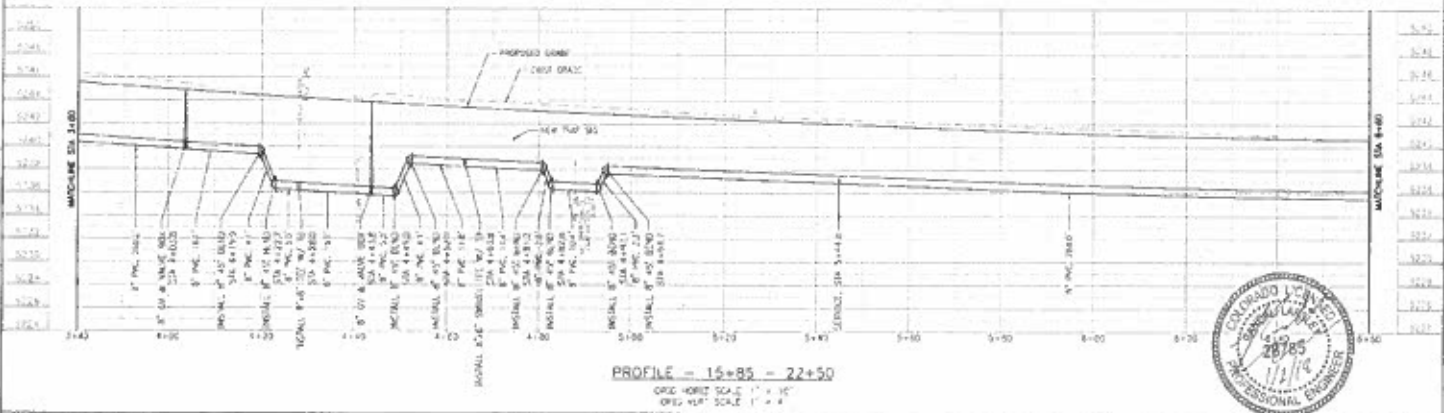
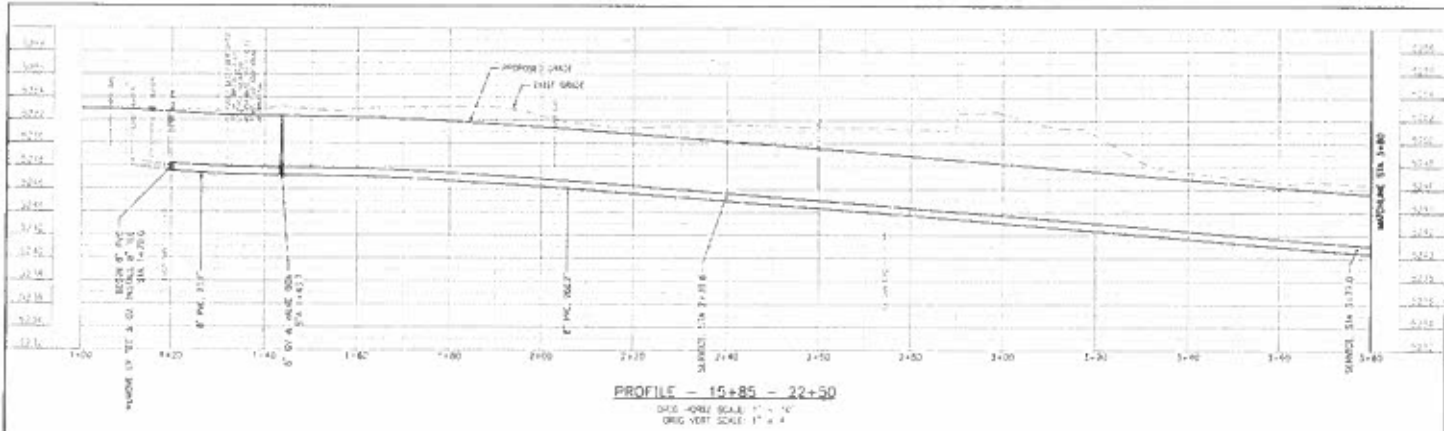


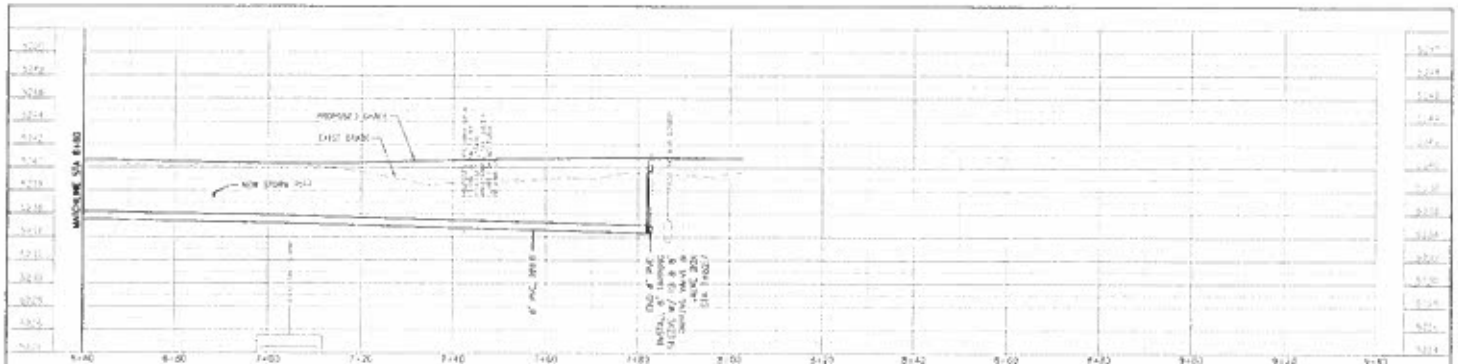
**GENERAL PLAN NOTES:**

1. THE CONTRACTOR WILL PROTECT EXISTING UTILITY LINES BY BRACING AND SHIELDING AND SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING UTILITIES. ANY DAMAGE TO EXISTING UTILITIES SHALL BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE.
2. ALL NEW INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE NATIONAL PLUMBING CODE AND THE NATIONAL ELECTRICAL CODE AS AMENDED.
3. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CITY OF DENVER SPECIFICATIONS FOR WATER MAINS AND UNDERGROUND UTILITIES.
4. ALL JOINTS SHALL BE MADE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
5. ALL LEAKS SHALL BE REPAIRED IMMEDIATELY.
6. ALL EXCAVATIONS SHALL BE PROTECTED BY SHIELDING AND BRACING.
7. ALL EXCAVATIONS SHALL BE BACKFILLED WITH COMPACTED SOIL.
8. ALL EXCAVATIONS SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION.
9. ALL MATERIALS SHALL BE APPROVED BY THE CITY ENGINEER.
10. ALL WORK SHALL BE COMPLETED WITHIN THE SPECIFIED TIME FRAME.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS.
12. ALL UTILITIES SHALL BE DEPTH MARKED PRIOR TO CONSTRUCTION.
13. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CITY OF DENVER SPECIFICATIONS FOR WATER MAINS AND UNDERGROUND UTILITIES.
14. ALL JOINTS SHALL BE MADE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
15. ALL LEAKS SHALL BE REPAIRED IMMEDIATELY.
16. ALL EXCAVATIONS SHALL BE PROTECTED BY SHIELDING AND BRACING.
17. ALL EXCAVATIONS SHALL BE BACKFILLED WITH COMPACTED SOIL.
18. ALL EXCAVATIONS SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION.
19. ALL MATERIALS SHALL BE APPROVED BY THE CITY ENGINEER.
20. ALL WORK SHALL BE COMPLETED WITHIN THE SPECIFIED TIME FRAME.



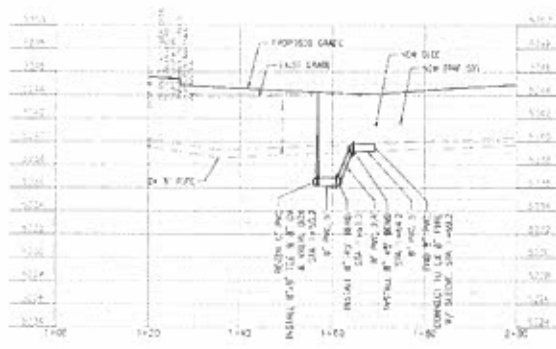


CAL. BEATTY INVESTIGATION CIVIL & ELECTRICAL <b>1-800-922-1987</b> <small>AREA COVERED BY THIS SEAL IS LIMITED TO THE PROJECT AND DATE SHOWN THEREON.</small>	 ORIGINAL PLAN SCALE: 1" = 20'	 <b>TSOUWALS ENGINEERS</b> CONSULTING ENGINEERS	 CITY AND COUNTY OF DENVER DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION CAPITAL PROJECTS GROUP 400 & 3RD AVENUE, DENVER CO 80202 TEL: (303) 441-3617 FAX: (303) 441-3647	FEDERAL BLVD. RECON. - ST-H AVE. TO HOWARD PLACE  <b>WATER LINE PROFILES</b>	FIELD DATE: _____ DATE: _____ REVIEWER: ROVICKA CONSULTING	AD. SUBMITTAL JAN. 2, 2018  <b>218</b> <small>18 OF 24</small>
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PROFILE - 15+85 - 22-50

VERT. SCALE: 1" = 4'  
 HORIZ. SCALE: 1" = 4'

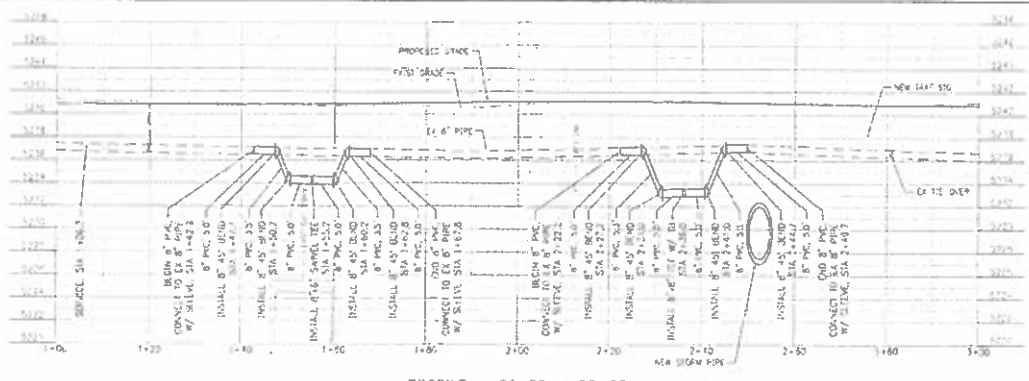


PROFILE - 18+94 EW

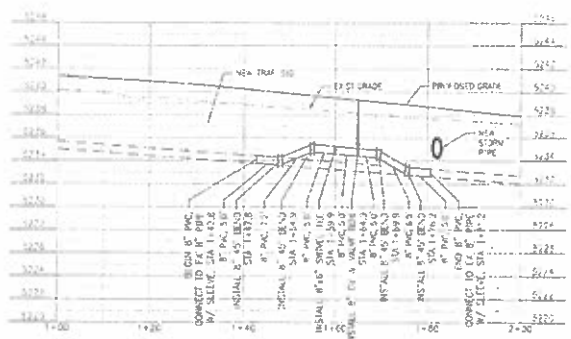
VERT. SCALE: 1" = 4'  
 HORIZ. SCALE: 1" = 4'



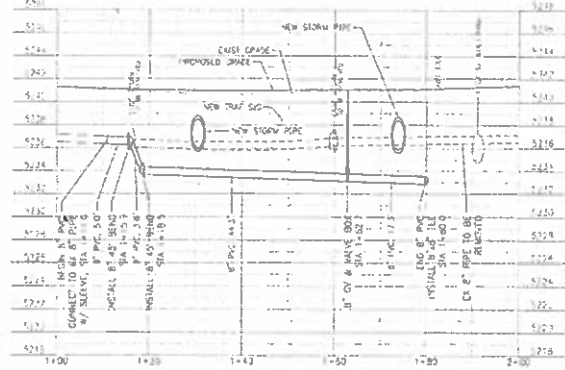
<p>CALL WATER NOTIFICATION          CENTER OF COLORADO  <b>1-800-922-1987</b>  <small>FOR ALL WATER MAINS AND SEWER LINES          BEFORE YOU DIG. CALL 24 HOURS A DAY.          WE'LL GET YOU RECONNECTED.</small></p>	<p>1" = 4'          HORIZONTAL SCALE          1" = 4'          VERTICAL SCALE</p>	<p><b>TSOUKAS HOLDENNESS</b>          CONSULTING ENGINEERS</p>	<p><b>CITY AND COUNTY OF DENVER</b>          DEPARTMENT OF PUBLIC WORKS          INFRASTRUCTURE DIVISION          CAPITAL PROJECT MANAGEMENT          200 A W. W. W. BOULEVARD, SUITE 200          DENVER, CO 80202          TEL: (303) 441-1611 FAX: (303) 441-1614</p>	<p>FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE          WATER LINE PROFILES</p>	<p>DATE: 1/1/15          DESIGNER: RICHARD J. COOPER, P.E.          CHECKER: RICHARD J. COOPER, P.E.</p>	<p>SHEET NO. <b>219</b>          AD. SUBMITTAL          JAN. 2, 2015          19 OF 28</p>
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PROFILE - 21+59 - 22+65  
 ORIG. HORIZ. SCALE: 1" = 40'  
 ORIG. VERT. SCALE: 1" = 4'



PROFILE - 22+48 EW  
 ORIG. HORIZ. SCALE: 1" = 40'  
 ORIG. VERT. SCALE: 1" = 4'



PROFILE - 22+53 EW  
 ORIG. HORIZ. SCALE: 1" = 40'  
 ORIG. VERT. SCALE: 1" = 4'



CALL DENVER NOTIFICATION CENTER OF COLORADO  
**1-800-922-1987**  
 DENVER WATER DEPARTMENT  
 1701 W. ALAMO AVE., DENVER, CO 80202

DESIGNED BY: [Name]  
 CHECKED BY: [Name]  
 DATE: [Date]

**TSOUVARAS HOLDERSNESS**  
 ENGINEERS

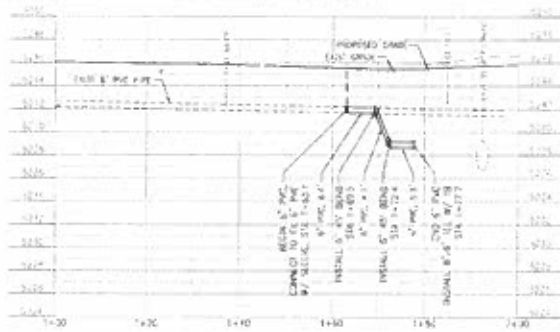
CITY AND COUNTY OF DENVER  
 DEPARTMENT OF PUBLIC WORKS  
 ENGINEERING DIVISION  
 CAPITAL PROJECT MANAGEMENT  
 2000 S 3RD AVE DENVER, CO 80213  
 TEL: (303) 442-2617 FAX: (303) 442-2617

FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE  
**WATER LINE PROFILES**

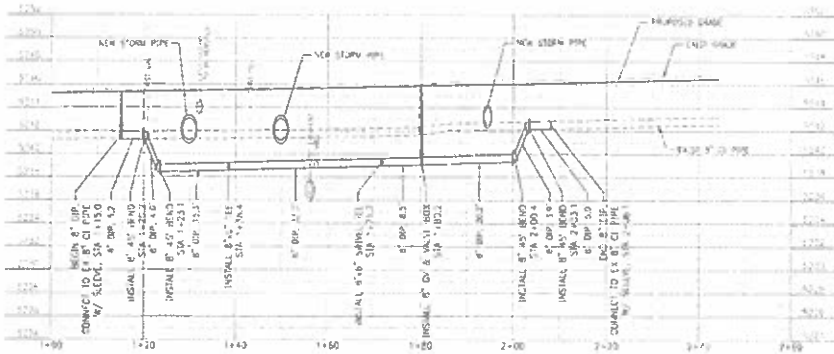
REVISIONS:  
 DATE: [Date]  
 REVISION COMMENTS:

AD. SUBMITTAL  
 JAN. 2, 2018

SHEET NO.  
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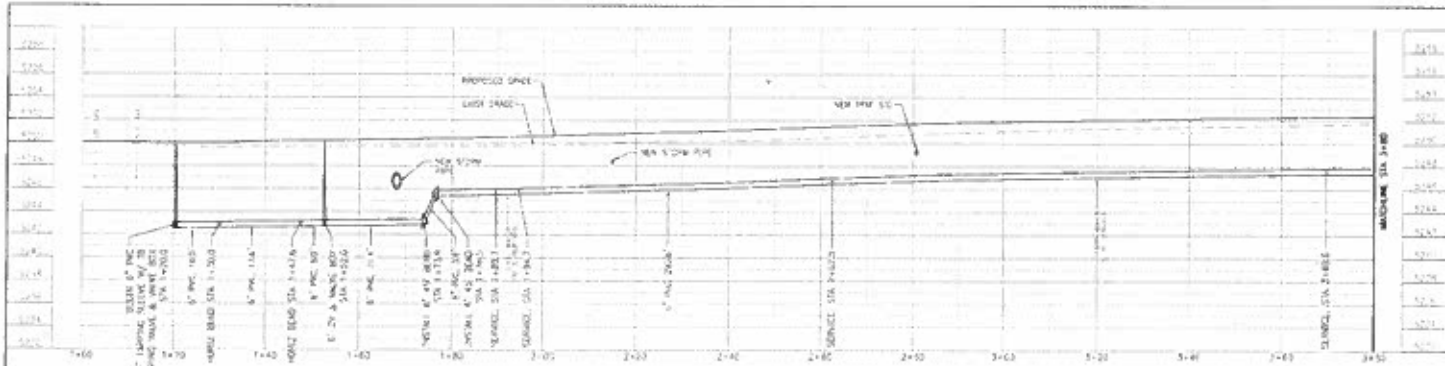
PROFILE - 28+89  
 ORIG. HORIZ. SCALE: 1" = 10'  
 ORIG. VERT. SCALE: 1" = 4'



PROFILE - 28+66 - 29+58  
 ORIG. HORIZ. SCALE: 1" = 10'  
 ORIG. VERT. SCALE: 1" = 4'

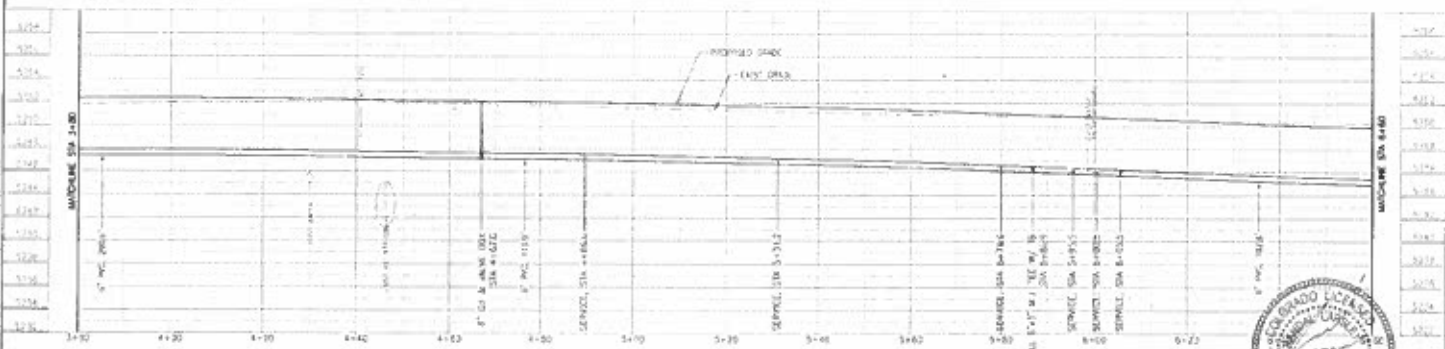


CALL UTILITY NOTIFICATION CENTER OF COLORADO <b>1-800-922-1987</b> <small>CALL 24 HOURS A DAY IN ADVANCE          TO LOCATE ALL UTILITIES BEFORE          ANY EXCAVATION OR GROUND          DISTURBANCE.</small>	 ORIGINAL HORIZ. SCALE: 1" = 10'	<b>TSOUVARAS &amp; HOLDERNESS</b> ENGINEERS & ARCHITECTS	 CITY AND COUNTY OF DENVER DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION CAPITAL PROJECTS MANAGEMENT 3300 N. 3RD AVE., DENVER, CO 80202 TEL: (303) 442-2517 FAX: (303) 442-2447	FEDERAL BLVD RECON. - 5TH AVE. TO HOWARD PLACE WATER LINE PROFILES	DRAWN BY: [blank] CHECKED BY: [blank]	AD SUBMITTAL JAN. 2, 2018	SHEET NO. <b>221</b> 21 OF 28
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PROFILE - 35+85 - 42+15

VERT. SCALE 1" = 10'  
HORIZ. SCALE 1" = 40'



PROFILE - 35+85 - 42+15

VERT. SCALE 1" = 10'  
HORIZ. SCALE 1" = 40'



CALL SEWER REPAIRS  
SERVICES OF COLORADO  
**1-800-922-1987**  
SERVICES OF COLORADO  
1000 W. 10TH AVENUE, SUITE 100  
DENVER, CO 80202

SCALE 1" = 40'  
SERVICES OF COLORADO  
1000 W. 10TH AVENUE, SUITE 100  
DENVER, CO 80202

**FOURWAYS ENGINEERING**  
SERVICES OF COLORADO  
1000 W. 10TH AVENUE, SUITE 100  
DENVER, CO 80202

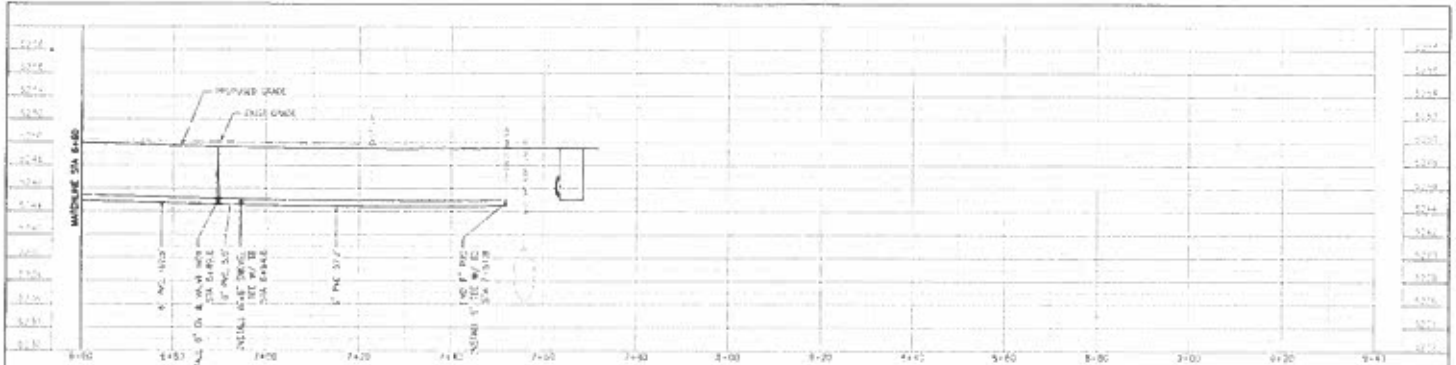
**SEWER**  
SERVICES OF COLORADO  
1000 W. 10TH AVENUE, SUITE 100  
DENVER, CO 80202

CITY AND COUNTY OF DENVER  
DEPARTMENT OF PUBLIC WORKS  
ENGINEERING DIVISION  
CAPITAL PROJECT MANAGEMENT  
P.O. BOX 350, DENVER, CO 80202  
TEL: (303) 861-2211 FAX: (303) 441-2541

FEDERAL BLVD. RECON - 5TH AVE. TO HOWARD PLACE  
WATER LINE PROFILES

DATE: 01/17/18  
BY: [Signature]  
REVISION COMMENTS:

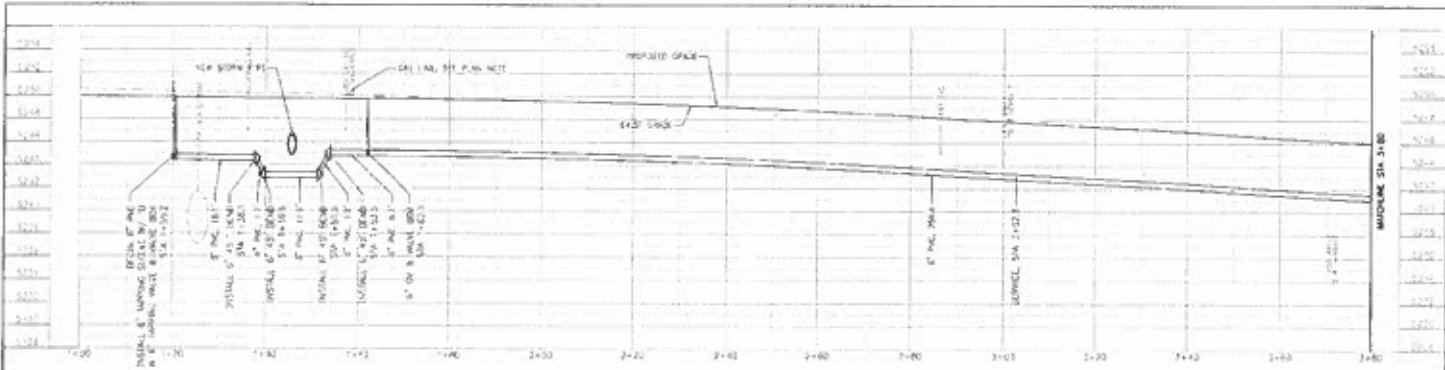
AD SUBMITAL  
JAN. 2, 2018  
222  
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PROFILE - 35+85 - 42+15  
 VERT. SCALE 1" = 12'  
 HOR. SCALE 1" = 40'

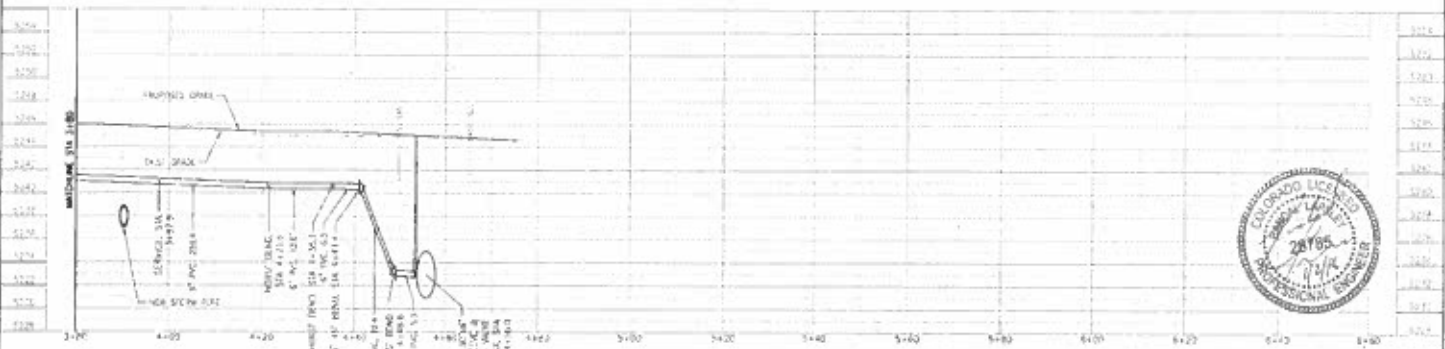


CALL UTILITY NOTIFICATION CENTER OF COLORADO <b>1-800-922-1987</b> <small>FOR A LIST OF UTILITIES AND TO REPORT          ANY UNDESIRED ACTS OF          UTILITY DAMAGE</small>	 ORIGINAL SCALE: 1" = 40' DATE: 1/18/18 DRAWN BY: [Signature]	 <b>TSOU/WRAS</b> HOLDERMESS <small>CONSULTING ENGINEERS</small>	 <b>GIMVER</b> <small>ENGINEERING &amp; ARCHITECTURE</small> 2006 & 300 AVENUE DENVER CO 80202 TEL: (303) 733-7672 FAX: (303) 440-8400	FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE WATER LINE PROFILES	ISSUE DATE: 1/18/18 DRAWN BY: [Signature] PERSON COMMENTS:	AD. SUBMITTAL JAN. 7, 2018	SHEET 93 <b>223</b> 23 OF 28
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PROFILE - 42+14 - 45+23

VERTICAL SCALE 1" = 10'  
HORIZONTAL SCALE 1" = 40'



PROFILE - 42+15 - 45+23

VERTICAL SCALE 1" = 10'  
HORIZONTAL SCALE 1" = 40'

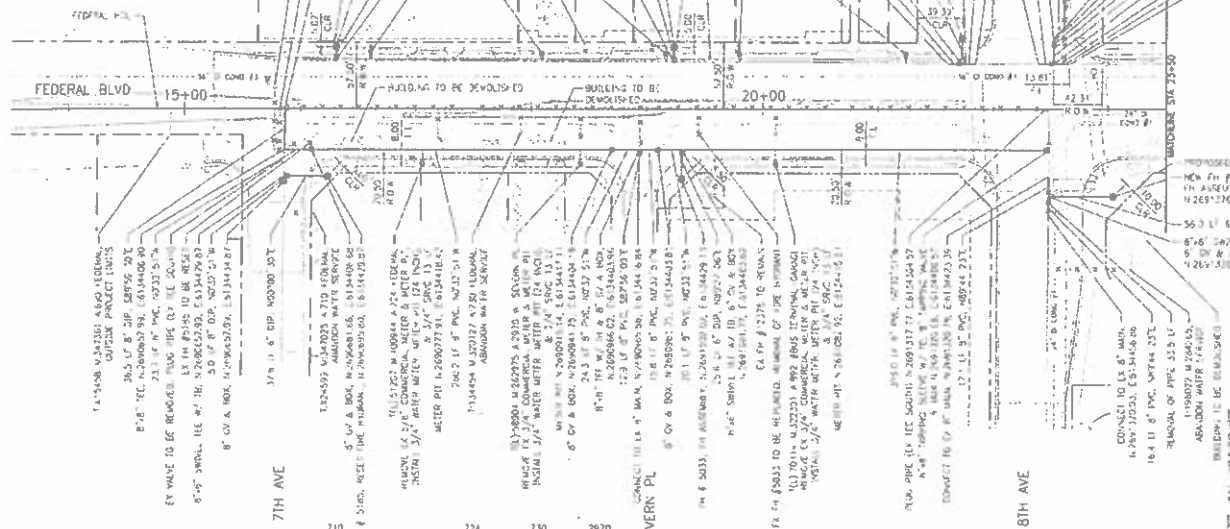


Call West-Substation Center of Colorado <b>1-800-922-1987</b> 424 1/2 South Broadway Denver, CO 80202				FEDERAL BLVD. RECCN. - 5TH AVE. TO HOWARD PLACE <b>WATER LINE PROFILES</b>	DATE: 12/15/15 SHEET NO.	AD. SUBMITTAL JAN. 2, 2016	<b>224</b> 24 OF 25
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STANDARD DRAWING INDEX

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NOTES
1. SEE AREA PLAN FOR ADDITIONAL INFORMATION.
2. SEE AREA PLAN FOR ADDITIONAL INFORMATION.
3. SEE AREA PLAN FOR ADDITIONAL INFORMATION.

LEGEND
SYMBOLS AND LINE TYPES
EXPLANATIONS

PROFESSIONAL ENGINEER
GOLDADO LICENSED PROFESSIONAL ENGINEER
28785

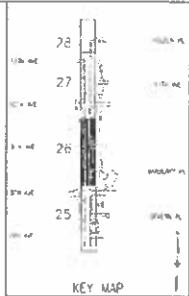
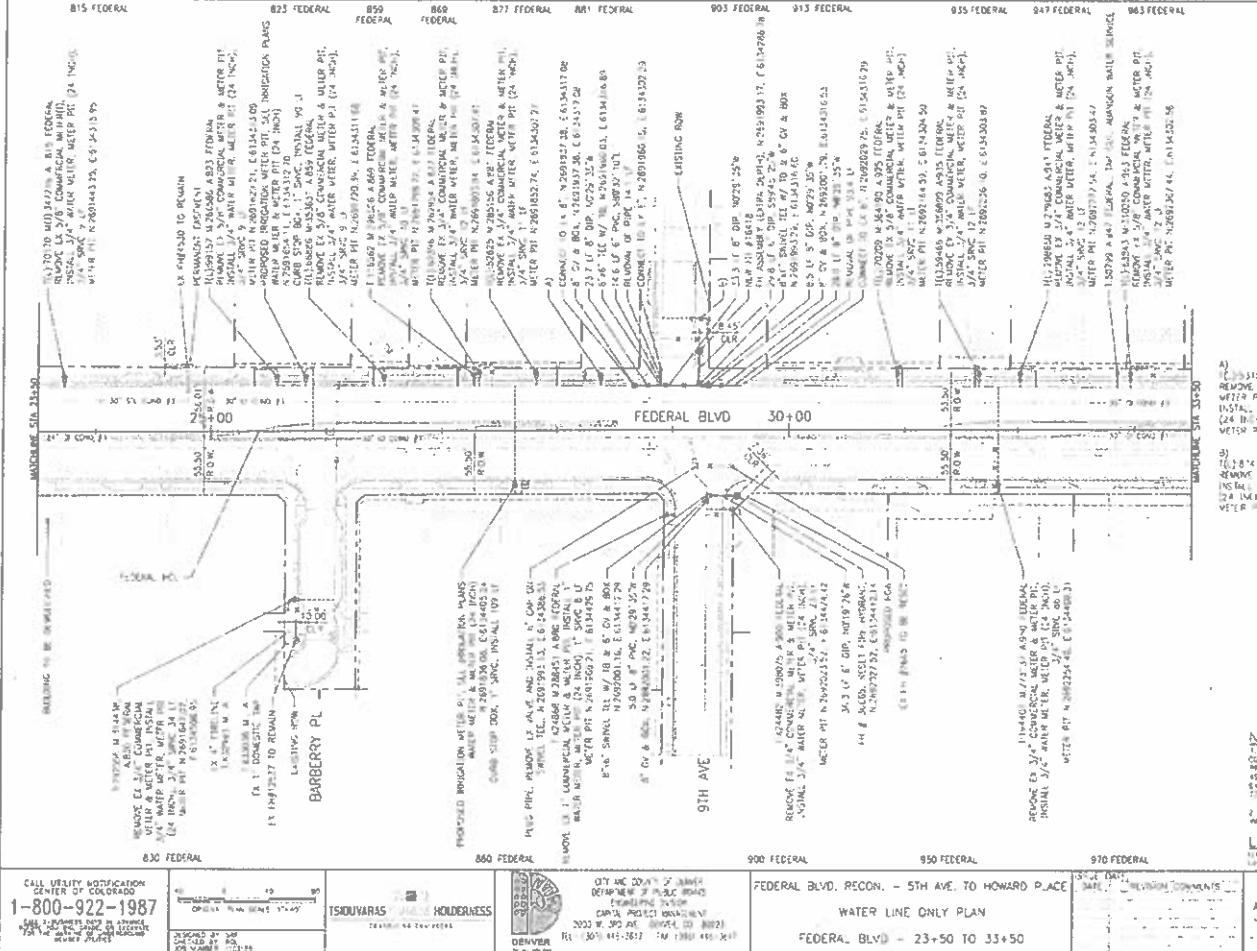
CALL BEHIND NOTIFICATION CENTER OF COLORADO
1-800-922-1987

TSOUVRAS HOLDERS
HOLDERS INFORMATION

OWNER AND CONTRACTOR
3200 W. 155th ST. DENVER, CO 80227

FEDERAL BLVD. RECON. - 5TH AVE TO HOWARD PLACE
WATER LINE ONLY PLAN
FEDERAL BLVD - 13+50 TO 23+50

DATE:
REVISION COMMENTS:
AD SUBMITAL JAN. 2, 2018
SHEET NO. 225



- NOTES:
1. ALL UTILITIES SHOWN ARE BASED ON RECORD DRAWINGS AND FIELD SURVEY. VERIFY ALL UTILITIES PRIOR TO CONSTRUCTION.
  2. SEE PLAN FOR ALL ADDITIONAL INFORMATION.



**LEGEND**

1. 12\"/>

CALL UTILITY NOTIFICATION CENTER OF COLORADO  
**1-800-922-1987**  
 24 HOURS A DAY  
 7 DAYS A WEEK

**TSOUVARAS HOLDENNESS**  
 ENGINEERS ARCHITECTS  
 2033 W. 39th Ave., Suite 100, Denver, CO 80211  
 Tel: 303.441-2812 Fax: 303.441-2813

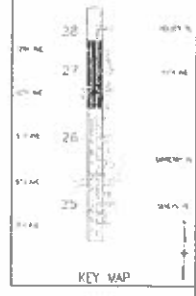
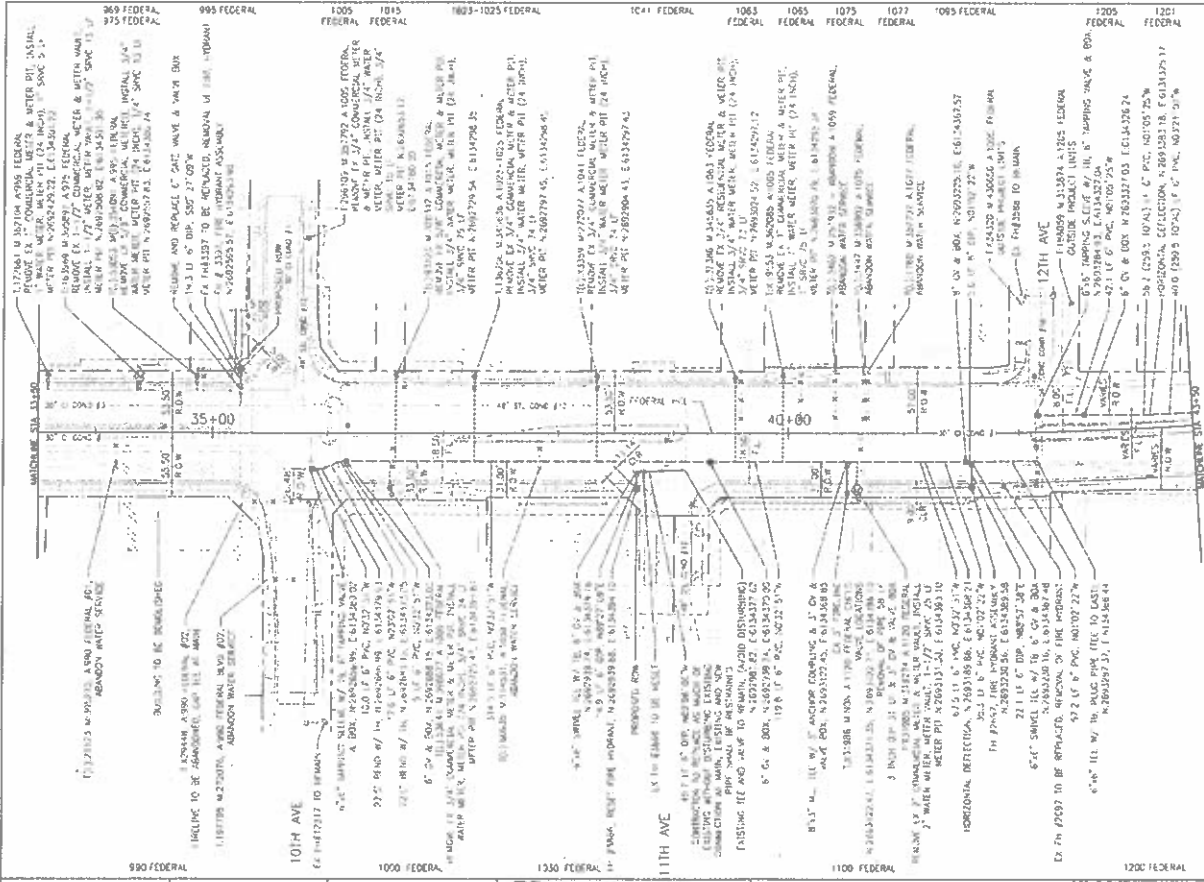
**FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE**  
**WATER LINE ONLY PLAN**  
**FEDERAL BLVD. - 23+50 TO 33+50**

DATE: \_\_\_\_\_  
 SCALE: \_\_\_\_\_

AD SUBMITTAL  
 JAN. 2, 2018

SHEET NO  
**226**

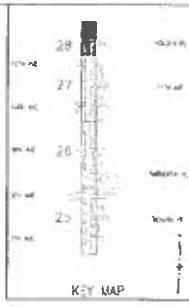
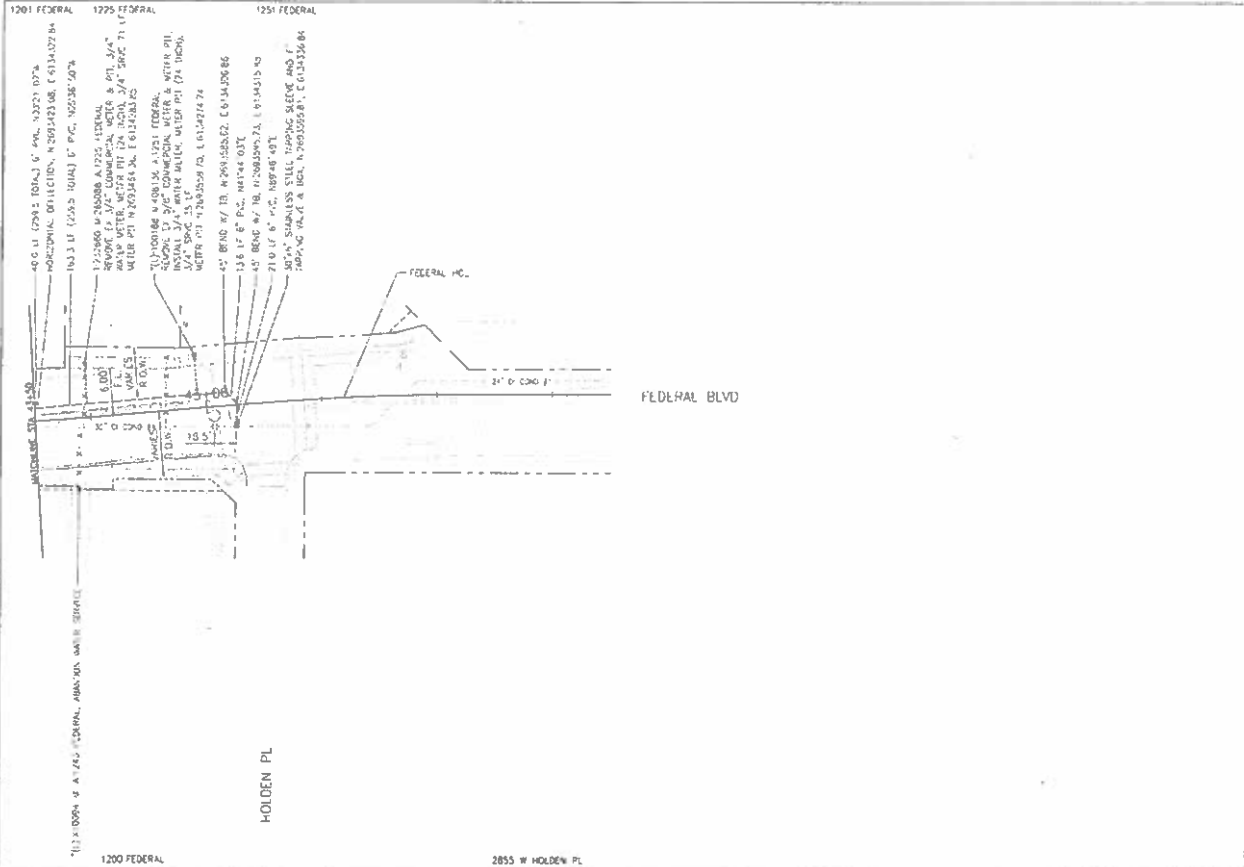
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**NOTES:**  
 1. REFER TO ALL OTHER DRAWINGS FOR SPECIFICATIONS AND DIMENSIONS.  
 2. REFER TO ALL OTHER DRAWINGS FOR MATERIALS AND METHODS.  
 3. REFER TO ALL OTHER DRAWINGS FOR CONSTRUCTION AND INSTALLATION.  
 4. REFER TO ALL OTHER DRAWINGS FOR TESTING AND INSPECTION.  
 5. REFER TO ALL OTHER DRAWINGS FOR RECORDING AND AS-BUILT.



<p>CALL US AT A CERTIFICATION CENTER OF COLORADO  <b>1-800-922-1987</b></p>	<p>TSOUVARAS HOLDERSHES</p>	<p>THE CITY AND COUNTY OF DENVER      DEPARTMENT OF PUBLIC WORKS      ENGINEERING DIVISION      WATER DIVISION      300 N. GAY ST., DENVER, CO 80202      TEL: (303) 441-2811 FAX: (303) 441-2812</p>	<p>FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE      WATER LINE ONLY PLAN      FEDERAL BLVD - 35+50 TO 43+50</p>	<p>DATE: 1/2/18      REVISION COMMENTS:</p>	<p>AD SUBMITTAL      JAN. 2 2018      227</p>
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**NOTES:**  
 1. REFER WATER MAIN SYSTEM 2018 GRAPHS TO CONDUCT INSPECTION AND HYDRO-PNEUMATIC ANALYSIS TESTS OF THE WATER MAIN AND ASSOCIATED BRANCHES. PLEASE CONTACT SYSTEM DEVELOPER AT 303-432-5470 PRIOR TO CONSTRUCTION FOR TESTING REQUIREMENTS.  
 2. SEE BRANCH PLANS FOR ADDITIONAL INFORMATION.

**LEGEND**  
 1. UNANNOTATED (S) IS A SERVICE LINE  
 2. SEE WATER MAIN PLAN FOR STRUCTURE

<p>CALL UTILITY NOTIFICATION CENTER OF COLORADO  <b>1-800-922-1987</b>  <small>FOR A LIST OF UTILITIES VISIT WWW.COCOLORADO.COM</small></p>	<p><b>TSOUKARAS HOLDERMESS</b>  <small>ENGINEERS ARCHITECTS</small></p>	<p><b>CITY AND COUNTY OF DENVER</b>  <small>DEPARTMENT OF PUBLIC WORKS</small>      LINDSEY R. DAWSON      CAPITAL PROJECT MANAGEMENT      2000 W. 5TH AVE. DENVER, CO 80202      TEL: (303) 441-3617 FAX: (303) 441-3647</p>	<p>FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE      WATER LINE ONLY PLAN      FEDERAL BLVD - 43+50 TO 48+50</p>	<p>DATE: 10/20/17      REVISED: 01/02/18</p>	<p>AD SUBMITTAL      JAN. 2, 2018</p>	<p>SHEET NO.  <b>228</b>  <small>28 OF 28</small></p>
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GENERAL NOTES:

1. CONTRACTOR'S PERFORMANCE UNDER ANY BASELINE WATER FACILITY OR PERFORMANCE MUST BE PROPERLY LICENSED AND HAVE A LICENSED PLUMBER OR DRINK-WATER ON SITE DURING THE WORK. GENERAL CONTRACT CONDITIONS (GCC) 317.1.
2. THE CURRENT EDITION OF THE WASTEWATER MANAGEMENT DESIGN STANDARD DETAILS SHALL APPLY TO ALL WORK AND WILL BE THE EDITION CURRENT AS OF THE REVISION SHEET DATE. THE CONTRACTOR MUST BE IN POSSESSION OF THE STANDARD DETAILS AT THE PRE-CONSTRUCTION CONFERENCE AND A COPY MUST REMAIN ON THE JOB SITE AT ALL TIMES DURING CONSTRUCTION. WASTEWATER MANAGEMENT DESIGN STANDARD DETAILS CAN BE OBTAINED AT WWW.DENVERGOV.ORG (SPECIAL CONTRACT CONDITIONS (SC-1) CONTRACT FORM - 3 (APPLICABLE LAWS)).
3. THE CONTRACT SPECIFIED EDITION OF THE CITY AND COUNTY OF DENVER'S TRANSPORTATION STANDARDS AND DETAILS FOR THE ENGINEERING DESIGN SHALL BE FOLLOWED FOR ALL ROADWAY WORK IN THE PLAN SET AND ALL OF THE EDITION CURRENT AS OF THE ADVERTISEMENT DATE. THESE STANDARDS AND DETAILS CAN BE OBTAINED AT WWW.DENVERGOV.ORG (SC-1) CONTRACT FORM - 8 (APPLICABLE LAWS).
4. THE CONSTRUCTION ACTIVITIES SUMMARY DISCHARGE PERMITS (STATE AND LOCAL FLOODPLAIN PERMITS, STREET-CUT PERMIT, AND STREET OCCUPANCY PERMIT) INCLUDING THE ASSOCIATED TRAFFIC CONTROL PLANS MAY BE REQUIRED AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL OF THESE PERMITS. APPROVED COPIES OF ALL REQUIRED PERMITS MUST BE SUBMITTED TO THE CITY CONSTRUCTION PROJECT MANAGER PRIOR TO THE START OF CONSTRUCTION (GCC 301.2, 317.1 & 317.2A, 317.5, CONTRACT FORM - 8 (APPLICABLE LAWS)).
5. PARKS PERMITS WILL BE REQUIRED FOR ANY WORK OR OCCUPANCY OF PARK LAND. THIS INCLUDES BUT IS NOT LIMITED TO: DESIGNATED CITY PARKS, PARKWAYS, OPEN SPACE, TRAILS AND BIKE PATHS (GCC 301.2, 317.1 & 317.2A, 317.5, CONTRACT FORM - 8 (APPLICABLE LAWS)).
6. ALL DESIGN DRAWINGS PROVIDED AS PART OF THIS CONTRACT ARE FORMATTED FOR PRINTING FULL SIZE ON STANDARD 22 x 34 INCH (ANSI) PAPER SIZE AND TO 1/4" DIA (LAND SCALE) WHERE APPROPRIATE ON STANDARD 11 x 17 PAPER SIZE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT HARD COPIES OF PLANS UTILIZED FOR BIDDING OR CONSTRUCTION ARE PRINTED ON THE PROPER MEDIA SIZE AND 1/4" SCALES PROVIDED WITHIN THE DRAWINGS ARE CORRECTLY INTERPRETED.
7. "RED-LINE" DRAWINGS AND PRINTS ARE TO BE MAINTAINED BY THE CONTRACTOR AND SUBMITTED TO THE CITY CONSTRUCTION PROJECT MANAGER AT THE COMPLETION OF THE PROJECT. ANY AND ALL FIELD CHANGES MADE DURING CONSTRUCTION MUST BE NOTED. DRAWINGS WILL BE "RED-LINED" IN LARGE BLOCK LETTERS THAT BECOME THE DRAWING MUST BE RECEIVED AND ACCEPTED BY THE CITY CONSTRUCTION PROJECT MANAGER PRIOR TO FINAL ACCEPTANCE AND SETTLEMENT.
8. THE CONTRACTOR SHALL NOTIFY THE CITY CONSTRUCTION PROJECT MANAGER IMMEDIATELY OF ANY DISCREPANCIES OR VARIATIONS IN DRAWINGS AND SPECIFICATIONS THAT EFFECT PRICES OR THAT COULD REQUIRE MODIFICATION TO THE DESIGN (GCC 310.5).
9. THE CITY AND COUNTY OF DENVER ASSUMES NO RESPONSIBILITY FOR UTILITY LOCATIONS. THE UTILITIES SHOWN ON THESE DRAWINGS HAVE BEEN PROVIDED FROM THE BEST AVAILABLE INFORMATION. ALL UTILITIES MUST BE LOCATED BY THE CONTRACTOR. ALL COSTS ASSOCIATED WITH FIELD VERIFICATION OF LOCATION AND DEPTHS OF UTILITIES AND SHALL BE BORNE BY THE CONTRACTOR AND SHALL BE COMPLETED PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION (GCC 301.1, 304).
10. ALL RANGE POINTS OR OTHER SURVEY MONUMENTS WHICH MAY BE DAMAGED OR DESTROYED DURING CONSTRUCTION SHALL BE RE-SET AND RE-SET PER CITY SURVEYING STANDARDS (GCC 318, 319).
11. ALL ELEVATIONS SHOWN ARE UNLESS OTHERWISE NOTED.
12. ALETS AND MANHOLES ARE NOT SHOWN TO SCALE ON THE PLAN AND PROFILE SHEETS.
13. INVERT ELEVATIONS AND CALCULATED PIPE SLOPES ON STORM AND SANITARY PROFILES ARE TO THE CENTER OF MANHOLE OR STRUCTURE PIPE LENGTHS ARE TWO DIMENSIONAL LENGTHS AND ARE CENTER TO CENTER BETWEEN MANHOLES AND TO THE INSIDE EDGE OF ALETS.
14. NOTHING AND FASTING CALLOUTS ON TYPE 16 AND TYPE 14 INLETS ARE TO THE CENTER OF THE STRUCTURE AT THE FLOORLINE, NORTH AND EASTING CALLOUTS ON MANHOLES ARE TO THE CENTER OF THE MANHOLE.
15. LOCATION OF INLETS AND/OR INLET CONNECTIONS MAY BE ADJUSTED IN THE FIELD AT THE DISCRETION OF THE CITY CONSTRUCTION PROJECT MANAGER IN CONSULTATION WITH DESIGN INTENTION. ALL INLET CONNECTIONS SHOWN IN PLAN AND PROFILE ARE APPROXIMATE LOCATIONS AND DEPTHS.
16. DEPTHS OR BOTTOM OF STRUCTURE ELEVATIONS WILL NOT BE PROVIDED FOR ALETS WITHIN THE PROJECT SCOPE, AS THESE ARE REQUIRED TO BE DETERMINED BASED ON FIELD CONDITIONS IN ACCORDANCE WITH APPLICABLE STANDARD DETAIL DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO ESTABLISH ALET DEPTHS AND COMPLETE CONSTRUCTION IN ACCORDANCE WITH APPLICABLE STANDARD DETAIL DRAWINGS BASED ON CLEARANCES OF ADJACENT UTILITIES WHILE MAINTAINING MINIMUM REQUIRED GRACES ON LATERAL CONNECTIONS.
17. ALL SEWER MANHOLES MUST BE MAINTAINED AND ACCESSIBLE DURING CONSTRUCTION.
18. ALL SANITARY MANHOLES ARE 1' DIA WITH 24" BASE AND CONCRETE CONE UNLESS NOTED OTHERWISE.
19. ALL MANHOLES SUBJECT WITHIN THIS PROJECT SHALL INCLUDE EITHER A 4" OR 6" CAST IRON RISER WITH 3" STEEL ADJUSTING RINGS.
20. PRIOR TO BEGINNING WORK ON THE PROJECT, THE CONTRACTOR SHALL PERFORM A SURVEY TO RE-ESTABLISH ALL SURVEY CONTROL POINTS, SECTION CORNERS AND BENCHMARKS. AFTER CONSTRUCTION, THE CONTRACTOR SHALL RE-ESTABLISH ALL SURVEY CONTROL MONUMENTATION DESTROYED BY CONSTRUCTION. ALL RANGE POINTS, SECTION CORNERS, AND BENCHMARKS SHALL BE SET IN RANGE POINT BOXES AND THE CONTRACTOR SHALL MAINTAIN THESE BOXES TO THE FINAL GRADE.
21. ALL STATIONS AND OFFSETS SHOWN ON THE PLANS ARE TO THE CONTROL LINES UNLESS OTHERWISE NOTED. THE USE OF CONTROL MONUMENTS FOR CONSTRUCTION STAKING OTHER THAN THOSE SHOWN ON THE PLANS OR APPROVED BY THE ENGINEER IS PROHIBITED, AND USE OF SUCH MONUMENTS IS AT THE CONTRACTOR'S SOLE RISK.

22. ALL SLOPES SHOWN ARE APPROXIMATE AND DIMENSIONS ARE TYPICAL.
23. UNNOTED FINISHED GRADE ELEVATIONS FOR ITEMS TO BE ADJUSTED, RESET, OR MODIFIED SHALL BE FIELD VERIFIED BY THE CONTRACTOR.
24. ALL MATERIALS AND LABOR REQUIRED FOR ENCASUREMENT SHOWN IN PLANS SHALL BE INCLUDED AS PART OF THE RESPONSIBLE CONTRACTOR'S COSTS.
25. THE CONTRACTOR SHALL PROTECT ALL WORK AREAS AND FACILITIES FROM WATER AT ALL TIMES. AREAS AND FACILITIES SUBJECT TO FLOODING, REGARDLESS OF THE SOURCE OF WATER SHALL BE PROMPTLY DEWATERED AND RESTORED AT NO COST TO THE OWNER.
26. THE CONTRACTOR IS REQUIRED TO KEEP EXISTING STORM DRAIN SYSTEMS FUNCTIONAL AND MAINTAIN PROPER STORMWATER COLLECTION OR PROPER TEMPORARY FACILITIES UNTIL PROPOSED DRAINAGE FACILITIES ARE CONSTRUCTED AND FUNCTIONING. PROPER REMOVAL OR ABANDONMENT OF THE EXISTING STORM DRAIN SYSTEMS SHALL BE AT THE DISCRETION OF THE CONTRACTOR IN ACCORDANCE WITH CONSTRUCTION PRACTICE.
27. THE DESIGN OR UPRATE, CHANGE, OR SHEET PILE THE PIPE LOCATION SHALL BE ENTIRELY THE CONTRACTOR'S RESPONSIBILITY. ALL WORK SHALL BE IN ACCORDANCE WITH ALL STATE AND FEDERAL DESIGN REGULATIONS. THE CONTRACTOR SHALL PROTECT EXISTING UTILITIES AND STRUCTURES NEAR THE PROPOSED EXCAVATION DURING CONSTRUCTION.

DENVER WATER NOTES:

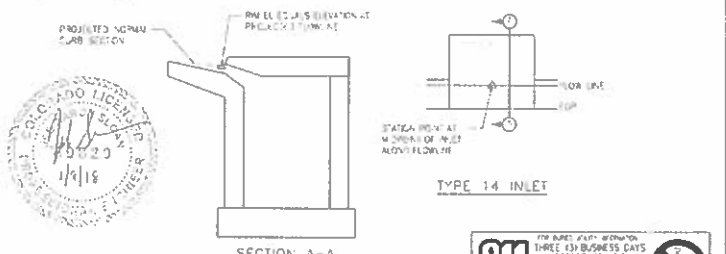
28. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO TAKE WHATEVER STEPS NECESSARY TO PROTECT ALL WATER FACILITIES. IF ANY WATER FACILITIES CANNOT BE ADEQUATELY PROTECTED, THEN SAID WATER FACILITIES SHALL BE RELOCATED OR REMOVED IN ACCORDANCE WITH THE DENVER WATER DEPARTMENT REQUIREMENTS BY A DENVER WATER APPROVED CONTRACTOR.
29. CONSTRUCTION ACTIVITIES BY ANY PARTY THAT DISTURB, RELOCATE, REMOVE, OR IN ANY OTHER WAY IMPAIR A SERVICE LINE SHALL BE REQUIRED TO MEET CURRENT DENVER WATER REQUIREMENTS FOR SERVICE LINES AS SPECIFIED IN CHAPTER 3 OF THE LATEST DENVER WATER STANDARDS. IN THE EVENT LEAD WATER LINES ARE ENCOUNTERED, DO NOT DISTURB, IMMEDIATELY STOP WORK, AND NOTIFY THE CITY CONSTRUCTION MANAGER.

TREE PROTECTION:

30. IF EXISTING TREES ARE TO BE REMOVED THEY MUST FIRST BE EVALUATED BY THE CITY AND COUNTY OF DENVER FORESTRY (PARKS) DEPARTMENT AND A PERMIT MUST BE OBTAINED. EXISTING TREES TO REMAIN MUST HAVE FORESTRY APPROVED TREE PROTECTION SET UP AROUND THEM DURING THE CONSTRUCTION AS SHOWN IN THE "INDIVIDUAL TREE PROTECTION DETAIL" IN THE DENVER PARKS DEPARTMENT STANDARD PLANS. THE CONTRACTOR MUST FOLLOW ALL OF THE CITY AND COUNTY OF DENVER TREE PROTECTION AND PROTECTION GUIDELINES REFER TO DENVER PARKS DEPARTMENT SPECIFICATION OF 56.34.

METRO WASTEWATER RECLAMATION DISTRICT:

31. METRO WASTEWATER RECLAMATION DISTRICT MUST BE NOTIFIED AT LEAST 48 HOURS PRIOR TO CONSTRUCTION ON METRO FACILITIES IN ORDER FOR A DISTRICT INSPECTOR TO BE PRESENT DURING CONSTRUCTION. CONTRACTOR MUST CONTACT METRO WASTEWATER RECLAMATION DISTRICT TO SCHEDULE THE INSPECTION: 303-286-6000.



INDEX OF SHEETS

SHEET NO.	TITLE
1	STORM - INDEX OF SHEETS, GENERAL NOTES
2	STORM - TUBULARS
3	STORM - PLAN AT PROFILE
4	STORM - Riser GAUM OUTLET DETAILS
5	STORM - RISE IN PLAN & PROFILE
6-17	STORM - TYPICAL DETAILS

THE WORK IS FOR THE CITY OF DENVER 2018-01-02 10:00 AM 2018-01-02 10:00 AM	<b>Sheet Revisions</b> <table border="1"> <thead> <tr> <th>Date</th> <th>Comments</th> <th>By</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Date	Comments	By				City and County of Denver Department of Public Works Engineering Director City of Denver Dept. of Public Works Denver, CO 80202	Colorado Department of Transportation Region 1 As Constructed No Provisions Not Set Not Set	FEDERAL BYWAY RECORD - 5TH AVE. TO HOWARD PLACE STORM SEWER INDEX OF SHEETS, GENERAL NOTES & LEGENDS Designer: AS Checker: JN Date: 01/02/18 Sheet Size: 11" x 17"	Project No./Code H-2018-001 SA 19957 2018-001-001-0000164 Sheet Number 301
Date	Comments	By									



AD SUBMITTAL - JANUARY 2, 2018

LINE NO.	REINFORCED CONCRETE PIPE										MANHOLE STRUCTURE										NO. OF REINFORCING STEEL BARS	NO. OF REINFORCING STEEL RODS
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
LINE 10																						
LINE 11																						
LINE 12																						
LINE 13																						
LINE 14																						
LINE 15																						
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LINE 29																						
LINE 30																						



SHEETING & DIMENSIONS ARE FOR REFERENCE ONLY. 1/18 Mod/Rev: Jan 17/18/2018 No. 188 Draft: R. A. H. (2018-2019) (2018-2019) Horizontal Scale: 1/2" = 1'-0" Vertical Scale: 1/4" = 1'-0"	<b>Sheet Revisions</b> Date: _____ Description: _____ By: _____		City and County of Denver Department of Public Works Engineering Section 201 W. Colfax Ave., Suite 278 Denver, CO 80202	Colorado Department of Transportation  Page 1	<b>As Constructed</b> By Request: _____ Request: _____ With: _____	<b>FEDERAL BLVD RECON - 5TH AVE TO HOWARD PLACE STORM WATER INAGULATIONS</b> Design: RFS Details: CDM Sheet Title: STORM WATER SHEET 3 OF 3	<b>Project No./Code</b> SA 1700-172 SA 17007 2017-2018-0001/184 Sheet Number: 303
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REWORKED CONCRETE PIPE										PIPE										4 INCH CONCRETE UNDERDRAIN		4 INCH PVC UNDERDRAIN	
LINE NO.	ITEM	QTY	18"		24"		30"		36"		42"		48"		54"		60"		L	S			
			1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2					
LINE 01	REVISION																						
	18" x 24"																						
	18" x 30"																						
	18" x 36"																						
	18" x 42"																						
LINE 02	REVISION																						
	18" x 24"																						
	18" x 30"																						
	18" x 36"																						
	18" x 42"																						
LINE 03	REVISION																						
	18" x 24"																						
	18" x 30"																						
	18" x 36"																						
	18" x 42"																						
LINE 04	REVISION																						
	18" x 24"																						
	18" x 30"																						
	18" x 36"																						
	18" x 42"																						
LINE 05	REVISION																						
	18" x 24"																						
	18" x 30"																						
	18" x 36"																						
	18" x 42"																						



**TSOUVARAS HOLDINGS**  
 2022 W. FREDERICK

LAST MODIFICATION DATE 10/11/2016 10:11 AM  
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Date	Comments



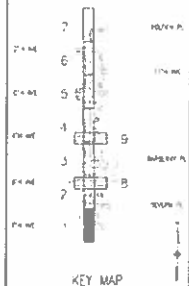
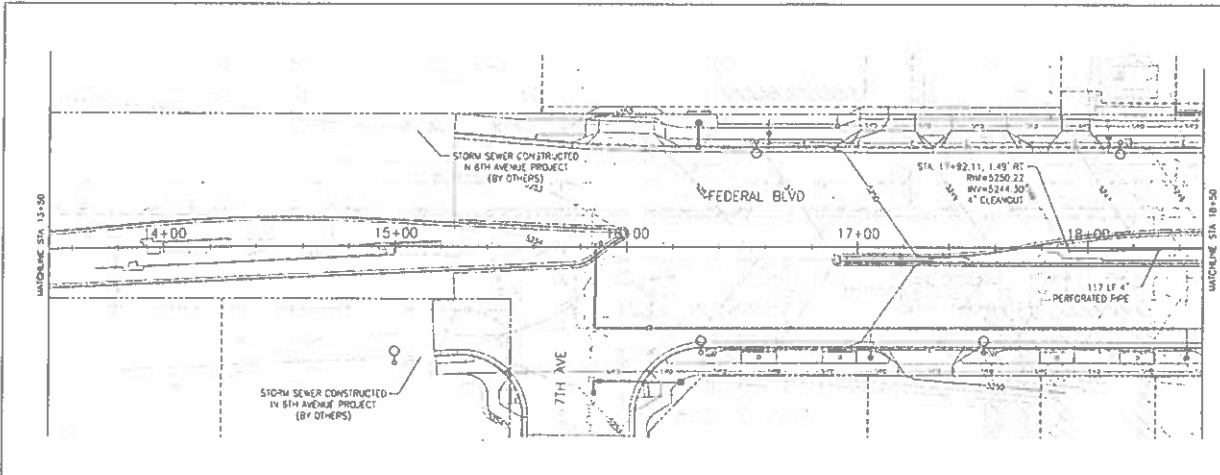
City and County of Denver  
 Department of Public Works  
 Engineering Division  
 201 W. Colfax Ave. 5th Fl.  
 Denver, CO 80202

As Constructed  
 No Revisions  
 Revised  
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FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE  
 STORM SEWER  
 TABULATIONS  
 Designer: AS Structure  
 Checker: CJP %rework  
 Detail Supt.: SF 1485 Survey Sheets 2 of 3

Project No./Code  
 14-PM 2813-112  
 SA 13517  
 2311-PROJWTR-0000264  
 Sheet Number: 304





**ABBREVIATIONS**

COPY DESIGN ELEMENTS TO THIS SHEET FOR INFORMATION ON LINES AND STATIONS SHOWN BUT NOT DETAILED ON THIS SHEET

1. SEE ADDITIONAL SHEETS IN THIS SUBJECT FOR INFORMATION ON LINES AND STATIONS SHOWN BUT NOT DETAILED ON THIS SHEET

2. STRUCTURE REFERENCE POINTS ARE AS FOLLOWS

MANHOLE SLAB BOX BASE = CENTER OF STRUCTURE

MANHOLE TYPE P = INTERSECTION OF PIPE (ELEVATION 4' MIN ELEVATION)

INLET TYPE 13 = CENTER OF STRUCTURE

INLET TYPE 14 = CENTER FACE OF STRUCTURE AT THE PROJECTED ELEVATION

**ABBREVIATIONS**

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**TSIONIARAS ENGINEERING**  
 ENGINEERS AND ARCHITECTS

Job Modification Date: 10/14/18 Drawing File Name: 18188 - Storm Sewer 18188 - Storm Sewer - 142	Date: 10/14/18 Scale: Not Set
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Date	Comments



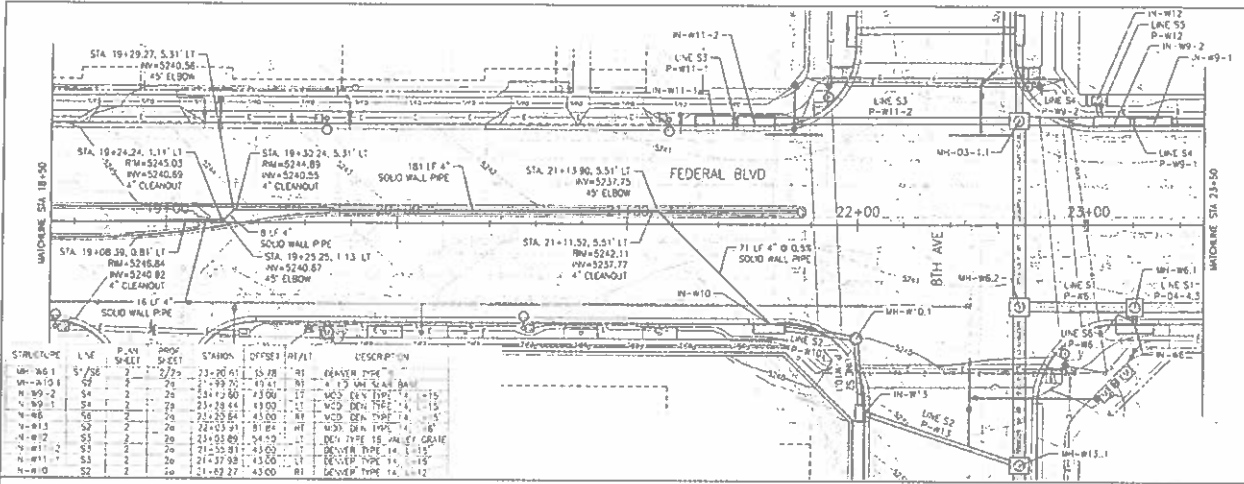
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 Department of Public Works  
 Engineer to Design  
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 Denver: 0018002

As Constructed	No Revisions
Revised	

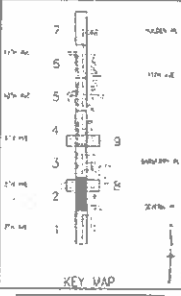
FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE  
 STORM SEWER - PLAN & PROFILE  
 FEDERAL BLVD & 7TH AVE INTERSECTION

Designer: J.S. Stricklin  
 Checker: J.M. Numbers  
 Sheet Supervisor: ST P&P Subject Sheets 1 of 3

Project No./Code	18-PP-2875-102 34 19957
	2011-PROJMSR-0002854
Sheet Number	305



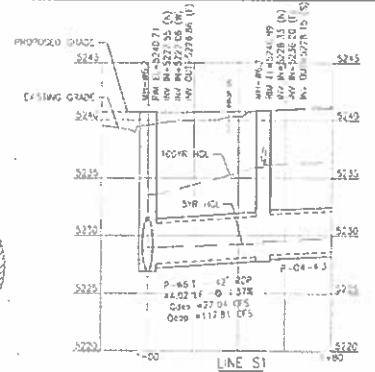
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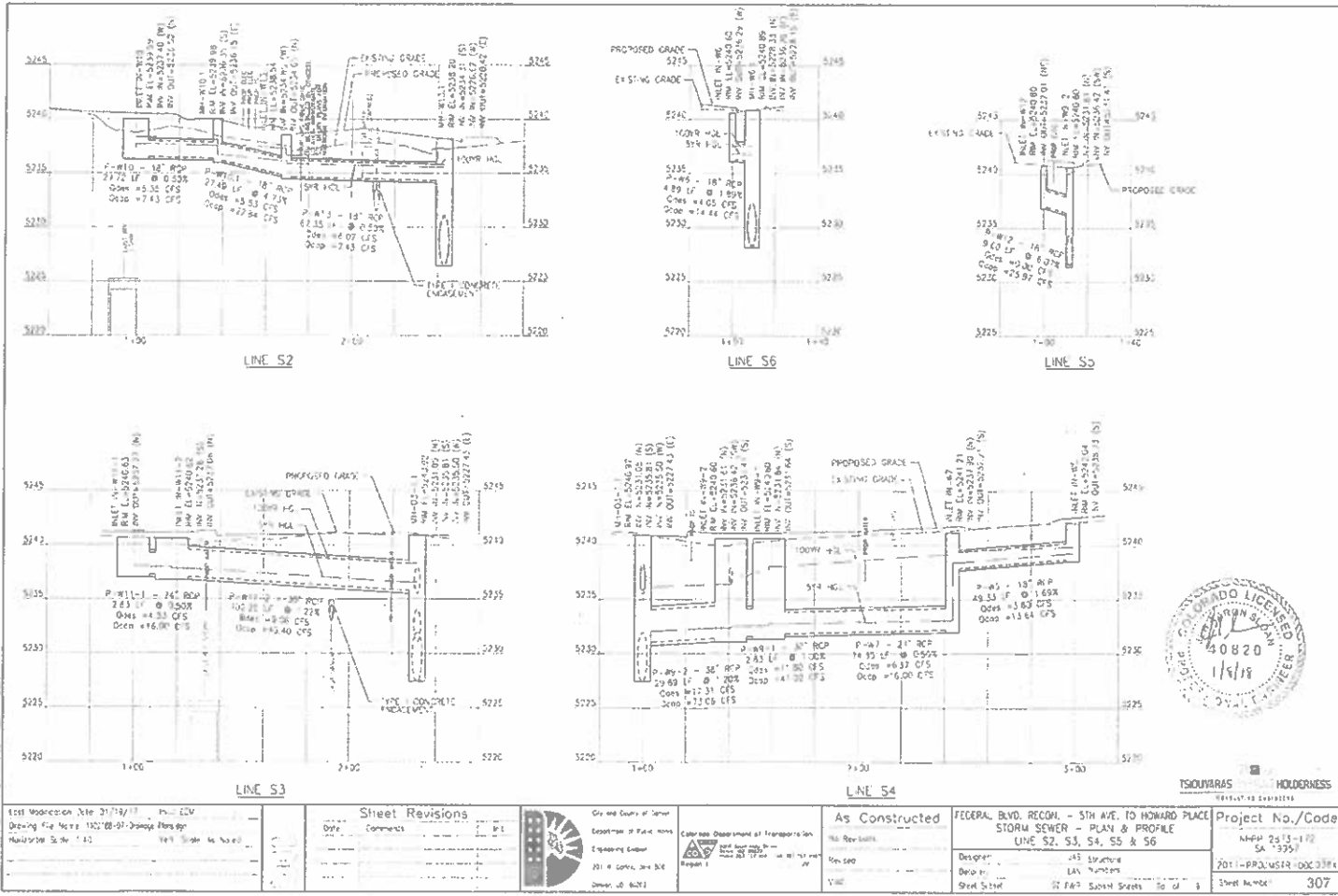
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 0.000 = 100% GRADE  
 0.000 = 100% GRADE  
 0.000 = 100% GRADE

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- STRUCTURE REFERENCE POINTS ARE AS FOLLOWS:

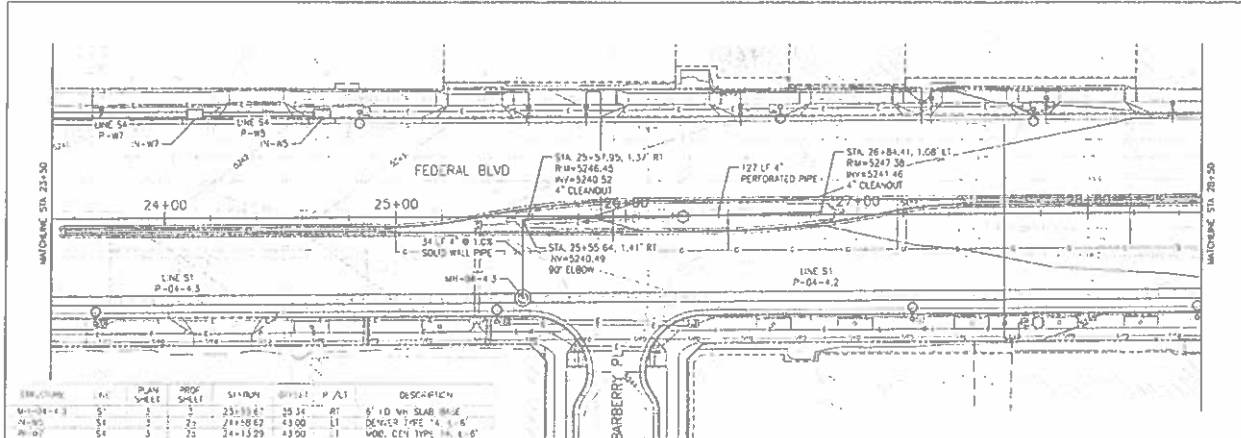
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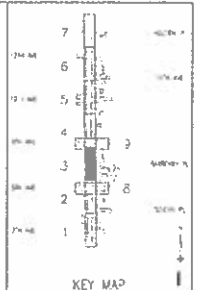
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<p>East Washington State 31/7/18/18 P. 101-EDV                  Drawing File Name: 180118-07-Storm Plans.dwg                  Modified Date: 1/9/18 10:46:40 AM</p>	<p><b>Sheet Revisions</b></p> <table border="1"> <thead> <tr> <th>Date</th> <th>Comments</th> <th>By</th> <th>Check</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Date	Comments	By	Check					<p>City and County of Spokane                  Department of Public Works                  Engineering Section                  201 N. Capitol Blvd.                  Spokane, WA 99201</p>	<p>Color and Department of Transportation                  Region 1</p>	<p><b>As Constructed</b></p> <p>No. Rev. Issued: _____                  Rev. Date: _____                  V. Date: _____</p>	<p>FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE                  STORM SEWER - PLAN &amp; PROFILE                  LINE S2, S3, S4, S5 &amp; S6</p> <p>Designer: JLS                  Date: 1/9/18                  Sheet Size: 11 Feet Square Sheets No. of 1</p>	<p><b>Project No./Code</b></p> <p>MMW 2513-112                  SA 13251                  2011-PROJ/MSR-0003384                  Sheet Number: 307</p>
Date	Comments	By	Check											



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MH-39	5.1	7	2	24+50.00	43.00'	LI	DENVER TYPE "A" 4' x 6'
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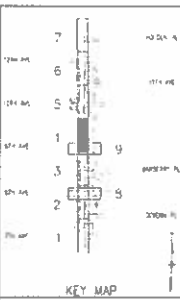
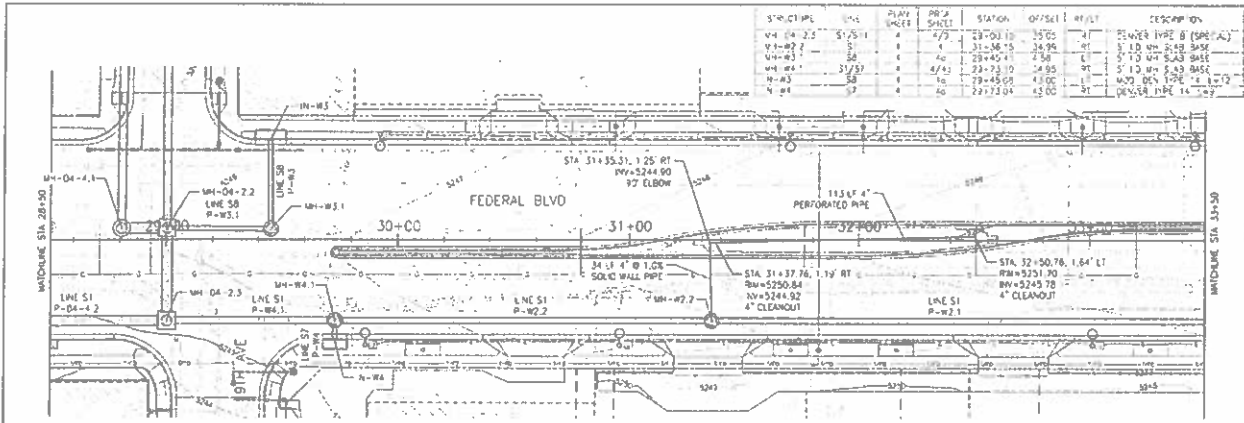
**ABBREVIATIONS**

- DC = DECK DRIVE IS-P
- DCB = MANHOLE FLOOR CAPACITY
- RCB = REINFORCED CONCRETE BOX
- PCP = PERFORATED CONCRETE PIPE
- MCWP = MANHOLE W/ LIP WALL

- SEE ADDITIONAL SHEETS IN THIS SET FOR INFORMATION ON LINES AND STRUCTURES SHOWN BUT NOT DETAIL ON THIS SHEET.
- STRUCTURE REFERENCE POINTS ARE AS FOLLOWS:  
MANHOLE SLAB BOX BASE = CENTER OF STRUCTURE  
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PILE TYPE "3" = CENTER OF STRUCTURE  
PILE TYPE "4" = CENTER OF STRUCTURE

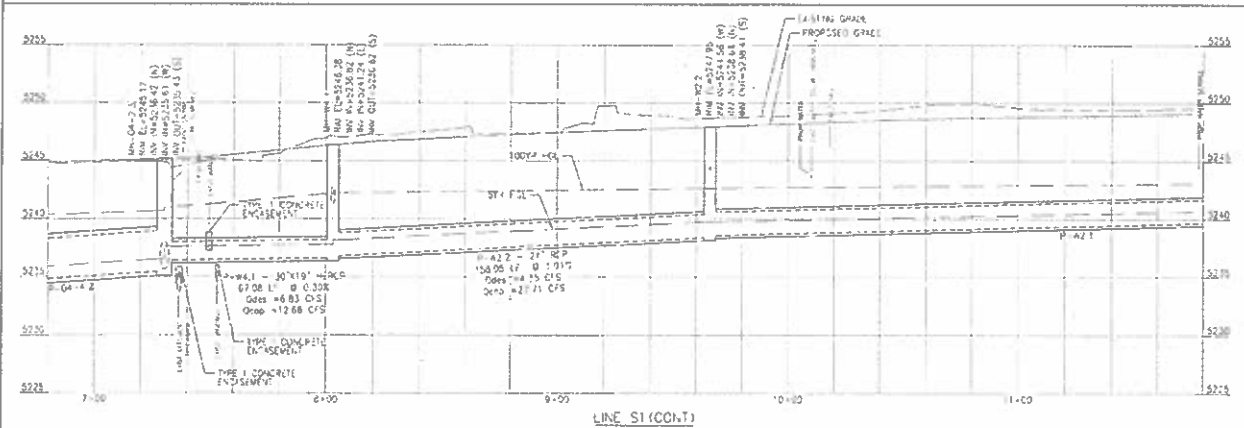
TSOUYIARAS HOLDENNESS  
REGISTERED PROFESSIONALS

<p>100% MODIFIED ON 12/16/2015 BY JLN Drawing Title: 242121-17-Denver Project Industry Code: 140 1st Size As Noted</p>	<p><b>Sheet Revisions</b></p> <table border="1"> <tr> <th>Rev.</th> <th>Comments</th> </tr> <tr> <td> </td> <td> </td> </tr> </table>	Rev.	Comments			<p>City and County of Denver Department of Public Works Engineering Division 20 = Capital Stock Unit License: 00 46320</p>	<p>As Constructed</p> <p>No. Revisions: 0 Revision: 0 Date: 01/15/16</p>	<p>FEDERAL BLVD. RECON - 5TH AVE. TO HOWARD PLACE STORY SEWER - PLAN &amp; PROFILE LINE S1 (CONT.)</p> <p>Design: JAS Shuck Checker: JAS Shuck Sheet Scale: 3/4" P.P. Subject Sheets 3 of 3</p>	<p>Project No./Code 4-PP 2873-173 SA 1925 2311 PROJWSTR-000356 Sheet Number: 308</p>
Rev.	Comments								



**ABBREVIATIONS**

- CONC. DESIGN (HORIZONTAL)
- CONC. DESIGN (VERTICAL)
- CONC. DESIGN (RADIUS)
- CONC. DESIGN (CIRCULAR)
- CONC. DESIGN (RECTANGULAR)
- CONC. DESIGN (TRIANGULAR)
- CONC. DESIGN (POLYGONAL)
- CONC. DESIGN (CIRCULAR)
- CONC. DESIGN (RECTANGULAR)
- CONC. DESIGN (TRIANGULAR)
- CONC. DESIGN (POLYGONAL)



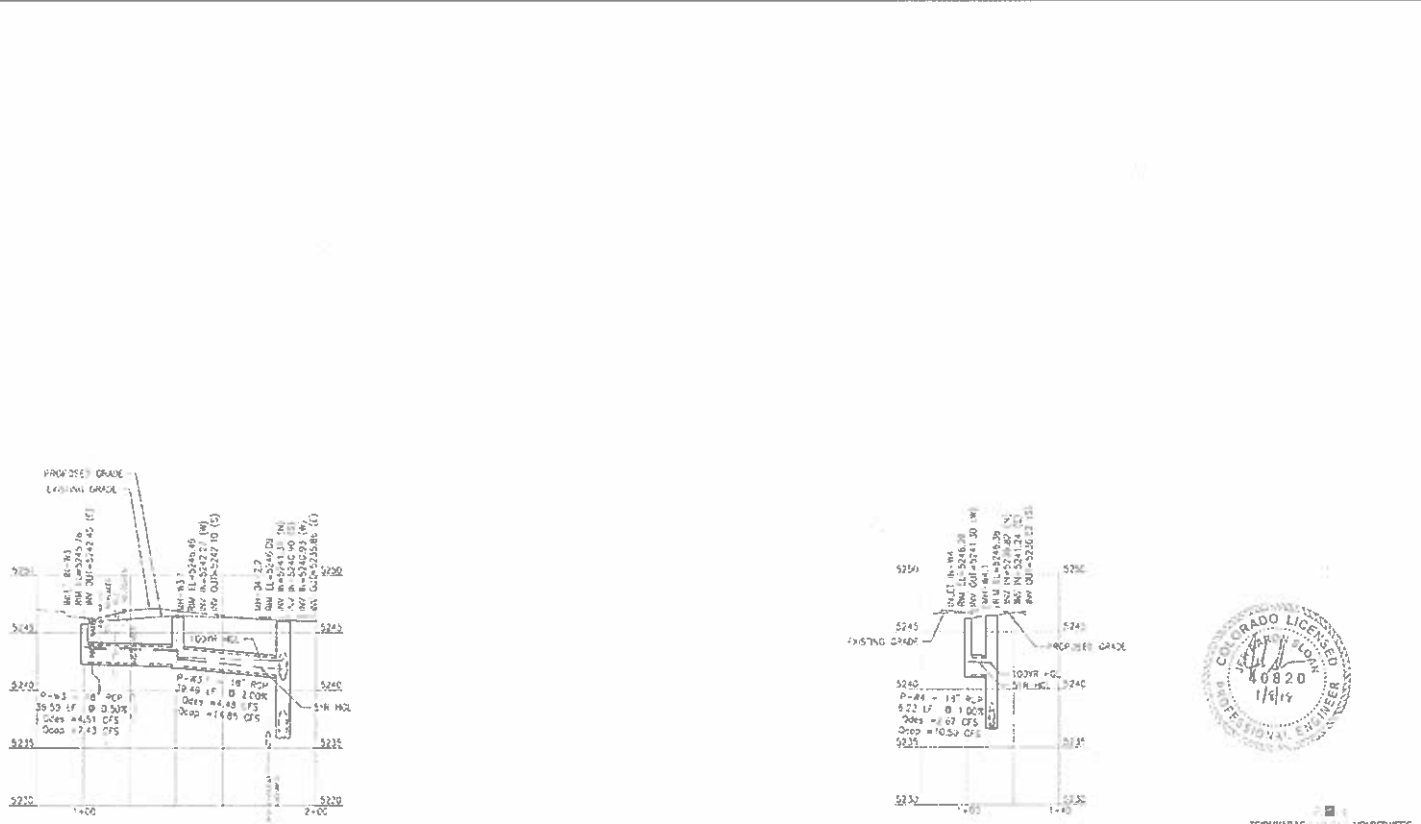
SEE ADDITIONAL SHEETS IN THIS SUBSET FOR INFORMATION ON LINES AND STRUCTURES SHOWN BUT NOT DETAILED ON THIS SHEET.

2. STRUCTURE REFERENCE POINTS ARE AS FOLLOWS:

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- MANHOLE TYPE P - INTERSECTION OF PIPE FLOWLINES AT RM ELEVATION
- INLET TYPE 13 - CENTER OF STRUCTURE
- INLET TYPE 14 - CENTER OF STRUCTURE AT THE PROPOSED FLOWLINE

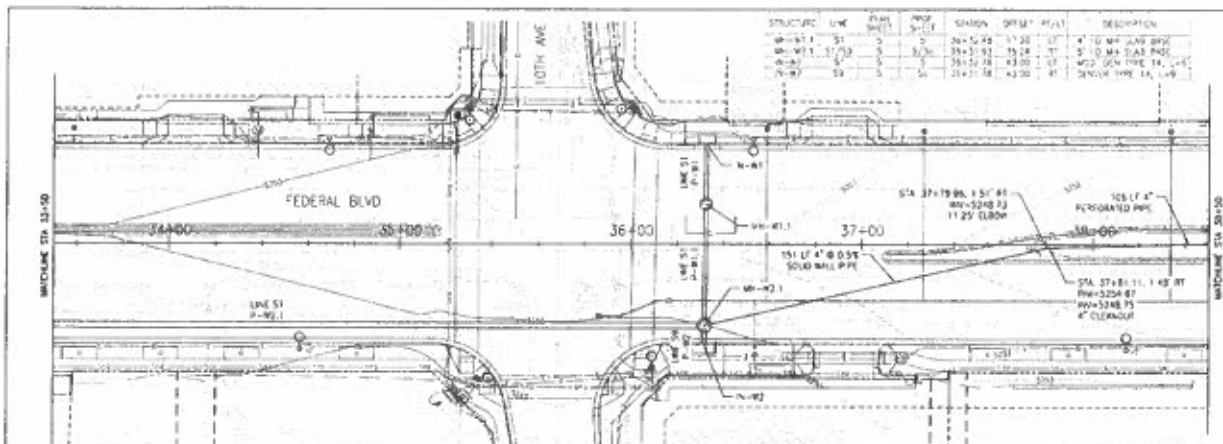
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 1/1/18  
 TSOUVARAS HOLDINGS  
 (SEAL)

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Date	Comments									



TSOLYIARAS HOLDENNESS  
REGISTERED ENGINEERS

<p>Last Modified on Date: 10/26/2016 Issue: 04/11                  Drawing File Name: 1107-SF-07-Storm Sewer Plans                  Horizontal Scale: 1"=40' Vert. Scale: As Noted</p>	<p>Sheet Revisions</p> <table border="1"> <thead> <tr> <th>Date</th> <th>Description</th> <th>By</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Date	Description	By				<p>City and County of Denver                  Department of Public Works                  Engineering Section                  20 = Central Street SW                  Denver, CO 80202</p>	<p>Colorado Department of Transportation                  2000 Central Expressway                  P.O. Box 800                  Golden, CO 80401                  Region 1</p>	<p>As Constructed</p> <p>No Revisions</p> <p>Revised:</p> <p> </p>	<p>FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE                  STORM SEWER - PLAN &amp; PROFILE                  LINE S7 &amp; S8</p> <p>Design: JAC Structures                  Date of: 10/14/16                  Sheet: S7-01 of 1 P&amp;P Sublet Sheets 43 of 1</p>	<p>Project No./Code</p> <p>10-000 2871-172                  SA 15957</p> <p>2017-FRANISER-0000354</p> <p>Sheet Number 310</p>
Date	Description	By										



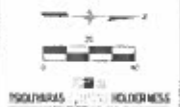
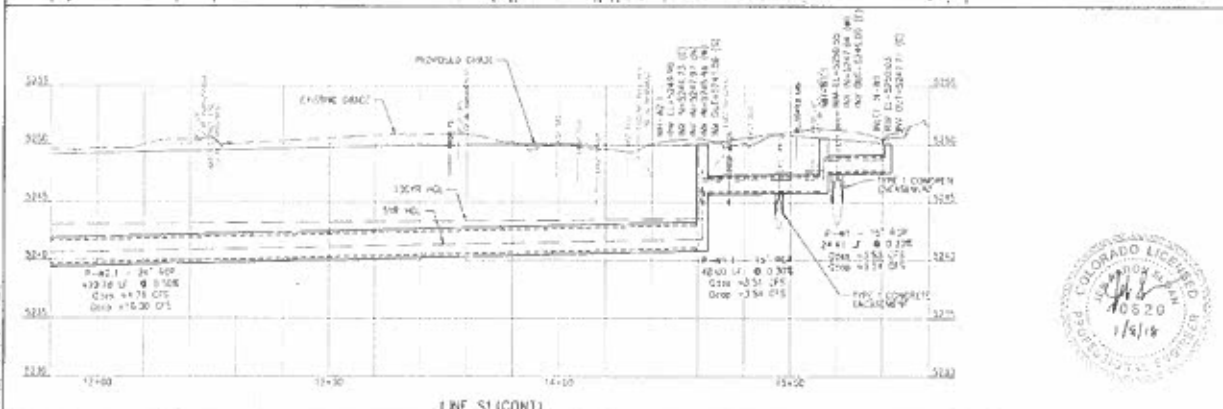
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MH-21	S1	0	0	36+20.78	43.00	0'	4' TO GEN TYPED 1A, 1-B
MH-21	S1	0	0	36+17.18	43.00	0'	GEN TYPED 1A, 1-B



**ABBREVIATIONS**

- 1 - 1" CONC. FLOWLINE
- 2 - CONC. MANHOLE
- 3 - 18" DIA. CONC. PIPE
- 4 - 18" DIA. CONC. PIPE
- 5 - 18" DIA. CONC. PIPE
- 6 - 18" DIA. CONC. PIPE
- 7 - 18" DIA. CONC. PIPE
- 8 - 18" DIA. CONC. PIPE
- 9 - 18" DIA. CONC. PIPE
- 10 - 18" DIA. CONC. PIPE

- SEE ADDITIONAL SHEETS IN THIS SUBMIT FOR INFORMATION ON LINES AND STRUCTURES SHOWN BUT NOT DETAILED ON THIS SHEET.
- STRUCTURE REFERENCE POINTS ARE AS FOLLOWS:
  - WHEN THE CENTER OF STRUCTURE IS INDICATED BY THE CENTER OF STRUCTURE.
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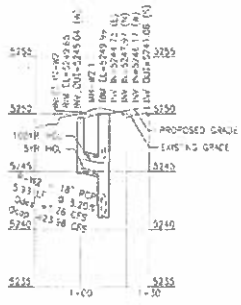
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Date	Comments



As Constructed

FEDERAL BLVD RECON - 5TH AVE. TO HOWARD PLACE STORM SEWER - PLAN & PROFILE LINE S1 (CONT.)
Project No./Code NARR 1875-172 SA 17057
Drawn By: JRM Check By: JRM Date: 01/08/18

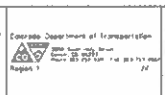
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TSI DIMITRIAS HOLDERSHIP  
REGISTERED ENGINEER

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Sheet Revisions		
Date	Description	By



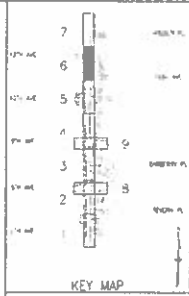
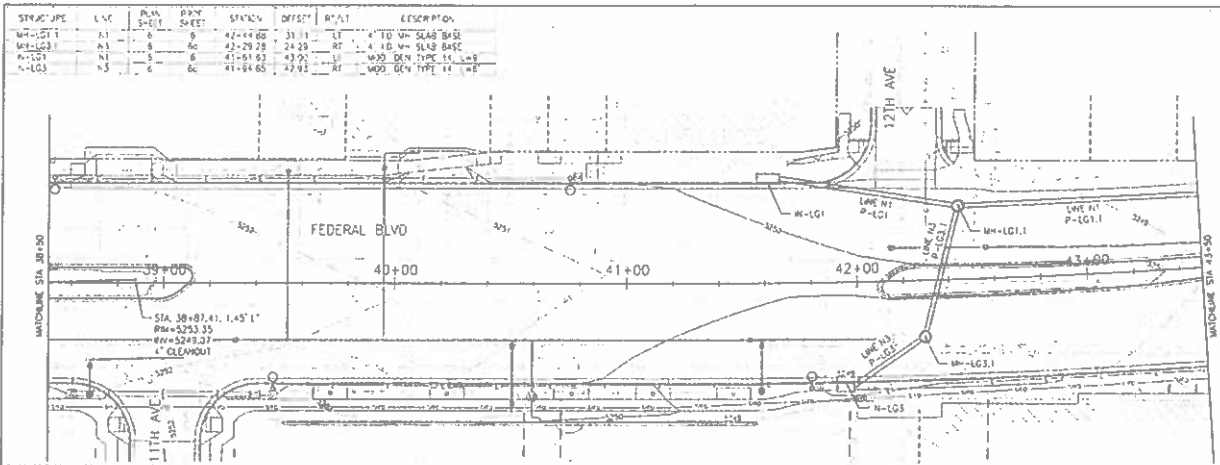
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No. Revisions	

FEDERAL BLVD. RECON - 5TH AVE TO HOWARD PLACE  
 STORM SEWER - PLAN & PROFILE  
 LINE S9

Project No./Code	
N-PP 2873-172	
SA 5957	
2018-PROJUS'R-0200364	
Sheet Number	312

Designer: JAS Structures  
 Checker: LAM Winters  
 Date Plotted: 01/24/2018 10:00 AM



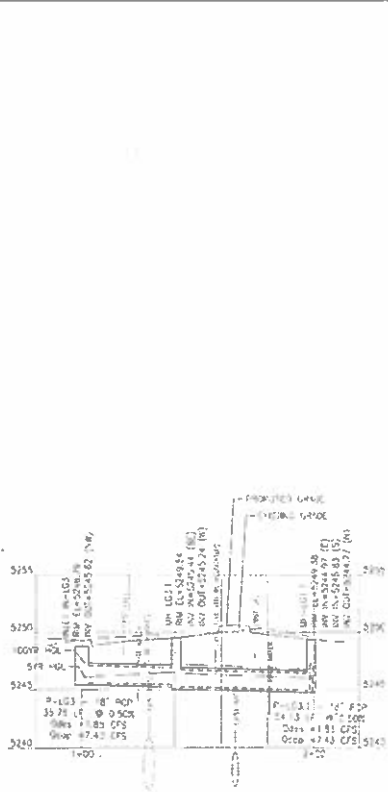


ABBREVIATIONS	
○	OPEN DESIGN MANHOLE (1'-10" DIA.)
○	CLOSE MANHOLE (1'-10" DIA.)
○	REINFORCED CONCRETE BOX
○	REINFORCED CONCRETE PIPE
○	HORIZONTAL CURVE (HP)

- SEE ADDITIONAL SHEETS IN THIS SUBSET FOR INFORMATION ON LINES AND STRUCTURES. STRUCTURES NOT DETAILLED ON THIS SHEET.
- STRUCTURE REFERENCE POINTS ARE AS FOLLOWS:  
 MANHOLE SLAB BOX BASIS = CENTER OF STRUCTURE  
 MANHOLE TYPE 10 = INTERSECTION OF PIPE FLOWLINES AT 9" ELEVATION  
 MANHOLE TYPE 13 = CENTER OF STRUCTURE  
 MANHOLE TYPE 14 = CENTER FACE OF STRUCTURE AT THE PROJECTED FLOWLINE



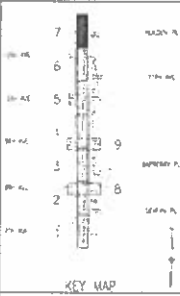
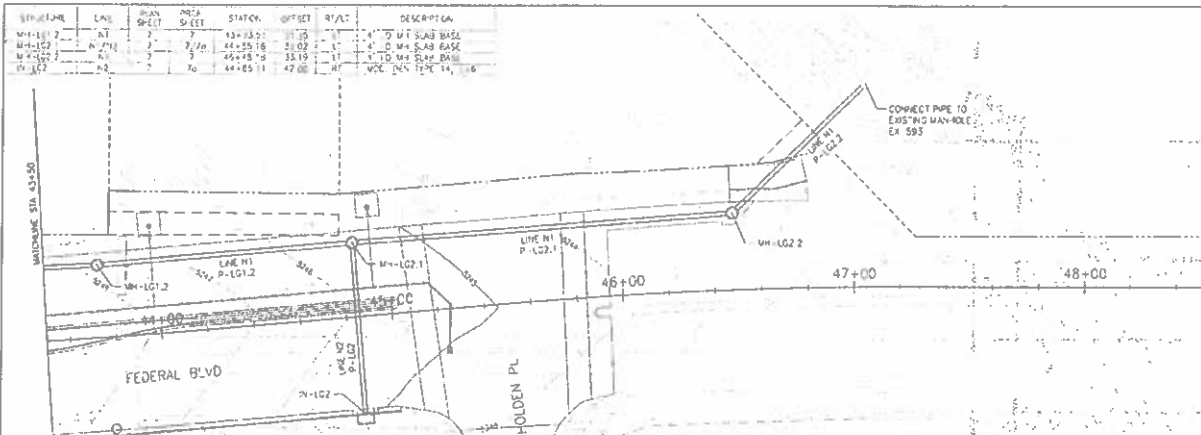
Last Modification Date: 10/26/2016 Drawing File Name: 1129-M-07-Storm Sewer Graphic Scale: 1"=40' Vertical Scale: As Noted	<b>Sheet Revisions</b> Date: _____ Comments: _____	City and County of Denver Department of Public Works Engineering Division 215 North Clark Street Denver, CO 80202	Colorado Department of Transportation Colorado Department of Transportation 1400 North Downing Street Denver, CO 80202	<b>As Constructed</b> No Revisions: Revised: With:	<b>FEDERAL BLVD RECON. - 5TH AVE TO HOWARD PLACE</b> STORM SEWER - PLAN & PROFILE LINE N1 Designer: MGS Checker: LAM Sheet Count: 51 T&P Sheet Sheets 2 of 9	<b>Project No./Code</b> N-PP 2013-112 SA 19907 2013-PROJWSN-0000064 Sheet Number: 313
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TSOUYIARAS - HOLDERSHIP  
 CONTRACT NO. 0000254

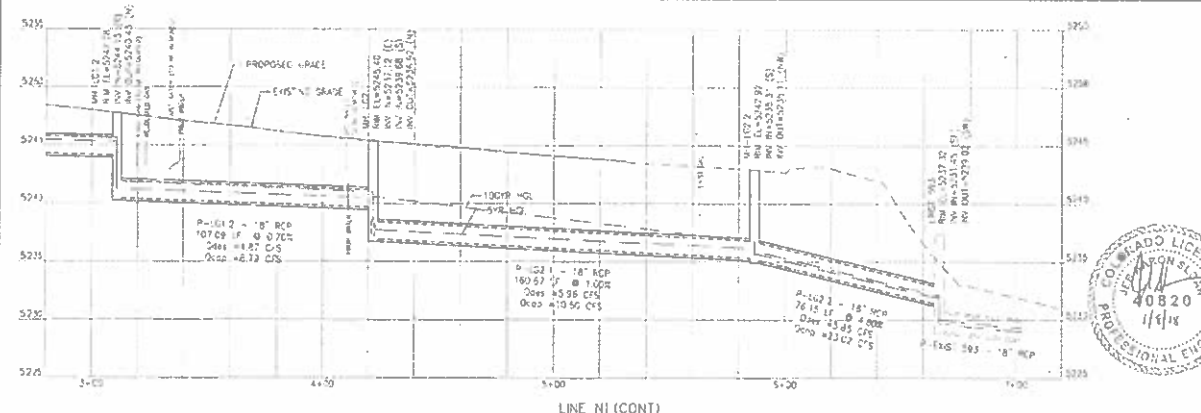
Last Modification Date: 10/26/2016 Drawing File Name: 1122154-17-03.swp Plot Date: 1/4/18 Plot Scale: 1/8" = 1'-0"	<b>Sheet Revisions</b> <table border="1"> <thead> <tr> <th>Date</th> <th>Comments</th> <th>By</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Date	Comments	By				City and County of Denver Department of Public Works Engineering Section 301 W. Colfax Ave., 10th Denver, CO 80202	Colorado Department of Transportation 1500 Sherman Street Denver, CO 80202 Region 1	<b>As Constructed</b> No Revisions Revised Void	FEDERAL BLVD RECON - 5TH AVE. TO HAWARD PLACE STORM SEWER - PLAN & PROFILE LINE N3 Designer: W2S Checker: LKN Date: 1/4/18 Sheet Name: ST P&P - Storm Sewer - 02 of 9	<b>Project No./Code</b> 1490 2873-17 SA 19557 17-PROJ-STR-0000254 Sheet Number: 314
Date	Comments	By										

01/04/18



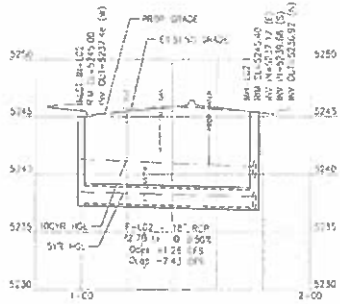
ABBREVIATIONS	
□	20% DESIGN FLOW (D-10)
○	20% DESIGN FLOW CAPACITY
○	REINFORCED CONCRETE BOX
○	REINFORCED CONCRETE PIPE
○	ADJORNAL ELLIPTICAL RCP

- SEE ADDITIONAL SHEETS IN THIS PROJECT FOR INFORMATION ON LINES AND STRUCTURES SHOWN BUT NOT DETAILED ON THIS SHEET.
- STRUCTURE REFERENCE POINTS ARE AS FOLLOWS:  
 MANHOLE SLAB TOP BASE = CENTER OF STRUCTURE  
 MANHOLE TYPE P = INTERSECTION OF PIPE FLOWLINES AT RAIL ELEVATION  
 INLET TYPE 13 = CENTER OF STRUCTURE  
 INLET TYPE 14 = CENTER FACE OF STRUCTURE AT THE PROJECTED FLOWLINE



LINE N1 (CONT)

2017 Modification Date: 10/26/2017, by: LAN Drawing File Name: 13186-07 Storage PWS.sxd Horizontal Scale: 1"=40'	<b>Sheet Revisions</b> Date: _____ Comments: _____ 1. _____ 2. _____	City and County of Denver Department of Public Works Engineering Division 1401 W. York Street, 5th Denver, CO 80202	Colorado Department of Transportation Region 1 1401 W. York Street, 5th Denver, CO 80202	As Constructed No Revisions R/S: 202 2/16	FEDERAL BLVD RECON - 5TH AVE. TO HOWARD PLACE SICRM SEWER - PLAN & PROFILE LINE N1 (CONT) Designer: MDS Structures Drawn: LCN Numbers Sheet Date: 01/09/18 Sheet Sheets: 7 of 9	Project No./Code 11-09 2813.177 SA 15917 2011-P-001518-000-0004 Sheet Number: 315
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LINE N2

TSOUVRAS ENGINEERS HOLDINGS  
REGISTERED PROFESSIONAL ENGINEERS

Last Mod/Issue on Date: 01/26/2016 11:11 AM  
 Drawing File Name: 1120108-01-Storm-Structure  
 Horizontal Curve: 140  
 Vertical Curve: As Noted

Sheet Revisions		
Date	Comments	By

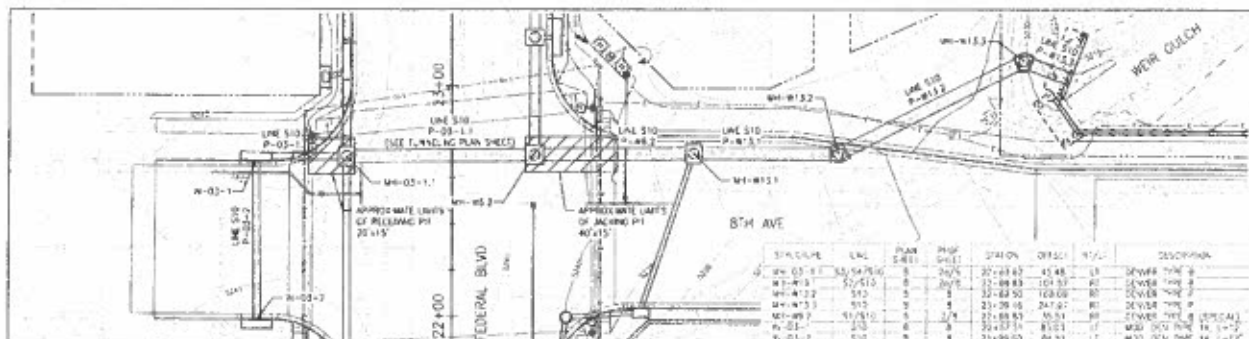


Colorado Department of Transportation  
 State Road 112  
 Denver, CO 80202

As Constructed  
 No Revisions  
 Revised  
 Vals

FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE  
 STORM SEWER - PLAN & PROFILE  
 LINE N2  
 Designer: WCS Structure  
 Checker: SAN Numbers  
 Sheet Subst: S1 P&P, Sheet Sheets 23 of 0

Project No./Code  
 NWP 2873-172  
 SA 9957  
 2011-PROJUSER-0000361  
 Sheet Number 318



STRUCTURE	LINE	PLAN	PROP. SHEET	STATION	OFFSET	TYPE	DESCRIPTION
MH-03-1	30+15.00	0	2075	37+28.42	45.48	13	SEWER TYPE 2
MH-03-2	30+51.00	0	2076	37+89.83	101.37	10	SEWER TYPE 2
MH-03-3	31+15.00	0	2077	37+88.50	128.00	10	SEWER TYPE 2
MH-03-4	31+51.00	0	2078	37+39.16	247.47	10	SEWER TYPE 2
MH-03-5	31+87.00	0	2079	37+88.82	35.21	10	SEWER TYPE 2 (SPECIAL)
MH-03-6	32+15.00	0	2080	37+87.71	81.23	17	MANHOLE TYPE 14
MH-03-7	32+51.00	0	2081	37+88.00	87.31	17	MANHOLE TYPE 14



**ABBREVIATIONS**

- 2'-MANHOLE (SPECIAL) TYPE 13
- 2'-MANHOLE (SPECIAL) TYPE 14
- 4'-MANHOLE (SPECIAL) TYPE 10
- 4'-MANHOLE (SPECIAL) TYPE 17
- 6'-MANHOLE (SPECIAL) TYPE 10
- 6'-MANHOLE (SPECIAL) TYPE 17
- 8'-MANHOLE (SPECIAL) TYPE 10
- 8'-MANHOLE (SPECIAL) TYPE 17

1. ALL ADDITIONAL SHEETS IN THIS SUBMITTAL FOR INFORMATION ON LINES AND STRUCTURES SHOWN BUT NOT DETAILED ON THIS SHEET.

2. STRUCTURE REFERENCE POINTS ARE AS FOLLOWS:

- MANHOLE: MANHOLE CENTER = CENTER OF STRUCTURE
- MANHOLE: TYPE 10 = INTERSECTION OF ALINE FLIGHTLINES AT 90° ELEVATION
- MANHOLE: TYPE 13 = CENTER OF STRUCTURE
- MANHOLE: TYPE 14 = CENTER FACE OF STRUCTURE AT THE PROPOSED FINISHLINE



**TSONOURAS, CIVIL ENGINEER**  
 License No. 4020  
 State of Colorado  
 Civil Engineering

Line Worksheet Date 10/26/2015, 8:11 AM  
 Drawing File Name: I:\2015-20-Storm Package\20150818.dwg  
 Horizontal Scale: 1"=40'

**Sheet Revisions**

No.	Comments
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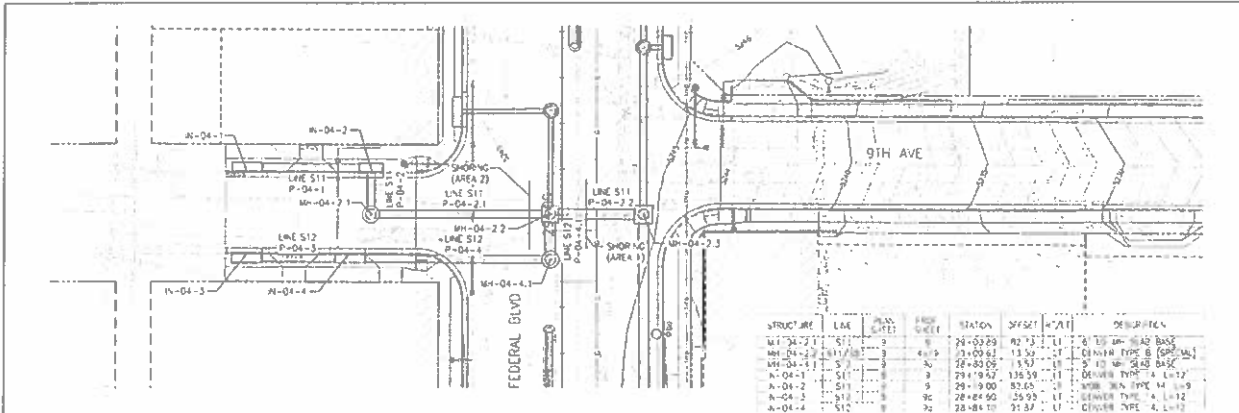
**As Constructed**

No. Revisions: 0  
 Project: 2015-FRONTSTN-3000364  
 Date: 10/26/2015

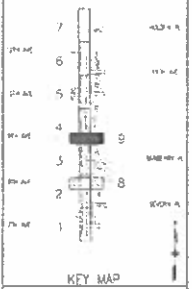
**FEDERAL BLVD. RECON. - 5TH AVE TO HOWARD PLACE**  
**STORM SEWER - PLAN & PROFILE**  
**LINE S10**

Designer: JPI, Structure  
 Checker: JAK, SUPPLEMENT  
 Field Engineer: JPI, JAK, SUPPLEMENT

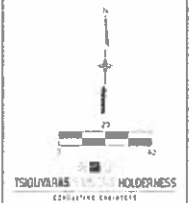
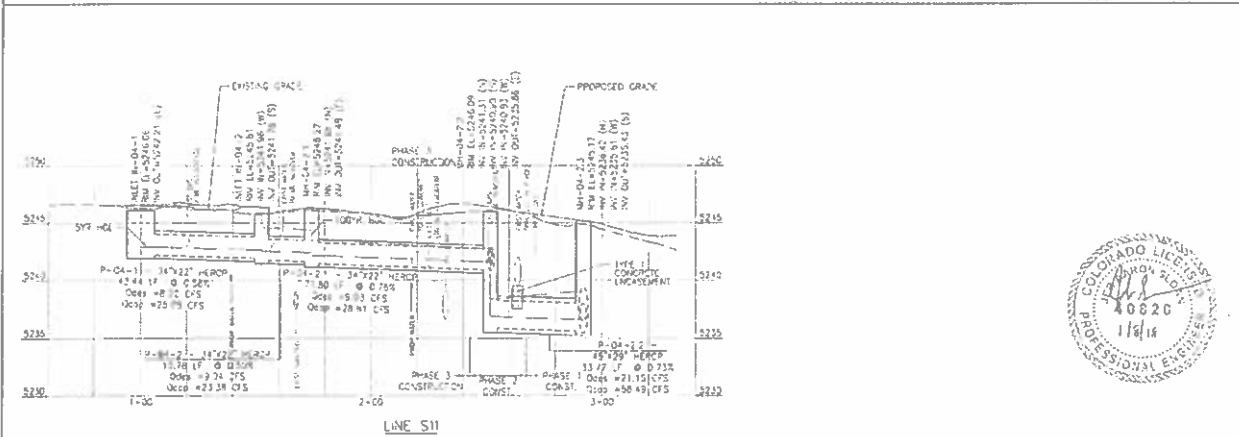
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 WPP 2013-172  
 SA 19327  
 2015-FRONTSTN-3000364  
 Sheet Number: **317**



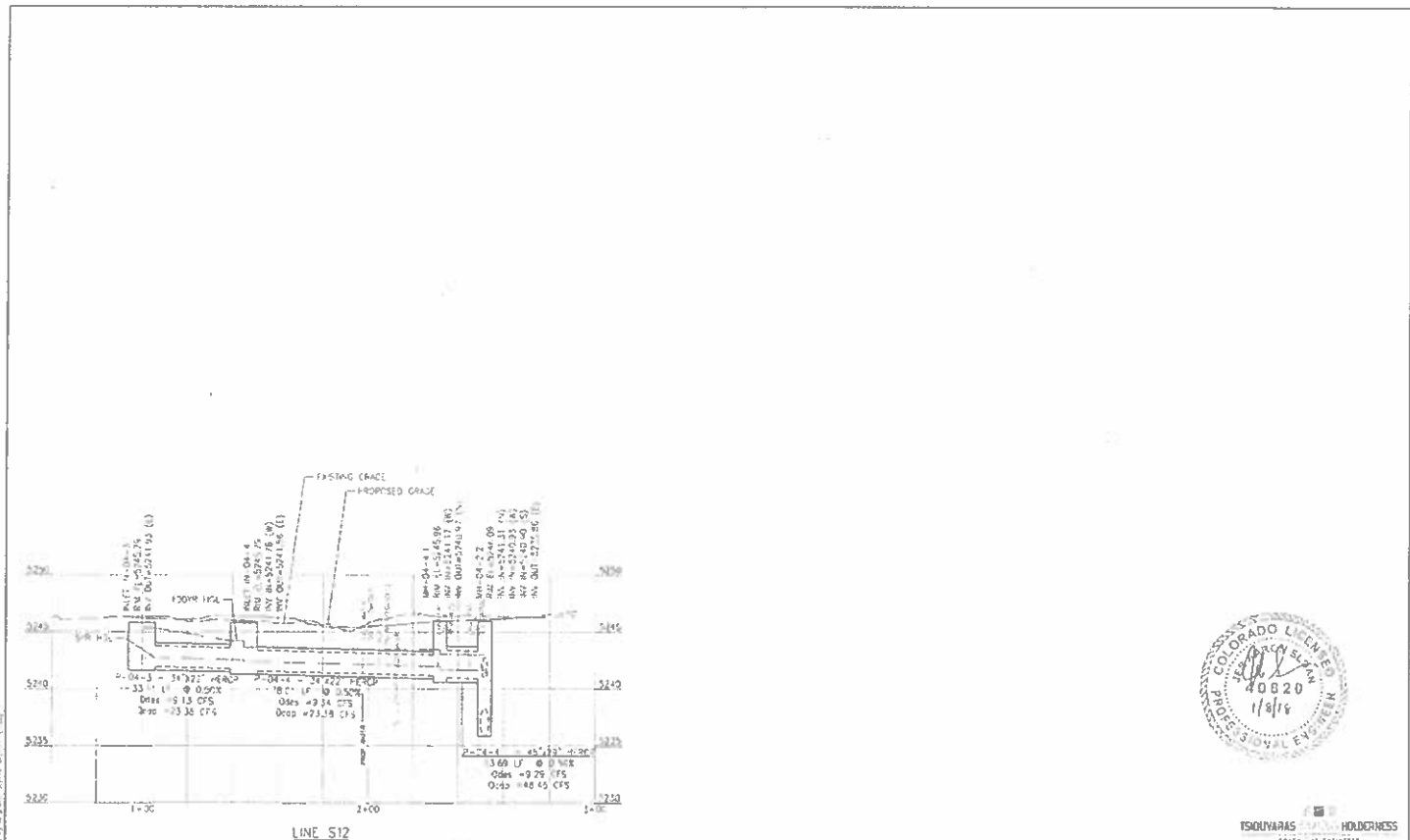
STRUCTURE	LINE	NO.	NO. SHEET	NO. SHEET	STATION	OFFSET	H/A/I	DESCRIPTION
MH-04-1	S11	1	1	1	24+00.00	0.00	11	8" DIA. MANHOLE BASE
MH-04-2	S11	2	2	2	24+00.61	13.50	11	8" DIA. MANHOLE TYPE B (SPR. WALL)
MH-04-3	S11	3	3	3	28+00.00	13.50	11	8" DIA. MANHOLE TYPE B (SPR. WALL)
MH-04-4	S11	4	4	4	28+00.00	13.50	11	8" DIA. MANHOLE TYPE B (SPR. WALL)
MH-04-1	S12	1	1	1	24+00.00	0.00	11	8" DIA. MANHOLE TYPE 4, L=12
MH-04-2	S12	2	2	2	24+00.00	0.00	11	8" DIA. MANHOLE TYPE 4, L=12
MH-04-3	S12	3	3	3	28+00.00	0.00	11	8" DIA. MANHOLE TYPE 4, L=12
MH-04-4	S12	4	4	4	28+00.00	0.00	11	8" DIA. MANHOLE TYPE 4, L=12



- ABBREVIATIONS**
- 8" DIA. MANHOLE (H=12)
  - 8" DIA. MANHOLE (H=12) (SPR. WALL)
  - 8" DIA. MANHOLE TYPE B (SPR. WALL)
  - 8" DIA. MANHOLE TYPE 4, L=12
  - 8" DIA. MANHOLE TYPE 4, L=12
1. SEE ADDITIONAL SHEETS IN THIS SUBSET FOR INFORMATION ON LINES AND STRUCTURES SHOWN, BUT NOT DETAILED ON THIS SHEET.
  2. STRUCTURE REFERENCE POINTS ARE AS FOLLOWS:
    - MANHOLE STAR BOX BASE - CENTER OF STRUCTURE
    - MANHOLE TYPE 11 - INTERSECTION OF PIPE LOADS AT RM ELEVATION
    - INLET TYPE 15 - CENTER OF STRUCTURE
    - MULTI-TYPE 14 - CENTER FACE OF STRUCTURE AT THE PROJECTED FLOWLINE

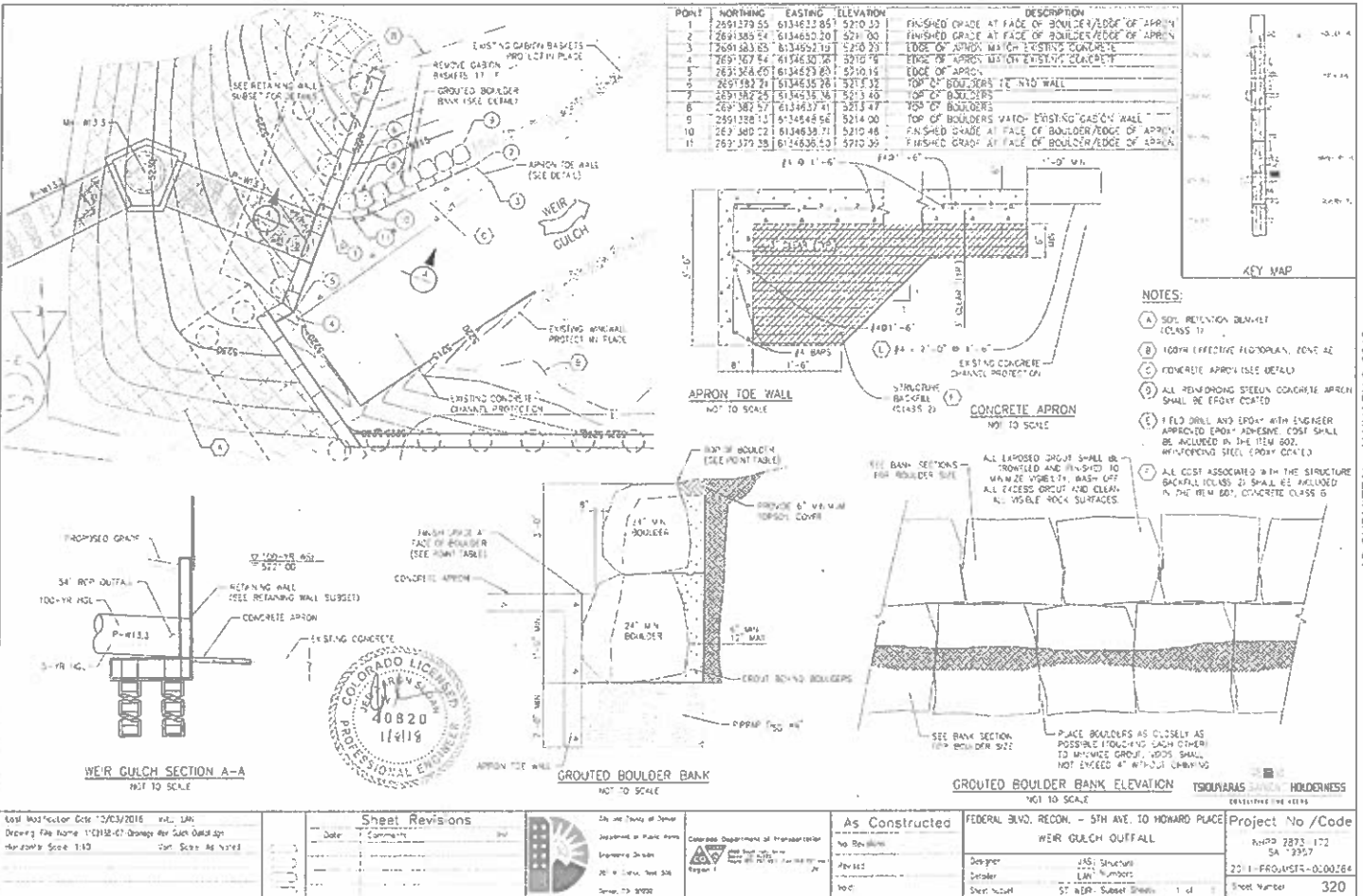


<p>Issue Modification Date: 12/25/2015                  Drawing File Name: 140188-01-Storm Sewer                  Project Name: 140</p>	<p><b>Sheet Revisions</b></p> <table border="1"> <thead> <tr> <th>Date</th> <th>Comments</th> <th>By</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Date	Comments	By				<p>City and County of Denver                  Department of Public Works                  Engineering Division                  2500 California Street, Suite 304                  Denver, CO 80202</p>	<p>Colorado Department of Transportation                  Region 1</p>	<p><b>As Constructed</b></p> <table border="1"> <thead> <tr> <th>No. Revisions</th> <th>Revised</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	No. Revisions	Revised	Notes				<p>FEDERAL BLVD RECON - 5TH AVE. TO HOWARD PLACE                  STORM SEWER - PLAN &amp; PROFILE                  LINE S11</p>	<p>Project No./Code                  RMP# 2873-172                  SA 13957                  140188-01-0002384                  Sheet Number: 318</p>
Date	Comments	By																
No. Revisions	Revised	Notes																



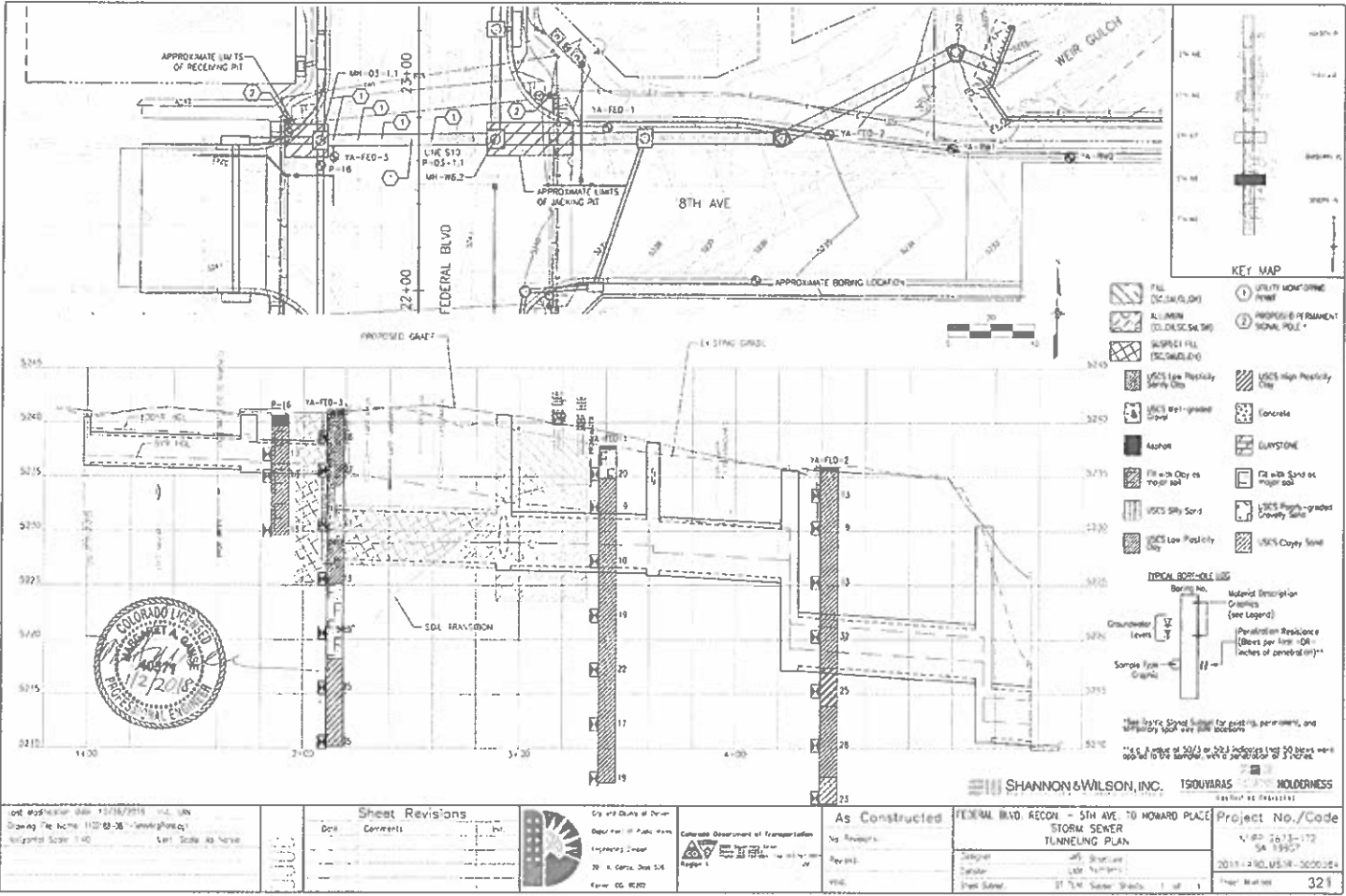
TSOUKARAS HOLDINGS

<p>Issue Modification Date 12/29/2018 ... LWS                  Drawing File Name 18236-00-000000.dwg                  Horizontal Scale 1:60 ...</p>	<p>Sheet Revisions</p> <table border="1"> <thead> <tr> <th>Corr</th> <th>Comments</th> <th>ni</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Corr	Comments	ni				<p>City of Denver                  Department of Public Works                  400 West Colfax                  Denver, CO 80202</p>	<p>Colorado Department of Transportation                  1555 North Colfax                  Denver, CO 80202</p>	<p>As Constructed</p> <p>No Revisions</p> <p>Rev 001</p> <p>0/0</p>	<p>FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE                  STORM SEWER - PLAN &amp; PROFILE                  LINE S12</p> <p>Designer JMS Structure                  Checker LWS No. 000000                  Sheet Number ST-P&amp;P Sheet Number 33 of 3</p>	<p>Project No./Code                  1-2-18-0015-02                  SA 13657                  2011-RQ-MS-R-000000                  Sheet Number 319</p>
Corr	Comments	ni										



<p>Last Mod/Issue Date: 12/03/2016</p> <p>Drawing File Name: 112118-01-Design for Weir Gulch.dwg</p> <p>Hardware Scale: 1:10</p>	<p><b>Sheet Revisions</b></p> <table border="1"> <thead> <tr> <th>Date</th> <th>Comments</th> <th>By</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Date	Comments	By				<p>City and County of Essex</p> <p>Department of Public Works</p> <p>Engineering Section</p> <p>2010 Central Street, Suite 508</p> <p>Essex, NJ 07022</p>	<p>As Constructed</p> <p>NO REVISIONS</p> <p>DESIGNED BY: JAS</p> <p>DRAWN BY: JAS</p> <p>CHECKED BY: JAS</p>	<p>FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE</p> <p>WEIR GULCH OUTFALL</p> <p>DESIGNER: JAS</p> <p>DRAWN: JAS</p> <p>SHEET COUNT: 57 WEIR - Submittal Sheets 1 of 1</p>	<p>Project No./Code</p> <p>RHPD 2873.172</p> <p>SA 3357</p> <p>2011-PROJ/ISSN-000264</p> <p>Sheet Number: 320</p>
Date	Comments	By									





DATE: 12/12/2018  
 DRAWING NO: 1102-02-08-10-001-001  
 SCALE: 1"=40'

Sheet Revisions	
Box	Comments



City and County of Denver  
 Department of Public Works  
 Engineering Department  
 20 N. Grant Street, 5th Floor  
 Denver, CO 80202

As Constructed  
 No Revisions  
 Project No. / Code  
 2018-1-90-0518-0000054

SHANNON & WILSON, INC.  
 1500 YARAS  
 HOLDENESS  
 FEDERAL BLVD RECON - 5TH AVE TO HOWARD PLACE  
 STORM SEWER TUNNELING PLAN

Project No./Code  
 1102-02-08-10-001-001  
 2018-1-90-0518-0000054  
 Sheet No. 321

**NOTES:**

- IN GENERAL, REPLACEMENT QUANTITIES FOR PAVEMENT, SLOPE, & NEW WALL, ETC. ARE DETERMINED FROM THE EXISTING PLAN WITH BRICKWORK TO BE THE ACTUAL FIELD TRENCH BOTH WAY (AFTER THE CONTRACTOR SHALL CONSIDER TO ALL MATERIALS AND JOBS SAFETY ON THE CONCERNING ELEVATION AND POSITIVE CONSIDERATION).
- TRENCH SHALL BE BRACED AND SHORED AS NECESSARY TO AVOID SAFE WORKING CONDITIONS ON TO ADJACENT EXISTING STRUCTURES, ETC. UNLESS OTHERWISE SPECIFIED ON THE PLAN, NO "TAMPING" WILL BE MADE FOR BRICKWORK, MORTARMENT, OR BRICKWORK OF SOIL AND OTHER UTILITIES, SLOPE, STRUCTURES, ETC. OUTSIDE THE USUAL VARIATION OF ELEVATION AND PVE.
1. AND 2. SHALL BE DETERMINED BY THE DESIGN ENGINEER. ALL EXISTING UTILITIES ARE PAID FOR BY A SQUARE YARD FOR NON-DRINK WATER.
- BRICKWORK OR BRICKWORK OF THE TRENCH SHALL BE WHERE APPLICABLE SHALL BE IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE, LOCAL, AND OTHER APPLICABLE REGULATIONS.
- AREA FOR STREET LIGHT FITTING SHALL BE 8'-0" X 8'-0" EACH SIDE OF TRENCH TO 3" GRADE AND 10" SET BACK.

D	B1	B2	B3	B4
(ft)	(ft)	(ft)	(ft)	(ft)
4'-0"	3.0	8.0	12.0	
6'-0"	4.0	9.0	12.0	
8'-0"	5.0	10.0	12.0	
10'-0"	6.0	11.0	12.0	
12'-0"	7.0	12.0	12.0	
14'-0"	8.0	13.0	12.0	
16'-0"	9.0	14.0	12.0	
18'-0"	10.0	15.0	12.0	
20'-0"	11.0	16.0	12.0	
22'-0"	12.0	17.0	12.0	
24'-0"	13.0	18.0	12.0	
26'-0"	14.0	19.0	12.0	
28'-0"	15.0	20.0	12.0	
30'-0"	16.0	21.0	12.0	
32'-0"	17.0	22.0	12.0	
34'-0"	18.0	23.0	12.0	
36'-0"	19.0	24.0	12.0	
38'-0"	20.0	25.0	12.0	
40'-0"	21.0	26.0	12.0	

UN-SPECIFIED TRENCH WIDTHS AS SHOWN IN TABLE ABOVE.  
 1/4" = DEPTH OF ASPHALT SURFACE COURSE  
 1/8" = DEPTH OF ASPHALT BASE COURSE  
 1/2" = WIDTH OF ASPHALT SURFACE COURSE  
 1/2" = WIDTH OF ASPHALT BASE COURSE

**NOTE:**  
 1. ALL TRENCHES, BRICKWORK AND ALL BRICKS TO BE IN ACCORDANCE WITH ALL REGULATIONS.

**TYPICAL CUTOFF WALL LOCATIONS**

**DETAIL**

**FIG. 2 CONCRETE CUTOFF WALL (REQUIRED METHOD) NO SCALE**

NO.	DESCRIPTION	QTY	UNIT	AMOUNT
1	CONCRETE			
2	ASPHALT			
3	BRICK			
4	MORTAR			
5	PIPE			
6	SHIELDING			
7	REINFORCEMENT			
8	BRICKWORK			
9	BRICKWORK			
10	BRICKWORK			
11	BRICKWORK			
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99	BRICKWORK			
100	BRICKWORK			

<p>Last Modification Date: 10/14/2016                  Drawing File Name: 123456789.DWG                  Horizontal Scale: 1:1                  Vertical Scale: As Noted</p>	<p><b>Sheet Revisions</b></p> <table border="1"> <tr><th>Date</th><th>By</th><th>Description</th></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </table>	Date	By	Description										<p>City and County of Denver                  Department of Public Works                  Engineering Division                  201 W. Colfax, Dept 308                  Denver, CO 80202</p>	<p>Colorado Department of Transportation                  1700 Stout Street, Suite 100                  Denver, CO 80202                  Region 1</p>	<p><b>As Constructed</b></p> <p>No. Revisions: 0                  Revision: 0                  Date: 1/2/2018</p>	<p>FEDERAL BLVD. RECON - 5TH AVE. TO HOWARD PLACE                  STORM SEWER                  TYPICAL DETAILS</p> <p>Drawn by: [Name]                  Checked by: [Name]                  Date: [Date]                  Sheet Size: 11 1/2" x 17 1/2" (Subject Sheets) 1 of 2</p>	<p>Project No./Code                  W-201-2873-172                  SA 13957                  2017-PRD-VSTR-0000184                  Sheet Number: 322</p>
Date	By	Description																

MINIMUM TRENCH WIDTH (A)	MINIMUM TRENCH DEPTH (B)	MINIMUM WIDTH OF CURB OR FIN (C)
4" & SMALLER	4"	B = 2"
4" TO 24"	6"	B = 4"
24" TO 36"	8"	B = 6"
36" TO 42"	10"	B = 8"
42" & LARGER	12"	B = 10"

CLASS "A" BEDDING REQUIREMENTS, SHOWS CROSS SECTION OF CONCRETE SLAB.

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CLASS OF CALCULATION	DEPT. SIZE (D) IN FEET	SPAN (S) IN FEET
1	1/4"	30 - 100
2	3/8"	20 - 55
3	1"	0 - 10
4	1 1/2"	0 - 5

NOTE: THE SECTION ASSUMED BY ARCH & TRENCH TABLE.

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NOTE: THESE DETAILS ARE GENERAL. FOR SPECIAL CONDITIONS, THE REQUIREMENTS OTHER THAN THOSE GIVEN IN ENHANCEMENT OR SPECIAL INSTALLATIONS (ETC.) IDENTICAL DETAILS AND SPECIAL REQUIREMENTS SHALL BE DETAILED ON THE CONSTRUCTION DRAWINGS. FOR JOINTS OR PARTIAL TRENCH CONDITIONS, TRENCH AND BEDDING DETAILS SHALL BE A SPECIAL DESIGN.

1. ALL TRENCH BEDDING TYPES AND STRUCTURAL BEDDING OF THIS OR CONDUIT SHALL BE BASED UPON THE TRENCH WIDTH AS SET FORTH IN THE TRENCH TABLES WITH THE EXCEPTION OF SPECIAL DESIGN.

2. IN REFERENCE TO OTHER THAN TYPICAL STANDARD ENCAUSTIC BEDDING AND STRUCTURAL BEDDING TYPES, THE DESIGNER IS RESPONSIBLE WITH THE TRENCH WIDTH TABLE (PART OF THIS PLAN) TO PROVIDE THE APPROPRIATE TRENCH AND BEDDING DETAILS AT THE PROPER DESIGN THICKNESS.

3. GRANULAR BEDDING SHALL BE 4\"/>

TSIOLIVARIS CONSULTING HOLDINGS INC. (PROVIDING CONSULTING)

As Constructed FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE STORM SEWER TYPICAL DETAILS

Project No./Code 4407 2813-132 34 100017 2311-FR001518-0002364

Sheet Number 323

Date	Comments

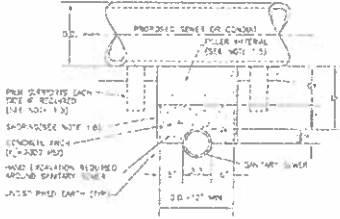
City of San Diego  
Department of Public Works  
Engineering Design  
301 N. Tenth Ave. 136  
June 20, 2009

California Department of Transportation  
SAN DIEGO DISTRICT  
Region 1

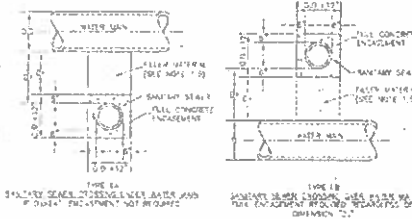
As Constructed	Revisions

Revised By	Checked By	Date

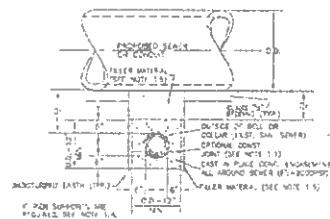
Project No./Code	Sheet Number
4407 2813-132 34 100017 2311-FR001518-0002364	323



**TYPE I**  
CONCRETE ENCLOSURE FOR SANITARY SEWERS

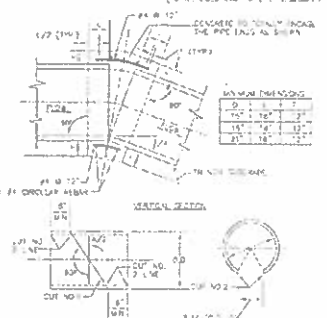


**TYPE II**  
CONCRETE ENCLOSURES FOR SANITARY SEWERS CROSSING OVER OR UNDER WATER MAIN NO SCALE



**TYPE III**  
CONCRETE ENCLOSURE FOR SANITARY SEWERS

**STORM CONNECTOR PIPE CLOSURE DETAIL**



**GENERAL NOTES**

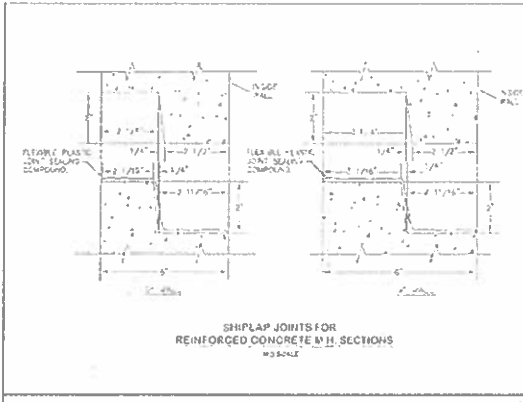
- CONCRETE COLLAR IS REQUIRED WHERE THE CHANGE IN DIAMETER IS 1/2" OR MORE.
- SEE LISTINGS.
- IF THE COLLAR IS USED, THE PIPE SHALL BE IN A 2' DIA. CHAMFERED END. THE COLLAR SHALL BE 1/2" THICKER THAN THE PIPE WALL.
- WHERE REINFORCING IS REQUIRED, THE DIAMETER OF ALL CIRCULAR REINFORCEMENT SHALL BE 1/2" OR MORE.
- REINFORCING SHALL BE USED WHERE THE SPACES BETWEEN THE EXTREME OUTER ENDS IS 2 1/2' OR LARGER.
- AN ATION FORM OF UNLINED SAND-TEMPERED FORM SHALL BE USED TO PRODUCE A SMOOTH INTERIOR SURFACE. THE FORM SHALL BE LEFT IN PLACE (SEE DETAIL).
- THE SHELL WALLS SHALL BE 24" DIA. OR MORE AND SHALL BE 4" THICK AND 4' HIGH.

**GENERAL NOTES FOR TYPE I, II & III ENCLOSURES**

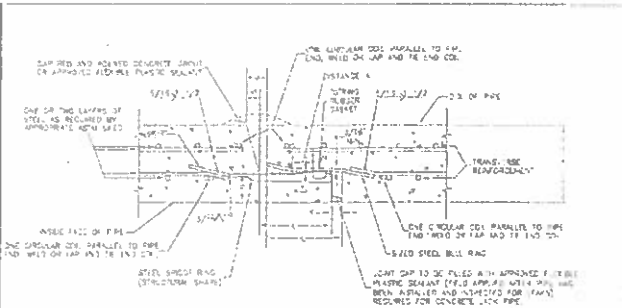
- CONCRETE TO BE CAST AGAINST UNDISTURBED SOIL OR BROWN F. OPTIONAL CONSTRUCTION JOINTS MAY BE USED AT JOINTS OF ENCLOSURE IS FURNISHED SEPARATELY. A 2" MIN. THICK LAYER OF SAND OR OTHER MATERIAL SHALL BE PLACED BETWEEN BOTTOM OF SANITARY SEWER AND TOP OF CONCRETE.
- LENGTH OF ENCLOSURE FOR:
  - TYPE I & II ENCLOSURES SHALL BE 10' MIN. FROM EACH ENDED FOR PROPOSED COVER OF JOINT.
  - TYPE III ENCLOSURES SHALL BE AT LEAST 10' FEET EACH SIDE OF WATER MAIN.
- UNLESS OTHERWISE NOTED ON DRAWINGS, REINFORCEMENT SHALL BE 1/2" OR MORE AND SHALL BE SPACED AT 24" ON CENTER.
- TYPE I & II ENCLOSURES SHALL BE REINFORCED AS FOLLOWS:
  - 18" DIA. OR LARGER SHALL BE REINFORCED BY 2" DIA. OR LARGER.
  - 18" DIA. OR LARGER SHALL BE REINFORCED BY 2" DIA. OR LARGER.
  - 18" DIA. OR LARGER SHALL BE REINFORCED BY 2" DIA. OR LARGER.
  - 18" DIA. OR LARGER SHALL BE REINFORCED BY 2" DIA. OR LARGER.
- IF THE SANITARY SEWER IS BRICK OR CONSTRUCTION OF CAST IRON PIPE (DIA. 18" OR C-15) OR CAST IRON PIPE (DIA. 18" OR C-15), CONCRETE ENCLOSURE SHALL BE 4" THICK.
- IF THE SANITARY SEWER IS BRICK OR CONSTRUCTION OF CAST IRON PIPE (DIA. 18" OR C-15) OR CAST IRON PIPE (DIA. 18" OR C-15), CONCRETE ENCLOSURE SHALL BE 4" THICK.
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NO.	DESCRIPTION	DATE
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9	ISSUED FOR PERMIT	01/14/2016
10	ISSUED FOR PERMIT	01/14/2016

Last Modification Date: 01/14/2016 by: JLN Drawing File Name: 140218-00-113-300.dwg Horizontal Scale: 1" = 12' Vert. Scale: Not Indicated	<b>Sheet Revisions</b> No.      Comments      By	 City and County of Denver Department of Public Works Engineering Division 201 W. Colfax, Suite 500 Denver, CO 80202	<b>As Constructed</b> No.      Revisions      By	FEDERAL BLDG. RECON. - 5TH AVE. TO HOWARD PLACE <b>STORM SEWER TYPICAL DETAILS</b> City of Denver      JAS Structure Designer      JLN      No.      3071-PRO-VSTR-030016A Sheet No.      51 OF 51      Sheets      1 of 1	<b>Project No./Code</b> 1490 2875-172 SA 19957 2011-PRO-VSTR-030016A Sheet Number 324
			Colorado Department of Transportation  Division 7 1000 South Peoria Street, Suite 300 Fort Collins, CO 80526	TSOULVARRAS S. TONNE HOLDENNESS CONSULTING ENGINEERS	



SHIMLAP JOINTS FOR REINFORCED CONCRETE IN H. SECTIONS  
NO SCALE

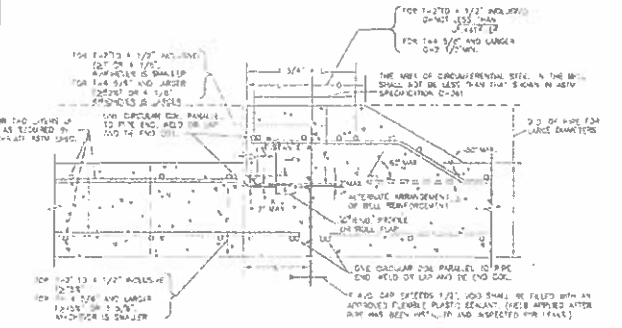


JOINT TYPE 2  
NO SCALE

- NOTES:**
1. T- WALL THICKNESS OF PIPE FLASHING.
  2. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES AND DIMENSIONS SHOWN ON THIS SHEET FOR JOINT DETAILS PRIOR TO FABRICATION.
  3. ALL DIMENSIONS SHALL BE GIVEN IN FEET & INCHES. IN CASE OF DIMENSIONS NOTED AS 1/2\"/>



SPIGOT GROOVE DETAIL TYPICAL FOR JOINT R.  
NO SCALE



JOINT TYPE R.  
NO SCALE

NO.	REVISION
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20	FOR CONSTRUCTION

DATE: 12/15/17

SCALE: AS SHOWN

PROJECT: FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE

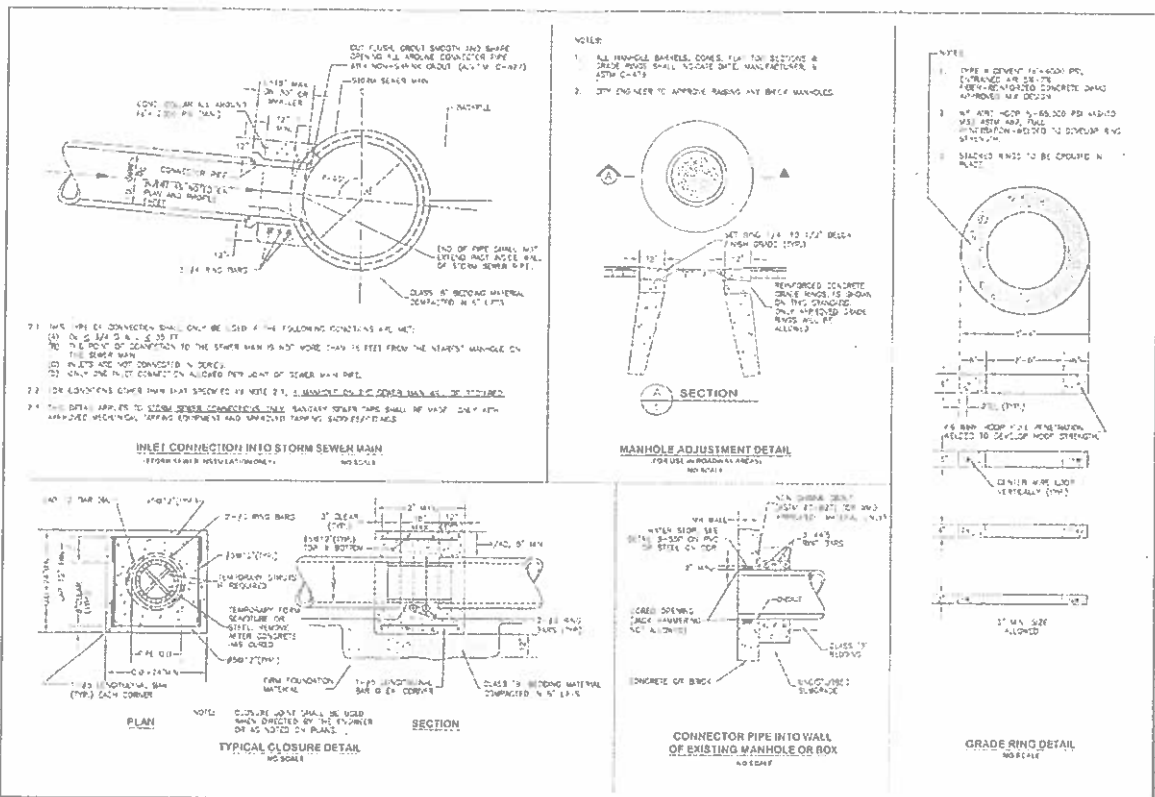
PROJECT NO./CODE: 4-PC-2875-112 SA 11937

2017 PROVISIONS - 002354

SHEET NO.: 325

TSICOURAS HOLDINGS

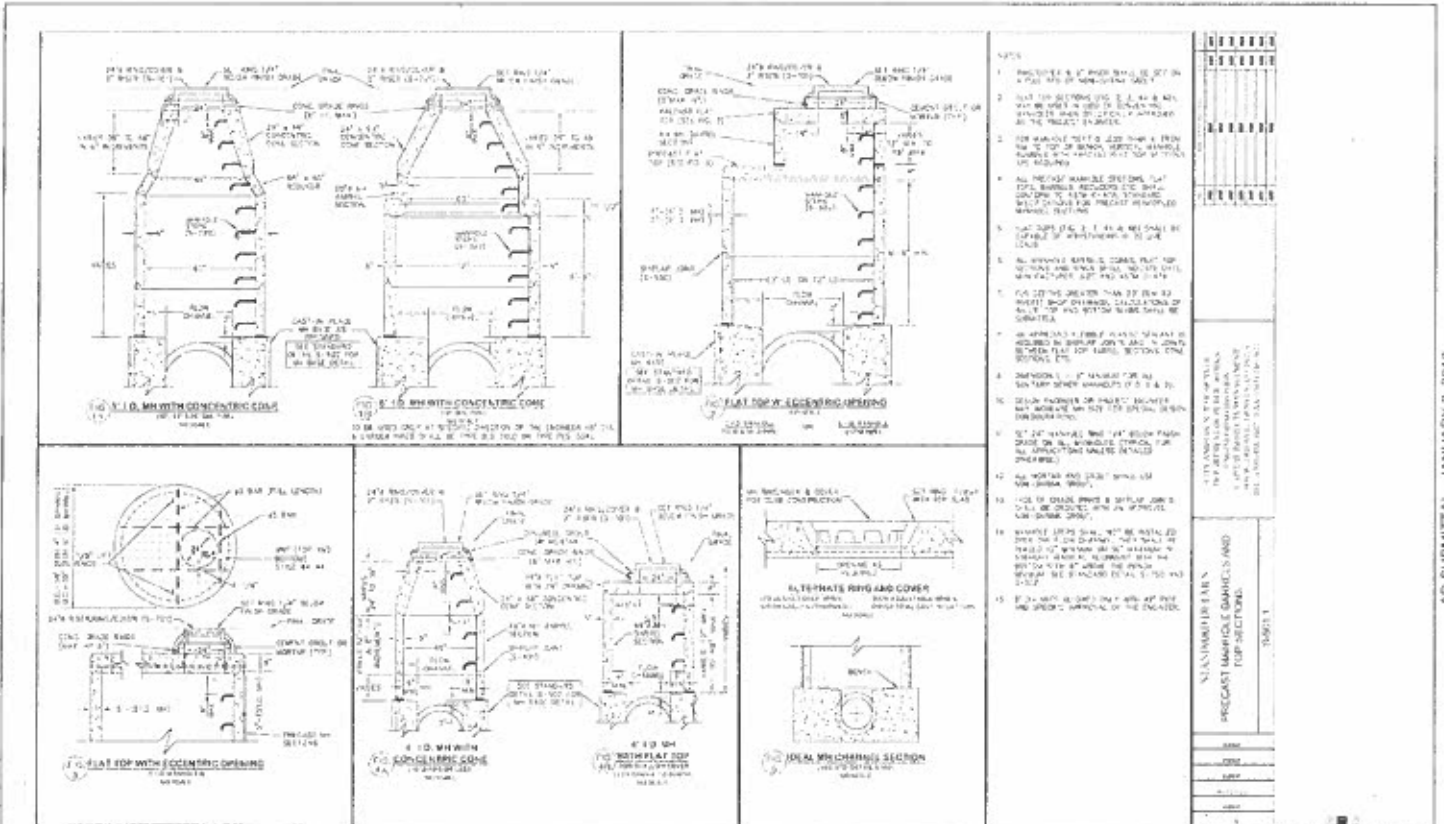
Issue Modification Date: 12/15/2016	Scale: 1/2" = 1'-0"	<b>Sheet Revisions</b>	City and County of Denver	As Constructed	FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE	Project No./Code
Drawn by: Vester, 132-00-112-200010	Scale: 1/2" = 1'-0"	1. 1/2" x 1/2" x 1/2"	Department of Public Works	Not Revisions	STORM SEWER TYPICAL DETAILS	4-PC-2875-112 SA 11937
Checked by: Vester, 132-00-112-200010	Scale: 1/2" = 1'-0"	2. 1/2" x 1/2" x 1/2"	Engineering Division	Revised	3/1/17	2017 PROVISIONS - 002354
Issue Modification Date: 12/15/2016	Scale: 1/2" = 1'-0"	3. 1/2" x 1/2" x 1/2"	2018 City of Denver	Revised	3/1/17	SHEET NO.: 325



NO.	REVISION	DATE	BY	CHKD.
1	ISSUED FOR PERMITS			
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<p>001: No. of Submittal Date: 12/14/2015                  002: Drawing No.: 12108-00-113-0000-02                  003: National Store: 11                  004: VAM: 5229                  005: RE: 10706</p>	<p><b>Sheet Revisions</b></p> <table border="1"> <thead> <tr> <th>Date</th> <th>Comments</th> <th>By</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Date	Comments	By				<p>City and County of Denver                  Department of Public Works                  Engineering Division                  320 W. Colfax, 5th Floor                  Denver, CO 80202</p>	<p>As Constructed                  No. of Revisions:                    Permitted:                    Date:  </p>	<p>FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE                  STORM SEWER                  TYPICAL DETAILS</p>	<p>Project No./Code                  NMPD 2872-192                  34-59957                  J011-FR021514-C000354                  Sheet Number: 328</p>
Date	Comments	By									

DATE PLOTTED: 1/2/2018 10:54:00 AM

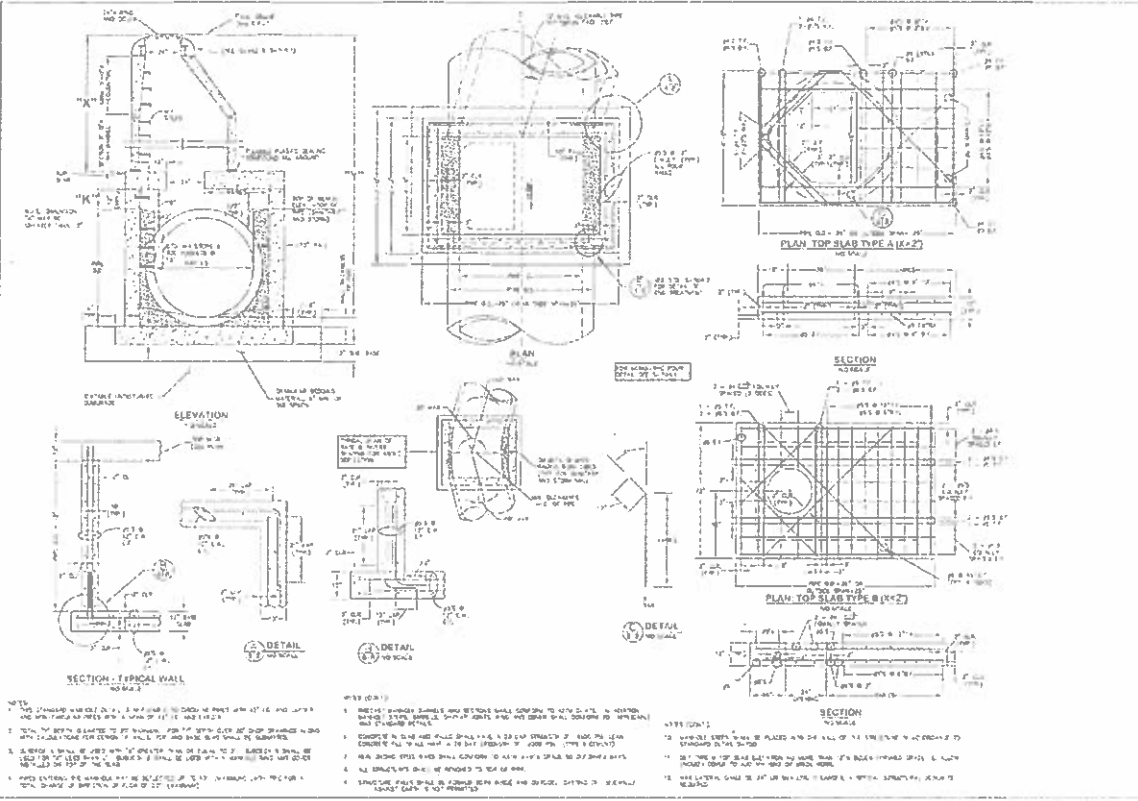


- NOTES
1. PRECAST 8" WIDE SLABS TO BE SET ON A 12" MIN. THICK CONCRETE SLAB.
  2. ALL TOP SURFING (S.E., S.W., N.E., N.W.) SHALL BE SET IN 12" MIN. THICK CONCRETE SLAB AS SHOWN IN THE PROJECT MANUAL.
  3. FOR MANHOLE WITH 2" DIA. FROM 18" TO 24" TOP OF MANHOLE, REINFORCING BARS SHALL BE PLACED WITH TOP SURFING AS SHOWN.
  4. ALL PRECAST MANHOLE SECTIONS SHALL BE MANUFACTURED TO THE MANHOLE DESIGNER'S SPECIFICATIONS. ALL PRECAST MANHOLE SECTIONS SHALL BE MANUFACTURED TO THE MANHOLE DESIGNER'S SPECIFICATIONS.
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  15. ALL PRECAST MANHOLE SECTIONS SHALL BE MANUFACTURED TO THE MANHOLE DESIGNER'S SPECIFICATIONS.

<p>LAST MODIFIED ON: 04/18/2018 BY: JAK</p> <p>DRAWING NO: 132-119-300-01</p> <p>REVISIONS: 1.2</p>	<p><b>Sheet Revisions</b></p> <table border="1"> <thead> <tr> <th>No.</th> <th>Comments</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> </tr> </tbody> </table>	No.	Comments			<p>City of Dallas</p> <p>Department of Public Works</p> <p>Engineering Division</p> <p>2500 North Stem</p> <p>June 10, 2013</p>	<p><b>As Constructed</b></p> <p>No Revisions</p> <p>Approved: _____</p> <p>Checked: _____</p> <p>Date: _____</p>	<p>FEDERAL HIGHWAY RECORD - SEE PLAN TO HOWARD PLACE</p> <p>STORM SEWER</p> <p>TYPICAL DETAILS</p> <p>Sheet No. 327</p>	<p>Project No./Code</p> <p>NAHP 2013-112</p> <p>SA 19957</p> <p>2011-0001-0214-0000164</p> <p>Sheet Number: 327</p>
No.	Comments								







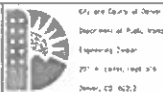
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**NOTES**  
 1. THE MANHOLE SHALL BE CONSTRUCTED TO BE NOT LESS THAN 10 FEET ABOVE FINISHED GRADE...  
 2. THE MANHOLE SHALL BE CONSTRUCTED TO BE NOT LESS THAN 10 FEET ABOVE FINISHED GRADE...  
 3. THE MANHOLE SHALL BE CONSTRUCTED TO BE NOT LESS THAN 10 FEET ABOVE FINISHED GRADE...  
 4. THE MANHOLE SHALL BE CONSTRUCTED TO BE NOT LESS THAN 10 FEET ABOVE FINISHED GRADE...

TSIOUVARAS & HOLDENNESS  
CONSULTING ENGINEERS

Last Modification Date: 12/11/2015  
Drawing File Name: E0213-10-11-Work1.dwg  
Horizontal Scale: 1" = 10'-0"

Date	Comments

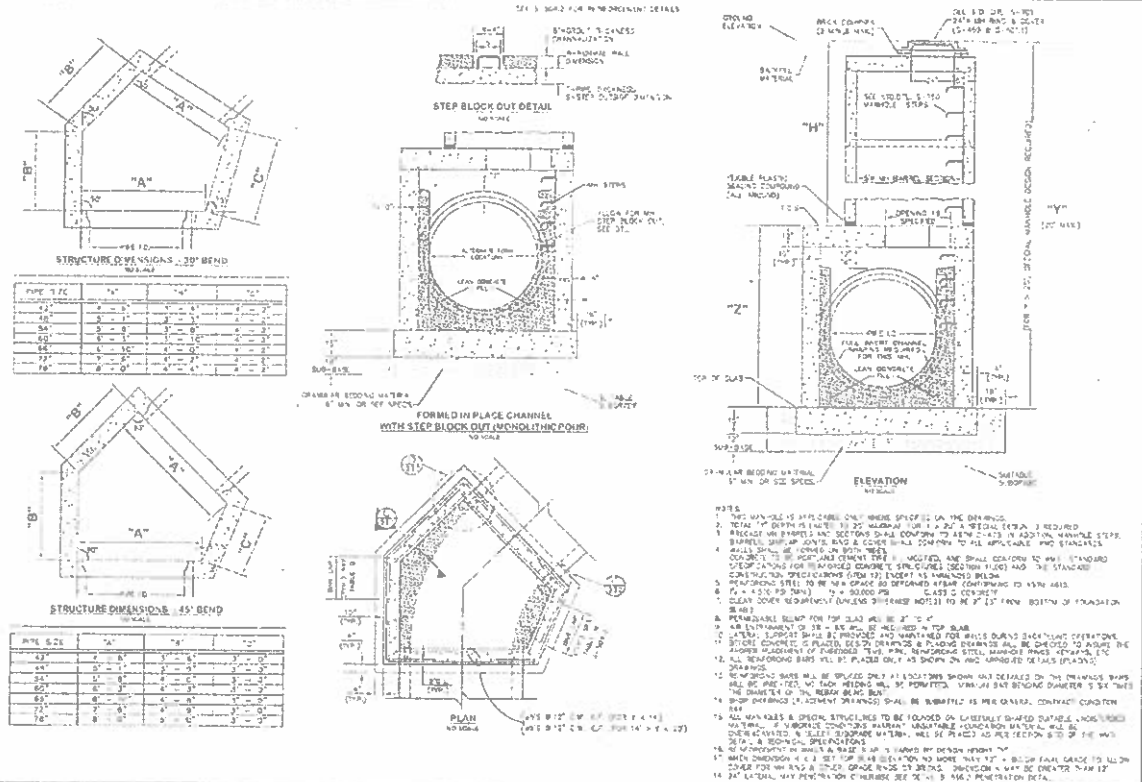


Maryland Department of Transportation  
 Region 1

As Constructed  
 No Revisions  
 Revised: [Blank]  
 Date: 1/24/18

FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE  
 STORM SEWER  
 TYPICAL DETAILS

Project No./Code  
 WPP 2871-177  
 SA 18357  
 2011-PROJ-MSTR-0000364  
 Sheet Number: 329

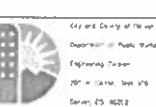


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- NOTES:**
1. THE MANHOLE IS TO BE CONCRETE UNLESS SPECIFIED IN THE DRAWINGS.
  2. TOTAL TOP DEPTH IN LINES TO 25' MAXIMUM FOR 18" & 24" SIZES (EXCL. 18" & 24" SIZES) IS REQUIRED.
  3. REINFORCEMENT BARS AND COVERS SHALL CONFORM TO ALL APPLICABLE AND STANDARD SPECIFICATIONS FOR REINFORCED CONCRETE STRUCTURES (SECTION 05050) AND THE STANDARD SPECIFICATIONS FOR PORTLAND CEMENT (SECTION 02010) AND THE STANDARD SPECIFICATIONS FOR PORTLAND CEMENT (SECTION 02010) AND THE STANDARD SPECIFICATIONS FOR PORTLAND CEMENT (SECTION 02010).
  4. ALL REINFORCING BARS SHALL BE PLACED OUT AS SHOWN ON THE DRAWINGS.
  5. ALL REINFORCING BARS SHALL BE PLACED OUT AS SHOWN ON THE DRAWINGS.
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  7. ALL REINFORCING BARS SHALL BE PLACED OUT AS SHOWN ON THE DRAWINGS.
  8. PERMISSIBLE BUMP FOR THE SLAB SHALL BE 1/2" TO 1/4".
  9. ALL REINFORCING BARS SHALL BE PLACED OUT AS SHOWN ON THE DRAWINGS.
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LAST MODIFICATION DATE: 12/11/11 BY: LAM  
 DRAWING FILE NAME: 11110-00-113-00000  
 PROJECT NO.: 11110-00-113-00000  
 SCALE: AS SHOWN

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City and County of Denver  
 Department of Public Works  
 Engineering Division  
 1001 - 14th Street, Suite 100  
 Denver, CO 80202

As Constructed  
 FEDERAL BLDG. RECON. - 5TH AVE. TO HOWARD PLACE  
 STORM SEWER  
 TYPICAL DETAILS

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Project No./Code  
 11110-00-113-00000  
 SHEET NO. 330

TOP SLAB (11x2)

TOP SLAB SECTION (11x2)

TABLE 'B'	
BAR DIA	SPACING (CL TO CL)
#5	24"
#4	24"

NOTE: MIN. 1% OF AREA ONLY AT EXTERIOR SPAN

TOP SLAB (11x2)

TOP SLAB SECTION (11x2)

PREFERRED

DETAIL (PIPE END TREATMENT)

OPTIONAL

DETAIL (PIPE END TREATMENT)

SECTION (TYP. WALL)

DETAIL (TYP. CORNER)

DETAIL

STANDARD DETAILS

TYPE OF MANHOLE BASE SECTIONS

Scale: 1/8" = 1'-0"

TSOUVARAS ENGINEERING HOLDINGS  
CERTIFIED ENGINEERS

1998 Mod/Rec'd on 2/28/10 by JLN  
 Drawing File Name: 110706-100-10-Celebrage  
 110706-100-10-12

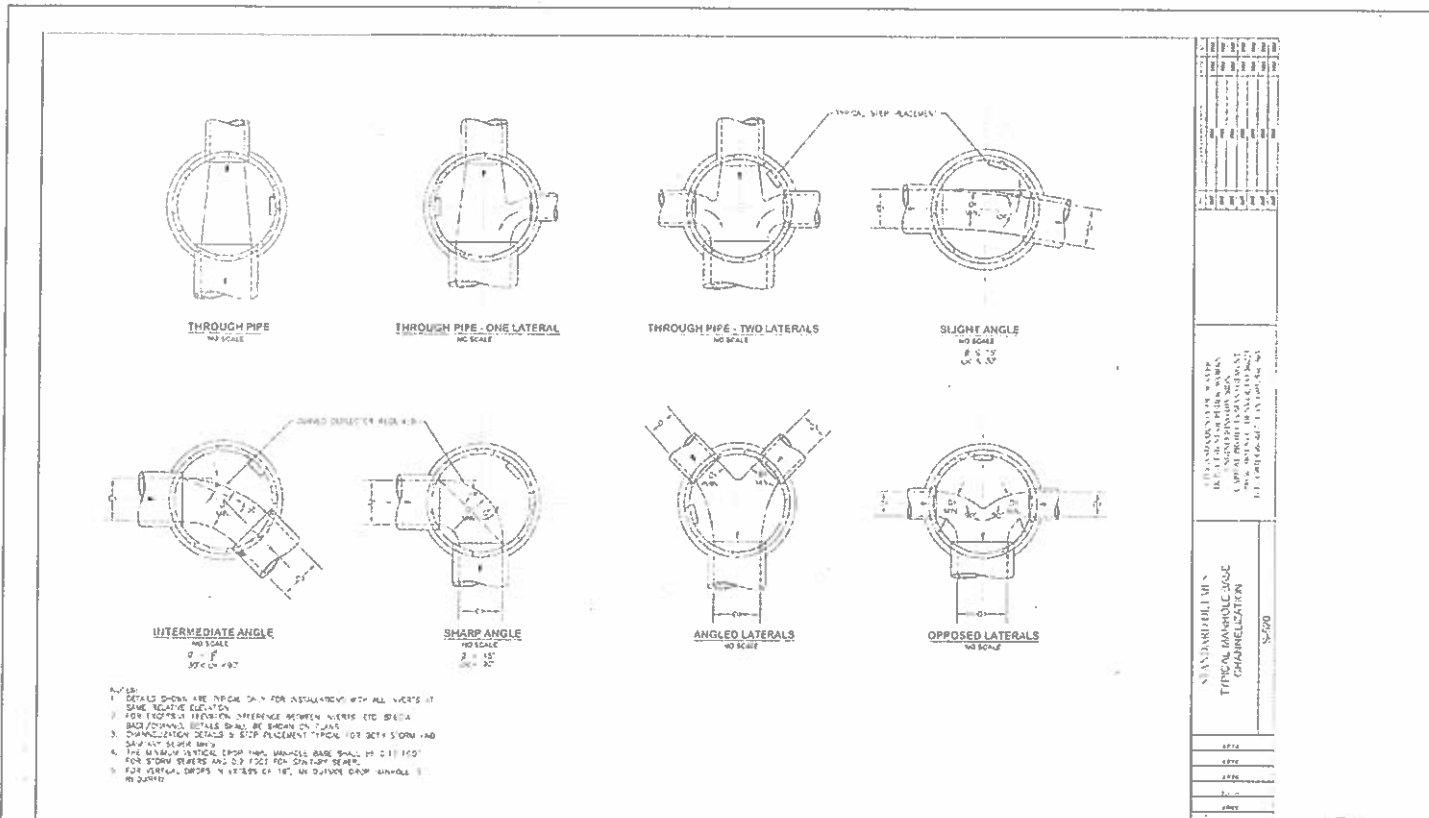
Sheet Revisions	
NO.	DESCRIPTION



Colorado Department of Transportation  
 As Constructed  
 No Revisions  
 Project: 110706-100-10-12

FEDERAL BLVD RECON. - 5TH AVE. TO HOWARD PLACE  
 STORM SEWER  
 TYPICAL DETAILS  
 Designer: JNS  
 Checker: JLN  
 Sheet Subst: 110706-100-10-12

Project No./Code  
 No. 110706-100-10-12  
 SA 19917  
 110706-100-10-12-000034.4  
 Sheet Number: 331

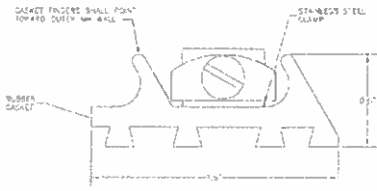


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1. DETAILS SHOWN ARE TYPICAL ONLY FOR INSTALLATION WITH ALL PARTS AT SAME NEGATIVE ELEVATION.
2. FOR TYPICAL INSTALLATION, DIFFERENCE BETWEEN INVERTS ETC. SHALL BE AS SHOWN.
3. CONNECTION DETAILS & STOP PLACEMENT TYPICAL FOR BOTH STORM AND SANITARY SEWER.
4. THE MINIMUM DISTANCE FROM MANHOLE BASE SHALL BE 2.0 FT FOR STORM SEWERS AND 0.2 FEET FOR SANITARY SEWERS.
5. FOR VERTICAL DROPS 4 INCHES OR 18" AN OVAL DROP MANHOLE IS REQUIRED.

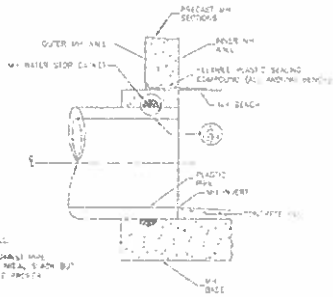
Last sheet on Date: 07/17/08 Drawing File Name: 1132188-130-19-Clear.dwg Horizontal Scale: "2"	<b>Sheet Revisions</b> <table border="1"> <thead> <tr> <th>Date</th> <th>Comments</th> <th>By</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Date	Comments	By														City and County of Denver Department of Public Works Engineering Division 221 St. George Circle West Denver, CO 80202	<b>As Constructed</b> No Revisions Date: _____ Design: _____ Check: _____	FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE <b>STORM SEWER</b> <b>TYPICAL DETAILS</b> Date: _____ Design: _____ Check: _____ Sheet No. 17 of 21 Sublet Sheet 33 of 21	Project No./Code NP-PD 2823-172 SA 1335 2011-2015/14-20035E4 Sheet Number 332
Date	Comments	By																			

AD SUBMITTAL - JANUARY 2, 2018

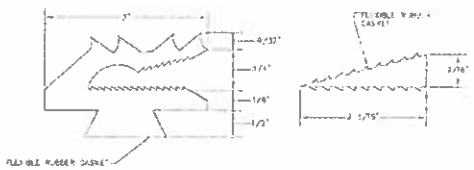


**CAST-IN-PLACE MANHOLE CONNECTION DETAILS FOR DISSIMILAR PIPE**  
NO SCALE

- NOTES
1. PLACE STOP ON PIPE NEAR CENTER OF MANHOLE WALL.
  2. 2" TIGHTLY STIRRED BOND TO ASSURE POSITIVE STOP AGAINST HOUSING. A SCREWDRIVER MAY BE USED TO TAKE OFF NEAR 5/8" BUT A SCREWDRIVER APPROX. 1/2" IS INDICATED TO CHECK PROPER TIGHTNESS.



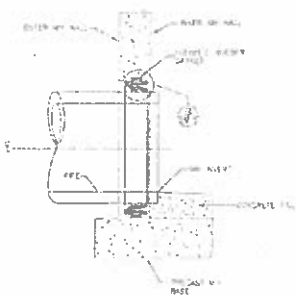
**PRECAST MANHOLE CONNECTION DETAILS FOR ANY TYPE OF PIPE**  
NO SCALE



**DETAIL - FLEXIBLE RUBBER WEDGE TYPE GASKET**  
(DWMV APPROVED TYPE ONLY)  
NO SCALE

NOTE: ALL MATERIAL SPECIFICATIONS AND INSTALLATION REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS APPLICABLE TO THE PROJECT.

**PRECAST MANHOLE CONNECTION DETAILS FOR ANY TYPE OF PIPE**  
NO SCALE



**PRECAST MANHOLE CONNECTION DETAILS FOR ANY TYPE OF PIPE**  
NO SCALE

NO.	REVISION	DATE	BY	CHECKED
1	ISSUED FOR PERMITS	12/14/2018	JAN	JAS
2	ISSUED FOR PERMITS	12/14/2018	JAN	JAS
3	ISSUED FOR PERMITS	12/14/2018	JAN	JAS
4	ISSUED FOR PERMITS	12/14/2018	JAN	JAS
5	ISSUED FOR PERMITS	12/14/2018	JAN	JAS
6	ISSUED FOR PERMITS	12/14/2018	JAN	JAS
7	ISSUED FOR PERMITS	12/14/2018	JAN	JAS
8	ISSUED FOR PERMITS	12/14/2018	JAN	JAS
9	ISSUED FOR PERMITS	12/14/2018	JAN	JAS
10	ISSUED FOR PERMITS	12/14/2018	JAN	JAS

Job Modification Date: 12/14/2018 Size of File Name: 110288-14-115-Cad.dwg Plot Scale: 1/2" = 1'-0"	<b>Sheet Revisions</b> Date: _____ Comments: _____ By: _____ Check: _____	 City and County of Denver Department of Public Works Engineer of Streets 201 W. Colfax Ave. 5th Fl. Denver, CO 80202	As Constructed No Remarks Revised: _____ Date: _____	FEDERAL BLVD. RECON. - 5TH AVE TO HOWARD PLACE STORM SEWER TYPICAL DETAILS	Project No./Code H-02 2813-1/2 SA 19957 2018-01-15-14-0001-01-4 Sheet Number 333

TSI/CUMARAS ENGINEERS HOLDINGS



**PLAN**  
NO SCALE

**SECTION - VERTICAL CURB AND GUTTER**  
1/4" = 1'-0"

**SECTION - COMBINATION CURB, GUTTER AND SIDEWALK**  
1/4" = 1'-0"

**SECTION - VERTICAL CURB AND GUTTER**  
1/4" = 1'-0"

**DETAIL - CURB BOX BEAM ANCHOR BAR (TYP.)**  
1/4" = 1'-0"

**DETAIL - CURB BOX BEAM**  
1/4" = 1'-0"

**DETAIL - CURB BOX BEAM**  
1/4" = 1'-0"

**DETAIL - CURB BOX BEAM**  
1/4" = 1'-0"

**DETAIL - CURB BOX BEAM**  
1/4" = 1'-0"

**DETAIL - CURB BOX BEAM**  
1/4" = 1'-0"

**NOTES:**

- SEE DETAIL SPECIFICATIONS SECTION 1105 FOR MORE INFORMATION. USE OF THIS DETAIL WITHOUT SPECIFICATIONS SHALL BE CONSIDERED NON-COMPLIANT.
- ALSO SEE GENERAL NOTES ON 1105-1.

**PROJECT DATA**

PROJECT NO.	2311-120-04510-10000000
SHEET NO.	335
DATE	11/20/16
SCALE	AS SHOWN

**DESIGNER**  
JAN

**CHECKER**  
JAN

**APPROVER**  
JAN

**DATE**  
11/20/16

<p>East Model on Day 10/18/2016                  Drawing File Name: 1105-120-04510-10000000                  Worksheet: Scale 1/4" = 1'-0"</p>	<p>Scale: 1/4" = 1'-0"</p>
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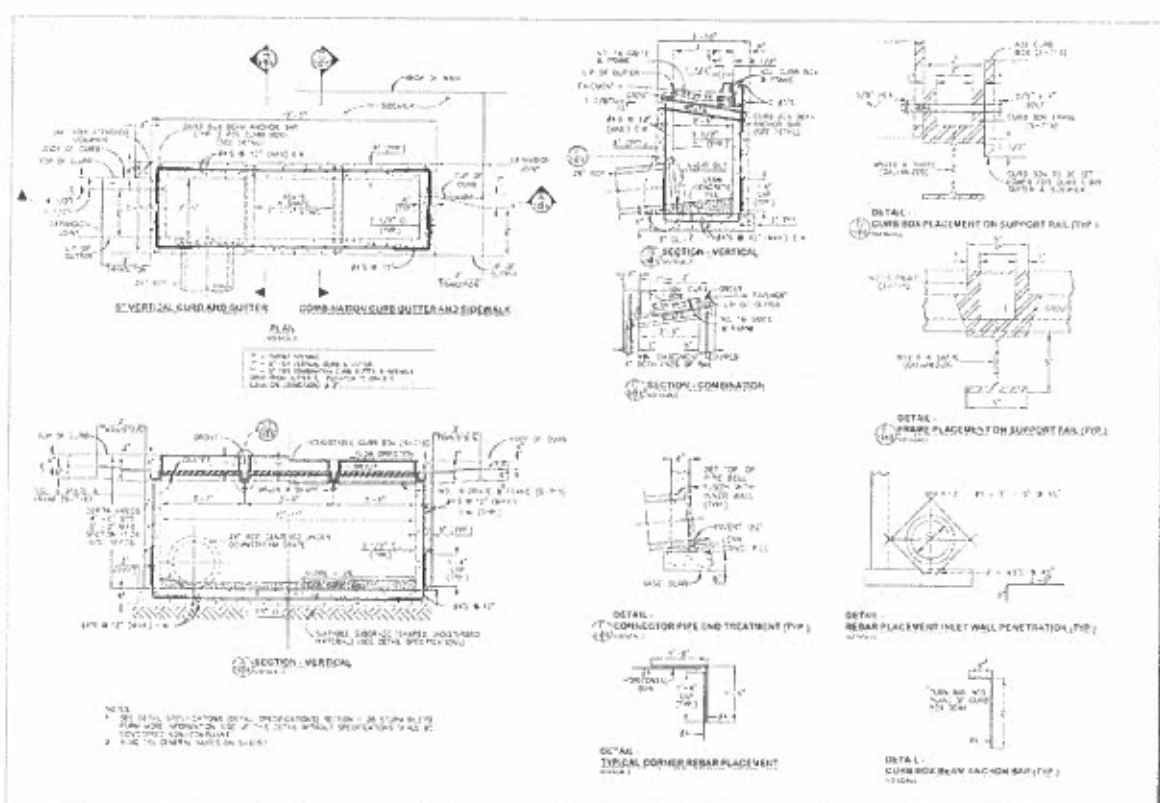
Sheet Revisions		
Date	Comments	By



<p>Colorado Department of Transportation                  Engineering Division                  1515 North Colorado Street, Suite 100                  Denver, CO 80202</p>	<p>As Constructed</p>
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<p>FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE                  STORM SEWER                  TYPICAL DETAILS</p>	<p>Project No./Code                  1105-120-04510-10000000                  2311-120-04510-10000000                  SHEET 4 OF 4</p>
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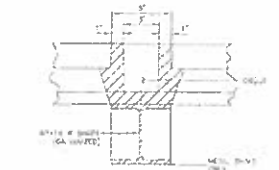
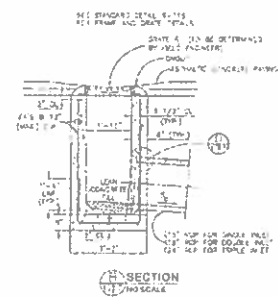
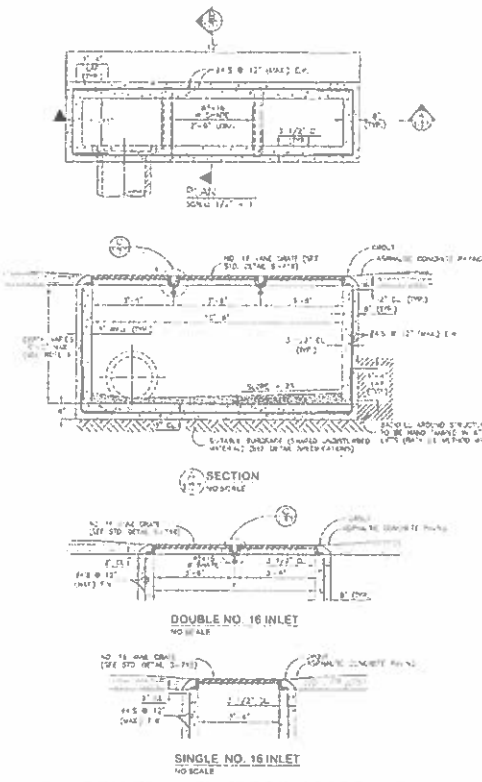
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NO.	DESCRIPTION
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3	REVISION
4	REVISION
5	REVISION
6	REVISION
7	REVISION
8	REVISION
9	REVISION
10	REVISION

Job location: Hwy 107, A-2176, Los Altos Drawing Title: Storm Sewer Details Drawing Scale: 1/2" = 1'-0"	<b>Sheet Revisions</b> Date: _____ Comment: _____	The City of San Jose Department of Public Works Engineering Division 201 S. Bascom Ave. West San Jose, CA 95128	As Constructed No. Revisions: _____ Revised: _____ By: _____	FEDERAL BUS. RECON. - 5TH AVE. TO HOWARD PLACE STORM SEWER TYPICAL DETAILS	Project No./Code 1011-PROJ-074-0000164 SA 1000 Sheet Number: 336





DETAIL -  
FRAME PLACEMENT ON SUPPORT RAIL (TYP.)  
NO SCALE



DETAIL -  
CONNECTOR PIPE END TREATMENT  
NO SCALE



DETAIL -  
CONNECTOR PIPE END TREATMENT (TYP.)  
NO SCALE

NOTE:  
1. SEE DETAIL SPECIFICATIONS SECTION FOR MORE INFORMATION. USE OF THIS DETAIL WITHOUT SPECIFICATIONS SHALL BE CONSIDERED A VIOLATION.  
2. ALWAYS SEE GENERAL NOTES ON SHEET.

NO.	DESCRIPTION	DATE
1	ISSUED FOR PERMITS	12/14/2016
2	ISSUED FOR PERMITS	12/14/2016
3	ISSUED FOR PERMITS	12/14/2016
4	ISSUED FOR PERMITS	12/14/2016
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18	ISSUED FOR PERMITS	12/14/2016
19	ISSUED FOR PERMITS	12/14/2016
20	ISSUED FOR PERMITS	12/14/2016

STANDARD PLAN  
SINGLE-DOUBLE-TRIPLE HEADER IS  
TYPE "V" VALLEY

TRIDIVARAS ENGINEERING

Issue/Revision Date: 12/14/2016  
Drawing File Name: 102151-12-119-2900.dwg  
Inventor Scale: 1/2" = 1'-0"  
Appr. Scale: As Noted

Date	Comments	By

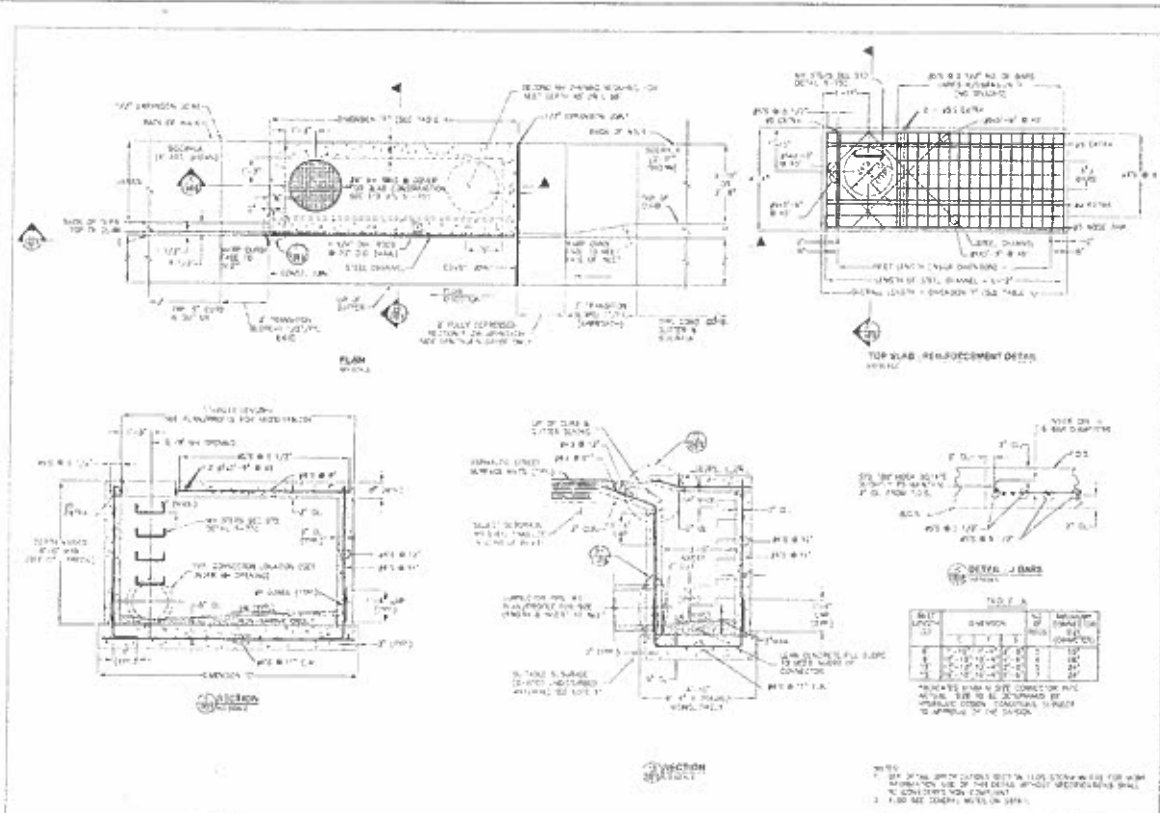


City and County of San Jose  
Department of Public Works  
Engineering Division  
201 W. Santa Clara St.  
San Jose, CA 95128

As Constructed  
No Revisions  
Revised  
R23

FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE  
STORM SEWER  
TYPICAL DETAILS  
Designer: JAS Structure  
Checker: JLN Numbers  
Sheet: 333 of 21

Project No./Code  
14-02 2871-172  
SA 19953  
2011-PROJ-WSF4-0000364  
Sheet Number 337



NO.	REVISION	DATE
1	ISSUED FOR PERMIT	12/15/17
2	ISSUED FOR PERMIT	12/15/17
3	ISSUED FOR PERMIT	12/15/17
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9	ISSUED FOR PERMIT	12/15/17
10	ISSUED FOR PERMIT	12/15/17

**TSOUKAS ENGINEERING**  
 10000 W. 10th Ave., Suite 100, Denver, CO 80202  
 (303) 751-1111  
 www.tsoukas-engineering.com

**PROJECT INFORMATION**

Project No./Code	1707-172 SA 19557
Sheet Number	338

1. All work shall conform to the 2012 International Building Code, 2012 International Plumbing Code, and 2012 International Fire Code, as amended by local ordinance.

2. All work shall conform to the 2012 International Building Code, 2012 International Plumbing Code, and 2012 International Fire Code, as amended by local ordinance.

3. All work shall conform to the 2012 International Building Code, 2012 International Plumbing Code, and 2012 International Fire Code, as amended by local ordinance.

NO.	REVISION	DATE
1	ISSUED FOR PERMIT	12/15/17
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4	ISSUED FOR PERMIT	12/15/17
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8	ISSUED FOR PERMIT	12/15/17
9	ISSUED FOR PERMIT	12/15/17
10	ISSUED FOR PERMIT	12/15/17



**As Constructed**

1. All work shall conform to the 2012 International Building Code, 2012 International Plumbing Code, and 2012 International Fire Code, as amended by local ordinance.

2. All work shall conform to the 2012 International Building Code, 2012 International Plumbing Code, and 2012 International Fire Code, as amended by local ordinance.

3. All work shall conform to the 2012 International Building Code, 2012 International Plumbing Code, and 2012 International Fire Code, as amended by local ordinance.

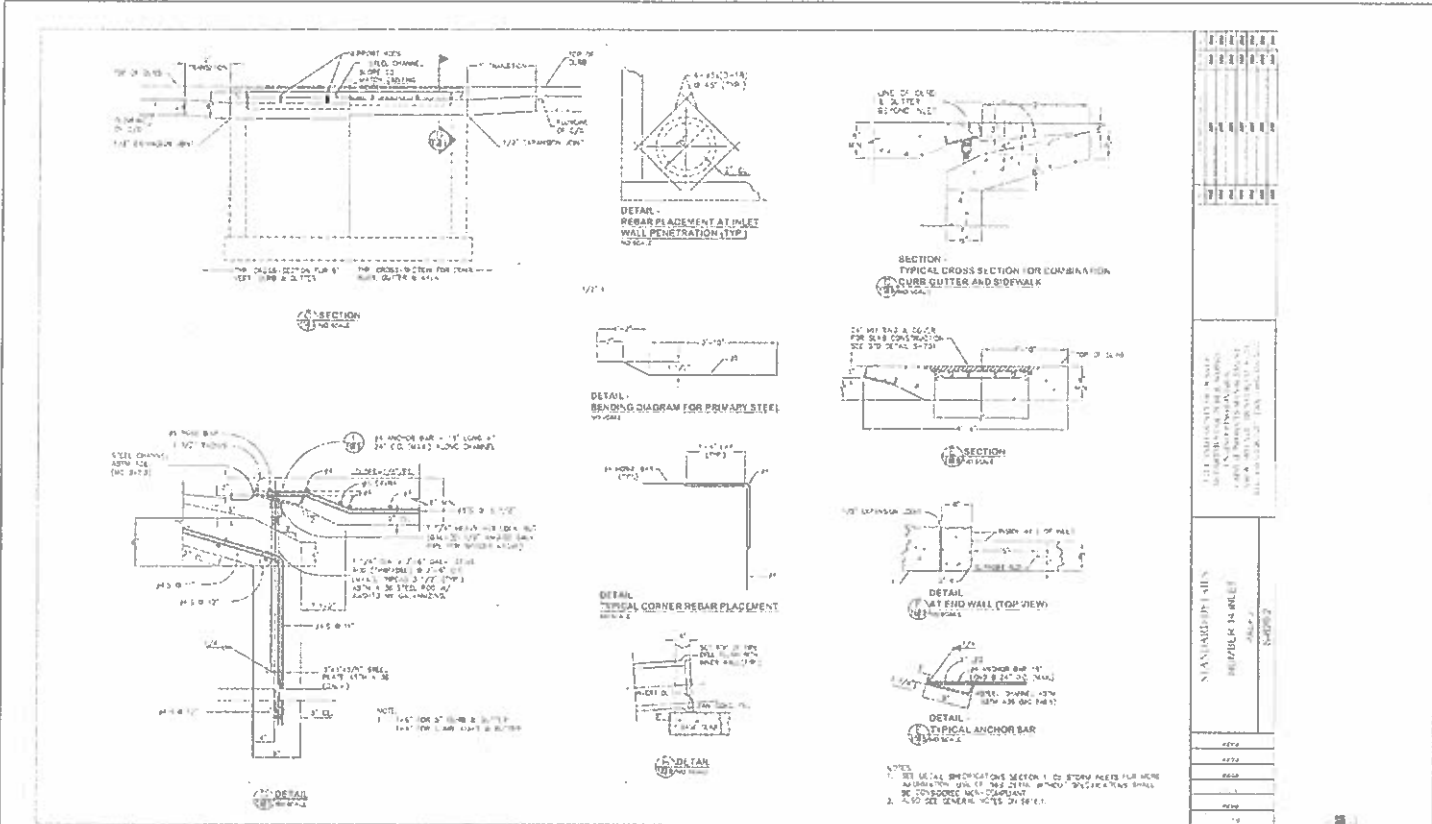
**FEDERAL BLDG. RECON - 5th AVE. TO HOWARD PLACE**

**STORM SEWER**

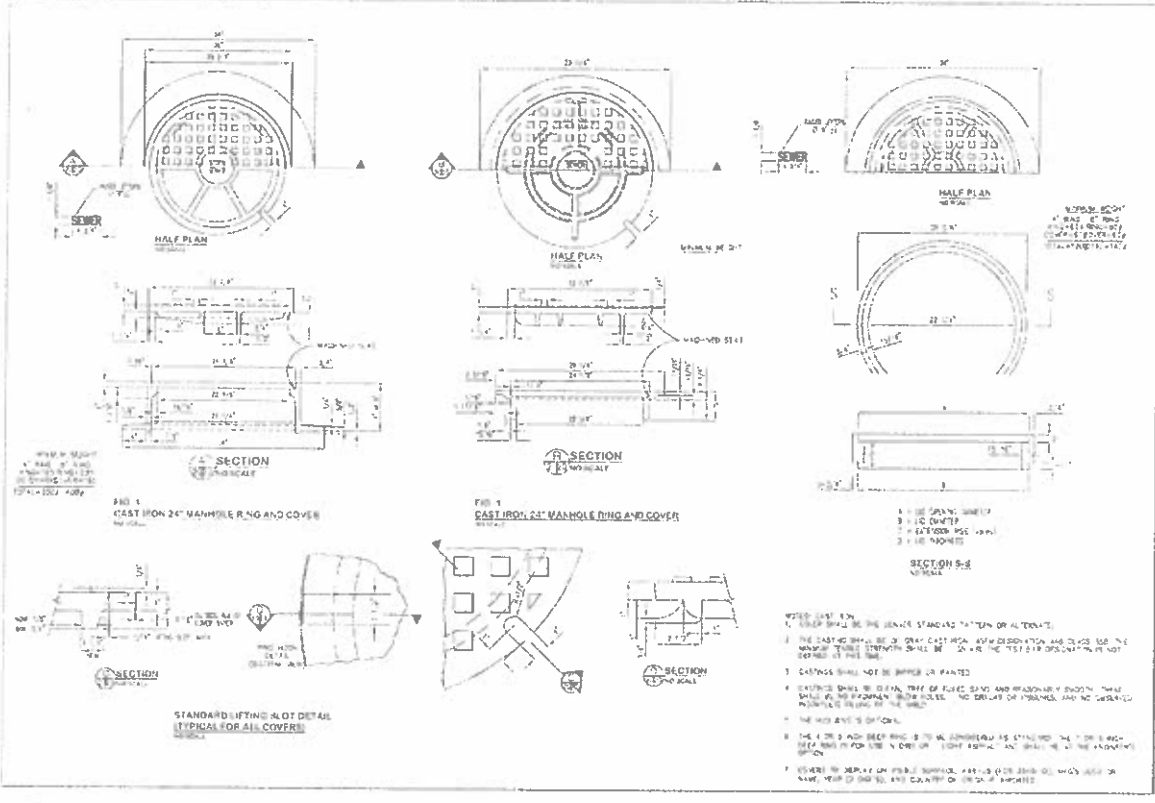
**TYPICAL DETAILS**

Design: J.S. Structure  
 Date: 12/15/17  
 Drawn: J.S. Structure  
 Title: 1707-172 Super Storm Sewer (1) of 10

Project No./Code: 1707-172 SA 19557  
 Sheet Number: 338



100% Max/Min Date: 10/16/2015 Drawing File Name: 170754-00-106 Details Drawing Sheet: 42	<b>Sheet Revisions</b> Date: _____ Comments: _____	City and County of Denver Department of Public Works Engineering Division 100 W. Colfax Ave. 300 Denver, CO 80202	Colorado Department of Transportation 1555 Sherman Street, Suite 100 Denver, CO 80202	<b>As Constructed</b> No Revisions Approved: _____ Date: 10/15	<b>FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE          STORM SEWER          TYPICAL DETAILS</b> Des. by: JAS Structure Date of: LAM 11/16/15 Sheet Size: 51 1/2" x 35 1/2"	<b>Project No./Code</b> 170754-00-106 SA 9957 2017-PROJ-5176-000-106 Spec. Number: 339
				TSOUYVARAS HOLDENNESS CIVIL ENGINEERS		



NO.	DESCRIPTION	DATE
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Last Modification Date: 01/04/2018 09:11 AM  
 Drawing File Name: 1102-08-100-113-Cover.dwg  
 Revision: 1.0  
 Date: 01/02/2018

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California Department of Transportation  
 4000 Golden Gate Avenue, Suite 101  
 Emeryville, CA 94608  
 Project: 1102-08-100-113-Cover.dwg  
 Page: 1

As Constructed  
 No Revisions  
 Revision  
 Plot

FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE  
 STORM SEWER  
 TYPICAL DETAILS  
 Designer: AS  
 Checker: LAN  
 Date: 01/02/2018  
 Sheet Subject: ST-021 Sublet Sheets 19 of 21

Project No./Code  
 N-07 2573-172  
 SA 935  
 2011 PROD.USER 0000264  
 Sheet Number 340

01/02/2018

TSICUVARAS HOLDERSNESS  
 CIVIL & ELECTRICAL

**NO DUMP LOGS  
CAUSING TO RIVER**

ADJUSTABLE CURB BOX  
AS SHOWN IN SECTION 100.01 AND 100.02

REVISION	DATE	BY	CHKD.

ADJUSTABLE CURB BOX  
AS SHOWN IN SECTION 100.01 AND 100.02

Last Modification Date: 10/14/2014  
 Drawing File Name: 100180-00-119-Storm Sewer  
 Revision: 001

Sheet Revisions			
NO.	DESCRIPTION	BY	CHKD.



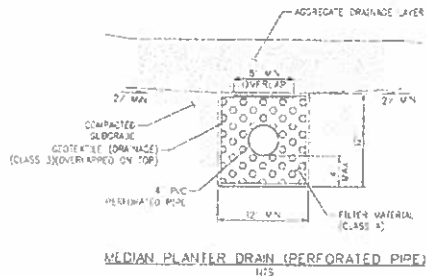
City and County of Denver  
 Department of Public Works  
 Engineering Division  
 2015 Golden Gate Ave  
 Denver, CO 80202

Colorado Department of Transportation  
 Region 1

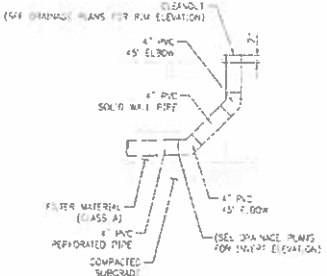
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No. Revisions	
Revised	
Date	

Project No./Code	NHPP 2871.172
	SA 1890T
	2011-FRONS-0000561
Sheet Number	341

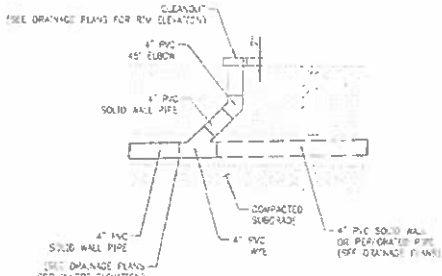
TSOUVARAS ENGINEERING HOLDERSHIP  
 REGISTERED ENGINEER



**MEDIAN PLANTER DRAIN (PERFORATED PIPE)**  
N/S



**CLEANOUT DETAIL (WITH ELBOW)**  
N/S



**CLEANOUT DETAIL (WITH WYE)**  
N/S



- NOTES:**
1. EXCAVATION AND BACKFILL BE ACCORDANCE WITH M-208-1 UNLESS OTHERWISE NOTED.
  2. MEDIAN PLANTER DRAIN REQUIRED FOR ENTIRE LENGTH OF PERFORATED PVC PIPE SHOWN ON THE PLANS.
  3. CLEANOUT ASSEMBLIES WILL NOT BE WASHED AND PAID FOR SEPARATELY, BUT WILL BE INCLUDED IN THE COST OF THE 4" PVC.
  4. SEE LANDSCAPE/PLANTER PLANS FOR MEDIAN PLANTER CONSTRUCTION DETAILS.

**TSHOUVARAS HOLDINGS**  
ENGINEER AT LARGE

Last Mod/Vector Date: 10/16/2016  
Drawing File Name: 192-08-10-11-3046.dwg  
Horizontal Scale: 1" = 20'

Sheet Revisions	
Date	Comments



City and County of Denver  
Department of Public Works  
Engineering Division  
201 W. Colfax Ave. Suite 300  
Denver, CO 80202

As Constructed  
No Revisions  
Revised  
Date  
By

FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE  
STORM SEWER  
UNDER DRAIN DETAILS  
Des. by: JAS  
Date of: LAY  
Sheet Size: 36" x 48" Sheets: 21 of 21

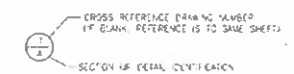
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WMP 2023-172  
SA 1995  
2011-PROJ/1914-3000.054  
Sheet Number: 342

**GENERAL NOTES**

1. CONCRETE TO BE PORTLAND CEMENT TYPE II, MODIFIED AND SHALL CONFORM TO AASHTO STANDARD SPECIFICATIONS FOR HEAVYWEIGHT CONCRETE STRUCTURES (SECTION 1100) AND THE STANDARD CONSTRUCTION SPECIFICATIONS (ITEM 72) EXCEPT AS AMENDED BELOW.
2. REINFORCING STEEL TO BE HOOK GRADE 60 DEFORMED REBAR CONFORMING TO ASTM A-615.
3. CONCRETE (CDDT CLASS D)
  - f'c = 4500 PSI (MIN.)
  - f<sub>y</sub> = 60,000 PSI
4. LEAN CONCRETE FILL SHALL BE f'c = 2000 PSI.
5. PROVIDE NO CLEAR COVER REQUIREMENT UNLESS OTHERWISE NOTED SHALL BE 2" (1") FROM BOTTOM OF FOUNDATION SLAB.
6. REINFORCING BARS WILL BE SPICED ONLY AT LOCATIONS SHOWN AND DETAILED ON THE DRAWINGS. BARS WILL BE WELDED, NO TACK WELDING WILL BE PERMITTED. MINIMUM BAR WELDING DIAMETER IS SIX TIMES THE DIAMETER OF THE REBAR BEING WELDED.
7. PERMISSIBLE SLUMP FOR TOP SLAB WILL BE 2" (75 MM).
8. AN ENTRAPMENT OF 5% - 1% WILL BE REQUIRED IN TOP SLAB.
9. MOST CURING WILL BE REQUIRED FOR 14 DAYS (MIN.) FOR WALLS AND BULKHEAD CURBING.
10. LATERAL SUPPORT SHALL BE PROVIDED AND MAINTAINED FOR WALLS DURING EXCAVATION OPERATIONS.
11. ALL STRUCTURES SHALL BE BLENDED TO TOP OF PAVE.
12. STRUCTURE WALLS SHALL BE FORMED BOTH INSIDE AND OUTSIDE. DRESSING OF WALLS AGAINST EARTH IS NOT PERMITTED. NO FORMWORK SHALL REMAIN AFTER STRUCTURE WHEN COMPLETE.
13. SHOP DRAWINGS (PLACEMENT DRAWINGS) SHALL BE SUBMITTED AS PER STANDARD SPECIFICATIONS.
14. ALL REINFORCING BARS WILL BE PLACED EXACT AS SHOWN ON THE AND APPROVED DETAILS (PLACING CRISPS).
15. ALL STRUCTURES SHALL BE FOUNDED ON CAREFULLY SHAPED, DRAINAGE UNDESIGNED MATERIAL. IF SUBGRADE CONDITIONS WARRANT UNDESIRABLE FOUNDATION MATERIAL, ALL BE OVEREXCAVATED AND REPLACED WITH CLASS B BEDDING AND COMPACTED PER AASHTO SPECIFICATIONS.
16. THE CONTRACTOR SHALL PERFORM WORK IN ACCORDANCE WITH CDDT STANDARD SPECIFICATIONS FOR ROAD & BRIDGE CONSTRUCTION 2011, SECTION 601 (STRUCTURAL CONCRETE) EXCEPT AS OTHERWISE MODIFIED.
17. ELEVATIONS SHOWN ON CONCRETE ARE TO THE TOP OF THE MEMBER, UNLESS OTHERWISE NOTED AND ARE SUBJECT TO FINAL FIELD ADJUSTMENT BY THE ENGINEER PRIOR TO CONSTRUCTION.
18. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES AS RELATED TO SHORING AND PROTECTIVE OF NEW AND EXISTING STRUCTURES AS NECESSARY TO PREVENT DAMAGE OR COLLAPSE DUE TO WIND, EARTH, CONSTRUCTION OR OTHER LOADS.
19. THE CONTRACTOR IS RESPONSIBLE TO CHECK AND VERIFY ALL GRADTS AND ALIGNMENTS TO ASSURE CONFORMANCE TO THE CONSTRUCTION DRAWINGS. THE CONTRACTOR SHALL NOTIFY THE PROJECT MANAGER IMMEDIATELY OF ANY DISCREPANCIES OR VARIATIONS.
20. THE CONTRACTOR SHALL NOTIFY THE PROJECT INSPECTOR 1 MINIMUM OF 48 HOURS PRIOR TO POURING CONCRETE FOR STRUCTURES.
21. PROVIDE VERTICAL BULKHEAD FOR CONSTRUCTION JOINTS IN WALLS WITH A CONTINUOUS 2x4 SHEAR KEY.
22. FOR TREATMENT OF ENDS OF PRECAST PILES, SEE "DETAIL: PILE END TREATMENT" ON STANDARD DRAWING S-1-S-504.2.

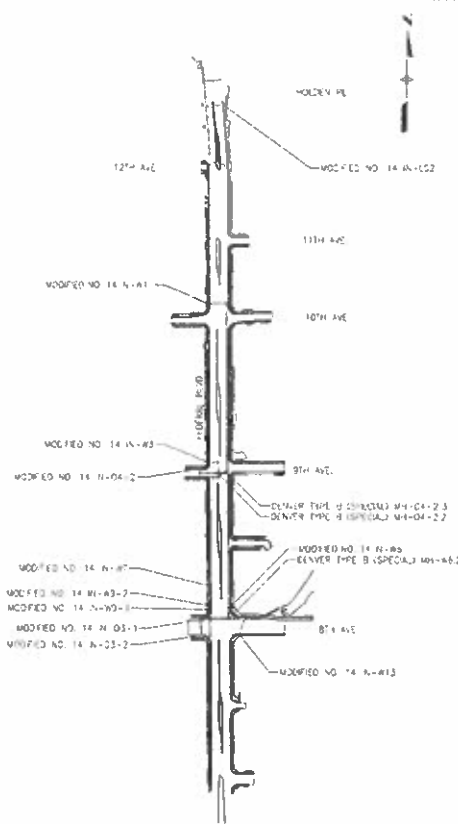
**INDEX OF SHEETS**

1. GENERAL NOTES
2. MODIFIED NO. 14 SHEET DETAILS
3. DENVER TYPE B (SPECIAL) BULKHEAD
4. PIPE CONNECTION AT EXISTING MANHOLE



**DESIGN NOTES**

- \* LOADS:
  - CONCRETE UNIT WEIGHT = 150 PCF
  - SOIL UNIT WEIGHT = 135 PCF
  - EARTH LATERAL EQUIVALENT LIND PRESSURE = 81 PCF
- \* ALL OTHER FINISHING APPLICABLE TO 5030 BULK

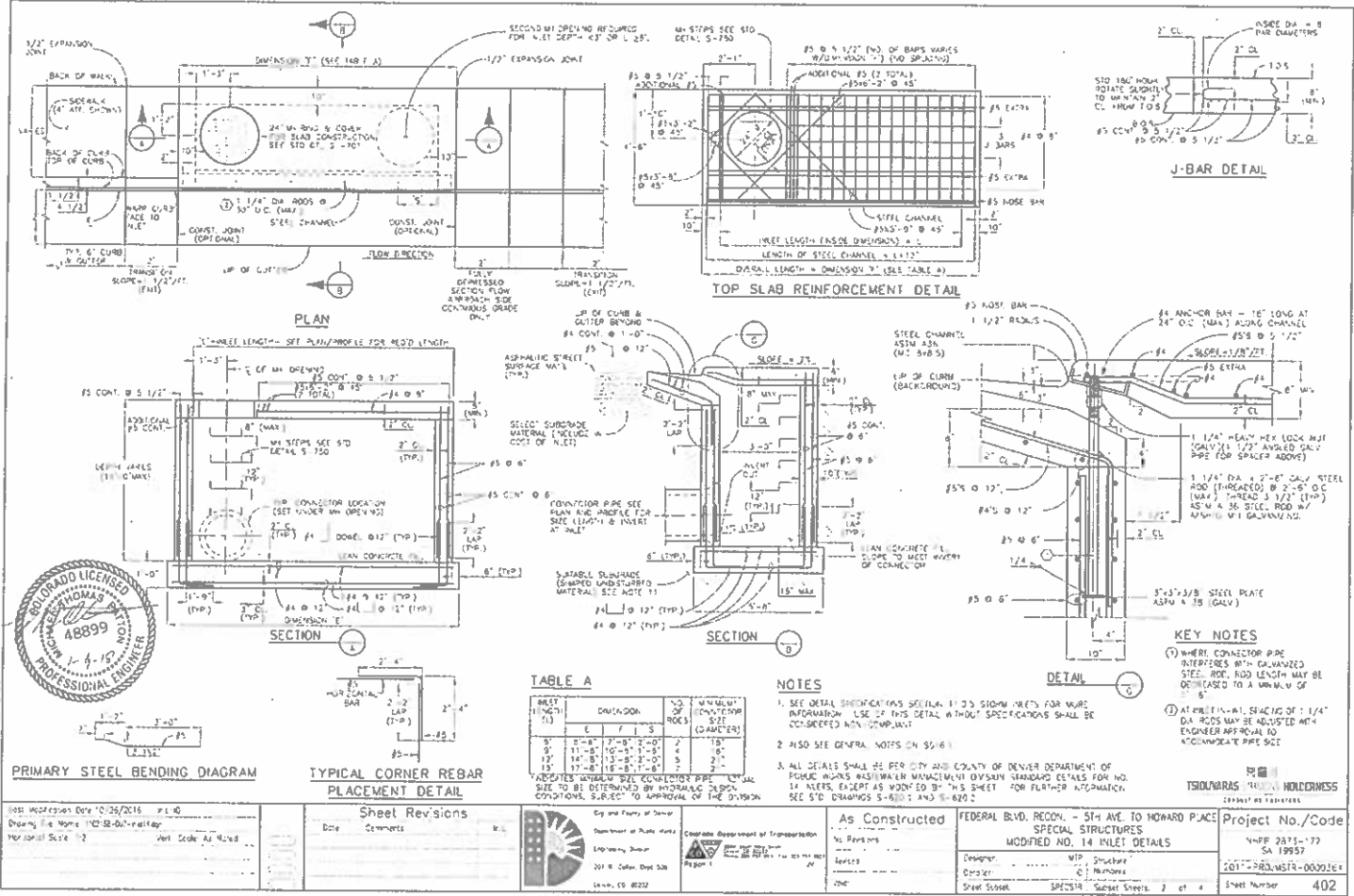


**SPECIAL STRUCTURES LOCATION MAP**

**TSOUVARAS HOLDINGS**  
CONSTRUCTION SERVICES

LHM Modification Date: 9/26/2018, LHM 547 Drawing File Name: 170230-001-001-001.dwg Horizontal Scale: NONE, Vert Scale: NONE	<b>Sheet Revisions</b> Date: _____ Comments: _____		City and County of Denver Department of Public Works Engineering Division 200 W. Colfax, 3rd Fl. Denver, CO 80202	Colorado Department of Transportation 1500 Stout Street, Suite 100 Denver, CO 80202	As Constructed No Revisions Proposed: _____ 7/23	FEDERAL BLVD. RECON - 5TH AVE. TO HOWARD PLACE SPECIAL STRUCTURES GENERAL NOTES	Project No./Code L-PPP 2813-172 SA 19957 231-FRPPAS17-0001361
	Designer: M.P. SHANKLE Checker: J. Numbers Sheet Submittal: SPECSTR Special Sheets 1 of 4	Sheet Number: 401					

AD SUBMITTAL - NOVEMBER 22, 2017



INLET LENGTH (ft)	DIVISION			NO. OF ROCS	MINIMUM CONCRETE COVER (INCHES)
	E	F	S		
8'	0'-8"	7'-8"	0'-0"	2	1 1/2"
9'	1'-8"	10'-8"	0'-0"	4	1 1/2"
12'	1'-8"	11'-8"	0'-0"	5	2"
15'	1'-8"	11'-8"	0'-0"	5	2"

**NOTES**

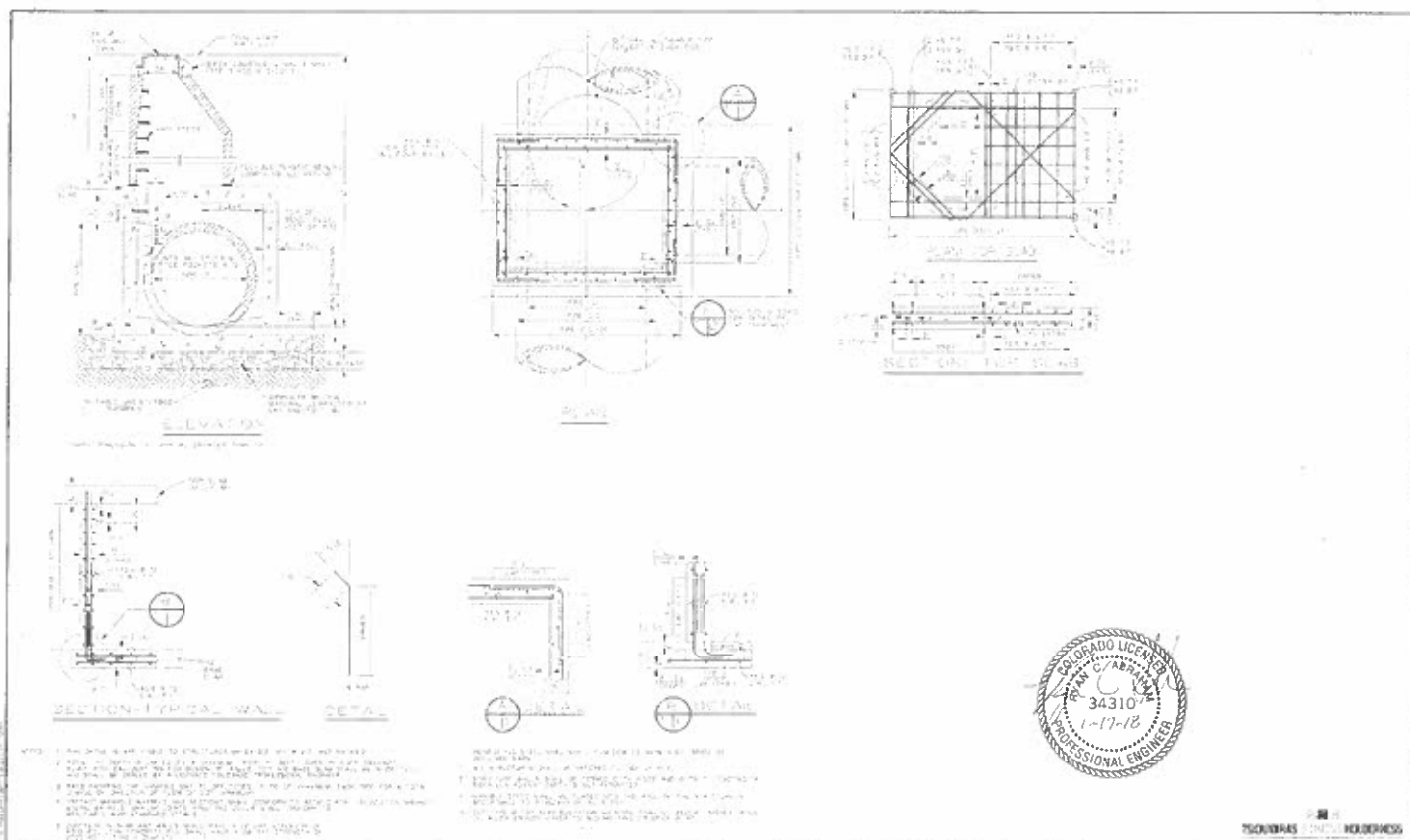
- SEE DETAIL SPECIFICATIONS SECTION 11.03 SHOW DETAILS FOR MORE INFORMATION. USE OF THIS DETAIL WITHOUT SPECIFICATIONS SHALL BE CONSIDERED NON-COMPLIANT.
- ALSO SEE GENERAL NOTES ON S-16.
- ALL DETAILS SHALL BE PER CITY AND COUNTY OF DENVER DEPARTMENT OF PUBLIC WORKS WASTEWATER MANAGEMENT DIVISION STANDARD DETAILS FOR NO. 14 INLETS, EXCEPT AS NOTED BY THIS SHEET FOR FURTHER INFORMATION. SEE STD. DRAWINGS S-6001 AND S-6202.

**KEY NOTES**

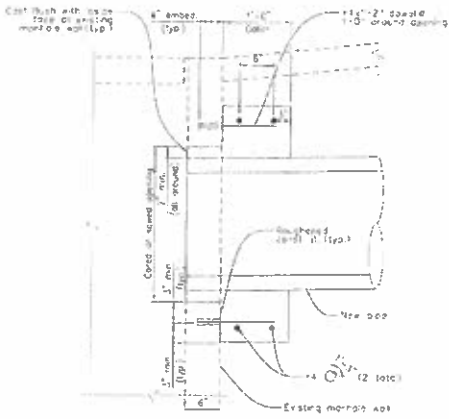
- WHERE CONNECTOR PIPE INTERFERES WITH CHANNELIZED STEEL ROD, ROD LENGTH MAY BE DIMINISHED TO A MINIMUM OF 6".
- AT PRELIMINARY SPACING OF 1/4" DIA. RODS MAY BE ADJUSTED WITH ENGINEER APPROVAL TO ACCOMMODATE PIPE SIZE.

10/11/2016 Date Drawing: 14 Inlet Detail Horizontal Scale: 1/2" = 1'-0"	<b>Sheet Revisions</b> Date: _____ Comments: _____	City and County of Denver Department of Public Works Engineering Division 201 W. Colfax Street, Suite 528 Denver, CO 80202	As Constructed No. Revisions: _____ Issued: _____ Date: _____	FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE SPECIAL STRUCTURES MODIFIED NO. 14 INLET DETAILS Designer: WJD Checker: MRM Sheet Scale: SPECIAL Sheet Sheets: 2 of 4	Project No./Code WWP 2015-172 SA 19957 2017-380-MSR-00001E Sheet Number: 402
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Last Modification Date: 12/02/2016 Drawing File Name: 1708000-Rev04.rvt Horizontal Scale: 1/2" = 1'-0"	<b>Sheet Revisions</b> No.   Comments   Date	State of Colorado Department of Transportation Engineering Division 1415 W. Colorado Blvd. Suite 300 Denver, CO 80202	<b>As Constructed</b> No Remarks Revised Issued	<b>FEDERAL BLVD. RECON - 5TH AVE. TO HOWARD PLACE          SPECIAL STRUCTURES          DENVER TYPE B (SPECIAL)</b> Title: SA - Structure Date: 04/18/2016 Sheet Set: SPECIAL - Super Sheets 3 of 4	<b>Project No./Code</b> ABDD 1871-172 SA 18457 2017-PROJ/SA/18-0000324 Sheet Number: <b>403</b>
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**CONNECTION/PENETRATION DETAIL**  
 (Existing manhole reinforcing not shown)



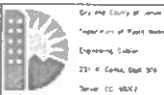
**NOTES**

1. Cast with Class B Concrete Class B
2. Reinforcing steel should be epoxy coated.
3. Cut and remove existing reinforcing in opening.
4. All work and materials necessary to connect the new pipe to the existing manhole should be measured and bid for separate, but should be included in the bid of the pipe.
5. Field drilled bond coats with Engineer approved epoxy install in accordance with epoxy Manufacturer's directions.

**TSOUVRAS HOLDINGS**  
 (800) 447-7888

Last Modification Date: 12/14/2016 1:11:12  
 Drawing File Name: 182175-004-ExampleSheet.dwg  
 Horizontal Scale: 1:2  
 Vertical Scale: As Shown

Sheet Revisions	
Date	Comments



City and County of Denver  
 Department of Public Works  
 Engineering Section  
 221 W. Colfax Street, 9th  
 Denver, CO 80202

Colorado Department of Transportation  
 1500 Sherman Street, Suite 200  
 Denver, CO 80202  
 Report #

**As Constructed**

No. Revisions	
Revised	

FEDERAL BLDG. RECON. - 5TH AVE. TO HOWARD PLACE  
 SPECIAL STRUCTURES  
 PIPE CONNECTION AT EXISTING MANHOLE

Designer: MFP Structure  
 Date: LXX Numbers  
 Prep. Subj: SPSR 5-sheet Sheets 4 of 6

Project No./Code  
 NRP 2013-172  
 SA 19457  
 2011 FSD, USFR 20091164  
 Sheet Number 404

**GENERAL NOTES**

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE COLORADO DEPARTMENT OF TRANSPORTATION 2011 SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

STRUCTURE EXCAVATION AND BACKFILL SHALL BE AS SHOWN ON THE PLANS (EXCEPT SHORING) IS REQUIRED FOR EXCAVATION ADJACENT TO THE EXISTING ROADWAY. TEMPORARY EXCAVATION SUPPORT SHALL BE PAID FOR BY ITEM 209, SHORING.

EXPANSION JOINT MATERIAL SHALL MEET ASHOTO SPECIFICATION W213.

A COLORED STRUCTURAL CONCRETE COATING FINISH WILL BE REQUIRED, AS SHOWN ON THE PLANS, ON EXPOSED CONCRETE SURFACES TO 1 FOOT BELOW FINISH GROUND. THE COLOR SHALL BE GRAY. CONFORM TO FEDERAL STANDARD 595D COLOR NO. 16950 AND IS TO BE SELECTED FROM TEST PANELS PROVIDED BY THE CONTRACTOR.

GRADE 60 REINFORCING STEEL IS REQUIRED.

ALL REINFORCING STEEL SHALL BE EPOXY COATED UNLESS OTHERWISE NOTED.

Ⓛ DENOTES EPOXY COATED REINFORCING STEEL.

THE FOLLOWING TABLE GIVES THE MINIMUM LAP SPlice LENGTH FOR EPOXY COATED REINFORCING BARS PLACED IN ACCORDANCE WITH SUBSECTION 602.05. THESE SPlice LENGTHS SHALL BE INCREASED BY 25% FOR BARS SPACED AT LESS THAN 6" ON CENTER.

BAR SIZE	#4	#5	#6	#7	#8	#9	#10	#11
SPlice LENGTH FOR CLASS D CONCRETE	1'-3"	1'-2"	1'-3"	2'-0"	1'-8"	1'-8"	1'-11"	1'-3"

WHEN THE CONTRACTOR ELECTS TO SUBSTITUTE EPOXY COATED REINFORCEMENT FOR BLACK REINFORCING BARS, THE MINIMUM LAP SPlice SHALL BE AS DESCRIBED ABOVE.

THE FOLLOWING TABLE GIVES THE MINIMUM LAP SPlice LENGTH FOR BLACK REINFORCING BARS PLACED IN ACCORDANCE WITH SUBSECTION 602.06. THESE SPlice LENGTHS SHALL BE INCREASED BY 25% FOR BARS SPACED AT LESS THAN 6" ON CENTER.

BAR SIZE	#4	#5	#6	#7	#8	#9	#10	#11
SPlice LENGTH FOR CLASS F CONCRETE	1'-11"	1'-4"	1'-3"	1'-11"	1'-6"	1'-11"	1'-11"	1'-10"

THE ABOVE SPlice LENGTHS SHALL BE INCREASED BY 20 PERCENT FOR 3 BAR BUNDLES AND 33 PERCENT FOR 4 BAR BUNDLES.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION. STATIONS, ELEVATIONS, AND DIMENSIONS CONTAINED IN THESE PLANS ARE CALCULATED FROM A RECENT FIELD SURVEY. THE CONTRACTOR SHALL VERIFY ALL DEPENDENT DIMENSIONS IN THE FIELD BEFORE ORDERING OR FABRICATING ANY MATERIAL.

THE INFORMATION SHOWN ON THESE PLANS CONCERNING THE TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THEREOF. THE CONTRACTOR SHALL CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 1-800-922-1987 AT LEAST 2 DAYS (NOT INCLUDING THE DAY OF NOTIFICATION) PRIOR TO ANY EXCAVATION OR OTHER EARTHWORK.

**DESIGN DATA**

ASHOTO, FIFTH EDITION LRFD, 2010  
 DESIGN METHOD: LOAD AND RESISTANCE FACTOR DESIGN

**SOIL PROPERTIES**  
 RETAINED EARTH (ACTIVE):  $R_q = 33.8 \text{ psf}$  (WALL SEGMENT 1)  
 RETAINED EARTH (ACTIVE):  $R_q = 41.0 \text{ psf}$  (WALL SEGMENT 2 & 3)  
 LIVE LOAD SURCHARGE = 2 FEET (WALL SEGMENT 1)  
 BACKFILL (CLASS 1):  $\gamma = 130 \text{ pcf}$

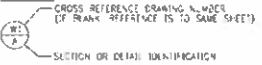
**REINFORCED CONCRETE:**  
 CLASS D CONCRETE:  $f'_c = 4,500 \text{ psi}$   
 REINFORCING STEEL:  $f_y = 60,000 \text{ psi}$   
 SULFATE EXPOSURE: CLASS D

**CAST-IN-PLACE CONCRETE:**  
 CLASS B2 CONCRETE:  $f'_c = 4,000 \text{ psi}$   
 REINFORCING STEEL:  $f_y = 60,000 \text{ psi}$   
 SULFATE EXPOSURE: CLASS D

**INDEX OF DRAWINGS**

- W1 GENERAL INFORMATION
- W2 SUMMARY OF QUANTITIES
- W3 GENERAL LAYOUT
- W4 SECTION SUMMARY AND GEOMETRIC LAYOUT
- W5 WALL SEGMENT 1 DETAILS
- W6 WALL SEGMENT 2 DETAILS
- W7 WALL SEGMENT 3 DETAILS
- W8 UTILITY DETAILS
- W9 BRIDGE RAIL TYPE 1CM (SPECIAL) (1 OF 2)
- W10 BRIDGE RAIL TYPE 1CM (SPECIAL) (2 OF 2)
- W11 PEDESTRIAN RAILING (STEEL)
- W12 PEDESTRIAN RAILING (STEEL) (SPECIAL) (1 OF 2)
- W13 PEDESTRIAN RAILING (STEEL) (SPECIAL) (2 OF 2)

**LEGEND**



**ABBREVIATIONS**

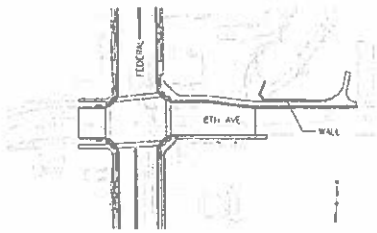
- AN = ANGLE
- ABUT = ABUTMENT
- B.F. = BACK FACE
- B. = BACK
- DD = BOTTOM
- BRG = BEARING
- CP = CAST-IN-PLACE
- CLR = CLEAR
- CONSTR = CONSTRUCTION
- CONT. = CONTINUOUS
- DRG = DRAWING
- EF = EACH FACE
- ELEV. = ELEVATION
- EMBED = EMBEDMENT
- EQ = EQUAL
- FF = FACE FACE
- GLV = GALVANIZED
- HL = HORIZONTAL CONTROL LINE
- JT = JOINT
- MAX. = MAXIMUM
- MIN. = MINIMUM
- NE = NEAR FACE
- NO. = NUMBER
- NOV = NORMAL
- OC = ON CENTER
- PROJ. = PROFILE GRADE LINE
- PROJ. = PROJECTION
- SPALD = SHOULDER
- SPA = SPACED
- STA = STATION
- STD = STANDARD
- STR. = STRUCTURE
- SYMM = SYMMETRICAL
- TYP = TYPICAL



**ENGINEERING GEOLOGY**

THE FOUNDATION DESIGN IS BASED UPON THE FINAL GEOTECHNICAL ENGINEERING REPORT PREPARED BY JEN AND ASSOCIATES, INC. PROJECT NO. 211-117 DATED SEPTEMBER 8, 2012.

FOR BORING LOCATIONS, BORING LOGS AND ADDITIONAL GEOTECHNICAL INFORMATION, SEE THE ENGINEERING GEOLOGY SUBSET.

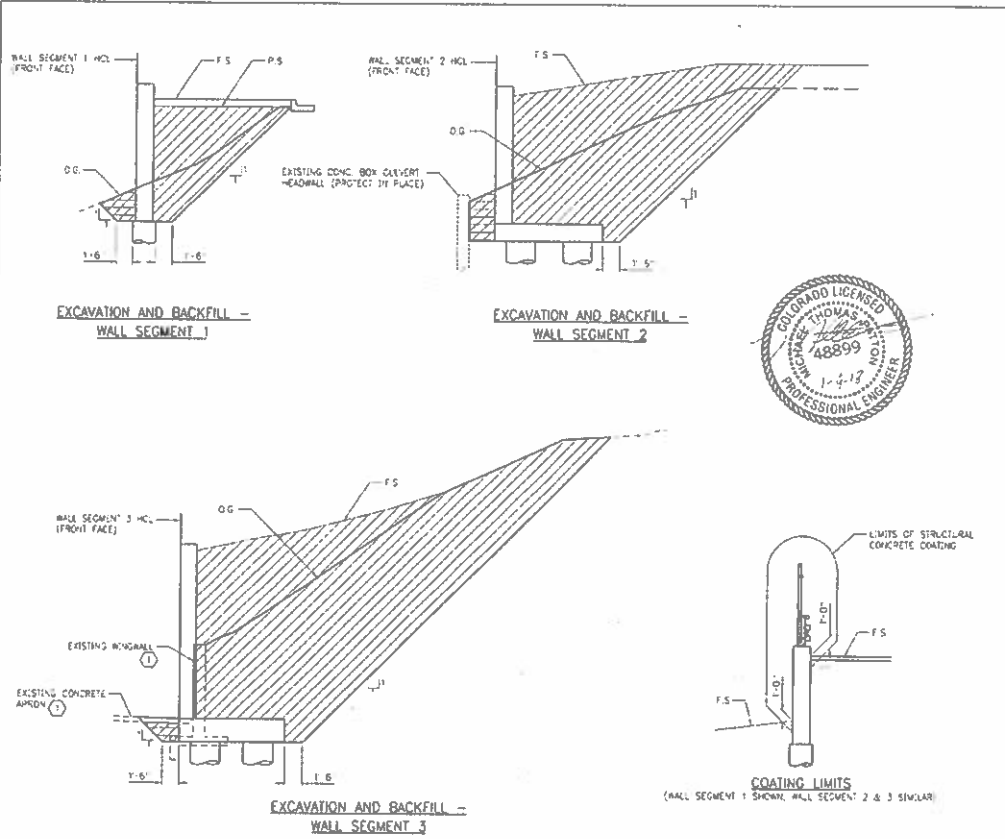


VICINITY MAP



TSOUKARAS HOLDINGS CORPORATION (Contract # 18-200-0000)

Last Modification Date: 11/28/2018 Drawing File Name: 112181-21-Wall-Grnd-Wall.dwg Horizontal Scale: NONE Vert. Scale: NONE	<b>Sheet Revisions</b> <table border="1"> <thead> <tr> <th>Date</th> <th>Comments</th> <th>By</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Date	Comments	By				City and County of Denver Department of Public Works Division of Construction 301 W. Colfax, Suite 502 Denver, CO 80202	Colorado Department of Transportation Region 1 1000 E. Colfax Ave., Suite 100 Denver, CO 80202	As Constructed No Revisions Revision: Year:	FEDERAL BRVD RECON - 5th AVE. TO HOWARD PLACE RETAINING WALL GENERAL INFORMATION Designer: MJP Checker: DO Sheet Label: WALL, Subset Sheet 081 of 113	Project No./Code No. PD: 2073-172 SA: 19357 2011-PROJ.MSTR-0000164 Sheet Number: 426
Date	Comments	By										



**SUMMARY OF QUANTITIES**

ITEM NO.	DESCRIPTION	UNIT	QTY.
202	REMOVAL OF WALL	LF	12
206	STRUCTURE EXCAVATION	CY	824
206	STRUCTURE BACKFILL (CLASS 1)	CY	292
206	STRUCTURE BACKFILL (CLASS 2)	CY	31
226	SHOWING	LS	1
603	FORMED GASSON (30' NEW)	LF	3,112
514	PIPE STRAIN RAILING (STEEL)	LF	93
514	PIPE STRAIN RAILING (SPECIAL)	LF	30
601	CONCRETE CLASS D (WALL)	CY	133
601	STRUCTURAL CONCRETE COATING	SF	222
602	REINFORCING STEEL	LB	14,764
606	SHOULDER GALV. TYPE 15W (SPECIAL)	LF	93

**KEY NOTES**

- REMOVE PORTIONS OF EXISTING RETAINMENT WALL AND CONCRETE APRON AS NECESSARY TO COMPLETE NEW CONSTRUCTION.
  - SEE DRAINAGE PLANS - "WATER CATCH-OFF" FOR STRUCTURE BACKFILL (CLASS 2) AT WALL SEGMENT 3.
- NOTES**
- UNLESS SHOWN OTHERWISE IN THE PLANS, THIS DRAWING LINES THE PAY LIMITS FOR STRUCTURE EXCAVATION AND STRUCTURE BACKFILL. THE CONTRACTOR MAY ELECT TO EXTEND THE STRUCTURE EXCAVATION AND STRUCTURE BACKFILL BEYOND THE LIMITS SHOWN HERE. ANY ADDITIONAL EXCAVATION OR BACKFILL BEYOND THESE LIMITS WILL NOT BE MEASURED NOR PAID FOR.
  - FOR PURPOSES OF QUANTITY CALCULATIONS, THESE TEMPLATES APPLY FROM END TO END OF WALL.

**ABBREVIATIONS**

- O.G. ORIGINAL GROUND
- P.S. PLANNED SUBGRADE
- F.S. PLANNED FINISHED SURFACE

**LEGEND**

- STRUCTURE EXCAVATION
- STRUCTURE BACKFILL (CLASS 1)
- STRUCTURE BACKFILL (CLASS 2) (2)

TSOUVARAS & MUEY'S HOLDINGS  
CONSULTING ENGINEERS

Lead Worksheet Date 11/28/2016  
Drawing File Name 132718-01-111-SubGrading  
Horizontal Scale NONE  
Vert Scale NONE

Sheet Revisions	
Date	Comments

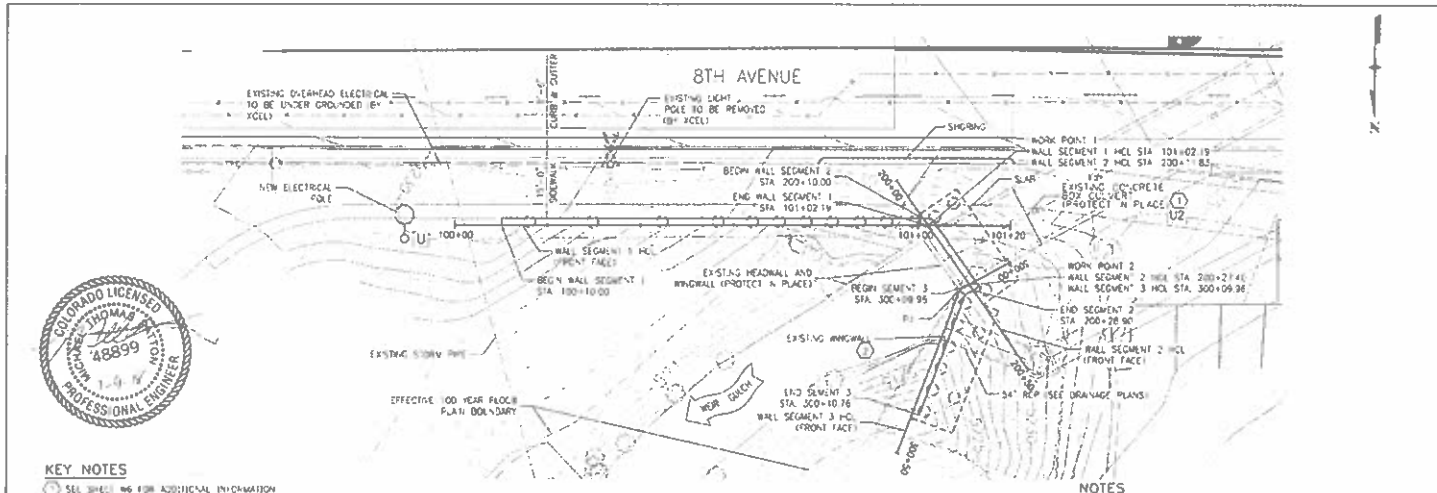
City and County of Denver  
Department of Public Works  
Engineering Division  
201 W. Colfax, Ste. 500  
Denver, CO 80202

Colorado Department of Transportation  
1535 Pearl Street, Suite 200  
Denver, CO 80202  
Phone: 303.733.4000  
Fax: 303.733.4001

As Constructed  
No Revisions  
Revised  
Void

FEDERAL BLVD RECON. - 5TH AVE. TO HOWARD PLACE  
RETAINING WALL  
SUMMARY OF QUANTITIES  
Designer: MTP Structures  
Checker: DQ Numbers  
Sheet Count: WALL SUBMIT SHEETS: W2 of 13

Project No./Code  
MHP 2013-172  
SA 1993  
2014-PROJ/SIR-000014  
Sheet Number 427

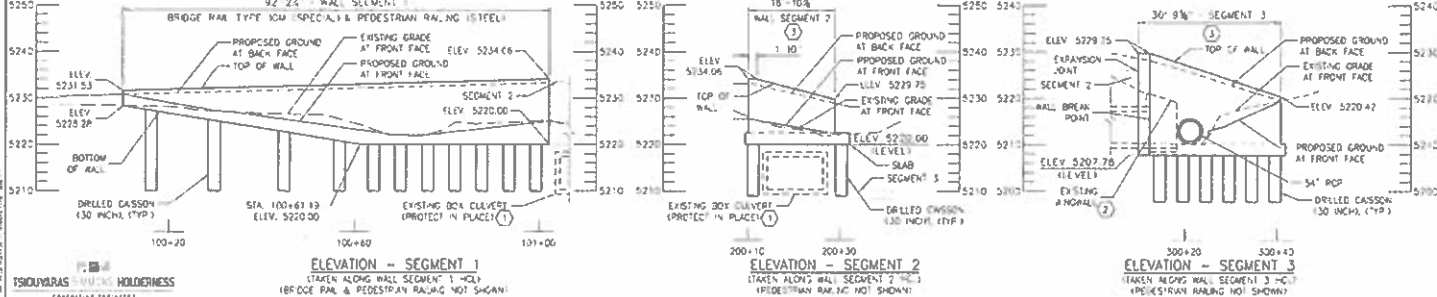


**KEY NOTES**

- 1 SEE SHEET 06 FOR ADDITIONAL INFORMATION
- 2 REMOVE PORTIONS OF EXISTING RETAINING WALL, FOUNDINGS, AND EXISTING CONCRETE APPROX AS NECESSARY TO COMPLETE NEW CONSTRUCTION
- 3 LIMITS OF PEDESTRIAN RAILING (SEE ELEV) (SPECIAL)

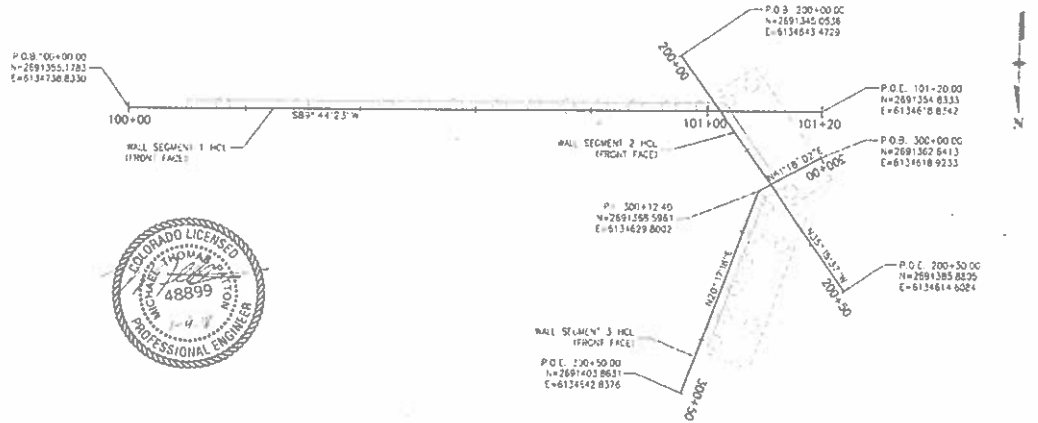
**NOTES**

- 1 SEE SHEET 04 FOR EXISTING UTILITY INFORMATION
- 2 CONTRACTOR SHALL COORDINATE CAISSON CONSTRUCTION WITH EXISTING AND RELOCATED UTILITIES, AND EXISTING CULVERT



<p>TSI/SHOUBAS HOLDERMESS CONSULTING ENGINEERS</p> <p>Last Modification Date: 1/28/2018 by: JKH Drawing File Name: 180206-03-Ret-Genral Layout.dwg Horizontal Scale: NONE Vertical Scale: NONE</p>	<p><b>Sheet Revisions</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Date</th> <th>Comments</th> <th>By</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Date	Comments	By				<p>City and County of Denver Department of Public Works Engineering Division 201 W. Colfax, Suite 304 Denver, CO 80202</p>	<p>Colorado Department of Transportation Region 1 1000 North 20th Street, Suite 200 Denver, CO 80202</p>	<p><b>As Constructed</b></p> <p>No Revisions Revised Ytd</p>	<p>FEDERAL BLVD RECOV. - 5TH AVE. TO HOWARD PLACE RETAINING WALL GENERAL LAYOUT</p> <p>Designer: WJP Checker: EGO Sheet Subst: WALL</p>	<p><b>Project No./Code</b></p> <p>N-PP 2873-13 SA 19957 2011-PROJLMSTR-0000314 Sheet Number: 428</p>
Date	Comments	By										

Notes: 1. See sheet 04 for utility information. 2. Contractor shall coordinate caisson construction with existing and relocated utilities, and existing culvert.



**CAISSON SUMMARY**

WALL STATION	OFFSET (FT)	CAISSON DIAMETER (IN)	TOP OF CAISSON (ELEV)	ESTIMATED SAND/GRAVEL ELEV.	MIN SAND/GRAVEL ENDED (FT)	ESTIMATED TOP ELEV.	ESTIMATED LENGTH (FT)
100+76.10	0.75	30	5229.33	5192.00	5.0	5187.00	40.30
100+29.69	0.75	30	5225.10	5192.00	5.0	5187.00	38.10
100+44.69	0.75	30	5222.67	5192.00	5.0	5187.00	35.67
100+58.69	0.75	30	5220.73	5192.00	5.0	5187.00	33.73
100+88.12	0.75	30	5220.00	5192.00	5.0	5187.00	33.00
100+89.98	0.75	30	5220.00	5192.00	5.0	5187.00	33.00
100+75.93	0.75	30	5220.00	5192.00	5.0	5187.00	33.00
100+81.69	0.75	30	5220.00	5192.00	5.0	5187.00	33.00
100+87.55	0.75	30	5220.00	5192.00	5.0	5187.00	33.00
100+93.40	0.75	30	5220.00	5192.00	5.0	5187.00	33.00
100+89.24	0.75	30	5220.00	5192.00	5.0	5187.00	33.00
200+11.07	7.25	30	5220.00	5192.00	65.0	5127.00	93.00
200+11.07	7.25	30	5220.00	5192.00	25.0	5167.00	53.00
200+30.38	7.25	30	5220.00	5192.00	65.0	5127.00	93.00
200+30.38	7.25	30	5220.00	5192.00	25.0	5167.00	53.00
300+19.56	7.25	30	5207.78	5192.00	47.0	5145.00	62.78
300+19.56	7.25	30	5207.78	5192.00	16.0	5176.00	31.78
300+24.36	7.25	30	5207.78	5192.00	47.0	5145.00	62.78
300+24.36	7.25	30	5207.78	5192.00	16.0	5176.00	31.78
300+34.58	7.25	30	5207.78	5192.00	47.0	5145.00	62.78
300+34.58	7.25	30	5207.78	5192.00	16.0	5176.00	31.78
300+39.56	7.25	30	5207.78	5192.00	47.0	5145.00	62.78

**GEOMETRIC LAYOUT**

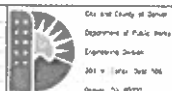
**NOTES**

- PORTIONS OF EXISTING STRUCTURES ENCOUNTERED DURING CONSTRUCTION OF THE NEW FOUNDATION SHALL BE REMOVED AS NECESSARY TO INSTALL THE NEW FOUNDATION. METHOD OF REMOVAL OF PORTIONS OF EXISTING STRUCTURES AND REPLACEMENT OF DISTURBED SUBGRADE SHALL BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION OF THE NEW FOUNDATION.
- CAISSON CONCRETE SHALL BE CONCRETE CLASS B2
- REINFORCING PROJECTING FROM TOP OF CAISSON SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF ITEM 503, DRILLED CAISSON (30 INCH).
- BARS PROJECTING FROM TOP OF CAISSON SHALL BE PLACED TO FIT INSIDE THE REINFORCING OF THE STRUCTURE ABOVE AS SHOWN ON SHEETS AS.06, A & B
- LAP SPLICES SHALL BE SECURELY TIED OR CLAMPED. CONTRACTOR SHALL BE RESPONSIBLE FOR ASSURING AND SUPPORTING THE REINFORCING LAGE TO SAFELY RESIST ALL LOADS IMPOSED DURING HANDLING AND CONCRETE PLACEMENT.
- THE BOTTOM OF THE CAISSON SHALL EXTEND TO THE ESTIMATED TOP ELEVATION SHOWN IN THE "CAISSON SUMMARY" OR DEEPER AS NECESSARY TO ACHIEVE THE MINIMUM EMBEDMENT INTO THE DENSE VERY GRAVEL SANDS. VERY DENSE GRAVELY SANDS ENCOUNTERED ABOVE THE ESTIMATED SAND/GRAVEL ELEVATION SHALL NOT BE CONSIDERED COMPLETELY.
- LOCATION OF CONCRETE BOX CURBLET SHALL BE DETERMINED PRIOR TO DRILLING CAISSONS FOR WALL SEGMENT 2. CAISSON LOCATION MAY BE ADJUSTED 6" MAX TO PROVIDE CLEARANCE TO EXISTING BOX CURBLET AS SHOWN ON SHEET W6.

DESIGNED BY  
**TSUDUWARAS S. MUNEZ, HOLDERNESS**  
2018.01.02 14:10:58

Last Modification Date 11/29/2018 rev. 02  
Drawing File Name: 1122-16-24-164-CaissonSummary.dgn  
Horizontal Scale: NONE  
Vert. Scale: NONE

Sheet Revisions		
Date:	Comments	By:

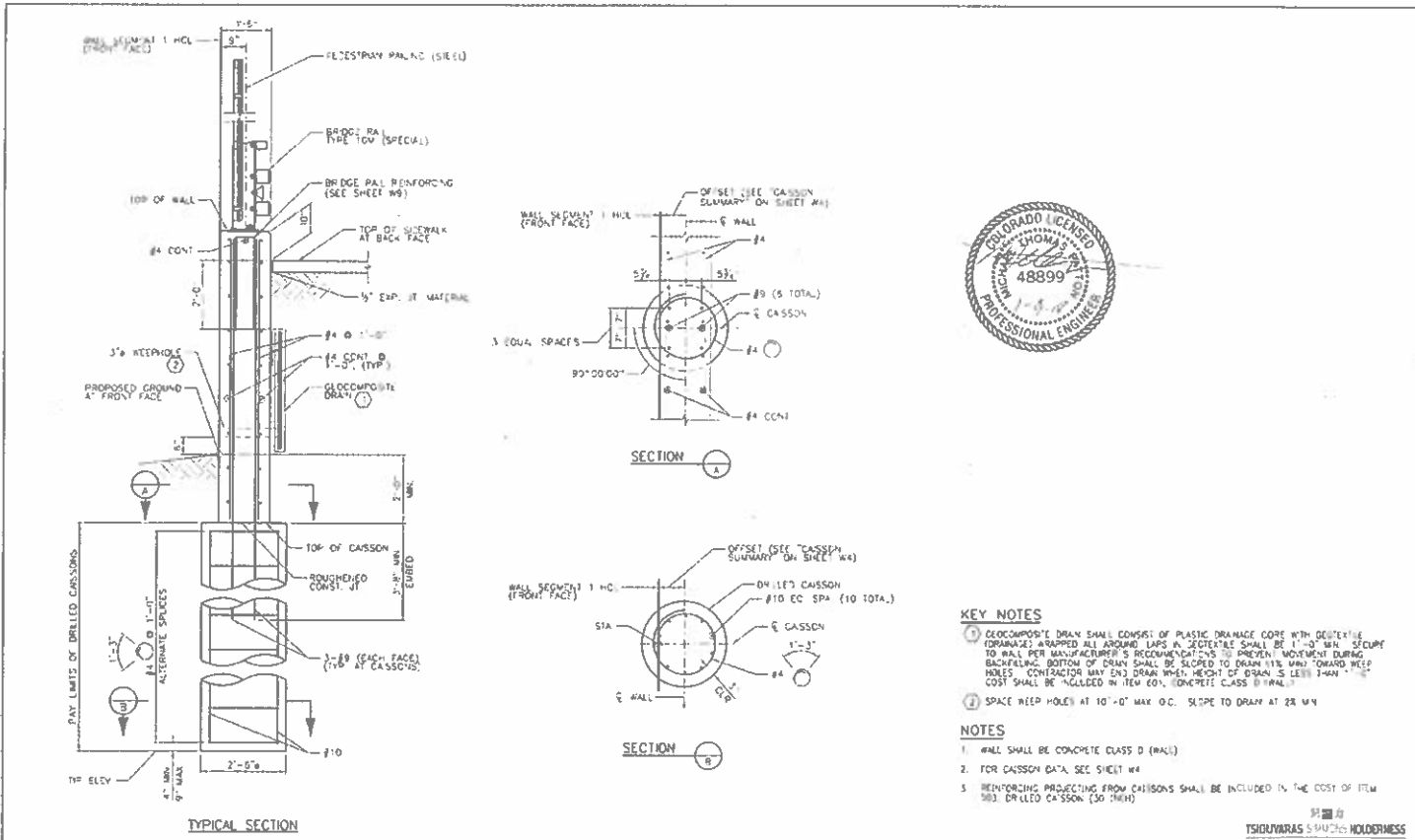


City and County of Denver  
Department of Public Works  
Engineering Division  
201 W. Larimer Street, 9th Floor  
Denver, CO 80202

As Constructed	
No. Revisions	
Revised	
No. 2	

FEDERAL BLVD. PECON. - 5TH AVE. TO HOWARD PLACE  
RETAINING WALL  
CAISSON SUMMARY AND GEOMETRIC LAYOUT

Project No./Code	
1-PPP 2873-172 SA 19557	
2011-FRONTIER-0000364	
Sheet Number	429



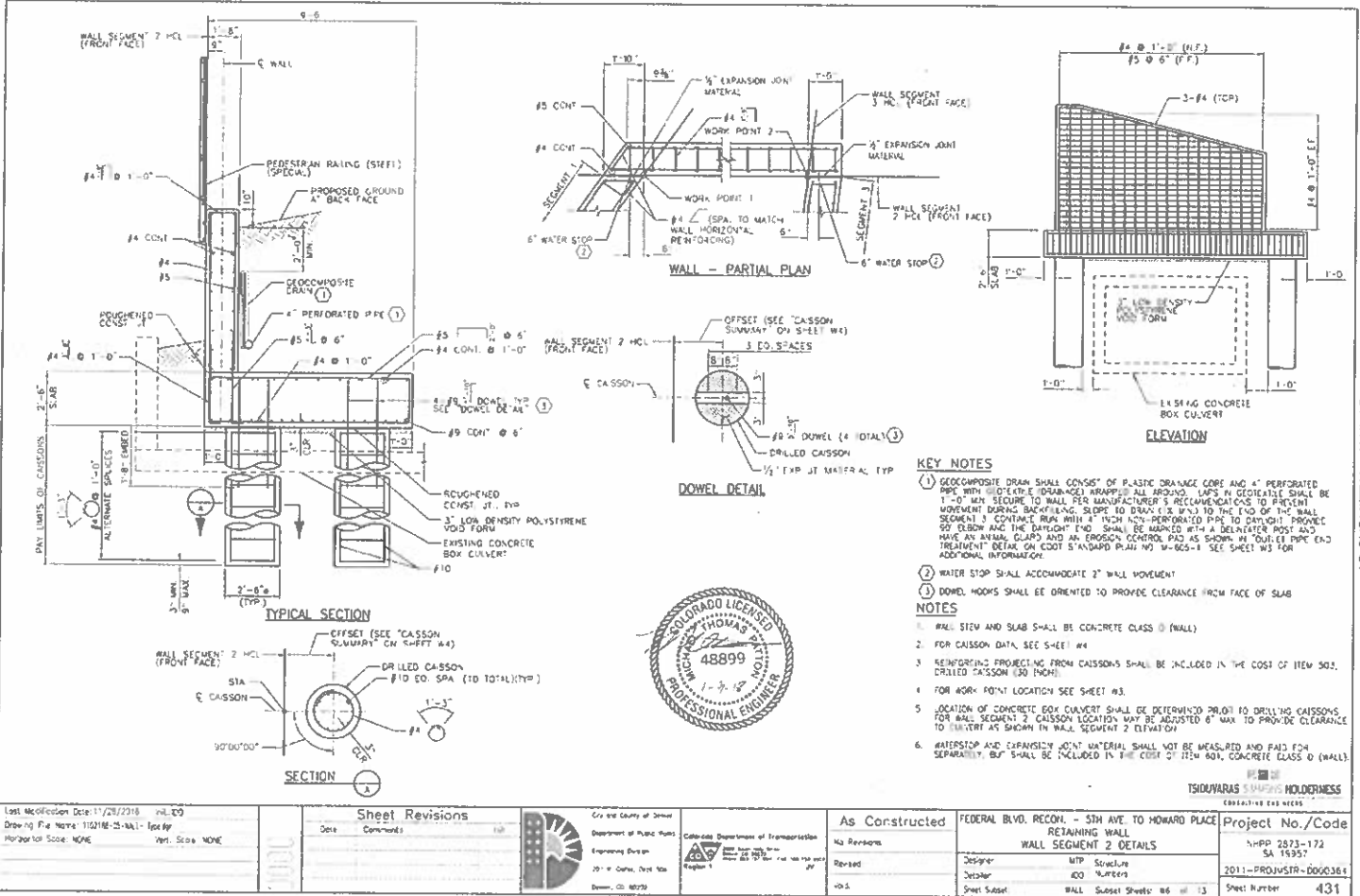
**KEY NOTES**

- COMPOSITE DRAIN SHALL CONSIST OF PLASTIC DRAINAGE CORE WITH DETERMINE (FORMANEX) WRAPPED ALL AROUND LAPS IN SECTION SHALL BE 1'-0" MIN. SECURE TO WALL PER MANUFACTURER'S RECOMMENDATIONS TO PREVENT MOVEMENT DURING BACKFILLING. BOTTOM OF DRAIN SHALL BE SECURED TO DRAIN WITH WALL TOWARD WEEP HOLES. CONTRACTOR MAY ENL. DRAIN WHEN HEIGHT OF DRAIN IS LESS THAN 1'-0". COST SHALL BE INCLUDED IN ITEM EQ1, CONCRETE CLASS D WALL.
- SPACE WEEP HOLES AT 10'-0" MAX O.C. SLOPE TO DRAIN AT 2% MIN.

**NOTES**

- WALL SHALL BE CONCRETE CLASS D (WALL)
- FOR CAISSON DATA, SEE SHEET W4
- REINFORCING PROJECTING FROM CAISSONS SHALL BE INCLUDED IN THE COST OF ITEM 3003 DRILLED CAISSON (30" HIGH)

Regt. Modification Date: 11/28/2016 ml:100 Drawing File Name: 1130-06-05-WALL - 1130.rvt Horizontal Scale: N/AE Vert. Scale: NONE		<b>Sheet Revisions</b> Date Comments		City and County of Denver Department of Public Works Engineering Division 201 W. Colfax, Suite 501 Denver, CO 80202		Colorado Department of Transportation FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE RETAINING WALL WALL SEGMENT I DETAILS		Project No./Code W-PP 2015-172 SA 18957 2011-FRONSJR-0000264 Sheet Number 430	
As Constructed No Revisions: _____ Revised: _____ Void: _____				Designer: MIP Structure Checker: EGO Numbers Sheet Count: WALL 5,264 Sheets WS of 13		TSHIVARAS S. RAJESH HOLDER/INCHES CONSULTING ENGINEERS			



- KEY NOTES**
1. GEOCOMPOSITE DRAIN SHALL CONSIST OF PLASTIC DRAINAGE CORE AND 4" PERFORATED PIPE WITH SLOTTED END (DRAINAGE) WRAPPED ALL AROUND. LAPS IN GEOTEXTILE SHALL BE 1'-0" MIN. SECURE TO WALL PER MANUFACTURER'S RECOMMENDATIONS TO PREVENT MOVEMENT DURING BACKFILLING. SLOPE TO DRAIN (2" IN 12") TO THE END OF THE WALL SEGMENT & CONTACT WITH 4" HIGH 1/2" PERFORATED PIPE TO DRAINOUT. PROVIDE 90° ELBOW AND THE DRAINOUT END SHALL BE MARKED WITH A DELIMITER POST AND HAVE AN ANVIL CLAMP AND AN EROSION CONTROL PAD AS SHOWN IN "OUTLET PIPE END TREATMENT" DETAIL ON SHEET 2. HORIZONTAL WALL NO. 14-002-1. SEE SHEET W3 FOR ADDITIONAL INFORMATION.
  2. WATER STOP SHALL ACCOMMODATE 2" WALL MOVEMENT.
  3. DOWEL HOOPS SHALL BE ORIENTED TO PROVIDE CLEARANCE FROM FACE OF SLAB.
- NOTES**
1. WALL, STEM AND SLAB SHALL BE CONCRETE CLASS 0 (WALL).
  2. FOR CAISSON DATA, SEE SHEET W4.
  3. REINFORCING PROJECTING FROM CAISSONS SHALL BE INCLUDED IN THE COST OF ITEM 502, DRILLED CAISSON (50 MOH).
  4. FOR WORK POINT LOCATION SEE SHEET W3.
  5. LOCATION OF CONCRETE BOX CULVERT SHALL BE DETERMINED PRIOR TO DRILLING CAISSONS. FOR WALL SEGMENT 2, CAISSON LOCATION MAY BE ADJUSTED 6" MAX TO PROVIDE CLEARANCE TO CULVERT AS SHOWN IN WALL SEGMENT 2 ELEVATION.
  6. WATERSTOP AND EXPANSION JOINT MATERIAL SHALL NOT BE MEASURED AND PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF ITEM BOX, CONCRETE CLASS 0 (WALL).



Last Modification Date: 11/28/2018 vnl:DO  
 Drawing File Name: 110218-2-Wall-1.rvt  
 Project Name: NONE  
 Rev. Scale: NONE

Sheet Revisions	
Date	Comments

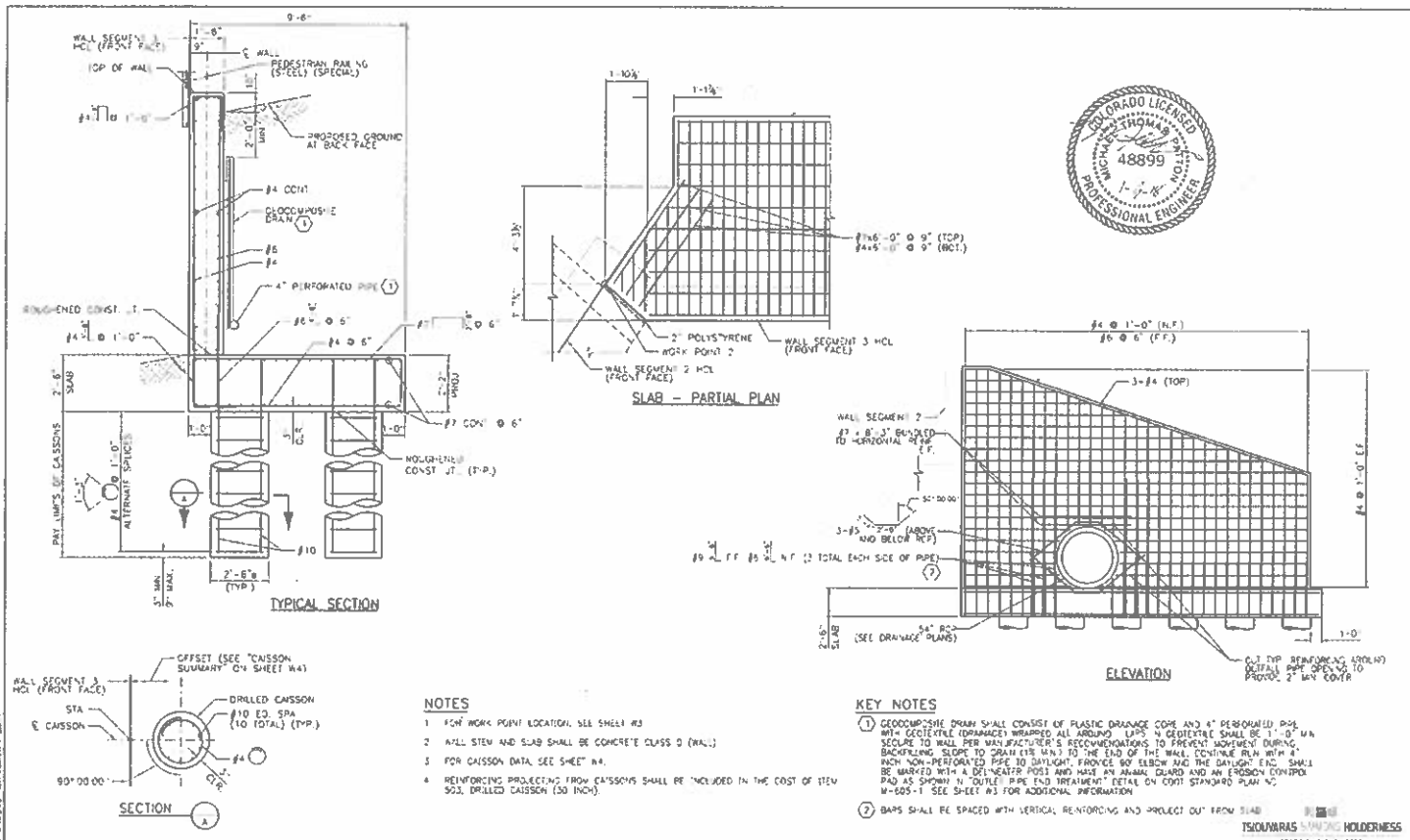
City and County of Denver  
 Department of Public Works  
 Engineering Division  
 201 W. Colfax, 3rd Fl.  
 Denver, CO 80202

Colorado Department of Transportation  
 Engineering Division  
 1701 W. Colfax, 3rd Fl.  
 Denver, CO 80202

As Constructed	FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE
No Revisions	RETAINING WALL
Revised	WALL SEGMENT 2 DETAILS
	Designer: MTP Structures
	Checker: JDO
	Sheet Subset: WALL Subset Sheets: 06 of 13

Project No./Code
N-PP 2873-172 SA 19357
2011-PROJUSFR-0000364
Sheet Number: 431





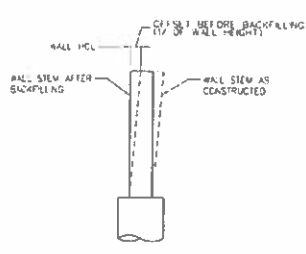
**NOTES**

1. FSN WORK POINT LOCATION, SEE SHEET #3
2. WALL STEM AND SLAB SHALL BE CONCRETE CLASS 0 (WALL)
3. FOR CAISSON DATA SEE SHEET #4.
4. REINFORCING PROJECTING FROM CAISSONS SHALL BE INCLUDED IN THE COST OF ITEM 902, DRILLED CAISSON (50 INCH).

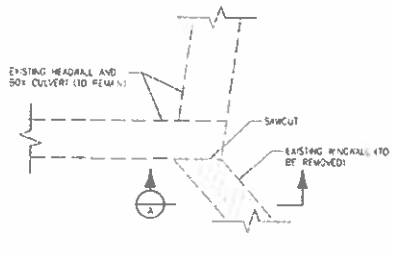
**KEY NOTES**

1. GEOCOMPOSITE DRAIN SHALL CONSIST OF PLASTIC DRAINAGE CORE AND 4" PERFORATED PIPE WITH GEOTEXTILE (DRAINAGE) WRAPPED ALL AROUND LIPS. GEOTEXTILE SHALL BE 1'-0" WIDE SECURE TO WALL PER MANUFACTURER'S RECOMMENDATIONS TO PREVENT MOVEMENT DURING BACKFILLING. SLOPE TO DRAIN (1% MIN.) TO THE END OF THE WALL. CONTINUE RUN WITH 4" RICH NON-PERFORATED PIPE TO DAYLIGHT. PROVIDE 90° ELBOW AND THE DAYLIGHT END SHALL BE MARKED WITH A DELINEATOR POLE AND HAVE AN ANCHOR GUARD AND AN EROSION CONTROL PAD AS SHOWN IN 'OUTLET' PIPE END TREATMENT DETAIL ON COST STANDARD PLAN NO. W-605-1. SEE SHEET #3 FOR ADDITIONAL INFORMATION.
2. BARS SHALL BE SPACED WITH VERTICAL REINFORCING AND PROJECT OUT FROM SLAB.

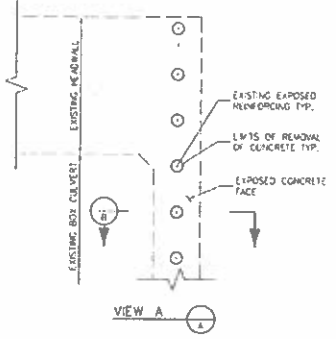
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No.	Comments									
1										



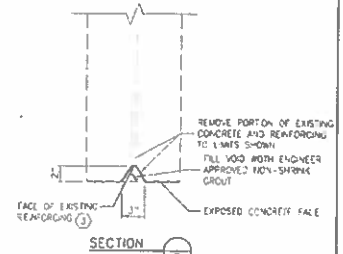
**WALL OFFSET**  
(DETAIL APPLIES TO WALL SEGMENT 1)



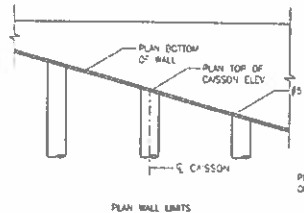
**PARTIAL PLAN - EXISTING BOX CULVERT**



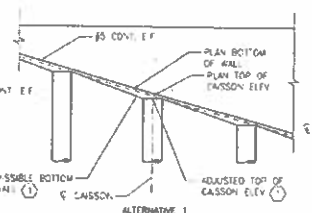
**VIEW A**



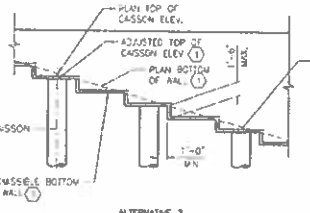
**SECTION B**  
(TYPICAL AT ALL EXPOSED REINFORCING LOCATIONS)



**PLAN WALL LIMITS**



**ALTERNATIVE 1**



**ALTERNATIVE 2**

**BOTTOM OF WALL OPTIONS - SEGMENT 1**  
(BOTH ALTERNATIVE 1 AND 2 ARE PERMISSIBLE)  
(ONLY BOTTOM LIMIT OF WALL REINFORCING SHOWN FOR CLARITY)

**NOTES**

- 1 ALL WORK AND MATERIALS NEEDED TO REMOVE EXISTING RW WALL, PLACE NON-SHRINK GROUT, AND PLACE EPOXY PAINT AT THE EXPOSED FACES OF THE EXISTING REINFORCING LOCATIONS SHALL BE INCLUDED IN ITEM 202 REMOVAL OF WALL.
- 2 CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTMENTS TO TOP OF CAISSON AND BOTTOM OF WALL ELEVATIONS. PAYMENT WILL BE MADE BASED ON PLANT WALL LIMITS. ADDITIONAL QUANTITIES REQUIRED BY EITHER ALTERNATIVE WILL NOT BE MEASURED NOR PAID FOR.
- 3 VERTICAL LEG OF #5 BARS SHALL BE 10" OR THE HEIGHT OF THE STEP WHICHEVER IS GREATER.
- 4 ALL FACES OF EXISTING REINFORCING SHALL BE COATED WITH ENGINEER APPROVED EPOXY PAINT.

**KEY NOTES**



**TSIGVARAS HOLDENNESS**  
CONSULTING ENGINEERS

Last Modification Date: 11/28/2016 Drawing File Name: 1120-00-04-041-040000.dwg Horizontal Scale: NONE Vert. Scale: NONE	ML-02 1120-00-04-041-040000.dwg 11/28/2016
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Date	Comments

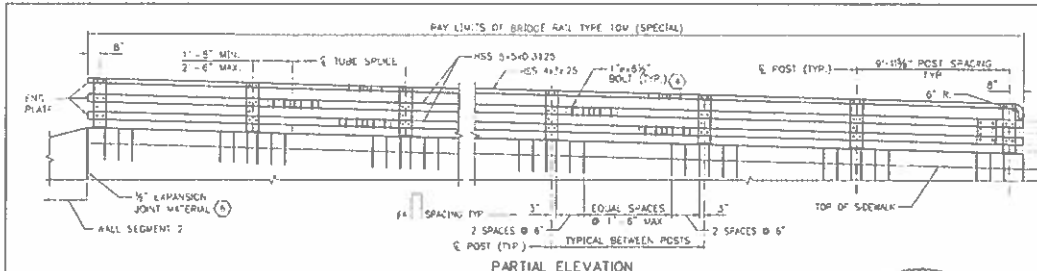


City and County of Denver  
Department of Public Works  
Engineering Division  
201 S. Colfax, Suite 200  
Denver, CO 80202

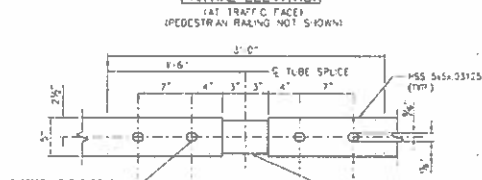
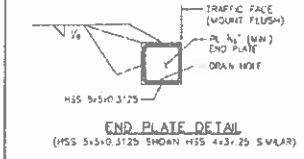
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No Revisions  
Revised  
Date

FEDERAL BLVD. RECON - 5TH AVE. TO HOWARD PLACE  
RETAINING WALL  
MISC. DETAILS  
Design: MIP  
Detail: CD  
Sheet Scale: #10  
Subst Sheet #5 of 13

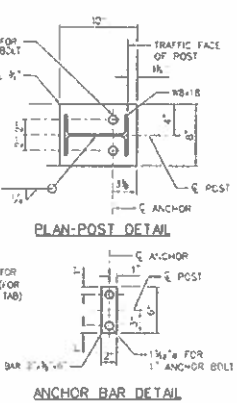
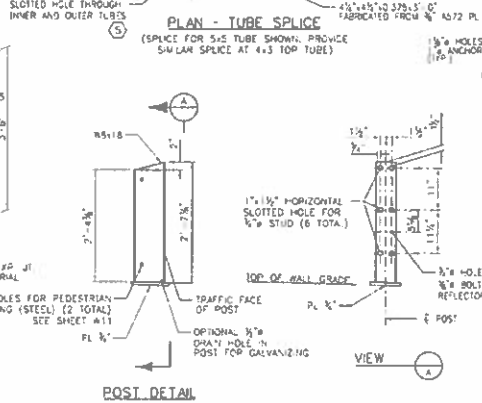
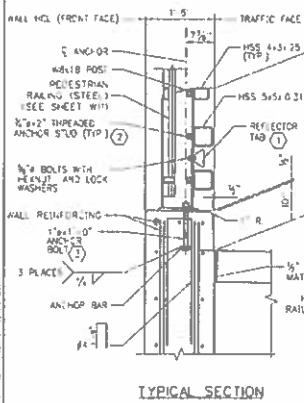
Project No./Code  
11-PR 2673.172  
SA 15957  
2011-PROJ/MSP-0000364  
Sheet Number 433



- KEY NOTES**
- REFLECTOR TAB REQUIRED AT EACH POST. SEE STD. PLAN NO. W-806-1, SHEET 3 OF 3, FOR DETAILS.
  - THREADED ANCHOR STUD SHALL BE AUTOMATICALLY END LOCATED TO RAILING TUBE. 8 STUDS REQUIRED AT EACH POST LOCATION. PROVIDE HEX NUT, HARDENED WASHER AND LOCK WASHER AT EACH STUD. LOCATE TO MATCH SLOTTED HOLES IN POSTS.
  - 2 ANCHOR BOLTS REQUIRED AT EACH POST LOCATION. PROVIDE HEX NUT AND LOCK WASHER WITH EACH ANCHOR BOLT. BOLT SHALL BE ASTM A-325 OR A-490. PROVIDE 2 1/2" BOLT PROJECTION.
  - 4 BOLTS REQUIRED AT EACH TUBE SPLICE LOCATION. PROVIDE HEX NUT, WASHER AND LOCK WASHER WITH EACH BOLT. BOLT SHALL BE ASTM A-325.
  - 1 1/2" x 1/4" SLOTS AT TUBE FIELD SPLICE. SLOT BOTH INNER AND OUTER TUBES. STAGGER TOP AND BOTTOM SPLICES INTO DIFFERENT POST SPACINGS.
  - SEAL EXPOSED EDGES OF EXPANSION JOINT MATERIAL WITH POLYURETHANE OR SILICONE SEALANT.



- NOTES**
- ALL TUBES SHALL BE ASTM A-500 GRADE B. ALL POSTS AND BASE PLATES SHALL BE ASTM A-572 GRADE 50. ALL OTHER STEEL SHALL BE ASTM A-36 UNLESS OTHERWISE NOTED.
  - THE ABOVE MATERIAL AND ALL ANCHOR BOLTS AND MISCELLANEOUS BOLTS, NUTS, AND WASHERS SHALL BE GALVANNEAL AND POWDER COATED AFTER FABRICATION IN ACCORDANCE WITH PROJECT SPECIAL PROVISION 522 COUPLED COATING SYSTEM. THE COLOR SHALL BE DARK GREEN, EQUIVALENT TO FEDERAL STANDARD 595B, COLOR NO. 14056.
  - CONCRETE, REINFORCING STEEL, AND STRUCTURAL STEEL ELEMENTS SHALL CONFORM TO THE REQUIREMENTS OF SECTIONS 601, 602 AND 609, RESPECTIVELY.
  - POST ANCHOR, ENCASED IN CONCRETE, SHALL BE ASTM A-36 (ASBESTO M-183) STEEL AND PFD NOT BE GALVANIZED.
  - TUBES SHALL BE CONTIGUOUS OVER NOT LESS THAN TWO POSTS. NO WELDED BUTT SPLICES WILL BE ALLOWED IN THE TUBE SECTIONS.
  - THE CENTERLINE OF THE TUBE SPLICE SHALL BE 1'-8" MINIMUM AND 2'-6" MAXIMUM FROM THE CENTERLINE OF THE POSTS.
  - ALL BOLTS THAT HAVE LOCK WASHERS SHALL BE TIGHTENED TO SPEC. ONLY.
  - POSTS SHALL BE PERPENDICULAR TO THE LONGITUDINAL ROADWAY.
  - PAYMENT WILL BE MADE UNDER ITEM 606, BRIDGE RAIL TYPE 10M (SPECIAL) FOR ALL POSTS, POST ANCHORS, BASE PLATES, BACKING PLATES, ANCHOR BOLTS, MISCELLANEOUS BOLTS, NUTS, WASHERS, TUBES, TUBE EXPANSION DEVICES, TUBE SPLICES, END PLATES, AND REFLECTOR TABS.
  - PRIOR TO FABRICATION OF THIS ITEM, THREE SETS OF SHOP DRAWINGS WHICH COMPLY WITH THE REQUIREMENTS OF SECTION 105, SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
  - STRUCTURAL STEEL:
    - ASTM A-572 (ASTM A-572) GRADE 50
    - COLD FORMED ASTM A-500 GRADE B



Sheet Revisions

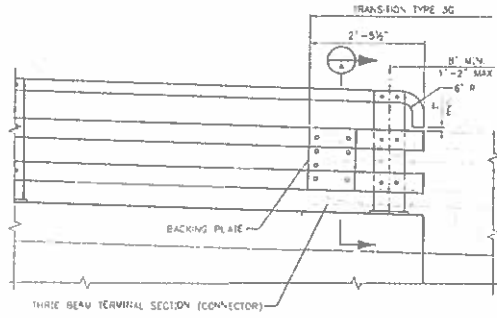
Date	Comments	By

City and County of Denver  
 Department of Public Works  
 Engineering Division  
 1111 South Dear Street  
 Denver, CO 80202

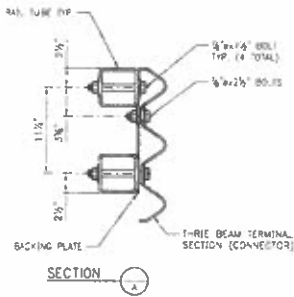
Colorado Department of Transportation  
 1500 Lincoln Street, Suite 100  
 Denver, CO 80202

As Constructed  
 FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE  
 RETAINING WALL  
 BRIDGE RAIL TYPE 10M (SPECIAL)(1 OF 2)

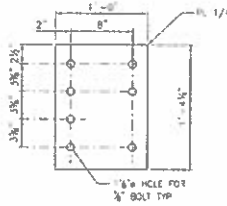
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 W-02 2873-172  
 SA 158197  
 2011-PROJMS18-0000364  
 Sheet No. 434



PARTIAL ELEVATION  
EAST FRONT FACE



SECTION A



BACKING PLATE



NOTES

1. FOR ADDITIONAL INFORMATION REFER TO SHEET NO. **TSIDUVARAS ENGINEERS HOLDERSNESS**

Iss. Issuance Date: 11/13/2016 Int. I00 Drawing File Name: 110218-01-RA-Substr-01 Horizontal Scale: NONE Vert. Scale: NONE
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Sheet Revisions		
Date	Comments	Int.

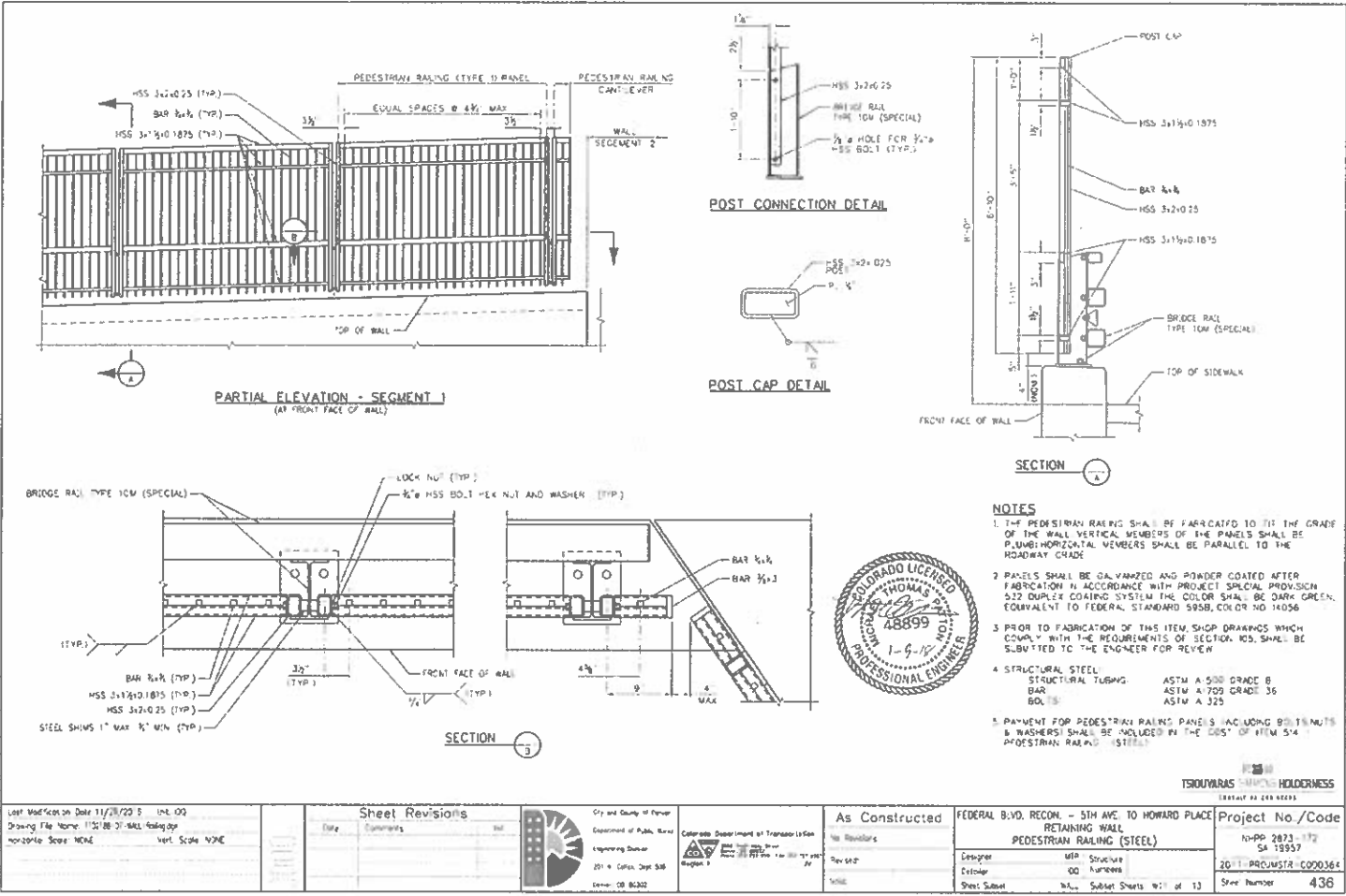
City and County of Denver  
 Department of Public Works  
 Engineering Division  
 201 W. Colfax Street, Suite 200  
 Denver, CO 80202

Colorado Department of Transportation  
 1400 Lusk Street, Suite 200  
 Denver, CO 80202 Phone: 303.733.8800 Fax: 303.733.8800  
 Project: 1

As Constructed
No. Revisions
Revised
Void

FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE RETAINING WALL BRIDGE RAIL TYPE 10M (SPECIAL)(2 OF 2)
Designer: MPA Structure Checker: JCO Numbers Sheet Subst: 44L Subst Sheets: 110 of 115

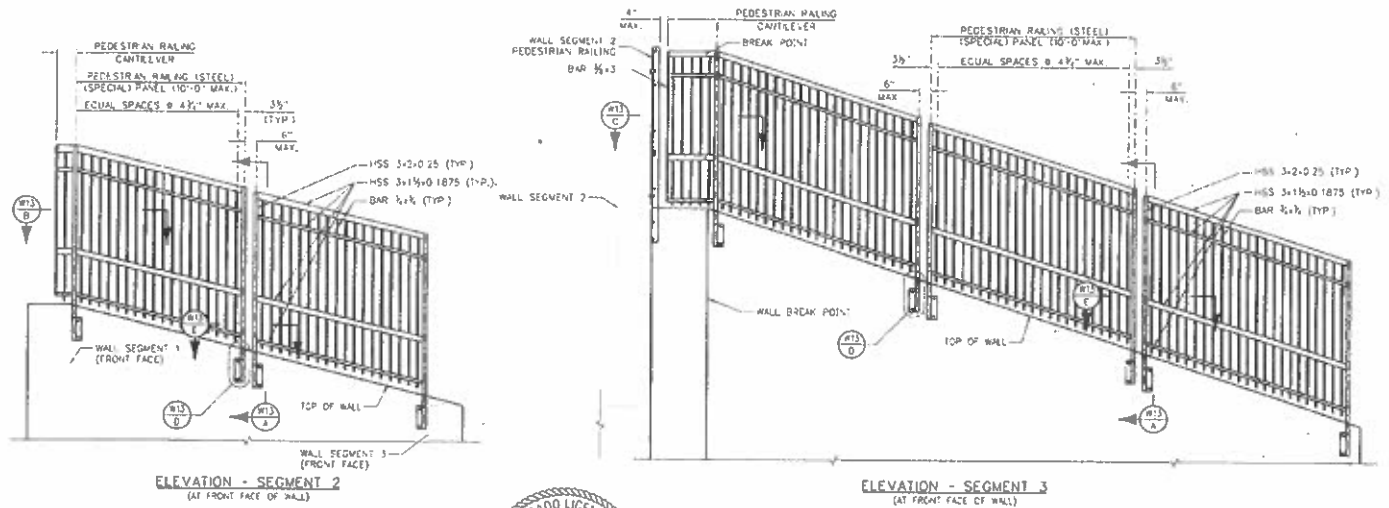
Project No./Code NHPD 2821-172 SA 19957 2011-PROJ/STR-0000184 Sheet Number <b>435</b>
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- NOTES**
1. THE PEDESTRIAN RAILING SHALL BE FABRICATED TO THE GRADE OF THE WALL. VERTICAL MEMBERS OF THE PANELS SHALL BE PLUMB. HORIZONTAL MEMBERS SHALL BE PARALLEL TO THE ROADWAY GRADE.
  2. PANELS SHALL BE GALVANIZED AND POWDER COATED AFTER FABRICATION IN ACCORDANCE WITH PROJECT SPECIAL PROVISION 512 DUPLEX COATING SYSTEM. THE COLOR SHALL BE DARK GREEN, EQUIVALENT TO FEDERAL STANDARD 595B, COLOR NO. 14056.
  3. PRIOR TO FABRICATION OF THIS ITEM, SHOP DRAWINGS WHICH COMPLY WITH THE REQUIREMENTS OF SECTION 105, SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.
  4. STRUCTURAL STEEL:  
 STRUCTURAL TUBING: ASTM A 500 GRADE B  
 BAR: ASTM A 709 GRADE 36  
 BOLT: ASTM A 325
  5. PAYMENT FOR PEDESTRIAN RAILING PANELS INCLUDING BOLT NUTS & WASHERS SHALL BE INCLUDED IN THE COST OF ITEM 514 PEDESTRIAN RAILING (STEEL).



Last Modification Date: 11/28/2018 Drawing File Name: 1131 BE 01 WALL Railing.rvt Worksheet Name: MECH Unit: Feet Scale: NONE	<b>Sheet Revisions</b> <table border="1"> <thead> <tr> <th>Date</th> <th>Comments</th> <th>By</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Date	Comments	By				City and County of Denver Department of Public Works Engineering Division 201 W. Colfax, Dept. 538 Denver, CO 80202	Colorado Department of Transportation Region 1 1000 Pecos Street, Suite 200 Denver, CO 80202	<b>As Constructed</b> No Revisions Rev: 01 Date: 11/28/2018	FEDERAL B.V.D. REGION - 5TH AVE. TO HOWARD PLACE RETAINING WALL PEDESTRIAN RAILING (STEEL) Designer: JTD Checker: JTD Sheet Subset: 11 of 13	Project No./Code N-PP 2873-172 SA 19957 2011-PROJUMSTR-C000364 Sheet Number: 436
Date	Comments	By										

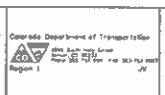


**NOTES**  
FOR NOTES AND ADDITIONAL INFORMATION SEE #13

**TSOUKARAKIS, THOMAS J. HOLDERSHIP**  
REGISTERED ENGINEER

Iss. Modified: Date 11/29/2016	By: JDO
Drawn To: Name: 1 (SHE-21-BA) Railing	Scale: NONE
Horizontal Scale: NONE	Vert. Scale: NONE

Sheet Revisions	
Date	Comments



As Constructed	No Revisions

FEDERAL BLVD RECON. - 5TH AVE. TO HOWARD PLACE	RETAINING WALL
PEDESTRIAN RAILING (STEEL) (SPECIAL) (1 OF 2)	
Designer: WTP - Structures	
Checker: EC	
Sheet Subst: WALL 1	Subst Sheets #12 of 13

Project No./Code	NHPP 2923-172
	SA 19963
	2011-PROJNSTR-0000364
Sheet Number	437

**SECTION A**

**SECTION B**

**SECTION C**

**SECTION D**

**DETAIL**

**KEY NOTES**

- FIELD DRILL BOLLS AND EPOXY ANCHOR BOLTS WITH ENGINEER APPROVED EPOXY EACH ANCHOR SHALL HAVE AN ALLOWABLE TENSION CAPACITY OF 6,000 LB UNDER SERVICE LOADING.
- THE PEDESTRIAN RAILING SHALL BE FABRICATED TO FIT THE GRADE OF THE WALL. VERTICAL MEMBERS OF THE PANELS SHALL BE PARALLEL TO THE TOP OF WALL. HORIZONTAL MEMBERS SHALL BE PARALLEL TO THE TOP OF WALL.
- PANELS SHALL BE GALVANIZED AND POWDER COATED AFTER FABRICATION IN ACCORDANCE WITH PROJECT SPECIAL PROVISION 522 DUPLEX COATING SYSTEM THE COLOR SHALL BE DARK GREEN, EQUIVALENT TO FEDERAL STANDARD 595B, COLOR NO 14056.
- BEFORE FABRICATION OF THIS ITEM SHOP DRAWINGS WHICH COMPLY WITH THE REQUIREMENTS OF SECTION 105, SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.
- STRUCTURAL STEEL:
  - STRUCTURAL TUBING: ASTM A-500 GRADE B
  - BAR: ASTM A-709 GRADE 36
  - BOLTS: ASTM A-325
  - PLATES: ASTM A-36
- PAYMENT FOR PEDESTRIAN RAILING PANELS (INCLUDING BOLTS, NUTS & WASHERS) SHALL BE INCLUDED IN THE COST ITEM 514 - PEDESTRIAN RAILING (STEEL) (SPECIAL).
- FIELD DRILL AND INSTALL ANCHORS ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
- FOR POST-CAP DETAIL SEE SHEET #11.

**PROFESSIONAL ENGINEER**  
 COLORADO LICENSED  
 48899  
 TSOUKARAS & HOLDENNESS

Rev	Date	Description

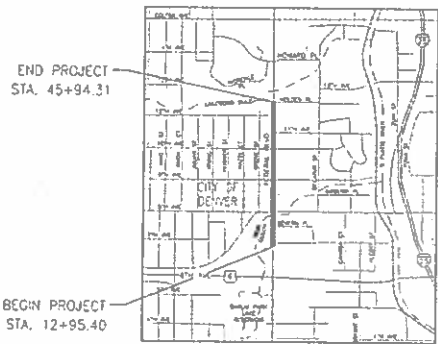
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DEPARTMENT OF TRANSPORTATION  
STATE OF COLORADO

HIGHWAY CONSTRUCTION BID PLANS OF PROPOSED  
FEDERAL AID PROJECT NO. SUB-ACCOUNT NO.  
NHPP 2873-172 19957  
STATE HIGHWAY NO. 88  
FEDERAL BOULEVARD RECONSTRUCTION - 5TH AVENUE TO HOWARD PLACE  
CITY OF DENVER, DENVER COUNTY  
MASTER PROJECT CODE NO. - 2011-PROJMSTR-0000364  
CONSTRUCTION PROJECT CODE NO. - 2011-CIP-03640302

INDEX OF SHEETS

SHEET NO	TITLE
1	TITLE SHEET
2 - 8	STORMWATER MANAGEMENT NARRATIVE
9	NOTES
10 - 26	STORMWATER MANAGEMENT PLANS
27 - 30	TYPICAL DETAILS



VICINITY MAP  
SHEET 1 - 1 - 2200  
SECTION 1  
TOWNSHIP 8 SOUTH  
RANGE 68 WEST

PINYON ENVIRONMENTAL INC.

I HEREBY CERTIFY THAT THIS EROSION CONTROL DRAWINGS FOR FEDERAL BOULEVARD RECONSTRUCTION - 5TH AVENUE TO HOWARD PLACE WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION IN ACCORDANCE WITH THE CITY AND COUNTY OF DENVER STORM DRAINAGE DESIGN AND STORMWATER QUALITY REGULATIONS FOR THE OWNERS HEREOF.

Bridget Mitchell  
REGISTERED PROFESSIONAL ENGINEER  
51097  
STATE OF COLORADO NO.

5/10/17  
SIGNATURE DATE



STORMWATER MANAGEMENT PLANS

**Pinyon**  
Environmental Inc.

TSOUVARAS & ASSOCIATES HOLDINGS  
PROFESSIONAL ENGINEERS

Least Modification Date	PR:	Sheet Revisions	City and County of Denver	As Constructed	Contract Information	Project No./Code
Drawing File Name: 1122180-00-SMTP Title Sheet.dwg Horizontal Scale: 1:2 Vert. Scale: As Noted		Date: _____ Comments: _____ PR: _____	Department of Public Works Engineering Division 201 W. Colfax, Suite 300 Denver, CO 80202	No Revisions Revised: _____ PR: _____	CONTRACTOR: _____ CONTRACT MANAGER: _____ PROJECT START: _____ PROJECT COMPLETE: _____ PROJECT ENGINEER: _____ DIRECTOR OF PUBLIC WORKS: _____ SMMP Sheet Sheets: 1 of 30	NHPP 2873-172 SA 19957 2011-PROJMSTR-0000364 Sheet Number: 451

AU SUBMITTAL - JANUARY 2, 2018



[Area 1018]

**1. SITE DESCRIPTION**

The Contractor shall comply with all EDCU contact information and all requirements associated with the CDPS-SCP on this project. The SWMP Administrator will update to reflect current project site conditions.

- A. **PROJECT SITE LOCATION:** THIS PROJECT INCLUDES HIGHWAY RECONSTRUCTION FOR 0.6 MILES OF FEDERAL BOULEVARD AND ADJACENT STREETS AND PROPERTIES BETWEEN 7<sup>TH</sup> AVENUE AND APPROXIMATELY 100 FEET NORTH OF HOLDEN PLACE.
- B. **PROJECT SITE DESCRIPTION:** THE PROPOSED HIGHWAY RECONSTRUCTION CONSISTS OF ROADWAY IMPROVEMENTS INCLUDING REMOVAL AND REPLACEMENT OF ASPHALT, CONCRETE, CURBS AND GUTTERS AND SIDEWALKS. IN ADDITION, THE PROJECT INVOLVES UTILITY REMOVAL AND REPLACEMENT INCLUDING STORM AND SANITARY SEWER WATERLINES, AND FIRE HYDRANTS, FIBER OPTICS, ELECTRIC, AND IRRIGATION SYSTEMS. MULTIPLE EXISTING BUILDING STRUCTURES WILL BE DEMOLISHED AND PARKING LOTS CONSTRUCTED IN THEIR PLACE AS A RESULT OF THE PROPOSED ROADWAY WORK, HOWEVER THIS WORK WILL BE CONDUCTED BY OTHERS AND IS NOT INCLUDED IN THIS CONTRACT. THE CONTRACTOR SHALL COORDINATE SCHEDULE AND STORMWATER BMP PLACEMENT WITH INDIVIDUAL DEMOLITION CONTRACTORS.
- C. **PROPOSED SEQUENCING FOR MAJOR CONSTRUCTION ACTIVITIES:**  
 PROPOSED SEQUENCING FOR MAJOR ACTIVITIES:  
 INSTALLATION OF PERIMETER CONTROLS AND BARRIERS  
 UTILITY CONSTRUCTION AND RELOCATION  
 RECONSTRUCTION OF ROADWAY  
 REPLACEMENT OF SIDEWALK AND CURBS AND GUTTER  
 LANDSCAPING  
 SITE RESTORATION AND STABILIZATION
- D. **ACRES OF DISTURBANCE:**
  - 1. Total area of construction site: 17.5 acres
  - 2. Total area of proposed disturbance (BDA): 12.1 acres
  - 3. Total area of seeding: 0.5 acres
  - 4. Total area of impervious surface: 11.6 acres
  - 5. Total area of NW impervious surface: 0 acres

E. **EXISTING SOIL DATA:** THE EXISTING SOILS IN THIS CORRIDOR CONSISTS OF SANDY LOAM TO LOAMY SAND, SILT LOAMS, SANDY OR WET ALLUVIUM, AND SAND AND GRAVEL.

F. **EXISTING VEGETATION INCLUDING PERCENT COVER:**

A SURVEY INCLUDING GENERAL DESCRIPTION OF EXISTING VEGETATION SHALL BE CONDUCTED BY THE SWAMP ADMINISTRATOR PRIOR TO ANY GROUND DISTURBANCE ON THE PROJECT. THE SWAMP ADMINISTRATOR SHALL PHOTO DOCUMENT EXISTING VEGETATION WHERE ALL WORK WILL BE OCCURRING. THE SWAMP ADMINISTRATOR SHALL ALSO PERFORM THE VEGETATION SURVEY TRANSECT(S) INCLUDING PHOTO DOCUMENTATION AS OUTLINED IN CHAPTER 4.11.2 OF CDOT'S EROSION CONTROL AND STORMWATER QUALITY GUIDE.

Pre-Construction Date of survey: \_\_\_\_\_ %Density: \_\_\_\_\_  
 Description of existing vegetation: EXISTING VEGETATION CONSISTS OF A MIX OF NATIVE AND NONNATIVE GRASSES AND WEEDES.  
 Map or table showing transect locations in SWMP notebook, tab 17.

Post-Construction Date of survey: \_\_\_\_\_ %Density: \_\_\_\_\_  
 Description of existing vegetation: \_\_\_\_\_ Date of CDPS-SCP Closure: \_\_\_\_\_

Map or table showing transect locations in SWMP notebook, tab 17.

G. **POTENTIAL POLLUTANT SOURCES:** See Pre-Construction Activities Under Potential Pollutant Sources. The SWMP Administrator shall prepare a list of potential pollutants and their location in accordance with subsection 107.25.

- H. **RECEIVING WATER:**
  - 1. Outfall location: THE OUTFALL LOCATIONS ARE SHOWN ON THE SWMP EROSION CONTROL PLANS. THIS PROJECT DISCHARGES TO DENVER COUNTY'S RAIN SYSTEM.
  - 2. Name of receiving water(s) on site: THE RECEIVING WATER ON SITE IS THE LAKEWOOD AND WER CULCH WHICH BOTH FLOW EAST.
  - 3. Ultimate receiving water: THE ULTIMATE RECEIVING WATER IS THE SOUTH PLATE RIVER.
  - 4. Horizontal distance nearest water of the state from project: LAKEWOOD AND WER CULCH TRAVEL THROUGH THE PROJECT AREA.

**I. NON STORMWATER DISCHARGES**

- A. **ALLOWABLE:**
  - 1. Groundwater and stormwater discharging: Discharges to the ground of water from construction de-watering activities may be authorized provided that:
    - a. The discharge is groundwater and/or groundwater combined with stormwater that does not contain pollutants.
    - b. The source and BMP/Control Measures are identified in the SWMP.
    - c. Discharges do not leave the site as surface runoff or to surface waters.
    - d. The contractor shall protect all work areas and localities from water at all times. Areas and facilities subject to flooding, regardless of the source of water, shall be properly dewatered and repaired at no cost to the owner. This shall include removal of any debris caused by flooding. Any dewatering shall be done in accordance with Subsection 107.25.
- B. **CONTAMINATED:**
  - 1. Discharges do not meet the above criteria a separate CDPS permit shall be obtained by the Contractor from the CDPE. See standard special provision 250 Hazardous Waste and Contaminated Water.

**2. SITE MAP COMPONENTS**

- A. **PROJECT CONSTRUCTION POTENTIAL BOUNDARIES - SHEETS 3-19**
- B. **ALL AREAS OF GROUND SURFACE DISTURBANCE SHEETS 3-19**
- C. **AREAS OF CURB AND BELL SHEETS 3-19**
- D. **LOCATION OF ALL STRUCTURAL BMP/CONTROL MEASURES IDENTIFIED IN THE SWMP SHEETS 3-19**
- E. **LOCATION OF NON STRUCTURAL BMP/CONTROL MEASURES AS APPLICABLE IN THE SWMP SHEETS 3-19**
- F. **TRAILS, SENSITIVE WETLANDS AND OTHER SURFACE WATERS SHEETS 3-19**
- G. **PROTECTION OF TREES, SHRUBS, CULTURAL RESOURCES AND MATURE VEGETATION SHEETS 3-19**
- H. **AREAS USED FOR STORING AND STOCKPILING OF MATERIALS, STAGING AREAS, TRUCK TRAILING, etc. LOCAL BATCH PLANTS SHEETS 3-19**



**Pinyon**  
 ENGINEERING, INC.  
 1501 W. 10TH AVENUE, SUITE 100, DENVER, CO 80202

TSOLYVARAS, P. V. V. HOLDERNESS  
 QUALITY ASSURANCE

List Modification Date: _____ Drawn by: EDCU 110191-01-SWMP Cleanup Horizontal Scale: 1:2 Vertical Scale: As Noted	SHEET REVISIONS <table border="1"> <thead> <tr> <th>Date</th> <th>Comments</th> <th>Initials</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Date	Comments	Initials				CD and Quality of Design Department of Public Works Engineering Division 201 W. Colfax, Suite 520 Denver, CO 80202	Colorado Department of Transportation Project 1 1000 15th Street, Suite 100 Denver, CO 80202	As Constructed No. Rev. 001 Rev. 002 Void	FEDERAL BLVD RECON. - 5TH AVE. TO -WARD PLACE STORMWATER MANAGEMENT MAPSHEET Design: AEC Construct: LAN Sheet Subst: SWMP Subst. Sheets 2 of 30	Project No./Code SWMP 2873-172 SA 19953 231-PPOLVSTR-0000354 Sheet Number: 452
		Date	Comments	Initials								
Date of CDPS-SCP Closure: _____												

11/15/2017  
 11/15/2017  
 11/15/2017

**3. SWMP ADMINISTRATOR:**

**A. SWMP ADMINISTRATOR FOR DESIGN:**

Name/Title	Contact Information
BROCK D. MICHELL, P.E., I.C.E.S. PINYON ENGINEERING	brockm@pinyoneng.com 303-337-2497

**B. SWMP ADMINISTRATOR FOR CONSTRUCTION:** (As defined in Subsection 208) The Contractor shall designate a SWMP Administrator for Construction as a member of the SWMP. The SWMP Administrator shall become the contact operator and assume responsibility for all design changes to the SWMP implementation and maintenance in accordance to 208.03. The SWMP Administrator shall be responsible for implementing, maintaining and revising SWMP, including the site and contact information. The activities and responsibilities of the SWMP administrator shall address all aspects of the project SWMP. Update the information below for each new SWMP Administrator. Copy of I.C.E.S. Certification must also be included in the SWMP Notebook.

Name/Title	Contact Information	Certification #	Start Date	Engineer Approval

**C. EROSION CONTROL INSPECTOR:** (As defined in Subsection 208) The Contractor may designate an Erosion Control Inspector. The Erosion Control Inspector shall complete duties in accordance with subsection 208.03 (c). Copy of I.C.E.S. Certification must also be included in the SWMP Notebook.

Name/Title	Contact Information	Certification #	Start Date	Engineer Approval

**4. STORMWATER MANAGEMENT CONTROLS FIRST CONSTRUCTION ACTIVITIES**

THE CONTRACTOR SHALL PREPARE THE FOLLOWING:

**A. POTENTIAL POLLUTANT SOURCES**

Identify, locate and describe all potential sources of pollutants at the site in accordance with subsection 208.03 (2). CDPS SOP and place in the SWMP notebook. All BMP/Control Measures related to potential pollutants shall be shown on the SWMP site map by the Contractor's SWMP Administrator.

**B. CHESIE CRANIAL IRRIGATION WATERS**

1. Describe and record BMP/Control Measures on the SWMP site map that have been implemented to address off-site irrigation water in accordance with subsection 208.03.

**C. VEHICLE TRACKING AND WHEELWASHING CONTROL**

1. BMP/Control Measures that be implemented in accordance with subsection 208.04

**D. PERIMETER CONTROL**

1. Perimeter control shall be established as the first item on the SWMP to prevent the potential for pollutants leaving the construction site boundaries, entering the stormwater drainage system, or discharging to state waters.
2. Perimeter control may consist of vegetation buffers, berms, silt fence, erosion logs, existing landforms, or other BMP/Control Measures as approved.
3. Perimeter control shall be in accordance with subsection 208.04

**5. DURING CONSTRUCTION**

**RESPONSIBILITIES OF THE SWMP ADMINISTRATOR DURING CONSTRUCTION**

The SWMP should be considered a "living document" that is continuously reviewed and modified. During construction, the following items shall be added, updated, or amended as needed by the SWMP Administrator in accordance with subsection 208.04

During construction, identify how items that have not been addressed during design are being handled in construction. Items are covered in the Methods or other sections of the SWMP notebook and indicate what section the discussion takes place.

- A. **SLOTTED PIPE MANAGEMENT:** Shall be done in accordance with subsection 107.25 and 208.07
- B. **CONCRETE WASHOUT:** Concrete washout water or waste from field laboratories and paving equipment shall be contained in accordance with subsection 208.03
- C. **SAW CUTTING:** Shall be done in accordance with subsection 107.25, 208.04, 208.05
- D. **STEEL SHEETING:** Shall be done in accordance with subsection 208.04

**6. INSPECTIONS**

A. Inspections shall be in accordance with subsection 208.03 (c)

**7. BMP/CONTROL MEASURE MAINTENANCE**

A. Maintenance shall be in accordance with subsection 208.04 (f)

**8. RECORD KEEPING**

A. Records shall be kept in accordance with subsection 208.03 (g)

**9. INTERIM AND PERMANENT STABILIZATION**

**A. SEEDING PLAN**

Soil preparation, soil compaction or tilling, seeding (broad, mulch, matching broad tree) and mulch tactics will be required for an estimated 0.13 acres of disturbed area within the right of way limits where not surfaced. The following types and rates shall be used:

Warm Season Native Grass Seed Mix:  
The seeding application rate for broad casting shall be 0.3 lb/1000 SF of native seed mix (80% Virginia Sideoats Grass, 20% Louisiana Blue Grass), if a Red the rate will be 0.15 lb/1000 SF.

Cool Season & Cover Seed Mix:  
The seeding application rate for broadcast shall be as shown in the following table. If a Red the rate will be 1/3 of the rate shown in the table.

COMMON NAME	SCIENTIFIC NAME	BOTANICAL NAME	% OF MIX	SD/SF	LB PLS/1000 SF	LB PLS/1000 PER ACRE
Blue Graminon	<i>Stylobolus arifolius</i>		10	5	0.003	1.12
Timothy	<i>Phleum pratense</i>		10	5	0.010	0.42
AS 4000	<i>Panicum capillare</i>		10	5	0.004	0.18
Stromboside Wheatgrass	<i>Elymus canadensis</i> sp. Pennsylvanicus		30	15	0.096	4.19
Winter Wheatgrass	<i>Panicum grama</i>		15	7.5	0.058	2.97
Annual Ryegrass	<i>Lolium multiflorum</i>		25	12.5	0.055	2.40
<b>TOTAL</b>						<b>10.28</b>

The two mixes shall be applied at a ratio of 50/50



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Last Modification Date: _____ Drawing File Name: 15218-01-SWMP-Design Horizontal Scale: 1" = 20' Vertical Scale: As noted	<b>Sheet Revisions</b> <table border="1"> <thead> <tr> <th>Date</th> <th>Comments</th> <th>By</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Date	Comments	By				City and County of Project: _____ Department of Public Works Engineering Division 201 N. Cache, Box 508 Denver, CO 80202	Colorado Department of Transportation 15218-01-SWMP-Design Report 1	<b>As Constructed</b> No. Rev: 0000 Revised: _____ Drawn: _____	FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE STORMWATER MANAGEMENT NARRATIVE Design: JNC Structures Detail: LAM Numbers Sheet Sizes: SWMP Submittal Sheets 5 of 30	Project No./Code N-PP 2873-172 SA 19951 2017-AR-SWMP-0000194 Sheet Number: 453
Date	Comments	By										

**B. SEEDING APPLICATION:** Drill seed 0.25 inch to 0.5 inch into the soil. If small areas not accessible to a drill, hand broadcast or broadcast at double the rate and rake 0.25 inch to 0.5 inch into the soil per subsection 2.2.

**C. MULCHING APPLICATION:** Apply a minimum of 2 tons of certified weed-free hay (or 2 1/2 tons of wet feed) weed free straw per acre and in accordance with Section 213, and mechanically incorporate into the soil in combination with an organic mulch lock fer.

1. Prior to winter shut down or 7th summer water application, all uncompleted slopes shall be mulched with 2 tons of mulching (weed free) per acre, mechanically incorporated into the soil in combination with an organic mulch lock fer per subsections 208 and 213.

**D. SPECIAL REQUIREMENTS:**  
Due to high fallow rates, hydroseeding will not be allowed for permanent stabilization.

**E. SOIL CONDITIONING AND HERBICIDE PROGRAMS:** All time requirements for all durations are to receive seeding (native).

Soil conditioner paid for as item 212: Soil Conditioning (Acre)			
Biological nutrient organic based fertilizer (lb/acre)	Nitrate (1-1/2/acre)	Compost (cwt/acre) All areas < 2 I	Feet
300	20	5	

\*Biological nutrient shall not exceed 3.5% (1.1%).  
Nitrate based material shall be in accordance to Standard Special Provision 212 and incorporated in accordance to Standard Special Provision 212.

**BMP Matrix:**

1. If Standards have been included along with standard BMP numbers, if a Non-Standard BMP will be used or the standard narrative does not apply, the SWMP Administrator shall write a Non-Standard BMP narrative, place an "X" in the column and complete a Non-Standard BMP Specification and narrative for the SWMP notebook.
2. The SWMP Administrator shall place an "X" in the column in line on site upon the BMP/Control Measure has been installed.
3. Place an "X" in the column BMP/Control Measure to be located by SWMP Administrator if the SWMP Administrator shall locate the BMP/Control Measure during construction. These BMP/Control Measures are not currently located on SWMP Plans but are anticipated to be used during construction (i.e. Vehicle Tracking Pad, Batch Plants, etc.). The SWMP Administrator shall locate them prior to or during construction and reflect on SWMP.
4. Place an "X" in the column Installation BMP/Control Measure Pre-Construction if the BMP/Control Measure is to be installed prior to construction (i.e. 2).

**F. SOIL PROTECTION COVENANT:** On slopes and ditches having a basket or turf reinforcement mat (turf), the basket/mat shall be placed in lieu of mulch and mulch lock fer and placed after seeding (native). See SWMP site map for basket/mat locations.

**G. WEEDING OPERATIONS/CORRECTIVE STABILIZATION:**  
Prior to partial acceptance

1. All seeded areas shall be reviewed during the 14 day inspection by the SWMP Administrator and or Erosion Control Inspector for bare soils caused by surface or wind erosion. Bare areas caused by surface or wind erosion, shall have mulch, etc. shall be graded, seeded and have the designated mulching applied as necessary, at no additional cost to the project.
2. The Contractor shall maintain weeding/mulch/lock fer/basket/mat, mow to control weeds, or apply herbicide to control weeds in the seeded areas or if Partial Acceptance of the stormwater construction work.

**10. PRIOR TO PROJECT FINAL ACCEPTANCE**

- A. Partial Acceptance shall be in accordance with subsection 107.25 (d), 208.10 and 214.04 of the Partial Acceptance of the project. It shall be determined by the SWMP Administrator and the Engineer which temporary BMP/Control Measures shall remain until 70% revegetation is established or which shall be removed.
- B. At the end of the project, all ditch or cuts that either consist of temporary erosion logs (or equivalent) or permanent rip rap.
- C. All storm drains shall be cleaned prior to the Final Acceptance of the project. Work shall be included in 202 Clean Creek.

**11. NARRATIVES:**

A. ADDITIONAL EROSION CONTROL MEASURES AND NARRATIVES:  
BMP/Control Measure details and narratives not covered by the SWMP or Standard Plan 1208, 1212 shall be added to the SWMP notebook by the SWMP Administrator.



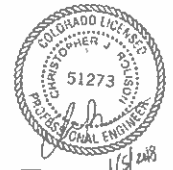
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1/12/18

TECUMARAS HOLDINGS  
CORPORATION

Last Modified Date: 1/11/18 Drawing Title Name: 1107-25-01 SWMP Cover Horizontal Scale: 1" = 120' Vertical Scale: As Shown	<b>Sheet Revisions</b> <table border="1"> <thead> <tr> <th>Date</th> <th>Comments</th> <th>By</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Date	Comments	By				City and County of Denver Department of Public Works Engineering Division 303 W. Colfax, Suite 108 Denver, CO 80202	Colorado Department of Transportation 1535 W. 10th Ave, Suite 100 Denver, CO 80202 Region 1	<b>As Constructed</b> No Revisions Revised Not	FEDERAL BLVD RECON - 5TH AVE TO HOWARD PLACE STORMWATER MANAGEMENT NARRATIVE Designer: JMC Checker: LAM Sheet Subet: SWMP Subet Sheets A of 30	Project No./Code 1107-25-01 SA 19957 2011-PROJ-VSTR-0000354 Sheet Number: 454
Date	Comments	By										

STRUCTURAL BMP/Control Measures that may be potentially used on the project for erosion and sediment control, practices may include, but are not limited to:

APPLICATION BMP/CONTROL MEASURE	NARRATIVE	M. STANDARD/NO. STATED	IN USE ON SITE	BMP/CONTROL MEASURE TO BE INSTALLED BY ADMINISTRATION	INSTALLATION BMP/CONTROL MEASURE BY CONSTRUCTION	BMP/CONTROL MEASURE PHASING		
						POST/INITIAL CONSTRUCTION ACTIVITIES	INITIAL CONSTRUCTION ACTIVITIES	PERMANENT STABILIZATION
PROTECTION OF EXISTING WETLANDS Fence (plastic) and erosion logs	Fence (plastic) shall be placed in combination with erosion logs to prevent encroachment of construction traffic and sediment into riparian waters prior to start of construction disturbances. Fence (plastic) shall be placed adjacent to the wetlands; erosion logs shall be placed between the plastic fence and disturbance area. Logs shall be placed to direct flows away from or filter water running into wetlands from disturbance areas.					X	X	
PROTECTION OF EXISTING TREES/LANDSCAPING Fence (plastic)	Fence (plastic) shall be used in areas indicated in the plans to prevent encroachment of construction traffic and sediment for the protection of mature trees and/or existing landscaping prior to start of construction disturbances.					X	X	
CHECK DAM/TURBIDITY CHECK Erosion log, silt berm, silt rack, rock check dam	Placed in ditches immediately upon completion of ditch grading to reduce velocity of runoff in ditch, for existing ditches, place prior to start of construction disturbances.	M-208				X	X	X
TYPE A AND TYPE 15 Silt PROTECTION Storm drain inlet protection (Type 12 and 3)	Placed prior to construction disturbances as indicated in M-208.1, to protect existing inlets or immediately upon completion of new inlets to prevent sediment from entering the inlet throughout construction.	M-208				X	X	X
CULVERT INLET/SILT PROTECTION Erosion logs aggregate bags	Placed at mouth of culvert inlets and over top of culvert at inlet and outlet where disturbance may be occurring adjacent to pipe to prevent sediment laden water from entering pipe or drainage. Place prior to start of construction disturbances.	M-208				X	X	X
TYPE C, TYPE D, AND TYPE 3 PROTECTION Erosion logs aggregate bags erosion mats	Placed around inlet grate or slope and ditch paving to prevent sediment from entering inlet. Place prior to start of construction disturbances.	M-208				X	X	X
STACKPILE PROTECTION Temporary berm, erosion logs aggregate bags	Placed within specified distance, in accordance with subsection 208.06, from site to contain sediment around stockpile. Aggregate bags are easily moved and replaced for access during the work day. Place prior to start of stock pile, storage container, stock pile, materials etc.	M-208				X	X	
TOE OF HILL PROTECTION Erosion logs temporary berm, silt fence, erosion matting	Place prior to slope/embankment work to capture sediment and protect and delineate undisturbed areas. *Can be used to stockpile topsoil for salvage.	M-208				X	X	
PERIMETER CONTROL Erosion logs silt fence, temporary berm, silt rack, silt rack	Placed prior to construction commencing to address potential runoff water from off site, and to divert area, no disturbed area. *Can be used to stockpile topsoil for salvage.	M-208				X	X	
SEDIMENT CONTROL Silt fence, erosion logs	Placed on the contour of a slope to contain and slow down construction runoff. Place prior to start of construction disturbances.	M-208				X	X	
TEMPORARY SEDIMENT TRAP SWAMP Administrator shall add technology to SWAMP file manual	Used to capture sediment laden runoff from disturbed areas < 5 acres during construction. Place prior to start of construction disturbances.	M-208				X	X	
PERMANENT SEDIMENT BASIN Extended detention basin or other permanent water quality features	Constructed early in project, prior to storm sewer/ditches to capture storm flow as a temporary sediment trap. Outlet structure shall be modified for containment of construction runoff if non-standard details are needed.					X	X	

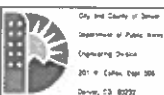


**Pinyon**  
Professional Engineer

TSIONVARAS SULLIVAN HOLDENNESS  
CONSULTING ENGINEERS

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Sheet Revisions		
Date	Comments	Int.



City and County of Denver  
Department of Public Works  
Engineering Division  
301 W. Colfax, Suite 300  
Denver, CO 80202

As Constructed  
No Revisions  
Revised: \_\_\_\_\_  
Sd: \_\_\_\_\_

FEDERAL BLVD. RECON - 5TH AVE TO HOWARD PLACE  
STORMWATER MANAGEMENT  
NARRATIVE

Project No./Code  
1-PP 2873-172  
SA 13957  
2011-FROMSTR-0000334  
Sheet Number 455

APPLICATION BMP/CONTROL MEASURE	NARRATIVE	M- STANDARD /NON-STANDARD	IN USE ON SITE	BMP/CONTROL MEASURE TO BE LOCATED BY SWMP ADMINISTRATION	INSTALLATION BMP/CONTROL MEASURE PRE-CONSTRUCTION	BMP/CONTROL MEASURE PHASING		
						PRE-INITIAL CONSTRUCTION ACTIVITIES	INTERIM CONSTRUCTION ACTIVITIES	PERMANENT STABILIZATION
EMBANKMENT PROTECTION OR EASY-DRAI TYPED DRAIN	Placed on a conduit or chute to drain runoff down slope and to prevent erosion of slope.	M-208					X	X
OUTLET PROTECTION	Material placed as energy dissipater to prevent erosion at outlet structure.						X	X
CONCRETE WASHOUT	Construction control used for waste management of concrete and concrete equipment cleaning. Place prior to start of concrete activities.	M-208				X	X	
VEHICLE TRACKING PAD	Source control placed to prevent tracking of sediment from disturbed area to offsite surface. Place prior to start of construction activities.	M-208				X	X	
SWEEPING	Source control used to remove sediment tracked onto paved surfaces and to prevent sediment from entering drainage system. Sweep daily and at the end of the construction shift as needed. Pick ups shall not be permitted.					X	X	
DEWATERING	Contractor is responsible for obtaining a permit from Colorado Department of Health and Environment.					X	X	
TEMPORARY STREAM CROSSING	Constructed over stream or drainage to prevent discharge of pollutants from construction equipment into water.					X	X	
CLEAN WATER DIVERSION	Placed to divert clean surface or ground water around disturbance area to prevent it from mixing with construction activities.					X	X	

**NON-STRUCTURAL BMPs/Control Measures** that may be potentially used on the project for erosion and sediment control practices may include, but are not limited to erosion control devices are used to limit the amount of soil loss on site. Sediment control devices are designed to capture sediment on the project site. Construction controls are BMP/Control Measures related to construction access and staging. BMP/Control Measure locations are indicated on the SWMP site map.

APPLICATION BMP/CONTROL MEASURE	NARRATIVE	M- STANDARD /NON-STANDARD	IN USE ON SITE	BMP/CONTROL MEASURE TO BE LOCATED BY SWMP ADMINISTRATION	INSTALLATION BMP/CONTROL MEASURE PRE-CONSTRUCTION	BMP/CONTROL MEASURE PHASING		
						PRE-INITIAL CONSTRUCTION ACTIVITIES	INTERIM CONSTRUCTION ACTIVITIES	PERMANENT STABILIZATION
VEGETATIVE BUFFER STRIP	Filter sediment laden runoff from disturbance area. Area to be identified on SWMP prior to construction start-up.					X	X	X
LANDFORM	Existing landforms may be used as a BMP/Control Measure if they prevent sediment from entering or leaving the disturbance area. If a landform directs flow of water to a constructed outlet point, the					X	X	



**Pinyon**  
Professional Engineer  
1/15/2018

TSIOUYVARAS ENGINEERING HOLDERSNESS  
ENGINEERS ARCHITECTS

Last Modification Date: 1/11/18 Drawing File Name: T2818-01-SWP-045.dwg Horizontal Scale: 1" = 30'	<b>Sheet Revisions</b> <table border="1"> <thead> <tr> <th>Date</th> <th>Comments</th> <th>By</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td>AVL</td> </tr> </tbody> </table>	Date	Comments	By			AVL	City and County of Denver Department of Public Works Engineering Division 201 W. Colfax, Suite 306 Denver, CO 80202	Colorado Department of Transportation District 1 1500 North Highways from Denver, CO 80202	<b>As Constructed</b> No Revisions Revised: _____ Void: _____	FEDERAL BLVD RECON - 5TH AVE TO HOWARD PLACE STORMWATER MANAGEMENT NARRATIVE Designer: JAC Detailer: LAY Sheet Subject: SWMP - Subset: Stormwater Management	Project No./Code INHP 2818-172 SA 19957 2018-PRO-MSTR-C000354 Sheet Number: 456
Date	Comments	By										
		AVL										

APPLICATION BMP/CONTROL MEASURE	NARRATIVE	AS STANDARD	IN USE ON SITE	BMP/CONTROL MEASURE TO BE ADMINISTERED	INSTALLATION BMP/CONTROL MEASURE PRE-CONSTRUCTION	BMP/CONTROL MEASURE PHASING		
						PRELIMINARY CONSTRUCTION ACTIVITIES	INTERIM CONSTRUCTION ACTIVITIES	PERMANENT STABILIZATION
TOPSOIL MANAGEMENT STOCKPILE/BALYAGE Windows or stockpile	Topsoil port that be protected to prevent erosion. Area to be identified on SWMP prior to construction starting. Prior to embankment work commencing, existing topsoil shall be scraped to a depth of 4 inches and placed in stockpiles or windows. Upon completion of slope work, final grading plus 4 inches topsoil shall be evenly distributed over embankment to a depth of 4 inches.					X	X	
SURFACE ROUGHENING / GRADING TECHNIQUES Bagging Backhoe Dozing Combination Loader	Temporary stabilization of disturbance and to minimize wind and erosion						X	
SEEDING (PLANTING)	Temporary stabilization used for over-wintering of disturbance or used to control erosion for areas scheduled for future construction.						X	
BONDED FIBER MAT (HYDRA-MULCH MULCH)	Not to be used in areas of concentrated flows, i.e. ditch lines. To be used in combination with surface roughening for temporary stabilization of disturbed soils when work is temporarily halted and as approved by the Engineer. (As) to be used as surface cover for temporary, topsoil stockpiles.						X	
MULCH/MULCH TACKLER	Temporary or Final Stabilization placed as a surface cover for erosion control and/or seeding establishment. To be installed as temporary surface cover when work is temporarily halted and as approved by the Engineer.						X	X
SPRAYON MULCH BLANKET (Not to be used in areas of concentrated flows, i.e. ditch lines)	Temporary or Final Stabilization placed as a surface cover for erosion control and/or seeding establishment. To be installed as temporary surface cover when work is temporarily halted and as approved by the Engineer.						X	X
SEEDING PERMANENT (NATIVE)	Final stabilization of disturbance and to reduce runoff and control erosion on disturbed areas.							X
SOIL RETENTION BLANKET (NR)	Final stabilization of disturbance and to reduce runoff and control erosion on disturbed areas.			13.216			X	X
MULCH/PROCLIMATE MAT (NM)	Final stabilization of disturbance and to reduce runoff and control erosion on disturbed areas. Placed in ditches or on slopes for erosion control, channel liner and seeding establishment.			13.216			X	X
OTHER							X	X

**12. TABULATION OF STORMWATER QUANTITIES**

- A. BMP/Control Measure sediment removal and disposal shall be paid for as: 208 Removal and Disposal of Sediment (Equipment) and 208 Removal and Disposal of Sediment (Labor). All other BMP/Control Measure maintenance shall be included in the cost of the BMP/Control Measure.
- B. If it is estimated that 30 tons of conventional loader (100 horsepower) may be required for muck or extra erosion control work as directed by the Engineer. Work shall be paid for as: 203 Conventional Loader.
- C. Establishment of seeded areas shall be paid for as: included in the price of the work 212 Seeding (with a). This shall include mowing, weed control, reseeding/mulch/tackler.

Spec.	Pay Item	Description	Pay Unit	Initial Const.	Interim Const.	Permanent Stabilization	Total Quantity
PSP	203-01574	Conventional Loader	Hour	30			30
PSP	207-00225	Topsoil	CY		670		670
PSP	207-00210	Stockpile Topsoil	CY			1,000	1,000
SSP	208-00002	Erosion Log Type 1 (12 inch)	LF	45	9		54
SSP	208-00020	SH Fence	LF	750	250		1,000
PSP	208-00021	SH Fence (Fe-Horced)	LF	250	86		336
SSP	208-00035	Aggregate Bag	LF	1250	575		1,825
SSP	208-00045	Concrete Washout Structure	S	1			1
SSP	208-00031	Storm Drain Inlet Protection (Type I)	LF	60	340		400



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Last Modification Date: InL Drawing File Name: 1120108-01-SWMP-Gen-01 Horizontal Scale: 1:2 Vert. Scale: As Noted	<b>Sheet Revisions</b> Date: _____ Comments: _____ InL: _____	City and County of Denver Department of Public Works Engineering Division 300 W. Colfax, Dept 300 Denver, CO, 80202	Colorado Department of Transportation 1500 Sherman Street, Room 300 Denver, CO 80202 Region 1	<b>As Constructed</b> No Revisions: Revised: Void:	FEDERAL BLVD. RECOH - 5TH AVE. TO HOWARD PLACE STORMWATER MANAGEMENT NARRATIVE Designer: JAC Checker: LAN Sheet Subst: SWMP: Susst. Sheets 7 of 30	Project No./Code NHP# 2013-172 SA 19957 2011-PROJ.GS1R-C000J64 Sheet Number 457
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Spec.	Pay Item	Description	Pay Unit	Initial Const.	Interim Const.	Permanent Stabilization	Total Quantity
SSP	208-00252	Storm Drain Inlet Protection (Type II)	Each	20	20		40
SSP	208-00056	Storm Drain Inlet Protection (Type III)	Each	2	1		3
SSP	208-00070	Vehicle Tracking Pad	Each	2			2
SSP	208-00103	Removal and Disposal of Sediment (Labor)	Hour		40		40
SSP	208-00105	Removal and Disposal of Sediment (Equipment)	Hour		30		30
SSP	208-00104	Sweeping (Sediment Removal)	Hour		190		190
SSP	208-00107	Removal of Trash	Hour		100		100
SSP	208-00207	Erosion Control Management (ECM)	Day		360		360
SSP	211-00006	Water Control	LS	0.5	0.5		1
SSP	212-00016	Seeding (Native)	Acres			0.82	0.82
SSP	212-00032	Soil Conditioning	Acres			0.82	0.82
SSP	213-00092	Mulching (Wheat Free Hay)	Acres			0.55	0.55
SSP	216-00101	Soil Retention Bank of (Straw/Coconut) (Photodegradable Class I)	SF			1,320	1,320
SSP	607-11525	Fence (Post&c)	LF	500			500
PS*	700-70280	Erosion Control	F/A	1			1

\*It is anticipated that additional BMP/Control Measures and BMP/Control Measure quantities not shown on the SWPPP Site Plans shall be required on this project for unforeseen conditions and replacement of items that are beyond their useful service life, see subsection 208.03 and 208.04. Quantities for all BMP/Control Measures shown above are estimated, and have been increased for unforeseen conditions and normal BMP/Control Measure life expectancy. Quantities shall be adjusted according to the conditions encountered in the field as directed and approved by the Engineer. Payment shall be for the actual work completed and material used.

13. BIOLOGIC IMPACTS

A. ENVIRONMENTAL IMPACTS

1. Wetland Impacts: YES/ NO
2. Stream Impacts: YES/ NO
3. Threatened and Endangered Species: NO SPECIES ANTICIPATED TO BE IMPACTED BY THE PROJECT
4. If YES to any of the above items, are any permits required or additional actions needed (404 etc.)? Approximately 0.02 acres of permanent impact to waters of the United States would occur during this project. The Army Corps of Engineers has permitted this project under a departmental discharge Army Nationwide Permit (NWP-7). General conditions, section 404 conditions, and Colorado Regional Conditions must be adhered to during construction.



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 TSOUYARAS HOLDERSNESS  
 6901.17.01.000 REVISED

Last Modification Date: _____ Drawing File Name: 180718-01-SWP-Gen.dwg Horizontal Scale: 1" = _____ Vertical Scale: As Noted		<b>Sheet Revisions</b> <table border="1"> <thead> <tr> <th>Date</th> <th>Comments</th> <th>Int</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>		Date	Comments	Int				City and County of Denver Department of Public Works Engineering Division 321 S. Colfax, Suite 500 Denver, CO 80202		Colorado Department of Transportation Project 1		As Constructed No Revisions Revised: _____ Void: _____		FEDERAL BLVD. RECCO - 5TH AVE. TO HOWARD PLACE STORMWATER MANAGEMENT NARRATIVE Designer: JMC Structure Checker: LJM Numbers Sheet Subst: SWMP Subst. Sheet 8 of 30		Project No./Code NHPP 2873-172 SA 19957 2011-PROJ/STR-0000354 Sheet Number 458	
Date	Comments	Int																	

Date: 12/06/2017  
 Time: 11:17:39 AM  
 User: jmc@pinyon.com  
 Path: C:\Users\jmc\AppData\Local\Temp\12\_06\_2017\_111739

**CITY AND COUNTY OF DENVER STANDARD NOTES**

1. THE PERMITEE AND/OR CONTRACTOR SHALL REMOVE ALL SEDIMENT, MUD, CONSTRUCTION DEBRIS, OR OTHER POTENTIAL POLLUTANTS THAT MAY HAVE BEEN DISCHARGED TO OR ACCUMULATE IN THE FLOODPLAINS, STORM DRAINAGE APPURTENANCES, AND PUBLIC RIGHTS OF WAYS OF THE CITY AND COUNTY OF DENVER AS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS SITE DEVELOPMENT OR CONSTRUCTION PROJECT. SAID REMOVAL SHALL BE CONDUCTED IN A TIMELY MANNER.
  2. THE CONTRACTOR SHALL PREVENT SEDIMENT, DEBRIS AND ALL OTHER POLLUTANTS FROM ENTERING THE STORM SEWER SYSTEM DURING ALL DEMOLITION, EXCAVATION, TRENCHING, BORING, GRADING, OR OTHER CONSTRUCTION OPERATIONS THAT ARE PART OF THIS PROJECT. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR RENOVATION OF ANY ADVERSE IMPACTS TO THE MUNICIPAL SEPARATE STORM SEWER SYSTEM, RECEIVING WATERS, WATERWAYS, WETLANDS, AND/OR OTHER PUBLIC OR PRIVATE PROPERTIES, RESULTING FROM WORK DONE AS PART OF THIS PROJECT.
  3. SOIL STABILIZATION MEASURES SHALL BE IMPLEMENTED WITHIN FOURTEEN (14) DAYS FOLLOWING COMPLETION OF GRADING ACTIVITIES. STABILIZATION OF DISTURBED AREAS ADJACENT TO RECEIVING WATERS OR WITH SLOPES 3 TO 1 OR GREATER SHALL BE COMPLETED WITHIN SEVEN (7) DAYS FOLLOWING COMPLETION OF GRADING ACTIVITIES. NOTIF: FEDERAL AND STATE REGULATIONS MAY SOON REQUIRE STABILIZATION WITHIN SEVEN (7) DAYS OF COMPLETION OF GRADING ACTIVITIES. IN SUCH CASES, THE SHORTER TIMEFRAME SHALL APPLY TO PROJECTS WITHIN DENVER AS WELL.
  4. THE DEVELOPER, GENERAL CONTRACTOR, GRADING CONTRACTOR AND/OR THEIR AUTHORIZED AGENTS SHALL INSURE THAT ALL LOADS OF CUT AND FILL MATERIAL SHIPPED TO OR EXPORTED FROM THIS SITE SHALL BE PROPERLY COVERED TO PREVENT LOSS OF THE MATERIAL DURING TRANSPORT ON PUBLIC RIGHTS OF WAY. (SEC. 49-552, REVISED MUNICIPAL CODE)
  5. THE USE OF REBAR TO ANCHOR BEST MANAGEMENT PRACTICES IS PROHIBITED. STEEL FENCE POSTS MAY BE USED ON A CASE BY CASE BASIS AND REQUIRES APPROVAL FROM THE CITY AND COUNTY OF DENVER SWMP REVIEWER OR THE STORMWATER ENFORCEMENT INVESTIGATOR PRIOR TO INSTALLATION.
  6. SOILS THAT WILL BE STOCKPILED FOR MORE THAN THIRTY (30) DAYS SHALL BE PROTECTED FROM WIND AND WATER EROSION WITHIN FOURTEEN (14) DAYS OF STOCKPILE CONSTRUCTION. STABILIZATION OF STOCKPILES LOCATED WITHIN 100 FEET OF RECEIVING WATERS OR WITH SLOPES 3 TO 1 OR GREATER SHALL BE COMPLETED WITHIN SEVEN (7) DAYS FOLLOWING STOCKPILE CONSTRUCTION. STABILIZATION AND PROTECTION OF THE STOCKPILE MAY BE ACCOMPLISHED BY ANY OF THE FOLLOWING: MULCHING, TEMPORARY/PERMANENT VEGETATION OPERATIONS, CHEMICAL SOIL STABILIZER APPLICATION (REQUIRES DENVER PUBLIC WORKS APPROVAL), OR EROSION CONTROL MATTING/GEOTEXTILES. IF STOCKPILES ARE LOCATED WITHIN 100 FEET OF RECEIVING WATERS, A DRAINAGEWAY OR THE SITE PERIMETER, ADDITIONAL SEDIMENT CONTROL SUCH AS SHALL BE REQUIRED.
  7. APPROVED EROSION AND SEDIMENT CONTROL "BEST MANAGEMENT PRACTICES" SHALL BE MAINTAINED AND KEPT IN GOOD REPAIR FOR THE DURATION OF THIS PROJECT. AT A MINIMUM, THE PERMITEE OR CONTRACTOR SHALL PRODUCE AND RETAIN WEEKLY WRITTEN INSPECTION RECORDS FOR ALL SITES AND AFTER SIGNIFICANT PRECIPITATION EVENTS. ALL NECESSARY MAINTENANCE AND REPAIR SHALL BE COMPLETED IMMEDIATELY. ADDITIONALLY, STREET SWEEPING IS TO BE COMPLETED BY THE CLOSE OF THE BUSINESS DAY OR (AND) ON AN AS NEEDED BASIS THROUGHOUT THE DAY.
  8. WATER USED IN THE CLEANING OF CEMENT TRUCK DELIVERY CHUTES SHALL BE DISCHARGED INTO A PREDEFINED, CONCRETE WASHOUT AREA ON THE JOB SITE. BERMED CONTAINMENT OR COMMERCIALLY AVAILABLE CONCRETE WASHOUT DEVICES THAT FULLY CONTAIN ALL WASH WATER ARE ACCEPTABLE. WASH WATER DISCHARGED INTO THE CONTAINMENT AREA OR DEVICE SHALL BE ALLOWED TO INFILTRATE, EVAPORATE, AND/OR BE DISPOSED OF IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS OR CEMENT WASTE IS TO BE REMOVED FROM THE CONTAINMENT AREA AND PROPERLY DISPOSED.
- SHOULD THE USE OF A PREDEFINED BERMED CONTAINMENT AREA OR APPROVED WASHOUT DEVICE BE TECHNICALLY INFEASIBLE DUE TO THE PROJECT SIZE OR LACK OF AN AREA WITH A SUITABLE GROUND SURFACE FOR ESTABLISHING CONTAINMENT, PROPER DISPOSAL OF CONCRETE WASHOUT AND WASH WATER AT THE JOB SITE SHALL CONFORM TO THE APPROVED TECHNIQUES AND PRACTICES IDENTIFIED IN THE COLORADO DEPARTMENT OF PUBLIC HEALTH & ENVIRONMENT'S TRAINING VIDEO ENTITLED "BUILDING FOR A CLEANER ENVIRONMENT, READY MIX WASHOUT TRAINING" AND ITS ACCOMPANYING MANUAL ENTITLED, "READY MIX WASHOUT GUIDEBOOK, VEHICLE AND EQUIPMENT WASHOUT AT CONSTRUCTION SITES."
- THE DIRECT OR INDIRECT DISCHARGE OF WATER CONTAINING WASTE CEMENT TO THE STORM SEWER SYSTEM IS PROHIBITED. (SEC. 55-102A, C, REVISED MUNICIPAL CODE, CITY AND COUNTY OF DENVER).
9. THE CONTRACTOR SHALL PROTECT ALL STORM SEWER FACILITIES ADJACENT TO ANY LOCATION WHERE PAVEMENT CUTTING OPERATIONS INVOLVING WHEEL CUTTING, SAW CUTTING, OR ABRASIVE WATER JET CUTTING ARE TO TAKE PLACE. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL WASTE PRODUCTS GENERATED BY SAID CUTTING OPERATIONS ON A DAILY BASIS OR AS NEEDED THROUGHOUT THE WORK DAY.
  10. THE DISCHARGE OF ANY WATER CONTAMINATED BY WASTE PRODUCTS FROM CUTTING OPERATIONS TO THE STORM SEWER SYSTEM IS PROHIBITED. (SEC. 56-102A, C, REVISED MUNICIPAL CODE, CITY AND COUNTY OF DENVER)
  11. PAVED AND IMPERVIOUS SURFACES WHICH ARE ADJACENT TO CONSTRUCTION SITES MUST BE SWEEPED ON A DAILY BASIS AND AS NEEDED DURING THE DAY WHEN SEDIMENT AND OTHER MATERIALS ARE TRACKED OR DISCHARGED ONTO THEM. EITHER SWEEPING BY HAND OR USE OF STREET SWEEPERS IS ACCEPTABLE. STREET SWEEPERS USING WATER WHILE SWEEPING IS PREFERRED IN ORDER TO MINIMIZE DUST. FLOUSHING OF PAVED SURFACES WITH WATER IS PROHIBITED. (SEC. 56-102A, C, REVISED MUNICIPAL CODE, CITY AND COUNTY OF DENVER)

**GENERAL NOTES**

1. CITY AND COUNTY OF DENVER HAS JURISDICTION IN SWMP INSPECTION WHICH WILL BE DONE EVERY SEVEN DAYS
2. WHEN REPLACING OR ADJUSTING EXISTING STORM SEWER INLET STRUCTURES, GEOTEXTILE FILTER FABRIC MUST BE PLACED OVER THE END OF EXPOSED STORM SEWER PIPES. BEFORE THE GEOTEXTILE FABRIC IS REMOVED, THE INLET STRUCTURE MUST BE CLEAN OF SEDIMENT
3. PAVED SURFACES WHICH ARE ADJACENT TO CONSTRUCTION ACTIVITIES MUST BE SWEEP AS OFTEN AS NEEDED (AT A MINIMUM BY THE CLOSE OF THE BUSINESS DAY) WHEN SEDIMENT AND OTHER MATERIALS ARE TRACKED OR DISCHARGED ONTO ADJACENT PAVED SURFACES AND/OR WHEN DEEMED APPROPRIATE BY CITY AND COUNTY OF DENVER OR OTHER REGULATORY AUTHORITIES.
4. DANDY RECycler BAGS OR APPROVED EQUAL SHALL ONLY BE PLACED IN THE GUTTER PAN WHEN THE ADJACENT LAKE IS CLOSED. THE DANDY RECycler BAGS SHALL BE REMOVED JUST BEFORE THE ADJACENT LAKE BECOMES ACTIVE WITH TRAFFIC.
5. ALL TEMPORARY STOCKPILES MUST HAVE PERIMETER CONTROLS AND ONLY W/WR STOCKPILING WILL BE ALLOWED ON THIS PROJECT. DEMOLITION MATERIAL WILL BE REMOVED IMMEDIATELY AND HAULED OFF-SITE.
6. CONCRETE WASHOUTS MAY BE ONE OF TWO CONFIGURATIONS AS SHOWN ON SWMP DETAIL SHEETS. ECO PANS (OR EQUIVALENT) MAY BE USED IN LIEU OF A BERMED CONCRETE WASHOUT AREA. IF ALL CONTAMINATED WATER IS CONTAINED, USE OF ECO PANS REQUIRES ADDITIONAL PERIMETER CONTROL SUCH AS ROCK SOCKS, SEDIMENT CONTROL LOGS, SILT FENCE OR EARTHEN BERMS TO CONTROL SPILLS OR OVERFILLS.
7. PLACEMENT OF CURB OR ROCK SOCKS IN LANES OF TRAFFIC MUST BE COMPLETED IN ACCORDANCE WITH THE APPROVED TRAFFIC CONTROL PLAN. THIS APPLIES AT ANY AND ALL LOCATIONS WHERE ROCK SOCKS ARE LOCATED IN A TRAFFIC LANE.
8. CURB SOCKS LOCATED ON DOWN GRADENT SIDE STREETS WILL BE PLACED PRIOR TO FEDERAL BOULEVARD RECONSTRUCTION, AND WILL BE REMOVED DURING RECONSTRUCTION OF SEE STREET AND THEN REPLACED UNTIL FINAL STABILIZATION OF UP-GRADE AREAS.
9. THE SWMP PLAN SHEETS IN COMBINATION WITH THE SWMP NARRATIVE MAKE UP THE COMPLETE SWMP REPORT AND MUST BE USED TOGETHER.
10. BEST MANAGEMENT PRACTICE (BMP) DETAILS ARE LOCATED ON SWMP PLAN SHEETS AND IN APPENDIX B OF THE SWMP NARRATIVE.
11. PHASES 1 AND 2 OF THE SWMP DO NOT CORRESPOND TO CONSTRUCTION PHASING. RATHER, THESE PHASES CORRESPOND TO BMPs THAT NEED TO BE PLACED PRIOR TO ANY LAND DISTURBANCE ACTIVITIES (PHASE 1) AND CONSTRUCTION IN AN AREA HAS BEEN COMPLETED BUT BEFORE FINAL STABILIZATION IS COMPLETE (PHASE 2). (PHASE 3) CORRESPONDS TO FINAL STABILIZATION ACTIVITIES.
12. DANDY CURB, DANDY BAG, DANDY RECycler BAG OR DANDY CURB SACK OR APPROVED EQUAL ARE RECOMMENDED FOR PROTECTION OF THE INLETS AND CURBS ALONG FEDERAL BOULEVARD.
13. IF GROUNDWATER IS ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL STOP CONSTRUCTION AND OBTAIN A DEWATERING PERMIT FROM THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT PRIOR TO RESUMING CONSTRUCTION ACTIVITIES.

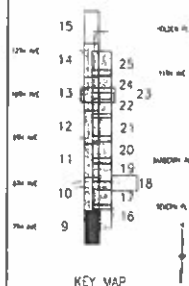
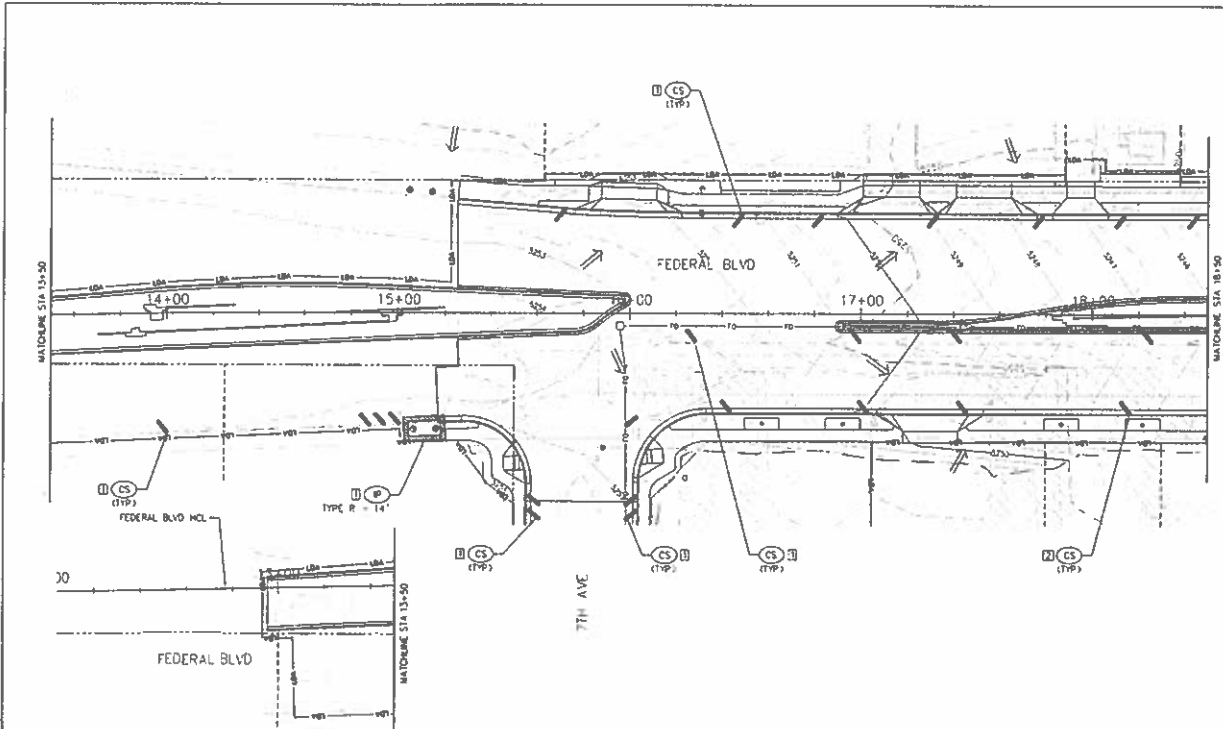


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Date	Comments	In: LAK										





**NOTES**

- PLEASE SEE EROSION CONTROL GENERAL NOTES FOR DETAILS ON PHASING AND TIMING OF BOTH INSTALLATION AND REMOVALS FOR ALL SHIPS SHOWN ON THESE PLANS.
- CS PLACEMENT IN LANES OF TRAFFIC MUST BE IN ACCORDANCE WITH APPROVED TRAFFIC CONTROL PLAN TYPICAL OF ANY LOCATION WHERE CS ARE IN TRAFFIC LANES.



LEGEND	
CD CHECK DAM	ECB EROSION CONTROL BLANKET (SOIL RETENTION BLANKET)
CS CURB SOCK (AGGREGATE BAG)	IP INLET PROTECTION
CW CONCRETE WASHOUT	OP OUTLET PROTECTION
CF CONSTRUCTION FENCE	RD ROCK CHECK DAM
CM CONSTRUCTION MARKER	RS ROCK SOCK (AGGREGATE BAG)
SCL SEDIMENT CONTROL LOG	ST SEDIMENT TRAP
SM SEEDING AND MULCHING	SSA STABILIZED STAGING AREA
SR SURFACE ROUGHENING	TP TREE PROTECTION
TSP TEMPORARY STOCKPILE	VTC VEHICLE TRACKING CONTROL
SF SALT FENCE	SFR REINFORCED SALT FENCE
LDA LIMITS OF DISTURBANCE	WA WETLAND AREA
FA FLOW ARROW	P PHASE

Last Modification Date: \_\_\_\_\_  
 Drawing File Name: 1102108-01-SWMP-Plan01  
 Horizontal Scale: 1"=40'      Vert. Scale: As Noted

Sheet Revisions	
Date	Comments

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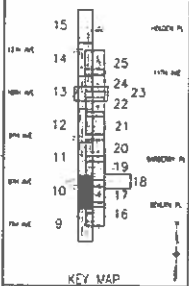
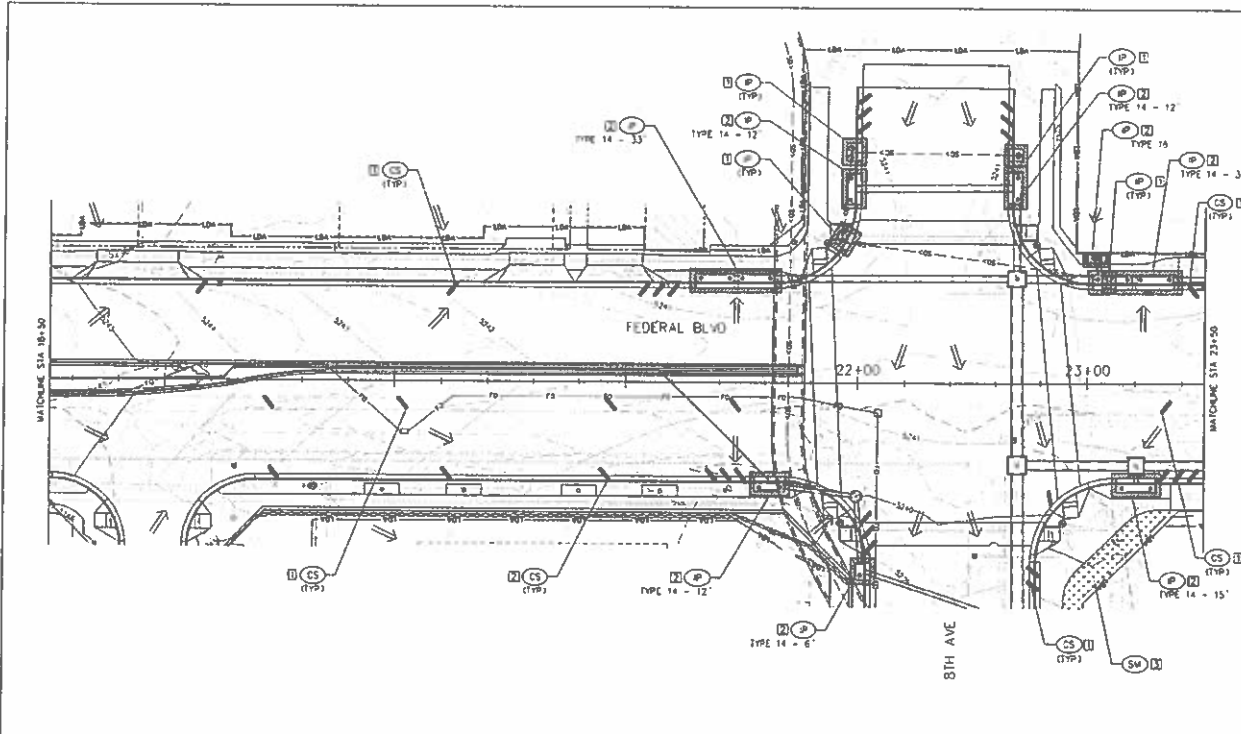
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 Region 1

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FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE  
 STORMWATER MANAGEMENT  
 PLAN - 13+50 TO 18+50  
 Designer: JAC Structure  
 Detailer: LNK Numbers  
 Sheet Subset: SWMP Subset Sheets: 10 of 30

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 Sheet Number: 460

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**NOTES**

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- CS PLACEMENT IN LANES OF TRAFFIC MUST BE IN ACCORDANCE WITH APPROVED TRAFFIC CONTROL PLAN, TYPICAL OF ANY LOCATION WHERE CS ARE IN TRAFFIC LANES

1/9/2018

LEGEND	
CD	CHECK DAM
CS	CURB SOCK (AGGREGATE BAG)
CW	CONCRETE WASHOUT
CF	CONSTRUCTION FENCE
CM	CONSTRUCTION MARKER
ECB	EROSION CONTROL BLANKET / ISOA, RETENTION BLANKET
AP	INLET PROTECTION
OP	OUTLET PROTECTION
RCD	ROCK CHECK DAM
RS	ROCK SOCK (AGGREGATE BAG)
SCL	SEDIMENT CONTROL LOG
ST	SEDIMENT TRAP
SM	SEEDING AND MULCHING
SSA	STABILIZED STAGING AREA
SR	SURFACE ROUNDING
TP	TREE PROTECTION
TSP	TEMPORARY STOCKPILE
VIC	VEHICLE TRACKING CONTROL
SF	SILT FENCE
SFR	REINFORCED SILT FENCE
LDA	LIMITS OF DISTURBANCE
Wetland	WETLAND AREA
Flow arrow	FLOW APPROX
Phase	PHASE

Last Modified On: 1/9/2018  
 Drawing File Name: 1402128-01-SMIP Plan.dwg  
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Sheet Revisions		
Date	Comments	By

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Colorado Department of Transportation  
 1115 North Speer Blvd  
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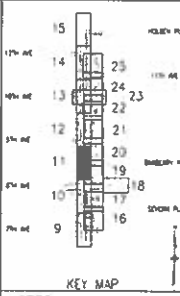
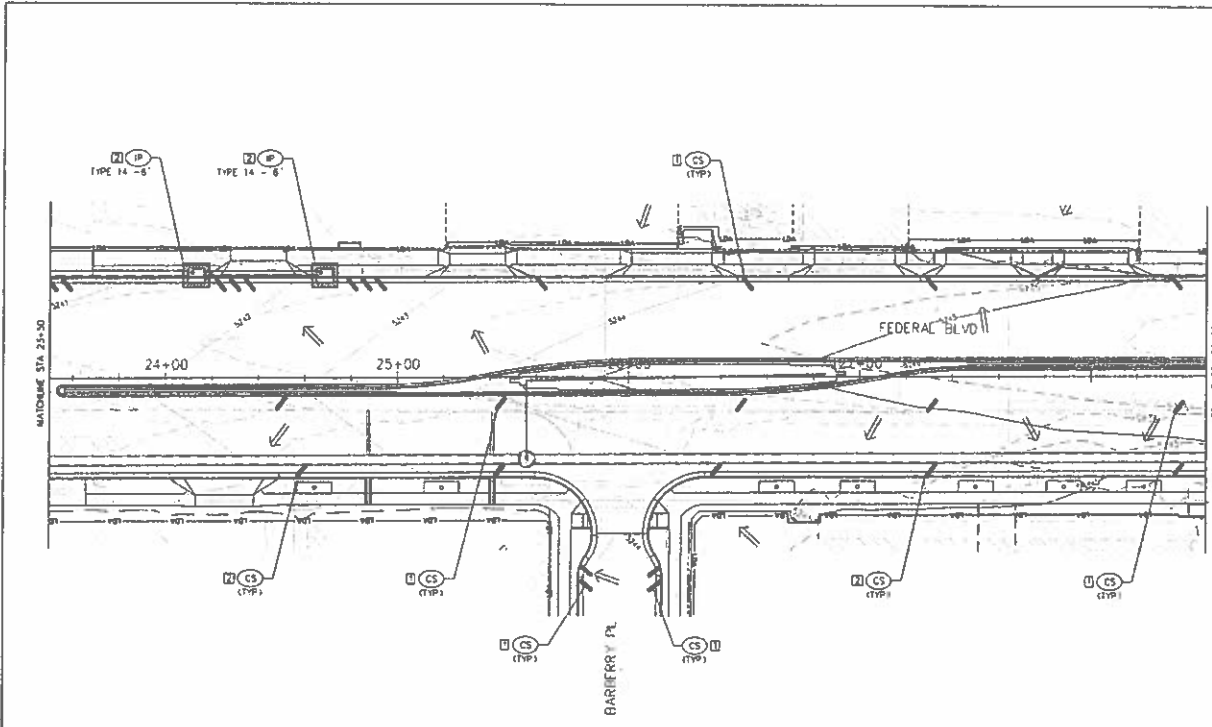
**FEDERAL BLVD RECON. - 5TH AVE TO HOWARD PLACE**  
**STORMWATER MANAGEMENT**  
**PLAN - 18+50 TO 23+50**

Designer: JAC Structure  
 Checker: LUN NUMBERS  
 Sheet Subst: SMIP Subst Sheets 11 of 30

**Project No./Code**  
 NHPP 2873-172  
 SA 19957  
 2011-PROJMS18-0000384  
 Sheet Number 481

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TSOUVARAS, CHRISTOPHER J. HOLDERSHIP  
 CONSULTING ENGINEER



**NOTES**

- PLEASE SEE EROSION CONTROL GENERAL NOTES FOR DETAILS ON PHASING AND TIMING OF BOTH INSTALLATION AND REMOVALS FOR ALL SIPS SHOWN ON THESE PLANS.
- CS PLACEMENT IN LANES OF TRAFFIC MUST BE IN ACCORDANCE WITH APPROVED TRAFFIC CONTROL PLAN TYPICAL OF ANY LOCATION WHERE CS ARE IN TRAFFIC LANES.

1/6/2018

**LEGEND**

	CD CHECK DAM		ECB EROSION CONTROL BLANKET (SOIL RETENTION BLANKET)		SCL SEDIMENT CONTROL LOG		TP TREE PROTECTION		LOA LIMITS OF DISTURBANCE
	CS ROCK SOCK (AGGREGATE BED)		IP INLET PROTECTION		ST SEDIMENT TRAP		TSP TEMPORARY STOCKPILE		WLA WETLAND AREA
	CF CONCRETE WASHOUT		OP OUTLET PROTECTION		SM SEEDING AND MULCHING		YTC VEHICLE TRACKING CONTROL		FA FLOW ARROW
	CF CONSTRUCTION FENCE		RD ROCK CHECK DAM		SSA STABILIZED STAGING AREA		SF SITE FENCE		PH PHASE
	CM CONSTRUCTION MARKER		RS ROCK SOCK (AGGREGATE BED)		SP SURFACE POLISHING		SFB REINFORCED BIT FENCE		

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 Drawing File Name: 1142118-01-SMP Plans.rvt  
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**Sheet Revisions**

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 Department of Public Works  
 Engineering Division  
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 Denver, CO 80202

Colorado Department of Transportation  
 Region 1  
 1000 North 20th Street  
 Denver, CO 80202

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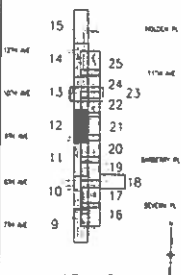
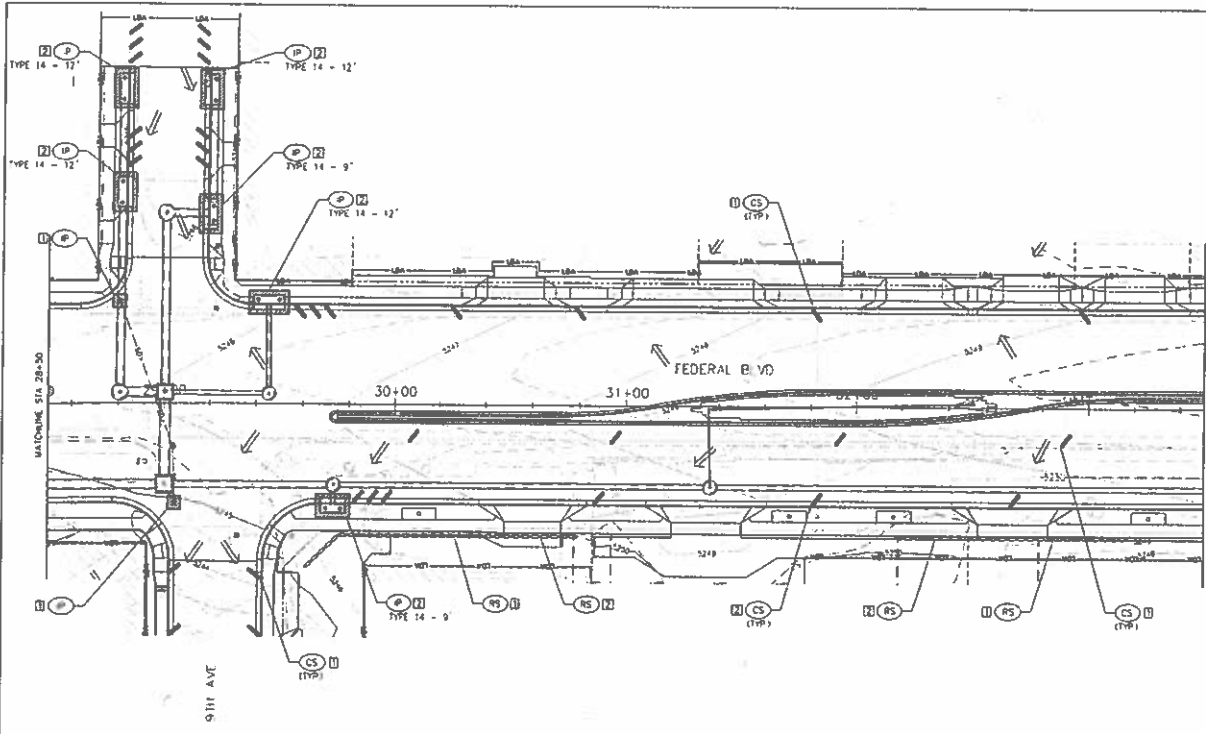
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FEDERAL BLVD RECON. - 5TH AVE. TO HOWARD PLACE  
 STORMWATER MANAGEMENT  
 PLAN - 23+50 TO 26+50

Designer: JMC Structure  
 Checker: LAM Number  
 Sheet Subject: SMP Subject Sheets: 12 of 30

Project No./Code  
 NP-PP 2873-112  
 SA 19957  
 2011-PROJUMSTR-0000354  
 Sheet Number 462

Sheet Number: 462 of 462



**NOTES**

- PLEASE SEE EROSION CONTROL GENERAL NOTES FOR DETAILS ON PHASING AND TIMING OF BOTH INSTALLATION AND REMOVALS FOR ALL BIDS SHOWN ON THESE PLANS.
- CS PLACEMENT IN LINES OF TRAFFIC MUST BE IN ACCORDANCE WITH APPROVED TRAFFIC CONTROL PLAN. TYPICAL OF ANY LOCATION WHERE CS ARE IN TRAFFIC LANES.

Professional Engineer Seal: **COLORED LICENSED ENGINEER**, **51273**, **PAUL J. HEDGECOCK**, **REGISTERED PROFESSIONAL ENGINEER**.

Scale: 1" = 20'

**Pinyon**

TSIDENARAS CONSULTING ENGINEERS

**LEGEND**

CHECK DAM	EROSION CONTROL BLANKET	SEDIMENT CONTROL LOG	TREE PROTECTION	LIMITS OF DISTURBANCE
CURB SOCK (AGGREGATE BAG)	EROSION RETENTION BLANKETS	SEDIMENT TRAP	TEMPORARY STOCKPILE	WETLAND AREA
CONCRETE WASHOUT	PILET PROTECTION	SEEDING AND MULCHING	VEHICLE TRACKING CONTROL	FLOW ARROW
CONSTRUCTION FENCE	OUTLET PROTECTION	STABILIZED STAGING AREA	SALT FENCE	PHASE
CONSTRUCTION MARKER	ROCK CHECK DAM	SURFACE ROUGHENING	REINFORCED SALT FENCE	
	ROCK SOCK (AGGREGATE BAG)			

Last Modification Date: nil.  
 Drawing File Number: 140118-01-SMMP Phasing  
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 Vertical Scale: As Noted

**Sheet Revisions**

Date	Comments	Init

City and County of Denver  
 Department of Public Works  
 Engineering Division  
 301 E. Colfax, Dept 806  
 Denver, CO 80202

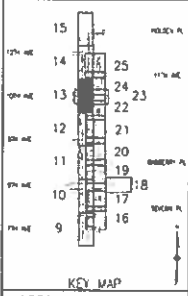
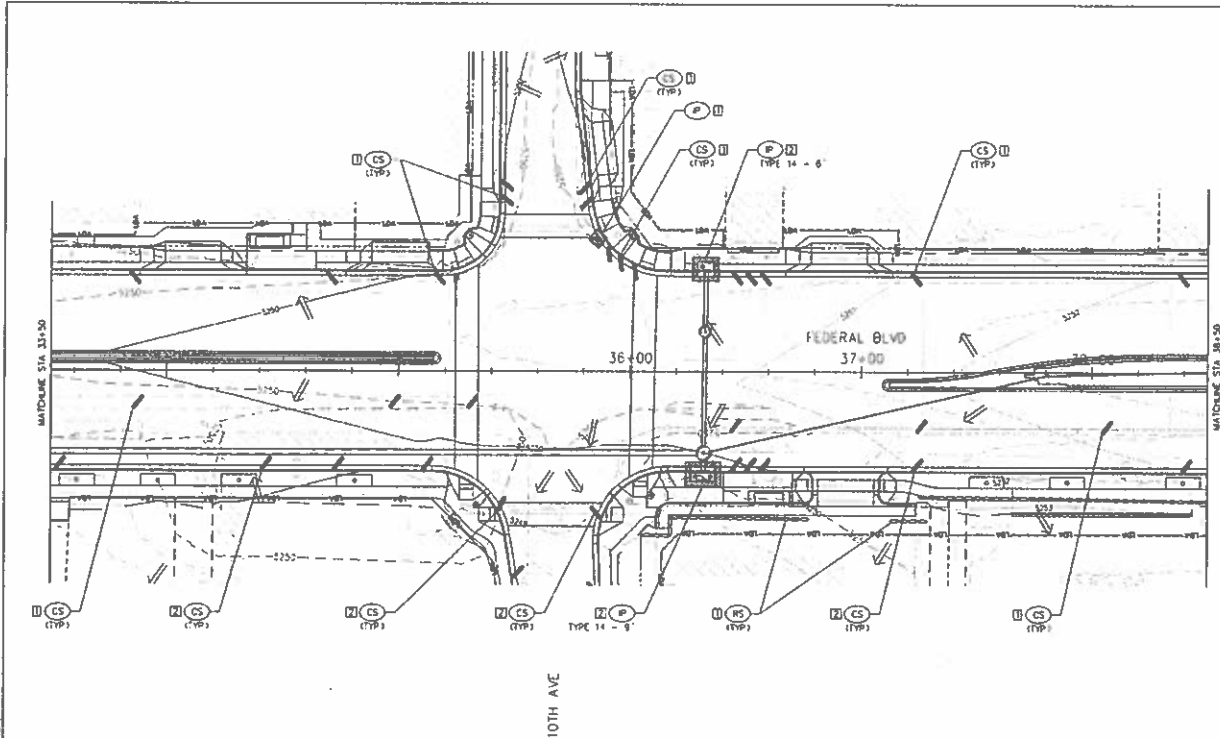
Colorado Department of Transportation  
 1555 Sherman Street, Room 301  
 Denver, CO 80202

As Constructed  
 No Revisions:  
 Revised:  
 Void:

FEDERAL BLVD RECON - 5TH AVE TO HOWARD PLACE  
 STORMWATER MANAGEMENT  
 PLAN - 28+50 TO 33+50

Designer: JWC Structure  
 Detable: LAN Numbers  
 Sheet Subst: SMMP Subst Sheets 13 of 30

Project No./Code  
 NMPD 2873-172  
 SA 19997  
 2011-PRDAMSTR-0000354  
 Sheet Number 463



**NOTES**

- PLEASE SEE EROSION CONTROL GENERAL NOTES FOR DETAILS ON PHASING AND TIMING OF BOTH INSTALLATION AND REMOVALS FOR ALL BAPS SHOWN ON THESE PLANS.
- CS PLACEMENT IN LANES OF TRAFFIC MUST BE IN ACCORDANCE WITH APPROVED TRAFFIC CONTROL PLAN. TYPICAL OF ANY LOCATION WHERE CS ARE IN TRAFFIC LANES.



**Pinyon**  
ENGINEERING  
TSIQUIVARAS HOLDENNESS

LEGEND			
	CHECK DAM		EROSION CONTROL BLANKET (SOIL RETENTION BLANKET)
	CURB SOCK (AGGREGATE BAG)		INLET PROTECTION
	CONCRETE WASHOUT		OUTLET PROTECTION
	CONSTRUCTION FENCE		ROCK CHECK DAM
	CONSTRUCTION MARKER		ROCK SOCK (AGGREGATE BAG)
	SEDIMENT CONTROL LOG		SEDIMENT TRAP
	SEEDING AND MULCHING		STABILIZED STAGING AREA
	SURFACE ROUGHENING		TREE PROTECTION
	TEMPORARY STOCKPILE		VEHICLE TRACKING CONTROL
	SILT FENCE		REINFORCED SILT FENCE
	LIMITS OF DISTURBANCE		WETLAND AREA
	FLOW ARROW		PHASE

Last Modification Date: \_\_\_\_\_  
 Drawing File Name: 1102188-03-SWP-Plan18  
 Horizontal Scale: 1/40 Vert. Scale: As Noted

Sheet Revisions		
Date	Comments	By

City and County of Denver  
 Department of Public Works  
 Engineering Division  
 301 N. California Street  
 Denver, CO 80202

Colorado Department of Transportation  
 Project 1  
 Page 1

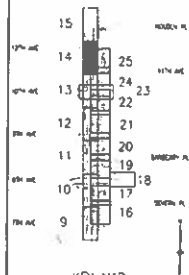
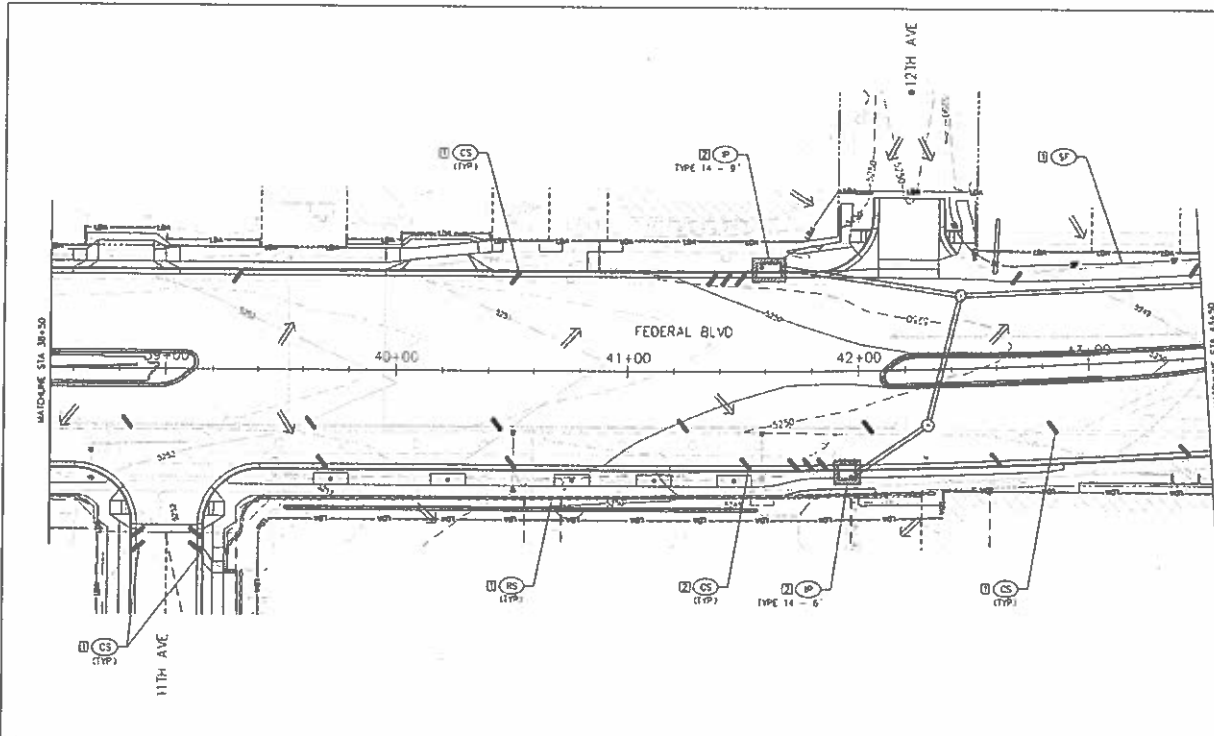
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FEDERAL BLVD RECON - 5TH AVE. TO HOWARD PLACE  
 STORMWATER MANAGEMENT  
 PLAN - 33+50 TO 39+50

Design: AK Structure  
 Detail: LAM Numbers  
 Sheet Title: SWMP Submittal Sheets 14 of 30

Project No./Code  
 NHPP 2873-172  
 SA 19957  
 2011 - PROJ/MSR-0000384  
 Sheet Number 464

AD SURMITTAI - JANUARY 7, 2018



**NOTES**

- PLEASE SEE EROSION CONTROL GENERAL NOTES FOR DETAILS ON PHASING AND TIMING OF BOTH INSTALLATION AND REMOVALS FOR ALL BMPs SHOWN ON THESE PLANS
- CS PLACEMENT IN LANES OF TRAFFIC MUST BE IN ACCORDANCE WITH APPROVED TRAFFIC CONTROL PLAN TYPICAL OF ANY LOCATION WHERE CS ARE IN TRAFFIC LANES

PROFESSIONAL ENGINEER  
 STATE OF COLORADO  
 LICENSE NO. 51273  
 J. S. [Signature]

SCALE: 1" = 20'

LEGEND	
CHECK DAM	EROSION CONTROL BLANKET (SOIL RETENTION BLANKET)
CURB SOCK (AGGREGATE BAG)	INLET PROTECTION
CONCRETE WASHOUT	OUTLET PROTECTION
CONSTRUCTION FENCE	ROCK CHECK DAM
CONSTRUCTION MARKER	ROCK SOCK (AGGREGATE BAG)
SEDIMENT CONTROL LOG	SEDIMENT TRAP
SEEDING AND MULCHING	STABILIZED STAGING AREA
SURFACE ROUGHENING	TREE PROTECTION
TEMPORARY STOCKPILE	VEHICLE TRACKING CONTROL
SILT FENCE	REINFORCED S&T FENCE
LIMITS OF DISTURBANCE	WETLAND AREA
FLOW ARROW	PHASE

Last Modification Date: \_\_\_\_\_  
 Drawing File Name: 1102188-03-SMWP-Phase  
 Horizontal Scale: 1" = 40'  
 Vert. Scale: As Noted

Sheet Revisions	
Date:	Comments:



Colorado Department of Transportation  
 4305  
 1000  
 1000

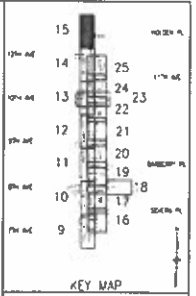
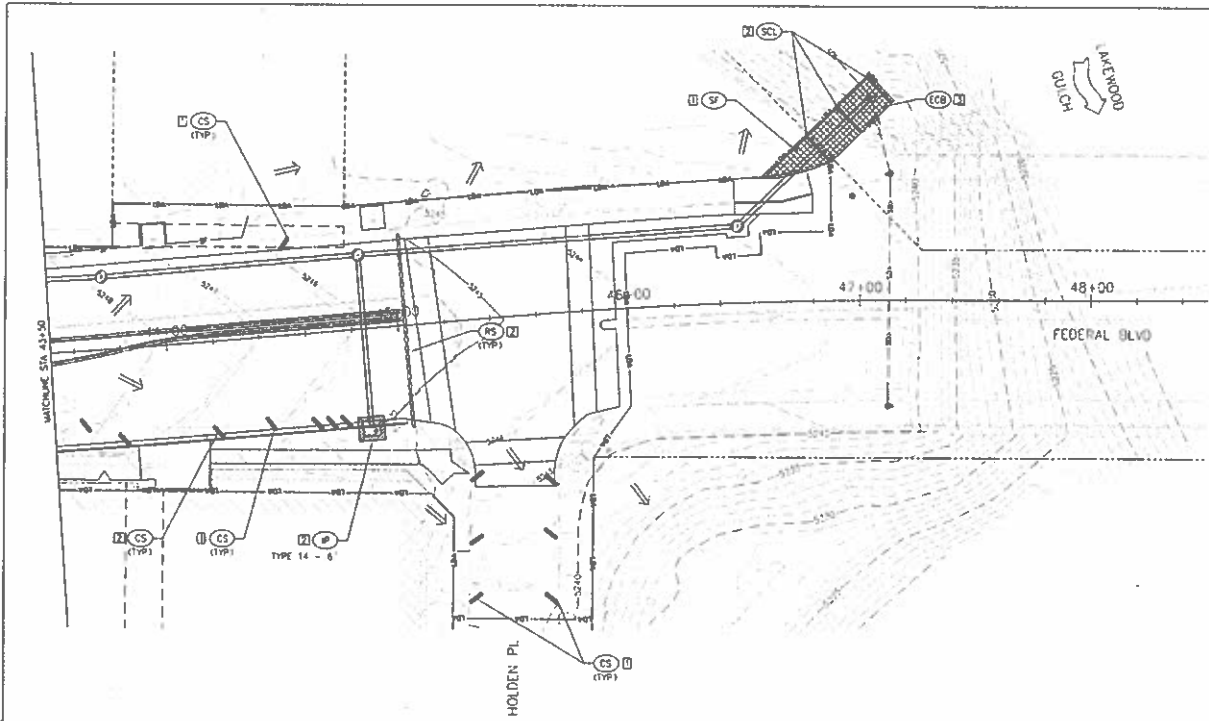
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FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE  
 STORMWATER MANAGEMENT  
 PLAN - 38+50 TO 43+50

Designer: JAC  
 Detailer: LAN  
 Sheet Subset: SMWP Susist Sheets 15 of 30

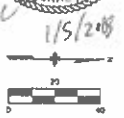
Project No./Code  
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 SA 19857  
 2011-PROJMS1R-0000384  
 Sheet Number 465

AN SUBMITTAL - JANUARY 7 2018



**NOTES**

- PLEASE SEE EROSION CONTROL GENERAL NOTES FOR DETAILS ON PHASING AND TIMING OF BOTH INSTALLATION AND REMOVALS FOR ALL BMPs SHOWN ON THESE PLANS.
- CS PLACEMENT IN LANES OF TRAFFIC MUST BE IN ACCORDANCE WITH APPROVED TRAFFIC CONTROL PLAN TYPICAL OF ANY LOCATION WHERE CS ARE IN TRAFFIC LANES



LEGEND	
CD CHECK DAM	EROSION CONTROL BLANKET (SOIL RETENTION BLANKET)
CS CURB SOCK (AGGREGATE BAG)	INLET PROTECTION
CW CONCRETE WASHOUT	OUTLET PROTECTION
CF CONSTRUCTION FENCE	ROCK CHECK DAM
CM CONSTRUCTION MARKER	ROCK SOCK (AGGREGATE BAG)
SCL SEDIMENT CONTROL LOG	SEDIMENT TRAP
SM SEEDING AND MULCHING	STABILIZED STAGING AREA
SR SURFACE ROUGHENING	TREE PROTECTION
TSP TEMPORARY STOCKPILE	VEHICLE TRACKING CONTROL
SF SILT FENCE	REINFORCED SILT FENCE
LDA LIMITS OF DISTURBANCE	WETLAND AREA
FLOW ARROW	PHASE

Last Modification Date: \_\_\_\_\_  
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Date	Comments

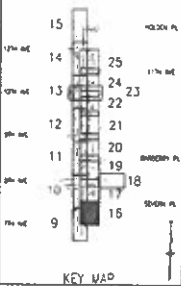
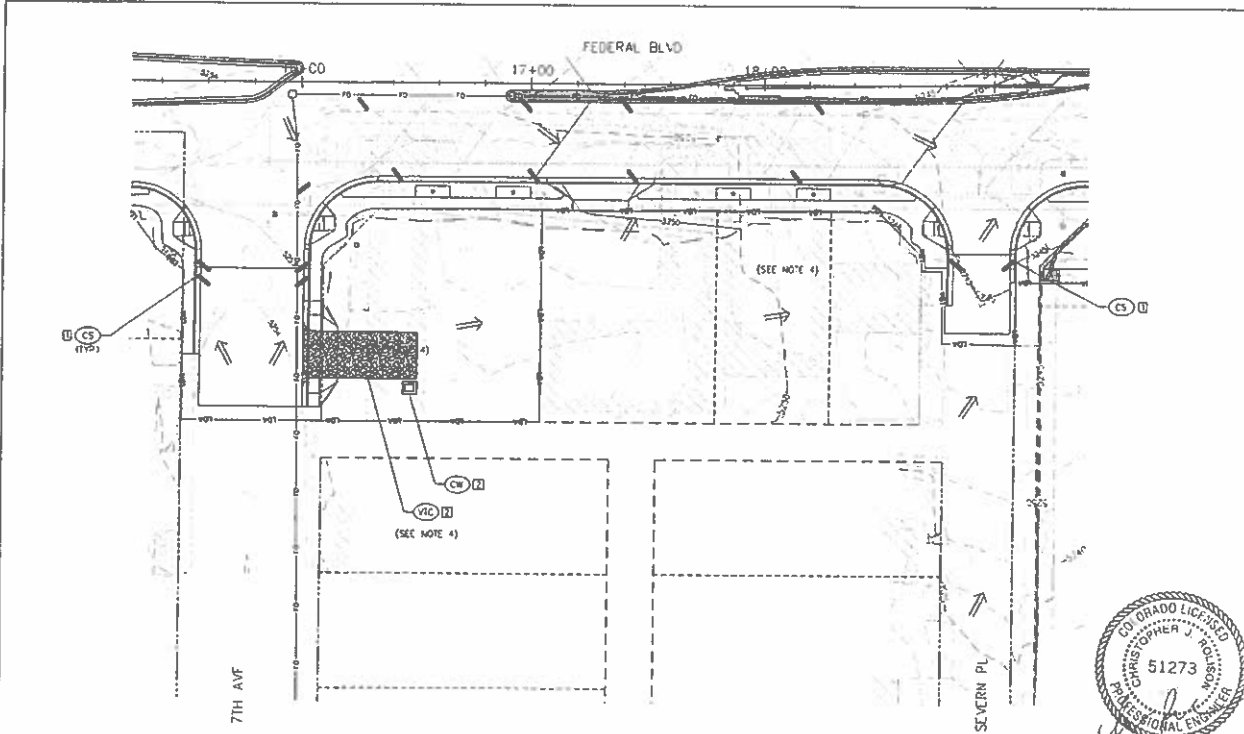
City and County of Denver  
 Department of Public Works  
 Engineering Division  
 301 B Colfax, Dept 505  
 Denver, CO 80202

As Constructed  
 No Revisions  
 Revised: \_\_\_\_\_  
 Vaid: \_\_\_\_\_

FEDERAL BLVD. RECCO - 5TH AVE. TO HOWARD PLACE  
 STORMWATER MANAGEMENT  
 PLAN - 43+50 TO 48+50  
 Designer: JMC Structure  
 Checker: LAM Numbers  
 Sheet Subst: SMP Subst Sheets: 18 of 30

Project No./Code  
 INDP 2873-172  
 SA 19957  
 2011-PROJ/INSTR-0000364  
 Sheet Number 466

AD. SHIRMITTA - JANUARY 2, 2018



**NOTES**

- PLEASE SEE EROSION CONTROL GENERAL NOTES FOR DETAILS ON PHASING AND TRIMS OF BOTH INSTALLATION AND REMOVALS FOR ALL BMS SHOWN ON THESE PLANS
- CS PLACEMENT IN LANES OF TRAFFIC MUST BE IN ACCORDANCE WITH APPROVED TRAFFIC CONTROL PLAN TYPICAL OF ANY LOCATION WHERE CS ARE IN TRAFFIC LANES
- SSA MAY BE LOCATED ON ASPHALT OR BARE GROUND, DEPENDANT ON THE REMOVAL OF ASPHALT AFTER DEMOLITION. PERIMETER CONTROL IS REQUIRED AROUND SSA IN THE FORM OF ROCK SOCKS IF LOCATED ON ASPHALT, AND SEDIMENT CONTROL LOGS, SILT FENCE, OR EARTHEN BERRIS IF LOCATED ON BARE GROUND. IN ADDITION, CONSTRUCTION FENCE MAY NEED TO BE ADDED IF CONSTRUCTION TRAFFIC IS BYPASSING THE VTC
- BUILDING DEMOLITION WORK AND RESTORATION WILL BE PERFORMED BY OTHERS AND COVERED UNDER SEPARATE STORMWATER MANAGEMENT PLANS

1/5/18  
 1757 LPI'S  
 PINYON  
 TSHUVARAS HOLDINGS

CHECK DAM	CURB SOCK (AGGREGATE BAG)	CONCRETE WASHOUT	CONSTRUCTION FENCE	CONSTRUCTION MARKER	EROSION CONTROL BLANKET (SOIL RETENTION BLANKET)	INLET PROTECTION	OUTLET PROTECTION	ROCK CHECK DAM	ROCK SOCK (AGGREGATE BAG)	SEDIMENT CONTROL LOG	SEDIMENT TRAP	SEEDING AND MULCHING	STABILIZED STAGING AREA	SURFACE ROUGHENING	TREE PROTECTION	TEMPORARY STOCKPILE	VEHICLE TRACKING CONTROL	SILT FENCE	REINFORCED SILT FENCE	LIMITS OF DISTURBANCE	WETLAND AREA	FLOW ARROW	PHASE
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 Vert. Scale: As Noted

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Date	Comments



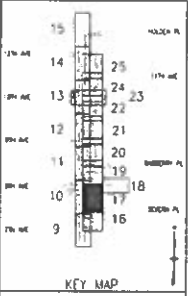
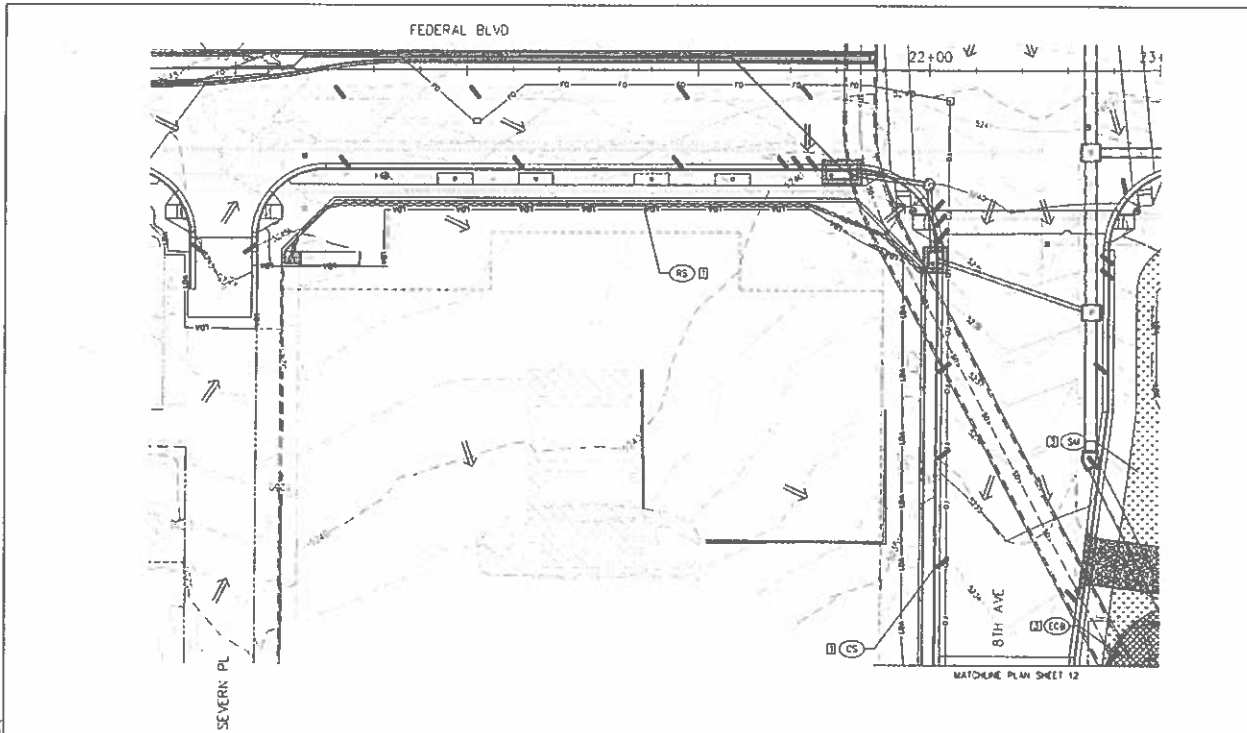
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 No Revisions  
 Revised:  
 Held:

FEDERAL BLVD RECON - 5TH AVE. TO HOWARD PLACE  
 STORMWATER MANAGEMENT  
 PLAN - 7TH AVE TO SEVERN PL

Designer: JMC Structures  
 Detailer: LAN Numbers  
 Sheet Subset: SWMP Subset Sheets 17 of 33

Project No./Code  
 NHPD 2873-172  
 SA 19957  
 2011-PROJMS1R-0000364  
 Sheet Number 467





**NOTES**

1. PLEASE SEE EROSION CONTROL GENERAL NOTES FOR DETAILS ON PHASING AND TIMING OF BOTH INSTALLATION AND REMOVALS FOR ALL BUIPS SHOWN ON THESE PLANS.

2. CS PLACEMENT IN LANES OF TRAFFIC MUST BE IN ACCORDANCE WITH APPROVED TRAFFIC CONTROL PLAN. TYPICAL OF ANY LOCATION WHERE CS ARE IN TRAFFIC LANES.

PROFESSIONAL SEAL

COLORADO LICENSED PROFESSIONAL ENGINEER

CHRISTOPHER J. HOLDNESS

51273

1/5/2018

20' SCALE

LEGEND	
CHECK DAM	EROSION CONTROL BLANKET (SOIL RETENTION BLANKET)
CURB SOCK (AGGREGATE BAG)	FLEET PROTECTION
CONCRETE WASH-OUT	OUTLET PROTECTION
CONSTRUCTION FENCE	ROCK CHECK DAM
CONSTRUCTION MARKER	ROCK SOCK (AGGREGATE BAG)
SEDIMENT CONTROL LOG	SEDIMENT TRAP
SEEDING AND MULCHING	STABILIZED STAGING AREA
SURFACE ROUGHENING	TREE PROTECTION
TEMPORARY STOCKPILE	VEHICLE TRACKING CONTROL
SALT FENCE	REINFORCED SALT FENCE
LIMITS OF DISTURBANCE	WETLAND AREA
FLOW ARROW	PHASE

Last Modification Date: INL  
 Drawing File Name: 110218-01-CMP-Plan04  
 Horizontal Scale: 1/40  
 Vert. Scale: As Noted

Sheet Revisions		
Date	Comments	By

City and County of Denver

Department of Public Works

Engineering Division

35 W. Colfax, Suite 505

Denver, CO 80202

Colorado Department of Transportation

Division 1

As Constructed

No Revisions

Revised: \_\_\_\_\_

Void: \_\_\_\_\_

FEDERAL BLVD RECON. - 5TH AVE TO HOWARD PLACE

SIGMAWATER MANAGEMENT

PLAN - SEVERN PL TO 8TH AVE AREA

Designer: JMC Structure Numbers

Checker: LHM

Sheet Sub#: 51273 Subent Sheets 18 of 30

Project No./Code

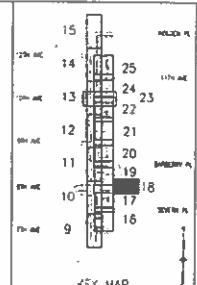
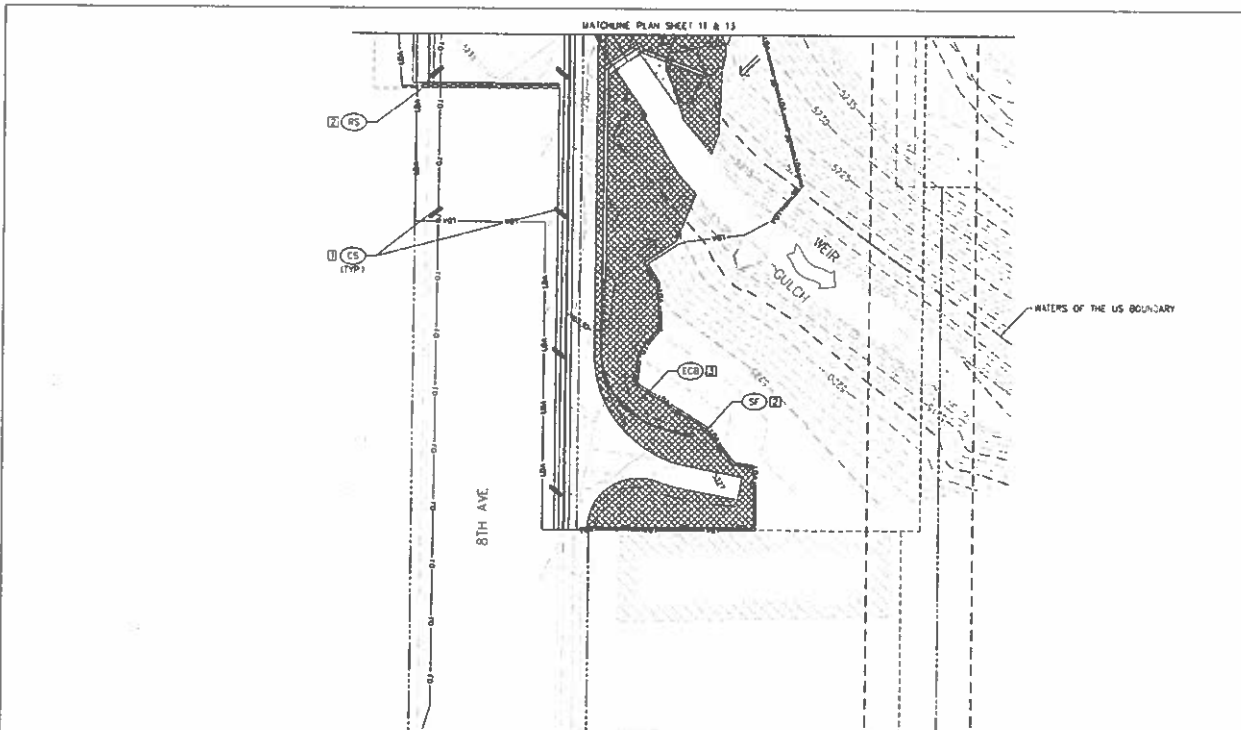
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SA 19957

2011-PROJNSTR-0000154

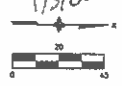
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AD SUBMITTAL - JANUARY 2, 2018



**NOTES**

- PLEASE SEE EROSION CONTROL GENERAL NOTES FOR DETAILS ON PHASING AND TIMING OF BOTH INSTALLATION AND REMOVALS FOR ALL BMPs SHOWN ON THESE PLANS
- CS PLACEMENT IN LANES OF TRAFFIC MUST BE IN ACCORDANCE WITH APPROVED TRAFFIC CONTROL PLAN. TYPICAL OF ANY LOCATION WHERE CS ARE IN TRAFFIC LANES



LEGEND	
	CHECK DAM
	CURB SOCK (AGGREGATE BAG)
	CONCRETE WASHOUT
	CONSTRUCTION FENCE
	CONSTRUCTION MARKER
	EROSION CONTROL BLANKET (SOIL RETENTION BLANKET)
	INLET PROTECTION
	OUTLET PROTECTION
	ROCK CHECK DAM
	ROCK SOCK (AGGREGATE BAG)
	SEDIMENT CONTROL LOG
	SEDIMENT TRAP
	SEEDING AND MULCHING
	STABILIZED STAGING AREA
	SURFACE ROUGHENING
	TREE PROTECTION
	TEMPORARY STOCKPILE
	VEHICLE TRACKING CONTROL
	5' FENCE
	REINFORCED SALT FENCE
	LIMITS OF DISTURBANCE
	FLOW ARROW
	PHASE

Last Modification Date: \_\_\_\_\_  
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Sheet Revisions		
Date	Comments	By

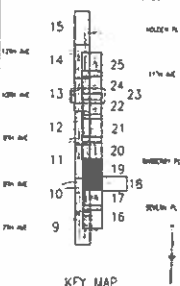
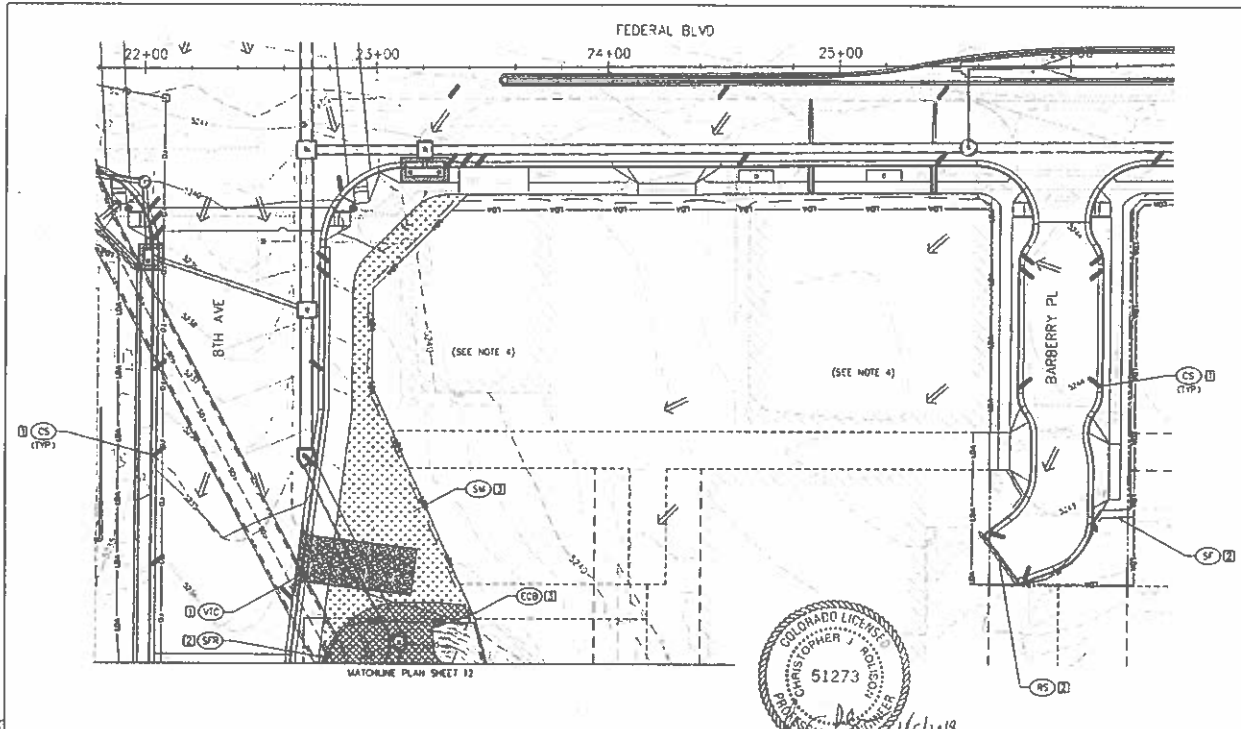


As Constructed	
No Revisions	
Revised	
Void	

FEDERAL BLVD. RECON. - 5TH AVE TO HOWARD PLACE  
 STORMWATER MANAGEMENT  
 PLAN - 10TH AVE EAST

Project No./Code
WMP 2833-172 SA 19957
2011-FRQUSTR-0000164
Sheet Number 469

AD SUBMITTAL - JANUARY 2, 2018



- NOTES**
- PLEASE SEE EROSION CONTROL GENERAL NOTES FOR DETAILS ON PHASING AND TIMING OF BOTH INSTALLATION AND REMOVALS FOR ALL SHIPS SHOWN ON THESE PLANS.
  - CS PLACEMENT IN LANES OF TRAFFIC MUST BE IN ACCORDANCE WITH APPROVED TRAFFIC CONTROL PLAN TYPICAL OF ANY LOCATION WHERE CS ARE IN TRAFFIC LANES.
  - SSA MAY BE LOCATED ON ASPHALT OR BARE GROUND, DEPENDANT ON THE REMOVAL OF ASPHALT AFTER DEMOLITION. PERMETER CONTROL IS REQUIRED AROUND SSA IN THE FORM OF ROCK SOCKS IF LOCATED ON ASPHALT, AND SEDIMENT CONTROL LOGS, SALT FENCE, OR EARTHEN BERMS IF LOCATED ON BARE GROUND. IN ADDITION, CONSTRUCTION FENCE MAY NEED TO BE ADDED IF CONSTRUCTION TRAFFIC IS BYPASSING THE VTC.
  - BUILDING DEMOLITION WORK AND RESTORATION WILL BE PERFORMED BY OTHERS AND COVERED UNDER SEPARATE STORMWATER MANAGEMENT PLANS.



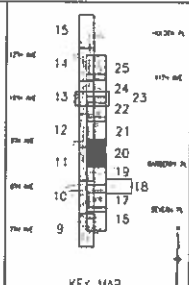
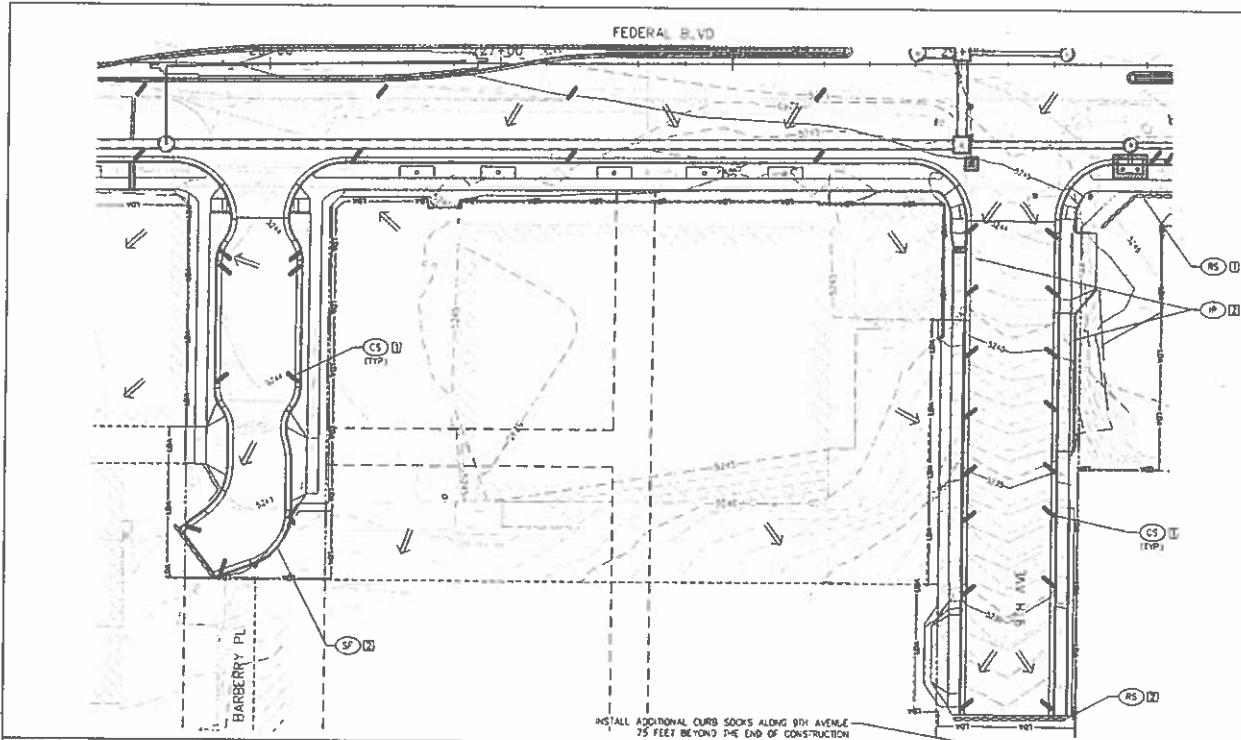
**LEGEND**

SD CHECK DAM	ECB EROSION CONTROL BLANKET (SOIL RETENTION BLANKET)	SCL SEDIMENT CONTROL LOG	TP TREE PROTECTION	LDA LIMITS OF DISTURBANCE
CS CURB SOCK (AGGREGATE BAG)	IP INLET PROTECTION	ST SEDIMENT TRAP	TSP TEMPORARY STOCKPILE	WETLAND AREA
CW CONCRETE WASHOUT	OP OUTLET PROTECTION	SM SEEDING AND MULCHING	VTC VEHICLE TRACKING CONTROL	FLOW ARROW
CF CONSTRUCTION FENCE	RD ROCK CHECK DAM	SSA STABILIZED STAGING AREA	SF SALT FENCE	PHASE
CM CONSTRUCTION MARKER	RS ROCK SOCK (AGGREGATE BAG)	SR SURFACE ROUGHENING	REINFORCED SALT FENCE	

**Pinyon**  
 TSOUKARAS ENGINEERS & ARCHITECTS  
 1000 W. 14th St., Suite 100  
 Broomfield, CO 80020  
 (303) 440-1111

<p>Last Modification Date: _____                  Drawing File Name: 132128-03-SWMP Pinyon                  Horizontal Scale: 1:40                  Vert. Scale: As Noted</p>	<p><b>Sheet Revisions</b></p> <table border="1"> <thead> <tr> <th>Date</th> <th>Comments</th> <th>By</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Date	Comments	By				<p>City and County of Denver                  Department of Public Works                  Engineering Division                  301 W. Colfax, Dept 106                  Denver, CO 80202</p>	<p>Colorado Department of Transportation                  Region 1                  1000 N. 1st Ave., Suite 200                  Denver, CO 80202                  Phone: 303.239.2000                  Fax: 303.239.2000</p>	<p>As Constructed                  No Revisions                  Revised: _____                  VQC: _____</p>	<p>FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE                  STORMWATER MANAGEMENT                  PLAN - 8TH AVE. TO BARBERRY PL.                  Designer: JAC Structure                  Checker: LHM Numbers                  Sheet Count: SWMP Sublet Sheet 20 of 30</p>	<p>Project No./Code                  NHPP 2873-172                  SA 19957                  2011 - PROMSTR-0000364                  Sheet Number 470</p>
Date	Comments	By										

Printed Date: 01/10/2018  
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**NOTES**

- PLEASE SEE EROSION CONTROL GENERAL NOTES FOR DETAILS ON PHASING AND TIMING OF BOTH INSTALLATION AND REMOVALS FOR ALL BUMPS SHOWN ON THESE PLANS.
- CS PLACEMENT IN LANES OF TRAFFIC MUST BE IN ACCORDANCE WITH APPROVED TRAFFIC CONTROL PLAN. TYPICAL OF ANY LOCATION WHERE CS ARE IN TRAFFIC LANES

1/15/2018

**LEGEND**

CD CHECK DAM	ECB EROSION CONTROL BLANKET	SCL SEDIMENT CONTROL LOG	TP TREE PROTECTION	LOM LIMITS OF DISTURBANCE
CS CURB SOCK (AGGREGATE BAG)	IR ISOLET RETENTION BLANKET	ST SEDIMENT TRAP	TSC TEMPORARY STOCKPILE	WETLAND AREA
CW CONCRETE WASH-OUT	IP INLET PROTECTION	SM SEEDING AND MULCHING	VTC VEHICLE TRACKING CONTROL	FLOW ARROW
CF CONSTRUCTION FENCE	OP OUTLET PROTECTION	SSA STABILIZED STAGS AREA	SF SALT FENCE	PHASE
CM CONSTRUCTION MARKER	RCD ROCK CHECK DAM	SRA SURFACE ROUGHENING	SFT REINFORCED SALT FENCE	

Last Modification Date: 3/14/18  
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 Vertical Scale: As Noted

**Sheet Revisions**

Date	Comments	By

City and County of Denver  
 Department of Public Works  
 Engineering Division  
 3301 W. Colfax, Dept 508  
 Denver, CO 80202

Colorado Department of Transportation  
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 1000  
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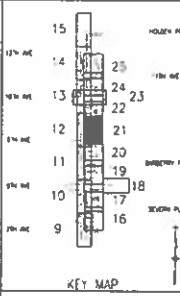
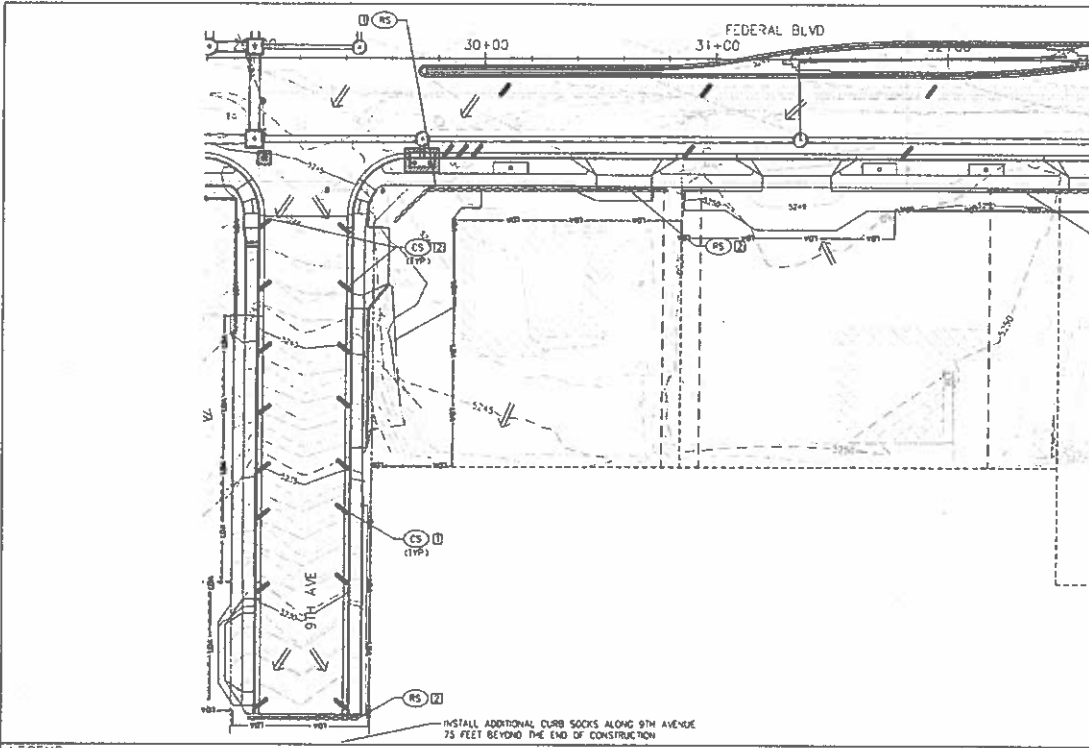
**As Constructed**

No. Revisions	
Revised	
Work	

FEDERAL BLVD RECON - 5TH AVE TO HOWARD PLACE  
 STORMWATER MANAGEMENT  
 PLAN - BARBERRY PL TO 9TH AVE  
 Designer: JMC Structure  
 Checker: LHM Numbers  
 Sheet Scale: Smp Subst Sheets: 21 of 30

**Project No./Code**  
 N-PP 2873-172  
 SA 19957  
 2011-PROJLSTR-0000354  
 Sheet Number 471

TSICUWRAS HOLDINGS



**NOTES**

- PLEASE SEE EROSION CONTROL GENERAL NOTES FOR DETAILS ON PHASING AND TIMING OF BOTH INSTALLATION AND REMOVALS FOR ALL BUPS SHOWN ON THESE PLANS
- CS PLACEMENT IN LANES OF TRAFFIC MUST BE IN ACCORDANCE WITH APPROVED TRAFFIC CONTROL PLAN TYPICAL OF ANY LOCATION WHERE CS ARE IN TRAFFIC LANES

Professional Engineer Seal: Colorado Licensed Professional Engineer, Christopher J. Moser, No. 51273, dated 1/5/2018.

Scale: 1" = 20'

LEGEND	
CD CHECK DAM	EROSION CONTROL BLANKET (SOIL RETENTION BLANKET)
CS CURB SOCK (AGGREGATE BAG)	INLET PROTECTION
CONCRETE BASH-OUT	OUTLET PROTECTION
CONSTRUCTION FENCE	ROCK CHECK DAM
CONSTRUCTION MARKER	ROCK SOCK (AGGREGATE BAG)
SEDIMENT CONTROL LOG	SEDIMENT TRAP
SEEDING AND MULCHING	STABILIZED STAGING AREA
SURFACE ROUGHENING	TREE PROTECTION
TEMPORARY STOCKPILE	VEHICLE TRACKING CONTROL
SILT FENCE	REINFORCED SILT FENCE
LIMITS OF DISTURBANCE	WETLAND AREA
FLOW ARROW	PHASE

Last Modification Date: 1/4/18  
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 Vert. Scale: As Noted

Sheet Revisions	
Date	Comments

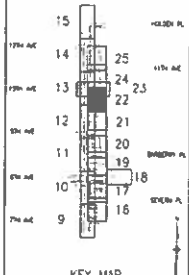
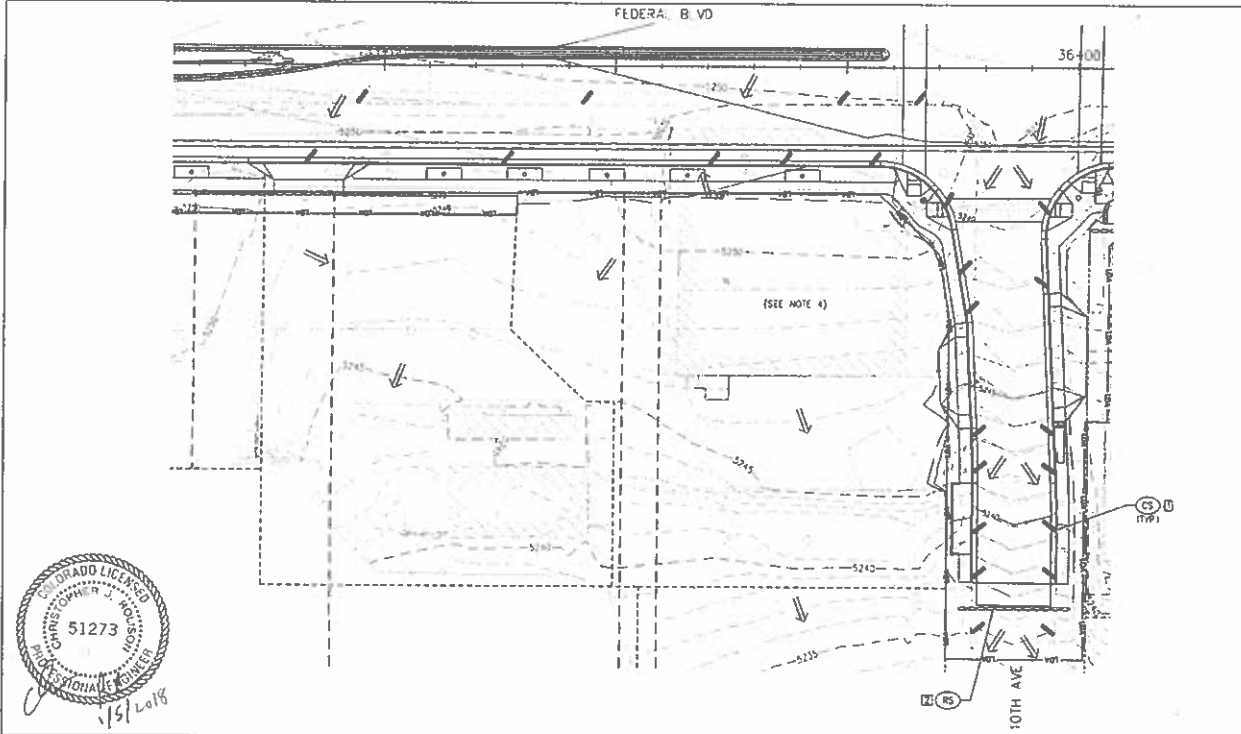
City and County of Denver  
 Department of Public Works  
 Engineering Division  
 261 W. Colfax, Dept 505  
 Denver, CO 80202

As Constructed	No Revisions

FEDERAL BLVD RECON - 5TH AVE. TO HOWARD PLACE  
 STORMWATER MANAGEMENT  
 PLAN - 9TH AVE TO MID-BLOCK

Project No./Code
NI-PP 2873-172 SA 19957
2011-PROJ/STR-0000354
Sheet Number 472

11/27/2014  
 11/27/2014  
 11/27/2014



- NOTES**
- PLEASE SEE EROSION CONTROL GENERAL NOTES FOR DETAILS ON PHASING AND TIMING OF BOTH INSTALLATION AND REMOVALS FOR ALL BUPS SHOWN ON THESE PLANS
  - CS PLACEMENT IN LANES OF TRAFFIC MUST BE IN ACCORDANCE WITH APPROVED TRAFFIC CONTROL PLAN, TYPICAL OF ANY LOCATION WHERE CS ARE IN TRAFFIC LANES
  - SSA MAY BE LOCATED ON ASPHALT OR BARE GROUND, DEPENDENT ON THE REMOVAL OF ASPHALT AFTER DEMOLITION PERMETER CONTROL IS REQUIRED AROUND SSA IN THE FORM OF ROCK SOCKS IF LOCATED ON ASPHALT AND SEDIMENT CONTROL LOGS, SILT FENCE, OR EARTHEN BERMS IF LOCATED ON BARE GROUND. IN ADDITIONAL CONSTRUCTION FENCE MAY NEED TO BE ADDED IF CONSTRUCTION TRAFFIC IS BYPASSING THE VTC
  - BUILDING DEMOLITION WORK AND RESTORATION WILL BE PERFORMED BY OTHERS AND COVERED UNDER SEPARATE STORMWATER MANAGEMENT PLANS



**LEGEND**

CHECK DAM	EROSION CONTROL BLANKET (SEE RETENTION BLANKETS)	SEDIMENT CONTROL LOG	TREE PROTECTION	LIMITS OF DISTURBANCE
CLMB SOCK (AGGREGATE BAG)	TREE PROTECTION	SEDIMENT TRAP	TEMPORARY STOCKPILE	WETLAND AREA
CONCRETE WASHOUT	OUTLET PROTECTION	SEEDING AND MULCHING	VEHICLE TRACKING CONTROL	FLOW ARROW
CONSTRUCTION FENCE	ROCK CHECK DAM	STABILIZED STAGING AREA	SILT FENCE	PHASE
CONSTRUCTION MARKER	ROCK SOCK (AGGREGATE BAG)	SURFACE ROUGHENING	REINFORCED SILT FENCE	



Last Modification Date: 1/5/2018  
 Drawing File Name: 1102108-01-SMIP-Plan.dwg  
 Horizontal Scale: 1:40  
 Vert. Scale: As Noted

Sheet Revisions		
Date	Comments	By

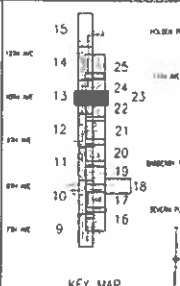
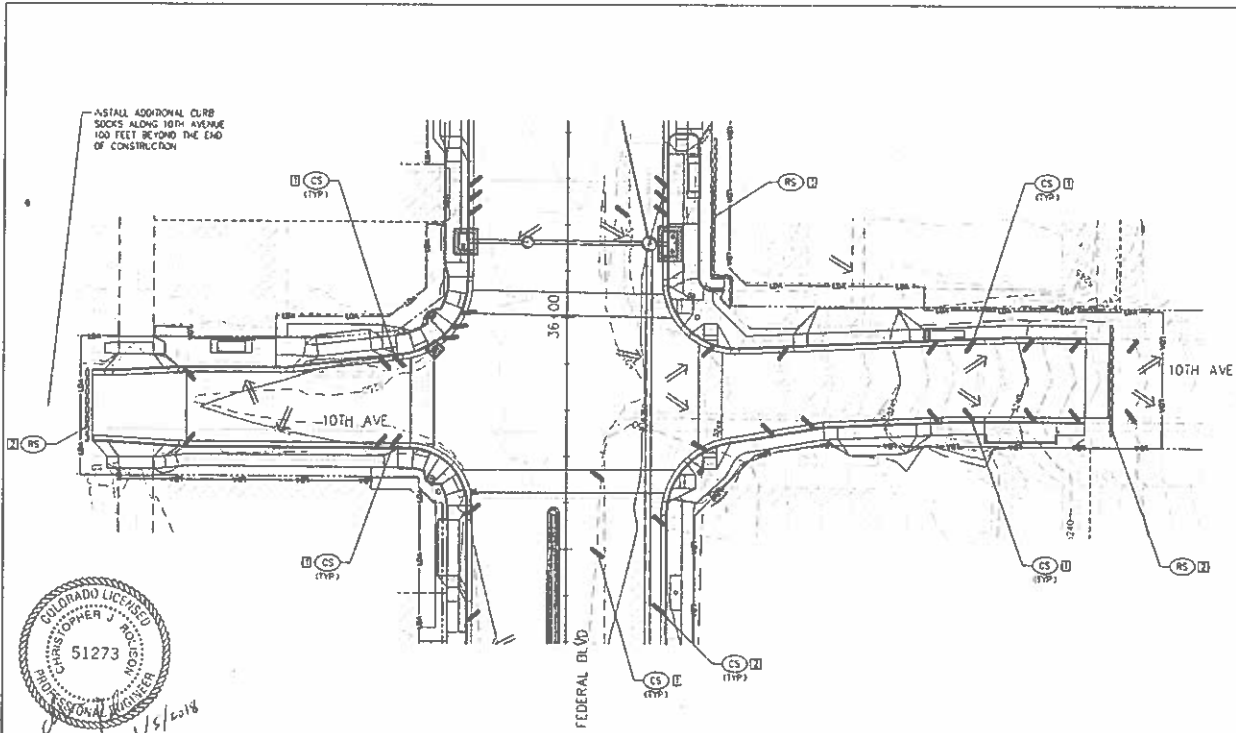


As Constructed	No Revisions
Revised	
Void	

FEDERAL BLVD RECON. - 5TH AVE TO HOWARD PLACE  
 STORMWATER MANAGEMENT  
 PLAN - MID-BLOCK 10 TO 10 AVE

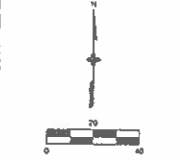
Designer: JMC Structures	Project No./Code: NDWP 2013-172 SA 19957
Checker: LAM Numbers	2011-PROJWTR-0000354
Sheet Subtitle: SMIP Sublet Sheets 23 of 30	Sheet Number: 473

AD SUBMITTAL - JANUARY 2 2018



**NOTES**

- PLEASE SEE EROSION CONTROL GENERAL NOTES FOR DETAILS ON PHASING AND TIMING OF BOTH INSTALLATION AND REMOVALS FOR ALL BAPS SHOWN ON THESE PLANS
- CS PLACEMENT IN LANES OF TRAFFIC MUST BE IN ACCORDANCE WITH APPROVED TRAFFIC CONTROL PLAN. TYPICAL OF ANY LOCATION WHERE CS ARE IN TRAFFIC LANES



**Pinyon**  
TSIQUYARAS HOLDINGS

LEGEND	
CD CHECK DAM	EROSION CONTROL BLANKET (SOIL RETENTION BLANKET)
CS CURB SOCK (AGGREGATE BAG)	INLET PROTECTION
CW CONCRETE WASHOUT	OUTLET PROTECTION
CF CONSTRUCTION FENCE	ROCK CHECK DAM
CM CONSTRUCTION MARKER	ROCK SOCK (AGGREGATE BAG)
SEDIMENT CONTROL LOG	SEDIMENT TRAP
SEEDING AND MULCHING	STABILIZED STAGING AREA
SURFACE ROUGHENING	TREE PROTECTION
TEMPORARY STOCKPILE	VEHICLE TRACKING CONTROL
SKI FENCE	REINFORCED BAIT FENCE
LIMITS OF DISTURBANCE	WETLAND AREA
PHASE	FLOW ARROW

Last Modification Date: \_\_\_\_\_  
 Drawing File Name: 1101-20-03-SubP Parallels  
 Horizontal Scale: 1/40 Vertical Scale: As Noted

Sheet Revisions		
Date	Comments	PKL

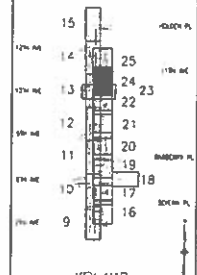
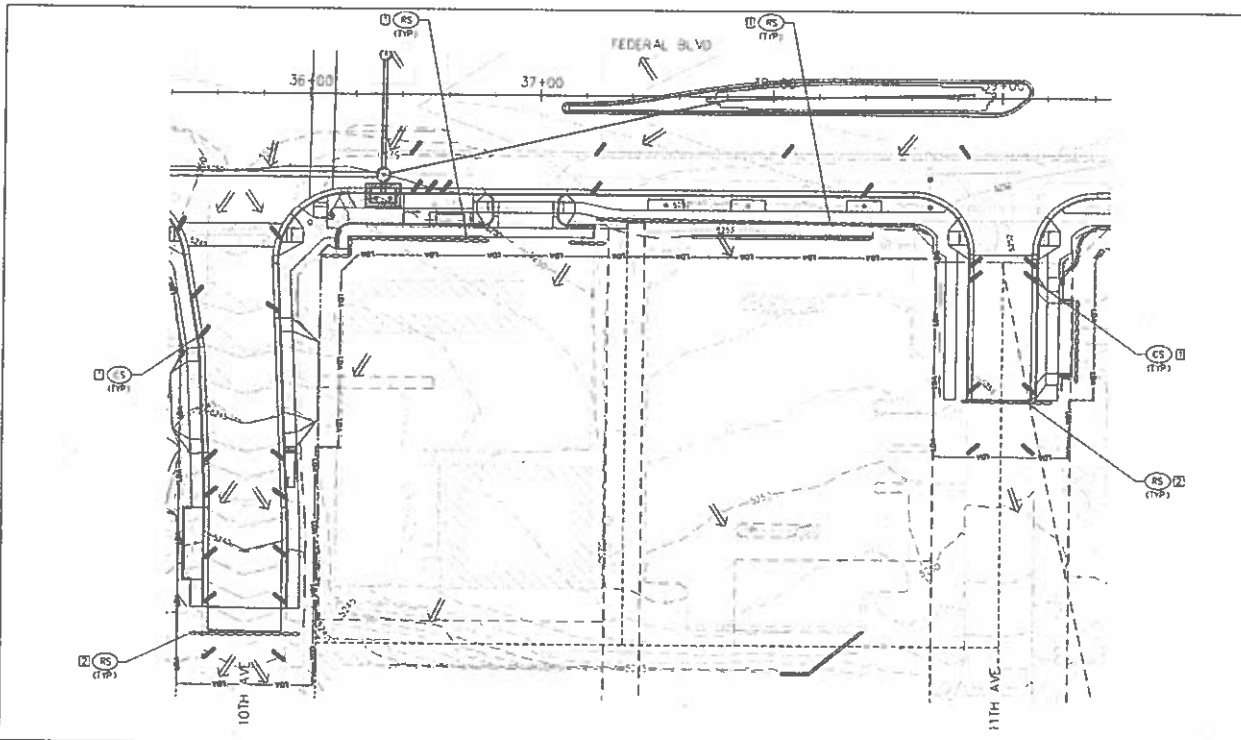
City and County of Denver  
 Department of Public Works  
 Engineering Division  
 301 W. Colfax, Dept 565  
 Denver, CO 80202

Colorado Department of Transportation  
 Region 1  
 As Constructed  
 No Revisions  
 Revised  
 Void

FEDERAL BLVD RECON - 5TH AVE TO HOWARD PLACE  
 STORMWATER MANAGEMENT  
 PLAN - 10TH AVE

Project No./Code  
 NHPD 2873-172  
 SA 19957  
 2011-PROJLSTR-0000584  
 Sheet Number 474

Small vertical text on the left margin, likely a reference or disclaimer.



**NOTES**

- PLEASE SEE EROSION CONTROL GENERAL NOTES FOR DETAILS ON PHASING AND TIMING OF BOTH INSTALLATION AND REMOVALS FOR ALL BMPs SHOWN ON THESE PLANS.
- CS PLACEMENT IN LANES OF TRAFFIC MUST BE IN ACCORDANCE WITH APPROVED TRAFFIC CONTROL PLAN TYPICAL OF ANY LOCATION WHERE CS ARE IN TRAFFIC LANES

Professional Engineer Seal for Colorado License No. 51273, signed by Christopher J. Holderness, dated 1/17/18. Below the seal is a north arrow and a graphic scale bar showing 0, 20, and 40 feet.

**LEGEND**

CHECK DAM	EROSION CONTROL BLANKET (SOIL RETENTION BLANKET)	SEDIMENT CONTROL LOG	TREE PROTECTION	LIMITS OF DISTURBANCE
CURB SOCK AGGREGATE BAG	INLET PROTECTION	SEDIMENT TRAP	TEMPORARY STOCKPILE	WETLAND AREA
CONCRETE WASH-OUT	OUTLET PROTECTION	SEEDING AND MULCHING	VEHICLE TRACING CONTROL	FLOW ARROW
CONSTRUCTION FENCE	ROCK CHECK DAM	STABILIZED STAGING AREA	SILT FENCE	PHASE
CONSTRUCTION MARKER	ROCK SOCK AGGREGATE BAG	SURFACE ROUGHENING	REINFORCED SILT FENCE	

Last Modification Date: 04/2  
 Drawing File Name: 110218-45-SMP Plans  
 Horizontal Scale: 1:40  
 Vert. Scale: As Noted

**Sheet Revisions**

Date	Comments	By

City and County of Denver  
 Department of Public Works  
 Engineering Division  
 201 W. Colfax, Dept 508  
 Denver, CO 80202

Colorado Department of Transportation  
 Project: 110218-45-SMP Plans

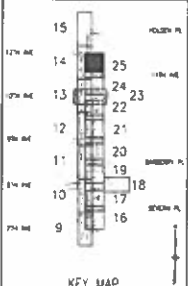
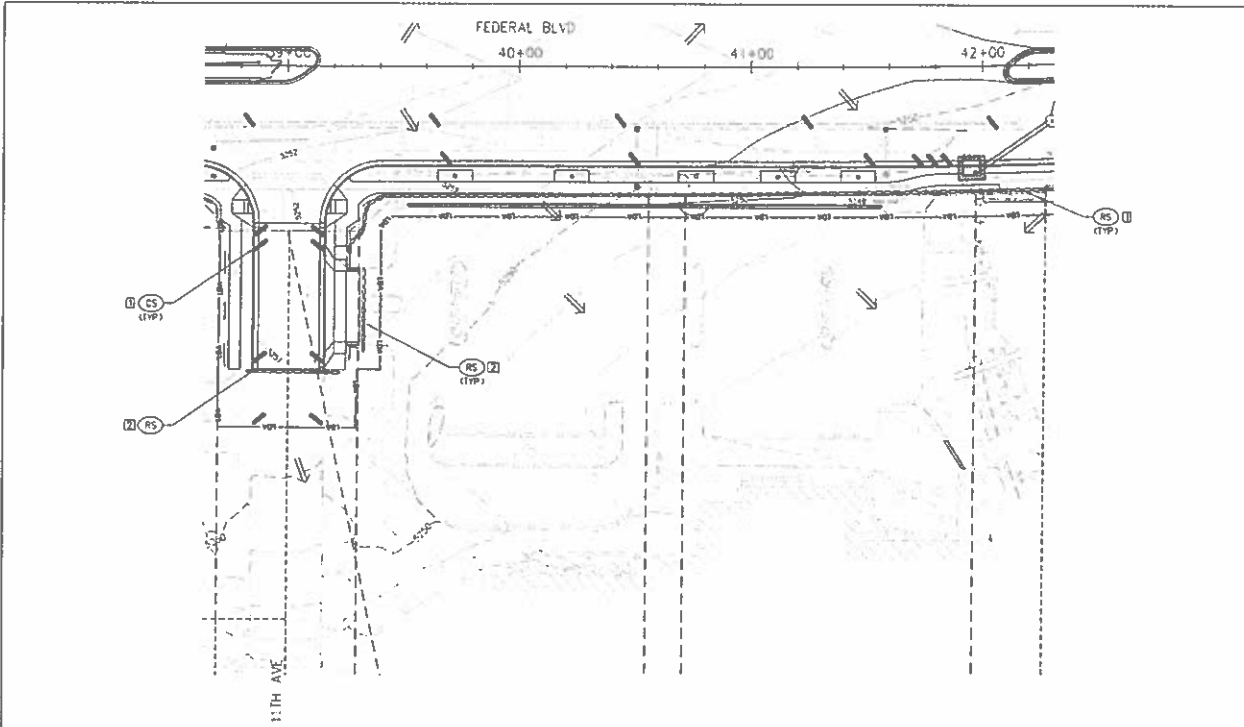
As Constructed  
 No Response  
 Revised  
 Void

FEDERAL BLVD, REDDY - 5TH AVE TO HOWARD PLACE  
 STORMWATER MANAGEMENT  
 PLAN - 10TH AVE TO 11TH AVE  
 Designer: JMC Structure  
 Detaler: LAM Numbers  
 Sheet Sub: SMP Subst Sheets 25 of 30

Project No./Code  
 NMP 2893-192  
 SA 13917  
 2011-PROJUSM-0000354  
 Sheet Number 475

AD SUBMITTAL - JANUARY 2 2018





**NOTES**

- PLEASE SEE EROSION CONTROL GENERAL NOTES FOR DETAILS ON PHASING AND TYPING OF BOTH INSTALLATION AND REMOVALS FOR ALL BUPS SHOWN ON THESE PLANS
- CS PLACEMENT IN LANES OF TRAFFIC MUST BE IN ACCORDANCE WITH APPROVED TRAFFIC CONTROL PLAN. TYPICAL OF ANY LOCATION WHERE CS ARE IN TRAFFIC LANES

1/5/2018

LEGEND	
CD CHECK DAM	ECB EROSION CONTROL BLANKET (SOIL RETENTION BLANKET)
CS CURB SOCK (AGGREGATE BAG)	IP INLET PROTECTION
CR CONCRETE RASHOUT	OP OUTLET PROTECTION
CF CONSTRUCTION FENCE	RD ROCK CHECK DAM
CM CONSTRUCTION MARKER	RS ROCK SOCK (AGGREGATE BAG)
SL SEDIMENT CONTROL LOG	ST SEDIMENT TRAP
SM SEEDING AND MULCHING	SSA STABILIZED STAGING AREA
SR SURFACE ROUGHENING	TP TREE PROTECTION
TSF TEMPORARY STAKE/PILE	VTC VEHICLE TRACKING CONTROL
SF SALT FENCE	SFR REINFORCED SALT FENCE
LOA LIMITS OF DISTURBANCE	WLA WETLAND AREA

Vert. Modification Date: \_\_\_\_\_ In: \_\_\_\_\_  
 Drawing File Name: 110248-03-SMP Phasings  
 Horizontal Scale: 1"=40' Vert. Scale: As Noted

Sheet Revisions		
Date	Comments	By

City and County of Denver  
 Department of Public Works  
 Engineering Bureau  
 701 W. Colfax, Suite 500  
 Denver, CO 80202

Colorado Department of Transportation  
 Project 1

**As Constructed**  
 No Revisions  
 Revised: \_\_\_\_\_  
 Voted: \_\_\_\_\_

FEDERAL BLVD RECON - 5TH AVE TO HOWARD PLACE  
 STOPWATER MANAGEMENT  
 PLAN - 11TH AVE TO 12TH AVE  
 Designer: AEC Structure  
 Checker: LAM Numbers  
 Sheet Sub: SMP Sublet Sheet: 26 of 30

Project No./Code  
 NHPD 2873-172  
 SA 19957  
 2011-PROJUNSTR-0000354  
 Sheet Number 476

AD SUBMITTAL - JANUARY 7, 2018

<p><b>DANDY BAG™ OR APPROVED EQUAL</b></p> <p><b>INLET SEDIMENT CONTROL DEVICE</b> (P)</p>	<p><b>DANDY CURB SACK™ OR APPROVED EQUAL</b></p> <p><b>INLET SEDIMENT CONTROL DEVICE WITH CURB FILTER</b> (P)</p>	<p><b>DANDY CURB™ OR APPROVED EQUAL</b></p> <p><b>CURB INLET PROTECTION</b> (P)</p>
<p><b>CURB RECYCLER BAG (ALTERNATIVE FOR CURB SOCK)</b> (CS)</p>	<p><b>SILTY FENCE - REINFORCED</b> (SFR)</p>	<p><b>AGES MUD MAT</b> (VIC)</p>



1/5/2018

**Pinyon**  
TSIUNURAS HOLDINGS

<p>Limit Modification Date: _____          Drawing File Name: 1102108-01-SMP-000.dwg          Horizontal Scale: N/A          Vert. Scale: N/A</p>	<p><b>Sheet Revisions</b></p> <table border="1"> <thead> <tr> <th>Date</th> <th>Comments</th> <th>Int.</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Date	Comments	Int.				<p>City and County of Denver          Department of Public Works          Engineering Division          200 W. Colfax, Dept 505          Denver, CO 80202</p>	<p>Colorado Sealed Plans of 1-1/2" x 1-1/2" for 1" x 1" Scale          Page 1 of 1</p>	<p><b>As Constructed</b></p> <p>No Revisions:          Revised:          Void:</p>	<p>FEDERAL BLDG RECON. - 5TH AVE. TO HOWARD PLACE          STORMWATER MANAGEMENT          TYPICAL DETAILS</p>	<p><b>Project No./Code</b>          NHPP 2833-172          SA 19557          2011-PROJ.MSTR-0000364          Sheet Number 477</p>
Date	Comments	Int.										

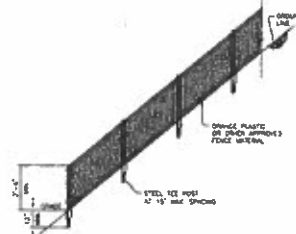


**POOL SOCK DETAIL**

**ROCK SOCK DETAIL**



**ROCK SOCK PERIMETER CONTROL** (15)

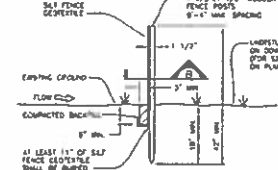


**CONSTRUCTION FENCE INSTALLATION NOTES**

- SEE PLAN VIEW FOR:
  - TYPE OF CONSTRUCTION FENCE OR WASHERS
  - LOCATION AND LENGTH OF FENCE OR LINE OF WASHERS
- CONSTRUCTION FENCE OR WASHERS BASED ON THE SWMP PLAN SHALL BE INSTALLED PRIOR TO OTHER WORK AND ANY LAND-RESTORING ACTIVITIES.
- STEEL TEE POSTS SHALL BE SPACED FOR SUPPORT OF CONSTRUCTION FENCE. MINIMUM SPACING FOR TEE POSTS SHALL BE 15'.

**CONSTRUCTION FENCE MAINTENANCE NOTES**

- ANY DAMAGED FENCE OR WASHERS SHALL BE REPAIRED ON A DAILY BASIS.
- FENCE OR WASHERS SHALL BE REMOVED AT THE END OF CONSTRUCTION IF ANY DAMAGED HIGH FLOOD WATER FENCE REMAINS. IT SHALL BE SPILL, SETBACK AND SWMP WASHING OR STRUCTURE STABILIZED IN A MANNER APPROVED BY THE CITY AND COUNTY OF BOWEN.



**DETAIL**

POSTS SHALL OVERLAP AT JOINTS SO THAT NO GAPS EXIST IN SILT FENCE.

POSTS SHALL BE JOINED AS SHOWN. WHEN REPAIRED, 180° IN DIRECTION SHOWN AND DRIVE INTO THE GROUND.

**JOINTS - SECTION**




**SILT FENCE INSTALLATION NOTES**

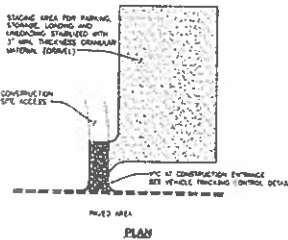
- SEE PLAN VIEW FOR:
  - LOCATION AND LENGTH OF FENCE.
- ANCHOR TRENCH SHALL BE EXCAVATED WITH BREAKER, OR WITH SILT FENCE INSTALLATION MACHINE, OR ROAD GRADER, BROOMS, ETC. SHALL BE USED. TRENCH SHALL BE COMPACTED BY HAND WITH "RAMMING JACK" OR BY SPEED ROLLING. COMPACTON SHALL BE SUCH THAT FENCE RESULTS BEING PULLED OUT OF ANCHOR TRENCH BY HAND.
- SILT FENCE GEOTEXTILE SHALL MEET THE FOLLOWING REQUIREMENTS:
  - 8-10 LBS./GAL. PER SQUARE PER SQUARE FOOT FLOW CAPACITY.
  - 80 LB. FENCE STRENGTH AT 2.5% STRAIN.
  - IN TRENCH AT 500 WBS. MIN. TENSILE STRENGTH REMAINS PER ASTM D 4756.
- SILT FENCE INDICATED ON THE SWMP PLAN SHALL BE INSTALLED PRIOR TO ANY LAND-RESTORING ACTIVITIES.

**SILT FENCE MAINTENANCE NOTES**

- INSPECT SILT FENCE DAILY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN UP UPSTREAM SOONEST AS NECESSARY.
- SILT FENCE SHALL BE REMOVED WHEN THE UPSTREAM CAPTURED AREA IS STABILIZED.

**SILT FENCE** (17)

Last Modification Date: 1/2/18 Drawing File Name: 110218-04-SWMP Detail.dwg Horizontal Scale: N/A Vert. Scale: M/A	<b>Sheet Revisions</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Date</th> <th>Comments</th> <th>By</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Date	Comments	By				 <p>City and County of Denver Department of Public Works Engineering Division 201 E. Colfax, Dear 805 Denver, CO 80202</p>	 <p>California Department of Transportation A DIVISION OF THE CALIFORNIA HIGHWAY PATROL Region 1 1100 North 1st Street, Room 400 Sacramento, CA 95833</p>	As Constructed No Revisions Review: Void:	FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE STORMWATER MANAGEMENT TYPICAL DETAILS Designer: JAC Structure Drafter: SDF Numbers Sheet Subset: SWMP Submittal Sheets 28 of 30	 <p>TSOUVARAS HOLDINGS 1983-17 by 100-10000</p>	Project No./Code NHPP 2875-172 SA 19957 2011-PROJAMSR-0000564 Sheet Number 478
Date	Comments	By											



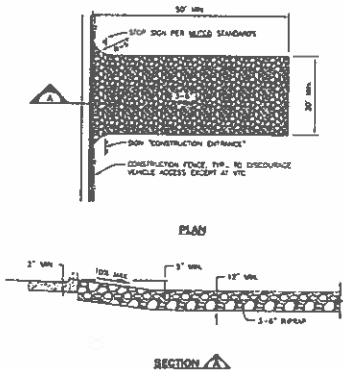
STABILIZED STAGING AREA (SSA)

- STABILIZED STAGING AREA INSTALLATION NOTES**
1. SEE PLAN AREA FOR GENERAL LOCATION OF STAGING AREA. CONTRACTOR MAY MODIFY LOCATION AND SIZE OF STABILIZED STAGING AREA WITH THE CITY AND COUNTY OF DENVER APPROVAL.
  2. STABILIZED STAGING AREA SHALL BE LARGE ENOUGH TO FULLY CONTAIN PARKING, STORAGE, AND UNLOADING AND LOADING OPERATIONS.
  3. IF REQUIRED BY THE CITY AND COUNTY OF DENVER, SITE ACCESS ROAD SHALL BE STABILIZED IN THE SAME MANNER AS THE STAGING AREA.
  4. STAGING AREA SHALL BE STABILIZED PRIOR TO ANY OTHER OPERATIONS ON THE SITE.
  5. THE STABILIZED STAGING AREA SHALL CONSIST OF A MINIMUM OF 2" OF GRANULAR MATERIAL (DRAIN).

- STABILIZED STAGING AREA MAINTENANCE NOTES**
1. THE DEEC MANAGER SHALL INSPECT THE STABILIZED STAGING AREA DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT UPSTREAM SEDIMENT AS NECESSARY.
  2. DEEC MANAGER SHALL PROVIDE ADDITIONAL THICKNESS OF GRANULAR MATERIAL IF ANY RUTTING OCCURS OR UNDERLYING SUBGRADE BECOMES EXPOSED.
  3. STABILIZED STAGING AREA SHALL BE ENLARGED IF NECESSARY TO CONTAIN PARKING, STORAGE, AND UNLOADING AND LOADING OPERATIONS.
  4. ANY ACCUMULATED DIRT OR MUD SHALL BE REMOVED FROM THE SURFACE OF THE STABILIZED STAGING AREA.

**Eco Pan Specification sheet**

**Eco Pan** is a...  
**Concrete Washout (Eco Pan)** (CW)  
 CONCRETE WASHOUT (ECO PAN) (CW)

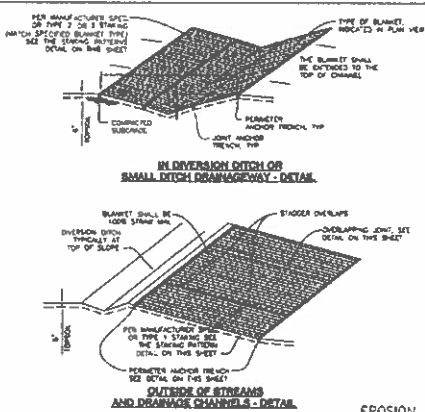


VEHICLE TRACKING CONTROL (VTC)

- VEHICLE TRACKING CONTROL INSTALLATION NOTES**
1. VEHICLE TRACKING CONTROL PADS SHALL BE INSTALLED AT EVERY ACCESS POINT TO SITE.
  2. VEHICLE TRACKING CONTROL PADS SHALL CONSIST OF PAVED, DENSE, QUARRY C STONE, ANGULAR IN SHAPE AND RESISTANT TO WEATHERING. ROUNDED STONE OR BRICKS ARE NOT ACCEPTABLE. THE STONES SHALL BE 3" WITH A MAXIMUM SIZE OF 8". THE STONE SHALL HAVE A SPECIFIC GRAVITY OF AT LEAST 2.6. CONTROL OF QUALITY SHALL BE BY VISUAL INSPECTION.
  3. ANY CRACKED OR DAMAGED CURB AND CUTTER AND SOULING SHALL BE REPLACED BY PERMITTEE.
- VEHICLE TRACKING CONTROL MAINTENANCE NOTES**
1. DEEC MANAGER SHALL INSPECT VEHICLE TRACKING CONTROL DAILY. GRAVEL SURFACE SHALL BE CLEAN AND JOINTS TIGHTEN TO THAT SLIGHTLY ABOVE WHEEL LAMEN AND CAUSE ADEQUATE DRAINAGE AROUND PADS. PADS WHEN GRAVEL BECOMES COMPACTED OR FILLED WITH SEDIMENT BY THAT THE EFFECTIVENESS OF THE PAD IS DIMINISHED, CONTRACTOR SHALL SUPPLY DIRT OR GRANULAR LADDER GRADUAL, PLACE ADDITIONAL NEW GRADUAL, OR REPLACE WITH NEW GRADUAL AS NECESSARY TO RESTORE EFFECTIVENESS.
  2. VEHICLE TRACKING CONTROL SHALL BE REMOVED AT THE END OF CONSTRUCTION.

**Pinyon**  
 ENGINEERING

Last Modification Date: _____ Drawing File Name: 1102108-04-0000 Detail.dwg Horizontal Scale: N/A Vertical Scale: N/A	<b>Sheet Revisions</b> <table border="1"> <thead> <tr> <th>Date</th> <th>Comments</th> <th>Init.</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Date	Comments	Init.				City and County of Denver Department of Public Works Engineering Division 301 N. Colfax, Opt 508 Denver, CO 80202	Colorado Department of Transportation 1500 Sherman Street Denver, CO 80202	<b>As Constructed</b> No Revisions Revised: Void:	FEDERAL BLVD. RECON. - 5TH AVE TO HOWARD PLACE STORMWATER MANAGEMENT TYPICAL DETAILS Designer: JWC Structure Detailer: GSR Numbers Sheet Subject: SWMP Subset Sheets: 29 of 30	<b>Project No./Code</b> 1102108-04-0000 SA 19957 2011-PROQA/STR-0000154 Sheet Number: 479
Date	Comments	Init.										



**EROSION CONTROL BLANKET INSTALLATION NOTES**

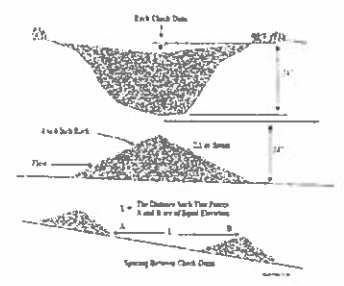
1. SET PLAN VIEW FOR:
  - LOCATION OF EROSION CONTROL BLANKET
  - TYPE OF BLANKET (FORM, FIBROUS/CHEMICAL, GEOTEXTILE OR ENDOGLOB) OR
  - AREA "X" IN SQUARE YARDS OF EACH TYPE OF BLANKET.
2. ALL EROSION CONTROL BLANKETS AND NETTING SHALL BE MADE OF 100% NATURAL AND BIODEGRADABLE MATERIAL. NO PLASTIC OR OTHER SYNTHETIC MATERIAL, EVEN IF PHOTO BIODEGRADABLE, SHALL BE ALLOWED.
3. IN AREAS WHERE EROSION CONTROL BLANKET IS SHOWN ON THE PLANS, THE PERMITS SHALL PLACE PIPES, AND PERFORM FINAL DRAINAGE SURFACE PREPARATION, AND SEEING BELOW THE BLANKET SURFACE SHALL BE SMOOTH AND MUST PRIOR TO BLANKET INSTALLATION AND THE BLANKET SHALL BE IN FULL CONTACT WITH SUBGRADE. NO GAPS OR Voids SHALL EXIST UNDER THE BLANKET.
4. PERMITS ANCHOR FRENCH SHALL BE USED AT OUTSIDE BOUNDARIES OF ALL BLANKET AREAS.
5. JOINT ANCHOR FRENCH SHALL BE USED TO JOIN ROLLS OF BLANKETS TOGETHER (LONGITUDINALLY) AND TRANSVERSELY FOR ALL BLANKETS EXCEPT SPINES WHICH MAY USE AN OVERLAPPING JOINT.
6. INTERMEDIATE ANCHOR FRENCH SHALL BE USED AT SPACING OF ONE-HALF THE ROLL LENGTH FOR GEOTEXTILE AND ENDOGLOB BLANKETS.
7. THE OVERLAPPING JOINT DETAIL SHALL BE USED TO JOIN ROLLS OF BLANKETS TOGETHER FOR BLANKETS ON SLOPES.
8. WRITING SPECIFICATIONS OF EROSION CONTROL BLANKET SHALL CONFORM TO TABLE 7.1.
9. ALL AREAS OF SLOPING AND WALKING DETERMINED IN THE PROCESS OF INSTALLING EROSION CONTROL BLANKET SHALL BE REVEALED AND MAINTAINED.
10. SEE DRAINAGE DESIGN PLANS FOR MAJOR DRAINAGEWAY FABRICATION MEASURES THAT MAY EXCEED THE DESIGN CONDITIONS ASSOCIATED WITH THE DETAILS ABOVE.

**TABLE 7.1 - EROSION CONTROL BLANKET TYPE**

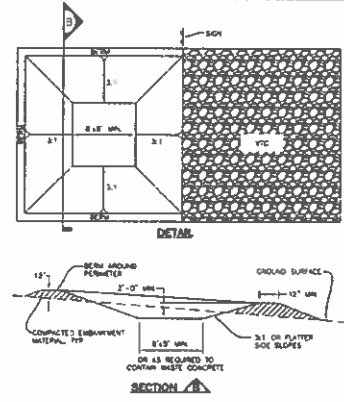
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6	100%	-	100%	100%	100%
7	100%	-	100%	100%	100%
8	100%	-	100%	100%	100%
9	100%	-	100%	100%	100%
10	100%	-	100%	100%	100%

**EROSION CONTROL BLANKET MAINTENANCE NOTES**

1. THE BEST MAINTENANCE SHALL BE TO EROSION CONTROL BLANKETS WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS AS NECESSARY.
2. EROSION CONTROL BLANKET IS TO BE LEFT IN PLACE UNLESS REQUESTED TO BE REMOVED BY THE CITY AND COUNTY OF DENVER.
3. ANY EROSION CONTROL BLANKET PULLED OUT, TOPPED, OR OTHERWISE DAMAGED SHALL BE RE-INSTALLED. ANY DAMAGE TO AREAS BEHIND THE BLANKET THAT HAVE EXPOSED TO EROSION SHALL BE REPAIRED. ANY DAMAGE TO AREAS BEHIND THE BLANKET THAT HAVE EXPOSED TO EROSION SHALL BE REPAIRED. INTERESTED AND MAINTAINED AND THE EROSION CONTROL BLANKET RE-INSTALLED.



CHECK DAM (CD)



**CONCRETE WASHOUT AREA INSTALLATION NOTES**

1. SEE PLAN VIEW FOR:
  - LOCATION OF CONCRETE WASHOUT AREA
2. THE CONCRETE WASHOUT AREA SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE.
3. VEHICLE TRACKING CONTROL IS REQUIRED AT THE ACCESS POINT.
4. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE TO THE WASHOUT AREA AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CONCRETE WASHOUT AREA TO OPERATORS OF CONCRETE TRUCKS AND PUMP TRUCKS.

**CONCRETE WASHOUT AREA MAINTENANCE NOTES**

1. THE CONCRETE WASHOUT AREA SHALL BE REPAIRED AND ENLARGED OR CLEANED OUT AS NECESSARY TO MAINTAIN CAPACITY FOR WASHED CONCRETE.
2. AT THE END OF CONSTRUCTION, ALL CONCRETE SHALL BE REMOVED FROM THE SITE AND DEPOSITED OF AT AN APPROVED WASTE SITE.
3. WHEN THE CONCRETE WASHOUT AREA IS REMOVED, THE DISTURBED AREA SHALL BE GRASS SEEDING AND GRASS MAINTAINED OR OTHER VEGETATION.
4. INSPECT WEEKLY, DURING AND AFTER ANY STORM EVENT.

CONCRETE WASHOUT STRUCTURE (CW)



Last Modification Date: _____ Drawing File Name: 1801288-04-SMP Detail.dgn Horizontal Scale: N/A Vert. Scale: N/A	<b>Sheet Revisions</b> Date: _____ Comments: _____ V#1: _____	City and County of Denver Department of Public Works Engineering Division 200 S. Dearborn, Dept. 308 Denver, CO 80222	Colorado Department of Transportation 1515 Sherman Street, Suite 100 Denver, CO 80202	As Constructed No Revisions: Revised: Void:	FEDERAL BLVD. RECON. - 5TH AVE. TO HOWARD PLACE STORMWATER MANAGEMENT TYPICAL DETAILS Designer: JMC Structure Detailer: SBF Numbers Sheet Subset: SMP Subpart Sheets 30 of 30	Project No./Code 1801288-04-SMP SA 19957 2011-PROJUMSTR-0000364 Sheet Number: 480
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**ABBREVIATIONS**

1.01	ASPH	ASPH	ASPH	ASPH
1.02	CONC	CONC	CONC	CONC
1.03	GRAVEL	GRAVEL	GRAVEL	GRAVEL
1.04	BRICK	BRICK	BRICK	BRICK
1.05	WOOD	WOOD	WOOD	WOOD
1.06	PLASTER	PLASTER	PLASTER	PLASTER
1.07	STUCCO	STUCCO	STUCCO	STUCCO
1.08	EIFS	EIFS	EIFS	EIFS
1.09	GLASS	GLASS	GLASS	GLASS
1.10	ALUMINUM	ALUMINUM	ALUMINUM	ALUMINUM
1.11	STEEL	STEEL	STEEL	STEEL
1.12	COPPER	COPPER	COPPER	COPPER
1.13	LEAD	LEAD	LEAD	LEAD
1.14	ZINC	ZINC	ZINC	ZINC
1.15	BRASS	BRASS	BRASS	BRASS
1.16	IRON	IRON	IRON	IRON
1.17	PAINT	PAINT	PAINT	PAINT
1.18	FINISH	FINISH	FINISH	FINISH
1.19	LANDSCAPE	LANDSCAPE	LANDSCAPE	LANDSCAPE
1.20	PLANTING	PLANTING	PLANTING	PLANTING
1.21	IRRIGATION	IRRIGATION	IRRIGATION	IRRIGATION
1.22	CONCRETE	CONCRETE	CONCRETE	CONCRETE
1.23	FOUNDATION	FOUNDATION	FOUNDATION	FOUNDATION
1.24	ROOFING	ROOFING	ROOFING	ROOFING
1.25	MECHANICAL	MECHANICAL	MECHANICAL	MECHANICAL
1.26	ELECTRICAL	ELECTRICAL	ELECTRICAL	ELECTRICAL
1.27	PLUMBING	PLUMBING	PLUMBING	PLUMBING
1.28	INSULATION	INSULATION	INSULATION	INSULATION
1.29	CLADDING	CLADDING	CLADDING	CLADDING
1.30	SCREENING	SCREENING	SCREENING	SCREENING
1.31	ENCLOSURE	ENCLOSURE	ENCLOSURE	ENCLOSURE
1.32	GLAZING	GLAZING	GLAZING	GLAZING
1.33	DOORS	DOORS	DOORS	DOORS
1.34	WINDOWS	WINDOWS	WINDOWS	WINDOWS
1.35	ROOF DECK	ROOF DECK	ROOF DECK	ROOF DECK
1.36	MECHANICAL ROOM	MECHANICAL ROOM	MECHANICAL ROOM	MECHANICAL ROOM
1.37	ELECTRICAL ROOM	ELECTRICAL ROOM	ELECTRICAL ROOM	ELECTRICAL ROOM
1.38	PLUMBING ROOM	PLUMBING ROOM	PLUMBING ROOM	PLUMBING ROOM
1.39	STAIRS	STAIRS	STAIRS	STAIRS
1.40	ELEVATOR	ELEVATOR	ELEVATOR	ELEVATOR
1.41	MECHANICAL SHAFT	MECHANICAL SHAFT	MECHANICAL SHAFT	MECHANICAL SHAFT
1.42	ELECTRICAL SHAFT	ELECTRICAL SHAFT	ELECTRICAL SHAFT	ELECTRICAL SHAFT
1.43	PLUMBING SHAFT	PLUMBING SHAFT	PLUMBING SHAFT	PLUMBING SHAFT
1.44	MECHANICAL EQUIPMENT	MECHANICAL EQUIPMENT	MECHANICAL EQUIPMENT	MECHANICAL EQUIPMENT
1.45	ELECTRICAL EQUIPMENT	ELECTRICAL EQUIPMENT	ELECTRICAL EQUIPMENT	ELECTRICAL EQUIPMENT
1.46	PLUMBING EQUIPMENT	PLUMBING EQUIPMENT	PLUMBING EQUIPMENT	PLUMBING EQUIPMENT
1.47	MECHANICAL ROOMS	MECHANICAL ROOMS	MECHANICAL ROOMS	MECHANICAL ROOMS
1.48	ELECTRICAL ROOMS	ELECTRICAL ROOMS	ELECTRICAL ROOMS	ELECTRICAL ROOMS
1.49	PLUMBING ROOMS	PLUMBING ROOMS	PLUMBING ROOMS	PLUMBING ROOMS
1.50	MECHANICAL EQUIPMENT	MECHANICAL EQUIPMENT	MECHANICAL EQUIPMENT	MECHANICAL EQUIPMENT
1.51	ELECTRICAL EQUIPMENT	ELECTRICAL EQUIPMENT	ELECTRICAL EQUIPMENT	ELECTRICAL EQUIPMENT
1.52	PLUMBING EQUIPMENT	PLUMBING EQUIPMENT	PLUMBING EQUIPMENT	PLUMBING EQUIPMENT
1.53	MECHANICAL ROOMS	MECHANICAL ROOMS	MECHANICAL ROOMS	MECHANICAL ROOMS
1.54	ELECTRICAL ROOMS	ELECTRICAL ROOMS	ELECTRICAL ROOMS	ELECTRICAL ROOMS
1.55	PLUMBING ROOMS	PLUMBING ROOMS	PLUMBING ROOMS	PLUMBING ROOMS
1.56	MECHANICAL EQUIPMENT	MECHANICAL EQUIPMENT	MECHANICAL EQUIPMENT	MECHANICAL EQUIPMENT
1.57	ELECTRICAL EQUIPMENT	ELECTRICAL EQUIPMENT	ELECTRICAL EQUIPMENT	ELECTRICAL EQUIPMENT
1.58	PLUMBING EQUIPMENT	PLUMBING EQUIPMENT	PLUMBING EQUIPMENT	PLUMBING EQUIPMENT
1.59	MECHANICAL ROOMS	MECHANICAL ROOMS	MECHANICAL ROOMS	MECHANICAL ROOMS
1.60	ELECTRICAL ROOMS	ELECTRICAL ROOMS	ELECTRICAL ROOMS	ELECTRICAL ROOMS
1.61	PLUMBING ROOMS	PLUMBING ROOMS	PLUMBING ROOMS	PLUMBING ROOMS
1.62	MECHANICAL EQUIPMENT	MECHANICAL EQUIPMENT	MECHANICAL EQUIPMENT	MECHANICAL EQUIPMENT
1.63	ELECTRICAL EQUIPMENT	ELECTRICAL EQUIPMENT	ELECTRICAL EQUIPMENT	ELECTRICAL EQUIPMENT
1.64	PLUMBING EQUIPMENT	PLUMBING EQUIPMENT	PLUMBING EQUIPMENT	PLUMBING EQUIPMENT
1.65	MECHANICAL ROOMS	MECHANICAL ROOMS	MECHANICAL ROOMS	MECHANICAL ROOMS
1.66	ELECTRICAL ROOMS	ELECTRICAL ROOMS	ELECTRICAL ROOMS	ELECTRICAL ROOMS
1.67	PLUMBING ROOMS	PLUMBING ROOMS	PLUMBING ROOMS	PLUMBING ROOMS
1.68	MECHANICAL EQUIPMENT	MECHANICAL EQUIPMENT	MECHANICAL EQUIPMENT	MECHANICAL EQUIPMENT
1.69	ELECTRICAL EQUIPMENT	ELECTRICAL EQUIPMENT	ELECTRICAL EQUIPMENT	ELECTRICAL EQUIPMENT
1.70	PLUMBING EQUIPMENT	PLUMBING EQUIPMENT	PLUMBING EQUIPMENT	PLUMBING EQUIPMENT
1.71	MECHANICAL ROOMS	MECHANICAL ROOMS	MECHANICAL ROOMS	MECHANICAL ROOMS
1.72	ELECTRICAL ROOMS	ELECTRICAL ROOMS	ELECTRICAL ROOMS	ELECTRICAL ROOMS
1.73	PLUMBING ROOMS	PLUMBING ROOMS	PLUMBING ROOMS	PLUMBING ROOMS
1.74	MECHANICAL EQUIPMENT	MECHANICAL EQUIPMENT	MECHANICAL EQUIPMENT	MECHANICAL EQUIPMENT
1.75	ELECTRICAL EQUIPMENT	ELECTRICAL EQUIPMENT	ELECTRICAL EQUIPMENT	ELECTRICAL EQUIPMENT
1.76	PLUMBING EQUIPMENT	PLUMBING EQUIPMENT	PLUMBING EQUIPMENT	PLUMBING EQUIPMENT
1.77	MECHANICAL ROOMS	MECHANICAL ROOMS	MECHANICAL ROOMS	MECHANICAL ROOMS
1.78	ELECTRICAL ROOMS	ELECTRICAL ROOMS	ELECTRICAL ROOMS	ELECTRICAL ROOMS
1.79	PLUMBING ROOMS	PLUMBING ROOMS	PLUMBING ROOMS	PLUMBING ROOMS
1.80	MECHANICAL EQUIPMENT	MECHANICAL EQUIPMENT	MECHANICAL EQUIPMENT	MECHANICAL EQUIPMENT
1.81	ELECTRICAL EQUIPMENT	ELECTRICAL EQUIPMENT	ELECTRICAL EQUIPMENT	ELECTRICAL EQUIPMENT
1.82	PLUMBING EQUIPMENT	PLUMBING EQUIPMENT	PLUMBING EQUIPMENT	PLUMBING EQUIPMENT
1.83	MECHANICAL ROOMS	MECHANICAL ROOMS	MECHANICAL ROOMS	MECHANICAL ROOMS
1.84	ELECTRICAL ROOMS	ELECTRICAL ROOMS	ELECTRICAL ROOMS	ELECTRICAL ROOMS
1.85	PLUMBING ROOMS	PLUMBING ROOMS	PLUMBING ROOMS	PLUMBING ROOMS
1.86	MECHANICAL EQUIPMENT	MECHANICAL EQUIPMENT	MECHANICAL EQUIPMENT	MECHANICAL EQUIPMENT
1.87	ELECTRICAL EQUIPMENT	ELECTRICAL EQUIPMENT	ELECTRICAL EQUIPMENT	ELECTRICAL EQUIPMENT
1.88	PLUMBING EQUIPMENT	PLUMBING EQUIPMENT	PLUMBING EQUIPMENT	PLUMBING EQUIPMENT
1.89	MECHANICAL ROOMS	MECHANICAL ROOMS	MECHANICAL ROOMS	MECHANICAL ROOMS
1.90	ELECTRICAL ROOMS	ELECTRICAL ROOMS	ELECTRICAL ROOMS	ELECTRICAL ROOMS
1.91	PLUMBING ROOMS	PLUMBING ROOMS	PLUMBING ROOMS	PLUMBING ROOMS
1.92	MECHANICAL EQUIPMENT	MECHANICAL EQUIPMENT	MECHANICAL EQUIPMENT	MECHANICAL EQUIPMENT
1.93	ELECTRICAL EQUIPMENT	ELECTRICAL EQUIPMENT	ELECTRICAL EQUIPMENT	ELECTRICAL EQUIPMENT
1.94	PLUMBING EQUIPMENT	PLUMBING EQUIPMENT	PLUMBING EQUIPMENT	PLUMBING EQUIPMENT
1.95	MECHANICAL ROOMS	MECHANICAL ROOMS	MECHANICAL ROOMS	MECHANICAL ROOMS
1.96	ELECTRICAL ROOMS	ELECTRICAL ROOMS	ELECTRICAL ROOMS	ELECTRICAL ROOMS
1.97	PLUMBING ROOMS	PLUMBING ROOMS	PLUMBING ROOMS	PLUMBING ROOMS
1.98	MECHANICAL EQUIPMENT	MECHANICAL EQUIPMENT	MECHANICAL EQUIPMENT	MECHANICAL EQUIPMENT
1.99	ELECTRICAL EQUIPMENT	ELECTRICAL EQUIPMENT	ELECTRICAL EQUIPMENT	ELECTRICAL EQUIPMENT
2.00	PLUMBING EQUIPMENT	PLUMBING EQUIPMENT	PLUMBING EQUIPMENT	PLUMBING EQUIPMENT

**GENERAL NOTES**

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE INTERNATIONAL BUILDING CODES (IBC) AND THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) CODES.
2. ALL MATERIALS SHALL BE APPROVED BY THE ARCHITECT AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
3. ALL WORK SHALL BE COMPLETED WITHIN THE SPECIFIED TIME FRAME.



**MATERIAL KEYNOTES**

1. ALL MATERIALS SHALL BE APPROVED BY THE ARCHITECT AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
2. ALL WORK SHALL BE COMPLETED WITHIN THE SPECIFIED TIME FRAME.
3. ALL MATERIALS SHALL BE APPROVED BY THE ARCHITECT AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
4. ALL WORK SHALL BE COMPLETED WITHIN THE SPECIFIED TIME FRAME.
5. ALL MATERIALS SHALL BE APPROVED BY THE ARCHITECT AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
6. ALL WORK SHALL BE COMPLETED WITHIN THE SPECIFIED TIME FRAME.
7. ALL MATERIALS SHALL BE APPROVED BY THE ARCHITECT AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
8. ALL WORK SHALL BE COMPLETED WITHIN THE SPECIFIED TIME FRAME.
9. ALL MATERIALS SHALL BE APPROVED BY THE ARCHITECT AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
10. ALL WORK SHALL BE COMPLETED WITHIN THE SPECIFIED TIME FRAME.

**LAYOUT NOTES**

- 1. ALL WORK SHALL BE COMPLETED WITHIN THE SPECIFIED TIME FRAME.
- 2. ALL MATERIALS SHALL BE APPROVED BY THE ARCHITECT AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- 3. ALL WORK SHALL BE COMPLETED WITHIN THE SPECIFIED TIME FRAME.
- 4. ALL MATERIALS SHALL BE APPROVED BY THE ARCHITECT AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- 5. ALL WORK SHALL BE COMPLETED WITHIN THE SPECIFIED TIME FRAME.
- 6. ALL MATERIALS SHALL BE APPROVED BY THE ARCHITECT AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- 7. ALL WORK SHALL BE COMPLETED WITHIN THE SPECIFIED TIME FRAME.
- 8. ALL MATERIALS SHALL BE APPROVED BY THE ARCHITECT AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- 9. ALL WORK SHALL BE COMPLETED WITHIN THE SPECIFIED TIME FRAME.
- 10. ALL MATERIALS SHALL BE APPROVED BY THE ARCHITECT AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

**MATERIAL KEYNOTES**

1. ALL MATERIALS SHALL BE APPROVED BY THE ARCHITECT AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
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8. ALL WORK SHALL BE COMPLETED WITHIN THE SPECIFIED TIME FRAME.
9. ALL MATERIALS SHALL BE APPROVED BY THE ARCHITECT AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
10. ALL WORK SHALL BE COMPLETED WITHIN THE SPECIFIED TIME FRAME.

For Review Use Only  
 Design & Construction  
 Subject to Change

Sheet Revisions  
 1.01 - 1.02  
 1.03 - 1.04

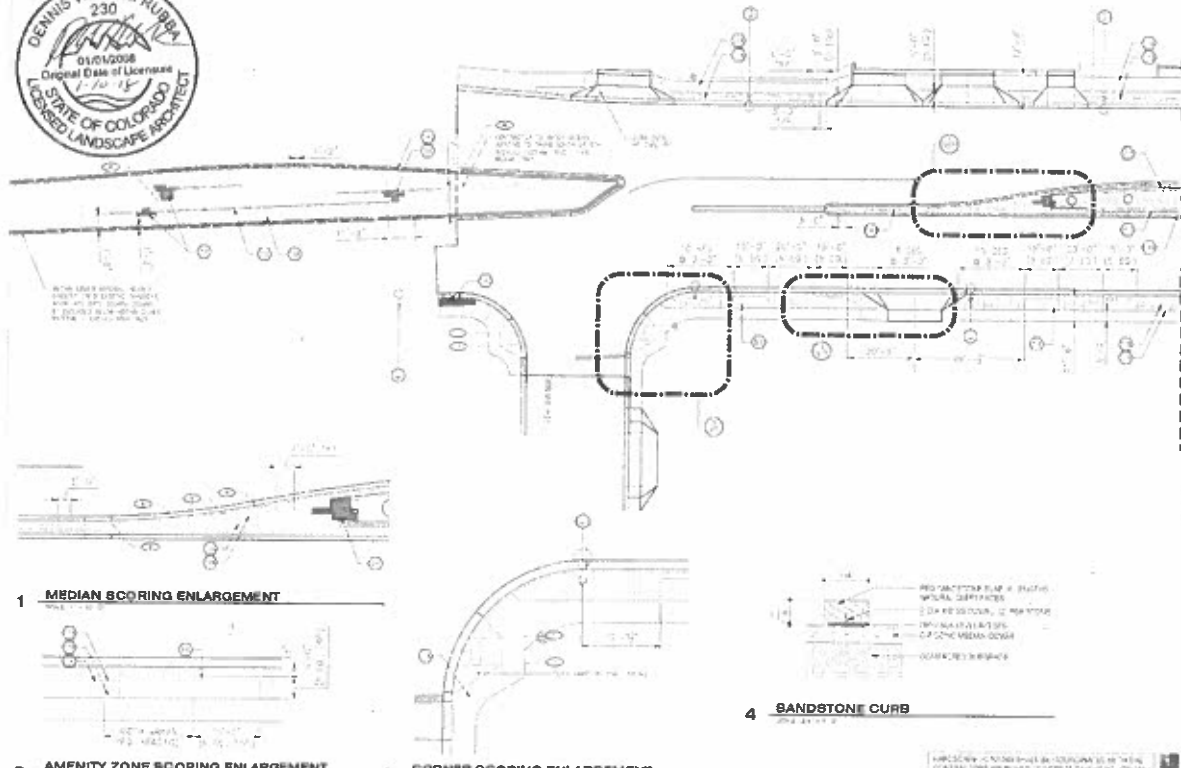


Colorado Department of Transportation  
 Project No. 17-0001  
 Section 1000  
 Sheet No. 502

As Constructed  
 17-0001  
 1000  
 502

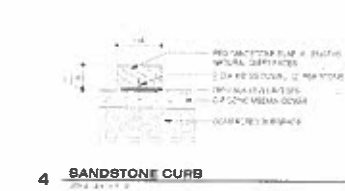
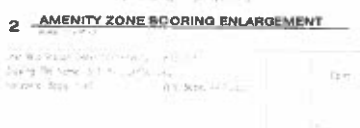
FEDERAL BLVD RECCA 5TH AVE TO HOWARD PL  
 NOTES - LAYOUT & LANDSCAPE  
 Project No./Code  
 17-0001-1000  
 502

ON SUBMITTAL 08/14/07 2018



**MATERIAL KEYWORDS**

1	GRAVEL	1/2\"
2	GRAVEL	3/4\"
3	GRAVEL	1\"
4	GRAVEL	1 1/2\"
5	GRAVEL	2\"
6	GRAVEL	3\"
7	GRAVEL	4\"
8	GRAVEL	6\"
9	GRAVEL	8\"
10	GRAVEL	12\"
11	GRAVEL	18\"
12	GRAVEL	24\"
13	GRAVEL	36\"
14	GRAVEL	48\"
15	GRAVEL	60\"
16	GRAVEL	72\"
17	GRAVEL	84\"
18	GRAVEL	96\"
19	GRAVEL	108\"
20	GRAVEL	120\"
21	GRAVEL	132\"
22	GRAVEL	144\"
23	GRAVEL	156\"
24	GRAVEL	168\"
25	GRAVEL	180\"
26	GRAVEL	192\"
27	GRAVEL	204\"
28	GRAVEL	216\"
29	GRAVEL	228\"
30	GRAVEL	240\"
31	GRAVEL	252\"
32	GRAVEL	264\"
33	GRAVEL	276\"
34	GRAVEL	288\"
35	GRAVEL	300\"
36	GRAVEL	312\"
37	GRAVEL	324\"
38	GRAVEL	336\"
39	GRAVEL	348\"
40	GRAVEL	360\"
41	GRAVEL	372\"
42	GRAVEL	384\"
43	GRAVEL	396\"
44	GRAVEL	408\"
45	GRAVEL	420\"
46	GRAVEL	432\"
47	GRAVEL	444\"
48	GRAVEL	456\"
49	GRAVEL	468\"
50	GRAVEL	480\"
51	GRAVEL	492\"
52	GRAVEL	504\"
53	GRAVEL	516\"
54	GRAVEL	528\"
55	GRAVEL	540\"
56	GRAVEL	552\"
57	GRAVEL	564\"
58	GRAVEL	576\"
59	GRAVEL	588\"
60	GRAVEL	600\"
61	GRAVEL	612\"
62	GRAVEL	624\"
63	GRAVEL	636\"
64	GRAVEL	648\"
65	GRAVEL	660\"
66	GRAVEL	672\"
67	GRAVEL	684\"
68	GRAVEL	696\"
69	GRAVEL	708\"
70	GRAVEL	720\"
71	GRAVEL	732\"
72	GRAVEL	744\"
73	GRAVEL	756\"
74	GRAVEL	768\"
75	GRAVEL	780\"
76	GRAVEL	792\"
77	GRAVEL	804\"
78	GRAVEL	816\"
79	GRAVEL	828\"
80	GRAVEL	840\"
81	GRAVEL	852\"
82	GRAVEL	864\"
83	GRAVEL	876\"
84	GRAVEL	888\"
85	GRAVEL	900\"
86	GRAVEL	912\"
87	GRAVEL	924\"
88	GRAVEL	936\"
89	GRAVEL	948\"
90	GRAVEL	960\"
91	GRAVEL	972\"
92	GRAVEL	984\"
93	GRAVEL	996\"
94	GRAVEL	1008\"
95	GRAVEL	1020\"
96	GRAVEL	1032\"
97	GRAVEL	1044\"
98	GRAVEL	1056\"
99	GRAVEL	1068\"
100	GRAVEL	1080\"



Site Plan  
 1/10/2018  
 10:00 AM  
 10:00 AM

Sheet Revisions  
 1/10/2018  
 10:00 AM



As Constructed  
 1/10/2018  
 10:00 AM

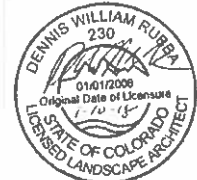
FEDERAL ROAD DISTRICT - SAN ANTONIO  
 1/10/2018  
 10:00 AM

Project No./Code  
 1/10/2018  
 10:00 AM

5/11

AD SUBMITTAL - JANUARY 2, 2018





As Constructed  
 Federal Blvd Recon - 5th Ave to Howard Pl  
 Hardscape Plan  
 Project No./Code  
 1407 2013 112  
 10 1507  
 Date: 10/1/2013  
 512

1 CORNER SCORING ENLARGEMENT

HARDSCAPE EXISTING SHALL BE PROTECTED TO REMAIN. CONTRACTOR SHALL PROTECT EXISTING HARDSCAPE FROM DAMAGE AND SHALL REPAIR OR REPLACE HARDSCAPE TO REMAIN TO MATCH EXISTING CONDITIONS.



As Constructed  
 FEDERAL BLVD RECON - 5TH AVE TO HOWARD PL  
 HARDSCAPE PLAN  
 Project No./Code  
 1407 2013 112  
 10 1507  
 Date: 10/1/2013  
 512

**MATERIAL KEYNOTES**

1	CONCRETE	6" THICK
2	CONCRETE	4" THICK
3	CONCRETE	3" THICK
4	CONCRETE	2" THICK
5	CONCRETE	1" THICK
6	CONCRETE	1/2" THICK
7	CONCRETE	1/4" THICK
8	CONCRETE	1/8" THICK
9	CONCRETE	1/16" THICK
10	CONCRETE	1/32" THICK
11	CONCRETE	1/64" THICK
12	CONCRETE	1/128" THICK
13	CONCRETE	1/256" THICK
14	CONCRETE	1/512" THICK
15	CONCRETE	1/1024" THICK
16	CONCRETE	1/2048" THICK
17	CONCRETE	1/4096" THICK
18	CONCRETE	1/8192" THICK
19	CONCRETE	1/16384" THICK
20	CONCRETE	1/32768" THICK
21	CONCRETE	1/65536" THICK
22	CONCRETE	1/131072" THICK
23	CONCRETE	1/262144" THICK
24	CONCRETE	1/524288" THICK
25	CONCRETE	1/1048576" THICK
26	CONCRETE	1/2097152" THICK
27	CONCRETE	1/4194304" THICK
28	CONCRETE	1/8388608" THICK
29	CONCRETE	1/16777216" THICK
30	CONCRETE	1/33554432" THICK
31	CONCRETE	1/67108864" THICK
32	CONCRETE	1/134217728" THICK
33	CONCRETE	1/268435456" THICK
34	CONCRETE	1/536870912" THICK
35	CONCRETE	1/1073741824" THICK
36	CONCRETE	1/2147483648" THICK
37	CONCRETE	1/4294967296" THICK
38	CONCRETE	1/8589934592" THICK
39	CONCRETE	1/17179869184" THICK
40	CONCRETE	1/34359738368" THICK
41	CONCRETE	1/68719476736" THICK
42	CONCRETE	1/137438953472" THICK
43	CONCRETE	1/274877906944" THICK
44	CONCRETE	1/549755813888" THICK
45	CONCRETE	1/1099511627776" THICK
46	CONCRETE	1/2199023255552" THICK
47	CONCRETE	1/4398046511104" THICK
48	CONCRETE	1/8796093022208" THICK
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64	CONCRETE	1/576460752303423488" THICK
65	CONCRETE	1/1152921504606846976" THICK
66	CONCRETE	1/2305843009213693952" THICK
67	CONCRETE	1/4611686018427387904" THICK
68	CONCRETE	1/9223372036854775808" THICK
69	CONCRETE	1/18446744073709551616" THICK
70	CONCRETE	1/36893488147419103232" THICK
71	CONCRETE	1/73786976294838206464" THICK
72	CONCRETE	1/147573952589676412928" THICK
73	CONCRETE	1/295147905179352825856" THICK
74	CONCRETE	1/590295810358705651712" THICK
75	CONCRETE	1/1180591620717411303424" THICK
76	CONCRETE	1/2361183241434822606848" THICK
77	CONCRETE	1/4722366482869645213696" THICK
78	CONCRETE	1/9444732965739290427392" THICK
79	CONCRETE	1/18889465931478580854784" THICK
80	CONCRETE	1/37778931862957161709568" THICK
81	CONCRETE	1/75557863725914323419136" THICK
82	CONCRETE	1/151115727451828646838272" THICK
83	CONCRETE	1/302231454903657293676544" THICK
84	CONCRETE	1/604462909807314587353088" THICK
85	CONCRETE	1/1208925819614629174706176" THICK
86	CONCRETE	1/2417851639229258349412352" THICK
87	CONCRETE	1/4835703278458516698824704" THICK
88	CONCRETE	1/9671406556917033397649408" THICK
89	CONCRETE	1/19342813113834066795298816" THICK
90	CONCRETE	1/38685626227668133590597632" THICK
91	CONCRETE	1/77371252455336267181195264" THICK
92	CONCRETE	1/154742504910672534362390528" THICK
93	CONCRETE	1/309485009821345068724781056" THICK
94	CONCRETE	1/618970019642690137449562112" THICK
95	CONCRETE	1/1237940039285380274899124224" THICK
96	CONCRETE	1/2475880078570760549798248448" THICK
97	CONCRETE	1/4951760157141521099596496896" THICK
98	CONCRETE	1/9903520314283042199192993792" THICK
99	CONCRETE	1/1980704062856608398797987584" THICK
100	CONCRETE	1/3961408125713216797595975168" THICK

**LAYOUT NOTES**

- 1. ALL HARDSCAPE SHALL BE INSTALLED TO MATCH EXISTING CONDITIONS.
- 2. ALL HARDSCAPE SHALL BE INSTALLED TO MATCH EXISTING CONDITIONS.
- 3. ALL HARDSCAPE SHALL BE INSTALLED TO MATCH EXISTING CONDITIONS.
- 4. ALL HARDSCAPE SHALL BE INSTALLED TO MATCH EXISTING CONDITIONS.
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- 9. ALL HARDSCAPE SHALL BE INSTALLED TO MATCH EXISTING CONDITIONS.
- 10. ALL HARDSCAPE SHALL BE INSTALLED TO MATCH EXISTING CONDITIONS.

**MATERIAL KEYNOTES**

1. ALL HARDSCAPE SHALL BE INSTALLED TO MATCH EXISTING CONDITIONS.

2. ALL HARDSCAPE SHALL BE INSTALLED TO MATCH EXISTING CONDITIONS.

3. ALL HARDSCAPE SHALL BE INSTALLED TO MATCH EXISTING CONDITIONS.

4. ALL HARDSCAPE SHALL BE INSTALLED TO MATCH EXISTING CONDITIONS.

5. ALL HARDSCAPE SHALL BE INSTALLED TO MATCH EXISTING CONDITIONS.

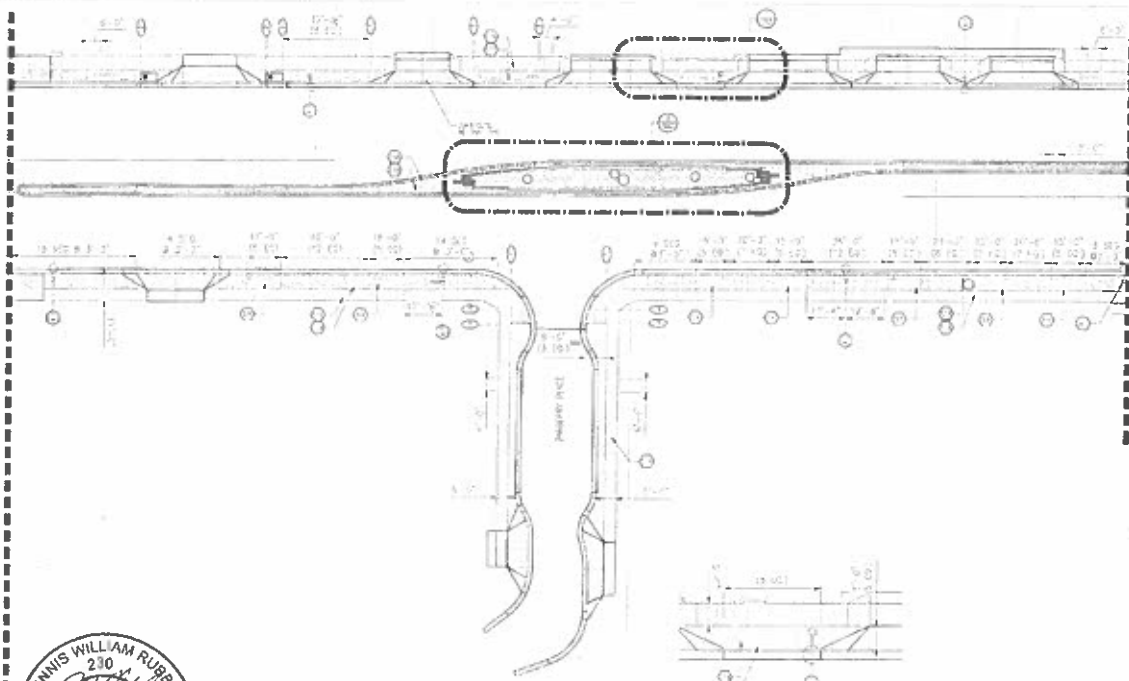
6. ALL HARDSCAPE SHALL BE INSTALLED TO MATCH EXISTING CONDITIONS.

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9. ALL HARDSCAPE SHALL BE INSTALLED TO MATCH EXISTING CONDITIONS.

10. ALL HARDSCAPE SHALL BE INSTALLED TO MATCH EXISTING CONDITIONS.



1 AMENITY ZONE SCORING ENLARGEMENT



GENERAL KEYPLAN

**MINERAL KEYPLAN**

1	CONCRETE PAVED PLAZA	1:00
2	CONCRETE PAVED PLAZA	1:00
3	CONCRETE PAVED PLAZA	1:00
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48	CONCRETE PAVED PLAZA	1:00
49	CONCRETE PAVED PLAZA	1:00
50	CONCRETE PAVED PLAZA	1:00

LAYOUT NOTES

- 1. ALL MATERIALS TO BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITIONS OF THE MPCA AND MPCA SPECIFICATIONS.
- 2. ALL MATERIALS TO BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITIONS OF THE MPCA AND MPCA SPECIFICATIONS.
- 3. ALL MATERIALS TO BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITIONS OF THE MPCA AND MPCA SPECIFICATIONS.
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- 9. ALL MATERIALS TO BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITIONS OF THE MPCA AND MPCA SPECIFICATIONS.
- 10. ALL MATERIALS TO BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITIONS OF THE MPCA AND MPCA SPECIFICATIONS.

MINERAL KEYPLAN

1	CONCRETE PAVED PLAZA	1:00
2	CONCRETE PAVED PLAZA	1:00
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11/15/2018 10:00 AM  
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Sheet Revisions  
 11/15/2018 10:00 AM



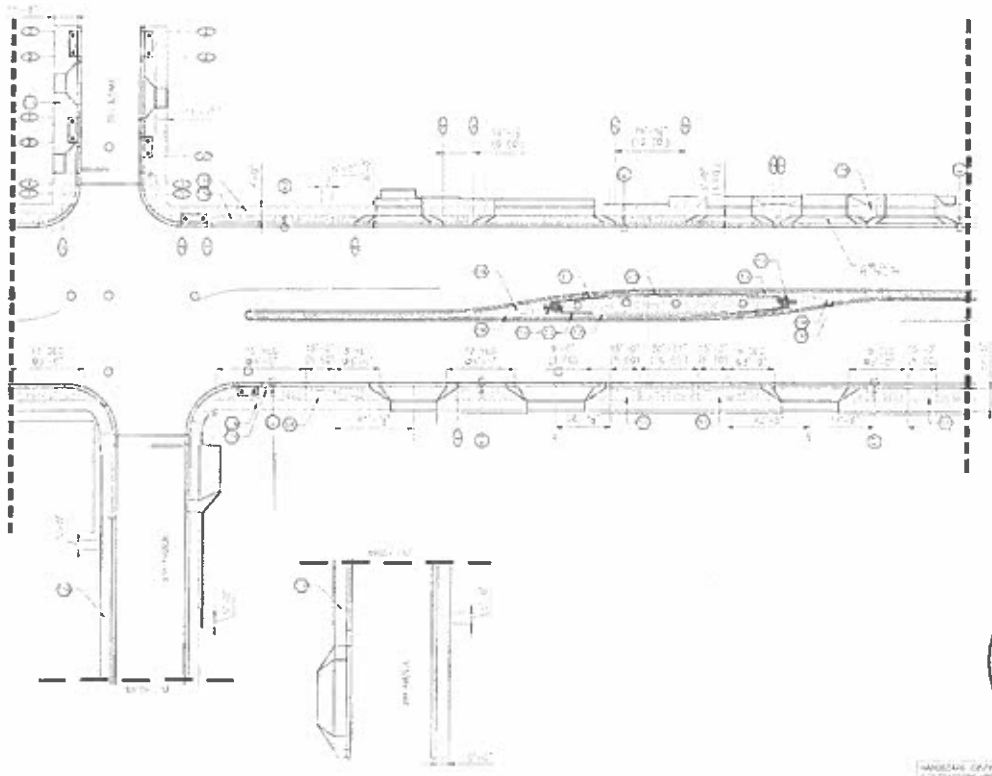
As Constructed  
 FEDERAL BLVD RECON- 5TH AVE TO HOWARD Pk  
 HARDSCAPE PLAN

Project No./Code  
 11/15/2018 10:00 AM

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AD SUBMITTAL - JANUARY 2, 2018



**MATERIAL KEYNOTES**

1. PAVING	PERMANENT CONCRETE	1.50
2. PAVING	PERMANENT CONCRETE	1.50
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**LAYOUT NOTES**

1. ALL MATERIALS TO BE SUPPLIED BY CONTRACTOR.
2. ALL MATERIALS TO BE INSTALLED BY CONTRACTOR.
3. ALL MATERIALS TO BE MAINTAINED BY CONTRACTOR.
4. ALL MATERIALS TO BE PROTECTED BY CONTRACTOR.
5. ALL MATERIALS TO BE REPLACED BY CONTRACTOR.
6. ALL MATERIALS TO BE REPAIRED BY CONTRACTOR.
7. ALL MATERIALS TO BE CLEANED BY CONTRACTOR.
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9. ALL MATERIALS TO BE STAINED BY CONTRACTOR.
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MANAGEMENT CONSULTING & DESIGN ARCHITECTS  
 CONTRACTOR APPROVED: [Signature]  
 DATE: 01/15/2018  
 ALL RIGHTS RESERVED BY THE OWNER  
 ALL RIGHTS RESERVED BY THE OWNER

As Constructed: FEDERAL BLDG RECON - 5TH AVE TO HOWARD PL  
 LANDSCAPE PLAN

Project No./Code: 1511-148-001-0000  
 Sheet No.: 514

DATE: 01/15/2018  
 TIME: 10:00 AM  
 LOCATION: 5TH AVE TO HOWARD PL

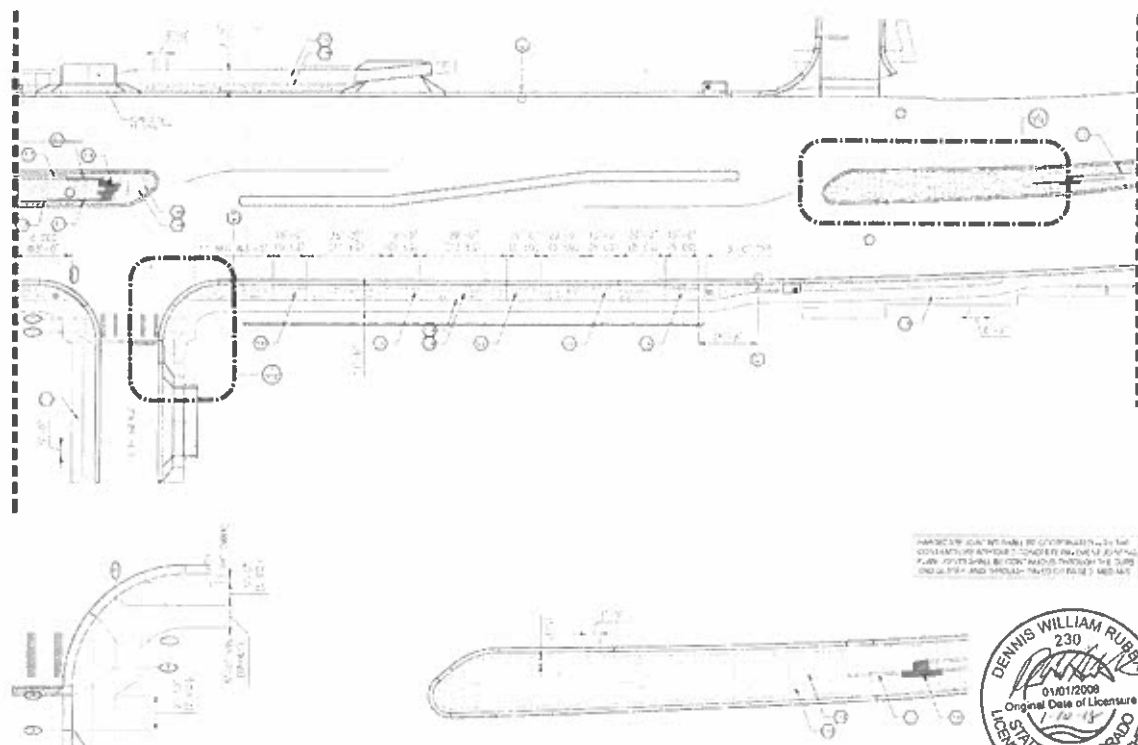
**Sheet Revisions**

No.	Description	Date
1	ISSUED FOR PERMIT	01/15/2018
2	ISSUED FOR PERMIT	01/15/2018
3	ISSUED FOR PERMIT	01/15/2018
4	ISSUED FOR PERMIT	01/15/2018
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50	ISSUED FOR PERMIT	01/15/2018



Colorado Department of Transportation  
 4400 Central Expressway  
 Denver, CO 80242  
 (303) 769-3000





**MATERIAL KEYNOTES**

1	GRAVEL	1/2" - 3/4"
2	CONCRETE	4" THICK
3	ASPHALT	2" THICK
4	PAVING STONE	4" x 8" x 4"
5	BRICK	4" x 8" x 2"
6	WOOD	2" x 4" S4S
7	WOOD	2" x 6" S4S
8	WOOD	2" x 8" S4S
9	WOOD	2" x 10" S4S
10	WOOD	2" x 12" S4S
11	WOOD	2" x 14" S4S
12	WOOD	2" x 16" S4S
13	WOOD	2" x 18" S4S
14	WOOD	2" x 20" S4S
15	WOOD	2" x 22" S4S
16	WOOD	2" x 24" S4S
17	WOOD	2" x 26" S4S
18	WOOD	2" x 28" S4S
19	WOOD	2" x 30" S4S
20	WOOD	2" x 32" S4S
21	WOOD	2" x 34" S4S
22	WOOD	2" x 36" S4S
23	WOOD	2" x 38" S4S
24	WOOD	2" x 40" S4S
25	WOOD	2" x 42" S4S
26	WOOD	2" x 44" S4S
27	WOOD	2" x 46" S4S
28	WOOD	2" x 48" S4S
29	WOOD	2" x 50" S4S
30	WOOD	2" x 52" S4S
31	WOOD	2" x 54" S4S
32	WOOD	2" x 56" S4S
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35	WOOD	2" x 62" S4S
36	WOOD	2" x 64" S4S
37	WOOD	2" x 66" S4S
38	WOOD	2" x 68" S4S
39	WOOD	2" x 70" S4S
40	WOOD	2" x 72" S4S
41	WOOD	2" x 74" S4S
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43	WOOD	2" x 78" S4S
44	WOOD	2" x 80" S4S
45	WOOD	2" x 82" S4S
46	WOOD	2" x 84" S4S
47	WOOD	2" x 86" S4S
48	WOOD	2" x 88" S4S
49	WOOD	2" x 90" S4S
50	WOOD	2" x 92" S4S
51	WOOD	2" x 94" S4S
52	WOOD	2" x 96" S4S
53	WOOD	2" x 98" S4S
54	WOOD	2" x 100" S4S

**1 CORNER SCORING ENLARGEMENT**

**2 MEDIAN SCORING ENLARGEMENT**



**LAUNCH NOTES**

1. All work shall be in accordance with the approved plans.
2. All materials shall be of the highest quality.
3. All work shall be completed within the specified time frame.
4. All work shall be done in a safe and sound manner.
5. All work shall be done in a professional and courteous manner.
6. All work shall be done in a timely and efficient manner.
7. All work shall be done in a cost-effective manner.
8. All work shall be done in a manner that is pleasing to the client.
9. All work shall be done in a manner that is respectful of the environment.
10. All work shall be done in a manner that is respectful of the community.

**PROJECT INFORMATION**

Project No./Code	516
Client Name	
Address	
City	
State	
Zip	
Phone	
Fax	
Email	
Website	
Project Start Date	
Project End Date	
Project Status	
Project Manager	
Project Designer	
Project Checker	
Project Approver	

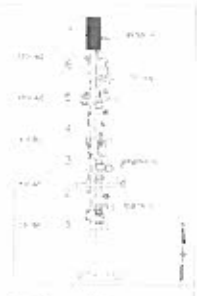
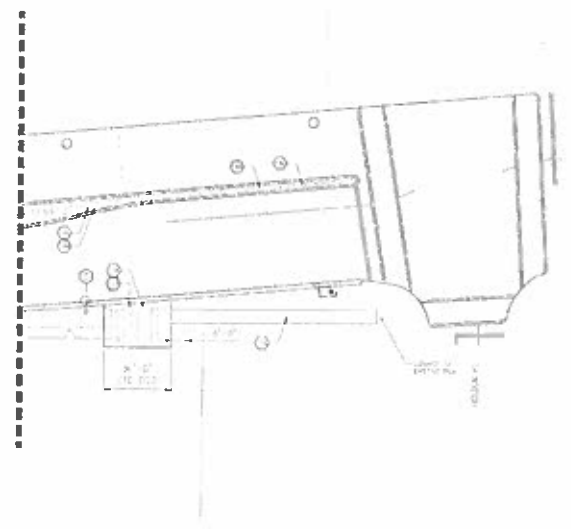
Sheet Revisions

No.	Description	Date
1	Initial Issue	01/01/2008
2	Revisions	01/01/2008
3	Revisions	01/01/2008
4	Revisions	01/01/2008
5	Revisions	01/01/2008
6	Revisions	01/01/2008
7	Revisions	01/01/2008
8	Revisions	01/01/2008
9	Revisions	01/01/2008
10	Revisions	01/01/2008

As Constructed

FEDERAL, BUSI RECON - 5th AVE TO HOWARD PL  
HARDSCAPE PLAN

Project No./Code: 516  
Client Name: [Redacted]  
Address: [Redacted]  
City: [Redacted]  
State: [Redacted]  
Zip: [Redacted]  
Phone: [Redacted]  
Fax: [Redacted]  
Email: [Redacted]  
Website: [Redacted]  
Project Start Date: [Redacted]  
Project End Date: [Redacted]  
Project Status: [Redacted]  
Project Manager: [Redacted]  
Project Designer: [Redacted]  
Project Checker: [Redacted]  
Project Approver: [Redacted]



Office: 1400 North Lincoln Avenue, Suite 100  
 Denver, Colorado 80202  
 Phone: 303.733.1111 Fax: 303.733.1112

**Sheet Revisions**  
 1/18/18



Groundworks Smilch Holdings  
 1400 North Lincoln Avenue, Suite 100  
 Denver, Colorado 80202  
 Phone: 303.733.1111

**As Constructed**  
 Project No. 18-001  
 Date: 1/18/18

**FEDERAL BLVD RECON - 5TH AVE TO HOWARD PL**  
**HARDSCAPE PLAN**

Project No./Code  
 18-001/517  
 Date: 1/18/18

**MATERIAL KEYNOTES**

1. 1/2" CONC. ON 2" SAND
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**LAUNCH NOTES**

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NOTES: ALL NOTES SHALL BE CONSIDERED PART OF THE CONTRACT DOCUMENTS. ANY NOTES NOT SHOWN HEREIN SHALL BE CONSIDERED TO BE PART OF THE CONTRACT DOCUMENTS. ANY NOTES NOT SHOWN HEREIN SHALL BE CONSIDERED TO BE PART OF THE CONTRACT DOCUMENTS.

AD SUBMITTAL - JANUARY 2, 2018