APPENDIX B

CALIFORNIA DEPARTMENT OF FISH AND GAME AGREEMENT

(NOT AVAILABLE AT TIME OF PRINTING)

APPENDIX C

SPILL CONTINGENCY PLAN FROM SWPPP

APPENDIX C
ANGORA CREEK FISHERIES/SEZ ENHANCEMENT PROJECT
CONTRACT NO. PW 09-30486, CIP #95161

SPILL CONTINGENCY PLAN

I. SEWAGE SPILLS:

A. Agency Contacts:

	Agency	Contact Person	Phone
1.	South Tahoe Public Utility District	Jim Hoggatt	544-6474 x206
2.	El Dorado County Environmental Management	Ginger Huber	573-3450
3.	Water Quality Control Board Lahontan Region	Robert Larsen	542-5439
4.	El Dorado County Department of Transportation	Steve Kooyman Dick Bird Donaldo Palaroan	573-7910 573-7911 573-7920

B. Contractor Representative:

Clean up operation shall be directed by _____, phone number _____ in cooperation with agencies listed in A.

C. Containment and Disposal:

Spills shall be contained with earthen berms or other approved methods. Liquid sewage shall be disinfected as necessary, and pumped to an adjacent sewer or transported to South Tahoe Public Utility District facilities by approved methods as instructed by South Tahoe Public Utility District.

II. PETROLEUM AND CHEMICAL SPILLS

A. Agency Contacts:

	Agency	Contact Person	Phone
1.	South Tahoe Public Utility District	Jim Hoggatt	544-6474 x206
2.	El Dorado County Environmental Management	Ginger Huber	573-3450
3.	Water Quality Control Board Lahontan Region	Robert Larsen	542-5439
4.	El Dorado County Department of Transportation	Steve Kooyman Dick Bird Donaldo Palaroan	573-7910 573-7911 573-7920

B. Contractor Representative:

Clean up operation shall be directed by _____, phone number _____ in cooperation with agencies listed in A.

C. Materials shall be excavated with a backhoe or other excavation equipment and placed on an impermeable membrane _____(type)_____ and covered with such membrane, as required for containment.

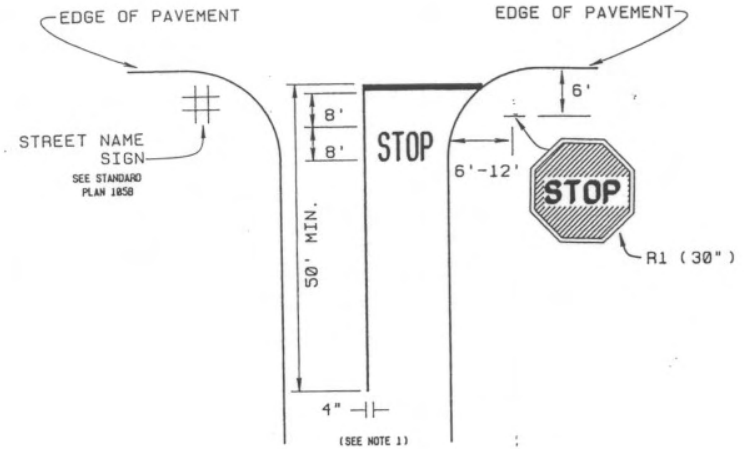
D. Materials shall be disposed of as directed by El Dorado County Environmental Management.

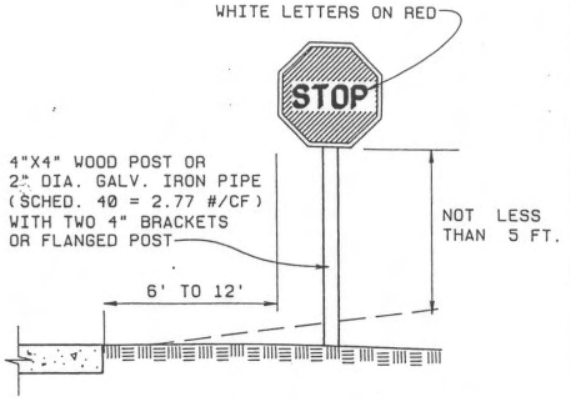
Minor Spills – South Tahoe Refuse – Jeanne Lear	542-8366
Major Spills – Forward Inc. Manteca, CA	(209) 466-4482
Or as approved by Environmental Management	

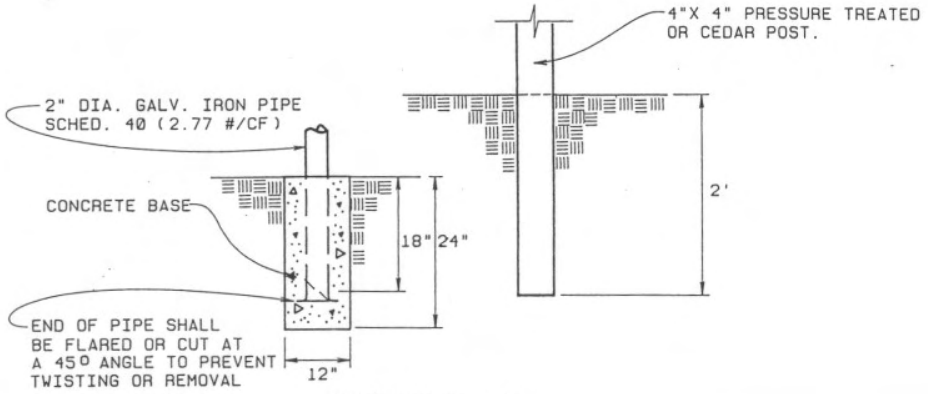
E. Contractor shall keep petroleum and chemical absorbent materials on site at all times.

APPENDIX D

STANDARD PLANS







ALTERNATE BASE

NOTES:

1. 4" STRIPE TO BE YELLOW REFLECTORIZED TRAFFIC PAINT. TWO 4" STRIPES WILL BE USED IF ADT'S WARRANT.
2. 12" STOP BAR TO BE WHITE REFLECTORIZED TRAFFIC PAINT AND LOCATED TO PROVIDE MAXIMUM VISIBILITY ALONG THROUGH STREET.
3. ALL SIGNS SHALL BE FABRICATED OF HIGH INTENSITY REFLECTIVE SHEETING ON AN ALUMINUM BLANK PER EL DORADO COUNTY SPECIFICATIONS.

NOT TO SCALE

GENERATED	REVISIONS		
DATE: 3/14/90			
DESIGNED:			
DRAWN: JM/SR/BS			
CHECKED: SKP			
APPROVED:			

APPROVED:

Scott Chadd
DIRECTOR OF TRANSPORTATION

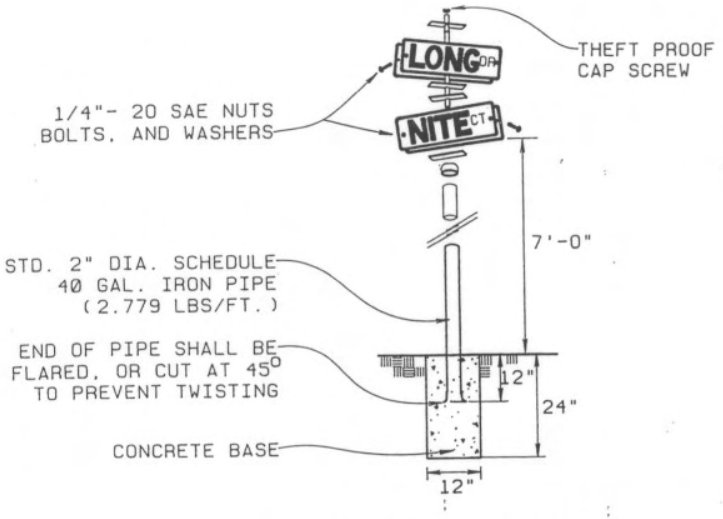
Alan K. Klepp C 33427
SENIOR CIVIL ENGINEER P.E. NO.

EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION
DESIGN STANDARDS

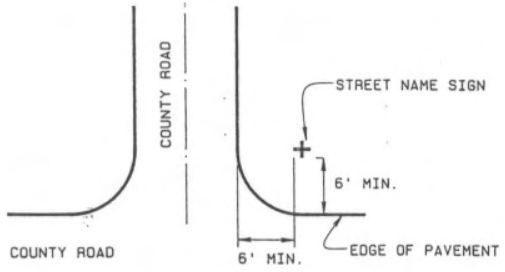
STOP SIGN

STD. PLAN 105A

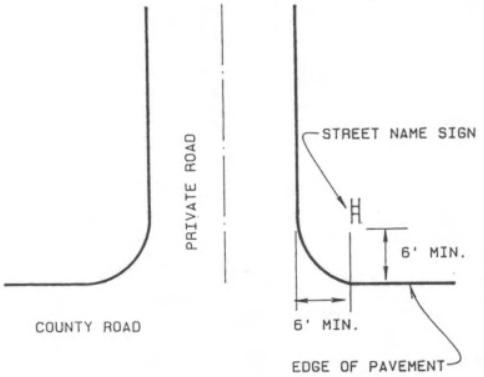
10-0073.B2.6



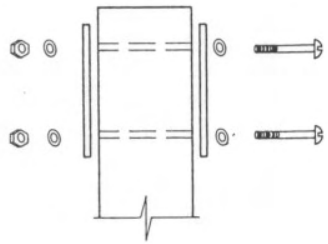
COUNTY ROAD STREET SIGN (SEE NOTE 1)



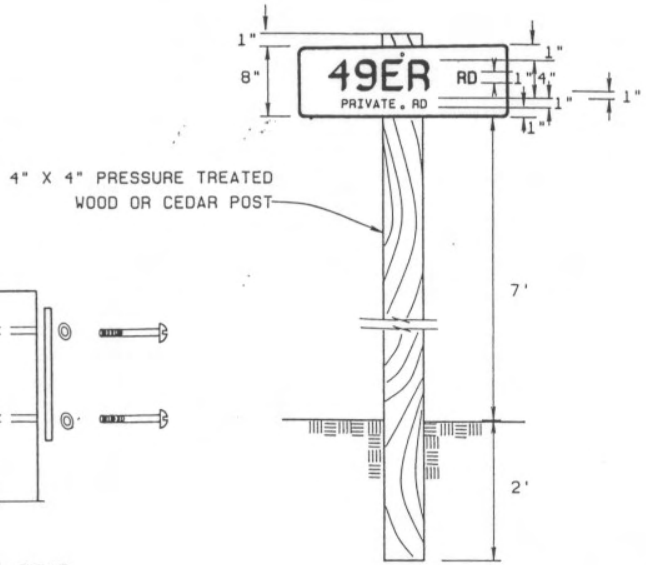
LOCATION OF COUNTY ROAD STREET SIGN



LOCATION OF PRIVATE STREEET SIGN



PRIVATE ROAD
TYPICAL SIGN ASSEMBLY



PRIVATE ROAD STREET SIGN (SEE NOTE 2)

NOTES:

1. STREET NAME PANELS FOR COUNTY ROADS SHALL BE FLAT ALUMINUM PLATES, 0.08" THICK. PANELS SHALL BE 6" X 24" OR 6" X 30", DEPENDING ON STREET NAME LENGTH. LETTERING TO BE 1" AND 4", SERIES "B", SILVER REFLECTIVE SHEETING ON GREEN SCOT-LITE BACKING.
2. STREET NAME PANELS FOR PRIVATE ROADS SHALL BE FLAT ALUMINUM PLATES, 0.08" THICK. PANELS SHALL BE 8" X 30" OR 8" X 24", DEPENDING ON STREET NAME LENGTH. LETTERING TO BE 1" AND 4" SERIES "B", SILVER REFLECTIVE SHEETING ON BROWN SCOT-LITE BACKING.

NOT TO SCALE

GENERATED	REVISIONS		
NO.			
DATE: 3/14/90			
DESIGNED:			
DRAWN: JM/SR/BS			
CHECKED: SKP			
APPROVED:			

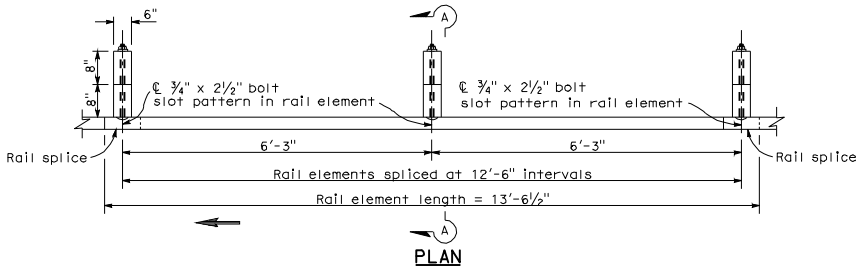
APPROVED:
Scott Challed
DIRECTOR OF TRANSPORTATION
Stan K Kluge C33427
SENIOR CIVIL ENGINEER P.E. NO.

EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION
DESIGN STANDARDS

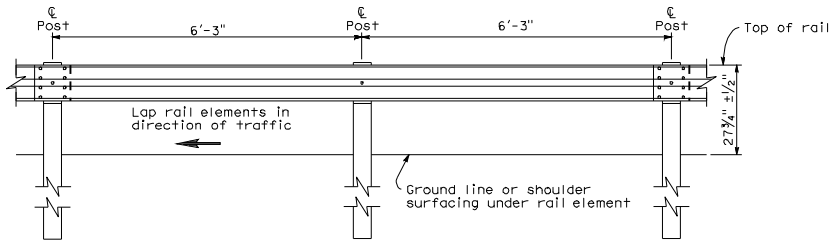
STREET SIGN

STD. PLAN 105B

10-0073.B27

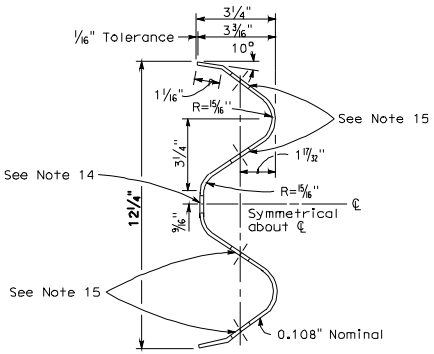


PLAN

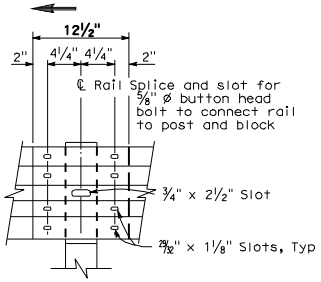


ELEVATION

METAL BEAM GUARD RAILING WITH WOOD POST AND BLOCKS



SECTION THRU RAIL ELEMENT



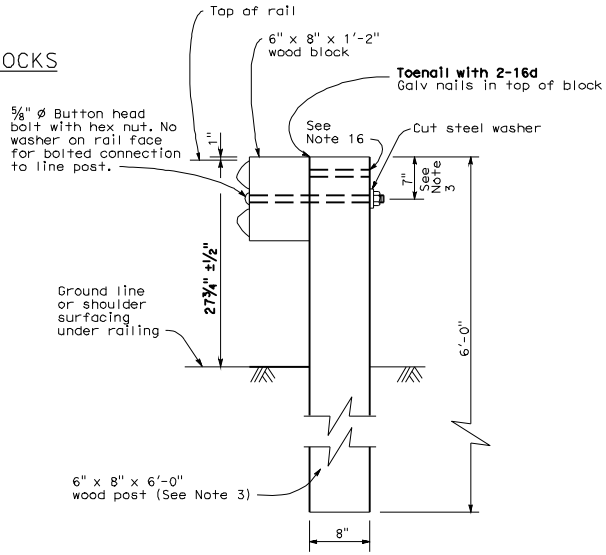
ELEVATION

RAIL ELEMENT SPLICE DETAIL

a) Connect the over lapped end of the rail elements with ⅝" ø x 1⅜" button head oval shoulder splice bolts inserted into the 29/32" x 1⅛" slots and bolted together with ⅝" ø recessed hex nuts. Recess of hex nut points toward rail element. A total of 8 bolts and nuts are to be used at each rail splice connection.

b) The ends of the rail elements are to be overlapped in the direction of traffic (see details).

c) Where end cap is to be attached to the end of a rail element, a total of 4 of the above described splice bolts and nuts are to be used.



SECTION A-A

TYPICAL WOOD LINE POST INSTALLATION

See Note 4

NOTES:

1. For details of steel post installations, see Standard Plan A77A2.
2. For details of standard hardware used to construct guard railing, see Standard Plan A77B1.
3. For details of wood posts and wood blocks used to construct guard railing, see Standard Plan A77C1.
4. For additional installation details, see Standard Plan A77C3.
5. **Guard railing post spacing to be 6'-3" center to center,** except as otherwise noted.
6. For guard railing typical layouts, see the A77E, A77F and A77G Series of Standard Plans.
7. For terminal system end treatment details, see the A77L Series of Standard Plans.
8. For guard railing end anchor details, see Standard Plans A77H1 and A77I2.
9. For details of guard railing transition to bridge railing, see Standard Plan A77J4.
10. For additional details of guard railing connection to bridge railings, see Standard Plans A77J1, A77J2 and A77K1.
11. For guard railing connection details to abutments and walls, see Standard Plan A77J3.
12. Direction of adjacent traffic indicated by →.
13. For typical guard railing delineation and dike positioning details, see Standard Plan A77C4.
14. Slotted hole for bolted connection of rail element to block and post. See "Section Thru Rail Element".
15. Slotted holes for splice bolts to overlap ends of rail element. See "Section Thru Rail Element".
16. Additional hole in uppermost portion of line post is for potential future adjustments of railing height. See Standard Plan A77C1.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Randall D. Hiatt
REGISTERED CIVIL ENGINEER

May 1, 2006
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Randall D. Hiatt — No. C50200 — Exp. 6-30-07 — CIVIL — STATE OF CALIFORNIA

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

METAL BEAM GUARD RAILING STANDARD RAILING SECTION (WOOD POST WITH WOOD BLOCK)

NO SCALE

A77A1

2006 STANDARD PLAN A77A1

41

10-0073.B2.8

11-8-05

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Randall D. Hiatt
REGISTERED CIVIL ENGINEER

May 1, 2006
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randall D. Hiatt
No. C50200
Exp. 6-30-07
CIVIL
STATE OF CALIFORNIA

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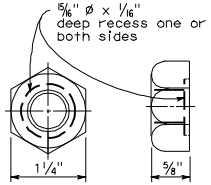
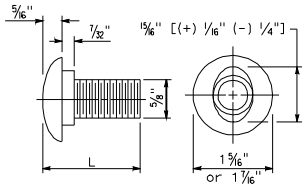


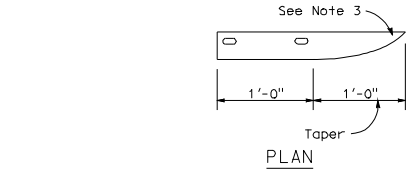
5/8" ø RECESS NUT



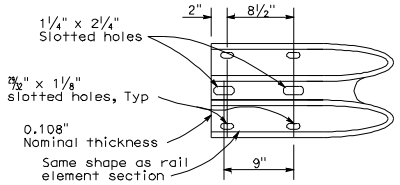
5/8" ø BUTTON HEAD BOLT

L	THREAD LENGTH
1 3/8"	full thread length
2"	full thread length
10"	4" Min thread length
1'-6"	4" Min thread length
** 2 3/4"	2" Min thread length
** 1'-7"	4" Min thread length

** For nested rail applications.



PLAN



ELEVATION

END CAP
(TYPE A)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

METAL BEAM GUARD RAILING
STANDARD HARDWARE

NO SCALE

A77B1

11-3-05

2006 STANDARD PLAN A77B1

43

10-0073.B2.9

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 1, 2006
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-07
CIVIL
STATE OF CALIFORNIA

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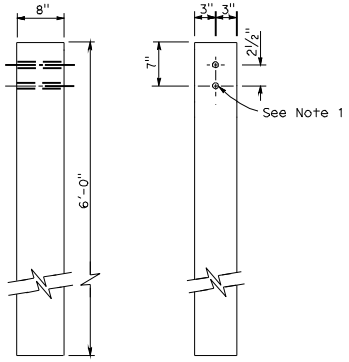
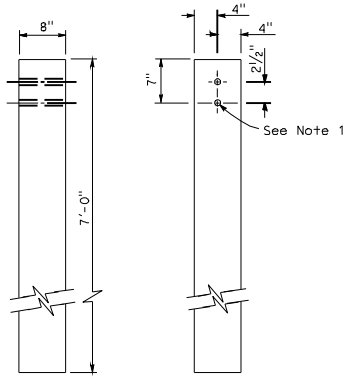


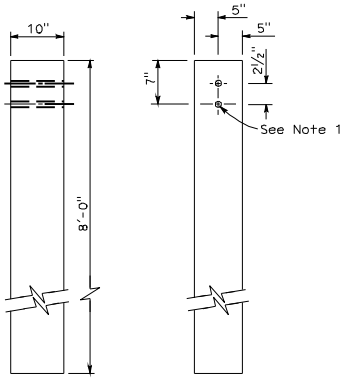
SIDE FRONT

6" x 8" WOOD POST
See Note 3



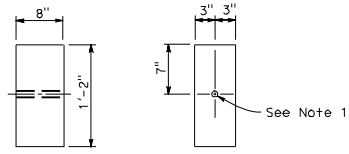
SIDE FRONT

8" x 8" WOOD POST
See Note 4



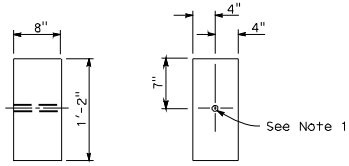
SIDE FRONT

10" x 10" WOOD POST
See Note 5



SIDE FRONT

6" x 8" WOOD BLOCK
See Note 3



SIDE FRONT

8" x 8" WOOD BLOCK

NOTES:

1. All holes in wood posts and blocks shall be ¾" Dia ± 1/16".
2. Dimensions shown for wood post are nominal.
3. This post and block combination used for standard line post sections of guard railing.
4. This post and 8" x 8" block combination used for line post sections of guard railing on narrow roadways.
5. This post and 8" x 8" block combination is typically used where strengthened line post sections of guard railings are warranted to shield fixed objects.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

METAL BEAM GUARD RAILING WOOD POST AND WOOD BLOCK DETAILS

NO SCALE

A77C1

11-3-05

2006 STANDARD PLAN A77C1

10-0073.B2.10

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 1, 2006
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-07
CIVIL
STATE OF CALIFORNIA

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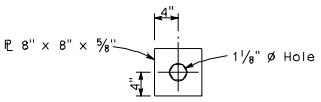
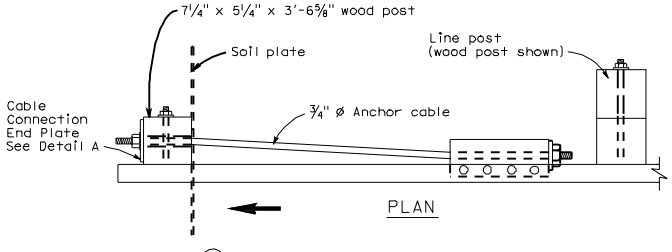
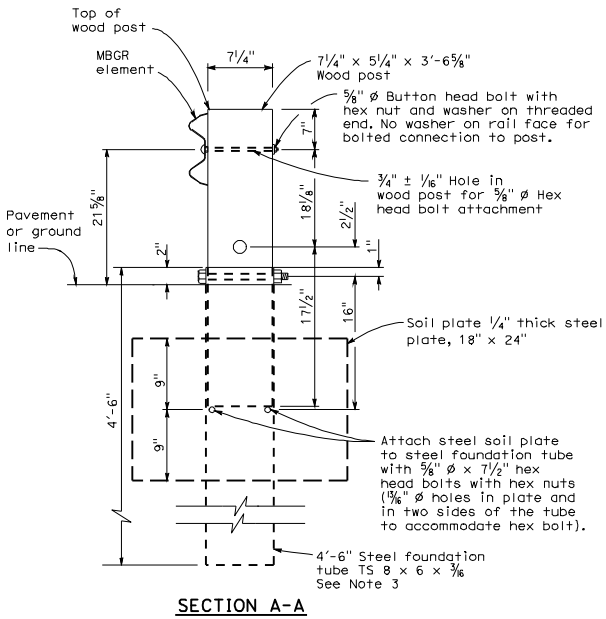


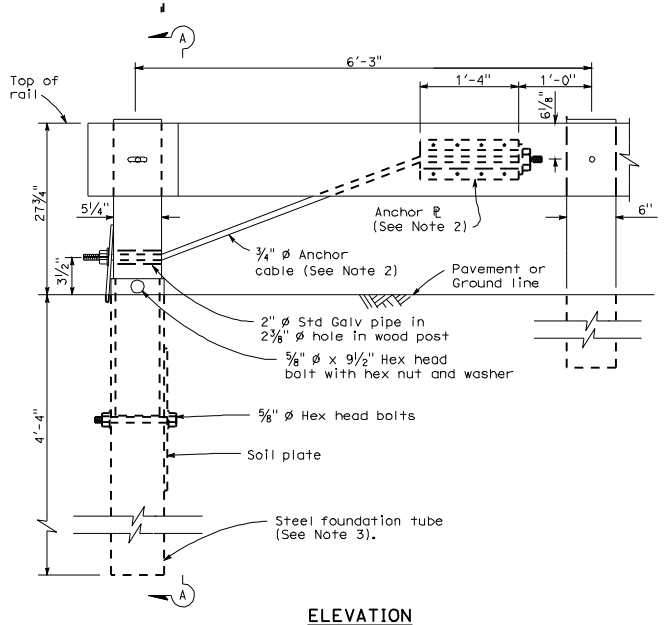
DETAIL A
CABLE CONNECTION
END PLATE



PLAN



SECTION A-A



ELEVATION
END ANCHOR
ASSEMBLY (TYPE SFT)
See Note 1

NOTES:

1. See the A77E, A77F and A77G series of Standard Plans for typical use of End Anchor Assembly (Type SFT).
2. For details of the anchor plate and 3/4" cable, see Standard Plan A77H3.
3. A 6'-0" length steel foundation tube, TS 8 x 6 x 3/16, without a soil plate, may be furnished and installed in place of the 4'-6" length steel foundation tube and soil plate shown. Minimum embedment of the 6'-0" length tube shall be 5'-9". A 5/8" ø hex head bolt and nut shall be installed in the hole in the 6'-0" length tube to keep the wood post from dropping into the tube.
4. Direction of traffic indicated by →.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

METAL RAILING
END ANCHOR ASSEMBLY
(TYPE SFT)

NO SCALE

A77H1

11-07-05

2006 STANDARD PLAN A77H1

67

10-0073.B2.11

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 1, 2006
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-07
CIVIL
STATE OF CALIFORNIA

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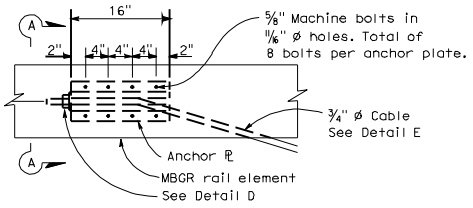
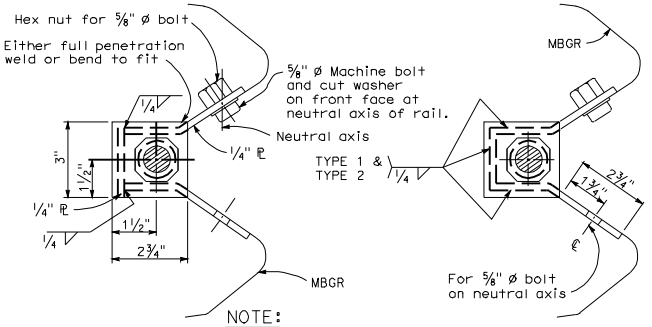
NOTE:

1. See Standard Plan A77H1 and Standard Plan A77H2 for typical use of anchor cable and anchor plate.



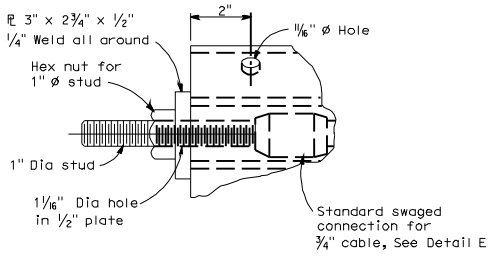
ANCHOR PLATE DETAIL
(MBGR shown, TBB similar)



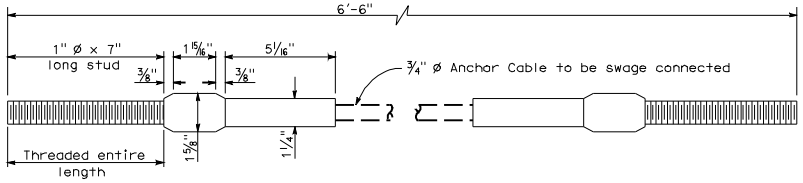
NOTE:
Dimensioning applies to both types.

SECTION A-A
(ALTERNATIVE TYPE 1)

SECTION A-A
(ALTERNATIVE TYPE 2)



DETAIL D



ANCHOR CABLE WITH
SWAGED FITTING AND STUD
DETAIL E

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

METAL RAILING ANCHOR CABLE AND ANCHOR PLATE DETAILS

NO SCALE

A77H3

11-07-05

2006 STANDARD PLAN A77H3

69

10-0073.B2.12

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Randall D. Hiatt
REGISTERED CIVIL ENGINEER

May 1, 2006
PLANS APPROVAL DATE

Registered Professional Engineer — Randall D. Hiatt — No. C50200 — Exp. 6-30-07 — CIVIL — State of California

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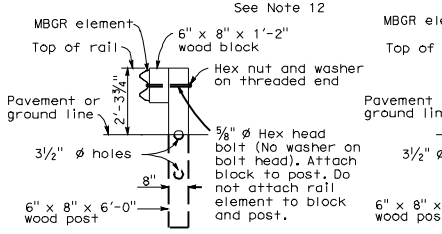
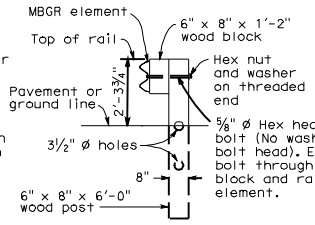
TABLE A

POST OFFSET DIMENSIONS		
Post No.	3'-0" System End Offset	3'-6" System End Offset
1	**36"**	**42"**
2	**22¼"**	**27¾"**
3	**11¼"**	**16¼"**
4	6¾"	10⅝"
5	3"	6"
6	¾"	2¾"
7	0"	¾"
8	0"	0"

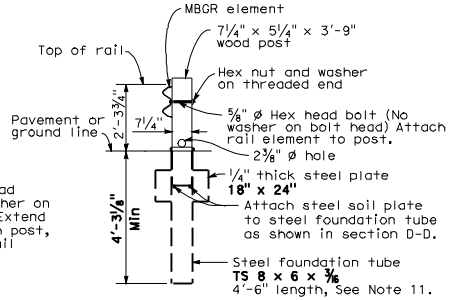
See Note 12



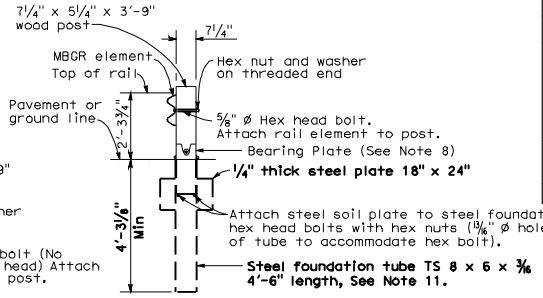
SECTION A-A



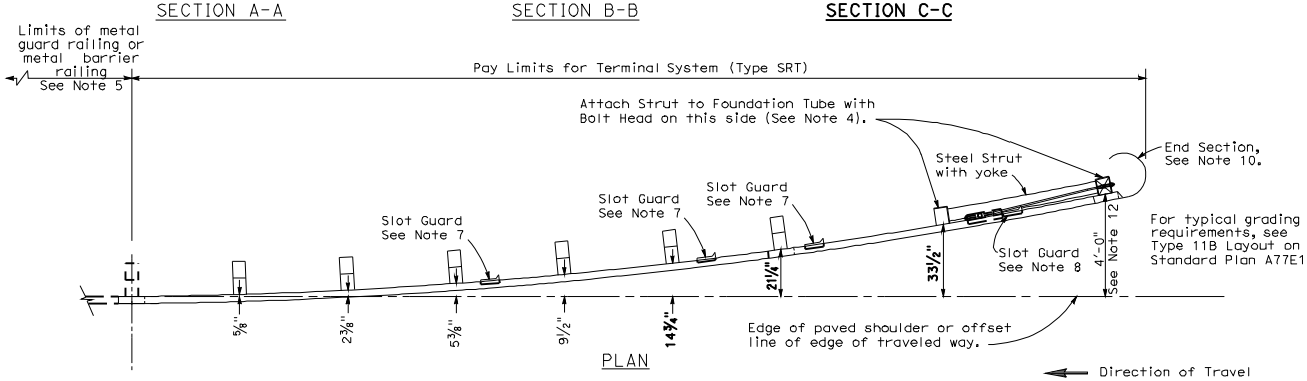
SECTION B-B



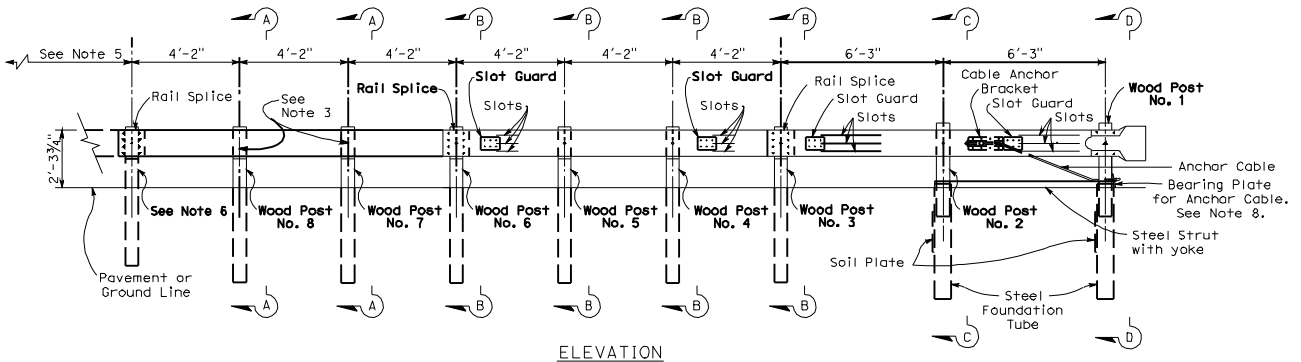
SECTION C-C



SECTION D-D
(Terminal Section not shown)



PLAN



ELEVATION

TERMINAL SYSTEM (TYPE SRT)
(8 Post System)
See Note 9

NOTES:

1. For additional details of Terminal System (Type SRT), refer to the manufacturer's installation instructions.
2. The post offset dimensions are given to the center of the traffic face of the block, except at the first two posts, where the dimension is to the center of the traffic face of the post. Offset points are to be located by chord measurements at the back of the rail equal to the **nominal post spacings shown. Posts are to be set approximately** radial to the railing at each post locations.
3. Do not attach rail elements to posts 7 and 8.
4. Attach strut to Post Nos. 1 and 2 foundation tubes with 5/8" Ø hex head bolts, washers and hex nuts. Bolts extend through the strut, steel foundation tube, and wood posts.
5. For the length and type of metal beam guard railing or metal barrier railing the terminal system is attached to, see the Project Plans.
6. Attach rail element to this post and block. Payment for this post, block and hardware is included in payment for the type of railing or barrier the terminal system is attached to, not part of payment for Terminal System (Type SRT).
7. The deflector angle of the slot guard is to be positioned immediatley downstream of the slots.
8. For bearing plate orientation, refer to the manufacturer's installation instructions.
9. For typical use of this terminal system with guard railing, see the A77E, A77F and A77G Series of Standard Plans. See Standard Plan A78E for typical use of this terminal system with single thrie beam barrier.
10. A complete wrap around end section may continued to be used in existing installations. New installations shall be constructed with the ¾ wrap end section shown.
11. **A 6'-0" length steel foundation tube, TS 8 x 6 x 3/16 without** a soil plate, may be furnished and installed in place of the 4'-6" length steel foundation tube and soil plate shown. Minimum **embedment of the 6'-0" length tube shall be 5'-9". A 5/8" Ø hex head bolt and nut shall be installed in the hole in 6'-0" length tube to keep the wood post from dropping into the tube.**
12. Where site conditions will not accommodate use of the standard 4'-0" system end offset, 3'-6" or 3'-0" system end offsets, as applicable, may be used. See Table A for post offset dimensions for 3'-6" and 3'-0" system end offsets.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

METAL BEAM RAILING TERMINAL SYSTEM (TYPE SRT)

NO SCALE

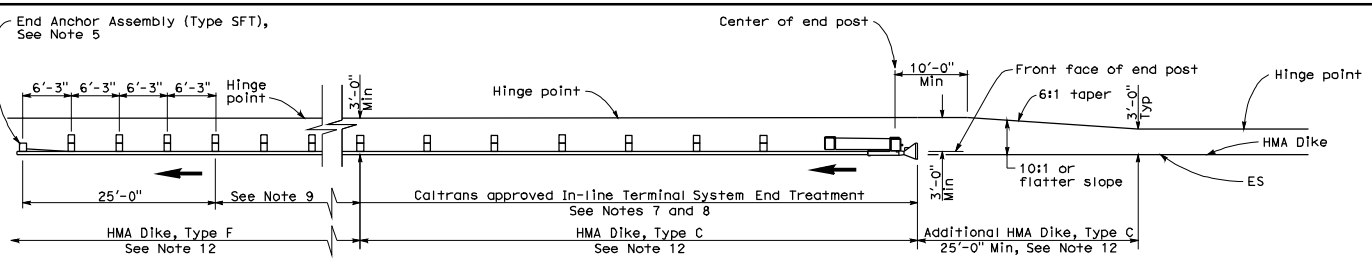
A77L1

1-17-06

2006 STANDARD PLAN A77L1

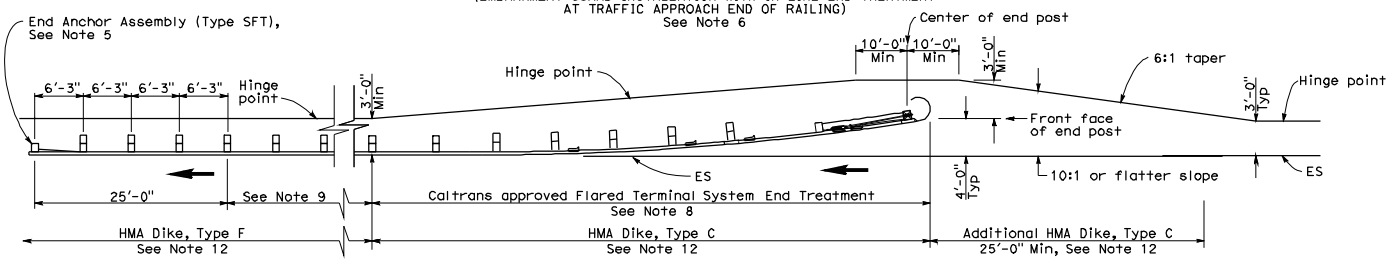
78

10-0073.B2.13



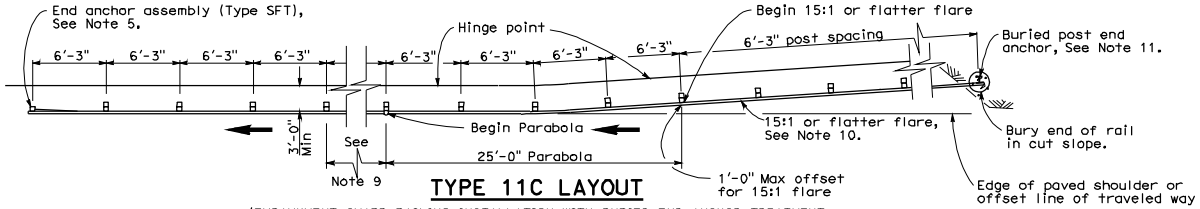
TYPE 11A LAYOUT

(EMBANKMENT GUARD INSTALLATION WITH IN-LINE END TREATMENT AT TRAFFIC APPROACH END OF RAILING)
See Note 6



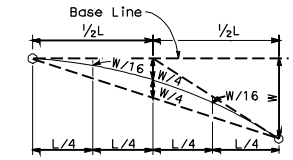
TYPE 11B LAYOUT

(EMBANKMENT GUARD RAILING INSTALLATION WITH FLARED END TREATMENT AT TRAFFIC APPROACH END OF RAILING)
See Note 6

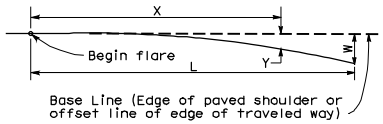


TYPE 11C LAYOUT

(EMBANKMENT GUARD RAILING INSTALLATION WITH BURIED END ANCHOR TREATMENT AT TRAFFIC APPROACH END OF RAILING)
See Notes 6 and 12



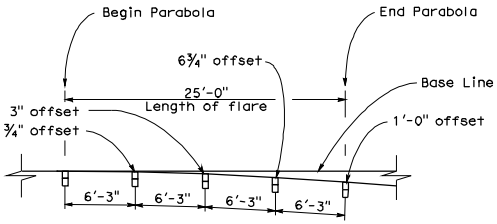
TYPICAL PARABOLIC LAYOUT



$Y = \frac{WX^2}{L^2}$

Y = Offset from base line
W = Maximum offset
X = Distance along base line
L = Length of flare

PARABOLIC FLARE OFFSETS



TYPICAL FLARE OFFSETS FOR 1 FOOT MAX END OFFSET

NOTES:

1. Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1, and A77C2.
2. Guard rail post spacing to be 6'-3" center to center, except as otherwise noted.
3. Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks, W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or recycled plastic blocks may be used for 6" x 8" x 6'-0" wood post with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
4. Direction of adjacent traffic indicated by ➡.
5. For End Anchor Assembly (Type SFT) details, see Standard Plan A77H1.
6. Layout Types 11A, 11B or 11C are typically used where guard railing is recommended to shield embankment slopes and a crashworthy end treatment is required for only one direction of traffic.
7. In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.
8. The type of terminal system end treatment to be used will be shown on the Project Plans.
9. Dependent on site conditions (embankment height and side slope), construction of additional guard railing (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
10. The 15:1 or flatter flare used with buried end anchors is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of guard railing within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
11. For details of the buried post end anchor used with Type 11C Layout, see Standard Plan A77I2.
12. Where placement of dike is required with guard railing installations, see Revised Standard Plan RSP A77C4 for dike positioning details.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

Randell D. Hiatt No. C50200 Exp. 6-30-09 CIVIL STATE OF CALIFORNIA

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

To accompany plans dated _____

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

METAL BEAM GUARD RAILING TYPICAL LAYOUTS FOR EMBANKMENTS

NO SCALE

RSP A77E1 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77E1 DATED MAY 1, 2006 - PAGE 48 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77E1

12-10-07

2006 REVISED STANDARD PLAN RSP A77E1

48

10-0073.B2.14

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

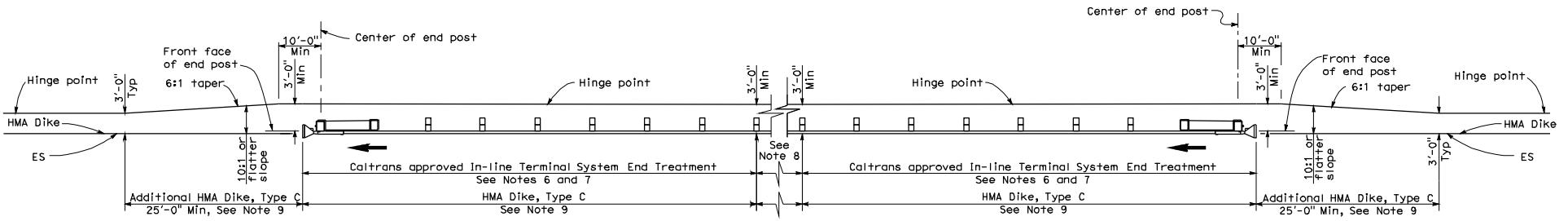
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

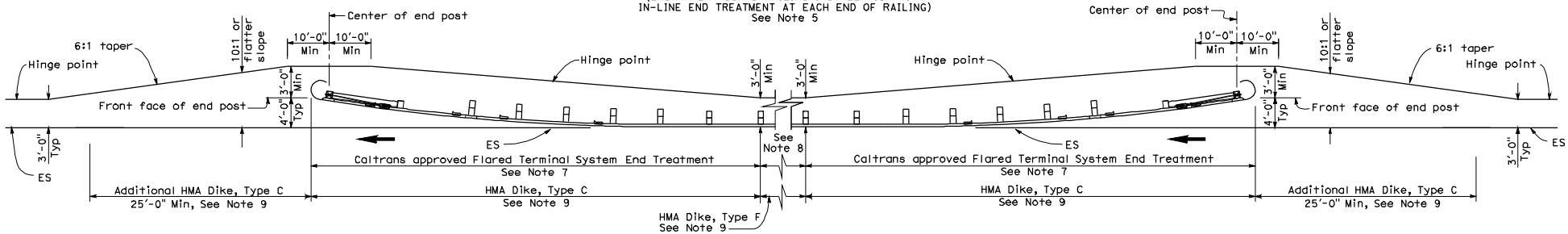
REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-09
CIVIL
STATE OF CALIFORNIA

To accompany plans dated _____



TYPE 11D LAYOUT

(EMBANKMENT GUARD RAILING INSTALLATION WITH IN-LINE END TREATMENT AT EACH END OF RAILING)
See Note 5



TYPE 11E LAYOUT

(EMBANKMENT GUARD RAILING INSTALLATION WITH FLARED END TREATMENT AT EACH END OF RAILING)
See Note 5

NOTES:

1. Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
2. Guard rail post spacing to be 6'-3" center to center, except as otherwise noted.
3. Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks, W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood post with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
4. Direction of adjacent traffic indicated by ➞.
5. Layout Types 11D through 11L, shown on the A77E Series of Revised Standard Plans, are typically used where guard railing is recommended to shield embankment slopes and a crashworthy end treatment is required for both directions of traffic.
6. In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.
7. The type of terminal system end treatment to be used will be shown on the Project Plans.
8. Dependent on site conditions (embankment height and side slope), construction of additional guard railing (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
9. Where placement of dike is required with guard railing installations, see Revised Standard Plan RSP A77C4 for dike positioning details.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

METAL BEAM GUARD RAILING TYPICAL LAYOUTS FOR EMBANKMENTS

NO SCALE

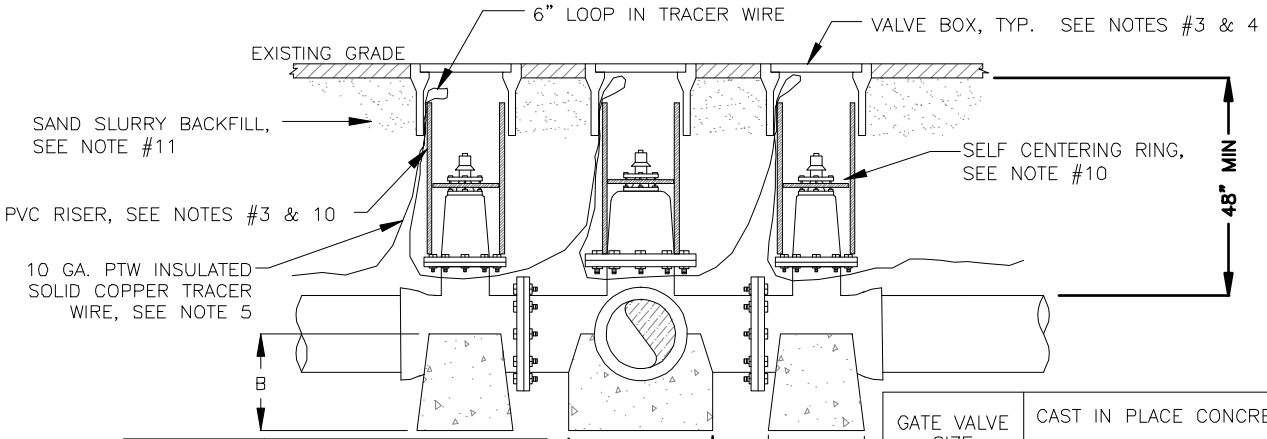
RSP A77E2 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77E2
DATED MAY 1, 2006 - PAGE 49 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77E2

12-10-07

2006 REVISED STANDARD PLAN RSP A77E2

10-0073.B2.15



GATE VALVE SIZE	SUPPORT BLOCK DIMENSION
6"	USE 1- 4"X8"X16" PRECAST STRUCTURAL SUPPORT BLOCK
8"	
10"	

GATE VALVE SIZE	CAST IN PLACE CONCRETE	
	A (FT)	B (FT)
12"	2.0	2.0
14"	2.5	2.5
16"	3.0	3.0
18"	3.0	3.0

NOTES:

1) GATE VALVES FOURTEEN INCH (14") DIAMETER AND SMALLER SHALL BE MUELLER OR APPROVED EQUAL AS PER AWWA C-509, RESILIENT RUBBER SEAT RING, WEDGE DISC, NON-RISING STEM. BRONZE STEM NUT AND O-RING SEALS ABOVE AND BELOW THE THRUST COLLAR, WITH TWO INCH (2") SQUARE OPERATING NUT. VALVES SIXTEEN INCH (16") AND LARGER SHALL BE BUTTERFLY VALVES AS SPECIFIED AND SUBMITTED FOR APPROVAL.

2) THE MAIN LINE VALVE CLUSTER SHALL CONSIST OF A FLANGED TEE AND FLANGED X MECHANICAL JOINT VALVES OR FLANGED COUPLING ADAPTERS.

3) VALVE BOX RISER PIPE TO BE EIGHT INCH (8") PVC, SDR-35 AND INSTALLED PERPENDICULARLY CENTERED AROUND AND COVERING THE UPPER VALVE BONNET AND OPERATOR.

4) VALVE BOX SHALL BE CHRISTY G5 BOX WITH METAL LID MARKED "WATER"

5) THE 10 GA. PTW TRACER WIRE SHALL BE ROUTED FROM THE NEW MAIN, LOOPED THROUGH THE VALVE BOXES AND CLAMPED TO THE EXISTING WATER MAIN USING STAINLESS STEEL CLAMPS. CONTINUITY BETWEEN ALL NEW AND EXISTING PIPELINES SHALL BE MAINTAINED.

6) EXPOSED NUTS AND BOLTS ON MJ FITTINGS TO BE PAINTED WITH TWO COATS OF KOPPERS 505, TNEMEC 46-450, AMERON OR EQUAL 15 MILS EACH COAT.

7) ALL FLANGES TO BE BURIED, COAT ENTIRE ASSEMBLY WITH PETROLATUM SATURATED FABRIC TAPE WRAP SYSTEM IN ACCORDANCE WITH STPUD REQUIREMENTS.

8) CONCRETE FOR SUPPORT BLOCKS SHALL BE FORMED TO MAINTAIN MINIMUM TWO INCH (2") CLEARANCE FROM FLANGE BOLTS.

9) PRE CAST STRUCTURAL SUPPORT BLOCKS SHALL BE SOLID AND CONFORM TO ASTM C90.

10) PROVIDE AND INSTALL SELF CENTERING ALIGNMENT RING WITH SLIDING ADJUSTER AS MANUFACTURED BY THE AMERICAN FLOW CONTROL CORP. AND SUPPLIED FOR A TRENCH ADAPTER VALVE BOX ASSEMBLY.

11) THE REQUIREMENTS FOR TRENCH BACK FILL AT ALL INTER TIE VALVE CLUSTERS SHALL INCLUDE THE PLACEMENT OF TWO SACK SAND SLURRY WITHIN 3' OF ALL VALVE BOXES BETWEEN THE AB PIPE ZONE MATERIAL AND BOTTOM OF AC PAVEMENT. THIS REQUIREMENT SHALL NOT APPLY TO SINGLE VALVE INSTALLATIONS.

12) FOR ALL VALVE OPERATING NUTS EXCEEDING FORTY EIGHT INCHES (48") BURY THE CONTRACTOR SHALL PROVIDE VALVE OPERATOR EXTENSIONS WITH TRASH RINGS TO A MINIMUM DEPTH OF THIRTY SIX INCHES (36").

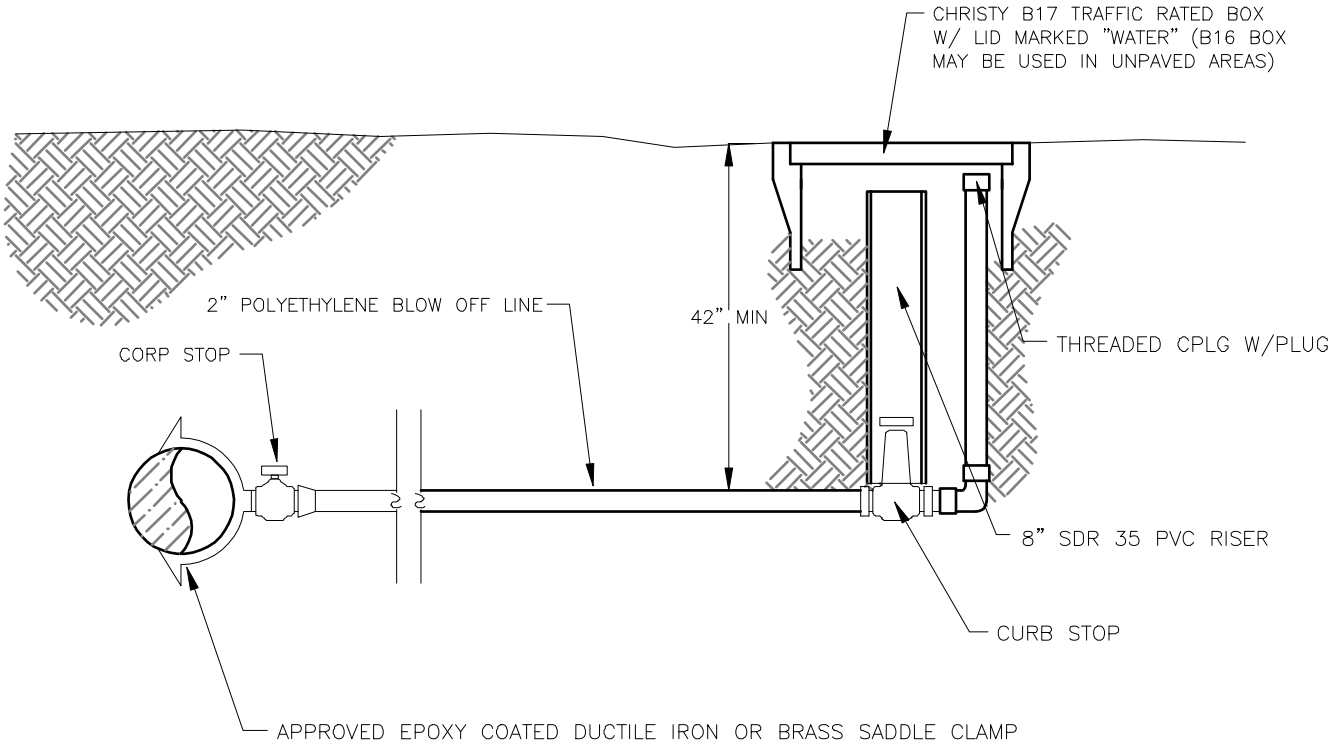
A/1 WATER VALVE ASSEMBLY

NO SCALE

SHEET: S1-D1 | FILE: STANDARDS | DRAWN: MAM | SCALE: NO SCALE | DATE: JAN 2009

WATERLINE DETAILS

SOUTH TAHOE PUBLIC UTILITY DISTRICT
Sewer . 1950 . Water A PUBLIC AGENCY
1275 Meadow Crest Drive South Lake Tahoe, California 96150
Phone (530) 544-6474 Fax (530) 541-4319
WWW.STPUD.US



NOTES:

1) ALL BLOW OFFS ARE TO BE REMOVED AFTER USE BY CLOSING THE CORP STOP AT THE MAIN AND REMOVING ALL APPURTENANCES

A/1 2" BLOW OFF

NO SCALE

SHEET: S1–D2	FILE: STANDARDS	DRAWN: MAM	SCALE: NO SCALE	DATE: JAN 2009

WATERLINE DETAILS

SOUTH TAHOE PUBLIC UTILITY DISTRICT
Sewer . 1950 . Water A PUBLIC AGENCY
1275 Meadow Crest Drive South Lake Tahoe, California 96150
Phone (530) 544-6474 Fax (530) 541-4319
WWW.STPUD.US

APPENDIX E

DEWATERING AND DIVERSION PLAN

ANGORA FISHERIES
AND
STREAM ENVIRONMENT ZONE ENHANCEMENT PROJECT
(CONTRACT NO. PW 09-30486, CIP 95161)

DEWATERING AND DIVERSION PLAN

Prepared for:

CA Department of Fish & Game
&
Lahontan Regional Water Control Board
&
Tahoe Regional Planning Agency
&
United States Forest Service - Lake Tahoe Basin Management Unit

Prepared by:

El Dorado County
Department of Transportation
Tahoe Engineering Division
924 B Emerald Bay Road
South Lake Tahoe, CA 96150

March 2010

10-0073.B2.19

ANGORA FISHERIES & SEZ ENHANCEMENT PROJECT
DEWATERING AND DIVERSION PLAN

AMENDMENT LOG

ANGORA FISHERIES AND SEZ ENHANCEMENT PROJECT
DEWATERING AND DIVERSION PLAN

Amendment No.	Date	Brief Description of Amendment	Prepared By

SECTION 1: GENERAL

1.1 GENERAL

1.1.1 Related Documents

A. The Contract Documents including but not limited to the Project Plans, Specifications including the Special Provisions, and Caltrans Standard Plans and Specifications, dated May 2006, and Amendments to May 2006 Standard Specifications.

B. Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Best Management Practices, TRPA, 1988.

1.1.2 Summary

A. The Contractor shall be responsible for final design, installation, maintenance and removal of the dewatering and diversion systems as required for completion of the work. The Contractor shall also be responsible for training all personnel on the dewatering and diversion system so that effluent limits are not exceeded at any time during construction. The plan sheets provided as a part of these contract documents show possible dewatering and diversion areas as well as acceptable effluent disposal areas (Sheet DW-1/2). The contractor shall submit a detailed Dewatering and Diversion Plan to the construction manager for approval prior to commencement of any disturbance within the project area or excavation activities.

B. The Contractor shall review the Geotechnical Report, Graphs 1 & 2 of this Report, along with ground water and soil conditions presented on Sheet G-1 of the Plans and/or Special Provisions in developing the dewatering/diversion system. It is the Contractor's responsibility to determine whether any independent testing and investigation needs to be performed and if so perform the testing and investigation to verify or supplement the information provided in this document, in the contract documents, on Sheet G-1 and/or the Special Provisions. Prior to disturbance within the project area or commencement of excavation, a detailed plan and schedule, with description for dewatering/diversion, estimated dewatering/diversion rates, volume and equipment requirements shall be submitted with the dewatering/diversion plan. The plan shall be signed and sealed by a California registered Civil Engineer, Geotechnical Engineer, Engineering Geologist or Hydrogeologist with experience of at least one dewatering/diversion operation of similar magnitude and complexity in a recently completed construction project. The qualification of the dewatering/diversion system designer shall be submitted to the Project Engineer for approval prior to the design of the dewatering/diversion plan.

1.1.3 Project Objectives

A. The Angora Creek Fisheries & Stream Environment Zone Enhancement Project (Project) is defined in the Tahoe Regional Planning Agency's Environmental Improvement Program (EIP) as Project #s 406, 193 and 650. The intent of the Project is to modify and improve Angora Creek in the vicinity of the culverts under Lake Tahoe Boulevard to improve fish passage. These improvements are intended to adjust channel morphology where the creek has become entrenched, stabilize banks with vegetation, and improve passage at two existing culverts by installing a 3-sided bridge structure. The benefits of the 3-sided bridge relative to fish habitat include a reduction in water velocity, an increase in flow depth, elimination of fish passage obstructions at the entrance and exits of the existing culverts, and the enhancement in fish habitat by replacing the existing

culverts with a natural bed channel beneath Lake Tahoe Boulevard. Anticipated construction activities include channel reconstruction, bioengineered bank stabilization, riffle pool sequences, reestablishment or creation of fish and wildlife habitat, construction of a 3-sided concrete bridge, removal of debris, removal and restoration of temporary access roads, finish grading, salvaging of existing native vegetation, planting of shrubs and sod, willow stakes, seeding and mulching and construction site temporary BMPs.

Due to the nature of the construction activity, the sensitive land capability of the project area, the presence of perennial streams within the project area and the proximity to surface waters, it is anticipated that the project will require dewatering and diversion activities. Dewatering will be necessary during construction activities for the new channel and for the bridge construction. Diversion will be necessary during most construction activities including but not limited to: when removing the improvements installed in response to the 2007 Angora Fire (log trash rack, rock rip-rap and steel sheet pile), when constructing the new channel, when backfilling and restoring the old channel, during culvert removal, during sod harvesting, construction of the grass-lined swale, construction of temporary access roads, utility relocation and during bridge construction. Flushing the new channel prior to allowing the creek to run through it is anticipated to be required to meet acceptable effluent discharge limits (10% above background). The purpose of this plan is to specify construction dewatering and diversion activities that will facilitate construction activities and maintain water quality standards.

1.1.4 Basin Objectives and Regulatory Requirements

A. All dewatering and diversion activities must meet the applicable requirements of El Dorado County Department of Transportation (EDOT), the California Regional Water Quality Control Board, Lahontan Region (RWQCB), California Department of Fish and Game (CFG) and the Tahoe Regional Planning Agency (TRPA). These requirements consist of construction requirements, water quality standards and provisions for the discharge of surface runoff from dewatering activities to surface and ground waters. These standards have been established to protect the water quality of surface and ground waters in the Lake Tahoe basin. The RWQCB standards are set forth in the NPDES General Permit No. R6T-2005-0026. The TRPA standards are specified in Chapter 81 – Water Quality Control of the TRPA Code of Ordinances.

B. The Contractor is required to meet both the surface water and ground water discharge limit requirements outlined by TRPA in Chapter 81 of the Code of Ordinances and the General NPDES Permit issued by the RWQCB (Table 1). For discharges directly back into Angora Creek, the water effluent limits must not exceed 10% above background levels. Monitoring data will be used, in accordance with TRPA and the RWQCB, to determine accurate background water quality levels in the creek. For discharges to SEZs, the discharge must not exceed 20 NTU and for discharges to upland areas (Land Capability 4 and greater), the discharge must not exceed 200 NTU.

Table 1: Discharge Limits

Constituent	Units	Ground Water Maximum Concentration	Surface Water Maximum Concentration	Creek Discharge Maximum Concentration
Total Nitrogen	mg/L as N	5.0	0.5	10% above background
Total Phosphorous	mg/L as P	1.0	0.1	10% above background
Total Iron	mg/L	4.0	0.5	10% above background
Turbidity	NTU	200	20	10% above background
Suspended Solids	mg/L	---	50	10% above background
Grease and Oil	mg/L	40	2.0	10% above background

In addition, the contractor shall comply with the requirements outlined in the following project specific permits:

- TRPA EIP Permit
- 401 Water Quality Certification
- NPDES Permit
- USACOE 404 Permit
- USFS Special Use Permit
- CA Fish & Game Streambed Alteration Agreement

1.2 SUBMITTALS

1.2.1 Contractor Submittals

A. The Contractor shall submit a detailed dewatering and diversion plan to the Project Engineer for distribution to and approval by the Lahontan RWQCB and TRPA prior to the initiation of activities that would require dewatering or diversion activities, and in accordance with "Dewatering and Rewatering Plan" Section 10-1.20 of the Special Provisions. The updated plan will become an amendment to the Storm Water Pollution Prevention Plan (SWPPP) and to this Dewatering and Diversion Plan for this project. Although the dewatering and diversion activities may take place at different times in the construction sequence, the Contractor shall submit the dewatering, rewatering and

diversion plans simultaneously in accordance with the Contractor Submittal section of the Special Provisions.

B. The dewatering plan shall include the Contractor's methodology for dewatering including but not limited to: the potential locations for dewatering, number and size of pumping units, power source for pumping units, size and material for pipes, materials for damming, well point design if required, piping point of discharge, fuel storage locations (if applicable), location of stilling basin, dirt bag or baker tanks, design flow rates, potential trucking alternatives, alternative treatment methods (advanced filtration, flocculation, electro-coagulation, etc.) and final method and location for disposal of treated ground water. The Contractor shall include in the submittal the manufacture's specifications on impermeable and filter barriers.

C. The diversion plan shall include identification of the Contractor's materials and methodology for diverting Angora Creek or tributaries of Angora Creek during construction including but not limited to: diversion method and materials, pipe sizes and slopes, number and size of pumping units, power source for pumping units, piping point of discharge, materials for damming, access and installation methodologies, protection methods for discharge point, fuel storage (if applicable), design flow rates to meet permitted regulatory water quality standards. The Contractor shall include in the submittal the manufacture's specifications on impermeable and filter barriers.

D. The rewatering plan shall include the identification of the Contractor's materials and methodology for rewatering Angora Creek when construction is complete including but not limited to: rewatering method and materials, pipe sizes and slopes, number and size of pumping units, power source for pumping units, power source for pumping units, piping point of discharge, materials for damming, access and installation methodologies, protection methods for discharge point, fuel storage (if applicable), design flow rates, and final method for flushing and rewatering existing channel(s) to meet permitted regulatory water quality standards for discharge.

SECTION 2: DEWATERING

2.1 DEWATERING REQUIREMENTS

2.1.1 Summary

A. The Contractor is required to dewater the construction area, as necessary to enable construction activities to be completed in a timely fashion. Dewatering will most likely be necessary for construction and use of temporary access roads, installation of temporary BMP's, clearing and grubbing, removal of trees, rocks, steel sheet pile, and log trash rack, boulder removal and relocation, installation of rock slope protection, floodplain and slope grading, coir log placement, topsoil and sod salvage, excavation and construction of the Angora Creek channel and salvaged sod grass-lined swale, utility relocation, culvert removal, excavation and construction of the three-sided precast bridge system and foundation, willow salvage and placement, sod harvest and placement, backfilling, compacting, and revegetation, or to complete work in areas where diversions are placed (Sheet DW-2 of the Plans). Water pumped from excavations or channels is likely to contain suspended sediments, total dissolved solids (TDS) or other materials, and shall not be discharged directly into Angora Creek or its tributary waters. Sediment controls, utilizing all reasonably available technologies and methodologies, shall be

provided to remove sediments generated during dewatering activities. Collected effluent may be used for irrigation or dust control, provided that all allowable numeric effluent limits for discharge have been met. If permitted water quality limits are not met, effluent shall be treated prior to discharging it; or shall be removed from the project area and discharged at an approved location. Pumped water shall be discharged in conformance with all applicable laws and permit requirements.

2.1.2 Ground Water Levels

A. A geotechnical investigation was completed to understand the soil characteristics within the Project area by MACTEC Engineering and Consulting Inc. (MACTEC) in January of 2009.

The study completed by MACTEC provided data for ground water levels at two boring locations within the Project area, which are shown on Sheet G-1 of the Plans. Native material encountered below the road associated fill was gray silty sands to a depth of approximately 20 feet. Based on the boring data, ground water was estimated to be near the elevation of the creek bottom during the time of their investigation. The investigation covered two sites near where the proposed bridge is to be installed within the project area. A summary of the information collected is shown in the table below: well boring data with the grain size distribution (Table 2). The grain size distribution of selected soil was determined in accordance with the Unified Soil Classification System (ASTM D2487-98).

Table 2 – MACTEC Analysis for Well Borings

Sample ID	Sample Depth (ft)	Percentage Passing				Material Type
		0.600 mm [30]	0.300 mm [50]	0.150 mm [100]	0.075 mm [200]	
B-1	.8-1.3	48	34	22	16	22% gravel, 62% sand, 16% silt/clay
B-2	.8-1.5	53	38	25	18	13% gravel, 69% sand, 18% silt/clay

Notes: US Standard Sieve Size in Parentheses [ ]

2.1.3 Dewatering Volume and Rates

A. No direct aquifer testing has been completed with which to accurately estimate the maximum rate of ground water flow which will need to be pumped in order to maintain a dewatered construction area. The contractor is responsible to appropriately dewater the construction site in order to construct the project improvements.

2.1.4 Dewatering Effluent Levels

A. Discharge limits for allowable dewatering numeric effluent limits are presented in Table 1. All effluent discharge shall be monitored and tested by the EDOT Project Engineer or an approved representative prior to discharge. Discharge of dewatering effluent in excess of surface water limits outlined in Table 1 is not covered by this SWPPP or Permit R6T-2005-0026 and is therefore is prohibited.

2.2 TREATMENT AND DISPOSAL

2.2.1 Treatment and Disposal Power Options

A. Dewatering and sump pumps shall be electric motor driven or shall be run from generators with approved muffling devices. The Contractor shall submit, with the dewatering plan, power requirements for the dewatering system. The Contractor will coordinate with NV Energy Power Company to perform the necessary modification to the available power distribution system to provide a suitable breaker, receptacle and meter. The Contractor shall be responsible for costs associated with obtaining the necessary power. Any use of gasoline engines on the project site must be approved by EDOT's Project Engineer and follow appropriate sections of these specifications regarding use, noise levels, refueling, and storage of fuels.

2.2.2 Dewatering Methods

2.2.2.1 Well Points

A. If well points or wells are used, they shall be adequately spaced to provide the necessary dewatering and shall be sand-packed and/or modified by other means to prevent pumping of fine sands or silts from the subsurface. A continual check shall be maintained to ensure that the subsurface soil is not being removed by the dewatering operation. The Contractor shall be responsible for conducting slug tests and any other investigations necessary for the proper design and operation of a well point dewatering system. The Contractor shall be responsible to obtain all applicable permits relative to installation of well points prior to installation.

B. Water and debris shall be disposed of in a suitable manner in compliance with permit stipulations, these specifications and without damage to adjacent property. No water shall be drained into constructed portions of the project or regions of the project under construction, except as shown on the plans. Water shall be filtered to remove sand and silt/clay-sized soil particles and further treated as required to meet discharge limits.

C. The release of ground water to its original level shall be performed in such a manner as not to disturb natural foundation soils, prevent disturbance of compacted backfill and prevent flotation or movement of structures, pipelines, water mains, and sewers.

2.2.2.2 Sumps

A. If a sump is used, it shall be protected to provide the necessary dewatering system and to prevent pumping of fine sands or silts from the subsurface. A continual check shall be maintained to ensure that the subsurface soil is not being removed by the dewatering operation.

B. Water and debris shall be disposed of in a suitable manner in compliance with permit stipulations, these specifications and without damage to adjacent property. No water shall be drained into constructed portions of the project or regions of the project under construction except as shown on the plans. Water shall be filtered to remove sand and silt/clay-sized soil particles and further treated as required to meet discharge limits.

2.2.3 Temporary Storage and Filtration Methods

A. The following sections describe acceptable methods for temporary storage and filtering of dewatering effluent.

2.2.3.1 Silt/Dirt Bags

A. Silt/dirt bags may be used to provide suitable filtration of dewatering effluent. Following passage of the effluent through the silt bag, the effluent must be collected and pumped

into the disposal system. Water shall be filtered to remove sand and silt/clay-sized soil particles and further treated as required to meet discharge limits.

2.2.3.2 Stilling/Detention Basins

A. Stilling/Detention Basins may be used to provide suitable filtration of dewatering effluent, however the effluent must be below 200 NTU. If the stilling basin is not completely lined with an impermeable membrane, some of the dewatering effluent may infiltrate from the basin, while the balance must be disposed of through spray irrigation in approved locations within the project area. The bottom of the basin must be constructed at least one foot higher than the elevation of the seasonal high water table. It is possible that infiltration rates may be high enough that the basin may require lining in order to prevent effluent reaching ground water prior to adequate treatment.

2.2.3.3 Portable Tanks

A. Portable tanks, such as Baker Tanks or equivalent, may be utilized in lieu of constructing a stilling basin.

2.2.3.4 Water Trucks

A. Water trucks may be used as a means to store, transport, and dispose of dewatering effluent. The Contractor must obtain written approval from EDOT's Project Engineer for location of disposal of effluent from the water trucks. Contractor shall pay all costs associated with this method of disposal.

2.2.3.5 Advanced Filtration

A. In the event that the dewatering effluent does not meet the water quality discharge limits, is considerably turbid, or settling is not an option, advanced filtration technologies (i.e. cartridge filters, etc.) shall be pursued and implemented if approved by Lahontan and TRPA.

2.2.3.6 Flocculation

A. In the event that the dewatering effluent does not meet the water quality discharge limits, is considerably turbid, or settling is not an option, flocculant alternatives (i.e. Chitosan, etc.) shall be pursued and implemented if approved by Lahontan and TRPA.

2.2.3.7 Electro-Coagulation

A. In the event that the dewatering effluent does not meet the water quality discharge limits, is considerably turbid, or settling is not an option, electro-coagulation technologies shall be pursued and implemented if approved by Lahontan and TRPA.

2.2.3.8 Other

A. In the event that the dewatering effluent does not meet the water quality discharge limits, is considerably turbid and the above-mentioned methods are not effective, other technologies shall be pursued and implemented if Lahontan and TRPA determine that it is necessary to meet effluent limits for discharge.

2.2.4 Disposal

A. Should dewatering be warranted, dewatering effluent shall be disposed utilizing approved methodologies and shall be applied in approved areas either by spraying the effluent on

approved areas for dust control or by spraying the effluent on approved land allowing for infiltration, so as not to cause runoff, within the project area (Sheet DW-2). All effluent to be disposed of within the project area must be monitored to meet numeric effluent limits outlined in Table 1 and must be approved by EDOT's Project Engineer. Alternatively, the effluent may be removed from the project area and disposed of at an approved location. Surface runoff to site surface water bodies shall not be permitted, unless it meets numeric effluent limits outlined in Table 1.

B. *Application Areas:* Acceptable dewatering effluent application areas are shown on Sheet DW-2. These areas are located on USFS Parcels 033-531-07, 033-531-06 033-524-05 through 033-524-14 and El Dorado County Parcel 033-524-02. Treated ground and surface water may be applied up to a rate of 1 inch per hour per area of land. At this rate the applied water is expected to percolate into the ground. The Contractor cannot spray dewatering effluent onto lots that will affect the dewatering operations in progress. The Contractor shall spray the effluent so as not to create runoff and shall install an approved impermeable run-off barrier around the perimeter of the application area. The applied ground water must remain within the confines of the impermeable run-off barrier and the Contractor is required to monitor for leakage or overspray, caused by forces such as wind or misaligned sprinkler heads. If the soils in this area become saturated or surface water runoff is created outside the barrier, the Contractor will stop applying treated ground water to this area and notify the Project Engineer. The Contractor shall propose alternate means of effluent disposal and shall seek approval from EDOT's Project Engineer (see Section 2.2.3 of this Plan). No disposal shall occur until the application area becomes unsaturated and approval for spraying is granted by EDOT's Project Engineer.

C. *Sanitary Sewer:* If all other methods have been exhausted, and proper written permission is granted by the RWQCB, South Tahoe Public Utility District (STPUD) and EDOT's Project Engineer, the Contractor may discharge effluent into the sanitary sewer system. The Contractor shall assume responsibility for the impacts of these actions and pay all costs associated with this method of disposal.

2.3 EXECUTION

2.3.1 Construction Sequence

A. This project will be constructed per the Project Specifications, Plans and the SWPPP.

B. A recommended construction sequence is described in Section 10-1.01 of the Project Specifications and the SWPPP.

C. It is the Contractors responsibility to sequence the diversion, dewatering, and construction of the Project in a manner that results in water quality conditions that conform to the permit stipulations outlined and referenced in this document.

2.3.2 Installation

A. The Contractor shall obtain materials and commence dewatering and diversion activities outlined in the approved Dewatering and Diversion Plan prior to construction and prior to removing the sheet pile and the log trash rack structures. The dewatering and diversion system along with the treatment and disposal system must be installed by the Contractor and be approved by EDOT's Project Engineer and a representative from TRPA and Lahontan prior to commencement of any dewatering and diversion activities (48 hours prior notice required). All activities shall result in water quality conditions conforming to these permit stipulations.

2.4 OPERATION AND MONITORING

2.4.1 Operation

A. When the dewatering system is in place, the Contractor shall commence with dewatering of the site. As the ground water reaches each portion of the treatment, distribution and application system, the Contractor shall inspect the system to ensure that it is functioning properly and that no surface water runoff is entering Angora Creek or its tributary waters. If any portion of the system is not functioning properly, the Contractor shall stop the dewatering activity and notify EDOT's Project Engineer. The problem shall be evaluated and necessary improvements shall be incorporated into the system. The process will then recommence and the Contractor shall reevaluate the system.

B. Once the system is functioning properly and meeting the treatment and application requirements, the Contractor must inspect the system regularly to ensure that it continues to function properly. Contractor shall maintain a log for the inspection of the dewatering and diversion system and make the log available for inspection by EDOT, Lahontan and TRPA.

Treatment Basins/Ponds/Storage Tanks: Inspect daily to ensure that damaged sections of the filter barrier material are repaired promptly and to determine when accumulated sediment will require removal.

Distribution Piping and System: Inspect the distribution piping and application systems twice a day for damaged or leaking sections and promptly repair.

Application Area(s): Inspect the application areas every hour throughout the day and night to ensure that no surface water runoff, or ponding of water, which may lead to surface runoff, is occurring. If this is occurring the Contractor shall make adjustments in the distribution system to apply the treated ground water to areas in which surface water runoff is not occurring or stop the dewatering operation until such time as the application site returns to an acceptable condition to resume distribution.

C. The Contractor is required to monitor ground water and surface water conditions at the construction site and at the application area.

2.4.2 Security of Dewatering System

A. The Contractor shall be responsible for maintaining a secured dewatering system including treatment and disposal systems for the duration of the work. The project site is located within a residential area and may be accessed by residents and animal life.

2.4.3 Dewater Effluent Monitoring

EDOT's Project Engineer or an approved representative will take samples at the point(s) of disposal of the dewater effluent to determine whether the effluent limitations of the NPDES permit and Chapter 81 of TRPA's Code of Ordinances are being met. The Contractor shall provide EDOT's Project Engineer with suitable sampling location(s) at the point(s) of disposal of the dewatering effluent. The frequency of sampling will be dependent on treatment system, variation in results, and the ability of the treatment system to consistently conform to the permit stipulations.

2.5 DEMOBILIZATION

2.5.1 Demobilization

A. When the dewatering system is no longer required for construction of the project in order to conform to permit stipulations, the Contractor shall remove all sediment collected by the treatment basin(s) and dispose of the material at a TRPA approved dumpsite or an approved site outside of the Tahoe Basin.

B. The ground water pumping system shall be disassembled and removed from the project area.

C. Energy dissipation structures, impermeable and filter barriers, sump, and sump pumps shall be removed and disposed of properly.

D. All the distribution piping and application fixtures shall be removed from the construction site and application area(s). Below grade piping shall be removed and trenches backfilled, compacted with native materials and restored to native conditions.

SECTION 3: DIVERSION

3.1 DIVERSION REQUIREMENTS

3.1.1 Summary

The Contractor will be required to divert flows from Angora Creek within the Project area or any associated tributary flow necessary to complete project construction. The diversion activity shall be constructed and operated in such a way as to prevent on and off site pollution. Diverted creek water may contain suspended sediments, total dissolved solids (TDS) or other materials, and shall not be discharged directly into Angora Creek or its tributary waters without meeting the approved discharge limits. Sediment controls shall be provided to eliminate sediment generation or to remove sediments generated during diversion activities.

Channel flushing may be required in the newly constructed channel prior to allowing Angora Creek to flow through it in order to meet discharge effluent limits set by Lahontan RWQCB and TRPA. The Lahontan permit only authorizes "clear-water diversions" which meet numeric effluent limits. Contractor shall refer to Section 10 of the Special Provisions and pages 16/17 of this document for further details on channel flushing. The diverted flows shall be reintroduced to Angora Creek or any tributaries in conformance with all applicable laws and permit requirements.

The Contractor's design shall demonstrate that the diversion system can handle the anticipated flows and must state the assumptions used for maximum flows. The plan shall also include a contingency plan in the event the diversion system fails.

3.1.2 Creek/Tributary Levels

A. El Dorado County has been operating stream monitoring stations in the project area since 1991. One of the sites is located roughly 500 feet upstream of the Project area. The collected data during water years 2004 and 2005 indicates the lowest flows (0.03 cfs) have occurred in the September time frame (See Graphs 1&2 below). This historical flow record suggests that the timing of the Project implementation and associated creek diversion take place in the August/September/October time frame. However, the 2007

Angora Fire may have changed flow conditions in the Angora Creek Watershed and the Contractor shall determine construction sequencing. For a frame of reference for water years 2004 and 2005, the table below shows the total annual precipitation recorded at the Echo Peak and Fallen Leaf SNOTEL sites for the time period corresponding with when flow was recorded at the monitoring site.

Table 3 – SNOTEL Sites - Total Precipitation (inches)

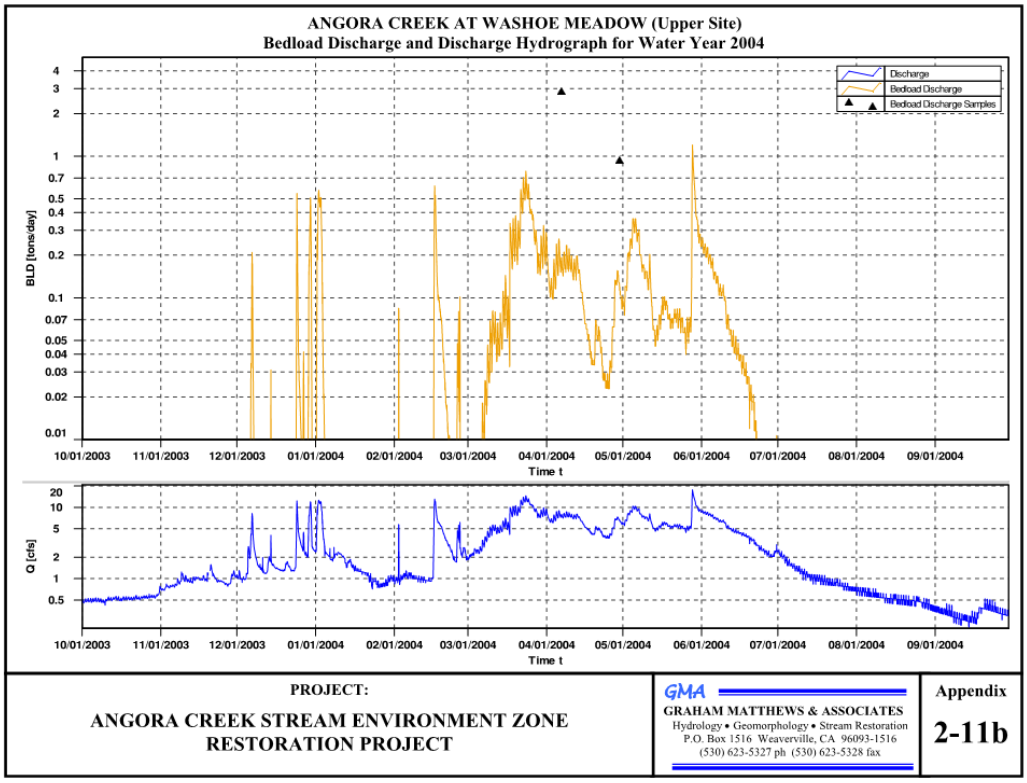
Year[1]	2002	2003	2004	2005	2006	2007
Echo Peak	52.7	60.3	45.4	71.5	86.2	21.5
Fallen Leaf	27.4	30.1	26.5	35.7	49.3	8.8

1. Water Years are from October 1st to September 30 (i.e. 2002 = October 1st, 2001 to September 30th, 2002)

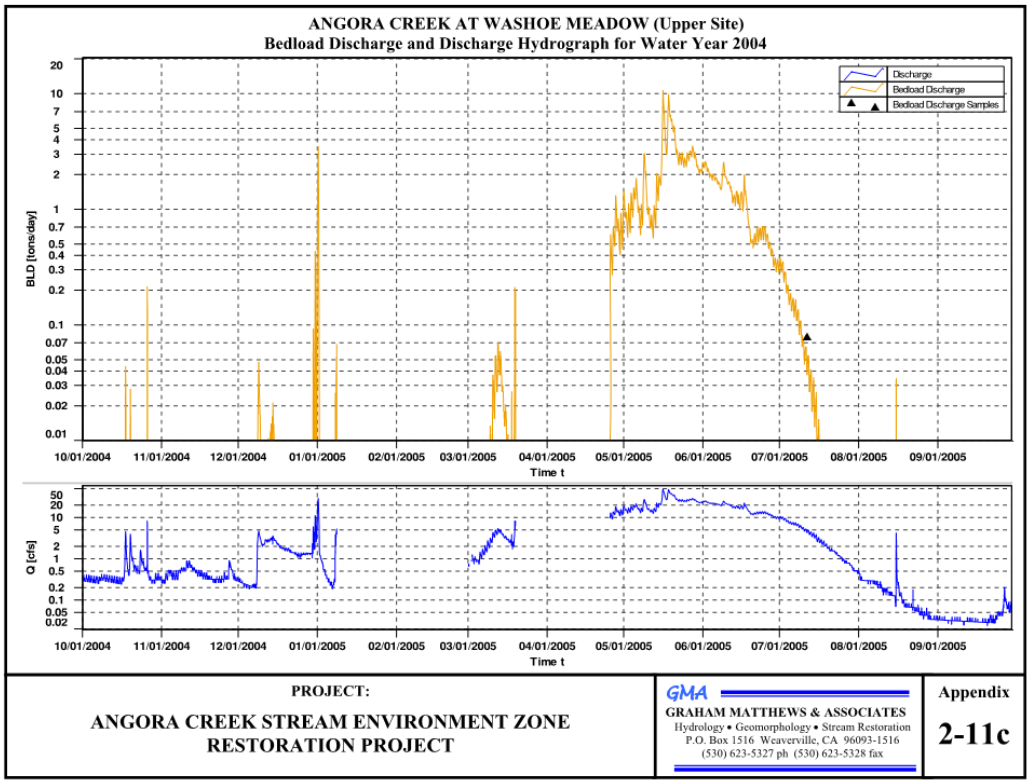
3.1.3 Diversion Volume and Rates

A. Based on the graphs of water years 2004 and 2005, Angora Creek flow conditions fluctuated between 0.03 cfs and 50 cfs. However, flows in the diversion areas during the construction period are likely to be between 0.03 cfs and 2 cfs and as high as 10 cfs based on the 2004 and 2005 water year measurements. It shall be the responsibility of the Contractor to appropriately size the diversion system to accommodate flow in Angora Creek during construction activities and verify the flow rates at the time of construction. The Contractor's design shall demonstrate that the diversion system can handle the anticipated flows and must state the assumptions used for maximum flows. The plan shall also include a contingency plan in the event the diversion system fails.

Graph 1 - Angora Creek Bedload and Discharge Hydrograph for Water Year 2004



Graph 2 - Angora Creek Bedload and Discharge Hydrograph for Water Year 2005



3.1.4 Channel Effluent Levels

A. The newly constructed channel section may require rewatering and/or channel flushing and shall meet all applicable permit criteria established by Lahontan and TRPA. In order to meet these requirements, channel flushing and the treatment of channel flush water may be required by the Contractor prior to rewatering the channel in order to meet these discharge standards.

3.2 DIVERSION METHODS

3.2.1 Diversion Options

A. One diversion location has been designated in order to complete project construction and is shown on Sheet DW-1. This location is slightly upstream from the construction location and involves diverting Angora Creek around the Project site, through the existing culverts beneath Lake Tahoe Blvd., and back into the creek just below the construction area. The diversion will be located both within County ROW, a USFS parcel (033-531-07) and a private easement (Hennessy, 033-524-01). Below, diversion options are outlined, however, the Contractor shall be responsible for final design, installation, maintenance and removal of the diversion systems as required for completion of the work.

Angora Creek Diversion – In order to divert Angora Creek around the construction area, the Contractor may either install a gravity system or a pumped system. If a gravity system is to be installed, a coffer dam must be installed in the existing creek channel using gravel bags or another approved equivalent to be able to create enough head and have enough fall to allow the creek to gravity flow through a piped system around the

construction area. The diversion dam shall effectively seal the channel from flows and allow the creek water to pond where it can flow through the temporary bypass pipe. Or, if the contractor chooses to utilize pumps, a coffer dam must be installed in the existing creek channel using gravel bags or another approved equivalent so that the creek can pond where it can be pumped into the piping system and then flow around the construction area. The Contractor shall furnish pumps of adequate power, to be determined by the Contractor and approved by EDOT's Project Engineer, to pump Angora Creek into the diversion pipe for anticipated flows outlined above. The pump shall be properly noise attenuated. In either case, the temporary pipe shall be installed and anchored with hand crews to minimally disturb the area.

Regardless if a pump or gravity system is used, the pipe shall be installed so as not to interfere with construction activities. The outlet of the temporary pipe shall be appropriately protected as determined by the Contractor and approved by the Project Engineer to eliminate scour and prevent erosion as the creek enters back into the main channel of Angora Creek. When the diversion system is no longer needed, the pipe, dam and all associated materials shall be removed by hand and the area shall be restored to natural conditions. Coordination shall occur with EDOT's Project Engineer for determining proper timing of removing the dam and allowing the creek to flow through the newly constructed channel. Channel flushing and the treatment of flush water, per the directions outlined below, shall occur prior to allowing Angora Creek to enter the newly constructed channel.

3.2.2 Channel Flushing Options

A. The Contractor shall be responsible for final design, installation and maintenance of the channel flushing system(s) as required for completion of the work on the newly constructed channel. Containment structures or turbidity barriers are the primary acceptable methods for containment/filtration of flushing effluent in a designated portion of the channel to be rewatered. Containment structures may be constructed of a variety of materials, such as plastic sheeting, impermeable geotextile fabric or gravel bags. The containment structure shall effectively seal the channel being flushed from allowing surface flow past the structure. Or, turbidity barriers shall be installed to temporarily dam and filter flushing water as long as acceptable effluent discharge levels are met. Pumps operated just upstream of the containment structure shall divert the flushing effluent into a disposal system, treatment system, or water truck until the effluent quality reaches the regulatory water quality criteria. Pumps shall be electric or noise attenuated, unless otherwise approved by the Engineer.

3.2.3 Treatment and Disposal Options

A. Channel Flushing effluent can either be directly spray applied, per EDOT's Project Engineer, in designated disposal areas for irrigation or routed through the dewatering system described in Section 2 of this plan and specification.

3.3 EXECUTION

3.3.1 Construction Sequence

A. Diversion sequencing shall be determined by the Contractor in consultation with the Project Engineer. Diversion activities shall commence in low flow conditions (1 cfs or less), however the Contractor shall be responsible for the diversion of higher flows throughout all phases of construction sequencing.

B. The diversion and channel flushing operations shall be designed, installed and maintained by the Contractor and upon construction completion, all temporary materials associated with diversion and channel flushing shall be removed immediately and the disturbed areas shall be restored to native conditions.

3.3.2 Installation

A. The water diversion and channel flushing system(s) for construction activities as outlined on Sheet DW-1 and the Special Provisions must be installed by the Contractor and approved by EDOT's Project Engineer and representatives from TRPA and Lahontan RWQCB prior to commencement of any water diversion (48 hours prior notice required). Appropriate temporary BMPs shall be in place in order to eliminate sediment transport.

3.4 OPERATION AND MONITORING OF DIVERSION AND FLUSHING SYSTEMS

3.4.1 Operation

A. When the diversion system is in place and has been approved per Section 3.3 above, the Contractor shall commence diverting creek flows appropriately. As the surface water reaches the diversion discharge location, the Contractor shall inspect the system to ensure that it is functioning properly and that no diversion effluent surface water runoff is entering Angora Creek or its tributary waters unless and until it meets water quality standards outlined in Table 1. If any portion of the system is not functioning properly, the Contractor shall stop the diversion system and notify EDOT's Project Engineer. The problem(s) shall be evaluated and necessary improvements incorporated into the system. The process will then recommence and the Contractor shall continually reevaluate the system.

B. Channel flushing operations in the construction area shall be designed and installed by the Contractor with the approval of EDOT's Project Engineer. The Contractor shall inspect the system to ensure that it is functioning properly and that no flushing effluent water runoff is entering Angora Creek or its tributary waters unless and until it meets water quality standards. If any portion of the system is not functioning properly, the Contractor shall stop the channel flushing system and notify EDOT's Project Engineer. The problem(s) shall be evaluated and necessary improvements incorporated into the system. The process will then recommence and the Contractor shall continually reevaluate the system.

C. Once the system is functioning properly and meeting the diversion requirements, the Contractor must inspect the system accordingly to ensure that it continues to function properly. A properly functioning channel flushing process will include the mobilization and transport of a limited volume of sediment from the channel with a decline in the mobilization and transport of sediment as flushing activities progress. Contractor shall maintain a log for the inspection of the diversion and rewatering system and make the log available for inspection by EDOT, Lahontan and TRPA for review.

Diversion Barrier(s) or Equivalent: Inspect daily to ensure that damaged sections of the barrier material are repaired promptly and to determine when accumulated sediment will require removal.

Distribution Piping and System: Inspect the distribution piping and application systems twice a day for damaged or leaking sections and promptly repair.

Application Area(s): Inspect the application areas hourly throughout the day to ensure that diverted water is appropriately discharging to approved areas and that no scour or signs of erosion are present. If failures are evident, the Contractor shall make adjustments in the distribution system or stop the diversion operation until such time as the application site returns to conditions within the limits of the permit stipulations to resume distribution.

Channel Flushing System: Continually inspect channel flushing system and operation to ensure that turbid water is captured and pumped to water trucks, a water treatment system, or equivalent prior to discharging to surface waters or SEZ areas. Water quality sampling and analysis shall occur as necessary to determine when tributary flows may re-enter the channel with acceptable water quality for discharge.

3.4.2 Diversion Effluent/Channel Flushing Monitoring

A. The Project Engineer or an approved designee will monitor surface water quality conditions at the construction site during diversion operations and channel flushing operations in accordance with the frequency outlined in the permits to confirm compliance with Lahontan RWQCB, NPDES and TRPA permit effluent limitations.

3.5 DEMOBILIZATION

3.5.1 Demobilization

A. When diversion and channel flushing activities are complete and the system is no longer required to allow construction of the project, the Contractor shall remove all sediment collected by the diversion and flushing structures and dispose of the material at a TRPA approved dumpsite or an approved site outside of the Tahoe Basin.

B. Impermeable barriers, gravel bag dams, pumps and piping shall be removed and disposed of properly and in conformance with the Contract Documents.

C. All distribution piping and application fixtures shall be removed from the construction site and application area(s). All disturbed areas shall be restored to native conditions per the direction of the Project Engineer and in conformance with the Contract Documents.

3.6 References

Angora Creek Stream Environmental Zone Restoration Project, Graham Matthews & Associates, September 2007.

Geotechnical Investigation Report, Angora Creek Fisheries/SEZ Enhancement Project, MACTEC Engineering and Consulting Inc. (MACTEC), January of 2009.

Standard Plans, California Department of Transportation, May 2006.

Standard Specifications, California Department of Transportation, May 2006.

Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Best Management Practices, TRPA, 1988.