

**DEVIATION SUMMARY  
NARRATIVE & RESPONSE TO COMMENTS  
CROSSROADS MIXED USE DEVELOPMENT  
UNDERGROUND DETENTION & WATER QUALITY**

Colorado Springs Equities LLC., and Crossroads Metropolitan District No. 1 are proposing an underground detention and water quality facility for the Crossroads Mixed Use development located SW of the intersection of US Hwy 24 and US Hwy 94. The development consists of a proposed apartment project and future commercial pad sites. The project is currently approved for the final plat and construction drawings. The Site Development Plan for the apartment site is also approved.

Reasons to Allow Underground Detention

- More attractive than traditional detention and water quality ponds.
- Utilizes the land area for more than one function or use.
- **The proposed facilities are privately owned and maintained by a Metropolitan District.**
- Approved in other jurisdictions in Colorado.
- For this development area, the soil infiltration rate is excellent.
- An agreement to replace the experimental system, if need be, will be provided by the Metro District per ECM I.7.2.B.
- A monitoring program will be provided by the Metro District per ECM I.7.2.B.
- Results of independent testing have been provided for your review.
- An example of an O&M Report has been provided for your review. It is for an existing project in the City of Colorado Springs.
- A park site constructed on top of the UGD is more visually appealing, and useful to the public, than a normal EPC Detention Pond.
- Fast rising waters are not a concern to public safety.
- Does not permanently store water to promote unwanted wetlands, mosquitos, fly's', etc...

Reasons to Allow Underground Water Quality

- The proposed system has two different points of capture for pollutants and sediment.
- "Pre-Treatment" Manufactured Treatment Devices will be used at each pond inlet location.
- System meets or exceeds the 30 mg/L effluent removal per ECM I.7.1.C.2
- The product supplier will provide a certification that the system meets the pollutant removal standard per ECM I.7.1.C.2.
- Pollutants are trapped underground and are less likely to be discharged downstream.
- Trapped debris underground cannot be distributed by the wind.
- Pollutants, debris and sediment are not visible when captured in the system.
- The pollutants, debris and sediment are isolated in the first & second stage of the water quality area, and are not distributed across the entire area of the facility.
- Visible inspection of the trapped pollutants or sediment can be viewed via the manhole lid and/or the inspection port of the chambers at any time.
- Maintenance of the XK Baysaver and Isolator manhole are similar to regular inlet or manhole maintenance.
- Maintenance of the isolator row is designed to reduce periodic maintenance.
- Maintenance will follow a regular schedule as administered by the Metro District.
- Metro District will hire 3<sup>rd</sup> party for maintenance and reporting.
- For this development area, the soil infiltration rate is excellent.

### Reasons to Not-Allow Underground Facilities

- Installation Cost – Underground detention facilities are more expensive to construct than traditional pond facilities.
- Maintenance Costs – The Metro District will maintain the underground facility and the park site above. Although, underground detention maintenance is far less expensive than for a traditional pond. (No erosion, reseeding, maintenance access repair, concrete repairs, weeds, mowing, etc...)
- Maintenance – Maintenance of the Isolator row requires special equipment. A Jet-Vac utilizes high pressure water to flush the isolator row to the manhole for vacuuming.
- Out of Sight, Out of Mind - However, records are kept to keep track of the private facilities for maintenance and reporting.
- Does not create wildlife habitat – However, the park landscaping will provide habitat in lieu.

**Response to EPC email from Gilbert LaForce (blue text) on June 16, 2022 (See attachments for print out of the actual email.)**

- Provide certification that the system meets the Pollutant Removal Standard. See ECM Appendix I Section I.7.1.C.2 for pollutant removal standard criteria.

*ECM I.7.1.C.2 - The control measures is designed to treat at a minimum the 80th percentile storm event. The control measures shall be designed to treat stormwater runoff in a manner expected to reduce the event mean concentration of total suspended solids (TSS) to a median value of 30 mg/L or less.*

- Refer to the Appendix containing the testing and monitoring reports provided by other jurisdictions as listed below.
- Refer to letter from product supplier stating that the BaySeparator can meet the 30 mg/L effluent removal per NURP Mean Concentrations for Urban Land Uses.
- Provide results of independent testing of the BMP in conditions similar to those at the site demonstrating that the BMP will meet or exceed the performance of approved BMPs for the site per I.7.2.B
- Refer to the Appendix containing the testing and monitoring reports as listed below.
- Provide a performance monitoring program described per ECM Appendix I Section I.7.2.B
- Refer to the Appendix containing the monitoring programs provided by other jurisdictions. If this deviation is approved, a site specific monitoring program for the facility will be provided to EPC. Final design of the underground detention facility has not progressed.

**3<sup>rd</sup> Party Studies provided in the Appendix**

- (BaySaver Barracuda) in accordance with the New Jersey Department of Environmental Protection Laboratory Protocol to Assess Total Suspended Solids Removal by a Hydrodynamic Sedimentation Manufactured Treatment Device.
- BaySaver Technologies – BaySeparator.
- “City of Charlotte Pilot SCM Monitoring Program, Cherry Gardens Senior Apartments, Storm Tech Chambers Stormwater Treatment Structure, Final Monitoring Report, July 2013.
- “NJCAT Technology Verification, Isolator Row Plus, StormTech, LLC, July 2020.
- ”Performance Evaluation of Sediment Removal Efficiency, StormTech Isolator Row, prepared by NJDEP/NJCAT, October, 2006
- “Performance Evaluation Report of the StormTech Isolator Row Treatment Unit, September, 2010
- Provide an agreement to replace the underground system with an approved system (i.e., extended detention pond) should the underground water quality and detention pond not function to the required level of performance at the owner’s expense. See ECM Appendix I Section I.7.2.B

- An agreement will be provided per ECM Appendix I Section I.7.2.B if this deviation is approved. The agreement will be with the Crossroads Metropolitan District No. 1. The Metropolitan District President, Mr. Danny Mientka, has already agreed to provide this when appropriate.
- Provide a structure specific Operations & Maintenance Manual described in ECM Appendix I Section I.7.3
- An Operations and Maintenance Manual will be provided per ECM Appendix I Section I.7.3 if this deviation is approved. An example of a City O&M has been provided in the Appendix.

Drainage Criteria Manual Chapter Section 4.1 notes the following:

At this time, water quality detention is not to be incorporated into underground detention facilities, such as installations of buried large-diameter pipe sections, stone trenches, underground "infiltrating" devices, etc.

- 1) "At this time" – This statement alludes to the fact that water quality detention incorporated into underground detention facilities would be considered in the future. It is not known how long ago this statement was published.

Urban Storm Drainage Criteria Manual Volume 2

## **6.5 Underground Detention**

Because of the problems associated with placing detention "out of sight", the difficulty and hazardous nature of access for maintenance, seepage concerns, and uncertain design life for vessels subject to corrosion, underground detention is not recommended by UDFCD. Some local jurisdictions may allow underground 100-year detention in limited high-density urban developments; in those cases, careful consideration must be given to requirements to ensure ongoing inspection, maintenance, and functionality.

- Latest Copywrite date 2016, Originally Published September 1969 – Not sure what version or year this section was introduced.
  - 1) "hazardous nature of access for maintenance" – Should not apply in the present design of underground structures. The regular maintenance is not dangerous or hazardous than any other facility.
  - 2) "uncertain design life for vessels subject to corrosion" – Should not apply in the present design of underground structures. Non-Metallic materials are used in the modern design.
  - 3) "Some local jurisdictions may allow...." – Local jurisdictions currently allow underground detention.

There are over 500 Stormtech installs in CO. Below is a short list of some of the larger installs in Colorado Springs over the past few years. There are also over 15 projects in design and in construction.

- **Installed Projects – Colorado Springs**
  - Copper Ridge Crossing/Crush Golf – 881 MC3500s (45” tall).
  - First and Main – 63 SC740s (30” tall)
  - CVS Colorado Springs – 276 SC310s (16” tall)
  - Powers Storage – 45 MC4500s (60” tall)
  - Space Village – 25 MC3500s (45” tall) – **El Paso County 2015**
  - The Gathering Place at the Farm – 111 MC3500s (45” tall)
  - The Learning Experience – 33 MC4500s (60” tall)
  - Circle K – 271 SC-310s (16” tall)
  - Barnes Road (ROW Project) – 30 MC4500s (60” tall)
  - Cascade Apartments – 65 SC-310s (16” tall)
  - Switchback Stadium Underground – 143 SC740s (30” tall)
  - Carlin 2 – 156 SC740s (30” tall)
  - Cordera CN-1/7-11 – 52 SC740s (30” tall)
  - Quick Quack – 81 SC740s (30” tall)
  - Robeson Arena – 41 MC3500s (45” tall)
  - Big O Tires – 39 MC4500s (60” tall)
  - Pikes Peak Plaza - 78 MC4500s (60” tall)
  - Elan Pikes Peak – 127 MC4500s (60” tall)
  - Cordera DF-3/DF-4 – 82 MC4500s (60” tall)

# APPENDIX

## TABLE OF CONTENTS

DEVIATION REQUEST – EPC STANDARD FORM

DEVIATION SUMMARY NARRATIVE & RESPONSE TO COMMENTS

EMAIL RE; CROSSROADS MIXED USE DEVELOPMENT – REQUEST FOR UNDERGROUND  
DETENTION

FACT SHEETS (WITH COMMENTS)

T-11 MANUFACTURED TREATMENT DEVICES 3-28-2022 MILE HIGH FLOOD DISTRICT  
T-11 UNDERGROUND BMPs – MILE HIGH FLOOD DISTRICT

MAINTENANCE

BAYSEPARATOR MAINTENANCE MANUAL  
CITY OF C/S EXTENDED DETENTION BASIN INSPECTION FORM – SAMPLE  
CITY OF C/S INSPECTION AND MAINTENANCE PLAN – APPROVED – SAMPLE  
STORMTECH ISOLATOR ROW PLUS O&M MANUAL  
HYDROVAC SERVICE PROPOSAL

PRODUCT SPECS

ADS MC3500 INSTALLATION GUIDE  
ISOLATOR ROW PLUS BROCHURE  
STORMTECH ISOLATOR ROW PLUS LITERATURE  
XK BAYSAVER 24 CFS – MTD DETAIL  
XK BAYSAVER 32 CFS – MTD DETAIL

SITE PHOTOS – INFILTRATION TESTING

6 PHOTOS  
INFILTRATION TESTING SUMMARY – RMG ENGINEERS

TESTING AND MONITORING REPORTS

BARRACUDA HYDRODYNAMIC SEPARATOR  
BAYSAVER – BAYSEPARATOR  
PILOT SCM MONITORING PROGRAM – CHERRY GARDENS  
NJCAT TECHNOLOGY VERIFICATION – STORMTECH ISOLATOR ROW  
PERFORMANCE EVALUATION OF SEDIMENT REMOVAL – STORMTECH ISOLATOR ROW  
PERFORMANCE EVALUATION REPORT – STORMTECH ISOLATOR ROW TREATMENT  
UNIT

PRE – POST DESIGN EXAMPLES

AS CONSTRUCTED – SPACE VILLAGE DRIVE – EPC (2 PDF'S)  
DESIGN – CREEKWALK – CITY OF CO. SPRINGS  
DRAFT – CROSSROADS MIXED USE UNDERGROUND DETENTION  
POLARIS POINTE – UNDRGROUND DETENTION – CITY OF CO. SPRINGS (3 PDF'S)