MINNESOTA DEPARTMENT OF TRANSPORTATION
OLMSTED COUNTY

CONSTRUCTION PLAN FOR BRIDGE NO. 55540 AND APPROACH GRADING

LOCATED 1.45 km E. OF JCT. CSAH 10 ON 10TH STREET
S.E. (TWP. RD. 215)
OVER CROW SPRING.
4.5 km N. OF DOVER.

SEC. 3 TWP. 106 N R 11 W (Legal Description)

MN. PROJ. NO.

GOVERNING SPECIFICATIONS

THE 1995 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

PLAN SYMBOLS

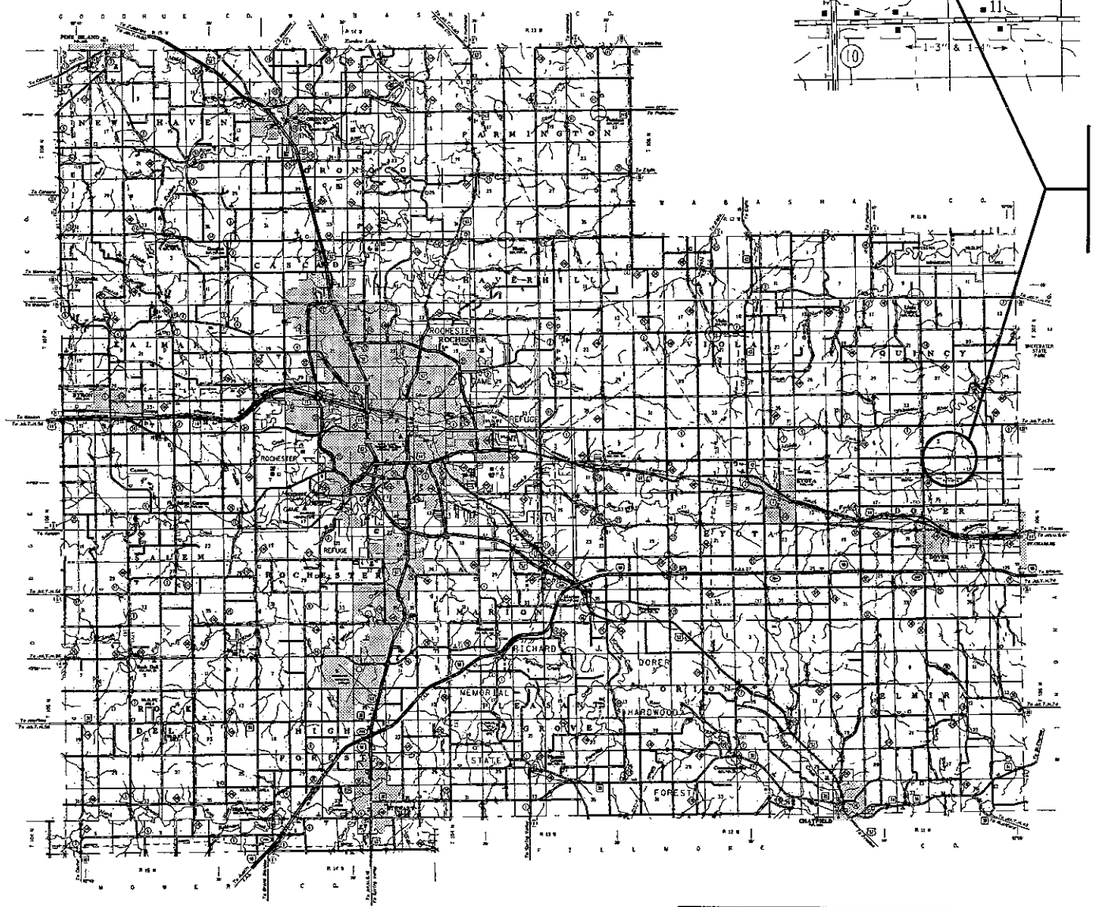
COUNTY LINE
TOWNSHIP OR RANGE LINE
SECTION LINE
QUARTER LINE
SIXTEENTH LINE
EXISTING R/W
NEW R/W
TEMP EASE
RAILROAD R/W
UNSURFACED RD. OR SHLD.
EDGE OF LAKE
SWAMP BOUNDARY
MISCELLANEOUS BOUNDARY
CORPORATE OR CITY LIMITS
VACATED PLATTED PROPERTY
RECREATIONAL TRAIL
ALIGNMENT STATIONS (110, 112)
ALIGNMENT POINTS
RIVER OR CREEK
DRAINAGE DITCH (SIZE)
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 (XC)
WOVEN WIRE, COMBINATION WOVEN AND BARB (XW)
WOOD FENCE
BILLBOARD
RETAINING WALL
GUARDRAIL (CABLE)
GUARDRAIL (PLATE BEAM) (P)
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 (B.M.)
HORIZONTAL CONTROL
POWER POLE
LIGHT POLE
LIGHT AND TELEPHONE POLE
LIGHT, TELEPHONE AND POWER POLE
GUY POLE (GP)
POLE ANCHOR
TELEPHONE POLE
TELEPHONE AND POWER POLE
UNDERGROUND CABLE PEDESTAL (PED)
TELEPHONE MANHOLE (VAULT) (MH)
ELECTRIC CABLE IN CONDUIT (P)
TELEPHONE CABLE IN CONDUIT (T)
BURIED ELECTRIC CABLE (P-BUR)
BURIED TELEPHONE CABLE (T-BUR)
GAS LINE (G)
WATER LINE
VALVE
FIRE HYDRANT
WATER MANHOLE
WELL (WELL)
LAWN SPRINKLER HEAD
MANHOLE (MH)
CATCH BASIN (CB)
SEPTIC TANK (SEPTIC TANK)
FORCE MAIN LIFT STA. (LIFT)
SEWER LINE
PERMANENT BARRICADE
TRAFFIC SIGNAL LIGHT
HAND HOLE
ENTRANCE
BUILDING (NUMBER 1-S-F)
SATELLITE DISH
STEEL TOWER (TOWER)
FLAG POLE (F.P.)

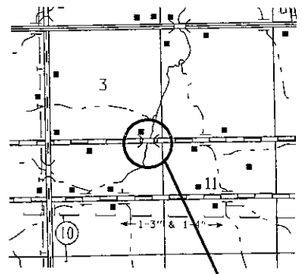
STATE PROJ. NO.

GROSS LENGTH	____ m	____ km
BRIDGES-LENGTH	____ m	____ km
EXCEPTIONS-LENGTH	____ m	____ km
NET. LENGTH	____ m	____ km

STATE AID PROJ. NO. 55-599-69

GROSS LENGTH	180.00 m	0.180 km
BRIDGES-LENGTH	15.98 m	0.016 km
EXCEPTIONS-LENGTH	____ m	____ km
NET. LENGTH	180.00 m	0.180 km

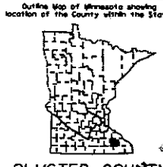




PROP. BRIDGE NO. 55540
S.A.P. 55-599-69
BEG. PROJ. 4+520.000
END PROJ. 4+700.000

EXIST. BRIDGE NO. L6259
STEEL BEAM SPAN
LENGTH 8.53m
RDWY. WIDTH 5.10m

PROJECT LOCATION
Outline Map of Minnesota showing location of the County within the State.



OLMSTED COUNTY

LIST OF SHEETS

NO.	TITLE
1	TITLE SHEET
2	GENERAL PLAN & ELEVATION
3	BRIDGE LAYOUT
4-5	ABUTMENT DETAILS
6-7	SUPERSTRUCTURE DETAILS
8	PRESTR. CONC. BEAM DETAILS
9	CONCRETE RAIL DETAILS (TYPE F)
10-14	DETAILS
15	BRIDGE SURVEY
16	BRIDGE SURVEY - PLAN & PROFILE
17	APPROACH - CROSS SECTIONS
17A	TRAFFIC CONTROL PLAN

THIS PLAN CONTAINS 18 SHEETS.

DESIGN DESIGNATION

$\leq N80_{20}$
R VALUE
ADT (2000) = 70
PROJ. ADT
PROJ. HCADT
SOIL FACTOR
kN DESIGN

Design Speed 50 km/h
Based on 63m Stopping Sight Distance
Height of eye 1070mm
Height of object 150mm
Design Speed not achieved at:
STA. TO STA. km/h
STA. TO STA. km/h
STA. TO STA. km/h

Ronald Benson

DESIGN ENGINEER: I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE 11/18/99 REGISTRATION NUMBER 22737

Donald Gudenau DATE 2-4-00
DOVER TOWNSHIP

Michael Sheehan DATE 2-4-00
APPROVED: COUNTY ENGINEER

Donald J. Flemming DATE 3-15-00
RECOMMEND FOR APPROVAL: STATE BRIDGE ENGINEER

Gregory Paulson DATE 3-1-00
DISTRICT STATE AID ENGINEER'S REVIEW FOR COMPLIANCE WITH STATE-AID RULES/POLICY

16 B. Dahl for DATE 3/22/00
APPROVED FOR STATE-AID FUNDING: STATE-AID ENGINEER

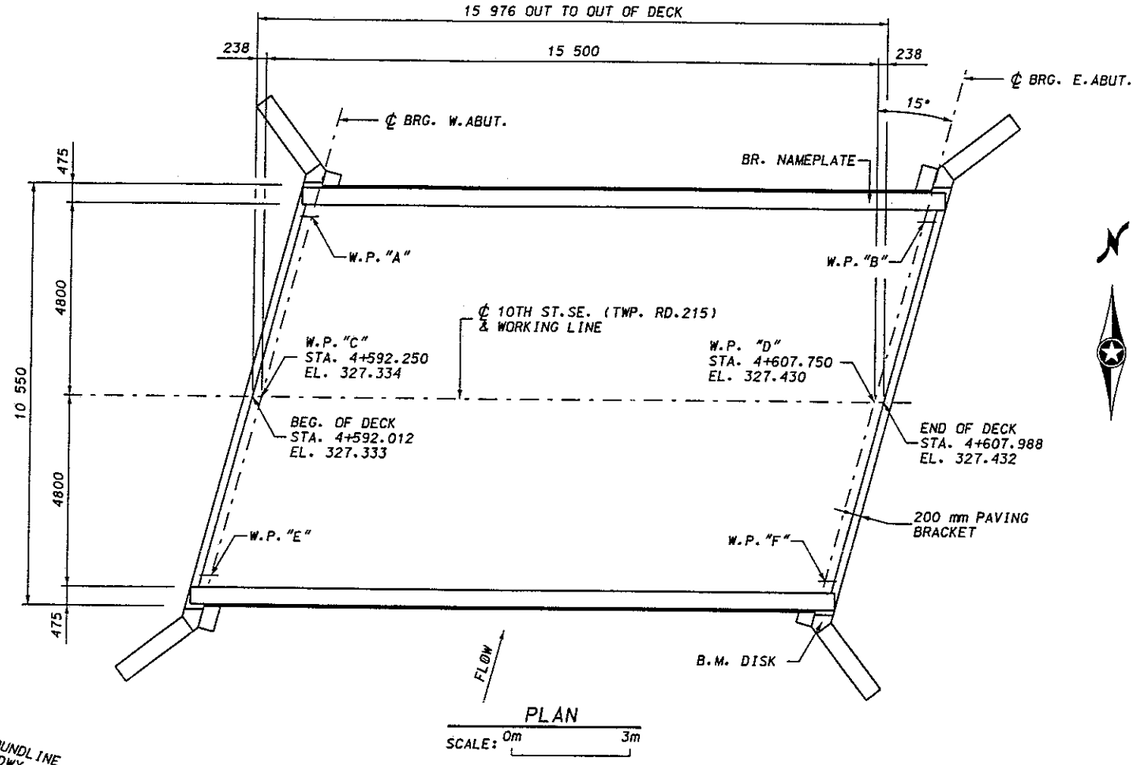
AS BUILT PLANS

ERICKSON ENGINEERING
Consulting Engineers

STATE AID PROJ. NO. 55-599-69

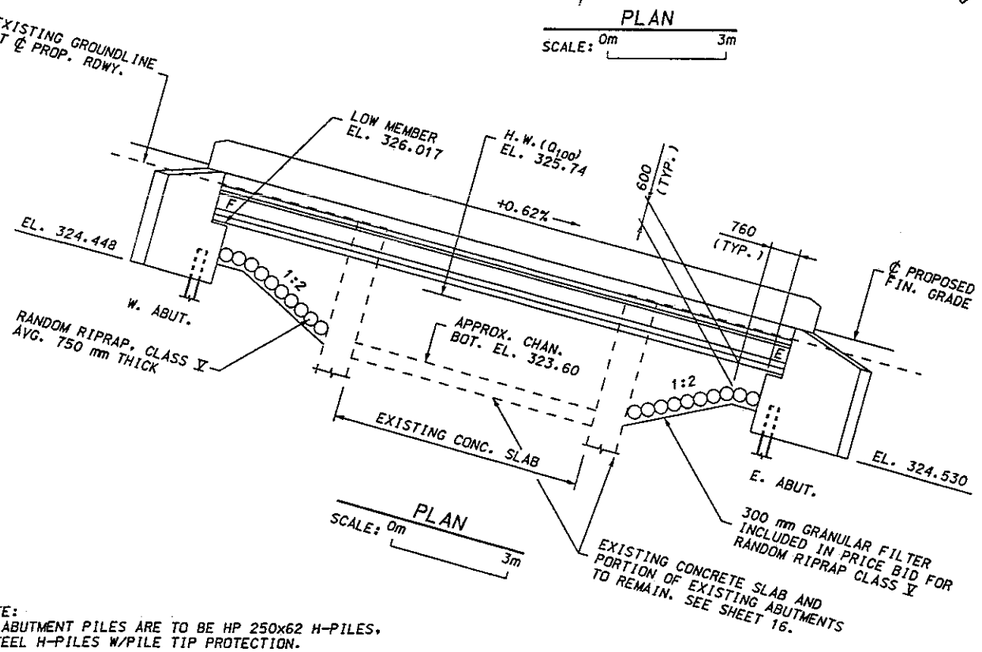
STATE PROJ. NO.

SHEET NO. 1



PLAN

SCALE: 0m 3m



PLAN

SCALE: 0m 3m

NOTE:
ABUTMENT PILES ARE TO BE HP 250x62 H-PILES,
STEEL H-PILES W/PILE TIP PROTECTION.

B.M. ELEV. 334.697 (M.S.L. 1929 Adj)

LOCATION: STANDARD TABLET #TT29E19341098
154 m EAST OF BR. L-6259.

CONSTRUCTION NOTES

THE 1995 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. BARS MARKED WITH THE SUFFIX " E" SHALL BE EPOXY COATED.

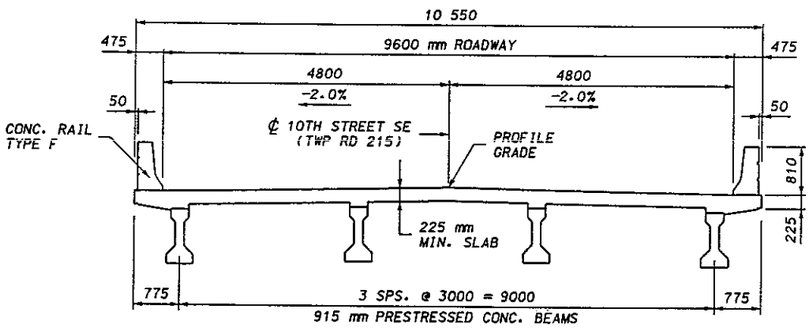
ALL DIMENSIONS ARE IN UNITS OF MILLIMETERS UNLESS OTHERWISE NOTED. ELEVATIONS ARE IN UNITS OF METERS.

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.

BRIDGE SEAT REINFORCEMENT SHALL BE CAREFULLY PLACED TO AVOID INTERFERENCE WITH DRILLING HOLES FOR ANCHOR RODS. THE SUPERSTRUCTURE BEAMS SHALL BE PLACED IN THEIR FINAL POSITION PRIOR TO DRILLING HOLES FOR ANCHOR RODS.

SEE SHEET 16 FOR REQUIREMENTS PERTAINING TO EXISTING ABUTMENT REMOVAL AND RIPRAP PLACEMENT.



TRANSVERSE SECTION THRU DECK

SCALE: 0m 2m

① STA. 4+600, NON-PARTICIPATING, SEE SHEET 16 FOR DETAILS.

② SEE ABUTMENT SHEET 5 FOR REQUIREMENTS.

③ SEE SHEET 17, NON-PARTICIPATING.

AS BUILT PLANS

SCHEDULE OF QUANTITIES FOR THE ENTIRE BRIDGE

ITEM NO.	2021.501	2105.601	2401.501	2401.512	2401.513
ITEM	MOBILIZATION	APPROACH GRADING ③	STRUCTURAL CONCRETE (3Y43)	BRIDGE SLAB CONCRETE (3Y33A)	TYPE F RAILING CONCRETE (3Y46A)
QUANTITY	1	1	58 (P)	169 (P)	33 (P)
UNIT	LUMP SUM	LUMP SUM	m^3	m^2	m

ITEM NO.	2401.541	2401.601	2401.601	2402.521	2402.595	2405.502	2405.511	2442.501	2452.510	2452.511	2452.520	2452.602	2511.501	2575.555	
ITEM	REIN-FORCEMENT BARS (EPOXY COATED)	SLOPE PREPARATION	STRUCTURE EXCAVATION ②	STRUCTURAL STEEL (3306)	BEARING ASSEMBLY	PRESTR. CONCRETE BEAMS 915	DIAPHRAGMS FOR TYPE 915 PRESTR. BEAMS	REMOVE OLD BRIDGE ①	STEEL H-PILES DRIVEN 250x62	STEEL H-PILES DELIVERED 250x62	STEEL H-TEST PILES, 7m LONG 250x62	PILE TIP PROTECTION 250mm	RANDOM RIPRAP CLASS V	TURF ESTABLISHMENT ③	
QUANTITY	9830 (P)	1	1	255 (P)	8	64 (P)	9 (P)	1	32	32	2	10	112	1	
UNIT	kg	LUMP SUM	LUMP SUM	kg	EACH	m	m	LUMP SUM	m	m	EACH	EACH	m^3	LUMP SUM	

minnesota metric

DESIGN DATA

1996 & INTERIM A.A.S.H.T.O. DESIGN SPECIFICATIONS
LOAD FACTOR DESIGN METHOD - MS 22.5 LOADING
INCLUDES 0.82 kN/m² DEAD LOAD ALLOWANCE FOR FUTURE WEARING COURSE MODIFICATIONS.

MAXIMUM ALLOWABLE DESIGN STRESSES:
- REINFORCED CONCRETE:
  - f'c = 28 MPa n = 8
  - fy = 420 MPa REINFORCEMENT
- PRESTRESSED CONCRETE:
  - f'c = 48 MPa n = 1
  - f's = 1860 MPa (STRANDS) LOW RELAX.
- STRUCTURAL STEEL:
  - fy = 250 MPa SPEC. 3306

DECK AREA = 169 m²
A.D.T. = 70 (2000)
OPERATING RATING = MS 37
DESIGN SPEED = 50 km/h

LIST OF SHEETS

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8	PRESTRESSED CONCRETE BEAM DETAILS
9	CONCRETE RAIL (TYPE F)
10-14	DETAILS
15	BRIDGE SURVEY
16	BRIDGE SURVEY - PLAN & PROFILE
17	APPROACH - CROSS SECTIONS
17A	TRAFFIC CONTROL PLAN

APPROVED: Michael D. Kuhar
COUNTY ENGINEER
OLMSTED COUNTY

DATE: 2/4/00

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Ronald Benson
REG.NO. 22737

DATE: 4/18/99

PLANS PREPARED BY:
ERICKSON ENGINEERING
3340 REPUBLIC AVENUE
ST.LOUIS PARK, MN 55426

TWP.RD. 215 OLMSTED COUNTY
MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 55540

LOCATED 1.45 km E. OF JCT. C.S.A.H. 10
ON 10TH ST. SE (TWP. RD. 215)
OVER THE CROW SPRING

1-15.5 m PRESTRESSED CONCRETE BEAM SPAN
9.6 m ROADWAY, 15° SKEW
SPAN IDENTIFICATION NO. 501

GENERAL PLAN & ELEVATION

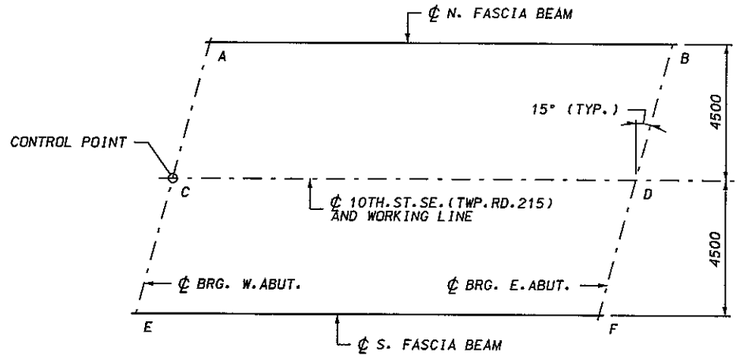
SEC. 3 TWP. 106 N R 11 W

TOWNSHIP: DOVER
COUNTY: OLMSTED

APPROVED: Donald J. Flemming 3-15-00
STATE BRIDGE ENGINEER

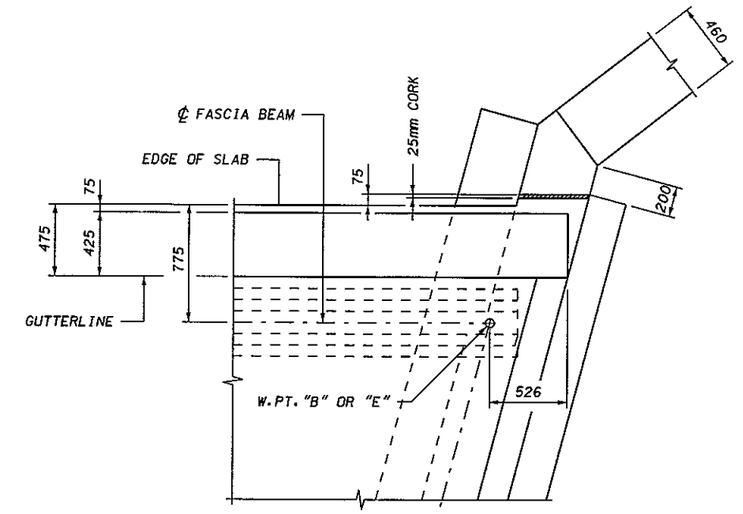
S.A.P. 55-599-69
SHEET NO. 2 OF 17 SHEETS

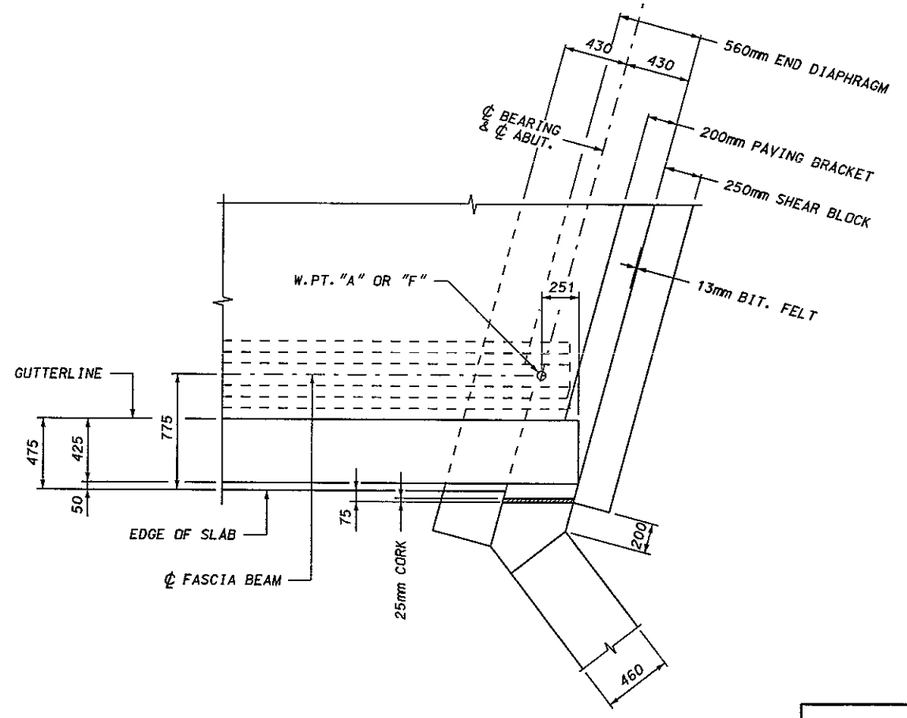
DES.:	CMB	DRN.:	BDM	55540
CHK.:	RAB	CHK.:	CMB	



LAYOUT SHOWING WORKING POINTS

SCALE: 0m 2m





TYPICAL CORNER DETAILS

SCALE: 0m 1m

DIMENSIONS BETWEEN WORKING POINTS (m)								ELEVATIONS (m)			
POINT	STATION	A	B	C	D	E	F	TOP OF SLAB	SLAB TO BRIDGE SEAT	BRIDGE SEAT	POINT
A	4+593.456		15.500	4.659	14.986		15.884	327.251	1.289	325.962	A
B	4+608.956			17.301	4.659	20.046		327.348	1.303	326.045	B
C	4+592.250				15.500	4.659	14.986	327.334			C
D	4+607.750					17.301	4.659	327.430			D
E	4+591.044						15.500	327.236	1.289	325.947	E
F	4+606.544							327.333	1.303	326.030	F

TOP OF SLAB TO BRIDGE SEAT		
	W. ABUT.	E. ABUT.
SLAB THICKNESS	0.225	0.225
STOOL HEIGHT	0.080	0.080
BEAM HEIGHT	0.915	0.915
BEARING HEIGHT	0.069	0.083
TOTAL	1.289	1.303

AS BUILT PLANS

minnesota metric

CERTIFIED BY Ronald Benson
PROFESSIONAL ENGINEER
REG. NO. 22737 19 99

MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 55540

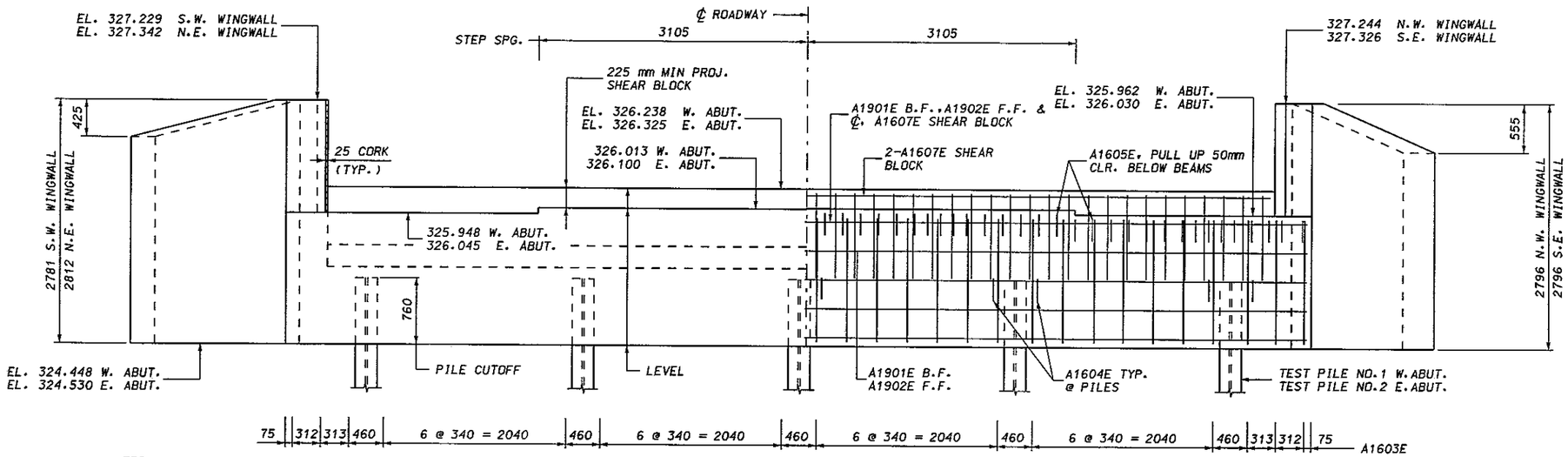
BRIDGE LAYOUT

APPROVED:

S.A.P. 55-599-69

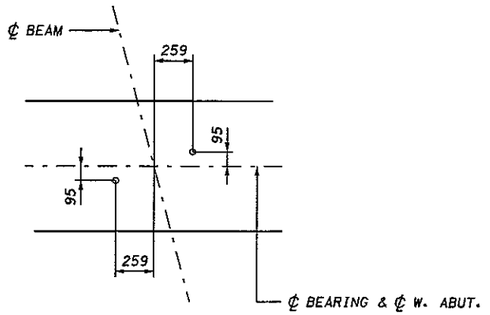
SHEET 3 OF 17 SHEETS

DES.	CMB	DRN.	BDM	55540
CHK.	RAB	CHK.	CMB	



ELEVATION

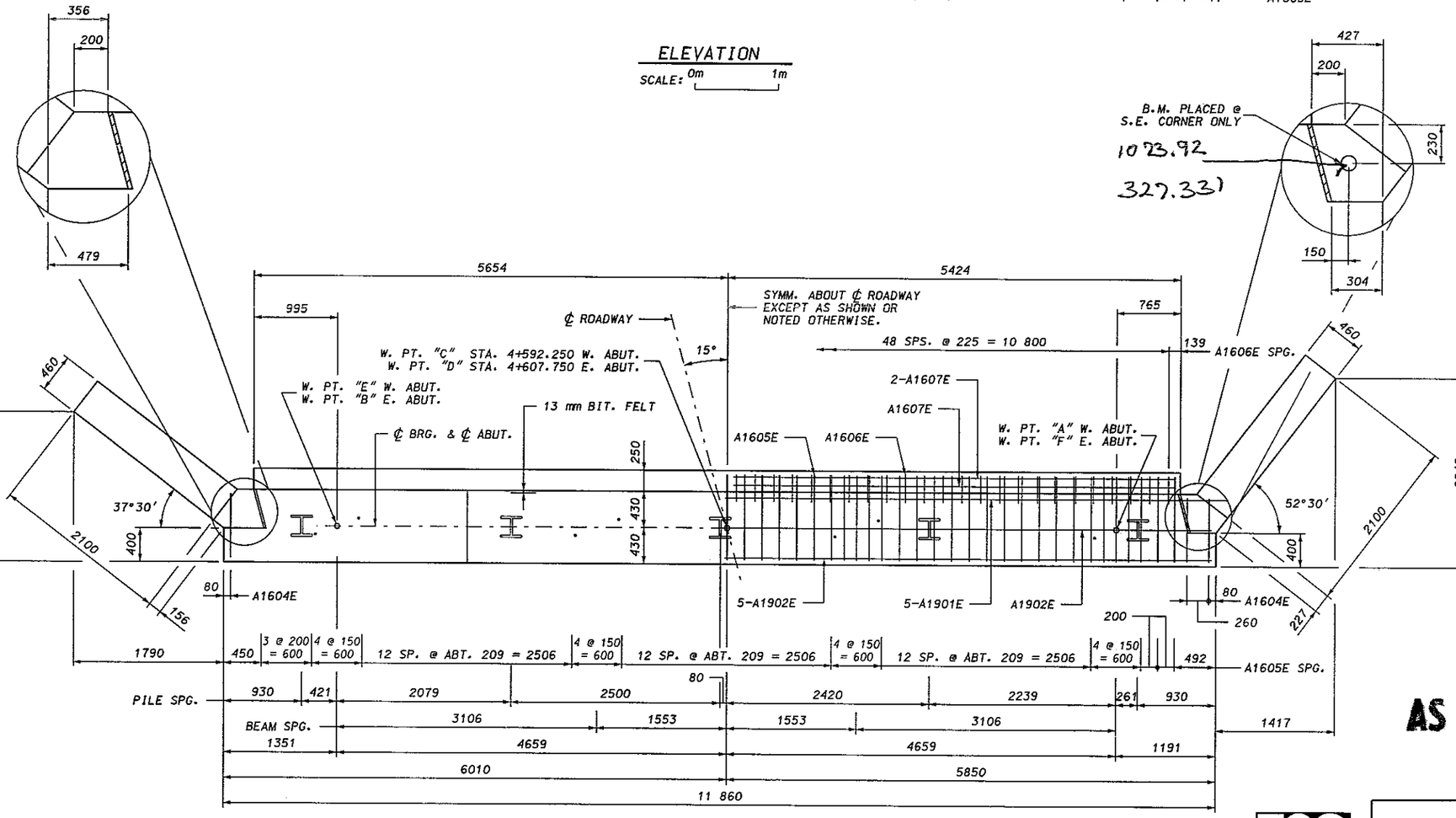
SCALE: 0m 1m



ANCHOR ROD LAYOUT

SCALE: 0m .5m

(WEST ABUTMENT ONLY)



PLAN

SCALE: 0m 1m

NOTE:
F.F. = FRONT FACE
B.F. = BACK FACE
E.F. = EACH FACE

COMPUTED PILE LOADS kN PER PILE FOR ABUTMENTS	
DEAD LOAD	290
LIVE LOAD	133
TOTAL	423

PILE NOTES

2 - STEEL H-TEST PILES, 7m LONG
8 - STEEL H-PILES, EST. LENGTH 4m
10 - STEEL H-PILES REQ'D FOR 2 ABUTMENTS

ALL PILES ARE TO BE HP250x62.

SEE DETAIL B202M FOR SPLICES.

ALL PILES TO PILE TIP PROTECTION. SEE SPECIAL PROVISIONS.

SEE SURVEY SHEET FOR TEST PILE LOCATIONS.

ALL ABUTMENT PILES SHALL BE DRIVEN TO TO MINIMUM PENETRATION OF 3 METERS BELOW BOTTOM OF FOOTING ELEVATION. IF MINIMUM ELEVATION CANNOT BE ATTAINED, ENGINEER SIGNING (DESIGN ENGINEER) THESE PLANS SHALL BE NOTIFIED.

AS BUILT PLANS

minnesota metric

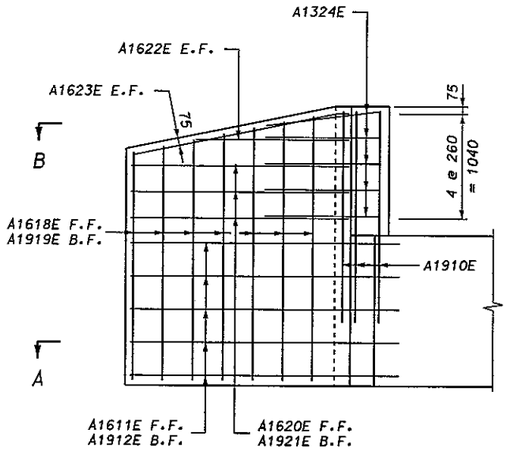
CERTIFIED BY Ronald Benson
PROFESSIONAL ENGINEER
REG. NO. 22737 19 99

MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 55540
ABUTMENT DETAILS

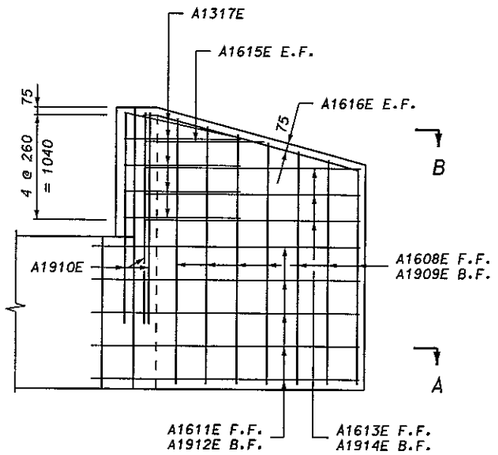
APPROVED:
S.A.P. 55-599-69
SHEET 4 OF 17 SHEETS

DES.	CMB	DRN.	BDM	55540
CHK.	RAB	CHK.	CMB	



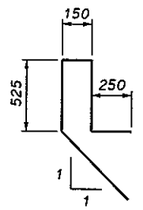
S.W. & N.E. WINGWALL ELEVATION

SCALE: 0m 1m

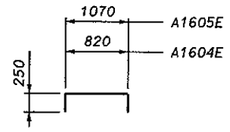


S.E. & N.W. WINGWALL ELEVATION

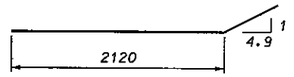
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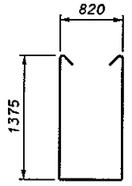
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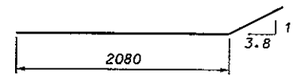
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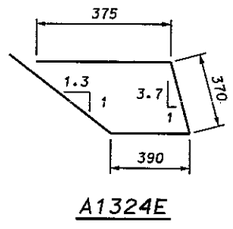
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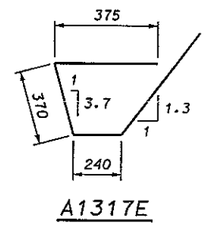
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A1623E

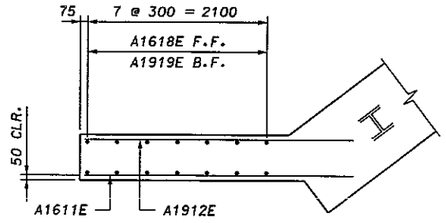


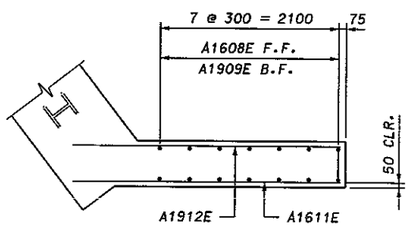
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A1317E

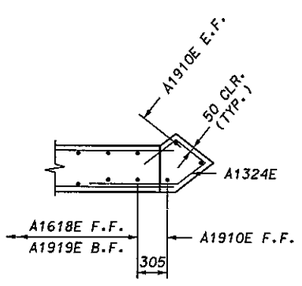
BILL OF REINFORCEMENT - 2 ABUTMENTS				
BAR	NO.	LENGTH	SHAPE	LOCATION
A1901E	10	12 500	STRT.	CAP - HORIZONTAL
A1902E	12	11 750	STRT.	CAP - HORIZONTAL
A1603E	68	3850	BENT	CAP - STIRRUP
A1604E	26	1320	BENT	CAP - PILE TIE
A1605E	116	1570	BENT	CAP - BR.SEAT TIE
A1606E	98	2015	BENT	SHEAR BLOCK - TIE
A1607E	6	10 980	STRT.	SHEAR BLOCK - HORIZ.
A1608E	2 SER. OF 7	2130 TO 2640	STRT.	WINGWALL - VERTICAL
A1909E	2 SER. OF 7	2130 TO 2640	STRT.	WINGWALL - VERTICAL
A1910E	12	1735	STRT.	WINGWALL - VERTICAL
A1611E	20	2700	STRT.	WINGWALL - HORIZONTAL
A1912E	20	2700	STRT.	WINGWALL - HORIZONTAL
A1613E	6	2250	STRT.	WINGWALL - HORIZONTAL
A1914E	6	2250	STRT.	WINGWALL - HORIZONTAL
A1615E	4	1190	STRT.	WINGWALL - HORIZONTAL
A1616E	4	2260	BENT	WINGWALL - HORIZONTAL
A1317E	10	1650	BENT	WINGWALL - HORIZONTAL
A1618E	2 SER. OF 7	2270 TO 2670	STRT.	WINGWALL - VERTICAL
A1919E	2 SER. OF 7	2270 TO 2670	STRT.	WINGWALL - VERTICAL
A1620E	6	2180	STRT.	WINGWALL - HORIZONTAL
A1921E	6	2180	STRT.	WINGWALL - HORIZONTAL
A1622E	4	1190	STRT.	WINGWALL - HORIZONTAL
A1623E	4	2260	BENT	WINGWALL - HORIZONTAL
A1324E	10	1460	BENT	WINGWALL - HORIZONTAL

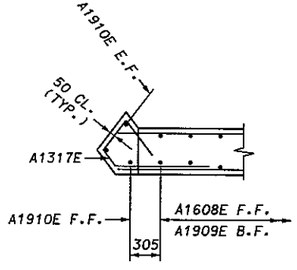




SECTION A-A

SCALE: 0m 1m

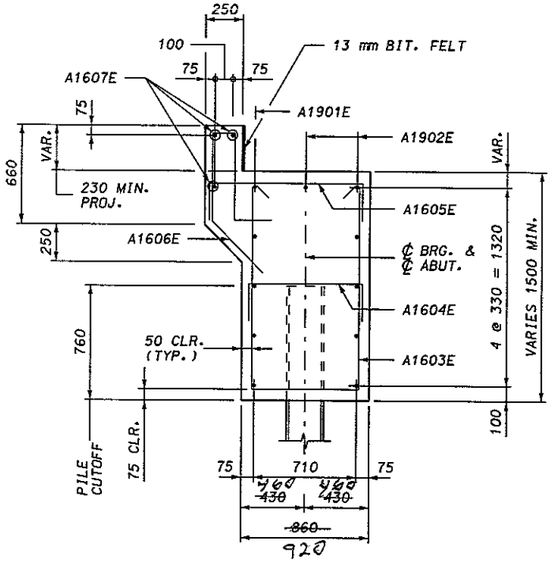




SECTION B-B

SCALE: 0m 1m

NOTE:
F.F. = FRONT FACE
B.F. = BACK FACE
E.F. = EACH FACE



SECTION THRU ABUTMENT

SCALE: 0m .5m

SUMMARY OF QUANTITIES - 2 ABUTMENTS	
STRUCTURAL CONCRETE (3Y43)	47 m³
REINFORCEMENT BARS (EPOXY COATED)	2430 kg
②④ STRUCTURE EXCAVATION	1 LUMP SUM
③ B.M. DISK	1 EACH
② PILE TIP PROTECTION, 250mm	10 EACH
① STEEL H-PILING DELIVERED, 250x62	32 m
① STEEL H-PILING DRIVEN, 250x62	32 m
STEEL H-TEST PILES 7m LONG, 250x62	2 EACH

① DOES NOT INCLUDE TEST PILES

② SEE SPECIAL PROVISIONS

③ COUNTY WILL FURNISH DISK. PAYMENT FOR PLACING IS TO BE INCLUDED IN PRICE BID FOR OTHER ITEMS. BEND PRONGS OUTWARD TO ANCHOR DISK IN CONCRETE. BOTTOM OF DISK TOP TO BE PLACED FLUSH WITH CONCRETE.

④ BACKFILL BEHIND ABUTMENTS SHALL BE SELECT GRANULAR BORROW PER SPEC. 3149.2B. INCLUDED IN PRICE BID FOR "STRUCTURE EXCAVATION". SEE SURVEY SHEET FOR PLACEMENT LIMITS. APPROXIMATE QUANTITY OF GRANULAR BORROW (CV) IS 705 m³. COMPACTION METHOD IN ACCORDANCE WITH THE REQUIREMENTS OF 2105.3F2.

AS BUILT PLANS

minnesota metric

CERTIFIED BY Ronald Benson
PROFESSIONAL ENGINEER

REG. NO. 22737 19 99

MINNESOTA DEPARTMENT OF TRANSPORTATION

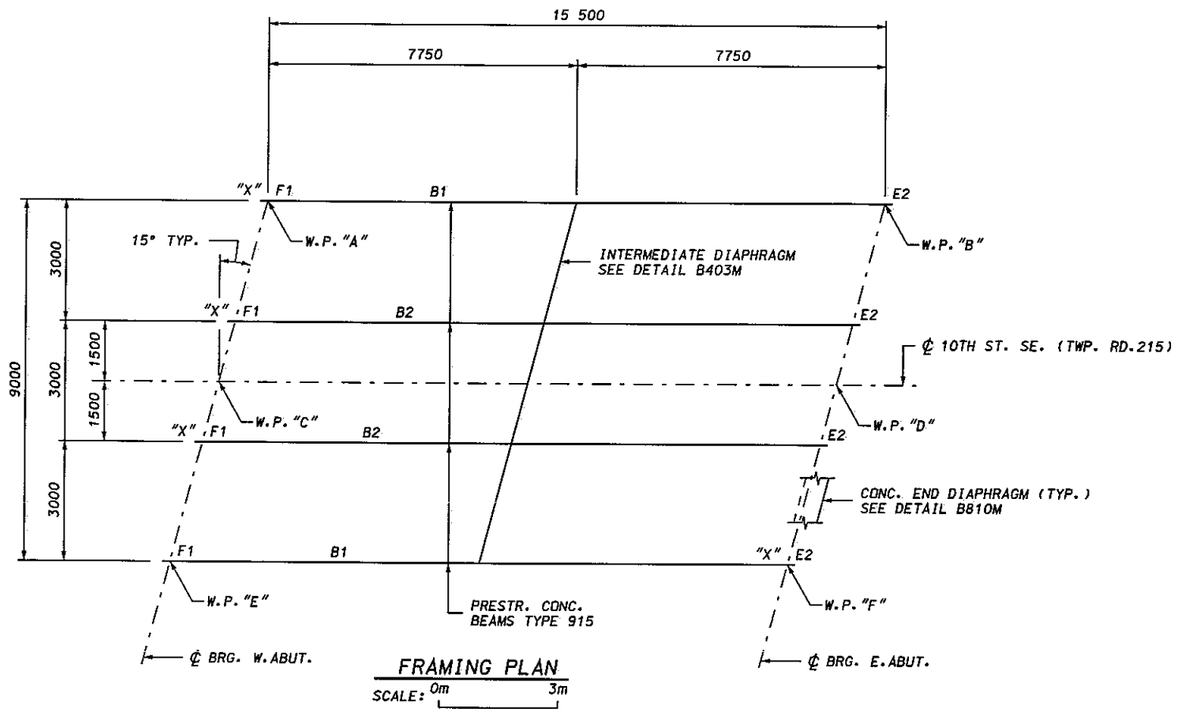
BRIDGE NO. 55540
ABUTMENT DETAILS

APPROVED:

S.A.P. 55-599-69

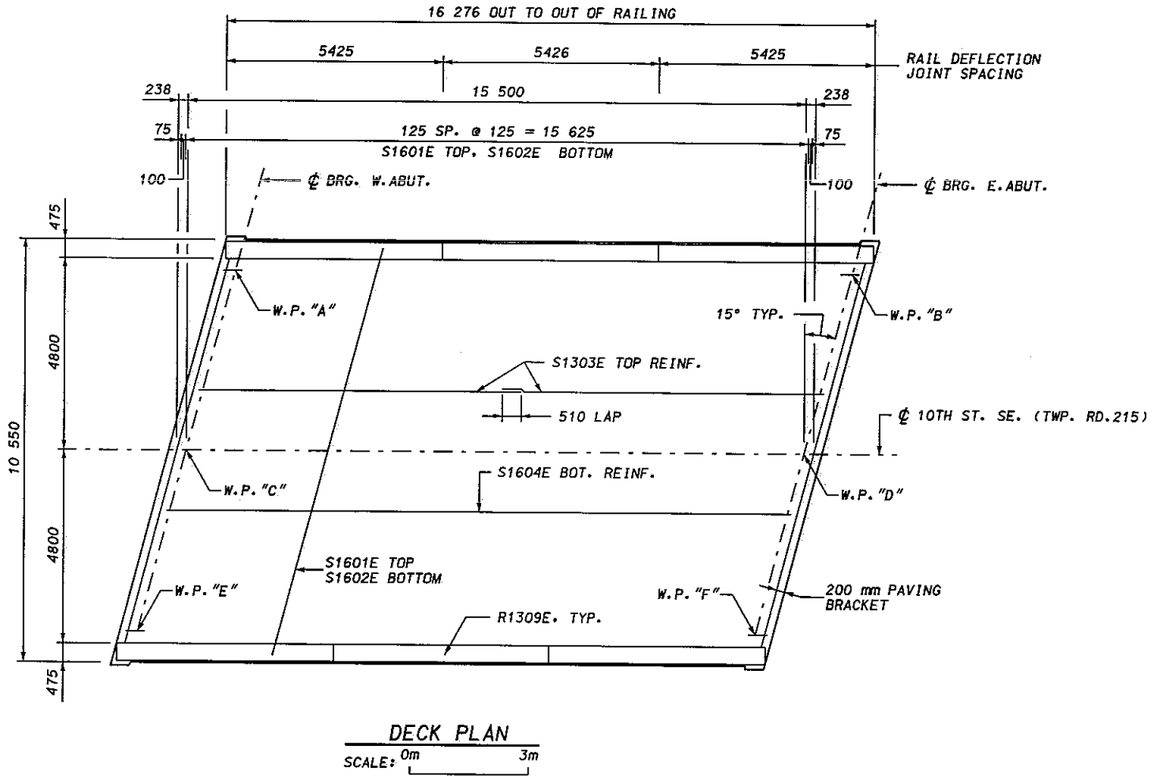
SHEET 5 OF 17 SHEETS

DES.	CMB	DRN.	BDM	55540
CHK.	RAB	CHK.	CMB	



FRAMING PLAN

SCALE: 0m 3m



DECK PLAN

SCALE: 0m 3m

NOTE:

E2 = EXPANSION CURVED PLATE BEARING ASSEMBLY, TYPE 2. SEE DETAIL B311M.

F1 = FIXED CURVED PLATE BEARING ASSEMBLY, TYPE 1. SEE DETAIL B310M.

AS BUILT PLANS

CERTIFIED BY Ronald Benson
PROFESSIONAL ENGINEER
REG. NO. 22737 19 99

MINNESOTA DEPARTMENT OF TRANSPORTATION

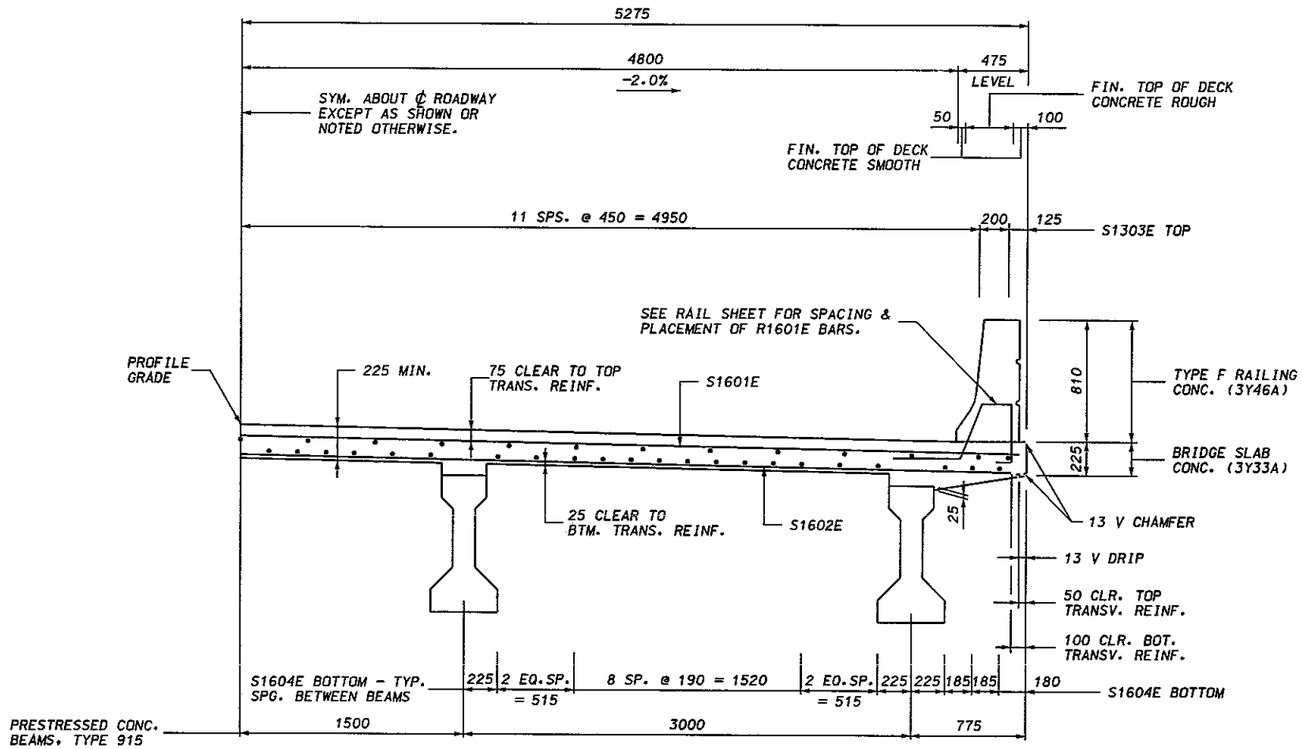
BRIDGE NO. 55540
SUPERSTRUCTURE DETAILS

APPROVED:

S.A.P. 55-599-69
SHEET 6 OF 17 SHEETS

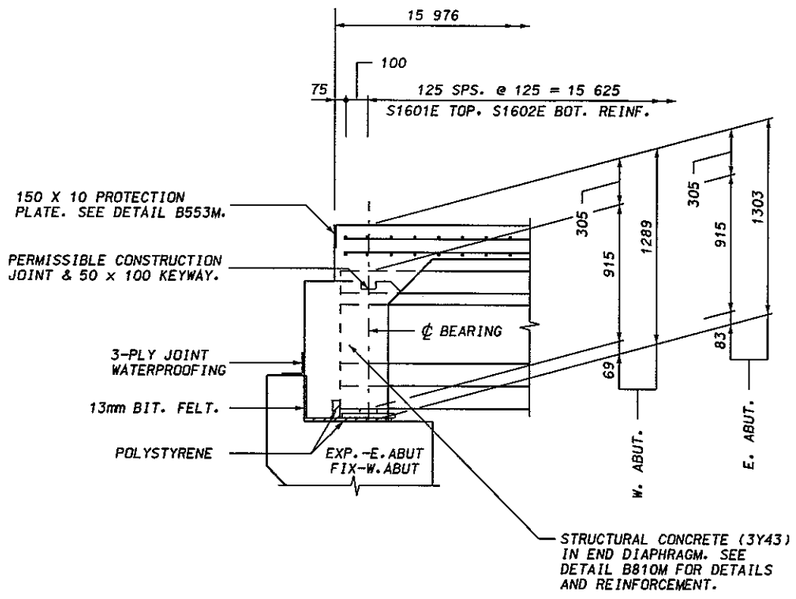
DES.	CMB	DRN.	BDM	55540
CHK.	RAB	CHK.	CMB	

minnesota metric



PART TRANSV. SECTION THRU DECK

SCALE: 0m 1m



LONGITUDINAL SECTION AT ABUTMENT

SCALE: 0m 1m

BILL OF REINFORCEMENT - SUPERSTRUCTURE

	BAR	NO.	LENGTH	SHAPE	LOCATION
	S1601E	128	10 815	STRT.	SLAB - TRANSV. TOP
	S1602E	128	10 715	STRT.	SLAB - TRANSV. BOTTOM
②	S1303E	50	8195	STRT.	SLAB - LONGIT. TOP
	S1604E	45	15 870	STRT.	SLAB - LONGIT. BOTTOM

② 2 LINES WITH 510 MINIMUM LAP.

③ SUMMARY OF QUANTITIES - SUPERSTRUCTURE

⑪	STRUCTURAL CONCRETE (3Y43)	11 m^3
⑤	BRIDGE SLAB CONCRETE (3Y33A)	169 m^2
⑩	TYPE F RAILING CONCRETE (3Y46A)	33 m
	REINFORCEMENT BARS (EPOXY COATED)	7400 kg
⑧	PRESTRESSED CONCRETE BEAMS, TYPE 915-16	4 EACH
	PRESTRESSED CONCRETE BEAMS, TYPE 915	64 m
	DIAPH. FOR TYPE 915 PRESTR. CONC. BEAMS	9 m
	STRUCTURAL STEEL (3306)	255 kg
⑥	NAME PLATE (SEE DETAIL B101M)	1 EACH
⑨	PROTECTION PLATE (SEE DETAIL B553M)	
	BEARING ASSEMBLY	8 EACH
⑦	EXP. CURVED PLATE BRG. ASSEMBLY, TYPE 2	4 EACH
⑦	FIXED CURVED PLATE BRG. ASSEMBLY, TYPE 1	4 EACH
⑥	3-PLY JOINT WATERPROOFING	28 m
④⑥	CORK - 25 X 300 (RAILING)	3 m
④⑥	CORK - 25 X 460 (ABUTS.)	6 m
④⑥	POLYSTYRENE, TYPE A 25 X 560 (BR.SEAT, ABUTS.)	16 m
④⑥	POLYSTYRENE, TYPE A 25 X 100 (SIDES OF BRGS.)	5 m
④⑥	POLYSTYRENE, TYPE A 50 X 100 (BEHIND BRGS.)	4 m
④⑥	POLYSTYRENE, TYPE A 25 X 75 (SIDES OF BRGS.)	5 m
④⑥	POLYSTYRENE, TYPE A 50 X 75 (BEHIND BRGS.)	4 m
④⑥	BIT. FELT, 13 X 305	23 m

③ INCLUDES RAILING AND END DIAPHRAGM QUANTITIES.

④ SEE SPECIAL PROVISIONS

⑤ APPROXIMATE VOLUME = 42m^3. BASED ON AN AVERAGE STOOL HEIGHT OF 65mm.

⑥ INCLUDED IN PRICE BID FOR OTHER ITEMS.

⑦ PAYMENT FOR BEARINGS INCLUDED IN ITEM BEARING ASSEMBLIES PER EACH.

⑧ PAYMENT FOR BEAMS INCLUDED IN ITEM PRESTRESSED CONCRETE BEAMS TYPE 915 PER METER.

⑨ INCLUDED IN STRUCTURAL STEEL (3306).

⑩ APPROXIMATE VOLUME = 8m^3.

⑪ END DIAPHRAGM CONCRETE.

CERTIFIED BY Ronald Benson
PROFESSIONAL ENGINEER
REG. NO. 22737 19 99

AS BUILT PLANS

minnesota metric

MINNESOTA DEPARTMENT OF TRANSPORTATION

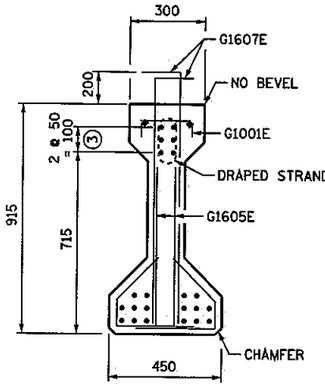
BRIDGE NO. 55540
SUPERSTRUCTURE DETAILS

APPROVED:

S.A.P. 55-599-69

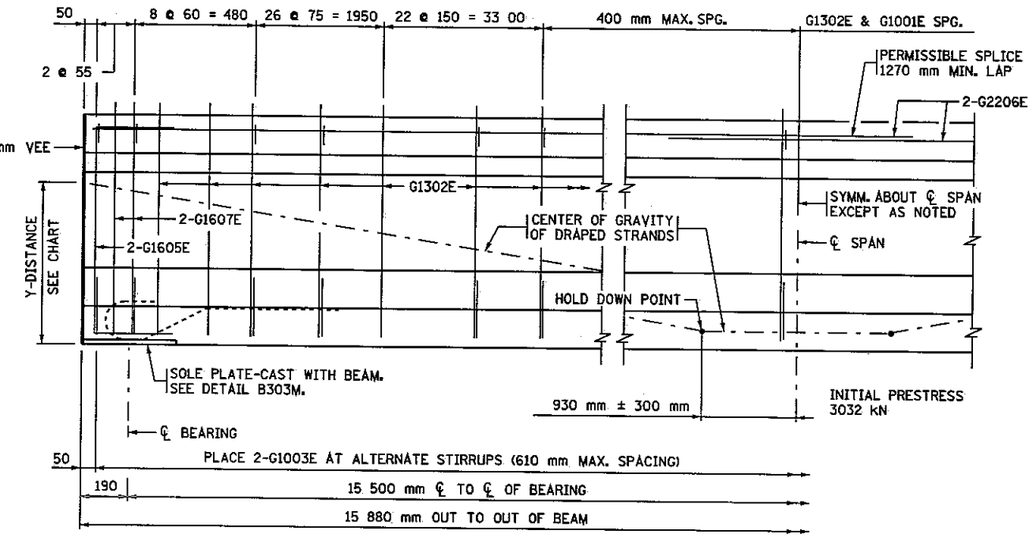
SHEET 7 OF 17 SHEETS

DES.	CMB	DRN.	BDM	55540
CHK.	RAB	CHK.	CMB	

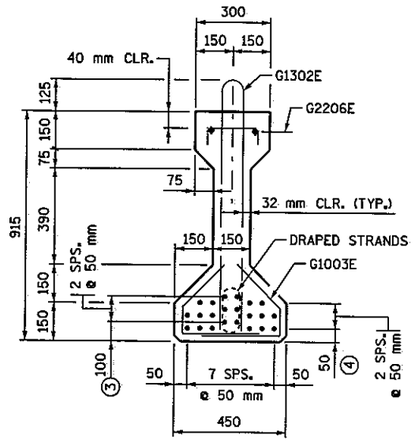


END VIEW

CUT STRANDS FLUSH WITH CONCRETE. PAINT ENDS WITH AN APPROVED GRAY EPOXY EXCEPT AS NOTED.



BEAM ELEVATION

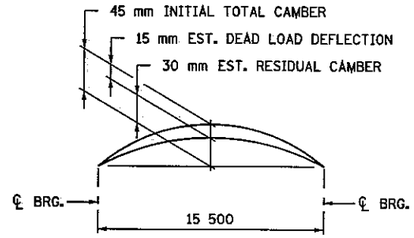


SECTION AT ℄ SPAN

Y DISTANCES			
	NO.	℄ SPAN	END
STRAIGHT STRANDS	16	94	
DRAPED STRANDS	6	150	765 □
TOTAL STRANDS	22	109	

Y = DISTANCE TO CENTER OF GRAVITY OF STRANDS FROM BOTTOM OF BEAM. ALL STRANDS SPACED 50 mm CENTER TO CENTER, HORIZONTALLY AND VERTICALLY, EXCEPT AS NOTED.

□ A TOLERANCE OF ± 25 mm WILL BE PERMITTED IN THIS DIMENSION.

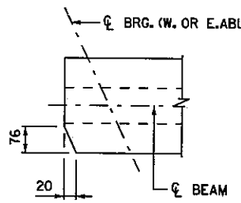


CAMBER DIAGRAM

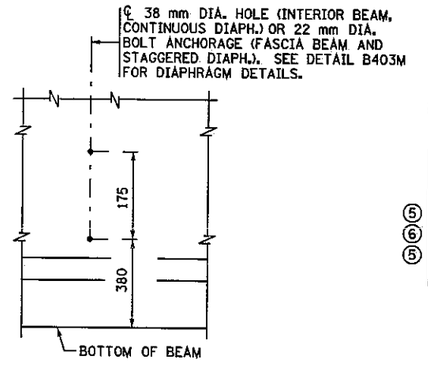
INITIAL CAMBER IS GIVEN AFTER DIAPHRAGMS ARE IN PLACE.

DEAD LOAD DEFLECTION SHOWN IS FOR WEIGHT OF SLAB, WEARING COURSE, RAILING, SIDEWALK AND MEDIAN WHERE APPLICABLE.

ENGINEER WILL TAKE ELEVATIONS AT TOP OF BEAMS AFTER ERECTION AND WILL ALLOW FOR DEFLECTION SHOWN TO ENABLE CONTRACTOR TO BUILD FORMS TO CORRECT GRADE AND SPECIFIED SLAB THICKNESS.



COPED TOP FLANGE

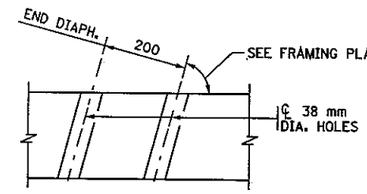


STEEL INTERMEDIATE DIAPHRAGM

MINIMUM CONCRETE STRENGTH - MPa		
	① f'ci	② f'c
REQUIRED MIN. CONCRETE STRENGTH	39	48

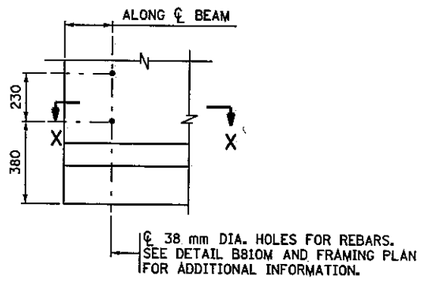
PRESTRESSING STRAND DIAMETER	
⑤ 13 mm	X
⑥ 13 mm SPECIAL	
⑤ 15 mm	

PLACE AN "X" IN THE APPROPRIATE BOX TO INDICATE THE STRAND DIAMETER USED FOR THE DESIGN.



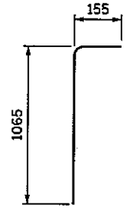
SECTION X-X

INTERIOR BEAM WITH CONTINUOUS CONCRETE DIAPHRAGM

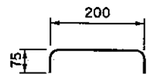


CONCRETE END DIAPHRAGM

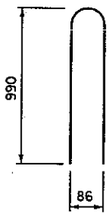
(PILE BENT ABUTMENT)



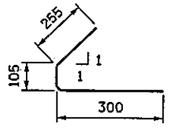
G1607E



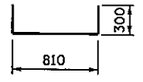
G1001E



G1302E



G1003E



G1605E

GENERAL NOTES

ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE NOTED.

TOPS OF BEAMS SHALL BE ROUGH FLOATED AND BROOMED TRANSVERSELY FOR BOND.

PROVIDE HANDLING HOOKS OR DEVICES AS REQUIRED BY CONTRACTOR.

EACH BEAM SHALL BE MARKED, SHOWING BRIDGE NUMBER, CASTING DATE AND INDIVIDUAL IDENTIFICATION LETTERS AND NUMBERS. MARKINGS SHALL BE MADE ON THE FACE OF THE BEAM, NEAR THE END, SO LOCATED THAT THEY WILL BE EXPOSED AFTER THE END DIAPHRAGMS HAVE BEEN CAST. FASCIA BEAMS SHALL BE MARKED ON THE INSIDE FACE. ALL MARKINGS SHALL BE STENCILED AND BE CLEARLY LEGIBLE. FOR LOCATION OF BEAMS, SEE FRAMING PLAN.

ALL MATERIAL AND WORK SHOWN OR NOTED ON THIS SHEET SHALL BE INCLUDED IN UNIT PRICE BID FOR PRESTRESSED CONCRETE BEAMS. SEE Mn/DOT SPEC. 2405.

SEE FRAMING PLAN FOR BEAM END MARKED "X" AND DIAPHRAGM SPACING.

APPROXIMATE WEIGHT OF BEAM IS 9.4 METRIC TONS.

AS AN ALTERNATE TO THE DIAPHRAGM ANCHORAGES SHOWN, THE CONTRACTOR MAY SUBMIT DETAILS OF A CAST-IN-PLACE ANCHORAGE TO THE ENGINEER FOR APPROVAL. ANCHORAGE MUST PROVIDE AN ULTIMATE PULL OUT STRENGTH OF 67 kN PER ANCHORAGE.

① MINIMUM CONCRETE STRENGTH AT TIME OF PRESTRESS TRANSFER.

② MINIMUM CONCRETE STRENGTH WHEN BEAM CAN BE TRANSPORTED AND INSTALLED.

③ DRAPED STRANDS.

④ STRAIGHT STRANDS.

⑤ PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION STRAND, CONFORMING TO ASTM A 416M, GRADE 1860.

⑥ PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION STRAND, CONFORMING TO ASTM A 779, GRADE 1860.

AS BUILT PLANS

APPROVED: _____

STATE BRIDGE ENGINEER

S.A.P. 55-599-69

BEAMS B1-B2

FIG. 5-397.502M

minnesota metric

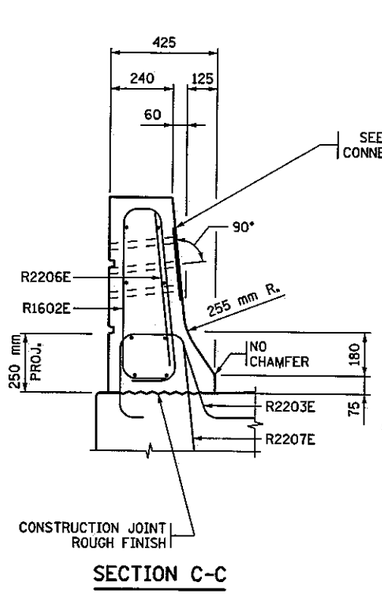
CERTIFIED BY: Ronald Benson
PROFESSIONAL ENGINEER
REG. NO. 22737 19 99

TITLE: 915 mm PRESTRESSED CONCRETE BEAM (PRETENSIONED) TYPE 915-16

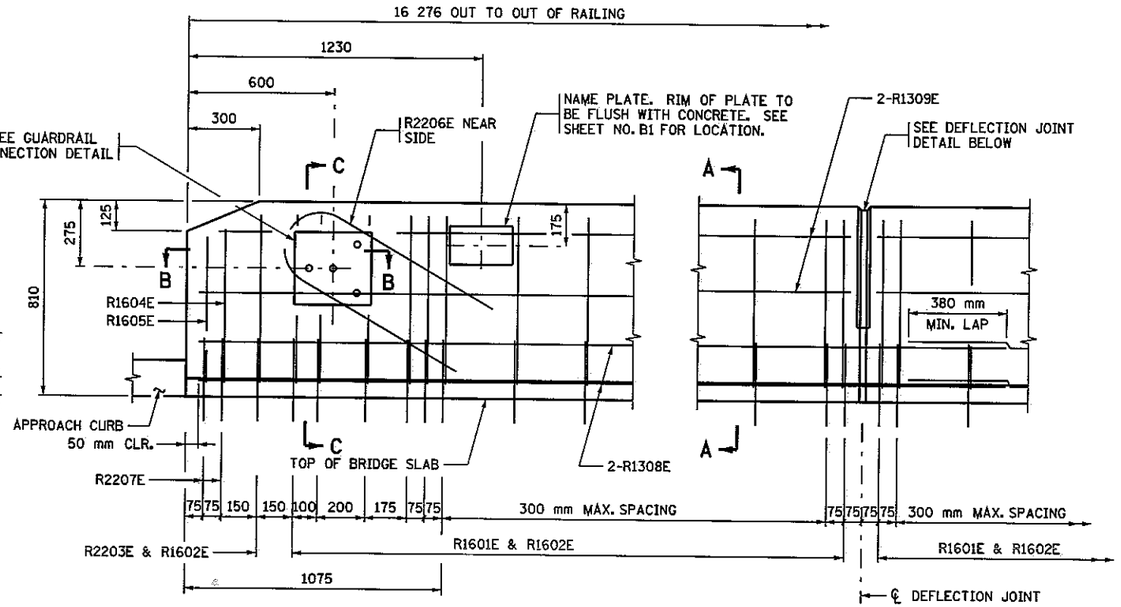
DES: CMB	DR: BDM	APPROVED:
CHK: RAB	CHK: CMB	

SHEET NO. 8 OF 17 SHEETS

BRIDGE NO. 55540

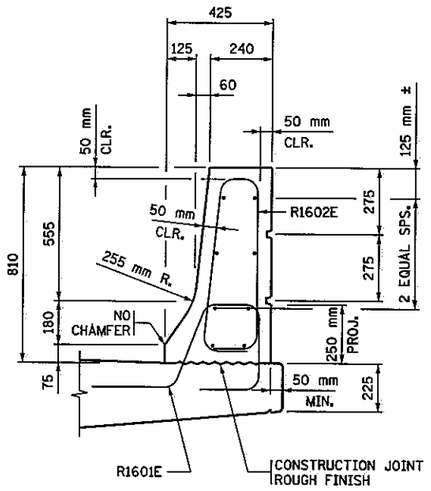


SECTION C-C

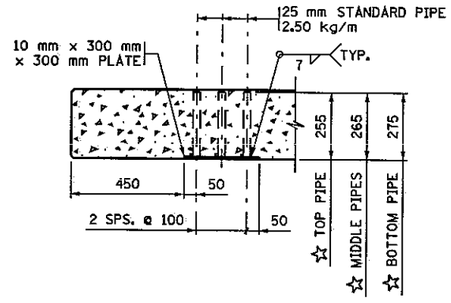


INSIDE ELEVATION OF RAILING

DEFLECTION JOINT

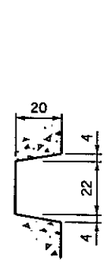


SECTION A-A

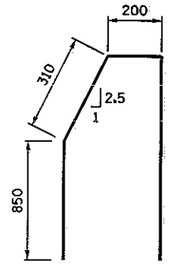


SECTION B-B

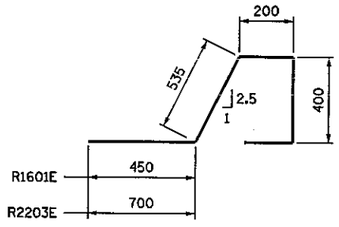
(REINFORCEMENT NOT SHOWN)
☆ DIMENSIONS INCLUDE 10 mm PLATE



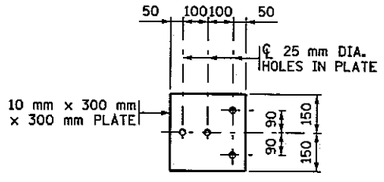
RAIL RUSTICATION



R2207E

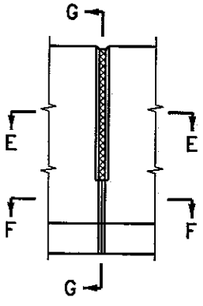


R1601E & R2203E

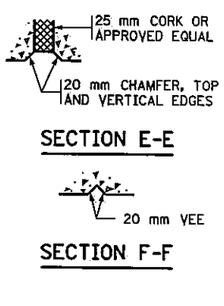


GUARDRAIL CONNECTION DETAIL

GALVANIZE AFTER FABRICATION PER Mn/DOT SPEC. 3394
ESTIMATED WEIGHT = 9.9 kg



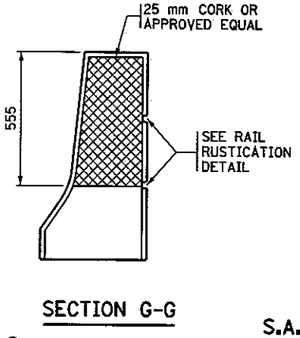
ELEVATION



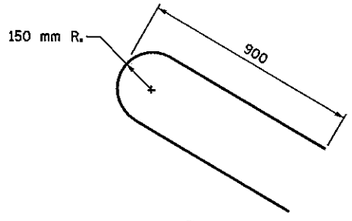
SECTION E-E

SECTION F-F

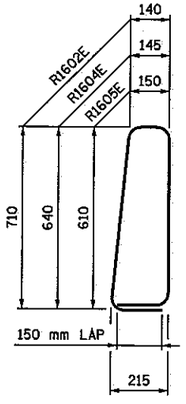
DEFLECTION JOINT DETAILS



SECTION G-G



R2206E



R1602E, R1604E & R1605E

BILL OF REINFORCEMENT FOR RAILING

	BAR	NO.	LENGTH	SHAPE	LOCATION
	R1601E	126	1735		RAIL DOWEL
	R1602E	130	1930		RAIL VERTICAL
	R2203E	4	1985		RAIL DOWEL
	R1604E	4	1790		RAIL VERTICAL
	R1605E	4	1740		RAIL VERTICAL
	R2206E	4	1970		RAIL VERTICAL
	R2207E	8	2480		RAIL DOWEL
①	R1308E	16	8280		RAIL LONGITUDINAL
	R1309E	36	5300		RAIL LONGITUDINAL

① 2-LINES, 380mm LAP

GENERAL NOTES

ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE NOTED.

LENGTH OF "TYPE F RAILING CONCRETE (3Y46A)" FOR PAYMENT SHALL BE MEASURED BETWEEN THE OUTSIDE FACES OF THE CONCRETE RAIL.

CONCRETE RAILING = 5.82 kN/m (0.247 m^3/m)

FINISH ALL EDGES OF RAIL WITH 13 mm CHAMFER, EXCEPT WHERE OTHERWISE NOTED.

MAXIMUM SPACING OF CONCRETE DEFLECTION JOINTS SHALL BE 6 m.

SEE SUPERSTRUCTURE SHEET FOR JOINT SPACING.

GUARDRAIL CONNECTION TO BE STRUCTURAL STEEL, Mn/DOT SPEC. 3306.

GUARDRAIL CONNECTION TO BE INCLUDED IN PRICE BID FOR OTHER ITEMS.

RAIL QUANTITIES ARE INCLUDED IN SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE.

AS BUILT PLANS

APPROVED: _____

STATE BRIDGE ENGINEER

S.A.P. 55-599-69

minnesota metric

CERTIFIED BY: Ronald Benson
PROFESSIONAL ENGINEER
REG. NO. 22737 19 99

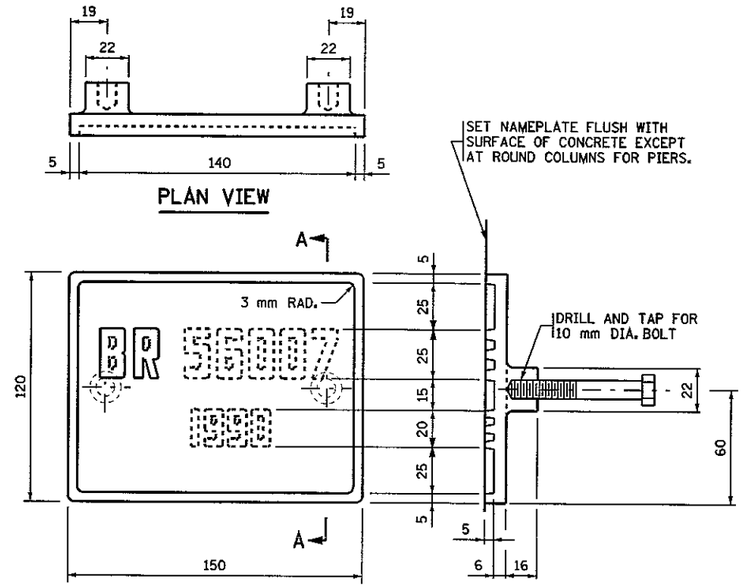
TITLE: CONCRETE RAILING (TYPE F)
WITH INTEGRAL END POST
(WITHOUT CONCRETE WEARING COURSE)

DES: CMB	DR: BDM	APPROVED:
CHK: RAB	CHK: CMB	

SHEET NO. 9 OF 17 SHEETS

FIG. 5-397.115M

BRIDGE NO. 55540



THE DASHED NUMBERS SHOWN ABOVE ARE FOR ILLUSTRATION.
DATA TO BE SHOWN ON NAMEPLATE IS AS FOLLOWS:

BRIDGE 55540

YEAR 2000

NUMBERS FOR NAMEPLATE

NOTES:

NO SHOP DRAWING REQUIRED.

MATERIAL SHALL COMPLY WITH SPEC. 3327.

LETTERS AND NUMBERS SHALL CONFORM TO THOSE SHOWN.

DRAFT ON LETTERS AND NUMBERS SHALL NOT BE MORE THAN 75 mm IN 300 mm.

HORIZONTAL SPACING OF LETTERS AND NUMBERS SHALL PRODUCE A BALANCED LAYOUT IN PROPORTION TO SPACING SHOWN.

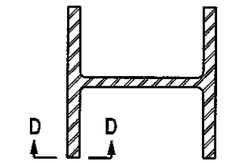
TOP SURFACE OF LETTERS, NUMBERS AND FRAMES SHALL BE BURNISHED.

FURNISH 2 STEEL BOLTS 10 mm DIA. x 75 mm LONG WITH EACH PLATE.

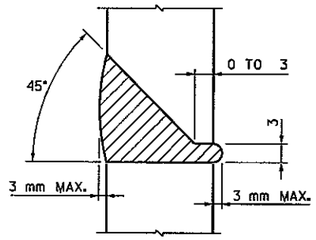
ALL DIMENSIONS FOR 19 mm HIGH LETTERS AND NUMBERS SHALL BE IN DIRECT PROPORTION TO THOSE SHOWN FOR THE 25 mm HIGH LETTERS AND NUMBERS.

ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE NOTED

APPROVED: APRIL 2, 1997 STATE BRIDGE ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION BRIDGE NAMEPLATE (FOR NEW BRIDGES)	REVISION	DETAIL NO. B101M



SECTION AT JOINT



SECTION D-D

100% BUTT WELDED PILE SPLICE

NOTES:

A.W.S. TYPE E7016 OR E7018 (LOW-HYDROGEN) ELECTRODES SHALL BE USED FOR 100% BUTT WELDED SPLICES.

LOW-HYDROGEN ELECTRODES SHALL BE SUPPLIED IN HERMETICALLY (AIR-TIGHT) SEALED CONTAINERS.

LOW-HYDROGEN ELECTRODES SHALL BE STORED IN HOLDING OVENS AT A TEMPERATURE OF NOT LESS THAN 121° C.

LOW-HYDROGEN ELECTRODES SHALL BE PLACED IN A HOLDING OVEN FOR AT LEAST 8 HOURS IF THEY HAVE BEEN EXPOSED TO THE ATMOSPHERE FOR MORE THAN 2 HOURS.

ELECTRODES WHICH HAVE BECOME WET, SOILED OR DAMAGED SHALL NOT BE USED.

WELDING SHALL NOT BE DONE WHEN THE AMBIENT TEMPERATURE IS LOWER THAN -18° C. OR WHEN THE PILE IS WET OR EXPOSED TO FALLING RAIN OR SNOW. WHEN THE PILE METAL TEMPERATURE IS BELOW 0° C., THE PILE METAL IN THE AREA OF THE WELD SHALL BE HEATED TO A MINIMUM TEMPERATURE OF 21° C. AND MAINTAINED AT THIS TEMPERATURE DURING WELDING.

AS BUILT PLANS

ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE NOTED

APPROVED: APRIL 2, 1997 STATE BRIDGE ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION PILE SPLICE (STEEL H BEARING PILES 250 mm TO 360 mm)	REVISION	DETAIL NO. B202M

S.A.P. 55-599-69

minnesota metric

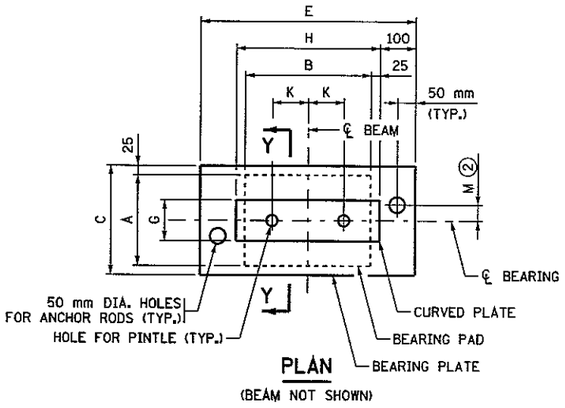
CERTIFIED BY: Ronald Benson
PROFESSIONAL ENGINEER
REG. NO. 22737 19 99

TITLE: DETAILS

DES: CMB	DR: BDM	APPROVED:
CHK: RAB	CHK: CMB	

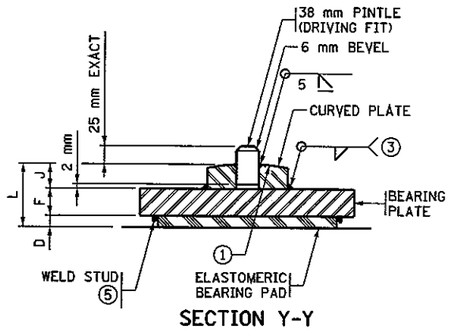
SHEET NO. 10 OF 17 SHEETS

BRIDGE NO. 55540



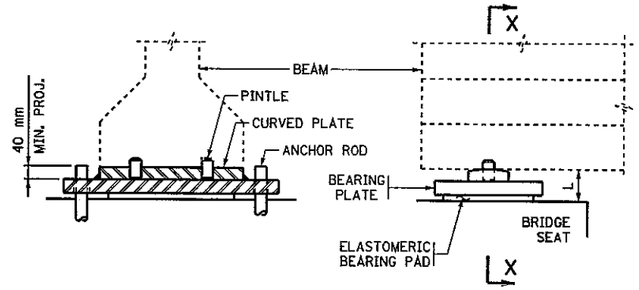
PLAN

(BEAM NOT SHOWN)



SECTION Y-Y

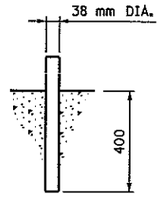
(ENLARGED)



SECTION X-X

END ELEVATION

(ANCHOR RODS NOT SHOWN)



ANCHOR ROD DETAIL

TABLE															
ASSEMBLY TYPE	LOCATION	BEAM SIZE	BEARING PAD SIZE			SHAPE FACTOR	BEARING PLATE SIZE			CURVED PLATE SIZE			PINTLE DIA.	PINTLE DISTANCE	ANCHOR ROD OFFSET	ASSY. HEIGHT
			A	B	D		C	E	F	G	H	J		K ④	M ②	L
F1	W. ABUT.	915	300	400	12	7.1	350	650	26	115	450	31	38	149	25	69

NOTES:

ELASTOMERIC MATERIALS AND PAD CONSTRUCTION SHALL COMPLY WITH Mn/DOT SPEC. 3741.

ALL STEEL PLATES SHALL COMPLY WITH Mn/DOT SPEC. 3306.

ANCHOR RODS SHALL COMPLY WITH Mn/DOT SPEC. 3306. GALVANIZE PER Mn/DOT SPEC. 3394.

PINTLES SHALL COMPLY WITH Mn/DOT SPEC. 3309.

GALVANIZE STRUCTURAL STEEL BEARING ASSEMBLY AFTER FABRICATION PER Mn/DOT SPEC. 3394, EXCEPT AS NOTED.

PAYMENT FOR BEARING PLATE ASSEMBLY SHALL INCLUDE ALL MATERIAL ON THIS DETAIL.

① THE RADIUS OF THE CURVED PLATE SHALL BE 400 mm MIN. AND 600 mm MAX. FINISH TO 6.35 MICROMETERS. THE FINISHED THICKNESS OF THE PLATE MAY BE 2 mm LESS THAN SHOWN.

② OFFSET MAY BE OPPOSITE OF THAT SHOWN. SEE ANCHOR ROD LAYOUT FOR DETAILS.

③ WELDING PER Mn/DOT SPEC. 2471.

④ SEE DETAIL B303M FOR PINTLE DISTANCE K.

⑤ 8 mm DIA. x 10 mm KNOCK-OFF WELD STUDS INSTALLED ON BEARING PLATE AROUND PERIMETER OF BEARING PAD. CENTERLINE STUD TO EDGE OF PAD DIMENSION = 13 mm, MAX. STUD SPACING = 100 mm.

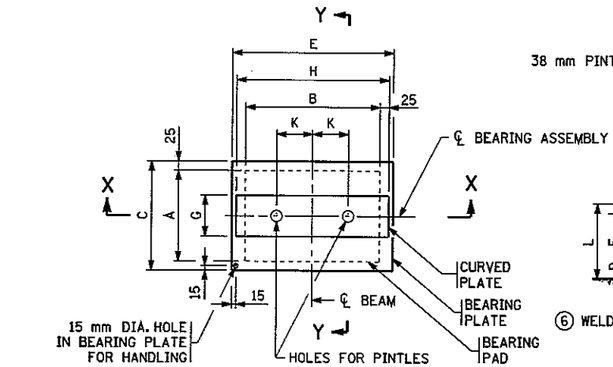
DESIGN DATA:

MAXIMUM HORIZONTAL LOAD IS 312 kN FOR 38 mm DIAMETER PINTLE.

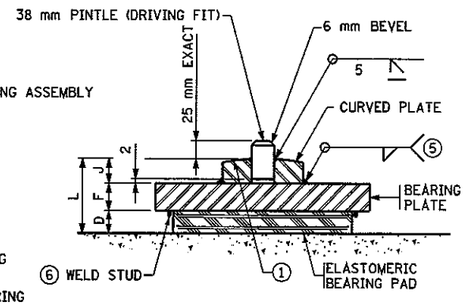
ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE NOTED

APPROVED: APRIL 2, 1997	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
STATE BRIDGE ENGINEER	CURVED PLATE BEARING ASSEMBLY (PRESTRESSED CONCRETE BEAMS) (FIXED)		B310M

S.A.P. 55-599-69

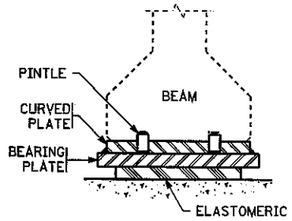


PLAN

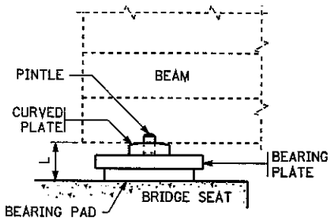


SECTION Y-Y

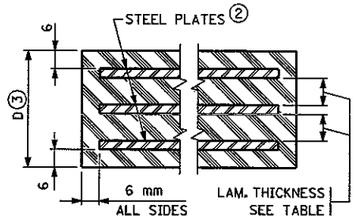
(ENLARGED BEARING ASSEMBLY)



SECTION X-X



END ELEVATION



SECTION THROUGH BEARING PAD

TABLE																		
ASSEMBLY TYPE	LOCATION	BEAM SIZE	BEARING PAD SIZE			STEEL PLATES		LAMINATES		SHAPE FACTOR	BEARING PLATE SIZE			CURVED PLATE SIZE			PINTLE DIA.	PINTLE DISTANCE	ASSY. HEIGHT
			A	B	D	NO.	THICK.	NO.	THICK.		C	E	F	G	H	J		K ④	L
E2	E. ABUT.	915	250	400	27	2	3	1	9	8.6	300	475	25	115	450	31	38	149	83

NOTES:

ELASTOMERIC MATERIALS & PAD CONSTRUCTION SHALL COMPLY WITH SPEC. 3741.

ALL STEEL PLATES SHALL COMPLY WITH SPEC. 3306

PINTLES SHALL COMPLY WITH SPEC. 3309.

GALVANIZE STRUCTURAL STEEL BEARING ASSEMBLY AFTER FABRICATION PER SPEC. 3394, EXCEPT AS NOTED.

PAYMENT FOR BEARING ASSEMBLY SHALL INCLUDE ALL MATERIAL ON THIS DETAIL.

① THE RADIUS OF THE CURVED PLATE SHALL BE 400 mm MIN. AND 600 mm MAX. FINISH TO 6.35 MICROMETERS. THE FINISHED THICKNESS OF THE PLATE MAY BE 2 mm LESS THAN SHOWN.

② DO NOT GALVANIZE THESE PLATES.

③ THE TOTAL THICKNESS SHOWN INCLUDES THE STEEL PLATES.

④ SEE DETAIL B303M FOR PINTLE DISTANCE K.

⑤ WELDING PER SPEC. 2471.

⑥ 8 mm DIA. x 10 mm KNOCK-OFF WELD STUDS INSTALLED ON BEARING PLATE AROUND PERIMETER OF BEARING PAD. CENTERLINE STUD TO EDGE OF PAD DIMENSION = 13 mm, MAX. STUD SPACING = 100 mm.

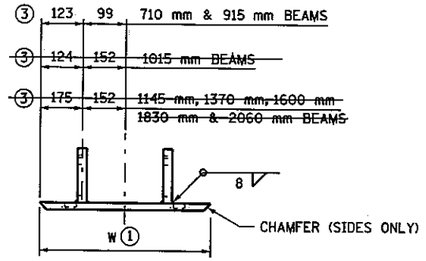
DESIGN DATA:

MAXIMUM HORIZONTAL LOAD IS 312 kN FOR 38 mm DIA. PINTLES.

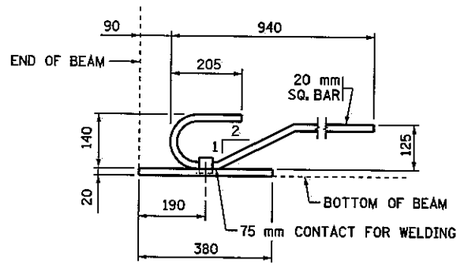
ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE NOTED

APPROVED: APRIL 2, 1997	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
STATE BRIDGE ENGINEER	CURVED PLATE BEARING ASSEMBLY (PRESTRESSED CONCRETE BEAMS) (EXPANSION)		B311M

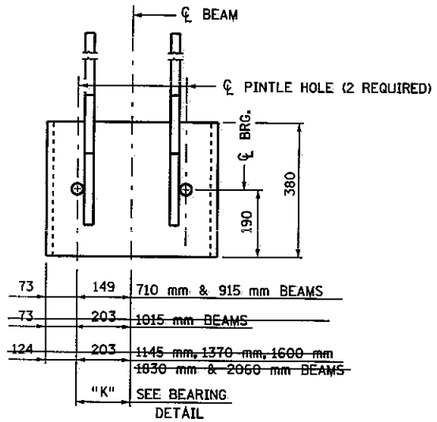
CERTIFIED BY: Ronald Benson PROFESSIONAL ENGINEER	TITLE:	DES: CMB	DR: BDM	APPROVED:	BRIDGE NO.
REG. NO. 22737 19 99	DETAILS	CHK: RAB	CHK: CMB		55540
		SHEET NO. 11 OF 17 SHEETS			



FRONT VIEW

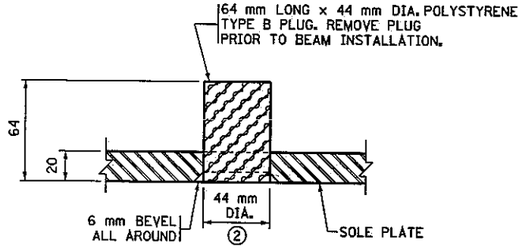


SIDE VIEW



TOP VIEW

BEAM SIZE	① W VALUE (mm)
710 mm, 915 mm	450
~~1015 mm~~	~~544~~
~~1145 mm, 1370 mm 1600 mm, 1830 mm, 2060 mm~~	~~654~~



PINTLE HOLE DETAIL

NOTES:

MATERIAL TO BE STRUCTURAL STEEL PER SPEC. 3306.

SOLE PLATE FOR BEARING ASSEMBLY TO BE HOT DIPPED GALVANIZED PER SPEC. 3394 AFTER FABRICATION.

PINTLE HOLES SHALL BE FREE OF ZINC BUILD UP FROM GALVANIZING.

PAYMENT FOR SOLE PLATES TO BE INCLUDED IN PRICE BID FOR PRESTRESSED CONCRETE BEAMS.

① DIMENSION "W" TO BE THE WIDTH AT THE BOTTOM FLANGE OF THE BEAM MINUS 6 mm.

② FOR 38 mm DIA. PINTLES.

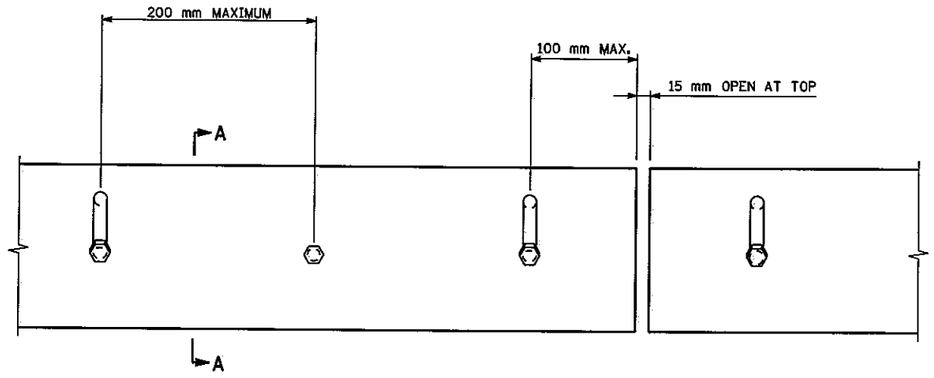
③ THESE DIMENSIONS MAY BE MODIFIED TO CLEAR PRESTRESSED STRANDS, HOWEVER, CHANGES MUST BE APPROVED BY THE ENGINEER.

ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE NOTED

MODIFIED

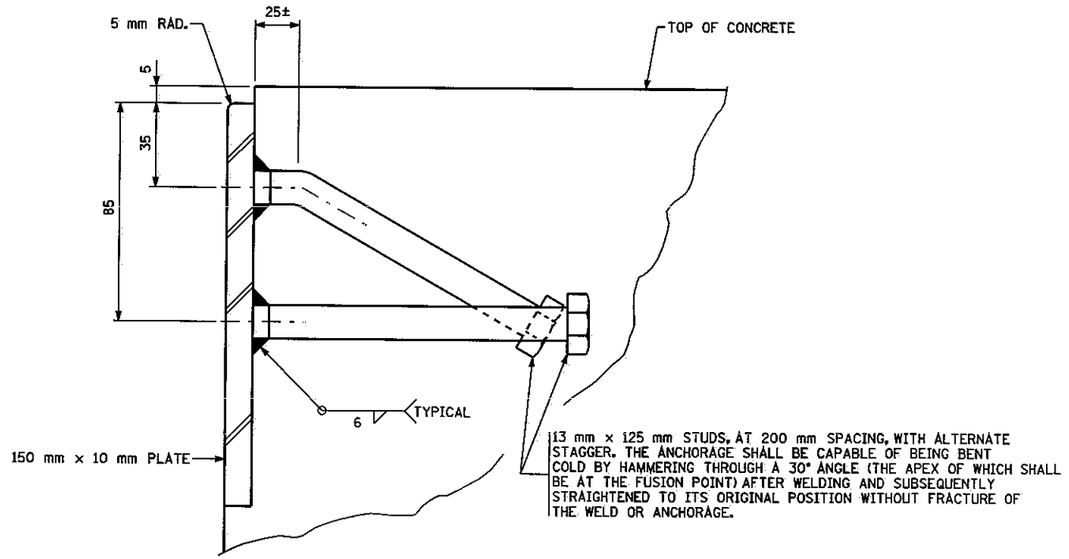
APPROVED: APRIL 2, 1997 STATE BRIDGE ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION SOLE PLATE (PRESTRESSED CONCRETE BEAMS) (FOR BEARINGS WITH PINTLES)	REVISION	DETAIL NO. B303M

S.A.P. 55-599-69



ELEVATION

(CONCRETE NOT SHOWN)



SECTION A-A

NOTES:

PLATES SHALL EXTEND FULL WIDTH OF ROADWAY BETWEEN GUTTER LINES WITH A 15 mm OPEN JOINT AT EACH BREAK IN CROWN PROFILE. MAXIMUM LENGTH 6700 mm.

MATERIALS: STRUCTURAL STEEL PER SPEC. 3306. GALVANIZE AFTER FABRICATION PER SPEC. 3394

SET PLATE TO PROPER GRADE AND CROWN.

AS BUILT PLANS

ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE NOTED

APPROVED: APRIL 2, 1997 STATE BRIDGE ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION PROTECTION PLATE (FOR END OF SLAB)	REVISION	DETAIL NO. B553M

minnesota metric

CERTIFIED BY: Ronald Benson PROFESSIONAL ENGINEER
REG. NO. 22737 19 99

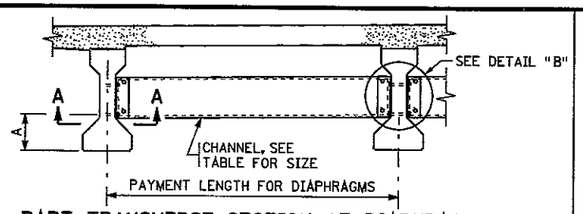
TITLE: DETAILS

DES: CMB	DR: BDM	APPROVED:
CHK: RAB	CHK: CMB	

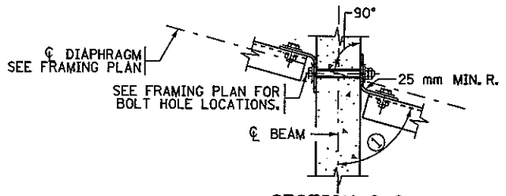
SHEET NO. 12 OF 17 SHEETS

BRIDGE NO. 55540

TABLE				
BEAM HEIGHT (mm)	DISTANCE (mm)			CHANNEL SIZE
	A	B	C	
~~710~~	~~300~~	~~125~~	~~250~~	~~C250x23~~
915	380	175	300	C310x31
~~1015~~	~~430~~	~~175~~	~~300~~	~~C310x31~~
~~1145~~	~~405~~	~~330~~	~~455~~	~~MC460x63.5~~
~~1370~~	~~365~~	~~330~~	~~810~~	~~MC460x63.5~~

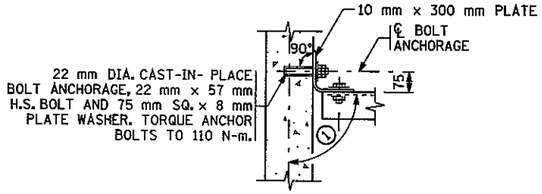


PART TRANSVERSE SECTION AT DIAPHRAGM



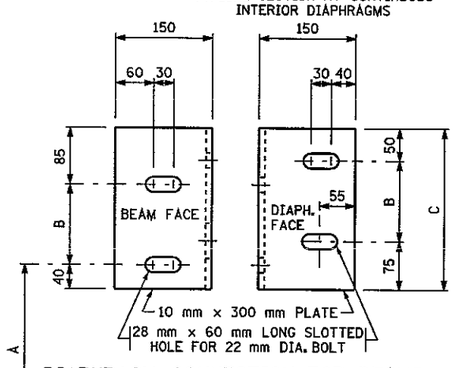
SECTION C-C

TYPICAL SECTION AT CONTINUOUS INTERIOR DIAPHRAGMS



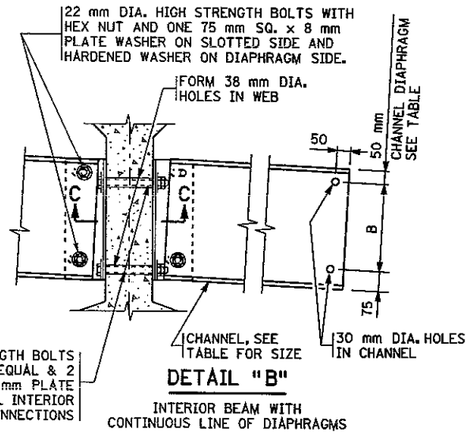
SECTION A-A

TYPICAL SECTION AT ALL FACIA BEAM AND STAGGERED DIAPHRAGM CONNECTIONS



DIAPHRAGM CONNECTION FOR BEAMS

(710 mm - 1145 mm BEAMS)



DETAIL "B"

INTERIOR BEAM WITH CONTINUOUS LINE OF DIAPHRAGMS

GENERAL NOTES:

ALL STEEL SHALL CONFORM TO SPEC. 3306.

SEE SPEC. 2405.3M FOR INSTALLATION.

THE LEG OF THE 300 mm PLATE SHALL BE SHOP BENT TO CONFORM TO THE DIAPHRAGM. A 9.5 mm x 152 mm x 152 mm ANGLE MAY BE USED FOR DIAPHRAGMS PERPENDICULAR TO BEAMS.

FOR BOLT LENGTHS GREATER THAN 215 mm, USE HIGH STRENGTH BOLTS PER SPEC. SAE GRADE 5 OR BETTER. SEE SPEC. 2405.3M FOR INSTALLATION.

ALL STRUCTURAL STEEL SHOWN ON THIS DETAIL, INCLUDING BOLTS AND WASHERS, SHALL BE INCLUDED IN THE PAYMENT FOR DIAPHRAGMS FOR PRESTRESSED BEAMS.

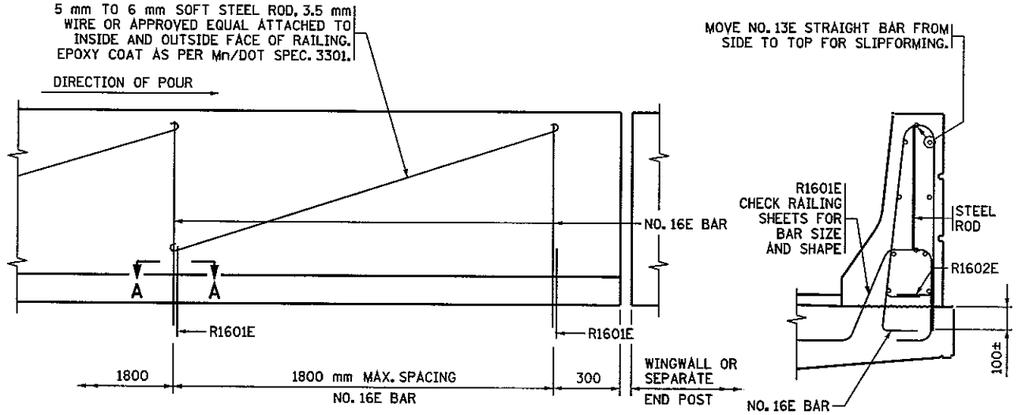
DIAPHRAGMS OVER THE PIERS ARE CONSIDERED TO BE INTERMEDIATE IF THE SLAB IS CONTINUOUS.

BENT PLATES MAY BE USED IN PLACE OF CHANNELS. THE BENT PLATES MUST BE THE SAME HEIGHT AS THE CHANNELS THEY REPLACE, BE 8 mm IN THICKNESS, AND HAVE LEGS 125 mm LONG.

(1) FOR SKEW ANGLES UNDER 20°, USE 90° LESS THE SKEW ANGLE. FOR SKEW ANGLES OVER 20°, USE 90°.

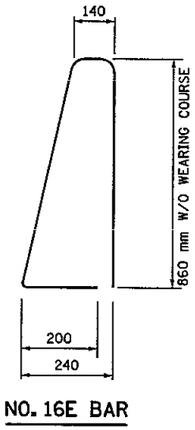
ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE NOTED

APPROVED: APRIL 2, 1997	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
STATE BRIDGE ENGINEER	STEEL INTERMEDIATE DIAPHRAGM (FOR 710 mm - 1370 mm PRESTRESSED CONCRETE BEAMS)	ELR 12-23-97	B403M

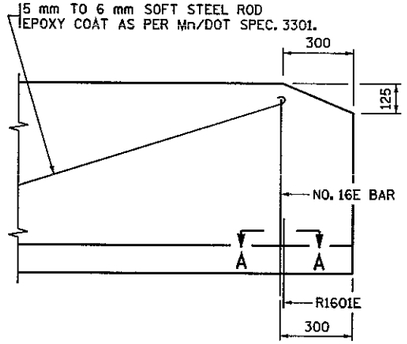


INSIDE ELEVATION OF RAILING

RAILING SECTION

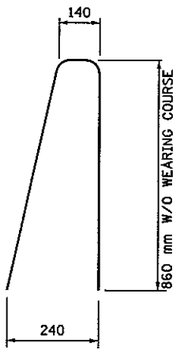


NO. 16E BAR



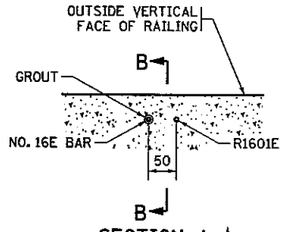
INSIDE ELEVATION OF RAILING

AT END OF WINGWALL

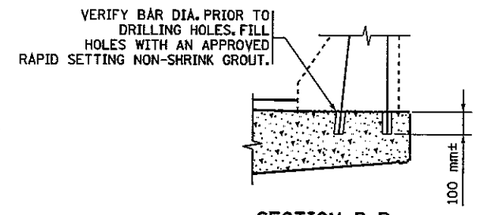


NO. 16E BAR

DRILLED IN ALTERNATE



SECTION A-A



SECTION B-B

INSTALLATION DETAILS FOR NO. 16E BAR (DRILLED IN ALTERNATE)

NOTES:

CONTRACTOR WILL TOOL V-GROOVE AT DEFLECTION JOINTS AT TIME RAIL IS CAST AND SHALL EXTEND V-GROOVE AROUND ENTIRE PERIMETER OF RAIL.

FOR ADDITIONAL DIMENSIONS, DETAILS, REINFORCEMENT AND NOTES SEE RAILING SHEET.

FORM RAIL FOR A MINIMUM OF 1200 mm ON EACH SIDE OF EXPANSION DEVICES, LIGHT STANDARDS AND DECK DRAIN BOX OUTS.

PAY QUANTITIES WILL NOT BE ADJUSTED AS A RESULT OF SELECTING THIS ALTERNATE.

USE A SIMILAR METHOD FOR TALLER RAILINGS OR MODIFIED VERSIONS OF THIS RAILING.

AS BUILT PLANS

ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE NOTED

APPROVED: APRIL 2, 1997	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
STATE BRIDGE ENGINEER	CONCRETE RAILING (TYPE F) (SLIPFORM ALTERNATE)	LJH 07-13-98 LJH 08-04-98 LJH 12-11-98	B830M

S.A.P. 55-599-69

minnesota metric

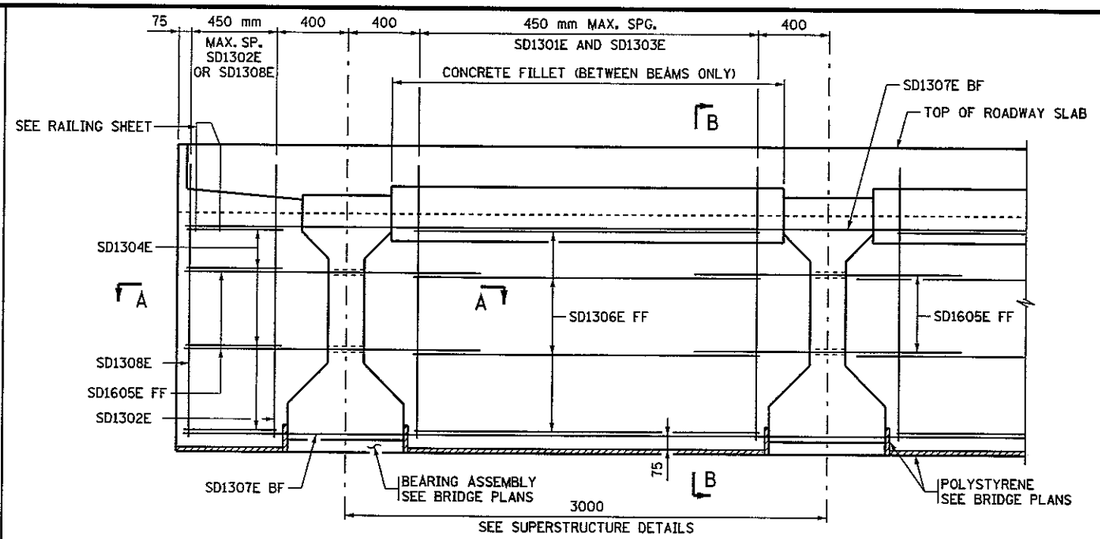
CERTIFIED BY: Ronald Benson PROFESSIONAL ENGINEER
REG. NO. 22737 19 99

TITLE: DETAILS

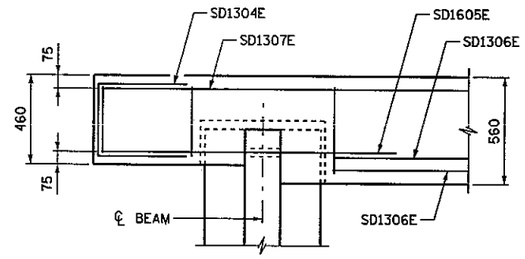
DES: CMB	DR: BDM	APPROVED:
CHK: RAB	CHK: CMB	

SHEET NO. 13 OF 17 SHEETS

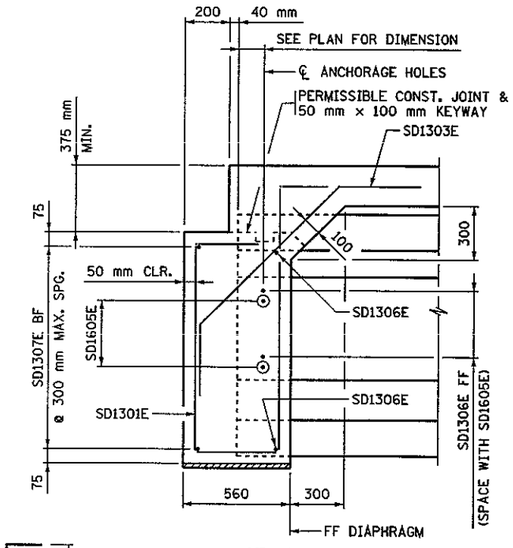
BRIDGE NO. 55540



PART TRANSVERSE SECTION AT END DIAPHRAGM



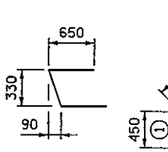
SECTION A-A



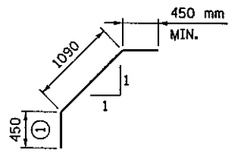
SECTION B-B

BILL OF REINFORCEMENT
FOR END DIAPHRAGM

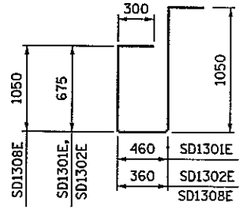
BAR	NO.	LENGTH	SHAPE	LOCATION
SD1301E	36	2785		VERT. TIE
SD1302E	4	2685		VERT. TIE @ END
SD1303E	42	2020		VERT. DOWEL
SD1304E	16	1630		END HORIZ. TIE
SD1605E	16	2050		DOWEL THRU BEAM
SD1306E	24	2200		FF HORIZ.
SD1307E	8	10 920		BF HORIZ.
SD1308E	4	3060		VERT. TIE @ END



SD1304E



SD1303E



SD1301E, SD1302E & SD1308E

NOTES:

DIAPHRAGM CONCRETE AND REINFORCEMENT QUANTITIES ARE INCLUDED IN THE SUPERSTRUCTURE QUANTITIES.

DIAPHRAGM TO BE USED AT ABUTMENT END ONLY.

BF DENOTES BACK FACE.
FF DENOTES FRONT FACE.

① MODIFY FOR WALL BEAM HEIGHTS.

ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE NOTED

AS BUILT PLANS

APPROVED: APRIL 2, 1997

STATE BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

CONCRETE END DIAPHRAGM
(710 mm - 1015 mm PRESTRESSED CONCRETE BEAMS)
(PILE BENT ABUTMENT)

REVISION

DETAIL NO.
B810M
MODIFIED

CERTIFIED BY: Ronald Benson
PROFESSIONAL ENGINEER
REG. NO. 22737 19 99

TITLE: DETAILS

DES: CMB | DR: BDM | APPROVED:
CHK: RAB | CHK: CMB

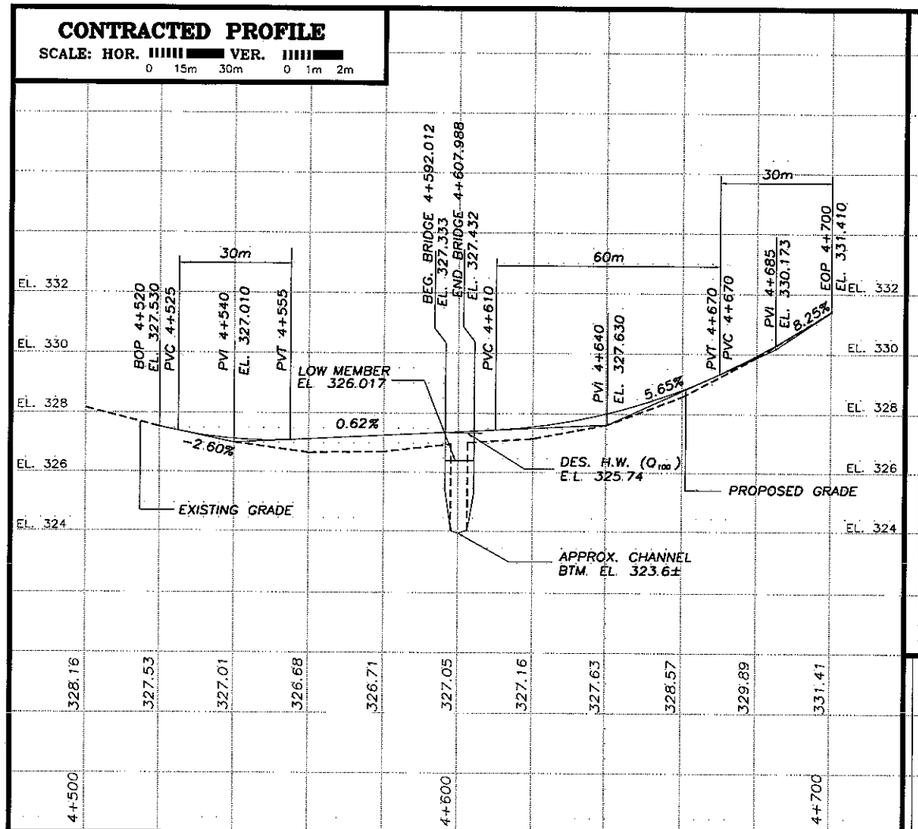
SHEET NO. 14 OF 17 SHEETS

BRIDGE NO.
55540

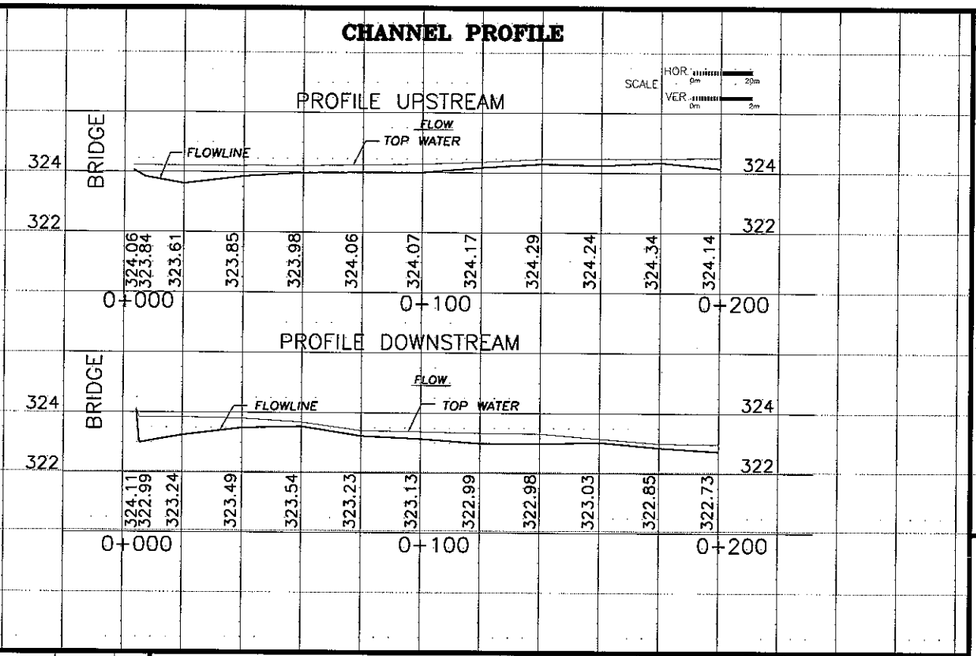
S.A.P. 55-599-69

CONTRACTED PROFILE

SCALE: HOR. 0 15m 30m VER. 0 1m 2m

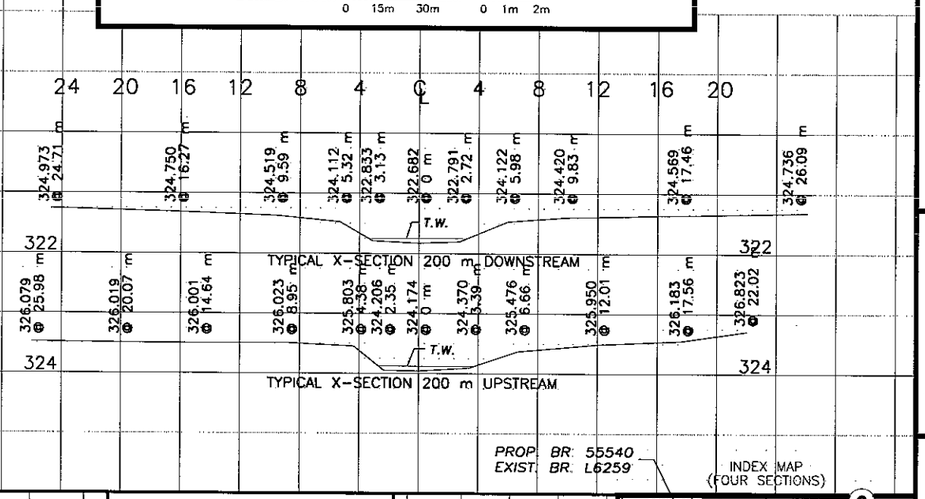


CHANNEL PROFILE



TYPICAL CHANNEL SECTIONS

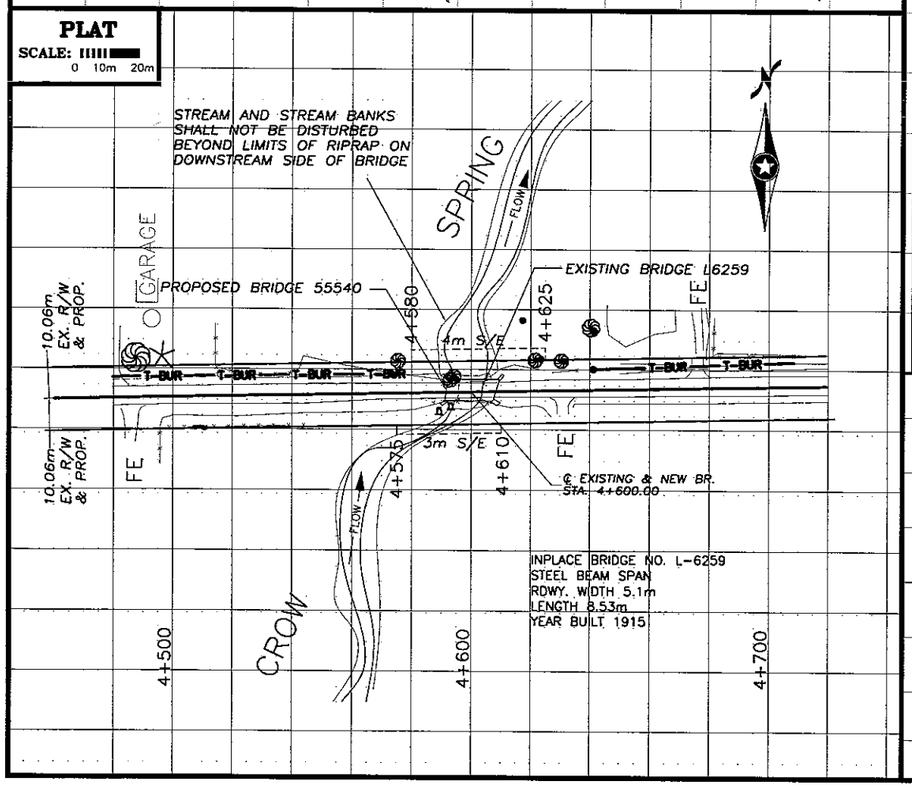
SCALE: HOR. 0 15m 30m VER. 0 1m 2m



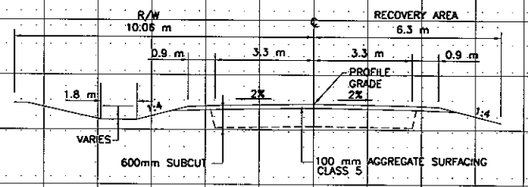
PROP. BR. 55540
EXIST. BR. L6259

PLAT

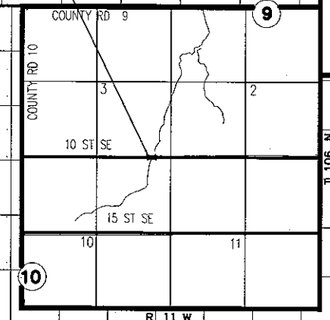
SCALE: 0 10m 20m



TYPICAL SECTION THRU PROPOSED RDWY.



INDEX MAP (FOUR SECTIONS)



Fed. Proj. No.

LOCATION ENGINEER'S OBSERVATION AT BRIDGE SITE

1. Special Features: Waterfalls, dams, floods, ice, debris, sliding banks, rec. boats.
   CONCRETE SPILLWAY UNDER EXISTING BRIDGE.
2. 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.
   1.) BR. NO. L-9746, 800m UPSTREAM, 4292mmx2667mmx 7.9m, STEEL ARCH PIPE, WATERWAY OPENING=9.011m².
   2.) BR. NO. 55J02, 1.6km DOWNSTREAM, 3657mmx3657mmx 50.29m (3) PRECAST CONCRETE BOX CULVERT. WATERWAY OPENING = 40.133m².
3. Apparent highwater elevation UNKNOWN Obtained from
4. Other data: Approx. velocity of water at time of survey

ENGINEERS RECOMMENDATION
DATE 11-20-98

Stream or ditch designation CROW SPRING
Drainage area 14.0 Km2
Max. flood on record N/A Design flood (100 yr freq.) 51.0 m3/s
Max. observed highwater elevation UNKWN Design highwater elevation 325.74
Design mean velocity through structure 2.56 m/s
Low superstructure at or above elevation 326.04
Flowline 323.60 Skew angle 15 deg.
Waterway area req'd. below elevation 325.74 19.9 Sq. m at Rt. angles to channel

In the interest of flood plain zoning the regional flood (100 yr. freq.) is 51.0 m3/s at stage 325.74 and mean velocity of 2.56 m.p.s. with 0.23 m swellhead. The above recommendation will provide a structure of adequate waterway to pass the regional flood within criteria established by the Dept. of National Resources.

ENGINEER'S RECOMMENDATION
DATE

1-15.50m PRESTR. CONC. BEAM SPAN
9.6m ROADWAY
SPAN IDENTIFICATION NO. 501

AS-BUILT PLANS

Brass Plug S.E. Cor. 335.70
1073.92 - 327.331 meter

Bridge survey sheets made from: SURVEY BY OLMSTED COUNTY SURVEYING AND MAPPING DEPARTMENT 1-98

Benchmark elevation 334.697 (M.S.L. 1929 Adj.)
Location: 154m EAST OF BR L-6259
STANDARD TABLET #TT29E19341098

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

AT MILE POINT km, PT 24+135 ON 10TH STREET S.E. (TWP. RD. 215)
PROPOSED BRIDGE LOCATED 1.448 km. EAST OF JCT CSAH 10
SEC. 3 TWP 106 N R. 11 W
TOWNSHIP DOVER COUNTY OLMSTED
EXIST. BRIDGE NO. L6259

minnesota metric

CERTIFIED BY Ronald Benson PROFESSIONAL ENGINEER
REG. NO. 22737 19 99

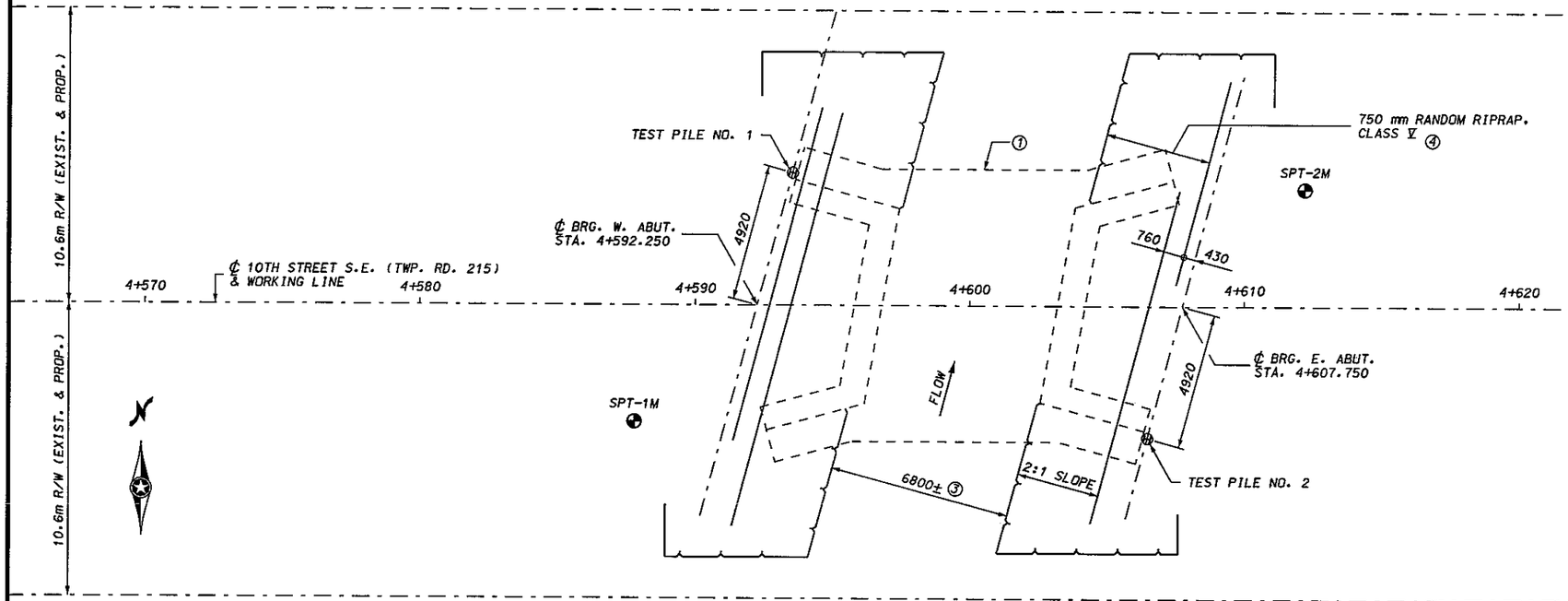
BRIDGE SURVEY

State Aid Proj. No.55-599-69

DES.: CMB	DRN.: CMB	APPROVED:
CHK.: RAB	CHK.: CSK	

Sheet No. 15 of 17 Sheets

Bridge No. 55540



① EXISTING CONCRETE CHANNEL BOTTOM BETWEEN EXISTING ABUTMENTS AND EXTENDING UPSTREAM AND DOWNSTREAM SHALL NOT BE ALTERED OR DISTURBED. EXISTING ABUTMENTS SHALL BE REMOVED ONLY TO TOP OF NEW RIPRAP ELEVATION OR SLIGHTLY HIGHER (0.3 m ±) MEASURED AT ABUTMENT BACKFACE. PORTION OF ABUTMENTS BELOW TOP OF NEW RIPRAP ELEVATION SHALL NOT BE MOVED, ALTERED OR DISTURBED. ABUTMENT REMOVAL OPERATIONS SHALL BE CONDUCTED SUCH THAT REMOVED PORTIONS OF THE ABUTMENTS DO NOT FALL INTO THE STREAM.

② AREA OF STREAM DOWNSTREAM OF SLAB AND BELOW ELEV. 323.6 SHALL NOT BE ALTERED OR DISTURBED. PLACE RIPRAP ON STREAMBANKS ONLY.

③ UPSTREAM CHANNEL WIDTH

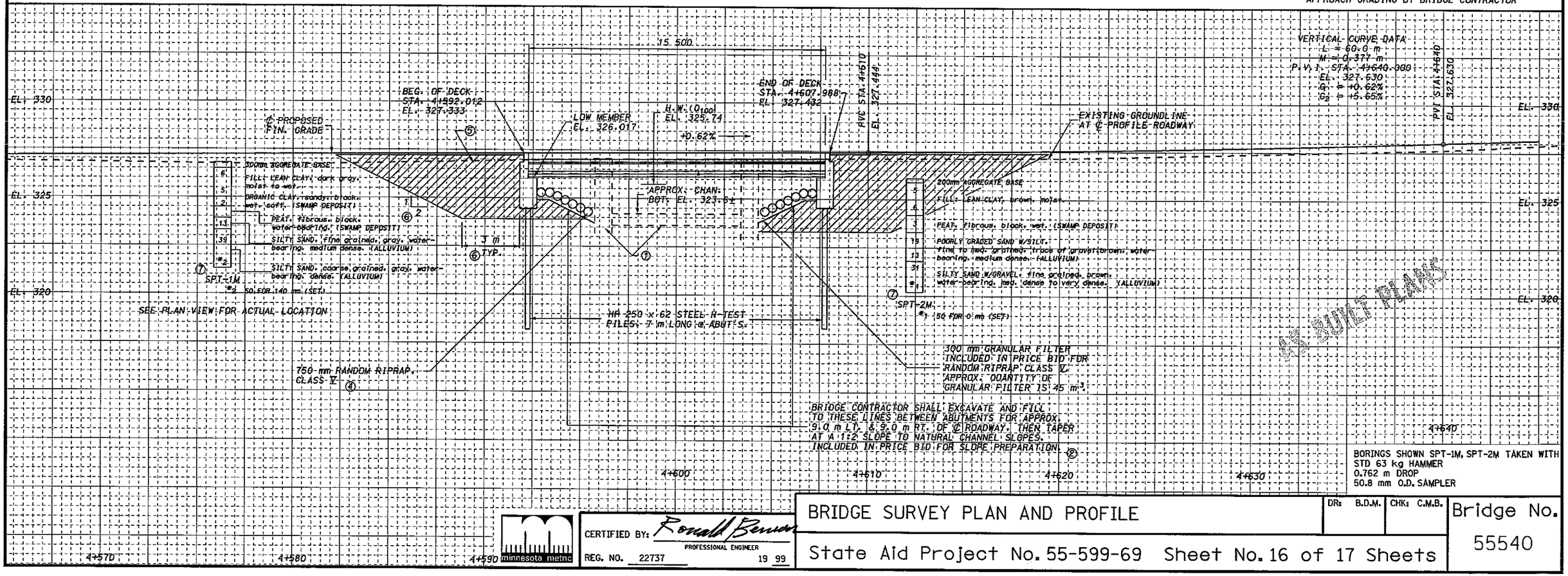
④ LIMITS OF RANDOM RIPRAP AS SHOWN ARE APPROX. ONLY. EXACT LIMITS ARE TO BE DETERMINED BY THE ENGINEER IN THE FIELD.

⑤ SELECT GRANULAR BORROW BEHIND ABUTMENTS WITH 1:2 SLOPE PLACED BETWEEN WINGWALL ENDS. SEE ABUTMENT SHEETS FOR REQUIREMENTS.

⑥ MEASURED PERPENDICULAR TO ℄ BEARING.

⑦ BLOW COUNTS ARE PER 0.305 m

APPROACH GRADING BY BRIDGE CONTRACTOR



BORINGS SHOWN SPT-1M, SPT-2M TAKEN WITH STD 63 kg HAMMER 0.762 m DROP 50.8 mm O.D. SAMPLER

minnesota metric

CERTIFIED BY: Ronald Benson PROFESSIONAL ENGINEER
REG. NO. 22737 19 99

BRIDGE SURVEY PLAN AND PROFILE

DR: B.D.M. CHK: C.M.B.

State Aid Project No. 55-599-69 Sheet No. 16 of 17 Sheets

Bridge No. 55540

SCHEDULE OF APPROXIMATE GRADING QUANTITIES

② ①	COMMON EXCAVATION	580	m^3
②	AGGREGATE BASE (CV) CLASS 5	144	m^3
②	COMMON BORROW (EV)	1873	m^3
③	TURF ESTABLISHMENT	1	LUMP SUM

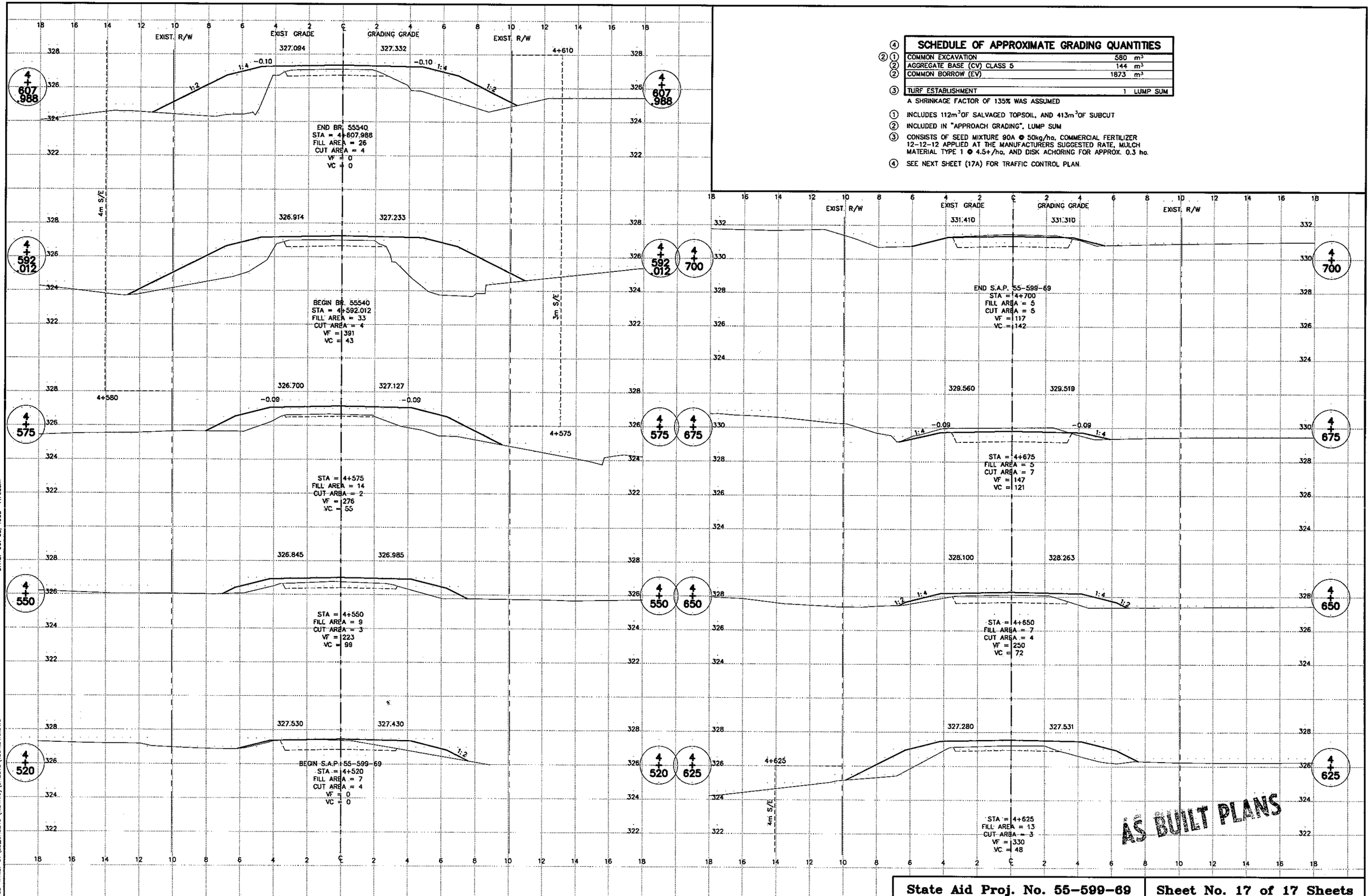
A SHRINKAGE FACTOR OF 135% WAS ASSUMED

① INCLUDES 112m^3 OF SALVAGED TOPSOIL, AND 413m^3 OF SUBCUT

② INCLUDED IN "APPROACH GRADING", LUMP SUM

③ CONSISTS OF SEED MIXTURE 90A @ 50kg/ha, COMMERCIAL FERTILIZER 12-12-12 APPLIED AT THE MANUFACTURERS SUGGESTED RATE, MULCH MATERIAL TYPE 1 @ 4.5+/ha, AND DISK ACHORING FOR APPROX. 0.3 ha.

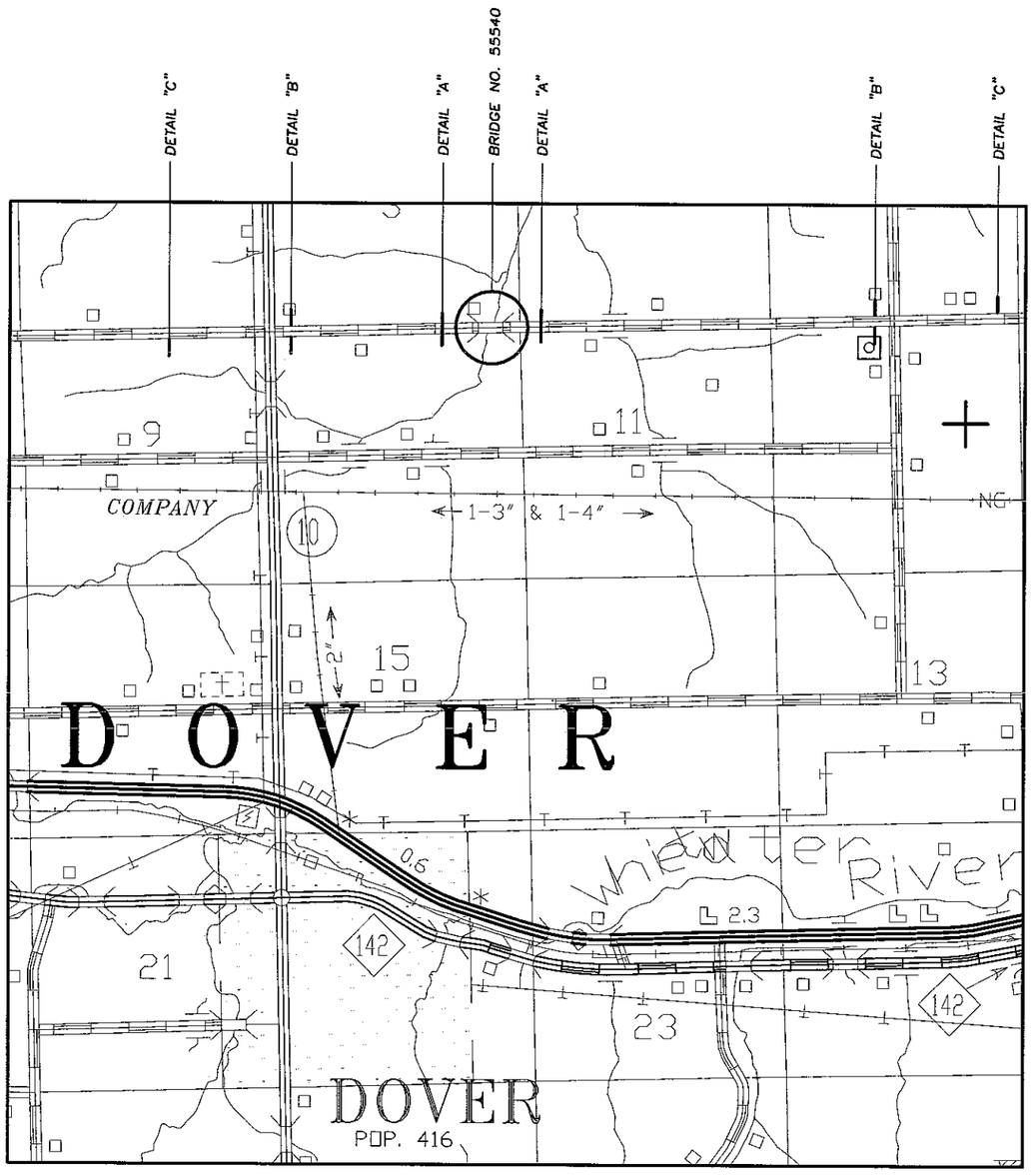
④ SEE NEXT SHEET (17A) FOR TRAFFIC CONTROL PLAN.



DATE: Oct 08, 1998 11:00am

FILE NAME: D:\EE_SHEETS (METRIC)\SHEETS\TEST.DWG.DWG

State Aid Proj. No. 55-599-69	Sheet No. 17 of 17 Sheets



TRAFFIC CONTROL DEVICES

ITEM	DESIGN NUMBER	F&I BY CONTRACTOR	SIZE (mm)	REMARKS
BARRICADES, TYPE III		10		
FLASHERS (TYPE A)		18		
ROAD CLOSED TO THRU...	R11-4	4	1525 x 760	LETTERING ~ BLACK ON ORANGE
BRIDGE CLOSED	R11-2A	2	1220 x 760	LETTERING ~ BLACK ON ORANGE
BRIDGE CLOSED AHEAD	W20-X4	2	1220 x 1220	LETTERING ~ BLACK ON ORANGE

NOTES:

ALL COSTS INCURRED FOR MATERIALS, INSTALLATION, AND MAINTENANCE OF TRAFFIC CONTROL AS SHOWN ON THIS SHEET, AND RELATED WORK WORK DURING CONSTRUCTION SHALL BE CONSIDERED AN INCIDENTAL EXPENSE.

ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MINNESOTA MANUAL FOR UNIFORM TRAFFIC CONTROL DEVICES AND TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS – FIELD MANUAL DATED JAN 1998.



DETAIL "A"



NOTE: FOR SETUP OF DETAIL "B" PLACE ONE BARRICADE ON EACH SIDE OF ROAD, ALLOWING THE PASSAGE OF A SINGLE VEHICLE ONLY

DETAIL "B"



NOTE: FOR SETUP OF DETAIL "C" PLACE ONE FLASHER (TYPE A) WITH "BRIDGE CLOSED AHEAD" SIGN.

DETAIL "C"

AS BUILT PLANS

minnesota metric

CERTIFIED BY Ronald Benson
PROFESSIONAL ENGINEER
REG. NO. 22737 19 99

MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 55540
TRAFFIC CONTROL

APPROVED:

S.A.P. 55-599-69	DRN.: PMI
SHEET 17A	CHK.: DGA

DATE: Dec 10, 1999 12:55pm

FILE NAME: H:\ERICKSON\OLMSTED\55540\55540-TC.DWG.DWG