

Integrated Stormwater Management (iSWM) Subcommittee Meeting

April 21, 2021

Staff contact - Sydni Ligons

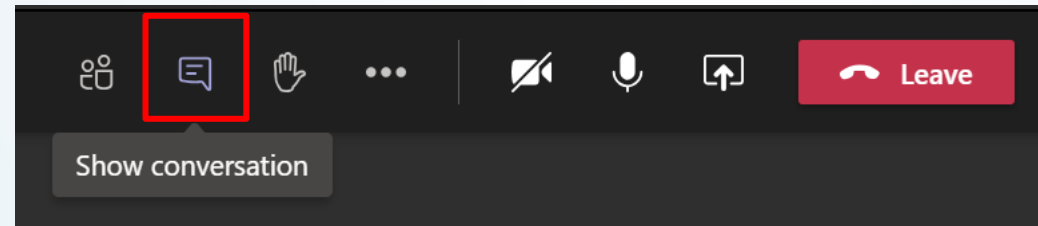


OVERVIEW OF April 21, 2021 MEETING AGENDA

1. Welcome and Introductions
2. Approval of January 13, 2021, [Meeting Summary](#)
3. Update of Task Order 4 progress (Work Scope). Presented by Halff
4. Review and Finalize draft work scope 6
5. iSWM Certification Outcome 17 Discussion
6. 87th Texas Legislature regular session update
7. iSWM Certification Update
8. Regional Public Works Program Update.
9. Upcoming Events and Conferences.
10. Future Agenda Items and Roundtable Discussion.

WELCOME AND INTRODUCTIONS

- Approval of January 13, 2021, [Meeting Summary](#)
 - The meeting agenda, presentation and handouts are located on the iSWM Subcommittee webpage - <https://www.nctcog.org/envir/committees/public-works-council/iswm-implementation-subcommittee>
- Please use the chat function to add your name and organization



< iSWM Subcommittee meeting 4/21/21

 Visual settings

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 Respond at Pollev.com/nctcogenv444

 Text **NCTCOGENV444** to **22333** once to join, then **A or B**

Do you approve the January 13th meeting summary?

Yes

A

No

B

Total Results: 0

SUMMARY OF TASKS FROM ISWM 2020 TASK ORDER 4

- Task 1 – Project Management and Meeting Attendance
- Task 2 – Reorganize/Re-evaluate Site Development Controls
- Task 3 – Guidance on developing a regional detention program
- Task 4 – Detention criteria guidance research
- Task 5 – Re-evaluate 85th Percentile (1.5”) Rainfall Requirements
- Task 6 – 5-Year Outreach and Implementation Strategy
- Task 7 – Provide details and specifications for water quality BMPs


Please click here to view documents



TASK 2 – REORGANIZE/RE-EVALUATE SITE DEVELOPMENT CONTROLS

- Comments have been addressed from subcommittee after January meeting
- 15 Summary Pages are finalized
- Need to choose priority for Task Order 6

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Modular Porous Paver Systems

Description
Modular porous paver systems are pavement surfaces composed of structural units with void areas. The void areas are filled with pervious materials such as sand or grass turf. These pavers are installed over a gravel base and underlying permeable soils. The gravel base provides storage for stormwater runoff prior to infiltration.

Design Considerations


- Consists of structural units with void areas that are typically filled with pervious materials such as coarse sand, gravel, or turf.
- Intended for low traffic areas, or for residential or overflow parking applications.
- Soil types need to be considered—an infiltration rate of 0.5 to 3 inches/hour is required (unless an underdrain is used).
- The ratio of the contributing impervious area to the porous paver surface should be no more than 3:1.
- Slopes should be less than 5%, but preferably less than 2%.
- A minimum of 2 feet of clearance between the bottom of the gravel and the seasonally high groundwater table or underlying bedrock is required.

Key Advantages

- Modular porous paver systems provide a reduction in runoff volume.
- There is a high level of pollutant removal with these facilities.
- Some types of systems can be purchased from commercial vendors.

Limitations

- There are high maintenance requirements associated with modular porous paver systems.
- These systems can fail if designed incorrectly, placed in unstabilized areas, or if maintenance is not properly done.
- There is the potential for groundwater contamination with modular porous paver systems.
- Cannot be used in areas where contamination is possible (ex. industrial sites).



Modular Porous Paver System In Encinitas, CA. (Source: Tetra Tech)

Target Constituent	Removal Rate
Total Suspended Solids	not applicable
Total Phosphorus	
Total Nitrogen	
Fecal Colliform	Insufficient data
Heavy Metals	

Implementation Considerations

Land Requirement: LOW
Capital Cost: MEDIUM
Maintenance Burden: HIGH

Suitability
The ISWM manual has designated permeable pavement facilities as suitable for providing:

- Water Quality Protection
- Streambank Protection

Maintenance

- Trash, leaf, debris and sediment removal.
- Vacuum or sweep the surface.
- Replace fill material as needed.
- Clear underdrain pipes of debris.
- Perform structural repairs as needed.
- Mow grass when using a permeable paver grid system.

For a similar design, see the Summary Page for Porous Concrete

Published April 2020

TASK 3 – GUIDANCE ON DEVELOPING A REGIONAL DETENTION PROGRAM

- Addressed comments received from subcommittee after January meeting
 - Added Appendix A that provides a template of an inspection and maintenance agreement

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Landowner/Developer Inspection and Maintenance Agreement

STATE OF TEXAS

KNOW ALL PERSONS BY THESE PRESENTS

COUNTY OF _____

THIS AGREEMENT, made and entered into this _____ day of _____, 20_____, by and between _____, hereinafter called the "Landowner," whose address is _____, and the City (or County) of _____, Texas, whose address is _____, hereinafter called the "City" (or "County").

WITNESSETH, that:

WHEREAS, the Landowner is the owner of certain real property described as an approximately _____ acre tract located in the _____ Survey, Abstract No. _____ as recorded by deed recorded in Volume _____, Page _____, dated _____ in the Public Official Records of _____ County, Texas, Instrument Number _____, hereinafter the "Property"; and

WHEREAS, the Landowner is proceeding to build on and develop the Property; and

WHEREAS, the Site Plan/Subdivision Plan known as _____ City (or County) File No. _____ hereinafter called the "Plan", which is incorporated herein by reference, as approved or to be approved by the City (or County), provides for stormwater management facilities within the confines of the Property; and

WHEREAS, the City (or County) and the Landowner, its successors, assigns and heirs in interest, including any Homeowners Association (HOAs) or Planned Improvement District (PID) agree that the health, safety, and welfare of the residents of _____, Texas require that on-site stormwater management facilities be constructed and maintained on or under the Property; and

TASK 4 – DETENTION CRITERIA GUIDANCE RESEARCH

- Comments have been addressed from subcommittee after January meeting
- Comments were minor
- Document has been finalized
- No change is recommended to iSWM Standard at this time

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MEMORANDUM

TO: North Central Texas Council of Governments ISWM Implementation Subcommittee **DATE:** April 2, 2021

FROM: Mikel Wilkins, Ashley Lowrie, Ben Pylant
TBG Partners, Half Associates, Half Associates

EMAIL: mikel.wilkins@tbgpartners.com, alowrie@half.com, bpylant@half.com

SUBJECT: Research of Volumetric Detention and Channel Protection Volume Design Guidance State of Practice

TBG Partners has completed their review of the current state of practice for the design of extended detention systems and the determination of channel protection volume storage requirements and associated allowable discharge rates and drawdown times both regionally and nationally. Specifically, they reviewed the following city and agency criteria and compared it to the current iSWM Criteria Manual and Technical Manual Guidance: Austin, TX, San Antonio, TX, Fayetteville, AR, Tulsa, OK, Little Rock, AR, and Harris County, TX. Based on this review of local and regional guidance it is recommended that the current iSWM criteria guidance remain unchanged.

The predominant national standard of practice as it relates to the volumetric design of extended detention basins to capture the 'channel protection volume' or 'stream protection volume' is based on the determination of the 2-year, 24-hour storm event under post development conditions and releasing that volume over a 24-hour period with a peak discharge equal to the 2-year, 24-hour storm event under predevelopment conditions. There is limited evidence that this standard of practice is particularly impactful in terms of streambank protection and erosion prevention. There is substantial documentation and research that indicates that this practice may in fact lead to increased frequency and duration of channel or stream alteration under erosive bank full or near bank full conditions. "Volume of runoff and the frequency of 'channel forming' events increase substantially with increased impervious surfaces (development). The most commonly practice form of channel protection, 2-year control, does not reduce channel erosion and may actually increase the amount of time the channel is exposed to erosive flows (McCuen and Mogley, 1988, MacRae, 1996, and CWP, 2000)." The iSWM standard is currently based on the determination of the 1-year, 24-hour storm event under pre-development conditions.

This is highly dependent on the structural properties of the channel bed and bank conditions within the receiving stream and also the length of time that a stream has been subject to developed runoff conditions. The erosive potential and sensitivity of a receiving stream is based on its current state of aggradation or degradation and this significantly influences the determination of the acceptable frequency, duration, and intensity within the system that will optimally reduce future erosion and sedimentation within the system.

1



TASK 5 – RE-EVALUATE 85TH PERCENTILE (1.5”) REQUIREMENTS

- **Comparison to other methodologies:**

- TRWD recently revised the estimates for water quality volume (WQV) using a continuous hydrology simulation model. While the runoff capture is still based on the 85th-percentile storm event, the WQV accounts for basin drain time.
- No other similar methodologies were found in Texas at this time.

- **Conclusions:**

- Optimal WQCV basin size is 0.95-inches (based on runoff volume capture) and 0.88-inches (based on storm events capture)
- WQ-COSM outcomes are sensitive to the input parameters

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TASK 5 – RE-EVALUATE 85TH PERCENTILE (1.5”) REQUIREMENTS

- **Conclusions (continued)**

- WQ-COSM methodology optimizes WQCV based on a long-term analysis of rainfall data and therefore provides a sound basis for BMP sizing.
- The WQCV determined using WQ-COSM is consistently smaller than the volume determined for complete capture of the 85th-percentile storm. A smaller WQCV also implies lower capital costs.

- **Recommendations added to memorandum**

- The WQCV based on the WQ-COSM methodology is therefore recommended as an alternate option to the iSWM's 85th-percentile storm capture method.
- Capture volume should be calculated using both methods to evaluate if the level of treatment required to meet water quality criteria by one or the other or both methods. The low-cost option capable of achieving water quality goals should be selected.

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TASK 6 – 5-YEAR OUTREACH AND IMPLEMENTATION STRATEGY

- Draft report was submitted to COG in **February**
- Presented to Public Works Council on **March 25th**
 - Each year check in on progress of achieving 5-year Strategy goals with Public Works Council
- All Tasks for Task Order 6 are from 5-year Strategy

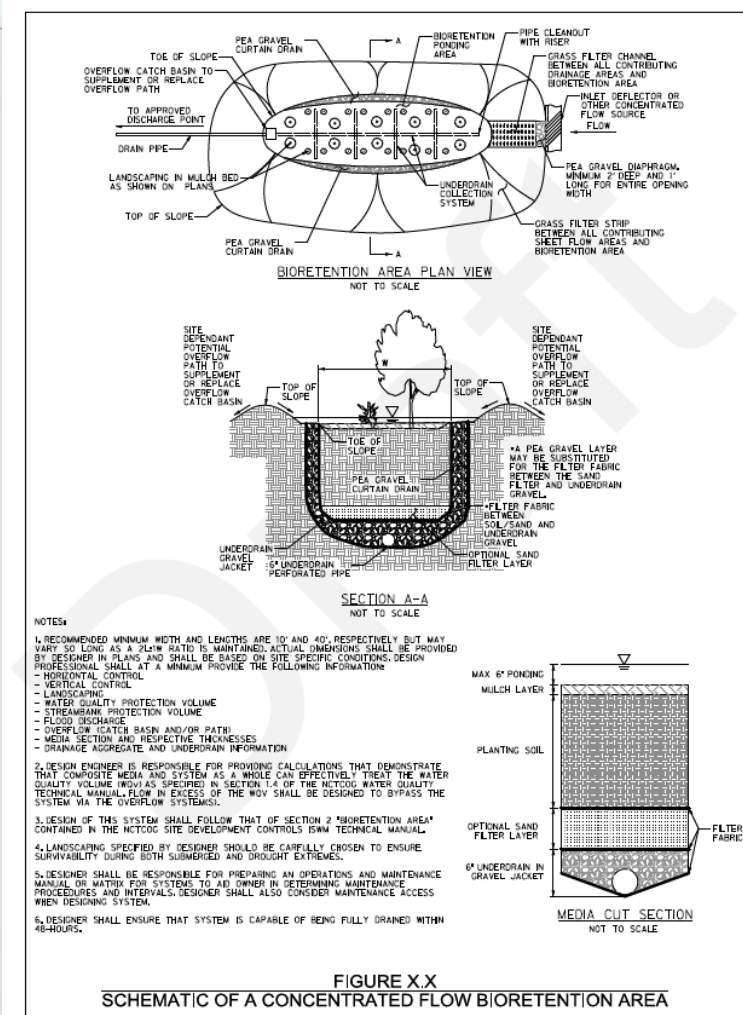


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TASK 7 – WATER QUALITY BMPS SCHEMATICS

- Addressed comments received from subcommittee after January meeting
- Holding specifications for possible future implementation through Standard Drawings Committee
 - No plans to implement at this time

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Old Schematic

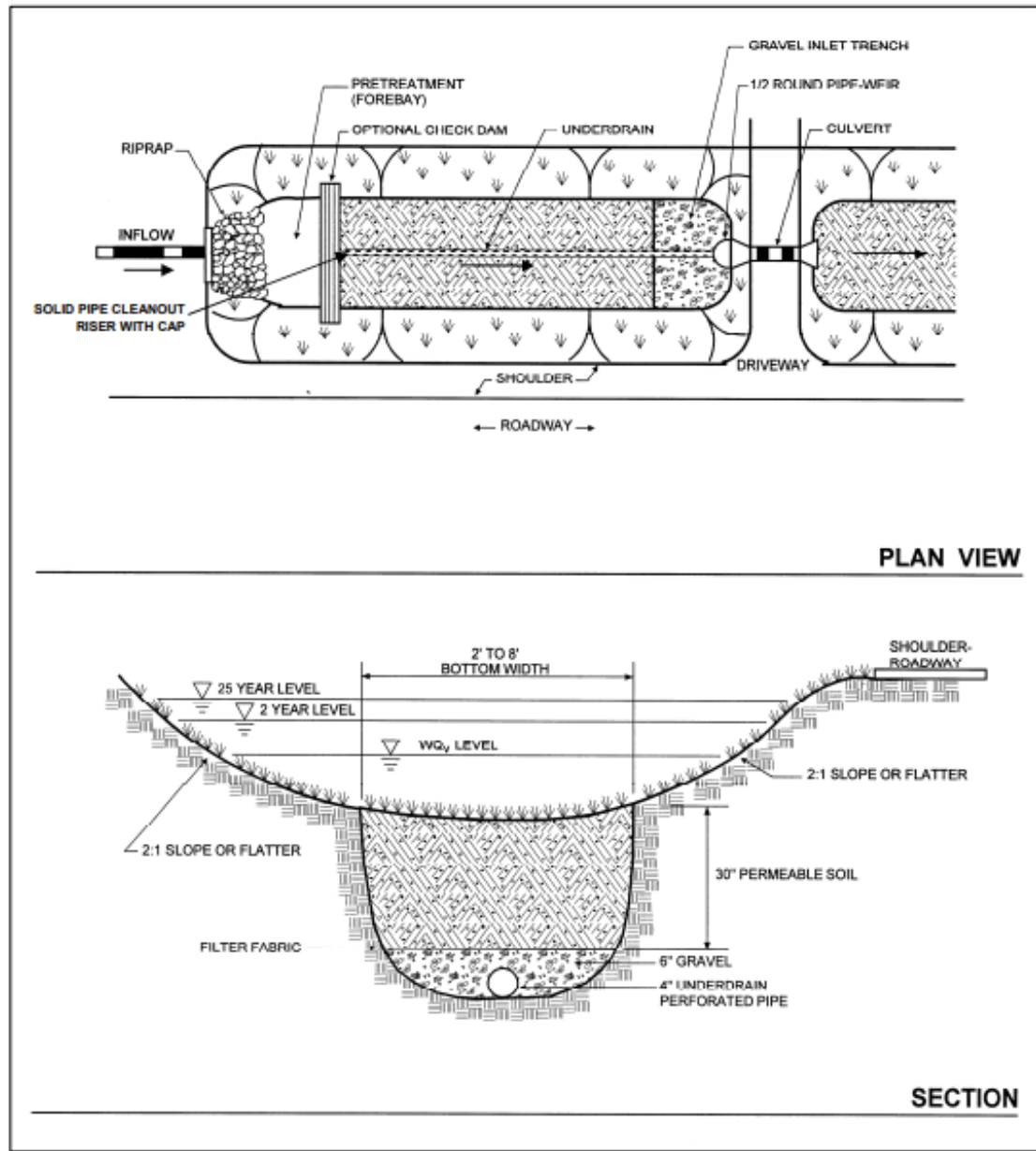


Figure 3.2 Schematic of Dry Swale
(Source: Center for Watershed Protection)

New Schematic

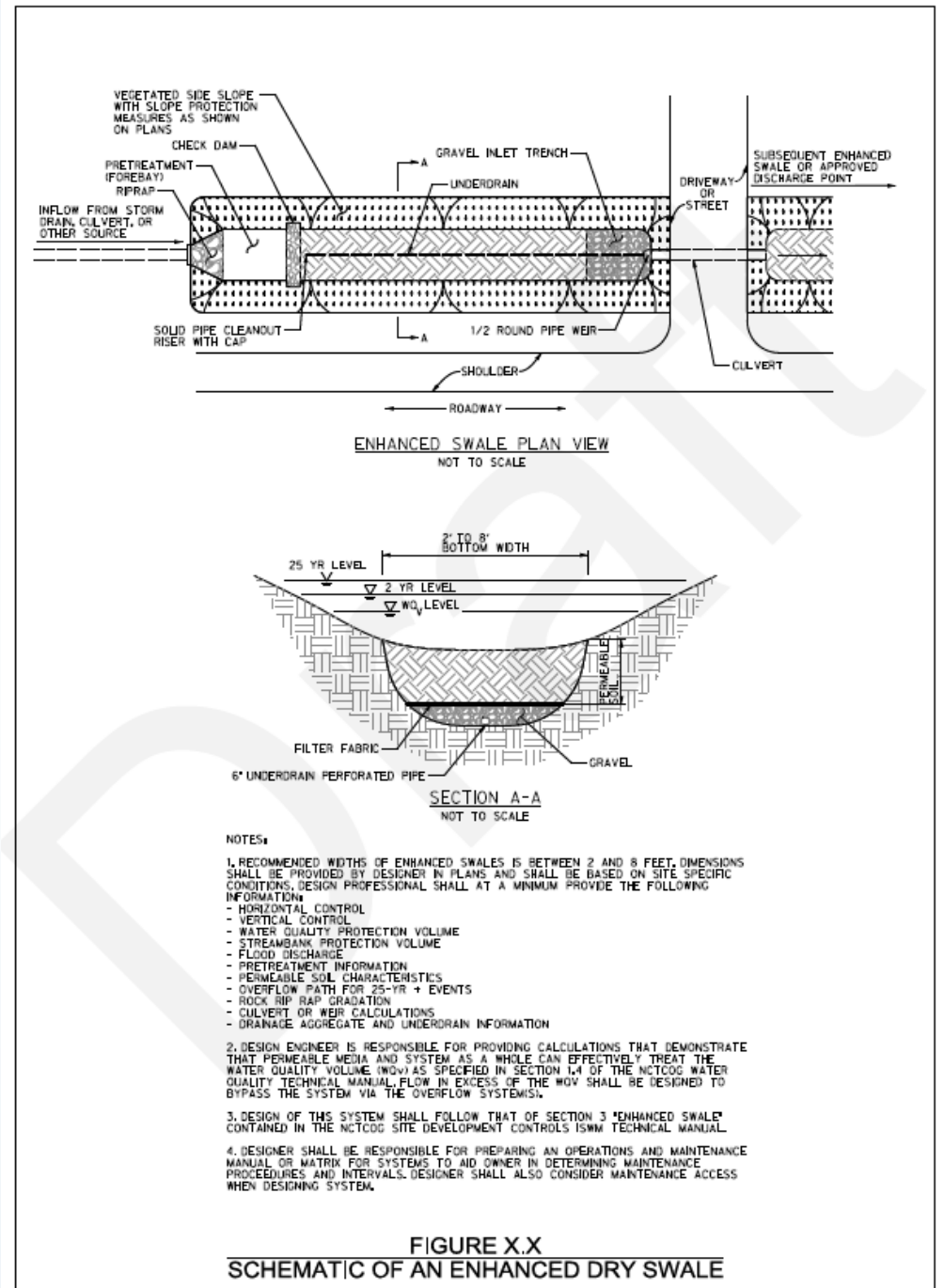


FIGURE X.X
SCHEMATIC OF AN ENHANCED DRY SWALE



NEXT STEPS FOR TASK ORDER 4 DOCUMENTS

- Provide additional feedback to Sydni Ligons at sligons@nctcog.org by **April 29, 2021**
- Draft Task Order 4 documents will be finalized by **Early May**
 - Task 2 Reorganize/Re-evaluate Site Development Controls
 - Task 3 Guidance on developing a regional detention program
 - Task 4 Detention criteria guidance research
 - Task 5 Re-evaluate 85th Percentile (1.5") Rainfall Requirements
 - Task 6 5-Year Outreach and Implementation Strategy
 - Task 7 Provide specifications for water quality BMPs
- Documents updated and posted to iSWM website by **June 1, 2021**

ISWM DRAFT TASK ORDER 6

The PWC approved the final one-year contract extension.

Task selection survey was sent out to IIS on February 21, 2021. Tasks below were selected via vote for the work scope 6.

1. Project Management and Meeting Attendance
2. Reorganize/Re-evaluate Site Development Controls
3. BMP Design and Maintenance Training
4. Technical Manual Updates
5. Guidance on Forebay Design
6. Hydrologic Mimicry Research
7. Technical Assistance for Case Studies
8. Economic Benefits of iSWM

Click [HERE](#) to view
draft scope

TASK 2 – REORGANIZE/RE-EVALUATE SITE DEVELOPMENT CONTROLS

- **Option 1:** Update summary pages for all 10 remaining BMPs
- **Option 2a:** Update summary pages for 4 or 5 BMPs and use remaining budget to provide more effort on another task
- **Option 2b:** Update summary pages for 4 or 5 BMPs and address other feedback received on the Site Development Controls Technical Manual in February 2020 that fits within the allotted budget.

Remaining BMPs :

1. Multi-Purpose Detention Areas
2. Organic Filter
3. Gravity (Oil Grit) Separator
4. Green Roof
5. Alum Treatment
6. Proprietary Structural controls
7. Open conveyance Channel
8. Culverts
9. Inlets
10. Pipe Systems




ISWM CONTRACT EXTENSION WITH HALFF cont. Reorganize/Re-evaluate Site Development Controls poll

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 When poll is active, respond at PollEv.com/nctcogenv444

 Text **NCTCOGENV444** to **22333** once to join

Which option do you want Halff to work on?

Option 1: Update summary pages for all 10 remaining BMPs

Option 2a: Update summary pages for 4 or 5 BMPs and use remaining budget to provide more effort on another task

Option 2b: Update summary pages for 4 or 5 BMPs and address other feedback received on the Site Development Controls Technical Manual in February 2020

Total Results: 0



When poll is active, respond at PollEv.com/nctcogenv444

Which 5 BMPS should be updated?

Multi-Purpose Detention Areas
Organic Filter
Gravity (Oil Grit) Separator
Green Roof
Alum Treatment
Proprietary Structural controls
Open conveyance Channel
Culverts
Inlets
Pipe Systems

Total Results: 0

ISWM CONTRACT EXTENSION WITH HALFF cont.

Next steps:

- Finalize work scope for the 2021-2022 contract by vote.
Click [here](#) to view draft task order 6.

Task Order 6 Tasks

1. Project Management and Meeting Attendance
2. Reorganize/Re-evaluate Site Development Controls
3. BMP Design and Maintenance Training
4. Technical Manual Updates
5. Guidance on Forebay Design
6. Hydrologic Mimicry Research
7. Technical Assistance for Case Studies
8. Economic Benefits of iSWM



ISWM CERTIFICATION UPDATE

Congratulations City of Celina on your designation as a Gold certified iSWM community!

By becoming a certified iSWM community, The City of Celina has demonstrated that they uphold water quality protection, streambank protection, and flood mitigation standards in their engineering regulations and development ordinances.



DISCUSSION OF OUTCOME NO. 17 - WATER QUALITY

- **Purpose:** To determine if clarity is needed to address language on the Tiered Implementation Measurement Form for requirements that qualify Outcome 17 – Water Quality Protection as full, partial, or none needs additional clarification.
- **Background:** In 2014, the iSWM contractor was tasked with meeting with community members. NCTCOG learned that communities did not like the point system, and that the pass/fail grade was perceived as a barrier to communities becoming certified. The subcommittee determined that the point system would not be used moving forward. It was recommended that the water quality option 1 be revised or replaced.
- **Proposed date:** the next iSWM meeting on July 14, 2021
- **Subcommittee members:** Review the language on the certification form and in the criteria manual* to determine if clarification is needed. Please bring your suggestions to the July meeting.
- *Outcome 17 - [Criteria manual](#), Section 3.2 page 18

87th Texas Legislature Update

87th Texas Legislature Flooding & SW infrastructure Related Bills as of 4/7/21

Bill Number	Short Title
HB 531	Relating to notice requirements for a leased dwelling located in a floodplain.
HB 1821	Relating to climate change planning and reporting.
HB 4258	Relating to a study by the University of Houston on the expected effects of future climate change in this state and the preparedness of this state to address those effects.

- View tracking spreadsheet [here](#)
- If you have legislative items, you would like NCTCOG staff to track please send an email to sligons@nctcog.org.

PUBLIC WORKS PROGRAM UPDATE

- [Sustainable Public Rights-of-Way Subcommittee](#) (SPROW), May. 18th 1:30pm
 - SPROW will meet with private utility representatives to write BMPs for the Utility Coordination chapter of the BMP Guidebook.
- [Standard Drawings Subcommittee](#), May. 24th 10am
 - The Subcommittee will begin reviewing Division 5000: Wastewater Collection.
- [Public Works Council](#) (PWC), May. 6th 9:30am
 - The Council is reviewing the completed Division 2000:Pavement Systems and 6000: Stormwater Drainage from the Standard Drawings Subcommittee.

Upcoming trainings and event, dates TBD:

- [Winter Storm Uri Roundtable](#) April 28th 2:00pm
- New Inspector Training Construction Contracts Administration Workshop
- Public Works Workforce Needs, Retention, and Recruitment

For mor information on the Public Works program please contact Olivia Kale at okale@nctcog.org or (817) 695-9213.

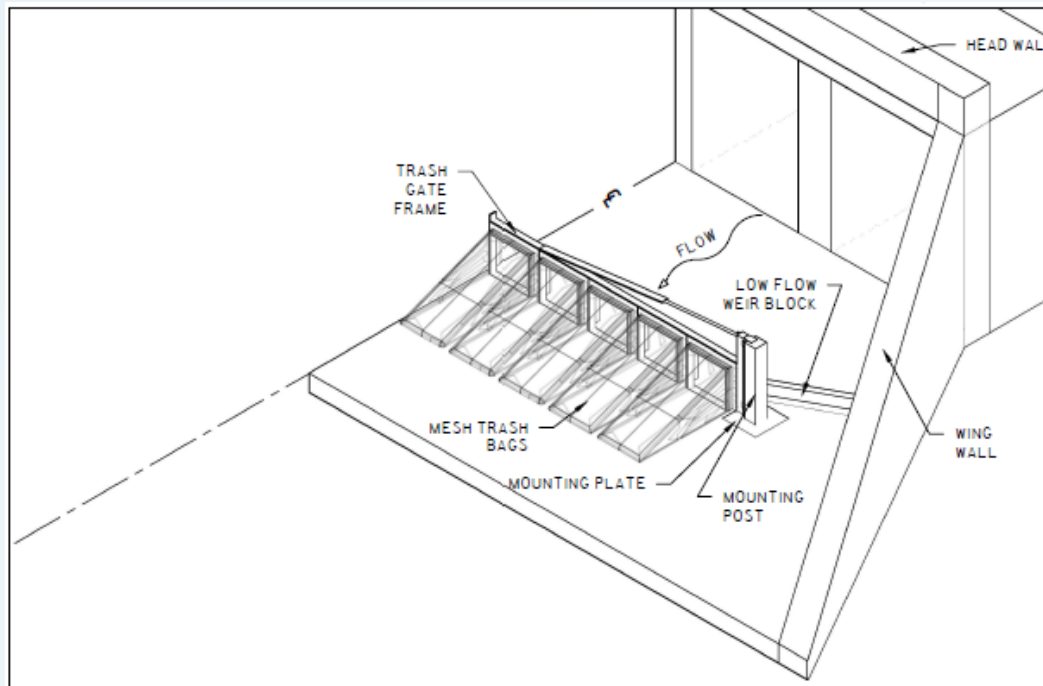
Frisco Trash Screen Detail



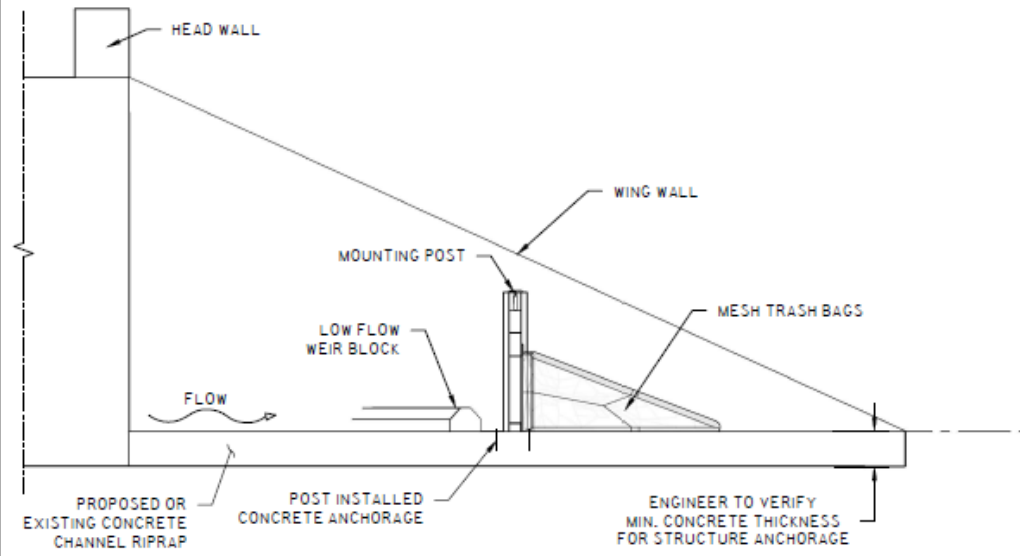
- Frisco estimated that it cost \$5,000 to build/install this system. It uses disposable laundry bags and designed/built the frames around the dimensions of the bags. There's 8 total on break-away and the frame has a ratchet strap to hold the bags.
- The curb directs low flow to the bags and most of the trash is in the first flush.
- The break-away point in the middle is important, this is the weakest link if the bags are clogged.
- 600lbs of trash and debris has been collected/disposed of so far.
- Frisco hand cleans the system, so a close access/disposal point is key.



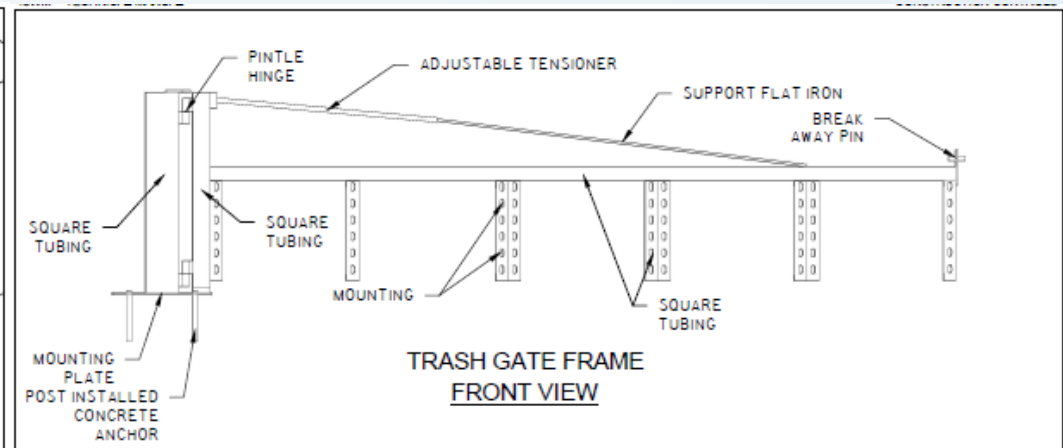
Draft Frisco Trash Screen Detail



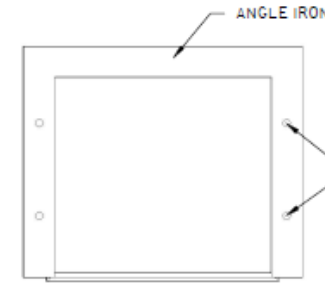
HALF ISOMETRIC VIEW



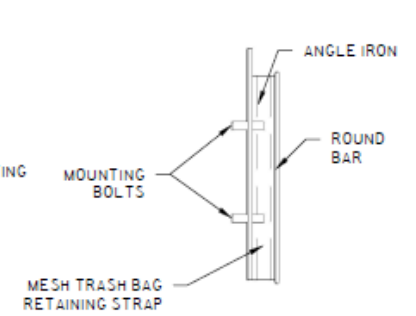
SIDE VIEW WITH HEADWALL



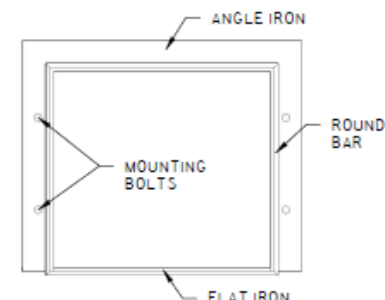
TRASH GATE FRAME FRONT VIEW



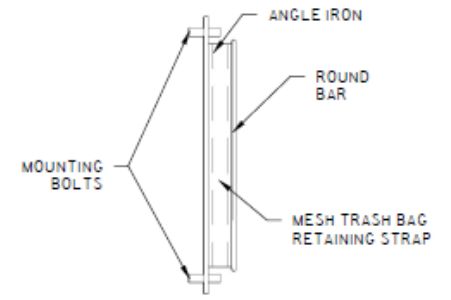
TRASH BAG BRACKET FRONT VIEW



TRASH BAG BRACKET SIDE VIEW



TRASH BAG BRACKET BACK VIEW



TRASH BAG BRACKET TOP VIEW

UPCOMING EVENTS, CONFERENCES AND OPPORTUNITIES

- **Stormwater Pollution Prevention Practices During Construction for Plan Reviewers,**
Wednesday, May 12th, 2021 at 8:30 -12:30 pm (Online)
 - For more information and to register, please visit <https://bit.ly/3wun5zn>
- **Stormwater Pollution Prevention Practices During Construction for Inspectors,**
Thursday, May 13th, 2021, at 8:30 -12:30 pm (Online)
 - For more information and to register, please visit <https://bit.ly/2PZDo6B>
- **2021 EPA Region 6 Stormwater Conference**
August 8-12, 2021, New Orleans Louisiana
 - For more information and to register, please visit <https://tamuk-isee.com/wp-content/uploads/2021/03/2021savethedate.pdf>
- **NCTCOG Webinar: Municipal BMP "Show and Tell",**
Tuesday, May 11th at 9:30 am -11 am (Online)
 - For more information and to register, please visit <https://www.addevent.com/event/wp6261560>



ROUNDTABLE DISCUSSION

NOW, IT'S YOUR TURN...

UPCOMING NCTCOG MEETINGS

Next iSWM Meeting: July 14, 2021 at 1:30 p.m.

- Public Works Council Sustainable Public Rights of Way, **May 18, 2021**
- Public Works Council Standard Drawings Subcommittee, **May 24, 2021**
- Regional Stormwater Management Coordinating Council, **May 19, 2021**
- Public Works Council Meeting, **May 6, 2021**

Meeting Information at: <https://www.nctcog.org/envir/committees>

Contact

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