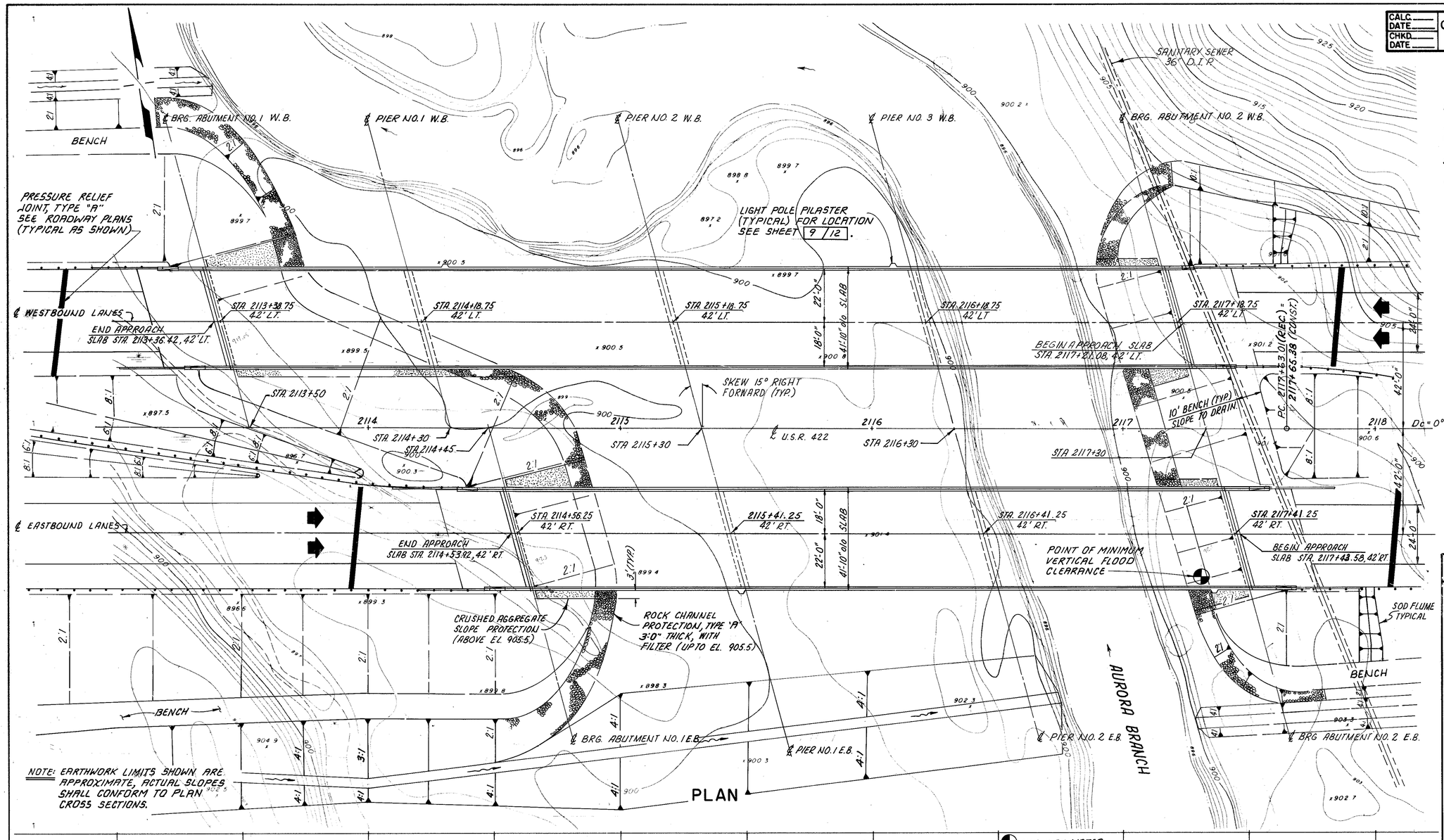
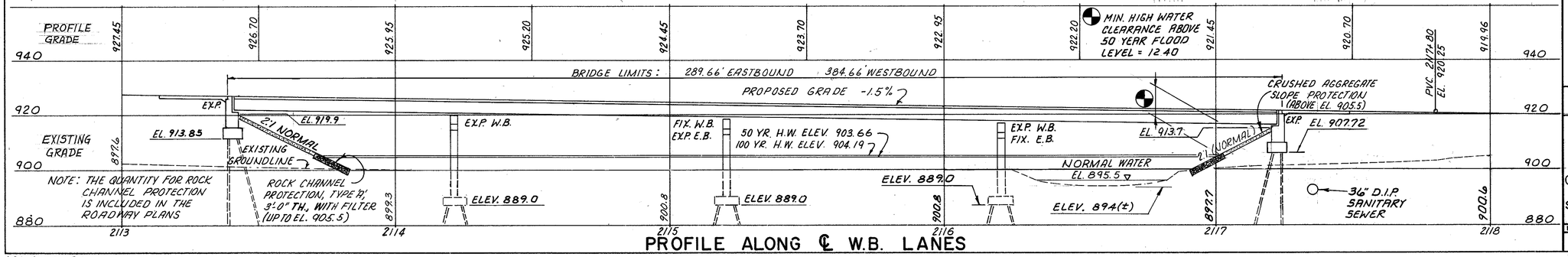
CALC.	CUY-422-18.40	OHIO
DATE	GEA-422-0.00	F.H.W.A. REGION 5
CHKD.		
DATE		

239 / 321



PLAN



PROFILE ALONG ℄ W.B. LANES

HYDRAULIC DATA:

DRAINAGE AREA: 48.9 SQ. MI.
Q_{50} = 4465 cfs
V_{50} = 8.98 FT./SEC.
50 YR. H.W. ELEV. 903.66

Q_{100} = 5128 cfs
V_{100} = 8.47 FT./SEC.
100 YR. H.W. ELEV. 904.19

NOTE: FOOTING PILES SHALL BE 12"Ø CAST-IN-PLACE REINFORCED CONCRETE. ESTIMATED AVERAGE PAY LENGTH IS AS FOLLOWS: ABUTMENTS 60 FT., PIERS 45 FT.

DESIGN TRAFFIC	
ADT (2007)	32,750
ADTT (2007)	1,310

NOTE: DESIGNATION 226N DENOTES REFERENCE TO DRAWING 226N / 321.

PROPOSED STRUCTURE

TYPE:	CONTINUOUS WELDED PLATE GIRDER, A572 STEEL WITH COMPOSITE CONCRETE SLAB. REINFORCED CONCRETE SUBSTRUCTURE.
SKEW:	15° RIGHT FORWARD
SPANS:	LEFT: 80' 100' 100' 100' RIGHT: 85' 100' 100'
ROADWAY:	TWO (2) @ 40'-0" F/F PARAPETS
LOADING:	HS 20-44 (CASE II) AND THE ALTERNATE MILITARY LOADING
WEARING SURFACE:	MONOLITHIC
APPROACH SLABS:	AS-1-81 (25' LONG)
ALIGNMENT:	TANGENT
SUPERELEVATION:	NONE (NORMAL CROWN)
SLOPE PROTECTION:	ROCK CHANNEL PROTECTION TYPE A, 3'-0" THICK, WITH FILTER & CRUSHED AGGREGATE SLOPE PROTECTION.

1 / 12

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CONSULTING ENGINEERS CLEVELAND, OHIO 44131

SITE PLAN

GEA-422-0015 L & R
OVER AURORA BRANCH OF CHAGRIN RIVER
GEAUGA COUNTY U.S. ROUTE 422
SEC. GEA-422-0.00 STA. 2113+36.42 LT. 2117+21.08 LT.

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
E.A.F.	D.R.J.	L.P.C.	L.E.D.	1-29-86	

A.C.L. form no. B-1

REFERENCE SHALL BE MADE TO STANDARD DRAWINGS:

SUPERSTRUCTURE DETAILS	SD-1-69 (1, 2, 3 OF 4)	DATED 6/12/69
ROCKER AND BOLSTER DETAILS	RB-1-55	REVISED 2/2/59
APPROACH SLAB DETAILS	AS-1-81 (1, 2, 3 OF 3)	DATED 11/27/81
COMPRESSION SEAL EXPANSION JOINTS AT ABUTMENTS FOR STEEL STRINGER STRUCTURES	EXJ-2-81 (1, 2, OF 2)	REVISED 4/2/84

AND TO SUPPLEMENTAL SPECIFICATIONS:

824	EPOXY COATED REINFORCING STEEL	DATED 10/8/82
836	CONCRETE CURING AND PROTECTIVE MEMBRANE	DATED 11/12/85
849	ELASTOMERIC COMPRESSION SEALS FOR STRUCTURAL STEEL JOINTS	DATED 12/24/85

DESIGN SPECIFICATIONS:

THIS STRUCTURE CONFORMS TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 1983, INCLUDING THE 1984 INTERIM SPECIFICATIONS AND THE OHIO "SUPPLEMENT" TO THESE SPECIFICATIONS.

DESIGN DATA:

DESIGN LOADING	HS20-44 CASE II AND THE ALTERNATE MILITARY LOADING.
CONCRETE CLASS S	COMPRESSIVE STRENGTH 4500 P.S.I. (SUPERSTRUCTURE)
CONCRETE CLASS C	COMPRESSIVE STRENGTH 4000 P.S.I. (SUBSTRUCTURE)
REINFORCING STEEL	ASTM A615, A616, A617 - GRADE 60 MINIMUM YIELD STRENGTH 60,000 P.S.I.
STRUCTURAL STEEL	ASTM 572 - GRADE 50, MINIMUM YIELD STRENGTH 50,000 P.S.I.
DECK PROTECTION METHOD:	EPOXY COATED REINFORCING STEEL, TOP MAT AND BOTTOM MATS.

MONOLITHIC WEARING SURFACE:

MONOLITHIC WEARING SURFACE IS ASSUMED, FOR DESIGN PURPOSES, TO BE 1" THICK.

PILE DESIGN LOADS:

THE DESIGN LOAD FOR THE ABUTMENT PILES IS 48 TONS PER PILE AND THE DESIGN LOAD FOR THE PIER PILES IS 49 TONS PER PILE.

12 INCH PRECAST PRESTRESSED CONCRETE PILES

12 INCH PRECAST PRESTRESSED CONCRETE PILES MAY BE SUBSTITUTED FOR THE 12 INCH CAST-IN-PLACE REINFORCED CONCRETE PILES SHOWN ON THESE PLANS. DRAWINGS SHOWING DETAILS OF AND SPECIFICATION FOR PRESTRESSED CONCRETE PILES ARE AVAILABLE FROM THE DIRECTOR (BUREAU OF BRIDGES). IF THE PRESTRESSED PILE ALTERNATE IS CHOSEN, THE METHOD OF MEASUREMENT AND BASIS OF PAYMENT SHALL BE THE SAME AS FOR CAST-IN-PLACE REINFORCED CONCRETE PILES PER 507.

PILE DRIVING CONSTRAINTS AT THE ABUTMENTS:

PRIOR TO DRIVING PILES AT AN ABUTMENT, THE SPILL-THRU SLOPE EMBANKMENT SHALL BE CONSTRUCTED UP TO THE LEVEL OF THE SUBGRADE FOR A MINIMUM DISTANCE OF 200 FEET BEHIND THE ABUTMENT. THE EXCAVATION FOR THE FOOTINGS OF THE ABUTMENTS AND THE INSTALLATION OF THE ABUTMENT PILES SHALL NOT BEGIN UNTIL AFTER THE ABOVE REQUIRED EMBANKMENT HAS BEEN CONSTRUCTED AND THE EMBANKMENT HAS EXPERIENCED A WAITING PERIOD OF FIFTEEN DAYS.

PILE STATIC LOAD TEST:

THE CONTRACTOR SHALL PERFORM A STATIC LOAD TEST ON ONE OF THE INITIALLY INSTALLED PILES. THE INSTALLED LENGTH OF THE PILE TO BE LOAD TESTED SHALL NOT BE MORE THAN THE PLAN ESTIMATED PILE LENGTH.

PILE HAMMER:

THE PILE HAMMER USED TO INSTALL THE PILES SHALL HAVE A STATE'S ENERGY RATING OF NOT LESS THAN 15,000 FOOT-POUNDS. THIS REQUIREMENT DOES NOT RELIEVE THE CONTRACTOR FROM 108.05 WHICH STATES THAT THE CONTRACTOR IS TO PROVIDE SUFFICIENT EQUIPMENT FOR PROSECUTING THE REQUIRED WORK. REFER TO O.D.O.T.'S MANUAL OF PROCEDURES FOR STRUCTURES" TO OBTAIN THE STATE'S ENERGY RATING.

GEA-422-0015 L&R OVER AURORA BRANCH ESTIMATED QUANTITIES

ITEM	EASTBOUND	WESTBOUND	TOTAL	UNIT	DESCRIPTION	ABUTMENTS E.B.	ABUTMENTS W.B.	PIERS E.B.	PIERS W.B.	SUPERSTRUCTURE E.B.	SUPERSTRUCTURE W.B.	GENERAL E.B.	GENERAL W.B.	AS-BUILTS E.B.	AS-BUILTS W.B.
503			LUMP	LUMP	COFFERDAMS, CRIBS AND SHEETING			LUMP SUM	LUMP SUM						
503	580	745	1325	C.Y.	UNCLASSIFIED EXCAVATION	250	250	330	495						
505			LUMP	LUMP	PILE DRIVING EQUIPMENT MOBILIZATION							LUMP SUM	LUMP SUM		
506			LUMP	LUMP	STATIC LOAD TEST							LUMP SUM	LUMP SUM		
507	4140	5310	9450	L.F.	12" DIAMETER CAST-IN-PLACE	1800	1800	2340	3510						
					REINFORCED CONCRETE PILES,										
					AS PER PLAN										
509	49971	69512	119483	LB.	REINFORCING STEEL, GRADE 60	12198	12198	37773	57314						
511	128	128	256	C.Y.	CLASS C CONCRETE, ABUTMENTS	128	128								
					ABOVE FOOTINGS										
511	131	203	334	C.Y.	CLASS C CONCRETE, PIERS			131	203						
					ABOVE FOOTINGS										
511	149	185	334	C.Y.	CLASS C CONCRETE, FOOTINGS	77	77	72	108						
511	423		423	C.Y.	CLASS S CONCRETE, SUPERSTRUCTURE, AS PER PLAN					423					
					SEE PROPOSAL NOTE										
513	321900	415300	738700	LB.	STRUCTURAL STEEL, A572 (AISC					321900	416800				
					CATEGORY III), SEE PROPOSAL NOTE										
513	2160	3180	5340	EA.	WELDED STUD SHEAR CONNECTORS					2160	3180				
514	321900	416800	738700	LB.	FIELD PAINTING OF NEW STRUCTURAL					321900	416800				
					STEEL, SYSTEM A										
516	88	88	176	L.F.	STRUCTURAL EXPANSION JOINTS					88	88				
					INCLUDING ELASTOMERIC										
					COMPRESSION SEALS										
518	75	75	150	C.Y.	POROUS BACKFILL	75	75								
518	80	80	160	L.F.	6" DIAMETER PERFORATED, HELICAL	80	80								
					C.S.P., 707.01										
518	30	30	60	L.F.	6" DIAMETER NON-PERFORATED HELICAL	30	30								
					C.S.P. INCLUDING SPECIALS, 707.01										
518	4	6	10	EA.	SCUPPERS, INCLUDING SUPPORTS					4	6				
523	3	0	3	HR.	DYNAMIC LOAD TEST			3							
601	250	400	650	S.Y.	CRUSHED AGGREGATE SLOPE PROTECTION	250	400								
625					SEE SHEET 281A FOR LIGHTING SUMMARY										
824	107636	143645	251281	LB.	EPOXY COATED REINFORCING STEEL, GR. 60	3124	3124			104512	140521				
511		564	564	C.Y.	Class S Concrete, Superstructure - using Shrinkage Compensating Cement, See Prop Note						564				
SPECIAL	775	1004	1779	S.Y.	SEALING OF CONCRETE SURFACES,	775	1004								
					SEE PROPOSAL NOTE										

2 / 12

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GENERAL NOTES AND ESTIMATED QUANTITIES

GEA - 422-0015 L & R

OVER AURORA BRANCH OF CHAGRIN RIVER

GEAUGA COUNTY U.S. ROUTE 422

SEC. GEA.-422-0.00 STA. 2113 + 36.42 LT. 2117 + 21.08 LT.

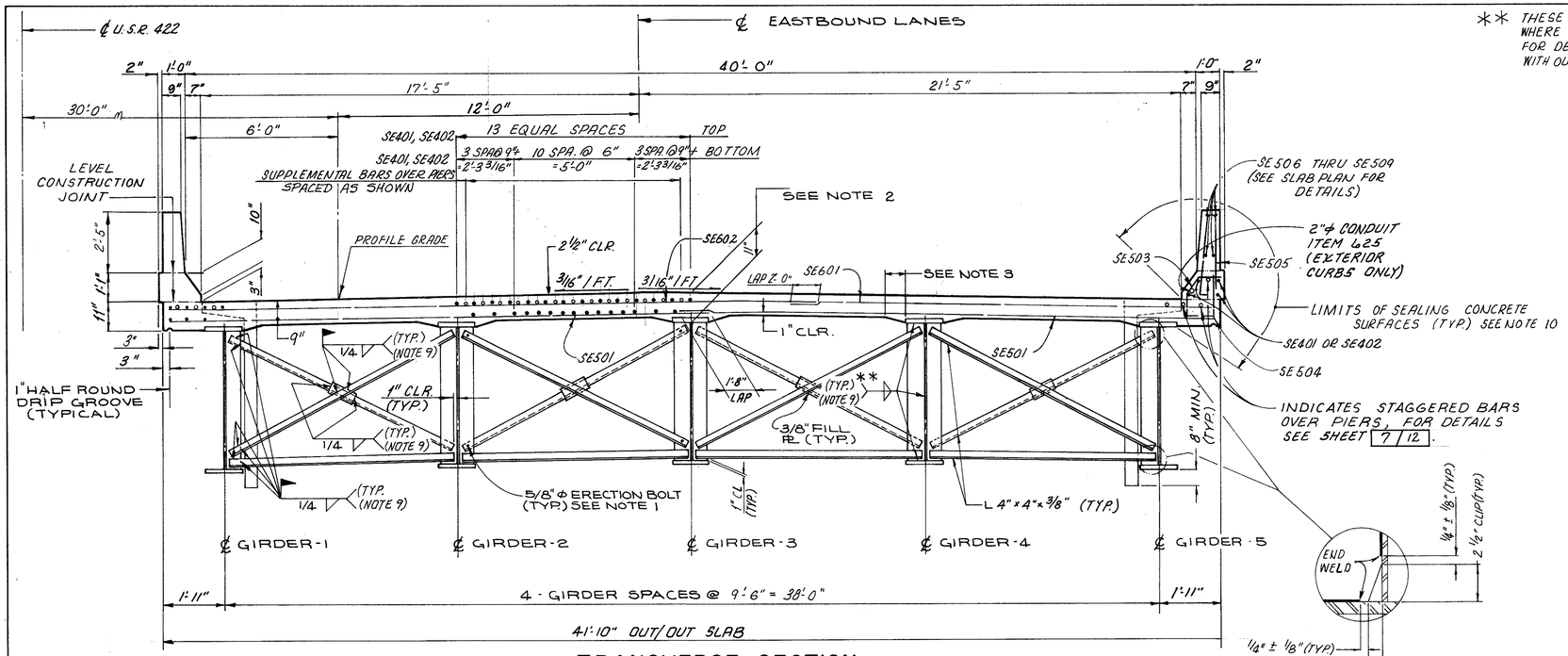
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
J.R.C.	C.A.G.	T.M.J.	L.E.D.	1-29-86	10-30-86

BRINKING 44 1326 7195
A·C·L form no. B-1

CALC DATE	CUY-422-18.40	OHIO
CHKD DATE	GEA-422-0.00	F.H.W.A. REGION 5

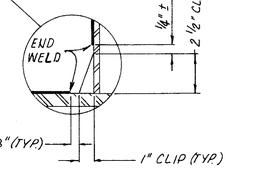
244 / 321

** THESE WELDS APPLY ONLY AT STIFFENERS WHERE CROSSFRAMES ARE ATTACHED. FOR DETAILS OF WELDMENT OF STIFFENERS WITHOUT CROSSFRAMES, SEE DETAIL 'A'



TRANSVERSE SECTION

EASTBOUND LANES SHOWN, WESTBOUND LANES OPPOSITE HAND



DETAIL OF INTERMEDIATE STIFFENER WITH CROSSFRAMES

1. HOLES FOR 5/8" ϕ ERECTION BOLTS SHALL BE PROVIDED IN THE CONNECTIONS OF CROSS FRAMES TO GIRDER STIFFENERS. PROVIDE 11/16" ϕ HOLES IN CROSS FRAME ANGLES AND 13/16" ϕ HOLES IN STIFFENERS. UNLESS REPLACED BY PERMANENT HIGH STRENGTH BOLTS, ERECTION BOLTS SHALL REMAIN IN PLACE. LOCK WASHERS SHALL BE FURNISHED FOR OTHER THAN FULLY TORQUED HIGH STRENGTH ERECTION BOLTS. BOLTS SHALL BE FURNISHED AS PART OF 513.

   IN LIEU OF ERECTION BOLTS AND AT THE OPTION OF THE CONTRACTOR, ALTERNATIVE MEANS OF TEMPORARY BRACING MAY BE USED SUBJECT TO THE APPROVAL OF THE DIRECTOR.

2. TOP OF DECK TO TOP OF WEB
   THIS IS THE DESIGN DIMENSION: THE QUANTITY OF DECK CONCRETE TO BE PAID FOR SHALL BE BASED UPON THIS DIMENSION, EVEN THOUGH DEVIATION FROM IT MAY BE NECESSARY BECAUSE THE TOP FLANGE OF THE GIRDER MAY NOT HAVE THE EXACT CAMBER OR CONFORMATION REQUIRED TO PLACE IT PARALLEL TO THE FINISHED GRADE. DEDUCTION SHALL BE MADE FOR VOLUME OF ENCASED STEEL PLATES AS PER 511.18.

3. A HAUNCH WIDTH OF 9" SHALL BE USED FOR COMPUTING QUANTITY OF CONCRETE HOWEVER, THE HAUNCH WIDTH MAY VARY BETWEEN 6" AND 12", PROVIDED THAT THE SLOPE SHALL BE NOT MORE THAN 1:4 FOR A HAUNCH LESS THAN 9" WIDTH.

4. BAR MARKS FOR REINFORCING BARS WHICH ARE TO BE EPOXY-COATED INCLUDE A LETTER SUFFIX "E."

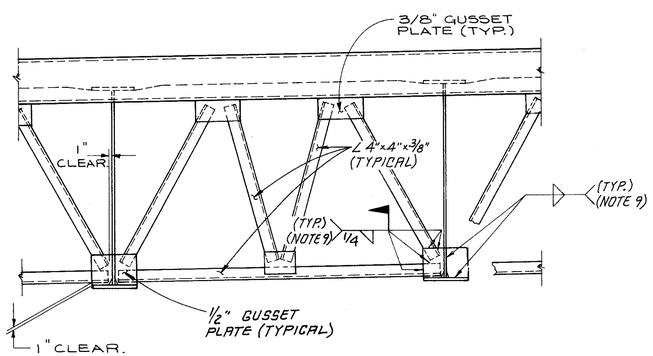
5. FOR SCUPPER LOCATIONS, SEE FRAMING PLANS, SHEET 7/12.

6. FOR FRAMING PLANS, SEE SHEET 7/12.

7. FOR SLAB PLAN, SEE SHEET 7/12.

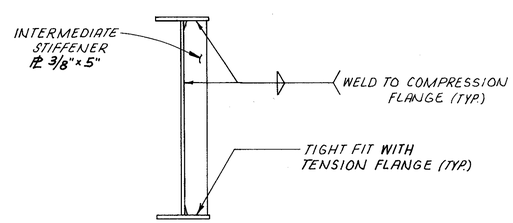
8. SCUPPERS SHALL BE IN ACCORDANCE WITH STANDARD DRAWING SD-1-69 EXCEPT THAT SCUPPER PIPES SHALL EXTEND 8" BELOW THE BOTTOM OF THE BEAMS INSTEAD OF 2". SCUPPERS SHALL BE LENGTHENED IN ACCORDANCE WITH DETAIL 'A', STANDARD DWG. SD-1-69.

9. WHERE NOT SPECIFIED, FILLET WELD SIZES SHALL BE AS LISTED ON SHEET 8/12.



TYPICAL END CROSSFRAME

FOR ADDITIONAL DETAILS, SEE STANDARD DRAWING SD-1-69, SHEET 1 OF 4 AND EXJ-2-81 SHEETS 1 AND 2 OF 2.



DETAIL 'A'

INTERMEDIATE STIFFENER WITHOUT CROSSFRAMES

10. ITEM SPECIAL, SEALING OF CONCRETE SURFACES:

    A CONCRETE SEALER, SHALL BE APPLIED TO THE CONCRETE SURFACES SHOWN ON THE TRANSVERSE SECTION. SEE THE PROPOSAL FOR SURFACE PREPARATION REQUIREMENTS, APPLICATION RATES, MATERIAL REQUIREMENTS AND APPLICATION PROCEDURES

11. FOR ADDITIONAL DETAILS OF PARAPETS, SEE SHEET 226A.

6/12

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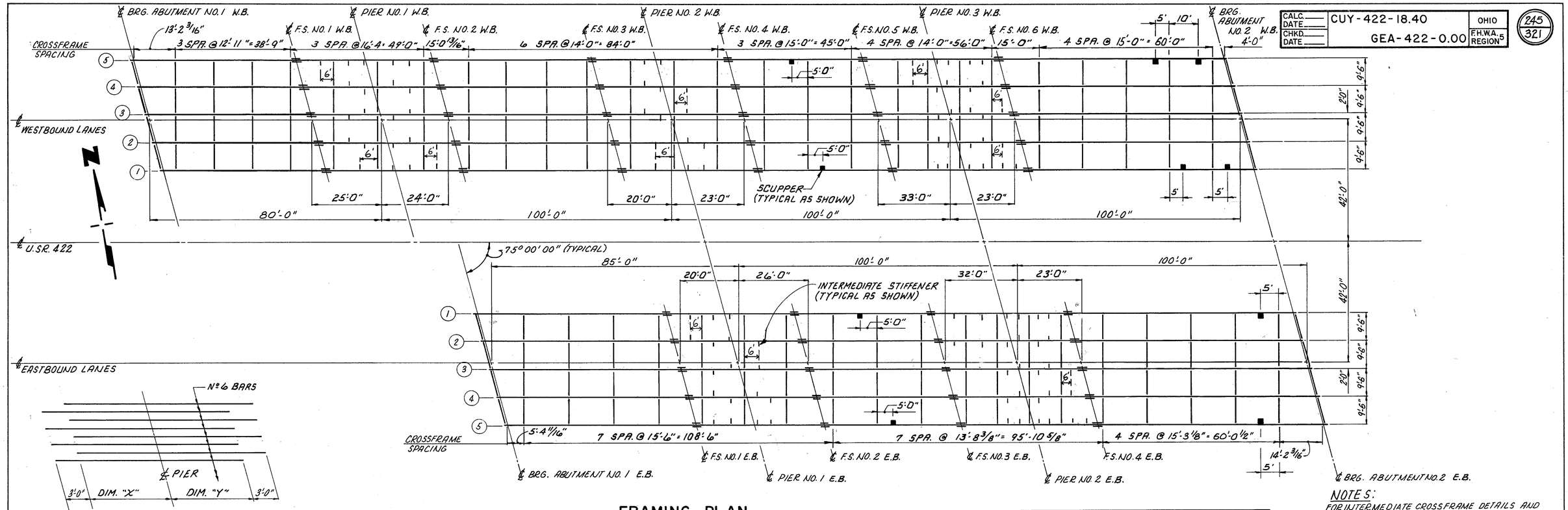
TRANSVERSE SECTION

GEA-422-0015 L & R
OVER AURORA BRANCH OF CHAGRIN RIVER
GEAUGA COUNTY U.S. ROUTE 422
SEC. GEA-422-0.00 STA. 2113+36.42 LT. 2117+21.08 LT.

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
J.R.C.	D.R.J.	L.P.C.	L.E.D.	1-29-86	

CALC.	CUY-422-18.40	OHIO
DATE		
CHKD.	GEA-422-0.00	F.H.W.A. REGION 5
DATE		

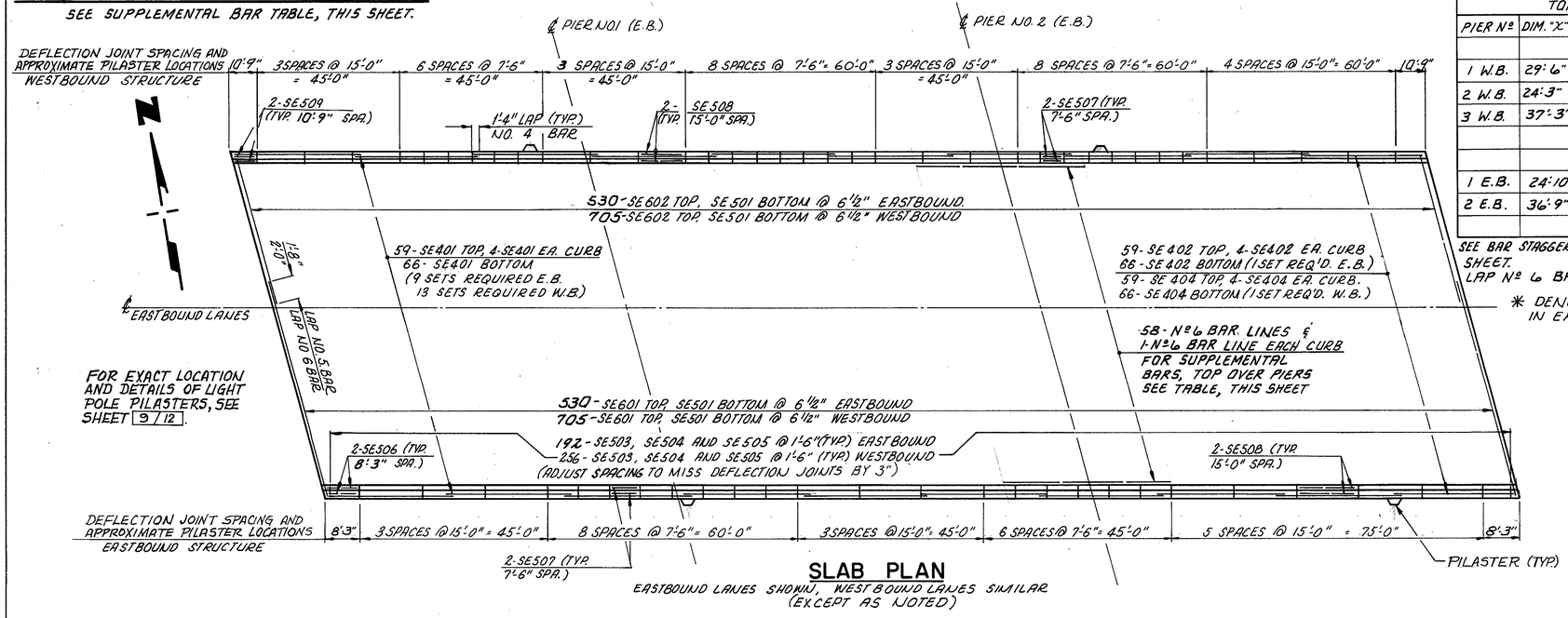
245/321



FRAMING PLAN

BAR STAGGER OVER PIER DIAGRAM

SEE SUPPLEMENTAL BAR TABLE, THIS SHEET.



SLAB PLAN

EASTBOUND LANES SHOWN, WESTBOUND LANES SIMILAR (EXCEPT AS NOTED)

SUPPLEMENTAL BARS

TOP OVER PIERS

PIER Nº	DIM. "X"	DIM. "Y"	* REINFORCING
1 W.B.	29'-6"	28'-3"	2-SE603 & 1-SE604
2 W.B.	24'-3"	27'-3"	1-SE603 & 1-SE605
3 W.B.	37'-3"	27'-10"	2-SE603 & 1-SE606
1 E.B.	24'-10"	30'-10"	1-SE603 & 1-SE607
2 E.B.	36'-9"	27'-5"	2-SE603 & 1-SE608

SEE BAR STAGGER OVER PIER DIAGRAM, THIS SHEET.
LAP Nº 6 BARS 2'-0"

* DENOTES SUPPLEMENTAL BARS IN EACH LINE, OVER PIERS

NOTES:

FOR INTERMEDIATE CROSSFRAME DETAILS AND END CROSSFRAME DETAILS DETAILS, SEE SHEET 6/12.

TRANSVERSE INTERMEDIATE STIFFENERS SHALL BE 5"×3/8"×48" PLATES. THEY SHALL BE PLACED AT ALL CROSSFRAME LOCATIONS AND AT ADDITIONAL LOCATIONS AS SHOWN ON THE FRAMING PLAN. WHERE DIMENSIONS ARE NOT GIVEN, STIFFENERS SHALL BE SPACED EQUALLY BETWEEN CROSSFRAMES.

FOR GIRDER ELEVATION AND SPLICE DETAILS, SEE SHEET 8/12.

FOR TRANSVERSE SECTION, SEE SHT. 6/12.

FOR REINFORCING SCHEDULE, SEE SHT. 12/12.

REINFORCING BAR MARKS WITH PREFIX 'E' SHALL BE EPOXY COATED. (ALL SUPERSTRUCTURE BARS ARE EPOXY COATED)

FOR COMPRESSION SEAL EXPANSION JOINTS DETAILS AND ADDITIONAL END CROSSFRAME DETAILS, SEE STANDARD DRAWING EXJ-2-81 SHEETS 1 AND 2 OF 2.

FOR SCREED ELEVATIONS AND DEFLECTION & CAMBER TABLES, SEE SHEET 9/12.

FOR ADDITIONAL DETAILS OF PARAPET, SEE SHEET 2(2LN).

7/12

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FRAMING PLAN & SLAB PLAN

GEA-422-0015 L & R
OVER AURORA BRANCH OF CHAGRIN RIVER
GEAUGA COUNTY U.S. ROUTE 422
SEC. GEA: 422-0.00 STA. 2113+36.42 LT
2117+21.08 LT

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
J.R.C.	T.M.J.	L.P.C.	L.E.D.	1-29-86	

BRUNING 44-132 67195

A-C-L form no. B-1