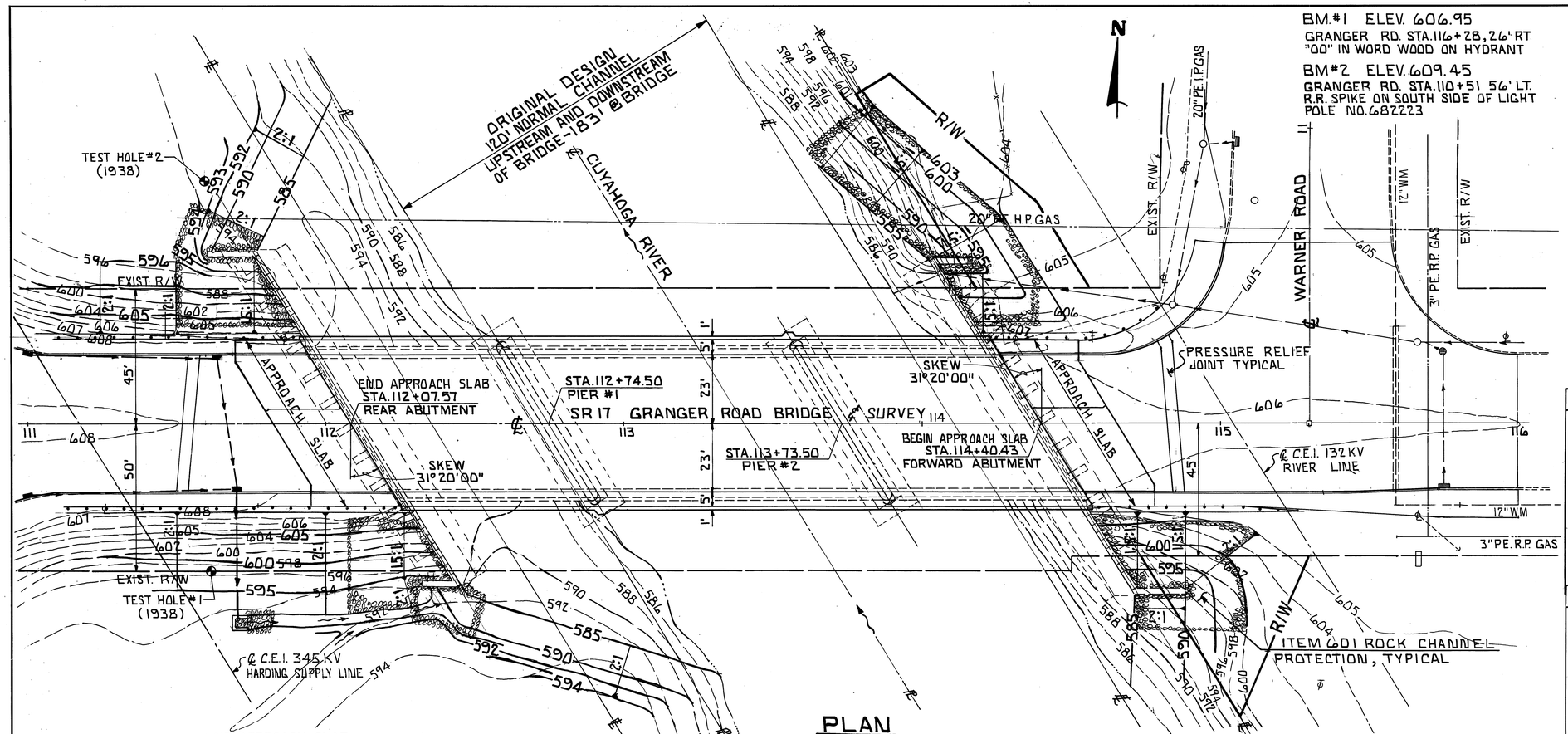
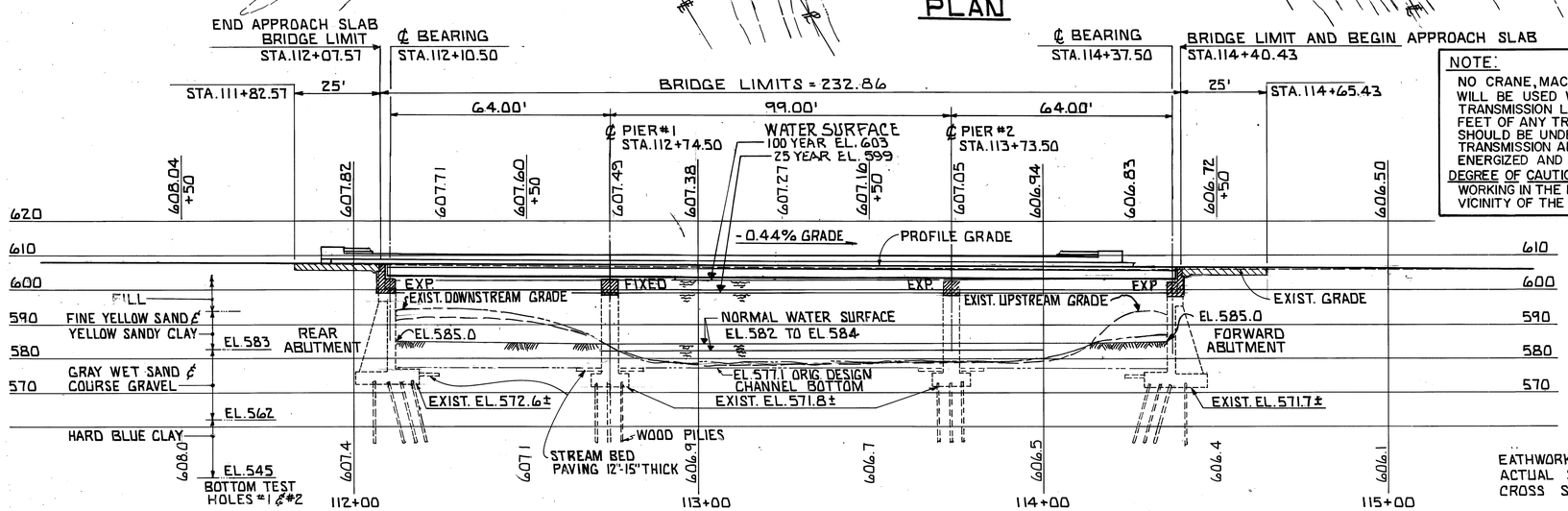
CALC. BY		CUY-17-14.40	OHIO	59
DATE			FHWA REGION 5	110
CHKD. BY				
DATE				



PLAN



PROFILE ON ℄ SURVEY

INDEX TO SHEETS

SH'T. NO.	DESCRIPTION
1	SITE PLAN
2,2A,3	GENERAL PLAN, ELEVATION AND NOTES
4	ESTIMATED QUANTITIES
5-8	ABUTMENTS
9	PIERS
10	BEARINGS
11,12	STRUCTURAL STEEL
13-15	DECK
16	APPROACH SLABS
17,18	REINFORCING BAR SCHEDULE

WORK ABOVE DRAWINGS WITH MAINTENANCE OF TRAFFIC PLANS SPECIFICALLY SHEET 28 & 30 OF 110.
STAGED CONSTRUCTION REQUIRED.
TRAFFIC: AVERAGE DAILY VEHICULAR TRAFFIC
YEAR 1988-20,540 YEAR 2008-25,470
ADTT: YEAR 1988-2,130 YEAR 2008-2,640

HYDRAULIC DATA

DISCHARGE (Q) FROM 710 SQ. MILE DRAINAGE AREA

Q 100 YEAR EVENT (DESIGN)	21,000 CFS	EL. 603
Q 500 YEAR EVENT	27,000 CFS	
Q 25 YEAR EVENT	14,700 CFS	EL. 599

AREA OF BRIDGE OPENING	SQUARE FEET
AS DESIGNED 1938	= 5,100
AS DESIGNED 1938 TO NEW BEAMS	5,800
AS EXISTING 1987	= 3,700
AS EXISTING 1987 TO NEW BEAMS	= 4,300
WITH BERMS EXCAVATED TO NORMAL WATER	= 4,800

DESIGN VELOCITIES (V)

V 100 YEAR EVENT	4.9 FPS
V 25 YEAR EVENT	3.5 FPS

EXISTING STRUCTURE

TYPE: REINFORCED CONCRETE ON CONTINUOUS STEEL GIRDERS
SPANS: 64.00'-99.00'-64.00' ℄ BEARINGS
ROADWAY: 44' + TWO 3' SIDEWALKS.
LOADING: H-20-33 DESIGN PLAN, H-15 INVENTORY
SKEW: 31°-20' R.F.
SURFACE: ASPHALT CONCRETE.
APPROACHS: 25' SLAB x 44' WIDE, ASPHALT CONCRETE SURFACED.
DATES: 1939 ORIGINAL CONSTRUCTION
1976 REPLACED PART OF DECK, BACKWALL & APPROACH SLABS

PROPOSED STRUCTURE

TYPE: COMPOSITE CONTINUOUS STEEL BEAMS ON REINFORCED CONCRETE SUBSTRUCTURE
SPANS: 64.00' - 99.00' - 64.00' ℄ BEARINGS
ROADWAY: 46'-0" F/F CURB, 5'-0" SIDEWALKS
LOADING: HS20-44 & ALTERNATE MILITARY (CASE II)
ALIGNMENT: TANGENT
SKEW: 31°-20'-00" R.F. ABUTMENTS & PIERS
APPROACHS: 25' SLAB STANDARD DRAWING AS-1-81

FOUNDATIONS: EXISTING UNTREATED TIMBER PILES DRIVEN TO A MINIMUM BEARING CAPACITY OF 22 TONS AND PREFERABLY 25 TONS. ESTIMATED PILE LENGTH IS 17 FEET.

NOTE:
NO CRANE, MACHINERY, OR OTHER EQUIPMENT WILL BE USED WITHIN 50 FEET OF ANY TRANSMISSION LINE STRUCTURE, OR WITHIN 25 FEET OF ANY TRANSMISSION LINE WIRE. IT SHOULD BE UNDERSTOOD THAT THE TRANSMISSION AND DISTRIBUTION LINES ARE ENERGIZED AND IN SERVICE AND A HIGH DEGREE OF CAUTION SHOULD BE USED WHEN WORKING IN THE RIGHT-OF-WAY ESPECIALLY IN THE VICINITY OF THE TRANSMISSION STRUCTURES.

EATHWORK LIMITS SHOWN ARE APPROXIMATE ACTUAL SLOPES TO CONFORM TO PLAN CROSS SECTIONS.

EXISTING UTILITIES ON STRUCTURE ARE ABANDONED LIGHTING CONDUIT & OVERHEAD WIRES FEEDING LIGHTS. ELECTRICAL IS MAINTAINED BY CLEVELAND ELECTRIC ILLUMINATING CO.

REVIEWED BY BURGESS & NIPLE, LTD.
M.P.B. 12-22-89

GRANGER ROAD BRIDGE NO 164
"B-85", AND "REPORT NO 7151"

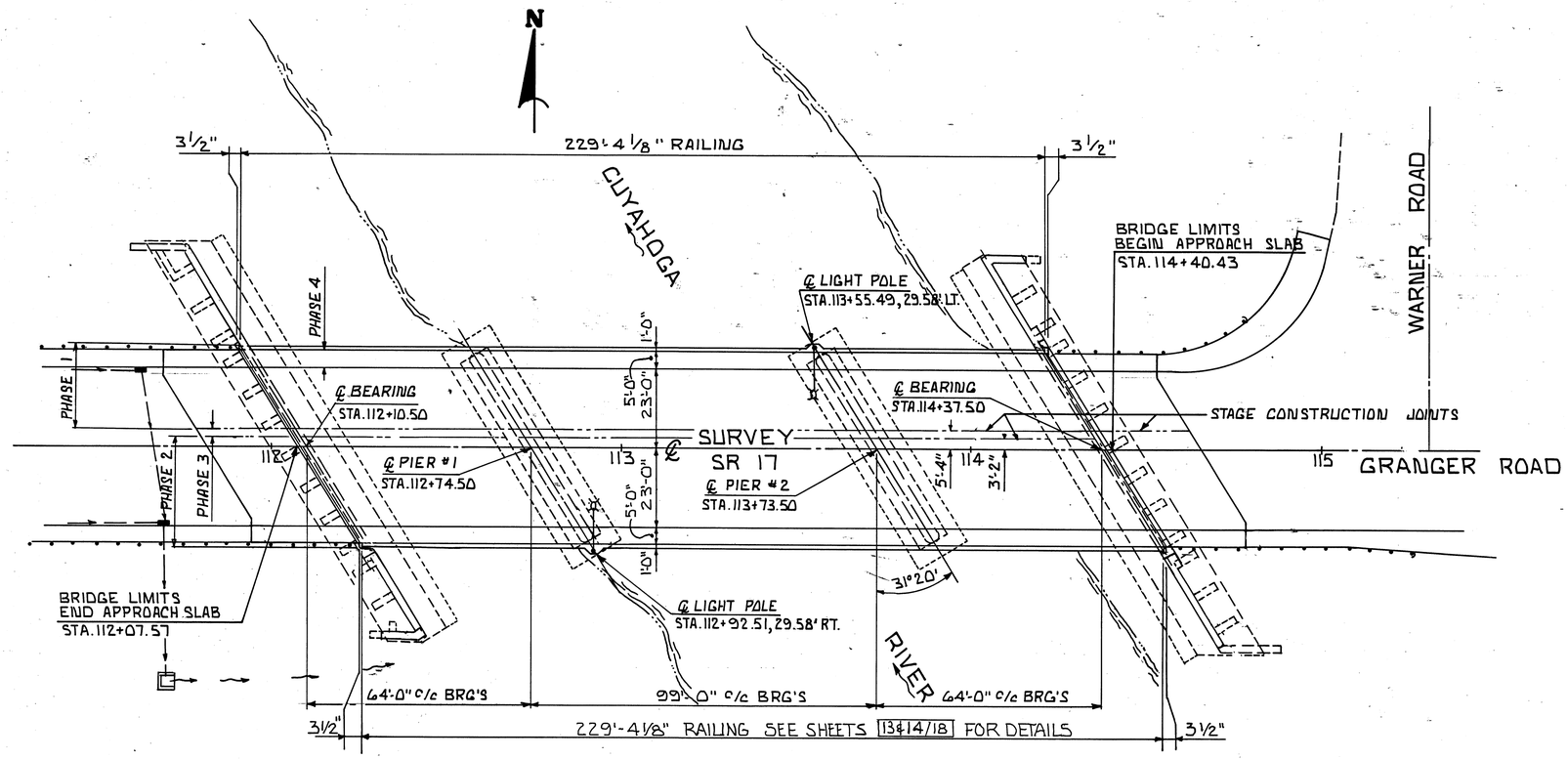
WESTON MANAGERS DESIGNERS/CONSULTANTS

1/18

SITE PLAN
BRIDGE № CUY-17-1465
STATE ROUTE 17 GRANGER ROAD
OVER CUYAHOGA RIVER
CUYAHOGA COUNTY STA.112+07.57 TO STA.114+40.43

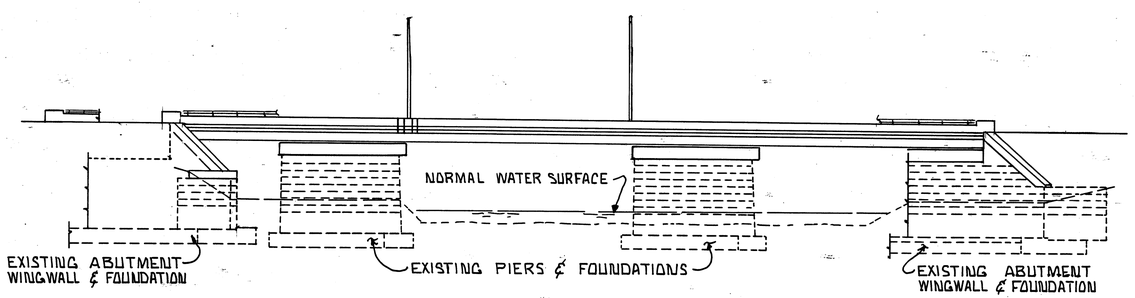
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
RLH CAP	CAP		CAP RLH			

CALC. BY ____ DATE ____ CHKD. BY ____ DATE ____	CUY-17-14.40	OHIO FHWA REGION 5	60 / 110



PLAN

SEE PARTIAL GENERAL PLAN 2A/18



ELEVATION

PROPOSED WORK - STAGED CONSTRUCTION

THE WORK REPLACES THE SUPERSTRUCTURE AND APPROACHES, AND REPLACES, MODIFIES AND REPAIRS PORTIONS OF THE SUBSTRUCTURE. REMOVAL OF PORTIONS OF THIS BRIDGE AND RECONSTRUCTION WILL BE PERFORMED IN FOUR PHASES WHILE MAINTAINING TRAFFIC ON THE EXISTING AND NEW BRIDGE DURING THE CONSTRUCTION.

PHASING OF THE CONSTRUCTION AND TRAFFIC IS SHOWN ON SHEET 28 AND 30 OF 110 OF THE MAINTENANCE OF TRAFFIC PLAN AND THE DETAIL WORK OF EACH OF THE FOUR PHASES IS SHOWN ON THE BRIDGE PLANS. GENERALLY THE WORK OF EACH PHASE IS AS FOLLOWS:

PHASE 1. REMOVES AND RECONSTRUCTS A PORTION OF THE BRIDGE LEFT OF THE CENTERLINE WHILE TRAFFIC IS MAINTAINED RIGHT OF THE CENTERLINE ON THE EXISTING BRIDGE.
PHASE 2 & 3 REMOVES AND RECONSTRUCTS THE REMAINING PORTION OF THE BRIDGE WHILE TRAFFIC IS MAINTAINED ON THE PORTION OF THE NEW BRIDGE CONSTRUCTED IN PHASE "1". PHASE "3" WORK IS A DECK CLOSURE SECTION AND COMPLETION OF THE APPROACH SLAB NOT BUILT IN PHASE "1".
PHASE 4 IS CONSTRUCTION OF THE SIDEWALK ON BRIDGE AND APPROACHES LEFT OF CENTERLINE NOT BUILT IN PHASE "1" TO PROVIDE WIDTH FOR MAINTAINING TRAFFIC.

1. STANDARD DRAWINGS AND SUPPLEMENTAL SPECIFICATIONS REFERENCE SHALL BE MADE TO STANDARD DRAWINGS:

AS-1-81	SH'TS 1-3 OF 3	11-27-81
EXJ-4-87	SH'TS 1-5 OF 5	1-5-89
SD-1-69	SH'T 1&4 OF 4	6-12-69
BR-2-82		11-1-82

AND TO SUPPLEMENTAL SPECIFICATIONS:

836	11-12-85
845	5-31-88
953	8-21-80

2. DESIGN SPECIFICATIONS: THE SUPERSTRUCTURE CONFORMS TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" FOURTEENTH EDITION 1989 AS ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS AND OHIO SUPPLEMENT TO THESE SPECIFICATIONS.

3. DESIGN DATA:

DESIGN LOADING

HS20-44 CASE II AND ALTERNATE MILITARY LOADING.

DESIGN STRESSES

CONCRETE CLASS S - COMPRESSIVE STRENGTH 4,500 P.S.I.

CONCRETE CLASS C - COMPRESSIVE STRENGTH 4,000 P.S.I.

REINFORCING STEEL - ASTM A615, A616, A617 - GRADE 60 MINIMUM YIELD STRENGTH 60,000 P.S.I.

STRUCTURAL STEEL - ASTM A572, GRADE 50, YIELD STRENGTH 50,000 P.S.I. EXCEPT EXPANSION JOINT AND CURB PLATE AS NOTED IN THE PLANS.

4. DECK PROTECTION METHOD: EPOXY COATED REINFORCING STEEL (BOTH MATS), LATEX MODIFIED CONCRETE, SEALING CONCRETE SURFACES AND STEEL CURB PLATE.

GRANGER ROAD BRIDGE Nº 164, "B-85", AND "REPORT Nº 7151"

WESTON MANAGERS DESIGNERS/CONSULTANTS

2/18

GENERAL PLAN
ELEVATION
AND NOTES
BRIDGE Nº CUY-17-1465
OVER CUYAHOGA RIVER

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
	CAP		RLH			

ESTIMATED QUANTITIES

LINE NO.	ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	ABUTMENTS	PIERS	SUPER STRUCTURE	GENERAL		ITEM AS PER PLAN	AS PER PLAN SHEET NO.	LINE NO.
1	202	11200	LUMP	LUMP	PORTIONS OF STRUCTURES REMOVED				LUMP				1
2													2
3	503	11100'	LUMP	LUMP	COFFERDAMS, CRIBS AND SHEETING				LUMP				3
4	503	21300	LUMP	LUMP	UNCLASSIFIED EXCAVATION				LUMP				4
5													5
6	509	15800	139,177	LB.	EPOXY COATED REINFORCING STEEL, GRADE 60	15,234		123,943					6
7	509	13400	7,437	LB.	REINFORCING STEEL, GRADE 60		7,437						7
8													8
9	510	11100	162	EACH	DOWEL HOLE	102	60						9
10	511	33404	431	CU. YD.	† CLASS S CONCRETE, SUPERSTRUCTURE (USING SHRINKAGE COMPENSATING CEMENT) 701.08 **								10
11	511	34401	431	CU. YD.	CLASS S CONCRETE, SUPERSTRUCTURE, AS PER PLAN			431			NOTE 10	3	11
12	511	40500	89	CU. YD.	CLASS C CONCRETE, PIERS ABOVE FOOTINGS		89						12
13	511	33410	LUMP		† CLASS S CONCRETE, USING SHRINKAGE COMPENSATING CEMENT. FOR PRE-POUR TESTING **								13
14	511	44500	176	CU. YD.	CLASS C CONCRETE, ABUTMENTS ABOVE FOOTINGS	176							14
15	511	34420	2,791	SQ. FT.	CLASS S CONCRETE, SIDEWALK WEARING SURFACE			2,291	500 #		NOTE 11	3	15
16	512	33300	199	SQ. YD.	TYPE A, WATERPROOFING	199							16
17	[illegible]	[illegible]											17
18	513	16590	11,026	LB.	STRUCTURAL STEEL, A36 OR A588, (AISC CATAGORY 1) (CURB PLATES)			9,046	1,980 #				18
19	513	11400	351,100	LB.	STRUCTURAL STEEL, A572 - 50, AISC CATAGORY 1			351,100					19
20	513	20000	4,960	EACH	WELDED STUD SHEAR CONNECTOR			4,960					20
21													21
22													22
23													23
24	SPECIAL	514 00600	LUMP		PAINTING OF NEW STEEL, SYSTEM IZEU, (SEE NOTE IN PROPOSAL)				LUMP #				24
25	516	11210	131	LIN. FT.	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMETRIC STRIP SEAL			131				12	25
26					(See Sheet 70)								26
27													27
28	516	44100	7	EACH	ELASTOMERIC BEARING W/INTERNAL LAMINATES (9" x 12" x 2" LAMINATED ELASTOMETRIC PAD WITH	7							28
29					AND LOAD PLATE (NEOPRENE) 10" x 17" x 1½" STEEL LOAD PLATE) (See Sht. 68)								29
30	516	44100	7	EACH	ELASTOMERIC BEARING W/INTERNAL LAMINATES (13" x 20" x 2" LAMINATED ELASTOMETRIC PAD WITH		7						30
31					AND LOAD PLATE (NEOPRENE) 14" x 26" x 2" STEEL LOAD PLATE) (See Sht. 68)								31
32	516	44100	7	EACH	ELASTOMERIC BEARING W/INTERNAL LAMINATES (13" x 20" x 3" LAMINATED ELASTOMETRIC PAD WITH		7						32
33					AND LOAD PLATE (NEOPRENE) 14" x 21" x 2" STEEL LOAD PLATE) (See Sht. 68)								33
34	516	44100	7	EACH	ELASTOMERIC BEARING W/INTERNAL LAMINATES (9" x 12" x 3" LAMINATED ELASTOMETRIC PAD WITH	7							34
35					AND LOAD PLATE (NEOPRENE) 10" x 17" x 1½" STEEL LOAD PLATE) (See Sht. 68)								35
36	516	31000	557	LIN. FT.	JOINT SEALER, 705.04			457	100 #				36
37													37
38	517	71500	459	LIN. FT.	RAILING (CONCRETE PARAPET WITH DOUBLE PIPE RAIL)			458.7			RE BAR DIFFERENT	14 & 15	38
39													39
40	518	21200	71	CU. YD.	POROUS BACKFILL WITH FILTER FABRIC	71							40
41													41
42	519	11101	855	SQ. FT.	PATCHING CONCRETE STRUCTURES, AS PER PLAN (See Sheet 64)	855					NOTE 2	6	42
43													43
44	845	10200	1,205 *	SQ. YD.	† LATEX MODIFIED CONCRETE OVERLAY (1¼" THICK)			1,205					44
45													45
46													46
47	SPECIAL	512 67502	1743	SQ. YD.	† SEALING CONCRETE SURFACES (EPOXY)	623	610	510					47
48													48
49													49
50													50
51													51
52													52
53													53
54													54
55													55
56													56
57													57
58													58
59													59
60													60
61	625				SEE SHEET 32 FOR LIGHTING QUANTITIES								61
62													62

CALC. BY ____ DATE ____
CHKD. BY ____ DATE ____

CUY-17-14.40

OHIO FHWA REGION 5

62 / 110

ALTERNATE BID ITEM 511, CLASS S CONCRETE, SUPERSTRUCTURE, USING SHRINKAGE COMPENSATING CEMENT, 701.08.

The cement in the Class S superstructure concrete shall be shrinkage compensating cement, 701.08. The following restrictions shall apply to the superstructure concrete.

A. Cement shall be expansive hydraulic cement, ASTM C845, Type K.

B. The maximum water/cement ratio given for Class S concrete in 499.03 shall be revised from 0.44 to 0.50.

C. Maximum slump at the time and place of concrete placement shall be 6 inches.

D. Chemical admixtures, when required by 511.06, shall be limited to 705.12 Type D.

E. Maximum ambient temperature at time of placement of concrete shall be 80 degrees Fahrenheit.

F. Membrane curing per SS836 will not be permitted for any concrete placed between September 1 and March 31. Such concrete shall be cured by Method (1) Water Curing.

G. If required by the Engineer, the surface of the concrete shall be given a fog spray of water. This may be required prior to either water curing or membrane curing if weather conditions dictate. Equipment shall be on hand.

H. A 28-day dry air cure period shall elapse after the normal deck concrete curing period prior to placing the latex overlay.

APPROACH SLAB QUANTITIES INCLUDED WITH STRUCTURE FOR PAYMENT.

** ALTERNATE BID ITEM

* ITEM 845, 100% COUNTY FUNDS

† See Proposal Note

WESTON DESIGNERS CONSULTANTS

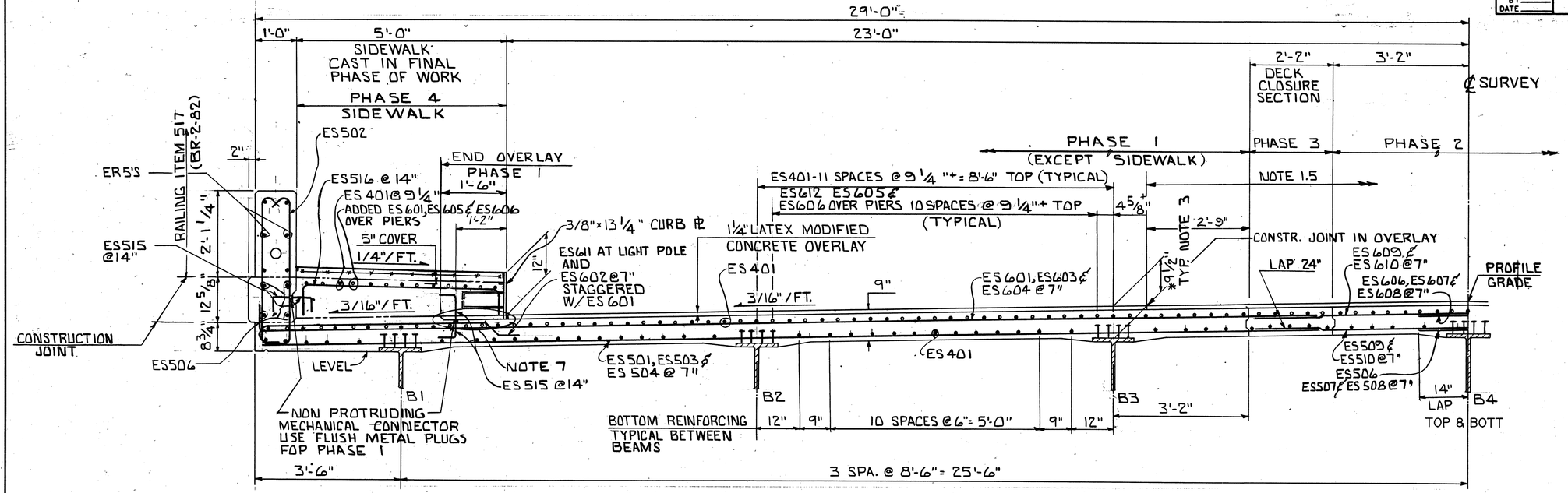
4/18

ESTIMATED QUANTITIES

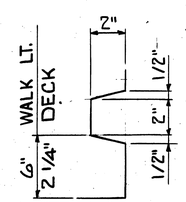
BRIDGE № CUY-17-1465
OVER CUYAHOGA RIVER

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
RLH	CAP		CAP RLH			

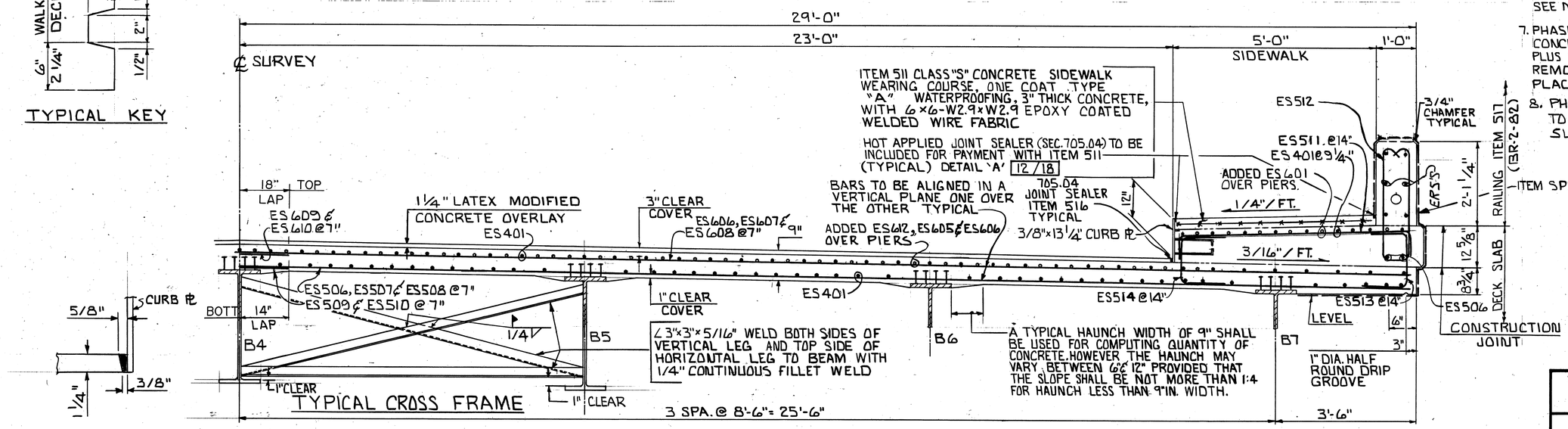
CALC. BY	CUY-17-14.40	OHIO	71
DATE		FHWA REGION 5	110
CHKD. BY			
DATE			



TYPICAL DECK SECTION LEFT ℄



TYPICAL KEY



TYPICAL CROSS FRAME

TYPICAL DECK SECTION RIGHT ℄

ITEM 516 JOINT SEAL DETAIL

NOTES:

1. CONSTRUCTION SEQUENCE
   - 1.1 LEFT OF DECK CLOSURE SECTION DECK SLAB, RAILING & OVERLAY.
   - 1.2 RIGHT OF DECK CLOSURE SECTION EXCEPT WEARING SURFACE
   - 1.3 PERMANENTLY ATTACH CROSS BRACING BAY B3-B4 (DECK CLOSURE BAY)
   - 1.4 PLACE DECK CLOSURE SECTION.
   - 1.5 PLACE LATEX MODIFIED CONCRETE WEARING SURFACE RIGHT.
   - 1.6 PLACE SIDEWALK LEFT, SEE NOTE 7.
2. FORMS FOR CANTILEVERED DECK SLAB CONSTRUCTION RIGHT & LEFT OF DECK CLOSURE SECTION (1.1 & 1.2 ABOVE) MUST NOT BE SUPPORTED ON ADJACENT BEAM DUE TO DIFFERENTIAL DEFLECTIONS.
3. * DIMENSION MARKED WITH AN ASTERISK IS THE DESIGN DIMENSION. THE QUANTITY OF DECK CONCRETE TO BE PAID FOR SHALL BE BASED UPON THIS DIMENSION - 1 1/4" EVEN THOUGH DEVIATION FROM IT MAY BE NECESSARY BECAUSE THE TOP FLANGE OF THE BEAM MAY NOT HAVE THE EXACT CAMBER OR CONFIGURATION REQUIRED TO PLACE IT PARALLEL TO THE FINISHED GRADE.
4. FOR REINFORCING SCHEDULE SEE 18/18
5. ALL SUPERSTRUCTURE CONCRETE TO BE CLASS "S"
6. CURB PLATE DETAILS 12/18
   SEE NOTES 11 & 12 3/18
7. PHASE 4 - SAWCUT LATEX MODIFIED CONCRETE (LMC) @ FACE OF CURB PLATE PLUS DIMENSION FOR JOINT SEAL & REMOVE LMC UNDER SIDEWALK THEN PLACE WALK.
8. PHASE '3' DECK CLOSURE CONCRETE TO BE PLACED AT DAWN ON A SUNDAY.

GRANGER ROAD BRIDGE Nº 164
"B-85", AND "REPORT Nº 7151"

WESTON MANAGERS DESIGNERS/CONSULTANTS

13/18

SUPERSTRUCTURE
STRUCTURAL CONCRETE
DECK TYPICAL SECTION
BRIDGE Nº CUY-17-1465
OVER CUYAHOGA RIVER

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
RLH/CAP	CAP		CAP/RLH			