

COTTONWOOD CREEK/PEORIA POND

SHARED INSPECTION AND MAINTENANCE AGREEMENT

THIS COTTONWOOD CREEK/PEORIA POND SHARED INSPECTION AND MAINTENANCE AGREEMENT (“Agreement”) is made and entered into this day of _____, 2024 to be effective as of _____, 2024 (“Effective Date”), by and among **URBAN DRAINAGE AND FLOOD CONTROL DISTRICT d/b/a MILE HIGH FLOOD DISTRICT** (“MHFD”), **CHERRY CREEK BASIN WATER QUALITY AUTHORITY** (“CCBWQA”), **THE CITY OF GREENWOOD VILLAGE** (“Greenwood Village”), and **SOUTHEAST METRO STORMWATER AUTHORITY** (“SEMSWA”). MHFD, CCBWQA, Greenwood Village, and SEMSWA may be hereinafter individually referred to as a “Party” and collectively referred to as the “Parties”.

RECITALS

WHEREAS, Peoria Pond, as hereinafter defined, was constructed in 2003 by MHFD with funds from MHFD and others including CCBWQA, Greenwood Village, Arapahoe County, and the Landmark Metropolitan District pursuant to that certain Agreement Regarding Final Design, Right of Way Acquisition, and Construction of Water Quality, Drainage, and Flood Control Improvements for Cottonwood Creek, dated February 14, 2000, as amended by a First Amendment dated May 18, 2001 (collectively the “Construction Agreement”); and

WHEREAS, Peoria Pond is located within an access and maintenance easement acquired by CCBWQA on June 15, 2001 and recorded upon the real estate records of Arapahoe County, Colorado on July 3, 2001 at Reception No. B1107383 (“Easement” or Easement Area); and

WHEREAS, except as noted herein and in the Shared Inspection and Maintenance Plan, as hereinafter defined, pursuant to the Construction Agreement and the Easement, CCBWQA acquired ownership of and maintenance responsibility for the constructed improvements, referred to herein as the components (“Components”), that constitute what is known as Peoria Pond; and

WHEREAS, at the time of its construction, one of the functions of Peoria Pond was that of a Pollution Reduction Facility for CCBWQA designed to protect, preserve, and enhance water quality in Cherry Creek and the Cherry Creek Reservoir, even though some Components also provided and currently do provide stormwater drainage benefits; and

WHEREAS, the Peoria Pond also serves as a regional water quality facility, as recognized in the 2010 MHFD Cottonwood Creek Outfall System Plan and may be utilized to meet Municipal Separate Storm Sewer System (MS4) post-construction stormwater management in new development and redevelopment; and

WHEREAS, subsequent to completion of Peoria Pond, the City of Centennial (“City”) was incorporated and the Southeast Metro Stormwater Authority (“SEMSWA”) was established as a Water Activity Enterprise, pursuant to 29-1-204.2 C.R.S. and

WHEREAS, with the incorporation of the City and SEMSWA’s formation, Peoria Pond may serve as a Regional Water Quality Capture Volume Facility for properties in SEMSWA’s service within the City of Centennial and unincorporated Arapahoe County; and

WHEREAS, the Construction Agreement provides that CCBWQA will maintain Peoria Pond with assistance from MHFD as requested by Greenwood Village and Arapahoe County, Colorado; and

WHEREAS, even though Greenwood Village does not use Peoria Pond as a Regional Water Quality Capture Volume Facility for purposes of Greenwood Village’s MS4 Permit, Peoria Pond is physically located within Greenwood Village and provides drainage and water quality benefits for certain developments within Greenwood Village that are north of Peoria Pond; and

WHEREAS, the changes in the local government structure and jurisdiction that have occurred since the Construction Agreement was entered into, necessitate this Agreement to ensure adequate inspection, maintenance, and rehabilitation of Peoria Pond and to clarify roles and responsibilities among the Parties with respect to the same; and

WHEREAS, to more efficiently and economically allocate inspection, maintenance, and rehabilitation responsibility for Peoria Pond and its Components the Parties desire to enter into this Shared Inspection and Maintenance Agreement.

NOW, THEREFORE, the Parties agree as follows:

ARTICLE I **DEFINITIONS**

Section 1.1 **Peoria Pond**. Means the water quality and drainage project, including the Components thereof, located West of Peoria Street, North of Maplewood Avenue, and upstream of Cherry Creek State Park as generally depicted on Figure 1 of the shared Inspection and Maintenance Plan.

Section 1.2 **Shared Inspection and Maintenance Plan**. Means that certain Cottonwood Creek/Peoria Street Water Quality Pond Shared Inspection and Maintenance Plan dated December 2023, a copy of which is attached hereto as Exhibit A.

Section 1.3 **Shared Inspection and Maintenance Boundary**. Means the area depicted on Figure 3 (page 8) of the Shared Inspection and Maintenance Plan.

Section 1.4 **Component or Components.** Means those facilities that taken together, comprise Peoria Pond as more particularly identified in Table 1 (page 5) of the Shared Inspection and Maintenance Plan.

Section 1.5 **Inspections.** Means the annual, quarterly, or after-storm inspections described in Section 5 of the Shared Inspection and Maintenance Plan.

Section 1.6 **Routine Maintenance.** Means work for the regular upkeep of property, including recurring, preventative, and on-going maintenance, necessary to prevent or delay the failure in the functionality of the pond. Routine maintenance includes those maintenance activities eligible under MHFD's maintenance eligibility program ("MEP") and other routine maintenance as described in Section 6 of the Shared Inspection and Maintenance Plan.

Section 1.7 **Sediment Removal.** Means the periodic sediment removal necessary to keep the sediment basin and micro pool components of the Peoria Pond functioning properly as more particularly described in Section 7 of the Shared Inspection and Maintenance Plan.

Section 1.8 **Rehabilitative Maintenance.** Means all maintenance and repair reasonably necessary to keep Peoria Pond including its Components in good working order and functioning as designed and identified on an annual basis in CCBWQA's annual pollution reduction facility operation and maintenance report as more particularly described in Section 8 of the Shared Inspection Maintenance Plan.

Section 1.9 **Retrofit Maintenance.** Means the addition of a component to improve one or more functions of the Peoria Pond.

Section 1.10 **Miscellaneous Maintenance Activities.** Means the other maintenance related activities as described in Section 9 of the Shared Inspection and Maintenance Plan.

ARTICLE II **PURPOSE**

Section 2.1 **Purpose.** This Agreement is entered into for the express purpose of furthering cooperation between the Parties with respect to the inspection, maintenance, and rehabilitation, as necessary of Peoria Pond. Peoria Pond: (i) is located within Greenwood Village adjacent to Peoria Street and facilitated the development of property within Greenwood Village adjacent to and downstream (west) from Peoria Pond; and (ii) benefits and is utilized by each of the Parties with respect to their separate, but integrated functions and responsibilities, with respect to the stormwater and water quality needs of portions of the Cherry Creek Basin and in particular Cottonwood Creek and the Cherry Creek Reservoir. This Agreement establishes a shared inspection and maintenance

approach for Peoria Pond and its operation as a whole that assigns to each of the Parties hereto, one or more specific, distinct Inspection and/or Maintenance Tasks on a Component-by-Component basis. This Agreement is intended to promote the efficient use of public resources, foster accountability, and improve and enhance Peoria Pond as a regional water quality and pollution abatement facility, now and in the future.

This Agreement is also entered into for the purposes of identifying those Components of Peoria Pond that are owned by CCBWQA and those Components of Peoria Pond that are not owned by CCBWQA. The ownership of the Components of Peoria Pond is more particularly described and identified in Table 1 of the shared Inspection and Maintenance Plan (pages 5, 6, and 7). It is expressly understood and agreed that any Components of Peoria Pond not owned by CCBWQA together with any other improvements located within the Easement and not owned by any Party hereto, are not subject or governed by the terms and provisions of this Agreement.

ARTICLE III **LOCATION AND OWNERSHIP**

Section 3.1 **CCBWQA Owned Components.** Peoria Pond is located within an Easement recorded with Arapahoe County at Reception No. B1107383 that extends over and across (“Easement Area”) land owned by the Cottonwood Master Homeowners Association in the Cherry Creek Vista Subdivision in Greenwood Village, Colorado (“Easement Area”). The CCBWQA owned Components which are the subject of this Agreement are owned by CCBWQA and located within that portion of the Easement Area identified in Figure 2 of the Shared Inspection and Maintenance Plan as the “Maintenance Boundary”. The Parties agree that the Components owned by CCBWQA are further listed and identified in Table 1 of the Shared Inspection and Maintenance Plan.

Section 3.2 **Components Not Owned by CCBWQA.** There are certain improvements located within the Easement Area and Maintenance Boundary that are not owned by CCBWQA and as a result are not subject to or covered by this Agreement unless specifically stated herein. Examples of such improvements that are not owned by CCBWQA include the concrete recreational trail owned by the Cherry Creek Vista Park and Recreation District as well as the sidewalk located directly adjacent to Peoria Pond and within the road right of way for Peoria Street which sidewalk is owned by Greenwood Village. There are also certain Components that are not owned by CCBWQA, but that are listed in Table 1 of the Shared Maintenance and Inspection Plan such as the Peoria Street Tributary Culverts as well as the Peoria Street Drain. The Parties further agree that any components or features located within the Easement that are not owned by CCBWQA such as the Peoria Street Tributary Culverts and Peoria Street Drain are not the maintenance responsibility of CCBWQA. Said improvements are owned by SEMSWA and SEMSWA hereby agrees to maintain and inspect said Components, as more particularly set forth in the Shared Maintenance and Inspection Plan (see Exhibit A).

ARTICLE IV

LICENSE

Section 4.1 **Grant of License.** CCBWQA hereby grants to each of the other Parties a revocable license to enter upon the Easement Area for the purpose of performing the Shared Inspection/Maintenance Tasks that each Party accepts and agrees to perform pursuant to this Agreement, subject to the terms and provisions of the Easement Area and obtaining whatever consent is necessary from the underlying fee owner of the Easement Area. This License is granted by CCBWQA without warranting title or interest. Each Party agrees to comply with the terms and provisions of the Easement, at all times, while performing, as an independent contractor and not as an agent of CCBWQA, the Inspection/Maintenance Task assigned to the Party pursuant to this Agreement.

ARTICLE V

SHARED INSPECTION AND MAINTENANCE TASKS

Section 5.1 **Shared Inspection and Maintenance.** Notwithstanding that the CCBWQA has accepted maintenance responsibility for the CCBWQA owned Components that are subject to this Agreement, the Parties agree to share the responsibility for the performance of the inspection, monitoring, maintenance, repair, and replacement of those Components as described in Appendix D to the Shared Inspection and Maintenance Plan and each Party hereby agrees to perform each such task assigned as set forth in Appendix D. The specific inspection, monitoring, maintenance, and other tasks that are to be shared and undertaken by the Parties hereto are more particularly described in the body of the Shared Inspection and Maintenance Plan and include: Inspection Requirements (Section 5), Routine Maintenance Activities, including those eligible under MHFD's maintenance eligibility program (Section 6), Sediment Removal (Section 7), Rehabilitative Maintenance Requirements (Section 8), and other miscellaneous maintenance related activities (Section 9). Except as specifically otherwise stated in the Shared Inspection and Maintenance Plan, the Party performing the Inspection/Maintenance Task as assigned to the Party shall perform such task or tasks at the performing Party's sole cost and expense without contribution from any other Party.

Section 5.1.1 **Personnel and Equipment.** Except as specifically otherwise stated in the Shared Inspection and Maintenance Plan each Party performing a Inspection/Maintenance Task as assigned to the Party, shall perform such task or tasks at the performing Party's sole cost and expense without contribution from any other Party. Each Party shall remain responsible for the payment of salary, wages, or other compensation or reimbursement of its own personnel or contractors utilized in the performance of any Inspection/Maintenance Task. The personnel and equipment of each Party providing work or assistance under this Agreement shall be insured by the liability, workers' compensation, or other insurance of such Party. Each Party shall be responsible for its own consumable equipment and supplies, including fuel, which may be consumed as a part of performing services under this Agreement.

Section 5.2 **Maintenance Tasks Role and Responsibilities Table.** The Inspection/Maintenance Tasks which the Parties hereto agree to perform in accordance with the terms and provisions of this Agreement shall be performed at the intervals and by the Party or Parties and for the purpose or purposes as set forth in the Peoria Pond Maintenance Task Role and Responsibilities Table attached to the Shared Inspection and Maintenance Plan as Appendix D. This table further identifies how the cost for performing each of the Maintenance Tasks will be allocated. The Peoria Pond Maintenance Role and Responsibilities Table will be reviewed by the management committee (as herein after defined), as such convenient intervals as the Management Committee may decide, but in no event less frequently than every eighteen (18) months. If it is necessary to make either additions, deletions, or modifications or any combination thereof to the Peoria Pond Maintenance Role and Responsibilities Table, those modifications and changes shall be determined by the Management Committee. Once changed, a new Peoria Pond Maintenance Role and Responsibilities Table will be attached to this Agreement as a new Appendix D and the then current Appendix D shall be deleted in its entirety.

ARTICLE VI

TERM

Section 6.1 **Term.** This Agreement shall commence on the Effective Date (November 1, 2024) and remain in effect thereafter until terminated by agreement of the Parties, unless sooner terminated in accordance with the provisions of this Article VI.

Section 6.2 **Termination for Convenience.** Any Party may withdraw from this Agreement upon six (6) months advance notice to the other Parties for any or no reason. Upon the withdrawal of a withdrawing Party, the other Parties to this Agreement may elect to terminate the Agreement or to modify the Agreement to reallocate the withdrawing Parties rights and responsibilities under this Agreement. Any such new agreement shall be entered into within ninety (90) days following the receipt of notice of withdrawal from a withdrawing Party. The intent is that if a new agreement is necessary, it will be entered into and be effective as of the date the withdrawing Party withdraws from the Agreement.

Section 6.3 **Termination for Cause.** In the event a Party defaults or is in breach of the performance of one or more of its obligations under this Agreement (“Default”) and such Default is not cured in ninety (90) days following delivery of written notice from any other Party of the nature extent of the Default in accordance with the notice provisions of Paragraph 9.14 below, specifying the default and the date on which the Default must be cured, any Party to this Agreement may elect to either withdraw or terminate this Agreement in its entirety. If the Default is not cured within the ninety (90) days, or some other reasonable resolution is not reached prior to the termination date set forth in the notice or the consensus for any extension date is not reached, then this Agreement shall terminate and be of no further force and effect, except that the non-defaulting Party or Parties may perform the obligations of the defaulting Party or Parties and shall have a right to seek reimbursement against the defaulting Party or Parties for the

reasonable costs incurred in performing the obligations of the defaulting Party or Parties for the year in which the default occurred. A Party shall not be in default if its governing body fails to budget and appropriate adequate funds to perform its obligations.

ARTICLE VII **ALLOCATION OF MAINTENANCE RESPONSIBILITIES**

Section 7.1 Maintenance Responsibilities for the components of Peoria Pond shall be as set forth in Appendix D to the Shared Inspection and Maintenance Plan as referenced in section 5.1 above.

ARTICLE VIII **MANAGEMENT - MANAGEMENT COMMITTEE**

Section 8.1 **Management.** During the Term of this Agreement activities under the Agreement including the Shared Inspection and Maintenance Plan and the Peoria Pond Maintenance Roles and Responsibilities Table (Appendix C) will be coordinated through a Management Committee, consisting of four (4) members. Each Party to this Peoria Pond Agreement shall appoint one member to the Management Committee. Matters to be addressed by the Management Committee shall include maintenance operations, Peoria Pond upgrades, modifications to either the Maintenance Plan and/or the Responsibilities Table, billing and payment, and other operations, regulatory or legal issues suggested by any Party. The Management Committee shall operate by consensus concerning any matter committed to its determination by this Agreement. If the Management Committee is unable to reach consensus concerning a matter, the proposed decision or disputed matter shall be submitted to the Board of Directors or City Council of each Party for approval. If there is not a consensus amongst all of the governing bodies, the matter shall not become effective until such time as there is consensus.

ARTICLE IX **MISCELLANEOUS**

Section 9.1 **Prior Agreements.** This Peoria Pond Agreement shall supersede the Construction Agreement and any and all prior Agreements entered into between the Parties with regard to the maintenance of Peoria Pond. The Parties, however, agree that the portion of any of the facilities identified herein as being located outside the Shared Inspection and Maintenance Boundary will not be subject to, are not a part of, and are not governed in any way by this Agreement. No portion of the facilities located outside the Shared Inspection and Maintenance Boundary shall be considered a shared maintenance facility within the meaning of this Agreement under any circumstance.

Section 9.2 **Annual Appropriation and Budgeting.** Notwithstanding any other provision contained herein to the contrary, the Parties do not, by this Agreement, intend to create any multiple fiscal year financial obligation for any Party. Accordingly,

to the extent required by Article X, Section 20 of the Colorado Constitution, the financial obligations of each Party under this Agreement are subject to annual budgeting and appropriation of funds; provided, however, that in the event that the Agreement is terminated as the result of the failure of a Party to budget and or appropriate funds for expenditure hereunder, each Party under all circumstances shall be entitled to compensation for all service rendered and all costs incurred for shared inspection and maintenance up to and including the date of such termination, if and when funds for the payment of such compensation become available and are appropriately budgeted and appropriated for such purposes by a Party. However, there is no legal obligation for a Party to budget and appropriate sufficient funds to compensate each Party for those services.

Section 9.3 **Claims by Third Parties.** In the event that any claim, demand, or action is made or brought in writing by any person or entity that is not a party to this Agreement against one of the Parties hereto and that arises out of or is in anyway related to this Agreement, the Party in receipt of the same shall promptly notify and provide a copy of said claim, demand, suit, or action to the other Parties. The Parties shall cooperate in defending against the claim, demand, suit, or action to the extent that such common defense is consistent with each Parties rights and obligations hereunder, and the terms and conditions of, this Agreement.

Notwithstanding the foregoing, each Party assumes full responsibility and liability for any and all injuries to, and damages to real or personal property of, persons not a party to this Agreement that occurred during the performance of any task contemplated by this Agreement that is caused by that Party, its volunteers, servants, agents, or employees. To the maximum extent allowed by law, each Party covenants and agrees to indemnify, save, and keep each of the other Parties harmless against all liabilities, judgements, cause, damages, and expenses including court costs and reasonable attorney's fees of and from any and all claims of any kind or nature asserted by third parties which may in any way arise against any Party for or on account of personal injuries and damages to real or personal property or to the loss of any property by a person not a party to this Agreement caused as a result of any act or deed or failure to act of any volunteer, servant, agent, or employee of any Party to this Agreement. Nothing contained in this Agreement, however, shall be construed as a waiver of the protections of the Colorado Governmental Immunity Act, Section 24-10-101 *et seq.* C.R.S. and the Parties reserve all of their rights under said act.

Section 9.4 **Waiver of Claims.** Except as provided in Paragraph 9.3 above, each Party waives all claims and causes of action against the other Parties for compensation, damages, personal injury, or death which may result or occur as a consequence, direct, or indirect, of the performance of the Shared Inspection and Maintenance Tasks agreed to under this Agreement. As to third-parties, it is agreed that each Party is responsible for its own negligence and that of its agents, officials, and employees to the extent provided in the Colorado Governmental Immunity Act Section 24-

10-101 et. seq. Nothing contained in this paragraph 9.4 or any other provision of this Agreement shall be construed as a waiver of the notice requirements, defenses, immunities, and limitations that exist for the protection of each of the Parties under the Colorado Governmental Immunity Act C.R.S. 24-10-101 et. seq., or to any other defenses, immunities, or limitations of liability available to a Party under the laws of the State of Colorado.

Section 9.5 **Severability.** This Agreement is to be performed in accordance with and only to the extent permitted by law if a provision of this Agreement or application thereof to any party, person, or circumstance for any reason and to any extent is determined to be invalid or unenforceable by a court of competent jurisdiction, the remainder of this Agreement and the application of such provisions to the other persons, parties, or circumstances shall not be affected thereby, but rather, shall be enforced to the greatest extent permitted by law.

Section 9.6 **Further Assurances.** From time to time, upon the request of a Party, the other Parties agree to make, execute, and deliver or cause to be made, executed, and delivered to the requesting Party, any and all further instruments, certificates, and documents consistent with the provisions of this Agreement as made, in the reasonable opinion of the requesting Party, be necessary or desirable in order to effectuate, complete, or perfect the rights of said Party under this Agreement provided said requesting Party is currently in full compliance with the provisions of this Agreement and has tendered or offered to tender any reciprocal instruments, certificates, and documents to which the other Parties are entitled under this Agreement.

Section 9.7 **Construction of Language.** The language used in this Agreement and all parts thereof shall be construed as a whole according to their fair meaning, and not strictly for or against any Party, all Parties having equally participated in the preparation of this Agreement.

Section 9.8 **No Waivers.** No waiver of any condition, or remedy of provision of this Agreement shall be deemed to have been made unless expressly made in writing and signed by the Party against whom such waiver is charged.

Section 9.9 **Governing Law.** The terms and provisions of this Agreement shall be governed by and shall be construed in accordance with the laws of the State of Colorado

Section 9.10 **Time of the Essence.** Time is of the essence in the performance of this Agreement.

Section 9.11 **Assignment.** This Agreement is personal to the Parties hereto and no Party shall have any right, power, or authority to assign this Agreement or any

portion thereof or to delegate any duties or obligations arising hereunder, either voluntarily or involuntarily by operation of law without the prior written approval of the other Parties.

Section 9.12 **Caption and Headings.** The headings throughout this Agreement are for convenience and reference only and in no way shall be deemed to define, limit, or add to the meaning of any provision of this Agreement.

Section 9.13 **Third Party Beneficiaries.** Nothing expressed or implied in this Agreement is intended nor shall be construed to confer upon, or to give to, any person other than the Parties hereto, any right, remedy, or claim under or by reason of this Agreement.

Section 9.14 **Notices.** All notices, demands, or consents required or permitted under this Peoria Pond Agreement shall be in writing and delivered personally or by overnight courier with written confirmation or sent by certified mail, return receipt requested to the following:

To:

Manager
Cherry Creek Basin Water Quality Authority
P.O. Box 3166
Centennial CO 80161

With a copy to:

Timothy J. Flynn
Ireland Stapleton Pryor & Pascoe, PC
1660 Lincoln Street, Suite 3000
Denver, CO 80264

To:

Executive Director
Mile High Flood District
12575 W. Bayaud Ave.
Lakewood, CO 80228

With a copy to:

Edward Krisor
6500 W Mansfield Ave., Unit 9
Denver, Co 80235

To:

Community Development Director
The City of Greenwood Village
6060 S Quebec St

Greenwood Village, CO 80111

With a copy to:

City Attorney
The City of Greenwood Village
6060 S. Quebec St.
Greenwood Village, CO 80111

To:

Executive Director
Southeast Metro Stormwater Authority
7437 S Fairplay Ave.
Centennial Co 80112

With a copy to:

Edward Krisor
6500 W Mansfield Ave., Unit 9
Denver, Co 80235

A Party may change the address at which it receives written notice by so notifying the other Parties in writing in the manner provided herein.

IN WITNESS WHEREOF, the Parties to this Peoria Pond Agreement have caused their names to be affixed by proper officers thereof as of the date and year first above written.

**CHERRY CREEK BASIN WATER
QUALITY AUTHORITY**, a quasi-municipal
corporation and political subdivision of the State
of Colorado

By: _____
Joshua Rivera, Chair
Date: _____

**URBAN DRAINAGE AND FLOOD
CONTROL DISTRICT d/b/a MILE HIGH
FLOOD DISTRICT**

By: _____
Name: _____
Date: _____

THE CITY OF GREENWOOD VILLAGE

By: _____
Name: _____
Date: _____

**SOUTHEAST METRO STORMWATER
AUTHORITY**

By: _____
Name: _____
Date: _____

EXHIBIT A

Shared Maintenance and Inspection Plan (September 2024)¹

¹ The Shared Maintenance and Inspection Plan may be amended from time to time, as agreed upon by the Parties.

**COTTONWOOD CREEK – PEORIA STREET
WATER QUALITY POND
SHARED INSPECTION AND MAINTENANCE PLAN**



August 2024

ACKNOWLEDGEMENTS

2005 Maintenance Plan prepared in 2005 by:

Muller Engineering Company for the Mile High Flood District

2024 Maintenance Plan updated and developed by:

Cherry Creek Basin Water Quality Authority

Southeast Metro Stormwater Authority (SEMSWA)

City of Greenwood Village

Mile High Flood District

2024 Maintenance Plan prepared with support from:

Rich Borchardt, R2R Engineers (Pollution Abatement Project Manager, CCBWQA)

Jane Clary, Wright Water Engineers (Technical Manager, CCBWQA)

TABLE OF CONTENTS

1.0	PROJECT DESCRIPTION AND BACKGROUND	1
2.0	OWNERSHIP AND EASEMENTS.....	3
3.0	SHARED INSPECTION AND MAINTENANCE PLAN OVERVIEW	4
4.0	MAINTENANCE BOUNDARY AND COMPONENTS.....	4
5.0	INSPECTIONS	9
6.0	ROUTINE MAINTENANCE	9
7.0	SEDIMENT REMOVAL	10
8.0	REHABILITATIVE AND RETROFIT MAINTENANCE	10
9.0	OTHER MAINTENANCE RELATED ACTIVITIES.....	11
10.0	AMENDMENT PROCESS.....	12

Tables

Table 1. Peoria Pond Project Components, Ownership and Shared Maintenance Features	5
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Figures

Figure 1. Cottonwood Creek - Peoria Street Water Quality Pond Location Map	2
Figure 2. Cottonwood Creek - Peoria Street Water Quality Pond Easement Map	3
Figure 3. Boundary of Shared Maintenance Responsibility and Components.	8

Appendices

Appendix A: 2005 Maintenance Site Plan, Updated 2023	
Appendix B: 2023 Project Components Photographs	
Appendix C: 2001 Construction Bid Tab with Engineer's Estimate	
Appendix D: Shared Inspection and Maintenance Roles and Responsibilities	
Appendix E: Shared Inspection and Maintenance Plan Addendum Form	
Appendix F: Peoria Pond Design Plans and Calculations	

COTTONWOOD CREEK – PEORIA STREET WATER QUALITY POND SHARED INSPECTION AND MAINTENANCE PLAN

1.0 PROJECT DESCRIPTION AND BACKGROUND

The purpose of this Shared Inspection and Maintenance Plan (Shared I&M Plan) for the Cottonwood Creek- Peoria Street Water Quality Pond (Project, Figure 1) is to identify inspection and maintenance requirements and responsibilities for the Project. Additionally, this I&M Plan defines specific project components included in shared I&M since not all Project components with Cherry Creek Basin Water Quality Authority's (CCBWQA) drainage easement are owned by CCBWQA. The Shared I&M Plan is Exhibit A to an updated intergovernmental agreement (IGA) among CCBWQA, the Mile High Flood District (MHFD), the Southeast Metro Stormwater Authority (SEMSWA), and the City of Greenwood Village.

The Project is located west of Peoria Street and north of Maplewood Avenue just upstream of Cherry Creek State Park in the City of Greenwood Village. Peoria Pond is an on-line water quality facility designed to treat the Water Quality Capture Volume (WQCV). The Project protects the water quality in Cottonwood Creek and the beneficial uses in Cherry Creek Reservoir. The pond design includes a micropool, sediment basin and storage for the WQCV with a two-stage water quality outlet structure designed for a 40-hour drain time. The pond has bypass capability and a separate overflow weir for large storm events with minimal and relatively insignificant flood attenuation observed in these events. Since the Project is located outside the Park, impacts to waterbodies in the Park from urban pollutants are reduced and maintenance operations for PRFs in the Park can take place without disturbing the Park.

The Project was completed in 2003 through a partnership between Urban Drainage and Flood Control District (aka Mile High Flood Control District, MHFD), Arapahoe County (County), City of Greenwood Village, the Cherry Creek Basin Water Quality Authority (CCBWQA), Landmark Metropolitan District, and the Arapahoe County Water and Wastewater Authority (ACWWA). An Intergovernmental Agreement (IGA) (February 2000, as amended in May 2001) among these parties identified construction and maintenance responsibilities for the Project. The IGA required CCBWQA to be responsible for maintenance of the Project with assistance from MHFD as requested from Greenwood Village and Arapahoe County. Muller Engineering Company (Muller) prepared a Maintenance Site Plan (Appendix A) in February 2005 to guide maintenance. Maintenance is critical for the Project to function as designed and to remain in a sightly and safe condition.

Since the Project was completed, the City of Centennial was incorporated, and the Southeast Metro Stormwater Authority (SEMSWA) was created. The Project now serves as a regional water quality facility under the Municipal Separate Storm Sewer System Permit (MS4 Permit) for SEMSWA serving Centennial; however, the project is physically located outside of SEMSWA's jurisdictional boundary. The Project is also identified as a Pollution Reduction Facility (PRF) for CCBWQA. Greenwood Village, however, does not use the Project as a

**Cottonwood Creek – Peoria Street Water Quality Pond
Shared Inspection and Maintenance Plan**

regional water quality facility under their MS4 Permit although the pond is physically located in Greenwood Village. These complex jurisdictional boundaries and organizational changes, which have taken place since the original IGA, necessitated this new Shared I&M IGA to ensure adequate maintenance of the Project and to identify the parties responsible for maintenance. The new Shared I&M IGA parties include MHFD, CCBWQA, Greenwood Village, and SEMSWA. Arapahoe County, the Landmark Metro District, and ACWWA are not included in the new Shared I&M IGA and do not have any stormwater related maintenance responsibilities for the Project.

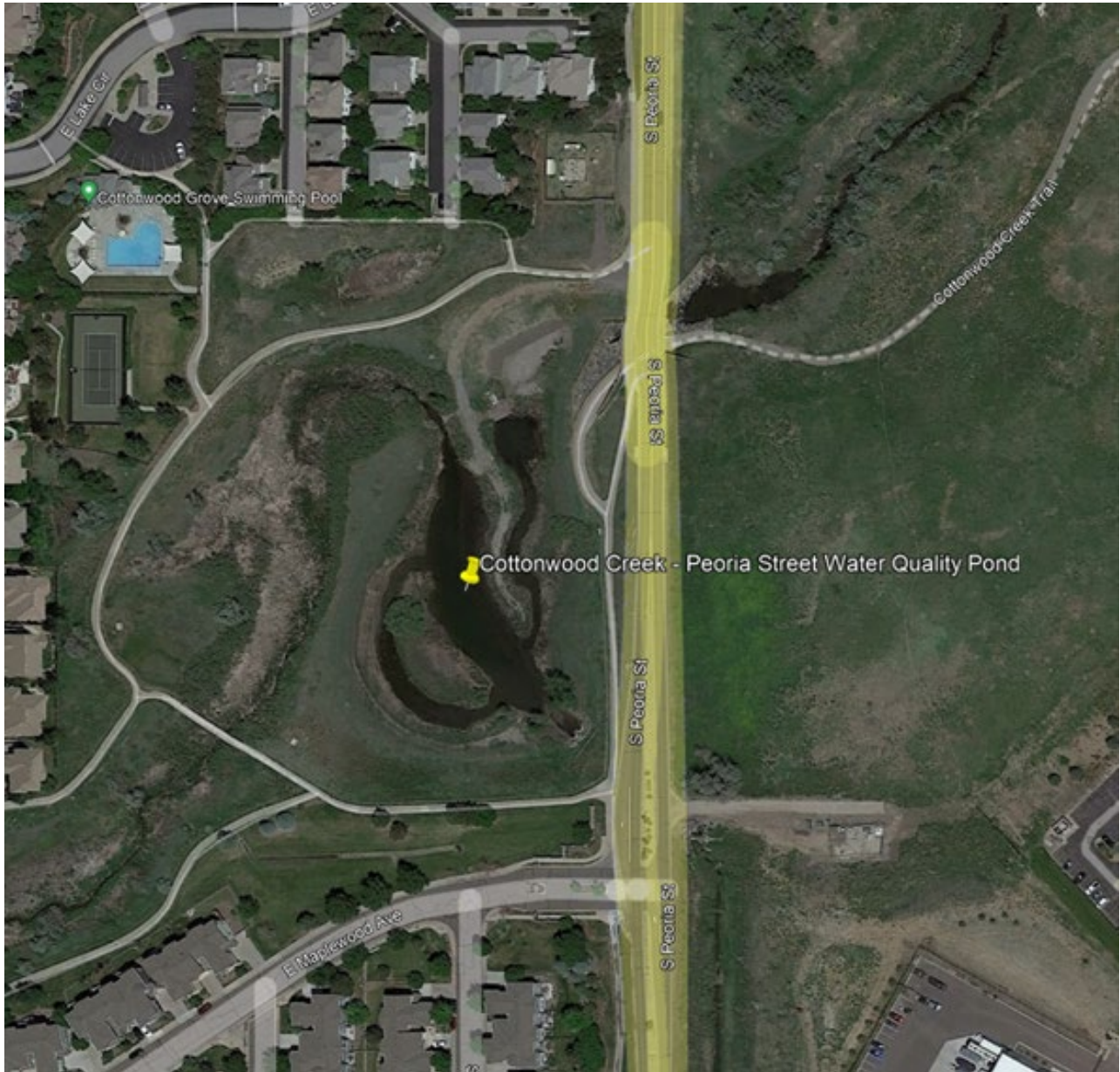


Figure 1. Cottonwood Creek - Peoria Street Water Quality Pond Location Map

2.0 OWNERSHIP AND EASEMENTS

Ownership and easement boundaries are shown in Figure 2, with key information including:

- **Project Land Ownership:** Land where the Project is located is owned by Cottonwood Master Homeowner’s Association in the Cherry Creek Vista Subdivision in Greenwood Village, CO, unless otherwise noted.
- **Concrete Trail Land Ownership:** Cherry Creek Vista Park and Rec District owns the concrete trail through the Project area, excluding the sidewalk directly adjacent to Peoria within the right-of-way which is owned and maintained by Greenwood Village.
- **Drainage Easement:** An easement for drainage and access (Easement, Reception No. B1107383) was recorded for CCBWQA in Arapahoe County on July 3, 2001 (hatched black line in Figure 2). Not all Project features inside of the drainage easement are owned by CCBWQA or maintained under this Shared I&M IGA. Ownership is further described by project component list in Table 1 and Figure 3.

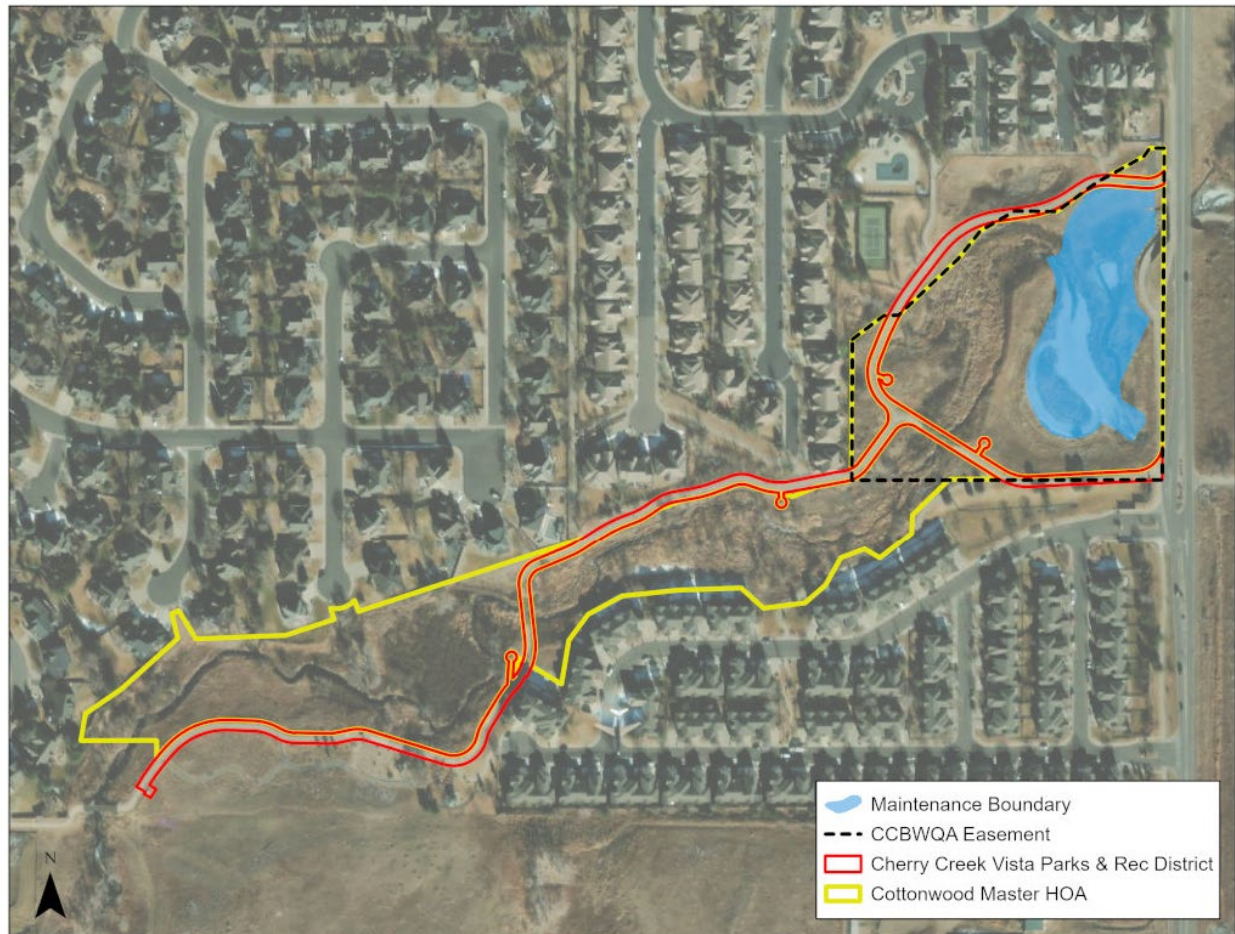


Figure 2. Cottonwood Creek - Peoria Street Water Quality Pond Easement Map

3.0 SHARED INSPECTION AND MAINTENANCE PLAN OVERVIEW

This Shared I&M Plan incorporates the recommended maintenance activities originally identified by Muller in the Maintenance Site Plan to keep the water quality pond functioning as designed, along with minor updates. This Updated Maintenance Site Plan is provided in **Appendix A**, with **Appendix F** providing as-built drawings and design calculations for the project. The Updated Maintenance Site Plan is based on a June 1, 2023 site visit and annotation of Muller’s original Maintenance Site Plan by R2R Engineers. A corresponding photo log of key Project components is provided in **Appendix B**. **Appendix C** provides the 2001 Bid Tab for the Project for additional information on components and quantities, which may be useful for major maintenance and rehabilitation¹ activities.

In addition to the **Appendix A** Updated Site Maintenance Plan and clarification of ownership and easement (Section 2), this Shared I&M Plan includes the following information:

- A Shared I&M Responsibility Table, included in **Appendix D**, which identifies the inspection and maintenance tasks, lead agency, partner agencies, maintenance activity descriptions and frequencies, implementation process, and cost allocation for all shared maintenance activities.
- Summary of Project components, ownership, and shared maintenance components (Section 4).
- Inspection requirements (Section 5).
- Routine maintenance activities, including those eligible under MHFD’s Maintenance Eligibility Program (MEP) and other routine maintenance (Section 6).
- Sediment removal activities (Section 7).
- Rehabilitative maintenance requirements (Section 8).
- Other miscellaneous activities associated with maintenance (Section 9).

4.0 MAINTENANCE BOUNDARY AND COMPONENTS

CCBWQA’s responsibilities are statutorily limited to water quality facilities; however, CCBWQA recognizes that drainage and flood control features are integral to the water quality benefits provided by the Project and cannot be readily separated. Table 1 lists Project components, identifies whether the component is owned by CCBWQA, identifies whether the component is

¹ For the purposes of this document, restorative (or restoration) and rehabilitative (or rehabilitation) shall have the same meaning.

**Cottonwood Creek – Peoria Street Water Quality Pond
Shared Inspection and Maintenance Plan**

subject to inspection and maintenance under the Shared I&M IGA. For convenience, features requiring sediment removal or mowing are also identified in the comments. Additionally, Table 1 provides a Map ID corresponding to the capital letters in yellow circles on Figure 3, which outlines the Shared I&M Boundary for parties to the Shared I&M Agreement. Project components that are outside of the Shared I&M Boundary are excluded from shared maintenance and responsibility under the IGA and will not be maintained by CCBWQA.

Table 1. Peoria Pond Project Components, Ownership and Shared Maintenance Features²

Map ID ¹	Peoria Pond Project Component	Feature Owned by CCBWQA (yes/no) ²	Included in Shared Inspection & Maintenance (yes/no) ³	Comment (Sediment Removal, Mowing)
	General Items:			
A	Access Drive (crushed rock) within Shared Maintenance Boundary	Yes	Yes ^{Q,S}	
	Vegetation within Shared Maintenance Boundary	Yes	Yes	Mowing
	Equipment and Project Structures:			
B	<u>Inlet Structure</u>			Sed. Removal
	Concrete Structure	Yes	Yes ^{Q,S}	
	Stoplogs	Yes	Yes	
	Grate	Yes	Yes ^{Q,S}	
	Bypass Pipe (18" HDPE, Stm-1 on figure)	Yes	Yes	
	Riprap (surrounding protection)	Yes	Yes ^{Q,S}	
	<u>Wetland Pond Features</u>			Sed. Removal
C	Water Quality Basin Volume and Topography	Yes	Yes	
D	Sediment Basin	Yes	Yes ^Q	
E	Wetland Bench	Yes	Yes ^Q	
F	Micropool	Yes	Yes ^{Q,S}	
G	Riprap Access Bench	Yes	Yes	
H	<u>Outlet Structure No. 1</u>			Sed. Removal
	Concrete Structure	Yes	Yes ^{Q,S}	
	Grate	Yes	Yes ^{Q,S}	
	Pipe (connecting to Outlet No. 2)	Yes	Yes ^Q	
	Riprap (surrounding protection)	Yes	Yes ^{Q,S}	

² This table is intended to identify all the project components requiring maintenance within the limits of the CCBWQA easement and may be revised from time to time.

**Cottonwood Creek – Peoria Street Water Quality Pond
Shared Inspection and Maintenance Plan**

Map ID ¹	Peoria Pond Project Component	Feature Owned by CCBWQA (yes/no) ²	Included in Shared Inspection & Maintenance (yes/no) ³	Comment (Sediment Removal, Mowing)
I	<u>Outlet Structure No. 2</u>			Sed. Removal
	Concrete Structure	Yes	Yes ^{Q,S}	
	Grate	Yes	Yes ^{Q,S}	
	Stoplogs	Yes	Yes	
	Orifice Plates	Yes	Yes ^{Q,S}	
	Slide Gate	Yes	Yes ^{Q,S}	
	Pipe (24" HDPE, Stm-3 on figure)	Yes	Yes ^Q	
	Boulders (surrounding protection)	Yes	Yes ^Q	
J	<u>Cottonwood Creek Spillway Crest Wall (SC-1 on figure)</u>			
	Painted Concrete Wall	Yes	Yes ^Q	
	Grouted Boulders around Outlet	Yes	Yes ^{Q,S}	
K	<u>Electrical Service</u>			
	Panel and Appurtenances (receptacles, bollards, meter, flexible markers for conduit)	Yes	Yes	
	<u>Peoria Street Tributary B Culverts (Stm-5 on figure)</u>			
	66" Reinforced Concrete Pipes and Flared End Sections	No	No	
	Grouted Boulders and Riprap Outlet Protection	No	No	
	Wood Fence	No	No	
	<u>Peoria Street Drain (from the North, Stm4)</u>			
	Peoria Street Storm Drain 36" RCP, portion within Easement Boundary and Shared Maintenance Boundary (Stm-4 on figure)	No (HOA) ⁴	No	
	General/Miscellaneous			
	Private Water Quality Detention Pond Outfall 18" HDPE pipe, portion within Easement Boundary and Shared Maintenance Boundary (Stm-2 on figure)	No (HOA) ⁴	No	
	Birdhouses and Posts (markers)	Yes	Yes	
	Trail Warning Signs (panels, posts, appurtenances)	No (CCVPT)	No	
	Concrete Trail/Bike Path	No (HOA; GWV) ⁵	No	

**Cottonwood Creek – Peoria Street Water Quality Pond
Shared Inspection and Maintenance Plan**

Map ID ¹	Peoria Pond Project Component	Feature Owned by CCBWQA (yes/no) ²	Included in Shared Inspection & Maintenance (yes/no) ³	Comment (Sediment Removal, Mowing)
	Picnic tables/trail-related amenities	No (CCVPT)	No	
	Educational Sign	Yes	Yes	
	Sediment Removal Markers (if added)	Yes	Yes	
L	Water Quality Sampling Equipment	Yes	Yes	
	Natural Features within Drainage Easement but outside of Shared Maintenance Boundary			
	Cottonwood Creek and Vegetated Area outside of Shared Maintenance Boundary	No (HOA)	No	
	Cottonwood Creek Riprap Bank Protection upstream of Inlet Structure	No (HOA)	No	
	Adjacent Infrastructure within Drainage Easement but outside of Shared Maintenance Boundary			
	Floodwall	No	No	
	Adjacent Infrastructure Outside of Drainage Easement (for clarity)			
	ACWWA Lift Station, Pipes and Appurtenances	No (ACWWA)	No	
	Adjacent Private Water Quality Detention Ponds (north and south of facility)	No (See Note) ⁶	No	
	Peoria Street Box Culverts and Related Infrastructure (box culvert, headwall, wingwalls, shoulder, drainage features, etc.)	No	No	

Table Notes:

¹Map IDs limited to substantive shared maintenance features. Birdhouses and signs do not have Map ID labels.

²Ownership by entities other than CCBWQA, if known, is provided in parentheses as follows: HOA = Cottonwood Master Homeowners Association, CCVPT = Cherry Creek Vista Parks & Trails, ACCWA = Arapahoe County Water and Wastewater Authority. These entities are not party to the maintenance agreement; therefore, this information is provided for descriptive purposes only.

³Yes^Q indicates components are visually inspected by SEMSWA on a quarterly basis. Yes^{Q,S} indicates components included in SEMSWA's quarterly and after-storm event inspections. Other shared maintenance components are inspected annually.

⁴Constructed w/ Cherry Creek Vista Filing 17a; owned by Cottonwood Master Homeowners Association.

⁵Trail ownership description: Cottonwood Master HOA (along Peoria St.) Greenwood Village (curved section to underpass).

⁶Cottonwood Master HOA owns pond to the north and Windemere HOA owns pond to the south.

Cottonwood Creek – Peoria Street Water Quality Pond Shared Inspection and Maintenance Plan

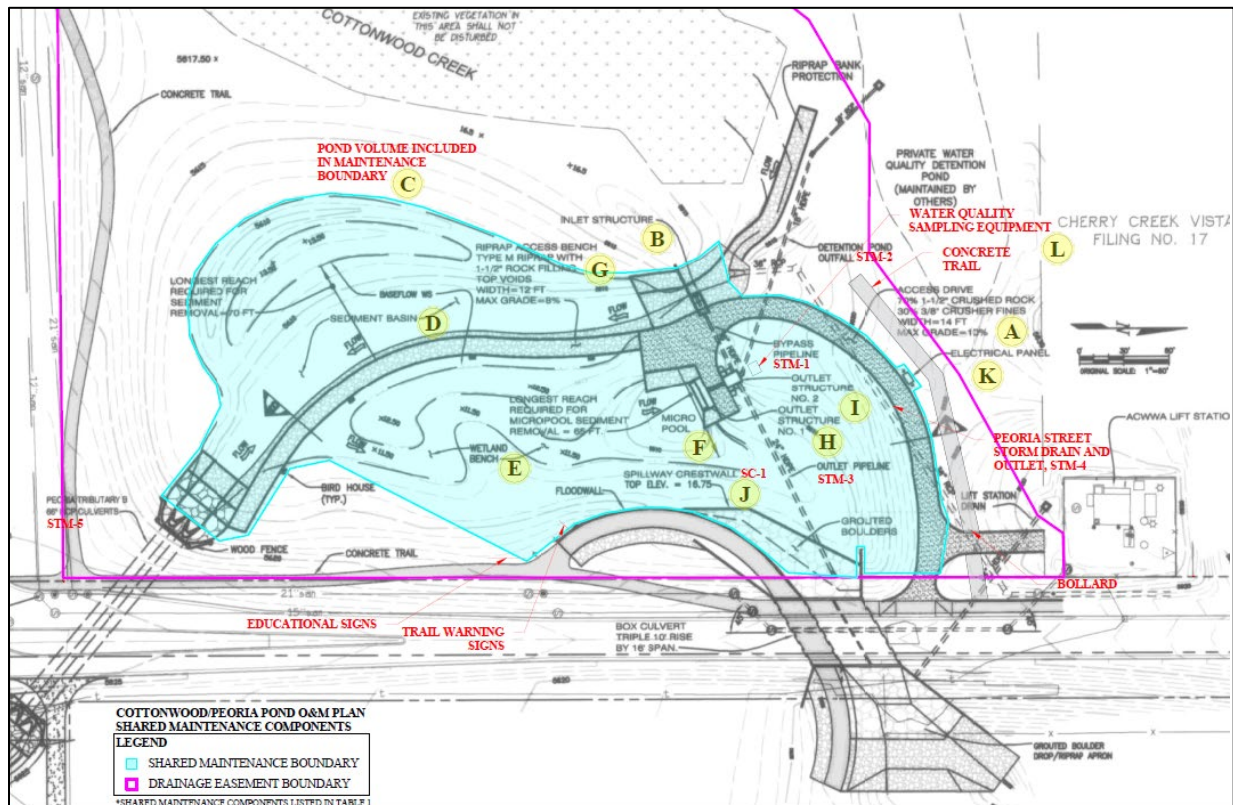


Figure 3. Boundary of Shared Maintenance Responsibility and Components.
(See Table 1 for Map ID descriptions for letter-identified features.)

5.0 INSPECTIONS

Annual, quarterly and after-storm inspections are included in the maintenance plan. CCBWQA is responsible for the annual inspections and SEMSWA is responsible for quarterly and after-storm event inspections. Per the Updated Maintenance Plan in Appendix A, inspections should include the shared maintenance components in Table 1 and Figure 3. Responsibilities and coordination include:

Annual Inspection

1. CCBWQA will perform the Annual Inspection as part of CCBWQA's Annual Pollution Reduction Facility Inspection/Observation.
2. CCBWQA will coordinate Annual Inspection with and include MHFD, SEMSWA, and Greenwood Village.
3. CCBWQA will add MHFD, SEMSWA, Greenwood Village to the distribution list for CCBWQA's Annual Pollution Reduction Facility Inspection/Observation report, including information on Project conditions and maintenance needs.
4. SEMSWA will perform Long Term Operations and Maintenance Inspections (MS4 Inspection) meeting the COR080000 MS4 permit minimum requirements, likely to occur annually. SEMSWA will coordinate the MS4 Inspection with Greenwood Village.

Routine Quarterly Inspection

1. SEMSWA will perform Routine Quarterly Inspection of selected components for function, as identified in Table 1, and share maintenance needs, if any, with the CCBWQA Technical Manager, MHFD and Greenwood Village, as applicable.

After Storm Event Inspection

1. SEMSWA will perform After Storm Event Inspections of selected components for function, as identified in Table 1, and share maintenance needs, if any, with the CCBWQA Technical Manager. Timeframe for inspections will be determined based on accessibility of key features. The primary focus of inspections will be debris accumulation and severe damage.
2. SEMSWA will notify Greenwood Village to coordinate with MHFD to request Routine Maintenance under MHFD's Maintenance Eligibility Program (MEP).

6.0 ROUTINE MAINTENANCE

Routine maintenance activities are divided into MHFD's MEP routine maintenance activities and other minor maintenance activities.

Because the facility meets MHFD's MEP requirements, MHFD typically provides the following routine maintenance upon request from Greenwood Village as may be recommended by SEMSWA:

1. Weed Control and Vegetation Management (typically 3 times per year)
2. Debris Removal (typically 4 times per year)

Other Non-MEP minor maintenance includes activities that can be completed by a small crew, tools, and small equipment. This includes minor localized repairs identified in After-Storm Inspections and other Routine Inspections. Examples could include minor sediment removal from pipes, replacement of small quantities of riprap, adjustment of orifice plates, minor erosion repairs, off-schedule debris and trash removal (not covered under MEP), and other activities.

7.0 SEDIMENT REMOVAL

Periodic sediment removal is necessary when the sediment bay and micro-pool have reached $\frac{3}{4}$ capacity to maintain the Water Quality Capture Volume of the pond. Additionally, sediment removal from pipes and structures is also needed periodically. Sediment removal is estimated to be needed every 10-12 years, although the frequency may vary. MHFD performed sediment removal in 2008 and 2020. Table 1 identifies the components subject to sediment removal under the Shared I&M Plan.

As described on the Maintenance Site Plan in Appendix A, dewatering is required prior to sediment removal, and the facility is equipped with electrical services suitable for use of electric pumps. The hydraulic profile shown on the Maintenance Site Plan identifies the target elevations for pond components after sediment removal.

Additional activities associated with sediment removal include:

1. Associated construction best management practices or stormwater control measures.
2. Restorationⁱ of native grass areas in accordance with upland seed mixes in Appendix A, if needed in these locations:
 - a. Additional access points.
 - b. Temporary stockpile areas used for drying and hauling of sediment.
3. Restoration of wetland vegetation in accordance with wetland seed mixes in Appendix A (if needed).
4. Repositioning sediment removal markers, if added.

8.0 REHABILITATIVE AND RETROFIT MAINTENANCE

Components included in rehabilitative and retrofit maintenance will vary depending on the scope of best practices and advances in water quality control measures. Components identified

for Shared I&M in Table 1 may require rehabilitation or retrofitting under this agreement. Components in Table 1 that are excluded from shared maintenance will be coordinated by Greenwood Village including the appropriate HOA, Metropolitan District, or Greenwood Village Department.

Rehabilitation and retrofit needs and projected timeline for construction will be identified in the CCBWQA's Annual Pollution Reduction Facility Operation and Maintenance report, with input and review from Shared I&M IGA parties, to enable costs to be integrated into Capital Improvement Plans. This work requires that the Authority's engineering consultant review the original design and construction drawings to assess rehabilitation needs, costs, funding agreements and contractor selection, coordinating with partner agencies. **Appendix C** provides the 2001 Bid Tab for the original construction project and may be useful for estimating project quantities and bid items. This work typically requires various permits and may also require more specialized maintenance equipment, design/details, surveying, or assistance through private contractors and consultants. Rehabilitation and retrofit projects will require coordinated planning prior to construction.

9.0 OTHER MAINTENANCE RELATED ACTIVITIES

Other activities associated with maintenance and Project operations include community outreach and aesthetic repairs, permitting coordination and maintenance of CCBWQA's water quality sampling equipment. Specific responsibilities include:

Community Outreach and Aesthetics

1. Greenwood Village will provide notification to surrounding neighbors, Districts, and HOAs regarding maintenance and construction activities and schedules.
2. Greenwood Village will provide aesthetic maintenance within the shared maintenance responsibility boundary (Figure 3) including graffiti and vandalism, concrete trails maintenance (sweeping and repairs) of trails not located on Cherry Creek Vista Parks and Recreation property, signage and general aesthetics.

Permitting Coordination

1. Lead agency conducting construction or maintenance will coordinate with Greenwood Village.

Water Quality Sampling Equipment

1. CCBWQA will operate and maintain water quality sampling equipment and appurtenances as part of its annual water quality monitoring program.
2. CCBWQA will collect sediment samples for analysis during sediment removal.

10.0 AMENDMENT PROCESS

This Shared I&M Plan may be updated from time to time as experience is gained through maintenance. These updates must be agreed to by all IGA parties before implementation. An addendum form to document these updates is included in **Appendix E**.

At a minimum, amendments to the Shared I&M Plan should be based on input and recommendations from a technical committee with qualified representatives of the IGA parties who are knowledgeable of the maintenance requirements for the Project. Signatories to amendments to this plan must be authorized to sign legally binding contracts for their agency.

Appendix A: Updated Maintenance Site Plan

PROJECT INFORMATION

1.0. GENERAL INFORMATION
 A. PROJECT NAME: COTTONWOOD CREEK - PEORIA STREET WATER QUALITY POND
 B. PROJECT NUMBER: 2022-77-0002
 C. DESIGN ENGINEER: MULLER ENGINEERING COMPANY
 D. DATE: 01.01.2021

1.1. PROJECT LOCATION
 A. LOCATION: COTTONWOOD CREEK
 B. FLOW RATES
 NORMAL LOW-FLOW: 1-3 CFS
 FULL-BODY: 15-20 CFS
 4400 CFS

1.2. POND DESCRIPTION
 MOUND: 181.10' 11.50' (180' C)
 MICROPOOL: 181.10' 11.50' (180' C)
 SEGMENT BASH: 181.10' 11.50' (180' C)
 TOTAL CAPACITY: 552.00' 27.5' (10'-10" x 8' WIDE)

1.3. OUTLET TYPE
 TWO-STAGE WATER QUALITY OUTLET STRUCTURE WITH POND BYPASS CAPABILITY AND SEPARATE OVERFLOW WEIR FOR LARGE STORM EVENTS

1.4. WEIR DESIGN
 TWO-40' WEIR

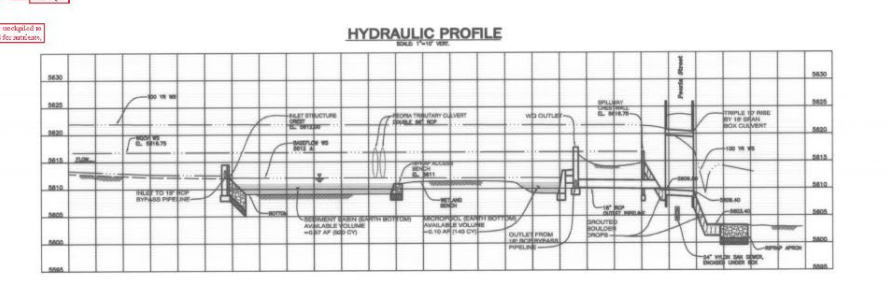
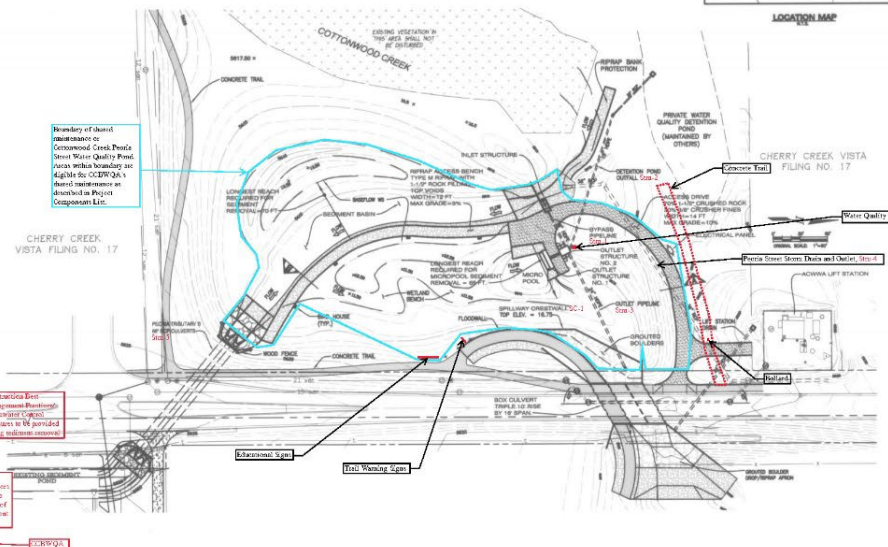
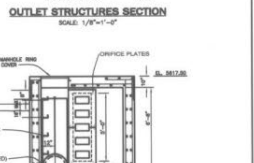
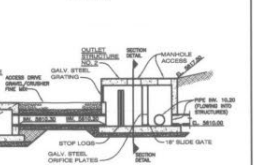
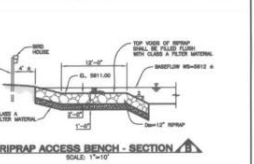
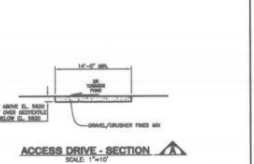
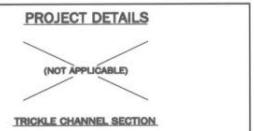
1.5. MATERIALS INFORMATION
 A. FLOORING: SURVEY AND TOPOGRAPHY WAS PROVIDED BY MULLER ENGINEERING AND SURVEYING INC. DATED APRIL 1987, JOB NO. 3284. SURVEY FOR CHERRY CREEK VISTA 17 AND DESIGN OF PEORIA STREET WAS PROVIDED BY GARNER AND LANGE, TOPOGRAPHY BY MULLER AND SIGNED 2002 TO MATCH DESIGN FOR SURVEY BY GARNER AND LANGE FOR CHERRY CREEK VISTA 17 (BASED ON LAND, 1982). HORIZONTAL CONTROL SHOWN IS BASED ON MULLER SURVEY.

1.6. CONTROL POINT
 CONTROL POINT: WEST CORNER OF SECTION 24, TOWNSHIP 34 SOUTH, RANGE 47 WEST (ALUMINUM CAP STAMPED 101177)
 ELEVATION: 181.10', HORIZONTAL: 118.12', DATUM: 1987 AD.

1.7. SEED LIST
 SEED LIST: VARIETY, X OF MAX BY WEIGHT, SEEDS PER LB, S OF MAX BY WEIGHT
 Kentucky Bluegrass: 0.01, 1,000,000, 1.00
 Tall Fescue: 0.01, 1,000,000, 1.00
 Orchardgrass: 0.01, 1,000,000, 1.00
 Ryegrass: 0.01, 1,000,000, 1.00
 Clover: 0.01, 1,000,000, 1.00
 Alfalfa: 0.01, 1,000,000, 1.00
 Lucerne: 0.01, 1,000,000, 1.00
 Medicago: 0.01, 1,000,000, 1.00
 Vicia: 0.01, 1,000,000, 1.00
 Trifolium: 0.01, 1,000,000, 1.00
 Lotus: 0.01, 1,000,000, 1.00
 Medicago: 0.01, 1,000,000, 1.00
 Vicia: 0.01, 1,000,000, 1.00
 Trifolium: 0.01, 1,000,000, 1.00
 Lotus: 0.01, 1,000,000, 1.00

All references to Urban Drainage and Flood Control District are interchangeable with Arapahoe County Water Quality Authority. As UDFCA is now doing business as ACFD.

COTTONWOOD CREEK - PEORIA STREET WATER QUALITY POND Updated Maintenance Site Plan Revised June 2023 (PROJECT COMPLETED SPRING 2002)



PROJECT NOTES

2.0. GENERAL FACILITY DESCRIPTION
 THE FACILITY IS AN EXTENDED DETENTION BASIN WITH WEIR TO RELEASE SEGMENT LOADS, THEREBY IMPROVING WATER QUALITY IN COTTONWOOD CREEK AND THE RECEIVING WATER OF CHERRY CREEK. THE FACILITY IS LOCATED ALONG THE ACCESS DRIVE FOR CHERRY CREEK VISTA 17 (SEE PLANS) AND IS BOUNDED BY THE COTTONWOOD CREEK TO THE NORTH AND THE PEORIA STREET TRIPLE BOX CULVERT TO THE SOUTH. THE POND RELIEVES INTO COTTONWOOD CREEK.

2.1. MAINTENANCE NOTES
 A. MAINTENANCE FREQUENCY: ROUTINE MAINTENANCE SHOULD BE PERFORMED ON AN AS-NEEDED BASIS. MAINTENANCE FREQUENCY IS TYPICALLY 2-4 TIMES PER YEAR AND SHOULD BE DONE PRIOR TO THE ONSET OF THE WINTER SEASON. MAINTENANCE SHOULD BE DONE PRIOR TO THE ONSET OF THE WINTER SEASON. MAINTENANCE SHOULD BE DONE PRIOR TO THE ONSET OF THE WINTER SEASON. MAINTENANCE SHOULD BE DONE PRIOR TO THE ONSET OF THE WINTER SEASON.

2.2. MAINTENANCE PROCEDURE
 TO MAINTAIN THE FACILITY, THE FOLLOWING STEPS SHOULD BE FOLLOWED:
 1. INSPECT THE FACILITY FOR ANY DAMAGE OR WEAR.
 2. CLEAN THE FACILITY OF ANY DEBRIS OR SEDIMENT.
 3. REPAIR ANY DAMAGE OR WEAR.
 4. TEST THE FACILITY FOR ANY LEAKS OR SEEPAGE.

2.3. ELECTRICAL SERVICE
 AN ELECTRICAL PANEL IS LOCATED ALONG THE ACCESS DRIVE FOR USE DURING MAINTENANCE OPERATIONS. THE PANEL IS 100 AMP, 120/240 VOLT, 3-PHASE, 4-WIRE. THE PANEL IS LOCATED ALONG THE ACCESS DRIVE FOR USE DURING MAINTENANCE OPERATIONS. THE PANEL IS 100 AMP, 120/240 VOLT, 3-PHASE, 4-WIRE.

2.4. MAINTENANCE PROCEDURE
 TO MAINTAIN THE FACILITY, THE FOLLOWING STEPS SHOULD BE FOLLOWED:
 1. INSPECT THE FACILITY FOR ANY DAMAGE OR WEAR.
 2. CLEAN THE FACILITY OF ANY DEBRIS OR SEDIMENT.
 3. REPAIR ANY DAMAGE OR WEAR.
 4. TEST THE FACILITY FOR ANY LEAKS OR SEEPAGE.

2.5. MAINTENANCE PROCEDURE
 TO MAINTAIN THE FACILITY, THE FOLLOWING STEPS SHOULD BE FOLLOWED:
 1. INSPECT THE FACILITY FOR ANY DAMAGE OR WEAR.
 2. CLEAN THE FACILITY OF ANY DEBRIS OR SEDIMENT.
 3. REPAIR ANY DAMAGE OR WEAR.
 4. TEST THE FACILITY FOR ANY LEAKS OR SEEPAGE.

2.6. MAINTENANCE PROCEDURE
 TO MAINTAIN THE FACILITY, THE FOLLOWING STEPS SHOULD BE FOLLOWED:
 1. INSPECT THE FACILITY FOR ANY DAMAGE OR WEAR.
 2. CLEAN THE FACILITY OF ANY DEBRIS OR SEDIMENT.
 3. REPAIR ANY DAMAGE OR WEAR.
 4. TEST THE FACILITY FOR ANY LEAKS OR SEEPAGE.

2.7. MAINTENANCE PROCEDURE
 TO MAINTAIN THE FACILITY, THE FOLLOWING STEPS SHOULD BE FOLLOWED:
 1. INSPECT THE FACILITY FOR ANY DAMAGE OR WEAR.
 2. CLEAN THE FACILITY OF ANY DEBRIS OR SEDIMENT.
 3. REPAIR ANY DAMAGE OR WEAR.
 4. TEST THE FACILITY FOR ANY LEAKS OR SEEPAGE.

2.8. MAINTENANCE PROCEDURE
 TO MAINTAIN THE FACILITY, THE FOLLOWING STEPS SHOULD BE FOLLOWED:
 1. INSPECT THE FACILITY FOR ANY DAMAGE OR WEAR.
 2. CLEAN THE FACILITY OF ANY DEBRIS OR SEDIMENT.
 3. REPAIR ANY DAMAGE OR WEAR.
 4. TEST THE FACILITY FOR ANY LEAKS OR SEEPAGE.

2.9. MAINTENANCE PROCEDURE
 TO MAINTAIN THE FACILITY, THE FOLLOWING STEPS SHOULD BE FOLLOWED:
 1. INSPECT THE FACILITY FOR ANY DAMAGE OR WEAR.
 2. CLEAN THE FACILITY OF ANY DEBRIS OR SEDIMENT.
 3. REPAIR ANY DAMAGE OR WEAR.
 4. TEST THE FACILITY FOR ANY LEAKS OR SEEPAGE.

MULLER ENGINEERING COMPANY, INC.
 CONSULTING ENGINEERS
 1770 SOUTH 10TH AVENUE
 LAMAR, COLORADO 80026
 (303) 986-4400

URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
 LANDMARK METROPOLITAN DISTRICT
 CITY OF GREENWOOD VILLAGE
 ARAPAHOE COUNTY WATER AND WASTEWATER AUTHORITY

Appendix B: 2023 Photos of Project Components



Access Drive at Entrance off Peoria Street (Map ID: A)



Access Drive past turn to Lift Station (Map ID: A)



Access Drive towards Outlet Structure (Map ID: A)



Electrical Panel (Map ID: K)



Inlet Structure (Map ID: B)



Peoria Street Storm Drain Outlet (Stm-4; Owned by Others, Excluded from Shared I&M)



Outlet Structures No. 1 and 2 and Micropool (Map IDs: H, I, F)



Outlet Structures No. 1, Micropool, and Wetland Bench (Map IDs: H, F, E)



Water Quality Sampling Equipment (Map ID: L)



Outlet Pipeline (Stm-3) (Map ID: I)



Spillway Crestwall (SC-1), Grouted Boulders, and Floodwall (Map ID: J for Crestwall; Floodwall and Concrete Trail Owned by Others)



Wetland Bench (Map ID: E)



Educational Signs Owned by CCBWQA



Peoria Tributary B 66" RCP Culverts (Stm-5; Owned by Others, Excluded from Shared I&M)



Sediment Basin looking South (Map ID: D)



Sediment Basin looking North (Map ID: D)

Appendix C: 2001 Project Bid Tab with Quantities and Engineer's Estimate

BID TAB

COTTONWOOD CREEK-PEORIA STREET IMPROVEMENTS

Bid Opening: June 5, 2001, 10:00 a.m.

ACCOUNT NO: 56-05-36111

CONTRACT NO: 00-06.08

FILE NO: 0909.05.B

ITEM NO.	DESCRIPTION OF ITEM	QUANTITY	UNIT	ENGINEER'S ESTIMATE	
				COST PER UNIT	AMOUNT
					OF BID
1	Mobilization	LS	1.00	\$45,000.00	\$45,000.00
2	Water and Erosion Control	LS	1.00	20,000.00	20,000.00
3	Construction Surveying	LS	1.00	12,000.00	12,000.00
4	Traffic Control	LS	1.00	31,000.00	31,000.00
5	Demolition	LS	1.00	8,300.00	8,300.00
6	Topsoil Stripping and Replacement (East of Peoria)	CY	1,200.00	7.00	8,400.00
7	Earthwork (East of Peoria)	CY	4,200.00	6.00	25,200.00
8	Overexcavation and Replacement with Granular	CY	800.00	40.00	32,000.00
9	Construction Limit Fence	LF	580.00	3.50	2,030.00
10	Silt Fence	LF	240.00	3.00	720.00
11	Sediment Trap	EA	1.00	4,000.00	4,000.00
12	Dryland Seed and Mulch	AC	6.00	2,000.00	12,000.00
13	Wetland Seed and Mulch	AC	1.80	2,500.00	4,500.00
14	Inlet Structure	LS	1.00	22,400.00	22,400.00
15	Water Quality Outlet	LS	1.00	28,000.00	28,000.00
16	Box Culvert Structure (including base bid headwalls)	LS	1.00	410,000.00	410,000.00
17	Sidewalk and Floodwalls	LS	1.00	55,000.00	55,000.00
18	Crestwall	LS	1.00	39,000.00	39,000.00
19	Sanitary Sewer Structural Slabs	LS	1.00	8,000.00	8,000.00
20	Grouted Boulders	SY	920.00	130.00	119,600.00
21	D50=12-inch Riprap	CY	600.00	45.00	27,000.00
22	D50=18-inch Riprap	CY	630.00	45.00	28,350.00
23	Riprap Bedding	CY	550.00	35.00	19,250.00
24	Access Path above Elevation 5620	SY	420.00	10.00	4,200.00
25	Access Path below Elevation 5620	SY	370.00	22.00	8,140.00
26	58-inch x 91-inch HERCP	LF	16.00	340.00	5,440.00
27	66-inch RCP	LF	280.00	250.00	70,000.00
28	58-inch x 91-inch HERCP to 66-inch RCP Transitions	EA	2.00	3,800.00	7,600.00

ITEM NO.	DESCRIPTION OF ITEM	QUANTITY	UNIT	ENGINEER'S ESTIMATE	
				COST PER UNIT	AMOUNT
					OF BID
29	66-inch FES	EA	2.00	2,000.00	4,000.00
30	24-inch Storm Drain	LF	275.00	60.00	16,500.00
31	18-inch Storm Drain	LF	213.00	55.00	11,715.00
32	Type C Inlet	EA	1.00	2,500.00	2,500.00
33	24-inch Vylon	LF	228.00	60.00	13,680.00
34	Sanitary Sewer Manhole	EA	4.00	4,000.00	16,000.00
35	Concrete Encasement for 24-inch Vylon	LF	77.00	180.00	13,860.00
36	Pumping for Sanitary Sewer Connections	LS	1.00	9,000.00	9,000.00
37	Wood Fence	LF	120.00	20.00	2,400.00
TOTAL BASE BID					1,146,785.00

SCHEDULE 2. ALTERNATE A HEADWALL AND WINGWALL TREATMENT

1	Additional Cost over Base Bid for Alternate A	LS	1.00	58,000.00	58,000.00
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SCHEDULE 3. ALTERNATE B HEADWALL AND WINGWALL TREATMENT

1	Additional Cost over Base Bid for Alternate B	LS	1.00	86,000.00	86,000.00
---	-----------------------------------------------	----	------	-----------	-----------

SCHEDULE 4. PLANTINGS

1	Willow Stakes	EA	4000	4.00	16,000.00
2	2-inch Caliper Cottonwood Trees	EA	25	300.00	7,500.00
TOTAL, SCHEDULE 4					23,500.00

Appendix D: Maintenance Responsibility Table

Appendix D. Peoria Pond Maintenance Roles and Responsibilities

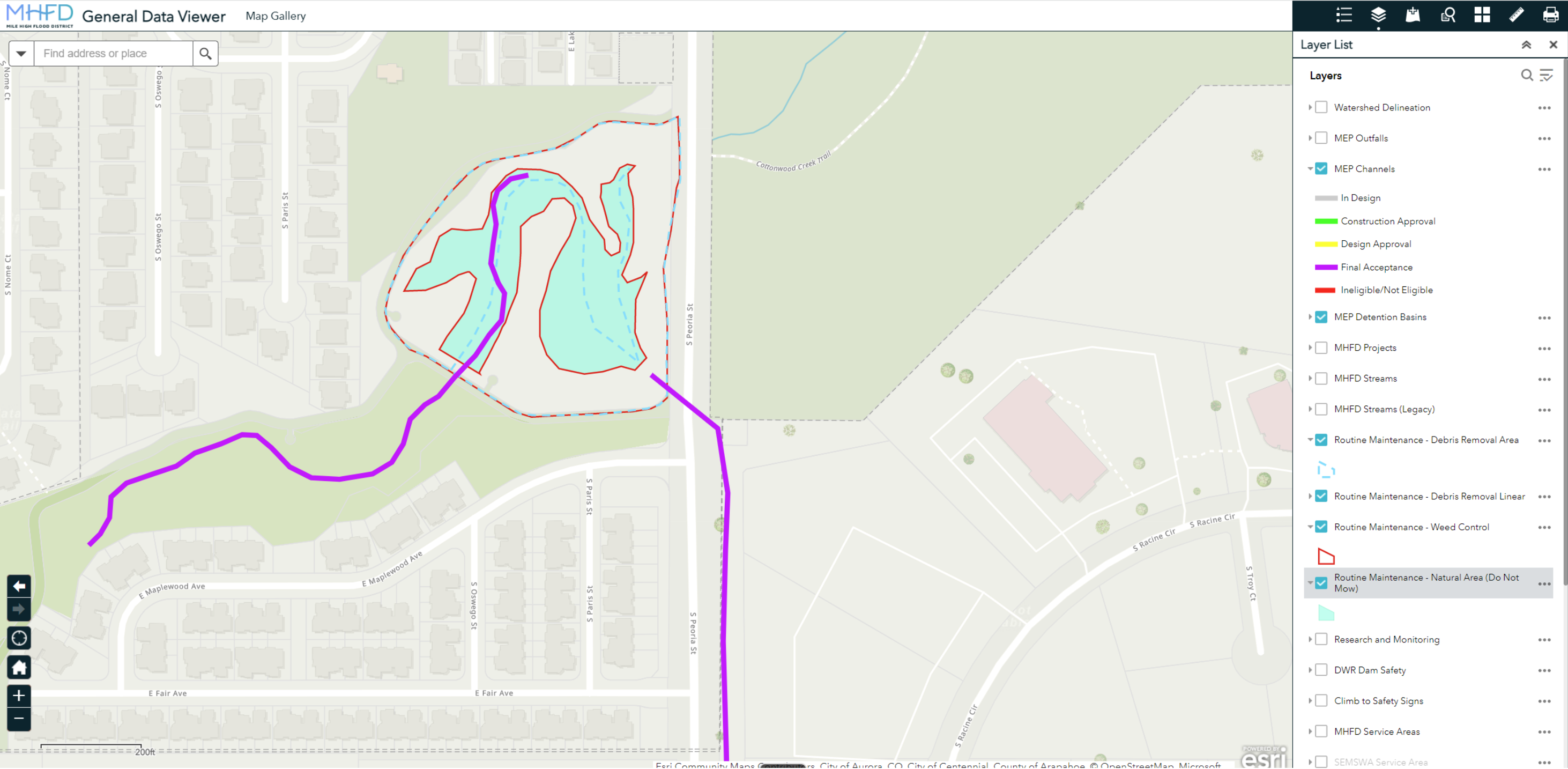
Task	Lead Agency	Partner Agency	Description and Frequency	Implementation Process	Cost Sharing Allocation
INSPECTIONS					
Annual Inspection	CCBWQA	SEMSWA, GV, MHFD	Conduct inspection to meet MS4 long-term operations and maintenance requirements; assess functionality of flood control and water quality components; assess sediment removal, rehabilitation, reconstruction needs and/or potential planning and redesign. Refer to Maintenance Plan for site inspection categories.	CCBWQA will inspect the facility as a pollutant reduction facility (PRF). SEMSWA will inspect for compliance with their MS4 permit as a Regional WQCV Facility. MHFD will inspect the facility as part of its MEP. GV will not inspect for MS4 Permit compliance since pond was constructed after 2002; GV will only inspect for general functionality of the pond and flood control.	No cost sharing for this item. Agency staff time and costs are the responsibility of each agency participating in task.
After Storm Event Inspection	SEMSWA	CCBWQA	Inspection of functional components of pond, inspections will occur after larger rain events.	SEMSWA staff to inspect facility and notify CCBWQA of major repairs needed, if any.	No cost sharing for this item. Agency staff time and costs are the responsibility of each agency.
Routine Inspection	SEMSWA	CCBWQA	Quarterly inspections of functional components to ensure functioning in accordance with design.	SEMSWA staff to inspect facility and notify CCBWQA of major repairs needed, if any.	No cost sharing for this item. Agency staff time and costs are the responsibility of each agency.
MAINTENANCE ACTIVITIES					
Routine Maintenance (under MHFD MEP)	GV- CCBWQA	MHFD	Three time per year debris removal and weed control, as MHFD budget allows.	GV to request funds from MHFD in GV's MEP budget, consistent with procedure since pond's construction.	Debris removals and weed control performed by MHFD with costs allocated at 100% MHFD unless otherwise agreed upon by agencies prior to work.
After Storm Event Maintenance	SEMSWA	CCBWQA	Maintenance based on after storm event inspection for functional components related to MS4 permit water quality.	SEMSWA will conduct maintenance and manage any needed contracts related to maintenance.	SEMSWA will cover this cost on a routine basis, unless major repairs are required.
Routine Maintenance (outside of MHFD MEP maintenance)	SEMSWA	CCBWQA	Maintenance based on assessment at quarterly inspection for functional components related to MS4 permit water quality.	SEMSWA will conduct maintenance and manage any needed contracts related to maintenance.	SEMSWA will cover this cost on a routine basis, unless major repairs are required.
Sediment Removal (major periodic maintenance)	CCBWQA	GV, MHFD, SEMSWA	Sediment removal to maintain the capacity of the pond as needed based on inspection. Sediment should be removed from sediment basin and micropool when at ¾ capacity. See Maintenance Plan for procedures, including Reg. 72 BMPs and revegetation/restoration requirements. Estimated frequency: ~10 years	CCBWQA to notify GV for a request of maintenance from MHFD under the MEP. GV to request maintenance from MHFD. Sediment removal performed by MHFD or MHFD contractor as funding allows.	As funding allows, MHFD will cover costs under MEP, unless otherwise agreed upon by agencies prior to work. If MHFD does not have budget and sediment removal needs are imminent, remaining costs to be allocated at 50% CCBWQA and 50% SEMSWA, as funding allows, unless otherwise agreed upon.
Structural Rehabilitation (e.g., major repairs of concrete structures, other structural components)	CCBWQA	GV, MHFD, SEMSWA	Repairs of major structural features involving concrete, outlet structures, wetland benches, and other major features. Estimated Frequency: 25-30 years	CCBWQA identifies needed repairs based on inspection and requests GV submit an MEP request to MHFD. If MEP funding available, MHFD to manage contract and construction. If MEP funding is not available and needs are imminent, then SEMSWA will manage planning, contracting and construction of rehabilitation with input from CCBWQA.	GV to request MEP funding from MHFD. If MEP funding available, rehabilitation and reconstruction will be performed by MHFD with costs sharing among partners identified under an addendum to this IGA. Water quality features allocated at 100% CCBWQA, although partner funding, if available, may be requested. Cost-sharing for drainage and flood control features allocated among partners under an addendum to this IGA.
Retrofits (optional)	CCBWQA	SEMSWA, MHFD	Construction of features to improve maintenance accessibility/efficiency or to improve water quality performance.	SEMSWA to manage planning, contracting and construction of retrofits with input from CCBWQA and MHFD.	Cost sharing between SEMSWA and CCBWQA, with cost sharing proportions determined prior to construction.

Task	Lead Agency	Partner Agency	Description and Frequency	Implementation Process	Cost Sharing Allocation
Reconstruction/Replacement	CCBWQA	MHFD, SEMSWA, GV	<p>“Replacement” of existing facility including concrete structures, system reconfiguration, sediment removal, major revegetation as a major project.</p> <p>Frequency estimated at 30-50 years, assuming maintenance is not deferred.</p>	Requires negotiation of new agreement.	Requires negotiation of new agreement with cost sharing among multiple parties for both design and construction with expenses cost-shared based on water quality, drainage and flood control functions. (CCBWQA funding only allowed where a water quality nexus is demonstrated.)
OTHER SUPPORTING ACTIVITIES					
Community Outreach and Aesthetics	GV	CCBWQA, SEMSWA	Notification to surrounding neighbors when construction or major maintenance occurs. Coordination with pond owners (Cottonwood Master Homeowners Association, Cherry Creek Vista Park and Recreation District). Coordination related to trails, aesthetic vegetation, signage, graffiti removal, etc.	<p>GV to contact appropriate entities impacted by work.</p> <p>CCBWQA and SEMSWA to provide content for outreach.</p>	No cost sharing for this item. Agency staff time and costs are the responsibility of GV.
Permitting Coordination	GV	CCBWQA, MHFD, SEMSWA Note: Lead agency conducting construction or maintenance to coordinate with GV.	Permits not necessary for routine maintenance or MEP routine maintenance but may be required for rehabilitation and/or reconstruction. Floodplain permits issued for rehabilitation and reconstruction.	Contractor applies for and provides construction documents, as necessary.	No cost sharing for this item. Agency staff time and costs are the responsibility of GV.
Sediment Analysis	CCBWQA	MHFD	Follow most current CCBWQA Sampling and Analysis Plan, accessible at https://www.cherrycreekbasin.org/	MHFD will provide CCBWQA a schedule for sediment removal and stockpile duration. MHFD will provide timely updates to schedule and progress meetings so that sampling can be coordinated. CCBWQA will collect a minimum of 3 samples from stockpile for lab analysis.	Sediment analysis will be done by CCBWQA with costs allocated at 100% CCBWQA.
Monitoring Equipment	CCBWQA		CCBWQA staff will maintain and repair monitoring equipment at appropriate frequencies.	CCBWQA contracts with consultant.	CCBWQA covers monitoring costs and monitoring equipment maintenance costs.

Definitions:

- MEP Routine Maintenance:** Mile High Flood District (MHFD) defined Maintenance Eligibility Program (MEP). For the Peoria Pond, the following are part of the MEP (see Exhibit A-1): Cottonwood Creek channel, Peoria Tributary B channel, pond debris removal, pond mowing (excluding wetland areas).
- Functional Components of Pond:** Elements of pond required to meet applicable regulatory requirements. For Peoria Pond, primarily the outlet structure and related appurtenances.
- Routine Maintenance:** Activities to maintain the original line and grade, hydraulic capacity, or original purpose of the facility. Examples include debris removal, mowing, sediment removal and other routine activities.
- Rehabilitation:** Rebuilding, repairing, or restoring functional components; activities that are outside of routine maintenance and intended to restore the facility to the original design, excluding the detention components.
- Retrofit:** Proactive improvement to facility to improve maintenance accessibility or performance. Considered an optional item.
- Replacement/Reconstruction:** Constructing or replacing improvements when the facility has reached its lifespan.

Exhibit A-1. MHFD Maintenance Eligibility Map for Peoria Pond



Appendix E: Addendum Form

ADDENDUM

COTTONWOOD CREEK – PEORIA STREET WATER QUALITY POND SHARED MAINTENANCE PLAN

Cherry Creek Basin Water Quality Authority
P.O. Box 3166
Centennial, Colorado 80161

Addendum No.: _____

Addendum Date: _____

The following revisions are hereby incorporated into EXHIBIT A, for the COTTONWOOD CREEK – PEORIA STREET WATER QUALITY POND SHARED MAINTENANCE PLAN:

Insert Addendum Language here and reference any attachments.

All other terms and conditions of COTTONWOOD CREEK – PEORIA STREET WATER QUALITY POND SHARED MAINTENANCE PLAN will remain unchanged.

_____	_____	_____	_____
(CCBWQA)	DATE	(SEMSWA)	DATE
_____	_____	_____	_____
(MHFD)	DATE	(Greenwood Village)	DATE

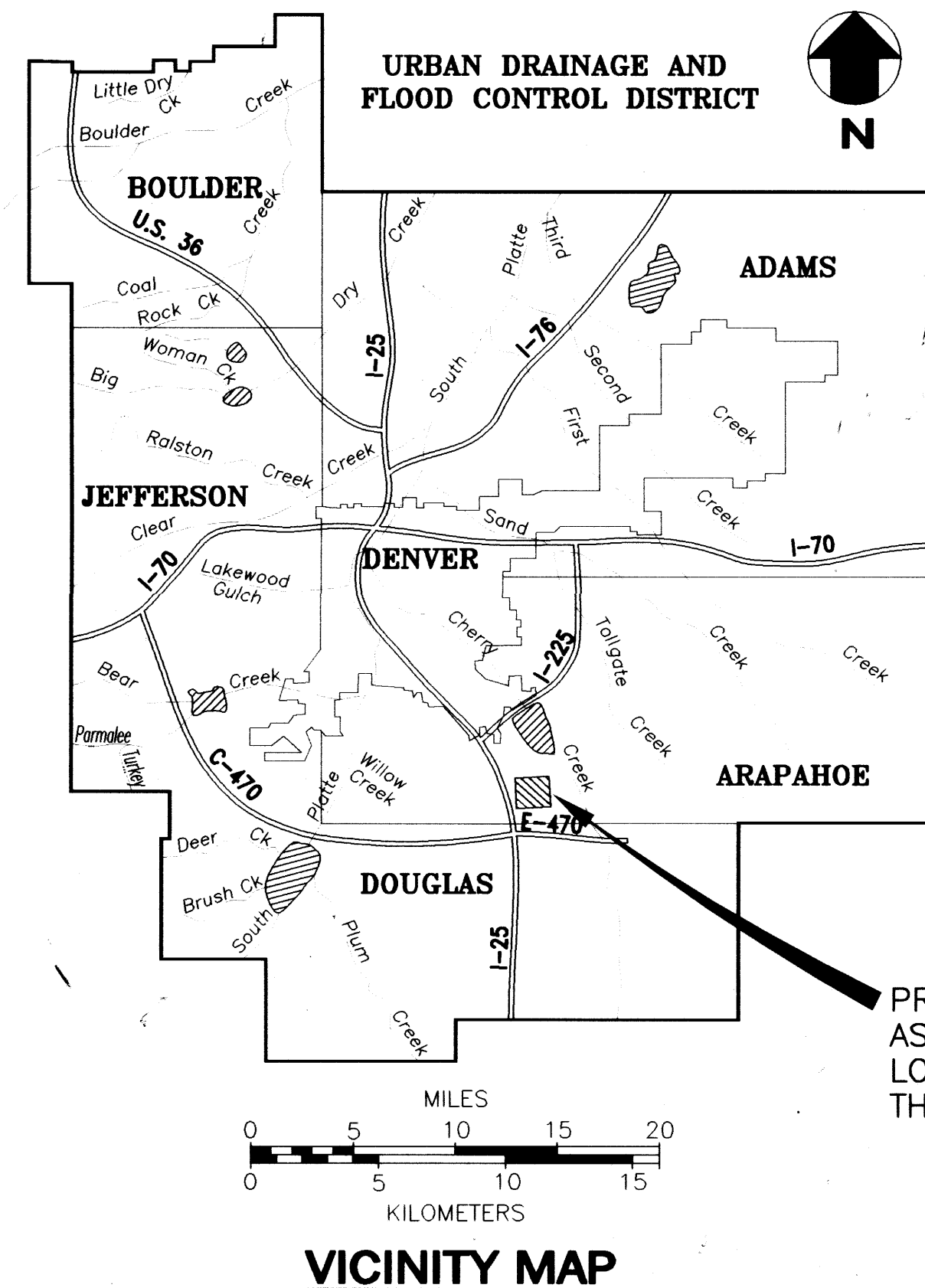
Appendix F: Peoria Pond Design Plans & Calculations

CONTRACT DRAWINGS FOR CONSTRUCTION OF COTTONWOOD CREEK- PEORIA STREET IMPROVEMENTS

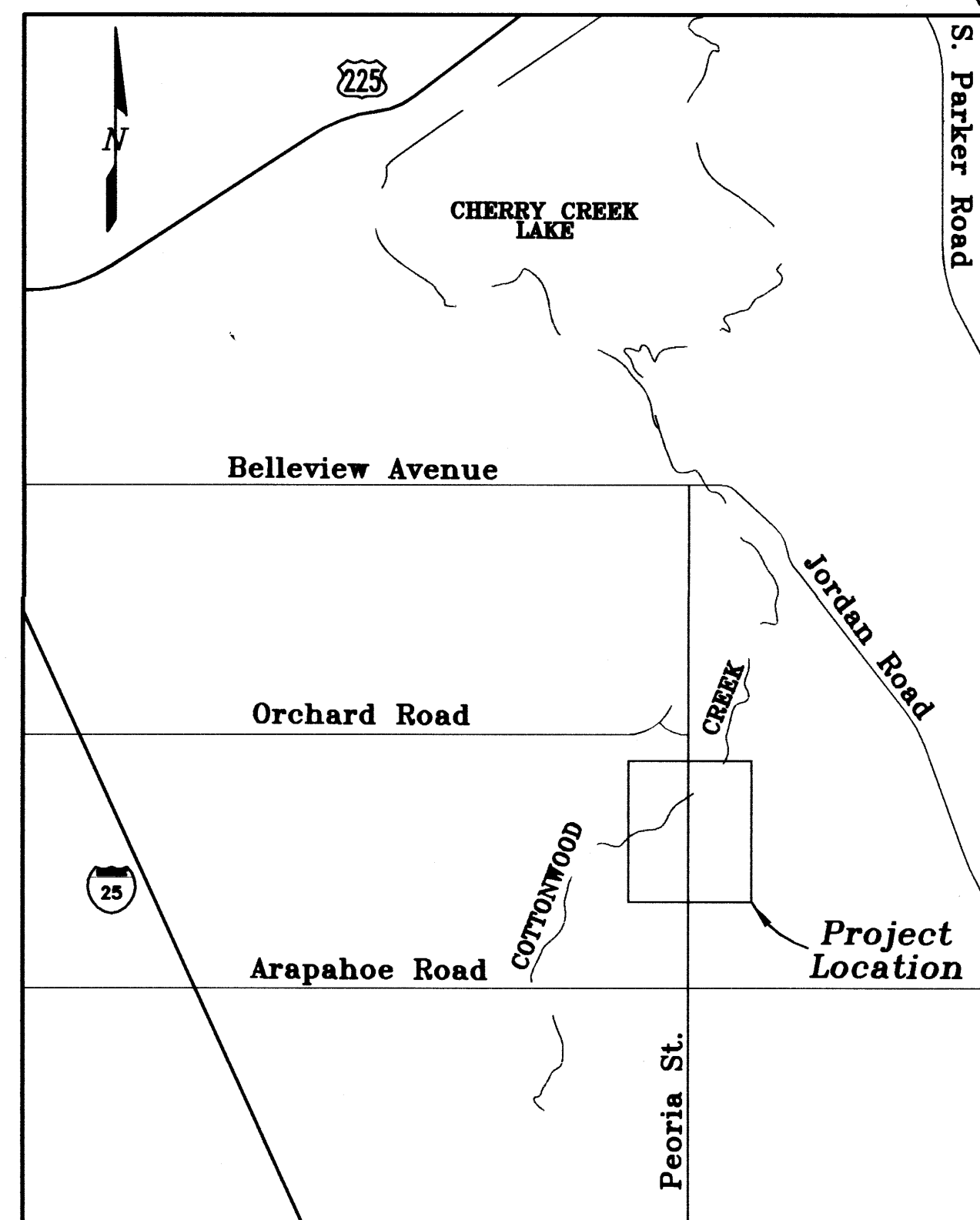
APRIL, 2001
RECORD DRAWINGS
JULY 22, 2003

INDEX OF DRAWINGS

SHEET	DRAWING NO	TITLE
GENERAL		
1	G-1	TITLE SHEET
2	G-2	LEGEND, ABBREVIATIONS, AND GENERAL NOTES
3	G-3	HYDRAULIC PROFILE
CIVIL		
4	C-1	EROSION CONTROL, DEMOLITION, AND WASTEWATER BYPASS PLAN
5	C-2	PHASE 1 WORK (IN THIS CONTRACT)
6	C-3	PHASE 2 WORK (BY OTHERS)
7	C-4	PHASE 3 WORK (IN THIS CONTRACT)
8	C-5	SANITARY SEWER PROFILE
9	C-6	STORM DRAIN PROFILES
10	C-7	PIPE TRENCH AND MANHOLE DETAILS
11	C-8	PEORIA TRIBUTARY CULVERT INLET AND OUTLET PLANS AND SECTIONS
11B	C-8B	PEORIA TRIBUTARY CULVERT INLET AND ENCASEMENT PLAN AND DETAIL
12	C-9	BOX CULVERT INLET AND OUTLET SECTIONS
13	C-10	PHASE 2 AND 3 TYPICAL SECTIONS
14	C-11	INLET AND OUTLET PLAN AND PHASE 3 SECTIONS
STRUCTURAL		
15	S-1	INLET STRUCTURE PLAN
16	S-2	INLET STRUCTURE SECTIONS
17	S-3	WATER QUALITY OUTLET PLAN AND SECTIONS
18	S-4	WATER QUALITY OUTLET SECTIONS AND DETAILS
19	S-5	BOX CULVERT PLAN
20	S-6	BOX CULVERT AND CRESTWALL SECTIONS
21	S-7	NORTH WINGWALL AND FLOODWALL ELEVATIONS
22	S-8	SOUTH WINGWALL AND CRESTWALL ELEVATIONS
23	S-9	WINGWALL PLAN AND SECTIONS
24	S-10	WINGWALL AND HEADWALL SECTIONS
25	S-11	ALTERNATIVE "A" HEADWALL AND RAILING SECTIONS AND DETAILS
26	S-12	ALTERNATIVE "B" HEADWALL, WINGWALL AND RAILING SECTIONS AND DETAILS
27	S-13	MISCELLANEOUS STRUCTURAL DETAILS AND NOTES
ACWWA PEORIA LIFT STATION (DESIGN BY MERRICK)		
28	A-1	NOTES AND DETAILS
29	A-2	PROPOSED SITE PLAN
30	A-3	MANHOLE DETAILS
31	A-4	PUMP DETAILS
32	A-5	MISCELLANEOUS DETAILS
33	A-6	ELECTRICAL PLAN
CDOT STANDARD DETAILS		
34 - 40	M-208-1	TEMPORARY EROSION CONTROL
41 - 42	M-601-3	TRIPLE CONCRETE BOX CULVERT
43 - 44	M-603-10	CONCRETE AND METAL END SECTIONS
45	M-604-10	INLET, TYPE C
46 - 48	M-607-2	CHAIN LINK FENCE



PROJECT LOCATION
AS SHOWN ON THE
LOCATION MAP,
THIS SHEET.



LOCATION MAP

NTS



PREPARED FOR AND APPROVED BY:

PREPARED BY:
MULLER ENGINEERING CO., INC.
MEC PROJECT NO. 0032

**URBAN DRAINAGE AND
FLOOD CONTROL DISTRICT**
PROJECT NO. 00-06.08

LANDMARK METROPOLITAN DISTRICT

**CHERRY CREEK BASIN
WATER QUALITY AUTHORITY**

**ARAPAHOE COUNTY
WATER AND WASTEWATER AUTHORITY**

PROJECT MANAGER _____ DATE _____

EXECUTIVE DIRECTOR _____ DATE _____

MANAGER _____ DATE _____

MANAGER _____ DATE _____

MANAGER _____ DATE _____

CHIEF, DESIGN AND CONSTRUCTION PROGRAM _____ DATE _____

CITY OF GREENWOOD VILLAGE

ARAPAHOE COUNTY
C97-001

**HAVANA WATER AND
SANITATION DISTRICT**

PROJECT ENGINEER _____ DATE _____

CITY MANAGER _____ DATE _____

JAMES E. PANKONIN, P.E., ENGINEERING MANAGER, DSIM _____ DATE _____

MANAGER _____ DATE _____

REVISIONS

NO.	DATE	BY	CHK'D	DESCRIPTION
1	7/22/03	WV/CJR	JTW	AS CONSTRUCTED RECORD DRAWINGS

MULLER

MULLER ENGINEERING COMPANY, INC.

CONSULTING ENGINEERS
IRONGATE 4, SUITE 100
777 S. WADSWORTH BLVD.
LAKEWOOD, COLORADO 80226
(303) 938-4939

URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
LANDMARK METROPOLITAN DISTRICT
CITY OF GREENWOOD VILLAGE
ARAPAHOE COUNTY WATER AND WASTEWATER AUTHORITY

**COTTONWOOD CREEK -
PEORIA STREET IMPROVEMENTS**

DRAWN: BKB 11/29/00 DESIGNED: JTW 11/29/00 CHKD: DDJ 1/5/01

TITLE SHEET

SHEET
1
DWG
G-1

GENERAL LEGEND

	SOIL/SUBGRADE		PROPOSED CHAIN LINK FENCE
	CONCRETE		EXISTING FENCE
	GROUT		EXISTING MAJOR CONTOUR
	BEDDING		EXISTING MINOR CONTOUR
	CRUSHER FINE		PROPOSED MAJOR CONTOUR
	EXISTING TREES		PROPOSED MINOR CONTOUR
	CONTROL POINT		EASEMENT LINE
	EXISTING POWER POLE		RIGHT-OF-WAY
	PROPOSED POWER POLE		EXISTING SANITARY SEWER
	EXISTING SANITARY MH		PROPOSED SANITARY SEWER
	PROPOSED SANITARY MH		EXISTING UNDERGROUND CABLE
	EXISTING MARKER POST		EXISTING UNDERGROUND ELECTRIC
	PROPOSED MARKER POST		EXISTING UNDERGROUND TELEPHONE
	EXISTING LIGHT POLE		RETAINING WALL
	EXISTING VALVE		DITCH
	PROPOSED STORM SEWER MH		EDGE OF PAVEMENT/CONCRETE
	EXISTING TELEPHONE PEDESTAL		SECTION LINE
			CENTER LINE
			PARCEL LINE
			STORM SEWER
			EXISTING RIPRAP
			PROPOSED RIPRAP
			GROUTED BOULDER
			MAINTENANCE ACCESS ROAD
			SILT FENCE

ABBREVIATIONS

ACWWA	-ARAPAHOE COUNTY WATER AND WASTEWATER AUTHORITY	IN.	-INCH
ADA	-AMERICANS W/ DISABILITIES ACT	INV.	-INVERT ELEVATION
AF	-ACRE - FEET	LF	-LINEAR FOOT/FEET
APPROX.	-APPROXIMATELY	L.P.	-LOW POINT
BLDG.	-BUILDING	MH	-MANHOLE
BLDR	-BOULDER	MAX.	-MAXIMUM
BOC.	-BACK OF CURB	MID	-MIDDLE
BOW	-BOTTOM OF WALL	MIN.	-MINIMUM
BTWN	-BETWEEN	NRCP	-NONREINFORCED CONCRETE PIPE
CL	-CENTERLINE	N.T.S.	-NOT TO SCALE
C.O.	-CLEAN OUT	# OR NO.	-NUMBER
CDOT	-COLORADO DEPARTMENT OF TRANSPORTATION	O/C. OR O.C.	-ON CENTER
CLR.	-CLEAR	PC	-POINT OF CURVATURE
COMB.	-COMBINATION	PT	POINT OF TANGENCY
CONC.	-CONCRETE	PVI	POINT OF VERTICAL INTERSECTION
CF	-CUBIC FEET	PVC	-POLYVINYL CHLORIDE PIPE
CJ	-CONSTRUCTION JOINT	PSF	-POUND/ SQUARE FOOT
DET.	-DETAIL	PSI	-POUND/ SQUARE INCH
DIA. OR Ø	-DIAMETER	QTY.	-QUANTITY
DIM.	-DIMENSION	RAD. OR R	-RADIUS
DIP	-DUCTILE IRON PIPE	RCP	-REINFORCED CONCRETE PIPE
DWG.	-DRAWING	REQ'D.	-REQUIRED
EA.	-EACH	RET WALL	-RETAINING WALL
EW.	-EACH WAY	REV.	-REVISED OR REVISION
EDP	-EDGE OF PAVEMENT	SCH. OR SCHED.	-SCHEDULE
EOW	-EDGE OF WALK	SPEC.	-SPECIFICATION
EL.	-ELEVATION	SQ.	-SQUARE
EXST.	-EXISTING	STA	-STATION
FES	-FLARED END SECTION	STD.	-STANDARD
FL	-FLOW LINE	STL	-STEEL
FT.	-FEET OR FOOT	SAN SEWER	-SANITARY SEWER
F.F/FF	-FINISHED FLOOR	SS	-STAINLESS STEEL
FS	-FIRE SERVICE	TOC	-TOP OF CURB
GV	-GATE VALVE	TOG	-TOP OF GROUT
GALV.	-GALVANIZED	TOW	-TOP OF WALL
G.	-GAS	TYP.	-TYPICAL
HC	-HANDICAP	U.G.	-UNDERGROUND
HE.	-HORIZONTAL ELLIPTICAL	U.S.G.S.	-UNITED STATES GEOLOGICAL SURVEY
H.P.	-HIGH POINT	VERT. OR V.	-VERTICAL
HORZ. OR H.	-HORIZONTAL	W/	-WITH
HT.	-HEIGHT	W/O	-WITHOUT
HWSD	-HAVANA WATER LAND SANITATION DISTRICT	WQ	-WATER QUALITY
		WS	-WATER SURFACE

GENERAL NOTES

1. WORK IN THIS CONTRACT CONSISTS OF CONSTRUCTING THE FACILITIES SHOWN FOR PHASE 1 AND PHASE 3 ON DRAWINGS C-2 AND C-4. FACILITIES SHOWN FOR PHASE 2 ON DRAWING C-3 SHALL BE CONSTRUCTED BY OTHERS. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION ON CONSTRUCTION SCHEDULE AND SEQUENCING OF THE WORK.
2. LOCATIONS OF UTILITIES REPRESENT THE BEST-KNOWN LOCATIONS AT THE TIME OF PREPARATION OF DRAWINGS. THE CONTRACTOR SHALL FIELD-LOCATE ALL UTILITIES IN ADVANCE OF EXCAVATION. RELOCATION OF UTILITIES MAY OR MAY NOT BE NEEDED AFTER THEY ARE EXPOSED. ACTUAL RELOCATION OF LINES WILL NOT BE THE RESPONSIBILITY OF THE CONTRACTOR, UNLESS OTHERWISE SHOWN, BUT THE CONTRACTOR SHALL COOPERATE WITH UTILITY COMPANIES TO COORDINATE THE RELOCATION EFFORT. LINES NOT RELOCATED SHALL BE PROTECTED BY THE CONTRACTOR IN PLACE OR REMOVED AND REPLACED, IN KIND, AS APPROVED BY THE ENGINEER. NO ADDITIONAL PAYMENT WILL BE ALLOWED FOR THE MINOR ADJUSTMENT OF STRUCTURES OR PIPES IN ORDER TO CLEAR A CONFLICTING UTILITY. CONTACT UTILITY COMPANIES 48 HOURS IN ADVANCE WHEN WORKING ADJACENT TO THE UTILITY.
3. EXCEPT WHERE OTHERWISE PROVIDED FOR IN THESE PLANS AND SPECIFICATIONS, THE CDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (1999) AND THE COLORADO DEPARTMENT OF TRANSPORTATION 'M&S' STANDARDS, (OCT, 2000), SHALL APPLY.
4. THE CONTRACTOR SHALL COMPLY WITH THE TRAFFIC CONTROL REQUIREMENTS OF GREENWOOD VILLAGE. THE CONTRACTOR SHALL IMPLEMENT A ROAD CLOSURE PLAN FOR PEORIA STREET SUBJECT TO THE APPROVAL OF GREENWOOD VILLAGE DURING CONSTRUCTION OF THE FACILITIES SHOWN HEREIN. TWO MESSAGE BOARDS (ONE NORTH AND ONE SOUTH OF PROJECT) SHALL BE PLACED AT LEAST ONE WEEK PRIOR TO CLOSURE. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
5. PROJECT FACILITIES ARE TO BE LOCATED BASED ON THE SURVEY COORDINATES, ELEVATIONS, DIMENSIONS, AND/OR GEOMETRIC DESIGN DATA PROVIDED ON THE DRAWINGS. DISTANCE, STATION, AND ANGLE INFORMATION SHOWN ON THE DRAWINGS HAS BEEN ROUNDED TO THE NEAREST SECOND OF ANGLE AND HUNDREDTH OF A FOOT. WHERE INDICATED FINISHED GRADES ARE TO BE DERIVED FROM PLAN VIEW CONTOURS.
6. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROVIDING STABLE EXCAVATIONS AND TEMPORARY SLOPES AND FOR SATISFYING ALL APPLICABLE OSHA, FEDERAL, STATE, AND LOCAL REGULATIONS. TEMPORARY EXCAVATIONS SHALL PROVIDE, AT MINIMUM, THE TRENCH DIMENSIONS AND CLEARANCES SHOWN OR SPECIFIED. TEMPORARY CONSTRUCTION SLOPES SHALL BE SLOPED, SHORED, SHEETED, AND/OR BRACED IN ACCORDANCE WITH STABILITY REQUIREMENTS AND APPLICABLE REGULATIONS, AND SHALL BE NO STEEPER THAN THE SLOPES SHOWN OR SPECIFIED WITHOUT THE APPROVAL OF THE ENGINEER. ANY SUCH APPROVALS BY THE ENGINEER WILL NOT RELIEVE THE CONTRACTOR FROM SOLE RESPONSIBILITY FOR PROVIDING STABLE EXCAVATIONS AND TEMPORARY SLOPES.
7. THE WORK WILL TAKE PLACE IN AND AROUND A FLOWING STREAM, SUBJECT TO PERIODIC FLOODING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTROL OF SURFACE AND SUBSURFACE WATER DURING THE COURSE OF THE WORK. ANY DAMAGE TO THE WORK RESULTING FROM SUBSURFACE, BASE FLOWS OR FLOOD FLOWS, INCLUDING BOUYANCY FORCES ON PIPELINES AND OTHER FACILITIES, SHALL BE CORRECTED BY THE CONTRACTOR AT THE CONTRACTOR'S SOLE COST. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND SATISFYING THE REQUIREMENTS OF ANY APPLICABLE PERMITS PERTAINING TO WATER AND SEDIMENT CONTROL.
8. THE CONSTRUCTION WORK IS LIMITED TO THE PUBLIC RIGHT OF WAY, THE ARAPAHOE AND HAVANA WATER AND SANITATION DISTRICTS EASEMENTS AND THE U.S. ARMY CORPS OF ENGINEERS EASEMENT UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
9. EXISTING FACILITIES NOT INDICATED TO BE REMOVED SHALL BE PROTECTED IN PLACE OR REMOVED AND REPLACED IN KIND, AS APPROVED BY THE ENGINEER.
10. CONTRACTOR SHALL FIELD VERIFY THE LOCATIONS (HORIZONTAL AND VERTICAL) AT CONNECTIONS TO ALL EXISTING INFRASTRUCTURE INCLUDING EXISTING SANITARY SEWERS, STORM DRAINS AND EXISTING CONCRETE STRUCTURES. THIS INFORMATION SHALL BE COLLECTED AND SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO FABRICATION AND/OR PRIOR TO INSTALLATION OF ANY NEW FACILITIES SHOWN ON THESE CONTRACT DRAWINGS. THE ENGINEER WILL DETERMINE IF ANY MINOR MODIFICATIONS TO THE NEW FACILITIES SHOWN ON THE CONTRACT DRAWINGS ARE NECESSARY SUCH AS HORIZONTAL AND VERTICAL ADJUSTMENTS.
11. SCALES SHOWN ARE FOR FULL SIZE (22"x34") SHEETS AND REQUIRE ADJUSTMENT FOR HALF SIZE (11"x17") SHEETS.
12. RIPRAP SHALL BE COVERED WITH TOPSOIL WHERE INDICATED ON THE DRAWINGS. THIS WORK SHALL BE A PART OF THIS CONTRACT AND NOT BY OTHERS.
13. CHAIN LINK FENCE IS SHOWN ON THE TRIPLE BOX CULVERT HEADWALLS AND WINGWALLS FOR THE BASE BID. TWO ALTERNATE TREATMENTS (A AND B) ARE ALSO SHOWN AND ARE TO BE BID AS ADD-ALTERNATES. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

SURVEY CONTROL INFORMATION

PLANIMETRIC SURVEY AND TOPOGRAPHY SHOWN HEREIN WAS PREPARED BY MILLER ENGINEERING AND SURVEYING INC., DATED APRIL 1997, JOB NO. 3294. SURVEY FOR CHERRY CREEK VISTA 17 AND DESIGN OF PEORIA STREET WAS PREPARED BY CARROLL AND LANGE. TOPOGRAPHY BY MILLER WAS RAISED 0.50' TO MATCH DATUM FOR SURVEY BY CARROLL AND LANGE FOR CHERRY CREEK VISTA 17 (BASED ON USGS, 1992). HORIZONTAL CONTROL SHOWN HEREIN IS BASED ON MILLER SURVEY. SEE TRANSLATION BELOW.

POINT NO.	POINT DESCRIPTION	ELEVATION	NORTHING	EASTING	CENTERLINE ALIGNMENT OF PEORIA STREET	STATION	NORTHING	EASTING
1	BRASS CAP AT NORTHWEST CORNER OF HEADWALL LOCATED AT SOUTH END OF NEWARK WAY CUL-DE-SAC (STAMPED USGS, SEPTEMBER, 1992, ELEV = 5632.33)	5632.33						
2	VERTICAL CONTROL POINT: WEST QUARTER CORNER OF SECTION 24, TOWNSHIP 5 SOUTH, RANGE 67 WEST (ALUMINUM CAP STAMPED LS 10717)	5631.04			START OF CONSTRUCTION	29+99.77	112,512.685	106,602.730
2	HORIZONTAL CONTROL POINT: WEST QUARTER CORNER OF SECTION 24, TOWNSHIP 5 SOUTH, RANGE 67 WEST (ALUMINUM CAP STAMPED LS 10717)		112,512.595	106,597.840		31+50.46	112,663.375	106,602.360
3	HORIZONTAL CONTROL POINT: NORTHEAST CORNER OF SECTION 23, TOWNSHIP 5 SOUTH, RANGE 67 WEST (NO. 3 REBAR)		115,155.955	106,599.170		36+50.00	113,162.715	106,588.170
	HORIZONTAL TRANSLATION TO CONVERT TO CARROLL & LANGE HORIZONTAL CONTROL SYSTEM (SUBTRACT FROM NORTHING AND EASTING SHOWN ABOVE)							
	BASIS OF BEARING: FROM POINT NO. 2 TO POINT NO. 3, 2643.36 FEET AT N 00 01' 44" E	102,482.005		93,964.490	END OF CONSTRUCTION	49+20.42	114,433.145	106,588.810

RECORD DRAWING

7/22/03

THIS RECORD DRAWING HAS BEEN PREPARED, IN PART, BASED UPON INFORMATION FURNISHED BY OTHERS. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, MULLER ENGINEERING COMPANY, INC. CANNOT ASSURE IT'S ACCURACY, AND THUS IS NOT RESPONSIBLE FOR THE ACCURACY OF THIS RECORD DRAWING OR FOR ANY ERRORS OR OMISSIONS WHICH MAY HAVE BEEN INCORPORATED INTO IT AS A RESULT. THOSE RELYING ON THIS RECORD DRAWING ARE ADVISED TO OBTAIN INDEPENDENT VERIFICATION OF IT'S ACCURACY BEFORE APPLYING IT FOR ANY PURPOSE.

CALL UTILITY NOTIFICATION
CENTER OF COLORADO

1-800-922-1987

CALL 2-BUSINESS DAYS IN ADVANCE
BEFORE YOU DIG, GRADE, OR EXCAVATE
FOR THE MARKING OF UNDERGROUND
MEMBER UTILITIES.

REVISIONS

NO	DATE	BY	CHK'D	DESCRIPTION
1	7/22/03	JTW	JTW	AS CONSTRUCTED RECORD DRAWINGS

MULLER ENGINEERING COMPANY, INC.

CONSULTING ENGINEERS
IRONGATE 4, SUITE 100
777 S. WADSWORTH BLVD.
LAKEWOOD, COLORADO 80226
(303) 968-4939

MULLER

URBAN DRAINAGE AND FLOOD CONTROL DISTRICT

LANDMARK METROPOLITAN DISTRICT

CITY OF GREENWOOD VILLAGE

ARAPAHOE COUNTY WATER AND WASTEWATER AUTHORITY

CHERRY CREEK BASIN WATER QUALITY AUTHORITY

ARAPAHOE COUNTY

COTTONWOOD CREEK -

PEORIA STREET IMPROVEMENTS

DRAWN: BKB 11/29/00 DESIGNED: JTW 11/29/00 CHKD: DDJ 1/5/01

LEGEND, ABBREVIATIONS AND

GENERAL NOTES

SHEET

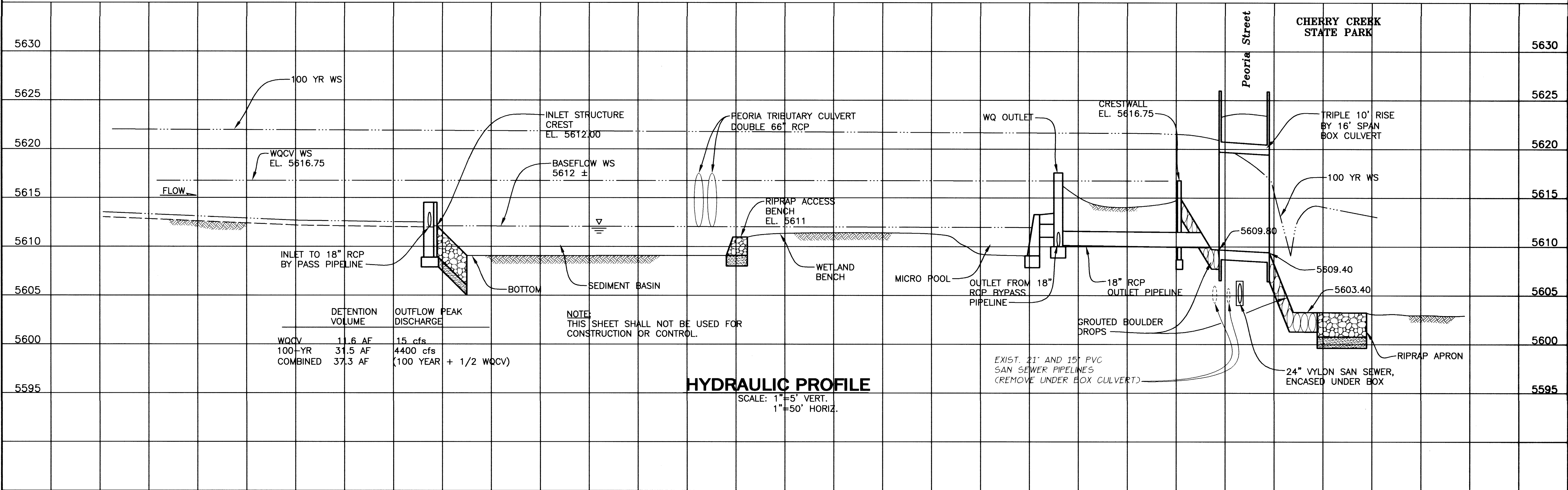
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DWG

G-2

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HYDRAULIC PROFILE

SCALE: 1"=5' VERT.
1"=50' HORIZ.

RECORD DRAWING

7/22/03

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REVISIONS

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CONSULTING ENGINEERS
IRONGATE 4, SUITE 100
777 S. WADSWORTH BLVD.
LAKEWOOD, COLORADO 80226
(303) 988-4939

URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
LANDMARK METROPOLITAN DISTRICT
CITY OF GREENWOOD VILLAGE
ARAPAHOE COUNTY
ARAPAHOE COUNTY WATER AND WASTEWATER AUTHORITY

COTTONWOOD CREEK - PEORIA STREET IMPROVEMENTS

DRAWN: BKB 11/29/00 DESIGNED: JTW 11/29/00 CHKD: DDJ 1/5/01

HYDRAULIC PROFILE

SHEET
3
DWG
G-3

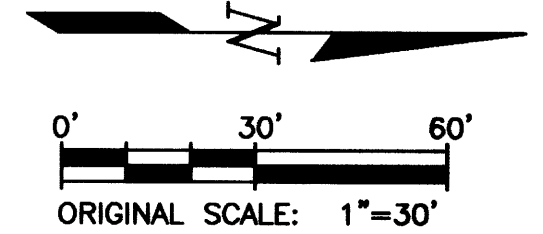
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BK. 2557, PG. 542

RECORD DRAWING

7/22/03

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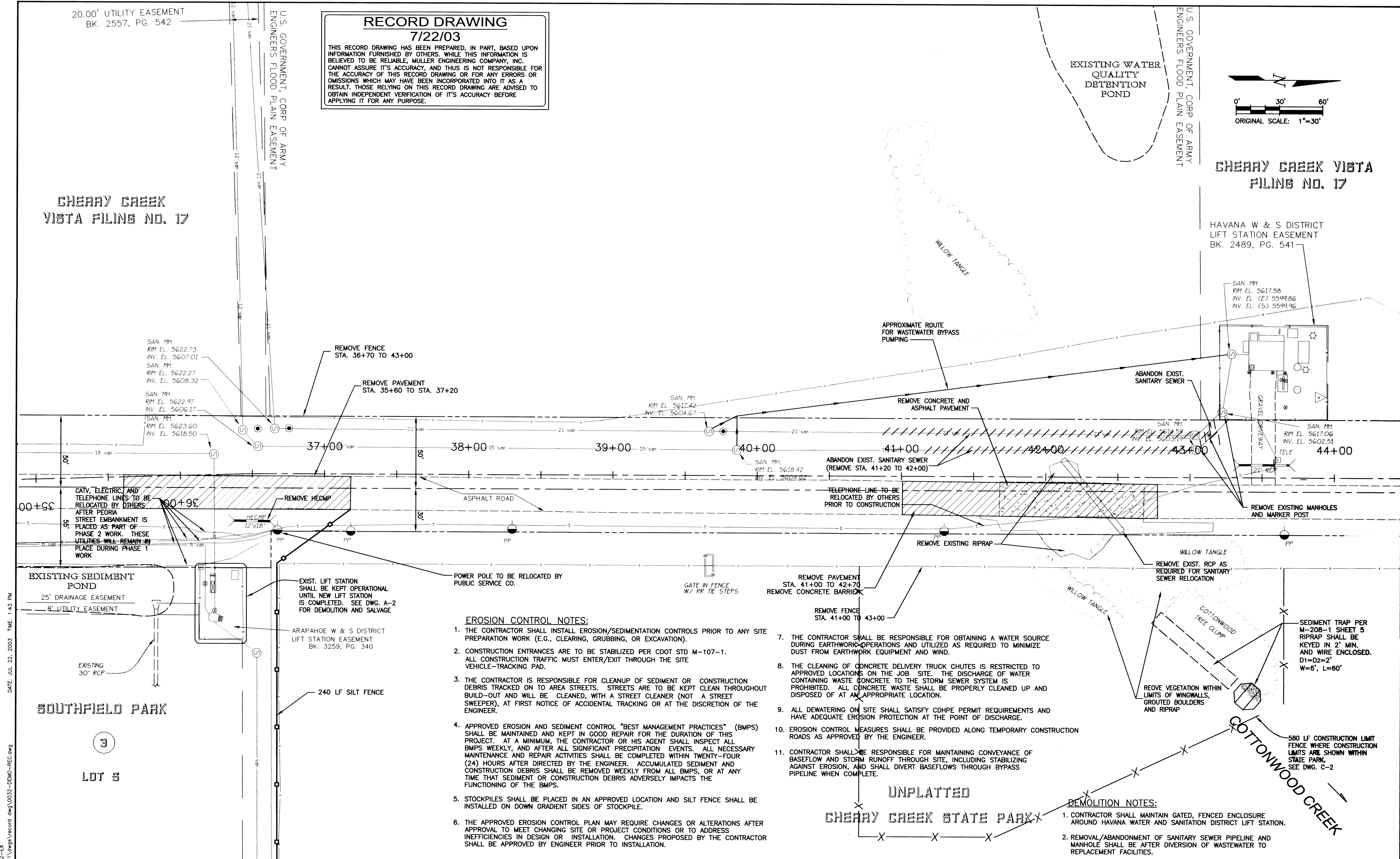
U.S. GOVERNMENT, CORP OF ARMY
ENGINEERS FLOOD PLAIN EASEMENT



CHERRY CREEK VISTA FILING NO. 17

HAVANA W & S DISTRICT
LIFT STATION EASEMENT
BK. 2489, PG. 541

CHERRY CREEK VISTA FILING NO. 17



EROSION CONTROL NOTES:

1. THE CONTRACTOR SHALL INSTALL EROSION/SEDIMENTATION CONTROLS PRIOR TO ANY SITE PREPARATION WORK (E.G., CLEARING, GRUBBING, OR EXCAVATION).
2. CONSTRUCTION ENTRANCES ARE TO BE STABILIZED PER CDOT STD M-107-1. ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THROUGH THE SITE VEHICLE-TRACKING PAD.
3. THE CONTRACTOR IS RESPONSIBLE FOR CLEANUP OF SEDIMENT OR CONSTRUCTION DEBRIS TRACKED ON TO AREA STREETS. STREETS ARE TO BE KEPT CLEAN THROUGHOUT BUILD-OUT AND WILL BE CLEANED, WITH A STREET CLEANER (NOT A STREET SWEEPER), AT FIRST NOTICE OF ACCIDENTAL TRACKING OR AT THE DISCRETION OF THE ENGINEER.
4. APPROVED EROSION AND SEDIMENT CONTROL "BEST MANAGEMENT PRACTICES" (BMPs) SHALL BE MAINTAINED AND KEPT IN GOOD REPAIR FOR THE DURATION OF THIS PROJECT. AT A MINIMUM, THE CONTRACTOR OR HIS AGENT SHALL INSPECT ALL BMPs WEEKLY, AND AFTER ALL SIGNIFICANT PRECIPITATION EVENTS. ALL NECESSARY MAINTENANCE AND REPAIR ACTIVITIES SHALL BE COMPLETED WITHIN TWENTY-FOUR (24) HOURS AFTER DIRECTED BY THE ENGINEER. ACCUMULATED SEDIMENT AND CONSTRUCTION DEBRIS SHALL BE REMOVED WEEKLY FROM ALL BMPs, OR AT ANY TIME THAT SEDIMENT OR CONSTRUCTION DEBRIS ADVERSELY IMPACTS THE FUNCTIONING OF THE BMPs.
5. STOCKPILES SHALL BE PLACED IN AN APPROVED LOCATION AND SILT FENCE SHALL BE INSTALLED ON DOWN GRADIENT SIDES OF STOCKPILE.
6. THE APPROVED EROSION CONTROL PLAN MAY REQUIRE CHANGES OR ALTERATIONS AFTER APPROVAL TO MEET CHANGING SITE OR PROJECT CONDITIONS OR TO ADDRESS INEFFICIENCIES IN DESIGN OR INSTALLATION. CHANGES PROPOSED BY THE CONTRACTOR SHALL BE APPROVED BY ENGINEER PRIOR TO INSTALLATION.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A WATER SOURCE DURING EARTHWORK OPERATIONS AND UTILIZED AS REQUIRED TO MINIMIZE DUST FROM EARTHWORK EQUIPMENT AND WIND.
8. THE CLEANING OF CONCRETE DELIVERY TRUCK CHUTES IS RESTRICTED TO APPROVED LOCATIONS ON THE JOB SITE. THE DISCHARGE OF WATER CONTAINING WASTE CONCRETE TO THE STORM SEWER SYSTEM IS PROHIBITED. ALL CONCRETE WASTE SHALL BE PROPERLY CLEANED UP AND DISPOSED OF AT AN APPROPRIATE LOCATION.
9. ALL DEWATERING ON SITE SHALL SATISFY CDHPE PERMIT REQUIREMENTS AND HAVE ADEQUATE EROSION PROTECTION AT THE POINT OF DISCHARGE.
10. EROSION CONTROL MEASURES SHALL BE PROVIDED ALONG TEMPORARY CONSTRUCTION ROADS AS APPROVED BY THE ENGINEER.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING CONVEYANCE OF BASEFLOW AND STORM RUNOFF THROUGH SITE, INCLUDING STABILIZING AGAINST EROSION, AND SHALL DIVERT BASEFLOWS THROUGH BYPASS PIPELINE WHEN COMPLETE.

DEMOLITION NOTES:

1. CONTRACTOR SHALL MAINTAIN GATED, FENCED ENCLOSURE AROUND HAVANA WATER AND SANITATION DISTRICT LIFT STATION.
2. REMOVAL/ABANDONMENT OF SANITARY SEWER PIPELINE AND MANHOLE SHALL BE AFTER DIVERSION OF WASTEWATER TO REPLACEMENT FACILITIES.

DATE: JUL 22, 2003 TIME: 1:43 PM

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REVISIONS

NO.	DATE	BY	CHK'D	DESCRIPTION
1	7/22/03	MM/CM	JTW	AS CONSTRUCTED RECORD DRAWINGS

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777 S. WADSWORTH BLVD.
LAKEWOOD, COLORADO 80226
(303) 988-4939

URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
LANDMARK METROPOLITAN DISTRICT
CITY OF GREENWOOD VILLAGE
ARAPAHOE COUNTY WATER AND WASTEWATER AUTHORITY

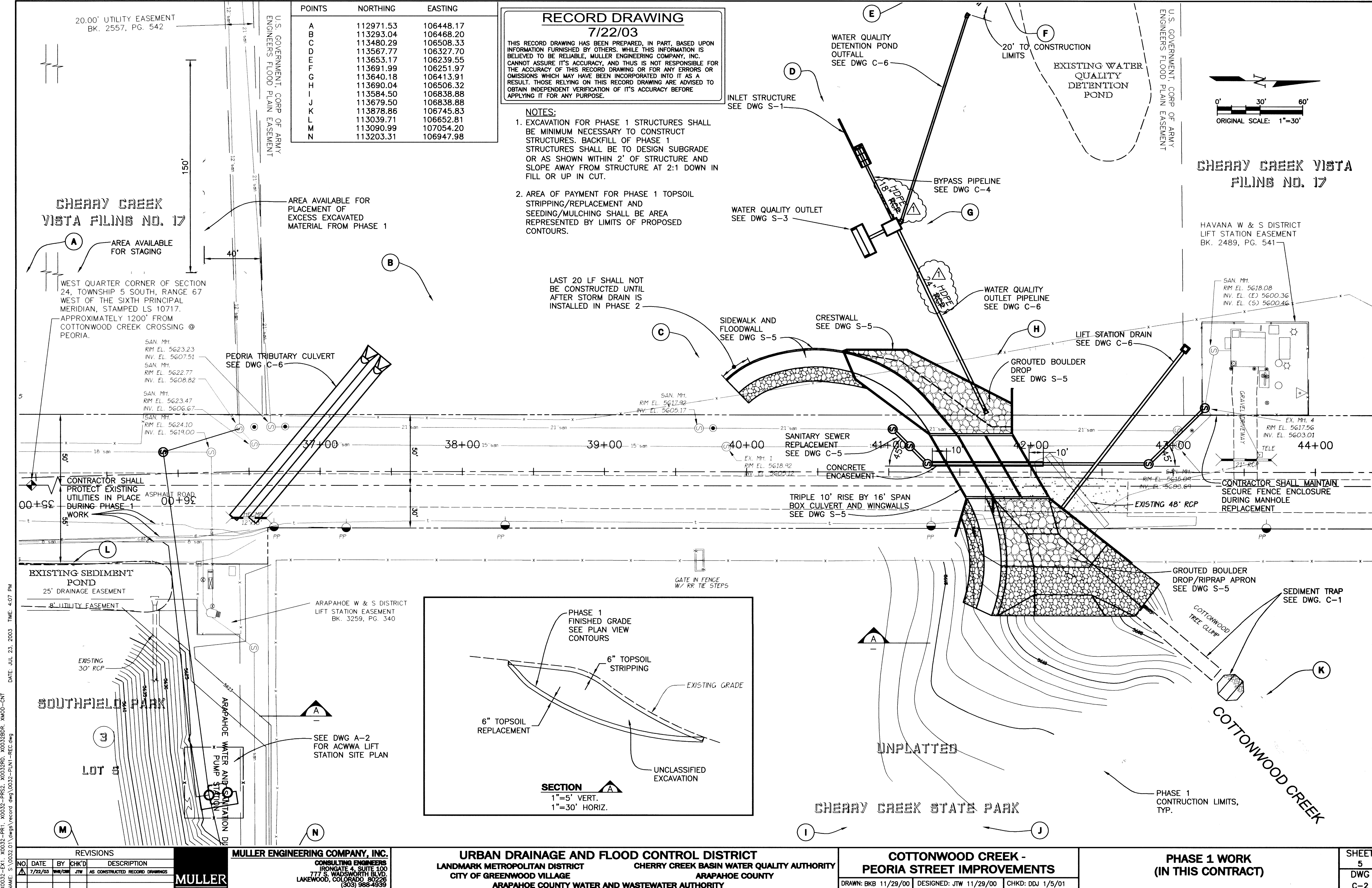
CHERRY CREEK BASIN WATER QUALITY AUTHORITY
ARAPAHOE COUNTY

COTTONWOOD CREEK - PEORIA STREET IMPROVEMENTS

DRAWN: BKB 11/29/00 DESIGNED: JTW 11/29/00 CHKD: DDJ 1/5/01

INITIAL EROSION CONTROL, DEMOLITION, AND WASTEWATER BYPASS PLAN

SHEET
4
DWG
C-1



DATE: JUL 23, 2003 TIME: 4:07 PM
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1	7/22/03	JTW	JTW	AS CONSTRUCTED RECORD DRAWINGS

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URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
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CITY OF GREENWOOD VILLAGE
ARAPAHOE COUNTY
ARAPAHOE COUNTY WATER AND WASTEWATER AUTHORITY

CHERRY CREEK BASIN WATER QUALITY AUTHORITY

COTTONWOOD CREEK -
PEORIA STREET IMPROVEMENTS

DRAWN: BKB 11/29/00 DESIGNED: JTW 11/29/00 CHKD: DDJ 1/5/01

PHASE 1 WORK
(IN THIS CONTRACT)

SHEET
5
DWG
C-2

RECORD DRAWING

7/22/03

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AREA USED FOR PLACEMENT OF EXCESS EXCAVATED MATERIAL FROM PHASE 2 GRADING. SEEDING AND MULCHING EXCESS EXCAVATED MATERIAL AND DISTURBED AREAS OUTSIDE PHASE 2 PROPOSED CONTOURS SHALL BE BY OTHERS

20.00' UTILITY EASEMENT
BK. 2557, PG. 542

CHERRY CREEK VISTA FILING NO. 17

WEST QUARTER CORNER OF SECTION 24, TOWNSHIP 5 SOUTH, RANGE 67 WEST OF THE SIXTH PRINCIPAL MERIDIAN, STAMPED LS 10717. APPROXIMATELY 1200' FROM COTTONWOOD CREEK CROSSING @ PEORIA.

RAISE/ADJUST ALL MANHOLES IN STREET ROW TO FINISHED GRADE, TYP

SAN. MH.
RIM EL. 5623.23
INV. EL. 5607.51
SAN. MH.
RIM EL. 5622.77
INV. EL. 5608.82

SAN. MH.
RIM EL. 5623.47
INV. EL. 5606.67
SAN. MH.
RIM EL. 5624.10
INV. EL. 5619.00

SAN. MH.
RIM EL. 5618.92
INV. EL. 5602.12
SAN. MH.
RIM EL. 5615.09
INV. EL. 5603.67

SAN. MH.
RIM EL. 5615.09
INV. EL. 5603.67
SAN. MH.
RIM EL. 5615.09
INV. EL. 5603.67

SAN. MH.
RIM EL. 5615.09
INV. EL. 5603.67
SAN. MH.
RIM EL. 5615.09
INV. EL. 5603.67

SAN. MH.
RIM EL. 5615.09
INV. EL. 5603.67
SAN. MH.
RIM EL. 5615.09
INV. EL. 5603.67

SAN. MH.
RIM EL. 5615.09
INV. EL. 5603.67
SAN. MH.
RIM EL. 5615.09
INV. EL. 5603.67

SAN. MH.
RIM EL. 5615.09
INV. EL. 5603.67
SAN. MH.
RIM EL. 5615.09
INV. EL. 5603.67

COTTONWOOD CREEK

EXISTING VEGETATION IN THIS AREA SHALL NOT BE DISTURBED

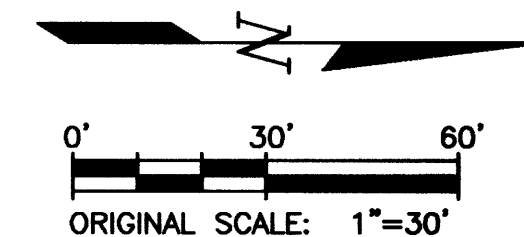
ALL FINISHED GRADING, SIDEWALK, FENCE, AND PEORIA STREET IMPROVEMENTS NOT SHOWN ON DWG. C-2 SHALL BE BY OTHERS. FINISHED GRADING BY OTHERS SHALL INCLUDE RUBBLE REMOVAL, PAVEMENT REMOVAL, SURFACE PREPARATION, TOPSOIL REMOVAL AND REPLACEMENT, AND DISPOSAL OF EXCESS EXCAVATED MATERIAL.

SEE TABLE 2 DWG. C-10 FOR RIPRAP LAYOUT POINTS

SEE BLOWUP OF THIS AREA, DWG. C-11

EXISTING WATER QUALITY DETENTION POND

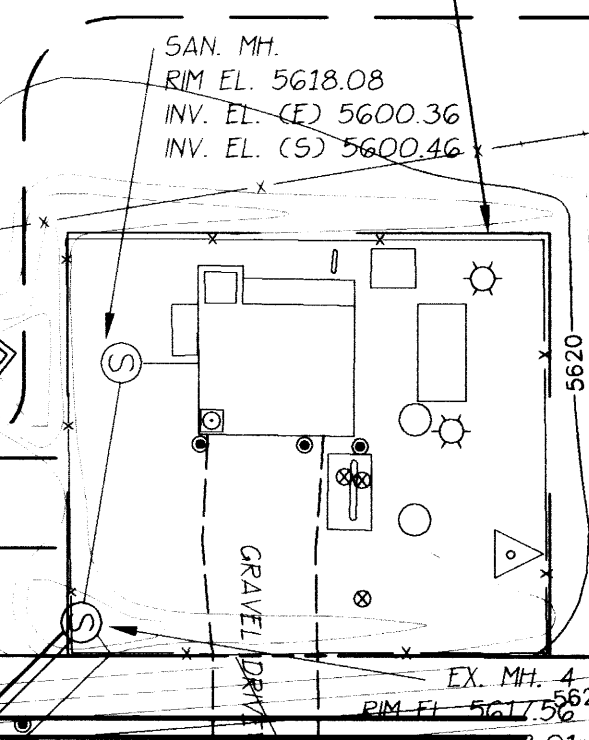
NOTE:
1. BOXED ITEMS COMPRISE PHASE 2 WORK BY OTHERS.



CHERRY CREEK VISTA FILING NO. 17

WORK SHOWN ON CARROLL & LANGE DRAWINGS FOR GRADING, ACCESS DRIVE, RETAINING WALLS, AND FENCE MODIFICATIONS NORTH OF CORPS EASEMENT SHALL BE BY OTHERS

HAVANA W & S DISTRICT LIFT STATION EASEMENT
BK. 2489, PG. 541



SAN. MH.
RIM EL. 5618.08
INV. EL. 5600.36
INV. EL. (S) 5600.46

SAN. MH.
RIM EL. 5618.08
INV. EL. 5600.36
INV. EL. (S) 5600.46

SAN. MH.
RIM EL. 5618.08
INV. EL. 5600.36
INV. EL. (S) 5600.46

SAN. MH.
RIM EL. 5618.08
INV. EL. 5600.36
INV. EL. (S) 5600.46

SAN. MH.
RIM EL. 5618.08
INV. EL. 5600.36
INV. EL. (S) 5600.46

SAN. MH.
RIM EL. 5618.08
INV. EL. 5600.36
INV. EL. (S) 5600.46

NO.	DATE	BY	CHK'D	DESCRIPTION
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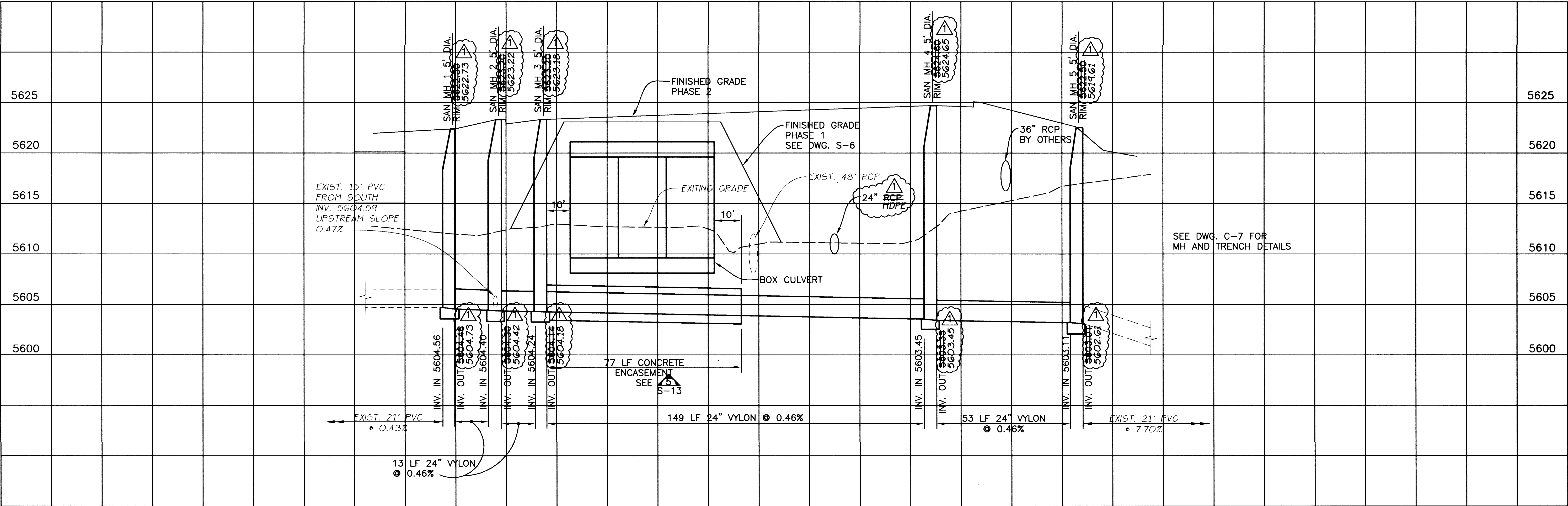
MULLER ENGINEERING COMPANY, INC.
CONSULTING ENGINEERS
FRONTGATE 4, SUITE 100
777 S. WADSWORTH BLVD.
LAKEWOOD, COLORADO 80226
(303) 968-4939

URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
LANDMARK METROPOLITAN DISTRICT
CITY OF GREENWOOD VILLAGE
ARAPAHOE COUNTY
ARAPAHOE COUNTY WATER AND WASTEWATER AUTHORITY

**COTTONWOOD CREEK -
PEORIA STREET IMPROVEMENTS**
DRAWN: BKB 11/29/00 | DESIGNED: JTW 11/29/00 | CHKD: DDJ 1/5/01

**PHASE 2 WORK
(BY OTHERS)**
SHEET 6
DWG C-3

CENTER POINT OF MANHOLE	NORTHING	EASTING	ORIENTATION OF MH RING AND COVER
MH 1	113616.32	106558.39	WEST SIDE OF MH
MH 2	113628.30	106570.37	WEST SIDE OF MH
MH 3	113640.76	106582.82	NORTH SIDE OF MH
MH 4	113796.33	106582.82	NORTH SIDE OF MH
MH 5	113835.81	106543.34	NORTH SIDE OF MH



SANITARY SEWER - PROFILE

SCALE: 1"=5' VERT.
1"=20' HORIZ.

RECORD DRAWING

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NOTES:

- MANHOLES SHALL BE INSTALLED TO RIM ELEVATIONS SHOWN AND ADJUSTED BY OTHERS AS NECESSARY TO MATCH FINAL GRADE.
- CONTRACTOR SHALL BACKFILL SANITARY SEWER AND MANHOLES TO ELEVATION OF EXISTING GRADE OR PHASE 1 FINISHED GRADE, WHICHEVER IS HIGHER.

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NO	DATE	BY	CHK'D	DESCRIPTION
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LANDMARK METROPOLITAN DISTRICT
CITY OF GREENWOOD VILLAGE
ARAPAHOE COUNTY WATER AND WASTEWATER AUTHORITY

CHERRY CREEK BASIN WATER QUALITY AUTHORITY
ARAPAHOE COUNTY

**COTTONWOOD CREEK -
PEORIA STREET IMPROVEMENTS**

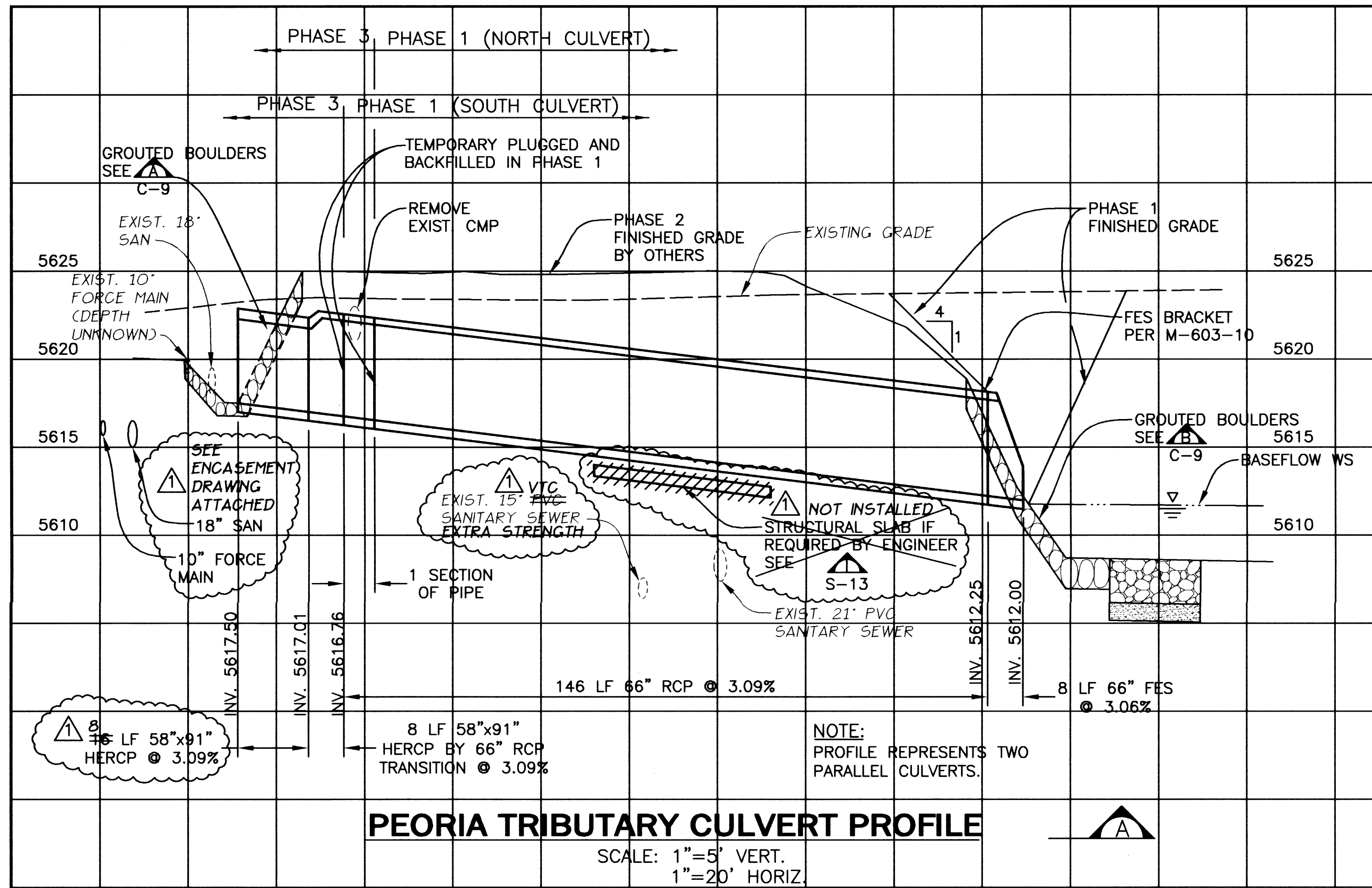
DRAWN: BKB 11/29/00 DESIGNED: JTW 11/29/00 CHKD: DDJ 1/5/01

**SANITARY SEWER
PROFILE**

SHEET
8
DWG
C-5

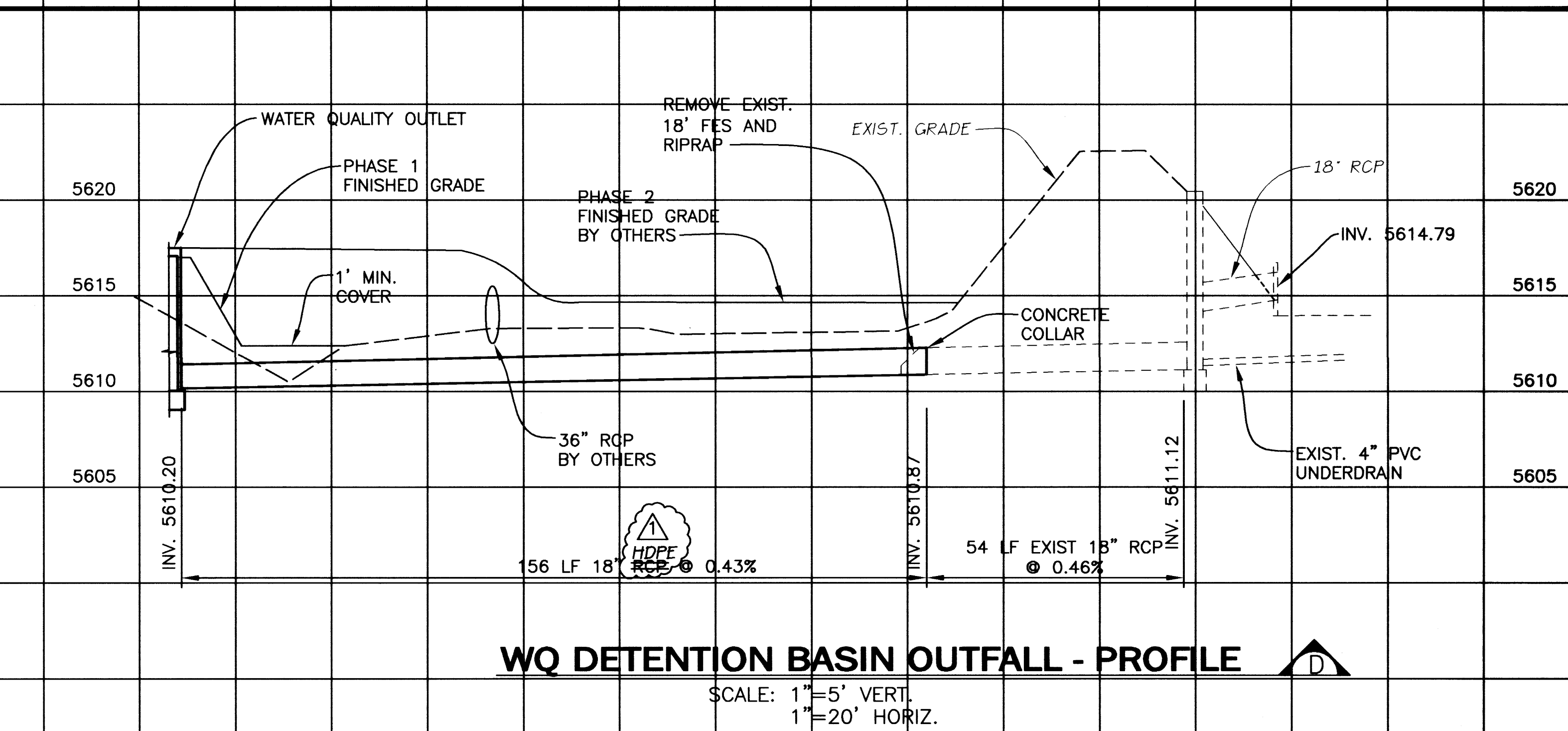
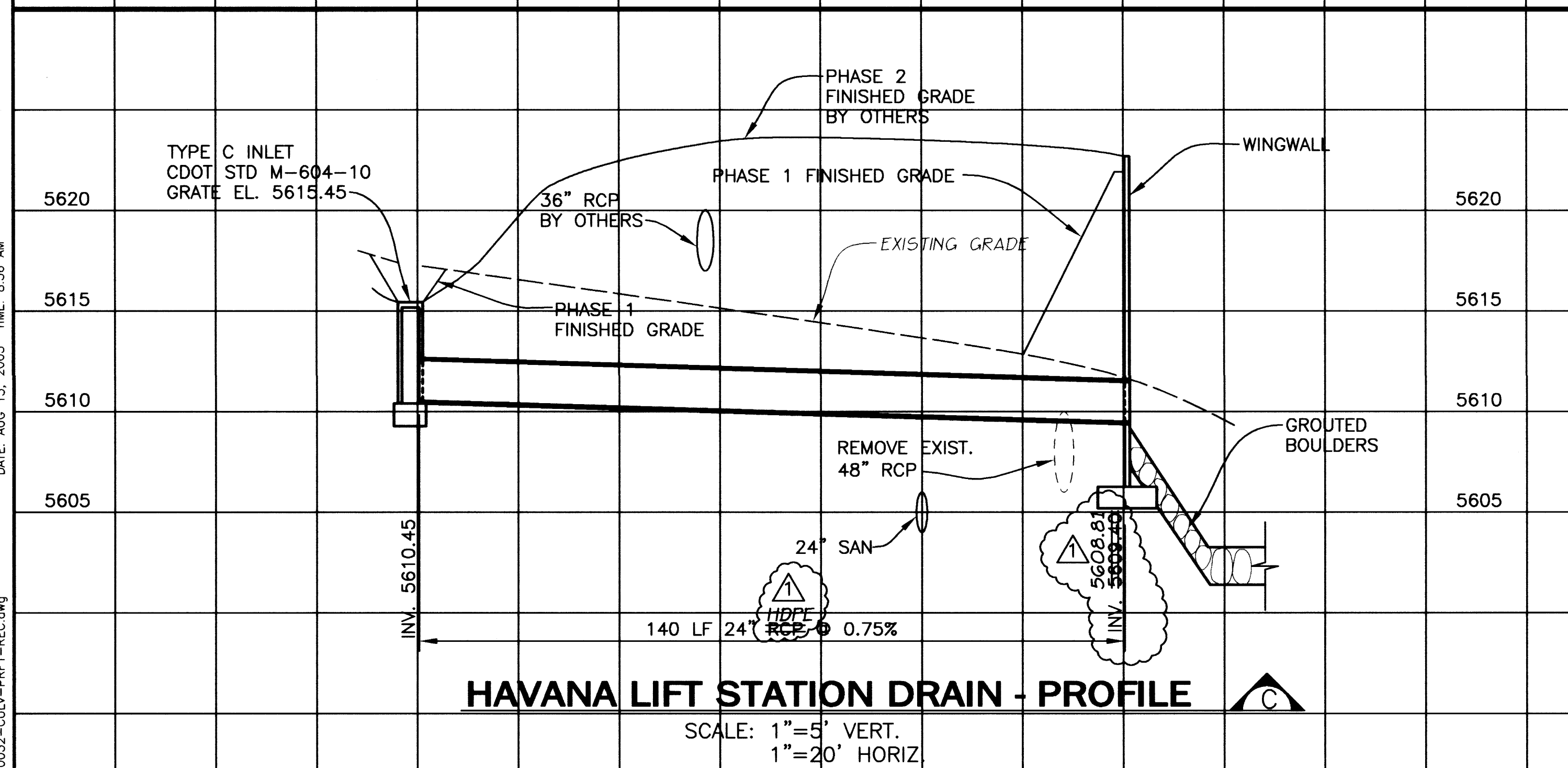
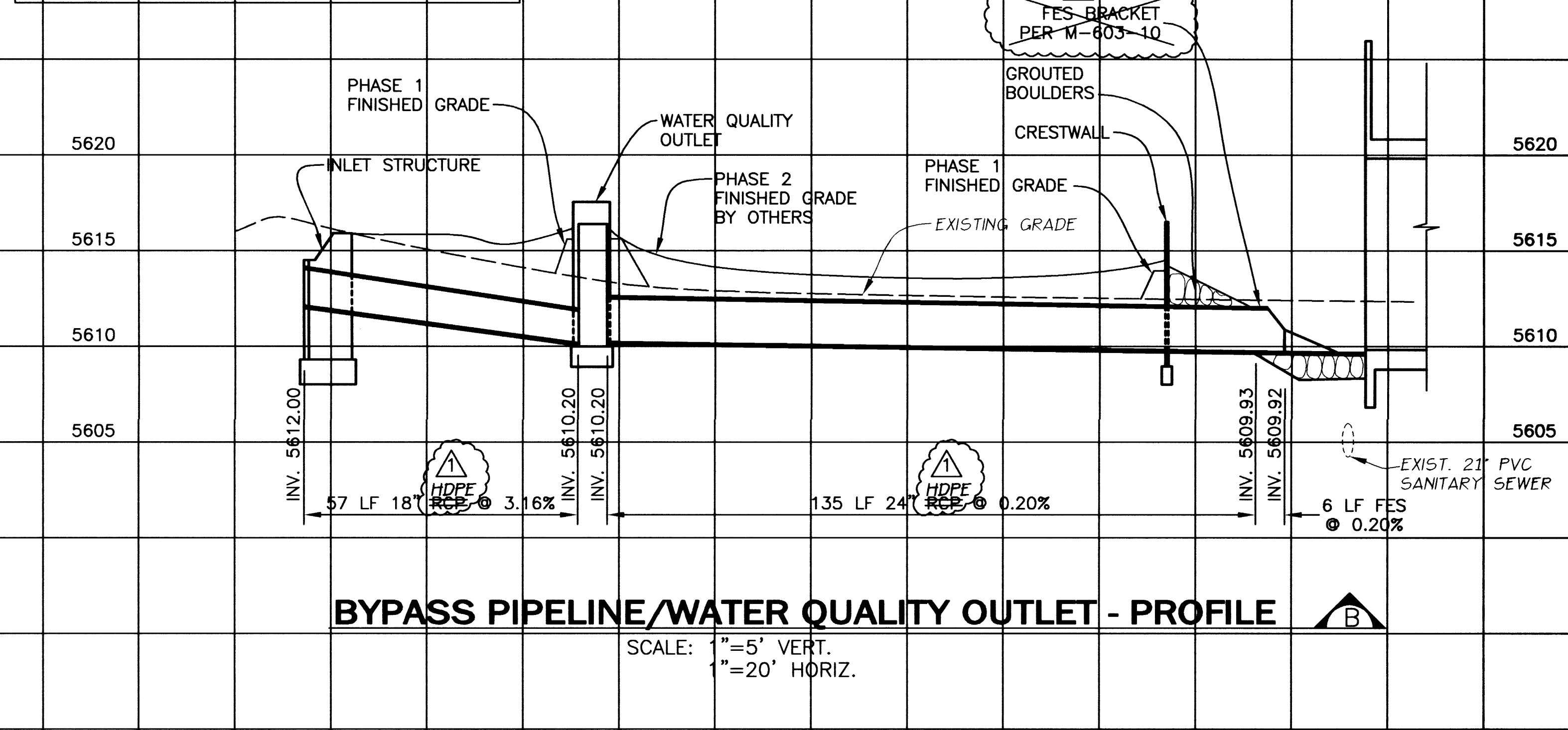
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- NOTES (PROFILES A-D):
- ALL STORM DRAIN SHALL BE BACKFILLED TO EXISTING GRADE OR PHASE 1 FINISHED GRADE WHERE INDICATED.
 - SEE DWG. C-7 FOR PIPE TRENCH SECTIONS.

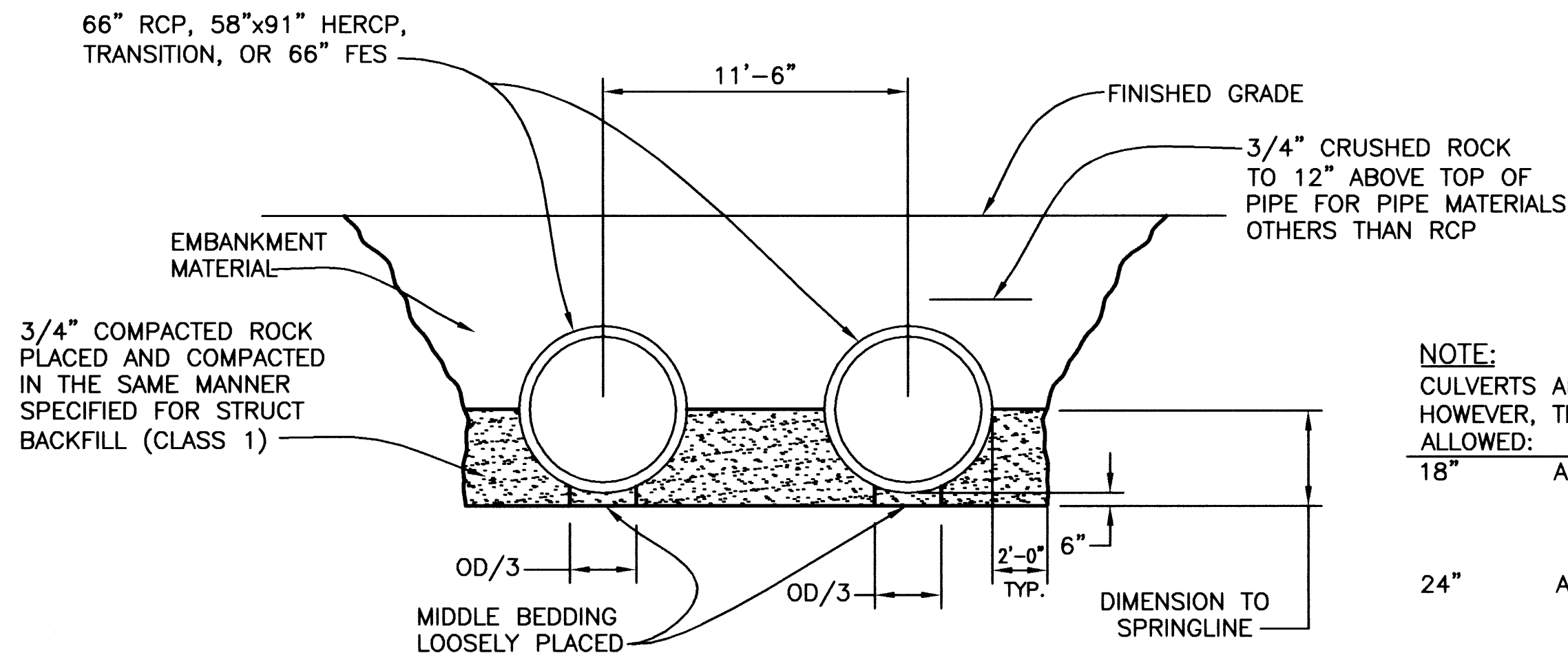
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NO.	DATE	BY	CHK'D	DESCRIPTION
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777 S. WADSWORTH BLVD.
LAKEWOOD, COLORADO 80226
(303) 988-4939

URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
LANDMARK METROPOLITAN DISTRICT
CITY OF GREENWOOD VILLAGE
ARAPAHOE COUNTY
ARAPAHOE COUNTY WATER AND WASTEWATER AUTHORITY

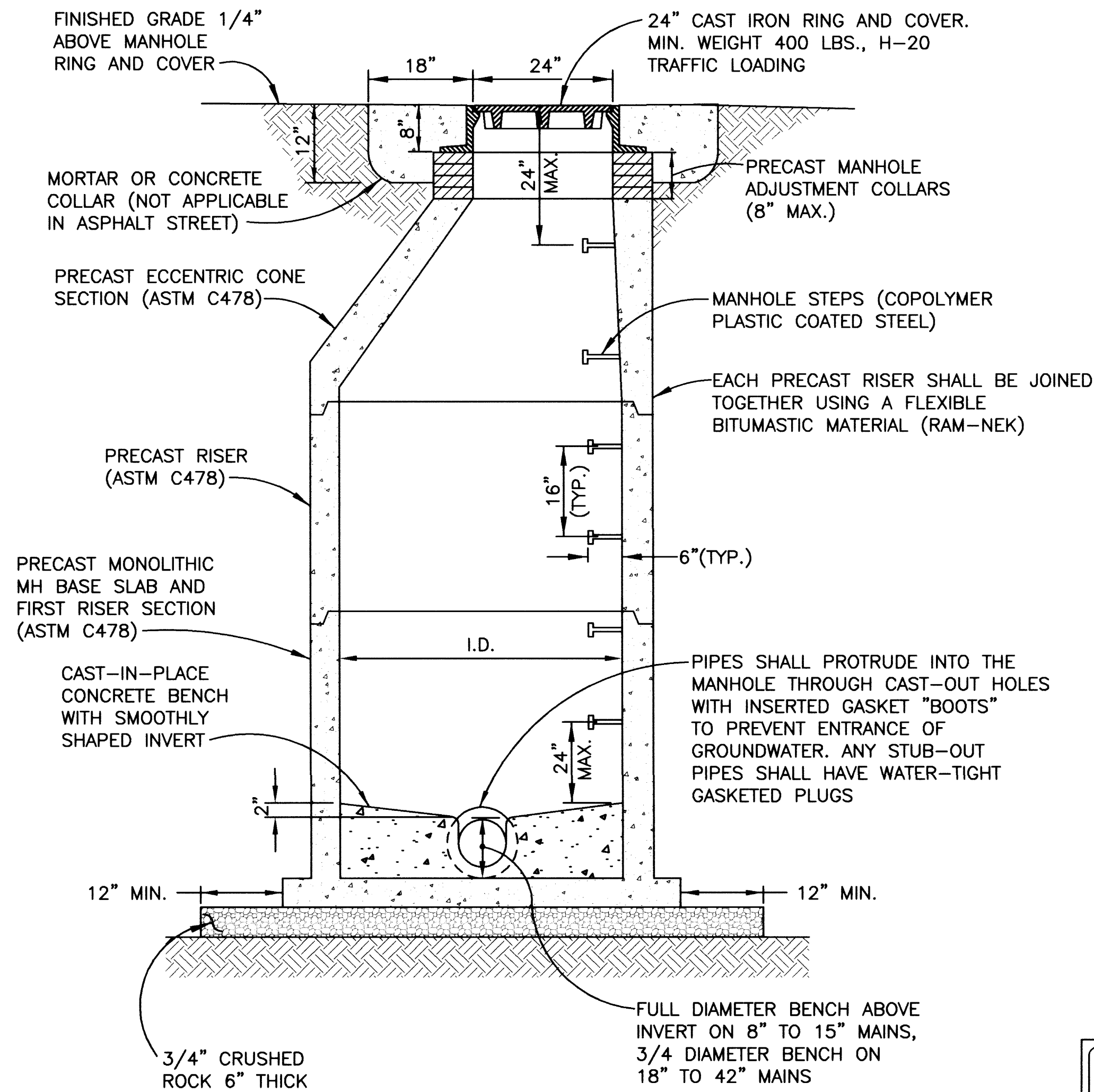
**COTTONWOOD CREEK -
PEORIA STREET IMPROVEMENTS**
DRAWN: BKB 11/29/00
DESIGNED: JTW 11/29/00
CHKD: DDJ 1/5/01

STORM DRAIN PROFILES
SHEET
9
DWG
C-6



PEORIA TRIBUTARY CULVERT - SECTION

SCALE: 1"=5'



MANHOLE:

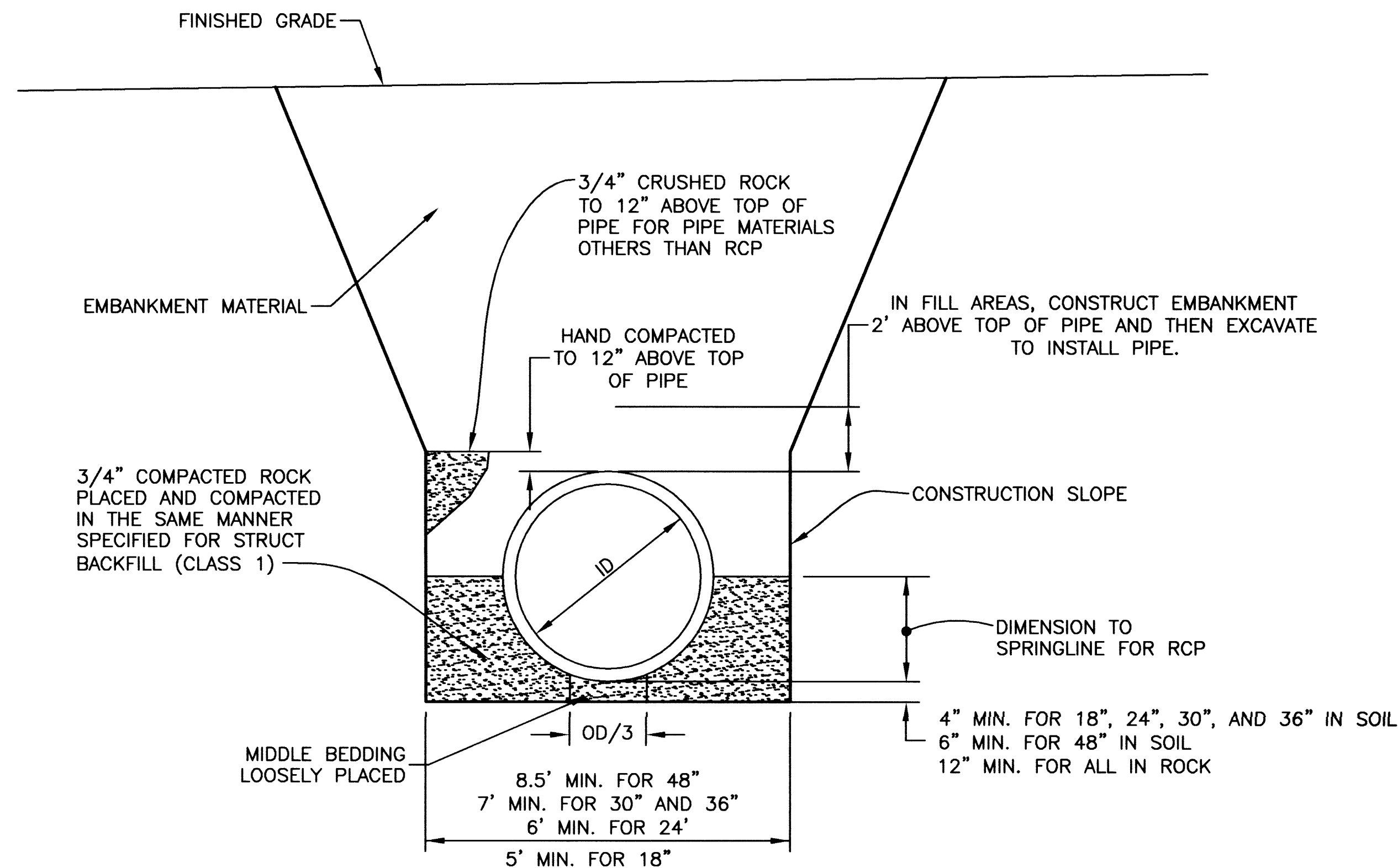
ID = 4' FOR MAIN DIAMETERS < 24"
ID = 5' FOR MAIN DIAMETERS 27"-48"

SANITARY SEWER MANHOLE - DETAIL

N.T.S.

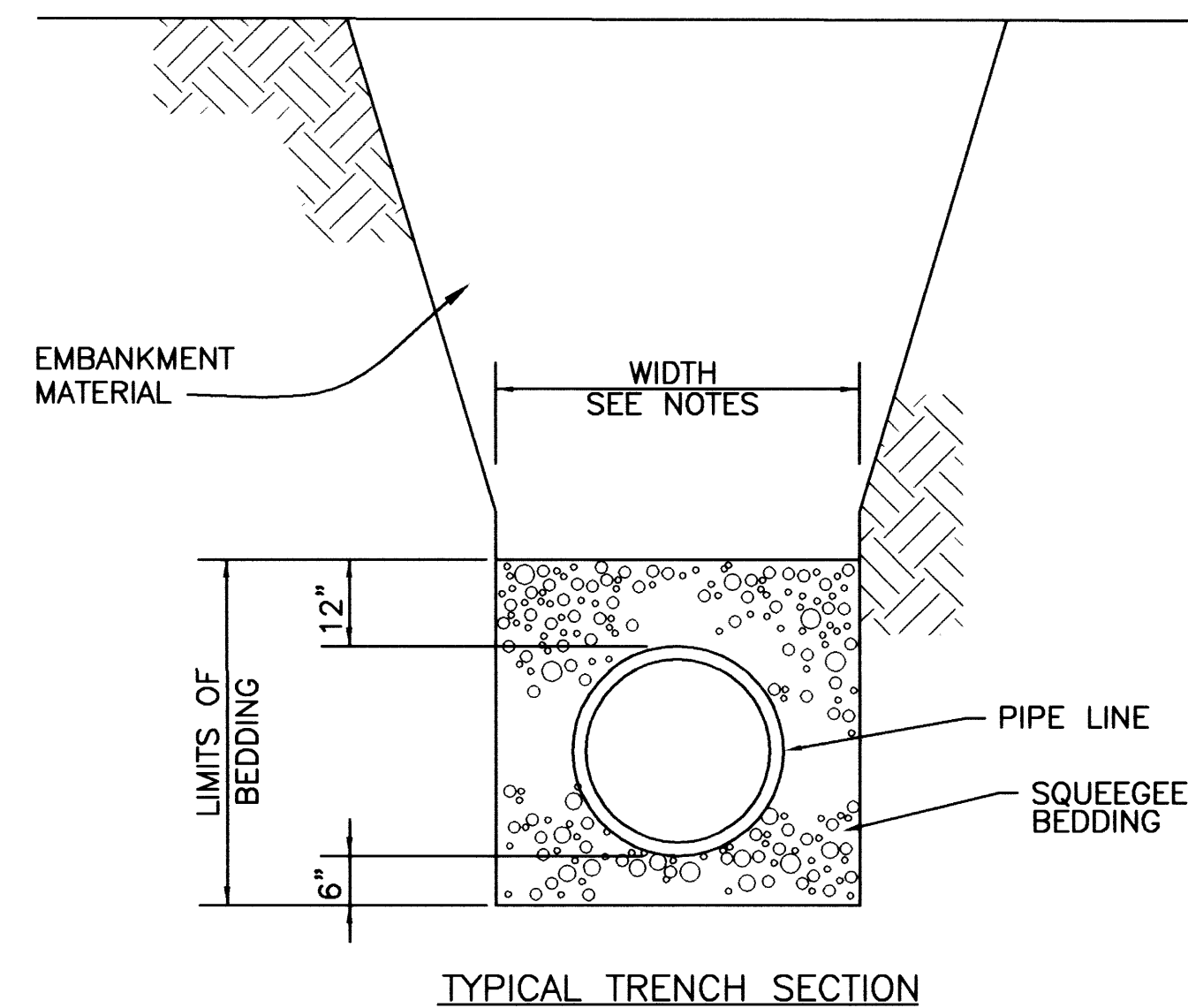
NOTE:
CULVERTS AND STORM DRAINS ARE SHOWN AS RCP.
HOWEVER, THE FOLLOWING ALTERNATE PIPE MATERIALS ARE ALLOWED:

18" ALUMINIZED STEEL (SPIRAL RIBBED)
HDPE
PVC
24" ALUMINIZED STEEL (SPIRAL RIBBED)



STORM DRAIN PIPE TRENCH - DETAIL

N.T.S.



TYPICAL TRENCH SECTION

NOTES:

- TRENCH WIDTH SHALL NOT BE MORE THAN 16" NOR LESS THAN 12" WIDER THAN THE LARGEST OUTSIDE DIAMETER OF THE PIPE.
- SHOULD THE TRENCH BE EXCAVATED WIDER THAN ALLOWED, A CONCRETE CRADLE SHALL BE PLACED WITH 2500 P.S.I. CONCRETE FROM TRENCH BOTTOM TO PIPE SPRINGLINE.

SANITARY SEWER TRENCH BEDDING - DETAIL

N.T.S.

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(303) 988-4939

URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
LANDMARK METROPOLITAN DISTRICT
CITY OF GREENWOOD VILLAGE
ARAPAHOE COUNTY WATER AND WASTEWATER AUTHORITY

**COTTONWOOD CREEK -
PEORIA STREET IMPROVEMENTS**
DRAWN: BKB 11/29/00 DESIGNED: JTW 11/29/00 CHKD: DDJ 1/5/01

**PIPE TRENCH AND MANHOLE
DETAILS**
SHEET
10
DWG
C-7

RECORD DRAWING

7/22/03

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PEORIA TRIBUTARY CULVERT INLET - PLAN

SCALE 1"=10'

PEORIA TRIBUTARY CULVERT OUTLET - PLAN

SCALE 1"=10'

GROUTED BOULDER PLACEMENT DETAIL

SCALE 1"=5'

PEORIA TRIBUTARY CULVERT INLET - SECTION

SCALE 1"=5'

PEORIA TRIBUTARY CULVERT INLET - SECTION

SCALE 1"=5'

UNDERDRAIN SYSTEM DETAIL

SCALE 1"=3'

DATE: AUG 07, 2003 TIME: 10:27 AM

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NO.	DATE	BY	CHK'D	DESCRIPTION
1	7/22/03	HW/CH	JTW	AS CONSTRUCTED RECORD DRAWINGS

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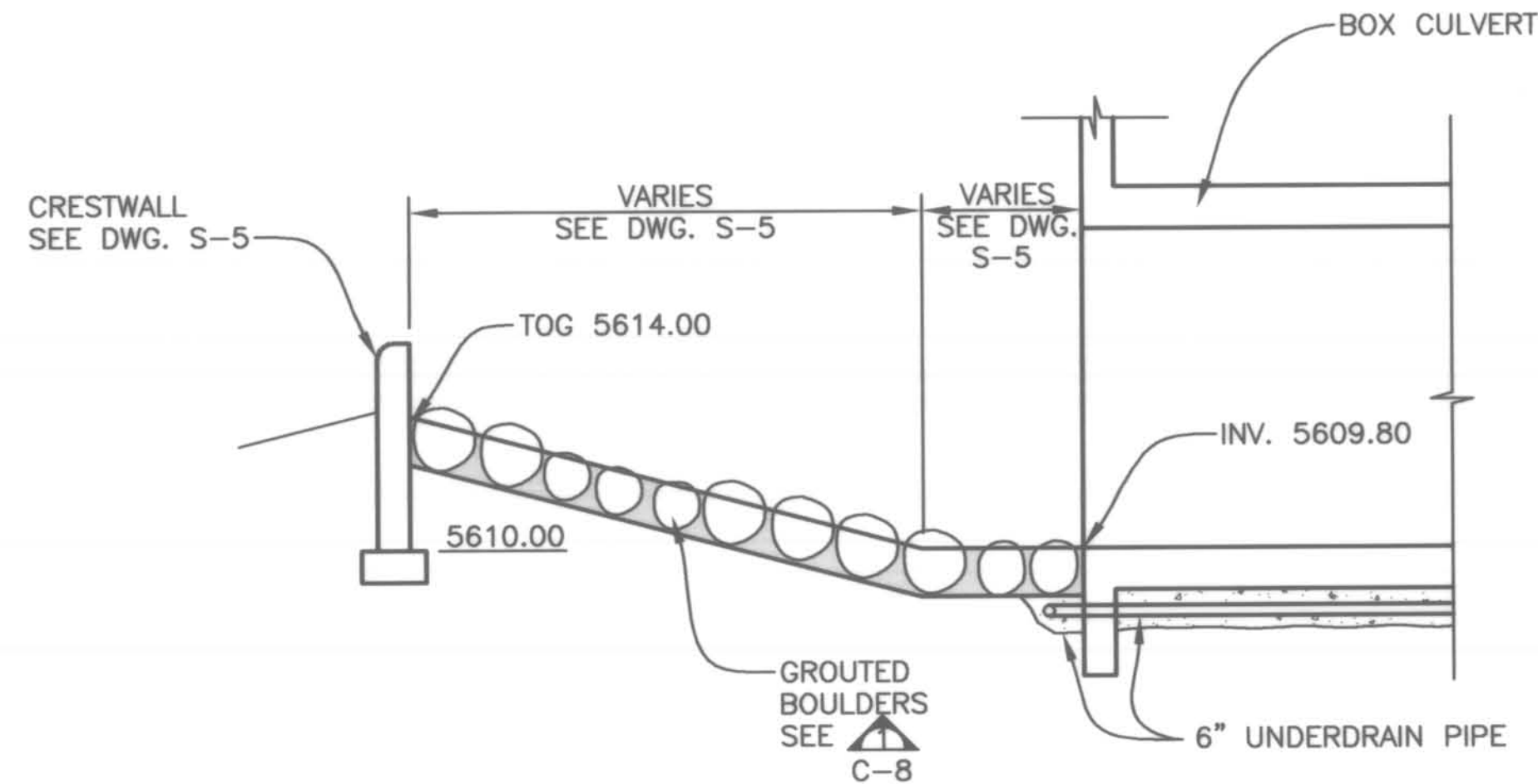
URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
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COTTONWOOD CREEK -
PEORIA STREET IMPROVEMENTS

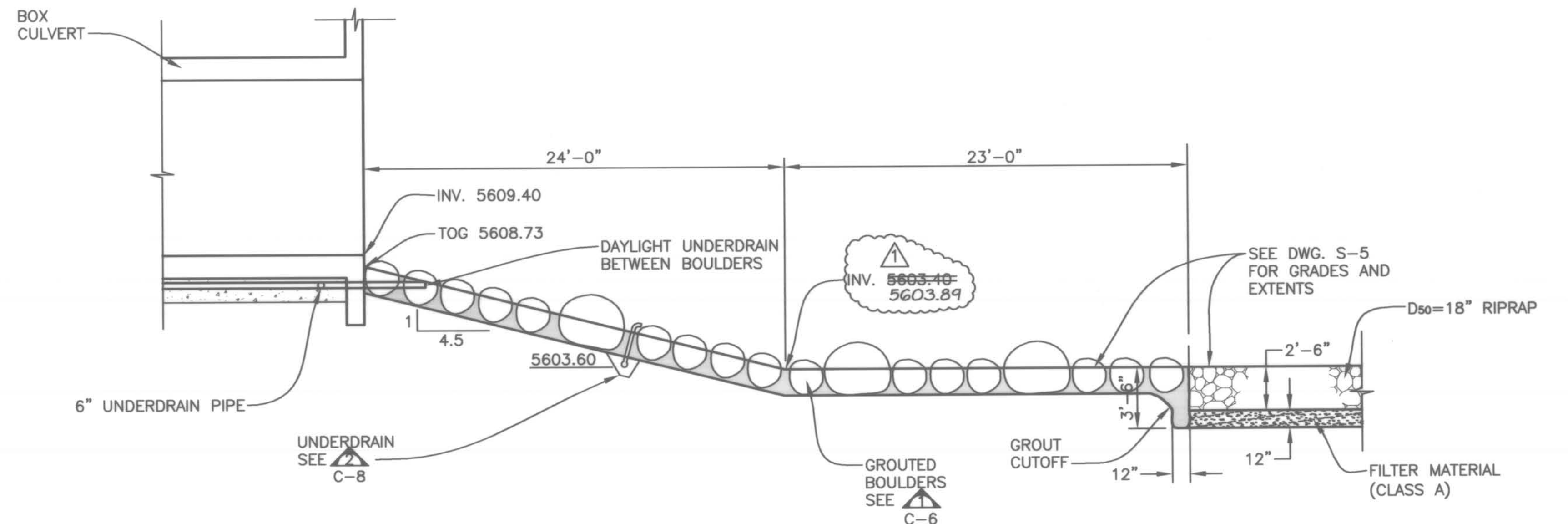
DRAWN: BKB 11/29/00 DESIGNED: JTW 11/29/00 CHKD: DDJ 1/5/01

PEORIA TRIBUTARY CULVERT
INLET AND OUTLET PLANS AND SECTIONS

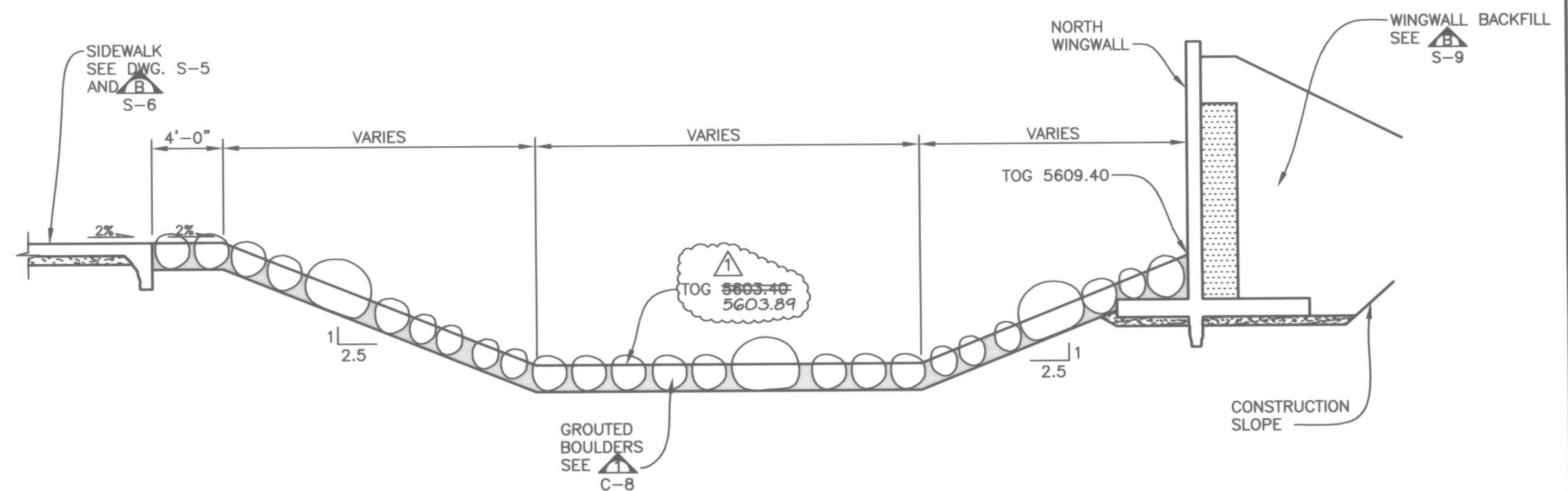
SHEET
11
DWG
C-8



BOX CULVERT UPSTREAM APRON - SECTION J
SCALE: 1"=5'



BOX CULVERT DOWNSTREAM APRON - SECTION K
SCALE: 1"=5'



BOX CULVERT DOWNSTREAM APRON - SECTION L
SCALE: 1"=5'

RECORD DRAWING
7/22/03

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NO.	DATE	BY	CHK'D	DESCRIPTION
1	7/22/03	WV/DM	JTW	AS CONSTRUCTED RECORD DRAWINGS

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LAKEWOOD, COLORADO 80226
(303) 986-4939

URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
LANDMARK METROPOLITAN DISTRICT
CITY OF GREENWOOD VILLAGE
ARAPAHOE COUNTY WATER AND WASTEWATER AUTHORITY

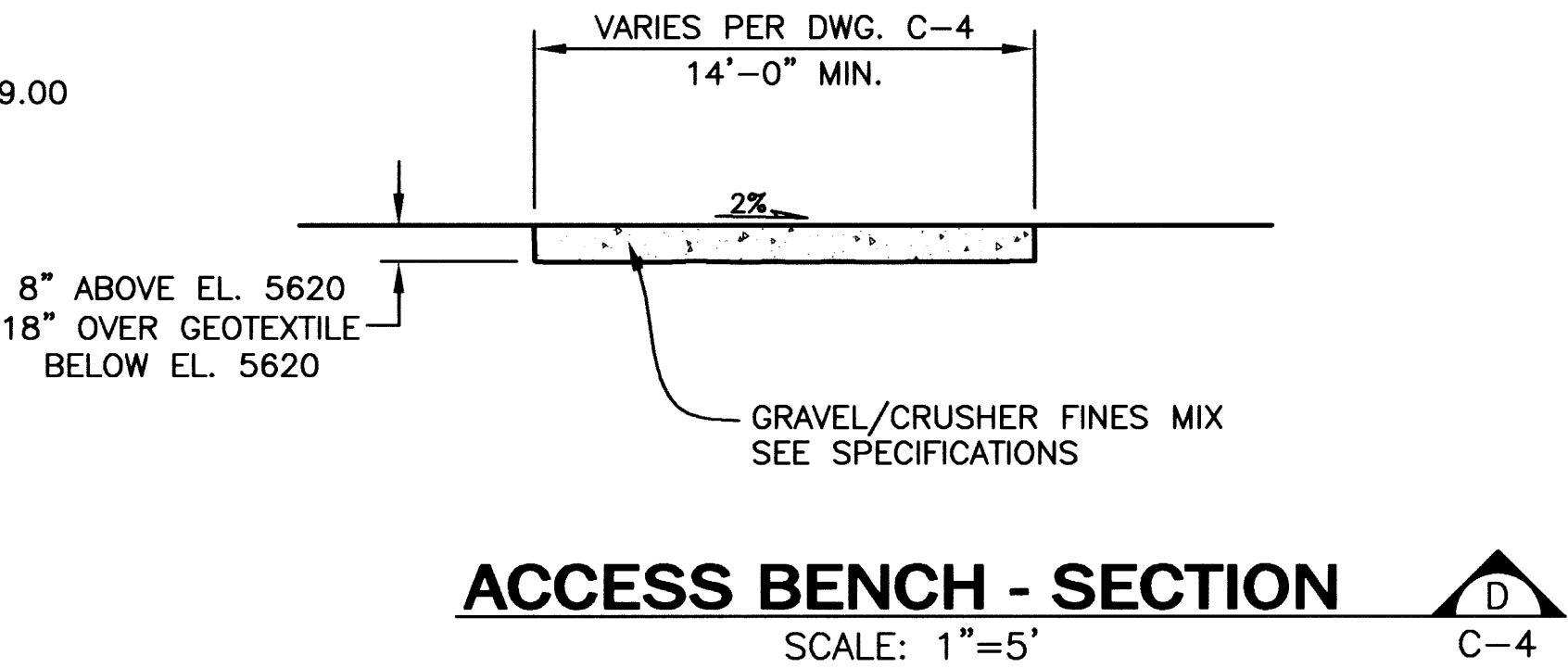
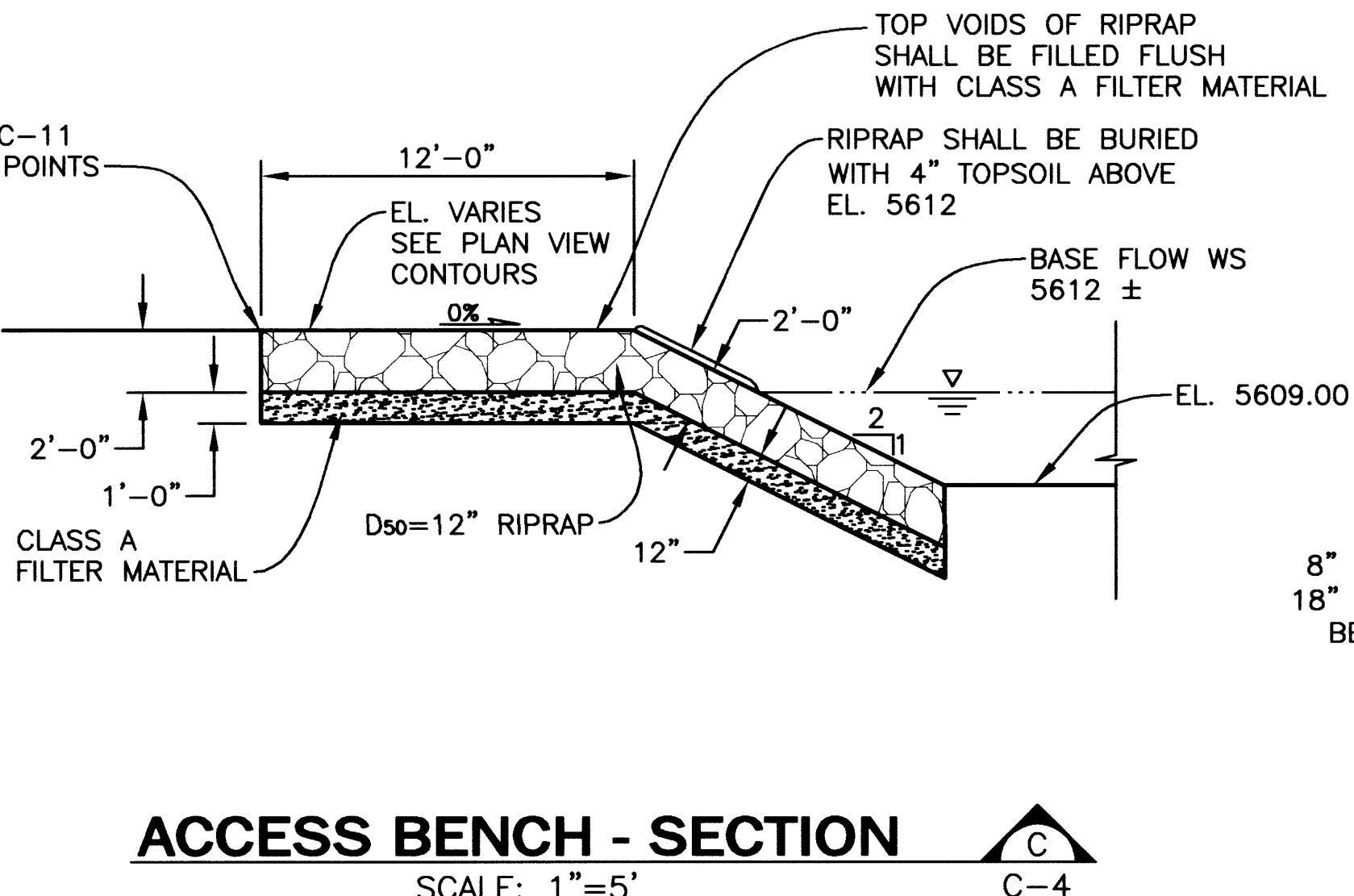
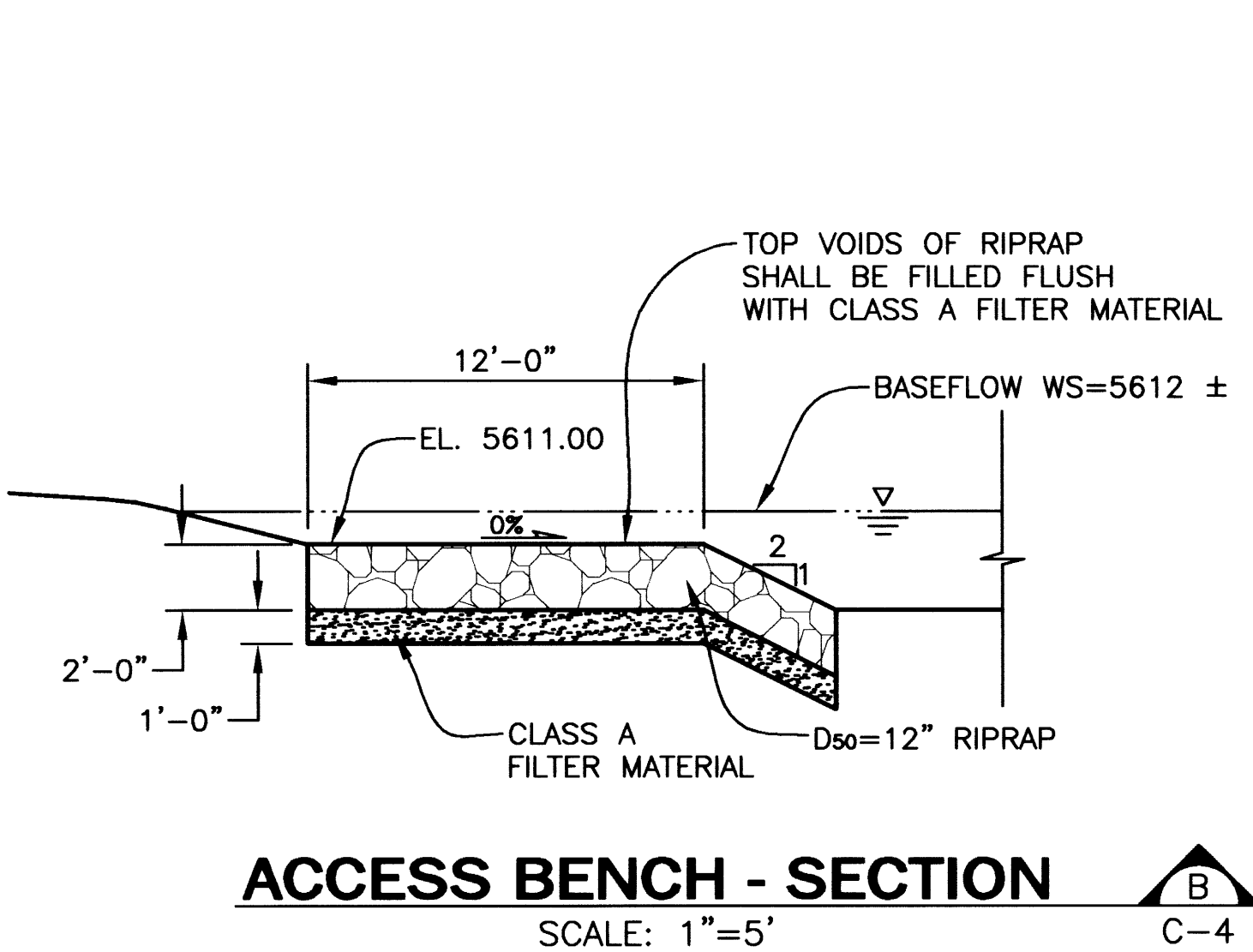
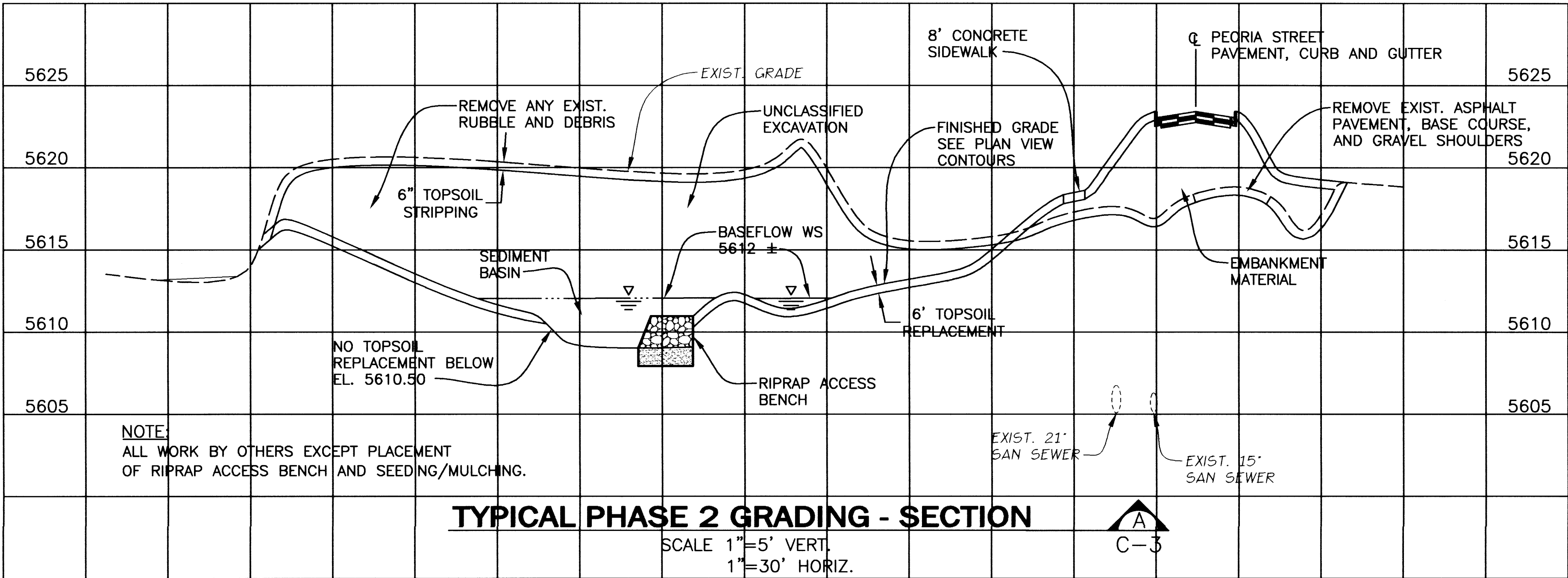
COTTONWOOD CREEK -
PEORIA STREET IMPROVEMENTS
DRAWN: BKB 11/29/00 DESIGNED: JTW 11/29/00 CHKD: DDJ 1/5/01

BOX CULVERT INLET AND
OUTLET SECTIONS

SHEET
12
DWG
C-9

DATE: JUL 24, 2003 TIME: 2:35 PM

NAME: S:\0002\01\dwg\Record.dwg\0002-TYP-SECT1-REC.dwg



RECORD DRAWING
7/22/03

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REVISIONS				
NO.	DATE	BY	CHK'D	DESCRIPTION
1	7/22/03	WMC/CRK	JTW	AS CONSTRUCTED RECORD DRAWINGS

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(303) 988-4939

URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
LANDMARK METROPOLITAN DISTRICT
CITY OF GREENWOOD VILLAGE
ARAPAHOE COUNTY WATER AND WASTEWATER AUTHORITY

COTTONWOOD CREEK -
PEORIA STREET IMPROVEMENTS

DRAWN: BKB 11/29/00 | DESIGNED: JTW 11/29/00 | CHKD: DDJ 1/5/01

PHASE 2 AND 3
TYPICAL SECTIONS

SHEET
13
DWG
C-10

X:\ROAD-CNT, X0032-EX1, X0032-PR2, X0032-RD, X0032BDR, XWQD-CNT
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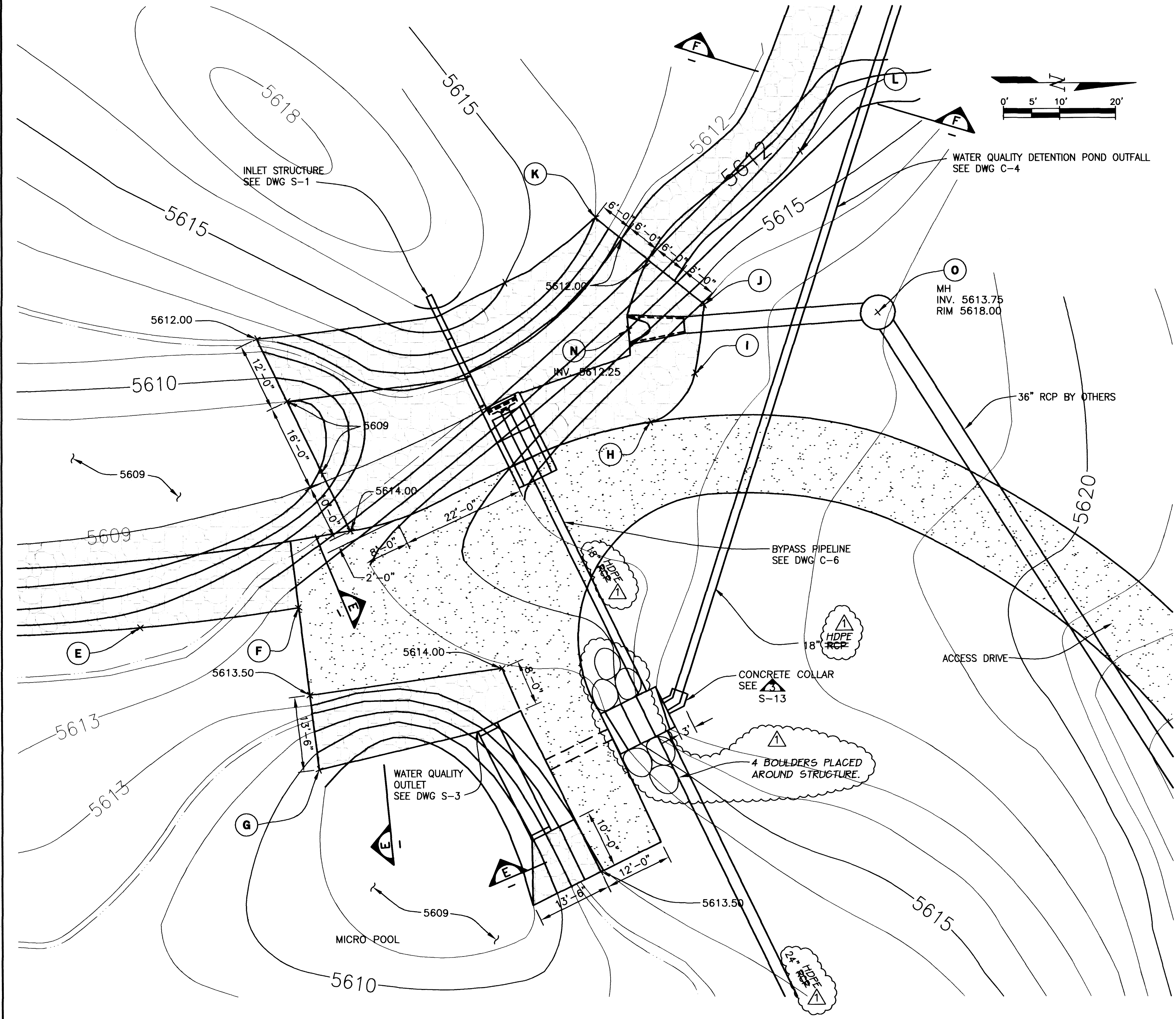
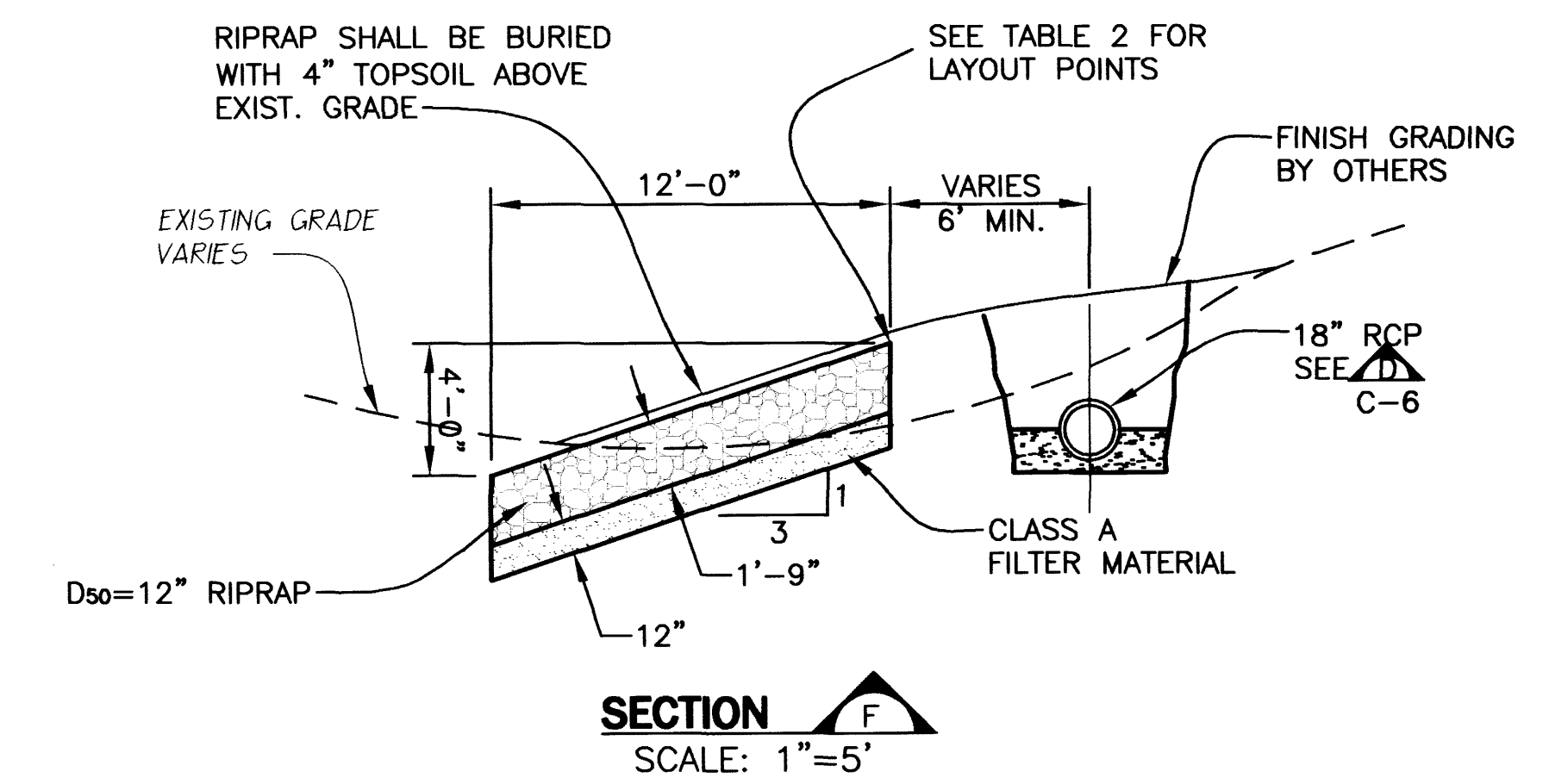
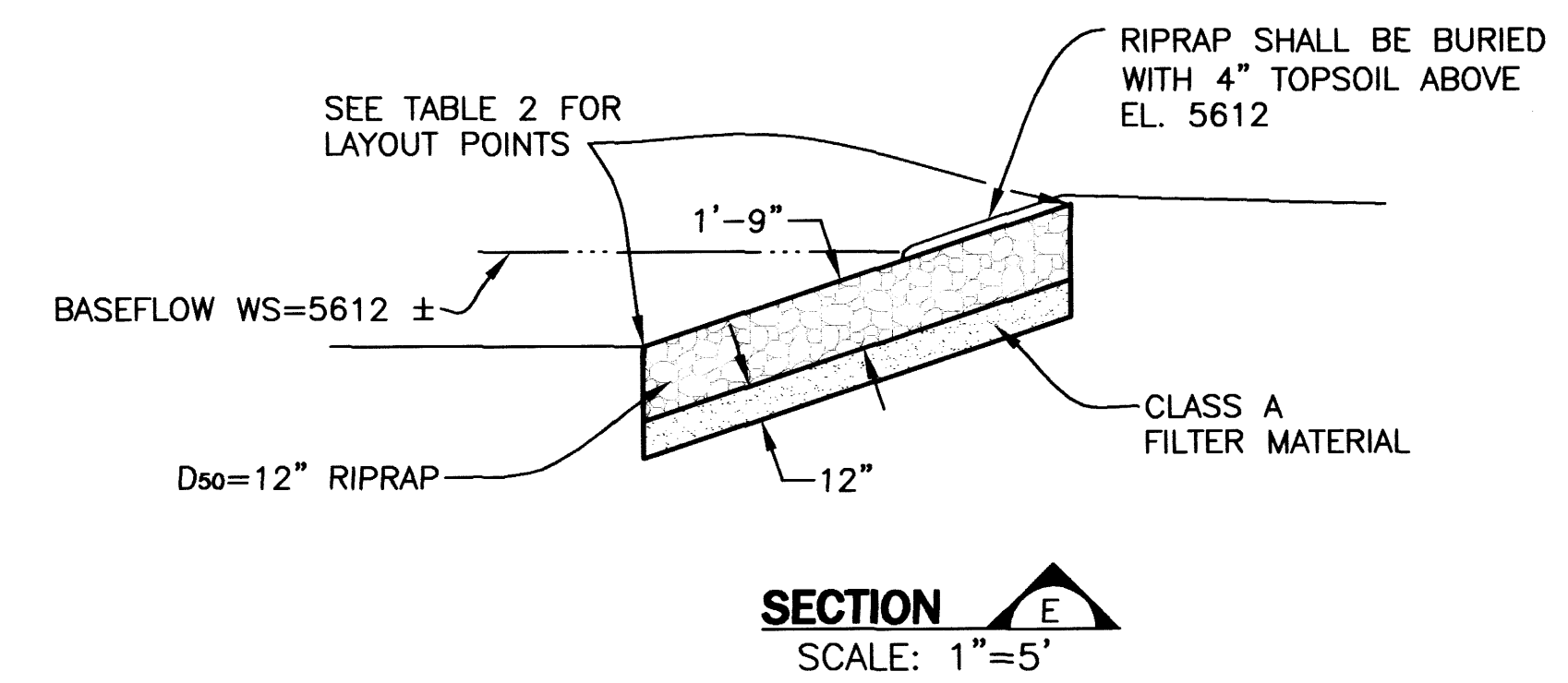


TABLE 2 RIPRAP LAYOUT POINTS

POINT	NORTHING	EASTING	ELEVATION
A	113293.51	106516.22	5616.00
B	113330.36	106456.82	5611.00
C	113384.48	106412.91	5611.00
D	113421.68	106400.59	5611.00
E	113526.60	106399.07	5611.00
F	113554.92	106395.52	5613.50
G	113558.57	106424.51	5609.00
H	113617.81	106362.23	5616.50
I	113625.81	106353.57	5616.00
J	113627.38	106341.25	5616.00
K	113607.94	106325.72	5614.00
L	113644.61	106313.77	5614.00
M	113671.92	106238.34	5614.00
N	113613.85	106345.78	-----
O	113658.41	106342.67	-----

RECORD DRAWING
7/22/03

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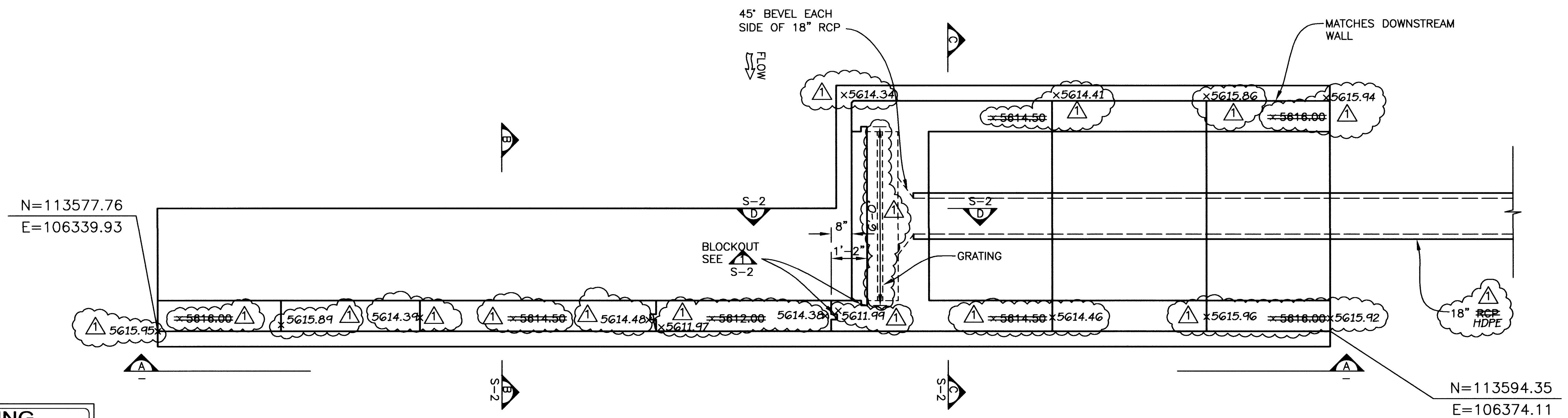
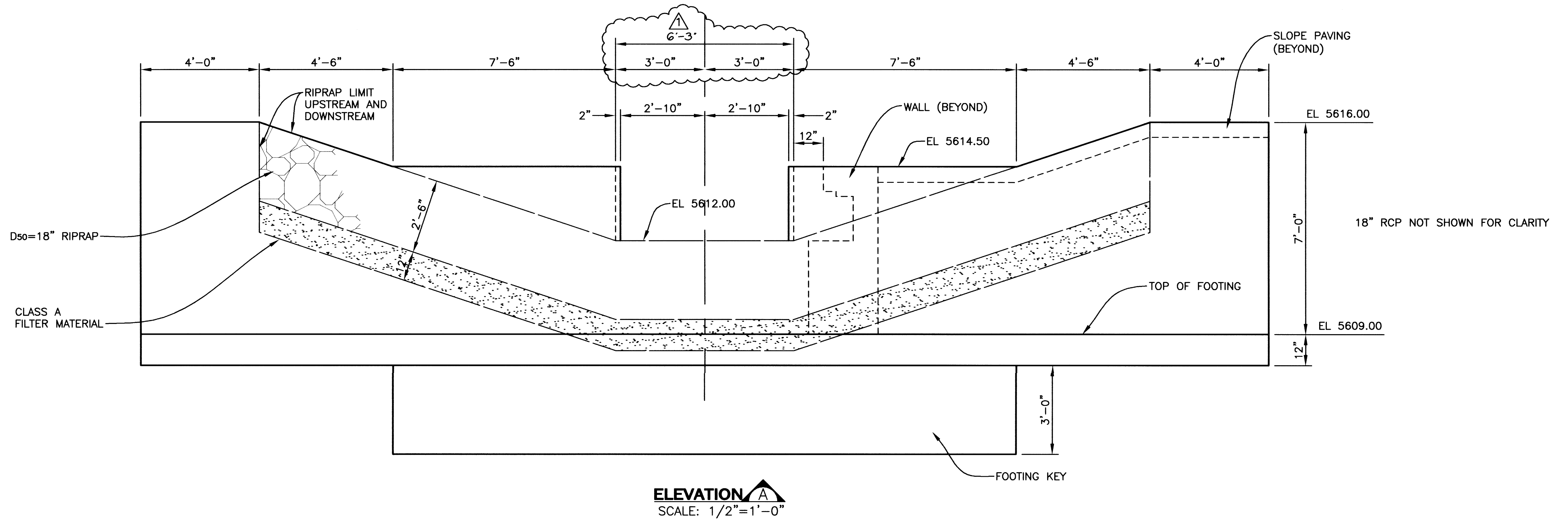
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IRONGATE 4, SUITE 100
777 S. WADSWORTH BLVD.
LAKEWOOD, COLORADO 80226
(303) 988-4339

URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
LANDMARK METROPOLITAN DISTRICT
CITY OF GREENWOOD VILLAGE
ARAPAHOE COUNTY WATER AND WASTEWATER AUTHORITY

COTTONWOOD CREEK -
PEORIA STREET IMPROVEMENTS
DRAWN: BKB 11/29/00 DESIGNED: JTW 11/29/00 CHKD: DDJ 1/5/01

INLET/OUTLET
PLAN AND PHASE 3 SECTIONS

SHEET
14
DWG
C-11



RECORD DRAWING

7/22/03

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REVISIONS

NO.	DATE	BY	CHK'D	DESCRIPTION
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777 S. WADSWORTH BLVD.
LAKEWOOD, COLORADO 80226
(303) 988-4939

URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
LANDMARK METROPOLITAN DISTRICT
CITY OF GREENWOOD VILLAGE
ARAPAHOE COUNTY
ARAPAHOE COUNTY WATER AND WASTEWATER AUTHORITY

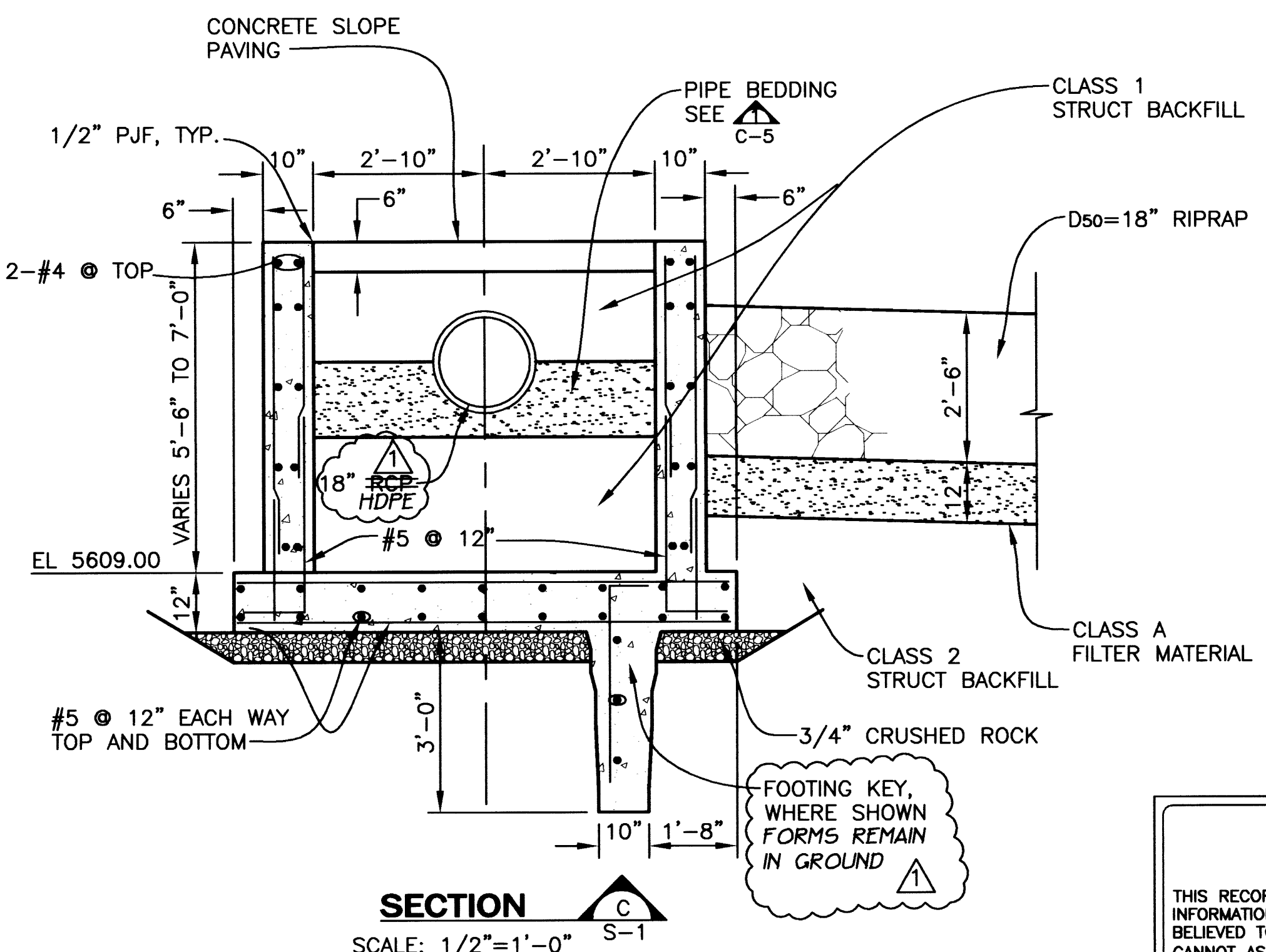
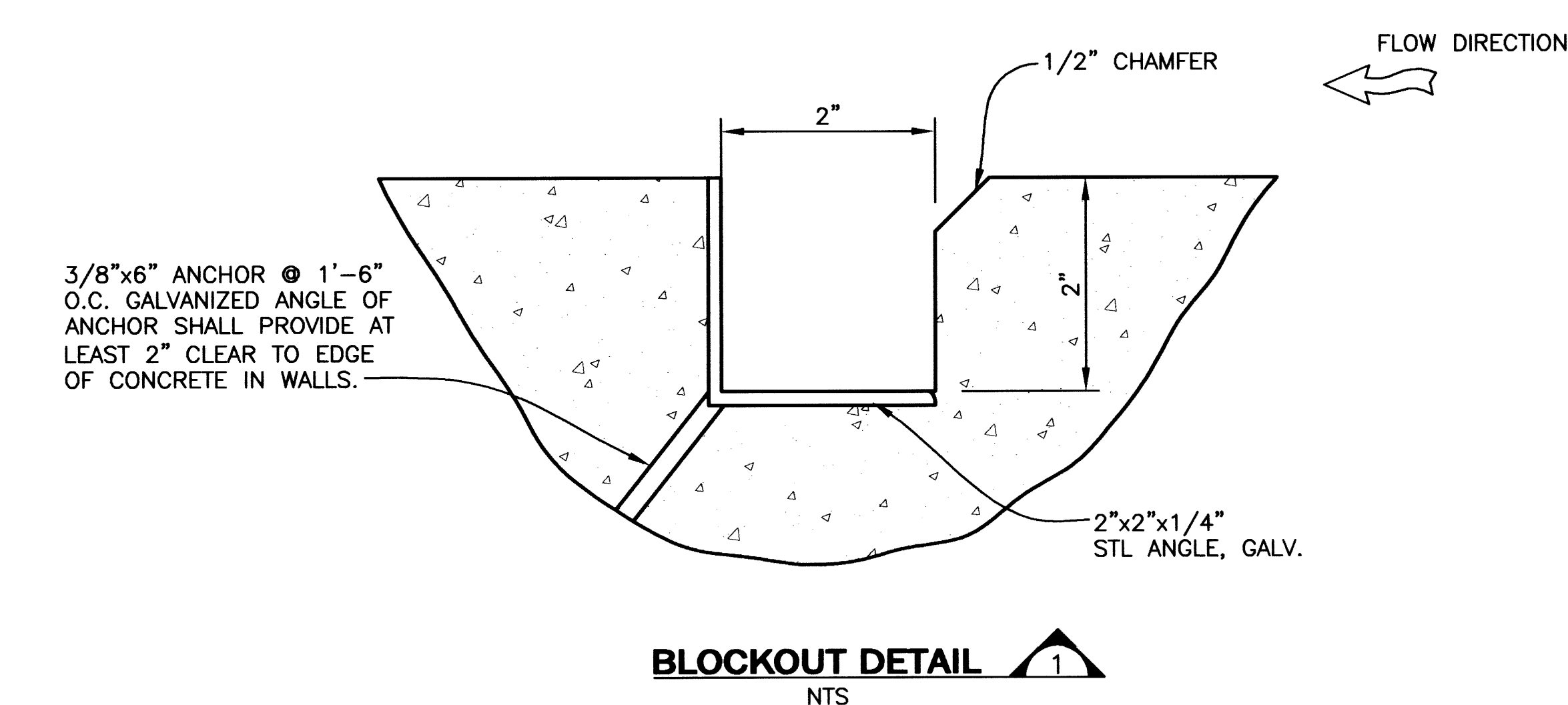
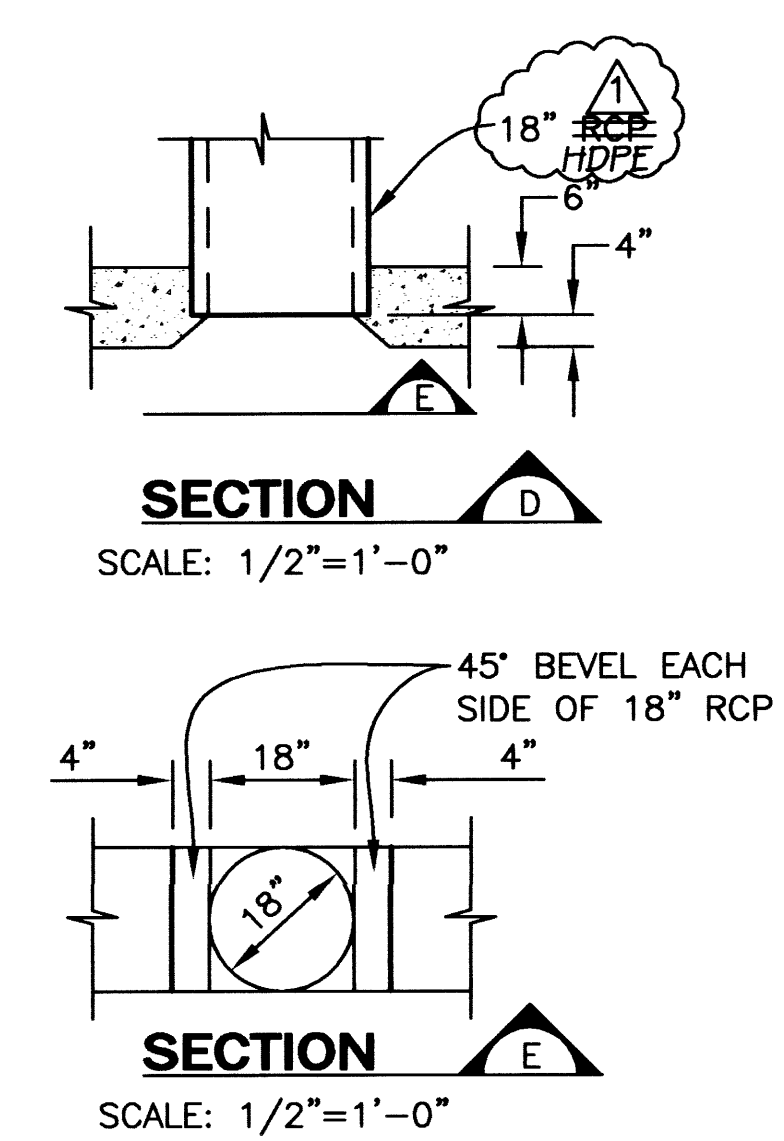
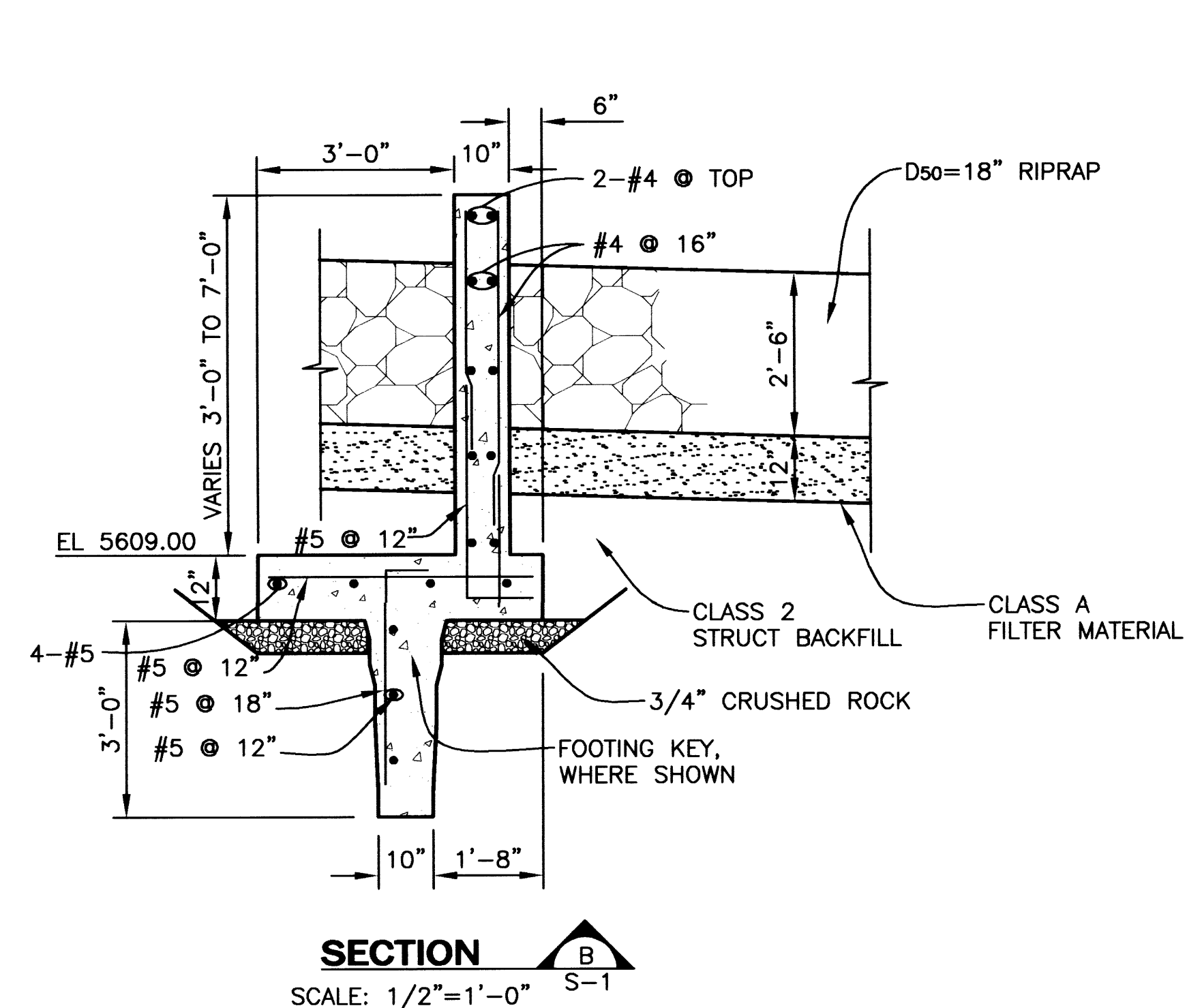
**COTTONWOOD CREEK -
PEORIA STREET IMPROVEMENTS**

DRAWN: BKB 11/29/00 DESIGNED: JTW 11/29/00 CHKD: LJE 4/11/01

**INLET
STRUCTURE
PLAN**

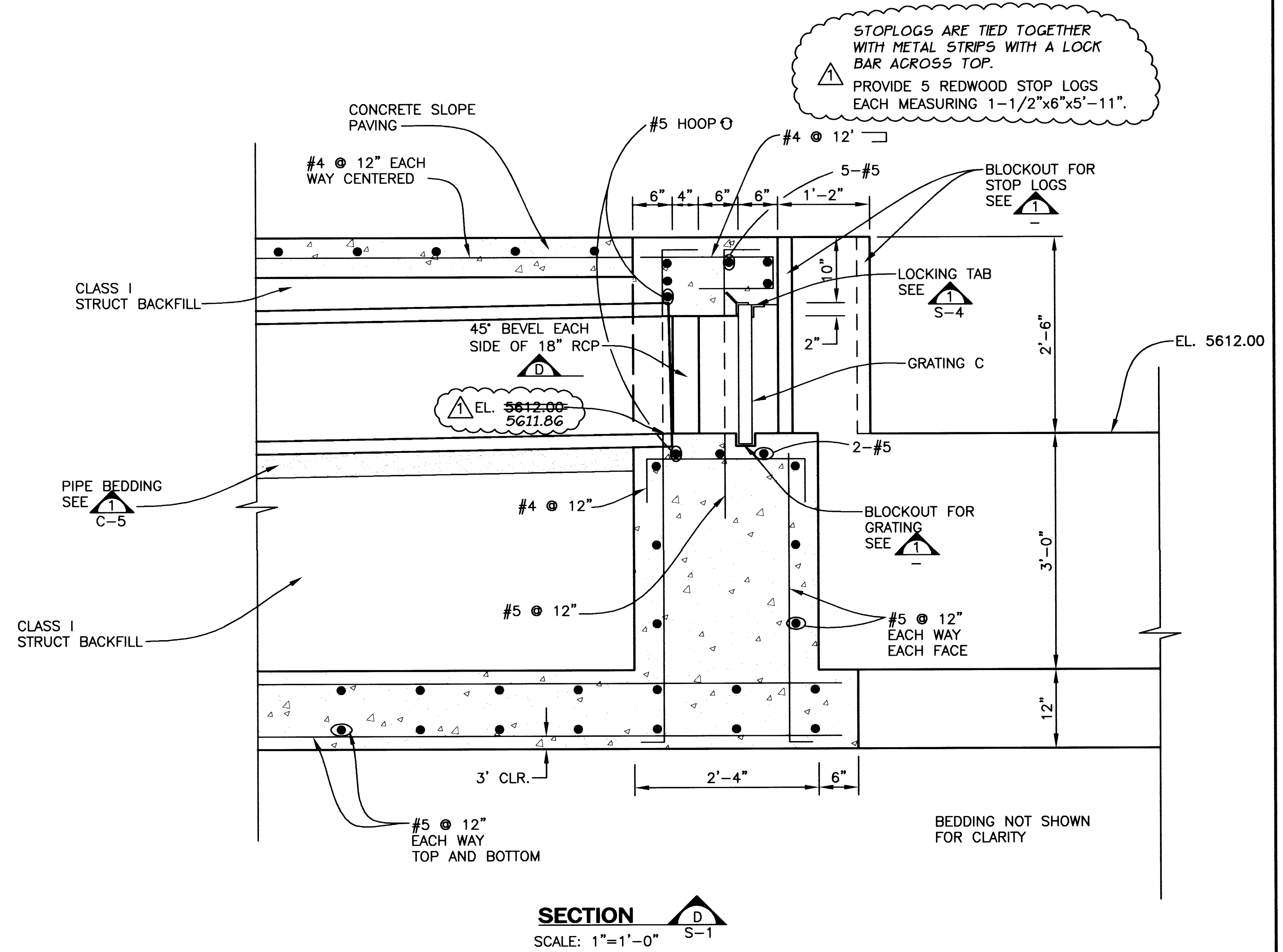
SHEET
15
DWG
S-1

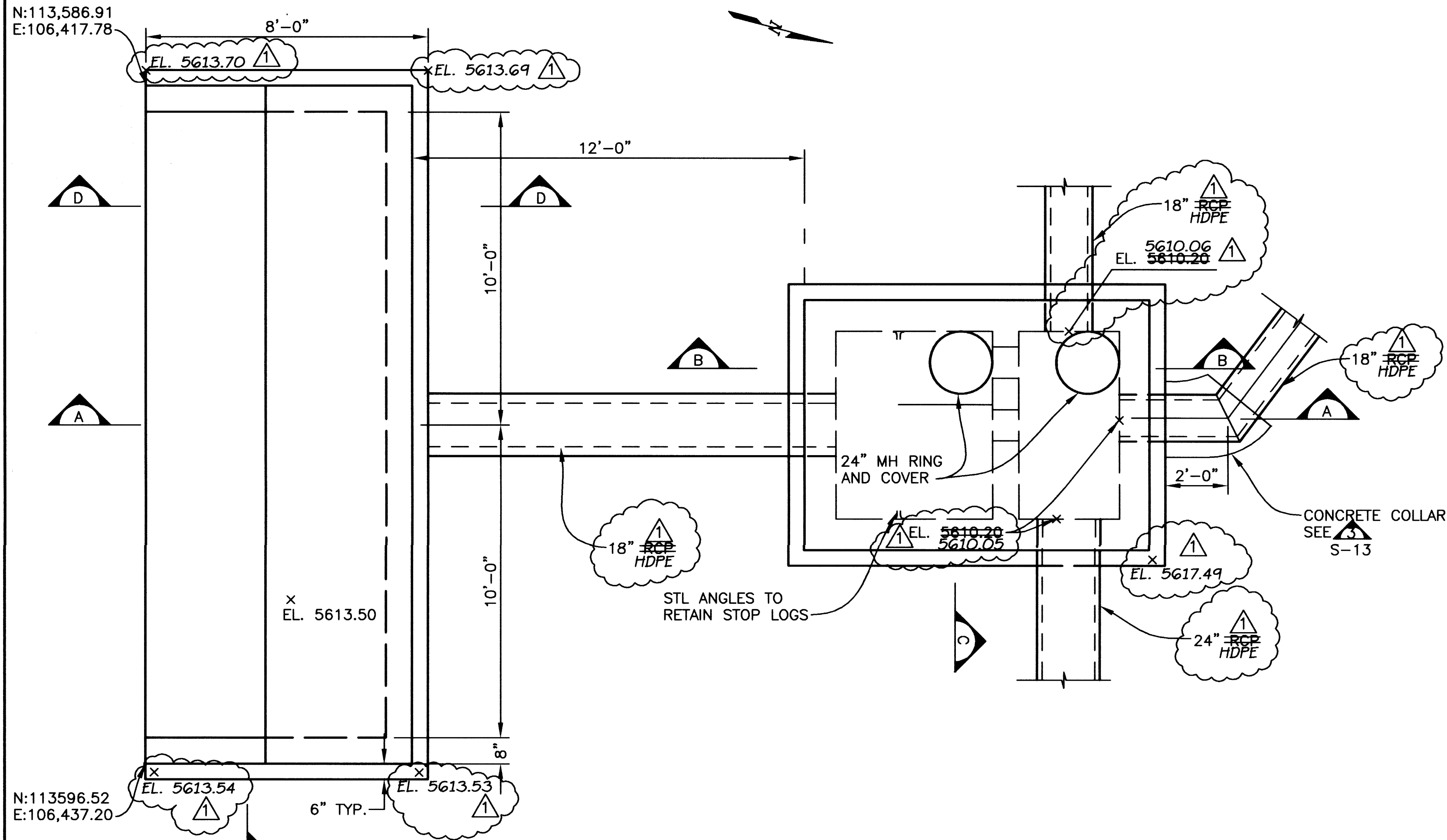
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RECORD DRAWING
7/22/03

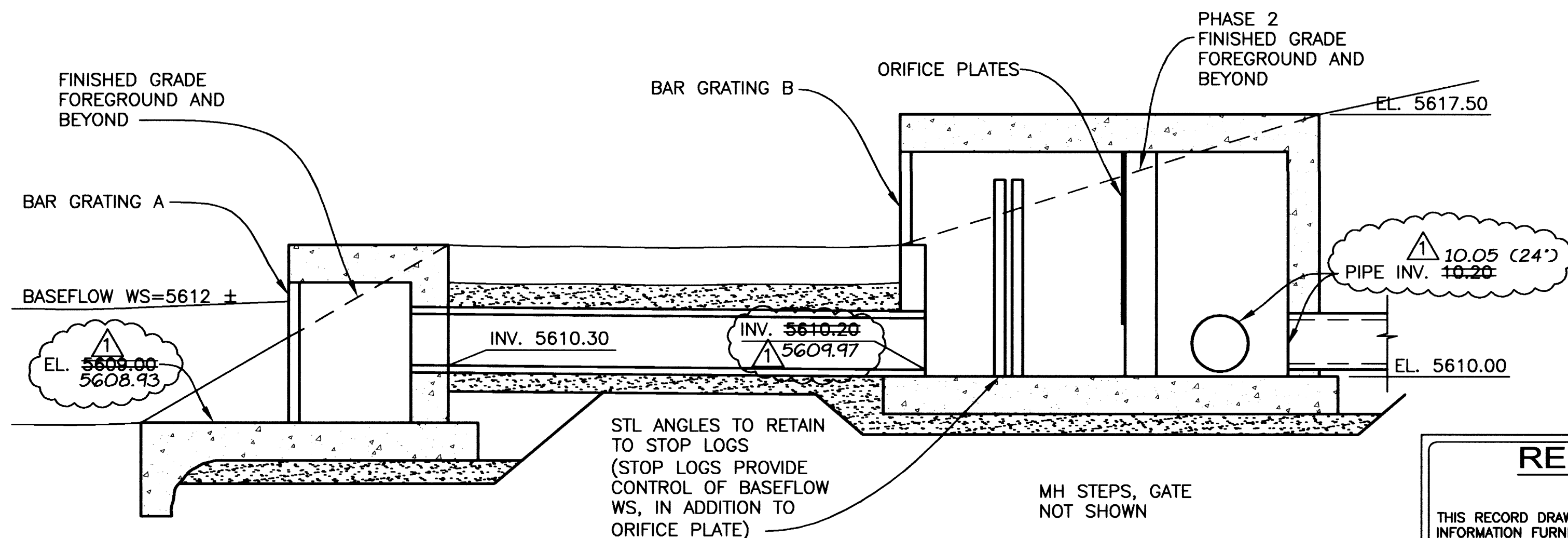
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WATER QUALITY OUTLET PLAN
SCALE: 3/8"=1'-0"

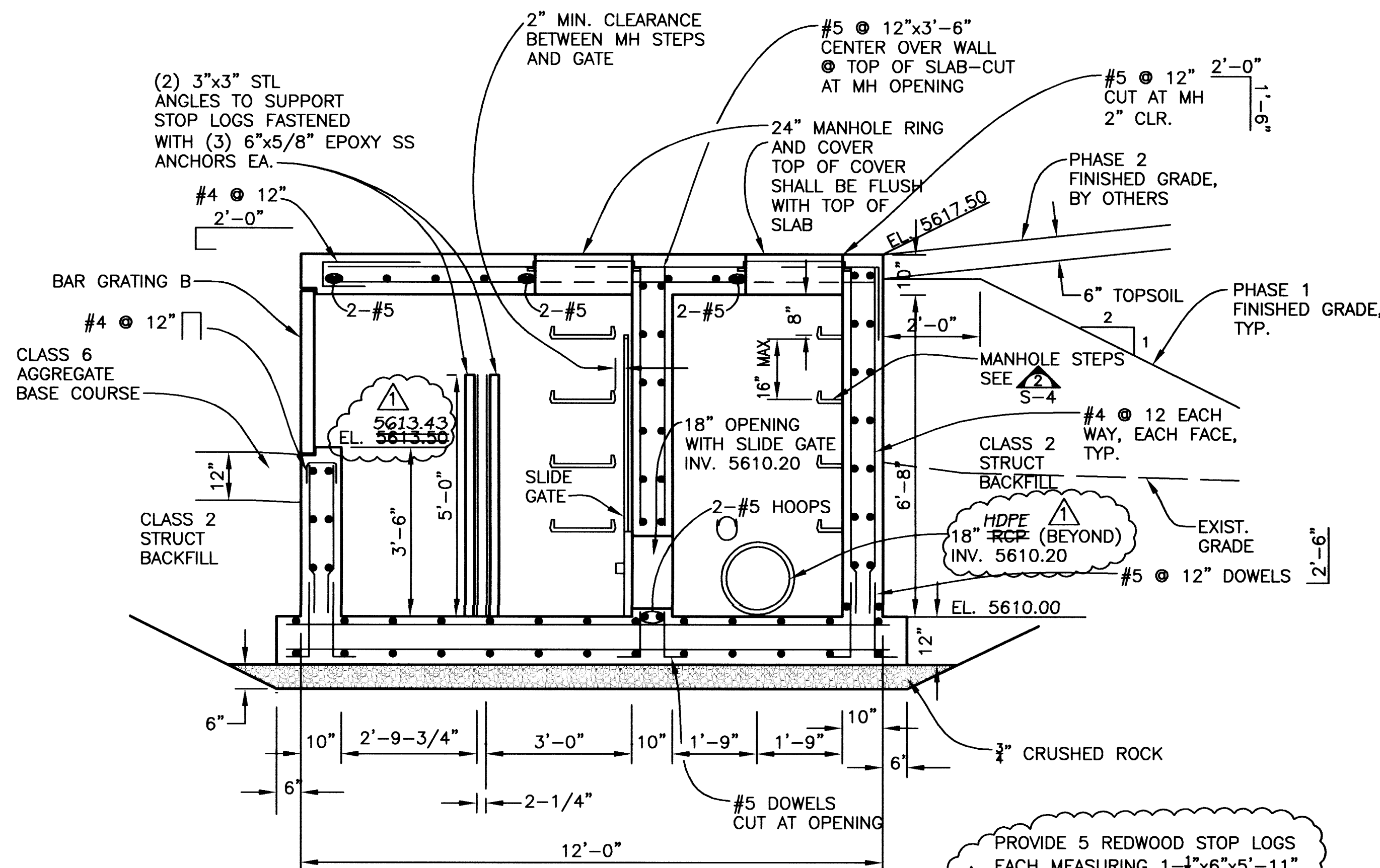
NOTE:
FOR BAR GRATING DETAILS, SEE 1
S-4



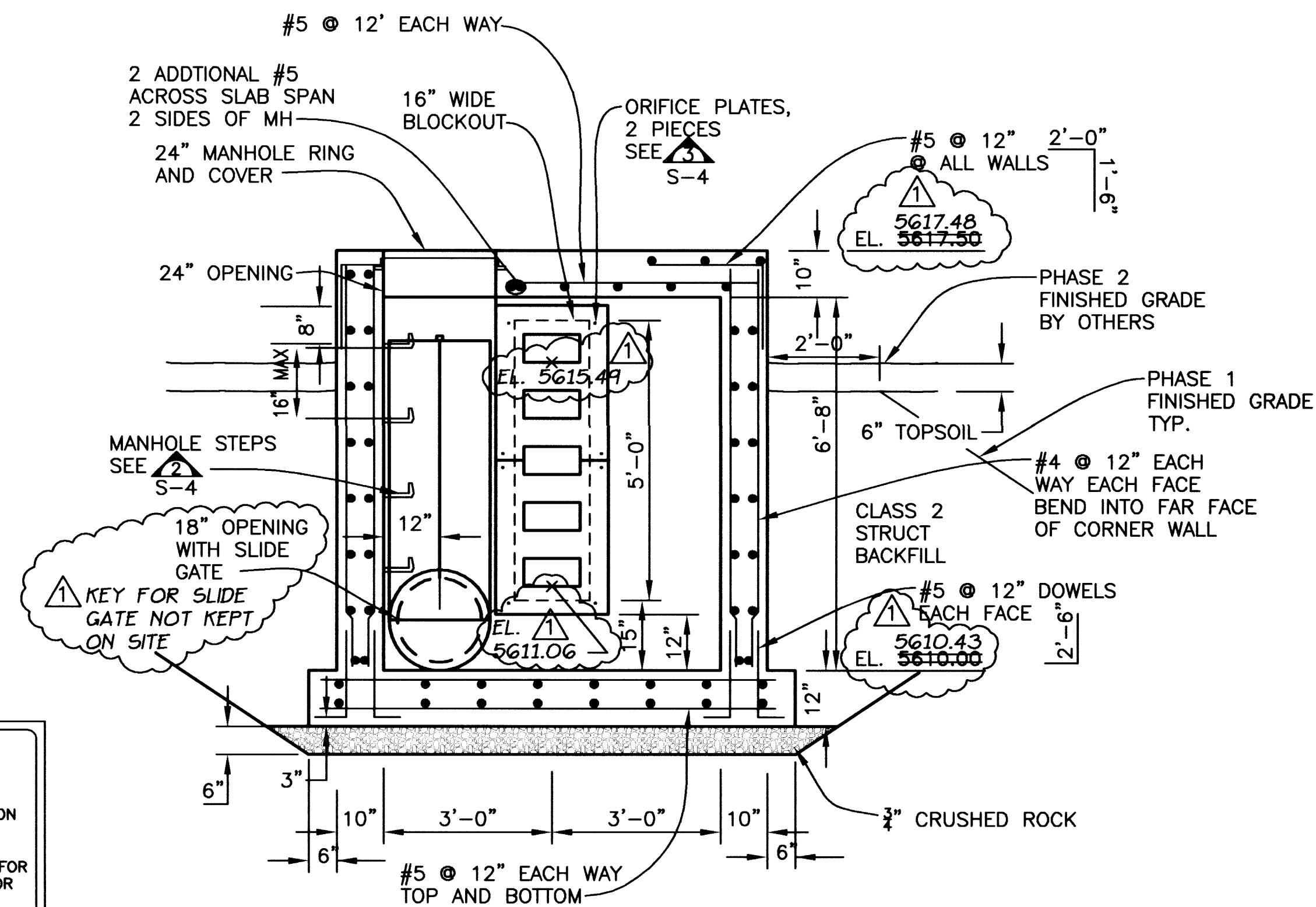
SECTION A
SCALE: 3/8"=1'-0"

RECORD DRAWING
7/22/03

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SECTION B
SCALE: 1/2"=1'-0"



SECTION C
SCALE: 1/2"=1'-0"

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NO	DATE	BY	CHK'D	DESCRIPTION
1	7/22/03	MM/CR	JTW	AS CONSTRUCTED RECORD DRAWINGS

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IRONGATE 4, SUITE 100
777 S. WADSWORTH BLVD.
LAKEWOOD, COLORADO 80226
(303) 986-4939

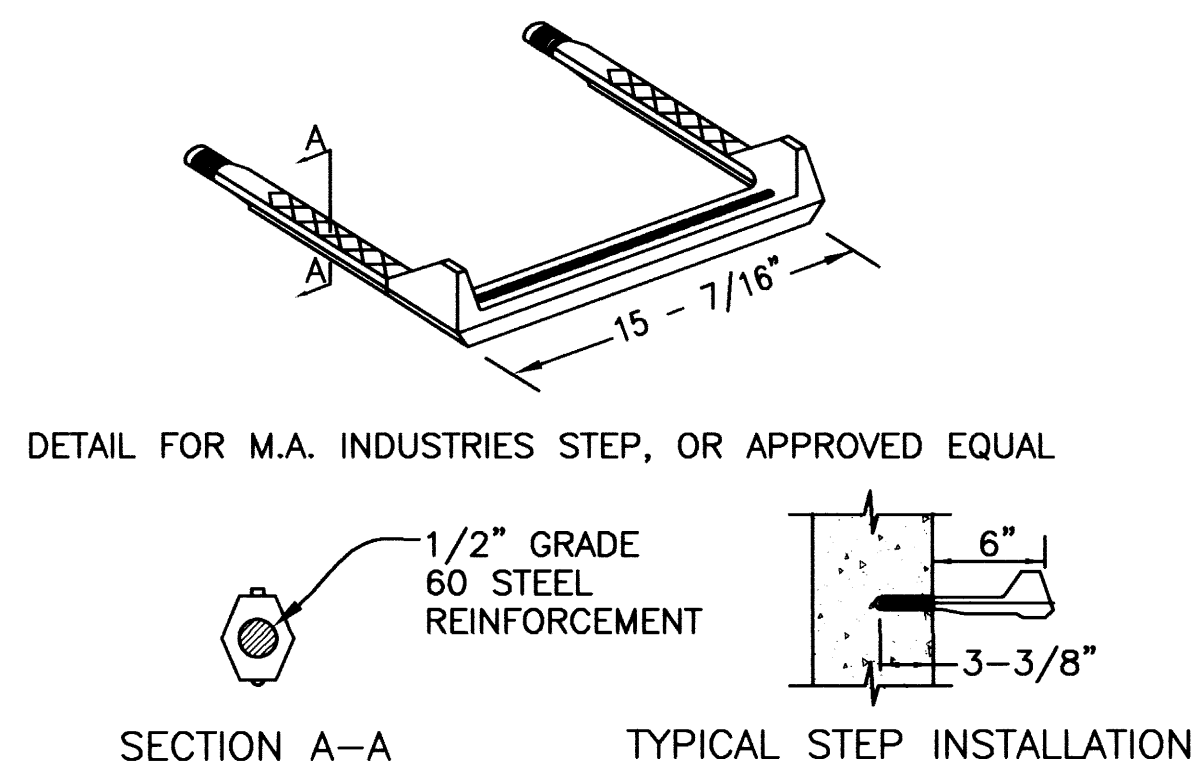
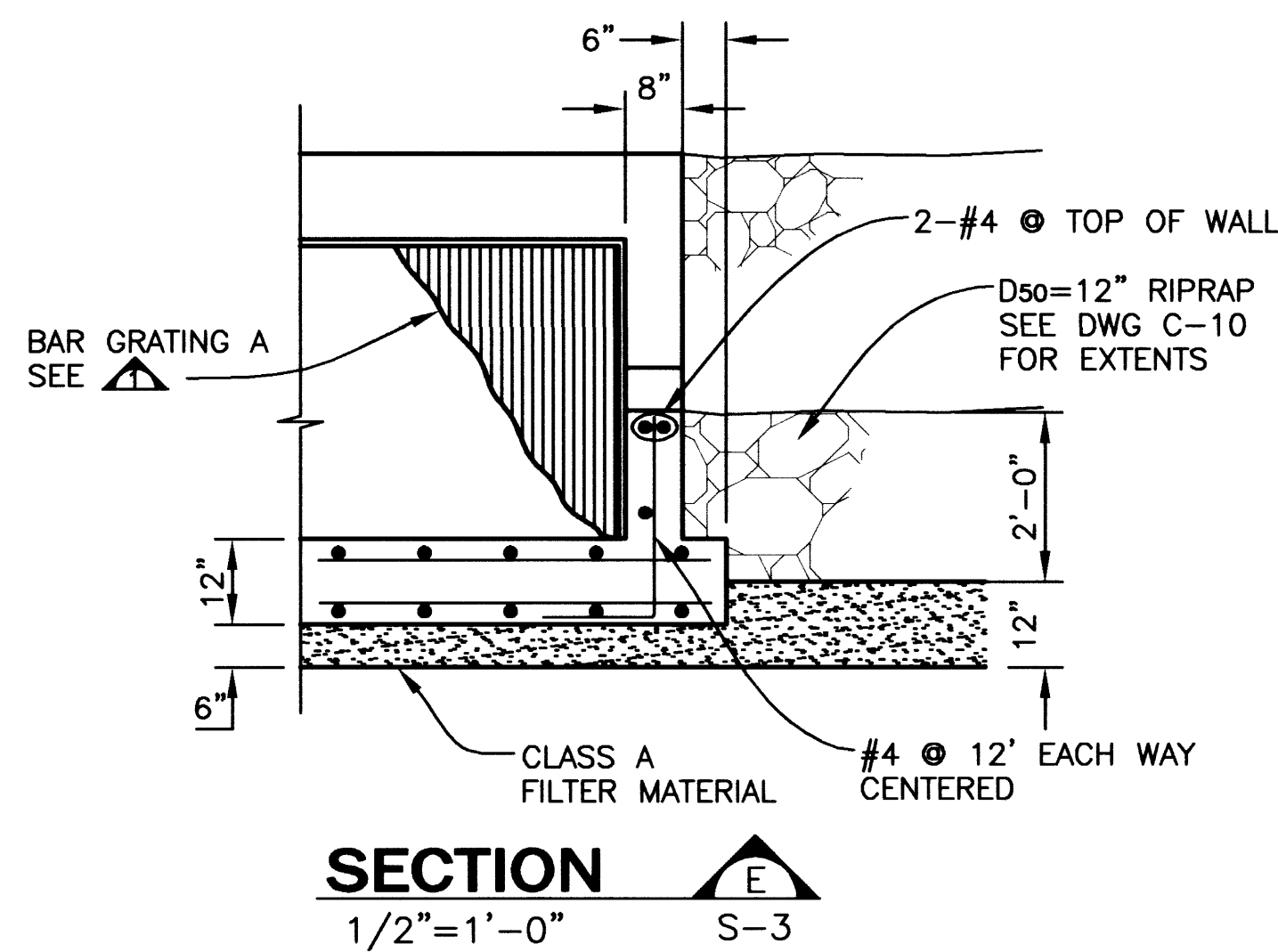
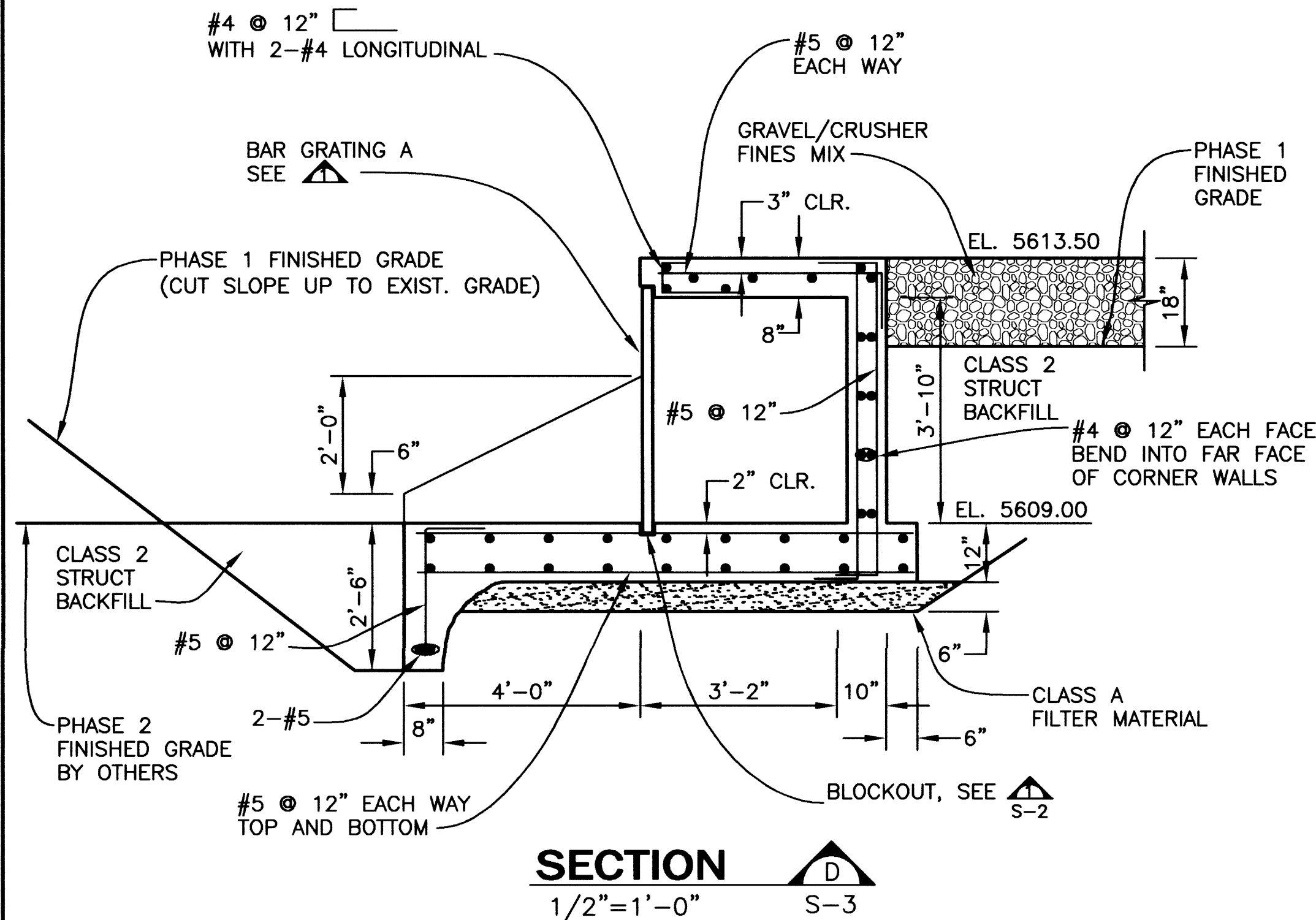
URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
LANDMARK METROPOLITAN DISTRICT
CITY OF GREENWOOD VILLAGE
ARAPAHOE COUNTY
ARAPAHOE COUNTY WATER AND WASTEWATER AUTHORITY

**COTTONWOOD CREEK -
PEORIA STREET IMPROVEMENTS**
DRAWN: BKB 11/29/00 DESIGNED: JTW 11/29/00 CHKD: LJE 4/11/01

**WATER QUALITY OUTLET
PLAN AND SECTIONS**

SHEET
17
DWG
S-3

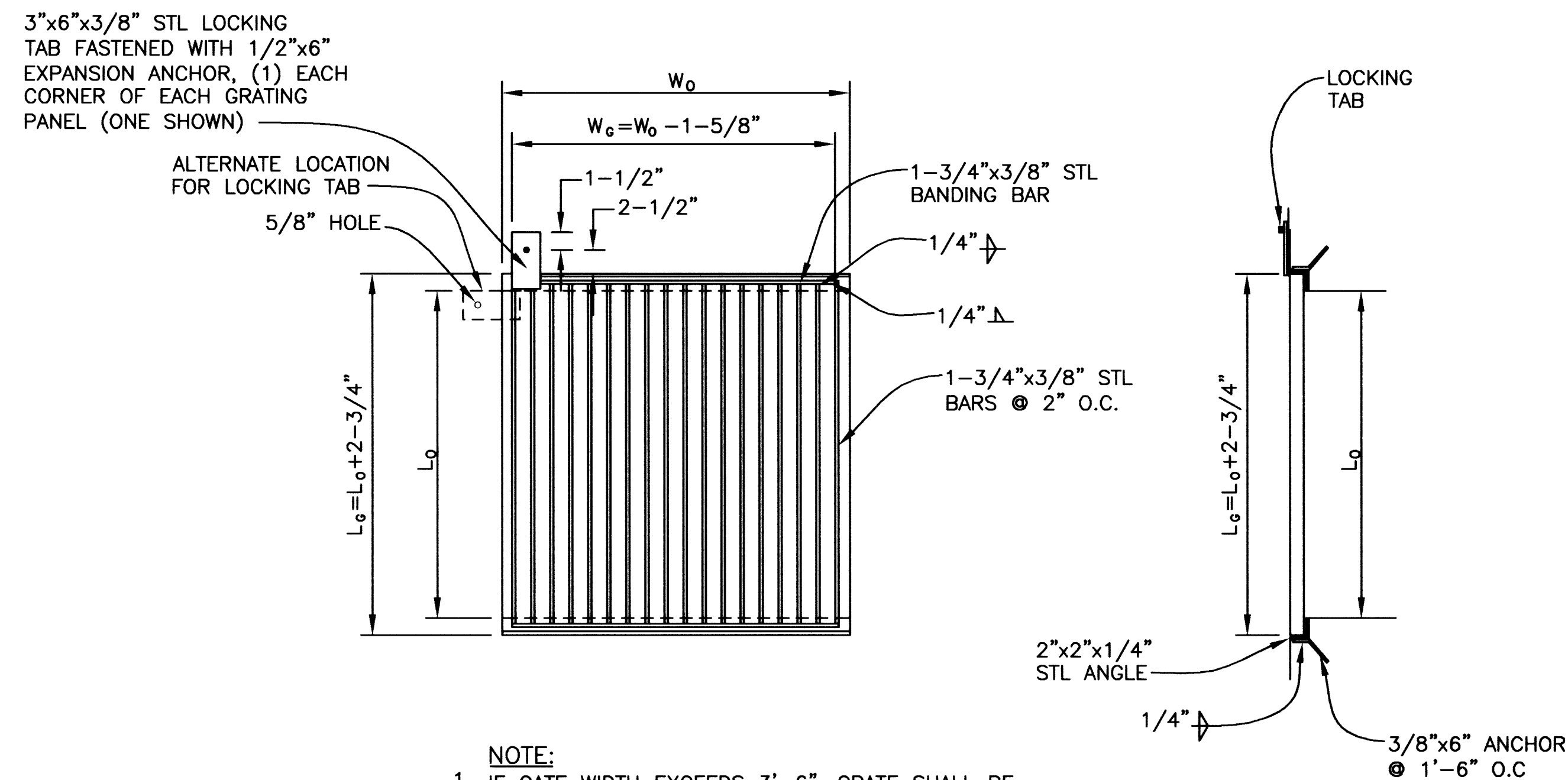
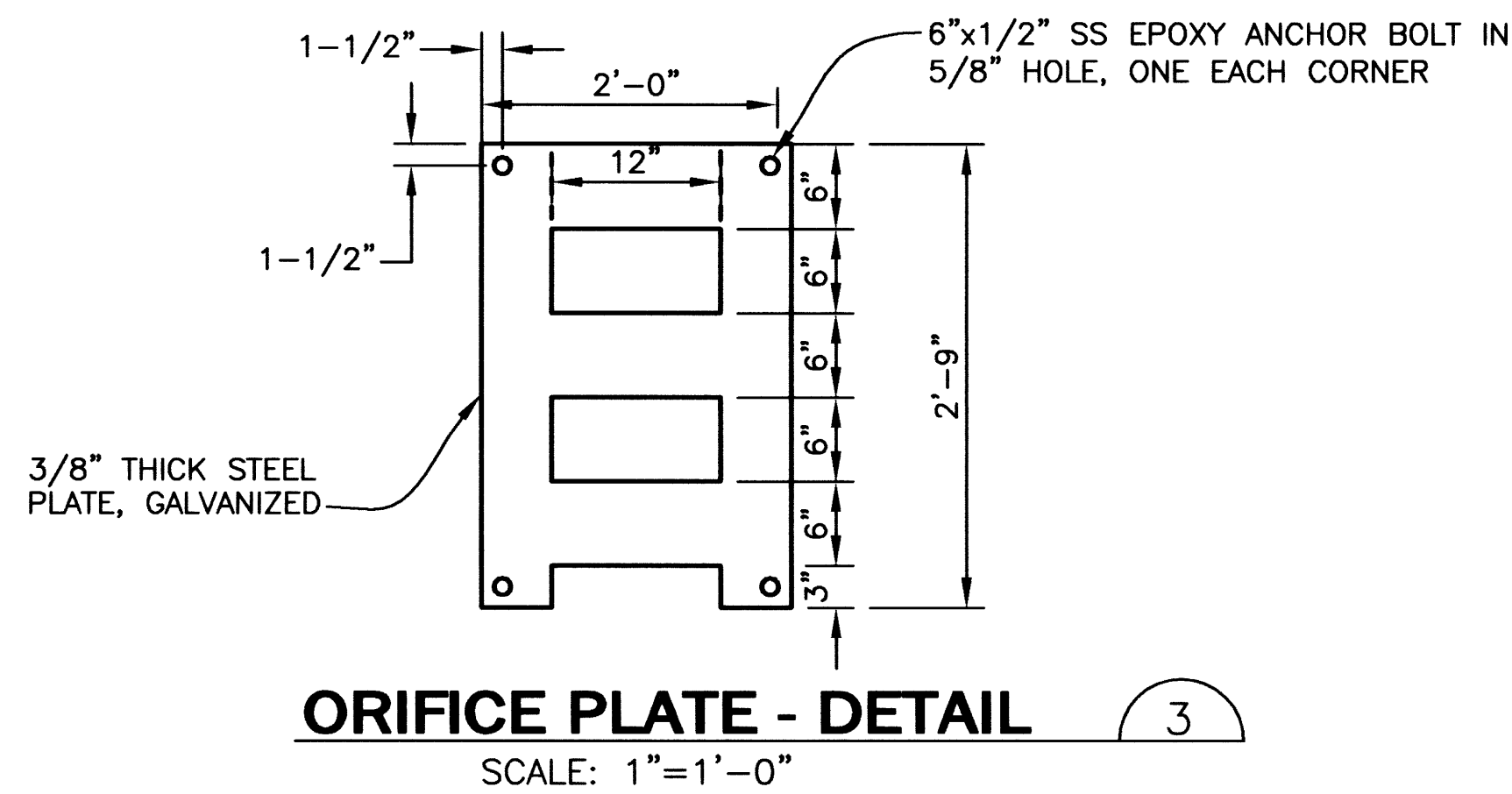
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MANHOLE STEP - DETAIL 2
NOT TO SCALE

RECORD DRAWING
7/22/03

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- NOTE:
- IF GATE WIDTH EXCEEDS 3'-6", GRATE SHALL BE FABRICATED IN GENERALLY EQUAL PANELS WITH MAX WIDTH=3'-6" PER PANEL.
 - EMBEDDED GRATING SUPPORTS INCLUDING ANCHORS AND BAR GRATING INCLUDING LOCKING TABS SHALL BE HOT DIP GALVANIZED.
 - GRATING A AND C REQUIRE NO LOCKING TABS ON BOTTOM CORNERS.
 - LOCKING TABS FOR GRATING C SHALL BE 2"x2"x1/4" STEEL ANGLES 3" LONG DRILLED AND FASTENED INTO TOP SLAB
 - ALL GRATING, ANGLES, AND LOCKING TABS SHALL BE HOT DIP GALVANIZED.

BAR GRATING	L ₀	W ₀
A	3'-10"	20'-0"
B	3'-2"	6'-0"
C	1'-6"	5'-8"

REVISIONS				
NO	DATE	BY	CHK'D	DESCRIPTION
1	7/22/03	JTW	JTW	AS CONSTRUCTED RECORD DRAWINGS

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(303) 988-4939

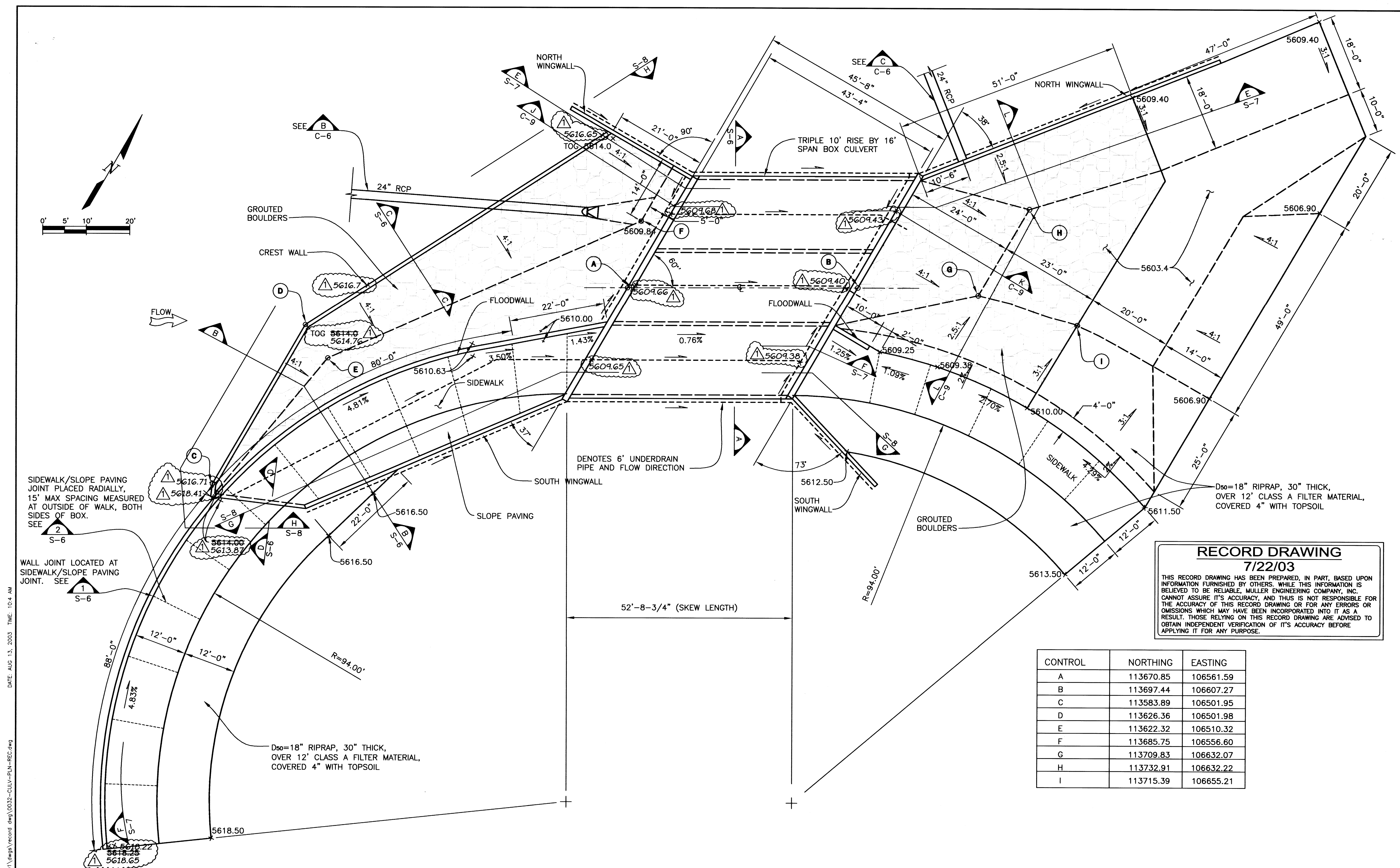
URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
LANDMARK METROPOLITAN DISTRICT
CITY OF GREENWOOD VILLAGE
ARAPAHOE COUNTY WATER AND WASTEWATER AUTHORITY

COTTONWOOD CREEK - PEORIA STREET IMPROVEMENTS
CHERRY CREEK BASIN WATER QUALITY AUTHORITY
ARAPAHOE COUNTY

DRAWN: BKB 11/29/00
DESIGNED: JTW 11/29/00
CHKD: LJE 4/11/01

WATER QUALITY OUTLET SECTIONS AND GRATING DETAILS

SHEET 18
DWG S-4



RECORD DRAWING
7/22/03
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CONTROL	NORTHING	EASTING
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B	113697.44	106607.27
C	113583.89	106501.95
D	113626.36	106501.98
E	113622.32	106510.32
F	113685.75	106556.60
G	113709.83	106632.07
H	113732.91	106632.22
I	113715.39	106655.21

REVISIONS			
NO	DATE	BY	CHK'D DESCRIPTION
1	7/22/03	MM/CR	JTW AS CONSTRUCTED RECORD DRAWINGS

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IRONGATE 4, SUITE 100
777 S. WADSWORTH BLVD.
LAKEWOOD, COLORADO 80226
(303) 988-4939

MULLER

URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
LANDMARK METROPOLITAN DISTRICT
CITY OF GREENWOOD VILLAGE
ARAPAHOE COUNTY WATER AND WASTEWATER AUTHORITY

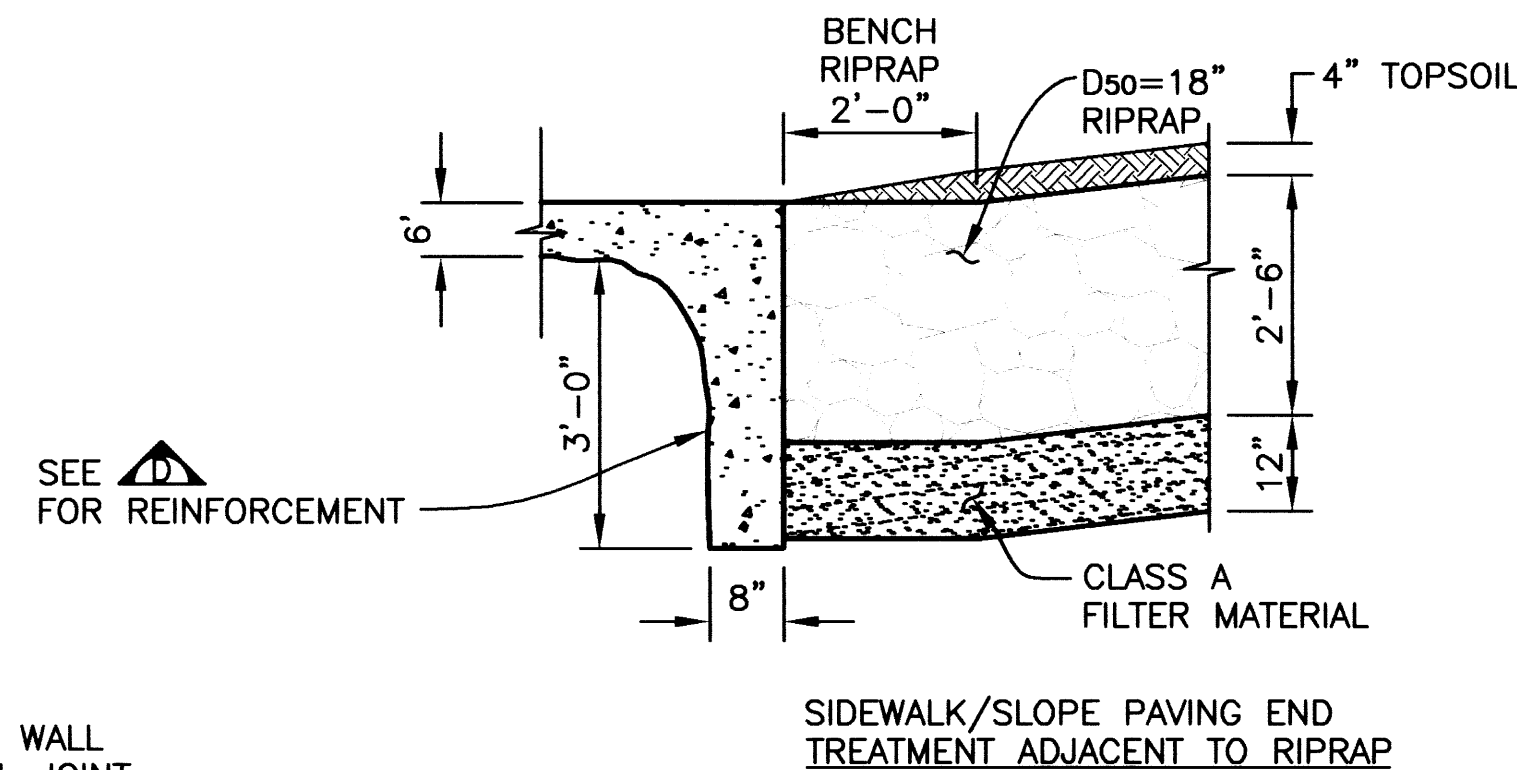
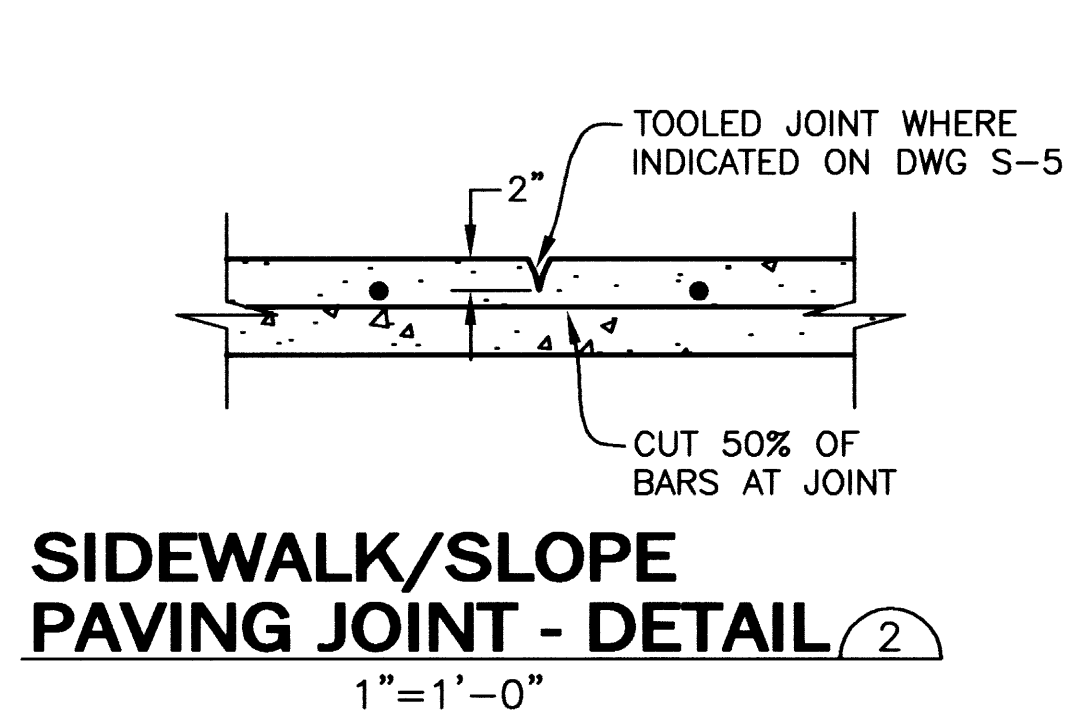
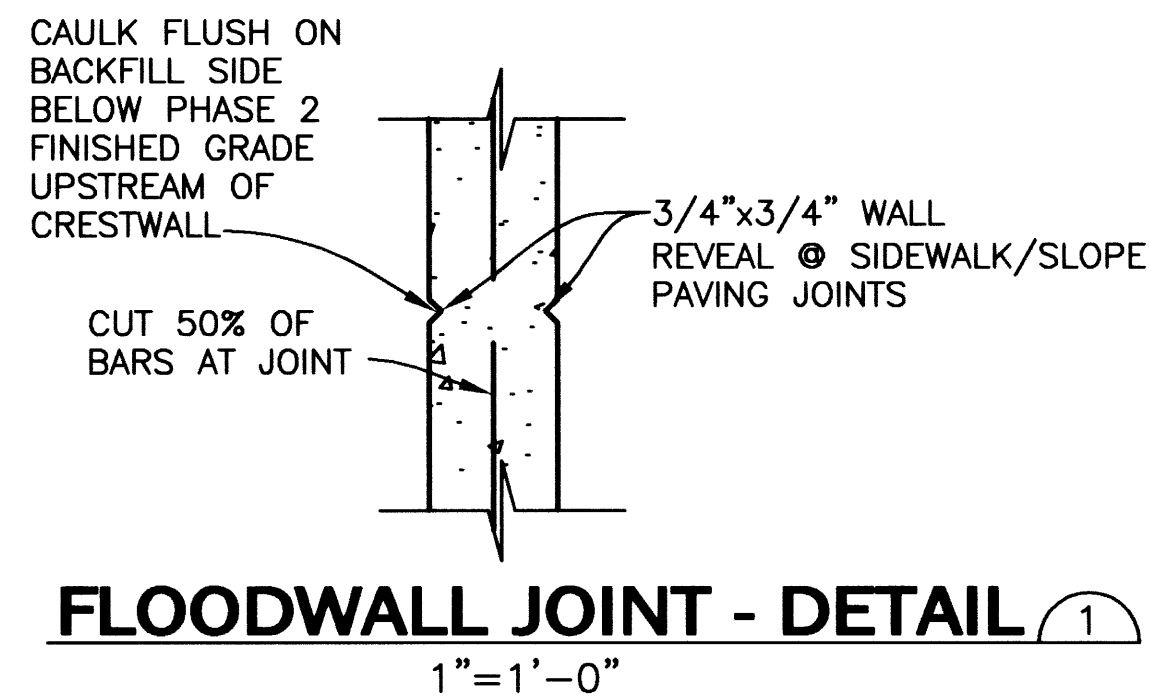
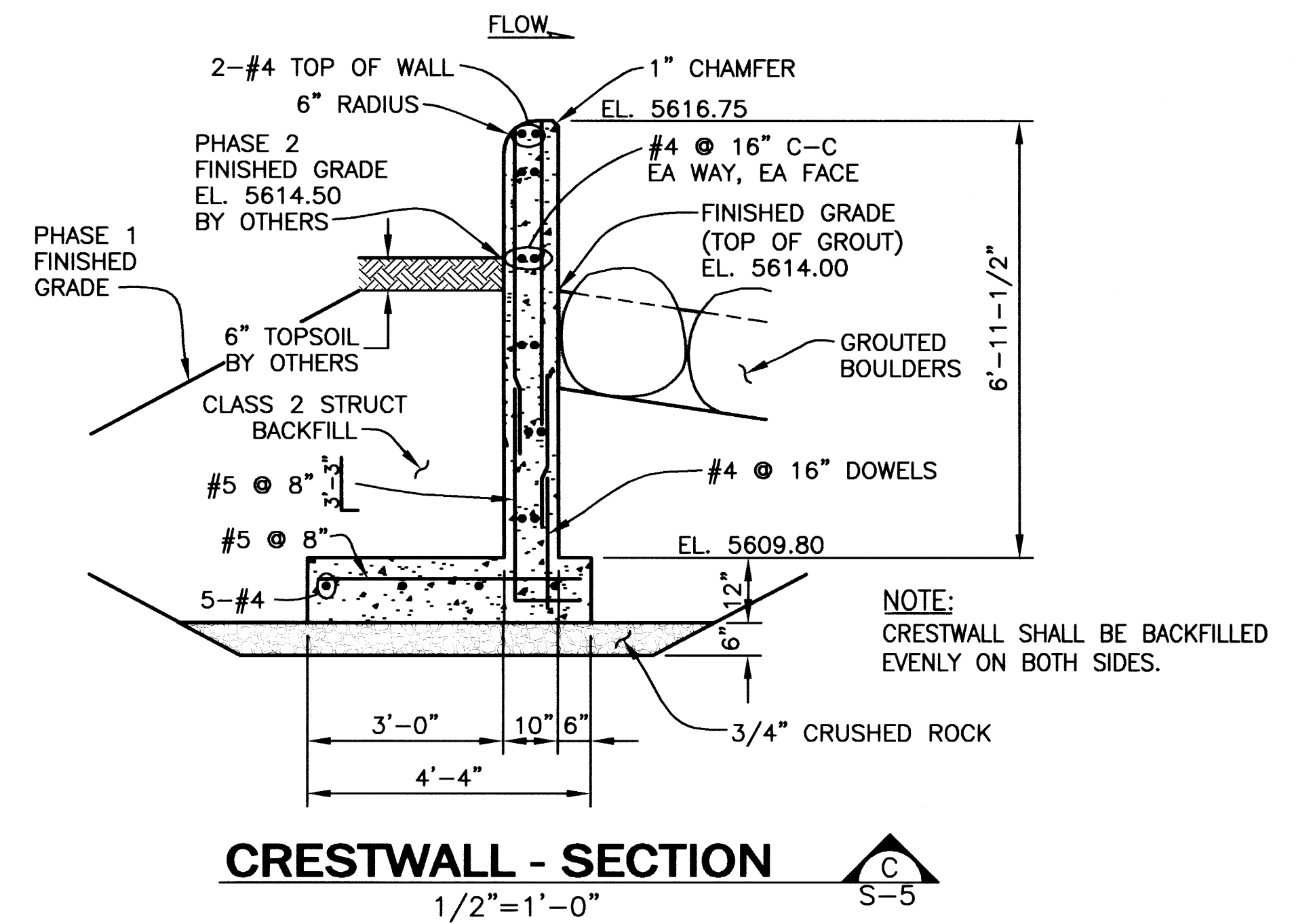
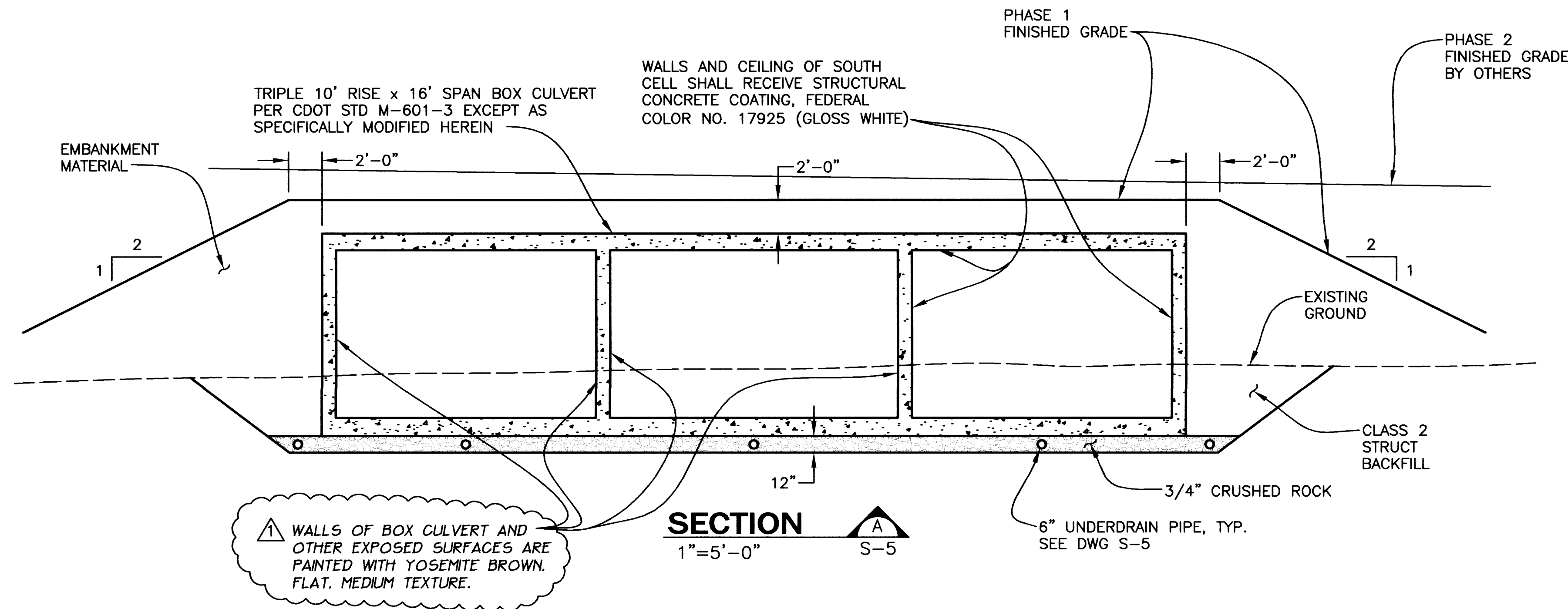
CHERRY CREEK BASIN WATER QUALITY AUTHORITY
ARAPAHOE COUNTY

COTTONWOOD CREEK -
PEORIA STREET IMPROVEMENTS

DRAWN: BKB 11/29/00 | DESIGNED: JTW 11/29/00 | CHKD: LJE 4/11/01

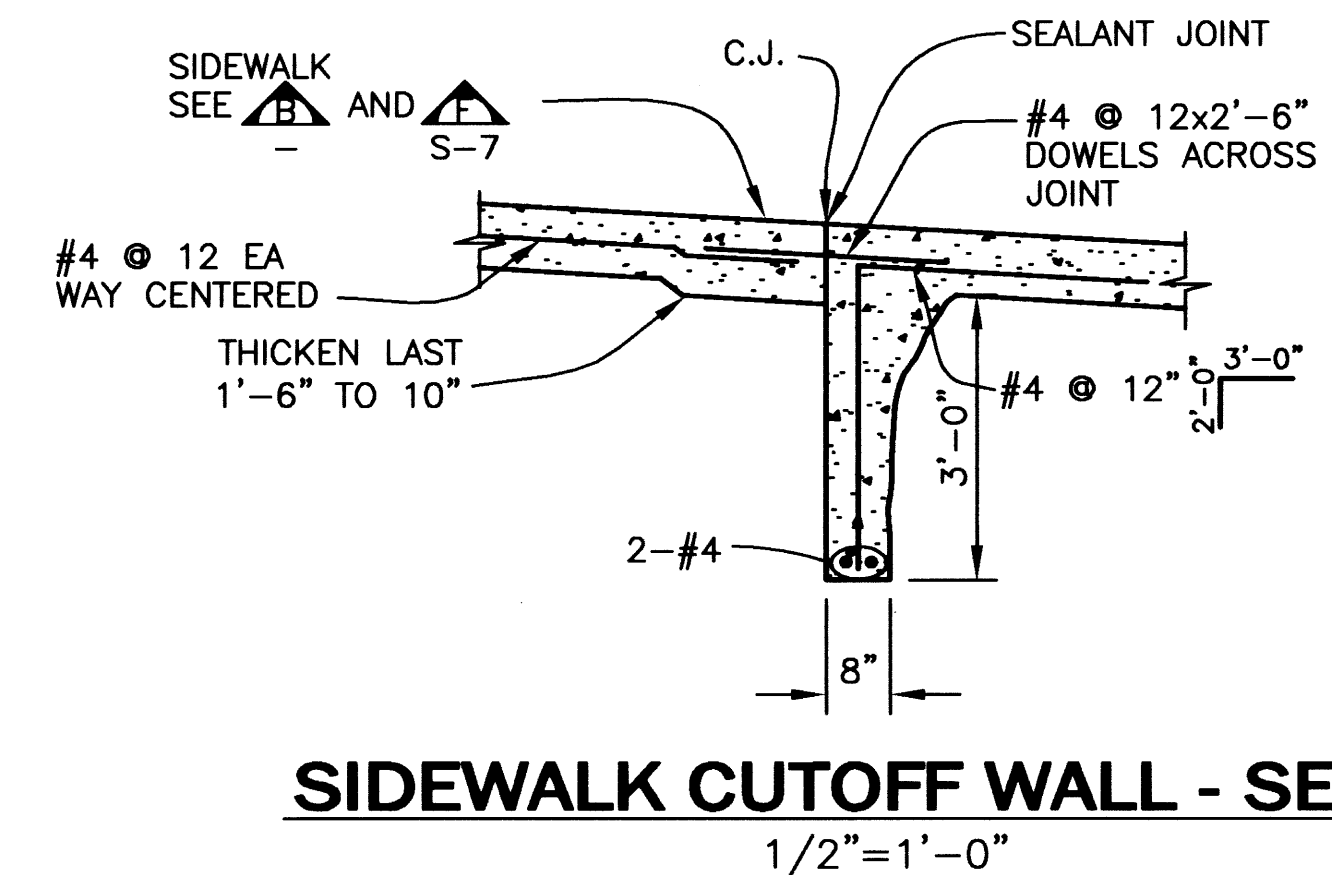
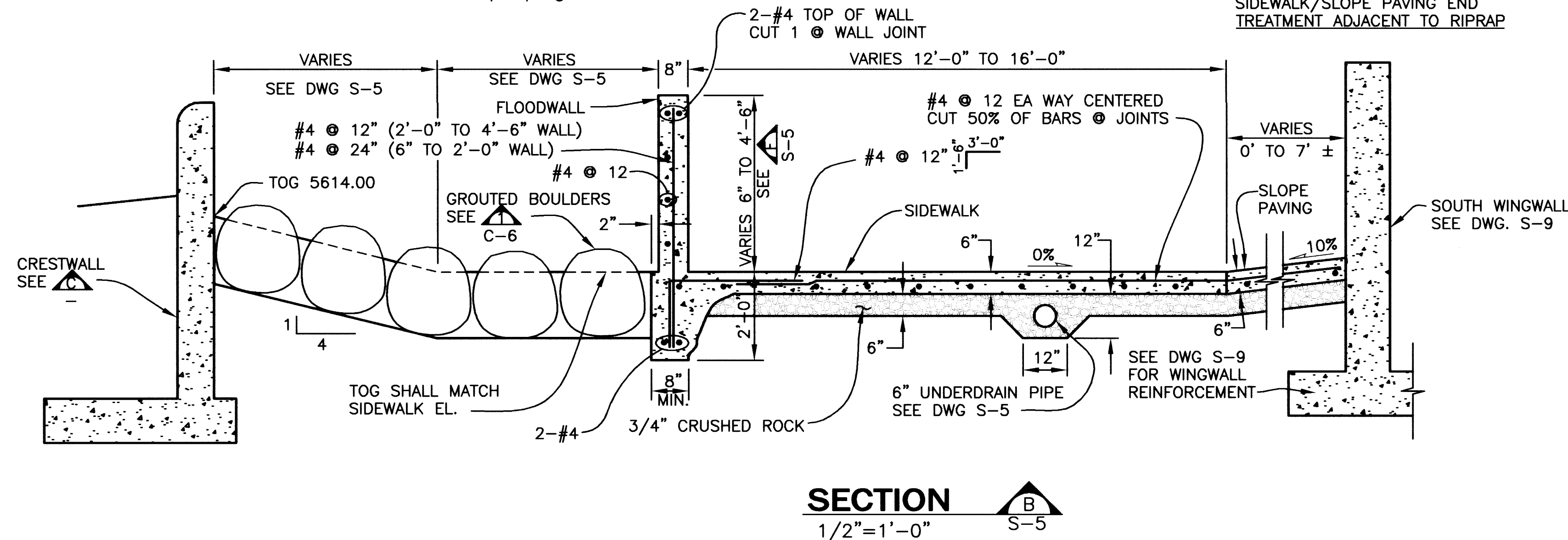
BOX CULVERT PLAN

SHEET 19
DWG S-5



RECORD DRAWING
7/22/03

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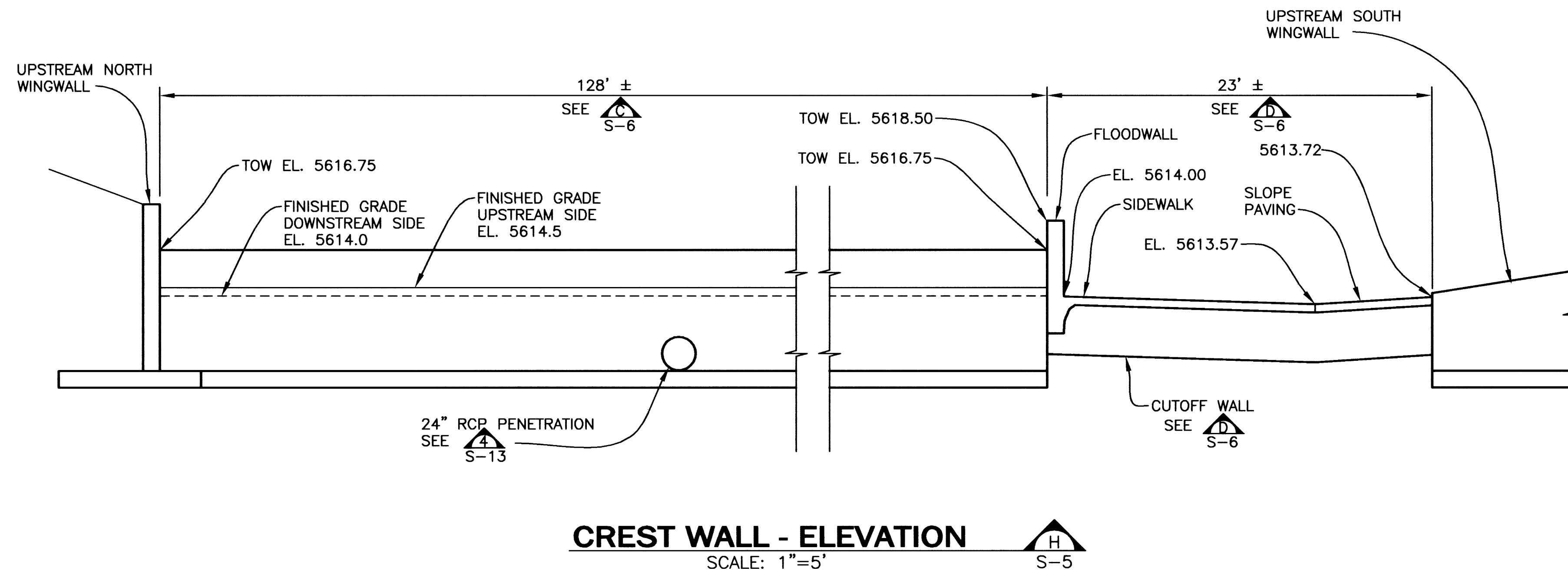
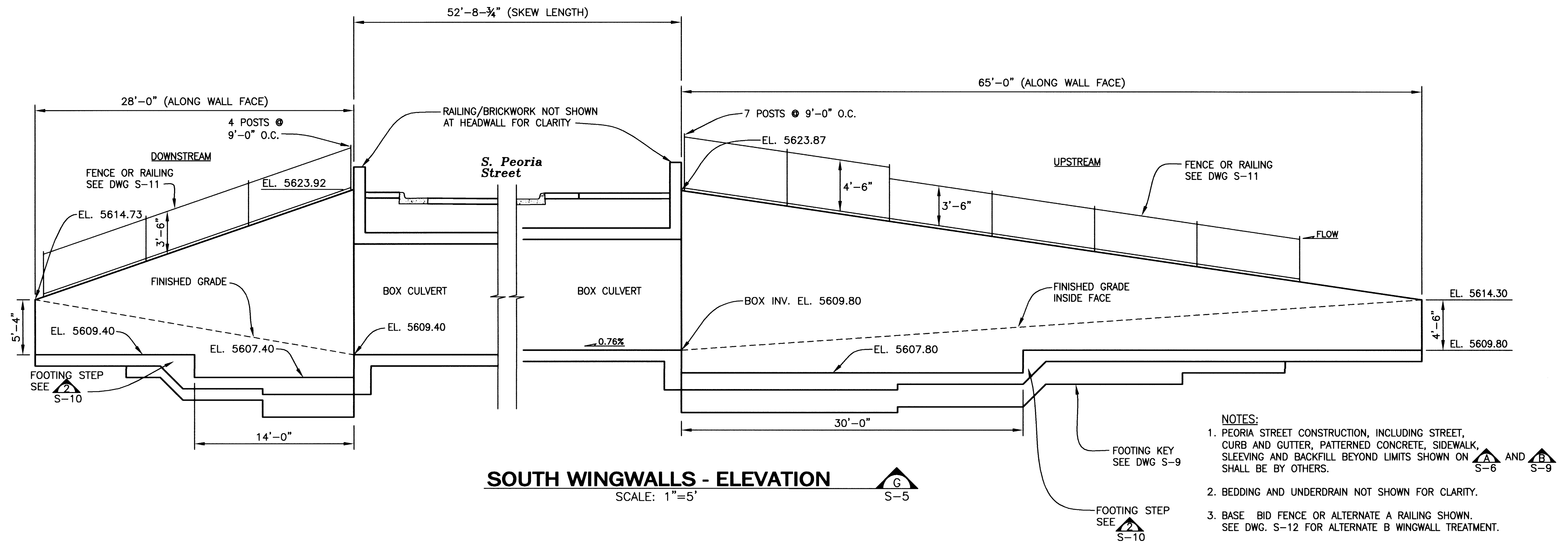
REVISIONS				
NO.	DATE	BY	CHK'D	DESCRIPTION
1	7/22/03	MM/CR	JTW	AS CONSTRUCTED RECORD DRAWINGS

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CONSULTING ENGINEERS
IRONGATE 4, SUITE 100
777 S. WADSWORTH BLVD.
LAKEWOOD, COLORADO 80226
(303) 988-4939

URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
LANDMARK METROPOLITAN DISTRICT
CITY OF GREENWOOD VILLAGE
ARAPAHOE COUNTY WATER AND WASTEWATER AUTHORITY

**COTTONWOOD CREEK -
PEORIA STREET IMPROVEMENTS**
DRAWN: BKB 11/29/00 DESIGNED: JTW 11/29/00 CHKD: LJE 4/11/01

**BOX CULVERT AND
CRESTWALL SECTIONS**
SHEET 20
DWG S-6



RECORD DRAWING
7/22/03

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DATE: AUG 26, 2003 TIME: 10:46 AM

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REVISIONS				
NO.	DATE	BY	CHK'D	DESCRIPTION
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MULLER ENGINEERING COMPANY, INC.
CONSULTING ENGINEERS
IRONGATE 4, SUITE 100
777 S. WADSWORTH BLVD.
LAKEWOOD, COLORADO 80226
(303) 988-4939

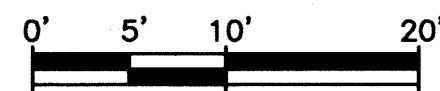
URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
LANDMARK METROPOLITAN DISTRICT
CITY OF GREENWOOD VILLAGE
ARAPAHOE COUNTY WATER AND WASTEWATER AUTHORITY

**COTTONWOOD CREEK -
PEORIA STREET IMPROVEMENTS**
DRAWN: BKB 11/29/00 DESIGNED: JTW 11/29/00 CHKD: LJE 4/11/01

**SOUTH WINGWALL
AND CREST WALL
ELEVATIONS**

SHEET
22
DWG
S-8

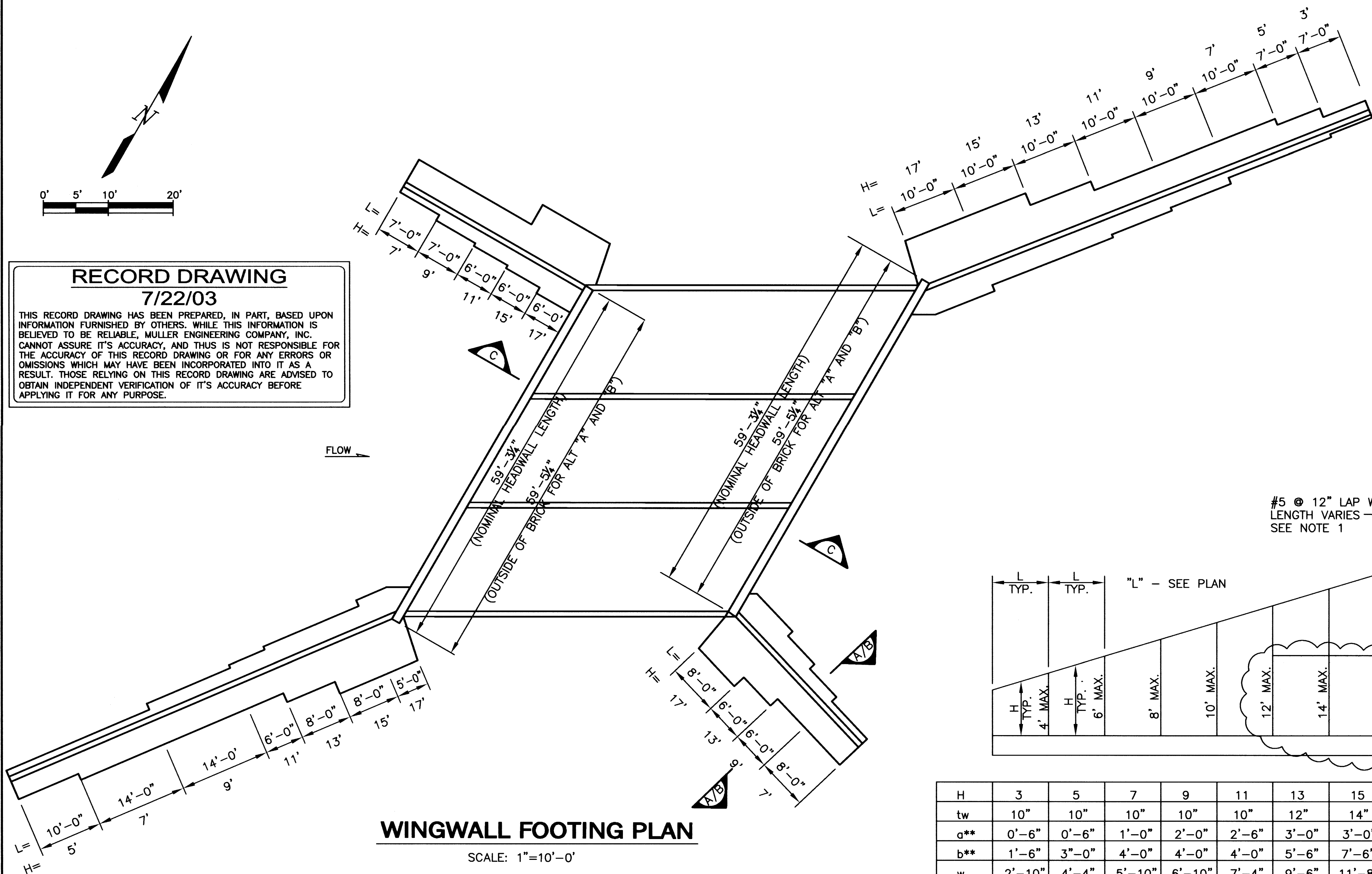
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RECORD DRAWING 7/22/03

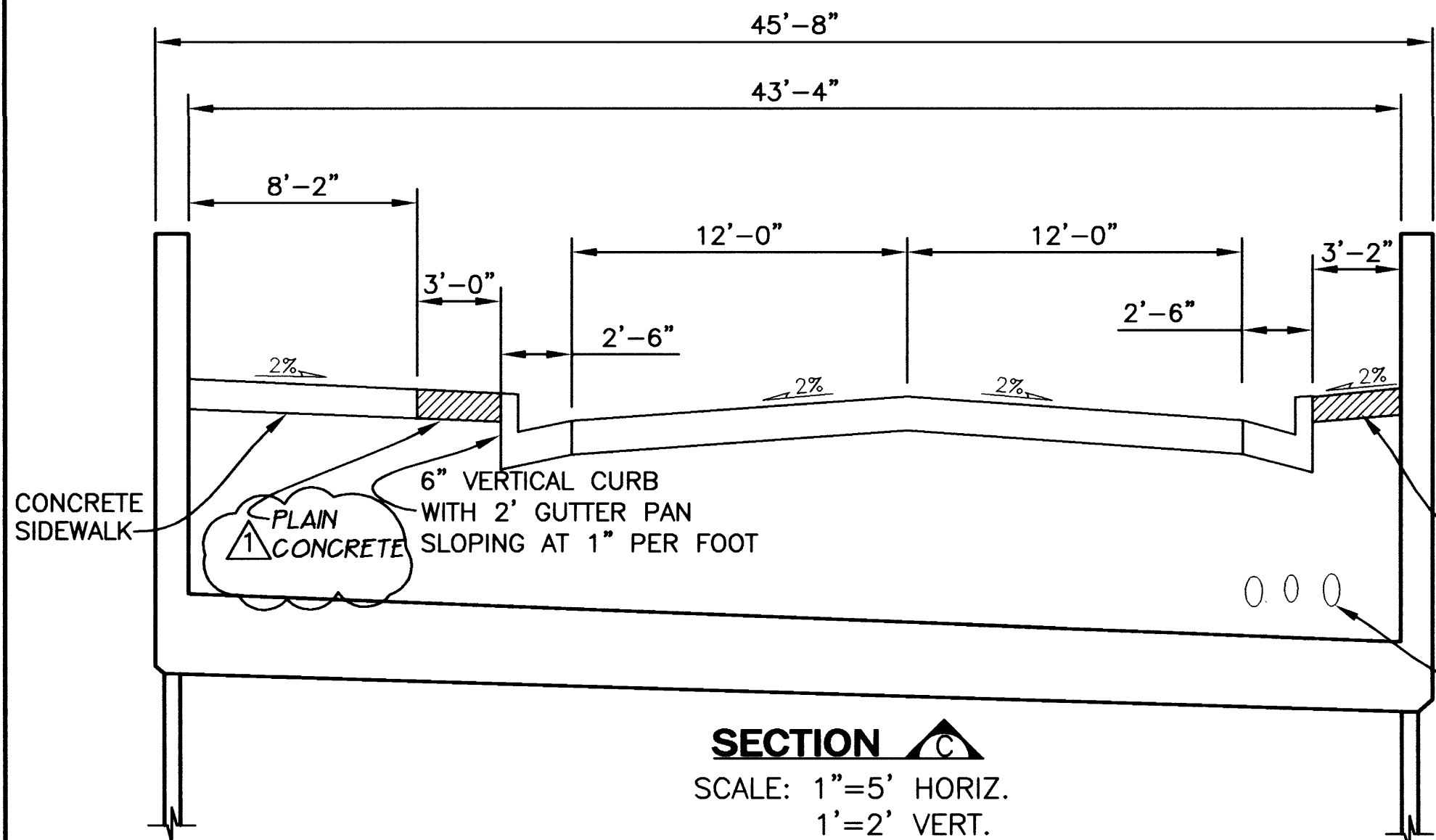
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FLOW →



WINGWALL FOOTING PLAN

SCALE: 1"=10'-0"



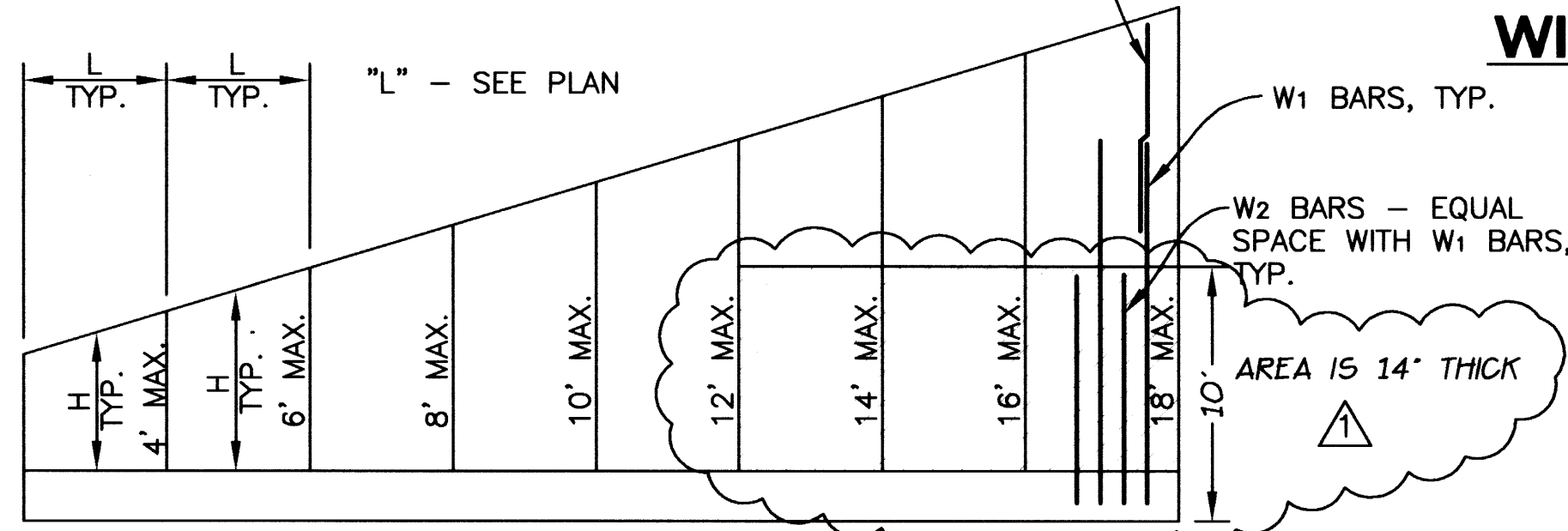
SECTION A

SCALE: 1"=5' HORIZ.
1"=2' VERT.

NOTE:
ALL FILL ABOVE PHASE 1 FINISHED GRADE, PAVEMENT, CURB, SIDEWALK, AND PATTERNED CONCRETE BY OTHERS.

PATTERNED CONCRETE, EACH SIDE NO CONCRETE JUST SOIL

SLEEVING FOR UTILITIES BY OTHERS INSTALLED AND USED



WINGWALL REINFORCING - SECTION A

SCALE: 1/2"=1'-0"

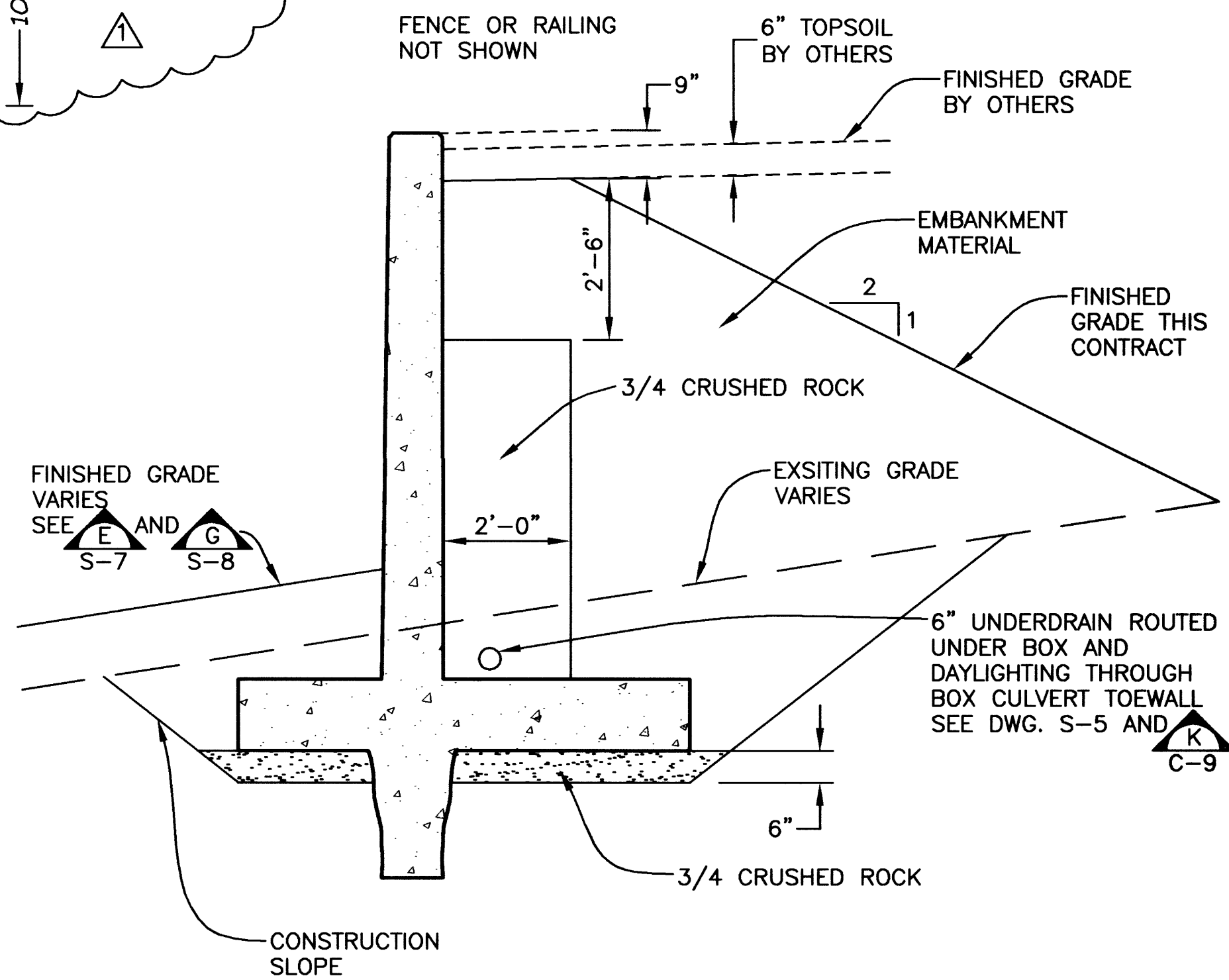
NOTE:

- LAP IS OPTIONAL @ W_1 = #5 @ 12" C-C FULL HEIGHT BARS MAY BE USED
- ALT. W_1 AND W_2 BARS FOR HALF SPACING.

H	3	5	7	9	11	13	15	17
tw	10"	10"	10"	10"	10"	12"	14"	14"
a**	0'-6"	0'-6"	1'-0"	2'-0"	2'-6"	3'-0"	3'-0"	4'-0"
b**	1'-6"	3'-0"	4'-0"	4'-0"	4'-0"	5'-6"	7'-6"	7'-6"
w	2'-10"	4'-4"	5'-10"	6'-10"	7'-4"	9'-6"	11'-8"	12'-8"
tf	1'-3"	1'-3"	1'-3"	1'-3"	1'-3"	1'-3"	1'-6"	1'-6"
W_1	#5@12	#5@12	#5@12	#5@12	#6@12	#7@12	#7@12	#9@10
L_1	2'-6"	2'-6"	3'-6"	4'-4"	9'-0"	10'-0"	12'-0"	13'-6"
W_2	-	-	-	#5@12	#7@12	#7@12	#9@12	#9@10
L_2	-	-	-	3'-4"	6'-0"	6'-6"	7'-6"	9'-6"
Ft	#5@12	#5@12	#5@12	#5@12	#6@12	#6@6	#7@6	#8@6
K^{**}	-	-	-	1'-0"	2'-0"	2'-0"	2'-0"	2'-0"
K_1	-	-	-	#5@18	#5@18	#5@12	#5@12	#5@12
O*	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	1"	1 1/4"

* MEASURED AT AVE. H - TRANSITION UNIFORMLY ALONG LENGTH OF WALL

** CONTRACTOR MAY ELECT, FOR ANY SECTION, TO USE DESIGN (DIMENSIONS AND AND BAR SIZES) FROM ADJACENT HIGHER H SECTION.

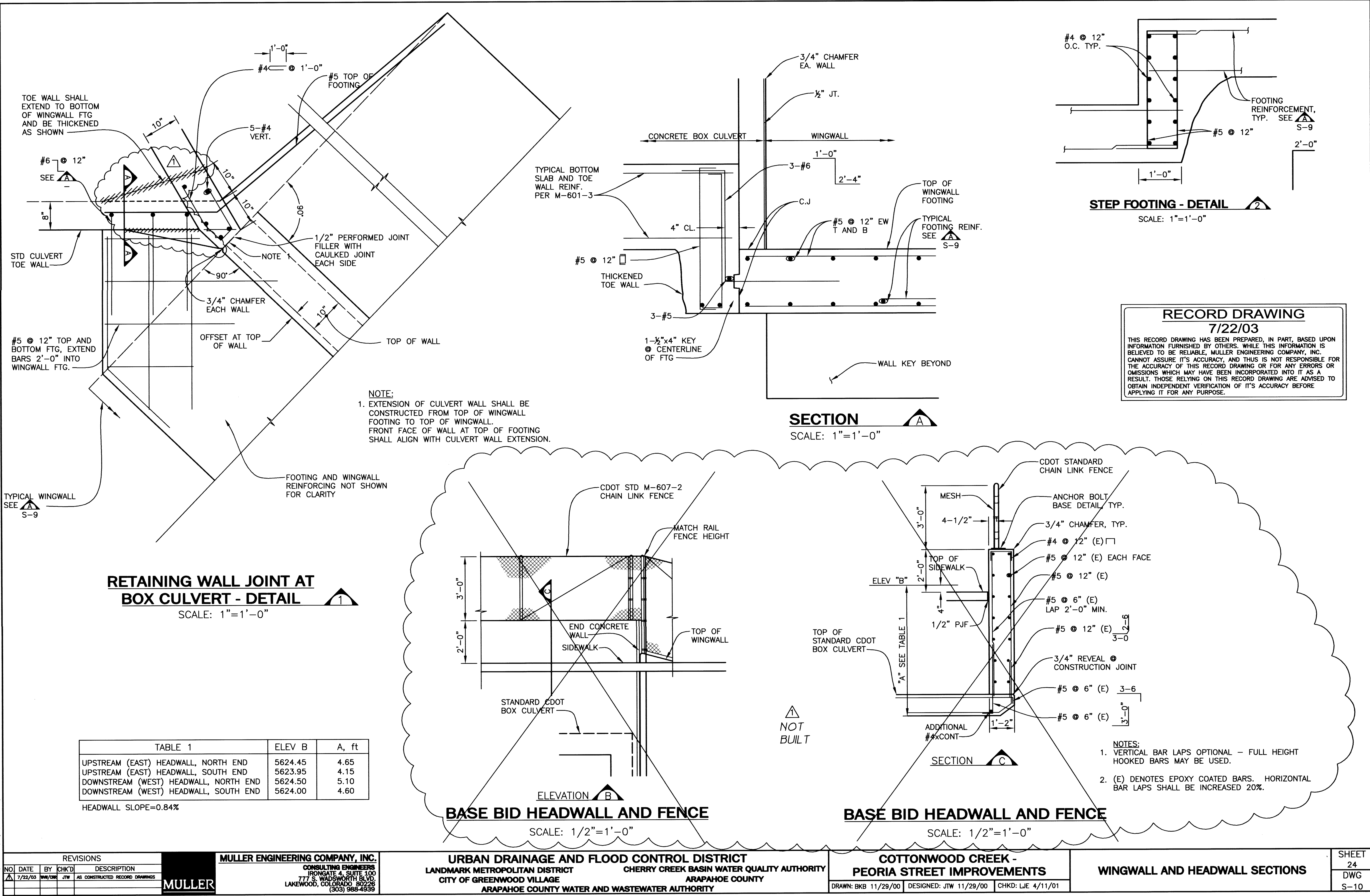


WINGWALL DRAINAGE AND BACKFILL - SECTION B

SCALE: 1/2"=1'-0"

DATE: AUG 13, 2003 TIME: 10:44 AM

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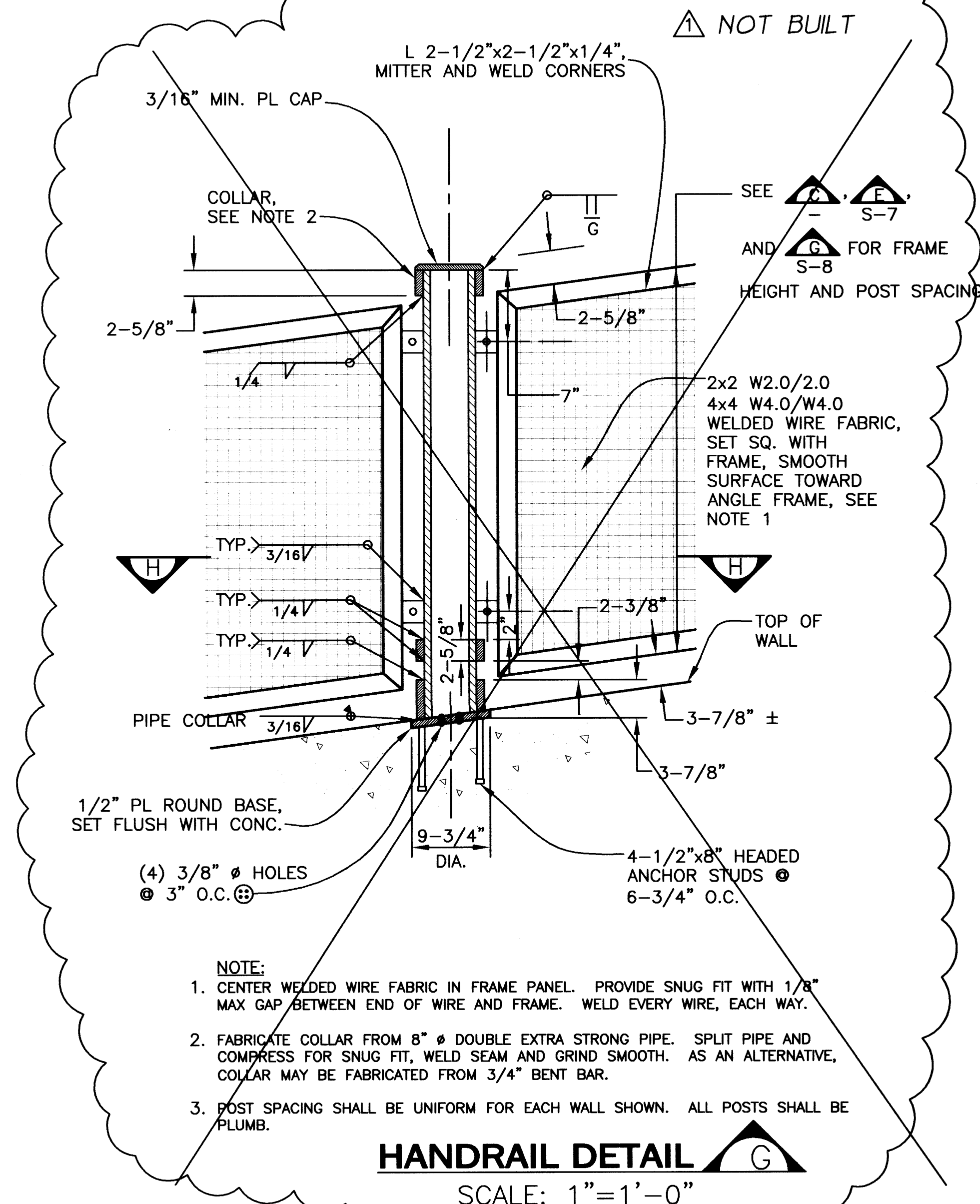
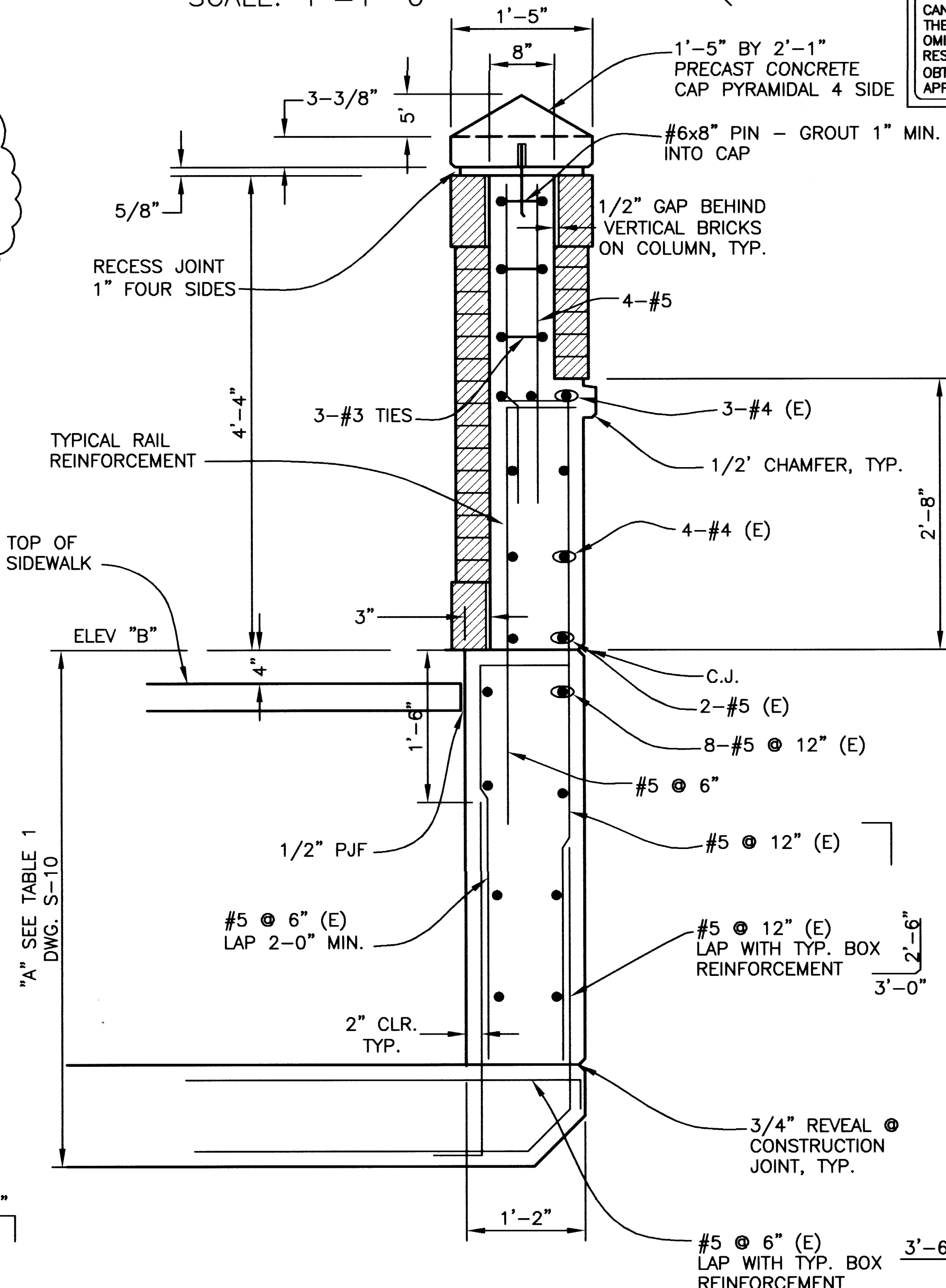
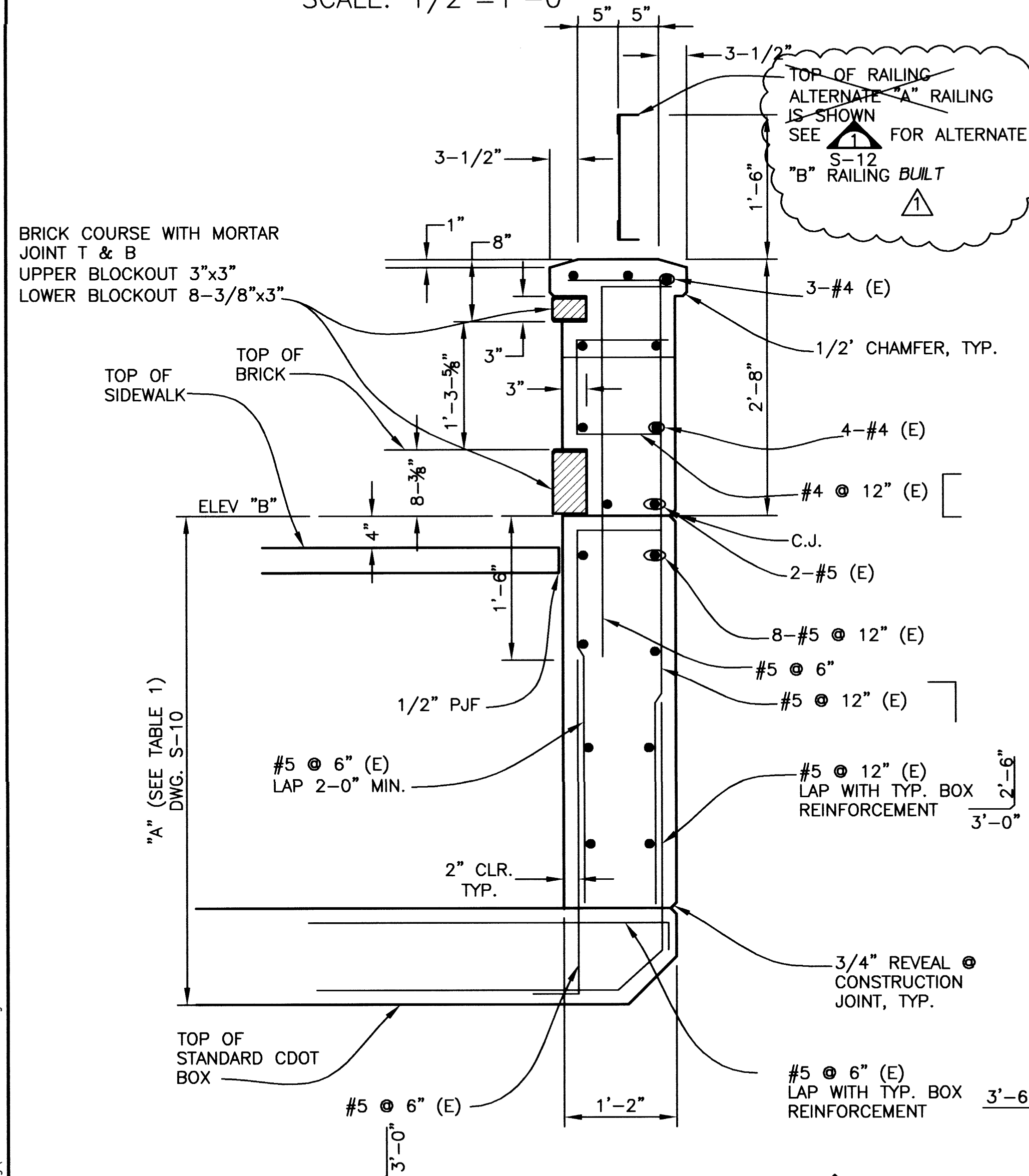
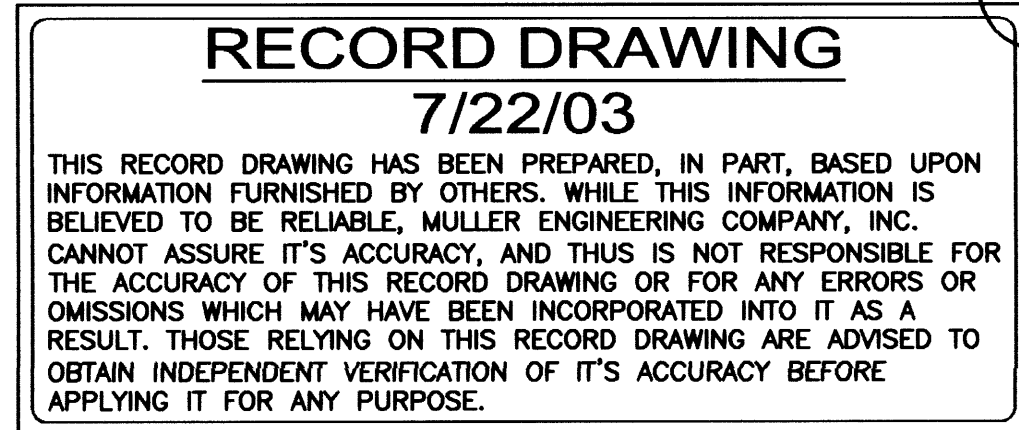
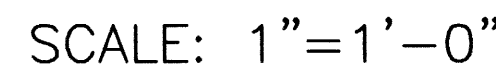
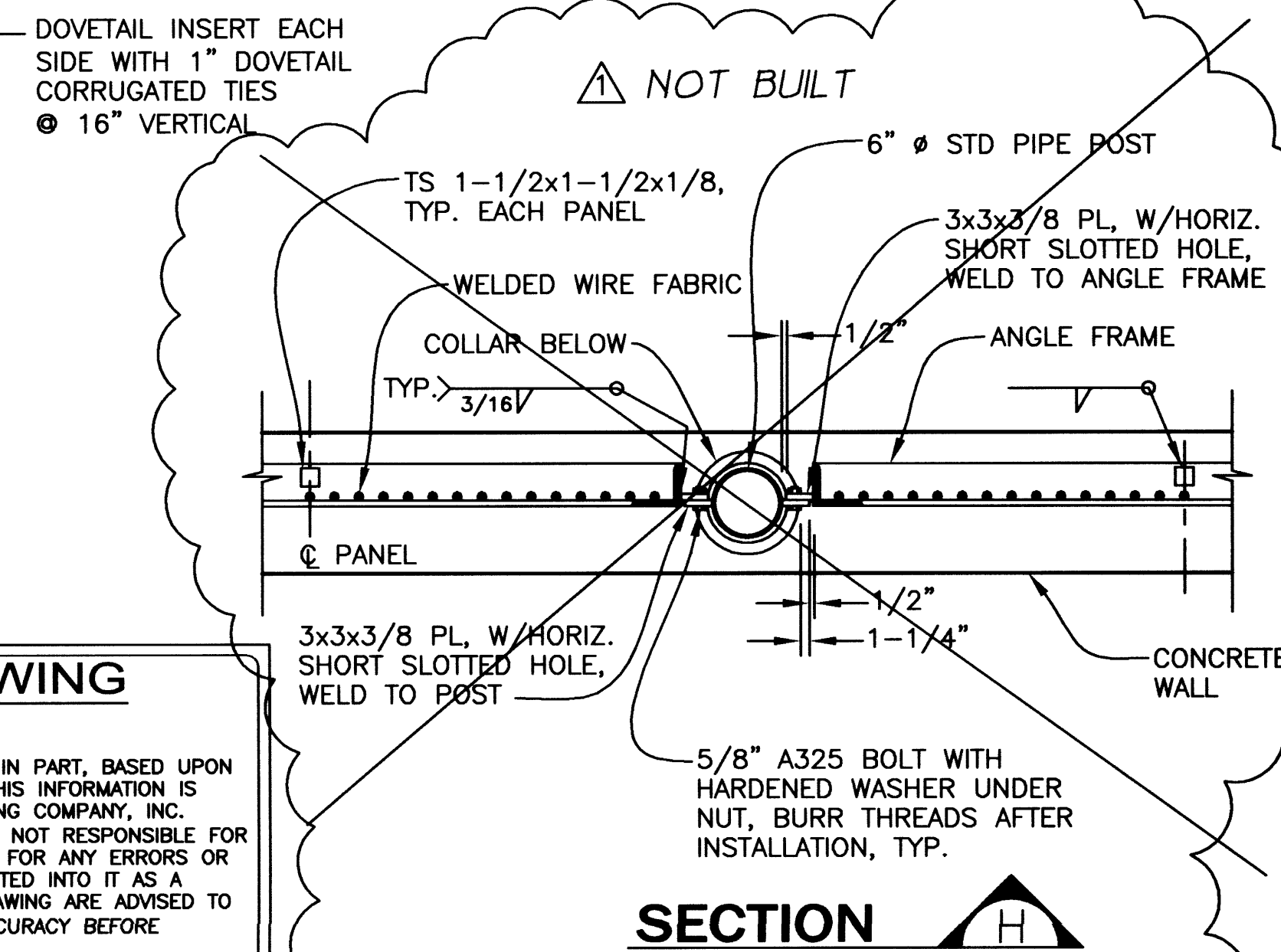
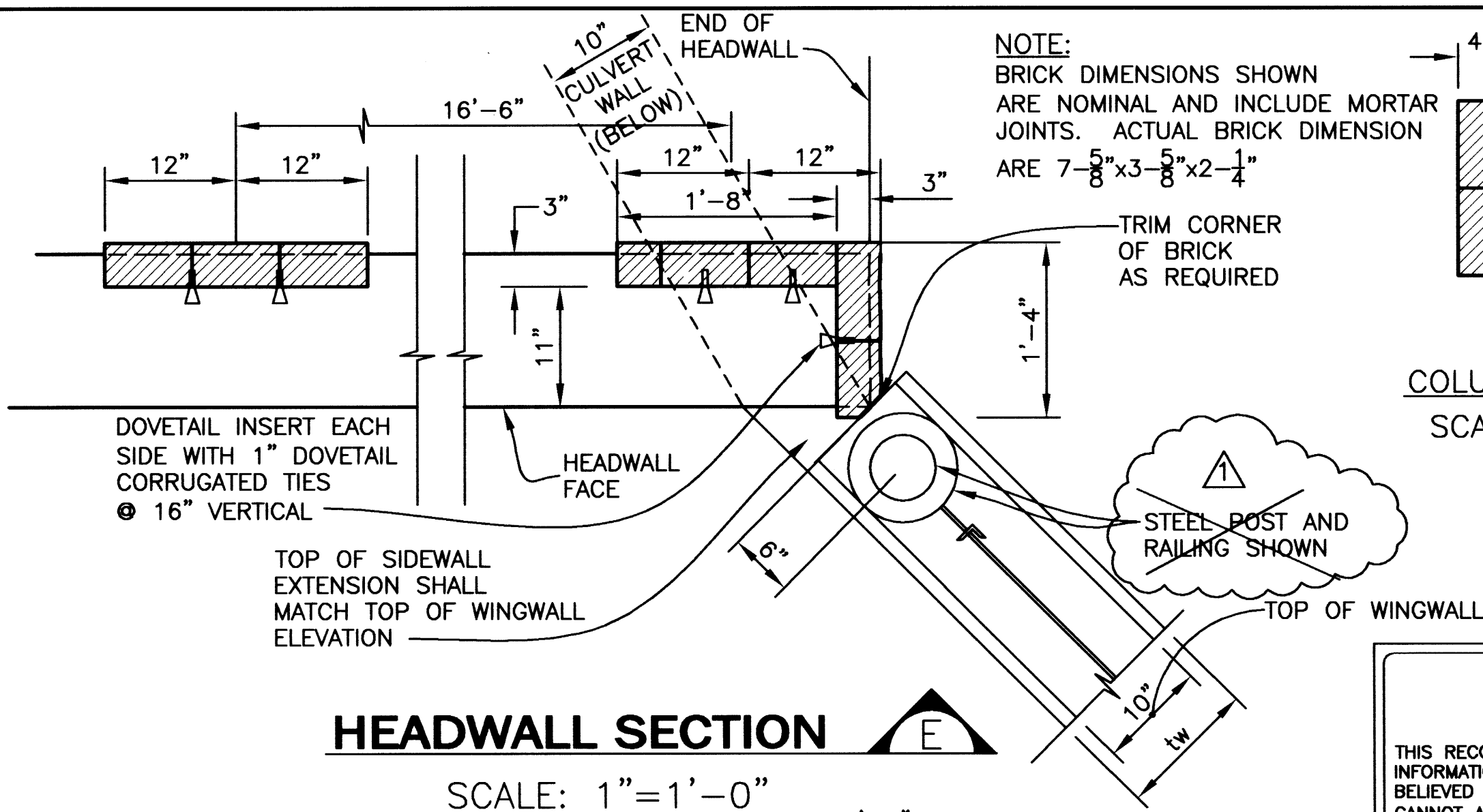
URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
LANDMARK METROPOLITAN DISTRICT
CITY OF GREENWOOD VILLAGE
ARAPAHOE COUNTY WATER AND WASTEWATER AUTHORITY

COTTONWOOD CREEK -
PEORIA STREET IMPROVEMENTS

DRAWN: BKB 11/29/00 DESIGNED: JTW 11/29/00 CHKD: LJE 4/11/01

WINGWALL AND HEADWALL SECTIONS

SHEET
24
DWG
S-10



REVISIONS				
NO.	DATE	BY	CHK'D	DESCRIPTION
1	7/22/03	MMW/CBR	JTW	AS CONSTRUCTED RECORD DRAWINGS

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URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
LANDMARK METROPOLITAN DISTRICT **CHERRY CREEK BASIN WATER QUALITY AUTHORITY**
CITY OF GREENWOOD VILLAGE **ARAPAHOE COUNTY**
ARAPAHOE COUNTY WATER AND WASTEWATER AUTHORITY

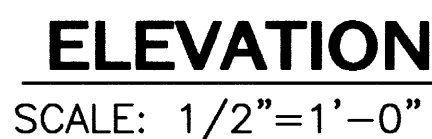
**COTTONWOOD CREEK -
PEORIA STREET IMPROVEMENTS**

DRAWN: BKB 11/29/00	DESIGNED: JTW 11/29/00	CHKD: LJE 4/11/01
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ALTERNATE "A" HEADWALL AND RAILING SECTIONS AND DETAILS

SHEET
25
DWG
S-11

NAME: S:\0032.01\dwqs\record dwq\0032-HDWALL-DET-REC.dwg DATE: AUG 18, 2003 TIME: 9:40 AM



7/22/03

3'- $\frac{1}{2}$ "

10"

3'- $\frac{1}{2}$ "

TYPE 1 RAILING

3-#4

8"

5"

3"

VARIES

5 @ 6"

7"

7"

#4 @ 12"

#5 @ 12"

6-#4

C.J.

2-#5

PHASE 2 FINISHED GRADE

8- $\frac{3}{4}$ "

4"

4"

#4 CONT.

#4 @ 12"

3"

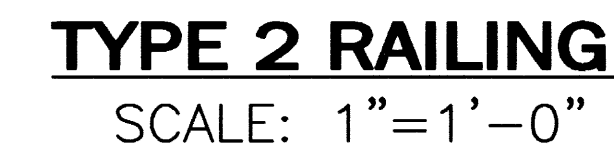
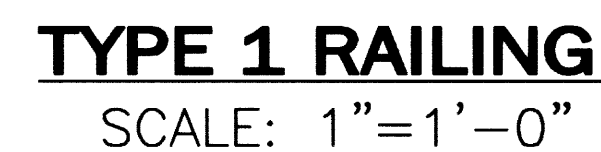
7"

TYP. WA REINFOR

VER BAT


4'-6"

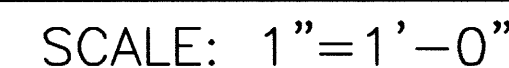
SCALE: 1"=1'-0"



WINGWALL		A	B	SLOPE
NORTH	UPSTREAM	14'-0"	13'-6"	25.22%
NORTH	DOWNSTREAM	50'-0"	49'-6"	19.96%
SOUTH	UPSTREAM	41'-0"	40'-6"	14.72%
SOUTH	DOWNSTREAM	10'-0"	9'-0"	32.82%

2. ALL WELDS $\frac{3}{16}$ " U.O.N.

3. SEE  FOR PHASE 1 FINISHED GRADE.



SCALE: 1"=1'-0"

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URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
LANDMARK METROPOLITAN DISTRICT **CHERRY CREEK BASIN WATER QUALITY AUTHORITY**
CITY OF GREENWOOD VILLAGE **ARAPAHOE COUNTY**
ARAPAHOE COUNTY WATER AND WASTEWATER AUTHORITY

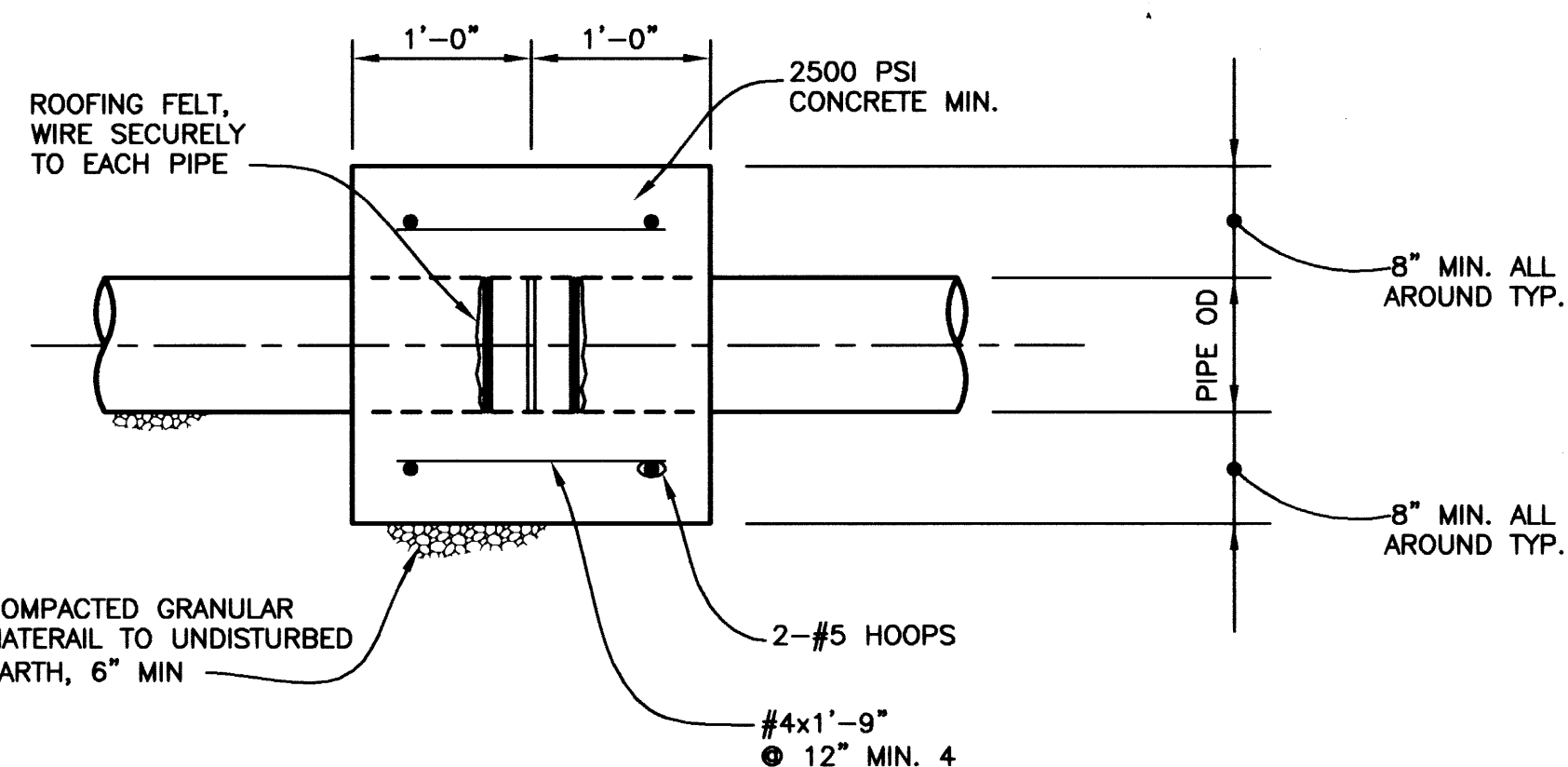
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DRAWN: BKB 11/29/00	DESIGNED: JTW 11/29/00	CHKD: DDJ 1/5/01

ALTERNATIVE "B" WINGWALLS AND RAILING SECTIONS AND DETAILS

SHEET
26
DWG
S-12

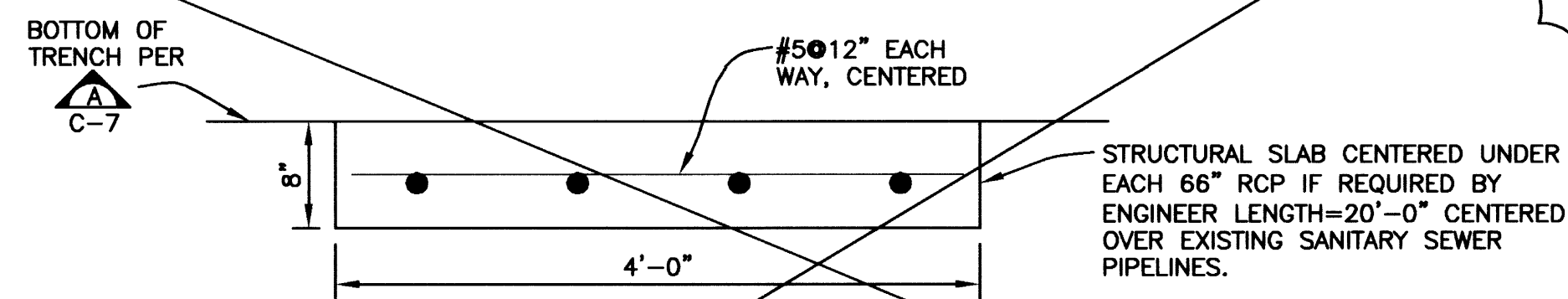
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CONCRETE COLLAR

1"=1'-0"

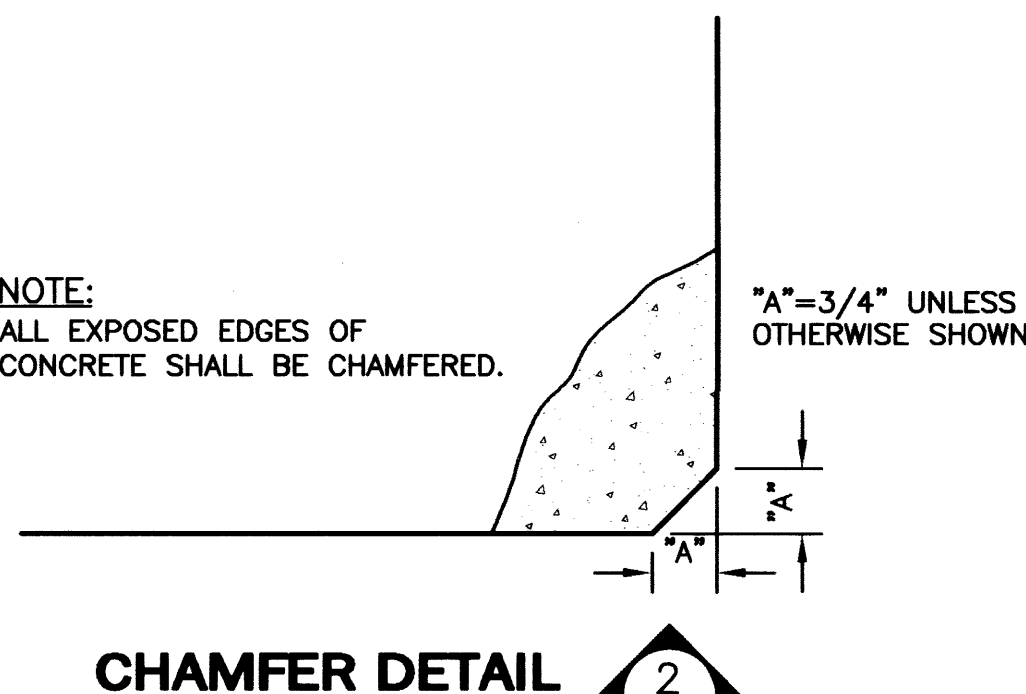


STRUCTURAL SLAB

1"=1'-0"

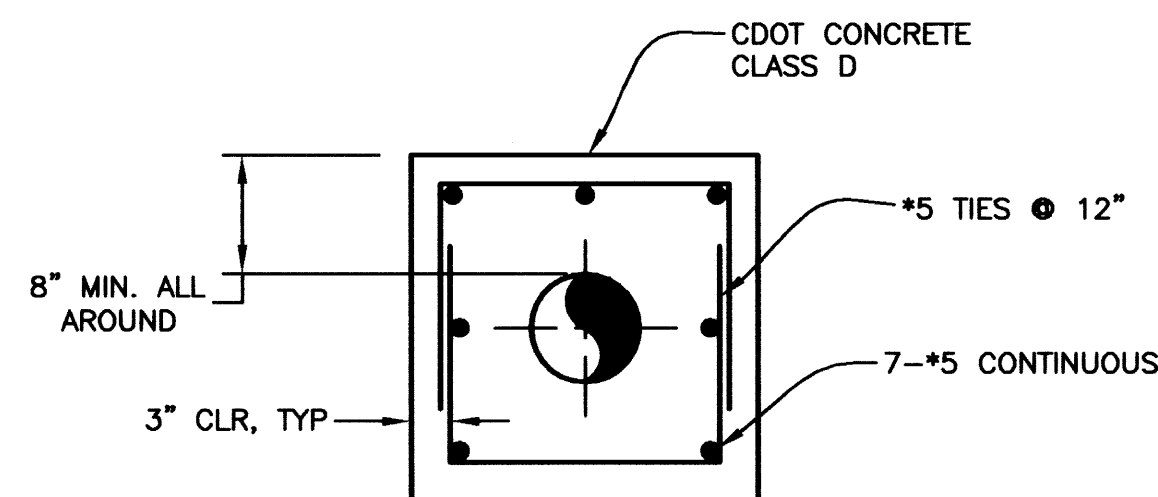
NOT
INSTALLED

NOTE:
ALL EXPOSED EDGES OF
CONCRETE SHALL BE CHAMFERED.



CHAMFER DETAIL

N.T.S.



CONCRETE ENCASEMENT- DETAIL

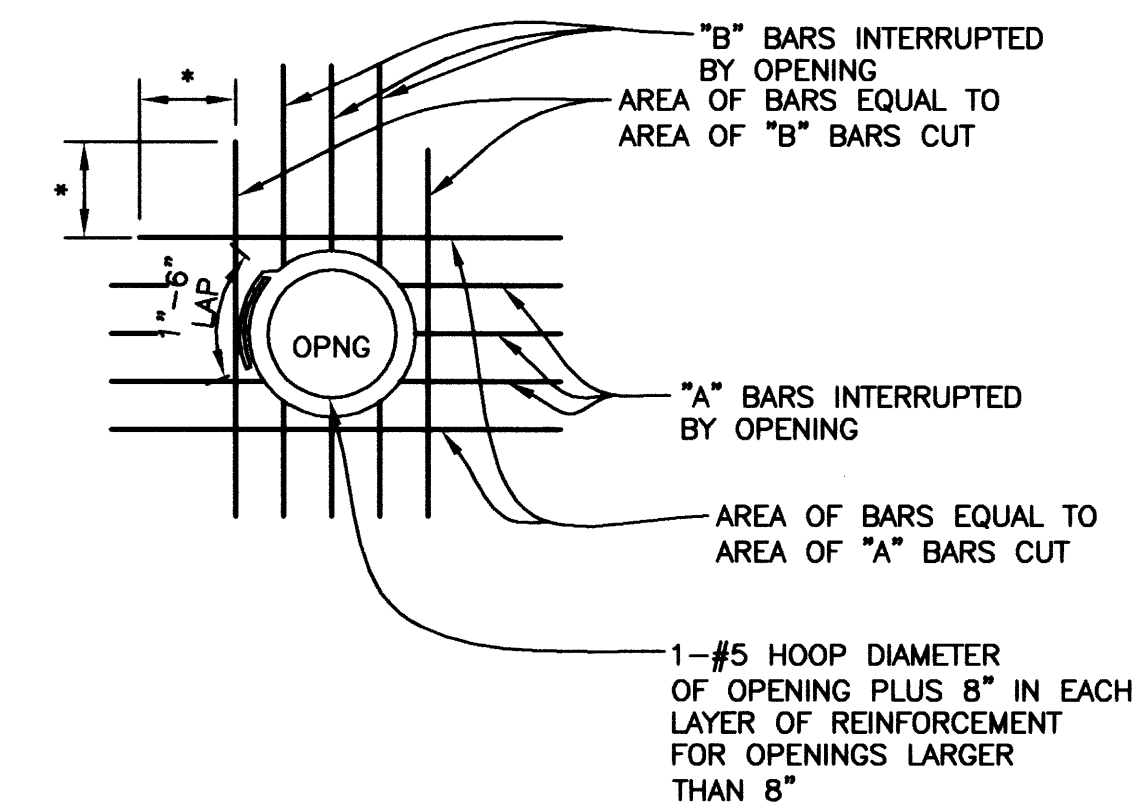
N.T.S.

REINFORCING STEEL

- CLEARANCE FOR REINFORCEMENT BARS, UNLESS SHOWN OTHERWISE, SHALL BE:
 - WHEN PLACED ON GROUND: 3"
 - ALL OTHER CONCRETE SURFACES: 2"
- ALL WALL CORNER AND WALL INTERSECTION REINFORCEMENT BARS SHALL BE CONTINUOUS AROUND CORNERS. REINFORCEMENT SHALL BE EXTENDED INTO CONNECTING WALLS AND LAPPED ON THE OPPOSITE FACE OF THE CONNECTING WALLS.
- REINFORCING STEEL SHALL MEET THE REQUIREMENTS OF ASTM A615, GRADE 60.
- UNLESS NOTED OTHERWISE, ALL REINFORCING LAP SPLICES SHALL BE CLASS B. HORIZONTAL BARS IN WALLS WITH MORE THAN 12 INCHES OF FRESH CONCRETE BELOW SHALL BE CONSIDERED TOP BARS. INCREASE LAP LENGTHS FOR EPOXY COATED BARS AS FOLLOWS: 20% FOR #3 THROUGH #5 AND 50% FOR #6 THROUGH #11.

STRUCTURAL CONCRETE:

- STRUCTURAL CONCRETE (BOX CULVERT, INLET STRUCTURE, WATER QUALITY OUTLET STRUCTURE, HEADWALL, WINGWALLS, STRUCTURAL CONCRETE PATH, ABUTMENTS, TOEWALLS) SHALL MEET THE REQUIREMENTS OF CDOT CONCRETE CLASS D FOR ALL STRUCTURES.
- PATH AND SLOPE PAVING CONCRETE SHALL MEET THE REQUIREMENTS OF CDOT CONCRETE CLASS B.
- EXCEPT AS NOTED, EXPOSED CONCRETE SURFACES OF STRUCTURES SHALL BE PROVIDED WITH A CLASS 2 RUBBED FINISH PER CDOT SPECIFICATIONS. EXPOSED CONCRETE SURFACES OF TRIPLE 10'x16' BOX CULVERT, HEADWALLS, AND WINGWALLS SHALL RECEIVE STRUCTURAL CONCRETE COATING, FEDERAL COLOR NO. 33717, FOR ALTERNATIVE "B" ONLY.



OPENING REBAR DETAIL

N.T.S.

NOTES:

* PROVIDE MINIMUM LAP.

TYPICAL FOR ALL OPENINGS IN CONCRETE WALLS AND SLABS UNLESS INDICATED OTHERWISE ON PLANS.

DO NOT WELD REINFORCEMENT TO PIPE SLEEVES AND INSERTS.

PROVIDE A MINIMUM OF 2 "A" BARS AND 2 "B" EACH SIDE OF OPENING (1 EACH FACE).

FOR OPENINGS LARGER THAN 8'-0", REINFORCE SAME AS FOR 8'-0" OPENINGS.

SPACE AT 3 BAR DIAMETERS (OR 3" MINIMUM) ON CENTER.

RECORD DRAWING

7/22/03

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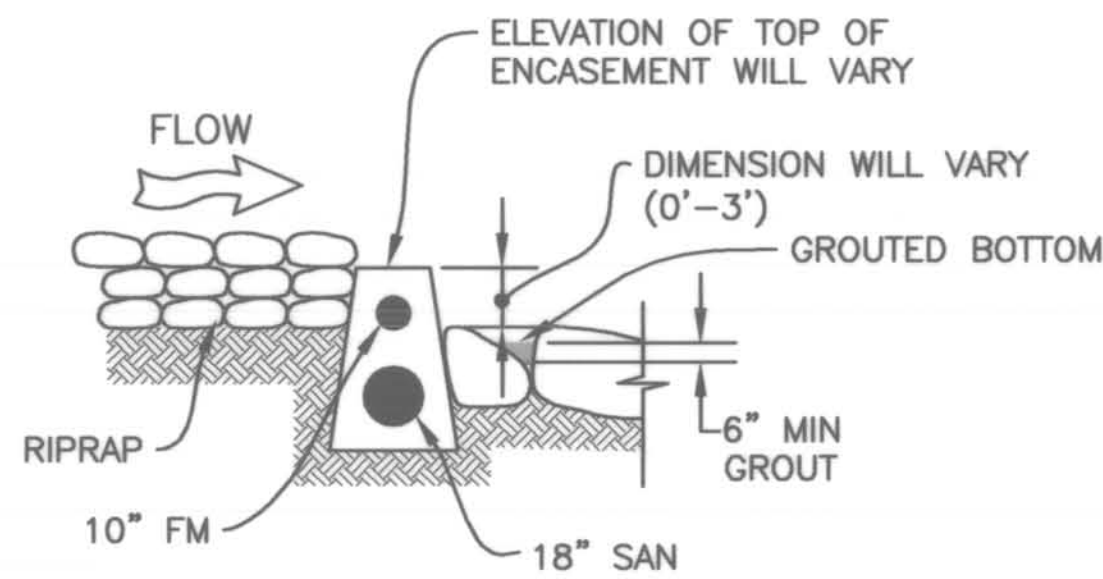
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LANDMARK METROPOLITAN DISTRICT
CITY OF GREENWOOD VILLAGE
ARAPAHOE COUNTY WATER AND WASTEWATER AUTHORITY

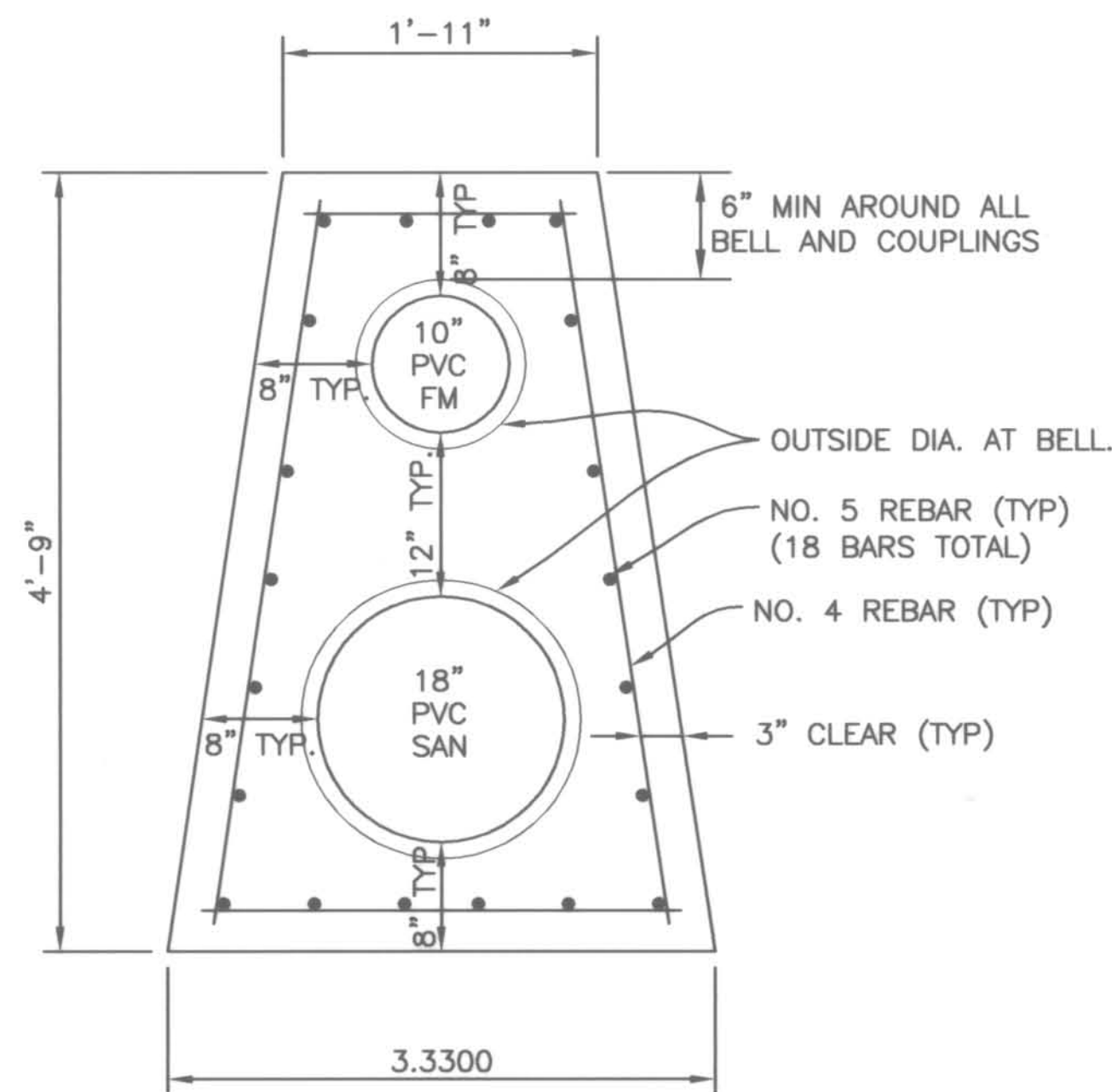
**COTTONWOOD CREEK -
PEORIA STREET IMPROVEMENTS**
DRAWN: BKB 11/29/00 DESIGNED: JTW 11/29/00 CHKD: LJE 4/11/01

**MISCELLANEOUS STRUCTURAL DETAILS
AND NOTES**

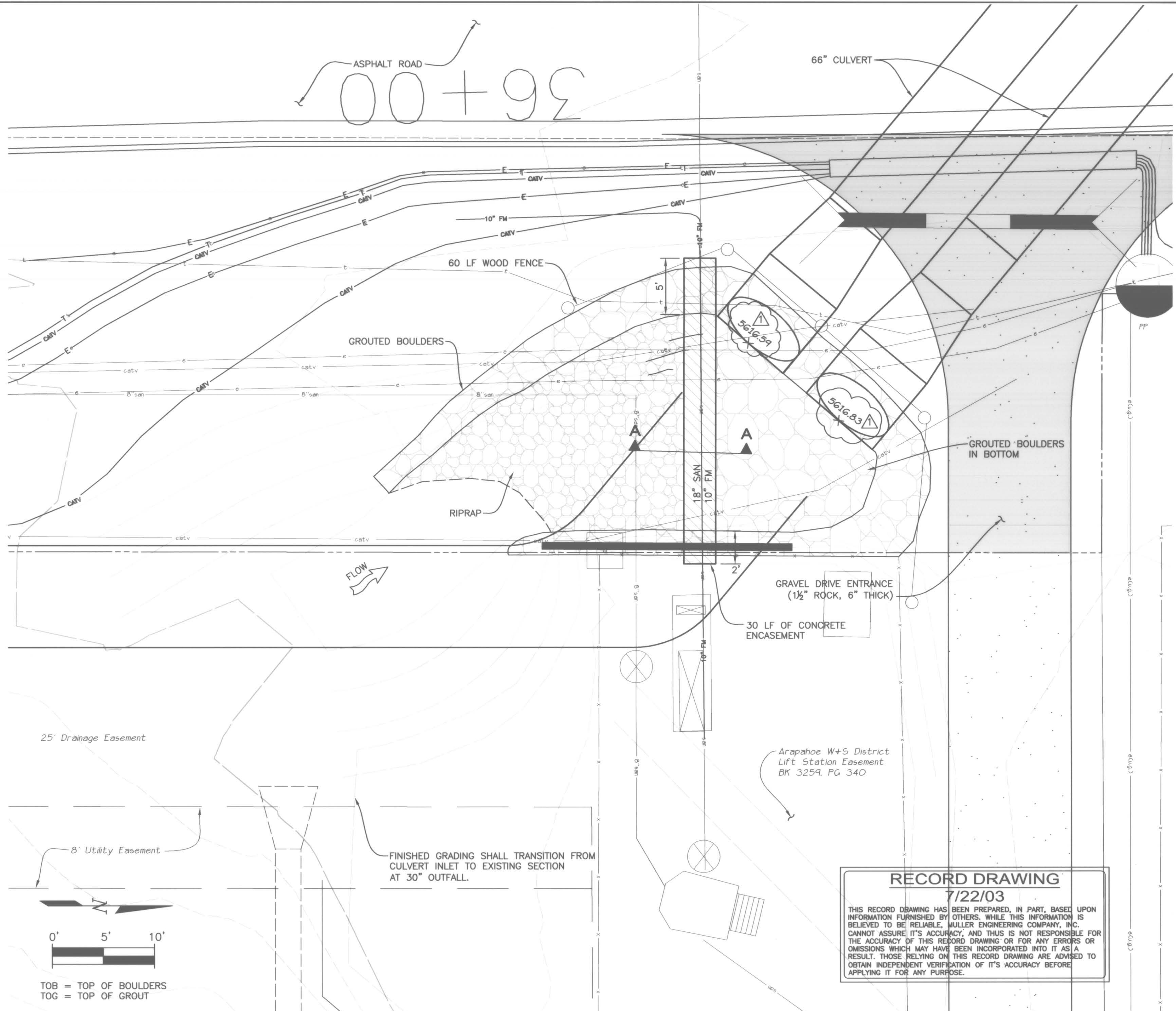
SHEET
27
DWG
S-13



SECTION A-A
SCALE: 1"=5'



ENCASEMENT DETAIL
SCALE: 1"=1'



RECORD DRAWING
7/22/03

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X-ROAD-CNT, X0032-EX1, X0032-PR2, X0032-PRS, X0032-RD, X0032BDR, XMOD-CNT
NAME: S:\0032\01\dwg\Record.dwg\0032-02-ENCASE.dwg DATE: AUG 07, 2003 TIME: 10:32 AM

NO	DATE	BY	CHK'D	DESCRIPTION
1	7/22/03	WHL/DJR	JTW	AS CONSTRUCTED RECORD DRAWINGS

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ARAPAHOE COUNTY
ARAPAHOE COUNTY WATER AND WASTEWATER AUTHORITY

**COTTONWOOD CREEK -
PEORIA STREET IMPROVEMENTS**

DRAWN: BKB 11/29/00 DESIGNED: JTW 11/29/00 CHKD: DDJ 1/5/01

**PEORIA TRIBUTARY CULVERT INLET
AND ENCASEMENT PLAN AND DETAIL**

SHEET
11B
DWG
C-8B