MICROFILMED-71

PLANS PREPARED BY: HAZELET & ERDAL CONSULTING ENGINEERS FILE NO. 909-A

LETTING DATE

Construction Alteration to Pier B, Mid Span

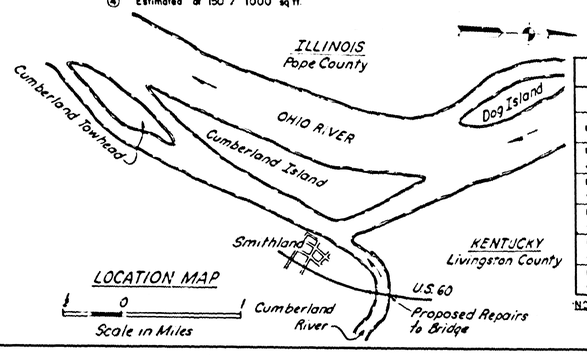
DESIGNED BY: WWM DATE 4-5-71
DRAWN BY: MDC CHECKED BY: WWM
TRACED BY: CHECKED BY:

KENTUCKY DEPARTMENT OF HIGHWAYS
LIVINGSTON COUNTY
SMITHLAND - MARION ROAD
BRIDGE OVER CUMBERLAND RIVER [U.S. 60]

ESTIMATE OF QUANTITIES FOR REPAIRS

SHEET DESIGNATION	SHEET NUMBER	CONCRETE CLASS "A" (CU.YDS)	CONCRETE CLASS "AA" (CU.YDS)	STEEL REINFORCEMENT (LBS)	STRUCTURAL STEEL (1) (LUMP SUM)	FOUNDATION SEAL CLASS "A" CONCRETE (CU.YDS)	JACKING AND SUPPORTING (LUMP SUM)	REMOVAL OF EXISTING REINFORCED CONCRETE (LUMP SUM)	STRUCTURE EXCAVATION COMMON (CU.YDS)	STEEL PILES 12 BP 53 FURNISHING (LIN.FT)	STEEL PILES 12 BP 53 DRIVING (LIN.FT.)	STEEL PILES 14 BP 89 FURNISHING (LIN.FT)	STEEL PILES 14 BP 89 DRIVING (LIN.FT)	COFFER-DAM (LUMP SUM)	2" NEOPRENE EXP DAM (EACH)		REPAIR COPING AT NP7 2 (LUMP SUM)	PAINTING CLEARANCE GAGES (LUMP SUM)	SEEDING & PROTECTION METHOD 2 (SQ. YDS)	FERTILIZER 10-10-10 (3) (TONS)	AGRICULTURAL LIMESTONE (4) (TONS)	ROADWAY EXCAVATION (CU.YDS.)	CLASS "A" CONC. BR FLOOR PATCHING (CU.YDS)	EPOXY-SAND STONE MORTAR PATCHING (STR.BATCH)	JOINT SEALING (LIN.FT)	CONCRETE CLASS "D" (CU.YDS.)					
TITLE SHEET	1																															
GENERAL NOTES	2,3,3A																															
GENERAL PLAN	4																															
LOG OF SOUNDINGS	5,6																															
PIER B	7,8,8A	2216.2		112,591		873			3,323			5,500	5,500	1														80.3				
FALSEWORK-PIER B	9																															
JACKING SUPPORTS-PIER B	10																															
PIER NP1	11,12	223.2		26,621					40	2,080	2,080																					
FALSEWORK-PIER NP1	13																															
JACKING & BRG DETAILS-PIER NP1	14																															
BEARING ADJUSTMENT-PIER A	15																															
EXPANSION JOINT DETAILS-PIER A	16		2.1	296																												
2" NEOPRENE EXPANSION DAM	17		13.2	1,236											6																	
ROADWAY JOINT DETAILS	18		28.6	3,797																									550			
MISCELLANEOUS DETAILS	19	2.8		276																												
PILE RECORD	20																															
CLEARANCE GAGE DETAILS	21																															
GRADING PLANS & R/W	22																			6,600	0.6	1.5	7,200									
CROSS SECTIONS	23,24																															
SERVICE PLATFORM AT PIER B	25																															
TOTALS		2,442.2	43.9	144,817	(1)	873	Lump Sum	Lump Sum	3,363	2,080	2,080	5,500	5,500	Lump Sum	6		Lump Sum	Lump Sum	6,600	0.6	1.5	7,200	5	25	550	80.3						

(1) Structural Steel: Approximately 114,755 Lbs included in lump sum bid for Structural Steel.
(2) For description of item See General Notes.
(3) Estimated at 20#/ 1000 sq ft
(4) Estimated at 150#/ 1000 sq ft



BILL OF INCIDENTAL MATERIAL

ITEM	AMOUNT	DESCRIPTION	LOCATION
PREFORMED JOINT SEAL	10	2½"X2½"X 24'-9"	JOINTS C,E & F
PREMOLDED CORK EXPANSION JOINT MATERIAL	10	1⅝"X7" X 21'-3" 1⅝"X8" X 3'-0"	JOINTS C,E & F
PREMOLDED CORK EXPANSION JOINT MATERIAL	2	1⅝"X 9" X 21'-3"	JOINT D
PREMOLDED CORK EXPANSION JOINT MATERIAL	4	½" X 11" X 3'-6"	JOINT E
PREMOLDED CORK EXPANSION JOINT MATERIAL	2	1½" X 7'-0" DIA.	PIER B
PREMOLDED CORK EXPANSION JOINT MATERIAL	1	½" X 11" X 2'	JOINT F

NOTE: The Bill of Incidental Material is approximate only and the contractor is responsible for furnishing enough material to complete the work according to the plans and specifications.

SPECIAL PROVISIONS

No. 15	Bid Proposal Guaranty and Contract Bonds.
No. 10-B	Membrane Curing of Concrete Structures
No. 35-B	Class "AA" Concrete.
No. 37-B	Preformed Compression Joint Seals.
No. 46-C	Water Pollution Controls.
No. 48-A	Bridge Deck Repairs.
No. 80-A	Blast Cleaning and Painting.
No. 83	Partial Payments.

Chronological Listing of Revisions to the 1965 Edition of the Standard Specifications.

REFERENCES

Standard drawings listed below are the current edition and are to be used with these plans.

AE 1-D
AE 2-D
AWS-2A
G 353-F
G 354-C
P 212 C

RECOMMENDED FOR APPROVAL:
Hazelet & Erdal, Consulting Engineers
Louisville, Ky. File No. 909-A
By: [signature]
Date: June 12, 1970

APPROVED BY KENTUCKY DEPARTMENT OF HIGHWAYS.
By: _____ Date _____
STATE HIGHWAY ENGINEER
By: _____ Date _____
CHIEF OF HIGHWAYS

SHEET 1 OF 25

REPAIRS TO BRIDGE CARRYING U.S.60 OVER CUMBERLAND RIVER

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
LIVINGSTON
SMITHLAND - MARION
ROAD
STATION P.E. PROJECT NO. SP 70-70

CONSTRUCTION PROJECT NO.	MAINTENANCE PROJECT NO.	DRAWING NO.
SP 70-70		18180

TITLE SHEET

BRIDGE

LETTING DATE

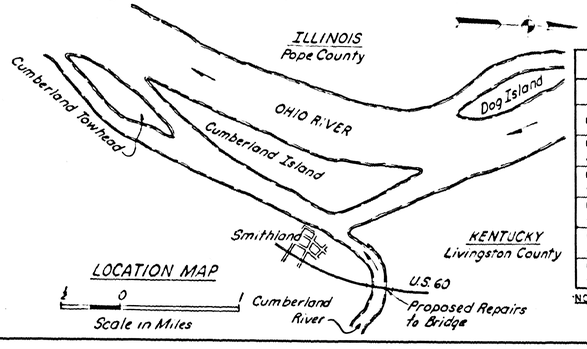
PLANS PREPARED BY
HAZELET & ERDAL
CONSULTING ENGINEERS
FILE NO. 909-A

KENTUCKY DEPARTMENT OF HIGHWAYS
LIVINGSTON COUNTY
SMITHLAND - MARION ROAD
BRIDGE OVER CUMBERLAND RIVER [U.S. 60]

ESTIMATE OF QUANTITIES FOR REPAIRS

SHEET DESIGNATION	SHEET NUMBER	CONCRETE CLASS "A" (CU.YDS)	CONCRETE CLASS "AA" (CU.YDS)	STEEL REINFORCEMENT (LBS)	STRUCTURAL STEEL (1) (LUMP SUM)	FOUNDATION SEAL CLASS "A" CONCRETE (CU.YDS)	JACKING AND SUPPORTING (LUMP SUM)	REMOVAL OF EXISTING REINFORCED CONCRETE (LUMP SUM)	STRUCTURE EXCAVATION COMMON (CU.YDS)	STEEL PILES 12 BP 53 FURNISHING (LIN.FT)	STEEL PILES 12 BP 53 DRIVING (LIN.FT.)	STEEL PILES 14 BP 89 FURNISHING (LIN.FT)	STEEL PILES 14 BP 89 DRIVING (LIN.FT.)	COFFER-DAM (LUMP SUM)	2" NEOPRENE EXP. DAM (EACH)		REPAIR COPING AT NP1 2 (LUMP SUM)	PAINTING CLEARANCE GAGES (LUMP SUM)	SEEDING & PROTECTION METHOD 2 (SQ. YDS)	FERTILIZER (10-10-10 (3) (TONS)	AGRICULTURAL LIMESTONE (4) (TONS)	ROADWAY EXCAVATION (CU.YDS.)	CLASS "AA" CONC BR FLOOR PATCHING (CU YDS)	EPOXY-SAND STONE MORTAR PATCHING (STD. BATCH)	JOINT SEALING (LIN. FT.)
TITLE SHEET	1																									
GENERAL NOTES	2,3																									
GENERAL PLAN	4																									
LOG OF SOUNDINGS	5,6																									
PIER B	7,8	2250.4		87,501		873			3,323			5,500	5,500	1												
FALSEWORK—PIER B	9																									
JACKING SUPPORTS—PIER B	10																									
PIER NP1	11,12	223.2		26,621					40	2,080	2,080															
FALSEWORK—PIER NP1	13																									
JACKING & BRG. DETAILS-PIER NP1	14																									
BEARING ADJUSTMENT-PIER A	15																									
EXPANSION JOINT DETAILS-PIER A	16		2.1	296																						
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CLEARANCE GAGE DETAILS	21																									
GRADING PLANS & R/W	22																			6,600	0.6	1.5	7,200			
CROSS SECTIONS	23,24																									
SERVICE PLATFORM AT PIER B	25																									
TOTALS		2,476.4	43.9	119,727	(1)	873	Lump Sum	Lump Sum	3,363	2,080	2,080	5,500	5,500	Lump Sum	6		Lump Sum	Lump Sum	6,600	0.6	1.5	7,200	5	25	550	

(1) Structural Steel: Approximately 114,755 Lbs. included in lump sum bid for Structural Steel.
(2) For description of item See General Notes.
(3) Estimated at 20# / 1000 sq.ft.
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BILL OF INCIDENTAL MATERIAL

ITEM	AMOUNT	DESCRIPTION	LOCATION
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PREMOLDED CORK EXPANSION JOINT MATERIAL	2	1⅝"x 9" x 21'-3"	JOINT D
PREMOLDED CORK EXPANSION JOINT MATERIAL	4	½" x 11" x 3'-6"	JOINT E
PREMOLDED CORK EXPANSION JOINT MATERIAL	2	1½" x 7'-0" DIA.	PIER B
PREMOLDED CORK EXPANSION JOINT MATERIAL	1	½" x 11" x 2'	JOINT F

NOTE: The Bill of Incidental Material is approximate only and the contractor is responsible for furnishing enough material to complete the work according to the plans and specifications.

SPECIAL PROVISIONS

No. 15	Bid Proposal Guaranty and Contract Bonds.
No. 30-B	Membrane Curing of Concrete Structures
No. 35-B	Class "AA" Concrete.
No. 37-B	Preformed Compression Joint Seals.
No. 46-C	Water Pollution Controls.
No. 48-A	Bridge Deck Repairs.
No. 80-A	Blast Cleaning and Painting.
No. 83	Partial Payments.

Chronological Listing of Revisions to the 1965 Edition of the Standard Specifications.

REFERENCES

Standard drawings listed below are the current edition and are to be used with these plans.

AE1-D
AE2-D
AWS-2A
G353-F
G354-C
P212 C

RECOMMENDED FOR APPROVAL:
Hazelet & Erdal, Consulting Engineers
Louisville, Ky File No. 909-A
By: _____
Date: June 12, 1970

APPROVED BY KENTUCKY DEPARTMENT OF HIGHWAYS
By: _____ Date _____
STATE HIGHWAY ENGINEER
By: _____ Date _____
COMMISSIONER OF HIGHWAYS

SHEET 1 OF 25

REPAIRS TO BRIDGE CARRYING US 60 OVER CUMBERLAND RIVER

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
LIVINGSTON
SMITHLAND-MARION
ROAD
STATION P.E. PROJECT NO. SP 70-70

CONSTRUCTION PROJECT NO.	MAINTENANCE PROJECT NO.	DRAWING NO.
SP 70-70		18180

TITLE SHEET

DESIGNED BY: WJM DATE 2-5-70
DETAILED BY: WJM DATE
TRACED BY: DATE
CHECKED BY: JAEC DATE
CHECKED BY: DATE
REVISED

BRIDGE

LETTING DATE

SPECIFICATIONS: The Kentucky Department of Highways Standard Specifications for Road and Bridge Construction, current edition with revisions, shall apply to this project.

DESIGN LOAD: Piers B and NP1 are designed for one lane of the bridge loaded with a train of Kentucky Class "AAA" trucks spaced 30 feet apart (rear axle of one vehicle to the front axle of the following vehicle) with the second lane loaded with the Standard AASHO H 15-44 live load.

The falsework at Pier B is designed considering one Kentucky Class "AAA" Truck in each lane followed and preceeded by the Standard AASHO H 15-44 live load.

The falsework at Pier NP1 is designed for the same loading combination as the piers.

Wind loads on the truss span are based on 84 mph wind velocity, while the wind loads on the approach spans are based on a wind velocity of 100 mph.

DESIGN STRESSES: For Reinforced Concrete:

Class A	Class AA
fs = 20,000 psi	fs = 20,000 psi
fc = 1,200 psi	fc = 1,200 psi
f'c = 3,000 psi	f'c = 4,000 psi
u = 200 psi for embedment	u = 200 psi for embedment
u = 300 psi for Σo.	u = 300 psi for Σo.
n = 10	n = 8

For Structural Steel:

New: fs = 27,000 psi for A 588 Steel.
fs = 20,000 psi for A 36 Steel.

Existing: fs = 18,000 psi for all except Silicon Steel.
fs = 24,000 psi for Silicon Steel.

FOUNDATION PILE LOADS: 12BP53 piles are designed for a maximum axial load of 70 tons and no horizontal shear. 14BP89 piles are designed for a maximum axial load of 118 tons and a maximum horizontal shear of 0.7 tons per pile. These maximums are for Group I loads with increases allowed for other loading groups.

PILING: Piling shall be driven to solid rock and to refusal. Test piles shall be driven where designated on the plans to determine the length of pile required. All test piles shall be accurately located so that they may be used in the finished structure. The Contractor's attention is called to the fact that due to the existing superstructure some of the piling may have to be driven part way, spliced, and driving continued until the pile is founded. If it is necessary to splice piling because of this restriction, such splicing shall not be paid for separately, but shall be included in the unit bid price for Steel Piles - Driving.

TYPES OF PILES: The Contractor shall use the following piles for Pier B and Pier NP1:

Pier B - Standard 14" Structural Steel Bearing Piles at 89 lbs.

Pier NP1 - Standard 12" Structural Steel Bearing Piles at 53 lbs. See Standard Drawing P-212, current edition.

CONCRETE: Class "AA" Concrete is to be used throughout the superstructure. Class "A" Concrete is to be used in the substructure.

REINFORCEMENT: Dimensions shown from face of concrete to bars are clear distances unless otherwise shown. Spacing of bars is from the center to center of bars.

BEVELED EDGES: All exposed edges shall be beveled 7/8" unless otherwise shown.

SPIRAL COLUMN TIES: Splices for spirals where desired by the Contractor shall be made with a minimum of one and one-half turns of spiral. No additional payment will be made for these splices, and the cost will be considered incidental to the cost of the developed length of spiral shown on the Plans. Spiral Reinforcement shall meet the requirements of Article 641.5.0 of the Specifications.

BILL OF INCIDENTAL MATERIAL: The quantities shown in the Bill of Incidental Material are approximate only, and the Contractor is responsible for furnishing enough material to complete the work in accordance with the Plans and Specifications. The cost of these items is to be included in the unit price bid for Class "AA" Concrete, or Class "A" Concrete.

DESIGNED BY RAG DETAILED BY CHECKED BY SJS TRACED BY CHECKED BY DATE 3-70 DATE DATE REVISED REVISED

TAR PAPER: Tar Paper is to be commercial grade tar paper or roofing felt approximately 1/16" thick. The cost of this item is to be included in the unit price bid for Class "AA" Concrete.

BONDING NEW CONCRETE TO OLD CONCRETE: All new concrete shall be bonded to the old concrete where noted on the Plans with a two-component epoxy resin system conforming to AASHO Designation M200-65, Type A. The epoxy resin bonding material shall be applied in accordance with the manufacturer's specifications. The cost of this work, including all labor, tools, and materials, is to be included in the unit price bid for Class "AA" Concrete.

MATERIALS: ASTM Specifications, current edition, as designated below, shall govern the materials furnished:

A588-68	Structural Steel, 50,000 psi Minimum Yield.
A36-67	Structural Steel, 36,000 psi Minimum Yield.
A307-68	Low Carbon Steel Machine Bolts, Nuts and Tap Bolts.
A325-68	High Strength Carbon Steel Bolts for structural joints including suitable nuts and plain hardened washers.
B29-55	Sheet lead and pig lead.

PAYMENT FOR STRUCTURAL STEEL: The lump sum bid for structural steel shall be full payment for all structural steel, self-lubricating bronze plates, bolts, washers, steel pins, lead plates, molten lead, welding and welding materials, paint and all labor and materials necessary to erect the steel in accordance with the Plans and Specifications. The approximate weight of structural steel shown in the Estimate of Quantities does not include overrun or weld material.

MILL TEST REPORTS: Notarized test reports shall be furnished in triplicate to the Department showing that all the materials used in structural steel conform to the requirements of the Specifications.

WELDING: All welding and welding materials shall conform to the Specifications for Welded Highway and Railway Bridges of the American Welding Society, current edition. The cost of welding, welding materials, straightening, altering and burning new or existing steel is to be included in the lump sum bid for structural steel.

CONNECTIONS: Unless otherwise provided on the Plans, all connections shall be 7/8" diameter high strength bolts. Open holes shall be 15/16" diameter. All joints are designed as friction type connections. Tightening shall be done with properly calibrated wrenches or by the turn-of-nut method.

CLEANING EXISTING STEEL: All areas of existing steel that are to be in contact with new steel, including areas under bolt heads, shall be cleaned of all dirt, rust, paint and other foreign matter, using a brush and a scraper, before installing the new steel. The cost of this cleaning is to be included in the lump sum bid for structural steel.

CLEANING TOPS OF BEAMS: The tops of all existing steel stringers which are exposed are to be cleaned of all rust and other foreign matter before pouring the concrete floor. The cost of material and labor is to be included in the lump sum bid for structural steel.

EXISTING STEEL: All existing steel that is to be replaced and all temporary bracing steel previously installed on the structure by the Department shall be removed and carefully stockpiled at an accessible location above high water. This steel is the property of the Department. The cost of this work is to be included in the lump sum bid for Jacking and Supporting.

PAINTING NEW STRUCTURAL STEEL: All new structural steel to remain in place as part of the permanent structure shall be cleaned and painted in accordance with the Special Provision No. 80-A for Blast Cleaning and Painting Structural Steel, current edition, except the second and third field coats of paint shall be Basic Lead Silico-Chromate Oil-Alkyd Paint (Green) in accordance with Article 661.4.0(C) "Finish Coat Paint (Green)" instead of aluminum.

PAINTING BURNT OR REPAIRED AREAS: All areas of new or existing structural steel on which the paint has been damaged by the Contractor with weld burns or by other means shall be cleaned and spot painted with the first field coat primer as specified in Special Provision No. 80-A and two coats of Basic Lead Silico-Chromate Oil-Alkyd Paint (Green) in accordance with Article 661.4.0(C) "Finish Coat Paint (Green)". This cleaning and painting shall be in accordance with Special Provision No. 80-A. The cost of this touch up painting is to be included in the lump sum bid for Structural Steel.

PROHIBITED FIELD WELDING: Except as shown on the Plans, no welding of any nature shall be performed on the load carrying members of the bridge without the written consent of the Director, Division of Bridges, or his authorized representative, and then only in the manner and at the locations designated in the authorization.

TREPANNED SELF-LUBRICATING BEARING PLATES, BRONZE: Self-lubricating bronze plates shall be an article of standard production by an established manufacturer of such equipment, and recommended for a minimum bearing pressure capacity of 2,000 psi under static load. They shall be in accordance with Article 643.6.0 of the Specifications. Trepanned recesses shall be in accordance with Article 643.8.0 of the Specifications. The cost of the self-lubricating bronze plates will not be paid for separately, but shall be included in the cost of Structural Steel.

EXISTING REINFORCING STEEL: The cost of cutting, bending and thoroughly cleaning existing reinforcing steel remaining in the structure of all foreign matter by wire brushing or by sand blasting to expose clean metal is to be included in the lump sum price bid for Removal of Existing Reinforced Concrete.

DRILLING HOLES IN CONCRETE: The cost of drilling holes in existing concrete and grouting is to be included in the unit price bid for Class "A" Concrete.

ANCHOR BOLT HOLES: Holes of depth and dimensions shown shall be drilled for anchor bolts or dowels by the Contractor, who shall be responsible for keeping holes dry in freezing weather. After base plates are properly set and anchor bolts are placed in drilled holes, molten lead shall be poured in the holes and packed until holes are completely filled flush to top of base plates. The cost of drilling anchor bolt holes, furnishing lead, and filling holes with molten lead shall be incidental to and included in the lump sum bid for Structural Steel.

MEMBRANE CURING COMPOUND: White pigmented curing compound shall be applied to the bridge deck in accordance with the Special Provision except that the membrane compound used shall have a resinous base.

GROUT: Grout for use in grouting the reinforcing bars into the existing concrete base or webwall of Pier B shall be of the non-shrinking type. The grout shall be made from cement, sand and water with admixtures as necessary or desirable to obtain non-shrink properties. The cement, sand and water shall meet the requirements of the Standard Specifications and, in addition, the sand shall all pass a No. 30 sieve, 50 percent shall pass a No. 50 sieve, and 20 percent shall pass a No. 100 sieve. The proportions of cement to sand may vary from a neat grout to a 1:1 mix. A minimum amount of water shall be used to obtain a flowable grout. The grout shall have the consistency of thick cream or heavy paint. Sample mixes shall be made to determine satisfactory consistency for use and these mixes shall be made into test specimens to demonstrate the strength and shrinkage characteristics which must be approved by the Engineer prior to the use of the grout in the construction. The cost of grouting at Pier B will be included in the unit price bid for Concrete, Class "A".

FOUNDATION SEAL, CLASS "A" CONCRETE: The concrete foundation seals to be placed under water shall be constructed in accordance with Articles 403.3.3-B and 404.3.1-B of the Standard Specifications except that a Type D Water-Reducing and Set-Retarding Admixture conforming to the requirements of ASTM C494-68 shall be used in the mix as recommended by the admixture manufacturer for tremie concrete. The slump of the tremie concrete shall be not less than four (4) inches nor more than eight (8) inches. The admixture will not be paid for separately, but the cost shall be included in the price bid for "Foundation Seal, Class A Concrete". The volume of "Foundation Seal, Class A Concrete" to be paid for shall be that volume outlined by plan dimensions or as ordered in writing by the Engineer. The volume of concrete displaced by the pile heads shall be deducted from the pay quantities. The accepted quantities, thus measured, shall be paid for at the contract unit price per cubic yard for "Foundation Seal, Class A Concrete". Such payment shall be full compensation for all materials, including admixtures as specified, forms, falsework, placing and finishing, all equipment, tools, labor and incidentals necessary to complete the work.

EXISTING NAVIGATION LIGHTING: Existing navigation lighting on the structure shall not be interfered with by the operations of the Contractor. The navigation lights at Pier B shall be moved and supported on the service platform as shown on Sheet 25 of the Plans. The electrical service shall be extended to the service platform using wire and conduit as specified in the Plans.

The light or a temporary light shall remain operative at all times during the construction of Pier B. The cost of moving and mounting the navigation light at Pier B, furnishing and erecting the service platform, junction boxes, wiring, conduit, and all labor, equipment, tools and incidentals necessary to complete the work will not be paid for separately but shall be included in the lump sum bid for Structural Steel.

CLEARANCE GAGES: A clearance gage consisting of painted marks and numerals as shown on the Plans shall be painted on the upstream end of Pier B only. The marks and numerals are to be accurately located as shown on the Plans. The area to be painted shall be thoroughly cleaned before painting. The marks and numerals shall be painted directly on the concrete with two coats of black paint as specified herein. The paint shall be waterproof black enamel designated as "7001 Postad black enamel" as manufactured by the Glidden Paint Company, or an approved equal.

The work covered by this section shall be paid for at the contract lump sum price for "Painting Clearance Gages", which payment shall be full compensation for all materials, transportation, all equipment and tools, and all work and labor, and all incidentals necessary to complete the work.

COFFERDAMS: Cofferdams shall be required for Pier B and all provisions of the Specifications shall apply, except as herein modified. The Contractor shall submit drawings for approval which show his proposed method of cofferdam construction. Cofferdam construction shall not start before these submitted drawings are approved. Steel sheet piling shall extend a minimum of ten (10) feet below the bottom of the foundation seal; however, a deeper sheet piling penetration may be necessary in order to obtain a satisfactory cofferdam. Cofferdams shall be well braced, as near watertight as practicable, and shall be constructed to allow concrete foundation seal of the dimensions shown on the Plans. Cofferdams which are tilted or moved laterally during construction due to any cause shall be righted, reset or enlarged so as to provide the clearance necessary for the construction of the substructure as shown on the Plans, and this shall be done at the sole expense of the Contractor. All sheeting shall be removed or cut off at the top of the concrete foundation seal. Cofferdams for Pier B will be paid for at the lump sum bid for "Cofferdams", which payment shall include and be full compensation for any required plans, for furnishing, hauling and placing all necessary materials, construction and maintenance, unwatering, removal of bracing and removal of or cutting off of sheeting, and for all labor, equipment, tools and incidentals necessary to complete this part of the work. Cofferdams are not required for Pier NP1.

NAVIGATION CLEARANCES: All work shall be conducted without unreasonable interference to the free navigation of the waterway and without impairment to the present navigational depths. The channel crossed by the structure shall be promptly cleared of all falsework, piling, or other obstructions placed therein or caused by the construction of the bridge. This clearing of the channel shall be done to the satisfaction of the U. S. Coast Guard Commandant and the Department of Highways at such time, when in the Engineer's judgement, the work has reached a point where such action can be taken, but in any case not later than 30 days after all work has been completed.

FALSEWORK PLANS: The Contractor shall submit to the Division of Construction for submission to the U. S. Coast Guard, for approval and for designation of temporary navigation lighting requirements, seven (7) sets of preliminary falsework plans showing the plan, elevation, and location of any and all cofferdams, temporary falsework and other obstructions to be used in connection with the construction of this bridge. One copy showing requested alterations, if any, will be returned to the Contractor by the Division of Construction. The Contractor shall submit to the Division of Construction five (5) sets of final falsework plans for final distribution.

ROADWAY SLAB JOINTS: This work includes replacing roadway slab joints as shown on the Plans at the girder spans fixed ends, at Pier B, at the stringer expansion joints on the truss, and at the abutments. The surface finish required on the roadway deck is as specified in Article 411.3.3-H, except that mechanical finishing will not be required.

REPAIRS TO BRIDGE CARRYING U.S 60 OVER CUMBERLAND RIVER

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
LIVINGSTON
SMITHLAND-MARION
ROAD

STATION	P.E. PROJECT NO. SP 70-70	
CONSTRUCTION PROJECT NO.	MAINTENANCE PROJECT NO.	DRAWING NO. 18180

GENERAL NOTES

BRIDGE

LETTING DATE

CONSTRUCTION OVER NAVIGABLE STREAM: Repairs to the bridge over the navigable waters of the Cumberland River in Livingston County, Kentucky has been authorized by a permit issued by the Department of the Army.

The Contractor will acquaint himself with all provisions and requirements set forth in this permit as it affects his work and comply therewith without exception. Copies of this permit are on file with the Kentucky Department of Highways in Frankfort.

The Contractor's particular attention is invited to the various requirements established by the Corps of Engineers, the U. S. Coast Guard and others relative to construction work in and over a navigable stream which are applicable to this contract and which may not be covered by existing permits. Such matters include, but are not necessarily limited to dredging, location and safeguards for cofferdams and temporary falsework, anchorage of barges and construction equipment, temporary restriction of channel width, lighting during construction, and removal of all temporary construction.

The Contractor shall procure from the appropriate agency or agencies, at his own expense, all required permits. The Contractor shall comply fully and faithfully with the requirements established by the District Engineer, Corps of Engineers, the U. S. Coast Guard and such other agencies, if any, as may have jurisdiction. Copies of all permits and authorizations shall be filed with the Engineer for information and record.

If the cofferdams or other falsework should be at any time completely submerged with a depth of less than 10 ft. of water over them, then a buoy shaped, colored and lighted to indicate which side navigation may safely pass, in accordance with the lateral system of buoyage described in Subpart 62.25-1 Code of the Federal Regulations, shall be placed to mark the obstruction.

Temporary navigation lighting or buoys required for the cofferdams or falsework will not be paid for separately, but will be included in the contract lump sum price for "Cofferdam".

NEOPRENE EXPANSION DAM, 2": The unit price bid for this item shall be for furnishing and placing each expansion dam including the "Neoprene" joints, caulking, bolts, and all labor, equipment, tools and incidentals necessary to complete the work in accordance with the Plans and Specifications. The expansion dams shall be as furnished by the General Tire and Rubber Co., Industrial Products Division, Wabash, Indiana, or an approved equal.

EXISTING FOUNDATION PREPARATION, PIER B: When excavation within the cofferdam has been completed to plan elevation, and before any tremie concrete has been placed, the sides of the existing foundation shall be thoroughly cleaned of any earth material which may be adhering to the foundation block after the excavation is completed. The foundation is enclosed with three inch timber sheathing which formed the shell for the caisson when the pier was originally constructed. This sheathing, assuming it is in an orderly condition and sound, does not have to be removed before placing the tremie concrete foundation seal. If any of the timber sheathing is loosened by excavation methods, or if any is found to be in a deteriorated condition, it shall be removed before placing the foundation seal in order to insure obtaining a good seal. After the existing foundation block has been cleaned, and before any foundation seal concrete has been placed, the condition of the timber sheathing and/or the existing foundation shall be carefully inspected by a qualified diver with proper equipment including underwater lights. If it is possible or practicable to dewater the cofferdam to the extent necessary to permit adequate inspection, the services of the diver may, at the Engineer's option, be dispensed with.

After the foundation seal is placed, all of the timber sheathing and all timber wales and nailers in the face of concrete on the existing foundation above Elevation 273.3 shall be removed. The voids left after removal of the timber wales will be utilized as keyways and additional 4" x 12" keyways shall be cut into the existing foundation as shown on the Plans.

The existing concrete surfaces shall be thoroughly cleaned by sand blasting or by high pressure jets to remove all loose or foreign material prior to placing any concrete above the seal. Care shall be exercised to insure that the keyways are completely filled with new concrete and thereby positively keying the new footing to the existing foundation.

The cost of cleaning and preparing the existing foundation will not be paid for separately, but shall be included in the unit price bid for "Concrete, Class A", which payment shall be full compensation for removing the existing timber sheathing and wales, cleaning the concrete, inspecting the existing foundation, and for all materials, equipment and tools necessary to complete the work as described above.

MAINTAINING TRAFFIC: Two lanes of traffic shall be maintained and protected on a 24-hour basis during construction, except as noted in "Closing Bridge to Traffic". The cost of this item, including flagmen if necessary, shall be incidental to the cost of Jacking and Supporting.

CLOSING BRIDGE TO TRAFFIC: The bridge shall be closed for short periods when jacking operations are under way or the bridge is supported on jacks. The Contractor shall notify the Department at least forty-eight (48) hours in advance of starting any jacking operations. The Contractor shall arrange his work in order that the bridge shall not be closed to traffic for more than eight (8) hours in any twenty-four (24) hour period. The jacking operations shall be closely coordinated with the Engineer, and flagmen and/or appropriate barricades shall be provided by the Contractor when required.

When the expansion dams or other roadway joints are being replaced, or the slab is being patched, one lane may be closed to traffic. The Contractor has the option of borrowing one controller and four signal heads from the Department for the maintenance of traffic. The Contractor shall be responsible for installing and maintaining the controller and signal heads, and shall be responsible for the power used. The contractor shall return the controller and signal heads to the Department within 7 days after completion of the project. The cost of maintaining all signals, furnishing barricades and flagmen when necessary, will be incidental to and included in the cost of Jacking and Supporting.

JACKING AND SUPPORTING: This work includes raising and supporting the structure at Piers A, B, NP1, NP2, SP3 and SP1 and accomplishing all work shown on the Plans and as described in the Procedure of Work at the various piers. Jacking assemblies and falsework details are shown in the Plans, however these details may be varied from what is shown in the Plans. The Contractor shall submit detail drawings showing any desired variances and design calculations supporting such variances to the Engineer for approval.

The jacking and other operations required at the above noted piers shall be paid for at the contract lump sum price bid for "Jacking and Supporting", which payment shall be full compensation for preparing shop plans, removing and stockpiling near the site any structural steel not to remain in place or any existing falsework, adjusting the superstructure, adjusting bearing assemblies, placing shims in bearing assemblies, maintaining traffic, flagging, barricades, and for all labor, equipment, tools and incidentals necessary to complete the work in accordance with the Plans.

The Structural Steel required for all falsework, strengthening the existing structure, and for new bearing, will be included in the item of "Structural Steel". As directed by the Engineer, portions of the structural steel will remain in place. The rest will be removed and stockpiled near the site as noted above. That structural steel to be removed will primarily consist of falsework at Piers A, B, and NP1 and all jacking assemblies.

All structural steel removed shall become the property of the Department.

REMOVAL OF EXISTING REINFORCED CONCRETE: This work includes removing existing reinforced concrete at Piers B, NP1, NP3, and the roadway slab joints as noted on the Plans, and disposing of same. Extreme care shall be taken in this operation to protect steel falsework which is in place at Pier B and Pier NP1, and to protect the existing structure from damage. Care shall be taken to protect that reinforcement which is to remain in place. This work shall be paid for at the contract lump sum price bid for "Removal of Existing Reinforced Concrete", which payment shall be full compensation for removal of the reinforced concrete, existing metal expansion devices, and all labor, equipment, tools and incidentals necessary to complete the work.

STEEL TRAFFIC PLATES: Steel traffic plates (3/4" by 2'-0" minimum width) shall be provided to bridge openings in the concrete roadway wherever such openings occur due to adjustments in the superstructure. The furnishing of these plates will not be paid for separately, but shall be included in the lump sum bid for "Jacking and Supporting", which price shall be full compensation for furnishing and placing the plates and any materials, equipment, tools and incidentals necessary to complete the work.

ROADWAY EXCAVATION: This work shall consist of removing and disposing of all materials excavated as shown on the grading plan. All large boulder riprap, excavated or existing in stockpile at the site, shall be stockpiled and placed on the north slope of the excavated areas as directed by the Engineer. The stockpiling and placing of the riprap material will not be paid for separately, but shall be included in the unit price bid for "Roadway Excavation".

REPAIR COPING AT PIER NP7: This work includes removing all deteriorated concrete and foreign matter from the spalled areas on the west coping (4'-8" diameter), cleaning the reinforcing steel, forming for the coping surface, and placing new concrete. The unsound areas shall be isolated by making one inch deep saw cuts around the perimeter of the area. The cleaned surface shall be coated with epoxy resin bonding material as noted in Bonding New Concrete to Old Concrete before any new concrete is placed. The work required to repair the coping shall be paid for at the contract lump sum price bid for "Repair Coping at Pier NP7", which payment shall be full compensation for removing the deteriorated concrete, cleaning the reinforcing steel, placing the bonding material and Concrete, Class A, and all materials, tools, equipment and incidentals necessary to complete the work.

PATCHING SPALLED DECK AREAS: As directed by the Engineer, spalled or deteriorated areas in the existing concrete deck shall be cleaned and patched in accordance with Special Provision No. 48-A.

ALIGNMENT CHECK FOR PIERS B AND NP1: In recognition of the possibility that the proposed work might cause further movement of Piers B and NP1, the Contractor shall make provisions for checking the vertical alignment of these piers while they are still supporting the superstructure. A constant check of these alignments shall be made during driving of all piling, and periodic checks as deemed advisable at all other times.

The results of these alignment checks shall be reported to the Engineer for evaluation. Excessive movement of these piers may require temporary provisions to restrain the pier or piers against further movement.

This item of work will not be paid for separately, but the cost of this work shall be included in the unit price bid for "Concrete, Class A".

Any provisions necessary to prevent further movement of the piers will be paid for under a Supplemental Agreement.

PROCEDURE OF WORK AT PIER B

1. Construct pier column encasement to 4'-0" below the bridge seat. Do not bond new concrete to old concrete.
2. Erect brackets for jacking at Lo joint, and chip column coping and strut to clear falsework bracing.
3. Erect falsework and install jacks.
4. Release four anchor bolts and four turned bolts at the lower shoes.
5. Close bridge to all traffic during Steps 6, 7, 8 and 11 while bridge is supported on jacks or during jacking operations.
6. Jack up both trusses simultaneously with restraint jacks in longitudinal direction to prevent sudden movement.
7. Shim between truss supports and jack housings such that truss is at correct elevation and release jacks. Approach girder span adjacent to Pier B which is supported on falsework at Pier NP1 must be moved nine inches (9") to the north before Step 8 can be started. Adjust or rework the metal expansion device at Pier NP1.
8. Jack both trusses simultaneously in horizontal direction toward the north for a distance of nine inches (9") or as directed by the Engineer to obtain correct bearing alignment at Pier A.
9. Field weld Beams F and C to Beams D and E as detailed.
10. Remove and rebuild top 4'-0" of columns. Lower shoes to be bolted to upper shoe prior to placement of concrete, shimming between shoes if necessary to place lower shoe at proper elevation.
11. After new concrete has reached proper strength, loosen bolts between upper and lower shoes, jack up both trusses, remove shims and reset on the lower shoes.
12. Remove falsework as directed by the Engineer.
13. Steps 4 through 9 above, inclusive, should be accomplished in one continuous operation.

PROCEDURE OF WORK AT PIER A

1. Install steel bands around column tops and fill space between band and column with non-shrink grout.
2. After the span is moved to the north utilizing the falsework at Pier B, erect the jacking assembly on one truss as shown on the details.
3. Bridge shall be closed to all traffic during Steps 4, 5 and 6 while bridge is supported on jacks.
4. Install the jacks as required and raise the truss.
5. Remove the side plates on the roller nest, adjust rollers to be in a vertical position at 60° Fahrenheit as shown on the Plans.
6. Replace side plates and lower truss onto bearing.
7. Repeat operation for other truss.

PROCEDURE OF WORK AT PIER NP1

1. Drive piles and place concrete in footings to Elevation 312.8.
2. Install falsework bents and auxiliary stiffeners on girders as shown on falsework details. Existing cable anchor shall remain in place until girders are supported on new falsework.
3. Bringe shall be closed to traffic during Steps 4,5,6,9 and 10 while bridge is supported on jacks or during jacking operations
4. Prepare jacking assemblies on Pier NP1 and raise girders to permit installation of bearing assemblies on falsework bents. Remove existing rollers.
5. Lower the girders onto the bearing assemblies on falsework bents and remove the jacks.
6. Weld jacking blocks on falsework caps and jack girders transversely to the correct alignment as shown on the detail plans.
7. Remove existing cable anchor, upper shoes from girders, 3-inch masonry plates, steel framework and existing reinforced concrete pier down to Elevation 310. The steel framework will be dismantled and stored for the Department. The masonry plates will be prepared for reuse by removing bars welded to them and grinding smooth as directed by the Engineer.
8. Complete construction of pier as shown on the Plans including the installation of three-inch masonry plate.
9. Install extension plate at Pier B girder bearings, raise girders, cut anchor bolts for existing bearing and lower girders back to bearings. Before raising girders to cut anchor bolts, the south falsework bent shall be struted from the north falsework bent at Pier NP1 to prevent the raised span from moving horizontally.
10. Jack span (Pier B-NP1) to the north nine inches by jacking against bearings at Pier B and allowing bearings to slide, install expansion shoes at Pier NP1 as shown on the Plans and remove the falsework. Note that the south falsework bent will be under a flexure force due to jacking span to the north.

PROCEDURE OF WORK AT PIER NP2

1. Drill holes in ends of girders and install brackets as shown on the Plans.
2. Girders at Piers NP2 and NP3 shall be blocked and tied together in order that horizontal forces may be transferred to Pier NP4 while the bridge is supported on jacks.
3. Utilizing jacking assemblies shown on the Plans, raise all girders simultaneously and install shim plates as shown on the Plans.
4. Release jacks and remove jacking assemblies.

PROCEDURE OF WORK AT PIER SP3

1. Drill holes in ends of girders and install brackets as shown on the Plans.
2. Install jacking assemblies, raise the girders, release the upper shoe to position the roller segments as necessary to be in a vertical position at 60° Fahrenheit temperature and weld the upper shoe in position to the girder flange.
3. Release the jacks and remove jacking assemblies.

PROCEDURE OF WORK AT PIER SP1

It is anticipated that the top of Pier A will deflect northward when the truss span is shifted to the north. In this event, it will be desirable to straighten the roller segments under the north bearings for both girders at Pier SP1.

1. Drill holes in ends of girders and install brackets as shown on the Plans.
2. Install jacking assemblies, raise the girders, cut the north upper shoes loose from the flanges of the girders, move the upper shoe to position the roller segments as necessary to be in a vertical position at 60° Fahrenheit temperature and weld the upper shoe in position to the girder flange.
3. Release jacks and remove the jacking assemblies.

ALTERNATE PROCEDURES: The procedures and successive stages of work described at Piers A, B, NP1, NP2, SP1 and SP3 are those considered in design of the necessary repair and reconstruction. Alternate procedures and stages of work will be considered by the Engineer provided such alternates are described completely in the bidder's proposal with bid prices for comparison. Consideration of proposed alternate procedures by the Engineer will not obligate the Department to accept the lowest bid proposed for such work, but will only be used by the Engineer to consider the safest, most expeditious and economical means of accomplishing the work.

See Sheet 3A for "Procedure of Work at Pier B" and "Notes for Construction of Pier B"

Construction Alteration to Pier B

DESIGNED BY EAG CHECKED BY SJS DATE 3-70
DRAWN BY CHECKED BY DATE
TRACED BY CHECKED BY DATE

REPAIRS TO BRIDGE CARRYING U.S.60 OVER CUMBERLAND RIVER

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
LIVINGSTON
SMITHLAND-MARION
ROAD
STATION P. E. PROJECT NO. SP 70-70

CONSTRUCTION PROJECT NO.	MAINTENANCE PROJECT NO.	DRAWING NO.
		18180

GENERAL NOTES

BRIDGE

LETTING DATE

DESIGNED BY: [illegible] CHECKED BY: 5/5 DATE 3-7C
DETAILED BY: [illegible] CHECKED BY: DATE
CLOCK BY: [illegible] CHECKED BY: DATE
DATE
DATE
DATE

CONSTRUCTION OVER NAVIGABLE STREAM: Repairs to the bridge over the navigable waters of the Cumberland River in Livingston County, Kentucky has been authorized by a permit issued by the Department of the Army.

The Contractor will acquaint himself with all provisions and requirements set forth in this permit as it affects his work and comply therewith without exception. Copies of this permit are on file with the Kentucky Department of Highways in Frankfort.

The Contractor's particular attention is invited to the various requirements established by the Corps of Engineers, the U. S. Coast Guard and others relative to construction work in and over a navigable stream which are applicable to this contract and which may not be covered by existing permits. Such matters include, but are not necessarily limited to dredging, location and safeguards for cofferdams and temporary falsework, anchorage of barges and construction equipment, temporary restriction of channel width, lighting during construction, and removal of all temporary construction.

The Contractor shall procure from the appropriate agency or agencies, at his own expense, all required permits. The Contractor shall comply fully and faithfully with the requirements established by the District Engineer, Corps of Engineers, the U. S. Coast Guard and such other agencies, if any, as may have jurisdiction. Copies of all permits and authorizations shall be filed with the Engineer for information and record.

If the cofferdams or other falsework should be at any time completely submerged with a depth of less than 10 ft. of water over them, then a buoy shaped, colored and lighted to indicate which side navigation may safely pass, in accordance with the lateral system of buoyage described in Subpart 82.25-1 Code of the Federal Regulations, shall be placed to mark the obstruction.

Temporary navigation lighting or buoys required for the cofferdams or falsework will not be paid for separately, but will be included in the contract lump sum price for "Cofferdam".

NEOPRENE EXPANSION DAM, 2": The unit price bid for this item shall be for furnishing and placing each expansion dam including the "Neoprene" joints, caulking, bolts, and all labor, equipment, tools and incidentals necessary to complete the work in accordance with the Plans and Specifications. The expansion dams shall be as furnished by the General Tire and Rubber Co., Industrial Products Division, Wabash, Indiana, or an approved equal.

EXISTING FOUNDATION PREPARATION, PIER B: When excavation within the cofferdam has been completed to plan elevation, and before any tremie concrete has been placed, the sides of the existing foundation shall be thoroughly cleaned of any earth material which may be adhering to the foundation block after the excavation is completed. The foundation is enclosed with three inch timber sheathing which formed the shell for the caisson when the pier was originally constructed. This sheathing, assuming it is in an orderly condition and sound, does not have to be removed before placing the tremie concrete foundation seal. If any of the timber sheathing is loosened by excavation methods, or if any is found to be in a deteriorated condition, it shall be removed before placing the foundation seal in order to insure obtaining a good seal. After the existing foundation block has been cleaned, and before any foundation seal concrete has been placed, the condition of the timber sheathing and/or the existing foundation shall be carefully inspected by a qualified diver with proper equipment including underwater lights. If it is possible or practicable to dewater the cofferdam to the extent necessary to permit adequate inspection, the services of the diver may, at the Engineer's option, be dispensed with.

After the foundation seal is placed, all of the timber sheathing and all timber wales and nailers in the face of concrete on the existing foundation above Elevation 273.3 shall be removed. The voids left after removal of the timber wales will be utilized as keyways and additional 4" x 12" keyways shall be cut into the existing foundation as shown on the Plans.

The existing concrete surfaces shall be thoroughly cleaned by sand blasting or by high pressure jets to remove all loose or foreign material prior to placing any concrete above the seal. Care shall be exercised to insure that the keyways are completely filled with new concrete and thereby positively keying the new footing to the existing foundation.

The cost of cleaning and preparing the existing foundation will not be paid for separately, but shall be included in the unit price bid for "Concrete, Class A", which payment shall be full compensation for removing the existing timber sheathing and wales, cleaning the concrete, inspecting the existing foundation, and for all materials, equipment and tools necessary to complete the work as described above.

MAINTAINING TRAFFIC: Two lanes of traffic shall be maintained and protected on a 24-hour basis during construction, except as noted in "Closing Bridge to Traffic". The cost of this item, including flagmen if necessary, shall be incidental to the cost of Jacking and Supporting.

CLOSING BRIDGE TO TRAFFIC: The bridge shall be closed for short periods when jacking operations are under way or the bridge is supported on jacks. The Contractor shall notify the Department at least forty-eight (48) hours in advance of starting any jacking operations. The Contractor shall arrange his work in order that the bridge shall not be closed to traffic for more than eight (8) hours in any twenty-four (24) hour period. The jacking operations shall be closely coordinated with the Engineer, and flagmen and/or appropriate barricades shall be provided by the Contractor when required.

When the expansion dams or other roadway joints are being replaced, or the slab is being patched, one lane may be closed to traffic. The Contractor has the option of borrowing one controller and four signal heads from the Department for the maintenance of traffic. The Contractor shall be responsible for installing and maintaining the controller and signal heads, and shall be responsible for the power used. The contractor shall return the controller and signal heads to the Department within 7 days after completion of the project. The cost of maintaining all signals, furnishing barricades and flagmen when necessary, will be incidental to and included in the cost of Jacking and Supporting.

JACKING AND SUPPORTING: This work includes raising and supporting the structure at Piers A, B, NP1, NP2, SP3 and SP1 and accomplishing all work shown on the Plans and as described in the Procedure of Work at the various piers. Jacking assemblies and falsework details are shown in the Plans, however these details may be varied from what is shown in the Plans. The Contractor shall submit detail drawings showing any desired variances and design calculations supporting such variances to the Engineer for approval.

The jacking and other operations required at the above noted piers shall be paid for at the contract lump sum price bid for "Jacking and Supporting", which payment shall be full compensation for preparing shop plans, removing and stockpiling near the site any structural steel not to remain in place or any existing falsework, adjusting the superstructure, adjusting bearing assemblies, placing shims in bearing assemblies, maintaining traffic, flagging, barricades, and for all labor, equipment, tools and incidentals necessary to complete the work in accordance with the Plans.

The Structural Steel required for all falsework, strengthening the existing structure, and for new bearing, will be included in the item of "Structural Steel". As directed by the Engineer, portions of the structural steel will remain in place. The rest will be removed and stockpiled near the site as noted above. That structural steel to be removed will primarily consist of falsework at Piers A, B, and NP1 and all jacking assemblies.

All structural steel removed shall become the property of the Department.

REMOVAL OF EXISTING REINFORCED CONCRETE: This work includes removing existing reinforced concrete at Piers B, NP1, NP3, and the roadway slab joints as noted on the Plans, and disposing of same. Extreme care shall be taken in this operation to protect steel falsework which is in place at Pier B and Pier NP1, and to protect the existing structure from damage. Care shall be taken to protect that reinforcement which is to remain in place. This work shall be paid for at the contract lump sum price bid for "Removal of Existing Reinforced Concrete", which payment shall be full compensation for removal of the reinforced concrete, existing metal expansion devices, and all labor, equipment, tools and incidentals necessary to complete the work.

STEEL TRAFFIC PLATES: Steel traffic plates (3/4" by 2'-0" minimum width) shall be provided to bridge openings in the concrete roadway wherever such openings occur due to adjustments in the superstructure. The furnishing of these plates will not be paid for separately, but shall be included in the lump sum bid for "Jacking and Supporting", which price shall be full compensation for furnishing and placing the plates and any materials, equipment, tools and incidentals necessary to complete the work.

ROADWAY EXCAVATION: This work shall consist of removing and disposing of all materials excavated as shown on the grading plan. All large boulder riprap, excavated or existing in stockpile at the site, shall be stockpiled and placed on the north slope of the excavated areas as directed by the Engineer. The stockpiling and placing of the riprap material will not be paid for separately, but shall be included in the unit price bid for "Roadway Excavation".

REPAIR COPING AT PIER NP7: This work includes removing all deteriorated concrete and foreign matter from the spalled areas on the west coping (4'-6" diameter), cleaning the reinforcing steel, forming for the coping surface, and placing new concrete. The unsound areas shall be isolated by making one inch deep saw cuts around the perimeter of the area. The cleaned surface shall be coated with epoxy resin bonding material as noted in Bonding New Concrete to Old Concrete before any new concrete is placed. The work required to repair the coping shall be paid for at the contract lump sum price bid for "Repair Coping at Pier NP7", which payment shall be full compensation for removing the deteriorated concrete, cleaning the reinforcing steel, placing the bonding material and Concrete, Class A, and all materials, tools, equipment and incidentals necessary to complete the work.

PATCHING SPALLED DECK AREAS: As directed by the Engineer, spalled or deteriorated areas in the existing concrete deck shall be cleaned and patched in accordance with Special Provision No. 48-A.

ALIGNMENT CHECK FOR PIERS B AND NP1: In recognition of the possibility that the proposed work might cause further movement of Piers B and NP1, the Contractor shall make provisions for checking the vertical alignment of these piers while they are still supporting the superstructure. A constant check of these alignments shall be made during driving of all piling, and periodic checks as deemed advisable at all other times.

The results of these alignment checks shall be reported to the Engineer for evaluation. Excessive movement of these piers may require temporary provisions to restrain the pier or piers against further movement.

This item of work will not be paid for separately, but the cost of this work shall be included in the unit price bid for "Concrete, Class A".

Any provisions necessary to prevent further movement of the piers will be paid for under a Supplemental Agreement.

PROCEDURE OF WORK AT PIER B

1. Construct pier column encasement to 4'-0" below the bridge seat. Do not bond new concrete to old concrete.
2. Erect brackets for jacking at Lo joint, and chip column coping and strut to clear falsework bracing.
3. Erect falsework and install jacks.
4. Release four anchor bolts and four turned bolts of the lower shoes.
5. Close bridge to all traffic during Steps 6, 7, 8 and 11 while bridge is supported on jacks or during jacking operations.
6. Jack up both trusses simultaneously with restraint jacks in longitudinal direction to prevent sudden movement.
7. Shim between truss supports and jack housings such that truss is at correct elevation and release jacks. Approach girder span adjacent to Pier B which is supported on falsework at Pier NP1 must be moved nine inches (9") to the north before Step 8 can be started. Adjust or rework the metal expansion device at Pier NP1.
8. Jack both trusses simultaneously in horizontal direction toward the north for a distance of nine inches (9") or as directed by the Engineer to obtain correct bearing alignment at Pier A.
9. Field weld Beams B and C to Beams D and E as detailed.
10. Remove and rebuild top 4'-0" of columns. Lower shoes to be bolted to upper shoe prior to placement of concrete, shimming between shoes if necessary to place lower shoe at proper elevation.
11. After new concrete has reached proper strength, loosen bolts between upper and lower shoes, jack up both trusses, remove shims and reset on the lower shoes.
12. Remove falsework as directed by the Engineer.
13. Steps 4 through 9 above, inclusive, should be accomplished in one continuous operation.

PROCEDURE OF WORK AT PIER A

1. Install steel bands around column tops and fill space between band and column with non-shrink grout.
2. After the span is moved to the north utilizing the falsework at Pier B, erect the jacking assembly on one truss as shown on the details.
3. Bridge shall be closed to all traffic during Steps 4, 5 and 6 while bridge is supported on jacks.
4. Install the jacks as required and raise the truss.
5. Remove the side plates on the roller nest, adjust rollers to be in a vertical position at 60° Fahrenheit as shown on the Plans.
6. Replace side plates and lower truss onto bearing.
7. Repeat operation for other truss.

PROCEDURE OF WORK AT PIER NP1

1. Drive piles and place concrete in footings to Elevation 312.0.
2. Install falsework bents and auxiliary stiffeners on girders as shown on falsework details. Existing cable anchor shall remain in place until girders are supported on new falsework.
3. Bridge shall be closed to traffic during Steps 4,5,8,9 and 10 while bridge is supported on jacks or during jacking operations.
4. Prepare jacking assemblies on Pier NP1 and raise girders to permit installation of bearing assemblies on falsework bents. Remove existing rollers.
5. Lower the girders onto the bearing assemblies on falsework bents and remove the jacks.
6. Weld jacking blocks on falsework caps and jack girders transversely to the correct alignment as shown on the detail plans.
7. Remove existing cable anchor, upper shoes from girders, 3-inch masonry plates, steel framework and existing reinforced concrete pier down to Elevation 310. The steel framework will be dismantled and stored for the Department. The masonry plates will be prepared for reuse by removing bars welded to them and grinding smooth as directed by the Engineer.
8. Complete construction of pier as shown on the Plans including the installation of three-inch masonry plate.
9. Install extension plate at Pier B girder bearings, raise girders, cut anchor bolts for existing bearing and lower girders back to bearings. Before raising girders to cut anchor bolts, the south falsework bent shall be struted from the north falsework bent at Pier NP1 to prevent the raised span from moving horizontally.
10. Jack span (Pier B-NP1) to the north nine inches by jacking against bearings at Pier B and allowing bearings to slide, install expansion shoes at Pier NP1 as shown on the Plans and remove the falsework. Note that the south falsework bent will be under a flexure force due to jacking span to the north.

PROCEDURE OF WORK AT PIER NP2

1. Drill holes in ends of girders and install brackets as shown on the Plans.
2. Girders at Piers NP2 and NP3 shall be blocked and tied together in order that horizontal forces may be transferred to Pier NP4 while the bridge is supported on jacks.
3. Utilizing jacking assemblies shown on the Plans, raise all girders simultaneously and install shim plates as shown on the Plans.
4. Release jacks and remove jacking assemblies.

PROCEDURE OF WORK AT PIER SP3

1. Drill holes in ends of girders and install brackets as shown on the Plans.
2. Install jacking assemblies, raise the girders, release the upper shoe to position the roller segments as necessary to be in a vertical position at 60° Fahrenheit temperature and weld the upper shoe in position to the girder flange.
3. Release the jacks and remove jacking assemblies.

PROCEDURE OF WORK AT PIER SP1

It is anticipated that the top of Pier A will deflect northward when the truss span is shifted to the north. In this event, it will be desirable to straighten the roller segments under the north bearings for both girders at Pier SP1.

1. Drill holes in ends of girders and install brackets as shown on the Plans.
2. Install jacking assemblies, raise the girders, cut the north upper shoes loose from the flanges of the girders, move the upper shoe to position the roller segments as necessary to be in a vertical position at 60° Fahrenheit temperature and weld the upper shoe in position to the girder flange.
3. Release jacks and remove the jacking assemblies.

ALTERNATE PROCEDURES: The procedures and successive stages of work described at Piers A, B, NP1, NP2, SP1 and SP3 are those considered in design of the necessary repair and reconstruction. Alternate procedures and stages of work will be considered by the Engineer provided such alternates are described completely in the bidder's proposal with bid prices for comparison. Consideration of proposed alternate procedures by the Engineer will not obligate the Department to accept the lowest bid proposed for such work, but will only be used by the Engineer to consider the safest, most expeditious and economical means of accomplishing the work.

REPAIRS TO BRIDGE CARRYING U.S.60 OVER CUMBERLAND RIVER

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
LIVINGSTON
SMITHLAND-MARION
ROAD

STATION | P.E. PROJECT NO. SP 70-70

CONSTRUCTION PROJECT NO.	MAINTENANCE PROJECT NO.	DRAWING NO.
		18180

GENERAL NOTES

BRIDGE

LETTING DATE

PROCEDURE OF WORK AT PIER B

1. Construct Pier B foundation, columns and webwall to Elevation 326.67. Do not bond new concrete to old concrete.
2. Construct concrete column encasement from Elevation 326.67 to Elevation 377.17. (See "Notes for Construction")
3. Erect brackets for jacking at Lo joint and chip column coping and strut to clear falsework bracing.
4. Erect falsework for supporting truss span and install jacks.
5. Jack approach span approximately nine (9) inches to the north or as directed by the Engineer. See Steps 9 & 10 for Procedure of Work at Pier NP1. Adjust or rework the metal expansion device at Pier NP1. (See note "Jacking Approach Span")
6. Close bridge to all traffic during Steps 7 thru 11 and 14, while bridge is supported on jacks or during jacking operations.
7. Release four anchor bolts and four turned bolts on each of the lower truss shoes.
8. Place oak timber blocking between existing and new columns and jack up both trusses simultaneously with restraint jacks in longitudinal direction to prevent sudden movement. Transfer entire truss load to falsework and new concrete encasement.
9. Shim between truss supports and jack housings such that truss is at correct elevation and release jacks.
10. Jack both trusses simultaneously in horizontal direction toward the north approximately nine (9) inches or as directed by the Engineer to obtain correct bearing alignment at Pier A.
11. Field weld Beams B & C to Beams D & E as shown in plans.
12. Place Concrete Class "D" in circular void around columns and for webwall encasement.
13. Remove and rebuild top four (4) feet of columns. Lower truss shoes to be bolted to upper shoe prior to placement of concrete, shimming between shoes if necessary to place lower shoes at proper elevation.
14. After new concrete has reached proper strength loosen bolts between upper and lower shoes, jack up both trusses simultaneously, remove shims and reset lower shoes.
15. Remove falsework as directed by the Engineer.
16. Steps 6 thru 11 above, inclusive, should be accomplished in one continuous operation.

NOTES FOR CONSTRUCTION OF PIER B

GENERAL: From Elevation 326.67 the concrete column encasement shall be built as a circular ring with an inner form, free of any contact with the existing pier column, webwall or strut until the truss span is completely supported on the new column encasement. After the existing pier column has been stabilized, the annular void between existing and new pier and the webwall encasement shall be filled with Concrete, Class "D".

COLUMN ENCASEMENT: Inner forms shall be erected as shown on the Plans, free of any contact with the existing columns, webwall, or strut. The forms shall be of such strength and have sufficient ties to the outer forms to support the pressures of poured concrete. The inner form may be removed or left in place. If the forms are left in place, they shall be constructed of horizontally corrugated metal or an approved equal. The portion of the form parallel to the webwall or strut shall be removed before pouring concrete adjacent to the webwall or strut. The column encasement shall be poured complete to Elevation 377.17 and the truss load transferred to the falsework and concrete encasement before any portion of the annular void between the existing column and encasement is filled.

JACKING APPROACH SPAN: After column encasement has been completed to Elevation 377.17 and before timber blocking noted below is in place, the approach bearing resting on Pier B strut shall be jacked to the north as outlined in Steps 8, 9 and 10 for Procedure of Work at Pier NP1. While the south end of the approach span is not anchored to Pier B strut it shall be temporarily anchored by placing cables around pier strut and around the cross framing and upper part of the bearings. After the approach span has been jacked to its proper location, work may begin on "Transferring Truss Load" and "Blocking Existing Pier". When the truss load has been transferred to the new concrete encasement and the truss span is adjusted horizontally to the correct position, it may be necessary to further adjust the approach span horizontally to its final position. After both spans are adjusted to their correct positions and the expansion shoes at Pier NP1 are in proper position the approach bearing shall be welded to the masonry plate as shown on Sheet 19 of the Plans. During the work involving horizontal adjustment of the spans, traffic plates may be required over the floor joint at Pier B to maintain traffic when the structure is not supported on jacks.

BLOCKING EXISTING PIER: Oak timber blocking shall be wedged between the existing columns and the new encasement at Elevation 377.17 to stabilize the existing pier. Immediately before the jacking operation described in Step 8 of "Procedure of Work at Pier B" is to start the timber blocking shall be put in place. This operation will fix the existing pier with respect to the new column encasement which is necessary as the existing pier will still support the approach girder span. If for any reason the jacking operation is stopped or interrupted before the truss load is transferred to the new encasement, the jacks should be released and the timber wedges removed to guard against damage to the new concrete encasement due to temperature variation and movement of the existing pier.

TRANSFERRING TRUSS LOAD: After the new column encasement has been completed, and provisions for blocking and stabilizing existing Pier B as described above have accomplished, work may continue as described in "Procedure of Work at Pier B", Steps 3 thru 11. However, blocking and stabilizing the existing pier must be accomplished immediately prior to the start of jacking the trusses (Step 8).

FILLING CIRCULAR VOID AND PLACING WEBWALL ENCASEMENT: After the truss load has been transferred to the new column encasement, the circular void shall be filled with Class "D" Concrete and the webwall encasement shall be placed using Class "D" Concrete. The concrete below Elevation 352.67 shall be placed through 4" diameter pipes inserted in the columns for that purpose. The contractor shall have equipment capable of pumping the concrete through the pipes if necessary to insure that the void is completely filled. In order to obtain even distribution of the concrete fill, all pipes at each level shall be used to fill the void. The placing of concrete shall begin at the extreme downstream and upstream end of the pier and proceed towards the webwall encasement so that any water which may exist in the void shall be forced into the webwall forms and not become trapped in the void around the existing columns.

CONCRETE, CLASS "D": Concrete for filling the circular void and webwall encasement shall be Class "D" Concrete as specified in Section 403 of the Standard Specifications except that a Type D Water-Reducing and Set-Retarding admixture conforming to the requirements of ASTM C494-71 shall be used in the mix as recommended by the admixture manufacturer. The slump of the concrete shall be not less than four (4) inches nor more than eight (8) inches. The admixture will not be paid for separately, but the cost shall be included in the unit price bid for Concrete, Class "D". Concrete, Class "D" shall be paid for at the unit price bid per cubic yard and such payment shall be full compensation for the inner forms, embedded steel pipe, timber blocking, all materials, admixtures, equipment, tools, labor and incidentals necessary to furnish and place Concrete, Class "D", between Elevations 326.67 and 377.17 as shown in the Plans.

ADDITIONAL BASIS OF PAYMENT: The additional cost of the inner forms and of all work incidental to this revised construction procedure for Pier B above Elevation 326.67 shall be included in the negotiated unit price for "Concrete, Class "D" per cubic yard, except that current contract items of work increased or reduced by this revised procedure will be paid for at the original contract price.

DESIGNED BY FDG DATE 6-7-72
DETAILED BY CL DATE 6-7-72
CHECKED BY DATE
CHECKED BY DATE
QUANTITIES BY DATE
TRACED BY DATE

SHEET 3A

REPAIRS TO BRIDGE CARRYING U.S. 60 OVER CUMBERLAND RIVER

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
LIVINGSTON
SMITHLAND-MARION
ROAD

STATION | P.E. PROJECT NO. SP 70-70

CONSTRUCTION PROJECT NO	MAINTENANCE PROJECT NO.	DRAWING NO
		18180

GENERAL NOTES

BRIDGE

FED. ROAD DIST.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
7	KY.				

LETTING DATE

+0.50% Grade (Existing)

-0.48% Grade (Existing)

PT Elev. 391.21
Sta. 62+10.00
-4.02% Grade (Proposed)

PT Sta. 65+18.64
Elev. 378.91

-4.00% Grade (Existing)

70' V.C.

70' V.C.

Relocate Navigation Light at Pier B (See Sheet 25)

℄ Pier B.

Remove portion of Existing Pier and Construct new Pier

Joint E

Joint E

Joint E

Joint E

Low Steel Elev. 385.8

Joint E

High Water Elev. 342.2 (1913)

Ext. High Water Elev. 348.9 1937

Br. Seat El. 381.17

Br. Seat El. 378.30

Encase Existing Pier B.

Elev. 307.5

Normal Pool Elevation 299.8

Elev. 322.97

Elev. 264.3

Elev. 261.54

Rock Elevation

Elev. 225.1

Elev. 214.0

Proposed 14 Ef. 89

Proposed 12 EP 53

Elev. 215.56

ABUT. SA | PIER SP4 | PIER SP3 | PIER SP2 | PIER SP1 | PIER A | PIER B | PIER NP1 | PIER NP2 | PIER NP3 | PIER NP4 | PIER NP5 | PIER NP6 | PIER NP7 | PIER NP8 | ABUT. NA

℄ Pier
℄ Brg. Girder
℄ Lower Shoe
0.14'

Rock Elevation

℄ Pier (Existing)
℄ Brg. Truss (Existing)
℄ Brg. Girder (Existing)
0.12'
0.75'

34.69' | 102.11' | 102.98' | 102.11' | 101.93' | 1.39' | 499.35' c.c. Lower Shoe | 1.19' | 100.95' | 104.87' | 103.25'* | 132.95' | 102.93' | 102.93' | 102.95' | 102.02' | 85.43' | Existing Dimensions

101.93'* | 1.39' | 499.89' c.c. Lower Shoe | 102.20' | 102.87' | Proposed Dimensions

0.32'* | 1.17'* | ℄ Brg. Truss (Proposed)
℄ Brg. Girder (Proposed)
℄ Pier (Proposed)

*Dimension 101.93 may increase when the truss is free at Pier B and allowed to move longitudinally assuming that Pier A is now deflected to the South by the Superstructure.

• Probable Dimension

Existing Cable Hitch
Existing Anchor Pier

Bench Mark Elev. 337.962
Railroad Spike in concrete monument flush with ground located on ℄ of Bridge between Piers NP7 and NP8 @ Sta 69+79.776
(U.S. Corps of Engineers' Cumberland River 1889 Construction Datum)
This is datum that original plans (1928) were based on.

ELEVATION

Sta 62+08.84
P.G. Elev. 391.03
℄ Pier B

℄ Pier NP1
Sta 63+12.54

Sta 64+18.22
P.G. Elev. 383.06

℄ Pier NP2
Sta 64+18.61
P.G. Elev. 382.91

℄ Pier NP3
Sta 65+18.64
P.G. Elev. 378.91

Exp. Dam | 55 | Exp. Dam | Exp. Dam | CUMBERLAND RIVER | 60 | ℄ Roadway | Exp. Dam | Exp. Dam | 65 | Exp. Dam | Exp. Dam | Exp. Dam | Bench Mark Elev. 337.962 | 70

Joint D | Joint C | Joint B | Joint C | Joint B | Joint A | Joint E | Joint E | Joint E | Joint E | Joint F | Joint E | Joint C | Joint B | Joint C | Joint B | Joint C | Joint B | Joint C | Joint D

FLOW

PLAN

NOTES:

Items of construction included under this contract

1. Drive new foundation piles and encase existing Pier B with new reinforced concrete.
2. Erect Falsework of Piers B and NP1 as shown in the plans.
3. Remove portions of Pier NP1 and construct new Pier
4. Replace Expansion Dam at Pier A (Joint A)
5. Replace Expansion Dam on approaches (Joint B)
6. Replace Slab joints at fixed bearings (Joint C or F)
7. Replace Slab joints at each abutment (Joint D)
8. Replace Slab joints at stringer expansion joint on truss span (Joint E)
9. Adjust girder bearings at Sp 2 & SP1, B and add shims under bearings @ NP2.
10. Reposition roller segments in truss span expansion bearing @ Pier A
11. Enlarge coping of Pier NP3
12. Repair coping of Pier NP7
13. Site Excavation and Grading
14. Other incidental work required to complete the work as shown in the plans.

Existing Structure Plans

Plans for the existing structure are on file in the office of the Kentucky Department of Highways, Frankfort Kentucky and prints of these plans for information may be obtained by contacting the Department.

SHEET 4

REPAIRS TO BRIDGE CARRYING U.S 60 OVER CUMBERLAND RIVER

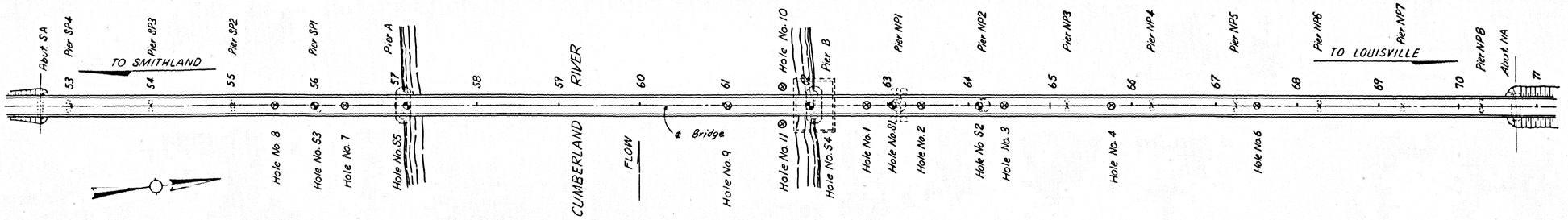
COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
LIVINGSTON
SMITHLAND - MARION
ROAD

STATION | PROJECT NO. SP 70-70

CONSTRUCTION PROJECT NO.	MAINTENANCE PROJECT NO.	DRAWING NO.
		18180

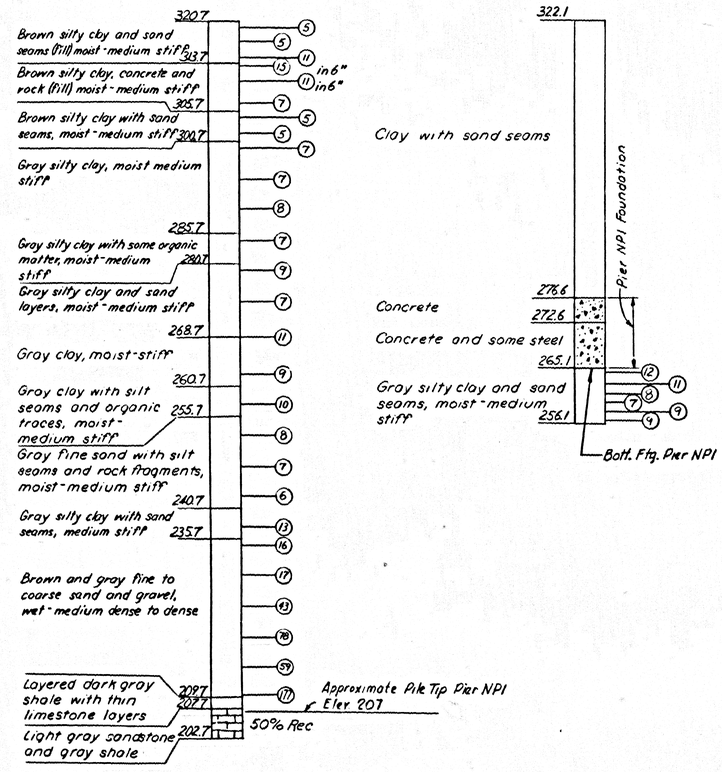
GENERAL PLAN

BRIDGE



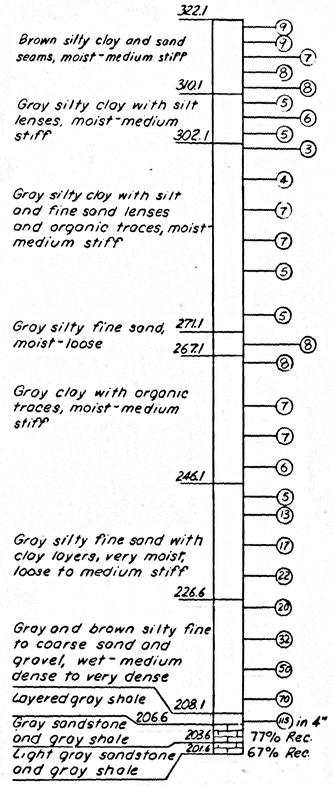
PLAN

Hole No. 1
Sta. 62+74
on ℄

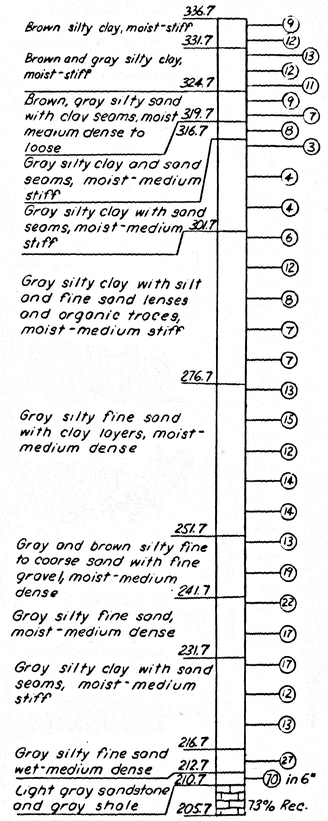


Hole No. S1
Sta. 63+06
on ℄

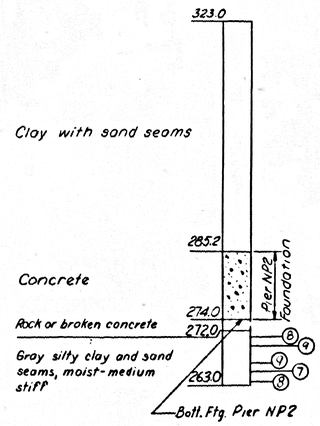
Hole No. 2
Sta. 63+41
on ℄



Hole No. 6
Sta. 67+51
on ℄



Hole No. 52
Sta. 64+09
on ℄



See Sheet 85 for notes

SHEET 5

REPAIRS TO BRIDGE CARRYING US 60 OVER CUMBERLAND RIVER

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
LIVINGSTON
SMITHLAND-MARION
ROAD

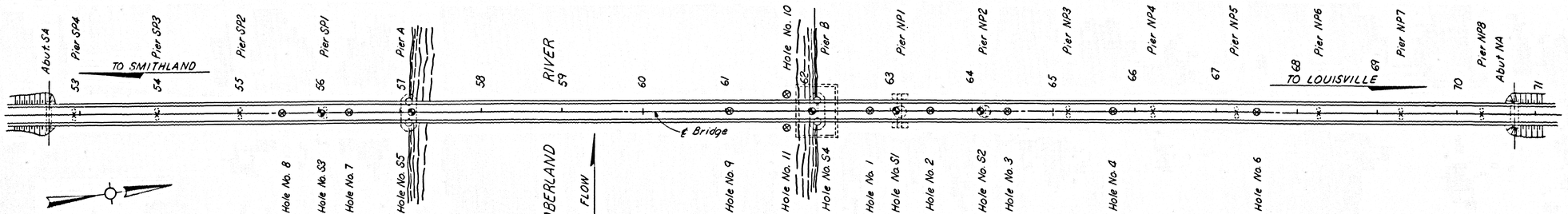
STATION | PROJECT NO. SP 70-70

BRIDGE NUMBER | DRAWING NO. | DATE 18180

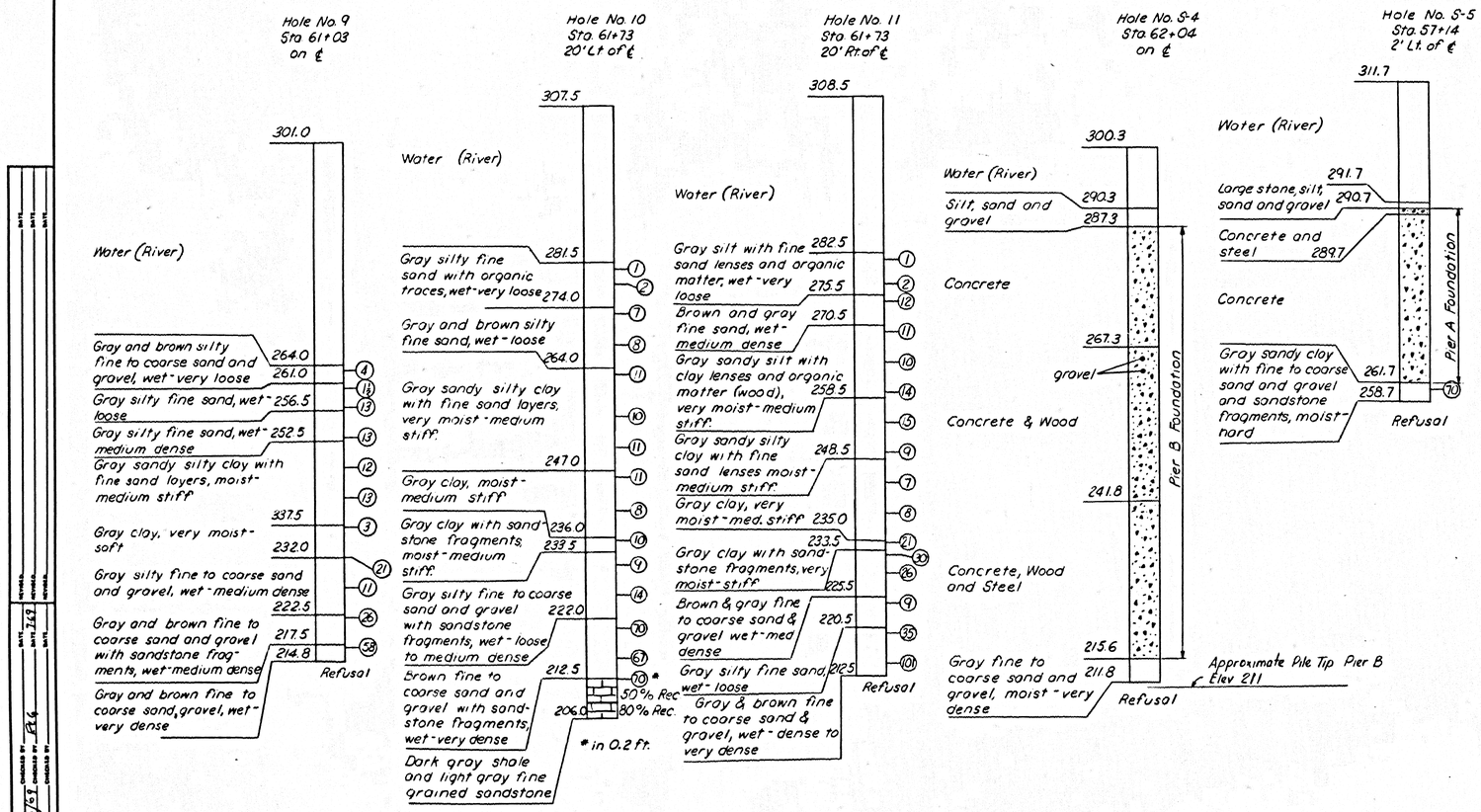
LOG OF SOUNDINGS

DESIGNED BY RL DATE 3-69
DETAILED BY DATE
CHECKED BY DATE
CHECKED BY DATE
TRACED BY DATE

BRIDGE



PLAN



Notes:

(8) Indicates Split Spoon Sample taken with 2" Diameter spoon using a 140 pound weight dropping 30 inches.
Number in circle indicates number of blows required to drive sampler 1 foot unless noted.
Elevations at left of borings indicate change in strata.

90% Rec. indicates rock core and percent of core recovered

Indicates core through existing foundation

⊗ Indicates soundings with samples

SHEET 6

REPAIRS TO BRIDGE CARRYING US 60 OVER CUMBERLAND RIVER

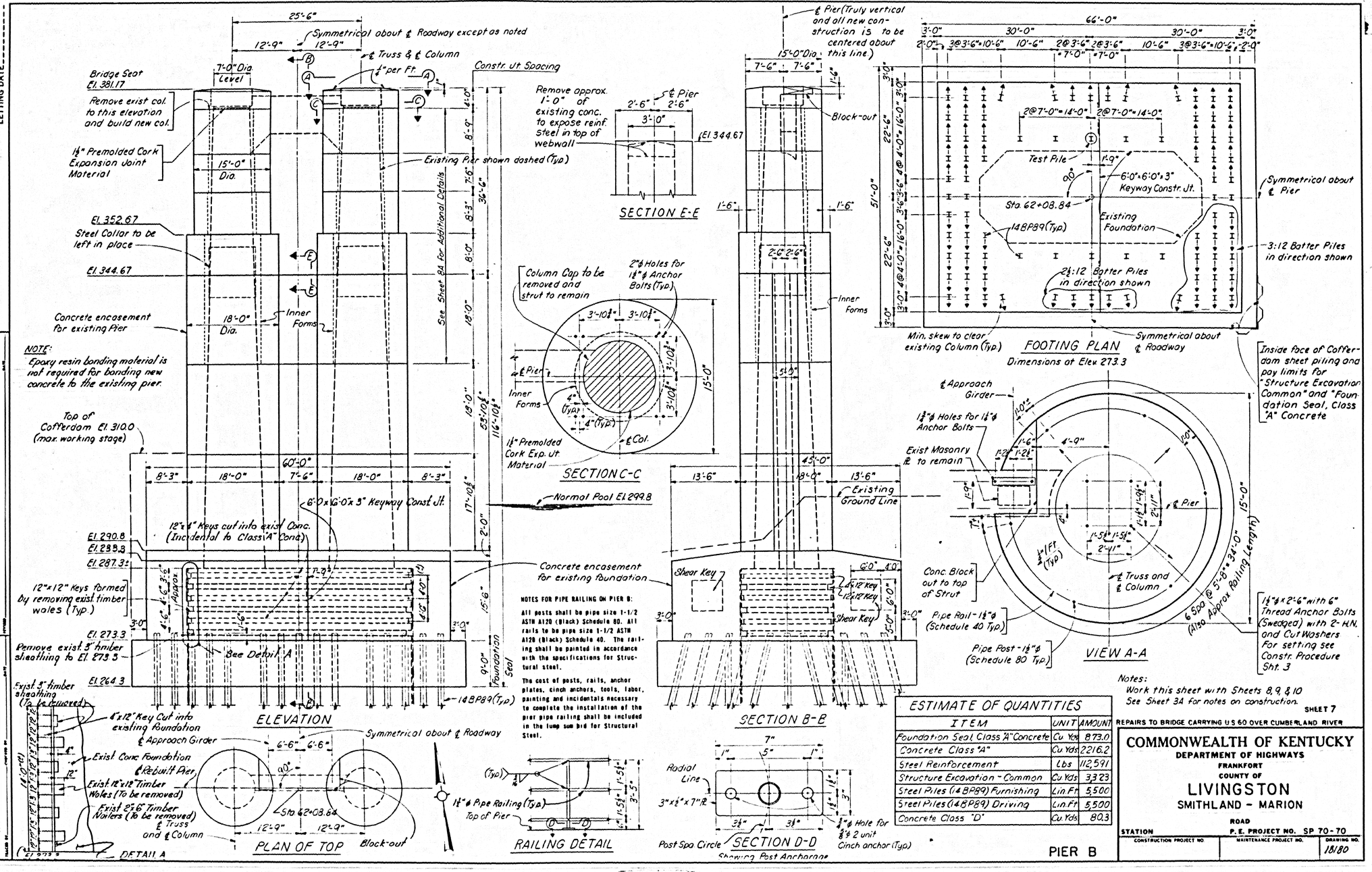
COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
LIVINGSTON
SMITHLAND-MARION
ROAD
STATION PROJECT NO. SP 70-70
BRIDGE NUMBER DRAWING NO. 18180

LOG OF SOUNDINGS

DESIGNED BY WES 7/61 DETAILED BY CHECKED BY TRACED BY CHECKED BY

BRIDGE

LETTING DATE



Notes:
Work this sheet with Sheets 8, 9, & 10
See Sheet 34 for notes on construction.

SHEET 7

REPAIRS TO BRIDGE CARRYING U.S. 60 OVER CUMBERLAND RIVER

ESTIMATE OF QUANTITIES

ITEM	UNIT	AMOUNT
Foundation Seal, Class "A" Concrete	Cu. Yds.	873.0
Concrete Class "A"	Cu. Yds.	2216.2
Steel Reinforcement	Lbs.	112,591
Structure Excavation - Common	Cu. Yds.	3323
Steel Piles (14BP89) Furnishing	Lin. Ft.	5,500
Steel Piles (14BP89) Driving	Lin. Ft.	5,500
Concrete Class "D"	Cu. Yds.	80.3

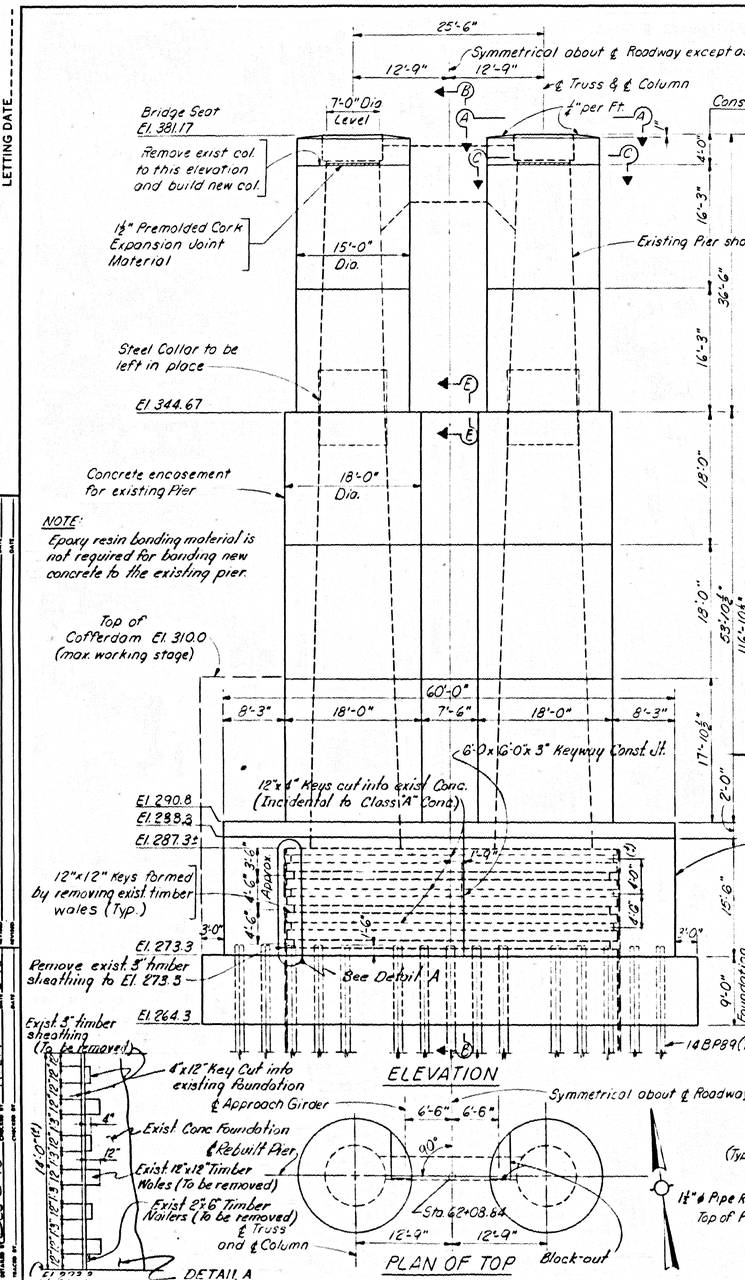
PIER B

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
LIVINGSTON
SMITHLAND - MARION
ROAD
STATION
P.E. PROJECT NO. SP 70-70

CONSTRUCTION PROJECT NO.	MAINTENANCE PROJECT NO.	DRAWING NO.
		18180

BRIDGE

LETTING DATE



Notes:
Work this sheet with Sheets 8, 9, & 10

ESTIMATE OF QUANTITIES

ITEM	UNIT	AMOUNT
Foundation Seal, Class "A" Concrete	Cu. Yds	873.0
Concrete Class "A"	Cu. Yds	2250.4
Steel Reinforcement	Lbs	37,501
Structure Excavation - Common	Cu. Yds	3,323
Steel Piles (14BP89) Furnishing	Lin. Ft	5,500
Steel Piles (14BP89) Driving	Lin. Ft	5,500

PIER B

SHEET 7

REPAIRS TO BRIDGE CARRYING U.S. 60 OVER CUMBERLAND RIVER

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
LIVINGSTON
SMITHLAND - MARION
ROAD
STATION — P.E. PROJECT NO. SP 70-70

CONSTRUCTION PROJECT NO.	MAINTENANCE PROJECT NO.	DRAWING NO.
		18180

DESIGNED BY K.O.K. CHECKED BY K. LIN DATE 2-70
DETAILED BY K.O.K. CHECKED BY R. LIN DATE 2-70
TRACED BY K.O.K. CHECKED BY DATE

BRIDGE

LETTING DATE

Construction Alteration to Pier B

DRAWN BY	CHECKED BY	DATE
KJG		MAR 2-70
TLN		MAR 2-70
JDM		MAR 2-70

PLAN

Place B41 Bars 2" clear below Bridge St Elev.

℄ Pier

℄ Roadway & ℄ Symmetry (Except as noted)

NOTES:
Work Sheets 7, 8 & 9 together.
Bars which require embedment in existing pier are to be grouted into predrilled holes (30° down from horiz.) of min. 2" ø for #11 Bars and 1¼" ø for #4 or #5 bars. Holes shall be drilled with rotary equipment and kept dry in freezing weather.
The cost of drilling holes, furnishing grout and filling holes shall be incidental to Concrete Class "A"

ELEVATION

See Sheet 8A for Additional Details

DETAIL D

TOP OF COLUMN

Existing Strut

SECTION A-A

SECTION B-B

Existing Pier

SECTION C-C

PLAN OF FOOTING

Top of Footing Reinforcement

Bottom of Footing Reinforcement

Field bend and straighten 4 top most B34 Bars to clear concrete block out

Inner Forms

℄ Column

℄ Roadway & ℄ Symmetry (Except as noted)

BILL OF REINFORCEMENT

MARK	TYPE	EMBEDDED IN EXIST. PIER	SIZE	No. of Bars	Length FT.	Length IN.	Dim "a" FT.	Dim "a" IN.	Dim "b" FT.	Dim "b" IN.	Dim "c" FT.	Dim "c" IN.	LOCATION
B1	(1)	—	11	32	46	10	44	0	2	0	42	9¾	Footing
B2	(1)	Yes	11	4	23	4	18	11	2	0	18	3⅜	"
B3	(1)	"	11	4	22	7	18	2	2	0	17	6¾	"
B4	(1)	"	11	4	21	11	17	6	2	0	16	10⅜	"
B5	(1)	"	11	4	21	2	16	9	2	0	16	1⅞	"
B6	(1)	"	11	26	18	5	14	0	2	0	13	4⅜	"
B7	(1)	"	11	14	12	11	8	6	2	0	7	10⅜	"
B8	(1)	"	11	4	14	4	9	11	2	0	9	3⅜	"
B9	(1)	"	11	4	15	9	11	4	2	0	10	8⅜	"
B10	(1)	"	11	4	17	2	12	9	2	0	12	1⅞	"
B11	(2)	—	11	26	37	5	36	0	2	0	35	4⅜	"
B12	(2)	—	11	26	29	2	29	9	2	0	27	7⅛	"
B13	(4)	—	5	20	30	3	14	6	15	9	2	4	"
B14	Str	10 Bars	5	26	17	0							"
B15	(3)	—	5	20	25	8	15	0	10	8	0	0	"
B16	(3)	—	5	40	26	8	16	0	10	8	0	0	"
B17	Str.	—	5	22	25	0							"
B18	Str.	—	5	6	13	6							"
B19	Str.	—	5	22	19	4							"
B20	Str.	—	5	16	33	6							"
B21	Str.	—	5	16	27	11							"
B22	(4)	—	5	16	48	5	44	4	2	1	2	1	"
B23	(4)	—	6	144	5	8	0	9	2	6	2	6	"
B24	Str.	—	6	36	40	0							"
B25	Str.	Yes	11	32	11	9							"
B26	(2)	—	11	32	9	8	8	3	2	0	7	7⅛	"
B27	(5)	112 Bars	5	224	29	3	17	4	8	7⅜			Footing & Col.
B28	Str.	—	11	128	22	9							"
B29	Str.	—	11	64	17	9							"
B30	Str.	—	11	44	21	0							"
B31	Str.	—	11	38	20	0							"
B32	Str.	—	11	6	18	6							"
B33	(6)	—	5	54	47	0	14	4					"
B34	(6)	16 Bars	5	80	24	6	14	8	7	1⅜			"
B35	(1)	—	11	60	14	10	12	0	2	0	10	9¼	"
B36	Str.	—	6	100	11	0							Web Wall
B37	(4)	Yes	6	18	7	11	6	8	1	8	1	8	"
B38	Str.	—	4	16	2	9							"
B39	Str.	—	4	32	19	8							"
B40	Str.	—	4	16	17	11							"
B41	(4)	—	5	32	8	1	5	6	1	4	1	4	Top of Col.

TYPE (5) TYPE (6) TYPE (4)

TYPE (1) TYPE (2) TYPE (7) TYPE (3)

Notes: See Sheet 3A for notes on construction.
See Sheet 8A for additional steel reinforcement details.

SHEET 8

REPAIRS TO BRIDGE CARRYING U.S 60 OVER CUMBERLAND RIVER

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
LIVINGSTON
SMITHLAND — MARION
ROAD

STATION | P.E. PROJECT NO. SP 70-70

CONSTRUCTION PROJECT NO.	MAINTENANCE PROJECT NO.	DRAWING NO.
		18180

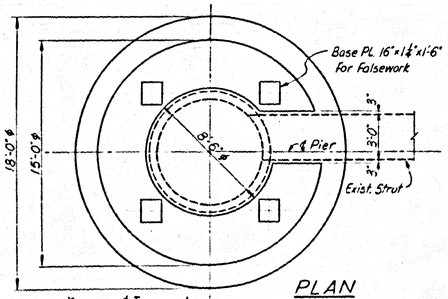
PIER B

BRIDGE

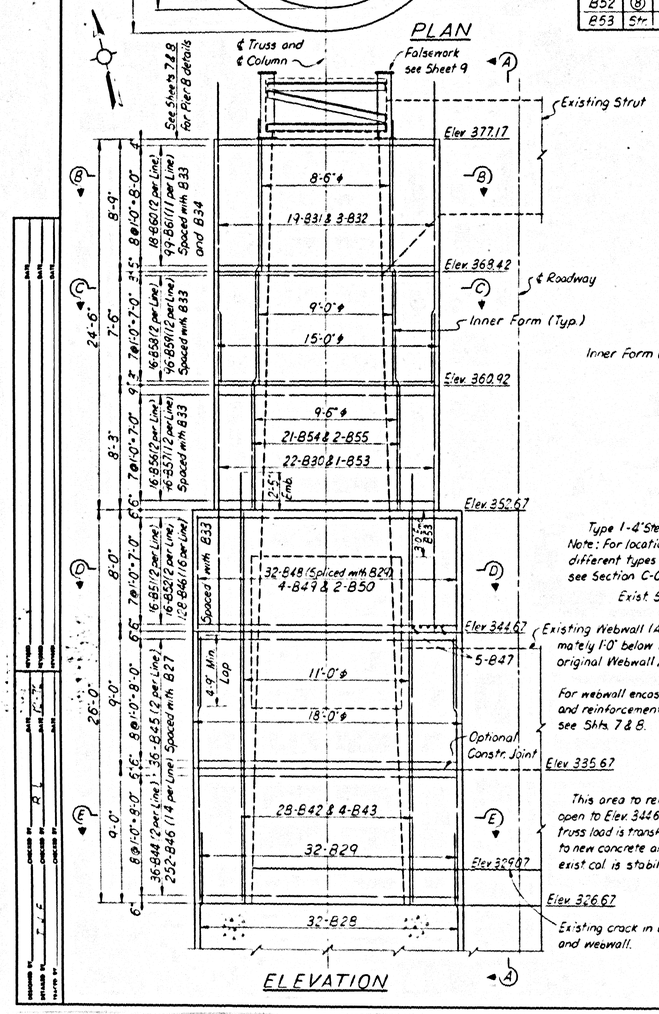
LETTING DATE

ADDITIONAL BILL OF REINFORCEMENT

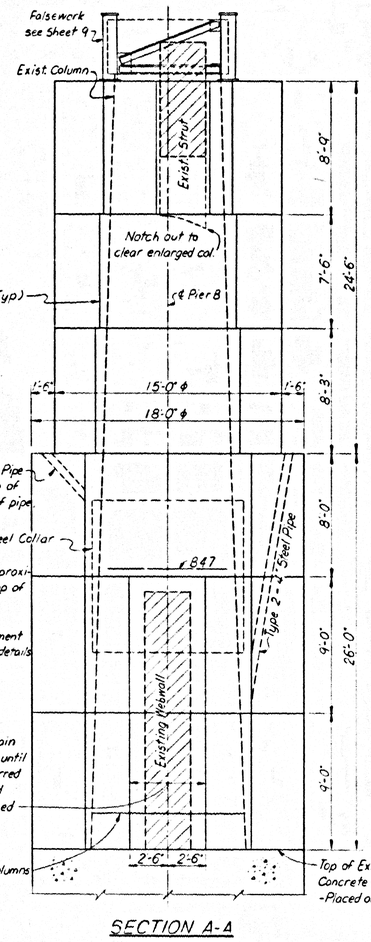
Mark	Type	Size	No. of Bars	Length Ft.	Length In.	Dim. 'a' Ft.	Dim. 'a' In.
B42	Str.	9	56	28	5		
B43	Str.	9	8	17	6		
B44	⑧	4	72	16	0	5	8
B45	⑨	4	72	6	0		
B46	⑭	4	760	4	0	2	8
B47	Str.	9	10	8	0		
B48	Str.	11	64	12	9		
B49	Str.	9	8	10	5		
B50	Str.	9	4	7	9		
B51	③	4	32	19	7	5	8
B52	⑧	5	32	29	3	8	7⅞
B53	Str.	11	2	21	0		
B54	⑩	9	42	25	4		
B55	⑪	9	4	15	10		
B56	⑧	4	32	17	3	4	11
B57	⑭	4	192	3	3	1	11
B58	⑧	4	32	16	6	4	8
B59	⑭	4	192	3	6	2	2
B60	⑧	4	36	12	10	4	5
B61	⑭	4	198	3	9	2	5



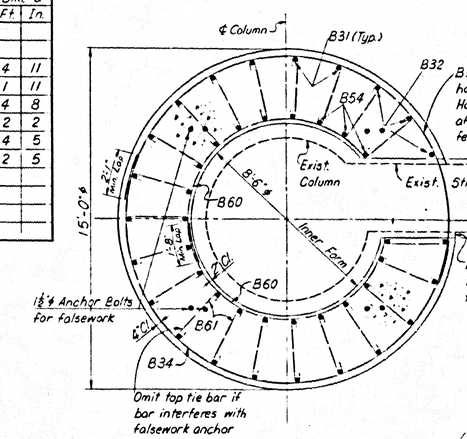
PLAN



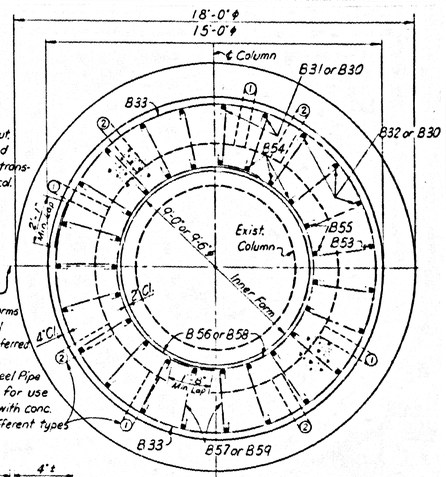
ELEVATION



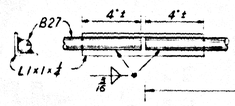
SECTION A-A



SECTION B-B

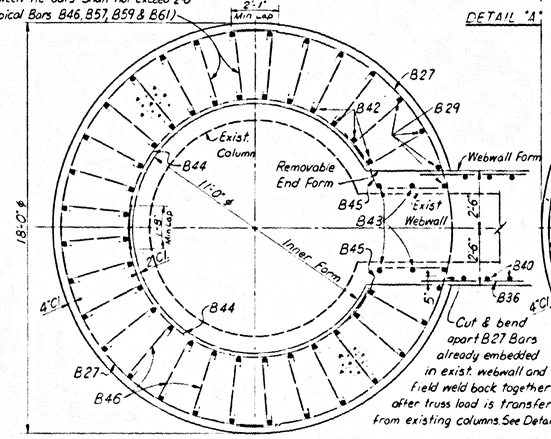


SECTION C-C

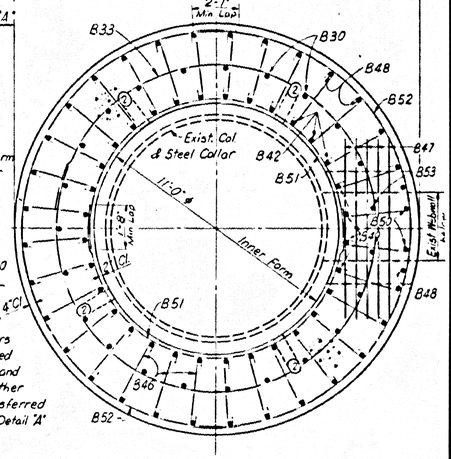


DETAIL "A"

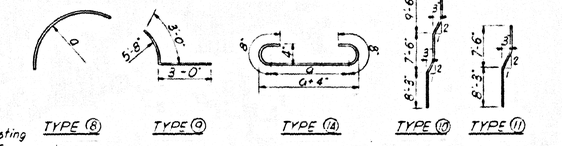
Adjacent ties shall be at different levels. Vertical or horizontal spacing between tie bars shall not exceed 2'-0" (Typical Bars B46, B57, B59 & B61)



SECTION E-E



SECTION D-D



TYPE ⑧ TYPE ⑨ TYPE ⑭ TYPE ⑩ TYPE ⑪

Notes: For details not shown, see Sheets 7 & 8. For quantities, see Sheet 7.

Type 2-4" Steel Pipe Note: Top of Existing Concrete Encasement -Placed on Oct. 24, 1972

CONSTRUCTION ALTERATION TO PIER B

SHEET 8A

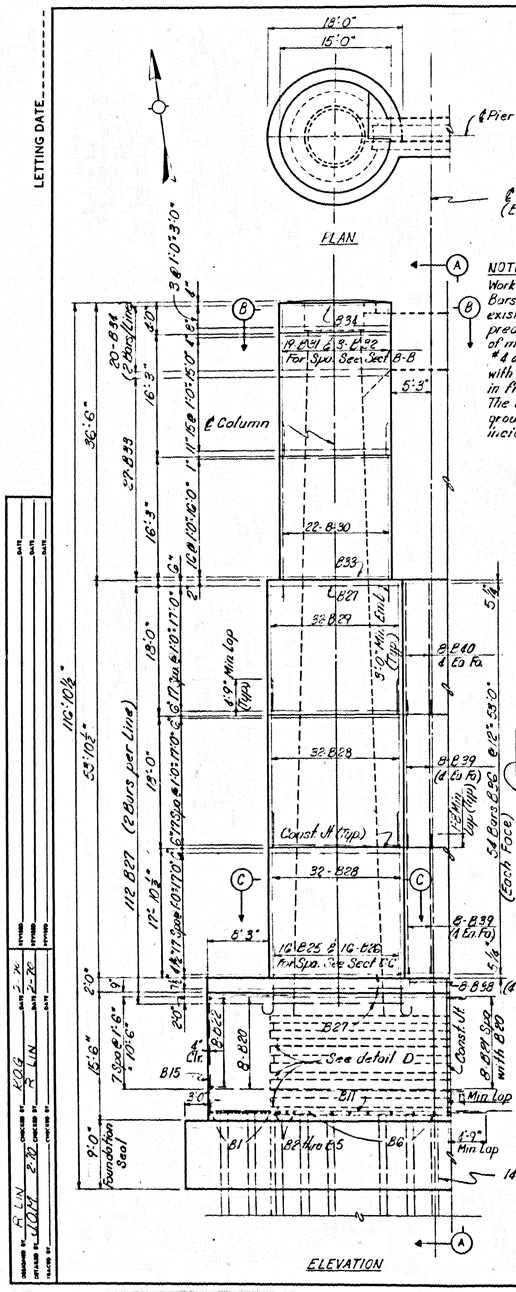
ROAD TO BRIDGE CARRYING U.S. 60 OVER CUMBERLAND RIVER

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
LIVINGSTON
SMITHLAND - MARION
ROAD
STATION - P. E. PROJECT NO. SP 70-70

CONSTRUCTION PROJECT NO.	MAINTENANCE PROJECT NO.	DRAWING NO.
		18180

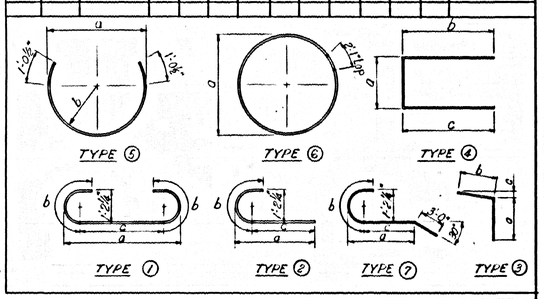
BRIDGE

LETTING DATE



BILL OF REINFORCEMENT

MARK	TYPE	EMBEDDED IN EXIST. PIER	SIZE	No. of Bars	Length FT	Length IN	Dim "a" FT	Dim "a" IN	Dim "b" FT	Dim "b" IN	Dim "c" FT	Dim "c" IN	LOCATION
B1	1	—	11	32	46	10	44	0	2	0	42	9¾	Footing
B2	1	Yes	11	4	23	4	18	11	2	0	19	3⅜	"
B3	1	"	11	4	22	7	18	2	2	0	19	6⅞	"
B4	1	"	11	4	21	11	17	6	2	0	18	10⅜	"
B5	1	"	11	4	21	2	16	9	2	0	16	1⅞	"
B6	1	"	11	26	18	5	14	0	2	0	13	4⅜	"
B7	1	"	11	14	12	11	8	6	2	0	7	10⅜	"
B8	1	"	11	4	14	4	9	11	2	0	9	5⅜	"
B9	1	"	11	4	15	9	11	4	2	0	10	8⅜	"
B10	1	"	11	4	17	2	12	9	2	0	12	1⅞	"
B11	2	—	11	26	37	5	36	0	2	0	35	4⅜	"
B12	2	—	11	26	29	2	27	9	2	0	27	1⅞	"
B13	3	—	5	90	30	3	14	6	15	9	2	4	"
B14	Str	10 Bars	5	20	17	0							"
B15	3	—	5	20	25	8	15	0	10	8	1	0	"
B16	3	—	5	40	26	8	16	0	10	8	0	0	"
B17	Str	—	5	22	25	0							"
B18	Str.	—	5	6	13	6							"
B19	Str.	—	5	22	19	4							"
B20	Str.	—	5	16	33	6							"
B21	Str.	—	5	16	27	11							"
B22	4	—	5	16	48	5	44	4	2	1	2	1	"
B23	4	—	6	444	5	8	0	9	2	6	2	6	"
B24	Str.	—	6	36	40	0							"
B25	Str.	Yes	11	32	11	3							"
B26	2	—	11	32	9	8	8	3	2	0	7	7⅛	"
B27	6	112 Bars	5	224	29	3	17	4	8	7⅛			Footing & Col Column
B28	Str.	—	11	182	22	9							"
B29	Str.	—	11	64	17	9							"
B30	Str.	—	11	44	21	0							"
B31	Str.	—	11	38	20	0							"
B32	Str.	—	11	6	18	6							"
B33	6	—	5	54	47	0	14	4					"
B34	5	16 Bars	5	40	24	6	14	4	7	1⅛			"
B35	1	—	11	20	14	10	12	0	2	0	10	9¾	"
B36	Str.	—	4	100	11	0							Web Wall
B37	4	Yes	4	18	7	11	4	8	1	8	1	8	"
B38	Str.	—	4	16	2	9							"
B39	Str.	—	4	32	19	8							"
B40	Str	—	4	16	17	11							"
B41	4	—	5	32	8	1	5	6	1	4	1	4	Top of Col.



SHEET 8

REPAIRS TO BRIDGE CARRYING U.S 60 OVER CUMBERLAND RIVER

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
LIVINGSTON
SMITHLAND — MARION
ROAD

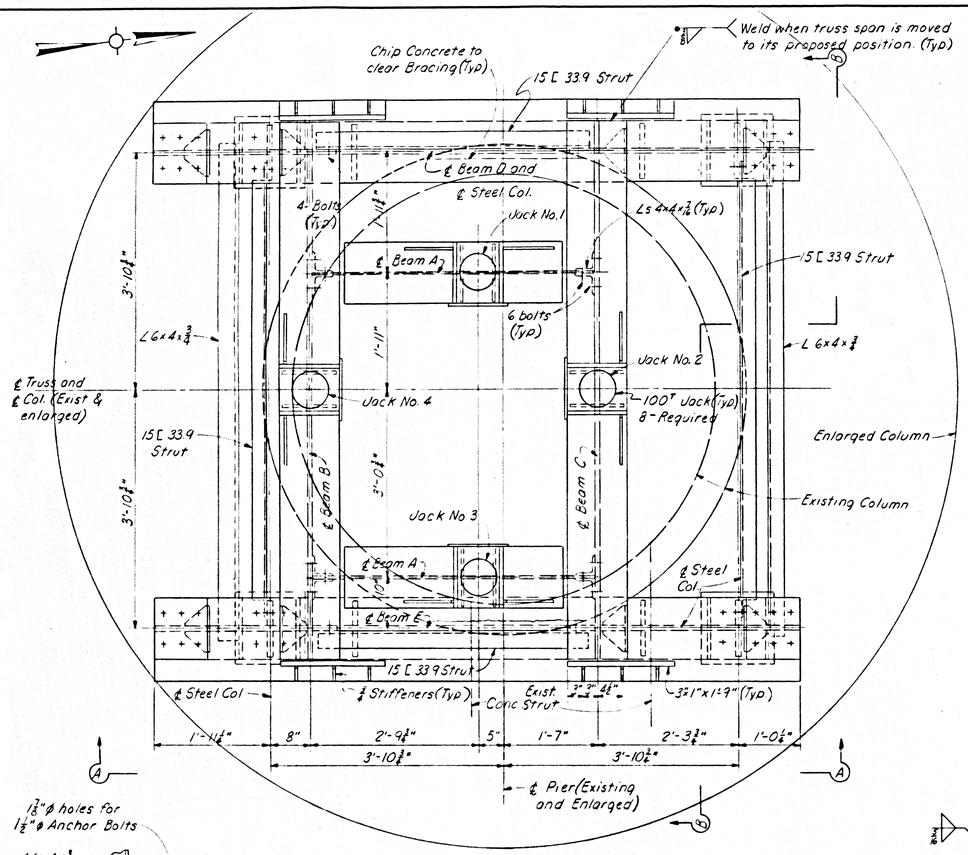
STATION	P. E. PROJECT NO. SP 70-70	
CONSTRUCTION PROJECT NO.	MAINTENANCE PROJECT NO.	DRAWING NO. 18180

PIER B

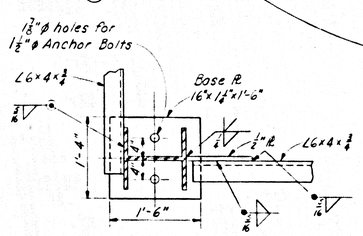
DESIGNED BY F.LIN DATE 2-70 CHECKED BY K.O.G
DETAILED BY E.BOM DATE 2-70 CHECKED BY R. LIN
TRACED BY DATE CHECKED BY DATE

BRIDGE

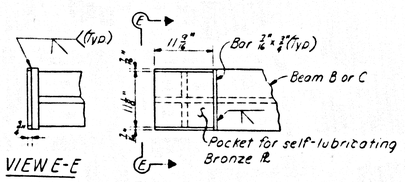
LETTING DATE



PLAN

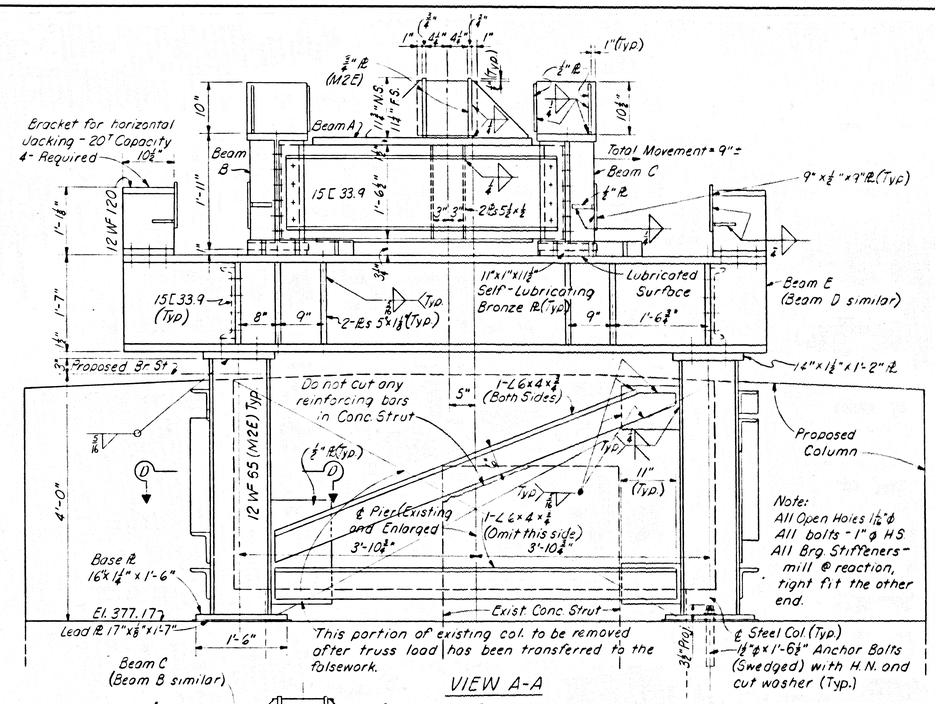


SECTION D-D



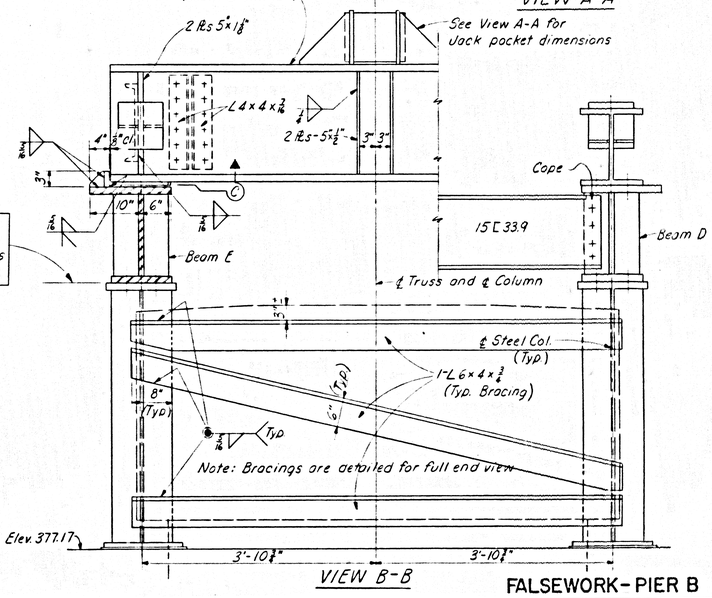
VIEW E-E

SECTION C-C



This portion of existing col. to be removed after truss load has been transferred to the falsework.

VIEW A-A



All Falsework steel below this elevation is to remain in place. See General Notes for painting.

VIEW B-B

FALSEWORK - PIER B

BEAM SCHEDULE

Beam	Web	Top Flange	Bottom Flange	Size of Filler Welds ¼"
A	18⅜ x ⅜	12 x 1⅛	12 x ⅝	
B	20 x ⅜	12 x 1⅛	12 x 1⅛	
C	20 x 1⅛	12 x 1⅜	12 x 1½	
D	16 x 1¼	16 x 1⅜	12 x 1½	
E	16 x 1 3/16	16 x 1¼	12 x 1½	

Notes:
All structural Steel A36
For Jacking Supports on Truss, see Sht. 10
For Pier B Details, see Sht. 7 & 8
Falsework for West Column shown, East Column similar
Estimated weight of Structural Steel on this sheet 31,546 lbs.

SHEET 9

REPAIRS TO BRIDGE CARRYING US 60 OVER CUMBERLAND RIVER

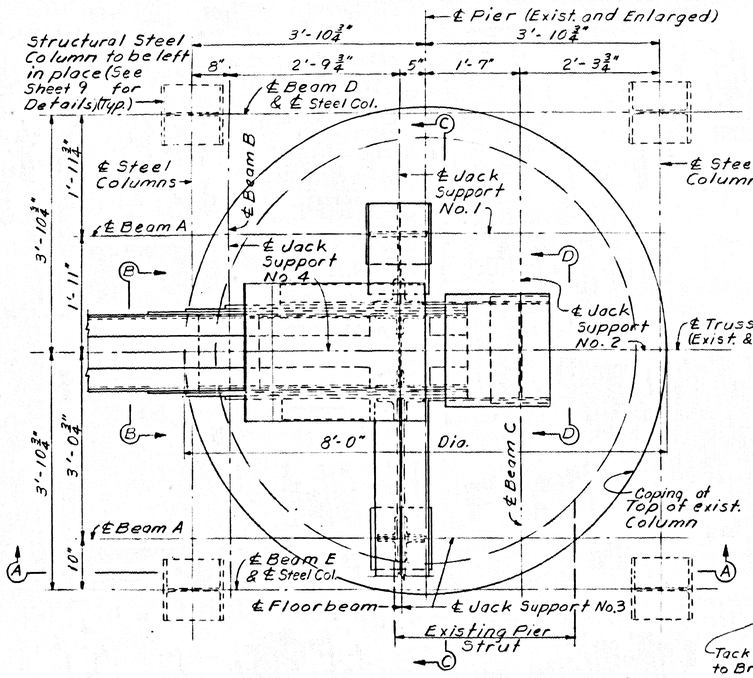
COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
LIVINGSTON
SMITHLAND — MARION
ROAD

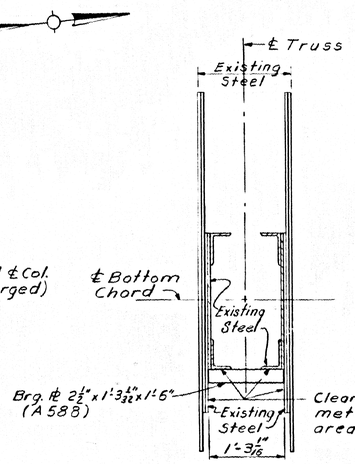
STATION | P. E. PROJECT NO. SP 70-70 | CONSTRUCTION PROJECT NO. | MAINTENANCE PROJECT NO. | DRAWING NO. 18180

DESIGNED BY K. LIN DATE 2-70
DETAILED BY L. WORKMAN DATE 2-70
TRACED BY DATE
CHECKED BY DATE
CHECKED BY DATE
REVISED DATE
REVISED DATE

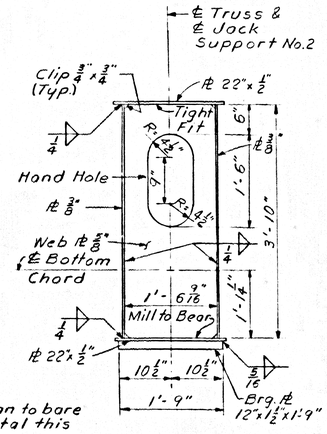
BRIDGE

LETTING DATE

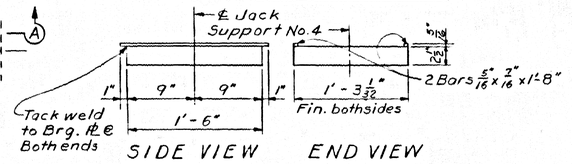




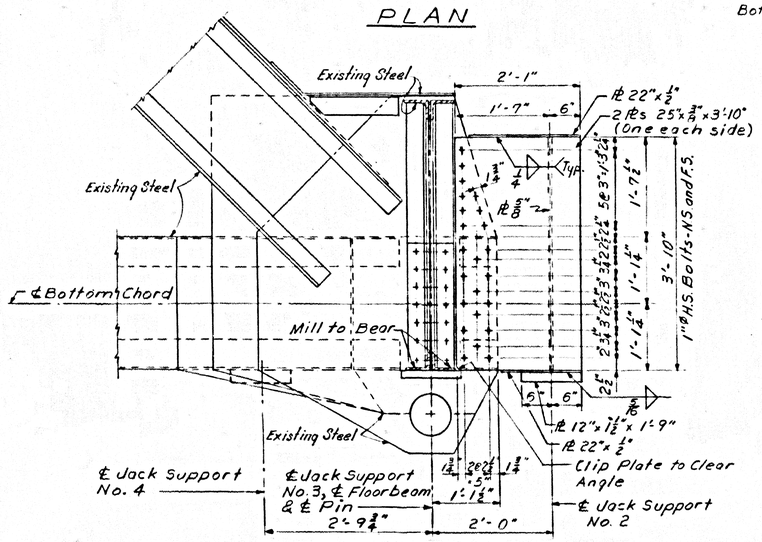
SECTION B-B



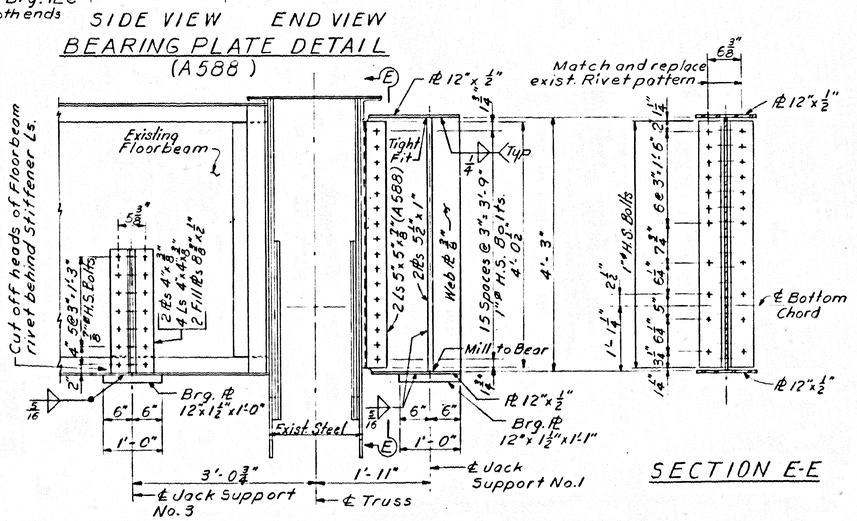
END VIEW D-D



BEARING PLATE DETAIL (A588)



ELEVATION A-A



SECTION C-C

SECTION E-E

NOTES:

All structural steel A36 except as noted.
Details for West Column shown, East Column similar
For Falsework Details See Sheet 9
Estimated weight of Structural Steel on this sheet - 3092 lbs. (including 824 lbs. of A588)
Holes in the existing steel that are left open because of the removal of jacking supports, as directed by the Engineer, shall be filled with H.S. Bolts of proper size and length.

SHEET 10

REPAIRS TO BRIDGE CARRYING U.S. 60 OVER CUMBERLAND RIVER

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
LIVINGSTON
SMITHLAND – MARION
ROAD
STATION
P. E. PROJECT NO. SP 70-70

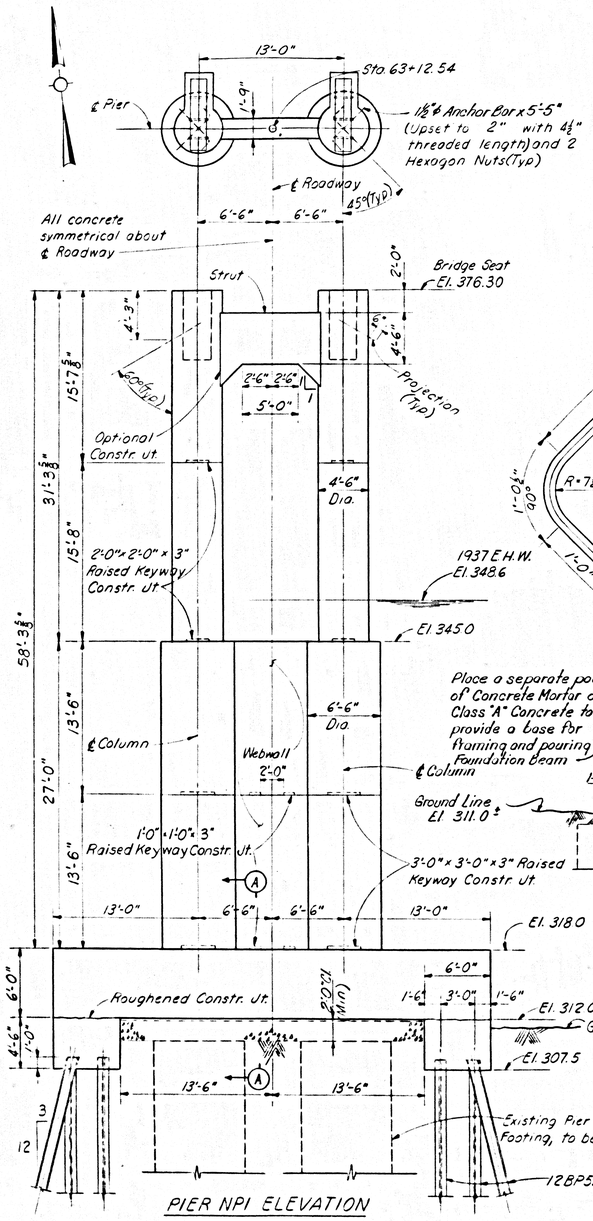
CONSTRUCTION PROJECT NO.	MAINTENANCE PROJECT NO.	DRAWING NO.
		18180

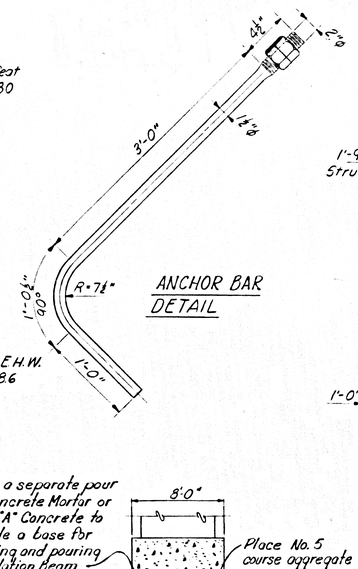
JACKING SUPPORTS – PIER B

DESIGNED BY P.W.K. DATE 2-70
DETAILED BY M.D.C. DATE 2-70
CHECKED BY DATE
TRACED BY DATE

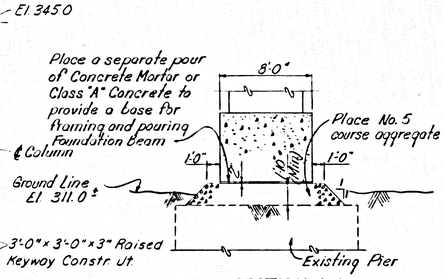
BRIDGE

LETTING DATE

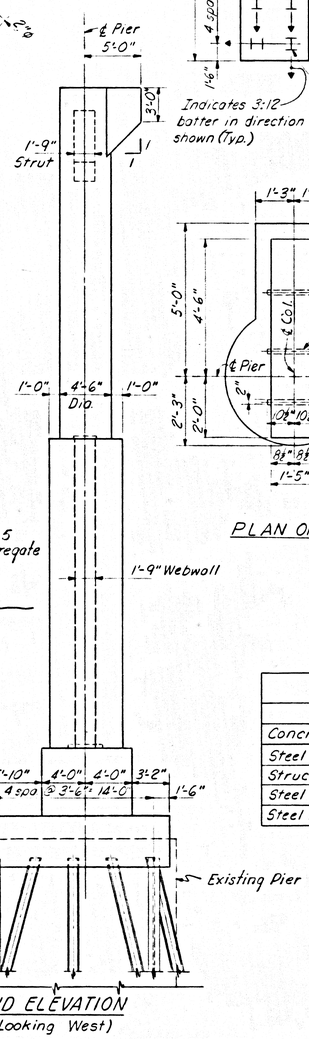




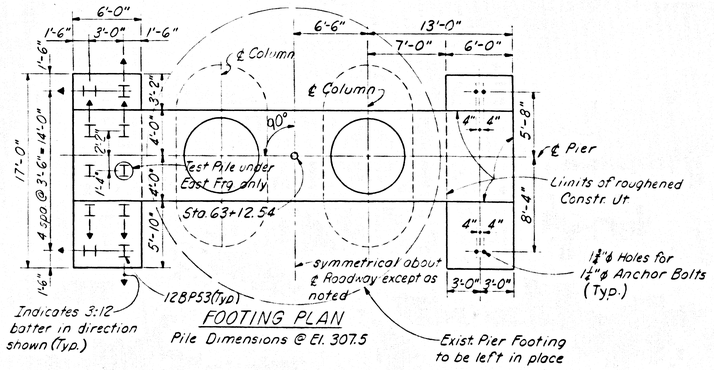
ANCHOR BAR DETAIL



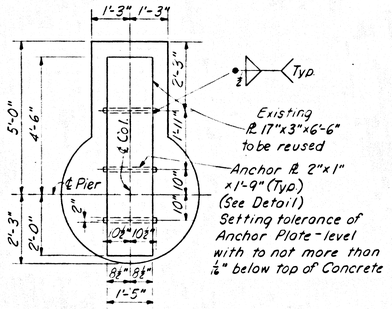
SECTION A-A



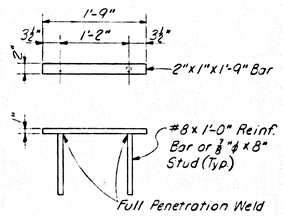
END ELEVATION (Looking West)



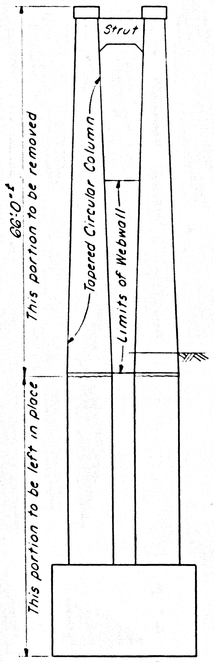
FOOTING PLAN
Pile Dimensions @ El. 307.5



PLAN OF COLUMN



ANCHOR PLATE DETAIL



EXISTING PIER NPI
SHOWING REMOVAL PORTION
Approximately 160 Cu Yds.

ESTIMATE OF QUANTITIES

ITEM	UNIT	AMOUNT
Concrete Class "A"	Cu. Yds.	223.2
Steel Reinforcement	Lbs.	26,621
Structure Excavation - Common	Cu. Yds.	40
Steel Piles (12BP53) Furnishing	Lin. Ft.	2,080
Steel Piles (12BP53) Driving	Lin. Ft.	2,080

Notes:
Work sheet 11 through sheet 14
The cost of Anchor Plates, Upset Anchor Bars and Hexagon Nuts shall be in the lump sum bid for "Structural Steel".
The cost of No. 5 course aggregate and Concrete Mortar Base shall be incidental to the unit price bid for Class "A" Concrete.
Construction of Pier NPI shall be completed before the girder span adjacent to Pier B is jacked 9" to the north

SHEET 11

REPAIRS TO BRIDGE CARRYING U.S. 60 OVER CUMBERLAND RIVER

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
LIVINGSTON
SMITHLAND - MARION
ROAD
STATION P. E. PROJECT NO. SP 70-70

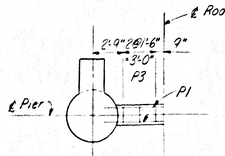
CONSTRUCTION PROJECT NO.	MAINTENANCE PROJECT NO.	DRAWING NO.
		18180

PIER NP1

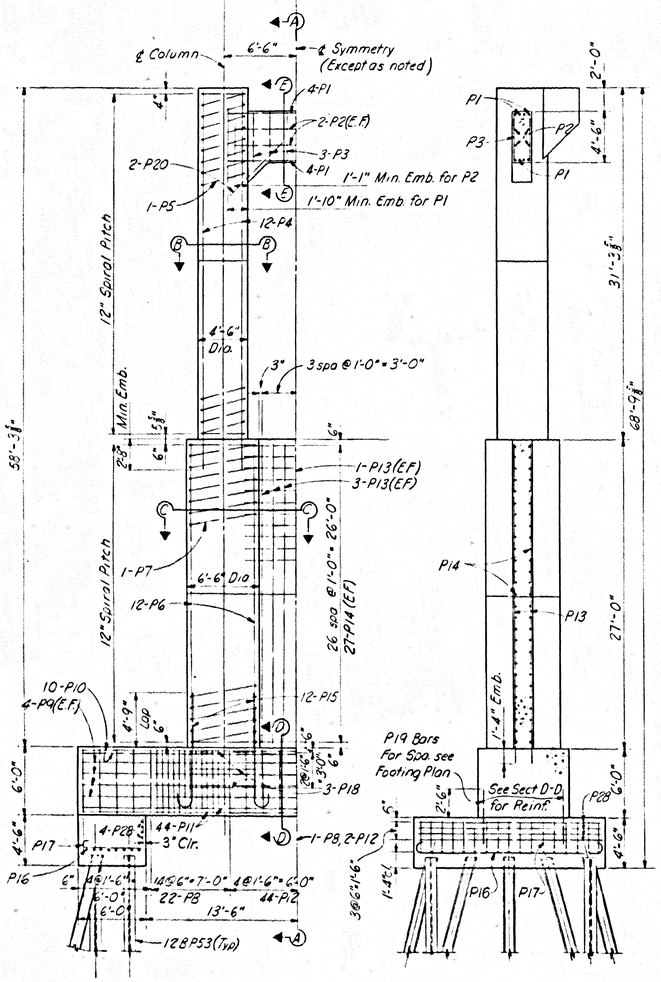
DESIGNED BY K.W.D. CHECKED BY W.W.S. DATE 2-70
DETAILED BY K.W.D. CHECKED BY W.W.S. DATE 2-70
TRACED BY CHECKED BY DATE

BRIDGE

LETTING DATE

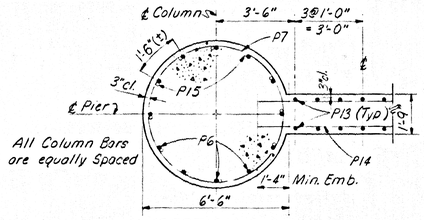


HALF PLAN



HALF ELEVATION

SECTION A-A

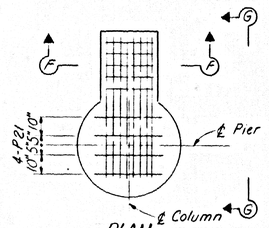


SECTION C-C

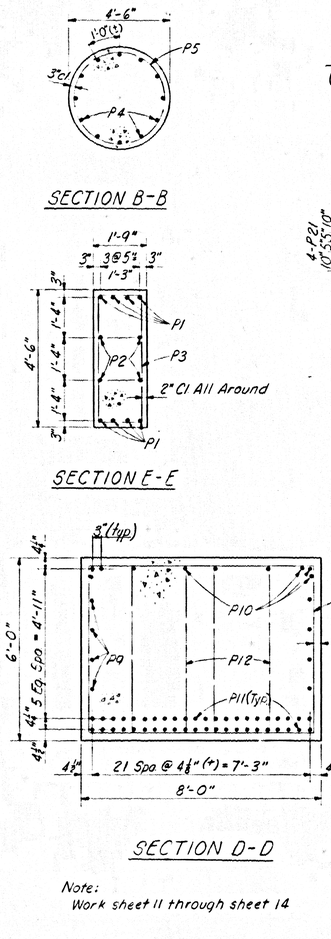
SECTION B-B

SECTION E-E

HALF FOOTING PLAN
(Col. Dowel Bars not shown)

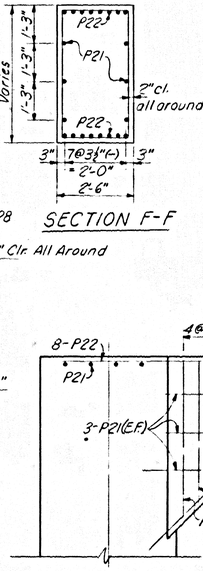


PLAN
TOP OF COLUMN



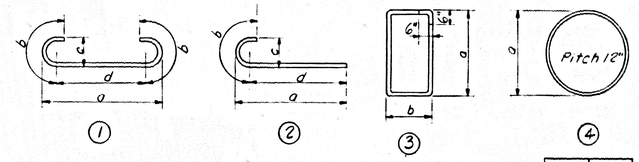
SECTION D-D

Note:
Work sheet 11 through sheet 14



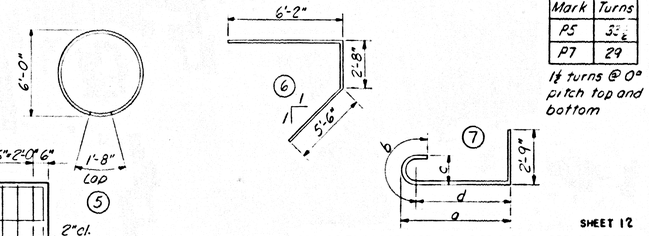
SECTION F-F

SECTION G-G



Mark	Turns
P5	3½
P7	29

14 turns @ 0° pitch top and bottom



BILL OF REINFORCEMENT

Mark	Type	Size	No. of Bars	Length Ft	Length In.	Location	a Ft	a In	b Ft	b In	c Ft	c In	d Ft	d In
P1	Str.	7	8	12	2	Strut								
P2	Str.	4	4	10	8	"								
P3	③	5	6	11	11	"	4	2	1	5				
P4	Str.	10	24	33	9	Column								
P5	④	⅜"ϕ	2	417	10	"	4	0						
P6	Str.	11	24	26	9	"								
P7	④	⅜"ϕ	2	543	6	"	6	0						
P8	③	5	45	26	9	Foundation Beam	5	6	7	6				
P9	Str.	5	8	38	6	" "								
P10	Str.	8	10	38	6	" "								
P11	Str.	11	44	38	6	" "								
P12	③	5	90	15	8	" "	5	6	1	11½				
P13	Str.	5	14	28	1	Webwall								
P14	Str.	5	54	9	2	"								
P15	②	11	24	11	5	Foundation Beam	10	0	2	0	1	2½	9	6⅝
P16	①	9	16	18	11	Footing	16	6	1	8	0	11¼	15	6½
P17	⑦	6	34	8	11	"	5	6	1	0	0	6	5	3
P18	⑤	4	6	20	5	Foundation Beam								
P19	Str.	6	32	5	0	" "								
P20	Str.	7	4	6	6	Strut								
P21	Str.	4	20	3	0	Column & Bracket								
P22	⑥	6	16	14	4	Bracket								
P23	③	5	2	11	3	"	3	1	2	2				
P24	③	5	2	12	3	"	3	7	2	2				
P25	③	5	2	13	3	"	4	1	2	2				
P26	③	5	2	14	3	"	4	7	2	2				
P27	③	5	2	15	3	"	5	1	2	2				
P28	①	7	8	18	3	Footing	16	6	1	2	0	7	15	11

DESIGNED BY KLin DATE 2-70
DETAILED BY [illegible] DATE 2-70
TRACED BY [illegible] DATE
CHECKED BY SMS DATE 2-70
CHECKED BY MAC DATE
CHECKED BY DATE

SHEET 12

REPAIRS TO BRIDGE CARRYING U.S 60 OVER CUMBERLAND RIVER

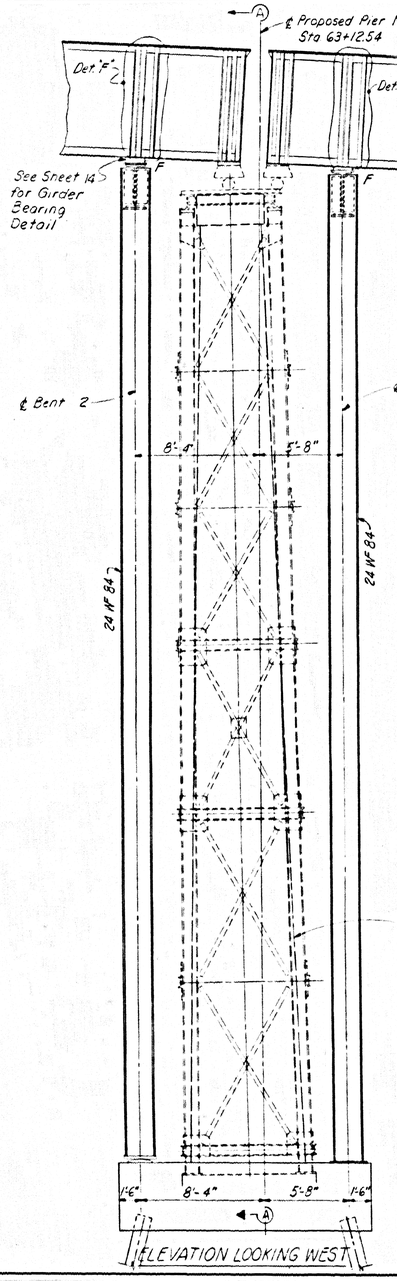
COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
LIVINGSTON
SMITHLAND - MARION
ROAD
STATION
P. E. PROJECT NO. SP 70-70

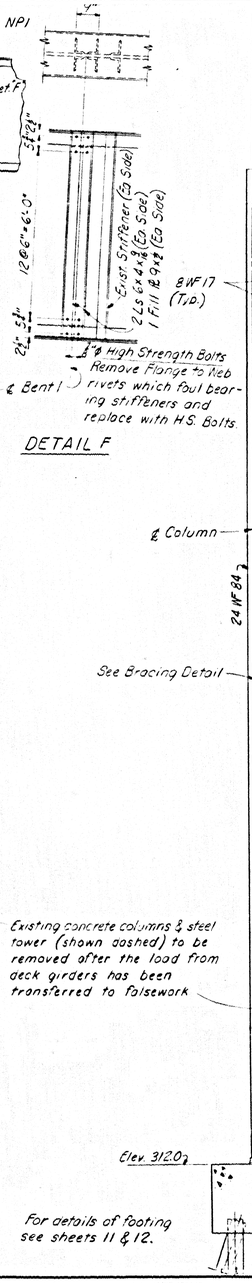
CONSTRUCTION PROJECT NO.	MAINTENANCE PROJECT NO.	DRAWING NO.
		18180

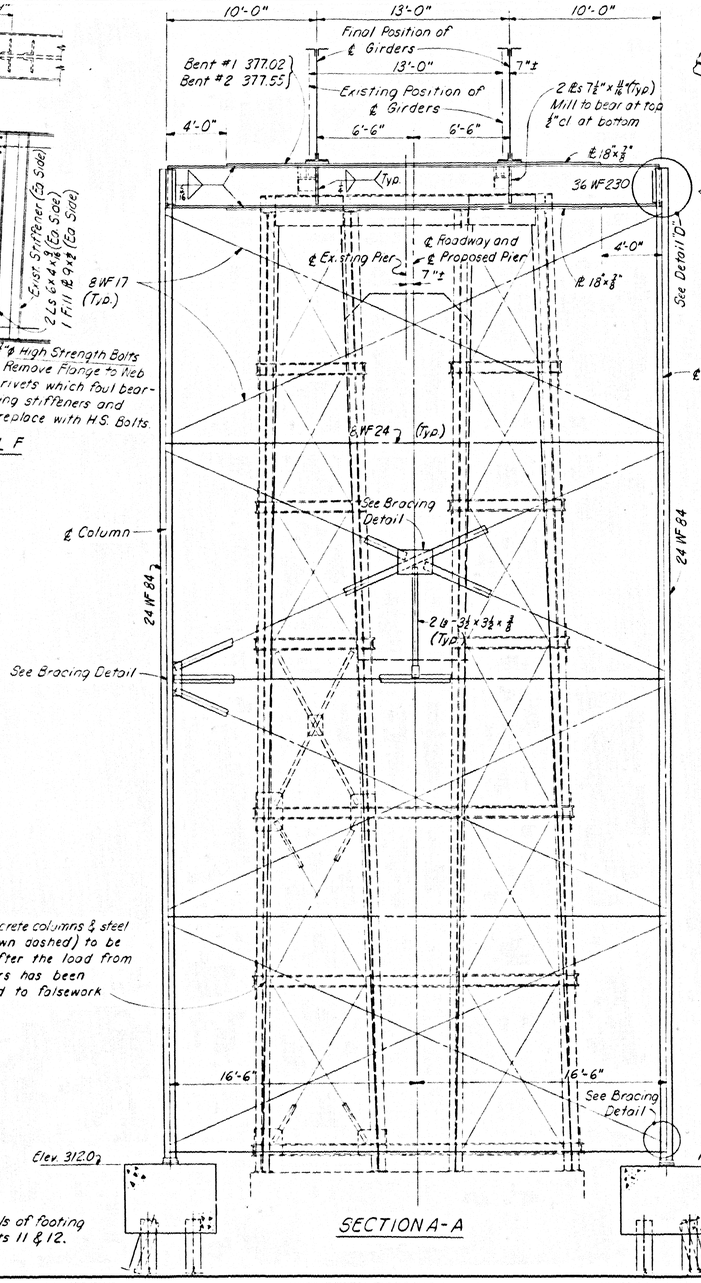
PIER NP 1

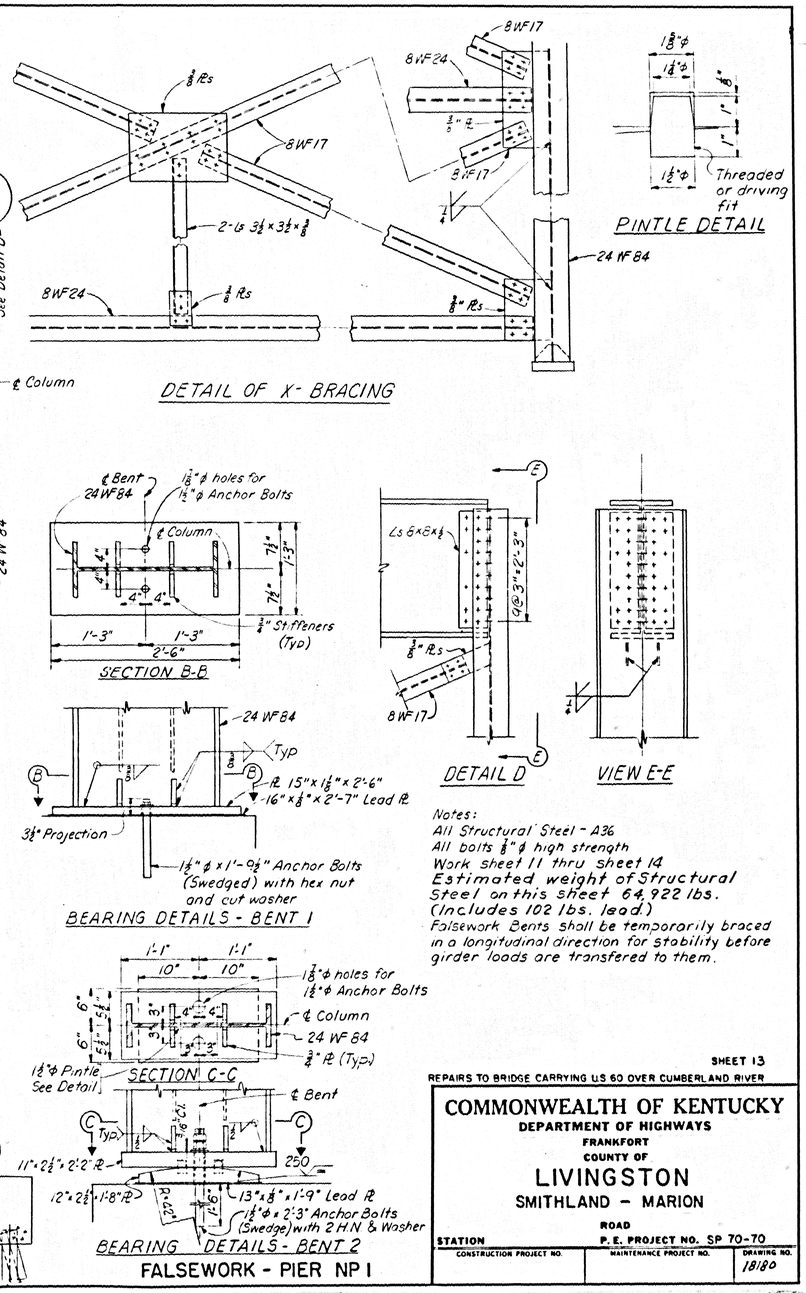
BRIDGE

LETTING DATE









Notes:
All Structural Steel - A36
All bolts ⅞"ϕ high strength
Work sheet 11 thru sheet 14
Estimated weight of Structural Steel on this sheet 64,922 lbs. (Includes 102 lbs. lead.)
Falsework Bents shall be temporarily braced in a longitudinal direction for stability before girder loads are transfered to them.

FALSEWORK - PIER NP 1

SHEET 13

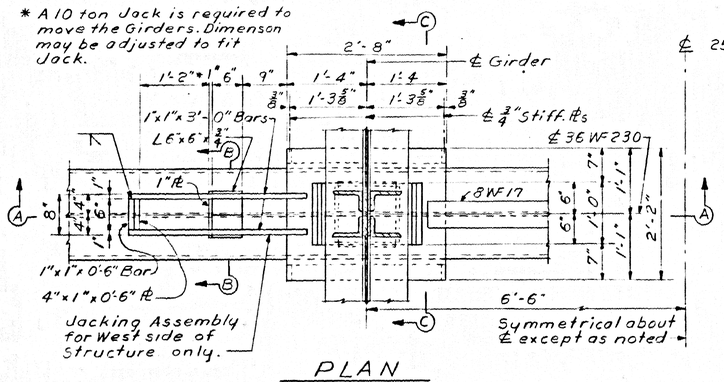
REPAIRS TO BRIDGE CARRYING U.S. 60 OVER CUMBERLAND RIVER

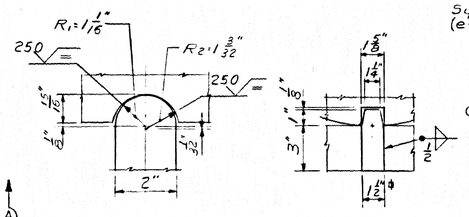
COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
LIVINGSTON
SMITHLAND - MARION
ROAD

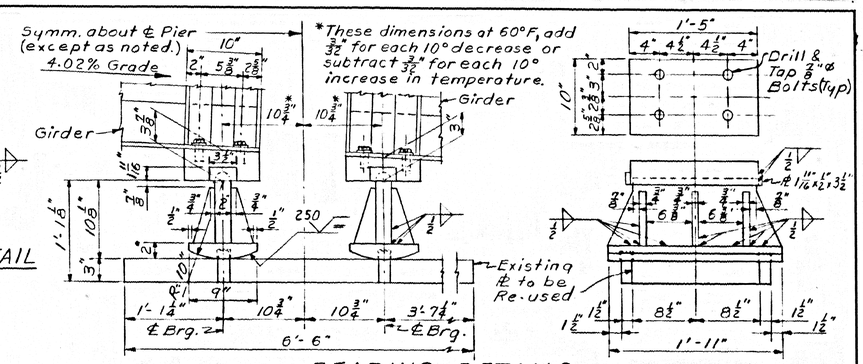
STATION	P.E. PROJECT NO. SP 70-70		
CONSTRUCTION PROJECT NO.	MAINTENANCE PROJECT NO.	DRAWING NO. 18180	

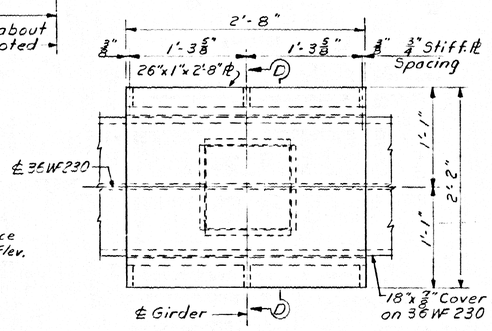
BRIDGE

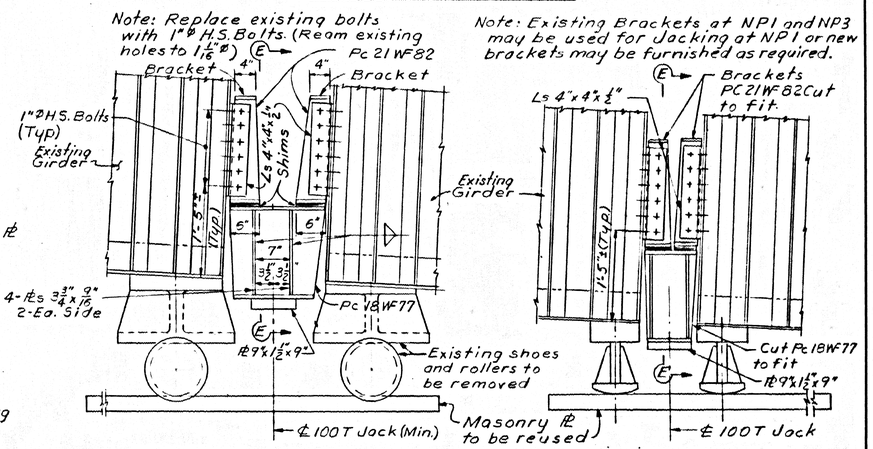
LETTING DATE

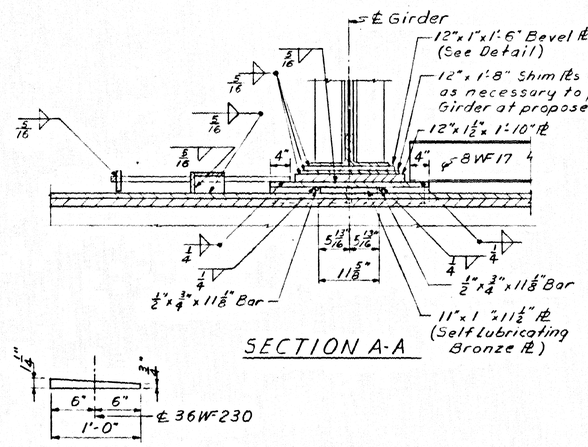


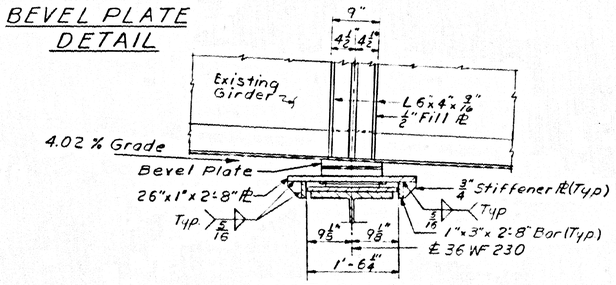


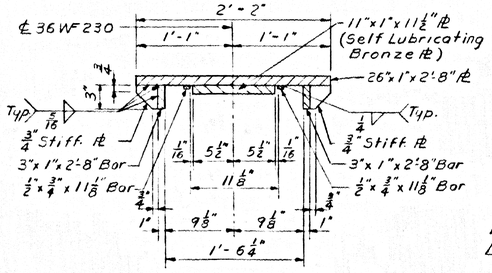


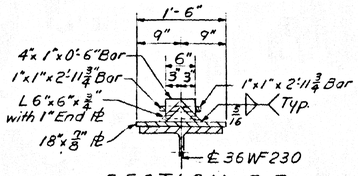


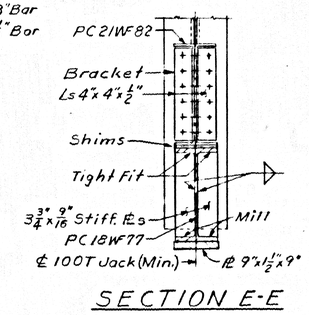












NOTE:
All plates must be true and free of warp. Finished surfaces of structural steel formed to radii shall be coated with white lead and tallow in accordance with current specifications with revisions. All material this sheet shall be ASTM A36 except for self-lubricating bronze bearing plate. Estimated weight of Structural Steel on this sheet 3576 lbs.

SHEET 14

REPAIRS TO BRIDGE CARRYING U.S 60 OVER CUMBERLAND RIVER

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
LIVINGSTON
SMITHLAND – MARION
ROAD
STATION
P.E. PROJECT NO. SP 70-70

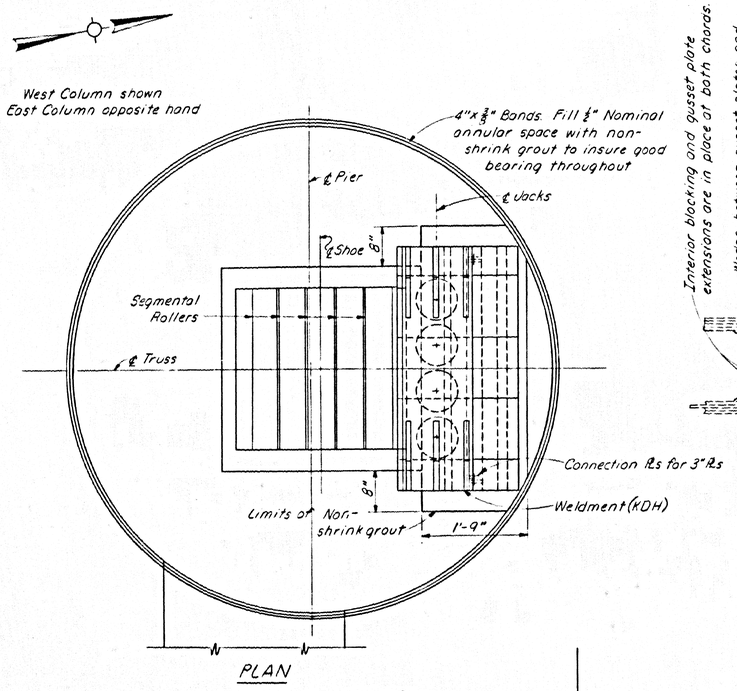
CONSTRUCTION PROJECT NO.	MAINTENANCE PROJECT NO.	DRAWING NO.
		18180

JACKING & BEARING DETAILS–PIER NP1

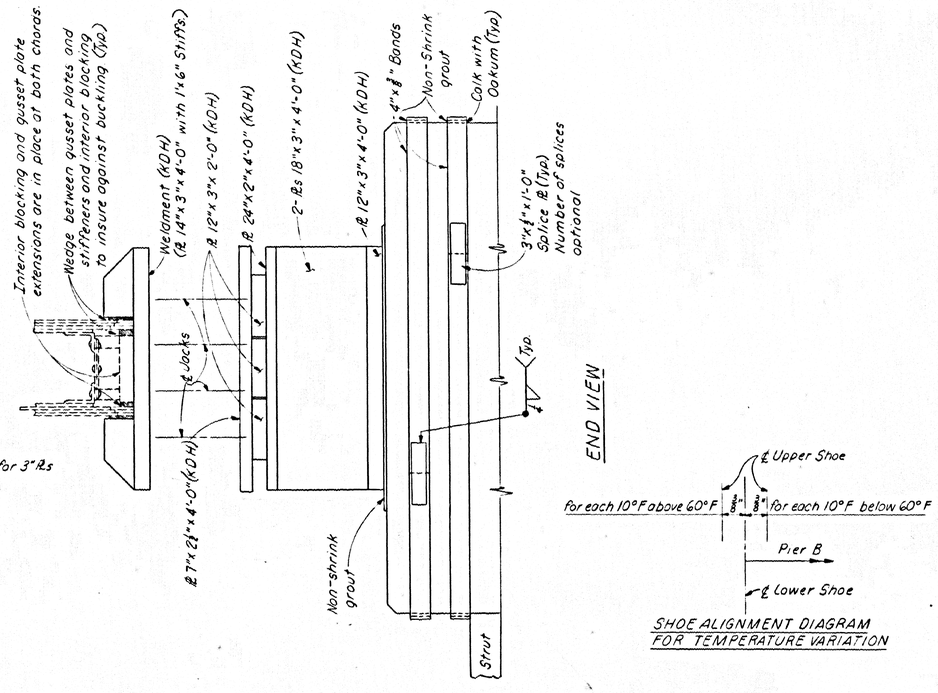
DESIGNED BY K.I.W.	DATE 5-70	REVISED
DETAILED BY MDC	DATE 5-70	REVISED
CHECKED BY MDC 5-20-70	CHECKED BY SWS	DATE 5-70
CHECKED BY	CHECKED BY	DATE

BRIDGE

LETTING DATE

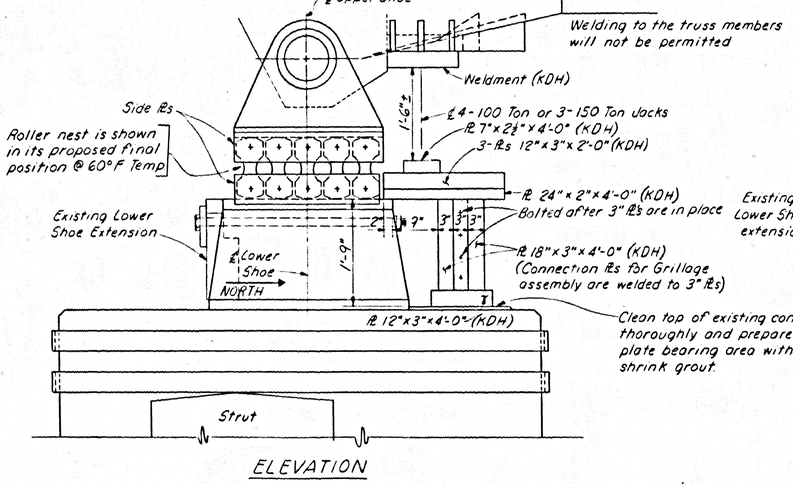


PLAN

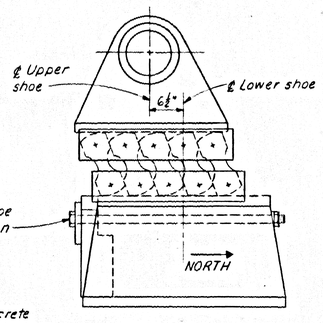


END VIEW

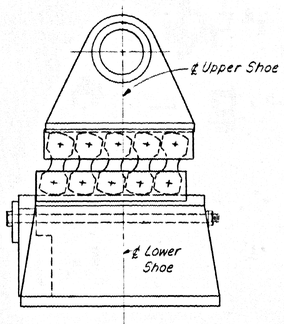
SHOE ALIGNMENT DIAGRAM FOR TEMPERATURE VARIATION



ELEVATION



EXISTING POSITION OF SHOES



ESTIMATED POSITION OF SHOES BEFORE CORRECTING ROLLER NEST

Notes:
(KDH) indicates material to be furnished by Kentucky Department of Highways at Frankfort, Ky. Contractor shall secure this and transport it to the site. The work will not be paid for separately but shall be included in the cost of "Jacking and Supporting"
4"x⅜" Steel Bands to be ASTM-A36
No adjustment of lower shoe is necessary.
Estimated weight of Structural Steel on this sheet, 535 Lbs.

SHEET 15

REPAIRS TO BRIDGE CARRYING U.S 60 OVER CUMBERLAND RIVER

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
LIVINGSTON
SMITHLAND – MARION
ROAD
STATION
P. E. PROJECT NO. SP 70-70

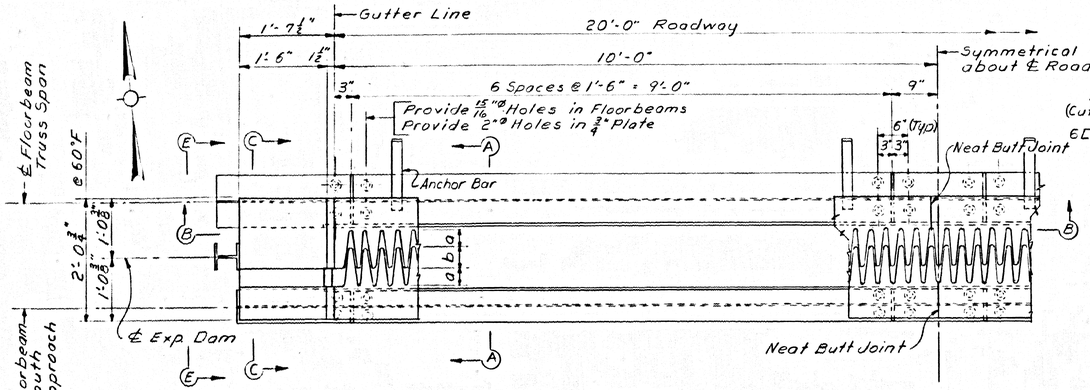
CONSTRUCTION PROJECT NO.	MAINTENANCE PROJECT NO.	DRAWING NO.
		18180

BEARING ADJUSTMENT PIER A

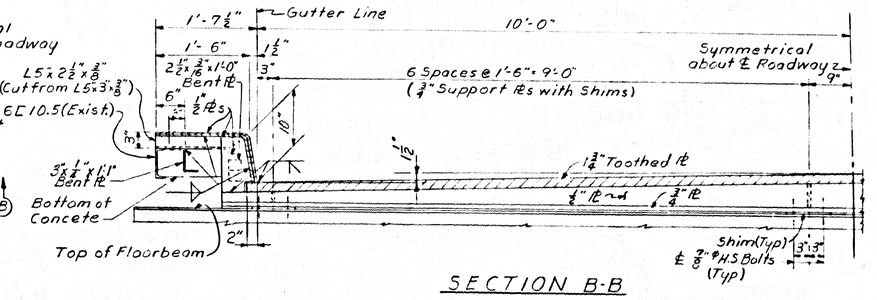
DESIGNED BY DATE
DETAILED BY DATE 2-70
CHECKED BY DATE
TRACED BY DATE
CHECKED BY DATE 2-70

BRIDGE

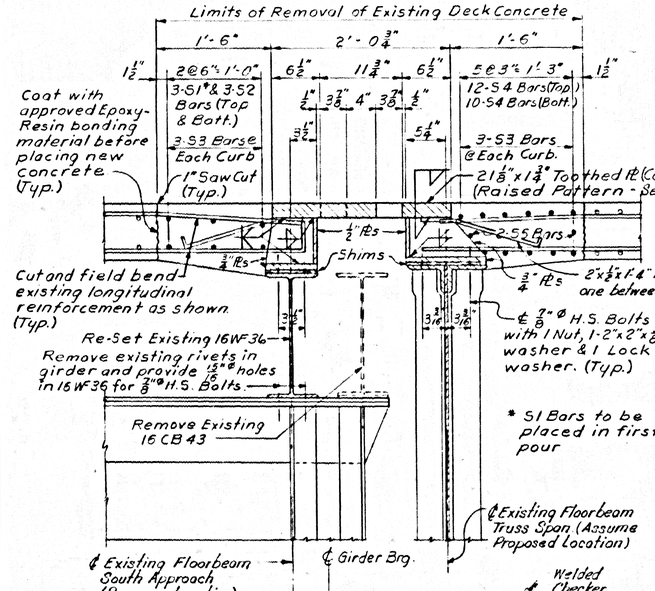
LETTING DATE



PLAN



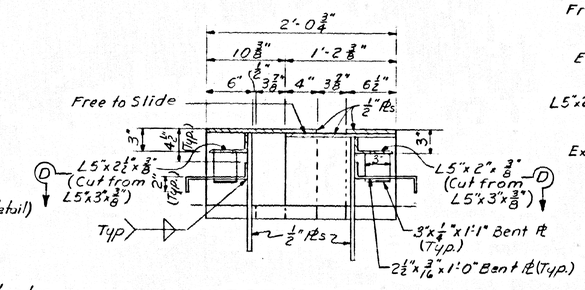
SECTION B-B



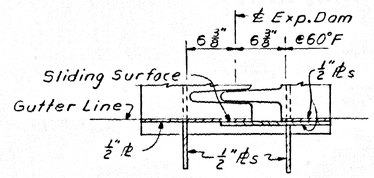
SECTION A-A

* S1 Bars to be placed in first pour

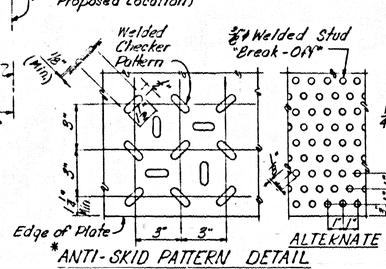
* An alternate rolled raised pattern complying with dimensions shown would also be acceptable



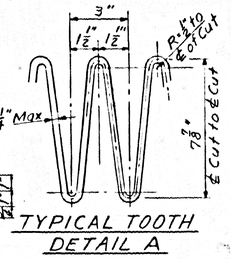
SECTION C-C



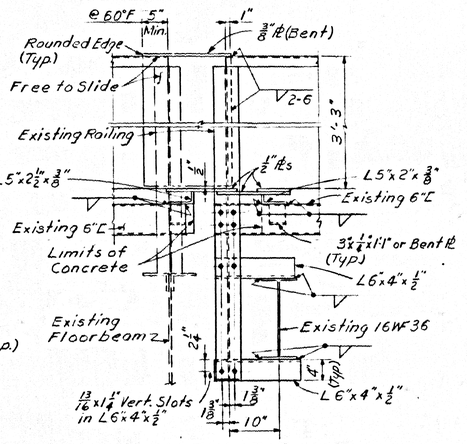
SECTION D-D



* ANTI-SKID PATTERN DETAIL



TYPICAL TOOTH DETAIL A



VIEW E-E

BILL OF REINFORCEMENT					
MARK	TYPE	SIZE	NO. OF BARS	LENGTH FT.	LENGTH IN.
S1	Str.	4	6	12	3
S2	Str.	4	6	10	4
S3	⑨	4	12	3	3
S4	①	4	22	11	4
S5	Str.	6	4	2	2

QUANTITIES		
ITEM	UNIT	AMOUNT
Concrete-Class AA	Cu Yds	2.1
Steel Reinforcement	lbs.	296

DIMENSIONS AT TEMPERATURE (F°)															
-20°		0°		20°		40°		60°		80°		100°		120°	
a	b	a	b	a	b	a	b	a	b	a	b	a	b	a	b
7"	⅞"	6 4/8"	5/8"	5 3/8"	2½"	4 2/8"	3¼"	3 3/8"	4"	3⅛"	4¼"	2⅞"	5/8"	1½"	6 3/8"

NOTES:

Plates must be true and free from warp.

Expansion Dam to be assembled in shop in its relative final position and inspected for fit.

The toothed plate shall be match-marked to maintain the same relative position before and after cutting.

All structural steel this sheet shall be A 36.

Cost of Expansion Dam in place, moving existing 16WF36 floorbeam and repairing and supporting handrail shall be included in the cost of Structural Steel.

Truss span and existing 16WF36 floorbeam must be adjusted to final position and dimensions checked before fabrication of structural steel is started.

Temporary shims or blocking must be provided to support existing deck after existing 16WF36 floorbeam is moved.

No field welding will be permitted until the joint has been assembled and adjusted in place.

For concrete and reinforcement details at curb and in slab see Sheet 18 for details for Joint F, which are similar.

Estimated weight of Structural Steel on this Sheet = 5,280 lbs.

Expansion Joint is to be replaced one lane at a time; traffic being maintained on the other lane. See General Notes.

DESIGNED BY	R. LIN	DATE	JAN. '70
DRAWN BY	MDC	DATE	2-'70
CHECKED BY	2-'70	DATE	
TRACED BY		CHECKED BY	

SHEET 16

REPAIRS TO BRIDGE CARRYING U.S. 60 OVER CUMBERLAND RIVER

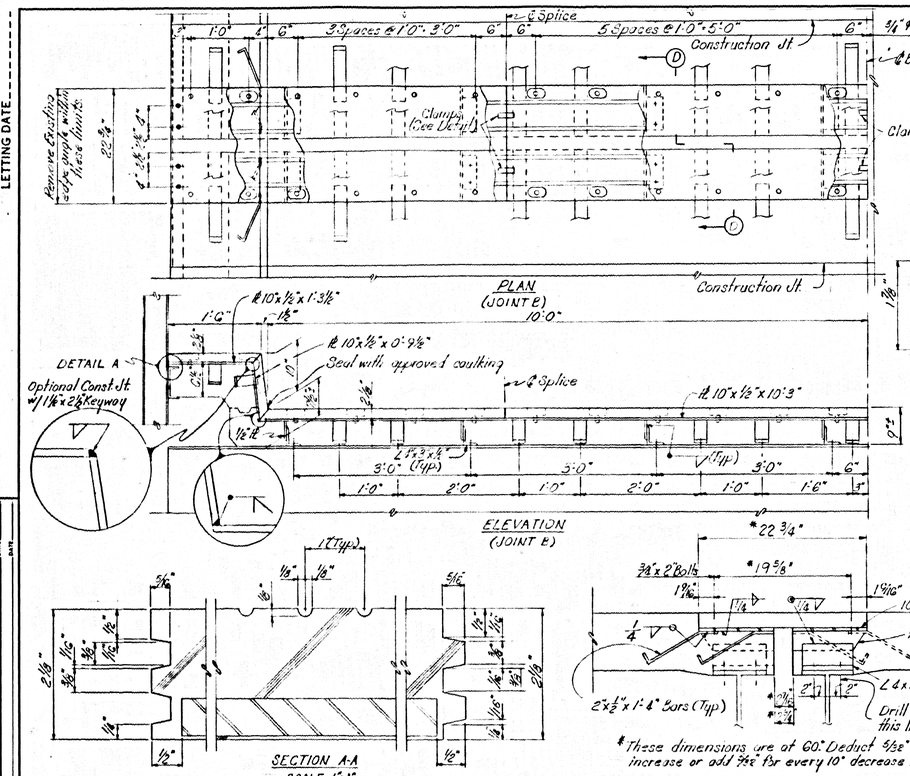
COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
LIVINGSTON
SMITHLAND - MARION
ROAD
STATION
P. E. PROJECT NO. SP 70-70

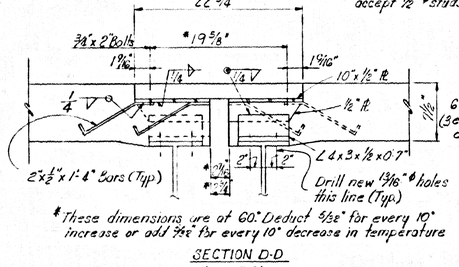
CONSTRUCTION PROJECT NO.	MAINTENANCE PROJECT NO.	DRAWING NO.
		18180

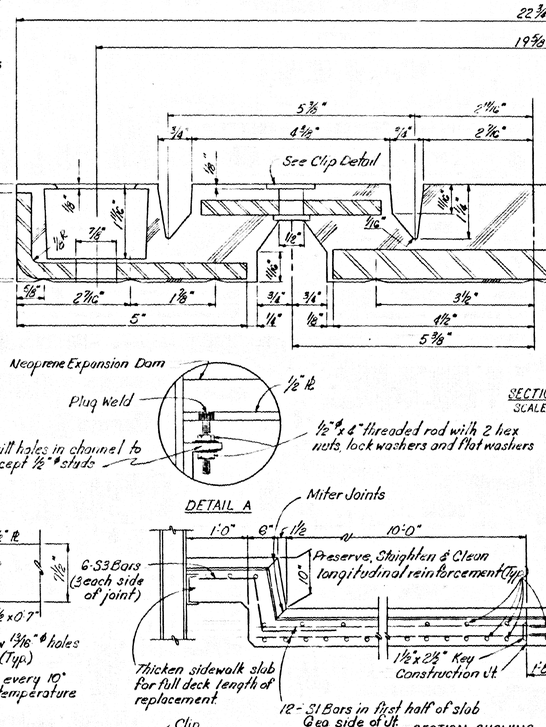
EXPANSION JOINT DETAILS-PIER A

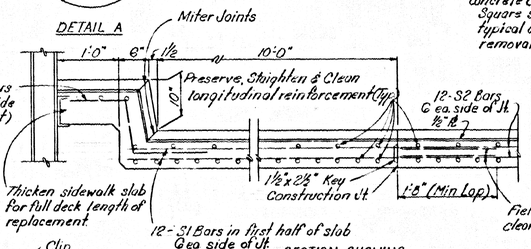
BRIDGE

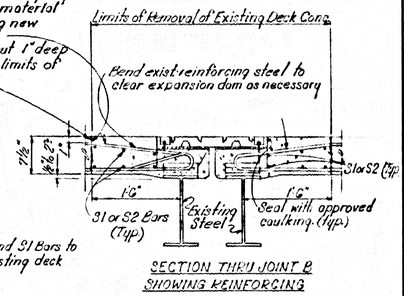
LETTING DATE

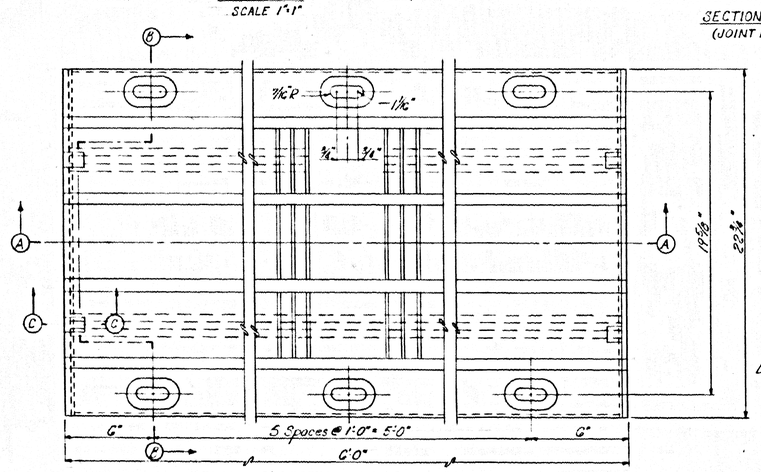


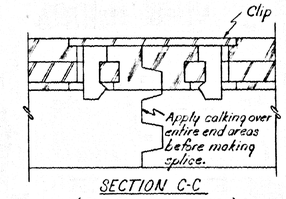


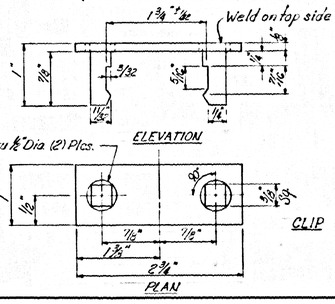












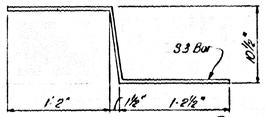
*Quantities shown are for 6 joints.

SECTION SHOWING REINFORCING IN CURB & DECK ADJACENT TO JOINT B

ESTIMATE OF QUANTITIES *		
ITEM	UNIT	AMOUNT
Concrete, Class "AA"	Cu. Yds	13.2
Steel Reinforcement	Lbs.	1236
2" Neoprene Expansion Dam	Each	6

NOTE: The Expansion Dam is to be replaced in one lane at a time; traffic being maintained in the other lane. See General Notes.

This joint MUST be installed in strict accordance with the manufacturer's instructions.



BILL OF REINFORCEMENT *					
Mark	Type	Size	No	LENGTH Ft	LENGTH In
S1	Str	#4	12	12	1
S2	Str	#4	12	10	4
S3	⑨	#4	12	3	3

*Reinf. shown is for one ft. of Curb reqd.

STRUCTURAL STEEL: To conform with ASTM A36-67.

CAULKING: Caulking shall meet the requirements of Federal Specification TT-B-00230. An approved equal may be substituted for the caulking.

NEOPRENE: To be made from DuPont Neoprene conforming with the following physical properties:

PROPERTY	ASTM TEST	REQUIREMENT
Tensile Strength	D-412	1,800 psi. min.
Elongation at Break	D-412	400 % min.
Hardness	D-2240	45±5 points, Durometer A
Compression Set, 22 hrs. at 158° Fahrenheit	D-395 (Method B)	20% Max.
Low Temperature	D-746	Not brittle at -40° F.
Oil Deterioration Volume Increase after immersion in ASTM Oil #3 for 70 hrs. at 212° F.	D-470	120% Max.
Ozone Resistance Exposure to 100 pphm ozone for 70 hrs. at 100° F. (Sample under 20% Strain)	D-1149	No cracks.

SHEET 17

REPAIRS TO BRIDGE CARRYING U.S. 60 OVER CUMBERLAND RIVER

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
LIVINGSTON
SMITHLAND – MARION
ROAD

2" NEOPRENE EXPANSION DAM

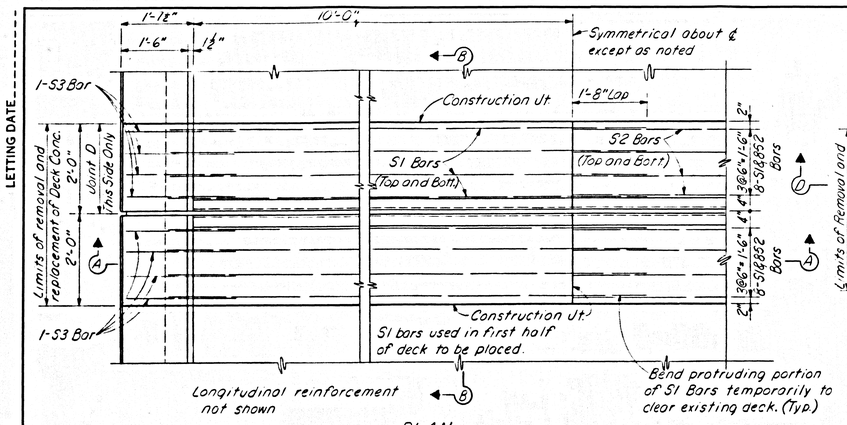
STATION | P.E. PROJECT NO. SP 70-70
CONSTRUCTION PROJECT NO. | MAINTENANCE PROJECT NO. | DRAWING NO. 18180

DESIGNED BY: CDM | DETAILED BY: | TRACED BY: | CHECKED BY: | DATE: 5-15-70 | REVISED

DATE | REVISED

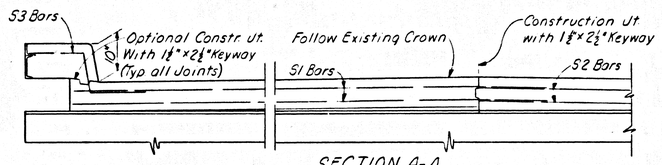
BRIDGE

LETTING DATE

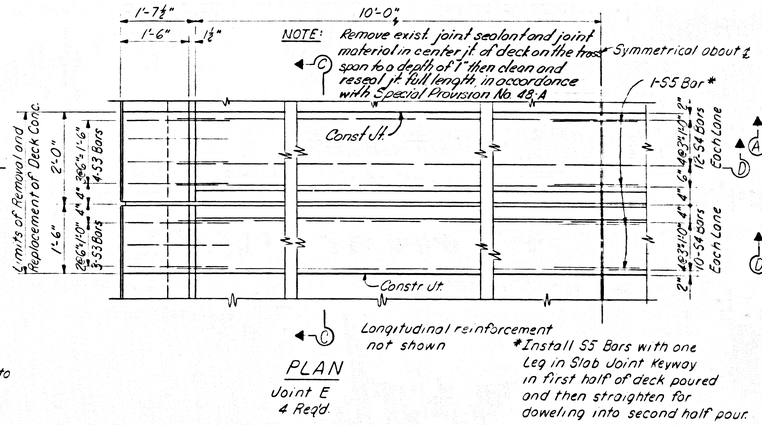


PLAN

Joints C & D
(6 Joint "C" Req'd.)
(2 Joint "D" Req'd)

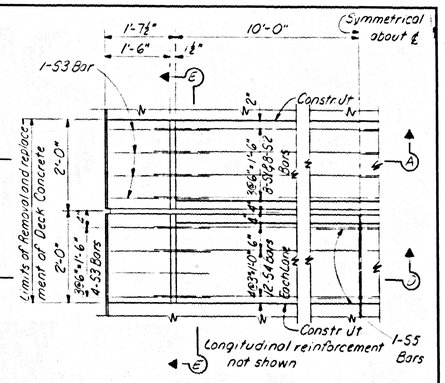


SECTION A-A



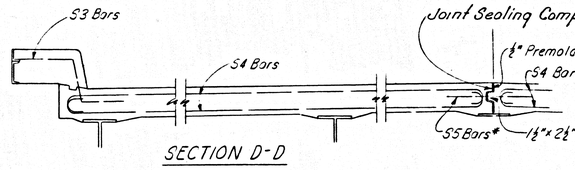
PLAN

Joint E
4 Req'd.

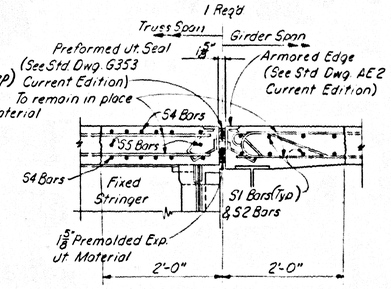


PLAN

Joint F
1 Req'd



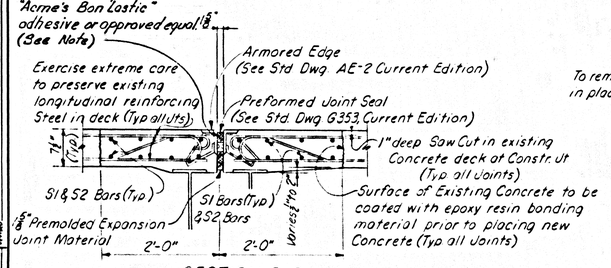
SECTION D-D



SECTION E-E

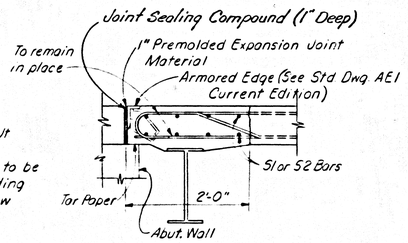
Joint F

Preformed Joint Seal shall be banded in place with "Acme's Bon Lastic" adhesive or approved equal. (See Note)



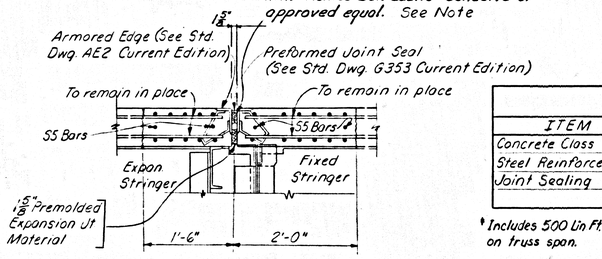
SECTION B-B

Joint "C"



SECTION B-B

Joint "D"

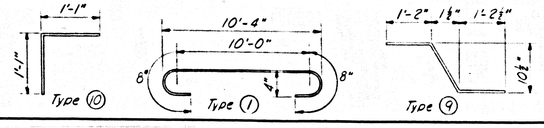


SECTION C-C

Joint E

BILL OF REINFORCEMENT

Mark	Type	Size	Length Ft	Length In	No of Bars Joint C	Joint D	Joint E	Joint F	Total
S1	Str.	4	12	3	16	8	—	8	120
S2	Str.	4	10	4	16	8	—	8	120
S3	④	4	3	3	16	8	14	16	184
S4	①	4	11	4	—	—	44	24	200
S5	⑩	6	2	2	—	—	4	2	18



ESTIMATE OF QUANTITIES

ITEM	UNIT	Joint C	Joint D	Joint E	Joint F	Total
Concrete Class "AA"	Cu. Yds	15.6	2.6	8.0	2.4	28.6
Steel Reinforcement	Lbs	1,656	276	1,504	361	3,797
Joint Sealing	Lin. Ft.		50			550*

*Includes 500 Lin Ft on truss span.

NOTES: (Cont.)

Special Provision No. 48-A does not apply to removal and replacement of concrete for repair of transverse joints in the bridge deck as detailed on this sheet.
Any necessary deck repair other than that at the transverse joints shall be made in accordance with Special Provision No 48-A.

NOTE: (for bonding preformed joint seal.)

All Preformed Joint Seals shall be bonded in place with Bon-Elastic adhesive as manufactured by ACME HIGHWAY PRODUCTS CORP or approved equal. This adhesive shall be a one-part moisture curing polyurethane and hydrocarbon solvent mixture with the following physical properties:

1. Average weight per gallon	8.00 Lbs ± 10%
2. Solids content	72-74% by wt.
3. Adhesive to remain fluid from	5°F to 120°F
4. Film Strength (ASTM D-412)	1200 p.s.i.
5. Elongation	350%

NOTES:

Roadway joints are to be replaced in one lane at a time. Traffic to be maintained in the other lane. See General Notes.
All steel Reinforcement remaining in place shall be straightened and cleaned.
For location of Roadway Joints, see General Plan, Sh. 4

SHEET 18

REPAIRS TO BRIDGE CARRYING U.S 60 OVER CUMBERLAND RIVER

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
LIVINGSTON
SMITHLAND – MARION
ROAD

STATION — P.E. PROJECT NO. SP 70-70

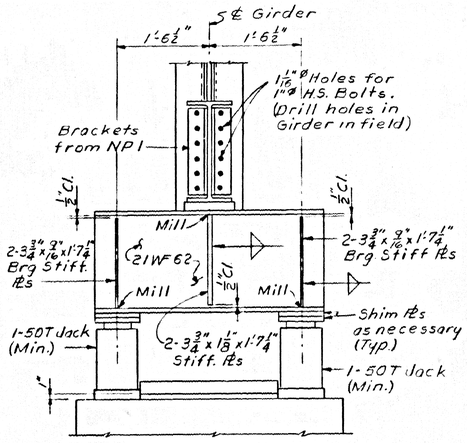
CONSTRUCTION PROJECT NO.	MAINTENANCE PROJECT NO.	DRAWING NO.
		18180

ROADWAY JOINT DETAILS

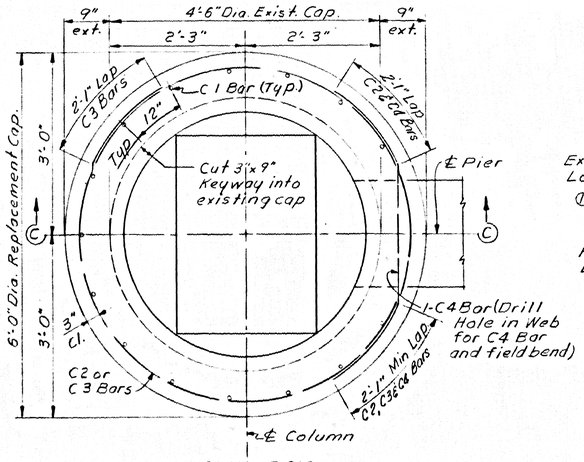
DESIGNED BY
DETAILED BY LEK 2-70
CHECKED BY
CHECKED BY 515
TRACED BY

BRIDGE

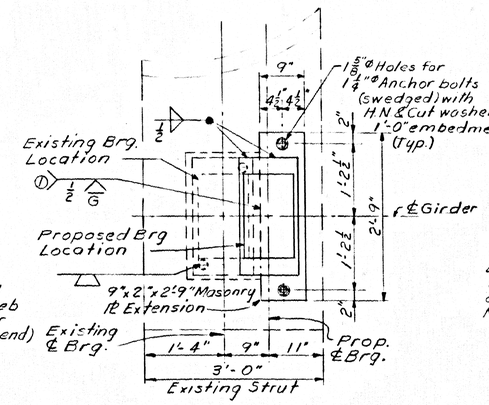
LETTING DATE



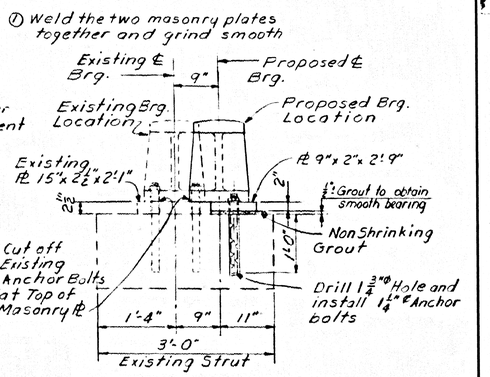
SECTION A-A



PLAN OF CAP
PIER NP3
(Both Caps to be enlarged)

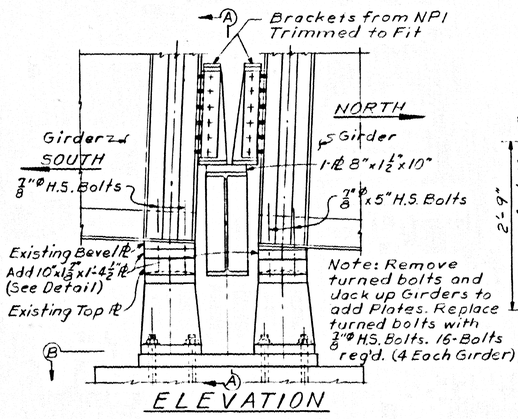


PLAN

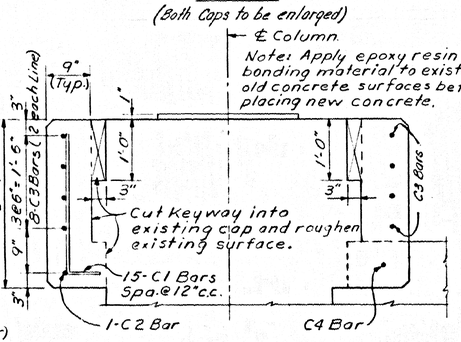


ELEVATION

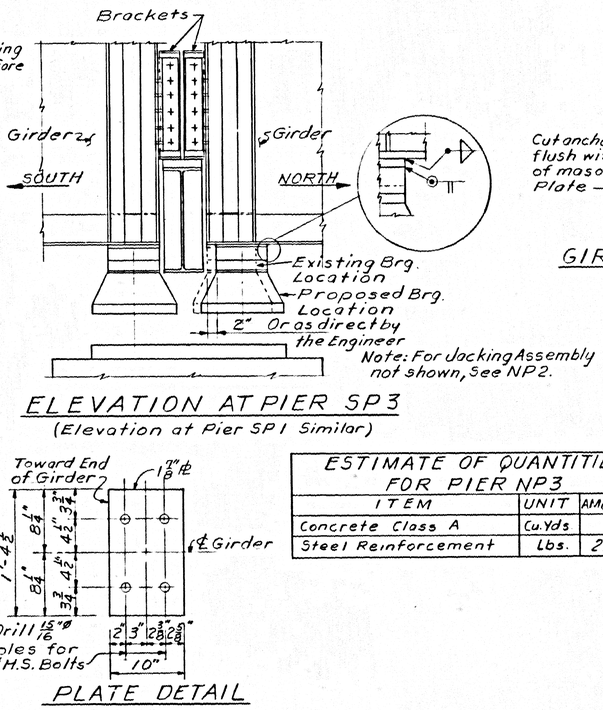
GIRDER BEARING DETAIL AT PIER B
2 Req'd.



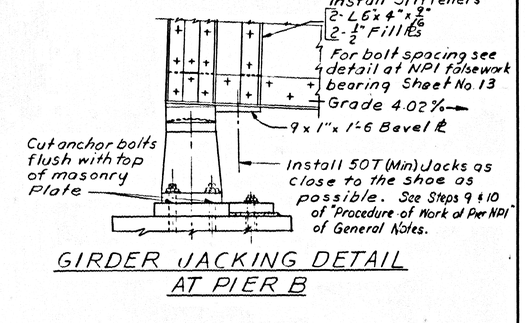
ELEVATION



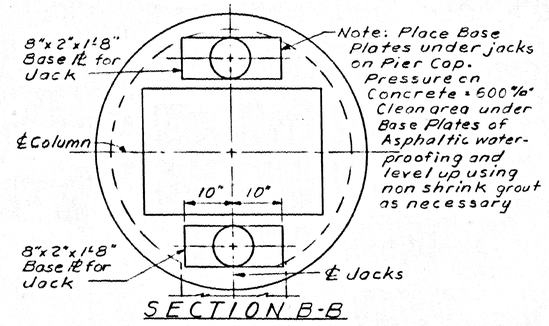
SECTION C-C



ELEVATION AT PIER SP3
(Elevation at Pier SP1 Similar)

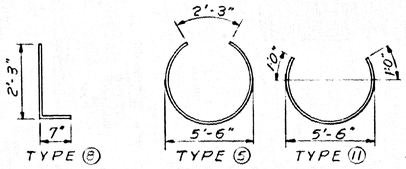


GIRDER JACKING DETAIL AT PIER B



SECTION B-B

JACKING ASSEMBLY AT PIER NP2



BAR BENDING DETAILS

BILL OF REINF. ONE PIER

MARK	TYPE	SIZE	NO. OF BARS	LENGTH FT.	LENGTH IN.
C1	⑧	4	30	2	10
C2	⑤	5	2	15	0
C3	⑪	5	16	10	6
C4	Str.	5	2	6	0

PIER CAP NP3 DETAILS

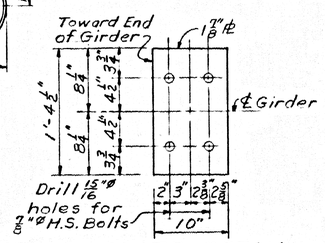


PLATE DETAIL

ESTIMATE OF QUANTITIES FOR PIER NP3

ITEM	UNIT	AMOUNT
Concrete Class A	Cu. Yds	2.8
Steel Reinforcement	Lbs.	276

Note: All material this sheet shall be ASTM A36 except as noted. Estimated weight of Structural Steel on this sheet - 3,157 lbs.

SHEET 19

REPAIRS TO BRIDGE CARRYING U.S. 60 OVER CUMBERLAND RIVER

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
LIVINGSTON
SMITHLAND – MARION
ROAD
STATION
P.E. PROJECT NO. SP 70-70

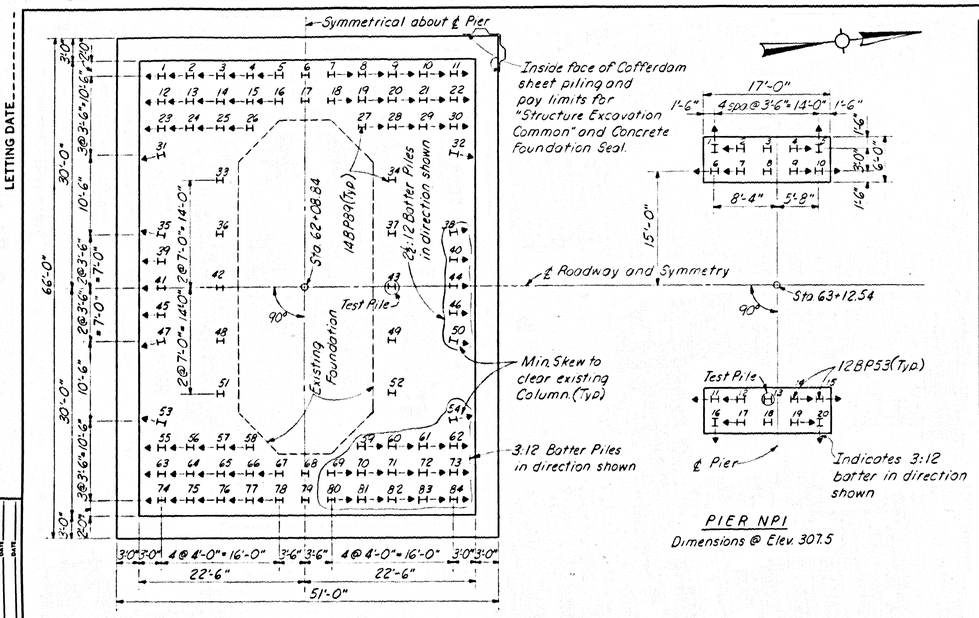
CONSTRUCTION PROJECT NO.	MAINTENANCE PROJECT NO.	DRAWING NO.
		18180

DESIGNED BY: MDC 2-70 CHECKED BY: SJS DATE 2-70
DETAILED BY: DATE
TRACED BY: CHECKED BY: DATE

MISCELLANEOUS DETAILS

BRIDGE

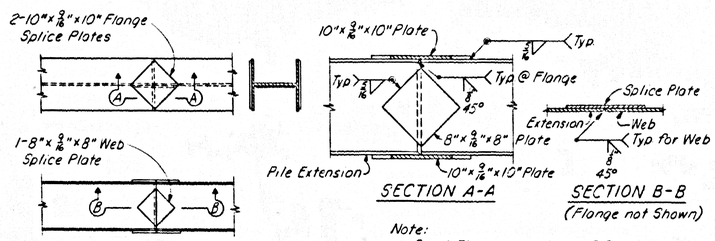
LETTING DATE



PIER B
Dimensions at Elev. 273.3

PIER NPI
Dimensions @ Elev. 307.5

PILING PLAN



Note:
For Pile Splice Detail for 12BP53, See Std. Dwg. P212, Current Edition.

SECTION A-A

SECTION B-B
(Flange not Shown)

Note:
Bevel Flanges and Web of Pile Extension on 1:1 Bevel as shown and employ conventional butt weld.

PILE SPLICE DETAIL-14BP89
(Not to Scale)

PIER B				
Pile No.	Cutoff Elevation	Tip of Piles Elevation as Driven	Length of Piles in Place	Calculated Bearing Capacity Tons
1	274.80			
2	↑			
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
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62				
63				
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65				
66				
67				
68				
69				
70				
71				
72				
73				
74				
75	274.80			

PIER B (CONT.)				
Pile No.	Cutoff Elevation	Tip of Piles Elevation as Driven	Length of Piles in Place	Calculated Bearing Capacity Tons
76	274.80			
77	↑			
78				
79				
80				
81				
82				
83				
84	274.80			

PIER NPI				
Pile No.	Cutoff Elevation	Tip of Piles Elevation as Driven	Length of Piles in Place	Calculated Bearing Capacity Tons
1	308.50			
2	↑			
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20	308.50			

TEST PILE LENGTHS	
PIER B	74.0'
PIER NPI	112.0'

NOTES:

This pile record does not replace other records of piles required to be kept and submitted by the Resident Engineer. After all piles have been driven, the Resident Engineer shall record the tip-of-pile elevation as driven, the length of pile in place, the calculated bearing capacity of each pile, and shall return one blueprint copy of this sheet with this data to the Director of Bridges so that the data may be recorded on the original plans. Lengths of piles in place shown hereon are the actual lengths of piles in the finished structure below cutoff elevation, and are not necessarily pay items.

For General Notes on bearing piling, see Standard Drawing P212, current edition.

DESIGNED BY: DCS 2-70 CHECKED BY: R.L.N. DATE 2-70
DETAILED BY: CHECKED BY: DATE
TRACED BY: CHECKED BY: DATE
DATE
DATE
DATE

SHEET 20

REPAIRS TO BRIDGE CARRYING US 60 OVER CUMBERLAND RIVER

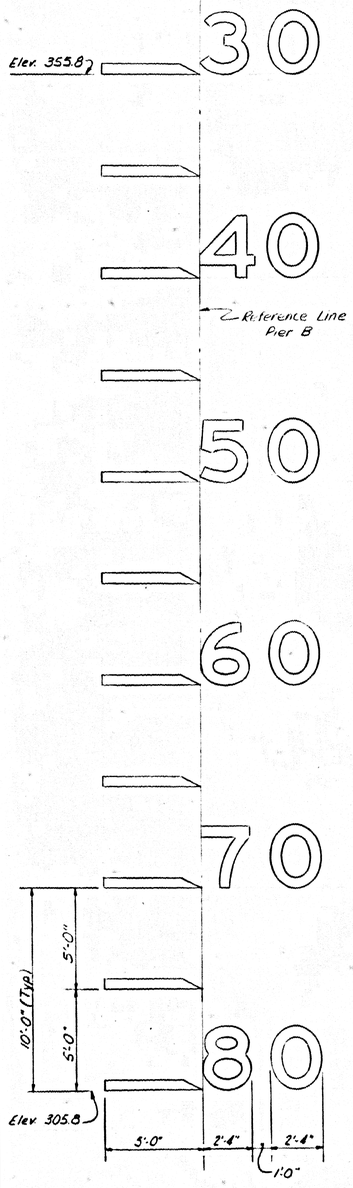
COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
LIVINGSTON
SMITHLAND – MARION
ROAD

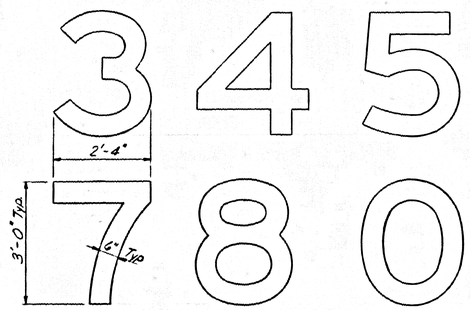
STATION	P.E. PROJECT NO. SP 70-70		
CONSTRUCTION PROJECT NO.	MAINTENANCE PROJECT NO.	DRAWING NO. 18180	

PILE RECORD

U.K. BRIDGE

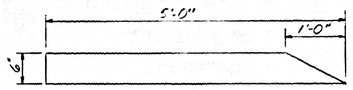
LETTING DATE



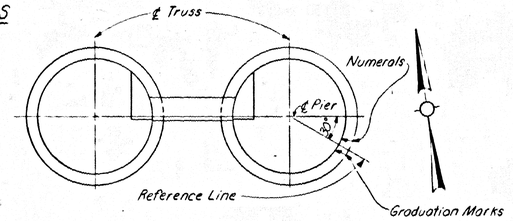


NOTE: Numeral details shall conform to Series E numerals as shown in reference guide for "Standard Alphabets for Highway Signs," Bureau of Public Roads, Department of Transportation.

NUMERAL DETAILS



GRADUATION MARKS



LOCATION PLAN
(Pier B only)

Note:
Numerals and Graduation Marks shall be painted directly on Concrete with 2 coats of paint. See General Notes for paint specifications.

VERTICAL CLEARANCE GAGE DETAILS

CLEARANCE GAGE DETAILS

SHEET 21

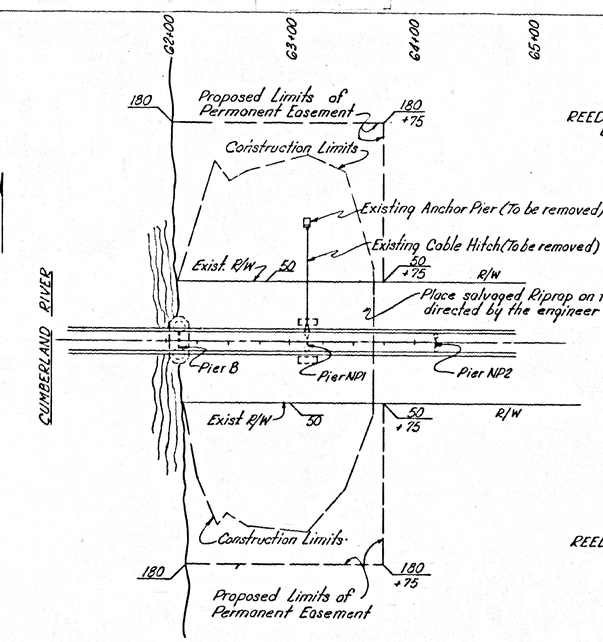
REPAIRS TO BRIDGE CARRYING U.S. 60 OVER CUMBERLAND RIVER

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
LIVINGSTON
SMITHLAND – MARION
ROAD
STATION P. E. PROJECT NO. SP 70-70

CONSTRUCTION PROJECT NO.	MAINTENANCE PROJECT NO.	DRAWING NO.
		18180

BRIDGE

REPAIRS TO BRIDGE CARRING U.S. 60
OVER CUMBERLAND RIVER
LIVINGSTON COUNTY
SMITHLAND-MARION ROAD
PROJ. NO. SP 70-70



REED CRUSHED STONE COMPANY
DEED BOOK 94 PAGE 337

REED CRUSHED STONE COMPANY
DEED BOOK 94 PAGE 337

← To Smithland

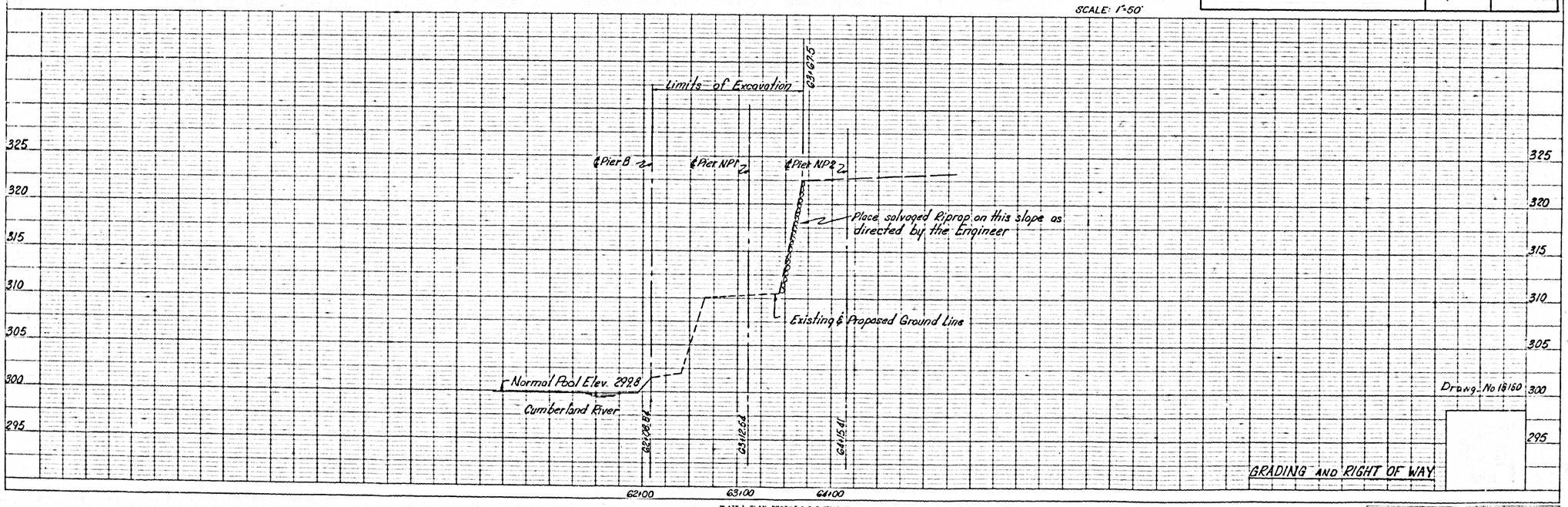
To Marion →

Area of Permanent Easement Required

West Side	22,750 Sq. Ft.
East Side	21,450 Sq. Ft.
Total Area	44,200 Sq. Ft.

ESTIMATE OF QUANTITIES		
Item	Unit	Amount
Fertilizer (10-10-10)	Tons	0.6
Agricultural Limestone	Tons	1.5
Roadway Excavation	Cu. Yds.	7200
Seeding & Protection (Method 2)	Sq. Yds	6600

SCALE: 1"=50'



Drawing No 18160

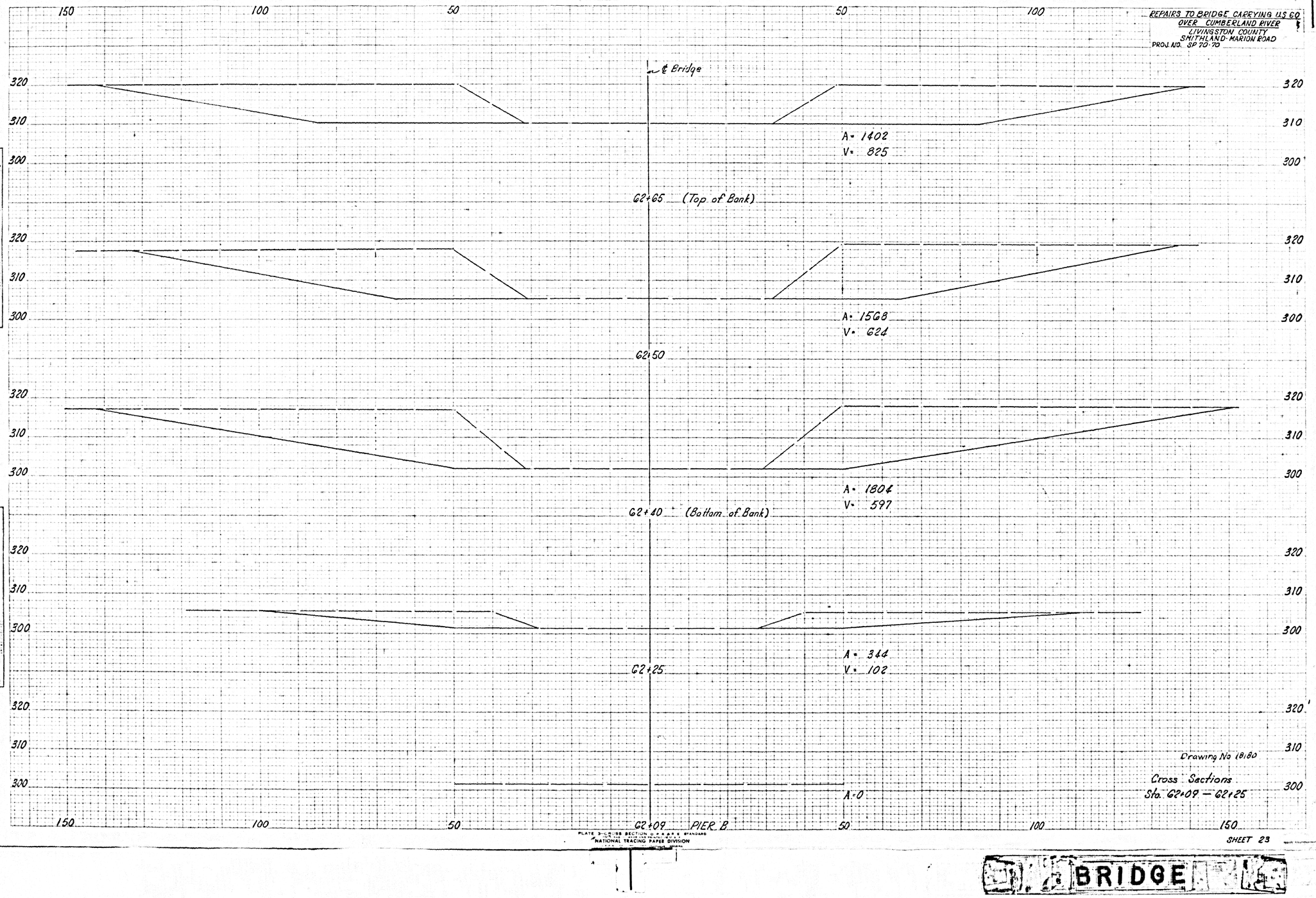
GRADING AND RIGHT OF WAY

PLATE 1 - PLAN - PROFILE R. R. S. STANDARD
November 6 1961

PROJECT NO	LINE	SHEET NO	TOTAL SHEETS	FILE
SP 70-70		22		

BRIDGE

REPAIRS TO BRIDGE CARRYING US 60
OVER CUMBERLAND RIVER
LIVINGSTON COUNTY
SMITHLAND-MARION ROAD
PROJ. NO. SP 70-70



Drawing No 18180

Cross Sections
Sta. 62+09 — 62+25

SHEET 23

BRIDGE

REPAIRS TO BRIDGE CARRYING U.S 60
OVER CUMBERLAND RIVER
LIVINGTON COUNTY
SMITHLAND-MARION ROAD
PROJ. NO. BP 70-70

150 100 50 50 100

320 310 300

℄ Bridge

A=0
V=188

G3+67.5

A= 579
V= 219

G3+50

A= 1241
V= 1050

G3+43.5

A= 1824
V= 794

G3+25

A= 1747
V= 2799

G3+13 PIER NPL

Drawing No 18180
Cross Sections
G3+13 - G3+67.5

JOM 2-70
JOM 3-70
JWM 5-70

JOM
JWM

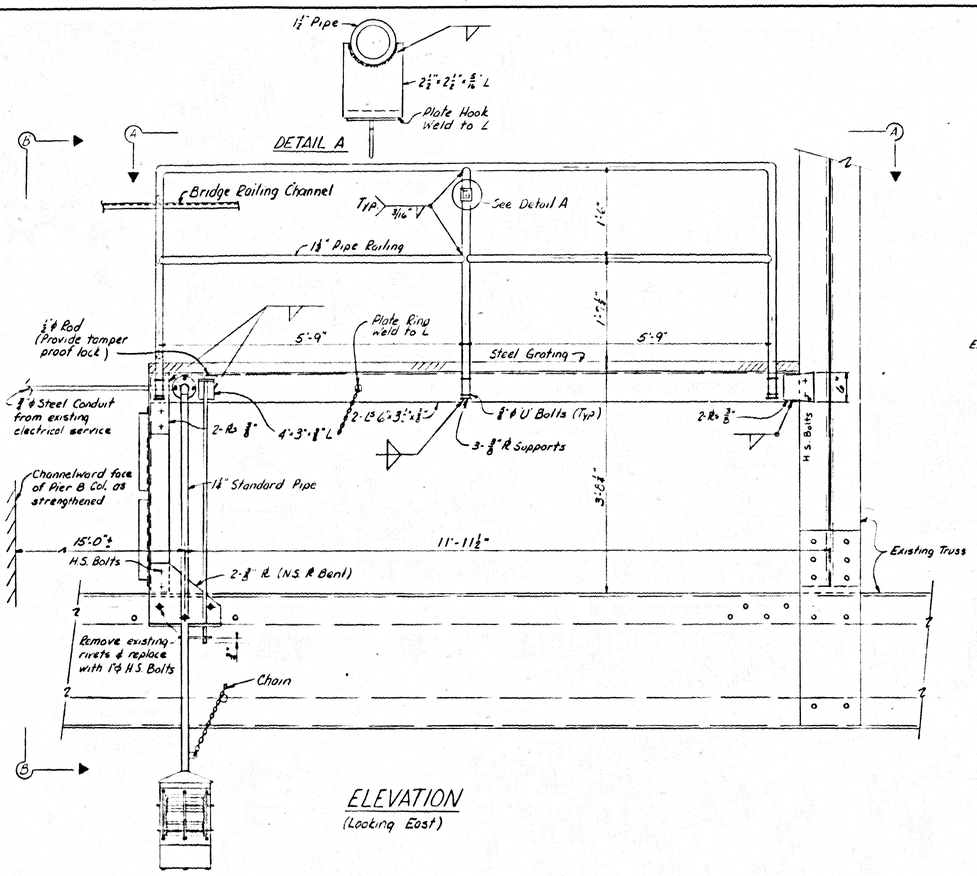
SURVEY

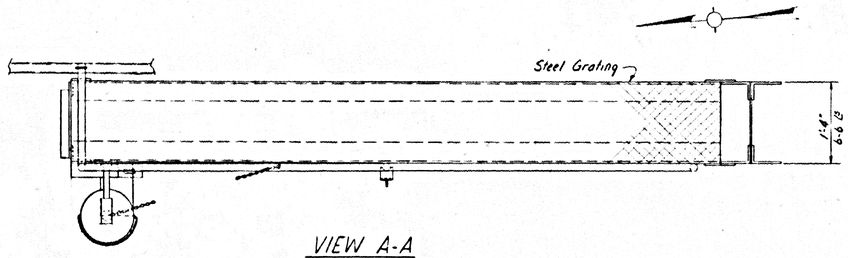
PLATE 3 - CROSS SECTION - C.P.R.R.E. STANDARD
NATIONAL TRACING PAPER DIVISION

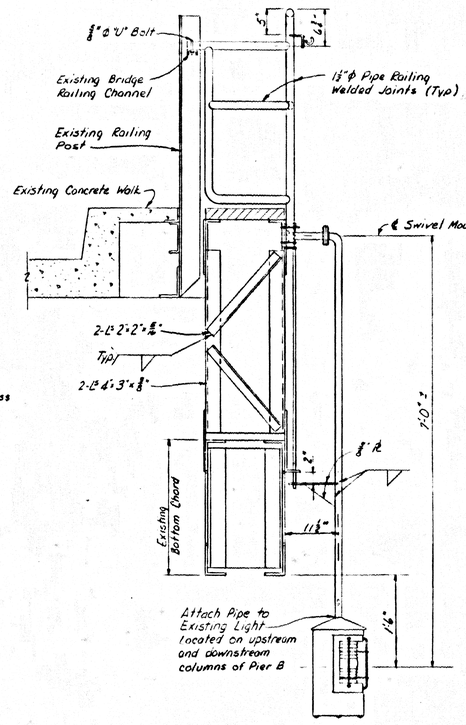
SHEET 24

BRIDGE

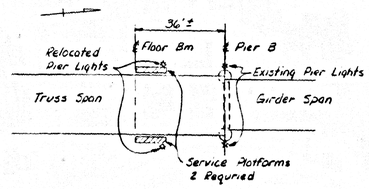
LETTING DATE







SECTION B-B



PLAN OF SERVICE PLATFORMS

For General Notes, see Sheet No. 2.

All pipe railing shall be 1-1/2" diameter ASTM A53 (Schedule 40) and shall be welded construction.

All bolts to be 7/8" diameter high-strength (ASTM 325) except for bolts replacing rivets in existing truss which shall be 1" diameter.

Painting of railing, platforms, angle supports, locking rod, etc. to be in accordance with the specifications for painting structural steel.

All steel shall be A 36 unless otherwise shown or noted.

Rough edges and sharp corners on platform and railing are to be removed.

All welds to be 1/4" unless otherwise noted or governed by material thickness.

Grating shall be shop welded to supports where practical.

Wire: The circuit wire necessary to move the Pier B navigation light shall be AWG Copper #12, either stranded or solid. Insulation shall be Type USE (UL Rated). All wire shall be identified in accordance with the provisions of the National Electrical Code.

Conduit: All conductors shall be run inside rigid steel conduit, 3/4" diameter. All rigid steel conduit shall be galvanized inside and out and shall conform to the Underwriters Laboratories requirements for rigid metallic conduit. All conduit installations shall conform to the provisions of the National Electrical Code. The ends of the conduit shall be reamed to remove burrs and rough edges. Damaged portions of the galvanized coating and untreated threads resulting from field cuts shall be painted with an approved rust-inhibitive paint. Slip joints will be permitted for coupling rigid conduit to junction boxes if necessary. When a standard coupling cannot be used for coupling rigid conduit, an approved threaded union coupling shall be used. All conduit threads shall be painted with white lead when fitted up. Conduit bends shall have a radius of not less than twelve (12) times the nominal diameter of the conduit. Conduit fittings shall be threaded and galvanized and shall have gasketed covers.

Junction Boxes: Any junction boxes necessary shall be hot dipped galvanized and be made watertight with gasketed covers.

Steel Grating: Steel Grating shall be Bustin Protecto-Bay, Type PW-2-R, galvanized steel grating as manufactured by Bustin Steel Products, Inc., or an approved equal.

Estimated weight of Structural Steel on this sheet is 1,200 lbs.

SHEET 25

REPAIRS TO BRIDGE CARRYING U.S. 60 OVER CUMBERLAND RIVER

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
LIVINGSTON
SMITHLAND - MARION
ROAD

STATION | P. E. PROJECT NO. SP 70-70

CONSTRUCTION PROJECT NO.	MAINTENANCE PROJECT NO.	DRAWING NO.
		18180

SERVICE PLATFORM AT PIER B

BRIDGE