

**Stormwater Management Facility
Operation and Maintenance (O&M) Manual
Underground Detention & Water Quality**

for:

CROSSROADS MIXED USE FILING NO. 1

Located near:

**HWY 24 AND NEWT DRIVE INTERSECTION
EI PASO COUNTY, CO**

Prepared for:

**Crossroads Metropolitan District No. 2
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Prepared by:

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CIVIL CONSULTANTS, INC.

Add text:

“EPC's EDARP File Number: CDR232”

(with no dashes or extras zeros or extra spaces
in the file number)

**Stormwater Management Facility
Operation and Maintenance (O&M) Manual
Underground Detention & Water Quality**

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Stormwater Management Facility Operation and Maintenance (O&M) Manual

I. Compliance with Stormwater Facility Maintenance Requirements

All property owners are responsible for ensuring that stormwater facilities installed on their property are properly maintained and that they function as designed. In some cases, this maintenance responsibility may be assigned to others through special agreements. The maintenance responsibility for a stormwater facility may be designated on the subdivision plat, the site development plan, and/or within a maintenance agreement for the property. Property owners should be aware of their responsibilities regarding stormwater facility maintenance. Maintenance agreement(s) associated with this property are provided in Appendix A.

In some cases, the El Paso County (EPC) may agree to provide the required inspection and maintenance for some or all private stormwater facilities. In these cases, an EPC maintenance agreement will be included in Appendix A for those facilities that are agreed to be included in the EPC routine maintenance program.

II. Inspection & Maintenance – Annual Reporting

Requirements for the inspection and maintenance of stormwater facilities, as well as reporting requirements are included in this Stormwater Management Facility Operation and Maintenance (O&M) Manual.

Verification that the Stormwater facilities have been properly inspected and maintained; submittal of the required Inspection and Maintenance Forms and Inspector qualifications shall be provided to EPC on an annual basis. The annual reporting form shall be provided to EPC prior to May 31st of each year.

Copies of the Inspection and Maintenance forms for each of the stormwater facilities are located in Appendix D and E. A standard annual reporting form is provided in Appendix F. Each form shall be reviewed and submitted by the property owner or property manager to EPC.

Property owners are not required to provide Inspection and Maintenance Reports for stormwater facilities that have been agreed to be maintained by EPC. These reports will be generated through EPC's inspection & maintenance program.

III. Preventative Measures to Reduce Maintenance Costs

The most effective way to maintain your water quality facility is to prevent the pollutants from entering the facility in the first place. Common pollutants include sediment, trash & debris, chemicals, dog wastes, runoff from stored materials, illicit discharges into the storm drainage system and many others. A thoughtful maintenance program will include measures to address these

potential contaminants, and will save money and time in the long run. Key points to consider in your maintenance program include:

- Educate property owners/residents to be aware of how their actions affect water quality, and how they can help reduce maintenance costs.
- Keep properties, streets and gutters, and parking lots free of trash, debris, and lawn clippings.
- Ensure the proper disposal of hazardous wastes and chemicals.
- Plan lawn care to minimize the use of chemicals and pesticides.
- Sweep paved surfaces and put the sweepings back on the lawn.
- Be aware of automobiles leaking fluids. Use absorbents such as cat litter to soak up drippings – dispose of properly.
- Re-vegetate disturbed and bare areas to maintain vegetative stabilization.
- Clean out the upstream components of the storm drainage system, including inlets, storm sewers and outfalls.
- Do not store materials outdoors (including landscaping materials) unless properly protected from runoff.

IV. Access and Easements

All stormwater management facilities located on the site have both a designated access location as well as a maintenance easement. Refer to the Stormwater Facilities Map located in Appendix G for access and easement locations.

V. Safety

Keep safety considerations at the forefront of inspection procedures at all times. Likely hazards should be anticipated and avoided. Never enter a confined space (outlet structure, manhole, etc) without proper training or equipment. A confined space should never be entered without at least one additional person present.

If a toxic or flammable substance is discovered, leave the immediate area and contact the local Sheriff at 911.

Potentially dangerous (e.g., fuel, chemicals, hazardous materials) substances found in the areas must be referred to the local Sheriff's Office immediately for response by the Hazardous Materials Unit. The emergency contact number is 911.

Vertical drops may be encountered in areas located within and around the facility. Avoid walking on top of retaining walls or other structures that have a significant vertical drop. If a vertical drop is identified within the pond that is greater than 48" in height, make the appropriate note/comment on the maintenance inspection form.

If any hazard is found within the facility area that poses an immediate threat to public safety, contact the local Sheriff's Office immediately.

VI. Field Inspection Equipment

It is imperative that the appropriate equipment is taken to the field with the inspector(s). This is to ensure the safety of the inspector and allow the inspections to be performed as efficiently as possible. Below is a list of the equipment that may be necessary to perform the inspections of all Stormwater Management Facilities:

- Protective clothing and boots
- Safety equipment (vest, hard hat, confined space entry equipment).
- Communication equipment
- Operation and Maintenance Manual for the site including stormwater management facility location maps
- Clipboard
- Stormwater Facility Maintenance Inspection Forms (See Appendix D).
- Manhole Lid Remover
- Shovel.
- Sediment Probe
- Measuring Tape

Some of the items identified above need not be carried by the inspector (manhole lid remover, shovel, and confined space entry equipment). However, this equipment should be available in the vehicle driven to the site.

VII. Inspecting Stormwater Management Facilities

The quality of stormwater entering the waters of the state relies heavily on the proper operation and maintenance of permanent best management practices. Stormwater management facilities must be periodically inspected to ensure that they function as designed. The inspection will determine the appropriate maintenance that is required for the facility.

A. Inspection Procedures

All stormwater management facilities are required to be inspected by a qualified individual at a minimum of once per year. Inspections should follow the inspection guidance found in the SOP for the specific type of facility. (Appendix C of this manual).

B. Inspection Report

The person(s) conducting the inspection activities shall complete the appropriate inspection report for the specific facility. Inspection reports are located in Appendix D.

The following information explains how to fill out the Inspection Forms:

General Information

This section identifies the facility location, person conducting the inspection, the date and time the facility was inspected, and approximate days since the last rainfall. Property classification is identified as single-family residential, multi-family residential, commercial, or other.

The reason for the inspection is also identified on the form depending on the nature of the inspection. All facilities should be inspected on an annual basis at a minimum. In addition, all facilities should be inspected after a significant precipitation event to ensure the facility is draining appropriately and to identify any damage that occurred as a result of the increased runoff.

Inspection Scoring

For each inspection item, a score must be given to identify the urgency of required maintenance. The scoring is as follows:

- 0 = No deficiencies identified.
- 1 = Monitor – Although maintenance may not be required at this time, a potential problem exists that will most likely need to be addressed in the future. This can include items like minor erosion, concrete cracks/spalling, or minor sediment accumulation. This item should be revisited at the next inspection.
- 2 = Routine Maintenance Required – Some inspection items can be addressed through the routine maintenance program (See SOP in appendix A). This can include items like vegetation management or debris/trash removal.
- 3 = Immediate Repair Necessary – This item needs immediate attention because failure is imminent or has already occurred. This could include items such as structural failure of a feature (outlet works, forebay, etc), significant erosion, or significant sediment accumulation. This score should be given to an item that can significantly affect the function of the facility.
- N/A This is checked by an item that may not exist in a facility. Not all facilities have all of the features identified on the form (forebay, micro-pool, etc.).

Inspection Summary/Additional Comments

Additional explanations to inspection items, and observations about the facility not covered by the form, are recorded in this section.

Overall Facility Rating

An overall rating must be given for each facility inspected. The overall facility rating should correspond with the highest score (0, 1, 2, 3) given to any feature on the inspection form.

C. Verification of Inspection and Form Submittal

The Stormwater Management Facility Inspection Form provides a record of inspection of the facility. Inspection Forms for each facility type are provided in Appendix D. Verification of the inspection of the stormwater facilities, the facility inspection form(s), and Inspector Qualifications shall be provided to EPC on an annual basis. The verification and the inspection form(s) shall be reviewed and submitted by the property owner or property manager.

Refer to Section II of this Manual regarding the annual reporting of inspections.

VIII. Maintaining Stormwater Management Facilities

Stormwater management facilities must be properly maintained to ensure that they operate correctly and provide the water quality treatment for which they were designed. Routine maintenance performed on a frequently scheduled basis, can help avoid more costly rehabilitative maintenance that results when facilities are not adequately maintained.

A. Maintenance Categories

Stormwater management facility maintenance programs are separated into three broad categories of work. These categories are based largely on the Urban Drainage and Flood Control District's Maintenance Program for regional drainage facilities. The categories are separated based upon the magnitude and type of the maintenance activities performed. A description of each category follows:

Routine Work

The majority of this work consists of scheduled mowings and trash and debris pickups for stormwater management facilities during the growing season. This includes items such as the removal of debris/material that may be clogging the outlet structure well screens and trash racks. It also includes activities such as weed control, mosquito treatment, and algae treatment. These activities normally will be performed numerous times during the year. These items can be completed without any prior

correspondence with EPC; however, completed inspection and maintenance forms shall be submitted to EPC for each inspection and maintenance activity.

Restoration Work

This work consists of a variety of isolated or small-scale maintenance and work needed to address operational problems. Most of this work can be completed by a small crew, with minor tools, and small equipment. These items require prior correspondence with EPC and require that completed maintenance forms be submitted to EPC for each maintenance activity.

Rehabilitation Work

This work consists of large-scale maintenance and major improvements needed to address failures within the stormwater management facilities. This work requires consultation with EPC and may require an engineering design with construction plans to be prepared for review and approval. This work may also require more specialized maintenance equipment, surveying, construction permits or assistance through private contractors and consultants. These items require prior correspondence with EPC and require that completed maintenance forms be submitted to EPC for each maintenance activity.

B. Maintenance Personnel

Maintenance personnel must be qualified to properly maintain stormwater management facilities. Inadequately trained personnel can cause additional problems resulting in additional maintenance costs.

C. Maintenance Forms

The Stormwater Management Facility Maintenance Form provides a record of maintenance activities. Maintenance Forms for each facility type are provided in Appendix E. Maintenance Forms shall be completed by the contractor completing the required maintenance items. The form shall then be reviewed by the property owner or an authorized agent of the property owner and submitted on an annual basis to the Southeast Metro Stormwater Authority.

Refer to Section II of this Manual regarding the annual reporting of inspections and maintenance activities performed.

revise to "Appendix A" to
match table of contents.



Exhibit A

**PRIVATE DETENTION BASIN /
STORMWATER QUALITY BEST MANAGEMENT PRACTICE
MAINTENANCE AGREEMENT AND EASEMENT**

This PRIVATE DETENTION BASIN / STORMWATER QUALITY BEST MANAGEMENT PRACTICE MAINTENANCE AGREEMENT AND EASEMENT (Agreement) is made by and between EL PASO COUNTY by and through THE BOARD OF COUNTY COMMISSIONERS OF EL PASO COUNTY, COLORADO (Board or County) and CROSSROADS METROPOLITAN DISTRICT NO. 2 (Owner and Developer). The above may occasionally be referred to herein singularly as “Party” and collectively as “Parties.”

Recitals

A. WHEREAS, Developer is the owner of certain real estate (the Property or Subdivision) in El Paso County, Colorado, which Property is legally described in [Exhibit A](#) attached hereto and incorporated herein by this reference; and

B. WHEREAS, Developer desires to plat and develop on the Property a subdivision/land use to be known as CROSSROADS MIXED USE FILING NO. 1; and

C. WHEREAS, the development of this Property will substantially increase the volume of water runoff and will decrease the quality of the stormwater runoff from the Property, and, therefore, it is in the best interest of public health, safety and welfare for the County to condition approval of this subdivision/land use on Developer’s promise to construct adequate drainage, water runoff control facilities, and stormwater quality structural Best Management Practices (“BMPs”) for the subdivision/land use; and

D. WHEREAS, Chapter 8, Section 8.4.5 of the El Paso County Land Development Code, as periodically amended, promulgated pursuant to Section 30-28-133(1), Colorado Revised Statutes (C.R.S.), requires the County to condition approval of all subdivisions on a developer’s promise to so construct adequate drainage, water runoff control facilities, and BMPs in subdivisions; and

E. WHEREAS, the Drainage Criteria Manual, Volume 2, as amended by Appendix I of the El Paso County Engineering Criteria Manual (ECM), as each may be periodically amended, promulgated pursuant to the County’s Colorado Discharge Permit System General Permit (MS4 Permit) as required by Phase II of the National Pollutant Discharge Elimination System (NPDES), which MS4 Permit requires that the County take measures to protect the quality of stormwater from sediment and other contaminants, requires subdividers, developers, landowners, and owners of facilities located in the County’s rights-of-way or easements to provide adequate permanent stormwater quality BMPs with new development or significant redevelopment; and

F. WHEREAS, Section 2.9 of the El Paso County Drainage Criteria Manual provides for a developer’s promise to maintain a subdivision’s drainage facilities in the event the County does not assume such responsibility; and

G. WHEREAS, developers in El Paso County have historically chosen water runoff detention basins as a means to provide adequate drainage and water runoff control in subdivisions,

which basins, while effective, are less expensive for developers to construct than other methods of providing drainage and water runoff control; and

H. WHEREAS, Developer desires to construct for the subdivision/land use one (1) detention basin/stormwater quality BMP(s) (“detention basin/BMP(s)”) as the means for providing adequate drainage and stormwater runoff control and to meet requirements of the County’s MS4 Permit, and to operate, clean, maintain and repair such detention basin/BMP(s); and

I. WHEREAS, Developer desires to construct the detention basin/BMP(s) on property that is or will be platted as TRACT A, as indicated on the final plat of the subdivision, and as set forth on Exhibit B attached hereto; and

J. WHEREAS, Developer shall be charged with the duties of constructing, operating, maintaining and repairing the detention basin/BMP(s) on the Property described in Exhibit B; and

K. WHEREAS, it is the County’s experience that subdivision developers and property owners historically have not properly cleaned and otherwise not properly maintained and repaired these detention basins/BMPs, and that these detention basins/BMPs, when not so properly cleaned, maintained, and repaired, threaten the public health, safety and welfare; and

L. WHEREAS, the County, in order to protect the public health, safety and welfare, has historically expended valuable and limited public resources to so properly clean, maintain, and repair these detention basins/BMPs when developers and property owners have failed in their responsibilities, and therefore, the County desires the means to recover its costs incurred in the event the burden falls on the County to so clean, maintain and repair the detention basin/BMP(s) serving this subdivision/land use due to the Developer/Owner’s failure to meet its obligations to do the same; and

M. WHEREAS, the County conditions approval of this subdivision/land use on the Developer’s promise to so construct the detention basin/BMP(s), and conditions approval on the Owner’s promise to reimburse the County in the event the burden falls upon the County to so clean, maintain and/or repair the detention basin/BMP(s) serving this Subdivision; and

N. WHEREAS, the County could condition subdivision/land use approval on the Developer’s promise to construct a different and more expensive drainage, water runoff control system and BMPs than those proposed herein, which more expensive system would not create the possibility of the burden of cleaning, maintenance and repair expenses falling on the County; however, the County is willing to forego such right upon the performance of Developer/Owner’s promises contained herein; and

O. WHEREAS, the County, in order to secure performance of the promises contained herein, conditions approval of this subdivision/land use upon the Developer’s grant herein of a perpetual Easement over a portion of the Property for the purpose of allowing the County to periodically access, inspect, and, when so necessary, to clean, maintain and/or repair the detention basin/BMP(s); and

Agreement

NOW, THEREFORE, in consideration of the mutual Promises contained herein, the sufficiency of which are hereby acknowledged, the Parties agree as follows:

1. Incorporation of Recitals: The Parties incorporate the Recitals above into this Agreement.

2. Covenants Running with the Land: Developer/Owner agrees that this entire Agreement and the performance thereof shall become a covenant running with the land, which land is legally described in Exhibit A attached hereto, and that this entire Agreement and the performance thereof shall be binding upon itself, its successors and assigns.

3. Construction: Developer shall construct on that portion of the Property described in Exhibit B attached hereto and incorporated herein by this reference, **one (1)** detention basin/BMP(s). Developer shall not commence construction of the detention basin/BMP(s) until the El Paso County Planning and Community Development Department (PCD) has approved in writing the plans and specifications for the detention basin/BMP(s) and this Agreement has been signed by all Parties and returned to the PCD. Developer shall complete construction of the detention basin/BMP(s) in substantial compliance with the County-approved plans and specifications for the detention basin/BMP(s). Failure to meet these requirements shall be a material breach of this Agreement, and shall entitle the County to pursue any remedies available to it at law or in equity to enforce the same. Construction of the detention basin/BMP(s) shall be substantially completed within one (1) year (defined as 365 days), which one year period will commence to run on the date the approved plat of this Subdivision is recorded in the records of the El Paso County Clerk and Recorder. In cases where a subdivision is not required, the one year period will commence to run on the date the Erosion and Stormwater Quality Control Permit (ESQCP) is issued. Rough grading of the detention basin/BMP(s) must be completed and inspected by the El Paso County Planning and Community Development Department prior to commencing road construction.

In the event construction is not substantially completed within the one (1) year period, then the County may exercise its discretion to complete the project, and shall have the right to seek reimbursement from the Developer/Owner and its successors and assigns, for its actual costs and expenses incurred in the process of completing construction. The term actual costs and expenses shall be liberally construed in favor of the County, and shall include, but shall not be limited to, labor costs, tool and equipment costs, supply costs, and engineering and design costs, regardless of whether the County uses its own personnel, tools, equipment and supplies, etc. to correct the matter. In the event the County initiates any litigation or engages the services of legal counsel in order to enforce the Provisions arising herein, the County shall be entitled to its damages and costs, including reasonable attorney fees, regardless of whether the County contracts with outside legal counsel or utilizes in-house legal counsel for the same.

4. Maintenance: The Developer/Owner agrees for itself and its successors and assigns, that it will regularly and routinely inspect, clean and maintain the detention basin/BMP(s), and otherwise keep the same in good repair, all at its own cost and expense. No trees or shrubs that will impair the structural integrity of the detention basin/BMP(s) shall be planted or allowed to grow on the detention basin/BMP(s).

5. Creation of Easement: Developer/Owner hereby grants the County a non-exclusive perpetual easement upon and across that portion of the Property described in Exhibit B. The purpose of the easement is to allow the County to access, inspect, clean, repair and maintain the detention basin/BMP(s); however, the creation of the easement does not expressly or implicitly impose on the County a duty to so inspect, clean, repair or maintain the detention basin/BMP(s).

6. County's Rights and Obligations: Any time the County determines, in the sole exercise of its discretion, that the detention basin/BMP(s) is not properly cleaned, maintained and/or otherwise kept in good repair, the County shall give reasonable notice to the Developer/Owner and its successors and assigns, that the detention basin/BMP(s) needs to be cleaned, maintained and/or otherwise repaired. The notice shall provide a reasonable time to correct the problem(s). Should the responsible parties fail to correct the specified problem(s), the County may enter upon the Property to so correct the specified problem(s). Notice shall be effective to the above by the County's deposit of the same into the regular United States mail, postage pre-paid. Notwithstanding the foregoing, this Agreement does not expressly or implicitly impose on the County a duty to so inspect, clean, repair or maintain the detention basin/BMP(s).

7. Reimbursement of County's Costs / Covenant Running With the Land: The Developer/Owner agrees and covenants, for itself, its successors and assigns, that it will reimburse the County for its costs and expenses incurred in the process of completing construction of, cleaning, maintaining, and/or repairing the detention basin/BMP(s) pursuant to the provisions of this Agreement.

The term "actual costs and expenses" shall be liberally construed in favor of the County, and shall include, but shall not be limited to, labor costs, tools and equipment costs, supply costs, and engineering and design costs, regardless of whether the County uses its own personnel, tools, equipment and supplies, etc. to correct the matter. In the event the County initiates any litigation or engages the services of legal counsel in order to enforce the provisions arising herein, the County shall be entitled to its damages and costs, including reasonable attorney's fees, regardless of whether the County contracts with outside legal counsel or utilizes in-house legal counsel for the same.

8. Contingencies of Land Use/Land Disturbance Approval: Developer/Owner's execution of this Agreement is a condition of land use/land disturbance approval.

The County shall have the right, in the sole exercise of its discretion, to approve or disapprove any documentation submitted to it under the conditions of this Paragraph, including but not limited to, any separate agreement or amendment, if applicable, identifying any specific maintenance responsibilities not addressed herein. The County's rejection of any documentation submitted hereunder shall mean that the appropriate condition of this Agreement has not been fulfilled.

9. Agreement Monitored by El Paso County Planning and Community Development Department and/or El Paso County Department of Public Works: Any and all actions and decisions to be made hereunder by the County shall be made by the Director of the El Paso County Planning and Community Development Department and/or the Director of the El Paso County Department of Public Works. Accordingly, any and all documents, submissions, plan approvals, inspections, etc. shall be submitted to and shall be made by the Director of the Planning and Community Development Department and/or the Director of the El Paso County Department of Public Works.

10. Indemnification and Hold Harmless: To the extent authorized by law, Developer/Owner agrees, for itself, its successors and assigns, that it will indemnify, defend, and hold the County harmless from any and all loss, costs, damage, injury, liability, claim, lien, demand, action and causes of action whatsoever, whether at law or in equity, arising from or related to its intentional or negligent acts, errors or omissions or that of its agents, officers, servants, employees, invitees and licensees in the construction, operation, inspection, cleaning (including analyzing and disposing of any solid or hazardous wastes as defined by State and/or Federal environmental laws and regulations), maintenance, and repair of the detention basin/BMP(s), and such obligation arising under this Paragraph shall be joint and several. Nothing in this Paragraph shall be deemed to waive or otherwise limit the defense available to the County pursuant to the Colorado Governmental Immunity Act, Sections 24-10-101, *et seq.* C.R.S., or as otherwise provided by law.

11. Severability: In the event any Court of competent jurisdiction declares any part of this Agreement to be unenforceable, such declaration shall not affect the enforceability of the remaining parts of this Agreement.

12. Third Parties: This Agreement does not and shall not be deemed to confer upon or grant to any third party any right to claim damages or to bring any lawsuit, action or other proceeding against either the County, the Developer/Owner, or their respective successors and assigns, because of any breach hereof or because of any terms, covenants, agreements or conditions contained herein.

13. Solid Waste or Hazardous Materials: Should any refuse from the detention basin/BMP(s) be suspected or identified as solid waste or petroleum products, hazardous substances or hazardous materials (collectively referred to herein as “hazardous materials”), the Developer/Owner shall take all necessary and proper steps to characterize the solid waste or hazardous materials and properly dispose of it in accordance with applicable State and/or Federal environmental laws and regulations, including, but not limited to, the following: Solid Wastes Disposal Sites and Facilities Acts, §§ 30-20-100.5 – 30-20-119, C.R.S., Colorado Regulations Pertaining to Solid Waste Disposal Sites and Facilities, 6 C.C.R. 1007-2, *et seq.*, Solid Waste Disposal Act, 42 U.S.C. §§ 6901-6992k, and Federal Solid Waste Regulations 40 CFR Ch. I. The County shall not be responsible or liable for identifying, characterizing, cleaning up, or disposing of such solid waste or hazardous materials. Notwithstanding the previous sentence, should any refuse cleaned up and disposed of by the County be determined to be solid waste or hazardous materials, the Developer/Owner, but not the County, shall be responsible and liable as the owner, generator, and/or transporter of said solid waste or hazardous materials.

14. Applicable Law and Venue: The laws, rules, and regulations of the State of Colorado and El Paso County shall be applicable in the enforcement, interpretation, and execution of this Agreement, except that Federal law may be applicable regarding solid waste or hazardous materials. Venue shall be in the El Paso County District Court.

IN WITNESS WHEREOF, the Parties affix their signatures below.

Executed this _____ day of _____, 20___, by:

CROSSROADS METROPOLITAN DISTRICT NO. 2



212 N. Wahsatch Ave, Ste 305
Colorado Springs, CO 80903
Mail to: PO Box 1360
Colorado Springs, CO 80901
719.955.5485

CROSSROADS MIXED USE FILING NO. 1 LEGAL DESCRIPTION

A PARCEL OF LAND IN THE SOUTH HALF (S 1/2) OF SECTION 8, T14S, R65W OF THE 6TH P.M., EL PASO COUNTY, COLORADO MORE PARTICULARLY DESCRIBED AS FOLLOWS;

TRACT B AS SHOWN ON THE PLAT OF "24/94 BUSINESS PARK FILING NO. 1" UNDER RECEPTION NO. 2177139393 IN THE RECORDS OF EL PASO COUNTY, COLORADO, AND AS AMENDED BY SURVEYOR'S AFFIDAVIT OF CORRECTION UNDER RECEPTION NO. 219097386 OF SAID COUNTY RECORDS.

SAID DESCRIBED PARCEL CONTAINS 1,264,738.1 SQUARE FEET (29.034 ACRES, MORE OR LESS).

PREPARED BY:

VERNON P. TAYLOR, COLORADO PLS NO. 25966 DATE
FOR AND ON BEHALF OF M&S CIVIL CONSULTANTS, INC

CROSSROADS MIXED USE FILING NO. 1

A REPLAT OF TRACT B "24/94 BUSINESS PARK FILING NO. 1", BEING A TRACT OF LAND IN THE SOUTH HALF (S 1/2) OF SECTION 8, T14S, R65W, OF THE 6TH P.M., EL PASO COUNTY, COLORADO

14975

BE IT KNOWN BY THESE PRESENTS:

THAT COLORADO SPRINGS EQUITIES, LLC, A COLORADO LIMITED LIABILITY COMPANY, BEING THE OWNERS OF THE FOLLOWING DESCRIBED TRACT OF LAND:

LEGAL DESCRIPTION:

A PARCEL OF LAND IN THE SOUTH HALF OF SECTION 8, T14S, R65W OF THE 6TH P.M., EL PASO COUNTY, COLORADO BEING TRACT B "24/94 BUSINESS PARK FILING NO. 1" AS RECORDED UNDER RECEPTION NO. 217713939 OF THE RECORDS OF EL PASO COUNTY, COLORADO, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHEAST CORNER OF "SOFTBALL WEST SUBDIVISION NO 2"; THENCE N03°58'20"E ALONG THE EASTERLY LINE THEREOF, 1,170.16 FEET; THENCE N03°56'37"E ALONG THE EASTERLY LINE THEREOF, 57.75 FEET TO THE SOUTHWEST CORNER OF MEADOWBROOK PARKWAY RIGHT-OF-WAY; THENCE ALONG THE SOUTHERLY LINE THEREOF THE FOLLOWING FIVE (5) COURSES:

1. THENCE N89°43'00"E A DISTANCE OF 940.70 FEET TO A POINT OF CURVE;
2. THENCE 221.10 FEET ALONG THE ARC OF A CURVE TO THE LEFT, SAID CURVE HAVING A RADIUS OF 605.00 FEET, A CENTRAL ANGLE OF 20°56'21", THE CHORD OF 219.87 FEET WHICH BEARS N79°14'49"E;
3. THENCE N89°43'06"E, NON-TANGENT TO THE PREVIOUS COURSE, 44.80 FEET;
4. THENCE N51°19'02"E A DISTANCE OF 198.81 FEET;
5. THENCE S41°14'31"E A DISTANCE OF 397.89 FEET TO THE NORTHERLY RIGHT-OF-WAY LINE OF U.S. HIGHWAY 24;

THENCE ALONG THE NORTHERLY LINE THEREOF THE FOLLOWING FOUR (4) COURSES:

1. THENCE 682.61 FEET ALONG THE ARC OF A CURVE TO THE RIGHT, SAID CURVE HAVING A RADIUS OF 7,514.00 FEET, A CENTRAL ANGLE OF 5°12'18", THE CHORD OF 682.38 FEET WHICH BEARS S51°24'05"W TO A POINT OF TANGENT;
2. THENCE S54°01'07"W A DISTANCE OF 497.15 FEET;
3. THENCE S57°40'23"W A DISTANCE OF 163.43 FEET;
4. THENCE S98.63 FEET ALONG THE ARC OF A CURVE TO THE RIGHT, SAID CURVE HAVING A RADIUS OF 1,780.00 FEET, A CENTRAL ANGLE OF 22°29'17", THE CHORD OF 694.16 FEET WHICH BEARS S65°14'17"W TO THE POINT OF BEGINNING.

SAID PARCEL CONTAINS A CALCULATED AREA OF 1,265,357 SQUARE FEET (29.049 ACRES MORE OR LESS).

SEE GENERAL PLAT NOTE 1 FOR BASIS OF BEARING.

DEDICATION:

THE UNDERSIGNED, BEING ALL THE OWNERS, MORTGAGEES, BENEFICIARIES OF DEEDS OF TRUST AND HOLDERS OF OTHER INTERESTS IN THE LAND DESCRIBED HEREIN, HAVE LAID OUT, SUBDIVIDED, AND PLATTED SAID LANDS INTO LOTS, TRACTS, STREETS, AND EASEMENTS (USE WHICH ARE APPLICABLE) AS SHOWN HEREON UNDER THE NAME AND SUBDIVISION OF "CROSSROADS MIXED USE FILING NO. 1". ALL PUBLIC IMPROVEMENTS SO PLATTED ARE HEREBY DEDICATED TO PUBLIC USE AND SAID OWNER DOES HEREBY COVENANT AND AGREE THAT THE PUBLIC IMPROVEMENTS WILL BE CONSTRUCTED TO EL PASO COUNTY STANDARDS AND THAT PROPER DRAINAGE AND EROSION CONTROL FOR SAME WILL BE PROVIDED AT SAID OWNER'S EXPENSE. ALL TO THE SATISFACTION OF THE BOARD OF COUNTY COMMISSIONERS OF EL PASO COUNTY, COLORADO. UPON ACCEPTANCE BY RESOLUTION, ALL PUBLIC IMPROVEMENTS SO DEDICATED WILL BECOME MATTERS OF MAINTENANCE BY EL PASO COUNTY, COLORADO. THE UTILITY EASEMENTS SHOWN HEREON ARE HEREBY DEDICATED FOR PUBLIC UTILITIES AND COMMUNICATION SYSTEMS AND OTHER PURPOSES AS SHOWN HEREON. THE ENTITIES RESPONSIBLE FOR PROVIDING THE SERVICES FOR WHICH THE EASEMENTS ARE ESTABLISHED ARE HEREBY GRANTED THE PERPETUAL RIGHT OF INGRESS AND EGRESS FROM AND TO ADJACENT PROPERTIES FOR INSTALLATION, MAINTENANCE, AND REPLACEMENT OF UTILITY LINES AND RELATED FACILITIES.

BY: DANNY MIENTKA
MANAGER, COLORADO SPRINGS EQUITIES, LLC, A COLORADO LIMITED LIABILITY COMPANY

NOTARIAL:

STATE OF COLORADO }
COUNTY OF EL PASO } SS

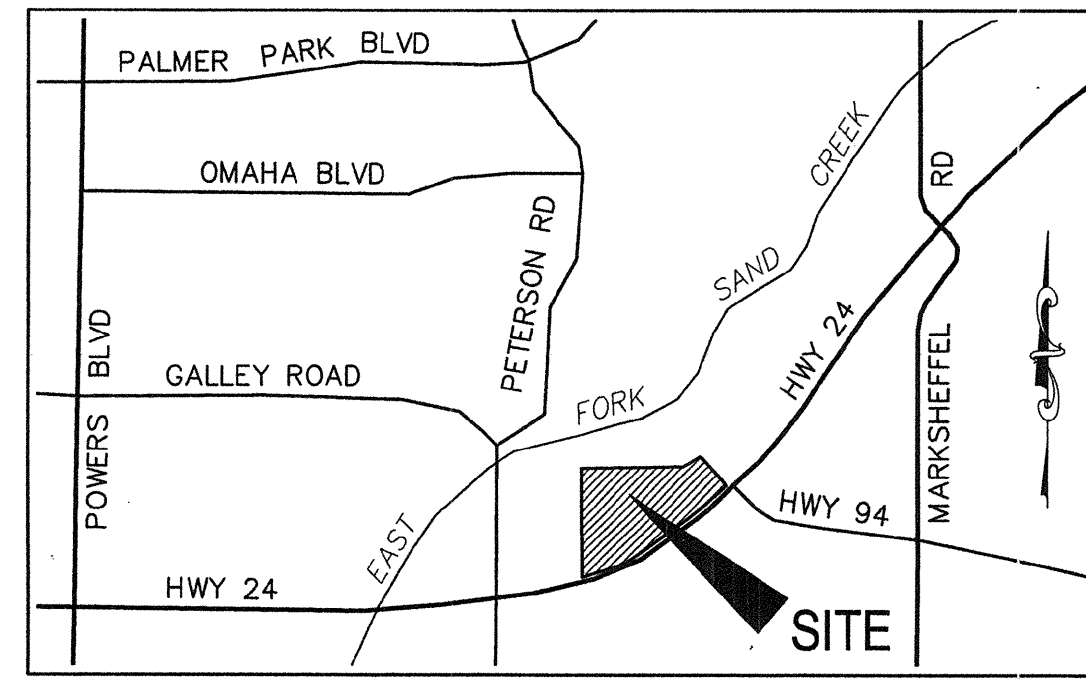
ACKNOWLEDGED BEFORE ME THIS 21st DAY OF June, 2022 BY
DANNY MIENTKA, AS MANAGER, COLORADO SPRINGS EQUITIES, LLC, A COLORADO
LIMITED LIABILITY COMPANY

WITNESS MY HAND AND OFFICIAL SEAL:

MY COMMISSION EXPIRES: December 3, 2025

NOTARY PUBLIC: Sybil Skull

SYBLAR SHULL
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20214047126
MY COMMISSION EXPIRES DECEMBER 03, 2025



VICINITY MAP
N.T.S.

LIEN HOLDER STATEMENT:

FRANK W. HOWARD #2 LIMITED PARTNERSHIP, L.L.P., A COLORADO LIMITED LIABILITY LIMITED PARTNERSHIP, OWNER AND HOLDER OF A LIEN AGAINST THE PROPERTY DESCRIBED IN THE PLAT KNOWN AS "CROSSROADS MIXED USE FILING NO. 1", SAID LIEN BEING EVIDENCED BY A DEED OF TRUST OF RECORD UNDER RECEPTION NO. 22118423 OF THE REAL PROPERTY RECORDS OF EL PASO COUNTY, COLORADO, DO HEREBY RATIFY AND CONFIRM SAID SUBDIVISION AND DEDICATION, AND DO HEREBY IN ALL THINGS SUBJECT TO SAID PLAT SAID LIENS. I HEREBY CONFIRM THAT I AM THE PRESENT OWNER OF SAID LIENS AND HAVE NOT ASSIGNED THE SAME NOR ANY PART THEREOF.

BY: Kevin Howard, AS Co-Partner, FRANK W. HOWARD #2 LIMITED PARTNERSHIP, L.L.P., A COLORADO LIMITED LIABILITY LIMITED PARTNERSHIP

NOTARIAL:

STATE OF COLORADO }
COUNTY OF EL PASO } SS

THE ABOVE AND AFOREMENTIONED INSTRUMENT WAS ACKNOWLEDGED BEFORE ME THIS 22nd DAY OF June, 2022, A.D. BY Kevin Howard, AS Co-Partner OF FRANK W. HOWARD #2 LIMITED PARTNERSHIP, L.L.P., A COLORADO LIMITED LIABILITY LIMITED PARTNERSHIP

WITNESS MY HAND AND OFFICIAL SEAL:

MY COMMISSION EXPIRES: December 3, 2025

NOTARY PUBLIC: Sybil Skull

SYBLAR SHULL
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20214047126
MY COMMISSION EXPIRES DECEMBER 03, 2025

LIEN HOLDER STATEMENT:

LEGACY BANK, ORGANIZED AND EXISTING UNDER THE LAWS OF COLORADO, OWNER AND HOLDER OF A LIEN AGAINST THE PROPERTY DESCRIBED IN THE PLAT KNOWN AS "CROSSROADS MIXED USE FILING NO. 1", SAID LIEN BEING EVIDENCED BY A DEED OF TRUST OF RECORD UNDER RECEPTION NO. 219089188, PARTIAL RELEASE OF DEED OF TRUST OF RECORD UNDER RECEPTION NUMBER 221158823, AND MODIFICATION OF DEED OF TRUST OF RECORD UNDER RECEPTION NUMBER 222015688 OF THE REAL PROPERTY RECORDS OF EL PASO COUNTY, COLORADO, DO HEREBY RATIFY AND CONFIRM SAID SUBDIVISION AND DEDICATION, AND DO HEREBY IN ALL THINGS SUBJECT TO SAID PLAT SAID LIENS. I HEREBY CONFIRM THAT I AM THE PRESENT OWNER OF SAID LIENS AND HAVE NOT ASSIGNED THE SAME NOR ANY PART THEREOF.

BY: Josh Stensrud, AS SA. Vice President, LEGACY BANK, ORGANIZED AND EXISTING UNDER THE LAWS OF COLORADO

NOTARIAL:

STATE OF COLORADO }
COUNTY OF EL PASO } SS

THE ABOVE AND AFOREMENTIONED INSTRUMENT WAS ACKNOWLEDGED BEFORE ME THIS 21st DAY OF June, 2022, A.D. BY Josh Stensrud AS SVP OF LEGACY BANK, ORGANIZED AND EXISTING UNDER THE LAWS OF COLORADO

WITNESS MY HAND AND OFFICIAL SEAL:

MY COMMISSION EXPIRES: 8-13-2024

NOTARY PUBLIC: Darlene J. Robinson

DARLENE J. ROBINSON
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 19664019963
MY COMMISSION EXPIRES AUGUST 13, 2024

EASEMENTS:

UNLESS OTHERWISE INDICATED, ALL SIDE, FRONT, AND REAR LOT LINES ARE HEREBY PLATTED ON EITHER SIDE WITH A 10 FOOT PUBLIC UTILITY AND DRAINAGE EASEMENT UNLESS OTHERWISE INDICATED. ALL EXTERIOR SUBDIVISION BOUNDARIES ARE HEREBY PLATTED WITH A 20 FOOT PUBLIC UTILITY AND DRAINAGE EASEMENT. THE SOLE RESPONSIBILITY FOR MAINTENANCE OF THESE EASEMENTS IS HEREBY VESTED WITH THE INDIVIDUAL PROPERTY OWNERS.

EASEMENTS ARE AS SHOWN ON SHEETS 4 AND 5 OF THIS PLAT.

SURVEYORS CERTIFICATE

I, VERNON P. TAYLOR, A DULY REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF COLORADO, DO HEREBY CERTIFY THAT THIS PLAT TRULY AND CORRECTLY REPRESENTS THE RESULTS OF A SURVEY MADE APRIL 2021, BY ME OR UNDER MY DIRECT SUPERVISION AND THAT ALL MONUMENTS EXIST AS SHOWN HEREON; THAT MATHEMATICAL CLOSURE ERRORS ARE LESS THAN 1:10,000; AND THAT SAID PLAT HAS BEEN PREPARED IN FULL COMPLIANCE WITH ALL APPLICABLE LAWS OF THE STATE OF COLORADO DEALING WITH MONUMENTS, SUBDIVISION, OR SURVEYING OF LAND AND ALL APPLICABLE PROVISIONS OF THE EL PASO COUNTY LAND DEVELOPMENT CODE.

I ATTEST THE ABOVE ON THIS 20th DAY OF JUNE, 2022.

Vernon P. Taylor
VERNON P. TAYLOR DATE
COLORADO PLS NO. 259966,
FOR AND ON BEHALF OF
M&S CIVIL CONSULTANTS, INC



NOTICE:

ACCORDING TO COLORADO LAW, YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT, MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.

PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT EXECUTIVE DIRECTOR CERTIFICATE:

THIS PLAT FOR "CROSSROADS MIXED USE FILING NO. 1" WAS APPROVED FOR FILING BY THE EL PASO COUNTY, COLORADO PLANNING AND COMMUNITY DEVELOPMENT DIRECTOR ON THE 20th DAY OF June, 2022, SUBJECT TO ANY NOTES SPECIFIED HEREON AND ANY CONDITIONS INCLUDED IN THE RESOLUTION OF APPROVAL. THE DEDICATIONS OF LAND TO THE PUBLIC (STREETS, TRACTS, AND EASEMENTS) ARE ACCEPTED, BUT PUBLIC IMPROVEMENTS THEREON WILL NOT BECOME THE MAINTENANCE RESPONSIBILITY OF EL PASO COUNTY UNTIL PRELIMINARY ACCEPTANCE OF THE PUBLIC IMPROVEMENTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE LAND DEVELOPMENT CODE AND ENGINEERING CRITERIA MANUAL, AND THE SUBDIVISION IMPROVEMENTS AGREEMENT.

Heidi 6/22/22
INTERIM EXECUTIVE DIRECTOR, PLANNING AND
COMMUNITY DEVELOPMENT DEPARTMENT DATE

CLERK AND RECORDER:

STATE OF COLORADO }
COUNTY OF EL PASO } SS

I HEREBY CERTIFY THAT THIS INSTRUMENT WAS FILED FOR RECORD IN MY OFFICE AT 4:04 O'CLOCK pm THIS 22nd DAY OF June, 2022, A.D., AND DULY RECORDED UNDER RECEPTION NO. 222114975 OF THE RECORDS OF EL PASO COUNTY, COLORADO.

FEES: \$50.00 CHUCK BROERMAN, RECORDER

SURCHARGE: \$3.00 BY: Cayla Young
DEPUTY

FEES:

DRAINAGE FEE:	\$ 292,304.51
BRIDGE FEE:	\$ 119,566.96
SCHOOL FEE:	\$ 31,212.00
URBAN PARK FEE:	\$ 88,740.00
REGIONAL PARK FEE:	\$ 140,760.00

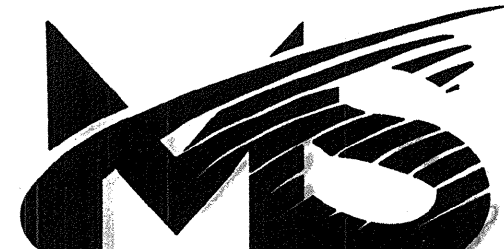
SUMMARY:

1 LOT	12.703 ACRES	43.73%
4 TRACTS	16.292 ACRES	56.08%
RIGHTS-OF-WAY	0.054 ACRES	0.19%
TOTAL	29.049 ACRES	100.00%

COLORADO SPRINGS EQUITIES, LLC
90 S. CASCADE AVE., SUITE 1500
COLORADO SPRINGS, CO 80903
PHONE: 719-475-7621

PREPARED BY:
ERIC L. YOKOM
FOR AND ON
BEHALF OF
212 N. WAHSATCH AVE., STE 305
COLORADO SPRINGS, CO 80903
PHONE: 719.955.5485

FINAL PLAT
CROSSROADS MIXED USE
FILING NO. 1
JOB NO. 18-003
DATE PREPARED: 06/23/2021
DATE REVISED: 06/20/2022
ISSUED FOR MYLAR



CROSSROADS MIXED USE FILING NO. 1

A REPLAT OF TRACT B "24/94 BUSINESS PARK FILING NO. 1", BEING A TRACT OF LAND IN THE SOUTH HALF (S 1/2) OF SECTION 8, T14S, R65W, OF THE 6TH P.M., EL PASO COUNTY, COLORADO

14975

GENERAL PLAT NOTES:

1. BASIS OF BEARINGS: A PORTION OF THE EASTERLY LINE OF "SOFTBALL WEST SUBDIVISION NO. 2" RECORDED IN PLAT BOOK T-3 AT PAGE 112 OF THE RECORDS OF EL PASO COUNTY, COLORADO, BEING MONUMENTED ON THE SOUTH WITH A NO. 4 REBAR, FROM WHICH A NO. 5 REBAR WITH BLUE PLASTIC CAP STAMPED: RAMPART PLS 32820" BEARS N03°58'20"E A DISTANCE OF 1,170.16 FEET. THE UNIT OF MEASUREMENT FOR THIS PLAT IS THE U.S. SURVEY FOOT.
2. THE FLOOD INSURANCE RATE MAP (FIRM) PANELS NO. 08041C0752 G AND 08041C0742 G, WITH AN EFFECTIVE DATE OF DECEMBER 7, 2018 HAVE BEEN EXAMINED AS THEY RELATE TO THE PROPERTY BEING PLATTED. SUBJECT PROPERTY LIES WITHIN ZONE X (AREA OF MINIMAL FLOOD HAZARD).
3. A COMMITMENT FOR TITLE INSURANCE ISSUED BY LAND TITLE GUARANTEE COMPANY, AS AGENT FOR OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY, ORDER NO. SC59090533.2-8, WITH AN EFFECTIVE DATE OF JUNE 4, 2022, HAS BEEN EXAMINED AS IT RELATES TO THE SUBJECT PROPERTY. THE FOLLOWING EXCEPTIONS AS NUMBERED THEREIN ARE HEREBY NOTED.
 - i. (TC#9) ALL RIGHTS AND RESERVATIONS AS CONTAINED IN PATENT OF THE UNITED STATES RECORDED JANUARY 10, 1874 IN BOOK K AT PAGE 47 AND AUGUST 2, 1875 IN BOOK K AT PAGE 550.
 - ii. (TC#10) RIGHT OF WAY EASEMENT AS GRANTED TO COLORADO TELEPHONE COMPANY IN INSTRUMENT RECORDED MARCH 03, 1905, IN BOOK 358 AT PAGE 565. SAID EASEMENT WAS ASSIGNED TO THE MOUNTAIN STATES TELEPHONE AND TELEGRAPH COMPANY IN WARRANTY DEED RECORDED AUGUST 5, 1911 IN BOOK 482 AT PAGE 190.
 - iii. (TC#11) THE EFFECT OF INCLUSION OF SUBJECT PROPERTY IN THE CHEROKEE WATER AND SANITATION DISTRICT, AS EVIDENCED BY INSTRUMENT RECORDED APRIL 25, 1984, IN BOOK 3862 AT PAGE 949 AND JULY 10, 1984, IN BOOK 3892 AT PAGE 529 AND WITHIN THE CIMARRON HILLS STREET IMPROVEMENT DISTRICT AS EVIDENCED BY INSTRUMENT RECORDED OCTOBER 2, 1984 IN BOOK 3923 AT PAGE 890, NOW COLLECTIVELY KNOWN AS CHEROKEE METROPOLITAN DISTRICT AS EVIDENCED BY INSTRUMENT RECORDED MAY 27, 1992 IN BOOK 5983 AT PAGE 83. ANY AND ALL WATER RIGHTS AS SET FORTH IN DECREE OF WATER COURT REGARDING CHEROKEE METROPOLITAN DISTRICT RECORDED DECEMBER 1, 2008 UNDER RECEPTION NO. 208127656.
 - iv. (TC#12) THE EFFECT OF RESOLUTION NO. 02-384 REGARDING SKETCH PLAN, RECORDED FEBRUARY 19, 2003, UNDER RECEPTION NO. 203036141.
 - v. (TC#13) COAL RESERVATION AS CONTAINED IN WARRANTY DEEDS RECORDED NOVEMBER 27, 1918 IN BOOK 565 AT PAGE 97 AND OCTOBER 18, 1919 IN BOOK 610 AT PAGE 332.
 - vi. (TC#14) EACH AND EVERY RIGHT OR RIGHTS OF ACCESS AS CONVEYED BY INSTRUMENT RECORDED FEBRUARY 24, 1967 IN BOOK 2167 AT PAGE 591.
 - vii. (TC#15) THE EFFECT OF INCLUSION OF SUBJECT PROPERTY IN THE CIMARRON HILLS FIRE PROTECTION DISTRICT, AS EVIDENCED BY INSTRUMENT RECORDED DECEMBER 13, 1972, UNDER RECEPTION NO. 941974.
 - viii. (TC#16) THE EFFECT OF RESOLUTIONS, RECORDED AUGUST 08, 1985, IN BOOK 5045 AT PAGE 248.
 - ix. (TC#17) TERMS, CONDITIONS, PROVISIONS, BURDENS AND OBLIGATIONS AS SET FORTH IN POSSESSION AND USE AGREEMENT RECORDED SEPTEMBER 04, 2002 UNDER RECEPTION NO. 202148485.
 - x. (TC#18) EACH AND EVERY RIGHT OF ACCESS AS CONTAINED IN RULE AND ORDER RECORDED DECEMBER 3, 2004 UNDER RECEPTION NO. 204198867.
 - xi. (TC#19) TERMS, CONDITIONS, PROVISIONS, BURDENS, OBLIGATIONS AND EASEMENTS AS SET FORTH AND GRANTED IN PERMANENT EASEMENT RECORDED FEBRUARY 08, 2008 UNDER RECEPTION NO. 208015362.
 - xii. (TC#20) THE EFFECT OF RESOLUTION NO. 14-294, RECORDED AUGUST 13, 2014, UNDER RECEPTION NO. 214072945.
 - xiii. (TC#21) TERMS, CONDITIONS, PROVISIONS, BURDENS, OBLIGATIONS AND EASEMENTS AS SET FORTH AND GRANTED IN AVIGATION EASEMENT RECORDED AUGUST 12, 2016 UNDER RECEPTION NO. 216090669.
 - xiv. (TC#22) THE EFFECT OF INCLUSION OF THE SUBJECT PROPERTY INTO THE SANDS METROPOLITAN DISTRICT NO. 4, AS EVIDENCED BY INSTRUMENTS RECORDED OCTOBER 5, 2016 UNDER RECEPTION NO. 216114674 AND NOVEMBER 28, 2016, UNDER RECEPTION NO. 216137221 AND DECEMBER 27, 2016 UNDER RECEPTION NO. 216149730 AND DECEMBER 27, 2016 UNDER RECEPTION NO. 216149731 AND JANUARY 27, 2017 UNDER RECEPTION NO. 217011026. ORDER OF EXCLUSION OF PROPERTY RECORDED MARCH 31, 2020 UNDER RECEPTION NO. 220044159.
 - xv. (TC#23) THE EFFECT OF RESOLUTION NO. 16-383, RECORDED NOVEMBER 08, 2016, UNDER RECEPTION NO. 216129983.
 - xvi. (TC#24) THE EFFECT OF RESOLUTION NO. 16-384, RECORDED NOVEMBER 08, 2016, UNDER RECEPTION NO. 216129984.
 - xvii. (TC#25) EASEMENTS, CONDITIONS, COVENANTS, RESTRICTIONS, RESERVATIONS AND NOTES ON THE PLAT OF 24/94 BUSINESS PARK FILING NO. 1 RECORDED APRIL 14, 2017 UNDER RECEPTION NO. 217713939, AS AMENDED BY SURVEYOR'S AFFIDAVIT OF CORRECTION RECORDED JUNE 26, 2017 UNDER RECEPTION NO. 217074318. RATIFICATION OF PLAT RECORDED AUGUST 2, 2019 UNDER RECEPTION NO. 219089187.
 - xviii. (TC#26) TERMS, CONDITIONS, PROVISIONS, BURDENS, OBLIGATIONS AND LICENSE AS SET FORTH AND GRANTED IN LICENSE AGREEMENT RECORDED APRIL 14, 2017 UNDER RECEPTION NO. 217042639.

GENERAL PLAT NOTES: (CONT.)

- xix. (TC#27) TERMS, CONDITIONS, PROVISIONS, BURDENS AND OBLIGATIONS AS SET FORTH IN SUBDIVISION IMPROVEMENTS AGREEMENT RECORDED APRIL 14, 2017 UNDER RECEPTION NO. 217042640.
 - xx. (TC#28) EASEMENTS AND RESTRICTIVE COVENANTS, WHICH DO NOT CONTAIN A FORFEITURE OR REVERTER CLAUSE, BUT OMITTING ANY COVENANTS OR RESTRICTIONS, IF ANY, BASED UPON RACE, COLOR, RELIGION, SEX, SEXUAL ORIENTATION, FAMILIAL STATUS, MARITAL STATUS, DISABILITY, HANDICAP, NATIONAL ORIGIN, ANCESTRY, OR SOURCE OF INCOME, AS SET FORTH IN APPLICABLE STATE OR FEDERAL LAWS, EXCEPT TO THE EXTENT THAT SAID COVENANT OR RESTRICTION IS PERMITTED BY APPLICABLE LAW, AS CONTAINED IN DECLARATION OF COVENANTS, CONDITIONS, RESTRICTIONS AND EASEMENTS FOR THE 24/92 BUSINESS PARK FILING NO. 1, RECORDED APRIL 26, 2017, UNDER RECEPTION NO. 217047603.
 - xxi. (TC#29) THE EFFECT OF RESOLUTION NO. 19-158, RECORDED MAY 09, 2019, UNDER RECEPTION NO. 219049801.
 - xxii. (TC#30) TERMS, CONDITIONS, PROVISIONS, BURDENS AND OBLIGATIONS AS SET FORTH IN RESOLUTION NO. 20-386 SERVICE PLAN FOR CROSSROADS METRO DIST. # 1 & 2 RECORDED NOVEMBER 27, 2020 UNDER RECEPTION NO. 220172025.
 - xxiii. (TC#31) TERMS, CONDITIONS, PROVISIONS, BURDENS AND OBLIGATIONS AS SET FORTH IN RESOLUTION NO. 20-386 RECORDED DECEMBER 08, 2020 UNDER RECEPTION NO. 220200054.
 - xxiv. (TC#32) TERMS, CONDITIONS, PROVISIONS, BURDENS AND OBLIGATIONS AS SET FORTH IN DECREE REGARDING CROSSROADS METROPOLITAN DISTRICT NO. 1 RECORDED MARCH 11, 2021 UNDER RECEPTION NO. 221048427.
 - xxv. (TC#33) TERMS, CONDITIONS, PROVISIONS, BURDENS AND OBLIGATIONS AS SET FORTH IN NOTICE REGARDING CROSSROADS METROPOLITAN DISTRICTS 1 & 2 RECORDED MARCH 17, 2021 UNDER RECEPTION NO. 221052090.
 - xxvi. (TC#34) TERMS, CONDITIONS, PROVISIONS, BURDENS AND OBLIGATIONS AS SET FORTH IN RESOLUTION RECORDED MAY 11, 2021 UNDER RECEPTION NO. 221093290.
 - xxvii. (TC#35) DEED OF TRUST FROM COLORADO SPRINGS EQUITIES LLC, A COLORADO LIMITED LIABILITY COMPANY TO THE PUBLIC TRUSTEE OF EL PASO FOR THE USE OF FRANK W. HOWARD 2 LP TO SECURE THE AGGREGATE SUM OF \$500,000.00 RECORDED JUNE 8, 2021 UNDER RECEPTION NO. 221116423.
 - xxviii. (TC#36) TERMS, CONDITIONS, PROVISIONS, BURDENS AND OBLIGATIONS AS SET FORTH IN ORDER RECORDED AUGUST 02, 2021 UNDER RECEPTION NO. 221146212.
 - xxix. (TC#37) TERMS, CONDITIONS, PROVISIONS, BURDENS AND OBLIGATIONS SET FORTH IN RESOLUTION RECORDED OCTOBER 27, 2021 UNDER RECEPTION NO. 221199436.
 - xxx. (TC#38) DEED OF TRUST FROM COLORADO SPRINGS EQUITIES INC. TO THE PUBLIC TRUSTEE OF EL PASO FOR THE USE OF LEGACY BANK TO SECURE THE AGGREGATE SUM OF \$6,000,000.00 RECORDED AUGUST 02, 2019 UNDER RECEPTION NO. 219089189. MODIFIED BY AGREEMENT RECORDED FEBRUARY 1, 2022 UNDER RECEPTION NO. 222015688. PARTIAL RELEASE RECORDED AUGUST 23, 2021 UNDER RECEPTION NO. 221158823.
 - xxxi. (TC#39) TERMS, CONDITIONS, PROVISIONS, BURDENS AND OBLIGATIONS AS SET FORTH IN DECLARATION OF COVENANTS IMPROVING AND IMPLEMENTING THE CROSSROADS RETAIL CENTER PUBLIC IMPROVEMENT FEE RECORDED MARCH 22, 2022 UNDER RECEPTION NO. 222040230.
 - xxxii. (TC#40) TERMS, CONDITIONS, PROVISIONS, BURDENS AND OBLIGATIONS AS SET FORTH IN NOTICE RECORDED JUNE 01, 2022, UNDER RECEPTION NO. 222075857.
4. WATER AND WASTEWATER SERVICES FOR THIS SUBDIVISION ARE PROVIDED BY THE CHEROKEE METROPOLITAN DISTRICT SUBJECT TO THE DISTRICTS RULES REGULATIONS AND SPECIFICATIONS.
 5. ALL STRUCTURAL FOUNDATIONS SHALL BE LOCATED AND DESIGNED BY A PROFESSIONAL ENGINEER, CURRENTLY REGISTERED IN THE STATE OF COLORADO.
 6. THE ADDRESSES EXHIBITED ON THIS PLAT ARE FOR INFORMATIONAL PURPOSES ONLY. THEY ARE NOT THE LEGAL DESCRIPTION AND ARE SUBJECT TO CHANGE.
 7. THERE SHALL BE NO DIRECT ACCESS TO U.S. HIGHWAY 24, NEWT ROAD, OR MEADOWBROOK PARKWAY ALLOWED. LOT 1 ACCESS TO MEADOWBROOK PARKWAY IS LIMITED TO THE APPROVED LOCATION SHOWN ON THE PLAT.
 8. NO DRIVEWAY SHALL BE ESTABLISHED UNLESS AN ACCESS PERMIT HAS BEEN GRANTED BY EL PASO COUNTY.
 9. MAILBOXES SHALL BE INSTALLED IN ACCORDANCE WITH ALL EL PASO COUNTY AND UNITED STATES POSTAL SERVICES REGULATIONS.
 10. NOTICE OF POTENTIAL AIRCRAFT OVERFLIGHT AND NOISE IMPACT ASSOCIATED WITH AIRPORT: THIS SERVES AS NOTICE OF POTENTIAL AIRCRAFT OVERFLIGHT AND NOISE IMPACTS ON THIS PROPERTY DUE TO ITS CLOSE PROXIMITY TO AN AIRPORT, WHICH IS BEING DISCLOSED TO ALL PROSPECTIVE PURCHASERS CONSIDERING THE USE OF THIS PROPERTY FOR RESIDENTIAL AND OTHER PURPOSES. THIS PROPERTY IS SUBJECT TO THE OVERFLIGHT AND ASSOCIATED NOISE OF ARRIVING AND DEPARTING AIRCRAFT DURING THE COURSE OF NORMAL AIRPORT OPERATIONS.

GENERAL PLAT NOTES: (CONT.)

11. ALL PROPERTY WITHIN THIS SUBDIVISION IS SUBJECT TO AVIGATION EASEMENTS AS RECORDED AT RECEPTION NO. 203019547 AND RECEPTION NO. 206095824 OF THE RECORDS OF THE EL PASO COUNTY CLERK AND RECORDER AS SUCH, FUTURE OWNERS SHOULD MAKE THEMSELVES FAMILIAR WITH THE FOLLOWING STIPULATIONS AND FACTS.
 - NO MAN-MADE OR NON MAN-MADE OBSTRUCTIONS SHALL BE ALLOWED TO PENETRATE THE 40:1 APPROACH SURFACE.
 - ALL EXTERIOR LIGHTING PLANS SHALL BE APPROVED BY THE DIRECTOR OF AVIATION TO PREVENT A HAZARD TO AIRCRAFT.
 - NO ELECTROMAGNETIC LIGHT, NOR ANY PHYSICAL EMISSIONS WHICH MAY INTERFERE WITH AIRCRAFT, AVIGATION, COMMUNICATIONS OR NAVIGATIONAL AIDS SHALL BE ALLOWED.
 - WHILE NOT A REQUIREMENT, A RECOMMENDATION IS MADE THAT A 25 DB REDUCTION IN INTERIOR NOISE (IN THE OFFICES OR ANY INHABITED WORK AREAS SUSCEPTIBLE TO AIRCRAFT NOISE) BE OBTAINED BY SOUNDPROOFING USING FAA RECOMMENDED CONSTRUCTION TECHNIQUES AND PERFORMED BY A CERTIFIED ACOUSTICAL ENGINEER.
 - IF A CRANE IS USED DURING CONSTRUCTION, AN FAA FORM 7460-1 WILL NEED TO BE FILED THROUGH THE AIRPORT OPERATIONS OFFICE AND APPROVED BY THE FEDERAL AVIATION ADMINISTRATION BEFORE ANY BUILDING PERMIT IS ISSUED BY THE CITY OR COUNTY. NORMAL TIME REQUIRED FOR APPROVAL IS 30 TO 50 WORKING DAYS.
12. ALL PROPERTY OWNERS ARE RESPONSIBLE FOR MAINTAINING PROPER STORM WATER DRAINAGE IN AND THROUGH THEIR PROPERTY. PUBLIC DRAINAGE EASEMENTS AS SPECIFICALLY NOTED ON THE PLAT SHALL BE MAINTAINED BY THE INDIVIDUAL LOT OWNERS UNLESS OTHERWISE INDICATED. STRUCTURES, FENCES, MATERIALS, OR LANDSCAPING THAT COULD IMPEDE THE FLOW OF RUNOFF SHALL NOT BE PLACED IN DRAINAGE EASEMENT. THE RETAINING WALL LOCATED ALONG THE WEST BOUNDARY WITHIN THE DRAINAGE EASEMENT AREA IS NECESSARY FOR MAINTAINING THE GRADE DIFFERENCE BETWEEN LOT 1 AND THE ADJACENT PARCEL (LOT 1, SOFTBALL WEST SUBDIVISION NO. 2) AND IS THUS PLACED IN THE EASEMENT AREA. THIS RETAINING WALL DOES NOT (WILL NOT) IMPEDE THE FLOW OF RUN-OFF IN THE EASEMENT AREA.
- ~~13. THE PROPERTY IS SUBJECT TO THE DECLARATION OF COVENANTS, CONDITIONS, AND RESTRICTIONS AND GRANT OF EASEMENTS AS RECORDED AT RECEPTION NO. 217042640 OF THE RECORDS OF EL PASO COUNTY.~~
14. THE FOLLOWING REPORTS HAVE BEEN SUBMITTED IN ASSOCIATION WITH THE FINAL PLAT FOR THIS SUBDIVISION AND ARE ON FILE AT THE COUNTY PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT: TRANSPORTATION IMPACT STUDY; DRAINAGE REPORT.
15. PUBLIC AND COMMON SUBDIVISION IMPROVEMENTS: NO LOT OR INTEREST THEREIN, SHALL BE SOLD, CONVEYED, OR TRANSFERRED WHETHER BY DEED OR BY CONTRACT, NOR SHALL BUILDING PERMITS BE ISSUED, UNTIL AND UNLESS EITHER THE REQUIRED PUBLIC AND COMMON DEVELOPMENT IMPROVEMENTS HAVE BEEN CONSTRUCTED AND COMPLETED AND PRELIMINARILY ACCEPTED IN ACCORDANCE WITH THE SUBDIVISION IMPROVEMENTS AGREEMENT BETWEEN THE APPLICANT/OWNER AND EL PASO COUNTY AS RECORDED UNDER RECEPTION NO. ~~203019547~~ **222085403** IN THE OFFICE OF THE CLERK AND RECORDER OF EL PASO COUNTY, COLORADO OR, IN THE ALTERNATIVE, OTHER COLLATERAL IS PROVIDED TO MAKE PROVISION FOR THE COMPLETION OF SAID IMPROVEMENTS IN ACCORDANCE WITH THE EL PASO COUNTY LAND DEVELOPMENT CODE AND ENGINEERING CRITERIA MANUAL. ANY SUCH ALTERNATIVE COLLATERAL MUST BE APPROVED BY THE BOARD OF COUNTY COMMISSIONERS OR, IF PERMITTED BY THE SUBDIVISION IMPROVEMENTS AGREEMENT, BY THE PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT DIRECTOR AND MEET THE POLICY AND PROCEDURE REQUIREMENTS OF EL PASO COUNTY PRIOR TO THE RELEASE BY THE COUNTY OF ANY LOTS FOR SALE, CONVEYANCE OR TRANSFER. THIS PLAT RESTRICTION MAY BE REMOVED OR RESCINDED BY THE BOARD OF COUNTY COMMISSIONERS OR, IF PERMITTED BY THE SUBDIVISION IMPROVEMENTS AGREEMENT, BY THE PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT DIRECTOR UPON EITHER APPROVAL OF AN ALTERNATIVE FORM OF COLLATERAL OR COMPLETION AND PRELIMINARY ACCEPTANCE BY THE EL PASO BOARD OF COUNTY COMMISSIONERS OF ALL IMPROVEMENTS REQUIRED TO BE CONSTRUCTED AND COMPLETED IN ACCORDANCE WITH SAID SUBDIVISION IMPROVEMENTS AGREEMENT. THE PARTIAL RELEASE OF LOTS FOR SALE, CONVEYANCE OR TRANSFER MAY ONLY BE GRANTED IN ACCORDANCE WITH ANY PLANNED PARTIAL RELEASE OF LOTS AUTHORIZED BY THE SUBDIVISION IMPROVEMENTS AGREEMENT.
16. TRACT A OF THIS PROPERTY IS SUBJECT TO A PRIVATE DETENTION BASIN/ STORMWATER QUALITY BMP MAINTENANCE AGREEMENT AND EASEMENT AS RECORDED AT RECEPTION NO. ~~203019547~~ **222085403** OF THE RECORDS OF EL PASO COUNTY. CROSSROADS METROPOLITAN DISTRICT NO. 1 IS RESPONSIBLE FOR MAINTENANCE OF THE SUBJECT DRAINAGE FACILITIES. FOR TRACT OWNERSHIP AND MAINTENANCE RESPONSIBILITIES, SEE TRACT TABLE, SHEET 5.
17. DEVELOPER SHALL COMPLY WITH FEDERAL AND STATE LAWS, REGULATIONS, ORDINANCES, REVIEW AND PERMIT REQUIREMENTS, AND OTHER AGENCY REQUIREMENTS, IF ANY, OF APPLICABLE AGENCIES INCLUDING, BUT NOT LIMITED TO, THE COLORADO DIVISION OF WILDLIFE, COLORADO DEPARTMENT OF TRANSPORTATION, U.S. ARMY CORPS OF ENGINEERS AND THE U.S. FISH AND WILDLIFE SERVICE REGARDING THE ENDANGERED SPECIES ACT, PARTICULARLY AS IT RELATES TO THE LISTED SPECIES.
18. THE PRIVATE ROADS AS SHOWN ON THIS PLAT WILL NOT BE MAINTAINED BY EL PASO COUNTY UNTIL AND UNLESS THE STREETS ARE CONSTRUCTED IN CONFORMANCE WITH EL PASO COUNTY STANDARDS IN EFFECT AT THE DATE OF THE REQUEST FOR DEDICATION AND MAINTENANCE.

GENERAL PLAT NOTES: (CONT.)

19. THE SUBDIVIDER(S) AGREES ON BEHALF OF HIM/HERSELF AND ANY DEVELOPER OR BUILDER SUCCESSORS AND ASSIGNS THAT SUBDIVIDER AND/OR SAID SUCCESSORS AND ASSIGNS SHALL BE REQUIRED TO PAY TRAFFIC IMPACT FEES IN ACCORDANCE WITH THE COUNTYWIDE TRANSPORTATION IMPROVEMENT FEE RESOLUTION (RESOLUTION 19-471), AS AMENDED, AT OR PRIOR TO THE TIME OF BUILDING PERMIT SUBMITTALS. THE FULL FEE OBLIGATION FOR LOT 1 SHALL BE PAID UP FRONT. THE METHOD OF PAYMENT FOR THE REMAINING PORTIONS OF THE OBLIGATED FEES SHALL BE DOCUMENTED ON ALL SALES DOCUMENTS AND ON PLAT NOTES TO ENSURE THAT A TITLE SEARCH WOULD FIND THE FEE OBLIGATION BEFORE THE SALE OF THE PROPERTY.
20. ANY PERSON WHO KNOWINGLY REMOVES, ALTERS OR DEFACTES ANY PUBLIC LAND SURVEY MONUMENT OR LAND BOUNDARY MONUMENT OR ACCESSORY COMMITS A CLASS TWO (2) MISDEMEANOR PURSUANT TO C.R.S. § 18-4-508.
21. A "SOILS AND GEOLOGY STUDY, CROSSROADS COMMERCIAL, PARCEL NO. 5408007005, EL PASO COUNTY, COLORADO" WAS COMPLETED BY THE ROCKY MOUNTAIN GROUP (RMG) ON AUGUST 18, 2020, JOB NO. 177025, REVISED MARCH 3, 2021. MITIGATION MEASURES AND A MAP OF THE HAZARD AREAS ARE IN SAID REPORT, PCD FILE NO. SP-2011, AVAILABLE AT THE EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT.
22. PER THE PRELIMINARY PLAN OF CROSSROADS MIXED USE (FILE NO. SP-20-011), THE STATE HAS DETERMINED WATER SUFFICIENCY FOR THE SITE.

FINAL PLAT
CROSSROADS MIXED USE
FILING NO. 1
JOB NO. 18-003
DATE PREPARED: 06/23/2021
DATE REVISED: 06/20/2022
ISSUED FOR MYLAR



212 N. WAHSATCH AVE., STE 305
COLORADO SPRINGS, CO 80903
PHONE: 719.955.5485

PCD FIL. NO. SF-21-029

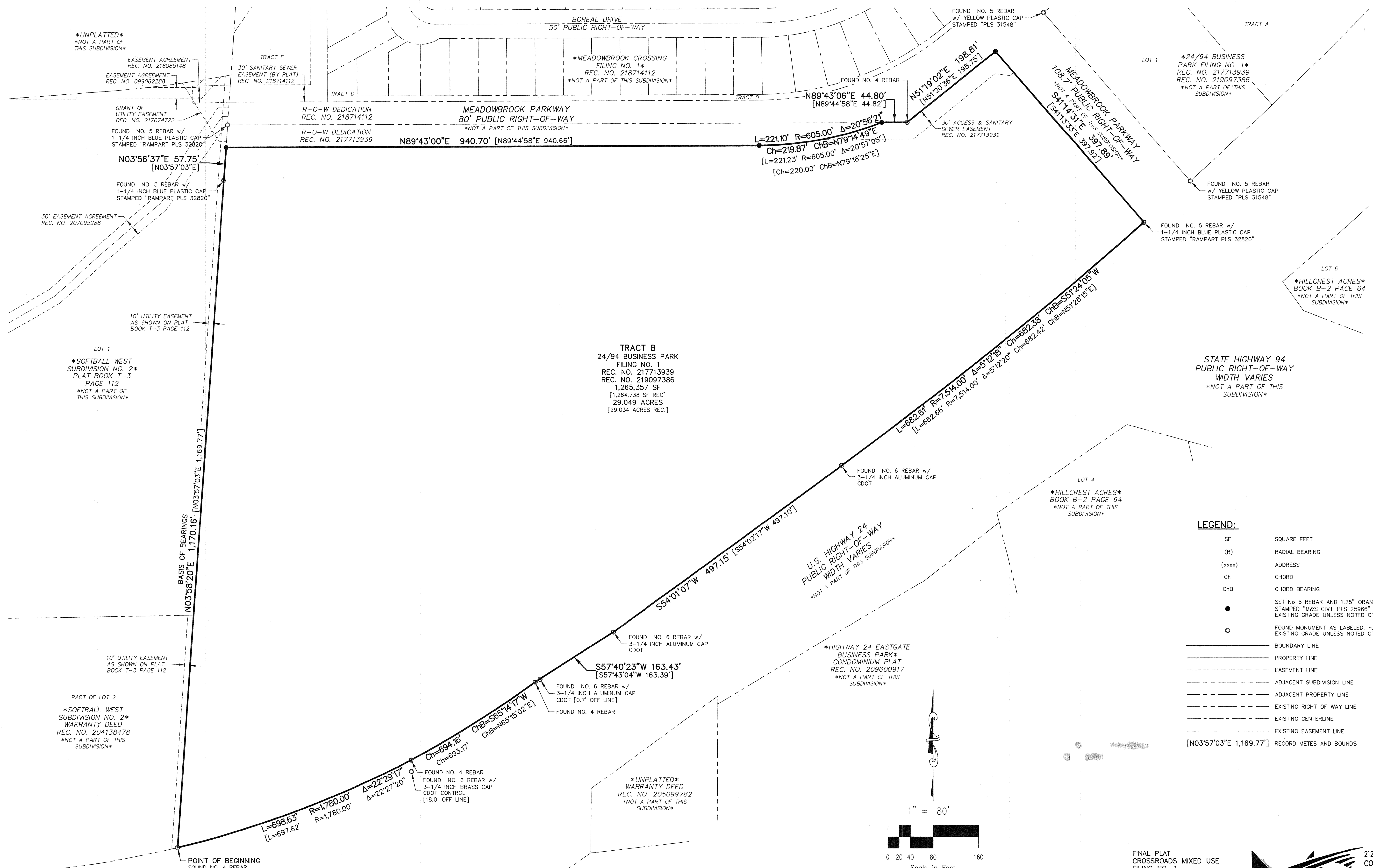
CIVIL CONSULTANTS, INC.

SHEET 2 OF 5

CROSSROADS MIXED USE FILING NO. 1

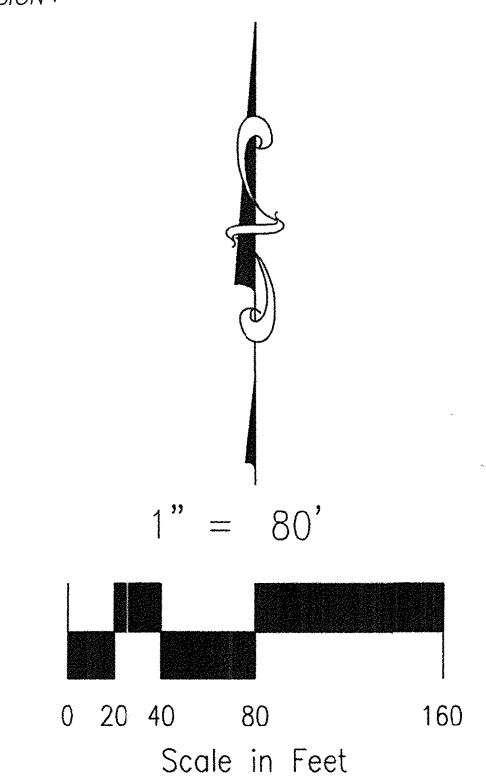
14975

A REPLAT OF TRACT B "24/94 BUSINESS PARK FILING NO. 1", BEING A TRACT OF LAND IN THE SOUTH HALF (S 1/2) OF SECTION 8, T14S, R65W, OF THE 6TH P.M., EL PASO COUNTY, COLORADO



TRACT B
 24/94 BUSINESS PARK
 FILING NO. 1
 REC. NO. 217713939
 REC. NO. 219097386
 1,265,357 SF
 [1,264,738 SF REC.]
 28.049 ACRES
 [29.034 ACRES REC.]

- LEGEND:**
- SF SQUARE FEET
 - (R) RADIAL BEARING
 - (xxxx) ADDRESS
 - Ch CHORD
 - ChB CHORD BEARING
 - SET NO. 5 REBAR AND 1.25" ORANGE CAP STAMPED "M&S CIVIL PLS 25966" FLUSH W/ EXISTING GRADE UNLESS NOTED OTHERWISE
 - FOUND MONUMENT AS LABELED, FLUSH W/ EXISTING GRADE UNLESS NOTED OTHERWISE
 - BOUNDARY LINE
 - - - PROPERTY LINE
 - - - EASEMENT LINE
 - - - ADJACENT SUBDIVISION LINE
 - - - ADJACENT PROPERTY LINE
 - - - EXISTING RIGHT OF WAY LINE
 - - - EXISTING CENTERLINE
 - - - EXISTING EASEMENT LINE
 - [N03°57'03"E 1,169.77'] RECORD METES AND BOUNDS



AS PLATTED

FINAL PLAT
 CROSSROADS MIXED USE
 FILING NO. 1
 JOB NO. 18-003
 DATE PREPARED: 06/23/2021
 DATE REVISED: 06/20/2022
 ISSUED BY: MYLAR



212 N. WAHSATCH AVE., STE 305
 COLORADO SPRINGS, CO 80903
 PHONE: 719.955.5465

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CIVIL CONSULTANTS, INC.

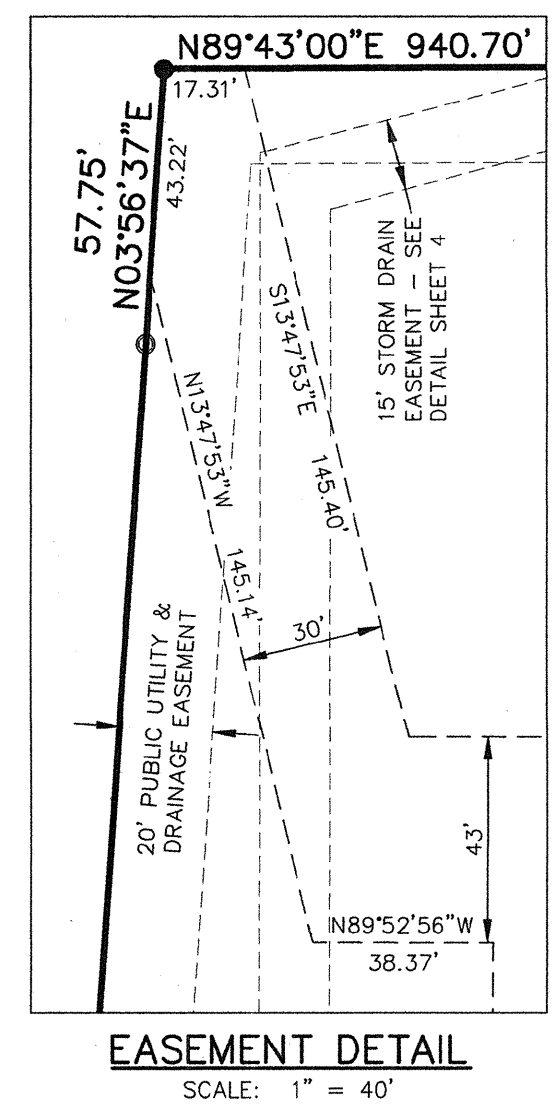
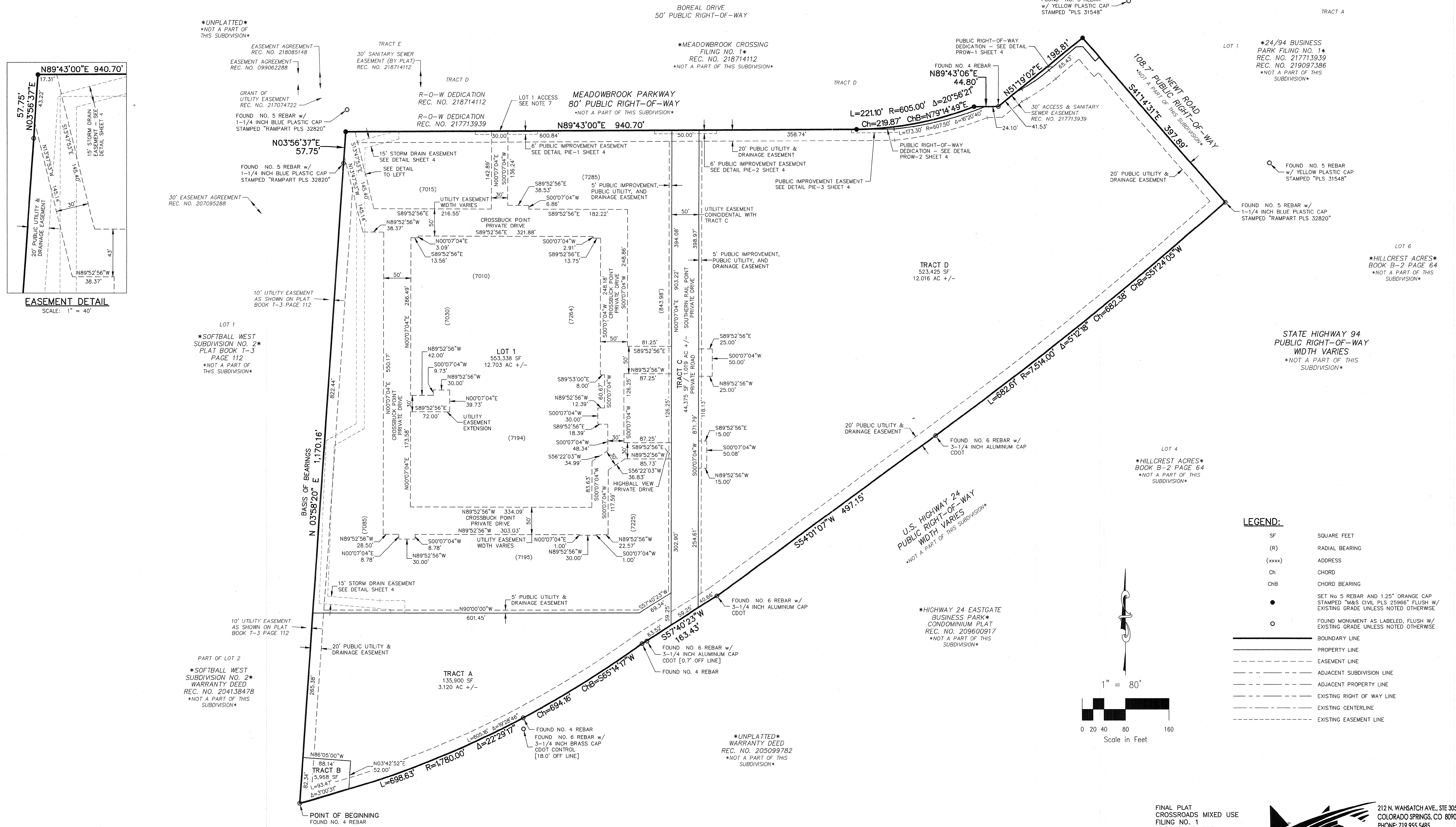
SHEET 3 OF 5

File: 0:180001-Crossroads Mixed Use Colorado Stamp Equator ITC\mylar\Survey\18-003_Crossroads_MU_Final_Plat.dwg PlotDate: 6/20/2022 8:03 AM

CROSSROADS MIXED USE FILING NO. 1

14975

A REPLAT OF TRACT B "24/94 BUSINESS PARK FILING NO. 1", BEING A TRACT OF LAND IN THE SOUTH HALF (S 1/2) OF SECTION 8, T14S, R65W, OF THE 6TH P.M., EL PASO COUNTY, COLORADO



UNPLATTED
NOT A PART OF THIS SUBDIVISION

LOT 1
SOFTBALL WEST SUBDIVISION NO. 2
PLAT BOOK T-3 PAGE 112
NOT A PART OF THIS SUBDIVISION

PART OF LOT 2
SOFTBALL WEST SUBDIVISION NO. 2
WARRANTY DEED
REC. NO. 204138478
NOT A PART OF THIS SUBDIVISION

MEADOWBROOK CROSSING FILING NO. 1
REC. NO. 218714112
NOT A PART OF THIS SUBDIVISION

24/94 BUSINESS PARK FILING NO. 1
REC. NO. 217713939
REC. NO. 219097386
NOT A PART OF THIS SUBDIVISION

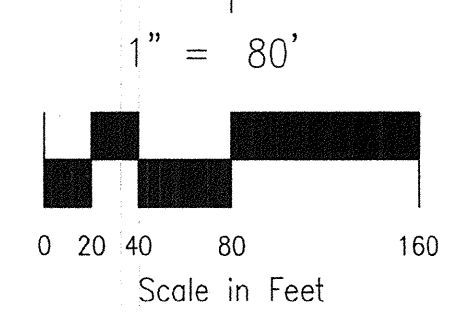
LOT 6
HILLCREST ACRES
BOOK B-2 PAGE 64
NOT A PART OF THIS SUBDIVISION

STATE HIGHWAY 94
PUBLIC RIGHT-OF-WAY
WIDTH VARIES
NOT A PART OF THIS SUBDIVISION

LOT 4
HILLCREST ACRES
BOOK B-2 PAGE 64
NOT A PART OF THIS SUBDIVISION

LEGEND:

- SF SQUARE FEET
- (R) RADIAL BEARING
- (xxxx) ADDRESS
- Ch CHORD
- ChB CHORD BEARING
- SET NO. 5 REBAR AND 1.25" ORANGE CAP STAMPED "M&S CIVIL PLS 25966" FLUSH W/ EXISTING GRADE UNLESS NOTED OTHERWISE
- FOUND MONUMENT AS LABELED, FLUSH W/ EXISTING GRADE UNLESS NOTED OTHERWISE
- BOUNDARY LINE
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- - - ADJACENT SUBDIVISION LINE
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- - - EXISTING CENTERLINE
- - - EXISTING EASEMENT LINE



FINAL PLAT
CROSSROADS MIXED USE
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JOB NO. 18-003
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SHEET 4 OF 5

AS REPLATTED

RBD

File: C:\18034-Crossroads Mixed Use Colorado Springs Equities LLC\Map\Survey\Plot\18-003_Crossroads_MU_Final_Plat.dwg PlotName: 6/7/2022 10:29 AM

revise to "Appendix B" to
match table of contents.



Exhibit B

Appendix B

General Location and Description of Stormwater Management Facilities Underground Detention & Water Quality

A. General Site Description

The subject site is located at 0 Meadowbrook Parkway in the southwestern quarter of Section 8, Township 14 South, Range 65 West of the 6th P.M. in El Paso County, Colorado. The 29.049 Acre site is currently undeveloped. The site is bound to the west by undeveloped Softball West Subdivision Filing No. 2, to the north by Meadowbrook Crossing Subdivision, south by Highway 24, and to the east by Newt Drive.

The proposed site is will be developed into ten (10) commercial lots, one (1) multifamily residential lot, and three (3) tracts for detention and roadway use. The development will extend Meadowbrook Parkway to the west and will include a single lane roundabout to be constructed at the intersection of the Meadowbrook Parkway and Newt Drive. The property is within the commercial aviation district overlay. A rezone application has been approved to rezone 12.703 acres from CR to the RM-30 Zone.

B. General Stormwater Management Description

All of the stormwater is conveyed via storm sewer piping and surface flows to a private underground detention facility located near the southwest boundary of the site that provides 100 year storage and water quality treatment for runoff. Flows from the underground detention basin will be discharged into the HWY 24 right-of-way. The facility is owned and maintained by the Crossroads Metropolitan District No. 1.

C. Stormwater Facilities Site Plan

Inspection or maintenance personnel may utilize the Stormwater Facilities Map located in Appendix G for locating the stormwater facilities within this development.

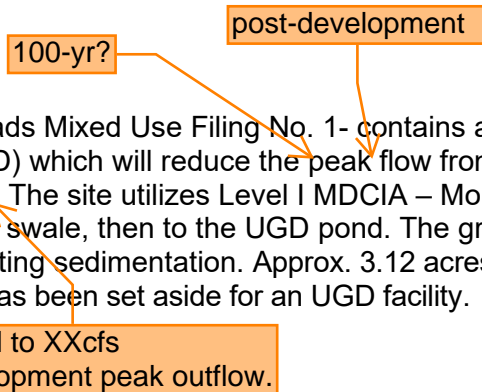
D. On-Site Stormwater Management Facilities

Volume Reduction Facilities

The detention pond submitted for Crossroads Mixed Use Filing No. 1- contains a private underground detention facility (UGD) which will reduce the peak flow from 186.6 cfs peak inflow to 11.4 peak outflow. The site utilizes Level I MDCIA – More impervious base material drains to a grass swale, then to the UGD pond. The grass swale keeps flows low and shallow, facilitating sedimentation. Approx. 3.12 acres of proposed land (Tract A) within the project has been set aside for an UGD facility.

Storage Facilities (Detention)

The detention pond submitted for Crossroads Mixed Use Filing No. 1- contains a underground detention facility (UGD) which will store the 100 year volume of 4.668 ac-ft.



Water Quality Facilities

Pond 1 submitted for Crossroads Mixed Use Filing No. 1- Underground Detention Facility contains an Underground Detention Basin (UGD) for water quality. The UGD has been designed and shall be constructed as follows.

WQCV Provided=	0.863 ac-ft
EURV Provided=	3.295 ac-ft
Q100 Volume Provided=	4.668 ac-ft
Q5 Release Proposed=	1.2 cfs
Q100 Release Proposed=	11.4 cfs

Flows from the UGD pond are routed via a proposed 18" RCP pipe to discharge in the HWY 24 right-of-way.

Source Control Best Management Practices

Proposed construction BMP's (silt fence, vehicle tracking, straw bale barriers, erosion control fabric and temporary sediment facility) will capture any sedimentation caused by construction before it can make it into the existing downstream tributaries. The water quality method meets the intent of treating impervious areas, based on the guidelines as set forth in the City of Colorado Springs/EI Paso County Drainage Criteria Manual – Volume II.

APPENDIX C

Standard Operation Procedures
for
Inspection and Maintenance

Underground Detention Basin
(UGD)

May 2021

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Clarify what "smaller" is compared to. The MTD outlet? Or an above ground pond?

UGD-1 BACKGROUND

Underground Detention Basins (UGD) are one of the least common types of Stormwater Management Facilities utilized within the Front Range of Colorado. An UGD is a sedimentation basin designed to “extend” the runoff detention time, but to drain completely dry sometime after stormwater runoff ends. The UGD’s drain time for the water quality portion of the facility is typically 40 hours. The chambers are considered to be “dry” because the majority of the chambers are designed not to have a significant permanent pool of water remaining between runoff events.

UGDs are an adaptation of an extended detention basin used for flood control, with the primary difference is the addition of additional manufactured treatment devices (MTDs) but they also include a slow release outlet design. Forebays are replaced by the MTDs, located at the inflow point to the basin and are provided to facilitate sediment removal within a contained area prior to releasing into the pond (underground chambers). The MTDs collect and briefly hold stormwater runoff resulting in a process called sedimentation, dropping sediment out of the stormwater. The stormwater is then routed from the MTD into the Isolator row. The isolator row holds the sediment in one underground chamber for easier maintenance (removal of sediment & pollutants). **The UGD also uses a much smaller outlet** that extends the emptying time of the more frequently occurring runoff events to facilitate pollutant removal. An UGD does not have a small micropool just upstream of the outlet like an EDB. The micropool is not necessary to hold a small amount of water to keep sediment and floatables from blocking the outlet orifices because this occurs in the isolator row(s).

UGD-2 INSPECTING UNDERGROUND DETENTION BASINS (UGD)

UGD-2.1 Access and Easements

Inspection or maintenance personnel may utilize the stormwater facility map located in Appendix G containing the location(s) of the access points and maintenance easements of the UGD(s) within this development.

UGD-2.2 Stormwater Management Facilities Locations

Inspection or maintenance personnel may utilize the stormwater facility map located in Appendix G containing the location(s) of the UGD(s) within this development.

UGD-2.3 Underground Detention Basin (UGD) Features

UGDs have a number of features that are designed to serve a particular function. Many times the proper function of one feature depends on another. For

example, if a MTD is not properly maintained, it could negatively affect the performance of a feature downstream (isolator row, outlet structure, etc.). Therefore, it is critical that each feature of the UGD is properly inspected and maintained to ensure that the overall facility functions as it was intended. Below is a list and description of the most common features within an UGD and the corresponding maintenance inspection items that can be anticipated:

**Table UGD-1
Typical Inspection & Maintenance Requirements Matrix**

UGD Features	Sediment Removal	Mowing/ Weed control	Trash & Debris Removal	Erosion	Overgrown Vegetation Removal	Standing Water (mosquito/ algae control)	Structure Repair
Inflow Points (MTDs)	X		X				X
Outlet Works	X		X				X

add a row for the isolator rows.

UGD-2.3.1 Inflow Points

Inflow Points or Outfalls into EDBs are the point source of the stormwater discharge into the facility. An inflow point is commonly a storm sewer pipe with a flared end section that discharges into an EDB. However, an Inflow Point for a UGD must first pass through a MTD.

An energy dissipation occurs with flows through the MTD.

The typical maintenance items that are found with inflow points are as follows:

a. Sediment Accumulation – Because of the turbulence in the water created by the energy dissipater, sediment often deposits immediately downstream of the inflow point. To prevent a loss in hydraulic performance of the upstream infrastructure, sediment that accumulates in this area must be removed in a timely manner.

b. Structural Damage – Structural damage can occur at anytime during the life of the facility. Typically, for an inflow, the structural damage occurs to the pipe flared end section (concrete or steel). Structural damage can lead to additional operating problems with the facility, including loss of hydraulic performance.

e. Woody Growth/Weeds Present – Undesirable vegetation can grow in and around the inflow area to an UGD that can significantly affect

the performance of the drainage facilities discharging into the facility. This type of vegetation includes trees (typically cottonwoods) and dense areas of shrubs (willows). If woody vegetation is not routinely mowed/removed, the growth can cause debris/sediment to accumulate, resulting in blockage of the discharge. Also, tree roots can cause damage to the structural components of the inflow. Routine maintenance is essential for trees (removing a small tree/sapling is much cheaper and “quieter” than a mature tree). In addition, noxious weeds growing in the facility can result in the loss of desirable native vegetation and impact adjacent open spaces/land. However, since the inflow point is below ground, the presence of these natural materials will be less common.

Also discuss the isolator rows in this section

UGD-2.3.2 Forebay (MTD)

provide I&M req's specific to the proposed MTD, not just generic ones (here or in another section below)

Manufactured Treatment Devices (MTDs) include many different types of proprietary devices that use various treatment processes and designs to remove targeted pollutants. For example, some MTDs are suitable for pretreatment and gross solid removal, whereas others incorporate advanced designs targeting specific metals, nutrients and other pollutants in stormwater runoff.

The typical maintenance items that are found with MTDs are as follows:

a. Sediment/Debris Accumulation – Because this feature of the UGD is designed to provide the initial sedimentation, debris and sediment frequently accumulate in this area. If the sediment and debris is not removed from the MTD on a regular basis, it can significantly affect the function of other features within the UGD. Routine sediment removal from the MTD can **significantly** reduce the need for dredging of the main portion of the UGD isolator row using specialized equipment (jet vacuums). Routine removal of sediment from the MTD can **substantially** decrease the long-term sediment removal costs of an UGD.

b. Concrete Cracking/Failing – The MTD is primarily constructed of concrete, which cracks, spalls, and settles. Damage to the MTD can result in decreased performance and impact maintenance efforts.

UGD-2.3.3 Trickle Channel (Low-Flow)

The trickle channels are not necessary in an UGD. Therefore, no maintenance is necessary.

UGD-2.3.4 Bottom Stage

The bottom stage is not necessary in an UGD since the facility is underground. Therefore, no maintenance is necessary.

UGD-2.3.5 Micro-pool

The micro-pool is not necessary in an UGD since the facility is underground. Therefore, no maintenance is necessary.

UGD-2.3.6 Outlet Works

re-phrase generic statements that include "typically" to be specific to this project. For example, if there is going to be a well screen, state so. Otherwise, any mention of a well screen can be removed (or state "no well screen on this project").

The outlet works is the feature that drains the UGD in specified quantities and periods of time. The outlet works is typically constructed of reinforced concrete at the end of the UGD. The concrete structure typically has steel orifice plates anchored/embedded into it to control stormwater release rates. The larger openings (flood control) on the outlet structure typically have trash racks over them to prevent clogging. The water quality orifice plate (smaller diameter holes) will typically have a well screen covering it to prevent smaller materials from clogging it. The outlet structure is the single most important feature in the UGD operation. Proper inspection and maintenance of the outlet works is essential in ensuring the long-term operation of the UGD.

The typical maintenance items that are found with the outlet works are as follows:

a. Trash Rack/Well Screen Clogged – Floatable material that enters the UGD will most likely make its way to the outlet structure. This material is trapped against the trash racks and well screens on the outlet structure (which is why they are there). This material must be removed on a routine basis to ensure the outlet structure drains in the specified design period.

b. Structural Damage - The outlet structure is primarily constructed of concrete, which can crack, spall, and settle. The steel trash racks and well screens are also susceptible to damage.

c. Orifice Plate Missing/Not Secure – Many times residents, property owners, or maintenance personnel will remove or loosen orifice plates if they believe the pond is not draining properly. Any modification to the orifice plate(s) will significantly affect the designed discharge rates for water quality and/or flood control. Modification of the orifice plates is not allowed without approval from EPC.

d. Manhole Access – Access to the outlet structure is necessary to properly inspect and maintain the facility. If access is difficult or not available to inspect the structure, chances are it will be difficult to maintain as well.

e. Woody Growth/Weeds Present - Because of the constant moisture in the soil surrounding the outlet works, woody growth (cottonwoods/willows) can create operational problems for the UGD. If woody vegetation is not routinely mowed/removed, the growth can cause debris/sediment to accumulate around the outlet works, which can cause problems with other UGD features. Also, tree roots can cause damage to the structural components of the outlet works. Routine management is essential for trees (removing a small tree/sapling is much cheaper and “quieter” than a mature tree). However, since the outflow point is below ground, the presence of these natural materials will be less common.

UGD-2.3.7 Emergency Spillway

An emergency spillway is not a component of an UGD, therefore no maintenance is necessary.

But still need to discuss the path of overflow and the importance of keeping it clear and checking for damage/erosion after an overflow event.

UGD-2.3.8 Upper Stage (Dry Storage)

There is no upper stage in an UGD, therefore no maintenance is necessary.

UGD-2.3.9 Miscellaneous

There are a variety of inspection/maintenance issues that may not be attributed to a single feature within the UGD. This category on the inspection form is for maintenance items that are commonly found in the UGD, but may not be attributed to an individual feature.

a. Encroachment in Easement Area – Private lots/property can sometimes be located very close to the UGDs, even though they are required to be located in tracts with drainage easements. Property owners may place landscaping, trash, fencing, or other items within the easement area that may affect maintenance or the operation of the facility.

b. Graffiti/Vandalism – Damage to the UGD infrastructure can be caused by vandals. If criminal mischief is evident, the inspector should

Discuss in general who the maintenance personnel will be. No specific names or companies are necessary but describe if maintenance will be provided by a third-party or the metro district. If by third-party, will there be over-site by the metro district? Describe the over-site. What training/qual's (if any) should the third-party and metro district have? Also add a similar discussion in section 2.4 above for the inspection personnel. Discuss what their qualifications should be. Will they be trained by ADS for example to inspect the UGD system and the BaySaver MTD?

forward this information to the local Sheriff's Office. The UGD is mostly underground and un-visible. Therefore, vandalism would be an uncommon problem.

c. Public Hazards – Public hazards include items such as vertical drops of greater than 4-feet, containers of unknown/suspicious substances, exposed metal/jagged concrete on structures. **If any hazard is found within the facility area that poses an immediate threat to public safety, contact the local Sheriff at 911 immediately!**

d. Burrowing Animals/Pests – Prairie dogs and other burrowing rodents may cause damage to the UGD features and negatively affect the components within the UGD.

e. Other – Any miscellaneous inspection/maintenance items not contained on the form should be entered here.

UGD-2.4 Inspection Forms

State that inspections involving measurements of the sediment depth should be done at least 5 days after the last storm to allow all water to drain from the system.

UGD Inspection forms are located in Appendix D. Inspection forms shall be completed by the person(s) conducting the inspection activities. Each form shall be reviewed and submitted by the property owner or property manager to the El Paso County per the requirements of the Operations and Maintenance Manual. These inspection forms shall be kept indefinitely and made available to the El Paso County upon request.

UGD-3 MAINTAINING UNDERGROUND DETENTION BASINS (UGD)

UGD-3.1 Maintenance Personnel

Maintenance personnel must be qualified to properly maintain UGDs. Inadequately trained personnel can cause additional problems resulting in additional maintenance costs.


UGD-3.2 Equipment

It is imperative that the appropriate equipment and tools are taken to the field with the operations crew. The types of equipment/tools will vary depending on the task at hand. Below is a list of tools, equipment, and material(s) that may be necessary to perform maintenance on an UGD:

- 1.) All Surface Vehicle (ASVs)
- 2.) Dump Truck – Truck to haul sediment and/or debris
- 3.) Jet-Vac Machine

Be more specific for the equipment: What type of nozzle specs are recommended for the jet-vac (I know ADS has recommendations in their standard O&M Manual)? What size vac hoses (length and diameter) are needed? What size vac truck is preferred? Discuss which pieces of equipment are needed for maintenance of the MTD vs the ADS system and how the equipment is to be used during maintenance of each. Is the same vac truck to be used for both the ADS system and the MTD? Vac truck to complete maintenance at inlet separators (BaySavers), inlet boxes, and outlet boxes? Clarify that jet-vac'ing is just for isolator rows.

Discuss under what circumstances confined entry may be required. To inspect/maintain inlet/outlet works? If detention rows fill up with sediment over time and the sediment needs to be removed manually with buckets and shovels?

- 
- 4.) Confined Space Entry Equipment
 - 5.) Approved Stormwater Facility Operation and Maintenance Manual
 - 6.) Mirror on pole, camera, flashlight
 - 7.) Stadia Rod, Sediment Probe
 - 8.) Tape Measure
 - 9.) Maintenance Log
 - 10.) Shovel
 - 11.) Buckets to remove sediment and/or trash debris

Some of the items identified above may not be needed for every maintenance operation. However, this equipment should be available to the maintenance operations crews should the need arise.

UGD-3.3 Safety

Vertical drops may be encountered in areas located within and around the facility. Avoid walking on top of retaining walls or other structures that have a significant vertical drop. If a vertical drop is identified within the UGD that is greater than 48" in height, make the appropriate note/comment on the maintenance inspection form.

UGD-3.4 Maintenance Forms

The UGD Maintenance Form provides a record of each maintenance operation performed by maintenance contractors. The UGD Maintenance Form shall be filled out in the field after the completion of the maintenance operation. Each form shall be reviewed and submitted by the property owner or property manager to the El Paso County per the requirements of the Operations and Maintenance Manual. The UGD Maintenance form is located in Appendix E.

UGD-3.5 Maintenance Categories and Activities

A typical UGD Maintenance Program will consist of three broad categories of work. Within each category of work, a variety of maintenance activities can be performed on an UGD. A maintenance activity can be specific to each feature within the UGD, or general to the overall facility. This section of the SOP explains each of the categories and briefly describes the typical maintenance activities for an UGD.

A variety of maintenance activities are typical of UGDs. The maintenance activities range in magnitude from routine trash pickup to the reconstruction of

drainage infrastructure. Below is a description of each maintenance activity, the objectives, and frequency of actions:

The Isolator Row PLUS was designed to reduce the cost of periodic maintenance. By “isolating” sediments to just one row, costs are dramatically reduced by eliminating the need to clean out each row of the entire storage bed. If inspection indicates the potential need for maintenance, access is provided via a manhole(s) located on the end(s) of the row for cleanout. If entry into the manhole is required, please follow local and OSHA rules for a confined space entries. Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row PLUS while scouring and suspending sediments. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45” are best. StormTech recommends a maximum nozzle pressure of 2000 psi be utilized during cleaning. Most JetVac reels have 400 feet of hose allowing maintenance of an Isolator Row PLUS up to 50 chambers long. The JetVac process shall only be performed on StormTech Isolator Row PLUS that have ADS PLUS Fabric (as specified by StormTech) over their angular base stone.

ISOLATOR ROW PLUS STEP BY STEP MAINTENANCE PROCEDURES

STEP 1

Inspect Isolator Row PLUS for sediment.

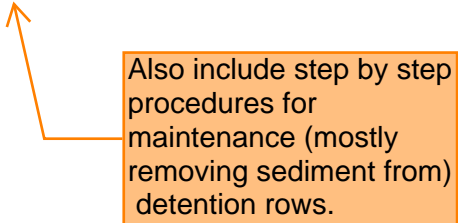
- A) Inspection ports (if present)
 - i. Remove lid from from box frame
 - ii. Remove cap from inspection riser
 - iii. Using a flashlight and stadia rod, measure depth of sediment and record results on maintenance log.
 - iv. If sediment is at or above 3 inch depth, proceed to Step 2. If not, proceed to Step 3.

B) All Isolator Row PLUS

- i. Remove cover from manhole at upstream end of Isolator Row PLUS
- ii. Using a flashlight, inspect down Isolator Row PLUS through outlet pipe
 - 1. Mirrors on poles or cameras may be used to avoid a confined space entry
 - 2. Follow OSHA regulations for confined space entry if entering manhole
- iii. If sediment is at or above the lower row of sidewall holes (approximately 3 inches), proceed to Step 2. If not, proceed to Step 3.

STEP 2

Clean out Isolator Row PLUS using the JetVac process.



Also include step by step procedures for maintenance (mostly removing sediment from) detention rows.

- A) A fixed floor cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable
- B) Apply multiple passes of JetVac until backflush water is clean
- C) Vacuum manhole sump as required

STEP 3

Replace all caps, lids and covers, record observations and actions.

STEP 4

Inspect & clean catch basins and manholes upstream of the StormTech system.

UGD-3.6 Routine Maintenance Activities

The majority of this work consists of regularly scheduled mowing and trash and debris pickups for stormwater management facilities during the growing season **upstream** of the UDG. This includes items such as the removal of debris/material that may be clogging the upstream stormwater inlets. These activities normally will be performed numerous times during the year. These items can be completed without any prior correspondence with the El Paso County; however, completed inspection and maintenance forms shall be submitted to the EPC for each inspection and maintenance activity.

The Maintenance Activities are summarized below, and further described in the following sections.

**TABLE – UGD-2
Summary of Routine Maintenance Activities**

MAINTENANCE ACTIVITY	MINIMUM FREQUENCY	LOOK FOR:	MAINTENANCE ACTION
Mowing	Twice annually	Excessive grass height/aesthetics	Mow grass to a height of 4” to 6”
Trash/Debris Removal	Twice annually	Trash & debris in UGD	Remove and dispose of trash and debris
Outlet Works Cleaning	As needed - after significant rain events – twice annually min.	Clogged outlet structure; ponding water	Remove and dispose of debris/trash/sediment to allow outlet to function properly
Weed control	Minimum twice annually	Noxious weeds; Unwanted vegetation	Treat w/ herbicide or hand pull; Consult the local weed specialist
Mosquito Treatment	As needed	Standing water/mosquito habitat	Treat w/ EPA approved chemicals

Algae Treatment	As needed	Standing water/ Algal growth/green color	Treat w/ EPA approved chemicals
-----------------	-----------	--	------------------------------------

UGD-3.6.1 Mowing

Mowing is necessary to limit **upstream** unwanted vegetation and to remove the overall pollutants allowed to enter the UGD. Native vegetation should be mowed to a height of 4-to-6 inches tall. Grass clippings should be collected and disposed of properly.

Frequency – Routine - Minimum of twice annually or depending on aesthetics.

UGD-3.6.2 Trash/Debris Removal

Trash and debris must be removed from the MTDs and entire UGD area to minimize inlet/outlet clogging and to improve aesthetics. This activity must be performed prior to mowing operations.

Frequency – Routine – Prior to mowing operations and minimum of twice annually.

UGD-3.6.3 Outlet Works Cleaning

Debris and other materials can clog the outlet work's well screen, orifice plate(s) and trash rack. This activity must be performed anytime other maintenance activities are conducted to ensure proper operation.

Frequency - Routine – After significant rainfall event or concurrently with other maintenance activities.

UGD-3.6.4 Weed Control

Upstream Noxious weeds and other unwanted vegetation must be treated as needed prior to reaching the UGD. This activity can be performed either through mechanical means (mowing/pulling) or with herbicide. Consultation with the local Weed Inspector is highly recommended prior to the use of herbicide.

Frequency – Routine – As needed based on inspections.

UGD-3.6.5 Mosquito/Algae Treatment

Treatment of permanent pools **upstream** to the UGD is necessary to control mosquitoes and undesirable aquatic vegetation that can create nuisances. Only EPA approved chemicals/materials can be used in areas that are warranted.

Frequency – As needed.

UGD- 3.7 Minor Maintenance Activities

This work consists of a variety of isolated or small-scale maintenance or operational problems. Most of this work can be completed by a small crew, tools, and small equipment. These items require prior correspondence with EPC and require completed inspection and maintenance forms to be submitted to EPC for each inspection and maintenance activity.

Note that ADS told us that they can do sediment loading calcs to determine O&M frequency. This data would be useful to include in here and/or in the Drainage Letter for reference.

**Table – UGD-3
Summary of Minor Maintenance Activities**

MAINTENANCE ACTIVITY	MINIMUM FREQUENCY	LOOK FOR:	MAINTENANCE ACTION
Sediment Removal	As needed; typically every 1 –2 years	Sediment build-up; decrease in pond volume	Remove and dispose of sediment
Erosion Repair	As needed, based upon inspection	Rills/gullies forming on side slopes, trickle channel, other areas	Repair eroded areas Revegetate; address source of erosion
Vegetation Removal/Tree Thinning	As needed, based upon inspection	Large trees/wood vegetation in lower chamber of pond	Remove vegetation; restore grade and surface
Drain Cleaning/Jet Vac	As needed, based upon inspection	Sediment build-up /non draining system	Clean drains; Jet Vac if needed

UGD-3.7.1 Sediment Removal

Sediment removal is necessary to maintain the original design volume of the UGD and to ensure proper function of the infrastructure.

Regular sediment removal (minor) from the MTD(s), and inflow(s), can significantly reduce the frequency of major sediment removal activities (dredging) in the isolator row. The minor sediment removal activities **can typically be addressed with shovels and smaller equipment.** Major

Sediment is removed via turbidity, isn't it? The idea is to use the jet to stir up and suspend the sediment and then vac it out.

clarify what this entails for UGD systems.

sediment removal activities will require larger and more specialized equipment.

Stormwater sediments removed from UGDs do not meet the criteria of "hazardous waste". However, these sediments are contaminated with a wide array of organic and inorganic pollutants and handling must be done with care. Sediments from isolator row must be carefully removed to minimize turbidity, further sedimentation, or other adverse water quality impacts. Sediments should be transported by motor vehicle only after they are dewatered. All sediments must be taken to a landfill for proper disposal. Prompt and thorough cleanup is important should a spill occur during transportation.

Frequency – Nonroutine – As necessary based upon inspections. Sediment removal in the forebay and trickle channel may be necessary as frequently as every 1-2 years.

UGD-3.7.2 Erosion Repair

The repair of eroded areas upstream of the UGD is necessary to minimize eroded material from reaching the UGD, minimize sediment transport, and to reduce potential impacts to other features. Erosion can vary in magnitude from minor repairs or major repairs on developments upstream of the UGD. The repair of eroded areas may require the use of excavators, earthmoving equipment, riprap, concrete, erosion control blankets, and turf reinforcement mats. Major erosion repair to the pond embankments, spillways, and adjacent to structures will require consultation with EPC engineering staff.

Frequency – Nonroutine – As necessary based upon inspections.

UGD-3.7.3 Vegetation Removal/Tree Thinning

clarify as yes or no.

Dense stands of woody vegetation (willows, shrubs, etc) or trees can create maintenance problems for the infrastructure within an UGD. Tree roots can damage structures and invade pipes/channels thereby blocking flows. Also, trees growing on or around the UGD will **most likely** have to be removed. A small tree is easier to remove than a large tree, therefore, regular removal/thinning is imperative. All trees and woody vegetation that is growing on top of the UGD or near structures (inflows, outlet works, etc) should be removed. Any trees or woody vegetation within 30 feet of the UGD should be monitored for root growth.

Frequency – Nonroutine – As necessary based upon inspections.

UGD-3.7.4 Clearing Drains/Jet-Vac

An UGD contains many structures, openings, vaults and pipes that can be frequently clogged with debris. These blockages can result in a decrease of hydraulic capacity. Many times the blockage to this infrastructure can be difficult to access and/or clean. Specialized equipment (jet-vac machines) may be necessary to clear debris from these difficult areas.

Frequency – Nonroutine – As necessary based upon inspections.

Clarify what this entails.

UGD-3.8 Major Maintenance Activities

This work consists of larger maintenance/operational problems and failures within the stormwater management facilities. All of this work requires consultation with EPC to ensure the proper maintenance is performed. This work requires that the engineering staff review the original design and construction drawings to assess the situation and assign the necessary maintenance. **A public improvements permit shall be required for all major maintenance activities.** This work may also require more specialized maintenance equipment, design/details, surveying, or assistance through private contractors and consultants.

**Table – UGD-4
Summary of Major Maintenance Activities**

MAINTENANCE ACTIVITY	MINIMUM FREQUENCY	LOOK FOR:	MAINTENANCE ACTION
Major Sediment Removal	As needed – based upon scheduled inspections	Large quantities of sediment; reduced pond capacity	Remove and dispose of sediment. Repair vegetation as needed
Major Erosion Repair	As needed – based upon scheduled inspections	Severe erosion including gullies, excessive soil displacement, areas of settlement, holes	Repair erosion – find cause of problem and address to avoid future erosion
Structural Repair	As needed – based upon scheduled inspections	Deterioration and/or damage to structural components – broken concrete, damaged pipes, outlet works	Structural repair to restore the structure to its original design

State/discuss the following:

- Similar to the procedure for isolator rows if >3" of sediment (per ADS O&M Manual) is measured in the inspection port of the detention row, sediment will need to be removed from all detention rows. Include means and methods (as stated on pg 35 above) in maintenance section below since the vac truck method used with isolator rows won't work for detention rows.

→ UGD-3.8.1 Major Sediment Removal

Major sediment removal consists of removal of large quantities of sediment or removal of sediment from vegetated areas. Care shall be given when removing large quantities of sediment and sediment deposited in vegetated areas. Large quantities of sediment need to be carefully removed, transported and disposed of. Vegetated areas need special care to ensure design volumes and grades are preserved.

Frequency – Nonroutine – Repair as needed based upon inspections.

UGD-3.8.2 Major Erosion Repair

Major erosion repair consists of filling and revegetating areas of severe erosion. Determining the cause of the erosion as well as correcting the condition that caused the erosion should also be part of the erosion repair. Care should be given to ensure design grades and volumes are preserved.

Frequency – Nonroutine – Repair as needed based upon inspections.

UGD-3.8.3 Structural Repair

An UGD includes a variety of structures that can deteriorate or be damaged during the course of routine maintenance. These structures are constructed of steel and concrete that can degrade or be damaged and may need to be repaired or re-constructed from time to time. These structures include items like outlet works, trickle channels, forebays, inflows and other features. In-house operations staff can perform some of the minor structural repairs. Major repairs to structures may require input from a structural engineer and specialized contractors. Consultation with EPC Engineering Staff should take place prior to all structural repairs.

remove

Frequency – Nonroutine – Repair as needed based upon inspections.

Also attached ADS's standard O&M and/or IM Manual(s) for reference.

APPENDIX D

This is an inspection form for an above ground pond, just with the title changed. The rest of the report also needs to be changed to reflect the different components of the UGD system.

UNDERGROUND DETENTION (UGD) INSPECTION FORM

Date: _____

Subdivision/Business Name: Crossroads Mixed Use Filing No. 1 Inspector: _____

Subdivision/Business Address: Northwest of HWY 24 & Newt Drive Intersection

Weather: _____

Date of Last Rainfall: _____ Amount: _____ Inches

Property Classification: Residential Multi Family Commercial Other: _____
(Circle One)

Reason for Inspection: Routine Complaint After Significant Rainfall Event
(Circle One)

INSPECTION SCORING - For each facility inspection item, insert one of the following scores:
0 = No deficiencies identified 2 = Routine maintenance required
1 = Monitor (potential for future problem) 3 = Immediate repair necessary
N/A = Not applicable

FEATURES

1.) Inflow Points

- Riprap Displaced
- Erosion Present/Outfall Undercut
- Sediment Accumulation
- Structural Damage (pipe, end-section, etc.)
- Woody Growth/Weeds Present

2.) Forebay

- Sediment/Debris Accumulation
- Concrete Cracking/Failing
- Drain Pipe/Wier Clogged (not draining)
- Wier/Drain Pipe Damage

3.) Trickle Channel (Low-flow)

- Sediment/Debris Accumulation
- Concrete/Riprap Damage
- Woody Growth/Weeds Present
- Erosion Outside Channel

4.) Bottom Stage (Micro-Pool)

- Sediment/Debris Accumulation
- Woody Growth/Weeds Present
- Bank Erosion
- Mosquitoes/Algae Treatment
- Petroleum/Chemical Sheen

5.) Outlet Works

- Trash Rack/Well Screen Clogged
- Structural Damage (concrete, steel, subgrade)
- Orifice Plate(s) Missing/Not Secure
- Manhole Access (cover, steps, etc.)
- Woody Growth/Weeds Present

6.) Emergency Spillway

- Riprap Displaced
- Erosion Present
- Woody Growth/Weeds Present
- Obstruction/Debris

7.) Upper Stage (Dry Storage)

- Vegetation Sparse
- Woody Growth/Undesirable Vegetation
- Standing Water/Boggy Areas
- Sediment Accumulation
- Erosion (banks and bottom)
- Trash/Debris
- Maintenance Access

8.) Miscellaneous

- Encroachment in Easement Area
- Graffiti/Vandalism
- Public Hazards
- Burrowing Animals/Pests
- Other

Inspection Summary / Additional Comments: _____

OVERALL FACILITY RATING (Circle One)

- 0 = No Deficiencies Identified 2 = Routine Maintenance Required
- 1 = Monitor (potential for future problem exists) 3 = Immediate Repair Necessary

This inspection form shall be kept indefinitely and made available to the El Paso County upon request.

APPENDIX E

This is a maintenance form for an above ground pond, just with the title changed. The rest of the report also needs to be changed to reflect the different components of the UGD system.

UNDERGROUND DETENTION (UGD) MAINTENANCE FORM

Subdivision/Business Name: Crossroads Mixed Use Filing No. 1
Subdivision/Business Address: Northwest of HWY 24 & Newt Drive
intersection

Completion Date: _____
Contact Name: _____

Maintenance Category: Routine Restoration Rehabilitation
(Circle All That Apply)

MAINTENANCE ACTIVITIES PERFORMED

ROUTINE WORK

- ___ MOWING
- ___ TRASH/DEBRIS REMOVAL
- ___ OUTLET WORKS CLEANING (TRASH RACK/WELL SCREEN)
- ___ WEED CONTROL (HERBICIDE APPLICATION)
- ___ MOSQUITO TREATMENT
- ___ ALGAE TREATMENT

RESTORATION WORK

- ___ SEDIMENT REMOVAL
 - ___ FOREBAY
 - ___ TRICKLE CHANNEL
 - ___ INFLOW
- ___ EROSION REPAIR
 - ___ INFLOW POINT
 - ___ TRICKLE CHANNEL
- ___ VEGETATION REMOVAL/TREE THINNING
 - ___ INFLOW(S)
 - ___ TRICKLE CHANNEL
 - ___ UPPER STAGE
 - ___ BOTTOM STAGE
- ___ REVEGETATION
- ___ JET-VAC/CLEARING DRAINS
 - ___ FOREBAY
 - ___ OUTLET WORKS
 - ___ INFLOWS

REHABILITATION WORK

- ___ SEDIMENT REMOVAL (DREDGING)
 - ___ BOTTOM STAGE
 - ___ UPPER STAGE
- ___ EROSION REPAIR
 - ___ OUTLET WORKS
 - ___ UPPER STAGE
 - ___ BOTTOM STAGE
 - ___ SPILLWAY
- ___ STRUCTURAL REPAIR
 - ___ INFLOW
 - ___ OUTLET WORKS
 - ___ FOREBAY
 - ___ TRICKLE CHANNEL
- OTHER _____
- _____
- _____

ESTIMATED TOTAL MANHOURS: _____

EQUIPMENT/MATERIAL USED: _____

COMMENTS/ADDITIONAL INFO: _____

APPENDIX F

Provide a list and/or Table of Contents outlining items to be included in this annual report. Some of these items to include are shown in the draft Pilot Program document.

Annual Inspection and Maintenance Reporting Form
for
Stormwater Facilities

(This form to be submitted to EPC prior to May 31 of each year)

Date: _____

**To: El Paso County Department of Public Works
Attn: Stormwater Facility Operations and Maintenance Program
2880 International Circle, Suite 7437 South Fairplay Street
Colorado Springs, CO 80922**

Re: Certification of Inspection and Maintenance; Submittal of forms

Property/Subdivision Name: __ Crossroads Mixed Use Filing No. 1 _____

Property Address: __ Northwest of HWY 24 & Newt Drive intersection _____

Contact Name: _____ Danny Mientka _____

I verify that the required stormwater facility inspections and required maintenance have been completed in accordance with the Stormwater Facilities Maintenance Agreement and the Operations and Maintenance Manual associated with the above referenced property.

The required Stormwater Facility Inspection and Maintenance forms are hereby provided.

Name of Party Responsible for Inspection
& Maintenance

Property Owner

Authorized Signature

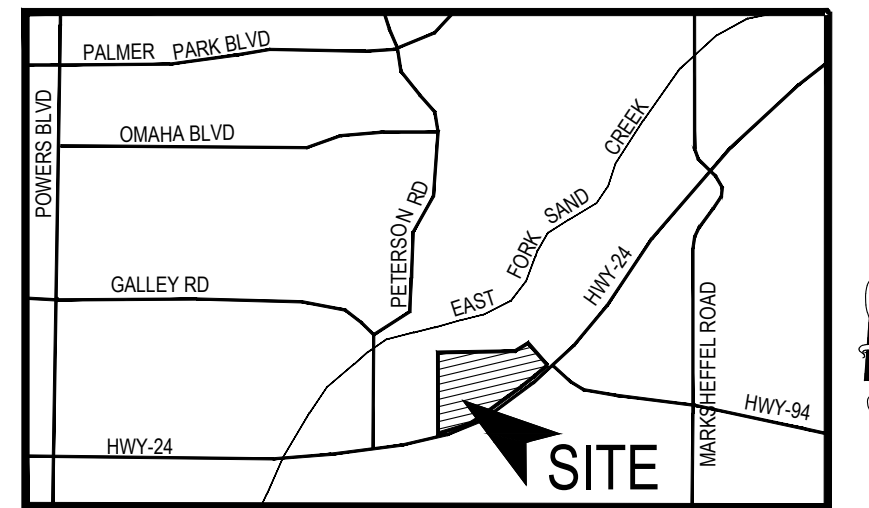
Signature

APPENDIX G

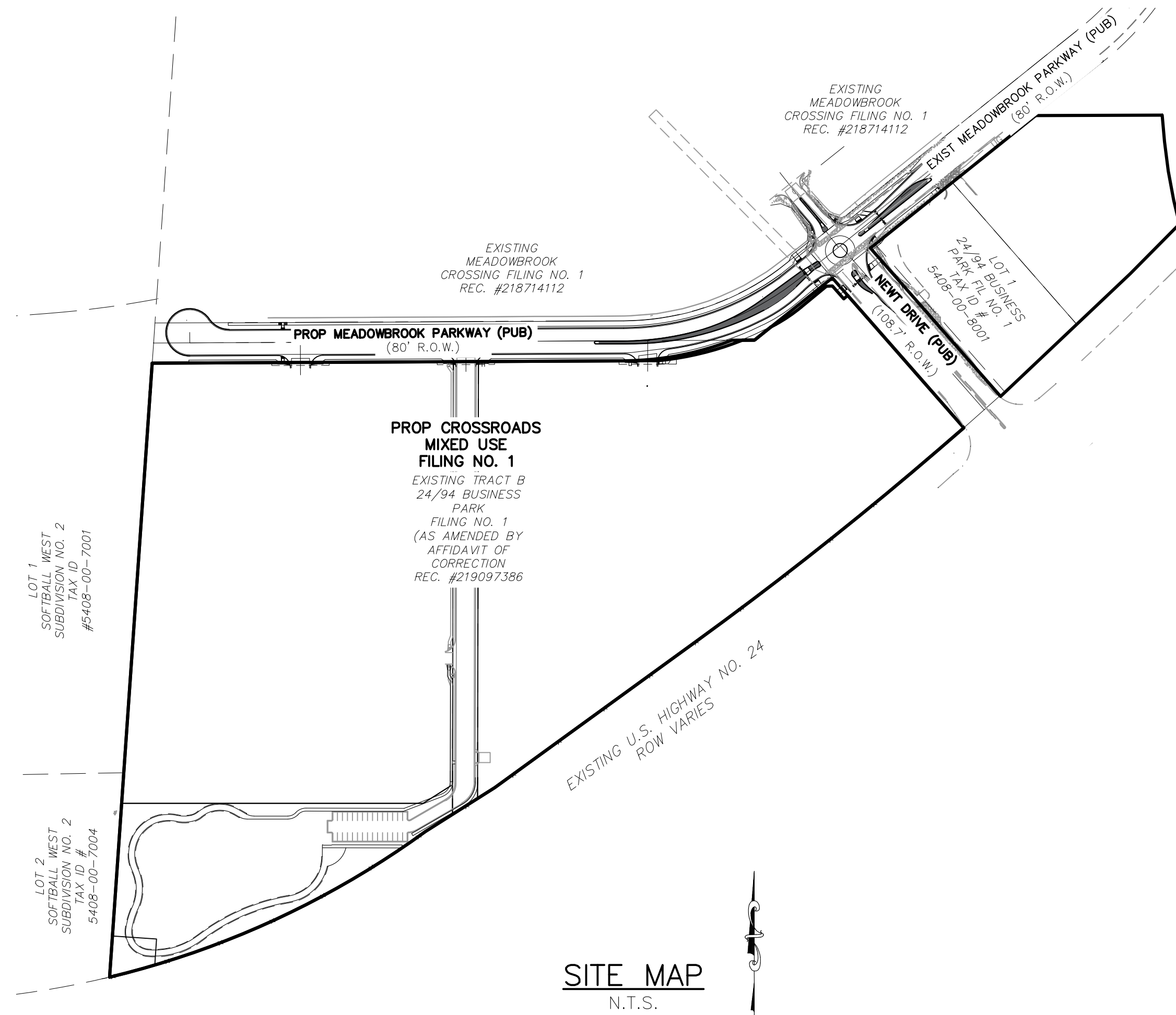
CROSSROADS MIXED USE FILING NO. 1

COUNTY OF EL PASO, STATE OF COLORADO STORM SEWER PLANS

UNDERGROUND DETENTION
DECEMBER 2022



VICINITY MAP
N.T.S.



SITE MAP
N.T.S.

GENERAL CONSTRUCTION NOTES:

- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES ALONG THE ROUTE OF THE WORK. THE OMISSION FROM OR THE INCLUSION OF UTILITY LOCATIONS ON THE PLANS IS NOT TO BE CONSIDERED AS THE NONEXISTENCE OF OR A DEFINITE LOCATION OF EXISTING UNDERGROUND UTILITIES.
- THE CONTRACTOR WILL TAKE THE NECESSARY PRECAUTIONS TO PROTECT EXISTING UTILITIES FROM DAMAGE DUE TO THIS OPERATION. ANY DAMAGE TO THE UTILITIES WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE, AND ANY SERVICE DISRUPTION WILL BE SETTLED BY THE CONTRACTOR.
- ADDITIONAL EROSION CONTROL STRUCTURES MAY BE REQUIRED AT THE TIME OF CONSTRUCTION.
- ALL BACKFILL, SUB-BASE, AND/OR BASE COURSE (CLASS 6) MATERIAL SHALL BE COMPACTED PER THE SOILS ENGINEER'S RECOMMENDATIONS, AND APPROVED BY EL PASO COUNTY PCD.
- ALL STATIONING IS CENTERLINE OF IMPROVEMENTS UNLESS OTHERWISE INDICATED. ALL ELEVATIONS ARE FLOW LINE UNLESS OTHERWISE INDICATED AS TOP BACK OF CURB (TBC), ASPHALT (ASP), OR TOP OF INLET OR BOX (TOB).
- ALL DISTURBED PAVEMENT EDGES SHALL BE CUT TO NEAT LINES. REPAIR SHALL CONFORM TO EPC ECM APPENDIX K - 1.2C.
- ALL INTERSECTION ACCESSSES TO BE CONSTRUCTED WITH A 25 FOOT SIGHT VISIBILITY TRIANGLES IS REQUIRED AND THERE SHALL BE NO OBSTRUCTIONS GREATER THAN 18" VERTICAL IN THIS AREA.
- ALL CULVERTS AND STORM DRAIN PIPES SHALL BE SMOOTH INTERIOR CORRUGATED POLYETHYLENE PIPE (HDPE), REINFORCED CONCRETE PIPE (RCP). ALL CULVERTS SHALL BE PLACED COMPLETE WITH FLARED END SECTIONS. ADEQUACY OF MATERIAL THICKNESS FOR ANY CSP INSTALLED SHALL BE VERIFIED BY OWNER'S GEOTECHNICAL ENGINEER TO SUPPORT MINIMUM 50 YEAR DESIGN LIFE. CULVERTS MUST CONFORM TO EPC ECM SECTION 3.32 - CULVERTS.
- ASPHALT THICKNESS AND BASE COURSE THICKNESS (COMPACTED) FOR ROADS SHALL BE PER DESIGN REPORT BY OWNER'S GEOTECHNICAL ENGINEER. OWNER'S GEOTECHNICAL ENGINEER TO BE ON SITE AT THE TIME OF ROAD CONSTRUCTION TO EVALUATE SOIL CONDITIONS AND DETERMINE IF ADDITIONAL MEASURES ARE NECESSARY TO ASSURE STABILITY OF THE NEW ROADS. PAVEMENT DESIGN SHALL BE APPROVED BY EL PASO COUNTY PCD PRIOR TO CONSTRUCTION.

STANDARD NOTES FOR EL PASO COUNTY CONSTRUCTION PLANS

- ALL DRAINAGE AND ROADWAY CONSTRUCTION SHALL MEET THE STANDARDS AND SPECIFICATIONS OF THE CITY OF COLORADO SPRINGS/EL PASO COUNTY DRAINAGE CRITERIA MANUAL, VOLUMES 1 AND 2, AND THE EL PASO COUNTY ENGINEERING CRITERIA MANUAL.
- CONTRACTOR SHALL BE RESPONSIBLE FOR THE NOTIFICATION AND FIELD NOTIFICATION OF ALL EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, BEFORE BEGINNING CONSTRUCTION. LOCATION OF EXISTING UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CALL 811 TO CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO (UNCC).
- CONTRACTOR SHALL KEEP A COPY OF THESE APPROVED PLANS, THE GRADING AND EROSION CONTROL PLAN, THE STORMWATER MANAGEMENT PLAN (SWMP), THE SOILS AND GEOTECHNICAL REPORT, AND THE APPROPRIATE DESIGN AND CONSTRUCTION STANDARDS AND SPECIFICATIONS AT THE JOB SITE AT ALL TIMES, INCLUDING THE FOLLOWING:
 - EL PASO COUNTY ENGINEERING CRITERIA MANUAL (ECM)
 - CITY OF COLORADO SPRINGS/EL PASO COUNTY DRAINAGE CRITERIA MANUAL, VOLUMES 1 AND 2
 - COLORADO DEPARTMENT OF TRANSPORTATION (CDOT) STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION
 - CDOT M & S STANDARDS.
- NOTWITHSTANDING ANYTHING DEPICTED IN THESE PLANS IN WORDS OR GRAPHIC REPRESENTATION, ALL DESIGN AND CONSTRUCTION RELATED TO ROADS, STORM DRAINAGE AND EROSION CONTROL SHALL CONFORM TO THE STANDARDS AND REQUIREMENTS OF THE MOST RECENT VERSION OF THE RELEVANT ADOPTED EL PASO COUNTY STANDARDS, INCLUDING THE LAND DEVELOPMENT CODE, THE ENGINEERING CRITERIA MANUAL, THE DRAINAGE CRITERIA MANUAL, AND THE DRAINAGE CRITERIA MANUAL VOLUME 2. ANY DEVIATIONS FROM REGULATIONS AND STANDARDS MUST BE REQUESTED, AND APPROVED, IN WRITING. ANY MODIFICATIONS NECESSARY TO MEET CRITERIA AFTER-THE-FACT WILL BE ENTIRELY THE DEVELOPER'S RESPONSIBILITY TO RECTIFY.
- IT IS THE DESIGN ENGINEER'S RESPONSIBILITY TO ACCURATELY SHOW EXISTING CONDITIONS, BOTH ON-SITE AND OFF-SITE, ON THE CONSTRUCTION PLANS. ANY MODIFICATIONS NECESSARY DUE TO CONFLICTS, OMISSIONS, OR CHANGED CONDITIONS WILL BE ENTIRELY THE DEVELOPER'S RESPONSIBILITY TO RECTIFY.
- CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT - INSPECTIONS, PRIOR TO STARTING CONSTRUCTION.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO UNDERSTAND THE REQUIREMENTS OF ALL JURISDICTIONAL AGENCIES AND TO OBTAIN ALL REQUIRED PERMITS, INCLUDING BUT NOT LIMITED TO EL PASO COUNTY EROSION AND STORMWATER QUALITY CONTROL PERMIT (ESQCP), REGIONAL BUILDING FLOODPLAIN DEVELOPMENT PERMIT, U.S. ARMY CORPS OF ENGINEERS-ISSUED 401 AND/OR 404 PERMITS, AND COUNTY AND STATE FUGITIVE DUST PERMITS.
- CONTRACTOR SHALL NOT DEVIATE FROM THE PLANS WITHOUT FIRST OBTAINING WRITTEN APPROVAL FROM THE DESIGN ENGINEER AND PCD. CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER IMMEDIATELY UPON DISCOVERY OF ANY ERRORS OR INCONSISTENCIES.
- ALL STORM DRAIN PIPE SHALL BE CLASS III RCP UNLESS OTHERWISE NOTED AND APPROVED BY PCD.
- CONTRACTOR SHALL COORDINATE GEOTECHNICAL TESTING PER ECM STANDARDS. PAVEMENT DESIGN SHALL BE APPROVED BY EL PASO COUNTY PCD PRIOR TO PLACEMENT OF CURB AND GUTTER AND PAVEMENT.
- ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE AT APPROVED CONSTRUCTION ACCESS POINTS.
- SIGHT VISIBILITY TRIANGLES AS IDENTIFIED IN THE PLANS SHALL BE PROVIDED AT ALL INTERSECTIONS. OBSTRUCTIONS GREATER THAN 18 INCHES ABOVE FLOWLINE ARE NOT ALLOWED WITHIN SIGHT TRIANGLES.
- SIGNING AND STRIPING SHALL COMPLY WITH EL PASO COUNTY DEPARTMENT OF PUBLIC WORKS AND MUTCD CRITERIA.
- CONTRACTOR SHALL OBTAIN ANY PERMITS REQUIRED BY EL PASO COUNTY DEPARTMENT OF PUBLIC WORKS, INCLUDING WORK WITHIN THE RIGHT-OF-WAY AND SPECIAL TRANSPORT PERMITS.
- THE LIMITS OF CONSTRUCTION SHALL REMAIN WITHIN THE PROPERTY LINE UNLESS NOTED. THE OWNER/DEVELOPER SHALL OBTAIN WRITTEN PERMISSION AND EASEMENTS, WHERE REQUIRED, FROM ADJOINING PROPERTY OWNER(S) PRIOR TO ANY OFF-SITE DISTURBANCE, GRADING, OR CONSTRUCTION.

BASIS OF BEARINGS

A PORTION OF THE EASTERLY LINE OF "SOFTBALL WEST SUBDIVISION NO. 2" RECORDED IN PLAT BOOK T-3 AT PAGE 112 OF THE RECORDS OF EL PASO COUNTY, COLORADO, BEING MONUMENTED ON THE SOUTH WITH A NO. 4 REBAR, FROM WHICH A NO. 5 REBAR WITH BLUE PLASTIC CAP STAMPED "RAMPART PLS 32820" BEARS N03°58'20"E A DISTANCE OF 1,170.16 FEET.

BENCHMARK

- NATIONAL GEODETIC VERTICAL DATUM OF 1929, MONUMENT R76 SET IN TOP OF CONCRETE MONUMENT ELEVATION = 6286.32'
- NATIONAL GEODETIC VERTICAL DATUM OF 1929, FOUND #5 REBAR AND ORANGE CAP PLS 32820 ELEVATION = 6325.50'

SHEET INDEX

- | | |
|--------------|----------------------------------|
| SHEET 1 | TITLE SHEET |
| SHEET 2 | STORM SEWER PLANS & PROFILES |
| SHEET 3 | STORM SEWER PLANS & PROFILES |
| SHEET 4 | STORM SEWER PLANS & PROFILES |
| SHEET 5 | STORM DETAILS |
| SHEET 6 | STORM DETAILS |
| ADS MC-7200 | STORMTECH CHAMBER SPECIFICATIONS |
| ADS BAYSAVER | BAYSEPARATOR SPECIFICATIONS |

AGENCIES:

OWNER/DEVELOPER: COLORADO SPRINGS EQUITIES LLC
90 S. CASCADE AVE., SUITE 1500
COLORADO SPRINGS, CO 80903
DANNY MIENKA (719) 448-4034

CIVIL ENGINEER: M & S CIVIL CONSULTANTS, INC.
212 N. WAHSATCH, SUITE 305
COLORADO SPRINGS, CO 80903
VIRGIL A. SANCHEZ P.E. (719) 955-5485

COUNTY ENGINEERING: EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT
2880 INTERNATIONAL CIRCLE, SUITE 110
COLORADO SPRINGS, CO 80910
GILBERT LAFORCE, P.E. (719) 520-6300

TRAFFIC ENGINEERING: EL PASO COUNTY DEPARTMENT OF PUBLIC WORKS
3275 AKERS DRIVE
COLORADO SPRINGS, CO 80922
JENNIFER IRVINE, P.E. (719) 520-6460

WATER RESOURCES: CHEROKEE METROPOLITAN DISTRICT
6250 PALMER PARK BOULEVARD
COLORADO SPRINGS, CO 80915-1721
JEFF MUNGER (719) 597-5080

FIRE DISTRICT: CIMARRON HILLS FIRE DEPARTMENT
1835 TUSKEGEE PLACE
COLORADO SPRINGS, CO 80915
(719) 591-0960

GAS DEPARTMENT: COLORADO SPRINGS UTILITIES
7710 DURANT DR.
COLORADO SPRINGS, CO 80947
TIM WENDT (719) 668-3556

ELECTRIC DEPARTMENT: COLORADO SPRINGS UTILITIES
7710 DURANT DR.
COLORADO SPRINGS, CO 80947
TIM WENDT (719) 668-3556

COMMUNICATIONS: QWEST COMMUNICATIONS
(U.N.C.C. LOCATORS) (800) 922-1987
AT&T (LOCATORS) (719) 635-3674

DESIGN ENGINEER'S STATEMENT

THESE DETAILED PLANS AND SPECIFICATIONS WERE PREPARED UNDER MY DIRECTION AND SUPERVISION. SAID PLANS AND SPECIFICATIONS HAVE BEEN PREPARED ACCORDING TO THE CRITERIA ESTABLISHED BY THE COUNTY FOR DETAILED ROADWAY, DRAINAGE, GRADING AND EROSION CONTROL PLANS AND SPECIFICATIONS, AND SAID PLANS AND SPECIFICATIONS ARE IN CONFORMITY WITH APPLICABLE MASTER DRAINAGE PLANS AND MASTER TRANSPORTATION PLANS. SAID PLANS AND SPECIFICATIONS MEET THE PURPOSES FOR WHICH THE PARTICULAR ROADWAY AND DRAINAGE FACILITIES ARE DESIGNED AND ARE CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. I ACCEPT RESPONSIBILITY FOR ANY LIABILITY CAUSED BY ANY NEGLIGENT ACTS, ERRORS OR OMISSIONS ON MY PART IN PREPARATION OF THESE DETAILED PLANS AND SPECIFICATIONS.

VIRGIL A. SANCHEZ, COLORADO P.E. #37160
FOR AND ON BEHALF OF M & S CIVIL CONSULTANTS, INC.

OWNER/DEVELOPER'S STATEMENT:

I, THE OWNER/DEVELOPER HAVE READ AND WILL COMPLY WITH THE REQUIREMENTS IN THESE DETAILED PLANS AND SPECIFICATIONS.

DANNY MIENKA (MANAGER) _____ DATE
COLORADO SPRINGS EQUITIES LLC

EL PASO COUNTY:

COUNTY PLAN REVIEW IS PROVIDED ONLY FOR GENERAL CONFORMANCE WITH COUNTY DESIGN CRITERIA. THE COUNTY IS NOT RESPONSIBLE FOR THE ACCURACY AND ADEQUACY OF THE DESIGN, DIMENSIONS, AND/OR ELEVATIONS WHICH SHALL BE CONFIRMED AT THE JOB SITE. THE COUNTY THROUGH THE APPROVAL OF THIS DOCUMENT ASSUMES NO RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THIS DOCUMENT.

FILED IN ACCORDANCE WITH THE REQUIREMENTS OF THE EL PASO COUNTY LAND DEVELOPMENT CODE, DRAINAGE CRITERIA MANUAL, VOLUMES 1 AND 2, AND ENGINEERING CRITERIA MANUAL AS AMENDED.

IN ACCORDANCE WITH ECM SECTION 1.12, THESE CONSTRUCTION DOCUMENTS WILL BE VALID FOR CONSTRUCTION FOR A PERIOD OF 2 YEARS FROM THE DATE SIGNED BY THE EL PASO COUNTY ENGINEER. IF CONSTRUCTION HAS NOT STARTED WITHIN THOSE 2 YEARS, THE PLANS WILL NEED TO BE RESUBMITTED FOR APPROVAL, INCLUDING PAYMENT OF REVIEW FEES AT THE PLANNING AND COMMUNITY DEVELOPMENT DIRECTORS DISCRETION.

JOSHUA PALMER, P.E. _____ DATE
COUNTY ENGINEER / ECM ADMINISTRATOR
EL PASO COUNTY FILE NO. SF 21-029



CROSS ROAD MIXED USE FILING NO.1		TITLE SHEET	
PROJECT NO. 18-003		SCALE: HORIZONTAL: N/A	DATE: 12-23-22
DESIGNED BY: GT		VERTICAL: N/A	SHEET 1 OF 6
DRAWN BY: TAU		VERTICAL: N/A	
CHECKED BY: VAS		S101	

212 N. WAHSATCH AVE., STE 305
COLORADO SPRINGS, CO 80903
PHONE: 719.955.5485

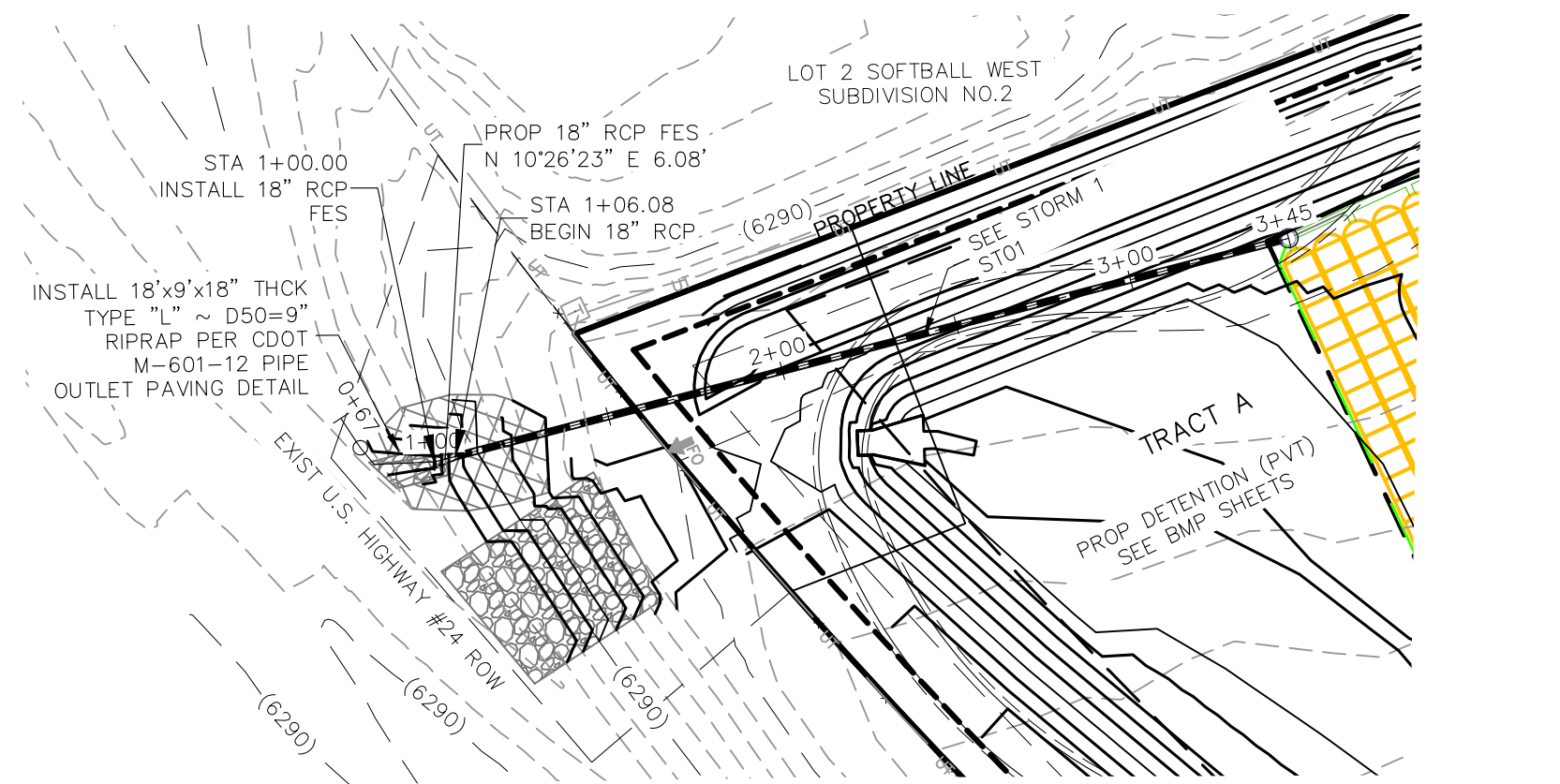
FOR AND ON BEHALF OF M&S CIVIL CONSULTANTS, INC.

REVISIONS:

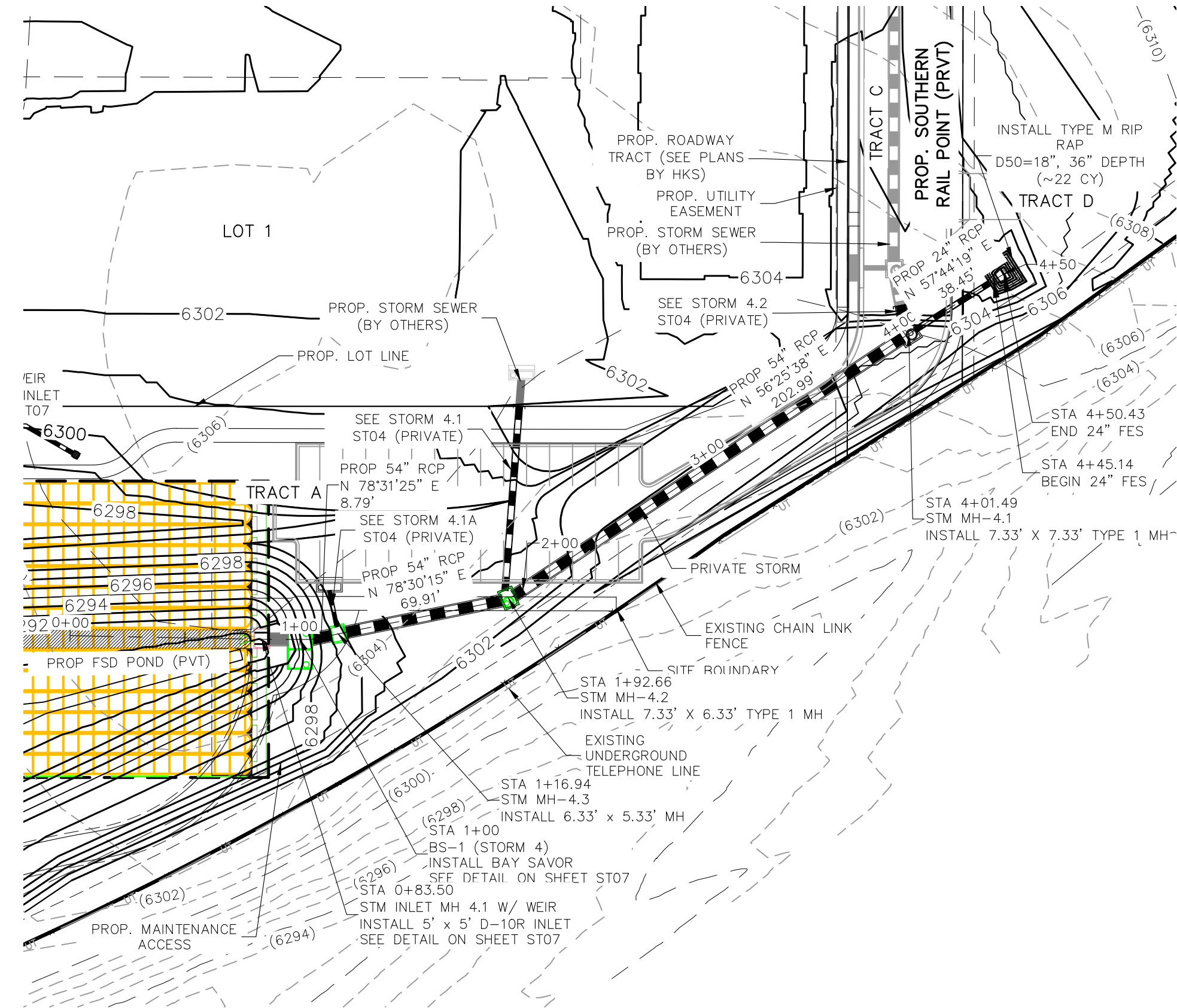
NO.	DATE	BY	DESCRIPTION

THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE, OR LIABLE FOR, UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARER OF THESE PLANS.

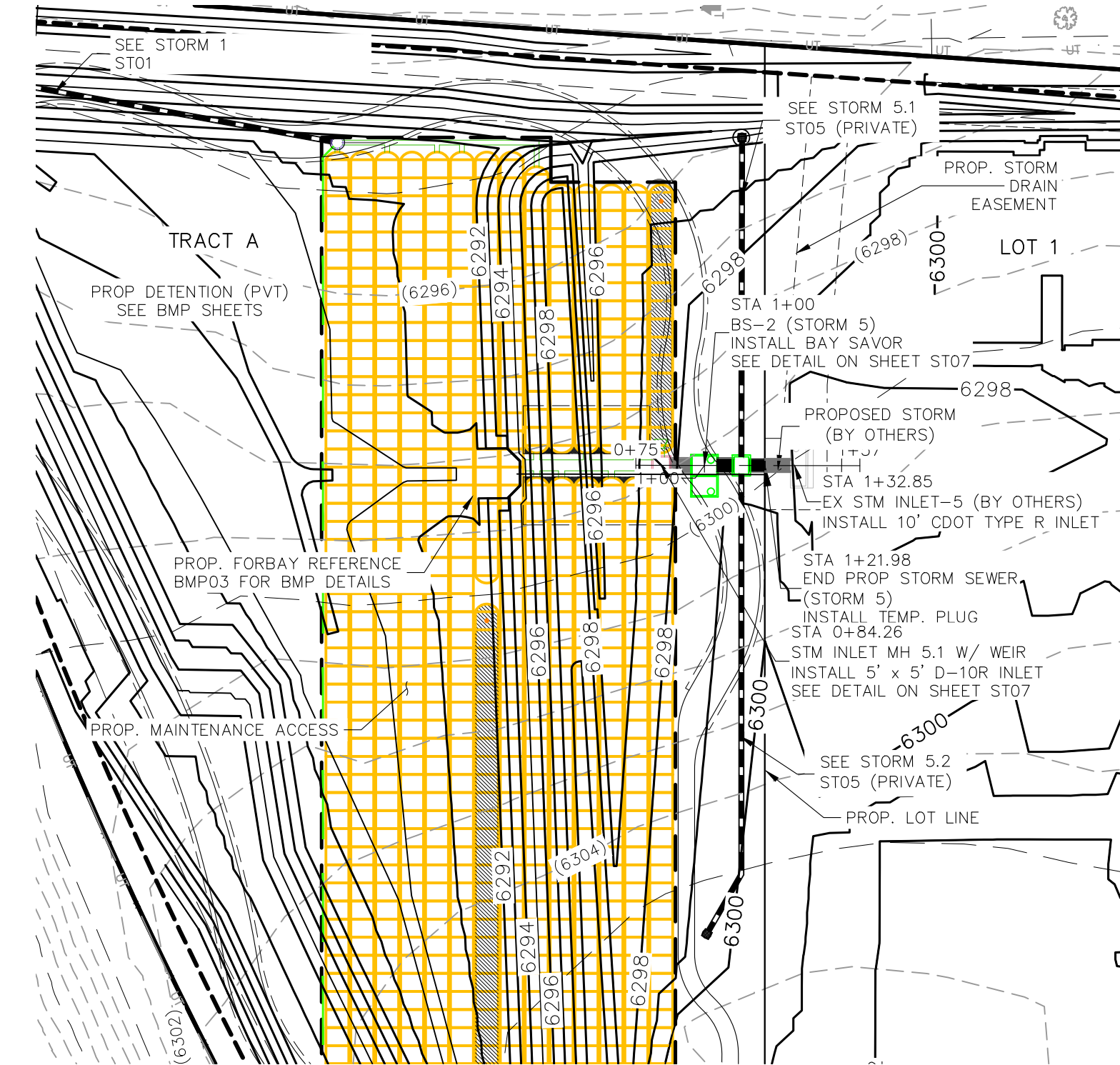
CAUTION



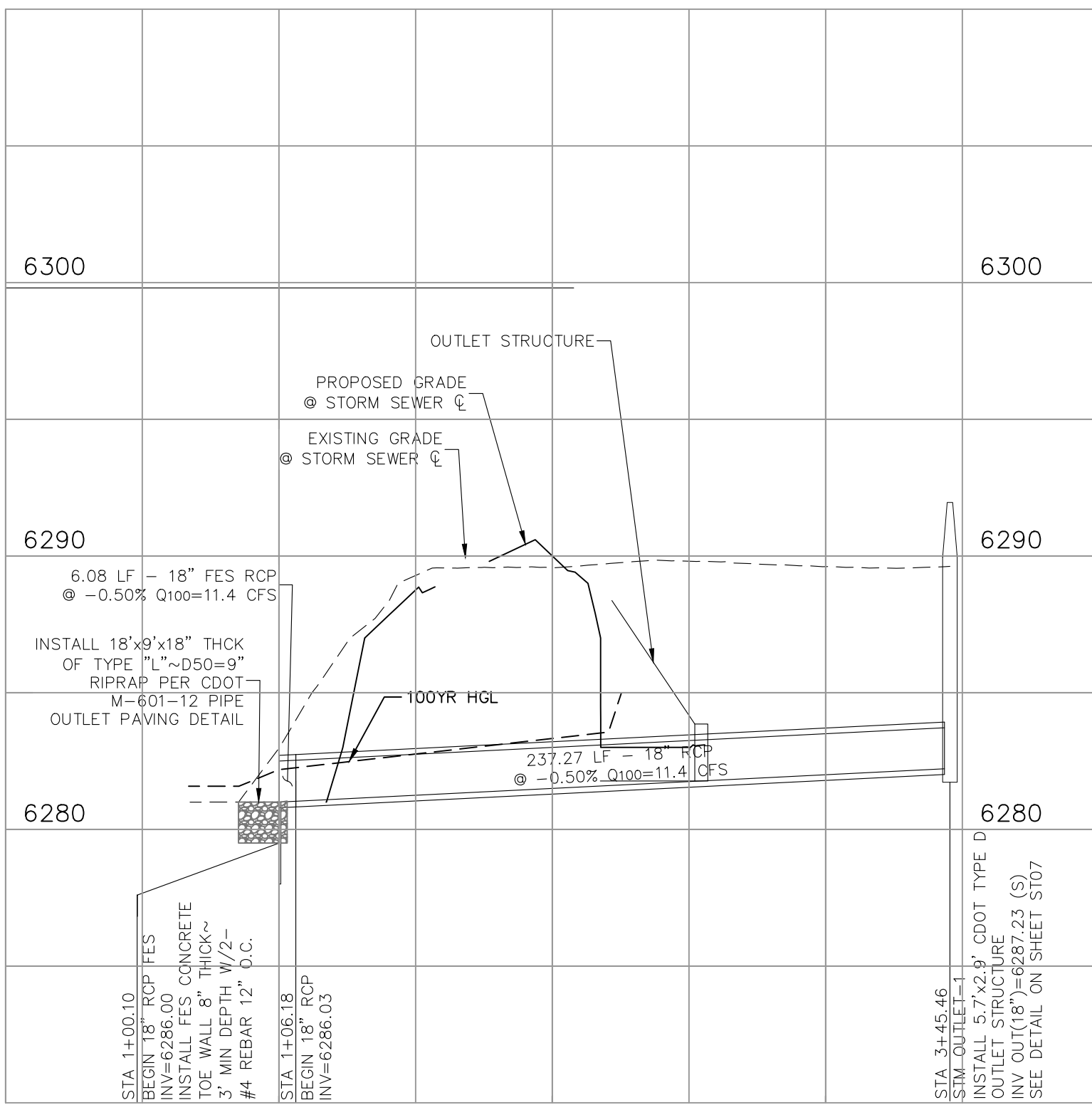
STORM 1 UNDERGROUND DETENTION OUTFALL
STA 1+00.00 TO STA 3+45.46
(PUBLIC/PRIVATE)



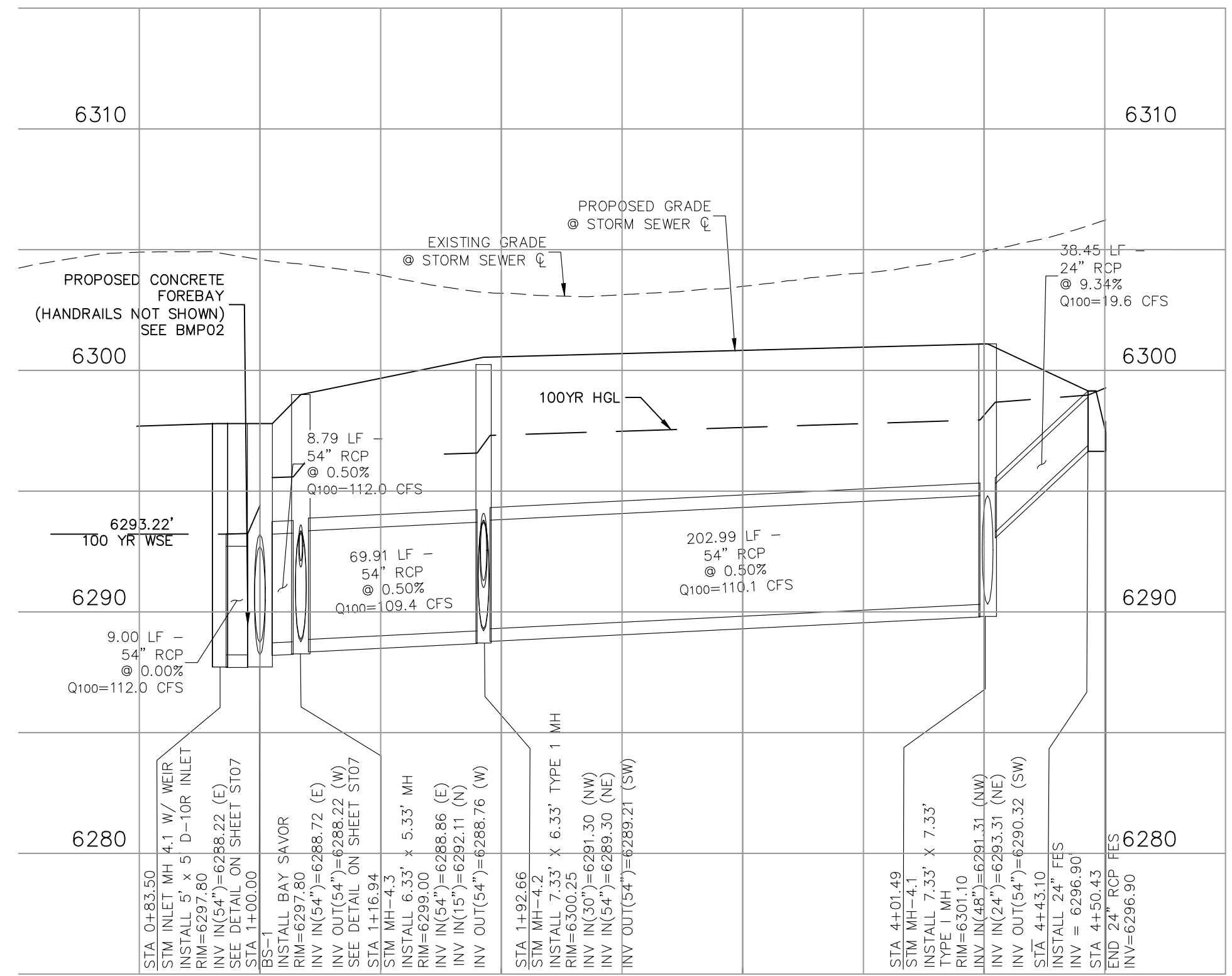
STORM 4 (PRIVATE)
STA 0+83.50 TO STA 4+50.43



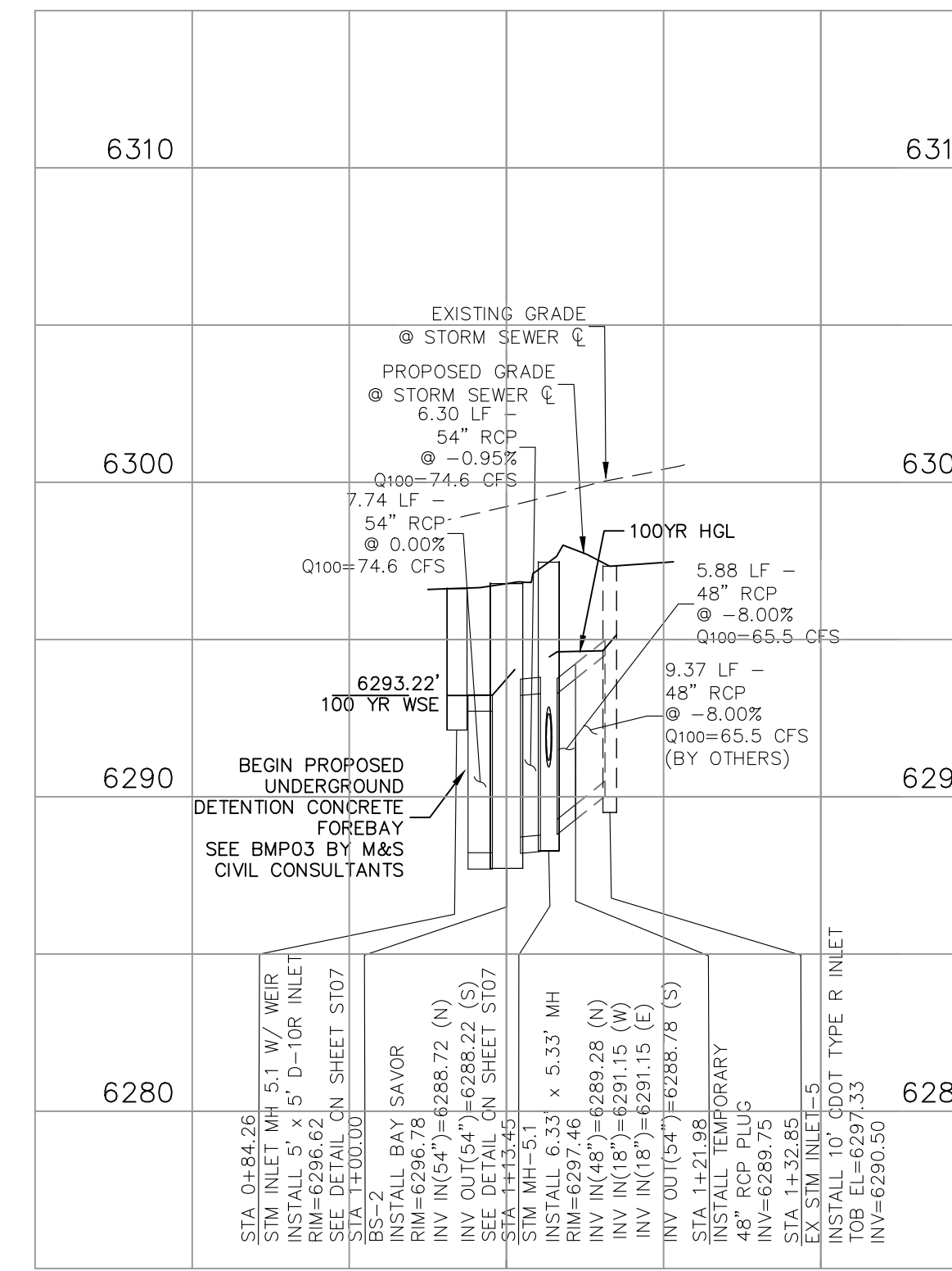
STORM 5 (PRIVATE)
STA 0+84.26 TO STA 1+32.85



STORM 1



STORM 4 (PRIVATE)



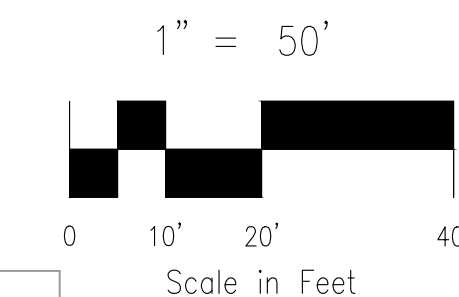
STORM 5 (PRIVATE)

NOTE:

- 1.) GRATED INLET TO BE REPLACED WITH CRUB FACE INLET AT TIME OF MEADOWBROOK PARKWAY EXTENSION
- 2.) ALL PRIVATE STORM SEWER CONSTRUCTED WITH THESE PLANS TO BE MAINTAINED BY THE CROSSROADS METROPOLITAN DISTRICT NO. 1

FOR LOCATING & MARKING GAS, ELECTRIC, WATER & TELEPHONE LINES

FOR BURIED UTILITY INFORMATION 48 HRS BEFORE YOU DIG CALL 1-800-922-1987



CROSS ROAD MIXED USE FILING NO. 1

STORM SEWER PLANS

PROJECT NO. 18-003 DATE: 12-23-22

SCALE: HORIZONTAL: 1"=50' VERTICAL: 1"=5'

DESIGNED BY: GT DRAWN BY: TAU CHECKED BY: VAS

212 N. WABATCH AVE, STE 305
 COLORADO SPRINGS, CO 80903
 PHONE: 719.555.5465

CIVIL CONSULTANTS, INC.

FOR AND ON BEHALF OF M&S CIVIL CONSULTANTS, INC.

VIRGIL A. SANCHEZ, COLORADO, P.E. NO. 371160

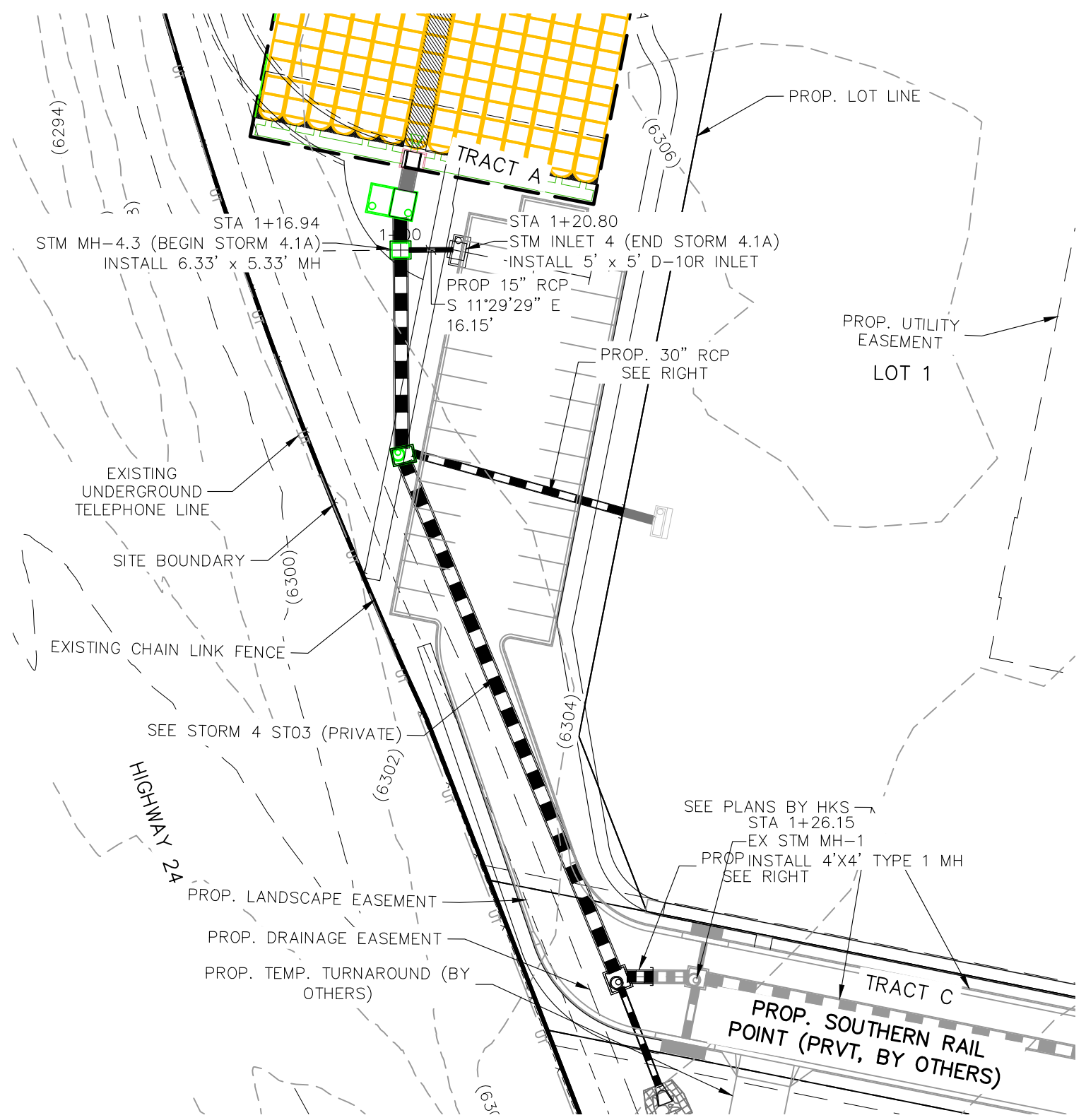
REVISIONS: NO. DATE BY DESCRIPTION

DATE: _____

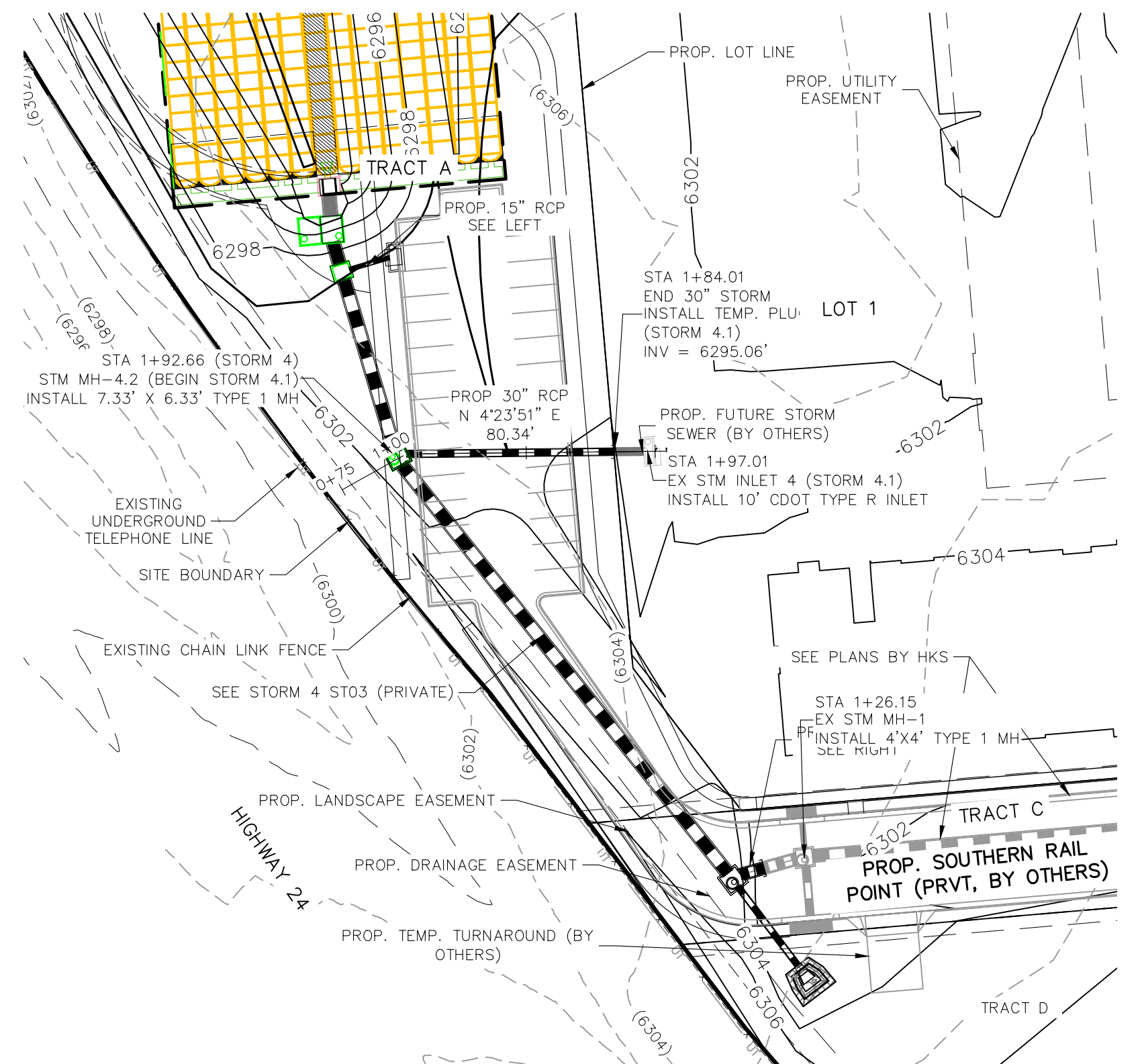
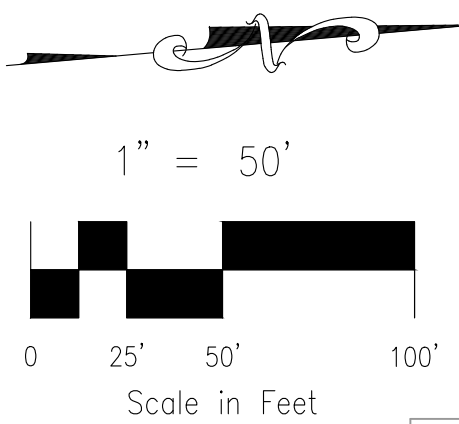
APPROVED BY: _____

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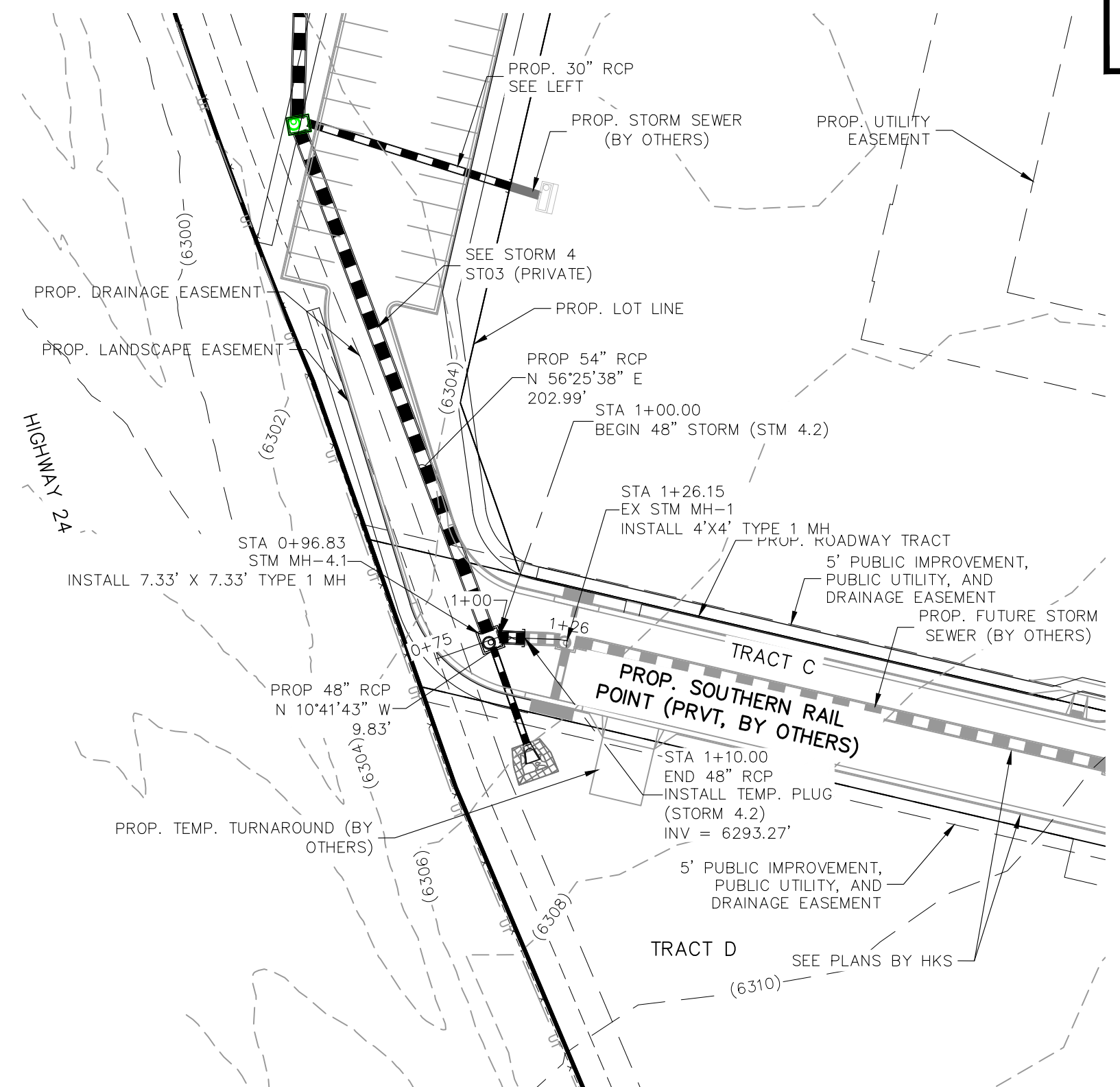
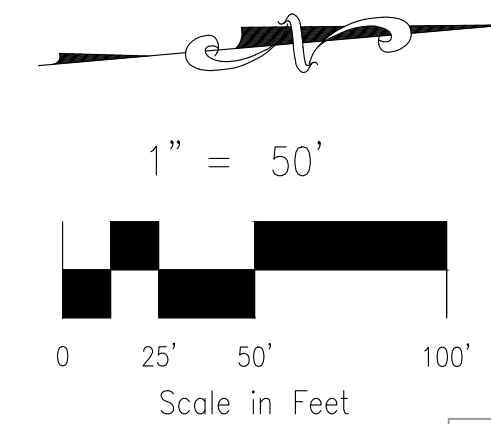
CAUTION



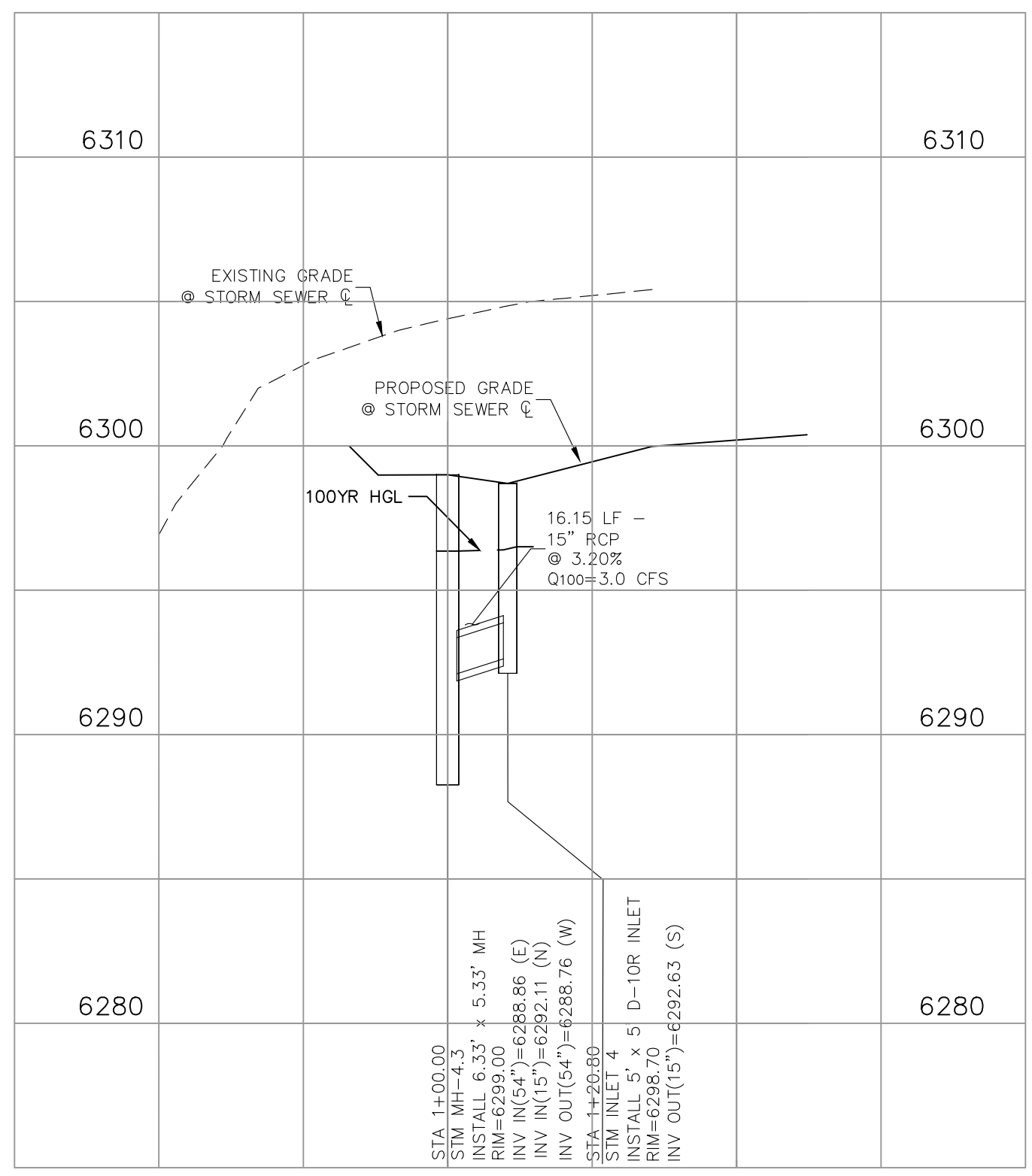
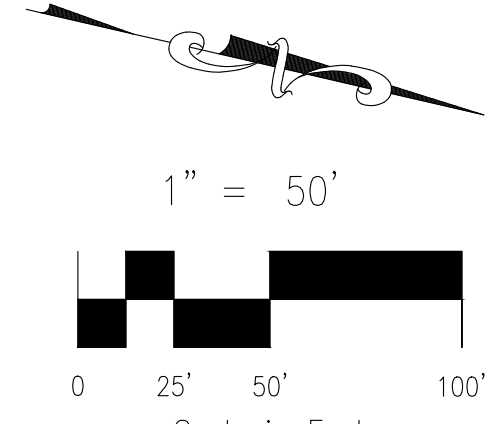
STORM 4.1A (PRIVATE)
STA 1+00.00 TO STA 1+20.80



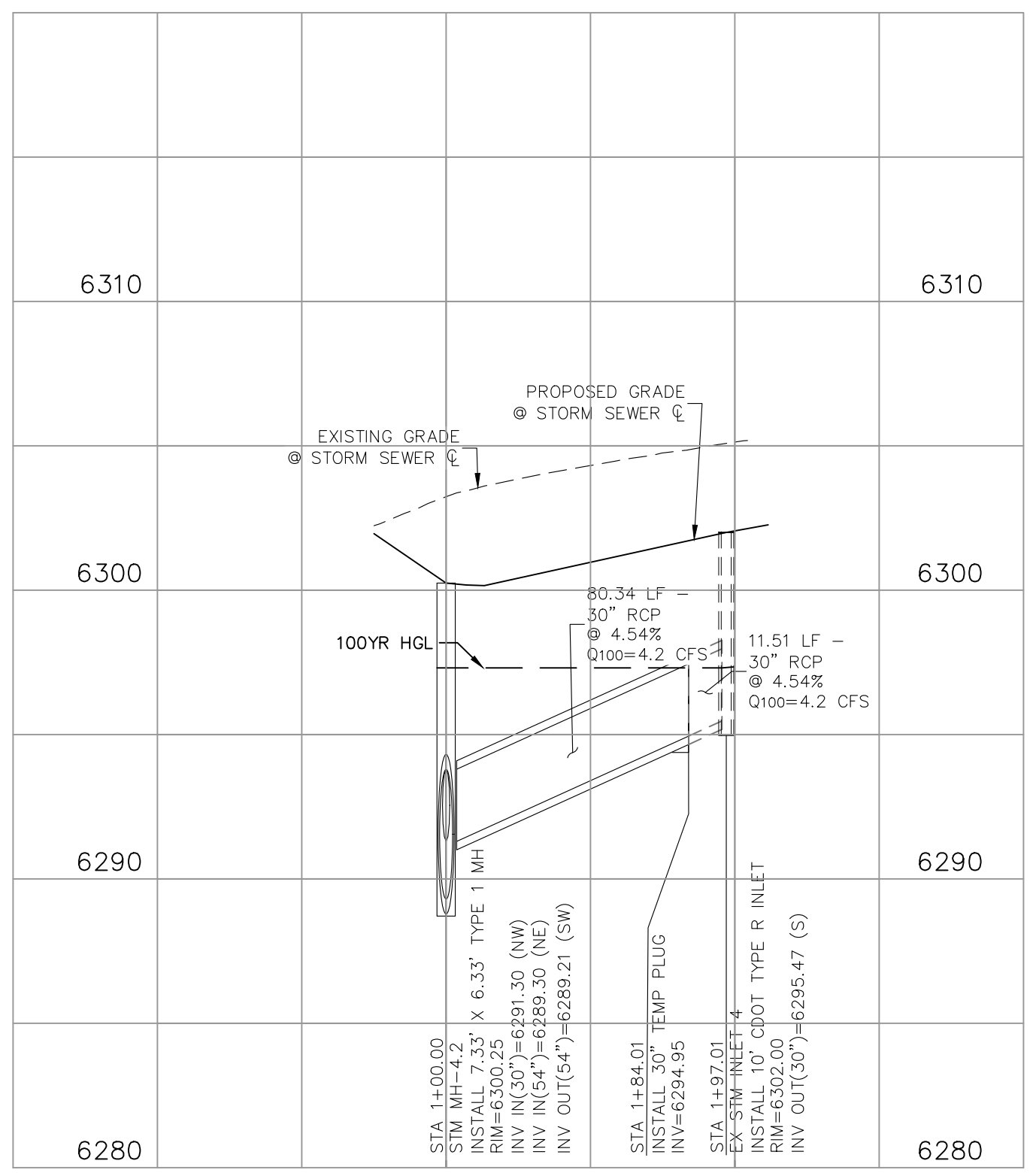
STORM 4.1 (PRIVATE)
STA 1+00.00 TO STA 1+97.01



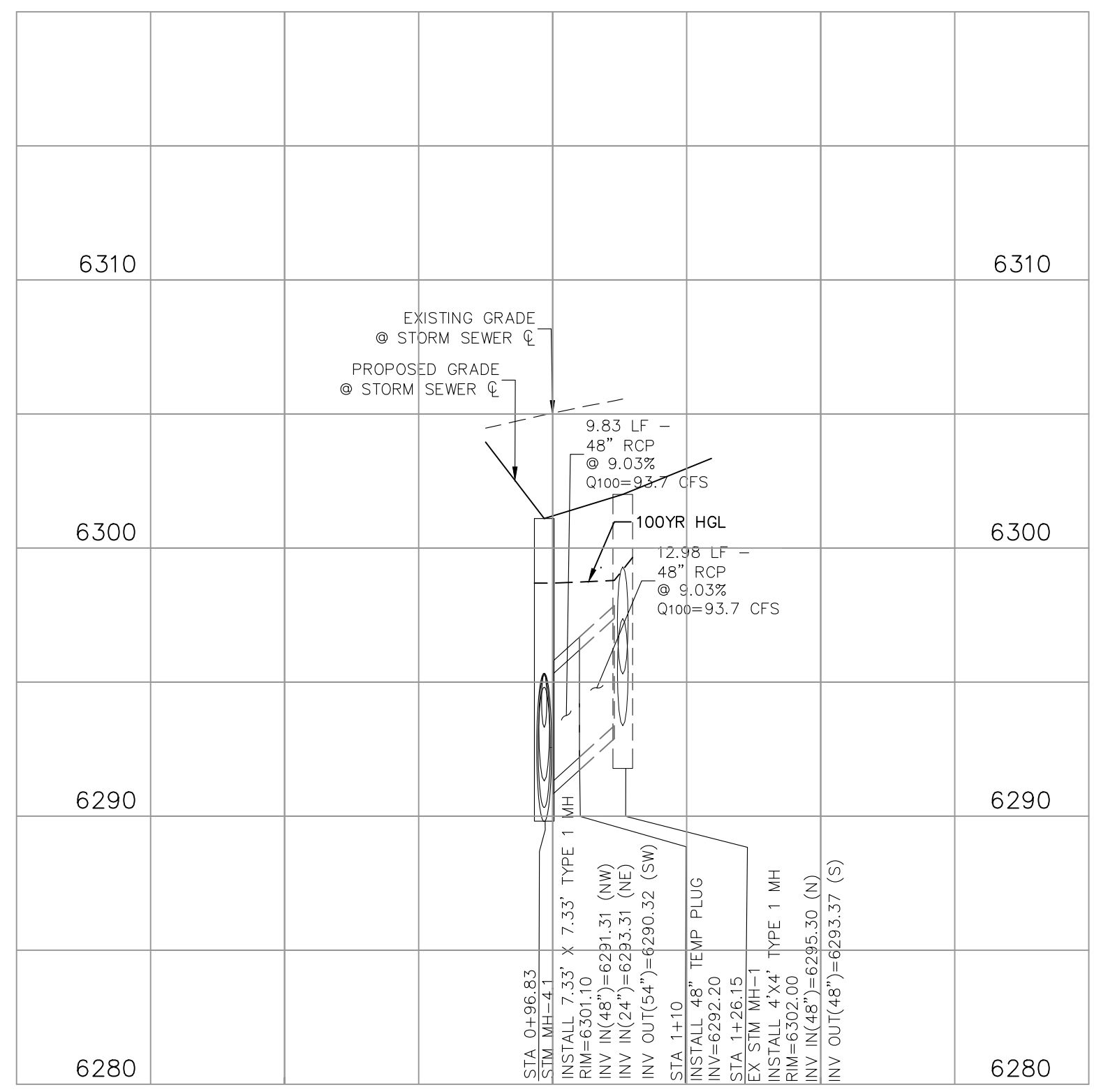
STORM 4.2 (PRIVATE)
STA 1+00.00 TO STA 1+26.15



STORM 4.1A (PRIVATE)



STORM 4.1 (PRIVATE)



STORM 4.2 (PRIVATE)

NOTE:
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FOR LOCATING & MARKING GAS, ELECTRIC, WATER & TELEPHONE LINES
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CROSS ROAD MIXED USE FILING NO. 1
STORM SEWER PLANS
PROJECT NO. 18-003
SCALE: HORIZONTAL: 1"=50' VERTICAL: 1"=5'
DATE: 12-23-22
DESIGNED BY: GT
DRAWN BY: TAU
CHECKED BY: VAS
SHEET 3 OF 6
ST03

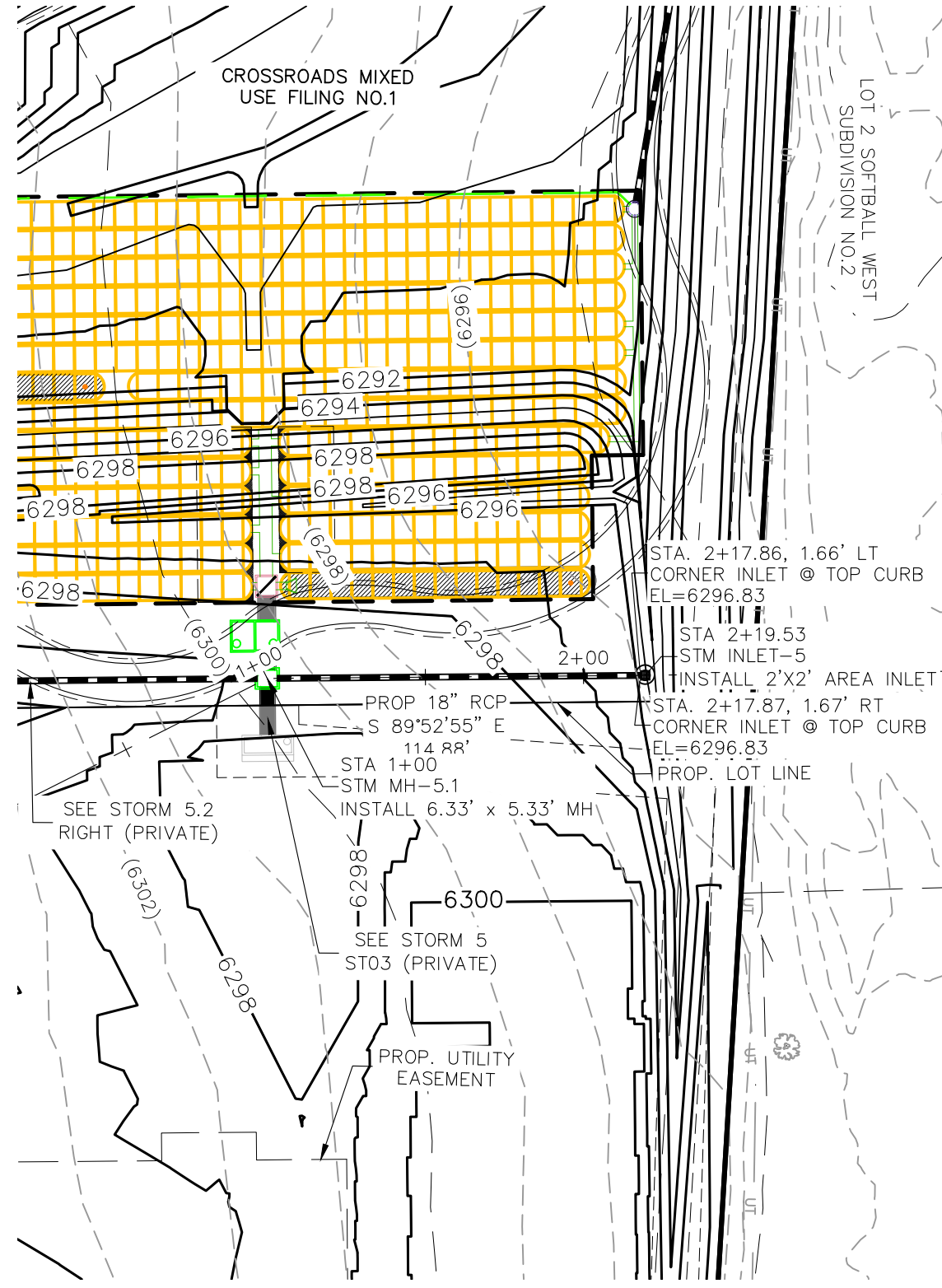
212 N. WABATCH AVE, STE 305
COLORADO SPRINGS CO 80903
PHONE: 719.555.5465
CIVIL CONSULTANTS, INC.

FOR AND ON BEHALF OF
MKS CIVIL CONSULTANTS, INC.
VIRGIL A. SANCHEZ, COLORADO, P.E. NO. 371160

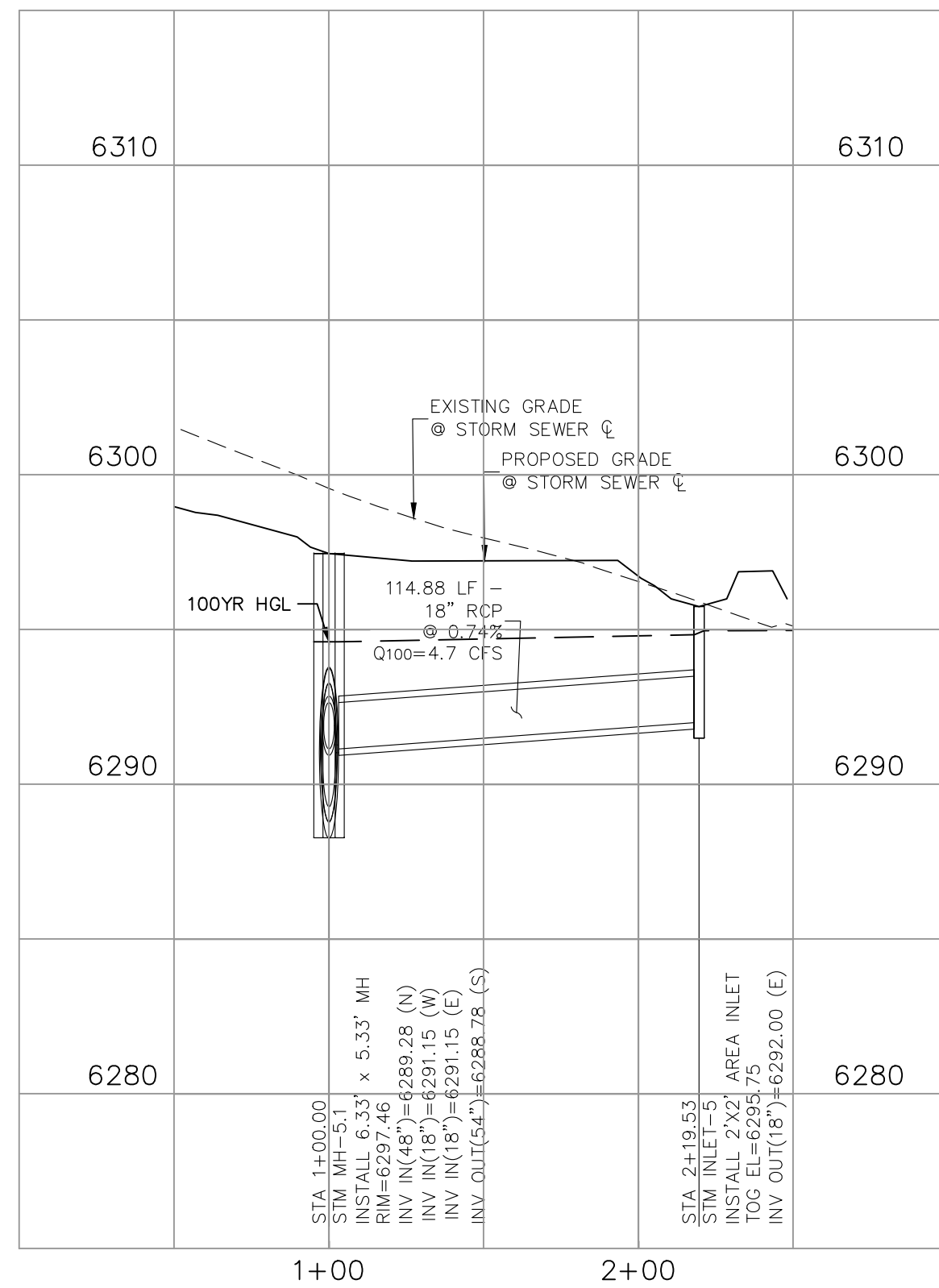
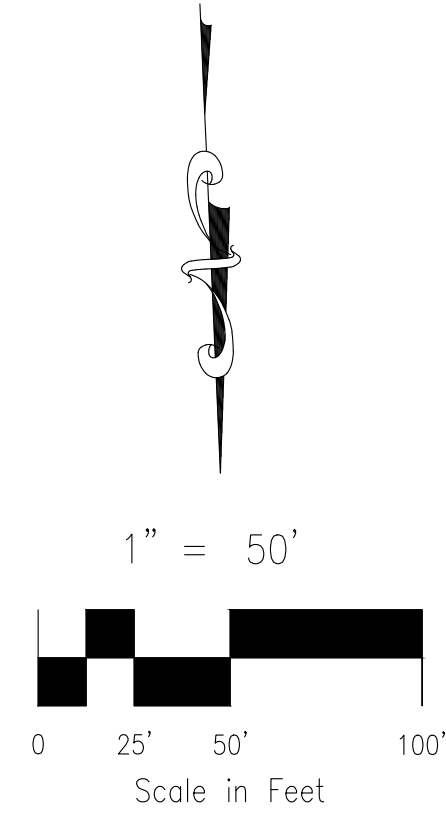
NO.	DATE	BY	DESCRIPTION	APPROV'D. BY	DATE

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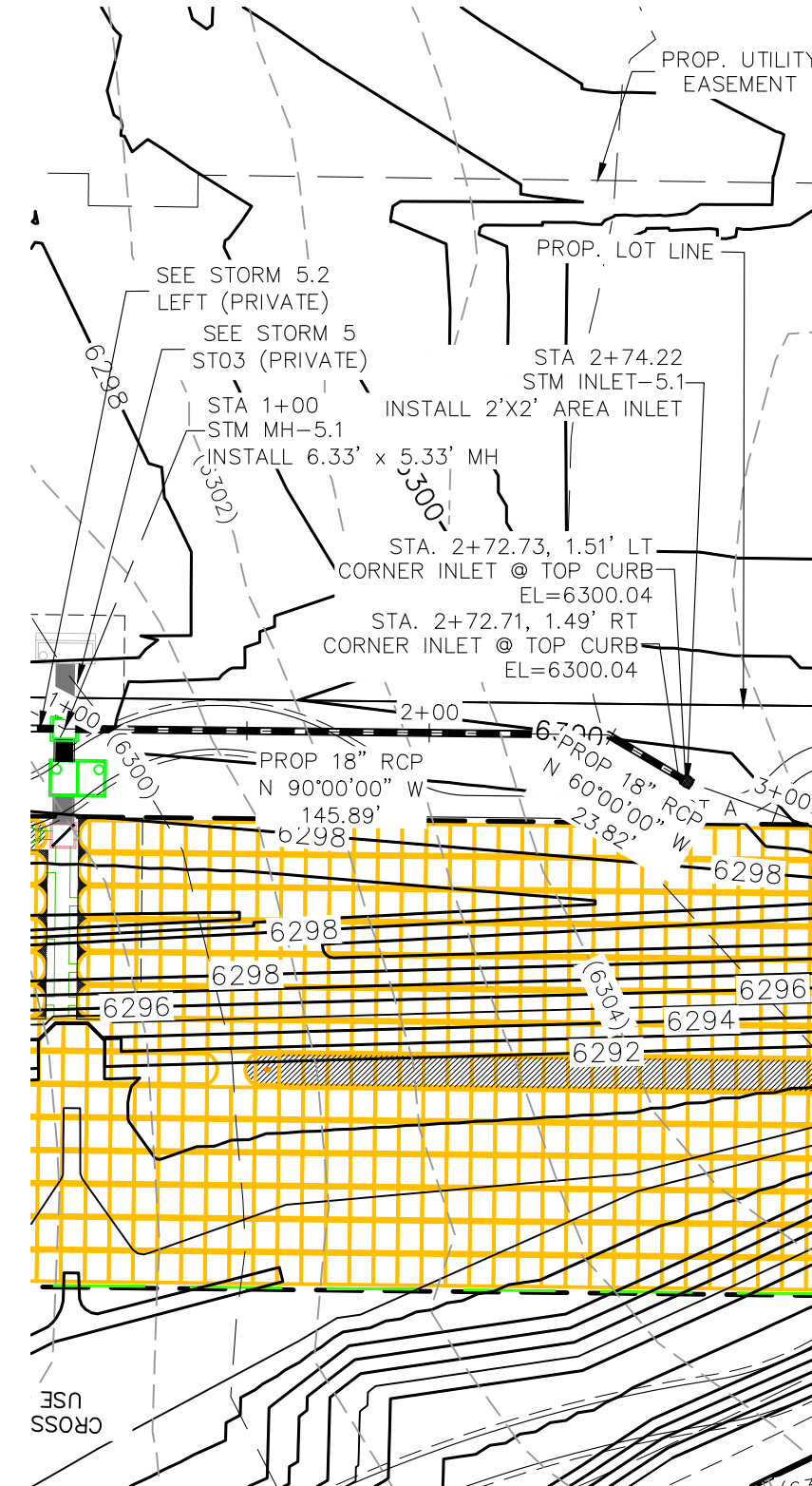
CAUTION



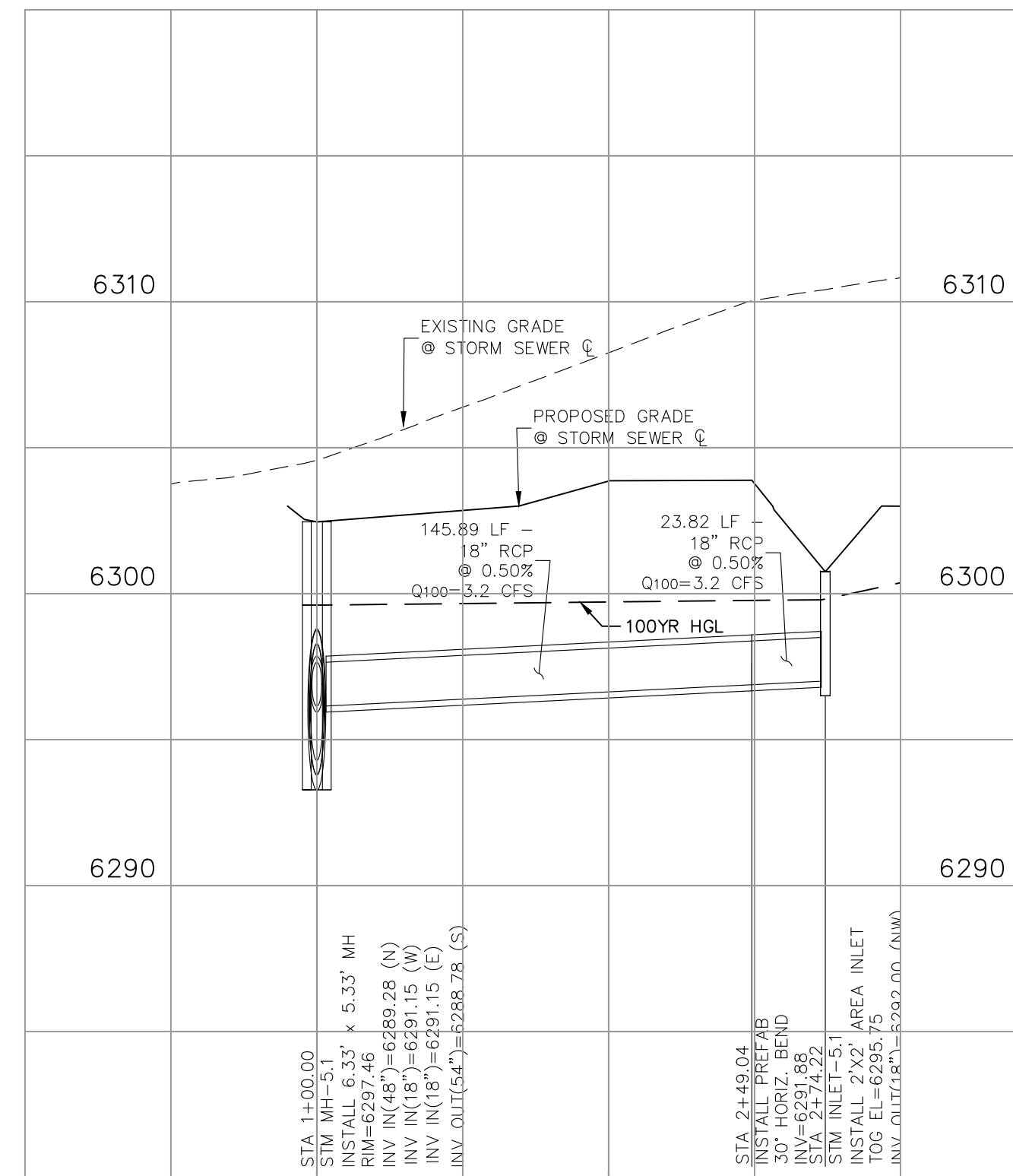
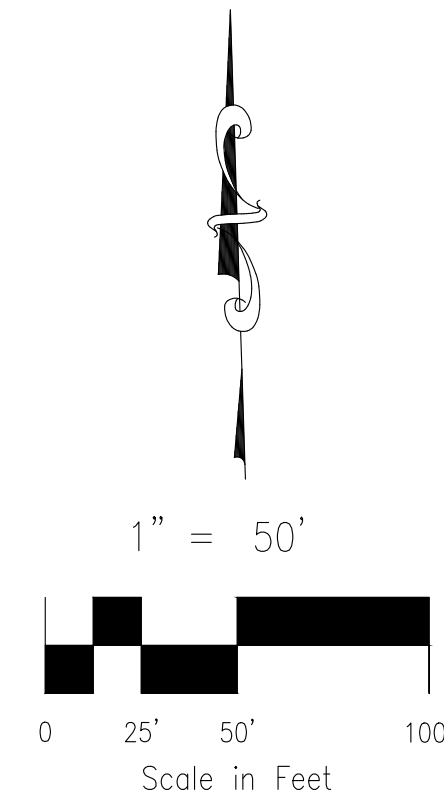
STORM 5.1 (PRIVATE)
STA 1+00.00 TO STA 2+19.53



STORM 5.1 (PRIVATE)



STORM 5.2 (PRIVATE)
STA 1+00.00 TO STA 2+74.22



STORM 5.2 (PRIVATE)

NOTE:

ALL PRIVATE STORM SEWER CONSTRUCTED WITH THESE PLANS TO BE MAINTAINED BY THE CROSSROADS METROPOLITAN DISTRICT NO. 1

FOR LOCATING & MARKING GAS, ELECTRIC, WATER & TELEPHONE LINES

FOR BURIED UTILITY INFORMATION
48 HRS BEFORE YOU DIG
CALL 1-800-922-1987

CROSS ROAD MIXED USE FILING NO.1

STORM SEWER PLANS

PROJECT NO. 18-003

SCALE: HORIZONTAL: 1"=50' VERTICAL: 1"=5'

DATE: 12-23-22

SHEET 4 OF 6

ST04

212 N. WASHCATCH AVE., STE 305
COLORADO SPRINGS, CO 80903
PHONE: 719.555.5465

CIVIL CONSULTANTS, INC.

FOR AND ON BEHALF OF MKS CIVIL CONSULTANTS, INC.

VIRGIL A. SANCHEZ, COLORADO, P.E. NO. 371160

NO.	DATE	BY	DESCRIPTION	APPR'D. BY	DATE

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CAUTION

Storm Sewer Manhole Detail Type II Standard Drawing

DATE APPROVED: 11/10/04
 FILE NAME: SD_3-2

DESIGNED BY: André P. Brackin
 DRAWN BY: [Blank]
 CHECKED BY: [Blank]

PROJECT NO. 18-003
 SCALE: HORIZONTAL: NA
 VERTICAL: NA
 DATE: 12-23-22

FOR LOCATING & MARKING GAS, ELECTRIC, WATER & TELEPHONE LINES
 FOR BURIED UTILITY INFORMATION
 48 HRS BEFORE YOU DIG
 CALL 1-800-922-1987

Storm Sewer Manhole Detail Type I Standard Drawing

DATE APPROVED: 7/9/09
 FILE NAME: SD_3-1

DESIGNED BY: André Brackin
 DRAWN BY: [Blank]
 CHECKED BY: [Blank]

PROJECT NO. 18-003
 SCALE: HORIZONTAL: NA
 VERTICAL: NA
 DATE: 12-23-22

Storm Sewer Manhole Details Standard Drawing

DATE APPROVED: 9/16/10
 FILE NAME: SD_3-5

DESIGNED BY: André P. Brackin
 DRAWN BY: [Blank]
 CHECKED BY: [Blank]

PROJECT NO. 18-003
 SCALE: HORIZONTAL: NA
 VERTICAL: NA
 DATE: 12-23-22

Storm Sewer Manhole Riser and Cover Detail Standard Drawing

DATE APPROVED: 8/11/11
 FILE NAME: SD_3-7

DESIGNED BY: André P. Brackin
 DRAWN BY: [Blank]
 CHECKED BY: [Blank]

PROJECT NO. 18-003
 SCALE: HORIZONTAL: NA
 VERTICAL: NA
 DATE: 12-23-22

CONCRETE AND METAL END SECTIONS Standard Drawing

DATE APPROVED: 7/9/09
 FILE NAME: M-603-10

DESIGNED BY: André Brackin
 DRAWN BY: [Blank]
 CHECKED BY: [Blank]

PROJECT NO. 18-003
 SCALE: HORIZONTAL: NA
 VERTICAL: NA
 DATE: 12-23-22

- STORM SEWER GENERAL NOTES**
- ALL STATIONING IS ALONG STORM SEWER CENTERLINE UNLESS OTHERWISE INDICATED. ALL ELEVATIONS ARE INVERT UNLESS OTHERWISE INDICATED.
 - ALL STORM SEWER BENDS, MANHOLES, AND WYES SHOWN ON THE PLANS SHALL BE PREFABRICATED. HORIZONTAL AND VERTICAL BENDS ARE INDICATED ON THE PLANS.
 - ALL CONNECTIONS BETWEEN DISSIMILAR MATERIALS (I.E. HP STORM PIPE AND CONCRETE STRUCTURES), SHALL BE WATER TIGHT. REFER TO ADS WATERSTOP STRUCTURE CONNECTION DETAILS (SEE THIS CONSTRUCTION SET) FOR ADDITIONAL INFORMATION.
 - THE CONTRACTOR SHOULD ATTEMPT TO LIMIT CONSTRUCTION TRAFFIC ATOP THE PROPOSED STORM SEWER INSTALLATION. AS PER THE MANUFACTURERS RECOMMENDATIONS THE CONTRACTOR SHALL PROVIDE A MIN OF 12" OF COVER AT ALL TIMES ATOP THE BACKFILLED STORM SEWER TO TOP OF THE FINISHED GROUND OR BOTTOM OF FLEXIBLE PAVEMENT SURFACE TO PROTECT THE PIPE FROM H-25 VEHICULAR TRAFFIC. A MINIMUM OF 36" SHOULD BE PROVIDED TO PROTECT THE STORM SEWER FROM 30 T TO 60 T TRAFFIC AND MINIMUM OF 72" FOR TRAFFIC UP TO 78 T AXLE LOADS. FINAL GRADING SHOWN ON THE PLANS WILL PROHIBIT VEHICULAR TRAFFIC TO LOADS LESS THE H-25.
 - REFER TO THE DETAIL IN THIS CONSTRUCTION SET FOR PIPE TRENCH DETAILS AND PIPE SPECIFICATION.

- STRUCTURAL CONCRETE NOTES:**
- ALL CONSTRUCTION INVOLVING THE PLACEMENT OF STRUCTURAL CONCRETE SHALL BE COMPLETED IN ACCORDANCE WITH STANDARD SPECIFICATIONS, AND AS SUPPLEMENTED BY THE COLORADO DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADWAY AND BRIDGE CONSTRUCTION.
 - STEEL REINFORCING SHALL BE GRADE 60 FOR ALL REINFORCING STEEL GREATER THAN #4. SPLICING, LAP SPLICING SHALL BE MINIMUM IN THE FOLLOWING TABLE UNLESS OTHERWISE SPECIFIED:
 BAR SIZE #4 #5 #6 #7 #8
 SPLICE LENGTH 1'-9" 2'-2" 2'-7" 3'-4" 4'-3"
 ALL REINFORCING SHALL HAVE A 2-INCH MINIMUM COVER UNLESS OTHERWISE SPECIFIED.
 - CAST-IN-PLACE CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f_c) OF 4,000 PSI AT 28 DAYS. ALL CONCRETE PLACED AGAINST SOIL SHALL BE TYPE II PORTLAND CEMENT. ALL EXPOSED CORNERS SHALL BE FORMED WITH A 3/4" CHAMFER UNLESS OTHERWISE SPECIFIED.
 - EXPANSION JOINT MATERIAL SHALL MEET AASHTO SPECIFICATION M-213.
 - BACKFILL AGAINST STRUCTURES SHALL NOT COMMENCE UNTIL ALL SUPPORTING DIAPHRAGMS ARE IN PLACE AND CONCRETE HAS OBTAINED ITS FULL SEVEN DAY STRENGTH. BACKFILL SHALL BE PLACED EQUALLY ON EACH SIDE OF RETAINING WALL STRUCTURES AND CUTOFF WALLS UNTIL THE FINAL GRADE IS REACHED.
 - FOOTING EXCAVATIONS SHALL BE EXAMINED BY THE GEOTECHNICAL ENGINEER WITH A 24-HOUR MINIMUM NOTIFICATION FOR SOIL AND/OR CONCRETE TESTING. PLACEMENT OF CONCRETE IN THE ABSENCE OF TESTING SHALL BE COMPLETED AT THE SOLE RISK OF THE CONTRACTOR.
 - PRIOR TO THE PLACEMENT OF CONCRETE IN AREAS WHERE SOIL IS PRESENT, THE SOIL SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 6-INCHES. THE MOISTURE CONTENT SHALL BE ADJUSTED TO WITHIN PLUS OR MINUS 2 PERCENT OF THE OPTIMUM MOISTURE CONTENT AND RECOMPACTED TO AT LEAST 95 PERCENT RELATIVE COMPACTION (AASHTO-T-180).

ABBREVIATIONS
 EC -- EPOXY COATED O.F. -- OUTSIDE FACE E.F. -- EACH FACE E.W. -- EACH WAY I.F. -- INSIDE FACE N.F. -- NEAR FACE
 T.O.C. -- TOP OF CONCRETE B.O.C. -- BOTTOM OF CONCRETE CONT. -- CONTINUOUS

CIVIL CONSULTANTS, INC.

FOR AND ON BEHALF OF
 M&S CIVIL CONSULTANTS, INC.

212 N. WASHCATCH AVE. STE 305
 COLORADO SPRINGS CO 80903
 PHONE: 719.555.5485

CROSS ROAD MIXED USE FILING NO. 1
 STORM SEWER DETAILS

PROJECT NO. 18-003
 SCALE: HORIZONTAL: NA
 VERTICAL: NA
 DATE: 12-23-22

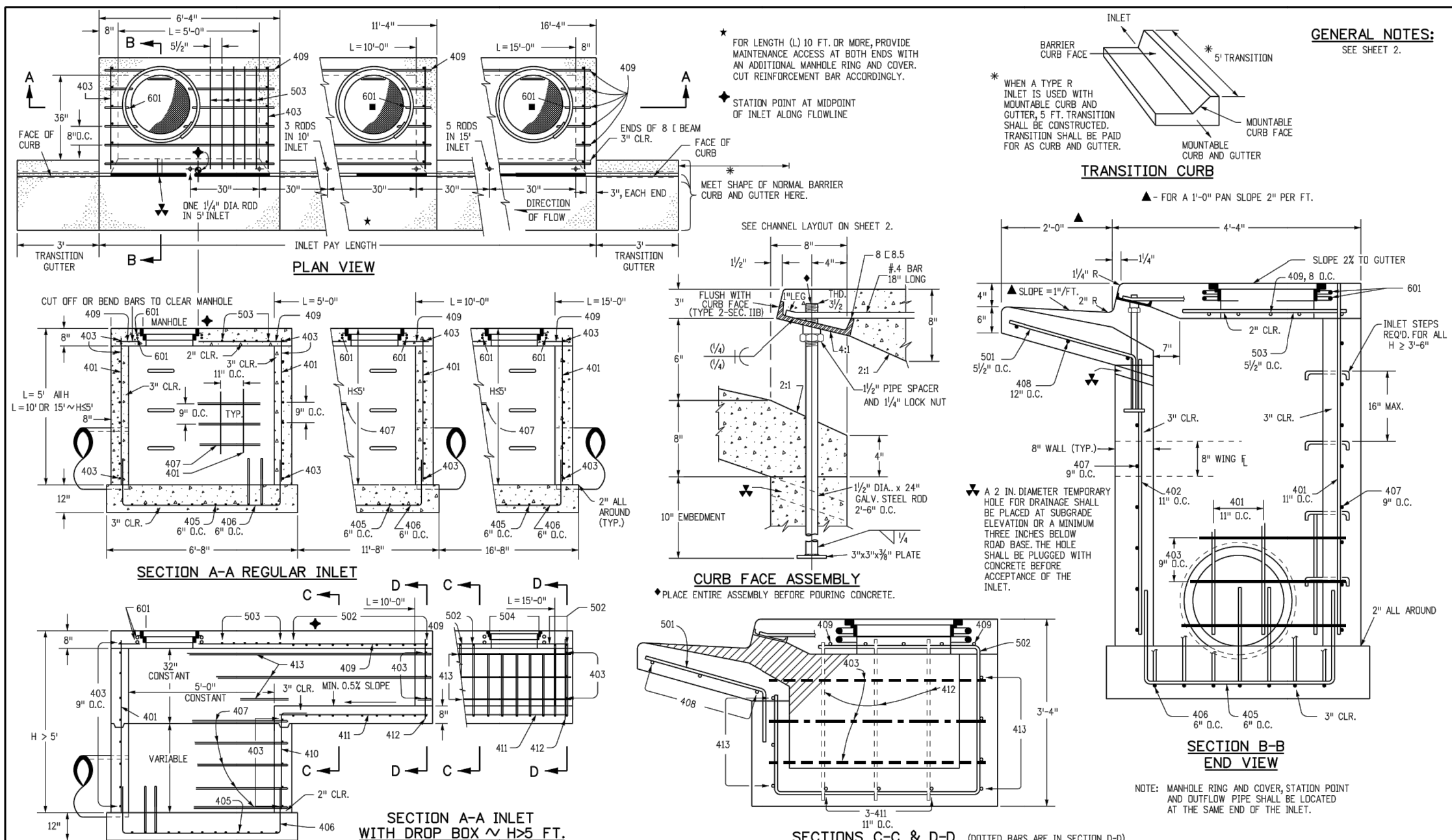
DESIGNED BY: GT
 DRAWN BY: TAU
 CHECKED BY: VAS

SHEET 5 OF 6
 ST05

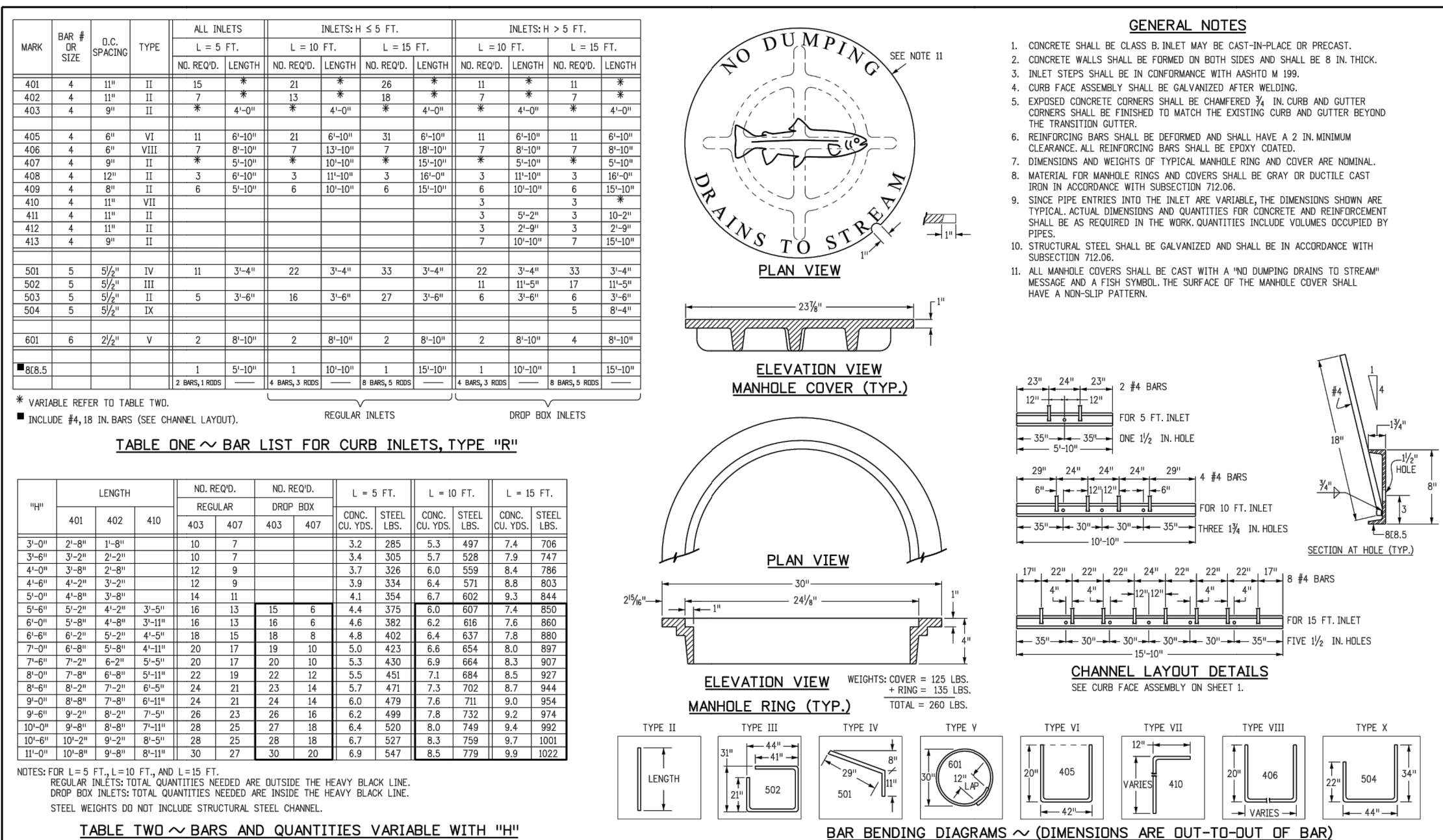
REVISIONS:
 NO. DATE BY DESCRIPTION

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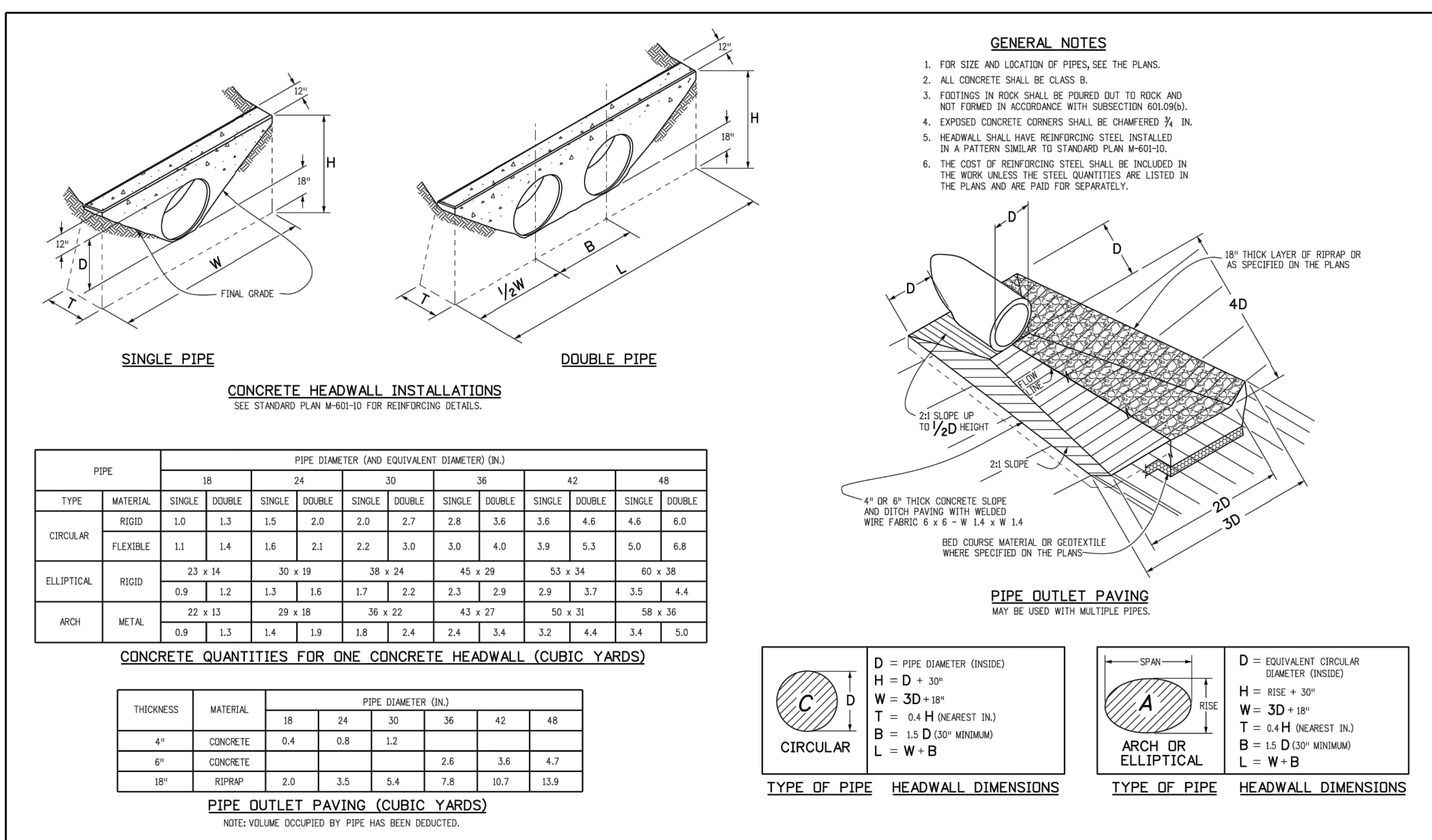
CAUTION



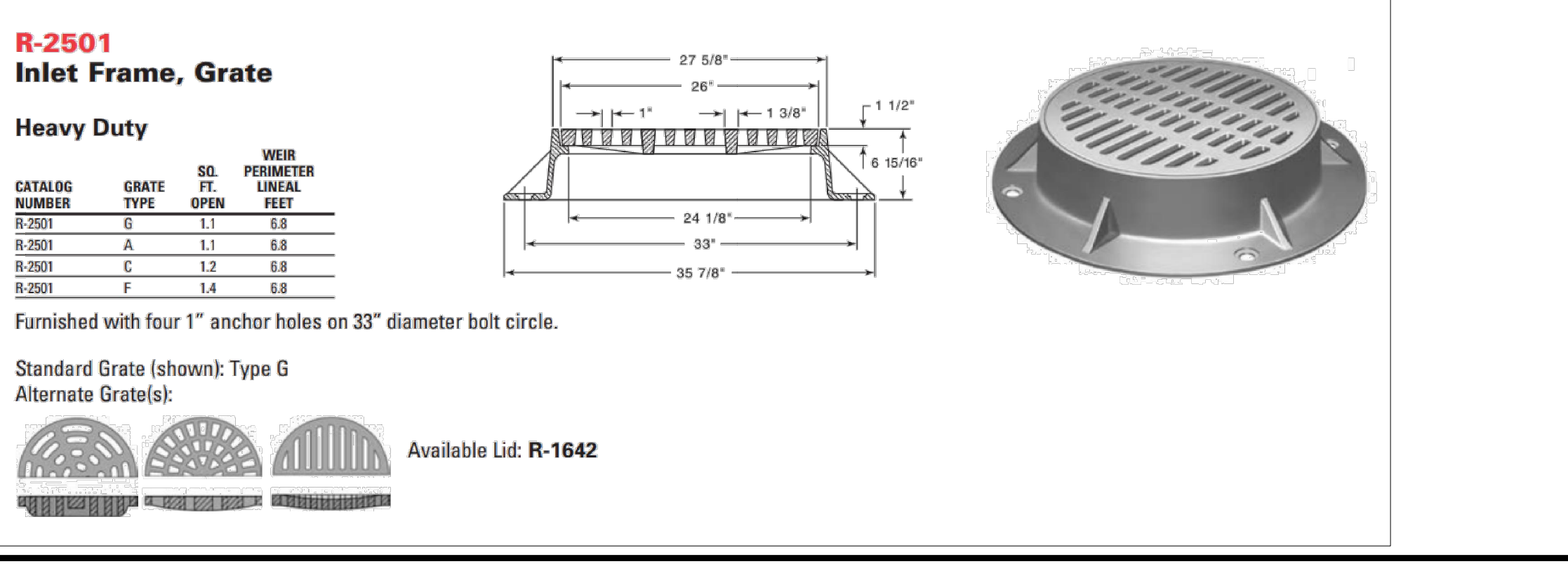
Computer File Information Creation Date: 07/04/12 Last Modification Date: 07/04/12 Drawing File Name: 6040120102.dgn CAD Ver.: MicroStation V8	Sheet Revisions Date: _____ Comments: _____	Colorado Department of Transportation 4201 East Arkansas Avenue Denver, Colorado 80222 Phone: (303) 757-9822 Fax: (303) 757-9820	CURB INLET TYPE R	STANDARD PLAN NO. M-604-12
Project Development Branch DD/LTA	Issued By: Project Development Branch July 4, 2012		Sheet No. 1 of 2	



Computer File Information Creation Date: 07/04/12 Last Modification Date: 07/04/12 Drawing File Name: 6040120202.dgn CAD Ver.: MicroStation V8	Sheet Revisions Date: _____ Comments: _____	Colorado Department of Transportation 4201 East Arkansas Avenue Denver, Colorado 80222 Phone: (303) 757-9822 Fax: (303) 757-9820	CURB INLET TYPE R	STANDARD PLAN NO. M-604-12
Project Development Branch DD/LTA	Issued By: Project Development Branch July 4, 2012		Sheet No. 2 of 2	



Computer File Information Creation Date: 07/04/12 Last Modification Date: 07/04/12 Drawing File Name: 6010120102.dgn CAD Ver.: MicroStation V8	Sheet Revisions Date: _____ Comments: _____	Colorado Department of Transportation 4201 East Arkansas Avenue Denver, Colorado 80222 Phone: (303) 757-9822 Fax: (303) 757-9820	HEADWALLS AND PIPE OUTLET PAVING	STANDARD PLAN NO. M-601-12
Project Development Branch DD/LTA	Issued By: Project Development Branch July 4, 2012		Sheet No. 1 of 1	



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CROSS ROAD MIXED USE FILING NO. 1
STORM SEWER DETAILS
 PROJECT NO. 18-003
 SCALE: HORIZONTAL: NA
 VERTICAL: NA
 DATE: 12-23-22
 DESIGNED BY: GT
 DRAWN BY: TAU
 CHECKED BY: VAS
 SHEET 6 OF 6
 ST06

212 N. WABASH AVE, STE 305
 COLORADO SPRINGS, CO 80903
 PHONE: 719.555.5485
CIVIL CONSULTANTS, INC.

FOR AND ON BEHALF OF
 M&K CIVIL CONSULTANTS, INC.

REVISIONS: NO. DATE BY DESCRIPTION
 APPROVED BY: _____
 THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE, OR LIABLE FOR, UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARE OF THESE PLANS.
 CAUTION

PROJECT INFORMATION	
ENGINEERED PRODUCT MANAGER:	JEROME MAGSINO 303-349-7555 JEROME.MAGSINO@ADSPIPE.COM
ADS SALES REP:	AARON ZEE 303-548-3479 AARON.ZEE@ADSPIPE.COM
PROJECT NO:	S295850



CROSSROADS MIXED USE FILING NO. 1

COLORADO SPRINGS, CO

MC-7200 STORMTECH CHAMBER SPECIFICATIONS

- CHAMBERS SHALL BE STORMTECH MC-7200.
- CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
- CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 60x101.
- CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
- THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
- CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
- REQUIREMENTS FOR HANDLING AND INSTALLATION:
 - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
 - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
 - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 450 LBS/FT/%. THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
- ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
 - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
 - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
 - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
- CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF MC-7200 CHAMBER SYSTEM

- STORMTECH MC-7200 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
- STORMTECH MC-7200 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-7200 CONSTRUCTION GUIDE".
- CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
 - STONESHOOTER LOCATED OFF THE CHAMBER BED.
 - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
 - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
- THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
- JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
- MAINTAIN MINIMUM - 9" (230 mm) SPACING BETWEEN THE CHAMBER ROWS.
- INLET AND OUTLET MANIFOLDS MUST BE INSERTED A MINIMUM OF 12" (300 mm) INTO CHAMBER END CAPS.
- EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE MEETING THE AASHTO M43 DESIGNATION OF #3 OR #4.
- STONE SHALL BE BROUGHT UP EVENLY AROUND CHAMBERS SO AS NOT TO DISTORT THE CHAMBER SHAPE. STONE DEPTHS SHOULD NEVER DIFFER BY MORE THAN 12" (300 mm) BETWEEN ADJACENT CHAMBER ROWS.
- STONE MUST BE PLACED ON THE TOP CENTER OF THE CHAMBER TO ANCHOR THE CHAMBERS IN PLACE AND PRESERVE ROW SPACING.
- THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIAL BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
- ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

- STORMTECH MC-7200 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-7200 CONSTRUCTION GUIDE".
- THE USE OF EQUIPMENT OVER MC-7200 CHAMBERS IS LIMITED:
 - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
 - NO RUBBER TIRE LOADER, DUMP TRUCK, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH MC-7200 CONSTRUCTION GUIDE".
 - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH MC-7200 CONSTRUCTION GUIDE".
- FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY USING THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

CONCEPTUAL LAYOUT

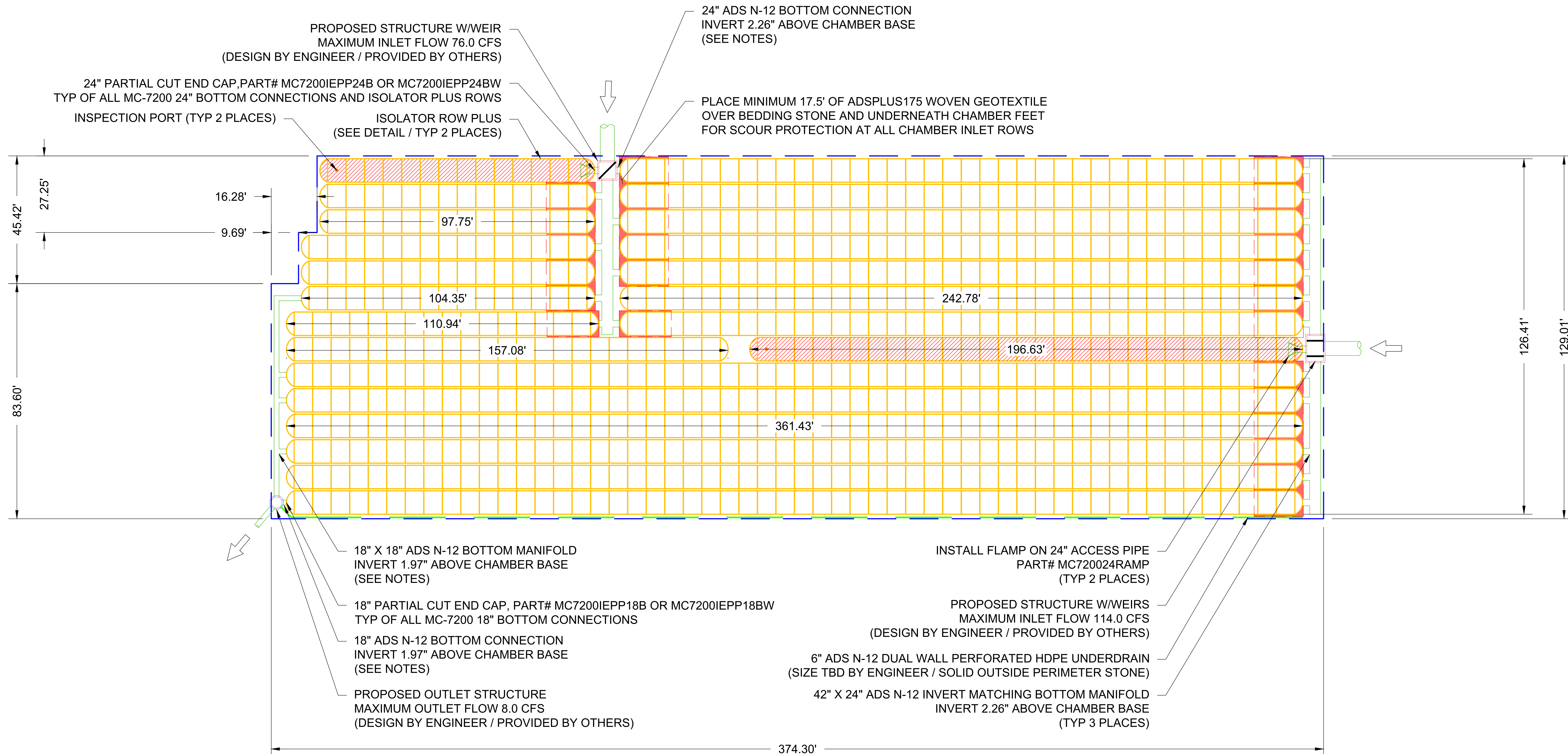
731	STORMTECH MC-7200 CHAMBERS
44	STORMTECH MC-7200 END CAPS
12	STONE ABOVE (in)
9	STONE BELOW (in)
40	% STONE VOID
206,903	INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED)
47670	SYSTEM AREA (ft ²)
1006	SYSTEM PERIMETER (ft)

CONCEPTUAL ELEVATIONS

6300.22	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED)
6295.72	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC)
6295.22	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC)
6295.22	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT)
6295.22	MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT)
6294.22	TOP OF STONE
6293.22	TOP OF MC-7200 CHAMBER
6288.41	42" X 24" MANIFOLD INVERT
6288.41	24" ISOLATOR ROW PLUS CONNECTION INVERT
6288.41	24" BOTTOM CONNECTION
6288.38	18" BOTTOM MANIFOLD / CONNECTION INVERT
6288.22	BOTTOM OF MC-7200 CHAMBER
6287.47	UNDERDRAIN INVERT
6287.47	BOTTOM OF STONE

NOTES

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECHNICAL NOTE 6.32 FOR MANIFOLD SIZING GUIDANCE.
 - DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
 - THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
 - THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.
- **NOT FOR CONSTRUCTION:** THIS LAYOUT IS FOR DIMENSIONAL PURPOSES ONLY TO PROVE CONCEPT & THE REQUIRED STORAGE VOLUME CAN BE ACHIEVED ON SITE.



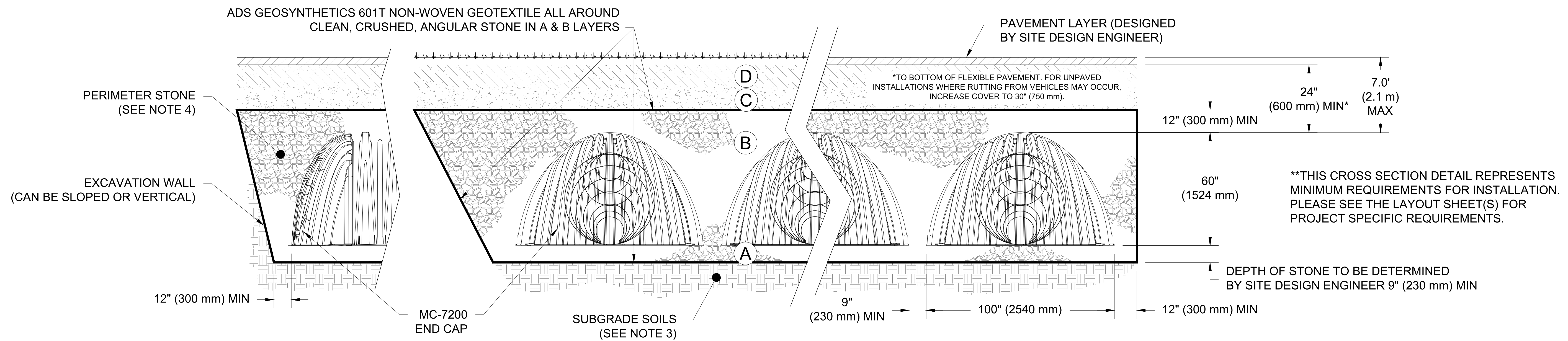
<p>CROSSROADS MIXED USE FILING NO. 1 COLORADO SPRINGS, CO</p>		<p>DATE: 05-05-22 DRAWN: TSG PROJECT #: S295850 CHECKED: CTS</p>				
<p>StormTech® Chamber System</p>	<p>888-892-2694 WWW.STORMTECH.COM</p>	<p>4640 TRUEMAN BLVD HILLIARD, OH 43026</p>	<p>80' 40' 0'</p>	THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER OR OTHER PROJECT REPRESENTATIVE. THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING PRIOR TO CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.		
<p>2 SHEET OF 5</p>						

ACCEPTABLE FILL MATERIALS: STORMTECH MC-7200 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145 ¹ A-1, A-2-4, A-3 OR AASHTO M43 ¹ 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43 ¹ 3, 4	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43 ¹ 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. ^{2,3}

PLEASE NOTE:

- THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
- STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
- WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
- ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

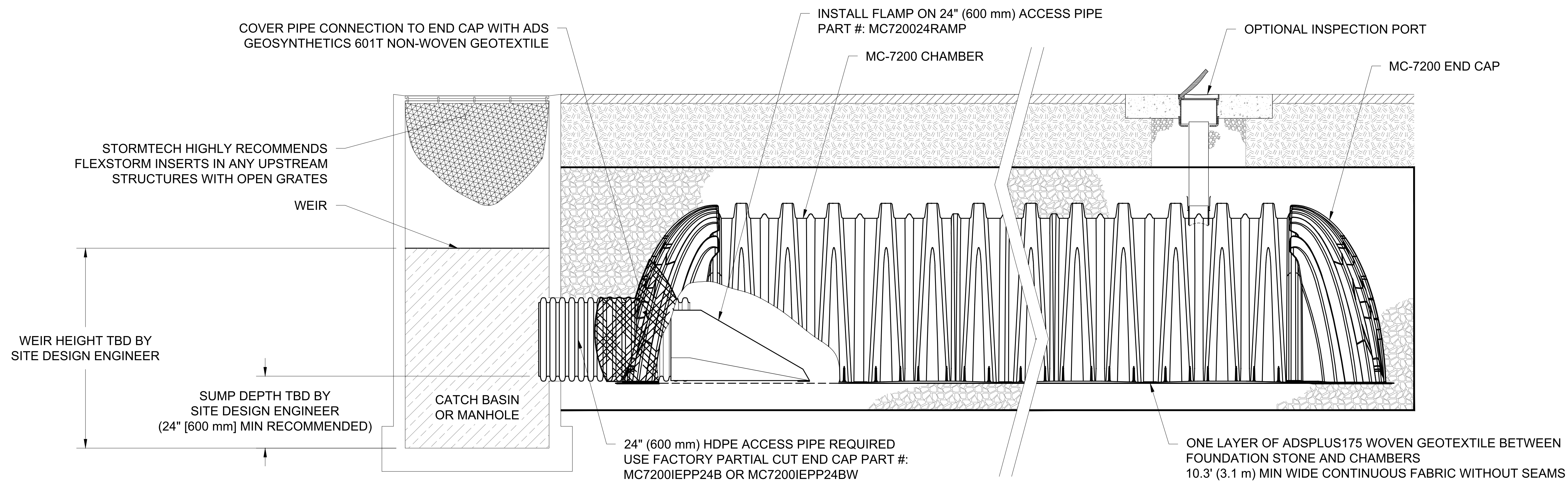


NOTES:

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- MC-7200 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
- PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
- REQUIREMENTS FOR HANDLING AND INSTALLATION:
 - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
 - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
 - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 500 LBS/FT/%. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

CROSSROADS MIXED USE FILING NO. 1 COLORADO SPRINGS, CO		DATE: 05-05-22 DRAWN: TSG PROJECT #: S295850 CHECKED: CTS
UPDATED ELEVATIONS ELEVATION AND LAYOUT ADJUSTMENTS	JPR DRWN CHKD	DESCRIPTION
12-18-22 RKC	12/13/22 BMW	DATE
		888-892-2694 WWW.STORMTECH.COM
4640 TRUEMAN BLVD HILLIARD, OH 43026		3 SHEET OF 5

THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER OR OTHER PROJECT REPRESENTATIVE. THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING PRIOR TO CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.



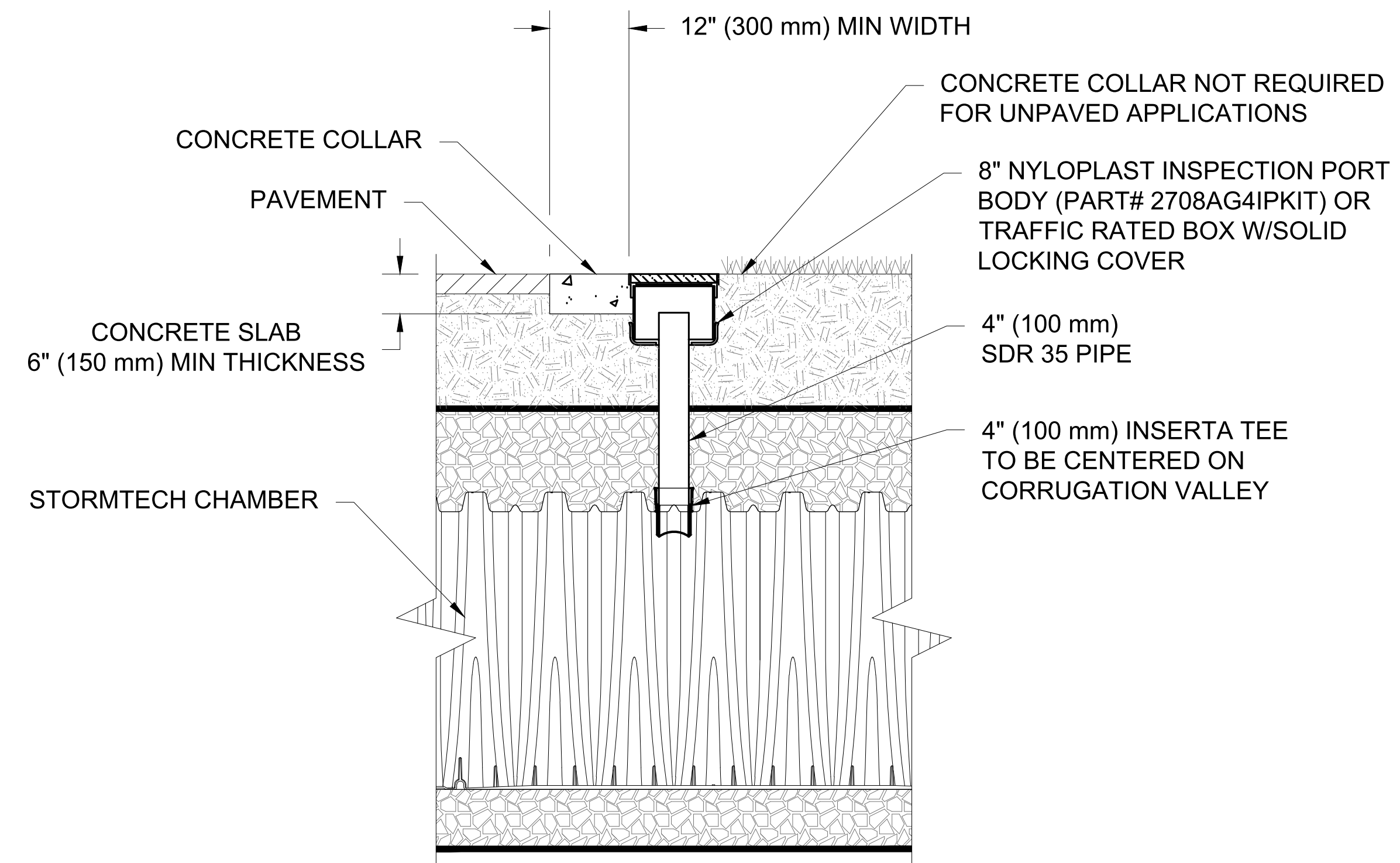
MC-7200 ISOLATOR ROW PLUS DETAIL
NTS

INSPECTION & MAINTENANCE

- STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
 - A. INSPECTION PORTS (IF PRESENT)
 - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
 - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
 - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
 - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
 - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
 - B. ALL ISOLATOR PLUS ROWS
 - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
 - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
 - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
 - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
 - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
 - A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
 - B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
 - C. VACUUM STRUCTURE SUMP AS REQUIRED
- STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.
- STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

- 1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
- 2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



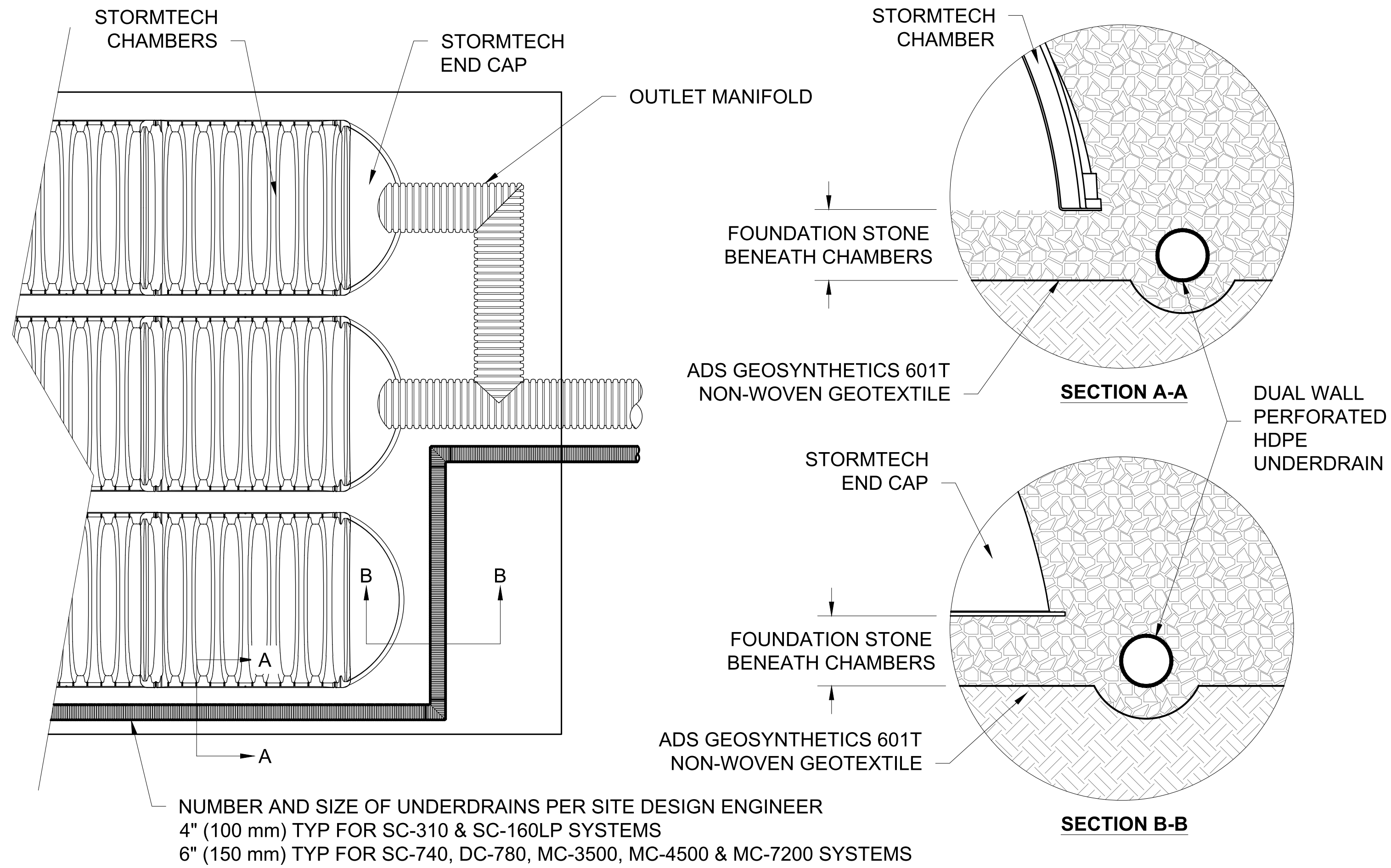
NOTE:
INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION VALLEY.

4\"/>NTS

<p>CROSSROADS MIXED USE FILING NO. 1 COLORADO SPRINGS, CO</p>		<p>DATE: 05-05-22 DRAWN: TSG PROJECT #: S295850 CHECKED: CTS</p>			
12-18-22	RKC	BMW	JPR	DATE	DESCRIPTION
<p>StormTech® Chamber System 888-892-2694 WWW.STORMTECH.COM</p>					
<p>4640 TRUEMAN BLVD HILLIARD, OH 43026</p>					
<p>ADS</p>					
<p>THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER OR OTHER PROJECT REPRESENTATIVE. THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING PRIOR TO CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.</p>					
4	SHEET OF				5

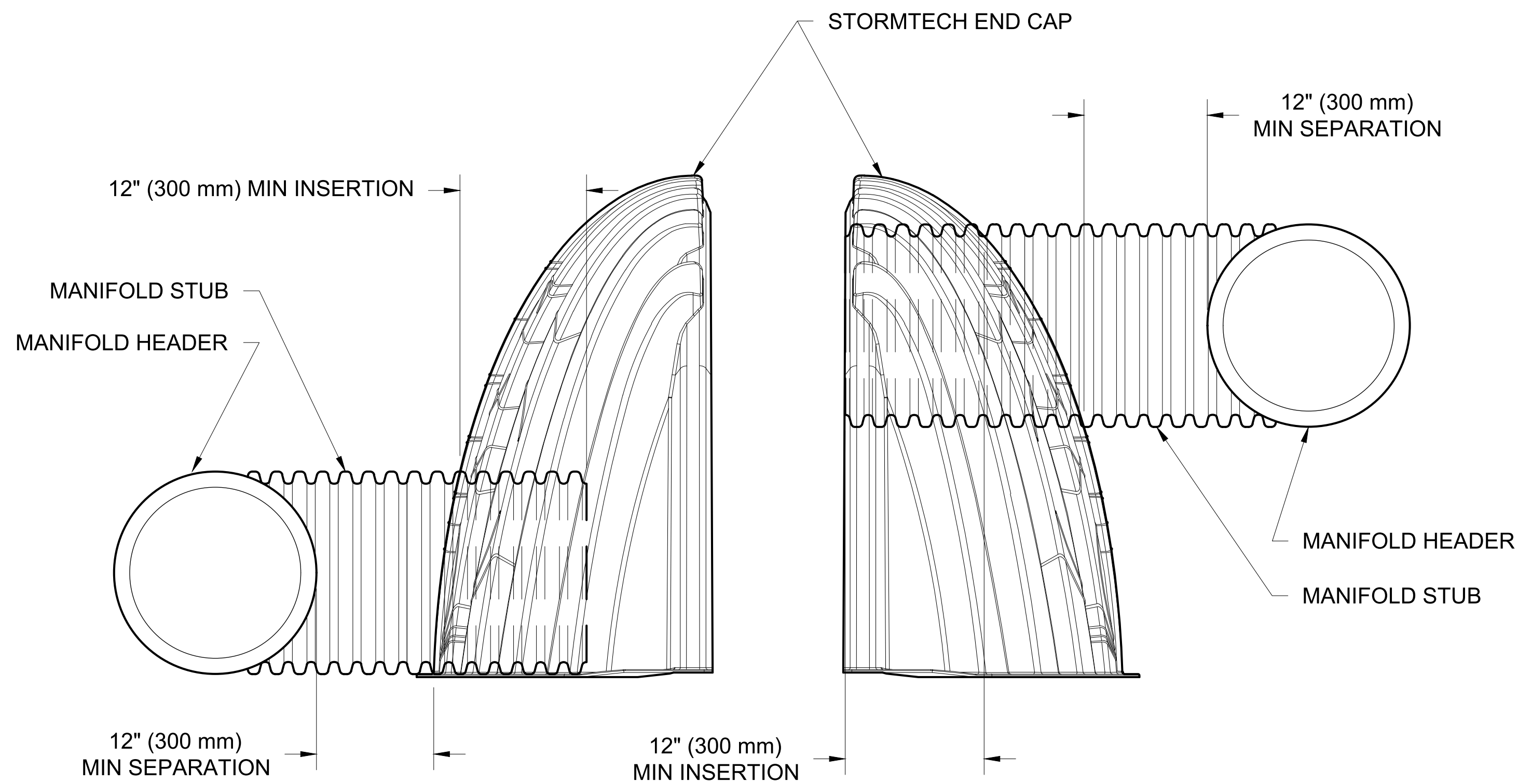
UNDERDRAIN DETAIL

NTS



MC-SERIES END CAP INSERTION DETAIL

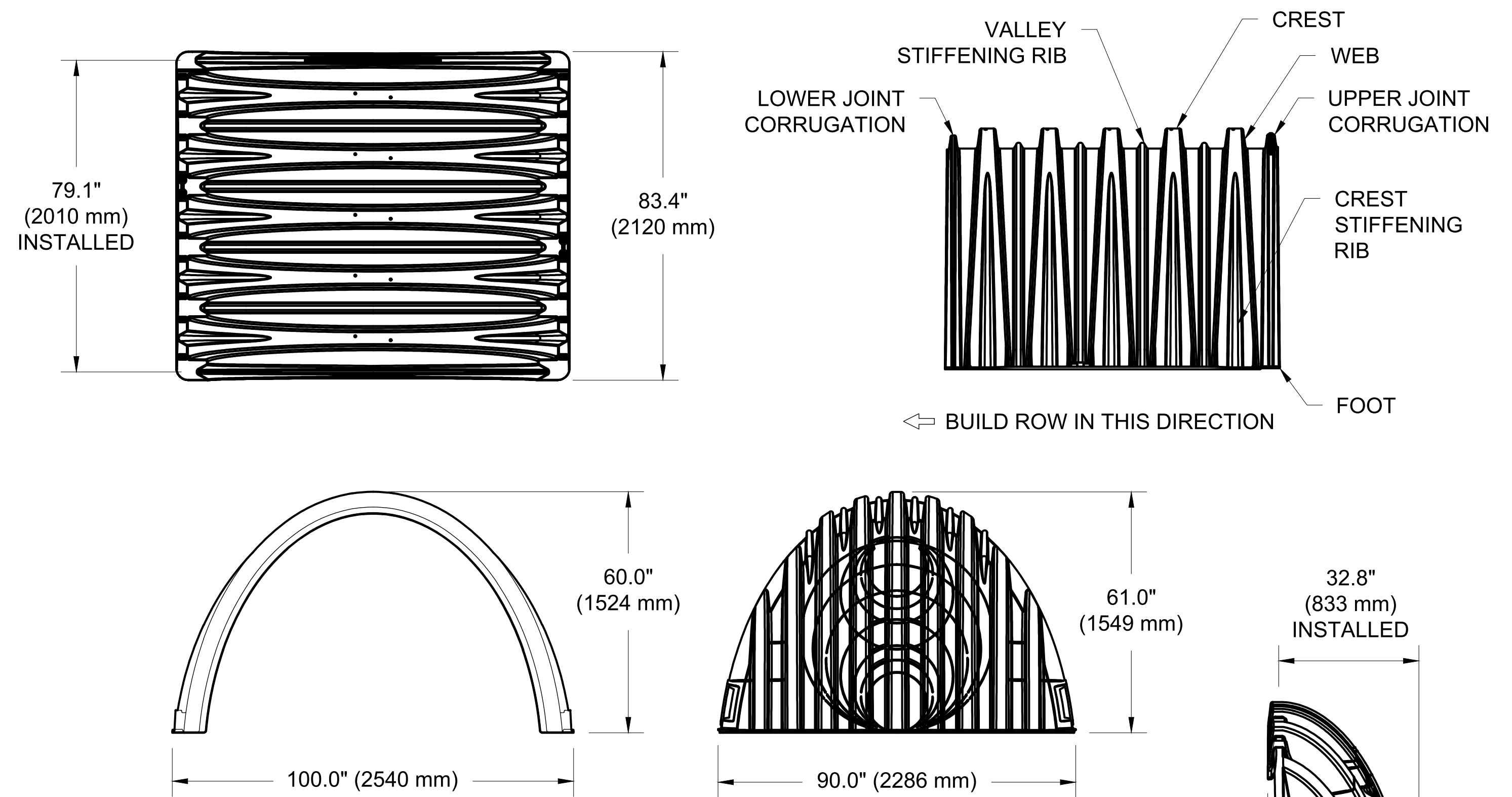
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NOTE: MANIFOLD STUB MUST BE LAID HORIZONTAL FOR A PROPER FIT IN END CAP OPENING.

MC-7200 TECHNICAL SPECIFICATION

NTS



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	100.0" X 60.0" X 79.1"	(2540 mm X 1524 mm X 2010 mm)
CHAMBER STORAGE	175.9 CUBIC FEET	(4.98 m ³)
MINIMUM INSTALLED STORAGE*	267.3 CUBIC FEET	(7.56 m ³)
WEIGHT (NOMINAL)	205 lbs.	(92.9 kg)

NOMINAL END CAP SPECIFICATIONS

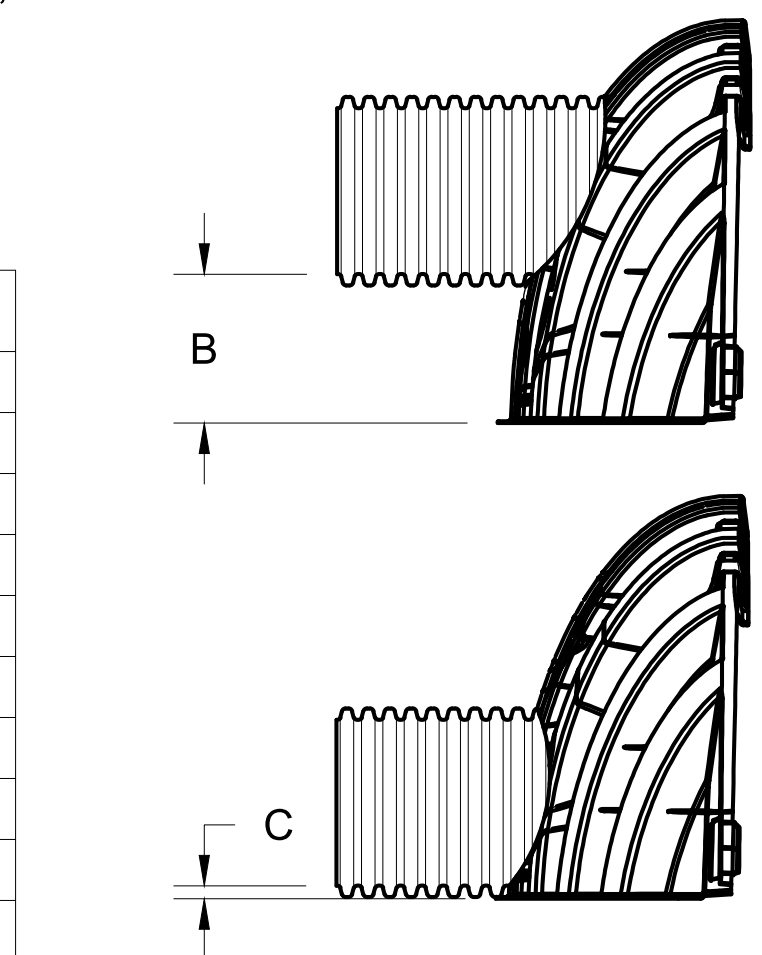
SIZE (W X H X INSTALLED LENGTH)	90.0" X 61.0" X 32.8"	(2286 mm X 1549 mm X 833 mm)
END CAP STORAGE	39.5 CUBIC FEET	(1.12 m ³)
MINIMUM INSTALLED STORAGE*	115.3 CUBIC FEET	(3.26 m ³)
WEIGHT (NOMINAL)	90 lbs.	(40.8 kg)

*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION AND BETWEEN CHAMBERS, 12" (305 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY.

PARTIAL CUT HOLES AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
 PARTIAL CUT HOLES AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
 END CAPS WITH A PREFABRICATED WELDED STUB END WITH "W"

PART #	STUB	B	C
MC7200IEPP06T	6" (150 mm)	42.54" (1081 mm)	---
MC7200IEPP06B	---	---	0.86" (22 mm)
MC7200IEPP08T	8" (200 mm)	40.50" (1029 mm)	---
MC7200IEPP08B	---	---	1.01" (26 mm)
MC7200IEPP10T	10" (250 mm)	38.37" (975 mm)	---
MC7200IEPP10B	---	---	1.33" (34 mm)
MC7200IEPP12T	12" (300 mm)	35.69" (907 mm)	---
MC7200IEPP12B	---	---	1.55" (39 mm)
MC7200IEPP15T	15" (375 mm)	32.72" (831 mm)	---
MC7200IEPP15B	---	---	1.70" (43 mm)
MC7200IEPP18T	---	29.36" (746 mm)	---
MC7200IEPP18TW	18" (450 mm)	---	---
MC7200IEPP18B	---	---	1.97" (50 mm)
MC7200IEPP18BW	---	---	---
MC7200IEPP24T	---	23.05" (585 mm)	---
MC7200IEPP24TW	24" (600 mm)	---	---
MC7200IEPP24B	---	---	2.26" (57 mm)
MC7200IEPP24BW	---	---	---
MC7200IEPP30BW	30" (750 mm)	---	2.95" (75 mm)
MC7200IEPP36BW	36" (900 mm)	---	3.25" (83 mm)
MC7200IEPP42BW	42" (1050 mm)	---	3.55" (90 mm)

NOTE: ALL DIMENSIONS ARE NOMINAL



CUSTOM PREFABRICATED INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-7200 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.

CROSSROADS MIXED USE
 FILING NO. 1
 COLORADO SPRINGS, CO
 DATE: 05-05-22
 PROJECT #: S295850
 DRAWN: TSG
 CHECKED: CTS

DATE	BY	DESCRIPTION
12-18-22	RKC	UPDATED ELEVATIONS
12/13/22	BMW	JPR ELEVATION AND LAYOUT ADJUSTMENTS
	DRWN	CHKD

StormTech®
 Chamber System
 888-892-2694 | WWW.STORMTECH.COM

4640 TRUEMAN BLVD
 HILLIARD, OH 43026

ADS

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PROJECT INFORMATION	
ENGINEERED PRODUCT MANAGER:	JEROME MAGSINO 303-349-7555 JEROME.MAGSINO@ADSPIPE.COM
ADS SALES REP:	AARON ZEE ---- AARON.ZEE@ADSPIPE.COM
PROJECT NO:	S295850



CROSSROADS MIXED USE FILING NO. 1

COLORADO SPRINGS, CO

BAYSAVER BAYSEPARATOR SPECIFICATIONS

MATERIALS AND DESIGN

- A. CONCRETE STRUCTURES SHALL BE DESIGNED FOR H-20 TRAFFIC LOADING AND APPLICABLE SOIL LOADS OR AS OTHERWISE DETERMINED BY A LICENSED PROFESSIONAL ENGINEER. THE MATERIALS AND STRUCTURAL DESIGN OF THE DEVICES SHALL BE PER ASTM C857 AND ASTM C858.
 1. THE MINIMUM COMPRESSIVE STRENGTH OF THE CONCRETE IN THE MANHOLE BASE, RISER, AND TOP SECTIONS SHALL BE 4000 PSI.
 2. THE MINIMUM WALL THICKNESS SHALL BE ONE TWELFTH OF THE INTERNAL DIAMETER OF THE RISER OF LARGEST CONE DIAMETER.
 3. CEMENT SHALL CONFORM TO THE REQUIREMENTS FOR PORTLAND CEMENT OF SPECIFICATION C150.
 4. AGGREGATES SHALL CONFORM TO SPECIFICATION C33, EXCEPT THAT THE REQUIREMENT FOR GRADATION SHALL NOT APPLY.
 5. REINFORCEMENT SHALL CONSIST OF WIRE CONFORMING TO SPECIFICATION A82 OR SPECIFICATION A496, OF WIRE FABRIC CONFORMING TO SPECIFICATION A185 OR SPECIFICATION A497, OR OF BARS OF GRADE 40 STEEL CONFORMING TO SPECIFICATION A615/A615M.
 6. THE ACCESS COVER SHALL BE DESIGNED FOR HS20-44 TRAFFIC LOADING AND SHALL PROVIDE A MINIMUM 30 INCH CLEAR OPENING.
 7. ALL JOINTS SHALL BE WATERPROOF WITH WRAPPED GASKETS OR SEALED WITH A MASTIC TREATMENT.
 8. ANY GROUT USED WITHIN THE SYSTEM SHALL MEET THE ASTM C 1107 "STANDARD SPECIFICATION FOR PACKAGED DRY, HYDRAULIC-CEMENT GROUT (NON-SHRINK)". GRADES A, B AND C AT A POURABLE AND PLASTIC CONSISTENCY AT 70°F. CRD C 621 "CORPS OF ENGINEERS SPECIFICATION FOR NON-SHRINK GROUT."
 9. STORAGE MANHOLE CONNECTOR PIPES SHALL BE EQUIPPED WITH A SEAL GASKET THAT MEETS OR EXCEEDS MATERIAL SPECIFICATIONS OF ASTM C-923 OR OTHER LOCALLY APPROVED METHODS.
- B. THE SEPARATOR STRUCTURE SHALL BE SUBSTANTIALLY CONSTRUCTED OF HDPE OR EQUIVALENT CORROSION RESISTANT MATERIAL MEETING ASTM D330, ASTM F412, AND ASTM C-425.
- C. PIPES WITHIN THE UNIT, (I.E., TEE PIPES, CONNECTOR PIPES AND DOWN PIPES) SHALL BE CONSTRUCTED OF AT LEAST SDR 32.5 HDPE PIPE OF STANDARD ASTM F412.
- D. PIPE AND FITTING MATERIAL SHALL BE HIGH DENSITY POLYETHYLENE MEETING ASTM D330 MINIMUM CELL CLASSIFICATION 335400C FOR 24-INCH THROUGH 60-INCH DIAMETERS. THE 24- THROUGH 60-INCH PIPE MATERIAL SHALL BE SLOW CRACK RESISTANT HDPE MATERIAL, EVALUATED USING THE SINGLE POINT NOTCHED CONSTANT TENSILE LOAD (SP-NCTL) TEST.

PERFORMANCE

- A. THE STORMWATER TREATMENT UNIT SHALL BE AN ONLINE UNIT CAPABLE OF CONVEYING 100% OF THE DESIGN PEAK FLOW.
- B. THE BAYSEPARATOR UNIT SHALL BE DESIGNED TO REMOVE AT LEAST 80% OF THE SUSPENDED SOLIDS LOAD ON AN ANNUAL AGGREGATE REMOVAL BASIS. SAID REMOVAL SHALL BE BASED ON FULL-SCALE THIRD PARTY TESTING USING F-95 MEDIA GRADATION (MANUFACTURED BY US SILICA) OR EQUIVALENT. SAID FULL SCALE TESTING SHALL HAVE INCLUDED SEDIMENT CAPTURE BASED ON ACTUAL TOTAL MASS COLLECTED BY THE STORMWATER TREATMENT UNIT(S).
- C. THE STORMWATER TREATMENT UNIT SHALL CONSIST OF ONE (1) PREFABRICATED SEPARATOR STRUCTURE, ONE (1) ONLINE COARSE SEDIMENT CAPTURE STRUCTURE, AND ONE (1) OFFLINE SEDIMENT AND FLOATABLE CAPTURE STRUCTURE. THE SEPARATOR STRUCTURE SHALL BE SUBSTANTIALLY CONSTRUCTED OF HDPE OR EQUIVALENT CORROSION RESISTANT MATERIAL. THE OFFLINE SEDIMENT STORAGE STRUCTURE MUST PROVIDE FOR OFFLINE SEDIMENT STORAGE OF SEDIMENTS AND FLOATABLES THAT ARE ISOLATED FROM HIGH INTENSITY STORMS.
- D. THE STORMWATER TREATMENT UNIT(S) HEAD LOSS AT THE PEAK DESIGN FLOW RATE SHALL NOT EXCEED THE HEAD LOSS SPECIFIED BY THE ENGINEER.
- E. THE UNIT SHALL BE DESIGNED TO REMOVE SEDIMENT PARTICLES AS WELL AS FLOATING OILS AND DEBRIS.

MANUFACTURER

- A. THE STORMWATER TREATMENT UNIT(S) SHALL BE OF A BASIC DESIGN THAT HAS BEEN INSTALLED AND USED SUCCESSFULLY FOR A MINIMUM OF 5 YEARS.
- B. EACH STORMWATER TREATMENT SYSTEM SHALL BE A BAYSEPARATOR SYSTEM AS MANUFACTURED BY BAYSAVER, LLC, 1030 DEER HOLLOW DR., MOUNT AIRY, MD 21771, PHONE (301) 829-6470, FAX (301)-829-3747, TOLL FREE 1-800-229-7283 (1-800-BAYSAVER), EMAIL INFO@BAYSAVER.COM PROTECTED UNDER US PATENT NUMBER 5746911

BAYSEPARATOR MAINTENANCE

BAYSEPARATOR SYSTEMS MUST BE INSPECTED AND MAINTAINED PERIODICALLY. INSPECTION IS MADE BY CHECKING THE DEPTH OF SEDIMENT IN EACH MANHOLE WITH A GRADE STICK OR SIMILAR DEVICE. MAINTENANCE IS REQUIRED WHEN THE SEDIMENT DEPTH IN EITHER MANHOLE EXCEEDS 2 FEET. MINIMUM INSPECTION IS RECOMMENDED TWICE A YEAR TO MAINTAIN OPERATION AND FUNCTION OF BAYSAVER.

MAINTENANCE CONSISTS OF THE FOLLOWING:

A. STORAGE MANHOLE

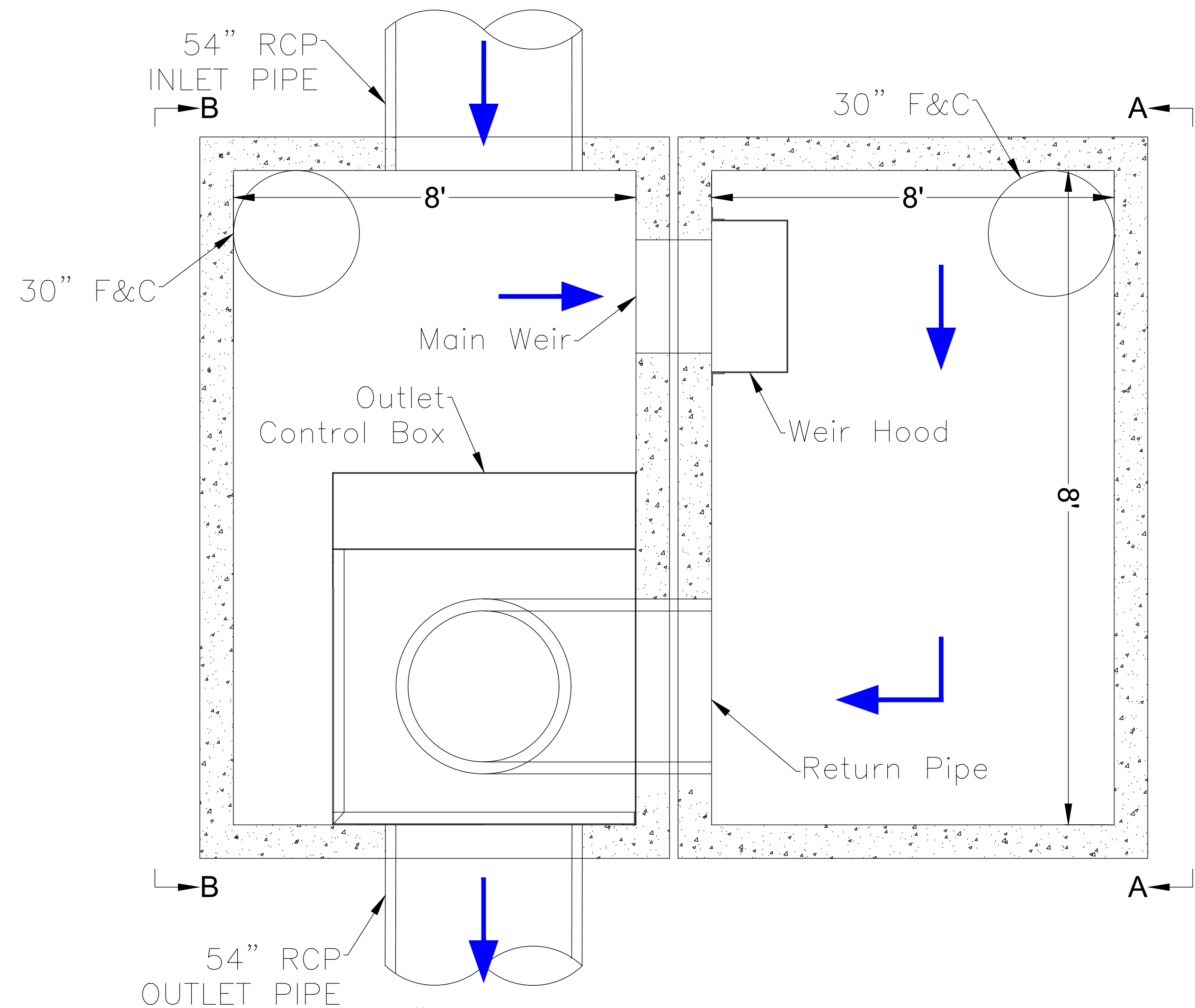
1. REMOVE THE ENTIRE VOLUME OF THE CONTAMINATED WATER BY VACUUM TRUCK.
2. CLEAN THE MANHOLE WALLS AND FLUSH OUT THE MANHOLE USING A HIGH PRESSURE HOSE AND REMOVE FLUSHING WATER BY VACUUM TRUCK. MAKE CERTAIN MANHOLE IS CLEAN.

B. PRIMARY MANHOLE

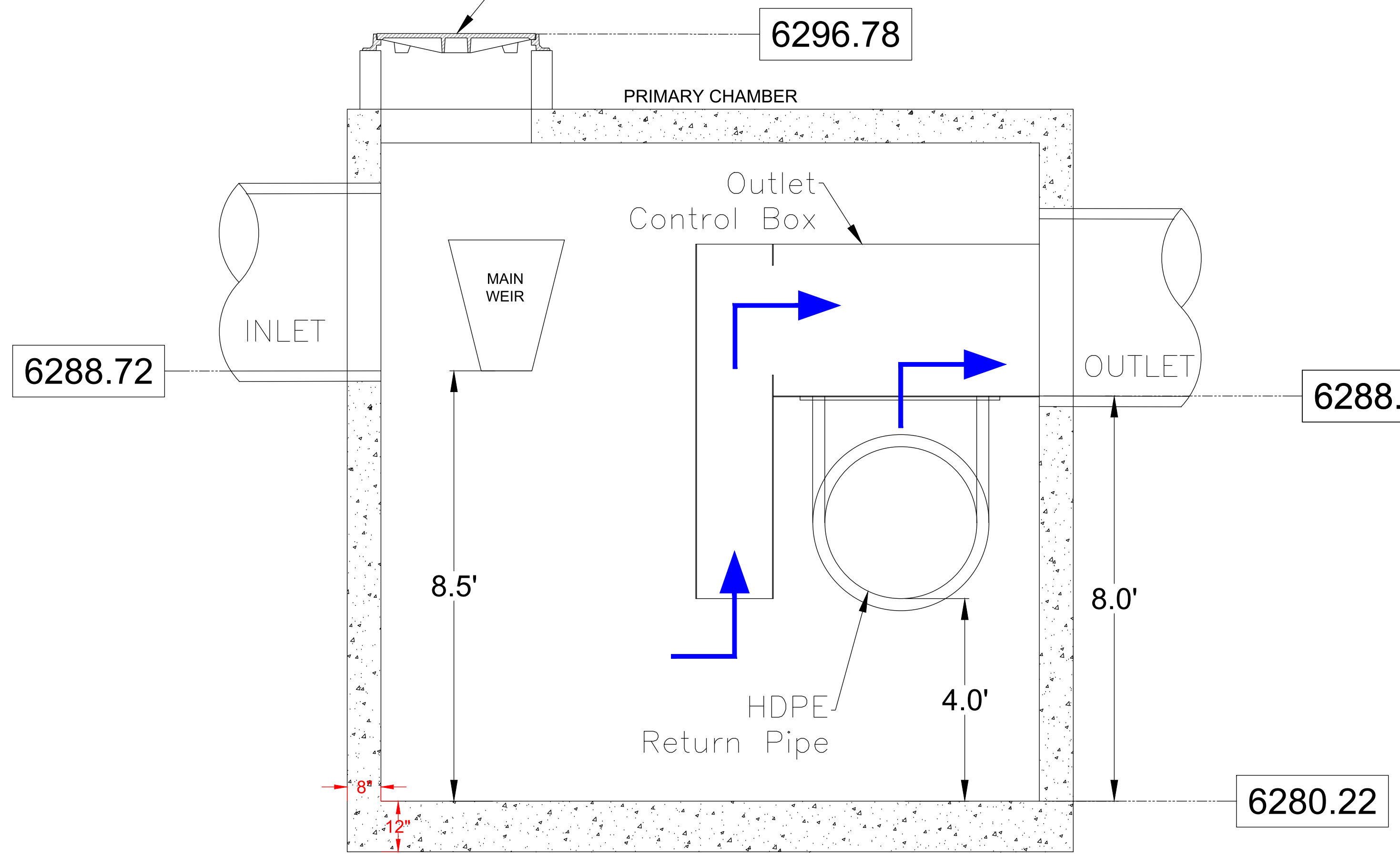
1. USING A SUBMERSIBLE PUMP, PUMP THE CLEAN WATER FROM THE CENTER OF THE MANHOLE DIRECTLY INTO THE EMPTY STORAGE MANHOLE UNTIL THE WATER LEVEL FALLS TO 1 FOOT ABOVE THE SEDIMENT LAYER.
2. REMOVE THE SETTLED SEDIMENT AND REMAINING WATER BY VACUUM TRUCK.
3. CLEAN THE MANHOLE WALLS AND FLUSH OUT THE MANHOLE USING A HIGH PRESSURE HOSE AND REMOVE FLUSHING WATER BY VACUUM TRUCK. MAKE CERTAIN MANHOLE IS CLEAN.
4. CONTAMINATED MATERIAL REMOVED FROM THE MANHOLES MUST BE DISPOSED OF RESPONSIBLY AND LEGALLY BY THE OPERATOR OF THE VACUUM TRUCK.

BAYSEPARATOR INSTALLATION NOTES

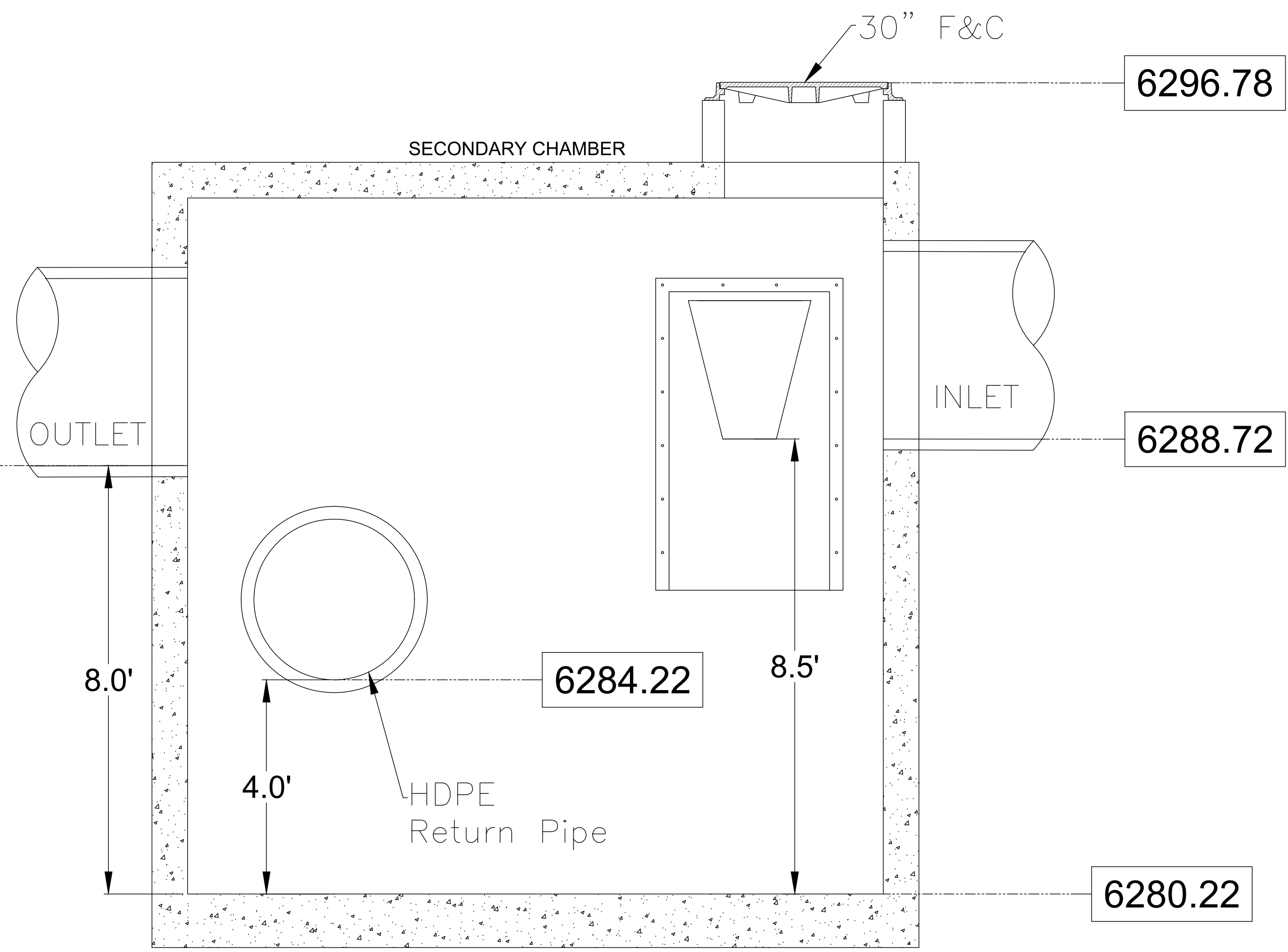
1. EXCAVATION MUST PROVIDE ADEQUATE SPACE TO CONNECT INLET AND OUTLET PIPES TO STORAGE MANHOLE AND BAYSEPARATOR UNIT. INSTALL PRECAST DROP STRUCTURES ON SOLID GROUND AS VERIFIED BY A GEOTECHNICAL ENGINEER.
2. VERIFY THE SUBGRADE ELEVATION AGAINST THE MANHOLE DIMENSIONS AND CONNECTING STORM DRAIN INVERTS.
3. MAKING SURE THE BASES ARE LEVEL AND THE STORAGE MANHOLE OPENINGS ARE ALIGNED WITH THE SEPARATOR UNIT, INSTALL PRIMARY AND STORAGE MANHOLES. INSTALL WATERTIGHT GASKETS ON BASE UNITS AND COAT WITH LUBRICATING GREASE (IF REQUIRED). INSTALL ADDITIONAL MANHOLE SECTIONS AS REQUIRED. SEAL LIFT HOLES WITH NON-SHRINK GROUT.
4. BACKFILL BASE SECTIONS OF MANHOLES TO INVERT OF STORAGE MANHOLE CONNECTING PIPES. USING APPROVED BACKFILL MATERIAL, BACKFILL AND COMPACT IN 8 INCH LIFTS. BACKFILL AND COMPACTION SHOULD BE MONITORED BY A GEOTECHNICAL ENGINEER.
5. INSTALL BAYSEPARATOR UNIT AND CONNECTING PIPES. SEAL ALL CONNECTING JOINTS AND INSTALL SEPARATOR HDPE REDUCER/ADAPTER. CUT EXCESS LENGTH OFF CONNECTING PIPES INSIDE STORAGE MANHOLE.
6. BACKFILL SEPARATOR UNIT AND MANHOLES. AREAS NOT ACCESSIBLE TO COMPACTION EQUIPMENT MUST BE BACKFILLED WITH #57, #7, OR PEA GRAVEL.
7. INSTALL AND SET MANHOLE COVER GRADE ADJUSTMENT RINGS AS NECESSARY.
8. INSTALL AND SET MANHOLE FRAME AND COVER UNITS.



SYSTEM	NORTHSIDE
WQ FLOW RATE (CFS)	24
PEAK FLOW RATE (CFS)	65.5
INLET PIPE	54"
INLET INVERT	6288.72
OUTLET PIPE	54"
OUTLET INVERT	6288.22
RIM ELEVATION	6296.78
WIDTH (FT)	8'
LENGTH (FT)	8'
INSIDE HEIGHT (FT)	16'



SECTION B-B



SECTION A-A

CROSSROADS MIXED USE FILING NO. 1

COLORADO SPRINGS, CO

DATE: 12/21/22 DRAWN: PR PROJECT #: S295850 CHECKED: PR

DATE	DRWN	CHKD	DESCRIPTION

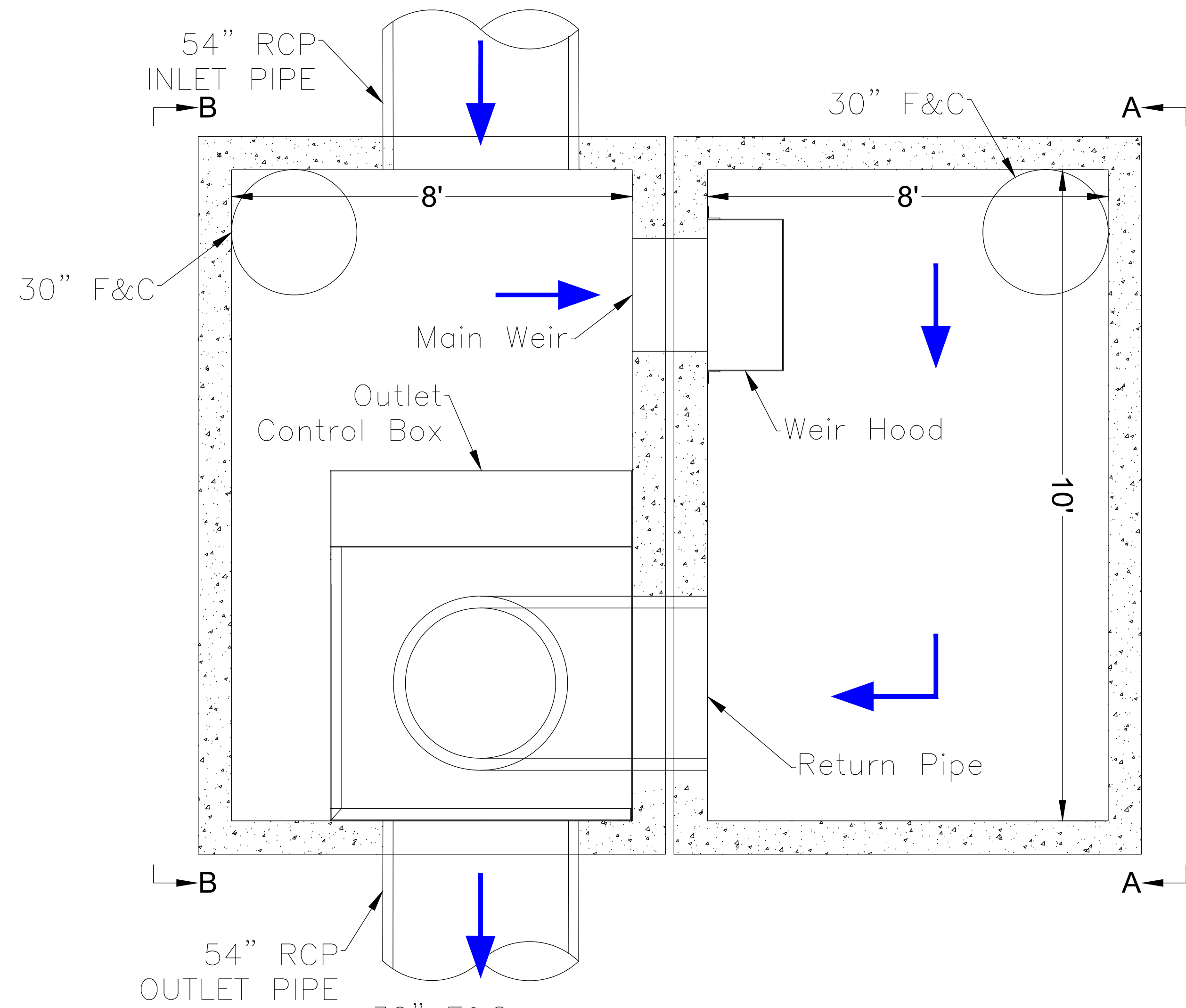
BaySeparator
Stormwater Treatment System

4640 TRUEMAN BLVD
HILLIARD, OH 43026

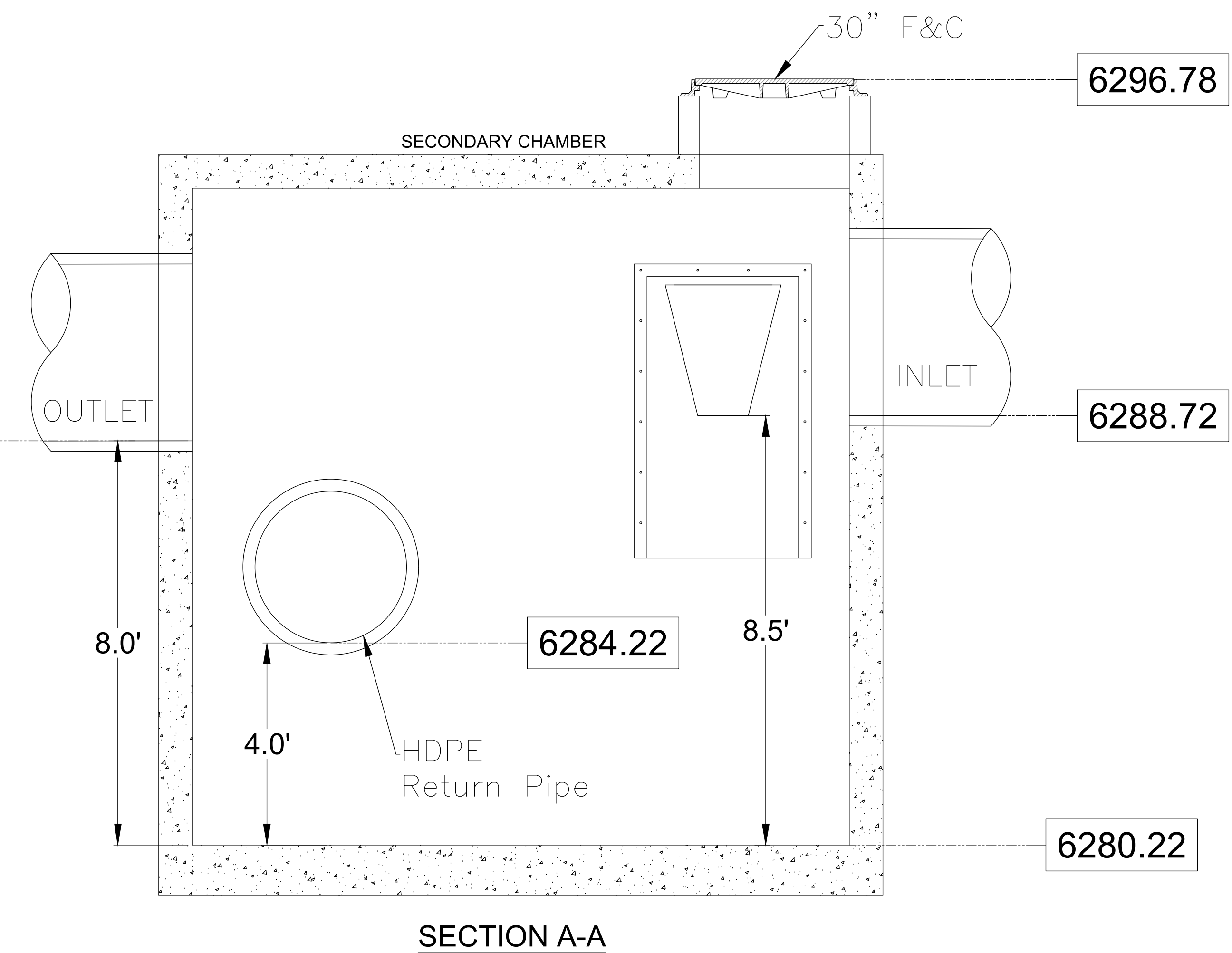
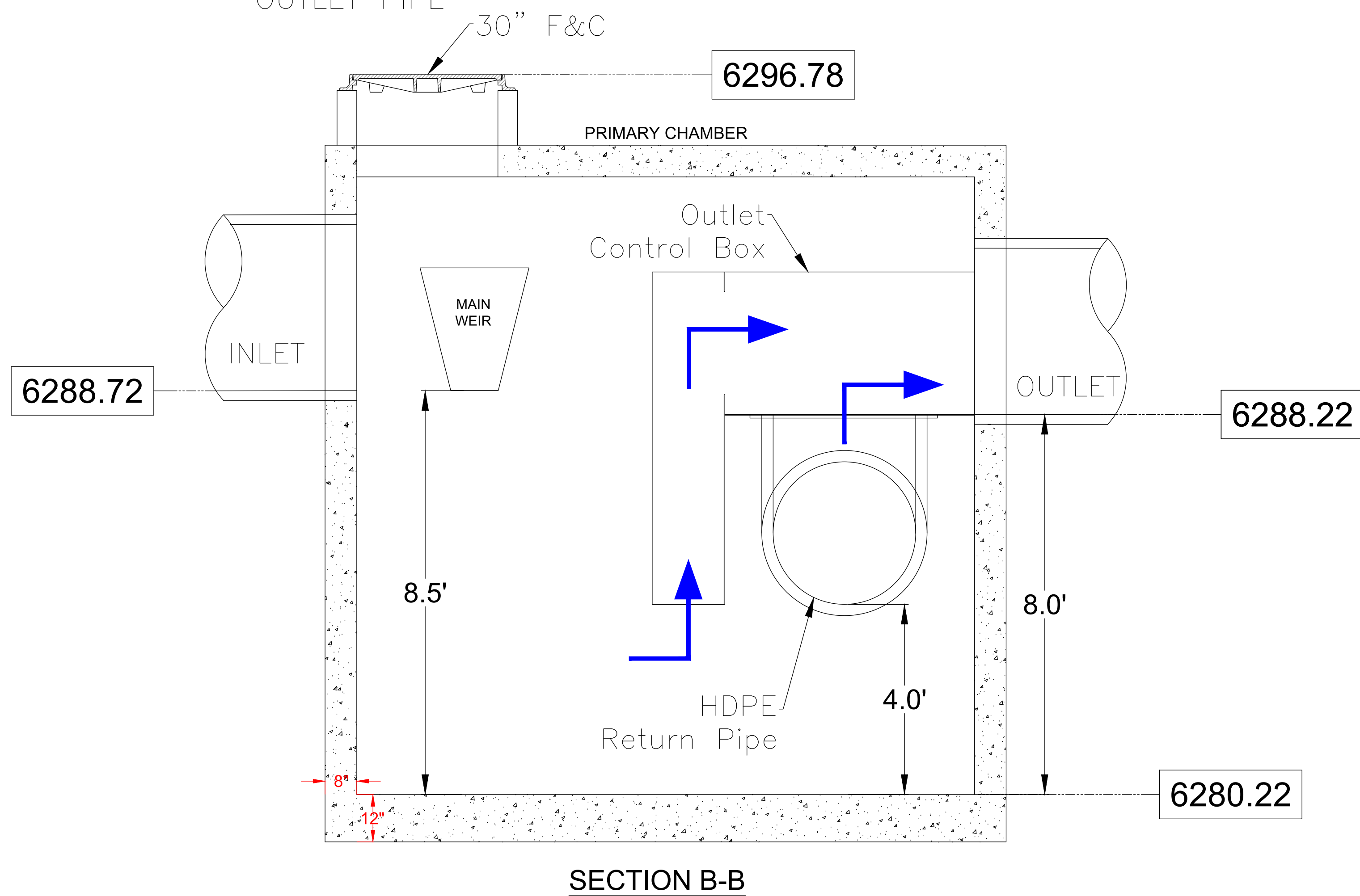
NOT TO SCALE

2 SHEET
OF 3

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SYSTEM	EASTSIDE
WQ FLOW RATE (CFS)	32
PEAK FLOW RATE (CFS)	112
INLET PIPE	54"
INLET INVERT	6288.72
OUTLET PIPE	54"
OUTLET INVERT	6288.22
RIM ELEVATION	6296.78
WIDTH (FT)	8'
LENGTH (FT)	10'
INSIDE HEIGHT (FT)	16'



CROSSROADS MIXED USE FILING NO. 1

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BaySeparator
Stormwater Treatment System

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NOT TO SCALE

3 SHEET OF 3

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