93453

4-25-08 Letting, Item 059

RTE. NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 5	*	MASON	12	1
COVER SHEET				

* SEC. 05-00016-01-BR

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	SUMMARY OF QUANTITIES AND TYPICAL SECTION
3	PLAN AND PROFILE
4-5	CROSS SECTIONS
6	GENERAL PLAN AND ELEVATION
7	STANDARD CS-3317-40
8	STANDARD CB-3317-36
9	STANDARD CA-3317-10
10	STANDARD CR-TS1
11	STANDARD CN
12	STANDARD CX-1

STATE OF ILLINOIS

DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED LOCAL AGENCY IMPROVEMENT

HIGHWAY BRIDGE PROPGRAM

MASON COUNTY SHERMAN ROAD DISTRICT

EXISTING STRUCTURE NO. 063-3024

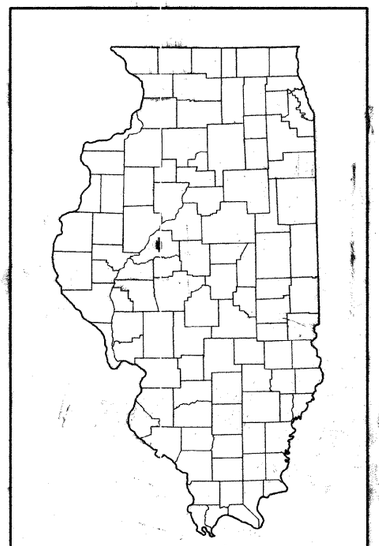
PROPOSED STRUCTURE NO. 063-3025

SEC. 05-00016-01-BR

PROJECT NO. BRS-0572(303)

JOB NO. C-96 -215-08

CH 5 (FAS 572) OVER SAMUELS DITCH, TRIBUTARY TO CRANE CREEK



LOCATION OF SECTION INDICATED THUS: ■

APPROVED Jan. 23 20 08

MASON COUNTY ENGINEER

APPROVED FEB 15, 20 08

DISTRICT ENGINEER OF CONSTRUCTION

APPROVED FEB 15 20 08

DISTRICT ENGINEER OF LOCAL ROADS & STREETS

RELEASING FOR BID BASED ON LIMITED REVIEW FEB 15 20 08

DEPUTY DIRECTOR OF HIGHWAYS, REGION FOUR ENGINEER

STATE OF ILLINOIS

DEPARTMENT OF TRANSPORTATION

LIST OF HIGHWAY STANDARDS

STD. 280001-04	TEMP. EROS. CONTROL SYSTEM
STD. 635006-02	REFLECTOR AND TERMINAL MARKER PLACEMENT
STD. 635011-01	REFLECTOR MARKER AND MOUNTING DETAILS
STD. 701006-02	OFF ROAD OPERATION - 2 LANE, 2 WAY
STD. 701011-01	OFF ROAD MOVING OPERATION - 2 LANE, 2 WAY
STD. 701301-02	SHORT-TERM LANE CLOSURE - 2 LANE, 2 WAY
STD. 701901	TRAFFIC CONTROL DEVICES
STD. BLR 21-7	TRAFFIC CONTROL DEVICES - LOCAL ROAD
STD. BLR 23-2	TRAFFIC BARRIER TERMINAL, TYPE 1
STD. BLR 26	STEEL PLATE BEAM GUARDRAIL, 27 1/2" HGT.
STD. BLR 27	TRAFFIC BARRIER TERMINAL, TYPE 5A

JOINT UTILITY LOCATING INFORMATION FOR EXCAVATIONS PHONE 1-800-892-0123

UTILITY COMPANIES

AMERENCIPS	ELECTRIC	BEARDSTOWN, ILLINOIS
CASS TELEPHONE	TELEPHONE	VIRGINIA, ILLINOIS

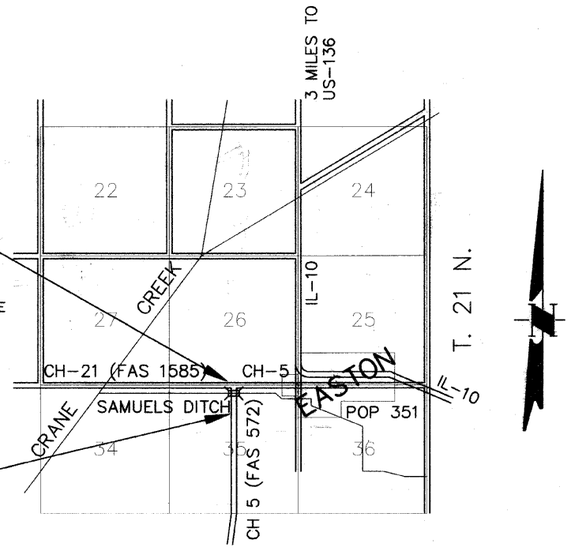
ROADWAY CLASSIFICATION: COLLECTOR/RURAL
2005 ADT: 375
DESIGN SPEED: 30
DESIGN GUIDELINES: RURAL
VARIANCES GRANTED: NONE
COMMITMENTS: NONE

BEGIN IMPROVEMENT STA. 43+00.00

STA 43+50.00 - CENTER OF PROPOSED STRUCTURE
41.50' B/B ABUTMENT, 1 SPAN PRECAST PRESTRESSED CONCRETE DECK BEAMS (17" DP.) ON SPILL-THRU ABUTMENTS, NO SKEW

REMOVE EXISTING STRUCTURE, SAME LOCATION
1 SPAN, 28'-0" B/B ABUTMENT POURED REINFORCED CONCRETE DECK OVER CLOSED TIMBER-PILE ABUTMENT, STRAIGHT WINGWALLS, NO SKEW

END IMPROVEMENT STA. 45+00.00



LOCATION MAP

NO SCALE

TOTAL AND NET LENGTH OF PROJECT = 200.00 FT. = 0.038 MI.
STRUCTURE LENGTH (BK.-BK. ABUT.) = 41.50 FT.

SCALES

PLAN	0 20'
PROFILE HORIZ.	0 20'
PROFILE VERT.	0 5'
CROSS SECTION HORIZ.	0 5'
CROSS SECTION VERT.	0 5'

CONTRACT NO. 93453

DONALD J. KULEK
LICENSED PROFESSIONAL ENGINEER
STATE OF ILLINOIS NO. 062-36321
LICENSE EXPIRES NOVEMBER 30, 2009

Donald J. Kulek 1/7/08
DONALD J. KULEK DATE

SEAL: DONALD J. KULEK 062-36321 LICENSED PROFESSIONAL ENGINEER OF ILLINOIS

PLANS PREPARED BY:
POEPPING, STONE, BACH & ASSOCIATES, INC.
100 SOUTH 54TH STREET
QUINCY, ILLINOIS 62306

PH.: (217) 223-4605
FAX: (217) 223-1546
E-MAIL: PSBA@PSBA.COM
WWW.PSBA.COM

93453

RTE. NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 5	*	MASON	12	2

SUMMARY OF QUANTITIES

* SEC. 05-00016-01-BR

RATES OF APPLICATION TABLE

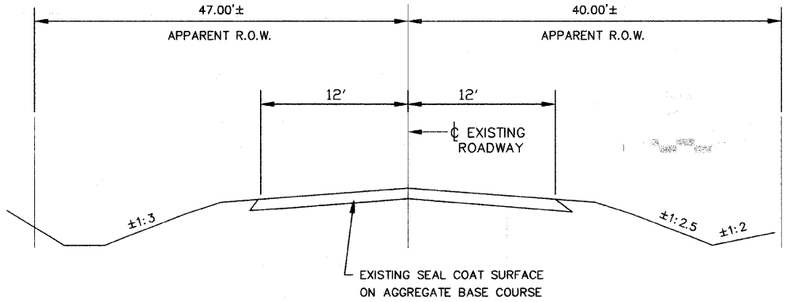
THE FOLLOWING APPLICATION RATES HAVE BEEN USED TO DETERMINE PLAN QUANTITIES:

BITUMINOUS MATERIALS (PRIME COAT)	
PAVEMENT	0.1 GAL/SQ YD
AGGREGATE	0.5 GAL/SQ YD
BITUMINOUS MATERIALS (COVER AND SEAL COATS)	0.3 GAL/SQ YD
SEAL COAT AGGREGATE	20 LBS/SQ YD
COVER COAT AGGREGATE	20 LBS/SQ YD
AGGREGATE BASES	2.05 TON/CU YD
RIPRAP	1.50 TONS/CU YD

GENERAL NOTES & COMMITMENTS

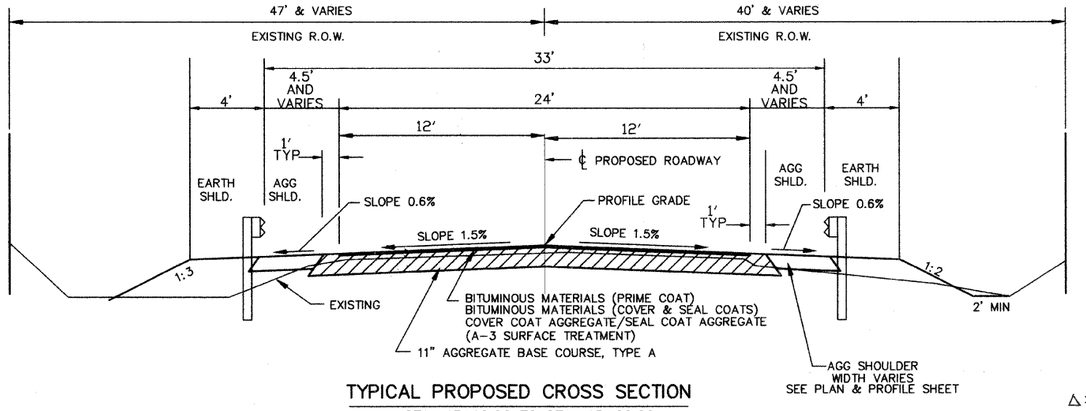
WHERE SECTION OR SUBSECTION MONUMENTS ARE ENCOUNTERED THE ENGINEER SHALL BE NOTIFIED BEFORE SUCH MONUMENTS ARE MOVED. THE CONTRACTOR SHALL PROTECT AND CAREFULLY PRESERVE ALL PROPERTY MARKS AND MONUMENTS UNTIL THE OWNER OR AN AUTHORIZED SURVEYOR OR AGENT HAS WITNESSED OR OTHERWISE REFERENCED THEIR LOCATION

THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE LOCATION AND ELEVATION OF ALL EXISTING UTILITIES AND TO NOTIFY ALL UTILITY COMPANIES PRIOR TO BEGINNING OF CONSTRUCTION. THIS SHALL BE INCIDENTAL TO THE CONTRACT.



TYPICAL EXISTING CROSS SECTION – CH 5

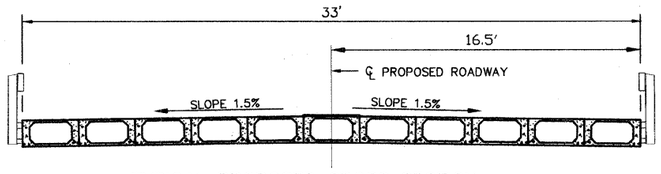
LOOKING UPSTATION



TYPICAL PROPOSED CROSS SECTION

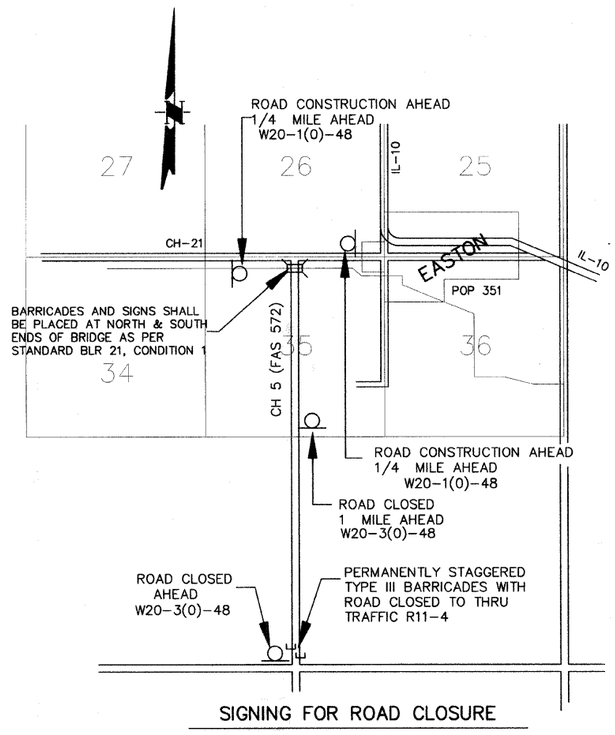
STA. 43+12.00 TO STA. 45+00.00
(BRIDGE OMISSION: STA. 43+29.25 TO STA. 43+70.75)
(NEW A3 SURFACE TREATMENT ONLY: STA. 43+00.00 TO STA. 43+12.00)

LOOKING UPSTATION

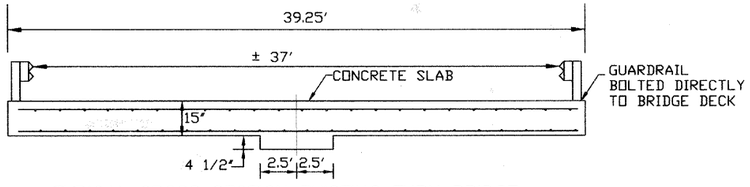


TYPICAL PROPOSED CROSS SECTION

BRIDGE – STA. 43+29.25 TO STA. 43+70.75



SIGNING FOR ROAD CLOSURE



TYPICAL CROSS SECTION EXISTING THRU BRIDGE

SUMMARY OF QUANTITIES

ITEM	CODE NUM	UNIT	QUANTITY
EARTH EXCAVATION	20200100	CU YD	115
CHANNEL EXCAVATION	20300100	CU YD	177
* FURNISHED EXCAVATION	20400800	CU YD	67
* SEEDING, CLASS 2 (SPECIAL)	25001000	ACRE	0.3
* RIPRAP, SPECIAL	28101700	TON	260
AGGREGATE BASE COURSE, TYPE A	35100100	TON	287
BITUMINOUS MATERIALS (PRIME COAT)	40300100	GALLON	355
BITUMINOUS MATERIALS (COVER AND SEAL COATS)	40300300	GALLON	640
COVER COAT AGGREGATE	40300500	TON	14
SEAL COAT AGGREGATE	40300600	TON	7
AGGREGATE SHOULDERS, TYPE B	48101200	TON	77
* REMOVAL OF EXISTING STRUCTURES	50100100	EACH	1
STRUCTURE EXCAVATION	50200100	CU YD	41
CONCRETE STRUCTURES	50300225	CU YD	22.0
CONCRETE ENCASEMENT	50300280	CU YD	3.2
PRECAST PRESTRESSED CONCRETE DECK BEAMS (17" DEPTH)	50400305	SQ FT	1320
* REINFORCEMENT BARS	50800105	POUND	2860
STEEL RAILING, TYPE S1	50900205	FOOT	80
FURNISHING METAL SHELL PILES 12"	51201005	FOOT	410
DRIVING PILES	51202305	FOOT	410
TEST PILE METAL SHELLS	51203200	EACH	1
NAME PLATES	51500100	EACH	1
△ TRAFFIC BARRIER TERMINAL, TYPE 5A	63100075	EACH	2
△ TRAFFIC BARRIER TERMINAL, TYPE 1, SPECIAL (TANGENT)	63100167	EACH	2
△* TRAFFIC BARRIER TERMINAL, TYPE 5A (SPECIAL)	63100205	EACH	2
△* STEEL PLATE BEAM GUARDRAIL (SHORT RADIUS)	63300725	FOOT	75
MOBILIZATION	67100100	L SUM	1
* TRAFFIC CONTROL AND PROTECTION (SPECIAL)	70101800	L SUM	1
△* GUARDRAIL MARKERS, TYPE A	78200410	EACH	10
△* TERMINAL MARKER – DIRECT APPLIED	78201000	EACH	2
△* TRAFFIC BARRIER TERMINAL, TYPE 1	LR631020	EACH	2

* SEE SPECIAL PROVISIONS
△ SPECIALTY ITEMS

CONSTRUCTION TYPE CODE: X080-2A

NOTE:
THE PAY ITEM DRIVING PILES INCLUDES THE COST OF FILLING THOSE PILES.

SUMMARY OF QUANTITIES & TYPICAL SECTIONS

CH 5 (FAS 572)
OVER SAMUELS DITCH

SEC. 05-00016-01-BR
MASON COUNTY
STATION 43+50.00

RTE. NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 5	*	MASON	12	3

PLAN AND PROFILE

* SEC. 05-00016-01-BR

GUARDRAIL

STA 43+30.00 LT ATTACH TRAFFIC BARRIER TERMINAL, TYPE 5A SPECIAL TO BRIDGE RAILING.
INSTALL TYPE 5A SPECIAL ON SHORT RADIUS TO STA 100+24.50, 18.16 RT (CH 21 STATIONING.)
INSTALL STEEL PLATE BEAM GUARDRAIL, SHORT RADIUS TO STA 100+47.20, 14.16' RT.
INSTALL TRAFFIC BARRIER TERMINAL TYPE 1 FROM STA 100+47.20, 14.16 FT RT TO STA 100+72.20, 18.16 FT RT.

STA 43+30.00 RT ATTACH TRAFFIC BARRIER TERMINAL, TYPE 5A SPECIAL TO BRIDGE RAILING.
INSTALL TYPE 5A SPECIAL ON SHORT RADIUS TO STA 99+76.30, 17.63 RT (CH 21 STATIONING.)
INSTALL STEEL PLATE BEAM GUARDRAIL, SHORT RADIUS TO STA 99+53.20, 12.54' RT.
INSTALL TRAFFIC BARRIER TERMINAL TYPE 1 FROM STA 99+53.20, 12.54 FT RT TO STA 99+28.20, 16.54 FT RT.

STA 44+33.25 RT INSTALL TRAFFIC BARRIER TERMINAL, TYPE 1 SPECIAL (TANGENT) TO STA 43+83.25, 16.50 FT RT.
STA 43+83.25, 16.50 FT RT TO STA 43+70.00, 16.50 FT RT - INSTALL TRAFFIC BARRIER TERMINAL TYPE 5A.
STA 43+70.00, 16.50 FT RT - ATTACH TRAFFIC BARRIER TERMINAL, TYPE 5A TO BRIDGE RAILING.

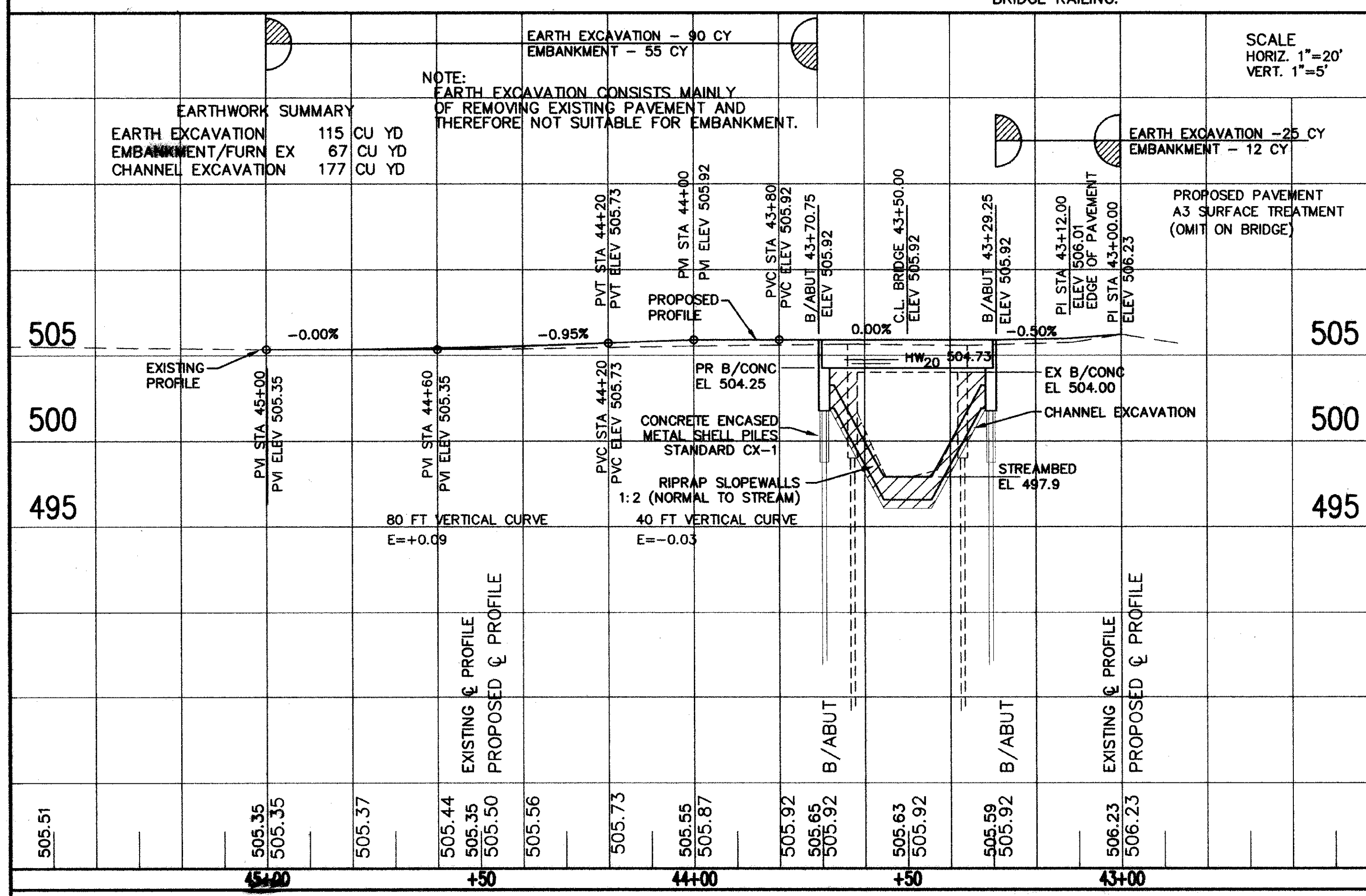
STA 44+33.25 LT INSTALL TRAFFIC BARRIER TERMINAL, TYPE 1 SPECIAL (TANGENT) TO STA 43+83.25, 16.50 FT LT.
STA 43+83.25, 16.50 FT LT TO STA 43+70.00, 16.50 FT LT - INSTALL TRAFFIC BARRIER TERMINAL TYPE 5A.
STA 43+70.00, 16.50 FT LT - ATTACH TRAFFIC BARRIER TERMINAL, TYPE 5A TO BRIDGE RAILING.

T.B.M. #1 - RAILROAD SPIKE IN POWER POLE STA. 100+71, 44.0' LT, ELEV. - 503.89

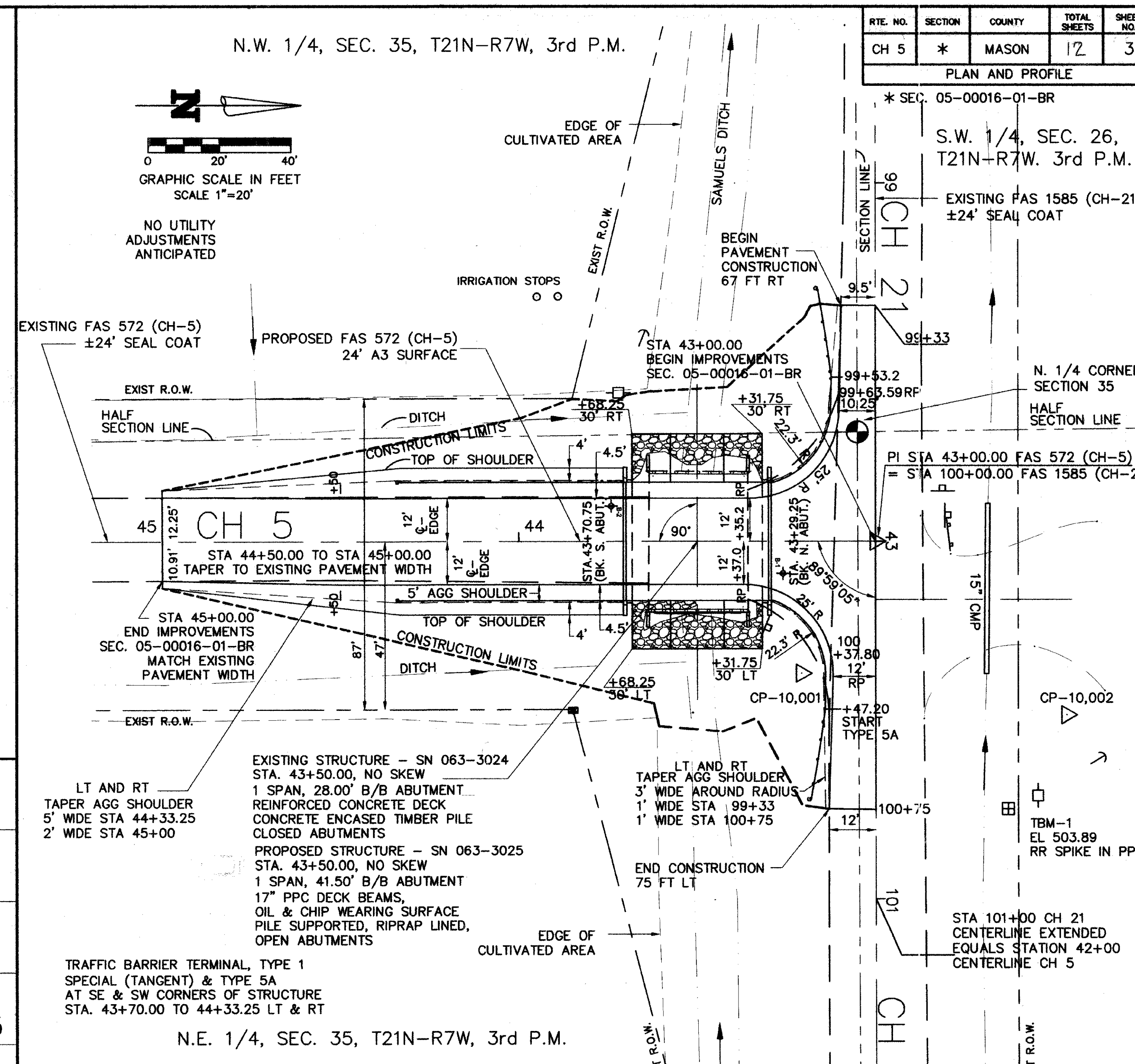
EARTHWORK SUMMARY

EARTH EXCAVATION	115	CU YD
EMBANKMENT/FURN EX	67	CU YD
CHANNEL EXCAVATION	177	CU YD

NOTE:
EARTH EXCAVATION CONSISTS MAINLY OF REMOVING EXISTING PAVEMENT AND THEREFORE NOT SUITABLE FOR EMBANKMENT.

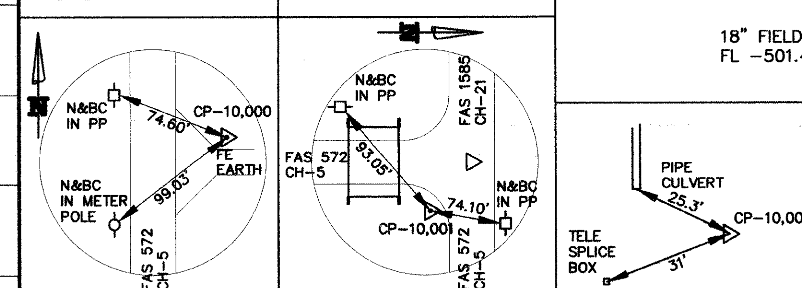


EARTH EXCAVATION - 90 CY
EMBANKMENT - 55 CY
EARTH EXCAVATION - 25 CY
EMBANKMENT - 12 CY
SCALE HORIZ. 1"=20' VERT. 1"=5'
PROPOSED PAVEMENT A3 SURFACE TREATMENT (OMIT ON BRIDGE)
505
500
495
-0.00%
-0.95%
0.00%
-0.50%
EXISTING PROFILE
PROPOSED PROFILE
PVI STA 45+00 PVI ELEV 505.35
PVI STA 44+60 PVI ELEV 505.35
PVT STA 44+20 PVT ELEV 505.73
PVC STA 44+20 PVC ELEV 505.73
PVI STA 44+00 PVI ELEV 505.92
PVC STA 43+80 PVC ELEV 505.92
B/ABUT 43+70.75 ELEV 505.92
C.L. BRIDGE 43+50.00 ELEV 505.92
B/ABUT 43+29.25 ELEV 505.92
PI STA 43+12.00 ELEV 506.01 EDGE OF PAVEMENT
PI STA 43+00.00 ELEV 506.23
HW20 504.73
PR B/CONC EL 504.25
EX B/CONC EL 504.00
CHANNEL EXCAVATION
CONCRETE ENCASED METAL SHELL PILES STANDARD CX-1
RIPRAP SLOPEWALLS 1:2 (NORMAL TO STREAM)
STREAMBED EL 497.9
80 FT VERTICAL CURVE E=+0.09
40 FT VERTICAL CURVE E=-0.03
EXISTING ℄ PROFILE
PROPOSED ℄ PROFILE
B/ABUT
505.51
505.35 505.35
505.37
505.44 505.35 505.50
505.56
505.73
505.55 505.87
505.92
505.65 505.92
505.63 505.92
505.59 505.92
506.23 506.23
45+00
+50
44+00
+50
43+00



N.W. 1/4, SEC. 35, T21N-R7W, 3rd P.M.
0 20' 40'
GRAPHIC SCALE IN FEET SCALE 1"=20'
NO UTILITY ADJUSTMENTS ANTICIPATED
IRRIGATION STOPS
EDGE OF CULTIVATED AREA
SAMUELS DITCH
EXIST R.O.W.
BEGIN PAVEMENT CONSTRUCTION 67 FT RT
S.W. 1/4, SEC. 26, T21N-R7W. 3rd P.M.
EXISTING FAS 1585 (CH-21) ±24' SEAL COAT
SECTION LINE
CH 21
99
9.5'
99+33
EXISTING FAS 572 (CH-5) ±24' SEAL COAT
PROPOSED FAS 572 (CH-5) 24' A3 SURFACE
STA 43+00.00 BEGIN IMPROVEMENTS SEC. 05-00016-01-BR
99+53.2
99+63.59RP
10.25'
N. 1/4 CORNER, SECTION 35
HALF SECTION LINE
PI STA 43+00.00 FAS 572 (CH-5) = STA 100+00.00 FAS 1585 (CH-21)
EXIST R.O.W.
HALF SECTION LINE
DITCH
CONSTRUCTION LIMITS
TOP OF SHOULDER
+68.25 30' RT
+31.75 30' RT
CH 5
45
44
43
STA 44+50.00 TO STA 45+00.00 TAPER TO EXISTING PAVEMENT WIDTH
5' AGG SHOULDER
STA.43+70.75 (BK. S. ABUT.)
STA. 43+29.25 (BK. N. ABUT.)
90°
89°59'05"
25' R
22.3'
15" CMP
STA 45+00.00 END IMPROVEMENTS SEC. 05-00016-01-BR MATCH EXISTING PAVEMENT WIDTH
TOP OF SHOULDER
CONSTRUCTION LIMITS
DITCH
+68.25 30' LT
+31.75 30' LT
100
+37.80
12'
RP
CP-10,001
CP-10,002
+47.20 START TYPE 5A
LT AND RT TAPER AGG SHOULDER 5' WIDE STA 44+33.25 2' WIDE STA 45+00
EXISTING STRUCTURE - SN 063-3024 STA. 43+50.00, NO SKEW 1 SPAN, 28.00' B/B ABUTMENT REINFORCED CONCRETE DECK CONCRETE ENCASED TIMBER PILE CLOSED ABUTMENTS
PROPOSED STRUCTURE - SN 063-3025 STA. 43+50.00, NO SKEW 1 SPAN, 41.50' B/B ABUTMENT 17" PPC DECK BEAMS, OIL & CHIP WEARING SURFACE PILE SUPPORTED, RIPRAP LINED, OPEN ABUTMENTS
LT AND RT TAPER AGG SHOULDER 3' WIDE AROUND RADIUS 1' WIDE STA 99+33 1' WIDE STA 100+75
100+75
12'
TBM-1 EL 503.89 RR SPIKE IN PP
END CONSTRUCTION 75 FT LT
EDGE OF CULTIVATED AREA
TRAFFIC BARRIER TERMINAL, TYPE 1 SPECIAL (TANGENT) & TYPE 5A AT SE & SW CORNERS OF STRUCTURE STA. 43+70.00 TO 44+33.25 LT & RT
101
STA 101+00 CH 21 CENTERLINE EXTENDED EQUALS STATION 42+00 CENTERLINE CH 5
N.E. 1/4, SEC. 35, T21N-R7W, 3rd P.M.
CH 5
EXIST R.O.W.
18" FIELD TILE FL -501.43
EXISTING FAS 572 (CH-5) 24' SEAL COAT 8' EARTH SHOULDER
EDGE OF PAVEMENT
SECTION LINE
102
S.E. 1/4, SEC. 26, T21N-R7W. 3rd P.M.

STA 43+00 N: 1298451.7077 E: 2383360.6715	STA 99+00 N: 1298451.6731 E: 2383260.5506
STA 45+00 N: 1298251.7077 E: 2383360.6715	STA 101+00 N: 1298451.7415 E: 2383460.5506



CONTROL POINT 10,000
5/8" REBAR W/ CAP
N: 1297174.3074
E: 2383401.0415
ELEV. 506.093

CONTROL POINT 10,001
5/8" REBAR W/ CAP
N: 1298430.9276
E: 2383397.4378
ELEV. 504.987

CONTROL POINT 10,002
5/8" REBAR W/ CAP
N: 1298505.36293
E: 2383409.16302
ELEV. 503.13

PLAN & PROFILE

CH 5 (FAS 572)
OVER SAMUELS DITCH

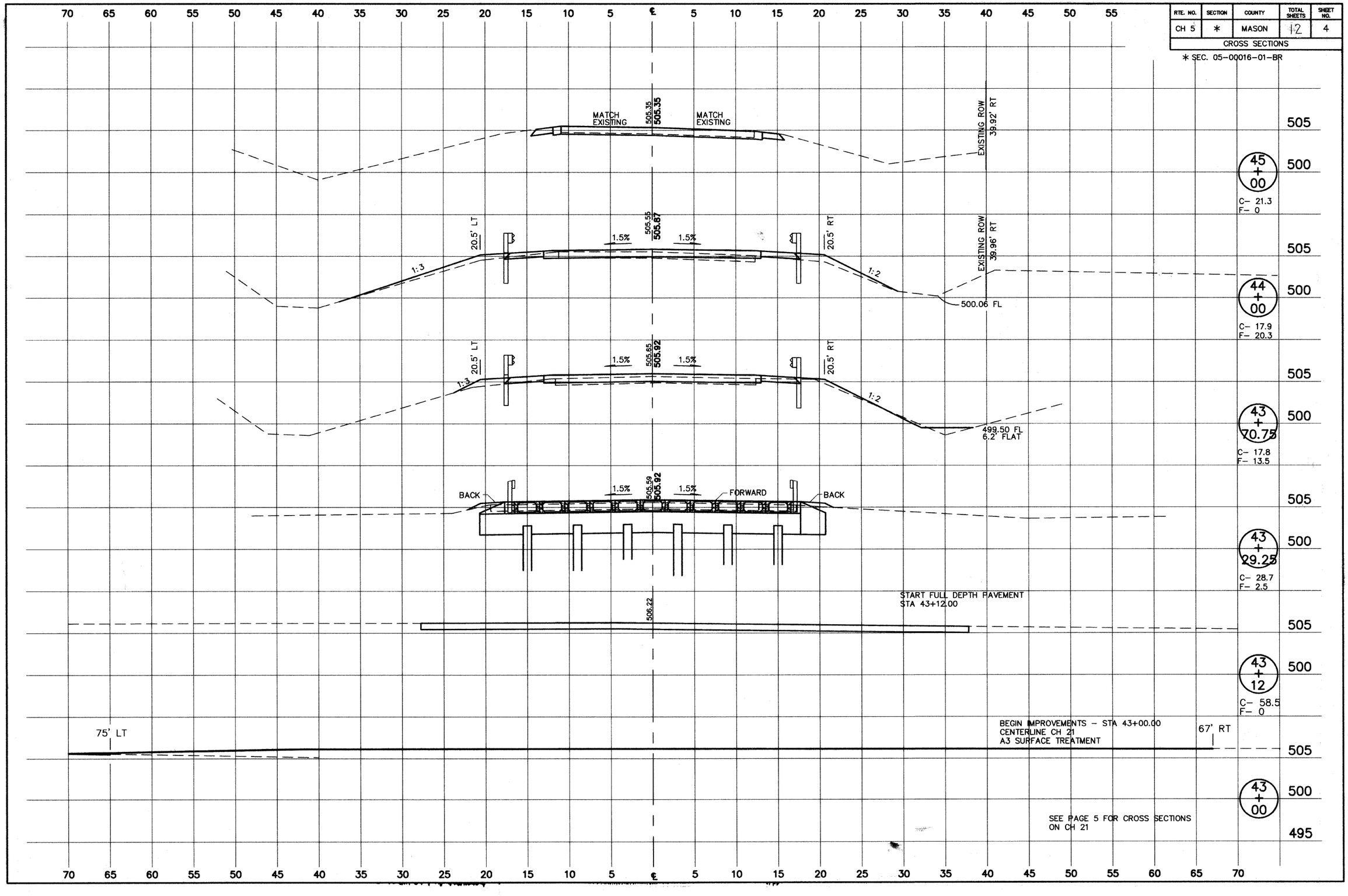
SEC. 05-00016-01-BR
MASON COUNTY
STATION 43+50.00

93453

RTE. NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 5	*	MASON	12	4

CROSS SECTIONS

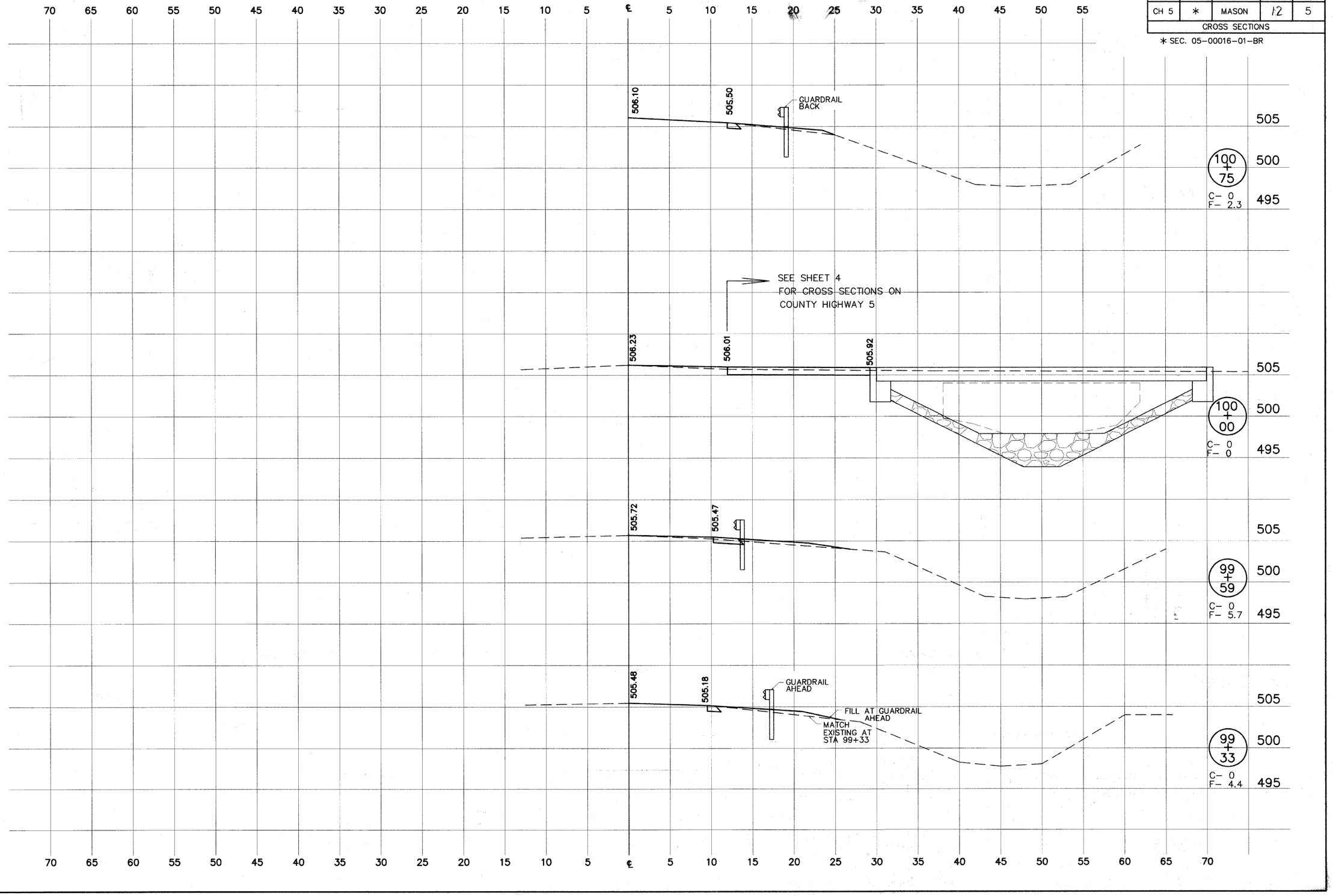
* SEC. 05-00016-01-BR



93459

RTE. NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 5	*	MASON	12	5
CROSS SECTIONS				

* SEC. 05-00016-01-BR



93453

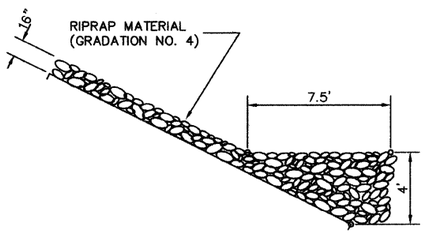
RTE. NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 5	*	MASON	12	6
GENERAL PLAN & ELEVATION				

* SEC. 05-00016-01-BR

T.B.M. #1 – RAILROAD SPIKE IN POWER POLE
STA. 100+71, 44.0' LT, ELEV. – 503.89

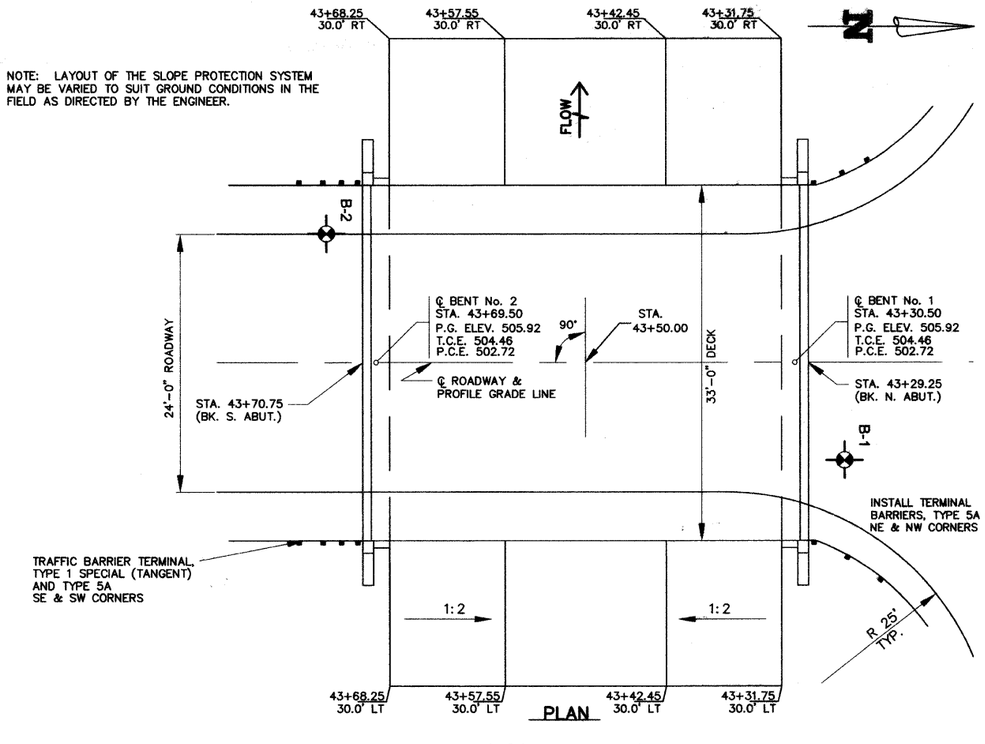
EXISTING STRUCTURE – SN 063-3024
STA. 43+50.00, NO SKEW
1 SPAN, 28.00' B/B ABUTMENT
REINFORCED CONCRETE DECK
CONCRETE ENCASED TIMBER PILE
CLOSED ABUTMENTS

SALVAGE– CONTRACTOR MAY SALVAGE ALL MATERIALS.



TYPICAL RIPRAP TREATMENT

	RIPRAP, SPECIAL
SOUTH ABUTMENT:	130 TON
NORTH ABUTMENT:	130 TON
TOTAL	260 TON



PLAN

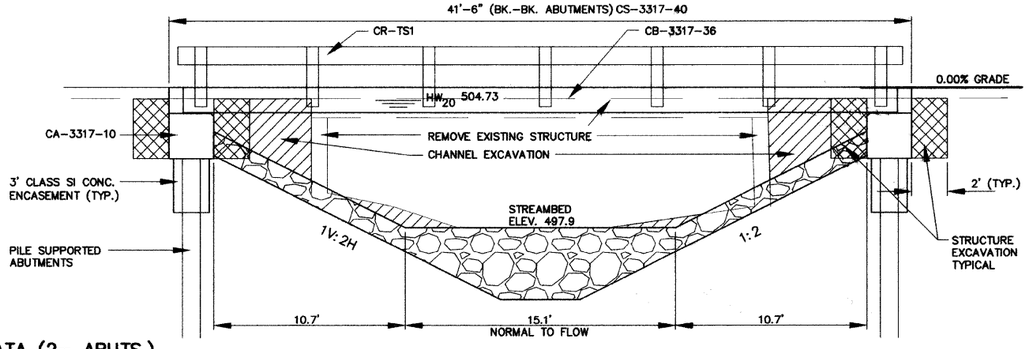
NOTE: LAYOUT OF THE SLOPE PROTECTION SYSTEM MAY BE VARIED TO SUIT GROUND CONDITIONS IN THE FIELD AS DIRECTED BY THE ENGINEER.

GENERAL NOTES

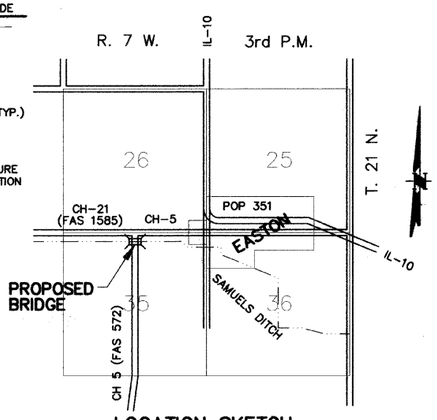
1. CLASS SI CONCRETE SHALL BE USED THROUGHOUT EXCEPT IN THE DECK BEAMS
2. THE CONTRACTOR SHALL DRIVE 1 TEST PILE, AS SPECIFIED IN A PERMANENT LOCATION AS DIRECTED BY THE ENGINEER BEFORE ORDERING THE REMAINING PILES. THE TEST PILE SHALL BE DRIVEN TO 110% OF THE NOMINAL REQUIRED BEARING AS SPECIFIED IN THE PILE DATA.
3. SEE SPECIAL PROVISIONS FOR BORING LOGS.
4. ALL GROUT ON THIS PROJECT SHALL BE NON-SHRINK.
5. REINFORCEMENT BARS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A706 GRADE 60. SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB. PIERS	SUB. ABUTS.	TOTAL
CHANNEL EXCAVATION	CU YD				177
* RIPRAP, SPECIAL	TON				260
* REMOVAL OF EXISTING STRUCTURE	EACH				1
STRUCTURE EXCAVATION	CU YD			41	41
CONCRETE STRUCTURES	CU YD			22.0	22.0
CONCRETE ENCASEMENT	CU YD			3.2	3.2
PRECAST PRESTRESSED CONC. DECK. BM. 17" DEPTH	SQ FT	1320			1320
* REINFORCEMENT BARS	POUND			2860	2860
STEEL RAILING, TYPE S1	FOOT	80			80
FURNISHING METAL SHELL PILES 12"	FOOT			410	410
DRIVING PILES	FOOT			410	410
TEST PILE METAL SHELL	EACH				1
NAME PLATES	EACH				1
* SEE SPECIAL PROVISIONS					



ELEVATION



LOCATION SKETCH

INDEX OF STANDARDS

STANDARD CS-3317-40
STANDARD CB-3317-36
STANDARD CA-3317-10
STANDARD CR-TS1
STANDARD CN
STANDARD CX-1

SAMUELS DITCH
BUILT 20___ BY
MASON COUNTY
SEC 05-00016-01-BR
FAS RT 572 STATION 43+50.00
STR. NO. 063-3025 LOADING HS-20

LETTERING FOR NAME PLATE

LOCATE NAME PLATE AT NORTHWEST CORNER OF BRIDGE (SEE STD. CN)

PILE DATA (2– ABUTS.)

TYPE:	* 12" METAL SHELL 0.25 INCH WALL THICKNESS
NOMINAL REQUIRED BEARING:	150 KIPS
ALLOWABLE RESISTANCE AVAILABLE:	50 KIPS
ESTIMATED LENGTH:	(BENT 1–35', BENT 2–40')
NUMBER REQUIRED:	12 (INCLUDES 1 TEST PILE LOCATED IN BENT #2)

* METAL SHELL PILES SHALL BE ACCORDING TO ASTM A252 GRADE 3

DESIGN SPECIFICATIONS

2002 AASHTO STANDARD SPECIFICATIONS– 17TH ED.
AASHTO HS20-44 LOADING.
LOAD FACTOR DESIGN

THIS STRUCTURE HAS BEEN DESIGNED TO BE STABLE FOR SCOUR CONDITIONS IN ACCORDANCE WITH THE FHWA TECHNICAL ADVISORY T-1540.23 "EVALUATING SCOUR AT BRIDGES" AND HYDRAULIC ENGINEER CIRCULAR 18 – EVALUATING SCOUR AT BRIDGES.

SEISMIC DATA
SEISMIC PERFORMANCE CATEGORY (SPC) = A
BEDROCK ACCELERATION COEFFICIENT (A) = 4.5%g
SITE COEFFICIENT (S) = 1.2

WATERWAY INFORMATION

DRAINAGE AREA = 6.1 SQ. MI. LOW GRADE ELEV. = 505.35 AT STA. 44+50.00

FLOOD	FREQ. YR.	Q C.F.S.	OPENING SQ. FT. EXIST.	OPENING SQ. FT. PROP.	NATURAL H.W.E.	HEAD-FT. EXIST.	HEAD-FT. PROP.	HEADWATER EL. EXIST.	HEADWATER EL. PROP.
DESIGN	20	1,453	112	164	504.73	2.05	1.25	506.78	505.98
BASE	100	2,231	112	164	505.16	1.91	1.87	507.07	507.03
OVERTOPPING									
MAX. CALC	500	3,011	112	164	505.46	1.84	1.81	507.30	507.27

CHARLES S. BACH JR. 081-004116 LICENSED STRUCTURAL ENGINEER OF QUINCY ILLINOIS

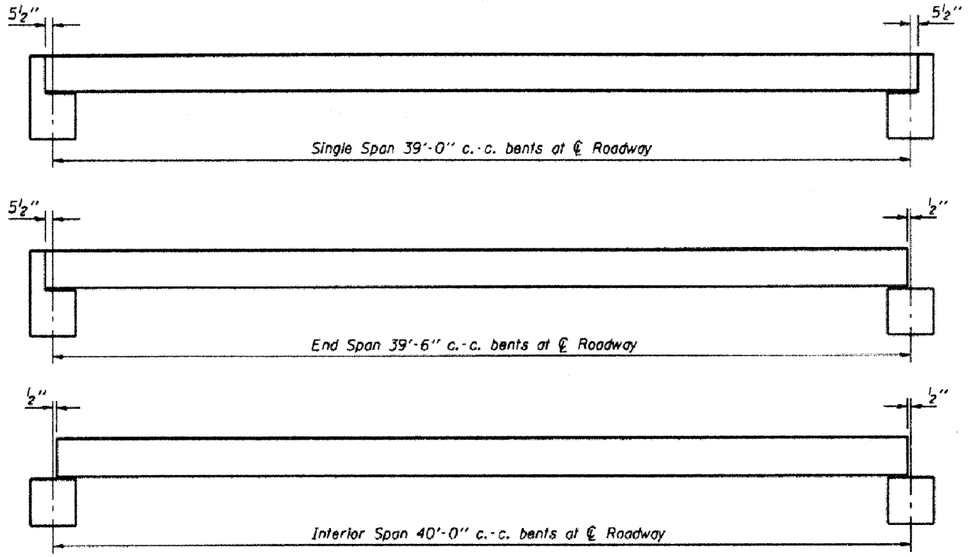
CHARLES S. BACH, JR.
LICENSED STRUCTURAL ENGINEER
QUINCY, ILLINOIS
EXPIRES: 11/30/08

I CERTIFY THESE STANDARD BRIDGE PLANS FOR FOUNDATION TREATMENT ONLY.

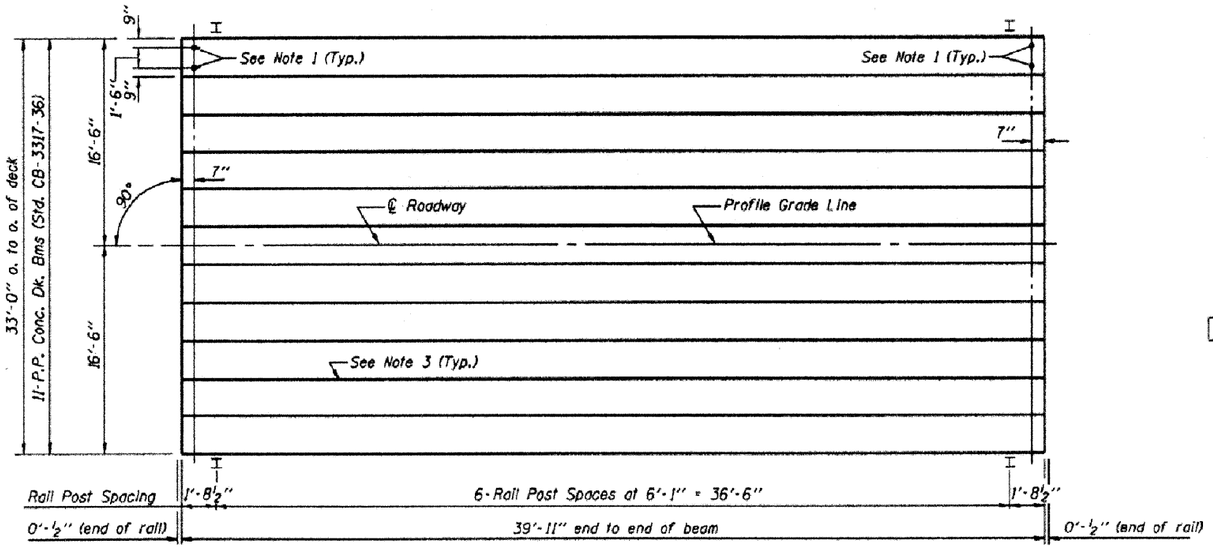
Charles S. Bach 11/07/08
SIGNATURE DATE

GENERAL PLAN & ELEVATION

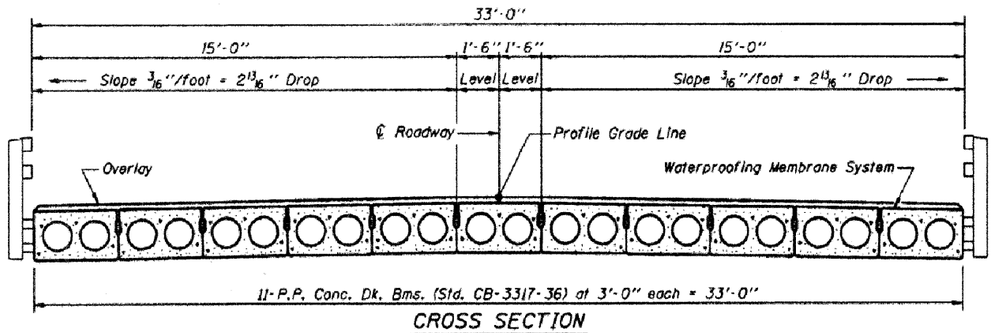
CH 5 (FAS 572)
OVER SAMUELS DITCH
SHERMAN TOWNSHIP
SEC. 05-00016-01-BR
MASON COUNTY
STATION 43+50.00



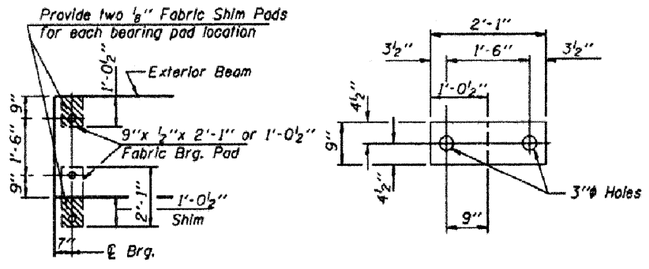
TYPICAL ELEVATIONS



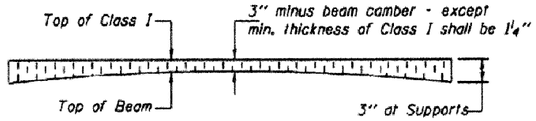
PLAN



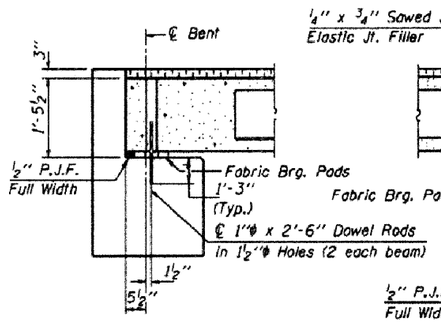
CROSS SECTION



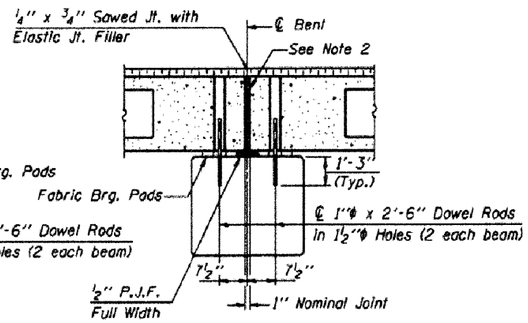
½" FABRIC BRG. PAD DETAILS



PROFILE OF OVERLAY



SECTION AT ABUTS.
(Along ℄ Beams)



SECTION AT PIERS
(Along ℄ Beams)

NOTES

1. After beams have been erected, holes shall be drilled into substructure and anchor dowels placed. Dowel holes shall be filled with non-shrink grout to top of beam and allowed to cure min. 24 hrs. prior to grouting the shear keys.
2. Nominal 1" joint at ℄ Pier shall be filled with non-shrink grout.
3. Longitudinal keys shall be grouted.

QUANTITIES FOR ONE SPAN

P.P. Conc. Dk. Bm. 17" Dp.	1320 Sq. Ft.
Steel Railing	80 Ft.
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

Note: Quantity of overlay for one span = 20.6 Tons

Illinois Department of Transportation

PASSED APRIL 4, 2005
Thomas S. Domagalski
Engineer of Bridge Design

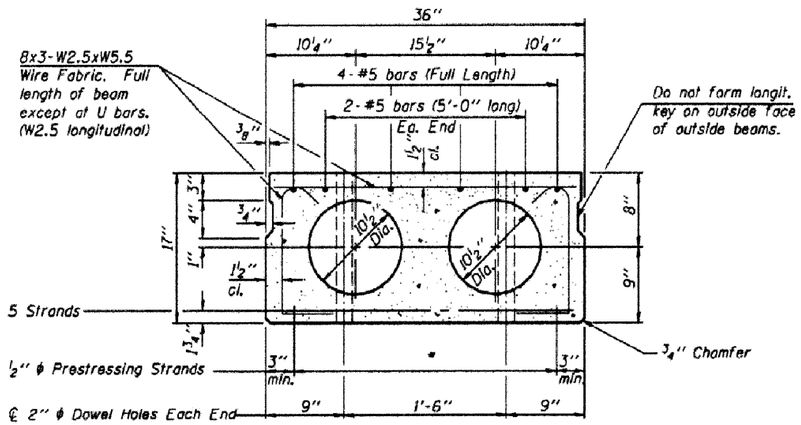
APPROVED APRIL 4, 2005
Ralph E. Anderson
Engineer of Bridges and Structures

ISSUED 4-4-2005

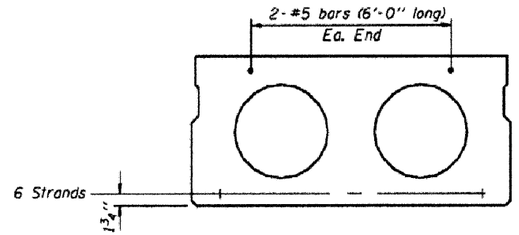
P.P.C. DECK BEAM SUPERSTRUCTURE

33' RDWY.	17" BMS.	40' SPAN	0° SKEW

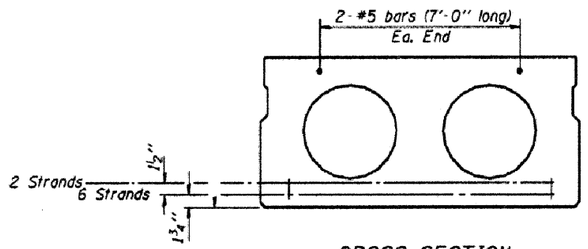
STANDARD CS-3317-40



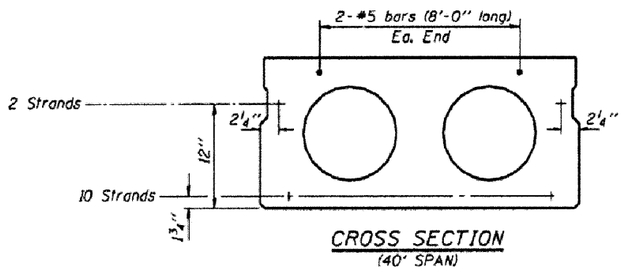
CROSS SECTION
(25' SPAN)



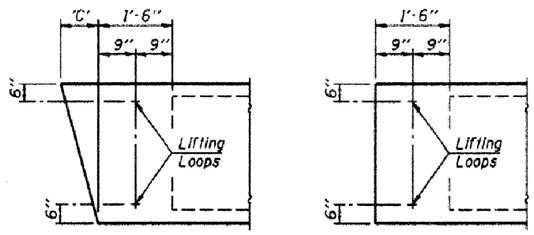
CROSS SECTION
(30' SPAN)



CROSS SECTION
(35' SPAN)

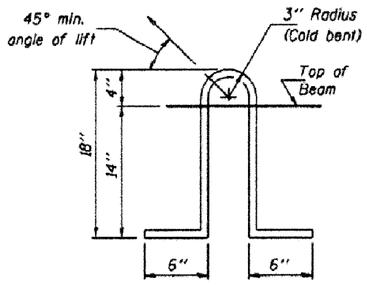


CROSS SECTION
(40' SPAN)



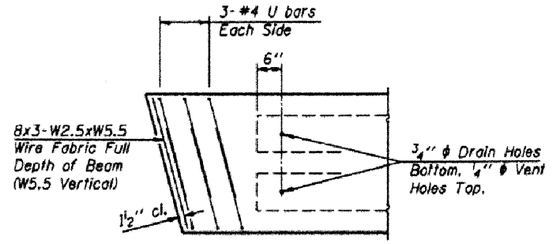
END BLOCK DETAILS

Each beam shall have four Lifting Loops. two at each end of beam cast in locations shown above. Loops shall be burned off after beams have been erected.

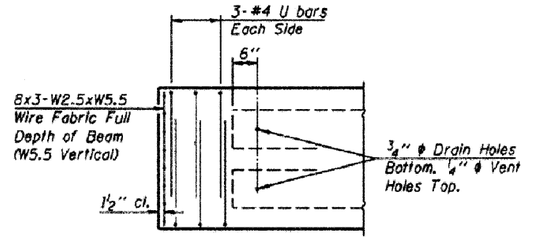


LIFTING LOOP DETAIL

Lifting loops shall be 2, ½"ϕ-270 ksi strands, as shown. Alternate approved lifting devices are also acceptable.



END REINFORCEMENT
(SKEWED)



END REINFORCEMENT
(RIGHT ANGLE)

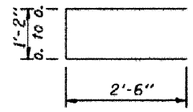
DIMENSION 'C'

Skew Angle 'D'	0°	5°	10°	15°	20°	25°	30°
Dimension 'C' (Inches)	0	3⅛	6⅜	9⅝	13⅛	16¾	20¾

* TRANSVERSE STRAND PLACEMENT GUIDELINES

1. Place strands symmetrically about centerline of beam.
2. The minimum distance from center to center of strands in all directions shall be 2".
3. The minimum clearance from strand to dowel hole shall be ½".
4. The minimum clearance from strand to void shall be 1½".

Vertical placement of strands shall not be adjusted to satisfy the above guidelines.



BAR U

MIN. BAR LAP

#5 bars = 1'-8"

NOTES

1. Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270.
2. The nominal diameter shall be ½" and the nominal cross-sectional area shall be 0.153 square inches.
3. [illegible]
4. Roll Post anchor devices shall be cast into outside beam as elsewhere specified.
5. When a Waterproofing Membrane System is specified, the top surface of the beams shall be screeded with a straightedge and finished with a hand float. The finished surface shall be free of depressions or high spots with sharp corners and the top edge of keys shall be rounded or chamfered a minimum of ¼".
6. Keyway surfaces shall be cleaned to remove form oil or other bond breaking material prior to shipment of the beams. Cleaning shall be done by sandblasting the keyway areas between the top of the beam and the bottom edge of the key.

DESIGN STRESSES

f'_c = 5,000 p.s.i.
f'_{ci} = 4,000 p.s.i.
f'_s = 270,000 p.s.i. (½" ϕ Strand)
f_{si} = 201,960 p.s.i. (½" ϕ Strand)
f_y = 60,000 p.s.i.

Illinois Department of Transportation

PASSED APRIL 4, 2005
Thomas J. Domagalski
Engineer of Bridge Design
APPROVED APRIL 4, 2005
Ralph E. Anderson
Engineer of Bridges and Structures

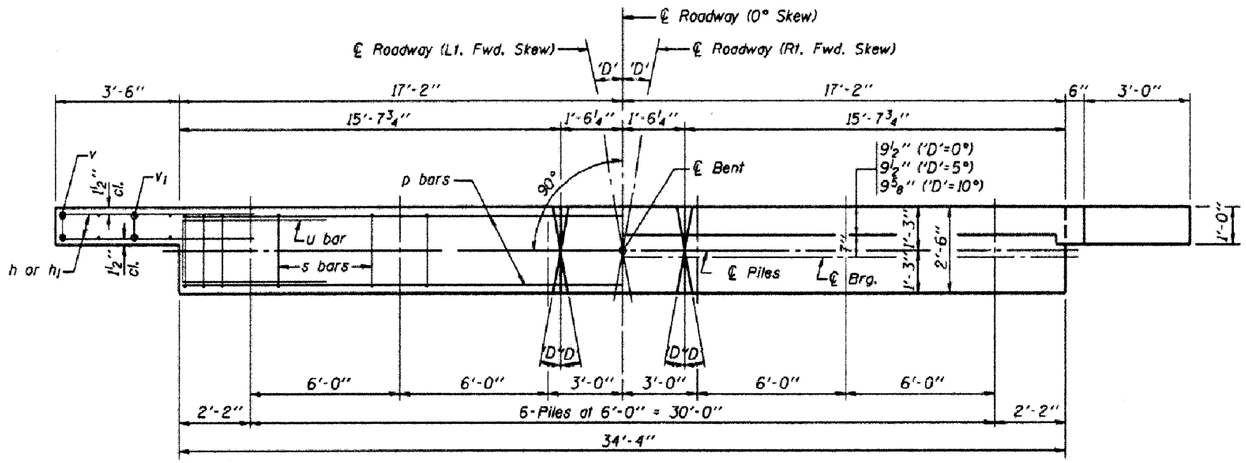
ISSUED 4-4-2005

NOTE
The std. reinf. and dimensions shown on the 25' span cross section is typical for all spans, except as shown.

P.P.C. DECK BEAM DETAILS

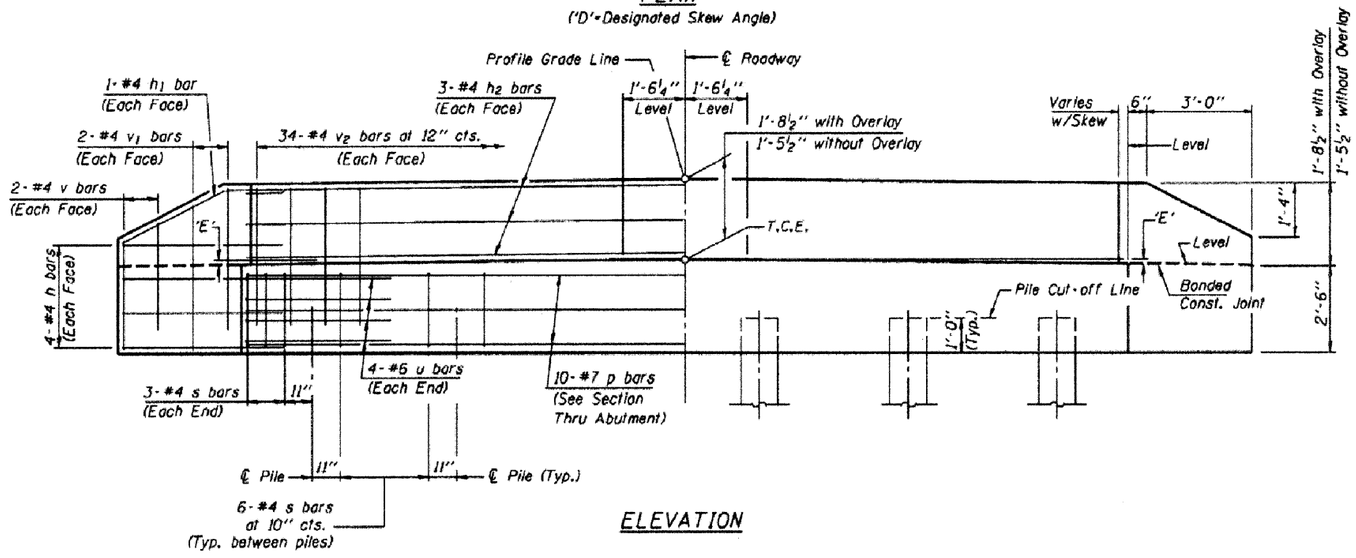
33' ROADWAY | 17" x 36" BEAMS

STANDARD CB-3317-36

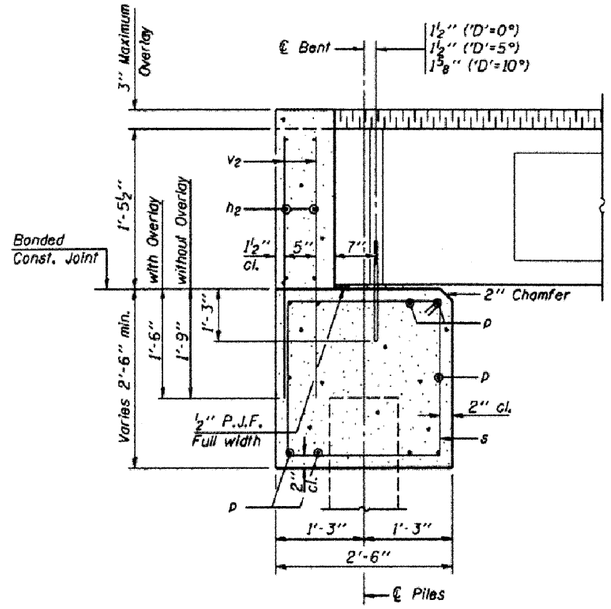


PLAN

('D'=Designated Skew Angle)

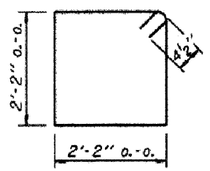


ELEVATION

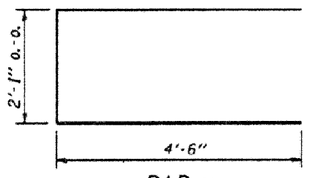


SECTION THRU ABUTMENT

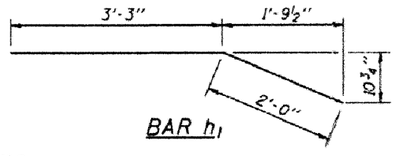
(At Right Angles)



BAR s



BAR u



BAR h1

BILL OF MATERIAL FOR ONE ABUTMENT

Bar	No.	Size	Length	Shape
h	16	#4	5'-0"	——
h1	4	#4	5'-3"	——
h2	6	#4	34'-0"	——
p	10	#7	34'-0"	——
s	36	#4	9'-5"	□
u	8	#6	11'-1"	⌐¬
v	8	#4	2'-6"	——
v1	8	#4	3'-5"	——
v2	68	#4	3'-1"	——
Concrete Structures			11.0 Cu. Yds.	
Reinforcement Bars			1430 Lb.	

DIMENSION 'E'

GRADE	'D'=0°		'D'=5°		'D'=10°	
	UPGRADE END	DOWNGRADE END	UPGRADE END	DOWNGRADE END	UPGRADE END	DOWNGRADE END
0%	2 7/8"	2 7/8"	2 7/8"	2 7/8"	2 7/8"	2 7/8"
Over 0% to 1%	2 7/8"	2 7/8"	2 7/8"	3"	2 3/4"	3"
Over 1% to 2%	2 7/8"	2 7/8"	2 5/8"	3 1/8"	2 3/8"	3 3/8"
Over 2% to 3%	2 7/8"	2 7/8"	2 1/2"	3 3/8"	2 1/8"	3 3/4"
Over 3% to 4%	2 7/8"	2 7/8"	2 3/8"	3 1/2"	1 3/4"	4"

NOTES

1. The Backwall and the portion of the Wingwalls above the bonded construction joint shall be cast against the in-place beam.
2. [illegible]
3. Space reinforcement in cap to miss anchor bolts.

MAXIMUM PILE LOADS

SPAN	TONS
25'	25
30'	25
35'	25
40'	25

DESIGN STRESSES

f'c = 3,500 psi

fy = 60,000 psi

Illinois Department of Transportation

PASSED APRIL 4, 2005

Thomas S. Domagalski
Engineer of Bridge Design

APPROVED APRIL 4, 2005

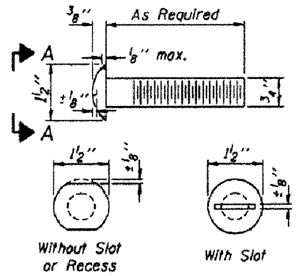
Ralph E. Anderson
Engineer of Bridges and Structures

ISSUED 4-4-2005

P.P.C. DECK BEAMS PILE BENT ABUTMENT

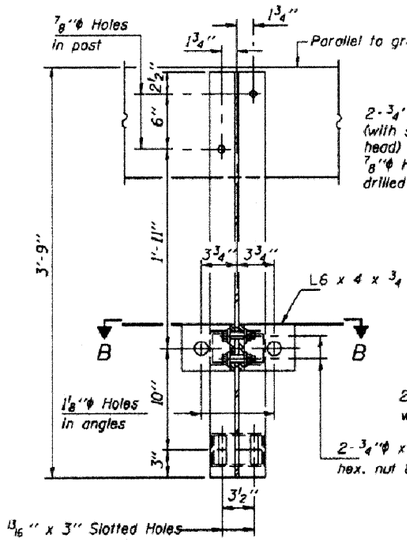
33' RDWY. | 17" BMS. | 'D'=0°, 5° OR 10°

STANDARD CA-3317-10

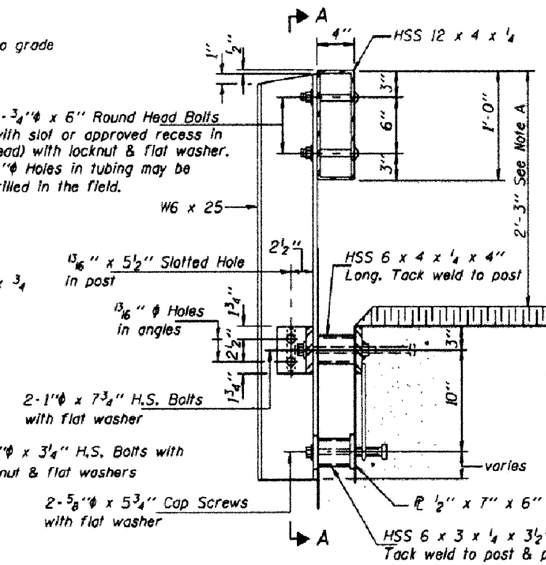


VIEW A-A

ROUND HEAD BOLT

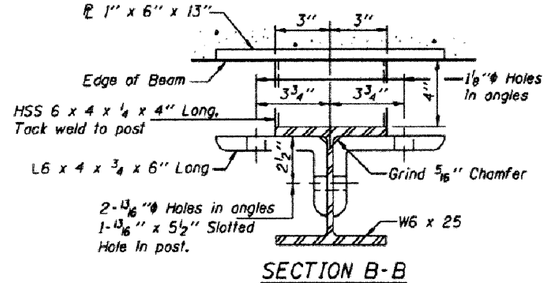


SECTION A-A



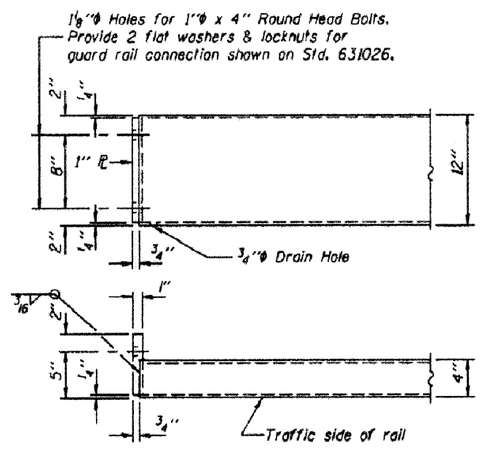
SECTION AT RAIL POST

Note A:
Where no overlay is to be provided, adjust top of rail to lay parallel to grade 2'-5" max. above top of beam.



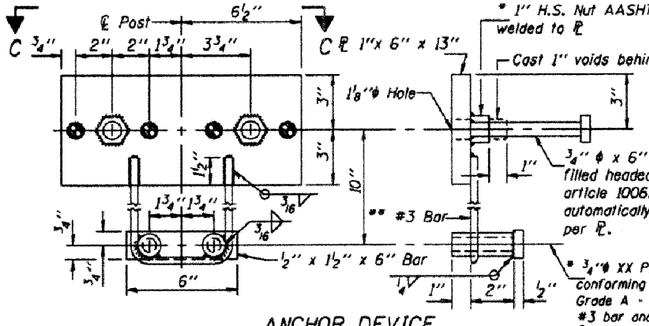
SECTION B-B

1 1/8"ϕ Holes for 1"ϕ x 4" Round Head Bolts. Provide 2 flat washers & locknuts for guard rail connection shown on Std. 631026.



END OF RAIL DETAILS

** Whenever the lower insert assemblies interfere with strand locations, the #3 bars shall be cut and adjusted in order to allow raising or lowering of the lower inserts. Maximum adjustment not to exceed 1/2".



ANCHOR DEVICE

NOTES

Hollow structural steel tubing shall conform to the requirements of ASTM designation A500 Grade B Structural Steel Tubing and shall meet the longitudinal CVN requirements of 15 ft.-lbs. at 0° F.

All other steel shapes and plates shall conform to the requirements of AASHTO M 270 Grade 36 except posts and angles shall conform to AASHTO M 270 Grade 50.

Bolts, cap screws, and nuts shall conform to the requirement of ASTM designation A307 except for high strength bolts, nuts and washers noted which shall conform to AASHTO M 164.

All bolts, nuts, cap screws, washers and lock washers shall be galvanized according to AASHTO M 232.

All posts, railing, rail splices, anchor devices and angles shall be galvanized after shop fabrication according to AASHTO M-111 and ASTM A 385. Galvanized rail shall not be painted.

Railing shall be according to Section 509 of the Standard Specifications, except as noted, and will be paid for at the contract unit price per foot for STEEL RAILING, TYPE S-1.

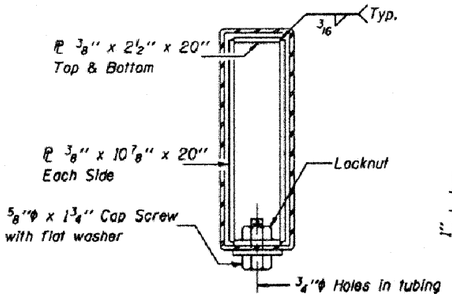
For multi-span bridges, sufficient 1/4" x 6" x 1'-2" galvanized steel shims shall be provided to align rail between adjacent spans. Cost included with STEEL RAILING, TYPE S-1.

All field drilled holes shall be coated with an approved zinc rich paint before erection.

[illegible]

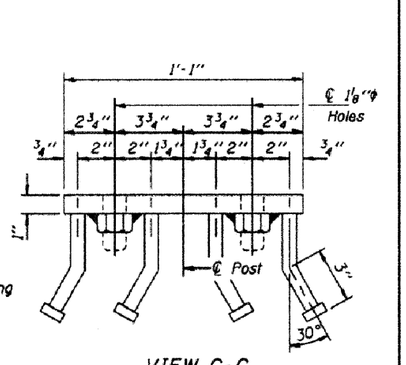
The 3/4"ϕ high strength bolts used to connect the 6 x 4 x 3/4 angles to the post shall be tightened according to Article 505.04 (fX2) of the Standard Specifications. The 1"ϕ high strength bolts connecting the angles to the concrete shall be tightened to a snug fit and given an additional 1/8 turn. The 5/8"ϕ cap screws in bottom of posts shall be tightened to a snug fit only.

The maximum allowable rail post spacing shall be 10'-6". The rail post spacing shown elsewhere in the plans is based on the allowable spacing for another type of rail. When this type of rail is used, the number of posts may be decreased and the post spacing increased to provide equal post spaces of 10'-6" or less.

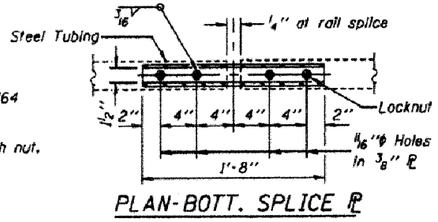


SECTION AT RAIL SPLICE

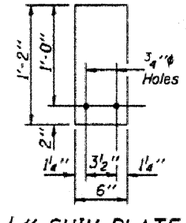
* Threaded areas shall be plugged or blocked off during casting of beam.



VIEW C-C



PLAN-BOTT. SPLICE PL TYPICAL



1/4" SHIM PLATE

Illinois Department of Transportation

PASSED APRIL 4, 2005
Thomas J. Ramsdell
Engineer of Bridge Design

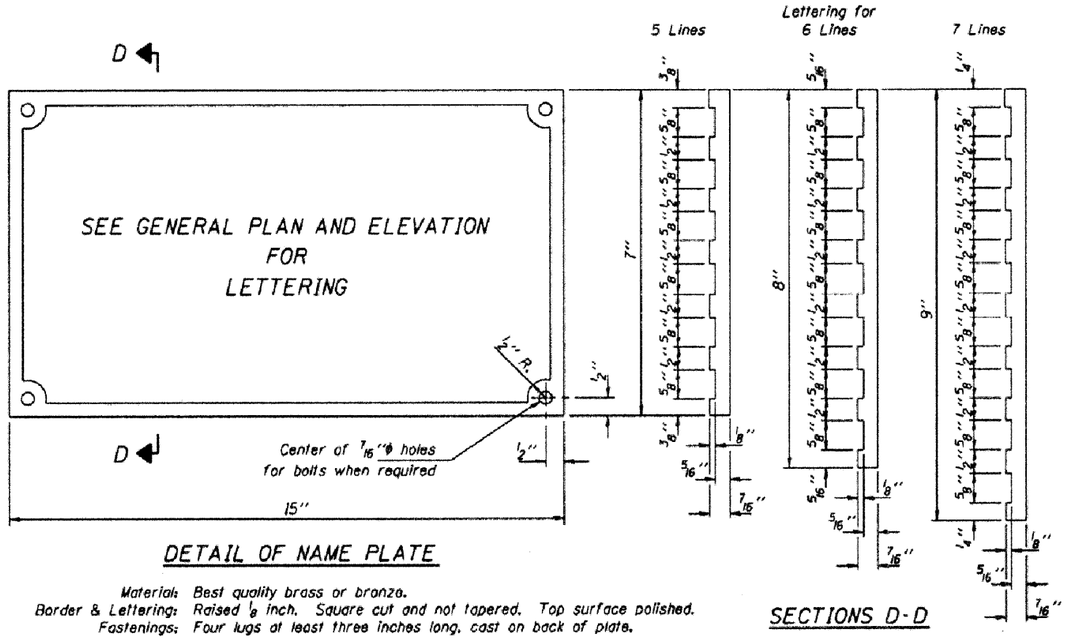
APPROVED APRIL 4, 2005
Ralph E. Anthes
Engineer of Bridges and Structures

ISSUED 1-1-06

STEEL RAILING, TYPE S-1

STANDARD CR-TS1

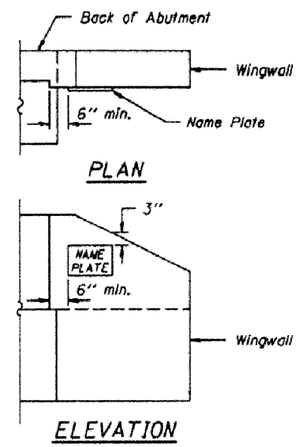
VI-1



DETAIL OF NAME PLATE

SECTIONS D-D

Material: Best quality brass or bronze.
Border & Lettering: Raised 1/8 inch. Square cut and not tapered. Top surface polished.
Fastenings: Four lugs at least three inches long, cast on back of plate.



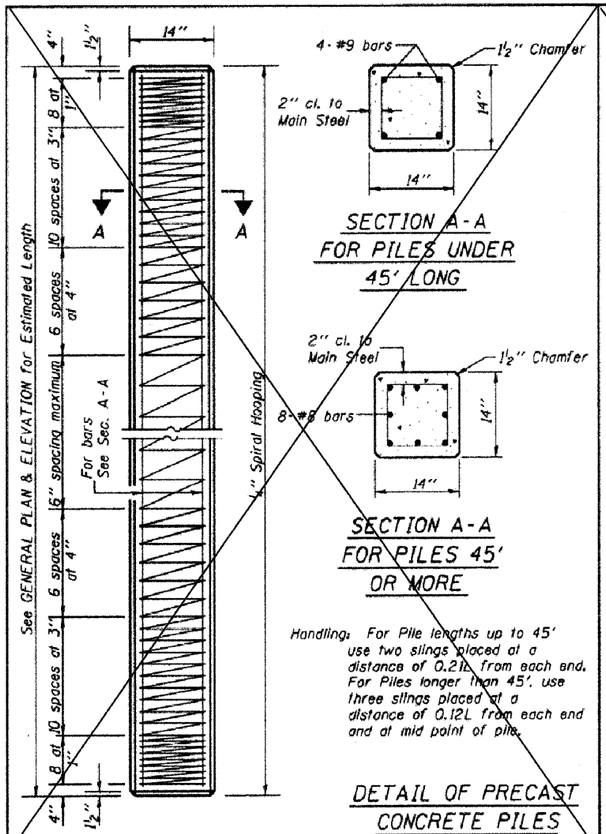
LOCATION OF NAME PLATE

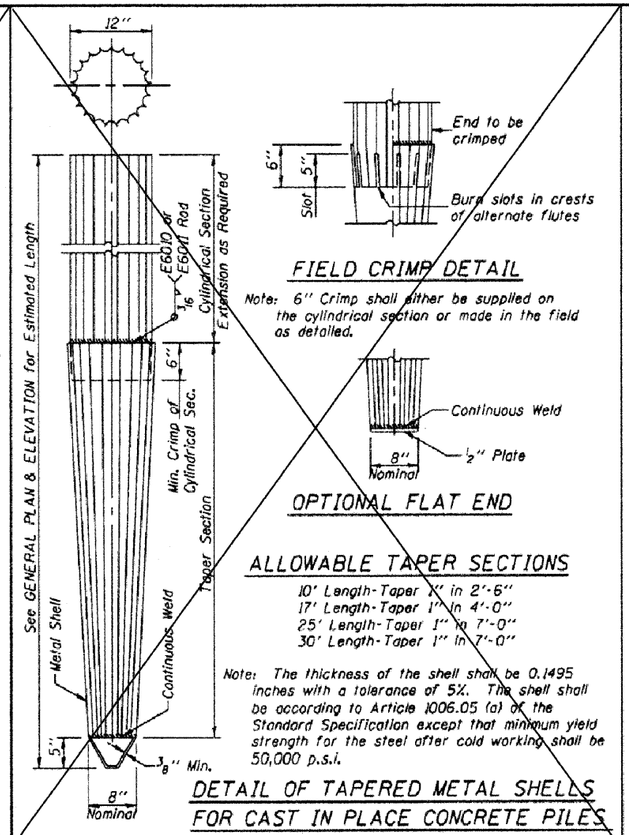
Illinois Department of Transportation

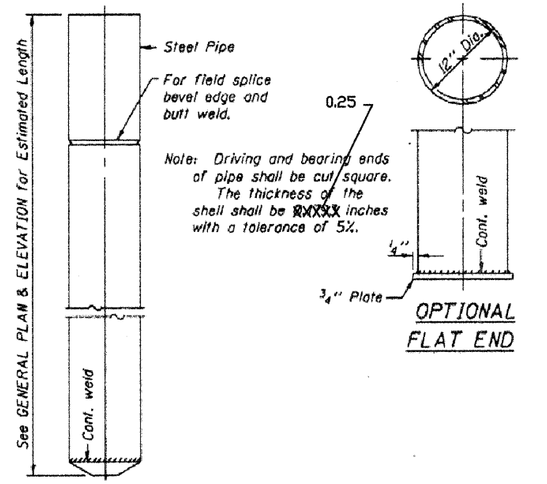
PASSED APRIL 4, 2005
Thomas J. Domagalski
Engineer of Bridge Design
APPROVED APRIL 4, 2005
Ralph E. Anderson
Engineer of Bridges and Structures

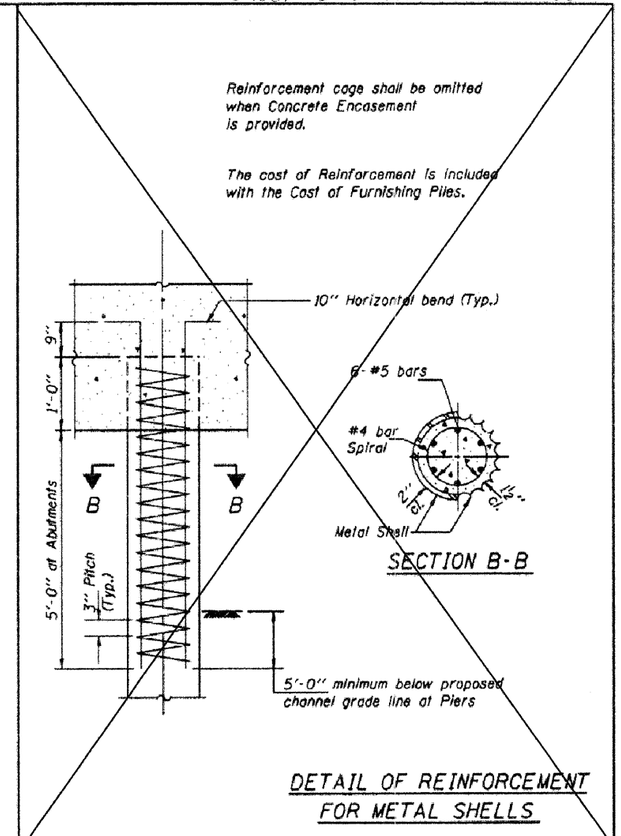
ISSUED 7-1-1995

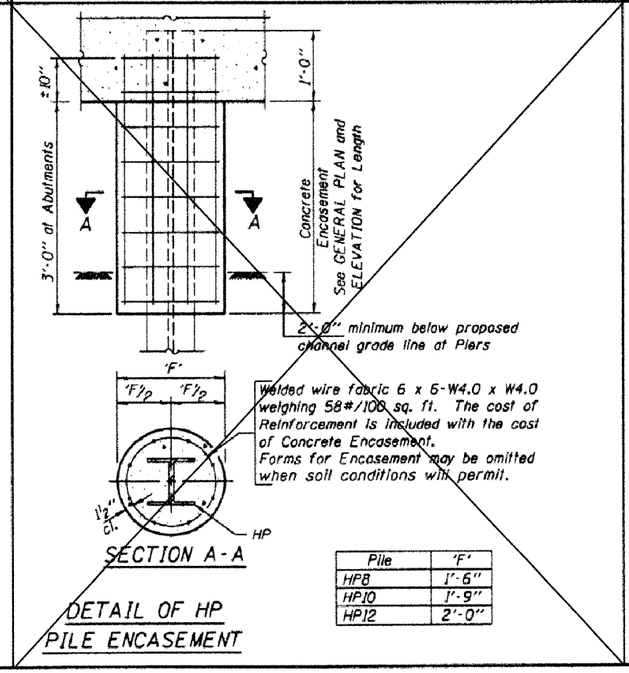
NAME PLATE
STANDARD CN



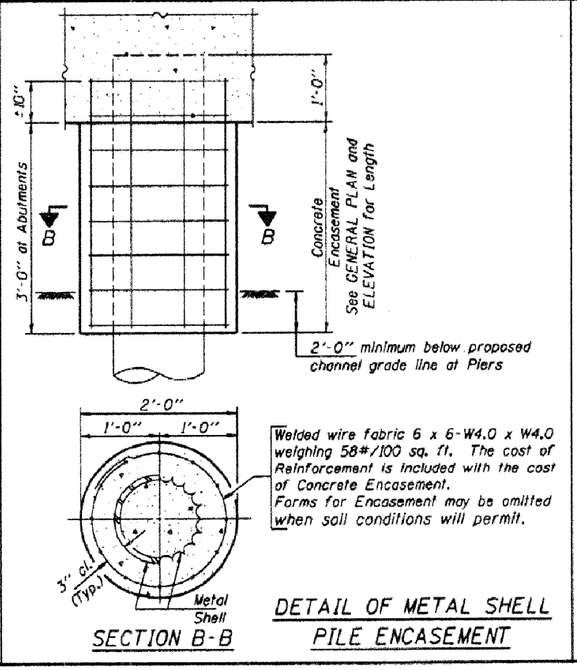








Pile	'F'
HP8	1'-6"
HP10	1'-9"
HP12	2'-0"



QUANTITIES/FT. OF ENCASEMENT

(STEEL PILES)

Pile Size	Item	Quantity
HP8	Concrete Encasement	0.063 C.Y.
HP10	Concrete Encasement	0.086 C.Y.
HP12	Concrete Encasement	0.112 C.Y.

(METAL SHELL PILES)

Pile Size	Item	Quantity
12" Dia.	Concrete Encasement	0.087 C.Y.

Illinois Department of Transportation

PASSED FEBRUARY 1, 2000
Thomas J. Domagalski
Engineer of Bridge Design
APPROVED FEBRUARY 1, 2000
Ralph E. Anderson
Engineer of Bridges and Structures

ISSUED 1-98

PILE DETAILS

STANDARD CX-1