

**MINNESOTA DEPARTMENT OF TRANSPORTATION
WASHINGTON COUNTY
CONSTRUCTION PLAN FOR BRIDGE NO. 82517 AND APPROACH GRADING
LOCATED ON C.S.A.H. 18 0.3 MILES NORTH OF JCT. C.S.A.H. 21
OVER VALLEY BRANCH CREEK IN THE CITY OF AFTON**

MN. PROJ. NO.

GOVERNING SPECIFICATIONS
THE 2005 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

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3	TYPICAL SECTION AND QUANTITIES
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5	BRIDGE LAYOUT
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14-18	N. ABUTMENT DETAILS
19-20	PIER DETAILS
21	PILE BENT
22	FRAMING PLAN SPANS 2-4
23	27" PRESTRESSED CONCRETE BEAM
24-25	SUPERSTRUCTURE DETAILS SPANS 2-4
26	PIER CONTINUITY DIAPHRAGM
27-29	SLAB SPAN 1 DETAILS
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43-44	CROSS-SECTIONS
45	TEMPORARY EROSION CONTROL
46	CHANNEL MODIFICATION
47-48	GUARDRAIL DETAILS
49-50	TRAFFIC CONTROL PLAN

THIS PLAN CONTAINS 50 SHEETS.

PLAN SYMBOLS

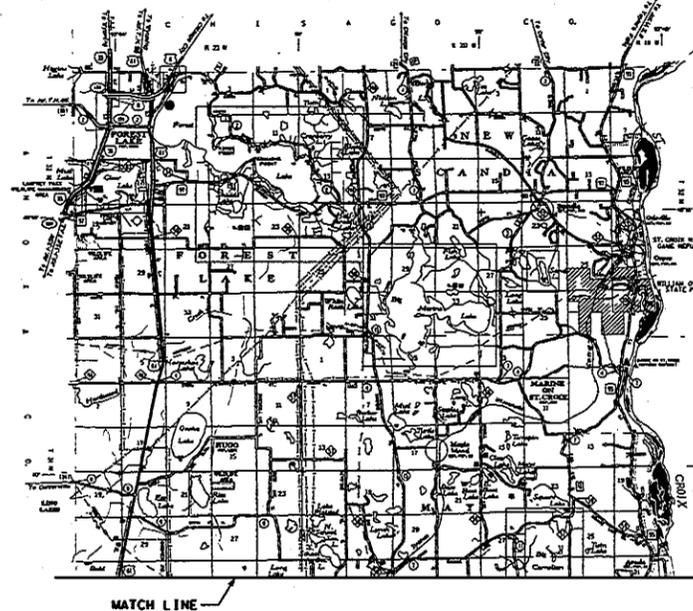
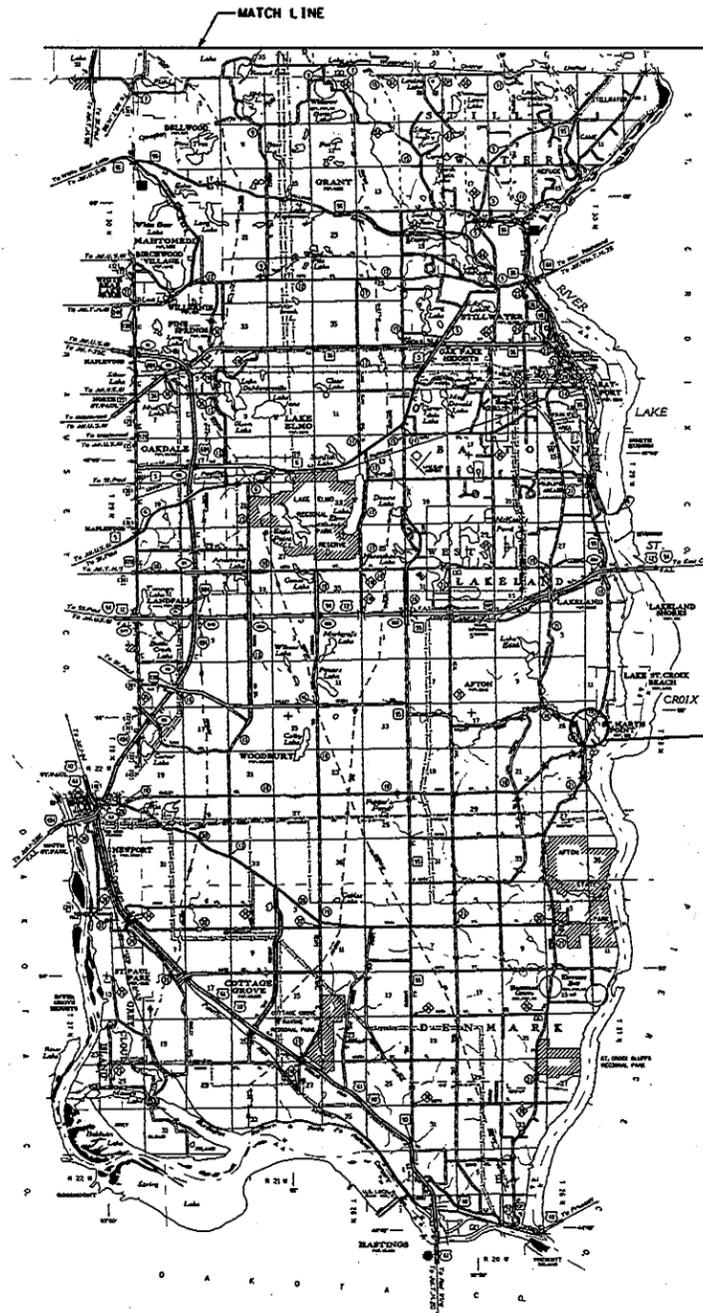
COUNTY LINE	=====
TOWNSHIP OR RANGE LINE	=====
SECTION LINE	=====
QUARTER LINE	=====
SIXTEENTH LINE	=====
EXISTING R/W	-----
NEW R/W	-----
TEMP EASE	-----
RAILROAD R/W	-----
UNSURFACED RD. OR SHLD.	-----
EDGE OF LAKE	-----
SWAMP BOUNDARY	-----
MISCELLANEOUS BOUNDARY	-----
CORPORATE OR CITY LIMITS	-----
VACATED PLATTED PROPERTY	-----
RECREATIONAL TRAIL	-----
ALIGNMENT STATIONS	-----
ALIGNMENT POINTS	-----
RIVER OR CREEK	-----
DRAINAGE DITCH	-----
BRIDGE	-----
RAILROAD (SINGLE TRACK)	-----
RR CROSSING PAVEMENT MARKING	-----
RR CROSSING GATE	-----
RR CROSSBUCK SIGN	-----
RR CROSSBUCK SIGN W/LIGHTS	-----
BARBED WIRE FENCE	-----
CHAIN LINK FENCE	-----
WOVEN WIRE, COMBINATION WOVEN AND BARB	-----
WOOD FENCE	-----
BILLBOARD	-----
RETAINING WALL	-----
GUARDRAIL (CABLE)	-----
GUARDRAIL (PLATE BEAM)	-----
DRAIN TILE	-----
CULVERT	-----
CULVERT WITH APRONS	-----
WOODS OR BRUSH, NURSERY	-----
DECIDUOUS TREES	-----
CONIFER (EVERGREEN) TREES	-----
HEDGE	-----
BUSH OR SHRUB	-----
STUMP	-----
SWAMP OR MARSH	-----
MONUMENT (CI.ACT.ACP.BCP....)	-----
CONCRETE OR STONE MONUMENT	-----
IRON PIPE	-----
IRON PIN OR REBAR	-----
IRON PIN WITH BRASS DISK	-----
NAIL, PK NAIL, SPIKE, SFP, T-BAR, ...	-----
VERTICAL CONTROL	-----
HORIZONTAL CONTROL	-----
POWER POLE	-----
LIGHT POLE	-----
LIGHT AND TELEPHONE POLE	-----
LIGHT, TELEPHONE AND POWER POLE	-----
GUY POLE	-----
POLE ANCHOR	-----
TELEPHONE POLE	-----
TELEPHONE AND POWER POLE	-----
UNDERGROUND CABLE PEDESTAL	-----
TELEPHONE MANHOLE (VAULT)	-----
ELECTRIC CABLE IN CONDUIT	-----
TELEPHONE CABLE IN CONDUIT	-----
BURIED ELECTRIC CABLE	-----
BURIED TELEPHONE CABLE	-----
GAS LINE	-----
WATER LINE	-----
VALVE	-----
FIRE HYDRANT	-----
WATER MANHOLE	-----
WELL	-----
LAWN SPRINKLER HEAD	-----
MANHOLE	-----
CATCH BASIN	-----
SEPTIC TANK	-----
FORCE MAIN LIFT STA.	-----
SEWER LINE	-----
PERMANENT BARRICADE	-----
TRAFFIC SIGNAL LIGHT	-----
HAND HOLE	-----
ENTRANCE	-----
BUILDING	-----
SATELLITE DISH	-----
STEEL TOWER	-----
FLAG POLE	-----

SEC. 14 TWP. 28 N R 20 W
STATE PROJ. NO.

(Legal Description)
STATE AID PROJ. NO. 82-618-08

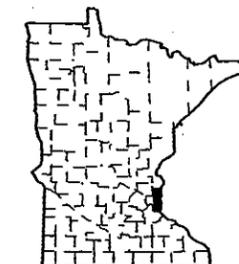
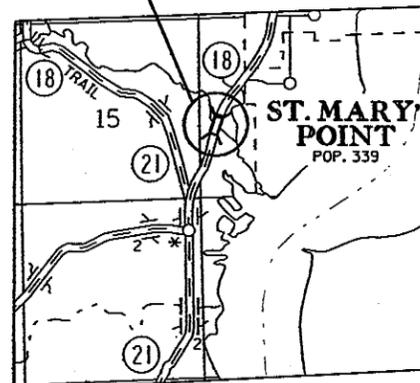
GROSS LENGTH	_____ FT.	_____ MILES
BRIDGES-LENGTH	_____ FT.	_____ MILES
EXCEPTIONS-LENGTH	_____ FT.	_____ MILES
NET. LENGTH	_____ FT.	_____ MILES

GROSS LENGTH	750.00 FT.	0.142 MILES
BRIDGES-LENGTH	195.42 FT.	0.037 MILES
EXCEPTIONS-LENGTH	_____ FT.	_____ MILES
NET. LENGTH	750.00 FT.	0.142 MILES



PROP. BRIDGE NO. 82517
S.A.P. 82-618-08
BEG. PROJ. 8+00.00
END PROJ. 15+50.00

EXIST. BRIDGE NO. 5673
STEEL-BEAM SPAN
LENGTH 156.0 FT.
RDWY. WIDTH 27.0 FT.
BUILT: 1937



WASHINGTON COUNTY

DESIGN DESIGNATION

ΣN18₂₀
R VALUE 3
ADT (2007) = 3980
PROJ. ADT (2027) = 7560
PROJ. HCADT
SOIL FACTOR

Design Speed 50 mph
Based on 425 ft Stopping Sight Distance
Height of eye 3.5 feet
Height of object 0.5 feet (Sag Curve)
Design Speed not achieved at:
STA. TO STA. mph
STA. TO STA. mph
STA. TO STA. mph

CMSchall-Karwacki C.M. SCHALL-KARWACKI
DESIGN ENGINEER: I HEREBY CERTIFY THAT THIS BRIDGE PLAN (SHEETS 1-29) WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE 10-29-07 LICENSE NUMBER 15656

[Signature]
APPROVED: COUNTY ENGINEER DATE 10-31-07

for *Nancy Daubert*
RECOMMEND/FOR APPROVAL: STATE BRIDGE ENGINEER DATE 11/29/07

Matthew Kowalski
DISTRICT STATE AID ENGINEER: REVIEW FOR COMPLIANCE WITH STATE-AID RULES/POLICY DATE 11/5/07

for *Pat J. Loken*
APPROVED FOR STATE FUNDING: STATE-AID ENGINEER DATE 11/7/07



STATE AID PROJ. NO. 82-618-08

STATE PROJ. NO.

Revised

SHEET NO. 1 OF 50 SHEETS

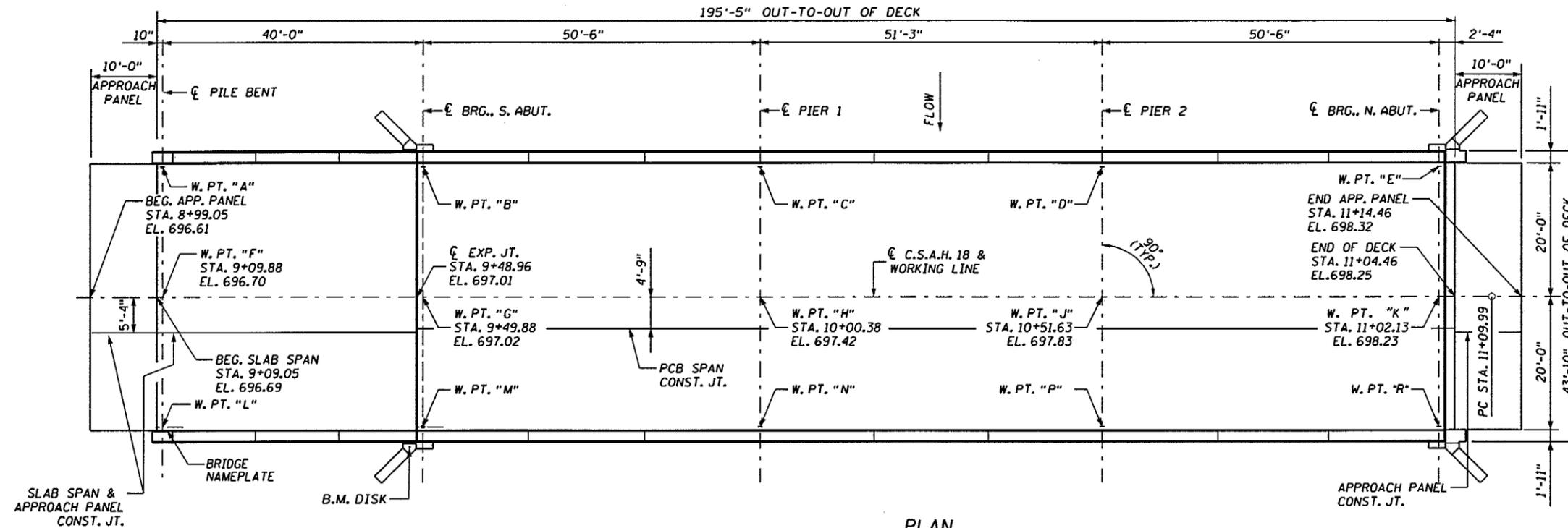
B.M. ELEV. 697.25 (NAVD 88)
 LOCATION: BRASS DISK IN S.E. ABUTMENT
 CORNER OF EXIST. BR. 5673

DESIGN DATA

LOAD FACTOR DESIGN METHOD - HS25 LOADING
 2002 A.A.S.H.T.O. DESIGN SPECS.
 INCLUDES 17 PSF DEAD LOAD ALLOWANCE FOR FUTURE
 WEARING COURSE MODIFICATIONS.
 MAXIMUM ALLOWABLE DESIGN STRESSES:
 REINFORCED CONCRETE:
 $f'_c = 4,000$ PSI $n = 8$
 $f_y = 60,000$ PSI REINFORCEMENT
 PRESTRESSED CONCRETE:
 $f'_c = 8,000$ PSI $n = 1$
 $f_y = 270,000$ PSI STRANDS
 STRUCTURAL STEEL:
 $f_y = 36,000$ PSI SPEC. 3306
 DECK AREA = 8566 SQ. FT. A.D.T. = 3980 (2007)
 OPERATING RATING = HS 48 PROJ. A.D.T. = 7560 (2027)
 DESIGN SPEED = 50 MPH

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39	BRIDGE SURVEY PLAN & PROFILE

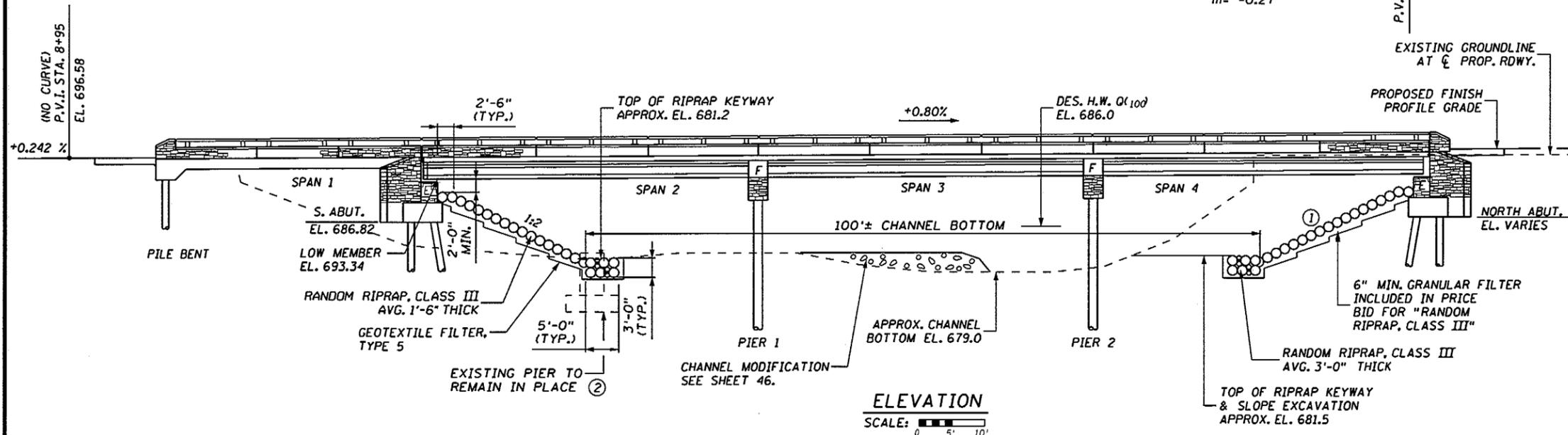


PLAN

SCALE: 0 5' 10'

150' VERTICAL CURVE DATA
 P.V.C. STA. 11+00.00, EL. 698.22
 P.V.I. STA. 11+75.00, EL. 698.82
 P.V.T. STA. 12+50.00, EL. 698.33
 $g_1 = +0.80\%$
 $g_2 = -0.65\%$
 $m = -0.27'$

HORIZONTAL CURVE DATA
 PI STA. 13+30.84
 Delta = 12°14'18" RT.
 $T = 220.85'$
 $R = 2060.00'$
 $L = 440.01'$



ELEVATION

SCALE: 0 5' 10'

NOTE:
 PILE BENT AND ABUTMENT PILES ARE TO BE 12" C.I.P.
 CONCRETE PILES WITH PILE POINTS.
 PIER PILES ARE TO BE 16" C.I.P.
 CONCRETE PILES WITH PILE POINTS.

- ① 1:2.0 WEST SIDE
1:2.2 EAST SIDE
- ② SEE SHEET 9 FOR DETAILS.

I HEREBY CERTIFY THAT THIS BRIDGE PLAN (SHEETS 1-39) WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

C.M. Schall-Karwacki
 C.M. SCHALL-KARWACKI
 DATE: 10-29-07 LIC. NO. 15656

PLANS PREPARED BY:
ERICKSON ENGINEERING
 9330 JAMES AVE. SOUTH
 BLOOMINGTON, MN 55431

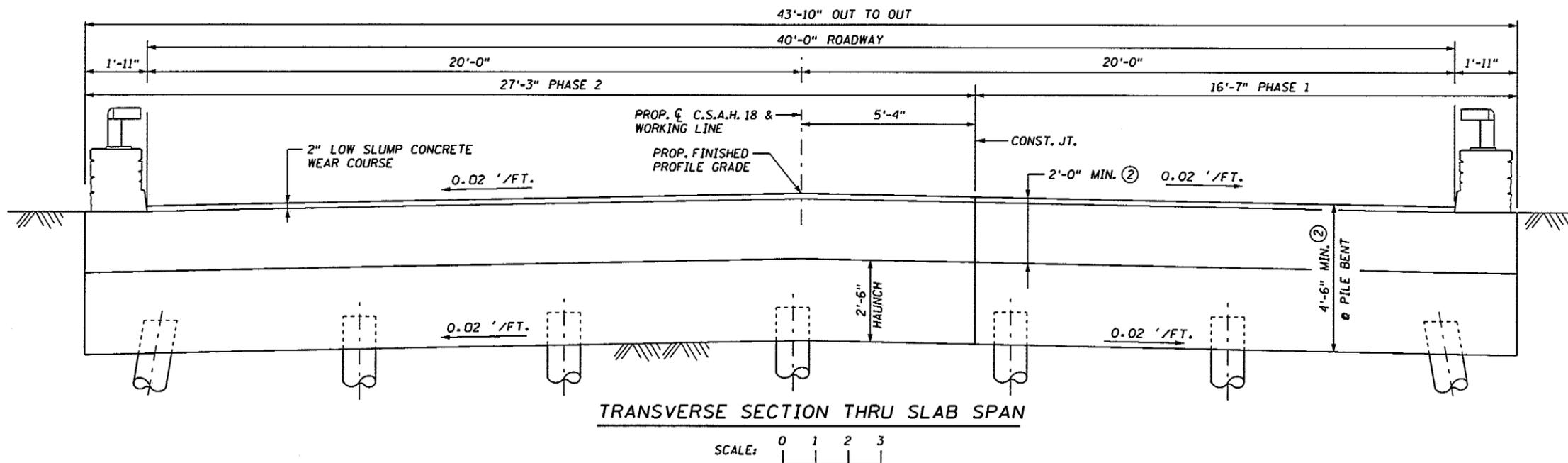
C.S.A.H. 18 WASHINGTON COUNTY
 MINNESOTA DEPARTMENT
 OF TRANSPORTATION

BRIDGE NO. 82517
 LOCATED 0.3 MILES NORTH OF C.S.A.H. 21
 ON C.S.A.H. 18 OVER VALLEY BRANCH CREEK.
 1-38 FT. CONCRETE SLAB SPAN
 & 3-51 FT. PRESTRESSED CONCRETE BEAM
 SPANS ~ 40 FT. RDWY. ~ 0° SKEW
 SPAN IDENTIFICATION NO. 109 (S. SLAB SPAN)
 SPAN IDENTIFICATION NO. 501 (MAIN SPANS)

GENERAL PLAN & ELEVATION
 SEC. 14 TWP. 28 N R 20 W
 CITY: AFTON
 COUNTY: WASHINGTON

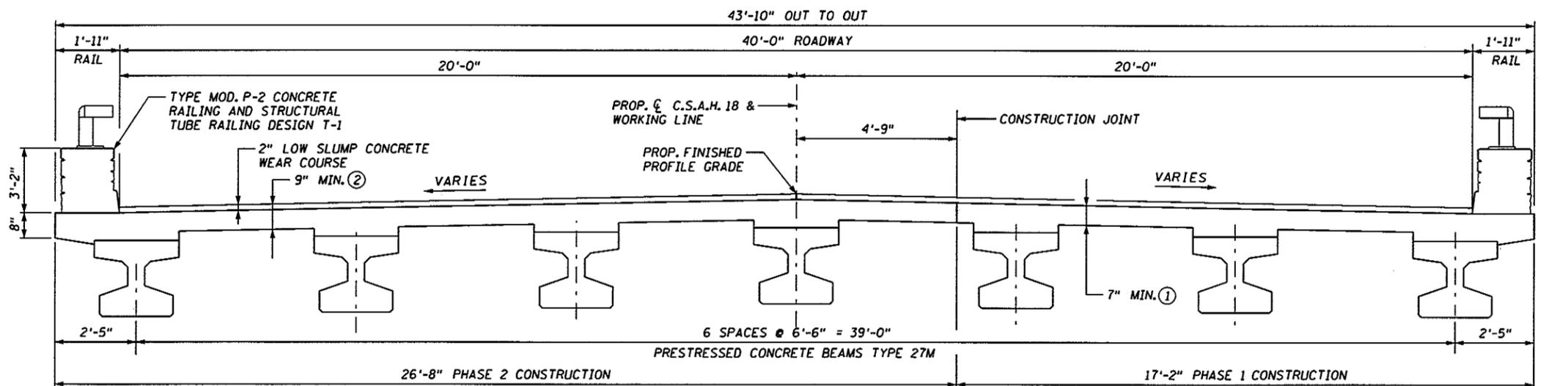
APPROVED: *Nancy Daubenerger*
 for STATE BRIDGE ENGINEER
 DATE: 11/29/07

S.A.P. 82-618-08
 SHEET 2 OF 50 SHEETS
 DES. JAS DRN. GRF
 CHK. CSK CHK. CSK **82517**



TRANSVERSE SECTION THRU SLAB SPAN

SCALE: 0 1 2 3



TRANSVERSE SECTION THRU DECK

SCALE: 0 1 2 3

CONSTRUCTION NOTES

THE 2005 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.
 THE FIRST TWO DIGITS OF EACH BAR MARK INDICATE THE BAR SIZE IN MILLIMETERS. BARS MARKED WITH THE SUFFIX "E" SHALL BE EPOXY COATED.
 ALL DIMENSIONS ARE MEASURED TO STRUCTURAL FACE OF THE MEMBER.
 ENGINEER IN THE FIELD SHALL VERIFY PROPER POSITIONING OF THE BRIDGE PRIOR TO COMMENCEMENT OF CONSTRUCTION. IF THE BRIDGE POSITIONING IS NOT COMPATIBLE WITH THE STREAM WHEN STAKING IS COMPLETED, THE SEALING ENGINEER SHALL BE NOTIFIED.
 IF STATIONING IS CHANGED, THE REVISED PLANS SHALL BE SUBMITTED TO THE OWNER AND STATE AID BRIDGE OFFICE.
 THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."
 THE EXISTING SOUTH PIER OF INPLACE BRIDGE 5673 IS NOT TO BE REMOVED BELOW THE INPLACE GROUNDLINE AT THE LOCATION OF THE PIER. THE CONCRETE WALL AND FOOTING ON TIMBER PILES IS ESSENTIAL TO THE STABILITY OF THE SOUTH SLOPE AND ABUTMENT.
 TRAFFIC TO BE MAINTAINED DURING CONSTRUCTION AS SHOWN ON SHEETS 5-8, AND SHEETS 49 & 50.

- ① MEASURED BEFORE PLACEMENT OF THE 2" LOW SLUMP WEARING COURSE.
- ② INCLUDES 2" LOW SLUMP WEARING COURSE.
- ③ SEE SPECIAL PROVISIONS.
- ④ BRIDGE NO. 5673 ~ STA. 10+00, NON-PARTICIPATING
- ⑤ SEE ABUTMENT SHEETS AND PHASE CONSTRUCTION SHEETS FOR STRUCTURE EXCAVATION REQUIREMENTS.
- ⑥ MOBILIZATION AND TRAFFIC CONTROL INCLUDE ALL ITEMS RELATED TO BRIDGE REMOVAL, CONSTRUCTION, AND APPROACH WORK, INCLUDING ALL PHASING.
- ⑦ ARCHITECTURAL SURFACE TREATMENT SHALL BE CUSTOM ROCK PATTERN NO. 12010 (MINNEHAHA BLEND) OR APPROVED EQUAL. SEE SHEETS 11, 15, 19 AND 30 FOR PLACEMENT DETAILS.
- ⑧ ARCHITECTURAL COLOR SYSTEM SHALL BE A MULTI-COLOR STAIN APPLICATION. SEE SPECIAL PROVISIONS.

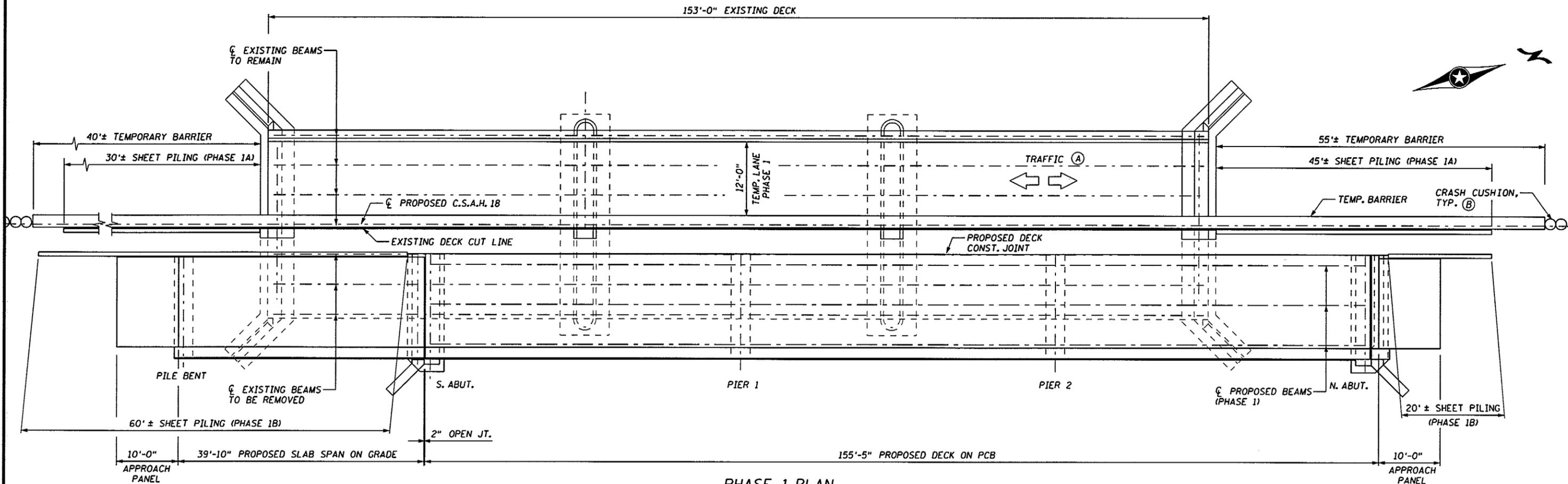
SCHEDULE OF QUANTITIES FOR ENTIRE BRIDGE

ITEM NO.	2021.501	2301.551	2401.501	2401.501	2401.512	2401.513	2401.541	2401.541	2401.601	2401.601	2402.584	2402.590	2402.591	2402.595	2404.501	2405.502	2411.604
ITEM	MOBILIZATION ⑥	BRIDGE APPROACH PANEL	STRUCTURAL CONCRETE (1A43)	STRUCTURAL CONCRETE (3Y43)	BRIDGE SLAB CONCRETE (3Y36)	TYPE MOD. P-2 RAILING CONCRETE (3Y46)	REINFORCEMENT BARS	REINFORCEMENT BARS (EPOXY COATED)	SLOPE PREPARATION	STRUCTURE EXCAVATION ⑤	STRUCTURAL TUBE RAILING DESIGN T-1	ELASTOMERIC BEARING PAD TYPE 1	EXPANSION JOINT DEVICE TYPE 4	BEARING ASSEMBLY	CONCRETE WEARING COURSE (3U17A)	PRESTRESSED CONCRETE BEAMS 27M	ARCHITECTURAL SURFACE TREATMENT ⑦
QUANTITY	1	2	64 (P)	112 (P)	8566 (P)	396 (P)	2940 (P)	87250 (P)	1	1	383 (P)	28	84 (P)	14	8617 (P)	1071 (P)	239 (P)
UNIT	LUMP SUM	EACH	CU. YD.	CU. YD.	SQ. FT.	LN. FT.	POUND	POUND	LUMP SUM	LUMP SUM	LN. FT.	EACH	LN. FT.	EACH	SQ. FT.	LN. FT.	SQ. YD.
ITEM NO.	2411.604	2442.501	2452.507	2452.507	2452.508	2452.508	2452.519	2452.519	2452.519	2452.602	2452.602	2472.525	2472.525	2472.525	2472.525	2502.601	2511.501
ITEM	ARCHITECTURAL COLOR SYSTEM ⑧	REMOVE EXISTING BRIDGE ④	C.I.P. CONCRETE PILING DELIVERED 12"	C.I.P. CONCRETE PILING DELIVERED 16"	C.I.P. CONCRETE PILING DRIVEN 12"	C.I.P. CONCRETE PILING DRIVEN 16"	C.I.P. CONCRETE TEST PILE 100 FT. LONG 12"	C.I.P. CONCRETE TEST PILE 120 FT. LONG 12"	C.I.P. CONCRETE TEST PILE 120 FT. LONG 16"	PILE POINTS 12 INCH	PILE POINTS 16 INCH	COUPLERS (REINF. BARS) T-16	COUPLERS (REINF. BARS) T-19	COUPLERS (REINF. BARS) T-22	COUPLERS (REINF. BARS) T-25	DRAINAGE SYSTEM TYPE B911 (MOD.)	RANDOM RIPRAP CLASS III
QUANTITY	239 (P)	1	2600	1000	2600	1000	2	4	4	33	14	105	20	12	14	1	290
UNIT	SQ. YD.	LUMP SUM	LN. FT.	LN. FT.	LN. FT.	LN. FT.	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	LUMP SUM	CU. YD.
ITEM NO.	2511.515	2533.603	2554.501	2554.501	2554.523	2563.601											
ITEM	GEOTEXTILE FILTER, TYPE 5 ③	CONCRETE MEDIAN BARRIER, DES. 8337	TRAFFIC BARRIER DESIGN SPECIAL	TRAFFIC BARRIER DESIGN B8338	END TREATMENT ENERGY ABSORBING TERMINAL	TRAFFIC CONTROL ⑥											
QUANTITY	230	260	100	200	4	1											
UNIT	SQ. YD.	LN. FT.	LN. FT.	LN. FT.	EACH	LUMP SUM											

CERTIFIED BY *C.M. Schall-Karwacki*
 PROFESSIONAL ENGINEER - C.M. SCHALL-KARWACKI
 LIC. NO. 15656 10-29-2007

MINNESOTA DEPARTMENT OF TRANSPORTATION
 BRIDGE NO. 82517
 TYPICAL SECTIONS AND QUANTITIES

APPROVED:
 S.A.P. 82-618-08
 SHEET 3 OF 50 SHEETS
 DES.: JAS DRN.: GRF
 CHK.: CSK CHK.: CSK 82517



PHASE 1 PLAN

SCALE: 0 5 10

SUGGESTED CONSTRUCTION SEQUENCE ©

WORK THIS SHEET WITH SHEETS 7 THRU 9.

- 1 INSTALL PHASE 1 TEMPORARY BARRIER ON THE EXISTING BRIDGE AND APPROACHES AS SHOWN ABOVE.
- 2 MOVE ALL TRAFFIC TO THE PHASE 1 LANE ON THE EXISTING BRIDGE. (SEE TRAFFIC CONTROL PLAN.)
- 3 REMOVE EXISTING DECK, BEAMS AND PIERS TO THE LIMITS SHOWN.
- 4 DRIVE PHASE 1A SHEET PILING BEHIND THE EXISTING ABUTMENTS AS SHOWN ABOVE. EXCAVATE AS REQUIRED AND REMOVE THE EXISTING ABUTMENTS.
- 5 CONSTRUCT THE PROPOSED PHASE 1 BENT PILES, ABUTMENTS, PIERS AND PCB SUPERSTRUCTURE. SEE "TRANSVERSE SECTION" THRU PCB DECK PHASE 1.
- 6 DRIVE PHASE 1B SHEET PILING BEHIND THE NEW ABUTMENTS AS SHOWN ABOVE. BACKFILL BEHIND THE ABUTMENTS. CONSTRUCT PHASE 1 SLAB SPAN AND APPROACH PANELS. (SEE "TRANSVERSE SECTION THRU SLAB SPAN - PHASE 1".)
- 7 COMPLETE PHASE 1 CONSTRUCTION. (TRAFFIC BARRIER, WEARING COURSE, APPROACH GRADING, ETC.).
- 8 INSTALL PHASE 2 TEMPORARY BARRIER ON THE NEW BRIDGE AND APPROACHES AS SHOWN ON PHASE 2 PLAN.
- 9 MOVE TRAFFIC FROM PHASE 1 LANE ON THE EXISTING BRIDGE TO THE PHASE 2 LANE ON THE NEW BRIDGE. (SEE TRAFFIC CONTROL PLAN.)
- 10 REMOVE ALL PHASE 1 TEMPORARY BARRIERS FROM THE EXISTING DECK. (MAY BE DONE WITH STEP 8 USING TEMPORARY CLOSURE. SEE TRAFFIC CONTROL PLAN.)
- 11 REMOVE PHASE 1A SHEET PILING AND THE REMAINDER OF THE EXISTING BRIDGE.
- 12 CONSTRUCT PROPOSED PHASE 2 ABUTMENTS AND PIERS, AND BENT PILES. PLACE PHASE 2 BEAMS AND END DIAPHRAGMS.
- 13 BACKFILL BEHIND THE PHASE 2 ABUTMENTS AND REMOVE SHEET PILING.
- 14 ERECT DECK AND SLAB SPAN FORMWORK AND PLACE REINFORCING.
- 15 SHUT DOWN ALL TRAFFIC ACCESS ON THE BRIDGE FOR THE PHASE 2 CONCRETE DECK AND SLAB SPAN PLACEMENT AND INITIAL CURING. (BRIDGE TO BE CLOSED 72 HOURS FROM START OF DECK POUR. SEE TRAFFIC CONTROL PLAN.)
- 16 PLACE CONCRETE FOR THE PHASE 2 CONTINUITY PIER DIAPHRAGMS, PCB DECK AND SLAB SPAN.
- 17 PHASE 2 LANE SHALL BE RE-OPENED TO TRAFFIC 72 HOURS AFTER CLOSURE.
- 18 CONSTRUCT PHASE 2 APPROACH PANELS.
- 19 COMPLETE PHASE 2 CONSTRUCTION. (TRAFFIC BARRIER, WEARING COURSE, APPROACH GRADING, ETC.).
- 20 REMOVE PHASE 2 TEMPORARY BARRIERS AND FILL ANCHOR HOLES PER DETAIL B920.
- 21 OPEN BRIDGE TO TRAFFIC.

NOTES:

SHEET PILING SHALL BE INCLUDED IN PRICE BID FOR "STRUCTURE EXCAVATION".

TEMPORARY BARRIER PLACEMENT TO BE APPROVED BY THE ENGINEER IN THE FIELD FOR EACH PHASE OF CONSTRUCTION. TEMPORARY BARRIER TO BE ANCHORED TO DECK IN PHASES 1 AND 2, SEE STANDARD PLATE B337, AND DETAIL B920 (MODIFIED).

SHEET PILING SHALL PROJECT A MINIMUM OF 6" ABOVE THE ROADWAY GRADE.

THE SOUTH ABUTMENT MUST BE REMOVED DOWN TO AN ELEVATION A MINIMUM OF 4 FEET BELOW PROPOSED SUBGRADE (SPEC. 2442).

SEE ABUTMENT QUANTITY NOTES FOR ABUTMENT BACKFILL REQUIREMENTS.

Ⓐ ONE LANE, TWO WAY TRAFFIC WITH TEMPORARY TRAFFIC CONTROL SIGNALS. SEE TRAFFIC CONTROL PLAN.

Ⓑ SEE TRAFFIC CONTROL SHEETS.

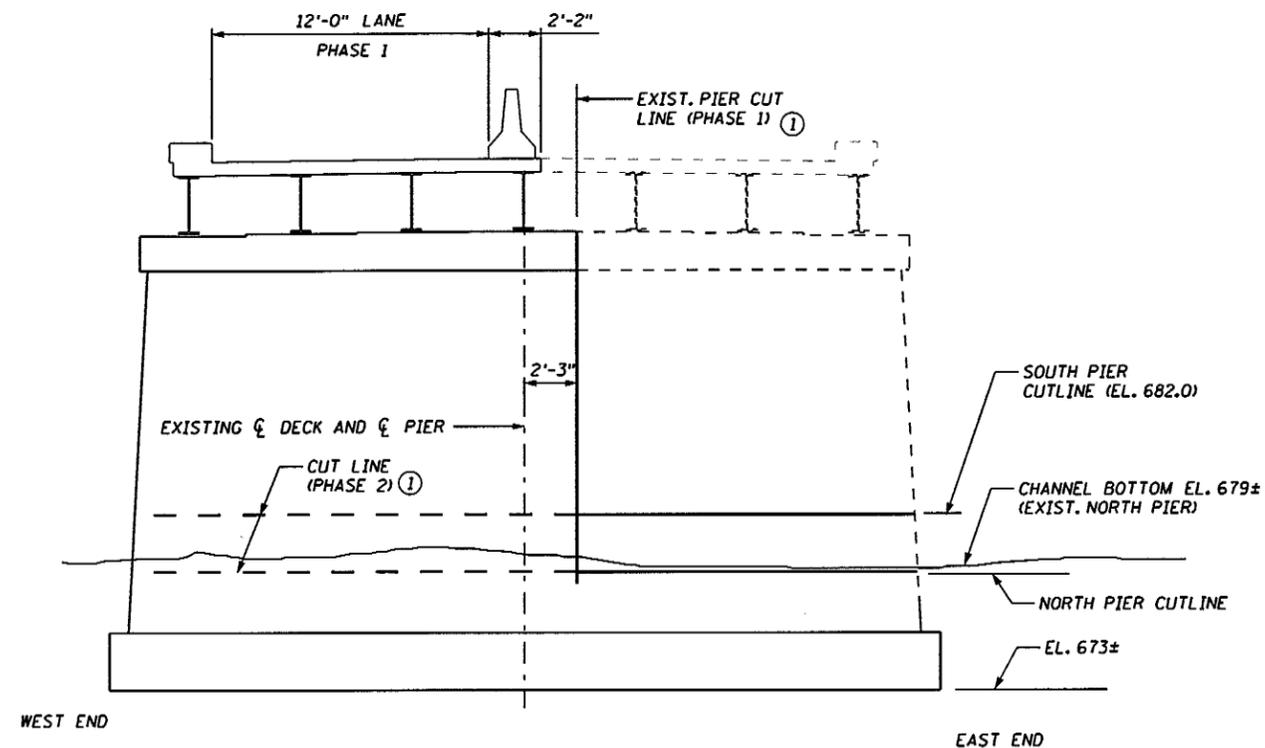
Ⓒ CONSTRUCTION SEQUENCE TO BE USED IS AT THE DISCRETION OF THE CONTRACTOR. CONTRACTOR SHALL FURNISH THE ENGINEER WITH A PROGRESS SCHEDULE, INCLUDING PROPOSED CONSTRUCTION SEQUENCE, IN ACCORDANCE WITH SPEC. 1803.

CERTIFIED BY *C.M. Schall-Karwacki*
 PROFESSIONAL ENGINEER - C.M. SCHALL-KARWACKI
 LIC. NO. 15656 10-29-2007

MINNESOTA DEPARTMENT OF TRANSPORTATION
BRIDGE NO. 82517
PHASE CONSTRUCTION

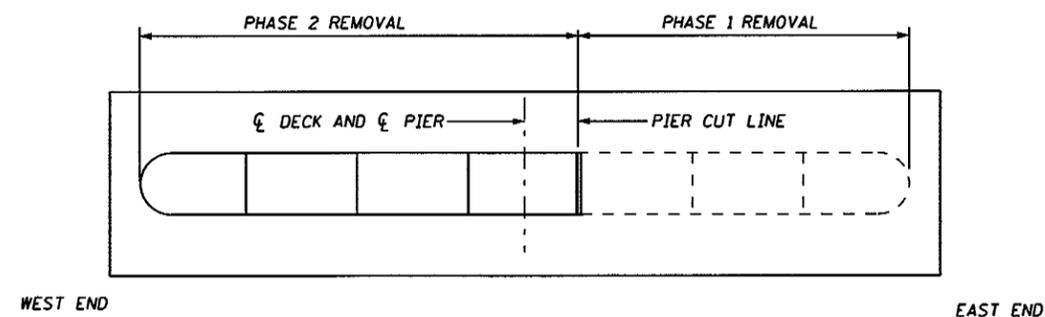
APPROVED:
 S.A.P. 82-618-08
 SHEET 6 OF 50 SHEETS

DES.: JAS	DRN.: GRF	82517
CHK.: CSK	CHK.: CSK	



TRANSVERSE SECTION AT EXISTING PIERS - PHASE 1

(PILING NOT SHOWN)
SCOUR DEPTH EL. 655±



EXISTING PIER PLAN - PHASE 1

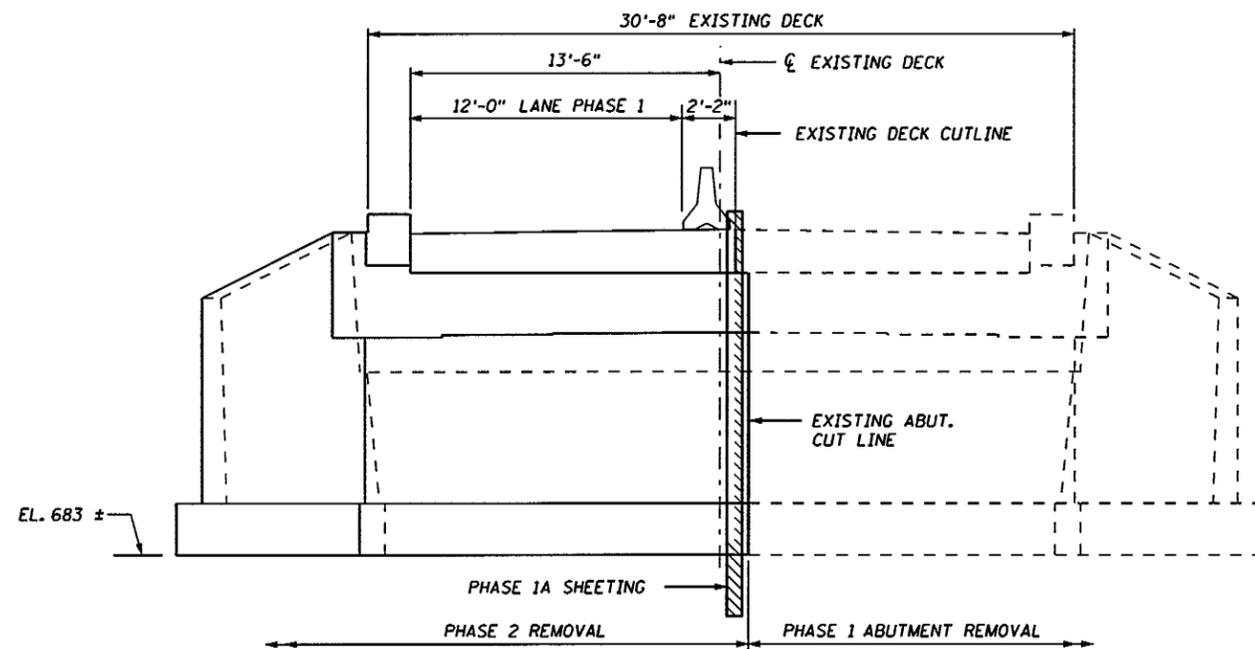
(SUPERSTRUCTURE NOT SHOWN)

NOTES

PHASED BRIDGE REMOVALS SHALL BE DONE IN ACCORDANCE WITH MN/DOT SPEC. 2442. ALL REQUIRED REMOVALS SHALL BE INCLUDED FOR PAYMENT WITH 2442.501 "REMOVE OLD BRIDGE" PER LUMP SUM.

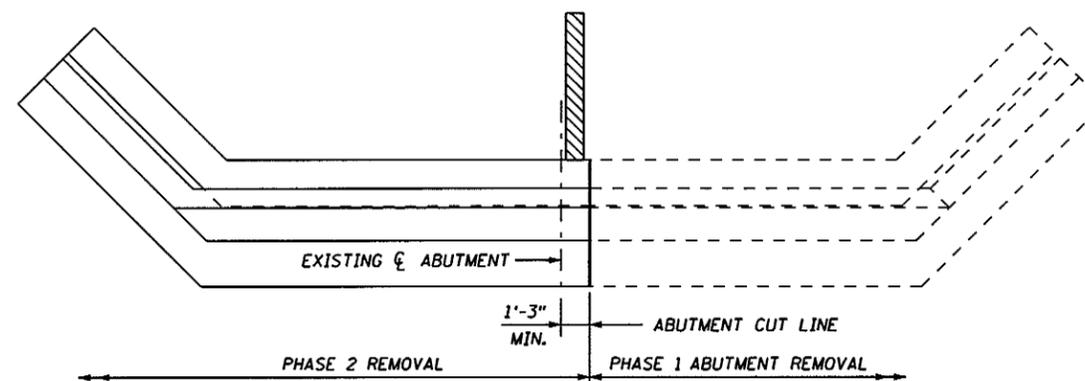
ESTIMATED LIMITS OF NORTH ABUTMENT REMOVAL ARE SHOWN. LOWER LIMITS OF SOUTH ABUTMENT REMOVAL IS ESTIMATED TO BE ABOUT 9 FEET DOWN FROM THE EXISTING ROADWAY SURFACE.

- ① ESTIMATED LIMITS OF PIER REMOVAL ARE SHOWN. THE SOUTH PIER WALL SHALL NOT BE REMOVED BELOW ELEV. 682.
- ② INPLACE PILING SHALL BE REMOVED TO THE BOTTOM OF THE GRANULAR FILTER.
- ③ LATERAL SOIL SUPPORT BETWEEN SHEET PILING AND EXISTING ABUTMENT STEM TO BE PROVIDED WITH TIMBERS OR OTHER SUITABLE MATERIAL ADEQUATELY BRACED AT THE SHEET PILING AND EXISTING ABUTMENT BACKFACE.



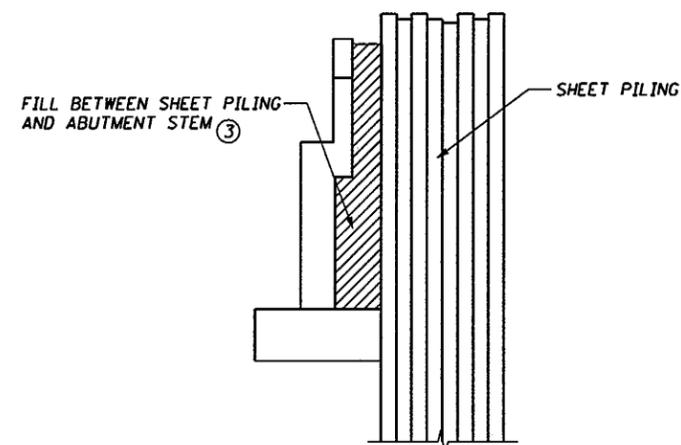
TRANSVERSE SECTION AT EXISTING NORTH ABUTMENT - PHASE 1

(PILING NOT SHOWN) ②



EXISTING ABUTMENT PLAN - PHASE 1

(SUPERSTRUCTURE NOT SHOWN)



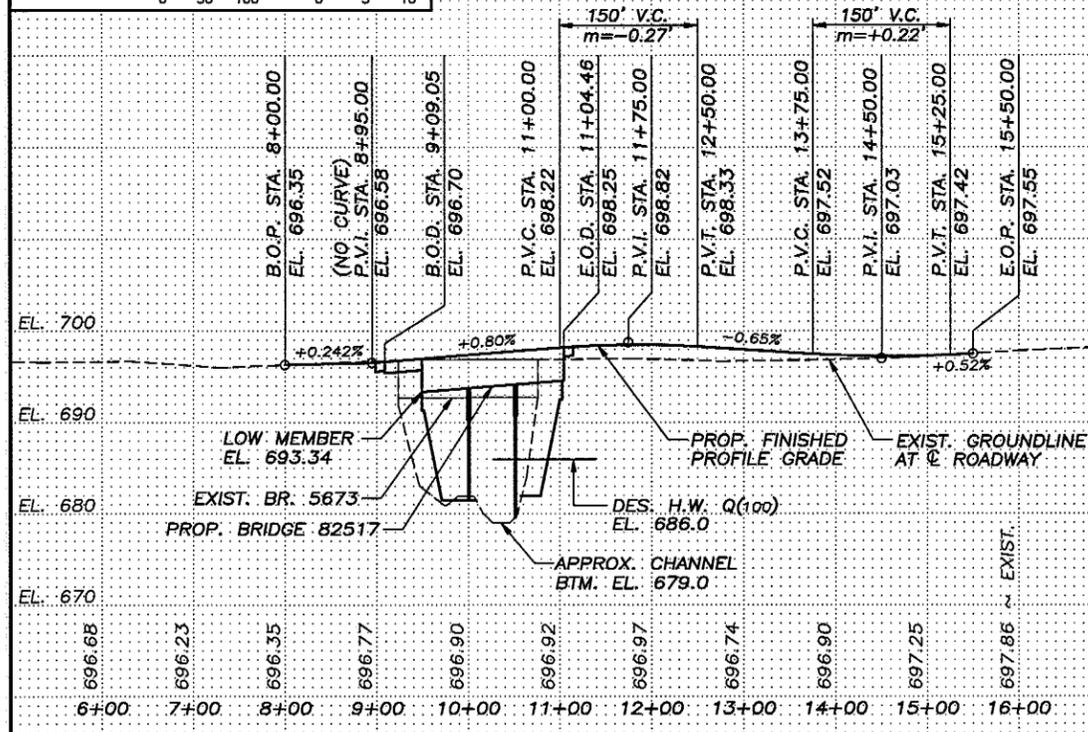
ABUTMENT SECTION

CERTIFIED BY *C.M. Schall-Karwacki*
PROFESSIONAL ENGINEER - C.M. SCHALL-KARWACKI
LIC. NO. 15656 10-29-2007

MINNESOTA DEPARTMENT OF TRANSPORTATION	
BRIDGE NO. 82517	
PHASE CONSTRUCTION REMOVALS	
APPROVED:	
S.A.P. 82-618-08	
SHEET 9 OF 50 SHEETS	
DES.: JAS	DRN.: GRF
CHK.: CSK	CHK.: CSK
82517	

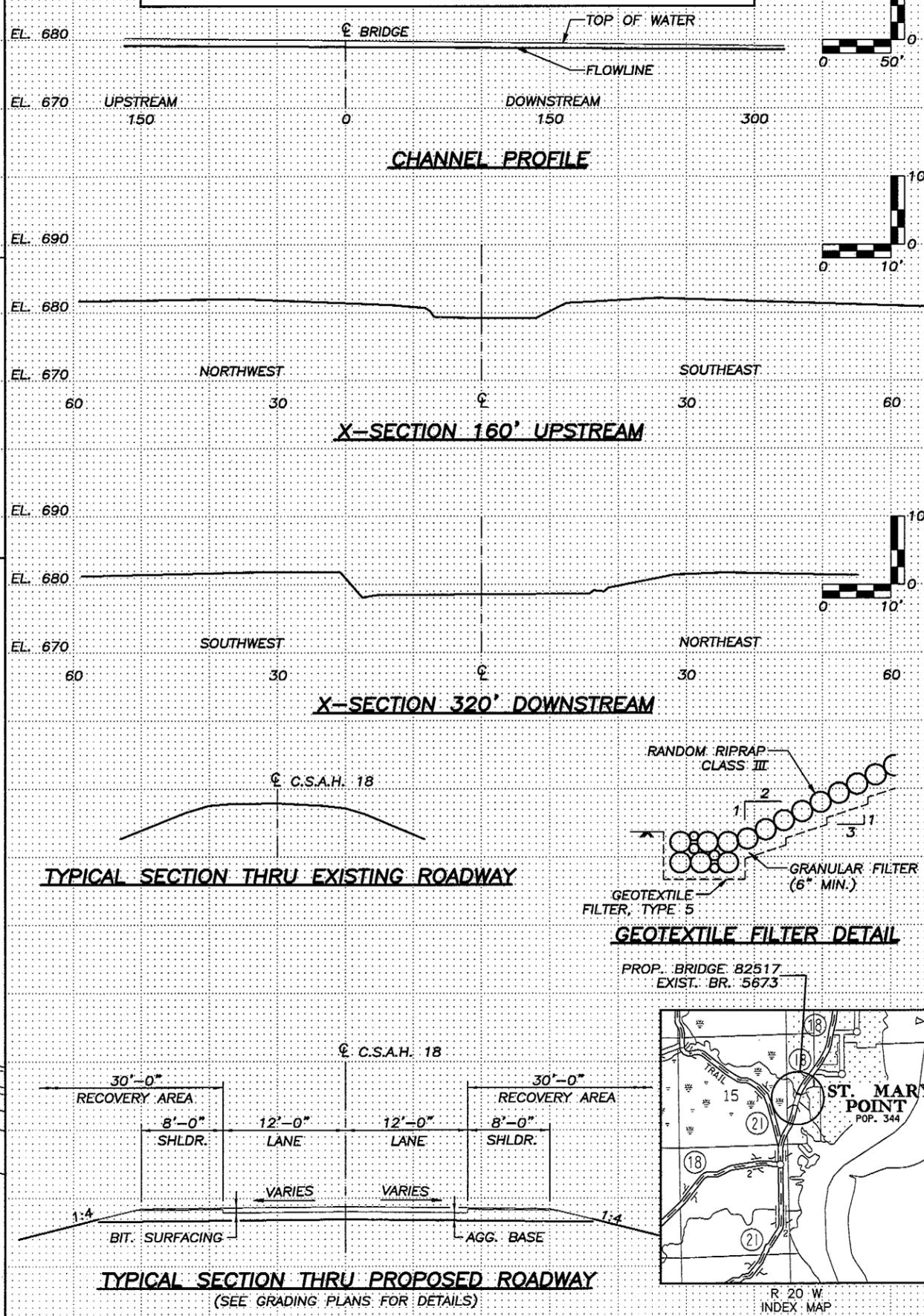
CONTRACTED PROFILE

SCALE: HOR. 1"=100' VER. 1"=10'



TYPICAL SECTIONS & PERTINENT DATA

SCALES AS SHOWN



Fed. Proj. No.

LOCATION ENGINEER'S OBSERVATION AT BRIDGE SITE

DATE

- Special Features: Waterfalls, dams, floods, ice, debris, sliding banks, rec. boats.
- Other bridges or culverts over the same stream (particularly structures which carry high water without overflow of roadway) : Given location, type, length, height above high water, cross-sectional area, etc.
- Apparent highwater elevation..... Obtained from
- Other data: Approx. velocity of water at time of survey

HYDRAULIC ENGINEER'S RECOMMENDATION

DATE 1-4-2005

Stream or ditch designation VALLEY BRANCH CREEK
 Drainage area 17.3 SQ. MI.
 Max. flood on record UNKN Design flood (100 yr. freq.) 2,800 C.F.S.
 Max. observed highwater elev. UNKN Design highwater elev. 686.0
 Design mean velocity through structure 4.9 F.P.S.
 Low superstructure at or above elevation 693.4
 Flowline elevation 679.0 Skew angle 0'
 Waterway area req'd. below elev. 686.0 = 575 Sq. Ft. @ Rt. angles to channel
 In the interest of flood plain zoning the regional flood (100 yr. freq.) is 2,800 C.F.S. at stage 686.0 and mean velocity of 4.9 F.P.S. with 1.2 Ft. swellhead. The above recommendation will provide a structure of adequate waterway to pass the regional flood within criteria established by the Dept. of Natural Resources.

SCOUR CODE: L
 EST. PIER SCOUR EL. 655.3

ENGINEER'S RECOMMENDATION
 DATE 1-3-2007

40' SLAB SPAN AND 51'-51'-51' PRESTRESSED
 CONCRETE BEAM SPANS
 0' SKEW, 40'-0" ROADWAY WIDTH

Bridge survey sheets made from: SURVEY NOTES FROM
 WASHINGTON COUNTY (DATED 12/2004)

Benchmark elevation 697.25 (NAVD 88)
 Location: BRASS DISK IN S.E. ABUTMENT
 CORNER OF EXIST. BR. 5673

STATE OF MINNESOTA
 DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

AT MILE POINT ON C.S.A.H. 18
 PROPOSED BRIDGE LOCATED 0.3 MILES NORTH OF
 JCT. C.S.A.H. 21 OVER VALLEY
 BRANCH CREEK.
 SEC. 14 TWP. 28 N R. 20 W
 CITY AFTON COUNTY WASHINGTON
 EXIST. BRIDGE NO. 5673
 PROP. BRIDGE NO. 82517

PLAT

SCALE: 1"=100'

UTILITY INFORMATION

WARNING:

DIAL GOPHER STATE ONE CALL AT 1-800-252-1166
 48 HOURS IN ADVANCE OF CONSTRUCTION OPERATIONS TO OBTAIN COMPLETE
 UTILITY PROPERTY OWNERSHIP AND LOCATION INFORMATION.

UTILITY INFO AVAILABLE FOR PLAN PREPARATION:

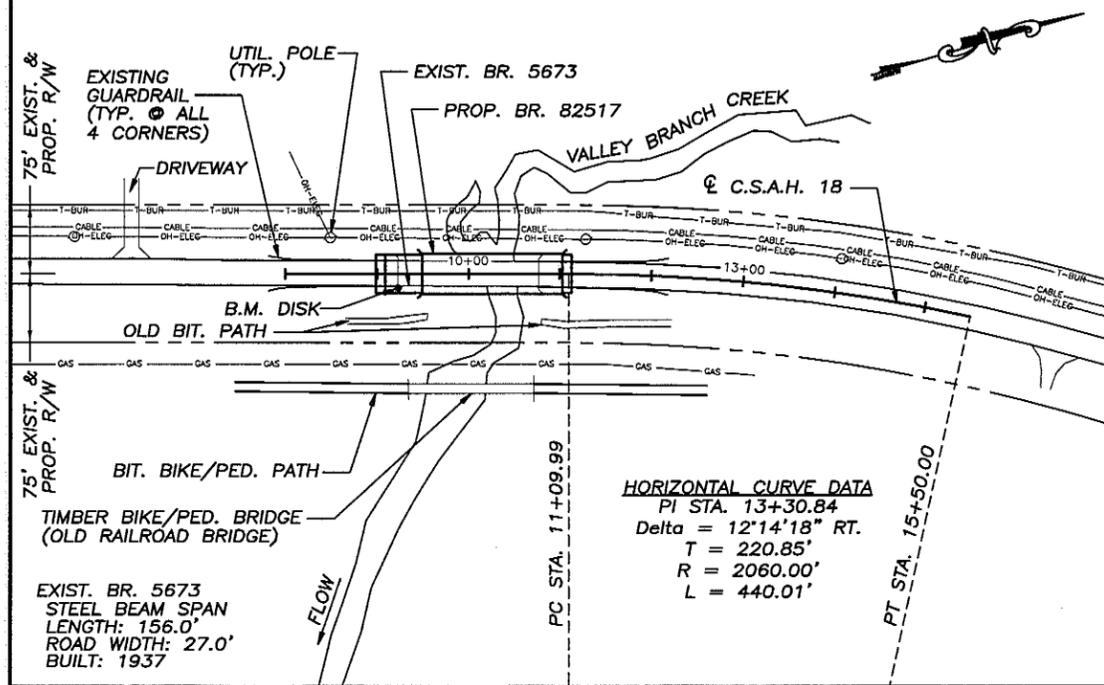
COMCAST (OVERHEAD CABLE) 651-224-0413
 CENTERPOINT ENERGY (BURIED GAS) 651-224-0413
 QWEST (BURIED TELEPHONE) 651-224-0413
 XCEL ENERGY (OVERHEAD POWER) 651-229-2427

NOTE:

FIELD VERIFY ALL UTILITIES.

THE PLAN INDICATES THE GENERAL LOCATION OF KNOWN UTILITIES ON THE PROJECT. ALL UTILITY
 LOCATIONS ARE APPROXIMATE. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL VERIFY ALL
 UNDERGROUND UTILITY LOCATIONS AND ELEVATIONS WITH THE UTILITY COMPANIES.

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS QUALITY LEVEL D. THIS QUALITY LEVEL WAS
 DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED 'STANDARD GUIDELINES
 FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA.'



CERTIFIED BY *MSD/Kerwood* LIC. NO. 15656 10-29-2007

State Aid Proj. No. 82-618-08

Sheet No. 38 of 50 Sheets

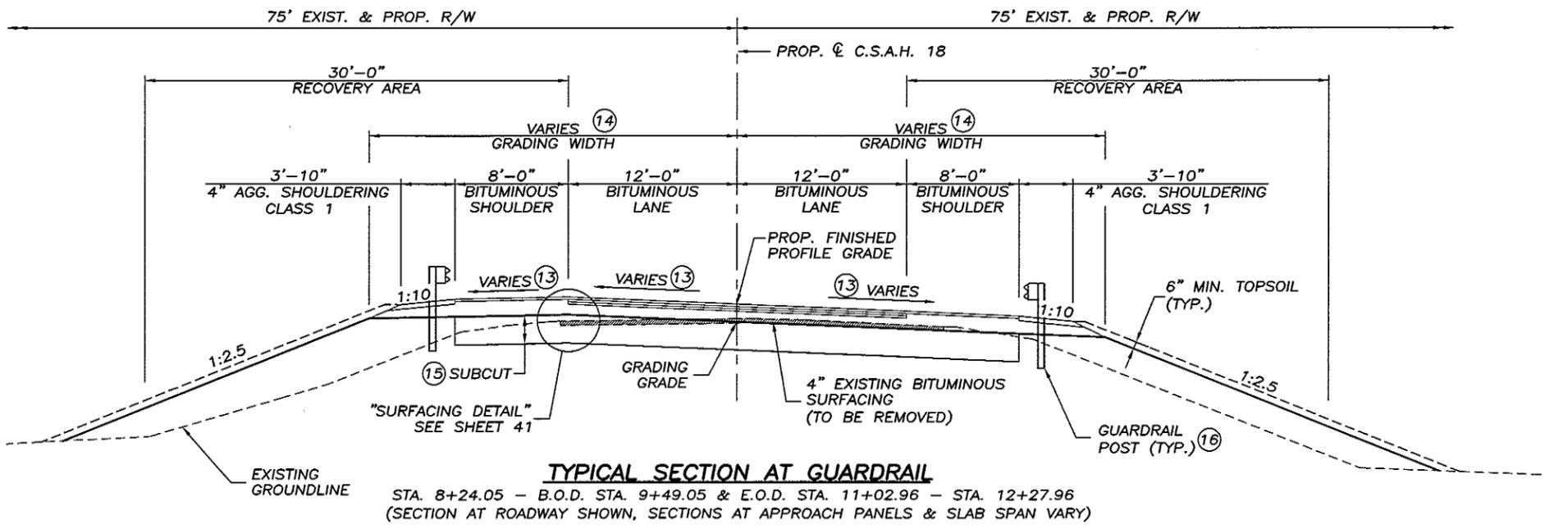
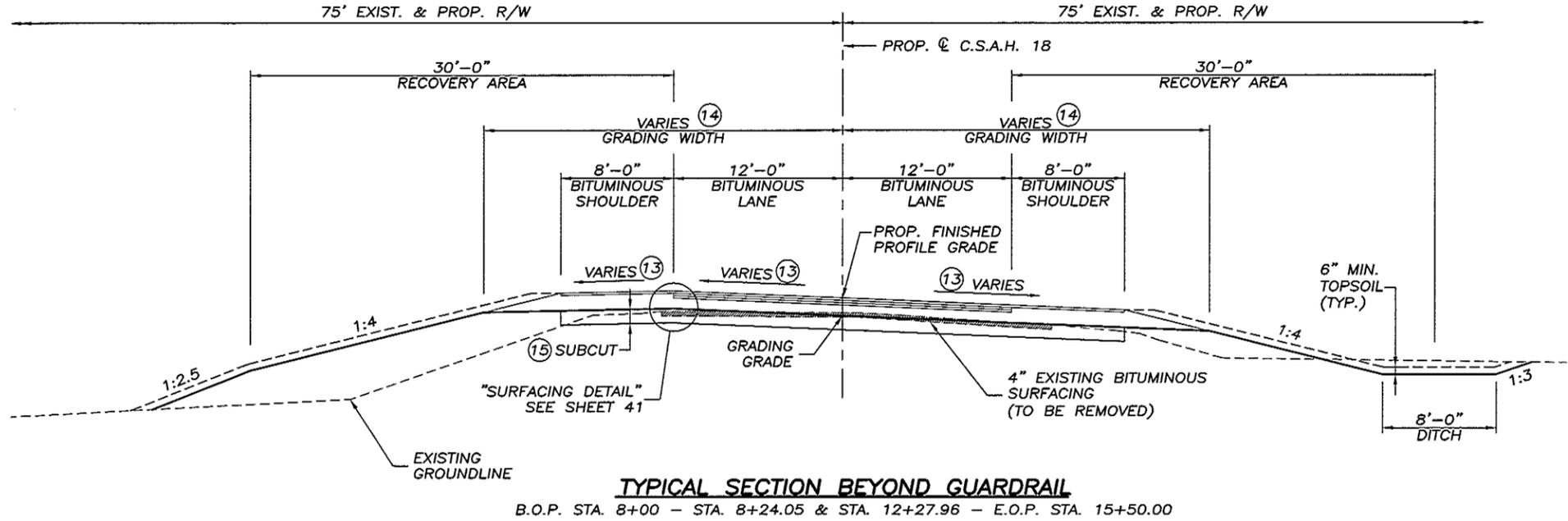
- ① CONSISTS OF APPROXIMATELY 0.9 ACRE.
- ② REMOVE ALL EXISTING BITUMINOUS PAVEMENT BETWEEN B.O.P. STA. 8+00 AND E.O.P. STA. 15+50 (LESS EXISTING BRIDGE). BITUMINOUS ON OLD BRIDGE INCLUDED IN "REMOVE EXISTING BRIDGE". SEE SPECIAL PROVISIONS.
- ③ SAWCUT ACROSS EXISTING C.S.A.H. 18 AT B.O.P. STA. 8+00 AND E.O.P. STA. 15+50.
- ④ INCLUDES APPROXIMATELY 535 CU. YD. OF SALVAGED TOPSOIL (ASSUMED 4" DEEP).
- ⑤ SELECT GRANULAR BORROW SHALL BE PLACED IN SUBCUT AREAS & 1:10 SUBCUT TAPERS FROM STA. 8+48.96 TO STA. 11+62.96.
- ⑥ INCLUDES 18 CU. YD. (LV) FOR PLACEMENT UNDER APPROACH PANELS (3" DEPTH). QUANTITY HAS BEEN INCREASED BY 25% TO ACCOUNT FOR LOSS OF AGGREGATE DURING GRADING PHASING. SEE "PHASE CONSTRUCTION SEQUENCE FOR APPROACH GRADING" NOTES ON SHEET 41.
- ⑦ QUANTITY BASED ON MIXTURE WEIGHT OF 110 LBS. PER SQUARE YARD PER 1 INCH DEPTH.
- ⑧ PLACEMENT SHALL BE AT THE RATE OF 0.05 GALLONS PER SQUARE YARD.
- ⑨ PLACE SILT FENCE AT TOE OF INSLOPE. SEE SHEET 42 FOR LOCATION AND SHEET 45 FOR DETAILS.

- ⑩ SEE SHEET 45 FOR DETAILS.
- ⑪ MAINTAINED. IF SILT FENCE OR FLOTATION SILT CURTAIN IS DAMAGED OR REMOVED DURING CONSTRUCTION, THE CONTRACTOR SHALL REPLACE WITH NO DIRECT COMPENSATION THEREOF.
- ⑫ TURF ESTABLISHMENT SHALL INCLUDE ALL AREAS DISTURBED BY CONSTRUCTION AND SHALL CONSIST OF SEED MIXTURE NO. 250 APPLIED AT 70 LBS./ACRE AND COMMERCIAL FERTILIZER TYPE 2 APPLIED AT THE MANUFACTURER'S SUGGESTED RATE. MULCH MATERIAL TYPE 1 AT 2 TONS/ACRE AND DISK ANCHORING ON ALL SEEDING AREAS EXCEPT THE CHANNEL FILL AREA AS SHOWN ON SHEET 36. APPROXIMATE AREA IS 0.9 ACRE.
- ⑬ ROADWAY AND SHOULDER CROSS SLOPE VARIES. SEE SUPERELEVATION DIAGRAM ON SHEET 41 AND CROSS SECTIONS ON SHEETS 43 & 44 FOR DETAILS.
- ⑭ GRADING WIDTH VARIES DUE TO SUPERELEVATION. SEE CROSS SECTIONS ON SHEETS 43 & 44 FOR DETAILS.
- ⑮ SUBCUT DEPTH, WIDTH & LOCATION VARIES. SEE CROSS SECTIONS ON SHEETS 43 & 44 FOR DETAILS. BACKFILL SUBCUT & SUBCUT TAPER WITH SELECT GRANULAR BORROW FROM STA. 8+48.96 TO STA. 11+62.96. BACKFILL SUBCUT WITH EXCAVATED MATERIAL OR COMMON BORROW IN ALL OTHER AREAS.
- ⑯ SEE SHEET 3 FOR GUARDRAIL QUANTITIES.

SCHEDULE OF ESTIMATED GRADING QUANTITIES (NON-PARTICIPATING)

ITEM NO.	ITEM	QUANTITY	UNIT	
①	2101.511	CLEARING & GRUBBING	1 LUMP SUM	
⑱	2104.501	REMOVE GUARD RAIL	564 LIN. FT.	
②	2104.505	REMOVE BITUMINOUS PAVEMENT	1,806 SQ. YD.	
③	2104.513	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	56 LIN. FT.	
④	2105.501	COMMON EXCAVATION	889 CU. YD.	
	2105.507	SUBGRADE EXCAVATION	738 CU. YD.	
⑤	2105.522	SELECT GRANULAR BORROW (LV)	642 CU. YD.	
⑳	2105.523	COMMON BORROW (LV)	7,585 CU. YD.	
	2105.525	TOPSOIL BORROW (LV)	267 CU. YD.	
⑥	2211.503	AGGREGATE BASE (CV) CLASS 5	1,085 CU. YD.	
	2221.503	AGGREGATE SHOULDERING (CV) CLASS 1	26 CU. YD.	
⑦	2350.501	TYPE MV 3 WEARING COURSE MIXTURE (C)	418 TON	
⑦	2350.502	TYPE LV 3 NON-WEARING COURSE MIXTURE (B)	157 TON	
⑧	2357.502	BITUMINOUS MATERIAL FOR TACK COAT	143 GALLON	
	2511.501	RANDOM RIPRAP CLASS IV	110 CU. YD.	
	2511.515	GEOTEXTILE FILTER, TYPE 5	170 SQ. YD.	
⑲	2564.553	CLEARANCE MARKER X4-4	4 EACH	
⑳	2571.502	DECIDUOUS TREE (4 FEET - CONTAINER)	7 TREE	
⑳	2571.505	DECIDUOUS SHRUB (NO. 2 - CONTAINER)	12 SHRUB	
⑨	⑪	2573.502	SILT FENCE, TYPE MACHINE SLICED	1,500 LIN. FT.
⑩	⑫	2573.502	SILT FENCE, TYPE HEAVY DUTY	100 LIN. FT.
⑩	⑬	2573.505	FLOTATION SILT CURTAIN, TYPE MOVING WATER	100 LIN. FT.
⑫	⑭	2575.523	EROSION CONTROL BLANKETS, CATEGORY 7	180 SQ. YD.
⑫	⑮	2575.555	TURF ESTABLISHMENT	1 LUMP SUM
⑮	⑯	2577.602	PLACE ROOTWAD COMPOSITE	3 EACH
⑮	⑰	2577.602	PLACE LUNKER STRUCTURE	8 EACH
⑮	⑱	2582.502	4" SOLID LINE WHITE - EPOXY	1,500 LIN. FT.
⑮	⑲	2582.502	4" SOLID LINE YELLOW - EPOXY	750 LIN. FT.
⑮	⑳	2582.502	4" BROKEN LINE YELLOW - EPOXY	750 LIN. FT.

- ⑰ INCLUDES REMOVAL OF CLEARANCE SIGNS AT BRIDGE CORNERS.
- ⑱ PLACED ACCORDING TO THE MNDOT TRAFFIC ENGINEERING MANUAL AND AS DIRECTED BY THE ENGINEER IN THE FIELD.
- ⑲ INSTALL EITHER X4-4L OR X4-4R AT EACH CORNER OF BRIDGE BEHIND GUARDRAIL. INCLUDES "U" CHANNEL TYPE POSTS (MIN. WEIGHT PER FOOT - 2.75 LBS.).
- ⑳ TYPE 3S COCONUT EROSION CONTROL BLANKETS WITH 11 GA. STEEL ANCHORS SHALL BE APPLIED TO THE CHANNEL FILL AREA SHOWN ON SHEET 36. A MINIMUM 4 INCH OVERLAP IS REQUIRED BETWEEN BLANKET SECTIONS. INCLUDES MAINTENANCE PER SPEC. 2575.3L2.
- ㉑ SEE SPECIAL PROVISIONS.
- ㉒ SEE SHEET 46 FOR LOCATION AND SHEET 45 FOR DETAILS.
- ㉓ INCLUDES 170 CU. YD. (LV) FOR CHANNEL FILL AREA. SEE SHEET 46.
- ㉔ SEE PROJECT BALANCE CHART ON SHEET 41.



PLANS PREPARED BY:
 ERICKSON ENGINEERING
 9330 JAMES AVE. SOUTH
 BLOOMINGTON, MN 55431

I HEREBY CERTIFY THAT THIS PLAN (SHEETS 40-50) WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

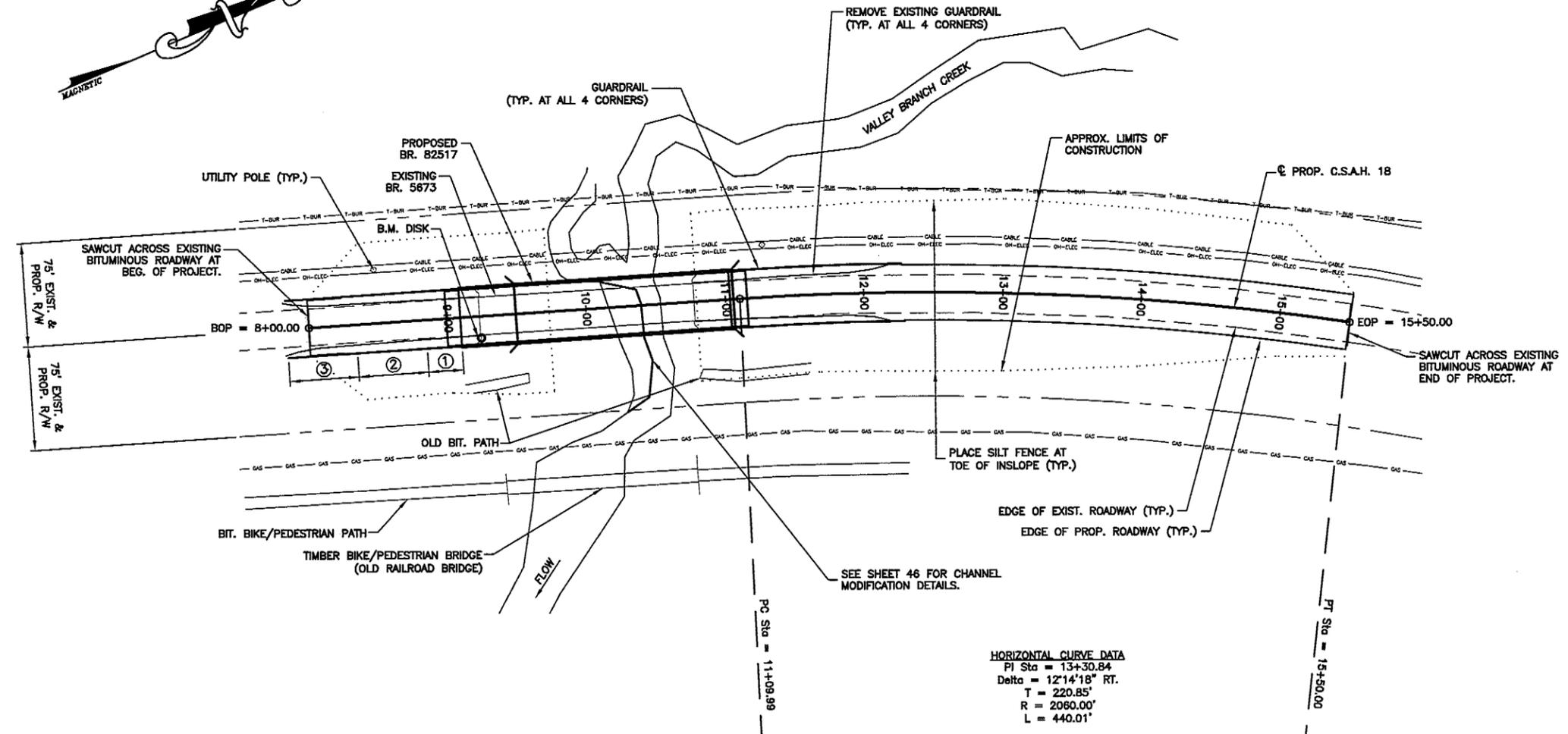
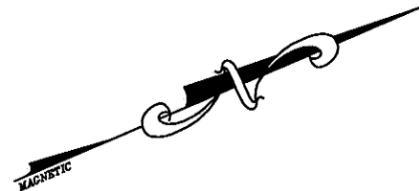
Thomas J. Wilson
 THOMAS J. WILSON

DATE: 10-29-07 LIC. NO. 21690

C.S.A.H. 18 WASHINGTON COUNTY
 MINNESOTA DEPARTMENT
 OF TRANSPORTATION

**BRIDGE NO. 82517
 APPROACH GRADING
 ESTIMATED QUANTITIES &
 CONSTRUCTION NOTES**

S.A.P. 82-618-08 DES.: JAS DRN.: NBB
 SHEET 40 OF 50 SHEETS CHK.: CSK CHK.: CGD



THE PLAN INDICATES THE GENERAL LOCATION OF KNOWN UTILITIES ON THE PROJECT. ALL UTILITY LOCATIONS ARE APPROXIMATE. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL VERIFY ALL UNDERGROUND UTILITY LOCATIONS AND ELEVATIONS WITH THE UTILITY COMPANIES.

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED 'STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA.'

UTILITY INFORMATION

WARNING:
DIAL GOPHER STATE ONE CALL AT 1-800-252-1166 48 HOURS IN ADVANCE OF CONSTRUCTION OPERATIONS TO OBTAIN COMPLETE UTILITY PROPERTY OWNERSHIP AND LOCATION INFORMATION.

UTILITY INFO AVAILABLE FOR PLAN PREPARATION: SEE SHEET 28 FOR DETAILS.

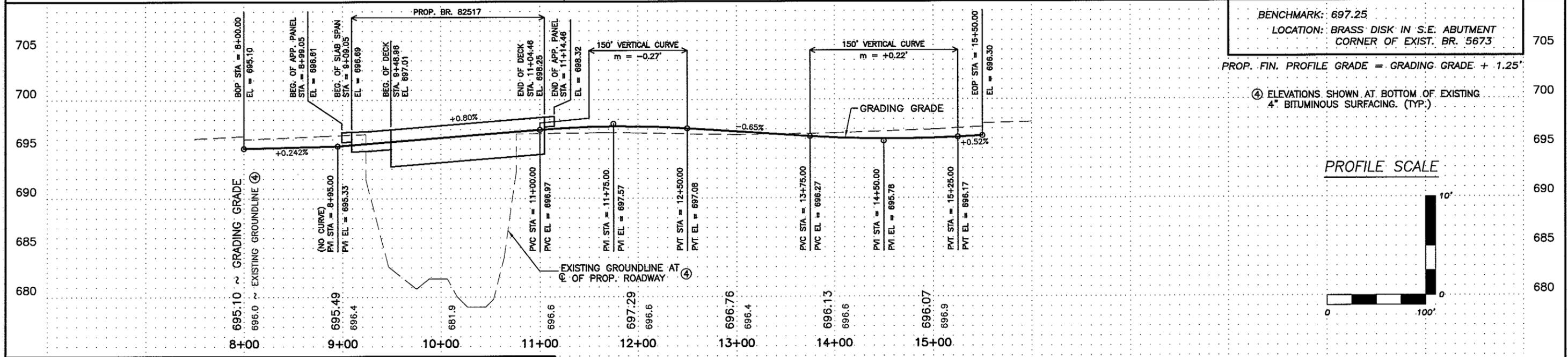
NOTE:
FIELD VERIFY ALL UTILITIES.

- ① TRAFFIC BARRIER DESIGN SPECIAL = 25'-0", SEE SHEET 47. TYP. ALL 4 CORNERS.
- ② 50' GUARDRAIL DESIGN B, SEE STANDARD PLATE 8338C. TYP. ALL 4 CORNERS.
- ③ ET-PLUS END TREATMENT - ENERGY ABSORBING TERMINAL 50'-0", SEE SHEET 48. TYP. ALL 4 CORNERS.

PLAN SCALE



HORIZONTAL CURVE DATA
 PI Sta = 13+30.84
 Delta = 12°14'18" RT.
 T = 220.85'
 R = 2080.00'
 L = 440.01'

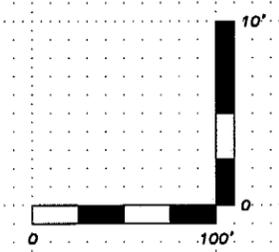


BENCHMARK: 697.25
 LOCATION: BRASS DISK IN S.E. ABUTMENT CORNER OF EXIST. BR. 5673

PROP. FIN. PROFILE GRADE = GRADING GRADE + 1.25'

④ ELEVATIONS SHOWN AT BOTTOM OF EXISTING 4" BITUMINOUS SURFACING. (TYP.)

PROFILE SCALE



CERTIFIED BY: *Thomas J. Wilson*
 PROFESSIONAL ENGINEER/THOMAS J. WILSON

LIC. NO. 21690 10-29-2007

APPROVED:

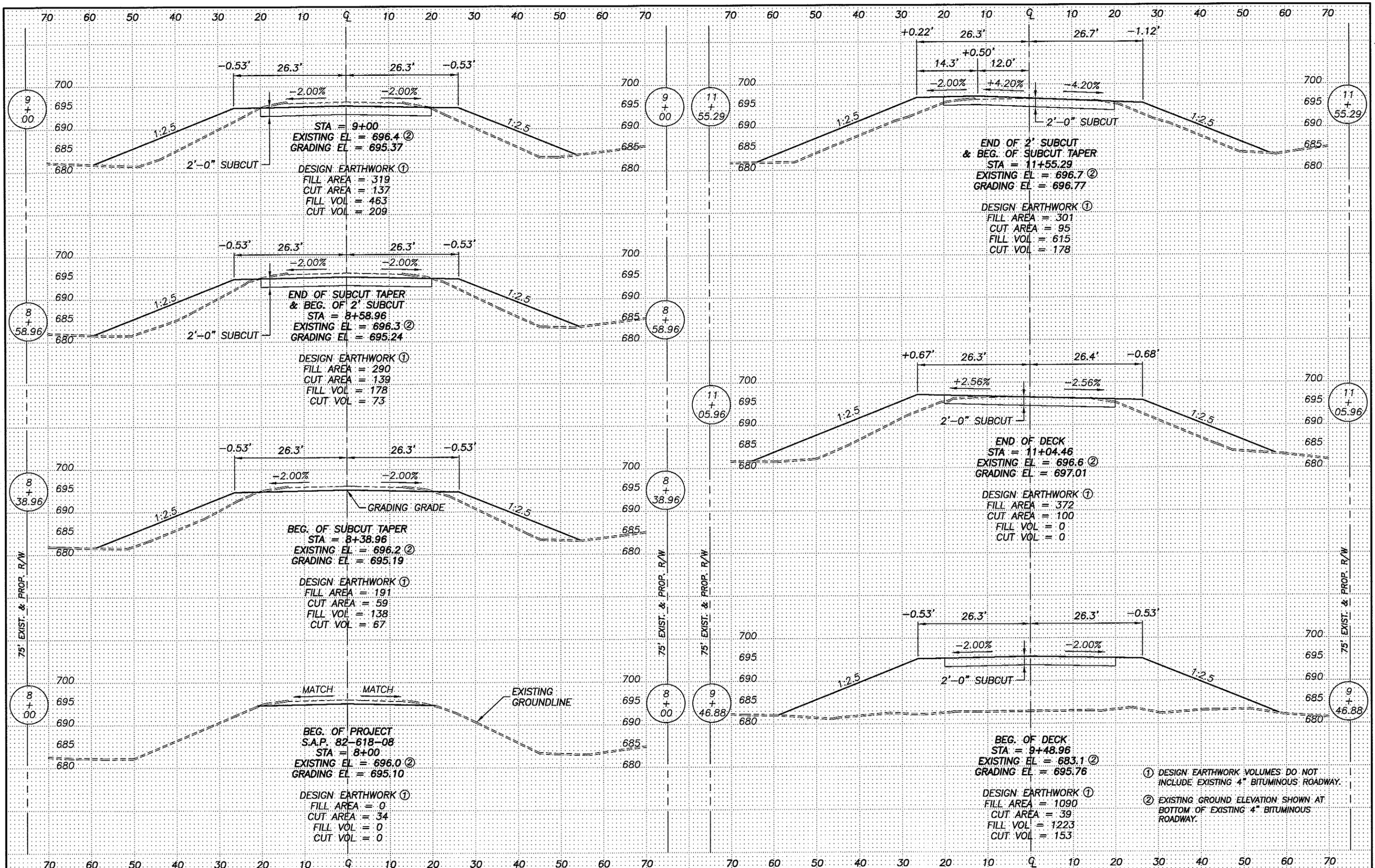
DES.: JAS	DRN.: NBB
CHK.: CSK	CHK.: CGD

S.A.P. 82-618-08

SHEET 42 OF 50 SHEETS

PLAN & PROFILE

82517



① DESIGN EARTHWORK VOLUMES DO NOT INCLUDE EXISTING 4" BITUMINOUS ROADWAY.
 ② EXISTING GROUND ELEVATION SHOWN AT BOTTOM OF EXISTING 4" BITUMINOUS ROADWAY.

APPROVED:

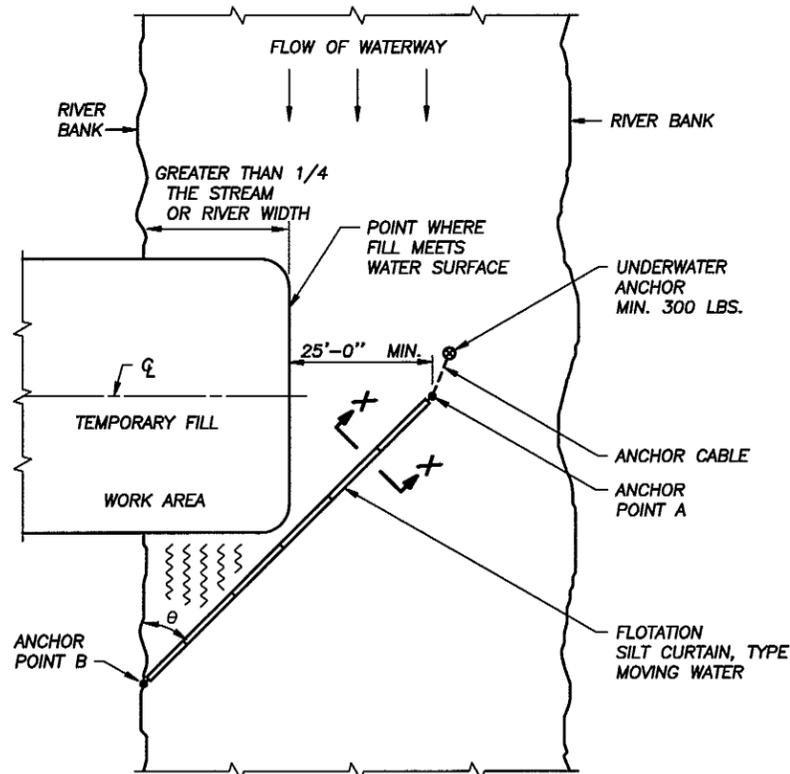
DES.: JAS DRN.: NBB
 CHK.: CSK CHK.: CGD

ROADWAY CROSS SECTIONS

S.A.P. 82-618-08

SHEET 43 OF 50 SHEETS

82517



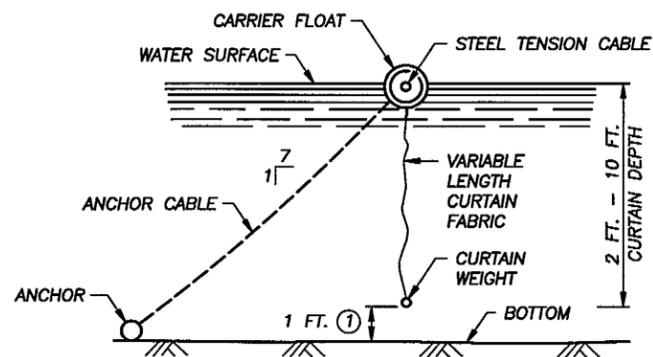
∠ θ	RIVER VELOCITY
45°	SLOW, LESS THAN 3 FT./SEC.
35°	MODERATE, 3 - 5 FT./SEC.

PLAN VIEW

FLOTATION SILT CURTAIN - TYPE MOVING WATER
(SPEC. 3887)

DESIGN GUIDELINES:

WHEN TEMPORARY FILL ENCLOSES MORE THAN 1/4 BUT LESS THAN 1/3 WIDTH OF THE STREAM.
 MAXIMUM WATER DEPTH: 11 FT. ①
 MINIMUM WATER DEPTH: 3 FT.
 MAXIMUM WATER VELOCITY: 5 FT./SEC.

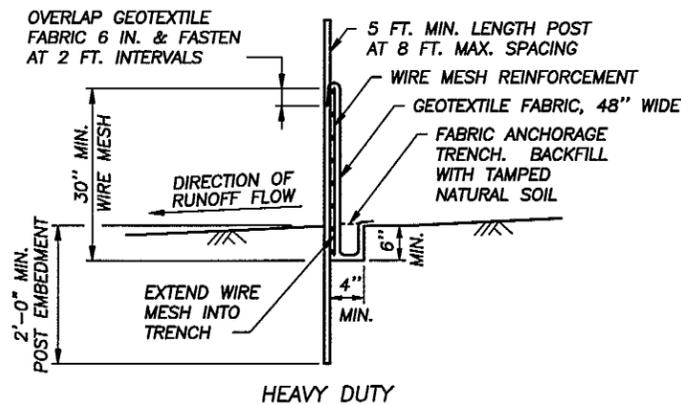


SECTION X-X
FLOTATION SILT CURTAINS
(SPEC. 3887)

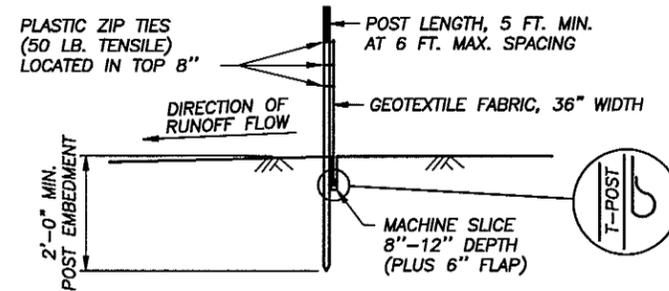
FLOTATION SILT CURTAIN NOTES

SEE SPECS. 2573, 3887 & 3894.

① CURTAIN 1 FT. FROM BOTTOM

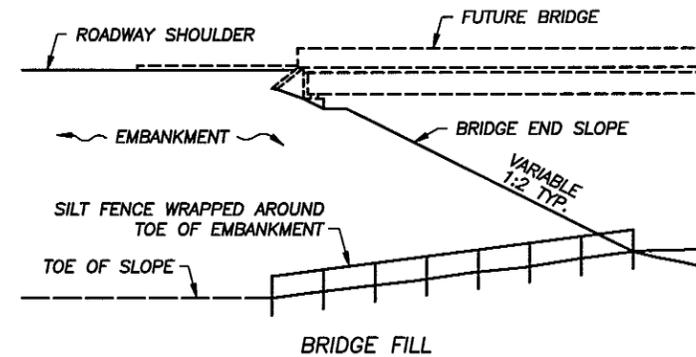
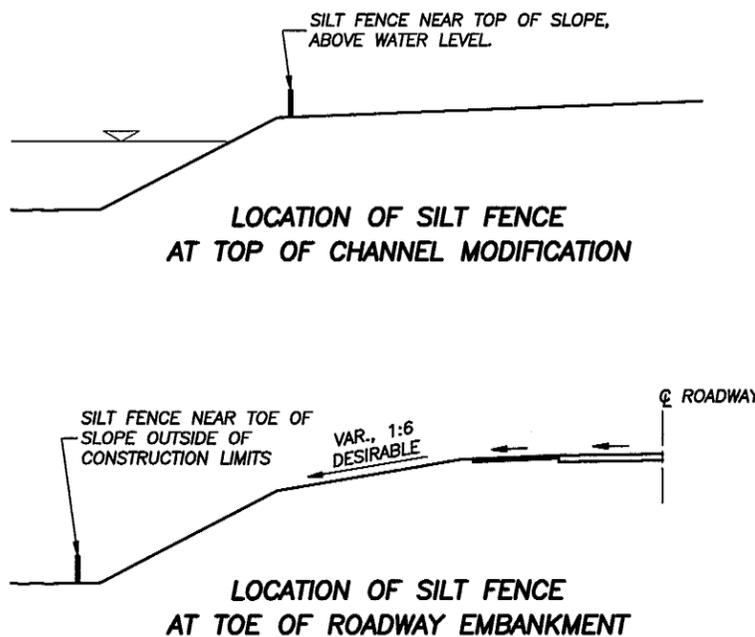


HEAVY DUTY

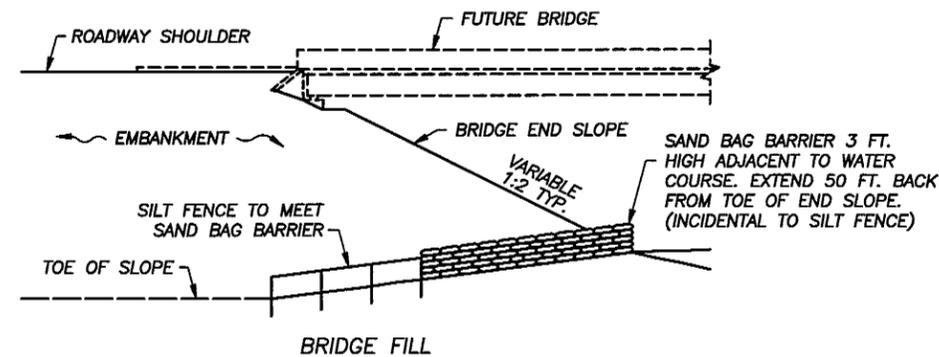


STANDARD MACHINE SLICED

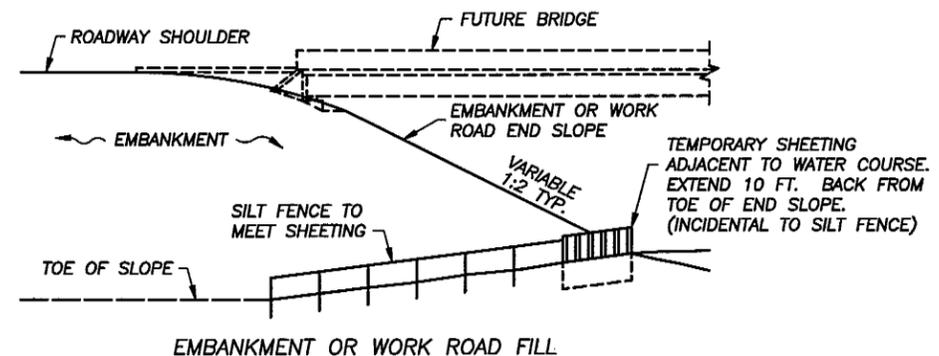
SILT FENCE DETAILS
TO PROTECT AREAS FROM SHEET FLOW
(SEE SPEC. 3886)



DESIGN GUIDELINES:
WATER COURSE FLOW VELOCITY: STAGNANT
CONTRIBUTING SLOPE AREA: 1/2 ACRE



DESIGN GUIDELINES:
MAX. WATER COURSE FLOW VELOCITY: 7 FT./SEC.
CONTRIBUTING SLOPE AREA: 1 ACRE

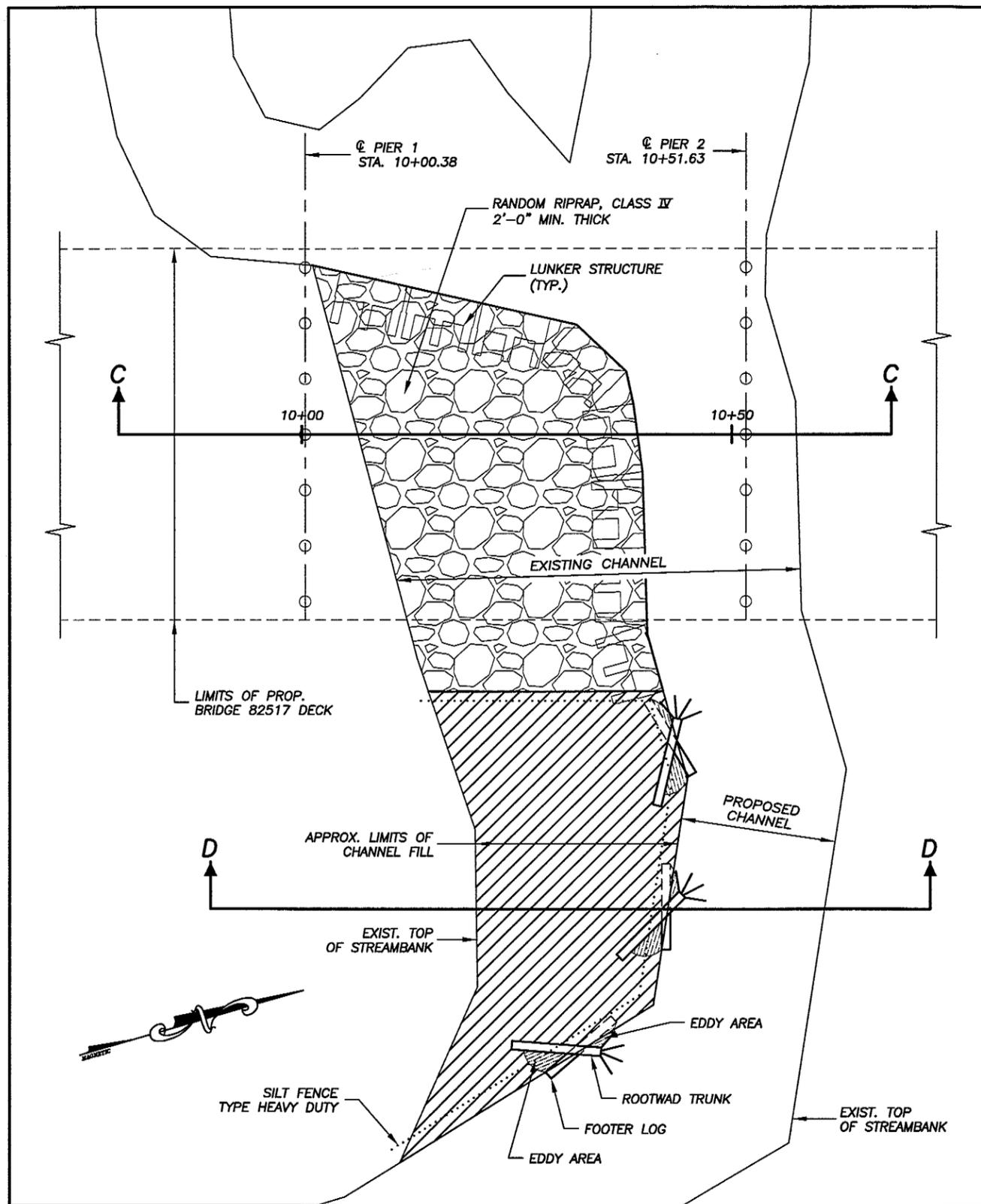


DESIGN GUIDELINES:
MAX. WATER COURSE FLOW VELOCITY: 15 FT./SEC.
CONTRIBUTING SLOPE AREA: 3 ACRES

SILT FENCE AT BRIDGE EMBANKMENT

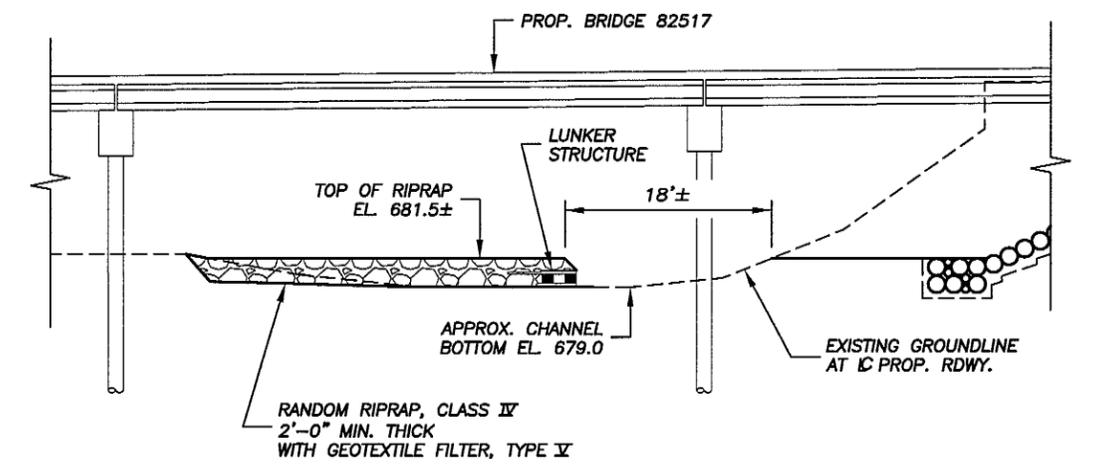
SILT FENCE NOTES
SEE SPECS. 2573 & 3886.

CERTIFIED BY: <i>Thomas J. Wilson</i> PROFESSIONAL ENGINEER/THOMAS J. WILSON	DES.: JAS	DRN.: NBB	TITLE:
	CHK.: CSK	CHK.: CSK	TEMPORARY EROSION CONTROL
LIC. NO. 21690	10-29-2007	STATE AID PROJECT NO. 82-618-08	SHEET NO. 45 OF 50 SHEETS
			82517

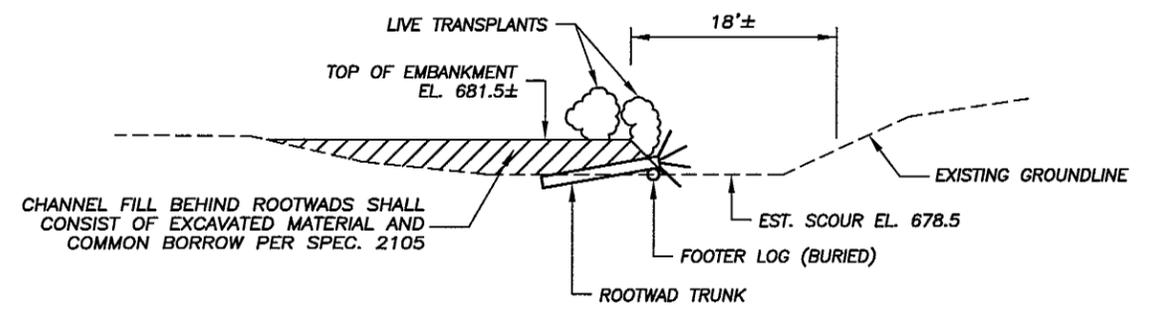


PLAN

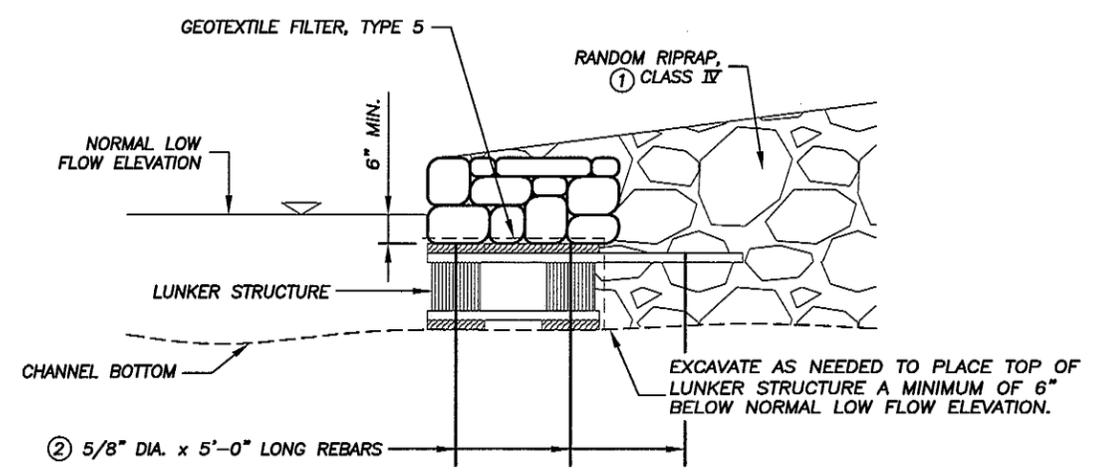
- ① PLACE RIPRAP AROUND LUNKER STRUCTURE AS NEEDED TO PROVIDE TIGHT FIT. LARGER, FLAT STONES TO BE PLACED ALONG THE TOP OF THE LUNKER STRUCTURE AT THE FRONT END.
- ② NINE 5 FOOT LONG REBAR TO BE DRIVEN THROUGH PRE-DRILLED HOLES INTO THE STREAMBED FOR EACH LUNKER STRUCTURE. THE COST OF SUPPLYING AND PLACING THE REBAR IS INCLUDED IN THE PRICE BID FOR "PLACE LUNKER STRUCTURE" PER EACH.



SECTION C-C AT RIPRAP



SECTION D-D AT ROOTWADS



LUNKER STRUCTURE DETAIL

CERTIFIED BY: <i>Thomas J. Wilson</i> PROFESSIONAL ENGINEER/THOMAS J. WILSON LIC. NO. 21690 10-29-2007	DES.: CSK	DRN.: NBB	TITLE:
	CHK.: TJW	CHK.: CSK	CHANNEL MODIFICATION
STATE AID PROJECT NO. 82-618-08			SHEET NO. 46 OF 50 SHEETS
			82517