



**Public Works Committee Agenda**  
**Wednesday, June 24, 2020 at 4:00pm**  
**Video Conference**

1. Call to Order
2. Review and Approve minutes of May 27, 2020 Public Works Committee Meeting
3. Review and Possible Recommendation – Klode Beach Erosion Restoration Plan  
(attachments: Klode Beach Erosion Repair memo dated August 12, 1997 and 2010 photos)
4. Review and Possible Recommendation - Village Hall / Library Parking Lot Biofilter Installation Project – MMSD Green Solutions Fund
5. Next scheduled meeting – to be determined
6. Adjournment

Cc: Village Board; Village Manager, Department Heads; Village Attorney

**Posted: 6/19/2020** Note: It is possible that members and/or possibly a quorum of members of other governmental bodies of the municipality may be in attendance at the above-stated meeting to gather information; action will not be taken by any governmental body at the above-stated meeting other than the governmental body specifically referred to above in the notice.



**Public Works Committee Minutes**  
**Wednesday, May 27, 2020 at 4:00 pm**  
**Klode Beach**

**I. Call to Order and Roll Call:**

Meeting was called to order at 4:00.

Present: Trustee Serebin, Tom Kindschi, Jay Miller

Also Present: John Edlebeck – Public Works Director, Paul Boening – Village Manager, Tim Blakeslee – Assistant Village Manager, Spencer Charczuk – Staff Engineer.

Absent: Trustee Buckley, Trustee Davis

**II. Review and Approve minutes of February 25, 2020 Public Works Committee Meeting:**

Trustee Serebin moved to approve the minutes of the February 25, 2020 Public Works Committee Meeting. Tom Kindschi seconded. Motion passed 3-0.

**III. Review and Possible Recommendation – Klode Beach Erosion Restoration Plan (attachments: Klode Beach Erosion Repair memo dated August 12, 1997 and 2010 photos)**

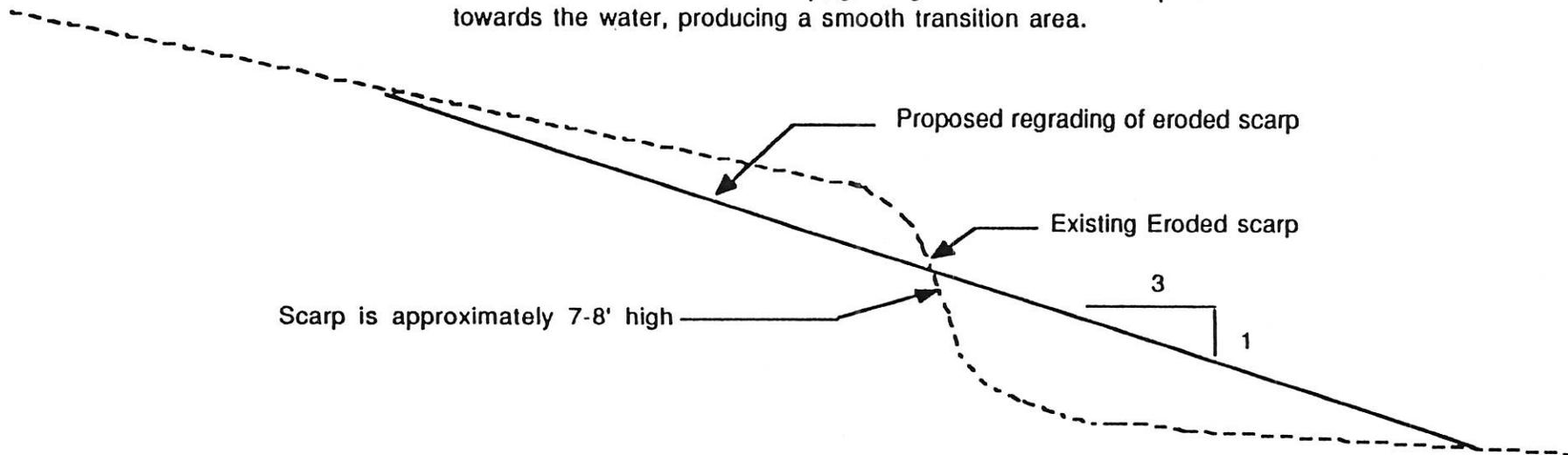
Public Works Director Edlebeck summarized the history of the Klode Park beach and the current state of the erosion at the beach. The group viewed the damage to the beach in-person. Edlebeck noted that himself and Assistant Village Manager Blakeslee are working with FEMA on a restoration grant. There was a discussion of repair/improvement options and estimated costs. There was a discussion about the competitive FEMA improvement grant program as well. Discussion on trying to schedule another Public Works Committee meeting soon to be able to discuss the potential options.

**IV. Next scheduled meeting – to be determined**

**V. Adjournment** Trustee Serebin moved to adjourn at 5:21 pm. Tom Kindschi seconded. Motion passed 3-0.

# (current situation) \*

NOTE: Regrading of existing eroded scarp will begin approximately 12' west of the face of the scarp, grading the material at a slope of 3:1 towards the water, producing a smooth transition area.



## Section Through Eroded Scarp - Section E-E

Scale: 1"=4'

*3 to 1 slope = un natural*

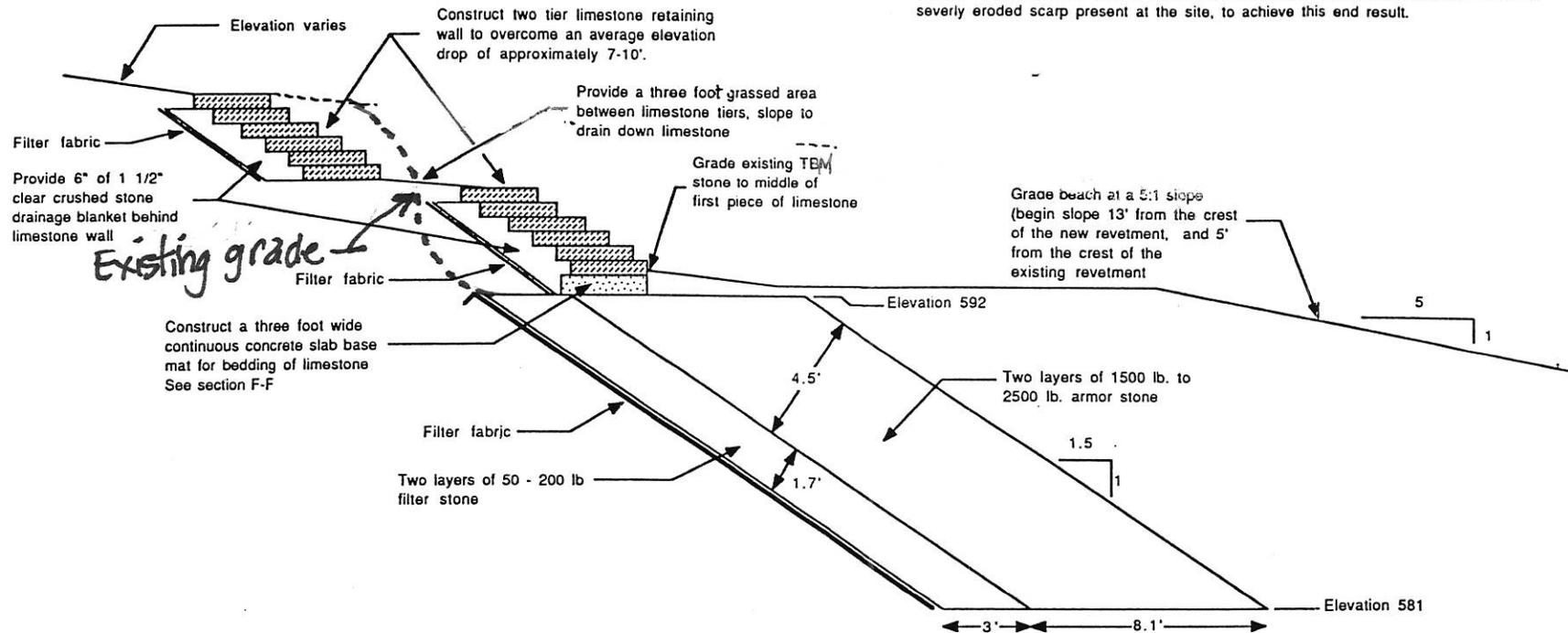
NOTE: There exists at the southern end of the project, south of the southern most steel sheetpile groin, a similar erosion scarp as that noted above. Grading will also be required at this location also and should be included in the base bid. The length of the scarp is approximately 100 feet.

# \* (typical revetment project)

NOTE: There is approximately 4.5' of TBM Spoil material existing above the proposed new grades, east of the new and existing revetment sections. In addition, approximately 11' of additional excavation will be required to construct the new revetment.

The additional material between existing and new grades will be graded towards the lake and evenly distributed in this general area. The Contractor may encounter a cohesive general fill, substantially different than the stone fill, sandwiched between layers of TBM Spoil material, if this is the case, the Contractor will rebury this general fill material after completion of the new revetment section and cover with TBM Spoil material.

The intent of the limestone wall is to overcome the obvious elevation difference and to provide an aesthetically pleasing overlook area for pedestrian use, additional meticulous grading will be required around all sides of the limestone wall construction and of the severely eroded scarp present at the site, to achieve this end result.



Section Through New Revetment - Section D-D

SCALE 1" = 4'

\* Note: Beach access an issue

## Revetments

Revetments are onshore structures built to protect the toe of a bluff/bank from erosion caused by wave action. These structures are constructed at a stable slope angle and create a covering of erosion resistant material from the toe of the bluff up to a point where wave action typically does not reach. Since material eroded from the bluff/bank is one source of beach-building sand, some regulatory agencies may require that one of the design components for a revetment to be the inclusion of sand pre-filling in the amount equal to that which would have been added to the system by erosion of the bluff/bank over the life of the structure.

Typically consisting of armor stone, precast concrete block, or concrete modules, revetment slopes can be smooth or rough depending design of the structure. The toe or most lakeward part of a revetment is usually located on or buried in the lakebed. Burying the toe in the lakebed lessens the chance for damage to the structure due to scouring, or erosion, at the base of the structure. The crest or most landward part of a revetment is designed to a height where waves will no longer be a threat to the land. The crest height must be high enough to reduce the chances of waves removing the soils above or behind the structure. This upper extent of the revetment should be determined on a site-by-site basis according to the wave conditions.

Depending on the design, revetments can be permeable, allowing water to move through the structure, or impermeable, where the waves and water run off the face of the structure. In the case of the permeable structure, a proper filter layer of smaller stone and filter fabric must be included in the structure. If the filter layer is improperly designed or constructed, or not included, erosion behind the revetment is likely to occur because the water will move too quickly through the structure, eroding the less resistant materials underneath.

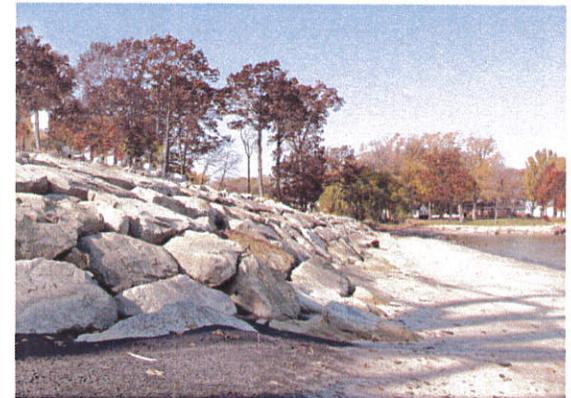
Revetments are built on areas adjacent to the bluff toe. The area covered by a revetment usually includes the beach area and/or the shallow nearshore, which is typically the same area where beach building occurs. Once the revetment is built, however, the area where a beach could build up in front of the structure will be deeper because it is further offshore. The likelihood of a new beach forming in this deeper area is lower than before construction because it would require the build up of much more sand due to the greater depth. Additionally, the sand which would have eroded from the area now covered by the revetment will need to be replenished within the system.

To maintain a revetment, periodic monitoring of the structure is necessary. This may include re-positioning or replacing the armor units.

Revetment construction requires the proper placement of large armor units along a specified slope. Due to these conditions, the design and construction of a revetment requires the services of a professional engineer and a contractor. Maintenance of these structures will likely also require a contractor's services.



*Revetment*

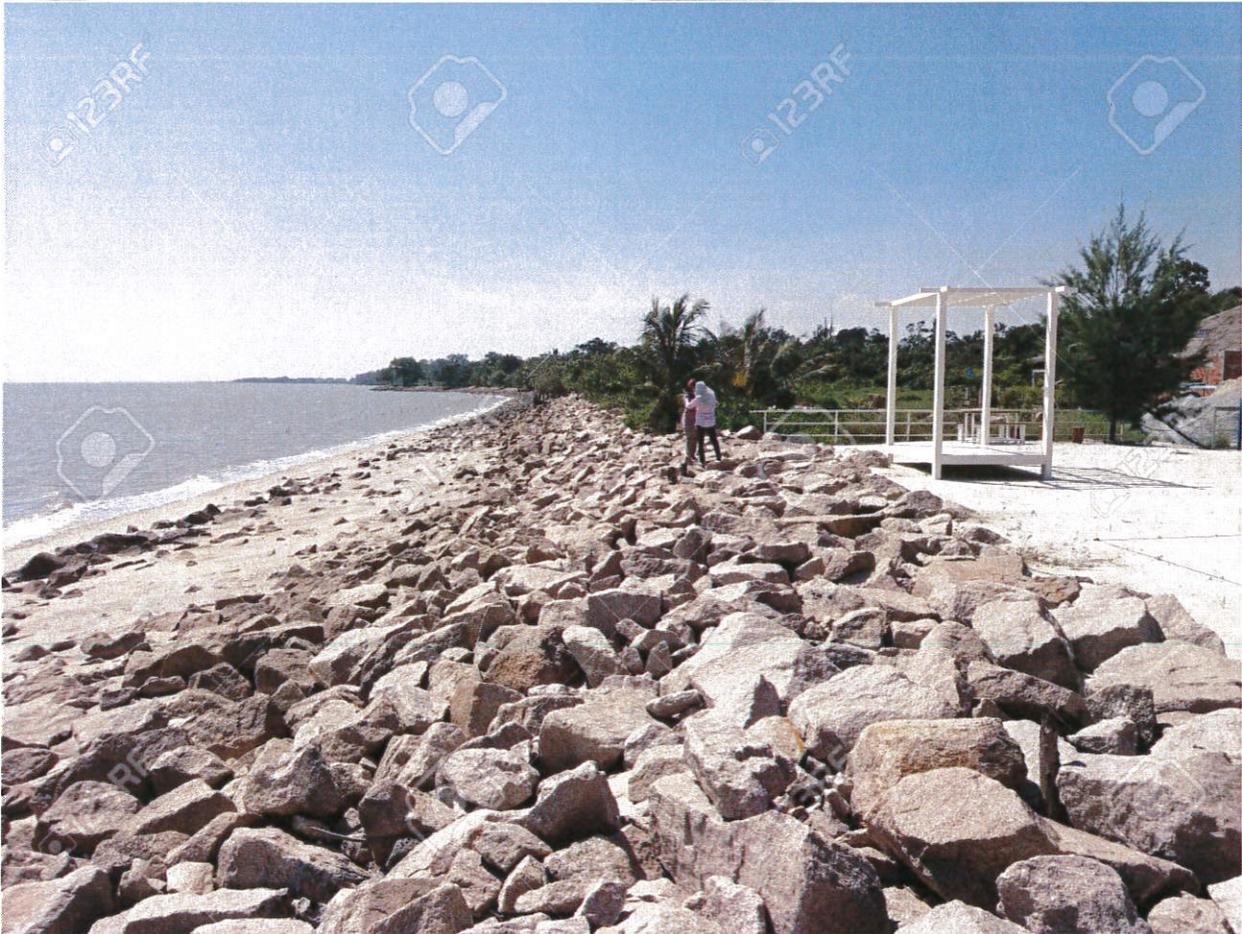


*Revetment*



*Revetment*

# Revetment Examples





## MEMO

TO: Zoning, Parks and Buildings Committee  
FROM: Edmund Henschel, Village Manager *EHS*  
RE: Klode Beach Erosion Repairs  
DATE: August 13, 1997

On July 14th, Oscar Dittrich made a presentation to the Zoning, Parks and Buildings Committee proposing a more permanent solution to the erosion that occurs in the north cell of Klode Beach. He presented a great deal of information and staff was asked to summarize this information and make a recommendation to the Committee.

Based on the annual survey conducted since the late 1980's by Baird Coastal Engineers, the north cell has eroded back approximately 19' and is getting uncomfortably close to the buried retaining wall. We need to take some action to ensure that the retaining wall is not undermined. We have annually regraded the original tunnel rock to create a better slope, but Dale Solon states he has not added any new material in recent years to replace that which has been washed away.

Mr. Dittrich has proposed a two phase approach to solving this problem.. The first is the installation of "Z" shaped blocks laid on their side which would lock together. The blocks would be 6' long with 12" steps going from lake level to the top of the bank (see sketch). Each block would weigh approximately one ton. Mr. Dittrich feels that their weight and the fact that they are locked together will prevent them from being moved by wave action.

Tews Lime and Gravel would make these blocks out of surplus concrete for \$30.00/per block. The total cost of material and installation would be approximately \$50,000. Mr. Dittrich feels this would prevent erosion, improve aesthetic appearance and be safer than the existing 6' or more drop off from the bank to water level.

The second phase would be to construct submerged rock piles between and approximately 100' further out from the existing exposed rock piles in the lake. These would have the effect of creating a permanent barrier to absorb wave energy before the waves reach the shore. A cost estimate for Phase 2 work is not available.

President Gormley noted that when Klode Park was rebuilt in 1986, a certain amount of erosion was anticipated, requiring on-going maintenance. In order to restore the north cell to its original dimensions, would require approximately 600-700 cubic yards of stone placed back into the cell. This would cost approximately \$15,000 - \$20,000.

This material would provide a more uniform slope from the top of the bank to the water and again provide protection to the buried retaining wall. The Public works Department would then have additional material to annually reshape the slope until new fill would have to be added again. This annual maintenance would cost approximately \$1,000/year. The total estimate for a 10 year period would be approximately \$25,000 - \$30,000. (This assumes no new material would be required during this 10 year period.)

Based on the above costs, it appears that it would be more cost effective to install additional fill material rather than "Z" blocks. However, assuming the blocks do not move or get undermined as a result of wave action, they would be a more aesthetically pleasing solution.

EMH/pjv

1-16-20  
Klode Park Beach



1-16-20  
Klode Park Beach





# 406 Public Assistance Mitigation

*Funding: Available for disaster-damaged facilities only.*

If your damaged facility is eligible for permanent repairs, you may also be eligible for additional cost-shared assistance under Section 406 of the Stafford Act for cost-effective measures that will prevent future similar damage to your facility. These measures are called hazard mitigation measures. FEMA strongly encourages you to consider hazard mitigation opportunities as a part of the repair and restoration of your facility. Hazard mitigation measures for your project may be proposed by you, FEMA, or the State. While your basic funding will return your facilities to their pre-disaster design, hazard mitigation measures will improve on the pre-disaster design. (Upgrades required to meet legally adopted applicable codes and standards are part of your basic eligible restoration work, not hazard mitigation measures.)

## Cost Effective Measures

Hazard mitigation opportunities usually present themselves at sites where damages are repetitive and simple measures will solve the problem. A hazard mitigation proposal is a written description and cost estimate of what it will take to repair the damage in such a way as to prevent it from happening again. The proposal is submitted with the Project Worksheet and describes in detail the additional work and cost associated with the mitigation measure. **Hazard mitigation measures must meet one of the following tests of cost-effectiveness:**

- **Cost no more than 15 percent of the total eligible cost of eligible repair work for the damaged facility**
- **Cost no more than 100 percent of the total eligible cost of eligible repair work and on the list of FEMA-approved mitigation measures**
- **Have a benefit-cost ratio of equal to or greater than 1.0**

Mitigation measures can be technically complex and must be thoroughly evaluated for feasibility, therefore you may want to ask your FEMA Public Assistance representative for technical assistance in identifying hazard mitigation measures or in preparing a proposal. Since hazard mitigation will often change the pre-disaster design of the facility and will require consideration of environmental and historic preservation issues, FEMA may also obtain assistance from Technical Specialists in those areas.

### Examples of reasonable mitigation measures:

- Constructing floodwalls around damaged facilities
- Installing new drainage facilities (including culverts) along a damaged road
- Dry flood proofing to damaged components
- Slope stabilization to protect facilities:
  - Riprap
  - Retaining walls or gabian baskets
  - Geotextile fabric
- Use of disaster-resistant materials for power poles

## FEMA's 406 Hazard Mitigation Program

(excerpt PAPPG, 97-99)

### Section 406 Hazard Mitigation

FEMA evaluates proposed mitigation measures for cost-effectiveness, technical feasibility, and compliance with EHP laws, regulations, and EOs. In addition, FEMA ensures that the mitigation does not negatively impact the facility's operation or surrounding areas, or create susceptibility to damage from another hazard.

Mitigation measures must be cost-effective. FEMA considers mitigation measures to be cost-effective if any of the following criteria are met:

- The cost for the mitigation measure does not exceed 15 percent of the total eligible repair cost (prior to any insurance reductions) of the facility or facilities for which the mitigation measure applies.
- The mitigation measure is specifically listed in [Appendix J: Cost-Effective Hazard Mitigation Measures](#), AND the cost of the mitigation measure does not exceed 100 percent of the eligible repair cost (prior to any insurance reductions) of the facility or facilities for which the mitigation measure applies.
- The Recipient or Applicant demonstrates through an acceptable benefit-cost analysis (BCA) methodology that the measure is cost-effective. FEMA's BCA software<sup>255</sup> provides appropriate BCA methodologies.

Many mitigation measures that do not meet the first two requirements above prove to be cost-effective based on a BCA. If the mitigation measure is not cost-effective based on the first two criteria, FEMA, the Recipient, and the Applicant will work together to develop a BCA to determine whether it is cost-effective.

A BCA is based on a comparison of the total eligible cost for the mitigation measure to the total value of expected benefits. Benefits include reductions in:

- The cost for the mitigation measure does not exceed 15 percent of the total eligible repair cost (prior to any insurance reductions) of the facility or facilities for which the mitigation measure applies.
- The mitigation measure is specifically listed in [Appendix J: Cost-Effective Hazard Mitigation Measures](#), AND the cost of the mitigation measure does not exceed 100 percent of the eligible repair cost (prior to any insurance reductions) of the facility or facilities for which the mitigation measure applies.
- The Recipient or Applicant demonstrates through an acceptable benefit-cost analysis (BCA) methodology that the measure is cost-effective. FEMA's BCA software<sup>255</sup> provides appropriate BCA methodologies.

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A BCA is based on a comparison of the total eligible cost for the mitigation measure to the total value of expected benefits. Benefits include reductions in:

- Damage to the facility and its contents
- The need for emergency protective measures
- The need for temporary facilities
- Loss of function
- Casualties (typically included only for earthquake, tornado, and wildfire mitigation)

To be eligible, the mitigation measures must directly reduce the potential of future, similar damage to the facility. Generally, eligible mitigation measures are those the Applicant performs on the damaged portion(s) of the facility. If the Applicant proposes mitigation measures that are distinct and separate from the damaged portion(s) of the facility, FEMA evaluates the proposal and determines eligibility on a case-by-case basis considering how the mitigation measure protects the damaged portion(s) of the facility and whether the mitigation measure is reasonable based on the extent of damage. Some examples of such measures include:

- Constructing floodwalls around damaged facilities
- Installing new drainage facilities (including culverts) along a damaged road
- Dry floodproofing both damaged and undamaged buildings that contain components of a system that are functionally interdependent (i.e., cases where the entire system is jeopardized if any one component of the system fails)

If FEMA determines mitigation measures to undamaged portions ineligible as 406 hazard mitigation, the Applicant may request HMGP (Section 404) funding from the State or Territory to provide protection to undamaged portions, while utilizing PA Program (Section 406) mitigation funds to provide protection to damaged portions.

If FEMA approves mitigation funding and the Applicant does not complete the mitigation work, FEMA will deobligate the mitigation funds.



June 18, 2020

Memo to: Chairman Miller and Members of the Public Works Committee  
From: John Edlebeck, P.E., Director of Public Works

Re: **Village Hall / Library Parking Lot Biofilter Installation Project – MMSD Funding**

In the 2020 Village Budget, \$8,000 was approved for landscaping renovation work in the turf area between the Village Hall / Library Parking Lot and the public street sidewalk to the west (see photograph). Many years ago this area was planted with bushes for aesthetic purposes. Over time many of those bushes have died with only a few remaining. We have received comments from area residents regarding the look of this area and therefore brought forth this item for 2020 Village Budget consideration and approval.

After some investigation, I was able to find a funding source to improve this area for both aesthetics purposes as well as stormwater quantity and quality purposes. The stormwater benefits are important as we are required per our DNR MS-4 Stormwater Permit to continually improve stormwater quality in the Village.

The funding source is coming from the MMSD Green Solutions (GS) Fund. This fund provides annual monetary allocations to all 28 municipalities in their service area to be used only for approved stormwater quality improvement projects. We have funded the following Village projects with MMSD GS Fund monies in the recent past:

- Police Department parking lot pervious pavement and biofilter
- Bartlett Drive infiltration swale

Below summarizes our current MMSD GS Fund account balance:

Rollover from 2019	\$289,587
Annual Allocation in 2020	\$365,892
<u>Expected 2021 Allocation</u>	<u>\$170,000</u>
Total as of 4/1/2021	\$825,479
<u>Allowed Rollover on 4/1/2021</u>	<u>\$300,000</u>
<i>Amount Needed to Prevent Loss</i>	<i>\$525,479</i>

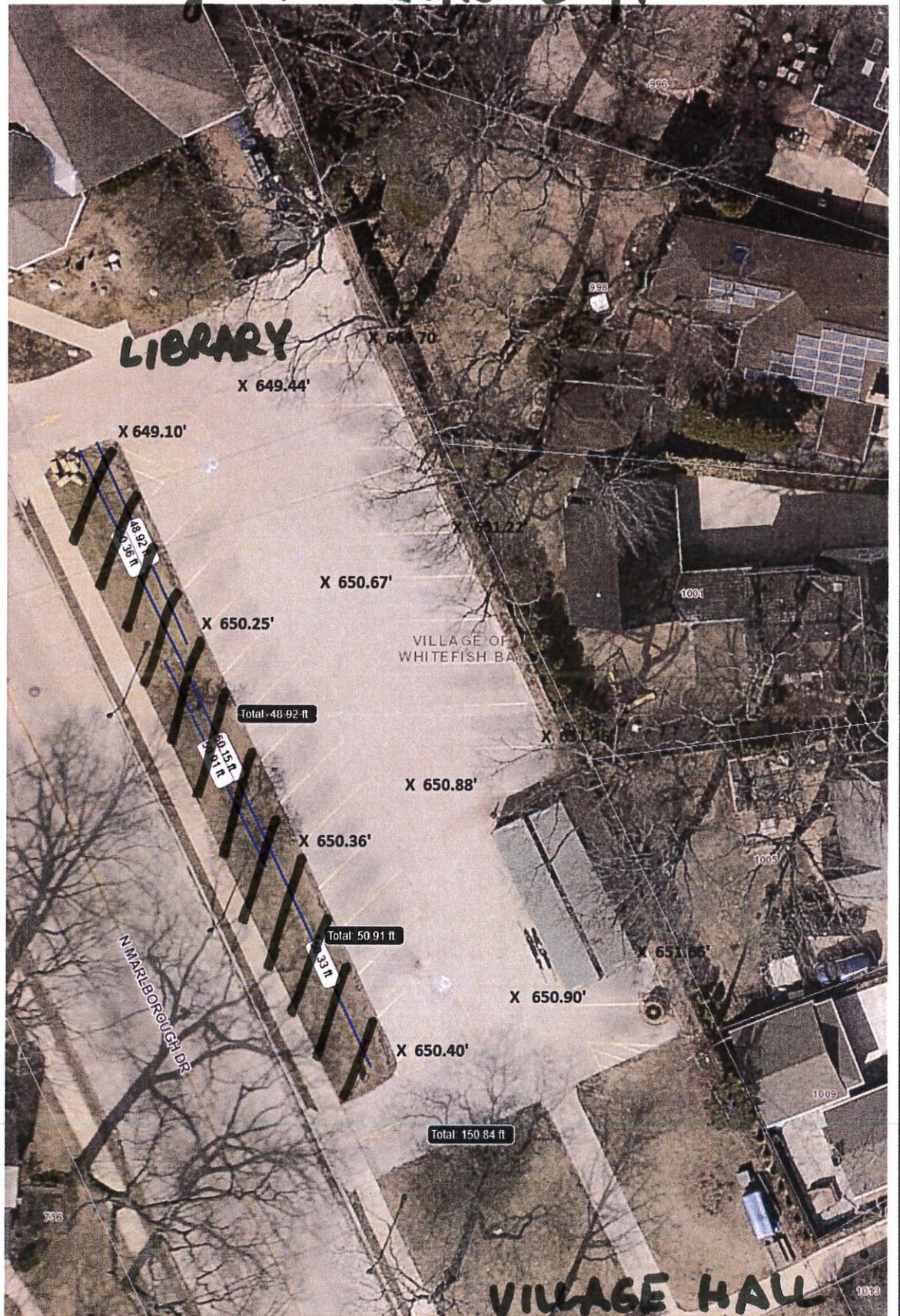
Any funds exceeding the rollover amount can be accessed by any Village property owner for private stormwater quality improvements. To expend this amount and not risk losing these Village of Whitefish Bay allocated MMSD GS funds, I am recommending the following expenditures:

<b>Project</b>	<b>Estimated Cost</b>	<b>Year</b>
Silver Spring Park Biofilter (project approved)	\$ 12,000	2020
Consaul Commons Redevelopment Pervious Pavement (approved)	\$ 75,000	2021
<i>Village Hall / Library Parking Lot Biofilter Installation Project (proposed)</i>	<i>\$ 89,000</i>	<i>2021</i>
2021 Alley Reconstruction Project (proposed)	\$300,000	2021
2021 Klode Park / Klode Beach biofilter project (proposed)	\$ 75,000	2021

I would The Public Works Committee to approve the following motion of recommendation to be brought forward to the Village Board:

**To recommend to the Village Board to approve the Village Hall / Library Parking Lot Biofilter Installation Project pending MMSD GS funding approval.**

# Village of Whitefish Bay, WI



Library Parking Lot

*Benchmark?*



SCALE: 1" = 20'

Village of Whitefish Bay  
 155 W. Fairmount Ave  
 Whitefish Bay, WI 53217-5399  
 414-962-6690

Print Date: 4/28/2020



Image capture: Sep 2019 © 2020 Google

Whitefish Bay, Wisconsin



Street View



## Village of Whitefish Bay Public Works Department

155 W. Fairmount Ave • Whitefish Bay, Wisconsin 53217 • (414) 962-6690 • Fax (414) 967-1391

John Edlebeck, P.E., Director of Public Works

### **Village of Whitefish Bay, Wisconsin MMSD Green Solution Fund Project Recommendations**

#### *WORK PLAN*

#### Village of Whitefish Bay, Wisconsin Village Hall and Library Parking Lot Biofilter Installation Project

#### **Description of Proposed Green Infrastructure Stormwater Quality Project**

The Village of Whitefish Bay, Wisconsin is seeking funding from the Milwaukee Metropolitan Sewerage District (MMSD) Green Solutions Fund in order to construct a stormwater quality best management practice (BMP) improvement in the Village. The proposed work will consist of the construction of a biofilter with underground gravel storage located on Village property in an area that overland drains the existing Village parking lot between Village Hall, 5300 N Marlborough Dr, and the Whitefish Bay Public Library, 5420 N Marlborough Dr. This project will improve storm water quality entering the Village storm sewer collection and conveyance system by filtering Total Suspended Solids (TSS) and Total Phosphorus (TP) as well as reduce storm water quantity through the detention of stormwater during rain events. Currently there is no stormwater treatment or storage of this parking lot surface water drainage.

#### **Implementation**

The Village Hall and Library Parking Lot Biofilter Installation Project will begin with project design utilizing the consulting engineering firm The Sigma Group Inc. They will provide needed plans and technical specifications for the project. Sigma Group will meet with Village representatives on site to discuss scope and limits of work and then provide concept design for review by Village staff. Sigma Group will then provide final engineering drawings to include site survey and erosion plan, site grading, biofiltration design, site landscape plans, and full project technical specifications including bidding documents.

Final design will include a biofilter that will capture stormwater sheet flow from approximately 10,000 square feet of the parking lot. The biofilter will have underground gravel storage with a 6-inch diameter perforated underdrain pipe and cleanout. The area will be landscaped and include educational signage.

## Public Information and Education

The Village shall provide updates of the installation project progress through the Village website, newsletter, and facebook page. Educational signage will be installed adjacent to the biofilter to educate the public on the operation and benefits of this project.

## Budget for the Village Hall and Village Hall Parking Lot Biofilter Installation Project

Project Cost including signage	\$75,000.00
Engineering Design and Consultation	9,900.00
<u>Inspection</u>	<u>\$4,000.00</u>
MMSD Reimbursement	(\$88,900.00)

### WFB Green Solutions Engineer's Estimate of Probable Cost

Short Description	Unit Of Measure	Item Quantity	Item Unit Cost	Total
Strip, stockpile and respread existing topsoil	S.Y.	170.00	\$8.00	\$1,400.00
Excavating for Bio	C.Y.	190.00	\$20.00	\$3,800.00
Bioswale Gravel Storage	Tons	62.50	\$42.00	\$2,700.00
Jute Netting for bioswales	S.Y.	120.00	\$8.00	\$1,000.00
6" perforated underdrain and fittings	L.F.	100.00	\$20.00	\$2,000.00
6" PVC clean out with cap	Each	2.00	\$200.00	\$400.00
Bioswale Plugs (2.5")	Each	960.00	\$8.00	\$7,700.00
36" storm sewer manhole with bedding and backfill	Each	1.00	\$3,000.00	\$3,000.00
12" Storm Sewer	L.F.	100.00	\$85.00	\$8,500.00
Beehive grate and frame	Each	1.00	\$600.00	\$600.00
PVC Liner for Stormwater Green Infrastructure	S.F.	1,800.00	\$3.00	\$5,400.00
Engineered Soil for Bioswale	Tons	225.00	\$42.00	\$9,500.00
Restoration	L.S.	1.00	\$4,000.00	\$4,000.00
Erosion Control	L.S.	1.00	\$1,000.00	\$1,000.00
			<b>Subtotal:</b>	\$51,000.00
			<b>Contingency</b>	\$10,200.00
			<b>Design Engineering</b>	\$9,900.00
			<b>Construction Admin</b>	\$4,000.00
			<b>Total</b>	\$75,100.00

## Schedule

Schedule will be prepared by The Sigma Group, Inc. upon written authorization to proceed. Estimated project installation to take place either Fall 2020 or Spring 2021.

## **Procurement**

The engineering consulting work will be undertaken by the The Sigma Group, Inc. This construction installation project will be awarded to the lowest responsible bidder through the public bidding process.

## **Data Attributes**

Not applicable.

## **Goals and Outcomes**

The goal of this project is to capture, detain, and filter surface water from a paved parking lot during rain events. The initial moments of a rain event are critical and this will help capture the first flush and prevent TSS and TP from entering the Village storm sewer system as well as provide relief to the storm sewer system by detaining and reducing the storm water quantity during and after the rain event. This project will also aid in the prevention of storm water entering the sanitary sewer system through Inflow and Infiltration (I/I).

## **Project Report**

After completion the Village Hall and Library Parking Lot Biofilter Installation Project a report will be generated and submitted to MMSD. A final report shall include map of location, total additional capacity provided, storm year design, and a summary of lessons learned.

## **File/Document Management**

Final daily inspection reports during construction shall be provided to the Village and stored with other project documents.

Prepared:

May 22, 2020

Spencer Charczuk, Staff Engineer

John Edlebeck, P.E. Director of Public Works

May 15, 2020

Project Reference #19369

Mr. John Edlebeck  
Director of Public Works  
Village of Whitefish Bay  
5300 N Marlborough Drive  
Whitefish Bay, WI 53217

**SUBJECT: Civil Engineering Proposal  
Green Solution Projects, Whitefish Bay, Wisconsin  
Library and City Hall Parking Lot Green Solutions**

Dear John,

Thank you for considering The Sigma Group, Inc. (Sigma) for civil engineering services associated with the proposed green solution project in the Village of Whitefish Bay (The Village). Sigma's understanding of the projects, proposed scope of work, fee estimate, and time frame are presented below for your review and consideration.

Sigma has significant experience designing and incorporating green infrastructure solutions into existing environments, including implementing green alleys in Shorewood and the development of a "green parking lot" for the City of Wauwatosa, among others. We will utilize this experience base to ensure that the design meets all stakeholders needs for the project.

### **PROJECT UNDERSTANDING**

The Village is interested in utilizing "green solution funding" made available by MMSD to design and install green infrastructure; specifically a landscaped bioretention area adjacent to the Library and Village Hall parking lot. The bioretention area will provide stormwater quality and quantity improvement for the adjacent paved area along with upgraded landscaping.

The following are a list of key assumptions that were made for the proposal based on our understanding of the project:

- The Village will provide survey for the project. Sigma will supplement as needed.
- The project will not be adding ½ acre of impervious or involve more than 1 acre of disturbance so it will be exempt from stormwater management and WDNR WRAPP Permitting.
- Sigma will provide the plans and technical specifications. We assume that the Village will provide the front-end items required for the Project Manual

- Sigma has not included any construction administration at this time. We would be glad to provide a proposal for that work once the scope and schedule are available

## **SCOPE OF WORK**

### **Biofiltration Installation at Parking Lot Between Village Hall and Library**

- Meet with Village on site to discuss scope and limits of work
- Provide concept design for review by Village staff
- Provide 50% Engineering Drawings for review by Village to include
  - Site Survey and Erosion Control Plan
  - Site Grading and Biofiltration Design
  - Site Landscape Plan
  - Site Details
- Provide 100% Engineering Drawings for review by Village to include
  - Site Survey and Erosion Control Plan
  - Site Grading and Biofiltration Design
  - Site Landscape Plan
  - Site Details
- Provide Technical Specifications
- Support Village with Preparation of Project Manual
- Answer questions during Bidding
- Provide Recommendation of Award Letter

### **COST ESTIMATE**

Our proposed lump sum fees for the survey and engineering services outlined above are presented below.

Biofiltration Installation at Parking Lot Between Village Hall and Library      \$9,900

### **SCHEDULE**

Sigma is prepared to begin working on this project upon receipt of written authorization to proceed and will complete the survey work within 4 weeks.

We Appreciate the opportunity to assist you. Please do not hesitate to contact us at (414) 643-4132 with any questions.

Sincerely,

**THE SIGMA GROUP, INC.**



Christopher Carr, PE  
Civil Group Leader



Paul Imig, PE  
Senior Engineer

Cc: Sean Miller, Sigma

**WFB Green Solutions  
Engineer's Estimate of Probable Cost**

<b>Short Description</b>	<b>Unit Of Measure</b>	<b>Item Quantity</b>	<b>Item Unit Cost</b>	<b>Total</b>
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			<b>Total</b>	\$75,100.00