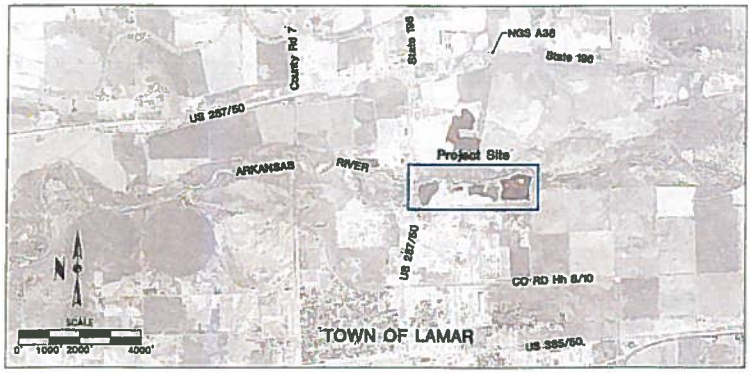
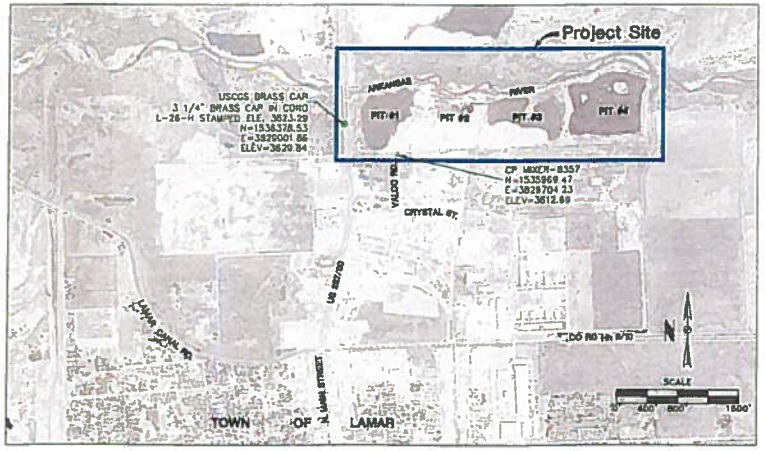
LAMAR PITS ON THE ARKANSAS RIVER
FLOOD MITIGATION AND RECLAMATION PLAN
PROWERS COUNTY, COLORADO
CONSTRUCTION DRAWINGS
SEPTEMBER 14, 2011



VICINITY MAP



LOCATION MAP

SUBMITTED TO:

STATE OF COLORADO
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERALS AND GEOLOGY
1313 SHERMAN ST., ROOM 215
DENVER, COLORADO 80203

OWNER:

VALCO, INC.
12753 S. PARKER RD., SUITE #203
PARKER, CO 80134

ENGINEER:

ANDERSON CONSULTING ENGINEERS, INC.
375 E. HORSETOOTH ROAD, BUILDING #5
FORT COLLINS, CO 80525

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

811
Know what's **below.**
Call before you dig.

INDEX OF SHEETS

COLORADO LICENSED
CHRISTOPHER J. [illegible]
31507
07/14/11
PROFESSIONAL ENGINEER

SHEET 1
SHEET INDEX 1

GENERAL NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO THESE PLANS, AND THE SPECIFICATIONS WHICH ARE INCLUDED WITH THE CONTRACT DOCUMENTS.
2. 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.
3. 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.
4. THE CONTRACTOR SHALL PROVIDE ALL CONSTRUCTION STAKING FOR THIS PROJECT. ALL SURVEYING MUST BE PERFORMED UNDER THE SUPERVISION OF A COLORADO LICENSED SURVEYOR.
5. THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO THEIR ORIGINAL CONDITION OR BETTER AS DESIGNATED BY THE OWNER. CONTRACTOR SHALL RE-VEGETATE DISTURBED AREAS USING APPROVED SEED MIXTURES SHOWN IN THESE PLANS.
6. REINFORCEMENT BAR LAP LENGTHS NOT SHOWN ON THE DRAWINGS SHALL BE PER ACI STANDARDS.
7. THE CONTRACTOR SHALL NOTIFY THE OWNER IMMEDIATELY OF ANY FIELD CONDITION NOT CONSISTENT WITH THE CONTRACT DOCUMENTS.
8. 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 CONTRACTOR'S EXPENSE.
9. THE CONTRACTOR SHALL PROVIDE EROSION CONTROL DURING CONSTRUCTION. THE EROSION CONTROL PLAN PROVIDED IN THESE DRAWINGS SHALL BE USED AS A GUIDE. THE CONTRACTOR SHALL PROVIDE A FINAL EROSION CONTROL PLAN TO THE OWNER FOR APPROVAL PRIOR TO MOBILIZATION.
10. 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.
11. THE STREETS ADJACENT TO THE CONSTRUCTION AREA SHALL BE CLEANED, BY THE CONTRACTOR, OF ANY DEBRIS GENERATED BY THE PROJECT 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 ROADWAY AT NO ADDITIONAL COST TO THE PROJECT.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RECORDING AS-BUILT INFORMATION ON A SET OF RECORD DRAWINGS KEPT ON THE CONSTRUCTION SITE, AND AVAILABLE TO THE LOCAL ENTITY'S INSPECTOR AT ALL TIMES.
13. DIMENSIONS FOR LAYOUT AND CONSTRUCTION ARE NOT TO BE SCALED FROM ANY DRAWING. IF PERTINENT DIMENSIONS ARE NOT SHOWN, CONTACT THE DESIGNER FOR CLARIFICATION, AND ANNOTATE THE DIMENSION ON THE AS-BUILT RECORD DRAWINGS.
14. THE CONTRACTOR SHALL COMPLY WITH ALL TERMS AND CONDITIONS OF THE COLORADO PERMIT FOR STORM WATER DISCHARGE, THE STORM WATER MANAGEMENT PLAN, AND THE EROSION CONTROL PLAN.
15. ALL STRUCTURAL EROSION CONTROL MEASURES SHALL BE INSTALLED, AT THE LIMITS OF CONSTRUCTION AND AT AREAS WITH DISTURBED SOIL, ON- OR OFF-SITE, PRIOR TO ANY OTHER GROUND-DISTURBING ACTIVITY. ALL EROSION CONTROL MEASURES SHALL BE MAINTAINED IN GOOD REPAIR BY THE CONTRACTOR, UNTIL SUCH TIME AS THE ENTIRE DISTURBED AREAS ARE STABILIZED WITH HARD SURFACE OR LANDSCAPING. TO MITIGATE EROSION, THE CONTRACTOR SHALL USE STANDARD EROSION CONTROL TECHNIQUES DESCRIBED IN "A GUIDE FOR EROSION AND SEDIMENT CONTROL IN URBANIZING AREAS OF COLORADO" AS PUBLISHED BY THE NATURAL RESOURCES CONSERVATION SERVICE, U.S. DEPT. OF AGRICULTURE.
16. WHEN APPLICABLE, GRADING CONSTRUCTION MUST COMPLY WITH STATE OF COLORADO PERMITTING PROCESS FOR "STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY". CONTACT COLORADO DEPARTMENT OF HEALTH, WATER QUALITY CONTROL DIVISION, PHONE (303) 692-3500.
17. A STATE OF COLORADO CONSTRUCTION DEWATERING WASTEWATER DISCHARGE PERMIT IS REQUIRED IF DEWATERING IS REQUIRED OR WATER IS DISCHARGED INTO A STORM SEWER, CHANNEL, IRRIGATION DITCH OR ANY WATER OF THE UNITED STATES.

HORIZONTAL AND VERTICAL BENCHMARK CONTROL POINTS

CONTROL POINT NO.	NORTHING	EASTING	ELEVATION (NAVD88)
USCGS BRASS CAP 3 ¼" BRASS CAP IN CONCRETE L-26-H STAMPED ELEV. 3623.29	1536378.53	3829001.86	3629.84
CP MIXER-8357	1535969.47	3829704.23	3612.69

VERTICAL DATUM:
BENCHMARK: NGS A 38 NAVD 88 ELEVATION=3619.79. BRASS CAP IN TOP OF A CONCRETE MONUMENT LOCATED 1 MILE EAST OF THE INTERSECTION OF HWY 287 AND HWY 198. ALL ELEVATIONS WERE BROUGHT TO SITE USING GPS AND GEOID 2003. THIS DRAWING IS ON NAVD88 DATUM.

HORIZONTAL DATUM:
COLORADO STATE PLANE COORDINATES NAD 83(2007) DATUM. HORIZONTAL CONTROL BASED UPON NGS DESIGNATION A 38.
N=1,541,116.82 E=3,831,875.98

NOTE:
1. THIS DRAWING IS AT STATE PLANE. TO REDUCE TO MODIFIED STATE PLANE COORDINATES, SCALE AT 1.00004242 (0.99995758) ABOUT THE ORIGIN 0,0.
2. ALL PROPERTY PINS, INTERSECTION MONUMENTS, AND SECTION CORNERS DISTURBED DURING CONSTRUCTION MUST BE REFERENCED AND REPLACED UNDER THE SUPERVISION OF A LICENSED SURVEYOR.
3. EXISTING 1-FOOT CONTOURS AND SURVEY CONTROL POINTS LISTED ABOVE WERE OBTAINED FROM SURVEY DATA COLLECTED BY KING SURVEYORS INC., WINDSOR COLORADO. PROJECT #2008357 – SEPTEMBER 2008, JULY 2009, AND NOVEMBER 2010.
4. ALL PROJECT CONTROL LISTED HEREON IS PROVIDED AS A COURTESY. IT IS THE RESPONSIBILITY OF THE RECIPIENT TO VERIFY THE ACCURACY OF THE COORDINATES AND ELEVATIONS SHOWN PRIOR TO USING THEM FOR ANY PURPOSES.

RE-VEGETATION RECOMMENDATIONS

General Site Re-vegetation Seed Mixtures:

The following seed mixtures are provided as a sample of a similar seed mixture that has been utilized for reclamation efforts in the plains region of Colorado. It is recommended that the Contractor and Owner contact the local Soil Conservation Service office for a specific local seed mixture. The seed mixture should be capable of establishing a diverse, effective, and long-lasting vegetative cover that is capable of self-regeneration without continued dependence on irrigation, soil amendments or fertilizer, and is at least equal in extent of cover to the natural vegetation of the surrounding area.

Erosion Protection Mat/Blanket Vegetal Cover:

The long term performance of the erosion protection mat, specified for the Pit #1 Spillway, is greatly enhanced with the presence of a vegetal cover. Therefore, it is recommended that effort (soil conditioning, watering, etc.) be provided to promote the establishment and continued growth of a herbaceous vegetal cover. Driving on the erosion protection mat during and after construction is not recommended.

Re-vegetation Seed Mixture:

Species (Scientific Name)	Species (Common Name)	Variety	#pls/Acre
SHORELINE MIX			
Elvirigia elongate	Tall wheatgrass	Alkar	3.0
Sporobolus airoides	Alkali sacaton	none	0.5
Panicum vergatum	Switch grass	Trailblazer	1.0
Pascopyrum smithii	Western wheatgrass	Arriba	3.0
DRY LAND MIX			
Bouteloua gracilis	Blue grama	Lovington	0.4
Elvirigia intermedia	Tubescent wheatgrass	Topar	3.0
Elvirigia elongate	Tall wheatgrass	Alkar	3.0
Bromus inermis	Smooth bromic	Manchar	0.1
MULCH SUBSTITUE			
Regreen TM	WheatXWheatgrass		10

Since species availability may vary, the contractor may substitute species of similar utility upon approval of the owner.

OPTIONAL Re-vegetation Seed Mixture

Species (Scientific Name	Species (Common Name)	Variety	% Mix	#pls/Acre
Festuca ovina	Sheep fescue	Covar	25	0.6
Bouteloua gracilis	Blue grama	Lovington	20	0.4
Poa pratensis	Kentucky bluegrass	Livingston	15	0.1
Schizachyrium scoparium	Little bluestem	Pastura	15	1.0
Elvirigia elongate	Tall wheatgrass	Alkar	10	2.2
Andropogon gerardi	Big bluestem	Kaw	05	0.7
Bouteloua curtipendula	Sideoats grama	Vaughn	05	0.5
Bromus inermis	Smooth bromic	Manchar	02	0.1
Sporobolus airoides	Alkali sacaton		01	0.01
Sporobolus cryptandrus	Sand dropseed		01	0.01
Trifolium repens	Strawberry clover	O Connor	01	0.1
Regreen TM	WheatXWheatgrass			10

MAPPING LEGEND

— —4945— —	EXISTING CONTOUR
4950	PROPOSED CONTOUR
— — —	EXISTING PROPERTY/EASEMENT BOUNDARY
C	CUTLINE/LIMIT OF DISTURBANCE
SF	PROPOSED SILT FENCE
FENCE	EXISTING FENCE
BM	BENCHMARK
CP	SURVEY CONTROL POINT
X 4955.4	EXISTING SPOT ELEVATION
X 4955.4	PROPOSED SPOT ELEVATION
	PROPOSED BURIED ROCK RIPRAP
	PROPOSED EXPOSED ROCK RIPRAP
	PROPOSED EROSION PROTECTION BLANKET
1+00	PROPOSED CENTERLINE WITH STATIONS
	EXISTING EDGE OF WATER
	PROPOSED EDGE OF WATER

COLORADO LICENSED
CHRISTOPHER J. [illegible]
34567
09/14/11
PROFESSIONAL ENGINEER

REVISIONS	
REV1	
REV2	
REV3	
REV4	
REV5	
REV6	

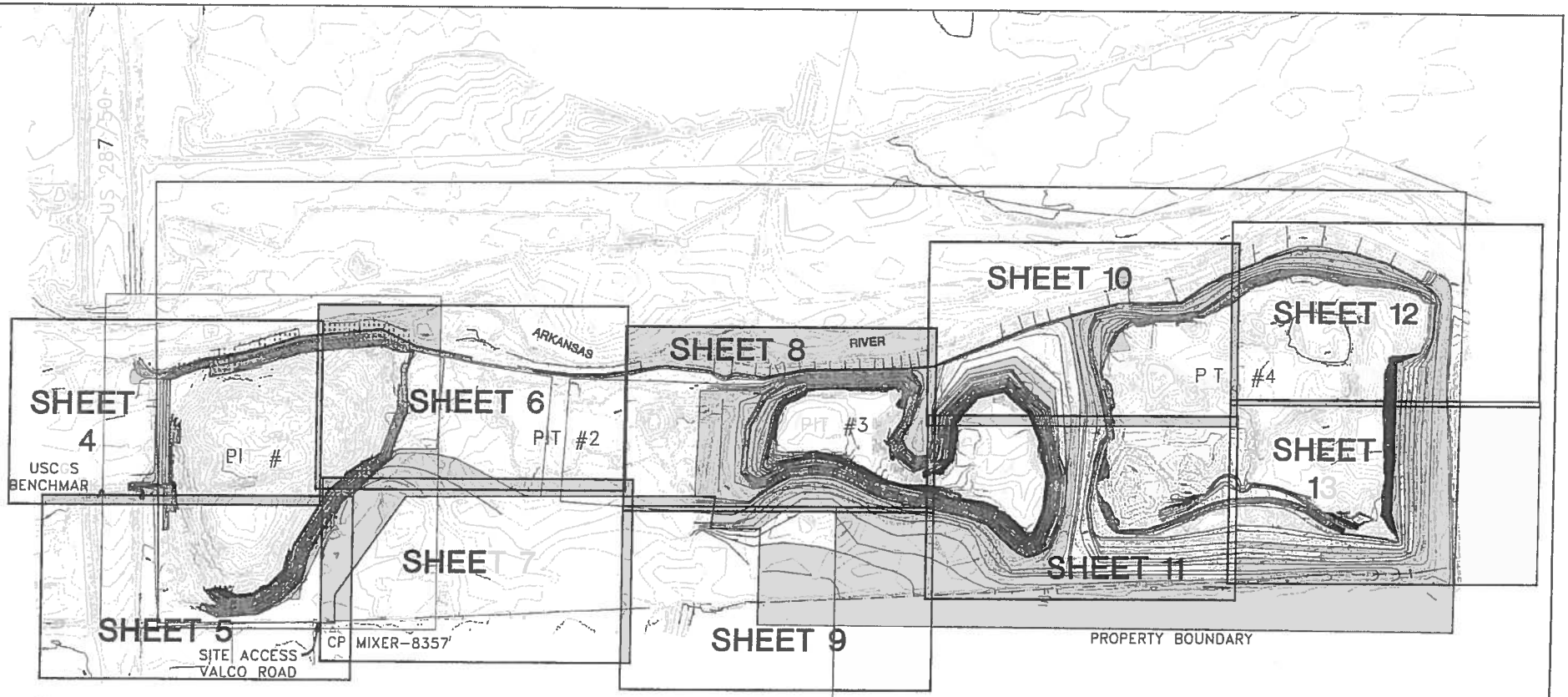
PROJECT NUMBER: COVALC001 | DRAWN BY: TAW
SCALE FILE: PROJECT INFO | DESIGNED BY: CJP
DATE: 09/12/2011 | CHECKED BY: CJP

Anderson Consulting Engineers, Inc
Civil · Water Resources · Environmental
371 S. Sherwood Street, Building #1, Fort Collins, CO 80521
Phone (970) 224-5828 Fax (970) 224-5821

LAMAR PITS ON THE ARKANSAS RIVER
FLOOD MITIGATION AND RECLAMATION PLAN

PROJECT INFORMATION SHEET

SHEET 2
SHEET NUMBER C1



PIT NO.	DESIGN NORMAL WATER SURFACE ELEVATION (FT., NAVD88)	LAKE SURFACE AREA (AC.)		ESTIMATED VOLUMES (CY.)		
		EXISTING	PROPOSED	CUT	FILL	NET
1	3605.0	9.15	9.11	10,500	3,600	+6,900 C
2	N/A (PIT FILLED)	1.50	0.00	26,300	19,700	+6,600 C
3	3602.0	8.65	7.08	45,300	35,300	+10,000 C
4	3601.0	16.73	14.26	44,000	46,000	-2,000 F
TOTAL		36.03	30.45	126,100	104,600	+21,500 C

COLORADO LICENSED
CHRISTOPHER J. PHILLIPS
31507
PROFESSIONAL ENGINEER
09/14/11

REVISIONS
REV1
REV2
REV3
REV4
REV5
REV6

N

CONTOUR INTERVAL = 1 FOOT

0 75 150 300'

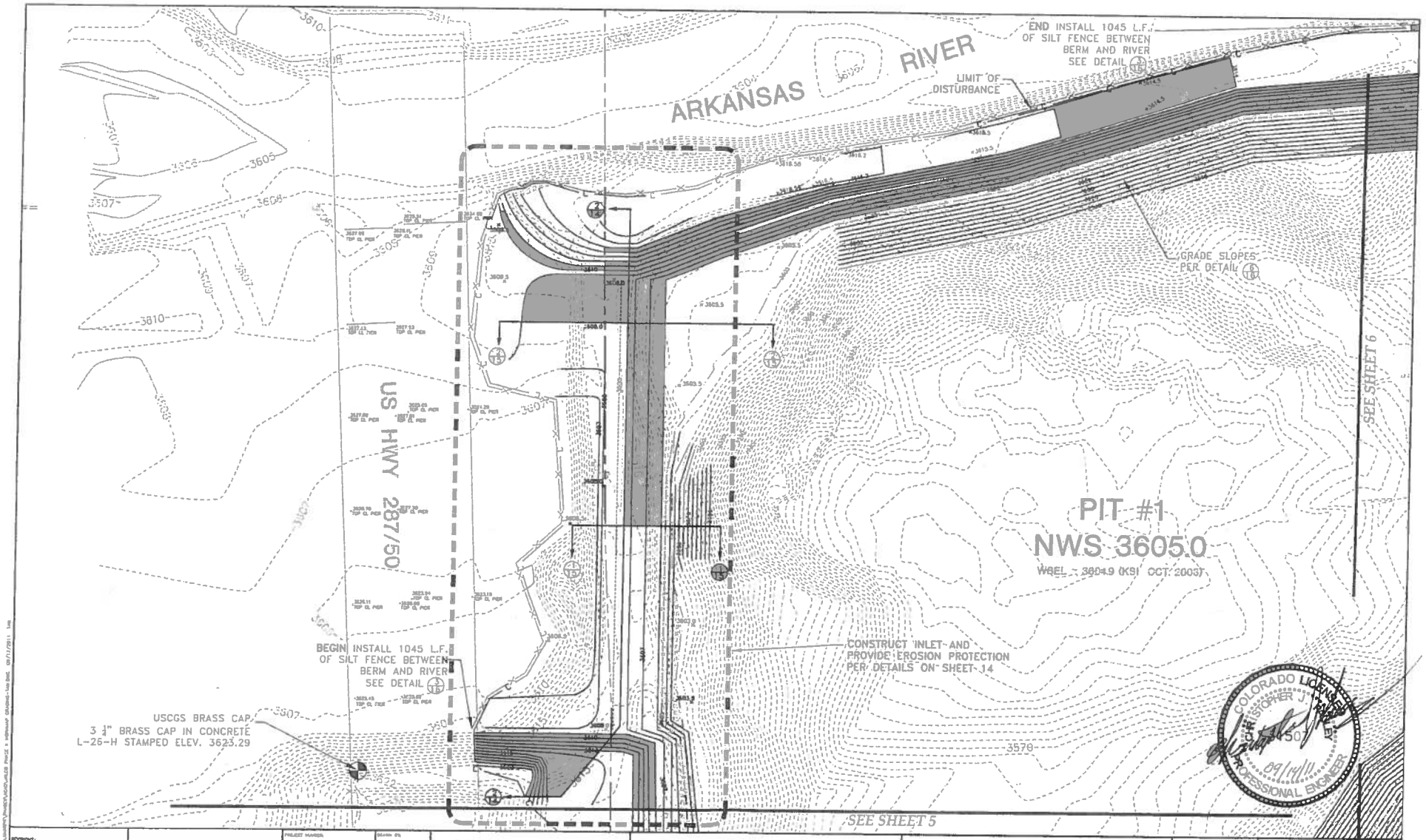
PROJECT NUMBER: COVALC001
DRAWING FILE: VALCO INDEX MAP
DATE: 09/14/2011
DRAWN BY: TAW
DESIGNED BY: MLM/CJP
CHECKED BY: CJP

Anderson Consulting Engineers, Inc
Civil Water Resources · Environmental

LAMAR PITS ON THE ARKANSAS RIVER
FLOOD MITIGATION AND RECLAMATION PLAN

GRADING PLAN INDEX MAP

SHEET 3
C2
SHEET INDEX



CONTOUR INTERVAL = 1 FOOT

0' 15' 30' 60'

PROJECT NUMBER	COVALCOO1
DRAWING FILE	VAL PHASEII WRKMP
DATE	09/13/2011
DRAWN BY	TAW
DESIGNED BY	MLM/CJP
CHECKED BY	CJP

Anderson Consulting Engineers, Inc
Civil · Water Resources · Environmental
373 S. Howes St. Building #4, Fort Collins, CO 80521
Phone (970) 224-9728 / Fax (970) 224-9121
www.acewater.com

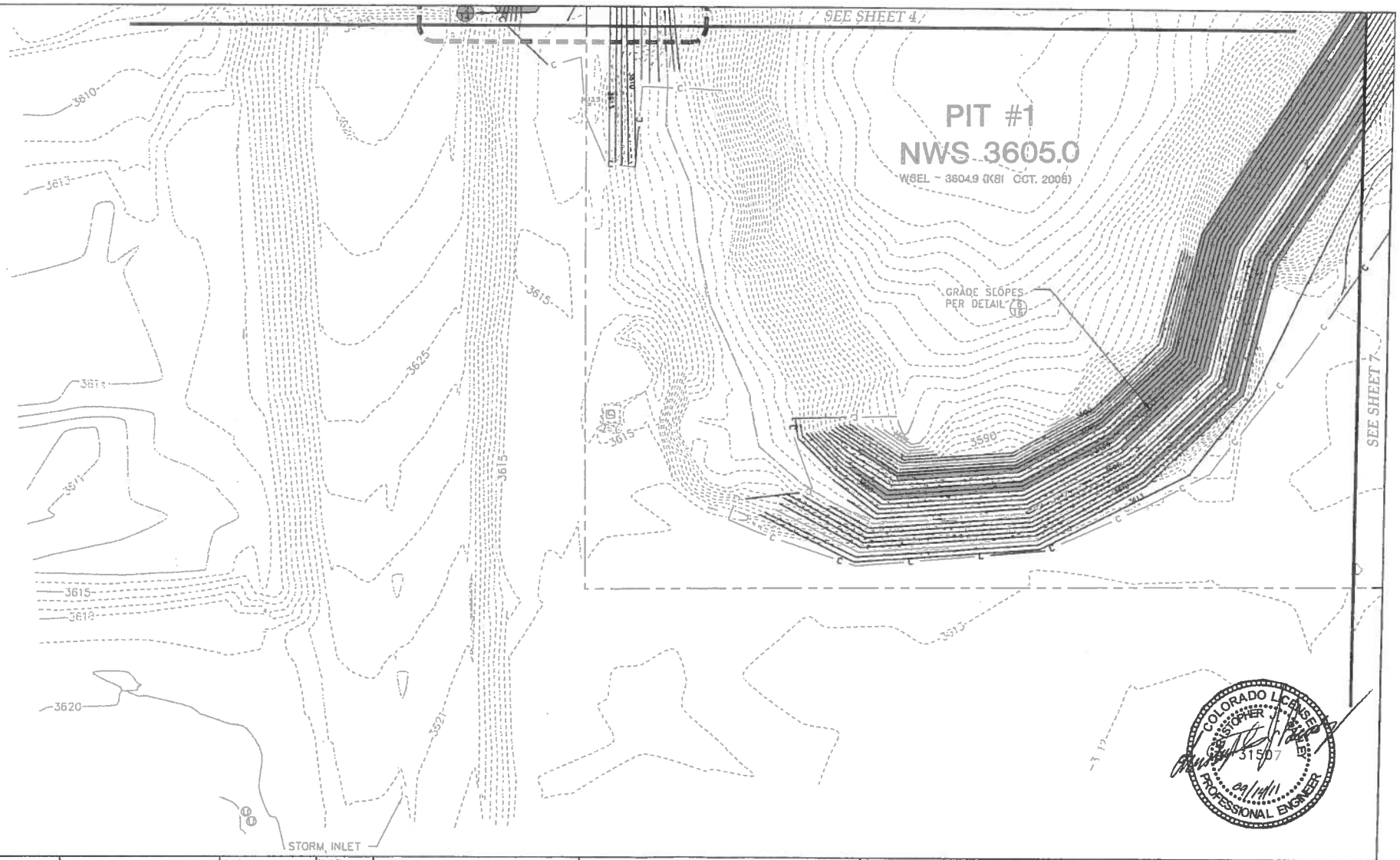
LAMAR PITS ON THE ARKANSAS RIVER
FLOOD MITIGATION AND RECLAMATION PLAN

GRADING PLAN

SHEET 4

C3

SHEET INDEX



COLORADO LICENSED
CHRISTOPHER J. PINEY
31507
09/14/11
PROFESSIONAL ENGINEER

REVISIONS:
REV1
REV2
REV3
REV4
REV5
REV6

CONTOUR INTERVAL = 1 FOOT
0' 15' 30' 60'

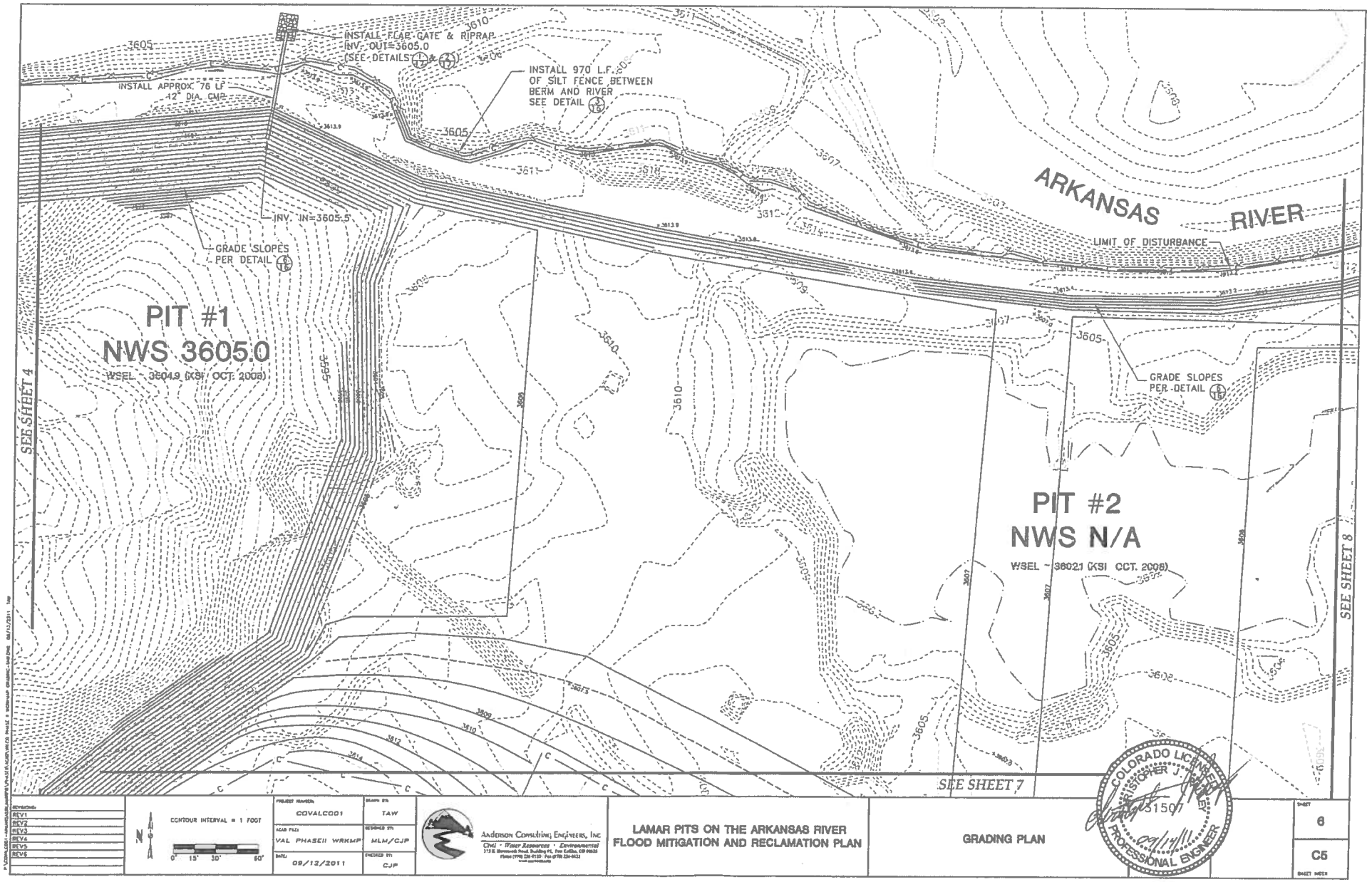
PROJECT NUMBER: COVALCOO1
CAD FILE: VAL PHASEII WRKMP
DATE: 09/12/2011
DRAWN BY: TAW
DESIGNED BY: MLM/CJP
CHECKED BY: CJP

Anderson Consulting Engineers, Inc
Civil · Water Resources · Environmental
373 E. Waterstreet Road, Building #1, Fort Collins, CO 80525
Phone (970) 226-0529 | Fax (970) 226-0931
www.acewaterco.com

VALCO LAMAR GRAVEL PITS
FLOOD CONTROL MITIGATION PLAN

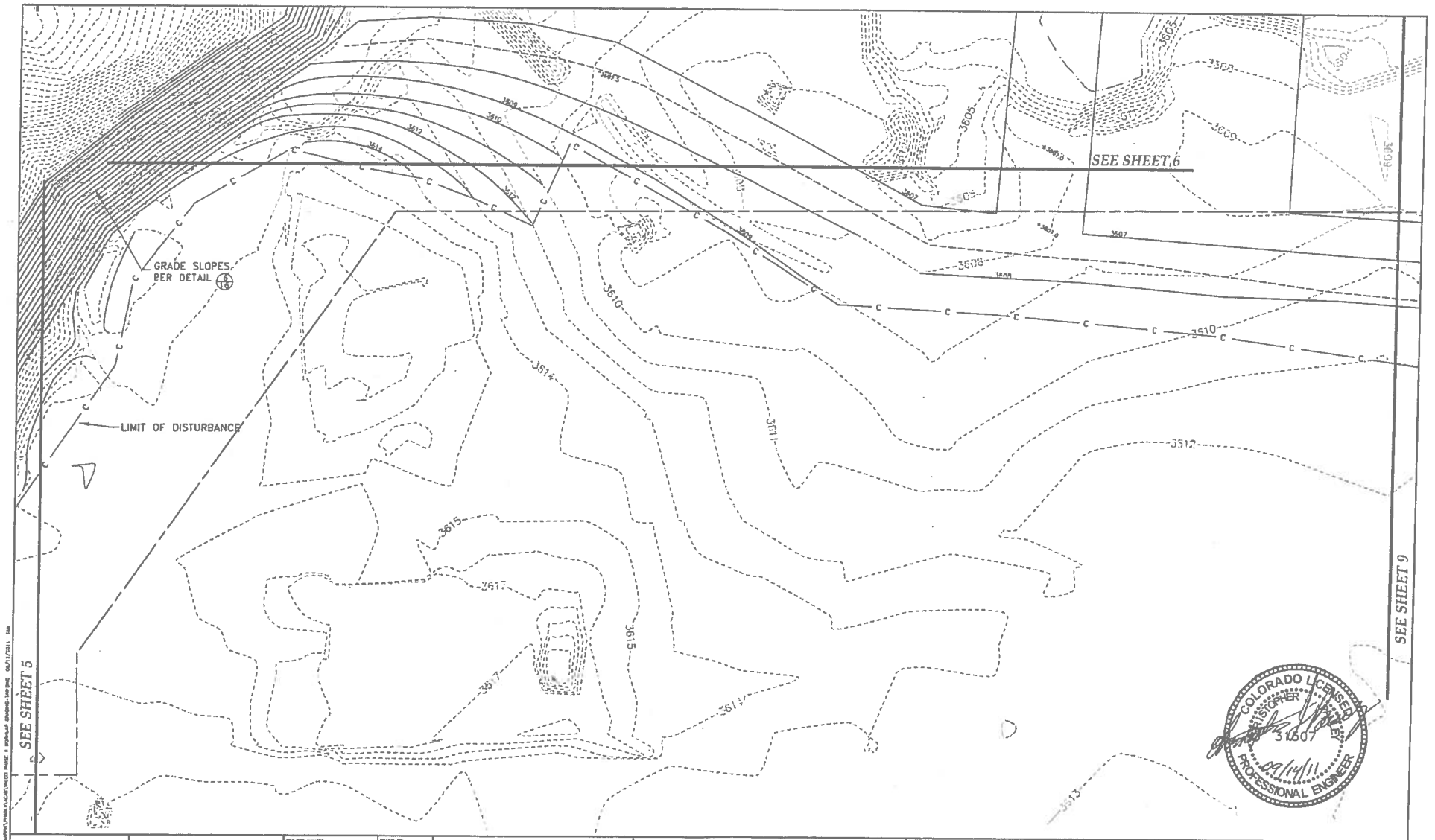
GRADING PLAN

SHEET 5
SHEET INDEX C4



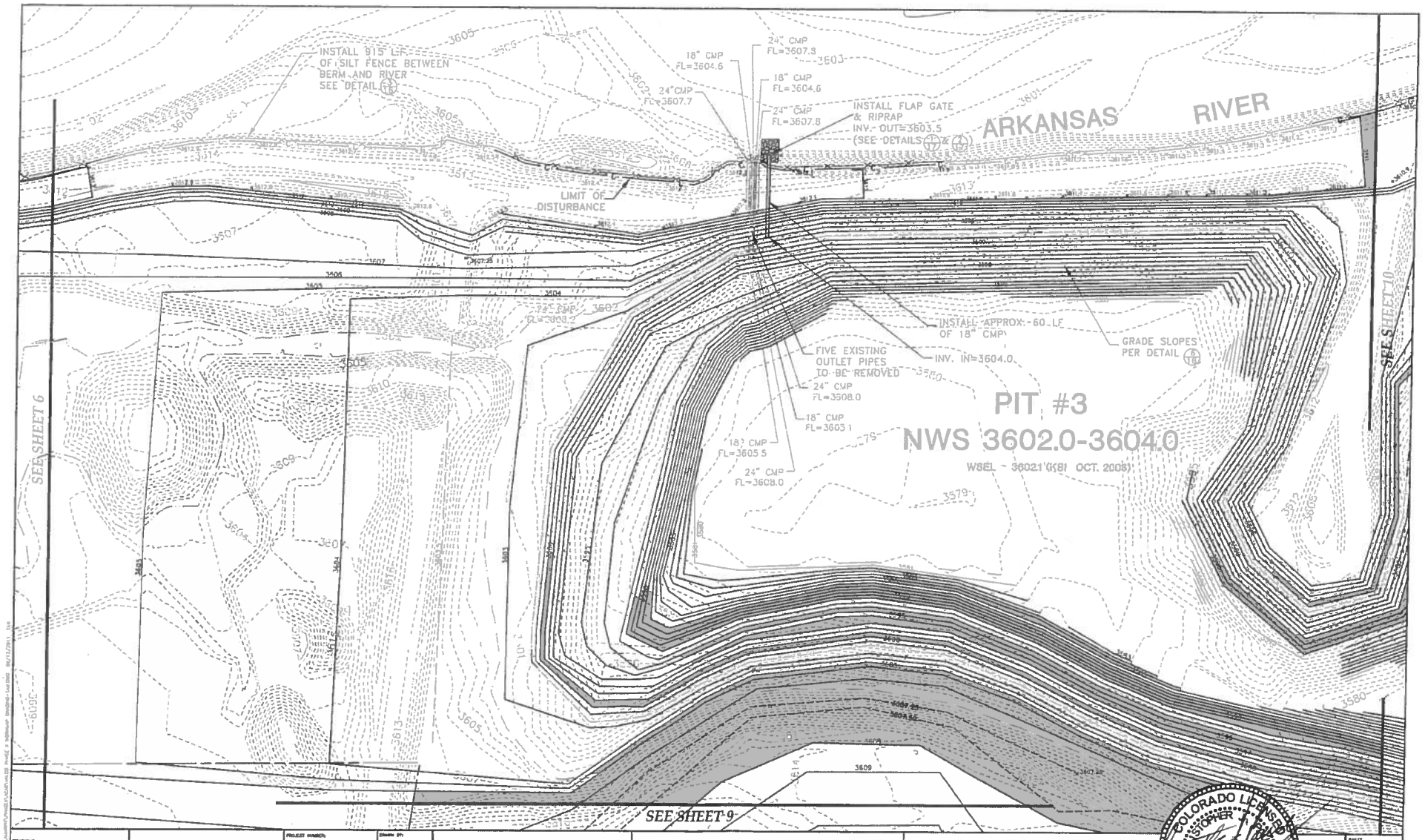
REV1	CONTOUR INTERVAL = 1 FOOT	PROJECT MANAGER: COVALC001	DRAWN BY: TAW	Anderson Consulting Engineers, Inc. Civil · Water Resources · Environmental	LAMAR PITS ON THE ARKANSAS RIVER FLOOD MITIGATION AND RECLAMATION PLAN
REV2		CAD FILE: VAL PHASEII WRKMP	DESIGNED BY: MLM/CJP		GRADING PLAN
REV3		DATE: 09/12/2011	ENCHED BY: CJP		SHEET 6
REV4					C5
REV5					SHEET INDEX
REV6					

COLORADO LICENSED
CHRISTOPHER J. JARVIS
31507
PROFESSIONAL ENGINEER
09/12/11



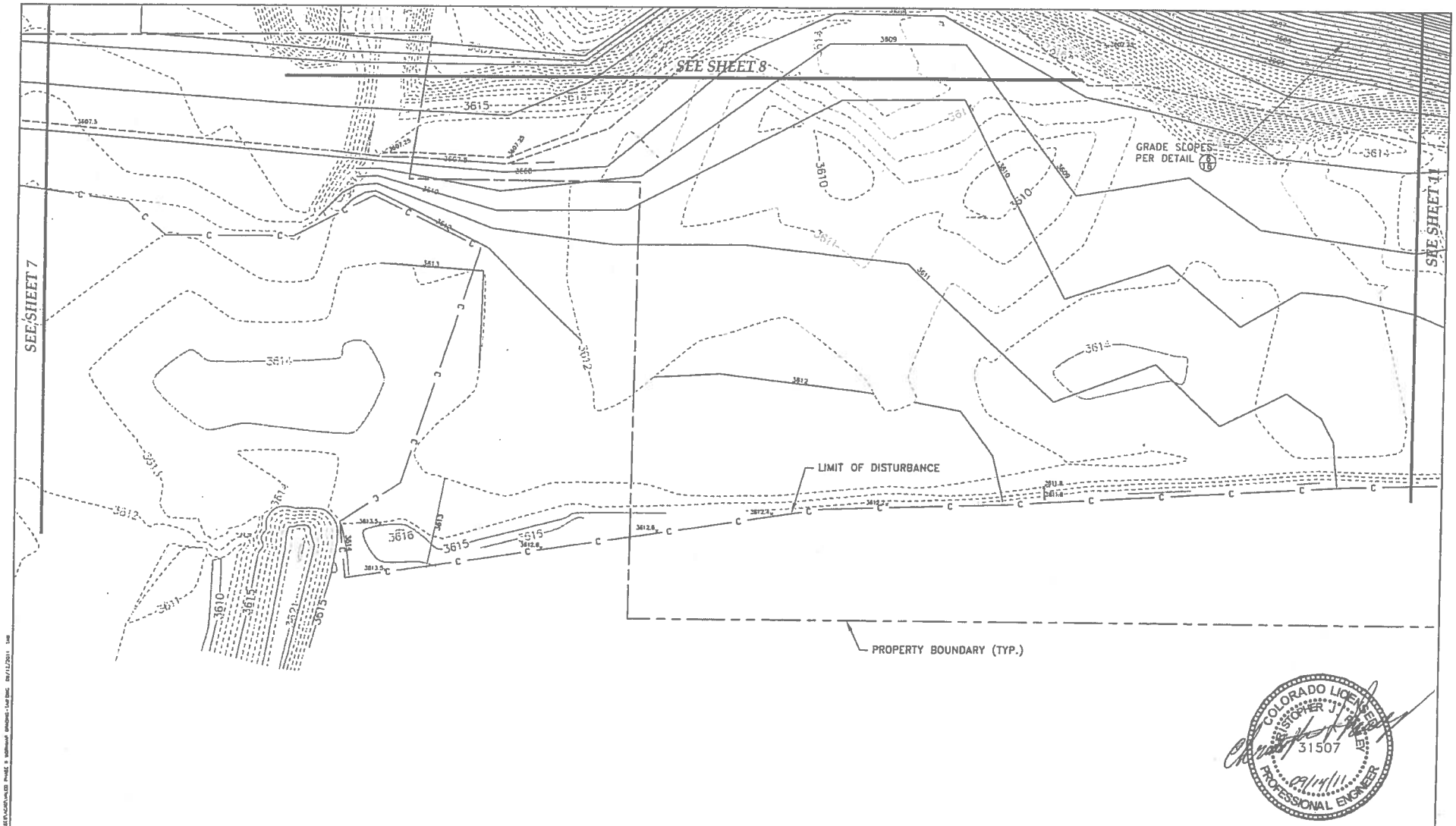
COLORADO LICENSED
CHRISTOPHER J. PINKLEY
31607
09/14/11
PROFESSIONAL ENGINEER

REVISIONS: REV1 REV2 REV3 REV4 REV5 REV6	N	CONTOUR INTERVAL = 1 FOOT 0' 15' 30' 60'	PROJECT NUMBER: COVALC001	DRAWN BY: TAW	Anderson Consulting Engineers, Inc Civil · Water Resources · Environmental 375 E. Horsetooth Road, Building #1, Fort Collins CO 80525 Phone: (970) 226-0525 / Fax: (970) 226-0132 www.acewater.com	LAMAR PITS ON THE ARKANSAS RIVER FLOOD MITIGATION AND RECLAMATION PLAN	GRADING PLAN	SHEET 7 C8 SHEET INDEX
			XREF FILE: VAL PHASEII WRKMP	DESIGNED BY: MLM/CJP				
			DATE: 09/12/2011	CHECKED BY: CJP				



REVISIONS: REV1 REV2 REV3 REV4 REV5 REV6	CONTOUR INTERVAL = 1 FOOT (0' 15' 30' 60')	PROJECT NUMBER: COVALC001	Drawn BY: TAW	Anderson Consulting Engineers, Inc. Civil · Water Resources · Environmental 771 E Horsetooth Road, Building #1, Fort Collins, CO 80525 Phone (970) 226-0120	LAMAR PITS ON THE ARKANSAS RIVER FLOOD MITIGATION AND RECLAMATION PLAN	GRADING PLAN	SHEET 8
		MAP FILE: VAL PHASEII WRKMP	DESIGNED BY: MLM/CJP				SHEET INDEX C7
		DATE: 08/12/2011	CHECKED BY: CJP				

COLORADO LICENSED CHRISTOPHER J. PUTNEY No. 31807 PROFESSIONAL ENGINEER 08/14/11



COLORADO LICENSED
CHRISTOPHER J. PINKLEY
31507
09/14/11
PROFESSIONAL ENGINEER

CONTOUR INTERVAL = 1 FOOT
0' 15' 30' 60'

PROJECT NUMBER: CCVALC001
DRAWN BY: TAW
LEAD PATH: VAL PHASEII WRKMP
DESIGNED BY: MLM/CJP
DATE: 09/12/2011
CHECKED BY: CJP

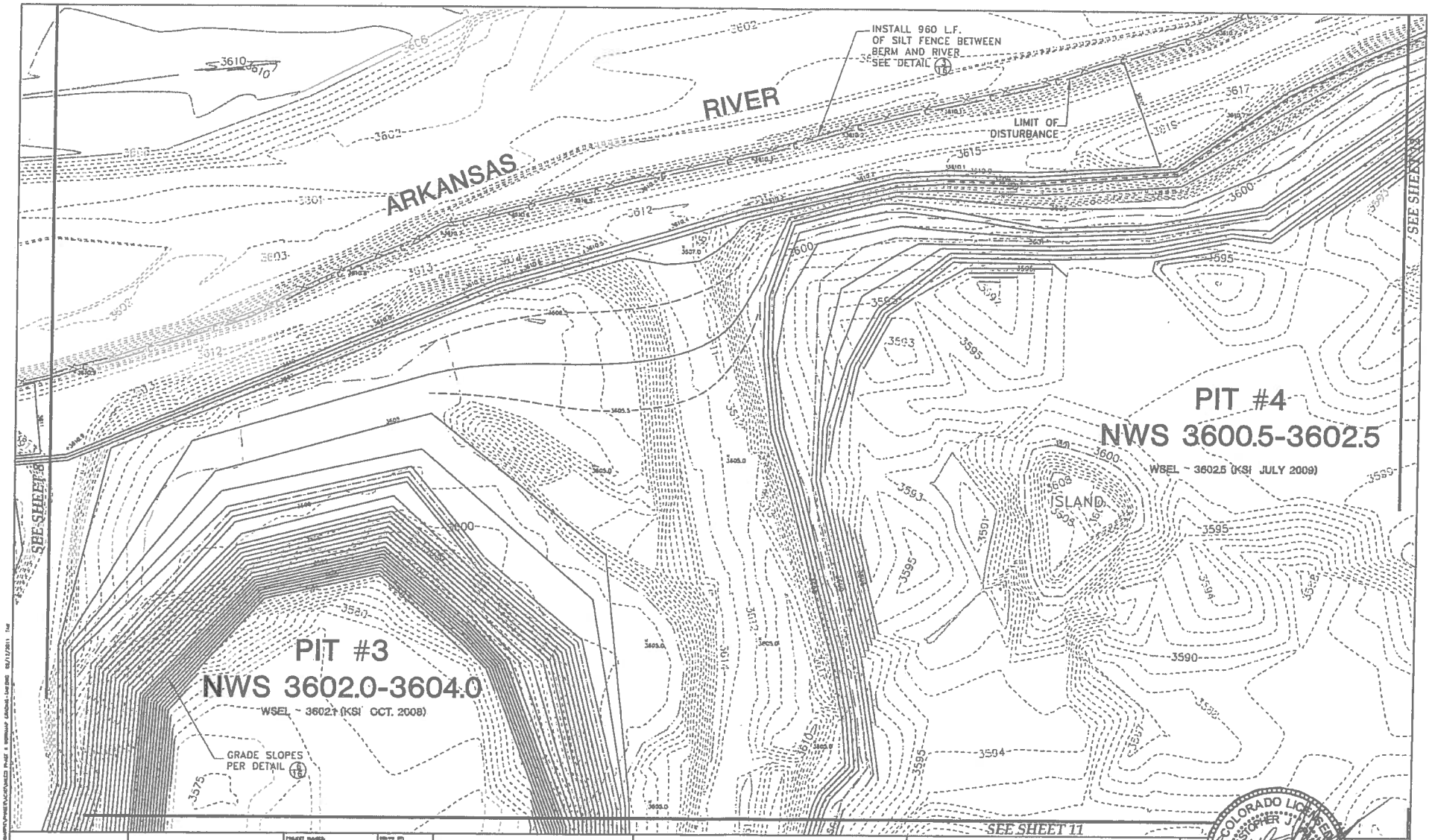
REV1
REV2
REV3
REV4
REV5
REV6

Anderson Consulting Engineers, Inc
Civil · Water Resources · Environmental
375 E. Horsetooth Road, Building #1, Fort Collins, CO 80525
Phone (970) 226-0639 Fax (970) 226-0621
www.acewater.com

LAMAR PITS ON THE ARKANSAS RIVER
FLOOD MITIGATION AND RECLAMATION PLAN

GRADING PLAN

SHEET 9
C8



CONTOUR INTERVAL = 1 FOOT

0' 15' 30' 60'

PROJECT NUMBER	COVALC001
DESIGNED BY	TAW
DRAWING FILE	VAL PHASEII WRKMP
DRAWN BY	MLM/CJP
DATE	08/12/2011
CHECKED BY	CJP

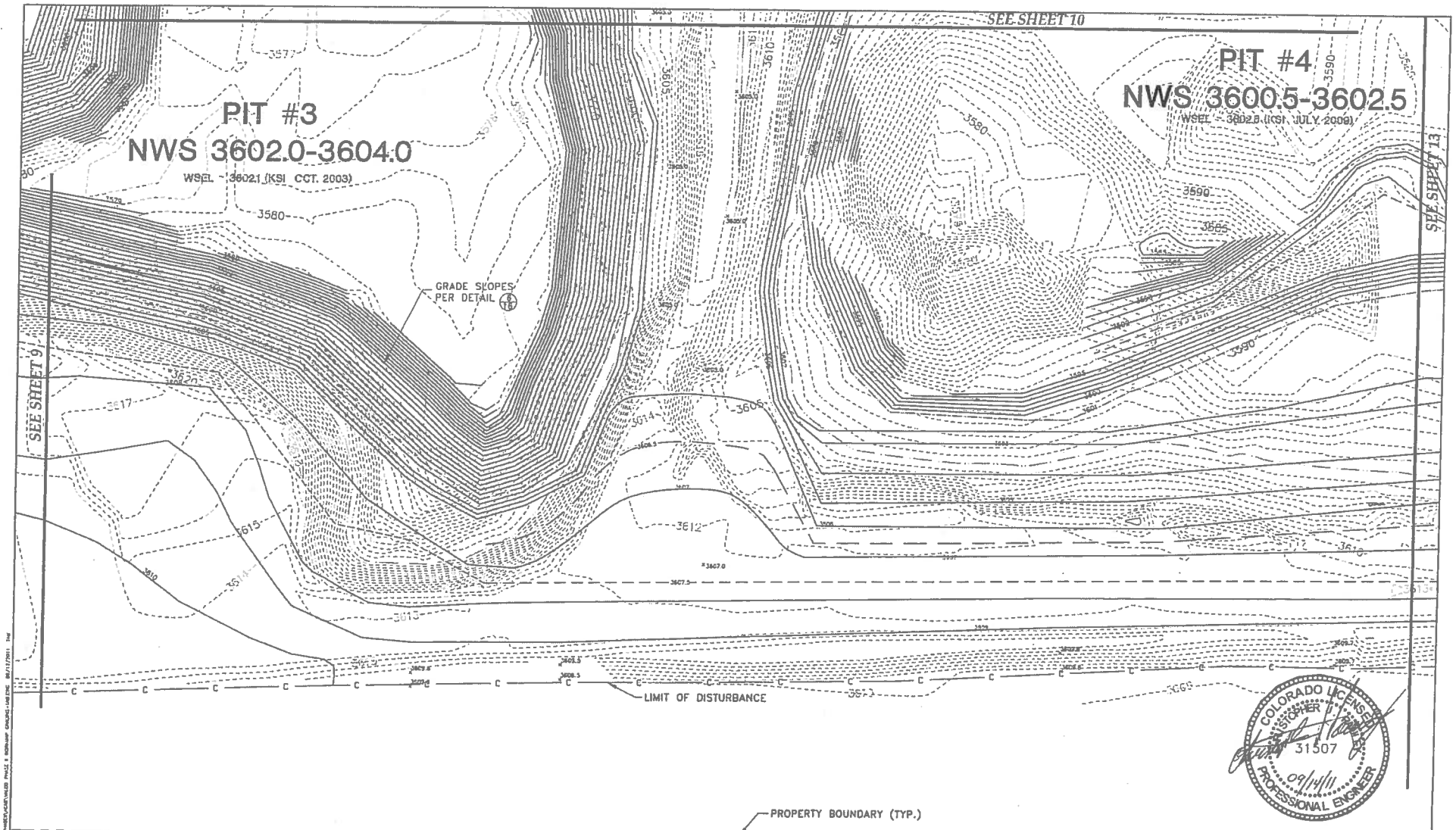
Anderson Consulting Engineers, Inc
Civil · Water Resources · Environmental
371 E. Stoneridge Road, Building #1, Fort Collins, CO 80525
Phone (970) 204-0120 FAX (970) 224-0132
www.acefnco.com

LAMAR PITS ON THE ARKANSAS RIVER
FLOOD MITIGATION AND RECLAMATION PLAN

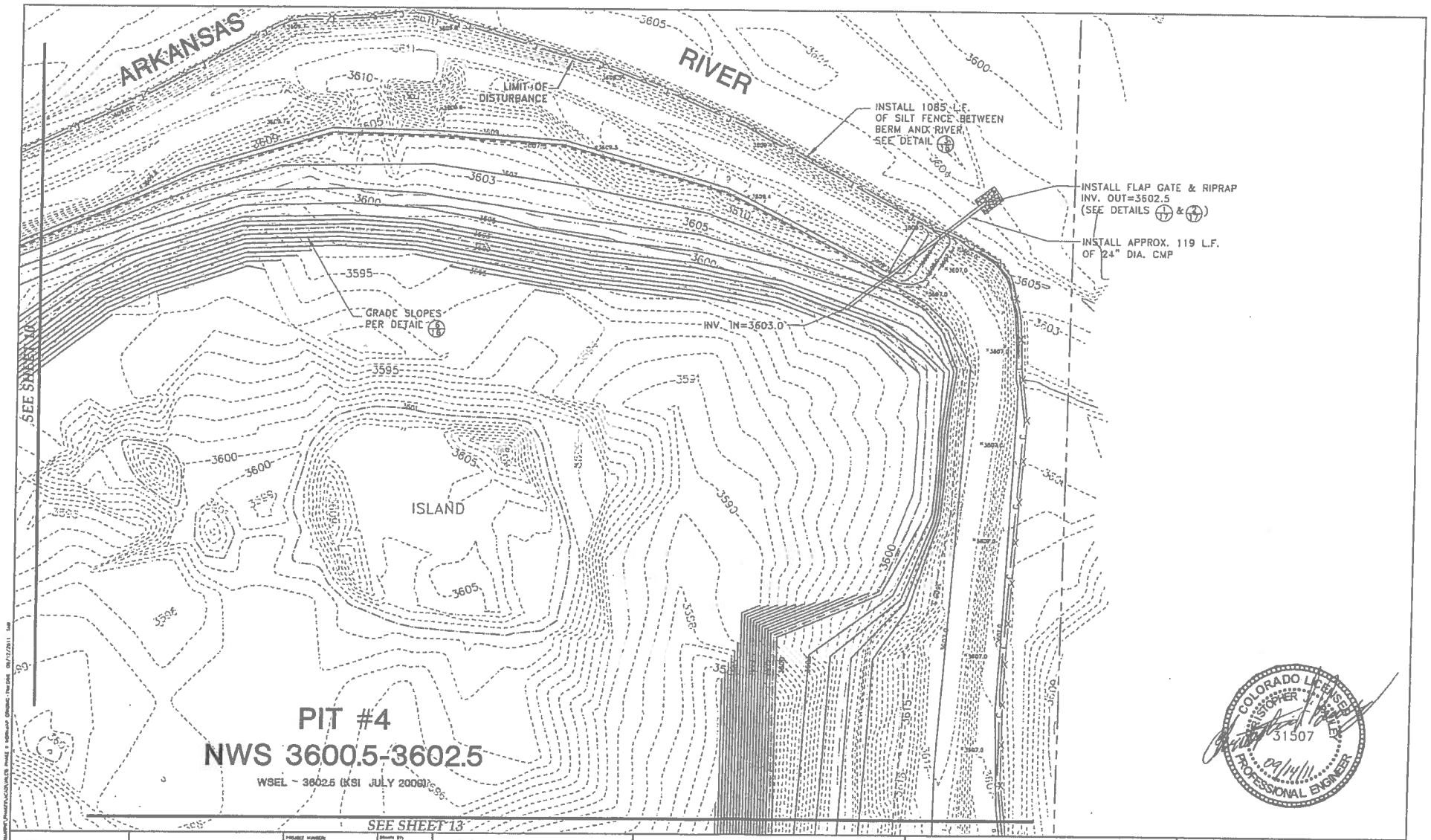
GRADING PLAN

COLORADO LICENSED
CHRISTOPHER J. PAYNE
31507
PROFESSIONAL ENGINEER

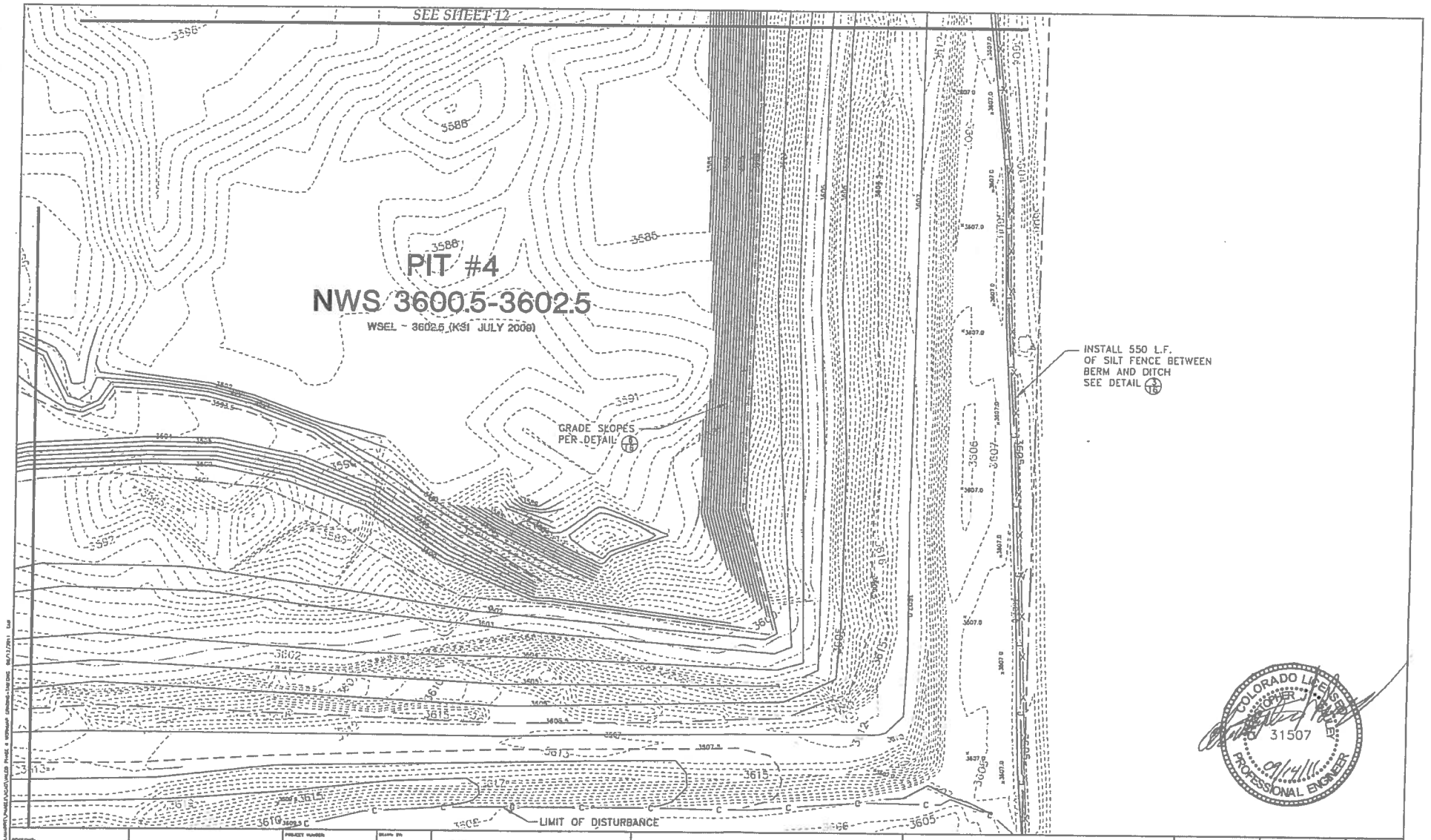
SHEET 10
C9



REVISIONS: REV1 REV2 REV3 REV4 REV5 REV6	CONTOUR INTERVAL = 1 FOOT 0' 15' 30' 60'	PROJECT NUMBER: COVALC001	DRAWN BY: TAW	Anderson Consulting Engineers, Inc. Civil · Water Resources · Environmental	LAMAR PITS ON THE ARKANSAS RIVER FLOOD MITIGATION AND RECLAMATION PLAN	GRADING PLAN	SHEET 11
		LEAD FILE: VAL PHASEII WRKMP	REVIEWED BY: MLM/CJP				C10
		DATE: 08/12/2011	CHECKED BY: CJP				SHEET NUMBER



REVISIONS: REV1 REV2 REV3 REV4 REV5 REV6	CONTOUR INTERVAL = 1 FOOT	PROJECT NUMBER: COVALCO01	DRAWN BY: TAW	Anderson Consulting Engineers, Inc. Civil · Water Resources · Environmental	LAMAR PITS ON THE ARKANSAS RIVER FLOOD MITIGATION AND RECLAMATION PLAN
		XREF FILE: VAL PHASEII WRKMP	DESIGNED BY: MLM/CJP		GRADING PLAN
		DATE: 09/12/2011	CHECKED BY: CJP		SHEET 12 C11



REVISIONS
REV1
REV2
REV3
REV4
REV5
REV6

CONTOUR INTERVAL = 1 FOOT
0' 15' 30' 60'

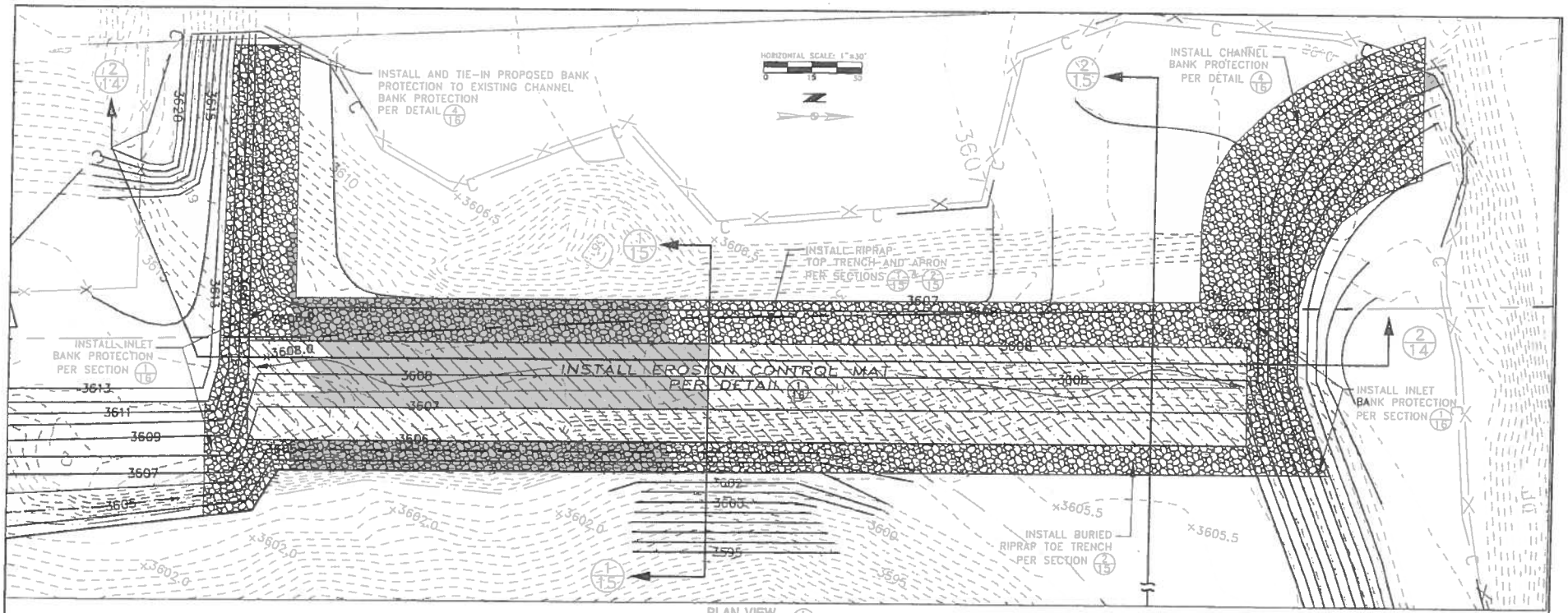
PROJECT NUMBER: COVALC001
ACAD FILE: VAL PHASEII WRKMP
DATE: 09/12/2011
DRAWN BY: TAW
DESIGNED BY: MLM/CJP
CHECKED BY: CJP

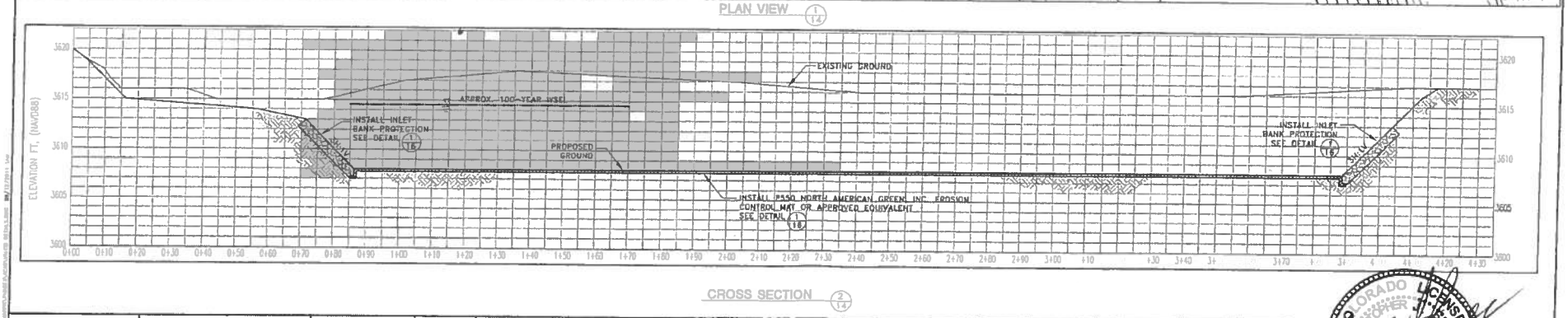
Anderson Consulting Engineers, Inc
Civil · Water Resources · Environmental
373 E. Simpson Road, Building #5, Fort Collins, CO 80525
Phone (970) 226-0139 / Fax (970) 226-0131
www.acengr.com

LAMAR PITS ON THE ARKANSAS RIVER
FLOOD MITIGATION AND RECLAMATION PLAN

GRADING PLAN

SHEET 13
SHEET INDEX C12





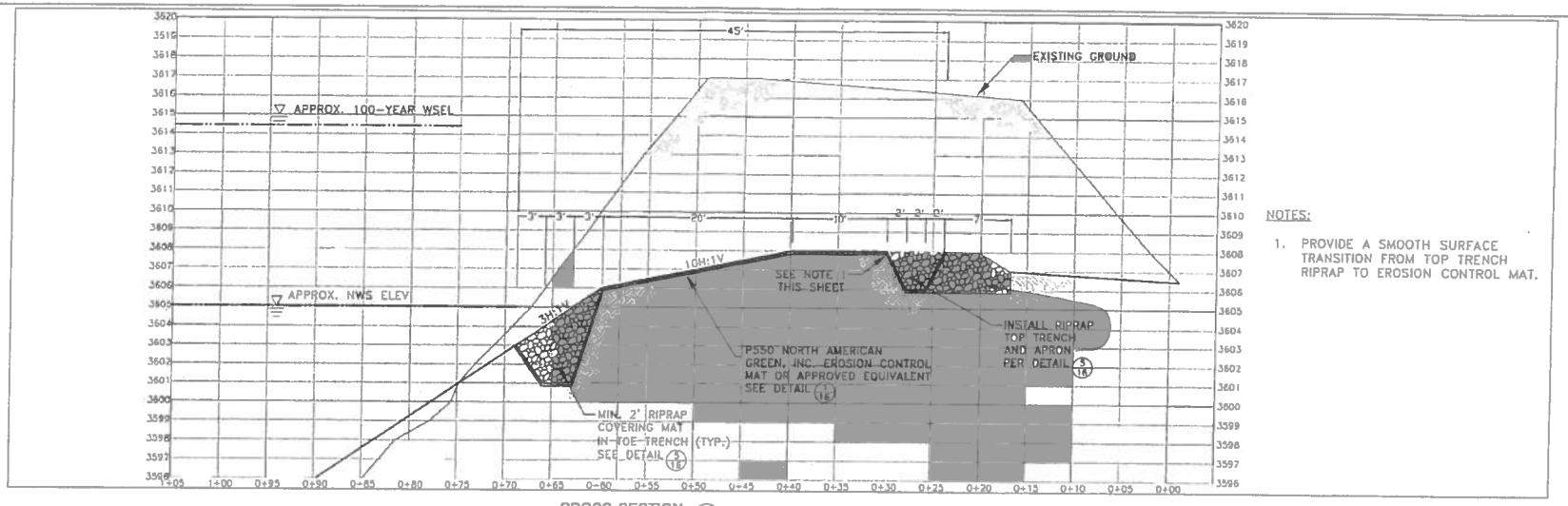
CROSS SECTION 2/14

REVISIONS: REV1 REV2 REV3 REV4 REV5 REV6	VERTICAL SCALE: 0 5 10 HORIZONTAL SCALE: 0 15 30	PROJECT NUMBER: COVALCO01	DRAWN BY: TAW	Anderson Consulting Engineers, Inc. Civil • Water Resources • Environmental 373 S. Howes St. Suite 200, Fort Collins, CO 80521 Phone (970) 224-5828 Fax (970) 224-5123	LAMAR PITS ON THE ARKANSAS RIVER FLOOD MITIGATION AND RECLAMATION PLAN
		ACAD FILE: VALCO DETAILS	RELEASED BY: CJP		PIT #1 INLET DETAILS
		DATE: 09/12/2011	CHECKED BY: CJP		

COLORADO LICENSED STOPHER J. PIPER 31507 PROFESSIONAL ENGINEER

SHEET 14

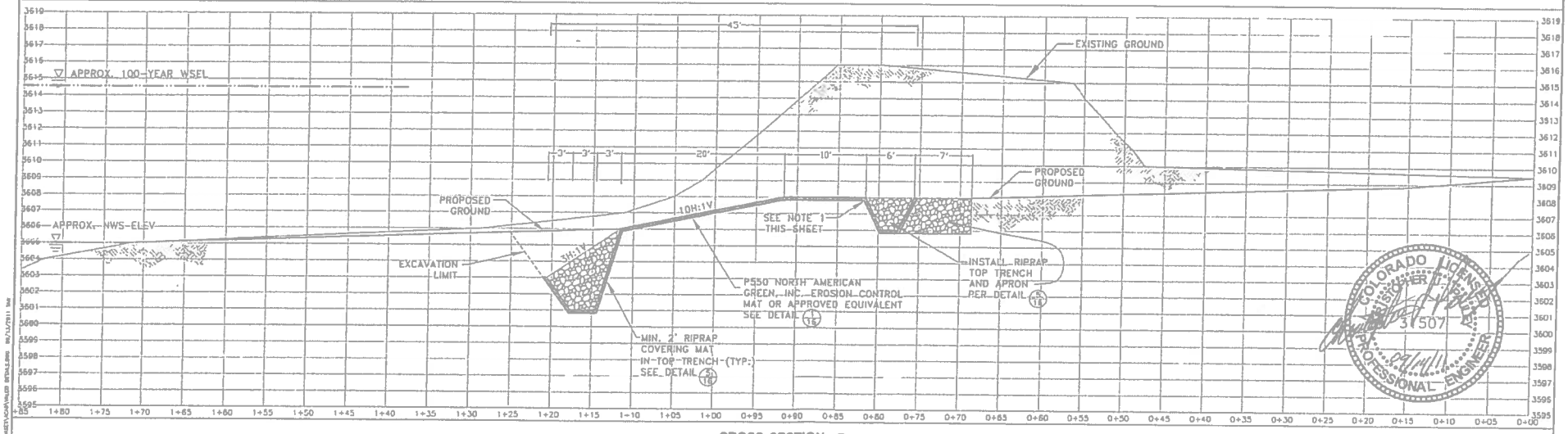
SHEET INDEX C13



NOTES:

1. PROVIDE A SMOOTH SURFACE TRANSITION FROM TOP TRENCH RIPRAP TO EROSION CONTROL MAT.

CROSS SECTION 1/15



CROSS SECTION 2/15

COLORADO LICENSED PROFESSIONAL ENGINEER 31507 04/14/11

REVISIONS:
REV1
REV2
REV3
REV4
REV5
REV6

VERTICAL SCALE: 0" 3" 6"
HORIZONTAL SCALE: 0" 6" 12"

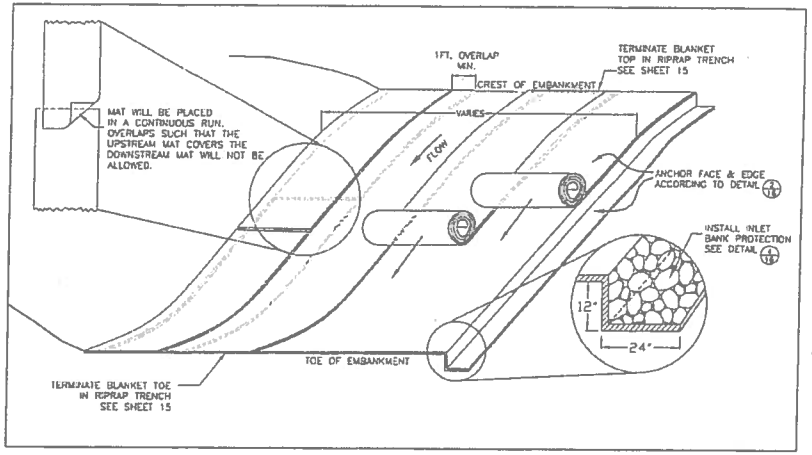
PROJECT NUMBER: COVALC001
ACAD FILE: VALCO DETAILS
DATE: 09/13/2011
DRAWN BY: TAW
DESIGNED BY: CJP
CHECKED BY: CJP

Anderson Consulting Engineers, Inc
Civil · Water Resources · Environmental
375 E. Simmonds Road, Building #1, Fort Collins, CO 80525
Phone (970) 226-0529 | Fax (970) 226-0123
www.andersonce.com

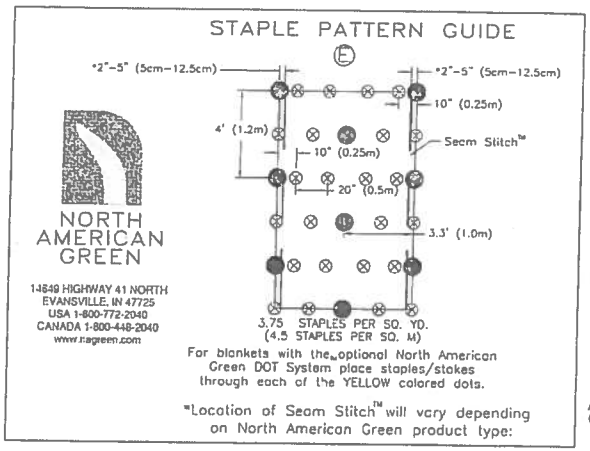
LAMAR PITS ON THE ARKANSAS RIVER
FLOOD MITIGATION AND RECLAMATION PLAN

PIT #1 INLET
CROSS SECTIONS

SHEET 15
C14
SHEET INDEX



TYPICAL EROSION CONTROL BLANKET
PIT 1 INLET SLOPE INSTALLATION (1/16)
N.T.S.



STAPLE PATTERN (2/16)
N.T.S.

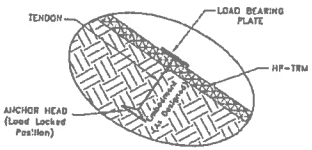
● -NAG EARTH ANCHOR 400

⊗ -NAG STAPLES

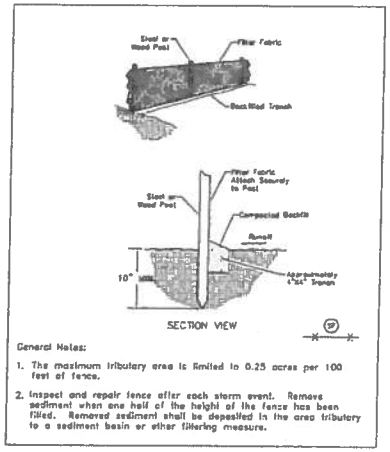
1. The performance of ground anchoring devices is highly dependent on numerous site/project specific variables. It is the responsibility of the contractor to select the appropriate anchor type and length. Anchoring shall be selected to hold the mat in intimate contact with the soil subgrade and resist pullout in accordance with the project's design intent.

2. Prepare soil before installing high performance turf reinforcement mats (HP-TRMs), including any necessary application of lime, fertilizer, and seed.

3. In loose soil conditions, the use of staples or stake lengths greater than 6"(15cm) may be necessary to properly secure the HP-TRMs.



EARTH ANCHOR DETAIL

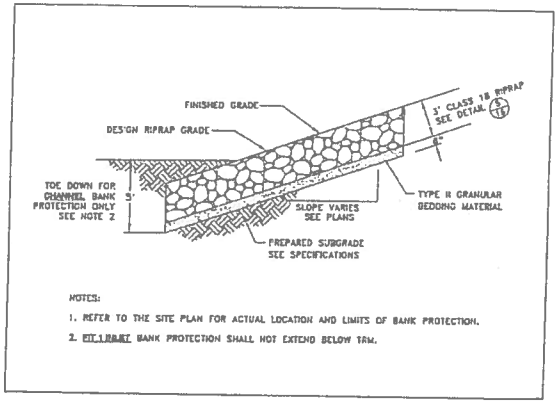


General Notes:

1. The maximum tributary area is limited to 0.25 acres per 100 feet of fence.

2. Inspect and repair fence after each storm event. Remove sediment when one half of the height of the fence has been filled. Removed sediment shall be deposited in the area tributary to a sediment basin or other filtering measure.

SILT FENCE (3/16)
N.T.S.

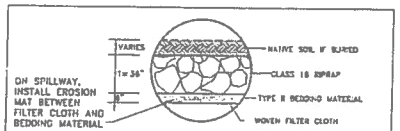


NOTES:

1. REFER TO THE SITE PLAN FOR ACTUAL LOCATION AND LIMITS OF BANK PROTECTION.

2. PIT 1 INLET BANK PROTECTION SHALL NOT EXTEND BELOW TRM.

TYPICAL RIPRAP BANK PROTECTION (4/16)
N.T.S.



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:

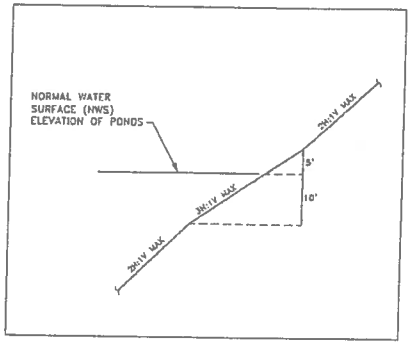
1. FILL RIPRAP VOIDS COMPLETELY WITH APPROVED FILL MATERIAL FOR BURIED CONDITIONS.

2. GENERAL PLACEMENT TECHNIQUES SHOULD RESULT IN LARGER ROCK AT THE SURFACE WITH ROCK SECURELY INTERLOCKED AT THE DESIGN THICKNESS AND GRADE. COMPACTION AND LEVELING SHOULD RESULT IN MINIMAL VOIDS BELOW GRADE AND MINIMAL PROJECTIONS ABOVE GRADE.

3. REFER TO SPECIFICATIONS FOR MATERIALS AND PLACEMENT REQUIREMENTS FOR RIPRAP AND GRANULAR BEDDING MATERIAL.

4. FOR TRENCH INSTALLATION, RIPRAP PLACEMENT SHALL NOT TEAR OR STRETCH TRM AND/OR FILTER CLOTH.

TYPICAL SECTION FOR CLASS 18 RIPRAP (5/16)
N.T.S.

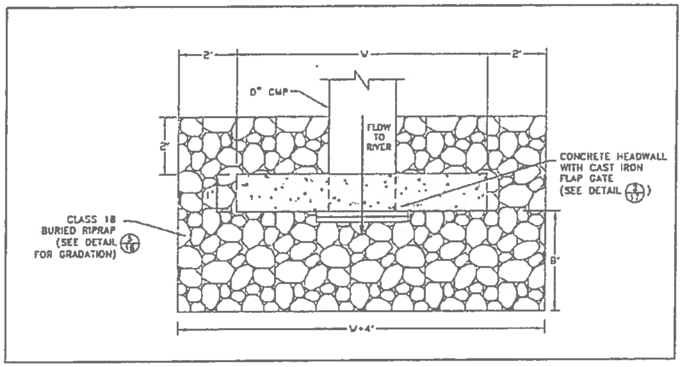


TYPICAL SLOPE GRADING (6/16)
N.T.S.

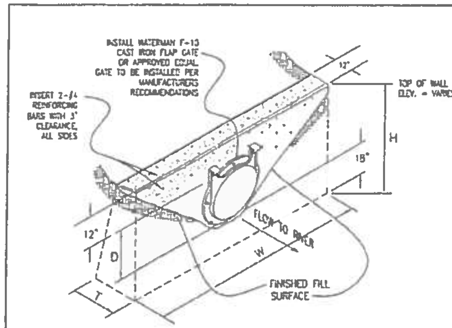
COLORADO LICENSED PROFESSIONAL ENGINEER
31507
9/14/11

REVISIONS	PROJECT NUMBER	DRAWN BY	Anderson Consulting Engineers, Inc.	LAMAR PITS ON THE ARKANSAS RIVER FLOOD MITIGATION AND RECLAMATION PLAN	MISCELLANEOUS DETAILS			SHEET 16
REV1	COVALC001	TAW	Civil · Water Resources · Environmental					
REV2	CAD FILE	DESIGNED BY	371 E. Monument Road, Building #2, Fort Collins, CO 80525					SHEET INDEX C15
REV3	VALCO DETAILS	CJP	Phone (970) 226-0120 / Fax (970) 226-0123					
REV4	DATE	CHECKED BY						
REV5	09/12/2011	CJP						
REV6								
REV7								
REV8								

P:\COVALC001\...\COVALC001_VALCO DETAILS.DWG 09/12/2011 USA



RIPRAP APRON DETAIL (1/17)
N.T.S.



SINGLE PIPE WITH FLAP GATE

DETAIL OBTAINED FROM CDOT DETAIL M-601-12 "HEADWALLS AND CULVERT OUTLET PAVING"

TYPE OF PIPE	HEADWALL DIMENSIONS
CIRCULAR	EXAMPLE D = PIPE DIAMETER (INSIDE) = 18" H = D + 27" = 45" W = 2D + 18" = 54" T = 0.4 H (NEAREST INCH) = 18"

CONCRETE HEADWALL AND FLAP GATE DETAIL (2/17)
N.T.S.

COLORADO LICENSED PROFESSIONAL ENGINEER CHRISTOPHER J. PALEY 31507 09/14/11

REVISIONS
REV1
REV2
REV3
REV4
REV5
REV6

PROJECT NUMBER: COVALCO01	DRAWN BY: TAW	Anderson Consulting Engineers, Inc Civil • Water Resources • Environmental	LAMAR PITS ON THE ARKANSAS RIVER FLOOD MITIGATION AND RECLAMATION PLAN	MISCELLANEOUS DETAILS
CAD FILE: VALCO DETAILS	DESIGNED BY: CJP			
DATE: 09/12/2011	CHECKED BY: CJP			

SHEET 17

C16

SHEET INDEX