03-06-2015 LETTING ITEM 148

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PLANS FOR PROPOSED
SURFACE TRANSPORTATION PROGRAM

SECTION 11–00172–01–BR
IROQUOIS COUNTY
PROJECT NO. BROS–0075(180)
C.H. 42
C93–059–13
CONTRACT NO. 87554

CONTRACT NO. 87554
TOTAL SHEETS 26

LOCATION OF SECTION INDICATED THUS: –

CLASSIFICATION: LOCAL ROAD (NON–URBAN)
DESIGN VOLUME: UNDER 250 ADT
CURRENT ADT: 200 (2013)
DESIGN SPEED: 30 M.P.H.

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

INDEX OF SHEETS

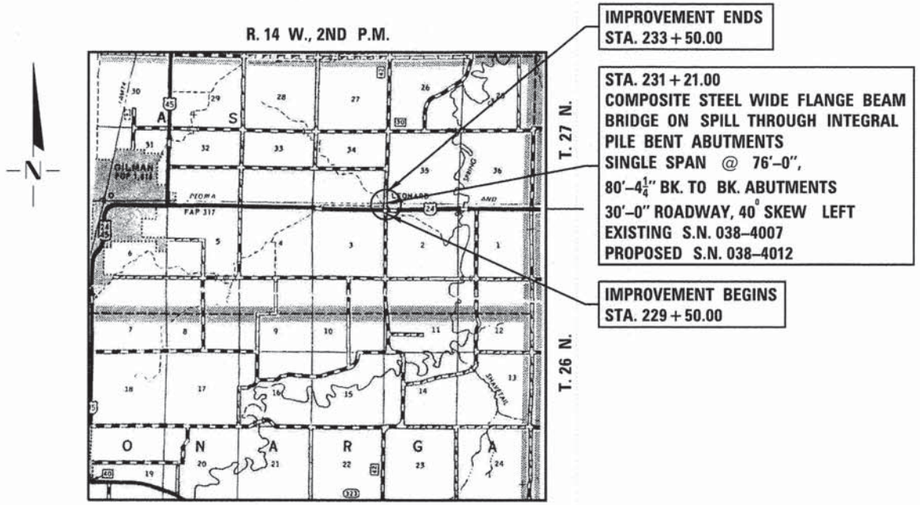
STANDARDS

280001–07	TEMPORARY EROSION CONTROL SYSTEMS
515001–03	NAME PLATE FOR BRIDGES
701901–04	TRAFFIC CONTROL DEVICES
720011–01	METAL POSTS FOR SIGNS, MARKERS AND DELINEATORS
728001–01	TELESCOPING STEEL SIGN SUPPORT
729001–01	APPLICATIONS OF TYPES A & B METAL POSTS (FOR SIGNS AND MARKERS)
BLR 21–9	TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES FOR CONSTRUCTION ON RURAL LOCAL HIGHWAYS
BLR 27–1	TRAFFIC BARRIER TERMINAL, TYPE 5A

SCALES

PLAN	0' 25' 50'
PROFILE HORIZ.	0' 25' 50'
PROFILE VERT.	0' 5' 10'
CROSS SECTIONS	0' 5' 10'

PRINTED BY THE AUTHORITY OF THE STATE OF ILLINOIS



LOCATION PLAN

GROSS LENGTH OF SECTION = 400.00 FEET = 0.076 MILES
NET LENGTH OF SECTION = 400.00 FEET = 0.076 MILES

0 1 2 3 4 5
SCALE IN MILES

FEHR GRAHAM
ENGINEERING & ENVIRONMENTAL
ILLINOIS IOWA WISCONSIN
ILLINOIS PROFESSIONAL DESIGN FIRM NUMBER: 184003525

JOHN A. MORRIS 36874 REGISTERED PROFESSIONAL ENGINEER OF ILLINOIS

John A. Morris 12-17-14
ILLINOIS PROFESSIONAL NO. 36874
EXPIRES 11-30-15

APPROVED Dec. 18 20 14
COUNTY ENGINEER

PASSED 12-30 20 14
DISTRICT 3 ENGINEER OF LOCAL ROADS & STREETS

RELEASED FOR BID BASED ON LIMITED REVIEW 12-30 20 14
DEPUTY DIRECTOR OF HIGHWAYS, REGION 2 ENGINEER

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

*13-705U

SUMMARY OF QUANTITIES

CONSTRUCTION CODE: 0011

	CODE NO.	ITEM	UNIT	TOTAL QUANTITY	
	20200100	EARTH EXCAVATION	CU YD	308	
	20300100	CHANNEL EXCAVATION	CU YD	744	
	20400800	FURNISHED EXCAVATION	CU YD	108	
	20700220	POROUS GRANULAR EMBANKMENT	CU YD	85	
	28000250	TEMPORARY EROSION CONTROL SEEDING	POUND	33	
	28000305	TEMPORARY DITCH CHECKS	FOOT	60	
	28000400	PERIMETER EROSION BARRIER	FOOT	715	
	28000500	INLET AND PIPE PROTECTION	EACH	3	
•	28100209	STONE RIPRAP, CLASS A5	TON	255	
•	28100809	STONE DUMPED RIPRAP, CLASS A5	TON	109	
	28200200	FILTER FABRIC	SQ YD	253	
	40200100	AGGREGATE SURFACE COURSE, TYPE A	TON	557	
	40300100	BITUMINOUS MATERIALS (PRIME COAT)	GALLON	195	
	40300300	BITUMINOUS MATERIALS (COVER AND SEAL COATS)	GALLON	779	
	40300500	COVER COAT AGGREGATE	TON	14	
	40300600	SEAL COAT AGGREGATE	TON	9	
•	50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1	
	50200100	STRUCTURE EXCAVATION	CU YD	50	
	50300225	CONCRETE STRUCTURES	CU YD	47.6	
	50300255	CONCRETE SUPERSTRUCTURE	CU YD	89.9	
	50300260	BRIDGE DECK GROOVING	SQ YD	250	
	50300300	PROTECTIVE COAT	SQ YD	318	
	50500105	FURNISHING AND ERECTING STURCTURAL STEEL	L SUM	1	
	50500505	STUD SHEAR CONNECTORS	EACH	1464	
	50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	25720	
	50900205	STEEL RAILING, TYPE S1	FOOT	159	
	51200958	FURNISHING METAL SHELL PILES 14"X 0.250"	FOOT	649	
	51202305	DRIVING PILES	FOOT	649	
	51203200	TEST PILE METAL SHELLS	EACH	1	
	51500100	NAME PLATES	EACH	1	
	52100520	ANCHOR BOLTS, 1"	EACH	24	
	542D0220	PIPE CULVERTS, CLASS D, TYPE 1 15"	FOOT	98	
	542D0223	PIPE CULVERTS, CLASS D, TYPE 1 18"	FOOT	48	
	59100100	GEOCOMPOSITE WALL DRAIN	SQ YD	71	
	63100075	TRAFFIC BARRIER TERMINAL, TYPE 5A	EACH	2	**
	63100167	TRAFFIC BARRIER TERMINAL, TYPE 1 (SPECIAL) TANGENT	EACH	2	**
	67100100	MOBILIZATION	L SUM	1	
•	70101830	TRAFFIC CONTROL AND PROTECTION, STANDARD BLR 21	L SUM	1	
•	78201000	TERMINAL MARKER - DIRECT APPLIED	EACH	4	
•	X2501000	SEEDING, CLASS 2 (SPECIAL)	ACRE	0.3	**
•	X2830495	AGGREGATE DITCH (SPECIAL)	TON	26	
•	Z0046304	PIPE UNDERDRAINS FOR STRUCTURES 4''	FOOT	140	
•	XX004633	FIELD TILE ADJUSTMENT	EACH	1	

•SEE SPECIAL PROVISIONS
** SPECIALTY ITEMS

GENERAL NOTES

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

THE AREA TO BE SEEDED SHALL CONSIST OF ALL DISTURBED EARTH SURFACES WITHIN THE RIGHT OF WAY, AS DIRECTED BY THE ENGINEER.

SEEDING, CLASS 2 (SPECIAL) = 0.3 ACRE

APPLICATION RATES USED IN QUANTITY CALCULATIONS

STONE RIPRAP, CLASS A5	1.65 TON/CU YD
AGGREGATE SURFACE COURSE	2.05 TON/CU YD
BITUMINOUS MATERIALS (PRIME COAT)	0.25 GALLON/SQ YD
(COVER COAT)	0.35 GALLON/SQ YD
(SEAL COAT)	0.30 GALLON/SQ YD
COVER COAT AGGREGATE	18 LB/SQ YD
SEAL COAT AGGREGATE	25 LB/SQ YD

TEMPORARY EROSION CONTROL

THE FOLLOWING QUANTITIES ARE ESTIMATE ONLY. ACTUAL QUANTITIES FOR EROSION CONTROL WILL BE DETERMINED BY THE ENGINEER IN THE FIELD AND THERE WILL BE NO ADJUSTMENT IN ANY PRICE DUE TO A CHANGE IN PLAN QUANTITY.

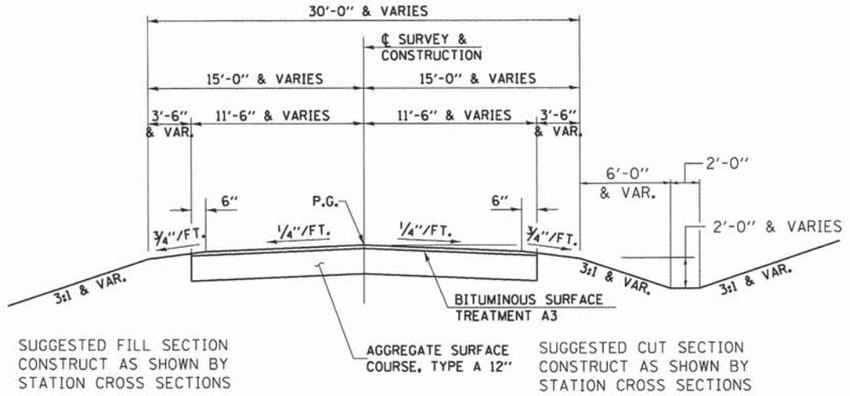
TEMPORARY EROSION CONTROL SEEDINGS	=	33 POUND
TEMPORARY DITCH CHECKS	=	60 FOOT
PERIMETER EROSION CONTROL BARRIER	=	715 FOOT
INLET AND PIPE PROTECTION	=	3 EACH

TEMPORARY DITCH CHECKS

LT. STA. 231+00	=	20 FOOT
RT. STA. 231+50	=	20 FOOT
LT. STA. 231+94	=	20 FOOT
TOTAL	=	60 FOOT

INLET AND PIPE PROTECTION

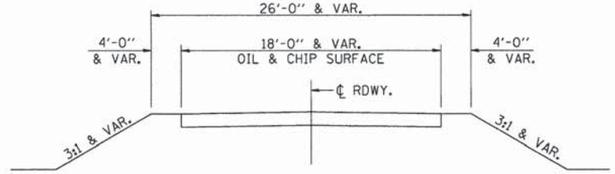
LT. STA. 230+25	=	1 EACH
RT. STA. 233+18	=	1 EACH
LT. STA. 233+18	=	1 EACH
TOTAL	=	3 EACH



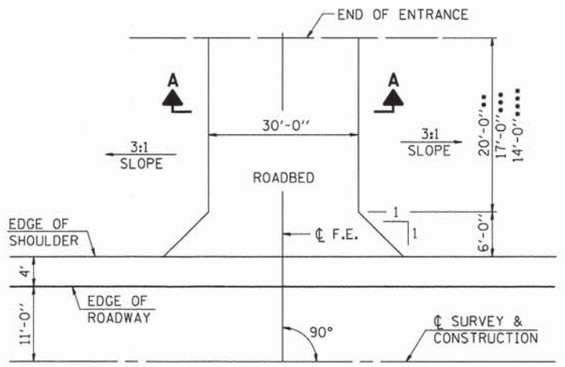
TYPICAL PROPOSED CROSS SECTION

STA. 229+50.00 TO STA. 230+82.13
STA. 231+59.87 TO STA. 233+00.00

TRANSITION FROM PROPOSED ROADWAY TO EXISTING ROADWAY TO BE CONSTRUCTED FROM STA. 233+00.00 TO STA. 233+50.00.

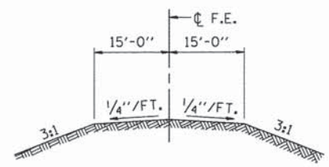


EXISTING TYPICAL CROSS SECTION



FIELD ENTRANCE DETAIL

F.E. LT. STA. 230+50••
F.E. LT. STA. 232+94•••
F.E. RT. STA. 232+94••••



SECTION A–A

FEHR GRAHAM
ENGINEERING & ENVIRONMENTAL
ILLINOIS DESIGN FIRM NO. 184-003525
ILLINOIS
IOWA
WISCONSIN

AGENCY: IROQUOIS COUNTY HWY. DEPT.

PROJECT: SECTION 11-00172-01-BR
C.H. 42 OVER TRIB. TO SPRING CREEK

DESIGNED: G.J.C.
CHECKED: R.D.F.
DRAWN: A.D.S.
CHECKED: R.D.F.

REV. NO.	DESCRIPTION	DATE

DRAWING: SUMMARY OF QUANTITIES, GENERAL NOTES AND TYPICAL CROSS SECTIONS

JOB NUMBER: 13-705U

SHEET NUMBER: 2 of 26

S.E. 1/4, SECT. 34, T. 27 N., R. 14 W., 2ND P.M.

NAIL & BOTTLE CAP IN GATE POST

ALBERT WITVOET & DONNA WITVOET

CHISELLED '+' TOP BRIDGE CURB

38.10' 48.43' 26.95'

℄ SURVEY

CHISELLED '+' TOP BRIDGE CURB

+71.98 45° LT.

P.I. STA. 230+71.98

P.I. STA. 230 + 71.98
IRON PIN (FLUSH)

F.E. LT. STA. 230+50
PIPE CULVERTS, CLASS D,
TYPE 1 15", 50' LONG

+47.92 46.85' LT.

STA. 228+97

℄ TOLEDO, PEORIA & WESTERN R.R.

PROPOSED STRUCTURE NO. 038-4012
STA. 231+21.00 - COMPOSITE STEEL WIDE FLANGE BEAM BRIDGE ON SPILL THROUGH PILE BENT ABUTS; SINGLE SPAN @ 76'-0", 80'-4¼" BK.-BK. ABUTS.; 30'-0" ROADWAY; 40° SKEW LEFT

F.E. LT. STA. 232+94
PIPE CULVERTS, CLASS D,
TYPE 1 18", 48' LONG

+10 45' LT.

+50 31.93' RT.

PROPOSED R.O.W. LINE

DALE A. JOHNSON AND DOUGLAS J. JOHNSON, CO-TRUSTEES OF THE EILEEN E. JOHNSON LIVING TRUST AND DEAN L. JOHNSON

SPIKE NAIL EDGE ROAD 15.04'
SPIKE NAIL EDGE ROAD 15.72'
SPIKE NAIL EDGE ROAD 11.42'
℄ SURVEY

P.I. STA. 237 + 04.51
IRON PIN (FLUSH)

ENTRANCES TO BE BUILT

LT. STA. 230+50,	F.E.	-15.0%,	30' ROADBED
LT. STA. 232+94,	F.E.	-13.0%,	30' ROADBED
RT. STA. 232+94,	F.E.	-12.5%,	30' ROADBED

QUANTITIES INCLUDED IN THOSE LISTED

PIPES TO BE REMOVED

LT. STA. 230+83, 15" CMP, 30' LONG
LT. STA. 231+82, 18" CMP, 32' LONG
RT. STA. 231+82, 18" CMP, 30' LONG
QUANTITIES INCLUDED IN "EARTH EXCAVATION".

EXISTING R.O.W. LINE

229+00 230+00 232+00 233+00 234+00 235+00 236+00

179°-09'-12"

60'

P.I. STA. 237+04.51

EXISTING R.O.W. LINE

+50 30.09' RT.

PROPOSED R.O.W. LINE

+82 45' RT.

F.E. RT. STA. 232+94
PIPE CULVERTS, CLASS D,
TYPE 1 15", 48' LONG

+10 45' RT.

IMPROVEMENT ENDS STA. 233+50.00

+50 28.07' RT.

IMPROVEMENT BEGINS STA. 229+50.00

50'

NORTH RAILROAD R.O.W.

CHANNEL EXCAVATION

THE CHANNEL SHALL BE EXCAVATED AS SHOWN WITHIN THE LIMITS OF THE PROPOSED STRUCTURE THEN TAPER TO THE EXISTING CHANNEL AT THE R.O.W. LINES. SUITABLE EXCAVATED MATERIAL TO BE USED IN THE EMBANKMENT AS DIRECTED BY THE ENGINEER.

CHANNEL EXCAVATION = 744 CU. YD.

DANA S. GROSSE, JULIE K. BORCHERS, ET AL

S.W. 1/4, SECT. 35, T. 27 N., R. 14 W., 2ND P.M.

UTILITIES

ATT/DISTRIBUTION
630-573-5450
2nd 630-573-5495

AMEREN CIPS - (NORTH)
MARK WINSON 217-221-0825

EASTERN ILLINI ELECTRIC COOP.
ALAN SCHWEIGHART 217-379-2131X173

MARATHON PL LLC/MRTNSVL
BEN SARVER 217-382-2234

EXISTING STRUCTURE NO. 038-4007
STA. 231+21.00
SINGLE SPAN PRECAST CONCRETE BRIDGE SLAB SUPERSTRUCTURE ON CLOSED TIMBER BACKED ABUTMENTS
32'-0" BK.-BK. ABUTS., 28'-0" RDWY.,
30'-0" O.-O. DECK, 40° SKEW LEFT

REMOVAL OF EXISTING STRUCTURES = 1 EACH

B.M. #1 - TOP SE COR. BEARING SEAT S.N. 038-0033 (U.S. 24) EL. 635.10

B.M. #2 - TOP NW COR. BEARING SEAT S.N. 038-0033 (U.S. 24) EL. 635.31

E=0.23 90' V.C. K=44 | E=0.78 160' V.C. K=41 | 50' | E=0.17 100' V.C. K=75

P.C. STA. 229+50 ELEV. 634.35
P.I. STA. 229+95 ELEV. 634.31
P.R.C. STA. 230+40 ELEV. 635.19
P.I. STA. 231+20 ELEV. 636.75
P.T. STA. 232+00 ELEV. 635.19
P.C. STA. 232+50 ELEV. 634.22
P.I. STA. 233+00 ELEV. 633.24
P.T. STA. 233+50 ELEV. 632.93

15 YR. H.W.E. 631.3
100 YR. H.W.E. 633.9

+1.95% -1.95% -0.62% -0.09% S.D. LT. -3.78%

PROPOSED PROFILE GRADE
EXISTING PROFILE GRADE

*2:1 (H:V) @ RT. L's TO CHANNEL

+00 LT. ELEV. 631.78
+00 LT. ELEV. 628.00
+50 RT. ELEV. 626.56
+94 LT. & RT. ELEV. 627.22
+18 LT. & RT. ELEV. 629.08
+43 LT. ELEV. 629.47
+43 RT. ELEV. 629.28

CHANNEL EXCAVATION (TYP.)
S.D. RT. 1.50%
S.D. LT & RT. 1.50%

F.L. ELEV. 622.2

EXISTING
PROPOSED

4'-0" & VAR. 2'-0" 6'-0" & VAR.
2'-0" & VAR.
2:1 3:1
16"
STONE RIPRAP, CLASS A4

EARTH EXCAVATION	= 308 CU YD
SUITABLE CHANNEL. EX.	= 372 CU YD
FURNISHED EXCAVATION	= 108 CU YD
EMBANKMENT (INFO ONLY)	= 618 CU YD

AGGREGATE DITCH (SPECIAL)
LT. STA. 230+75 TO LT. STA. 231+00 = 26 TON
TOTAL = 26 TON

650 645 640 635 630 625 620 615 610

634.36 634.35 634.35 633.63 634.40 633.58 634.59 633.54 634.92 633.48 635.37 633.41 635.72 633.37 635.92 633.30 635.97 633.30 635.86 633.30 635.60 633.30 635.19 633.26 634.70 633.23 634.22 633.21 633.77 633.16 633.41 633.04 633.13 632.93 632.93 632.84 632.76 632.70 632.66 632.67 632.68 632.73 632.77 632.81 632.85 632.90

230 231 232 233

FEHR GRAHAM
ENGINEERING & ENVIRONMENTAL
ILLINOIS DESIGN FIRM NO. 184-003525
ILLINOIS IOWA WISCONSIN

AGENCY: IROQUOIS COUNTY HWY. DEPT.

PROJECT: SECTION 11-00172-01-BR
C.H. 42 OVER TRIB. TO SPRING CREEK

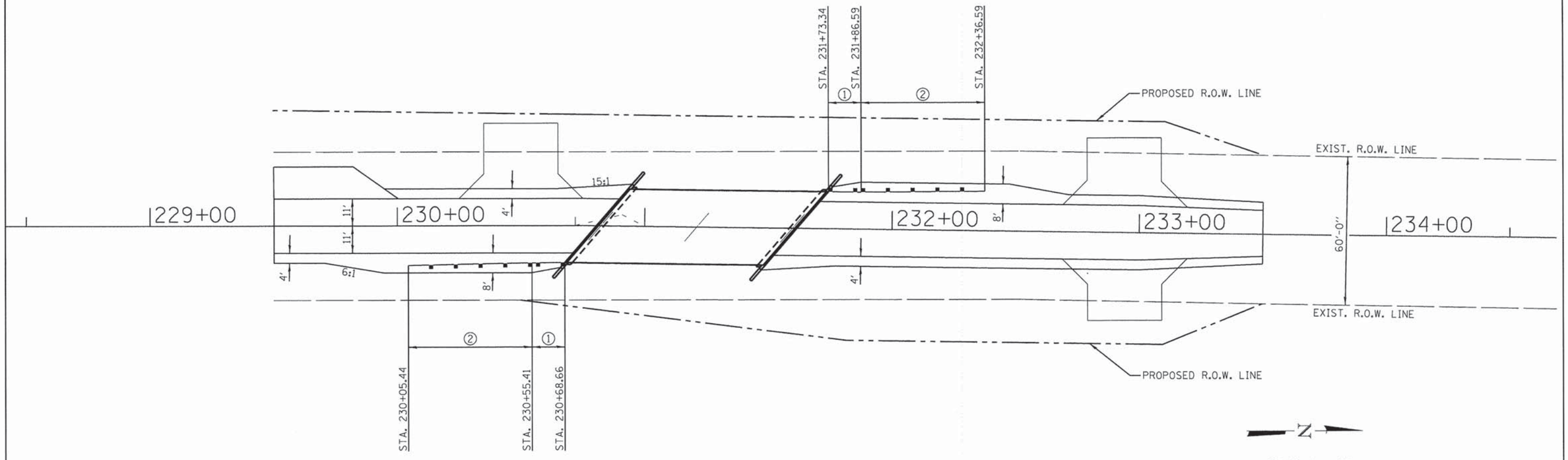
DESIGNED: G.J.C.
CHECKED: R.D.F.
DRAWN: A.D.S.
CHECKED:

REV. NO.	DESCRIPTION	DATE
REV. NO.	DESCRIPTION	DATE
REV. NO.	DESCRIPTION	DATE
REV. NO.	DESCRIPTION	DATE
REV. NO.	DESCRIPTION	DATE

DRAWING: PLAN & PROFILE

JOB NUMBER: 13-705U

SHEET NUMBER: 3 of 26



GUARDRAIL & SHOULDER DETAIL

NOTE:
ROADWAY EMBANKMENT FORESLOPES ARE 3:1 EXCEPT AT THE BRIDGE WINGWALLS WHERE THE SLOPES ARE 2:1. THE TRANSITION FROM THE 2:1 BRIDGE EMBANKMENT TO THE 3:1 ROADWAY FORESLOPE SHALL BE ACCOMPLISHED AS RAPIDLY AS POSSIBLE.

TRAFFIC BARRIER TERMINAL, TYPE 5A

15' RT. STA. 230+55.41 TO 15' RT. STA. 230+68.66	=	1 EACH
15' LT. STA. 231+73.34 TO 15' LT. STA. 231+86.59	=	1 EACH
TOTAL	=	2 EACH

TRAFFIC BARRIER TERMINAL, TYPE 1 (SPECIAL) TANGENT

16' RT. STA. 230+05.41 TO 15' RT. STA. 230+55.41	=	1 EACH
15' LT. STA. 231+86.59 TO 16' LT. STA. 232+36.59	=	1 EACH
TOTAL	=	2 EACH

LEGEND

① TRAFFIC BARRIER TERMINAL, TYPE 5A

② TRAFFIC BARRIER TERMINAL, TYPE 1 (SPECIAL) TANGENT

FEHR GRAHAM
ENGINEERING & ENVIRONMENTAL
ILLINOIS DESIGN FIRM NO. 184-003525
ILLINOIS
IOWA
WISCONSIN

AGENCY: IROQUOIS COUNTY HWY. DEPT.

PROJECT: SECTION 11-00172-01-BR
C.H. 42 OVER TRIB. TO SPRING CREEK

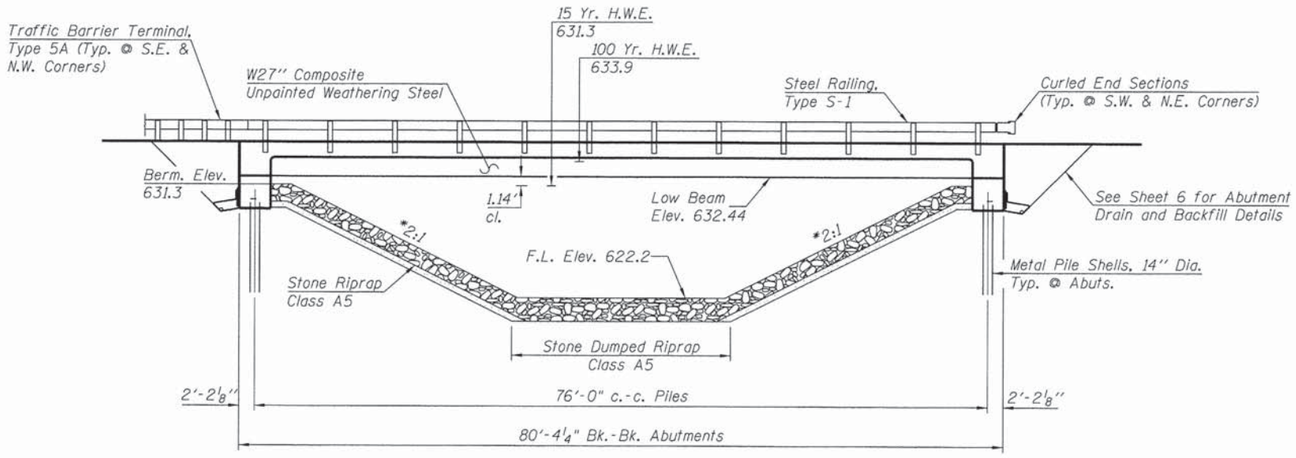
DESIGNED: G.J.C.
CHECKED: R.D.F.
DRAWN: A.D.S.
CHECKED:

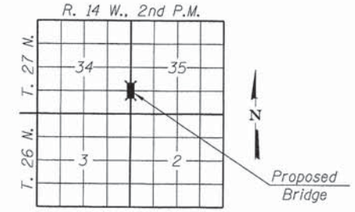
REV. NO.	DESCRIPTION	DATE

DRAWING: SHOULDER AND GUARDRAIL DETAIL

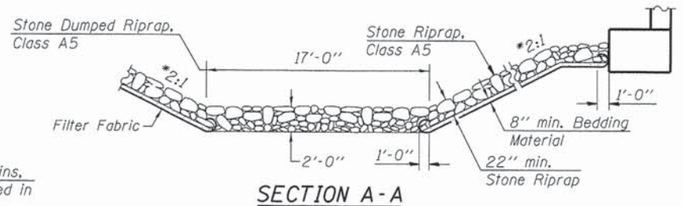
JOB NUMBER: 13-705U

SHEET NUMBER: 4 of 26



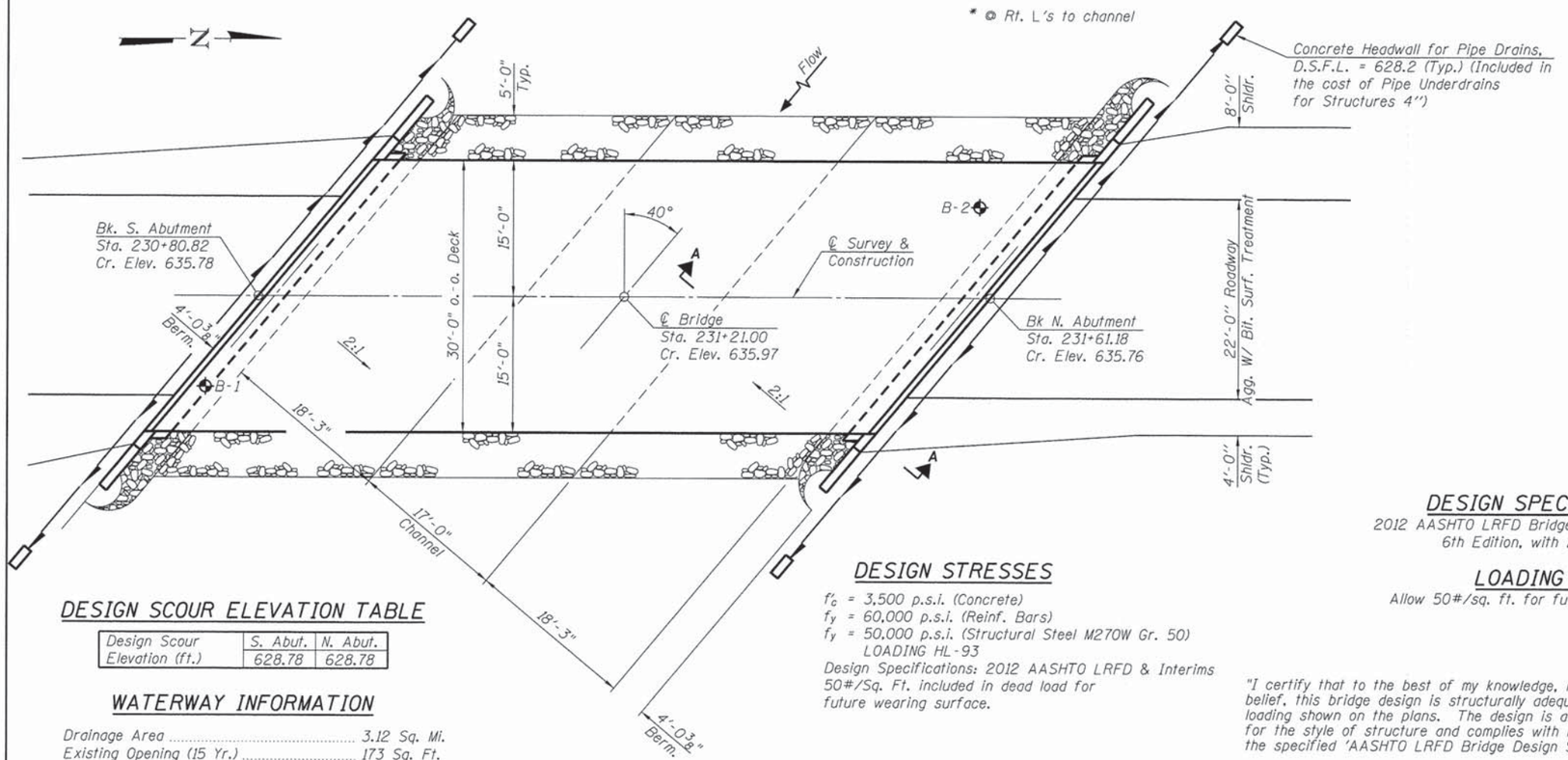


LOCATION SKETCH



SECTION A-A
RIPRAP PLACEMENT

Note: Excavation and aggregate bedding will not be paid for as separate items and shall be considered as included in Stone Riprap, Class A5.



DESIGN SCOUR ELEVATION TABLE

Design Scour Elevation (ft.)	S. Abut.	N. Abut.
	628.78	628.78

WATERWAY INFORMATION

Drainage Area	3.12 Sq. Mi.
Existing Opening (15 Yr.)	173 Sq. Ft.
Required Opening (15 Yr.)	320 Sq. Ft.
Proposed Opening (15 Yr.)	320 Sq. Ft.
Design Discharge (15 Yr.)	401 C.F.S.
Created Head (15 Yr.)	0.2 Ft.
100 Year Discharge	652 C.F.S.
100 Yr. Created Head	0.2 Ft.

SEISMIC DATA

Seismic Performance Zone (SPZ) = 1
Design Spectral Acceleration at 1.0 sec. (S_{D1}) = 0.162
Design Spectral Acceleration at 0.2 sec. (S_{DS}) = 0.278
Soil Site Class = E

DESIGN STRESSES

f'_c = 3,500 p.s.i. (Concrete)
f_y = 60,000 p.s.i. (Reinf. Bars)
f_y = 50,000 p.s.i. (Structural Steel M270W Gr. 50)
LOADING HL-93
Design Specifications: 2012 AASHTO LRFD & Interims
50#/Sq. Ft. included in dead load for future wearing surface.

DESIGN SPECIFICATIONS

2012 AASHTO LRFD Bridge Design Specifications, 6th Edition, with 2013 Interims

LOADING HL-93

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

"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 specified 'AASHTO LRFD Bridge Design Specifications'".

John A. Morris 12/17/14
ILLINOIS STRUCTURAL NO. 4277 (Expires 11/30/16)

LICENSED STRUCTURAL ENGINEER * JOHN A. MORRIS NO. 81-4277 * STATE OF ILLINOIS

BUILT 20__ BY
IROQUOIS COUNTY
SEC. 11-00172-01-BR
F.A. PROJ. BROS-0075 (180)
STR. NO. 038-4012
LOADING HL-93

LETTERING FOR NAME PLATE

See Std. 515001

GENERAL PLAN & ELEVATION
C.H. 42
SECTION 11-00172-01-BR
IROQUOIS COUNTY
STA. 231+21.00
S.N. 038-4012

FEHR GRAHAM
ENGINEERING & ENVIRONMENTAL
ILLINOIS DESIGN FIRM NO. 184-003525
ILLINOIS IOWA WISCONSIN

AGENCY: IROQUOIS COUNTY HWY. DEPT.

PROJECT: SECTION 11-00172-01-BR C.H. 42 OVER TRIBUTARY SPRING CREEK

DESIGNED: K.E.B.
CHECKED: ENG
DRAWN: A.D.S.
CHECKED: ENG

REV. NO.	DESCRIPTION	DATE

DRAWING: GENERAL PLAN & ELEVATION

JOB NUMBER: 13-705U

SHEET NUMBER 5 of 26

GENERAL NOTES

See sheet 19 to 22 for Boring Data.

Fasteners shall be AASHTO M164 Type 1, mechanically galvanized bolts in painted areas and M164 Type 3 in unpainted areas. Bolts $\frac{3}{4}$ in. ϕ, holes $\frac{15}{16}$ in. ϕ, unless otherwise noted.

Calculated weight of Structural Steel = 87,200 lbs.

All structural steel shall be AASHTO M270 Grade 50W.

No field welding is permitted except as specified in the contract documents.

Reinforcement bars shall conform to the requirements of ASTM A 706 Gr 60.

Reinforcement bars designated (E) shall be epoxy coated.

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

Structural steel shall only be painted for a distance equal to the depth of embedment into the concrete cap plus 3 inches. Those areas shall be primed in the shop with a Department approved zinc rich primer. No field painting shall be required.

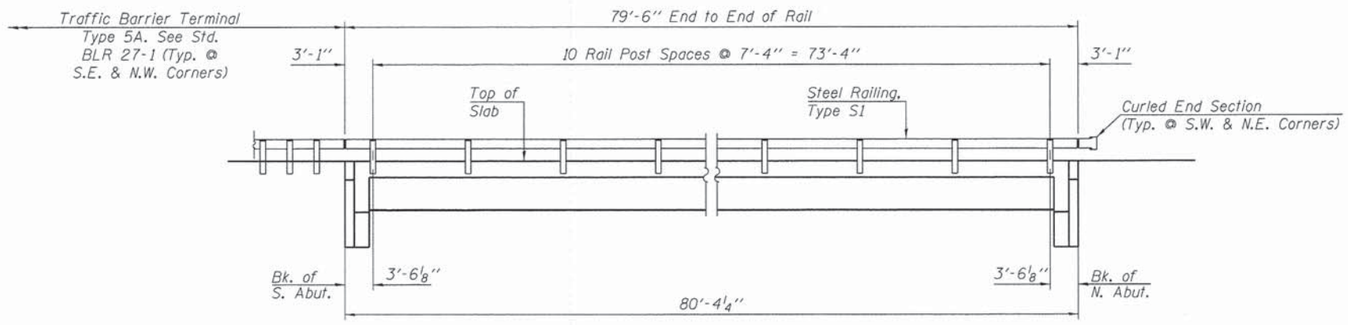
The Contractor shall drive test piles to 110% of the nominal required bearing specified in production locations at substructures specified or approved by the Engineer before ordering the remainder of piles.

All construction joints shall be bonded.

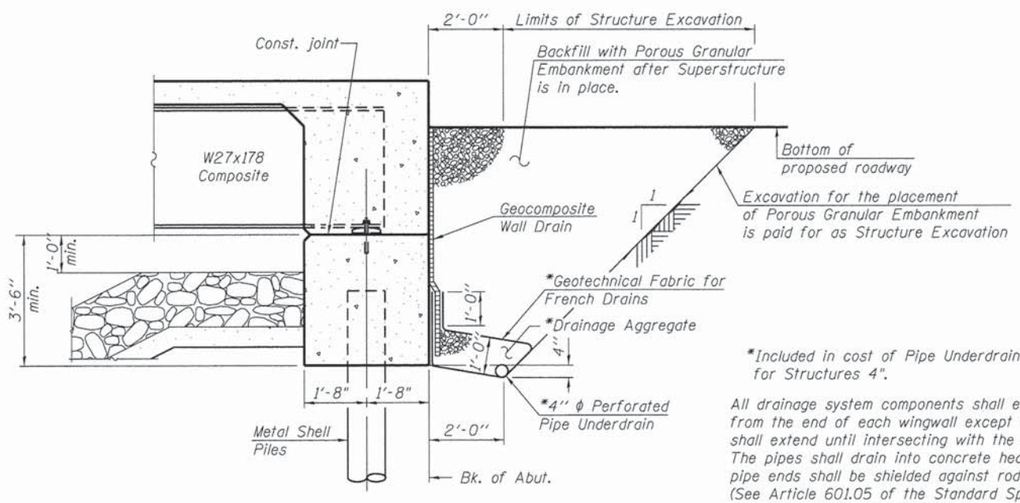
All exposed surfaces or abutments and wingwalls shall be given a rubbed finish. This work shall be included in the cost of Concrete Structures.

Bearing Seat surfaces shall be constructed or adjusted to the designated elevations within a tolerance of $\frac{1}{8}$ inch. Adjustment shall be made by grinding the surface of shimming the bearing.

Excavation required for the construction of the abutments is included in the cost of "Concrete Structures".



RAIL POST SPACING DETAIL



SECTION THRU INTEGRAL ABUTMENT
(Horiz. dim. @ Rt. L's)

*Included in cost of Pipe Underdrains for Structures 4".

All drainage system components shall extend to 2'-0" from the end of each wingwall except an outlet pipe shall extend until intersecting with the side slopes. The pipes shall drain into concrete headwalls* and the pipe ends shall be shielded against rodent intrusion. (See Article 601.05 of the Standard Specifications and Highway Standard 601101)

TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB	TOTAL
Removal of Existing Structures	L. Sum		1	1
Concrete Structures	Cu. Yd.		47.6	47.6
Concrete Superstructure	Cu. Yd.	89.9		89.9
Bridge Deck Grooving	Sq. Yd.	250		250
Protective Coat	Sq. Yd.	318		318
Furnishing and Erecting Structural Steel	L. Sum	1		1
Stud Shear Connectors	Each	1464		1464
Reinforcement Bars, Epoxy Coated	Pounds	18,140	7,580	25,720
Furnishing Metal Shell Piles 14" x 0.250"	Foot		649	649
Driving Piles	Foot		649	649
Test Pile Metal Shells	Each		1	1
Name Plates	Each		1	1
Steel Railing, Type S1	Foot	159		159
Anchor Bolts, 1"	Each	24		24
Stone Riprap, Class A5	Ton		255	255
Stone Dumped Riprap, Class A5	Ton		109	109
Filter Fabric	Sq. Yd.		253	253
Pipe Underdrains for Structures 4"	Foot		140	140
Geocomposite Wall Drain	Sq. Yd.		71	71
Porous Granular Embankment	Cu. Yd.		85	85
Structure Excavation	Cu. Yd.		50	50

FEHR GRAHAM
ENGINEERING & ENVIRONMENTAL
ILLINOIS DESIGN FIRM NO. 184-003525
ILLINOIS
IOWA
WISCONSIN

AGENCY: IROQUOIS COUNTY HWY. DEPT.

PROJECT: SECTION 11-00172-01-BR
C.H. 42 OVER TRIBUTARY
SPRING CREEK

DESIGNED: K.E.B.
CHECKED: ENG
DRAWN: A.D.S.
CHECKED: ENG

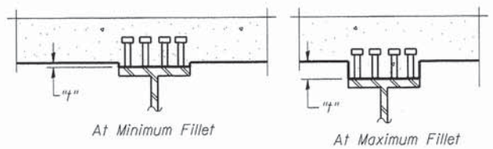
REVISIONS

REV. NO.	DESCRIPTION	DATE

DRAWING: GENERAL NOTES AND BILL OF MATERIAL

JOB NUMBER: 13-705U

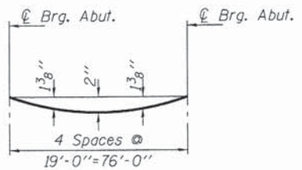
SHEET NUMBER 6 of 26



At Minimum Fillet At Maximum Fillet

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 Deflection" shown below, minus slab thickness, equals the fillet heights "t" above top flange of beams.

FILLET HEIGHTS



DEAD LOAD DEFLECTION DIAGRAM

(Includes weight of concrete only.)

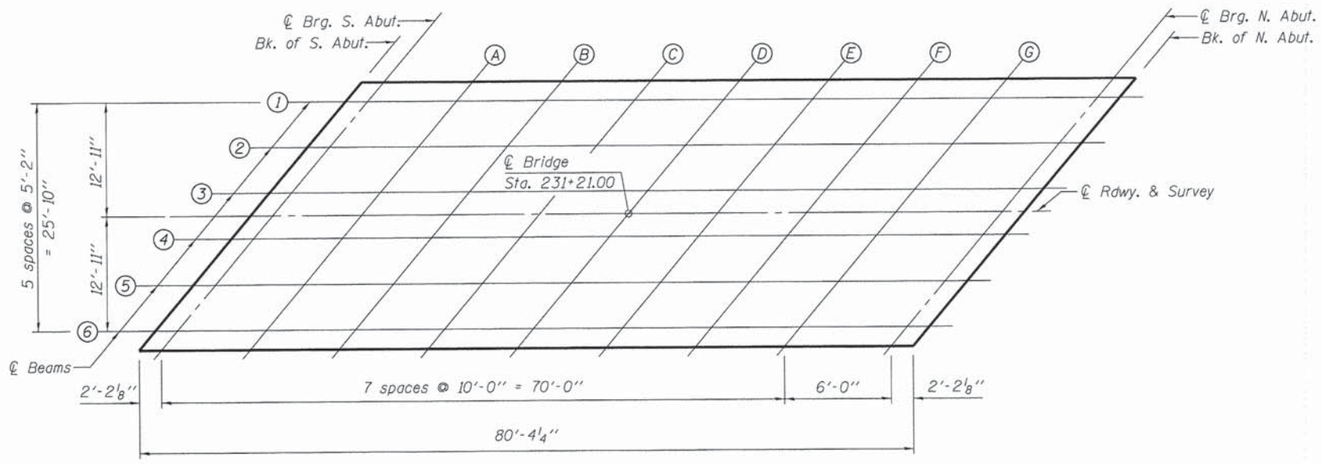
Note: The above deflections are not to be used in the field if the engineer is working from the grade elevations adjusted for dead load deflections as shown below.

WEST EDGE OF DECK

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. of S. Abut.	230+93.41	-15.000	635.649	635.649
℄ S. Abut.	230+95.58	-15.000	635.663	635.663
A	231+05.58	-15.000	635.710	635.769
B	231+15.58	-15.000	635.733	635.848
C	231+25.58	-15.000	635.732	635.872
D	231+35.58	-15.000	635.706	635.861
E	231+45.58	-15.000	635.656	635.786
F	231+55.58	-15.000	635.581	635.676
G	231+65.58	-15.000	635.482	635.518
℄ N. Abut.	231+71.58	-15.000	635.411	635.411
Bk. of N. Abut.	231+73.76	-15.000	635.383	635.383

BEAM 1

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. of S. Abut.	230+91.66	-12.917	635.670	635.670
℄ S. Abut.	230+93.84	-12.917	635.685	635.685
A	231+03.83	-12.917	635.736	635.795
B	231+13.83	-12.917	635.764	635.878
C	231+23.83	-12.917	635.766	635.906
D	231+33.83	-12.917	635.745	635.900
E	231+43.83	-12.917	635.699	635.829
F	231+53.83	-12.917	635.629	635.723
G	231+63.83	-12.917	635.534	635.569
℄ N. Abut.	231+69.84	-12.917	635.465	635.465
Bk. of N. Abut.	231+72.01	-12.917	635.438	635.438



PLAN

BEAM 2

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. of S. Abut.	230+87.32	-7.750	635.719	635.719
℄ S. Abut.	230+89.50	-7.750	635.736	635.736
A	230+99.50	-7.750	635.798	635.857
B	231+09.50	-7.750	635.835	635.950
C	231+19.50	-7.750	635.849	635.989
D	231+29.50	-7.750	635.838	635.993
E	231+39.50	-7.750	635.803	635.932
F	231+49.50	-7.750	635.743	635.837
G	231+59.50	-7.750	635.659	635.694
℄ N. Abut.	231+65.50	-7.750	635.597	635.597
Bk. of N. Abut.	231+67.68	-7.750	635.572	635.572

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AGENCY: IROQUOIS COUNTY HWY. DEPT.

PROJECT: SECTION 11-00172-01-BR
C.H. 42 OVER TRIBUTARY
SPRING CREEK

DESIGNED: K.E.B.
CHECKED: ENG
DRAWN: A.D.S.
CHECKED: ENG

REVISIONS

REV. NO.	DESCRIPTION	DATE

DRAWING: TOP OF SLAB ELEVATIONS

JOB NUMBER: 13-705U

SHEET NUMBER: 7 of 26

BEAM 3

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. of S. Abut.	230+82.99	-2.583	635.763	635.763
℄ S. Abut.	230+85.16	-2.583	635.782	635.782
A	230+95.16	-2.583	635.854	635.914
B	231+05.16	-2.583	635.903	636.018
C	231+15.16	-2.583	635.927	636.067
D	231+25.16	-2.583	635.926	636.081
E	231+35.16	-2.583	635.902	636.031
F	231+45.16	-2.583	635.852	635.947
G	231+55.16	-2.583	635.779	635.814
℄ N. Abut.	231+61.17	-2.583	635.723	635.723
Bk. of N. Abut.	231+63.34	-2.583	635.701	635.701

℄ ROADWAY & PG

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. of S. Abut.	230+80.82	0.000	635.783	635.783
℄ S. Abut.	230+83.00	0.000	635.803	635.803
A	230+93.00	0.000	635.881	635.940
B	231+03.00	0.000	635.935	636.050
C	231+13.00	0.000	635.964	636.104
D	231+23.00	0.000	635.969	636.124
E	231+33.00	0.000	635.949	636.079
F	231+43.00	0.000	635.906	636.000
G	231+53.00	0.000	635.837	635.873
℄ N. Abut.	231+59.00	0.000	635.785	635.785
Bk. of N. Abut.	231+61.18	0.000	635.763	635.763

BEAM 4

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. of S. Abut.	230+78.65	2.583	635.721	635.721
℄ S. Abut.	230+80.83	2.583	635.743	635.743
A	230+90.83	2.583	635.826	635.885
B	231+00.83	2.583	635.885	636.000
C	231+10.83	2.583	635.919	636.059
D	231+20.83	2.583	635.930	636.084
E	231+30.83	2.583	635.915	636.045
F	231+40.83	2.583	635.877	635.971
G	231+50.83	2.583	635.814	635.849
℄ N. Abut.	231+56.83	2.583	635.764	635.764
Bk. of N. Abut.	231+59.01	2.583	635.744	635.744

BEAM 5

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. of S. Abut.	230+74.32	7.750	635.595	635.595
℄ S. Abut.	230+76.49	7.750	635.618	635.618
A	230+86.49	7.750	635.712	635.771
B	230+96.49	7.750	635.782	635.896
C	231+06.49	7.750	635.827	635.966
D	231+16.49	7.750	635.847	636.002
E	231+26.49	7.750	635.844	635.974
F	231+36.49	7.750	635.816	635.910
G	231+46.49	7.750	635.763	635.799
℄ N. Abut.	231+52.49	7.750	635.720	635.720
Bk. of N. Abut.	231+54.67	7.750	635.702	635.702

BEAM 6

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. of S. Abut.	230+69.98	12.917	635.463	635.463
℄ S. Abut.	230+72.16	12.917	635.489	635.489
A	230+82.16	12.917	635.594	635.653
B	230+92.16	12.917	635.674	635.789
C	231+02.16	12.917	635.729	635.869
D	231+12.16	12.917	635.761	635.915
E	231+22.16	12.917	635.768	635.897
F	231+32.16	12.917	635.750	635.845
G	231+42.16	12.917	635.708	635.744
℄ N. Abut.	231+48.17	12.917	635.671	635.671
Bk. of N. Abut.	231+50.34	12.917	635.656	635.656

EAST EDGE OF DECK

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. of S. Abut.	230+68.23	15.000	635.409	635.409
℄ S. Abut.	230+70.41	15.000	635.436	635.436
A	230+80.41	15.000	635.545	635.604
B	230+90.41	15.000	635.629	635.744
C	231+00.41	15.000	635.689	635.829
D	231+10.41	15.000	635.724	635.879
E	231+20.41	15.000	635.736	635.865
F	231+30.41	15.000	635.722	635.817
G	231+40.41	15.000	635.685	635.720
℄ N. Abut.	231+46.41	15.000	635.651	635.651
Bk. of N. Abut.	231+48.59	15.000	635.636	635.636

AGENCY: IROQUOIS COUNTY HWY. DEPT.

PROJECT: SECTION 11-00172-01-BR
C.H. 42 OVER TRIBUTARY
SPRING CREEK

DESIGNED: K.E.B.
CHECKED: ENG
DRAWN: A.D.S.
CHECKED: ENG

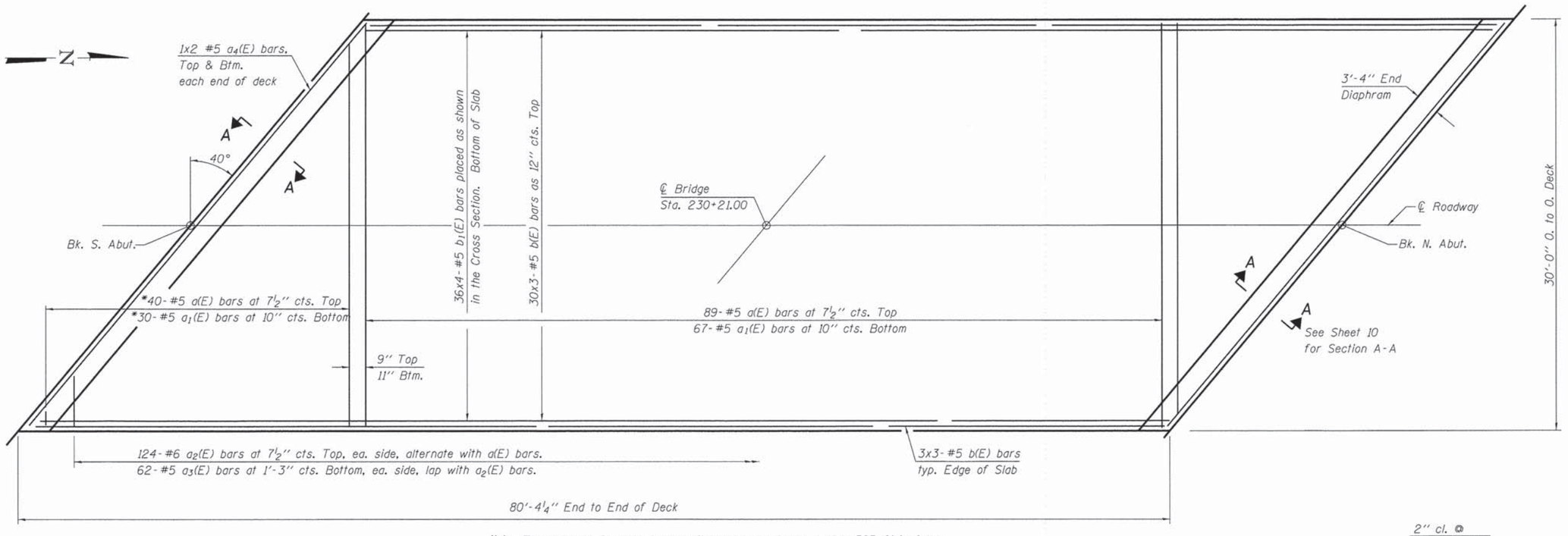
REVISIONS

REV. NO.	DESCRIPTION	DATE

DRAWING: TOP OF SLAB ELEVATIONS

JOB NUMBER: 13-705U

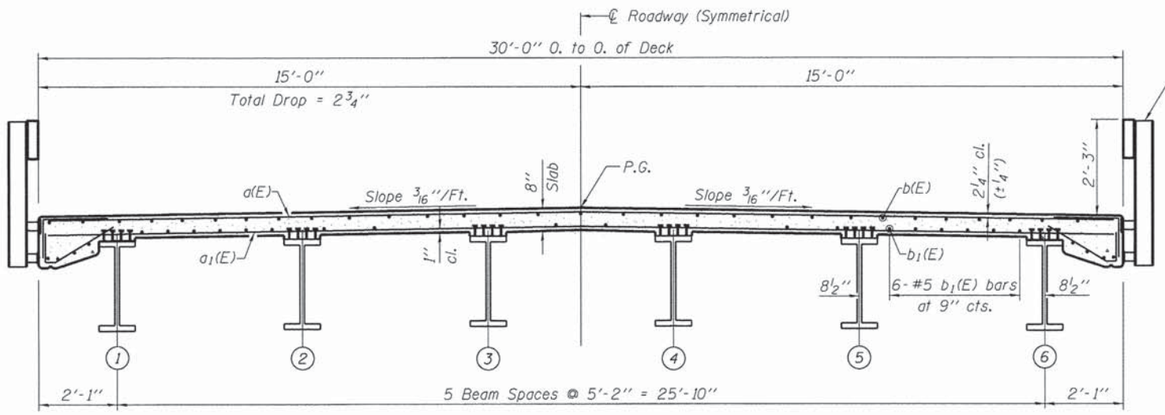
SHEET NUMBER 8 of 26



*Order a(E) and a_1(E) bars full length. Cut to fit skew and use remainder of bars in opposite end.

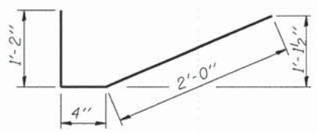
Note: The concrete for bridge decks finished according to Article 503.16(a) of the Standard Specifications shall be placed and compacted parallel to the skew in uniform increments along centerline of bridge. The machine used for finishing shall be set parallel to the skew for striking off and screeding the concrete.

PLAN

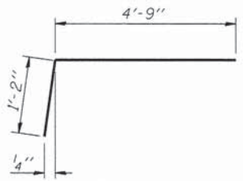


CROSS SECTION

(Looking North)

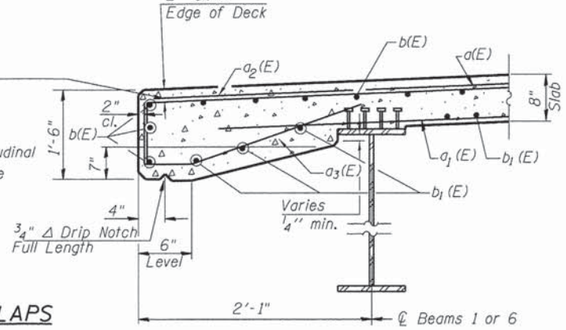


BAR a3(E)



BAR a2(E)

Reinforcement bars in the top of deck may be placed with a 2" minimum clearance in the area of rail post anchor devices. The studs of the anchor devices shall be placed below the top reinforcement and the outermost longitudinal reinforcement bar shall be placed directly above the studs of the rail post achor devices.



SECTION THRU EDGE OF SLAB

MINIMUM BAR LAPS

#5 Bars ____3'-3"

Notes:
See Sheet 10 for superstructure details and Bill of Material.
Reinforcement bars designated (E) shall be epoxy coated.
Bars indicated thus 34 x 4-#5 etc. indicates 34 lines of bars with 4 lengths per line.
Apply protective coat to deck fascia's.

Work this Sheet with Sheets 10 & 11.

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ENGINEERING & ENVIRONMENTAL
ILLINOIS DESIGN FIRM NO. 184-003525
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AGENCY: IROQUOIS COUNTY HWY. DEPT.

PROJECT: SECTION 11-00172-01-BR
C.H. 42 OVER TRIBUTARY SPRING CREEK

DESIGNED:	K.E.B.
CHECKED:	ENG
DRAWN:	A.D.S.
CHECKED:	ENG

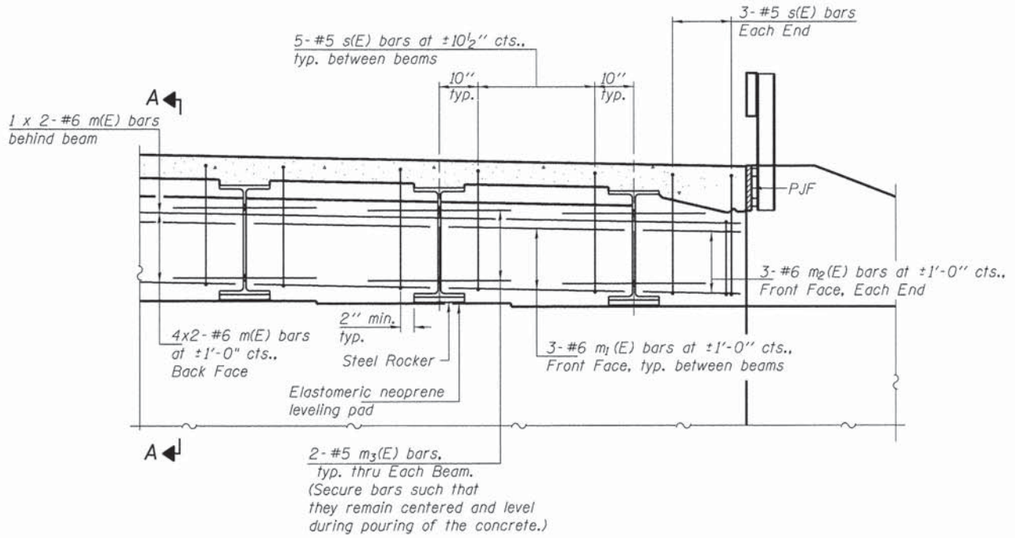
REVISIONS

REV. NO.	DESCRIPTION	DATE

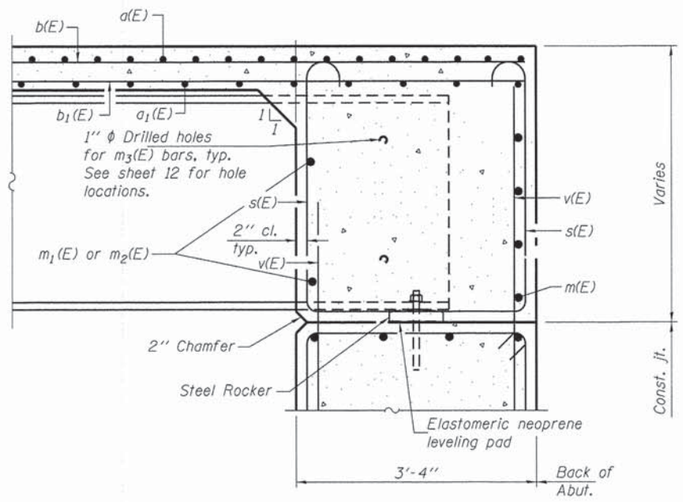
DRAWING: SUPERSTRUCTURE

JOB NUMBER: 13-705U

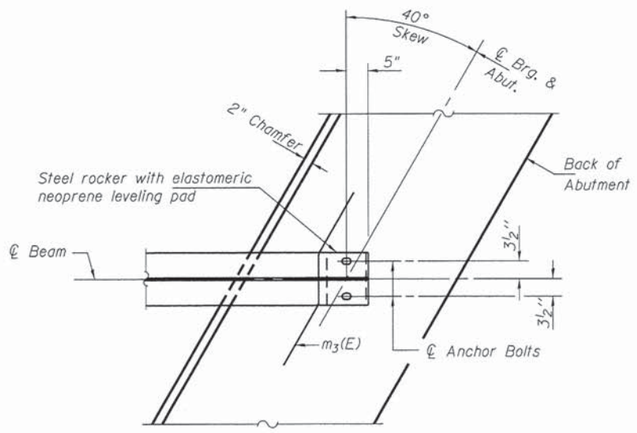
SHEET NUMBER: 9 of 26



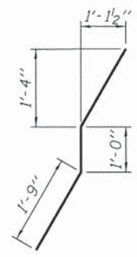
DIAPHRAGM ELEVATION AT ABUTMENT



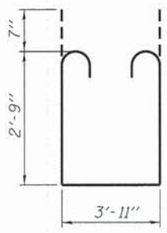
SECTION A-A
(at Rt. L's)



PARTIAL PLAN AT ABUTMENT
(Showing bottom flange of beam)



BAR m3(E)



BAR s(E)

BILL OF MATERIAL
SUPERSTRUCTURE

BAR	NO.	SIZE	LENGTH	SHAPE
a(E)	129	#5	29'-8"	
a1(E)	97	#5	29'-0"	
a2(E)	248	#6	5'-11"	
a3(E)	124	#5	3'-6"	
a4(E)	8	#5	21'-0"	
b(E)	108	#5	29'-0"	
b1(E)	144	#5	22'-6"	
m(E)	20	#6	21'-0"	
m1(E)	30	#6	6'-3"	
m2(E)	12	#6	1'-9"	
m3(E)	24	#5	4'-6"	
s(E)	62	#5	10'-7"	
Reinforcement Bars, Epoxy Coated		Pound	18,140	
Concrete Superstructure		Cu. Yd.	89.9	
Protective Coat		Sq. Yd.	318	
Bridge Deck Grooving		Sq. Yd.	250	

Notes:
Bar indicated thus 4x2-#5 etc. indicates 4 lines of bars with 2 legnths per line.
Concrete in diaphragm is included with Concrete Superstructure.
For details of bars a2(E) and a3(E) see sheet 9.
The s(E) bars shall be placed parallel to the beams. Spacing for these bars shall be at right angles to the beams.
For bearing details see sheet 14.

Work this sheet with sheets 9 and 11.

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ENGINEERING & ENVIRONMENTAL
ILLINOIS DESIGN FIRM NO. 184-003525
ILLINOIS IOWA WISCONSIN

AGENCY: IROQUOIS COUNTY HWY. DEPT.

PROJECT: SECTION 11-00172-01-BR
C.H. 42 OVER TRIBUTARY
SPRING CREEK

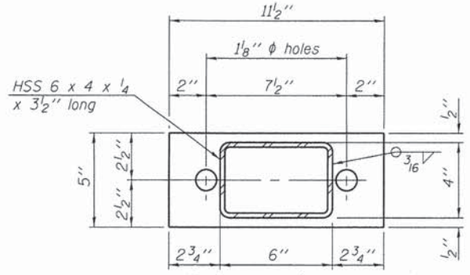
DESIGNED: K.E.B.
CHECKED: ENG
DRAWN: A.D.S.
CHECKED: ENG

REVISIONS		
REV. NO.	DESCRIPTION	DATE

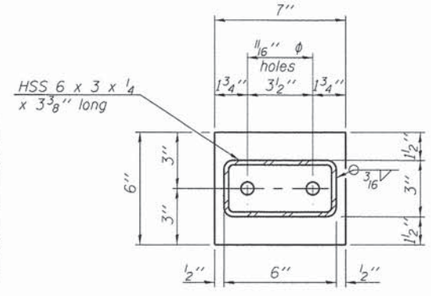
DRAWING: SUPERSTRUCTURE DETAILS

JOB NUMBER: 13-705U

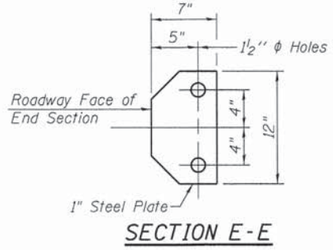
SHEET NUMBER 10 of 26



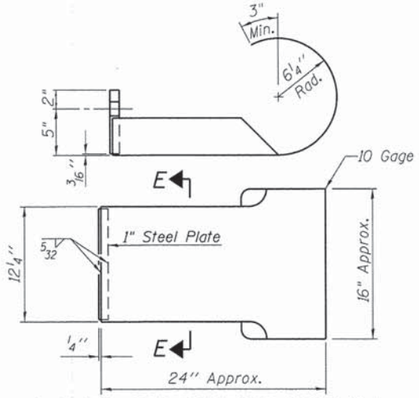
PL ½" x 11½" x 5"



PL ½" x 7" x 6"

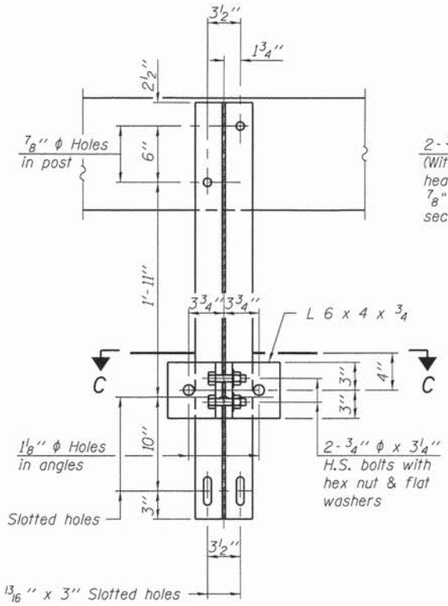


SECTION E-E

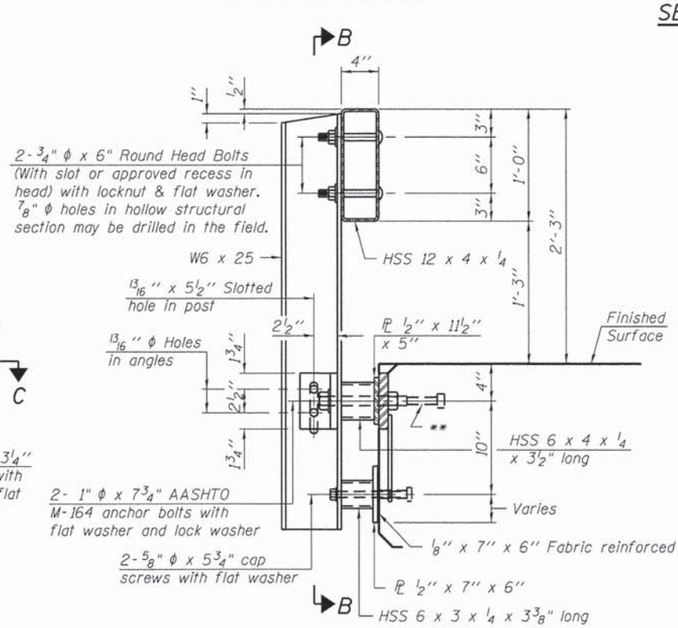


CURLED END SECTION DETAILS
(4 Required)

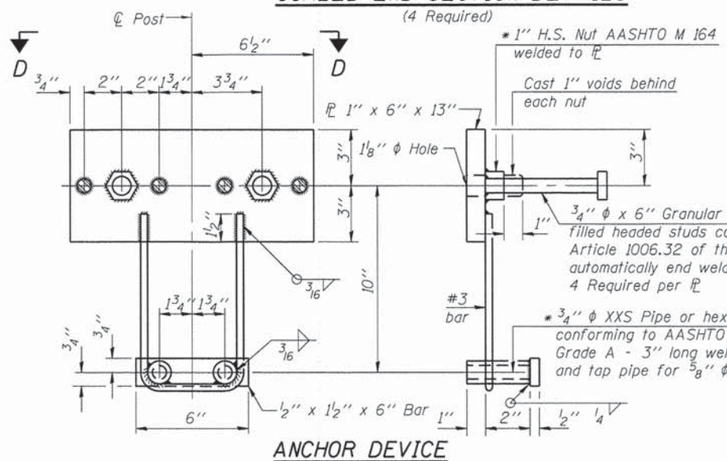
Notes:
All field drilled holes shall be coated with an approved zinc rich paint before erection.
All steel rail elements shall be galvanized according to Article 509.05 of the Standard Specifications.
* Threaded areas of nuts or pipes used for anchor devices shall be plugged or blocked off during casting of beam.
** The studs of the anchor devices shall be placed below the top reinforcement bars and the outermost longitudinal reinforcement bar shall be placed directly above the studs of the rail post anchor device.
The Cost of Curled End Sections is included in the cost of "Steel Railing, Type S1".
See Sheet 2 of 15 for Rail Post Spacing.



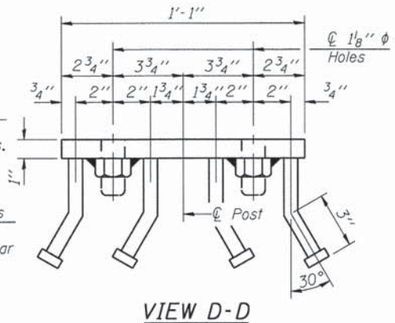
SECTION B-B



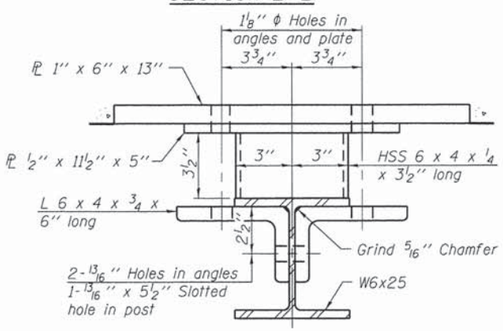
SECTION AT RAILING POST



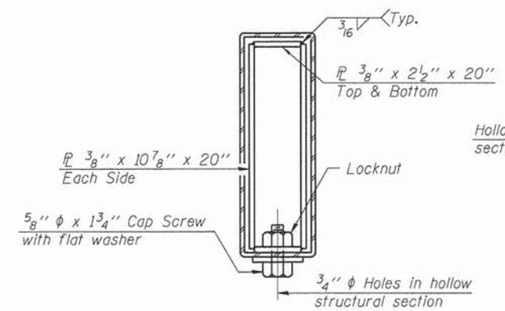
ANCHOR DEVICE



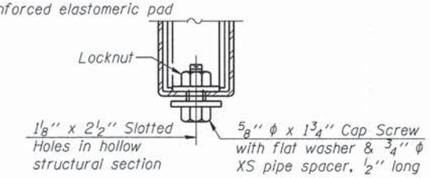
VIEW D-D



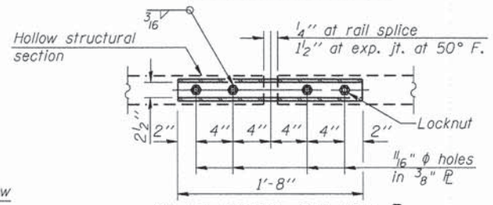
SECTION C-C



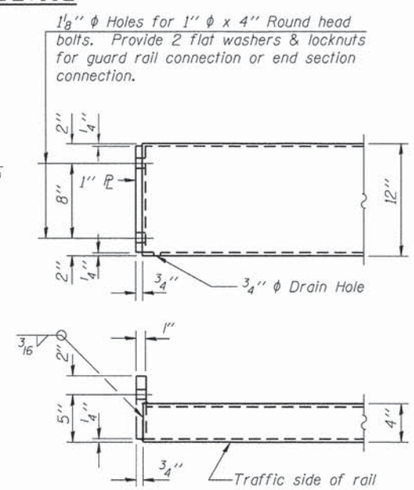
SECTIONS AT RAIL SPLICE



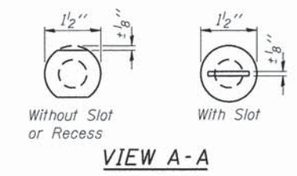
RAIL SPLICE CONNECTION
AT EXPANSION JT.



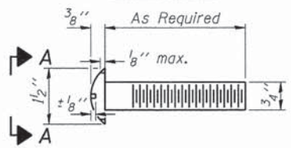
PLAN-BOTT. SPLICE PL
TYPICAL



END OF RAIL DETAILS



VIEW A-A



ROUND HEAD BOLT

BILL OF MATERIAL

Item	Unit	Quantity
Steel Railing, Type S-1	Foot	159

R-23A 7-1-10 (10'-9" Maximum Post Spacing)

FEHR GRAHAM
ENGINEERING & ENVIRONMENTAL
ILLINOIS DESIGN FIRM NO. 184-003525
ILLINOIS IOWA WISCONSIN

AGENCY: IROQUOIS COUNTY HWY. DEPT.

PROJECT: SECTION 11-00172-01-BR
C.H. 42 OVER TRIBUTARY
SPRING CREEK

DESIGNED: K.E.B.
CHECKED: ENG
DRAWN: A.D.S.
CHECKED: ENG

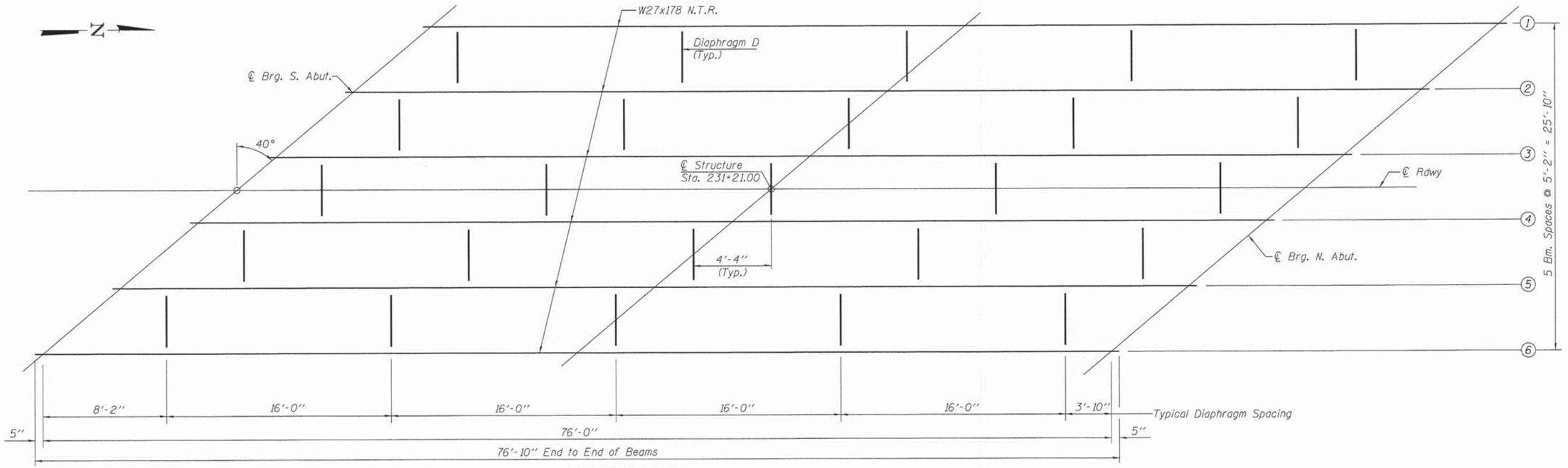
REVISIONS

REV. NO.	DESCRIPTION	DATE

DRAWING: STEEL RAILING, TYPE S-1

JOB NUMBER: 13-705U

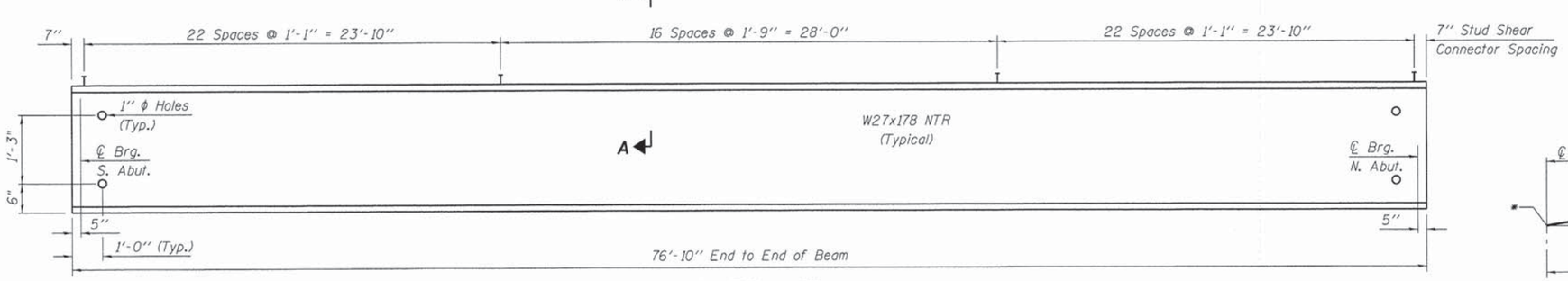
SHEET NUMBER 11 of 26



FRAMING PLAN

N.T.R. indicates Notch Toughness Requirements are applicable.

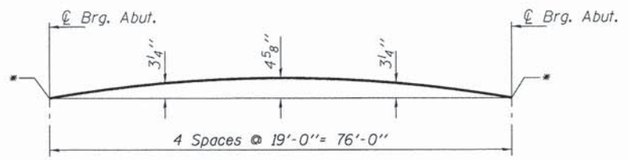
Note: Load carrying components designated "NTR" shall conform to the Supplemental Requirements for Notch Toughness, Zone 2.



ELEVATION VIEW

(Showing Stud Shear Connector Spacing)

Note: See Sheet 13 for Section A-A.



CAMBER DIAGRAM

* For top of beam Elevations @ Abutments See Sheet 13

FEHR GRAHAM
ENGINEERING & ENVIRONMENTAL
ILLINOIS DESIGN FIRM NO. 184-003525
ILLINOIS
IOWA
WISCONSIN

AGENCY: IROQUOIS COUNTY HWY. DEPT.

PROJECT: SECTION 11-00172-01-BR
C.H. 42 OVER TRIBUTARY
SPRING CREEK

DESIGNED:	K.E.B.
CHECKED:	ENG
DRAWN:	A.D.S.
CHECKED:	ENG

REVISIONS

REV. NO.	DESCRIPTION	DATE

DRAWING: STRUCTURAL STEEL

JOB NUMBER: 13-705U

SHEET NUMBER 12 of 26

INTERIOR GIRDER MOMENT TABLE		
		0.5 Span
I_s	(in^4)	7020
$I_c(n)$	(in^4)	16391
$I_c(3n)$	(in^4)	11716
S_s	(in^3)	505
$S_c(n)$	(in^3)	701
$S_c(3n)$	(in^3)	626
DC1	(k/')	0.738
M_{DC1}	('k)	532.5
DC2	(k/')	0.017
M_{DC2}	('k)	12.0
DW	(k/')	0.258
M_{DW}	('k)	186.5
M_{L+IM}	('k)	935.7
M_u (Strength I)	('k)	2598.0
$\phi_f M_n$	('k)	3141.5
f_s DC1	(ksi)	12.73
f_s DC2	(ksi)	0.23
f_s DW	(ksi)	3.58
f_s (L+IM)	(ksi)	16.02
f_s (Service II)	(ksi)	37.37
$0.95R_hF_{yf}$	(ksi)	47.50
f_s (Total)(Strength I)	(ksi)	49.60
$\phi_f F_n$	(ksi)	50.00
V_f	(k)	31.04

INTERIOR GIRDER REACTION TABLE		
		Abut.
R_{DC1}	(k)	28.04
R_{DC2}	(k)	0.65
R_{DW}	(k)	9.29
R_{L+IM}	(k)	78.25
R_{Total}	(k)	116.23

TOP OF BEAM ELEVATIONS

(For Fabrication Only)

	℄ Brg. S. Abut.	℄ Brg. N. Abut.
Beam 1	634.98	634.76
Beam 2	635.03	634.89
Beam 3	635.07	635.01
Beam 4	635.03	635.06
Beam 5	634.91	635.01
Beam 6	634.78	634.96

I_s, S_s: Non-composite moment of inertia and section modulus of the steel section used for computing f_s (Total-Strength I, and Service II) due to non-composite dead loads (in.^{4} and in.^{3}).

$I_c(n)$, $S_c(n)$: Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing f_s (Total-Strength I, and Service II) due to short-term composite live loads (in.^{4} and in.^{3}).

$I_c(3n)$, $S_c(3n)$: Composite moment of inertia and section modulus of the steel and deck based upon 3 times the modular ratio, "3n", used for computing f_s (Total-Strength I, and Service II) due to long-term composite (superimposed) dead loads (in.^{4} and in.^{3}).

DC1: Un-factored non-composite dead load (kips/ft.).

M_{DC1}: Un-factored moment due to non-composite dead load (kip-ft.).

DC2: Un-factored long-term composite (superimposed excluding future wearing surface) dead load (kips/ft.).

M_{DC2}: Un-factored moment due to long-term composite (superimposed excluding future wearing surface) dead load (kip-ft.).

DW: Un-factored long-term composite (superimposed future wearing surface only) dead load (kips/ft.).

M_{DW}: Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).

M_{L+IM}: Un-factored live load moment plus dynamic load allowance (impact) (kip-ft.).

M_u (Strength I): Factored design moment (kip-ft.).
$1.25\ (M_{DC1} + M_{DC2}) + 1.5\ M_{DW} + 1.75\ M_{L+IM}$

$\phi_f M_n$: Compact composite positive moment capacity computed according to Article 6.10.7.1 or non-slender negative moment capacity according to Article A6.1.1 or A6.1.2 (kip-ft).

f_s DC1: Un-factored stress at edge of flange for controlling steel flange due to vertical non-composite dead loads as calculated below (ksi).
M_{DC1} / S_{nc}

f_s DC2: Un-factored stress at edge of flange for controlling steel flange due to vertical composite dead loads as calculated below (ksi).
$M_{DC2} / S_c(3n)$ or $M_{DC2} / S_c(cr)$ as applicable.

f_s DW: Un-factored stress at edge of flange for controlling steel flange due to vertical composite future wearing surface loads as calculated below (ksi).
$M_{DW} / S_c(3n)$ or $M_{DW} / S_c(cr)$ as applicable.

f_s (L+IM): Un-factored stress at edge of flange for controlling steel flange due to vertical composite live plus impact loads as calculated below (ksi).
$M_{L+IM} / S_c(n)$ or $M_{L+IM} / S_c(cr)$ as applicable.

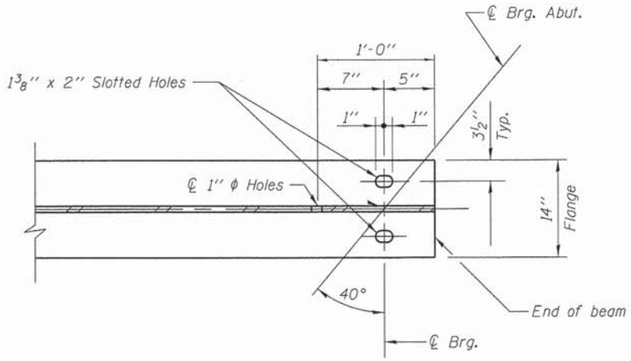
f_s (Service II): Sum of stresses as computed below (ksi).
$f_{sDC1} + f_{sDC2} + f_{sDW} + 1.3\ f_{sL+IM}$

$0.95R_hF_yf$: Composite stress capacity for Service II loading according to Article 6.10.4.2 (ksi).

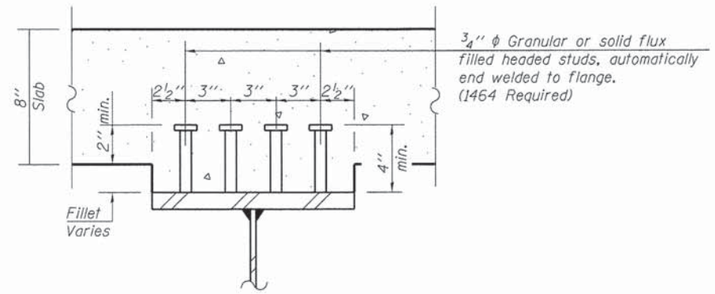
f_s (Total)(Strength I): Sum of stresses as computed below on non-compact section (ksi).
$1.25\ (f_{sDC1} + f_{sDC2}) + 1.5\ f_{sDW} + 1.75\ f_{sL+IM}$

$\phi_r F_n$: Non-Compact composite positive or negative stress capacity for Strength I loading according to Article 6.10.7 or 6.10.8 (ksi).

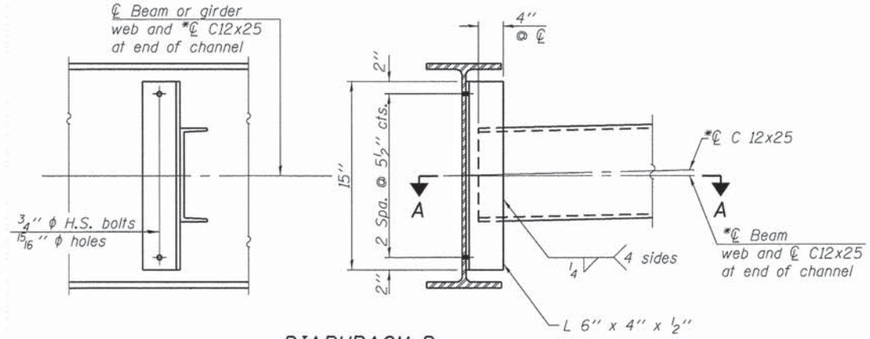
V_f: Maximum factored shear range in composite portion of span computed according to Article 6.10.10.



END OF BEAM DETAILS



SECTION A-A



DIAPHRAGM D

(25 Required)

Note:
Two hardened washers required for each set of oversized holes.
*Alternate channels C12x30 are permitted to facilitate material acquisition. Calculated weight of structural steel is based on the lighter section.
The alternate, if utilized, shall be provided at no additional cost to the Department.
**3/4" ϕ HS bolts, 15/16" ϕ holes

FEHR GRAHAM
ENGINEERING & ENVIRONMENTAL
ILLINOIS DESIGN FIRM NO. 184-003525
ILLINOIS IOWA WISCONSIN

AGENCY: IROQUOIS COUNTY HWY. DEPT.

PROJECT: SECTION 11-00172-01-BR
C.H. 42 OVER TRIBUTARY SPRING CREEK

DESIGNED: K.E.B.
CHECKED: ENG
DRAWN: A.D.S.
CHECKED: ENG

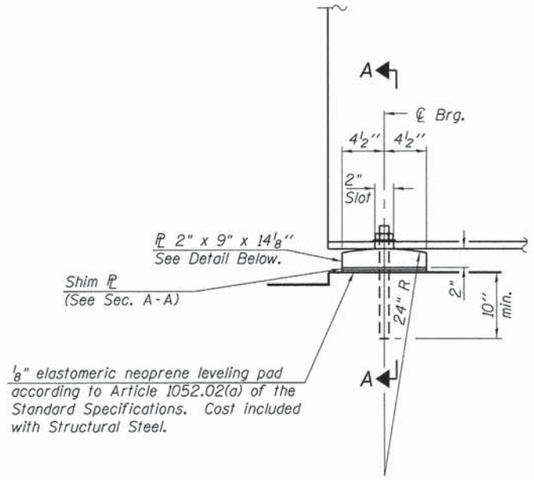
REVISIONS

REV. NO.	DESCRIPTION	DATE

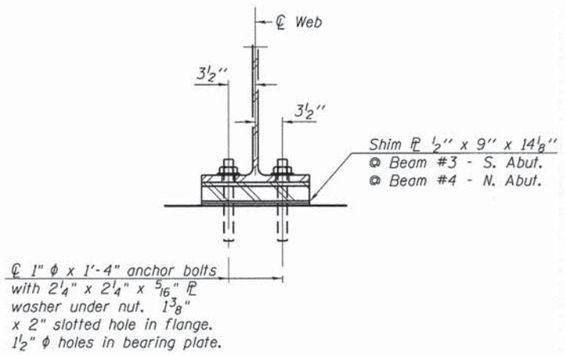
DRAWING: STRUCTURAL STEEL

JOB NUMBER: 13-705U

SHEET NUMBER 13 of 26



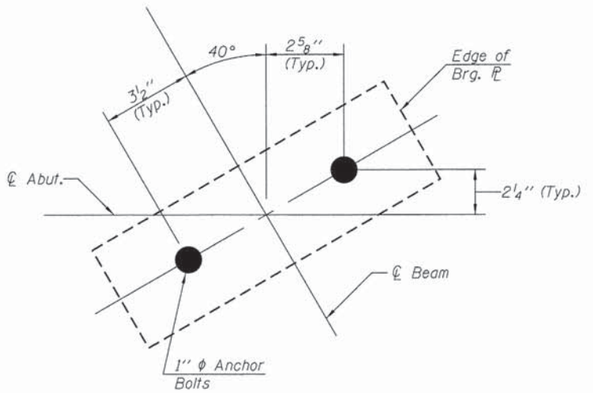
ELEVATION AT ABUTMENTS



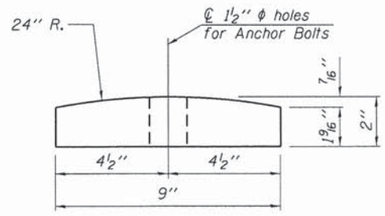
SECTION A-A

ABUTMENT BEARING

(12 Required)
Weight included with Structural Steel.



ANCHOR BOLT LAYOUT



BEARING PLATE DETAIL

Notes: Two ⅛" adjusting shims, of the dimension of the bottom bearing plate, shall be provided for each bearing in addition to all other plates or shims.

Anchor bolts shall be ASTM F1554 Grade 36, all-thread of the diameter(s) specified. ASTM A307 Grade C anchor bolts may be used in lieu of ASTM F1554 Grade 36 (Fy=36 ksi). The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.

Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.

BILL OF MATERIAL

Item	Unit	Total
Anchor Bolts 1"	Each	24

Work this Sheet with Sheets 12 & 13.

FEHR GRAHAM
ENGINEERING & ENVIRONMENTAL
ILLINOIS DESIGN FIRM NO. 184-003525
ILLINOIS IOWA WISCONSIN

AGENCY: IROQUOIS COUNTY HWY. DEPT.

PROJECT: SECTION 11-00172-01-BR
C.H. 42 OVER TRIBUTARY
SPRING CREEK

DESIGNED: K.E.B.
CHECKED: ENG
DRAWN: A.D.S.
CHECKED: ENG

REVISIONS

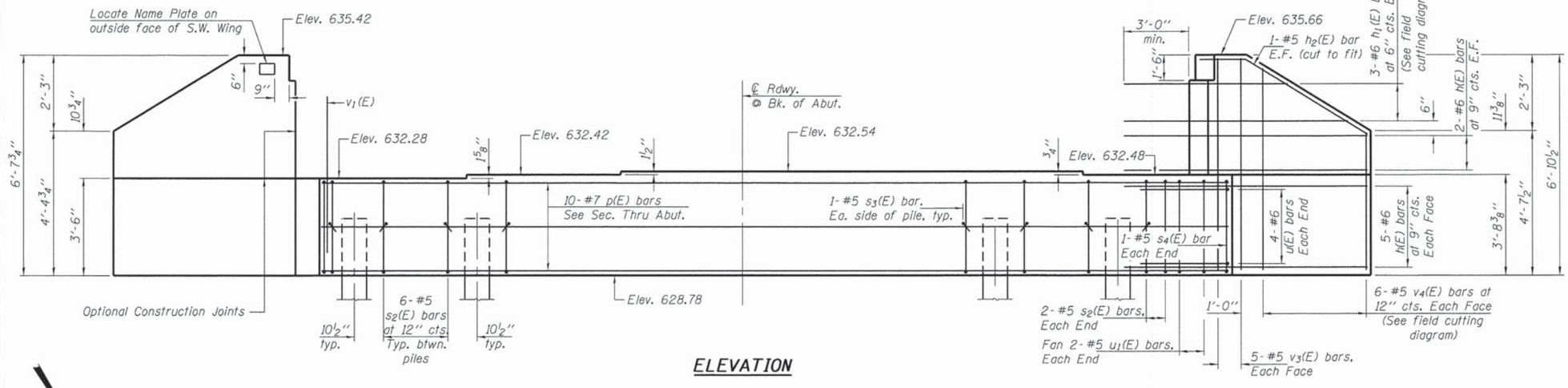
REV. NO.	DESCRIPTION	DATE

DRAWING: BEARING DETAILS

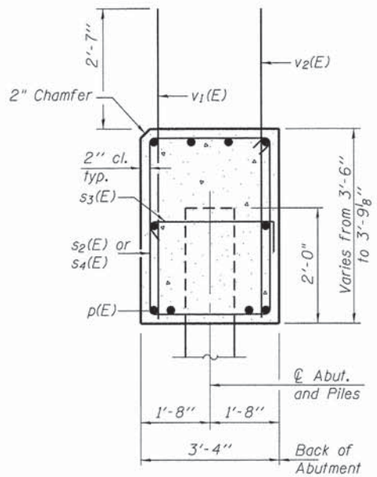
JOB NUMBER: 13-705U

SHEET NUMBER 14 of 26

Notes:
Pour steps monolithically with cap.

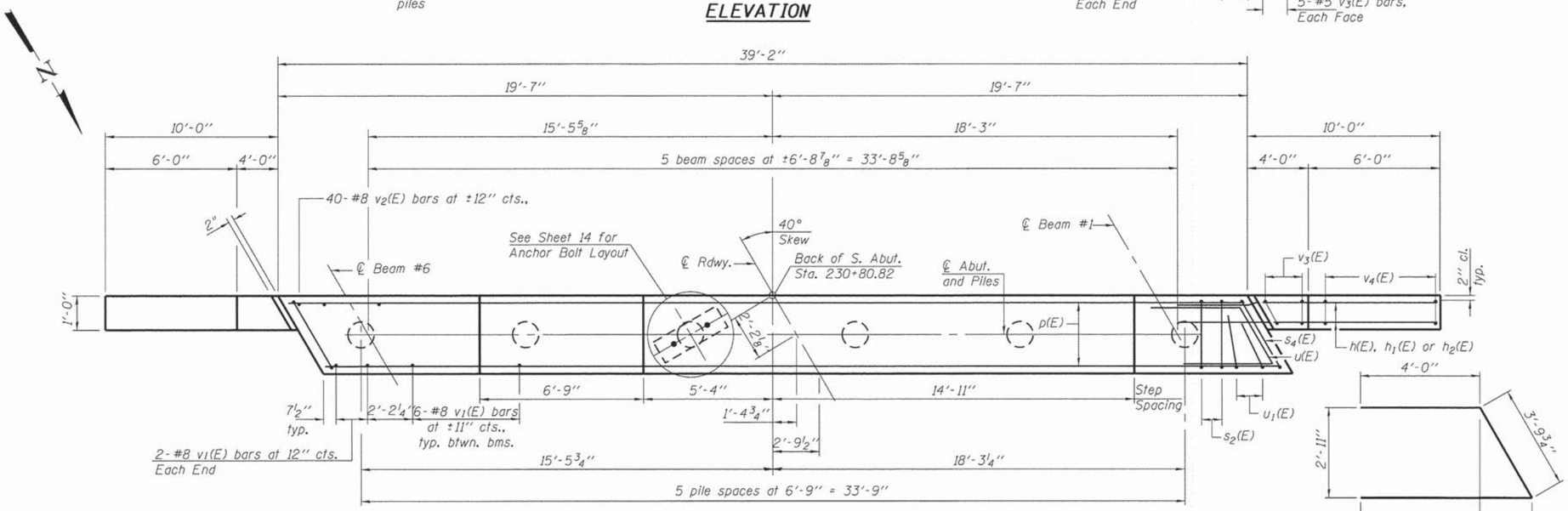


ELEVATION

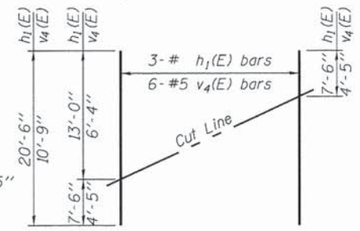


SEC. THRU ABUT.

Dimensions at right angles to abutment.

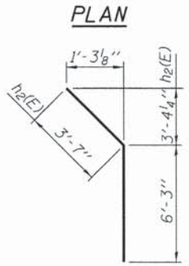


PLAN

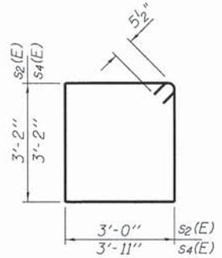


FIELD CUTTING DIAGRAM

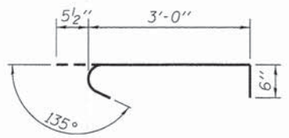
Order $h_1(E)$ and $v_4(E)$ full length. Cut as shown and use remainder of bars in opposite face.



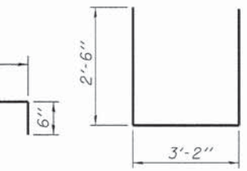
BAR $h_2(E)$



BAR $s_2(E)$ & $s_4(E)$



BAR $s_3(E)$



BAR $u_1(E)$

BAR u(E)

PILE DATA

Type	Metal Shell 14" x 0.25"
Nominal Required Bearing	300 kips
Factored Resistance Available	165 kips
Est. Length	45 ft.
No. Production Piles	5
No. Test Piles	1

S. ABUT. BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h(E)	28	#6	13'-0"	
$h_1(E)$	6	#6	20'-6"	
$h_2(E)$	4	#5	9'-10"	
p(E)	10	#7	38'-10"	
$s_2(E)$	34	#5	13'-3"	
$s_3(E)$	12	#5	4'-0"	
$s_4(E)$	2	#5	15'-1"	
u(E)	8	#6	14'-3"	
$u_1(E)$	4	#5	8'-2"	
$v_1(E)$	34	#8	5'-11"	
$v_2(E)$	40	#8	6'-2"	
$v_3(E)$	20	#5	6'-4"	
$v_4(E)$	12	#5	10'-9"	
Concrete Structures		Cu. Yd.	23.8	
Reinforcement Bars, Epoxy Coated		Pound	3790	
Furnishing Metal Shell Piles 14" x 0.250"		Foot	295	
Driving Piles		Foot	295	
Test Pile Metal Shells		Each	1	
Name Plate		Each	1	

For details of piles see sheet 17.

FEHR GRAHAM
ENGINEERING & ENVIRONMENTAL
ILLINOIS DESIGN FIRM NO. 184-003525
ILLINOIS IOWA WISCONSIN

AGENCY: IROQUOIS COUNTY HWY. DEPT.

PROJECT: SECTION 11-00172-01-BR
C.H. 42 OVER TRIBUTARY SPRING CREEK

DESIGNED:	K.E.B.
CHECKED:	ENG
DRAWN:	A.D.S.
CHECKED:	ENG

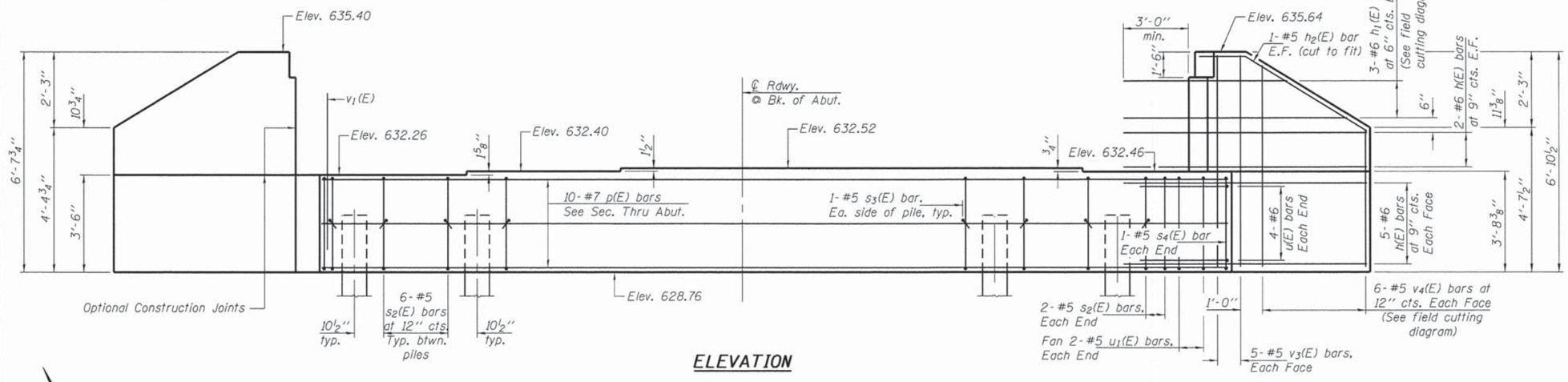
REV. NO.	DESCRIPTION	DATE

DRAWING: SOUTH ABUTMENT

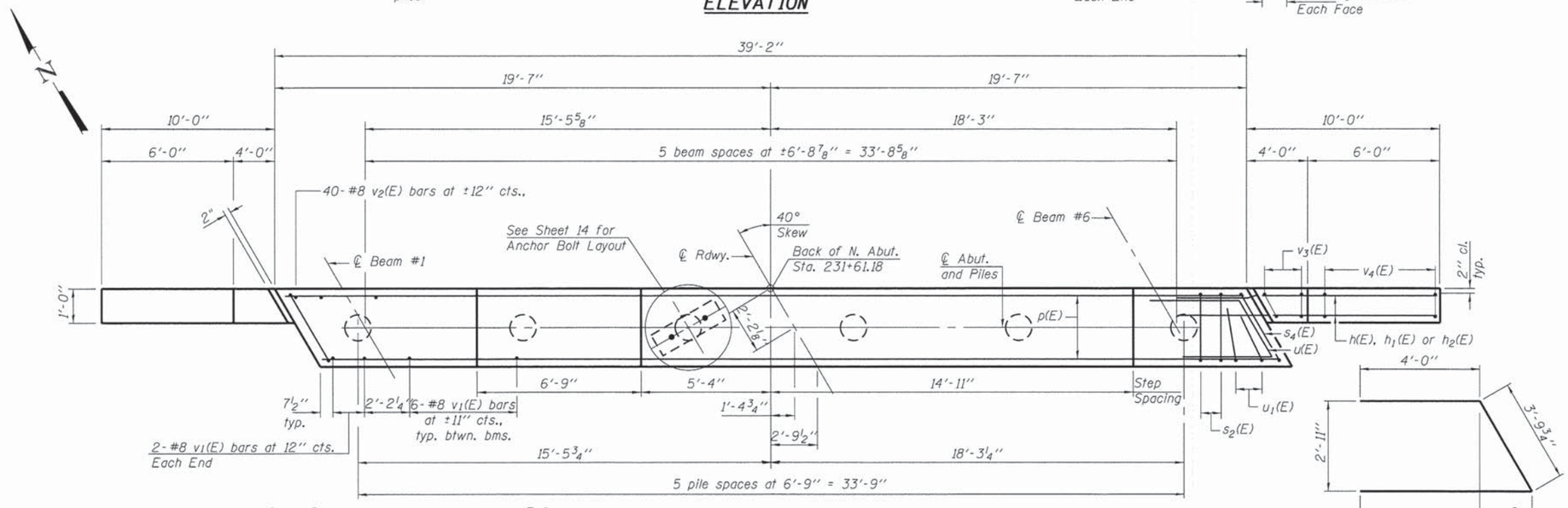
JOB NUMBER: 13-705U

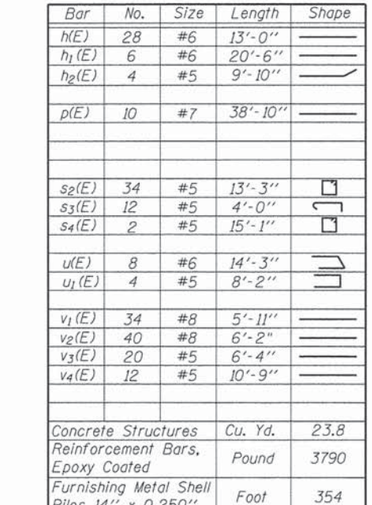
SHEET NUMBER: 15 of 26

Notes:
Pour steps monolithically with cap.



ELEVATION



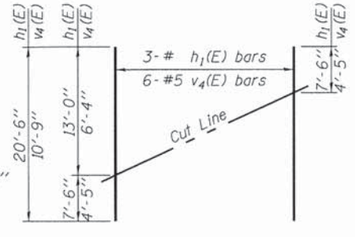


SEC. THRU ABUT.

Dimensions at right angles to abutment.

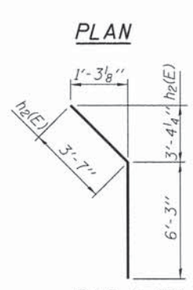
PILE DATA

Type	Metal Shell 14" x 0.25"
Nominal Required Bearing	300 kips
Factored Resistance Available	165 kips
Est. Length	45 ft.
No. Production Piles	6

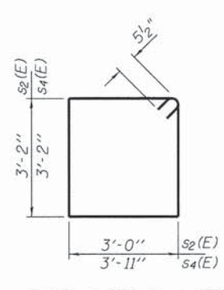


FIELD CUTTING DIAGRAM

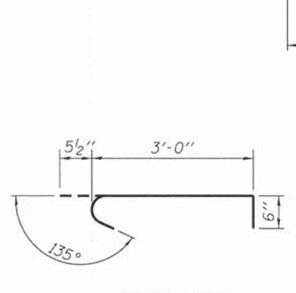
Order $h_1(E)$ and $v_4(E)$ full length. Cut as shown and use remainder of bars in opposite face.



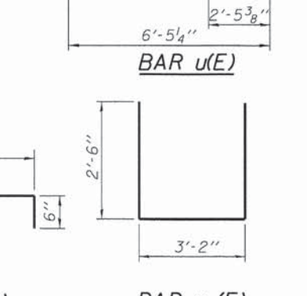
BAR $h_2(E)$



BAR $s_2(E)$ & $s_4(E)$



BAR $s_3(E)$



BAR $u_1(E)$

BAR u(E)

N. ABUT. BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h(E)	28	#6	13'-0"	
$h_1(E)$	6	#6	20'-6"	
$h_2(E)$	4	#5	9'-10"	
p(E)	10	#7	38'-10"	
$s_2(E)$	34	#5	13'-3"	
$s_3(E)$	12	#5	4'-0"	
$s_4(E)$	2	#5	15'-1"	
u(E)	8	#6	14'-3"	
$u_1(E)$	4	#5	8'-2"	
$v_1(E)$	34	#8	5'-11"	
$v_2(E)$	40	#8	6'-2"	
$v_3(E)$	20	#5	6'-4"	
$v_4(E)$	12	#5	10'-9"	
Concrete Structures			Cu. Yd.	23.8
Reinforcement Bars, Epoxy Coated			Pound	3790
Furnishing Metal Shell Piles 14" x 0.250"			Foot	354
Driving Piles			Foot	354

For details of piles see sheet 17.

AGENCY: IROQUOIS COUNTY HWY. DEPT.

PROJECT: SECTION 11-00172-01-BR
C.H. 42 OVER TRIBUTARY SPRING CREEK

DESIGNED: K.E.B.
CHECKED: ENG
DRAWN: A.D.S.
CHECKED: ENG

REV. NO.	DESCRIPTION	DATE

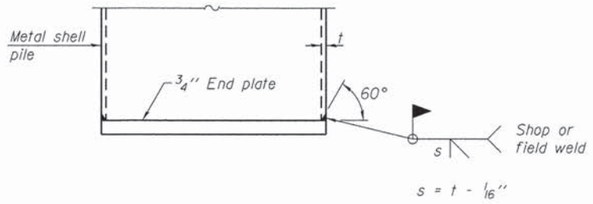
DRAWING: NORTH ABUTMENT

JOB NUMBER: 13-705U

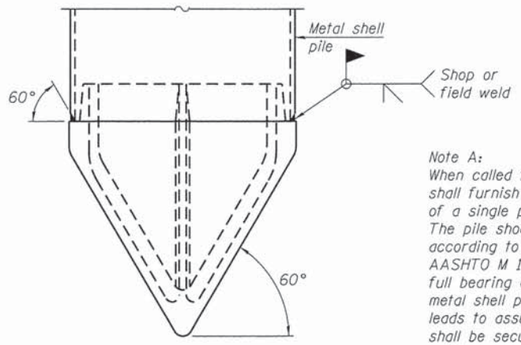
SHEET NUMBER 16 of 26

METAL SHELL PILE TABLE

Designation and outside diameter	Wall thickness t	Weight per foot (Lbs./ft.)	Inside volume (yd.³/ft.)
PP12	0.179"	22.60	0.0274
PP12	0.250"	31.37	0.0267
PP14	0.250"	36.71	0.0368
PP14	0.312"	45.61	0.0361



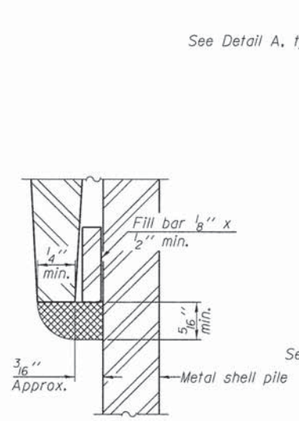
END PLATE ATTACHMENT



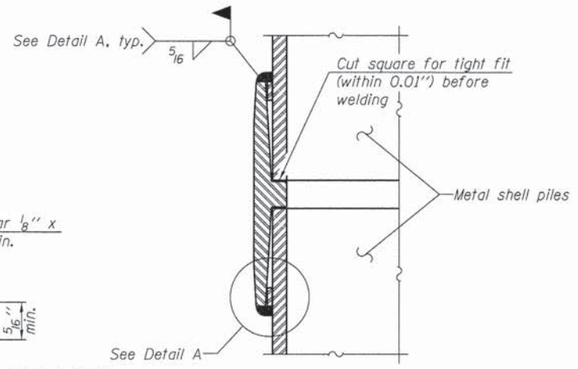
Note A:
When called for on the plans, the Contractor shall furnish metal shell pile shoes consisting of a single piece conical pile point as shown. The pile shoes shall be cast in one piece steel according to either ASTM A 148 Grade 90-60 or AASHTO M 103 Grade 65-35 and shall provide full bearing over the full circumference of the metal shell pile. The pile shoe shall have tapered leads to assure proper alignment and fitting and shall be secured to the pile with a circumferential weld.

METAL SHELL PILE SHOE ATTACHMENT

(See Note A)

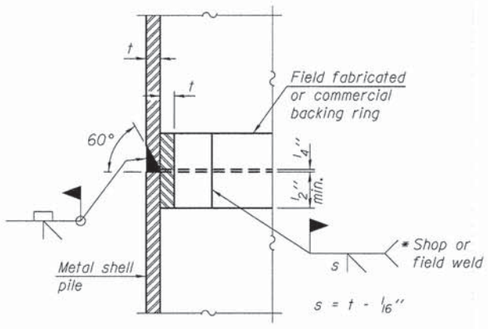


DETAIL A



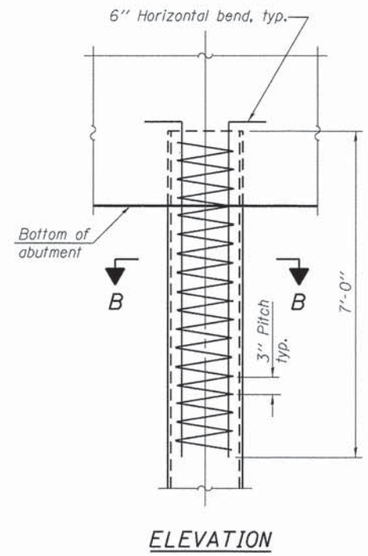
Notes:
The 1/8" x 1/2" min. fill bar may be constructed of 2 bars with a 1/8" max. gap between them.
Pile segments shall be driven to solid contact with splicer before welding.

WELDED COMMERCIAL SPLICE

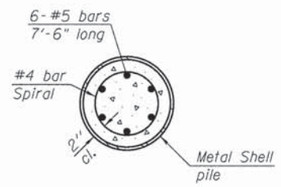


COMPLETE PENETRATION WELD SPLICE

* Field fabricated backing ring may be made from pile shell by removing segment to allow reducing circumference and vertically rejoin with partial joint penetration weld.



ELEVATION



SECTION B-B

METAL SHELL REINFORCEMENT AT ABUTMENTS

Reinforcement for Piles is included in the cost of Furnishing Metal Shell Piles 14" x 0.250".

Note:
The metal shell piles shall be according to ASTM A 252 Grade 3.

FEHR GRAHAM
ENGINEERING & ENVIRONMENTAL
ILLINOIS DESIGN FIRM NO. 184-003525
ILLINOIS
IOWA
WISCONSIN

AGENCY: IROQUOIS COUNTY HWY. DEPT.

PROJECT: SECTION 11-00172-01-BR
C.H. 42 OVER TRIBUTARY
SPRING CREEK

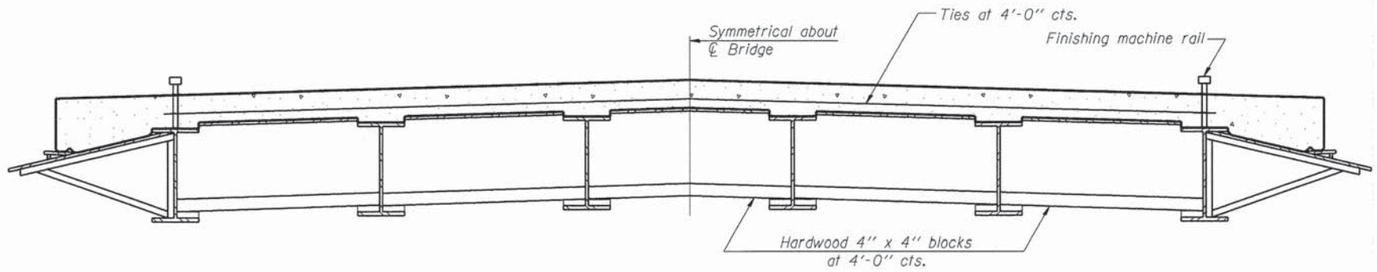
DESIGNED: K.E.B.
CHECKED: ENG
DRAWN: A.D.S.
CHECKED: ENG

REV. NO.	DESCRIPTION	DATE

DRAWING: METAL SHELL PILE DETAILS

JOB NUMBER: 13-705U

SHEET NUMBER: 17 of 26



FORM BRACES FOR
STANDARD CONSTRUCTION

When cantilever forming brackets are used, the work shall be done according to Article 503.06(b) of the Standard Specifications, except as modified below and in the details shown on this sheet.

The finishing machine rails shall be placed on the top flange of the exterior beams.

The beams or girders, supporting cantilever forming brackets, shall be tied together at 4 foot intervals.

For Standard construction, or Stage Construction the Hardwood bracing materials shall be placed as shown between webs of beams in each bay.

FEHR GRAHAM
ENGINEERING & ENVIRONMENTAL
ILLINOIS DESIGN FIRM NO. 184-003525
ILLINOIS
IOWA
WISCONSIN

AGENCY:
IROQUOIS COUNTY HWY. DEPT.

PROJECT:
SECTION 11-00172-01-BR
C.H. 42 OVER TRIBUTARY
SPRING CREEK

DESIGNED:	K.E.B.
CHECKED:	ENG
DRAWN:	A.D.S.
CHECKED:	ENG

REVISIONS

REV. NO.	DESCRIPTION	DATE

DRAWING:
CANTILEVER FORMING BRACKETS
FOR SUPERSTRUCTURES WITH
W27 BEAMS AND SMALLER

JOB NUMBER:
13-705U

SHEET NUMBER
18 of 26

Midwest Testing Services, Inc.
3705 Progress Blvd.
Peru, IL 61354

Phone: 815-223-6696
Fax: 815-223-6659
e-mail: mts37@comcast.net

BORING LOG

Sheet 1 of 4

Client: Fehr-Graham
Project Name: Section 11-00172-01-BR
Project Site: Iroquois County, IL.
SN 038-4012

Boring No. B-1
Surface Elev. 633.10
Auger Depth 66' Rotary Depth NA
Start Date 08/31/13 Finish Date 08/31/13

Location: 10' Right of Station 230+75

DRILLED BY: Randy Safranski, Diedrich D-120

(DEPTH) ELEV. 633.10	DESCRIPTION OF MATERIALS	Graphic Log	Depth in feet	Sample No.	Sample Type	Qu (TSF)	N Value (Blows)	Bulge / Shear	Moisture (%)	Dry Density (PCF)	REMARKS
632.10	Stiff Black And Brown Clay (Fill)		1								
631.10			2								
630.10			3	1	SS	1.2	7	S	15		
629.10			4								
628.10	Stiff Black Silty Clay		5	2	SS	1.4	8	B	23		
627.10			6								
626.10	Stiff Brown Clay		7								
625.10			8	3	SS	1.5	8	B	22		
624.10			9								
623.10	Very Stiff Brownish Gray Clay Till		10								
622.10			11	4	SS	2.0	9	B	25		
621.10			12								
620.10			13	5	SS	2.1	9	B	25		
619.10			14								
618.10	Very Stiff Gray Clay Till		15	6	SS	2.4	10	B	23		
617.10			16								
616.10			17								
615.10			18	7	SS	2.2	9	B	26		
614.10			19								
613.10			20	8	SS	2.3	10	B	25		

Groundwater Data: No groundwater encountered at time of subsurface investigation.
Comments:

Midwest Testing Services, Inc.
3705 Progress Blvd.
Peru, IL 61354

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BORING LOG

Sheet 2 of 4

Client: Fehr-Graham
Project Name: Section 11-00172-01-BR
Project Site: Iroquois County, IL.
SN 038-4012

Boring No. B-1
Surface Elev. 633.10
Auger Depth 66' Rotary Depth NA
Start Date 08/31/13 Finish Date 08/31/13

Location: 10' Right of Station 230+75

DRILLED BY: Randy Safranski, Diedrich D-120

(DEPTH) ELEV. 612.10	DESCRIPTION OF MATERIALS	Graphic Log	Depth in feet	Sample No.	Sample Type	Qu (TSF)	N Value (Blows)	Bulge / Shear	Moisture (%)	Dry Density (PCF)	REMARKS
611.10	Very Stiff Gray Clay Till		22								
610.10			23	9	SS	2.4	10	B	23		
609.10			24								
608.10	Stiff Gray Clay Till		25	10	SS	1.6	8	B	25		
607.10			26								
606.10			27								
605.10			28	11	SS	1.8	9	B	25		
604.10			29								
603.10			30								
602.10			31	12	SS	1.9	8	B	26		
601.10			32								
600.10			33	13	SS	2.2	10	B	22		
599.10			34								
598.10			35								
597.10	Very Stiff Gray Clay With Fine Sand Seams		36	14	SS	2.5	12	B	23		
596.10			37								
595.10			38								
594.10			39								
593.10			40								
592.10			41	15	SS	2.3	12	B	23		

Groundwater Data: No groundwater encountered at time of subsurface investigation.
Comments:

FEHR GRAHAM
ENGINEERING & ENVIRONMENTAL
ILLINOIS DESIGN FIRM NO. 184-003525
ILLINOIS IOWA WISCONSIN

AGENCY: IROQUOIS COUNTY HWY. DEPT.

PROJECT: SECTION 11-00172-01-BR
C.H. 42 OVER TRIBUTARY
SPRING CREEK

DESIGNED: K.E.B.
CHECKED: ENG
DRAWN: A.D.S.
CHECKED: ENG

REV. NO.	DESCRIPTION	DATE

DRAWING: SOIL BORING LOGS

JOB NUMBER: 13-705U

SHEET NUMBER: 19 of 26

Midwest Testing Services, Inc.
3705 Progress Blvd.
Peru, IL 61354

Phone: 815-223-6696
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BORING LOG

Sheet 3 of 4

Client: Fehr-Graham
Project Name: Section 11-00172-01-BR
Project Site: Iroquois County, IL.
SN 038-4012

Boring No. B-1
Surface Elev. 633.10
Auger Depth 66' Rotary Depth NA
Start Date 08/31/01 Finish Date 08/31/13

Location: 10' Right of Station 230+75

DRILLED BY: Randy Safranski, Diedrich D-120

(DEPTH) ELEV.	DESCRIPTION OF MATERIALS	Graphic Log	Depth in feet	Sample No.	Sample Type	Qu (TSF)	N Value (Blows)	Bulge / Shear	Moisture (%)	Dry Density (PCF)	REMARKS
591.10											
590.10	Very Stiff Gray Clay With Silt Seams		43								
589.10			44								
588.10			45								
587.10			46	16	SS	2.4	11	B	28		
586.10			47								
585.10			48								
584.10			49								
583.10			50								
582.10			51	17	SS	1.9	9	B	25		
581.10			52								
580.10			53								
579.10	Stiff Gray Clay With Silt Seams		54								
578.10			55								
577.10			56	18	SS	1.9	8	B	37		
576.10			57								
575.10			58								
574.10			59								
573.10			60								
572.10			61	19	SS	1.6	8	B	36		
571.10			62								

Groundwater Data: No groundwater encountered at time of subsurface investigation.
Comments:

Midwest Testing Services, Inc.
3705 Progress Blvd.
Peru, IL 61354

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Fax: 815-223-6659
e-mail: mts37@comcast.net

BORING LOG

Sheet 4 of 4

Client: Fehr-Graham
Project Name: Section 11-00172-01-BR
Project Site: Iroquois County, IL.
SN 038-4012

Boring No. B-1
Surface Elev. 633.10
Auger Depth 66' Rotary Depth NA
Start Date 08/31/13 Finish Date 08/31/13

Location: 10' Right of Station 230+75

DRILLED BY: Randy Safranski, Diedrich D-120

(DEPTH) ELEV.	DESCRIPTION OF MATERIALS	Graphic Log	Depth in feet	Sample No.	Sample Type	Qu (TSF)	N Value (Blows)	Bulge / Shear	Moisture (%)	Dry Density (PCF)	REMARKS
570.10											
569.10	Medium Gray Alternating Seams of Fine Sand And Silt		64								
568.10			65								
567.10			66	20	SS	---	22	---	16		
	Botttom of Boring										
566.10			67								
565.10			68								
564.10			69								
563.10			70								
562.10			71								
561.10			72								
560.10			73								
559.10			74								
558.10			75								
557.10			76								
556.10			77								
555.10			78								
554.10			79								
553.10			80								
552.10			81								
551.10			82								
550.10			83								

Groundwater Data: No groundwater encountered at time of subsurface investigation.
Comments:

FEHR GRAHAM
ENGINEERING & ENVIRONMENTAL
ILLINOIS DESIGN FIRM NO. 184-003525

ILLINOIS
IOWA
WISCONSIN

AGENCY: IROQUOIS COUNTY HWY. DEPT.

PROJECT: SECTION 11-00172-01-BR
C.H. 42 OVER TRIBUTARY
SPRING CREEK

DESIGNED: K.E.B.
CHECKED: ENG
DRAWN: A.D.S.
CHECKED: ENG

REV. NO.	DESCRIPTION	DATE

DRAWING: SOIL BORING LOGS

JOB NUMBER: 13-705U

SHEET NUMBER: 20 of 26

Midwest Testing Services, Inc.
3705 Progress Blvd.
Peru, IL 61354

Phone: 815-223-6696
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BORING LOG

Sheet 1 of 4

Client: Fehr-Graham
Project Name: Section 11-00172-01-BR
Project Site: Iroquois County, IL.
SN 038-4012

Boring No. B-2
Surface Elev. 633.00
Auger Depth 76' Rotary Depth NA
Start Date 08/31/13 Finish Date 08/31/13

Location: 10' Left of Station 231+60

DRILLED BY: Randy Safranski, Diedrich D-120

(DEPTH) ELEV.	DESCRIPTION OF MATERIALS	Graphic Log	Depth in feet	Sample No.	Sample Type	Qu (TSF)	N Value (Blows)	Bulge / Shear	Moisture (%)	Dry Density (PCF)	REMARKS
633.00											
632.00			1								
631.00			2								
630.00	Stiff Black And Brown Clay (Fill)		3	1	SS	1.4	8	B	23		
629.00			4								
628.00			5	2	SS	1.7	9	B	21		
627.00			6								
626.00	Stiff Black Silty Clay		7								
625.00			8	3	SS	1.3	6	B	25		
624.00			9								
623.00			10	4	SS	2.1	9	B	24		
622.00			11								
621.00			12								
620.00	Very Stiff Gray Clay Till		13	5	SS	2.2	9	B	24		
619.00			14								
618.00			15	6	SS	2.1	8	B	24		
617.00			16								
616.00			17								
615.00			18	7	SS	2.0	9	B	25		
614.00			19								
613.00	Stiff Gray Clay Till		20	8	SS	1.6	8	B	26		

Groundwater Data: No groundwater encountered at time of subsurface investigation.
Comments:

Midwest Testing Services, Inc.
3705 Progress Blvd.
Peru, IL 61354

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BORING LOG

Sheet 2 of 4

Client: Fehr-Graham
Project Name: Section 11-00172-01-BR
Project Site: Iroquois County, IL.
SN 038-4012

Boring No. B-2
Surface Elev. 633.00
Auger Depth 76' Rotary Depth NA
Start Date 08/31/13 Finish Date 08/31/13

Location: 10' Left of Station 231+60

DRILLED BY: Randy Safranski, Diedrich D-120

(DEPTH) ELEV.	DESCRIPTION OF MATERIALS	Graphic Log	Depth in feet	Sample No.	Sample Type	Qu (TSF)	N Value (Blows)	Bulge / Shear	Moisture (%)	Dry Density (PCF)	REMARKS
612.00											
611.00			22								
610.00			23	9	SS	1.5	7	B	26		
609.00			24								
608.00	Stiff Gray Clay Till		25	10	SS	1.7	8	B	25		
607.00			26								
606.00			27								
605.00			28	11	SS	1.7	8	B	25		
604.00			29								
603.00			30	12	SS	2.0	9	B	23		
602.00			31								
601.00			32								
600.00			33	13	SS	2.1	9	B	23		
599.00			34								
598.00			35								
597.00	Very Stiff Gray Clay With Silt Seams		36	14	SS	2.2	10	B	24		
596.00			37								
595.00			38								
594.00			39								
593.00			40								
592.00			41	15	SS	2.4	12	B	22		

Groundwater Data: No groundwater encountered at time of subsurface investigation.
Comments:

Midwest Testing Services, Inc.
3705 Progress Blvd.
Peru, IL 61354

Phone: 815-223-6696
Fax: 815-223-6659
e-mail: mts37@comcast.net

BORING LOG

Sheet 3 of 4

Client: Fehr-Graham
Project Name: Section 11-00172-01-BR
Project Site: Iroquois County, IL.
SN 038-4012

Boring No. B-2
Surface Elev. 633.00
Auger Depth 76'
Rotary Depth NA
Start Date 08/31/01
Finish Date 08/31/13

Location: 10' Left of Station 231+60

DRILLED BY: Randy Safranski, Diedrich D-120

(DEPTH) ELEV. 591.00	DESCRIPTION OF MATERIALS	Graphic Log	Depth in feet	Sample No.	Sample Type	Qu (TSF)	N Value (Blows)	Bulge / Shear	Moisture (%)	Dry Density (PCF)	REMARKS
590.00			43								
589.00			44								
588.00			45								
587.00	Very Stiff Gray Clay With Silt Seams		46	16	SS	2.1	10	B	27		
586.00			47								
585.00			48								
584.00			49								
583.00			50								
582.00			51	17	SS	2.3	12	B	25		
581.00			52								
580.00			53								
579.00			54								
578.00			55								
577.00	Stiff Gray Clay With Silt Seams		56	18	SS	1.8	8	B	36		
576.00			57								
575.00			58								
574.00			59								
573.00			60								
572.00			61	19	SS	1.7	9	B	34		
571.00			62								

Groundwater Data: No groundwater encountered at time of subsurface investigation.
Comments:

Midwest Testing Services, Inc.
3705 Progress Blvd.
Peru, IL 61354

Phone: 815-223-6696
Fax: 815-223-6659
e-mail: mts37@comcast.net

BORING LOG

Sheet 4 of 4

Client: Fehr-Graham
Project Name: Section 11-00172-01-BR
Project Site: Iroquois County, IL.
SN 038-4012

Boring No. B-2
Surface Elev. 633.00
Auger Depth 76'
Rotary Depth NA
Start Date 08/31/13
Finish Date 08/31/13

Location: 10' Left of Station 231+60

DRILLED BY: Randy Safranski, Diedrich D-120

(DEPTH) ELEV. 570.00	DESCRIPTION OF MATERIALS	Graphic Log	Depth in feet	Sample No.	Sample Type	Qu (TSF)	N Value (Blows)	Bulge / Shear	Moisture (%)	Dry Density (PCF)	REMARKS
569.00			64								
568.00			65								
567.00			66	20	SS	---	27	---	15		
566.00	Medium Gray Silty Loam		67								
565.00			68								
564.00			69								
563.00			70								
562.00			71	21	SS	---	29	---	12		
561.00			72								
560.00			73								
559.00	Dense Gray Silty Loam		74								
558.00			75								
557.00			76	22	SS	---	33	---	12		
556.00	Bottom of Boring		77								
555.00			78								
554.00			79								
553.00			80								
552.00			81								
551.00			82								
550.00			83								

Groundwater Data: No groundwater encountered at time of subsurface investigation.
Comments:

FEHR GRAHAM
ENGINEERING & ENVIRONMENTAL
ILLINOIS DESIGN FIRM NO. 184-003525

ILLINOIS
IOWA
WISCONSIN

AGENCY: IROQUOIS COUNTY HWY. DEPT.

PROJECT: SECTION 11-00172-01-BR
C.H. 42 OVER TRIBUTARY
SPRING CREEK

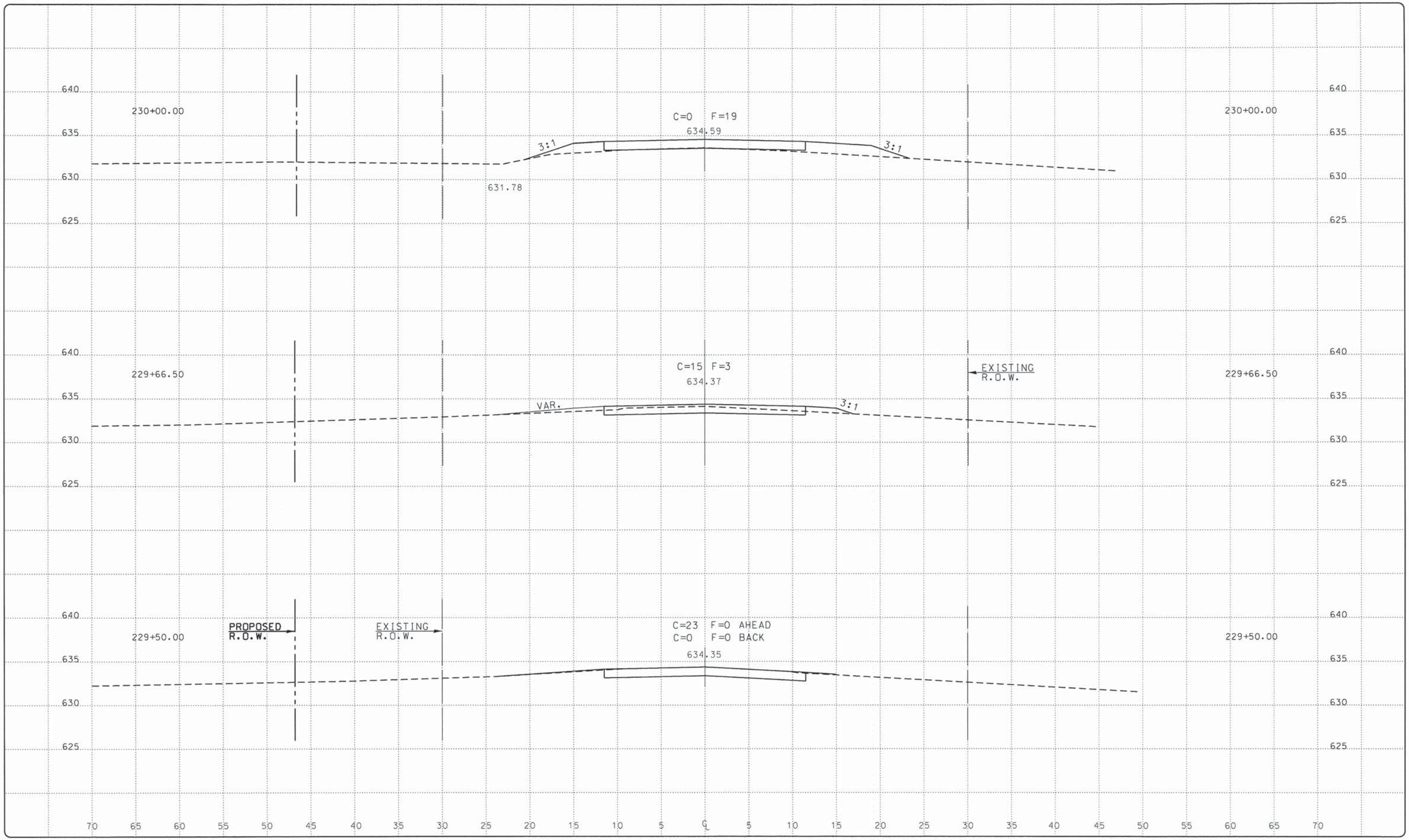
DESIGNED: K.E.B.
CHECKED: ENG
DRAWN: A.D.S.
CHECKED: ENG

REV. NO.	DESCRIPTION	DATE

DRAWING: SOIL BORING LOGS

JOB NUMBER: 13-705U

SHEET NUMBER 22 of 26



FEHR GRAHAM
ENGINEERING & ENVIRONMENTAL
ILLINOIS DESIGN FIRM NO. 184-003525
ILLINOIS
IOWA
WISCONSIN

AGENCY:
IROQUOIS COUNTY HWY. DEPT.

PROJECT:
SECTION 11-00172-01-BR
C.H. 42 OVER TRIB. TO SPRING CREEK

DESIGNED:	G.J.C.
CHECKED:	R.D.F.
DRAWN:	A.D.S.
CHECKED:	ENG

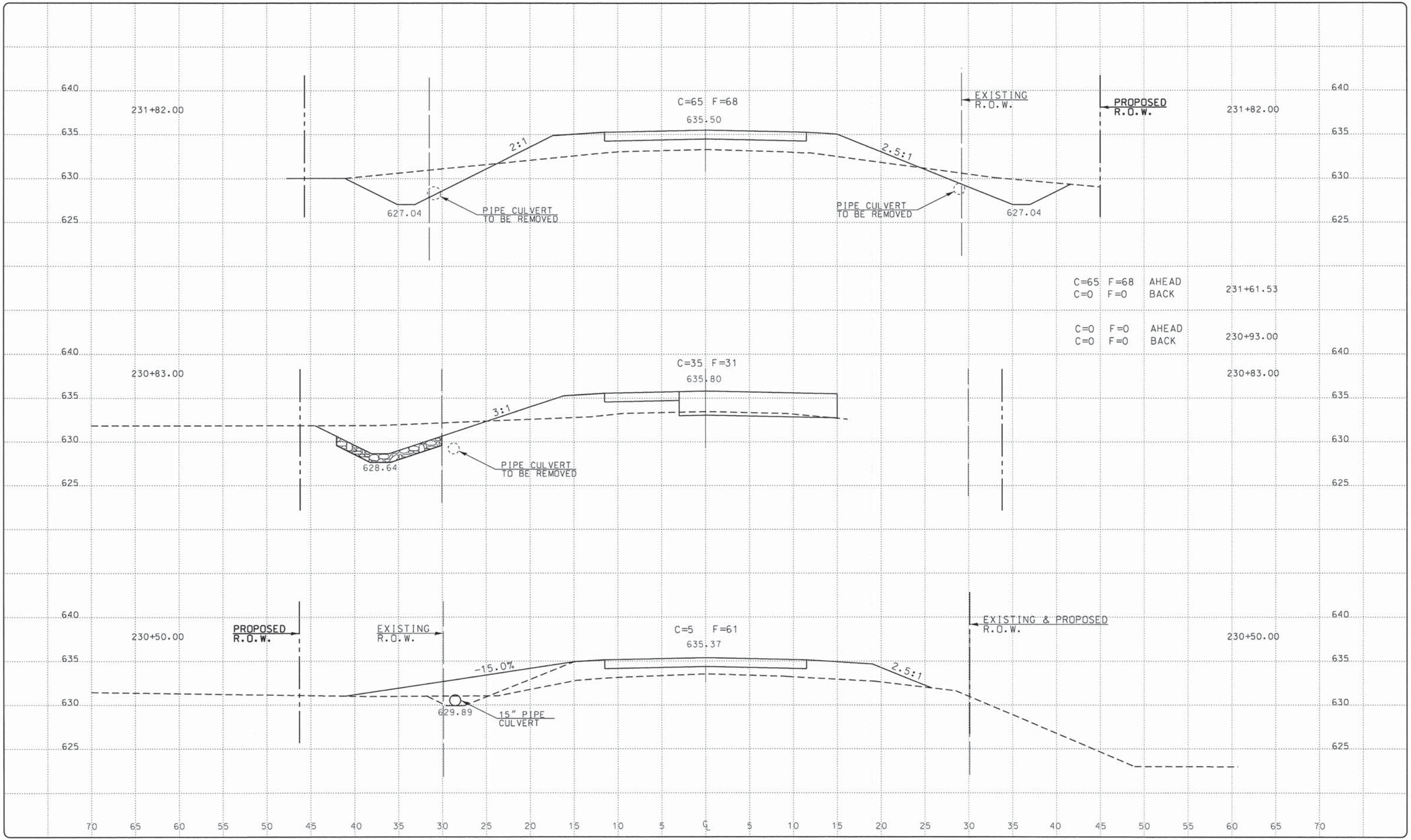
REVISIONS

REV. NO.	DESCRIPTION	DATE
REV. NO.	DESCRIPTION	DATE
REV. NO.	DESCRIPTION	DATE
REV. NO.	DESCRIPTION	DATE
REV. NO.	DESCRIPTION	DATE

DRAWING:
STATION CROSS SECTIONS

JOB NUMBER:
13-705U

SHEET NUMBER
23 of 26



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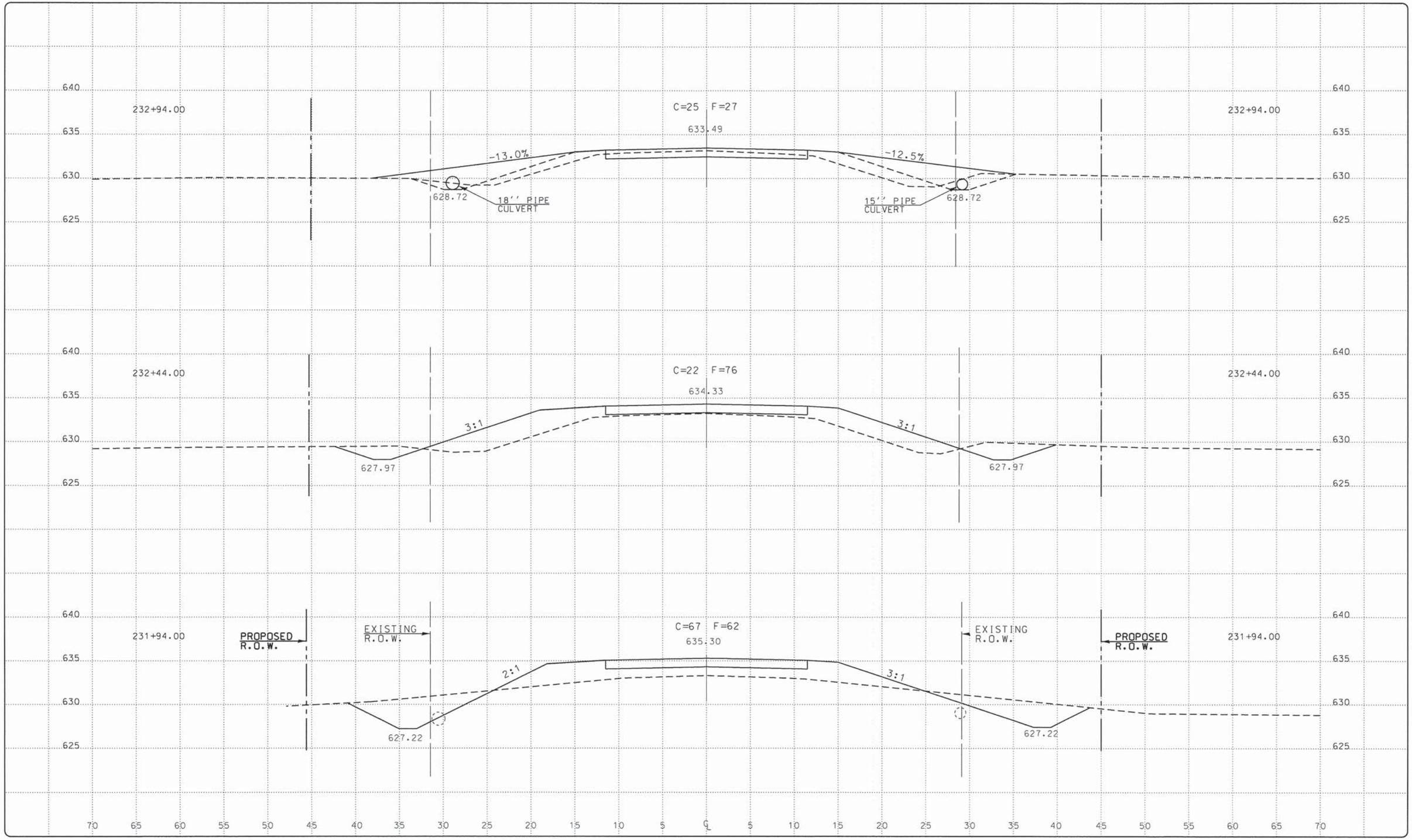
REV. NO.	DESCRIPTION	DATE

DRAWING:
STATION CROSS SECTIONS

JOB NUMBER:
13-705U

SHEET NUMBER
24 of 26



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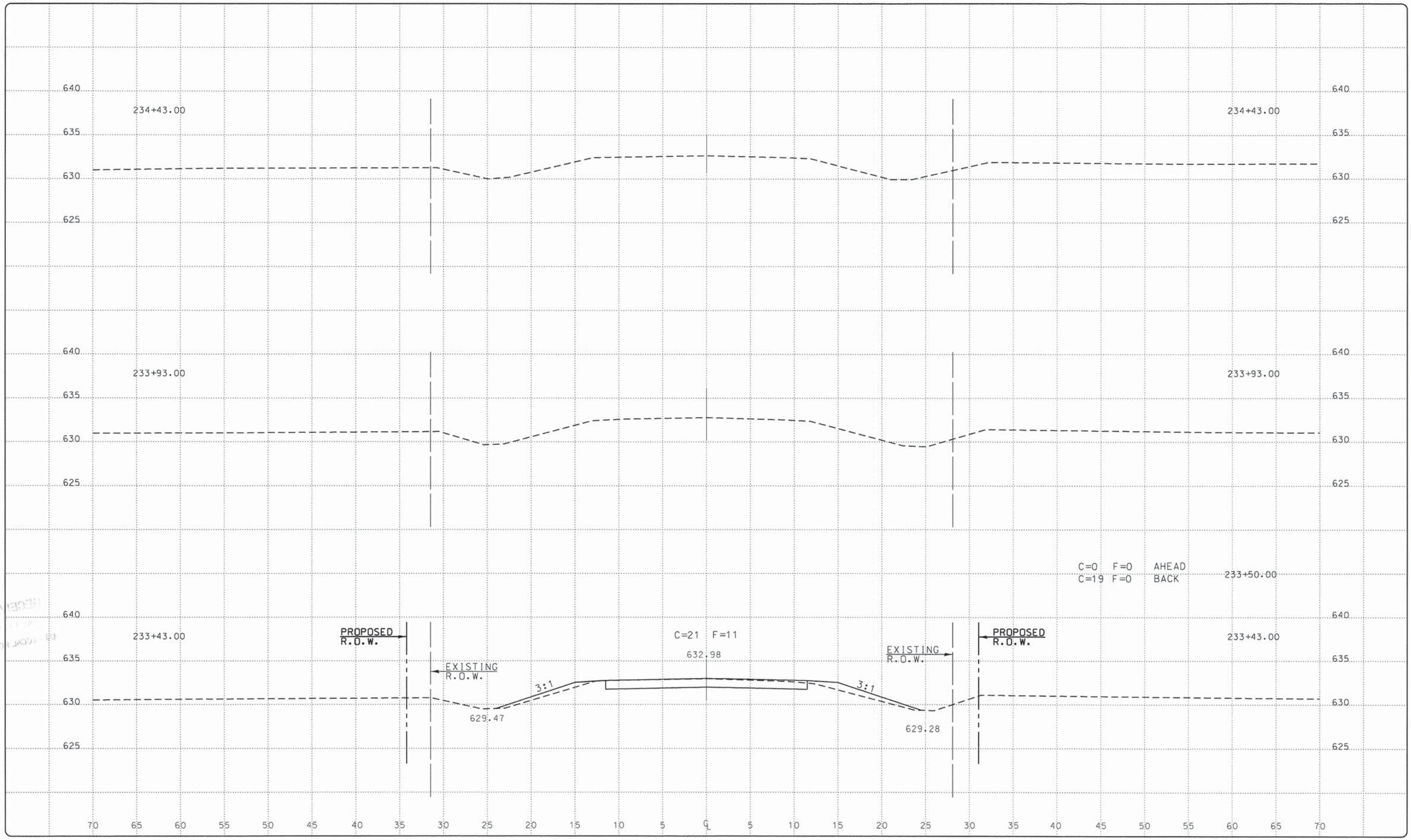
REV. NO.	DESCRIPTION	DATE

DRAWING:
STATION CROSS SECTIONS

JOB NUMBER:
13-705U

SHEET NUMBER
25 of 26



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SHEET NUMBER
26 of 26