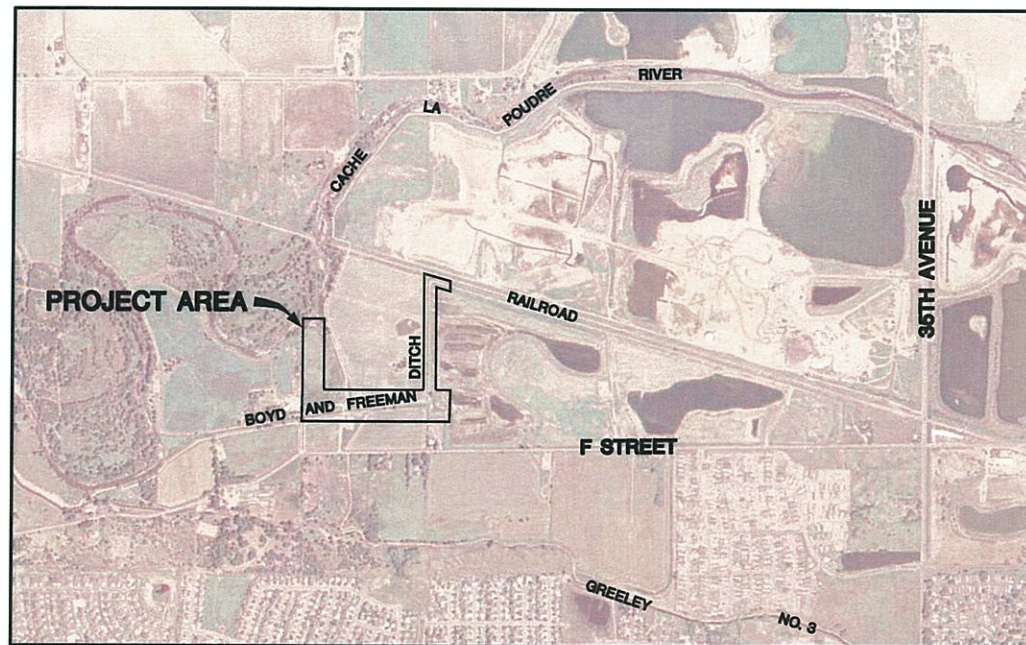


BOYD AND FREEMAN DITCH GREELEY REACH REPAIR AND HILL REACH IMPROVEMENTS CONSTRUCTION DRAWINGS GREELEY, COLORADO MARCH 2011



PROJECT VICINITY MAP

SCALE 1" = 1000'
0 500 1000 2000



OWNER:

THE BOYD IRRIGATION COMPANY
1100 10TH STREET, SUITE 300
GREELEY, CO 80631

ENGINEERS:



ANDERSON CONSULTING ENGINEERS, INC.
Civil • Water Resources • Environmental
375 E. Horsetooth Road, Building #5, Fort Collins, CO 80525
Phone (970) 226-0120 / Fax (970) 226-0121
www.acewater.com

INDEX OF SHEETS

SHEET NO.	INDEX NO.	DESCRIPTION
1	1	COVER SHEET
2	C1	PROJECT INFORMATION SHEET
3	C2	SITE PLAN
4	C3	EARTHWORK BORROW AND FILL PLAN
5	C4	WASH OUT REGRADING
6	C5	48-INCH PIPE PLAN AND PROFILE STA. 16+00 TO STA. 23+50
7	C6	48-INCH PIPE PLAN AND PROFILE STA. 23+50 TO STA. 31+00
8	C7	48-INCH PIPE PLAN AND PROFILE STA. 31+00 TO STA. 37+00
9	C8	48-INCH PIPE PLAN AND PROFILE STA. 37+00 TO STA. 43+10
10	C9	WASTEWAY PLAN AND PROFILE STA. 0+00 TO STA. 6+00
11	C10	WASTEWAY PLAN AND PROFILE STA. 6+00 TO STA. 11+05
12	D1	WASTEWAY STRUCTURE DETAILS
13	D2	GENERAL DETAILS
14	D3	GENERAL DETAILS
15	D4	GENERAL DETAILS
16	D5	GENERAL DETAILS
17	D6	GENERAL DETAILS
18	D7	GENERAL DETAILS

ACCEPTED BY:

Boyd Irrigation Company, President

Date

Boyd Irrigation Company, Project Manager

Date

PRELIMINARY-90%
- FOR REVIEW AND BID PURPOSES ONLY



SHEET
1
SHEET INDEX
1

P:\COCOG\13.03-BED-GREELEY REACH REPAIR\ACAD\B&F DITCH REPAIR_PROJ\INFO SITE PLAN.dwg 02/16/2011 TAW

GENERAL NOTES

- ALL CONSTRUCTION SHALL CONFORM TO THESE PLANS, THE SPECIFICATIONS WHICH ARE INCLUDED WITH THE CONTRACT DOCUMENTS, AND THE CITY OF GREELEY STREETS DESIGN CRITERIA AND CONSTRUCTION SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE DRAWINGS AND SPECIFICATIONS.
- WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES AND SPECIFICATIONS, THE MORE STRINGENT REQUIREMENTS SHALL GOVERN.
- "CDOT SPECIFICATIONS" REFERS TO CDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2005 EDITION.
- ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION BY THE OWNER. THE OWNER RESERVES THE RIGHT TO ACCEPT OR REJECT ANY SUCH MATERIALS AND WORKMANSHIP THAT DOES NOT CONFORM TO THE STANDARDS AND SPECIFICATIONS SET FORTH HEREIN.
- SUBSTITUTIONS: THE OWNER'S AND ENGINEER'S APPROVAL SHALL BE SECURED FOR ALL SUBSTITUTIONS.
- NONCONFORMANCE: THE CONTRACTOR SHALL NOTIFY THE OWNER IMMEDIATELY OF ANY FIELD CONDITION NOT CONSISTENT WITH THE CONTRACT DOCUMENTS.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES WITHIN THE WORK AREA AND COORDINATE CONSTRUCTION SCHEDULES WITH THESE UTILITY OWNERS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING UTILITIES DURING CONSTRUCTION.
- THE CONTRACTOR SHALL PROVIDE ALL CONSTRUCTION STAKING FOR THIS PROJECT. ALL SURVEYING MUST BE PERFORMED UNDER THE SUPERVISION OF A COLORADO LICENSED SURVEYOR.
- CONTRACTOR SHALL HAVE A REGISTERED LAND SURVEYOR TIE-OUT AND RESET ANY PROPERTY CORNERS OR SECTION CORNERS DISTURBED DURING CONSTRUCTION.
- THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO THEIR ORIGINAL CONDITION OR BETTER AS DESIGNATED BY THE OWNER.
- REINFORCEMENT BAR LAP LENGTHS NOT SHOWN ON THE DRAWINGS SHALL BE PER ACI STANDARDS.
- THE CONTRACTOR SHALL CONNECT STRUCTURAL STEEL UTILIZING ESTABLISHED METHODS AS OUTLINED IN AISC "MANUAL OF STEEL CONSTRUCTION" AND WELDING IN ACCORDANCE WITH AWS STRUCTURAL CODE.
- THE CONTRACTOR SHALL PROVIDE A TRAFFIC CONTROL PLAN TO THE TRAFFIC CONTROL DEPARTMENT FOR REVIEW PRIOR TO MOBILIZATION AND SHALL OBTAIN ANY NECESSARY PERMITS AND TRAFFIC PLAN APPROVALS FROM THE CITY OF GREELEY AND/OR WELD COUNTY PRIOR TO CONSTRUCTION.
- THE CONTRACTOR SHALL PROTECT ALL EXISTING CURB, GUTTER, SIDEWALK, ASPHALT, AND LANDSCAPING EXCEPT AS SHOWN ON THESE DRAWINGS, FROM DAMAGE BY EQUIPMENT OR CONSTRUCTION OPERATIONS. ALL CURB, GUTTER, SIDEWALK, ASPHALT, AND LANDSCAPING DAMAGED BY THE CONTRACTOR SHALL BE REMOVED AND REPLACED AT THE CONTRACTORS EXPENSE.
- THE CONTRACTOR SHALL PROVIDE EROSION CONTROL DURING CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE A FINAL EROSION CONTROL PLAN TO THE APPROPRIATE GOVERNING AUTHORITY FOR REVIEW PRIOR TO MOBILIZATION.
- THE CONTRACTOR SHALL MAINTAIN A SAFE WORK AREA IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS, AND SHALL PROVIDE ACCESS TO THE SITE FOR ALL EMERGENCY VEHICLES.
- THE STREETS ADJACENT TO THE CONSTRUCTION AREA SHALL BE CLEANED OF DEBRIS GENERATED BY THE PROJECT BY THE CONTRACTOR AT THE EARLIEST OPPORTUNITY, OR IMMEDIATELY WHEN DEEMED NECESSARY BY THE OWNER FOR THE SAFETY OF TRAFFIC OR PEDESTRIANS, BUT IN NO CASE SHALL THE STREET BE LEFT UNCLEANED AFTER THE COMPLETION OF THE DAY'S WORK. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE THE NECESSARY EQUIPMENT AND MATERIALS TO SATISFACTORILY CLEAN THE ADJACENT ROADWAYS AT NO ADDITIONAL COST TO THE PROJECT. THIS SHALL INCLUDE PEDESTRIAN/BIKE TRIALS.
- STRUCTURAL FILL IMPORTED TO THE SITE SHALL CONFORM CDOT STANDARD SPECIFICATIONS FOR CLASS 1 MATERIAL.
- ALL STRUCTURAL FILL SHALL BE PLACED TO CDOT SPECIFICATIONS AND COMPACTED IN 6" LIFTS. COMPACTION SHALL CONFORM TO 80% RELATIVE COMPACTION (MODIFIED PROCTOR, AASHTO T180), UNLESS NOTED OTHERWISE. THE CONTRACTOR IS RESPONSIBLE FOR GEOTECHNICAL TESTING.

VERTICAL DATUM:

PROJECT BENCHMARK:
NGS CONTROL POINT U136
ELEVATION=4674.08 (NAVD 88)

HORIZONTAL DATUM:

COLORADO STATE PLANE COORDINATES NAD 83 (2007) DATUM. HORIZONTAL CONTROL BASED UPON TRIMBLE VRS NETWORK.

SURVEY NOTES:

- THESE CONSTRUCTION DRAWINGS ARE IN MODIFIED STATE PLANE COORDINATES. IN ORDER TO REDUCE TO STATE PLANE COORDINATES, SCALE THE DRAWING AT 0.99973183 (1.00026824) ABOUT THE ORIGIN 0,0.
- ALL PROPERTY LINES, INTERSECTION MONUMENTS, AND SECTION CORNERS DISTURBED DURING CONSTRUCTION MUST BE REFERENCED AND REPLACED UNDER THE SUPERVISION OF A LICENSED SURVEYOR.
- ALL PROJECT CONTROL LISTED HEREON IS PROVIDED AS A REFERENCE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE ACCURACY OF THE COORDINATES AND ELEVATIONS SHOWN PRIOR TO USING THEM FOR ANY PURPOSES.



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CENTER OF COLORADO

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CALL 2 BUSINESS DAYS IN ADVANCE
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FOR THE MARKING OF UNDERGROUND
MEMBER UTILITIES

LEGEND

	CHAIN LINK FENCE		SHRUB
	EDGE OF ASPHALT		PINE TREE
	EDGE OF LANDSCAPING		DECIDUOUS TREE
	EDGE OF DIRT ROAD		WOOD POST
	FENCE LINE		REFLECTOR POST
	GAS LINE		WATER METER
	GUARD RAIL		STEEL POST
	WATER LINE		ELECTRIC METER
	OVERHEAD POWER LINE		DRAINAGE MANHOLE
	PIPE		GAS MARKER
	DRAINAGE LINE		CONTROL POINT
	UNDERGROUND POWER LINE		POWER POLE
	EXISTING ONE FOOT CONTOUR		GUY WIRE
	EXISTING 5 FOOT CONTOUR		SIGN
	PROPOSED CONTOUR		GAS VALVE
	PVC PIPE		BOREHOLE
	PROPERTY BOUNDARY		
	SILT FENCE		
	EASEMENT		
	LIMITS OF DISTURBANCE		
	LIMITS OF EARTHWORK		
	EFFECTIVE FLOODWAY		
	EFFECTIVE 100-YR FLOODPLAIN		

TEMPORARY CONTROL POINTS

CONTROL POINT NO.	NORTHING	EASTING	ELEVATION (FT., NAVD 88)	DESCRIPTION
GRAYLING	1405082.93	3207019.71	4688.81	SET #4 REBAR WITH 2" ALUMINUM CAP KSI
KOKANEE	1405238.28	3207603.96	4687.1	FOUND #4 REBAR WITH 2" ALUMINUM CAP KSI
CIVIL ARTS	1405138.03	3207663.56	4686.6	FOUND #4 REBAR WITH YELLOW PLASTIC CAP
PIKE	1405531.50	3209189.27	4683.59	SET #4 REBAR WITH 2" ALUMINUM CAP KSI
WP-30	1405582.87	3209334.46	4683.93	SET 60D NAIL

THE SURVEY CONTROL POINTS LISTED ABOVE WERE OBTAINED FROM SURVEY DATA COLLECTED BY KING SURVEYORS INC., WINDSOR, CO ON 7-28-2010. KING SURVEYORS PROJECT NO. 2010294.
THE PROJECT BENCHMARK IS DEFINED IN THE VERTICAL DATUM SECTION INCLUDED ON THIS SHEET.

CITY OF GREELEY 1-FOOT CONTOURS FROM MAY, 2005

KING SURVEYORS, INC. 1-FOOT CONTOURS FROM JULY, 2010. PROJECT NO. 2010294

THE BOYD IRRIGATION COMPANY
BOYD AND FREEMAN DITCH
GREELEY REACH REPAIR
AND HILL REACH IMPROVEMENTS

PRELIMINARY-90%
PROJECT INFORMATION

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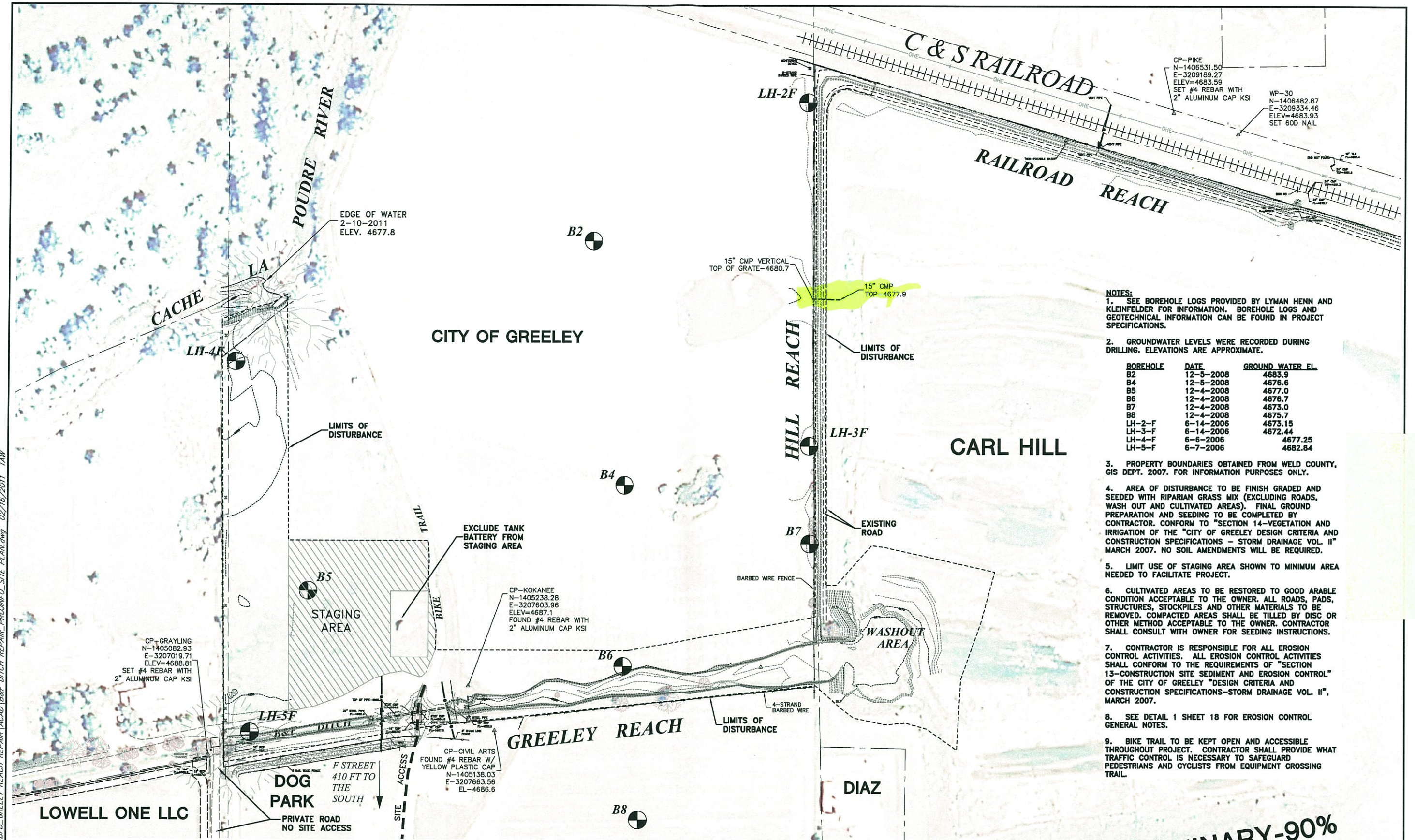
REVISIONS:
REV1
REV2
REV3
REV4
REV5
REV6

PROJECT NUMBER: COCOG13.02	DRAWN BY: SRP/TAW
ACAD FILE: PROJ INFO	DESIGNED BY: CJP/SRP
DATE: 02/16/2011	CHECKED BY: CJP/BAA



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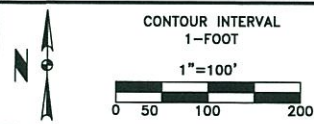
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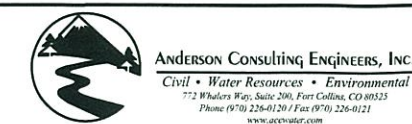
- NOTES:**
- SEE BOREHOLE LOGS PROVIDED BY LYMAN HENN AND KLEINFELDER FOR INFORMATION. BOREHOLE LOGS AND GEOTECHNICAL INFORMATION CAN BE FOUND IN PROJECT SPECIFICATIONS.
 - GROUNDWATER LEVELS WERE RECORDED DURING DRILLING. ELEVATIONS ARE APPROXIMATE.
 - PROPERTY BOUNDARIES OBTAINED FROM WELD COUNTY, GIS DEPT. 2007. FOR INFORMATION PURPOSES ONLY.
 - AREA OF DISTURBANCE TO BE FINISH GRADED AND SEEDED WITH RIPARIAN GRASS MIX (EXCLUDING ROADS, WASH OUT AND CULTIVATED AREAS). FINAL GROUND PREPARATION AND SEEDED TO BE COMPLETED BY CONTRACTOR. CONFORM TO "SECTION 14-VEGETATION AND IRRIGATION OF THE "CITY OF GREELEY DESIGN CRITERIA AND CONSTRUCTION SPECIFICATIONS - STORM DRAINAGE VOL. II" MARCH 2007. NO SOIL AMENDMENTS WILL BE REQUIRED.
 - LIMIT USE OF STAGING AREA SHOWN TO MINIMUM AREA NEEDED TO FACILITATE PROJECT.
 - CULTIVATED AREAS TO BE RESTORED TO GOOD ARABLE CONDITION ACCEPTABLE TO THE OWNER. ALL ROADS, PADS, STRUCTURES, STOCKPILES AND OTHER MATERIALS TO BE REMOVED. COMPACTED AREAS SHALL BE TILLED BY DISC OR OTHER METHOD ACCEPTABLE TO THE OWNER. CONTRACTOR SHALL CONSULT WITH OWNER FOR SEEDING INSTRUCTIONS.
 - CONTRACTOR IS RESPONSIBLE FOR ALL EROSION CONTROL ACTIVITIES. ALL EROSION CONTROL ACTIVITIES SHALL CONFORM TO THE REQUIREMENTS OF "SECTION 13-CONSTRUCTION SITE SEDIMENT AND EROSION CONTROL" OF THE CITY OF GREELEY "DESIGN CRITERIA AND CONSTRUCTION SPECIFICATIONS-STORM DRAINAGE VOL. II", MARCH 2007.
 - SEE DETAIL 1 SHEET 18 FOR EROSION CONTROL GENERAL NOTES.
 - BIKE TRAIL TO BE KEPT OPEN AND ACCESSIBLE THROUGHOUT PROJECT. CONTRACTOR SHALL PROVIDE WHAT TRAFFIC CONTROL IS NECESSARY TO SAFEGUARD PEDESTRIANS AND CYCLISTS FROM EQUIPMENT CROSSING TRAIL.

BOREHOLE	DATE	GROUND WATER EL.
B2	12-5-2008	4683.9
B4	12-5-2008	4676.6
B5	12-4-2008	4677.0
B6	12-4-2008	4676.7
B7	12-4-2008	4673.0
B8	12-4-2008	4675.7
LH-2-F	6-14-2006	4673.15
LH-3-F	6-14-2006	4672.44
LH-4-F	6-6-2006	4677.25
LH-5-F	6-7-2006	4682.84

REVISIONS:
REV1
REV2
REV3
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REV6



PROJECT NUMBER:	COCOG13.03
ACAD FILE:	SITE PLAN
DATE:	03/16/2011
DRAWN BY:	SRP
DESIGNED BY:	CJP/SRP
CHECKED BY:	CJP/BAA



THE BOYD IRRIGATION COMPANY
BOYD AND FREEMAN DITCH
GREELEY REACH REPAIR
AND HILL REACH IMPROVEMENTS

PRELIMINARY-90%
SITE PLAN

SHEET	3
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BORROW AND FILL TABLE:

GREELEY REACH	-12,100 CY FILL
WASH OUT AREA	+7,100 CY BORROW
WASTEWAY AREA	+4,500 CY BORROW
IMPORT/EXPORT	-500 CY IMPORT

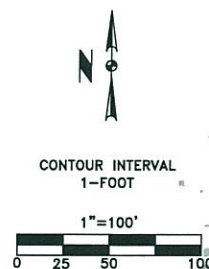
NOTE: APPROXIMATELY 800 CY OF SELECT MATERIAL REQUIRED FOR PIPE BEDDING AND STRUCTURES. MAY BE IMPORTED OR SCREENED ON SITE. SEE NOTE 3.

NOTE:

- BORING LOGS FROM LYMAN HENN (LH-4F AND LH-5F) INDICATE 18" OF TOPSOIL IN WASTEWAY AREA UNDERLAIN BY 10'-12' OF SAND AND SAND W/GRAVEL. SUITABLE BACKFILL MATERIAL. BORING LOGS ARE PROVIDED IN PROJECT SPECIFICATIONS.
- LABORATORY RESULTS FROM EEC (MARCH, 2011) (EEC-A, EEC-B, EEC-C) SHOW SAND, SAND & GRAVEL, AND CLAYEY SAND WITH GRAVEL RESPECTIVELY. THE SAND AND SAND & GRAVEL MATERIALS ARE SUITABLE FOR PROCESSING INTO SELECT FILL. ALL MATERIALS WILL MAKE SUITABLE BACKFILL. LAB RESULTS ARE INCLUDED IN PROJECT SPECIFICATIONS.
- GRADATION LIMITS FOR SELECT FILL ARE AS FOLLOWS:

SIZE	PERCENT BY WEIGHT
PASSING 3/4"	100
PASSING No. 200	5 OR LESS
PASSING No. 50	25 OR LESS
- EXISTING DITCH IN HILL REACH CAN BE REGRADED BY CUTTING EMBANKMENT INTO DITCH TO PROVIDE MINIMUM PIPE COVER. NO NET CUT OR FILL IS EXPECTED.
- SEE GENERAL NOTES FOR COMPACTION REQUIREMENTS.

Do we need County Flood People or anyone to approve?



 PROPOSED FILL AREA
 PROPOSED BORROW AREA

PRELIMINARY-90%
EARTHWORK BORROW AND FILL PLAN

P:\COCOG13.03-BFD-GREELEY REACH REPAIR\ACAD\B&F DITCH REPAIR CUT AND FILL.DWG 03/25/2011 TAW

REVISIONS:	
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REV4	
REV5	
REV6	

PROJECT NUMBER:	COCOG13.03	DRAWN BY:	TAW
ACAD FILE:	B&F CUT AND FILL	DESIGNED BY:	CJP/SRP
DATE:	03/25/2011	CHECKED BY:	CJP/BAA



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THE BOYD IRRIGATION COMPANY
BOYD AND FREEMAN DITCH
GREELEY REACH REPAIR

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 SHEET INDEX

NOTES:

1. WASH OUT AREA IS BORROW AREA FOR GREELEY REACH REPAIR. REGRADING CONTOURS REFLECT FINAL GRADING FOLLOWING BORROW ACTIVITIES.
2. EMBANKMENT SHALL BE COMPACTED TO 90% MINIMUM RELATIVE COMPACTION. (MODIFIED PROCTOR/AASHTO T180)

CITY OF GREELEY
1-FOOT CONTOURS
MAY, 2005 (TYP.)

KING SURVEYORS
1-FOOT CONTOURS
JULY, 2010 (TYP.)

WASH OUT AREA
REGRADING CONTOURS
(TYP.)

LIMITS OF DISTURBANCE

EMBANKMENT

PROPOSED 48-INCH PVC PIPE

EXISTING A

CONTOUR INTERVAL
1-FOOT
1"=40'
0 10 20 40



REVISIONS:
REV1
REV2
REV3
REV4
REV5
REV6

PROJECT NUMBER: COCOG13.03	DRAWN BY: TAW
ACAD FILE: PLAN & PROFILES	DESIGNED BY: SRP
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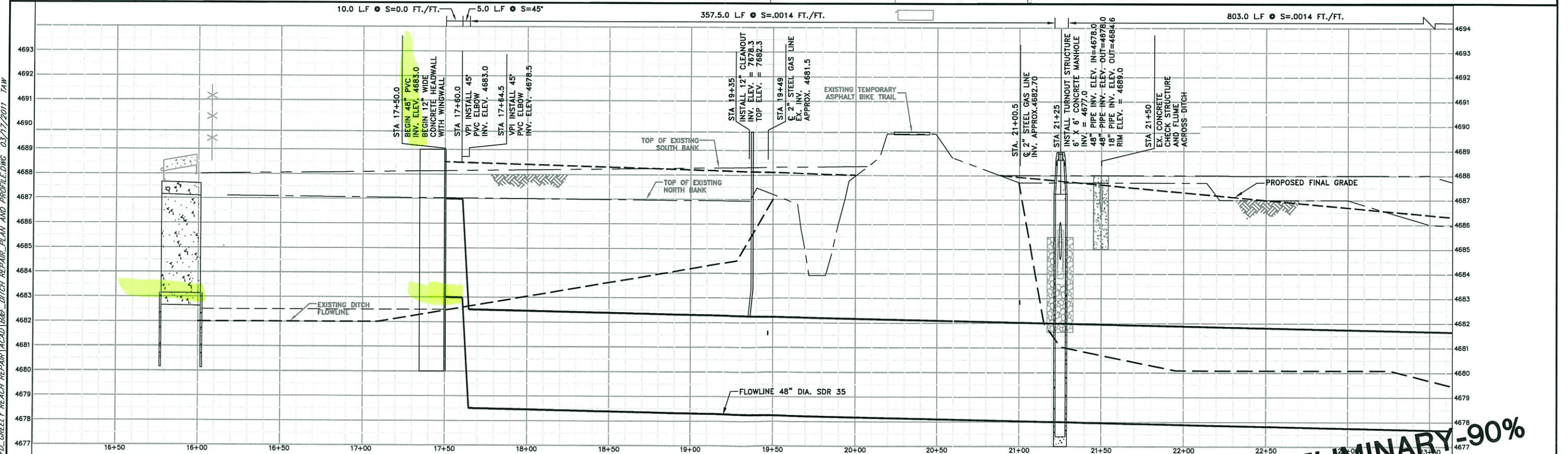
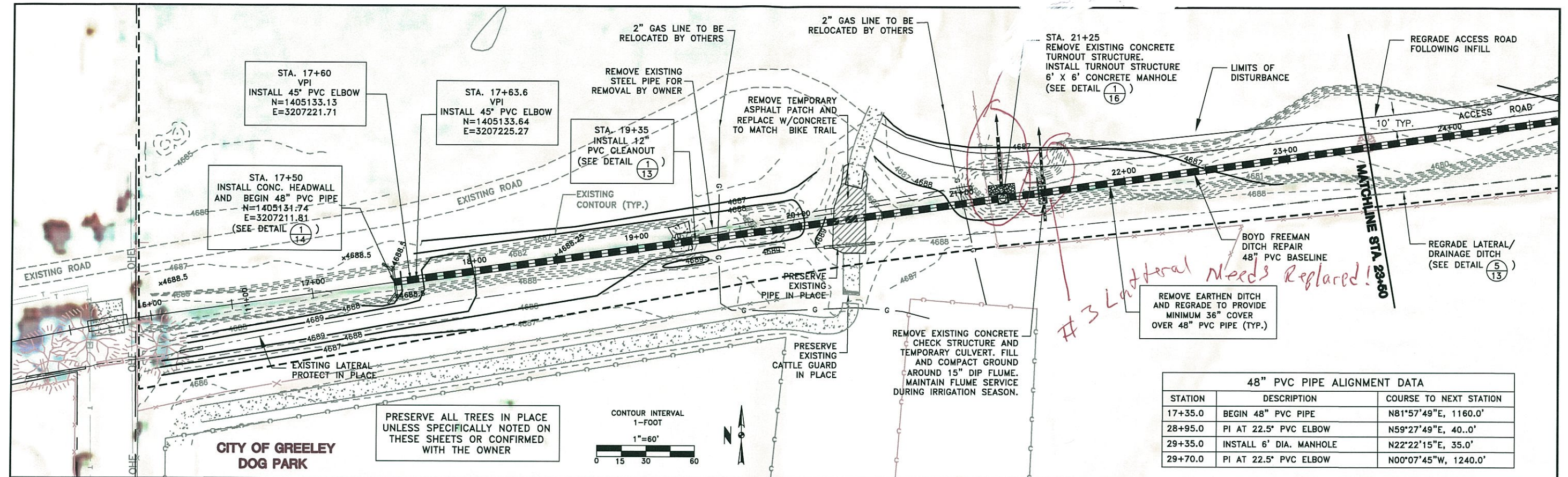
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PRELIMINARY-90%
WASH OUT AREA
GRADING PLAN

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P:\COCOG13.03-BTD-GREELEY REACH REPAIR\ACAD\B&C-DITCH REPAIR-PLAN AND PROFILE.DWG 03/17/2011 TAW



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REV6	

PROJECT NUMBER:
COCOG13.03

ACAD FILE:
PLAN & PROFILES

DATE:
02/16/2011

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HILL REACH IMPROVEMENTS**

PRELIMINARY-90%

**48-INCH PIPE PLAN AND PROFILE
STA 16+00 TO STA 23+50**

SHEET
6
C5
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48" PVC PIPE ALIGNMENT DATA		
STATION	DESCRIPTION	
17+35.0	BEGIN 48" PVC PIPE	N81°57'49"E, 1160.0'
28+95.0	PI AT 22.5" PVC ELBOW	N59°27'49"E, 40..0'
29+35.0	INSTALL 6" DIA. MANHOLE	N22°22'15"E, 35.0'
29+70.0	PI AT 22.5" PVC ELBOW	N00°07'45"W, 1240.0'

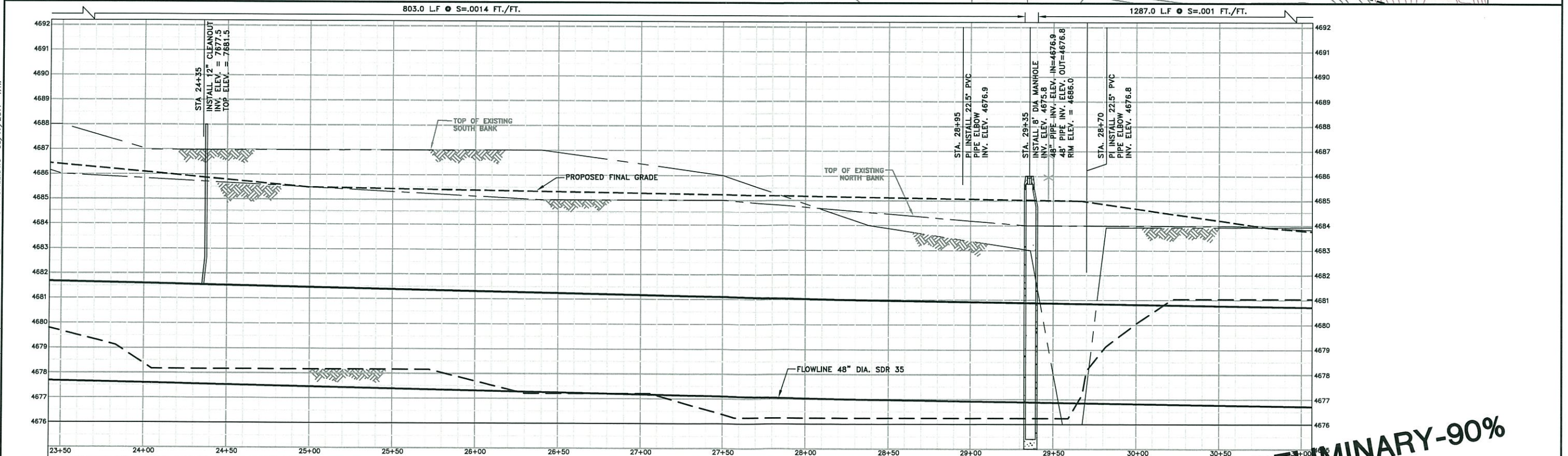
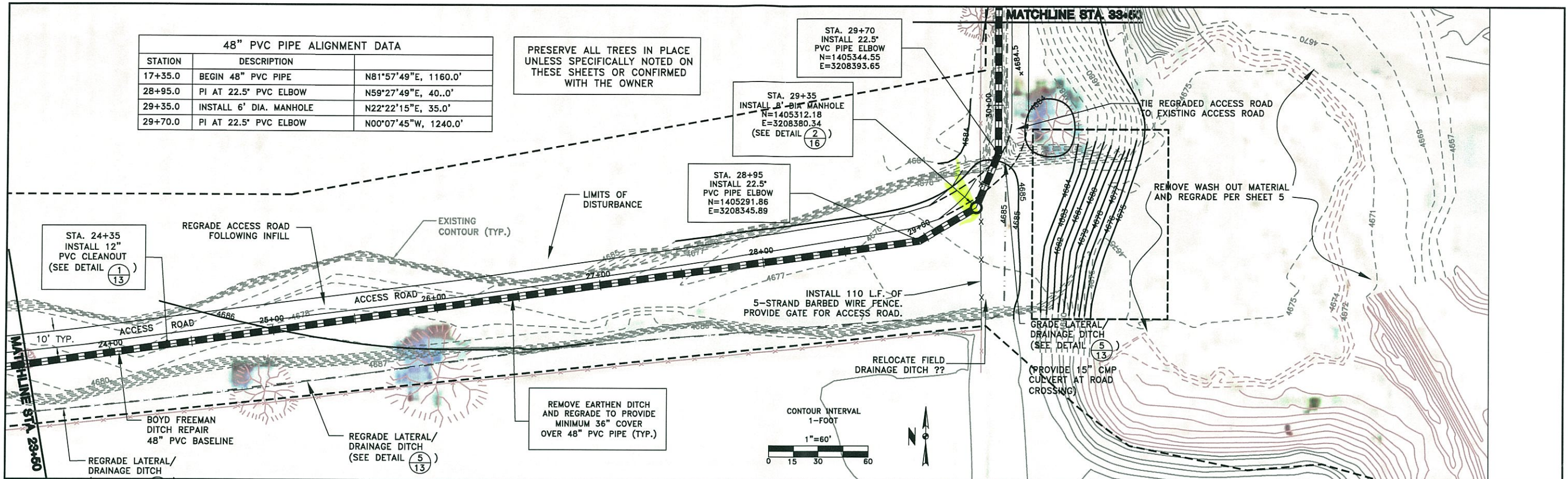
PRESERVE ALL TREES IN PLACE
UNLESS SPECIFICALLY NOTED ON
THESE SHEETS OR CONFIRMED
WITH THE OWNER

STA. 29+70
INSTALL 22.5"
PVC PIPE ELBOW
N=1405344.55
E=3208393.65

STA. 29+35
INSTALL 8" DIA. MANHOLE
N=1405312.18
E=3208380.34
(SEE DETAIL 2/16)

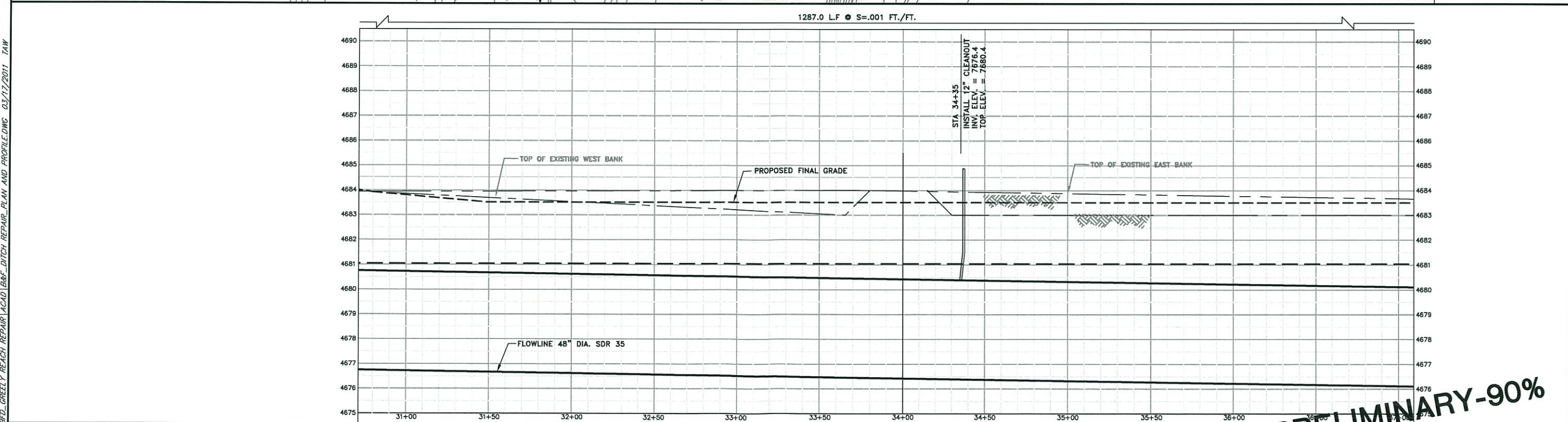
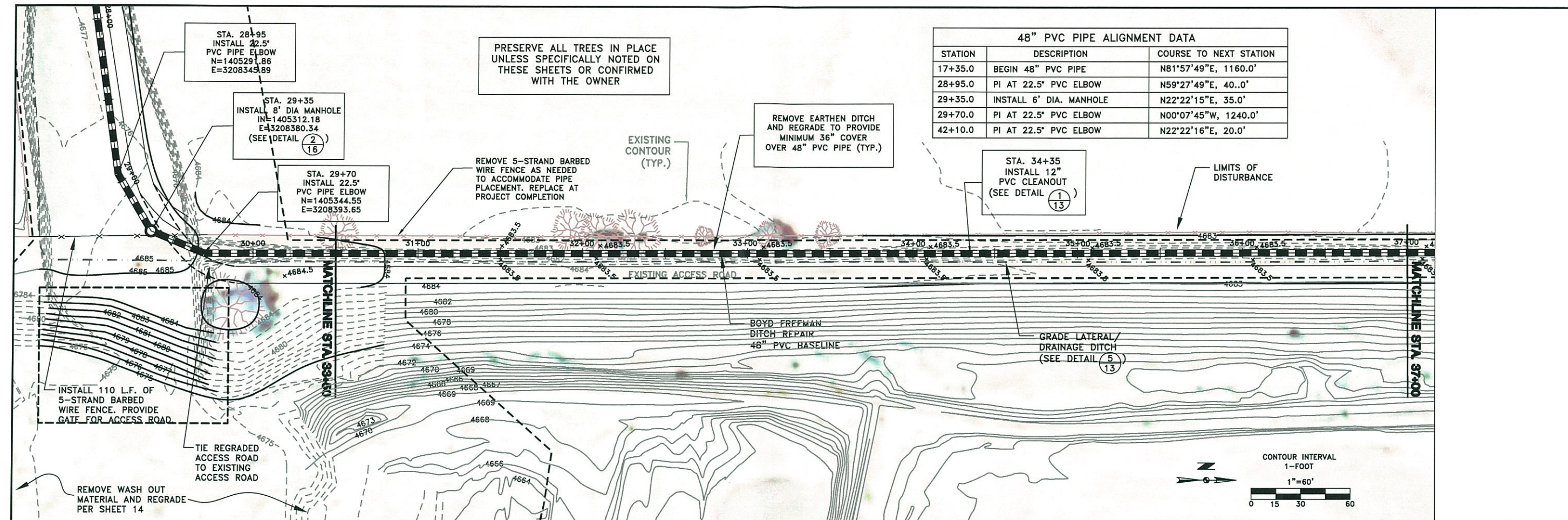
STA. 28+95
INSTALL 22.5"
PVC PIPE ELBOW
N=1405291.86
E=3208345.89

STA. 24+35
INSTALL 12"
PVC CLEANOUT
(SEE DETAIL 1/13)



REVISIONS: REV1 REV2 REV3 REV4 REV5 REV6	VERT. 1" = 4' HORIZ. 1" = 60' 0 1 2 4 0 15 30 60	PROJECT NUMBER: COCOG13.03 ACAD FILE: PLAN & PROFILES DATE: 02/16/2011	DRAWN BY: TAW DESIGNED BY: SRP CHECKED BY: CJP/BAA	 ANDERSON CONSULTING ENGINEERS, INC. Civil • Water Resources • Environmental 772 Whalers Way, Suite 200, Fort Collins, CO 80525 Phone (970) 226-0120 / Fax (970) 226-0121 www.andersonce.com	THE BOYD IRRIGATION COMPANY BOYD AND FREEMAN DITCH GREELEY REACH REPAIR AND HILL REACH IMPROVEMENTS	PRELIMINARY-90% 48-INCH PIPE PLAN AND PROFILE STA 23+50 TO STA 31+00	SHEET 7 C6 SHEET INDEX
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P:\COCOG13.03-BTD-GREELEY REACH REPAIR\ACAD\BMT-DITCH REPAIR PLAN AND PROFILE.DWG 03/17/2011 TAW



REVISIONS:

REV	DATE	DESCRIPTION
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REV3		
REV4		
REV5		
REV6		

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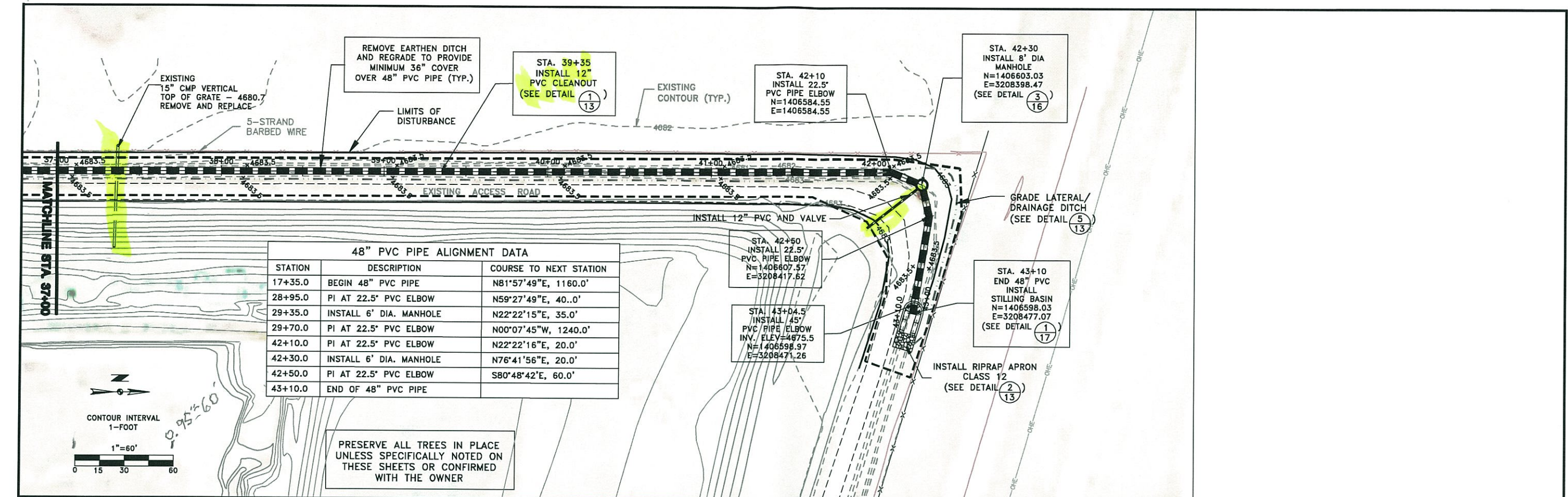
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GREELEY REACH REPAIR AND
HILL REACH IMPROVEMENTS

PRELIMINARY-90%

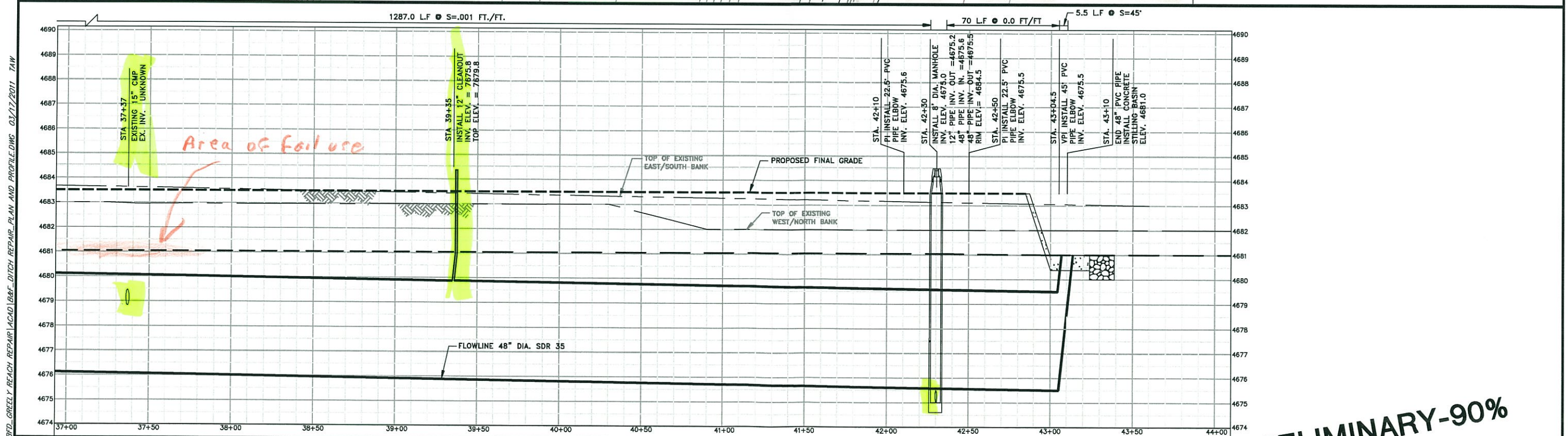
48-INCH PIPE PLAN AND PROFILE
STA. 31+00 TO STA. 37+00

SHEET 8
C7
SHEET INDEX



STATION	DESCRIPTION	COURSE TO NEXT STATION
17+35.0	BEGIN 48" PVC PIPE	N81°57'49"E, 1160.0'
28+95.0	PI AT 22.5" PVC ELBOW	N59°27'49"E, 40.0'
29+35.0	INSTALL 6' DIA. MANHOLE	N22°22'15"E, 35.0'
29+70.0	PI AT 22.5" PVC ELBOW	N00°07'45"W, 1240.0'
42+10.0	PI AT 22.5" PVC ELBOW	N22°22'16"E, 20.0'
42+30.0	INSTALL 6' DIA. MANHOLE	N76°41'56"E, 20.0'
42+50.0	PI AT 22.5" PVC ELBOW	S80°48'42"E, 60.0'
43+10.0	END OF 48" PVC PIPE	

PRESERVE ALL TREES IN PLACE
UNLESS SPECIFICALLY NOTED ON
THESE SHEETS OR CONFIRMED
WITH THE OWNER



REVISIONS:

REV1	
REV2	
REV3	
REV4	
REV5	
REV6	

VERT. 1" = 4'

HORIZ. 1" = 60'

PROJECT NUMBER:
COCOG13.03

ACAD FILE:
PLAN & PROFILES

DATE:
02/16/2011

DRAWN BY:
TAW

DESIGNED BY:
CJP/SRP

CHECKED BY:
CJP/BAA

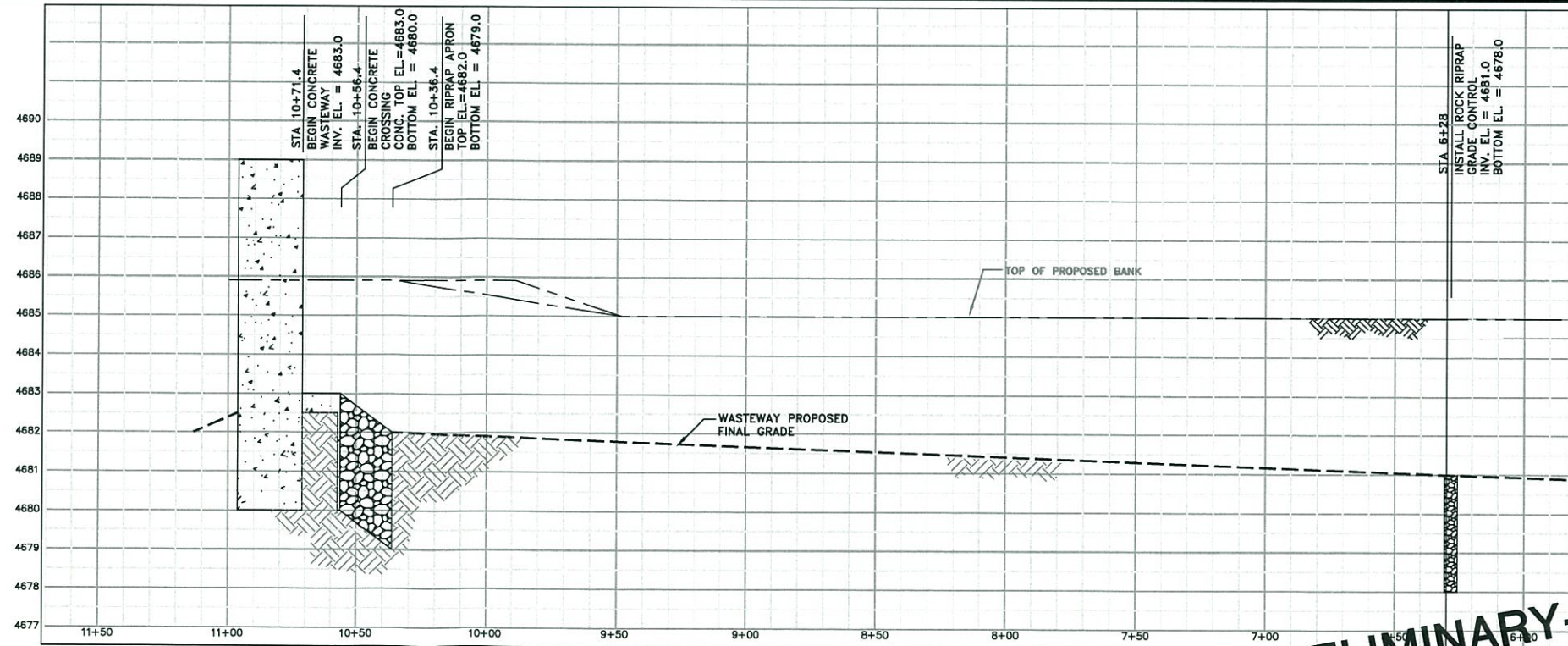
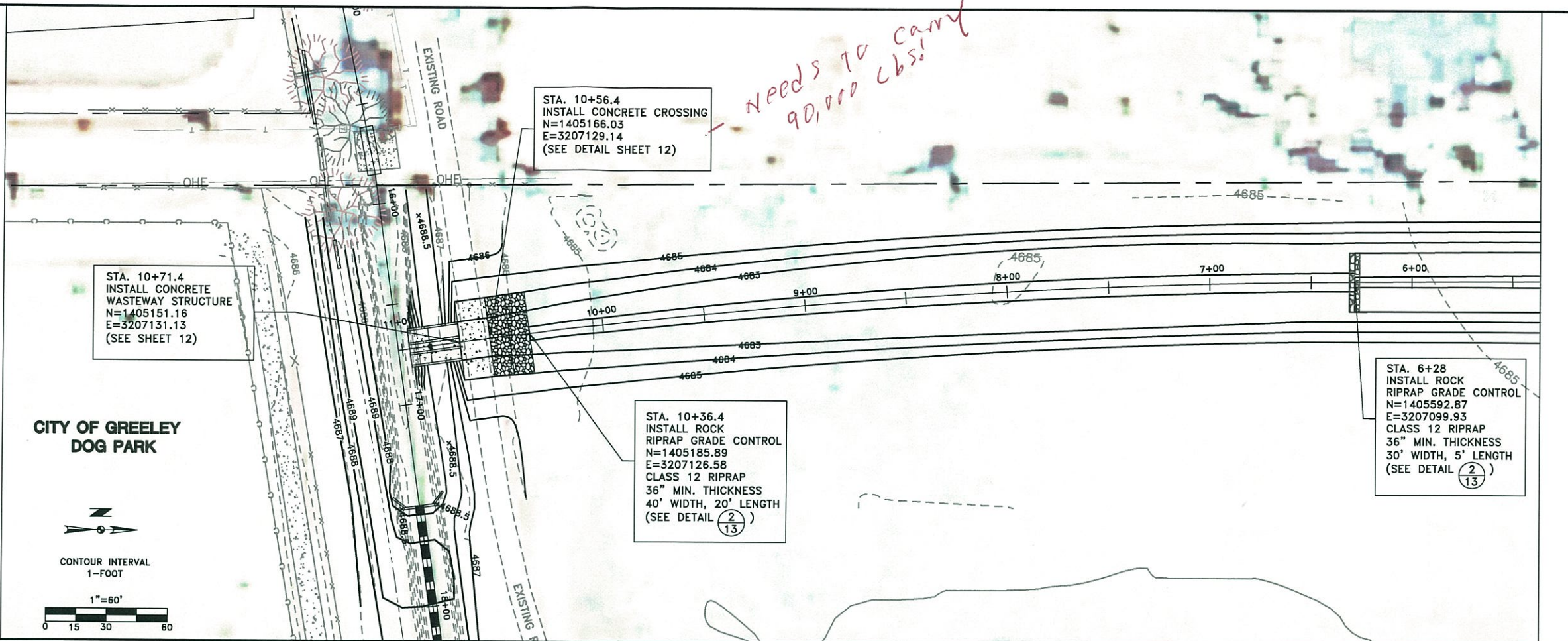
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THE BOYD IRRIGATION COMPANY
BOYD AND FREEMAN DITCH
GREELEY REACH REPAIR AND
HILL REACH IMPROVEMENTS

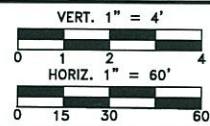
PRELIMINARY-90%
48-INCH PLAN AND PROFILE
STA. 37+00 TO STA. 43+10

SHEET
9
C8
SHEET INDEX

P:\COCOG13.03-BTD-GREELEY REACH REPAIR\ACAD\BMT-DITCH REPAIR PLAN AND PROFILE.DWG 03/17/2011 TAW



REVISIONS:
REV1
REV2
REV3
REV4
REV5
REV6



PROJECT NUMBER:
COCOG13.03

ACAD FILE:
PLAN & PROFILES

DATE:
02/16/2011

DRAWN BY:
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DESIGNED BY:
CJP/SRP

CHECKED BY:
CJP/BAA



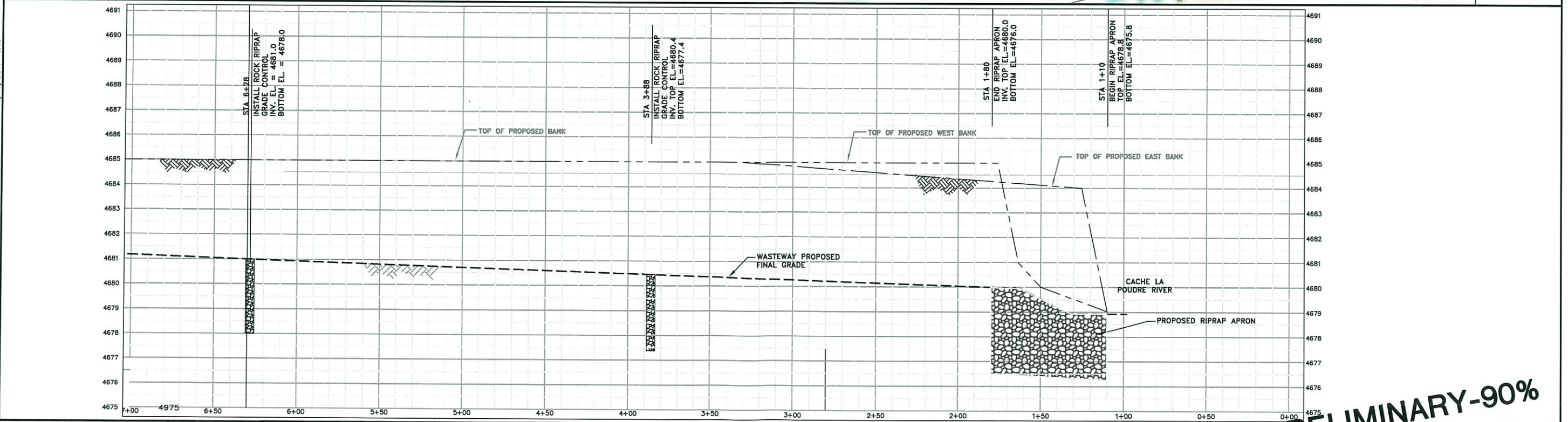
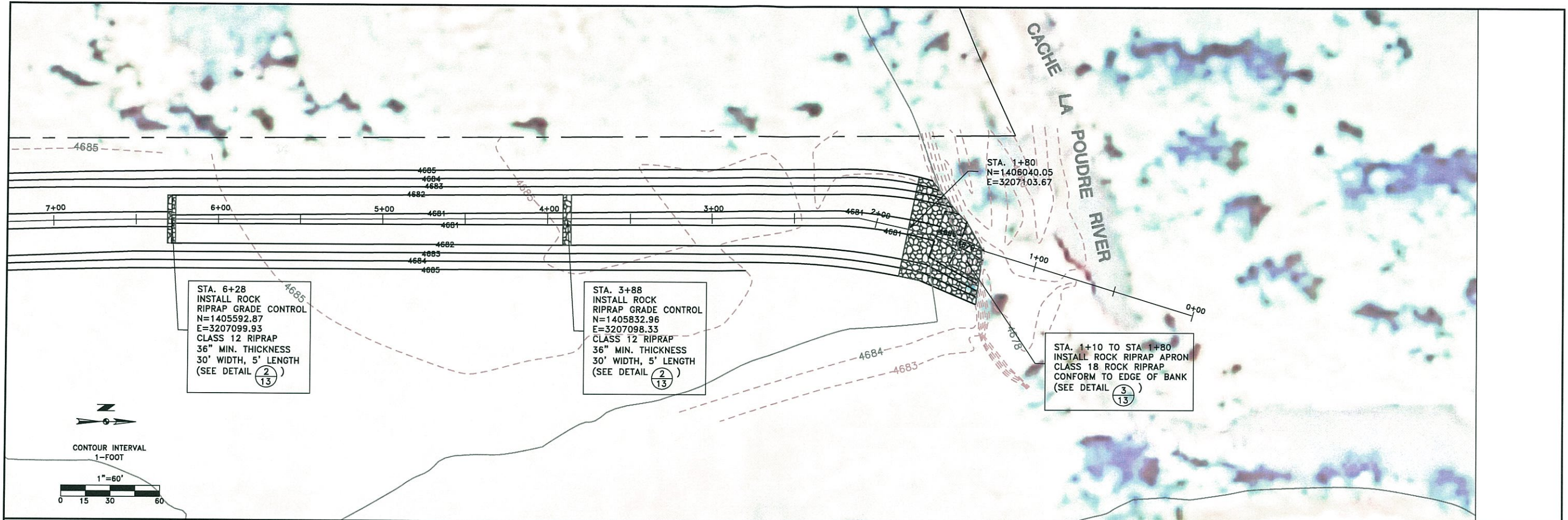
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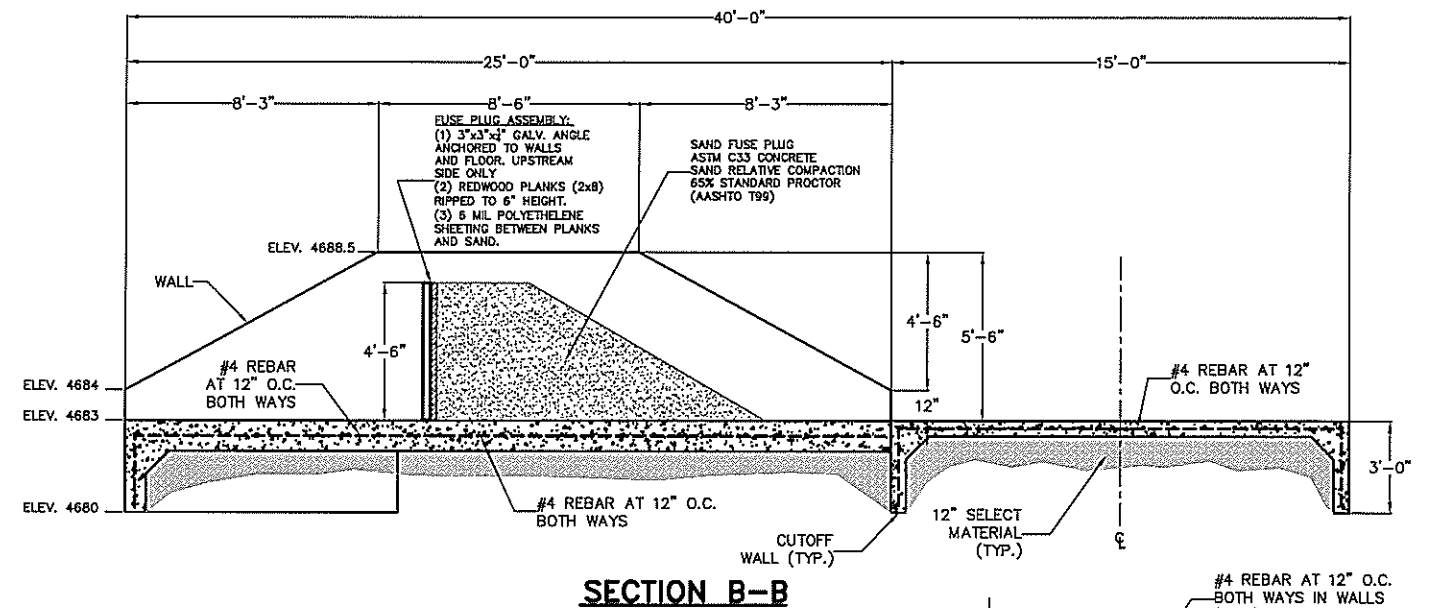
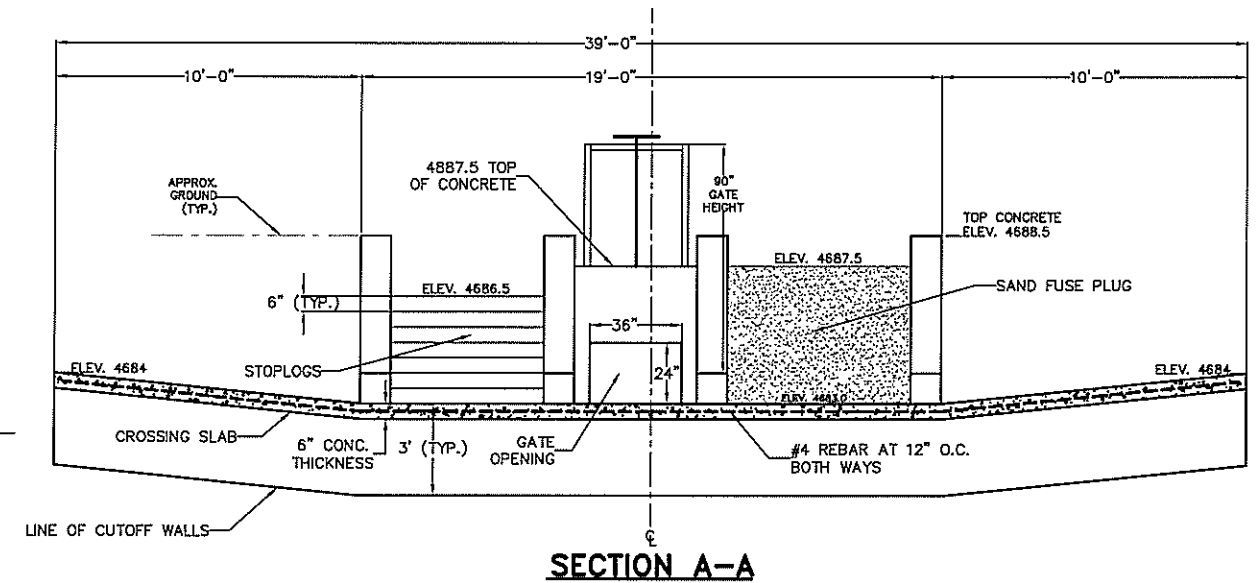
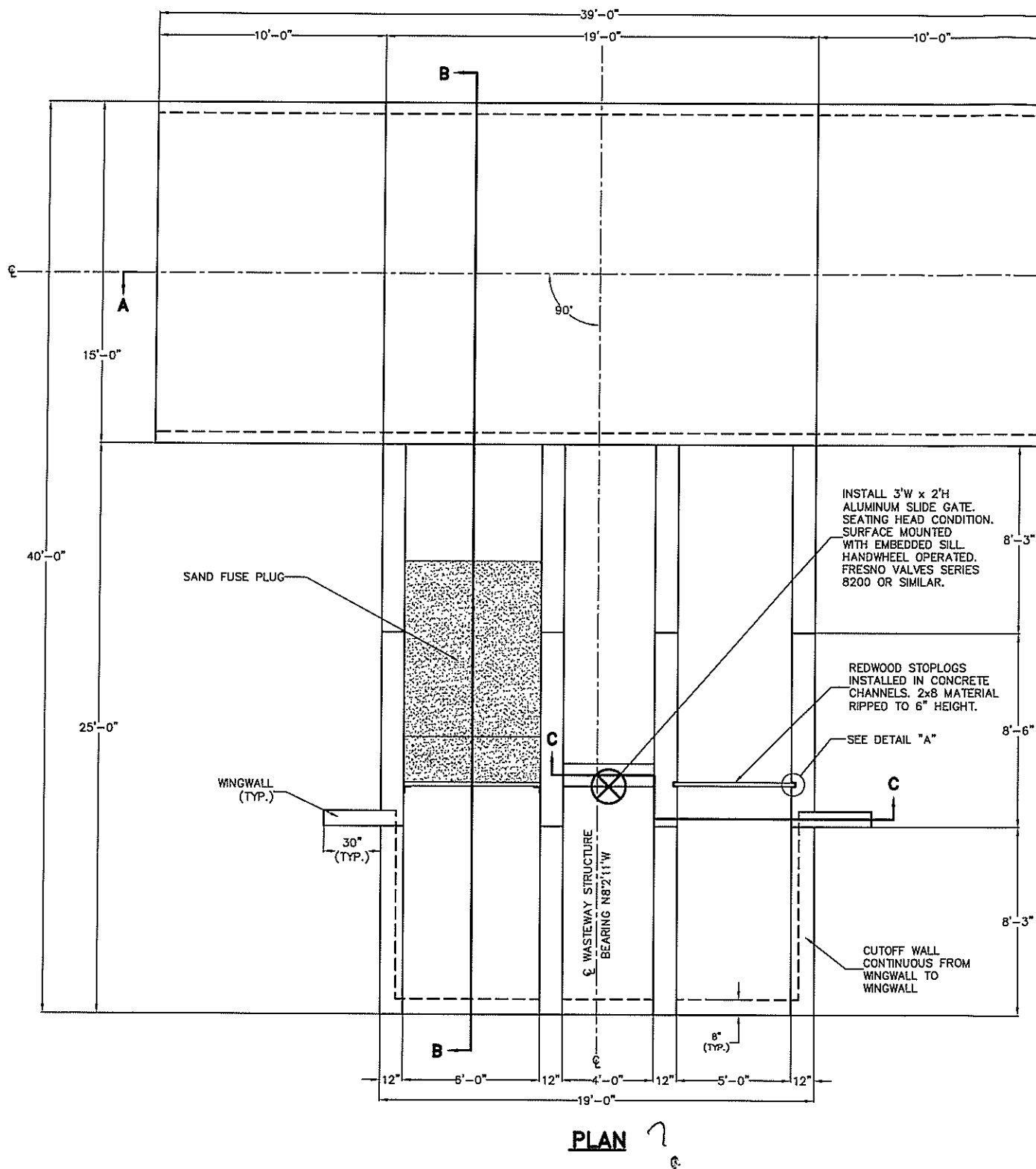
PRELIMINARY-90%

WASTEWAY PLAN AND PROFILE
STA. 6+00 TO STA. 11+05

SHEET
10
C9
SHEET INDEX

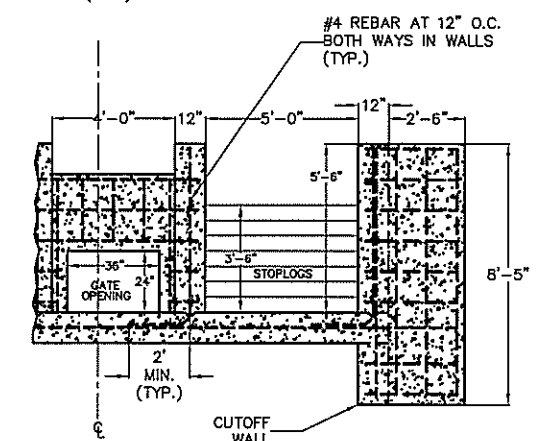
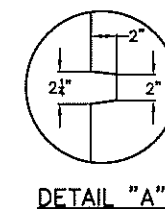


REVISIONS: REV1 REV2 REV3 REV4 REV5 REV6	VERT. 1" = 4' HORIZ. 1" = 60'	PROJECT NUMBER: COCOG13.03 ACAD FILE: PLAN & PROFILES DATE: 02/16/2011	DRAWN BY: TAW DESIGNED BY: CJP/SRP CHECKED BY: CJP/BAA	 ANDERSON CONSULTING ENGINEERS, INC. Civil • Water Resources • Environmental 772 Walters Way, Suite 200, Fort Collins, CO 80525 Phone (970) 226-6120 / Fax (970) 226-0121 www.acwater.com	THE BOYD IRRIGATION COMPANY BOYD AND FREEMAN DITCH GREELEY REACH REPAIR AND HILL REACH IMPROVEMENTS	PRELIMINARY-90% WASTEWAY PLAN AND PROFILE STA 0+00 TO STA 6+00	SHEET 11 C10 SHEET INDEX
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GENERAL NOTES

1. CONCRETE SHALL BE CDOT CLASS B (3000 PSI @ 28 DAYS).
 2. EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED $\frac{3}{4}$ ".
 3. REINFORCEMENT SHALL BE DEFORMED BARS, GRADE 60.
 4. BARS SHALL BE FIELD CUT AND BENT. MAKE BARS CONTINUOUS AROUND CORNERS.
 5. MINIMUM COVER FOR CONCRETE REINFORCEMENT SHALL BE 3" WHERE PLACED AGAINST EARTH AND 2" WHERE EXPOSED TO WEATHER.
 6. THE MINIMUM SPLICE LENGTH FOR COMMON BAR SIZES SHALL BE:
- | BAR | #4 | #5 | #6 |
|---------------|-------|-------|-------|
| SPLICE LENGTH | 1'-3" | 1'-7" | 2'-0" |
7. PROVIDE ACCESSORIES NECESSARY TO PROPERLY SUPPORT THE REINFORCING AT THE POSITIONS SHOWN ON THE DRAWINGS.



PRELIMINARY-90%
WASTERWAY STRUCTURE DETAILS

REVISIONS:
REV1
REV2
REV3
REV4
REV5
REV6

NOT TO SCALE

PROJECT NUMBER: COCOG13.03	DRAWN BY: TAW/SRP
ACAD FILE: DETAILS	DESIGNED BY: SRP/CJP
DATE: 3/15/2011	CHECKED BY: CJP

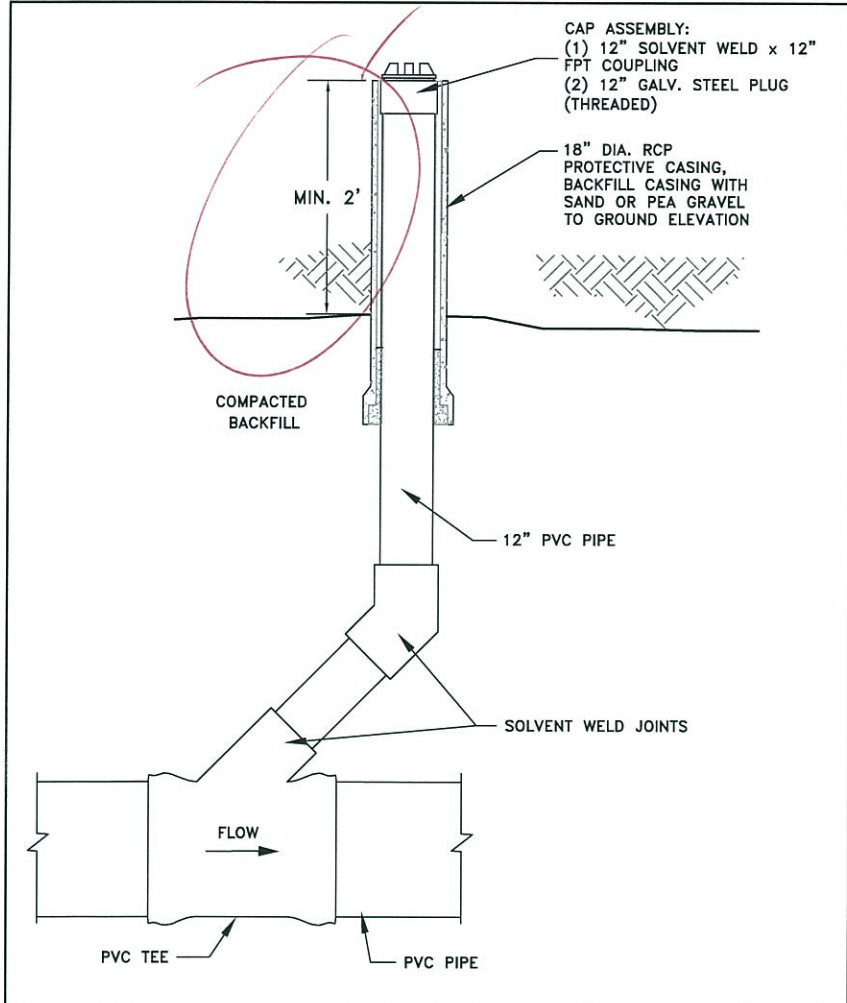


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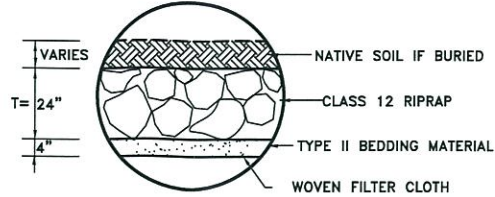
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HILL REACH IMPROVEMENTS

SHEET
12
D1
SHEET INDEX

Do we want it sticking out of ground 2' ? will get broken.



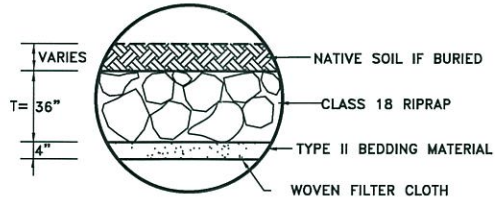
CLEANOUT DETAIL 1
13
N.T.S.



GRADATION OF ROCK FOR CLASS 12 RIPRAP		GRADATION OF TYPE II BEDDING MATERIAL	
PERCENT SMALLER THAN GIVEN SIZE (BY WEIGHT)	INTERMEDIATE ROCK DIMENSION (POUNDS, INCHES)	SIEVE SIZE	PERCENT PASSING (BY WEIGHT)
70-100	440, 21	3"	90-100
50-70	275, 18	3/4"	20-90
35-50	85, 12	#4	0-20
2-10	3, 4	#200	0-3

- NOTES:
1. FILL RIPRAP VOIDS COMPLETELY WITH APPROVED FILL MATERIAL FOR BURIED CONDITIONS.
 2. GENERAL PLACEMENT TECHNIQUES SHOULD RESULT IN LARGER ROCK AT THE THE SURFACE WITH ROCK SECURELY INTERLOCKED AT THE DESIGN THICKNESS AND GRADE. COMPACTING AND LEVELING SHOULD RESULT IN MINIMAL VOIDS AND PROJECTIONS ABOVE GRADE.
 3. REFER TO SPECIFICATIONS FOR MATERIALS AND PLACEMENT REQUIREMENTS FOR RIPRAP AND GRANULAR BEDDING MATERIAL.

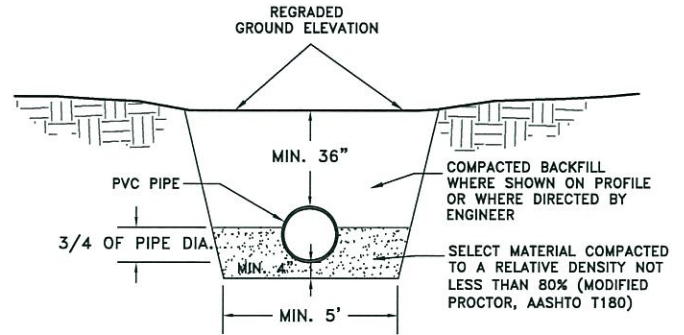
**TYPICAL SECTION
FOR CLASS 12 RIPRAP** 2
13



GRADATION OF ROCK FOR CLASS 18 RIPRAP		GRADATION OF TYPE II BEDDING MATERIAL	
PERCENT SMALLER THAN GIVEN SIZE (BY WEIGHT)	INTERMEDIATE ROCK DIMENSION (POUNDS, INCHES)	SIEVE SIZE	PERCENT PASSING (BY WEIGHT)
70-100	1275, 30	3"	90-100
50-70	655, 24	3/4"	20-90
35-50	275, 18	#4	0-20
2-10	10, 6	#200	0-3

- NOTES:
1. FILL RIPRAP VOIDS COMPLETELY WITH APPROVED FILL MATERIAL FOR BURIED CONDITIONS.
 2. GENERAL PLACEMENT TECHNIQUES SHOULD RESULT IN LARGER ROCK AT THE TOP SURFACE WITH ROCK SECURELY INTERLOCKED AT THE DESIGN THICKNESS AND GRADE. COMPACTING AND LEVELING SHOULD RESULT IN MINIMAL VOIDS AND PROJECTIONS ABOVE GRADE.
 3. REFER TO SPECIFICATIONS FOR MATERIALS AND PLACEMENT REQUIREMENTS FOR RIPRAP AND GRANULAR BEDDING MATERIAL.

**TYPICAL SECTION
FOR CLASS 18 RIPRAP** 3
13
N.T.S.

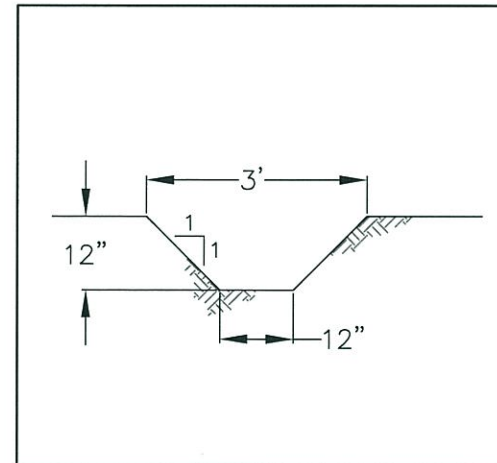


SIZE*	PERCENT BY WEIGHT
PASSING NO. 200 SIEVE	5 OR LESS
PASSING NO. 50 SIEVE	25 OR LESS

*MAXIMUM SIZE SHALL NOT EXCEED 3/4 INCH.

- NOTES:**
1. COMPACTION EQUIPMENT SHOULD NOT BE USED UNTIL BACKFILL IS 12" OVER THE TOP OF THE PIPE.

TRENCH DETAIL (4)
N.T.S. 13



DRAINAGE DITCH
TYPICAL X-SECT
N.T.S.

REVISIONS:	
REV1	
REV2	
REV3	
REV4	
REV5	
REV6	

PROJECT NUMBER: COCO G13.03	DRAWN BY: TAW/SRP
ACAD FILE: DETAILS	DESIGNED BY: SRP/CJP
DATE: 3/15/2011	CHECKED BY: CJP



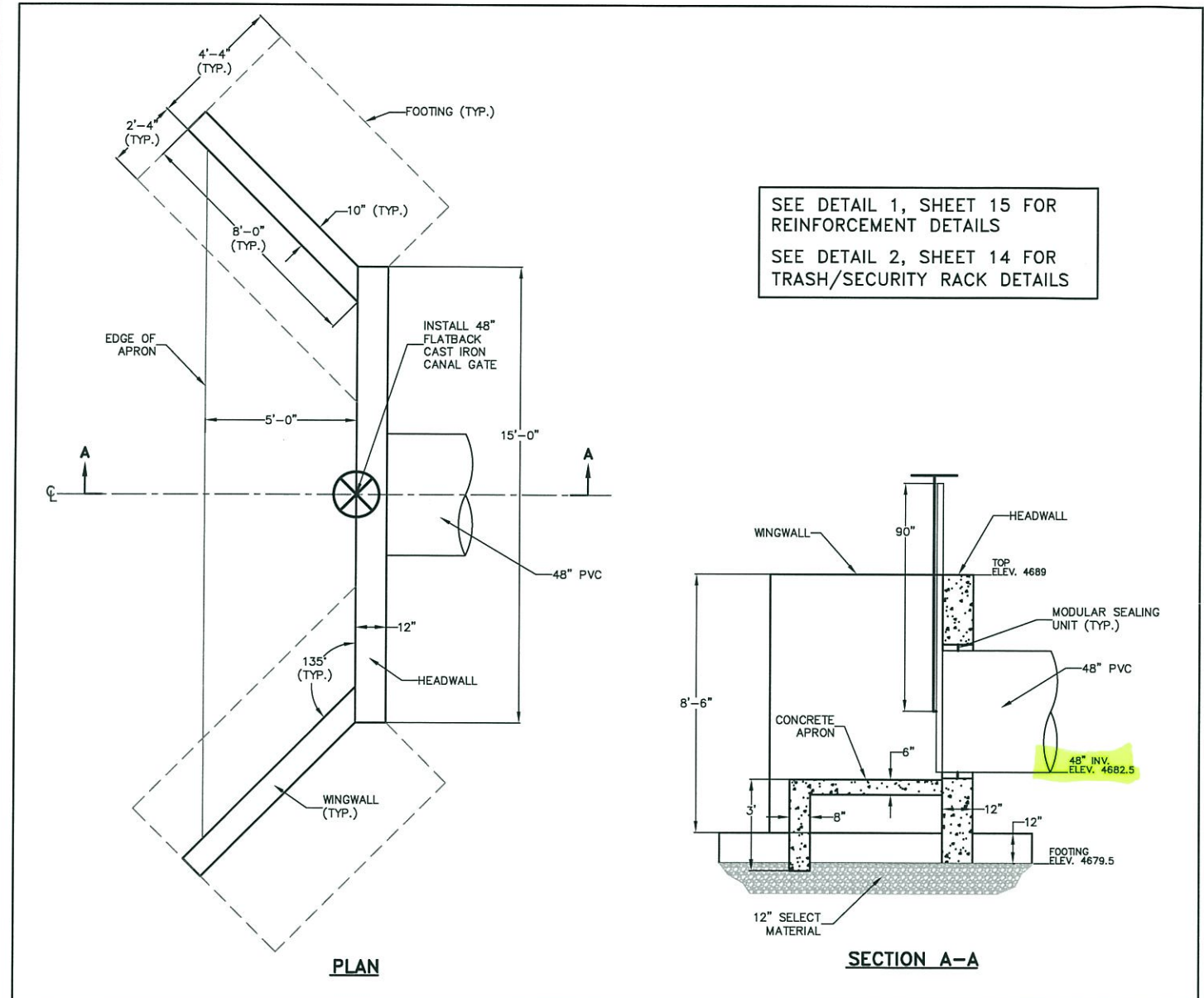
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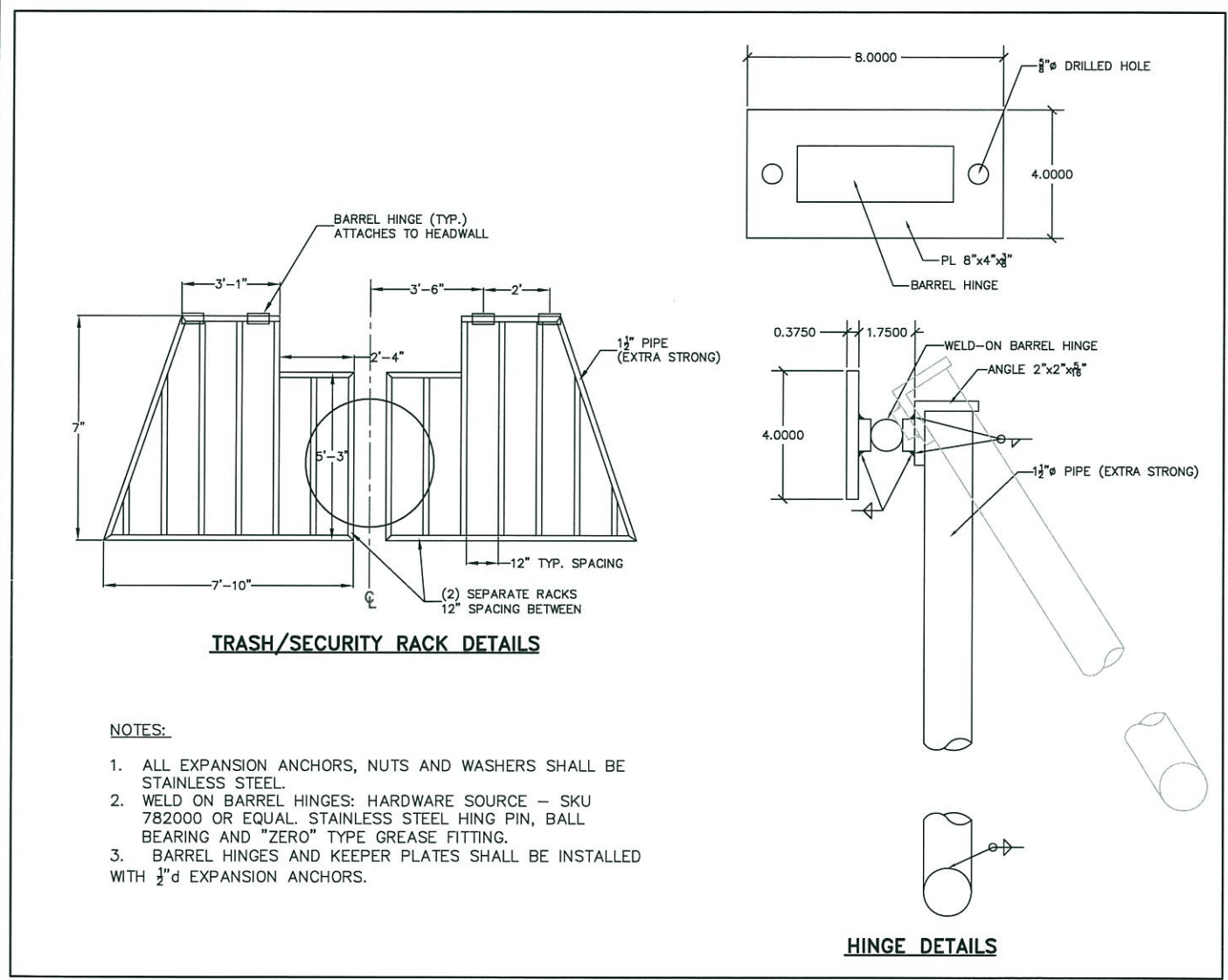
PRELIMINARY-90%

GENERAL DETAILS

SHEET
13
D2
SHEET INDEX



STA 17+50
48" PIPE HEADWALL DETAIL 1 / 14
 N.T.S.

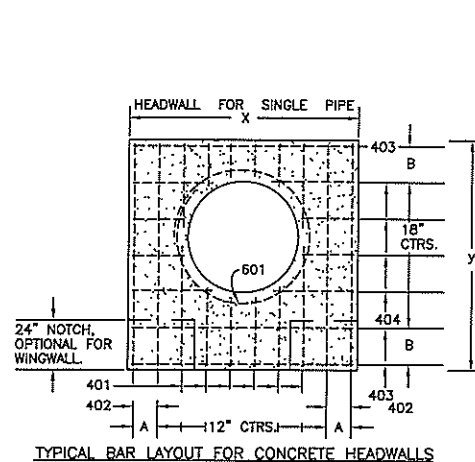


- NOTES:**
1. ALL EXPANSION ANCHORS, NUTS AND WASHERS SHALL BE STAINLESS STEEL.
 2. WELD ON BARREL HINGES: HARDWARE SOURCE - SKU 782000 OR EQUAL. STAINLESS STEEL HING PIN, BALL BEARING AND "ZERO" TYPE GREASE FITTING.
 3. BARREL HINGES AND KEEPER PLATES SHALL BE INSTALLED WITH 1/2" d EXPANSION ANCHORS.

TRASH/SECURITY RACK DETAIL 2 / 14
 N.T.S.

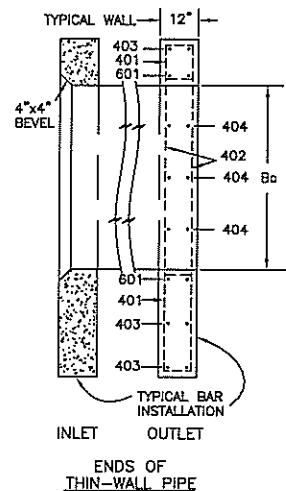
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REVISIONS: REV1 REV2 REV3 REV4 REV5 REV6		PROJECT NUMBER: COCOG13.03 ACAD FILE: DETAILS DATE: 3/15/2011	DRAWN BY: TAW/SRP DESIGNED BY: SRP/CJP CHECKED BY: CJP	 ANDERSON CONSULTING ENGINEERS, INC. Civil • Water Resources • Environmental 772 Whelan Way, Suite 200, Fort Collins, CO 80525 Phone (970) 226-6120 / Fax (970) 226-6121 www.acewater.com	THE BOYD IRRIGATION COMPANY BOYD AND FREEMAN DITCH GREELEY REACH REPAIR AND HILL REACH IMPROVEMENTS	PRELIMINARY-90% GENERAL DETAILS	SHEET 14 D3 SHEET INDEX
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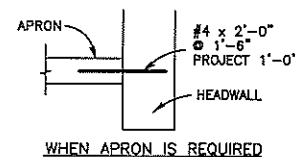
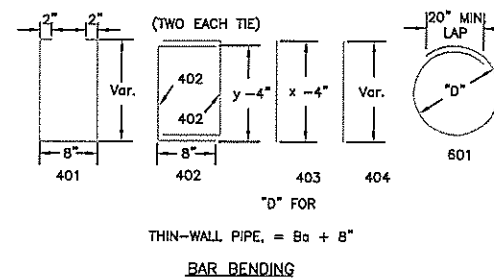


DIMENSIONS

Ba	X	A	y	B
in.	ft.-in.	in.	ft.-in.	in.
48	15-0	10	9-6	10



HEADWALL

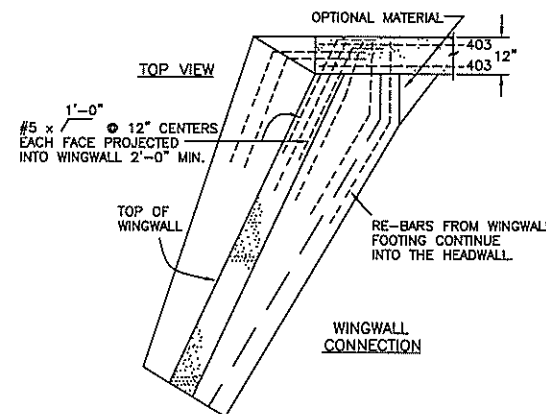


GENERAL NOTES

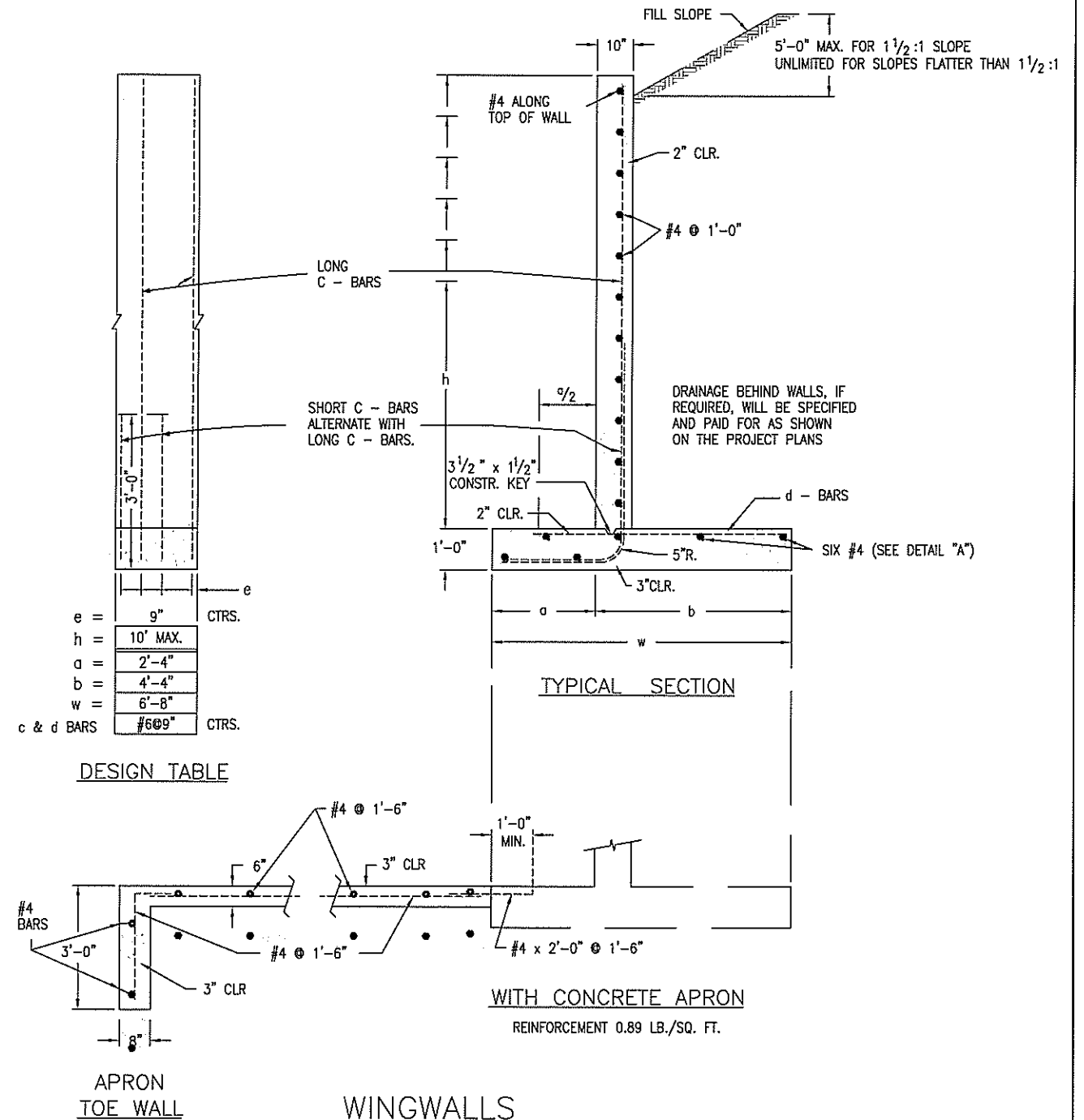
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- EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED $\frac{3}{4}$ ".
- REINFORCEMENT SHALL BE DEFORMED BARS, GRADE 60.
- MINIMUM COVER FOR CONCRETE REINFORCEMENT SHALL BE 3" WHERE PLACED AGAINST EARTH AND 2" WHERE EXPOSED TO WEATHER.
- THE MINIMUM SPLICE LENGTH FOR COMMON BAR SIZES SHALL BE:

BAR	#4	#5	#6
SPLICE LENGTH	1'-3"	1'-7"	2'-0"

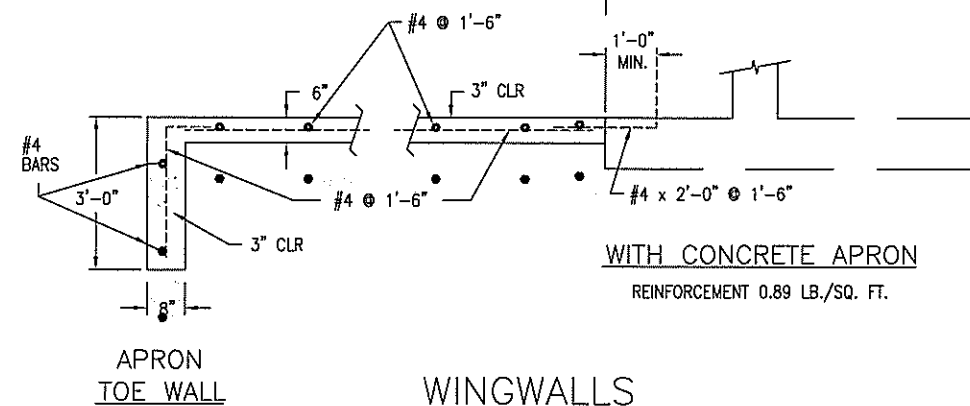
- PROVIDE ACCESSORIES NECESSARY TO PROPERLY SUPPORT THE REINFORCING AT THE POSITIONS SHOWN ON THE DRAWINGS.



WINGWALL CONNECTION



DESIGN TABLE



HEADWALL/WINGWALL REINFORCEMENT DETAILS

N.T.S.

1
15

REVISIONS:

REV	DESCRIPTION
REV1	
REV2	
REV3	
REV4	
REV5	
REV6	

PROJECT NUMBER:

COCOG13.03

ASAP FILE:

DETAILS

DATE:

3/15/2011

DRAWN BY:

SRP

DESIGNED BY:

SRP/CJP

CHECKED BY:

CJP



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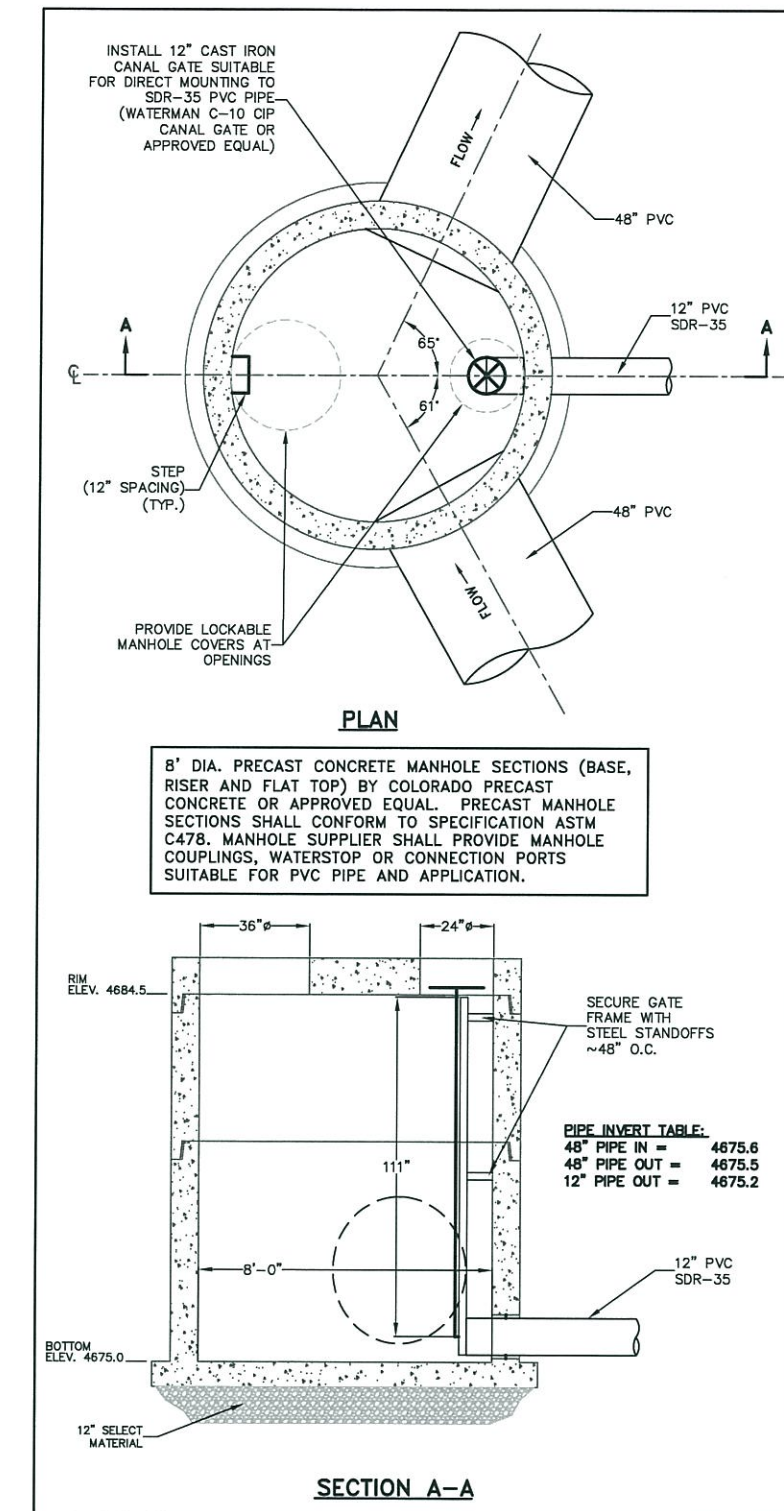
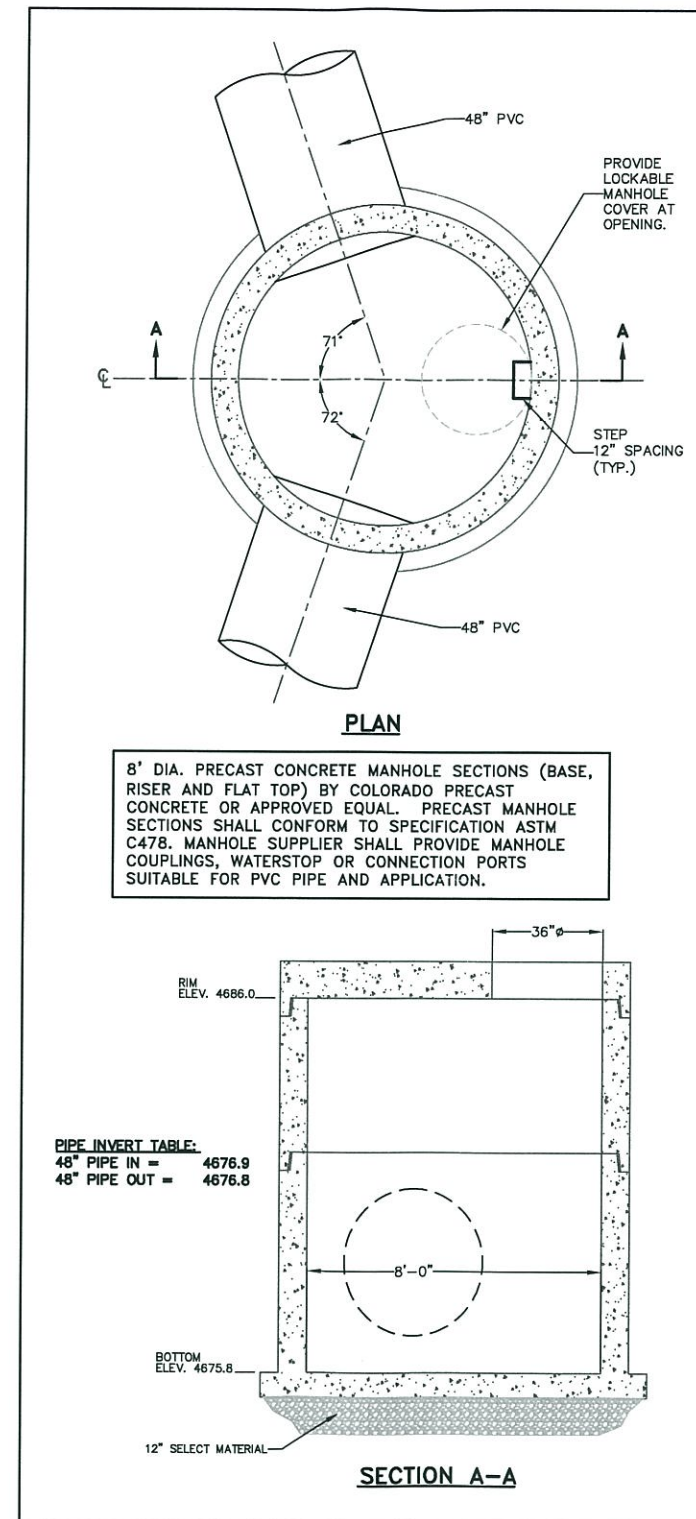
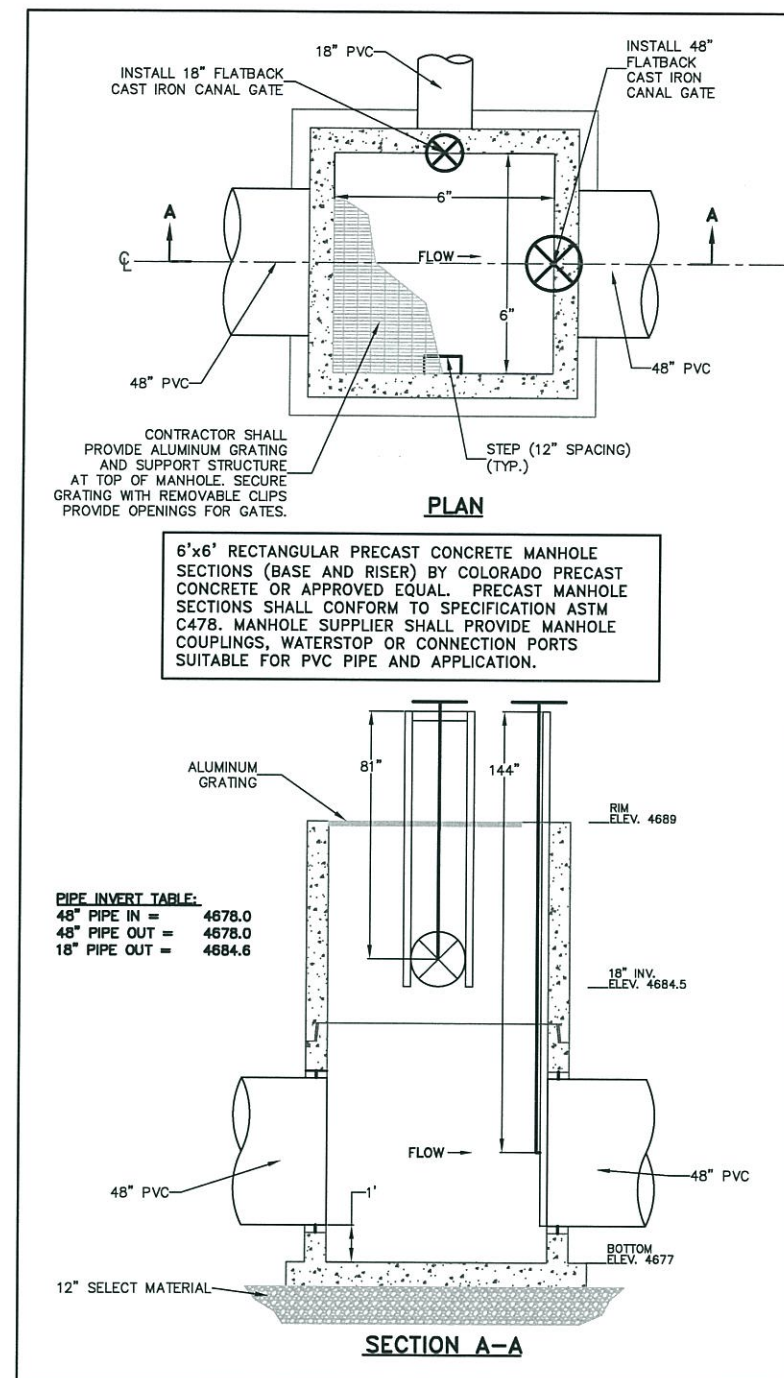
PRELIMINARY-90%
GENERAL DETAILS

SHEET

15

D4

SHEET INDEX



REV1	
REV2	
REV3	
REV4	
REV5	
REV6	

PROJECT NUMBER: COCOG13.03	DRAWN BY: SRP
ACAD FILE: DETAILS	DESIGNED BY: SRP/CJP
DATE: 3/15/2011	CHECKED BY: CJP



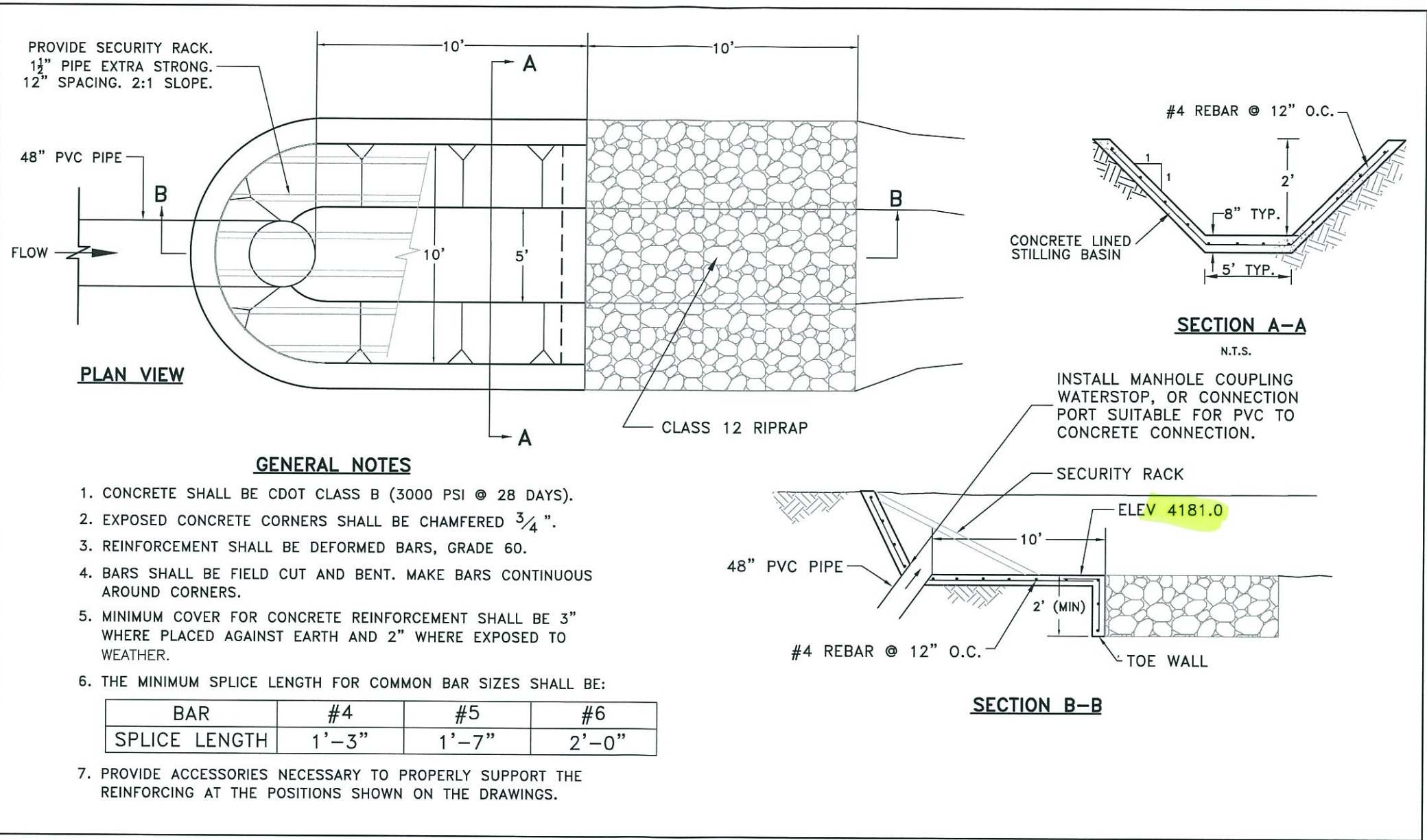
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N.T.S. 16

PRELIMINARY-90%

GENERAL DETAILS



STA. 43+10
CONC. STILLING BASIN

N.T.S.

1
17

1/10/2011 10:40 AM C:\PROJECTS\STILLING BASIN\STILLING BASIN.dwg 1/10/2011 10:40 AM

REVISIONS:
REV1
REV2
REV3
REV4
REV5
REV6

PROJECT NUMBER:	COCOG13.03	DRAWN BY:	TAW/SRP
ACAD FILE:	DETAILS	DESIGNED BY:	SRP/CJP
DATE:	3/15/2011	CHECKED BY:	CJP



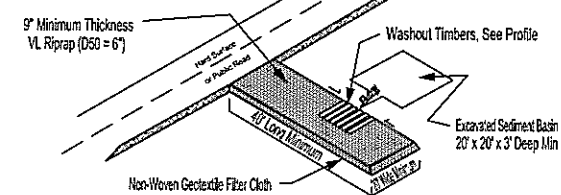
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HILL REACH IMPROVEMENTS

PRELIMINARY-90%
GENERAL DETAILS

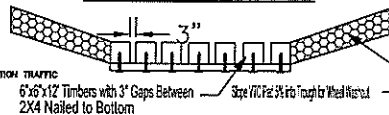
SHEET
17
D6
SHEET INDEX

VTC/WHEEL WASHOUT PLAN

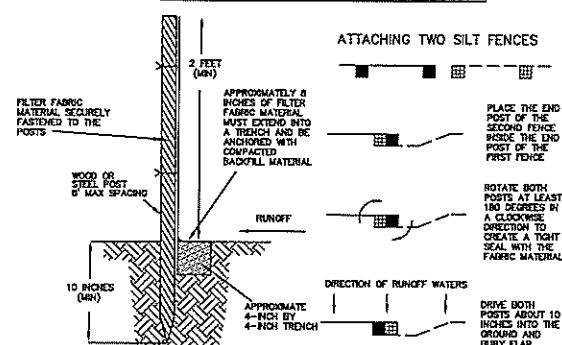


- NOTES:
1. CONTRACTOR TO SUPPLY WASH WATER
 2. WASHOUT BASIN TO BE ISOLATED FROM STORM SYSTEM
 3. VTC PAD R/R PAD TO BE CLEARED OF DEBRIS AT THE END OF EACH DAY'S WORK OR AFTER RAIN EVENTS, AS NEEDED
 4. WHEEL WASHOUT TIMBERS REQUIRED ONLY ON EXT. SIDE OF PAD, SECURE TIMBER GAP WITH 2X4 NAILED TO BOTTOM OF TIMBERS EACH END
 5. VTC PAD TO BE REINFORCED TO ENSURE USE BY CONSTRUCTION TRAFFIC

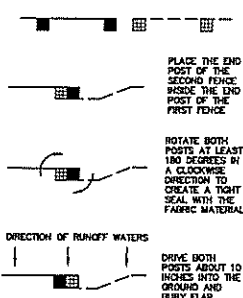
WASHOUT PROFILE



SILT FENCE INSTALLATION



ATTACHING TWO SILT FENCES



GENERAL EROSION CONTROL NOTES

CONTRACTOR SHALL INSTALL ALL PERIMETER SEDIMENT AND EROSION CONTROL DEVICES INCLUDING, BUT NOT LIMITED TO, SILT FENCE, INLET PROTECTION, VTC PAD, WHEEL WASHOUT, AND SEDIMENT BASINS BEFORE COMMENCING ANY LAND CLEARING OR GRADING ACTIVITIES. THE CONTRACTOR SHALL LIMIT TOPSOIL STRIPPING OPERATIONS TO WITHIN THE AREAS IN WHICH THEY WILL BE IMMEDIATELY WORKING. THE CONSTRUCTION OF UNDERGROUND UTILITIES SHALL BE INCLUDED AS A LAND DISTURBING ACTIVITY. ALL EXCAVATED MATERIAL SHALL BE PLACED WHERE SEDIMENT WILL ERODE BACK INTO THE TRENCH. ALL TRENCHES SHALL BE BACKFILLED BY THE END OF THE DAYS WORK. BACKFILL SHALL BE PERMANENTLY STABILIZED BEFORE CONSTRUCTION IS CONSIDERED COMPLETE.

ALL DISTURBED AREAS AND SOIL STOCKPILES SHALL BE ADEQUATELY STABILIZED AS DEFINED IN THE URBAN DRAINAGE FLOOD CONTROL DISTRICT (UDFCD), VOLUME 3, CONSTRUCTION BEST MANAGEMENT PRACTICES, SECTION 3.0 "EROSION CONTROL". ALL DISTURBED SOILS AND SOIL STOCKPILES SHALL BE WATERED AND MAINTAINED IN A ROUGHENED CONDITION AT ALL TIMES DURING CONSTRUCTION ACTIVITIES TO PREVENT WIND-CAUSED EROSION. ALL LAND DISTURBING ACTIVITIES WILL BE IMMEDIATELY DISCONTINUED WHEN FUGITIVE DUST IMPACTS ADJACENT PROPERTIES, AS DETERMINED BY CITY INSPECTOR. PERMANENT OR TEMPORARY NATIVE SEED (SEE SDDC MANUAL SECTION 14 FOR SEEDING SPECIFICATIONS) SOIL STABILIZATION SHALL BE REQUIRED WITHIN 7 DAYS AFTER FINAL GRADE IS REACHED. IF DISTURBED AREAS OR STOCKPILES ARE NOT BROUGHT TO FINAL GRADE WITHIN 30 DAYS FOLLOWING THE INITIAL DISTURBANCE, OR RE-DISTURBANCE, TEMPORARY STABILIZATION MEASURES SHALL BE REQUIRED. NO SOIL STOCKPILE SHALL EXCEED TEN (10) FEET IN HEIGHT. ALL SOIL STOCKPILE SIDE SLOPES SHALL NOT EXCEED A SLOPE OF 4V:1H.

ALL STORM SEWER INLETS SHALL BE PROTECTED FROM THE ENTRY OF SEDIMENT-LADEN WATER. HAY BALES ARE NOT RECOGNIZED BY THE CITY OF GREELEY AS AN ACCEPTABLE FORM OF EROSION CONTROL.

INSPECTION OF ALL EROSION AND SEDIMENT CONTROL BMP'S SHALL BE REQUIRED AT THE END OF EACH DAY'S WORK, WITH NECESSARY MAINTENANCE AND REPAIRS PROVIDED IMMEDIATELY. THE CITY OF GREELEY INSPECTOR SHALL, AT THEIR DISCRETION, REQUIRE ANY EROSION CONTROL DEVICES BE REPAIRED, REPLACED, RELOCATED, MODIFIED, OR REMOVED. SUCH REQUESTS SHALL BE COMPLETED WITHIN 5 WORKING DAYS FOLLOWING RECEIPT OF THE WRITTEN REQUEST FROM THE INSPECTOR. ALL PUBLIC RIGHT OF WAY POLLUTED WITH DIRT, MUD, OR DEBRIS SHALL BE SWEEP CLEAN AT THE END OF EACH DAY'S WORK OR AFTER STORM EVENTS, AS NECESSARY. ALL TEMPORARY AND PERIMETER EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED AS SOON AS THEIR FUNCTION HAS BEEN FULFILLED. SEDIMENT TRAPS/BASINS SHALL BE CLEANED AND REMOVED, OR STABILIZED, WHEN ALL UPSTREAM AREAS ARE PERMANENTLY STABILIZED. THE SITE CONTRACTOR IS RESPONSIBLE FOR PROPERLY DISPOSING OF ALL SILT FROM THE SITE, IF IT IS NOT REUSABLE ON SITE.

THE LANDOWNER SHALL BE HELD RESPONSIBLE FOR THE LONG-TERM STABILITY OF CUT AND FILL SLOPES AND THE SUCCESSFUL ESTABLISHMENT OF PERMANENT VEGETATIVE COVER ON EXPOSED SOIL AS DEFINED IN THE UDFCD, VOLUME 3, CONSTRUCTION BEST MANAGEMENT PRACTICES, SECTION 3.2 "MULCHING".

ALL CONSTRUCTION SUPPLIES OR MATERIALS USED OR STORED ON SITE MUST BE DISPOSED OF PROPERLY AND MUST MEET ALL APPLICABLE MATERIAL SAFETY DATA SHEET CRITERIA.

THE STATE STORMWATER DISCHARGE PERMIT HOLDER MAY BE LIABLE FOR ANY VIOLATIONS RESULTING FROM THE ACTIONS TAKEN BY SITE CONTRACTORS, SUBCONTRACTORS, MAINTENANCE CREWS, ETC.

EROSION CONTROL STRUCTURES

DETAIL 12-1

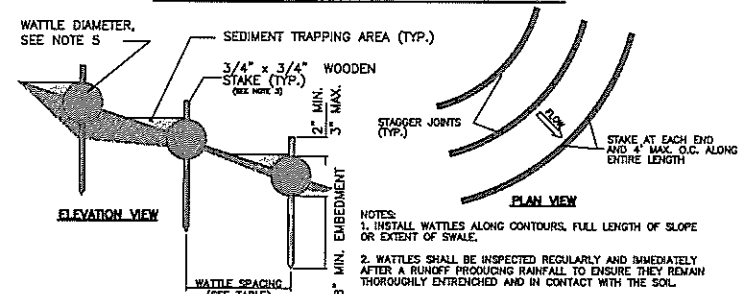
DATE: MARCH 2007

SCALE: N.T.S.

EROSION CONTROL STRUCTURES

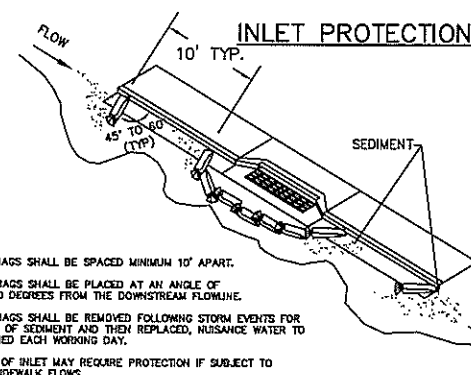
N.T.S.

SLOPE AND SWALE PROTECTION



WATTLE SPACING TABLE	
SLOPE TYPE	MAXIMUM SPACING
ALL SWALES	20 FEET
4:1 SLOPE OR 3	40 FEET

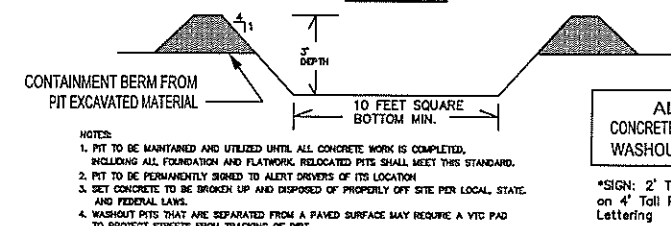
- NOTES:
1. INSTALL WATTLES ALONG CONTOURS, FULL LENGTH OF SLOPE OR EXTENT OF SWALE.
 2. WATTLES SHALL BE INSPECTED REGULARLY AND IMMEDIATELY AFTER A RUNOFF PRODUING RAINFALL TO ENSURE THEY REMAIN THOROUGHLY ENTRENCHED AND IN CONTACT WITH THE SOIL.
 3. LIVE STAKES MAY BE USED FOR PERMANENT INSTALLATIONS.
 4. INSTALL WATTLES SNUGLY INTO THE TRENCH (4\"/>



NOTES:

1. SANDBAGS SHALL BE SPACED MINIMUM 10' APART.
2. SANDBAGS SHALL BE PLACED AT AN ANGLE OF 45 TO 60 DEGREES FROM THE DOWNSTREAM FLOWLINE.
3. SANDBAGS SHALL BE REMOVED FOLLOWING STORM EVENTS FOR REMOVAL OF SEDIMENT AND THEN REPLACED, NUISANCE WATER TO BE DRAINED EACH WORKING DAY.
4. BACK OF INLET MAY REQUIRE PROTECTION IF SUBJECT TO CROSS-SIDEWALK FLOWS.

CONCRETE TRUCK WASHOUT PIT



- NOTES:
1. PIT TO BE MAINTAINED AND UTILIZED UNTIL ALL CONCRETE WORK IS COMPLETED, INCLUDING ALL FOUNDATION AND FLATWORK. RELOCATED PITS SHALL MEET THIS STANDARD.
 2. PIT TO BE PERMANENTLY SIGNED TO ALERT DRIVERS OF ITS LOCATION.
 3. SET CONCRETE TO BE BROKEN UP AND DISPOSED OF PROPERLY OFF SITE PER LOCAL, STATE, AND FEDERAL LAWS.
 4. WASHOUT PITS THAT ARE SEPARATED FROM A PAVED SURFACE MAY REQUIRE A VTC PAD TO PROTECT STREETS FROM TRACKING OF DIRT.



EROSION CONTROL STRUCTURES

DETAIL 12-2

DATE: MARCH 2007

SCALE: N.T.S.

EROSION CONTROL STRUCTURES

N.T.S.

REVISIONS:	
REV1	
REV2	
REV3	
REV4	
REV5	
REV6	

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DESIGNED BY:	SRP/CJP
CHECKED BY:	CJP



ANDERSON CONSULTING ENGINEERS, INC.
Civil • Water Resources • Environmental
772 W. Main Way, Suite 200, Fort Collins, CO 80521
Phone (970) 226-6120 / Fax (970) 226-6121
www.andersonce.com

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GENERAL DETAILS

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