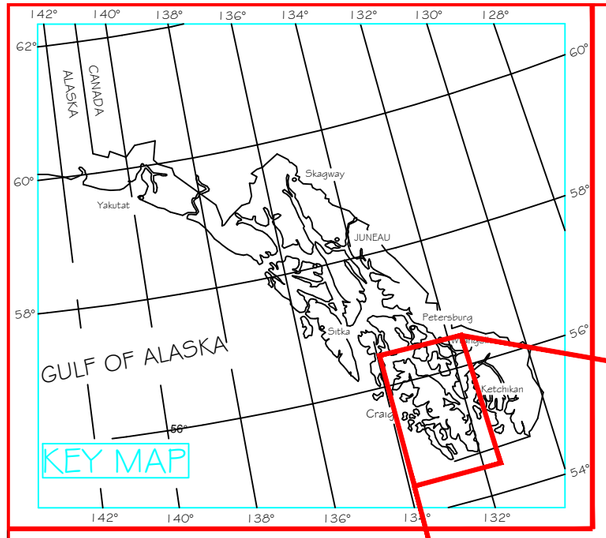
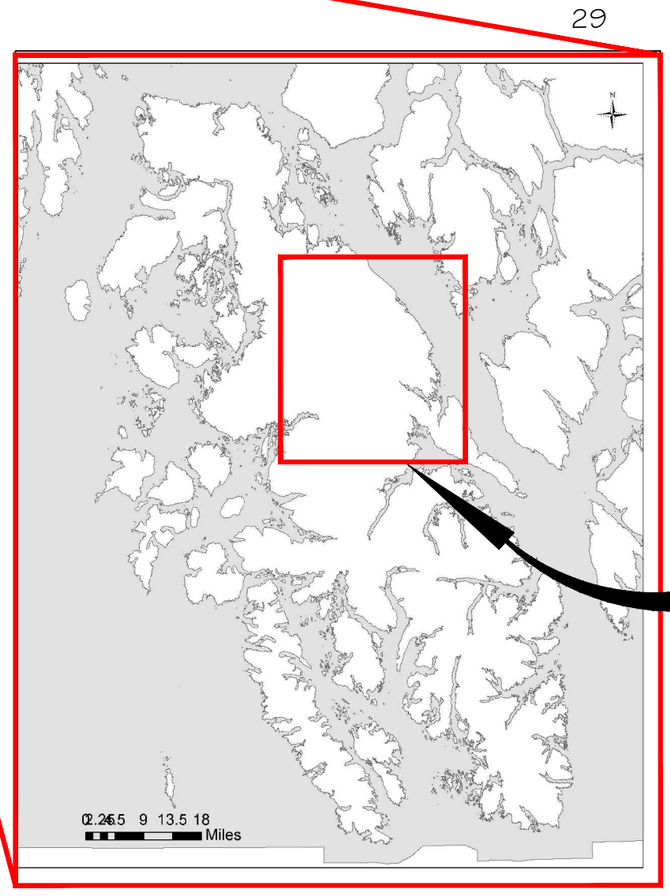
BIG THORNE STEWARDSHIP

STEWARDSHIP CONTRACT

PLANS FOR POPOSED FOREST DEVELOPMENT PROJECT





PROJECT LOCATION

VICINITY MAP

INDEX TO SHEETS

RECOMMENDED

DISTRICT RANGER _____ DATE _____

APPROVED

FOREST ENGINEER _____ DATE _____

TONGASS ENGINEERING & RECREATION

DESIGNED: M. WILLIAMS	DATE: 5/20/14	DATE:	REVISION:	BY:
DRAWN: M. WILLIAMS	DATE: 5/20/14			
REVIEWED: Q. SMITH	DATE: 5/28/14			
TNFTYP:09/04				

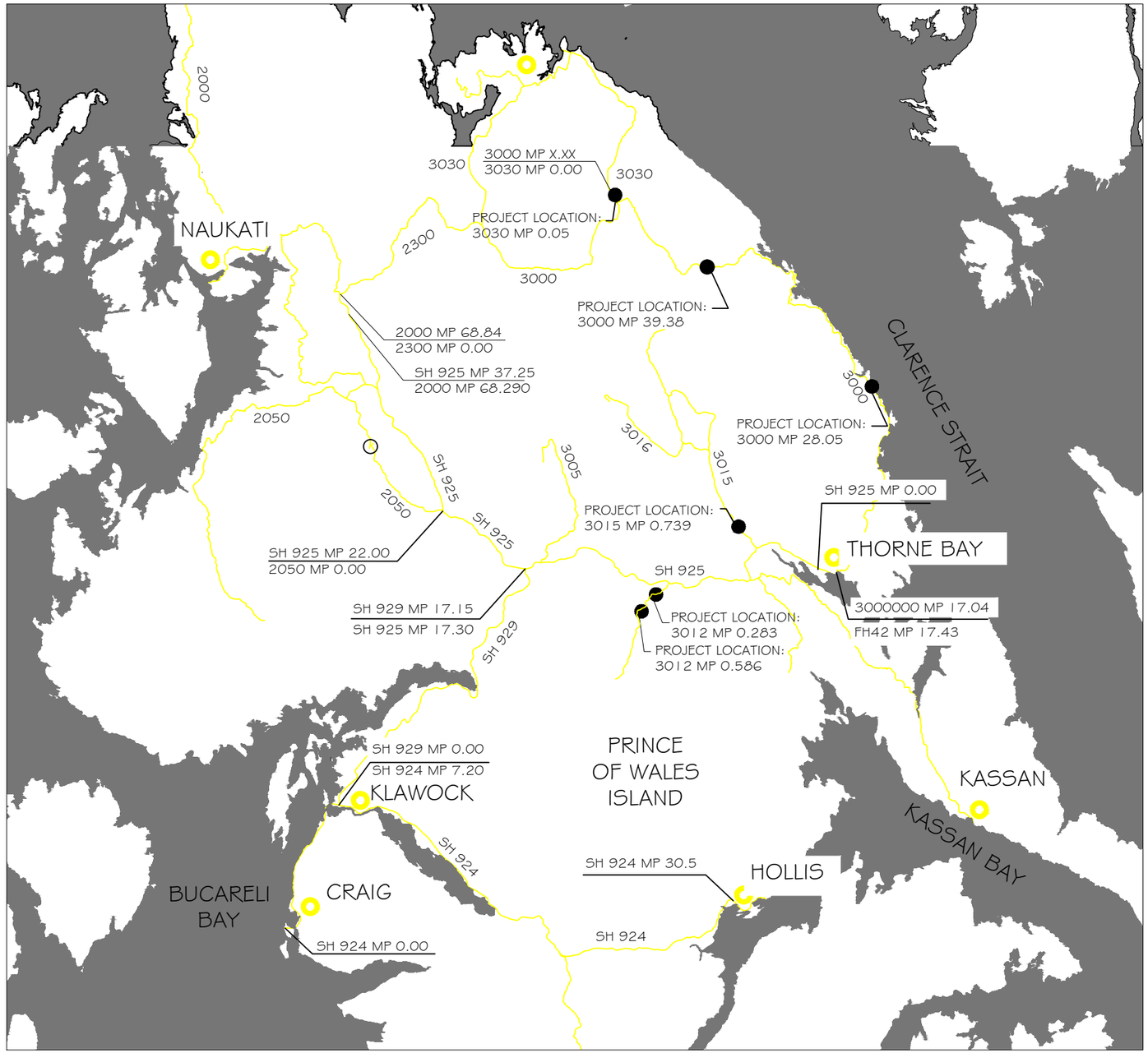
BIG THORNE STEWARDSHIP

USDA FOREST SERVICE - TONGASS NATIONAL FOREST
R-10 - THORNE BAY RANGER DISTRICT

TITLE SHEET

BigThorneStewardship_COVER.DWG
PLOT ON 11"X17" PAPER

SH. 1 of 29



1/2 VICINITY MAP - SOUTH THORNE BAY

SCALE: 1" = 10 MI

CULVERT LOCATION: NFSR 3012 MP 0.283

THE PROPOSED PROJECT SITE IS LOCATED ON NFR 3012000 ROAD APPROXIMATELY 10.5 MILES FROM THE COMMUNITY OF THORNE BAY, ALASKA. PROJECT WORK CONSISTS OF THE FOLLOWING: REMOVAL OF AN EXISTING 24" CORRUGATED METAL CULVERT, AND THE INSTALLATION OF A 73" X 55" X 34' LONG CORRUGATED METAL ARCH PIPE.

CULVERT LOCATION: NFSR 3012 MP 0.586

THE PROPOSED PROJECT SITE IS LOCATED ON NFR 3012000 ROAD APPROXIMATELY 10.5 MILES FROM THE COMMUNITY OF THORNE BAY, ALASKA. PROJECT WORK CONSISTS OF THE FOLLOWING: REMOVAL OF AN EXISTING 24" CORRUGATED METAL CULVERT, AND THE INSTALLATION OF A 73" X 55" X 40' LONG CORRUGATED METAL ARCH PIPE.

BRIDGE LOCATION: NFSR 3015 MP 0.739

THE PROPOSED PROJECT SITE IS LOCATED ON NFR 3015000 ROAD APPROXIMATELY 5.5 MILES OUTSIDE THE COMMUNITY OF THORNE BAY, ALASKA. PROJECT WORK CONSISTS OF THE FOLLOWING: REMOVAL OF AN EXISTING 48" CORRUGATED METAL CULVERT, AND THE INSTALLATION OF A 40' GLULAM SLAB BRIDGE.

BRIDGE LOCATION: NFSR 3030 MP 0.05

THE PROPOSED PROJECT SITE IS LOCATED ON THE STANEY CREEK ROAD SYSTEM BETWEEN THE COMMUNITIES OF THORNE BAY AND COFFMAN COVE, ALASKA. PROJECT WORK CONSISTS OF THE FOLLOWING: REMOVAL OF AN EXISTING 8.5' x 11.5' CORRUGATED METAL CULVERT, AND THE INSTALLATION OF A 50' PREFABRICATED MODULAR BRIDGE.

BRIDGE LOCATION: NFSR 3000 MP 39.38

THE PROPOSED PROJECT SITE IS LOCATED ON THE SANDY BEACH ROAD BETWEEN THE COMMUNITIES OF THORNE BAY AND COFFMAN COVE ALASKA. PROJECT WORK CONSISTS OF THE FOLLOWING: OBLITERATING APPROXIMATELY 500' OF EXISTING GRAVEL ROAD, REMOVAL OF AN EXISTING 48" X 54' LONG CORRUGATED METAL CULVERT, THE CONSTRUCTION OF APPROXIMATELY 600' OF NEW ROADWAY ALIGNMENT, AND THE INSTALLATION OF A 40' GLULAM SLAB BRIDGE.

BRIDGE LOCATION: NFSR 3000 MP 28.05

THE PROPOSED PROJECT SITE IS LOCATED ON THE SANDY BEACH ROAD BETWEEN THE COMMUNITIES OF THORNE BAY AND COFFMAN COVE ALASKA. PROJECT WORK CONSISTS OF THE FOLLOWING: REMOVAL OF EXISTING 60" CULVERT AND 20' GLULAM BRIDGE STRUCTURE, INSTALLATION OF A 50' PREFABRICATED BRIDGE MODULAR BRIDGE, AND ROADWAY CURVE REALIGNMENT.

NOTES

ALL DISPLAYED LOCATIONS ARE APPROXIMATE. FIELD VERIFY ALL DESIGNATED PROJECT SITES AND BORROW SOURCES AND CONFIRM WITH CO BEFORE INITIATING OF WORK ACTIVITIES.

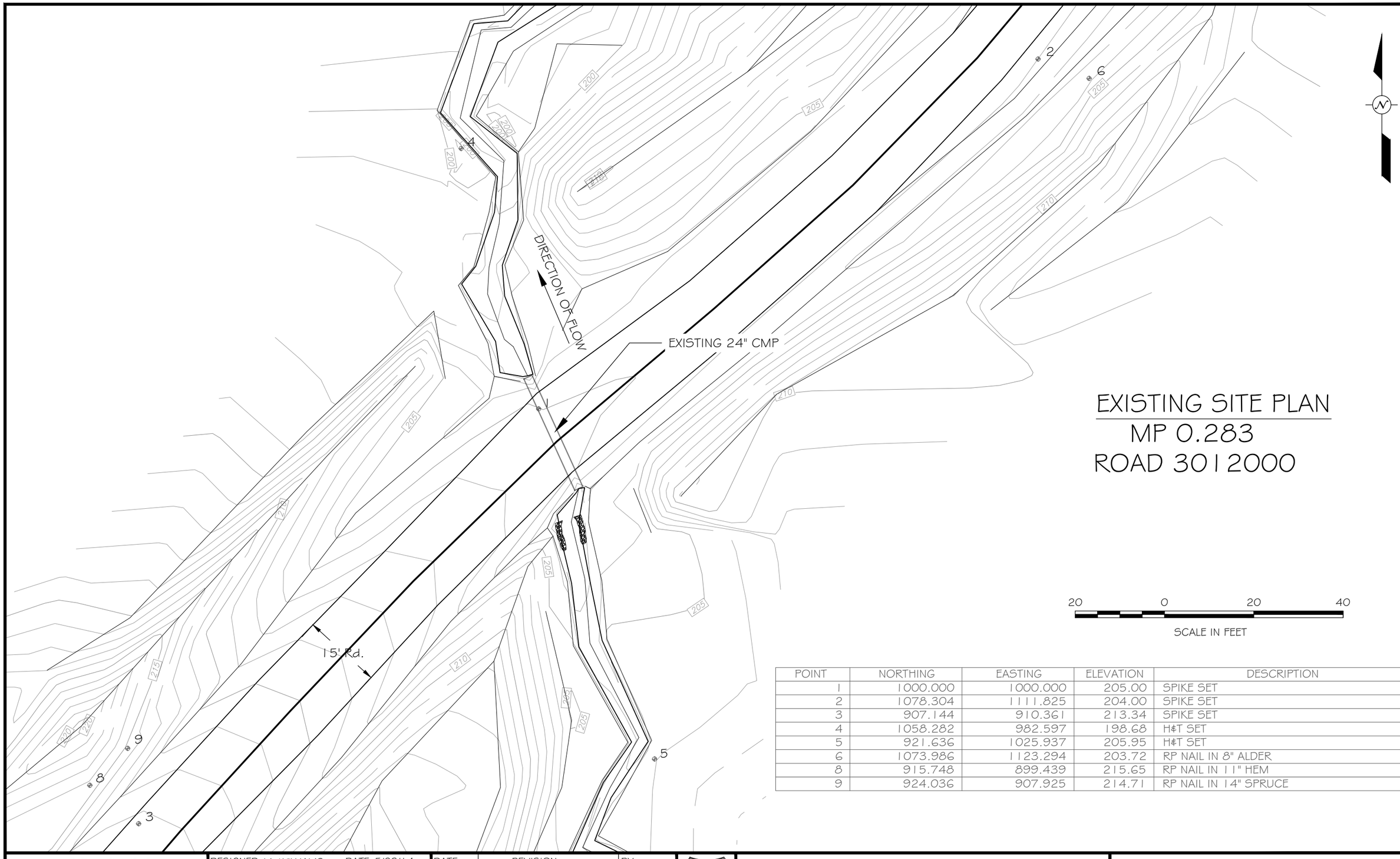
NORTH

LEGEND	
	EXISTING ROAD
	PROJECT LOCATION
	COMMUNITY

10 0 10 20

SCALE IN MILES

TONGASS ENGINEERING & RECREATION	DESIGNED: T.BRADSHAW	DATE: 5/28/14	DATE:	REVISION:	BY:	BIG THORNE STEWARDSHIP	VICINITY MAP - PRINCE OF WALES AREA
	DRAWN: T.BRADSHAW	DATE: 07/15/11	5/28/14		M.WILLIAMS	USDA FOREST SERVICE - TONGASS NATIONAL FOREST R-10 - THORNE BAY RANGER DISTRICT	02_VICINITY_MAP.DWG PLOT ON 11"X17" PAPER
	REVIEWED: Q. SMITH	DATE: 07/15/11					SH. 2 of 29
	TNFTYP: 04/03						



EXISTING SITE PLAN
MP 0.283
ROAD 3012000

20 0 20 40

SCALE IN FEET

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	1000.000	1000.000	205.00	SPIKE SET
2	1078.304	1111.825	204.00	SPIKE SET
3	907.144	910.361	213.34	SPIKE SET
4	1058.282	982.597	198.68	H&T SET
5	921.636	1025.937	205.95	H&T SET
6	1073.986	1123.294	203.72	RP NAIL IN 8" ALDER
8	915.748	899.439	215.65	RP NAIL IN 11" HEM
9	924.036	907.925	214.71	RP NAIL IN 14" SPRUCE

TONGASS
ENGINEERING & RECREATION

DESIGNED: M. WILLIAMS	DATE: 5/23/14	DATE:	REVISION:	BY:
DRAWN: M. WILLIAMS	DATE: 5/23/14			
REVIEWED: Q. SMITH	DATE: 5/28/14			
TNFTYP:09/04				

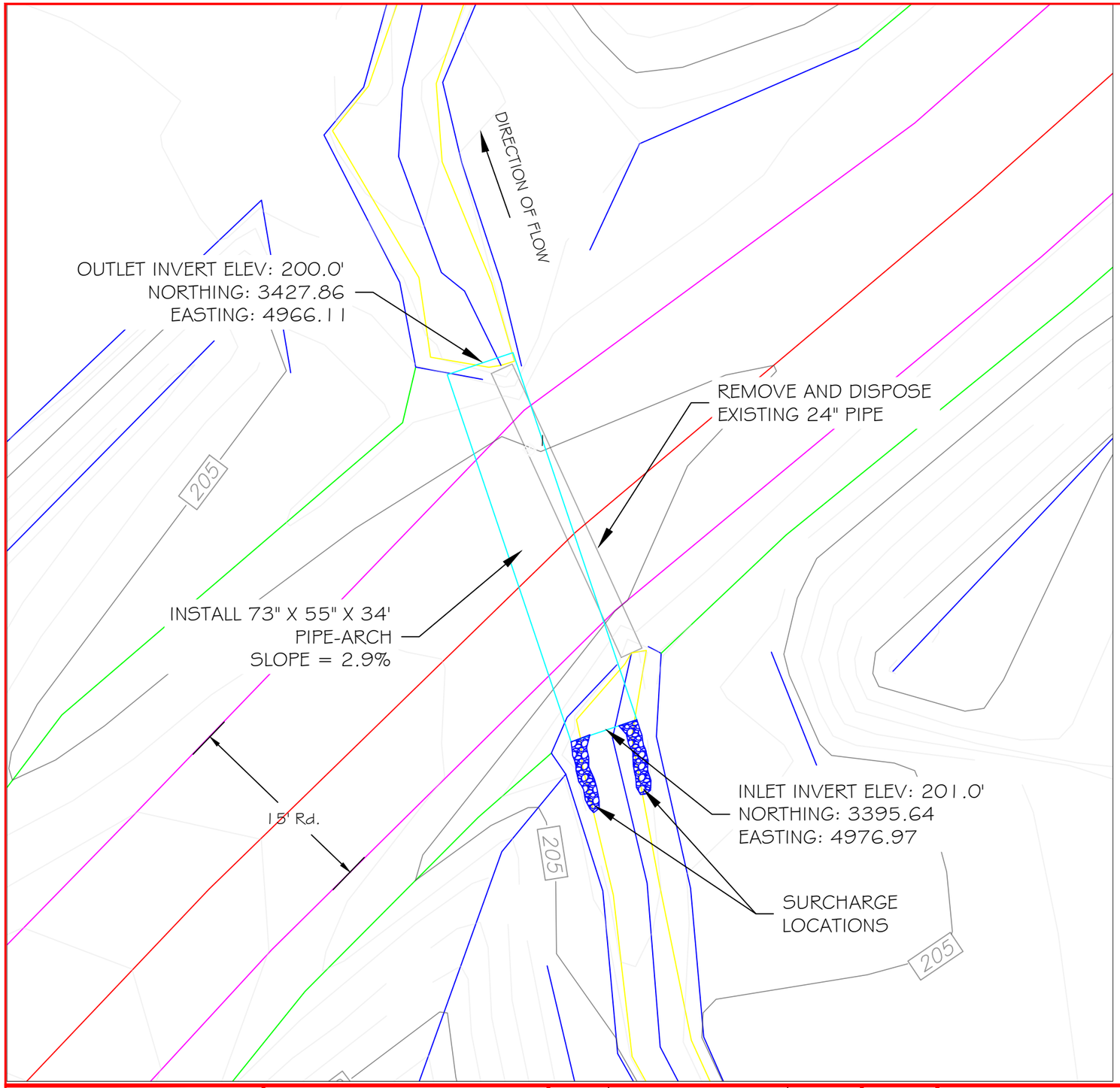
FOREST SERVICE — DEPARTMENT OF AGRICULTURE

BIG THORNE STEWARDSHIP

USDA FOREST SERVICE - TONGASS NATIONAL FOREST
R-10 - THORNE BAY RANGER DISTRICT

RD 3012000, MP 0.283: EXISTING

3012000_MP0_283.DWG
PLOT ON 11"X17" PAPER



EXISTING SITE PLAN
MP 0.283
ROAD 3012000

ESTIMATED QUANTITIES		
DESCRIPTION	UNITS	QTY.
6-IN MINUS	CY	4
PIT RUN	CY	96
CRUSHED	CY	40
73" X 55" CORRUGATED PIPE-ARCH	LF	34

NOTES:
1. INSTALLATION WILL CONFORM TO THE SIMPLIFIED STREAM SIMULATION TYPICAL (SEE NOTE 2).
2. GRADE CONTROL STRUCTURES ARE NOT REQUIRED AT THIS SITE.
3. INFILL APPROXIMATELY 6 LINEAR FEET FROM EACH END OF THE CULVERT WITH SURCHARGE MATERIAL TO A DEPTH OF 1FT. REMAINING SURCHARGE MATERIAL SHALL BE PLACED AS SHOWN ON DRAWING.
4. SUITABLE EXCAVATION MATERIAL MAY BE USED AS BACKFILL FOR INSTALLATION OF NEW CULVERT. UNSUITABLE MATERIAL WILL BE DISPOSED AT A SITE DESIGNATED BY THE C.O. AND WILL BE NO FURTHER THAN 3 MILES FROM PROJECT SITE.
5. ROCK MATERIAL FOR THIS SITE IS LOCATED AT RD 3012000, MP0.79 (0.5 MILES FROM SITE).

10 0 10 20
SCALE IN FEET

TONGASS
ENGINEERING & RECREATION

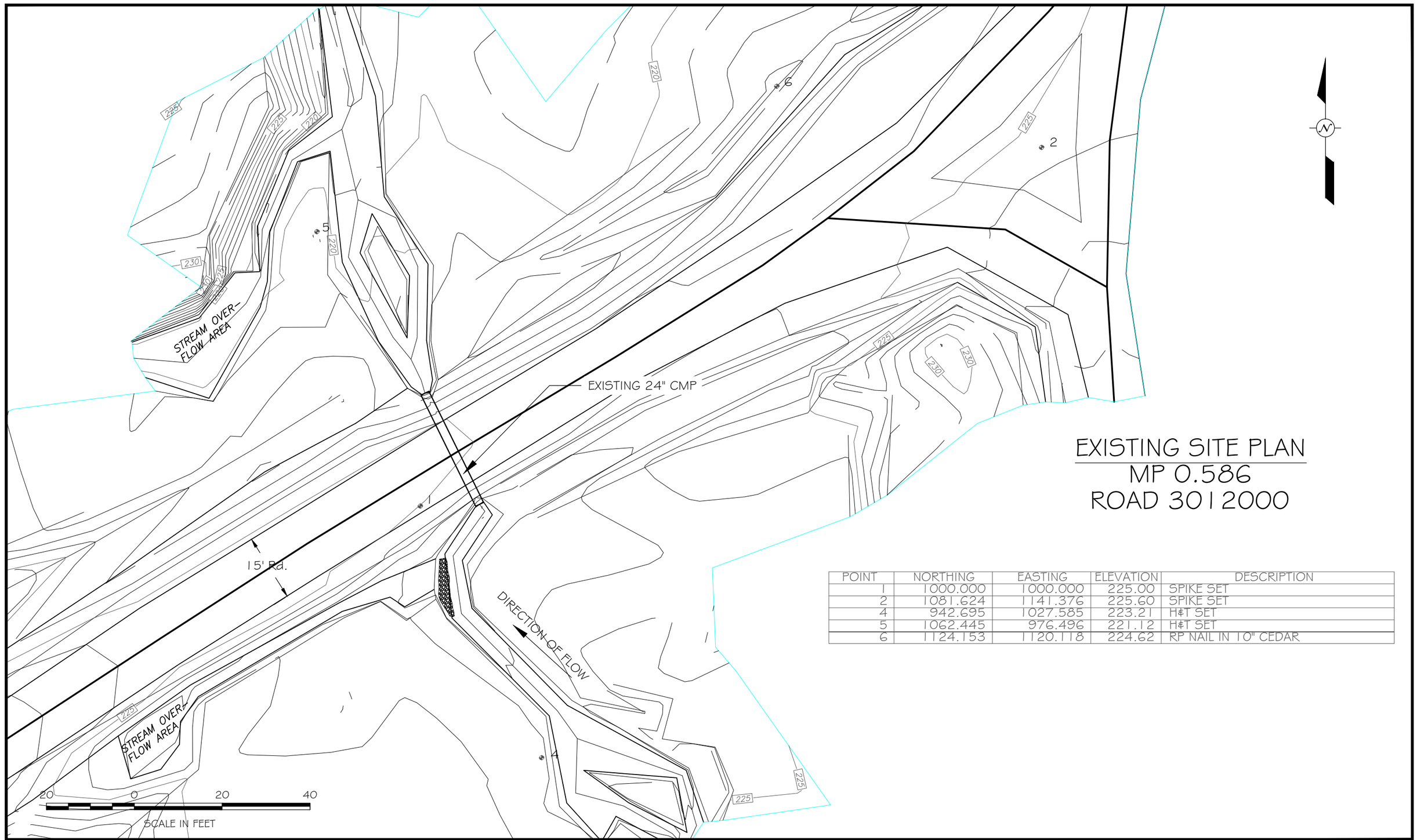
DESIGNED: M. WILLIAMS	DATE: 5/23/14	DATE:	REVISION:	BY:
DRAWN: M. WILLIAMS	DATE: 5/23/14			
REVIEWED: Q. SMITH	DATE: 5/28/14			
TNFTYP:09/04				

BIG THORNE STEWARDSHIP

USDA FOREST SERVICE - TONGASS NATIONAL FOREST
R-10 - THORNE BAY RANGER DISTRICT

RD 3012000, MP 0.283: NEW

3012000_MP0_283.DWG
PLOT ON 11"X17" PAPER



EXISTING SITE PLAN
MP 0.586
ROAD 3012000

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	1000.000	1000.000	225.00	SPIKE SET
2	1081.624	1141.376	225.60	SPIKE SET
4	942.695	1027.585	223.21	H&T SET
5	1062.445	976.496	221.12	H&T SET
6	1124.153	1120.118	224.62	RP NAIL IN 10" CEDAR

TONGASS
ENGINEERING & RECREATION

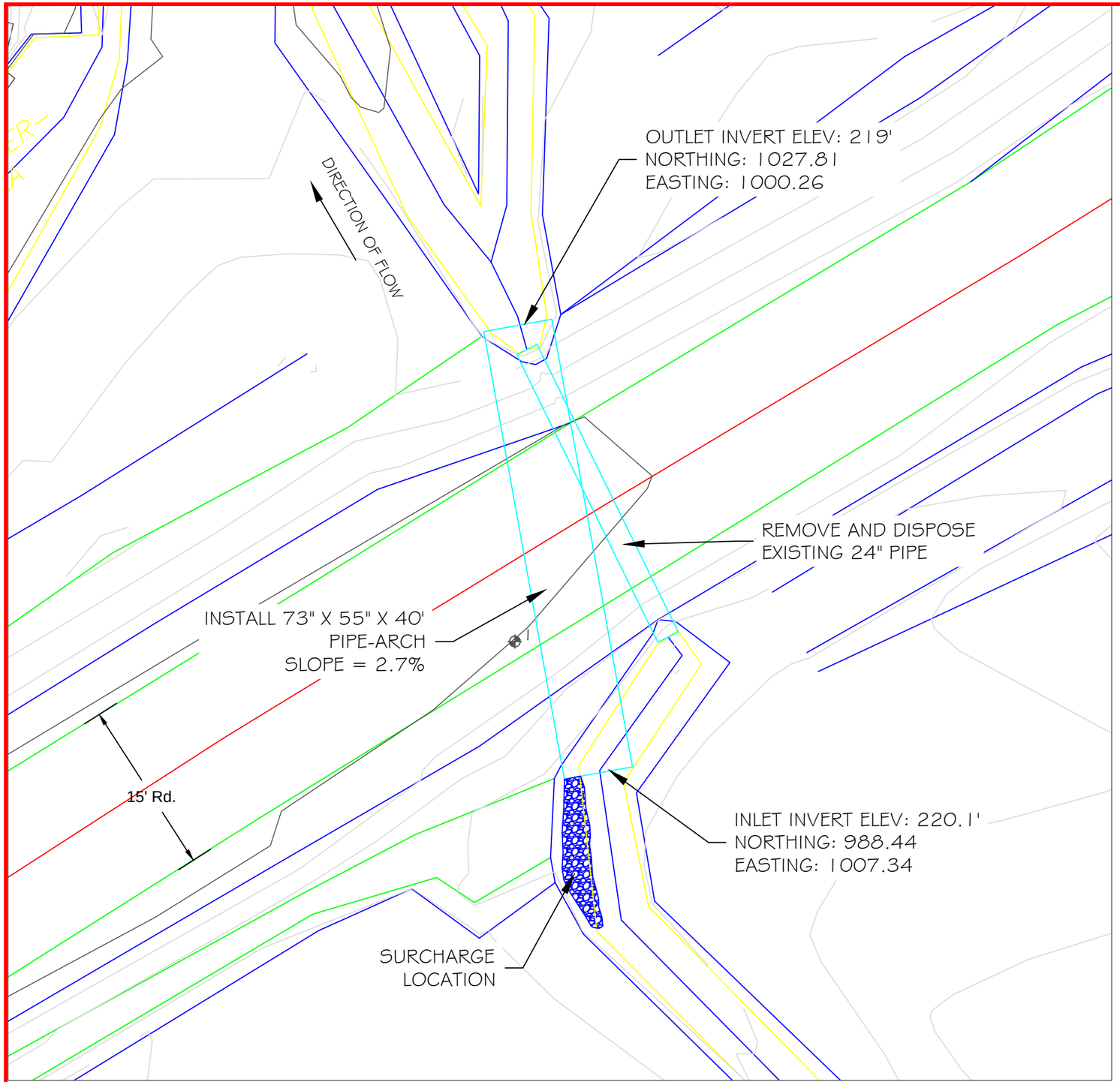
DESIGNED: M. WILLIAMS	DATE: 5/28/14	DATE:	REVISION:	BY:
DRAWN: M. WILLIAMS	DATE: 5/21/14			
REVIEWED Q. SMITH	DATE: 4/25/14			
TNFTYP: 09/04				

BIG THORNE STEWARDSHIP

USDA FOREST SERVICE - TONGASS NATIONAL FOREST
R-10 - THORNE BAY RANGER DISTRICT

RD 3012000, MP 0.586: EXISTING

3012000_MP0.586.DWG
PLOT ON 11"X17" PAPER



EXISTING SITE PLAN
MP 0.586
ROAD 3012000

ESTIMATED QUANTITIES

DESCRIPTION	UNITS	QTY.
6-IN MINUS	CY	5
PIT RUN	CY	86
CRUSHED	CY	58
73" X 55" CORRUGATED PIPE-ARCH	LF	40

NOTES:

1. INSTALLATION WILL CONFORM TO THE SIMPLIFIED STREAM SIMULATION TYPICAL (SEE NOTE 2).
2. GRADE CONTROL STRUCTURES ARE NOT REQUIRED AT THIS SITE.
3. INFILL APPROXIMATELY 6 LINEAR FEET FROM EACH END OF THE CULVERT WITH SURCHARGE MATERIAL TO A DEPTH OF 1 FT. REMAINING SURCHARGE MATERIAL SHALL BE PLACED AS SHOWN ON DRAWING.
4. SUITABLE EXCAVATION MATERIAL MAY BE USED AS BACKFILL FOR INSTALLATION OF NEW CULVERT. UNSUITABLE MATERIAL WILL BE DISPOSED AT A SITE DESIGNATED BY THE C.O. AND WILL BE NO FURTHER THAN 3 MILES FROM PROJECT SITE.
5. ROCK MATERIAL FOR THIS SITE IS LOCATED AT RD 3012000, MP 0.79 (0.2 MILES FROM SITE) AND RD 30150000, MP 0.1 (5.8 MILES FROM SITE).

10 0 10 20

SCALE IN FEET

TONGASS
ENGINEERING & RECREATION

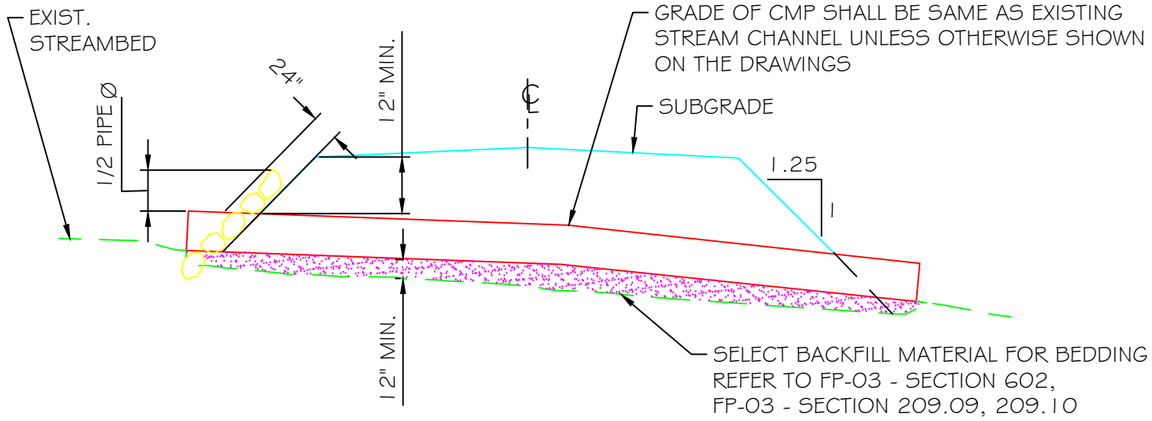
DESIGNED:M. WILLIAMS	DATE:5/28/14	DATE:	REVISION:	BY:
DRAWN:M. WILLIAMS	DATE:5/21/14			
REVIEWEDQ. SMITH	DATE: 4/25/14			
TNFTYP:09/04				

BIG THORNE STEWARDSHIP

USDA FOREST SERVICE - TONGASS NATIONAL FOREST
R-10 - THORNE BAY RANGER DISTRICT

RD 3012000, MP 0.586: NEW

3012000_MP0.586.DWG
PLOT ON 11"X17" PAPER



TYPICAL CULVERT INSTALLATION AT LIVE STREAMS

NOTES

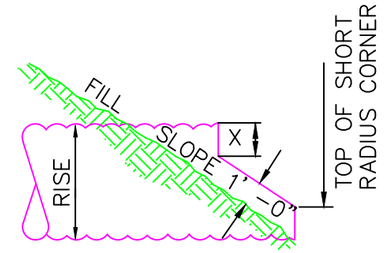
1. PLACE CULVERT IN ALIGNMENT WITH THE NATURAL STREAM CHANNEL.

2. CAMBER WILL DEPEND ON SITE CONDITIONS. MAXIMUM CAMBER IS 2% (STEEL OR ALUMINUM CULVERTS) OR 1% (POLYETHYLENE CULVERTS) OF CULVERT LENGTH BY NO MORE THAN 2.5-IN AT CENTER.

3. CULVERT INLETS AND OUTLETS SHALL EXTEND 24-IN BEYOND THE TOE OF THE FILL UNLESS AGREED TO BY THE C.O.

4. THE CONTRACTOR SHALL PROVIDE THE C.O. A LIST OF AS- SLOPE STAKED CULVERT LENGTHS AND LOCATIONS.

ALUMINUM & STEEL CULVERT CORRUGATIONS SHALL CONFORM TO THE FOLLOWING:			
PIPE SIZE INCHES	MIN. INCH / GAGE		CORRUGATIONS
	STEEL	ALUMINUM	
18 TO 36	0.064" / 16	0.060" / 16	2 2/3" X 0.5"
48	0.079" / 14	0.075" / 14	2 2/3" X 0.5"
60	0.079" / 14	0.075" / 14	5" x 1"
72	0.109" / 12	0.105" / 12	5" x 1"



PIPE ARCH

BEVELED END DETAIL

⚠ X = 1/4 * RISE, OR MANUFACTURERS STANDARDS.

⚠ BEVEL OF PIPE SHALL BE 1V:1 1/4H SLOPE UNLESS OTHERWISE SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SCHEDULE OF ITEMS.

⚠ THE ENDS OF CULVERTS SHALL NOT BE CUT ON A SKEW UNLESS SHOWN ON THE DRAWINGS, OR CALLED FOR IN THE SCHEDULE OF ITEMS.

TONGASS
ENGINEERING & RECREATION

DESIGNED:	DATE:
DRAWN:	DATE:
REVIEWED:	DATE:
TNFTYP:01/05	

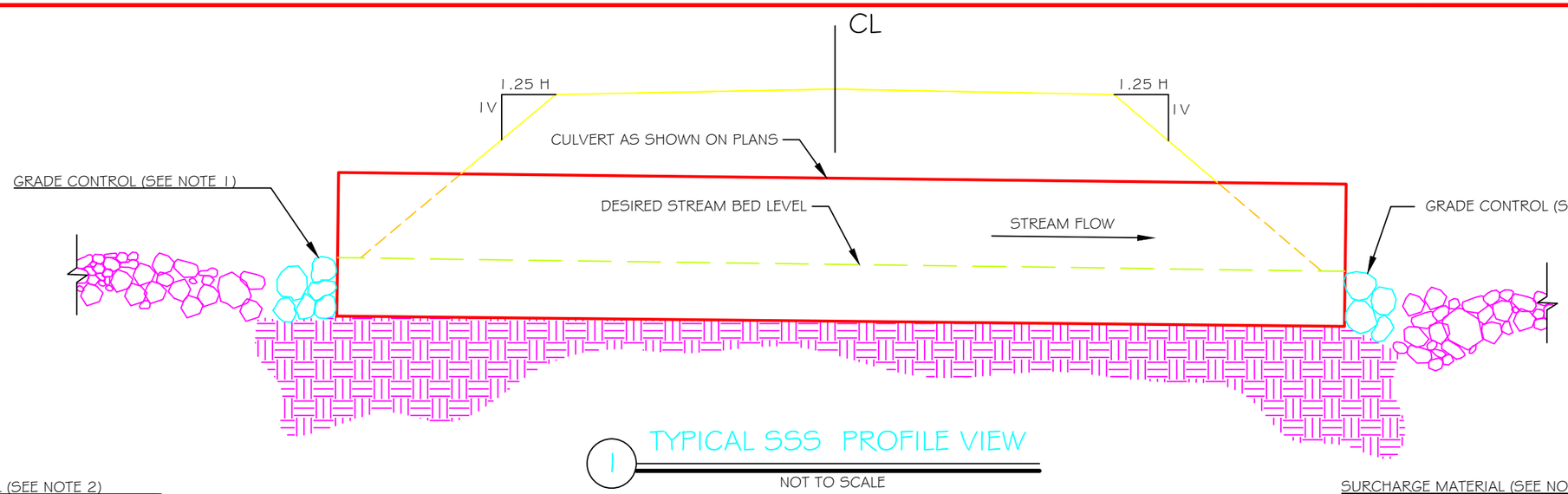
DATE:	REVISION:	BY:
1/19/05	CORRECTED DWG	SJC / KWB
2/23/07	UPDATED SPECS	G.BITTORF
8/16/11	BEVELED END DETAIL/NOTES	J. POWELL

BIG THORNE STEWARDSHIP

USDA FOREST SERVICE - TONGASS NATIONAL FOREST
R-10 - THORNE BAY RANGER DISTRICT

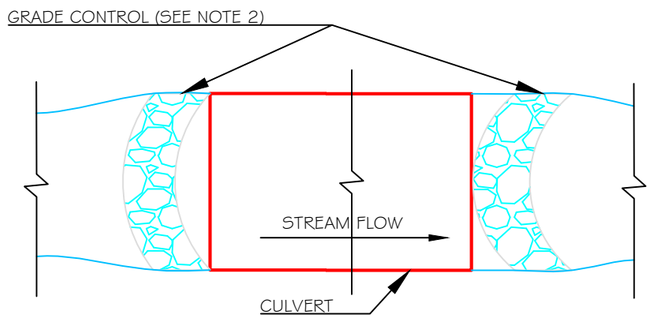
TYPICAL CULVERT DETAILS (MODIFIED)

TYP_CMP_INSTALL.DWG
PLOT ON 11"X17" PAPER



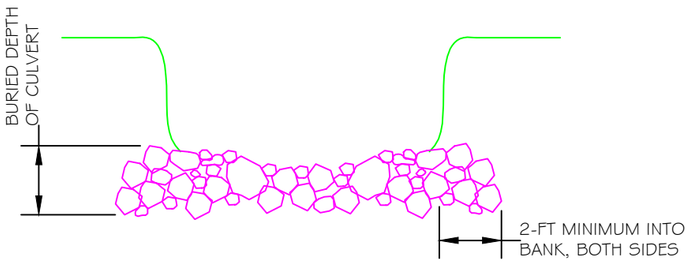
1 TYPICAL SSS PROFILE VIEW

NOT TO SCALE



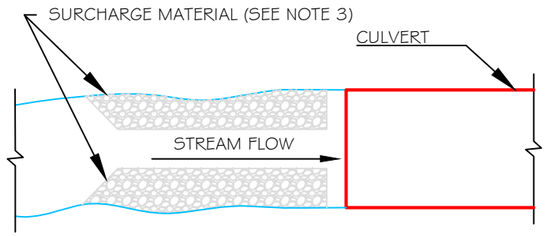
2 TYPICAL SSS PLAN VIEW

NOT TO SCALE



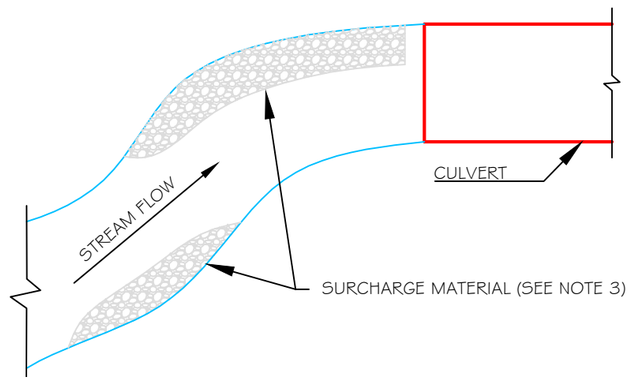
3 TYPICAL GRADE CONTROL X-SECTION

NOT TO SCALE



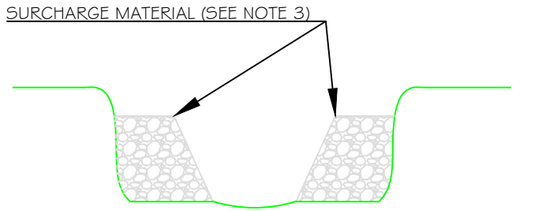
4 TYPICAL SURCHARGE PLACEMENT, STRAIGHT

NOT TO SCALE



5 TYPICAL SURCHARGE PLACEMENT, CORNER

NOT TO SCALE



6 TYPICAL SURCHARGE X-SECTION

NOT TO SCALE

NOTE:

1. GRADE CONTROL STRUCTURES ARE TO BE CONSTRUCTED WITH CLASS 3 RIPRAP, UNLESS DESIGNATED OTHERWISE BY THE C.O., AND ITS HEIGHT SHALL BE EVEN WITH THE DESIRED STREAMBED, OR AS STAKED BY THE C.O.

2. GRADE CONTROLS SHALL BE CONSTRUCTED AS AN ARCH WITH THE TOP OF THE ARCH POINTING UPSTREAM. THE TWO DOWNSTREAM PORTIONS OF THE ARCH SHALL BE WELL ANCHORED INTO THE STREAM BANKS.

3. SURCHARGE MATERIAL WILL CONSIST OF 6-IN MINUS ROCK AND PLACEMENT WILL BE APPROVED BY THE C.O. PRIOR TO CONSTRUCTION.

4. THE CULVERT SLOPE SHALL MATCH THE NATURAL STREAM GRADIENT, OR AS STAKED BY THE C.O., EXCLUDING ABNORMALITIES SUCH AS PLUNGE POOLS, DEBRIS JAMS, ETC.

5. HORIZONTAL ALIGNMENT OF THE CULVERT SHALL CLOSELY MATCH THE NATURAL STREAM CHANNEL ALIGNMENT.

6. CULVERT INLETS AND OUTLETS SHALL EXTEND 24-IN BEYOND THE TOE OF THE FILL, UNLESS AGREED TO BY THE C.O.

7. 1V : 1.25H, AS SHOWN ON THIS DRAWING, IS THE MAXIMUM FILL SLOPE.

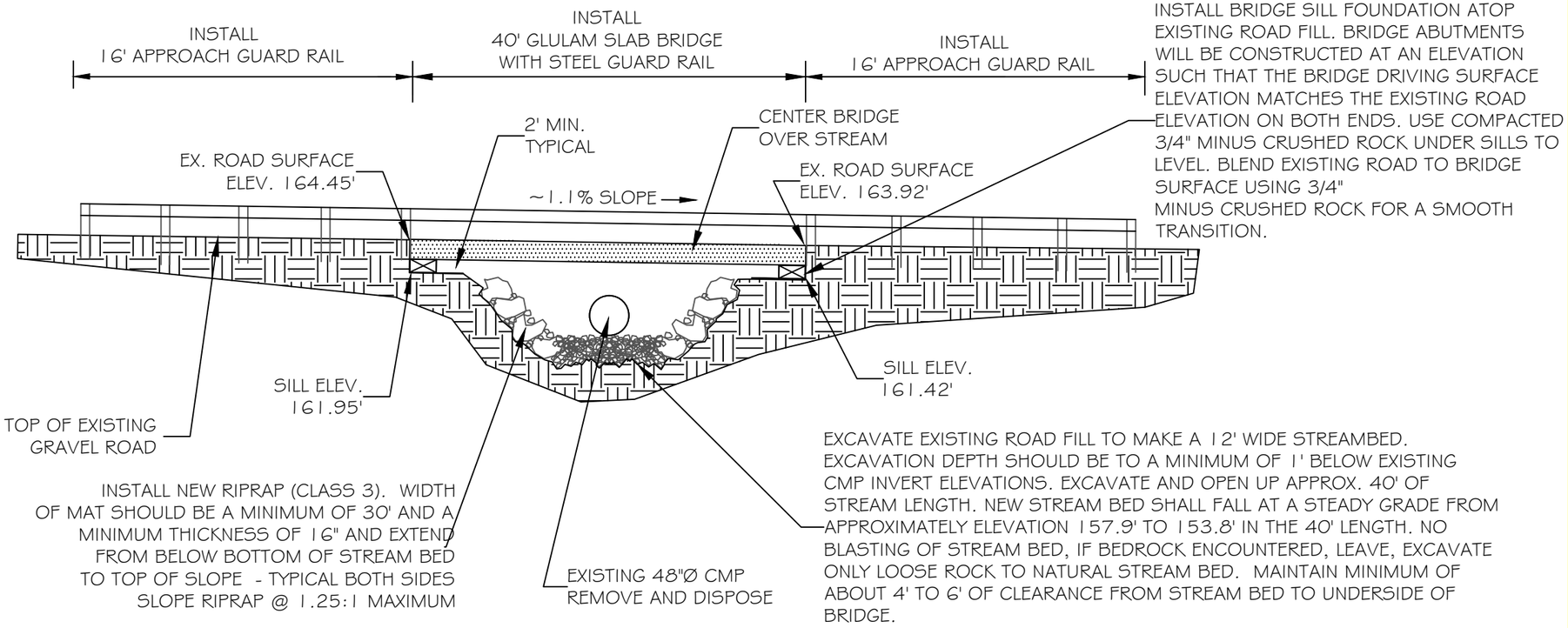
8. MINIMUM COVER HEIGHTS ON CULVERTS, AS PER MANUFACTURERS RECOMMENDATIONS, MUST BE MET.

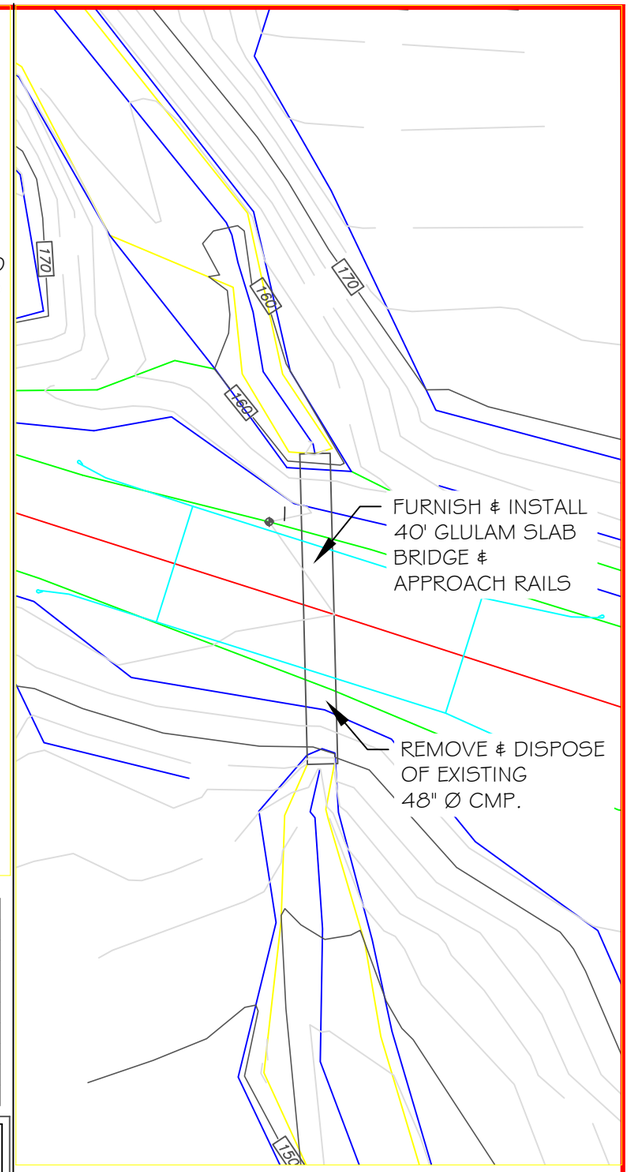
9. THIS TYPICAL IS INTENDED FOR STREAMS WITH A GRADIENT OF 4% OR LESS.

TONGASS ENGINEERING & RECREATION	DESIGNED: POWELL / SMITH DATE: 7/2011	DATE:	REVISION:	BY:	BIG THORNE STEWARDSHIP
	DRAWN: J. POWELL DATE: 7/2011				USDA FOREST SERVICE - TONGASS NATIONAL FOREST
	REVIEWED: Q. SMITH DATE: 8/2011				R-10 - THORNE BAY RANGER DISTRICT
	TNFTYP:03/04				

SIMPLIFIED STREAM SIMULATION (SSS) TYPICAL

SSS_TYPICAL.DWG
PLOT ON 11"X17" PAPER





CONSTRUCTION NOTES:

1. REMOVE AND DISPOSE OF EXISTING 48"Ø STEEL CULVERT. EXCAVATE AND OPEN UP APPROXIMATELY 40' OF STREAM TO A BED WIDTH OF 12' MINIMUM AND BANK SLOPES OF 1.25:1. NEW STREAM BED SHALL FALL AT A STEAD GRADE FROM APPROXIMATELY ELEVATION 157.9' TO 153.8' IN THE 40' LENGTH. NO BLASTING OF STREAM BED, IF BEDROCK ENCOUNTERED, LEAVE, EXCAVATE ONLY LOOSE ROCK TO NATURAL STREAM BED.
2. CONSTRUCT A NEW 40' PREFABRICATED GLULAM SLAB BRIDGE. FINISH ELEVATION OF BRIDGE WILL MATCH EXISTING ROAD ELEVATION.
3. BLEND EXISTING ROAD TO BRIDGE SURFACE USING 3/4" MINUS CRUSHED ROCK FOR A SMOOTH TRANSITION.
4. INSTALL APPROACH AND GUARD RAILS BOTH SIDES OF BRIDGE.
5. INSTALL RIPRAP ON BOTH BANKS OF STREAM UNDER BRIDGE. SEE NOTE ON ELEVATION VIEW.

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	1000.000	1000.000	164.00	SPIKE SET
2	1023.530	866.557	169.24	SPIKE SET
3	937.767	1149.038	159.04	SPIKE SET
4	908.564	1001.979	148.35	H&T SET
5	1077.461	959.313	164.01	SPIKE SET
6	1007.454	857.079	167.00	RP NAIL IN 17" SPRUCE
7	1002.106	890.020	165.28	RP NAIL IN 13" SPRUCE
8	920.715	1156.799	157.84	RP NAIL IN 19" SPRUCE
9	932.466	1122.460	156.73	RP NAIL IN 6" ALDER

ESTIMATED QUANTITIES

SHOTROCK EXCAVATION & REMOVAL TO OPEN STREAM ~ 210 CY
RIPRAP ~ 26 CY
CRUSHED ROCK ~ 10 CY

ELEVATION VIEW
MP 0.739 ROAD 3015
Not to Scale

FISH TIMING WINDOW FOR CONSTRUCTION

PREFERRED CONSTRUCTION OF THE BRIDGE IS LIMITED TO A WINDOW OF TIME BETWEEN JUNE 15 & SEPTEMBER 1. REQUEST FOR DIFFERENT TIMING MAY BE SUBMITTED TO THE C.O. FOR APPROVAL

PLAN VIEW
MP 0.739 ROAD 3015

20 0 20 40
SCALE IN FEET

TONGASS
ENGINEERING & RECREATION

DESIGNED: M. WILLIAMS	DATE: 5/20/14	DATE:	REVISION:	BY:	
DRAWN: M. WILLIAMS	DATE: 5/20/14	XX/XX/XX	XXXXXXXXXX	X. XXXXXX	
REVIEWED: Q. SMITH	DATE: 5/28/14	XX/XX/XX	XXXXXXXXXXXX	X.XXXXXX	
TNFTYP: 09/04		XX/XX/XX	XXXXXXXXXXXX	X. XXXXXX	

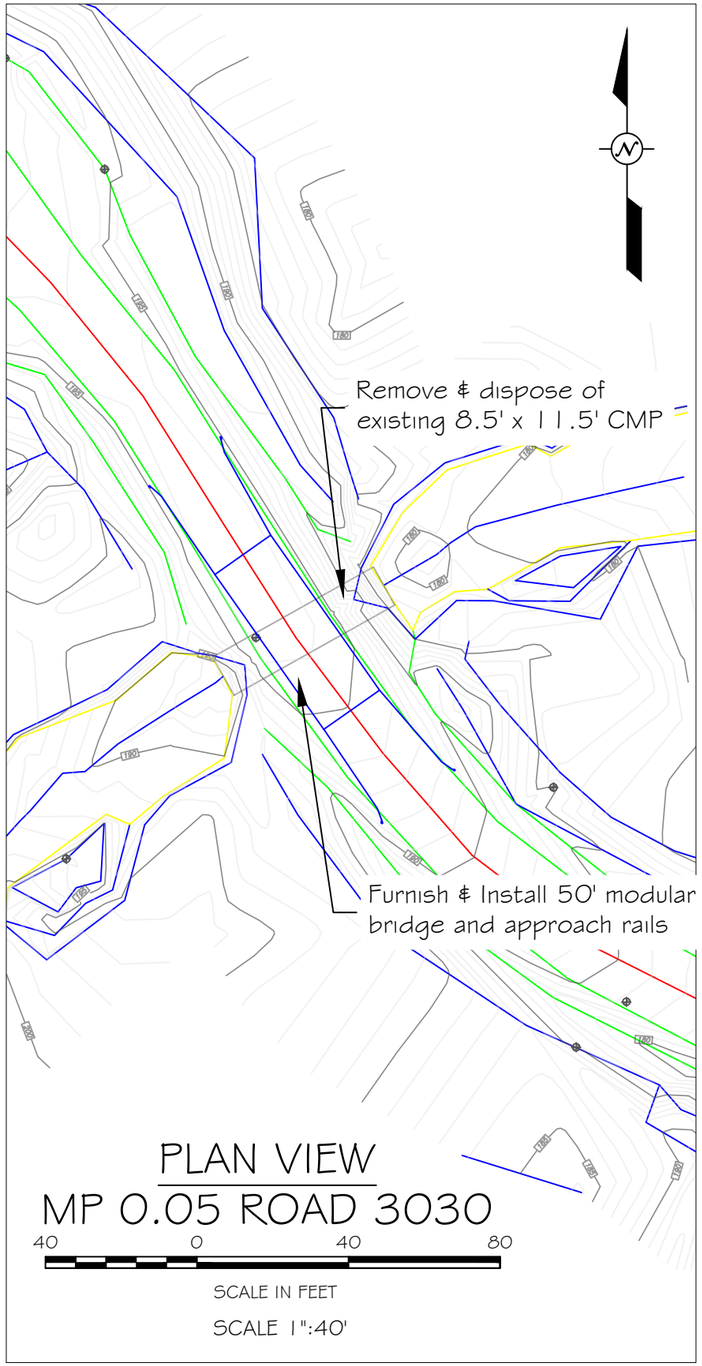
BIG THORNE STEWARDSHIP

USDA FOREST SERVICE - TONGASS NATIONAL FOREST
R-10 - THORNE BAY RANGER DISTRICT

3015000 MP 0.739, PROPOSED

3015000@MP0.739.dwg
PLOT ON 11"X17" PAPER

SH. 9 of 29

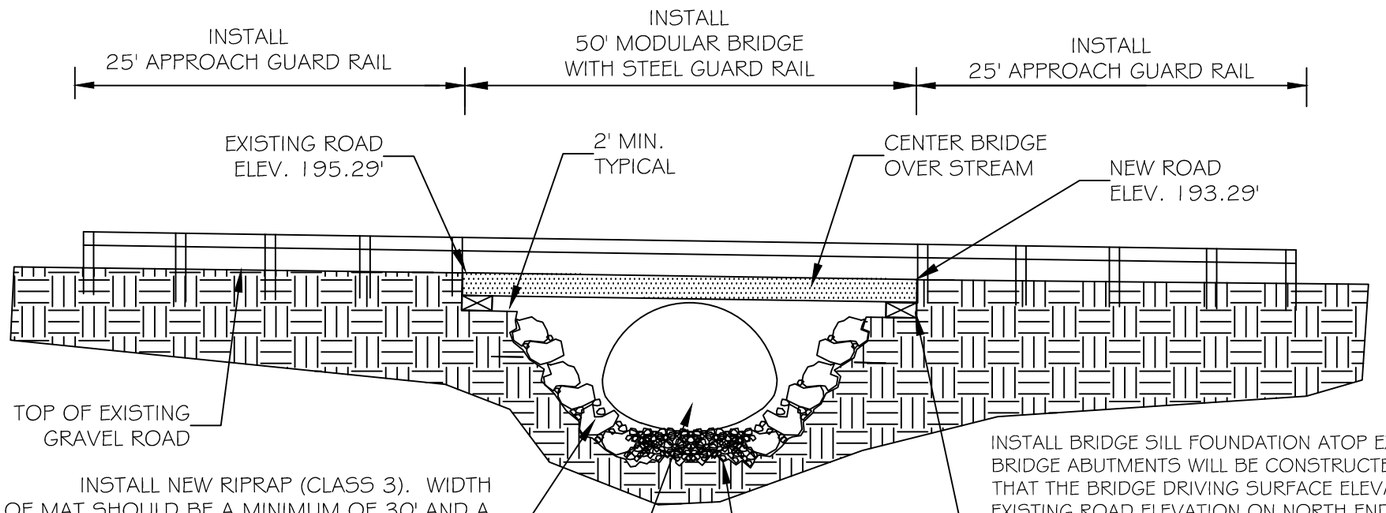


PLAN VIEW
MP 0.05 ROAD 3030

40 0 40 80

SCALE IN FEET

SCALE 1":40'



ELEVATION VIEW
MP 0.05
ROAD 3030000

NOT TO SCALE

DESIGNATED FISH STREAM
THIS IS A DESIGNATED FISH STREAM. REFER TO CLAUSE H3 FOR CONSTRUCTION TIMING RESTRICTIONS. REQUEST FOR DIFFERENT TIMING MAY BE SUBMITTED TO THE C.O. FOR APPROVAL

ESTIMATED QUANTITIES

SHOTROCK EXCAVATION & REMOVAL TO OPEN STREAM ~ 485 CY
RIPRAP ~ 42 CY
CRUSHED ROCK ~ 18 CY

CONSTRUCTION NOTES:

1. REMOVE AND DISPOSE OF EXISTING CULVERT. EXCAVATE AND OPEN UP APPROXIMATELY 50' OF STREAM TO A BED WIDTH OF 25' MINIMUM AND BANK SLOPES OF 1.25:1. NEW STREAM BED SHALL FALL AT A STEADY GRADE FROM APPROXIMATELY ELEVATION 185.99' TO 181.5' IN THE 50' LENGTH. NO BLASTING OF STREAM BED, IF BEDROCK ENCOUNTERED, LEAVE, EXCAVATE ONLY LOOSE ROCK TO NATURAL STREAM BED.
2. CONSTRUCT A NEW 50' PREFABRICATED MODULAR BRIDGE. FINISH ELEVATION OF BRIDGE WILL MATCH EXISTING ROAD ELEVATION.
3. BLEND EXISTING ROAD TO BRIDGE SURFACE USING 3/4" MINUS CRUSHED ROCK FOR A SMOOTH TRANSITION.
4. INSTALL APPROACH AND GUARD RAILS BOTH SIDES OF BRIDGE.
5. INSTALL RIPRAP ON BOTH BANKS OF STREAM UNDER BRIDGE. SEE NOTE ON ELEVATION VIEW.

TONGASS
ENGINEERING & RECREATION

DESIGNED: M. WILLIAMS	DATE: 04/16/14	DATE:	REVISION:	BY:	
DRAWN: M. WILLIAMS	DATE: 04/16/14				
REVIEWED: Q. SMITH	DATE: 4/25/14				
TNFTYP:09/04					

BIG THORNE STEWARDSHIP

USDA FOREST SERVICE - TONGASS NATIONAL FOREST
R-10 - THORNE BAY RANGER DISTRICT

RD 3030000, MP 0.05

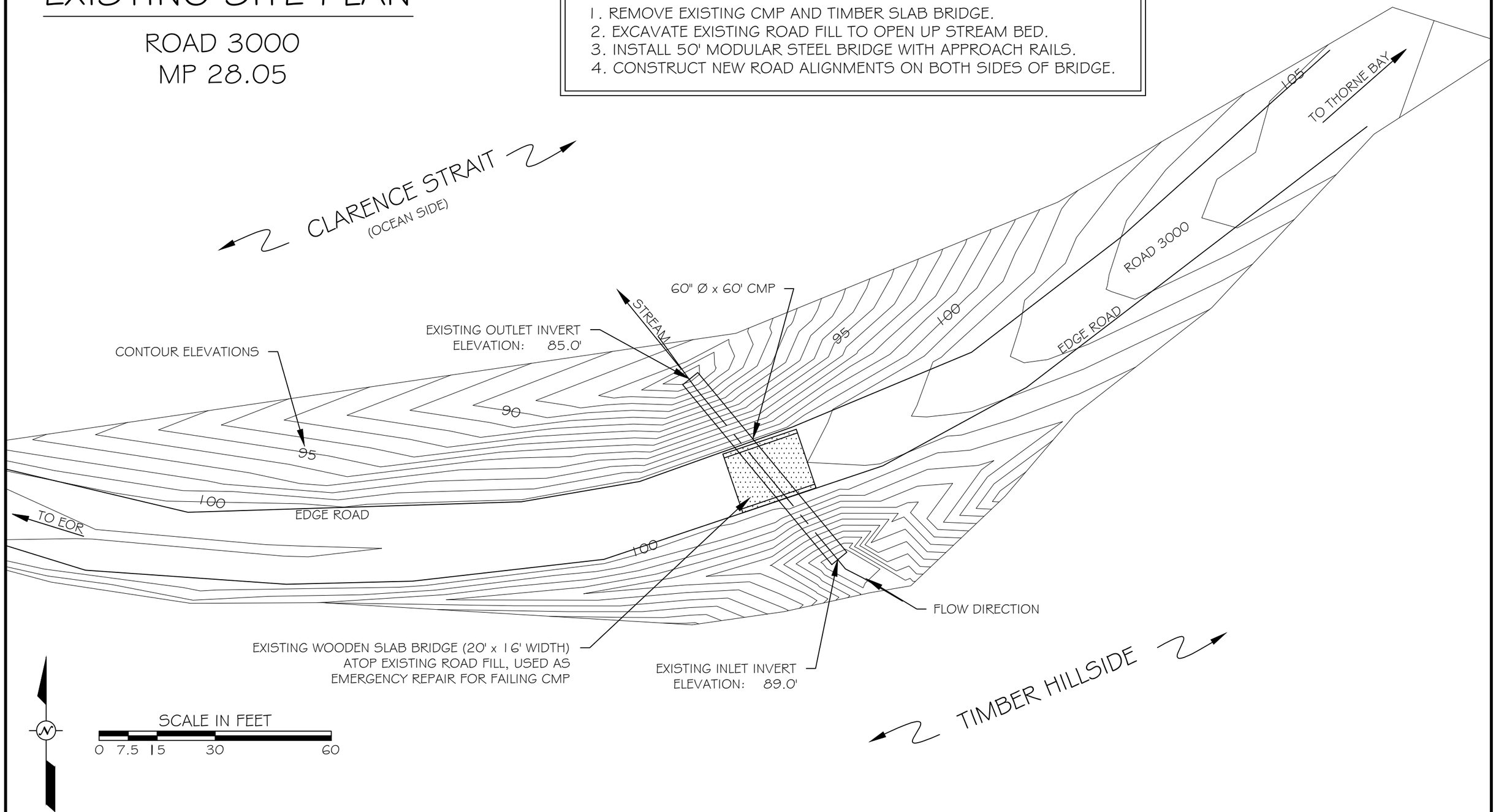
3030000_MP0_05.DWG
PLOT ON 11"X17" PAPER

EXISTING SITE PLAN

ROAD 3000
MP 28.05

GENERAL PROJECT DISCRIPTION

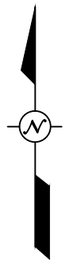
1. REMOVE EXISTING CMP AND TIMBER SLAB BRIDGE.
2. EXCAVATE EXISTING ROAD FILL TO OPEN UP STREAM BED.
3. INSTALL 50' MODULAR STEEL BRIDGE WITH APPROACH RAILS.
4. CONSTRUCT NEW ROAD ALIGNMENTS ON BOTH SIDES OF BRIDGE.

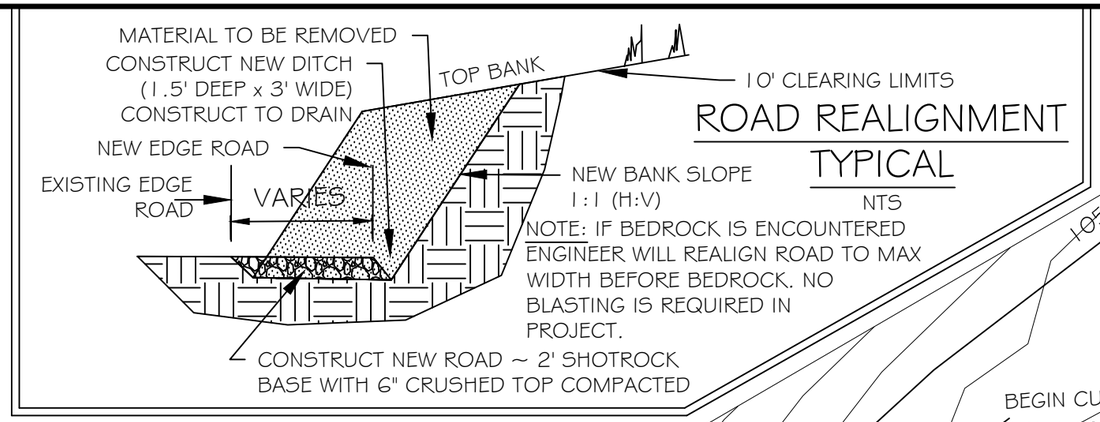


TONGASS ENGINEERING & RECREATION	DESIGNED: AJM	DATE: 6/2013	DATE:	REVISION:	BY:	BIG THORNE STEWARDSHIP	SITE PLAN ROAD 3000 MP 28.05
	DRAWN: AJM	DATE: 6/2013	XX/XX/XX	XXXXXXXXX	X. XXXXXX	USDA FOREST SERVICE - TONGASS NATIONAL FOREST R-10 - THORNE BAY RANGER DISTRICT	ACAD.DWG PLOT ON 11"X17" PAPER
	REVIEWED: X. XXXXXXXXX	DATE: XX/XX/XX	XX/XX/XX	XXXXXXXXXXX	X.XXXXXX		SH. 11 of 29
	TNFTYP:09/04		XX/XX/XX	XXXXXXXXXXX	X. XXXXXX		

PROPOSED SITE PLAN

ROAD 3000
MP 28.05





ROAD REALIGNMENT TYPICAL

NTS

CLARENCE STRAIT
(OCEAN SIDE)

INSTALL 50' PREFABRICATED STEEL BRIDGE WITH STEEL GUARD RAIL
ALIGN EDGE OF BRIDGE WITH EDGE OF ROAD ON THE OCEAN SIDE
CENTER BRIDGE OVER CENTER OF STREAM @ CENTER OF ROAD
REMOVE EXISTING 60" Ø x 60' CMP
REMOVE EXISTING 20' WOODEN SLAB BRIDGE

SHADED AREA IS APPROXIMATE
LIMITS OF SHOTROCK FILL REMOVAL
INCLUDING UNDER BRIDGE
DEPTH OF FILL AT MIDDLE
OF ROAD IS 15' TO 18'

STREAM

90
95
100
105

TO THORNE BAY

BEGIN CUT
STA 1+00

ROAD 3000
EDGE ROAD

PC
STA 1+36

REALIGNMENT 1
MIN R=200FT

AREA OF ROAD REALIGNMENT
IN SHADED PORTION ~ SEE TYPICAL

END CUT
STA 2+24

PT
STA 2+02

BEGIN CUT
STA 2+74

TO EOR

END CUT
STA 4+17

PT
STA 3+95

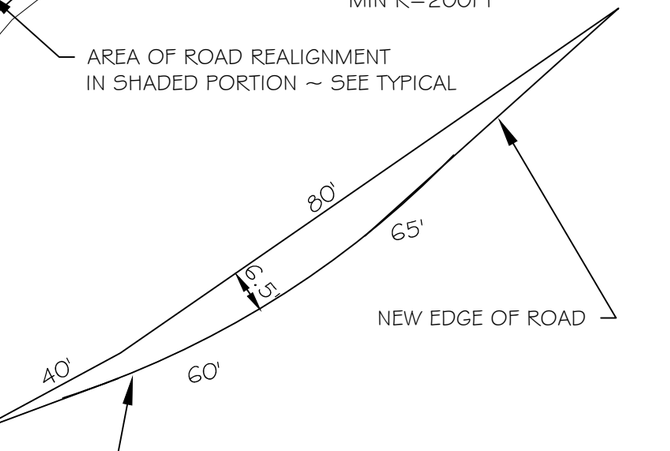
PC
STA 3+14

FLOW DIRECTION
STREAM

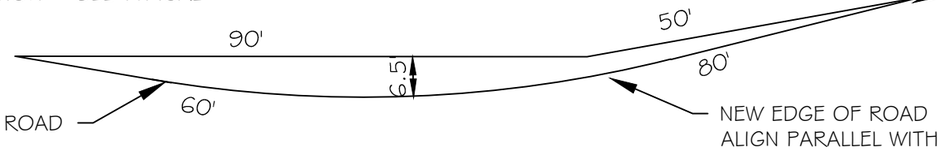
REALIGNMENT 2
MIN R=200FT

AREA OF ROAD REALIGNMENT
IN SHADED PORTION ~ SEE TYPICAL

SHADED AREA IS APPROXIMATE
LIMITS OF SHOTROCK FILL REMOVAL
DEPTH OF FILL AT MIDDLE
OF ROAD IS 15' TO 18'



ROAD REALIGNMENT
DIMENSIONS



NEW EDGE OF ROAD
ALIGN PARALLEL WITH BRIDGE & 2' TO SOUTH

SCALE IN FEET
0 7.5 15 30 60

TONGASS ENGINEERING & RECREATION	DESIGNED: AJM	DATE: 6/2013	DATE:	REVISION:	BY:	BIG THORNE STEWARDSHIP	PROPOSED PLAN ROAD 3000 MP 28.05
	DRAWN: AJM	DATE: 6/2013	XX/XX/XX	XXXXXXXXXX	X. XXXXXX	USDA FOREST SERVICE - TONGASS NATIONAL FOREST R-10 - THORNE BAY RANGER DISTRICT	ACAD.DWG PLOT ON 11"X17" PAPER
	REVIEWED: X. XXXXXXXXXX	DATE: XX/XX/XX	XX/XX/XX	XXXXXXXXXXXX	X.XXXXXX		SH. 12 of 29
	TNFTYP:09/04		XX/XX/XX	XXXXXXXXXXXX	X. XXXXXX		

FISH TIMING WINDOW FOR CONSTRUCTION

PREFERRED CONSTRUCTION OF THE BRIDGE IS LIMITED TO A WINDOW OF TIME BETWEEN JUNE 15 & AUGUST 15. REQUEST FOR DIFFERENT TIMING MAY BE SUBMITTED TO THE C.O. FOR APPROVAL

PROPOSED ELEVATION VIEW

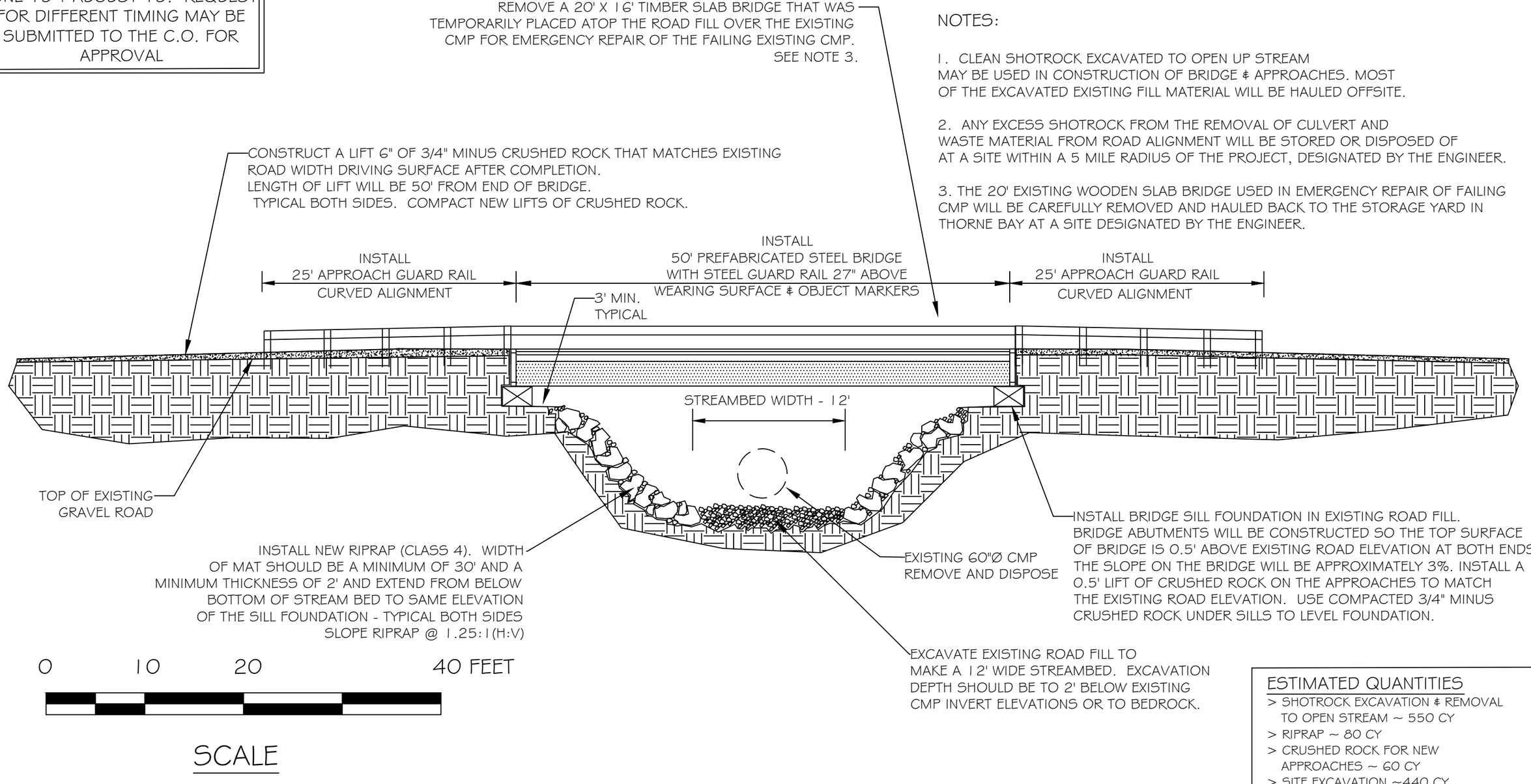
BRIDGE @ MP 28.05
ROAD 3000

NOTES:

1. CLEAN SHOTROCK EXCAVATED TO OPEN UP STREAM MAY BE USED IN CONSTRUCTION OF BRIDGE & APPROACHES. MOST OF THE EXCAVATED EXISTING FILL MATERIAL WILL BE HAULED OFFSITE.

2. ANY EXCESS SHOTROCK FROM THE REMOVAL OF CULVERT AND WASTE MATERIAL FROM ROAD ALIGNMENT WILL BE STORED OR DISPOSED OF AT A SITE WITHIN A 5 MILE RADIUS OF THE PROJECT, DESIGNATED BY THE ENGINEER.

3. THE 20' EXISTING WOODEN SLAB BRIDGE USED IN EMERGENCY REPAIR OF FAILING CMP WILL BE CAREFULLY REMOVED AND HAULED BACK TO THE STORAGE YARD IN THORNE BAY AT A SITE DESIGNATED BY THE ENGINEER.



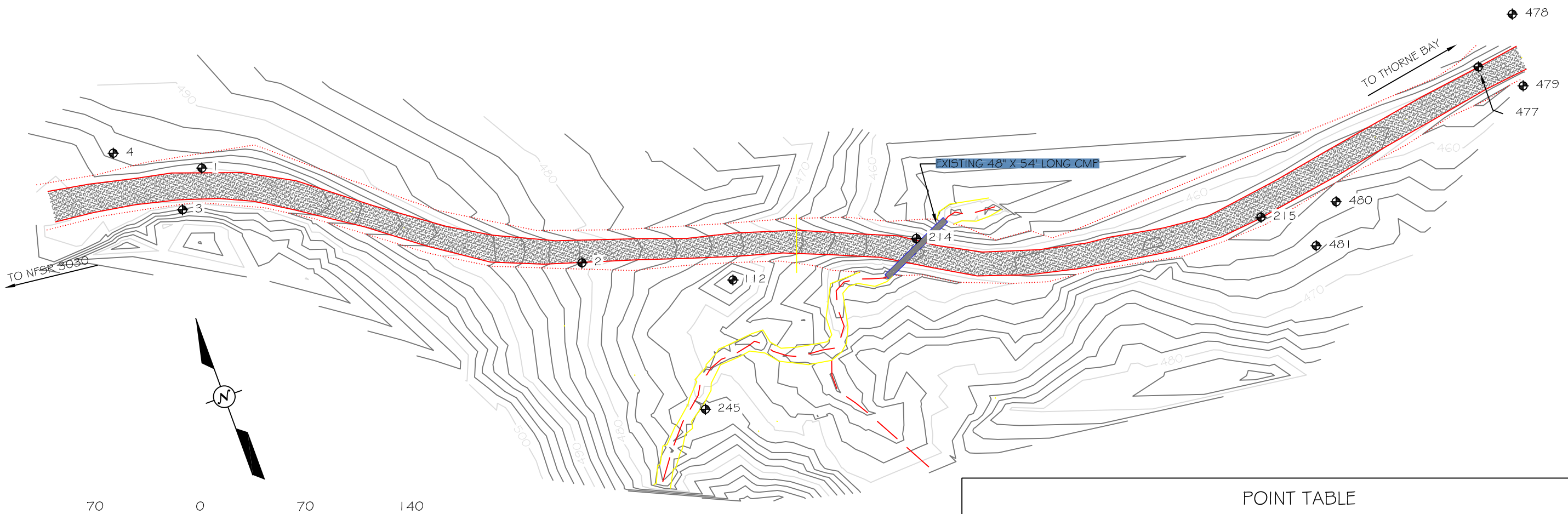
0 10 20 40 FEET

SCALE

ESTIMATED QUANTITIES

- SHOTROCK EXCAVATION & REMOVAL TO OPEN STREAM ~ 550 CY
- RIPRAP ~ 80 CY
- CRUSHED ROCK FOR NEW APPROACHES ~ 60 CY
- SITE EXCAVATION ~440 CY

TONGASS ENGINEERING & RECREATION	DESIGNED: AJM	DATE: 6/2013	DATE:	REVISION:	BY:	BIG THORNE STEWARDSHIP	PROPOSED ELEVATION RD 3000 MP 28.05
	DRAWN: AJM	DATE: 6/2013				USDA FOREST SERVICE - TONGASS NATIONAL FOREST R-10 - THORNE BAY RANGER DISTRICT	PLOT ON 11"X17" PAPER
	REVIEWED:	DATE:					SH. 13 of 29
	TNFTYP:09/04						



70 0 70 140

SCALE IN FEET

LEGEND	
— — —	CENTERLINE OF STREAM
—·—	CENTER LINE OF ROAD
———	EDGE OF ROAD
·····	TOE OF ROAD FILL
———	STREAM HIGHWATER
———	MAJOR CONTOUR
———	MINOR CONTOUR
	ROAD SURFACE

POINT TABLE

POINT #	ELEVATION	NORTHING	EASTING	DESCRIPTION
1	500.00	5000.00	3000.00	CP1: HUB & TACK ON SHOULDER OF ROAD
2	481.95	4854.27	3216.05	CP 2: HUB & TACK ON SHOULDER OF ROAD
3	502.94	4978.28	2978.43	RP1: MAGNAIL IN ROCK OUTCROP
4	497.99	5029.44	2947.97	RP2/TBM: MAGNAIL IN 4" ALDER STUMP
112	476.41	4809.20	3306.50	CP3: HUB & TACK IN NATIVE SOIL ≈ 23' SOUTH OF ROAD CENTERLINE
214	462.40	4793.46	3430.58	CP4: HUB & TACK ON SHOULDER OF ROAD
215	463.55	4728.29	3650.87	CP5: HUB & TACK ON SHOULDER OF ROAD
245	472.81	4734.65	3259.88	CP6: HUB & TACK ON STREAM EDGE ≈110' SOUTH OF ROAD CENTERLINE
477	459.03	4772.81	3820.98	CP7: 8" SPIKE ON SHOULDER OF ROAD
478	459.03	4798.10	3854.18	RP 6/TBM 2: MAGNAIL IN 24" STUMP
479	462.03	4750.78	3844.64	RP 5: MAGNAIL IN 24" STUMP
480	466.84	4720.89	3701.37	RP 3: MAGNAIL IN 20" STUMP
481	469.05	4697.92	3678.91	RP 4: MAGNAIL IN 20" CEDAR

1/14

SURVEY CONTROL: NFSR 3000 MP 39.38

SCALE: 1" = 70'

TONGASS ENGINEERING & RECREATION

DESIGNED: T. BRADSHAW	DATE: 07/12/11	DATE:	REVISION:	BY:	
DRAWN: T.BRADSHAW	DATE: 07/12/11	XX/XX/XX	XXXXXXXXXX	X. XXXXXX	
REVIEWED: Q. SMITH	DATE: 07/12/11	XX/XX/XX	XXXXXXXXXXXX	X.XXXXXX	
TNFTYP:09/04		XX/XX/XX	XXXXXXXXXXXX	X. XXXXXX	

FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE

BIG THORNE STEWARDSHIP

USDA FOREST SERVICE - TONGASS NATIONAL FOREST
R-10 - THORNE BAY RANGER DISTRICT

SURVEY CONTROL: NFSR 3000 MP 39.38

03_DESG_DET.DWG
PLOT ON 11"X17" PAPER

SH. 14 of 29

PROPOSED POINT TABLE

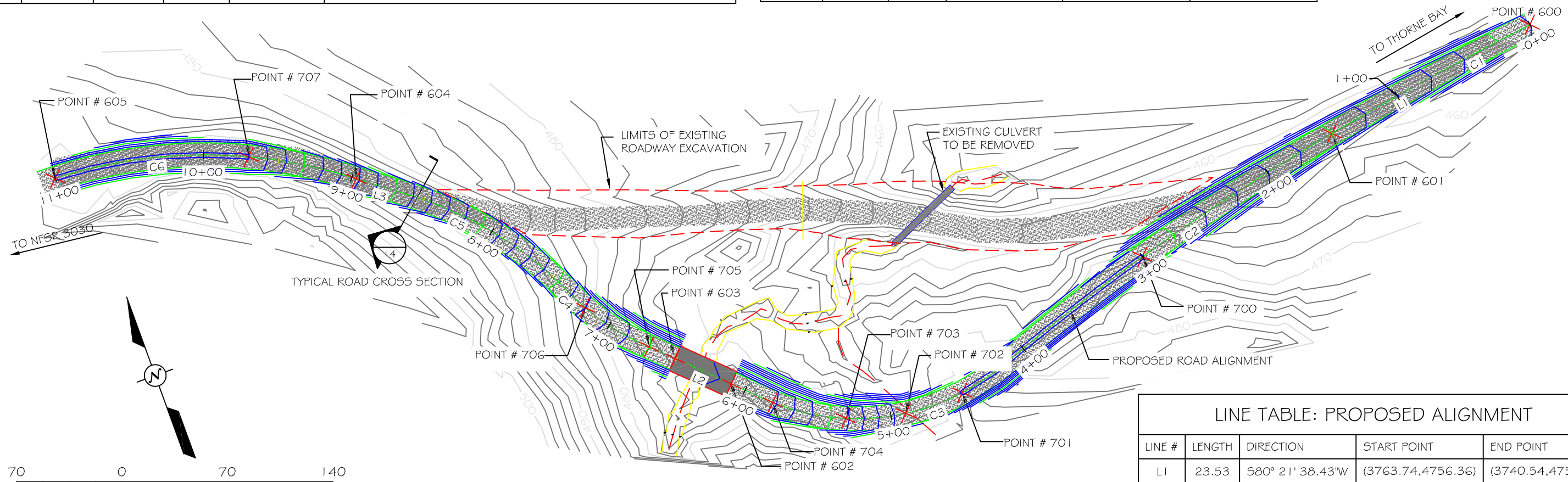
POINT #	ELEVATION	NORTHING	EASTING	STATION	DESCRIPTION
600	459.03	4768.77	3850.16	0+00	START OF STATIONING. ROAD ALIGNMENT TO MATCH EXISTING
601	465.03	4745.83	3701.94	1+50	START OF PROPOSED ALIGNMENT
602	478.83	4725.77	3270.63	6+10	START OF PROPOSED BRIDGE
603	479.65	4754.43	3241.32	6+51	END OF PROPOSED BRIDGE
604	497.19	4938.95	3083.23	8+97	END OF PROPOSED ALIGNMENT: RETURN TO MATCH EXISTING ALIGNMENT
605	503.03	5007.57	2895.67	11+00	END OF STATIONING
700	471.03	4711.87	3555.89	3+00	VERTICAL INFLECTION POINT
701	471.03	4667.97	3412.61	4+50	VERTICAL INFLECTION POINT
702	470.23	4667.87	3372.73	4+90	VERTICAL INFLECTION POINT
703	474.23	4678.28	3334.23	5+30	VERTICAL INFLECTION POINT
704	478.23	4704.89	3292.18	5+80	VERTICAL INFLECTION POINT
705	480.03	4767.72	3227.74	6+70	VERTICAL INFLECTION POINT
706	483.03	4806.65	3196.70	7+20	VERTICAL INFLECTION POINT
707	503.03	4977.07	3021.15	9+70	VERTICAL INFLECTION POINT

NOTES:

1. EXISTING ROADWAY WITHIN THE LIMITS OF EXCAVATION TO BE OBLITERATED AND RESTORED TO THE APPROXIMATE ORIGINAL GROUND CONTOURS IN ACCORDANCE WITH SECTION 211 OF THE FP-03 AND THE FSS. ALL MATERIAL WITHIN THE LIMITS OF EXISTING ROADWAY EXCAVATION TO BE REMOVED. SUITABLE MATERIAL TO BE STOCKPILED FOR REUSE IN ACCORDANCE WITH THE FP-03 SECTION 203. ALL EXCESS OR UNSUITABLE MATERIAL TO BE DISPOSED OF IN ACCORDANCE WITH FSS 204.14. LIMITS OF EXISTING ROADWAY EXCAVATION TO BE CONTAINED WITHIN THE EXISTING ROADWAY PRISM.
2. ALL DISTURBED AREAS TO BE RESTORED IN ACCORDANCE WITH ALL REQUIREMENTS OF FSS SECTION 625.
3. CONTRACTOR TO SUBMIT A WRITTEN PLAN FOR ROAD CLOSURE TO THE CO FOR APPROVAL AT A MINIMUM OF 14 DAYS BEFORE THE PLANNED CLOSURE. ROAD CLOSURE TO BE CONFINED TO A MAXIMUM OF 14 DAYS. WRITTEN PLAN TO INCLUDE DETAILS THAT INVOLVE PUBLIC NOTICE OF ROAD CLOSURE.
4. EXISTING CULVERT TO BE REMOVED AND DISPOSED OFF OF FOREST LAND PER FSS R10 203.04.
5. PROPOSED ROADWAY CONSTRUCTION SURVEY AND STAKING TO PERFORMED ON SITE BY A QUALIFIED INDIVIDUAL AND COMPLETED IN ACCORDANCE WITH THE TOLERANCES AND REQUIREMENTS OUTLINED IN THE FP-03 SECTION 152. BRIDGE LOCATION TOLERANCES ARE TO BE AS SHOWN IN THE BRIDGE DETAILS ON SHEET 17. PROPOSED POINTS ARE UNMARKED IN FIELD. POINTS TO BE LOCATED BY CONTRACTOR.
6. PRIOR TO THE START OF CONSTRUCTION, CONTRACTOR IS TO SUBMIT A WRITTEN PLAN THAT PROVIDES PERMANENT AND TEMPORARY EROSION CONTROL MEASURES TO MINIMIZE EROSION AND SEDIMENTATION DURING AND AFTER CONSTRUCTION AS PER FSS SECTION 157.03.

CURVE TABLE: PROPOSED ALIGNMENT

CURVE #	RADIUS	LENGTH	CHORD DIRECTION	START POINT	END POINT
C1	3000.00	87.31	S81° 50' 01.44"W	(3850.16,4768.77)	(3763.74,4756.36)
C2	1600.00	307.18	S75° 30' 00.00"W	(3740.54,4752.42)	(3443.60,4675.63)
C3	150.00	167.55	N78° 00' 00.00"W	(3443.60,4675.63)	(3288.10,4708.68)
C4	150.00	57.60	N35° 00' 00.00"W	(3223.46,4771.90)	(3190.63,4818.79)
C5	250.00	126.54	N38° 30' 00.00"W	(3190.63,4818.79)	(3112.70,4916.76)
C6	325.00	203.05	N69° 53' 54.64"W	(3083.27,4938.92)	(2895.67,5007.57)



LINE TABLE: PROPOSED ALIGNMENT

LINE #	LENGTH	DIRECTION	START POINT	END POINT
L1	23.53	S80° 21' 38.43"W	(3763.74,4756.36)	(3740.54,4752.42)
L2	90.41	N45° 38' 17.50"W	(3288.10,4708.68)	(3223.46,4771.90)
L3	36.84	N53° 01' 29.03"W	(3112.70,4916.76)	(3083.27,4938.92)

1/15 SITE PLAN: NFSR 3000 MP 39.38
SCALE: 1" = 70'

TONGASS ENGINEERING & RECREATION

DESIGNED: T. BRADSHAW	DATE: 07/12/11	DATE:	REVISION:	BY:
DRAWN: T.BRADSHAW	DATE: 07/12/11	XX/XX/XX	XXXXXXXXX	X. XXXXX
REVIEWED: Q. SMITH	DATE: 07/12/11	XX/XX/XX	XXXXXXXXXXX	X.XXXXX
TNFTYP: 09/04		XX/XX/XX	XXXXXXXXXXX	X. XXXXX

BIG THORNE STEWARDSHIP

USDA FOREST SERVICE - TONGASS NATIONAL FOREST
R-10 - THORNE BAY RANGER DISTRICT

SITE PLAN: NFSR 3000 MP 39.38

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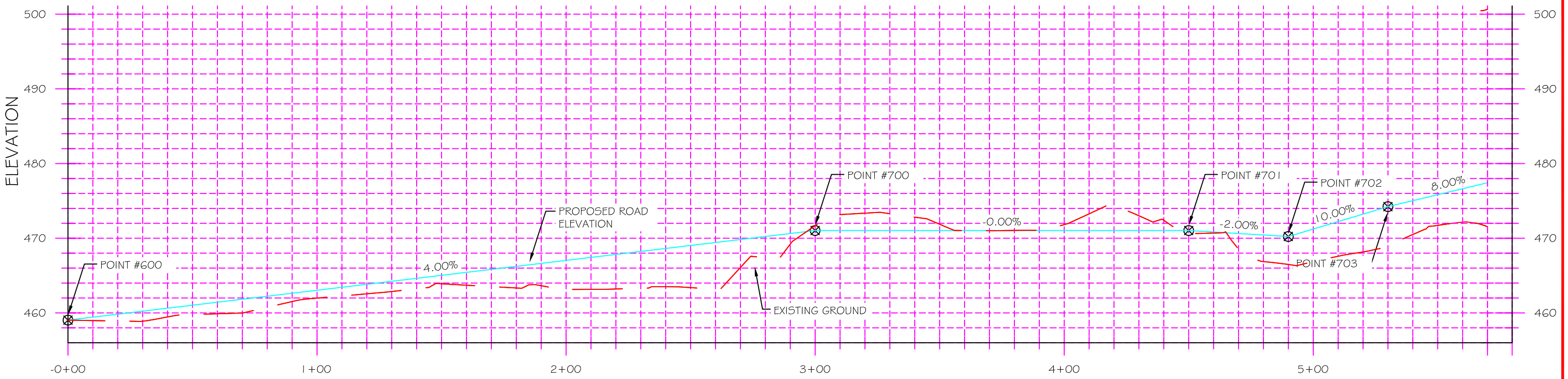
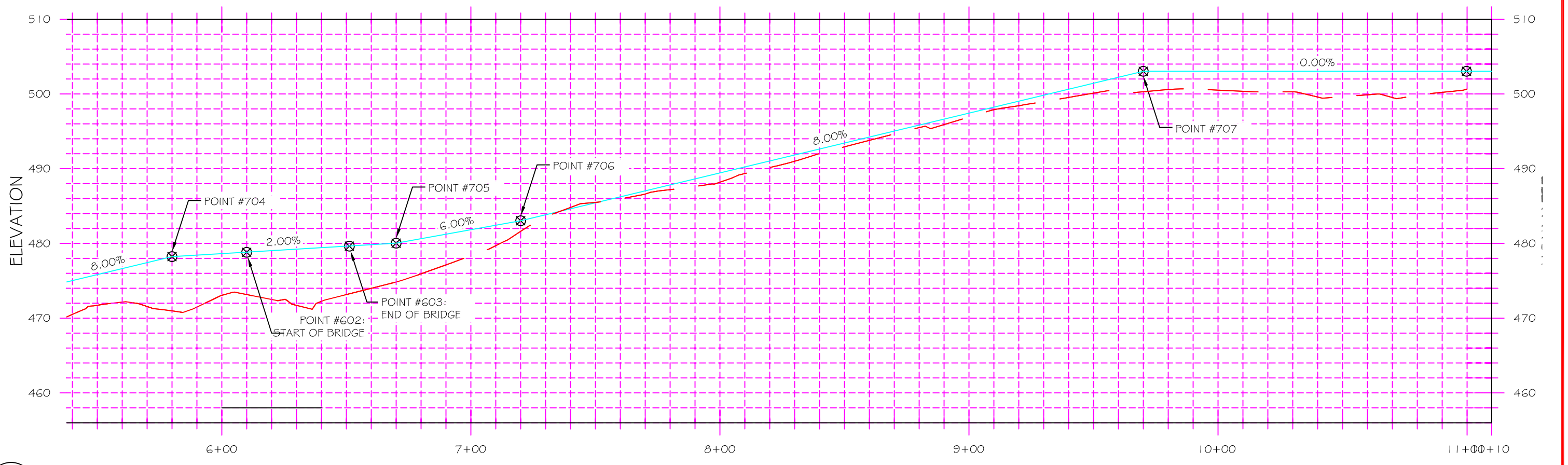
PLOT ON 11"X17" PAPER





1 / 16

PROPOSED VERTICAL ALIGNMENT: NFSR 3000 MP 39.38

SCALE: 1V:3H

TONGASS ENGINEERING & RECREATION	DESIGNED: T. BRADSHAW	DATE: 07/12/11	DATE:	REVISION:	BY:
	DRAWN: T.BRADSHAW	DATE: 07/12/11	XX/XX/XX	XXXXXXXXXX	X. XXXXXX
	REVIEWED: Q. SMITH	DATE: 07/12/11	XX/XX/XX	XXXXXXXXXXXX	X.XXXXXX
	TNFTYP: 09/04		XX/XX/XX	XXXXXXXXXXXX	X. XXXXXX

BIG THORNE STEWARDSHIP

USDA FOREST SERVICE - TONGASS NATIONAL FOREST
R-10 - THORNE BAY RANGER DISTRICT

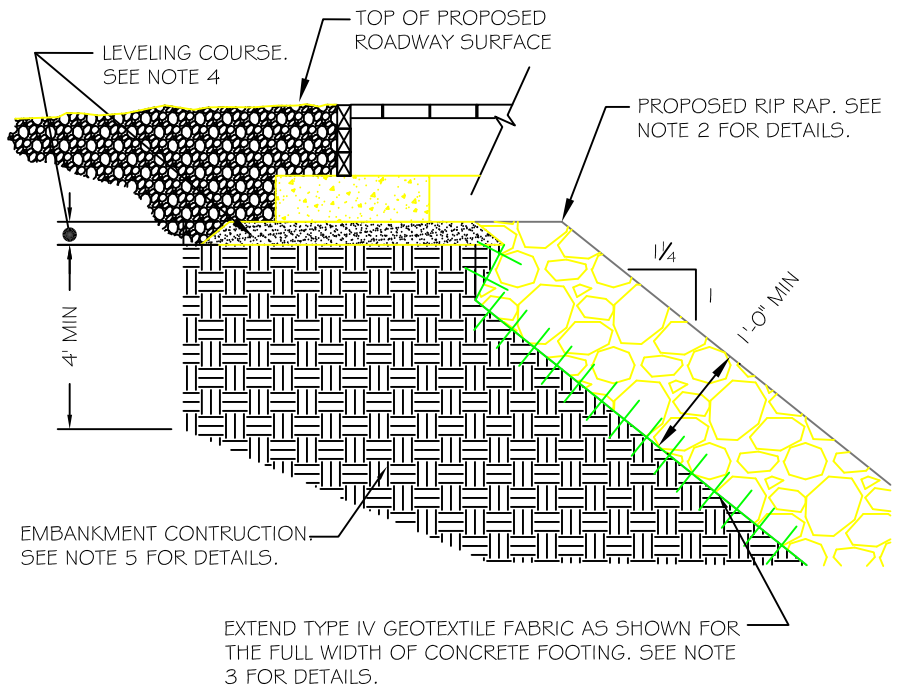
VERTICAL ALIGNMENT: NFSR 3000 MP 39.38

03_DESG_DET.DWG
PLOT ON 11"X17" PAPER

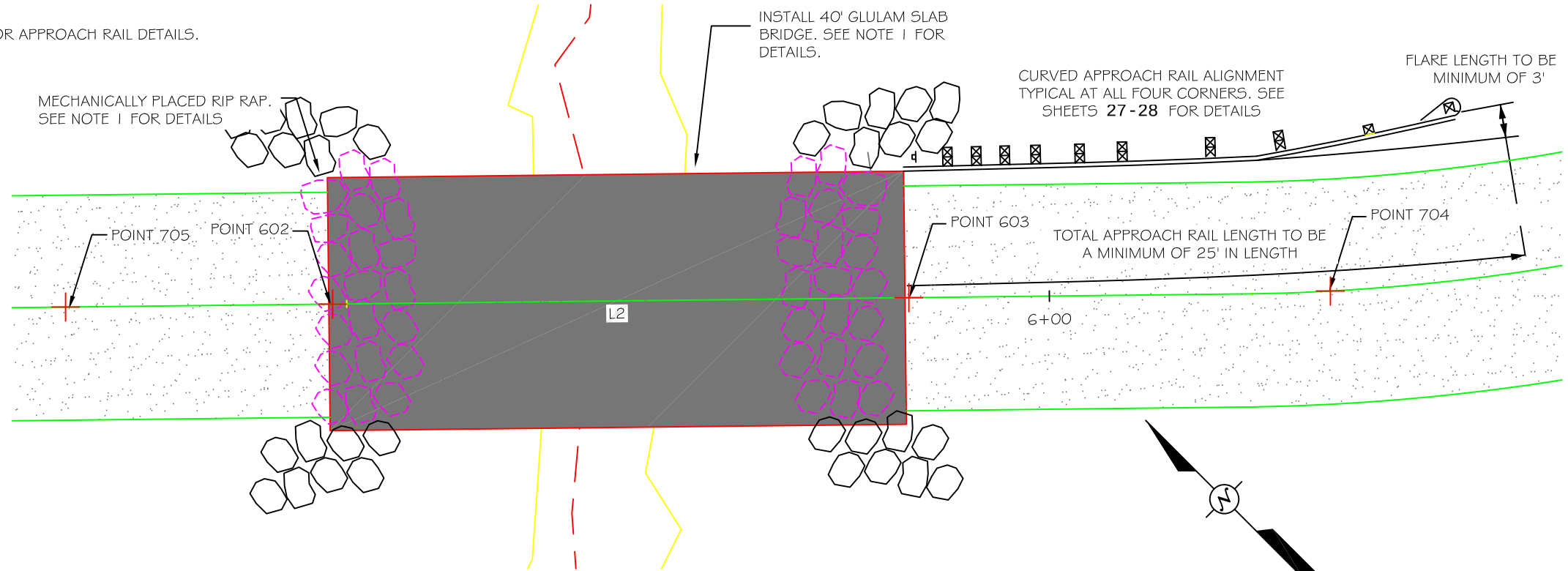
SH. 16 of 29

NOTES:

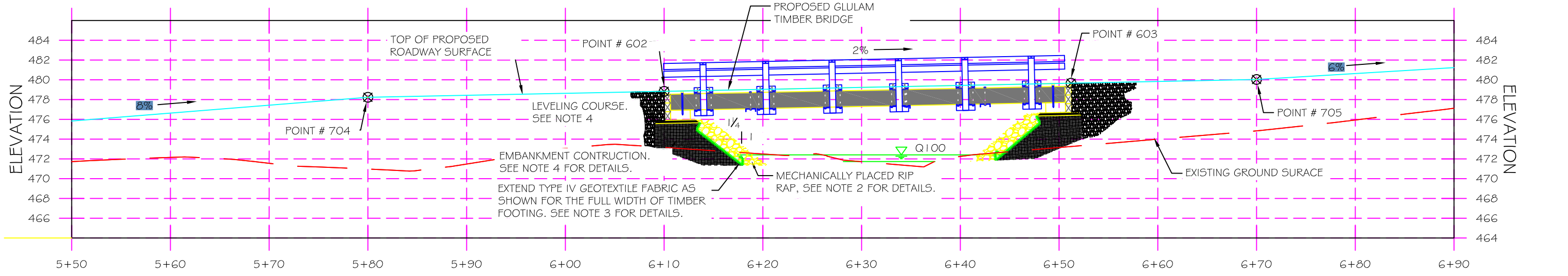
1. BRIDGE TO BE 40' GLULAM SLAB BRIDGE WITH FULL HEIGHT STEEL RAILING. SEE SHEETS 19-23 FOR BRIDGE MATERIALS AND FABRICATION DETAILS.
2. RIPRAP TO BE MECHANICALLY PLACED IN ACCORDANCE WITH FP-03 SECTION 251. RIP RAP SHALL BE A MINIMUM CLASS III AND CONFORM TO FSSS 705.02.
3. PLACE GEOTEXTILE FABRIC IN ACCORDANCE WITH FP-03 SECTION 207. FABRIC SHALL BE TYPE IV AND IS TO CONFORM TO THE MATERIAL SPECIFICATIONS CONTAINED WITHIN THE FP-03 SECTION 714..
4. A MINIMUM 6" DEPTH OF LEVELING COURSE MATERIAL TO BE PLACED DIRECTLY BELOW BRIDGE FOOTING. LEVELING COURSE SHALL CONFORM TO FSSS 704.01 FOUNDATION FILL. LEVELING COURSE SHALL EXTEND A MINIMUM OF 12" BEYOND THE PERIMETER OF CONCRETE FOOTING ON ALL SIDES. LEVELING COURSE TO BE PLACED IN ACCORDANCE WITH EMBANKMENT CONSTRUCTION SPECIFICATION 204.11 COMPACTION METHOD B, FINISH METHOD A, TOLERANCE CLASS C
5. ALL NON-LEVELING BRIDGE BEARING MATERIAL PLACED BELOW THE LOWEST ELEVATION OF THE FOOTING TO BE CONSIDERED EMBANKMENT CONSTRICTION AND SHALL CONFORM TO FSSS 704.06 UNCLASSIFIED BORROW. EMBANKMENT CONSTRUCTION MATERIAL SHALL EXTEND TO A DEPTH NO LESS THEN 4' BELOW THE BRIDGE FOOTING AND 24" BEYOND ITS PERIMETER. EMBANKMENT TO BE CONSTRUCTED IN ACCORDANCE WITH FSSS 204.10.B. EMBANKMENT COMPACTION SHALL BE DONE IN ACCORDANCE WITH FSSS 204.11 COMPACTION METHOD B, FINISH METHOD A, TOLERANCE CLASS C.
6. FINISHED BRIDGE TO BE SLOPED AT A MINIMUM OF 0.5% AND A MAXIMUM OF 3%
7. SEE SHEET 19 FOR APPROACH ROADWAY MATERIAL AND CONSTRUCTION DETAILS.
8. COMPLETE APPROACH RAIL DETAILS NOT SHOWN FOR CLARITY. SEE SHEETS 27-28 FOR APPROACH RAIL DETAILS.



2/17 BRIDGE ABUTMENT DETAIL: NFSR 3000 MP 39.38
SCALE: 1" = 10'

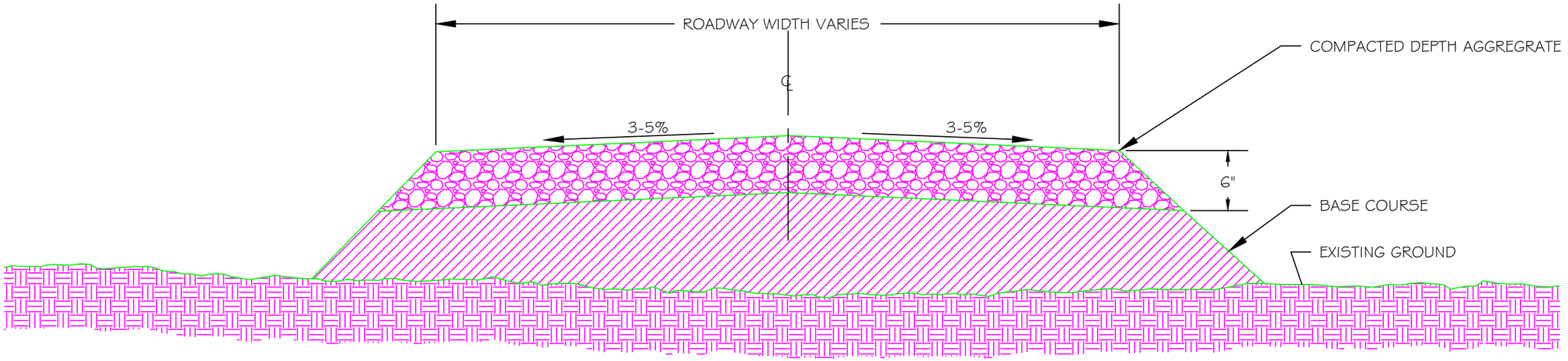


3/17 BRIDGE CONTROL PLAN VIEW: NFSR 3000 MP 39.38
SCALE: 1" = 10'



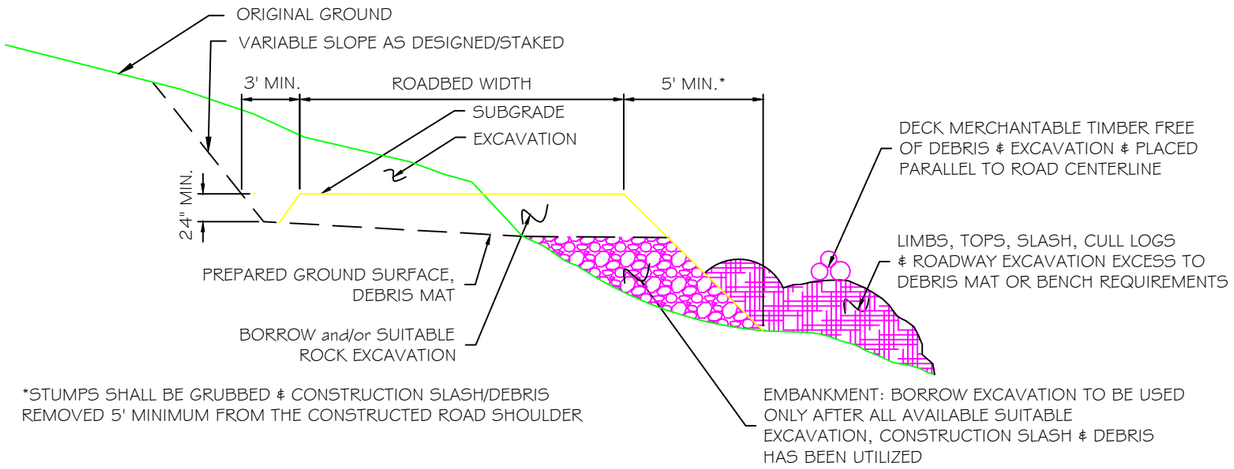
1/17 BRIDGE CONTROL SECTION VIEW: NFSR 3000 MP 39.38
SCALE: 1" = 10'

TONGASS ENGINEERING & RECREATION	DESIGNED: T. BRADSHAW	DATE: 07/12/11	DATE:	REVISION:	BY:	BIG THORNE STEWARDSHIP	BRIDGE PLAN: NFSR 3000 MP 39.38
	DRAWN: T.BRADSHAW	DATE: 07/12/11	XX/XX/XX	XXXXXXXXXX	X. XXXXXX	USDA FOREST SERVICE - TONGASS NATIONAL FOREST	03_DESG_DET.DWG
	REVIEWED: Q. SMITH	DATE: 07/12/11	XX/XX/XX	XXXXXXXXXXXX	X.XXXXXX	R-10 - THORNE BAY RANGER DISTRICT	PLOT ON 11"X17" PAPER
	TNFTYP:09/04		XX/XX/XX	XXXXXXXXXXXX	X. XXXXXX		SH. 17 of 29

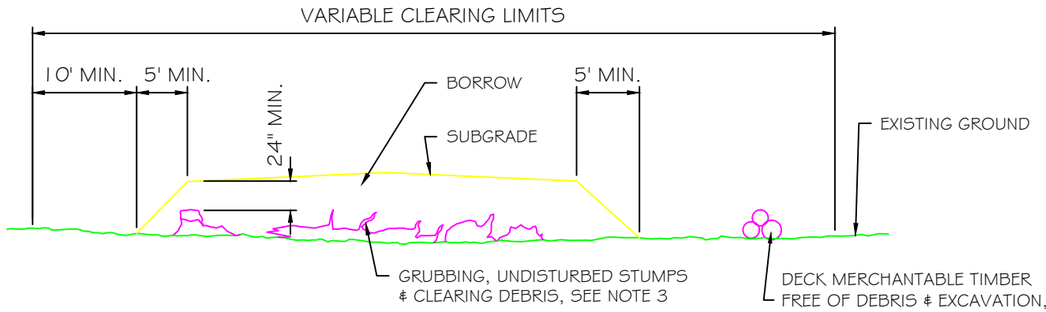


TYPICAL ROAD X-SECTION

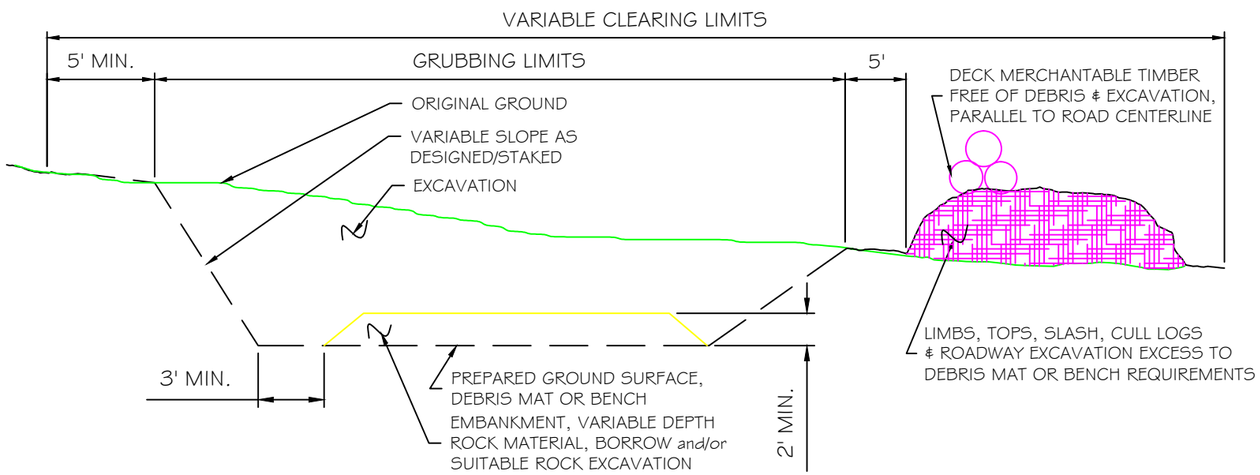
TONGASS ENGINEERING & RECREATION	DESIGNED: X. XXXXXXX	DATE: XX/XX/XX	DATE:	REVISION:	BY:	BIG THORNE STEWARDSHIP	ROAD X-SECTION TYPICAL
	DRAWN: SJC	DATE: 1/25/05	XX/XX/XX	XXXXXXXXX	X. XXXXXX	USDA FOREST SERVICE - TONGASS NATIONAL FOREST R-10 - THORNE BAY RANGER DISTRICT	ROAD_TYPICALS_COMBINED.DWG PLOT ON 11"X17" PAPER
	REVIEWED: K. BRAY	DATE: 1/25/05	XX/XX/XX	XXXXXXXXXXX	X.XXXXXX		SH. 18 of 29
	TNFTYP:08/2004		XX/XX/XX	XXXXXXXXXXX	X. XXXXXX		



TYPICAL SIDEHILL SECTION



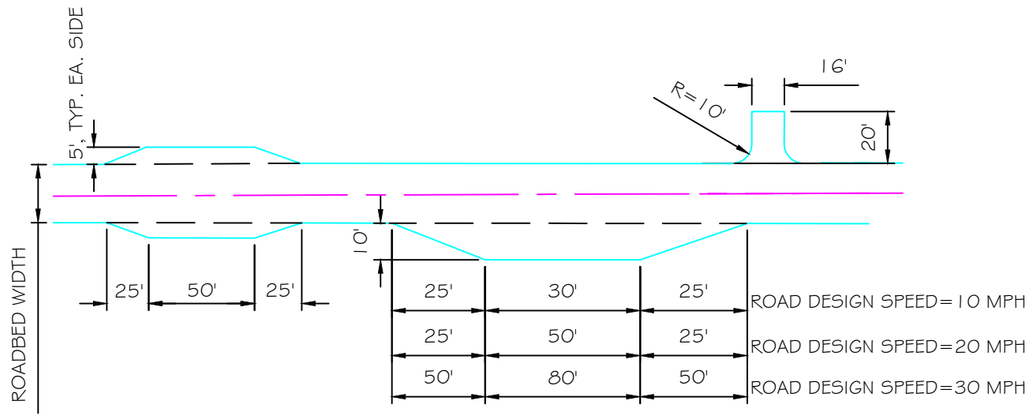
TYPICAL OVERLAY SECTION



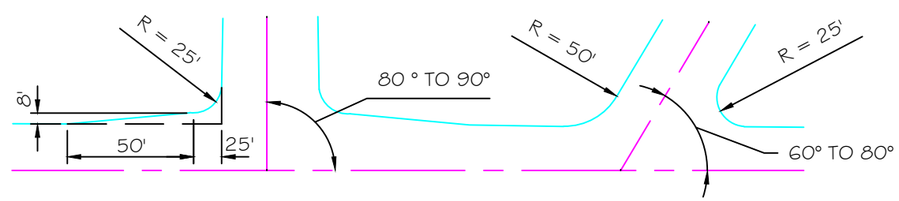
TYPICAL THROUGH CUT SECTION

NOTES

1. PROFILE ELEVATIONS ARE SHOWN TO SUBGRADE. SUBGRADE TO BE CONSTRUCTED IN ACCORDANCE WITH SECTION 204 OF THE FP-03 AND FSS . ALL UNSUITABLE MATERIAL TO BE DISPOSED OF OFF OF FOREST LAND PER FSS 204.14. A MINIMUM OF 24" OF SUGRADE TO BE PLACED OVER NATIVE SOIL. SUGRADE MATERAIL TO CONFORM TO UNCLASSIFIED BORROW SPECIFICATION 704.06.
2. A MINIMUM OF 6" OF SURFACE COURSE AGGREATE TO BE PLACED ON TOP OF SUBGRADE MATERIAL. SURFACE COURSE AGGREGATE TO CONFORM TO THE MATERIAL SPECIFICATIONS OF THE FP-03 703.05 SUBBASE-B AS OUTLINED IN TABLE 703-2. SURFACE COURSE TO BE PLACED IN A MAXIMUM OF 6" LIFTS.
3. ROADWAY EMBANKMENT CONSTRUCTION TO BE COMPLETED USING COMPACTION METHOD A AND FINISH METHOD A AND TOLERANCE CLASS C PER FSS 204.
4. CROWN TRAVELED WAY OR ROADBED AT 2%
5. UNDISTRUBED STUMPS AND OTHER CLEARING DEBRIS IN EMBANKMENT AREAS MAY BE LEFT IN PLACE IF THEY NOT NOT EXTNED CLOSER THEN 24" TO ANY SUBGRADE. (rEFERENCE SPEC 201.05b)
6. UNLESS OTHERWISE INDICATED OR STAKED, ALL FILL SLOPES SHALL BE 1:1-1/4 AND ALL CUT SLOPES SHALL BE 1:1 OR AS SHOWN ON THE STAKING NOTES.



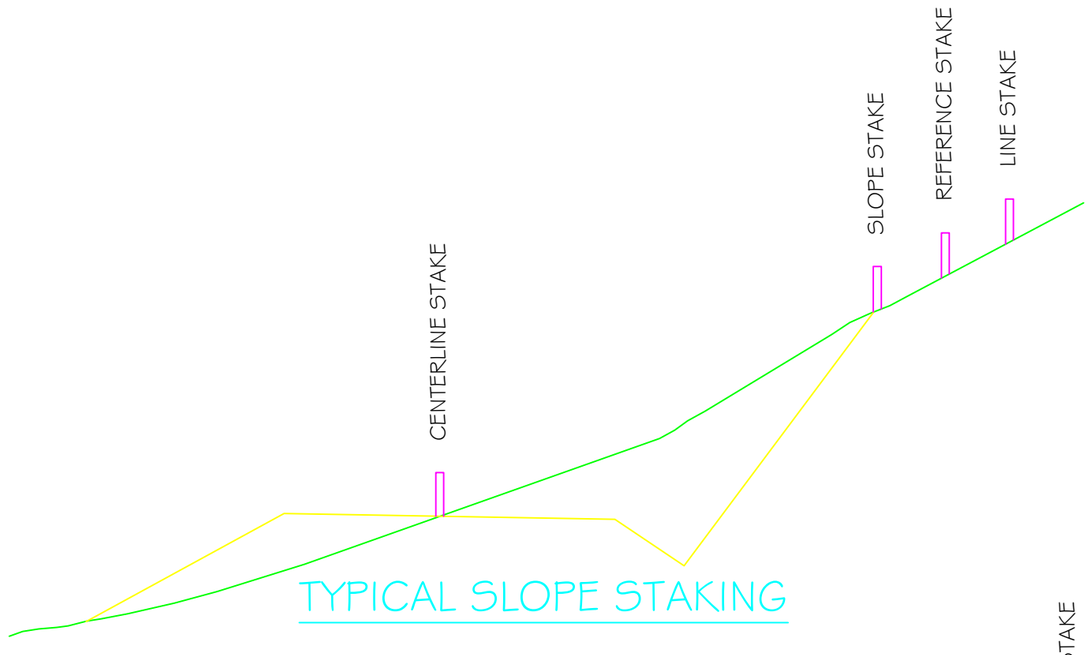
TURNOUT/PULLOUT DETAILS



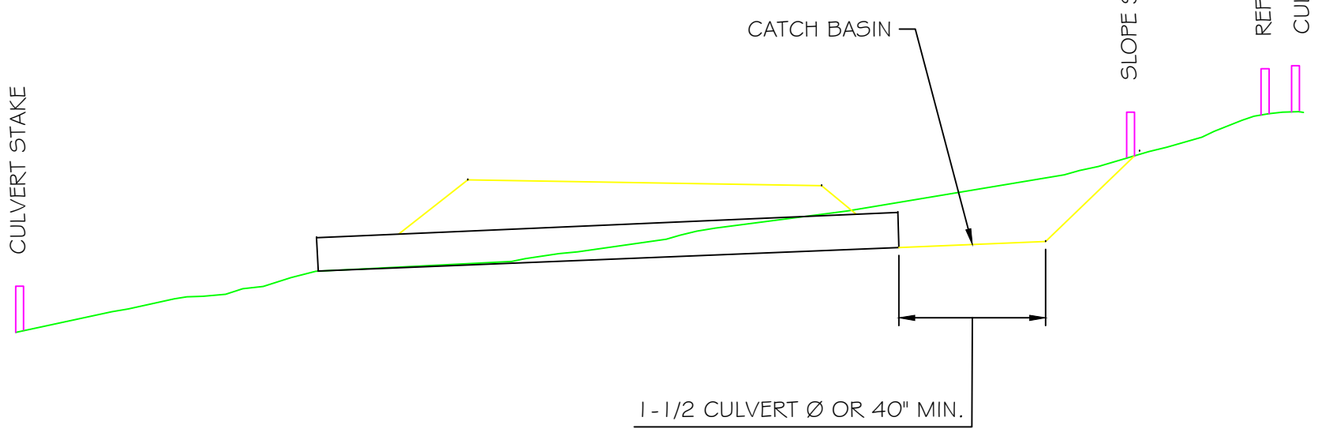
INTERSECTION DETAILS

TONGASS ENGINEERING & RECREATION	DESIGNED: USFS	DATE: XX/XX/XX	DATE:	REVISION:	BY:	BIG THORNE STEWARDSHIP	TYPICAL ROAD SECTIONS
	DRAWN: SJC	DATE: 1/19/05	XX/XX/XX	XXXXXXXXX	X. XXXXX	USDA FOREST SERVICE - TONGASS NATIONAL FOREST R-10 - THORNE BAY RANGER DISTRICT	14_TYP_ROAD.DWG PLOT ON 11"X17" PAPER
	REVIEWED: K. BRAY	DATE: 01/2005	XX/XX/XX	XXXXXXXXXXX	X.XXXXX		SH. 19 of 29
	TNFTYP:01/05		XX/XX/XX	XXXXXXXXXXX	X. XXXXX		

LINE STAKE IS AN UNMARKED STAKE IN ALIGNMENT WITH CENTERLINE AND REFERENCE STAKES - REQUIRED ONLY WHERE NO SLOPE STAKE IS NECESSARY.



TYPICAL SLOPE STAKING

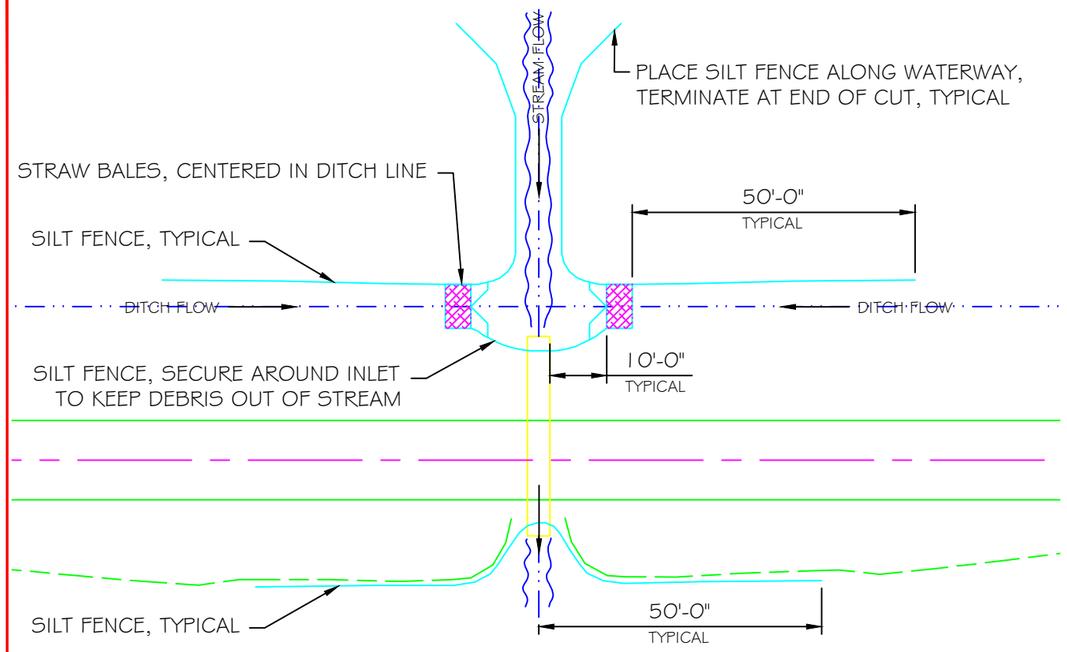


CONTRACTOR IS REQUIRED TO MARK 18" CULVERTS WITH A REFERENCE STAKE SHOWING ONLY CULVERT DIMENSIONS. CULVERTS GREATER THAN 18" BUT LESS THAN 60' SHALL BE STAKED ONLY ON THE INLET END. CULVERTS 60" AND GREATER OR REQUIRING FISH PASSAGE SHALL BE STAKED ON BOTH THE INLET AND OUTLET ENDS.

TYPICAL CULVERT STAKING

NOTES

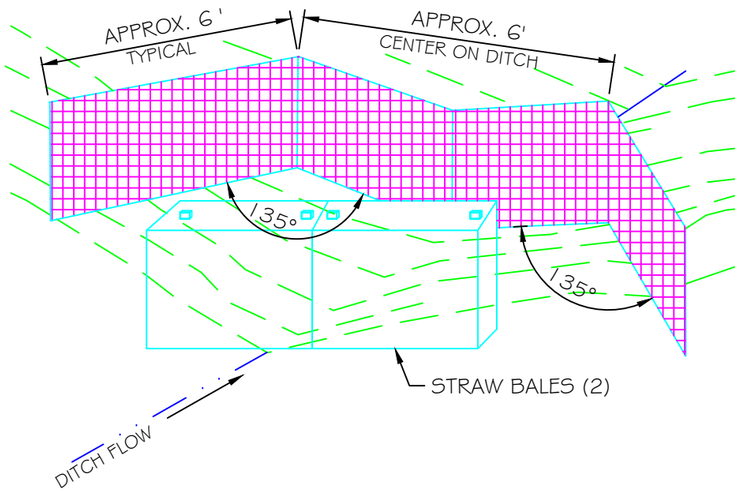
1. CONSTRUCTION SURVEY AND STAKING TOLERENCES ARE CONTAINED IN FP-03-SECTION - 152.03, TABLE 152-1.
2. STAKES AND HUBS HAVE THE FOLLOWING NOMINAL DIMENSIONS:
   HUBS: 2-IN X 3/4-IN X 18-IN OR
   2-IN X 3/4-IN X 24-IN
   STAKES: 2-IN X 3/8-IN X 48-IN
3. PAINT TOPS OF ALL STAKES AND HUBS FLUORESCENT ORANGE. FLAG STAKES AND HUBS WITH FLUORESCENT ORANGE FLAGGING.
4. MARK CLEARING LIMITS WITH HIGH VISIBILITY FLUORESCENT ORANGE FLAGGING, NOMINAL DIMENSION 1-IN WIDE. EACH FLAG STREAMER LENGTH TO BE APPROXIMATELY 24-IN AND EACH FLAG TO BE SECURELY TIED TO VEGETATION APPROXIMATELY 5-FT ABOVE GROUND LEVEL.
5. MARK OTHER FEATURES AND SPECIAL STRUCTURES WITH COLORS APPROVED IN WRITING BY THE C.O.
6. UNLESS WAIVED IN WRITING BY THE C.O. UPON COMPLETION OF CLEARING AND GRUBBING, BUT PRIOR TO EXCAVATION AND PLACING BORROW, ESTABLISH CENTERLINE FROM THE REFERENCE POINT WITH A LATH SHOWING CUT OR FILL TO FINISH GRADE.
7. ESTABLISH CLEARING LIMITS USING METHOD III UNLESS ACTUAL CATCH POINT IS STAKED.
8. NO SLOPE STAKE REQUIRED ON SECTIONS WHERE THEORETICAL CATCH IS A CUT LESS THAN 10-FT.
9. ESTABLISH CLEARING LIMITS ON BOTH SIDES OF EACH CENTERLINE STATION USING METHOD III, UNLESS THE ACTUAL CATCHPOINT IS STAKED. STAKE REFERENCES FOR EACH CENTERLINE STATION ON THE UPHILL SIDE ONLY. ESTABLISH SLOPE STAKES ONLY FOR THE SIDE ON ANY SECTION WHERE THE SLOPE STAKE NOTES SHOW A CUT GREATER THAN 10' AT THE THEORETICAL CATCHPOINT.
10. SET REFERENCE STAKES A MINIMUM OF 15' BEHIND THE CLEARING LIMITS. DISPLAY THE FOLLOWING INFORMATION ON REFERENCE STAKES: "L" STATION, HORIZONTAL DISTANCE TO CENTERLINE, VERTICAL DISTANCE TO FINISHED GRADE, THE AZIMUTH * FROM THE R.P. TO THE CENTERLINE STAKE, SLOPE RATIO, AND ROAD WIDTH LEFT AND RIGHT OF CENTERLINE. DISPLAY THE CATCH POINT INFORMATION ON THE R.P. AND RHT HORIZONTAL DISTANCE FROM THE R.P. TO THE CATCH POINT WHEN SLPE STAKES ARE REQUIRED.
    *IN LIEU OF DISPLAYING THE AZIMUTH, PLACE AN UNMARKED LINE LATH A MINIMUM OF 15' BEHIND THE REFERENCE STAKE IN LINE WITH THE CENTERLINE, SLOPE STAKE, AND REFERENCE STAKES, WHEN DIRECTED BY THE CO.
11. DISPLAY THE FOLLOWING INFORMATION ON SLOPE STAKES: "L" STATION, HORIZONTAL DISTANCE TO CENTERLINE, VERTICAL DISTANCE TO FINSIHED GRADE, AND SLOPE RATIO. DISPLAY THE HORIZONTAL DISTANCE FROM THE SLOPE STAKE TO THE CATCH POINT WHEN SLOPE STAKES ARE SET BACK TO AVOID DESTRUCTION DURING CLEARING OPERATIONS.



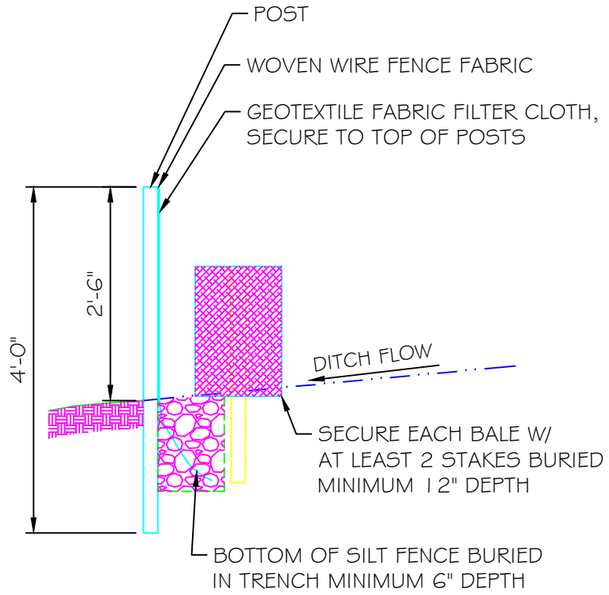
TYPICAL SEDIMENT CONTROL AT CULVERTS

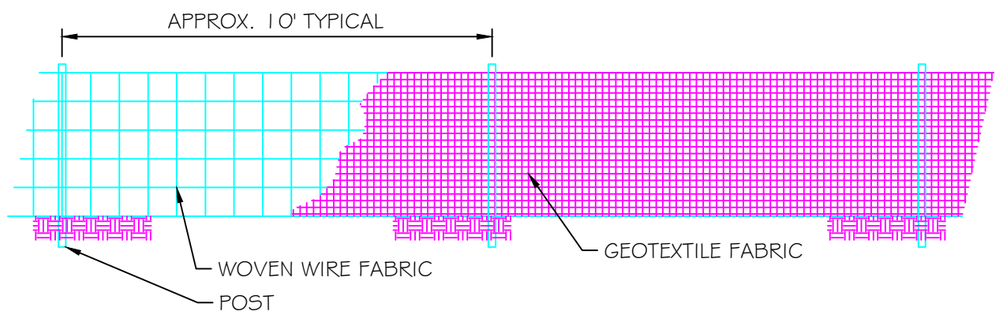
NOTES:

1. SILT FENCE CONSISTS OF WOVEN WIRE FENCE FABRIC WITH A MAXIMUM 6 INCHES MESH, MINIMUM HEIGHT 30 INCHES.
2. THE CO MAY REQUIRE ADJUSTMENTS TO ACTUAL LENGTHS OR LOCATIONS TO FIT FIELD CONDITIONS.
3. INSPECT SILT FENCES AFTER EACH RUNOFF EVENT AND IMMEDIATELY REPAIR ALL EROSION ALONG EDGES AND BOTTOM.
4. ACCUMULATED DEPTH OF SEDIMENT SHALL NOT EXCEED ONE HALF THE ORIGINAL HEIGHT OF THE SILT FENCE.
5. IN AREAS DESIGNATED FOR BRUSH BARRIERS, LIMIT CLEARING TO TREES, SHRUBS AND PLANTS LESS THAN 4 INCHES IN DIAMETER. GRUBBING SHALL NOT BE PERFORMED IN THESE AREAS.
6. BRUSH BARIER SHALL BE CONSTRUCTED APPROX. PARALLEL TO ORIGINAL GROUND CONTOUR. USE WELL-INTERMINGLED MASS OF BRUSH, TREES, TRIMMINGS, ETC. BARRIER SHALL BE POROUS ENOUGH TO ALLOW WATER TO FILTER THROUGH. SECURE BY PLACING HEAVIER MATERIAL (TREES, LOGS, ETC.) ON TOP OF AND THROUGHOUT THE BRUSH.
7. ADJOIN BRUSH BARRIER WITH ROADWAY SLOPE ON THE LOW END AS NEEDED TO CONTAIN SEDIMENTS.

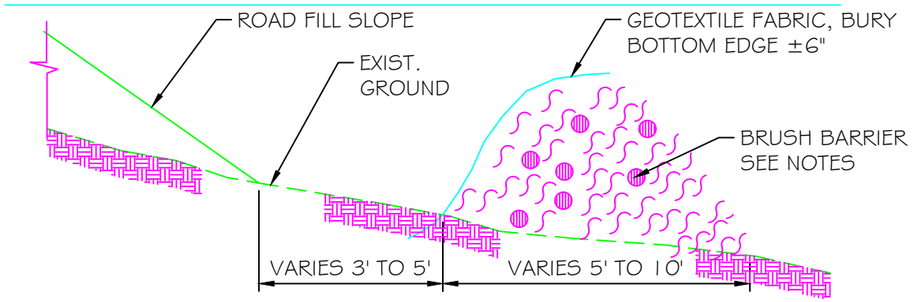


TYPICAL SILT FENCE INSTALLATION FOR DITCHES



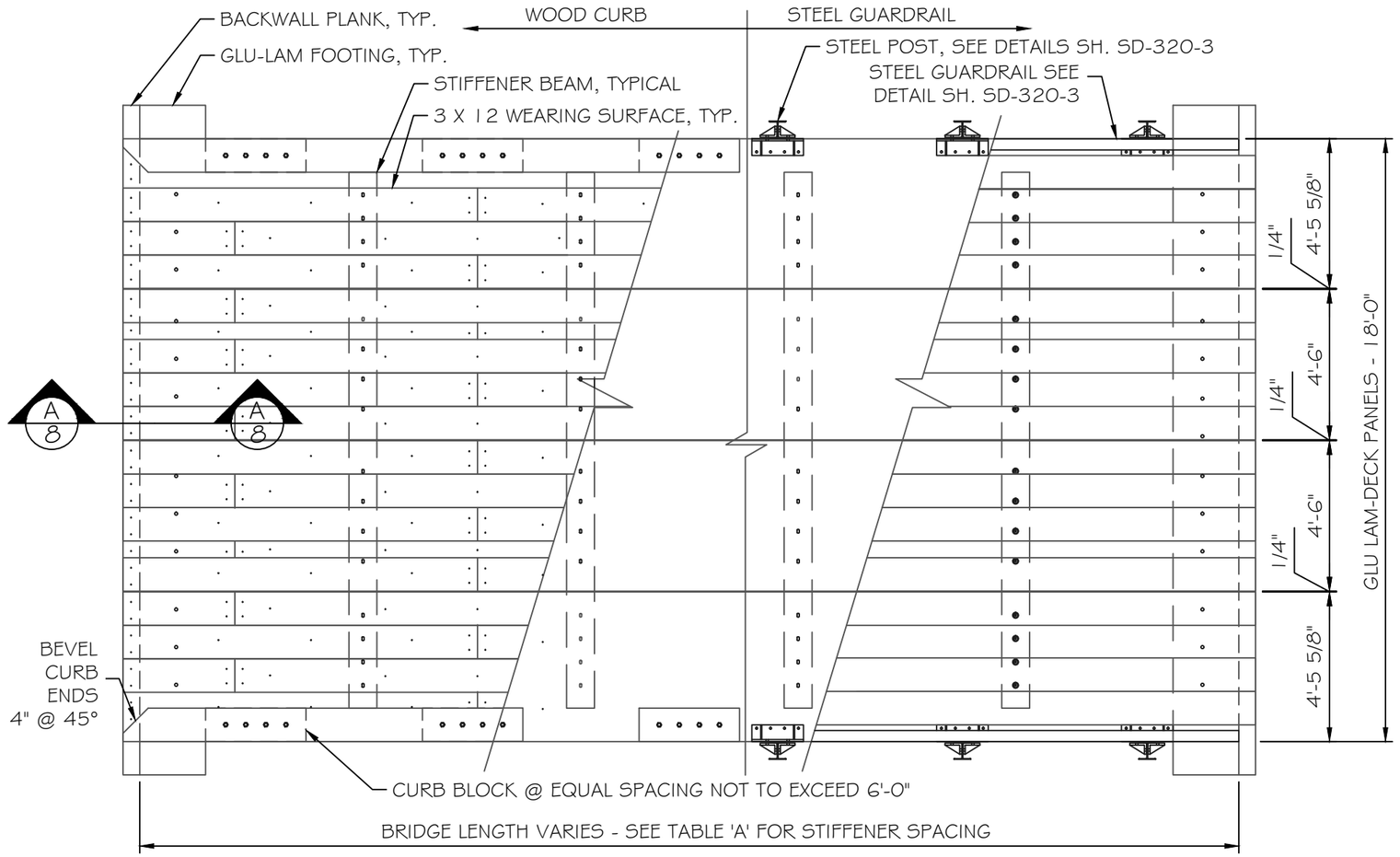


TYPICAL SEDIMENT CONTROL AT CULVERTS

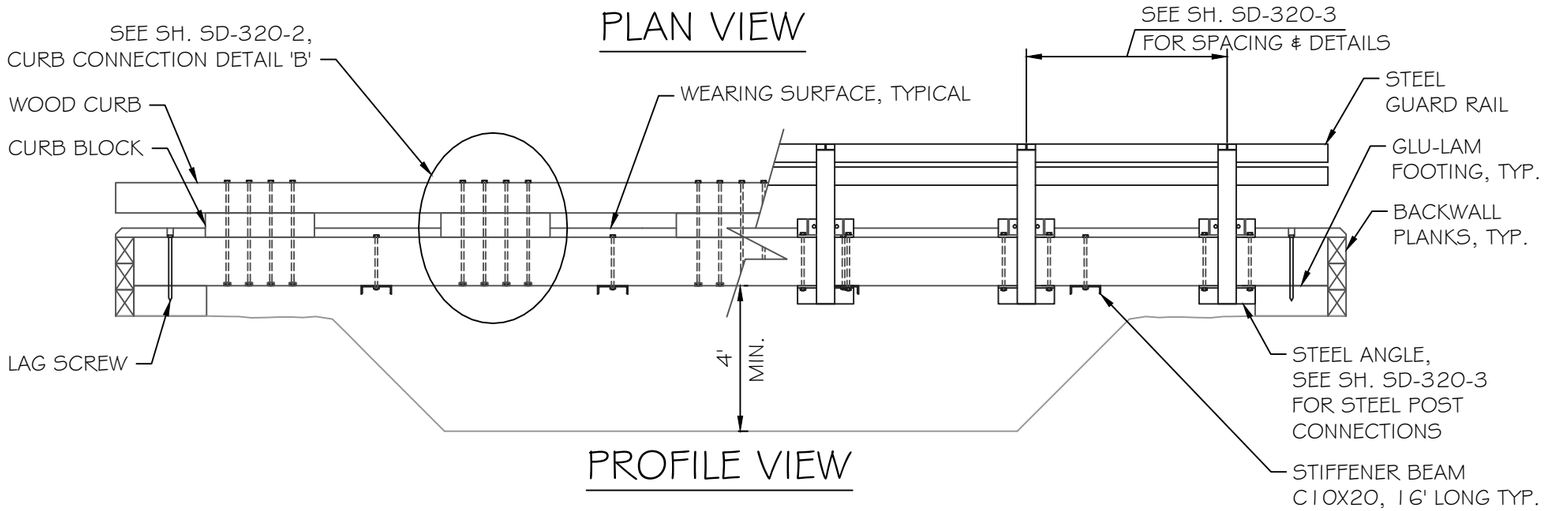


TYPICAL BRUSH BARRIER

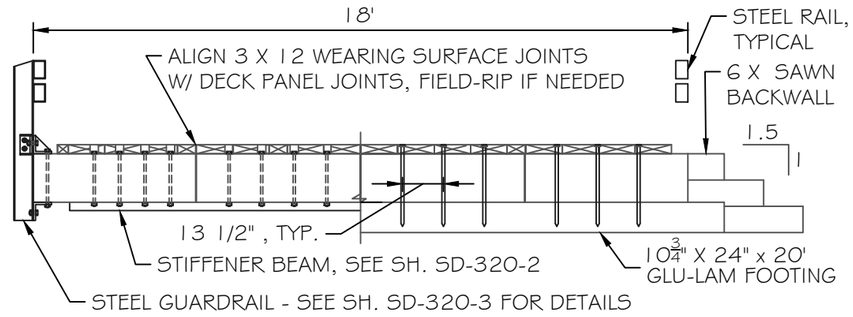
TONGASS ENGINEERING & RECREATION	DESIGNED:	DATE:	DATE:	REVISION:	BY:	BIG THORNE STEWARDSHIP	EROSION CONTROL DEVICES TYPICAL
	DRAWN: SJC	DATE: 01/2005				USDA FOREST SERVICE - TONGASS NATIONAL FOREST R-10 - THORNE BAY RANGER DISTRICT	EROSION CONTROL.DWG PLOT ON 11"X17" PAPER
	REVIEWED: K. BRAY	DATE: 01/2005					SH. 21 of 29
	TNFTYP:01/05						



PLAN VIEW



PROFILE VIEW



SECTION @ MIDSPAN SECTION @ ABUTMENT

TYPICAL SECTIONS - STEEL GUARD RAIL

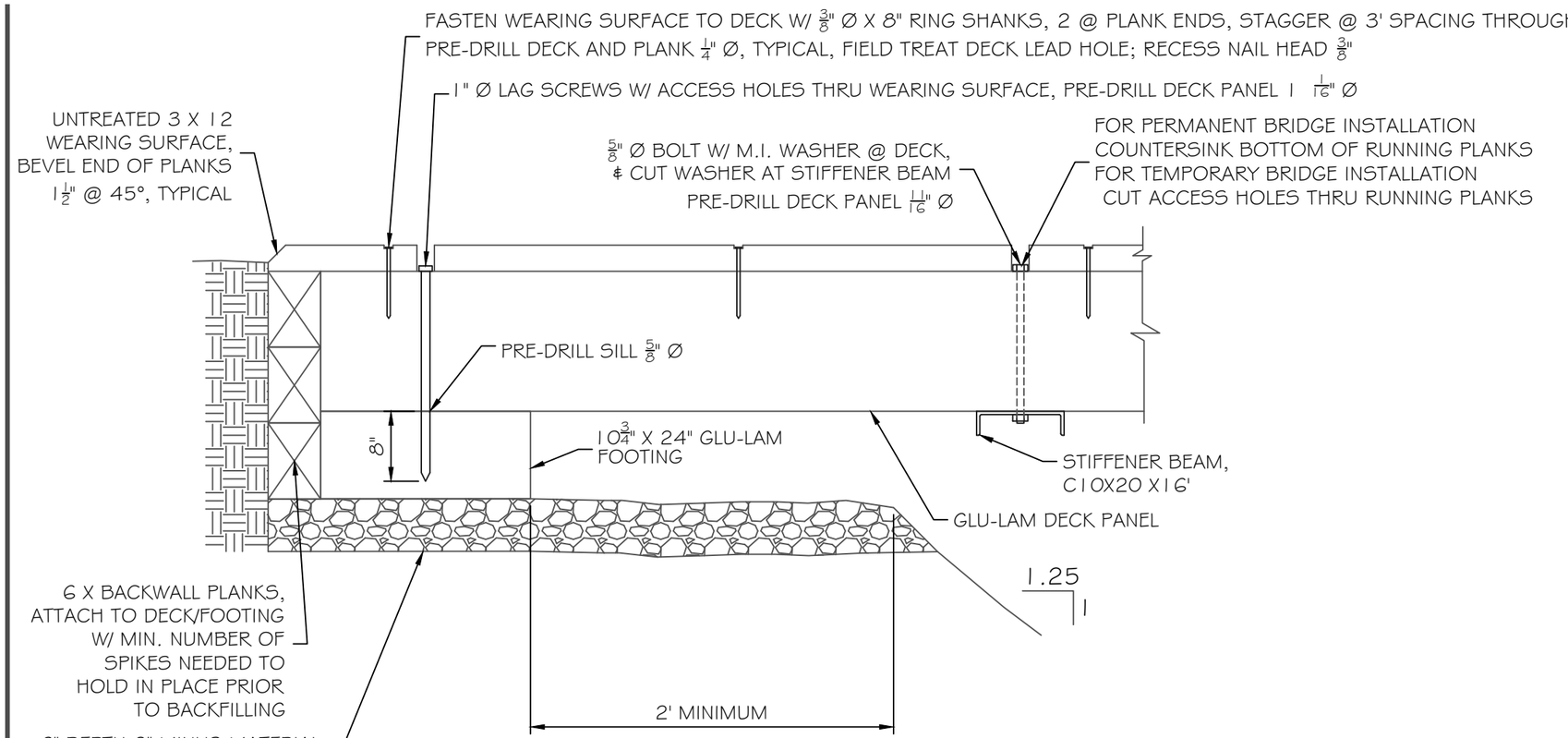
NOTES:

1. DECK PANELS DESIGNED IN ACCORDANCE W/ THE 1994 ASHTO LRFD SPECIFICATIONS,FIRST EDITION.
2. PANELS ARE GLU-LAMINATED COASTAL DOUGLAS FIR, COMB. 5 OR BETTER,
   Fby = 6100 psi
   Fvy = 245 psi
3. CURBS ARE COMB. 20FV3 OR NO. 1 COASTAL DOUGLAS FIR.
4. FOOTINGS ARE COMBINATION SYMBOL 1
5. BACKWALL PLANKS SHALL BE NO. 2 HEM FIR OR BETTER.
6. TIMBER IS TREATED IN ACCORDANCE W. AWPA C28 OR BETTER AFTER FABRICATION W/ PENTACHLOROPHENOL OR COPPER NAPTHANATE.
7. WEARING SURFACE SHALL BE UNTREATED NO. 2 HEM FIR, ALASKA HEMLOCK, ALASKA SPRUCE OR ALASKA YELLOW CEDAR.
8. ALL HARDWARE SHALL BE HOT-DIP GALVANIZED.
9. SHOP DRAWINGS SHALL BE SUBMITTED IN ACCORDANCE WITH SPECIFICATION SECTION 574.

TABLE 'A'

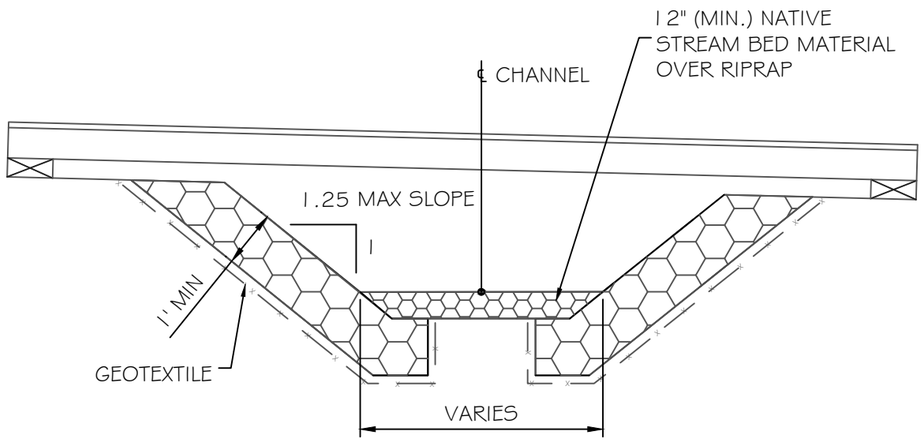
BRIDGE LENGTH	PANEL THICKNESS	STIFFENER BEAMS	
		QUANTITY	SPACING
40 FT	16 1/4"	4	7'-10"
30 FT	14 1/4"	4	6'-6"
25 FT	12 1/4"	3	6'-6"
20 FT	12 1/4"	2	6'-6"

TONGASS ENGINEERING & RECREATION	DESIGNED:	DATE:	DATE:	REVISION:	BY:	BIG THORNE STEWARDSHIP	SD-320-1 PLAN/PROFILE/SECTIONS
	DRAWN: SJC	DATE: 2/2005	11/2005	edit text	dwv	USDA FOREST SERVICE - TONGASS NATIONAL FOREST R-10 - THORNE BAY RANGER DISTRICT	04_STND_GL1.dwg PLOT ON 11"X17" PAPER
	REVIEWED: Q. SMITH	DATE: 8/20/2011					SH. 22 of 29
	TNFTYP:09/04						

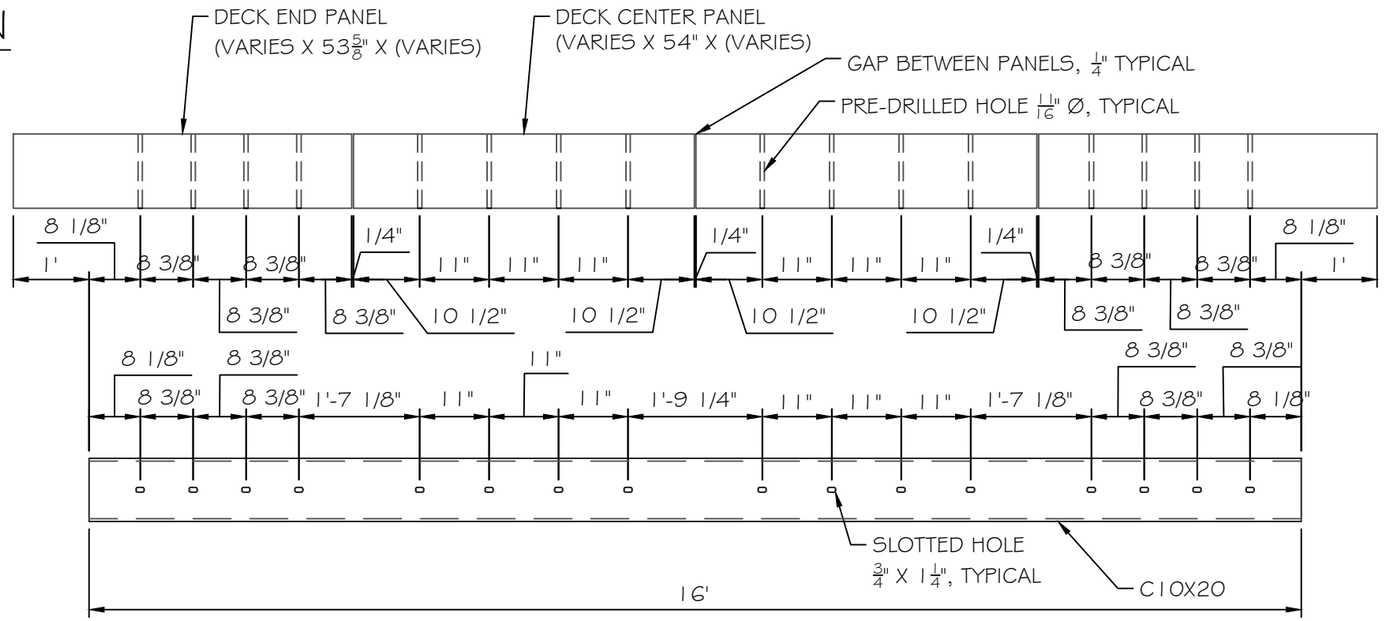


A/8 TYPICAL ABUTMENT SECTION

NOTES:
1. ALL STEEL ANGLES AND ROLLED SHAPES SHALL BE ASTM A36 GRADE.
2. ALL STEEL NUTS & BOLTS SHALL BE ASTM A307 GRADE.
3. HOT DIP GALVANIZE ALL STEEL AFTER FABRICATION.

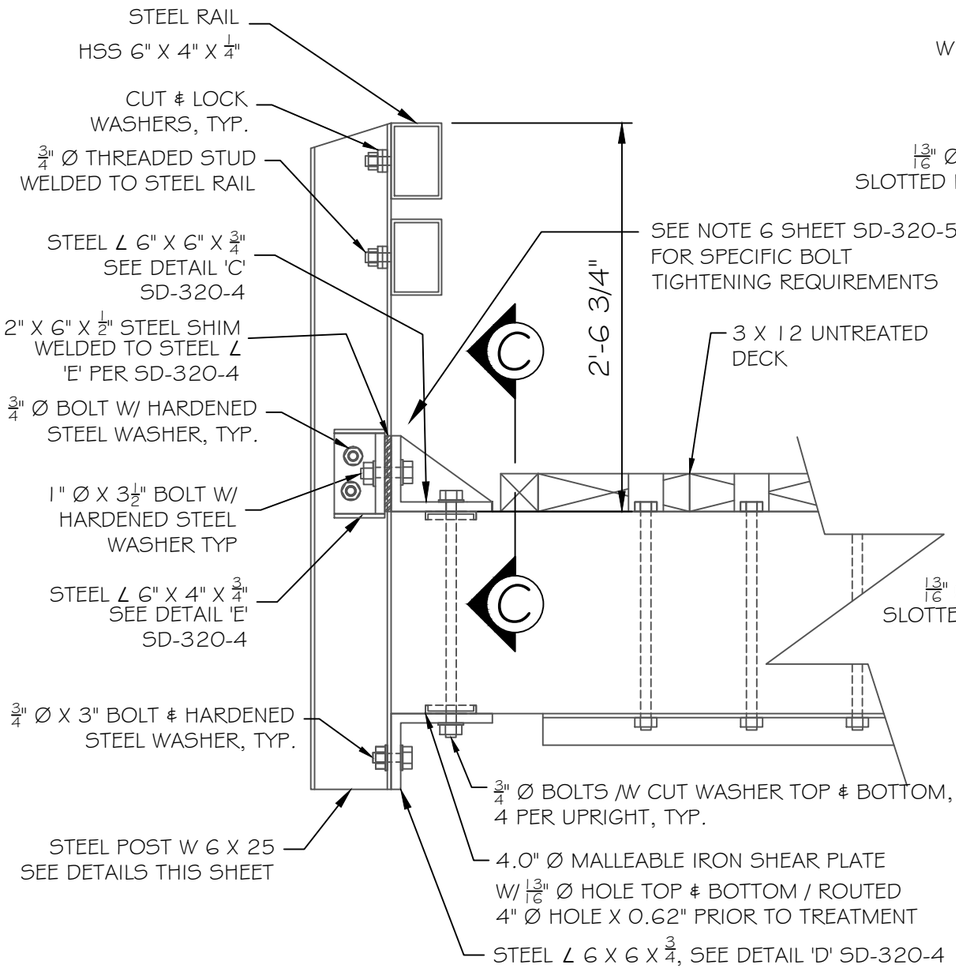


TYPICAL BRIDGE PROFILE

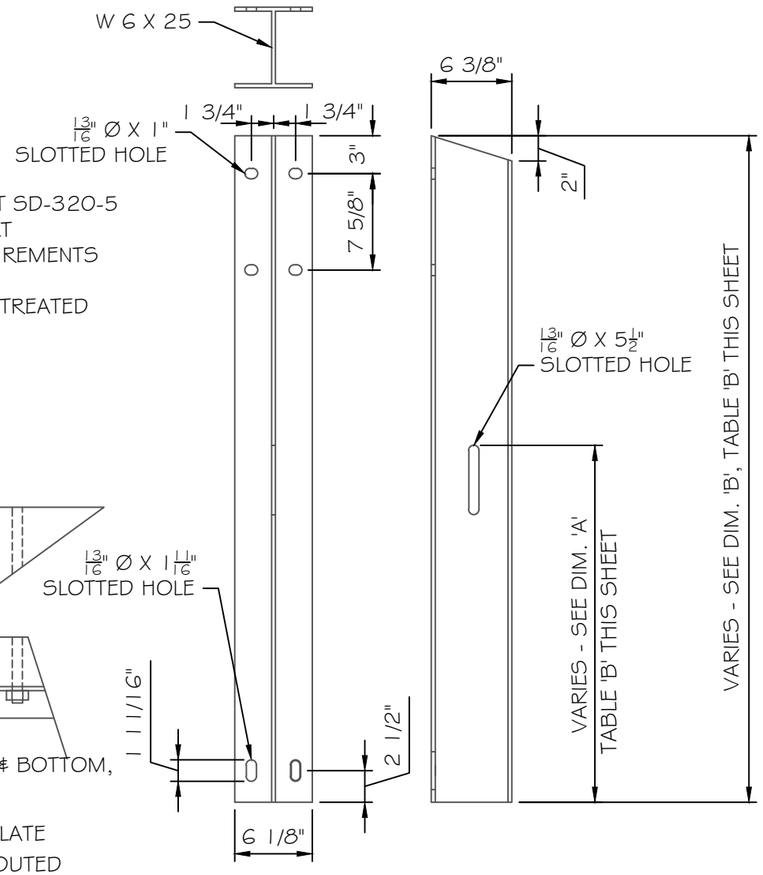


STIFFENER BEAM - PLAN VIEW

TONGASS ENGINEERING & RECREATION	DESIGNED:	DATE:	DATE:	REVISION:	BY:	USDA FOREST SERVICE	BIG THORNE STEWARDSHIP	SD-320-2 TYPICAL DETAILS
	DRAWN: SJC	DATE: 2/2005	11/2005	curb detail/abutment dim.	dwv	R-10 - THORNE BAY RANGER DISTRICT	05_STD_GL2.dwg PLOT ON 11"X17" PAPER	SH. 23 of 29
	REVIEWED: Q. SMITH	DATE: 8/20/2011						
	TNFTYP:09/04							

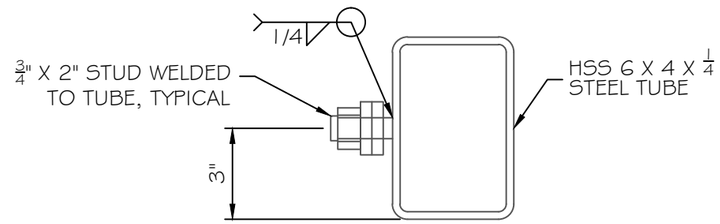


STEEL GUARD RAIL DETAIL 'A'

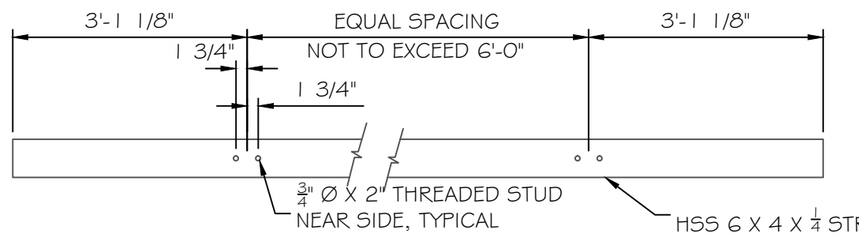


STEEL POST DETAILS

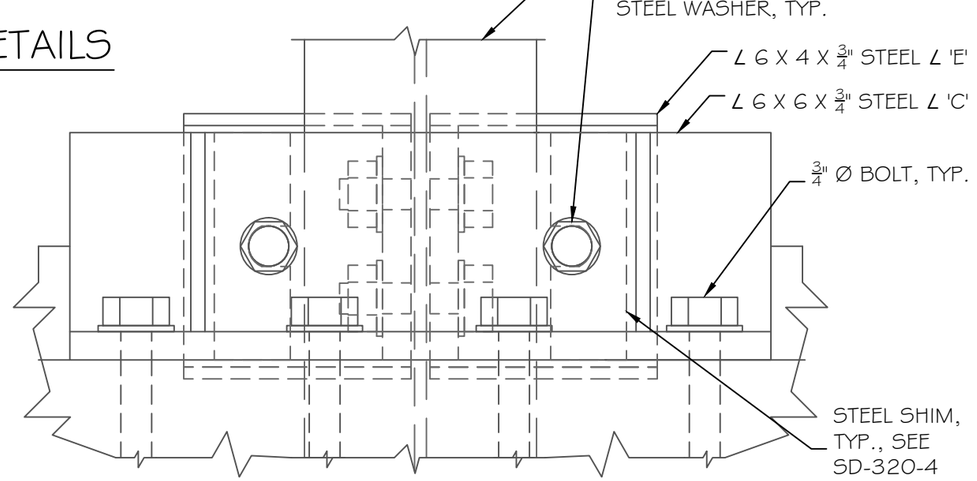
TABLE 'B'				
BRIDGE LENGTH	PANEL THICKNESS	STEEL POSTS		STEEL RAIL
		DIM. 'A'	DIM. 'B'	LENGTH
40 FT	16 1/4"	28"	53"	40 FT
30 FT	14 1/4"	26"	51"	30 FT
25 FT	12 1/4"	24"	49"	25 FT
20 FT	12 1/4"	24"	49"	20 FT



STEEL RAIL - SECTION

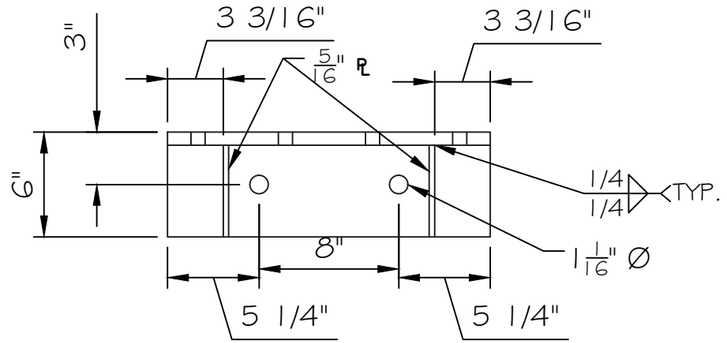


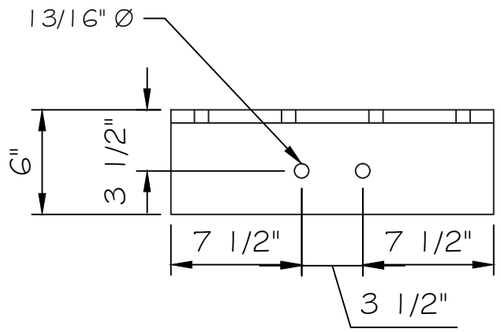
STEEL RAIL DETAIL

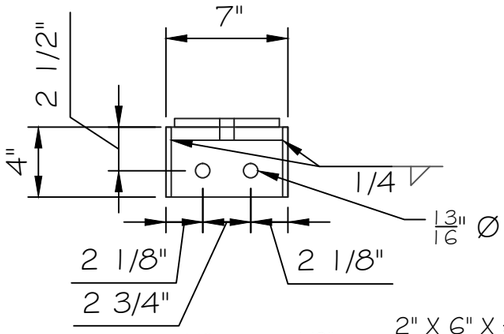


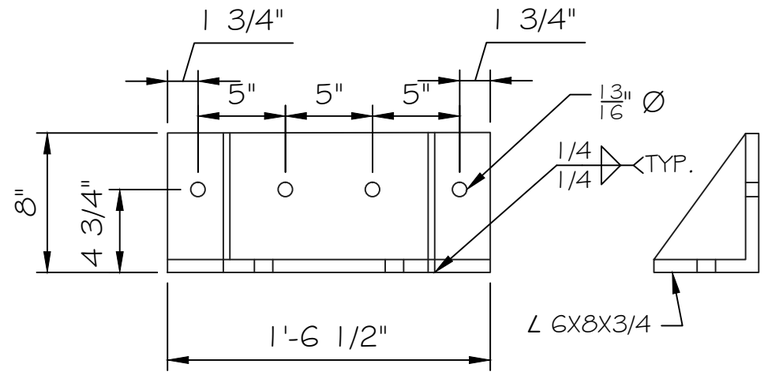
DETAIL - VIEW 'C-C'

TONGASS ENGINEERING & RECREATION	DESIGNED:	DATE:	DATE:	REVISION:	BY:	BIG THORNE STEWARDSHIP / USDA FOREST SERVICE - TONGASS NATIONAL FOREST / R-10 - THORNE BAY RANGER DISTRICT
	DRAWN: SJC	DATE: 2/2005	11/2005	angle bracket/post/washers	dwv	SD-320-3 STEEL GUARD RAIL DETAILS
	REVIEWED: Q. SMITH	DATE: 8/20/2011				06_STD_GL3.dwg PLOT ON 11"X17" PAPER
	TNFTYP:09/04					SH. 24 of 29

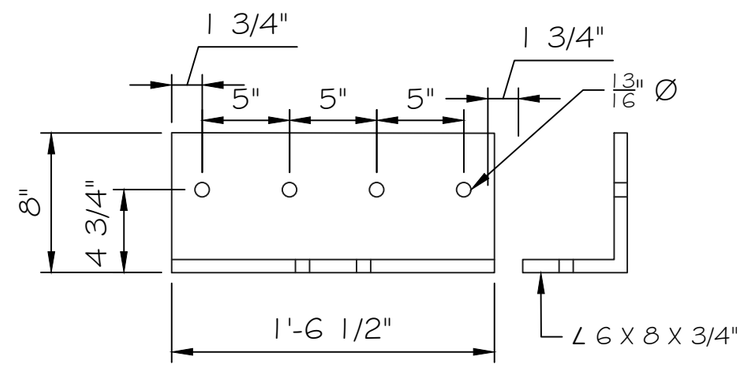




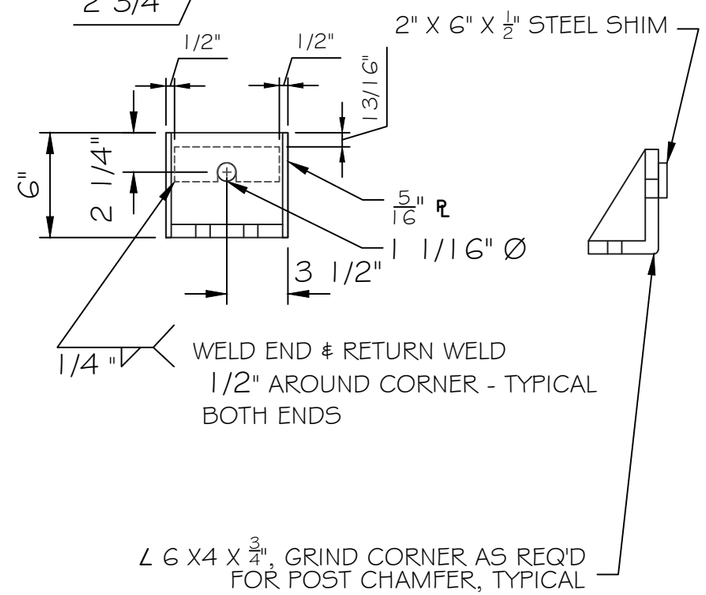




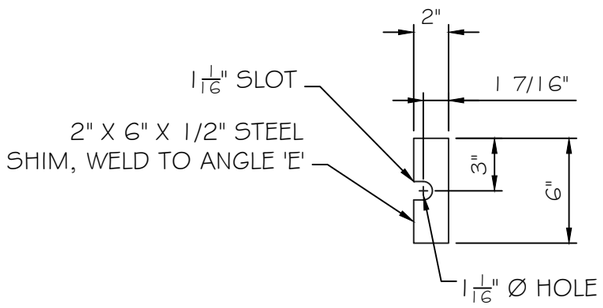
STEEL ANGLE 'C'



STEEL ANGLE 'D'

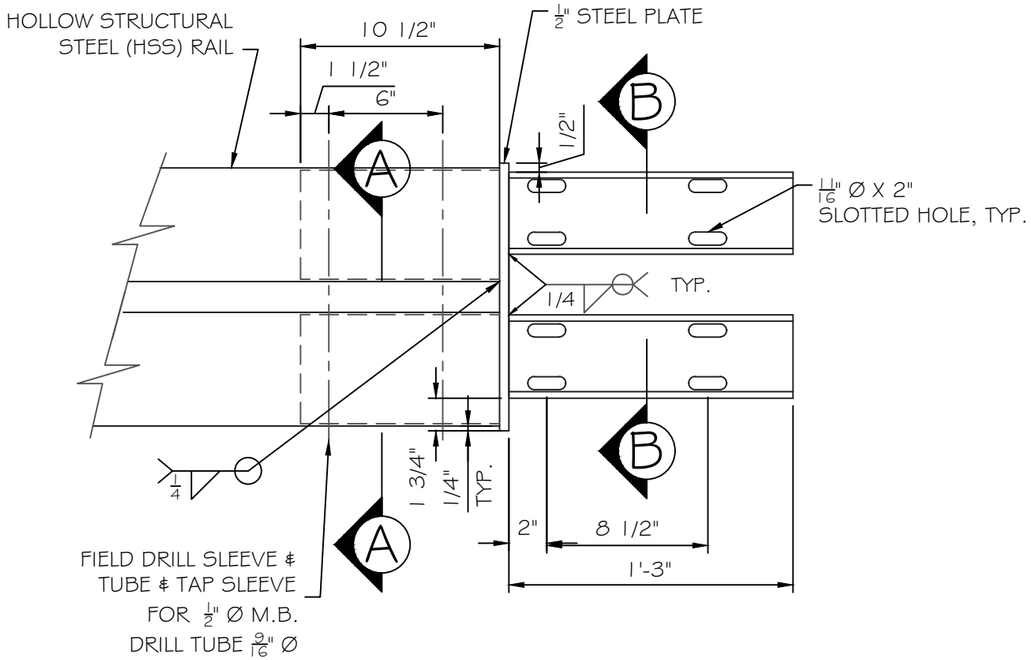


STEEL ANGLE 'E'



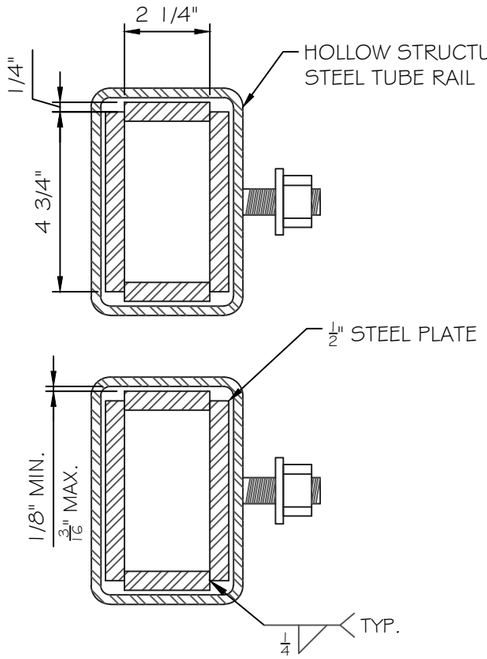
STEEL SHIM

TONGASS ENGINEERING & RECREATION	DESIGNED: USFS	DATE: 4/2005	DATE:	REVISION:	BY:	BIG THORNE STEWARDSHIP	SD-320-4 STEEL ANGLE DETAILS
	DRAWN: SJC	DATE: 4/2005	11/2005	ANGLES TO 6" X 8"	DWV	USDA FOREST SERVICE - TONGASS NATIONAL FOREST R-10 - THORNE BAY RANGER DISTRICT	07_STD_GL4.DWG PLOT ON 11"X17" PAPER
	REVIEWED: Q. SMITH	DATE: 8/20/2011					SH. 25 of 29
	TNFTYP:09/04						

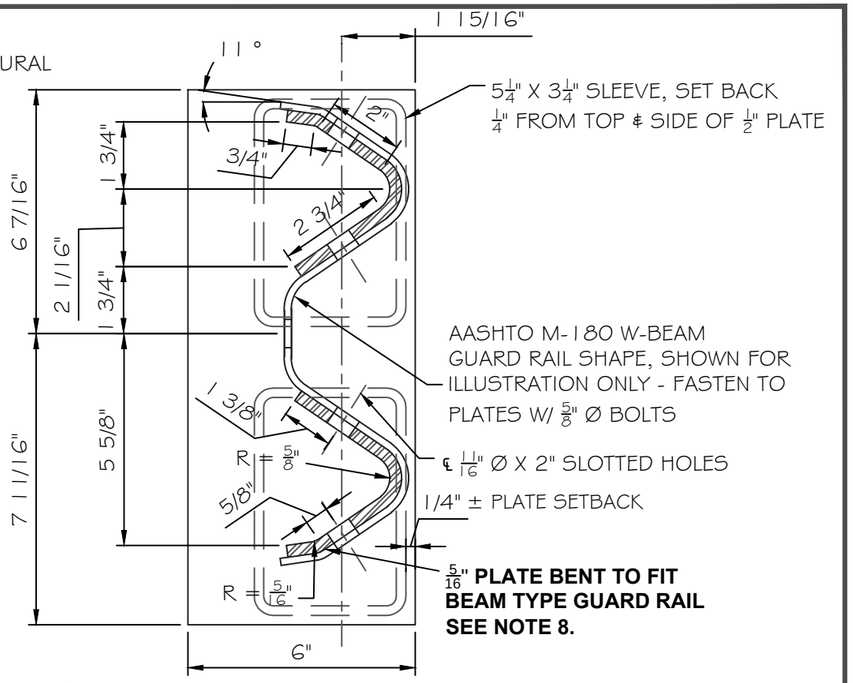


TUBE RAIL-GUARD RAIL SPLICE DETAIL

RIGHT & LEFT-HAND REQUIRED (TWO EACH)



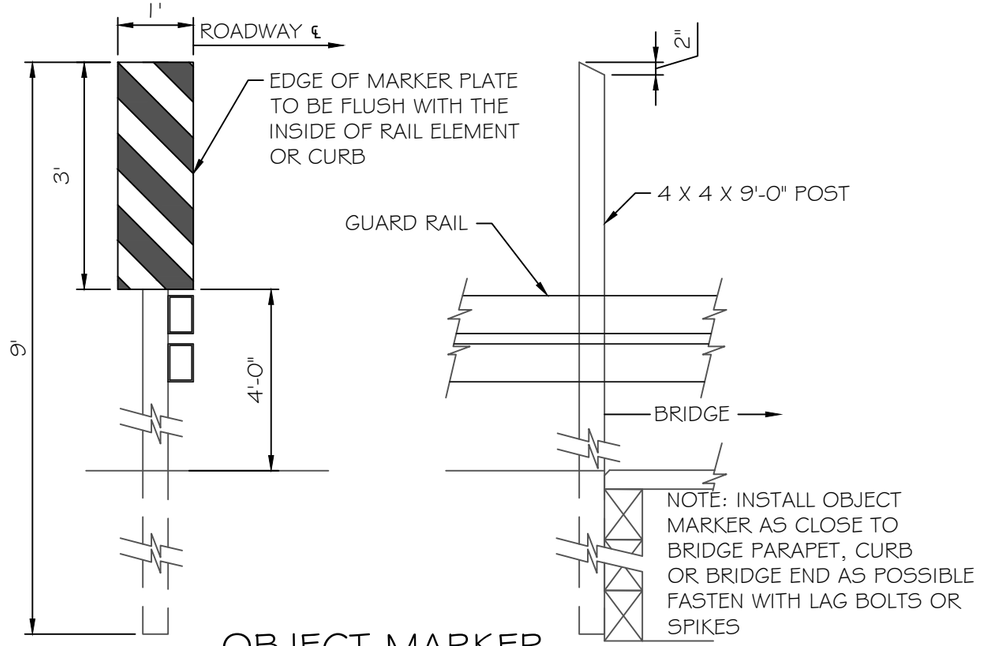
SPLICE DETAIL A-A



SPLICE DETAIL B-B

SPLICE DETAIL NOTES:

1. RAILING DESIGN MEETS & EXCEEDS REQUIRED LOADING FOR IMPACT LOADS AT 50% OF AASHTO (5KIPS) FOR SINGLE LANE ROADS WITH LESS THAN 20 FEET OF DROP.
2. THIS DESIGN INCLUDES RAILING SYSTEM ONLY. IT DOES NOT INCLUDE THE BRIDGE ITSELF.
3. ALL STRUCTURAL STEEL TUBING (HSS) SHALL CONFORM TO AASHTO M83 (ASTM A500 GRADE B).
4. ALL STEEL ANGLES AND ROLLED SHAPES SHALL BE ASTM A36 GRADE.
5. ALL STEEL NUTS SHALL BE ASTM A563 GRADE DH OR ASTM194 GRADE 2H, GALVANIZED. ALL BOLTS SHALL BE ASTM A325 GRADE TYPE 1. FASTENERS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM 153A.
6. ALL HARDENED STEEL WASHERS SHALL BE ASTM F436. THE 1" DIA. BOLT CONNECTIONS SHALL BE FULLY TENSIONED. ALL OTHERS SHALL BE SNUG-TIGHT.
SNUG-TIGHT EQUALS FULL EFFORT OF A MAN WITH A NORMAL SPUD WRENCH. FULLY TENSIONED EQUALS SNUG-TIGHT + 1/3 TURN (REFERENCE ASTM A325).
7. HOT DIP GALVANIZE ALL STEEL PLATES AND SHAPES AFTER FABRICATION.
8. DIMENSIONS OF APPROACH GUARDRAIL SHALL BE CONFIRMED PRIOR TO FABRICATION OF SPLICE BRACKET.
9. WELDS SHALL BE SMAW (SHIELDED METAL ARC WELDING) WITH MINIMUM TENSILE STRENGTH OF 70 KSI. ALL WELDS SHALL MEET REQUIREMENTS OF AISC AND AWS FOR STRENGTH, ALIGNMENT & OVERALL QUALITY CONTROL.



OBJECT MARKER

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES - TYPE 3

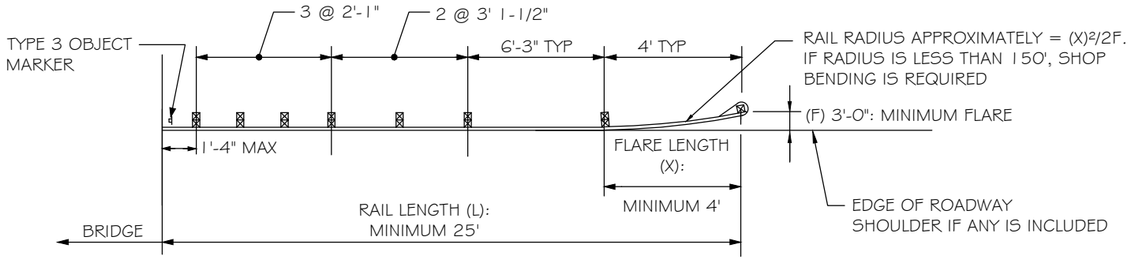
TONGASS ENGINEERING & RECREATION	DESIGNED:	DATE:	DATE:	REVISION:	BY:	BIG THORNE STEWARDSHIP	SD-320-5 BRIDGE/APPROACH RAIL DETAILS
	DRAWN: SJC	DATE: 2/2005	11/2005	edited notes	DWV	USDA FOREST SERVICE - TONGASS NATIONAL FOREST R-10 - THORNE BAY RANGER DISTRICT	08_STD_GLD5.DWG PLOT ON 11"X17" PAPER
	REVIEWED: Q. SMITH	DATE: 8/20/2011					SH. 26 of 29
	TNFTYP:09/04						

MATERIALS: STEEL SHAPES, PLATES, AND BARS SHALL BE STRUCTURAL STEEL CONFORMING TO AASHTO M183 (ASTM 136). RAIL ELEMENTS SHALL CONFORM TO AASHTO M180 AND SHALL BE OF THE CLASS AND TYPE SPECIFIED ON THE LAYOUT SHEET. ALL STEEL, SHAPES, PLATES AND BARS SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111. UNLESS OTHERWISE SPECIFIED ON THE BRIDGE LAYOUT SHEET. NUTS, BOLTS, AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM A-307 AND SHALL BE GALVANIZED UNLESS SPECIFIED OTHERWISE ON THE BRIDGE LAYOUT SHEET. ANCHOR CABLE SHALL BE ¾"Ø GALVANIZED WIRE ROPE CONFORMING TO AASHTO M30, TYPE II. REFLECTORS SHALL BE SILVER, HIGH INTENSITY, 3M SCOTCHLITE #3870, OR APPROVED EQUAL. POSTS SHALL BE NO. 1 GRADE STRUCTURAL GRADE DOUGLAS FIR OR WESTERN LARCH CONFORMING O AASHTO M168 AND SHALL BE TREATED WITH COPPER NAPHTHENATE IN ACCORDANCE WITH AWPA C14. CONCRETE FOR ANCHORS SHALL BE IN ACCORDANCE WITH SECTION 552 OR SECTION 602, METHOD A OR B . OBJECT MARKERS SHALL CONFORM TO UMTCD TYPE 3.

FABRICATION: STRUCTURAL STEEL SHALL BE SHOP FABRICATED, WELDING SHALL CONFORM TO THE AWS STRUCTURAL WELDING CODE, D1.5 AND SHALL BE Y A CERTIFIED WELDER. ALL STEEL SHALL BE FABRICATED BEFORE BEING GALVANIZED, EXCEPT THAT MINOR SHOP CUTTING, DRILLING AND WELDING IS PERMITTED ON GALVANIZED METAL, PROVIDED THAT THESE AREAS ARE CLEANED AND REPAIRED WITH 2 COATS OF ZINC DUST-ZINC OXIDE PAINT METTING FEDERAL SPECIFICATION TT-P-541 OR MILITARY SPECIFICATION MIL-P-21035. THE CABLE ASSEMBLY SHALL DEVELOP A MINIMUM TENSILE STRENGTH OF 40,000 LBS.

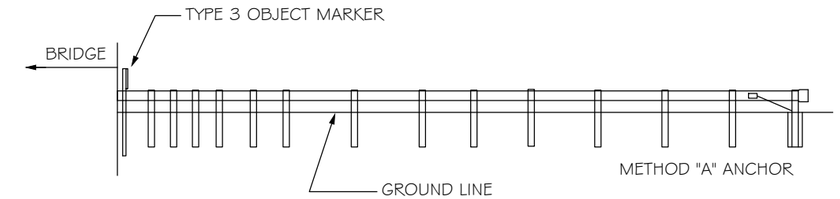
ERECTION: RAIL ELEMENTS MAY BE EITHER 25'-0" OR 12'-6" IN LENGTH. IF RAIL CURVATURE IS LESS THAN A 150 FT. RADIUS, IT SHALL BE CURVED TO THE SPECIFIED RADIUS. NO FIELD CUTTING OR WELDING IS PERMITTED ON GALVANIZED METAL UNLESS APPROVED BY THE ENGINEER. ALL RAIL POSTS SHALL BE SET SET VERTICALLY AND THE RAILING ERECTED PARALLEL TO GRADE. POST SPACING SHALL BE 6'-3" EXCEPT AS NOTED. THE COMPLETED INSTALLATION SHALL NOT REFLECT ANY UNEVENNESS IN THE STRUCTURE. AFTER ERECTION IS COMPLETE, BURR THREADS OF ALL BOLTS AND RODS TO PREVENT BACKING OFF OF NUTS. ALL DAMAGED SURFACES SHALL BE REPAIRED WITH 2 COATS OF ZINC PAINT AS SPECIFIED IN THE FABRICATION NOT ABOVE.

SEE SHEET 30 FOR THRIE BEAM SPECIFIC APPROACH RAIL TRANSITION DETAILS IN REFERENCE TO MB4 & MB5



1/27 APPROACH RAIL PLAN STRAIGHT ALIGNMENT

SCALE: NTS

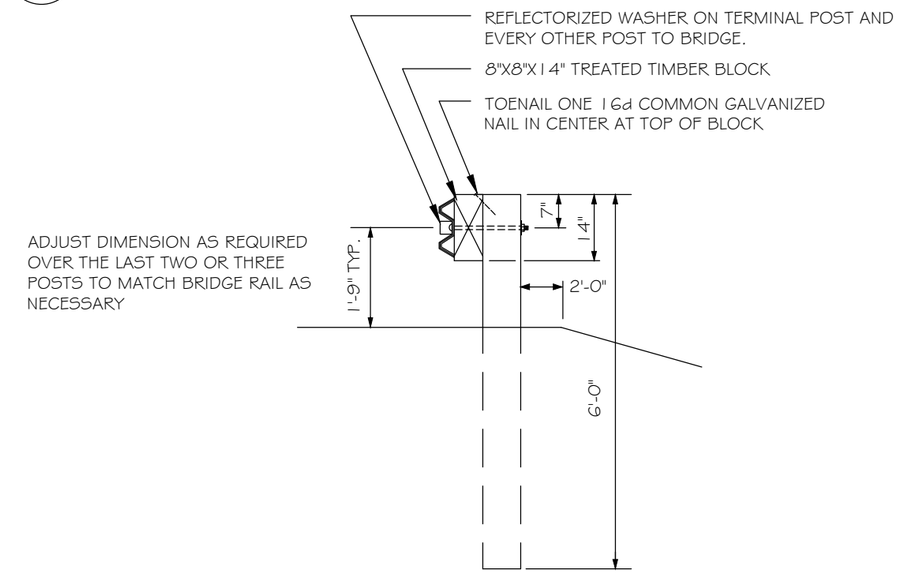


3/27 APPROACH RAIL ELEVATION

SCALE: NTS

5/27 TYPCIAL APPROACH RAIL ELEMENT: CLASS A TYPE II W BEAM

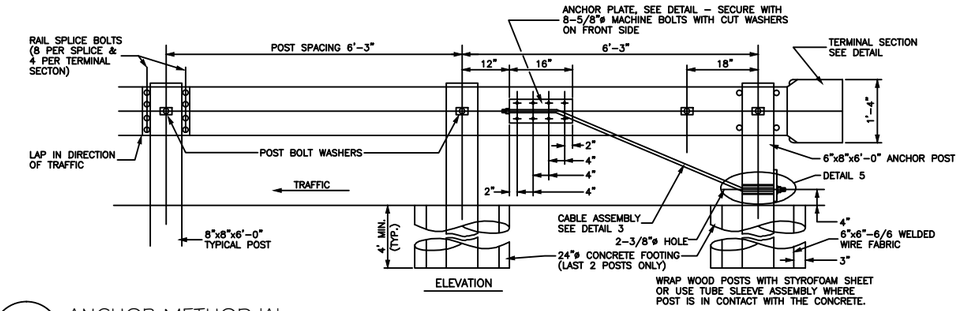
SCALE: NTS



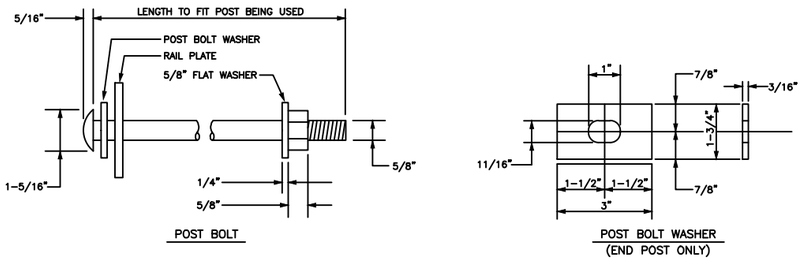
4/27 TYPCIAL W BEAM APPROACH RAIL SECTION

SCALE: NTS

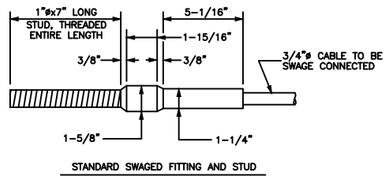
TONGASS ENGINEERING & RECREATION	DESIGNED: USFS	DATE:	DATE:	REVISION:	BY:	BIG THORNE STEWARDSHIP	STANDARD APPROACH RAIL PLAN
	DRAWN: USFS	DATE:				USDA FOREST SERVICE - TONGASS NATIONAL FOREST	28_NTBR_APPRAIL_PLAN.DWG
	REVIEWED: M. MURPHY	DATE: XXXXXXXX				R-10 - HOONAH RANGER DISTRICT	PLOT ON 11"X17" PAPER
	TNFTYP:04/03						SH. 27 of 29



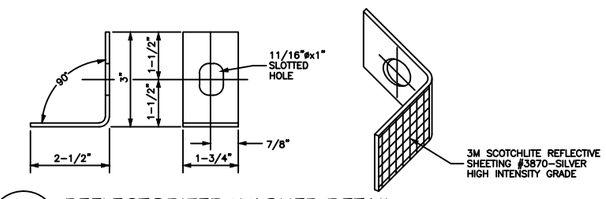
1/18 ANCHOR METHOD 'A'
SCALE: NTS



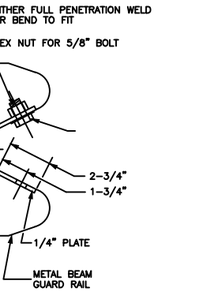
2/18 POST BOLT ASSEMBLY
SCALE: NTS



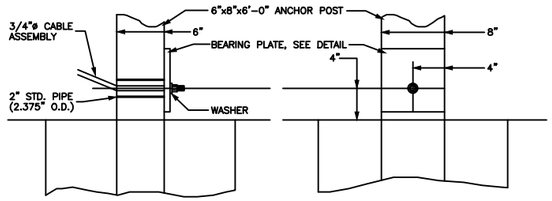
3/18 CABLE ASSEMBLY
SCALE: NTS



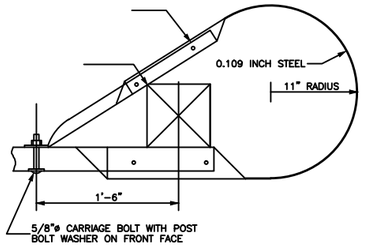
4/18 REFLECTORIZED WASHER DETAIL
SCALE: NTS



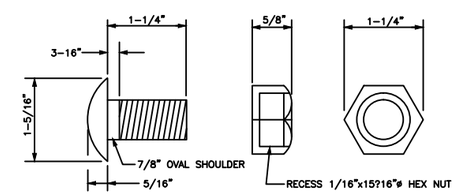
6/18 ANCHOR PLATE DETAILS
SCALE: NTS



5/18 CABLE ATTACHMENT DETAIL
SCALE: NTS

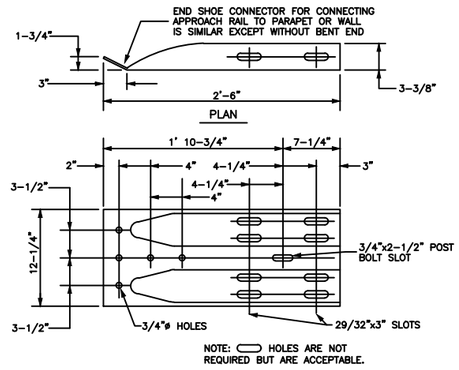


10/18 OBJECT MARKER
M.U.T.C.D. TYPE 3
SCALE: NTS

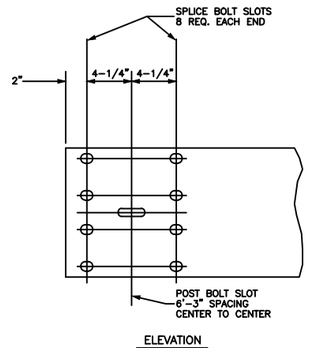


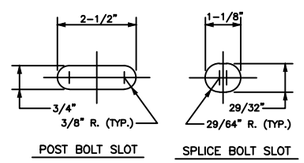
A SCREW HEAD RAIL SPLICE BOLT WITHOUT SHOULDER, BUT WITH THE SAME GENERAL DIMENSIONS MAY BE USED IN LIEU OF THE RAIL BOLT AS SHOWN.

8/18 RAIL SPLICE BOLT
SCALE: NTS



9/18 TERMINAL SECTION DETAILS
SCALE: NTS





11/18 RAIL ELEMENT BOLT HOLE DETAIL
SCALE: NTS

TONGASS ENGINEERING & RECREATION	DESIGNED: USFS	DATE:	DATE:	REVISION:	BY:	BIG THORNE STEWARDSHIP
	DRAWN: USFS	DATE:				USDA FOREST SERVICE - TONGASS NATIONAL FOREST
	REVIEWED: XXXXXXXXXX	DATE: XXXXXXX				R-10 - THORNE BAY RANGER DISTRICT
	TNFTYP:04/03					

APPROACH RAIL DETAILS

13_APP_RAIL_DET.DWG
PLOT ON 11"X17" PAPER

SH. 28 of 29

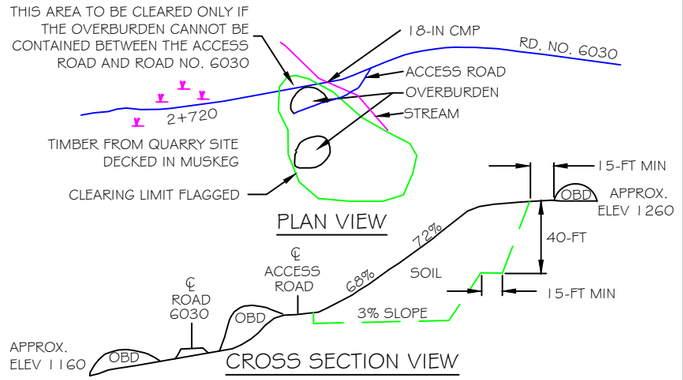
NOTES

1. ALL PITS AND QUARRIES SHALL BE APPROVED IN WRITING BY THE C.O. PRIOR TO EXPLORATION, CLEARING OR DEVELOPMENT.
2. REMOVE ALL OVERBURDEN TO SOLID ROCK FOR A MINIMUM DISTANCE OF 15' FROM THE WORKING FACE.
3. SLOPE THE CUT BANK OF THE OVERBURDEN TO THE NATURAL ANGLE OF REPOSE BUT IN NO CASE STEEPER THAN 1:1.
4. WITHIN THE CLEARING LIMITS:
   - MAXIMUM STUMP HEIGHT SHALL BE IN ACCORDANCE WITH SPECIFICATIONS.
   - STABLE TREES UP TO 6" *dbh* NEED NOT BE CUT IF THEY WILL NOT INTERFERE WITH BACK SLOPE STABILITY.
   - STUMPS AND BRUSH MAY BE LEFT IN PLACE, EXCEPT THAT ALL STUMPS THAT PROTRUDE FROM EXCAVATED BANKS OR THAT HAVE THE POTENTIAL TO BECOME DISLODGED AT ANY LATER DATE SHALL BE REMOVED.
5. DISPOSE OF OR STOCKPILE FOR LATER USE ALL OVERBURDEN, CLEARING, MERCHANTABLE TIMBER AND GRUBBING DEBRIS AS SHOWN ON THE QUARRY DEVELOPMENT PLAN.
6. FELL ALL DEAD TREES AND SNAGS WHICH ARE SUFFICIENTLY TALL TO REACH THE WORK AREA.
7. LEAVE THE PIT/QUARRY IN A NEAT, ORDERLY AND WELL-DRAINED CONDITION. REMOVE ALL OVERHANGS AND LOOSE ROCK.
8. AFTER EXCAVATION IS COMPLETE CLEAN THE AREA AND LEAVE AS SHOWN ON THE QUARRY DEVELOPMENT PLAN. TREAT ANY ACCESS ROAD AS SHOWN ON THE QUARRY DEVELOPMENT PLAN.
9. TEST SHOTS OF 1300 to 2600 CUBIC YARDS ARE REQUIRED AT ALL QUARRY SITES IF DESCRIBED IN THE SPECIFICATIONS.
10. LEAVE NO MORE THAN 5% BY VOLUME OF OVERSIZE MATERIAL IN THE QUARRY. BREAK DOWN ANY MATERIAL OVER THIS VOLUME AND USE AS SPECIFIED IN SECTIONS 651.
11. PROVISIONS FOR FUTURE QUARRY DEVELOPMENT ACCESS WILL BE PROVIDED, UNLESS THIS REQUIREMENT IS WAVED BY THE CO.
12. INSTALL AND MAINTAIN A COMMERCIALLY AVAILABLE RAIN GAUGE MEASURING IN UNITS OF INCHES AND FRACTIONS OF INCHES IN ACCORDANCE WITH SECTION 205.08.
13. HAUL WILL NOT BE ALLOWED BEYOND DESIGNATED SOURCES UNLESS OTHERWISE SHOWN ON THE DRAWINGS OR AGREED TO BY THE CO.
14. SEED AND FERTILIZE ALL DISTURBED AREAS SUCH AS OVERBURDEN PILES AND BENCH SURFACES IN ACCORDANCE WITH SECTION 625.

SAMPLE QUARRY DEVELOPMENT PLAN

QUARRY DEVELOPMENT PLAN

QUARRY IS LOCATED RIGHT OF STA 27+58 ON ROAD NO. 6030
ESTIMATE OF VOLUME = 24,850 CU. YD.



DEVELOPMENT PLAN

1. ALL MERCHANTABLE TIMBER WILL BE REMOVED FROM THE QUARRY SITE AND DECKED IN THE MUSKEG LEFT OF 27+20
2. OVERBURDEN WILL NOT BE PLACED IN THE SMALL STREAM BORDERING THE QUARRY.
3. DEVELOPMENT WILL COMPLY WITH THE GENERAL NOTES SHOWN ON THE PIT & QUARRY DEVELOPMENT TYPICAL SHEET.
4. TEST SHOT OF APPROX. 2000 CU. YD. IS PLANNED.

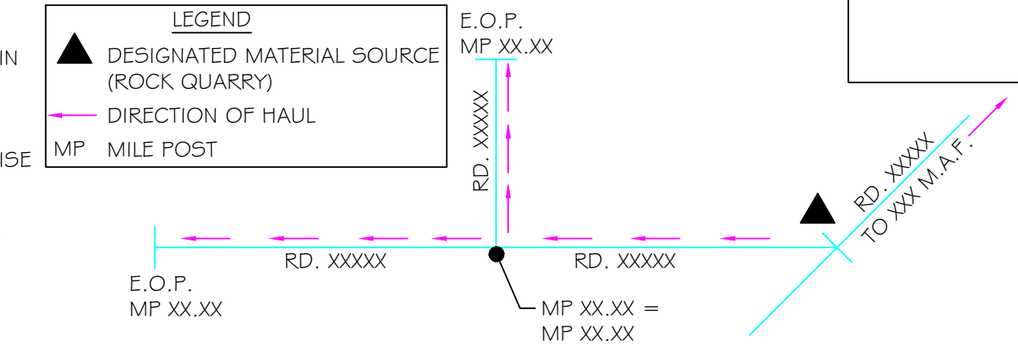
REHABILITATION PLAN

1. THE ACCESS ROAD WILL BE OBLITERATED BY CUTTING A DITCH AT THE JUNCTION OF THE ACCESS ROAD WITH ROAD NO. 6030 AND BY ROUGHING UP THE ACCESS ROAD SURFACE.
2. ALL OVERSIZE ROCK WILL BE PLACED AGAINST THE SIDES OF THE QUARRY NEXT TO THE BACKWALL BENCH.
3. A MINIMUM OF 12-IN OF OVERBURDEN WILL BE EVENLY SPREAD OVER THE QUARRY FLOOR.
4. ALL DISTURBED AREAS, SUCH AS OVERBURDEN PILES, BENCH SURFACES, AND ACCESS ROAD SURFACES, WILL BE SEEDED AND FERTILIZED IN ACCORDANCE WITH SPECIFICATIONS.
5. PROVISIONS FOR FUTURE QUARRY ACCESS WILL BE PROVIDED UNLESS THIS REQUIREMENT IS WAIVED BY THE COR.

CONTRACTOR DATE | COR DATE | DISTRICT RANGER DATE

LEGEND

- ▲ DESIGNATED MATERIAL SOURCE (ROCK QUARRY)
- ← DIRECTION OF HAUL
- MP MILE POST

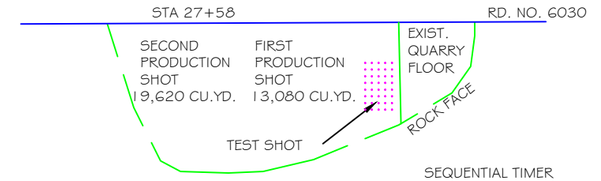


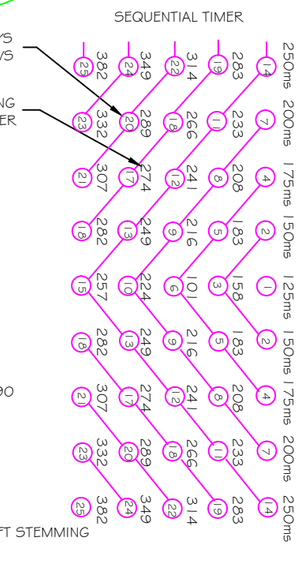
HAUL DIAGRAM

SAMPLE QUARRY BLASTING PLAN

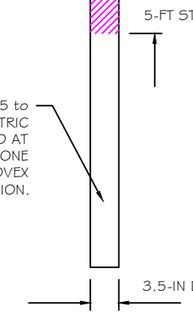
QUARRY BLASTING PLAN

THIS PLAN IS FOR THE FIRST TEST SHOT IN THE QUARRY
RIGHT OF STA. 27+58 ON ROAD NO. 6030

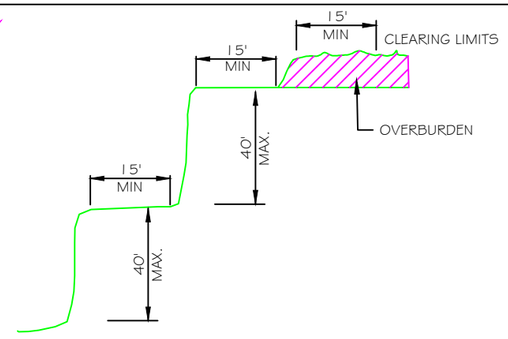




BOREHOLE SIZE = 3.5-IN
HOLE DEPTH = 10-FT to 30-FT
SPACING = 10-FT
BURDEN = 8-FT
STEMMING = 5-FT
TYPE OF EXPLOSIVES = TOVEX 800, 3" X 16"
DENSITY = 20 lbs./cu. yd.
TYPE OF PRIMER & LOCATION IN HOLE = 2" DIA STICK OF HI DRIVE LOCATED IN BOTTOM OF HOLE
TOTAL NUMBER OF HOLES IN SHOT = 45
TOTAL POUNDS OF POWDER IN SHOT (INCLUDING PRIMERS) = 3385 lbs.
NUMBER OF CUBIC YARDS IN SHOT = 2670
MAX. POUNDS OF POWDER PER 8 ms DELAY = 1090
POWDER FACTOR = 1 lb. PER CUBIC YARD
NAME OF BLASTER IN CHARGE = T.J. BARRY
PLANNED SHOT DATE = JUNE 15, 1996



TYPICAL LOADED HOLE



TONGASS ENGINEERING & RECREATION	DESIGNED: X. XXXXXXX	DATE: XX/XX/XX	DATE:	REVISION:	BY:	BIG THORNE STEWARDSHIP
	DRAWN: SJC	DATE: 2/24/05	XX/XX/XX	XXXXXXXXXX	X. XXXXXX	PIT & QUARRY DEVELOPMENT
	REVIEWED: K.BRAY	DATE: 2/24/05	XX/XX/XX	XXXXXXXXXXXX	X.XXXXXX	USDA FOREST SERVICE - TONGASS NATIONAL FOREST
	TNFTYP:02/05		XX/XX/XX	XXXXXXXXXXXX	X. XXXXXX	R-10 - THORNE BAY RANGER DISTRICT
						pit_and_quarry_rev.DWG PLOT ON 11"X17" PAPER
						SH. 29 of 29