



June 28, 2017

Farshad Omidvaran, P.E.
Parsons Brinkerhoff
6100 Uptown Blvd NE
Albuquerque, NM 87110

RE: **ABQ Ride Daytona Transit Facility**
Grading and Drainage Plan (Engineer's Stamp Date: 6/28/17)
Hydrology File: J09D025

Dear Mr. Omidvaran:

Based on the information provided in your submittal received on 6/28/2017, the Grading and Pavement Plan Sheet C-7 with engineer's stamp dated 6/28/2017 and the Proposed Storm Drain Plan Sheet C-9 with engineer's stamp dated 6/14/2017 are approved for Building Permit.

PO Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

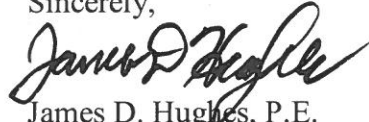
The following inconsistencies were noted during the review of the HGL calculations.

1. HEC-22 (2nd ed) was used which incorrectly applied losses directly to the HGL without calculating the EGL. The COA DPM 22.3.B requires the use of Bernoulli's equation and several other minor losses. If the HEC-22 (3rd Ed) option is used in the current version of StormCAD, the results will be consistent with the DPM. This will increase the HGL at the upstream end by about 3' so the HGL will be more than a foot out of the ground there.
2. Several things can be done to lower the HGL.
 - a. Starting with a lower tail-water elevation. The DPM allows use of the 10-year elevation of Pond 6 to account for the difference in timing of the peak stage in the pond and the peak flow in the pipe. That elevation is not known but it may be assumed to be at least 1' below the crest elevation of the emergency overflow spillway which is at 5182.6. So a reasonable starting elevation would be 5181.6.(1.4' lower)
 - b. The peak flow rate in Daytona Street can be reduced to 195.86 cfs per Amole Hubble DMP (0.9' less HL)
 - c. The onsite peak flow rate can be reduced to 80 cfs since about 20% of basin U201 goes to a different storm drain.

When all of these changes are combined the resulting HGL will probably be below the surface, so the design will be in compliance with City Code 14-5-2-12(G).

If you have any questions, please contact me at 924-3986 or jhughes@cabq.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "James D. Hughes". The signature is fluid and cursive, with the first name "James" and last name "Hughes" clearly distinguishable.

James D. Hughes, P.E.
Principal Engineer, Planning Dept.
Development Review Services



City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 11/2016)

Project Title: ABQ Ride Daytona Design **Building Permit #:** BP-2017-19346 **Hydrology File #:** J09D025

DRB#: _____ **EPC#:** _____ **Work Order#:** _____

Legal Description: Lot A, West Side Transit Facility

City Address: 8001 Daytona Road NW, Albuquerque, NM 87121

Applicant: Daytona Transit Facility (COA) **Contact:** Nolan Meadows

Address: 8001 Daytona Place, NM, Albuquerque, NM 87121

Phone#: 505-239-9924 **Fax#:** _____ **E-mail:** nmeadows@cabq.gov

Other Contact: WSP|Parsons Brinckerhoff **Contact:** Jim Buckman

Address: 6100 Uptown Blvd. NE Suite 600, Albuquerque, NM 87110

Phone#: 505-878-6577 **Fax#:** _____ **E-mail:** Buckman@pbworld.com

Check all that Apply:

DEPARTMENT:

☒ HYDROLOGY/ DRAINAGE
☐ TRAFFIC/ TRANSPORTATION

TYPE OF SUBMITTAL:

☐ ENGINEER/ARCHITECT CERTIFICATION

☐ CONCEPTUAL G & D PLAN

☒ GRADING PLAN

☐ DRAINAGE MASTER PLAN

☐ DRAINAGE REPORT

☐ CLOMR/LOMR

☐ TRAFFIC CIRCULATION LAYOUT (TCL)

☐ TRAFFIC IMPACT STUDY (TIS)

☐ OTHER (SPECIFY) _____

☐ PRE-DESIGN MEETING?

TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

☒ BUILDING PERMIT APPROVAL

☐ CERTIFICATE OF OCCUPANCY

☐ PRELIMINARY PLAT APPROVAL

☐ SITE PLAN FOR SUB'D APPROVAL

☐ SITE PLAN FOR BLDG. PERMIT APPROVAL

☐ FINAL PLAT APPROVAL

☐ SIA/ RELEASE OF FINANCIAL GUARANTEE

☐ FOUNDATION PERMIT APPROVAL

☒ GRADING PERMIT APPROVAL

☐ SO-19 APPROVAL

☒ PAVING PERMIT APPROVAL

☐ GRADING/ PAD CERTIFICATION

☐ WORK ORDER APPROVAL

☐ CLOMR/LOMR

☐ OTHER (SPECIFY) _____

IS THIS A RESUBMITTAL?: ☒ Yes ☐ No

DATE SUBMITTED: 07/03/2017 **By:** Lauren Ornel for Jim Buckman

COA STAFF:

ELECTRONIC SUBMITTAL RECEIVED: _____

FEE PAID: _____



June 30, 2017

James Hughes, PE
Principal Engineer, Planning Dept.
Development Review Services
City of Albuquerque
PO Box 1293
Albuquerque, NM 87103

Re: ABQ Ride Daytona Transit Facility
Grading and Drainage Plan
Hydrology File J09D025

Dear Mr. Hughes:

We have addressed the comments provided in your letters dated June 26 and June 28, 2017. We disagree that the current storm drain layout will not provide for adequate drainage for the site. Our responses are listed below.

1. The depressed landscape areas are being built per the construction plans, sheet C-6, attached, and sheet C-11, which was provided with the original submittal.
2. Wall details are included for your reference, sheets S-1 and S-4, showing turned blocks to pass drainage.
3. A memo describing the drainage analysis for the site is attached, for your review. This includes the information requested, per the City of Albuquerque DPM Chapter 22.
4. The stormwater treatment system is designed to treat 25 cfs. This flow rate was determined in coordination with DMD and ABQ Ride staff, and approximately represents a 1-year storm. The "Stormwater Pollution Prevention Plan for the Daytona Maintenance Facility" (September 2015) recommends to "Select and evaluate the appropriate storm water control or combination of controls (treatment train) to improve storm water quality." The proposed system meets this requirement. Typical details from three manufacturers are attached.

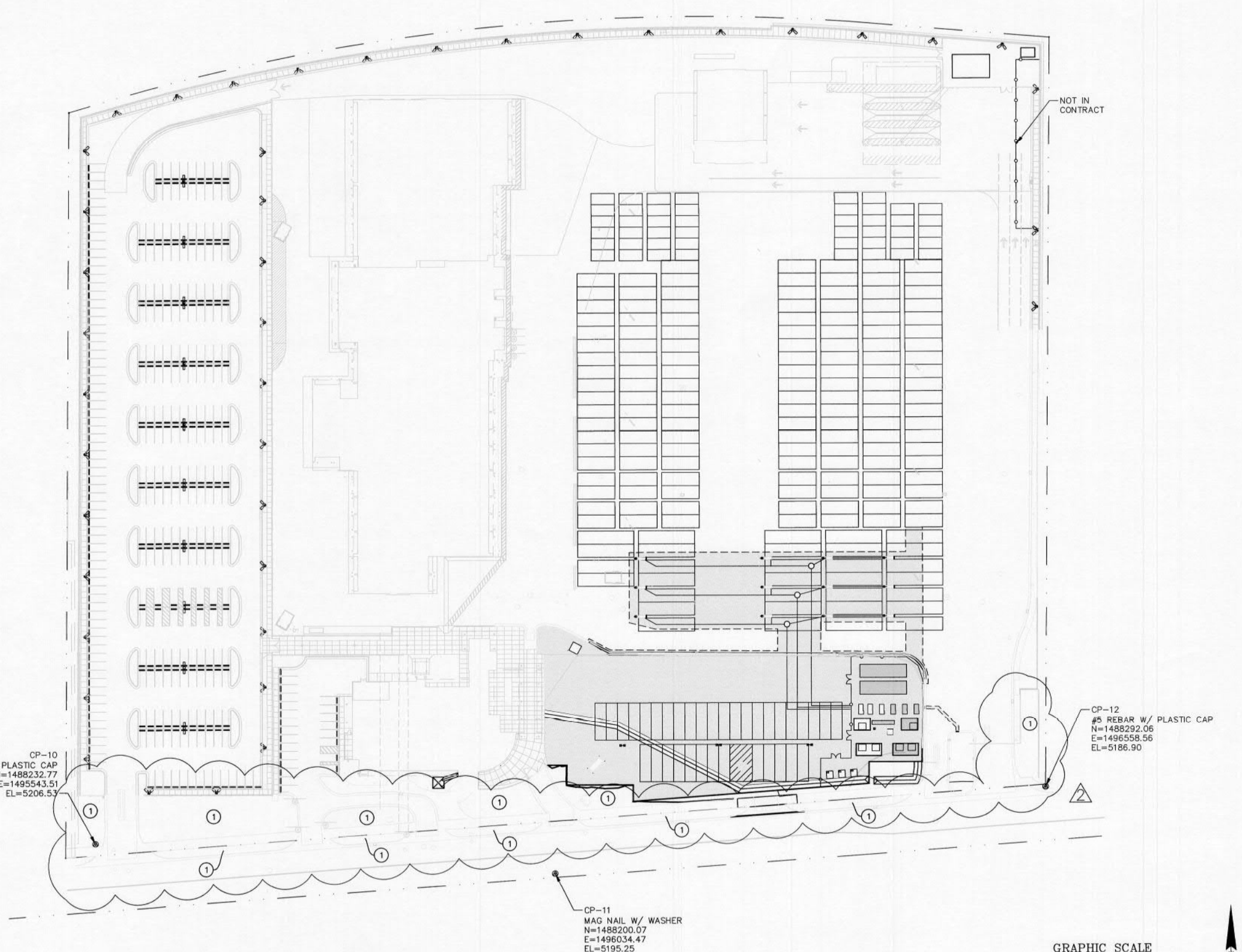
Kind regards,

Jim Buckman, PE

Attachments
cc: Bruce Rizzieri
Nolan Meadows

WSP USA
Suite 700
6100 Uptown Boulevard NE
Albuquerque, NM 87110

Tel.: +1 505 881-5357
Fax: +1 505 881-7602
wsp.com



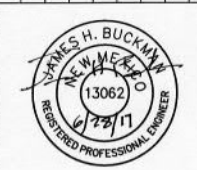
LEGEND

- PROPOSED PAVED AREA
- PROPOSED SAW CUT LINE
- PROPOSED VALLEY GUTTER
- PROPOSED CHAIN LINK FENCE
- PROPOSED DOUBLE GATES
- PROPOSED CMU WALL
- PROPOSED PARKING SPACE STRIPING
- PROPOSED ELECTRICAL CHARGING STATION
- LUMINARE

KEYED NOTES:

- GRADE LANDSCAPE AREA PER DETAILS ON SHEET C-11.

AS BUILT INFORMATION			BENCH MARKS			SURVEY INFORMATION			ENGINEER'S SEAL			NO. DATE			REMARKS			DESIGN		
CONTRACTOR	DATE	NO.	CONTRACTOR	DATE	NO.	FIELD NOTES	BY	DATE	AR	AB	BY	NO.	DATE	NO.	DATE	NO.	DATE	DESIGNED BY:	DATE	NO.
INSPECTOR'S	DATE	NO.	"TRIMBLE VRSHOW RTK NETWORK" WITH CHECKS	DATE	NO.	NO.	BY	DATE	AR	AB	BY	NO.	DATE	NO.	DATE	NO.	DATE	DRAWN BY:	DATE	NO.
ACCEPTANCE BY	DATE	NO.	TO NGS CONTROL STATION "NGS Q 424"	DATE	NO.	NO.	BY	DATE	AR	AB	BY	NO.	DATE	NO.	DATE	NO.	DATE	CHECKED BY:	DATE	NO.
VERIFICATION BY	DATE	NO.		DATE	NO.	NO.	BY	DATE	AR	AB	BY	NO.	DATE	NO.	DATE	NO.	DATE			
DRAWINGS	DATE	NO.		DATE	NO.	NO.	BY	DATE	AR	AB	BY	NO.	DATE	NO.	DATE	NO.	DATE			
CORRECTED BY	DATE	NO.		DATE	NO.	NO.	BY	DATE	AR	AB	BY	NO.	DATE	NO.	DATE	NO.	DATE			
MICRO-FILM INFORMATION	DATE	NO.		DATE	NO.	NO.	BY	DATE	AR	AB	BY	NO.	DATE	NO.	DATE	NO.	DATE			
RECORDED BY	DATE	NO.		DATE	NO.	NO.	BY	DATE	AR	AB	BY	NO.	DATE	NO.	DATE	NO.	DATE			



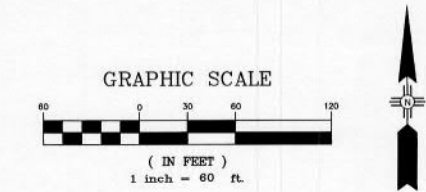
PARSONS BRINCKERHOFF

ABQRIDE CITY OF ALBUQUERQUE TRANSIT DEPARTMENT ABQ RIDE ABQ RIDE DAYTONA DESIGN

SITE PLAN

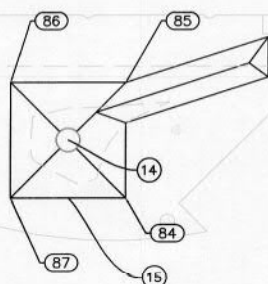
DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	MO./DAY/YR.	MO./DAY/YR.

City Project No. COA 5658.05 Zone Map No. J-09-Z Sheet C-6

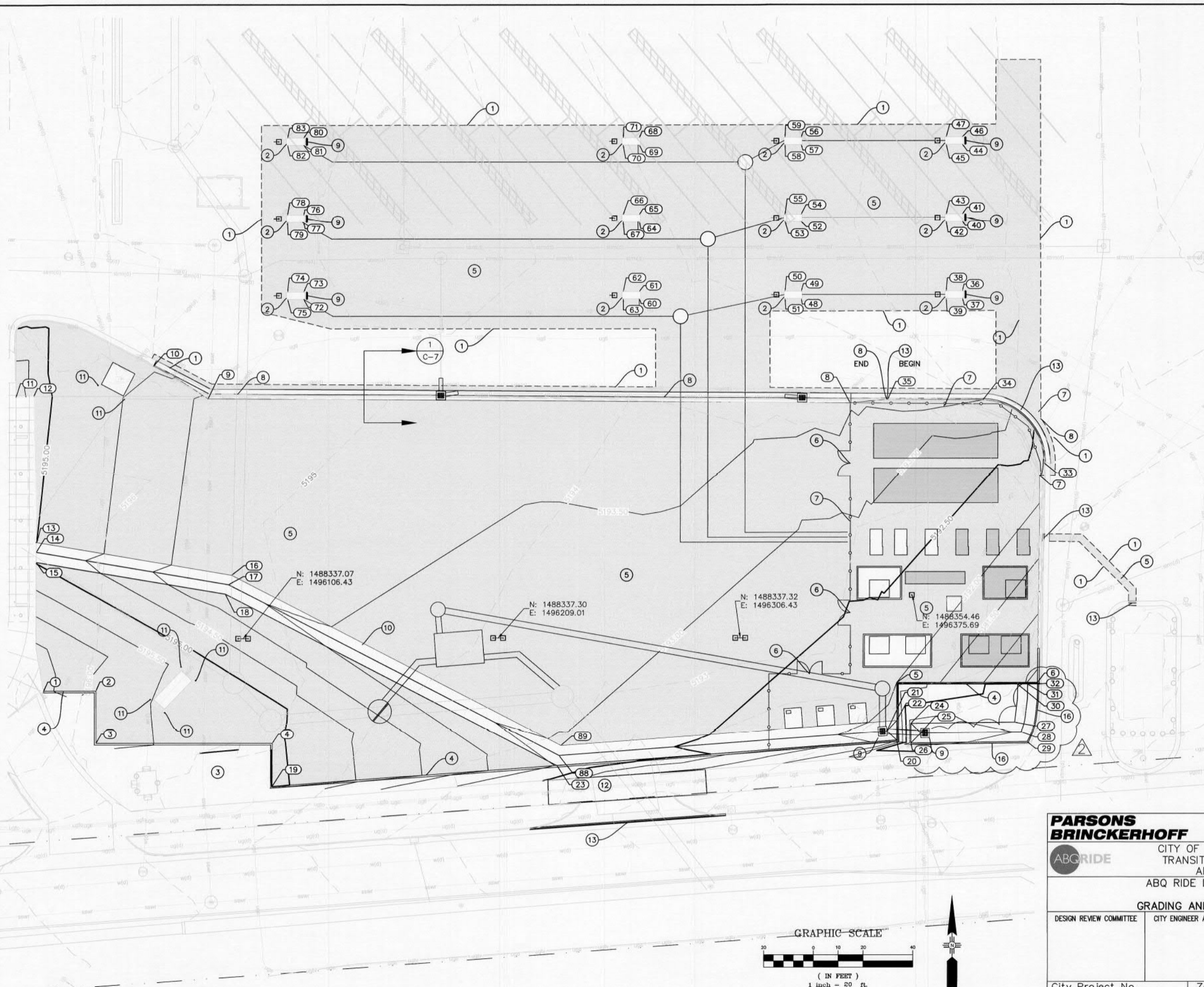


1. SAW CUT LINE
2. CONCRETE CHARGING STATION ISLAND, SEE DETAIL SHEET C-10.
3. LANDSCAPE AREA, SEE DETAIL SHEET C-11 FOR GRADING TYPICAL.
4. WALL SEE SHEETS S-1 AND S-2.
5. PAVED AREA SEE PAVEMENT SECTION ON DETAIL SHEET C-10.
6. 6' DOUBLE GATE SEE COA STANDARD DWG. 2252.
7. 6' CHAIN LINK FENCE SEE COA STANDARD DWG. 2252.
8. VALLEY GUTTER "TYPE I", SEE SHEET C-10.
9. 4" U SHAPED BOLLARD. SEE DETAIL SHEET C-10.
10. VALLEY GUTTER "TYPE II" SEE DETAIL SHEET C-10.
11. BOLLARD. SEE COA STANDARD DWG. 2370.
12. PROPOSED SIDEWALK SEE COA STANDARD DWG. 2430.
13. PROPOSED CURB AND GUTTER SEE COA STANDARD DWG. 2451A.
14. REMOVE EXISTING GRATE AND REPLACE WITH BEEHIVE GRATE AND FRAME, SEE SHEET C-10.
15. 4" CONCRETE SIDEWALK APRON, SLOPE TO DRAIN.
16. 6" TALL HEADER CURB, SEE COA DWG. 2415, COST INCIDENTAL TO VALLEY GUTTER.

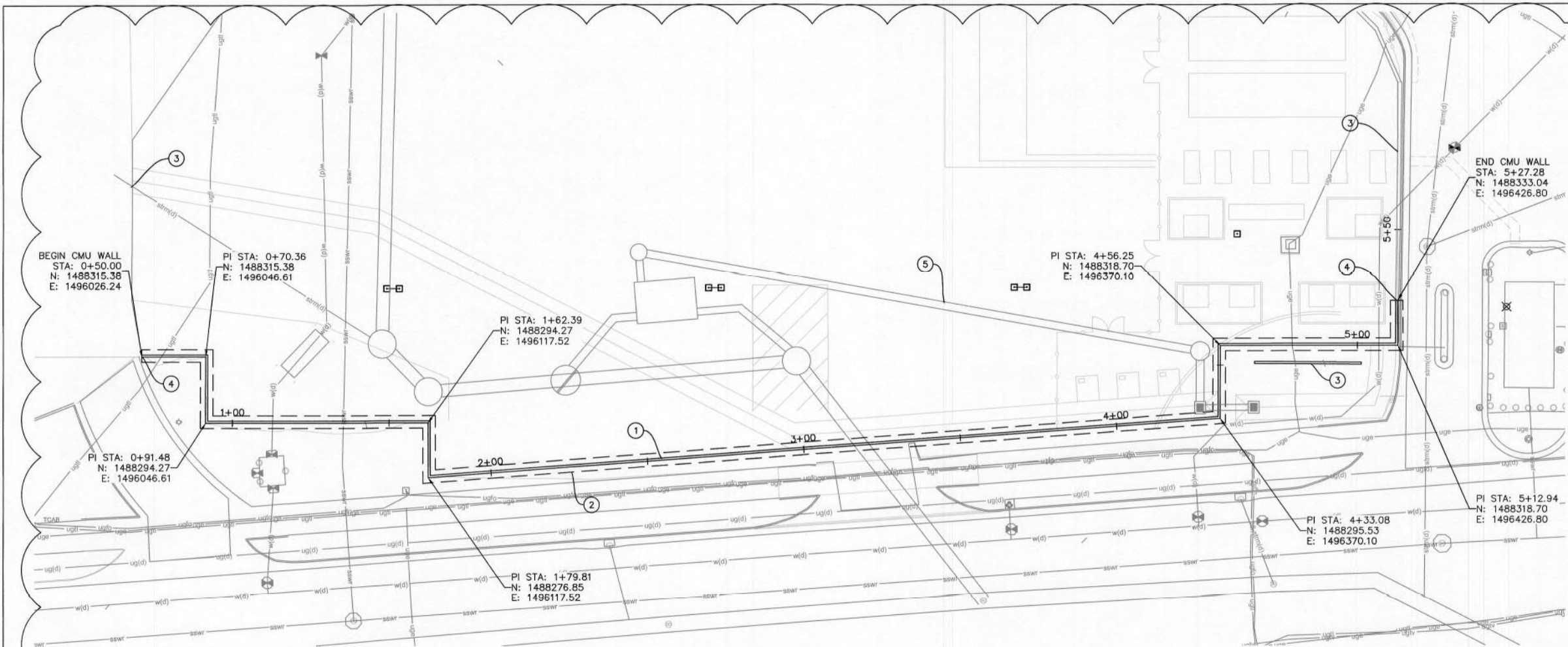
	LIGHT, SEE SHEET E-300.
	LOCATION OF FUTURE ELECTRICAL PAD, TO BE ASPHALT PAVED
	ELECTRICAL PAD
	NEW PAVED AREA
	MAJOR CONTOUR (0.5' INTERVAL)
	MINOR CONTOUR (0.5' INTERVAL)
	EXISTING MAJOR CONTOUR (1' INTERVAL)
	EXISTING MINOR CONTOUR (1' INTERVAL)



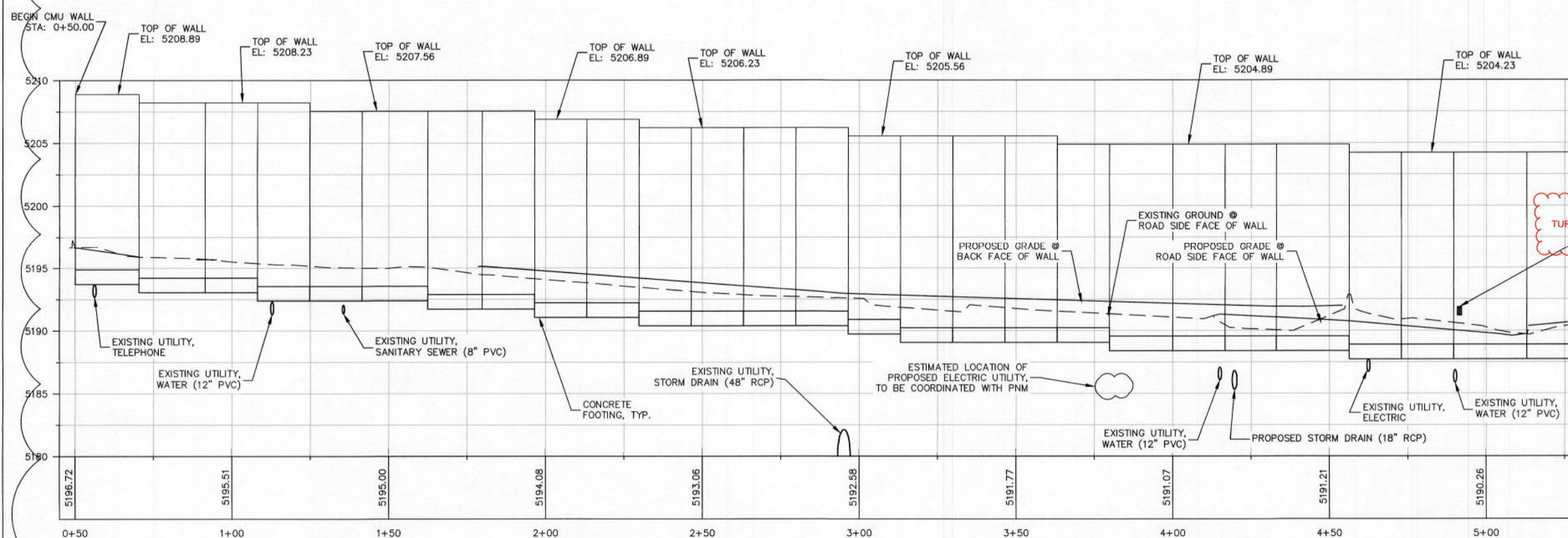
CONCRETE DRAIN DETAIL
SCALE: 1"=10'

[illegible]

DESIGN		CONTRACTOR		AS BUILT INFORMATION	
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DRAWN BY: PB		DATE 05/31/17		TO NGS CONTROL STATION "NGS Q 424"	
CHECKED BY: PB		DATE 05/31/17		WORK STAKED BY	
				INSPECTOR'S ACCEPTANCE BY	
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				MICRO-FILM INFORMATION	
				RECORDED BY	
				NO.	

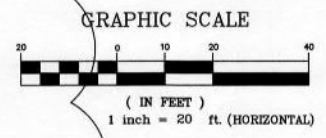
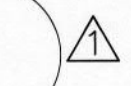


PLAN



PROFILE

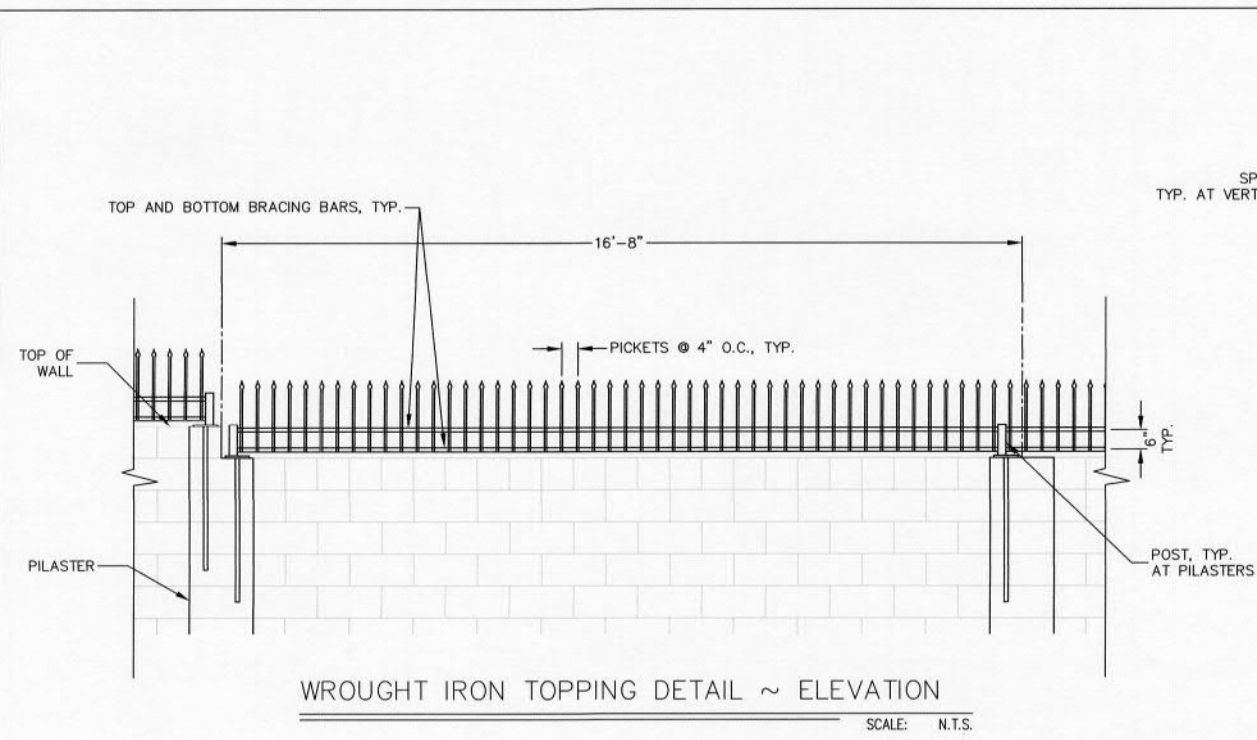
- KEYED NOTES:**
- 1 NEW CMU WALL, SEE SHEET S2 FOR DETAILS.
 - 2 NEW CONCRETE FOOTING, SEE SHEET S2 FOR DETAILS.
 - 3 EXISTING CMU WALL TO REMAIN IN PLACE.
 - 4 TIE NEW CMU WALL TO EXISTING PILASTER.
 - 5 PROPOSED STORM DRAIN, SEE CIVIL DRAWINGS.
- GENERAL NOTES:**
- 1. THE CONTRACTOR SHALL VERIFY EXISTING UTILITY LOCATIONS, INCLUDING DEPTHS, PRIOR TO CONSTRUCTION AND SHALL NOTIFY THE PROJECT MANAGER OF ANY CONFLICTS.



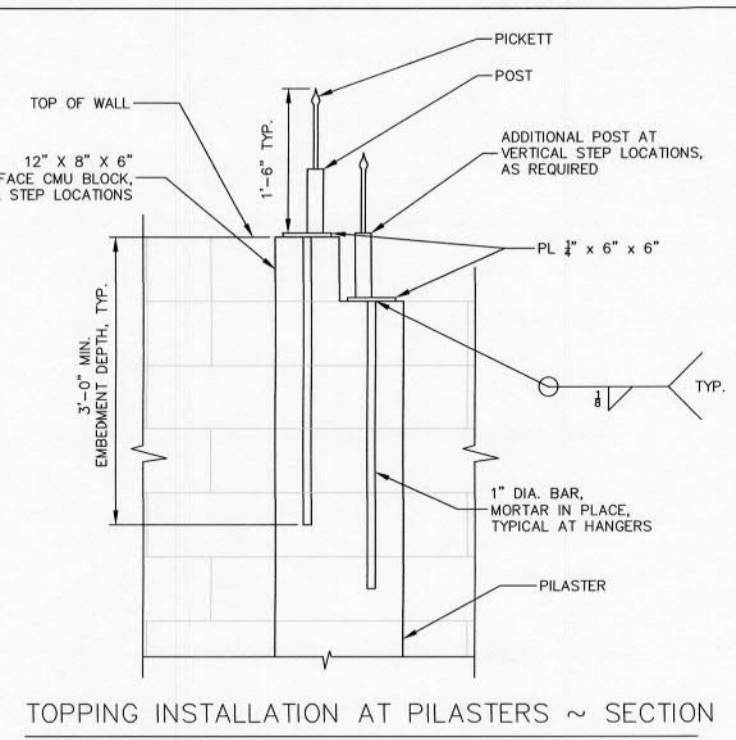
PARSONS BRINCKERHOFF

CITY OF ALBUQUERQUE TRANSIT DEPARTMENT ABQ RIDE ABQ RIDE DAYTONA DESIGN	
WALL PLAN & PROFILE	
DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL
City Project No. 60A 5658.05	Zone Map No. J-09-Z
Sheet S1	

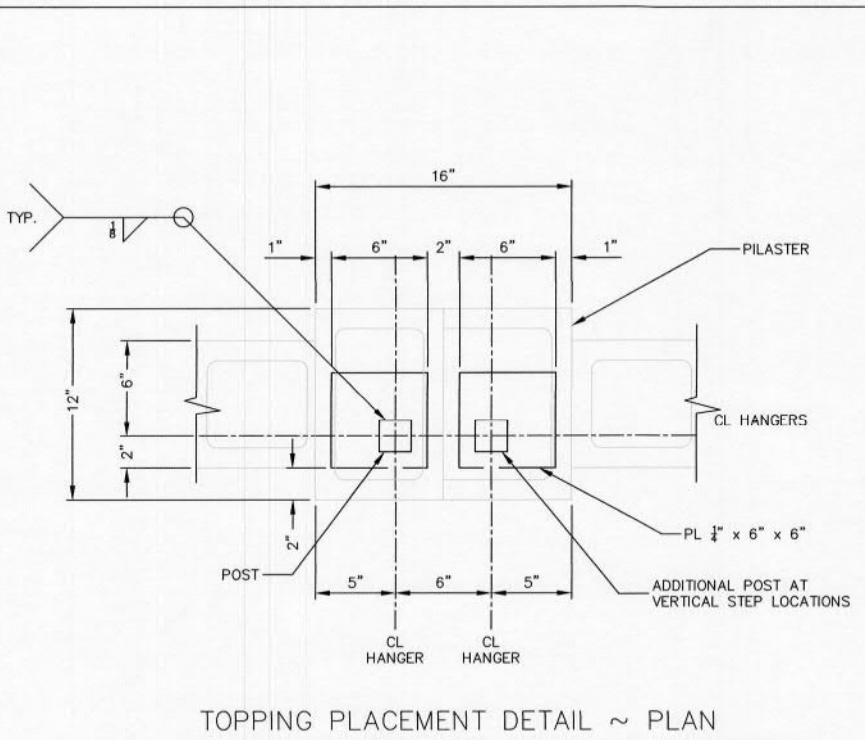
AS BUILT INFORMATION		BENCH MARKS		SURVEY INFORMATION		ENGINEER'S SEAL		WALL RELOCATION & PROFILE UPDATE		REMARKS		DESIGN		MICRO-FILM INFORMATION	
CONTRACTOR	NO.	TRIMBLE VR500W RTK NETWORK* WITH CHECKS TO NGS CONTROL STATION "NGS Q 424"	NO.	FIELD NOTES	NO.	DATE	BY	NO.	DATE	BY	NO.	DATE	BY	NO.	DATE
INSPECTOR'S REVIEW	NO.		NO.		NO.										
VERIFICATION BY	NO.		NO.		NO.										
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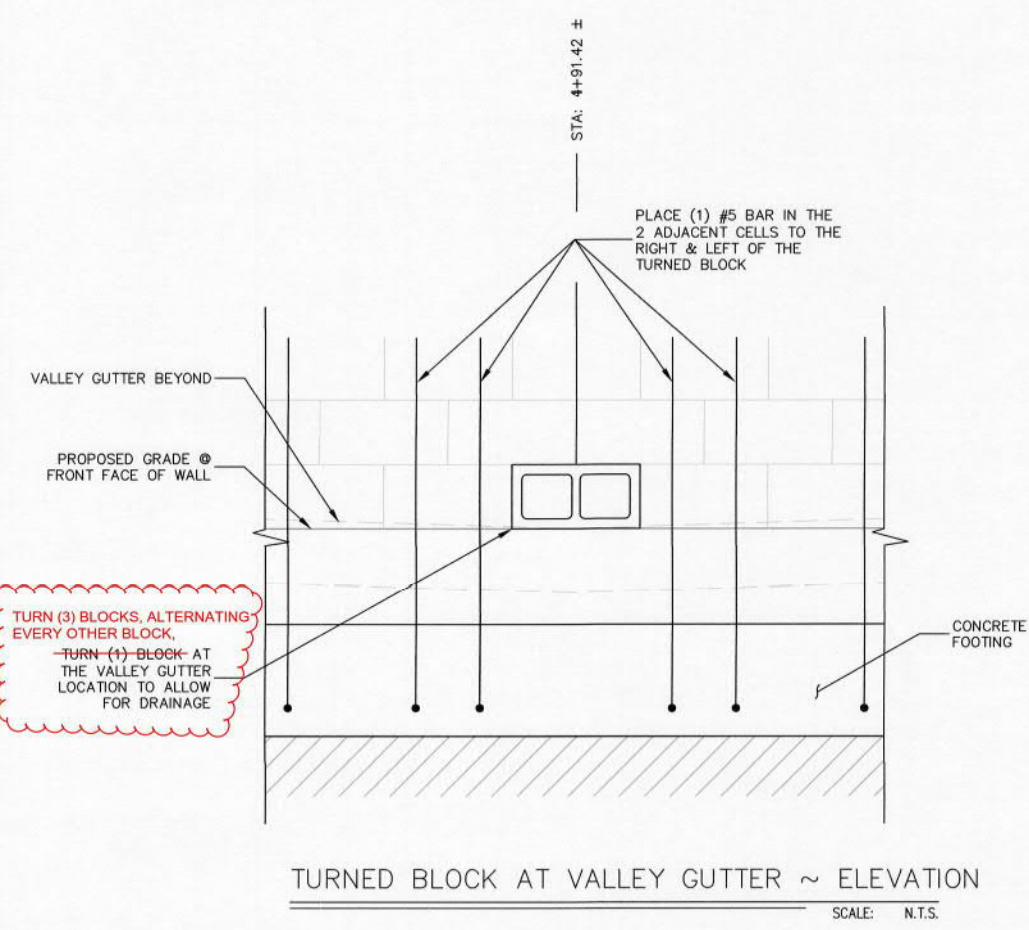
WROUGHT IRON TOPPING DETAIL ~ ELEVATION
SCALE: N.T.S.



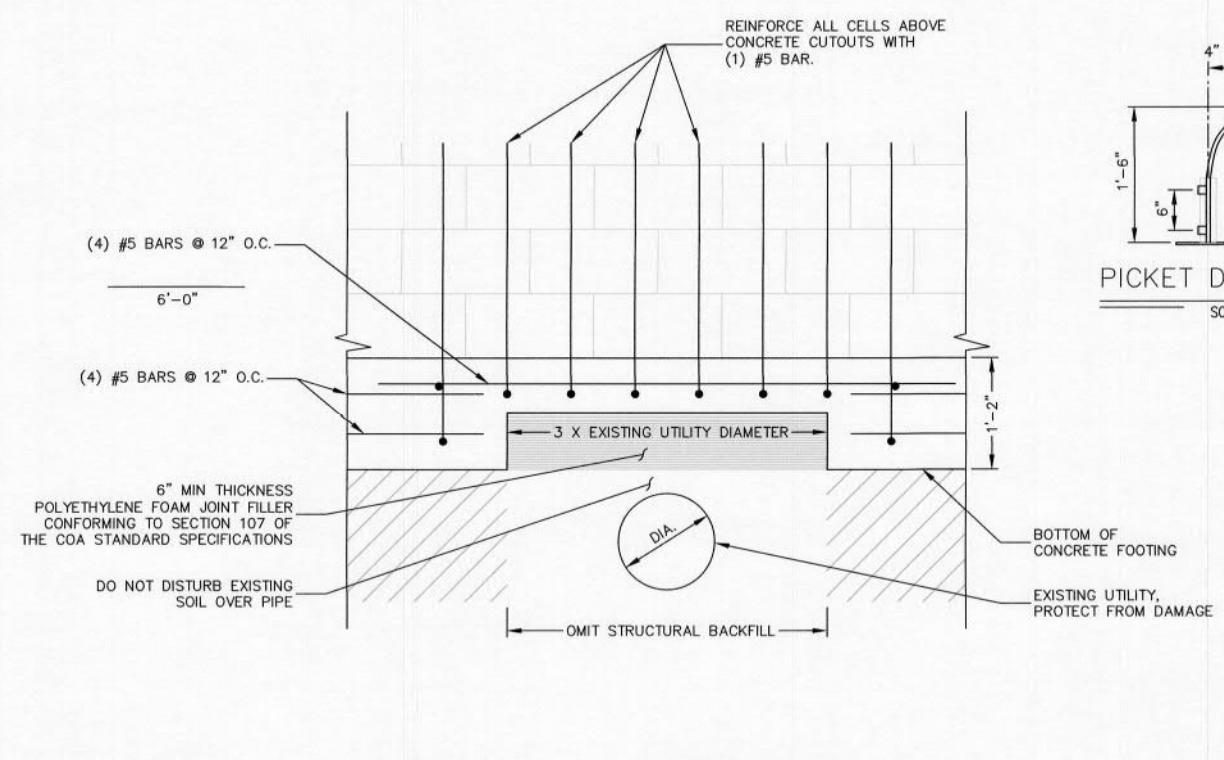
TOPPING INSTALLATION AT PILASTERS ~ SECTION
SCALE: N.T.S.



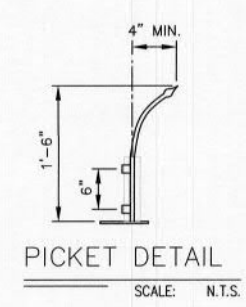
TOPPING PLACEMENT DETAIL ~ PLAN
SCALE: N.T.S.



TURNED BLOCK AT VALLEY GUTTER ~ ELEVATION
SCALE: N.T.S.



CONCRETE CUTOUT AT UTILITIES ~ SECTION
SCALE: N.T.S.



- WROUGHT IRON TOPPING NOTES:**
1. WROUGHT IRON TOPPING SHALL BE STEEL PER SECTION 139 OF THE COA STANDARD SPECIFICATIONS, AND SHALL BE PAINTED BLACK PER SECTION 157 OF THE SPECIFICATIONS. PROVIDE DETAILS TO THE PROJECT MANAGER FOR REVIEW PRIOR TO ORDERING MATERIALS.
 2. WROUGHT IRON TOPPING SHALL BE BENT OR CURVED SO AS TO OVERHANG A MINIMUM OF 4" FROM THE VERTICAL PLAN CREATED BETWEEN THE CENTER OF THE WROUGHT IRON POSTS, SEE PICKET DETAIL TO THE LEFT.

- CONCRETE CUTOUT NOTES**
1. CONCRETE CUTOUTS WITH POLYETHYLENE FILLER SHALL BE USED WHEN THE COVER FROM THE BOTTOM OF THE FOOTING TO THE TOP OF AN EXISTING UTILITY IS LESS THAN 2'-0", SEE DETAIL THIS SHEET.
 2. THE COST OF POLYETHYLENE FOAM JOINT FILLER AND INSTALLATION SHALL BE INCIDENTAL TO ITEM NO. 510.12, WALL FOOTING, RPCC AND NO ADDITIONAL MEASUREMENT OR PAYMENT SHALL BE MADE.

PARSONS BRINCKERHOFF

ABQRIDE CITY OF ALBUQUERQUE TRANSIT DEPARTMENT ABQ RIDE ABQ RIDE DAYTONA DESIGN

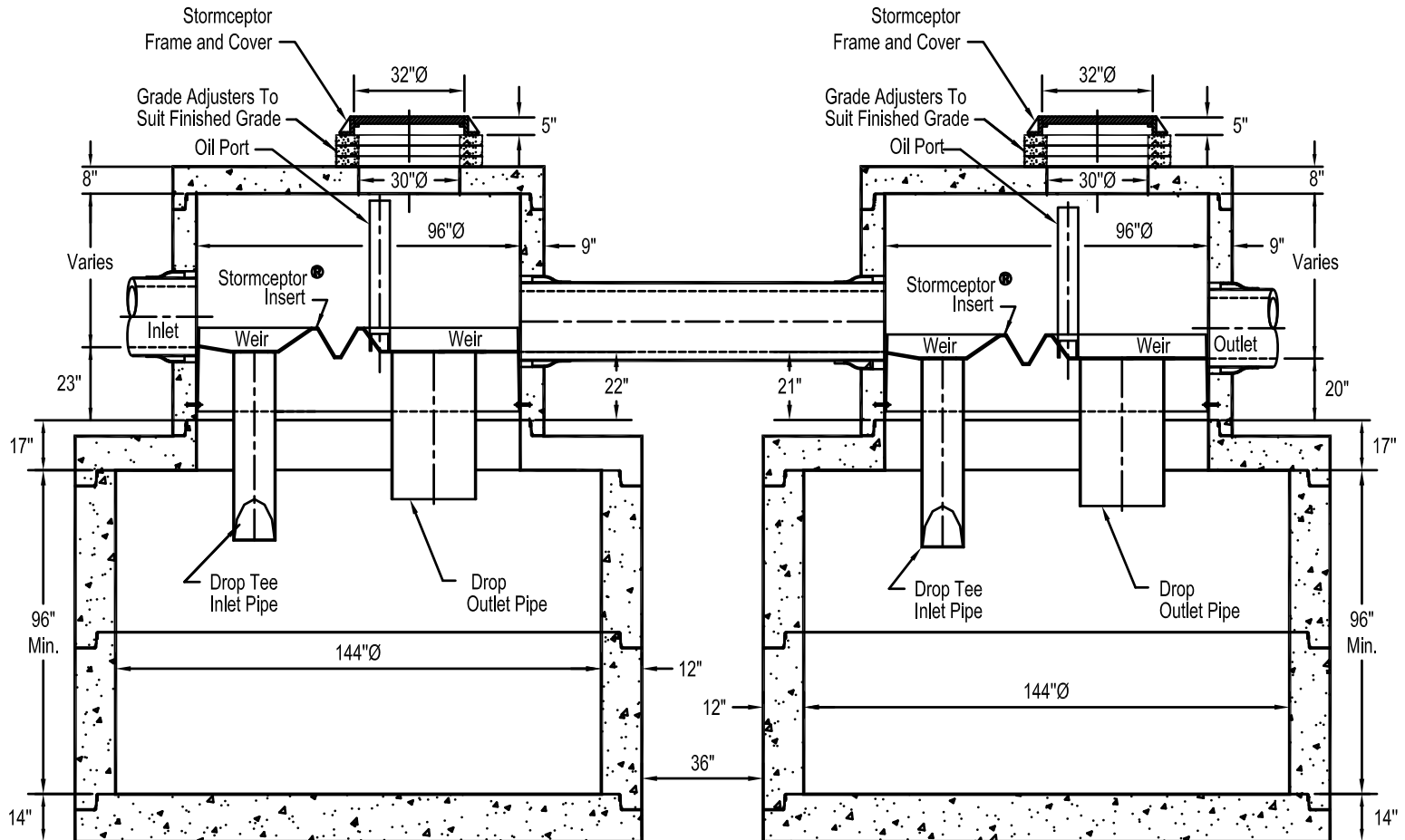
WALL DETAILS

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	MO./DAY/YR.	MO./DAY/YR.

City Project No. COA 5658.05 Zone Map No. J-09-Z Sheet **S4**

ENGINEER'S SEAL		SURVEY INFORMATION		BENCH MARKS		AS BUILT INFORMATION	
NO.	BY	DATE	NO.	DATE	CONTRACTOR	NO.	NO.
					"TRIMBLE VRSnow RTK NETWORK" WITH CHECKS TO NOS CONTROL STATION "NOS Q 424"		
					WORK STAKED BY		
					INSPECTED BY		
					ADJUSTED BY		
					FIELD VERIFICATION BY		
					CHECKED BY		
					CORRECTED BY		
					MICRO-FILM INFORMATION		
					RECORDED BY		

**STC 16000s Precast Concrete Stormceptor®
(16000 U.S. Gallon Capacity)**

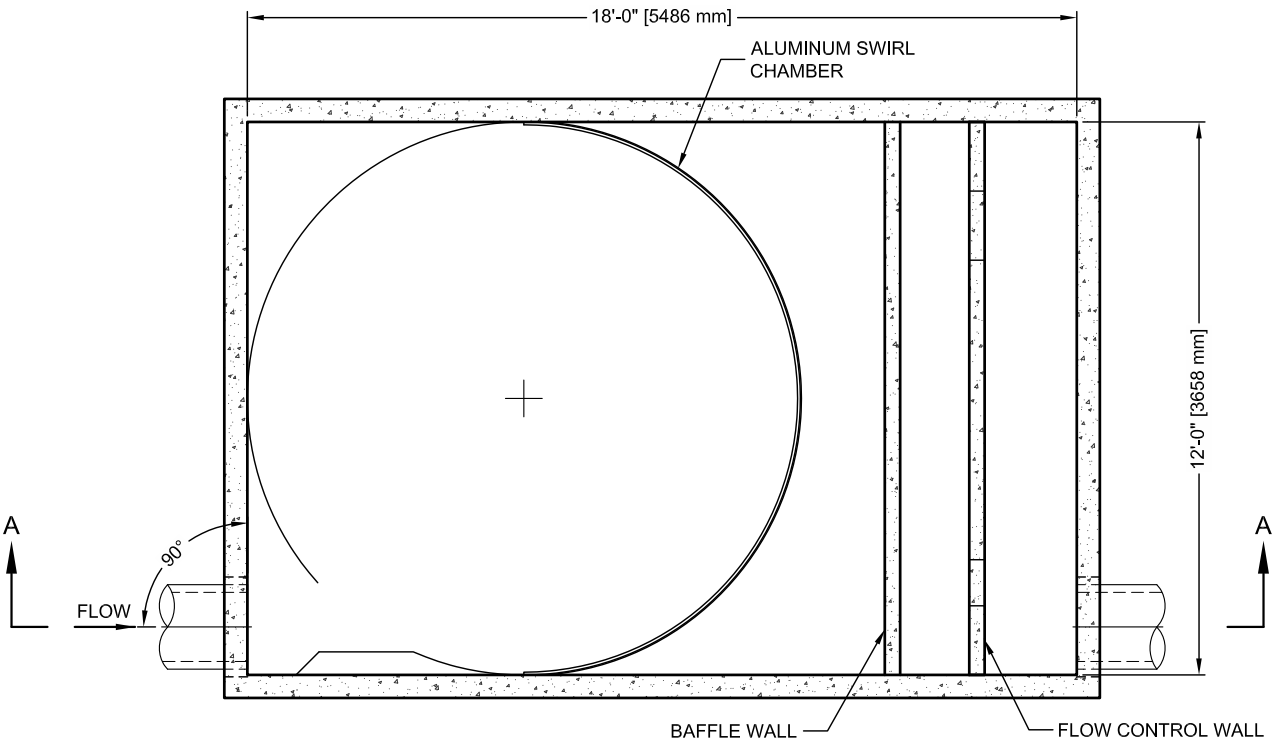


Section Thru Chambers

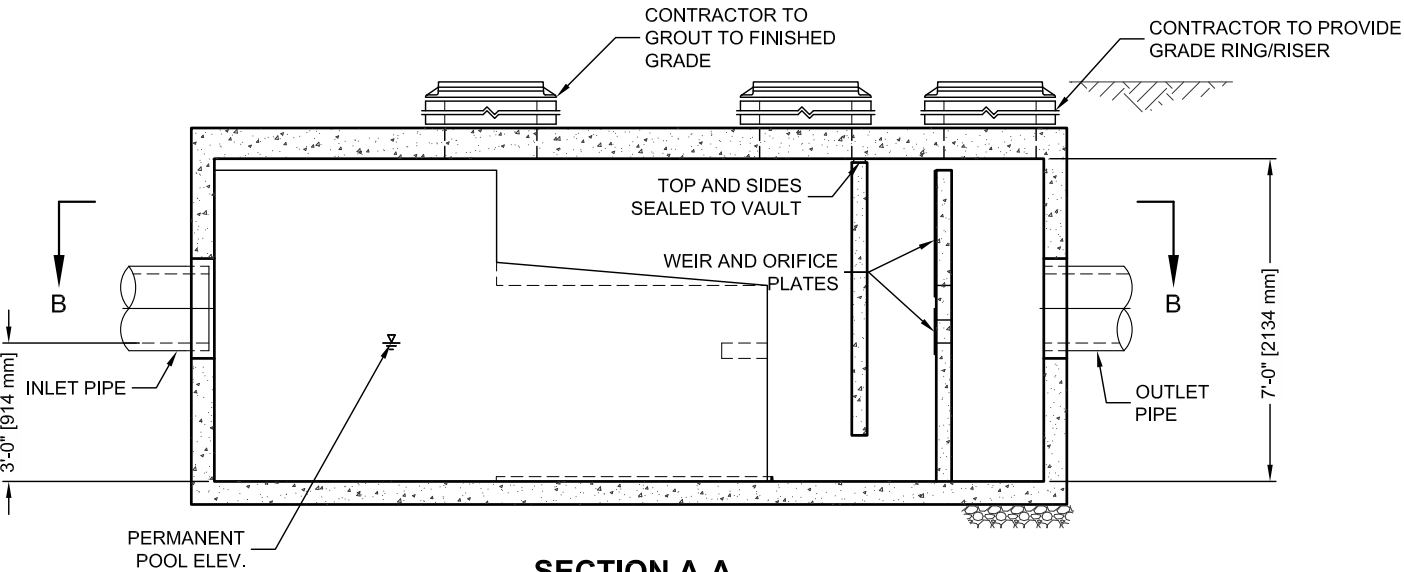
Notes:

1. The Use Of Flexible Connection is Recommended at The Inlet and Outlet Where Applicable.
2. The Cover Should be Positioned Over The Outlet Drop Pipe and The Oil Port.
3. The Stormceptor System is protected by one or more of the following U.S. Patents:
#5753115, #5849181, #6068765, #6371690, #7582216, #7666303.
4. Contact a Concrete Pipe Division representative for further details not listed on this drawing.

I:\COMMON\CAD\TREATMENT\20 VORTECHS\40 STANDARD DRAWINGS\DWG\IX-16000-DTL.DWG 8/6/2014 2:41 PM



SECTION B-B



SECTION A-A

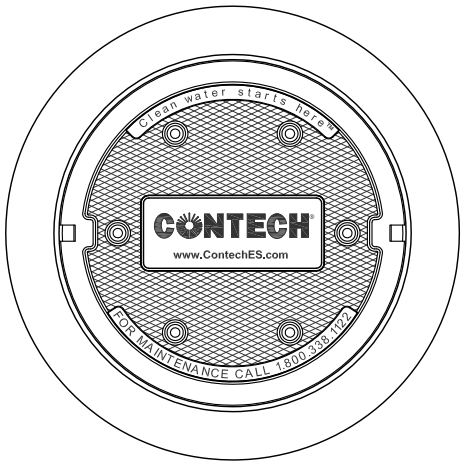


THIS PRODUCT MAY BE PROTECTED BY THE FOLLOWING
U.S. PATENT: 5,759,415; RELATED FOREIGN PATENTS.

VORTECHS 16000 DESIGN NOTES

VORTECHS 16000 RATED TREATMENT CAPACITY IS 25 CFS, OR PER LOCAL REGULATIONS. IF THE SITE CONDITIONS EXCEED RATED TREATMENT CAPACITY, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

THE STANDARD INLET/OUTLET CONFIGURATION IS SHOWN. FOR OTHER CONFIGURATION OPTIONS , PLEASE CONTACT YOUR CONTECH CONSTRUCTION PRODUCTS REPRESENTATIVE. www.ContechES.com



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	*
WATER QUALITY FLOW RATE (CFS)	*
PEAK FLOW RATE (CFS)	*
RETURN PERIOD OF PEAK FLOW (YRS)	*

PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	*	*	*
INLET PIPE 2	*	*	*
OUTLET PIPE	*	*	*

RIM ELEVATION	*
---------------	---

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

GENERAL NOTES

- CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
- DIMENSIONS MARKED WITH () ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
- FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
- VORTECHS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
- STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET AASHTO M306 LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.
- INLET PIPE(S) MUST BE PERPENDICULAR TO THE VAULT AND AT THE CORNER TO INTRODUCE THE FLOW TANGENTIALLY TO THE SWIRL CHAMBER. DUAL INLETS NOT TO HAVE OPPOSING TANGENTIAL FLOW DIRECTIONS.
- OUTLET PIPE(S) MUST BE DOWN STREAM OF THE FLOW CONTROL BAFFLE AND MAY BE LOCATED ON THE SIDE OR END OF THE VAULT. THE FLOW CONTROL WALL MAY BE TURNED TO ACCOMODATE OUTLET PIPE KNOCKOUTS ON THE SIDE OF THE VAULT.

INSTALLATION NOTES

- ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE VORTECHS STRUCTURE (LIFTING CLUTCHES PROVIDED).
- CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
- CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
- CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

CONTECH
ENGINEERED SOLUTIONS LLC

www.ContechES.com

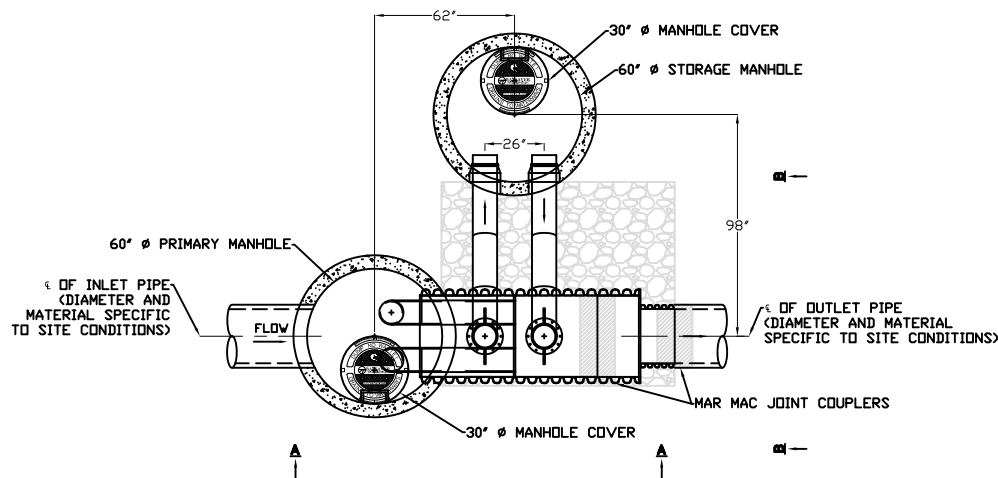
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069

800-338-1122

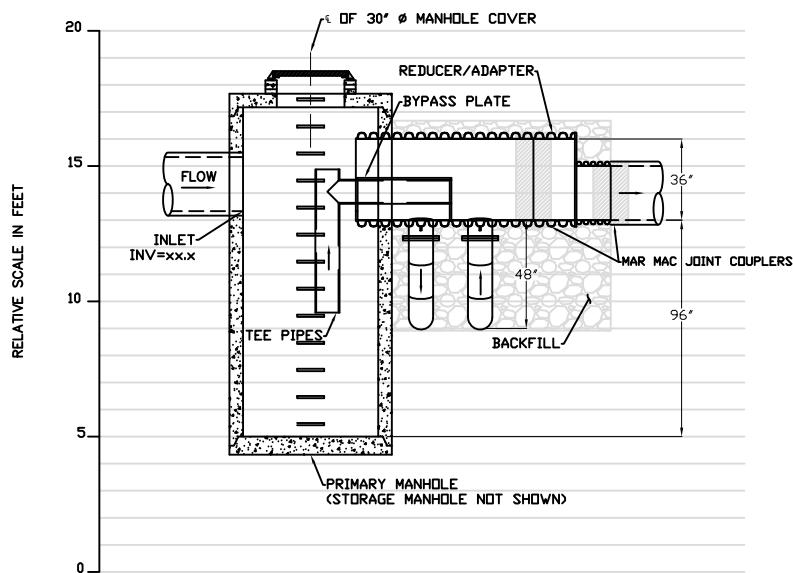
513-645-7000

513-645-7993 FAX

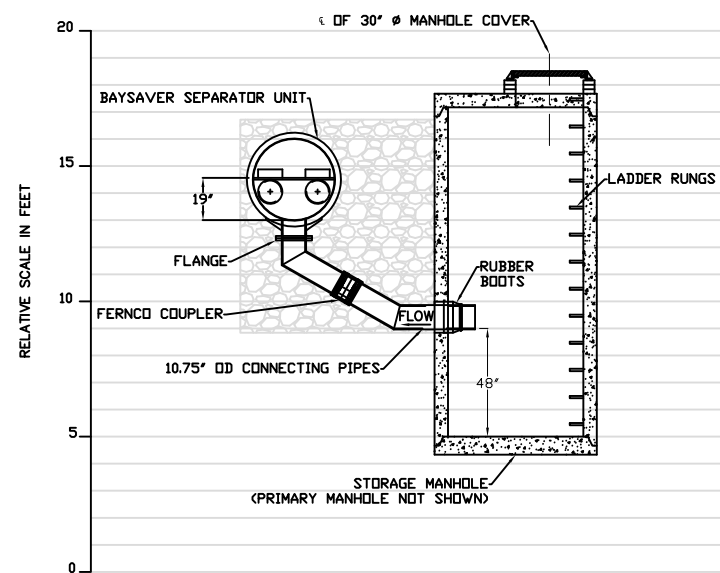
VORTECHS 16000
STANDARD DETAIL



PLAN VIEW-BAYSAVER SEPARATION SYSTEM
(LEFT HAND ORIENTATION SHOWN)



PROFILE VIEW A-A



PROFILE VIEW B-B

INLET PIPE INVERT:	xxx
INLET PIPE ID AND MATERIAL:	xxx
OUTLET PIPE INVERT:	xxx
OUTLET PIPE ID AND MATERIAL:	xxx
PRIMARY MANHOLE RIM ELEVATION:	xxx
STORAGE MANHOLE RIM ELEVATION:	xxx
ORIENTATION (RIGHT OR LEFT):	 

GENERAL NOTES:

1. MANHOLES SHOWN REPRESENT STANDARD PRECAST STRUCTURES PROVIDED BY OTHERS.
2. SEAL THE CONNECTING PIPES INTO THE STORAGE MANHOLE USING RUBBER BOOTS/GASKETS.
3. THE BAYSAVER SEPARATION SYSTEM INCLUDES THE SEPARATOR UNIT, (2) CONNECTING PIPES, (2) FERNCO COUPLERS, (1) REDUCER ADAPTER, AND (2) MARMAC JOINT COUPLERS.
4. LEFT HAND ORIENTATION SHOWN. FOR RIGHT HAND ORIENTATION ROTATE STORAGE MANHOLE AND CONNECTING PIPES 180°.
5. SEE BAYSAVER SPECIFICATIONS AND INSTALLATION INSTRUCTIONS FOR FURTHER DETAIL.
6. USE NON-SHRINK GROUT TO SEAL THE INLET PIPE AND BAYSEPARATOR IN TO THE PRIMARY MANHOLE.
7. BACKFILL: CLASS I, II OR III BACKFILL SHOULD BE USED TO AN ELEVATION OF AT LEAST 6' OVER THE CROWN OF THE SEPARATOR UNIT.
8. 12" COVER REQUIRED FOR TRAFFIC RATED SURFACE.
9. BAYSEPARATOR IS PROTECTED BY US PATENT NO. 5,746,911

REV	DESCRIPTION	DATE	APPR	NOTES:	 BAYSAVER TECHNOLOGIES 800-229-7283 WWW.BAYSAVER.COM	3K BAYSEPARATOR™ SYSTEM DETAILS
DESIGNED: TEP					DATE: 5/28/15	
DRAWN: EKH					SCALE: N.T.S.	
CHECKED: PR					DWG NO: 3K	



MEMO

TO: ABQ Ride

FROM: Farshad Omidvaran, PE

SUBJECT: Daytona Transit Facility, Grading and Drainage, Hydrologic and Hydraulic Analysis, Project #5658.05

DATE: June 30, 2017

INTRODUCTION

WSP was selected by the City of Albuquerque (CoA) ABQ Ride to design improvements to the Daytona Transit Facility as part of City of Albuquerque project 5685.05. A vicinity map for the project area can be seen in Exhibit 1 which has been included as an attachment to this memo. The purpose of the project is to upgrade the site so that it can accommodate electric bus services. For the most part, the site is developed. As part of this project, an unpaved portion of the site, located along the southern border of the property will be regraded and developed.

HYDROLOGY

On-Site

WSP was unable to find the original drainage report for the site and used DPM Chapter 22, Hydrology to estimate the flows generated within the site as follows.

Total area of the site: 19.63 acres. Presently 1.25 acres of this site is unpaved; however, under the proposed conditions the entire site will be paved. Assume land treatment D for the entire site.

The site is in precipitation Zone 1, and since the area is less than 40 acres, Table A-9 (DPM) was used to estimate the Peak Discharge.

Total Site: $Q_{100} = 19.63 * 4.37 = 85.8 \text{ cfs}$



The undeveloped portion of the site: Area = 1.25 acres, all land treatment D, Q100 = 5.5 cfs

The portion of the site that contributes to the openings in the proposed wall: Area = 0.35 acres, all land treatment D. Q100 = 1.5 cfs

Off-Site Daytona Road Storm Drain System

The “I-40 South and Unser Mini Drainage Management Plan” (I-40 DMP), prepared by Easterling Consultants, dated April 2014, the “Master Drainage Plan for the West Side Transit Facility” (WSTF), prepared by Smith Engineering, dated 2001, and the Amole Hubbell Drainage Master Plan Update (Amole Hubbell) by Wilson, dated May 2013 were used to evaluate the effect of the proposed improvements to the existing downstream storm drain and pond facilities.

Historically, the runoff from the north side of I-40 drained south through tributaries of the Mirehaven Arroyo and reached Daytona Road. However, with the construction of the I-40 diversion channel along the north side of I-40, the offsite flows from north of I-40 are now diverted to the east. The WSTF analysis, which was used for the design and construction of the existing storm drain system under Daytona Road and its downstream ponds, was modeled under the assumption that the land within the contributory drainage basins south of I-40 is fully developed, and the developed basins north of I-40 still drain to the south. The WSTF analysis used the AHYMO computer program. The I-40 DMP reanalyzed the downstream capacity of the ponds based on the assumption that there would be no off-site flow from north of I-40, and that the watershed land use has changed to a commercial/light industrial area as opposed to the medium-high density residential area that was assumed in the WSTF analysis and design.

The key findings from the reports are described below.

I-40 DMP:

Plate 1, Existing Conditions Drainage Basin Map with HEC-HMS Input and Output Summary, April 2014 from the I-40 South and Unser Diversion Mini DMP (copy attached) shows a routed flow at the outfall of the Daytona Storm Drain system of 82.8 cfs. This map identifies the discharge into Pond 6 as AP-3.

WSTF Analysis and Design

The as-built plans for the West Side Transit Facility Phase I, Sheet 18 of 61, show a flow of 243 cfs in the 60” diameter RCP at the outfall of the Daytona Road trunk line into Pond 6.



Amole-Hubbell DMP:

The Amole-Hubbell DMP indicates that a flow of 196 cfs reaches Pond 6 at the outfall of the Daytona Road storm drain trunk line.

A 100-year flow of 260 cfs at the outlet of the Daytona Road storm drain trunk line was used as a conservative basis for the hydraulic analysis.

HYDRAULICS

See the construction plans for COA Project 5658.05, Daytona Operations and Maintenance Facility, prepared by WSP, June 2017 for the proposed improvements to the unpaved portion of the site. The improvements consist of: 1) two valley gutters directing the flows from the new parking area to two drop inlets at the southeast corner of the site; and 2) a 24" diameter RCP carrying the flow from these inlets west to the existing 48" diameter RCP trunk line, via a new stormwater treatment system (STS). To avoid overwhelming the STS, it will be off-line from the existing trunk. A new manhole with a diversion weir will direct part of the flow in the existing 48" diameter RCP to the new STS. High flows will continue to the east in the existing 48" diameter RCP. The diversion weir and STS will be designed to treat a total of approximately 25 cfs.

The eastern part of the property drains towards the east and is directed toward 3 turned blocks in the proposed perimeter wall. From there, valley gutter will carry the flow to a Type D drop inlet with a modified grate. Calculations to show the openings and valley gutter/rundown capacity are included as an attachment to this memo.

A StormCAD model was developed (printouts attached) to ensure that the backwater from the existing storm drain system under Daytona Road does not overflow the storm drain and inlets. A total flow of 260 cfs was used to analyze the trunk line under Daytona Road. The tailwater elevation at the pipe outlet to Pond 6 was set at elevation 5183.2. This elevation was assumed conservatively as the top of the outlet pipe plus a head loss of one times the velocity head. This water surface elevation is above the top of the pond riser, which is at elevation 5181.40.

For the proposed manhole with the diversion weir, the losses for a submerged weir were added to the model. Since StormCAD does not calculate split flow networks, the hydraulic grade lines (HGL's) for the two pipe branches were calculated, and the flows were adjusted until the HGL's converged at the manhole with the diversion weir. The attached StormCAD printouts show the split in the system at MH 3; MH-3A represents the flow through the Stormceptor and MH-3B shows the remainder of the flow through the existing system. MH-



13A and MH-13B in addition to CO-14A and CO-14B represent the same manhole and trunk line upstream of the proposed diversion manhole.

The losses through the oil/water separator were included in the StormCAD model. Because the project is federally funded, bidders were given three different STS options. For this analysis, a Stormceptor 16000 from Rinker Materials was assumed. A "K" value of 1.3 was recommended by the manufacturer to calculate head losses through each manhole.

The StormCAD results show that the HGL stays below the ground at the lowest inlet during a 100-year storm. The proposed storm drain system will have adequate capacity for the 100-year design storm in accordance with DPM Chapter 22 criteria, while also providing storm water treatment and allowing for maintenance by ABQ Ride forces.

Attachments

Basin area contributing to the openings in the wall and the rundown. Area = 0.35 ac.

N: 1488337.07
D: 1488188.43

N: 1488337.30
E: 1488038.01

N: 1488337.35
E: 1488338.43

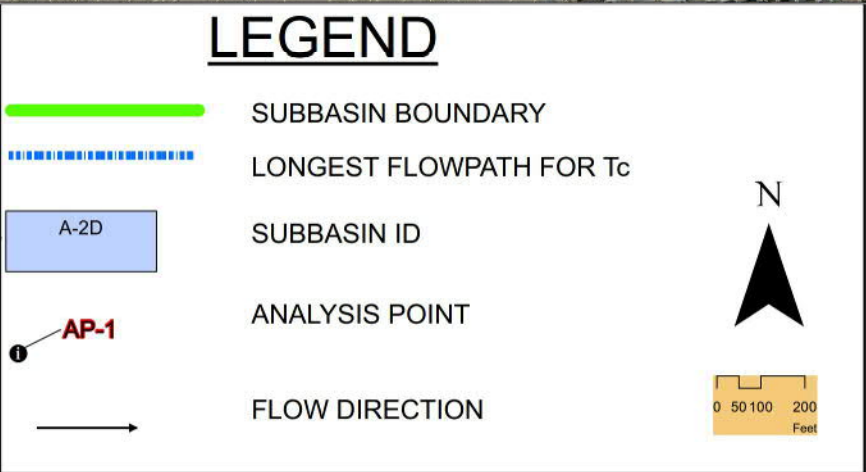
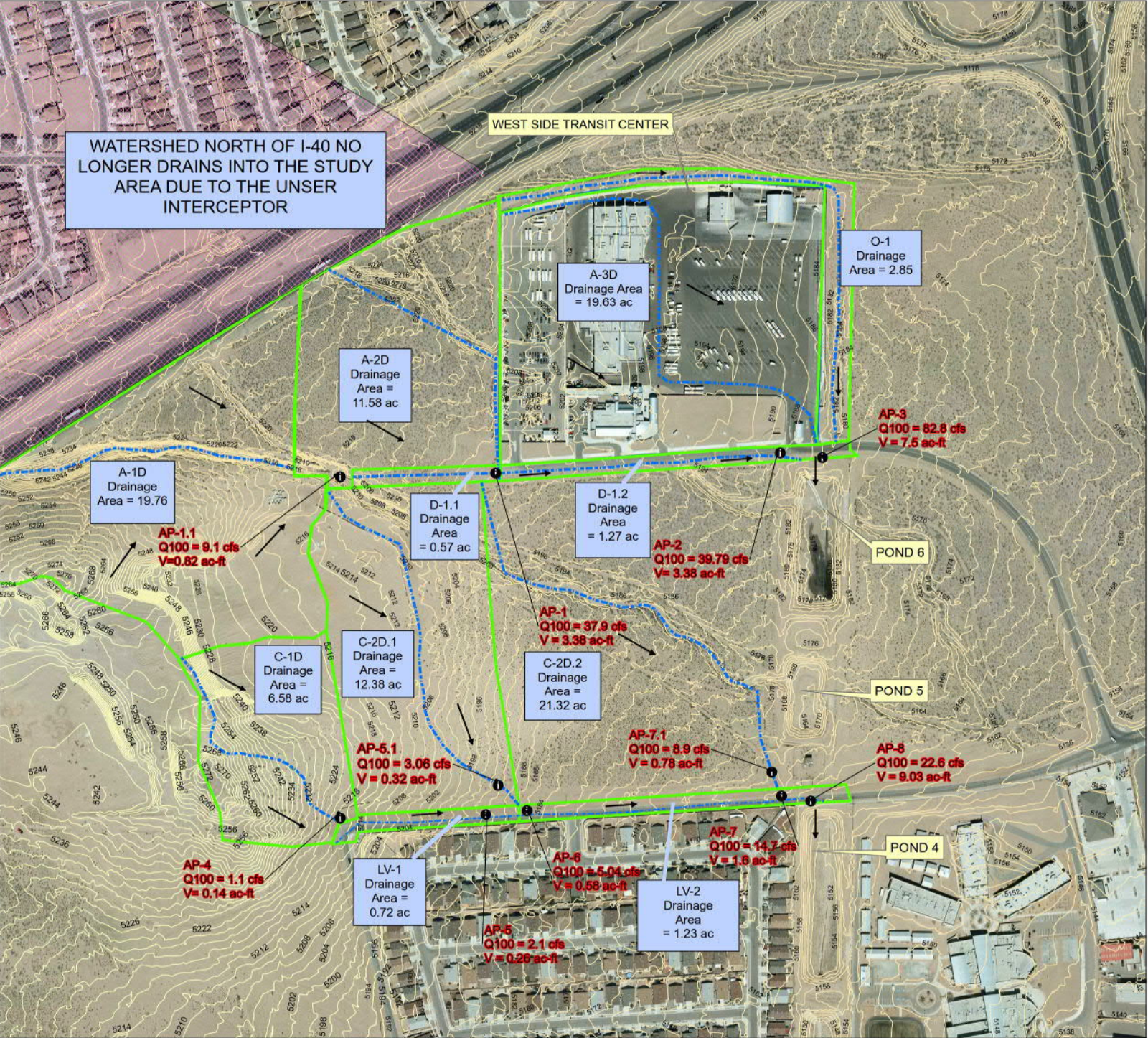
N: 1488354.89
E: 1488332.19

I-40 South and Unser Mini Drainage Master Plan

Prepared for:
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c/o Tom Keleher
P.O. Box AA
Albuquerque, NM 87103

Prepared by:
Easterling Consultants LLC
3613 NM 528
Suite E-2
Albuquerque, NM 87114

April 2014
Revision #1



EXISTING CONDITIONS HEC-HMS INPUT PARAMETERS																													
General Subbasin Data				Time of Concentration (Tc) Data														Lag Time Results				Tc and tp Results							
Sub-basin	Sub-basin Area	Sub-basin Area	Number of Reaches	L Length of Longest Water-course	Lca Centroid Length	Sc Composite Slope	Kc Composite K	Upper Reach or Entire Reach (0 to 400-ft length)							Middle Reach (400 to 1600-ft length)						Lag Time	Lag Time	Actual Tc	Final Tc	Tp	Composite CN	Sub-basin		
								Top Elevation at beginning of water course	Bottom Elevation	Length (L1)	Slope (S1)	KH1	K1	V1	Elevation at lower end of water course	Length (L2)	Slope (S2)	KH2	K2	V2									
a	acres	sq mi		ft	ft	ft/ft		ft	ft	ft	ft/ft		d	b	e	ft	ft	ft/ft		d	b	e	f/sec (hours)	(minutes)	hours	hours	hours		a
A-1D	19.758	0.0309	2	1,642	NA	0.0292	1.4457	5258	5252	400	0.0150	1.0	1.22	5210	1,242	0.0338	2.0	3.68	0.15	9	0.18	0.20	0.13	69	A-1D				
A-2D	11.581	0.0181	2	986	NA	0.0144	1.2671	5221.19	5210	400	0.0280	1.0	1.67	5207	586	0.0051	2.0	1.43	0.15	9	0.18	0.20	0.13	90	A-2D				
A-3D	19.628	0.0307	2	1,630	NA	0.0112	1.5227	5203.2	5193	400	0.0255	1.0	1.00	5185	1,230	0.0065	2.0	1.61	0.21	13	0.28	0.28	0.19	91	A-3D				
C-1D	6.581	0.0103	2	832	NA	0.0433	0.9790	5256	5250	400	0.0150	1.0	1.22	5220	432	0.0694	2.0	5.27	0.15	9	0.11	0.20	0.13	63	C-1D				
C-2D.1	12.376	0.0193	2	1,261	NA	0.0222	1.4201	5216	5210	400	0.0150	1.0	1.22	5188	861	0.0250	2.0	3.20	0.15	9	0.17	0.20	0.13	65	C-2D.1				
C-2D.2	21.324	0.0333	2	1,544	NA	0.0233	1.6145	5206	5192	400	0.0350	1.0	1.87	5170	1,144	0.0192	2.0	2.77	0.15	9	0.17	0.20	0.13	69	C-2D.2				
D-1.1	0.556	0.0009	2	460	NA	0.0130	1.0571	5212	5207	400	0.0125	1.0	1.12	5206	60	0.0187	2.0	2.58	0.15	9	0.11	0.20	0.13	82	D-1.1				
D-1.2	1.268	0.0020	2	953	NA	0.0210	1.3981	5206	5198	400	0.0200	1.0	1.41	5186	553	0.0217	2.0	2.95	0.15	9	0.13	0.20	0.13	82	D-1.2				
LV-1	0.721	0.00113	2	607	NA	0.0478	1.2222	5217	5196	400	0.0525	1.0	2.29	5188	207	0.0386	2.0	3.93	0.15	9	0.06	0.20	0.13	82	LV-1				
LV-2	1.225	0.00191	2	967	NA	0.0248	1.4428	5188	5175	400	0.0325	1.0	1.80	5164	567	0.0194	2.0	2.79	0.15	9	0.12	0.20	0.13	82	LV-2				
O-1	2.852	0.00446	2	1,870	NA	0.0171	1.4742	5214	5200	400	0.0350	0.7	1.31	5182	1,470	0.0122	2.0	2.21	0.20	12	0.27	0.27	0.18	66	O-1				

(a) All measurements were obtained from the Drainage Basin Maps, based on Lidar contour mapping dated 2010.
(b) Obtained from Table F-5 in the DPM, pg. 22-64.
(d) Obtained from Table F-6 in the DPM, pg. 22-64.
(e) $V = 10 \cdot K \cdot S^{0.5}$ - determined from $V = K \cdot (S \cdot 100)^{0.5}$
(f) See DPM, pages 22-63 through 22-65 for following formulas :
If $L < 4000$ ft, then
 $T_c = (L/1V_1 + L^2/V_2 + L^3/V_3)3600$ sec/hour
If L is between 4,000 ft and 12,000 ft, then
 $T_c = ((12,000/L) / (72,000 \cdot K \cdot S^{0.5})) + ((L-4000) \cdot K \cdot (Lca/L)^{0.33} / (552.2 \cdot S^{0.165}))$ (ignore upper reach K - it is insignificant for long lengths and assume middle reach K for this equation)
If $L > 12000$ ft, then
 $T_c = (4/3) \cdot 26 \cdot K \cdot ((L \cdot Lca)/(5280 \cdot 2 \cdot (S \cdot 5280)^{0.5}))^{0.33}$
(g) T_p = if T_c is computed to be less than 0.2 hours, then use 0.2 hours DPM pg. 22-37
(h) $T_p = (2/3) \cdot T_c$ per DPM pg. 22-36
(i) $Sc = (L \cdot S^{0.5} + L^2 \cdot S^{0.5} + L^3 \cdot S^{0.5})/L$ per DPM pg. 22-65
(j) $Kc = (L \cdot S^{0.5}) / ((L/1) \cdot (K \cdot S^{0.5}) + L/2 \cdot (K \cdot S^{0.5}) + L/3 \cdot (K \cdot S^{0.5}))$ per DPM pg. 22-65

Summary of Pond Routings										Comments
Pond	Model Description	Design Volume	100 Yr-24 Hr Peak Storage Volume	100 Yr-24 Hr Inflow Volume	100 Yr-24 Hr Outflow Volume	100 Yr-24 Hr Inflow	100 Yr-24 Hr Outflow	Elevation of Emergency Spillway	100 Yr-24 Hr Peak Water Surface Elevation	
		ac-ft	ac-ft	ac-ft	cfs	cfs	cfs	ft	ft	
		a						a	b	
Pond 4	Ex Conditions HEC-HMS	8.51	2.42	9.03	9.03	22.6	7.7	5155.1	5148.98	Model uses current watershed conditions using latest NOAA 14 100 Yr-24 Hr rainfall depth of 2.52 in. Pond 5 not modeled
Pond 6	Ex Conditions HEC-HMS	9.01	2.98	7.48	7.48	82.8	9.4	5177.9	5174.18	

a- All values reported on this table are taken directly from The Master Drainage Plan for the West Side Transit Facility
100 Yr 24 Hr rainfall depth based on latest NOAA Atlas 14 data
b - Freeboard = Elevation of Emergency Spillway - Peak Water Surface Elevation

EX POND 6 RATING CURVE		
Elevation	Storage	Discharge
ft.	ac-ft.	cfs
5170	0	0
5171	0.14	4
5172	0.83	6.2
5173	1.77	7.9
5174	2.79	9.2
5175	3.87	10.4
5176	5.04	11.5
5177	6.27	79.5
5178	7.46	86.1
5179	9.01	93.2
DATA FROM MASTER DRAINAGE PLAN FOR THE WEST SIDE TRANSIT FACILITY		

EX POND 4 RATING CURVE		
Elevation	Storage	Discharge
ft.	ac-ft.	cfs
5147	0	0
5148	0.08	0
5149	0.51	3
5150	1.3	5.7
5151	2.29	7.5
5151.9	3.26	8.7
5152	3.37	11.7
5152.5	3.94	50.6
5153	4.52	92.5
5154	5.76	104.3
5155	7.18	115.9
5156	8.51	124.6
DATA FROM MASTER DRAINAGE PLAN FOR THE WEST SIDE TRANSIT FACILITY		

EASTERLING CONSULTANTS

I-40 SOUTH AND UNSER
DIVERSION MINI DMP
PLATE 1

EXISTING CONDITIONS DRAINAGE BASIN
MAP WITH HEC-HMS INPUT AND OUTPUT
SUMMARY
APRIL, 2014

WEST SIDE TRANSIT FACILITY PHASE I

8001 DAYTONA RD. SW
ALBUQUERQUE, NEW MEXICO

NEW FACILITIES TRANSIT DEPARTMENT PROJECT NO. 5658.01

SCANNED BY
MESA REPRO

SURVEYOR'S CERTIFICATE
I, THOMAS W. PATRICK, A DULY QUALIFIED LICENSED PROFESSIONAL SURVEYOR UNDER THE LAWS OF THE STATE OF NEW MEXICO, DO HEREBY CERTIFY THAT THE AS-BUILT INFORMATION SHOWN ON THESE DRAWINGS WAS OBTAINED FROM FIELD CONSTRUCTION AND "AS-BUILT" SURVEYS PERFORMED BY ME, OR UNDER MY SUPERVISION, AND THAT THIS "AS-BUILT" INFORMATION IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. COMMUNITY SCIENCES CORPORATION IS NOT RESPONSIBLE FOR ANY OF THE DESIGN CONCEPTS, CALCULATIONS, ENGINEERING AND/OR INTENT OF THE RECORD DRAWINGS.

THOMAS W. PATRICK
NEW MEXICO PROFESSIONAL SURVEYOR NO. 12051

7-26-2004
DATE

INDEX OF DRAWINGS

DESIGN TEAM

GENERAL INFORMATION

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CIVIL

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- 04 SI-C-103 LOS VOLCANES RD. P&P: STA 9+00 TO STA 13+60
- 05 SI-C-104 LOS VOLCANES RD. P&P: STA 13+60 TO STA 18+00
- 06 SI-C-105 OLIVER ROSS DR. PAVING P&P: STA 10+00 TO STA 14+60
- 07 SI-C-106 OLIVER ROSS DR. PAVING P&P: STA 14+60 TO STA 19+00
- 08 SI-C-107 OLIVER ROSS DR. PAVING P&P: STA 19+00 TO STA 23+60
- 09 SI-C-108 DAYTONA DR. PAVING P&P: STA 23+60 TO STA 28+20
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- 11 SI-C-110 DAYTONA DR. PAVING P&P: STA 32+50 TO STA 35+07.32
- 12 SI-C-111 OLIVER ROSS DR. UTILITY P&P: STA 10+00 TO STA 14+60
- 13 SI-C-112 OLIVER ROSS DR. UTILITY P&P: STA 14+60 TO STA 19+00
- 14 SI-C-113 OLIVER ROSS DR. UTILITY P&P: STA 19+00 TO STA 23+60
- 15 SI-C-114 DAYTONA DR. UTILITY P&P: STA 23+60 TO STA 28+20
- 16 SI-C-115 DAYTONA DR. UTILITY P&P: STA 28+20 TO STA 32+50
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THE FOLLOWING SHEETS WERE ADDED IN GREEN CHANGE ORDERS FOR ON-SITE UTILITIES AND WALL MOVS AND PAVING

- 23A PHASE 1 CHANGE ORDER - WATER
- 23B PHASE 1 CHANGE ORDER - ON-SITE SANITARY SEWER
- 23C ON-SITE PAVING CO.
- 23D PHASE 1 CHANGE ORDER - STORM DRAIN
- 23E CHANGE ORDER - GAS & ELECTRICAL
- 23F NEW INTERIOR WALL LOCATION SHEET 061103

PATRICK CONLEY, of the firm of **SMITH ENGINEERING COMPANY**, a Registered Professional Engineer in the State of New Mexico, do hereby certify, to the best of my knowledge and belief, that the infrastructure installed as part of this project has been inspected by me or by a qualified person under my direct supervision and has been constructed in accordance with the plans and specifications, while someone from Smith Engineering Company was onsite, approved by the City Engineer and that the original design intent of the approved plans has been met, except as noted by me on the as-built construction drawings. This Certification is based on site inspections by me or personnel under my direction and survey information provided by **THOMAS PATRICK** (Surveyor Name) NMPS number **12051** (PS #).

Engineers Seal & Signature

DWL ARCHITECTS & PLANNERS, INC.
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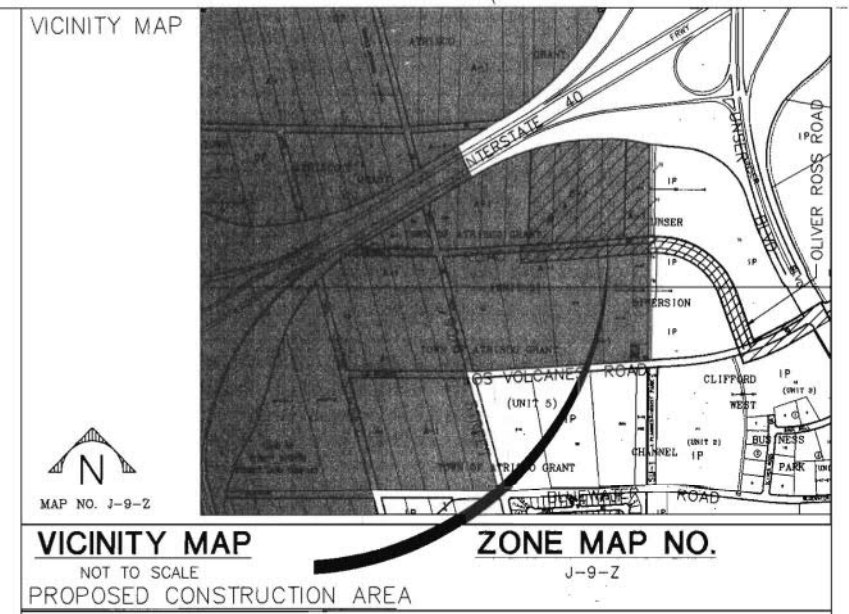
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ph (505) 889-3004
rme@redmt.com

RECORD DRAWING

APPROVAL OF RECORD DRAWINGS
CHIEF ENGINEER
DATE 4-18-05



* FOR WORK DONE IN NMSHTD RIGHT-OF-WAY



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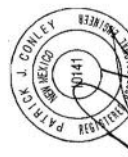
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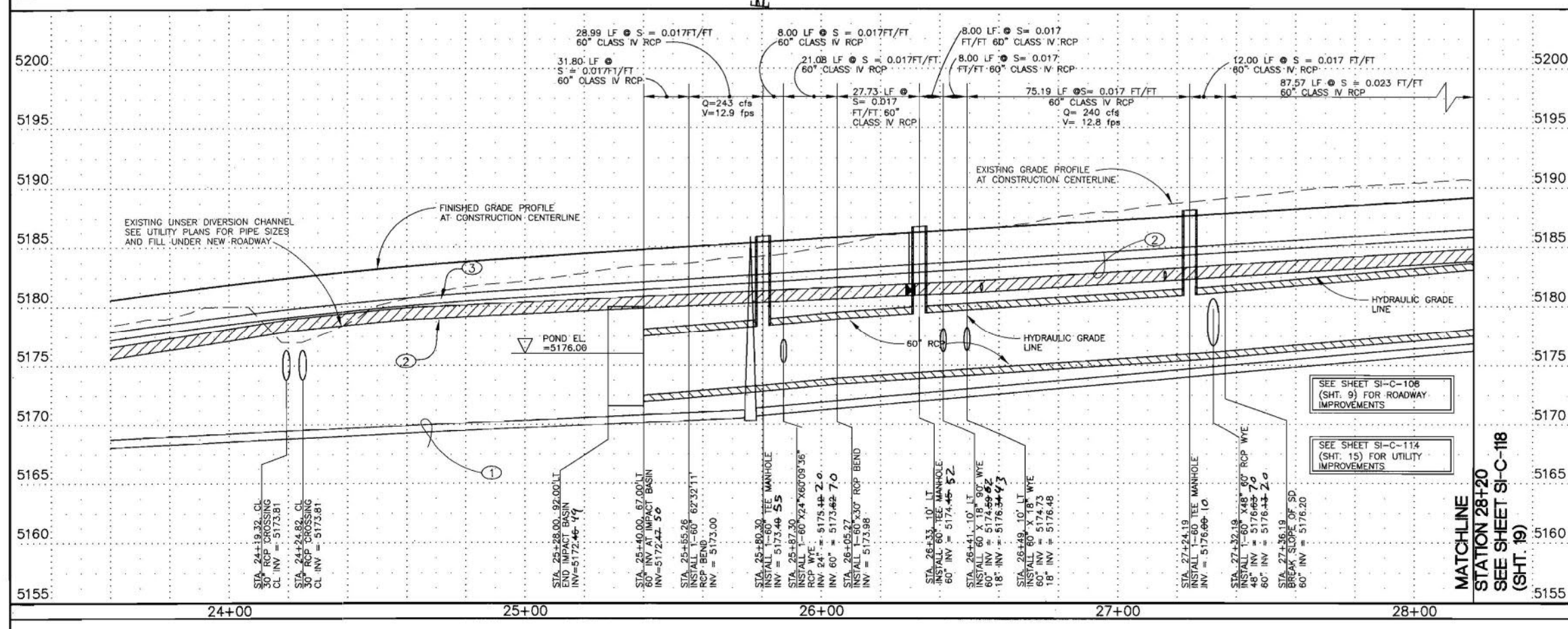
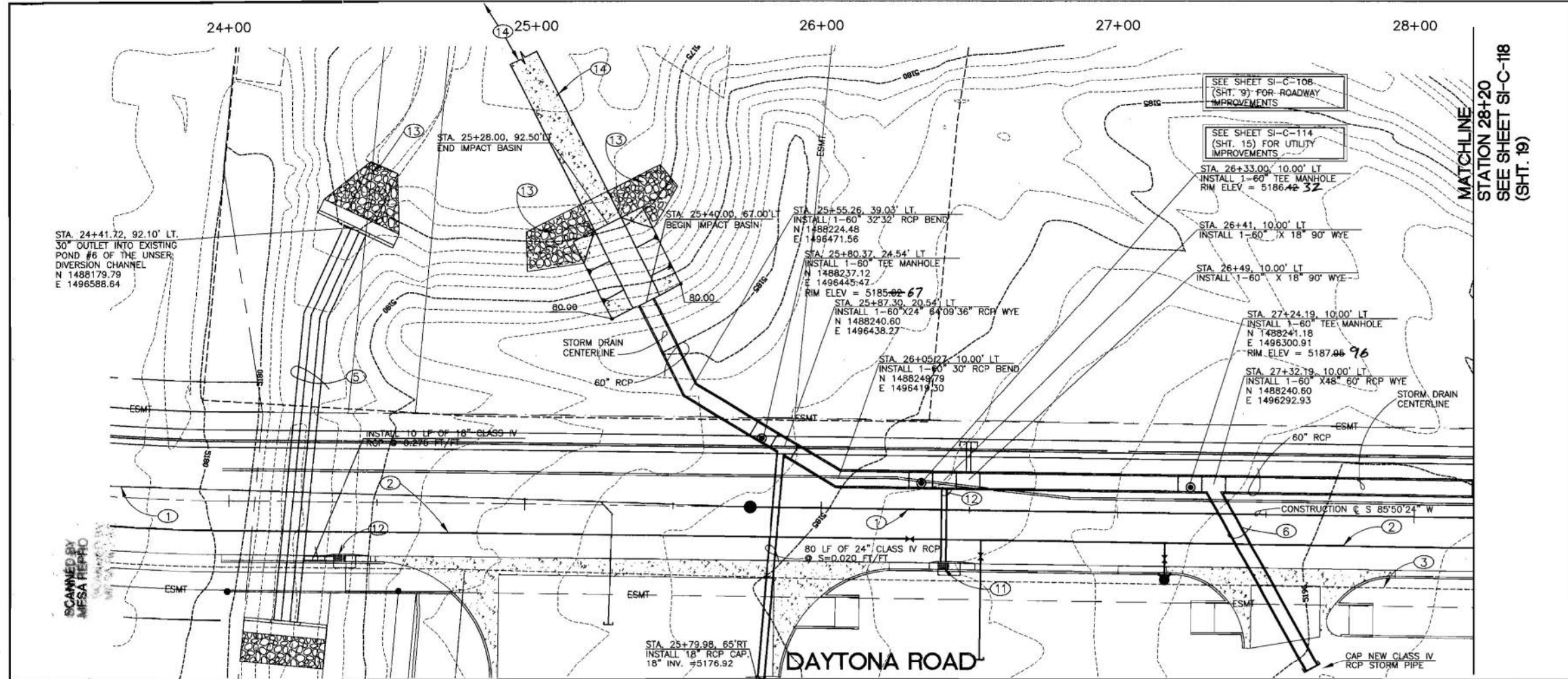
SEC JOB # 100300
Smith Engineering Company
A Full Service Engineering Company
8400 Uptown Boulevard, N.E. Suite 900E Albuquerque, New Mexico 87110

APPROVED FOR CONSTRUCTION			
REV.	SHEETS	DATE	DATE
1	23	7/20/02	9/19/02
2	46, 52, 53	9/17/02	9/17/02
STAMP & SIGNATURE		APPROVALS	NAME
		D.R.C. Chairman	7-1-02
		Transportation	6/12/02
		Water/Wastewater	5/20/02
		Hydrology	5/20/02
		NMSHTD *	5/20/02
		NMSHTD *	5/20/02
		Constr. Coord.	7-1-02
CITY PROJECT NO.		5658.01	

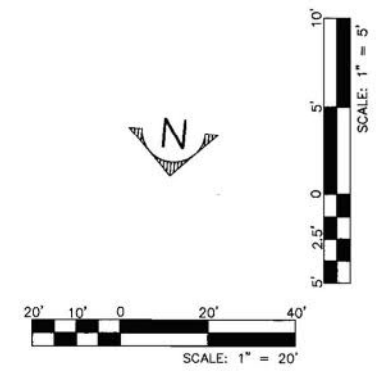
00.01
SHEET 01 OF 61

KEYED NOTES:		ENGINEERS SEAL		SURVEY INFORMATION		AS BUILT INFORMATION																																			
1. NEW 8" PVC SANITARY SEWER LINE. 2. NEW 12" PVC WATERLINE. 3. INSTALL 50 LF OF 8" PVC WATERLINE. 4. STORM DRAIN SYSTEM - SEE SHEET SI-C-119 (SHT. 19) FOR STORM DRAIN PLAN & PROFILES. 5. NOT USED. 6. NEW 8" HIGH PRESSURE GAS LINE TO BE INSTALLED BY PNM GAS. MINIMUM OF 3' OF COVER. 7. INSTALL 1-1/2" TYPE K COPPER IRRIGATION LINE TO 5' BACK OF R/W. CAP LINE.		N   		DWL ARCHITECTS & PLANNERS, INC. OF NEW MEXICO 202 CENTRAL AVE. S.E. WEST COURTYARD ALBUQUERQUE, NEW MEXICO 87102 FAX (505) 242-4159 VOICE (505) 242-6202 E-MAIL DWLJH@RTS6.COM		FIELD NOTES <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>NO.</th> <th>BY</th> <th>DATE</th> </tr> <tr> <td>11599</td> <td>STEVE TOLER</td> <td>2000</td> </tr> </table>		NO.	BY	DATE	11599	STEVE TOLER	2000	BENCH MARKS <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>A.C.S. CONTROL MONUMENT "10-K10"</td> <td>ELEV. (NGVD 29) = 5,142.79'</td> </tr> <tr> <td>3-1/4" AL. CAP IN CONC. CURB</td> <td>S.W. COR. UNSER & LOS VOLCANES</td> </tr> <tr> <td>N 1,487,056.22 ; E 357,375.04</td> <td>DELTA ALPHA = -0°16'27"</td> </tr> <tr> <td>COMBINED FACTOR = 0.998675701 (PROJECT)</td> <td></td> </tr> </table>		A.C.S. CONTROL MONUMENT "10-K10"	ELEV. (NGVD 29) = 5,142.79'	3-1/4" AL. CAP IN CONC. CURB	S.W. COR. UNSER & LOS VOLCANES	N 1,487,056.22 ; E 357,375.04	DELTA ALPHA = -0°16'27"	COMBINED FACTOR = 0.998675701 (PROJECT)		MICRO-FILM INFORMATION <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>CONTRACTOR</td> <td>DATE</td> </tr> <tr> <td>STARTED BY</td> <td>DATE</td> </tr> <tr> <td>INSPECTOR'S</td> <td>DATE</td> </tr> <tr> <td>FIELD</td> <td>DATE</td> </tr> <tr> <td>REVISION BY</td> <td>DATE</td> </tr> <tr> <td>CORRECTED BY</td> <td>DATE</td> </tr> <tr> <td>RECORDED BY</td> <td>DATE</td> </tr> <tr> <td>NO.</td> <td></td> </tr> </table>		CONTRACTOR	DATE	STARTED BY	DATE	INSPECTOR'S	DATE	FIELD	DATE	REVISION BY	DATE	CORRECTED BY	DATE	RECORDED BY	DATE	NO.	
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SI-C-116		ENGINEERS SEAL 		REVISIONS <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>NO.</th> <th>DATE</th> <th>BY</th> </tr> <tr> <td>1</td> <td>4/02</td> <td></td> </tr> <tr> <td>2</td> <td>4/02</td> <td></td> </tr> </table>		NO.	DATE	BY	1	4/02		2	4/02		DESIGNED BY PJC DRAWN BY EAO																										
NO.	DATE	BY																																							
1	4/02																																								
2	4/02																																								
100300 Smith Engineering Company A Full Service Engineering Company 6000 Olympic Boulevard, N.E. Suite 500 Albuquerque, New Mexico 87112		CITY OF ALBUQUERQUE CAPITAL IMPLEMENTATION PROGRAM TITLE: WEST SIDE TRANSIT FACILITY DAYTONA RD UTILITY P&P: STA 32+50 TO STA 35+12.0'		Design Review Committee City Engineer Approval		Last Design Update																																			
City Project No.		Zone Map No.		Sheet		Of																																			
5658.01		J-9-Z		17		61																																			

Z:\Nrv_Grad\100300 West Side Transit Facility\Options\Design Document\117sd-rp-p-dwg Thu Mar 20 11:45:10 2003



- KEYED NOTES:
1. NEW 8" PVC SANITARY SEWER LINE - SEE UTILITY PLANS.
 2. NEW 12" PVC WATERLINE - SEE UTILITY PLANS.
 3. NEW 8" HIGH PRESSURE GAS LINE TO BE INSTALLED BY PNM GAS. MINIMUM OF 3' OF COVER.
 4. NOT USED.
 5. INSTALL 110 LF OF TWIN 30" RCP CLASS IV SEE CULVERT P&P SHEET.
 6. INSTALL 64 LF 48" CLASS IV RCP @ S=0.020 FT/FT. 48" INVERT AT CAP.=5177.97
 7. CONCRETE HEADWALL 'C', SEE DETAIL ON SHEET 39.
 8. INSTALL 7.5 CY OF RIP-RAP PER DETAIL ON SHEET 39.
 9. CULVERT HEADWALL AND RIP-RAP. SEE SHEET 39.
 10. NOT USED.
 11. STA. 26+41.00 RT. INSTALL 1-TYPE "A" C.O.A. STORM DRAIN INLET PER C.O.A. STANDARD DRAWING 2201 GRATE ELEV=5186.23 - 85.49 18" INV = 5176.42
 12. INSTALL 24 LF 18" CLASS IV RCP
 13. DUMPED RIP-RAP, TYPE M, 2'-0" THICK, SEE DETAIL SHEET 38.
 14. CONSTRUCT 6" THICK, 10'-0" WIDE LOW FLOW CHANNEL. SLOPE TO BE DETERMINED IN FIELD COORDINATE WITH ENGINEER. CONNECT CHANNEL TO EXISTING CHANNEL. (EXISTING CHANNEL NOT SHOWN)



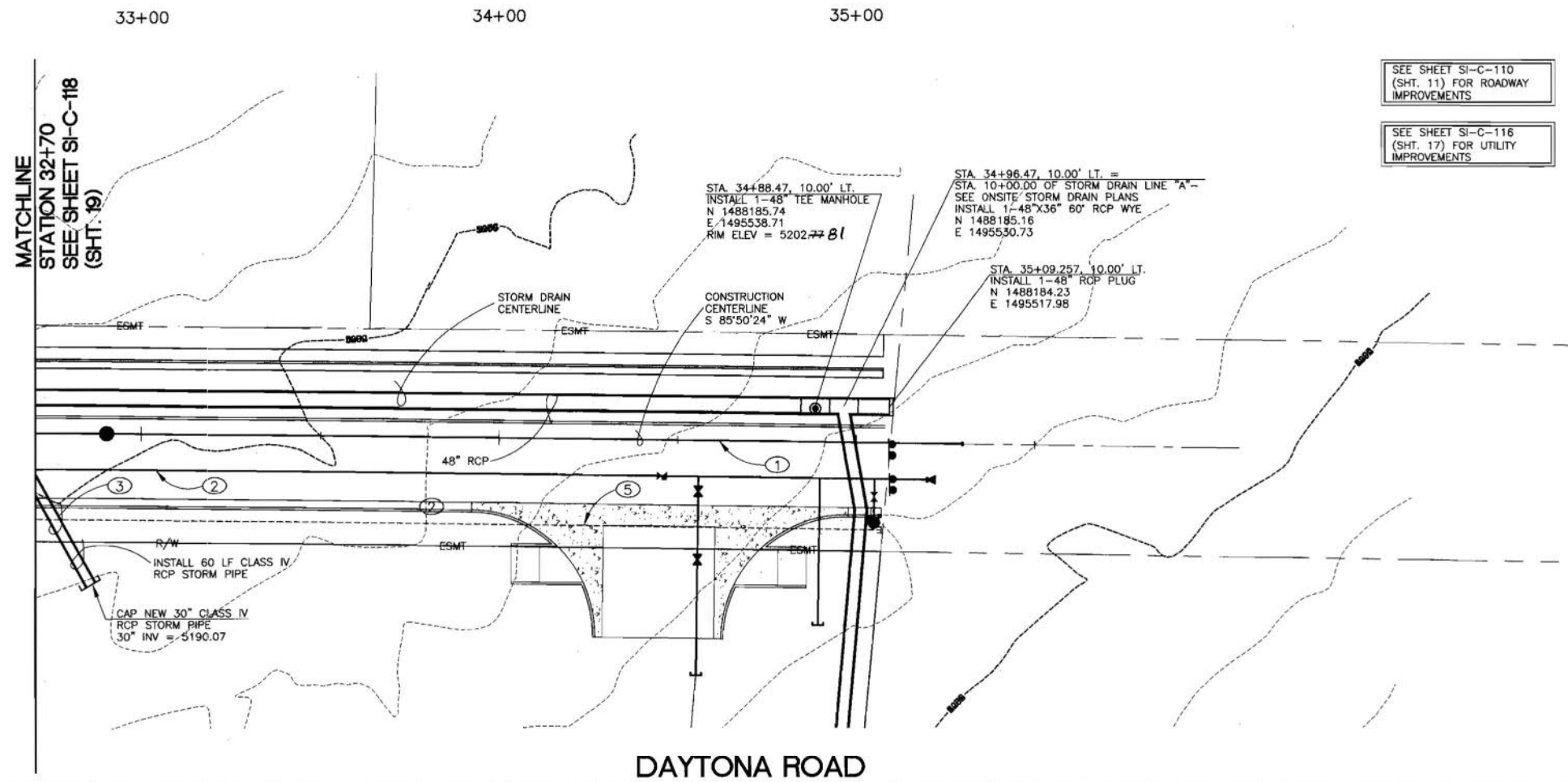
DWL ARCHITECTS & PLANNERS, INC.
OF NEW MEXICO
202 CENTRAL AVE. S.E.
WEST COURTYARD
ALBUQUERQUE, NEW MEXICO 87102
FAX (505) 242-4159
VOICE (505) 242-5203
E-MAIL DWL@DWL.COM

100300
Smith Engineering Company
A Full Service Engineering Company
5000 Uptown Boulevard, N.E. Suite 900 Albuquerque, New Mexico 87106

CITY OF ALBUQUERQUE
CAPITAL IMPLEMENTATION PROGRAM
TITLE: WEST SIDE TRANSIT FACILITY
DAYTONA RD SD P&P: STA 23+60 TO STA 28+20

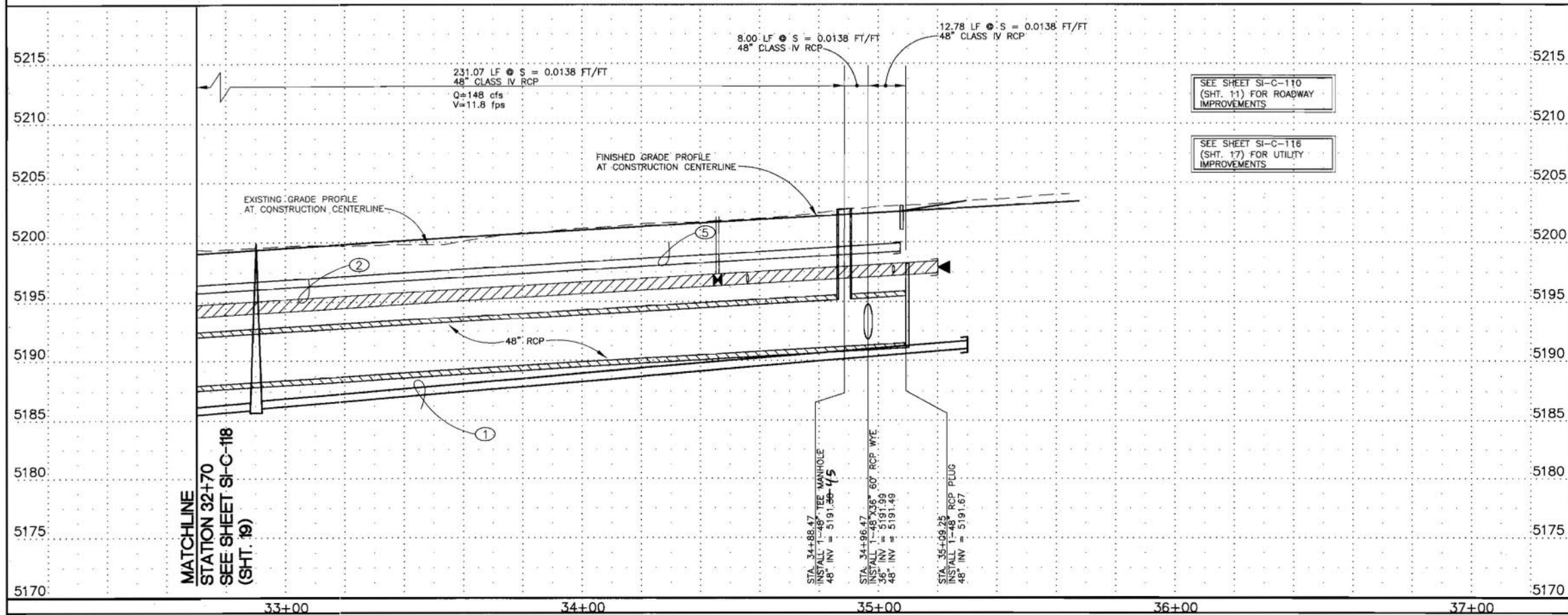
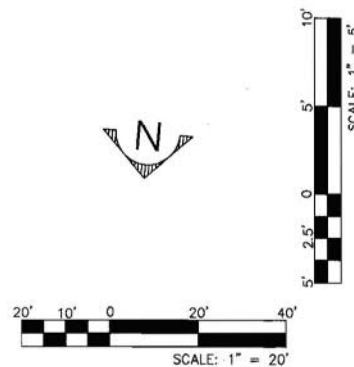
DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	LAST DESIGN UPDATE																		
<table><tr><th>NO.</th><th>DATE</th><th>REVISIONS</th></tr><tr><td>1</td><td>3/10/03</td><td>REVISED ALIGNMENT (SD)</td></tr></table>	NO.	DATE	REVISIONS	1	3/10/03	REVISED ALIGNMENT (SD)	<table><tr><th>NO.</th><th>DATE</th><th>REVISIONS</th></tr><tr><td>1</td><td>4/02</td><td>DESIGN</td></tr></table>	NO.	DATE	REVISIONS	1	4/02	DESIGN	<table><tr><th>NO.</th><th>DATE</th><th>REVISIONS</th></tr><tr><td>1</td><td>4/02</td><td>DESIGN</td></tr></table>	NO.	DATE	REVISIONS	1	4/02	DESIGN
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1	3/10/03	REVISED ALIGNMENT (SD)																		
NO.	DATE	REVISIONS																		
1	4/02	DESIGN																		
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1	4/02	DESIGN																		

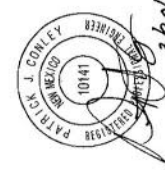
City Project No.	5658.01	Zone Map No.	J-9-Z	Sheet	18	Of	61
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KEYED NOTES:

1. NEW 8" PVC SANITARY SEWER LINE - SEE UTILITY PLANS.
2. NEW 12" PVC WATERLINE - SEE UTILITY PLANS.
3. INSTALL 56' LF 30" CL IV RCP STORM DRAIN @ S = 0.020 FT/FT
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AS BUILT INFORMATION		BENCH MARKS		SURVEY INFORMATION		ENGINEERS SEAL	
CONTRACTOR	DATE	A.C.S. CONTROL MONUMENT "10-K10"	DATE	NO.	BY		REVISIONS
WORKED BY	DATE	ELEV. (NGVD 29) = 5142.79	DATE	11599	STEVE TOLER		
INSPECTOR	DATE	3-1/4" AL. CAP IN CONC. CURB	DATE				
ASSISTANT	DATE	S.W. COR. UNSEER & LOS VOLCANES	DATE				
VERIFICATION BY	DATE	N 1.487,056.22 ; E 357.375.04	DATE			NO. DATE	REMARKS
DESIGNED BY	DATE	DELTA ALPHA = -016'27"	DATE			DESIGNED BY	DATE
COMBINED FACTOR=0.999675701 (PROJECT)	DATE		DATE			DRAWN BY	DATE
RECORDED BY	DATE		DATE			CHECKED BY	DATE
NO.							

3/26/03 Revised 30 August

DWL ARCHITECTS
DWL ARCHITECTS & PLANNERS, INC.
OF NEW MEXICO
202 CENTRAL AVE. S.E.
WEST COURTYARD
ALBUQUERQUE, NEW MEXICO 87102
FAX (505) 242-4159
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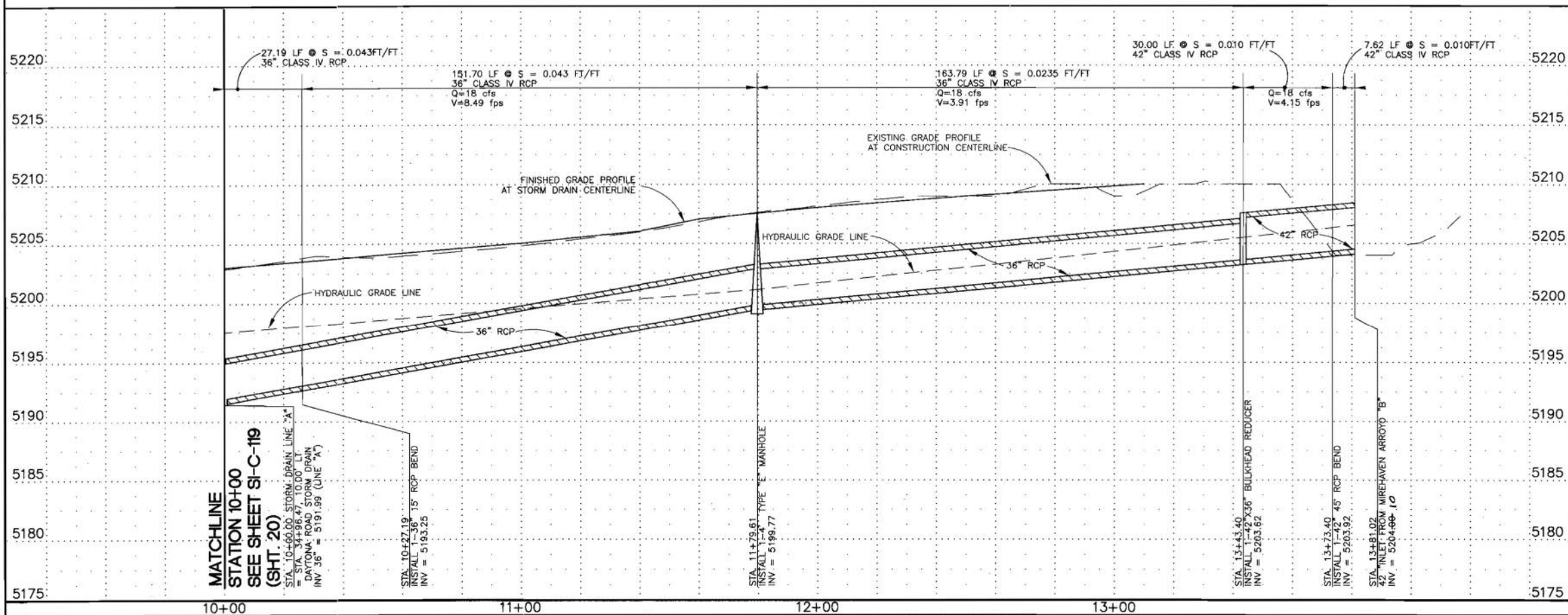
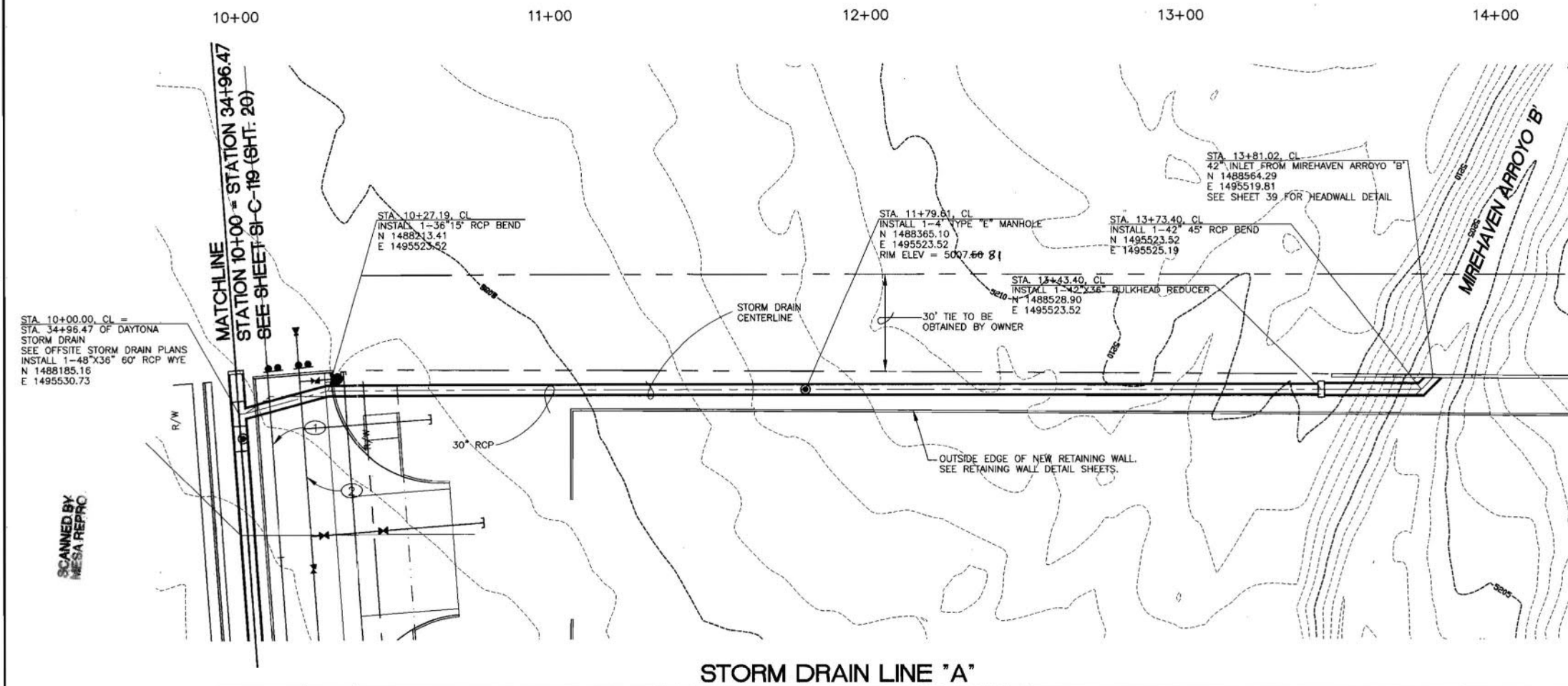
Smith Engineering Company
A Full Service Engineering Company
4400 Olympic Boulevard, N.E. Suite 2000 Albuquerque, New Mexico 87110

CITY OF ALBUQUERQUE
CAPITAL IMPLEMENTATION PROGRAM
TITLE: **WEST SIDE TRANSIT FACILITY**
DAYTONA RD SD P&P: STA 32+50 TO STA 35+07.77

Design Review Committee City Engineer Approval

Last Design Update

City Project No. **5658.01** Zone Map No. **J-9-Z** Sheet **20** Of **61**



○ KEYED NOTES:

1. NEW 8" PVC SANITARY SEWER LINE--SEE UTILITY PLANS.
2. NEW 12" PVC WATERLINE--SEE UTILITY PLANS.

A 3/4/85 REVISED so REPLACEMENT NO. DATE REMARKS BY		ENGINEER'S SEAL  DESIGNED BY PJC DATE 4/02		NO. DATE DRAWN BY FAD DATE 4/02		NO. DATE REVISIONS DESIGN		NO. DATE REVISIONS DESIGN		NO. DATE REVISIONS DESIGN		NO. DATE REVISIONS DESIGN		NO. DATE REVISIONS DESIGN		NO. DATE REVISIONS DESIGN		NO. DATE REVISIONS DESIGN		NO. DATE REVISIONS DESIGN		NO. DATE REVISIONS DESIGN		NO. DATE REVISIONS DESIGN		NO. DATE REVISIONS DESIGN		NO. DATE REVISIONS DESIGN		NO. DATE REVISIONS DESIGN		NO. DATE REVISIONS DESIGN		NO. DATE REVISIONS DESIGN		NO. DATE REVISIONS DESIGN		NO. DATE REVISIONS DESIGN		NO. DATE REVISIONS DESIGN		NO. DATE REVISIONS DESIGN		NO. DATE REVISIONS DESIGN		NO. DATE REVISIONS DESIGN		NO. DATE REVISIONS DESIGN		NO. DATE REVISIONS DESIGN		NO. DATE REVISIONS DESIGN		NO. DATE REVISIONS DESIGN		NO.	
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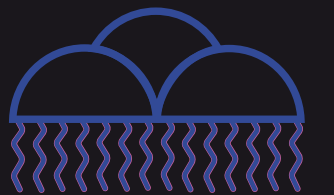
AMAFCA

Amole-Hubbell

Drainage Master
Plan Update

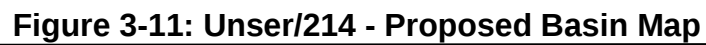
May 2013

Final Report



AMAFCA

WILSON
& COMPANY
ENGINEERS & ARCHITECTS



Project Dayton
Subject Turned block capacity

Computed by FHO

Date 6-28-17

Checked by

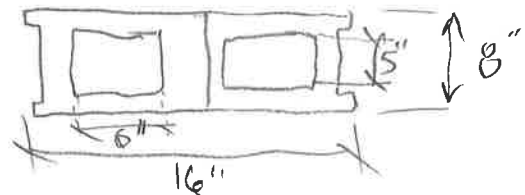
Date

Contributory basin (see map) = 15100 sq. ft. = 0.35 ac

$$Q_{100} = 0.35(4.37) \quad \text{zone 1, bond treatment D}$$

$$Q_{100} \approx \underline{1.5 \text{ cfs}}$$

Blocks configuration 16" x 8" w/ 2-6" x 5" holes



use weir equation to determine capacity of 1 block since the water level should not get that high for orifice eq'n.

$$Q_c = C L (H)^{3/2}$$

assume 4" depth

$$Q_{c_{4''}} = 3.0(1)(4''/12)^{3/2}$$

Finished grade



$$Q_{c_{4'' \text{ depth}}} / \text{block} = 0.58 \text{ cfs}$$

$$\text{use 3 turned blocks, } Q_c @ 4'' = 0.58(3) = 1.73 \text{ cfs}$$

water depth behind the wall should be slightly less than 4" during the 100-year storm.

Since the transformers have a minimum 4" high header curb around them, the 3 turned blocks should work fine.

Project

Dayton

Computed by

FH6

Date

6-29-17

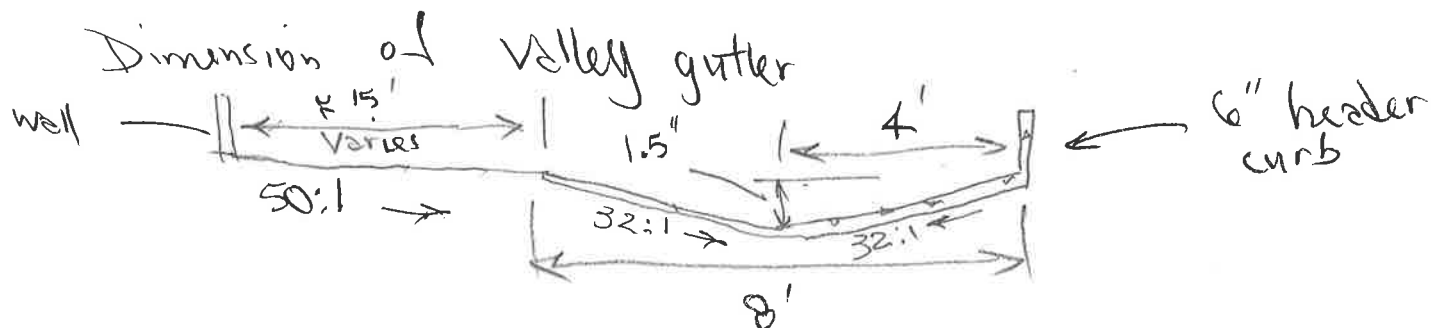
Subject

Valley Gutter Capacity

Checked by

Date

Determine the capacity of the valley gutter at the SE corner of the property just outside of the proposed wall.



long. slope of valley gutter $\approx 1.5\%$
use FlowMaster to estimate capacity.

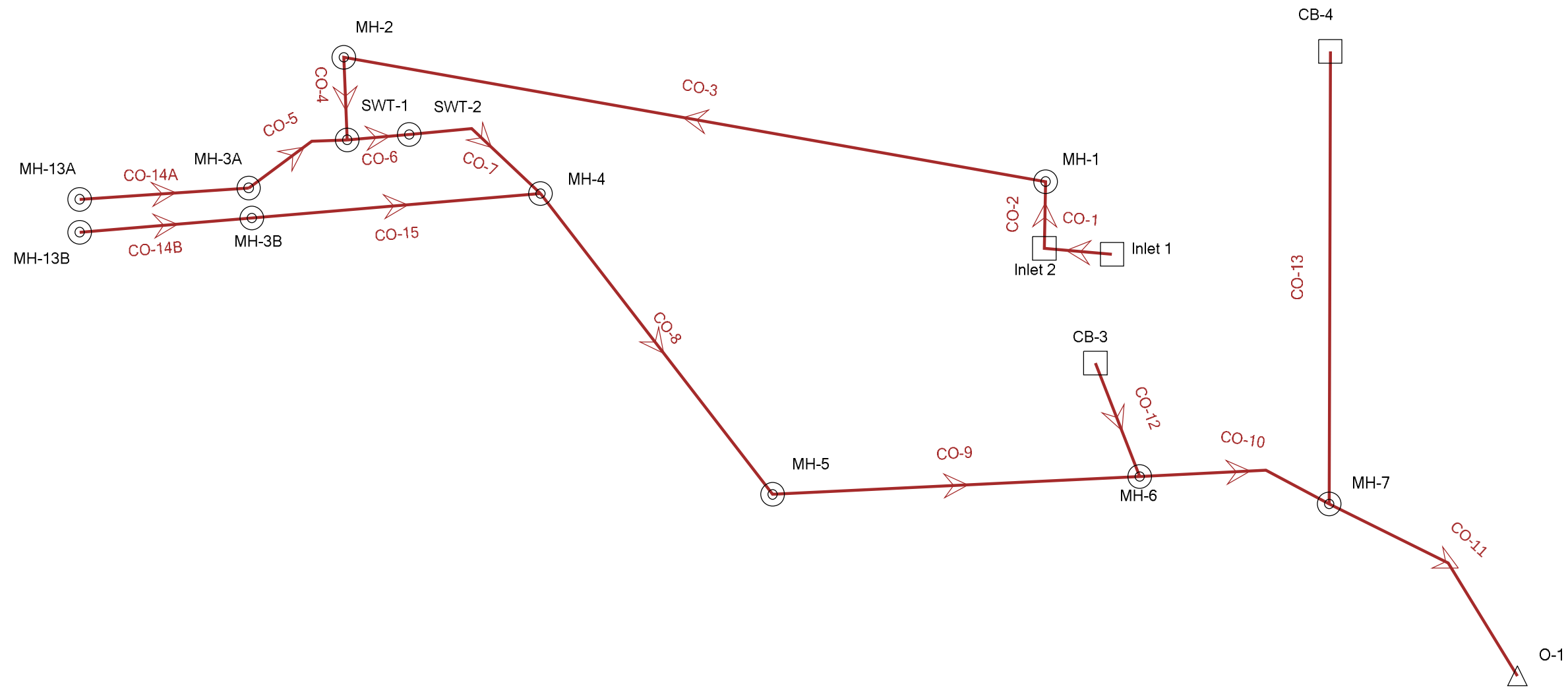
$$Q_{100} = 1.5 \text{ cfs}$$

$$\text{depth of flow } d_{100} = 0.15'$$

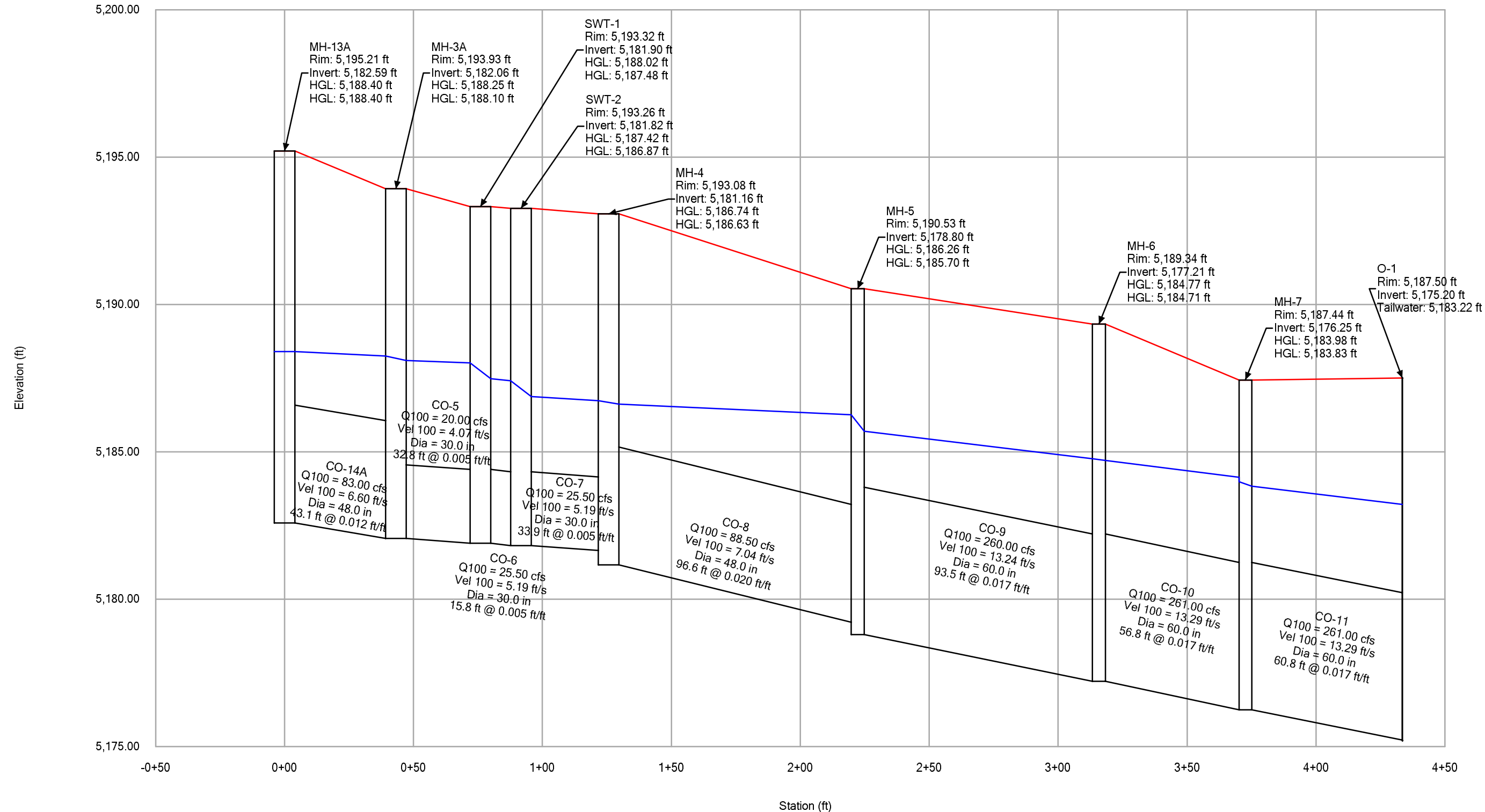
Use the specific energy depth of $0.22'$ for the worst case condition of if flow comes to a sudden stop; the depth around the curved portion of the valley gutter should be less than the $0.22'$ or $2.6''$ (specific energy depth).

Since the transformers are sitting on a pad with a minimum $4''$ high header curb around them; the runoff should not get on the pads.

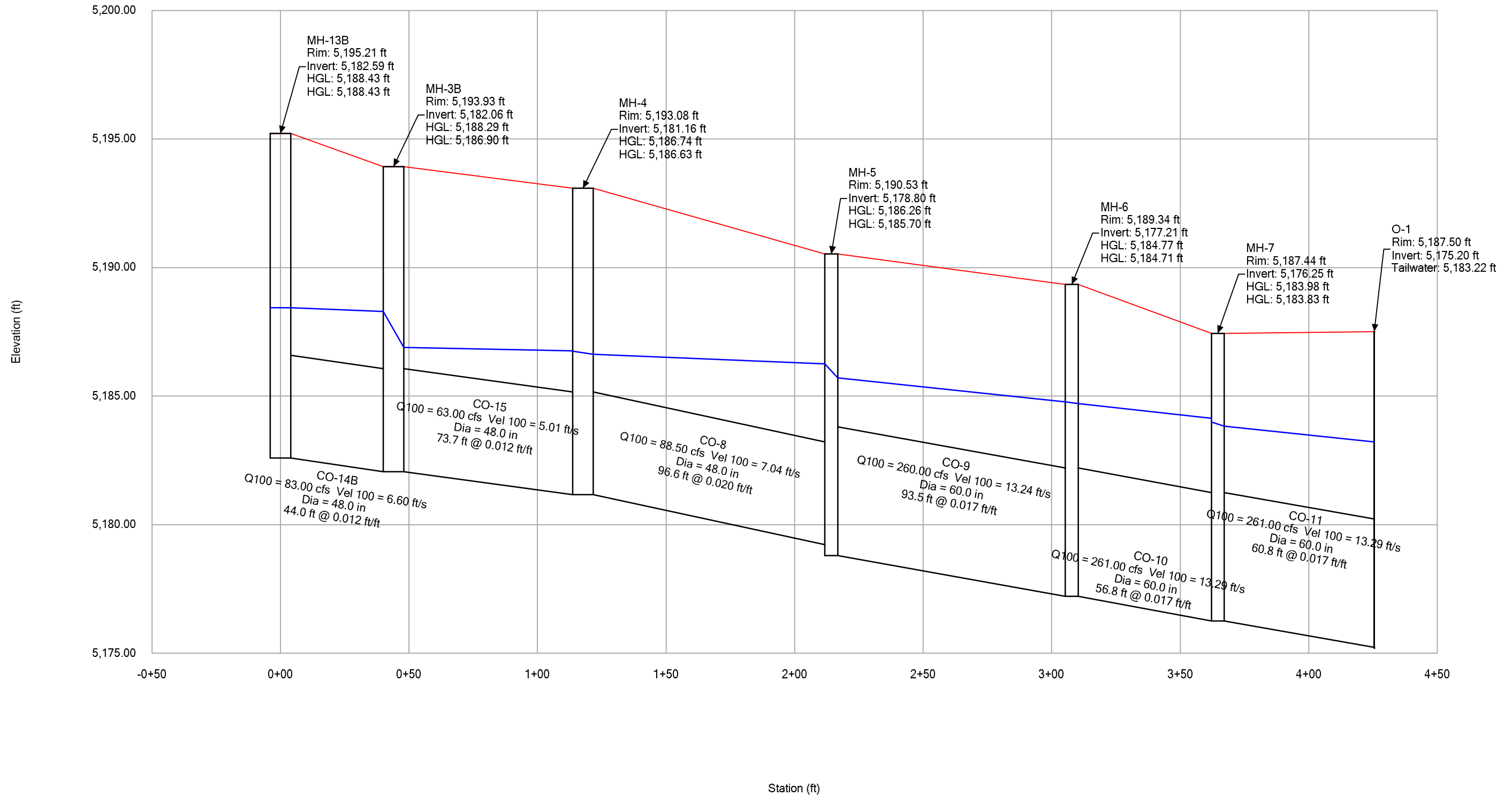
Scenario: Base



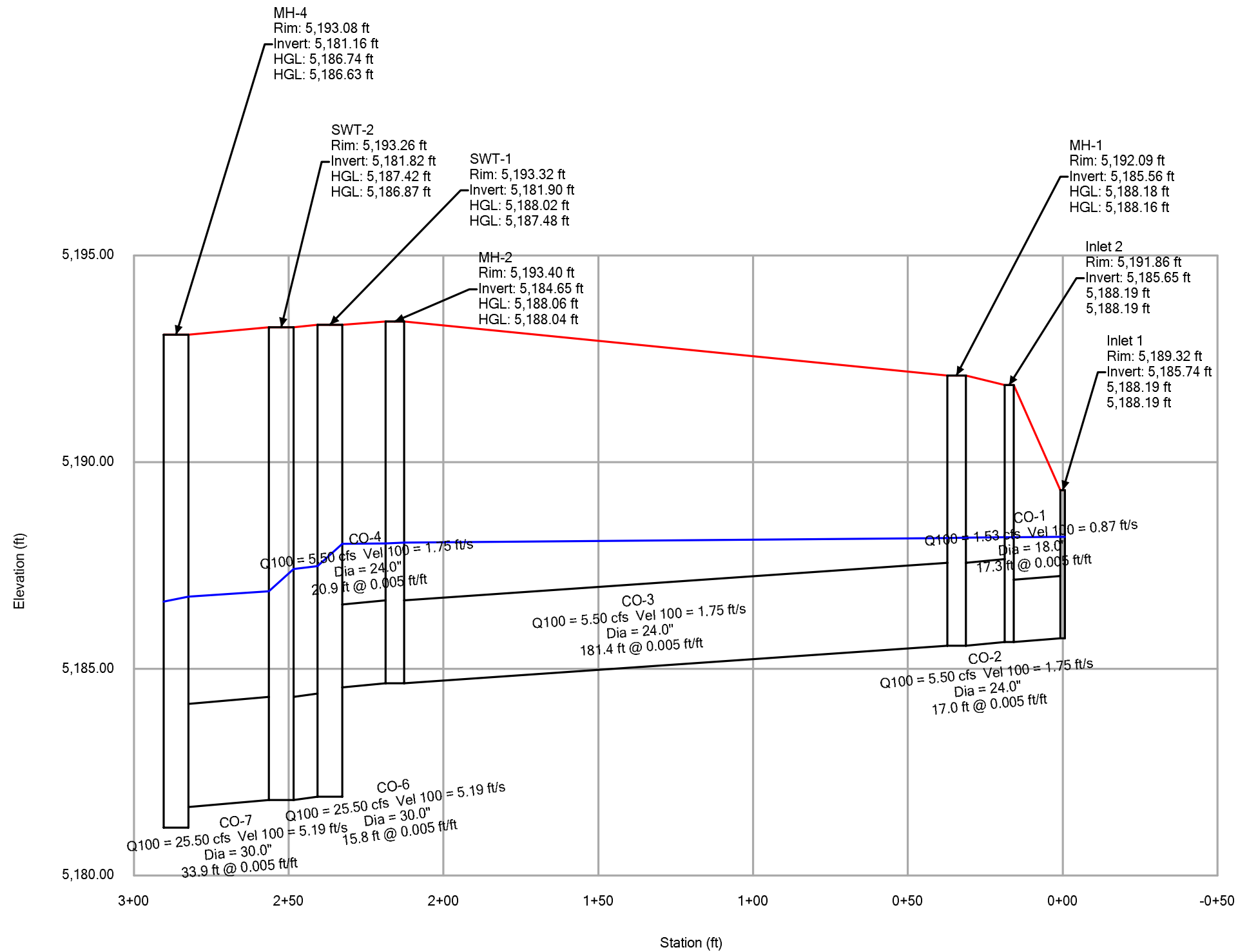
Profile Report
Engineering Profile - TreatmentSys SD (Ex&PropSD Option1.stsw)



Profile Report
Engineering Profile - Existing SD (Ex&PropSD Option1.stsw)



Profile Report Engineering Profile - Daytona SD (Ex&PropSD Option1.stsw)



DAYTONA - STORM CAD RESULTS

CATCH BASIN SUMMARY								
Label	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Depth (In) (ft)	Hydraulic Grade Line (In) (ft)	Headloss Method	Headloss (ft)	Flow (Known) (cfs)	Inflow (Wet) Collection (cfs)
Inlet 1	5,189.32	5,185.74	2.45	5,188.19	Absolute	0	0	1.53
Inlet 2	5,191.86	5,185.65	2.54	5,188.19	Absolute	0	0	3.97
CB-3	5,188.96	5,177.83	6.96	5,184.79	Absolute	0	0	1
CB-4	5,190.11	5,178.67	5.32	5,183.98	Absolute	0	0	0

DAYTONA - STORM CAD RESULTS

MANHOLE SUMMARY											
Label	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Diameter (in)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	HEC-22 Benching Method	Headloss Method	Headloss Coefficient (Standard)	Headloss (ft)	Flow (Known) (cfs)	Inflow (Wet) Collection
MH-1	5,192.09	5,185.56	72	5,188.18	5,188.16	Half	HEC-22(2nd Ed)		0.01	0	0
MH-2	5,193.40	5,184.65	72	5,188.06	5,188.04	Half	HEC-22(2nd Ed)		0.02	0	0
SWT-1	5,193.32	5,181.90	96	5,188.02	5,187.48		Standard	1.3	0.55	0	0
MH-4	5,193.08	5,181.16	96	5,186.74	5,186.63	Half	HEC-22(2nd Ed)		0.12	0	0
MH-5	5,190.53	5,178.80	60	5,186.26	5,185.70	Half	HEC-22(2nd Ed)		0.56	254.5	0
MH-6	5,189.34	5,177.21	60	5,184.77	5,184.71	Half	HEC-22(2nd Ed)		0.06	0	0
MH-7	5,187.44	5,176.25	60	5,183.98	5,183.83	Half	HEC-22(2nd Ed)		0.15	0	0
MH-3B	5,193.93	5,182.06	96	5,188.29	5,186.90	Half	Absolute		1.39	63	0
MH-3A	5,193.93	5,182.06	96	5,188.25	5,188.10	Half	HEC-22(2nd Ed)		0.15	20	0
SWT-2	5,193.26	5,181.82	96	5,187.42	5,186.87		Standard	1.3	0.55	0	0
MH-13B	5,195.21	5,182.59	96	5,188.43	5,188.43	Half	HEC-22(2nd Ed)		0	83	0
MH-13A	5,195.21	5,182.59	96	5,188.40	5,188.40	Half	HEC-22(2nd Ed)		0	83	0

DAYTONA - STORM CAD RESULTS

CONDUIT SUMMARY								
Label	Diameter (in)	Material	Flow (cfs)	Capacity (Design) (cfs)	Velocity (ft/s)	Manning's n	Slope (Calculated) (ft/ft)	Headloss (ft)
CO-1	18	Concrete	1.53	7.57	0.87	0.013	0.005	0
CO-2	24	Concrete	5.5	16.46	1.75	0.013	0.005	0.01
CO-3	24	Concrete	5.5	16.02	1.75	0.013	0.005	0.11
CO-4	24	Concrete	5.5	15.63	1.75	0.013	0.005	0.01
CO-8	48	Concrete	88.5	203.5	7.04	0.013	0.02	0.37
CO-9	60	Concrete	260	339.55	13.24	0.013	0.017	0.93
CO-12	18	Concrete	1	14.87	0.57	0.013	0.02	0
CO-13	24	Concrete	0	32.82	0	0.013	0.021	0
CO-15	48	Concrete	63	158.72	5.01	0.013	0.012	0.14
CO-6	30	Concrete	25.5	29.19	5.19	0.013	0.005	0.06
CO-14B	48	Concrete	83	157.7	6.6	0.013	0.012	0.15
CO-5	30	Concrete	20	28.65	4.07	0.013	0.005	0.08
CO-7	30	Concrete	25.5	29.04	5.19	0.013	0.005	0.13
CO-10	60	Concrete	261	338.57	13.29	0.013	0.017	0.57
CO-11	60	Concrete	261	338.97	13.29	0.013	0.017	0.61
CO-14A	48	Concrete	83	159.19	6.6	0.013	0.012	0.14

MH 3-B HEADLOSS	
Flow	63 cfs
Velocity	5 ft/s
Weir Equation	
$Q = 3.33 \times 8 \times \text{Head}^{(3/2)}$	
Weir Head	1.775024 ft
Velocity Head	
$\text{Head} = V^{(2)}/2g$	
Velocity Head	0.3881988 ft
Headloss	1.39 ft



Project

Daytona

Computed by

Date

Subject

Tailwater elevation for trunkline
at Pond 6

Checked by

Date

Assume the tailwater elevation is at top of the
60" pipe plus the velocity head.

Determine velocity at the outfall (full flow)

$Q = 260 \text{ cfs}$, 60" diameter, $A = 19.63 \text{ ft}^2$
waterway

$$V = 13.25 \text{ fps}$$

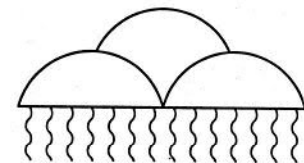
$$\begin{aligned} \text{use tailwater elev.} &= 5' + \frac{(13.25)^2}{2g} \\ &= 5' + 2.73' = \underline{\underline{7.73'}} \end{aligned}$$

Invert of the 60" RCP @ 5175.20

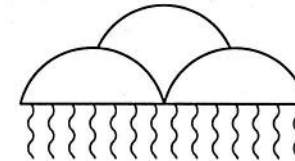
Tailwater elev. @ 5182.93'

The elevation of the spillway (riser structure) in
Pond 6 is at: 5181.40

use elev. ≈ 5183.0 for tailwater @ Pond 6



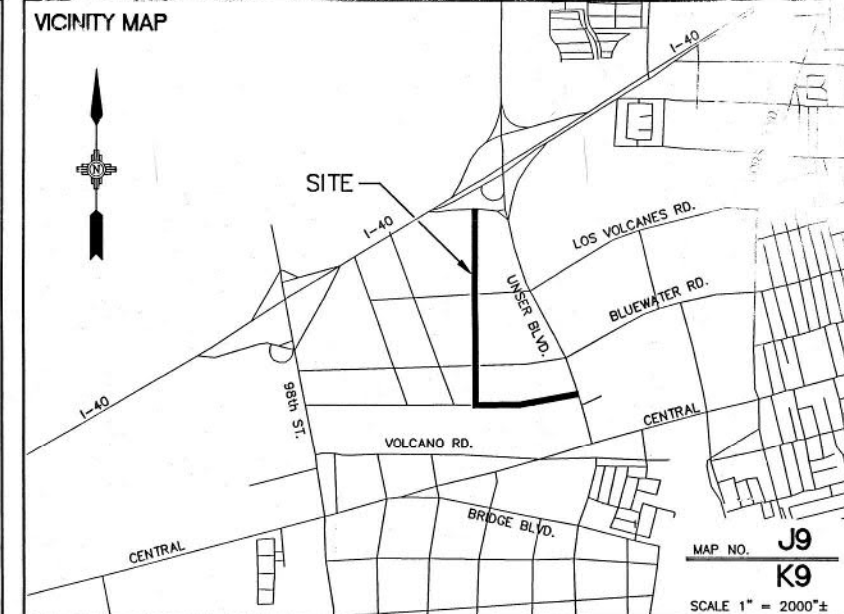
CONSTRUCTION PLANS FOR ALBUQUERQUE METROPOLITAN ARROYO FLOOD CONTROL AUTHORITY



UNSER DIVERSION

GENERAL NOTES

- ALL WORK DETAILED ON THESE PLANS, EXCEPT AS OTHERWISE STATED OR PROVIDED HEREON WITHIN THE PROJECT CONTRACT DOCUMENTS AND SPECIFICATIONS, SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE NEW MEXICO STATE HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION 1994 EDITION.
- ALL STORM DRAIN CONSTRUCTION AND WORK REQUIRED ON THE WATERLINE OWNED BY THE CITY OF ALBUQUERQUE, EXCEPT WHERE REVISED OR AMENDED BY THESE PLANS AND SPECIFICATIONS, SHALL BE DONE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS, STANDARD DRAWINGS, AND SECTIONS 13 AND 18 OF THE GENERAL CONDITIONS OF THE CITY OF ALBUQUERQUE'S STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1986 EDITION AS AMENDED THROUGH UPDATE NO. 5.
- TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT ONE CALL SYSTEM, INC., 260-1990, FOR LOCATION OF EXISTING UTILITIES.
- THESE DRAWINGS REFLECT INFORMATION ON UTILITIES GATHERED BY SITE INSPECTION. DISCUSSIONS WITH MUNICIPAL OFFICIALS, AND PREVIOUS CONSTRUCTION DRAWINGS. IT IS POSSIBLE THAT THE EXACT LOCATION OF LINES AND UTILITY CONNECTION POINTS IN THE VICINITY OF THE REQUIRED WORK MAY BE DIFFERENT FROM THE LOCATION SHOWN ON THESE DRAWINGS. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL OBSTRUCTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
- ALL GAS, ELECTRIC, TELEPHONE LINES, CABLES, AND APPURTENANCES ENCOUNTERED DURING CONSTRUCTION THAT REQUIRE RELOCATION SHALL BE RELOCATED BY THE RESPECTIVE UTILITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF ALL NECESSARY UTILITY RELOCATIONS AND ADJUSTMENTS TO GRADE.
- IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO PROTECT AND MAINTAIN IN SERVICE ALL EXISTING UTILITIES.
- ALL WORK ON THIS PROJECT SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE, AND LOCAL LAWS, RULES, AND REGULATIONS CONCERNING CONSTRUCTION SAFETY AND HEALTH. THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY WHICH SHALL REMAIN THE CONTRACTOR'S RESPONSIBILITY.
- ALL EXCAVATION/CONSTRUCTION PERMITS WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN THE CITY RIGHT-OF-WAY. AN APPROVED COPY OF THESE PLANS MUST BE SUBMITTED AT THE TIME OF APPLICATION FOR PERMITS.
- THE CONTRACTOR SHALL EXERCISE REASONABLE CARE DURING CONSTRUCTION TO PREVENT THE MOVEMENT OF SEDIMENT FROM THE SITE INTO EXISTING STREETS OR ADJUTING PROPERTY. LOOSE SOIL STOCKPILES DURING CONSTRUCTION ACTIVITIES SHALL BE PROMPTLY CLEANED UP OR PROTECTED FROM BEING CARRIED DOWNSTREAM BY FLOWING WATER.
- EXCEPT FOR THE STOCKPILE AREA SHOWN ON SHEET 2, ALL UNPAVED AREAS DISTURBED BY THE CONTRACTORS WORK SHALL BE REVEGETATED IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION SECTION 1012 IN THE CITY OF ALBUQUERQUE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1986 EDITION, AS AMENDED THROUGH UPDATE NO. 5.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR DISPOSAL OF ALL WASTE OR UNSUITABLE MATERIAL. A DISPOSAL SITE FOR ALL WASTE MATERIAL, INCLUDING TRASH THAT EXISTS ON THE SITE, SHALL BE OBTAINED BY THE CONTRACTOR IN COMPLIANCE WITH APPLICABLE ENVIRONMENTAL REGULATIONS AND APPROVED BY THE FIELD ENGINEER. ALL COSTS INCURRED IN OBTAINING A DISPOSAL SITE AND HAUL THERE TO SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT AND NO SEPARATE MEASUREMENT OR PAYMENT SHALL BE MADE.
- THE CONTRACTOR WILL BE REQUIRED TO CONFINE HIS WORK WITHIN THE EASEMENT LIMITS AND / OR PUBLIC RIGHT-OF-WAY TO PRESERVE EXISTING VEGETATION AND PRIVATE PROPERTY. THE CONTRACTOR SHALL NOT STORE ANY EQUIPMENT OR MATERIAL WITHIN THE RIGHT-OF-WAY UNLESS THE EQUIPMENT OR MATERIAL IS PROPERLY SHIELDED UTILIZING CURRENT SAFETY DESIGN AND INSTALLATION METHODS. THE SAFETY DESIGN FOR THIS SHIELDING SHALL BE PROVIDED BY THE CONTRACTOR AND MUST BE APPROVED BY THE CITY OF ALBUQUERQUE BEFORE IMPLEMENTING. THERE WILL BE NO DIRECT MEASUREMENT OR PAYMENT FOR THE DESIGN, MATERIALS, INSTALLATION, AND REMOVAL OF THE SAFETY BARRIER.
- CONTRACTOR SHALL MAINTAIN ACCESS TO ADJACENT PROPERTIES DURING CONSTRUCTION.
- CONTRACTOR SHALL COORDINATE WITH THE CITY OF ALBUQUERQUE WATER SYSTEMS DIVISION A MINIMUM OF THREE (3) WORKING DAYS PRIOR TO INITIATING ANY WORK AFFECTING ANY EXISTING PUBLIC OR PRIVATE WATERLINES.
- THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, ARE INTENDED FOR USE ON THIS PROJECT AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF EASTERLING & ASSOCIATES, INC. IN THE EVENT OF UNAUTHORIZED USE, THE USER ASSUMES ALL RESPONSIBILITY AND LIABILITY WHICH RESULTS.
- CONTRACTOR SHALL NOTIFY THE ENGINEER NOT LESS THAN SEVEN (7) DAYS PRIOR TO STARTING WORK IN ORDER THAT THE ENGINEER MAY TAKE NECESSARY MEASURES TO INSURE THE PRESERVATION OF SURVEY MONUMENTS. CONTRACTOR SHALL NOT DISTURB PERMANENT SURVEY MONUMENTS WITHOUT THE CONSENT OF THE ENGINEER AND SHALL NOTIFY THE ENGINEER AND BEAR THE EXPENSE OF REPLACING ANY THAT MAY BE DISTURBED WITHOUT PERMISSION. REPLACEMENT SHALL BE DONE ONLY BY THE ENGINEER. WHEN A CHANGE IS MADE IN THE FINISHED ELEVATION OF THE PAVEMENT OR ANY ROADWAY IN WHICH A PERMANENT SURVEY MONUMENT IS LOCATED, CONTRACTOR SHALL, AT HIS OWN EXPENSE, ADJUST THE MONUMENT COVER TO THE NEW GRADE UNLESS OTHERWISE SPECIFIED.
- MANHOLE STEPS WILL BE INSTALLED IN ALL STORM DRAIN MANHOLES AND JUNCTION BOXES AND CATCH BASINS. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO OTHER CONTRACT ITEMS AND NO SEPARATE MEASUREMENT OR PAYMENT SHALL BE MADE.
- THE CONTRACTOR SHALL ADEQUATELY SUPPORT AND PROTECT EXISTING UTILITIES AFFECTED BY THE CONTRACTORS EXCAVATION ACTIVITY. IN THE EVENT THAT EXISTING UTILITIES ARE DAMAGED BY THE CONTRACTORS OPERATIONS, THE CONTRACTOR SHALL ARRANGE FOR AND COORDINATE PROMPT REPAIR BY THE RESPECTIVE UTILITY AND SHALL BEAR THE COST OF REPAIRS.
- THE CONTRACTOR SHALL REMOVE AND REPLACE ALL SECTIONS OF EXISTING PAVING, CURB, AND GUTTER, AND OR SIDEWALK DAMAGED DURING CONSTRUCTION OF THE PROJECT. THIS WORK SHALL BE PERFORMED AT NO COST TO THE OWNER.
- ALL TRENCH EXCAVATION AND RELATED WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE OSHA, STATE, AND LOCAL REGULATIONS, LAWS AND ORDINANCES.
- THE FOLLOWING DOCUMENTS PROVIDED THE BASIS FOR DESIGN OF THE PROJECT.
 - MASTER DRAINAGE PLAN FOR THE ATRISCO BUSINESS PARK, OCTOBER 1993, EASTERLING AND ASSOCIATES.
 - DESIGN ANALYSIS FOR THE AMAFCA UNSER DIVERSION, SEPTEMBER 1993, EASTERLING AND ASSOCIATES.
 - REQUEST FOR CONDITIONAL LETTER OF MAP REVISION FOR THE UNSER DIVERSION AND THE ATRISCO BUSINESS PARK, JANUARY 1994, EASTERLING AND ASSOCIATES.
 - CONDITIONAL LETTER OF MAP REVISION FOR THE UNSER DIVERSION AND ATRISCO BUSINESS PARK, APRIL 1994, FEDERAL EMERGENCY MANAGEMENT AGENCY.



SHEET INDEX

- COVER PAGE
- KEY MAP, UTILITY CONTACTS AND STOCKPILE SECTIONS
- STORM DRAIN - PLAN AND PROFILE
- STORM DRAIN - PLAN AND PROFILE
- STORM DRAIN/POND CONNECTIONS - PLAN AND PROFILE
- STORM DRAIN/POND CONNECTIONS - PLAN AND PROFILE
- EARTHEN CHANNEL - PLAN AND PROFILE
- POND 1 - GRADING PLAN
- POND 2 - GRADING PLAN
- POND 3 - GRADING PLAN
- POND 4 - GRADING PLAN
- POND 5 - GRADING PLAN
- POND 6 - GRADING PLAN
- OUTLET STRUCTURE - DETAILS AND SECTIONS
- OUTLET STRUCTURE TRASH RACK - DETAILS AND SECTIONS
- RUNDOWN STRUCTURE DETAILS AND SECTIONS
- RUNDOWN STRUCTURE DETAILS AND SECTIONS
- MISCELLANEOUS DETAILS AND SECTIONS
- FENCE DETAILS AND LOW FLOW CHANNEL DETAILS
- 20.-25. PROJECT PLAT

RECORD DRAWING

I, Charles M. Easterling, hereby certify that these drawings have been revised in accordance with the information furnished by Surv-Tek, Inc. to reflect the construction as actually accomplished.

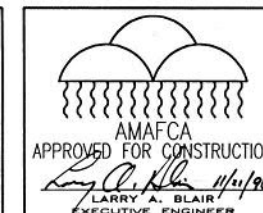
Charles M. Easterling 5-8-97
Charles M. Easterling, P.E.
N.M.P.E. No. 6411

REV.	SHEETS	CITY ENGINEER	DATE	USER DEPARTMENT	DATE	USER DEPARTMENT	DATE

APPROVAL OF REVISIONS

ABBREVIATIONS

AC - ASBESTOS CEMENT	DD - DEFLECT DOWN	FO - FIBER OPTIC CABLE	PRC - POINT OF REVERSE CURVATURE	SAS - SANITARY SEWER
ARV - AIR/VACUUM RELEASE VALVE	DIP - DUCTILE IRON PIPE	G - GAS	PRV - PRESSURE RELIEF VALVE	SD - STORM DRAIN
B - BASELINE	DU - DEFLECT UP	HP - HIGH PRESSURE	PT - POINT OF TANGENCY	TC - TOP OF CURB
BC - BEGIN CURVE	E - EXISTING	I - INSTALL	PUE - PUBLIC UTILITY EASEMENT	T - TELEPHONE
BCT - BEGIN CROWN TRANSITION	EC - END CURVE	LP - LIGHT POLE	R/REL - REMOVE & RELOCATE	TP - TOP OF PIPE
C - CONSTRUCT	ECT - END CROWN TRANSITION	LT - LEFT	R/RPLC - REMOVE & REPLACE	TW - TOP WIDTH
CAV - COMBINATION AIR VALVE	ELEV - ELEVATION	MH - MANHOLE	PVC - POLY VINYL CHLORIDE	UE - UNDERGROUND ELECTRIC
CCP - CONCRETE CYLINDER PIPE	F-F - FACE TO FACE	PC - POINT OF CURVATURE	R - REMOVE	VCP - VITRIFIED CLAY PIPE
CI - CAST IRON	F/F - FEET/FOOT	PCC - POINT OF COMPOUND CURVATURE	REL - RELOCATE	VER - VERIFY LOCATION
CL - CENTERLINE	FH - FIRE HYDRANT	POC - POINT ON CURVE	ROW - RIGHT-OF-WAY	W OR WL - WATERLINE
COA - CITY OF ALBUQUERQUE	FL - FLOW LINE	PP - POWER POLE	RT - RIGHT	X - CROSSING

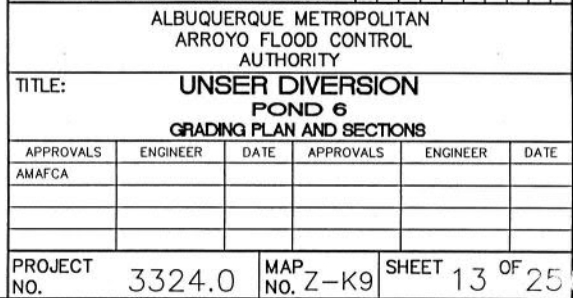
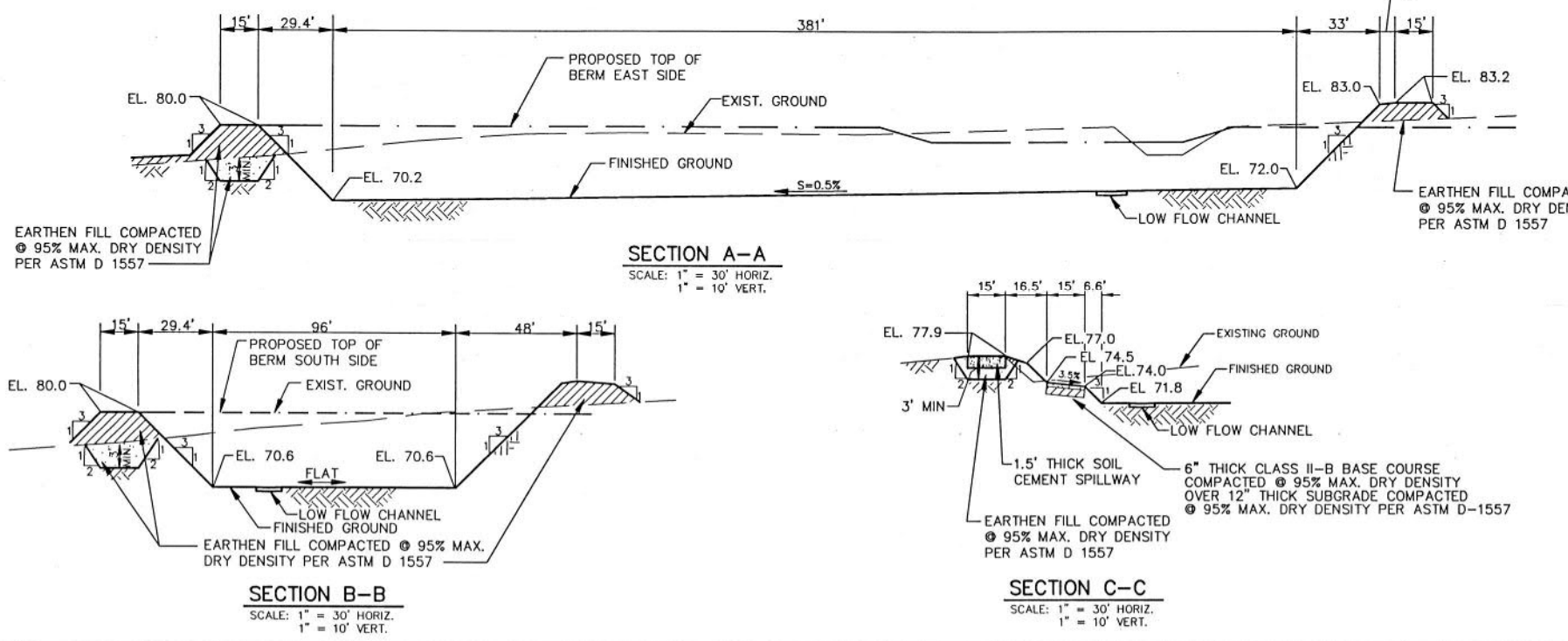


EASTERLING & ASSOCIATES, INC.
CONSULTING ENGINEERS
10131 Coors Rd., NW, Suite H-7/B
ALBUQUERQUE, NEW MEXICO 87114
(505) 898-8021 FAX (505) 898-8501

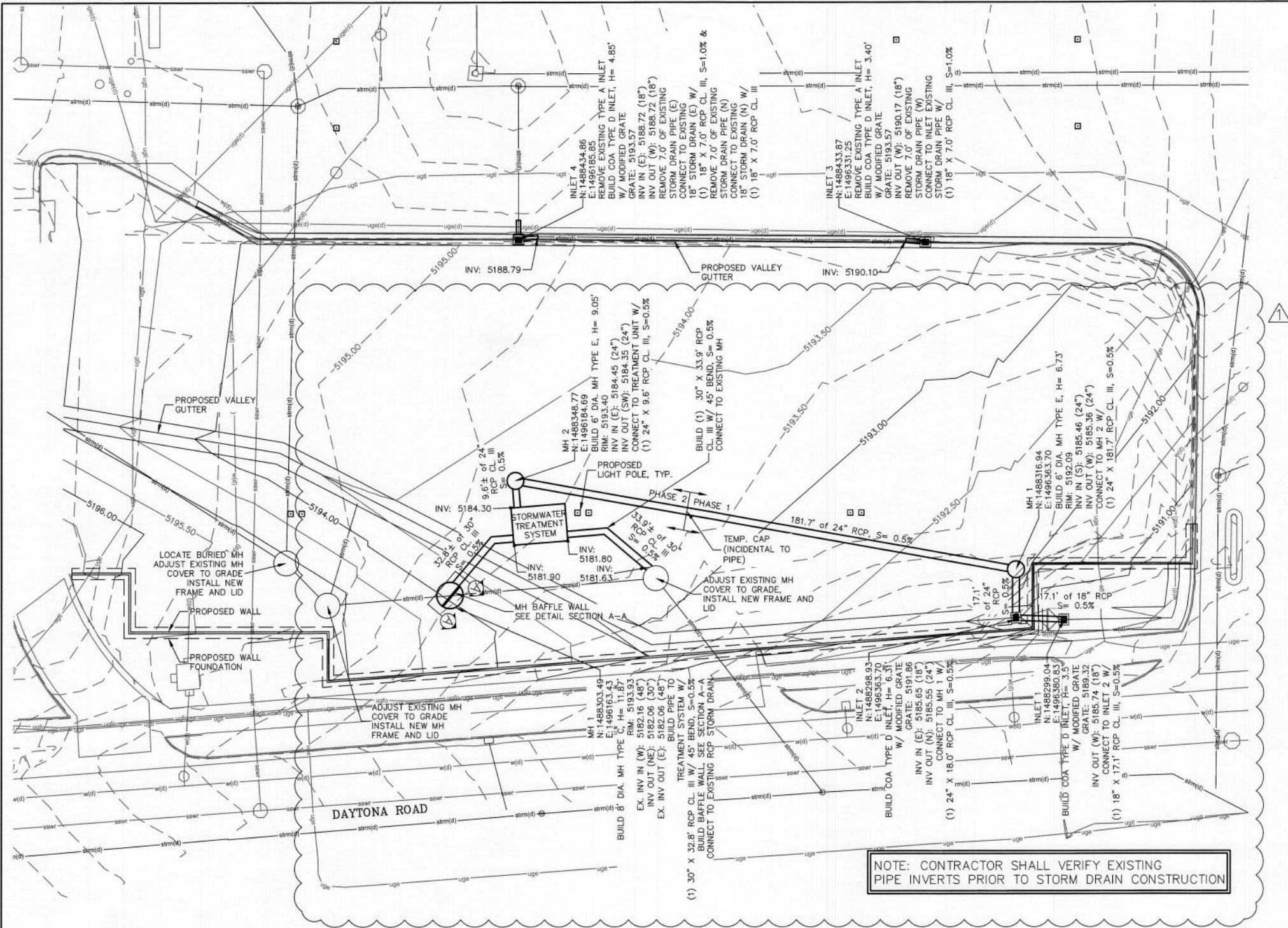
APPROVED FOR
CONSTRUCTION
Don Hoge 4/21/96
CITY HYDROLOGY DATE

PROJECT NUMBER **3324.0**

SHEET **1** OF **25**

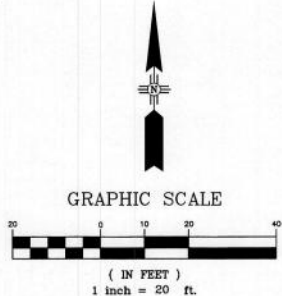
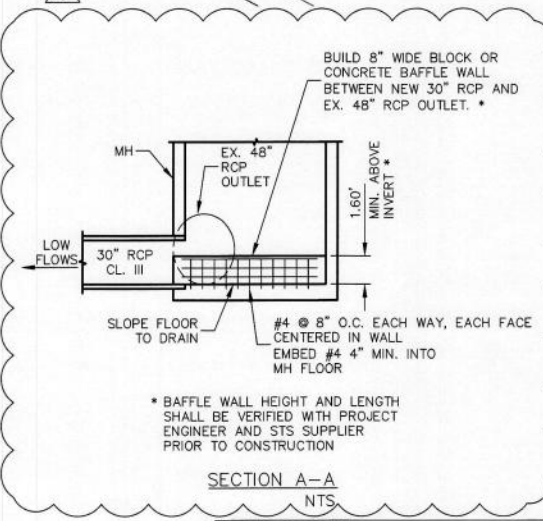
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- GENERAL NOTES:**
1. PIPE LENGTHS AND SLOPES ARE MEASURED FROM THE CENTER OF MANHOLE TO THE CENTER OF MANHOLE AND FROM THE CENTER OF INLET TO THE CENTER OF INLET.
 2. SEE SHEET C-10 FOR MODIFIED INLET FRAME AND GRATE DETAILS
 3. TO CONNECT NEW PIPES AT BENDS, SEE CONCRETE COLLAR DETAIL, SHEET C-11
 4. FOR MANHOLES, SEE COA DWG. 2101.
 5. FOR TYPE D INLETS, SEE COA DWG. 2206.
 6. STORMWATER TREATMENT SYSTEM (STS) SHALL BE A MANUFACTURER DESIGNED STORMWATER POLLUTANTS SEPARATOR SYSTEM WITH A TREATMENT CAPACITY OF AT LEAST 25 CFS AND CAPABLE OF TRAPPING HYDROCARBONS, FLOATABLES, AND 80% OF TOTAL SUSPENDED SOLIDS. PAID FOR UNDER ITEM NO. 915.X2, STORMWATER TREATMENT SYSTEM, COMPLETE IN PLACE.

- LEGEND:**
- (d)— EXISTING STORM DRAIN SYSTEM
 - (s)— EXISTING STORM SEWER
 - (w)— EXISTING WATER
 - (e)— EXISTING ELECTRIC
 - (f)— EXISTING FIBER
 - (t)— EXISTING TELEPHONE
 - PROPOSED INLET
 - ▬ PROPOSED STORM DRAIN
 - EXISTING 0.5' CONTOURS
 - PROPOSED 0.5' CONTOURS



PARSONS BRINCKERHOFF

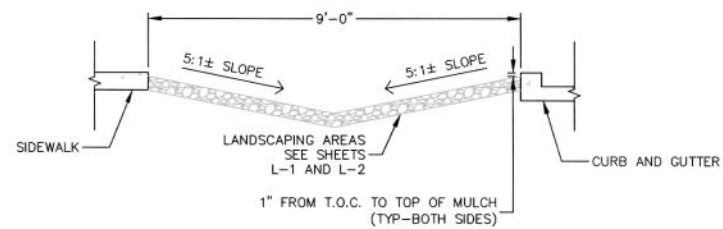
ABQRIDE CITY OF ALBUQUERQUE TRANSIT DEPARTMENT ABQ RIDE DAYTONA DESIGN

PROPOSED STORM DRAIN PLAN

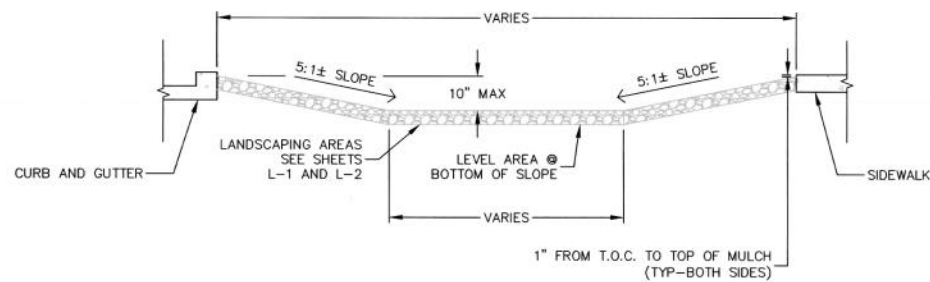
DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	MO./DAY/YR.	MO./DAY/YR.

City Project No. COA 5658.05 Zone Map No. J-09-Z Sheet C-9

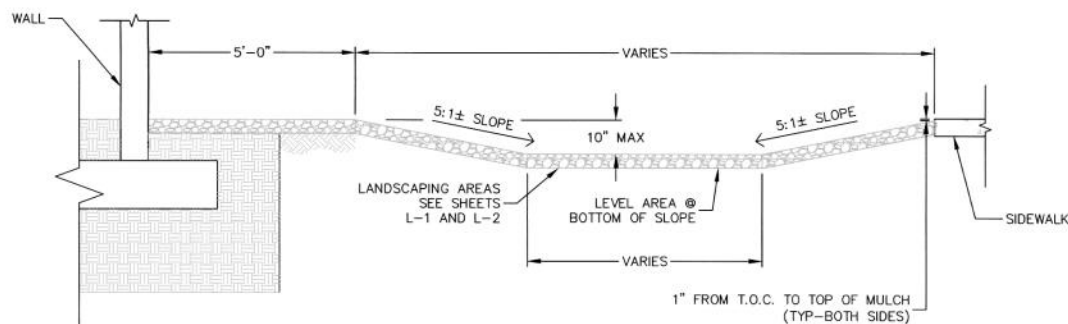
AS BUILT INFORMATION		BENCH MARKS		SURVEY INFORMATION		ENGINEER'S SEAL	
CONTRACTOR	WORK	"TRIMBLE VRSnow RTK NETWORK" WITH CHECKS	DATE	NO.	BY	CR	ADDED STS
INSPECTED BY	INSPECTED BY	DATE	DATE	NO.	BY	NO. DATE	REMARKS
ACCEPTANCE BY	ACCEPTANCE BY	DATE	DATE	NO.	BY	DESIGNED BY: PB	DATE 05/31/17
VERIFICATION BY	VERIFICATION BY	DATE	DATE	NO.	BY	DRAWN BY: PB	DATE 05/31/17
DRAWINGS	DRAWINGS	DATE	DATE	NO.	BY	CHECKED BY: PB	DATE 05/31/17
REVISIONS	REVISIONS	DATE	DATE	NO.	BY		
MICRO-FILM INFORMATION							
RECORDED BY	NO.						



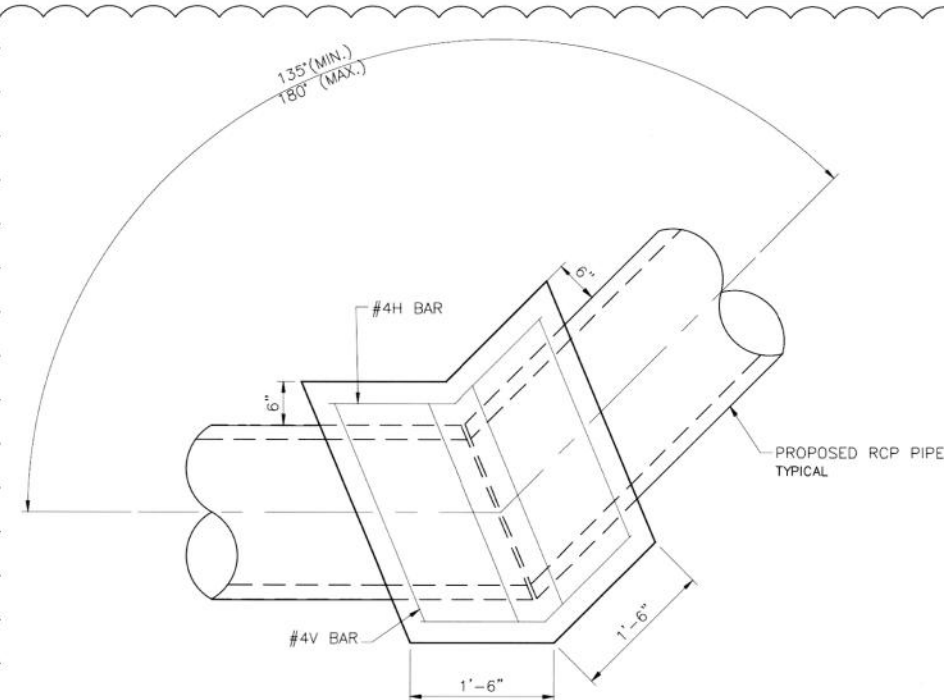
LANDSCAPE AREA SECTION, TYPICAL
N.T.S.



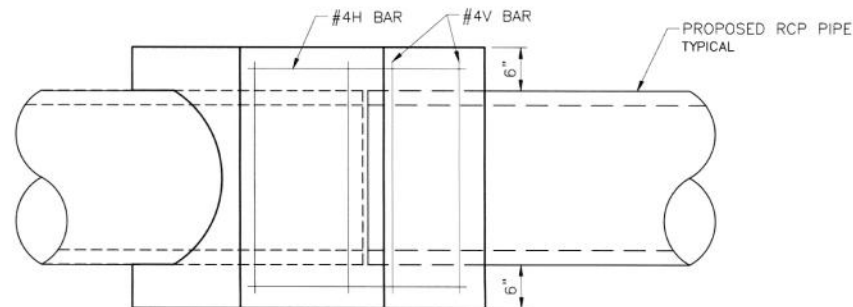
LANDSCAPE AREA SECTION, TYPICAL
N.T.S.



LANDSCAPE AREA SECTION, TYPICAL
N.T.S.

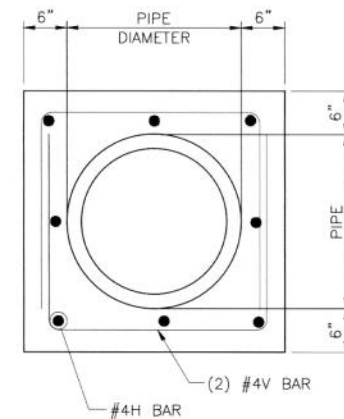


PLAN VIEW



SIDE VIEW

CONCRETE COLLAR DETAILS
N.T.S.



SECTION VIEW

CONCRETE COLLAR NOTES:

1. CONCRETE COLLARS SHALL BE USED ON ALL JOINTS AND CONNECTIONS BETWEEN EXISTING AND PROPOSED PIPES AND AS DEEMED NECESSARY BY THE ENGINEER. THE COST OF ALL LABOR, MATERIAL, AND EQUIPMENT ASSOCIATED TO CONSTRUCTION OF COLLARS SHALL BE INCIDENTAL TO CONSTRUCTION OF THE PROPOSED PIPE AND NO ADDITIONAL PAYMENT WILL BE MADE.
2. WHEN CONCRETE COLLARS ARE USED TO CONNECT PIPES OF DIFFERENT OUTSIDE DIAMETERS, THE CONCRETE COLLAR SHALL BE FORMED USING THE LARGEST OUTSIDE DIAMETER.
3. THE HYDRAULIC FLOW LINE SHALL ALWAYS MATCH FROM ONE PIPE TO THE OTHER. THE CONTRACTOR SHALL SEAL THE OPENINGS BETWEEN DIFFERENT SIZE AND TYPE PIPES WITH FORM WORK TO PREVENT INTRUSION OF CONCRETE INTO THE PIPE OPENING.
4. THE END OF THE EXISTING AND PROPOSED PIPES SHALL BE MITERED EQUALLY TO APPROPRIATELY MATCH PIPE ENDS.
5. ALL CONCRETE SHALL BE 3500psi MIX. SEE SECTION 101 OF THE CITY STANDARD SPECIFICATIONS FOR HYDRAULIC STRUCTURES CONCRETE.
6. ALL REINFORCING BARS SHALL CONFORM TO AASHTO STANDARD SPECIFICATIONS M GRADE 60 UNLESS OTHERWISE NOTED.

AS BUILT INFORMATION		BENCH MARKS		SURVEY INFORMATION		ENGINEER'S SEAL		OR		CONCRETE COLLAR DETAIL ADDED	
CONTRACTOR	WORK	DATE	BY	DATE	BY	DATE	BY	DATE	BY	DATE	BY
TRIMBLE VRSNOR RTK NETWORK	WITH CHECKS										
TO NGS CONTROL STATION	"NGS Q 424"										
DESIGNED BY: PB DRAWN BY: PB CHECKED BY: PB DATE: 05/31/17 DATE: 05/31/17 DATE: 05/31/17											

**PARSONS
BRINCKERHOFF**

ABORIDE CITY OF ALBUQUERQUE
TRANSIT DEPARTMENT
ABQ RIDE
ABQ RIDE DAYTONA DESIGN

MISC DETAILS

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	MO./DAY/YR.	MO./DAY/YR.

City Project No. COA 5658.05 Zone Map No. J-09-Z Sheet C-11