
Infiltration Rate (F.S. 2)	0.23 in/hr	
Drain Time	72 hrs	
Equivalent Water Depth	16.6 in	
Retention Volume	1630.3 ft^3	
Equivalent Rainfall Depth	1.3 in	

Retention EWD		
Equivalent Water Depth Maximum	16.6 in	
Surface Storage	5 in	
Soil Depth	6 in	
Aggregate Depth	18 in	
Calculated EWD	13.7 in	



Detention Pond

List of Variables		Notes
A: Tributary area to the detention practice area	0.62 acres	
C: Combined Rational Coefficient (omit if >75% impervious)	0.65	
Q_r: Peak allowable discharge rate for the 100 year storm event	0.15 cfs/acre	

Practice #4

Bioretention/Detention

Date: 01/02/19

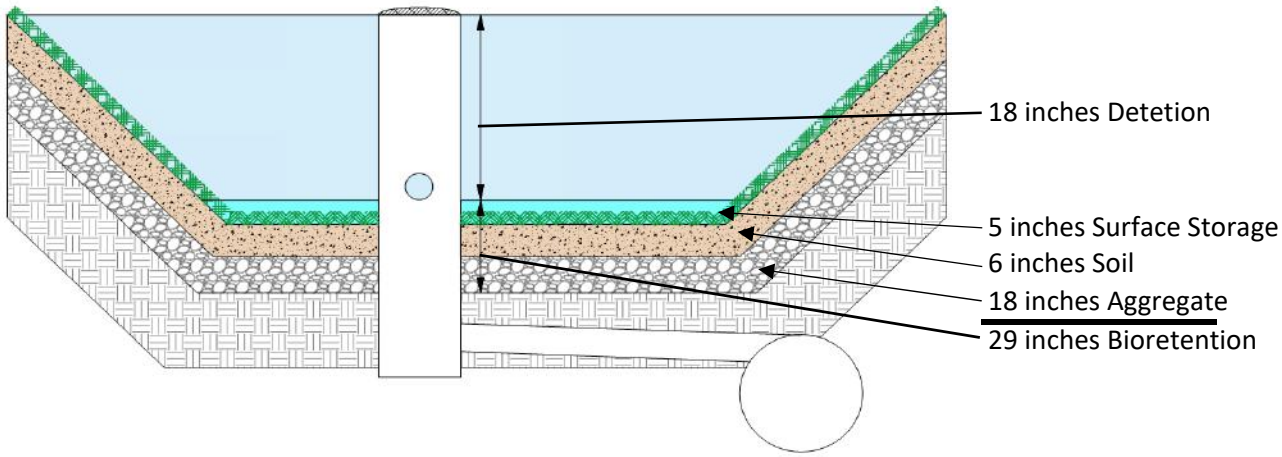
Last updated by: HDS

Site Address:	2050 E Canfield		
Site Owner:	St Albertus Church		
Site Description:	Church, rectory, empty school building, garage, and parking lot		
Parcel Number(s):	09004940-2, 09004938, 09004939, 09002241-1, 09002240		
Total Site Area (acres):	2.89	Total Site Area (sft):	125,888
Site Impervious Area (acres):	2.05	Ex Impervious Area (sft):	89,298
Number of Practices:	5	New Impervious Area (sft)	82,330

Areas			C Value	Notes
Total Proposed Drainage Area	27145	ft^2		*drainage area 5, 4, 8*
Pavement/Sidewalk Area	9292	ft^2	0.95	

D: Critical Storm Duration	212.25	min		
t: Recurrence interval	2	years		
	100	years		
I: Rainfall intensity (2 years)	0.47	in/hr		
Rainfall intensity (100 years)	1.05	in/hr		
V_2: Required detention volume for a 2 year event	1248	ft^3		
V_{100}: Required detention volume for a 100 year event	4313	ft^3		
$V_{provided}$	2142	ft^3	18	*inches detention*

Peak Flow Credit	49.7%
Volume Credit	95.3%
Practice Credit	58.0%
Site Credit	**10.4%**



Practice #5

Disconnected Impervious

Date:	01/02/19
Last updated by:	HDS

Site Address:	2050 E Canfield		
Site Owner:	St Albertus Church		
Site Description:	Church, rectory, empty school building, garage, and parking lot		
Parcel Number(s):	09004940-2, 09004938, 09004939, 09002241-1, 09002240		
Total Site Area (acres):	2.89	Total Site Area (sft):	125,888
Site Impervious Area (acres):	2.05	Ex Impervious Area (sft):	89,298
Number of Practices:	5	New Impervious Area (sft)	82,330

Permenant Pavement Removal	0	sft

Managed Impervious Area			Notes
Gravel Edge/Other Transition	No		
Length	51.5	ft	
Width	224	ft	
Total Impervious Area	11536	ft^2	*less the pavement removal*

Practice Area		
Flow Length	26	ft
Width	224	ft
Practice Area	5824	ft^2

Practice Ratio	0.504854369

Volume Credit	62.9%	For this Drainage Area only
Practice Credit	25.1%	For this Drainage Area only
Site Credit	**3.52%**	For this Drainage Area only

APPENDIX H

Detailed Cost Estimates

Practice 1 Estimate

Date: January 8, 2019

Prepared by: HDS

Site Address: 2050 E Canfield

Site Owner: St Albertus Church

Parcel ID: 09004940-2, 09004938, 09004939, 09002241-1, 09002240

Practice Type: Bioretention/Detention

Practice Number: 1

Site Credit: 20.2%

Practice Area: 2700 sft

DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	COST
Earth Excavation, Haul Off	Cyd	492	$ 35.00	$ 17,208.33
HMA Surface, Rem	Syd	300	$ 6.75	$ 2,025.00
Aggregate Base, 6A	Cyd	167	$ 50.00	$ 8,333.33
Bioretention Soil	Cyd	83	$ 27.00	$ 2,250.00
Bioretention Plants	Sft	675	$ 3.00	$ 2,025.00
Bioretention Seeding	Sft	2700	$ 0.75	$ 2,025.00
Geotextile Fabric	Syd	300	$ 1.25	$ 375.00
Curb and Gutter, Conc, Det F4	Ft	210	$ 30.00	$ 6,300.00
Existing Catch Basin Retrofit	Ea	1	$ 500.00	$ 500.00
Pavt Mrkg, Parking Stalls	Ft	1220	$ 0.50	$ 610.00
Spillway	Syd	4	$ 35.00	$ 140.00

PRACTICE COST =	$	41,791.67
ENGINEERING =		15%
CONTINGENCY =		10%
TOTAL PRACTICE COST =	$	52,239.58
ANNUAL MAINTENANCE COST =	$	486.00
SAVINGS PER YEAR =	$	2,883.17
ROI (YEARS) =		18.1
SAVINGS PER YEAR - SELF-PERFORMED MAINTENANCE =	$	3,369.17
ROI (YEARS) - SELF-PERFORMED MAINTENANCE=		15.5

Practice 2 Estimate

Date: January 8, 2019

Prepared by: HDS

Site Address: 2050 E Canfield

Site Owner: St Albertus Church

Parcel ID: 09004940-2, 09004938, 09004939, 09002241-1, 09002240

Practice Type: Bioretention/Detention

Practice Number: 2

Site Credit: 10.7%

Practice Area: 919 sft

DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	COST
Earth Excavation, Haul Off	Cyd	179	$ 35.00	$ 6,254.31
HMA Surface, Rem	Syd	350	$ 6.75	$ 2,360.25
Aggregate Base, 6A	Cyd	51	$ 50.00	$ 2,552.78
Bioretention Soil	Cyd	28	$ 27.00	$ 765.83
Bioretention Plants	Sft	230	$ 3.00	$ 689.25
Bioretention Seeding	Sft	919	$ 0.75	$ 689.25
Geotextile Fabric	Syd	102	$ 1.25	$ 127.64
Sewer, Cl A, 6 inch, Tr Det B	Ft	25	$ 35.00	$ 875.00
Sewer Tap	Ea	1	$ 2,000.00	$ 2,000.00
Outlet Control Structure	Ea	1	$ 500.00	$ 500.00
Downspout Relocation	Ea	5	$ 100.00	$ 500.00

PRACTICE COST =	$	17,314.31
ENGINEERING =		15%
CONTINGENCY =		10%
TOTAL PRACTICE COST =	$	21,642.88
ANNUAL MAINTENANCE COST =	$	165.42
SAVINGS PER YEAR =	$	1,804.24
ROI (YEARS) =		12.0
SAVINGS PER YEAR - SELF-PERFORMED MAINTENANCE =	$	1,969.66
ROI (YEARS) - SELF-PERFORMED MAINTENANCE=		11.0

Practice 3 Estimate

Date: January 8, 2019

Prepared by: HDS

Site Address: 2050 E Canfield

Site Owner: St Albertus Church

Parcel ID: 09004940-2, 09004938, 09004939, 09002241-1, 09002240

Practice Type: Bioretention

Practice Number: 3

Site Credit: 2.9%

Practice Area: 563 sft

DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	COST
Earth Excavation, Haul Off	Cyd	0	$ 35.00	$ -
Aggregate Base, 6A	Cyd	57	$ 50.00	$ 2,867.13
Bioretention Soil	Cyd	35	$ 27.00	$ 938.33
Bioretention Plants	Sft	141	$ 3.00	$ 422.25
Bioretention Seeding	Sft	563	$ 0.75	$ 422.25
Geotextile Fabric	Syd	63	$ 1.25	$ 78.19
Downspout Relocation	Ea	4	$ 100.00	$ 400.00

PRACTICE COST =	$	5,128.16
ENGINEERING =		15%
CONTINGENCY =		10%
TOTAL PRACTICE COST =	$	6,410.20
ANNUAL MAINTENANCE COST =	$	56.30
SAVINGS PER YEAR =	$	337.02
ROI (YEARS) =		19.0
SAVINGS PER YEAR - SELF-PERFORMED MAINTENANCE =	$	393.32
ROI (YEARS) - SELF-PERFORMED MAINTENANCE=		16.3

Practice 4 Estimate

Date: January 8, 2019

Prepared by: HDS

Site Address: 2050 E Canfield

Site Owner: St Albertus Church

Parcel ID: 09004940-2, 09004938, 09004939, 09002241-1, 09002240

Practice Type: Bioretention/Detention

Practice Number: 4

Site Credit: 10.4%

Practice Area: 1428 sft

DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	COST
Earth Excavation, Haul Off	Cyd	207	$ 35.00	$ 7,250.19
Conc Pavement, Rem	Syd	13	$ 12.00	$ 152.00
Aggregate Base, 6A	Cyd	79	$ 50.00	$ 3,966.67
Bioretention Soil	Cyd	26	$ 27.00	$ 714.00
Bioretention Plants	Sft	357	$ 3.00	$ 1,071.00
Bioretention Seeding	Sft	1428	$ 0.75	$ 1,071.00
Geotextile Fabric	Syd	159	$ 1.25	$ 198.33
Outlet Control Structure	Ea	1	$ 500.00	$ 500.00
Sewer, Cl A, 6 inch, Tr Det B	Ft	98	$ 35.00	$ 3,430.00
Downspout Relocation	Ea	3	$ 100.00	$ 300.00
Concrete Pavement	Syd	13	$ 85.00	$ 1,076.67

PRACTICE COST =	$	19,729.85
ENGINEERING =		15%
CONTINGENCY =		10%
TOTAL PRACTICE COST =	$	24,662.31
ANNUAL MAINTENANCE COST =	$	257.04
SAVINGS PER YEAR =	$	1,153.50
ROI (YEARS) =		21.4
SAVINGS PER YEAR - SELF-PERFORMED MAINTENANCE =	$	1,410.54
ROI (YEARS) - SELF-PERFORMED MAINTENANCE=		17.5

Practice 5 Estimate

Date: January 8, 2019

Prepared by: HDS

Site Address: 2050 E Canfield

Site Owner: St Albertus Church

Parcel ID: 09004940-2, 09004938, 09004939, 09002241-1, 09002240

Practice Type: Disconnected Impervious

Practice Number: 5 Site Credit: 3.5%

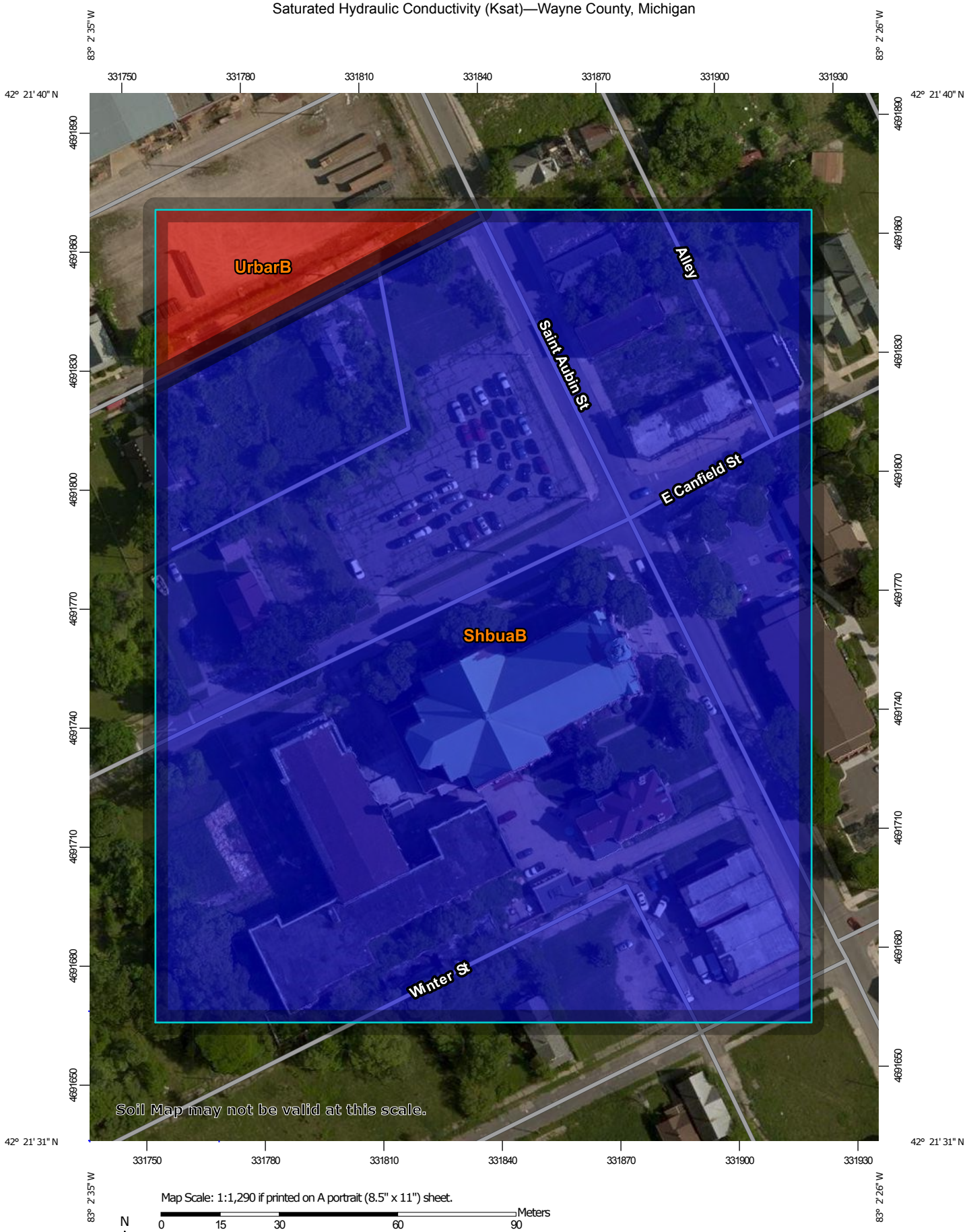
Practice Area: 3862.5 sft

DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	COST
Downspout Relocation	Ea	3	$ 100.00	$ 300.00

PRACTICE COST =	$	300.00
ENGINEERING =		15%
CONTINGENCY =		10%
TOTAL PRACTICE COST =	$	375.00
ANNUAL MAINTENANCE COST =	$	-
SAVINGS PER YEAR =	$	477.41
ROI (YEARS) =		0.8
SAVINGS PER YEAR - SELF-PERFORMED MAINTENANCE =	$	477.41
ROI (YEARS) - SELF-PERFORMED MAINTENANCE=		0.8

APPENDIX I

NRCS Soil Survey


83° 2' 35" W
83° 2' 26" W
331750
331780
331810
331840
331870
331900
331930
42° 21' 40" N
42° 21' 31" N
4691890
4691860
4691830
4691800
4691770
4691740
4691710
4691680
4691650
UrbarB
ShbuaB
Alley
Saint Aubin St
E Canfield St
Winter St
Soil Map may not be valid at this scale.
Map Scale: 1:1,290 if printed on A portrait (8.5" x 11") sheet.
N
Meters
0 15 30 60 90
Feet
0 50 100 200 300
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

<= 0.0050

> 0.0050 and <= 3.2247

Not rated or not available

Soil Rating Lines

<= 0.0050

> 0.0050 and <= 3.2247

Not rated or not available

Soil Rating Points

<= 0.0050

> 0.0050 and <= 3.2247

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Wayne County, Michigan
Survey Area Data: Version 4, Sep 11, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 31, 2014—Jun 7, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Saturated Hydraulic Conductivity (Ksat)

Map unit symbol	Map unit name	Rating (micrometers per second)	Acres in AOI	Percent of AOI
ShbuaB	Shebeon-Urban land complex, 0 to 4 percent slopes	3.2247	8.0	94.8%
UrbarB	Urban land-Riverfront complex, dense substratum, 0 to 4 percent slopes	0.0050	0.4	5.2%
Totals for Area of Interest			**8.4**	**100.0%**

Description

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity is considered in the design of soil drainage systems and septic tank absorption fields.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

The numeric Ksat values have been grouped according to standard Ksat class limits.

Rating Options

Units of Measure: micrometers per second

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Fastest

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

Top Depth: 0

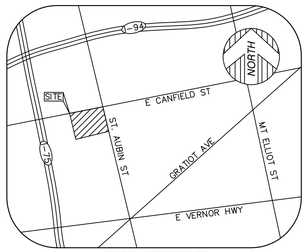
Bottom Depth: 60

Units of Measure: Inches

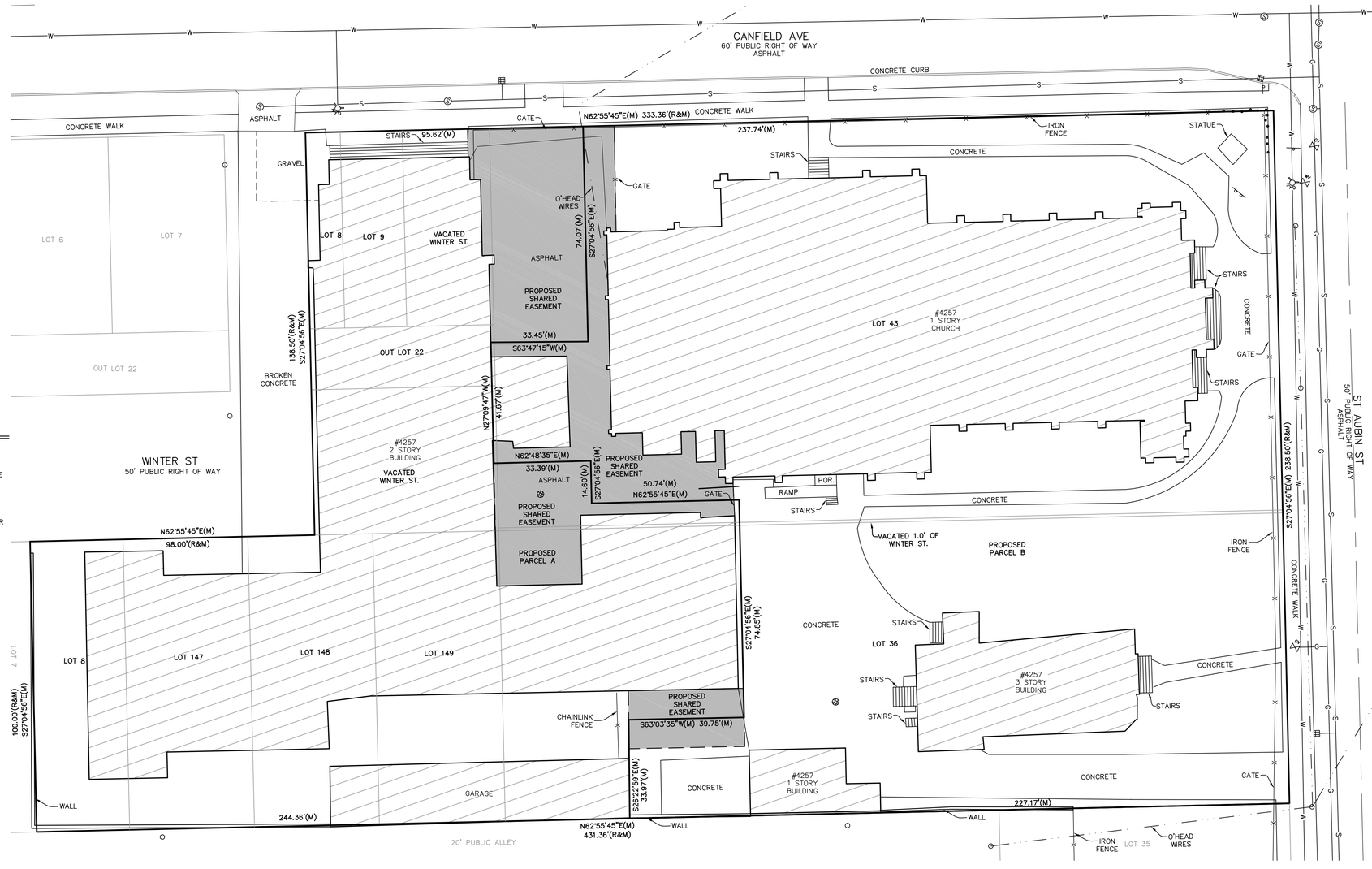
APPENDIX J

Existing Site Plans

BOUNDARY SURVEY



VICINITY MAP
(NOT TO SCALE)



PARCEL AREA

PROPOSED PARCEL A:
±35,384 SQUARE FEET = ±0.812 ACRES
PROPOSED PARCEL B:
±53,922 SQUARE FEET = ±1.238 ACRES
TOTAL:
±89,306 SQUARE FEET = ±2.050 ACRES

SURVEYOR'S NOTES

1. THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES OTHER THAN THE STRUCTURE INVENTORY SHOWN HEREON.

2. ALL PROPERTY SPLITS REQUIRE PRIOR CITY, TOWNSHIP, COUNTY, AND/OR STATE APPROVAL.

LEGEND

●	SET 1/2" REBAR WITH CAP P.S. 47976
◉	FOUND MONUMENT (AS NOTED)
(R&M)	RECORD AND MEASURED DIMENSION
(R)	RECORD DIMENSION
(M)	MEASURED DIMENSION
○	UTILITY POLE
⋈	GAS VALVE
⊸☼	LIGHT POLE WITH STREET LAMP
Ⓢ	SEWER MANHOLE
⊕	ROUND CATCH BASIN
▦	SQUARE CATCH BASIN
Ⓓ	STORM DRAIN MANHOLE
	FIRE HYDRANT
W	WATER VALVE
•	BOLLARD
⊸	SINGLE POST SIGN
⊸⊸	DOUBLE POST SIGN
	PARCEL BOUNDARY LINE
	PLATTED LOT LINE
	SECTION LINE
	BUILDING
	BUILDING HATCH
	CONCRETE CURB
	EDGE OF CONCRETE (CONC.)
	EDGE OF ASPHALT (ASPH.)
	EDGE OF GRAVEL
-x-	FENCE (AS NOTED)
	WALL (AS NOTED)
	OVERHEAD UTILITY LINE
G	GAS LINE
S	SEWER LINE
W	WATER LINE

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

PROPERTY DESCRIPTION

LAND SITUATED IN THE CITY OF DETROIT, COUNTY OF WAYNE, MICHIGAN, DESCRIBED AS:

PARCEL 1:
LOT 8, FOXEN'S SUBDIVISION OF PART OF OUT LOTS 18, 19, 20, 21, 22 AND PART OF 23, WITHERELL FARM, ACCORDING TO THE PLAT THEREOF AS RECORDED IN LIBER 8, PAGE 42 OF PLATS, WAYNE COUNTY RECORDS.

PARCEL 2:
LOTS 147, 148, AND 149 OF THE SUBDIVISION OF OUT LOTS 18, 19, 20, 21, 22 AND PART OF 23, WITHERELL FARM, ACCORDING TO THE PLAT THEREOF AS RECORDED IN LIBER 1, PAGE 23 OF PLATS, WAYNE COUNTY RECORDS.

PARCEL 3:
LOT 9 AND THE EAST 12 FEET OF LOT 8 OF THE SUBDIVISION OF THE SOUTH PART OF OUT LOT 23, WITHERELL FARM, ACCORDING TO THE PLAT THEREOF AS RECORDED IN LIBER 3, PAGE 67 OF PLATS, WAYNE COUNTY RECORDS.

PARCEL 4:
THE WEST 33.36 FEET OF THE EAST 63.36 FEET OF THE NORTH 21 FEET OF OUT LOT 22, PLAT OF SUB OF PRIVATE CLAIM 90, LIBER 34, PAGE 2 OF DEEDS, WAYNE COUNTY RECORDS, BY HEIRS OF JAMES WITHERELL, ALSO ALL THAT PART OF VACATED WINTER STREET, DESCRIBED AS: BEGINNING AT THE INTERSECTION OF THE SOUTHERLY LINE OF CANFIELD AVENUE WITH THE EASTERLY LINE OF THE WITHERELL FARM; THENCE SOUTH 26 DEGREES EAST 138.5 FEET TO THE SOUTH LINE OF WINTER STREET; THENCE SOUTH 64 DEGREES WEST 63.36 FEET TO A POINT; THENCE NORTH 26 DEGREES WEST 50 FEET; THENCE NORTH 64 DEGREES EAST 33.36 FEET TO A POINT; THENCE NORTH 26 DEGREES WEST 88.50 FEET TO THE SOUTHERLY LINE OF CANFIELD AVENUE; THENCE NORTH 64 DEGREES EAST 30 FEET TO THE PLACE OF BEGINNING. ALSO ALL THAT PART OF OUT LOT 43, SUB OF PRIVATE CLAIMS 14 & 587 AS SURVEYED BY J. MULLETT, LIBER 31, PAGE 91 OF DEEDS, WAYNE COUNTY RECORDS, BOUNDED ON THE NORTH BY THE SOUTH LINE OF CANFIELD AVENUE (FORMERLY FREMONT STREET), ON THE EAST BY THE WEST LINE OF ST. AUBIN AVENUE, ON THE SOUTH BY THE NORTH LINE OF OUT LOT 42 OF ST. AUBIN FARM, AND ON THE WEST BY THE WEST LINE OF ST. AUBIN FARM.

PARCEL 5:
THE NORTH 1 FOOT OF OUT LOT 42, SUB OF PRIVATE CLAIMS 14 & 587 AS SURVEYED BY J. MULLETT, LIBER 31, PAGE 91 OF DEEDS, WAYNE COUNTY RECORDS, AND LOT 36 OF THE SUBDIVISION OF OUT LOT 42, ACCORDING TO THE PLAT THEREOF AS RECORDED IN LIBER 1, PAGE 299 OF PLATS, WAYNE COUNTY RECORDS.

TITLE REPORT NOTE

ONLY THOSE EXCEPTIONS CONTAINED WITHIN THE ATA NATIONAL TITLE GROUP FILE No. 82-1754643-GCM, DATED JUNE 21, 2017, AND RELISTED BELOW WERE CONSIDERED FOR THIS SURVEY. NO OTHER RECORDS RESEARCH WAS PERFORMED BY THE CERTIFYING SURVEYOR.

9. TERMS, CONDITIONS AND PROVISIONS WHICH ARE RECITED IN AFFIDAVIT OF HISTORIC DESIGNATION RESTRICTIONS RECORDED IN LIBER 21262, PAGE 802, WAYNE COUNTY RECORDS.

10. TERMS, CONDITIONS AND PROVISIONS WHICH ARE RECITED IN RESOLUTIONS OF HISTORIC DESIGNATION RECORDED IN LIBER 20419, PAGE 653, AND IN LIBER 20419, PAGE 654, WAYNE COUNTY RECORDS.

SURVEYOR'S CERTIFICATION

I HEREBY CERTIFY THAT I HAVE SURVEYED THE LAND HEREIN PLATTED AND DESCRIBED AND THAT THE RATIO OF CLOSURE MEETS THE REQUIREMENTS OF PUBLIC ACT 132 OF 1970.

DRAFT

ANTHONY T. SYCKO, JR., P.S.
PROFESSIONAL SURVEYOR
MICHIGAN LICENSE NO. 47976

REVISED: 09/05/18 – PER REVIEW COMMENTS

KEM-TEC & ASSOCIATES
PROFESSIONAL SURVEYORS – PROFESSIONAL ENGINEERS
22556 GRATIOT AVE * EASTPOINTE, MICHIGAN 48021
(586)772-2222 * (800)295-7222 * FAX (586)772-4048

CERTIFIED TO: VERUS DEVELOPMENT GROUP, LLC	
DATE: AUGUST 07, 2017	JOB #: 17-02644
SCALE: 1" = 20'	SHEET: 1 OF 1
DRAWN BY: MRJ	REV.:

Detroit Water and Sewerage Department
Engineering and Design Services
for Stormwater Management Practices

Final Report Review Meeting

Property: _____ **Date:** _____ Time: _____

Job No: _____ **Location:** _____

Name	Title	Company	Phone	E-Mail
Matthew Baka	President	PANSA	248 321 9241	albertus1884@gmail.com
Patrick Droze	*Project Manager*	*OHM*	*313.481.1252*	*Pat.droze@ohm-advisors.com*

OHM Advisors Inc.
1145 GRISWOLD ST SUITE 200
DETROIT, MI 48226
T 313 481 1250 | OHM-advisors.com

In association with livingLAB: TNX DRUMMOND CARPENTER

DWSD Capital Partnership Program – Non-Residential Customer Only

Application for Capital Partnership Funding for Stormwater Management Practices

(Please fill out one form per property)

Submit a completed application with your attachments at www.detroitmi.gov/drainage or email to drainage@detroitmi.gov. Alternatively, the application can be mailed to:

Stormwater Management Group
Detroit Water and Sewerage Department
6425 Huber St. • Detroit, MI 48211

SECTION 1 - PROPERTY OWNER INFORMATION	
Property Owner:	
Mailing Address:	
City, State, Zip Code of Mailing Address:	
Phone Number(s):	
Email Address:	
Organization/Business Name (if different from Owner):	
Property Address:	
Parcel ID(s):	
DWSD Account No. (s):	
Parcel Size in Acre(s):	
Impervious Area in Acre(s):	
EIN or TIN Number:	
Current Drainage Charge Per Year:	
Expected Drainage Credit Per Year:	

DESIGNATED PROJECT MANAGER CONTACT INFORMATION	
_____ Check if Project Manager Contact Information is the same as Property Owner	
First Name:	
Last Name:	
Mailing Address:	
City, State, Zip Code of Mailing Address:	
Contact Number(s):	
E-Mail:	

SECTION 2 - Eligibility Criteria - Required	
1. Is property non-residential?	☐ Yes ☐ No
2. Is property owner willing to execute legal agreements including a Capital Partnership Agreement, Easement Agreement, and Declaration of Restrictive Covenant and obtain all necessary permits for GSI implementation?	☐ Yes ☐ No
3. Is the property owner current on their DWSD water, sewer and drainage accounts or enrolled in, and current on, their payment plan obligations?	☐ Yes ☐ No
4. Does the property owner have any outstanding liens or overdue fees payable to other City of Detroit properties? (Please attach clearance documentation)	☐ Yes ☐ No
5. For constructed or in progress GSI measures, was construction initiated after April 1, 2017?	☐ Yes ☐ No ☐ N/A
6. Is proposed GSI on environmentally constrained sites?	☐ Yes ☐ No

SECTION 3 - Eligibility Criteria below are not required, but will be used to prioritize applications	
1. Has the property owner arranged for funding their share of GSI implementation costs to date?	☐ Yes ☐ No
a. If no: Is Capital Partnership Program required to do so? b. If no: Is the applicant seeking referrals to potential funders?	☐ Yes ☐ No ☐ Yes ☐ No
2. Has your bill always been based on the impervious area on your property?	☐ Yes ☐ No
3. Does your proposed project have an estimated payback period, absent funding assistance, of 5 years of more?	☐ Yes ☐ No

4.	Do you agree to allow your project to serve as a demonstration site for targeted property classes and/or customer populations?	☐ **Yes** ☐ **No**
5.	Will your project provide workforce development opportunities for Detroit residents?	☐ **Yes** ☐ **No**
6.	Do you own a small business with fewer than 50 employees or less than $50 million in annual revenues?	☐ **Yes** ☐ **No**
7.	Does your proposed GSI project support City of Detroit economic revitalization / redevelopment (e.g., commercial corridor development, neighborhood stabilization/amenity)	☐ **Yes** ☐ **No**
8.	Are you a non-profit customer?	☐ **Yes** ☐ **No**

SECTION 4 – PROJECT INFORMATION

If additional space is needed to provide requested information, please attach separate sheet(s)

1. PROJECT PROPOSAL SUMMARY

TITLE OF PROPOSED PROJECT: _____

TYPE OF GSI TECHNOLOGY (SELECT ALL THAT APPLY):

- ☐ Impervious Cover Removal
- ☐ Cistern
- ☐ Rainwater Reuse System
- ☐ Green Roof
- ☐ Blue Roof
- ☐ Porous Pavement
- ☐ Rain Garden/Infiltration System
- ☐ Detention Systems with Infiltration Capabilities
- ☐ Other

STORMWATER CAPTURE AND COST PER GALLON SUMMARY

Total Impervious Tributary Area: _____

Total Proposed Volume Managed: _____

Total Project Cost/Total Proposed Volume Managed_____$/gal

APPROXIMATE PROJECT TIMELINE: _____Weeks[1]

BUDGET SUMMARY

Total Project Cost: _____

(Include design, construction, permitting, and any other capital cost)

Total Requested Funds from DWSD: _____

Other Funding Sources (if applicable): _____

Annual Maintenance Cost _____

[1] DWSD will allow for more than one construction season if deemed necessary.

2. PROJECT DETAILS

For the proposed stormwater management practice or combination of practices, attach a project report with supporting documentation that includes:

a. A conceptual design that provides a plan view schematic of each site with existing conditions and proposed conditions for selected/recommended BMPs.
b. Impervious area managed
c. Volume and peak flow managed
d. Estimated drainage charge fee reduction
e. Estimated project cost (design, construction and other project related capital cost)
f. Total amount saved (estimate of credit)
g. Net Present Value (NPV)
h. Internal Rate of Return (IRR)
i. Payback period
j. GIS Plan View Figure
k. Technical Report

3. ADDITIONAL REQUIREMENTS

STATEMENT OF AGREEMENT

If awarded, all applicants will be required to execute a **Capital Partnership Agreement**, Easement Agreement and Restrictive Covenant in a form provided by DWSD.

FIRST AND LAST PAGE OF PROPERTY DEED OR COPY OF TITLE

Attach supporting documentation.

Owner Certification and Right-Of-Entry:

I certify that the above information is true to the best of my knowledge. By signing below, I agree to allow DWSD staff or its agents to verify the information above and to visit the site if necessary.

_____ Signature of Property Owner/Authorized Representative	☐ By submitting on the City of Detroit website, I acknowledge the statements.
_____ Print Name	_____ Date

For DWSD Use only:

☐ **Property approved for Capital Partnership Program funding** **Approved by (sign):** _____	**Print Name:** _____ **Date:** _____
NOTES:	

DWSD Green Stormwater Infrastructure Capital Partnership Program

Agreement

This Capital Partnership Agreement ("Agreement") is made and entered into as of _____, 2018, by and between the City of Detroit (the "City"), acting through the Detroit Water and Sewerage Department ("DWSD"), having an office at 735 Randolph, Detroit, MI 48226, and _____, the property owner (the "Awardee") of the property located at _____("Premises").

RECITALS

WHEREAS, the DWSD established the Green Stormwater Infrastructure Capital Partnership Program ("GSI CPP") to allocate funding for qualified projects which use green infrastructure to manage stormwater runoff in the City of Detroit.

WHEREAS, this Agreement acknowledges that the Awardee submitted to DWSD a proposal to install and maintain a green infrastructure project within non-city owned property, and DWSD has determined that the Awardee's proposal will meet the GSI CPP goals and provide significant benefit to the City and has selected the Awardee's proposal for this purpose.

NOW, THEREFORE, the parties, in consideration of the mutual agreements contained herein, agree as follows:

After DWSD has accepted a Final Design and this Agreement is executed and returned to DWSD, DWSD will issue a Notice to Proceed letter. This Agreement shall be effective when the Notice to Proceed letter is issued and shall remain in effect for a period of two (2) years from the date of the Notice to Proceed letter. This Agreement may be extended in writing upon approval by DWSD.

GENERAL OBLIGATIONS:

1. Awardee shall install and maintain a [insert general description of the project] (the "Project") in accordance with the more and as more fully described in the scope of work attached as Appendix # ("Scope of Work") and with the maintenance plan ("Maintenance Plan") attached as Appendix #.
2. Awardee shall comply with all provisions in the General Requirements, Appendix # attached to this Agreement.
3. Awardee shall conduct site investigations and submit designs to DWSD for review and acceptance in accordance with the instructions provided by DWSD at the time of announcement of selected Awardees. Said instructions, entitled "Awardee Guide" are hereby incorporated by reference.

4. Awardee shall submit a Site Safety Plan to DWSD prepared by a Licensed Professional prior to the issuance of a Notice to Proceed. All Awardee and contractor employees shall comply with all safety regulations governing the Site Safety Plan.
5. Awardee must obtain all necessary permits for construction and operations of the Project.
6. Awardee acknowledges that all plans and specifications shall be certified by a Professional Engineer, Registered Architect or Registered Landscape Architect currently licensed in the State of Michigan.

MAINTENANCE:

1. The maintenance period ("Maintenance Period") shall begin and shall remain in effect for a period to be determined by DWSD, beginning on the date of the Final Acceptance Letter.
2. Awardee shall submit a Maintenance Plan at the time of the 90% design submittal, for review and acceptance by DWSD. The Maintenance Plan shall be for a period to be determined by DWSD and shall include all maintenance requirements including labor, equipment, materials, and frequencies, for the Maintenance Period.
3. Awardee agrees that during the Term of this Agreement and the Maintenance Period, it will maintain the Project and keep it in good repair with full functionality for its intended purpose. Moreover, Awardee shall ensure that the Project shall be kept free and clear of any and all obstructions that would impede the Project's proper functioning.
4. Quarterly and yearly maintenance reports shall be submitted for a period of thirty-six (36) months from the issuance of the Final Acceptance Letter. These reports shall be submitted to DWSD in a previously agreed upon format and transmitted electronically in MS Word or MS Excel format.

DECLARATION OF RESTRICTIVE COVENANT:

1. A Declaration of Restrictive Covenant in the form provided to the Awardee by DWSD (the "Declaration") shall be filed against such property with the Office of the Wayne County Register of Deeds. It shall be a condition of disbursement of any funds pursuant hereto that such Declaration of Restrictive Covenant shall have been recorded against the Property and evidence thereof shall have been provided to DWSD.

EASEMENT:

1. An Easement in the form provided to the Awardee by DWSD (the "Easement") shall be filed against such property with the Office of the Wayne County Register of Deeds. It shall be a condition of disbursement of any funds pursuant hereto that such Easement shall have been recorded against the Property and evidence thereof shall have been provided to DWSD.

MONITORING:

1. If selected to receive funds for monitoring equipment and reporting, the "Monitoring Period" shall begin and remain in effect for a period as determined by DWSD. Awardee

shall submit a monitoring protocol, at the time of the 90% design submittal, for review and acceptance by DWSD. This protocol shall include procedures for recording Project monitoring data on the monitoring database and submission of reports is the responsibility of the Awardee.

INVOICING AND REIMBURSEMENT:

1. DWSD shall remit to Awardee an amount not to exceed fifty thousand (50,000) dollars ("Grant Award") in full consideration for the satisfactory completion of the Project. The Grant Award shall be on a reimbursement basis.
2. Awardees shall submit invoices to DWSD for review and acceptance in accordance with the instructions provided by DWSD at the time of announcement of selected Awardees.
3. Funding provided pursuant to this Agreement shall be used only to pay third-party vendors for eligible capital expenses. Funds shall not be used to pay or reimburse Awardee for its internal costs, including but not limited to its employee salaries, overhead or any form of administrative fees.
4. Invoices must include eligible costs and expenses where monies have been paid to third parties.
5. All payments shall be made to the Awardee unless the Awardee provides to DWSD a valid assignment which authorizes a third-party contractor to receive payment under this Agreement.
6. Requests for advance payments will not be approved.
7. DWSD shall only reimburse Awardee for payments that, in DWSD's sole discretion, are for the construction or reconstruction of a capital asset under generally accepted accounting principles and are eligible for payment with City capital funds, pursuant to all laws, regulations, and directive governing the payment of such funds.

PROJECT CLOSE-OUT:

1. Awardee shall provide a Certification of Construction Completion at the close of the Project stating that the Project was built in accordance with accepted plans and specifications.
2. DWSD shall issue a Final Acceptance Letter after the Project has been inspected and the final As-Built records have been submitted by the Awardee.
3. DWSD will not reimburse the last invoice until the Final Acceptance Letter has been issued.

PRESS AND NOTICES:

1. The Awardee and its officers, officers, employees, and agents shall indicate in any statements to the press or in any materials for publication in any media of communication (print, news, television, radio, Internet, etc.) that the Project was funded in part by DWSD as part of the CPP.

2. All notices to be sent in accordance with this Agreements shall be sent to the following addresses:

If to DWSD:

735 Randolph St.
Detroit, MI 48226

If to Awardee:

In WITNESS THEREOF, the individuals listed below are authorized to sign and execute this Agreement between their respective Agencies and Organizations, on the date appearing below their respective signatures.

The City of Detroit Water and Sewerage Department

By:_____

Title:_____

AWARDEE

By:_____

Title:_____

Approved as to Form:

_____
DWSD General Counsel