

ORANGE COUNTY PUBLIC FACILITIES AND RESOURCES DEPARTMENT

SANTA ANA, CALIFORNIA

VICKI L. WILSON, DIRECTOR

PLANS FOR RESTORATION OF

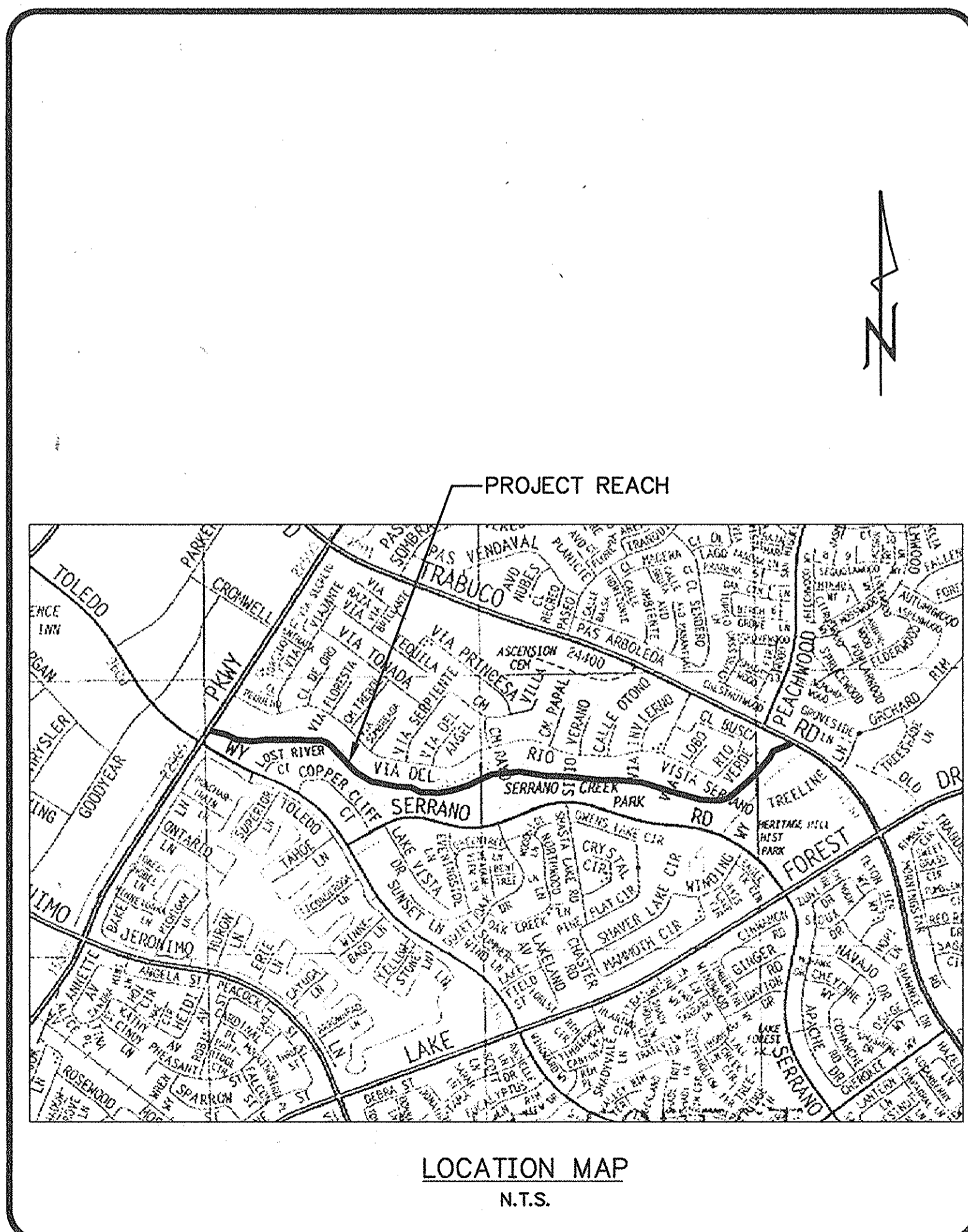
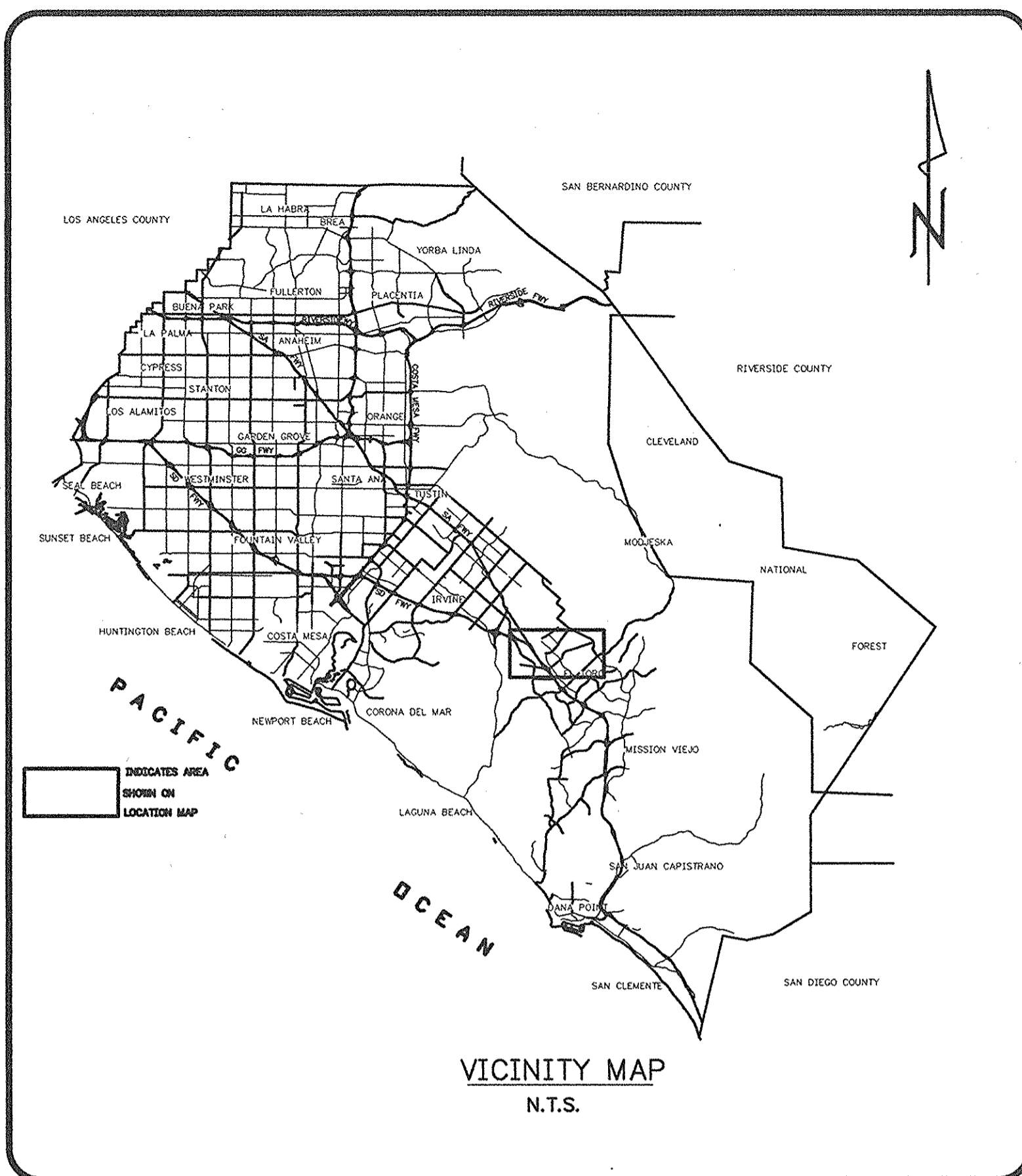
SERRANO CREEK
(FACILITY NO. F19)

BAKE PARKWAY – STA 150+06.34

TO

TRABUCO ROAD – STA 211+52.78

OCTOBER 2001



FUNDING NOTE:
FUNDING FOR THIS PROJECT HAS BEEN PROVIDED IN PART THROUGH A CONTRACT WITH THE STATE WATER RESOURCES CONTROL BOARD (SWRCB) PURSUANT TO THE COSTA-MACHADO WATER ACT OF 2000 (PROPOSITION 13) AND ANY AMENDMENTS THERETO FOR THE IMPLEMENTATION OF CALIFORNIA'S NONPOINT SOURCE POLLUTION CONTROL PROGRAM. THE CONTENTS OF THIS DOCUMENT DO NOT NECESSARILY REFLECT THE VIEWS AND POLICIES OF THE SWRCB NOR DOES MENTION OF TRADE NAMES OR COMMERCIAL PRODUCTS CONSTITUTE ENDORSEMENT OR RECOMMENDATION FOR USE.

RECORD DRAWINGS ▲
PROJECT START DATE: MARCH 20, 2002
PROJECT COMPLETION DATE: SEPTEMBER 17, 2002
RESIDENT ENGINEER: BOB PARSONS
INSPECTOR: SATINDER VERMA
CONTRACTOR: McLAUGHLIN ENGINEERING AND MINING, INC.

APPROVALS

APPROVED: 12-19-01
CITY OF LAKE FOREST DATE

APPROVED: 11-14-01
SERRANO CREEK CONSERVANCY DATE

PUBLIC FACILITIES & RESOURCES DEPARTMENT

SUBMITTED: R. S. BAVAN
CHIEF, FLOOD CONTROL PROGRAM

RECOMMENDED: 12/14/01
H. H. NAKASONO DATE
MANAGER, PROGRAM DEVELOPMENT DIVISION

APPROVED: 11/15/01
KENNETH R. SMITH DATE
DEPUTY DIRECTOR/CHIEF ENGINEER

PREPARED BY

PBSJ ▲
DONALD D. TALLEY
NO. 13151
EXP. 3/31/05
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA
CIVIL

18022 Cowan, Suite
Irvine, Ca 92614
(949) 660-8600

PREPARED UNDER RESPONSIBLE CHARGE OF:
 10/17/01
DONALD TALLEY DATE
RCE 13151 EXP. 3/31/05

SHEET	DESCRIPTION
1	TITLE SHEET
2	HORIZONTAL CONTROL & INDEX PLAN
3	PLAN AND PROFILE FROM STA. 164+11.52 TO STA. 169+40 (UNITS A & H)
4	PLAN AND PROFILE FROM STA. 174+70 TO STA. 178+50 (UNITS B1 & B2)
5	PLAN AND PROFILE FROM STA. 178+00 TO STA. 180+70 (UNITS Q1 & Q2)
6	PLAN AND PROFILE FROM STA. 180+30 TO STA. 186+25 (UNITS C & K)
7	PLAN AND PROFILE FROM STA. 187+24 TO STA. 195+28 (UNITS L1, L2 & M)
8	PLAN AND PROFILE FROM STA. 197+50 TO STA. 202+90 (UNITS U1 & U2)
9	DETAILS
10	DETAILS
11	DETAILS
12	PAYLINE DETAILS
13	SENSITIVE AREAS & ACCESS PLAN
▲ 3A	RECORD DRAWING FROM STA. 158+60± TO STA. 164+10± (UNIT "O")
▲ 7A	RECORD DRAWING FROM STA. 187+50± TO STA. 195+70± (UNITS "L-1" & "M")

UTILITY	OWNER	PHONE NO.	CONTACT
	Underground Service Alert	(800)422-4133	
Power	Southern California Edison	(949)458-4419	
Gas	Southern California Gas	(949)634-3115	
Water	Irvine Ranch Water District	(949)453-5300	
Water	El Toro Water District	(949)837-1660	
Telephone	Pacific Bell	(949)811-5454	
Cable	Cox Communications	(949)716-2139	
Police	Lake Forest Police Services	(949)461-3400	

BENCH MARK:
3E-96-78
DESCRIBED BY OCS 1978 AT THE NORTHERLY SIDE OF TRABUCO ROAD AT ITS JUNCTION WITH PASEO SOMBRÁ. 7.7 FEET NORTH OF THE EASTERNMOST CURB RETURN OF TRABUCO ROAD, 1.5 FEET NORTHWEST OF THE STREET SIGN POST, 17.6 FEET SOUTH OF THE SERRANO PARK STONE SIGN AT THE ANGLE POINT OF THE SIDEWALK AND ASPHALT WALKWAY, SET IN TOP OF A CONCRETE POST, FLUSH WITH WALKWAY.
ELEVATION: 432.535
(1995 OCS ADJUSTMENT) NGVD 29

BASIS OF BEARINGS:
THE BEARINGS SHOWN HEREON ARE BASED ON THE BEARING BETWEEN OCS HORIZONTAL CONTROL STATION GPS NO. 6729 AND STATION GPS NO. 6687 BEING N 64°04'36" E PER RECORDS ON FILE IN THE OFFICE OF THE ORANGE COUNTY SURVEYOR.

NO.	DESCRIPTION	SHT.	APPROVED	DATE
▲	RECORD DRAWINGS			2/25/03
▲	REVISED "FILTER BEDDING GRADATIONS" TABLE 9			4/02/02
▲	ADDED D-LOADS, REV. INV. ELEV. & ROCK R. RAP DATA			6/15/02

W. O. NO. EFO 7377
DWG. NO. F19-701-6

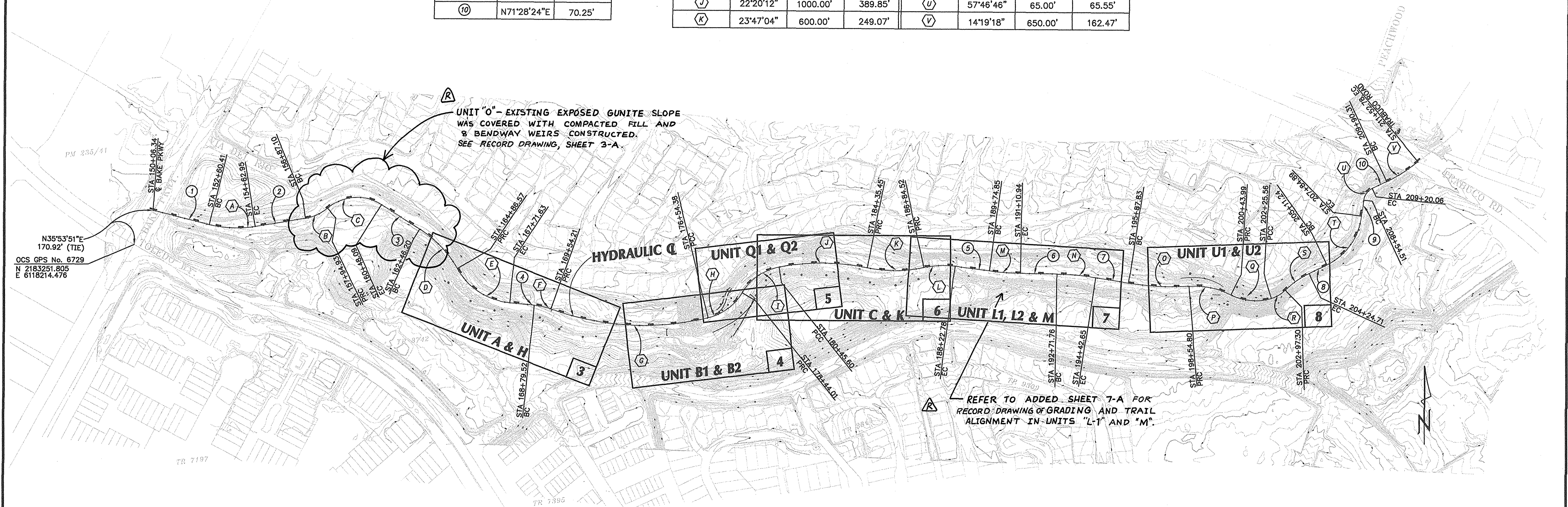
SHEET 1 OF 13

HYDRAULIC Q TANGENT DATA

TANGENT NO.	BEARING	LENGTH
①	N69°23'06"W	254.07'
②	N87°24'21"E	224.15'
③	N50°57'31"W	198.11'
④	N77°51'29"W	107.89'
⑤	N75°48'50"W	152.07'
⑥	N82°18'43"W	160.82'
⑦	N74°09'09"W	145.18'
⑧	N70°42'32"E	86.53'
⑨	N13°41'38"E	69.62'
⑩	N71°28'24"E	70.25'

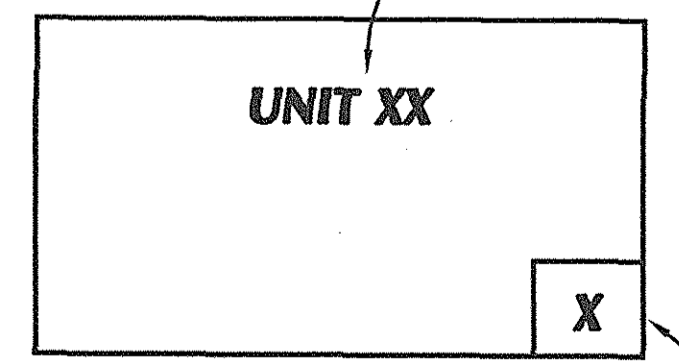
HYDRAULIC Q CURVE DATA

CURVE NO.	Δ	RADIUS	LENGTH	CURVE NO.	Δ	RADIUS	LENGTH
A	23°12'33"	500.00'	202.54'	L	19°48'14"	400.00'	138.26'
B	30°53'26"	200.00'	107.83'	M	06°29'53"	1200.00'	136.09'
C	72°31'34"	200.00'	253.16'	N	08°09'34"	1200.00'	170.89'
D	27°32'38"	500.00'	240.37'	O	12°44'49"	1200.00'	266.97'
E	54°26'36"	300.00'	285.06'	P	30°06'36"	360.00'	189.19'
F	14°15'52"	300.00'	74.69'	Q	43°20'51"	240.00'	181.57'
G	33°25'51"	1200.00'	700.17'	R	27°24'16"	150.00'	71.74'
H	45°16'18"	240.00'	189.63'	S	18°15'01"	400.00'	127.41'
I	48°07'34"	240.00'	201.59'	T	57°00'54"	275.00'	273.65'
J	22°20'12"	1000.00'	389.85'	U	57°46'46"	65.00'	65.55'
K	23°47'04"	600.00'	249.07'	V	14°19'18"	650.00'	162.47'



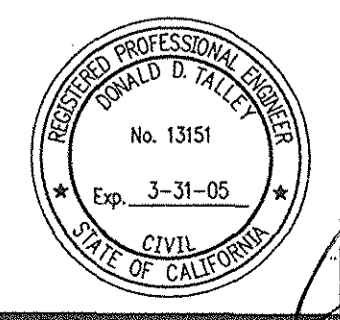
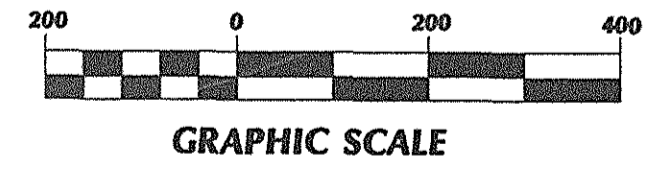
N35°53'51"E
170.92' (TIE)
OCS GPS No. 6729
N 2183251.805
E 6118214.476

LEGEND:

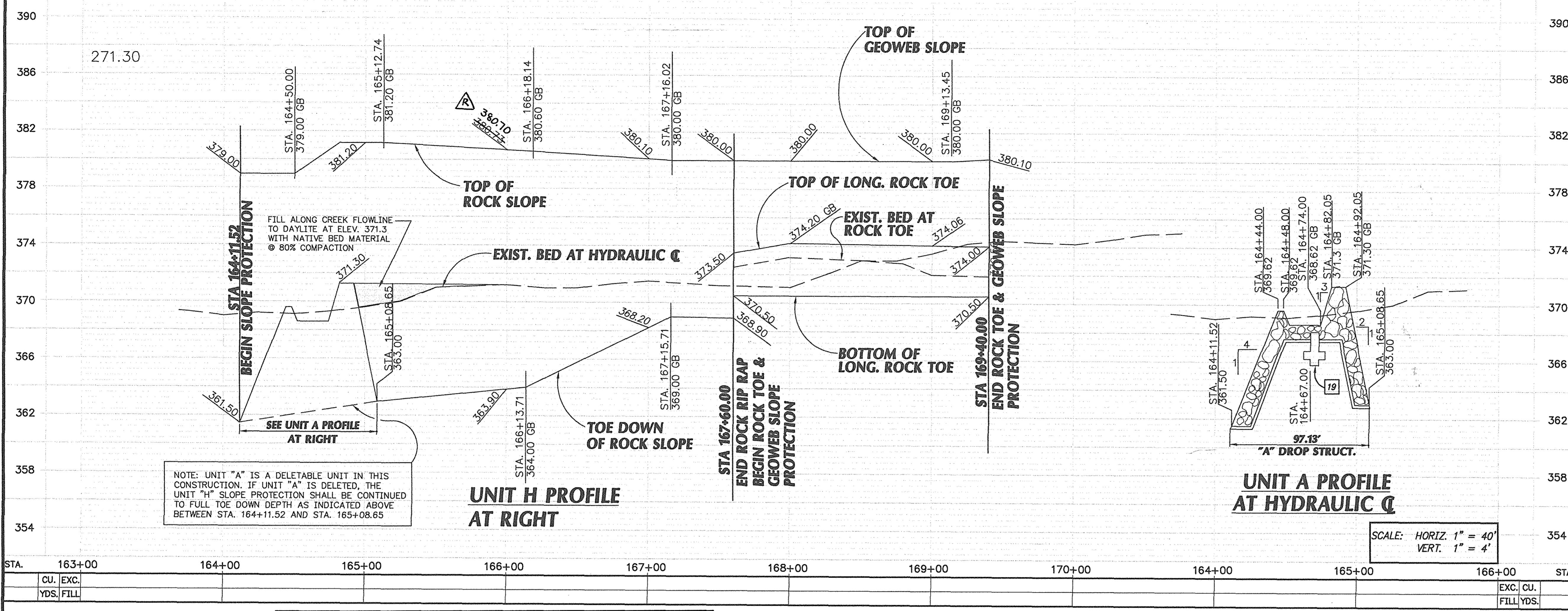


SHEET NO. FOR
PLAN/PROFILE
& TYPICAL SECTIONS

RECORD DRAWING



ORANGE COUNTY PUBLIC FACILITIES AND RESOURCES DEPARTMENT	
SERRANO CREEK CREEK STABILIZATION (BAKE PARKWAY TO TRABUCO ROAD)	
HORIZONTAL CONTROL & INDEX PLAN	
DESIGNED: E.H.	SHEET
DRAWN: E.H.	2
CHECKED: D.T.	OF 13
SCALE: 1"=200'	DATE: 07-13-01
DRAWING NO.:	F19-701-6

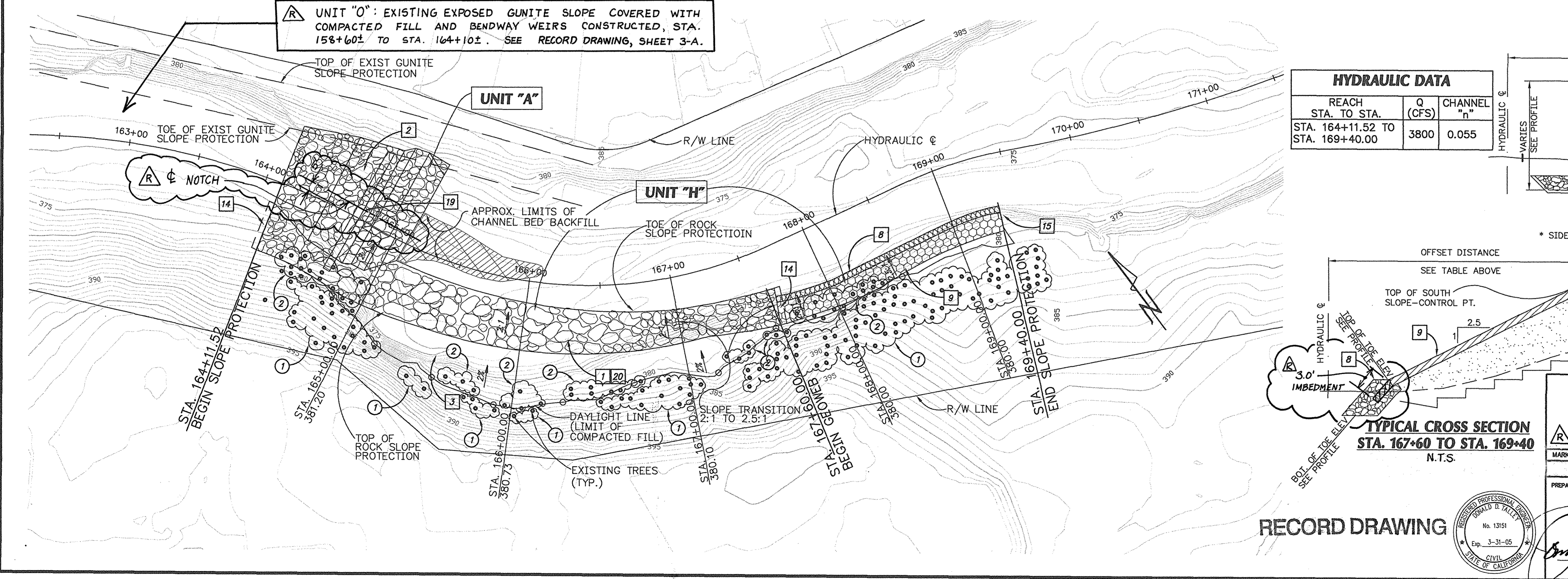


- ### CONSTRUCTION NOTES
- 1 CONSTRUCT ROCK RIP RAP SLOPE PROTECTION WITH FILTER BEDDING PER TYPICAL SECTIONS HEREON AND ROCK SLOPE PROTECTION DETAILS, SHEET 9.
 - 2 CONSTRUCT ROCK RIP RAP STABILIZATION STRUCTURE WITH FILTER BEDDING PER TYPICAL SECTION HEREON AND DETAILS, SHEET 11.
 - 3 CONSTRUCT COMPACTED BACKFILL PER PLAN & TYPICAL SECTION TO DAYLIGHT TO EXISTING GROUND. BENCH SLOPE PER PFRD STD. PLAN 1322.
 - 8 CONSTRUCT LONGITUDINAL ROCK TOE PER TYPICAL SECTIONS HEREON AND DETAILS, SHEET 10.
 - 9 CONSTRUCT COMPACTED FILL SLOPE WITH GEOWEB SURFACE PROTECTION PER TYPICAL SECTIONS HEREON AND DETAILS, SHEET 10.
 - 14 CONSTRUCT ROCK CUT-OFF PER DETAILS, SHEET 9.
 - 15 CONSTRUCT GEOWEB END RETURN PER DETAIL, SHEET 10.
 - 19 CONSTRUCT RETAINING WALL PER DETAILS, SHEET 11.
 - 20 FILL ROCK VOIDS WITH SOIL PER DETAIL, SHEET 9.
 - 22 REMOVE TREES 6" OR GREATER IN DIAMETER MEASURED 2' FROM BASE OF TREE.

- ### PROTECT/REMOVE LEGEND
- 1 PROTECT IN PLACE.
 - 2 REMOVE.
 - 3 REMOVE INTERFERING PORTIONS.
 - 4 REMOVE AND STOCKPILE FOR REUSE.

OFFSET DISTANCE FROM HYDRAULIC Q TO TOP OF SLOPE PROTECTION

STATION	OFFSET	ELEVATION
STA. 164+11.52	50.27	379.00
STA. 165+00.00	50.70	381.20
STA. 165+12.74	50.19	380.50
STA. 166+00.00	48.92	380.73
STA. 166+18.14	48.57	380.60
STA. 167+00.00	46.60	380.10
STA. 167+16.02	45.15	380.00
STA. 167+60.00	55.25	380.00
STA. 168+00.00	58.90	380.00
STA. 168+26.83	59.74	380.00
STA. 169+00.00	55.62	380.00
STA. 169+13.07	55.43	380.00
STA. 169+40.00	54.84	380.10



ORANGE COUNTY PUBLIC FACILITIES AND RESOURCES DEPARTMENT

SERRANO CREEK CREEK STABILIZATION (BAKE PARKWAY TO TRABUCO ROAD)

UNITS "A" & "H" STA. 164+11.52 TO STA. 169+40

DESIGNED: E.H. SHEET 3 OF 13

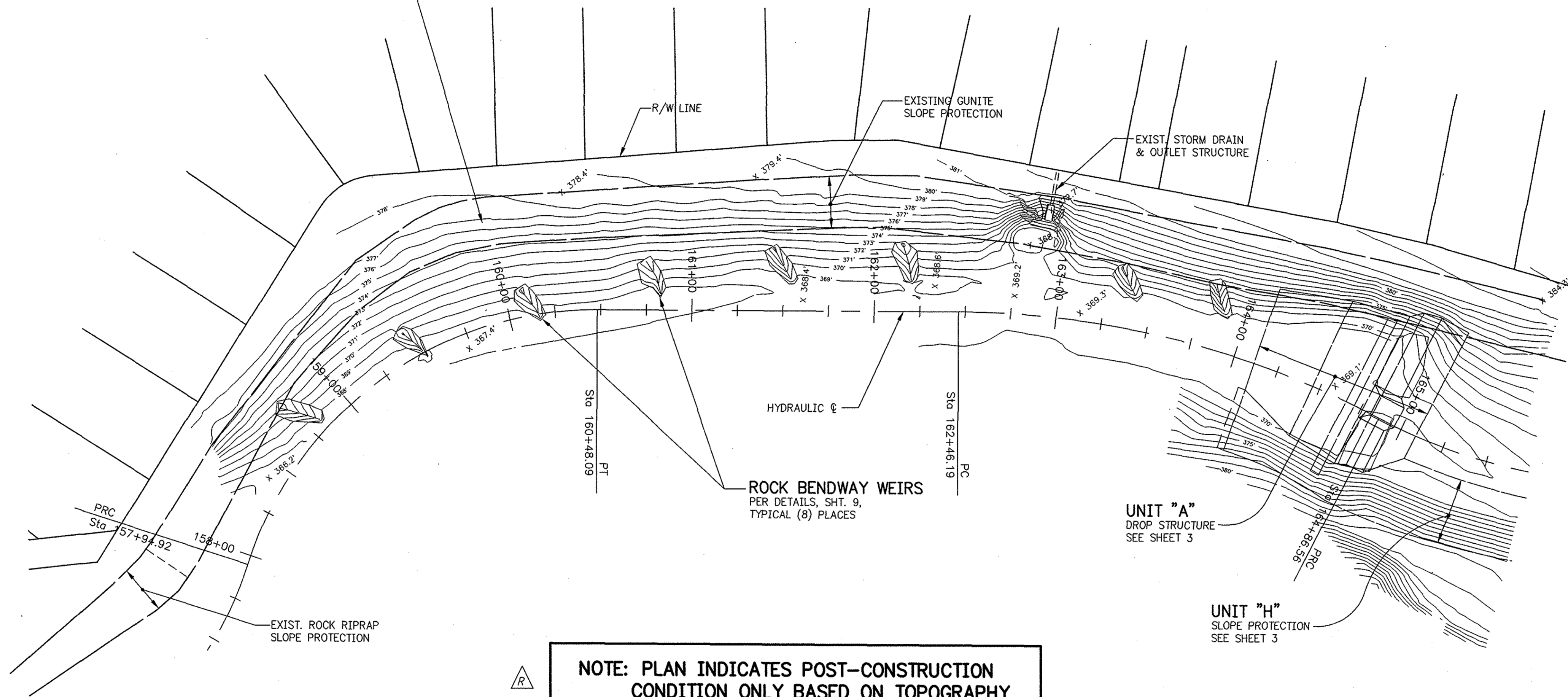
DRAWN: E.H. CHECKED: D.T.

SCALE: 1" = 40' DATE: 07-13-01 DRAWING NO.: F19-701-8

PREPARED UNDER RESPONSIBLE CHARGE OF: **PBSJ** (Professional Seal)

DATE: 10/17/01

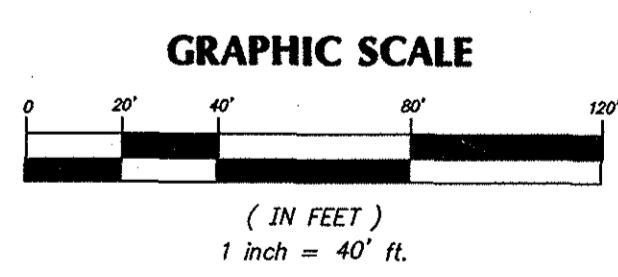
CONTOURS INDICATE COMPACTED FILL ADDED OVER
PARTIALLY EXPOSED EXISTING GUNITE SLOPE
PROTECTION, STA. 158+60± TO STA. 164+10±



NOTE: PLAN INDICATES POST-CONSTRUCTION
CONDITION ONLY BASED ON TOPOGRAPHY
COMPLETED NOVEMBER 30, 2002



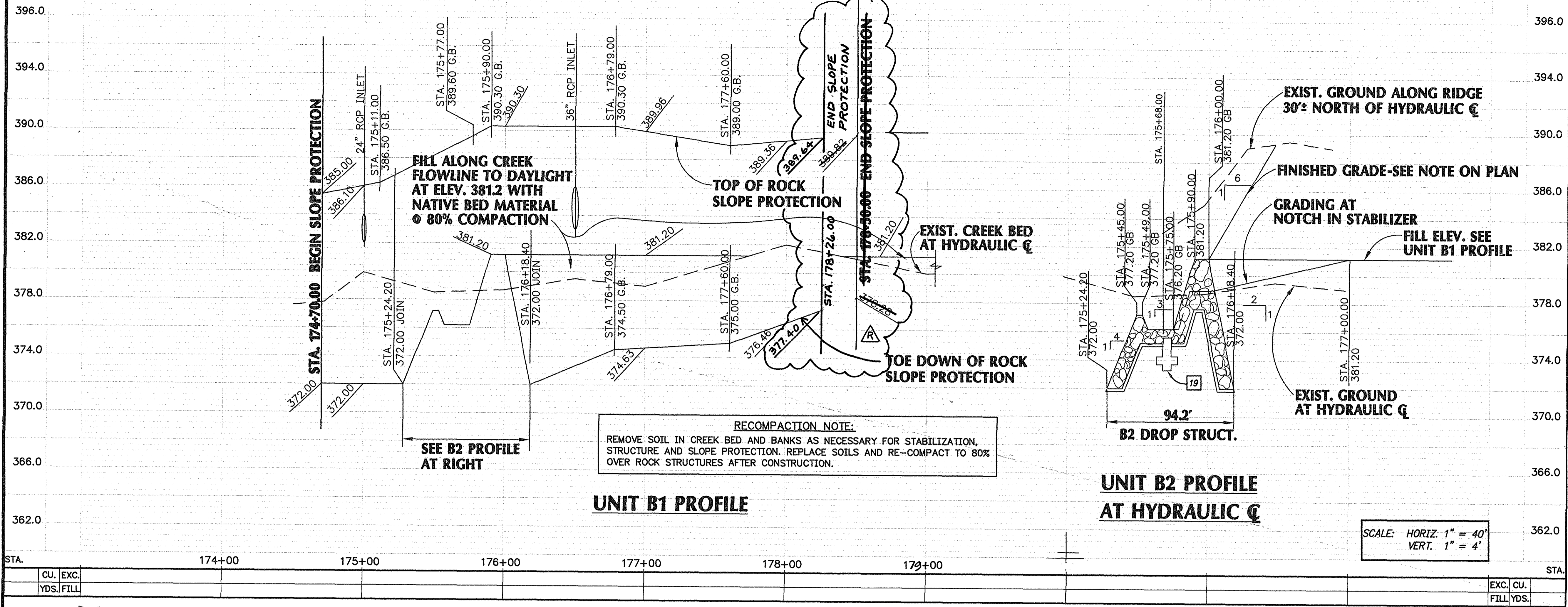
RECORD DRAWING



ORANGE COUNTY PUBLIC FACILITIES AND RESOURCES DEPARTMENT	
SERRANO CREEK CREEK STABILIZATION (BAKE PARKWAY TO TRABUCO ROAD)	
RECORD DRAWING UNIT "O" STA. 158+60± TO STA. 164+10±	
DESIGNED: J.R.	SHEET
DRAWN: J.R.	CHECKED: D.T.
DATE: 2/28/03	3A
SCALE: 1" = 40'	DRAWING NO. F19-701-8
DATE: 2-12-03	OF 13

MARK	DATE	DESCRIPTION
△	2/03	RECORD DRAWINGS

PREPARED UNDER RESPONSIBLE CHARGE OF:
PBSJ
18022 Cowan, Suite 100A
Irvine, CA 92618
(949) 560-6600

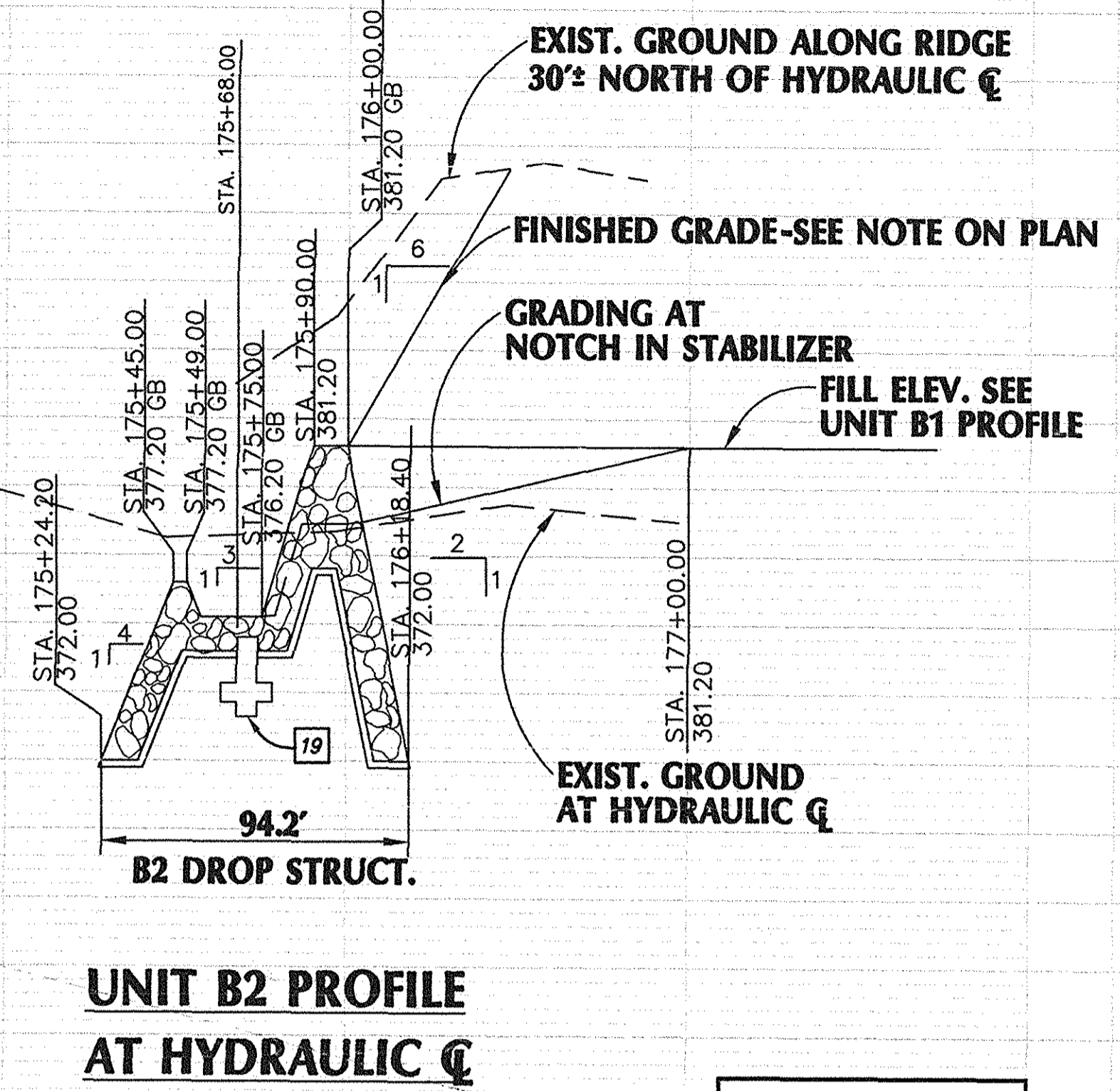


- ### CONSTRUCTION NOTES
- 1 CONSTRUCT ROCK RIP RAP SLOPE PROTECTION WITH FILTER BEDDING PER TYPICAL SECTION HEREON AND ROCK SLOPE PROTECTION DETAILS, SHEET 9.
 - 2 CONSTRUCT ROCK RIP RAP STABILIZATION STRUCTURE WITH FILTER BEDDING PER TYPICAL SECTION HEREON AND DETAILS, SHEET 9.
 - 3 CONSTRUCT COMPACTED BACK FILL PER PLAN & TYPICAL SECTION TO DAYLIGHT TO EXISTING GROUND BENCH SLOPE PER PFRD STD. PLAN 1322.
 - 4 GRADE DRAINAGE SWALE AND OVERFLOW PER DETAILS, SHEET 10.
 - 5 CONSTRUCT R.C. CHANNEL INLET PER PFRD STD. PLAN NO. 1326 AS MODIFIED PER DETAILS, SHEET 11.
 - 13 CONSTRUCT 4" PCC SIDEWALK PER PLAN AND DETAILS, SHEET 10 AND PFRD STD. PLAN 1205.
 - 14 CONSTRUCT ROCK CUT-OFF PER DETAILS, SHEET 9.
 - 19 CONSTRUCT R.C. RETAINING WALL PER DETAIL, SHEET 11.
 - 20 FILL ROCK VOIDS WITH SOIL PER DETAIL, SHEET 9.
 - 21 CONSTRUCT RCP PIPE PER ELEVATIONS ON PLAN BELOW, & PROFILE, SHEET 10.
 - 22 REMOVE TREES 6" OR GREATER IN DIAMETER MEASURED 2' FROM BASE OF TREE.

- ### PROTECT/REMOVE LEGEND
- 1 PROTECT IN PLACE.
 - 2 REMOVE.
 - 3 REMOVE INTERFERING PORTIONS.
 - 4 REMOVE AND STOCKPILE FOR REUSE.

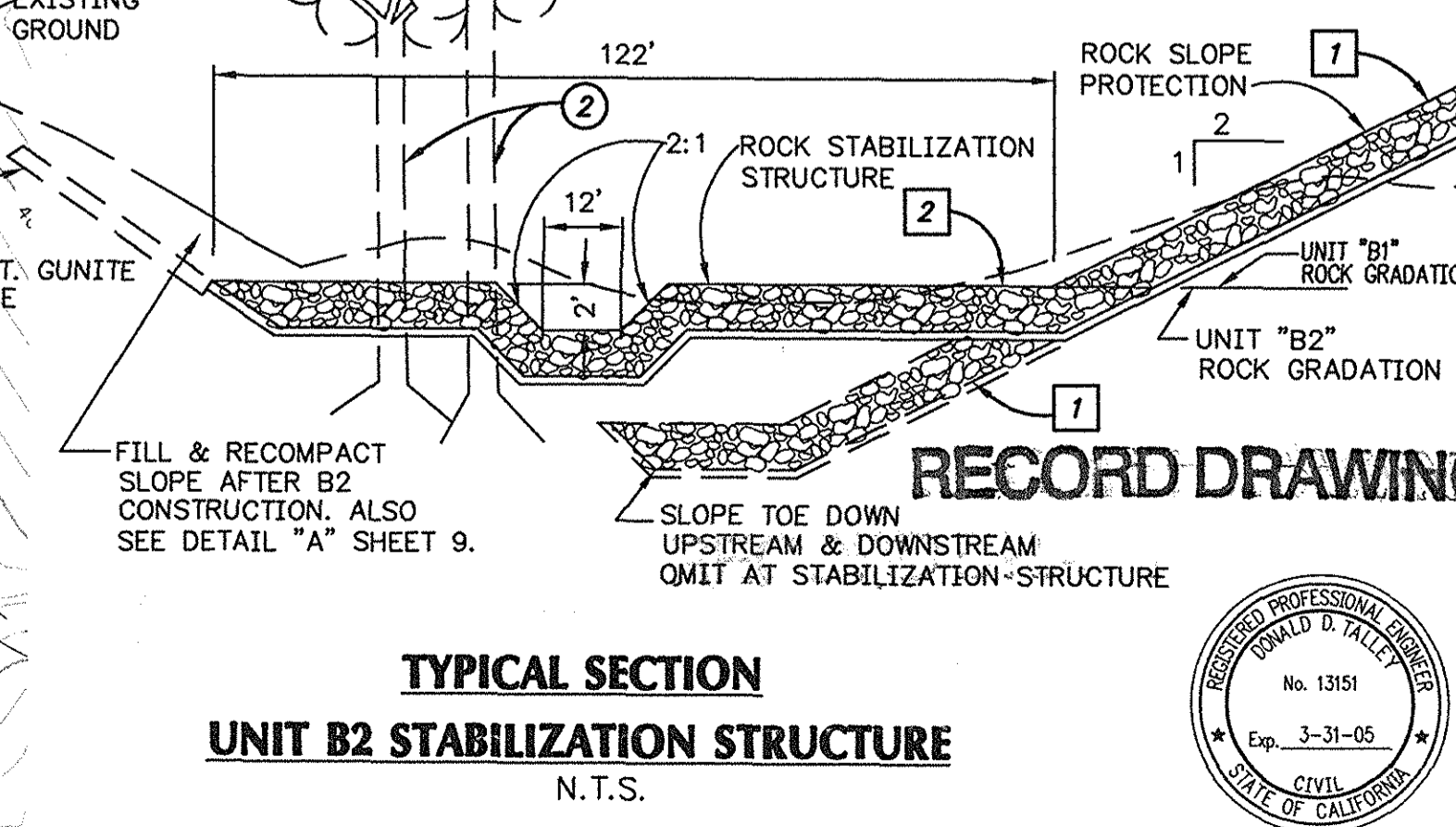
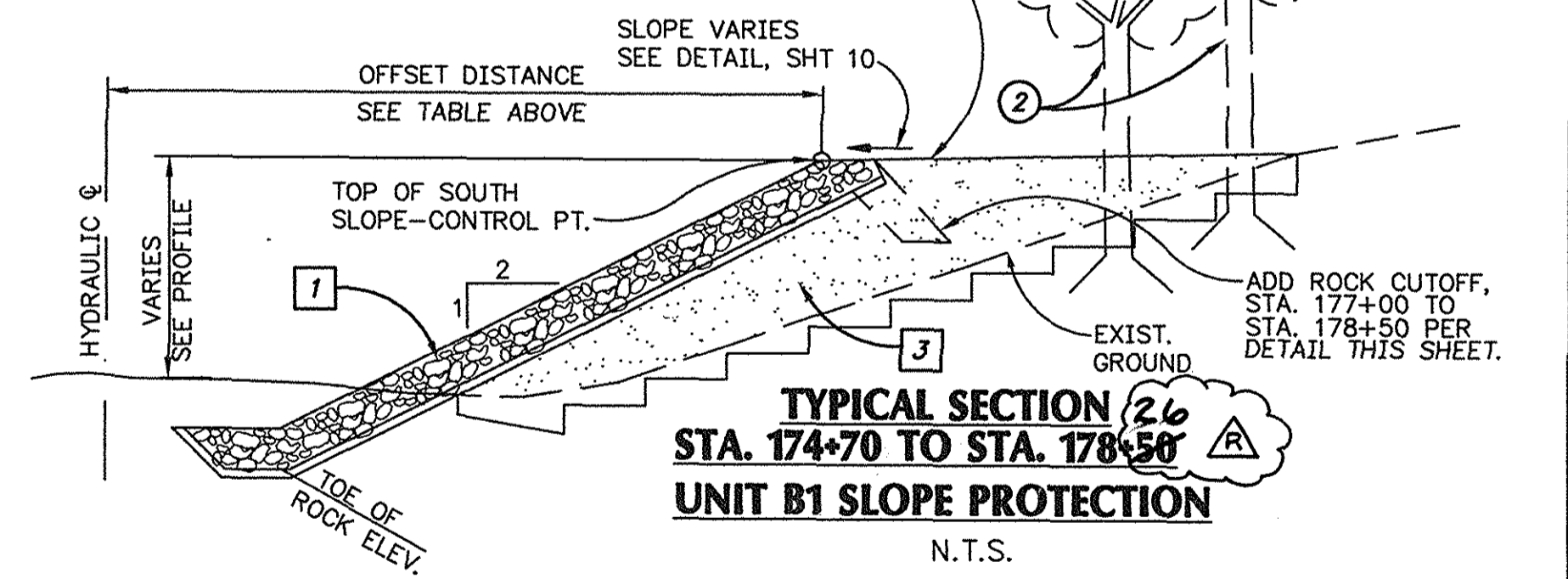
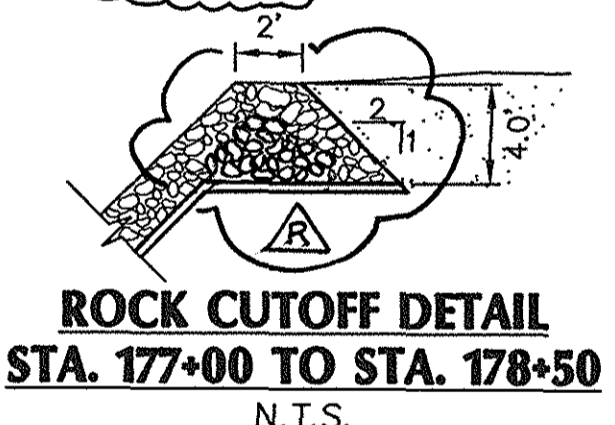
OFFSET DISTANCE FROM HYDRAULIC Q TO TOP OF SLOPE PROTECTION

STATION	OFFSET	ELEVATION
STA. 174+70.00	47.80	385.00
STA. 175+00.00	52.50	386.10
STA. 175+11.00	54.30	386.50
STA. 175+77.00	62.50	389.60
STA. 175+90.00	63.90	390.30
STA. 176+00.00	63.80	390.30
STA. 176+50.00	59.80	390.30
STA. 176+79.00	54.70	390.30
STA. 177+00.00	52.60	389.96
STA. 177+60.00	51.70	389.00
STA. 178+00.00	52.70	389.36
STA. 178+50.00	56.40	389.92
26.00	54.60	389.64



HYDRAULIC DATA

REACH STA. TO STA.	Q (CFS)	CHANNEL "n"
STA. 174+70.00 TO STA. 178+50.00	3800	0.055

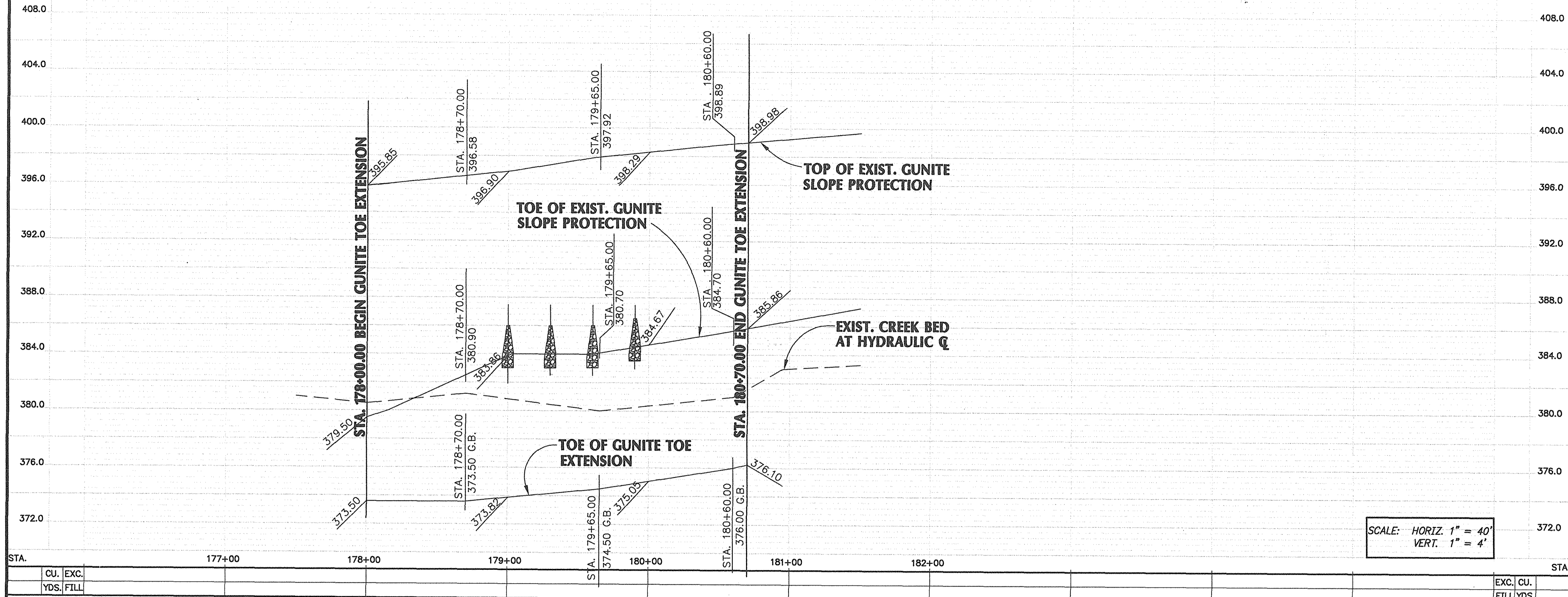


ORANGE COUNTY
PUBLIC FACILITIES AND RESOURCES
DEPARTMENT

**SERRANO CREEK
CREEK STABILIZATION
(BAKE PARKWAY TO TRABUCO ROAD)**

**UNITS "B1" & "B2"
STA. 174+70 TO STA. 178+50**

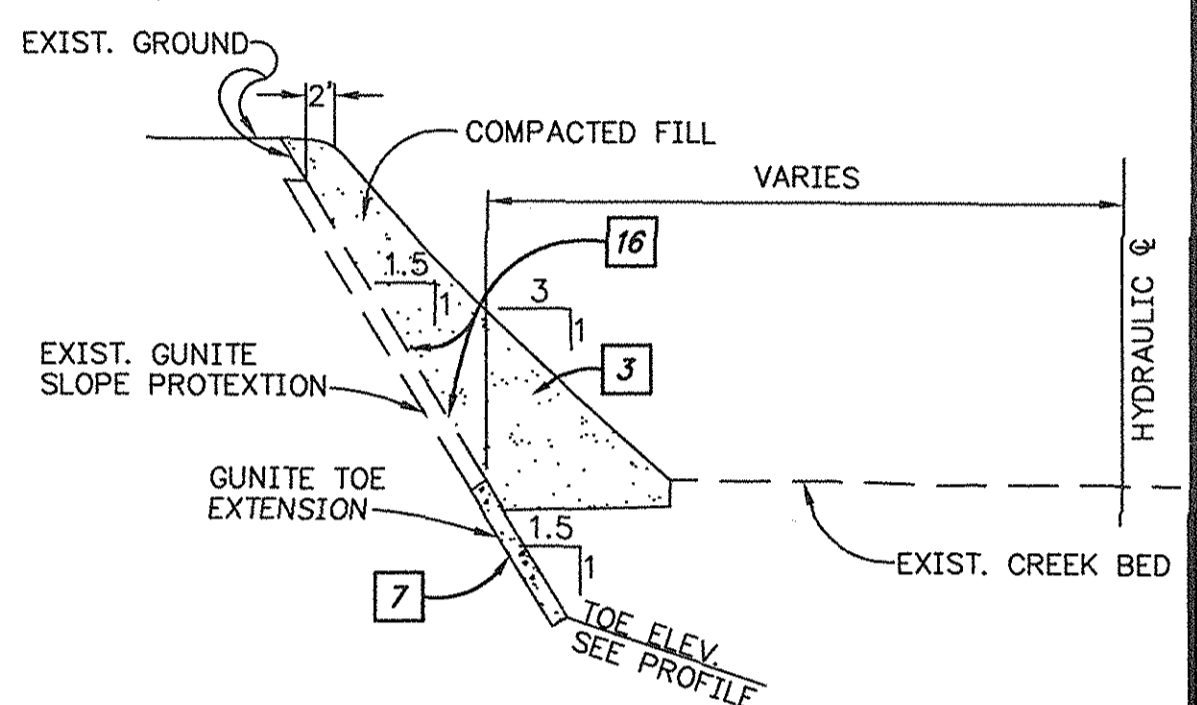
2/03 RECORD DRAWINGS		
2/15/02 REVISED		
MARK	DATE	DESCRIPTION
PREPARED UNDER RESPONSIBLE CHARGE OF:		
DESIGNED E.H.	CHECKED D.T.	SHEET
DRAWN E.H.		4
SCALE 1"=40'	DATE 7-13-01	DRAWING NO. F19-701-6
		OF 13



STA.	177+00	178+00	179+00	180+00	181+00	182+00	STA.
CJ. EXC.							
YDS. FILL							
							EXC. CU.
							FILL YDS.

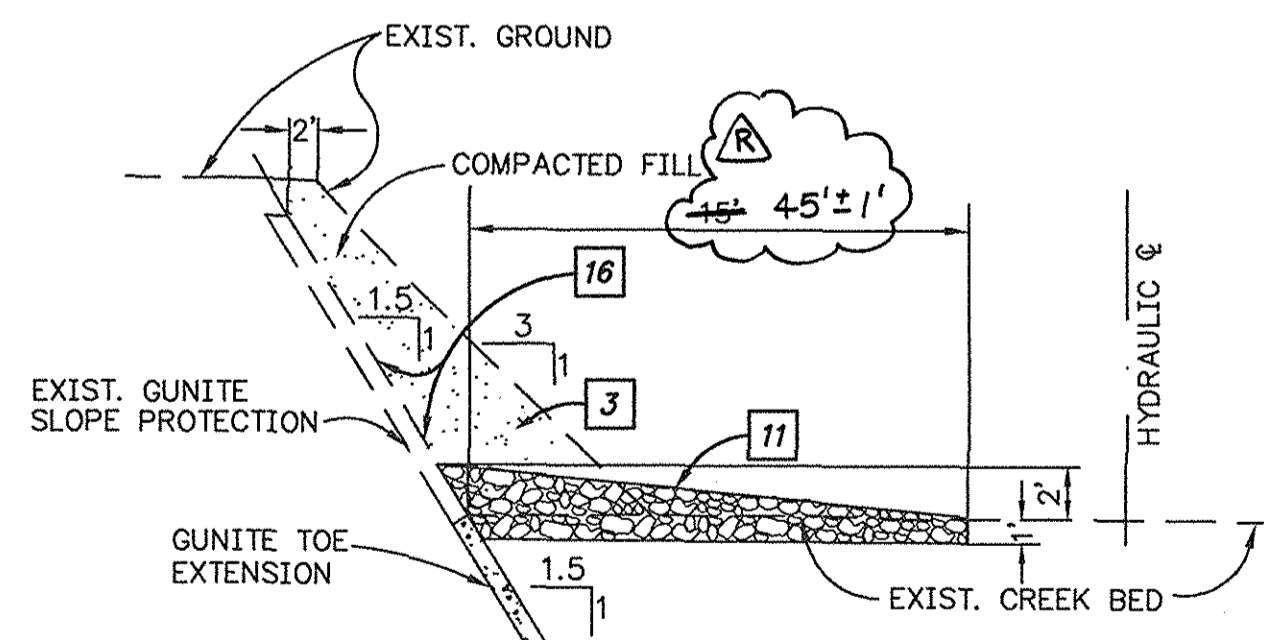
- ### CONSTRUCTION NOTES
- 3 CONSTRUCT COMPACTED BACKFILL PER PLAN & TYPICAL SECTION TO DAYLIGHT TO EXISTING GROUND BENCH SLOPE PER PFRD STD. PLAN 1322.
 - 7 CONSTRUCT GUNITE TOE EXTENSION PER TYPICAL SECTION HEREON AND DETAILS, SHEET 10.
 - 11 CONSTRUCT ROCK BENDWAY WEIRS PER TYPICAL SECTION HEREON AND DETAILS, SHEET 9.
 - 16 CLEAN EXISTING EXPOSED GUNITE SURFACE AND CONSTRUCT HORIZONTAL GUNITE RIDGES 6"± WIDE X 1"± THICK AT 18" O.C. TO HOLD FILL SEE DETAIL SHEET 10.
 - 17 CONSTRUCT GUNITE TOE EXTENSION END RETURN PER DETAIL, SHEET 10.
 - 20 FILL ROCK VOIDS WITH SOIL PER DETAIL, SHEET 9.
 - 22 REMOVE TREES 6" OR GREATER IN DIAMETER MEASURED 2' FROM BASE OF TREE.

- ### PROTECT/REMOVE LEGEND
- 1 PROTECT IN PLACE.
 - 2 REMOVE.
 - 3 REMOVE INTERFERING PORTIONS.
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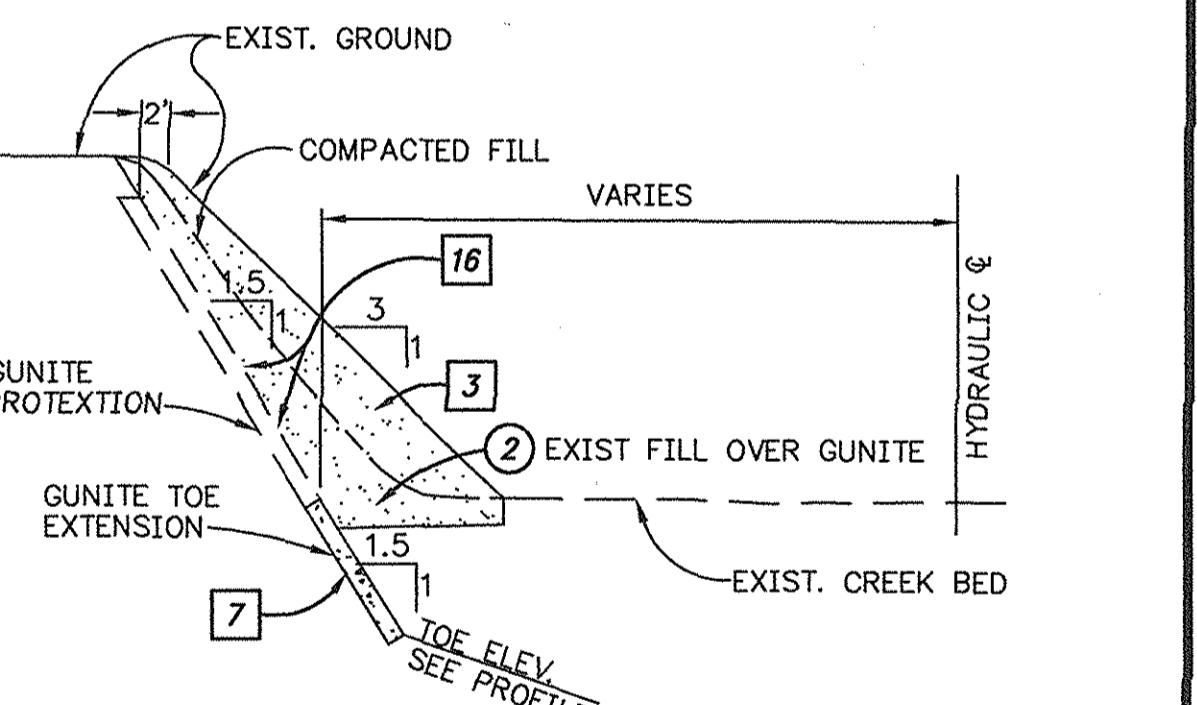


**TYPICAL SECTION
UNIT Q1 GUNITE TOE EXTENSION
STA. 178+00 TO STA. 179+00±**
N.T.S.

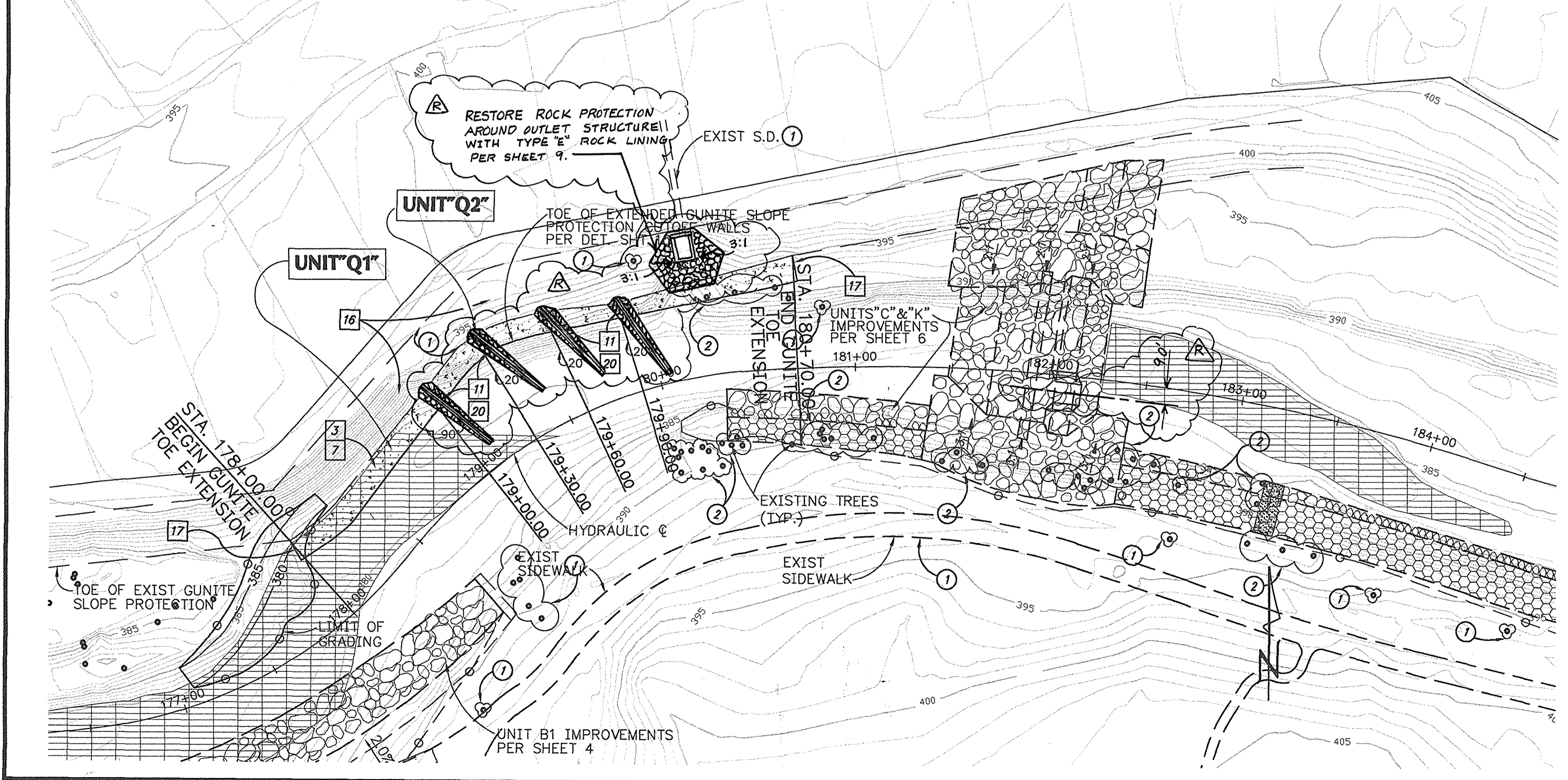
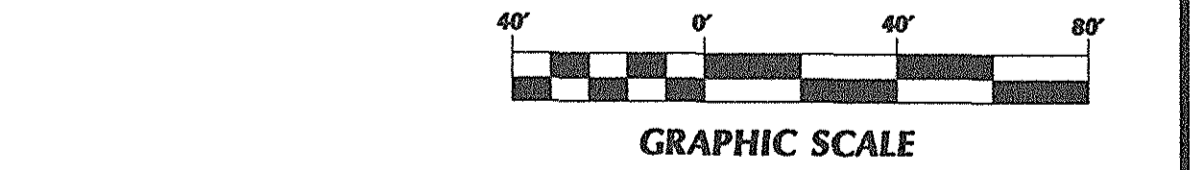
HYDRAULIC DATA		
REACH STA. TO STA.	Q (CFS)	CHANNEL "n"
STA. 178+00.00 TO STA. 180+70.00	3800	0.055



**TYPICAL SECTION
UNIT Q2 ROCK BENDWAY WEIR**
N.T.S.



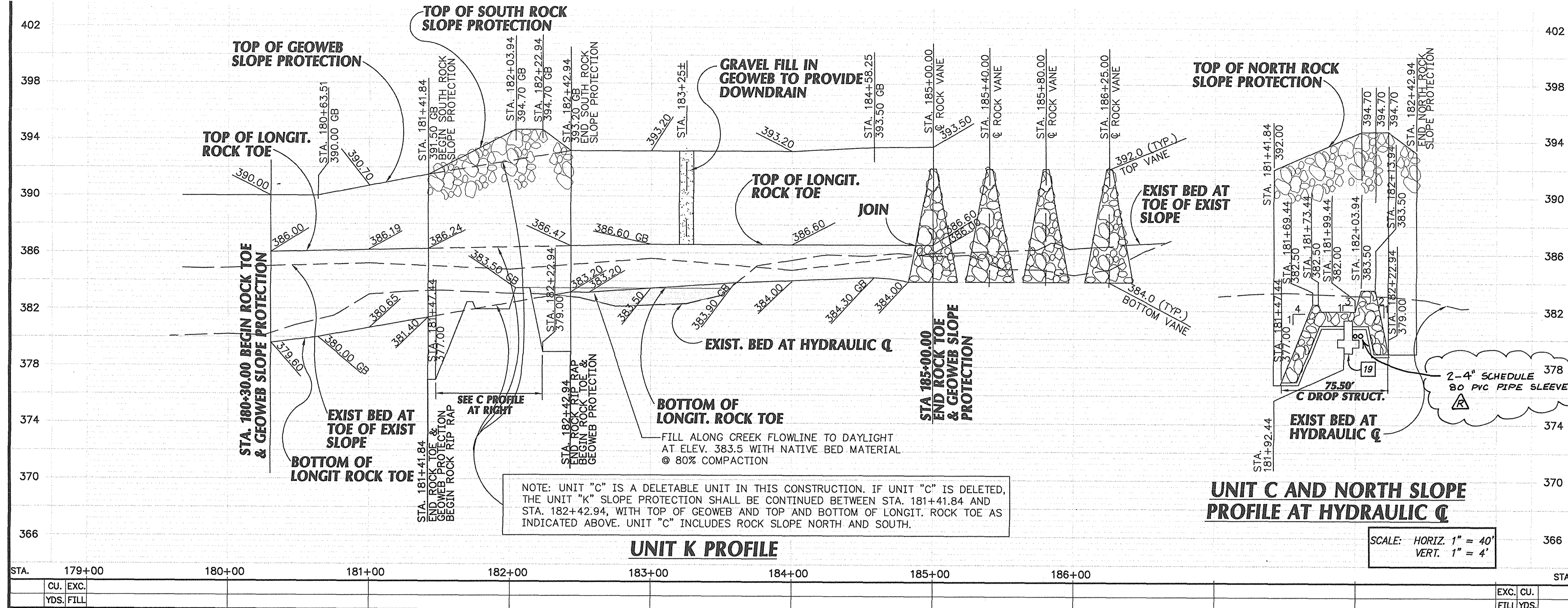
**TYPICAL SECTION
UNIT Q1 GUNITE TOE EXTENSION
STA. 179+00± TO STA. 180+70**
N.T.S.



RECORD DRAWING



ORANGE COUNTY PUBLIC FACILITIES AND RESOURCES DEPARTMENT		SERRANO CREEK CREEK STABILIZATION (BAKE PARKWAY TO TRABUCO ROAD)	
UNITS "Q1" & "Q2" STA. 178+00 TO STA 180+70		DESIGNED E.H.	SHEET
2/03 RECORD DRAWINGS		DATE	5
MARK DATE DESCRIPTION		CHECKED D.T.	
REVISIONS		DATE	
PREPARED UNDER RESPONSIBLE CHARGE OF:		SCALE	DATE
PBSJ		1"=40'	7-13-01
18022 Cowan, Suite 100A Irvine, Ca 92614 (949) 451-7999		DRAWING NO.	F19-701-6
DATE		DATE	OF 13
10/1/01			

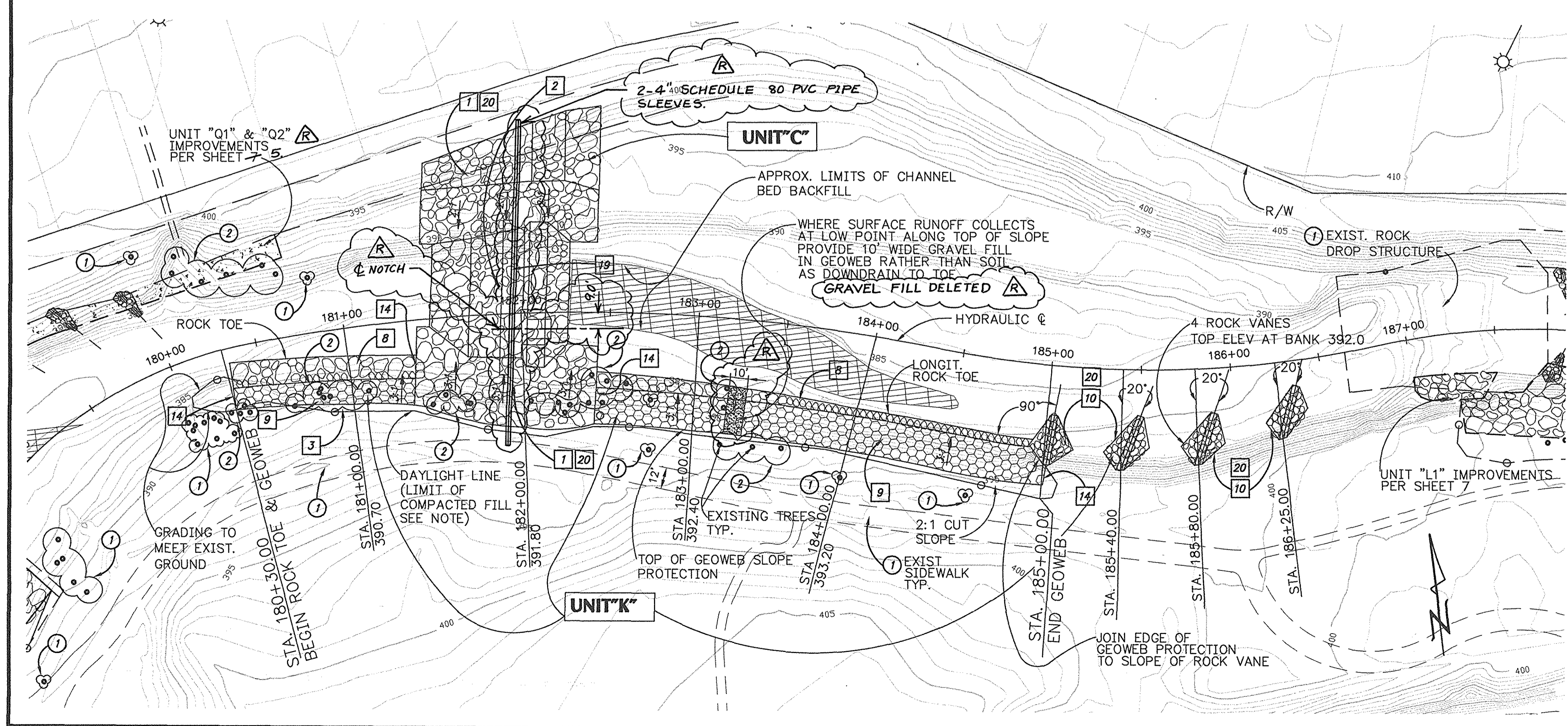


- ### CONSTRUCTION NOTES
- 1 CONSTRUCT ROCK RIP RAP SLOPE PROTECTION WITH FILTER BEDDING PER TYPICAL SECTION HEREON AND ROCK SLOPE PROTECTION DETAILS, SHEET 9.
 - 2 CONSTRUCT ROCK RIP RAP STABILIZATION STRUCTURE WITH FILTER BEDDING PER TYPICAL SECTION HEREON AND DETAILS, SHEET 11.
 - 3 CONSTRUCT COMPACTED BACKFILL PER PLAN & TYPICAL SECTION TO DAYLIGHT TO EXISTING GROUND BENCH SLOPE PER PFRD STD. PLAN 1322.
 - 8 CONSTRUCT LONGITUDINAL ROCK TOE PER TYPICAL SECTIONS HEREON AND DETAILS, SHEET 10.
 - 9 CONSTRUCT COMPACTED FILL SLOPE WITH GEOWEB SURFACE PROTECTION PER TYPICAL SECTIONS HEREON AND DETAILS, SHEET 10.
 - 10 CONSTRUCT ROCK RIPRAP VANES PER TYPICAL SECTIONS HEREON AND DETAILS, SHEET 9.
 - 14 CONSTRUCT ROCK CUT-OFF PER DETAILS, SHEET 9.
 - 19 CONSTRUCT R.C. RETAINING WALL PER DETAILS SHEET 11.
 - 20 FILL ROCK VOIDS WITH SOIL PER DETAIL, SHEET 9.
 - 22 REMOVE TREES 6" OR GREATER IN DIAMETER MEASURED 2' FROM BASE OF TREE.

- ### PROTECT/REMOVE LEGEND
- 1 PROTECT IN PLACE.
 - 2 REMOVE.
 - 3 REMOVE INTERFERING PORTIONS.
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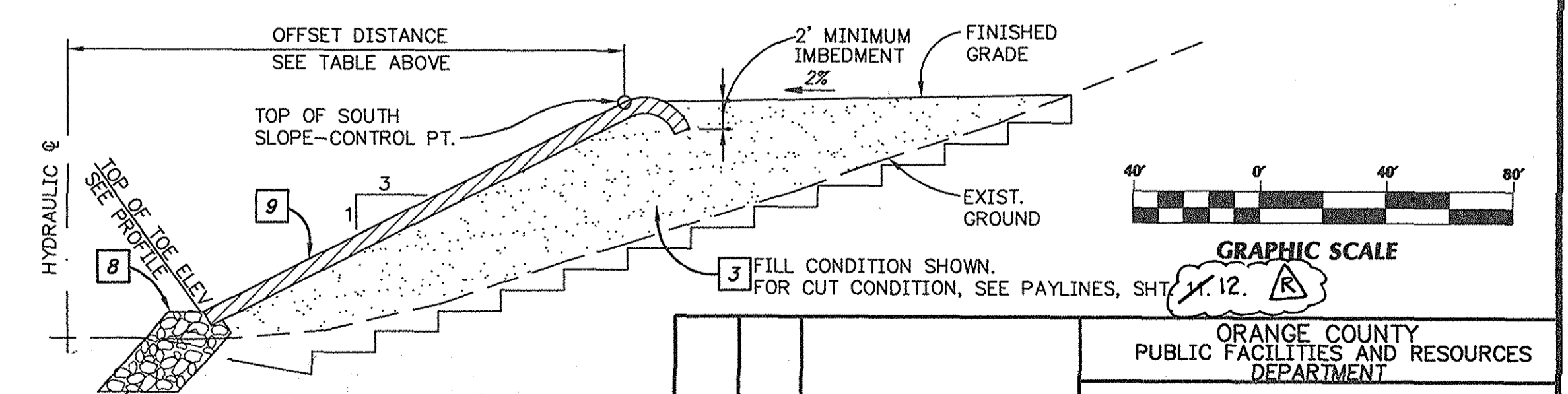
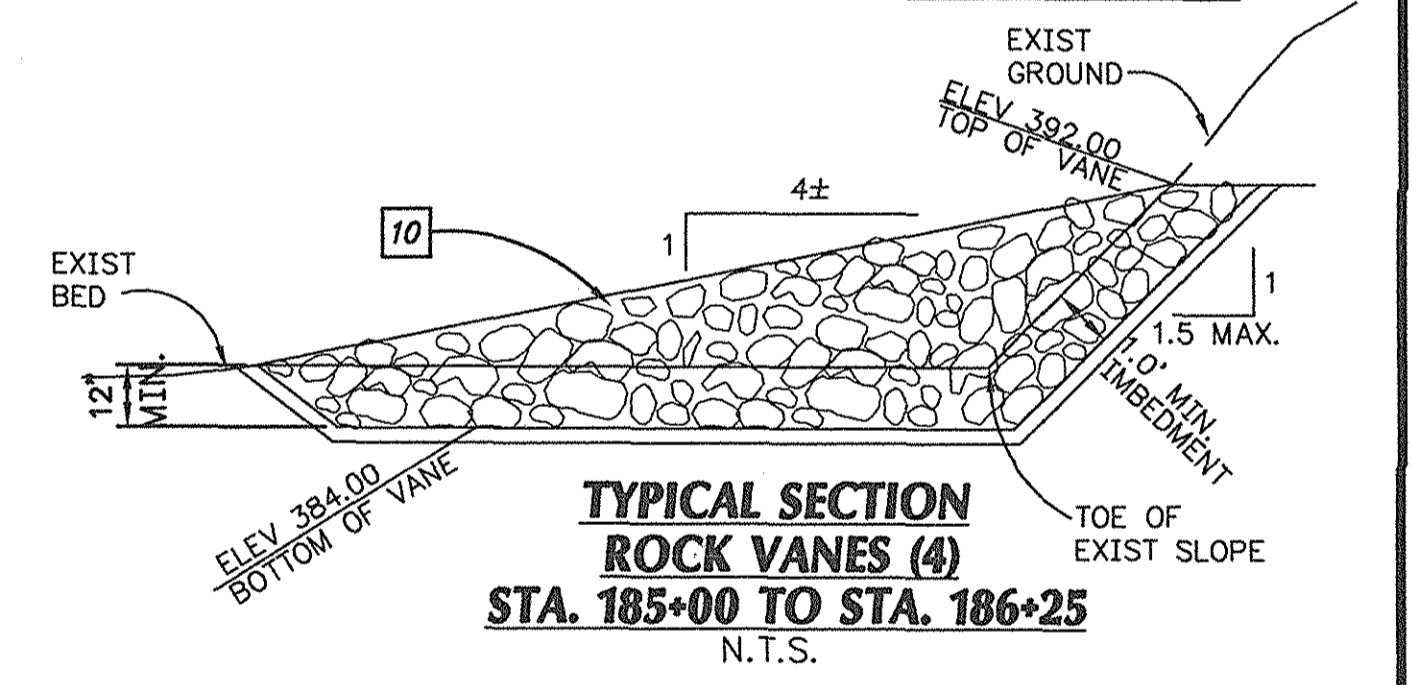
OFFSET DISTANCE FROM HYDRAULIC Q TO TOP OF SLOPE PROTECTION

STATION	OFFSET	ELEVATION
STA. 180+30.00	34.40	390.00
STA. 180+63.51	38.13	390.00
STA. 181+00.00	42.80	390.70
STA. 181+41.78	48.66	391.50
STA. 182+00.00	63.63	394.50
STA. 182+56.67	62.32	393.20
STA. 183+00.00	64.02	393.20
STA. 183+60.05	65.33	393.20
STA. 184+00.00	65.52	393.20
STA. 184+58.46	66.65	393.20
STA. 185+00.00	66.93	393.50



HYDRAULIC DATA

REACH STA. TO STA.	Q (CFS)	CHANNEL "n"
STA. 180+30.00 TO STA. 185+00.00	3800	0.055



RECORD DRAWING

ORANGE COUNTY PUBLIC FACILITIES AND RESOURCES DEPARTMENT

SERRANO CREEK CREEK STABILIZATION (BAKE PARKWAY TO TRABUCO ROAD)

UNITS "C" & "K" STA. 180+30 TO STA. 186+25

DESIGNED E.H. SHEET 6 OF 13

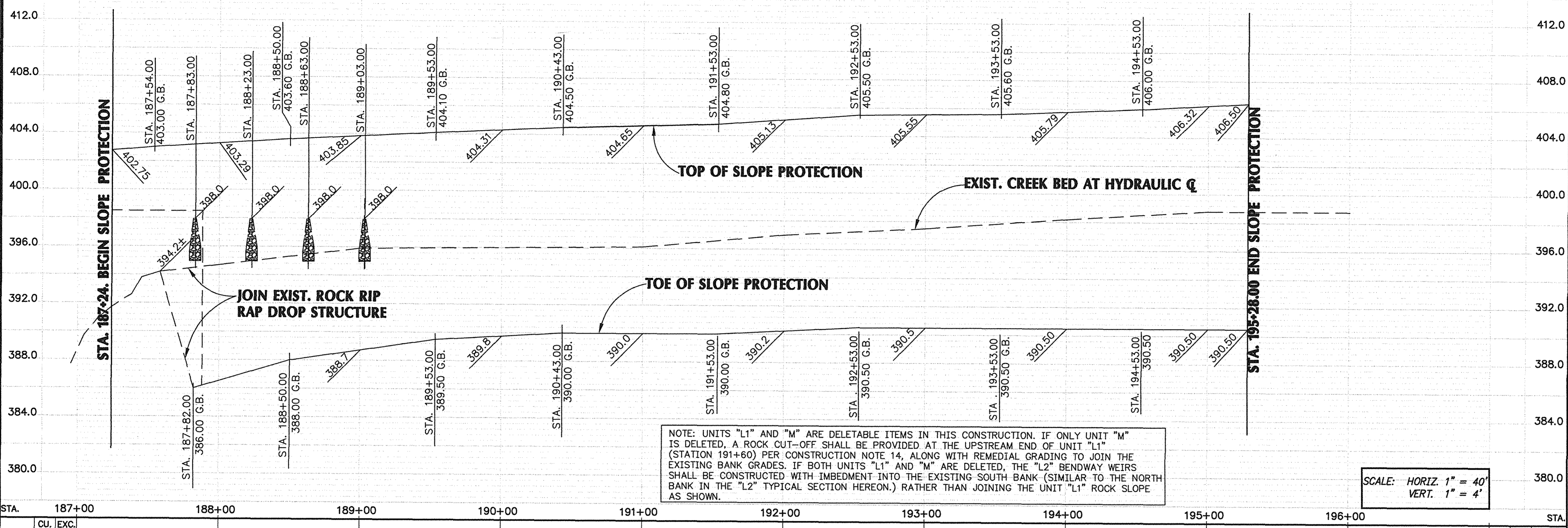
SCALE 1"=40' DATE 07-13-01 DRAWING NO. F19-701-6

PREPARED UNDER RESPONSIBLE CHARGE OF: **PBSJ** 18022 Cowan, Suite 100A Irvine, Ca 92614 (949) 450-0000

2/03 RECORD DRAWINGS

MARK DATE DESCRIPTION REVISIONS

NO. 13151 Exp. 3-31-05 CIVIL STATE OF CALIFORNIA



NOTE: UNITS "L1" AND "M" ARE DELETABLE ITEMS IN THIS CONSTRUCTION. IF ONLY UNIT "M" IS DELETED, A ROCK CUT-OFF SHALL BE PROVIDED AT THE UPSTREAM END OF UNIT "L1" (STATION 191+60) PER CONSTRUCTION NOTE 14, ALONG WITH REMEDIAL GRADING TO JOIN THE EXISTING BANK GRADES. IF BOTH UNITS "L1" AND "M" ARE DELETED, THE "L2" BENDWAY WEIRS SHALL BE CONSTRUCTED WITH IMBEDMENT INTO THE EXISTING SOUTH BANK (SIMILAR TO THE NORTH BANK IN THE "L2" TYPICAL SECTION HEREON.) RATHER THAN JOINING THE UNIT "L1" ROCK SLOPE AS SHOWN.

SCALE: HORIZ. 1" = 40'
VERT. 1" = 4'

CU. EXC.	YDS. FILL	STA.	EXC. CU.	FILL YDS.
		187+00		
		188+00		
		189+00		
		190+00		
		191+00		
		192+00		
		193+00		
		194+00		
		195+00		
		196+00		

CONSTRUCTION NOTES

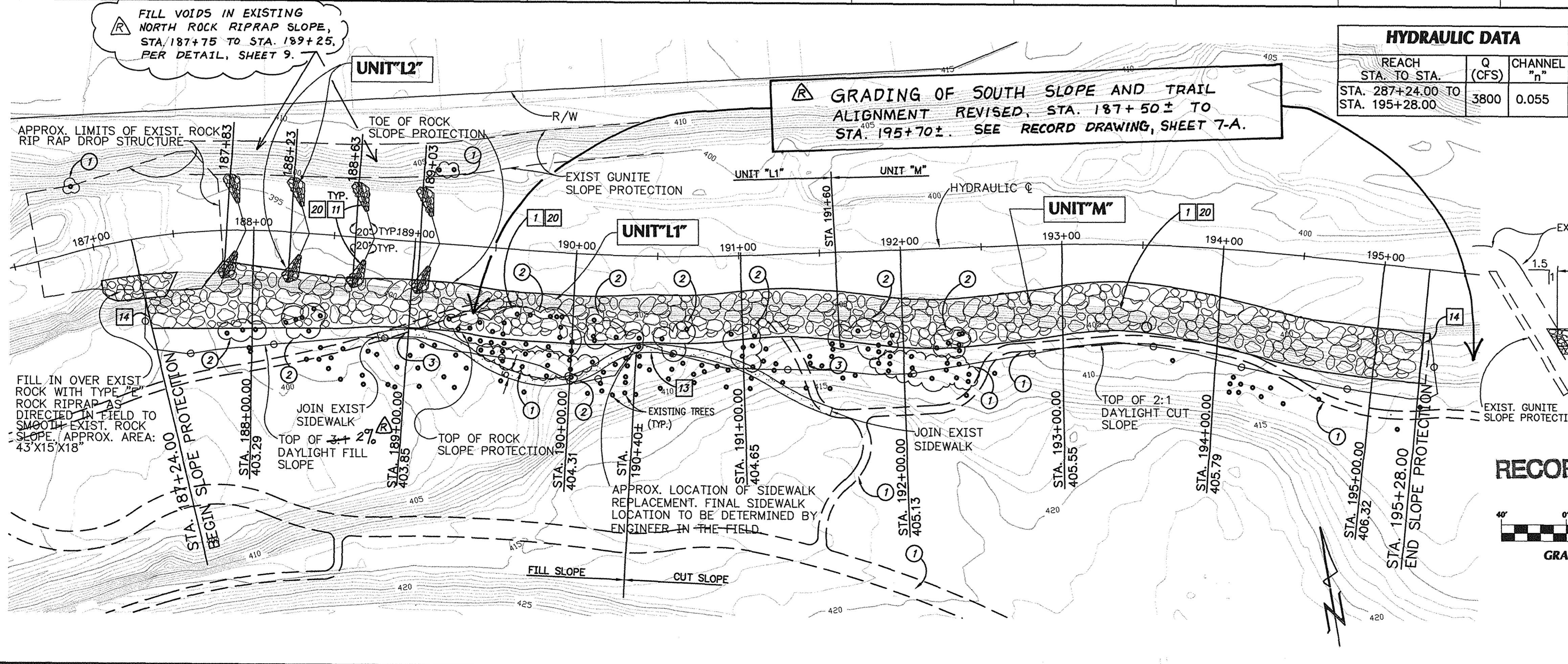
- 1 CONSTRUCT ROCK RIPRAP SLOPE PROTECTION WITH FILTER BEDDING PER TYPICAL SECTION HEREON AND DETAILS, SHEET 9.
- 3 CONSTRUCT COMPACTED BACKFILL PER PLAN & TYPICAL SECTION TO DAYLIGHT TO EXISTING GROUND BENCH SLOPE PER OCPRD STD. PLAN 1322.
- 11 CONSTRUCT ROCK BENDWAY WEIRS PER TYPICAL SECTION HEREON AND DETAILS, SHEET 9.
- 13 CONSTRUCT 4" PCC SIDEWALK PER PLAN AND DETAILS, SHEET 10 AND PFRD STD. PLAN 1205.
- 14 CONSTRUCT ROCK CUT-OFF PER DETAILS, SHEET 9.
- 20 FILL ROCK VOIDS WITH SOIL PER DETAIL, SHEET 9.
- 22 REMOVE TREES 6" OR GREATER IN DIAMETER MEASURED 2' FROM BASE OF TREE.

PROTECT/REMOVE LEGEND

- 1 PROTECT IN PLACE.
- 2 REMOVE.
- 3 REMOVE INTERFERING PORTIONS.
- 4 REMOVE AND STOCKPILE FOR REUSE.

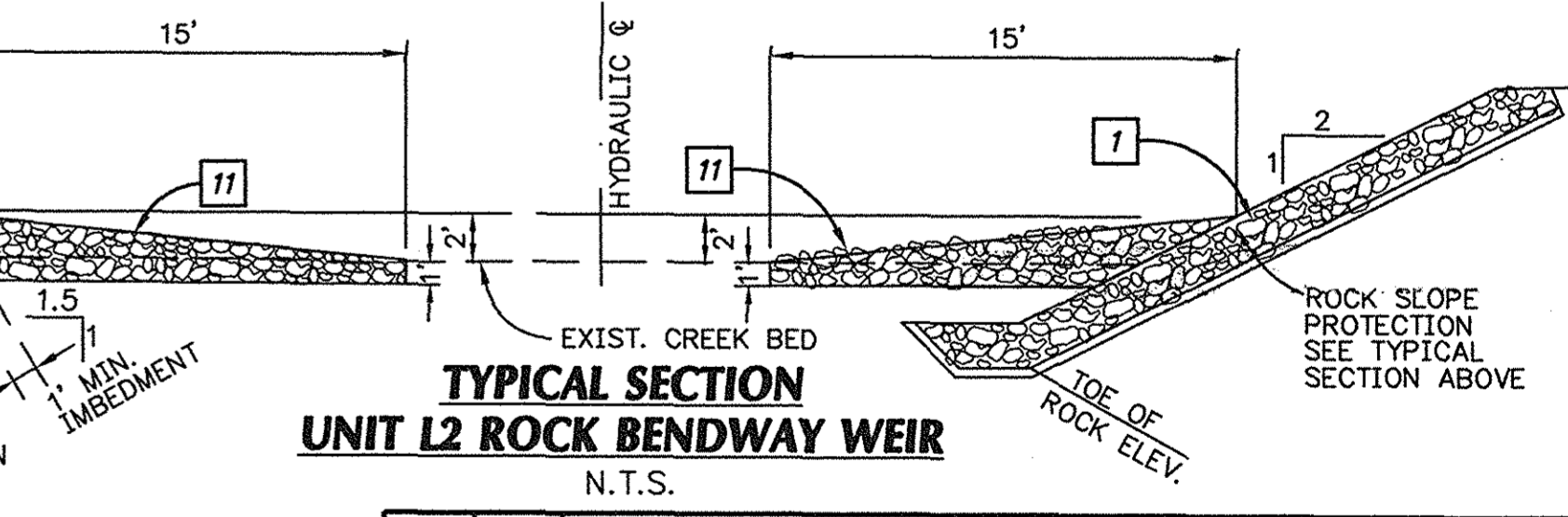
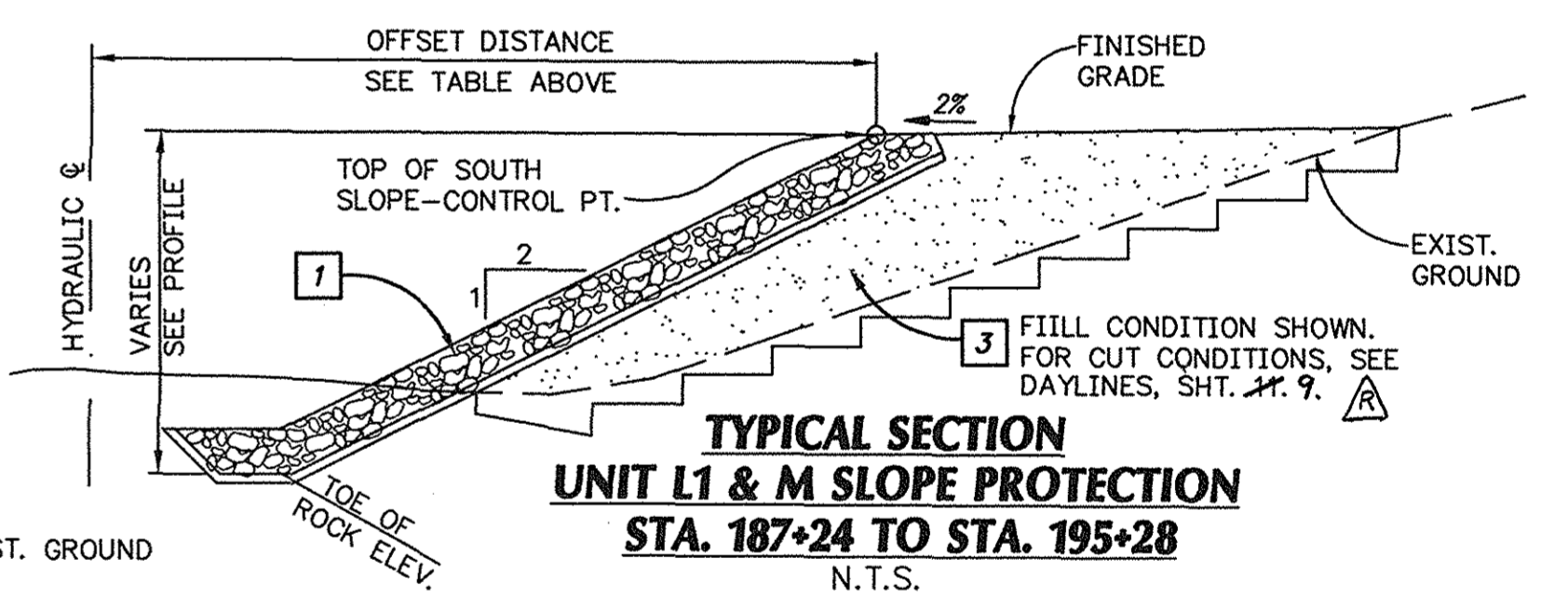
OFFSET DISTANCE FROM HYDRAULIC Q TO TOP OF SLOPE PROTECTION

STATION	OFFSET	ELEVATION
STA. 187+24.00	55.60	402.75
STA. 187+54.00	58.80	403.00
STA. 188+00.00	60.20	403.29
STA. 188+50.00	57.30	403.60
STA. 189+00.00	53.10	403.85
STA. 189+50.00	55.10	404.10
STA. 190+00.00	55.50	404.31
STA. 190+50.00	53.10	404.53
STA. 191+00.00	51.60	404.65
STA. 191+50.00	52.70	404.79
STA. 192+00.00	60.00	405.13
STA. 192+50.00	60.30	405.48
STA. 193+00.00	55.70	405.55
STA. 193+50.00	53.50	405.60
STA. 194+00.00	59.80	405.79
STA. 194+50.00	67.70	405.99
STA. 195+00.00	70.10	406.32
STA. 195+28.00	70.10	406.50

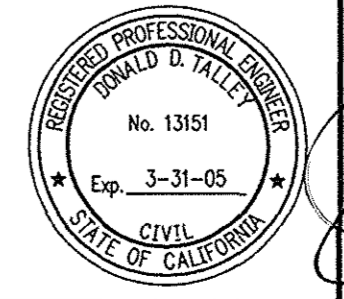
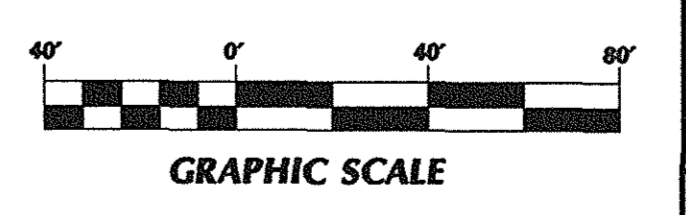


HYDRAULIC DATA

REACH STA. TO STA.	Q (CFS)	CHANNEL "n"
STA. 287+24.00 TO STA. 195+28.00	3800	0.055



RECORD DRAWING



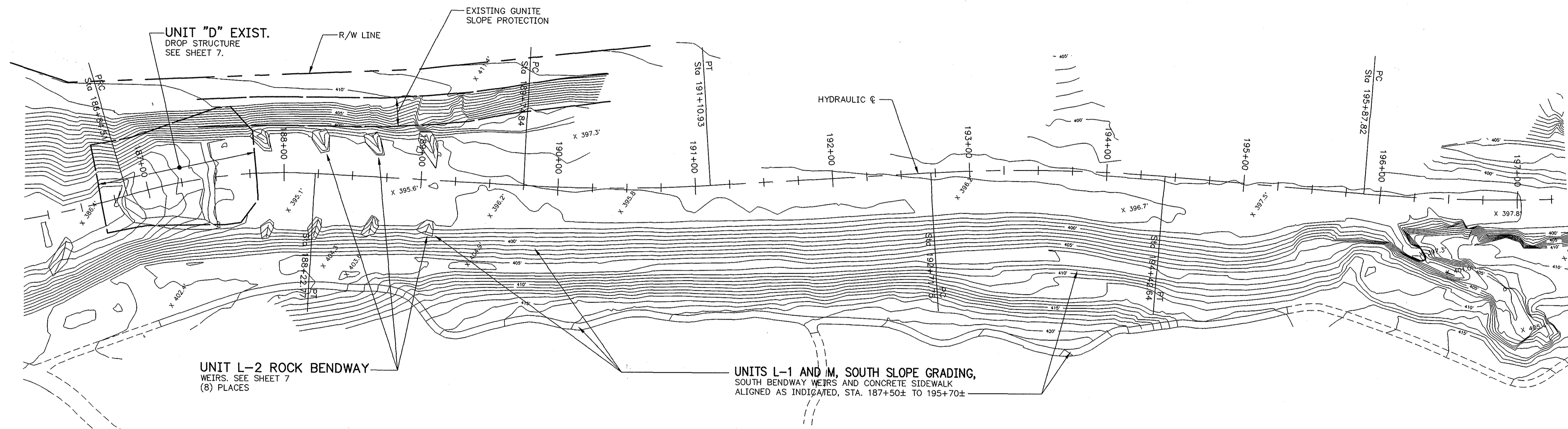
ORANGE COUNTY PUBLIC FACILITIES AND RESOURCES DEPARTMENT

SERRANO CREEK CREEK STABILIZATION (BAKE PARKWAY TO TRABUCO ROAD)

UNITS "L1", "L2" & "M" STA. 187+24 TO STA. 195+28

MARK	DATE	DESCRIPTION
2/03		RECORD DRAWINGS
REVISIONS		
PREPARED UNDER RESPONSIBLE CHARGE OF:		
PBSJ		
DESIGNED	E.H.	
DRAWN	E.H.	CHECKED D.T.
SCALE	DATE	DRAWING NO.
1"=40'	7-13-01	F19-701-8

SHEET 7 OF 13



UNIT "D" EXIST.
DROP STRUCTURE
SEE SHEET 7.

R/W LINE

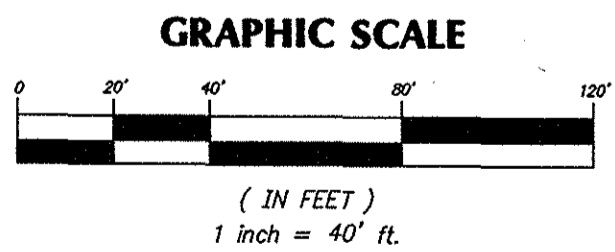
EXISTING GUNITE
SLOPE PROTECTION

HYDRAULIC @

UNIT L-2 ROCK BENDWAY
WEIRS. SEE SHEET 7
(8) PLACES

UNITS L-1 AND M, SOUTH SLOPE GRADING,
SOUTH BENDWAY WEIRS AND CONCRETE SIDEWALK
ALIGNED AS INDICATED, STA. 187+50± TO 195+70±

NOTE: PLAN INDICATES POST-CONSTRUCTION
CONDITION ONLY BASED ON TOPOGRAPHY
COMPLETED NOVEMBER 30, 2002



RECORD DRAWING



ORANGE COUNTY PUBLIC FACILITIES AND RESOURCES DEPARTMENT	
SERRANO CREEK CREEK STABILIZATION (BAKE PARKWAY TO TRABUCO ROAD)	
RECORD DRAWING UNITS L1 & M STA. 187+50± TO STA. 195+70±	
DESIGNED: J.R.	SHEET
DRAWN: J.R.	CHECKED: D.T.
DATE: 2-12-03	DRAWING NO. 7A
SCALE: 1" = 40'	DATE: 2-12-03
DRAWING NO. F19-701-8	OF 13

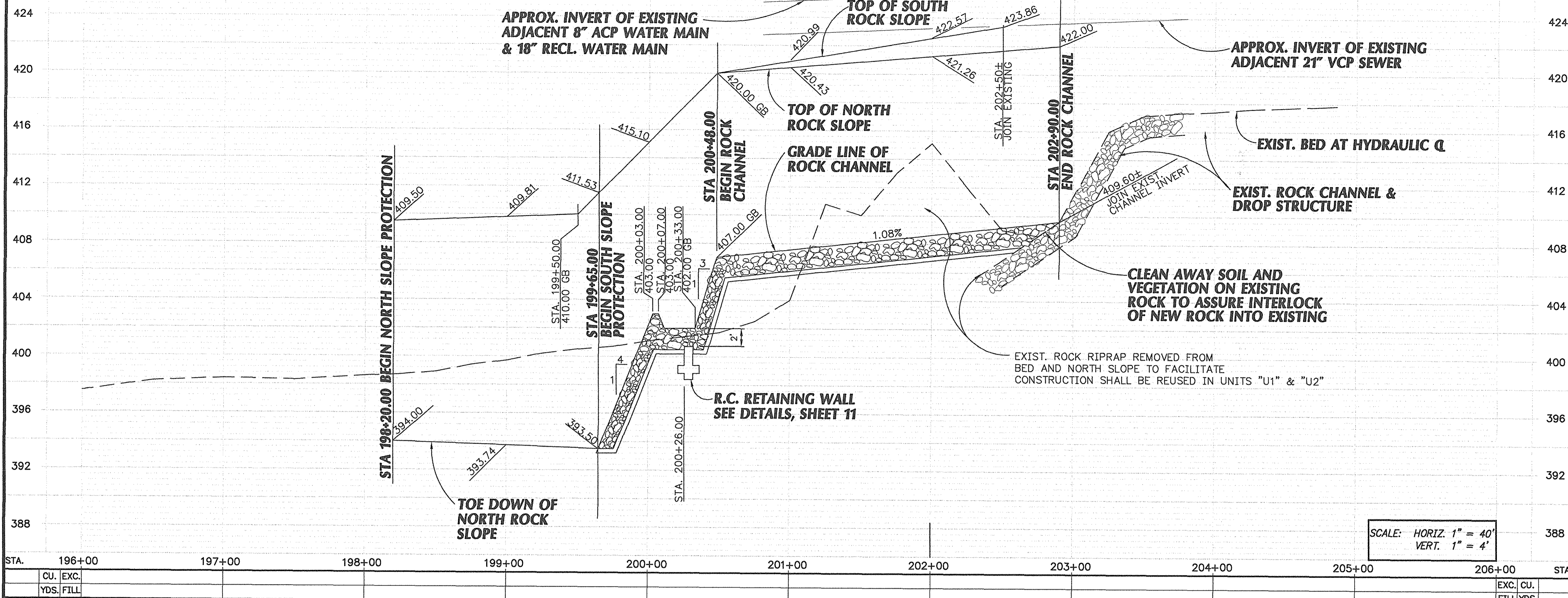
REVISIONS

MARK	DATE	DESCRIPTION
△	2/03	RECORD DRAWINGS

PREPARED UNDER RESPONSIBLE CHARGE OF:

PBSJ
18022 Cowan, Suite 100A
Irvine, Ca 92614
(949) 867-1000

Donald D. Palle 2/12/03
DATE



- ### CONSTRUCTION NOTES
- 1 CONSTRUCT ROCK RIPRAP SLOPE PROTECTION WITH FILTER BEDDING PER TYPICAL SECTIONS HEREON AND DETAILS, SHEET 9.
 - 2 CONSTRUCT ROCK RIP RAP STABILIZATION STRUCTURE WITH FILTER BEDDING PER TYPICAL SECTIONS HEREON AND DETAILS, SHEET 9.
 - 3 CONSTRUCT COMPACTED BACKFILL PER PLAN & TYPICAL SECTION TO DAYLIGHT TO EXISTING GROUND BENCH SLOPE PER PFRD STD. PLAN 1322.
 - 6 EXCAVATE PER PLAN AND TYPICAL SECTION
 - 12 CONSTRUCT ROCK RIP RAP LINED CHANNEL PER TYPICAL SECTIONS HEREON AND DETAILS, SHEET 10.
 - 14 CONSTRUCT ROCK CUT-OFF PER DETAILS, SHEET 9.
 - 18 PROVIDE 10' WIDE TYPE "F" ROCK LINING.
 - 19 CONSTRUCT R.C. RETAINING WALL PER DETAILS, SHEET 11.
 - 20 FILL ROCK VOIDS WITH SOIL PER DETAIL, SHEET 9. (CHANNEL SLOPES ONLY - OMIT FILL IN INVERT)
 - 22 REMOVE TREES 6" OR GREATER IN DIAMETER MEASURED 2' FROM BASE OF TREE.

- ### PROTECT/REMOVE LEGEND
- 1 PROTECT IN PLACE.
 - 2 REMOVE.
 - 3 REMOVE INTERFERING PORTIONS.
 - 4 REMOVE AND STOCKPILE FOR REUSE.

OFFSET DISTANCE FROM HYDRAULIC Q TO TOP OF SLOPE PROTECTION

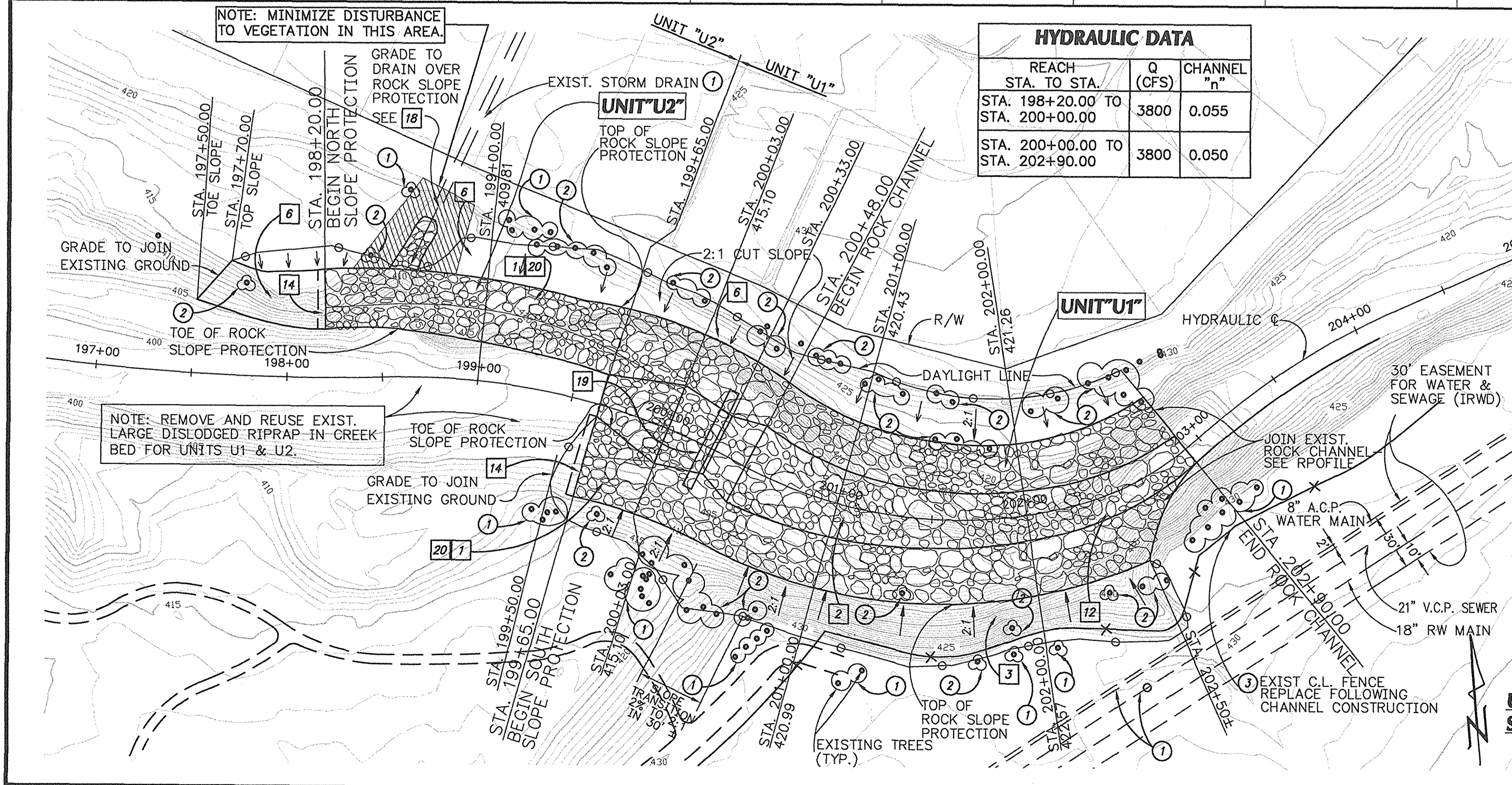
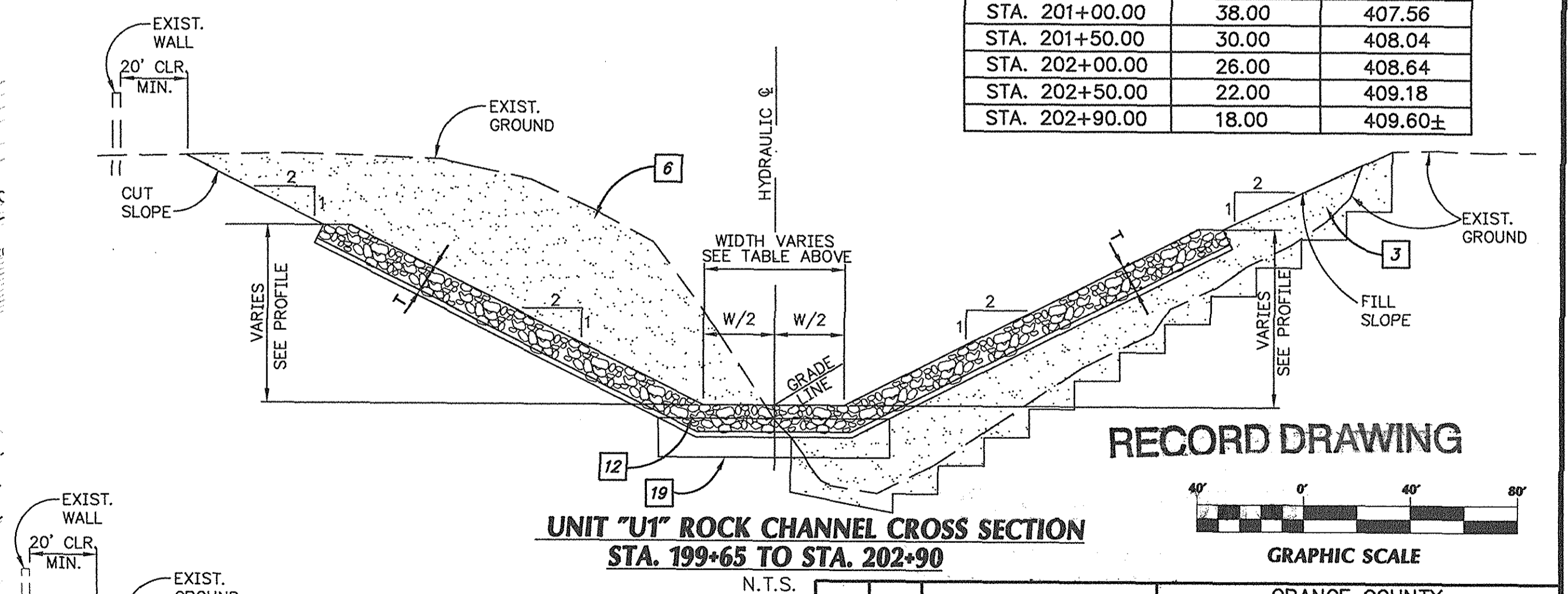
STATION	OFFSET	ELEVATION
NORTH SLOPE:		
STA. 198+20.00	56.60	409.60 50
STA. 198+60.00	56.00	409.31
STA. 199+00.00	53.40	409.62
STA. 199+50.00	50.30	410.00
STA. 199+65.00	52.26	411.53
SOUTH SLOPE:		
STA. 199+65.00	49.56	413.77

ROCK RIP RAP CHANNEL WIDTH

STATION	BOTTOM WIDTH	GRADE LINE ELEVATION
STA. 199+65.00	22.66	393.50
STA. 200+03.00	44.00	401.70
STA. 200+33.00	28.00	402.00
STA. 200+48.00	44.00	407.00
STA. 201+00.00	38.00	407.56
STA. 201+50.00	30.00	408.04
STA. 202+00.00	26.00	408.64
STA. 202+50.00	22.00	409.18
STA. 202+90.00	18.00	409.60±

HYDRAULIC DATA

REACH STA. TO STA.	Q (CFS)	CHANNEL "n"
STA. 198+20.00 TO STA. 200+00.00	3800	0.055
STA. 200+00.00 TO STA. 202+90.00	3800	0.050



ORANGE COUNTY PUBLIC FACILITIES AND RESOURCES DEPARTMENT

SERRANO CREEK CREEK STABILIZATION (BAKE PARKWAY TO TRABUCO ROAD)

UNITS "U1" & "U2" STA. 197+50 TO STA. 202+90

DESIGNED: E.H. DRAWN: E.H. CHECKED: D.T. SHEET 8 OF 13

SCALE: 1"=40' DATE: 07-13-01 DRAWING NO. F19-701-6

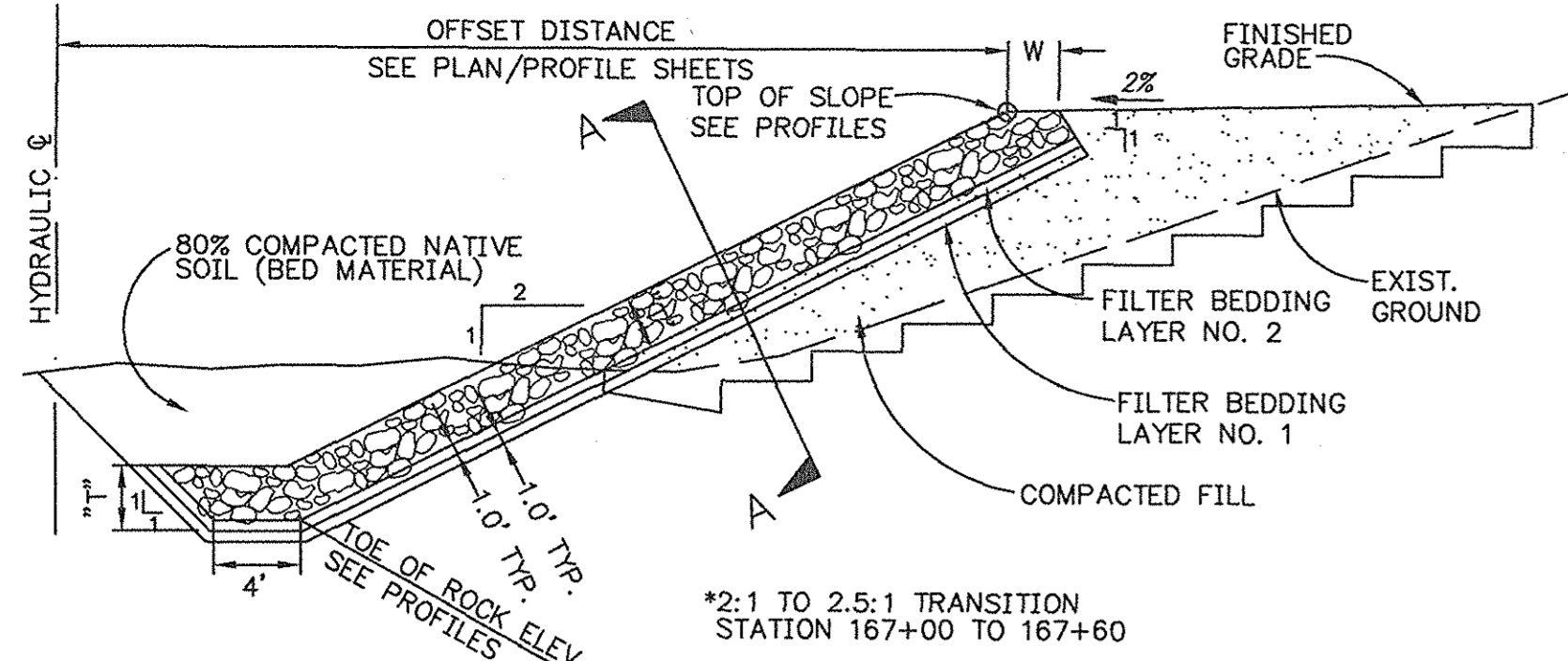
PREPARED UNDER RESPONSIBLE CHARGE OF: **PBSJ** 18022 Cowan, Suite 100A Irvine, Ca 92614 (949) 666-7900

DATE: 2/03

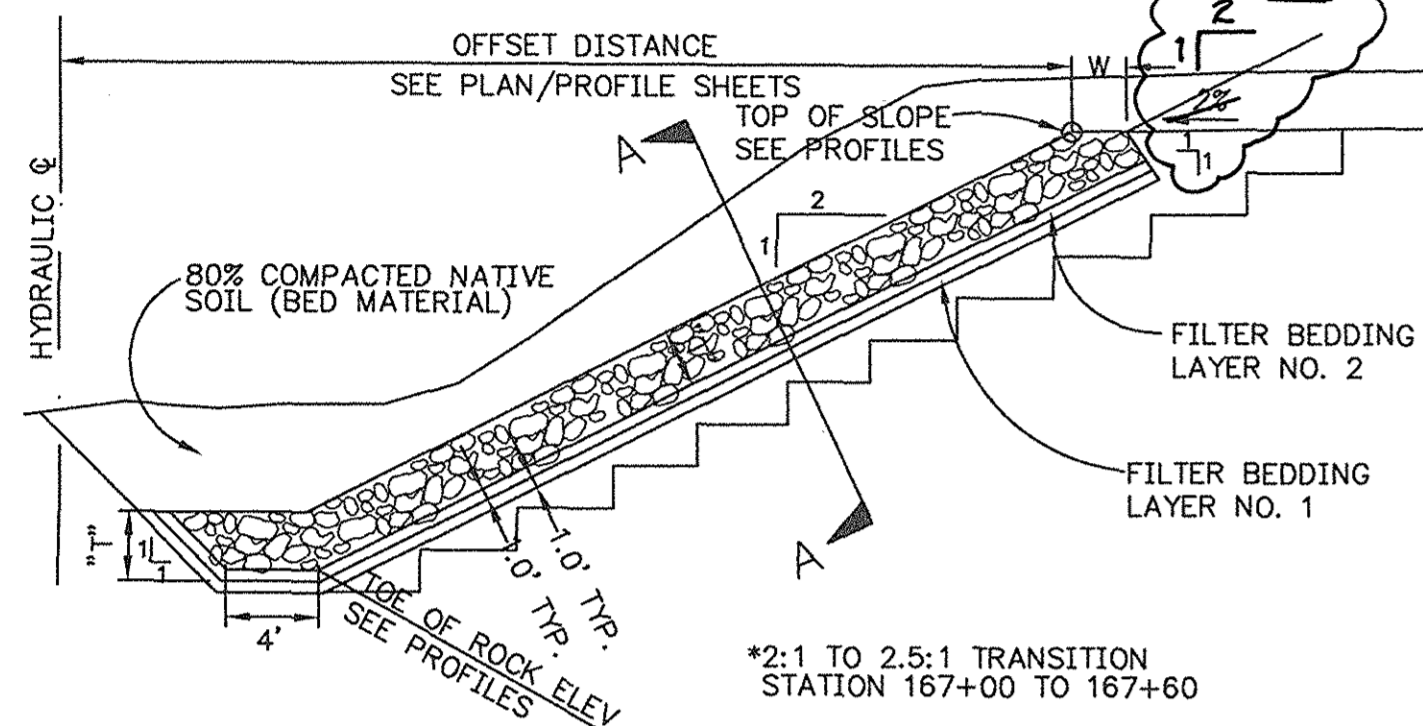
RECORD DRAWINGS

MARK DATE DESCRIPTION REVISIONS

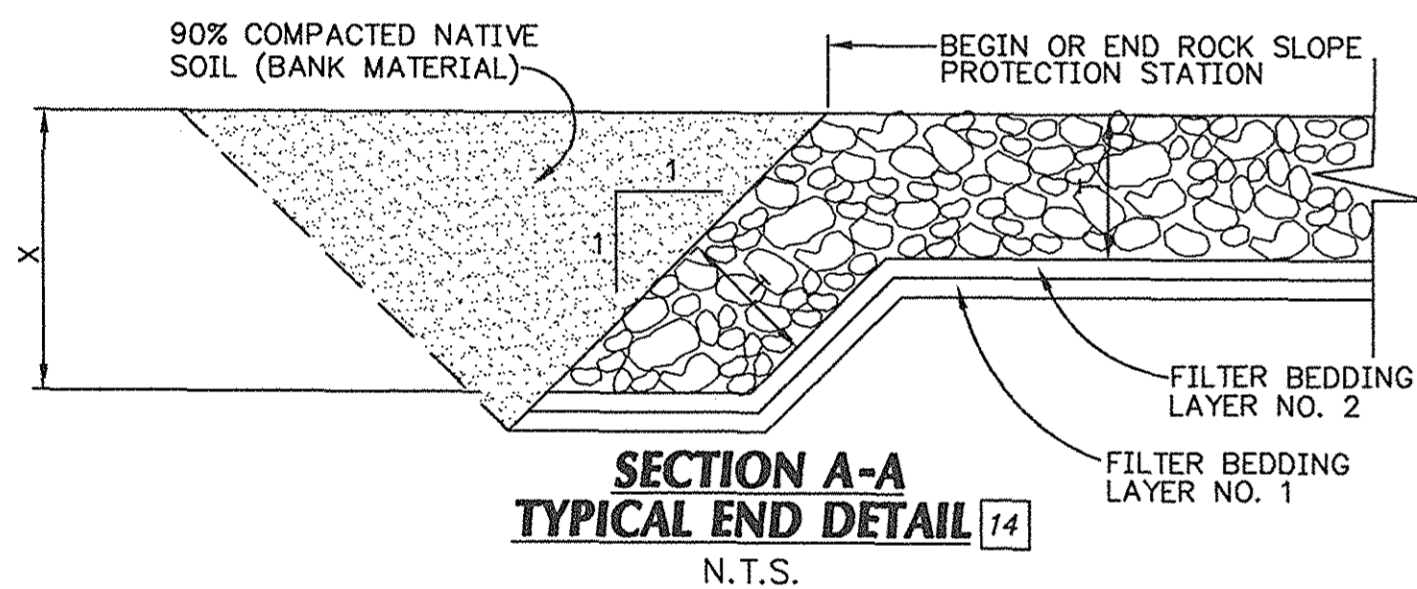
PROFESSIONAL SEAL: DONALD D. TALLEY No. 13151 Exp. 3-31-05 CIVIL STATE OF CALIFORNIA



ROCK SLOPE PROTECTION
TYPICAL CROSS SECTION IN FILL
N.T.S.



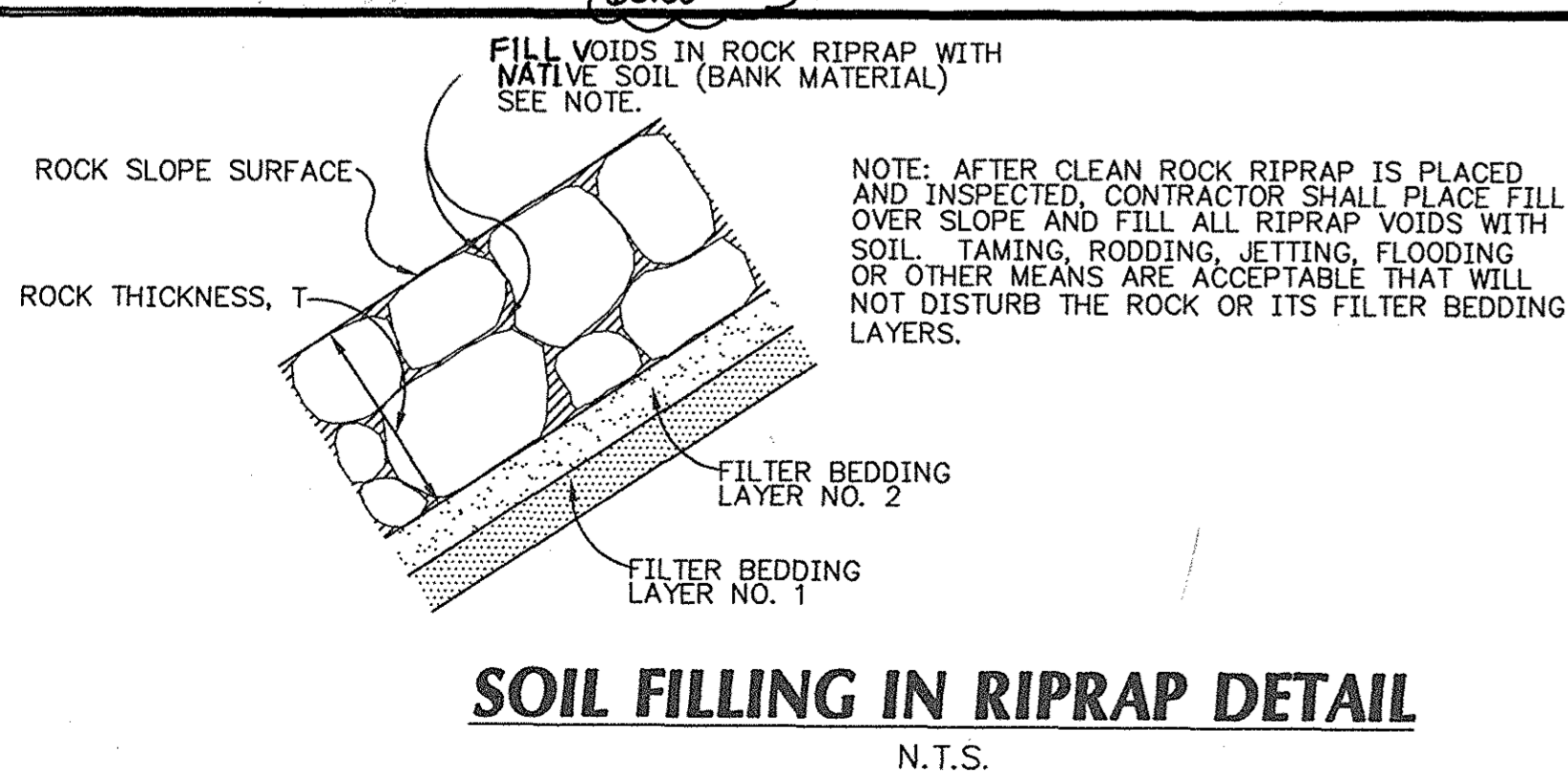
ROCK SLOPE PROTECTION
TYPICAL CROSS SECTION IN CUT
N.T.S.



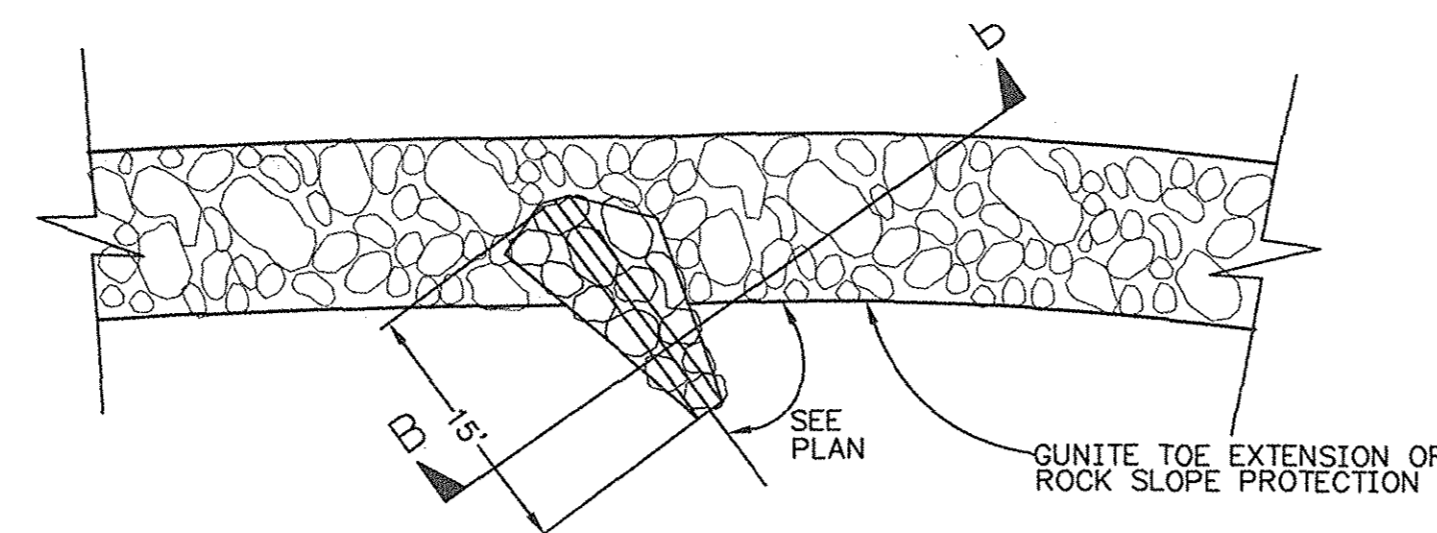
SECTION A-A
TYPICAL END DETAIL
N.T.S.

ROCK RIPRAP DATA

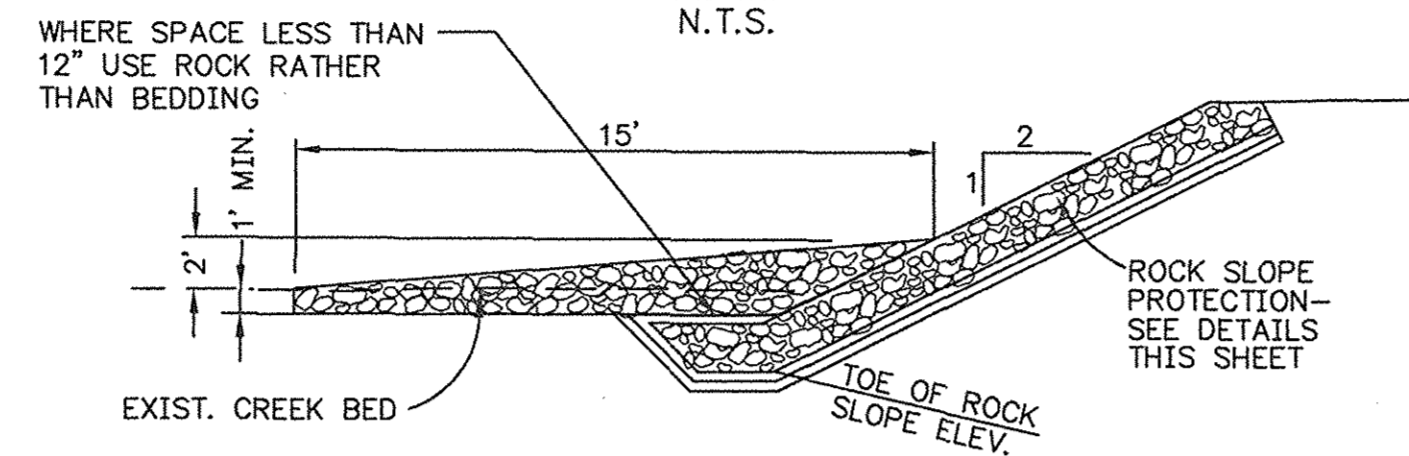
UNIT	STATION	ROCK TYPE	"T"	"W"	"X"
H	164+11.52 TO 165+30.00	D	2.00'	2.0'	4.0'
	165+30.00 TO 167+60.00	F	2.00	2.0'	4.0'
B1	174+70.00 TO 176+00.00	E	2.00'	2.0'	4.0'
	176+00.00 TO 178+50.00	F	2.00'	2.0'	4.0'
L1 & M	187+00.00 TO 188+00.00	E	2.00'	2.0'	4.0'
	188+00.00 TO 195+28.00	F	2.00'	2.0'	4.0'
U2	198+20.00 TO 199+75.40	R/C	3.50'	4.0'	5.0'



SOIL FILLING IN RIPRAP DETAIL
N.T.S.

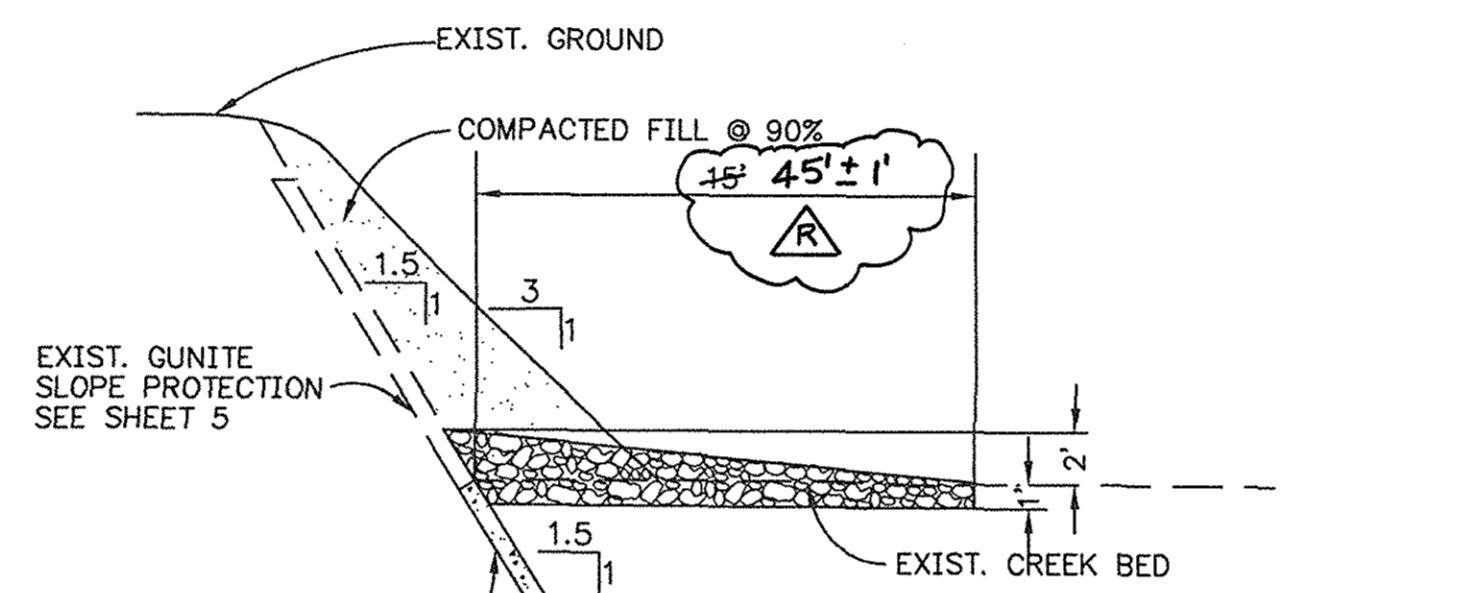


ROCK BENDWAY WEIR
PLAN
N.T.S.

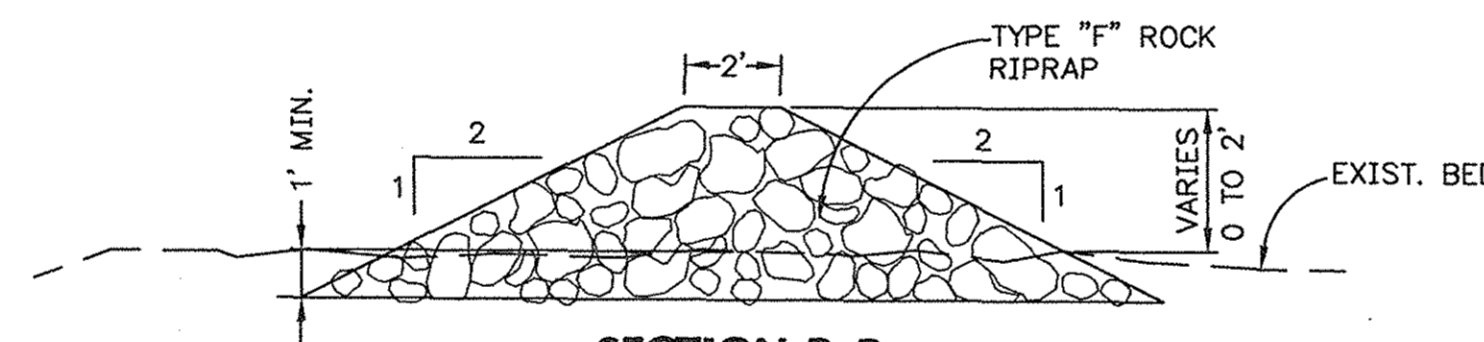


UNIT L2 CROSS SECTION
N.T.S.

NOTE: SOUTH SIDE SHOWN-NORTH SIDE SIMILAR BUT WITHOUT ROCK SLOPE PROTECTION. SEE TYPICAL SECTION, SHEET 7.



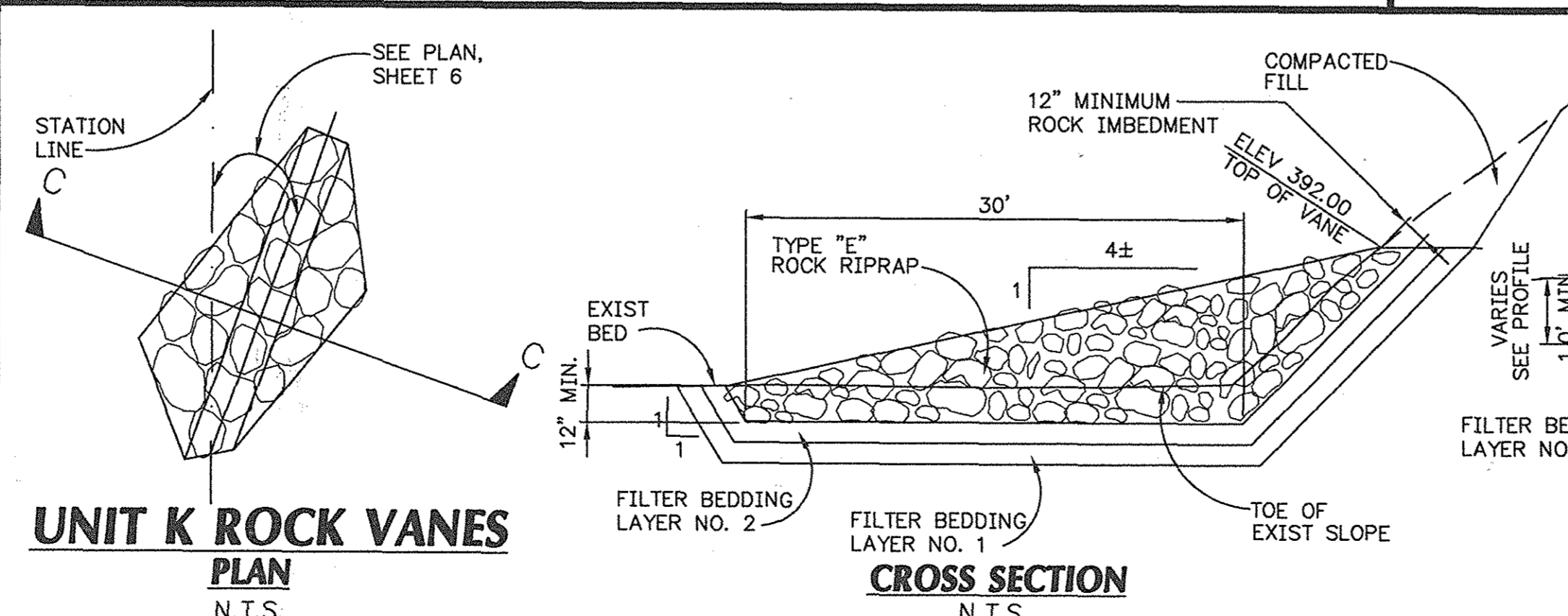
UNIT Q2 CROSS SECTION
N.T.S.



SECTION B-B
N.T.S.

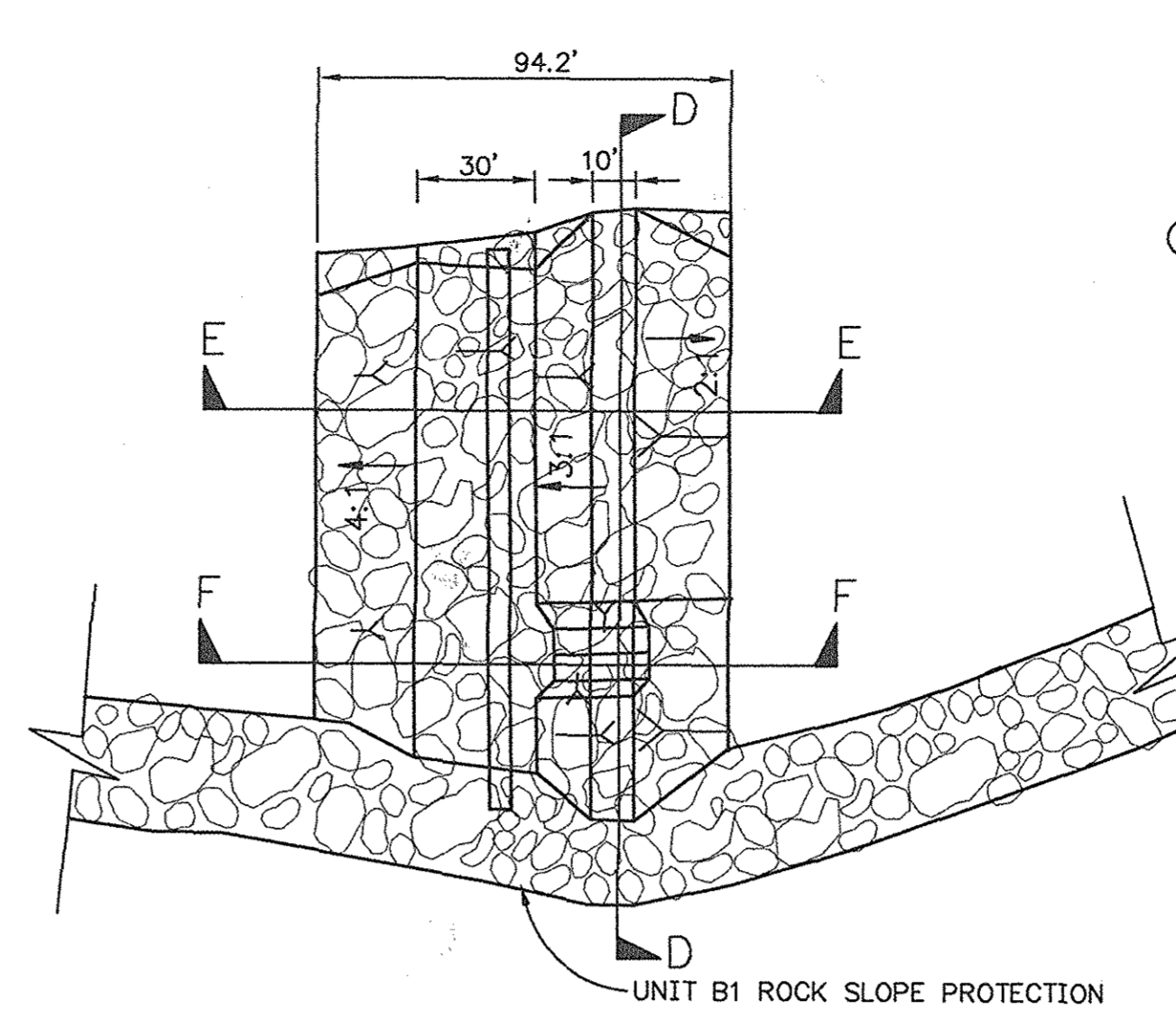
ROCK RIPRAP ROUNDING

ROCK RIPRAP DETAILS ARE SHOWN WITH SHARP CORNERS. CONTRACTOR SHALL ROUND ALL EXPOSED ROCK CORNERS TO APPROXIMATELY 3-FOOT RADIUS.



UNIT K ROCK VANES
PLAN
N.T.S.

CROSS SECTION
N.T.S.



UNIT B2 STABILIZATION STRUCTURE
PLAN
N.T.S.

ROCK RIPRAP DATA

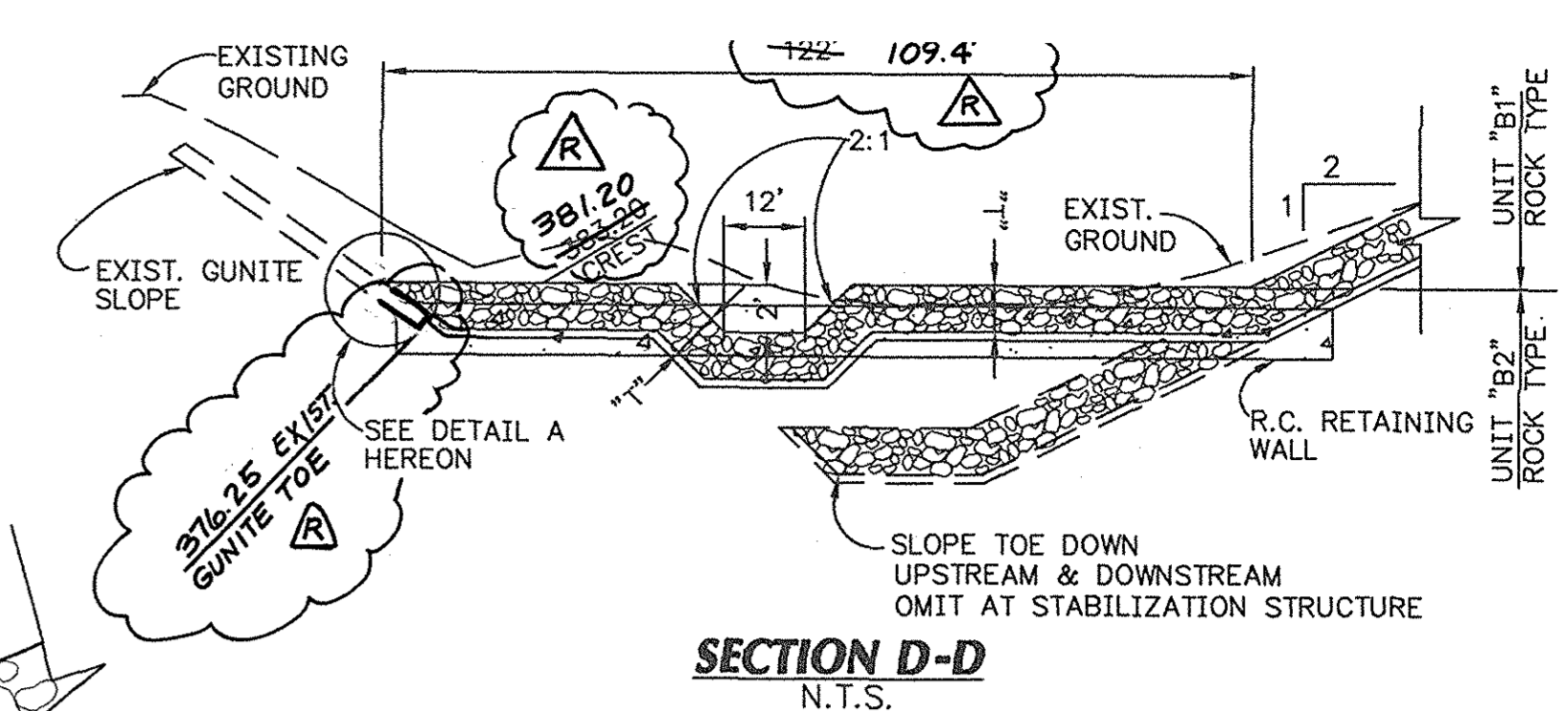
UNIT	STATION	ROCK TYPE	"T"
B2	175+24.20 TO 176+18.40	B	4.50'

FILTER BEDDING GRADATIONS

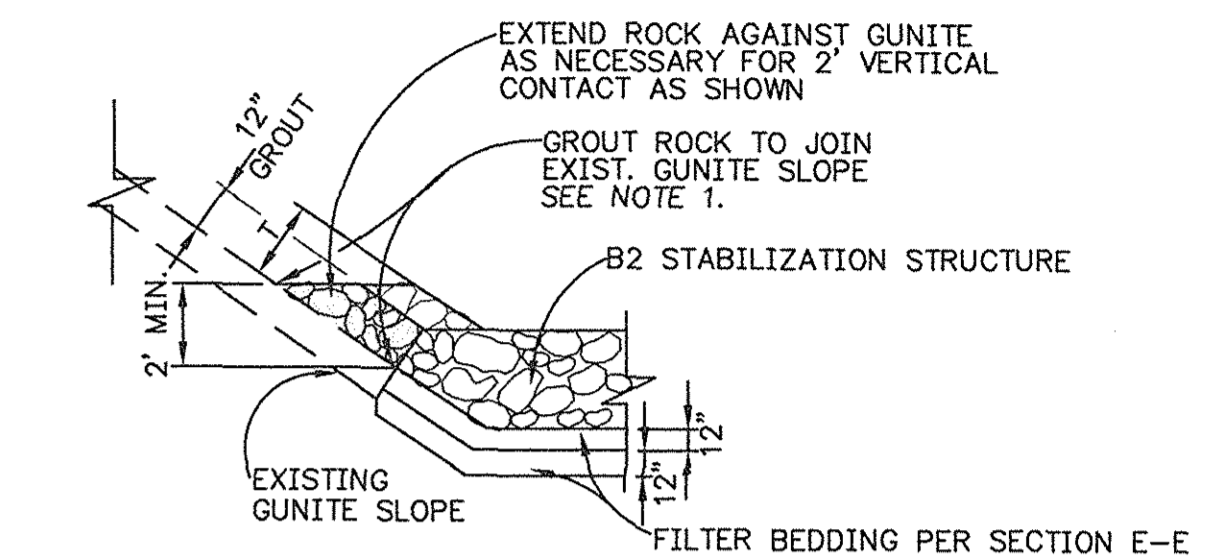
PARTICLE/SIEVE SIZE	FILTER LAYER NO.1	FILTER LAYER NO.2
6-INCH	100	85 TO 100
1-1/2 INCH	100	65 TO 95
3/8 INCH	100	40 TO 70
#4	95 TO 100	15 TO 50
#8	75 TO 90	5 TO 30
#16	55 TO 75	
#30	30 TO 50	
#50	10 TO 25	
#100	2 TO 10	
#200	0 TO 5	

ROCK RIPRAP TYPES/GRADATIONS

% LIGHTER BY WEIGHT	LIMITS OF STONE WEIGHT - LBS.					
	A	B	C	D	E	F
W100	10,800-4,320	7,873-3,149	1,797-719	691-276	463-185	169-67
W50	3,197-2160	2,330-1,575	532-359	205-138	137-93	50-34
W15	1,598-676	1,165-492	266-112	102-43	69-29	25-11
THICKNESS	5.00'	4.50'	3.50'	2.00'	2.00'	2.00'

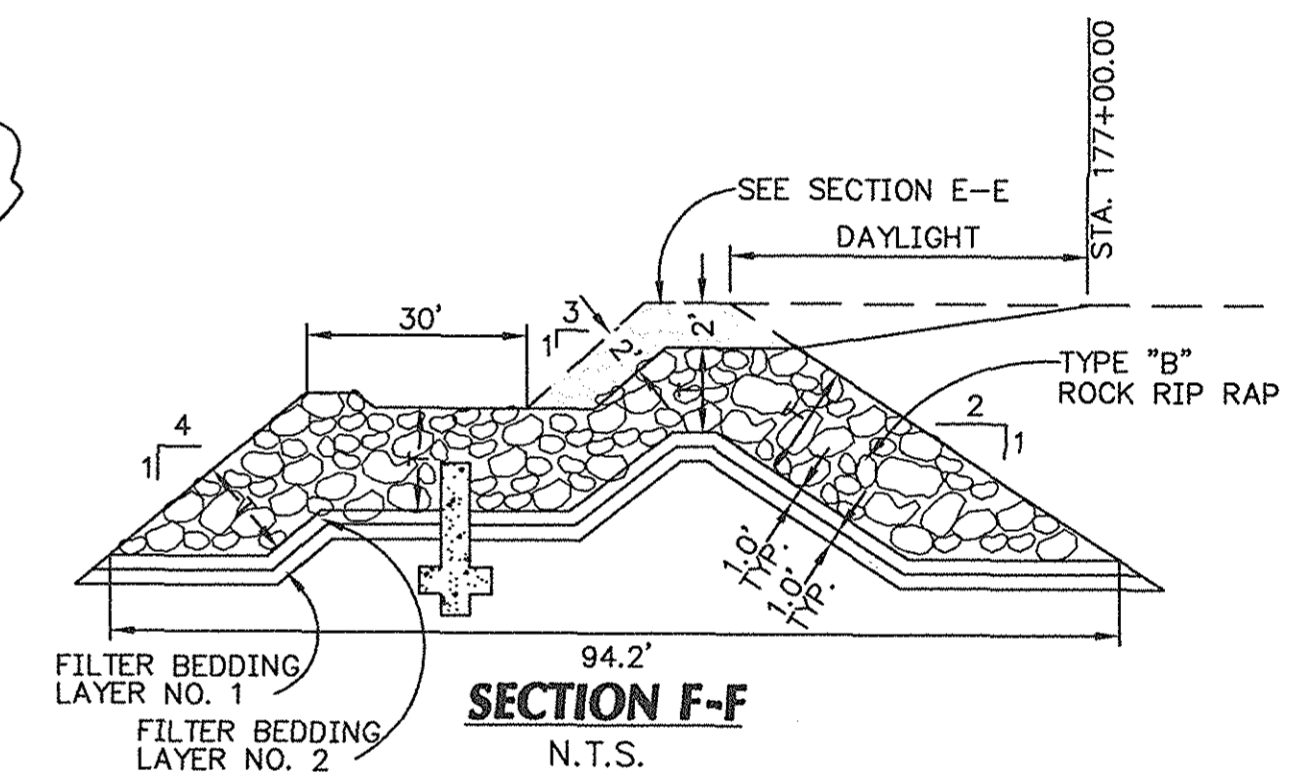


SECTION D-D
N.T.S.

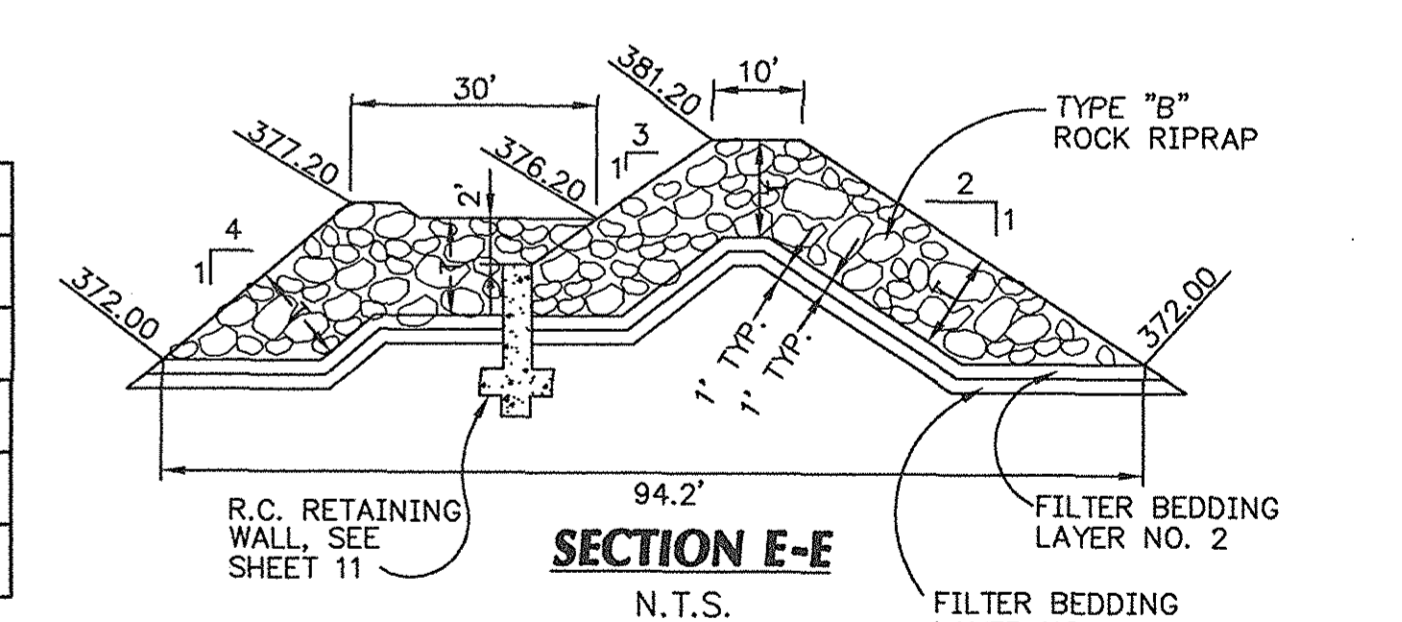


DETAIL A
N.T.S.

NOTE:
1. GROUT ROCK 12" MIN. THICKNESS WHERE ROCK SLOPE ADJOINS EXISTING GUNITE SLOPE.



SECTION F-F
N.T.S.



SECTION E-E
N.T.S.

RECORD DRAWING

ORANGE COUNTY
PUBLIC FACILITIES AND RESOURCES
DEPARTMENT

SERRANO CREEK
CREEK STABILIZATION
(BAKE PARKWAY TO TRABUCO ROAD)

DETAILS

DESIGNED: E.H.
DRAWN: E.H.
CHECKED: D.T.
SCALE: N.T.S.
DATE: 07-13-01
DRAWING NO.: F18-701-8
SHEET: 9 OF 13

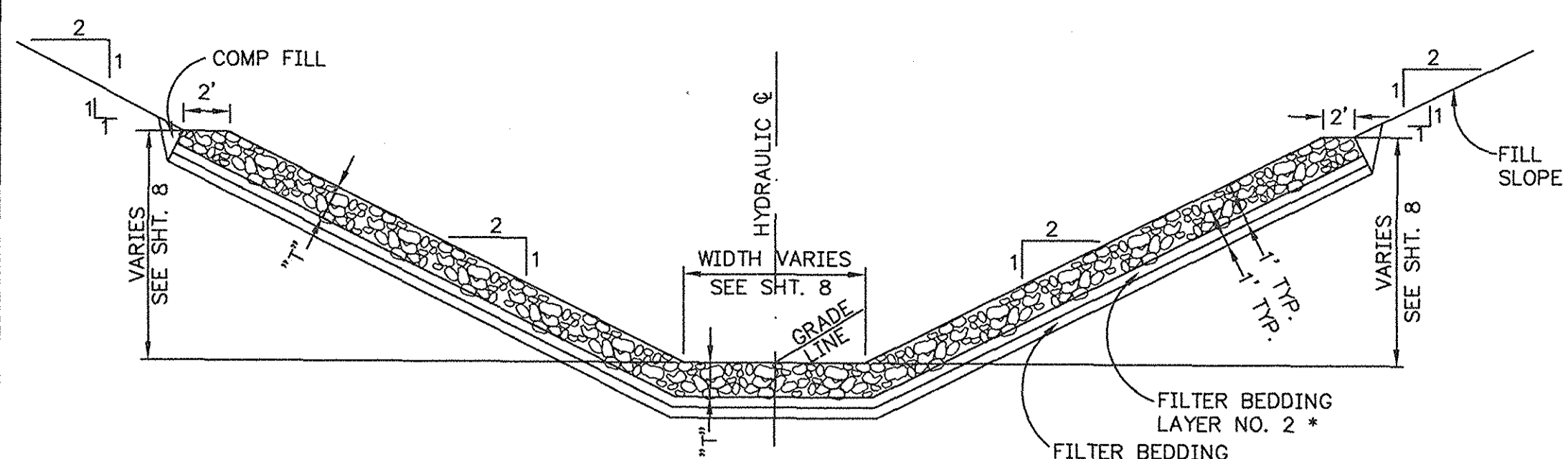
REVISIONS

MARK	DATE	DESCRIPTION
2/03		RECORD DRAWINGS
4/02/02		REVISED
2/15/02		REVISED

PREPARED UNDER RESPONSIBLE CHARGE OF:
PBSJ
8022 Cowan, Suite 100A
Irvine, Ca 92614
(949) 660-2400

DESIGNED BY: *Orlando May*
DATE: 07/13/01

PROFESSIONAL ENGINEER
No. 13151
Exp. 3-31-05
CIVIL
STATE OF CALIFORNIA



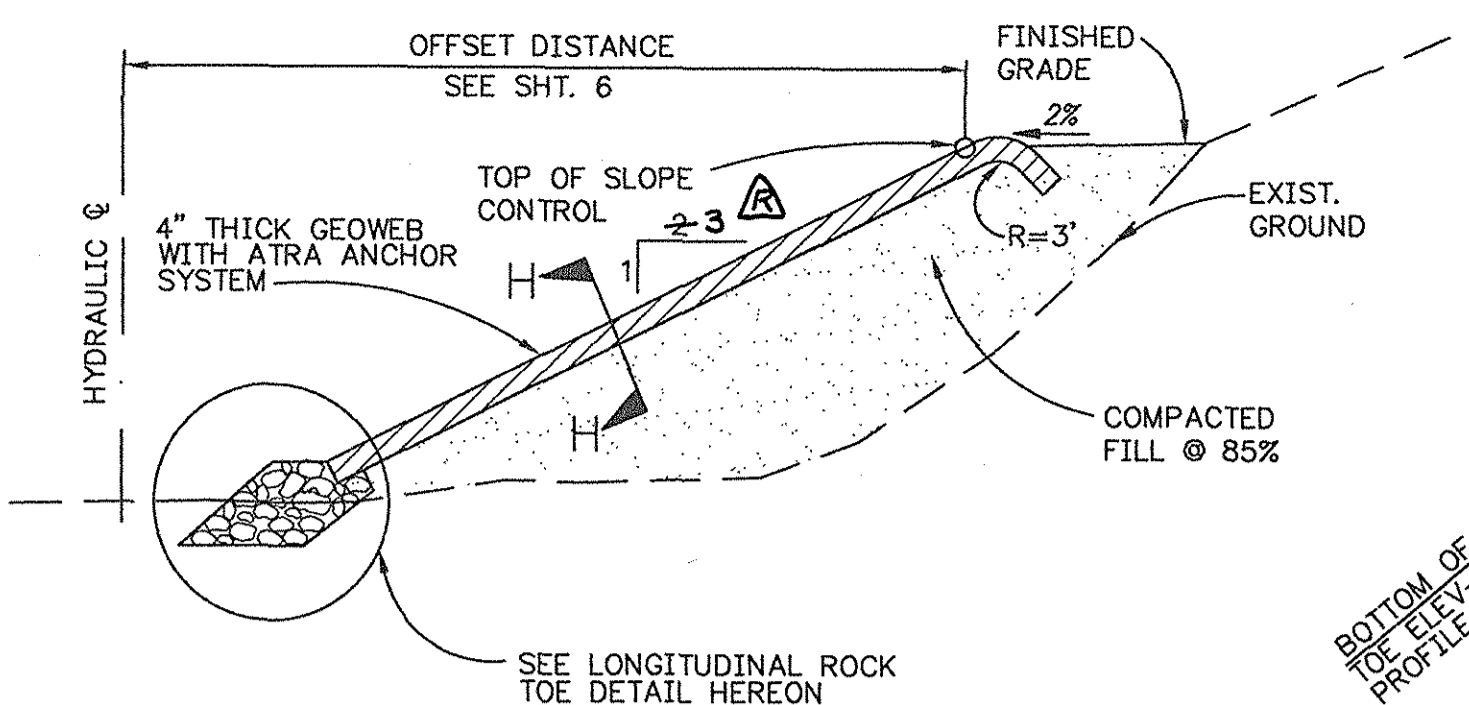
UNIT U1 RIPRAP CHANNEL
CROSS SECTION

N.T.S.

ROCK RIPRAP DATA

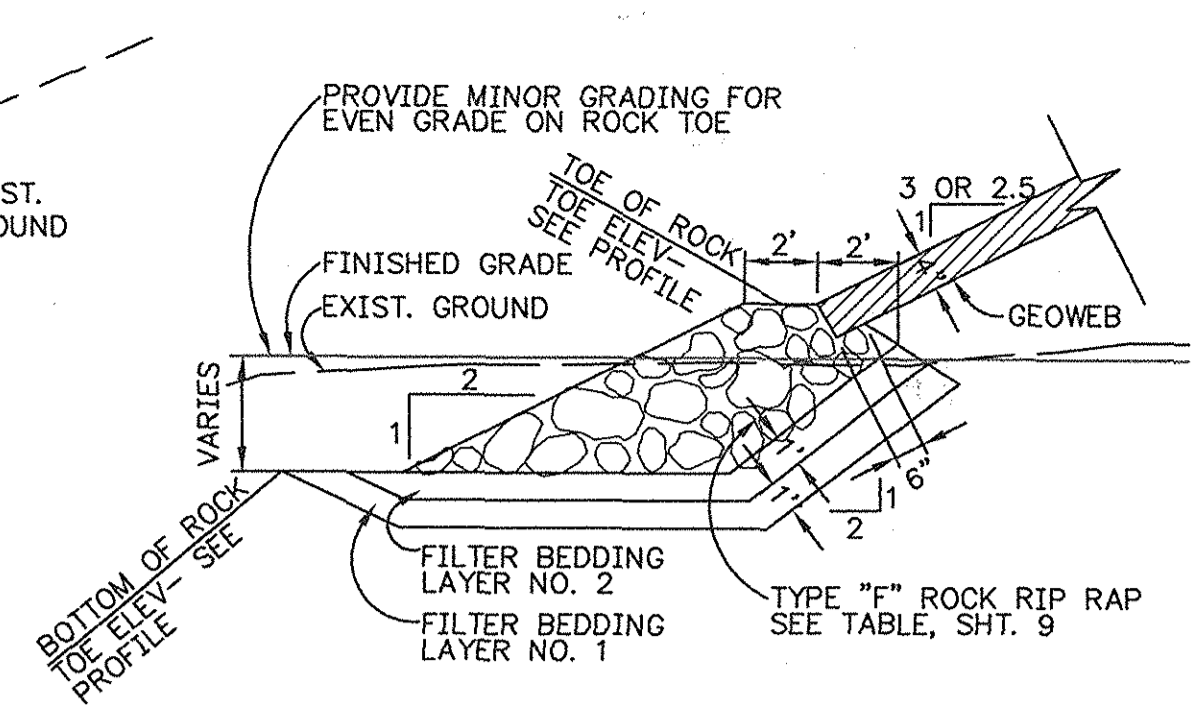
UNIT	STATION	ROCK TYPE	"T"
U1	199+65.00 TO 200+80.00	A	5.00'
U1	200+80.00 TO 202+90.00	C	3.50'

* SEE FILTER GRADATION TABLE, SHT. 9



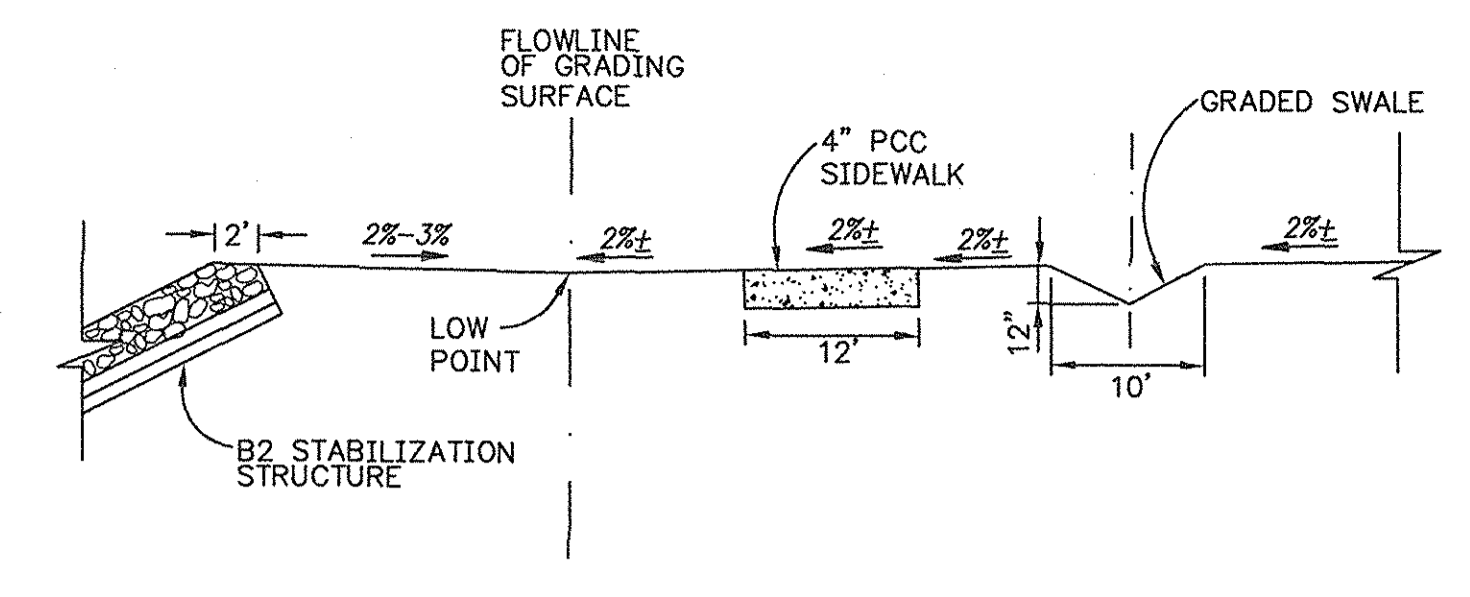
UNIT K & H GEOWEB & ROCK TOE
CROSS SECTION

N.T.S.



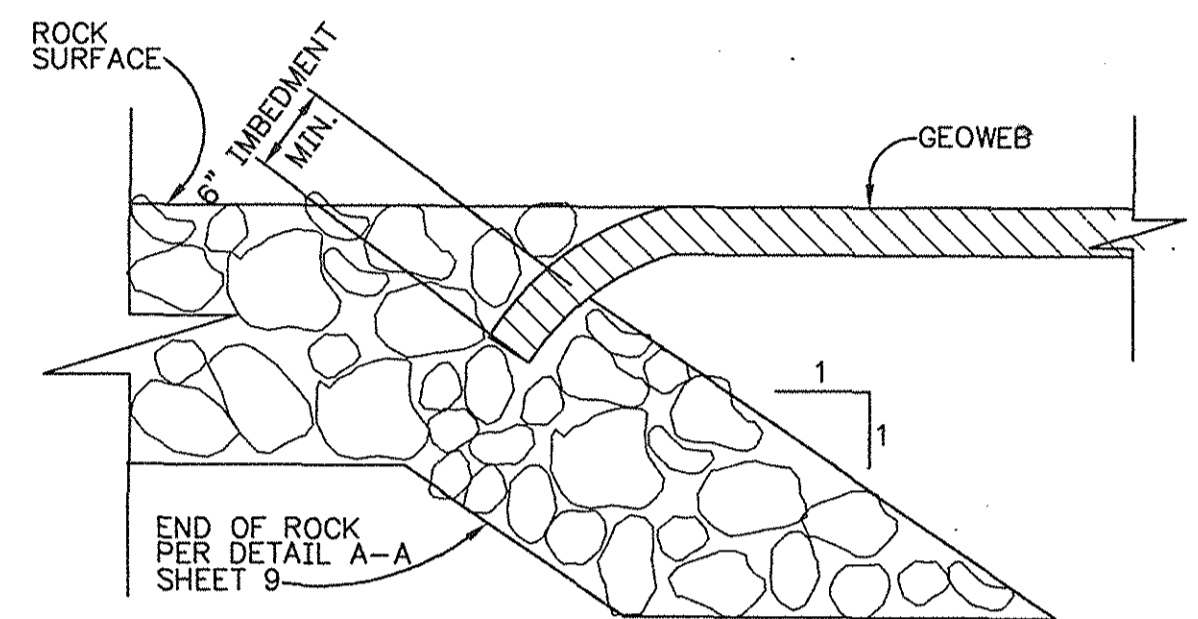
LONGITUDINAL ROCK TOE DETAIL

N.T.S.



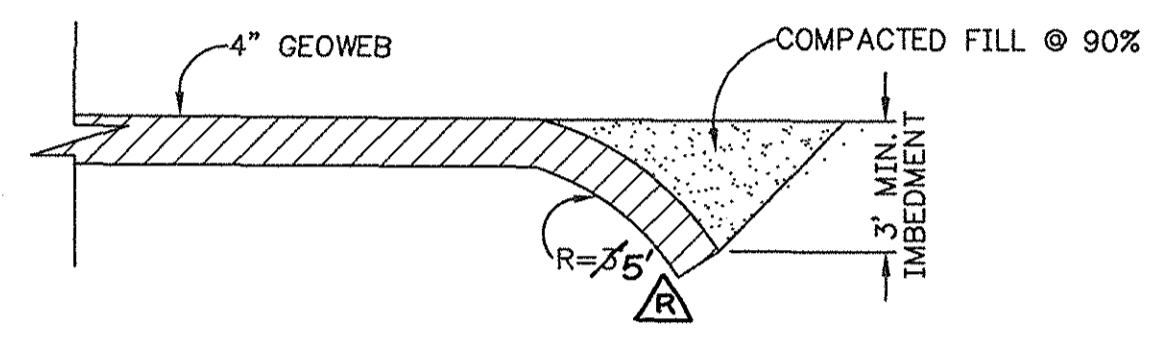
PARK GRADING DETAIL
SECTION I-I

N.T.S.



DETAIL GEOWEB JOINING ROCK SLOPE

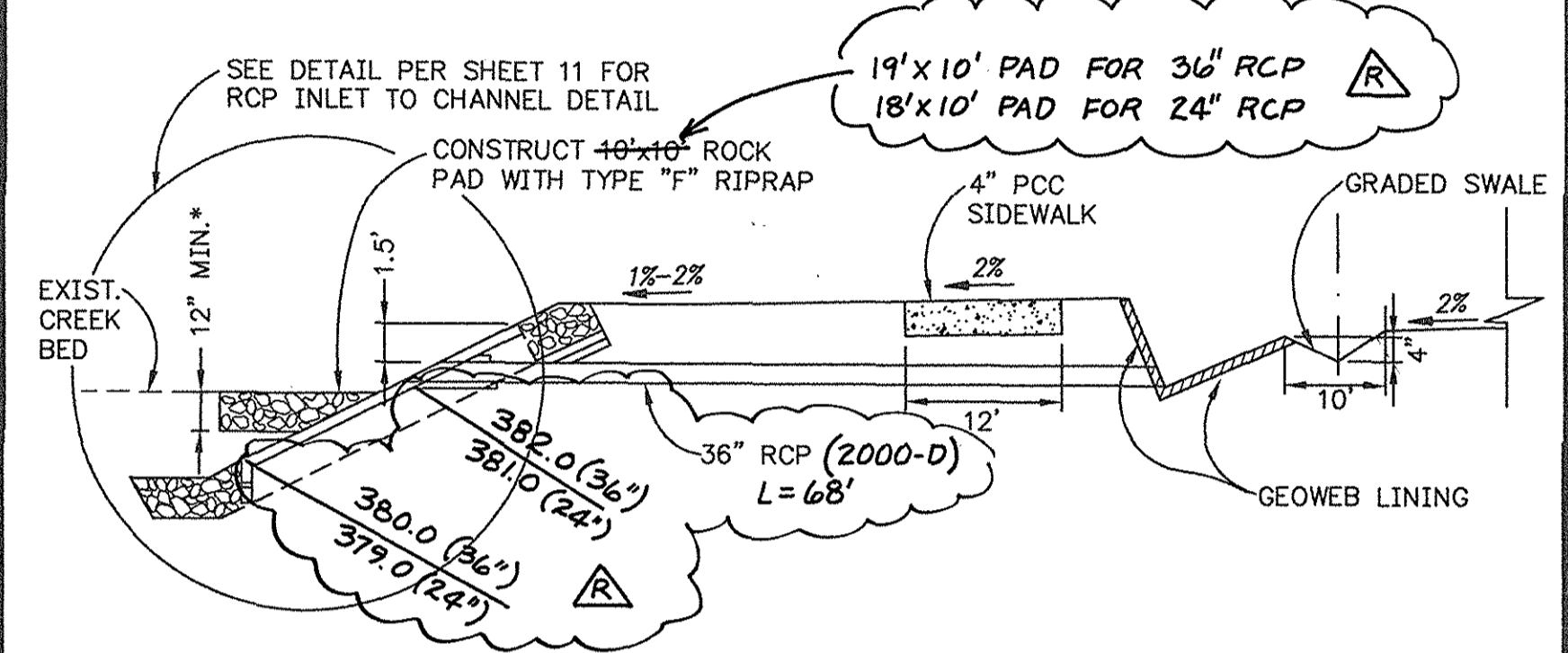
UNIT "H" - STA. 167+60
UNIT "K" - STA. 181+41.84
UNIT "K" - STA. 182+42+92
N.T.S.



END DETAIL SECTION H-H

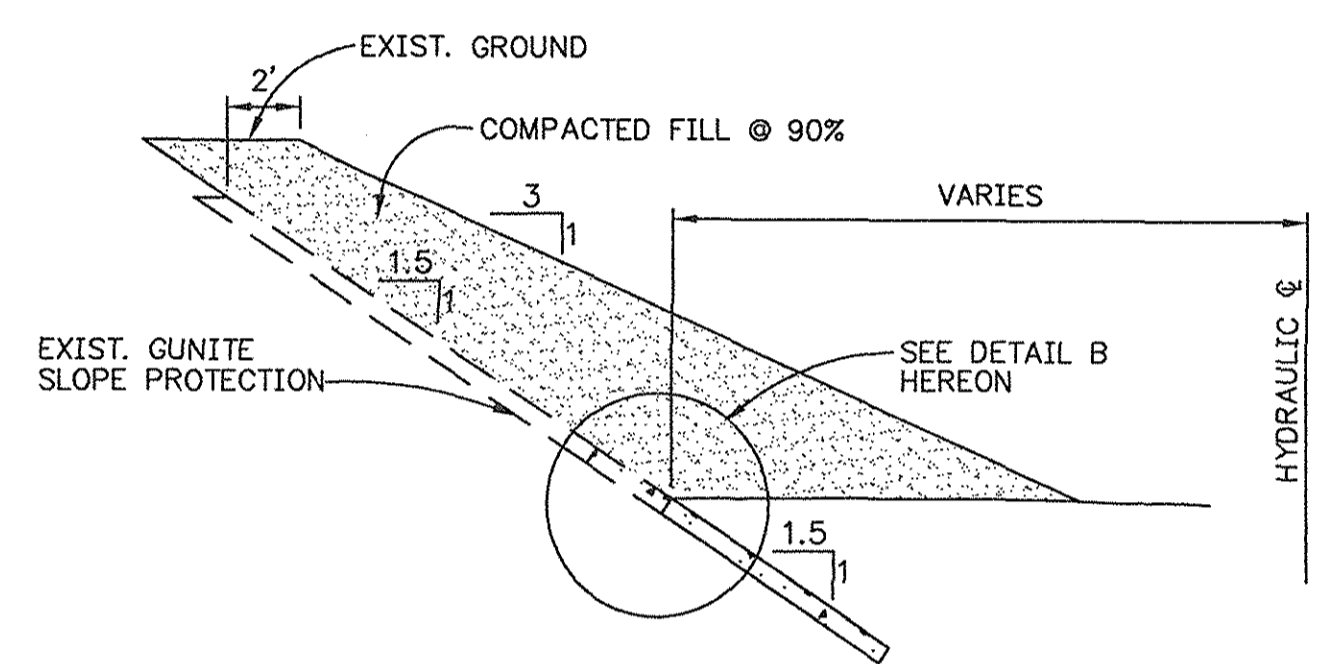
N.T.S.

GEOWEB NOTES:
1. INSTALL GEOWEB ON FINISHED EARTH SLOPE AND ANCHOR PER MANUFACTURER'S SPECS.
2. PLACE NATIVE SOIL IN GEOWEB GRID TO SURFACE AND HAND TAMP.



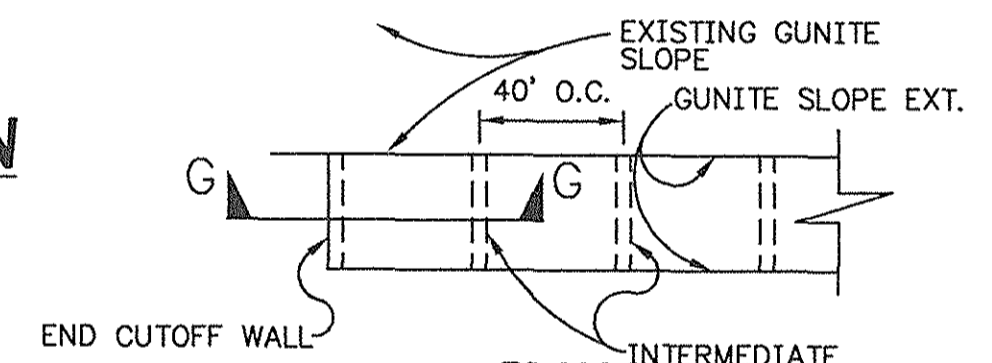
PARK GRADING DETAIL
SECTION I-J

N.T.S.



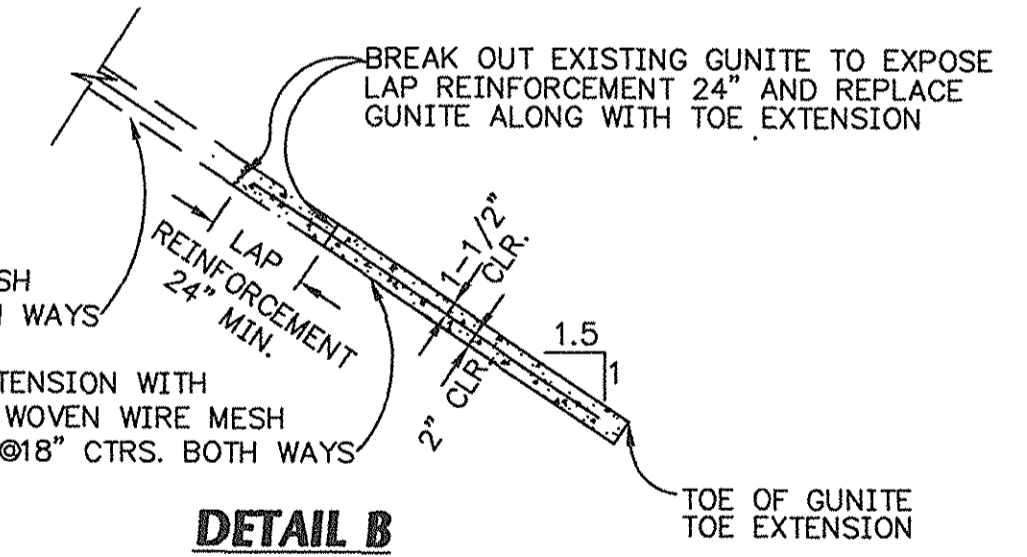
UNIT Q1 GUNITE TOE EXTENSION
CROSS SECTION

N.T.S.



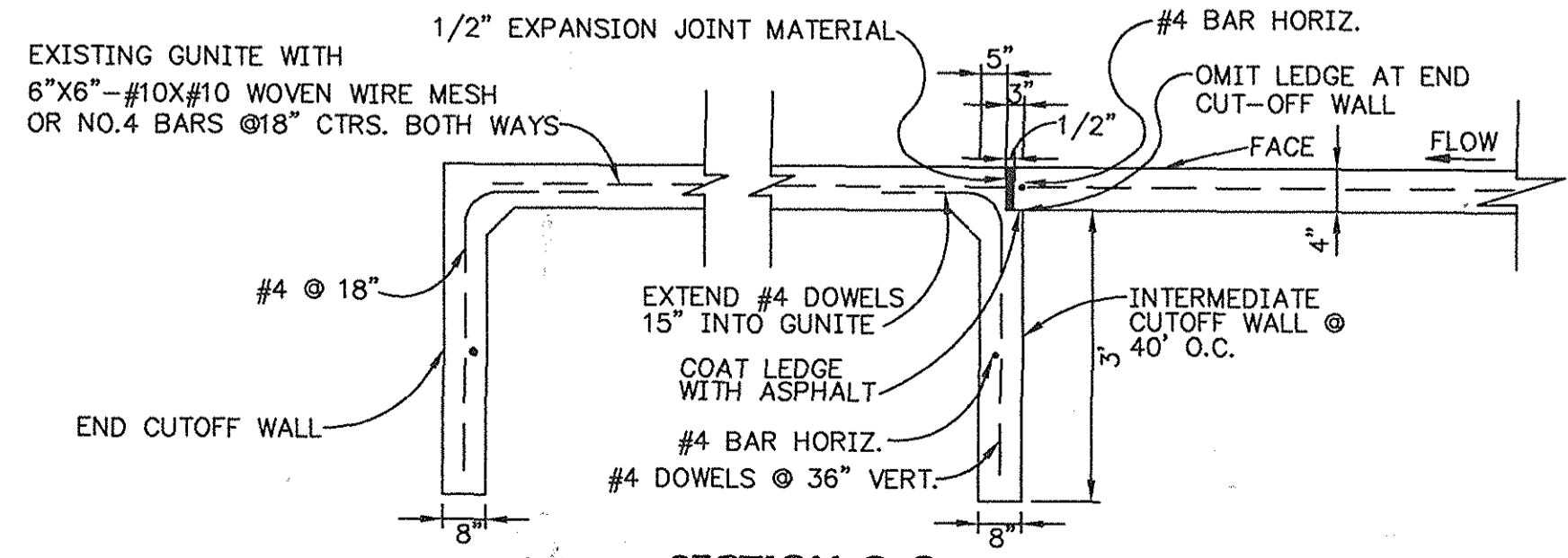
PLAN

N.T.S.



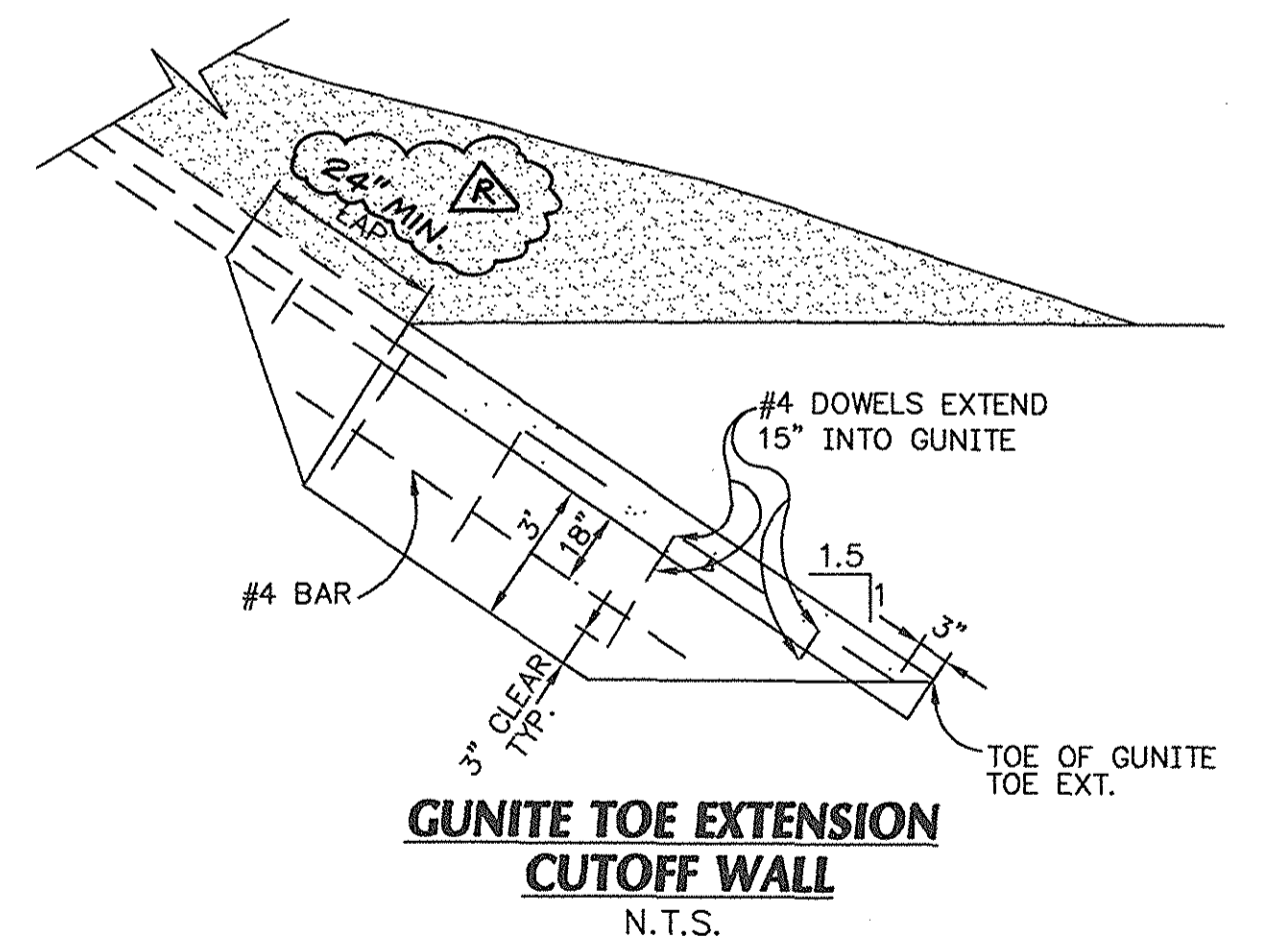
DETAIL B

N.T.S.



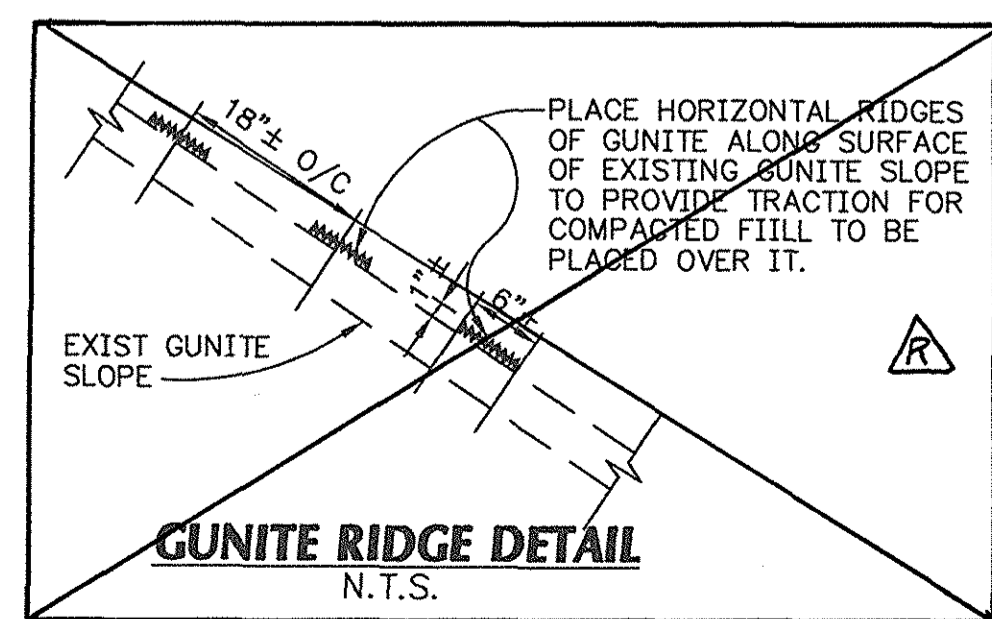
SECTION G-G

N.T.S.



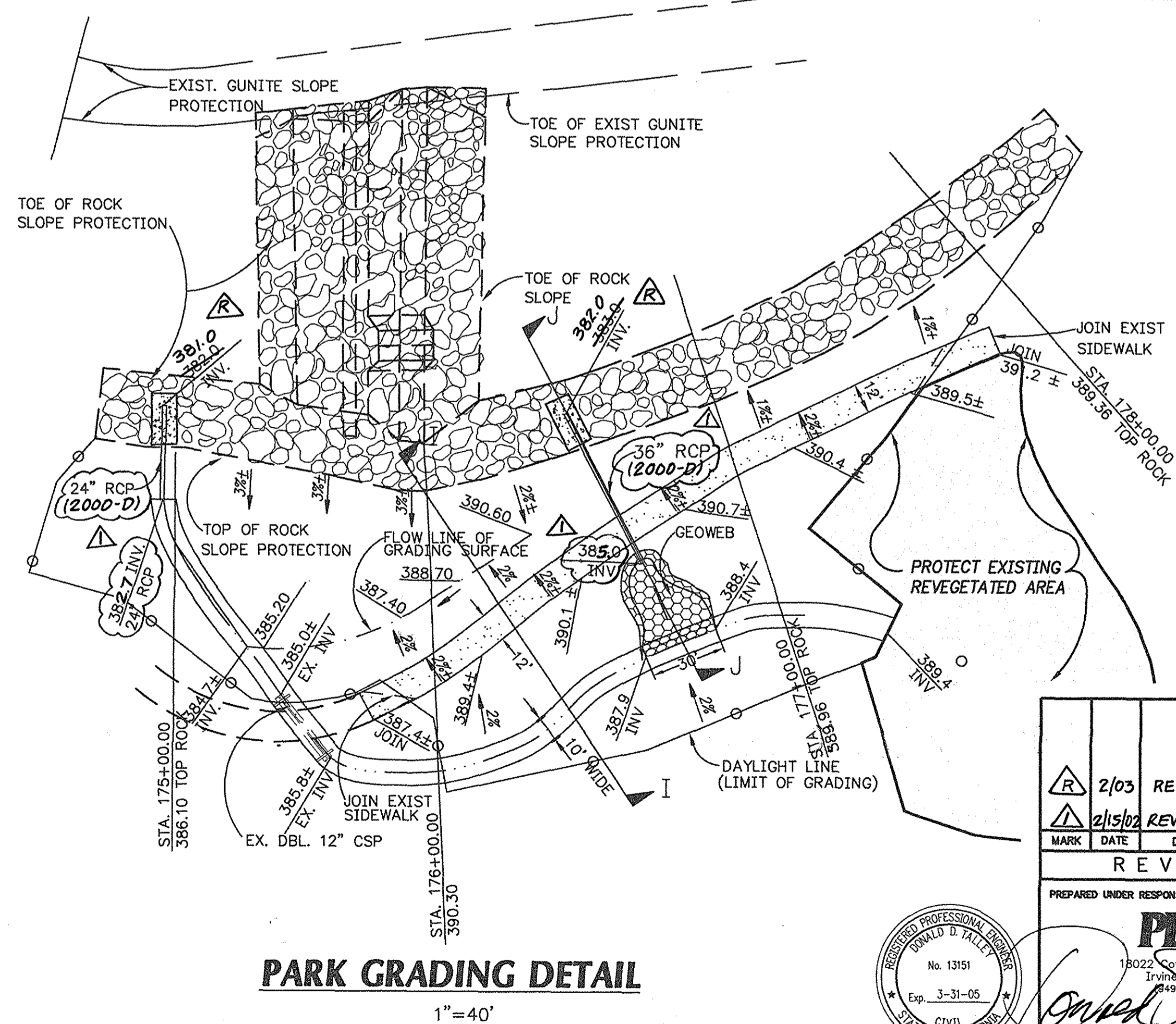
GUNITE TOE EXTENSION CUTOFF WALL

N.T.S.



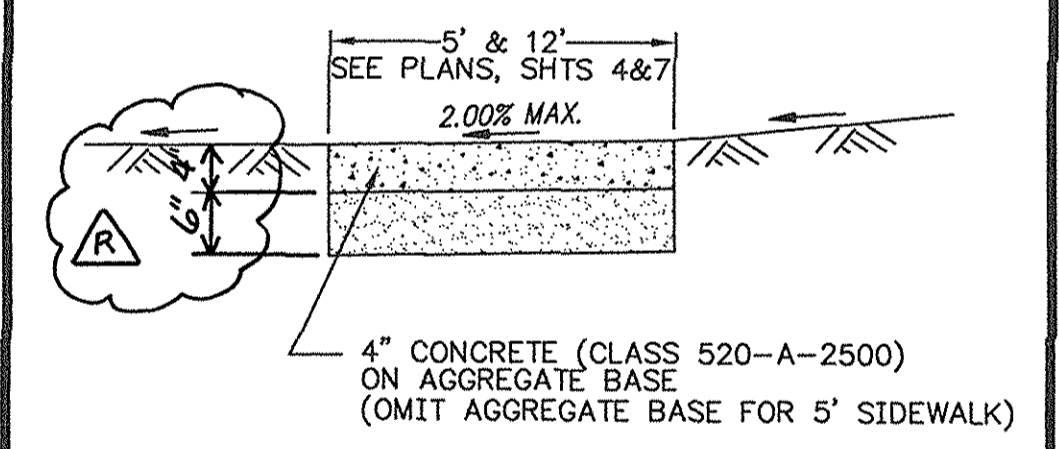
GUNITE RIDGE DETAIL

N.T.S.



PARK GRADING DETAIL

1"=40'



TYPICAL SIDEWALK

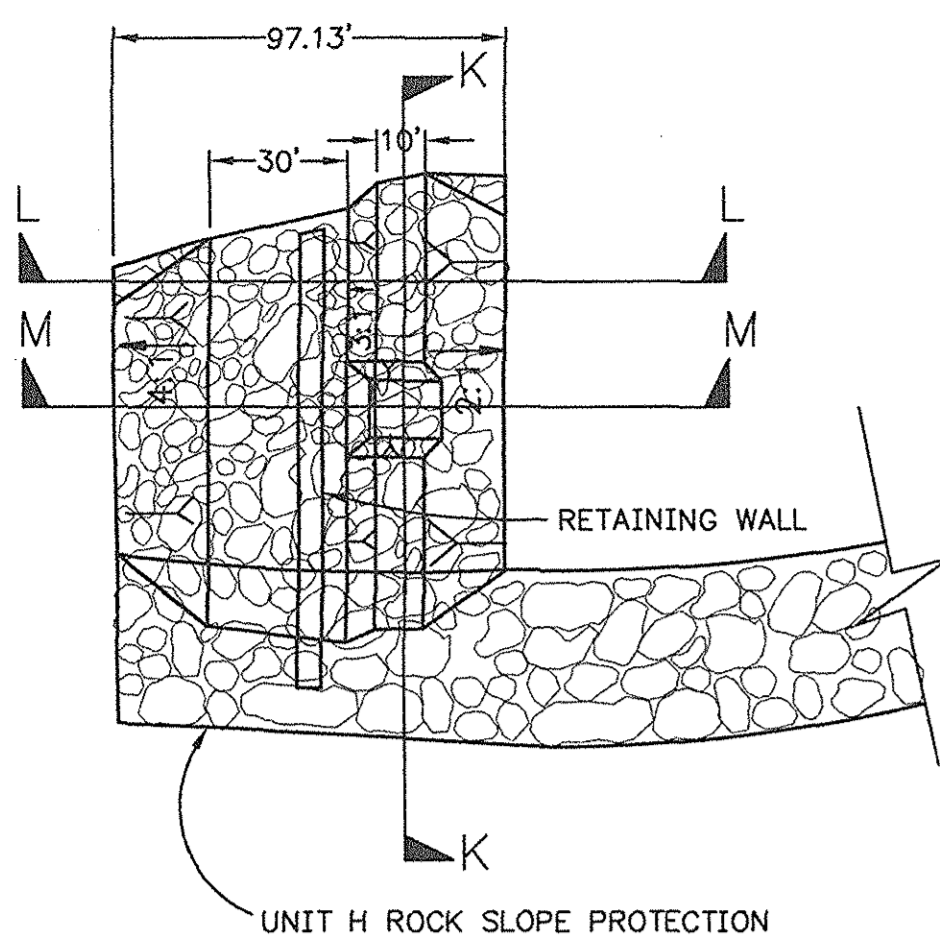
N.T.S.

NOTE:
1. CONSTRUCTION JOINTS SHALL BE PROVIDED IN SIDEWALKS. 1" MINIMUM DEPTH. AT 10' INTERVALS JOINTS SHALL BE EDGE FINISHED (R=1/8")

RECORD DRAWING

ORANGE COUNTY PUBLIC FACILITIES AND RESOURCES DEPARTMENT	
SERRANO CREEK CREEK STABILIZATION (BAKE PARKWAY TO TRABUCO ROAD)	
DETAILS	
DESIGNED E.H.	SHEET
DRAWN E.H.	10
SCALE N.T.S.	DATE 07-13-01
DATE 07-13-01	DRAWING NO. F19-701-6
DATE	OF 13

2/03 RECORD DRAWINGS
2/15/02 REVISED
REVISIONS
PREPARED UNDER RESPONSIBLE CHARGE OF:
PBSJ
18022 Cowan Suite 100A
Irvine, CA 92614
Exp. 3-31-05
CIVIL
STATE OF CALIFORNIA
DATE

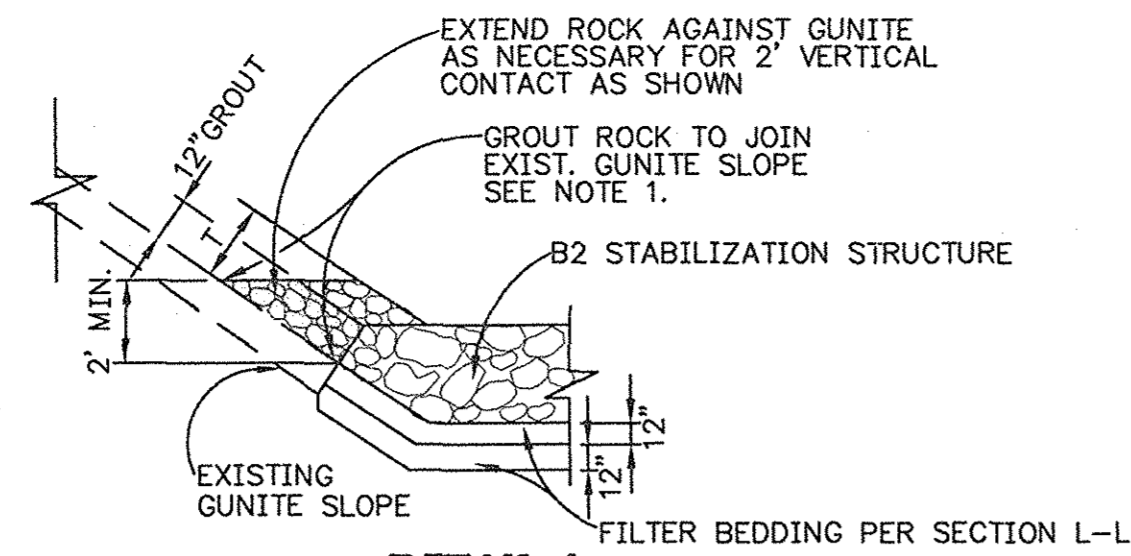


UNIT A STABILIZATION STRUCTURE

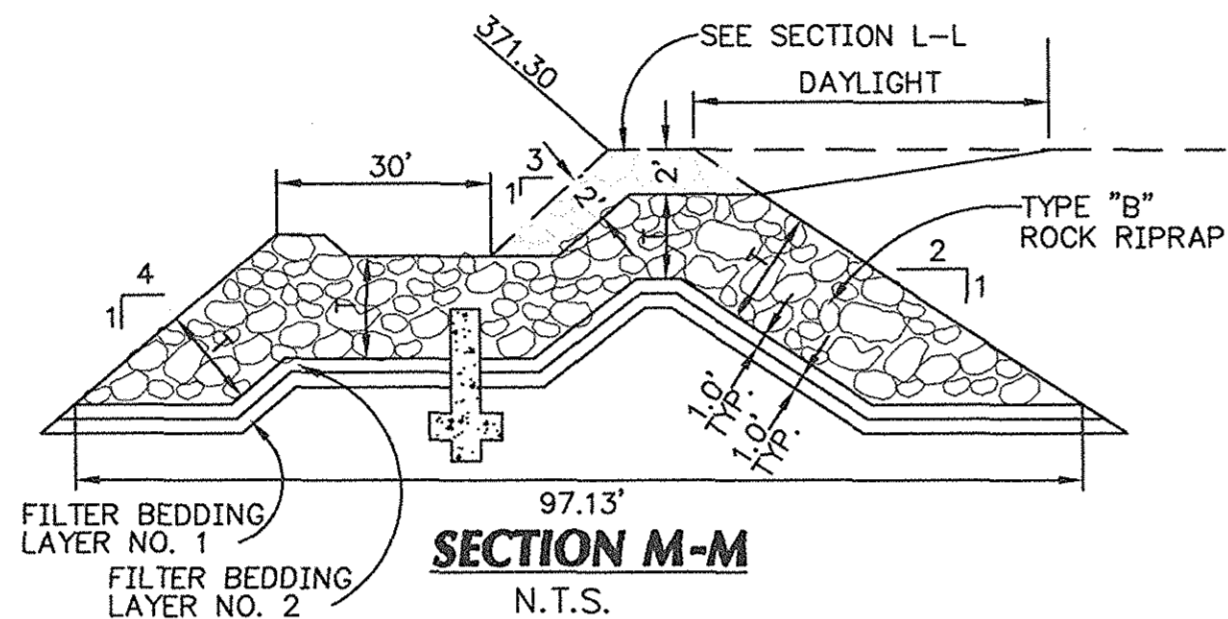
PLAN
N.T.S.

ROCK RIP RAP DATA

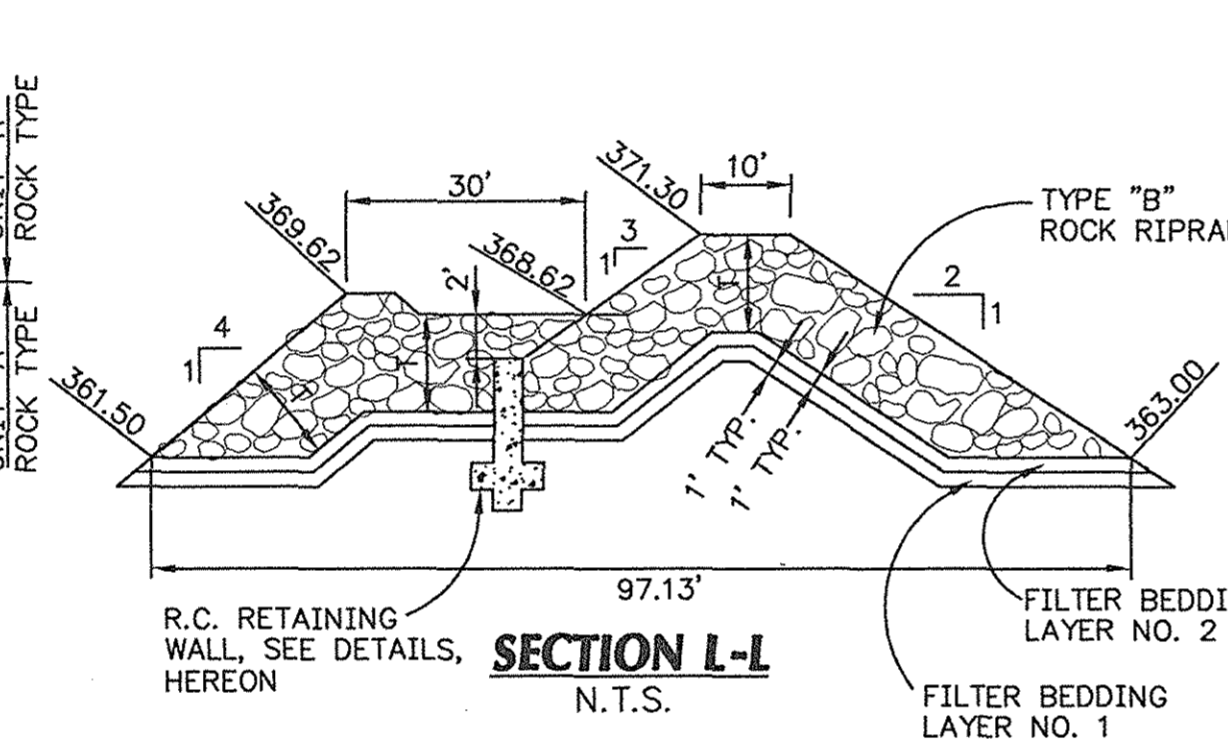
UNIT	STATION	ROCK TYPE	"T"
A	164+11.52 TO 165+08.65	B	4.50'



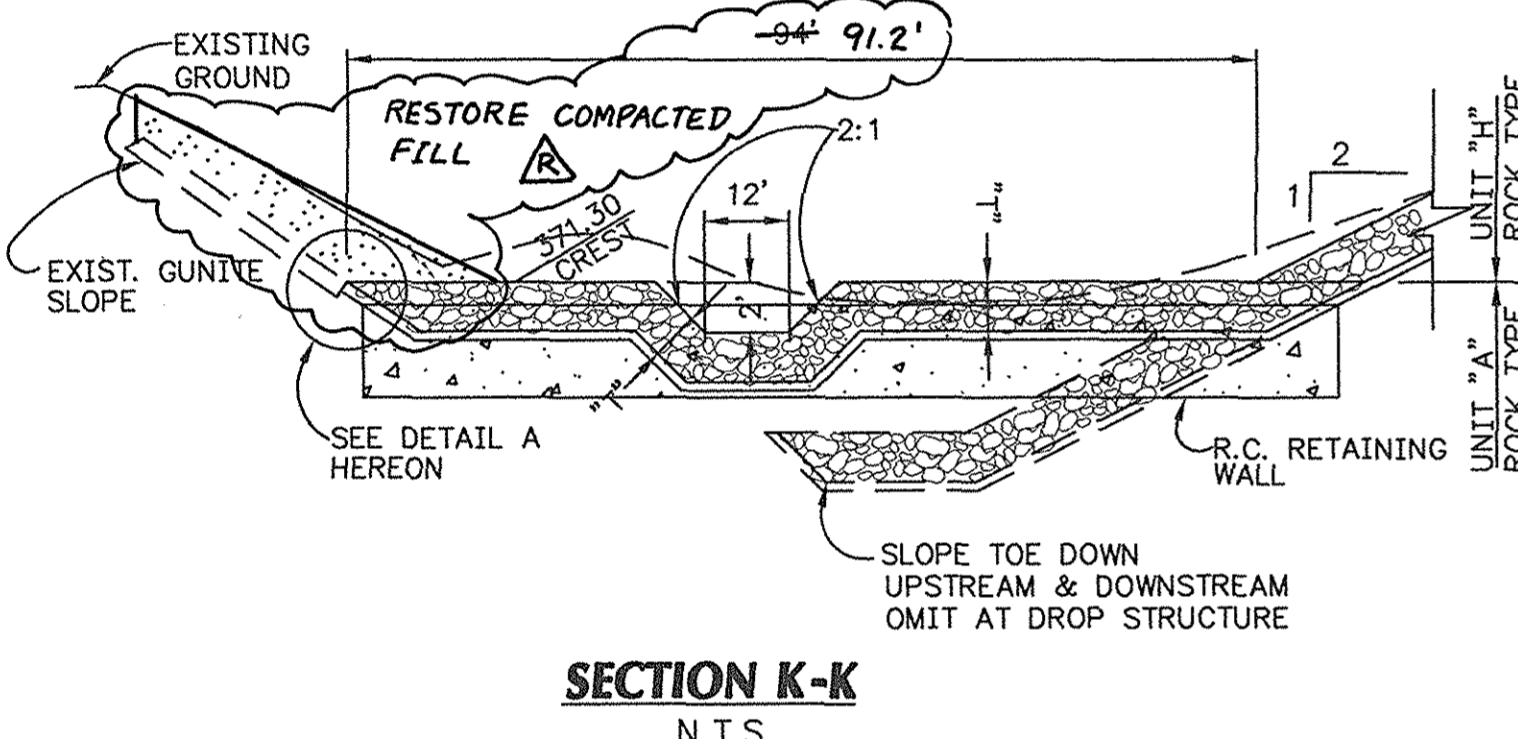
DETAIL A
N.T.S.
NOTE:
1. GROUT ROCK 12" MIN. THICKNESS WHERE ROCK SLOPE ADJOINS EXISTING GUNITE SLOPE.



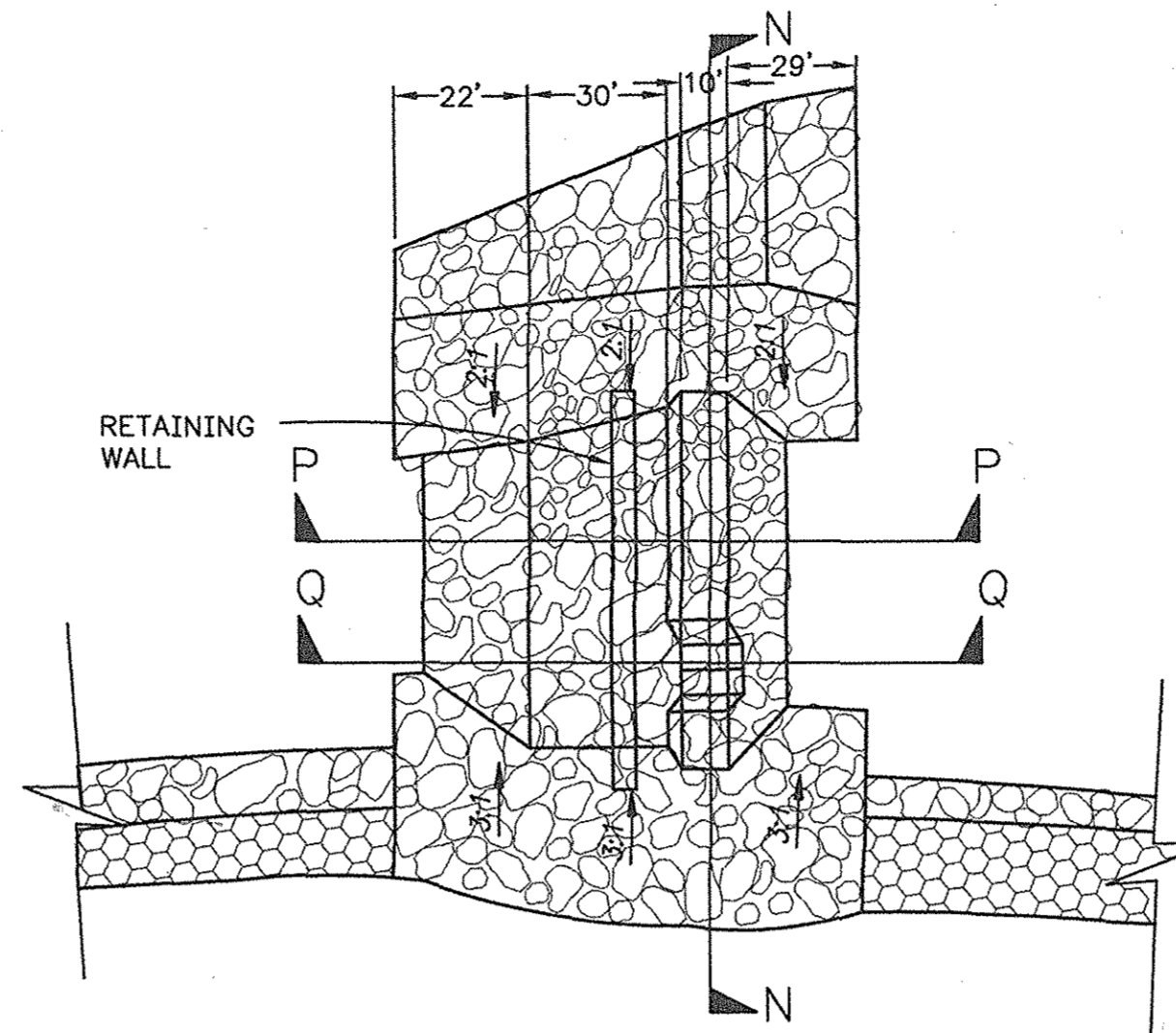
SECTION M-M
N.T.S.



SECTION L-L
N.T.S.



SECTION K-K
N.T.S.

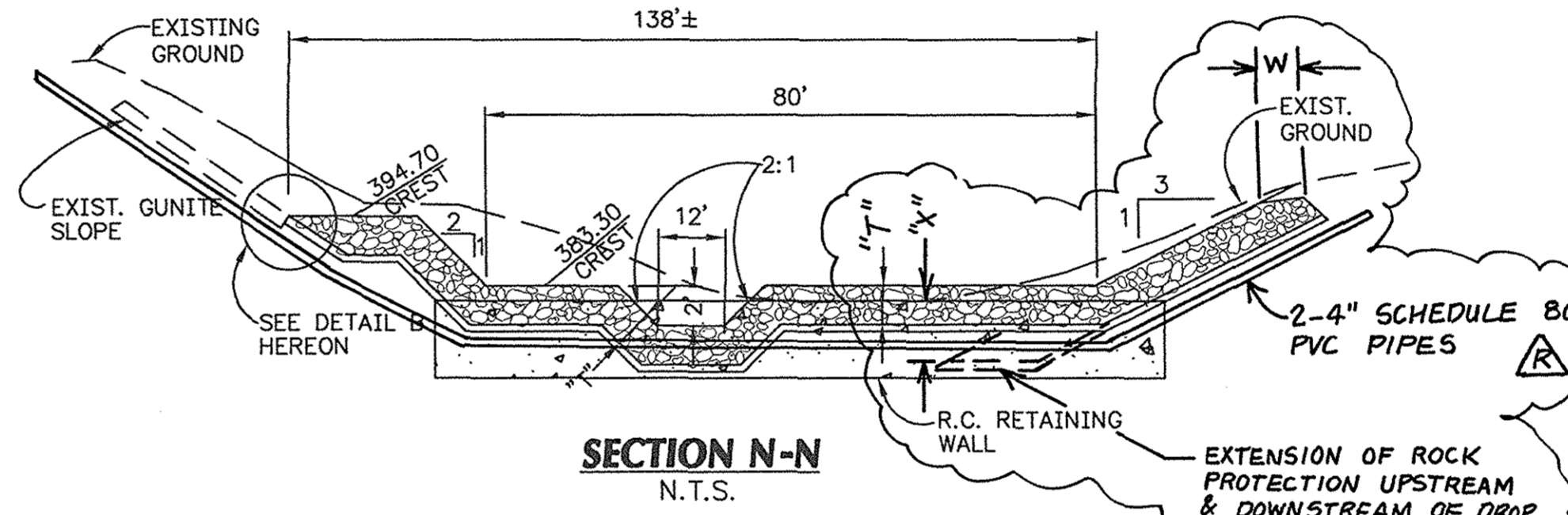


UNIT C STABILIZATION STRUCTURE

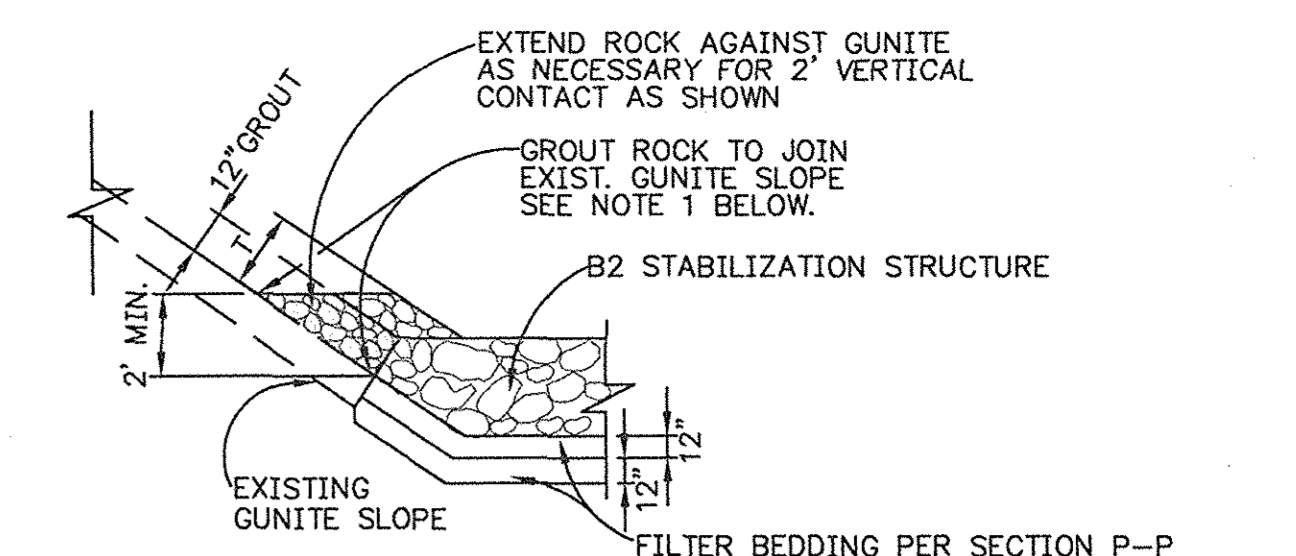
PLAN
N.T.S.

ROCK RIP RAP DATA

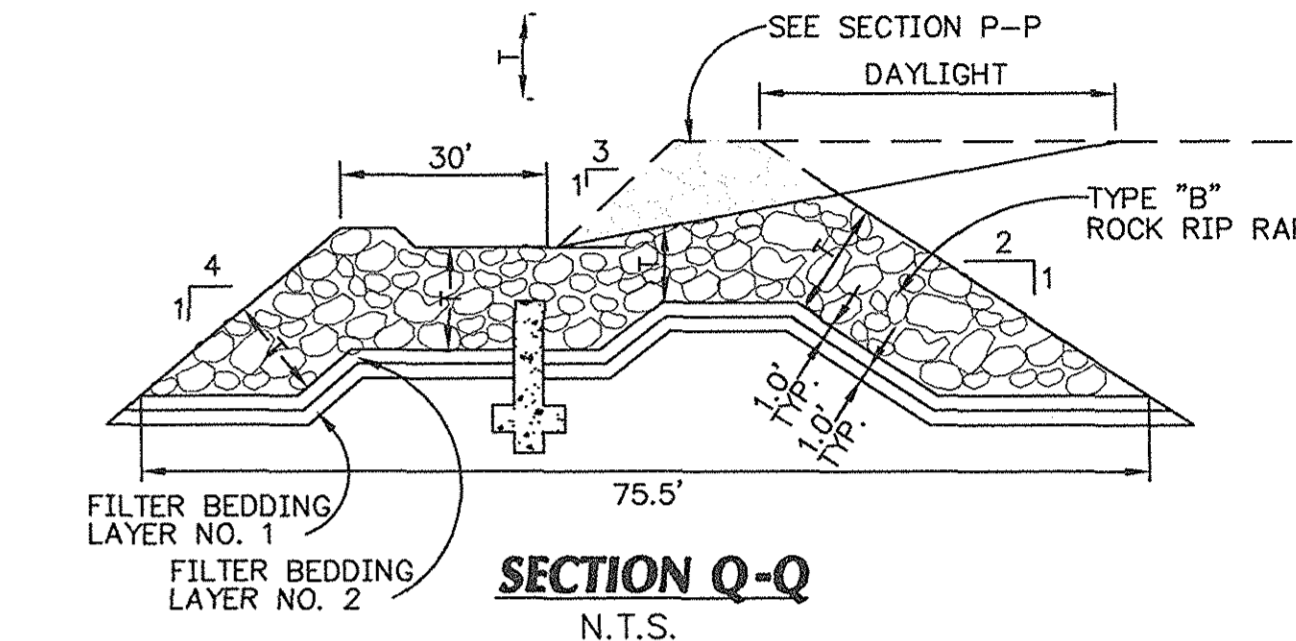
UNIT	STATION	ROCK TYPE	"T"	"W"	"X"
C	181+41.84 TO 182+42.94	B	4.50'	4.0'	5.5'



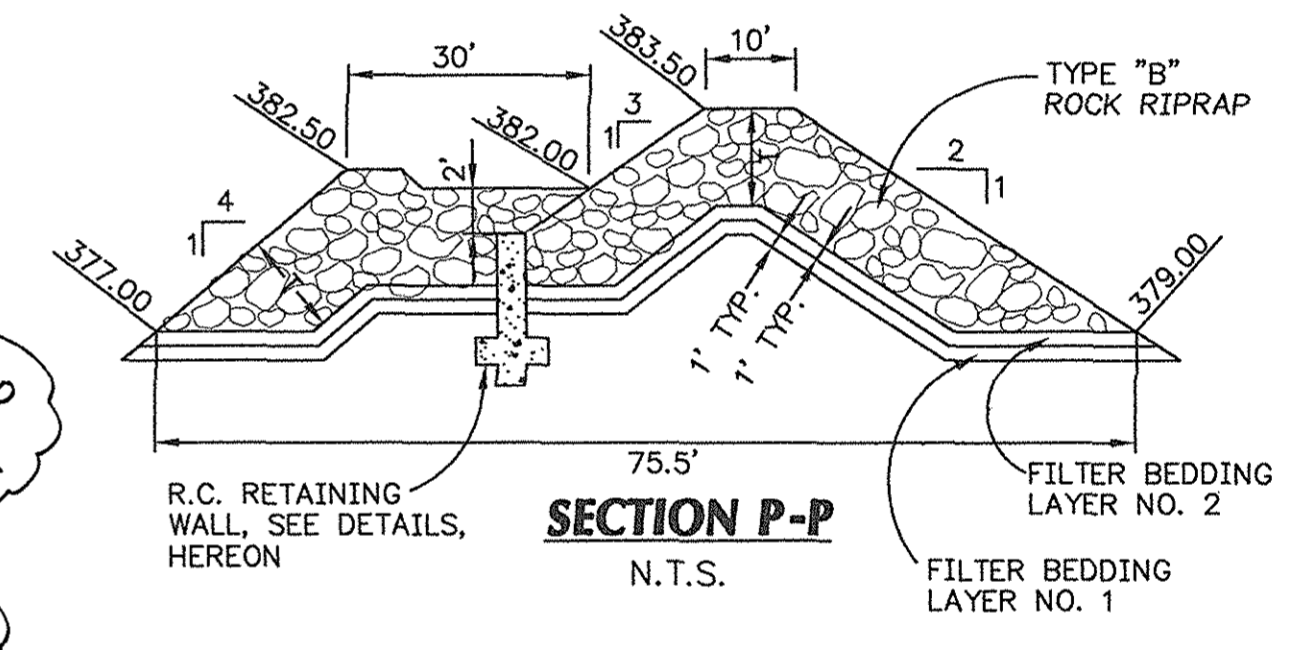
SECTION N-N
N.T.S.



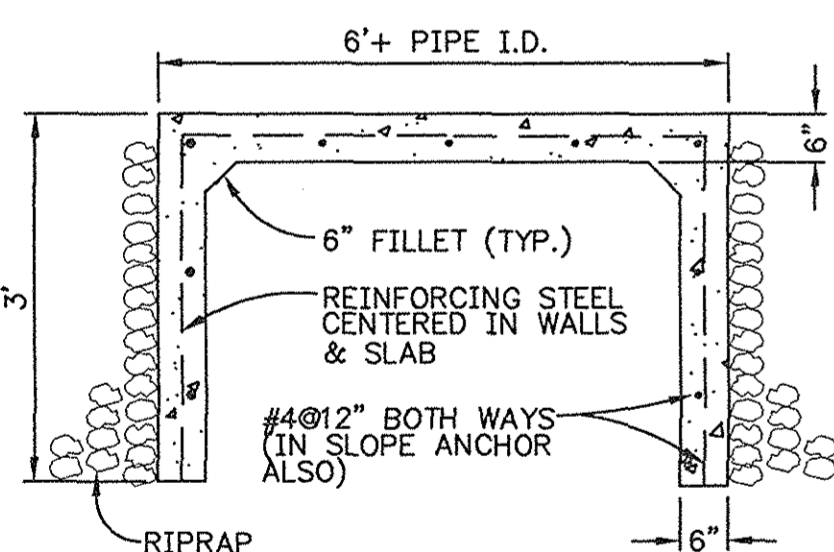
DETAIL B
N.T.S.
NOTE:
1. GROUT ROCK 12" MIN. THICKNESS WHERE ROCK SLOPE ADJOINS EXISTING GUNITE SLOPE.



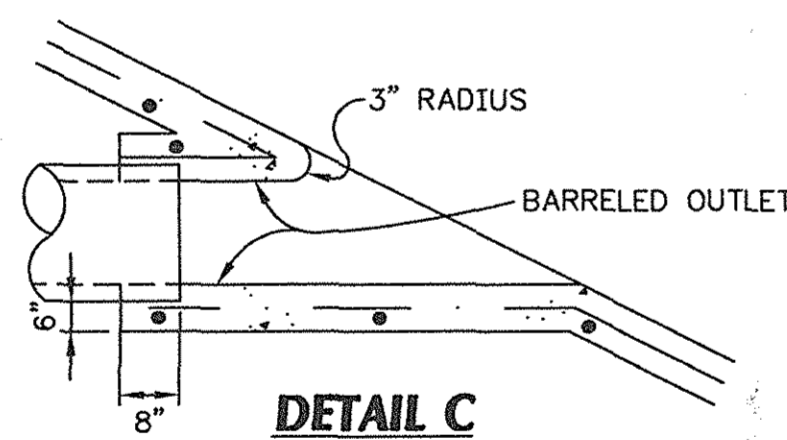
SECTION Q-Q
N.T.S.



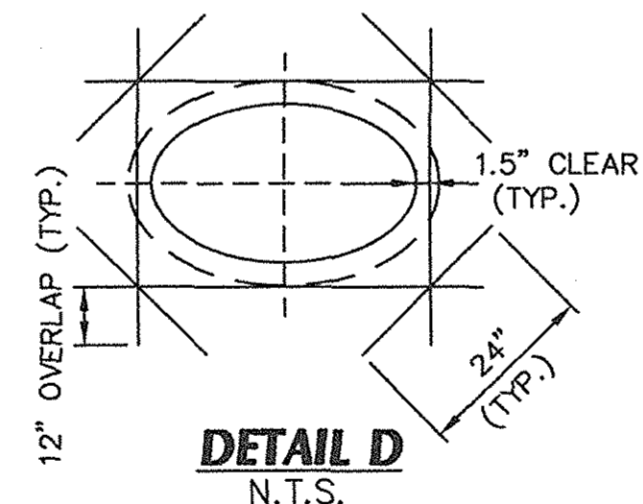
SECTION P-P
N.T.S.



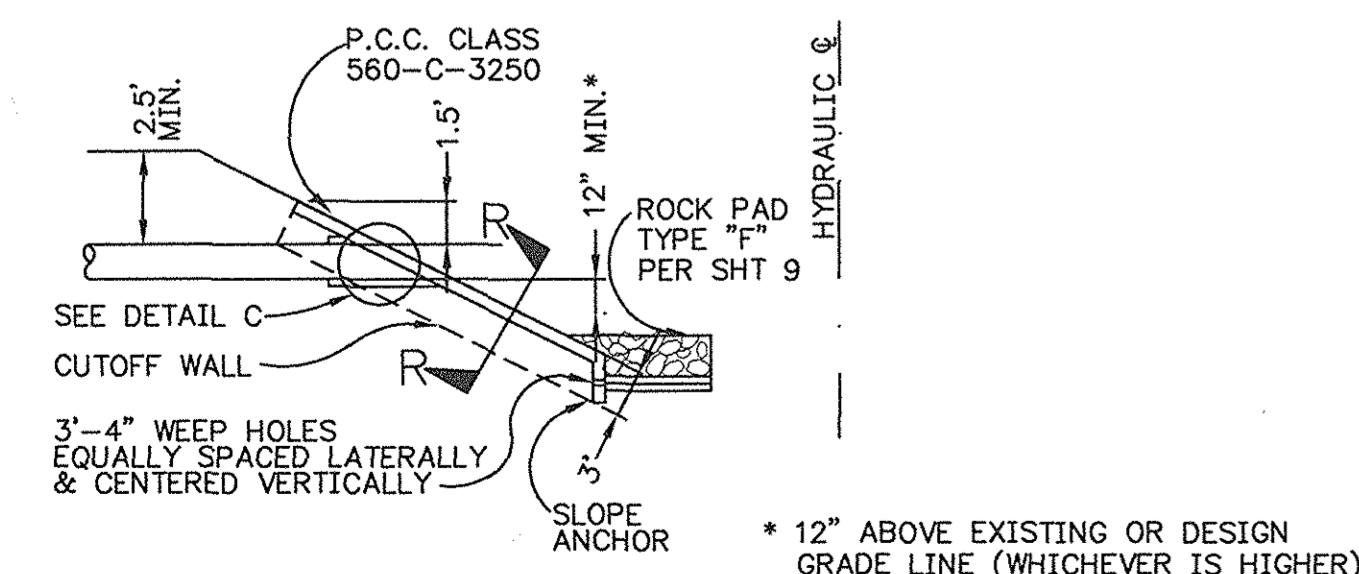
SECTION R-R
N.T.S.



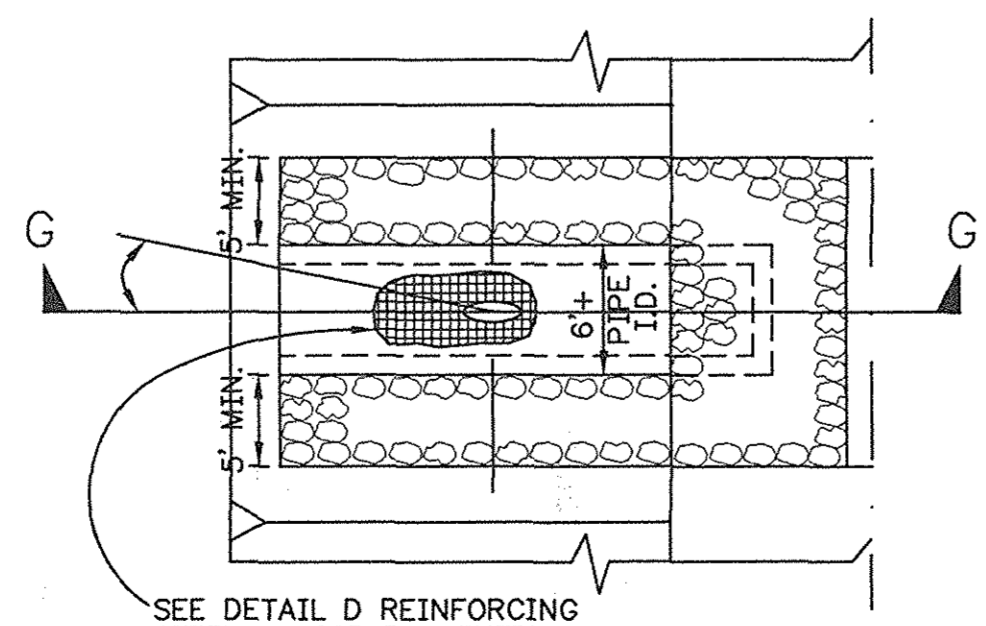
DETAIL C
N.T.S.



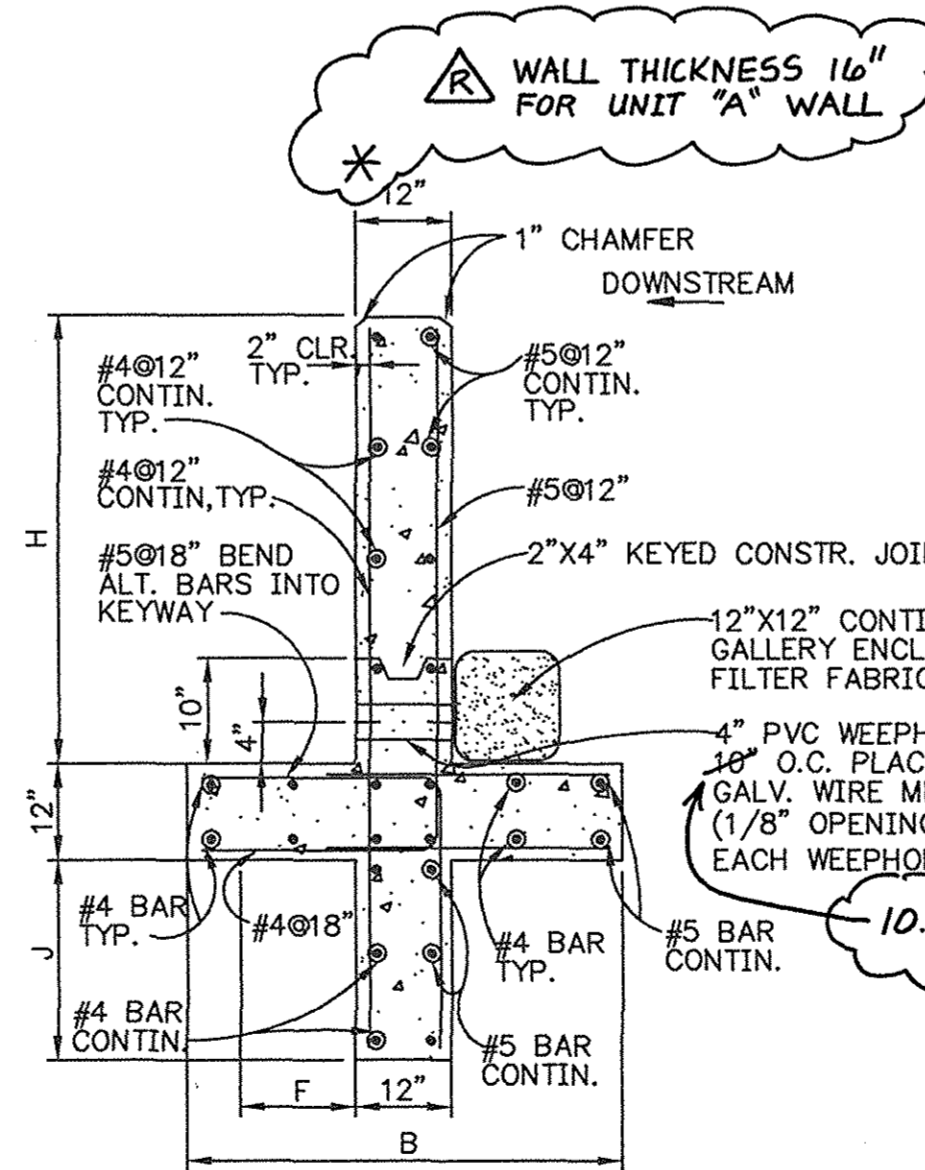
DETAIL D
N.T.S.



RCP INLET TO CHANNEL DETAIL
SECTION G-G
N.T.S.



PLAN VIEW
N.T.S.



TYPICAL SECTION RETAINING WALL
PLAN
N.T.S.

R.C. RETAINING WALL DESIGN DATA

LOADS:	HYDROSTATIC PRESSURE	62.5 PCF
WEIGHTS:	CONCRETE	150 PCF
	RIPRAP	112 PCF
	EARTH	120 PCF
	WATER	62.5 PCF
ALLOWING STRESSES:	(WORKING STRESS METHOD)	
	F _c	3,250 PSI
	F _c	1,350 PSI
SHEAR	F _v	60 PSI
	k	248
	j	0.857
STEEL	F _s	24,000 PSI

R.C. RETAINING WALL NOTES:

- CLEAR DIMENSION FROM FACE OF CONCRETE TO STEEL SHALL BE 2" UNLESS OTHERWISE SHOWN.
- TRANSVERSE CONSTRUCTION JOINTS SHALL BE 2' MINIMUM FROM WEEPHOLES. LONGITUDINAL REINFORCEMENT SHALL EXTEND THROUGH JOINTS.
- STEEL SHALL BE LAPPED 45 BAR DIAMETERS AT SPLICES.
- TRANSVERSE CONSTRUCTION JOINT SHALL BE SPACED AT NOT GREATER THAN 20' ON CENTERS.
- USE TYPE V CEMENT FOR CONCRETE.

R.C. RETAINING WALL DATA

UNIT	SECTION DATA				*OFFSET	WALL LENGTH	QUANTITIES		
	H	B	F	J			CONCRETE CY/LF	STEEL LBS/LF	
A	4'	4'	1.5'	3'	53.72'	38'	110.912'	0.333 0.407	23.5 37.6
B2	3'	4'	1.5'	1'	79.39'	45.28'	137.1245'	0.296	21.1
C	3'	4'	1.5'	1'	58'	40'	98'	0.296	21.1
U1	5'	5'	2'	5'	34'	34'	68'	-0.407 0.556	26.8 51.2

* DISTANCE FROM HYDRAULIC @ TO END OF WALL.

RECORD DRAWING

DETAIL
N.T.S.



ORANGE COUNTY
PUBLIC FACILITIES AND RESOURCES
DEPARTMENT

**SERRANO CREEK
CREEK STABILIZATION
(BAKE PARKWAY TO TRABUCO ROAD)**




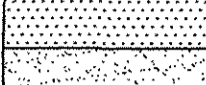
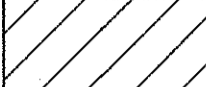

DETAILS

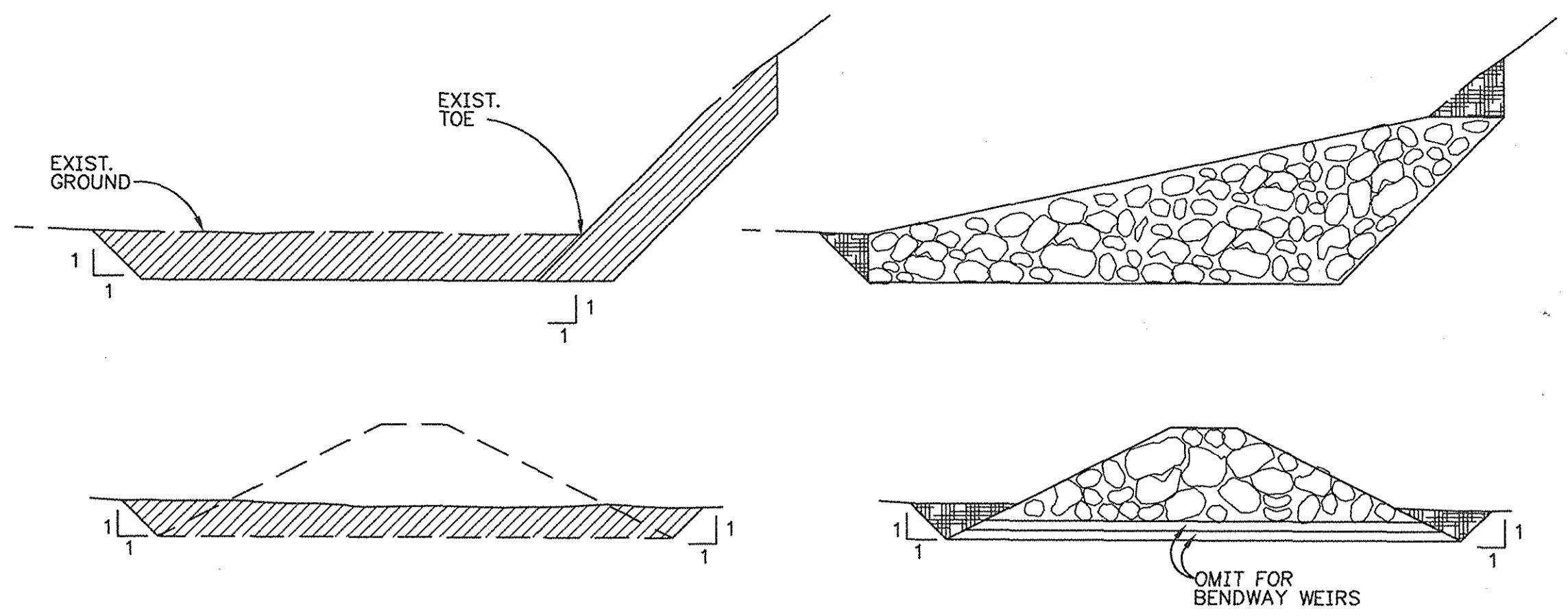
DESIGNED E.H. _____ SHEET
DRAWN E.H. _____ CHECKED D.T. _____ 11
SCALE DATE DRAWING NO. OF 13
N.T.S. 07-13-01 F18-701-8

PREPARED UNDER RESPONSIBLE CHARGE OF:
PBSJ
8022 Convent 200 100A
Irvine, Ca 92614
(949) 660-8666

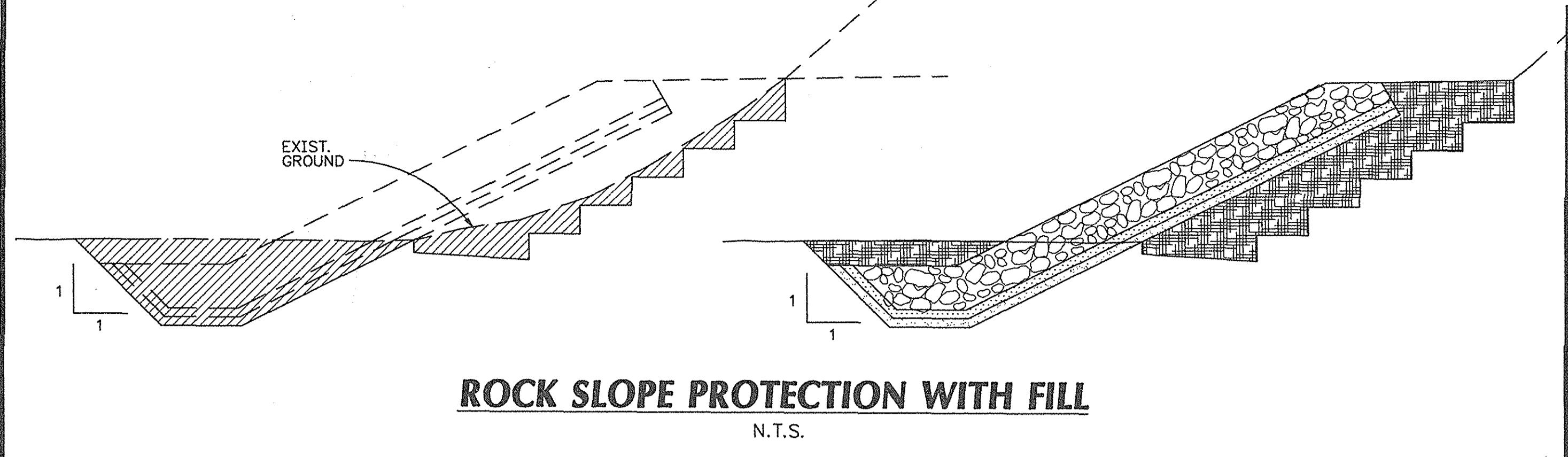
DATE: 07/13/01

PAYLINE LEGEND

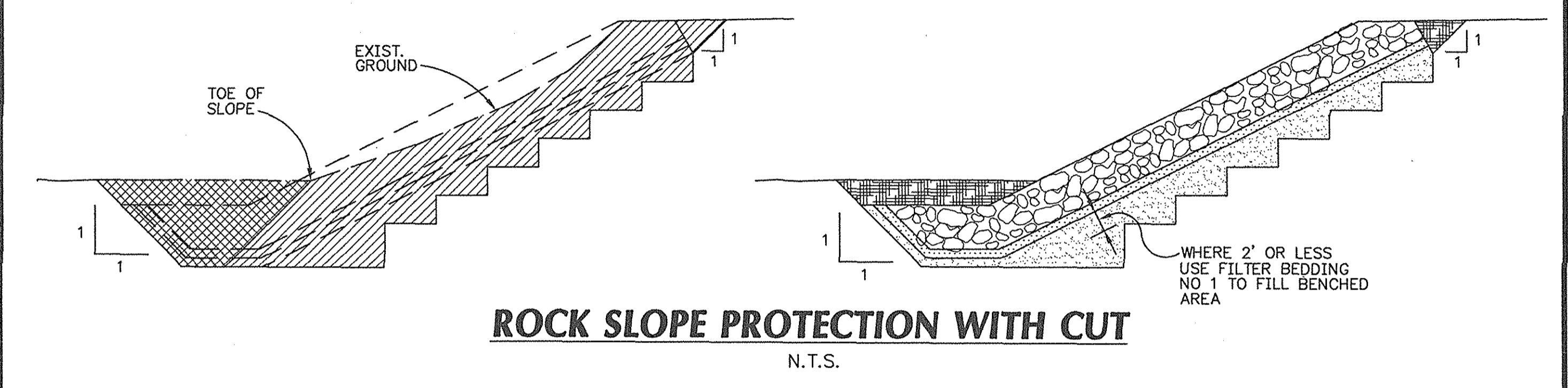
-  UNCLASSIFIED EXCAVATION
-  COMPACTED FILL
-  ROCK RIPRAP
-  LAYER NO. 2 FILTER BEDDING
-  LAYER NO. 1 FILTER BEDDING
-  GEOWEB



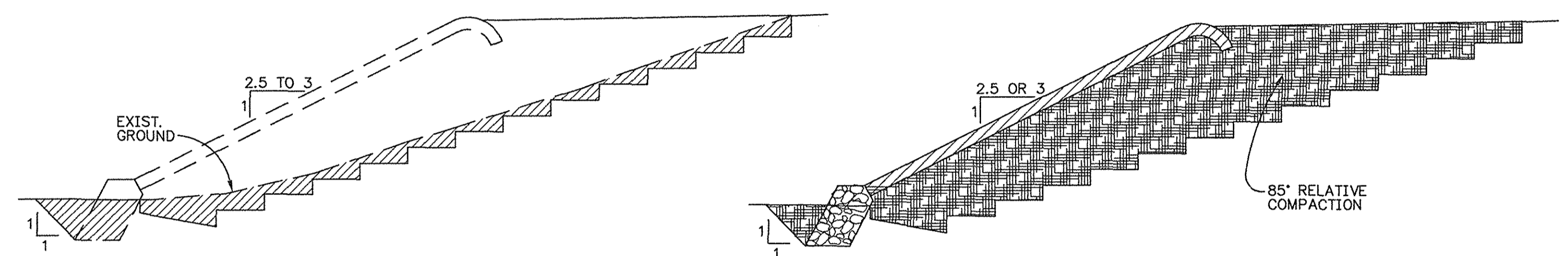
VANES & BENDWAY WEIRS
N.T.S.



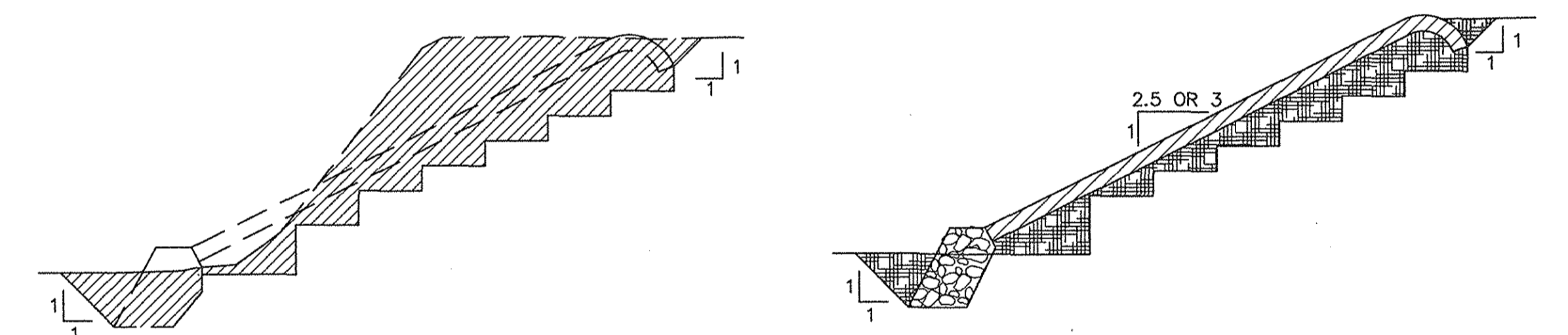
ROCK SLOPE PROTECTION WITH FILL
N.T.S.



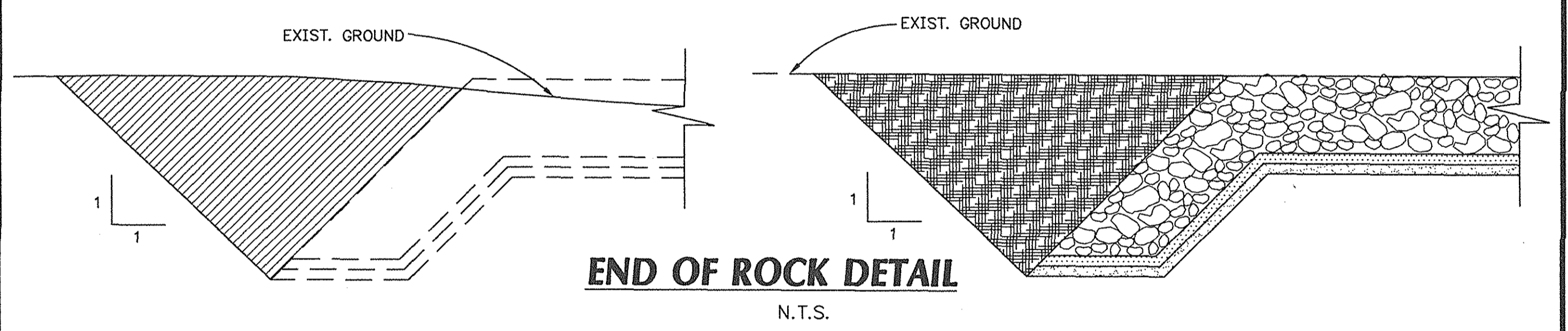
ROCK SLOPE PROTECTION WITH CUT
N.T.S.



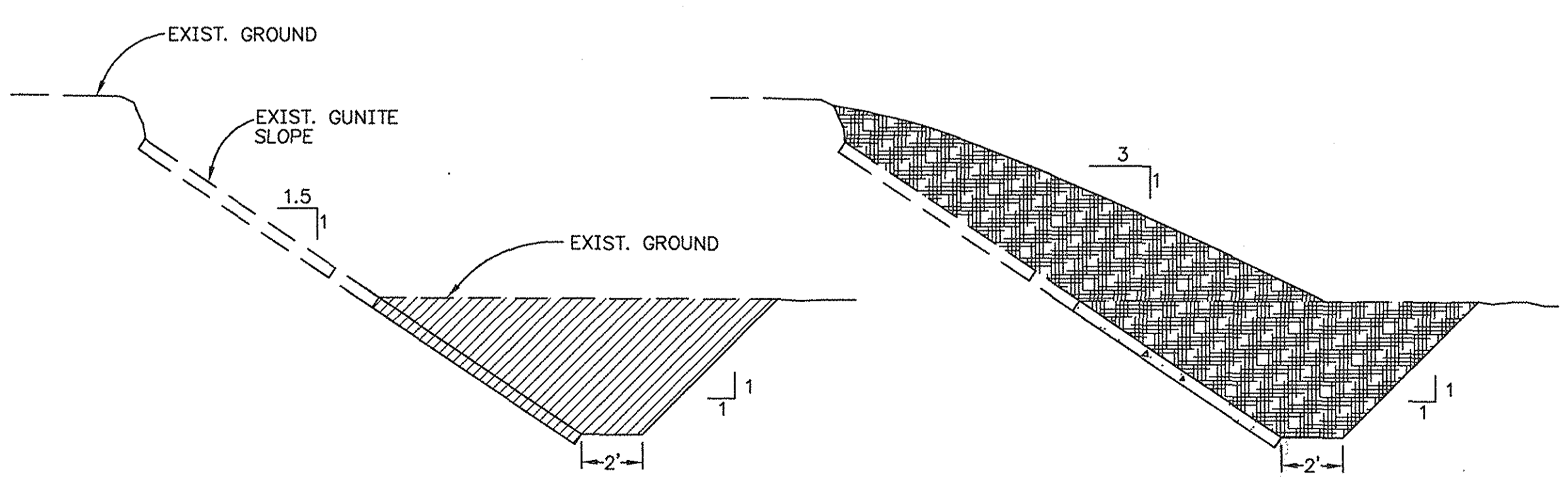
ROCK TOE & GEOWEB WITH FILL
N.T.S.



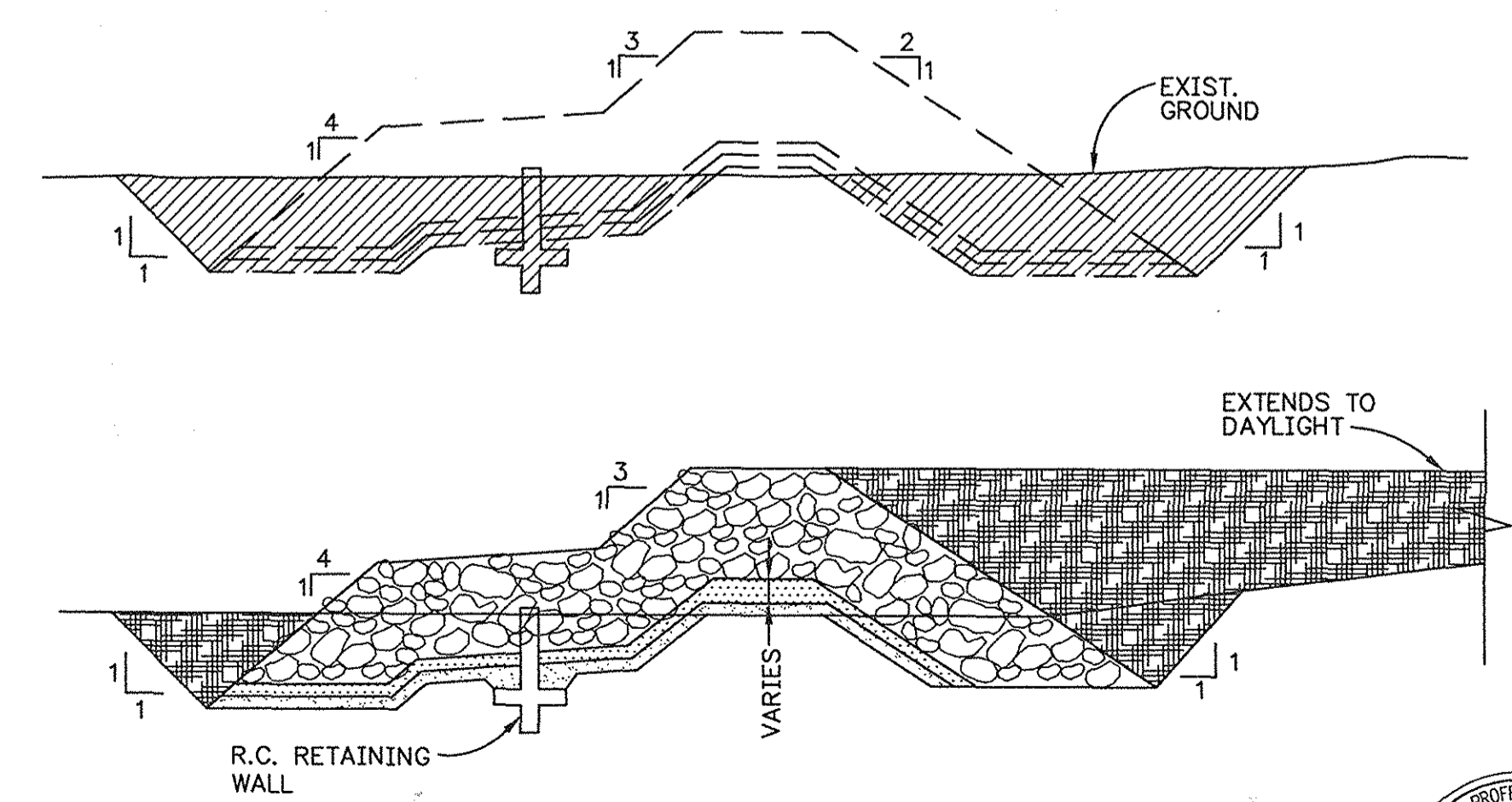
ROCK TOE & GEOWEB WITH CUT
N.T.S.



END OF ROCK DETAIL
N.T.S.




GUNITE SLOPE TOE EXTENSION
N.T.S.

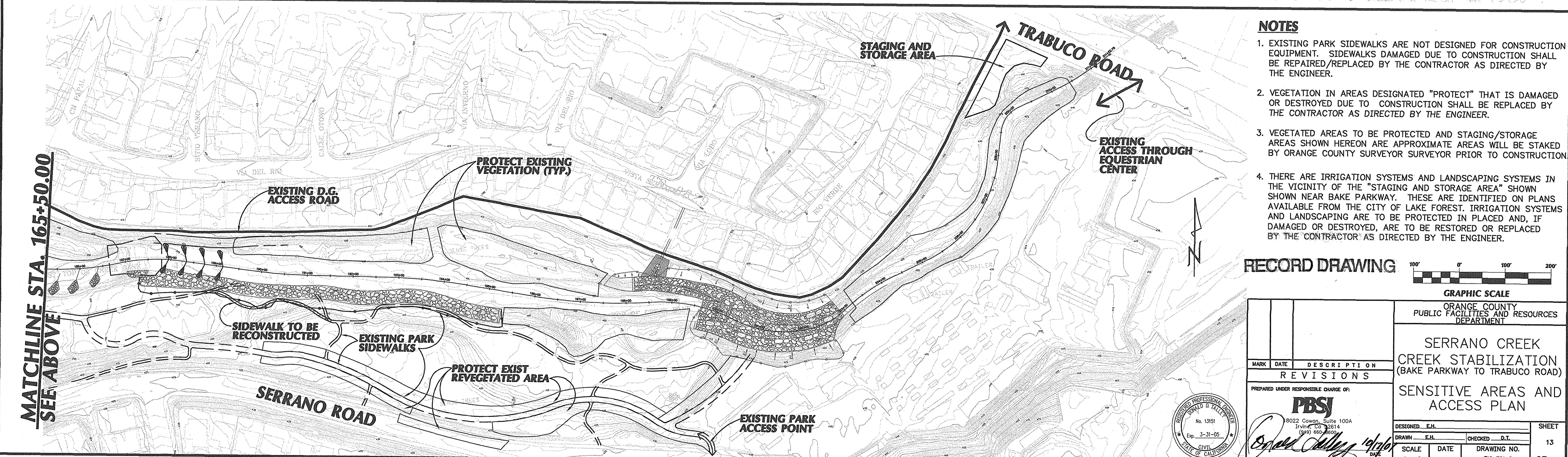
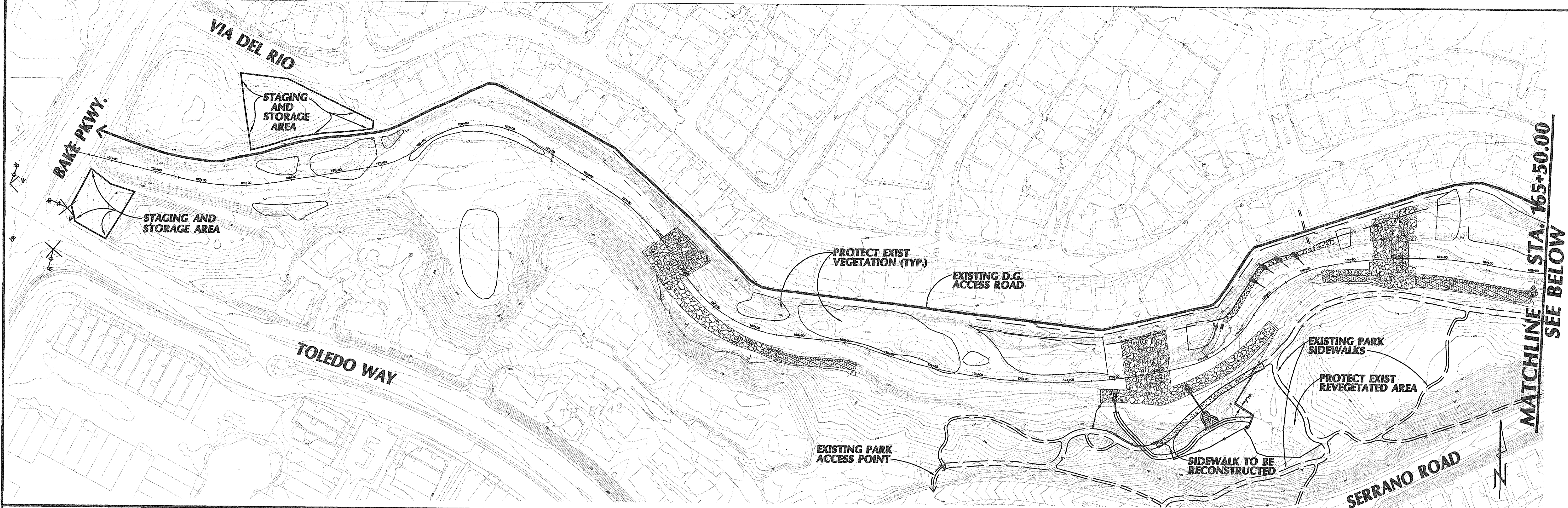


ROCK STABILIZATION STRUCTURE
N.T.S.

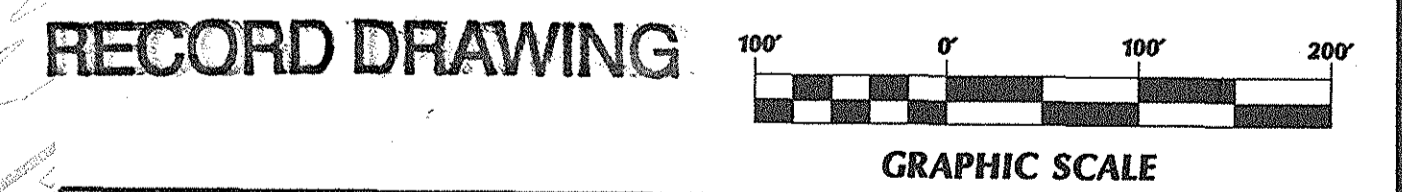
RECORD DRAWING

ORANGE COUNTY PUBLIC FACILITIES AND RESOURCES DEPARTMENT		SERRANO CREEK CREEK STABILIZATION (BAKE PARKWAY TO TRABUCO ROAD)		PAYLINE DETAILS	
MARK	DATE	DESCRIPTION		DESIGNED	E.H.
REVISIONS		PREPARED UNDER RESPONSIBLE CHARGE OF:		DRAWN	E.H.
		 18022 Cowan, Suite 100A Irvine, Ca 92614 (949) 459-9500		CHECKED	D.T.
SCALE	DATE	DRAWING NO.		SHEET	
N.T.S.	07-13-01	F19-701-8		12	
				OF 13	





- NOTES**
1. EXISTING PARK SIDEWALKS ARE NOT DESIGNED FOR CONSTRUCTION EQUIPMENT. SIDEWALKS DAMAGED DUE TO CONSTRUCTION SHALL BE REPAIRED/REPLACED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER.
 2. VEGETATION IN AREAS DESIGNATED "PROTECT" THAT IS DAMAGED OR DESTROYED DUE TO CONSTRUCTION SHALL BE REPLACED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER.
 3. VEGETATED AREAS TO BE PROTECTED AND STAGING/STORAGE AREAS SHOWN HEREON ARE APPROXIMATE AREAS WILL BE STAKED BY ORANGE COUNTY SURVEYOR SURVEYOR PRIOR TO CONSTRUCTION.
 4. THERE ARE IRRIGATION SYSTEMS AND LANDSCAPING SYSTEMS IN THE VICINITY OF THE "STAGING AND STORAGE AREA" SHOWN NEAR BAKE PARKWAY. THESE ARE IDENTIFIED ON PLANS AVAILABLE FROM THE CITY OF LAKE FOREST. IRRIGATION SYSTEMS AND LANDSCAPING ARE TO BE PROTECTED IN PLACED AND, IF DAMAGED OR DESTROYED, ARE TO BE RESTORED OR REPLACED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER.



ORANGE COUNTY PUBLIC FACILITIES AND RESOURCES DEPARTMENT		SERRANO CREEK CREEK STABILIZATION (BAKE PARKWAY TO TRABUCO ROAD)	
SENSITIVE AREAS AND ACCESS PLAN		SHEET 13 OF 13	
MARK	DATE	DESCRIPTION	REVISIONS
PREPARED UNDER RESPONSIBLE CHARGE OF:			
PBSJ			
8022 Cowan, Suite 100A Irvine, CA 92614 (949) 666-0000			
DESIGNED	E.H.	CHECKED	D.T.
DRAWN	E.H.	DATE	DRAWING NO.
1"=100'	07-13-01	F19-701-6	OF 13



Donald D. Piller
DATE 10/10/01