

Permanent Water Quality Facilities
Maintenance and Operations
Town of Erie
Region 4 (TCH)

Routing #: 22-HA4-XC-00233
OLA #: 331002634
Project #: 0072-032 (24526)

AGREEMENT

THIS AGREEMENT executed, this ___ day of _____, 2021, by and between the State of Colorado for the use and benefit of the COLORADO DEPARTMENT OF TRANSPORTATION, hereinafter referred to as the “State” or “CDOT”, and the TOWN OF ERIE, COLORADO, CDOT vendor # 2000001, hereinafter referred to as the “Town” or the “Local Agency”; CDOT and the Local Agency individually shall be referred to as a “Party”, and together shall be referred to as the “Parties.”

RECITALS

CDOT has constructed several Permanent Water Quality (“PWQ”) facilities and related elements for preventing stormwater pollution in Erie, Colorado, hereinafter referred to as the “Project”; and

The Parties recognize the importance and benefit to their respective systems by the Town’s operation and maintenance of the Project; and

The Parties desire to enter into this agreement to agree upon the division of responsibility for their respective maintenance and operation obligations on the Project (the “Work”) as shown and depicted in **Exhibit A and Attachment 1**; and

The Town is adequately staffed and suitably equipped to undertake and satisfactorily carry out its operations and maintenance responsibilities under this agreement as shown and depicted in **Exhibit B Town Resolution**; and

Required approval, clearance, and coordination has been accomplished from and with appropriate agencies; and

This agreement is executed by the State under authority of Sections 43-1-106, 43-1-110, 43-1-201, et seq., 43-2-102 and 43-2-144 C.R.S., as amended; and

The Local Agency agrees by its execution hereof that it is duly authorized to enter into this agreement.

NOW, THEREFORE, it is hereby agreed that:

I. **PROJECT DESCRIPTION**

The “Work” under this contract shall consist of the maintenance and operations of the Project in Erie, Colorado.

II. CDOT COMMITMENTS

- A. The State will provide liaison with the Town through the State's Region Transportation Director, CDOT Region 4, 10601 W. 10th Street, Greeley, CO 80634. Said Director will also be responsible for coordinating the State's activities under this contract. State liaison will also be provided through:
Nick Schipanski, Environmental Protection Specialist III
CDOT Region 4
10601 W. 10th Street
Greeley, CO 80634
(970) 350-2127
Nicholaus.Schipanski@state.co.us
- B. Upon the execution of this contract, CDOT shall accept maintenance responsibility for the portions of the Work identified as CDOT's area of responsibility for the Work shown in **Exhibit A and Attachment 1**.
- C. By approving said agreement, CDOT grants the Town access to enter CDOT ROW to perform maintenance duties. Though a separate access permit will not be required, notification to CDOT of a Town approved and CDOT accepted Method of Handling Traffic (MHT) shall be required for work impacting traffic.

III. TOWN COMMITMENTS

- A. The Town will provide liaison with the State through:
Chad Schroeder, Development Engineering
Supervisor Town of Erie
PO Box 750
Erie, CO 80516
(303) 926-2876
CSchroeder@erieco.gov
- B. Upon the execution of this contract, the Town shall accept maintenance responsibility for the portions of the Work identified as the Town's area of responsibility for the Work shown in **Exhibit A and Attachment 1**.
- C. The Local Agency shall, at its own cost and expense, maintain, operate, replace, and make ample provision each year for the maintenance of those portions of the Work identified as the Town's area of responsibility, as shown in **Exhibit A and Attachment 1**. Such maintenance and operations shall be in accordance with all applicable federal and state statutes and ordinances, and regulations promulgated thereunder, which define the Local Agency's obligations to maintain such improvements.
- D. Maintenance services to be performed by the Town at its sole expense under this agreement shall include the services shown in **Exhibit A and Attachment 1**. By approving said agreement the Town grants CDOT access to enter Town ROW to

perform maintenance duties. The Town shall perform the maintenance services in accordance with the most stringent MS4 Permit requirements, whether the Town's or CDOT's, and the Town shall, by May 31 of each year, inspect the Project, complete its inspection report and any maintenance records, and provide completed copies of that inspection report and any such maintenance records to CDOT Region 4.

- E. Only in the event that the Town fails to perform any maintenance services as set forth in **Exhibit A and Attachment 1**, causing CDOT to be required to perform them, CDOT shall bill the Town for all actual costs incurred thereby, including but not limited to labor, materials, equipment, and dump fees.

IV. GENERAL PROVISIONS

- A. Modifications and Amendment. This agreement is subject to such modifications as may be required by changes in federal or State law, or their implementing regulations. Any such required modification shall automatically be incorporated into and be part of this contract on the effective date of such change as if fully set forth herein. Except as provided above, no modification of this contract shall be effective unless agreed to in writing by both Parties in an amendment to this contract that is properly executed and approved in accordance with applicable law.
- B. Severability. To the extent that this contract may be executed and performance of the obligations of the Parties may be accomplished within the intent of the contract, the terms of this contract are severable, and should any term or provision hereof be declared invalid or become inoperative for any reason, such invalidity or failure shall not affect the validity of any other term or provision hereof. The waiver of any breach of a term hereof shall not be construed as a waiver of any other term, or the same term upon subsequent breach.
- C. Entire Understanding. This contract is intended as the complete integration of all understandings between the Parties. No prior or contemporaneous addition, deletion, or other amendment hereto shall have any force or affect whatsoever, unless embodied herein by writing. No subsequent novation, renewal, addition, deletion, or other amendment hereto shall have any force or effect unless embodied in a written contract executed and approved pursuant to the State Fiscal Rules.
- D. Successors. Except as herein otherwise provided, this contract shall inure to the benefit of and be binding upon the Parties hereto and their respective successors and assigns.
- E. Term of Contract. The term of this contract shall begin the date first above written and shall terminate on October 19, 2031, unless earlier modified or terminated by written agreement of the Parties hereto.
- F. Third Party Beneficiaries. It is expressly understood and agreed that the enforcement of the terms and conditions of this contract, and all rights of action relating to such enforcement, shall be strictly reserved to the Parties hereto, and nothing contained in this contract shall give or allow any such claim or right of action by any other or third person on such contract. It is the express intention of the Parties that any person or

entity other than the Parties receiving services or benefits under this contract be deemed to be an incidental beneficiary only.

- G. Governmental Immunity. Notwithstanding any other provision of this agreement to the contrary, no term or condition of this agreement shall be construed or interpreted as a waiver, express or implied, of any of the immunities, rights, benefits, protection, or other provisions of the Colorado Governmental Immunity Act, § 24-10-101, *et seq.*, C.R.S., as now or hereafter amended.
- H. Legal Authority. The Town warrants that it possesses the legal authority to enter into this contract and that it has taken all actions required by its procedures, by-laws, and/or applicable law to exercise that authority, and to lawfully authorize its undersigned signatory to execute this contract and to bind the Town to its terms. The person(s) executing this contract on behalf of the Town warrants that they have full authorization to execute this contract.
- I. Prohibited Terms. Nothing in this agreement shall be construed as a waiver of any provision of §24-106-109 C.R.S. Any term included in this agreement that limits the Local Agency's liability that is not void under this section shall apply only in excess of any insurance to be maintained under this agreement, and no insurance policy shall be interpreted as being subject to any limitations of liability of this agreement.
- J. Appropriations. This agreement is expressly made subject to the limits of the Colorado Constitution. Nothing herein shall constitute, nor be deemed to constitute, the creation of a debt or multi-year fiscal obligation or an obligation of future appropriations by the Town, contrary to Article X, § 20, Colo. Const., or any other constitutional, statutory, or charter debt limitation. As used herein, the term "appropriation" shall mean and include the due adoption of an appropriation ordinance and budget and the approval of a Budget Detail Report (Resource Allocations) which contains an allocation of sufficient funds for the performance of fiscal obligations arising under this agreement.

V. **COLORADO SPECIAL PROVISIONS (COLORADO FISCAL RULE 3-3)**

These Special Provisions apply to all contracts except where noted in italics.

A. STATUTORY APPROVAL. §24-30-202(1), C.R.S.

This Contract shall not be valid until it has been approved by the Colorado State Controller or designee. If this Contract is for a Major Information Technology Project, as defined in §24-37.5-102(2.6), then this Contract shall not be valid until it has been approved by the State's Chief Information Officer or designee.

B. FUND AVAILABILITY. §24-30-202(5.5), C.R.S.

Financial obligations of the State payable after the current State Fiscal Year are contingent upon funds for that purpose being appropriated, budgeted, and otherwise made available.

C. GOVERNMENTAL IMMUNITY.

Liability for claims for injuries to persons or property arising from the negligence of the State, its departments, boards, commissions, committees, bureaus, offices,

employees and officials shall be controlled and limited by the provisions of the Colorado Governmental Immunity Act, §24-10-101, et seq., C.R.S.; the Federal Tort Claims Act, 28 U.S.C. Pt. VI, Ch. 171 and 28 U.S.C. 1346(b), and the State's risk management statutes, §§24-30- 1501, et seq. C.R.S. No term or condition of this Contract shall be construed or interpreted as a waiver, express or implied, of any of the immunities, rights, benefits, protections, or other provisions, contained in these statutes.

D. INDEPENDENT CONTRACTOR

Local Agency shall perform its duties hereunder as an independent contractor and not as an employee. Neither Local Agency nor any agent or employee of Local Agency shall be deemed to be an agent or employee of the State. Local Agency shall not have authorization, express or implied, to bind the State to any agreement, liability or understanding, except as expressly set forth herein. **Local Agency and its employees and agents are not entitled to unemployment insurance or workers compensation benefits through the State and the State shall not pay for or otherwise provide such coverage for Local Agency or any of its agents or employees. Local Agency shall pay when due all applicable employment taxes and income taxes and local head taxes incurred pursuant to this Contract. Local Agency shall (i) provide and keep in force workers' compensation and unemployment compensation insurance in the amounts required by law, (ii) provide proof thereof when requested by the State, and (iii) be solely responsible for its acts and those of its employees and agents.**

E. COMPLIANCE WITH LAW.

Local Agency shall comply with all applicable federal and State laws, rules, and regulations in effect or hereafter established, including, without limitation, laws applicable to discrimination and unfair employment practices.

F. CHOICE OF LAW, JURISDICTION, AND VENUE.

Colorado law, and rules and regulations issued pursuant thereto, shall be applied in the interpretation, execution, and enforcement of this Contract. Any provision included or incorporated herein by reference which conflicts with said laws, rules, and regulations shall be null and void. All suits or actions related to this Contract shall be filed and proceedings held in the State of Colorado and exclusive venue shall be in the City and County of Denver.

G. PROHIBITED TERMS.

Any term included in this Contract that requires the State to indemnify or hold Local Agency harmless; requires the State to agree to binding arbitration; limits Local Agency's liability for damages resulting from death, bodily injury, or damage to tangible property; or that conflicts with this provision in any way shall be void ab initio. Nothing in this Contract shall be construed as a waiver of any provision of §24-106-109 C.R.S.

H. SOFTWARE PIRACY PROHIBITION.

State or other public funds payable under this Contract shall not be used for the acquisition, operation, or maintenance of computer software in violation of federal copyright laws or applicable licensing restrictions. Local Agency hereby certifies and warrants that, during the term of this Contract and any extensions, Local Agency has and shall maintain in place appropriate systems and controls to prevent such improper use of public funds. If the State determines that Local Agency is in violation of this provision, the State may exercise any remedy available at law or in equity or under this Contract, including, without limitation, immediate termination of this Contract and any remedy consistent with federal copyright laws or applicable licensing restrictions.

I. EMPLOYEE FINANCIAL INTEREST/CONFLICT OF INTEREST. §§24-18-201 and 24-50-507, C.R.S.

The signatories aver that to their knowledge, no employee of the State has any personal or beneficial interest whatsoever in the service or property described in this Contract. Local Agency has no interest and shall not acquire any interest, direct or indirect, that would conflict in any manner or degree with the performance of Local Agency's services and Local Agency shall not employ any person having such known interests.

J. VENDOR OFFSET AND ERRONEOUS PAYMENTS. §§24-30-202(1) and 24-30-202.4, C.R.S.

[Not applicable to intergovernmental agreements] Subject to §24-30-202.4(3.5), C.R.S., the State Controller may withhold payment under the State's vendor offset intercept system for debts owed to State agencies for: **(i)** unpaid child support debts or child support arrearages; **(ii)** unpaid balances of tax, accrued interest, or other charges specified in §§39-21-101, *et seq.*, C.R.S.; **(iii)** unpaid loans due to the Student Loan Division of the Department of Higher Education; **(iv)** amounts required to be paid to the Unemployment Compensation Fund; and **(v)** other unpaid debts owing to the State as a result of final agency determination or judicial action. The State may also recover, at the State's discretion, payments made to Local Agency in error for any reason, including, but not limited to, overpayments or improper payments, and unexpended or excess funds received by Local Agency by deduction from subsequent payments under this Contract, deduction from any payment due under any other contracts, grants or agreements between the State and Local Agency, or by any other appropriate method for collecting debts owed to the State.

K. PUBLIC CONTRACTS FOR SERVICES. §§8-17.5-101, *et seq.*, C.R.S.

[Not applicable to agreements relating to the offer, issuance, or sale of securities, investment advisory services or fund management services, sponsored projects, intergovernmental agreements, or information technology services or products and services] Local Agency certifies, warrants, and agrees that it does not knowingly employ or contract with an illegal alien who will perform work under this Contract and will confirm the employment eligibility of all employees who are newly hired for employment in the United States to perform work under this Contract, through participation in the E-Verify Program or the State verification program established pursuant to §8-17.5-

102(5)(c), C.R.S., Local Agency shall not knowingly employ or contract with an illegal alien to perform work under this Contract or enter into a contract with a Subcontractor that fails to certify to Local Agency that the Subcontractor shall not knowingly employ or contract with an illegal alien to perform work under this Contract. Local Agency **(i)** shall not use E-Verify Program or the program procedures of the Colorado Department of Labor and Employment (“Department Program”) to undertake pre-employment screening of job applicants while this Contract is being performed, **(ii)** shall notify the Subcontractor and the contracting State agency or institution of higher education within 3 days if Local Agency has actual knowledge that a Subcontractor is employing or contracting with an illegal alien for work under this Contract, **(iii)** shall terminate the subcontract if a Subcontractor does not stop employing or contracting with the illegal alien within 3 days of receiving the notice, and **(iv)** shall comply with reasonable requests made in the course of an investigation, undertaken pursuant to §8-17.5-102(5), C.R.S., by the Colorado Department of Labor and Employment. If Local Agency participates in the Department program, Local Agency shall deliver to the contracting State agency, Institution of Higher Education or political subdivision, a written, notarized affirmation, affirming that Local Agency has examined the legal work status of such employee, and shall comply with all of the other requirements of the Department program. If Local Agency fails to comply with any requirement of this provision or §§8-17.5-101, *et seq.*, C.R.S., the contracting State agency, institution of higher education or political subdivision may terminate this Contract for breach and, if so terminated, Local Agency shall be liable for damages.

L. PUBLIC CONTRACTS WITH NATURAL PERSONS. §§24-76.5-101, *et seq.*, C.R.S.

Local Agency, if a natural person eighteen (18) years of age or older, hereby swears and affirms under penalty of perjury that Local Agency **(i)** is a citizen or otherwise lawfully present in the United States pursuant to federal law, **(ii)** shall comply with the provisions of §§24-76.5-101, *et seq.*, C.R.S., and **(iii)** has produced one form of identification required by §24-76.5-103, C.R.S. prior to the Effective Date of this Contract.

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SIGNATURE PAGE

Agreement Routing Number: 22-HA4-XC-00233

THE PARTIES HERETO HAVE EXECUTED THIS AGREEMENT

* Persons signing for the Local Agency hereby swear and affirm that they are authorized to act on the Local Agency's behalf and acknowledge that the State is relying on their representations to that effect.

| | |
|---|--|
| <p>THE LOCAL AGENCY Town of Erie</p> <p>Print: <u>Jennifer Carroll</u></p> <p>Title: <u>Mayor</u></p> <p>_____</p> <p>*Signature</p> <p>Date: _____</p> | <p>STATE OF COLORADO Jared S. Polis, GOVERNOR</p> <p>Colorado Department of Transportation Shoshana M. Lew, Executive Director</p> <p>_____</p> <p>By: Stephen Harelson, P.E., Chief Engineer</p> <p>Date: _____</p> |
| <p>2nd Local Agency Signature if needed</p> <p>Print: <u>Heidi Leatherwood</u></p> <p>Title: <u>Town Clerk</u></p> <p>_____</p> <p>*Signature</p> <p>Date: _____</p> | <p>LEGAL REVIEW Phil Weiser, Attorney General</p> <p>By: <u>n/a</u> Signature - Assistant Attorney General</p> <p>Date: _____</p> |

EXHIBIT A

SCOPE OF WORK

Town of Erie Hwy 7 Stormwater 0072-032 (24526)

The Local Agency is responsible for the inspection and maintenance of all Drainage Facilities and Facilities along Highway 7, as shown and depicted in **Attachment 1** per CRS § 43-2-135.

The Local Agency shall perform an at least annual inspection and maintenance of all such PWQ Facilities and Drainage Facilities.

The Local Agency's maintenance and cleaning of these PWQ Facilities shall be performed based upon the findings of the Local Agency's inspections. The Local Agency shall keep all inlet pipes, outfalls, orifice plates and grates free and clear of any and all trash, debris, brush, overgrown vegetation and excessive sediment build-up, as shown in **Attachment 1**. The stormceptors are on Highway 7 from Mile Markers 63.217 to 64.144. Stormceptors will be maintained in accordance with the approved plans and Stormceptor Owner's manual attached hereto and incorporated herein by reference.

A copy of all Inspection/Maintenance Reports produced by the Local Agency pursuant to this Agreement shall be sent to Nick Schipanski, Region 4 Water Pollution Control Manager, 10601 W. 10th Street, Greeley, CO 80634 no later than the 15th day of November of each year.

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DUAL-VORTEX SEPARATOR

Submittal Package

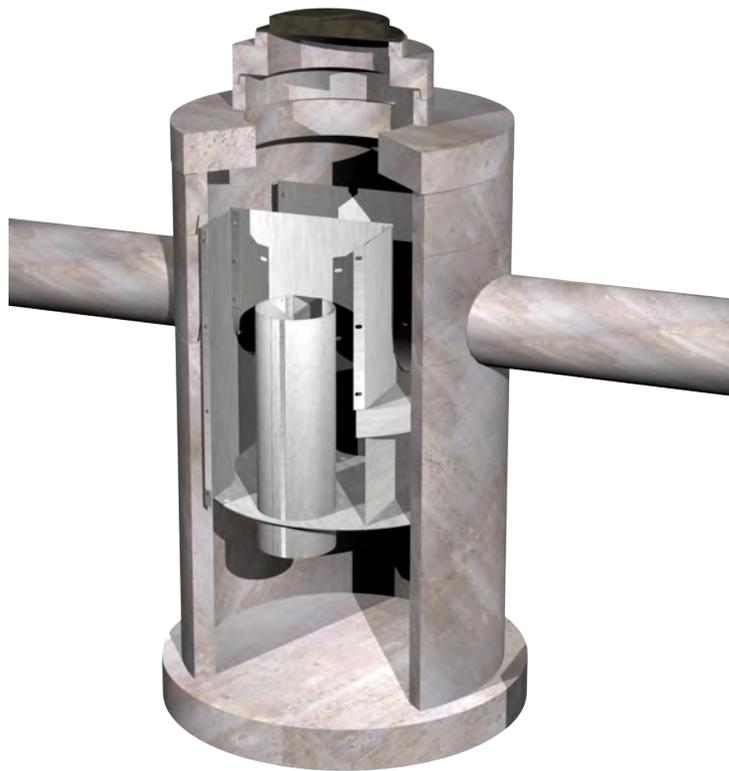


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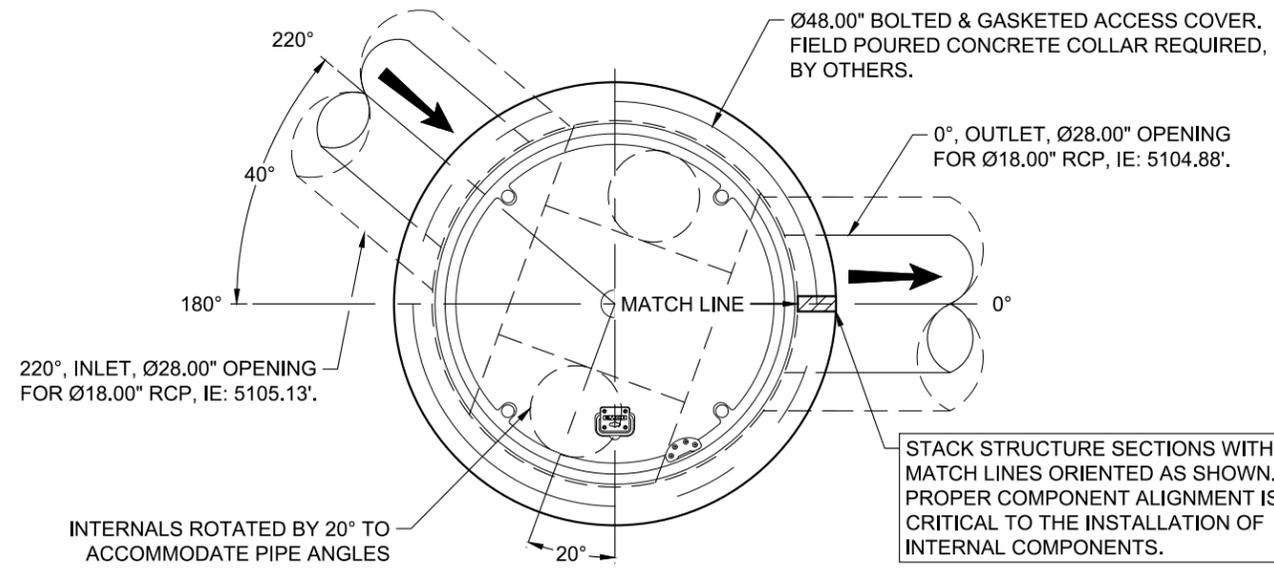
2 - Features & Benefits

3 - Product Specifications

4 - Inspection & Maintenance

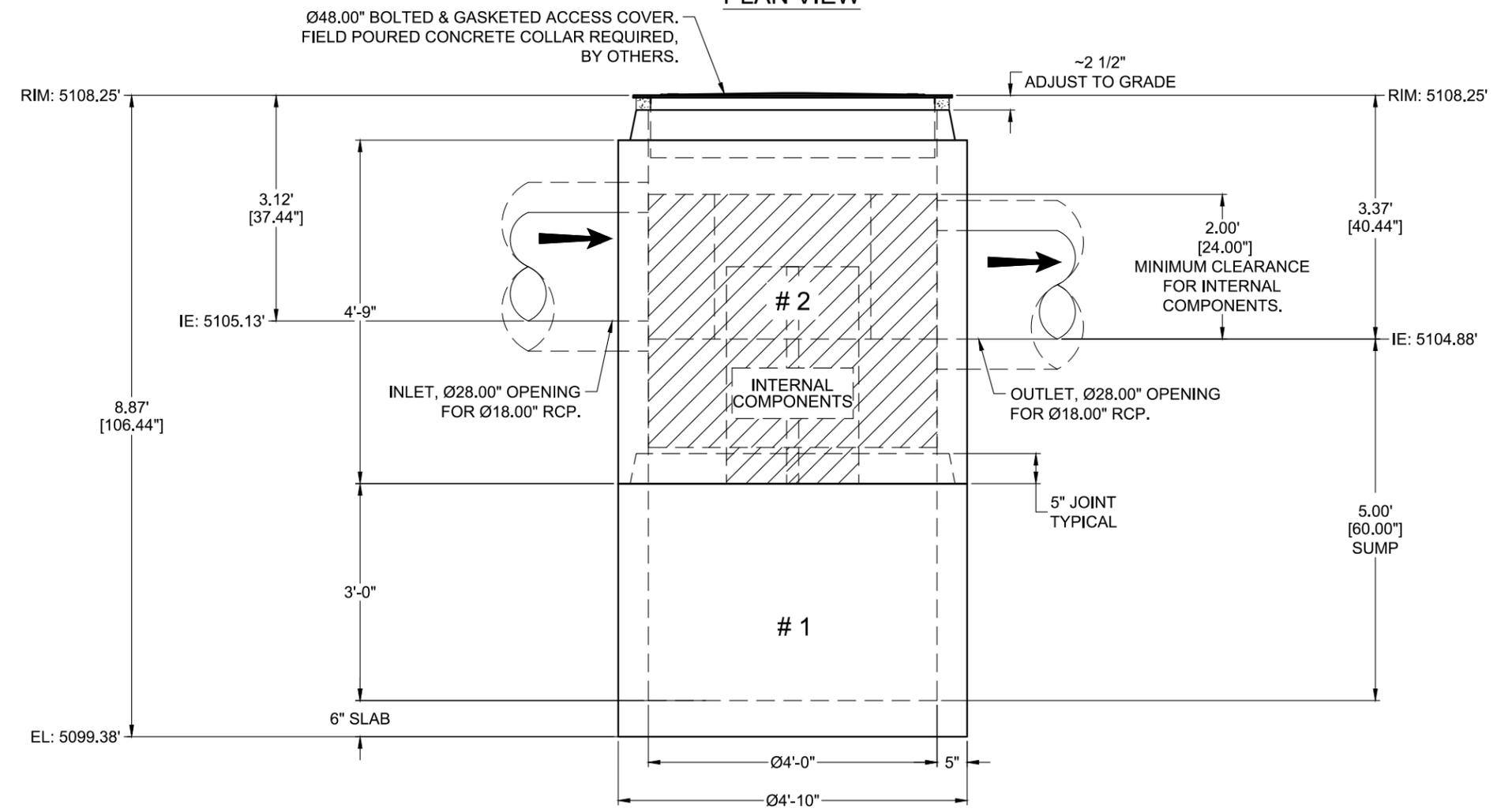
SECTION 1

Submittal Drawing



UNIT ID: 81-2

PLAN VIEW



ELEVATION VIEW

- NOTES:
- DESIGN LOADINGS:
 - AASHTO HS-20-44 W/ IMPACT.
 - DESIGN FILL: 1' MAXIMUM.
 - ASSUMED WATER TABLE = BELOW INVERT.
 - DRY LATERAL EARTH PRESSURE (EFP) = 45 PCF.
 - LATERAL LIVE LOAD SURCHARGE = 80 PSF (APPLIED TO 8' BELOW GRADE).
 - NO LATERAL SURCHARGE FROM ADJACENT BUILDINGS, WALLS, PIERS, OR FOUNDATIONS.
 - CONCRETE 28 DAY COMPRESSIVE STRENGTH SHALL BE 5,000 PSI MINIMUM.
 - STEEL REINFORCEMENT: REBAR, ASTM A-615 OR A-706, GRADE 60.
 - CEMENT: ASTM C-150 SPECIFICATION.
 - REQUIRED NATIVE ALLOWABLE SOIL BEARING PRESSURE = 2,500 PSF.
 - REFERENCE STANDARD:
 - ASTM C 478
 - ASTM C 497
 - THIS STRUCTURE IS DESIGNED TO THE PARAMETERS NOTED HEREIN. PLEASE VERIFY THAT THESE PARAMETERS MEET PROJECT REQUIREMENTS (I.E. LIVE LOAD, FILL RANGE, WATER TABLE). IF DESIGN PARAMETERS ARE INCORRECT, REVIEWING ENGINEER/AUTHORITY SHALL NOTIFY OLDCASTLE INFRASTRUCTURE UPON REVIEW OF THIS SUBMITTAL.
 - OVERSIZED HOLES TO ACCOMMODATE SPECIFIC PIPE TYPE MUST BE CONCENTRIC TO PIPE ID. AFTER PIPES ARE INSTALLED, ALL ANNULAR SPACES SHALL BE FILLED WITH A MINIMUM OF 3000 PSI CONCRETE FOR FULL THICKNESS OF PRECAST WALLS. PIPES ARE TO BE FLUSH WITH THE INSIDE SURFACE OF THE CONCRETE STRUCTURE.
 - CONTRACTOR RESPONSIBLE TO VERIFY ALL SIZES, LOCATIONS AND ELEVATIONS OF OPENINGS.
 - CONTRACTOR RESPONSIBLE TO ENSURE ADEQUATE BEARING SURFACE IS PROVIDED (I.E. COMPACTED AND LEVEL PER PROJECT SPECIFICATIONS).
 - SECTION HEIGHTS, SLAB/WALL THICKNESSES AND KEYWAYS ARE SUBJECT TO CHANGE DUE TO AVAILABILITY AND PRODUCTION PLANT CAPABILITY.
 - MAXIMUM PICK WEIGHT: SECTION #1 = 4,200 LBS.

* THIS MUST BE FILLED OUT BEFORE MANUFACTURING BEGINS *

APPROVED W/ NO EXCEPTIONS TAKEN:

APPROVED AS NOTED:

REVISE AND RESUBMIT:

SIGNATURE _____ DATE _____



Ph: 800.579.8819 | www.oldcastleinfrastructure.com/stormwater
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Dual-Vortex Separator
DVS-48C

CUSTOMER
Hudick Excavating

JOB NAME
Parkdale - Erie, CO

| DATE | MFG | DRAWN | ENGINEER | CHECKED | SALES ORDER |
|---------------------|--------|-------|----------|--------------------------|-------------|
| 8/19/21 | 110-LI | PPS | JSA | JSA | S177999 |
| INTERNAL DRAWING ID | | | | REVISION | SHEET |
| PDD-11582 | | | | 1 REV DATE 8/30/21 | 1 OF 1 |



THIS PRODUCT IS PROTECTED BY THE FOLLOWING US PATENT: 7,182,874; RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

PDD-11582-LI/DVS-48C.dwg, 2021-08-30 9:32 AM, Akshay Sarmat, 6.652

| REV | DESCRIPTION | BY | DATE |
|-----|----------------------|-----|---------|
| 1 | UPDATED TO SUBMITTAL | PPS | 8/30/21 |

SECTION 2

Features & Benefits



STORM CYCLONIC WATER Separation

Enhanced Gravity Separation of Stormwater Pollutants in a Compact Configuration

Dual-Vortex Efficiency

Particle settling is enhanced by circular flow patterns and a highly circuitous flow path created by two independent vortex cylinders.

Settled particles are collected in the isolated bottom storage area, while floating trash, debris and petroleum hydrocarbons are retained in the cylinders and upper storage areas.

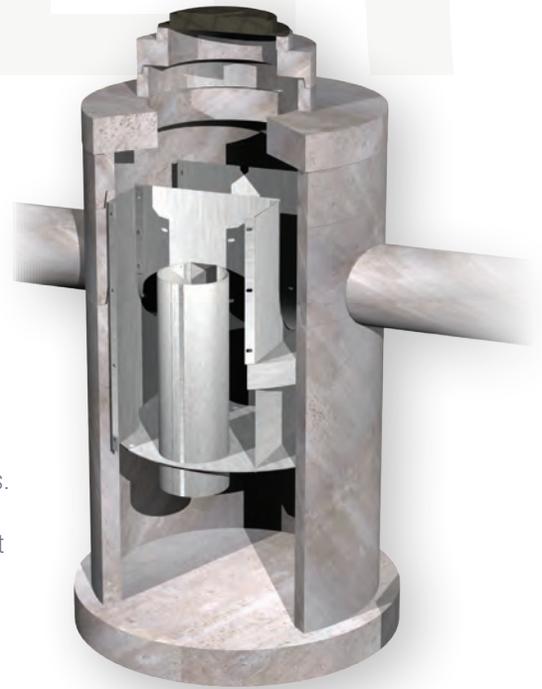
During peak events, flows in excess of design treatment overtop the bypass weir and exit the system without entering the cylinders and lower storage area, thereby eliminating re-entrainment issues.

FEATURES:

- Maintenance Accessible Design
- Economical Installation
- Access Options
- Online System Capability
- Durable Construction
- Proven Performance
- Treatment Train

BENEFITS:

- Open access to accumulated floatables and sediment storage area
- Prepackaged and provided as compact round or square manholes
- Multiple access options (manhole cover or optional hinged lid)
- Internal high-flow bypass weir system provides for online or offline configurations
- Stainless-steel components installed in a reinforced concrete structure
- Third party tested and certified
- Can be installed upstream of infiltration, detention and retention systems or other treatment BMP's



Dual-Vortex Separator Offers an Innovative, Economical Alternative for Removal of Suspended Pollutants from Stormwater Runoff

How it Works

STEP 1

Independent Vortex Cylinders & Control Weir - Flows are directed to the two independent vortex cylinders where particle settling is enhanced by circular flow patterns.

STEP 2

Captured Floatables - Floating trash, debris and petroleum hydrocarbons accumulate at the top of the two cylinders where they are held until transfer into the upper storage area by peak storm events.

STEP 3

Removal of Total Suspended Solids (TSS) - Particle settling is enhanced by the circular flow patterns and a highly circuitous flow path created by two independent vortex cylinders. Sediments are collected and retained in the isolated bottom storage area.

STEP 4

High-Flow Bypass - Flows in excess of the design treatment overtop the bypass weir and exit the system without entering the cylinders and re-entraining captured pollutants.



MODELS AND NOMINAL DIMENSIONS

| Model No. | Structure Diameter (ft.) | Standard Sump Depth* (ft.) | Minimum Rim to Invert Depth (ft.) | Sediment Storage* (cubic feet) | Oil and Floatable Storage (cubic feet) | NJCAT Treatment Flow Rate (cfs) | Maximum Treatment Flow Rate (cfs) |
|-----------|--------------------------|----------------------------|-----------------------------------|--------------------------------|--|---------------------------------|-----------------------------------|
| DVS-36 | 3 | 4.5 | 2.5 | 11 | 6 | 0.56 | 0.56 |
| DVS-48 | 4 | 5.0 | 3.0 | 19 | 15 | 1.00 | 1.25 |
| DVS-60 | 5 | 5.5 | 3.5 | 29 | 29 | 1.56 | 2.50 |
| DVS-72 | 6 | 6.5 | 4.5 | 42 | 49 | 2.25 | 4.25 |
| DVS-84 | 7 | 7.0 | 5.0 | 58 | 79 | 3.06 | 6.50 |
| DVS-96 | 8 | 8.0 | 5.5 | 75 | 116 | 4.00 | 9.50 |
| DVS-120 | 10 | 10.0 | 7.0 | 118 | 226 | 6.25 | 16.80 |
| DVS-144 | 12 | 11.5 | 8.0 | 170 | 388 | 9.00 | 26.40 |

*Depth of unit can be increased to add storage capacity.

Available Options

Square configurations accept multiple inlet pipes or meet other special site conditions.
Flume inlet control for grated inlet applications.



SECTION 3

Product Specifications

PART 1 — GENERAL

1.1 Section Includes

- A. Dual Vortex Separator (DVS) – vortex hydrodynamic separator for stormwater treatment.

1.2 Related Sections

- A. Section 01 33 00 – Submittals: Shop Drawings, Product Data, and Samples
- B. Section 02 30 00 – Earthwork: Excavation, Trenching, Backfill, and Compaction.
- C. Section 31 25 00 – Erosion and Sedimentation Controls

1.3 References

- A. American Association of State Highway and Transportation Officials (AASHTO)
 - 1. AASHTO M105 – Standard Specification for Gray Iron Castings
- B. American Society for Testing and Materials (ASTM)
 - 1. ASTM A48, CL.30B – Standard Specification for Gray Iron Castings
 - 2. ASTM A82 – Standard Specification for Steel Wire, Plain, for Concrete Reinforcement
 - 3. ASTM A185 – Standard Specification for Welded Steel Wire Fabric for Concrete Reinforcement
 - 4. ASTM A240 – Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
 - 5. ASTM A496 – Standard Specification for Deformed Steel Wire for Concrete Reinforcement
 - 6. ASTM A497 – Standard Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete
 - 7. ASTM A615 – Standard Specification for Deformed and Plain, Carbon-Steel Bars for Concrete Reinforcement
 - 8. ASTM B209 – Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
 - 9. ASTM C32 – Standard Specification for Sewer and Manhole Brick (Made from Clay or Shale)
 - 10. ASTM C33 – Standard Specification for Concrete Aggregates
 - 11. ASTM C139 – Standard Specification for Concrete Masonry Units for Construction of Catch Basins and Manholes

12. ASTM C150 – Standard Specification for Portland Cement
13. ASTM C478 – Standard Specification for Circular Precast Reinforced Concrete Manhole Sections
14. ASTM C595 – Standard Specification for Blended Hydraulic Cements
15. ASTM C890 – Standard Practice for Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water and Wastewater Structures
16. ASTM C891 – Standard Practice for Installation of Underground Precast Concrete Utility Structures
17. ASTM C913 – Standard Specification for Precast Concrete Water and Wastewater Structures
18. ASTM C990 – Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants
19. ASTM C1107 – Standard Specification for Packaged Dry, Hydraulic Cement Grout (Non-Shrink)
20. ASTM C1227 – Standard Specification for Precast Concrete Septic Tanks
21. ASTM C1244 – Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test Prior to Backfill
22. ASTM D698 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort

C. Definitions:

1. BMP: Best Management Practices
2. TSS: Total Suspended Solids

1.4 Submittals

The following shall be submitted by contractor in accordance with Section 01 33 00 Submittal Procedures:

A. Product Data for the Hydrodynamic Separator:

1. Product specifications to include but not limited to specification sheets, brochures, and performance claims.
2. Inspection and maintenance guidelines.
3. Submittal drawings shall be provided and annotated to indicate all materials to be used and applicable material standards, required tests of materials, and all design assumptions for structural analysis. Details of steel reinforcing size and placement shall be submitted if professional

engineering stamp and calculations are required by the customer. It is the responsibility of the project's engineer-of-record to verify that the design assumptions are suitable for the proposed application.

- B. Independent third-party certification or test report demonstrating conformance to applicable local or regional BMP standards before the treatment system is installed for the following, upon request:
 - 1. Removal Efficiency
 - 2. Targeted Pollutants of Concern
 - 3. Hydraulic Capacity
 - 4. Certification of adherence to applicable standard
- C. Products submitted as approved equal must be submitted at least 2 weeks prior to project bid opening and must be approved by project engineer. Submittal for approved equal product must contain a signed letter from an executive officer of the manufacturer stating product is equivalent to all applicable requirements of this specification.

1.5 Quality Assurance

The precast concrete producer shall demonstrate adherence to the standards set forth in the plant Quality Control Manual.

- A. Qualifications, Quality Control and Inspection
 - 1. The precast producer shall maintain a permanent quality control department.
 - 2. The precast concrete producer shall have a quality control program which is audited for compliance annually by persons outside that plant's employee structure.
 - 3. Upon request, the precast concrete producer shall supply a copy of their quality control manual.
- B. Quality Control
 - 1. The precast concrete producer shall perform standard concrete testing and inspection.
 - i. Replacement Check
 - 1. All non machine-cast products shall be inspected for accuracy prior to placing concrete. Checks shall include, but not be limited to, form condition and cleanliness, form dimensions, joints, release agent, blockouts, inserts and locations, lifting devices, reinforcing steel size, spacing, clearances and proper placement. Machine cast products shall have a minimum 5% of the production checked at random.
 - 2. Replacement checks shall be documented and initialed by the inspector. A drawing with verifications of the above

criteria can be used as documentation.

ii. Postplacement Check

1. All non machine-cast products shall be inspected for accuracy after the concrete forms have been removed. Checks shall include, but not be limited to, dimensional checks, finishing, insert locations, squareness, honeycombing, cracking, marking, coatings, racking, hole size and location. Postplacement checks may require a corrective action report. Machine cast products shall have a minimum of 5% of production checked at random.
2. Postplacement checks shall be documented and initialed by the inspector. A drawing with verifications of the above criteria can be used as documentation.

2. Copies of the test results and Inspections above shall be available upon request.

1.6 Delivery, Storage, and Handling

- A. All treatment system components shall be delivered to the site and unloaded with handling that conforms to the manufacturer's instructions for reasonable care. Concrete and internal components shall not be rolled or dragged over gravel or rock during handling. The contractor shall take necessary precautions to ensure the method used in lifting or placing the treatment system does not induce stress fatigue in the concrete.

PART 2 — PRODUCTS

2.1 Description

The contractor, and/or a manufacturer selected by the contractor and approved by the Engineer, shall furnish all labor, materials, equipment and incidentals required and install all precast concrete stormwater treatment systems and appurtenances in accordance with the drawings and these specifications. The treatment system is housed in a precast concrete manhole or vault structure. The treatment system shall provide flow partitioned hydrodynamic treatment that removes sediment, free-floating pollutants, and oil particles. The treatment system must include the capability to partition flows, causing treatment flows to be diverted into the treatment chamber. Flows exceeding the treatment capacity of the unit shall divert the bypass flows around the treatment chamber to prevent resuspension and washout of previously trapped pollutants.

2.2 Materials and Design

- A. Concrete for precast stormwater treatment systems shall conform to ASTM A478 or ASTM C890 and C913 and meet the following additional requirements:
 1. In all cases the wall thickness shall be no less than the minimum thickness necessary to sustain HS20-44 (MS18) loading requirements as determined by a Licensed Professional Engineer.
 2. Sections shall have tongue and groove or ship-lap joints with a butyl

mastic sealant conforming to ASTM C990.

3. Cement shall be Type I, II, or III Portland cement conforming to ASTM C150.
4. All sections shall be cured by an approved method. Sections shall not be shipped until the concrete has attained a compressive strength of 4,000 psi (28 MPa) or other designate suitable handling strength.
5. Pipe openings shall be sized to accept pipes of the specified size(s) and material(s), and shall be sealed by the contractor with hydraulic cement conforming to ASTM C595M or ASTM C1107.
6. Aggregates shall conform to ASTM C33, except that the requirement for gradation shall not apply.
7. Reinforcement shall consist of wire conforming to ASTM A82 or A496, of wire mesh conforming to ASTM A185 or A497, or Grade 40 steel bars conforming to ASTM A615.
8. Castings for manhole frames and covers shall be in accordance with ASTM A48, CL.30B and AASHTO M105. The access cover/s shall be designed for HS20-44 traffic loading and shall provide a minimum of 30-inch clear opening.
9. Brick or masonry used to build the manhole frame to grade shall conform to ASTM C32 or ASTM C139 and shall be installed in conformance with all local requirements.
10. Diversion weirs, separation chamber, and oil baffle shall be made from aluminum and/or stainless steel and shall conform to ASTM B209 or ASTM A240
11. All mounting hardware for internal components shall be made of 304SS and shall conform to ASTM A240

2.3 Performance

Each specified stormwater flow based treatment device shall conform to the specifications listed in Table 2.1

Table 2.1 DVS Models, Flow Rates and Capacities.

| DVS Model | Diameter or Length/Width (ft) | NJCAT Verified Flow Rate (cfs) | Minimum Sediment Storage Capacity (cu-ft) | Minimum Oil Storage Capacity (cu-ft) |
|------------------|--------------------------------------|---------------------------------------|--|---|
| DVS-36 | 3 | 0.56 | 11 | 5 |
| DVS-48 | 4 | 1.00 | 19 | 12 |
| DVS-60 | 5 | 1.56 | 29 | 23 |
| DVS-72 | 6 | 2.25 | 42 | 37 |
| DVS-84 | 7 | 3.06 | 58 | 60 |
| DVS-96 | 8 | 4.00 | 75 | 88 |
| DVS-120 | 10 | 6.25 | 118 | 184 |
| DVS-144 | 12 | 9.00 | 170 | 312 |

Each specified flow-based stormwater treatment system shall be verified by New Jersey Corporation for Advanced Technology (NJCAT) and certified by New Jersey Department of Environmental Protection (NJDEP) according to the 2013 Hydrodynamic Separator Testing Protocol. Each specified flow-based stormwater treatment system shall be capable of removing 50% of the weighted Total Suspended Solids (TSS) load based on a d50 particle size of 47 microns. Annual TSS removal efficiency models shall be based on laboratory performance data, site-specific hydraulics and hydrology, and local rainfall intensity distributions. The stormwater treatment system shall be completely housed within one structure.

2.4 Manufacturer

Each stormwater treatment system shall be a Dual Vortex Separator (DVS) as manufactured by Oldcastle Infrastructure, Inc., 7100 Longe St, Stockton, California 95206. Phone: (800) 579-8819.

PART 3 — EXECUTION

3.1 Survey

- A. The installation area shall be surveyed using the work print and a checklist to identify the work to be done and to determine that the plans are correct.
- B. All underground facilities and structures such as gas, water, sewer, power, telephone cable, and so forth shall be located and identified. Location markings shall be placed by the affected utilities before construction.
- C. The survey shall identify and obstacles such as overhead wires, building structures that will interfere with crane operations, work progress, or create a safety hazard.
- D. The survey shall give consideration to the soil structure so that proper shoring, sloping, or both may be planned in advance of the excavation work.

3.2 Planning

- A. Permits required to do work in accordance with the detail plans shall be secured before starting the job. All permits or a record of the permits shall be retained on the

job for immediate reference.

- B. All utilities and owners of surface and subsurface facilities and structures in the area shall be given advance notification of proposed excavation. Every effort shall be made to avoid damage to the facilities of others. If any damage occurs, the owner of the damaged facility shall be notified immediately.
- C. Planning shall include the coordination of all responsible parties to ensure that arrangements for removal of excess and damaged material have been made.
- D. Should it appear that a structure location will interfere with traffic, review the situation with the engineer and notify appropriate authorities.
- E. Provide for access to call boxes, fire hydrants, etc.

3.3 Safety Requirements

- A. Safety requirements for construction shall be in accordance with all federal, state, and local regulations.

3.4 Excavating

- A. If unforeseen facilities or obstructions are encountered, stop excavation operations immediately. Expose the obstruction with wood handled digging tools and investigate them with caution. If there is any doubt as to the type of obstruction exposed, request positive identification from those suspected of owning the facility and then proceed as circumstances dictate.
- B. Inspect excavations after every rainstorm or other hazard-increasing occurrence, and increase the protection against slides and cave-ins, if necessary.
- C. In dewatering excavations, make certain that the discharge is carried to a suitable runoff point.
- D. Excavation size shall be large enough to allow access around the structure after it is installed.

3.5 Shoring

- A. Shoring for construction shall be in accordance with all federal, state, and local regulations

3.6 Installation

- A. Site Access – The general contractor shall be responsible for providing adequate access to the site to facilitate hauling, storage, and proper handling of the precast concrete units.
- B. Installation – Precast concrete units shall be installed: to the lines and grades shown on the contract documents or otherwise specified; be lifted by suitable lifting devices at points provided by the precast concrete producer; in accordance with applicable industry standards. Upon request, the precast concrete producer shall provide installation instructions. Field modifications to the product shall relieve the precast

producer of liability and warranty regardless if such modifications result in the failure of the precast concrete unit.

- C. Leak Resistance – Where leak resistance is a necessary performance characteristic of the precast concrete unit's end use, joint sealant, pipe-entry connectors and other penetrations shall be sealed according to manufacturer's requirements to ensure the integrity of the system.

3.7 Backfilling and Restoration

- A. Do the backfilling as soon as possible after the structure has been placed.
- B. Backfill material shall be granular and free from large stones, rocks, and pavement. Expansive soil material shall not be used as backfill around the structure.
- C. Backfilling shall be achieved by lifts (layers) to the required compaction.
- D. Follow up inspections for settlements are required. Should settlement occur, the contractor shall be responsible for all necessary repairs.

3.8 Field Quality Control

- A. Job Site Tests – When leak resistance testing is required for a precast concrete structure, one of the following methods may be followed:
 - 1. Vacuum Testing
 - i. Prior to backfill, vacuum test system according to ASTM C1244 for manholes and ASTM C1227 for septic tanks.
 - 2. Hydrostatic Testing
 - i. First Backfill the structure, then fill to the normal water level, let stand for 24 hours. Refill to the original water line and measure the water level change over a 24-hour period. Leak shall not exceed 5% of volume.
- B. Inspection
 - 1. Final field elevations and compaction properties shall be verified and documented.

END OF SECTION

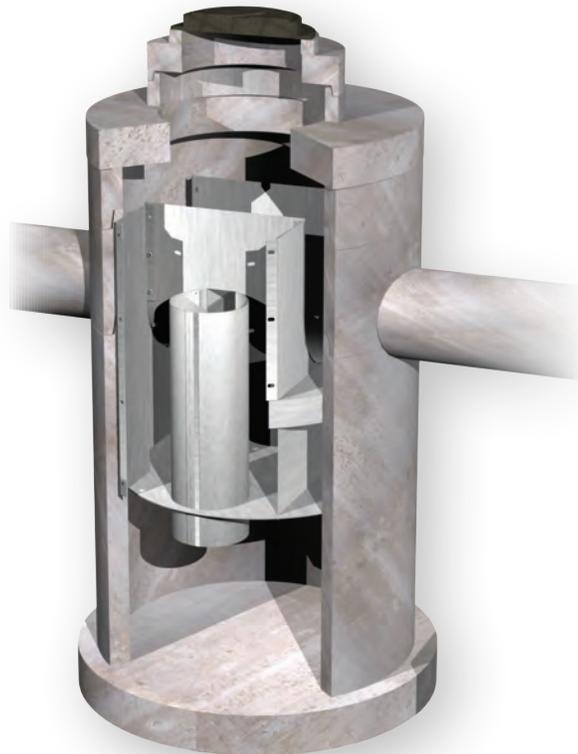
SECTION 4

Inspection & Maintenance



DUAL-VORTEX SEPARATOR

Inspection and Maintenance Guide



Description

The Dual-Vortex Separator (DVS) is a hydrodynamic stormwater treatment device used to remove pollutants from urban runoff. Impervious surfaces and other urban and suburban landscapes generate a variety of contaminants that can enter stormwater and pollute downstream receiving waters. The DVS is designed to capture and retain sediment as well as floating trash, debris and oils. The concentration of metals and other constituents associated with sediment or floating pollutants may also be reduced.

Function

Stormwater runoff enters the DVS unit through an inlet pipe. Influent flow is split evenly between two vortex tubes by a V-shaped weir. The shape and diameter of the vortex tubes promotes circular motion of the incoming stormwater at increased velocities to enhance particle settling through centrifugal force. The system is also designed with an extended flow path to maximize hydraulic residence time which allows increased time to settle out solids. Settled pollutants are collected in an isolated storage area at the bottom of the structure, while floating trash, debris and petroleum hydrocarbons are retained behind baffles that contain the vortex chambers. During peak runoff events, flow in excess of design treatment flow overtops the bypass weir and exits the system without entering the treatment chambers to interrupt the treatment process or re-entrain captured pollutants. Treatment and bypass flows exit the system through an outlet pipe that is plumbed at the same elevation as the inlet pipe.

Configuration

The internal components of the DVS system are fabricated from stainless steel and mounted in a manhole or vault structure. The system is typically delivered as a complete unit for installation by the contractor. Installation includes excavation, preparation of the base rock, setting the unit, plumbing the inlet and outlet piping, backfill and placement of the finished surface at grade. Access to the installed system is allowed through ductile iron casting or hatch covers. The number of access points provided is dependent on the size and configuration of the system.

Maintenance Overview

State and local regulations require all stormwater management systems to be inspected on a regular basis and maintained as necessary to ensure performance and protect downstream receiving waters. Without maintenance, excessive pollutant buildup can limit system performance by reducing the operating capacity and increase the potential for scouring of pollutants during periods of high flow.

Inspection Equipment

The following equipment is helpful when conducting DVS inspections:

- Recording device (pen and paper form, voice recorder, iPad, etc.)
- Suitable clothing (appropriate footwear, gloves, hardhat, safety glasses, etc.)
- Traffic control equipment (cones, barricades, signage, flagging, etc.)
- Manhole hook or pry bar
- Flashlight
- Tape measure
- Measuring stick or sludge sampler
- Long-handled net (optional)
- Replacement sorbent pads

Inspection Procedures

Inspection is essential to consistent system performance and is easily completed. Inspection is typically conducted a minimum of twice per year but since pollutant transport and deposition varies from site to site, a site-specific maintenance frequency should be established during the first two or three years of operation.

DVS inspections are visual and are conducted without entering the unit. To complete an inspection, safety measures including traffic control should be deployed before the access covers are removed. Once the covers have been removed, the following items should be checked and recorded (see form provided on page 5) to determine whether maintenance is required:

- Inspect the internal components and note whether there are any broken or missing parts. In the unlikely event that internal parts are broken or missing, contact Oldcastle Infrastructure at (800) 579-8819 to determine appropriate corrective action.
- Note whether the inlet or outlet pipe is blocked or obstructed.
- Observe, quantify and record the accumulation of floating trash and debris in the baffled chambers around the vortex tubes. The significance of accumulated floating trash and debris is a matter of judgement. A long-handled net may be used to retrieve the bulk of trash and debris at the time of inspection if full maintenance due to accumulation of oils or sediment is not yet warranted.
- Observe, quantify and record the accumulation of oils in the baffled chambers around the vortex tubes. If sorbent pads have been used to absorb free oil and grease, observe and record their condition. Unless the sorbent pads are tethered to the internal baffles, spent pads may be netted and replaced at the time of inspection. The significance of accumulated floating oils is a matter of judgement. However, if there is evidence of an oil or fuel spill, immediate maintenance is warranted.
- Finally, observe, quantify and record the accumulation of sediment in the sediment storage sump. A calibrated dipstick, tape measure or sludge sampler may be used to determine the amount of accumulated sediment. The depth of sediment may be determined by calculating the difference between the measurement from the rim of the DVS to the top of the accumulated sediment and the measurement from the rim of the DVS to the bottom of the DVS structure. Finding the top of the accumulated sediment takes some practice and a light touch, but increasing resistance as the measuring device is lowered toward the bottom of the unit indicates the top of the accumulated sediment.

Maintenance

Maintenance should be scheduled if any of the following conditions are identified during inspection:

- Internal components are broken or missing.
- Inlet or outlet piping is obstructed.
- The accumulation of floating trash and debris that cannot be retrieved with a net and/or oil in the baffled chambers around the vortex tubes is significant.
- Tethered sorbent pads, if used, are dirty or saturated.
- The sediment level in the sediment storage sump is greater than 12 inches. The capacity of the sediment sump is 18 inches of sediment depth for all DVS models. Sediment depths greater than 18 inches will begin to affect the performance of the system.

Maintenance Equipment

The following equipment is helpful when conducting DVS maintenance:

- Suitable clothing (appropriate footwear, gloves, hardhat, safety glasses, etc.)
- Traffic control equipment (cones, barricades, signage, flagging, etc.)
- Manhole hook or pry bar
- Confined space entry equipment, if needed
- Flashlight
- Tape measure
- Sorbent pads
- Vacuum truck

Maintenance Procedures

Maintenance should be conducted during dry weather when no flow is entering the system. All maintenance, except possibly the attachment of sorbent pads (if required), may be conducted without entering the DVS structure. Once safety measures such as traffic control are deployed, the access covers may be removed and the following activities may be conducted to complete maintenance:

- Remove floating trash, debris and oils from the water surface using an extension on the end of the boom hose of the vacuum truck. Continue using the vacuum truck to completely dewater the structure through the vortex tubes and evacuate all accumulated sediment from the sediment sump. Some jetting may be required to fully evacuate sediment from the sump. This is easily achieved by inserting a jet hose through the vortex tube opposite the tube used for vacuum hose access.
- If sorbent pads are required and are tethered to the structure, only personnel that are OSHA Confined Space Entry trained and certified may enter the structure to remove and replace the spent pads.
- The structure does not need to be refilled with water after maintenance is complete. The system will fill with water when the next storm event occurs.
- All material removed from the DVS during maintenance must be disposed of in accordance with local regulations. In most cases, the material may be handled in the same manner as disposal of material removed from sumped catch basins or manholes.

Dual-Vortex Separator Inspection and Maintenance Log

DVS Model _____

Inspection Date _____

Location _____

Condition of Internal Components

Notes:

Good Damaged Missing

Inlet or Outlet Blockage or Obstruction

Notes:

Yes No

Floating Trash and Debris

Notes:

Significant Not Significant

Floating Oils

Notes:

Significant Not Significant Spill

Sediment Depth

Notes:

Inches of Sediment: _____

Maintenance Requirements

Yes - Schedule Maintenance No - Schedule Re-Inspection

DUAL-VORTEX SEPARATOR

OUR MARKETS



**BUILDING
STRUCTURES**



COMMUNICATIONS



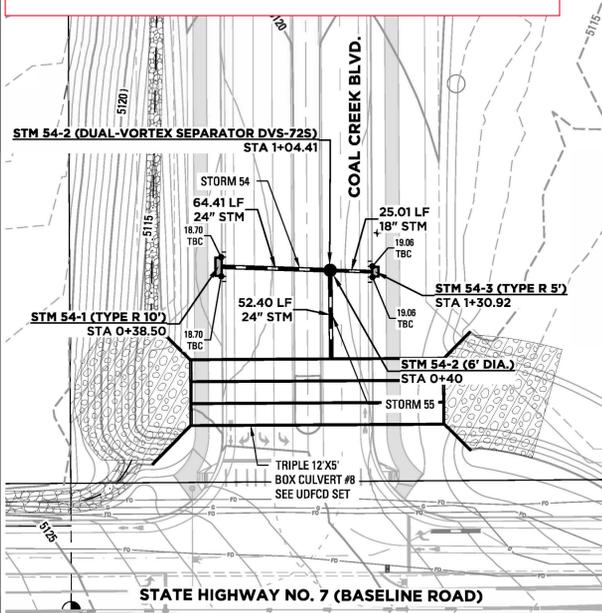
WATER



ENERGY

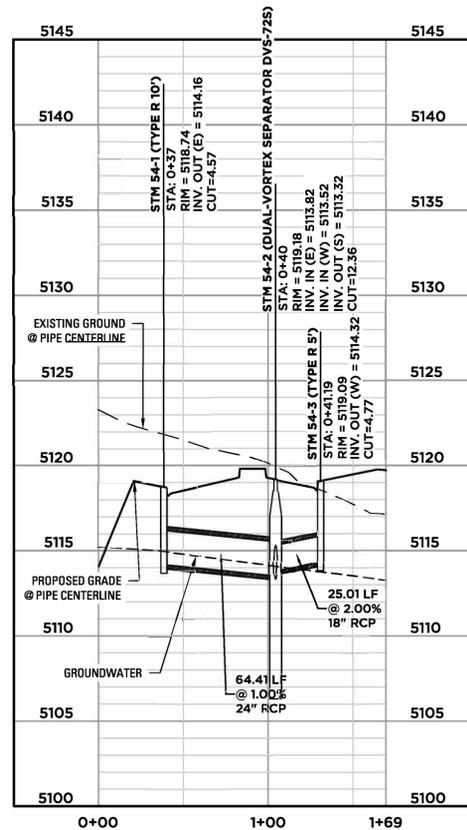


TRANSPORTATION

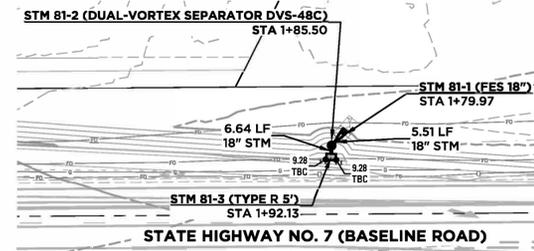
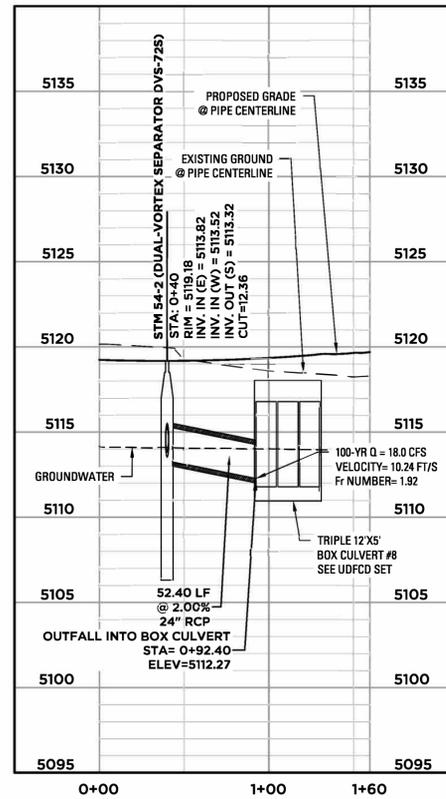


STORM 54 & 55 PLAN

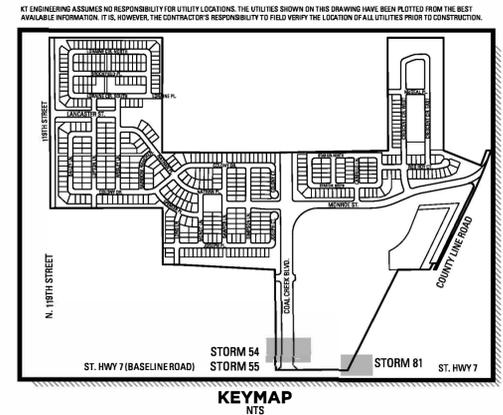
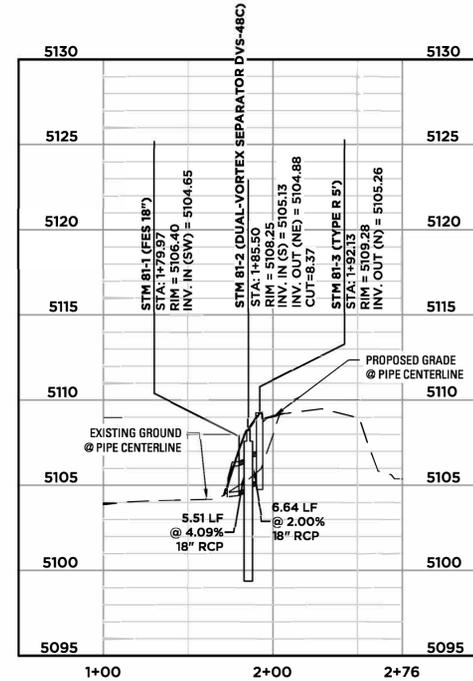
STORM 54 PROFILE



STORM 55 PROFILE



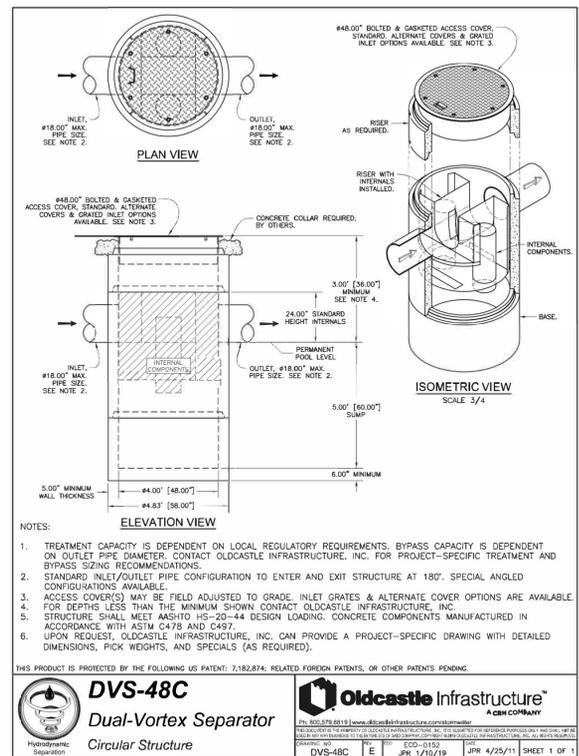
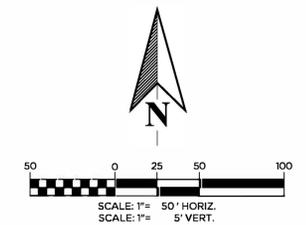
STORM 81 PLAN & PROFILE



PARKDALE SUBDIVISION
DUAL-VORTEX SEPARATOR
OPERATIONS AND
MAINTENANCE PLAN

THE TOWN OF ERIE IS RESPONSIBLE
FOR INSPECTION AND MAINTENANCE

CDOT REGION 4, BOULDER COUNTY

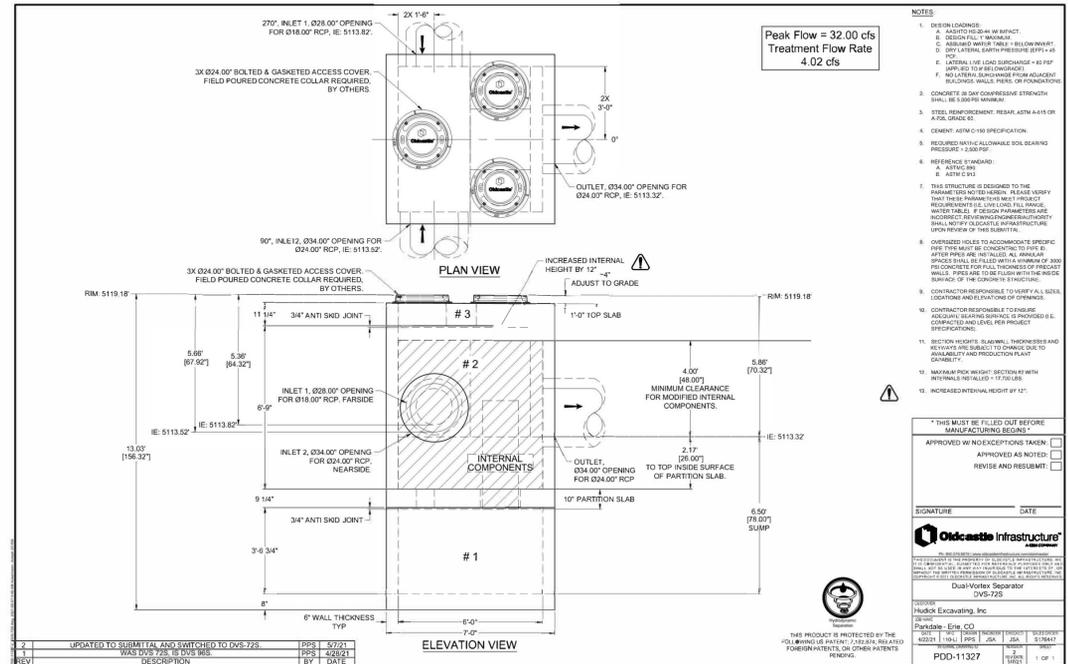


NOTES:
1. TREATMENT CAPACITY IS DEPENDENT ON LOCAL REGULATORY REQUIREMENTS. BYPASS CAPACITY IS DEPENDENT ON OUTLET PIPE DIAMETER. CONTACT OLDCASTLE INFRASTRUCTURE, INC. FOR PROJECT-SPECIFIC TREATMENT AND BYPASS SIZING RECOMMENDATIONS.
2. STANDARD INLET/OUTLET PIPE CONFIGURATION TO ENTER AND EXIT STRUCTURE AT 180°. SPECIAL ANGLED CONFIGURATIONS AVAILABLE.
3. ACCESS COVER(S) MAY BE FIELD ADJUSTED TO GRADE. INLET GRATES & ALTERNATE COVER OPTIONS ARE AVAILABLE. FOR DEPTHS LESS THAN THE MINIMUM SHOWN CONTACT OLDCASTLE INFRASTRUCTURE, INC.
4. STRUCTURE SHALL MEET AASHTO HS-20-44 DESIGN LOADING. CONCRETE COMPONENTS MANUFACTURED IN ACCORDANCE WITH ASTM C478 AND C487.
5. UPON REQUEST, OLDCASTLE INFRASTRUCTURE, INC. CAN PROVIDE A PROJECT-SPECIFIC DRAWING WITH DETAILED DIMENSIONS, PICK WEIGHTS, AND SPECIALS (AS REQUIRED).
THIS PRODUCT IS PROTECTED BY THE FOLLOWING US PATENT: 7,182,874; RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

DVS-48C
Dual-Vortex Separator
Circular Structure

Oldcastle Infrastructure
A CEM COMPANY

Ph: 800.579.0113 | www.oldcastleinfrastructure.com
11000 Oldcastle Drive, Suite 100, Charlotte, NC 28226
DVS-48C | E | ECO-0152 | JPR 1/10/19 | JPR 4/25/11 | SHEET 1 OF 1



NOTES:
1. EXISTING CONDITIONS:
A. VERIFY ALL UTILITIES AND THEIR DEPTHS PRIOR TO CONSTRUCTION.
B. VERIFY ALL EXISTING STRUCTURES AND THEIR FOUNDATIONS PRIOR TO CONSTRUCTION.
C. VERIFY ALL EXISTING ELEVATIONS AND THEIR ACCURACY PRIOR TO CONSTRUCTION.
D. VERIFY ALL EXISTING DIMENSIONS AND THEIR ACCURACY PRIOR TO CONSTRUCTION.
E. VERIFY ALL EXISTING MATERIALS AND THEIR QUALITY PRIOR TO CONSTRUCTION.
F. VERIFY ALL EXISTING CONDITIONS AND THEIR IMPACT PRIOR TO CONSTRUCTION.
2. CONSTRUCTION RESPONSIBILITY TO VERIFY ALL UTILITIES, LOCATIONS AND DEPTHS OF UTILITIES.
3. CONSTRUCTION RESPONSIBILITY TO VERIFY ALL EXISTING STRUCTURES, FOUNDATIONS AND DEPTHS OF FOUNDATIONS.
4. CONSTRUCTION RESPONSIBILITY TO VERIFY ALL EXISTING DIMENSIONS AND THEIR ACCURACY PRIOR TO CONSTRUCTION.
5. CONSTRUCTION RESPONSIBILITY TO VERIFY ALL EXISTING MATERIALS AND THEIR QUALITY PRIOR TO CONSTRUCTION.
6. CONSTRUCTION RESPONSIBILITY TO VERIFY ALL EXISTING CONDITIONS AND THEIR IMPACT PRIOR TO CONSTRUCTION.
7. THIS STRUCTURE IS DESIGNED TO THE PERMANENT SERVICE LIFE. PLEASE VERIFY THAT THE PERMANENT SERVICE LIFE REQUIREMENTS ARE MET. ALL MATERIALS SHALL BE CONFORMANT WITH ALL APPLICABLE CODES AND STANDARDS.
8. OVERSIZED HOLES TO ACCOMMODATE SPECIFIC PIPE MUST BE CONCRETE TO PIPE BY AFTER PERIOD AND SHALL BE ALL MATERIALS SHALL BE CONFORMANT WITH ALL APPLICABLE CODES AND STANDARDS.
9. CONSTRUCTION RESPONSIBILITY TO VERIFY ALL UTILITIES, LOCATIONS AND DEPTHS OF UTILITIES.
10. CONSTRUCTION RESPONSIBILITY TO VERIFY ALL EXISTING STRUCTURES, FOUNDATIONS AND DEPTHS OF FOUNDATIONS.
11. CONSTRUCTION RESPONSIBILITY TO VERIFY ALL EXISTING DIMENSIONS AND THEIR ACCURACY PRIOR TO CONSTRUCTION.
12. CONSTRUCTION RESPONSIBILITY TO VERIFY ALL EXISTING MATERIALS AND THEIR QUALITY PRIOR TO CONSTRUCTION.
13. CONSTRUCTION RESPONSIBILITY TO VERIFY ALL EXISTING CONDITIONS AND THEIR IMPACT PRIOR TO CONSTRUCTION.
14. INCREASED INTERNAL HEIGHT BY 12" ADJUST TO GRADE.

Peak Flow = 32.00 cfs
Treatment Flow Rate 4.02 cfs

Oldcastle Infrastructure
A CEM COMPANY

Ph: 800.579.0113 | www.oldcastleinfrastructure.com
11000 Oldcastle Drive, Suite 100, Charlotte, NC 28226
DVS-72S | E | ECO-0152 | JPR 1/10/19 | JPR 4/25/11 | SHEET 1 OF 1

GENERAL PROJECT INFORMATION
RECEIVING WATER: COAL CREEK
CDOT REGION 4 CONTACT: Nick Schipanski
CDOT Region 4 Environmental Project Manager
C: 970.631.3182
nicholaus.schipanski@state.co.us

MAINTAINING AGENCY: The Town of Erie Public Works Department
P: 303.926.2870
pubwks@erieco.gov

GENERAL FACILITY DESCRIPTION
THIS FACILITY CONSISTS OF TWO DUAL-VORTEX SEPARATORS UTILIZED TO TREAT RUNOFF FROM THE PAVED ACCELERATION AND DECELERATION LANES CONSTRUCTED WITH THE PARKDALE SUBDIVISION ON STATE HWY 7. DUAL-VORTEX SEPARATOR DVS-48C (81-2) IS WITHIN CDOT RIGHT OF WAY AND ACCEPTS FLOW FROM THE WIDENING EAST OF COAL CREEK BLVD. DUAL-VORTEX SEPARATOR DVS-72S (54-2) IS WITHIN THE TOWN OF ERIE RIGHT WAY AND ACCEPTS FLOW FROM THE WIDENING WEST OF COAL CREEK BLVD.

INSPECTION & MAINTENANCE FREQUENCY
POST-CONSTRUCTION INSPECTION IS REQUIRED PRIOR TO PUTTING THE DUAL-VORTEX SEPARATOR SYSTEM INTO SERVICE.
ROUTINE INSPECTIONS ARE RECOMMENDED DURING THE FIRST YEAR OF OPERATION TO ACCURATELY ASSESS THE SEDIMENT ACCUMULATION OVER TIME.

FOR THE FIRST YEAR THE DUAL-VORTEX SEPARATOR WILL BE INSPECTED A MINIMUM FOUR TIMES PER YEAR AND AFTER EVERY STORM WITH GREATER THAN ONE INCH OF RAINFALL.
INSPECTION FREQUENCY IN SUBSEQUENT YEARS IS BASED ON THE MAINTENANCE PLAN DEVELOPED IN THE FIRST YEAR.

FOR OPTIMUM PERFORMANCE, THE UNIT SHOULD BE CLEANED ONCE THE SEDIMENT DEPTH REACHES 67% (1/2) OF THE UNIT'S TOTAL STORAGE CAPACITY. GENERALLY, THE MINIMUM CLEANING FREQUENCY IS ONCE ANNUALLY, ALTHOUGH THE FREQUENCY SHALL BE BASED ON HISTORICAL INSPECTION RESULTS.

INSPECTIONS SHOULD ALSO BE PERFORMED IMMEDIATELY AFTER AN OIL, FUEL OF OTHER CHEMICAL SPILL.

REVISIONS TO MAINTENANCE FREQUENCY:

| SCHEDULED DATE | DESCRIPTION OF SERVICE |
|----------------|------------------------|
| | |
| | |
| | |

PROCEDURE, REQUIRED EQUIPMENT, MATERIALS, & RESPONSIBILITY
THE DUAL-VORTEX SEPARATOR SYSTEM IS INSPECTED AND MAINTAINED BY PROFESSIONAL VACUUM CLEANING SERVICE PROVIDERS WITH EXPERIENCE IN THE MAINTENANCE OF UNDERGROUND TANKS, SEWERS AND CATCH BASINS. FOR TYPICAL INSPECTION AND MAINTENANCE ACTIVITIES, NO SPECIFIC SUPPLEMENTAL TRAINING IS REQUIRED FOR THE DUAL-VORTEX SEPARATOR SYSTEM.

IN UNUSUAL CIRCUMSTANCES, SUCH AS IF A DAMAGED COMPONENT NEEDS REPLACEMENT OR SOME OTHER CONDITION REQUIRES MANNED ENTRY INTO THE VESSEL, CONFINED SPACE ENTRY PROCEDURES MUST BE FOLLOWED. ONLY PROFESSIONAL MAINTENANCE SERVICE PROVIDERS TRAINED IN THESE PROCEDURES SHOULD ENTER THE VESSEL. SERVICE PROVIDER COMPANIES TYPICALLY HAVE PERSONNEL WHO ARE TRAINED AND CERTIFIED IN CONFINED SPACE ENTRY PROCEDURES ACCORDING TO LOCAL, STATE, AND FEDERAL STANDARDS.

- TYPICAL EQUIPMENT USED FOR INSPECTION:**
- MANHOLE ACCESS COVER LIFTING TOOL
 - OIL DIPSTICK
 - SEDIMENT PROBE
 - FLASHLIGHT
 - CAMERA
 - DATA LOG
 - SAFETY CONES AND CAUTION TAPE
 - HARD HAT, SAFETY SHOES, SAFETY GLASSES, AND CHEMICAL-RESISTANT GLOVES

INSPECTION PROCEDURE:

- THE DUAL-VORTEX SEPARATOR SYSTEM CAN BE INSPECTED THROUGH A STANDARD SURFACE MANHOLE ACCESS COVER.
- SEDIMENT AND OIL DEPTH INSPECTIONS ARE PERFORMED WITH A SEDIMENT PROBE AND OIL DIPSTICK. OIL DEPTH IS MEASURED THROUGH THE OIL INSPECTION PORT. SEDIMENT DEPTH CAN BE MEASURED THROUGH THE OIL INSPECTION PORT OR EXIT RISER PIPE.
- INSPECTIONS ALSO INVOLVE A VISUAL INSPECTION OF THE INTERNAL COMPONENTS OF THE SYSTEM.

MAINTENANCE RESPONSIBILITY:
THE TOWN OF ERIE IS RESPONSIBLE FOR THE SCHEDULING OF INSPECTION AND MAINTENANCE OF DUAL-VORTEX SEPARATOR DVS-48C (81-2) AND DUAL-VORTEX SEPARATOR DVS-72S (54-2) AS SHOWN ON THIS OPERATIONS AND MAINTENANCE PLAN.



KT ENGINEERING
12500 W. 58TH AVE. #230
ARVADA, CO 80002
P: 720.638.5190
WWW.KTENG.NET

PREPARED FOR:
OEO, LLC

REVISIONS:

| NO. | DATE | DESCRIPTION |
|-----|------------|--|
| 1. | 08.20.2021 | REVISED STORM SEPTORS TO OLD CASTLE DUAL VORTEX SEPARATORS |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |
| 6. | | |

STAMP:

SHEET INFO:

PARKDALE
STORM 54, 55 & 81 PLAN AND PROFILE
DUAL-VORTEX SEPARATOR
OPERATION AND MAINTENANCE PLAN

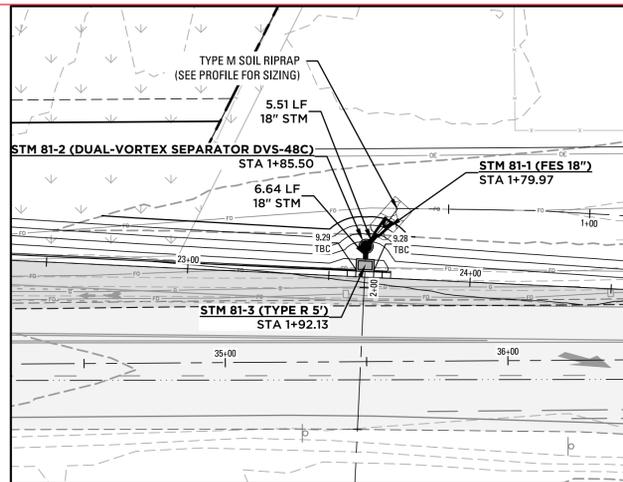
PROJECT NO:
0043-1532

DRAWN BY:
KBS
DESIGNED BY:
BSS

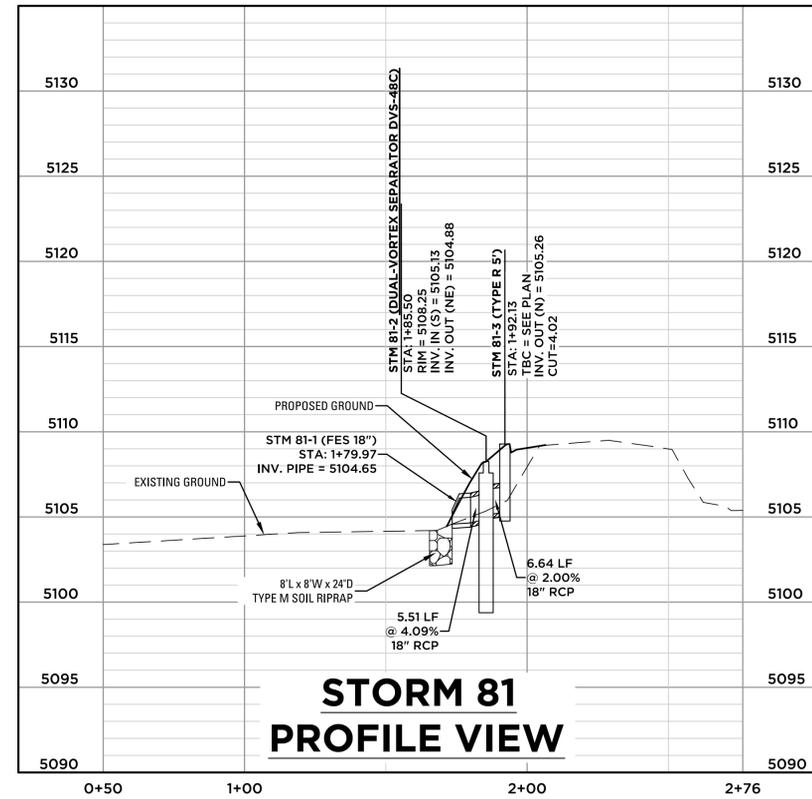
SCALE:
1" = 50'

SUBMITTED ON:
02/01/2021

01
OF **01**

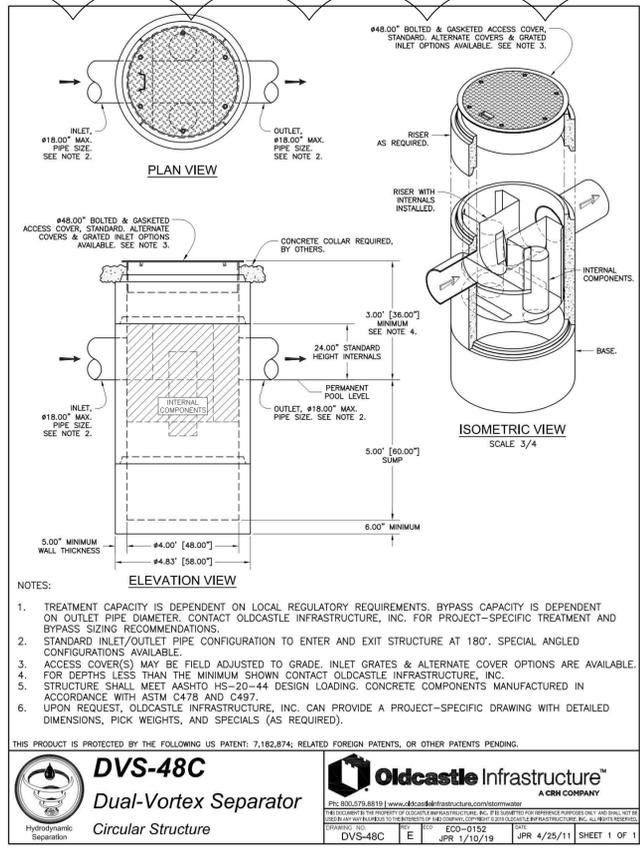


**STORM 81
PLAN VIEW**



**STORM 81
PROFILE VIEW**

AM1
AMENDMENT NO. 1 - REVISION TO STM 81-2
CHANGED TO DUAL-VORTEX SEPARATOR DVS-48C.



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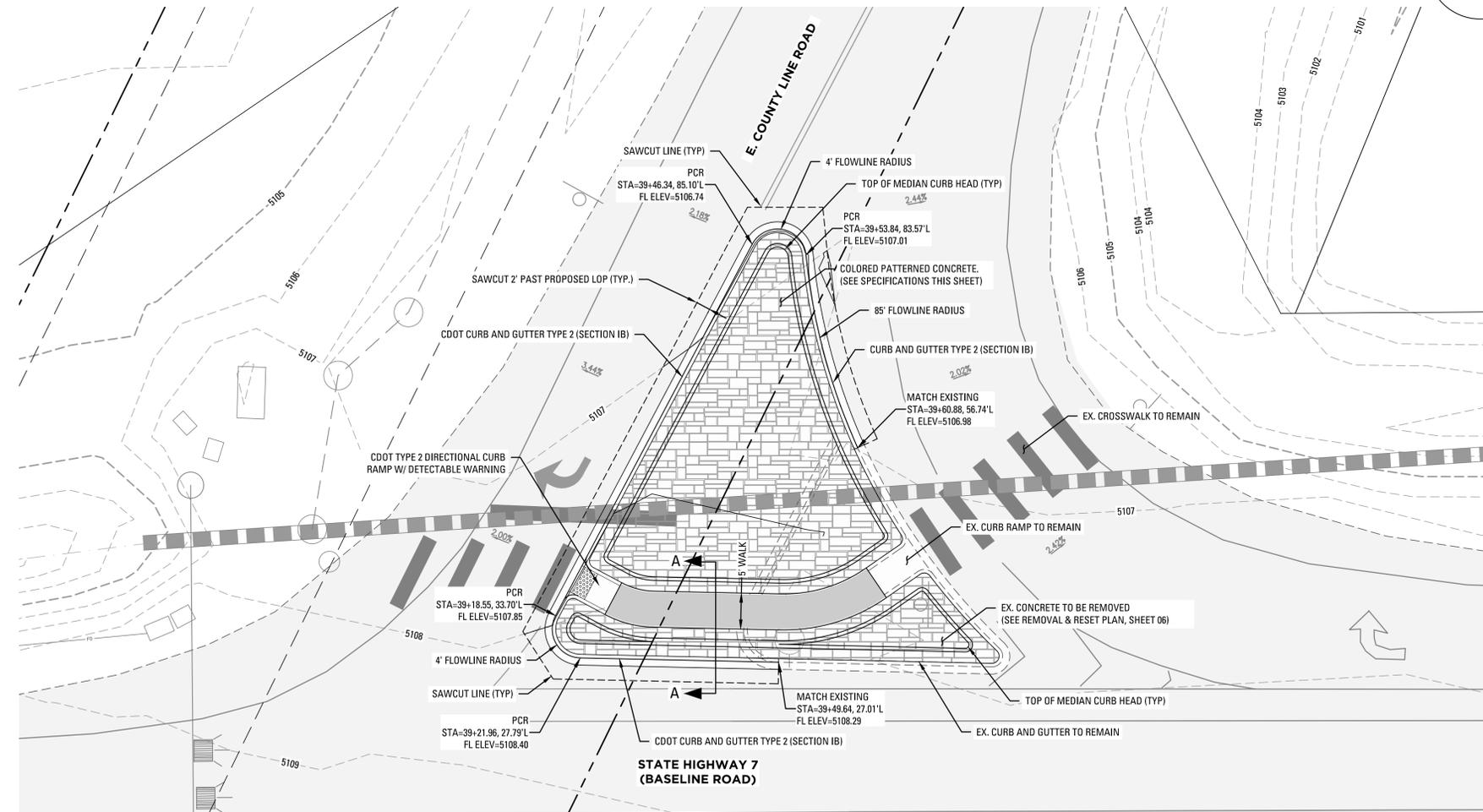
PREPARED FOR:
OEO, LLC

REVISIONS:

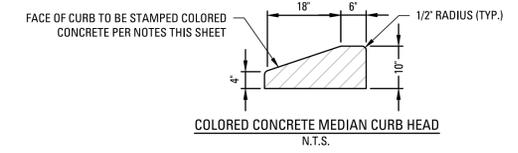
| NO. | DATE | BY | REVISION DESCRIPTION |
|-----|------------|-----|---------------------------------------|
| 1. | 06.01.2020 | BSS | REVISED PER LAFALETTE COMMENT |
| 2. | 07.15.2020 | BSS | REVISED PER CDOT COMMENT |
| 3. | 10.21.2020 | BSS | REVISED PER CDOT & LAFALETTE COMMENT |
| 4. | 12.18.2020 | BSS | REVISED PER CDOT COMMENT |
| 5. | 01.11.2021 | BSS | FOR CONSTRUCTION (REGION 1 MATERIALS) |
| 6. | 01.29.2021 | BSS | AMENDMENT 1 SEE DESCRIPTION LEFT |
| 7. | 06.19.2021 | BSS | |



SHEET INFO:



MEDIAN RECONSTRUCTION DETAILS



- COLORED CONCRETE PAVING NOTES:**
- PATTERNED COLORED CONCRETE SHALL BE CONSTRUCTED USING THE FOLLOWING SPECIFICATIONS:
- COLOR HARDENER: TILE RED MANUFACTURED BY L.M. SCOFIELD AND LOCALLY DISTRIBUTED BY WHITECAP INDUSTRIES, OR APPROVED EQUAL
 - ANTIQUING RELEASE AGENT: TWO PARTS - STONE GRAY, MANUFACTURED BY GC CONSTRUCTION AND LOCALLY DISTRIBUTED BY WHITECAP INDUSTRIES, OR APPROVED EQUAL
 - ANTIQUING RELEASE AGENT: ONE PART - DEEP CHARCOAL, MANUFACTURED BY GC CONSTRUCTION AND LOCALLY DISTRIBUTED BY WHITECAP INDUSTRIES, OR APPROVED EQUAL-STAMP PATTERN NAME - BRICKFORM - CALIFORNIA WEAVE FM-3500

- NOTES:**
- STATIONING FOLLOWS SECTION LINES.
 - STA: 0+00 IS SET AT THE SOUTHWEST CORNER OF SECTION 36. A FOUND 2.25" ALUMINUM CAP IN A RANGE BOX, PLS 28656 PER MON. REC. DATED 12.02.1993. N: 1243218.1603° E: 3119209.1719'

PARKDALE
STATE HWY. 7 IMPROVEMENTS
ROADWAY PLANS &
STORMCEPTOR PROFILE

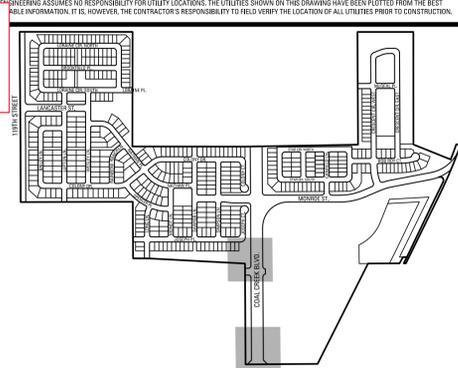
PROJECT NO:
0043-1532

DRAWN BY:
BSS
DESIGNED BY:
BSS

SCALE:
1" = 30'

SUBMITTED ON:
03.05.2020

**12
OF 18**



KT ENGINEERING
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PREPARED FOR:
OEO, LLC

REVISIONS:

| NO. | DATE | BY | REVISION DESCRIPTION |
|-----|------------|-----|-------------------------------------|
| 1. | 06-18-2018 | JLJ | REVISIONS PER ERIE COMMENT |
| 2. | 04-26-2019 | JLJ | REVISIONS PER ERIE COMMENT |
| 3. | 06-05-2019 | JLJ | REVISIONS PER ERIE COMMENT |
| 4. | 12-20-2019 | JLJ | REVISIONS PER ERIE COMMENT |
| 5. | 12-16-2020 | BSS | AMENDMENT 1 SEE DESCRIPTION TO LEFT |
| 6. | 07-23-2021 | BSS | |



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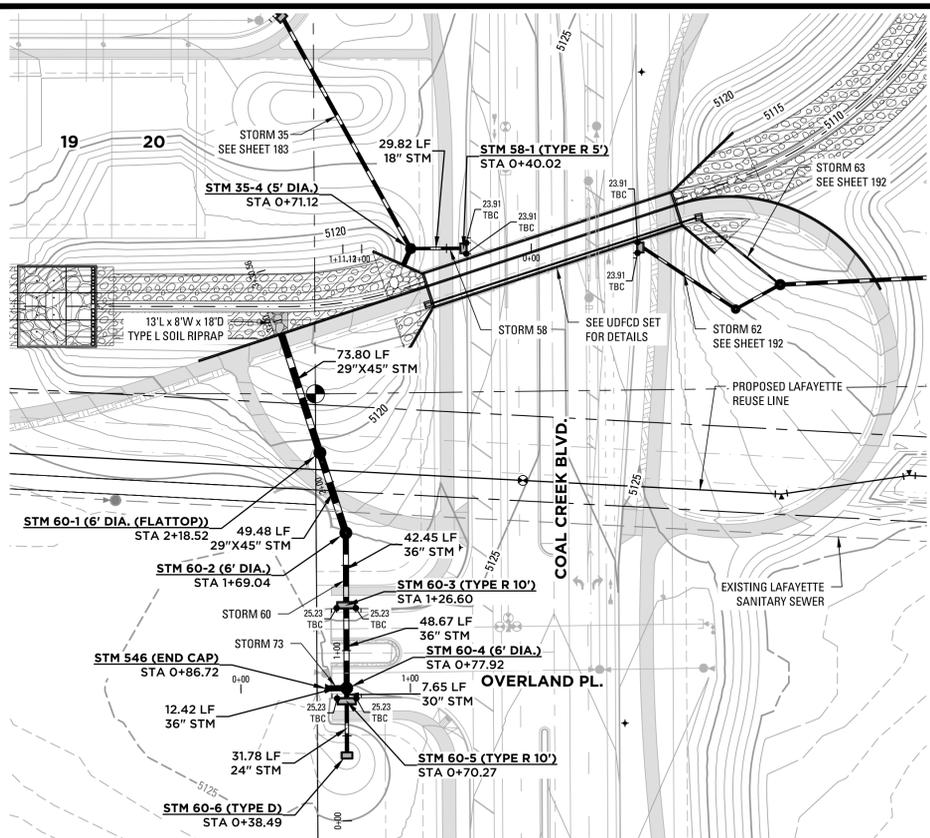
PARKDALE FILING NO. 1
STORM DRAIN PLAN & PROFILE
STORM 54, 55, 58, 60 & 73 (20 OF 32)

PROJECT NO:
0043-1532

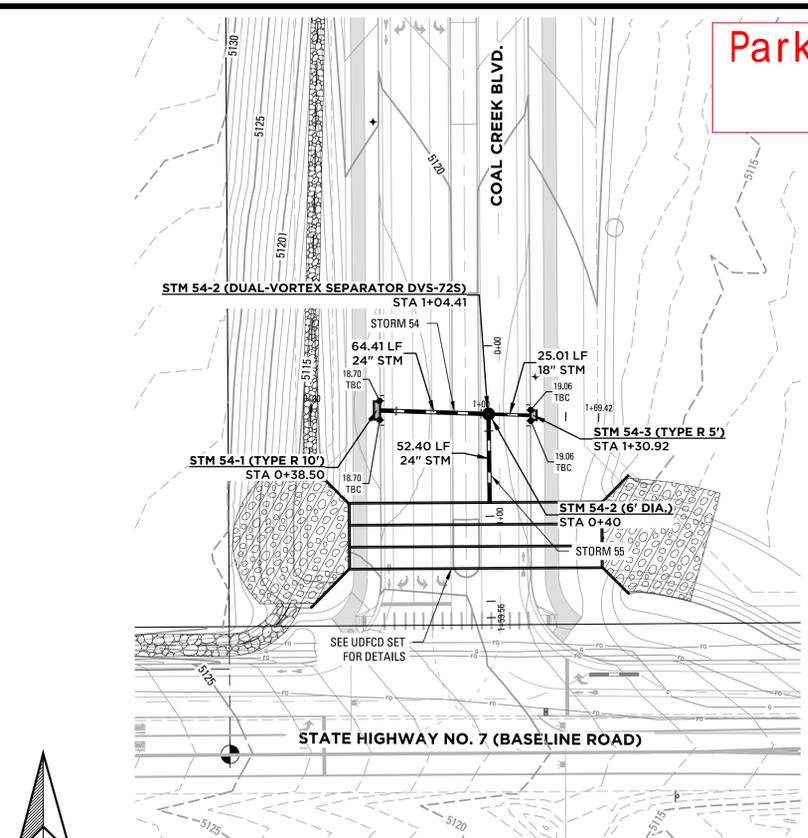
DRAWN BY:
IJL
DESIGNED BY:
BSS

SCALE:
1" = 50'
SUBMITTED ON:
06/11/2018

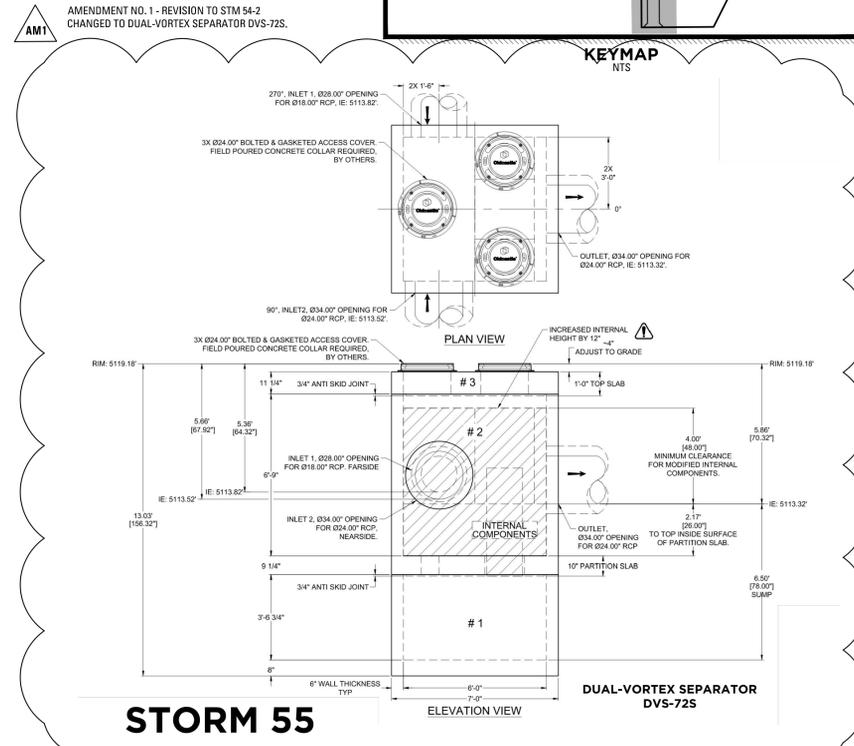
184
OF 224



STORM 58 & 60 & 73 PLAN & PROFILE

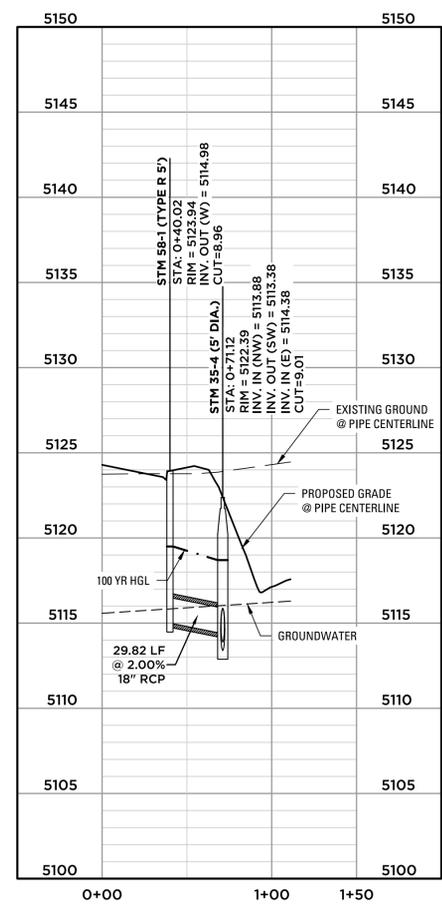


STORM 54 & 55 PLAN & PROFILE

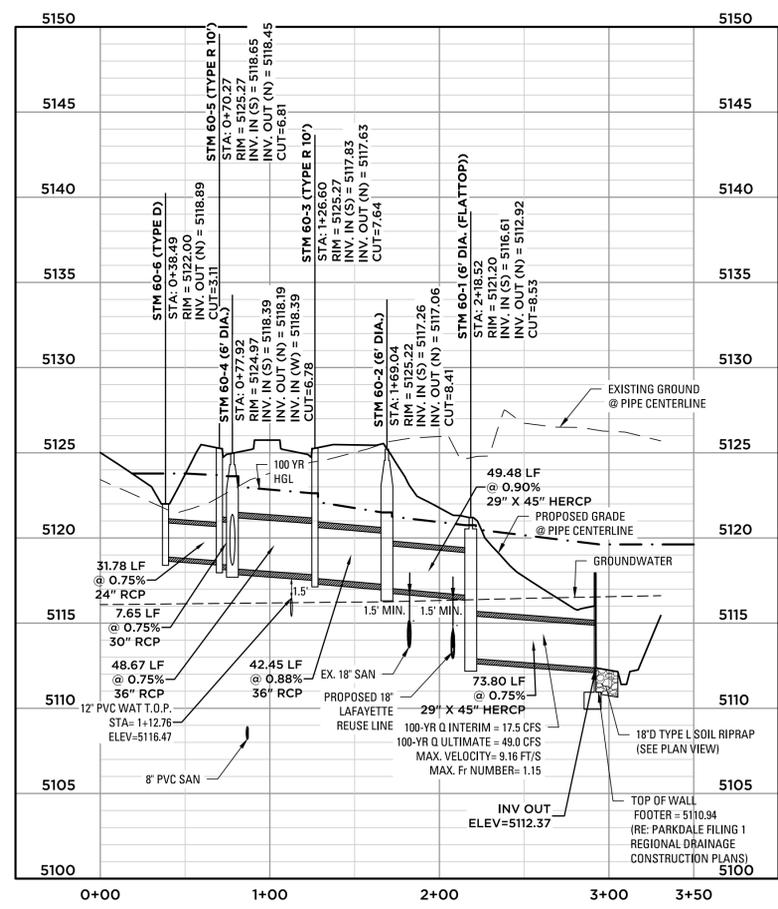


STORM 55

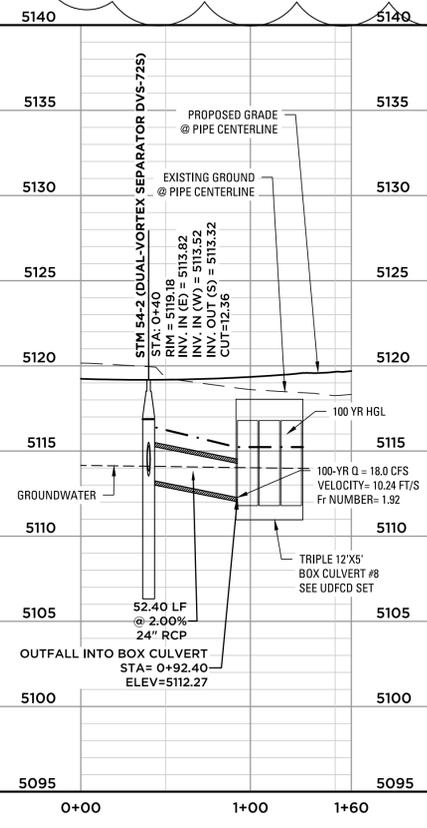
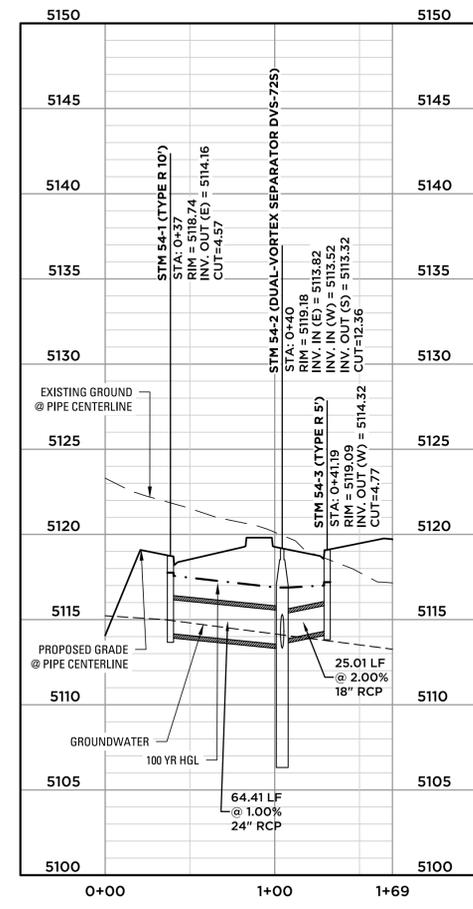
STORM 58



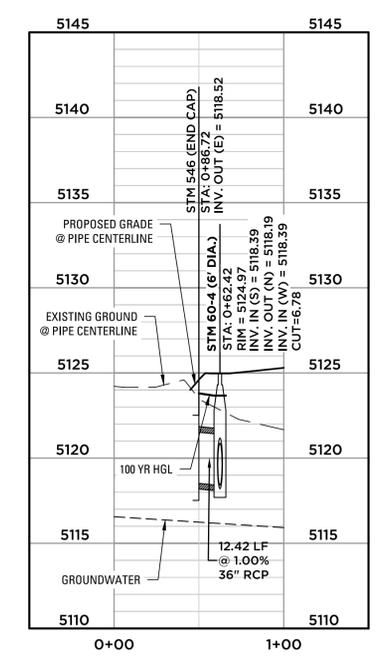
STORM 60



STORM 54



STORM 73



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EXHIBIT B
TOWN RESOLUTION (IF APPLICABLE)