93392

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 40	*	SANGAMON	33	1
PROJECT				

* 00-00021-02-BR

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

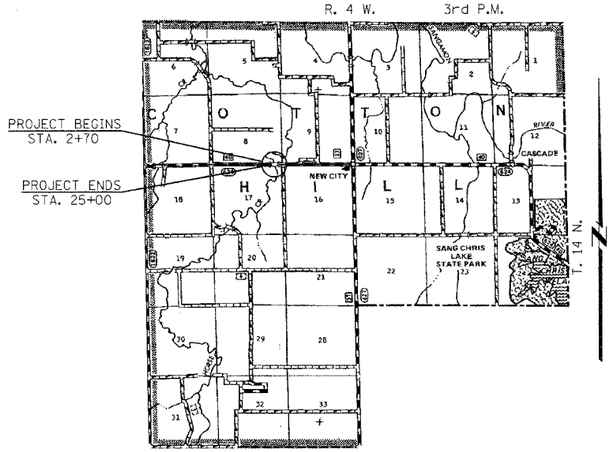
PLANS FOR PROPOSED HIGHWAY BRIDGE REPLACEMENT AND REHABILITATION PROGRAM
PROJECT NO. BRS-624(110)
F.A.S. 624 (C.H. 40) OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY
C-96-237-04

6-17-05 Letting, Item 218

INDEX OF SHEETS

STANDARDS

STANDARD 280001-02
STANDARD 515001-02
STANDARD 630001-05
STANDARD 630301-03
STANDARD 631032-01
STANDARD 635006-02
STANDARD 702001-05
STANDARD BLR 21-6



LOCATION PLAN

Length of Section - 2230.00 Feet = 0.422 Miles

0 1 2
Scale: 1" = 1 Mile

Scale in Feet

0 50 100 = Profile - Plan
0 50 100 = Profile - Horizontal
0 5 10 = Profile - Vertical
0 5 10 = Cross Sections - Horizontal
0 5 10 = Cross Sections - Vertical

EXISTING STRUCTURE: FOUR SPAN REINFORCED CONCRETE DECK ON STEEL STRINGERS. CONCRETE PILE BENT ABUTMENTS AND PIERS. ±162'-9"BK.-BK. ABUTMENTS, ±24'-4" OUT.-OUT. DECK. CONCRETE RAILINGS. 45° SKEW RT. FORWARD.
EXISTING STRUCTURE NO. 084-3015

PROPOSED STRUCTURE: THREE SPAN REINFORCED CONCRETE DECK ON STEEL "I"-BEAM (36") ON INTEGRAL CONCRETE ABUTMENTS AND SOLID CONCRETE PIERS. 310'-0" BK.-BK. ABUTMENTS, 40'-0" CLEAR DECK WIDTH WITH CONCRETE PARAPETS. 30° SKEW RT. FORWARD.
PROPOSED STRUCTURE NO. 084-3415

Land Section - 8
Land Quarter Section - S.E.
Design Class: Major Collector (Non-Urban)
ADT = 1200 (1998)
1560 (2021)
50 M.P.H. Design Speed

CHRISTOPHER P. KOHLRUS 062-046558 LICENSED PROFESSIONAL ENGINEER OF ILLINOIS

Christopher P. Kohlrus 3/15/05
Expiration: 11/30/05

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
APPROVED 3-14 2005
COUNTY ENGINEER
PASSED 3-31 2005
DISTRICT ENGINEER OF LOCAL ROADS & STREETS
PASSED 3-31 2005
W.P. Finnegan
DISTRICT CONSTRUCTION ENGINEER
APPROVED 4-01 2005
Christine M Reed
DEPUTY DIRECTOR OF HIGHWAYS REGION FOUR ENGINEER

TOLL FREE
"JOINT UTILITY LOCATION INFORMATION FOR EXCAVATORS"
(J.U.L.I.E.) TELEPHONE NUMBER
1-800-892-0123

CONTRACT NO. 93392

FILE NAME: SCOHIOTS (REV. 3/14/05)

SCHEDULE
FENCE REMOVAL

Location	Quantity (Foot)
Sta. 4+75 to Sta. 5+35 Lt.	55
Sta. 4+08 to Sta. 10+76 Rt.	680
Sta. 11+06 to Sta. 17+21 Rt.	625
Sta. 18+51 to Sta. 22+25 Lt.	385
Sta. 19+00 to Sta. 22+50 Rt.	350
Total	2095

SCHEDULE
PIPE CULVERTS, CLASS D, TYPE 1 18"

Location	Quantity (Foot)
Sta. 21+77 to Sta. 22+13 Lt.	26
Total	26

SCHEDULE
STONE DUMPED RIPRAP CLASS A4

Location	Quantity (Ton)
Sta. 3+00 to Bridge Lt. & Rt. Side Slopes	7215
Bridge to Sta. 20+50 Lt. & Rt. Side Slopes	368
Bridge Slopewalls with Bedding	1115
Total	8698

SCHEDULE
AGGREGATE BASE COURSE, TYPE A

Location	Quantity (Ton)
Sta. 2+70 to Sta. 25+00	4985
Wahl Road – Sta. 23+83	54
Total	5039

SCHEDULE
AGGREGATE SHOULDERS, TYPE A

Location	Quantity (Ton)
Sta. 2+70 to Sta. 25+00	956
Wahl Road – Sta. 23+83	13
Total	969

SCHEDULE
BITUMINOUS MATERIALS (PRIME COAT)

Location	Quantity (Gallon)
Sta. 2+70 to Sta. 25+00	2751
Wahl Road – Sta. 23+83	79
Total	2830

SCHEDULE
BITUMINOUS MATERIALS (COVER AND SEAL COATS)

Location	Quantity (Gallon)
Sta. 2+70 to Sta. 25+00	5777
Wahl Road – Sta. 23+83	166
Total	5943

SCHEDULE
COVER COAT AGGREGATE

Location	Quantity (Ton)
Sta. 2+70 to Sta. 25+00	138
Wahl Road – Sta. 23+83	4
Total	142

SCHEDULE
SEAL COAT AGGREGATE

Location	Quantity (Ton)
Sta. 2+70 to Sta. 25+00	69
Wahl Road – Sta. 23+83	2
Total	71

SCHEDULE
PERIMETER EROSION BARRIER

Location	Quantity (Foot)
Sta. 2+70 to Sta. 5+00 150' Lt.	345
Sta. 2+70 to Sta. 5+00 150' Rt.	340
Sta. 5+00 to Sta. 11+00 130' Lt.	620
Sta. 11+00 to Sta. 16+13 130' Lt.	513
Sta. 16+83 to Sta. 21+00 60' Lt.	487
Sta. 5+00 to Sta. 13+00 130' Rt.	820
Sta. 13+00 to Sta. 18+37 130' Rt.	537
Sta. 18+97 to Sta. 19+50 75' Rt.	108
Sta. 19+50 to Sta. 21+00 60' Rt.	165
Sta. 21+00 to Sta. 25+00 33' Lt.	422
Sta. 21+00 to Sta. 25+00 34.3' Rt.	390
Total	4747

GUARDRAIL SCHEDULE

Location	Traffic Barrier Terminal Type 1 Special (Tangent) (Each)	Steel Plate Beam Guardrail Type A (Foot)	Traffic Barrier Terminal Type 6A (Each)
Sta. 8+97.98 to Sta. 9+47.98 Rt.	1		
Sta. 9+47.98 to Sta. 15+72.98 Rt.		625	
Sta. 15+72.98 to Sta. 16+04.38 Rt.			1
Sta. 19+14.38 to Sta. 19+45.78 Rt.			1
Sta. 19+45.78 to Sta. 20+83.28 Rt.		137.5	
Sta. 20+83.28 to Sta. 21+33.28 Rt.	1		
Sta. 9+49.22 to Sta. 9+99.22 Lt.	1		
Sta. 9+99.22 to Sta. 15+49.22 Lt.		550	
Sta. 15+49.22 to Sta. 15+80.62 Lt.			1
Sta. 18+90.62 to Sta. 19+22.02 Lt.			1
Sta. 19+22.02 to Sta. 20+97.02 Lt.		175	
Sta. 20+97.02 to Sta. 21+47.02 Lt.	1		
Total	4	1487.5	4

SCHEDULE
SEEDING

Location	Seeding Class 2 (Special) (Acre)	Temporary Erosion Control Seeding ** (Pound)
Sta. 2+70 to Sta. 25+00	2.7	560
Total	2.7	560

** Represents total disturbed area to be temporarily seeded before riprap placement.

SCHEDULE
FILTER FABRIC FOR USE WITH RIPRAP

Location	Quantity (Sq. Yd.)
Sta. 3+00 to Bridge Lt. & Rt. Side Slopes	12056
Bridge to Sta. 20+50 Lt. & Rt. Side Slopes	614
Bridge Slopewalls with Bedding	1683
Total	14353

GENERAL NOTES

Where section or subsection stones are encountered, the Engineer shall be notified before such stones are removed. The contractor shall protect and preserve all property markers and monuments until the owner, authorized surveyor or agent has witnessed or referenced their location.

Areas to be seeded shall consist of all disturbed earth surfaces within the right-of-way as directed by the Engineer.

Any reference to Standards throughout the plans or Special Provisions shall be interpreted as the latest Standard of the Department.

All traffic control and other advisory signs needed for construction, unless otherwise indicated in the plans or Special Provisions, are to be furnished by the Contractor in accordance with Section 107.14 of the Standard Specifications.

The location on the plans of existing drainage structures, telephone lines and other utilities are approximate and their exact location is to be determined in the field as incidental to the contract.

The Contractor shall be responsible for the protection of all underground or surface utilities even though they may not be shown on the plans. Any utility that is damaged during construction shall be repaired or replaced to the satisfaction of the owner. This work shall be the Contractor's expense.

Trees within the Right of Way and Easements which interfere with construction shall be removed only at the direction of the Engineer. The area designated for removal shall be marked and measured for payment by the engineer before removal and shall be paid for at the Contract Unit Price per Acre for Tree Removal, Acres.

The following application rates have been used to determine plan quantities:

Bituminous Materials (Prime Coat)	0.50 Gal./Sq. Yd.
Bituminous Materials (Cover and Seal Coats)	0.35 Gal./Sq. Yd.
Aggregate Material	2.05 Ton/Cu. Yd.
Riprap	1.35 Ton/Cu. Yd.
Mulch Method	2.0 Ton/Acre
Agricultural Ground Limestone	2.0 Ton/Acre
Nitrogen Fertilizer Nutrient	80 Lbs./Acre
Phosphorus Fertilizer Nutrient	320 Lbs./Acre
Potassium Fertilizer Nutrient	160 Lbs./Acre
Cover and Seal Coat Aggregate	0.0125 Ton/Sq. Yd.
Temporary Erosion Seeding	100 Lbs./Acre

The Contractor shall provide access to all private and field entrances at all times during construction unless otherwise noted in the plans.

DITCH CHECKS SCHEDULE

Location	Quantity (Each)
Sta. 4+00 Lt. & Rt.	2
Sta. 5+00 Lt. & Rt.	2
Sta. 5+75 Lt.	1
Sta. 6+00 Rt.	1
Sta. 6+50 Lt.	1
Sta. 7+00 Lt. & Rt.	2
Sta. 7+50 Lt.	1
Sta. 8+00 Lt. & Rt.	2
Sta. 8+50 Lt. & Rt.	2
Sta. 9+00 Lt. & Rt.	2
Sta. 9+50 Lt. & Rt.	2
Sta. 10+00 Lt. & Rt.	2
Sta. 11+00 Lt. & Rt.	2
Sta. 13+00 Lt. & Rt.	2
Sta. 15+00 Lt. & Rt.	2
Sta. 20+00 Rt.	1
Sta. 21+00 Lt. & Rt.	2
Sta. 22+00 Rt.	1
Sta. 23+00 Lt. & Rt.	2
Total	32

SUMMARY OF QUANTITIES

	Item No.	Item	Unit	Quantity
	20100500	Tree Removal, Acres	Acre	1.85
	20200100	Earth Excavation	Cu. Yd.	3282
*	20400100	Borrow Excavation	Cu. Yd.	153103
*	25001000	Seeding, Class 2 (Special)	Acre	2.7
	28000250	Temporary Erosion Control Seeding	Pound	560
*	28000300	Temporary Ditch Checks	Each	32
	28000400	Perimeter Erosion Barrier	Foot	4747
*	28100807	Stone Dumped Riprap, Class A4	Ton	8698
	28200200	Filter Fabric	Sq. Yd.	14353
	35100100	Aggregate Base Course, Type A	Ton	5039
	40300100	Bituminous Materials (Prime Coat)	Gallon	2830
	40300300	Bituminous Materials (Cover and Seal Coats)	Gallon	5943
	40300500	Cover Coat Aggregate	Ton	142
	40300600	Seal Coat Aggregate	Ton	71
	48100100	Aggregate Shoulders, Type A	Ton	969
*	50100100	Removal of Existing Structures	Each	1
	50200300	Cofferdam Excavation	Cu. Yd.	1062
	50200600	Cofferdams (Pier 1)	Each	1
	50200700	Cofferdams (Pier 2)	Each	1
	50300225	Concrete Structures	Cu. Yd.	620
	50300255	Concrete Superstructure	Cu. Yd.	360.9
	50300260	Bridge Deck Grooving	Sq. Yd.	1378
	50300265	Seal Coat Concrete	Cu. Yd.	182
	50300300	Protective Coat	Sq. Yd.	1378
	50300310	Elastomeric Bearing Assembly, Type 1	Each	12
	50500105	Furnishing and Erecting Structural Steel	L. Sum	1
	50500505	Stud Shear Connectors	Each	3798
	50800205	Reinforcement Bars (Epoxy Coated)	Pound	170630
	50901005	Steel Bridge Rail, Type SM	Foot	620
*	51201500	Furnishing Steel Piles HP 10 x 57	Foot	1152
*	51201600	Furnishing Steel Piles HP 12 x 53	Foot	2392
	51202700	Driving Steel Piles	Foot	3544
	51203500	Test Pile, Steel HP 10 x 57	Each	2
	51203600	Test Pile, Steel HP 12 x 53	Each	2
	51204315	Concrete Encasement	Cu. Yd.	4.8
	51500100	Name Plates	Each	1
	542D0223	Pipe Culverts, Class D, Type 1 18"	Foot	26
	63000000	Steel Plate Beam Guardrail, Type A	Foot	1487.5
	63100087	Traffic Barrier Terminal, Type 6A	Each	4
*	63100167	Traffic Barrier Terminal, Type 1 Special (Tangent)	Each	4
	67000400	Engineers Field Office, Type A	Cal. Mo.	10
*	70101830	Traffic Control And Protection Standard BLR 21	L. Sum	1
*	78201000	Terminal Marker – Direct Applied	Each	4
	Z0002600	Bar Splicers	Each	82
*	Z0013798	Construction Layout	L. Sum	1
*	Z0014800	Culvert To Be Cleaned	Foot	34
*	Z0022800	Fence Removal	Foot	2095

* See Special Provisions

Construction Type Code: X071-2A

SCHEDULE
TREE REMOVAL

Location	Quantity (Acre)
Sta. 4+80, 40' to 55' Rt. to Sta. 7+50, 75' to 30' Rt.	0.19
Sta. 7+50, 30' to 75' Rt. to Sta. 10+75, 60' to 50' Rt.	0.21
Sta. 5+60, 65' Lt. to Sta. 5+60, 130' Lt. to Sta. 6+85, 130' Lt. to Sta. 6+85, 65' Lt.	0.19
Sta. 7+20, 150' Lt. to Sta. 8+40, 150' Lt. to Sta. 8+40, 85' Lt. to Sta. 7+55, 95' Lt.	0.13
Sta. 9+80 to Sta. 10+45, 40' to 150' Lt.	0.14
Sta. 15+90, 30' Lt. to 150' Lt. to Sta. 16+10, 150' Lt. to Sta. 16+60, 30' Lt.	0.15
Sta. 16+10, 45' Rt. to Sta. 17+20, 130' Rt. to Sta. 18+20, 130' Rt. to Sta. 17+45, 55' Rt.	0.36
Sta. 17+00, 130' Lt. to Sta. 17+45, 130' Lt. to Sta. 17+65, 35' Lt.	0.07
Sta. 18+45, 40' Rt. to Sta. 19+00, 130' Rt. to Sta. 19+35, 130' Rt. to Sta. 19+00, 45' Rt.	0.09
Sta. 18+55, 90' Lt. to Sta. 18+55, 130' Lt. to Sta. 19+70, 130' Lt. to Sta. 19+70, 90' Lt.	0.11
Sta. 19+70, 60' Lt. to Sta. 19+70, 130' Lt. to Sta. 21+00, 130' Lt. to Sta. 21+00, 60' Lt.	0.21
Total	1.85

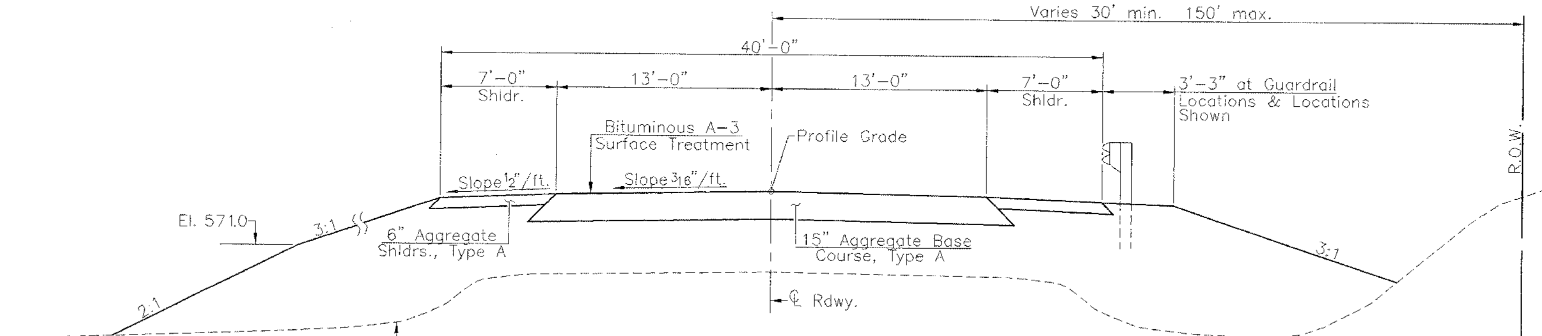
SUMMARY OF QUANTITIES, GENERAL NOTES & SCHEDULES
C.H. 40 OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY

FILE NAME: SCHMISC06 (REV. 1/14/05)

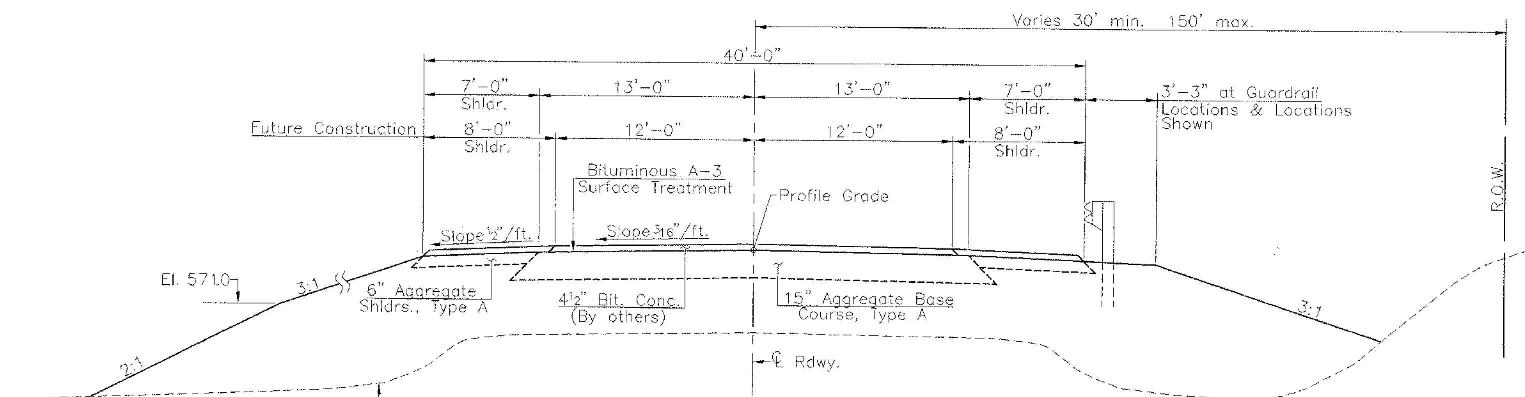
93392

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 40	*	SANGAMON	33	3
PROJECT				

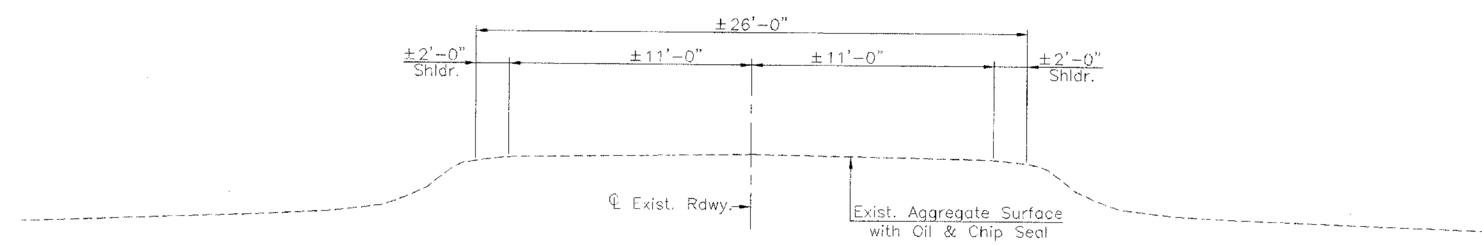
* 00-00021-02-BR



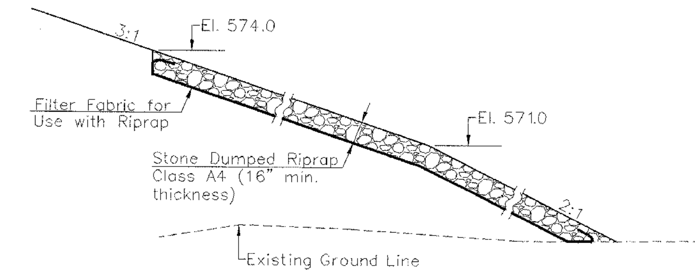
PROPOSED CROSS SECTION
* Stage I Construction



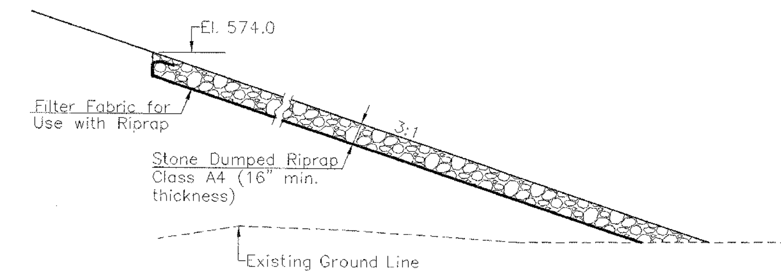
PROPOSED CROSS SECTION
* Final Construction **(By Others)**



EXISTING CROSS SECTION

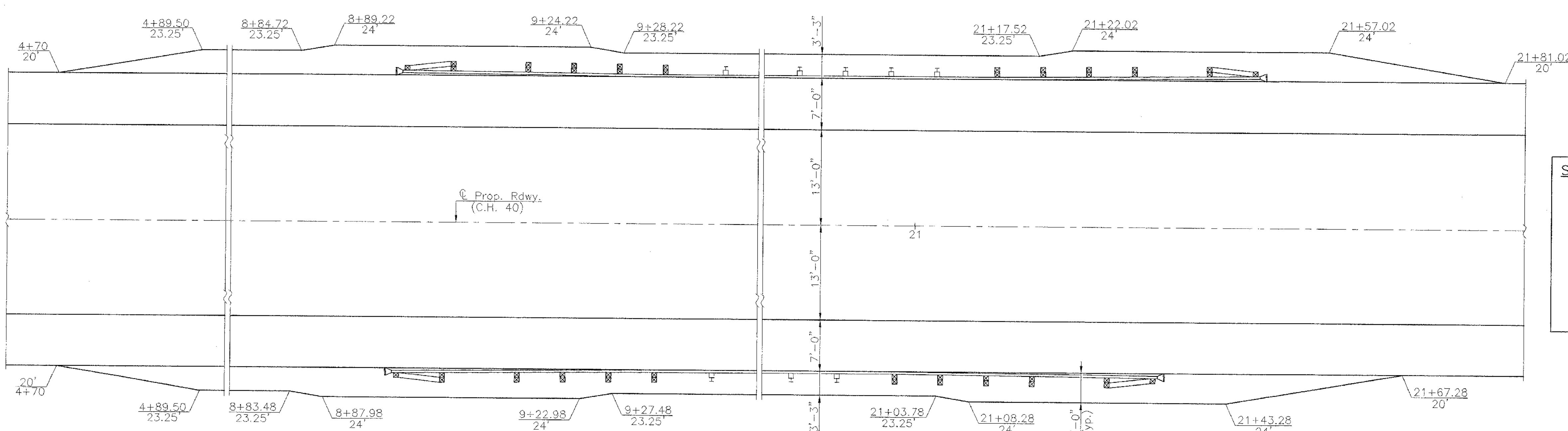


STONE DUMPED RIPRAP DETAIL (SIDE SLOPES)
(Sta. 10+00 to Sta. 21+00 Lt. & Rt.)



STONE DUMPED RIPRAP DETAIL (SIDE SLOPES)
(Sta. 3+00 Rt. to Sta. 9+00 &
Sta. 4+00 Lt. to Sta. 9+00 Lt.)

Note: Transition slopes from 3:1 configuration to Barn Slope 3:1,
2:1 Configuration from Sta. 9+00 to Sta. 10+00 Lt. & Rt.



SHOULDER WIDENING TRANSITION DETAIL

FILE NAME: SCCH40DETS (REV. 3/14/05)

STRUCTURAL PAVEMENT DESIGN INFORMATION

Design Traffic: 1466 (2015)
PV = 1392 SU = 36 MU = 36
T.F. = 0.145 (73K)
E_{AC} = 600 S_{AC} = 259

Min. Final Pavement Structure:
4.5" Bituminous Concrete Superpave
8" Aggregate Base, Type A

* Stage I Construction:
15" Aggregate Base, Type A w/
Bituminous Surface Treatment (A-3)

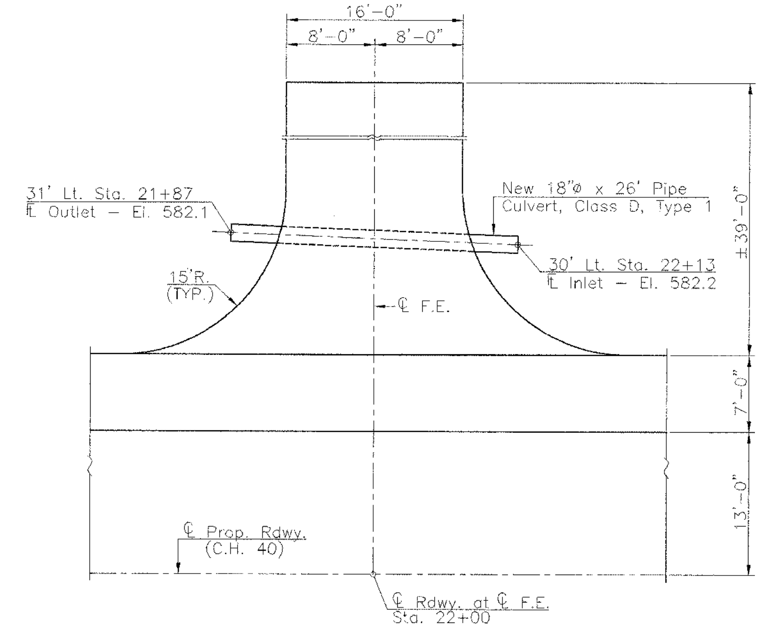
DETAILS & TYPICAL SECTIONS
C.H. 40 OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY

ALLEN HENDERSON & ASSOCIATES, INC. CONSULTING CIVIL AND STRUCTURAL ENGINEERS SPRINGFIELD,IL. PHONE: (217) 544-8033

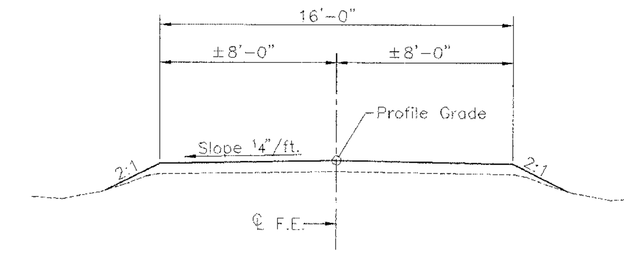
93392

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 40	*	SANGAMON	33	4
PROJECT				

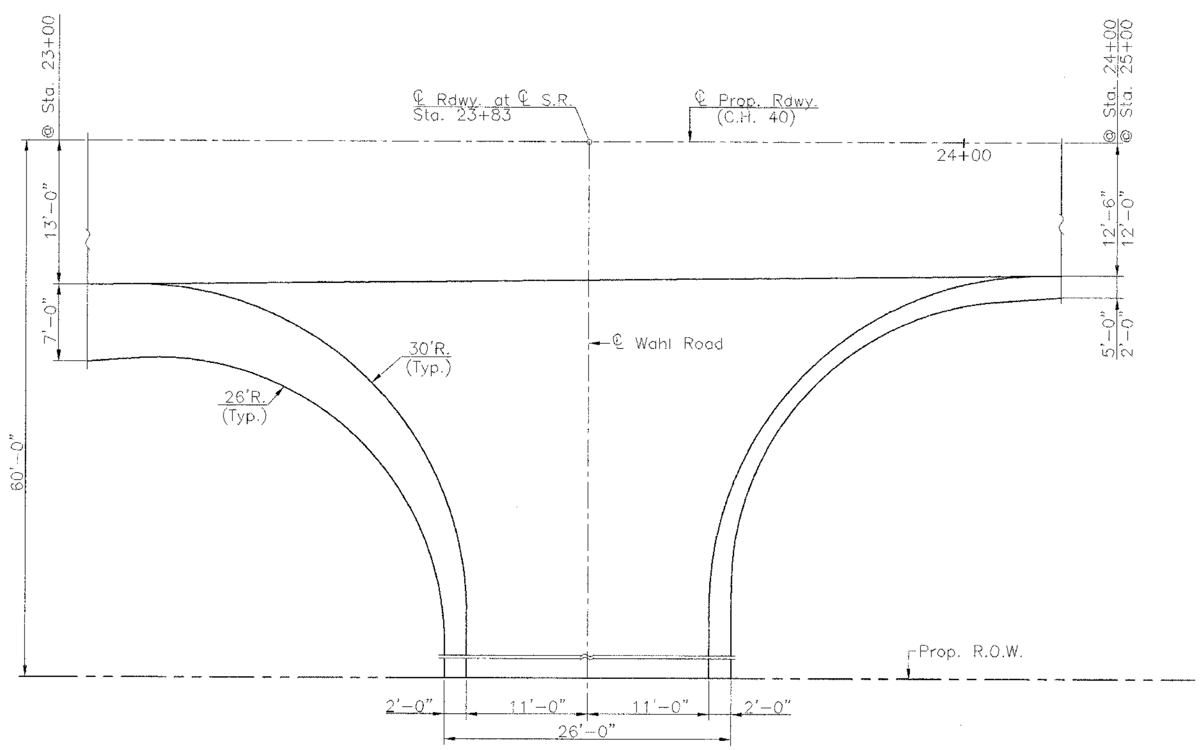
* 00-00021-02-BR



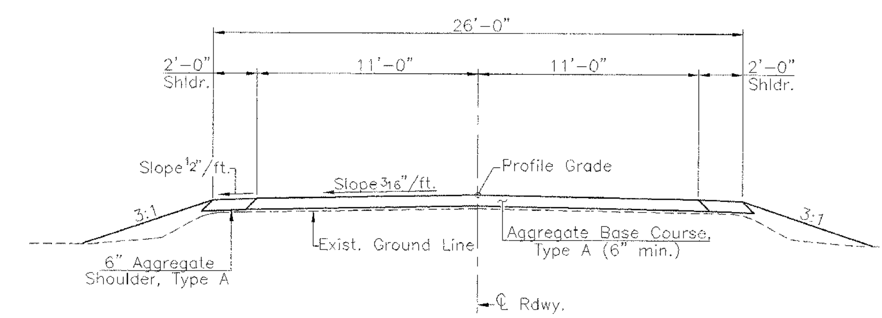
PLAN
(F.E. Sta. 22+00 Lt.)



TYPICAL FIELD ENTRANCE
(F.E. Sta. 22+00 Lt.)



PLAN
(Wahl Road Sta. 23+83 Rt.)



PROPOSED CROSS SECTION
(Wahl Road Sta. 23+83)

DETAILS & TYPICAL SECTIONS
C.H. 40 OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY

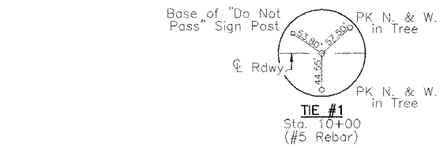
FILE NAME: SCCH40D&TS (REV. 3/14/05)

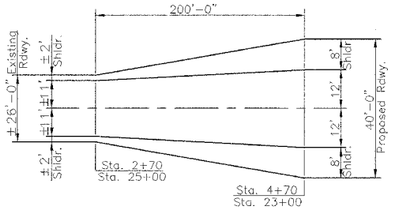
ALLEN HENDERSON & ASSOCIATES, INC. CONSULTING CIVIL AND STRUCTURAL ENGINEERS SPRINGFIELD,IL. PHONE: (217) 544-8033

93392

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 40	*	SANGAMON	33	5
PROJECT				

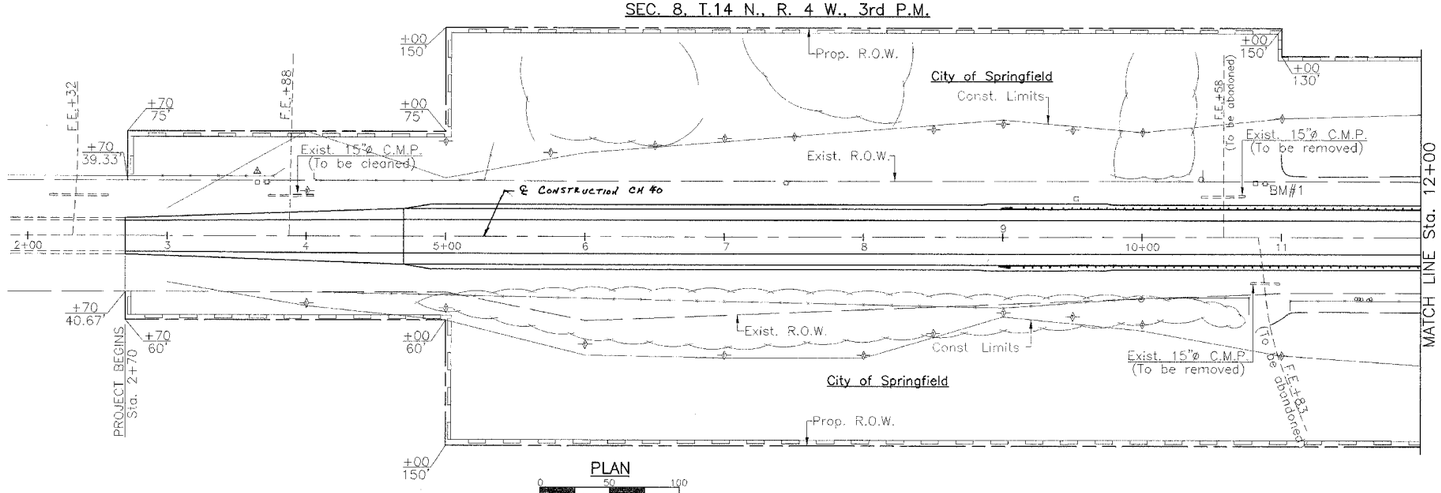
* 00-00021-02-BR





ROADWAY TRANSITION DETAIL

SEC. 8, T.14 N., R. 4 W., 3rd P.M.



PLAN

Scale: 1"=50' (Full Scale)

— Indicates Erosion Control Barrier
— Indicates Temporary Ditch Checks

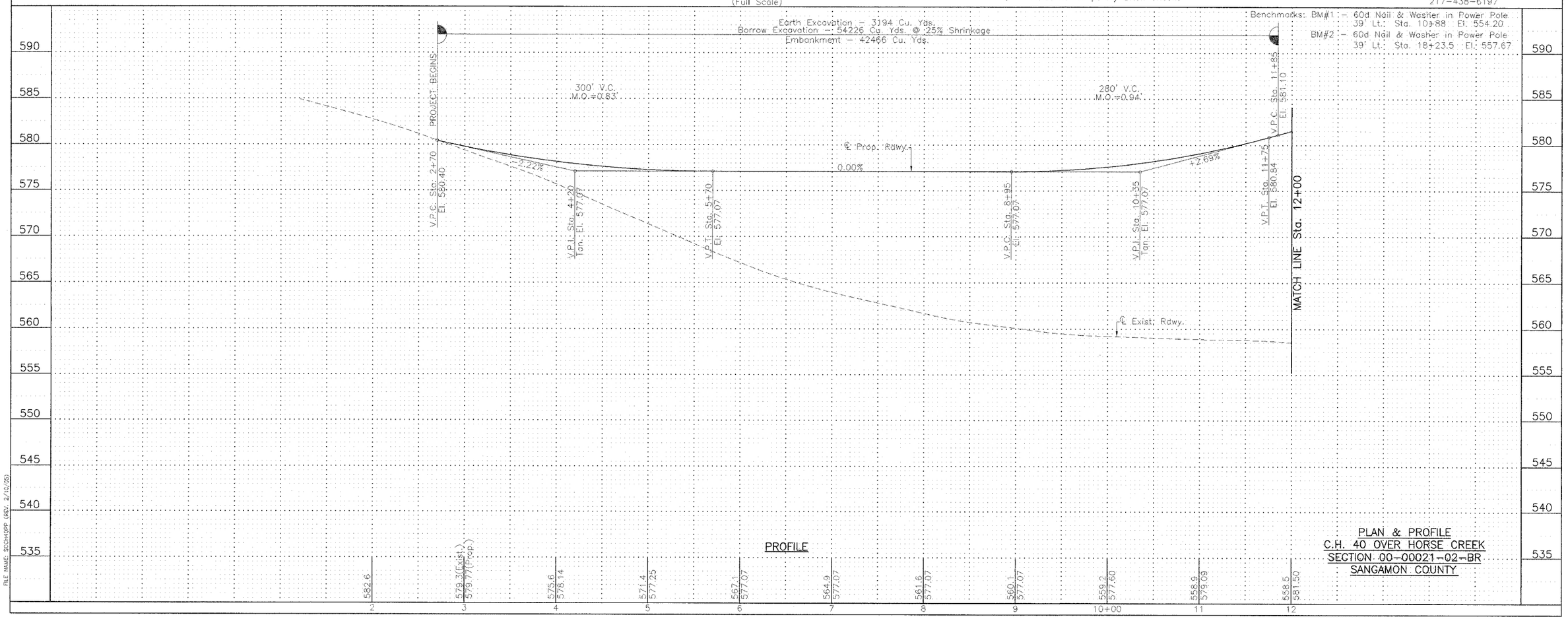
UTILITIES

SBC
529 South 7th Street
Springfield, Illinois 62721
Contact: Mr. Gary McCarrel
217-789-8375

Rural Electric Convenience Cooperative Company
3973 W. State Route 104
P.O. Box 19
Auburn, Illinois 62615
Contact: Mr. Marty Hinton
217-438-6197

Earth Excavation = 3194 Cu. Yds.
Borrow Excavation = 54226 Cu. Yds. @ 25% Shrinkage
Embankment = 42466 Cu. Yds.

Benchmarks: BM#1 :- 60d Nail & Washer in Power Pole 39' Lt.; Sta. 10+88 El. 554.20
BM#2 :- 60d Nail & Washer in Power Pole 39' Lt.; Sta. 18+23.5 El. 557.67



PROFILE

PLAN & PROFILE
C.H. 40 OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY

FILE NAME: 93CH40PP (REV. 2/10/25)

93392

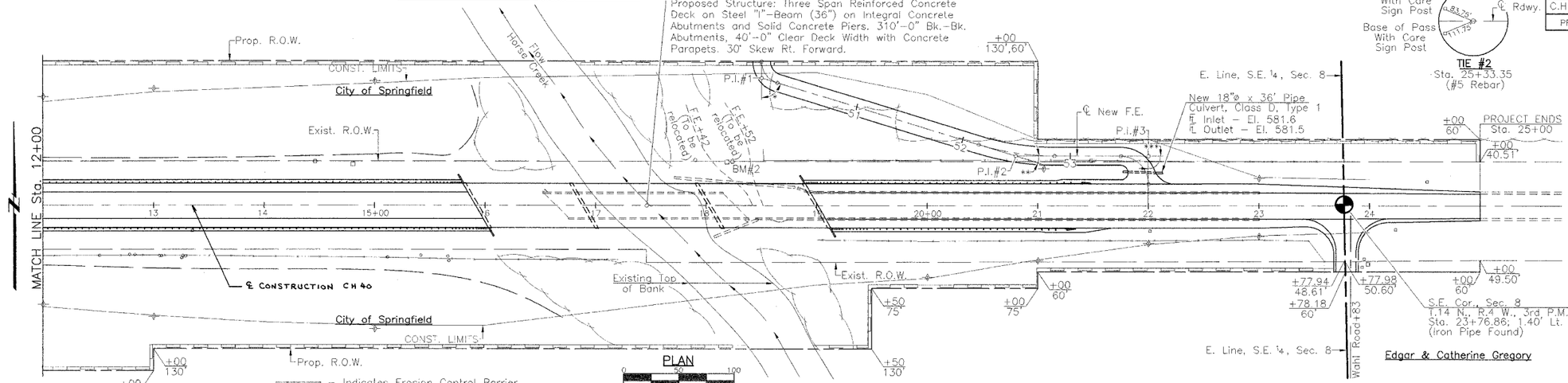
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 40	*	SANGAMON	33	6
PROJECT				

* 00-00021-02-BR

SEC. 8, T.14 N., R. 4 W., 3rd P.M.

Sta. 17+46.25 – ℄ Rdwy. at ℄ Structure
Proposed Structure: Three Span Reinforced Concrete Deck on Steel "I"-Beam (36") on Integral Concrete Abutments and Solid Concrete Piers. 310'-0" Bk.-Bk. Abutments, 40'-0" Clear Deck Width with Concrete Parapets. 30° Skew Rt. Forward.

Base of Pass With Care Sign Post — ℄ Rdwy. — Base of Pass With Care Sign Post
TIE #2
Sta. 25+33.35
(#5 Rebar)

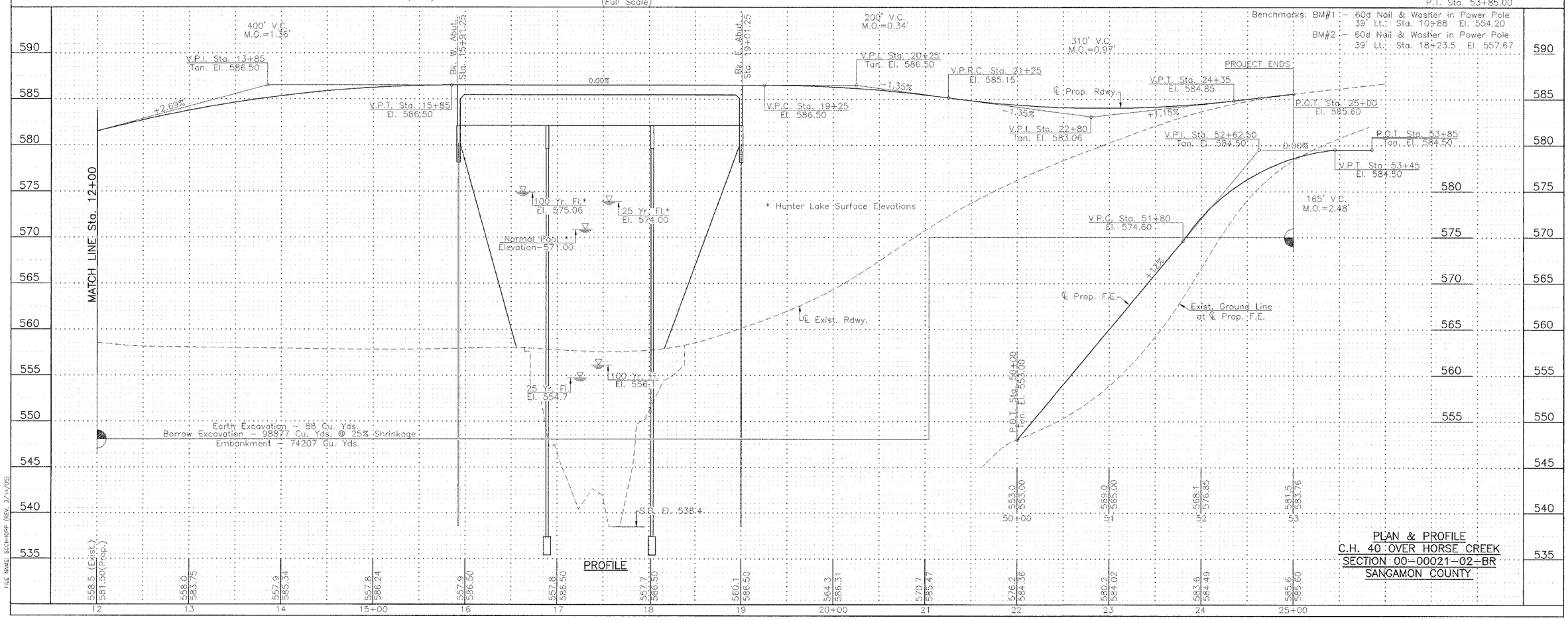


PLAN
Scale: 1"=50'
(Full Scale)

CURVE #1 DATA
P.I. Sta. 50+25
(℄ Sta. 18+50.115' Lt.)
* △ = 73°04'20"
D = 283°01'01"
T = 15.00'
R = 20.24'
L = 25.82'
E = 4.95'
P.C. Sta. 50+00
(℄ Sta. 18+50.130' Lt.)
P.T. Sta. 50+25.82

CURVE #2 DATA
P.I. Sta. 52+51.24
** △ = 16°55'40"
D = 24°21'36"
T = 35.00'
R = 235.20'
L = 69.49'
E = 2.59'
P.C. Sta. 52+16.24
P.T. Sta. 52+85.73

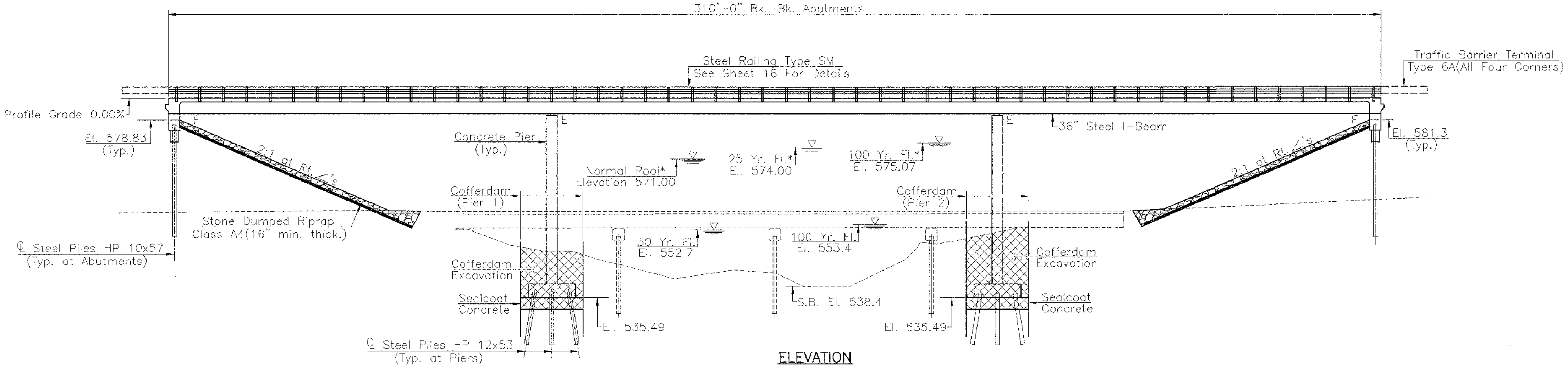
CURVE #3 DATA
P.I. Sta. 53+70.73
(℄ Sta. 22+00.45' Lt.)
*** △ = 90°00'00"
D = 229°11'00"
T = 25.00'
R = 25.00'
L = 39.27'
E = 10.36'
P.C. Sta. 53+45.73
(℄ Sta. 22+00.20' Lt.)
P.T. Sta. 53+85.00



PLAN & PROFILE
C.H. 40 OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY

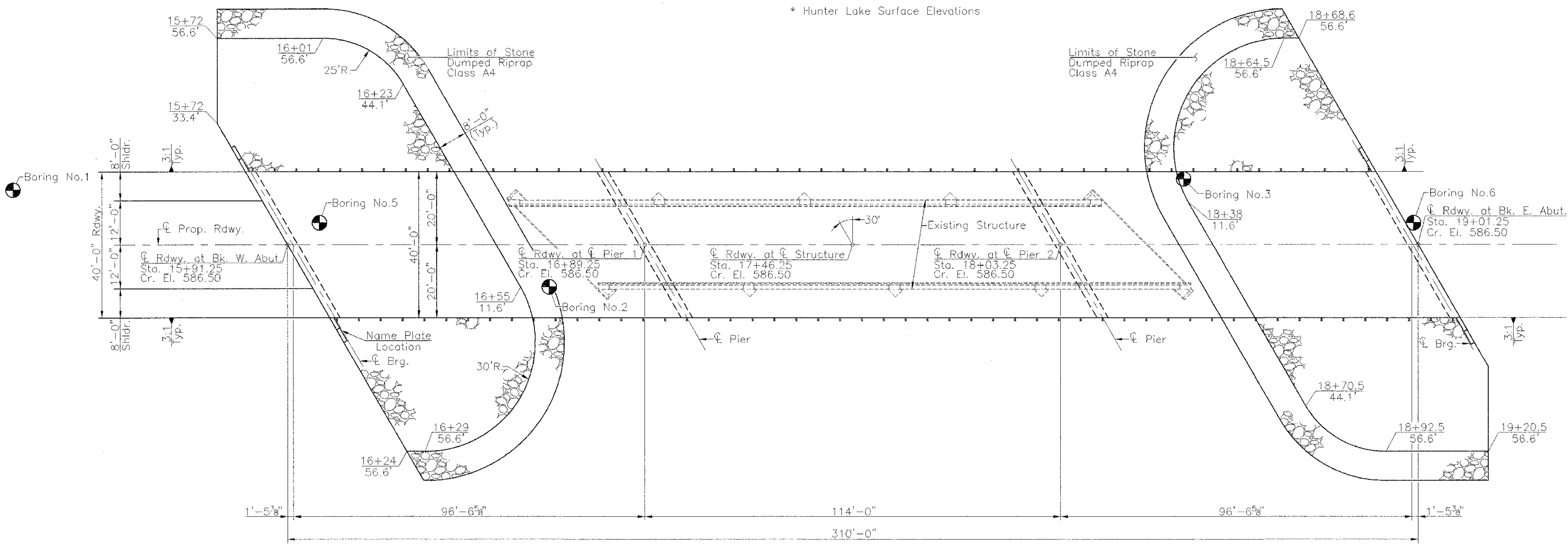
FILE NAME: SCH-HDPP (REV. 3/1/95)

Existing Structure: Four Span Reinforced Concrete Deck on Steel Stringers.
Concrete Pile Bent Abutments and Piers. ±162'-9" Bk.-Bk.
Abutments, ±24'-4" Out.-Out. Deck. Concrete Railings.
45° Skew Rt. Forward. Existing Structure No. 084-3015
Estimated Quantity to be Removed: Structural Steel – 103,480 Lbs
Concrete Structures – 201 Cu. Yds.



ELEVATION

* Hunter Lake Surface Elevations



PLAN

WATERWAY INFORMATION – HORSE CREEK

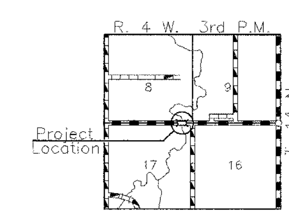
Drainage Area = 74.1Sq. Miles			Low Grade Elev. = 577.07					@ Sta. 5+70	
Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft.		Nat. H.W.E.	Head-Ft.		Headwater El.	
			Exist.	Prop.		Exist.	Prop.	Exist.	Prop.
Design	30	4881	662	887	552.7	0.3	0.2	553.0	552.9
Base	100	6433	705	968	553.4	0.7	0.5	554.1	553.9
Exist. Overtop	Greater than 500 Years								
Prop. Overtop	Greater than 500 Years								
Max. Calc.	500	8417	748	1069	554.2	1.3	0.9	555.5	555.1

WATERWAY INFORMATION – HUNTER LAKE

Drainage Area = 74.1Sq. Miles			Low Grade Elev. = 577.07					@ Sta. 5+70	
Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft.		Nat. H.W.E.	Head-Ft.		Headwater El.	
			Exist.	Prop.		Exist.	Prop.	Exist.	Prop.
Design	25	4781	998	1150	574.0	N/A	0.0	N/A	574.0
Base	100	6433	1117	1291	575.1	N/A	0.0	N/A	575.1
Exist. Overtop	Greater than 500 Years								
Prop. Overtop	Greater than 500 Years								

HORSE CREEK
BUILT 200 BY
SANGAMON COUNTY
SECTION 00-00021-02-BR
STA. 17+46.25
STR. NO. 084-3415 LOADING HS20

NAME PLATE
(Standard 515001)



LOCATION MAP

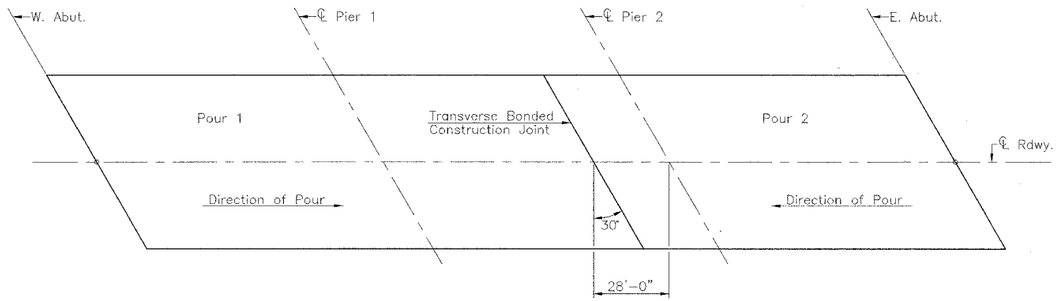
GENERAL PLAN & ELEVATION
C.H. 40 OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY

FILE NAME: SCCH40GPE (REV. 2/3/05)

93392

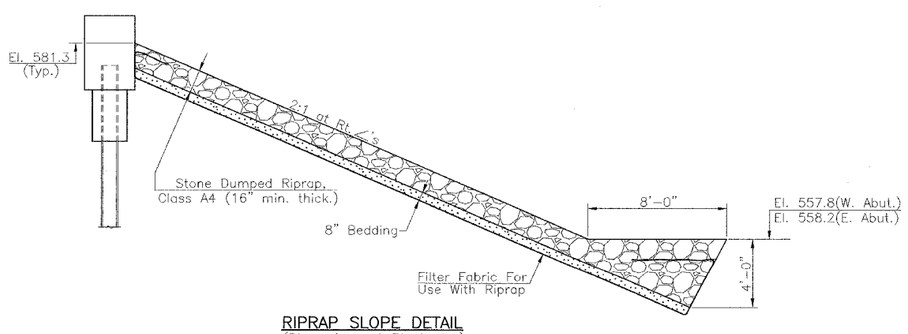
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 40	*	SANGAMON	33	8

* 00-00021-02-BR



DECK POURING SEQUENCE

The Contractor may alter the pouring sequence with the approval of the Engineer.



RIPRAP SLOPE DETAIL

(Dimensions at Rt. Angles)

GENERAL NOTES

Fasteners shall be high strength bolts. Bolts $^{7}/_{8}$"ø, open holes $^{15}/_{16}$"ø, unless otherwise noted.

Calculated weight of structural steel = 27100 Pounds (M270 G36)
Calculated weight of structural steel = 407100 Pounds (M270 G50)

Field welding of construction accessories will not be permitted to beams or girders.

Anchor bolts shall be set before bolting diaphragms over supports.

The structural steel bearing plates of the Elastomeric Bearing Assembly shall conform to the requirements of A.A.S.H.T.O. M270, Grade 50.

The main load carrying member components subject to tensile stress shall conform to the Supplemental Requirements for Notch Toughness Zone 2. These components are the wide flange beams and all splice plate material except fill plates.

Reinforcement bars shall conform to the requirements of A.A.S.H.T.O. M31, **M322,** Grade 60.

Layout of the slope protection system may be varied in the field to suit ground conditions as directed by the engineer.

The embankment configuration shown shall be the minimum embankment that must be constructed prior to construction of the abutments.

Bearing seat surfaces shall be constructed or adjusted to the designated elevations within a tolerance of $^{1}/_{8}$ inch. Adjustment shall be made either by grinding the surface or by shimming the bearing. Two $^{1}/_{8}$" adjusting shims, of the dimensions of the bottom bearing plate, shall be provided for each bearing in addition to all other plates or shims. For Type 1 Elastomeric bearings, two $^{1}/_{8}$" adjusting shims shall be provided for each bearing and placed as detailed.

The Contractor shall drive one test pile in a permanent location at each substructure unit as directed by the Engineer before ordering the remainder of piles.

When the deck pour is stopped for the day at one or more of the transverse Bonded Construction Joints in the deck Pouring Sequence as shown, the next pour shall not be made until both of the following requirements are met:

1. At least 72 hours shall have elapsed from the end of the previous pour.
2. The concrete strength shall have attained a minimum flexural strength of 650 psi or a minimum compressive strength of 3500 psi.

The existing structural steel coating contains lead. The Contractor shall take appropriate precautions to deal with the presence of lead on this project.

All construction joints shall be bonded.

The contractor shall obtain a construction permit from the Illinois Department of Natural Resources (I.D.N.R.), Office of Water Resources for any temporary construction activity placed in the water except cofferdams. This shall include the placement of material for run-arounds, causeways, etc. Any permit application by the Contractor shall refer to the I.D.N.R. permit number D52004161 which was issued for the permanent construction.

The Inorganic zinc rich primer / Acrylic / Acrylic Paint System shall be used for shop and field painting of new structural steel except where otherwise noted. The color of the final finish coat for all interior steel surfaces shall be gray, Munsell No. 5B 7/1. The color of the final finish coat for the exterior and bottom flange of the fascia beams shall be gray, Munsell No. 5B 7/1. See Special provision for "Cleaning and Painting New Metal Structures".

TOTAL BILL OF MATERIAL

Item		Super	Sub	Total
Stone Dumped Riprap, Class A4	Ton		1115	1115
Filter Fabric	Sq. Yd.		1683	1683
Removal of Existing Structures	Each			1
Cofferdam Excavation	Cu. Yd.		1062	1062
Cofferdam (Pier 1)	Each		1	1
Cofferdam (Pier 2)	Each		1	1
Concrete Structures	Cu. Yd.		620	620
Concrete Superstructures	Cu. Yd.	360.9		360.9
Bridge Deck Grooving	Sq. Yd.	1378		1378
Seal Coat Concrete	Cu. Yd.		182	182
Protective Coat	Sq. Yd.	1378		1378
Elastomeric Bearing Assembly, Type 1	Each	12		12
Furnishing and Erecting Structural Steel	L. Sum	1		1
Stud Shear Connectors	Each	3798		3798
Reinforcement Bars (Epoxy Coated)	Pound	86810	83820	170630
Steel Railing Type SM	Foot	620		620
Furnishing Steel Piles, HP 10x57	Foot		1152	1152
Furnishing Steel Piles HP12x53	Foot		2392	2392
Driving Steel Piles	Foot		3544	3544
Test Pile, Steel HP 10x57	Each		2	2
Test Piles, Steel HP12x53	Each		2	2
Concrete Encasement	Cu. Yd.		4.8	4.8
Name Plates	Each	1		1
Bar Splicers	Each	82		82

DESIGN STRESSES
FIELD UNITS

f'c = 3500 psi
fy = 60000 psi (Reinf.)
Fy = 50000 psi (Structural Steel) (M270 Grade 50)
Fy = 36000 psi (Structural Steel) (M270 Grade 36)

DESIGN SPECIFICATIONS

2002 A.A.S.H.T.O. Specifications and 2003 Interim Specifications.

LOADING HS 20-44

Allow 50#/sq. ft. for future wearing surface.

SEISMIC DATA

Seismic Performance Category (SPC) = A
Bedrock Acceleration Coefficient (A) = 4.8% g
Site Coefficient (S) = 1.5

I certify that to the best of my knowledge, information and belief, this bridge design is structurally adequate for the design loading shown on the plans. The design is an economical one for the style of structure and complies with requirements of the current "A.A.S.H.T.O. Standard Specifications For Highway Bridges".

Mark A Henderson 8/15/05
Expiration Date 11/30/2006

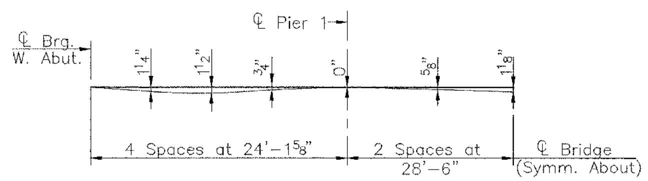
MARK A. HENDERSON 8618 LICENSED STRUCTURAL ENGINEER STATE OF ILLINOIS

GENERAL PLAN & ELEVATION
C.H. 40 OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY

FILE NAME: SCHEMDPE (REV. 3/14/05)

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 40	*	SANGAMON	33	9
PROJECT				

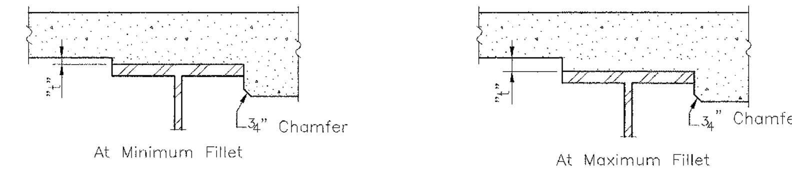
* 00-00021-02-BR



DEAD LOAD DEFLECTION DIAGRAM

(Includes weight of concrete, excluding beams).

Note: The above deflections are not to be used in the field if the engineer is working from the grade elevations adjusted for for dead load deflections as shown below.



FILLET HEIGHTS

To determine "t": After all structural steel has been erected, elevations of the top flanges of the beams shall be taken at intervals shown below. These elevations subtracted from the 'Theoretical Grade Elevations Adjusted for Dead Load Deflections' minus slab thickness, equals the fillet heights "t" above top flange of beams.

BEAM 1

Location	Station	Offset	Theoretical Grade Elevation	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut.	15+81.03	−17.71	586.22	586.22
℄ Brg. W. Abut.	15+82.48	−17.71	586.22	586.22
A	15+92.48	−17.71	586.22	586.27
B	16+02.48	−17.71	586.22	586.32
C	16+12.48	−17.71	586.22	586.34
D	16+22.48	−17.71	586.22	586.35
E	16+32.48	−17.71	586.22	586.35
F	16+42.48	−17.71	586.22	586.32
G	16+52.48	−17.71	586.22	586.29
H	16+62.48	−17.71	586.22	586.26
I	16+72.48	−17.71	586.22	586.23
℄ Brg. Pier 1	16+79.03	−17.71	586.22	586.22
J	16+89.03	−17.71	586.22	586.23
K	16+99.03	−17.71	586.22	586.25
L	17+09.03	−17.71	586.22	586.28
M	17+19.03	−17.71	586.22	586.30
N	17+29.03	−17.71	586.22	586.32
O	17+39.03	−17.71	586.22	586.32
P	17+49.03	−17.71	586.22	586.31
Q	17+59.03	−17.71	586.22	586.29
R	17+69.03	−17.71	586.22	586.26
S	17+79.03	−17.71	586.22	586.23
T	17+89.03	−17.71	586.22	586.22
℄ Brg. Pier 2	17+93.03	−17.71	586.22	586.22
U	18+03.03	−17.71	586.22	586.24
V	18+13.03	−17.71	586.22	586.27
W	18+23.03	−17.71	586.22	586.30
X	18+33.03	−17.71	586.22	586.33
Y	18+43.03	−17.71	586.22	586.35
Z	18+53.03	−17.71	586.22	586.35
AA	18+63.03	−17.71	586.22	586.34
BB	18+73.03	−17.71	586.22	586.30
CC	18+83.03	−17.71	586.22	586.25
℄ Brg. E. Abut.	18+89.58	−17.71	586.22	586.22
Bk. E. Abut.	18+91.03	−17.71	586.22	586.22

BEAM 2

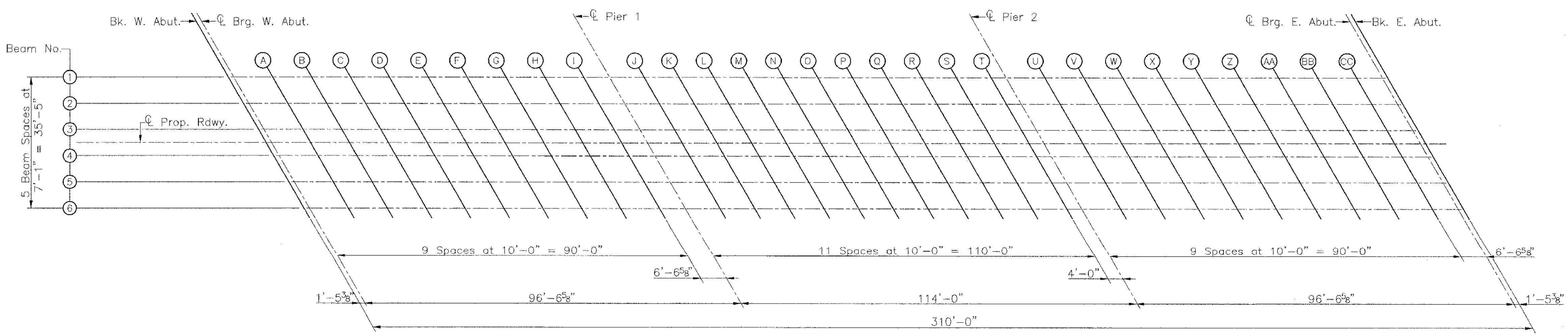
Location	Station	Offset	Theoretical Grade Elevation	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut.	15+85.12	−10.63	586.33	586.33
℄ Brg. W. Abut.	15+86.57	−10.63	586.33	586.33
A	15+96.57	−10.63	586.33	586.38
B	16+06.57	−10.63	586.33	586.43
C	16+16.57	−10.63	586.33	586.45
D	16+26.57	−10.63	586.33	586.46
E	16+36.57	−10.63	586.33	586.46
F	16+46.57	−10.63	586.33	586.43
G	16+56.57	−10.63	586.33	586.40
H	16+66.57	−10.63	586.33	586.37
I	16+76.57	−10.63	586.33	586.34
℄ Brg. Pier 1	16+83.12	−10.63	586.33	586.33
J	16+93.12	−10.63	586.33	586.34
K	17+03.12	−10.63	586.33	586.36
L	17+13.12	−10.63	586.33	586.39
M	17+23.12	−10.63	586.33	586.41
N	17+33.12	−10.63	586.33	586.43
O	17+43.12	−10.63	586.33	586.43
P	17+53.12	−10.63	586.33	586.42
Q	17+63.12	−10.63	586.33	586.40
R	17+73.12	−10.63	586.33	586.37
S	17+83.12	−10.63	586.33	586.34
T	17+93.12	−10.63	586.33	586.33
℄ Brg. Pier 2	17+97.12	−10.63	586.33	586.33
U	18+07.12	−10.63	586.33	586.35
V	18+17.12	−10.63	586.33	586.38
W	18+27.12	−10.63	586.33	586.41
X	18+37.12	−10.63	586.33	586.44
Y	18+47.12	−10.63	586.33	586.46
Z	18+57.12	−10.63	586.33	586.46
AA	18+67.12	−10.63	586.33	586.45
BB	18+77.12	−10.63	586.33	586.41
CC	18+87.12	−10.63	586.33	586.36
℄ Brg. E. Abut.	18+93.67	−10.63	586.33	586.33
Bk. E. Abut.	18+95.12	−10.63	586.33	586.33

BEAM 3

Location	Station	Offset	Theoretical Grade Elevation	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut.	15+89.20	−3.54	586.44	586.44
℄ Brg. W. Abut.	15+90.65	−3.54	586.44	586.44
A	16+00.65	−3.54	586.44	586.49
B	16+10.65	−3.54	586.44	586.54
C	16+20.65	−3.54	586.44	586.56
D	16+30.65	−3.54	586.44	586.57
E	16+40.65	−3.54	586.44	586.57
F	16+50.65	−3.54	586.44	586.54
G	16+60.65	−3.54	586.44	586.51
H	16+70.65	−3.54	586.44	586.48
I	16+80.65	−3.54	586.44	586.45
℄ Brg. Pier 1	16+87.20	−3.54	586.44	586.44
J	16+97.20	−3.54	586.44	586.45
K	17+07.20	−3.54	586.44	586.47
L	17+17.20	−3.54	586.44	586.50
M	17+27.20	−3.54	586.44	586.52
N	17+37.20	−3.54	586.44	586.54
O	17+47.20	−3.54	586.44	586.54
P	17+57.20	−3.54	586.44	586.53
Q	17+67.20	−3.54	586.44	586.51
R	17+77.20	−3.54	586.44	586.48
S	17+87.20	−3.54	586.44	586.45
T	17+97.20	−3.54	586.44	586.44
℄ Brg. Pier 2	18+01.20	−3.54	586.44	586.44
U	18+11.20	−3.54	586.44	586.46
V	18+21.20	−3.54	586.44	586.49
W	18+31.20	−3.54	586.44	586.52
X	18+41.20	−3.54	586.44	586.55
Y	18+51.20	−3.54	586.44	586.57
Z	18+61.20	−3.54	586.44	586.57
AA	18+71.20	−3.54	586.44	586.56
BB	18+81.20	−3.54	586.44	586.52
CC	18+91.20	−3.54	586.44	586.47
℄ Brg. E. Abut.	18+97.75	−3.54	586.44	586.44
Bk. E. Abut.	18+99.20	−3.54	586.44	586.44

℄ RDWY.

Location	Station	Offset	Theoretical Grade Elevation	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut.	15+91.25	0.00	586.50	586.50
℄ Brg. W. Abut.	15+92.70	0.00	586.50	586.50
A	16+02.70	0.00	586.50	586.55
B	16+12.70	0.00	586.50	586.60
C	16+22.70	0.00	586.50	586.62
D	16+32.70	0.00	586.50	586.63
E	16+42.70	0.00	586.50	586.63
F	16+52.70	0.00	586.50	586.60
G	16+62.70	0.00	586.50	586.57
H	16+72.70	0.00	586.50	586.54
I	16+82.70	0.00	586.50	586.51
℄ Brg. Pier 1	16+89.25	0.00	586.50	586.50
J	16+99.25	0.00	586.50	586.51
K	17+09.25	0.00	586.50	586.53
L	17+19.25	0.00	586.50	586.56
M	17+29.25	0.00	586.50	586.58
N	17+39.25	0.00	586.50	586.60
O	17+49.25	0.00	586.50	586.60
P	17+59.25	0.00	586.50	586.59
Q	17+69.25	0.00	586.50	586.57
R	17+79.25	0.00	586.50	586.54
S	17+89.25	0.00	586.50	586.51
T	17+99.25	0.00	586.50	586.50
℄ Brg. Pier 2	18+03.25	0.00	586.50	586.50
U	18+13.25	0.00	586.50	586.52
V	18+23.25	0.00	586.50	586.55
W	18+33.25	0.00	586.50	586.58
X	18+43.25	0.00	586.50	586.61
Y	18+53.25	0.00	586.50	586.63
Z	18+63.25	0.00	586.50	586.63
AA	18+73.25	0.00	586.50	586.62
BB	18+83.25	0.00	586.50	586.58
CC	18+93.25	0.00	586.50	586.53
℄ Brg. E. Abut.	18+99.80	0.00	586.50	586.50
Bk. E. Abut.	19+01.25	0.00	586.50	586.50



PLAN

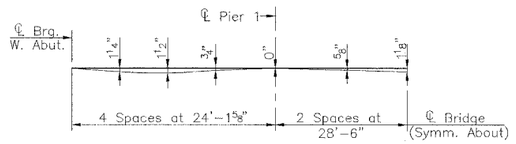
TOP OF SLAB ELEVATIONS
C.H. 40 OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY

ALLEN HENDERSON & ASSOCIATES, INC. CONSULTING CIVIL AND STRUCTURAL ENGINEERS SPRINGFIELD,IL. PHONE: (217) 544-8033

93392

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 40	*	SANGAMON	33	10
PROJECT				

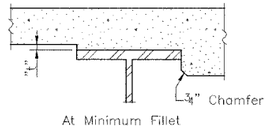
* 00-00021-02-BR



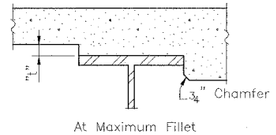
DEAD LOAD DEFLECTION DIAGRAM

(Includes weight of concrete, excluding beams).

Note: The above deflections are not to be used in the field if the engineer is working from the grade elevations adjusted for for dead load deflections as shown below.



At Minimum Fillet



At Maximum Fillet

FILLET HEIGHTS

To determine "t": After all structural steel has been erected, elevations of the top flanges of the beams shall be taken at intervals shown below. These elevations subtracted from the 'Theoretical Grade Elevations Adjusted for Dead Load Deflections' minus slab thickness, equals the fillet heights "t" above top flange of beams.

BEAM 4

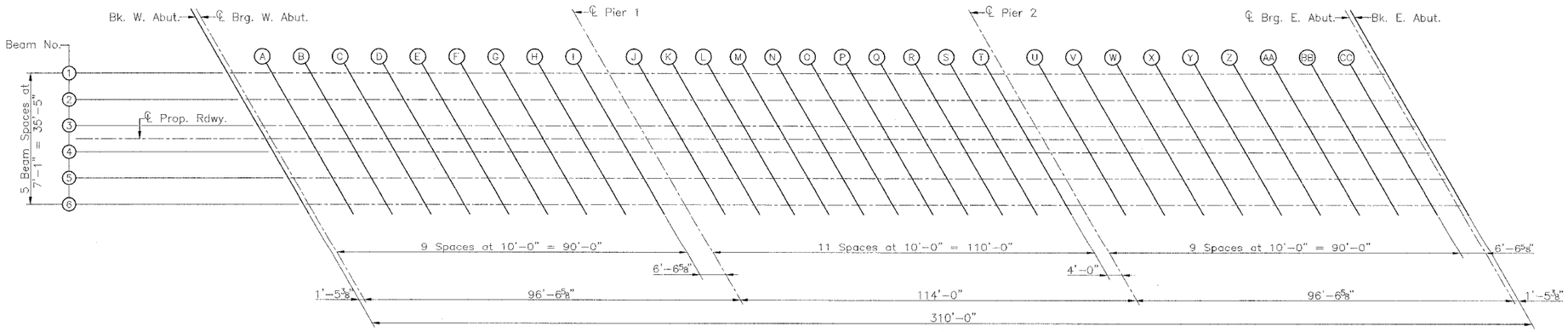
Location	Station	Offset	Theoretical Grade Elevation	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut.	15+93.29	3.54	586.44	586.44
℄ Brg. W. Abut.	15+94.74	3.54	586.44	586.44
A	16+04.74	3.54	586.44	586.49
B	16+14.74	3.54	586.44	586.54
C	16+24.74	3.54	586.44	586.56
D	16+34.74	3.54	586.44	586.57
E	16+44.74	3.54	586.44	586.57
F	16+54.74	3.54	586.44	586.54
G	16+64.74	3.54	586.44	586.51
H	16+74.74	3.54	586.44	586.48
I	16+84.74	3.54	586.44	586.45
℄ Brg. Pier 1	16+91.29	3.54	586.44	586.44
J	17+01.29	3.54	586.44	586.45
K	17+11.29	3.54	586.44	586.47
L	17+21.29	3.54	586.44	586.50
M	17+31.29	3.54	586.44	586.52
N	17+41.29	3.54	586.44	586.54
O	17+51.29	3.54	586.44	586.54
P	17+61.29	3.54	586.44	586.53
Q	17+71.29	3.54	586.44	586.51
R	17+81.29	3.54	586.44	586.48
S	17+91.29	3.54	586.44	586.45
T	18+01.29	3.54	586.44	586.44
℄ Brg. Pier 2	18+05.29	3.54	586.44	586.44
U	18+15.29	3.54	586.44	586.46
V	18+25.29	3.54	586.44	586.49
W	18+35.29	3.54	586.44	586.52
X	18+45.29	3.54	586.44	586.55
Y	18+55.29	3.54	586.44	586.57
Z	18+65.29	3.54	586.44	586.57
AA	18+75.29	3.54	586.44	586.56
BB	18+85.29	3.54	586.44	586.52
CC	18+95.29	3.54	586.44	586.47
℄ Brg. E. Abut.	19+01.84	3.54	586.44	586.44
Bk. E. Abut.	19+03.29	3.54	586.44	586.44

BEAM 5

Location	Station	Offset	Theoretical Grade Elevation	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut.	15+97.38	10.63	586.33	586.33
℄ Brg. W. Abut.	15+98.83	10.63	586.33	586.33
A	16+08.83	10.63	586.33	586.38
B	16+18.83	10.63	586.33	586.43
C	16+28.83	10.63	586.33	586.45
D	16+38.83	10.63	586.33	586.46
E	16+48.83	10.63	586.33	586.46
F	16+58.83	10.63	586.33	586.43
G	16+68.83	10.63	586.33	586.40
H	16+78.83	10.63	586.33	586.37
I	16+88.83	10.63	586.33	586.34
℄ Brg. Pier 1	16+95.38	10.63	586.33	586.33
J	17+05.38	10.63	586.33	586.34
K	17+15.38	10.63	586.33	586.36
L	17+25.38	10.63	586.33	586.39
M	17+35.38	10.63	586.33	586.41
N	17+45.38	10.63	586.33	586.43
O	17+55.38	10.63	586.33	586.43
P	17+65.38	10.63	586.33	586.42
Q	17+75.38	10.63	586.33	586.40
R	17+85.38	10.63	586.33	586.37
S	17+95.38	10.63	586.33	586.34
T	18+05.38	10.63	586.33	586.33
℄ Brg. Pier 2	18+09.38	10.63	586.33	586.33
U	18+19.38	10.63	586.33	586.35
V	18+29.38	10.63	586.33	586.38
W	18+39.38	10.63	586.33	586.41
X	18+49.38	10.63	586.33	586.44
Y	18+59.38	10.63	586.33	586.46
Z	18+69.38	10.63	586.33	586.46
AA	18+79.38	10.63	586.33	586.45
BB	18+89.38	10.63	586.33	586.41
CC	18+99.38	10.63	586.33	586.36
℄ Brg. E. Abut.	19+05.93	10.63	586.33	586.33
Bk. E. Abut.	19+07.38	10.63	586.33	586.33

BEAM 6

Location	Station	Offset	Theoretical Grade Elevation	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut.	16+01.47	17.71	586.22	586.22
℄ Brg. W. Abut.	16+02.92	17.71	586.22	586.22
A	16+12.92	17.71	586.22	586.27
B	16+22.92	17.71	586.22	586.32
C	16+32.92	17.71	586.22	586.34
D	16+42.92	17.71	586.22	586.35
E	16+52.92	17.71	586.22	586.35
F	16+62.92	17.71	586.22	586.32
G	16+72.92	17.71	586.22	586.29
H	16+82.92	17.71	586.22	586.26
I	16+92.92	17.71	586.22	586.23
℄ Brg. Pier 1	16+99.47	17.71	586.22	586.22
J	17+09.47	17.71	586.22	586.23
K	17+19.47	17.71	586.22	586.25
L	17+29.47	17.71	586.22	586.28
M	17+39.47	17.71	586.22	586.30
N	17+49.47	17.71	586.22	586.32
O	17+59.47	17.71	586.22	586.32
P	17+69.47	17.71	586.22	586.31
Q	17+79.47	17.71	586.22	586.29
R	17+89.47	17.71	586.22	586.26
S	17+99.47	17.71	586.22	586.23
T	18+09.47	17.71	586.22	586.22
℄ Brg. Pier 2	18+13.47	17.71	586.22	586.22
U	18+23.47	17.71	586.22	586.24
V	18+33.47	17.71	586.22	586.27
W	18+43.47	17.71	586.22	586.30
X	18+53.47	17.71	586.22	586.33
Y	18+63.47	17.71	586.22	586.35
Z	18+73.47	17.71	586.22	586.35
AA	18+83.47	17.71	586.22	586.34
BB	18+93.47	17.71	586.22	586.30
CC	19+03.47	17.71	586.22	586.25
℄ Brg. E. Abut.	19+10.02	17.71	586.22	586.22
Bk. E. Abut.	19+11.47	17.71	586.22	586.22



PLAN

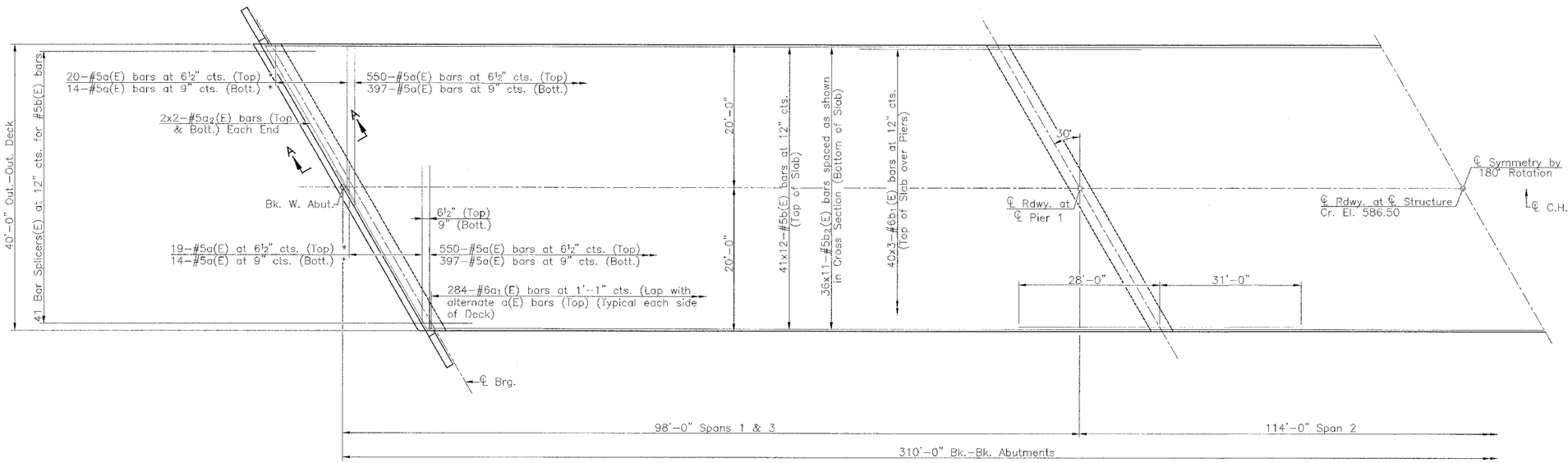
TOP OF SLAB ELEVATIONS
C.H. 40 OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY

FILE NAME: SCCH40TOSE (REV. 1/26/05)

93392

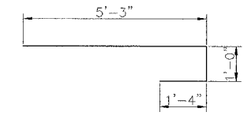
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 40	*	SANGAMON	33	11
PROJECT				

* 00-00021-02-BR



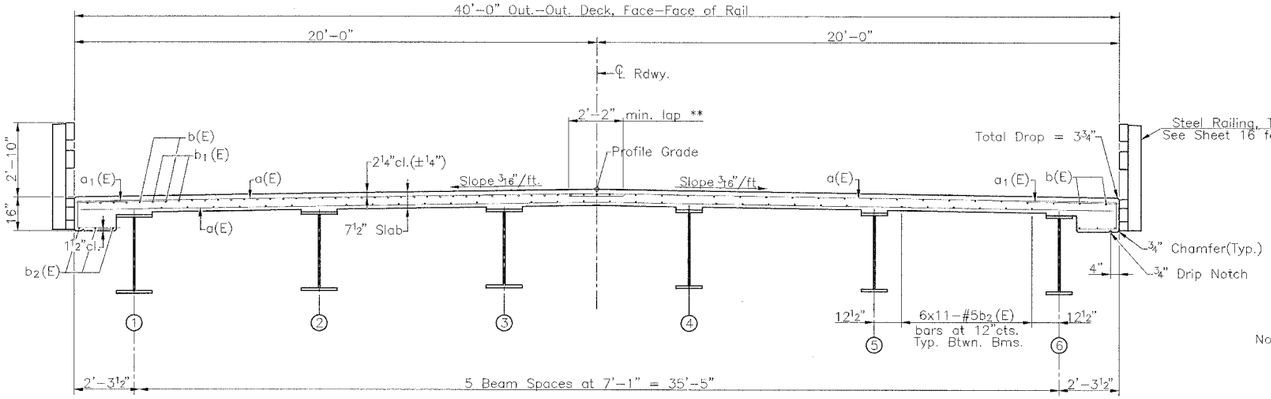
HALF PLAN

* Order a(E) bars full length. Cut to fit and use remainder of bars in opposite end.



BAR a_1(E)

Note: See Sheet 15 of 33 for superstructure details & Section A-A.
Bars indicated thus 40 x 16-#5 etc. indicates 40 lines of bars with 16 lengths per line.
Reinforcement bars designated (E) shall be epoxy coated.
See Sheet 8 of 33 for Deck Pouring Sequence.



Near Pier — Near Midspan

CROSS SECTION
(Looking East)

Note: Reinforcement in the top of the deck may be placed with a 1½" minimum clearance in the area of the rail post anchor devices. The studs of the anchor devices shall be placed below the top reinforcement bars and outermost longitudinal reinforcement bar shall be placed directly above the studs of the rail post anchor device.

** Bars shall be lapped with double the number of ties normally used.

MIN. BAR LAPS
#5 bars = 2'-2"
#6 bars = 2'-7"

SUPERSTRUCTURE
BILL OF MATERIAL

Bar	No.	Size	Length	Shape
a(E)	1961	#5	20'-11"	
a_1(E)	568	#6	7'-7"	
a_2(E)	16	#5	24'-0"	
b(E)	492	#5	27'-10"	
b_1(E)	240	#6	21'-6"	
b_2(E)	396	#5	30'-2"	
m(E)	8	#6	24'-3"	
m_1(E)	12	#6	24'-3"	
m_2(E)	24	#6	10'-10"	
m_3(E)	10	#6	7'-10"	
s(E)	82	#5	4'-11"	
s_1(E)	82	#5	10'-4"	
u(E)	16	#5	7'-5"	
Reinforcement Bars, Epoxy Coated			Pound	86810
Concrete Superstructures			Cu. Yd.	360.9
Protective Coat			Sq. Yd.	1378

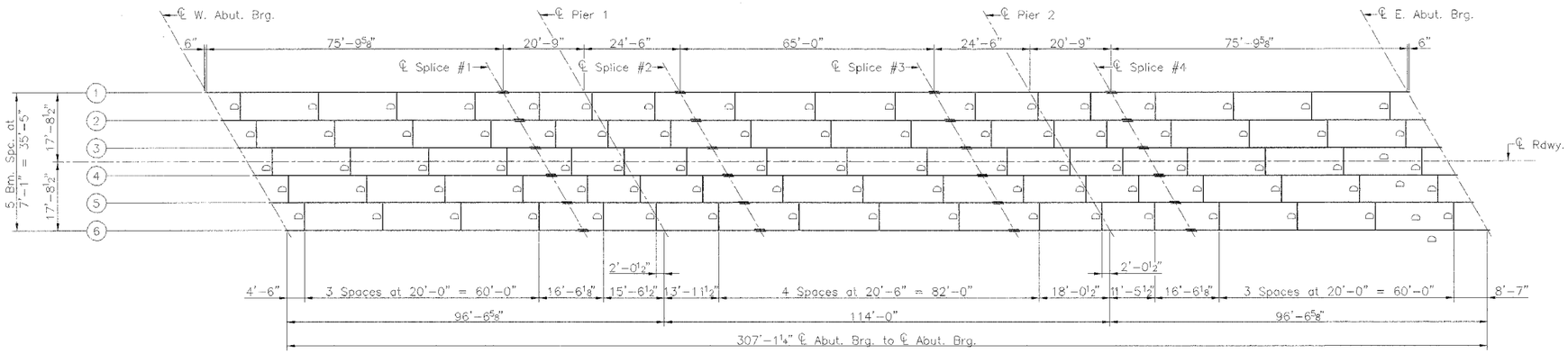
SUPERSTRUCTURE
C.H. 40 OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY

FILE NAME: SCH40SB (REV. 3/14/08)

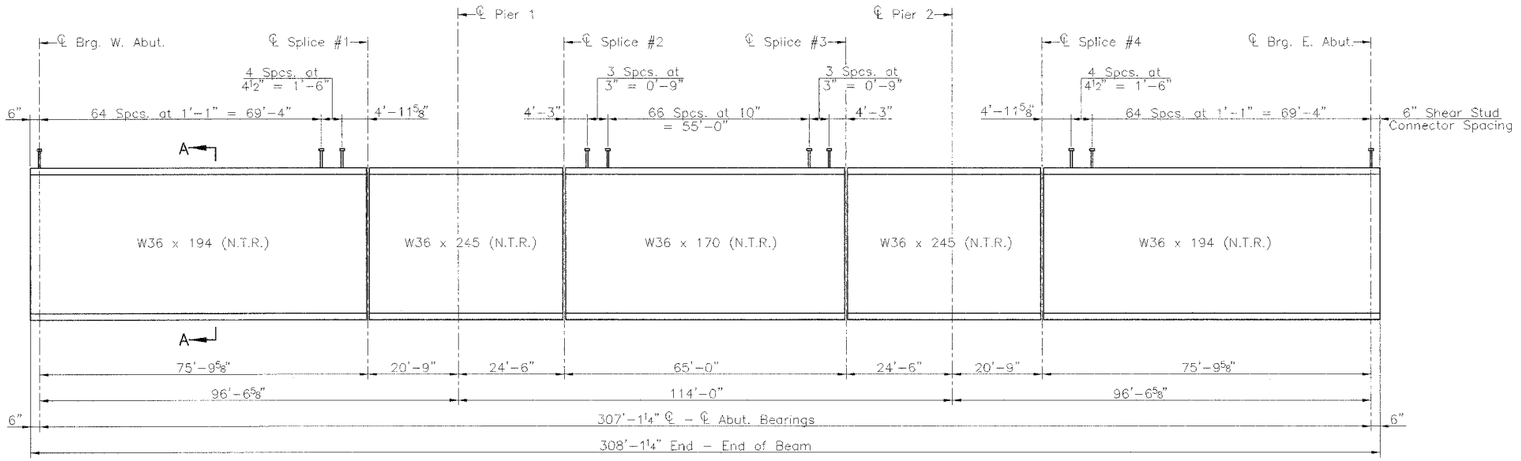
93392

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 40	*	SANGAMON	33	12
PROJECT				

* 00-00021-02-BR

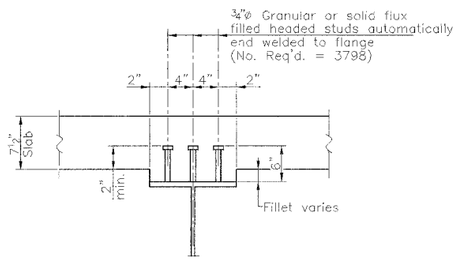


FRAMING PLAN

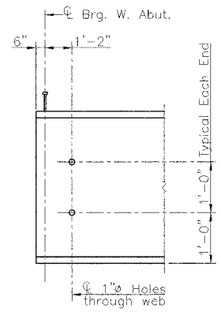


ELEVATION

Notes:
N.T.R. denotes beams to which Notch Toughness requirements are applicable.
All structural steel shall be A.A.S.H.T.O. M270, Grade 50.



SECTION A-A



ELEVATION AT END OF BEAM

TOP OF BEAM ELEVATIONS

LOCATION	Beam #1	Beam #2	Beam #3	Beam #4	Beam #5	Beam #6
℄ W. Abut. Brg.	585.55	585.66	585.77	585.77	585.66	585.55
℄ Slice #1	585.44	585.55	585.66	585.66	585.55	585.44
℄ Pier #1	585.45	585.56	585.67	585.67	585.56	585.45
℄ Splice #2	585.46	585.57	585.68	585.68	585.57	585.46
℄ Splice #3	585.46	585.57	585.68	585.68	585.57	585.46
℄ Pier #2	585.45	585.56	585.67	585.67	585.56	585.45
℄ Splice #4	585.44	585.55	585.66	585.66	585.55	585.44
℄ E. Abut. Brg.	585.55	585.66	585.77	585.77	585.66	585.55

Notes:
Top of beam elevations are for fabrication only and do not include dead load deflections.

STRUCTURAL STEEL
C.H. 40 OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY

FILE NAME: SGC-140STST (REV. 3/14/05)

93392

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 40	*	SANGAMON	33	13
PROJECT				

* 00-00021-02-BR

INTERIOR GIRDER MOMENT TABLE

		0.4 Span 1 or 0.6 Span 3	Pier #1 or Pier #2	0.5 Span 2
Is	(in^4)	12,100	16,100	10,500
Ic (n)	(in^4)	26,653	–	23,830
Ic (3n)	(in^4)	19,563	–	17,560
Ss	(in^3)	664	895	580
Sc (n)	(in^3)	889	–	783
Sc (3n)	(in^3)	804	–	710
℄	(K/Ft)	.887	.938	.863
M ℄	(Ft–k)	571	1069	363
S ℄	(K/Ft)	.355	.355	.355
Ms ℄	(Ft–k)	245	381	196
M ℄	(Ft–k)	790	637	787
M (Imp)	(Ft–k)	178	138	165
5/3[M ℄+M(Imp)]	(Ft–k)	1613	1292	1586
Ma	(Ft–k)	3158	3565	2788
Mu	(Ft–k)	4285	---	3815
fs ℄ non–comp	k.s.i.	10.3	19.4	7.5
fs ℄ (comp)	k.s.i.	3.7	–	3.3
fs 5/3(℄+Imp)	k.s.i.	21.8	17.3	24.3
fs (Overload)	k.s.i.	35.8	36.7	35.1
fs (Total)	k.s.i.	—	47.7	—
VR	(k)	55.3	–	44.2

INTERIOR GIRDER REACTION TABLE

		Abuts.	Piers
R ℄	(k)	45.1	147.6
R ℄	(k)	45.9	71.1
Imp.	(k)	10.3	15.5
R (Total)	(k)	101.3	234.2

Note: Reactions are not factored

Is and Ss are the moment of inertia and section modulus of the steel section used in computing fs (Total & Overload).

Ic(n) and Sc(n) are the moment of inertia and section modulus of the composite section used in computing stresses due to Live Load.

Ic(3n) and Sc(3n) are the moment of inertia and section modulus of the composite section used in computing stresses due to superimposed dead loads. (See AASHTO 10.38).

VR is the maximum Live Load + Impact shear range in span.

Ma (Applied Moment) = 1.3 [M ℄+Ms ℄ +5/3 (M ℄ + Mlmp)].

The Plastic Moment Capacity for compact, braced section, (Mu) is computed according to AASHTO 10.48.1 & 10.50.1.1

fs (Overload) is the sum of the stresses due to M ℄ + Ms ℄ +5/3 (M ℄ + Mlmp).

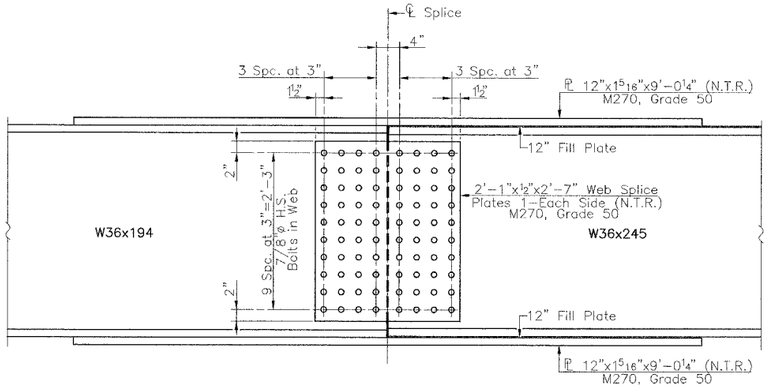
fs(Total) (Non–compact section) is the sum of the stresses due to 1.3[M ℄ + Ms ℄ + 5/3(M ℄ + Mlmp)].

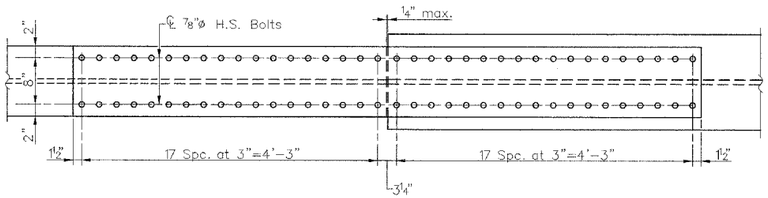
$M_{℄}$ – Moment due to dead loads on non–composite section.

$Ms_{℄}$ – Moment due to dead loads on composite section.

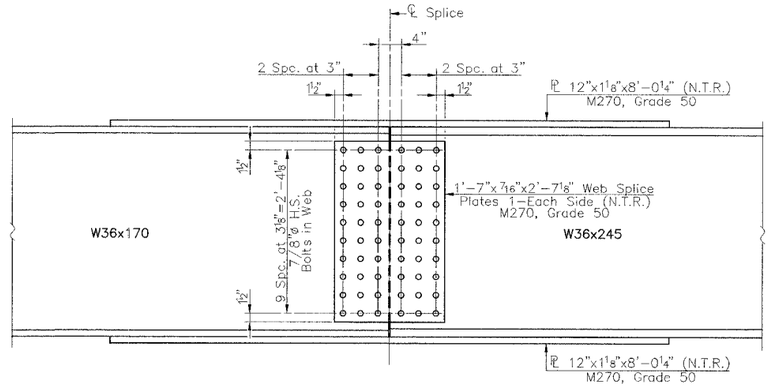
M_{LL} – Moment due to live loads on non–composite or composite section.

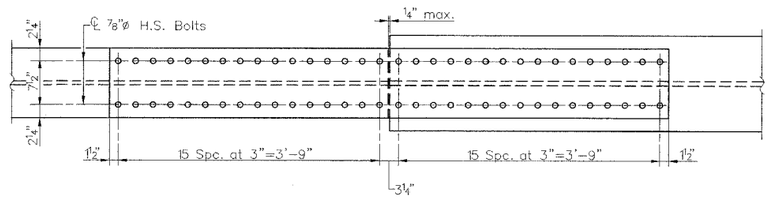
$M_{(Imp)}$ – Moment due to live load impact on non–composite or composite section.



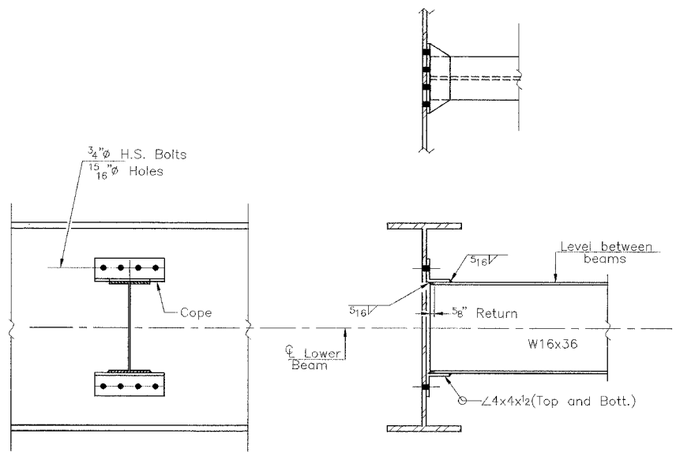


SPLICE #1 AND #4





SPLICE #2 AND #3



DIAPHRAGM D
(85 Required)

Note: Two hardened washers shall be required over all oversized holes in diaphragms.

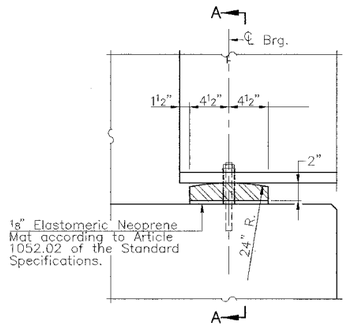
STRUCTURAL STEEL
C.H. 40 OVER HORSE CREEK
SECTION 00–00021–02–BR
SANGAMON COUNTY

FILE NAME: SCCH140S52 (REV. 3/14/05)

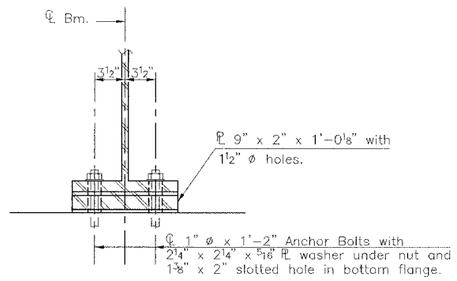
93392

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 40	*	SANGAMON	33	14
PROJECT				

* 00-00021-00-BR

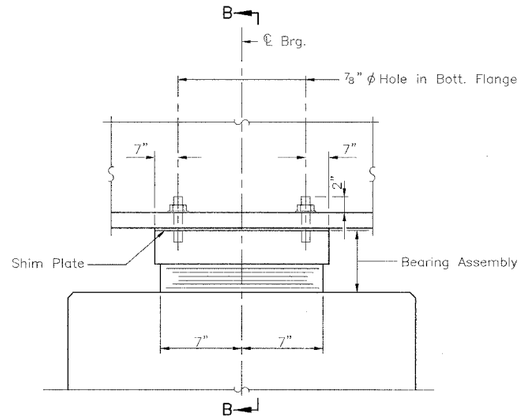


ELEVATION AT ABUTS.

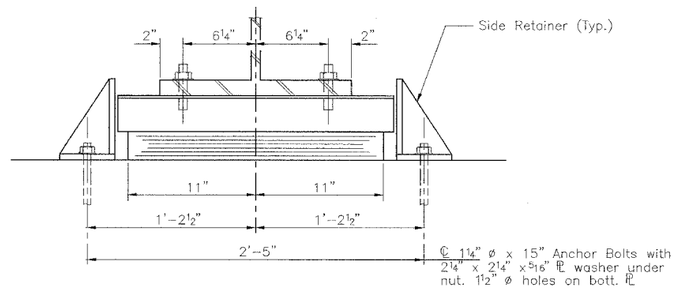


SECTION A-A

FIXED BRG. AT ABUTMENTS

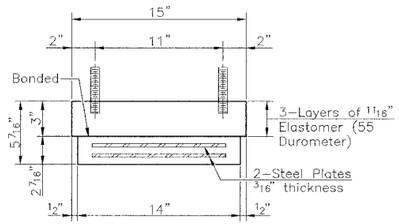


ELEVATION AT PIERS



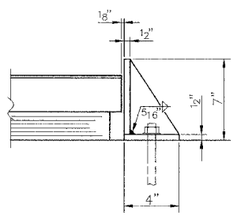
SECTION B-B

EXPANSION BRG. AT PIERS

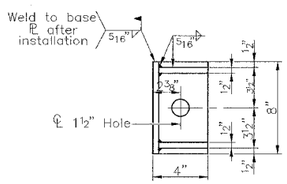


BEARING ASSEMBLY

Notes: Shim plates shall not be placed under Bearing Assembly.



SIDE RETAINER



SIDE RETAINER

Notes:
Anchor bolts at bearings may be built into the masonary.
See Sheet No. 20 of 33 for Anchor Bolt details.
All plates for the fixed and expansion bearings shall be AASHTO M270, Grade 50.

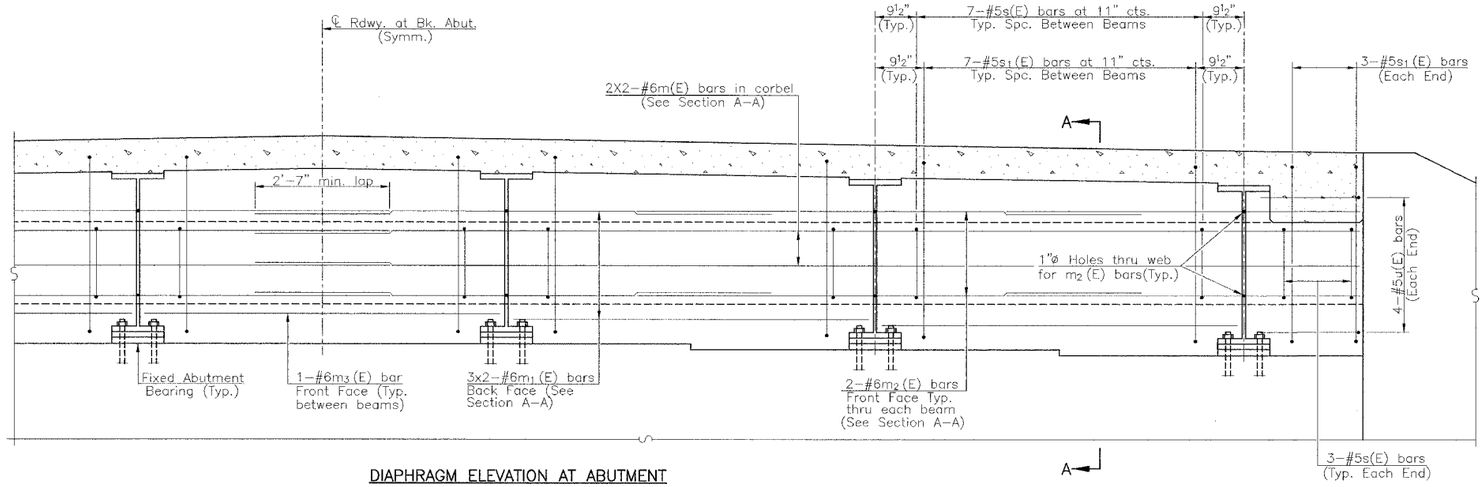
BEARING DETAILS
C.H. 40 OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY

FILE NAME: SCD14080 (REV. 1/27/05)

93392

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 40	*	SANGAMON	33	15
PROJECT				

* 00-00021-02-BR



DIAPHRAGM ELEVATION AT ABUTMENT

Notes:

Reinforcement bars in diaphragm are billed with superstructure on Sheet 11 of 33.

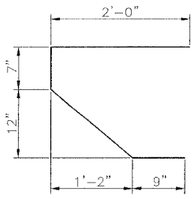
Concrete in diaphragm is included with Concrete Superstructure on Sheet 11 of 33.

The s(E) and s_1(E) bars shall be placed parallel to the beams. Spacing for theses bars shall be at right angles to the beams.

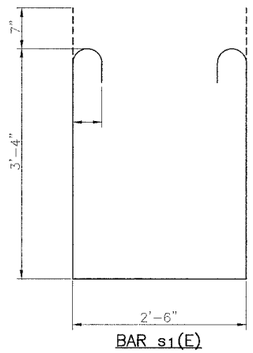
For bearing details, see Sheet 14 of 33.

For anchor bolt details, see Sheet 20 of 33.

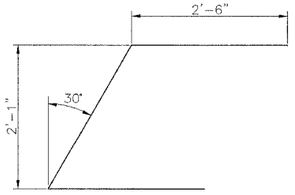
MIN. BAR LAPS
#6 bar = 2'-7"



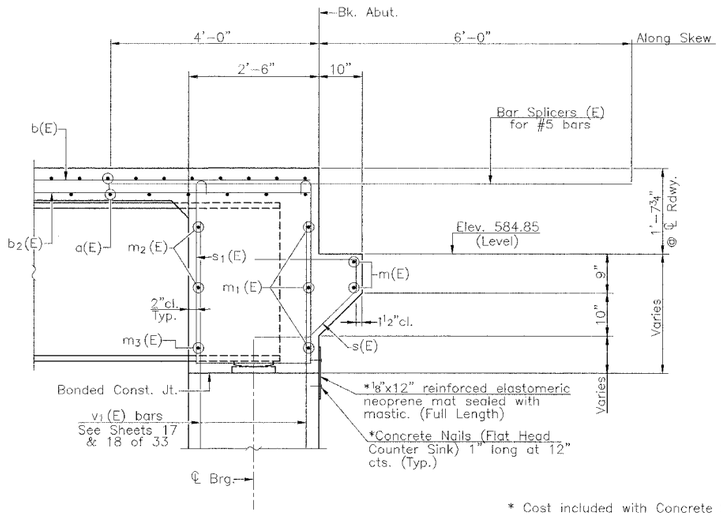
BAR s(E)



BAR s_1(E)



BAR u(E)



SECTION A-A

Dimensions are at right angles to abutment except as shown.

* Cost included with Concrete Structures.

DIAPHRAGM DETAILS
C.H. 40 OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY

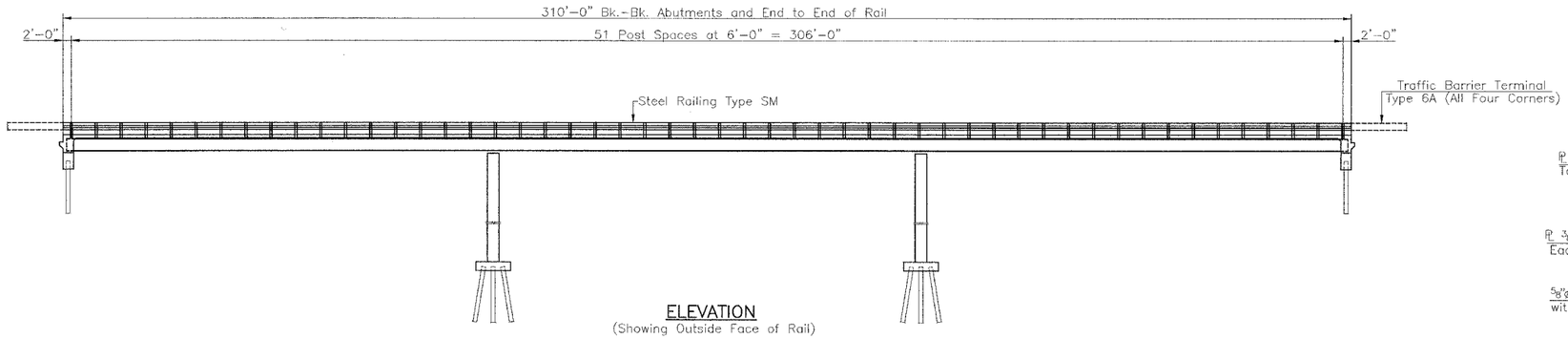
FILE NAME: SCCH40DD (REV. 3/14/05)

ALLEN HENDERSON & ASSOCIATES, INC. CONSULTING CIVIL AND STRUCTURAL ENGINEERS SPRINGFIELD,IL. PHONE: (217) 544-8033

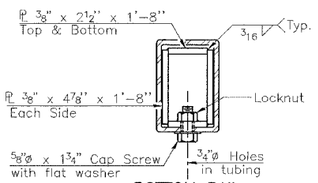
93392

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 40	*	SANGAMON	33	16
PROJECT				

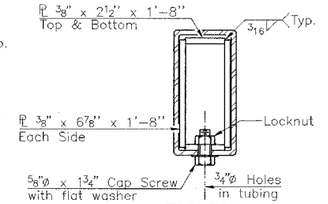
* 00-00021-02-BR



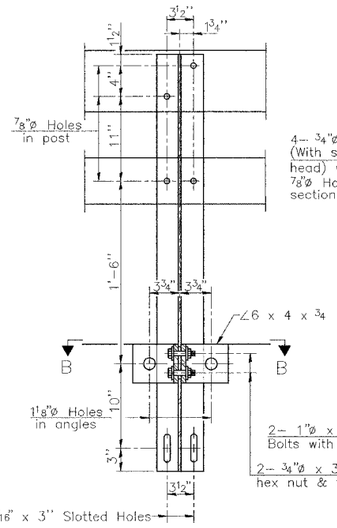
ELEVATION
(Showing Outside Face of Rail)



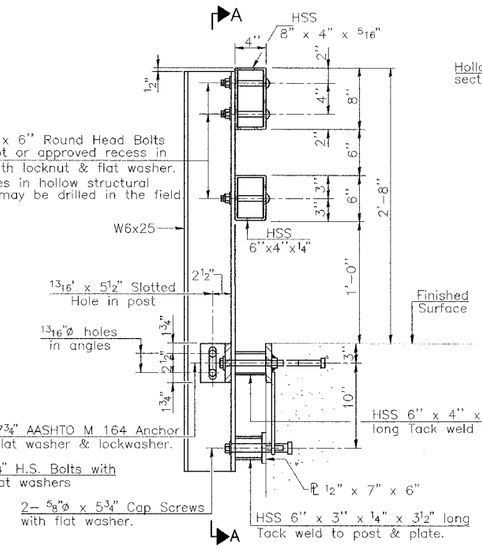
BOTTOM RAIL



TOP RAIL

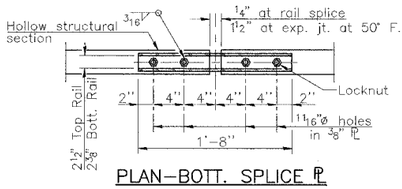


SECTION A-A

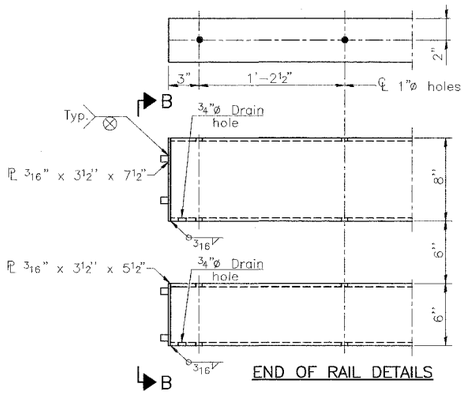


4 - 3/4"ø x 6" Round Head Bolts (With slot or approved recess in head) with locknut & flat washer. 7/8"ø Holes in hollow structural section may be drilled in the field

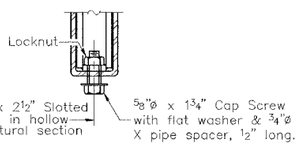
SECTION AT RAIL POST



PLAN-BOTT. SPLICE PL
TYPICAL

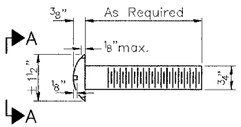


END OF RAIL DETAILS

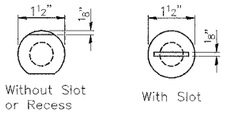


RAIL SPLICE CONNECTION
AT EXPANSION JT.

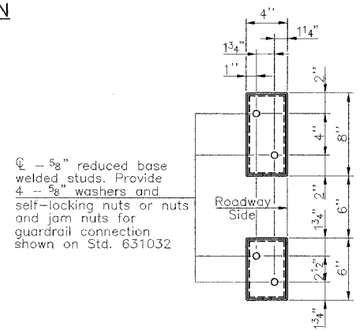
SECTIONS AT RAIL SPLICE



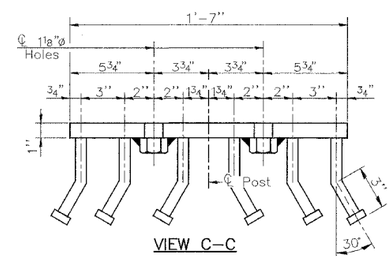
DETAIL OF 3/4"ø ROUND HEAD BOLT



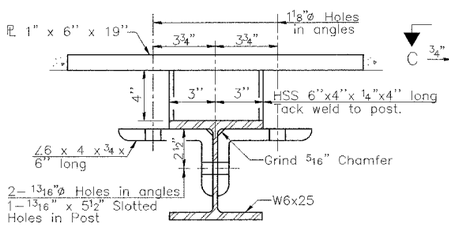
VIEW A-A



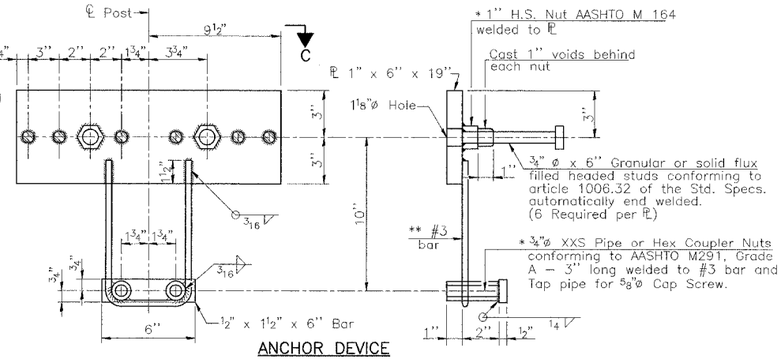
VIEW B-B



VIEW C-C



SECTION B-B



ANCHOR DEVICE

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

** 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".

NOTES

Hollow structural sections shall conform to the requirements of ASTM designation A 500 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 requirements of ASTM designation A 307 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 Bridge Rail, Type SM.

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

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 Bridge Rail, Type SM.

The 1/2" x 7" x 6" plates that come in contact with concrete shall receive two coats of asphalt paint conforming to Section 1060.07 Type II or place 1/8" fabric bearing pads between the plates and concrete.

The 3/4"ø 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(f)(2) of the Standard Specifications. The 1"ø 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"ø cap screws in bottom of posts shall be tightened to a snug fit only.

BILL OF MATERIAL

Item	Unit	Quantity
Steel Bridge Rail, Type SM	Foot	620

TYPE SM
STEEL BRIDGE RAIL SIDE MOUNTED
C.H. 40 OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY

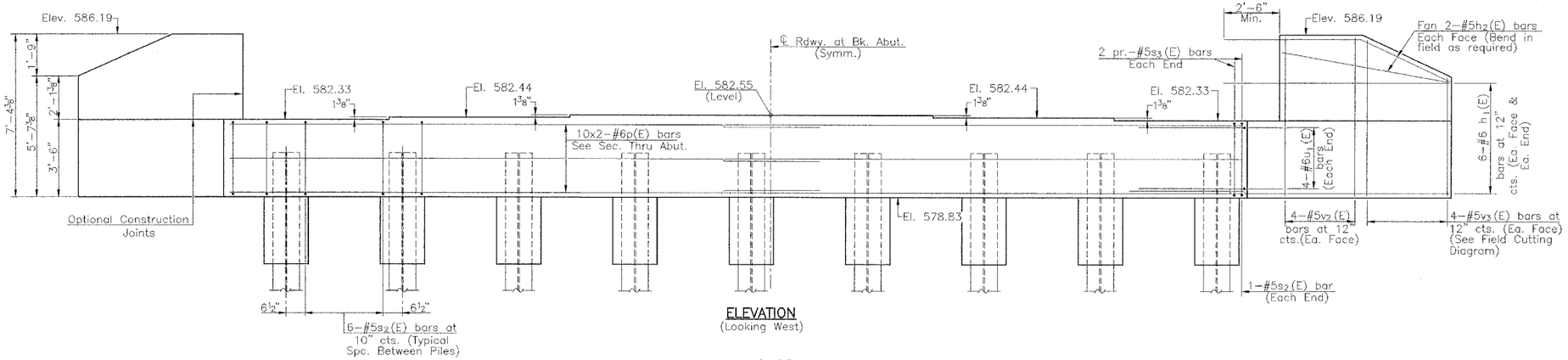
FILE NAME: SM31405R (REV. 3/14/03)

R-34 10-31-02 (6'-3" Maximum Post Spacing)

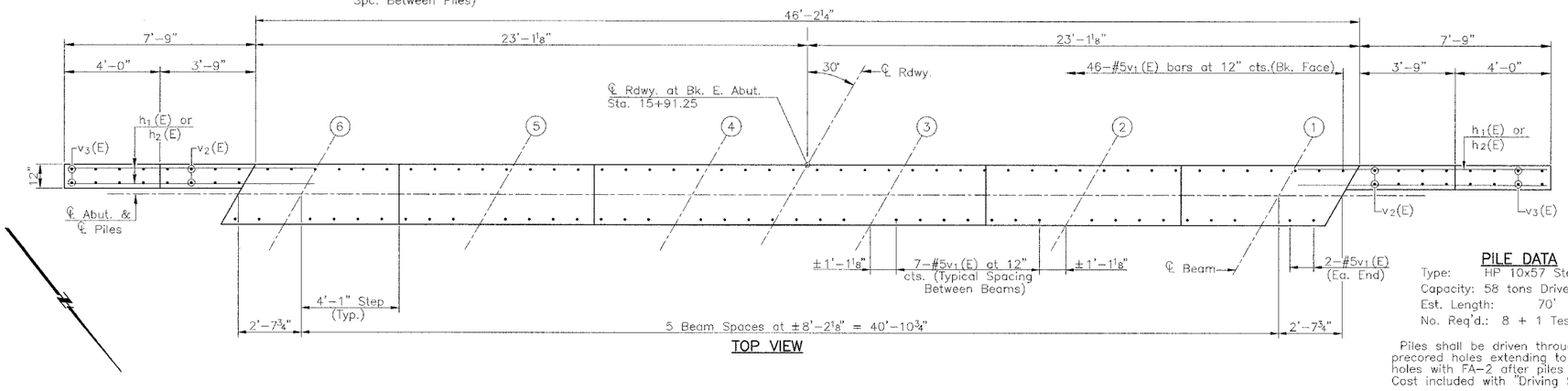
93392

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 40	*	SANGAMON	33	17
PROJECT				

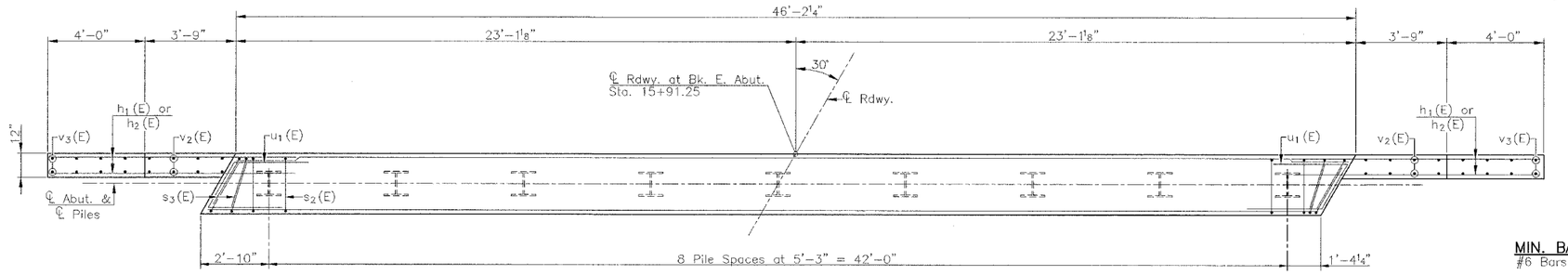
* 00-00021-02-BR



ELEVATION
(Looking West)



TOP VIEW



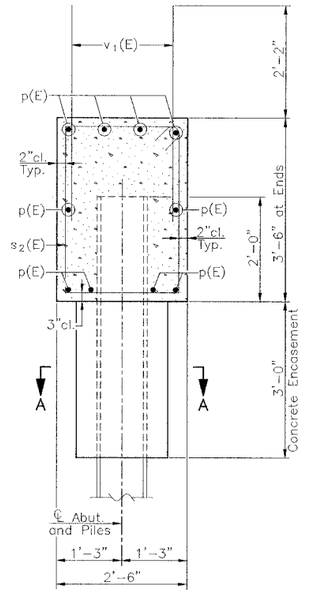
PILE PLAN

PILE DATA

Type: HP 10x57 Steel Piles
Capacity: 58 tons Driven to 87 tons
Est. Length: 70'
No. Req'd.: 8 + 1 Test Pile

Piles shall be driven through 18" diameter precored holes extending to El. 559.0. Fill holes with FA-2 after piles have been driven. Cost included with "Driving Steel Piles".

MIN. BAR LAPS
#6 Bars = 2'-6"

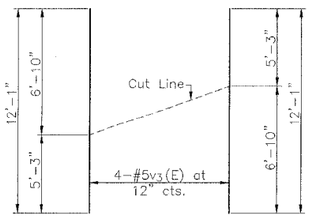


SECTION THRU ABUT.

WEST ABUTMENT BILL OF MATERIAL

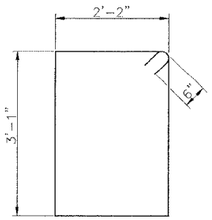
BAR	NO.	SIZE	LENGTH	SHAPE
h1(E)	24	#6	10'-8"	——
h2(E)	8	#5	7'-6"	——
p(E)	20	#6	24'-3"	——
s2(E)	50	#5	11'-6"	⌐¬
s3(E)	8	#5	7'-5"	⊏
u1(E)	8	#6	10'-4"	⌐—
v1(E)	85	#5	5'-0"	——
v2(E)	16	#5	6'-11"	——
v3(E)	8	#5	12'-1"	——
Concrete Structures			Cu. Yd.	17.5
Reinforcement Bars(Epoxy Coated)			Pound	2620
Furnishing Steel Piles Hp 10x57			Foot	560
Driving Steel Piles			Foot	560
Test Pile, Steel HP 10x57			Each	1
Concrete Encasement			Cu. Yd.	2.4

Notes:
Space Reinforcement in top of footing to miss anchor bolts.
Pour Steps monolithically with caps.
Reinforcement bars designated (E) shall be epoxy coated.
All exposed edges shall have a standard ¾" chamfer.
Volume of concrete wingwalls above bonded construction joint to be included in "Concrete Superstructures". See Sheet No. 11 of 33.
See Sheet No. 20 of 33 for anchor bolt installation.
Bars indicated thus 10x2-#6 etc. indicates 10 lines of bars with 2 lengths per line.

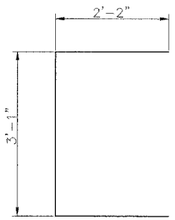


FIELD CUTTING DIAGRAM

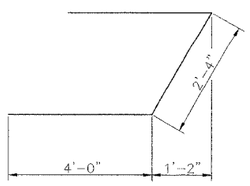
Order v3(E) bars full length: Layout in field according to diagram. Cut v3(E) bars along cut line. Use remainder of each bar in opposite face.



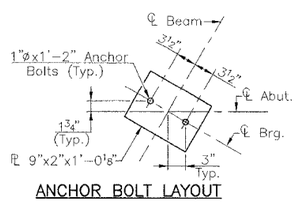
BAR s2(E)



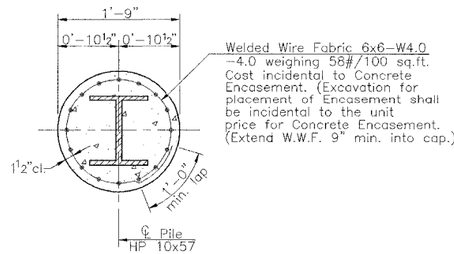
BAR s3(E)



BAR u1(E)



ANCHOR BOLT LAYOUT



SECTION A-A

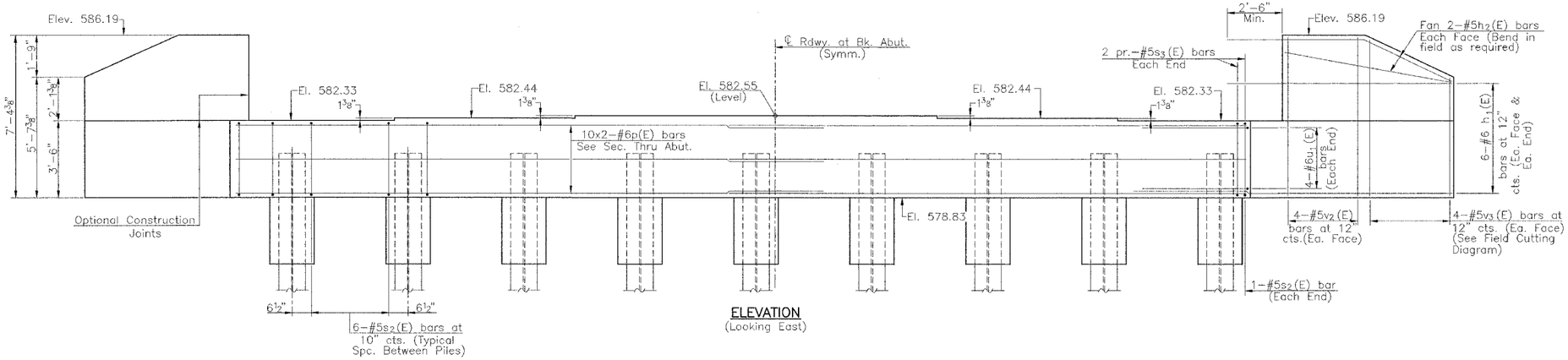
WEST ABUTMENT
C.H. 40 OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY

FILE NAME: SCHEAB (REV. 3/14/06)

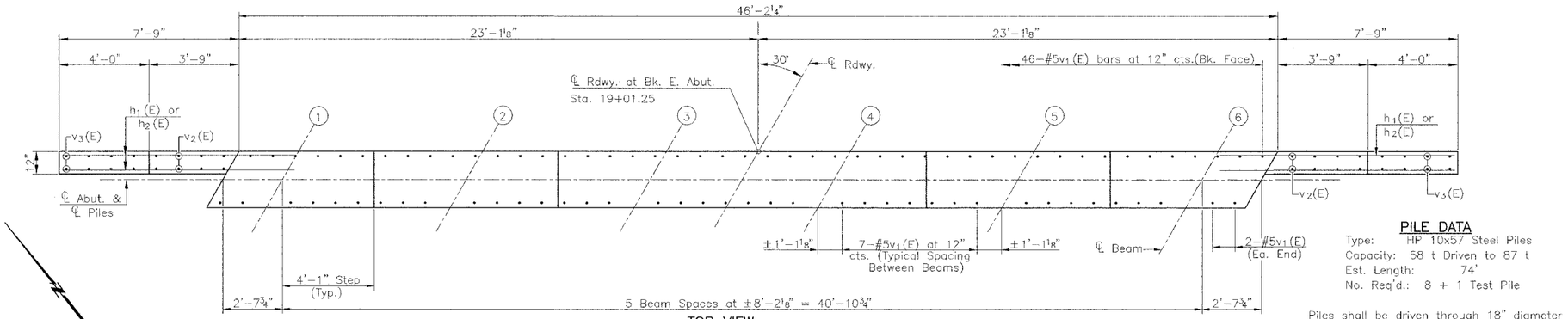
93392

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 40	*	SANGAMON	33	18
PROJECT				

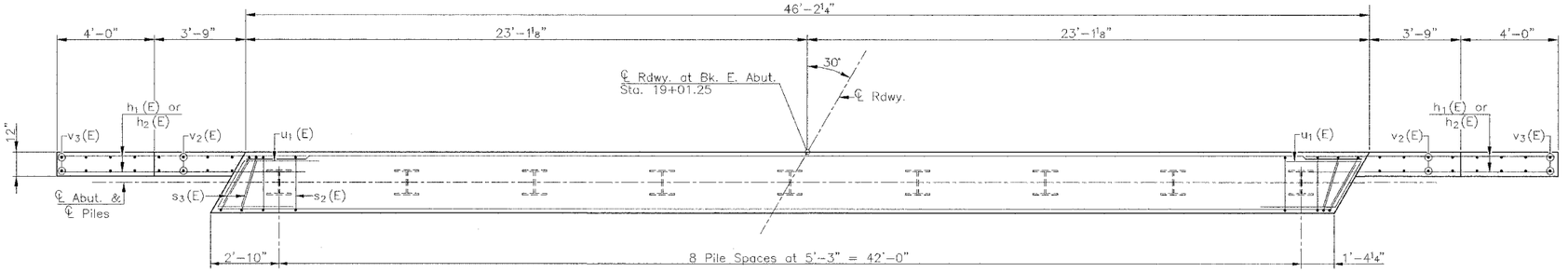
* 00-00021-02-BR



ELEVATION
(Looking East)



TOP VIEW



PILE PLAN

SECTION THRU ABUT.

PILE DATA

Type: HP 10x57 Steel Piles
Capacity: 58 t Driven to 87 t
Est. Length: 74'
No. Req'd.: 8 + 1 Test Pile

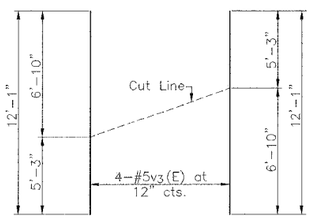
Piles shall be driven through 18" diameter precored holes extending to El. 568.9. Fill holes with FA-2 after piles have been driven. Cost included with "Driving Steel Piles".

EAST ABUTMENT BILL OF MATERIAL

BAR	NO.	SIZE	LENGTH	SHAPE
h1(E)	24	#6	10'-8"	——
h2(E)	8	#5	7'-6"	——
p(E)	20	#6	24'-3"	——
s2(E)	50	#5	11'-6"	□
s3(E)	8	#5	7'-5"	⊏
u1(E)	8	#6	10'-4"	⌐¬
v1(E)	85	#5	5'-0"	——
v2(E)	16	#5	6'-11"	——
v3(E)	8	#5	12'-1"	——

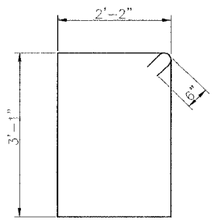
Concrete Structures	Cu. Yd.	17.5
Reinforcement Bars(Epoxy Coated)	Pound	2620
Furnishing Steel Piles Hp 10x57	Foot	592
Driving Steel Piles	Foot	592
Test Pile, Steel HP 10x57	Each	1
Concrete Encasement	Cu. Yd.	2.4

Notes:
Space Reinforcement in top of footing to miss anchor bolts.
Pour Steps monolithically with caps.
Reinforcement bars designated (E) shall be epoxy coated.
All exposed edges shall have a standard ¾" chamfer.
Volume of concrete wingwalls above bonded construction joint to be included in "Concrete Superstructures". See Sheet No. 11 of 33.
See Sheet No. 20 of 33 for anchor bolt installation.
Bars indicated thus 10x2-#6 etc. indicates 10 lines of bars with 2 lengths per line.

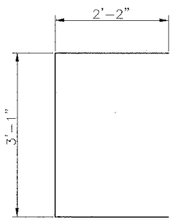


FIELD CUTTING DIAGRAM

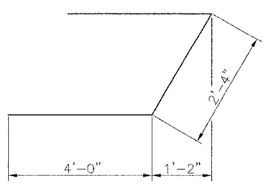
Order v3(E) bars full length: Layout in field according to diagram. Cut v3(E) bars along cut line. Use remainder of each bar in opposite face.



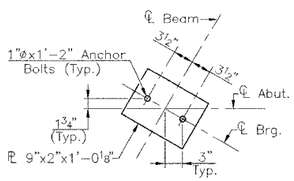
BARS s2(E)



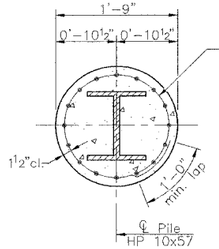
BARS s3(E)



BAR u1(E)



ANCHOR BOLT LAYOUT



SECTION A-A

Welded Wire Fabric 6x6-W4.0 -4.0 weighing 58#/100 sq.ft. Cost incidental to Concrete Encasement. (Excavation for placement of Encasement shall be incidental to the unit price for Concrete Encasement. (Extend W.W.F. 9" min. into cap.)

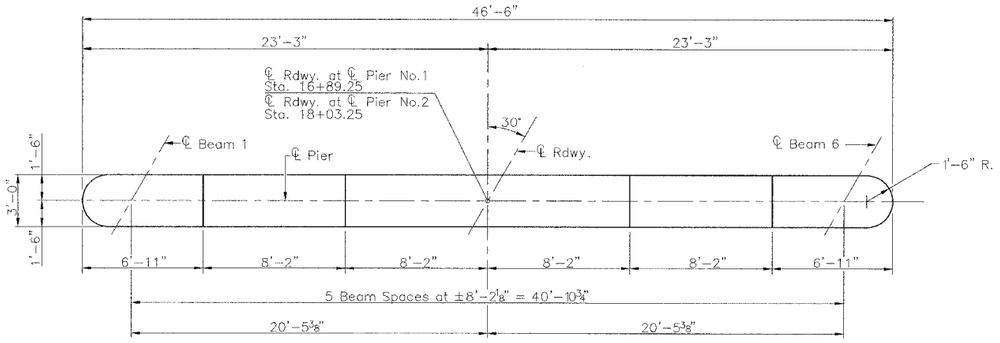
EAST ABUTMENT
C.H. 40 OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY

FILE NAME: SCH140AB (REV. 3/14/05)

93392

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 40	*	SANGAMON	33	19
PROJECT				

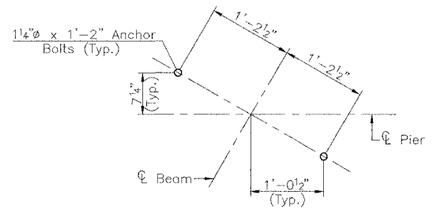
* 00-00021-02-BR



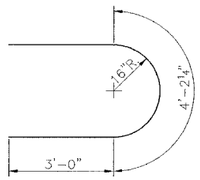
TOP PLAN

PILE DATA

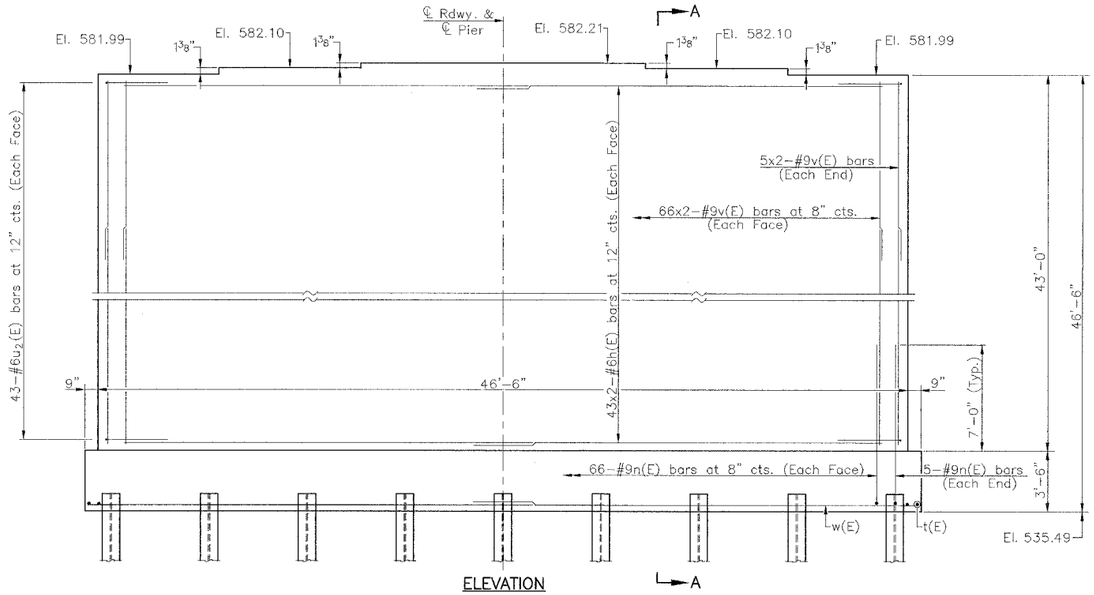
	Pier No. 1	Pier No. 2
Type:	HP 12x53	HP 12x53
Capacity:	59^t driven to 89^t	59^t driven to 89^t
Est. Length:	38'	54'
No. Req'd.:	26 + 1 Test Pile	26 + 1 Test Pile



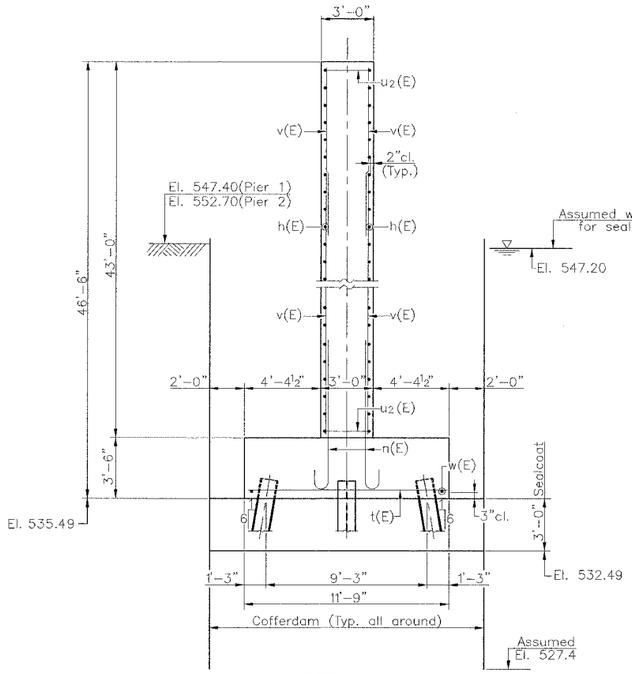
ANCHOR BOLT LAYOUT



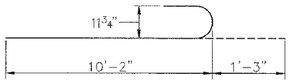
BAR u2(E)



ELEVATION



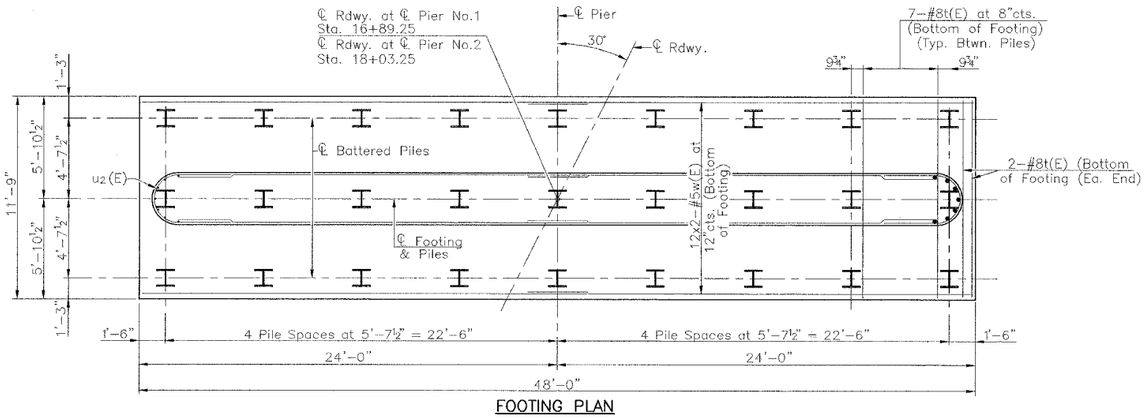
SECTION A-A



BAR n(E)

Assumed water elevation for sealcoat design

El. 547.20



FOOTING PLAN

MIN. BAR LAPS

#5 Bars = 2'-2"
#6 Bars = 2'-6"
#9 Bars = 6'-11"

Notes:
Pour steps monolithically with pier.
All edges shall have standard ¾" chamfers except as noted.
Reinforcement bars designated (E) shall be epoxy coated.

TWO PIERS
BILL OF MATERIAL

BAR	NO.	SIZE	LENGTH	SHAPE
h(E)	344	#6	23'-0"	——
n(E)	284	#9	11'-5"	——
t(E)	120	#8	11'-5"	——
u2(E)	172	#6	10'-2"	⊂⊃
v(E)	568	#9	24'-11"	——
w(E)	48	#5	25'-1"	——

Concrete Structures	Cu. Yd.	585.7
Reinforcement Bars, Epoxy Coated	Pound	78580
Furnishing Steel Piles HP 12x53	Foot	2392
Driving Steel Piles	Foot	2392
Test Pile, Steel HP 12x53	Each	2
Cofferdam Excavation	Cu. Yd.	1062
Cofferdam (Pier No. 1)	Each	1
Cofferdam (Pier No. 2)	Each	1
Seal Coat Concrete	Cu. Yd.	182.0

PIERS
C.H. 40 OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY

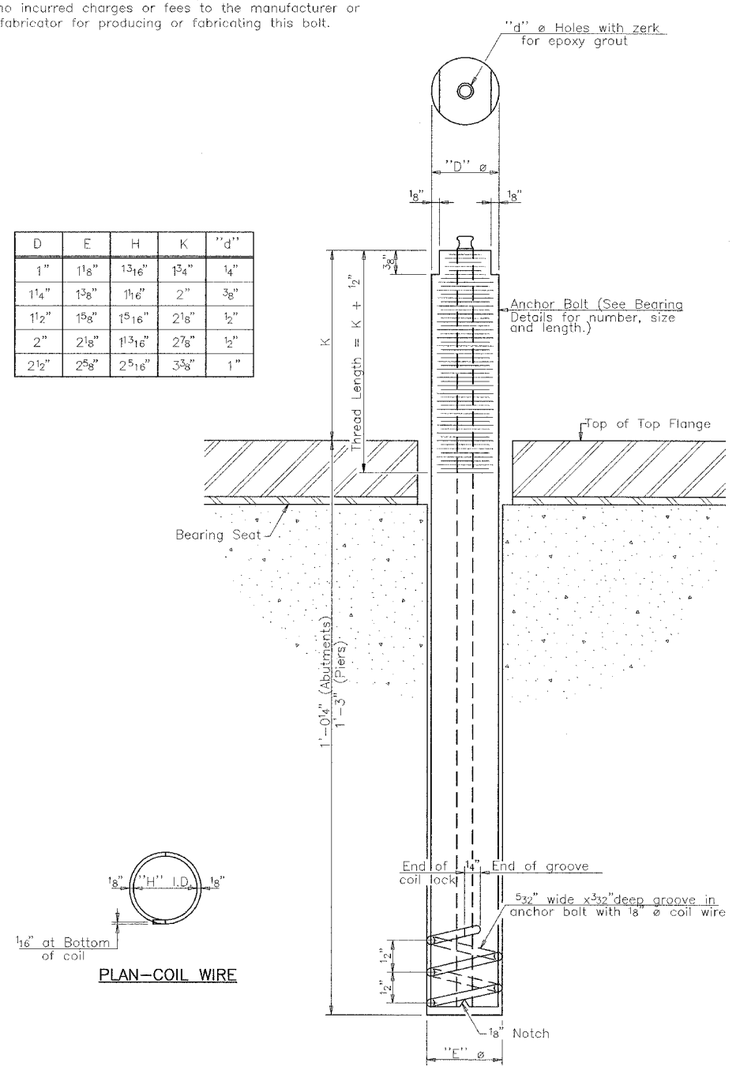
FILE NAME: SCHAEFER (REV. 3/14/08)

93392

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 40	*	SANGAMON	33	20
PROJECT				

* 00-00021-02-BR

D	E	H	K	"d"
1"	$1\frac{1}{8}$"	$\frac{13}{16}$"	$1\frac{3}{4}$"	$\frac{1}{4}$"
$1\frac{1}{4}$"	$1\frac{3}{8}$"	$1\frac{1}{16}$"	2"	$\frac{3}{8}$"
$1\frac{1}{2}$"	$1\frac{5}{8}$"	$1\frac{5}{16}$"	$2\frac{1}{8}$"	$\frac{1}{2}$"
2"	$2\frac{1}{8}$"	$1\frac{13}{16}$"	$2\frac{7}{8}$"	$\frac{1}{2}$"
$2\frac{1}{2}$"	$2\frac{5}{8}$"	$2\frac{5}{16}$"	$3\frac{3}{8}$"	1"



PLAN-COIL WIRE

ILLINOIS COIL-LOCK ANCHOR BOLT

MATERIALS FOR ILLINOIS COIL-LOCK ANCHOR BOLT

The anchor bolt shall be fabricated from cold drawn or hot finished seamless carbon steel mechanical tubing conforming to ASTM A 519, Grade 1026, CW and supplied with hexagonal nuts and cut washers.

The coil wire shall be made of any suitable soft steel wire.

The finished anchor bolt shall be cleaned of rust and other foreign materials and wrapped or packaged to prevent contamination until they are installed.

The epoxy grout shall be a two-component, epoxy resin bonding system comforming to ASTM C 881, Type I, Grade 1 and of a Class suitable for the temperature at installation.

INSTALLATION PROCEDURE for the ILLINOIS COIL-LOCK ANCHOR BOLT

1. With the coil wire in place, the bolt shall be inserted into the hole and turned clockwise to a snug fit in the hole. Nut and washer shall be placed on the bolt. The nut shall be tensioned until the steel base plates are held securely to the concrete bearing seat.
2. Epoxy grout shall be pumped through the zerk fitting with a pressure gun. Pumping shall continue until the epoxy overflows the hole around the bolt shank. After pumping is discontinued, excess epoxy shall be immediately wiped off.

ALTERNATE ANCHOR BOLTS

The Contractor may use, at his option, the capsule or the adhesive cartridge type anchor rods that have been previously tested and given a prior approval by the Department. The Contractor shall install these anchor rods in pre-drilled holes according to the manufacturer's recommendations and procedures.

The capsule or the adhesive cartridge type anchor rods shall be a two part system composed of:

1. A threaded rod stud with nut and washer of the type specified.
2. A sealed glass capsule or a sealed glass adhesive cartridge containing premeasured amounts of the adhesive chemical.

Location	Type	D
Abuts.	A307	1"
Piers	A307	$1\frac{1}{4}$"

ASTM F 1554 Grade 105, ASTM A 449 and AASHTO M314 Grade 105 anchor bolts may be substituted for the anchor bolts shown above.

GENERAL NOTES

Holes in the masonry for anchor bolts shall be drilled through the base plates to the diameter and depth shown or according to the manufacturer's recommendation after beams or girders have been erected and adjusted.

Prior to setting the bolts, the holes shall be dry and all dust and loose particles shall be removed by the use of compressed air or vacuuming.

The anchor bolts, furnished and installed and including the epoxy grout or capsules shall not be paid for separately but shall be included in the unit bid price for "Furnishing and Erecting Structural Steel".

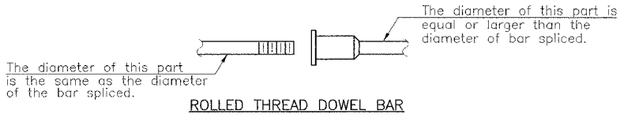
F.I.E. NAME: SCCH40BSD (REV. 1/27/09)

ANCHOR BOLT DETAILS
C.H. 40 OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY

93392

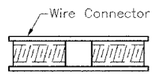
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 40	*	SANGAMON	33	21
PROJECT				

* 00-00021-02-BR



ROLLED THREAD DOWEL BAR

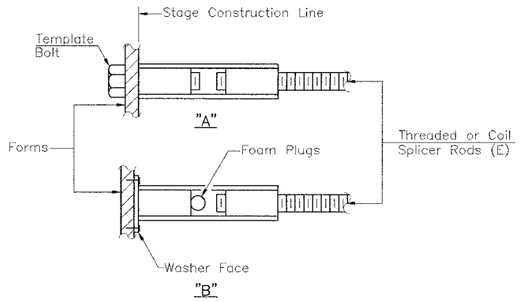
** ONE PIECE



WELDED SECTIONS

BAR SPLICER ASSEMBLY ALTERNATIVES

** Heavy Hex Nuts conforming to ASTM A 563, Grade C, D or DH may be used.



INSTALLATION AND SETTING METHODS

"A" : Set bar splicer assembly by means of a template bolt.
"B" : Set bar splicer assembly by nailing to wood forms or cementing to steel forms.
(E) : Indicates epoxy coating.

NOTES

Bar splicer assemblies shall be of an approved type and shall develop in tension at least 125 percent of the yield strength of the lapped reinforcement bars.

Splicer rods shall be of minimum 60 ksi yield strength, threaded or coiled full length.

All reinforcement bars shall be lapped and tied to the splicer rods or dowel bars.

Bar splicer assemblies shall be epoxy coated according to the requirements for reinforcement bars.

Other systems of similar design may be submitted to the Engineer for approval. Approval shall be based on certified test results from an approved testing laboratory that the proposed bar splicer assembly satisfies the following requirements:

① Minimum Capacity (Tension in kips) = $1.25 \times fy \times A_t$

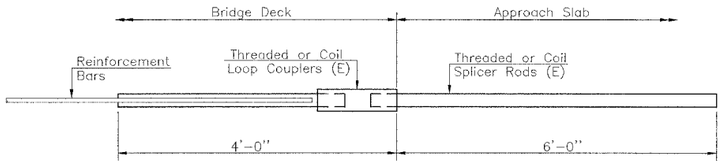
② Minimum *Pull-out Strength (Tension in kips) = $1.25 \times fs_{allow} \times A_t$

Where fy = Yield strength of lapped reinforcement bars in ksi.
fs_{allow} = Allowable tensile stress in lapped reinforcement bars in ksi (Service Load)
A_t = Tensile stress area of lapped reinforcement bars (in^2).
* = 28 day concrete

BAR SPLICER ASSEMBLIES

Bar Size to be Spliced	Splicer Rod or Dowel Bar Length	Strength Requirements	
		Min. Capacity kips – tension	Min. Pull-Out Strength kips – tension
#4	1'-8"	14.7	5.9
#5	2'-0"	23.0	9.2
#6	2'-7"	33.1	13.3
#7	3'-5"	45.1	18.0
#8	4'-6"	58.9	23.6
#9	5'-9"	75.0	30.0

Bar splicer assemblies shall be according to Section 508 of the Standard Specifications, except as noted. The furnishing and installation of bar splicer assemblies will be measured and paid for at the contract unit price each for "BAR SPLICERS."



FOR INTEGRAL OR SEMI-INTEGRAL ABUTMENTS

Bar Splicer for #5 bar
Min. Capacity = 23.0 kips-Tension
Min. Pull-out Strength = 9.2 kips-Tension
No. Required = 82

Note: The bar splicers for the integral abutment shall have the template bolt left in place after construction. The portion of the splicer to be used in the approach slab shall become the property of the Sangamon County Highway Department for use in the future construction of the bridge approach slab. Cost included with "Bar Splicers".

BAR SPLICER DETAILS
C.H. 40 OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY

FILE NAME: SCCH40BSD (REV. 2/3/05)

ALLEN HENDERSON & ASSOCIATES, INC. CONSULTING CIVIL AND STRUCTURAL ENGINEERS SPRINGFIELD,IL. PHONE: (217) 544-8033

93392

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 40	*	SANGAMON	33	22
PROJECT				

* 00-00021-02-BR

LOG OF BORING B-1

Sheet 1 of 2

PSI Job No.: 020-45040 Revision 1 (07/27/04)
Project: Proposed Bridge Replacement
Location: New City Road (CH 40) over Horse Creek; Section 00-00021-02-BR; Sangamon County, Illinois

Drilling Method: 3 1/4" Hollow Stem Auger
Sampling Method: Split Spoon
Hammer Type: Automatic
Boring Location: Station 15+16; 15'N of CL of New City Road

WATER LEVELS: While Drilling 13.5 feet; Upon Completion 7 feet; - -

Elevation, (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 12" (N value)	Moisture, %	STRENGTH, tsf	Additional Remarks
555	0					Approximate Surface Elev.: 557.5 ft					
				1	12	SURFACE: crushed stone and gravel mix to ~12"	GP				
				2	24	Brown/gray silty CLAY, trace sand, fine, stiff		3-3-2 N=5	15	Qu = 2.3 tsf	
	5										DD = 99 pcf Qu = 1.8 tsf
550				3	24		CL-ML	Shelby Tube	25		
											DD = 89 pcf Qu = 0.3 tsf
				4	18	Grayish brown silty CLAY, little sand, fine, firm to stiff		Shelby Tube	32		
	10			5	18			0-1-1 N=2	28	Qu = 1.7 tsf	
545								1-2-3 N=5	18	Qu = 1.0 tsf	
				6	18		CL-ML	1-2-2 N=4	20		
				7	24			Shelby Tube	22		DD = 107 pcf Qu = 0.4 tsf
	15										
540				8	18	Brown fine SAND, little gray silty clay, loose, consistency		0-1-2 N=3	18		
				9	18		SW	0-3-7 N=10	18		
	20										
535				10	18			1-1-1 N=2	18		
	25										

Continued Next Page

Completion Depth: 50.0 ft
Date Boring Started: 5/5/04
Date Boring Completed: 5/5/04
Logged By: Jon McGrath
Drilling Contractor: PSI

Sample Types: Auger Cutting; Split-Spoon; Rock Core; Shelby Tube; Hand Auger

Remarks:

LOG OF BORING B-2

Sheet 1 of 2

PSI Job No.: 020-45040 Revision 1 (07/27/04)
Project: Proposed Bridge Replacement
Location: New City Road (CH 40) over Horse Creek; Section 00-00021-02-BR; Sangamon County, Illinois

Drilling Method: 3 1/4" Hollow Stem Auger
Sampling Method: Split Spoon
Hammer Type: Automatic
Boring Location: Station 16+63; 10'S of CL of New City Road

WATER LEVELS: While Drilling 18.5 feet; Upon Completion caved 3 feet; - -

Elevation, (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 12" (N value)	Moisture, %	STRENGTH, tsf	Additional Remarks
555	0					Approximate Surface Elev.: 557.4 ft					
				1	10	SURFACE: crushed stone and gravel mix to ~8"	GP				
						Bituminous concrete	ASPHALT				
				2	4	Black silty CLAY, some crushed stone (TILL?)	CL-ML	3-4-4 N=8	14	Qu = 0.4 tsf	
	5					Brown/gray silty CLAY, trace sand, fine to medium, soft (FILL)					
550				3	8	Brown/gray silty CLAY, trace sand, fine (natural)		1-1-1 N=2	16		
							CL-ML	0-0-2 N=2	25	Qu = 0.4 tsf	
				4	18	Dark gray silty CLAY, little sand, fine, stiff to very stiff		1-1-2 N=4	25		
	10			5	18			1-1-2 N=3	24	Qu = 1.2 tsf	
545								2-3-3 N=6	19	Qu = 2.7 tsf	
				6	18		CL-ML				
				7	18	Brown/gray silty CLAY, some sand, fine, stiff		2-2-3 N=5	22	Qu = 1.6 tsf	
	15										
540				8	18	Brown/gray medium SAND, very loose consistency	SW	1-2-1 N=3	19		
				9	18	Gray silty CLAY, trace sand, medium, trace gravel, hard (TILL)		16-16-28 N=44	8	Qu = 5.5 tsf	
	20										
535				10	18			12-18-20 N=38	11		
	25										

Continued Next Page

Completion Depth: 45.0 ft
Date Boring Started: 5/5/04
Date Boring Completed: 5/5/04
Logged By: Jon McGrath
Drilling Contractor: PSI

Sample Types: Auger Cutting; Split-Spoon; Rock Core; Shelby Tube; Hand Auger

Remarks:

LOG OF BORING B-3

Sheet 1 of 2

PSI Job No.: 020-45040 Revision 1 (07/27/04)
Project: Proposed Bridge Replacement
Location: New City Road (CH 40) over Horse Creek; Section 00-00021-02-BR; Sangamon County, Illinois

Drilling Method: 3 1/4" Hollow Stem Auger
Sampling Method: Split Spoon
Hammer Type: Automatic
Boring Location: Station 19+37; 18'N of CL of New City Road

WATER LEVELS: While Drilling 37.5 feet; Upon Completion 38.5 feet; 1 Hr Delay caved 35 ft

Elevation, (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 12" (N value)	Moisture, %	STRENGTH, tsf	Additional Remarks
555	0					Approximate Surface Elev.: 557.4 ft					
				1	10	SURFACE: Grass (organics to a depth of ~4")	CL-ML				
						Dark brown/gray silty CLAY, some gravel and cinders (FILL)		2-1-1 N=2	18		
	5			2	18	Brown clayey SILT, trace sand, medium, stiff to very stiff	CL-ML	Shelby Tube	24		DD = 88 pcf Qu = 0.5 tsf
550				3	19			2-3-4 N=7	22	Qu = 2.5 tsf	
				4	22		ML	Shelby Tube	22		DD = 106 pcf Qu = 0.4 tsf
	10			5	18			2-3-4 N=7	19	Qu = 1.7 tsf	
545				6	18			3-3-4 N=7	18		
				7	24	Brown/gray silty CLAY, sand, medium, hard (TILL)	CL-ML	Shelby Tube	21		DD = 105 pcf Qu = 0.9 tsf
	15					Hard drilling beginning at ~13'					
540				8	18	Gray silty CLAY, trace sand, medium, hard (TILL)		7-11-12 N=23	10	Qu = 4.0 tsf	
				9	18			6-12-15 N=27	11	Qu = 6.4 tsf	
	20										
535				10	18		CL-ML	7-8-14 N=23	13	Qu = 6.6 tsf	
	25										

Continued Next Page

Completion Depth: 47.0 ft
Date Boring Started: 4/27/04
Date Boring Completed: 4/27/04
Logged By: Jon McGrath
Drilling Contractor: PSI

Sample Types: Auger Cutting; Split-Spoon; Rock Core; Shelby Tube; Hand Auger

Remarks:

LOG OF BORING B-4

Sheet 1 of 2

PSI Job No.: 020-45040 Revision 1 (07/27/04)
Project: Proposed Bridge Replacement
Location: New City Road (CH 40) over Horse Creek; Section 00-00021-02-BR; Sangamon County, Illinois

Drilling Method: 3 1/4" Hollow Stem Auger
Sampling Method: Split Spoon
Hammer Type: Automatic
Boring Location: Station 20+05; 21'S of CL of New City Road

WATER LEVELS: While Drilling 16 feet; Upon Compl. caved 7 ft; - -

Elevation, (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 12" (N value)	Moisture, %	STRENGTH, tsf	Additional Remarks
565	0					Approximate Surface Elev.: 564.4 ft					
				1	12	SURFACE: Grass (organics to a depth of ~6")	CL-ML				
						Dark gray silty CLAY, few gravel	CL-ML				
				2	18	Brown silty CLAY, trace sand, fine	CL-ML	0-3-5 N=8	11	Qu = 4.4 tsf	
	5					Brown/gray silty CLAY, few sand, fine to medium, hard (TILL)					
560				3	18			11-15-24 N=39	11		
								76/10"	12		
				4	15						
	10			5	18		CL-ML	26-40-46 N=86	8		
555											
				6	18			26-48-46 N=94	7		
				7	18						
	15							22-36-44 N=79	8		
550				8	18	Gray SILT (TILL)	ML				
				9	18	Gray silty CLAY, trace sand, fine to coarse, trace gravel, hard (TILL)		34-36-47 N=83	12		
	20										
545				10	18			8-14-25 N=39	20		
	25										

Continued Next Page

Completion Depth: 40.0 ft
Date Boring Started: 5/4/04
Date Boring Completed: 5/4/04
Logged By: Jon McGrath
Drilling Contractor: PSI

Sample Types: Auger Cutting; Split-Spoon; Rock Core; Shelby Tube; Hand Auger

Remarks:

LOG OF BORING B-1

Sheet 2 of 2

PSI Job No.: 020-45040 Revision 1 (07/27/04)
Project: Proposed Bridge Replacement
Location: New City Road (CH 40) over Horse Creek; Section 00-00021-02-BR; Sangamon County, Illinois

Drilling Method: 3 1/4" Hollow Stem Auger
Sampling Method: Split Spoon
Hammer Type: Automatic
Boring Location: Station 15+16; 15'N of CL of New City Road

WATER LEVELS: While Drilling 13.5 feet; Upon Completion 7 feet; - -

Elevation, (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 12" (N value)	Moisture, %	STRENGTH, tsf	Additional Remarks
530	25					Gray silty CLAY, frm					
				11	18		CL-ML	1-1-1 N=2	24		DD = 101 pcf Qu = 0.4 tsf
				12	18			0-0-2 N=2	20	Qu = 0.8 tsf	
	30										
525				13	18	Gray SAND, medium consistency	SW	4-9-16 N=25		Qu = 2.6 tsf	
						Hard Drilling began @ ~33'					
				14	18	Gray silty CLAY, trace sand, fine to coarse, trace gravel, hard (TILL)		13-16-29 N=36	12		
	35										DD = 119 pcf Qu = 6.8 tsf
520				15	18			10-12-20 N=32	13		
				16	18			8-11-16 N=27	11	Qu = 6.6 tsf	
	40										
515				17	18		CL-ML	9-11-15 N=26	11	Qu = 6.0 tsf	
	45			18	18			19-33-28 N=61	10		
				19	18			22-26-24 N=50	10		DD = 121 pcf
510	50			20	18	End of boring @ ~50'		11-17-21 N=38	14		

Completion Depth: 50.0 ft
Date Boring Started: 5/5/04
Date Boring Completed: 5/5/04
Logged By: Jon McGrath
Drilling Contractor: PSI

Sample Types: Auger Cutting; Split-Spoon; Rock Core; Shelby Tube; Hand Auger

Remarks:

LOG OF BORING B-2

Sheet 2 of 2

PSI Job No.: 020-45040 Revision 1 (07/27/04)
Project: Proposed Bridge Replacement
Location: New City Road (CH 40) over Horse Creek; Section 00-00021-02-BR; Sangamon County, Illinois

Drilling Method: 3 1/4" Hollow Stem Auger
Sampling Method: Split Spoon
Hammer Type: Automatic
Boring Location: Station 16+63; 10'S of CL of New City Road

WATER LEVELS: While Drilling 18.5 feet; Upon Completion caved 3 feet; - -

Elevation, (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 12" (N value)	Moisture, %	STRENGTH, tsf	Additional Remarks
530	25					Gray silty CLAY, trace sand, medium, trace gravel, hard (TILL)	CL-ML	10-16-18 N=34	12		
				11	18						
	30							21-31-35 N=66	13	Qu = 6.0 tsf	
				12	18	Gray clayey SILT, trace sand, fine, trace gravel, hard (TILL)	ML				
525				13	18	Gray silty CLAY, trace sand, fine to medium, trace gravel, hard to very stiff (TILL)		12-15-22 N=37	10		
				14	18			24-12-33 N=45	12		
	35						CL-ML				
520				15	18			22-15-29 N=47	13		
	40			16	18			12-8-12 N=20	21		
				17	18			7-8-12 N=20	15		
515	45			18	18	End of boring @ ~45'		23-39-26 N=65	11		

Completion Depth: 45.0 ft
Date Boring Started: 5/5/04
Date Boring Completed: 5/5/04
Logged By: Jon McGrath
Drilling Contractor: PSI

Sample Types: Auger Cutting; Split-Spoon; Rock Core; Shelby Tube; Hand Auger

Remarks:

LOG OF BORING B-3

Sheet 2 of 2

PSI Job No.: 020-45040 Revision 1 (07/27/04)
Project: Proposed Bridge Replacement
Location: New City Road (CH 40) over Horse Creek; Section 00-00021-02-BR; Sangamon County, Illinois

Drilling Method: 3 1/4" Hollow Stem Auger
Sampling Method: Split Spoon
Hammer Type: Automatic
Boring Location: Station 19+37; 18'N of CL of New City Road

WATER LEVELS: While Drilling 37.5 feet; Upon Completion 38.5 feet; 1 Hr Delay caved 35 ft

Elevation, (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 12" (N value)	Moisture, %	STRENGTH, tsf	Additional Remarks
530	25					Gray silty CLAY, trace sand, mixed (TILL)					
				11	18		CL-ML	6-11-14 N=25	20		
	30			12	18			6-12-15 N=27	17	Qu = 6.0 tsf	
				13	18	Gray SILT, trace sand, fine to medium, very stiff (TILL)	ML	9-11-22 N=33	19		
525				14	18			7-8-8 N=16	15	Qu = 3.1 tsf	
	35					Gray silty CLAY, few sand, fine to medium (TILL)	CL-ML				
				15	18			8-8-13 N=21	13		
520	40					Gray clayey SILT, some sand, fine (TILL)	ML				
				16	18	Gray clayey SILT, trace sand, fine to medium, trace gravel, very stiff (TILL)		14-15-12 N=27	13		
				17	18		ML	8-12-12 N=24	18		
515	45			18	18			5-7-17 N=24	14		
				19	1	Gray SHALE, auger refusal @ ~47'	SHALE	50/1"			
						End of boring @ ~47'					

Completion Depth: 47.0 ft
Date Boring Started: 4/27/04
Date Boring Completed: 4/27/04
Logged By: Jon McGrath
Drilling Contractor: PSI

Sample Types: Auger Cutting; Split-Spoon; Rock Core; Shelby Tube; Hand Auger

Remarks:

LOG OF BORING B-4

Sheet 2 of 2

PSI Job No.: 020-45040 Revision 1 (07/27/04)
Project: Proposed Bridge Replacement
Location: New City Road (CH 40) over Horse Creek; Section 00-00021-02-BR; Sangamon County, Illinois

Drilling Method: 3 1/4" Hollow Stem Auger
Sampling Method: Split Spoon
Hammer Type: Automatic
Boring Location: Station 20+05; 21'S of CL of New City Road

WATER LEVELS: While Drilling 16 feet; Upon Compl. caved 7 ft; - -

Elevation, (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 12" (N value)	Moisture, %	STRENGTH, tsf	Additional Remarks
535	25					Gray silty CLAY, trace sand, fine to coarse, trace gravel, hard (TILL)					
				11	18			8-10-15 N=25	11	Qu = 6.8 tsf	
	30			12	18			8-12-18 N=28	9		DD = 123 pcf Qu = 8.7 tsf
							CL-ML				
530				13	18			8-12-18 N=30	9	Qu = 7.4 tsf	
	35										
				14	18			10-11-12 N=23	21		
				15	18	End of boring @ ~40'		10-15-18 N=33	15		
525	40			16	18			8-9-12 N=21	19		

Completion Depth: 40.0 ft
Date Boring Started: 5/4/04
Date Boring Completed: 5/4/04
Logged By: Jon McGrath
Drilling Contractor: PSI

Sample Types: Auger Cutting; Split-Spoon; Rock Core; Shelby Tube; Hand Auger

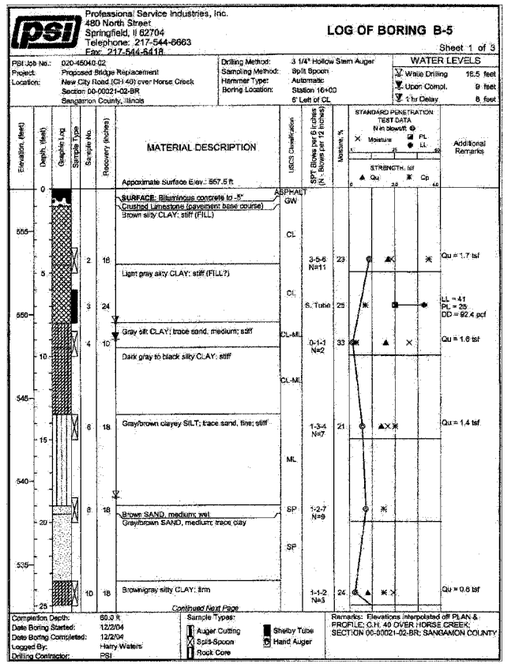
Remarks:

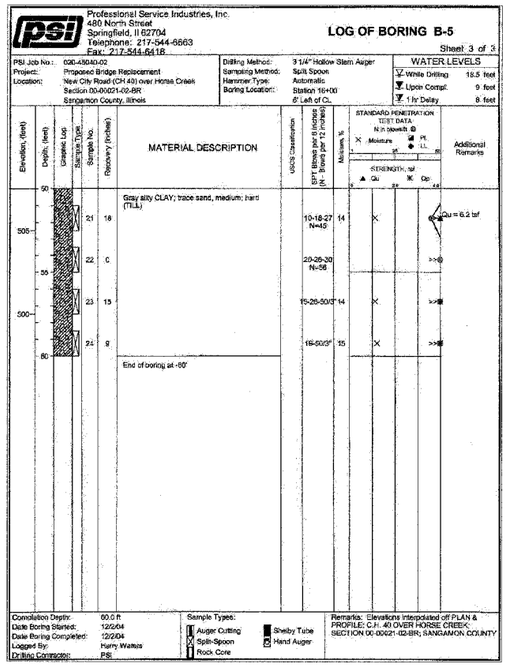
FILE NAME: SCO:\45040\BORINGS (REV. 3-14-06)

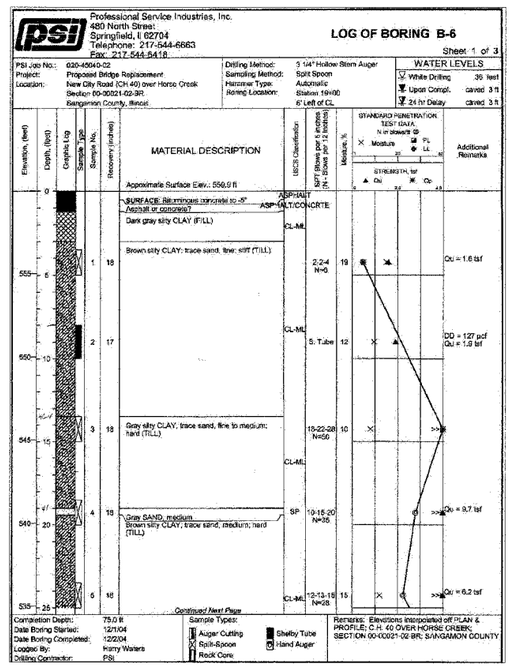
BORINGS
C.H. 40 OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY

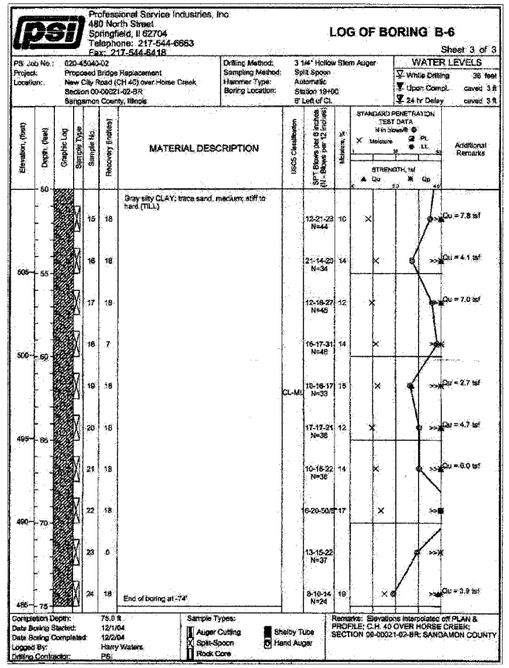
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 40	*	SANGAMON	33	23
PROJECT				

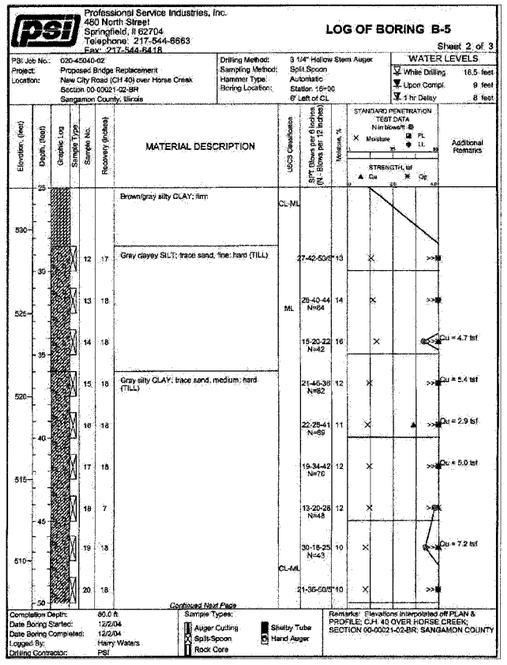
* 00-00021-02-BR

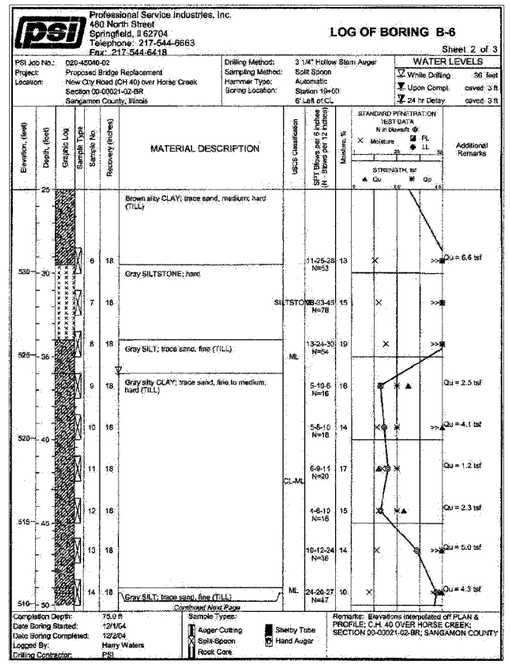










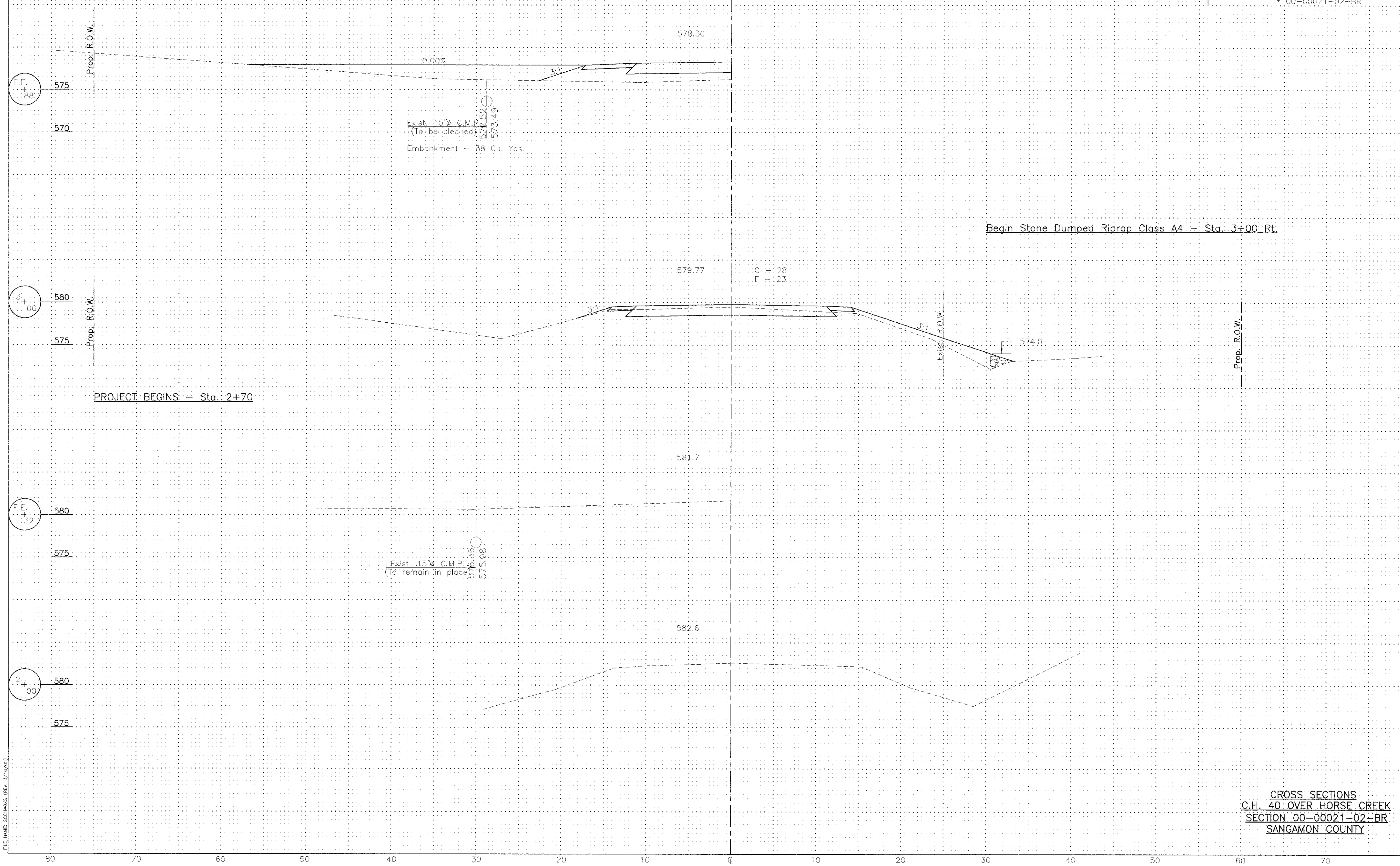


FILE NAME: SCOH40BORINGS-2 (REV. 3/14/05)

BORINGS
C.H. 40 OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY

93392

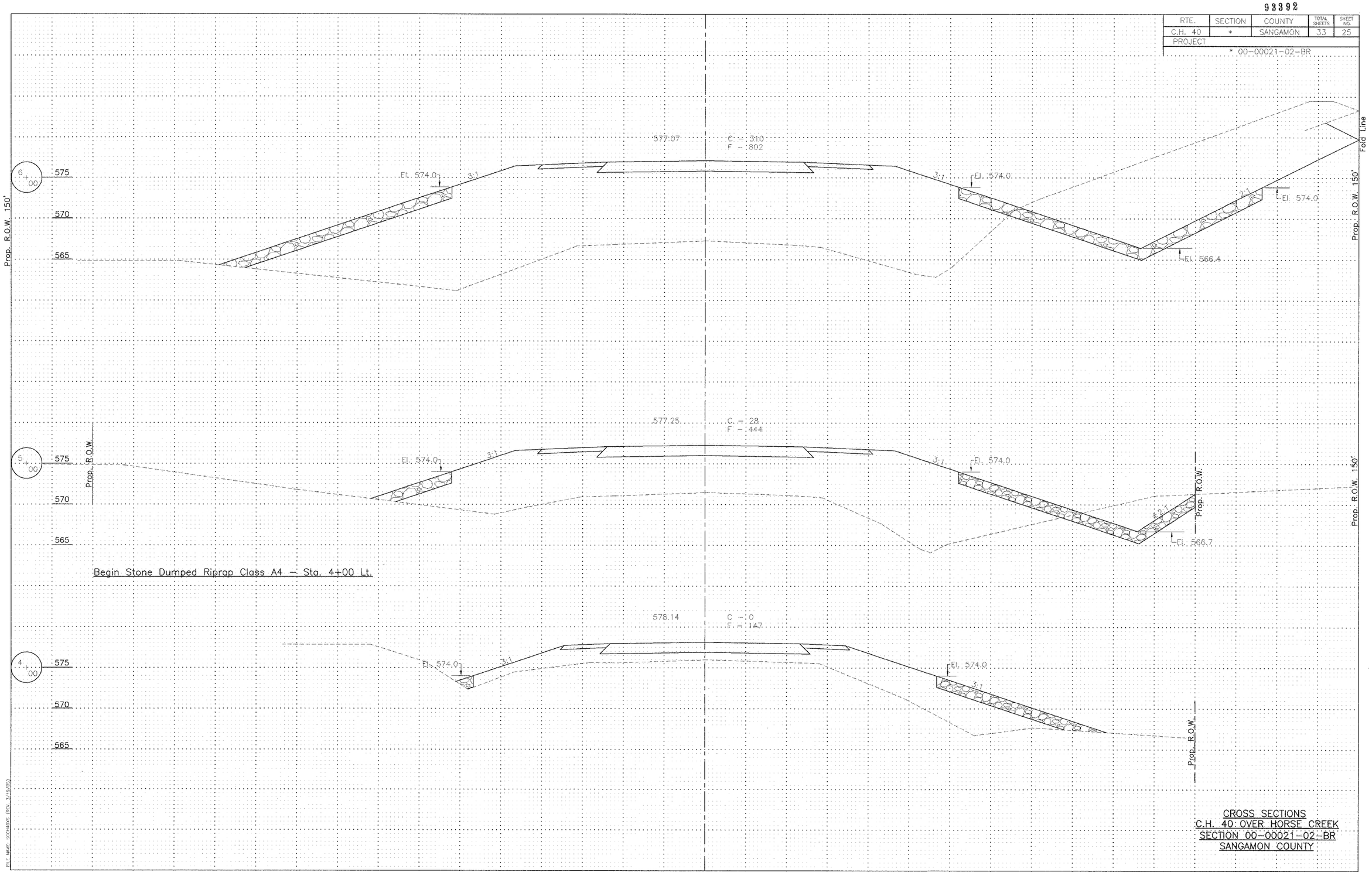
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 40	*	SANGAMON	33	24
PROJECT	* 00-00021-02-BR			



CROSS SECTIONS
C.H. 40 OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY

93392

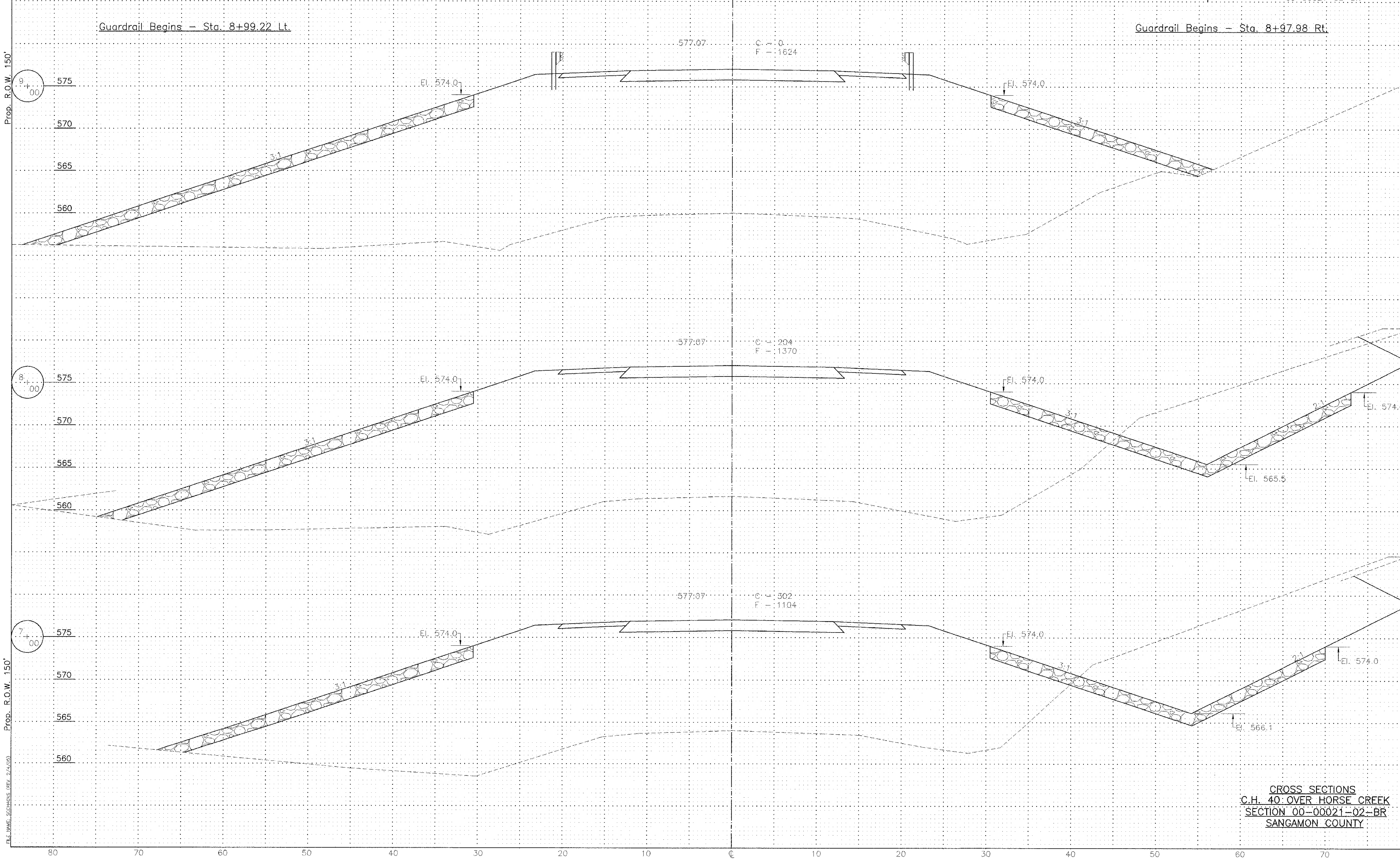
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 40	*	SANGAMON	33	25
PROJECT				
* 00-00021-02-BR				



FILE NAME: SCHMXS (REV. 3/10/05)

CROSS SECTIONS
C.H. 40 OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY

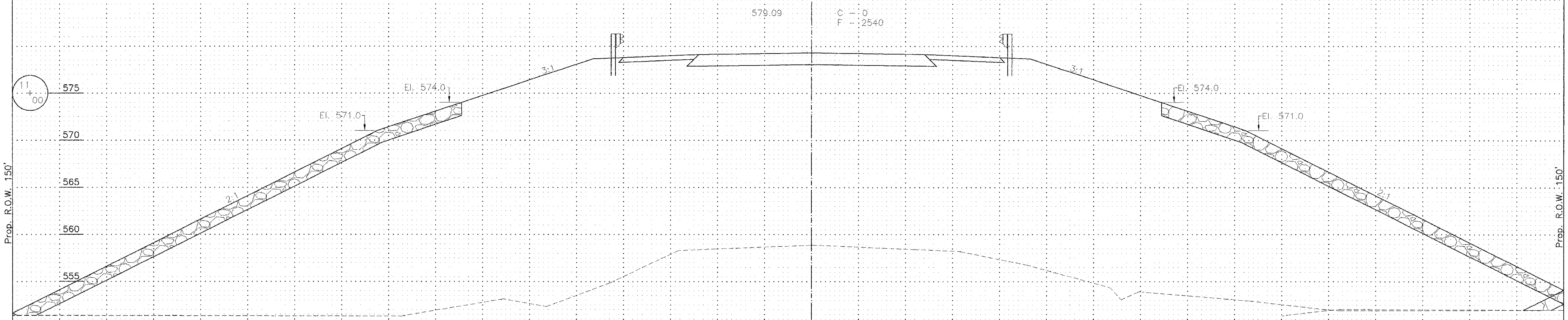
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 40	*	SANGAMON	33	26
PROJECT				
* 00-00021-02-BR				

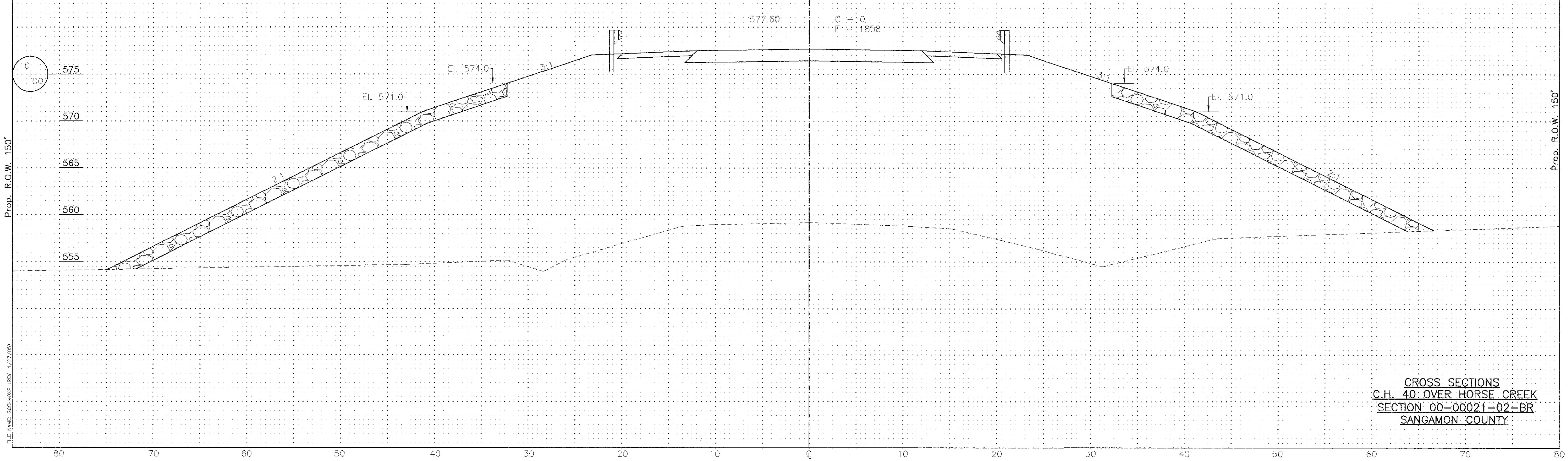


CROSS SECTIONS
C.H. 40 OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY

93392

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 40	*	SANGAMON	33	27
PROJECT				
* 00-00021-02-BR				

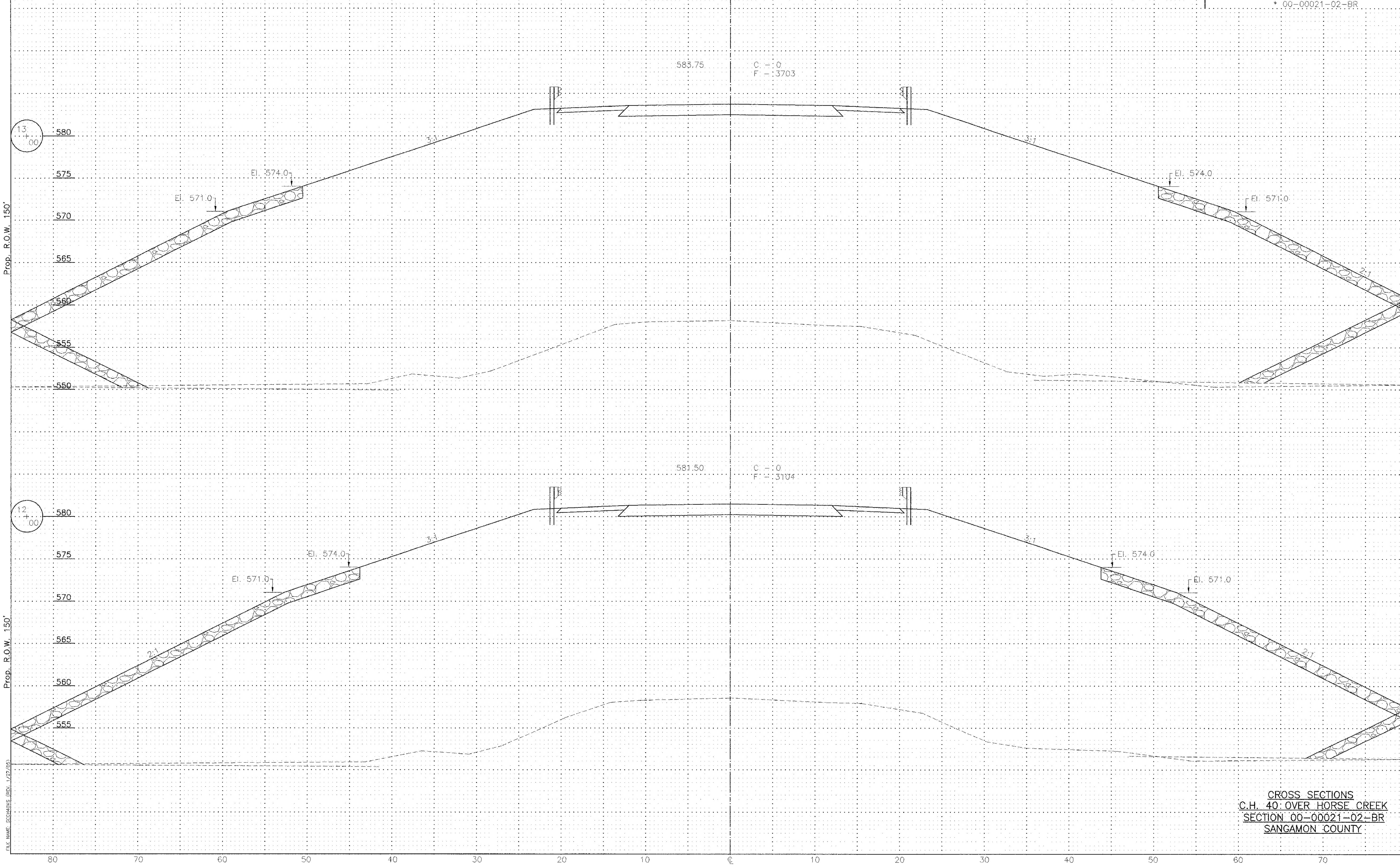




CROSS SECTIONS
C.H. 40 OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY

93392

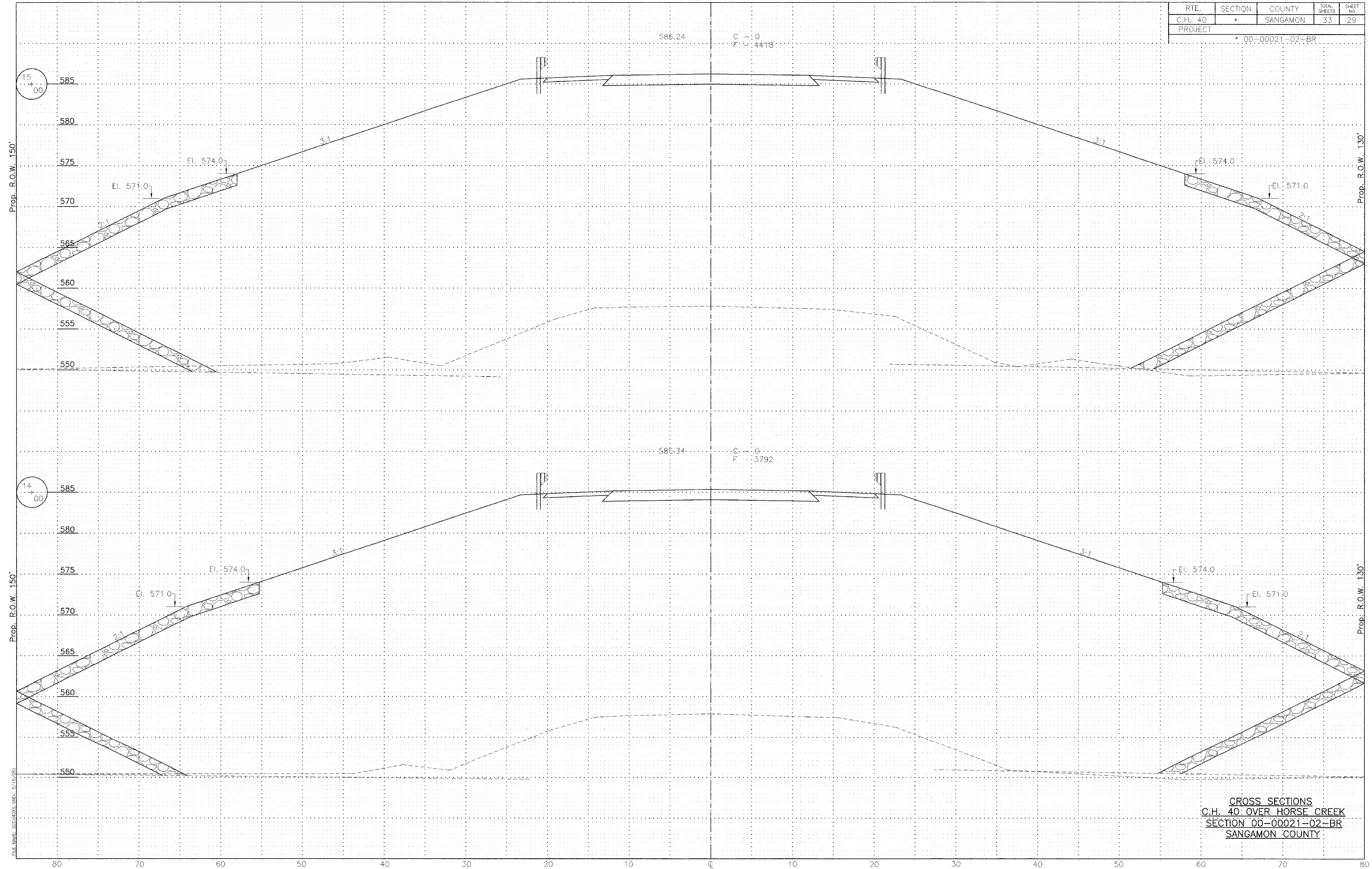
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 40	*	SANGAMON	33	28
PROJECT				
	* 00-00021-02-BR			



CROSS SECTIONS
C.H. 40 OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY

93392

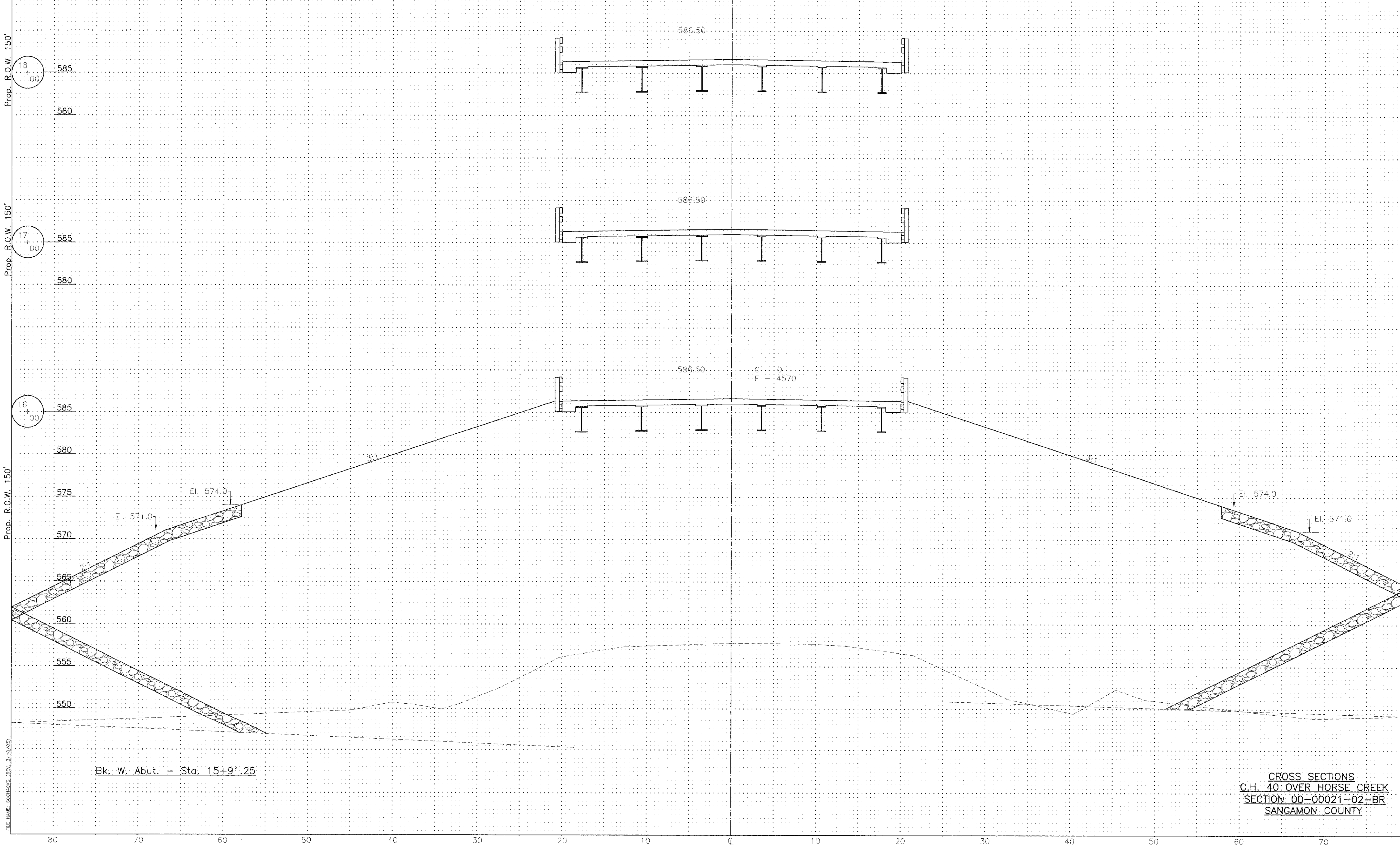
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 40	*	SANGAMON	33	29
PROJECT				
* 00-00021-02-BR				



CROSS SECTIONS
C.H. 40 OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY

93392

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 40	*	SANGAMON	33	30
PROJECT				
* 00-00021-02-BR				

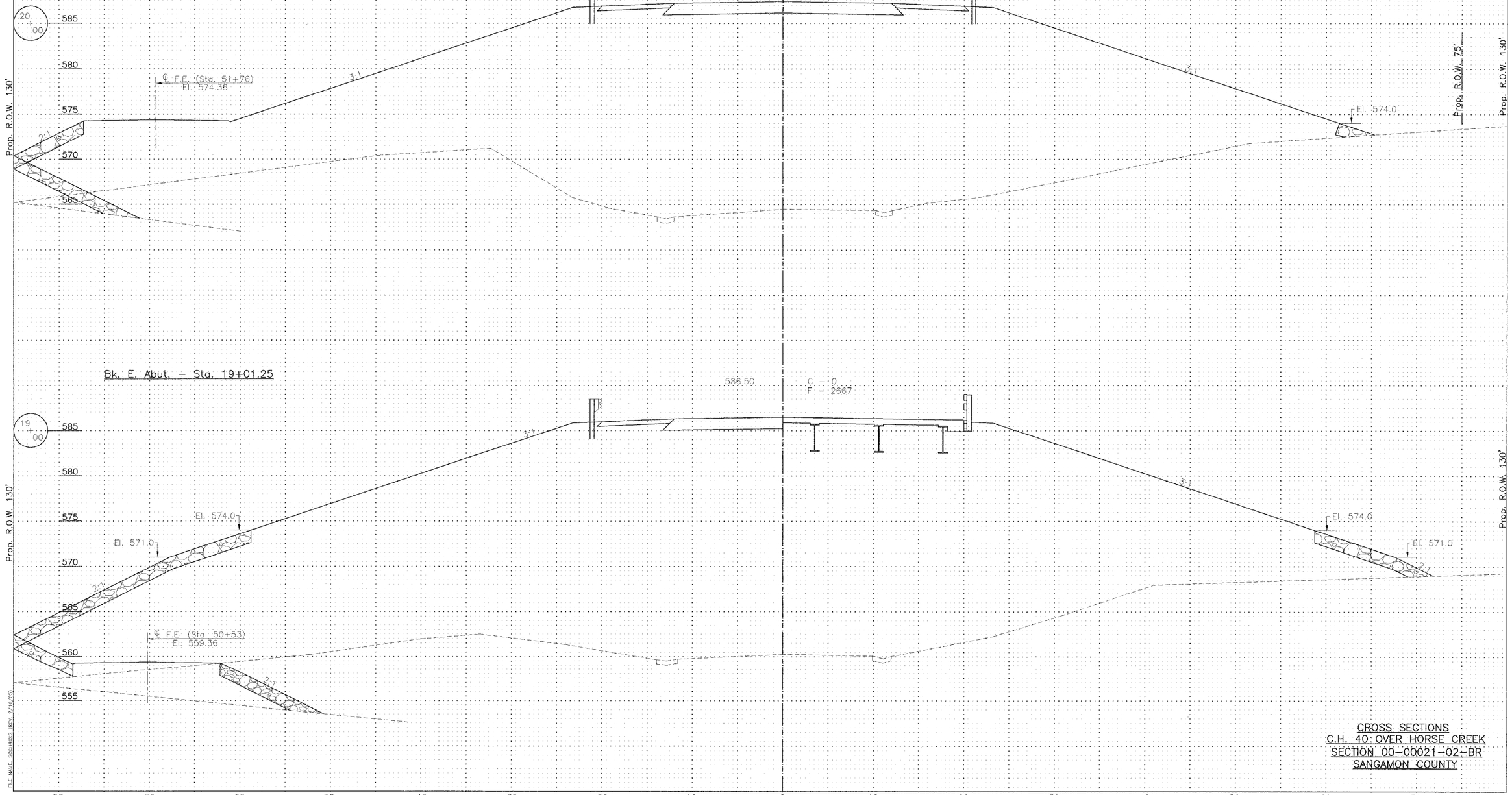


CROSS SECTIONS
C.H. 40 OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY

93392

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 40	*	SANGAMON	33	31
PROJECT				
* 00-00021-02-BR				

Stone Dumped Riprap, Class A4 Ends – Sta. 20+50 Lt. & Rt.



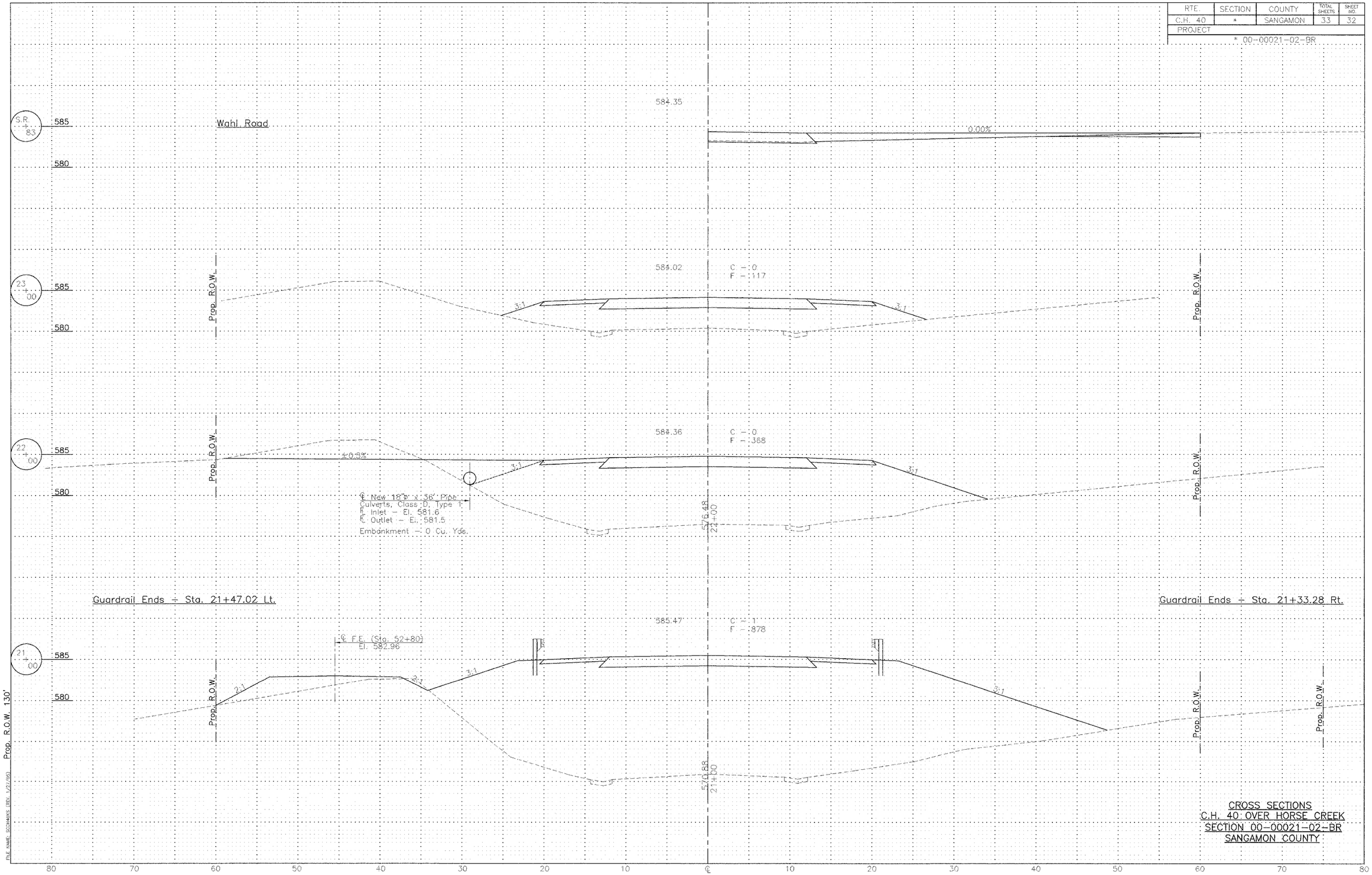
Bk. E. Abut. – Sta. 19+01.25

FILE NAME: SCHAD05 (REV. 2/10/05)

CROSS SECTIONS
C.H. 40 OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY

93392

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 40	*	SANGAMON	33	32
PROJECT				
* 00-00021-02-BR				

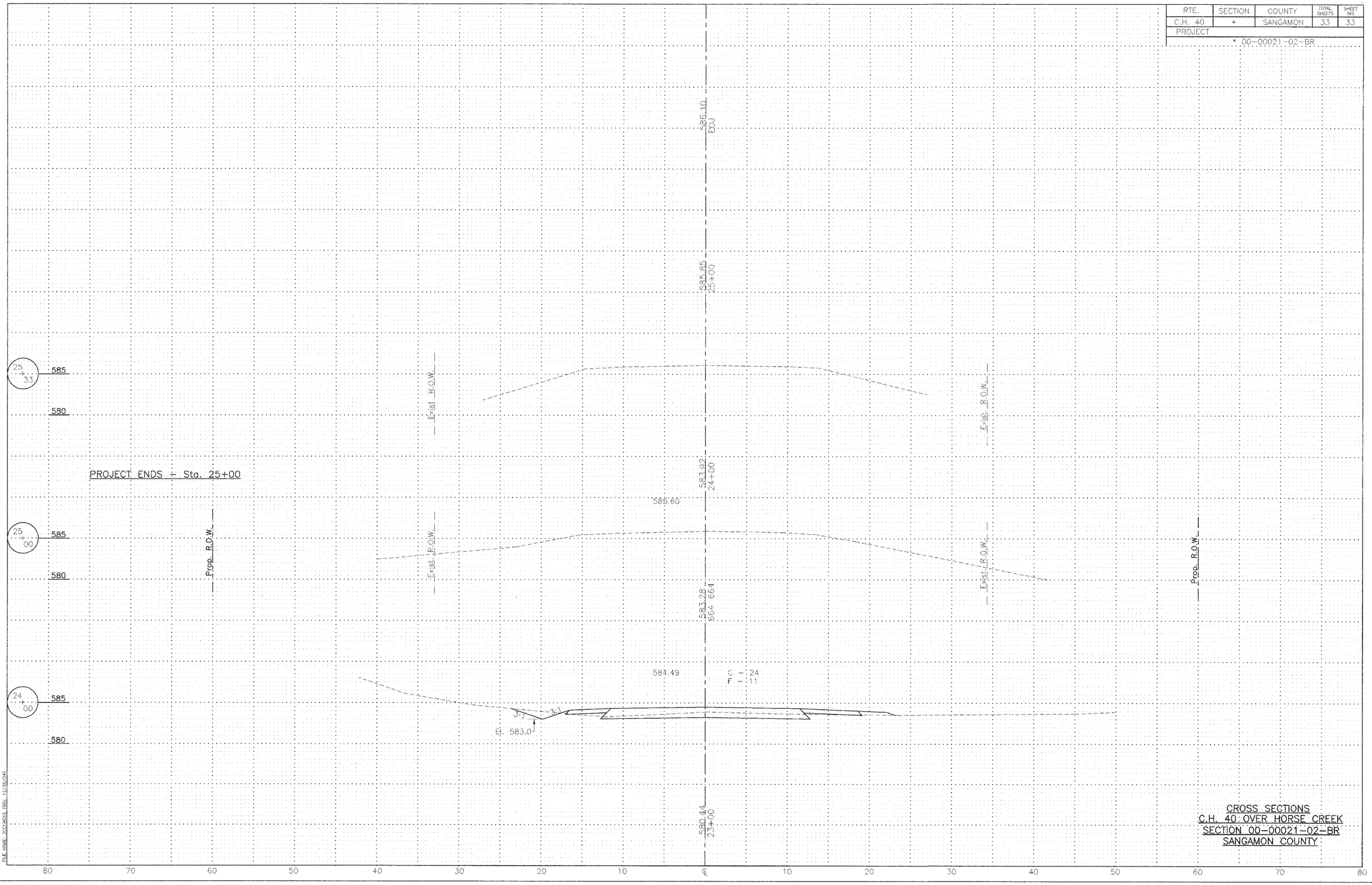


CROSS SECTIONS
C.H. 40 OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY

FILE NAME: SCS1140XS (REV. 1/21/09)

93392

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 40	*	SANGAMON	33	33
PROJECT				
* 00-00021-02-BR				



CROSS SECTIONS
C.H. 40 OVER HORSE CREEK
SECTION 00-00021-02-BR
SANGAMON COUNTY

FILE NAME: SCH1405S (REV. 12/29/04)