#3056

Fed. Aid Dist. No.	State	Fed. Aid Project	Fiscal Year
	Ohio		

1/9

S.H. (I.C.H.) 21 SEC. I-1 BRIDGE
LUCAS COUNTY

STATE OF OHIO
DEPARTMENT OF HIGHWAYS

BRIDGE OVER TEN MILE CREEK
TOLEDO ANGOLA ROAD

S.H. (I.C.H.) No. 21 SEC. I-1 BRIDGE PET. No. 6553

LUCAS COUNTY

SYLVANIA TOWNSHIP FEB. 1928

The Standard Specifications of the State of Ohio, Department of Highways, in force on date of Contract will govern this improvement.

I hereby approve these plans and declare that the making of this improvement will require the closing to traffic of the highway and that detours will be provided as shown on the plans and estimates.

Approved: [signature]
Date, 5-28-28 Resident District Deputy Director.

Approved: M. Q. Hanahan
Date, 6-9-28 Resident Division Deputy Director.

Approved: Robt. J. Leighteiz
Date, 6/12/28 Chief Engineer, Bureau of Construction

Approved: _____
Date, Chief Engineer, Bureau of Maintenance

Approved: J. C. Burkey
Date, 6/11/28 Chief Engineer, Bureau of Bridges

Approved: Harry C. Dick
Date, 6-12-28 Chief Engineer.

Approved: G. F. Schlesinger
Date, 6-12-28 Director of Highways

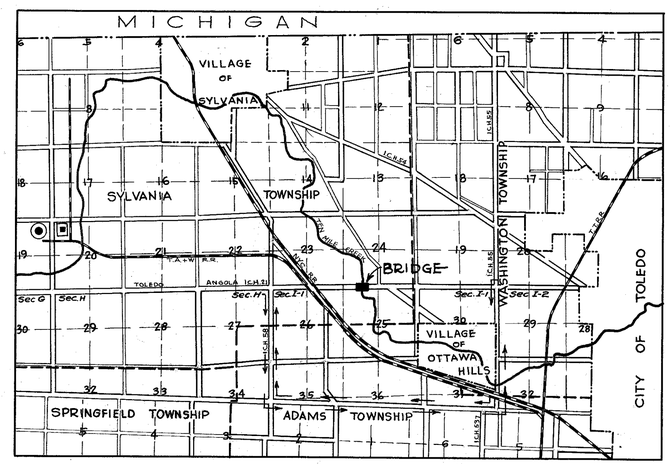
Recommended for Approval: _____
Date, District Engineer, Bureau of Public Roads

Recommended for Approval: _____
Date, Chief Engineer, Bureau of Public Roads

Approved: _____
Date, Chief of Bureau.

CONVENTIONAL SIGNS

State Line
County Line
Township Line
Section Line
Property Line not fenced
Center Line
City or Village Line
Fence
Telephone or Telegraph
Steam Railroad
Electric Line
Guard Rail
Drain Pipe - new
Drain Pipe - old



LOCATION PLAN
Scale of Miles

Portion to be improved
Detours shown thus
Improved Roads
Unimproved Roads
Cement Plant
Stone Quarry

We, the Commissioners of Lucas County, hereby approve these plans and certify that the right-of-way 140 feet wide is available for the construction maintenance and repair of the above bridge.

R. E. Transwork
Paul P. Hoffman
Ray E. Davis

Date: May 28, 1928 County Commissioners

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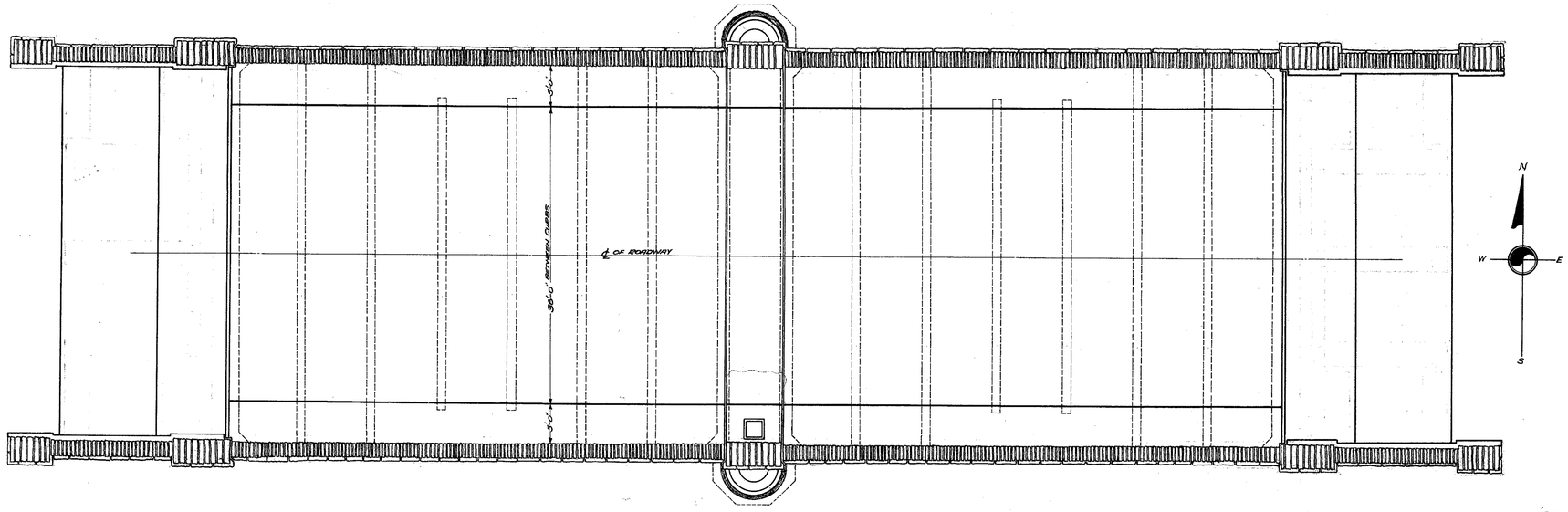
Stone Facing Specifications — 8
Steel List and Misc. Details — 9

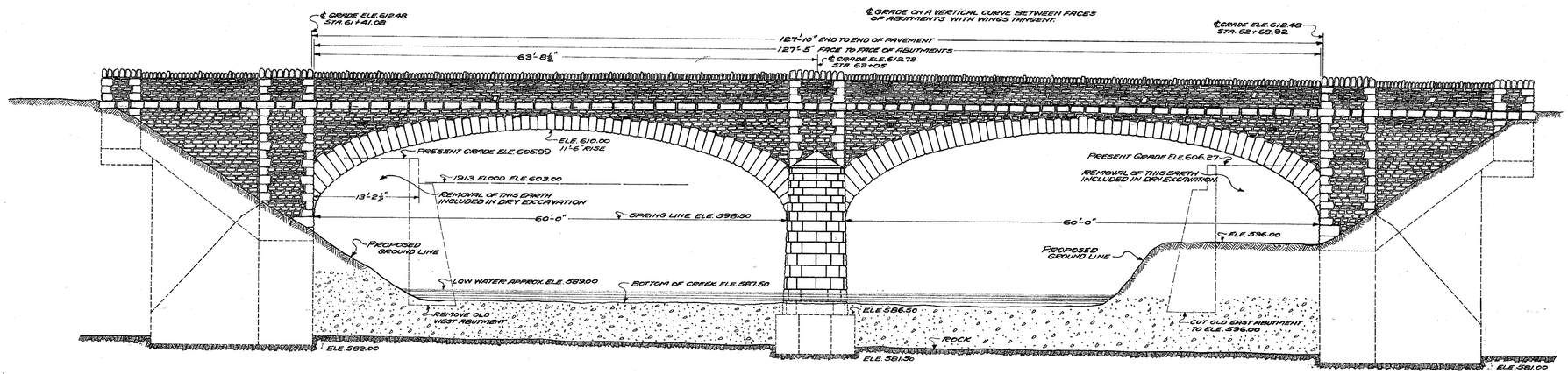
CONSTRUCTION BUREAU
JUN 29 1955
GROUND PHOTOLAB

97

Lucas 21 I-1 Bry.

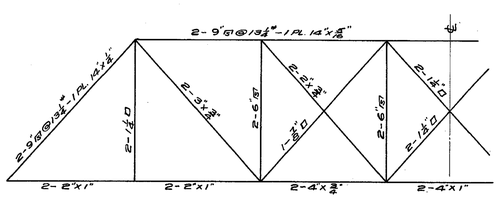
1928





ESTIMATED QUANTITIES

R-2	DRY EXCAVATION AND BACKFILL	2500 CU. YD.
R-2	WET EXCAVATION	750 CU. YD.
R-2	ROCK EXCAVATION	140 CU. YD.
R-2	COFFER DAMS	LUMP
S-1	CLASS "A" CONCRETE	1116 CU. YD.
S-1	CLASS "B" CONCRETE	156 CU. YD.
S-1	CLASS "C" CONCRETE	660 CU. YD.
S-1	CLASS "D" CONCRETE	364 CU. YD.
S-4	REINFORCING STEEL	155,172 LBS.
SPEC.	PIER CAP STONE	80 CU. FT.
SPEC.	ARCH RING STONE	580 CU. FT.
SPEC.	PIER END STONE	1162 CU. FT.
SPEC.	TRIM FACING STONE	450 CU. FT.
SPEC.	ABUTMENT FACING STONE	1030 SQ. FT.
SPEC.	SPANDREL WALL FACING STONE	760 SQ. FT.
SPEC.	COPING STONE	380 CU. FT.
SPEC.	RAILING AND POST FACING STONE	1850 SQ. FT.
SPEC.	RAILING AND POST TOP STONE	820 CU. FT.
T-9	WEARING SURFACE	572 SQ. YD.
SPEC.	4" C.I.P. DRAIN PIPE (SOLID)	32½ LIN. FT.
I-13	¾" PREMOLDED EXPANSION JOINTS	230 SQ. FT.
I-13	COPPER EXPANSION JOINTS	28 LIN. FT.
I-9	MANHOLE FRAME AND COVER	1 REQD.
I-9	WROUGHT IRON STEPS	31 REQD.
SPEC.	CAST ALUMINUM VENTILATORS	8 REQD.
S-3	TYPE "A" WATERPROOFING	445 SQ. YD.
S-3	TYPE "B" WATERPROOFING	80 SQ. YD.
I-15	REMOVING OLD BRIDGE	LUMP



7 PANELS 14'-0"% = 98'-0"
HEIGHT 16'-0" CLEAR ROADWAY
BEAMS 18" I's @ 23.8#
JOISTS - 6 LINES 8" I's @ 18.4#
2 LINES 8" I's @ 13.0# @ 11¼"
WOOD BLOCK FLOOR

HALF OF PRESENT SUPERSTRUCTURE

GENERAL NOTE.

THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO DEPARTMENT OF HIGHWAYS SHALL GOVERN THIS WORK AS PER THE ITEM LETTERS AND NUMBERS AS SHOWN ON THIS SHEET AND ON THE ESTIMATE; EXCEPT THAT ALL SPECIAL ITEMS ARE GOVERNED BY SPECIAL SPECIFICATIONS AS SHOWN ON PLANS.

PRESENT BRIDGE.

THE EXISTING BRIDGE INCLUDING SUPERSTRUCTURE AND CONCRETE SUBSTRUCTURE SHALL BE REMOVED BY THE CONTRACTOR AS FOLLOWS; THE SUPERSTRUCTURE SHALL BE THE PROPERTY OF LUCAS COUNTY AND THE CONTRACTOR SHALL SPOT MARK, REMOVE, DELIVER AND PILE IN NEAT PILES AT A POINT DESIGNATED BY THE ENGINEER, HAUL NOT TO EXCEED 500 FEET FROM THE BRIDGE SITE. THE ENTIRE OLD WEST ABUTMENT AND THE OLD EAST ABUTMENT ABOVE ELE. 596.00 SHALL BE REMOVED AND PLACED AS EARTH FILL AS DIRECTED BY ENGINEER.

EXCAVATION AND BACKFILL

EXCAVATION MATERIAL SHALL BE USED IN BACKFILL OVER ABUTMENTS. ADDITIONAL FILL REQUIRED SHALL BE FURNISHED AND PLACED BY THE ROAD CONTRACTOR. UNIT PRICE BID FOR ITEM R-2 DRY EXCAVATION SHALL INCLUDE BACKFILL. FILL SHALL BE MADE ON BOTH SIDES OF ABUTMENT WING WALLS SIMULTANEOUSLY.

POURING INSTRUCTIONS

ARCH RINGS SHALL BE POURED FULL WIDTH BETWEEN CONSTRUCTION JOINTS AS FOLLOWS;
1st FROM CONSTRUCTION JOINT "X" TO CONSTRUCTION JOINT "Y" AT BOTH ENDS OF SPAN.
2nd POURING AT CROWN BETWEEN CONSTRUCTION JOINTS "Z".
3rd FROM CONSTRUCTION JOINT "Y" TO CONSTRUCTION JOINT "Z" ON BOTH SIDES OF CENTER OF SPAN.
NO LONGITUDINAL JOINTS WILL BE ALLOWED IN ARCH RING.
THE LAGGING SUPPORTING THE ARCH RING STONE FACING SHALL BE AT AN ELEVATION OF 2" BELOW LAGGING FOR CONCRETE ARCH RING TO ALLOW FOR THE ROCK FACED PROJECTIONS ON ARCH RING STONE. THE LAGGING SHALL EXTEND OUT FROM FACE OF ARCH RING STONE A SUFFICIENT DISTANCE SO THAT AFTER THE ARCH RINGS HAS BEEN POURED THE SHORES OR CENTERS MAY BE LOWERED APPROX. 6" AND LAGGING USED FOR BEARING SPANDREL WALL FACING STONE DURING POURING OF SPANDREL WALLS.
NO STONE SHALL BE LAID OR CONCRETE POURED IN SPANDREL OR TRANSVERSE WALLS UNTIL SHORES OR CENTERS HAVE BEEN LOWERED TO CLEAR ARCH RING.
THE EAST ABUTMENT SHALL BE COMPLETED FIRST TO ALLOW PLACING OF EARTH FILL BY ROAD CONTRACTOR.
FOR ADDITIONAL INSTRUCTIONS SEE NOTES ON SHEET No 7.

CONCRETE CLASSIFICATION

CLASS "A" 1-6½ MIX.
ALL CONCRETE IN ABUTMENT MASSES BELOW CONSTRUCTION JOINT, PIER FOOTING AND RAILING FILLER.
CLASS "B" 1-6½ MIX.
CONCRETE IN PIER STEM AND WING WALLS BELOW CONSTRUCTION JOINT.
CLASS "C" 1-3½ MIX.
CONCRETE IN PIER, ABUTMENTS AND WINGS ABOVE CONSTRUCTION JOINTS, SPANDREL WALLS, TRANSVERSE WALLS AND ROADWAY AND SIDEWALK SLABS.
CLASS "D" 1-3½ MIX.
ALL CONCRETE IN ARCH RINGS.

FACING STONE

THE PIER CAP STONE ONLY, WILL BE DERB COLORED BEDFORD LIMESTONE OR LOCAL LIMESTONE OF APPROVED QUALITY AND COLOR.
ALL REMAINING STONE FACING ITEMS WILL BE LOCAL LIMESTONE OF BLOOMVILLE QUALITY AND WORKABILITY AND ACCEPTABLE TO THE ENGINEER.
FOR STONE SIZES AND SPECIAL SPECIFICATIONS SEE SHEET No 8.
FOR PROCEDURE OF CONSTRUCTION SEE NOTES ON SHEET No 7.
UNIT PRICE BID FOR ALL STONE ITEMS TO INCLUDE ITEMS UNDER HEADING (WORK INCLUDED) IN SPECIFICATIONS

WATERPROOFING

ALL CONSTRUCTION JOINTS ON BACK SURFACE OF ABUTMENTS AND WING WALLS SHALL BE COVERED WITH A STRIP OF TYPE "B" WATERPROOFING 36" WIDE.
AFTER TYPE "B" WATERPROOFING IS IN PLACE, ALL OTHER BACK SURFACES OF ABUTMENTS AND WING WALLS AND END TRANSVERSE WALLS SHALL BE COVERED WITH TYPE "A" WATERPROOFING.

SURFACE FINISH

UNIT PRICE BID FOR ITEMS S-1 CONCRETE SHALL INCLUDE THE FOLLOWING SURFACE FINISHES.
CONCRETE FACES OF ABUTMENTS AND PIER SHALL RECEIVE ORDINARY SURFACE FINISH.
THE ROADWAY SLAB SHALL HAVE A "FLOATED FINISH" AND BE STRUCK TO THE SPECIFIED CROWN BY THE USE OF A TEMPLATE.
THE SIDEWALKS SHALL BE TRUE TO SPECIFIED SLOPE, GROOVED IN BLOCKS AT APPROX. 5' FT. INTERVALS AND AT THE PROPER TIME, GIVEN FLOATED SURFACE FINISH TO PRODUCE A SANDY TEXTURE.

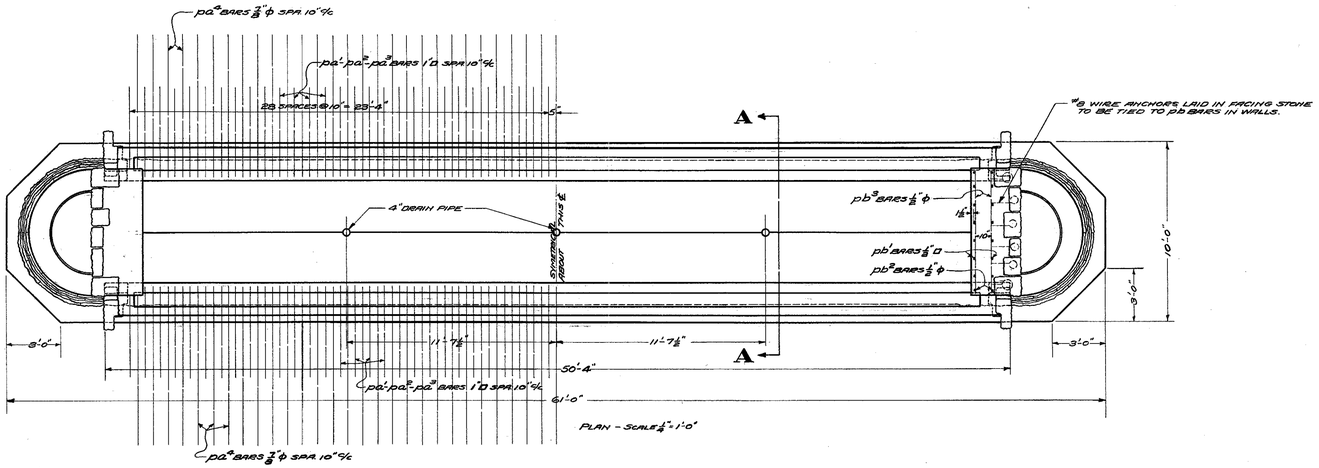
TRAFFIC MARKER

UNIT PRICE BID FOR ITEM T-9 WEARING SURFACE SHALL INCLUDE A TRAFFIC MARK 8" IN WIDTH TO BE CONSTRUCTED ON THE ℄ OF THE BRIDGE BY USING GLAZED CREAM COLORED BRICK IN EACH ALTERNATE ROW. THESE BRICK SHALL BE OF EQUAL QUALITY AND OF THE SAME DIMENSIONS AS THE REGULAR BRICK FOR THIS WORK.

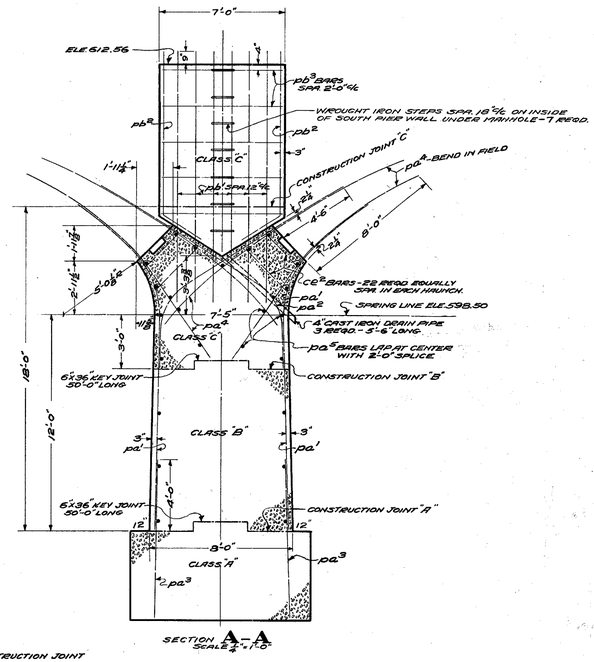
QUANTITIES AND SPECIFICATIONS
GENERAL PLAN AND ELEVATIONS

S.H. (I.C.H.) 21 SEC. I-I BRIDGE
LUCAS COUNTY
STATE OF OHIO
DEPARTMENT OF HIGHWAYS

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED
OHIO-GMFC	G.O.C.	G.O.C.	O.H.O.	W.H.B. 6-11-62

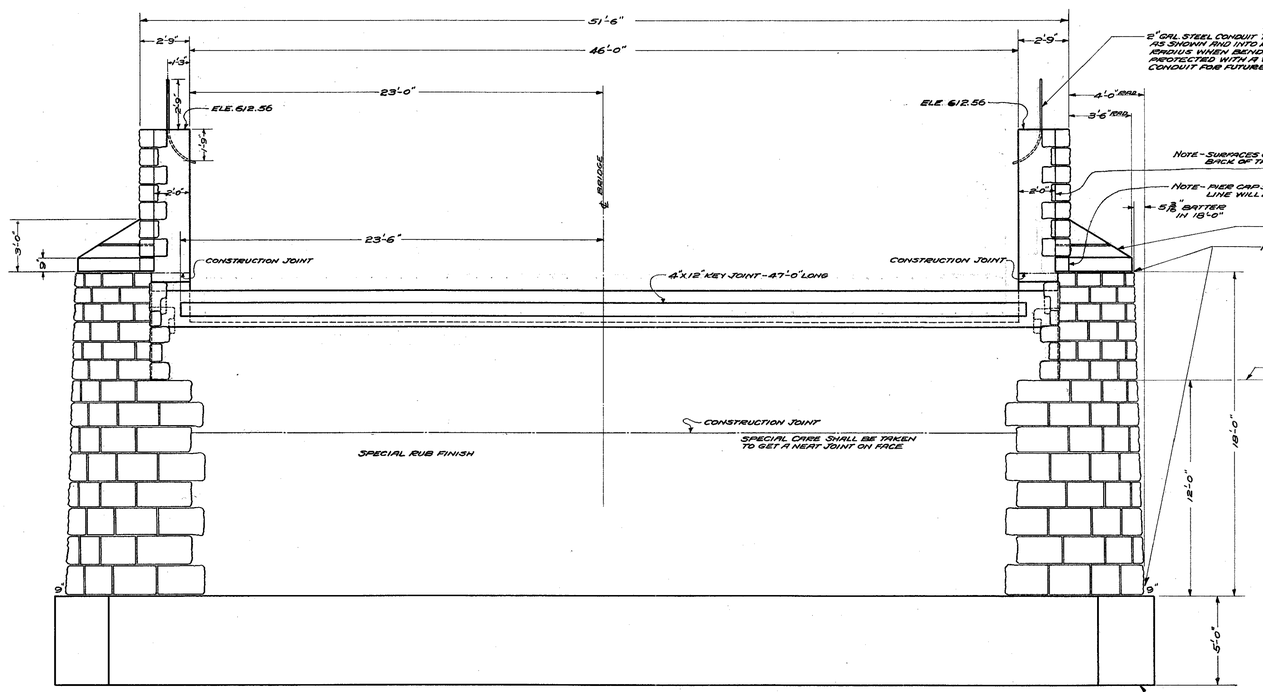


PLAN - SCALE 1/4" = 1'-0"

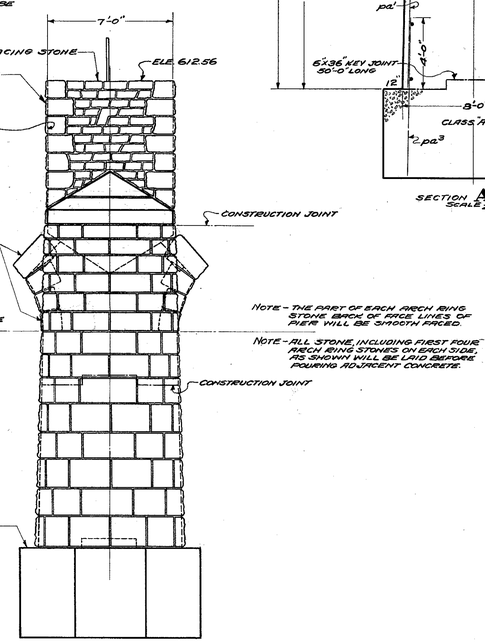


SECTION A-A
SCALE 1/4" = 1'-0"

NOTE - ALL CONCRETE BELOW CONSTRUCTION JOINT "B" WILL BE 1-5 1/2 MIX. ALL CONCRETE ABOVE CONSTRUCTION JOINT "B" WILL BE 1-3 1/2 MIX.



SIDE ELEVATION
SCALE 1/4" = 1'-0"

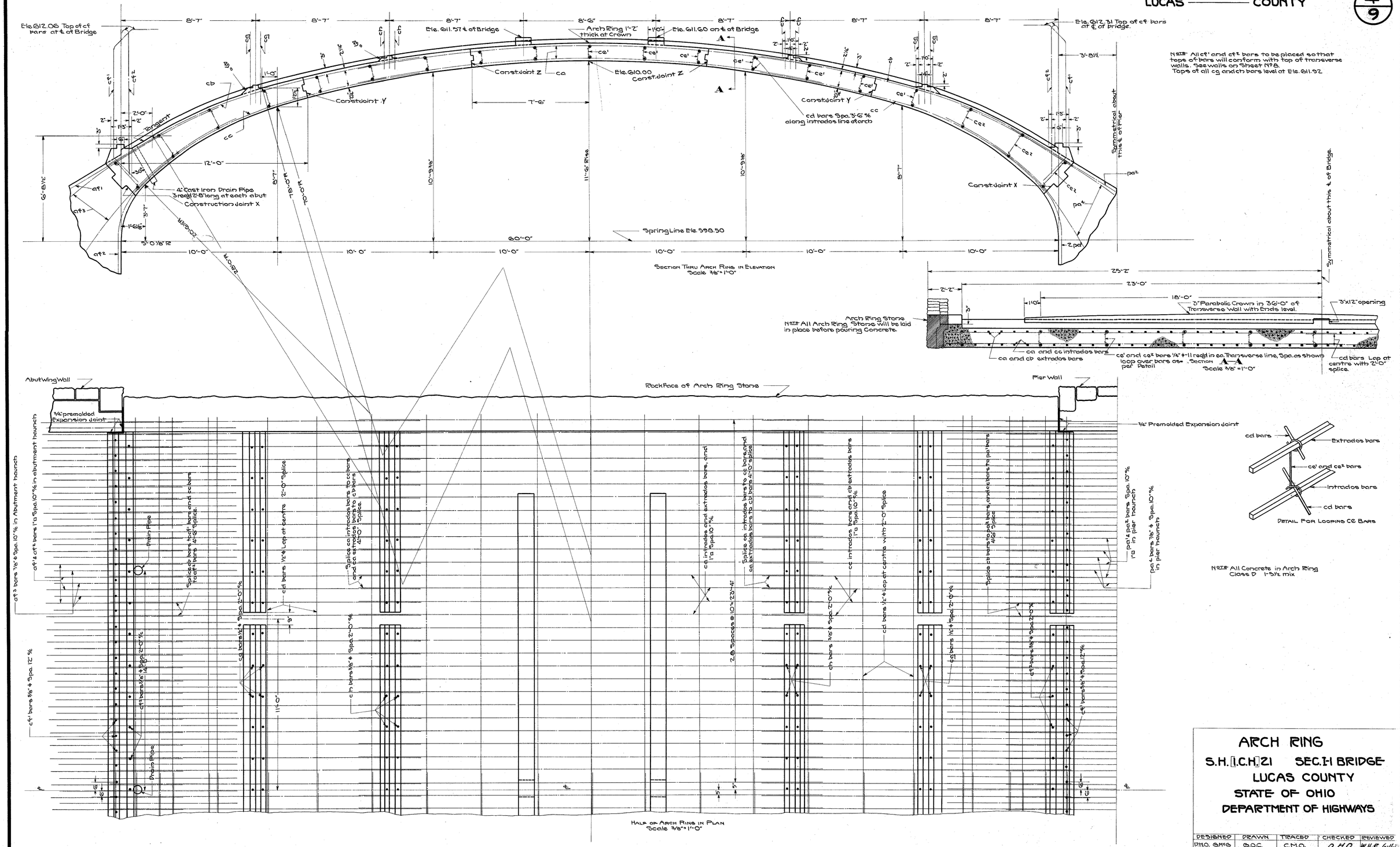


END ELEVATION
SCALE 1/4" = 1'-0"

PIER

S.H. (I.C.H.) 21 SEC. I-1 BRIDGE
LUCAS COUNTY
STATE OF OHIO
DEPARTMENT OF HIGHWAYS

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED
D.H.O. - G.M.P.G.	G.O.C.	G.O.C.	D.H.O.	W.H.E. 6-11-25



ARCH RING

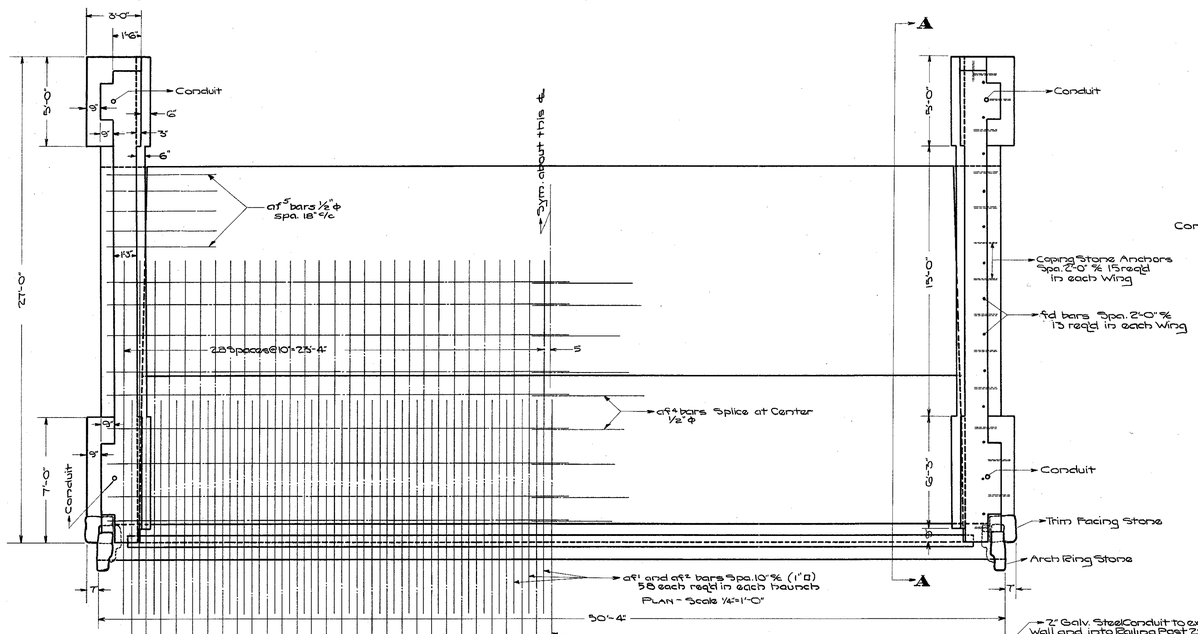
S.H. I.C.H. 21 SEC. I-1 BRIDGE
LUCAS COUNTY
STATE OF OHIO
DEPARTMENT OF HIGHWAYS

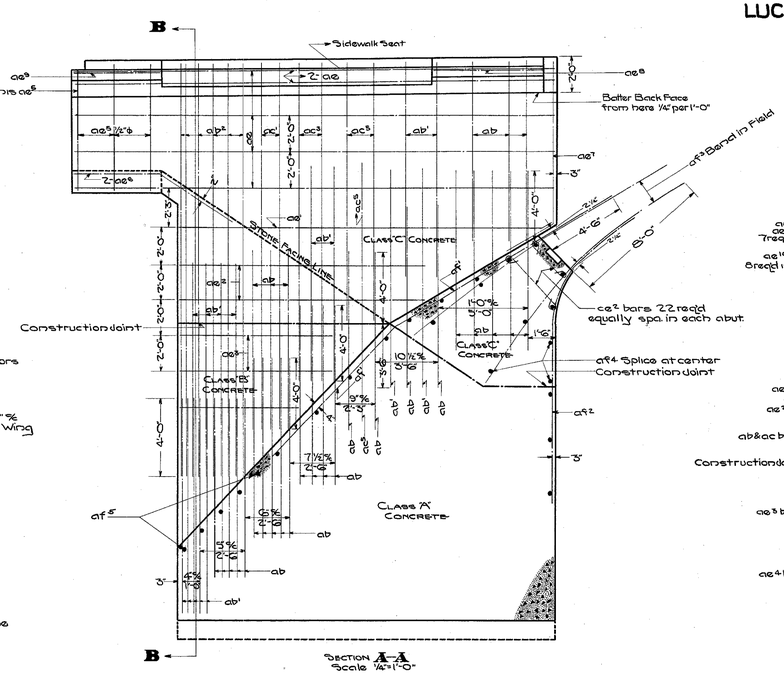
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED
D.H.O. & M.G.	G.O.C.	C.M.O.	D.H.O.	W.H.E. 6-11-62

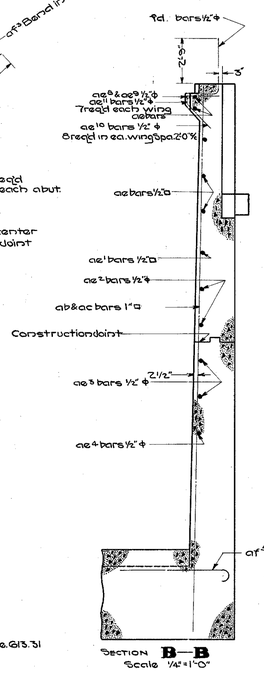
S.H. I.C.H. 21
LUCAS

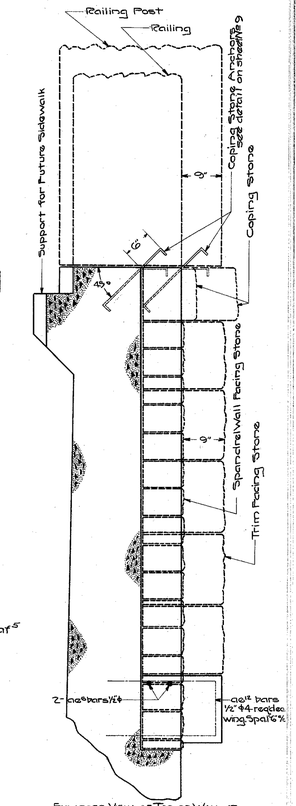
SEC. I-1 BRIDGE
COUNTY

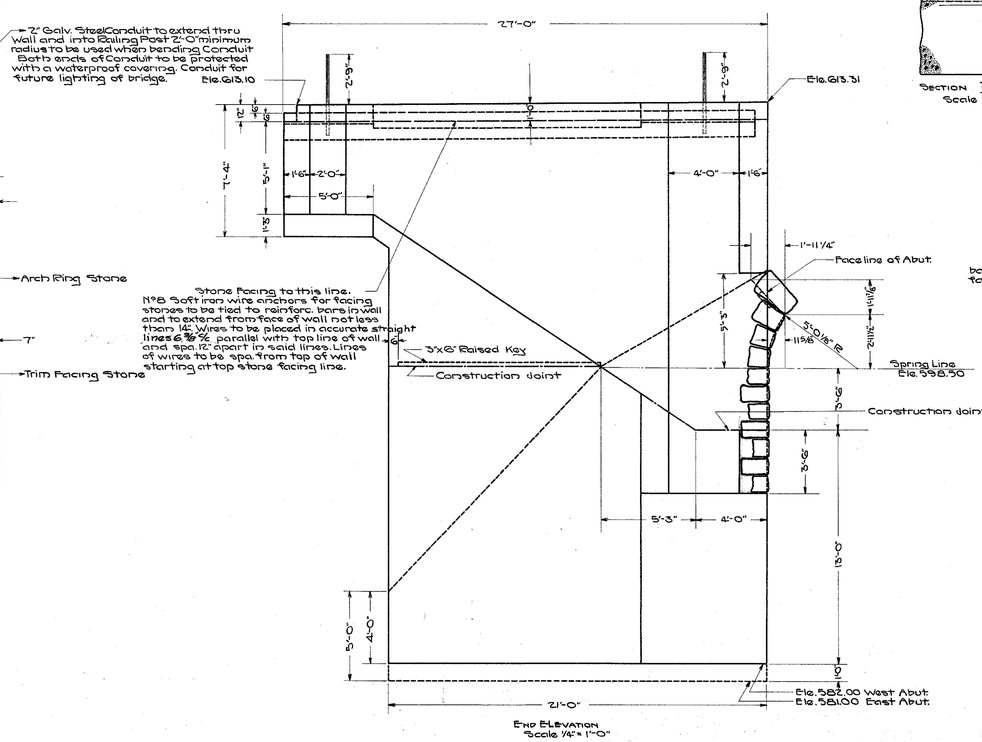
5/9











NOTE: The part of each Arch Ring stone back of face line of Abutment will be smooth faced.

NOTE: The Trim Facing stone below spring line, and first four Arch Ring stones as shown will be laid in place before pouring concrete above Construction joint.

NOTE: All concrete below Construction joint will be 1-6½ mix. All concrete above said joint will be 1-5½ mix.

NOTE: Fill shall be made on both sides of Wing Walls simultaneously.

ABUTMENTS

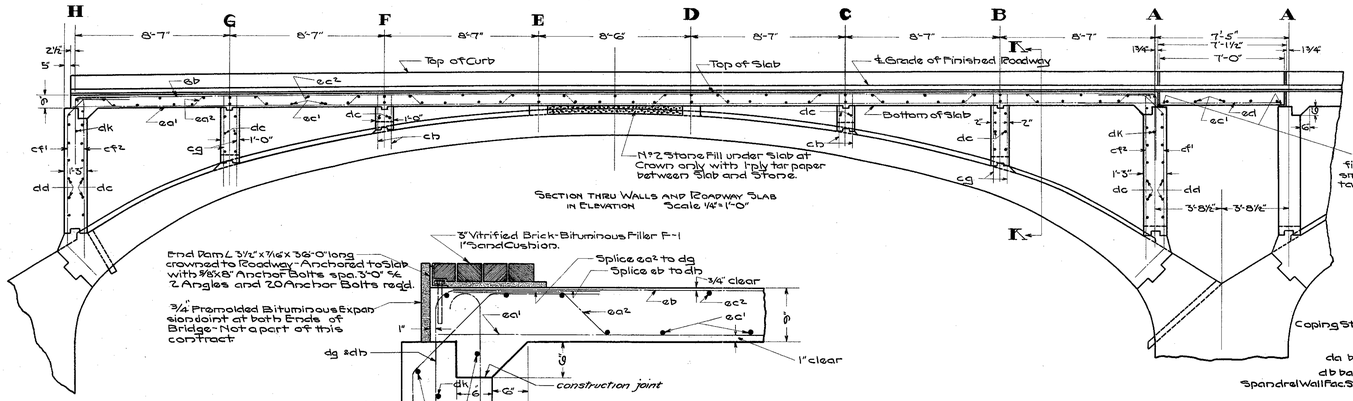
S.H. (I.C.H.) 21 SEC. I-1 BRIDGE
LUCAS COUNTY
STATE OF OHIO
DIVISION OF HIGHWAYS

DESIGN	DRAWN	TRACED	CHECKED	REVIEWED
G.M.G.-D.H.O.	G.O.C.	C.M.O.	D.H.O.	W.H.R. 6-11-28

S.H. I.C.H. 21, LUCAS

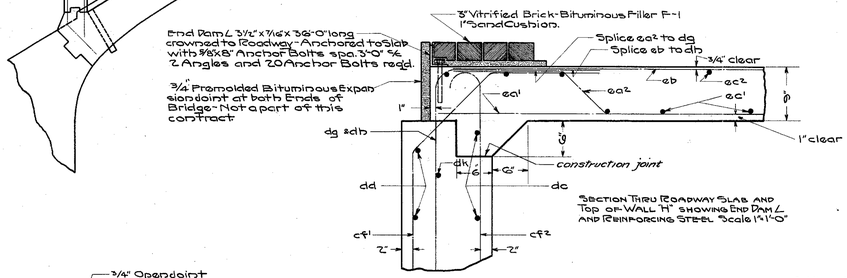
SEC. H BRIDGE COUNTY

6/9

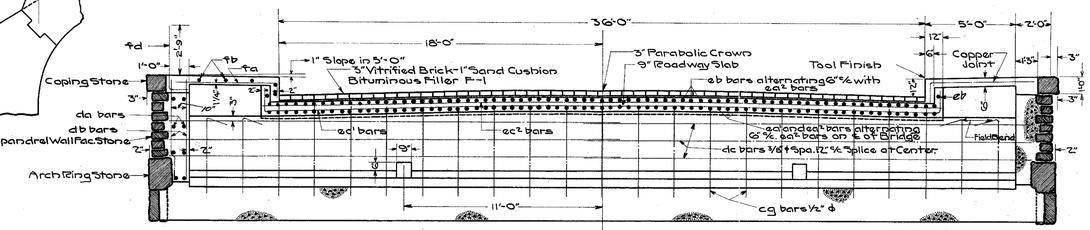


SECTION THRU WALLS AND ROADWAY SLAB IN ELEVATION Scale ¼" = 1'-0"

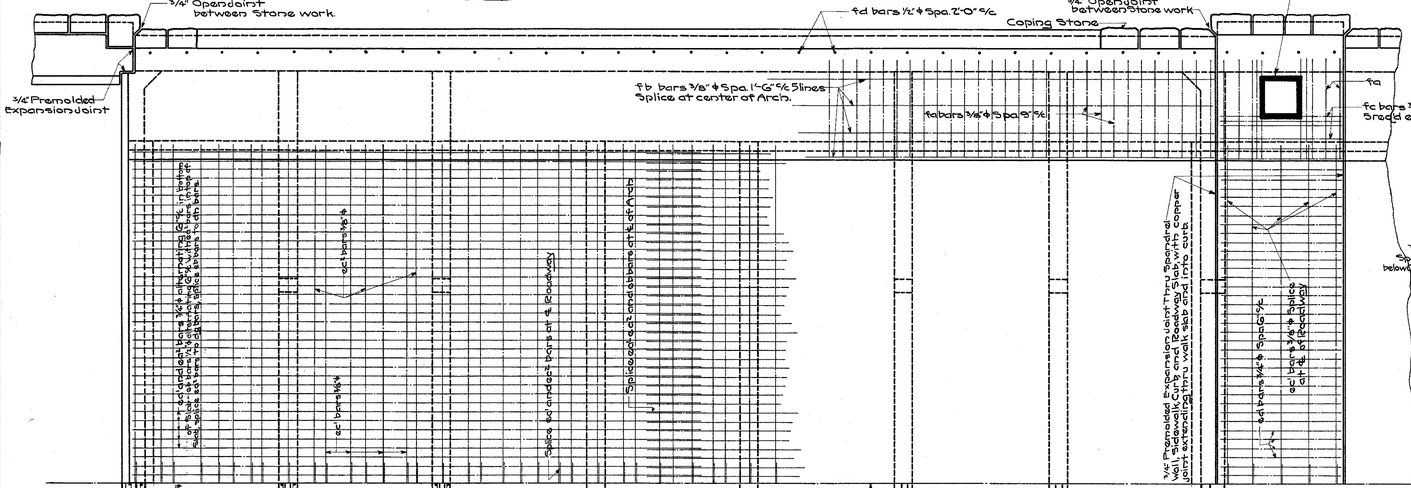
ELEVATIONS AT	A	B	C	D	E	F	G	H
℄ GRADE OF FINISHED ROADWAY	612.73	612.72	612.71	612.68	612.65	612.60	612.55	612.48
TOP OF COPING STONE	613.59	613.55	613.54	613.51	613.48	613.43	613.38	613.31
TOP OF TRANSVERSE WALLS AT ℄	611.65	611.64	611.63	611.60	611.57	611.52	611.47	611.40



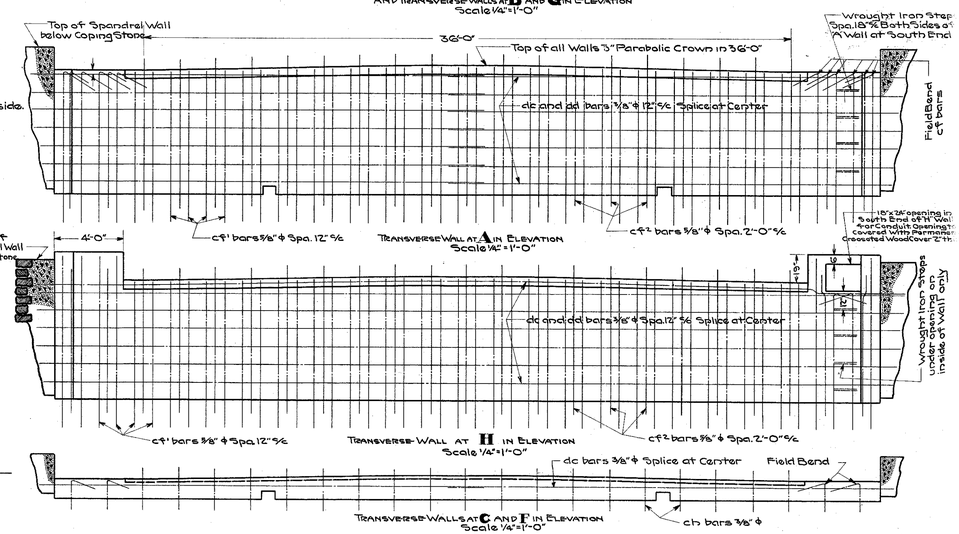
SECTION THRU ROADWAY SLAB AND TOP OF WALL "H" SHOWING END PAN ∠ AND REINFORCING STEEL Scale 1" = 1'-0"

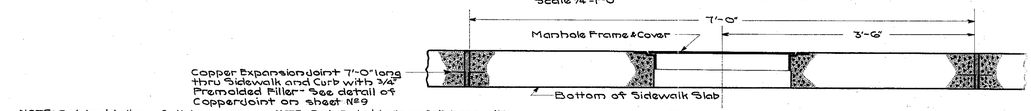


SECTION KK AND TRANSVERSE WALLS AT B AND G IN ELEVATION Scale ¼" = 1'-0"



UPPER HALF PLAN ROADWAY AND SIDEWALK SLABS
LOWER HALF PLAN SPANDREL AND TRANSVERSE WALLS
Scale ¼" = 1'-0"



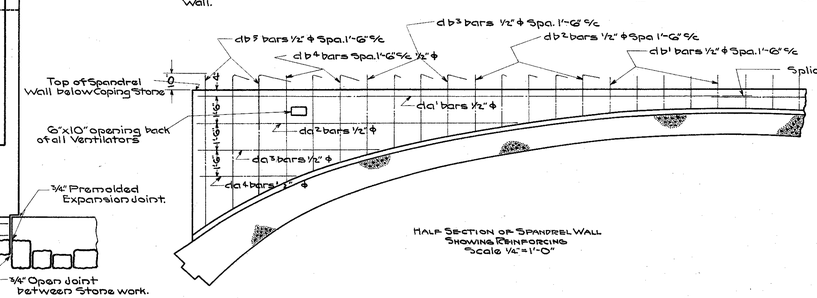


SECTION THRU SIDEWALK SLAB AT PIER SHOWING MANHOLE AND EXPANSION JOINTS Scale ½" = 1'-0"

Note: Set inside line of db bars on Arch Ring, and bend extra length over to make tops of bars 10" above top of Wall.

Note: Set outside line of db bars with their tops 10" above top of Wall, and bend bottoms around Arch Ring stone.

Note: Spandrel Wall Facing Stone will be laid prior to pouring Concrete in Walls.
Note: Coping Stone will be laid, and Anchor provided for same, before pouring concrete in Sidewalk Slab.
Note: All Concrete 1-3½ mix, Class "C".

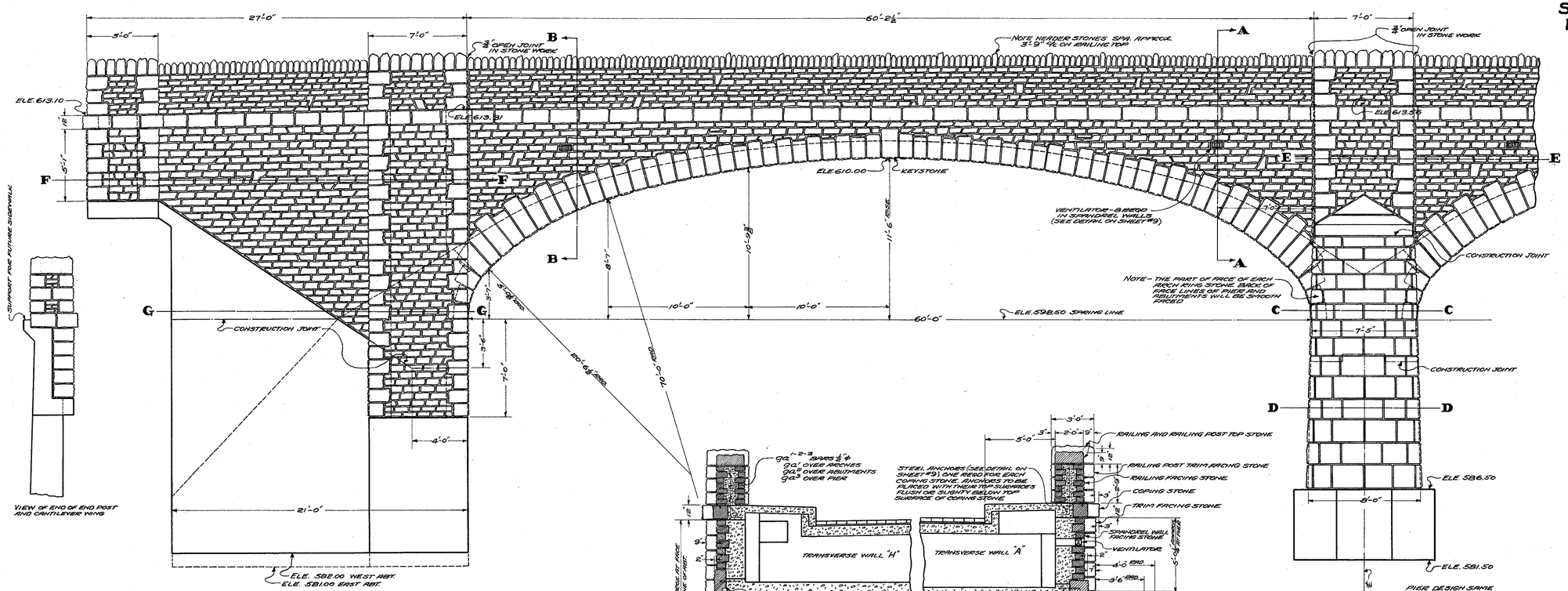


HALF SECTION OF SPANDREL WALL SHOWING REINFORCING
Scale ½" = 1'-0"

WALLS AND SLABS

S.H. I.C.H. 21 SEC. H BRIDGE
LUCAS COUNTY
STATE OF OHIO
DEPARTMENT OF HIGHWAYS

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED
P.H.O.-G.M.G.	G.O.C.	C.M.O.	D.H.O.	W.H.F. G.H.



NOTES

(CONSTRUCTION) LAY ALL FACING STONE AND COPING STONE ON LINES PARALLEL WITH ℄ GRADE OF ROADWAY (VERTICLE CURVE BETWEEN FACES OF ABUTMENTS WITH WINGS TANGENT) FOR ELEVATIONS OF TOP OF COPING STONE BETWEEN ABUTMENT AND PIER SEE SHEET #8.

ALL STONE BETWEEN FACES OF ABUTMENTS INCLUDING ALL ARCH RING STONE WILL BE LAID UP BEFORE PLACING ADJACENT CONCRETE. ABUTMENTS, ABUTMENT WINGS AND RAILING WILL BE CONSTRUCTED AS FOLLOWS - 1ST THE CONCRETE BELOW CONSTRUCTION JOINT WILL BE POURED. 2ND THE LOWER SEVEN TRIM FACING STONE AT FACE CORNERS OF ABUTMENTS AND THE FIRST FOUR ARCH RING STONE WILL BE LAID UP. 3RD THE BALANCE OF THE CONCRETE BELOW TOP LINE OF COPING STONE WILL BE POURED. 4TH THE BALANCE OF STONE IN ABUTMENT WING BELOW TOP LINE OF COPING STONE WILL BE LAID UP. 5TH ALL RAILING AND POST FACING AND TRIM STONE WILL BE LAID UP. 6TH CONCRETE, RAILING AND POST FILLER WILL BE POURED. 7TH ALL RAILING AND POST TOP STONE WILL BE LAID.

(MORTAR JOINTS) MORTAR JOINTS IN PIER END STONE AND ARCH RING STONE WILL BE RAKED OUT TO A DEPTH OF 1". MORTAR JOINTS IN SPANDREL WALL FACING STONE, ABUTMENT FACING STONE, RAILING AND POST FACING STONE, RAILING AND POST TOP STONE ALL TRIM FACING STONE, AND COPING STONE WILL BE RAKED OUT TO A DEPTH OF ½". MORTAR JOINTS IN PIER CAP STONE WILL BE FULL RUBBED.

(ANCHORS) EACH FACING STONE INCLUDING TRIM FACING STONE TO BE ANCHORED WITH #8 SOFT IRON WIRE ANCHORS, ANCHORS TO HAVE A 6" DIA. (APPROX.) LOOP BENT ON ONE END AND LAID IN MORTAR JOINT. THE OTHER END OF ANCHORS TO BE TIED TO REINFORCING BARS IN CONCRETE WALL.

ALL ARCHING STONE, PIER END STONE, PIER CAP STONE AND COPING STONE WILL BE ANCHORED WITH STEEL ANCHORS (SEE DETAIL ON SHEET #9)

THE FIRST FIVE TRIM FACING STONES ABOVE SPRING LINE AT FACE CORNERS OF ABUTMENTS WILL BE ANCHORED WITH ¾"ϕ DOWELS (SEE SECTION G-G AND NOTE).

(EXPANSION) ¾" OPEN JOINTS WILL BE LEFT IN STONE WORK AT ALL POINTS WHERE EXPANSION IS REQUIRED.

ALL CONCRETE FOR RAILING FILLER CLASS "A" 1-6½ MIX.

SCALE OF DRAWING ¼" = 1'-0"

STONE FACING AND RAILING

S.H.(I.C.H.)21 SEC. I-I BRIDGE
LUCAS COUNTY
STATE OF OHIO
DEPARTMENT OF HIGHWAYS

DESIGN	DRAWN	TRACED	CHECKED	REVIEWED
D.H.O.+G.M.G	G.O.C.	G.O.C.	D.H.O.	W.H.R.G.

STONE SIZES AND SPECIFICATIONS

PIER CAP STONE
TO BE SMOOTH FACED, CUT TO SIZE EXACTLY AS SHOWN ON SHEET Nº 7. BED AND BUILD TO BE CUT TRUE AND SQUARE TO FULL DEPTH. MORTAR JOINT 1/4" THICK.

ARCH RING STONE
THE ARCH RING STONE SHALL BE ROCK FACED 1½" PROJECTIONS ON THE TWO EXPOSED SURFACES. DEPTH OF STONE IN WALL 15" AND 9'; DIMENSIONS INCLUDE 3" ROUGH CUT SHOULDER ON BACKS AS SHOWN ON SHEET Nº 7. DEPTH OF FIRST STONE ABOVE SPRING LINE 15". STRETCHER AND HEADER STONES TO ALTERNATE, THE STRETCHER STONES 9" DEEP BEING HIGHER THAN THE HEADER STONES 15" DEEP. HEIGHTH OF FIRST FIVE STONES ABOVE SPRING LINE AT ABUTMENT AND PIER TO BE APPROX. AS SHOWN ON SHEET Nº 7, SCALE FOR SIZE. HEIGHTH OF SIXTH STONE TO BE 3'-0" AND BALANCE OF STONE TO VARY, BEING SHORTER TOWARD CENTER OR KEYSTONE WHICH WILL BE 2'-0" HIGH AND 15" DEEP. TOTAL NUMBER OF STONES IN ARCH RING, 65 INCLUDING KEYSTONE. ALL STONES TO BE APPROX. SAME THICKNESS ON THE INTRADOS LINE OF ARCH RING. BEDS AND BUILDS TO BE CUT TRUE AND SQUARE TO FULL DEPTH AND ON APPROX. RADIAL LINES OF INTRADOS LINE OF ARCH RING. ALL MORTAR JOINTS SHALL BE UNIFORM 1/2" MAXIMUM THICKNESS.

PIER END STONE
ROCK FACED STONE ASHLER. ROCK FACED PROJECTIONS TO VARY FROM 2½" AT BASE TO 1½" AT TOP OF WALL. STONE TO VARY IN THICKNESS WITH THICKEST AT BASE OF WALL, FROM BASE TO SPRING LINE 12'-0" HAVING 8 LAYERS AND ABOVE SPRING LINE 6'-0" HAVING 6 LAYERS. ROCK FACE OF ALL STONES TO BE CUT TO APPROX. RADIUS AND BATTER AS SHOWN ON SHEET Nº 7. HALF OF STONES TO BE HEADERS 3'-0" DEEP AND OTHER HALF STRETCHER STONES 2'-0" DEEP. ALL STONE TO BE ROUGH AT BACK, HEADER STONES BEING DOVETAILED TO SECURE BOND WITH CONCRETE WALL. BEDS, BUILDS AND VERTICAL JOINTS TO BE CUT TRUE AND SQUARE TO THEIR FULL DEPTH. ALL MORTAR JOINTS TO BE UNIFORM 1/2" MAXIMUM THICKNESS.

TRIM FACING STONE
ROCK FACED 1½" PROJECTIONS ON EXPOSED SURFACES. ALL STONES APPROX. SAME THICKNESS TOP TO BOTTOM OF WALLS. ALL STONE APPROX. 12" WIDE X 18" LONG EXCEPT AS FOLLOWS; THREE STONES IN CORNER OF EACH CANTILEVER WING AND TWO STONES IN FACE CORNER OF EACH ABUTMENT WHICH WILL BE APPROX. 18" WIDE X 18" LONG, AND THE FIRST FIVE STONES ABOVE SPRING LINE AT FACE CORNERS OF ABUTMENTS WILL BE IN TWO SIZES ALTERNATING 6" WIDE X 12" LONG AND 6" WIDE X 18" LONG. TRIM FACING STONE FOR ABUTMENT WINGS MUST BE CUT TRUE AND SQUARE ON SIDES ADJACENT TO CONCRETE. TRIM FACING STONE FOR SPANDREL WALLS AND RAILING POSTS PREFERABLY ROUGH AT BACKS. BEDS AND BUILDS TO BE CUT TRUE AND SQUARE TO THEIR FULL DEPTH. ALL MORTAR JOINTS TO BE UNIFORM 1/2" MAXIMUM THICKNESS.

ABUTMENT FACING STONE
ROCK FACED 1" PROJECTIONS ON EXPOSED SURFACE. RANGE WORK MASONRY, THICKNESS OF STONE BEING 6". ALL STONES 8" DEEP, IN MISC. LENGTHS WITH VERTICAL JOINTS IRREGULAR. STONE CUT TRUE AND SQUARE AT BACK. BEDS AND BUILDS TO BE CUT TRUE AND SQUARE TO THEIR FULL DEPTH. ALL MORTAR JOINTS TO BE UNIFORM 1/2" MAXIMUM THICKNESS.

SPANDREL WALL FACING STONE
ROCK FACED 1" PROJECTIONS ON EXPOSED SURFACE. RANGE WORK MASONRY, THICKNESS OF STONE 6". ONE-THIRD OF STONES BEING HEADERS 10" DEEP AND TWO-THIRDS STRETCHERS 7" DEEP. STONES TO VARY IN LENGTH WITH VERTICAL JOINTS IRREGULAR. ALL STONES TO BE ROUGH AT BACKS WITH HEADER STONES SLIGHTLY DOVETAILED. BEDS AND BUILDS TO BE CUT TRUE AND SQUARE TO A DEPTH OF 6". MORTAR JOINTS UNIFORM 1/2" MAXIMUM THICKNESS.

COPING STONE
HAMMER DRESSED ON ALL EXPOSED SURFACES. ALL STONES TO BE 12" THICK X 12" DEEP. LENGTH OF STONES MAY VARY BEING BETWEEN 18" AND 24" LONG. ALL SURFACES EXCEPT BACK MUST BE DRESSED TRUE AND SQUARE. BACKS MAY BE ROUGH. MORTAR JOINTS UNIFORM 1/2" MAXIMUM THICKNESS

RAILING AND POST FACING STONE
ROCK FACED 1" PROJECTIONS ON EXPOSED SURFACE. RANGE WORK MASONRY, THICKNESS OF STONES APPROX. 4½". ONE-THIRD OF STONES BEING HEADERS 9" DEEP AND TWO-THIRDS STRETCHERS 6" DEEP. STONES TO VARY IN LENGTH WITH VERTICAL JOINTS IRREGULAR. ALL STONES TO BE ROUGH AT BACKS WITH HEADER STONES SLIGHTLY DOVETAILED. BEDS AND BUILDS TO BE CUT TRUE AND SQUARE TO A DEPTH OF 5". MORTAR JOINTS UNIFORM 1/2" MAXIMUM THICKNESS.

RAILING AND POST TOP STONE
HAMMER DRESSED ON ENDS. HEIGHTH OF POST TOP STONE TO BE 12" NOT INCLUDING 2½" STONE FACED TOP. HEIGHTH OF RAILING TOP STONE TO BE 9" NOT INCLUDING 2" STONE FACED TOP. STONE FACED TOPS TO BE SHARP POINTED AND ANGULAR IN SHAPE. THICKNESS OF STONES MAY VARY, POST TOP STONE BEING APPROX. 9" THICK AND RAILING TOP STONE APPROX. 5" THICK. POST TOP STONE 3'-0" LONG AND RAILING TOP STONE 2'-0" LONG. ALL BUILDS AND VERTICAL JOINTS CUT TRUE AND SQUARE AND MORTAR JOINTS 1/2" MAXIMUM THICKNESS.

WORK INCLUDED
UNDER THIS HEAD IS INCLUDED ALL LABOR AND MATERIAL NECESSARY FOR THE CONSTRUCTION OF ALL STONE WORK ON BRIDGE INCLUDING ALL ANCHORS FOR STONE, DOWELS, REINFORCEMENT, FORMS FALSEWORK AND ALL OTHER LABOR OR MATERIAL NESSARY TO COMPLETE THE BRIDGE ACCORDING TO SPECIFICATIONS.

DRAWINGS
THE CONTRACTOR FOR THE STONE WORK SHALL MAKE COMPLETE AND ACCURATE SETTING DRAWINGS OF ALL PIER CAP STONE, ARCH RING STONE AND PIER END STONE, SHOWING SIZE, SHAPE, LOCATION AND HOW STONE WILL BOND WITH THE WALL; SUBMIT DRAWINGS IN DUPLICATE TO THE ENGINEER AND RECEIVE HIS APPROVAL BEFORE COMMENCING ANY PART OF THE WORK. THE ENGINEER WILL CAREFULLY CHECK AND ENDEAVOR TO DISCOVER ANY ERRORS THAT MAY EXIST IN DRAWINGS SUBMITTED, BUT THE CONTRACTOR ALONE SHALL BE RESPONSIBLE FOR THE CORRECTNESS OF HIS OWN DRAWINGS AND ANY DETAIL WORK AFTERWARDS FOUND TO BE INCORRECT (INCLUDING ANY OTHER WORK AFFECTED THEREBY) SHALL BE REJECTED AND MADE GOOD BY THE CONTRACTOR FOR THE STONE WORK AT HIS OWN EXPENSE. THE ENGINEER WILL RETAIN ONE COPY OF EACH DRAWING, RETURNING TO THE CONTRACTOR THE OTHER COPY WITH HIS CORRECTIONS OR APPROVAL. ANY ERRORS DISCOVERED SHALL BE CORRECTED BY THE CONTRACTOR AND DUPLICATE COPIES RE-SUBMITTED UNTIL FINALLY APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL MARK EACH AND EVERY PIECE OF STONE TO CORRESPOND TO ITS LOCATION IN THE SETTING DRAWINGS.

CUTTING OF STONE
ALL STONE SHALL CUT WITH TRUE AND LEVEL BEDS AND BUILDS AND TO DIMENSIONS SPECIFIED. MAKE ALL BEDS AND BUILDS FULL AND TRUE FOR THEIR SPECIFIED DEPTH. BACKS OF ALL STONE SHALL BE ROUGH CUT OR SLIGHTLY DOVETAILED UNLESS OTHERWISE SPECIFIED. EACH AND EVERY PIECE OF STONE FOR WHICH SETTING DRAWINGS HAVE BEEN SUBMITTED AND APPROVED SHALL BE MARKED TO CORRESPOND TO ITS POSITION IN SAID SETTING DRAWINGS.
NO LEWIS HOLES SHALL BE CUT IN STONE THAT WILL SHOW IN THE FINISHED WORK.

SETTING OF STONE
ALL STONE SHALL BE SET BY EXPERIENCED STONE SETTERS IN FULL MORTAR BEDS (EXCEPT OUTER EDGE). ALL VERTICAL JOINTS AND BED JOINTS WHERE ROCK FACED STONE IS USED SHALL NOT EXCEED 1/2" IN THICKNESS. BED JOINTS IN CUT STONE WORK SHALL NOT EXCEED 1/2" IN THICKNESS. ALL STONE WORK SHALL BE SET WITH APPROVED NON-STAINING CEMENT MORTAR AND ALL JOINTS SHALL BE POINTED UP, AFTER TRIMMING OFF ALL INEQUALITIES AND RAKING OUT AS SPECIFIED, WITH CEMENT AND FINE SAND. A SUFFICIENT NUMBER OF TRIMMERS SHALL BE KEPT ON THE JOB SO THAT THE WORK WILL NOT BE DELAYED.
NO PERMENANT WEDGING WILL BE ALLOWED.
IN SETTING THE ARCH RING STONE EACH STONE BEFORE BEING PLACED SHALL HAVE 1/2" MORTAR BED BY 3" WIDE AROUND ALL FACES THAT WILL BE IN CONTACT WITH THE ARCH RING STONE IN PLACE. THE STONE MUST BE SET IN ITS PROPER POSITION IN REGARD TO RADIUS LINES, INTRADOS ARC AND TO ITS POSITION IN THE SETTING DRAWING, TEMPORARILY WEDGED TO ITS PROPER POSITION AND HELD IN ITS PROPER POSITION UNTIL ALL THE STONE IN THE ARCH RING HAVE BEEN PLACED. WHEN THE MORTAR BED ON THE FACE HAS TAKEN ITS FINAL SET, THE OPEN JOINT AT THE TOP SHALL BE POURED FULL OF CEMENT GROUT.
ANY WORK FOUND TO BE NOT PLUMB, STRAIGHT, ON LINES AS SPECIFIED, OR INJURED, DEFACED OR STAINED BY SETTERS OR OTHERS (INCLUDING ANY OTHER WORK AFFECTED THEREBY) WILL BE REJECTED AND CONTRACTOR SHALL TAKE DOWN AND REBUILD AT HIS OWN COST.

SAMPLES OF MATERIAL
SAMPLES OF STONE, SAND AND CEMENT SHALL BE SUBMITTED BY THE CONTRACTOR FOR THE APPROVAL OF THE ENGINEER AND ALL STONE, SAND AND CEMENT USED IN CONSTRUCTION SHALL EQUAL IN ALL RESPECTS TO THE APPROVED SAMPLES.

MORTAR
ALL MORTAR FOR STONE MASONRY SHALL CONSIST OF ONE PART NON-STAINING CEMENT AND ONE PART GRADE "A" SAND. THE MORTAR SHALL BE MIXED IN A BATCH MIXER INTO WHICH THE SAND AND CEMENT SHALL BE PLACED INCLUDING ENOUGH WATER TO GIVE THE MORTAR THE PROPER CONSISTENCY AND EACH BATCH SHALL BE TURNED AFTER ALL MATERIALS ARE IN THE MACHINE FOR AT LEAST 32 REVOLUTIONS OF THE MIXER DRUM OR NOT LESS THAN TWO MINUTES.
RETEMPERING OF MORTER WHICH HAS PARTIALLY HARDENED, THAT IS, REMIXING WITH OR WITHOUT ADDITIONAL MATERIALS OR WATER, WILL NOT BE PERMITTED.

ANCHORS
THE CONTRACTOR SHALL PROVIDE SPECIAL ANCHORS AT ALL PLACES WHERE REQUIRED AND DIRECTED. EACH PIECE OF STONE SHALL BE SECURELY ANCHORED IN THE WALL WITH EITHER Nº 8 SOFT IRON WIRE ANCHORS, STEEL STRAP ANCHORS, (SEE DETAIL ON SHEET Nº 9) DOWEL ANCHORS OR GALVANIZED CRIMPED IRON ANCHORS.

PROTECTION OF STONE WORK
PROTECT ALL STONE WORK IN THE MOST THOROUGH MANNER UNTIL THE COMPLETION OF THE BRIDGE. SECURELY COVER WITH PLANK ALL PROJECTING WORK AND MAKE GOOD ANY WORK DAMAGED IN ANY MANNER WHATSOEVER.

CLEANING STONE WORK
WASH DOWN AND CLEAN THE WHOLE EXTERIOR OF THE STONE WORK AT THE COMPLETION OF THE BRIDGE WITH CLEAR WATER, BRUSHES AND SPONGES, AND LEAVE THE ENTIRE BRIDGE IN PERFECT CONDITION. NO ACID SHALL BE USED IN CLEANING STONE.

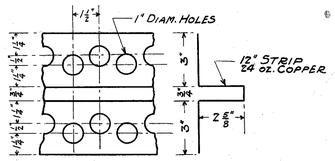
STONE SIZES-SPECIFICATIONS
SH. (I.C.H) 21 SEC. I-1 BRIDGE
LUCAS COUNTY
STATE OF OHIO
DEPARTMENT OF HIGHWAYS

NOTES		TRACED	CHECKED	REVIEWED
G.M.G.		G.O.C.	D.H.O.	W.H.E. 6-11-12

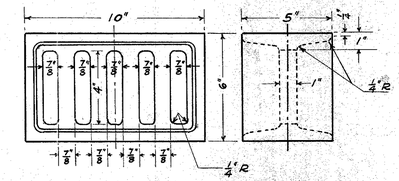
MARK	SIZE	NO. REQD.	SHAPE	WHERE USED	LENGTH	TOTAL WEIGHT
ab	1"□	116	Straight	Abut. Wings	10'-0"	3944
ab'	1"□	60	"	"	12'-0"	2448
ab²	1"□	24	"	"	23'-0"	1877
ac'	1"□	8	"	"	20'-6"	558
ac³	1"□	8	"	"	18'-0"	490
ac⁵	1"□	12	"	"	14'-6"	592
ae	½"□	24	"	"	26'-6"	542
ae'	½"□	4	"	"	20'-6"	71
ae²	½"φ	8	"	"	13'-6"	72
ae³	½"φ	8	"	"	8'-6"	45
ae⁴	½"φ	4	"	"	6'-6"	18
ae⁵	½"φ	12	"	"	7'-0"	56
ae⁶	½"φ	8	2'-7½" 4'-9" 4'-9"	"	9'-6"	51
ae⁷	½"φ	4	3'-0" 9'-0" 1'-6"	"	12'-0"	33
ae⁸	½"φ	4	Straight	"	5'-9"	16
ae⁹	½"φ	4	Straight	"	4'-6"	12
ae¹⁰	½"φ	32	1'-6" 9" 1'-6" 1'-1"	"	3'-9"	80
ae¹¹	½"φ	28	1'-6" 6" 1'-9" 1'-3"	"	3'-9"	70
ae¹²	½"φ	16	2'-0" 1'-0" 2'-0"	"	5'-0"	54
af'	1"□	116	10'-0" 2'-8" 14'-0"	Abutment	24'-0"	9466
af²	1"□	116	9'-9" 4'-1½" 4'-4" 5'-3"R 3'-7½"	"	17'-6"	6902
af³	⅞"φ	228	Straight	"	17'-0"	7908
af⁴	½"φ	80	Straight	"	25'-0"	1320
af⁵	½"φ	20	3'-8" 3"R 9½"	"	6'-0"	80
pa'	1"□	116	12'-0" 4'-1½" 4'-4" 5'-3"R 3'-7½"	Pier	19'-9"	7790
pa²	1"□	116	3'-0" 10'-3" 2'-0" 3'-0"R 3'-0"	"	15'-3"	6015
pa³	1"□	116	Straight	"	9'-0"	3550
pa⁴	⅞"φ	228	"	"	15'-6"	7210
pa⁵	½"φ	50	"	"	25'-0"	825
pb'	½"□	24	"	"	14'-0"	286
pb²	½"φ	8	9'-0" 2'-6" 1'-4½"	"	11'-6"	61
pb³	½"φ	20	Straight	"	6'-9"	90

MARK	SIZE	NO. REQD.	SHAPE	WHERE USED	LENGTH	TOTAL WEIGHT
ca	1"□	232	Straight	Arch Ring	30'-0"	23664
cb	1"□	232	"	"	21'-6"	16960
cc	1"□	232	"	"	20'-6"	16171
cd	½"φ	152	"	"	25'-0"	2535
ce'	¼"φ	286	3" 2" 3" 1'-9"ce' 4'-0"ce² 1"R	Arch Ring	2'-3"	109
ce²	¼"φ	220		Pier & Abut	4'-6"	169
cf¹	⅝"φ	184	7'-6" 2'-3" 1'-7" 1'-7" 1'-3" 2½"R 4" 2'-1-4½" 4" 1'-2" 1'-5½"	Arch Ring	13'-3"	2536
cf²	⅝"φ	92	9'-4" 2½"R 8"	Arch Ring	10'-0"	956
cg	½"φ	184	Straight	Arch Ring	4'-9"	577
ch	⅜"φ	184	Straight	Arch Ring	2'-6"	171
da'	½"φ	16	Straight	Spand. Walls	30'-9"	325
da²	½"φ	16	"	"	18'-0"	191
da³	½"φ	16	"	"	10'-6"	111
da⁴	½"φ	16	"	"	5'-6"	59
db'	½"φ	80	"	"	2'-0"	106
db²	½"φ	80	"	"	3'-3"	172
db³	½"φ	64	"	"	4'-6"	192
db⁴	½"φ	48	"	"	6'-0"	192
db⁵	½"φ	48	"	"	8'-6"	270
dc	⅜"φ	120	24'-0" 3"R 9½" 2½"	Transv. Walls	25'-0"	1140
dd	⅜"φ	56	24'-0" 1'-0"	"	25'-0"	532
de	½"φ	56	3'-0" 3"R 9½" 2½"	"	4'-0"	148
df	½"φ	56	1'-0" 4'-0" 1'-0" 8½"	"	6'-0"	222
dg	¾"φ	148	3' 7¼" 4¾" 3"R 2'-0"	"	6'-0"	1332
dh	½"φ	152	Same as above dg	"	6'-0"	602
dk	⅜"φ	8	Straight	"	20'-0"	60
ea¹	¾"φ	152	Straight	Roadw. Slab	31'-6"	7182
ea²	¾"φ	148	1'-8¾" 6½" 3'-0" 3'-0" 3'-0" 9¼" 4'-4½" 4'-6" 45° 4'-6" 6½" 3'-9"	"	33'-3	7382
eb	½"φ	160	Straight	"	31'-0"	3323
ec'	⅜"φ	146	19'-10" 1'-2"	"	21'-0"	1135
ec²	⅜"φ	116	Straight	"	20'-0"	859
ed	¾"φ	75	Straight	"	6'-9"	760

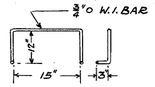
MARK	SIZE	NO. REQD.	SHAPE	WHERE USED	LENGTH	TOTAL WEIGHT
fa	⅜"φ	342	5'-6" 9"	Side Walks	6'-3"	794
fb	⅜"φ	40	Straight	"	32'-0"	474
fc	⅜"φ	10	Straight	"	6'-9"	25
fd	½"φ	180	3'-3" 3" 2"R 6"	"	4'-0"	476
ga'	½"φ	24	Straight	Railing	31'-0"	492
ga²	½"φ	12	Straight	Railing	26'-6"	210
ga³	½"φ	6	Straight	Railing	6'-6"	26



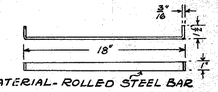
DETAIL OF COPPER EXPANSION JOINT
28 F.T. REQD.



VENTILATOR FOR SPANDREL WALLS - 8 REQD.
MATERIAL - CAST ALUMINUM.



DETAIL OF WROUGHT IRON STEPS.
31 - REQD.



MATERIAL - ROLLED STEEL BAR
DETAIL OF STEEL ANCHOR FOR STONE WORK
Scale 1½" = 1'-0"

TOTAL LBS. REINF. STEEL = 155,172

Note - All dimensions to center of bars.

STEEL LIST & DETAILS.
S.H.(I.C.H.)21 - SEC. I-1 BRIDGE
LUCAS COUNTY
STATE of OHIO
DEPARTMENT OF HIGHWAYS.

DESIGN	DRAWN	TRACED	CHECKED	REVIEWED
D.H.O.-G.M.G.	G.O.C.	C.L.K.	O.H.O.	W.H.E.-6-16