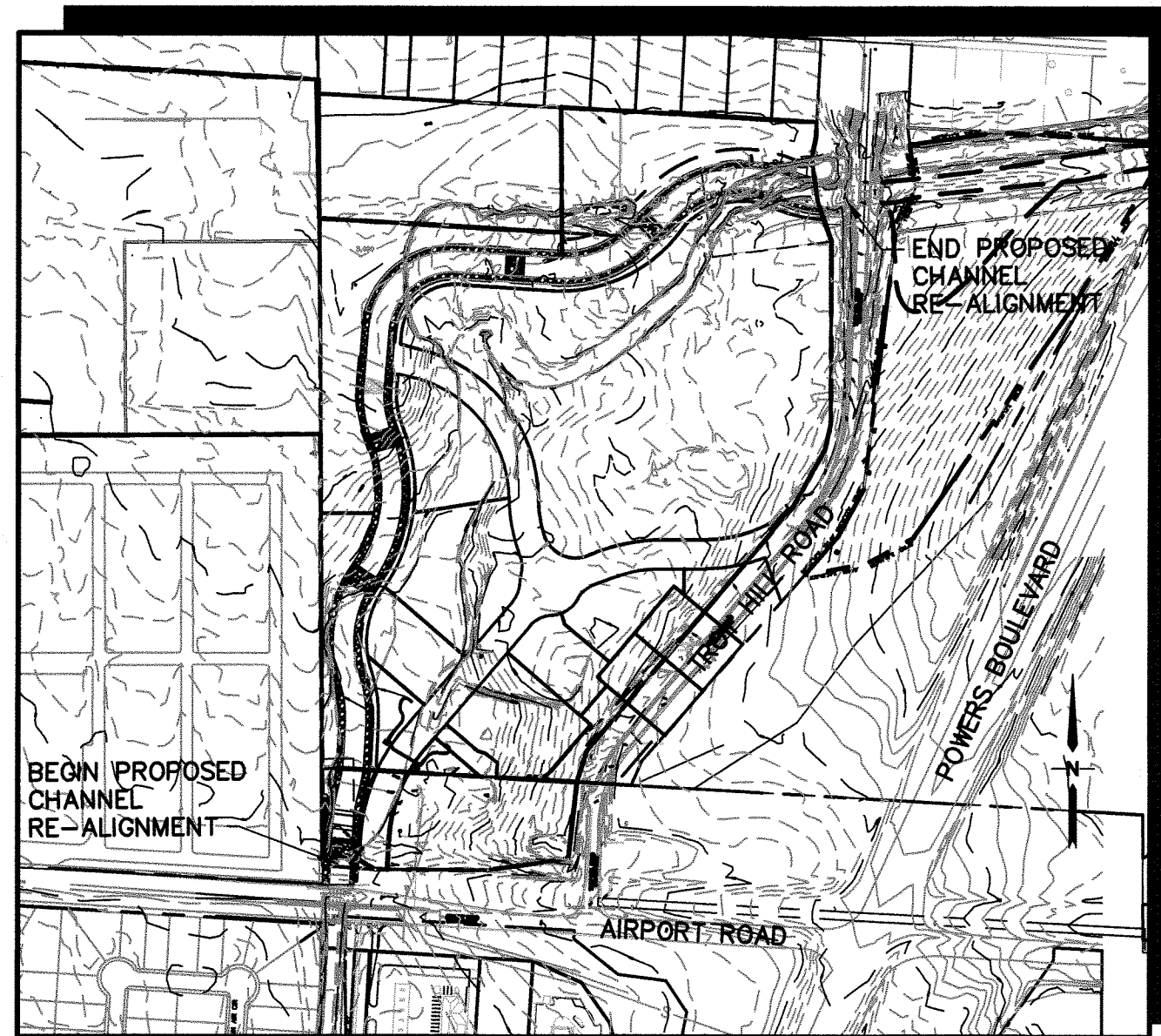


SITE LOCATION: S1/2, SECTION 13, T14S, R66W OF 6TH P.M.

VICINITY MAP
NTS



SITE MAP
SCALE: 1"=400'

SHEET INDEX

- G1 COVER SHEET
- CH1 CHANNEL IMPROVEMENT PLAN & NOTES
- TY1 TYPICAL CHANNEL SECTIONS AND DETAILS
- CH1.01 CHANNEL PLAN & PROFILE
- CH1.02 CHANNEL PLAN & PROFILE
- CH1.03 CHANNEL PLAN & PROFILE
- CH2 CHANNEL DETAILS
- CS1 CHANNEL SECTIONS
- CS2 CHANNEL SECTIONS

BENCHMARK:
CONCRETE NAIL IN CENTER OF MEDIAN IN CENTER
OF AIRPORT ROAD ON BRIDGE OVER SAND CREEK.
ELEVATION= 6109.59 (NGVD 29)

WESTGATE AT POWERS

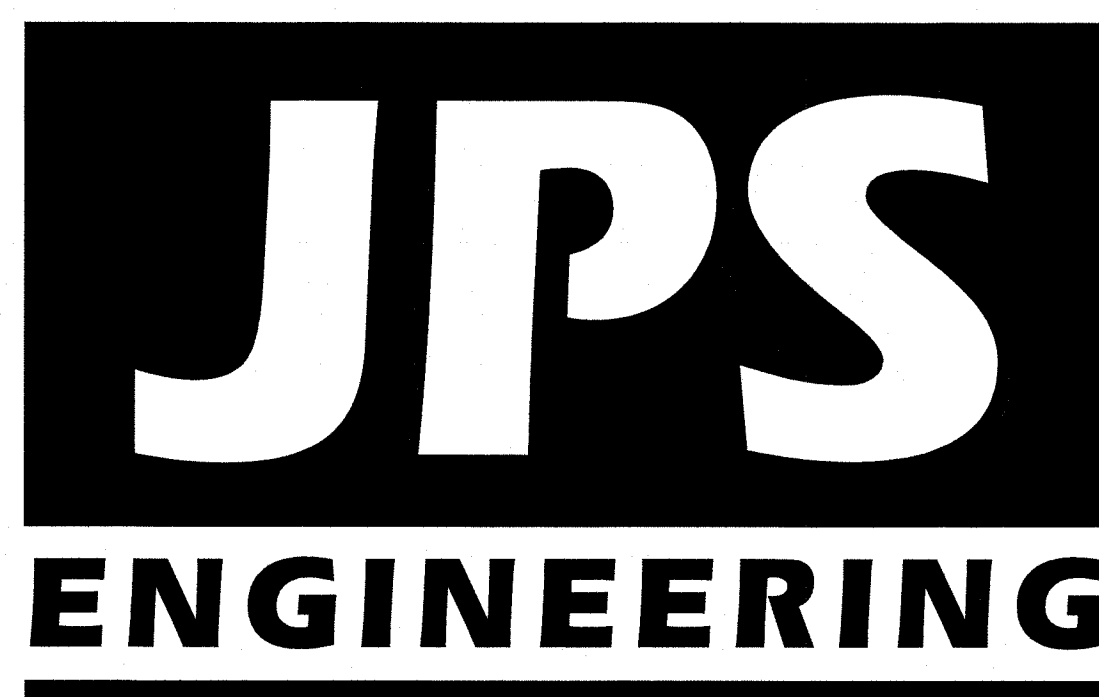
Sand Creek Center Tributary Channel Improvements

Colorado Springs, Colorado

PREPARED FOR:

Powers and Airport, LLC
9891 Irvine Center Drive, Suite 200
Irvine, CA 92618

PREPARED BY:



19 East Willamette Avenue
Colorado Springs, Colorado 80903
www.jpsengr.com
March, 2018

AGENCIES/CONTACTS

- DEVELOPER: POWERS AND AIRPORT, LLC
9891 IRVINE CENTER DRIVE, SUITE 200
IRVINE, CA 92618
MR. AL COHEN (949) 398-8209
- CIVIL ENGINEER: JPS ENGINEERING, INC.
19 E. WILLAMETTE AVE.
COLORADO SPRINGS, CO 80903
MR. JOHN P. SCHWAB, P.E. (719) 477-9429
- CITY PLANNING: CITY OF COLORADO SPRINGS
30 S. NEVADA AVENUE
COLORADO SPRINGS, CO 80903
MR. MIKE SCHULTZ (719) 385-5089
- ENGINEERING DIVISION: CITY OF COLORADO SPRINGS
30 S. NEVADA AVENUE
COLORADO SPRINGS, CO 80903
MR. JONATHAN SCHERER (719) 385-5546
- WATER RESOURCES: COLORADO SPRINGS UTILITIES
111 S. CASCADE
COLORADO SPRINGS, CO 80903
MR. MATT WILLIAMS (719) 668-7211
- GAS/ELECTRICAL: COLORADO SPRINGS UTILITIES
101 S. CONEJOS STREET
COLORADO SPRINGS, CO 80903
MS. GINNY HALVORSON (719) 668-5567
- TELEPHONE COMPANY: QWEST COMMUNICATIONS
(LOCATORS) (800) 922-1987

A.T. & T.
(LOCATORS) (719) 625-3674

APPROVALS

DETAILED IMPROVEMENT PLANS AND SPECIFICATIONS ENGINEER'S STATEMENT:

THESE DETAILED PLANS AND SPECIFICATIONS WERE PREPARED UNDER MY DIRECTION AND SUPERVISION. SAID DETAILED PLANS AND SPECIFICATIONS HAVE BEEN PREPARED ACCORDING TO THE CRITERIA ESTABLISHED BY THE CITY FOR DETAILED DRAINAGE PLANS AND SPECIFICATIONS, AND SAID DETAILED PLANS AND SPECIFICATIONS ARE IN CONFORMITY WITH THE MASTER PLAN OF THE DRAINAGE BASIN. SAID DETAILED DRAINAGE PLANS AND SPECIFICATIONS MEET THE PURPOSES FOR WHICH THE PARTICULAR DRAINAGE FACILITY IS DESIGNED. I ACCEPT RESPONSIBILITY FOR ANY LIABILITY CAUSED BY ANY NEGLIGENT ACTS, ERRORS, OR OMISSIONS ON MY PART IN PREPARING AND REVIEWING OF THE DETAILED DRAINAGE PLANS AND SPECIFICATIONS.

JOHN P. SCHWAB, COLORADO
FOR AND ON BEHALF OF JPS ENGINEERING

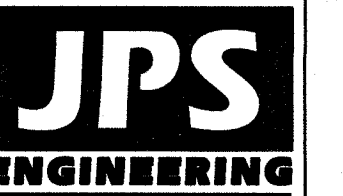
Jonathan B. Scherer
CITY ENGINEERING REVIEW

3/28/18
DATE

04/04/2018
DATE

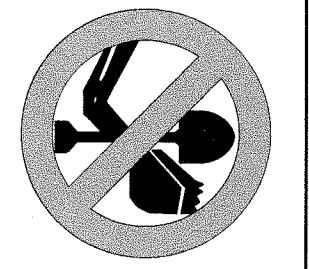
WESTGATE AT POWERS
SAND CREEK CENTER TRIBUTARY CHANNEL IMPROVEMENTS

COVER SHEET



19 E. Willamette Ave.
Colorado Springs, CO
80903

PH: 719-477-9429
FAX: 719-471-0766
www.jpsengr.com

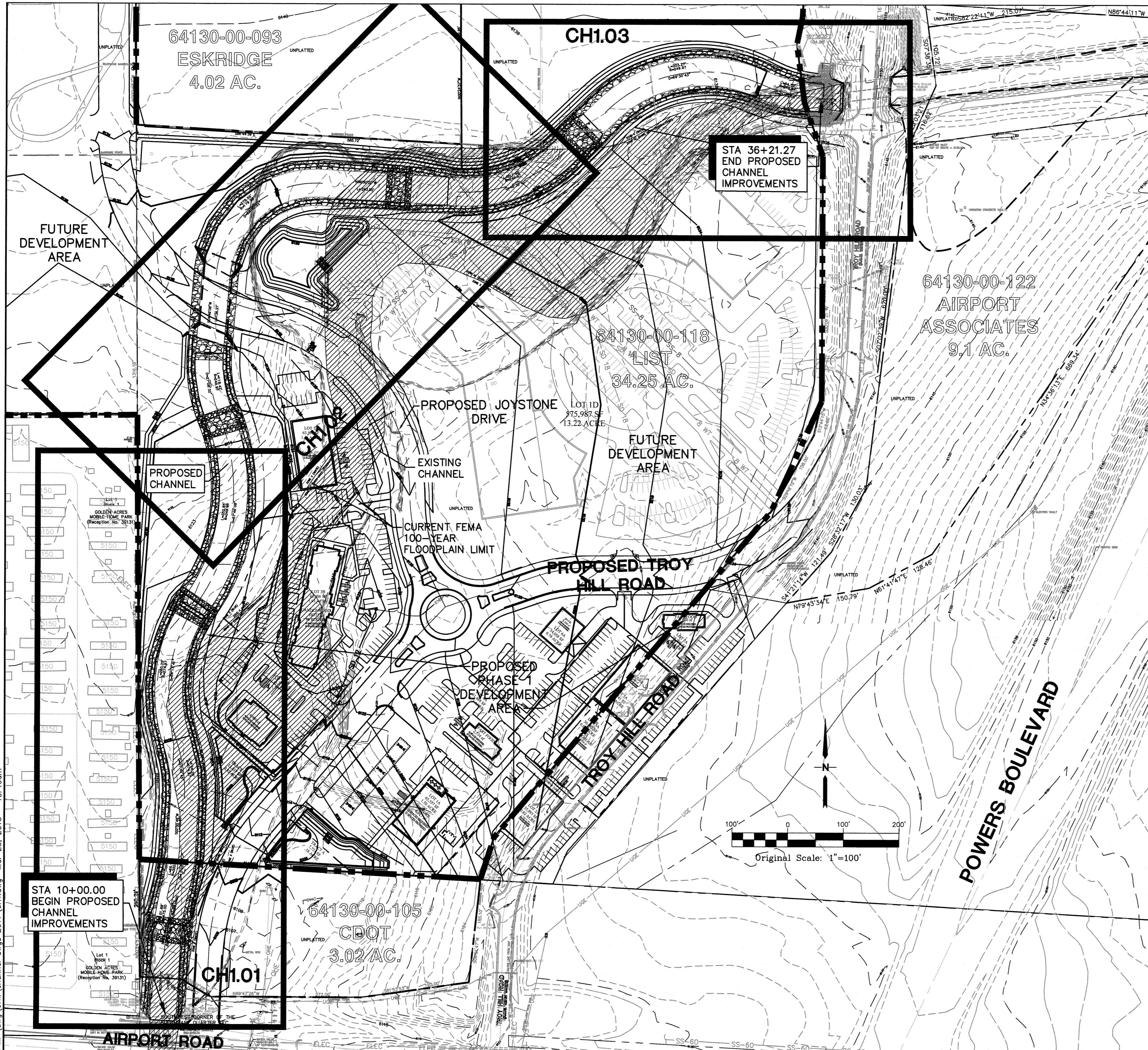


CALL UTILITY NOTIFICATION
CENTER OF COLORADO
1-800-922-1987
CALL 2-BUSINESS DAYS IN ADVANCE
BEFORE YOU DIG, GRADE, OR EXCAVATE
FOR THE MARKING OF UNDERGROUND
MEMBER UTILITIES.

NO.	REVISION	DATE
1	CITY SUBMITTAL	2/20/18
2	CITY COMMENTS	3/09/18
3	CITY COMMENTS	3/28/18

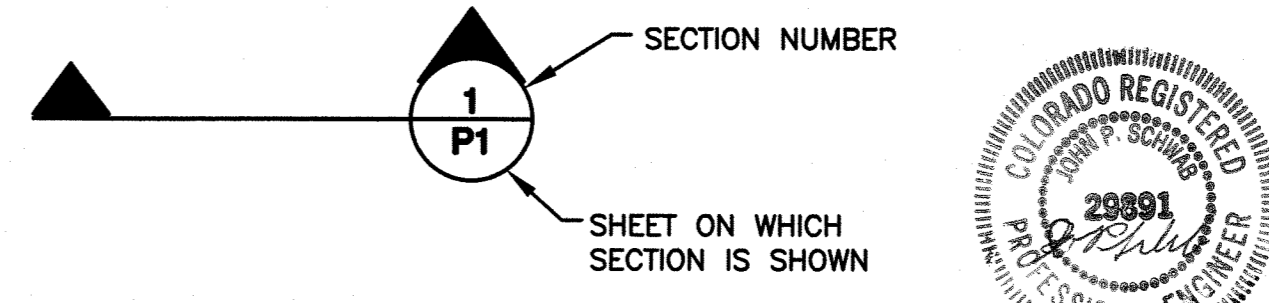
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VERT. SCALE:	N/A	DESIGNED:	JPS
SURVEYED:	LDC	CHECKED:	JPS
CREATED:	10/16/08	LAST MODIFIED:	3/28/18
PROJECT NO.:	020501	MODIFIED BY:	BJJ

SHEET: **G1**



LEGEND:

---	SECTION LINE	---	NEW/EXISTING
---	EASEMENT LINE	---	SECTION LINE
---	CONTOUR	---	EASEMENT LINE
---	PROPERTY LINE	---	CONTOUR
---	FENCE	---	PROPERTY LINE
---	OVERHEAD ELECTRIC LINE W/ POWER POLE	---	FENCE
---	UNDERGROUND ELECTRIC LINE	---	OVERHEAD ELECTRIC LINE W/ POWER POLE
---	SANITARY SEWER LINE	---	UNDERGROUND ELECTRIC LINE
---	UNDERGROUND ELECTRIC	---	SANITARY SEWER LINE
---	TELEPHONE - NEW/EXISTING	---	UNDERGROUND ELECTRIC
---	GAS - NEW/EXISTING	---	TELEPHONE - NEW/EXISTING
---	WATER - NEW/EXISTING	---	GAS - NEW/EXISTING
---	PROPOSED RIPRAP BANK LINING	---	WATER - NEW/EXISTING
---	PROPOSED GRAVEL TRAIL	---	PROPOSED RIPRAP BANK LINING
---	FEMA 100-YEAR FLOODPLAIN LIMITS	---	PROPOSED GRAVEL TRAIL
---	STREAMSIDE OVERLAY ZONE BOUNDARY	---	FEMA 100-YEAR FLOODPLAIN LIMITS
---	GRASS BUFFER STRIP	---	STREAMSIDE OVERLAY ZONE BOUNDARY
---		---	GRASS BUFFER STRIP



- GENERAL NOTES:**
- ALL CONSTRUCTION SHALL MEET THE STANDARDS & SPECIFICATIONS OF THE CITY OF COLORADO SPRINGS ENGINEERING DIVISION AND COLORADO SPRINGS UTILITIES.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE NOTIFICATION AND FIELD LOCATION OF ALL EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, BEFORE BEGINNING CONSTRUCTION. LOCATION OF EXISTING UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO ACTUAL CONSTRUCTION.
 - THE CONTRACTOR SHALL HAVE ONE (1) SIGNED COPY OF THESE APPROVED PLANS AND ONE (1) COPY OF THE APPROPRIATE DESIGN AND CONSTRUCTION STANDARDS AND SPECIFICATIONS AT THE JOB SITE AT ALL TIMES:
 - A. COLORADO SPRINGS ENGINEERING DIVISION STANDARD SPECIFICATIONS.
 - STORM DRAIN PIPE SHALL BE RCP CLASS III WITH CLASS C BEDDING UNLESS OTHERWISE NOTED.
 - STATIONING IS AT CENTERLINE UNLESS OTHERWISE NOTED. ALL ELEVATIONS ARE AT FLOWLINE UNLESS OTHERWISE NOTED. ALL DIMENSIONS ARE FROM FACE OF CURB UNLESS OTHERWISE NOTED. LENGTHS SHOWN FOR STORM SEWER PIPES ARE TO CENTER OF MANHOLE.
 - CONTRACTOR SHALL COORDINATE WITH GAS, ELECTRIC, TELEPHONE AND CABLE T.V. UTILITY SUPPLIERS FOR INSTALLATION OF ALL UTILITIES. MINIMUM COVER FOR ALL NON-CITY UTILITIES SHALL BE 36".
 - CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING STRUCTURES, DEBRIS, WASTE AND OTHER UNSUITABLE FILL MATERIAL FOUND WITHIN THE LIMITS OF EXCAVATION.
 - MATCH INTO EXISTING GRADES AT 3:1 MAX CUT AND FILL SLOPES.
 - REVEGETATION OF ALL DISTURBED AREAS SHALL BE DONE WITH 4" TOPSOIL AND DRY LAND GRASS SEED AFTER FINE GRADING IS COMPLETE. ("FOOTHILLS SEED MIX").
 - EROSION CONTROL SHALL CONSIST OF SILT FENCE AND HAY BALES AS SHOWN ON THE DRAWING, AND TOPSOIL WITH GRASS SEED, WHICH WILL BE WATERED UNTIL VEGETATION HAS BEEN REESTABLISHED.
 - THE EROSION CONTROL MEASURES OUTLINED ON THIS PLAN ARE THE RESPONSIBILITY OF THE DEVELOPER TO MONITOR AND REPLACE, REGRADE, AND REBUILD AS NECESSARY UNTIL VEGETATION IS REESTABLISHED.
 - CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES IN A MANNER THAT WILL PROTECT ADJACENT PROPERTIES AND PUBLIC FACILITIES FROM THE ADVERSE EFFECTS OF EROSION AND SEDIMENTATION AS A RESULT OF CONSTRUCTION AND EARTHWORK ACTIVITIES WITHIN THE PROJECT SITE.
 - ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED AS DETERMINED BY SITE CONDITIONS.
 - THE CONTRACTOR WILL TAKE THE NECESSARY PRECAUTIONS TO PROTECT EXISTING UTILITIES FROM DAMAGE DUE TO THIS OPERATION. ANY DAMAGE TO THE UTILITIES WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE, AND ANY SERVICE DISRUPTION WILL BE SETTLED BY THE CONTRACTOR.
 - ALL BACKFILL, SUB-BASE, AND/OR BASE COURSE MATERIAL SHALL BE COMPACTED PER THE CITY OF COLORADO SPRINGS ENGINEERING DIVISION STANDARD SPECIFICATIONS, SECTION 205 (92% MAX. MODIFIED PROCTOR DENSITY).
 - ALL FINISHED GRADES SHALL HAVE A MINIMUM 0.5% SLOPE TO PROVIDE POSITIVE DRAINAGE.
 - CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS PRIOR TO BEGINNING WORK.

WESTGATE AT POWERS SAND CREEK CENTER TRIBUTARY CHANNEL

CHANNEL IMPROVEMENT PLAN & GENERAL NOTES

JPS ENGINEERING
 19 E. Willamette Ave.
 Colorado Springs, CO 80903
 PH: 719-477-9429
 FAX: 719-471-0766
 www.jpseng.com

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 UTILITIES.

NO.	REVISION	BY	DATE
1	SUBMITTAL TO CITY ENGINEER	JPS	11/13/09
2	CITY ENGINEERING COMMENTS	JPS	1/22/10
3	EXTEND CHANNEL TO S. AIRPORT	JPS	11/25/15
4	CITY SUBMITTAL	JPS	2/20/18

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

RESUBMITTAL REQUIRED IF CONSTRUCTION HAS NOT COMMENCED WITHIN 180 DAYS AFTER REVIEW DATE.

REVIEW:
 STREET DESIGN: _____ DATE: _____
 CURB & GUTTER REVIEW: _____ DATE: _____
 FINAL REVIEW: _____
 DRAINAGE DESIGN: *Jonathan D. Schwan* DATE: *01/04/2018*
 CITY REVIEW: _____
 DRAINAGE BASIN: SAND CREEK
 THIS IS FILED IN ACCORDANCE WITH SECTION 7.7.906 (DRAINAGE ORDINANCE) OF THE CODE OF THE CITY OF COLORADO SPRINGS, 2001, AS AMENDED

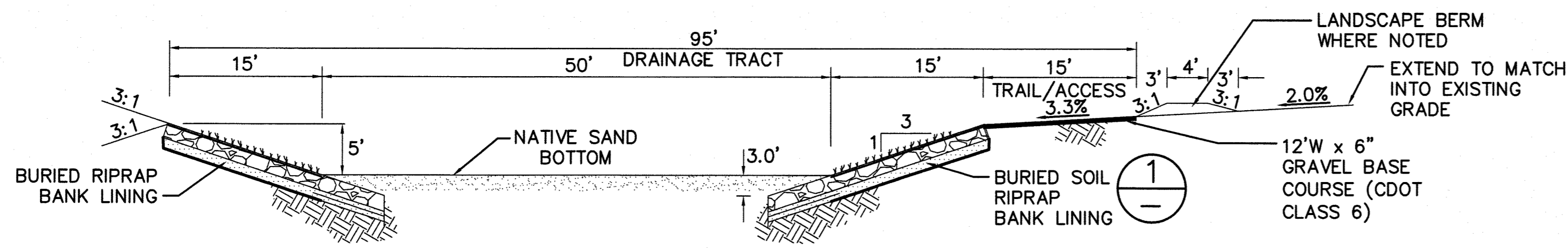
DESIGN DATA:
 SIDEWALKS: WIDTH NA ASPHALT THICKNESS: _____
 LOCATION: ATTACHED AC SURFACE _____
 DETACHED, 6" FROM P/L AC BASE _____
 CURB TYPE 1 2 3 AGGREGATE BASE THICKNESS: _____
 R/W WIDTH F/C-F/C CLASS 6 _____
 STREET TYPE CLASS 5 _____
 HVEEM CLASS 2 _____

BENCHMARK:
 CONCRETE NAIL IN CENTER OF MEDIAN IN CENTER OF AIRPORT ROAD ON BRIDGE OVER SAND CREEK.
 ELEVATION= 6109.59 (NGVD 29)

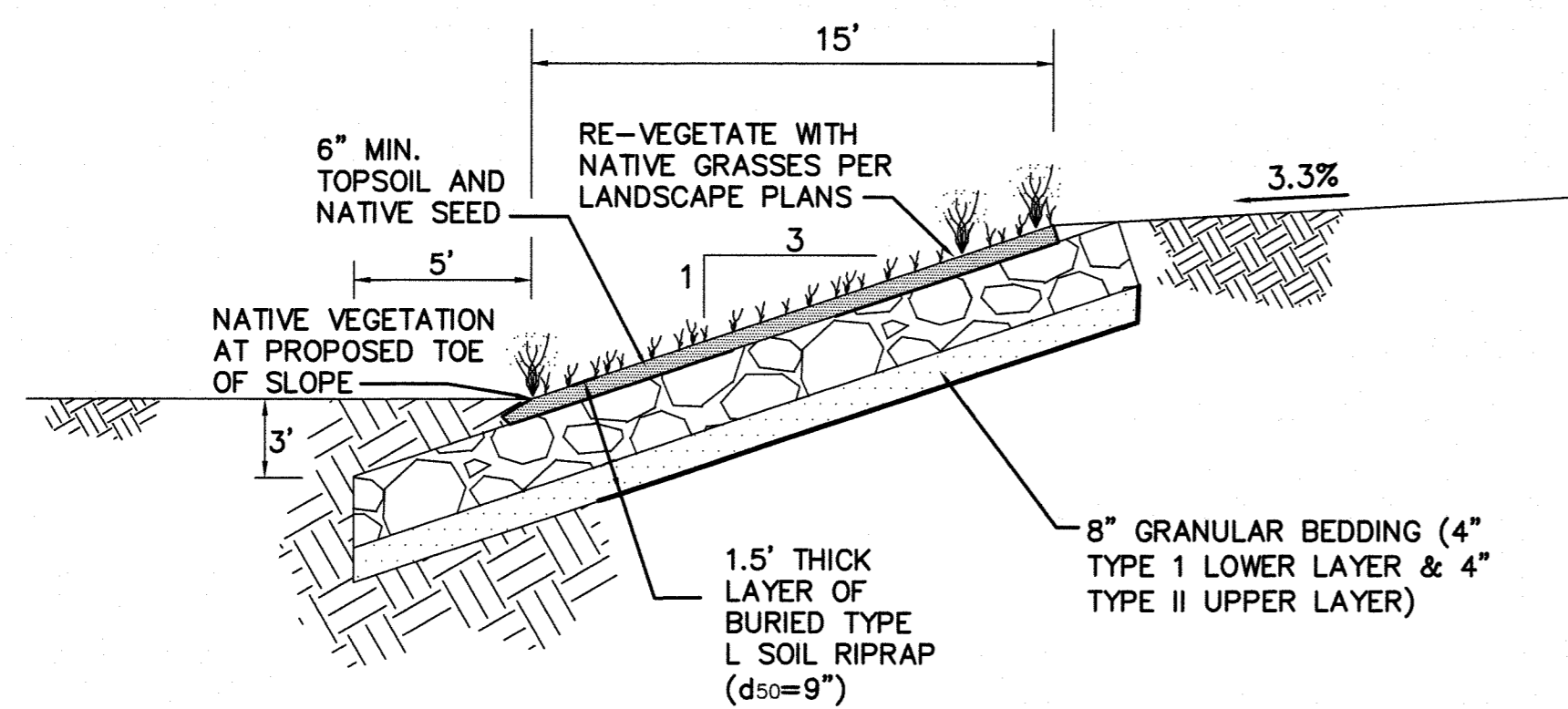
STATEMENTS:
 A. SEWER - ANY CHANGES OR ALTERATIONS EFFECTING THE GRADE, ALIGNMENT, ELEVATION, AND DEPTH OF COVER OF SEWERS AND RESPONSIBILITY OF THE OWNER/DEVELOPER. THE OWNER/DEVELOPER SHALL BE RESPONSIBLE FOR ALL OPERATIONAL DAMAGES AND DEFECTS IN INSTALLATION AND MATERIAL FOR MAINS AND SERVICES FROM THE DATE OF APPROVAL UNTIL FINAL ACCEPTANCE IS ISSUED.
 B. WATER - THIS APPROVAL SUBJECT TO THE FINAL STREET GRADE LEAVING A MINIMUM COVER OF 5' (FIVE FEET) OVER THE WATER MAIN. ANY CHANGES SHALL BE AT THE EXPENSE OF THE OWNER OR DEVELOPER.

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF JPS ENGINEERING.
 JOHN P. SCHWAB, CO. PE. #29891 DATE _____

HORZ. SCALE: 1"=100'
 VERT. SCALE: N/A
 SURVEYED: LDC CHECKED: JPS
 CREATED: 12/05/08 LAST MODIFIED: 3/28/18
 PROJECT NO: 020501 MODIFIED BY: BJJ
 SHEET: **CH1**



TYPICAL CHANNEL SECTION A
SCALE : 1"=10'



TYPICAL BURIED RIPRAP BANK STABILIZATION SECTION 1
SCALE : 1"=5'

GENERAL CHANNEL CONSTRUCTION NOTES:

1. CONTRACTOR SHALL MAINTAIN FLOW CONVEYANCE IN CHANNEL THROUGHOUT CONSTRUCTION PERIOD.
 2. RIPRAP SHALL CONSIST OF HARD, DENSE, DURABLE STONE, ANGULAR IN SHAPE AND RESISTANT TO WEATHERING. ROUNDED STONE OR BOULDERS WILL NOT BE ACCEPTED AS RIPRAP MATERIAL. THE STONE SHALL HAVE A SPECIFIC GRAVITY OF AT LEAST 2.5. EACH PIECE SHALL HAVE ITS GREATEST DIMENSION NOT GREATER THAN THREE TIMES ITS LEAST DIMENSION. FOLLOW SECTION 624 IN THE COLORADO SPRINGS ENGINEERING DIVISION STANDARD SPECIFICATIONS.

3. STONES WITH TYPICAL STONE DIMENSIONS THAT ARE EQUAL TO D50 AND LARGER SHALL BE PLACED AT THE TOP SURFACE WITH FACES AND SHAPES MATCHED TO MINIMIZE VOIDS AND FORM AS SMOOTH A SURFACE AS PRACTICAL. DUMPING AND BACKHOE PLACEMENT ALONE IS NOT SUFFICIENT TO ENSURE A PROPERLY INTERLOCKED SYSTEM. THE MATERIAL MAY BE MACHINE-PLACED AND THEN ARRANGED AS NECESSARY BY USE OF GRADE-ALL WITH MULTI-PRONG GRAPPLE DEVICE OR BY HAND TO INTERLOCK AND FORM A SUBSTANTIAL BOND.

4. TYPE 2 GRANULAR BEDDING SHALL CONFORM TO THE FOLLOWING GRADATION:
 (SLIGHTLY COARSER THAN CDOT'S CLASS A FILTER MATERIAL)

SIEVE	% PASSING
3"	90-100
3/4"	20-90
#4	0-20
#200	0-3

5. RIPRAP SHALL CONFORM TO THE FOLLOWING GRADATION:

	STONE SIZE d ₅₀ (inches)	% OF MATERIAL SMALLER THAN TYPICAL STONE	TYPICAL STONE DIMENSIONS (inches)
RIPRAP TYPE H	18	100	30
		50-70	24
		35-50	18
		2-10	6
RIPRAP TYPE M	12	70-100	21
		50-70	18
		35-50	12
		2-10	4

6. RIPRAP GRADATION SHALL CONFORM TO THE FOLLOWING LIMITS:

$$\frac{D_{max}}{D_{50}} = 1.25$$

$$\frac{D_{max}}{D_{50}} = 2-3$$

7. CONTRACTOR SHALL SUBMIT RIPRAP GRADATION TO ENGINEER FOR APPROVAL PRIOR TO DELIVERY.

8. GROUTED RIPRAP SHALL CONFORM TO SECTION 624.02 IN THE COLORADO SPRINGS ENGINEERING DIVISION STANDARD SPECIFICATIONS.

9. UTILITY INFORMATION AS SHOWN ON THE PLAN SHEETS IS PLOTTED FROM BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL CALL 1-800-922-1987 FOR UTILITY LOCATIONS AT LEAST THREE (3) WORKING DAYS PRIOR TO ANY DIGGING, NOT INCLUDING THE DAY OF ACTUAL CONTACT.

10. EROSION CONTROL MEASURES FOR THE PROJECT ARE REQUIRED. THE CONTRACTOR SHALL IMMEDIATELY RE-SEED AND MULCH ALL DISTURBED AREAS ALONG THE CHANNEL EMBANKMENT ONCE FINAL GRADES ARE REACHED AND/OR AS DIRECTED BY THE ENGINEER.

11. ALL CONSTRUCTION AND MATERIALS SHALL BE IN CONFORMANCE WITH THE COLORADO SPRINGS ENGINEERING DIVISION STANDARD SPECIFICATIONS, SEE SECTION 620, DRAINAGE CHANNELS.

12. ANY EXCAVATION SHALL BE DEWATERED TO THE EXTENT REQUIRED FOR CONSTRUCTION OPERATIONS TO PROCEED UNDER DRY CONDITION PER SECTION 621.04 IN THE COLORADO SPRINGS ENGINEERING DIVISION STANDARD SPECIFICATIONS MANUAL.

13. WITHIN THE LIMITS OF DISTURBANCE, THE CONTRACTOR SHALL CLEAR AND GRUB THE SITE, AS REQUIRED TO INSTALL THE PROPOSED CHANNEL IMPROVEMENTS. ALL SURFACE OBJECTS, TREES, STUMPS, ROOTS, AND OTHER PROTRUDING OBSTRUCTIONS SHALL BE CLEARED AND GRUBBED BY THE CONTRACTOR, INCLUDING MOWING, AS REQUIRED. ALL HOLES RESULTING FROM THE REMOVAL OF OBSTRUCTIONS SHALL BE BACKFILLED WITH SUITABLE MATERIAL AND COMPACTED IN ACCORDANCE WITH CITY STANDARDS. ALL DEBRIS SHALL BE DISPOSED OF OFF SITE BY THE CONTRACTOR.

**WESTGATE AT POWERS
SAND CREEK CENTER TRIBUTARY CHANNEL**



CALL UTILITY NOTIFICATION CENTER OF COLORADO
 1-800-922-1987
 CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MEMBER UTILITIES.

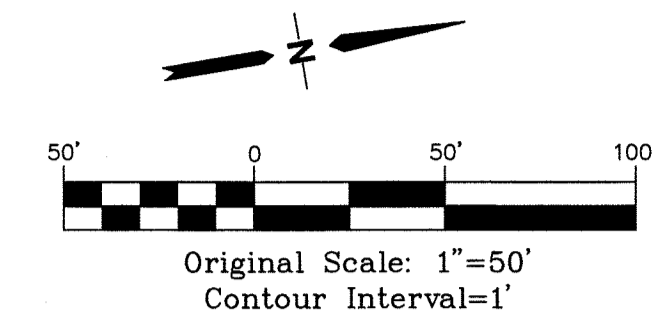
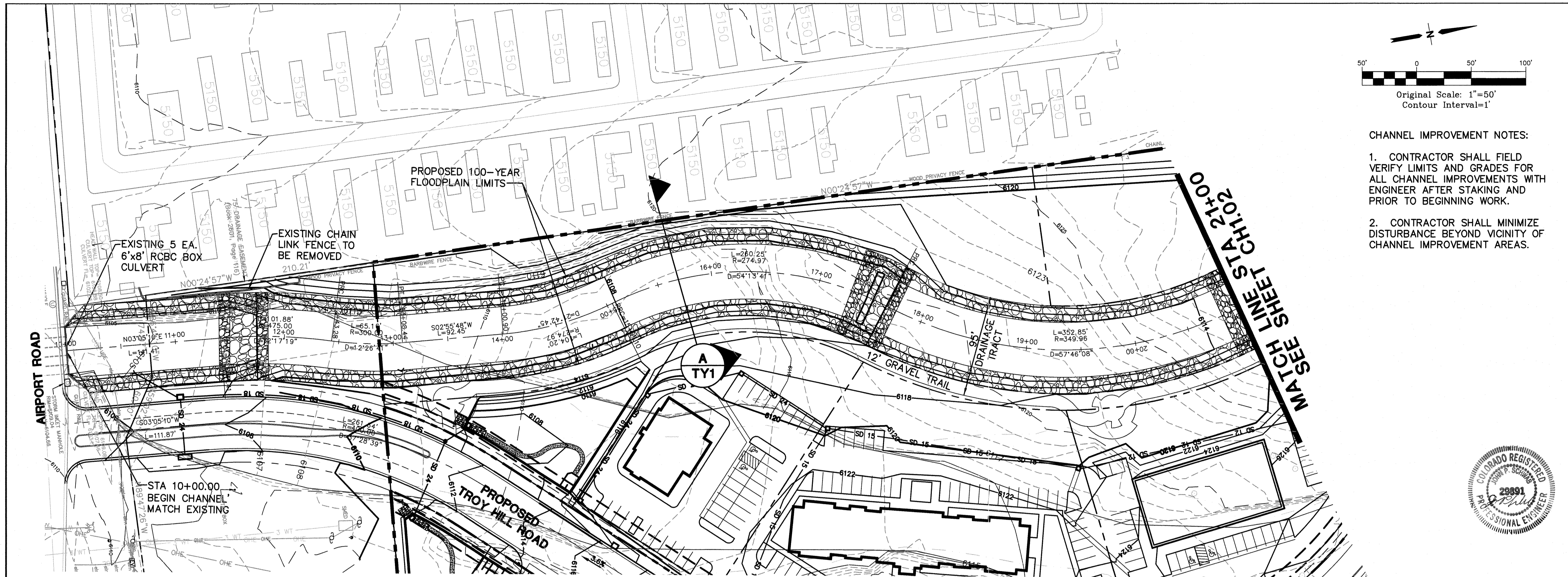
No.	REVISION	BY	DATE
1	SUBMITTAL TO CITY ENGINEER	JPS	11/13/09
2	CITY ENGINEERING COMMENTS	JPS	1/22/10
3	EXTEND CHANNEL TO AIRPORT	JPS	11/25/15
4	CITY SUBMITTAL	JPS	2/20/18
5	CITY COMMENTS	JPS	3/09/18

**TYPICAL CHANNEL SECTIONS
& DETAILS**

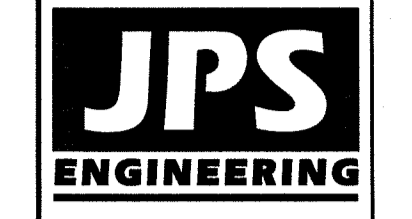


HORZ. SCALE: AS SHOWN	DRAWN: BJJ
VERT. SCALE: N/A	DESIGNED: JPS
SURVEYED: LDC	CHECKED: JPS
CREATED: 9/01/09	LAST MODIFIED: 3/09/18
PROJECT NO: 020501	MODIFIED BY: BJJ

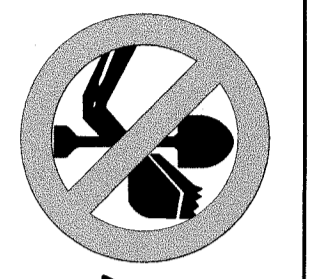
SHEET: **TY1**



- CHANNEL IMPROVEMENT NOTES:
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 - CONTRACTOR SHALL MINIMIZE DISTURBANCE BEYOND VICINITY OF CHANNEL IMPROVEMENT AREAS.



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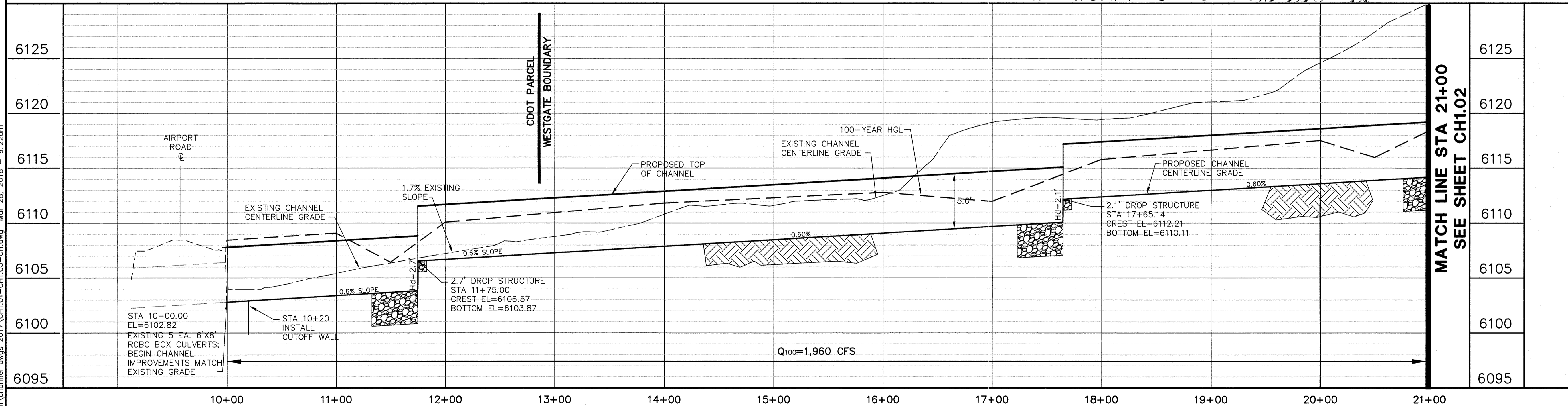


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WESTGATE AT POWERS SAND CREEK CENTER TRIBUTARY CHANNEL

CHANNEL PLAN & PROFILE



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REVIEW:
STREET DESIGN: _____ DATE: _____
CURB & GUTTER REVIEW: _____ DATE: _____
FINAL REVIEW: _____ DATE: _____
DRAINAGE DESIGN: _____ DATE: 04/04/2018
CITY REVIEW: *Jonathan B. DeWitt*
DRAINAGE BASIN: SAND CREEK
THIS IS FILED IN ACCORDANCE WITH SECTION 7.7.906 (DRAINAGE ORDINANCE) OF THE CODE OF THE CITY OF COLORADO SPRINGS, 2001, AS AMENDED.

DESIGN DATA:
SIDEWALKS: WIDTH NA ASPHALT THICKNESS: _____
LOCATION: ATTACHED AC SURFACE _____
DETACHED, 6" FROM P/L AC BASE _____
CURB TYPE 1 2 3 AGGREGATE BASE THICKNESS: _____
R/W WIDTH _____ F/C-F/C _____ CLASS 5 _____
STREET TYPE _____ CLASS 6 _____
HVEEM _____ CLASS 2 _____

BENCHMARK:
CONCRETE NAIL IN CENTER OF MEDIAN IN CENTER OF AIRPORT ROAD ON BRIDGE OVER SAND CREEK. ELEVATION= 6109.59 (NGVD 29)

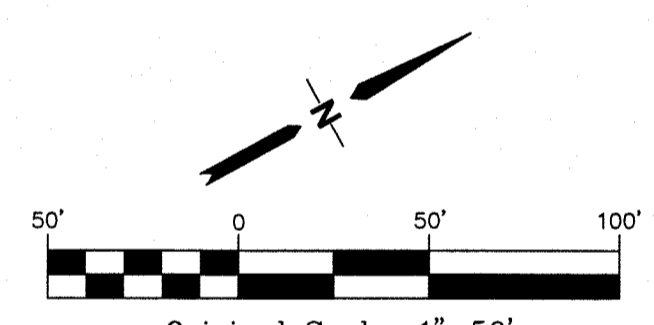
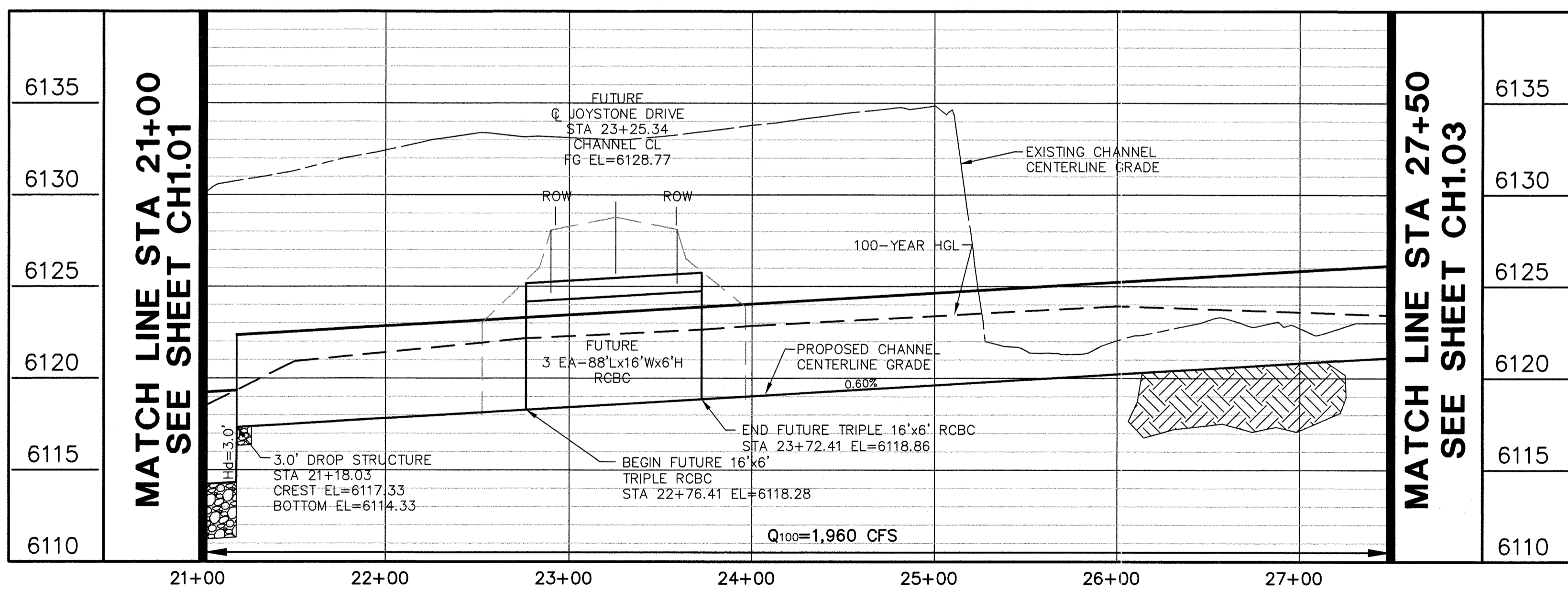
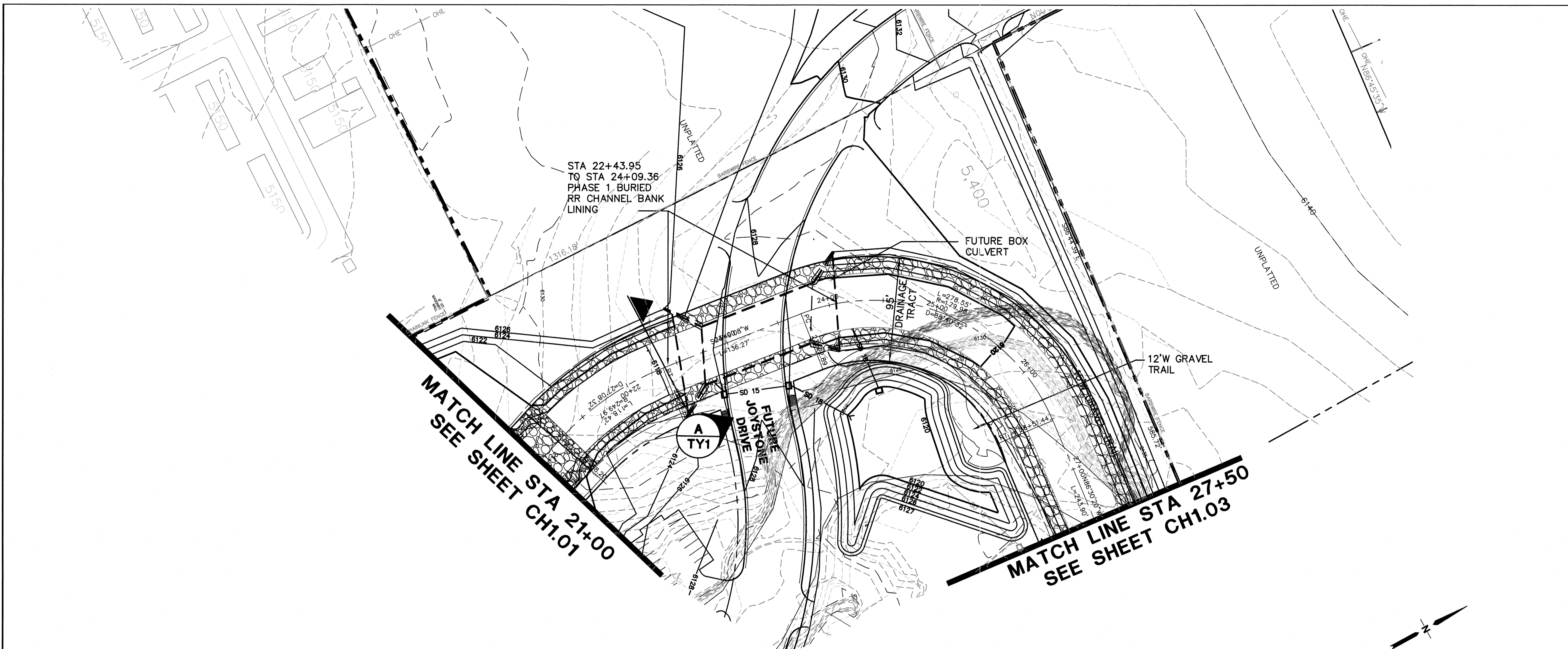
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PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF JPS ENGINEERING.
JOHN P. SCHWAB, CO. PE. #29891 DATE _____

HORIZ. SCALE: 1"=50'	DRAWN: RMD
VERT. SCALE: 1"=5'	DESIGNED: JPS
SURVEYED: LDC	CHECKED: JPS
CREATED: 8/2/06	LAST MODIFIED: 3/28/18
PROJECT NO: 020501	MODIFIED BY: BJJ
SHEET: CH1.01	

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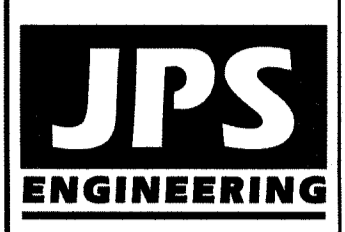


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WESTGATE AT POWERS SAND CREEK CENTER TRIBUTARY CHANNEL

CHANNEL PLAN & PROFILE



19 E. Wilomette Ave.
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FOR THE MEMBER UTILITIES.

NO.	REVISION	BY	DATE
1	SUBMITTAL TO CITY ENGINEER	JPS	11/13/09
2	CITY ENGINEERING COMMENTS	JPS	1/22/10
3	EXTEND CHANNEL S. TO AIRPORT	JPS	12/19/17
4	CITY SUBMITTAL	JPS	2/20/18

STATEMENT:
PLAN REVIEW BY CITY IS PROVIDED ONLY FOR GENERAL CONFORMANCE WITH DESIGN CRITERIA. THE CITY IS NOT RESPONSIBLE FOR THE ACCURACY AND ADEQUACY OF THE DESIGN, DIMENSIONS, AND/OR ELEVATIONS WHICH SHALL BE CONFIRMED AT THE JOB SITE. THE CITY, THROUGH THE APPROVAL OF THIS DOCUMENT, ASSUMES NO RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THIS DOCUMENT.
RESUBMITTAL REQUIRED IF CONSTRUCTION HAS NOT COMMENCED WITHIN 180 DAYS AFTER REVIEW DATE.

REVIEW:
STREET DESIGN:
CURB & GUTTER REVIEW _____ DATE: _____
FINAL REVIEW _____ DATE: _____
DRAINAGE DESIGN:
CITY REVIEW: *Jonathan S. Schwab* DATE: *04/04/2018*
DRAINAGE BASIN: **SAND CREEK**
THIS IS FILED IN ACCORDANCE WITH SECTION 7.7.906 (DRAINAGE ORDINANCE) OF THE CODE OF THE CITY OF COLORADO SPRINGS, 2001, AS AMENDED

DESIGN DATA:
SIDEWALKS: WIDTH NA ASPHALT THICKNESS: _____
LOCATION: ATTACHED AC SURFACE _____
DETACHED, 6" FROM P/L AC BASE _____
CURB TYPE 2 3 AGGREGATE BASE THICKNESS: _____
R/W WIDTH _____ F/C-F/C _____ CLASS 6 _____
STREET TYPE _____ CLASS 5 _____
HVEM _____ CLASS 2 _____

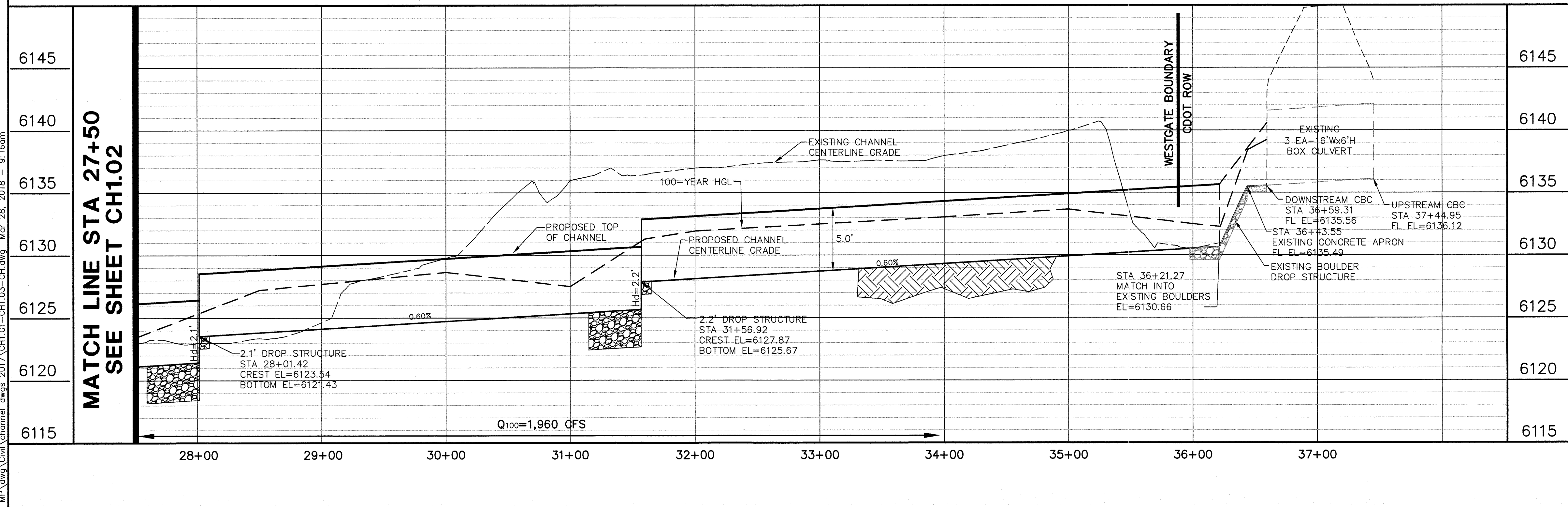
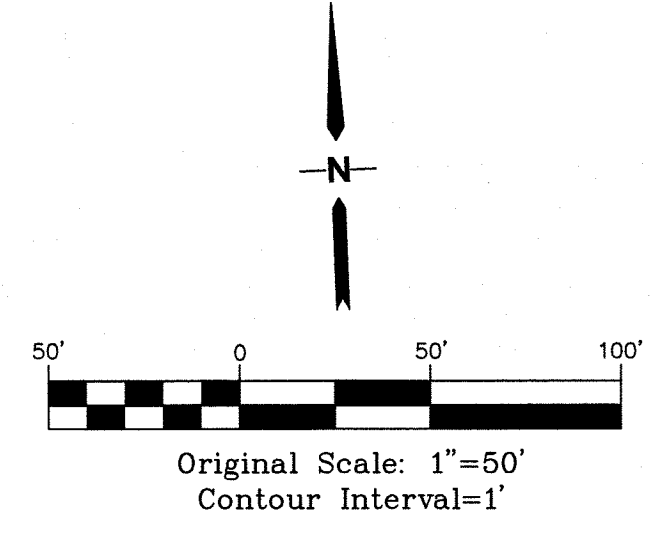
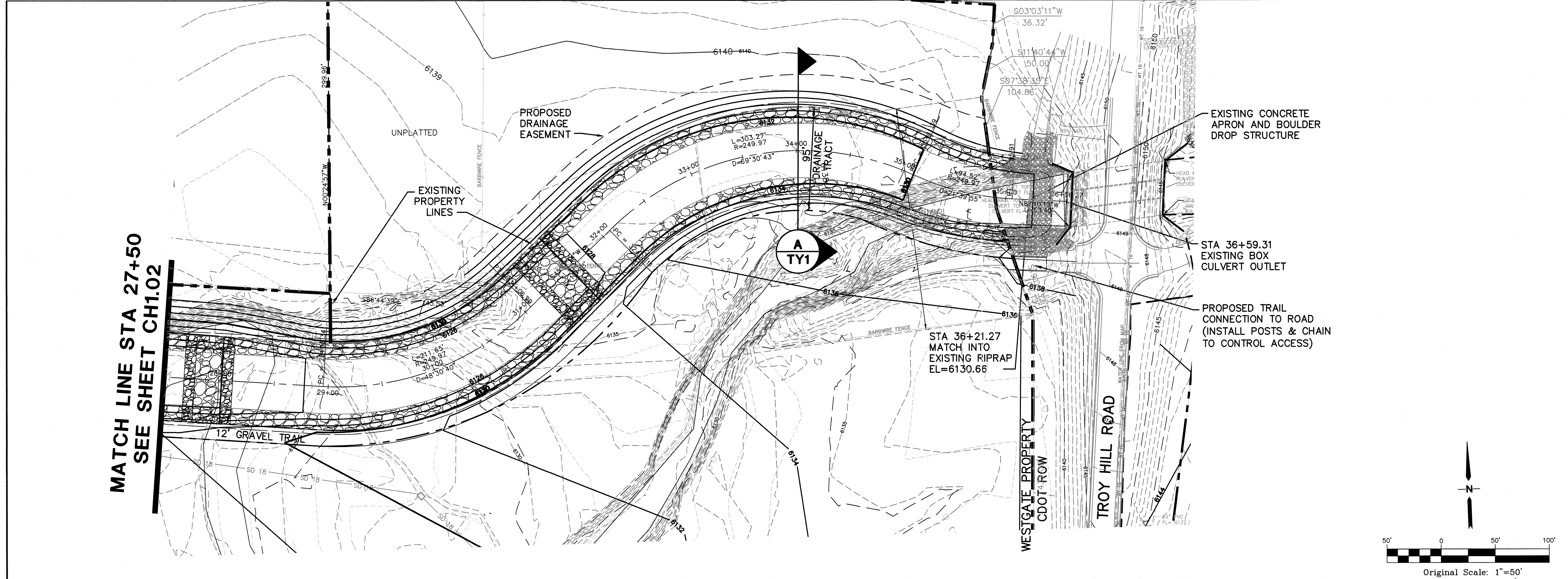
BENCHMARK:
CONCRETE NAIL IN CENTER OF
MEDIAN IN CENTER OF AIRPORT ROAD
ON BRIDGE OVER SAND CREEK.
ELEVATION= 6109.59 (NGVD 29)

STATEMENTS:
A. SEWER - ANY CHANGES OR ALTERATIONS EFFECTING THE GRADE, ALIGNMENT, ELEVATION, AND DEPTH OF COVER OF SEWERS AND RESPONSIBILITY OF THE OWNER/DEVELOPER. THE OWNER/DEVELOPER SHALL BE RESPONSIBLE FOR ALL OPERATIONAL DAMAGES AND DEFECTS IN INSTALLATION AND MATERIAL FOR MAINS AND SERVICES FROM THE DATE OF APPROVAL UNTIL FINAL ACCEPTANCE IS ISSUED.
B. WATER - THIS APPROVAL SUBJECT TO THE FINAL STREET GRADE LEAVING A MINIMUM COVER OF 5' (FIVE FEET) OVER THE WATER MAIN. ANY CHANGES SHALL BE AT THE EXPENSE OF THE OWNER OR DEVELOPER.

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF JPS ENGINEERING.
JOHN P. SCHWAB, CO. PE. #29891 DATE _____

HORZ. SCALE: 1"=50'
VERT. SCALE: 1"=5'
SURVEYED: **LDC**
CREATED: **8/2/06**
PROJECT NO: **020501**
SHEET: **CH1.02**
DRAWN: **RMD**
DESIGNED: **JPS**
CHECKED: **JPS**
LAST MODIFIED: **3/28/18**
MODIFIED BY: **BJJ**

J:\projects\020501.airport_MP\dwg\Civil\channel dwgs\2017\CH1.01-CH1.03-CH1.dwg Mar 28, 2018 - 9:16am



- CHANNEL IMPROVEMENT NOTES:**
1. CONTRACTOR SHALL FIELD VERIFY LIMITS AND GRADES FOR ALL CHANNEL IMPROVEMENTS WITH ENGINEER AFTER STAKING AND PRIOR TO BEGINNING WORK.
 2. CONTRACTOR SHALL MINIMIZE DISTURBANCE BEYOND IMMEDIATE VICINITY OF CHANNEL IMPROVEMENT AREAS.



WESTGATE AT POWERS

SAND CREEK CENTER TRIBUTARY CHANNEL

CHANNEL PLAN & PROFILE

MATCH LINE STA 27+50
SEE SHEET CH1.02

MATCH LINE STA 27+50
SEE SHEET CH1.02

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

RESUBMITAL REQUIRED IF CONSTRUCTION HAS NOT COMMENCED WITHIN 180 DAYS AFTER REVIEW DATE.

REVIEW:
STREET DESIGN: _____ DATE: _____
CURB & GUTTER REVIEW: _____ DATE: _____
FINAL REVIEW: _____ DATE: _____

DRAINAGE DESIGN:
CITY REVIEW: *Jonathan B. Decker* DATE: 04/04/2018
DRAINAGE BASIN: SAND CREEK

THIS IS FILED IN ACCORDANCE WITH SECTION 7.7.906 (DRAINAGE ORDINANCE) OF THE CODE OF THE CITY OF COLORADO SPRINGS, 2001, AS AMENDED

DESIGN DATA:
SIDEWALKS: WIDTH NA ASPHALT THICKNESS: _____
LOCATION: ATTACHED AC SURFACE _____
DETACHED, 6" FROM P/L AC BASE _____

CURB TYPE 1 2 3 AGGREGATE BASE THICKNESS:
R/W WIDTH _____ F/C-F/C _____ CLASS 6 _____
STREET TYPE _____ CLASS 5 _____
HVEEM _____ CLASS 2 _____

BENCHMARK:
CONCRETE NAIL IN CENTER OF AIRPORT ROAD
MEDIAN IN CENTER OF AIRPORT ROAD
ON BRIDGE OVER SAND CREEK.
ELEVATION= 6109.59 (NGVD 29)

STATEMENTS:
A. SEWER - ANY CHANGES OR ALTERATIONS EFFECTING THE GRADE, ALIGNMENT, ELEVATION, AND DEPTH OF COVER OF SEWERS AND RESPONSIBILITY OF THE OWNER/DEVELOPER. THE OWNER/DEVELOPER SHALL BE RESPONSIBLE FOR ALL OPERATIONAL DAMAGES AND DEFECTS IN INSTALLATION AND MATERIAL FOR MAINS AND SERVICES FROM THE DATE OF APPROVAL UNTIL FINAL ACCEPTANCE IS ISSUED.

B. WATER - THIS APPROVAL SUBJECT TO THE FINAL STREET GRADE LEAVING A MINIMUM COVER OF 5' (FIVE FEET) OVER THE WATER MAIN. ANY CHANGES SHALL BE AT THE EXPENSE OF THE OWNER OR DEVELOPER.

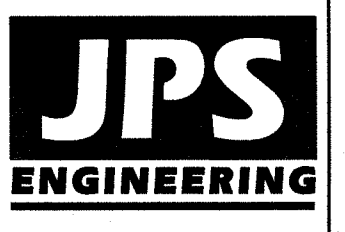
PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF JPS ENGINEERING.

JOHN P. SCHWAB, CO. PE. #29891 DATE _____

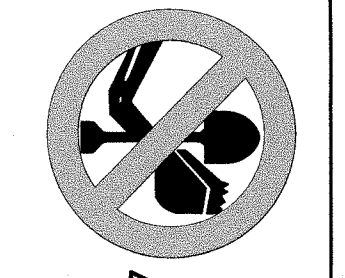
HORIZ. SCALE: 1"=50'
VERT. SCALE: 1"=5'
SURVEYED: LDC
CREATED: 8/2/06
PROJECT NO: 020501

DRAWN: RMD
DESIGNED: JPS
CHECKED: JPS
LAST MODIFIED: 2/28/18
MODIFIED BY: BJJ

SHEET: **CH1.03**

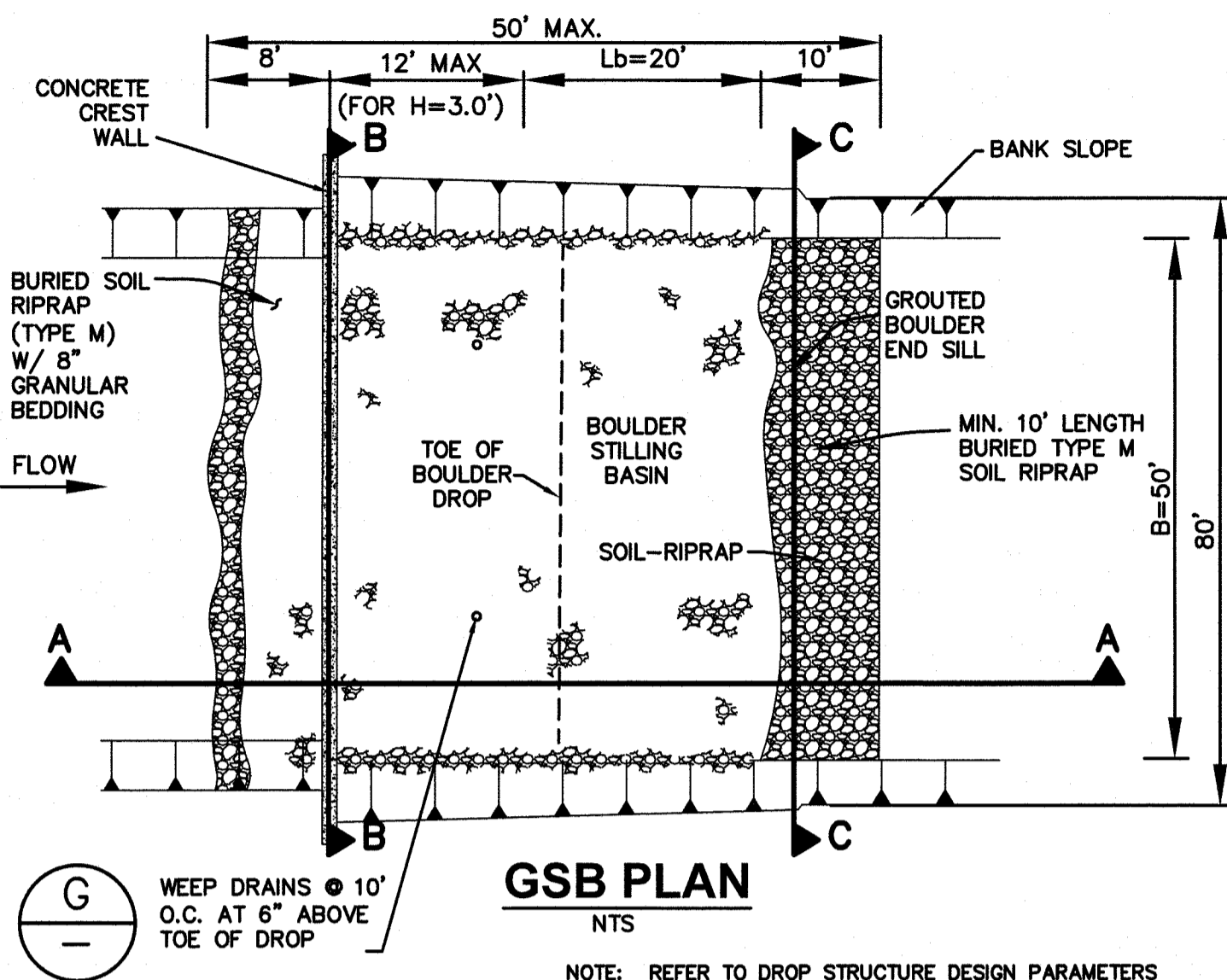


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Colorado Springs, CO 80903
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FAX: 719-471-0766
www.jpsegr.com



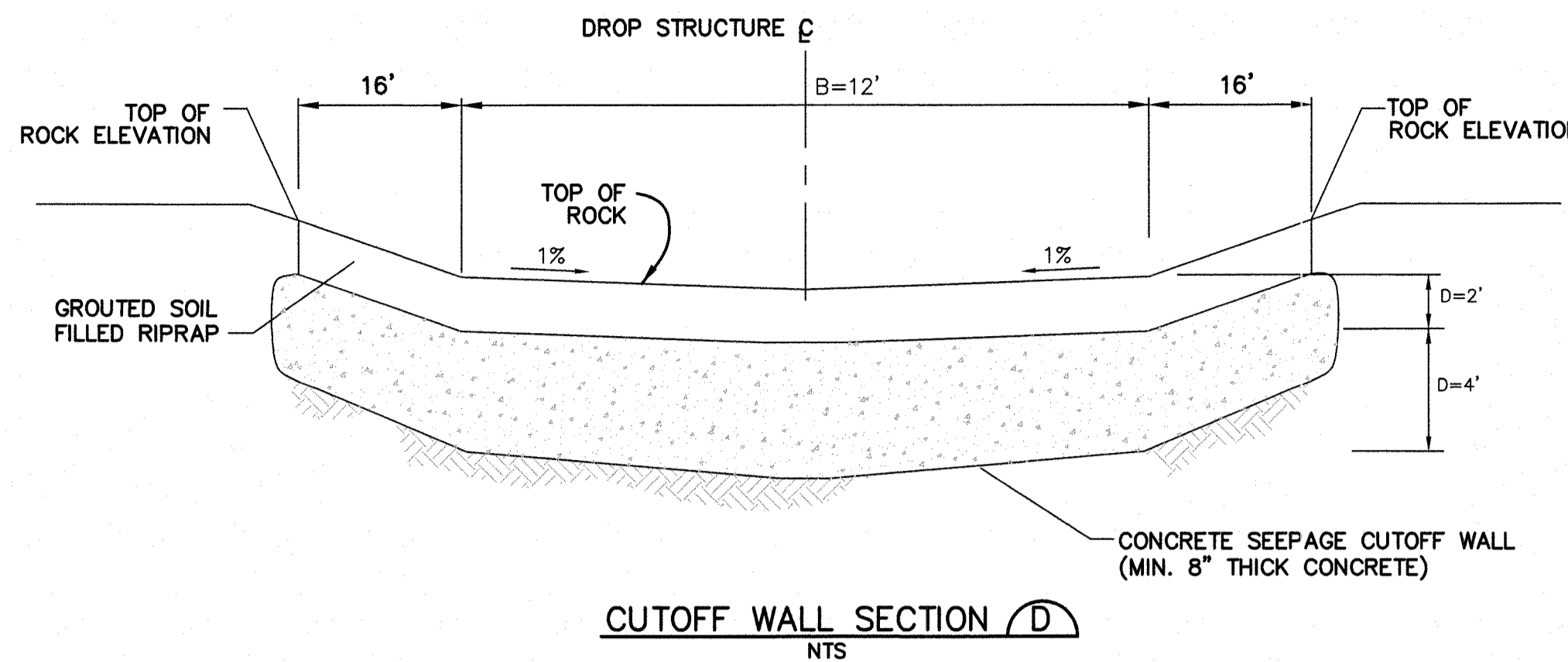
CALL UTILITY NOTIFICATION CENTER OF COLORADO
1-800-922-1987
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG. BE RESPONSIBLE FOR THE MEMBER UTILITIES.

No.	REVISION	BY	DATE
1	SUBMITTAL TO CITY ENGINEER	JPS	11/13/09
2	CITY ENGINEERING COMMENTS	JPS	1/22/10
3	EXTEND CHANNEL S. TO AIRPORT	JPS	11/09/17
4	CITY SUBMITTAL	JPS	2/20/18

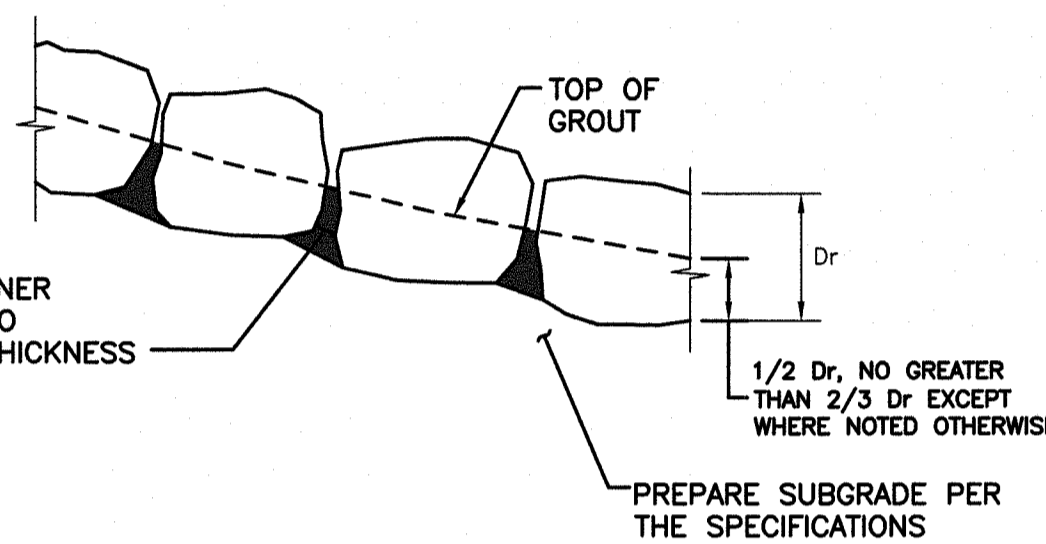


GSB PLAN

NOTE: REFER TO DROP STRUCTURE DESIGN PARAMETERS



CUTOFF WALL SECTION D



PLACE GROUT IN A MANNER THAT FILLS ALL VOIDS TO THE SPECIFIED GROUT THICKNESS

BOULDER PLACEMENT NOTES:

1. PLACE BOULDERS WITH THE REQUIRED BOULDER HEIGHT VERTICAL. PLACE BOULDERS AS TIGHTLY TOGETHER AS POSSIBLE (WITHOUT TOUCHING) WHILE PROVIDING ENOUGH ROOM BETWEEN THEM TO THOROUGHLY VIBRATE THE GROUT AND TO ENSURE NO GAPS IN THE GROUT. THE SMALL DIMENSION OF A 2X4 CAN BE USED AS A GUIDE TO CHECK MINIMUM SPACING.
2. BEFORE GROUTING, CLEAN ALL DIRT AND MATERIAL FROM ROCK THAT COULD PREVENT THE GROUT FROM BINDING TO THE ROCK. KEEP BOULDERS FROM TOUCHING. AVOID SLIDING BOULDERS AGAINST SUBGRADE TO PROPERLY POSITION.

MATERIAL SPECIFICATIONS:

1. ALL GROUT SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH EQUAL TO 3200 PSI.
2. ONE CUBIC YARD OF GROUT SHALL HAVE A MINIMUM OF SIX (6) SACKS OF TYPE II PORTLAND CEMENT.
3. A MAXIMUM OF 25% TYPE F FLY ASH MAY BE SUBSTITUTED FOR THE PORTLAND CEMENT.
4. THE AGGREGATE SHALL BE COMPRISED OF 70% NATURAL SAND (FINES) AND 30% 3/8-INCH ROCK (COARSE).
5. THE GROUT SLUMP SHALL BE BETWEEN 4-INCHES TO 6-INCHES.
6. AIR ENTRAINMENT SHALL BE BETWEEN 5.5% AND 7.5%.
7. TO CONTROL SHRINKAGE AND CRACKING, 1.5 POUNDS OF FIBERMESH, OR EQUIVALENT, SHALL BE USED PER CUBIC YARD OF GROUT.
8. COLOR ADDITIVE IN REQUIRED AMOUNTS SHALL BE USED WHEN SO SPECIFIED BY CONTRACT.

GROUT PLACEMENT SPECIFICATIONS:

1. SPECIAL PROCEDURES SHALL BE REQUIRED FOR GROUT PLACEMENT WHEN THE AIR TEMPERATURES ARE LESS THAN 40°F OR GREATER THAN 90°F. CONTRACTOR SHALL OBTAIN PRIOR APPROVAL FROM THE DESIGN ENGINEER OF THE PROCEDURES TO BE USED FOR PROTECTING THE GROUT.
2. GROUT SHALL BE DELIVERED BY MEANS OF A LOW PRESSURE (LESS THAN 10 PSI) GROUT PUMP USING A 2-INCH DIAMETER (MAXIMUM) NOZZLE.
3. FULL DEPTH PENETRATION OF THE GROUT INTO THE BOULDER VOIDS SHALL BE ACHIEVED BY INJECTING GROUT STARTING WITH THE NOZZLE NEAR THE BOTTOM AND RAISING IT AS THE GROUT FILLS, WHILE VIBRATING GROUT INTO PLACE USING A PENCIL VIBRATOR.
4. ALL GROUT BETWEEN BOULDERS SHALL BE TREATED WITH A BROOM FINISH.
5. AFTER GROUT PLACEMENT, EXPOSED BOULDER FACES SHALL BE CLEANED AND FREE OF GROUT.
6. ALL FINISHED GROUT SURFACES SHALL BE SPRAYED WITH A CLEAR LIQUID MEMBRANE CURING COMPOUND AS SPECIFIED IN ASTM C309.

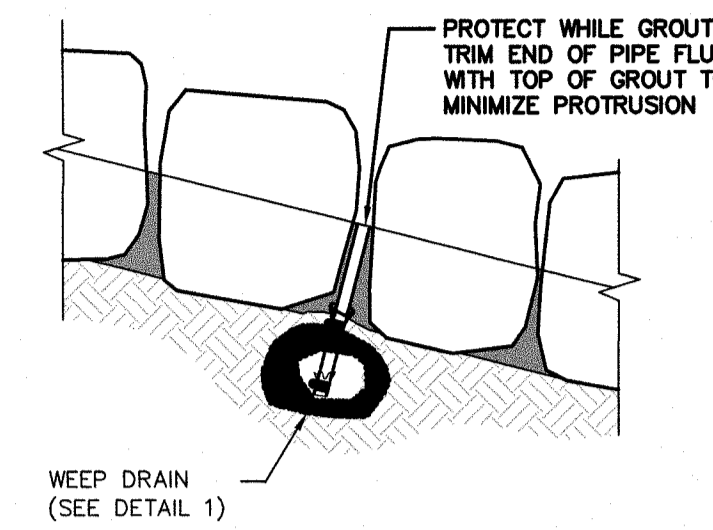
GROUTED BOULDER PLACEMENT DETAIL E

GROUTED SLOPING BOULDER DROP STRUCTURE DESIGN DATA:
(PER UDFCD TABLE 9-1)

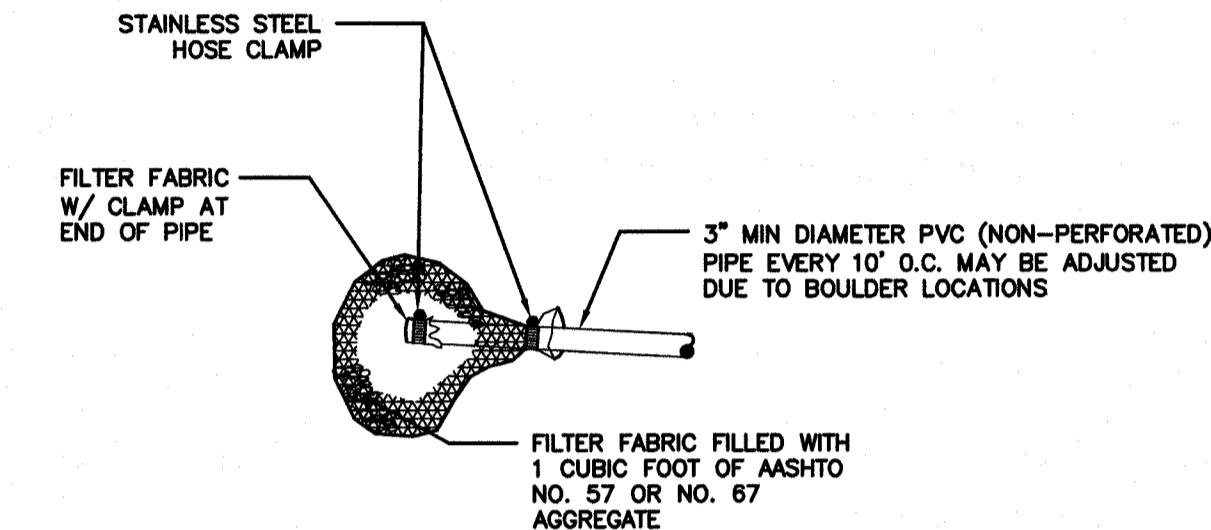
CHANNEL SECTION:
B = 50'
Z = 3:1
Y_n = 5.0'

DROP STRUCTURE DESIGN:
H_d = 3.0' MAX. DROP HEIGHT
S = 4:1 MAX. LONGITUDINAL SLOPE
D_b = 1' STILLING BASIN DEPRESSION
L_a = 8' LENGTH OF APPROACH RIPRAP
L_b = 20' LENGTH OF STILLING BASIN
B = 50' STILLING BASIN WIDTH (=CREST WIDTH)
D_c = 6' CUTOFF WALL DEPTH
L_d = 10' LENGTH OF RIPRAP DOWNSTREAM OF STILLING BASIN
D_50 = 12" RIPRAP SIZE FOR APPROACH AND DOWNSTREAM LENGTH
D_r = 30" BOULDER SIZE

DROP STRUCTURE DESIGN PARAMETERS F

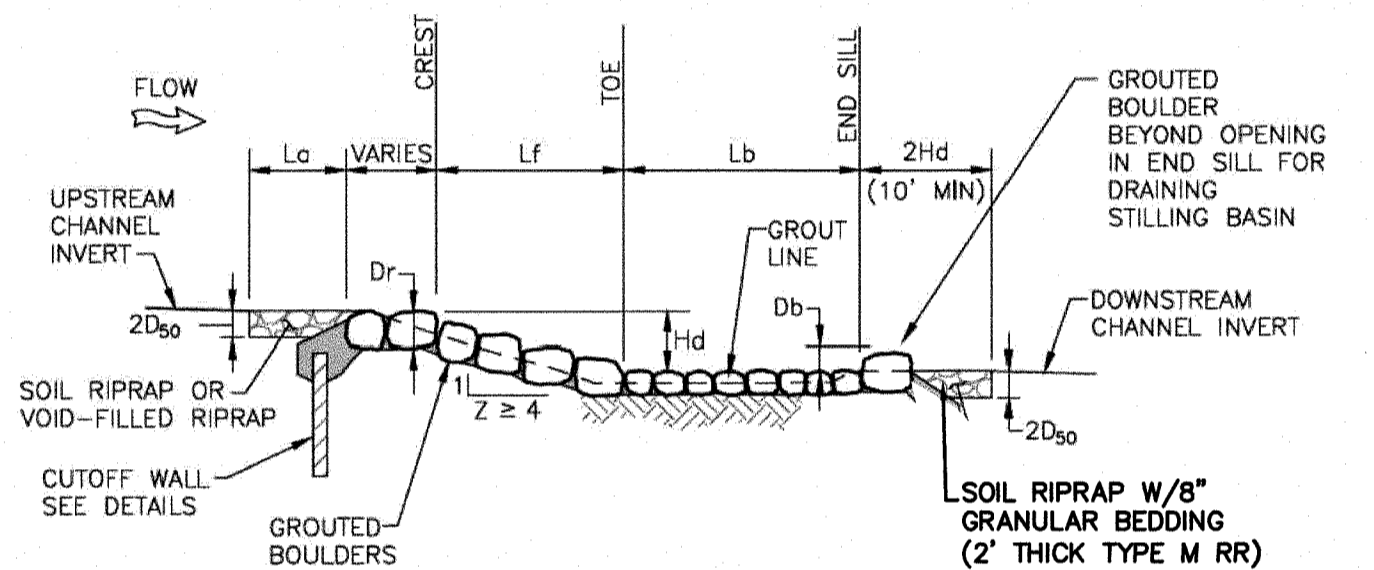


GROUTED BOULDERS



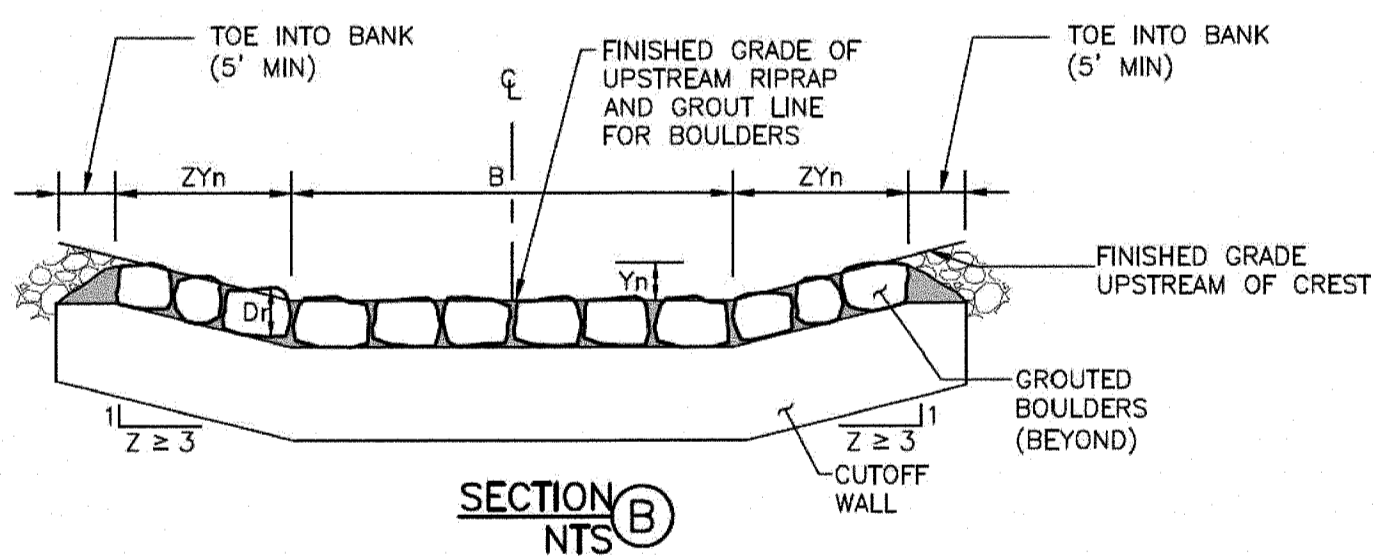
WEEP DRAINS

WEEP DRAIN DETAILS G



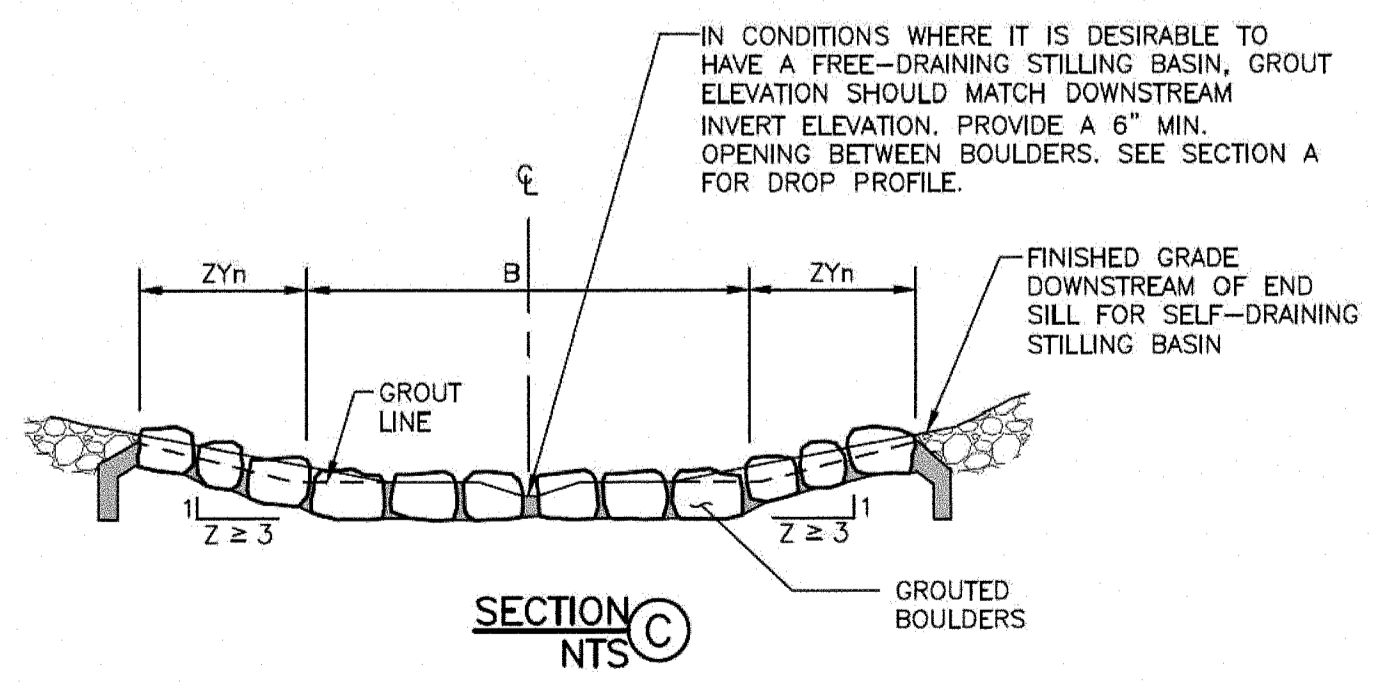
GROUTED BOULDER DROP PROFILE A

NOTE: REFER TO DROP STRUCTURE DESIGN PARAMETERS



SECTION B

NTS

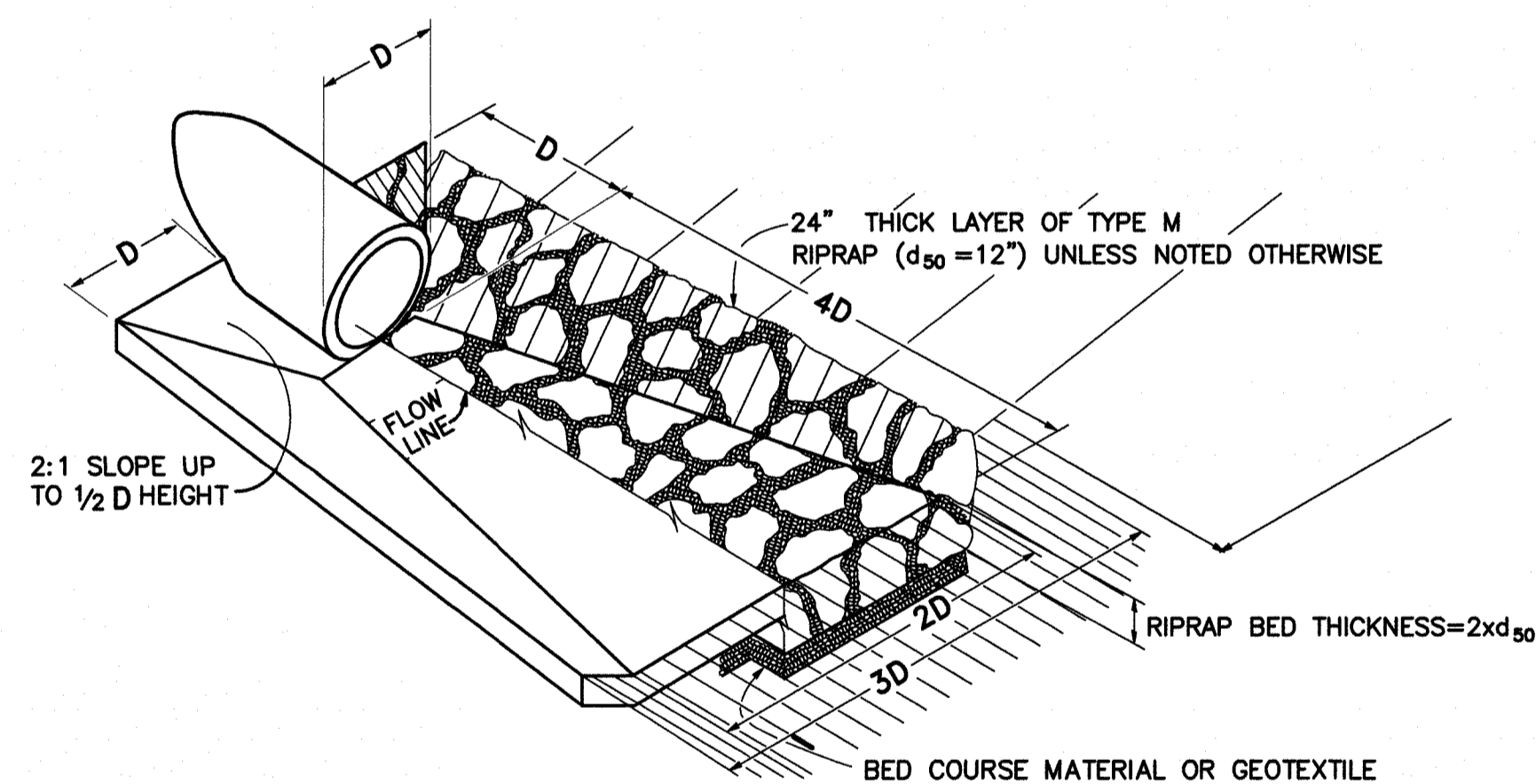


SECTION C

NTS

GROUTED SLOPING BOULDER DROP DETAIL I

NOTE: REFER TO DROP STRUCTURE DESIGN PARAMETERS

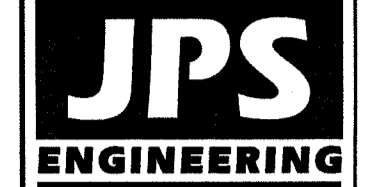
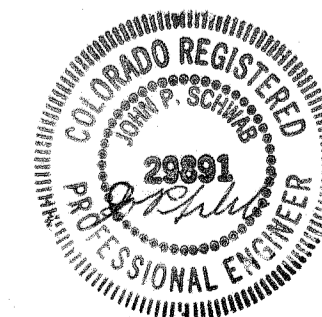


NOTE: TYPICAL RIPRAP APRON DIMENSIONS SHALL BE 12'Lx9'Wx1.5'D UNLESS NOTED OTHERWISE

TYPICAL OUTLET PROTECTION / RIPRAP APRON DETAIL 3

STORM SEWER OUTLET DESIGN TABLE

CHANNEL STATION	PIPE SIZE (IN)	APRON LENGTH (FT)	APRON WIDTH (FT)	RR SIZE (d ₅₀)	RIPRAP THICKNESS (FT)
10+60.70 (25.51' R)	36"	15'	9'	12	2
24+19.10 (25.17' R)	18"	7.5'	4.5'	12	2



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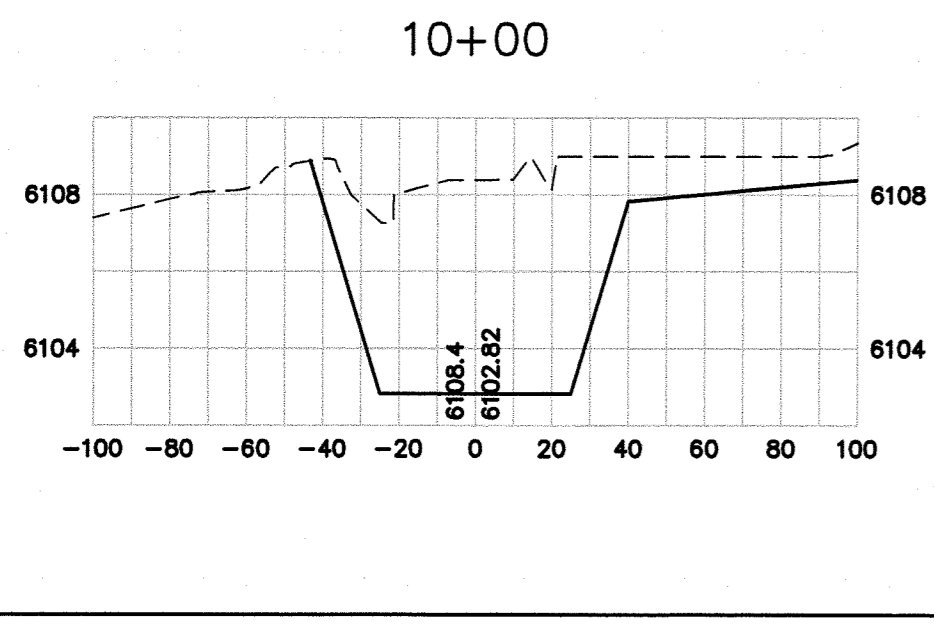
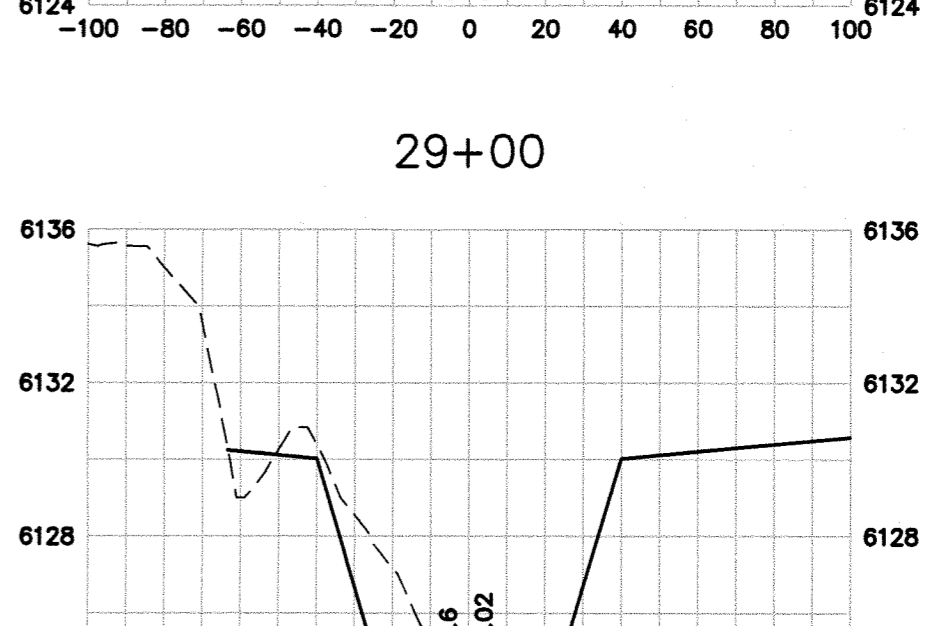
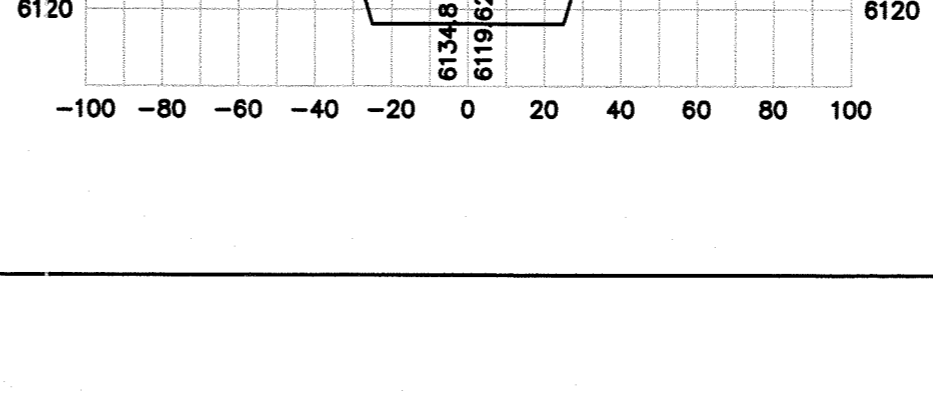
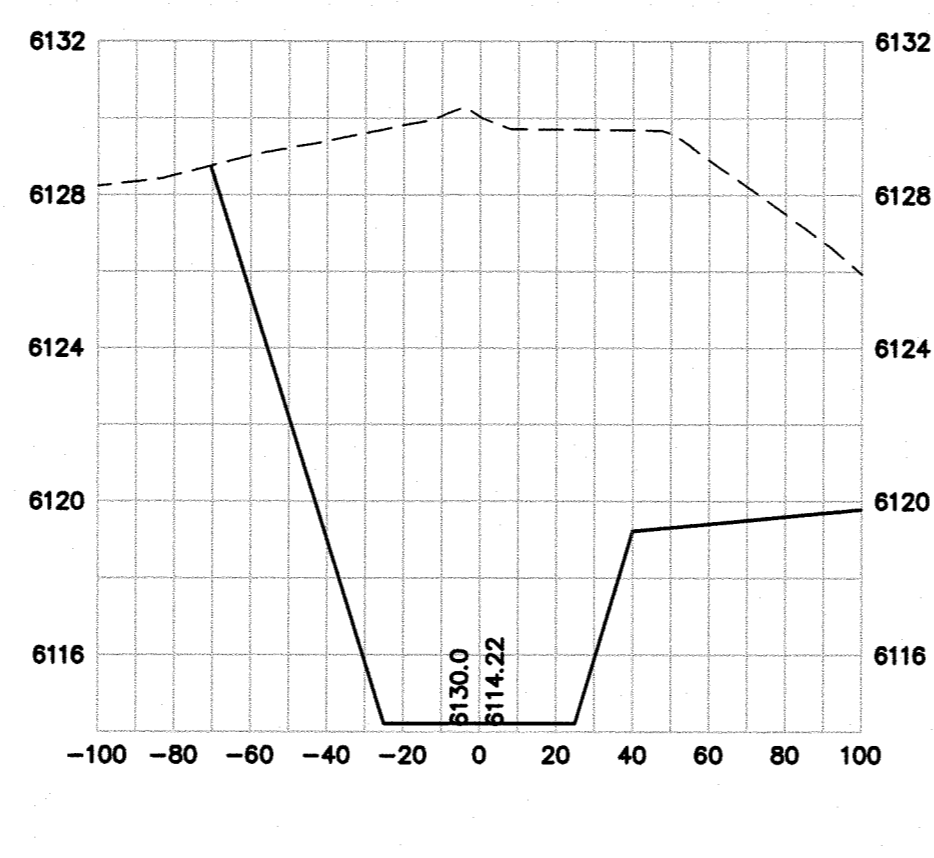
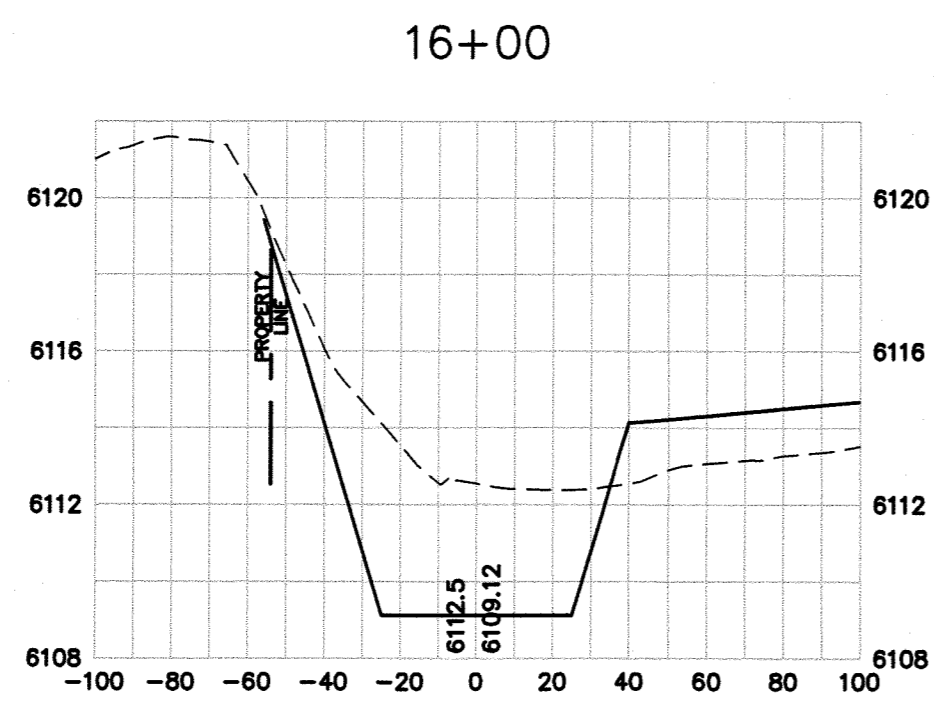
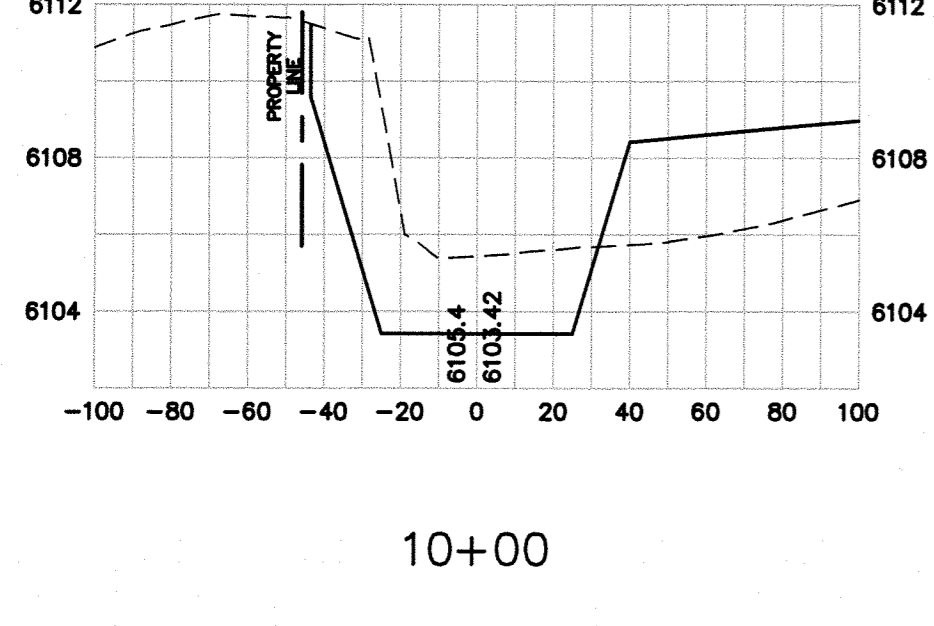
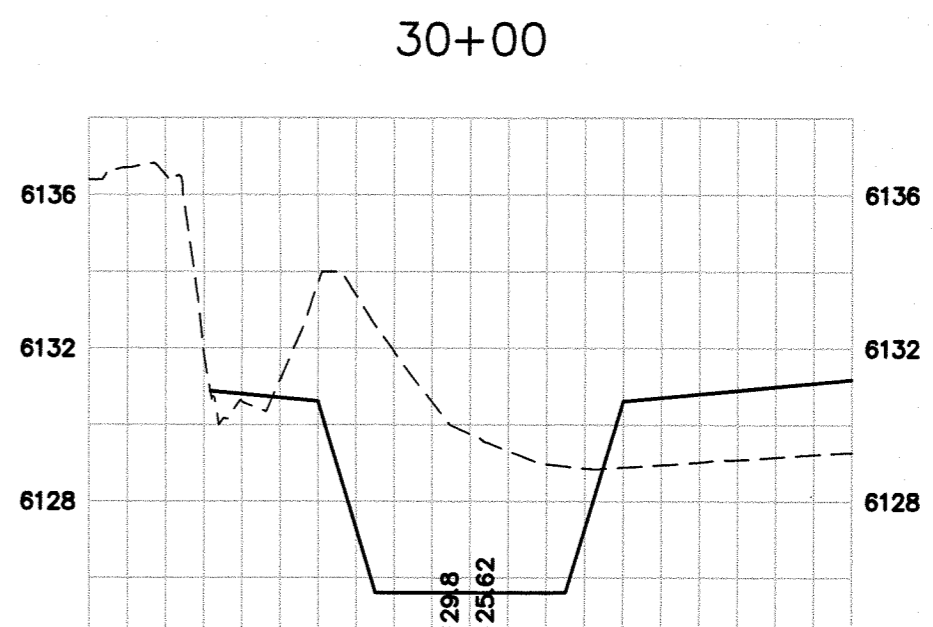
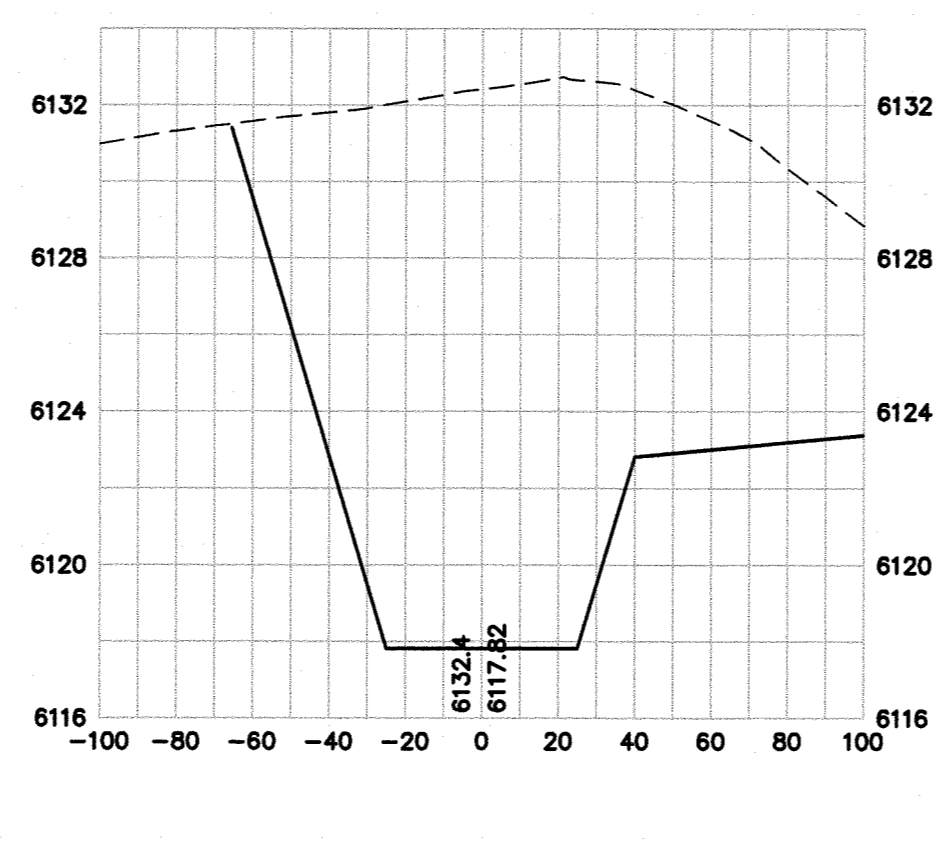
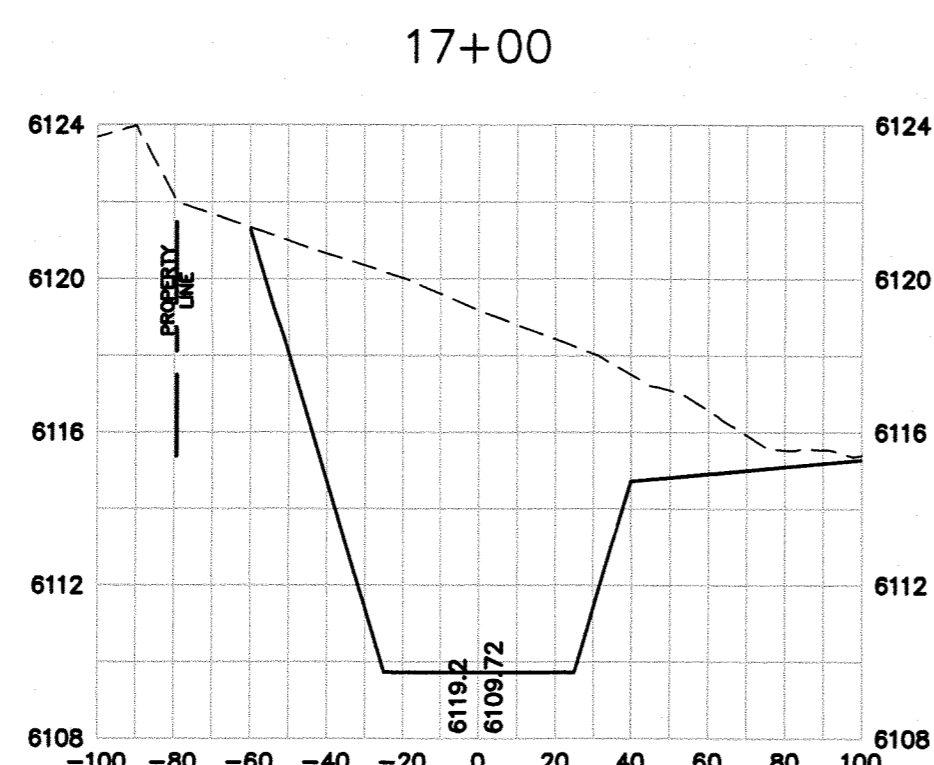
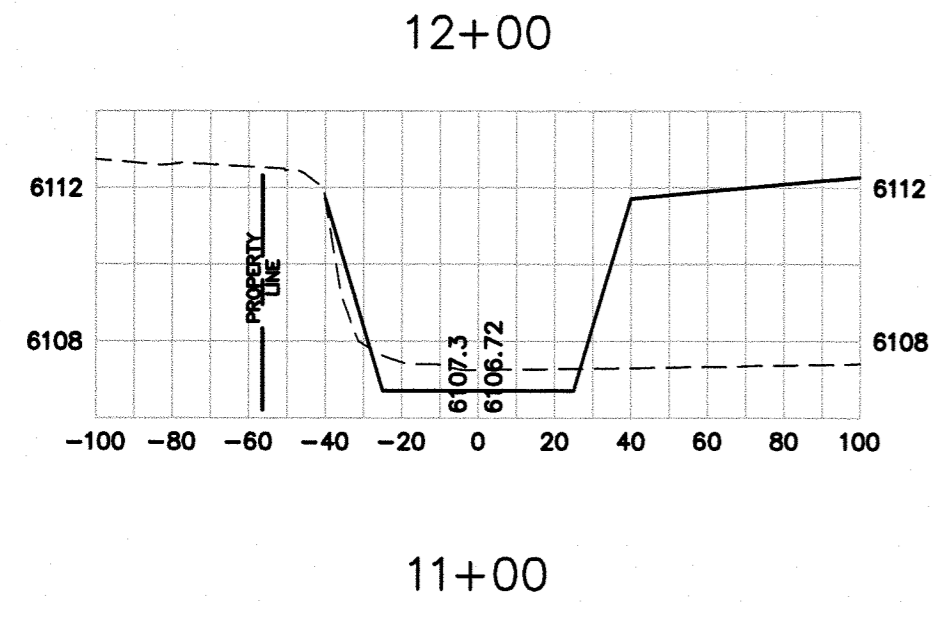
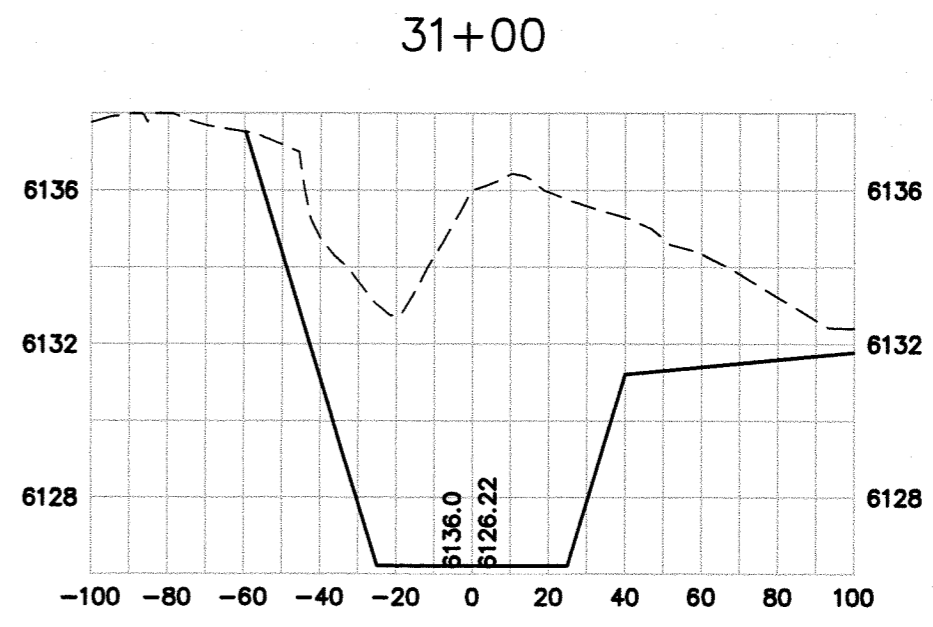
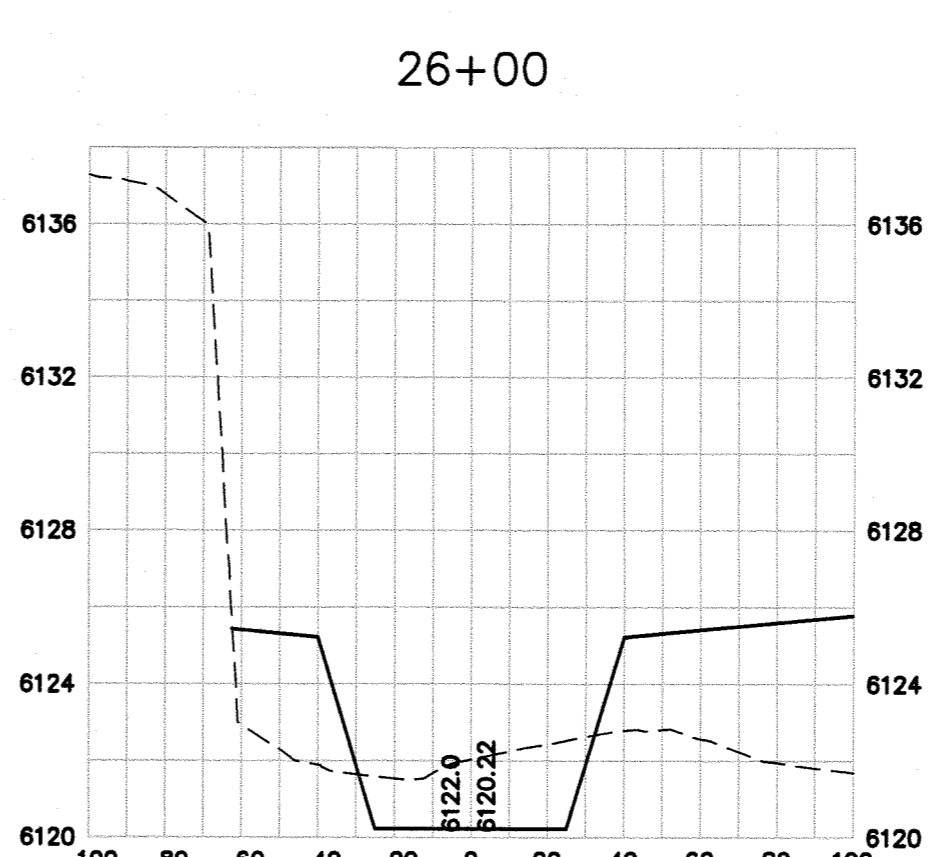
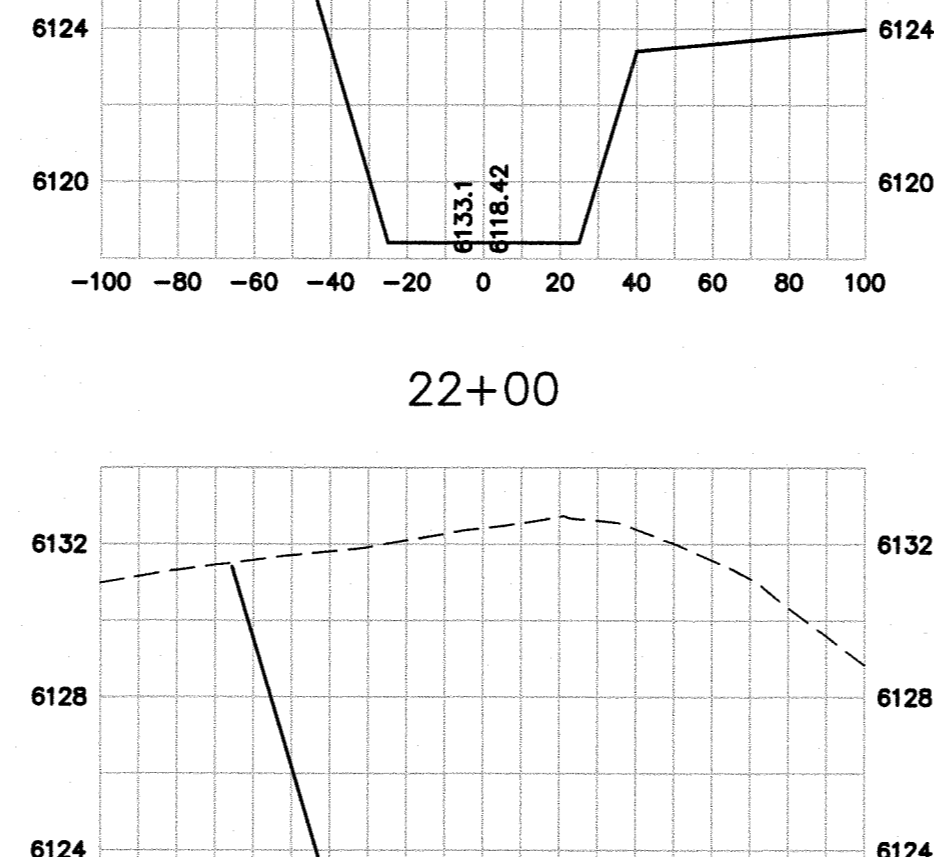
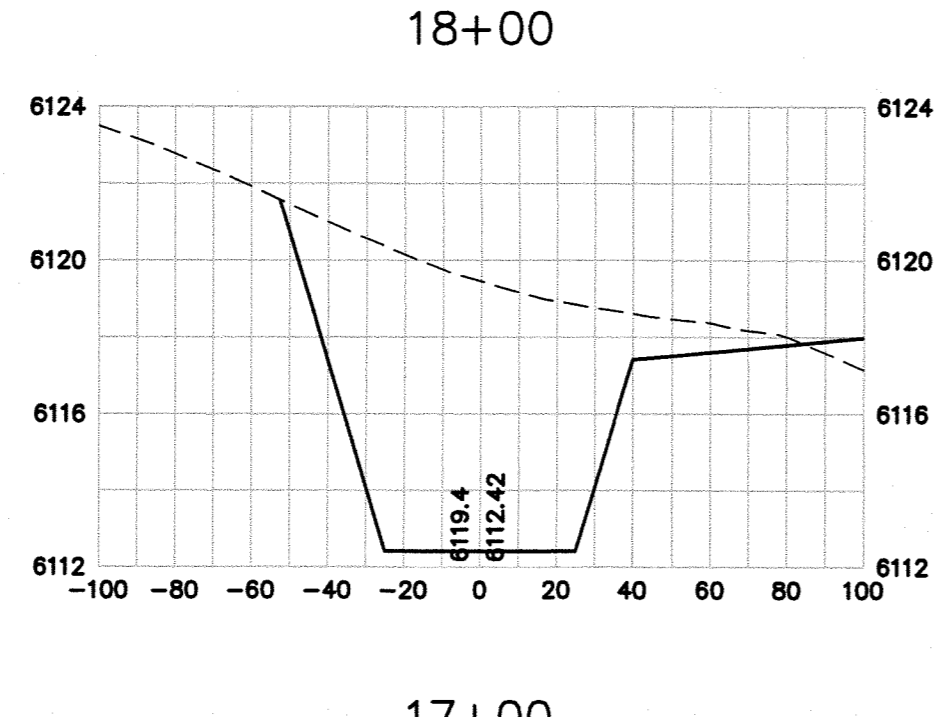
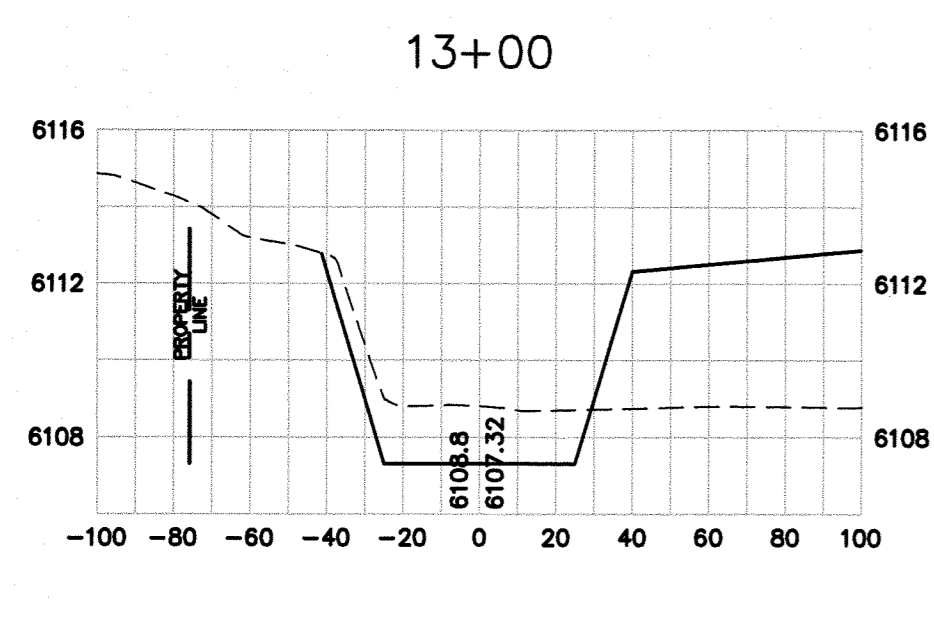
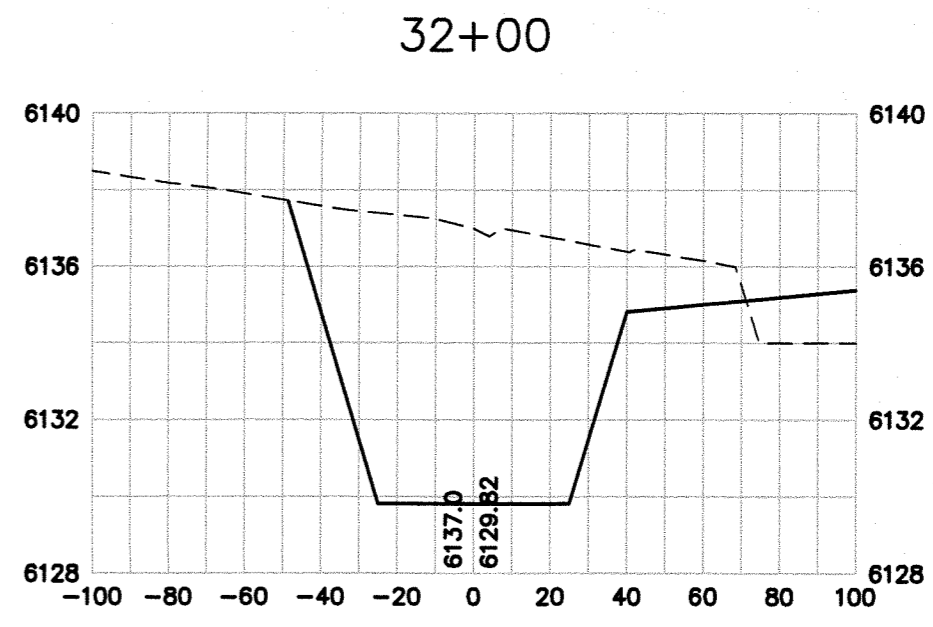
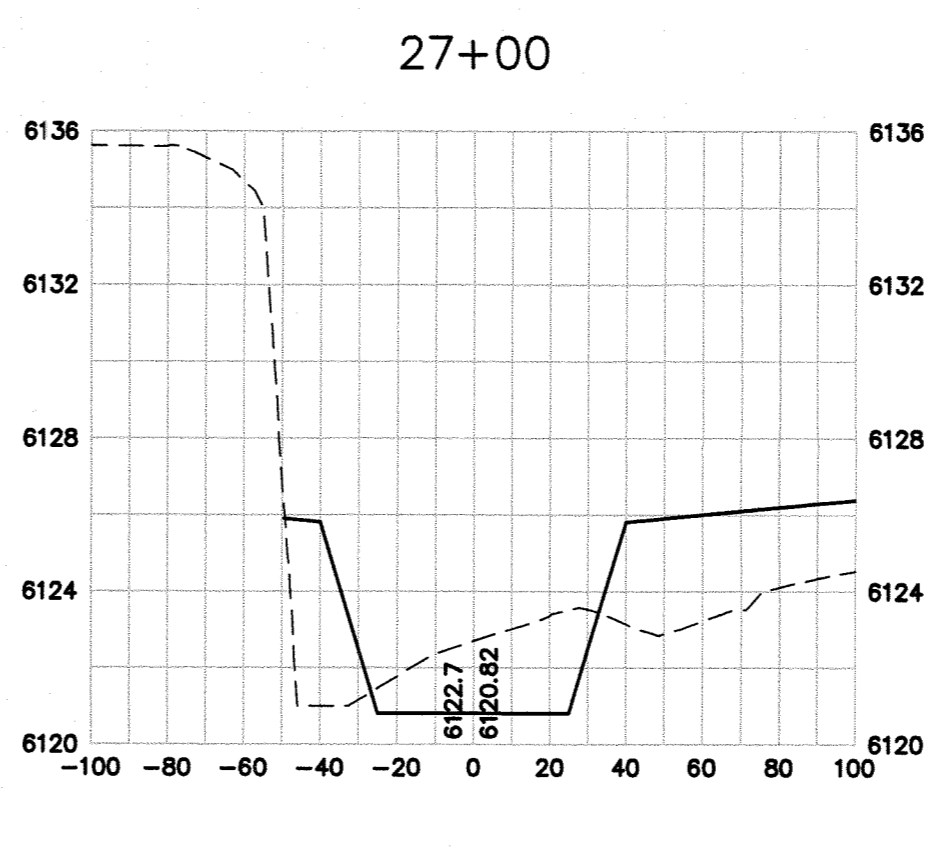
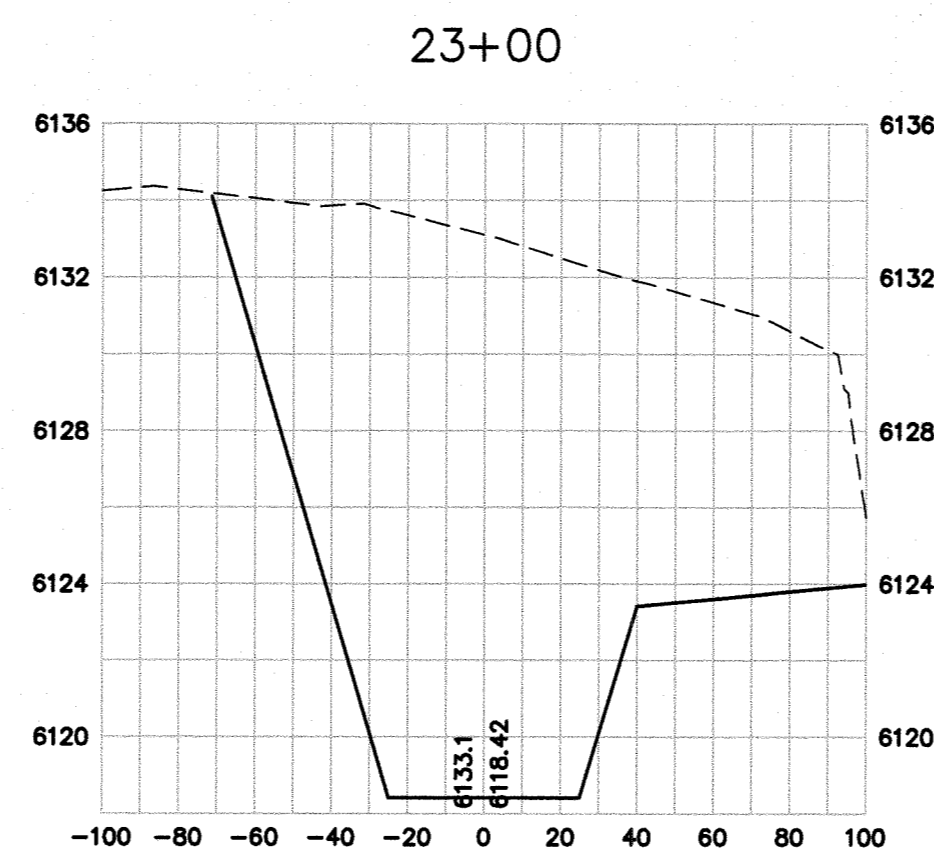
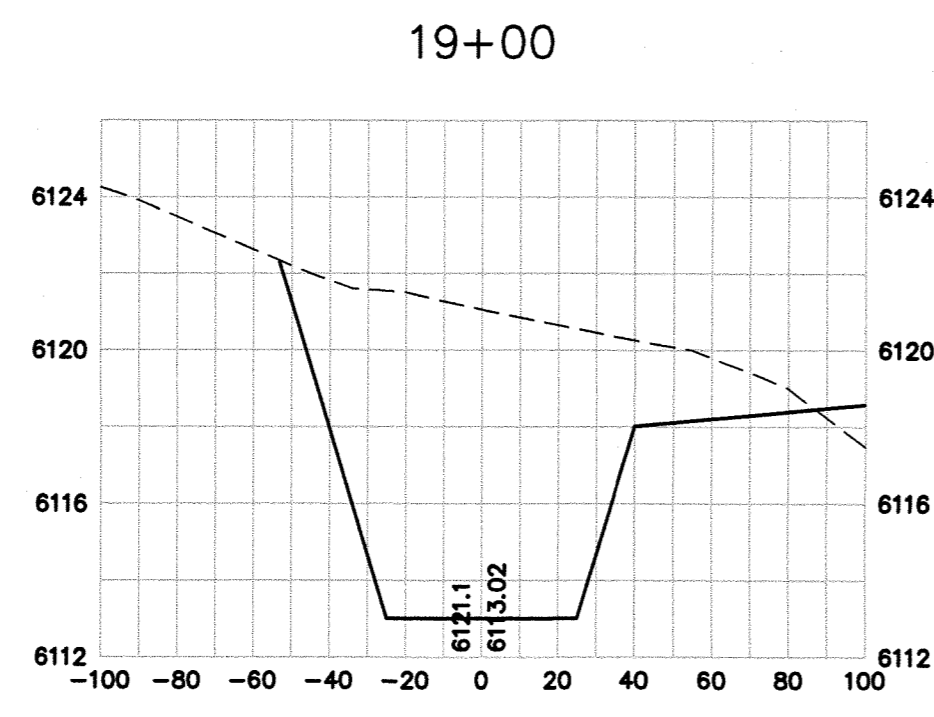
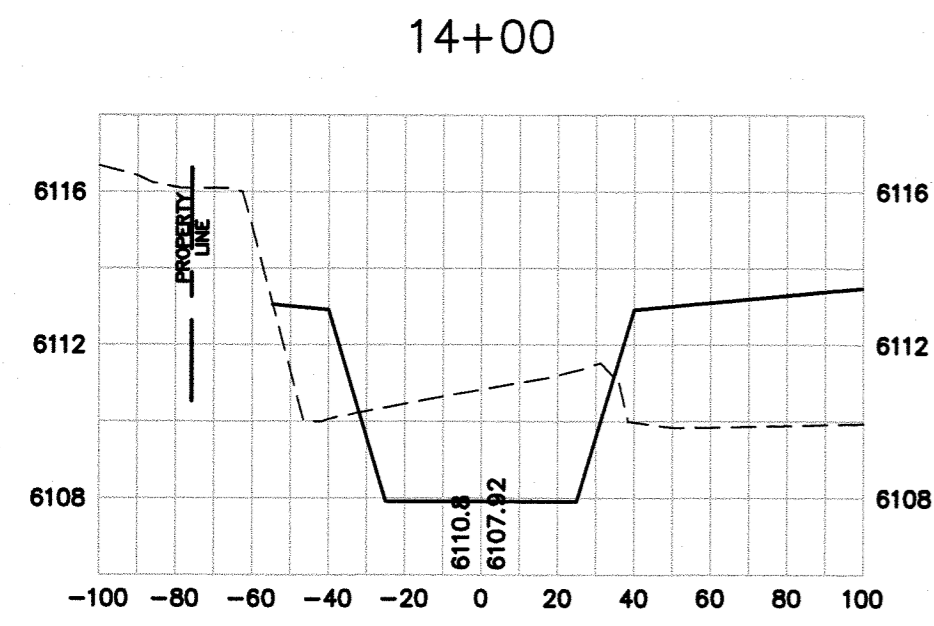
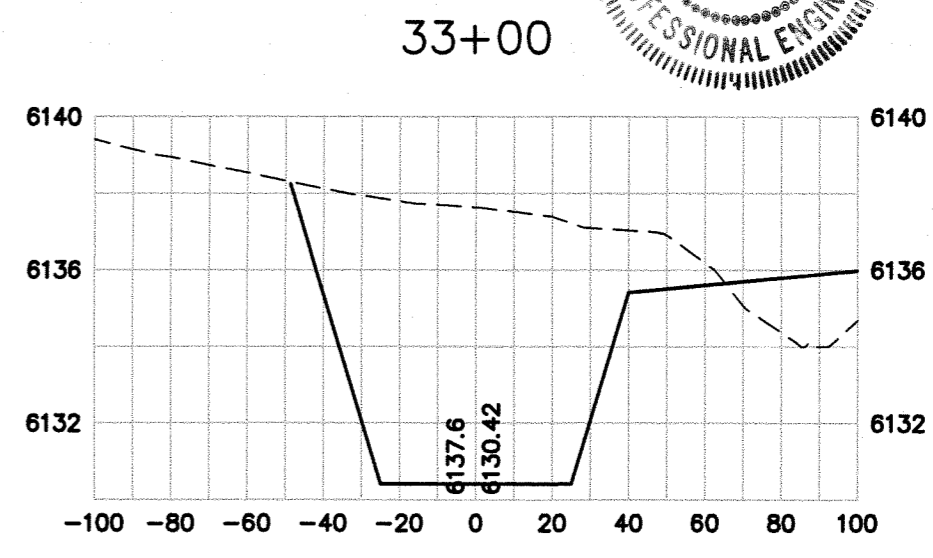
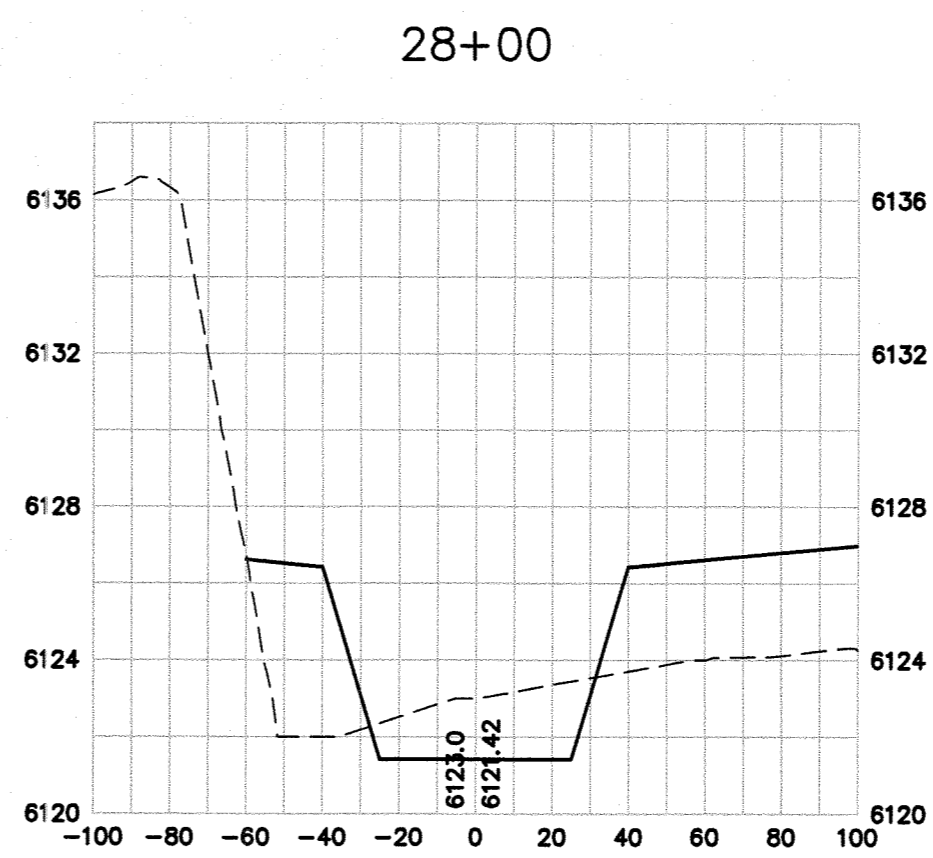
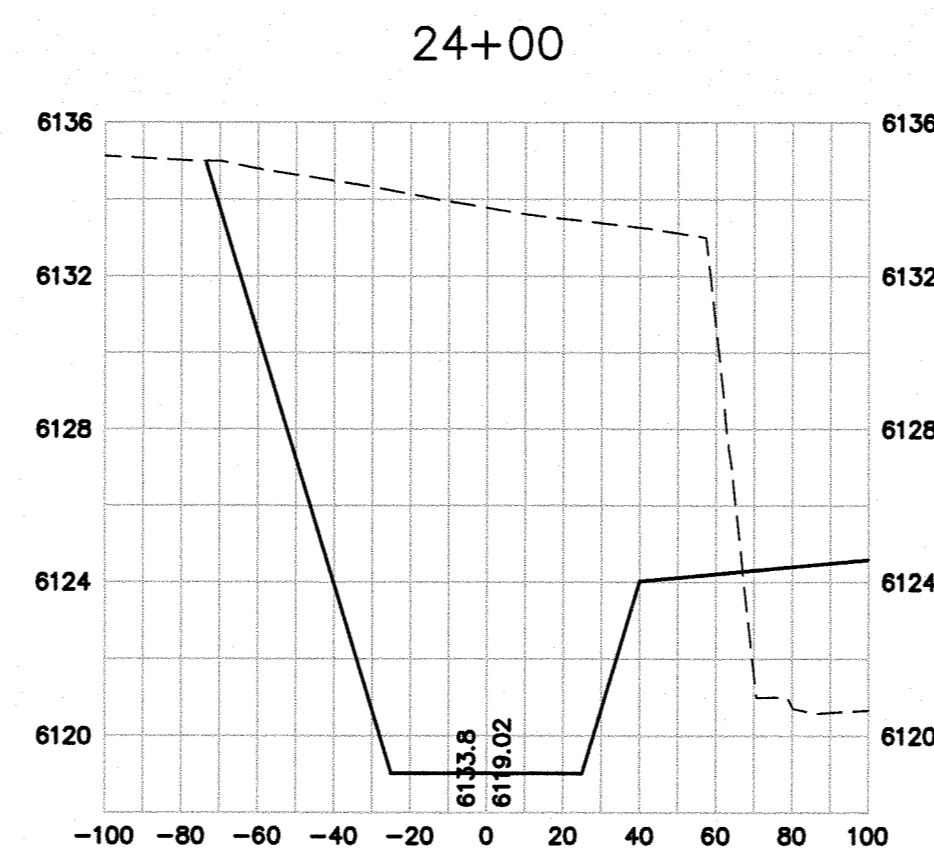
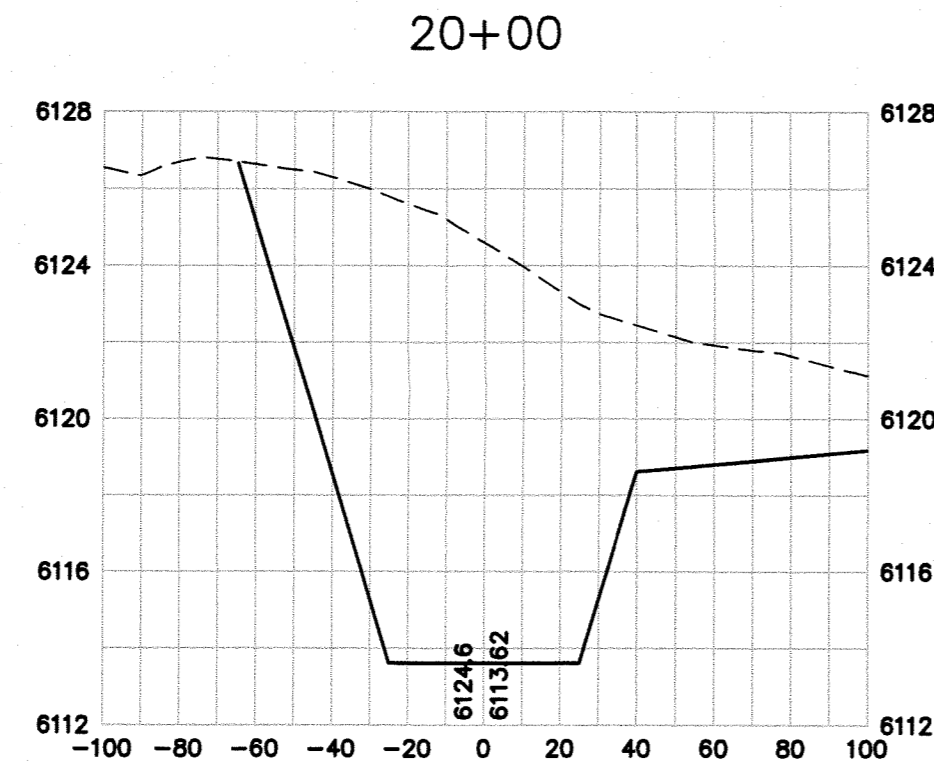
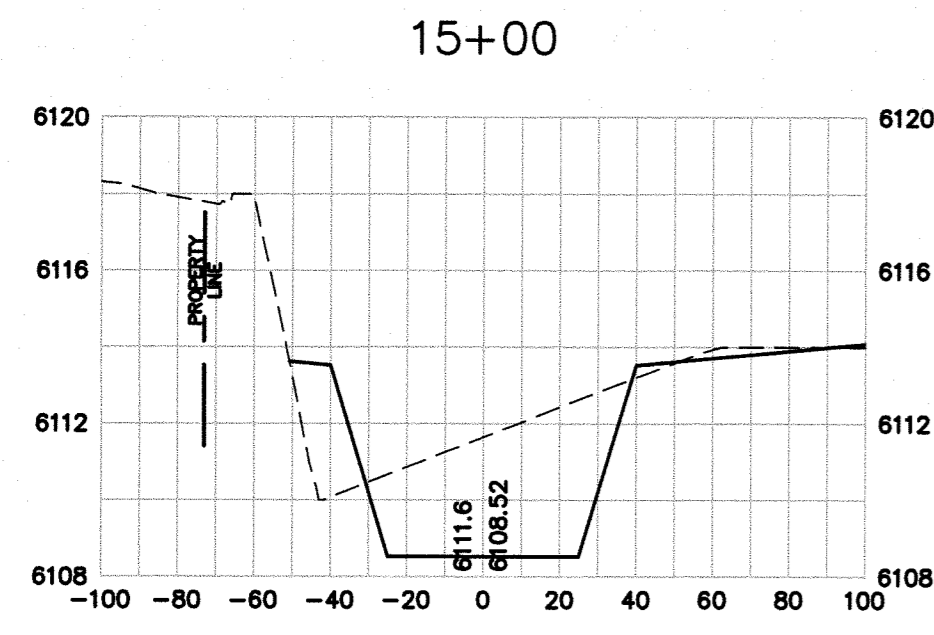
WESTGATE AT POWERS SAND CREEK CENTER TRIBUTARY CHANNEL CHANNEL DETAILS

NO.	REVISION	DATE	BY
1	CITY SUBMITTAL	2/20/18	JPS
2	CITY COMMENTS	3/09/18	JPS
3	CITY COMMENTS	3/28/18	JPS

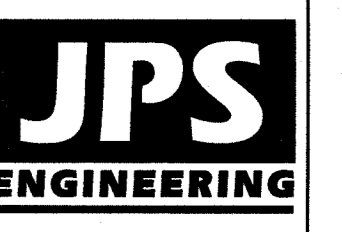
HORZ. SCALE:	AS SHOWN	DRAWN:	BJJ
VERT. SCALE:	N/A	DESIGNED:	JPS
SURVEYED:	LDC	CHECKED:	JPS
CREATED:	2/20/18	LAST MODIFIED:	3/28/18
PROJECT NO.:	020501	MODIFIED BY:	BJJ

CH2

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WESTGATE AT POWERS SAND CREEK CENTER TRIBUTARY CHANNEL



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1-800-922-1987
CALL 2-BUSINESS DAYS IN ADVANCE
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FOR THE MARKING OF UNDERGROUND
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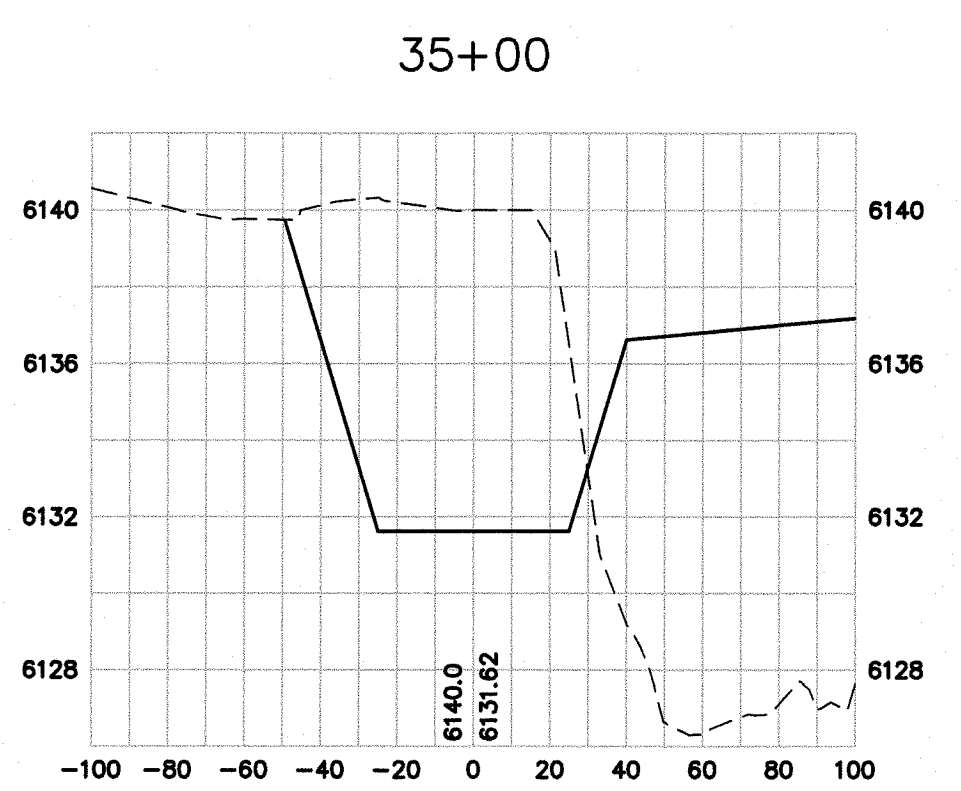
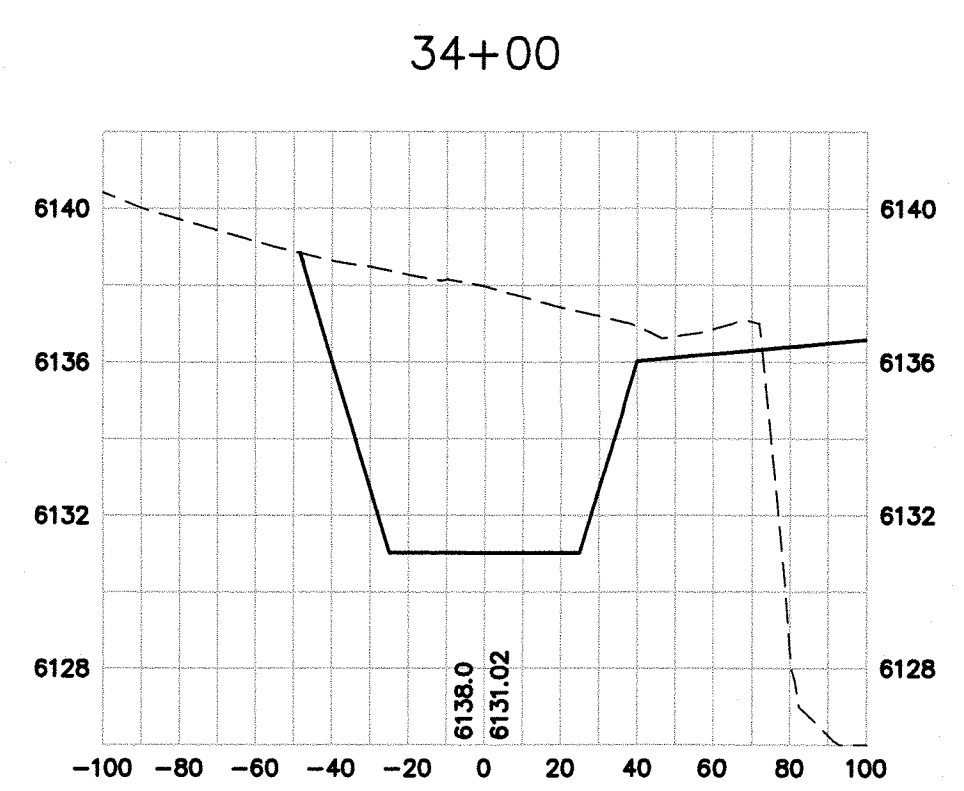
NO.	REVISION	BY	DATE
1	SUBMITTAL TO CITY ENGINEER	JPS	11/13/09
2	CITY ENGINEERING COMMENTS	JPS	1/22/10
3	EXTEND CHANNEL TO AIRPORT	JPS	11/25/15
4	CITY SUBMITTAL	JPS	2/20/18

CHANNEL SECTIONS

HORIZ. SCALE: 1"=50'	DRAWN: BJJ
VERT. SCALE: 1"=5'	DESIGNED: JPS
SURVEYED: LDC	CHECKED: JPS
CREATED: 9/15/09	LAST MODIFIED: 2/20/18
PROJECT NO: 020501	MODIFIED BY: BJJ

SHEET: CS1

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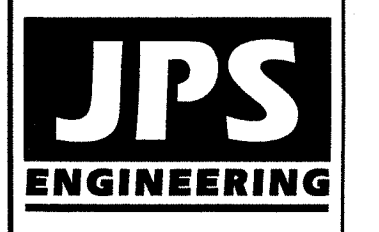


WESTGATE AT POWERS SAND CREEK CENTER TRIBUTARY CHANNEL

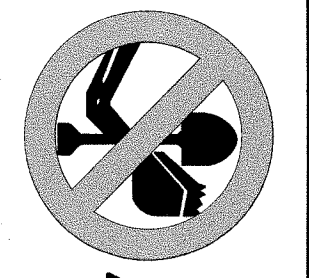
CHANNEL SECTIONS

HORIZ. SCALE: 1"=50'	DRAWN: BJJ
VERT. SCALE: 1"=5'	DESIGNED: JPS
SURVEYED: LDC	CHECKED: JPS
CREATED: 9/15/09	LAST MODIFIED: 2/20/18
PROJECT NO: 020501	MODIFIED BY: BJJ

CS2



19 E. Willamette Ave.
Colorado Springs, CO
80903
PH: 719-477-9429
FAX: 719-471-0766
www.jsengr.com



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.

No.	REVISION	BY	DATE
1	SUBMITTAL TO CITY ENGINEER	JPS	11/13/09
2	CITY ENGINEERING COMMENTS	JPS	1/22/10
3	EXTEND CHANNEL TO AIRPORT	JPS	11/25/15
4	CITY SUBMITTAL	JPS	2/20/18