

Current (1994) A.D.T.	= 440	= 440
Design Year (2014) A.D.T.	= 710	= 710
D.H.V.	= 71	= 71
D Directional Distribution.	= 55%	= 55%
T Percent B & C Trucks.	= 7%	= 7%
V Design Speed.	= 55	= 55
Legal Speed.	= 55	= 55
Functional Classification.	= Rural Major Collector	= Rural Major Collector
Design Exceptions.	= None	

County Line _____

Township Line _____

Section Line _____

Corporation Line _____ or _____

Construction Limits _____

Fence Line (existing) — x — x — (proposed) — x — x —

Center Line _____ 352 _____ 353 _____

Trees Stumps (to be removed)

Utility Poles: Telephone Power Light

Existing Light Pole Foundation

Existing Steel Post

Limited access (only) _____ LA _____

Right of Way (only) _____ R/W _____

Right of Way with Limited Access _____ LA R/W _____

Existing Right of Way _____

Property Line (in existing fence) — x — — x —

Railroad or

Guardrail (existing) (proposed)

Waterline — W — Gasline — G —

W.V. C.B. G.V. M.H.

Existing Storm Sewer _____ 12" _____

Existing Sanitary Sewer _____ 12" — San _____

M.H.

Title Sheet	1
Typical Section.....	2-4
General Notes.....	5
Detour Plan.....	6
General Summary.....	7
Calculations.....	8-9

	Project	Work
<u>HUR-162-1.53</u>		
Begin	Sta. <u>81+00.31</u>	Sta. <u>79+75.00</u>
Suspend	Sta. <u>82+63.69</u>	Sta. <u>84+00.00</u>
Length	<u>163.38</u> Lin.Ft. or <u>0.031</u> Miles	<u>425</u> Lin.Ft. or <u>0.08</u> Miles
<u>HUR-162-2.56</u>		
Resume	Sta. <u>135+41.04</u>	Sta. <u>134+45.85</u>
End	Sta. <u>136+24.46</u>	Sta, <u>137+25.00</u>
Length	<u>83.42</u> Lin.Ft. or <u>0.016</u> Miles	<u>279.15</u> Lin.Ft. or <u>0.053</u> Miles
Total Length	<u>246.8</u> Lin.Ft. or <u>0.047</u> Miles	<u>704.15</u> Lin.Ft. or <u>0.133</u> Miles

STRUCTURE PLANS REVIEWED BY:
Burgess & Niple, Limited
Engineers and Architects

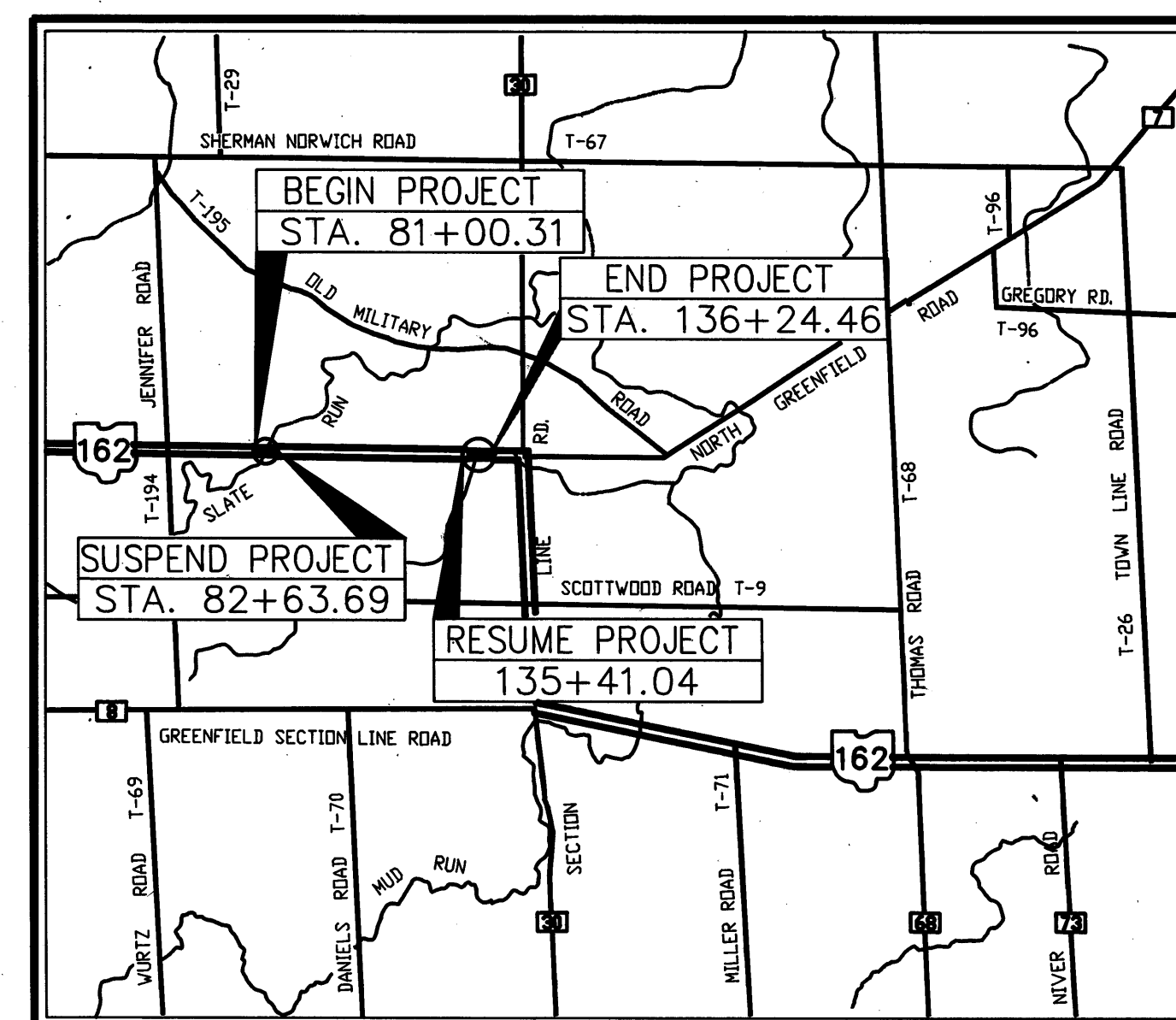
bn
1982

Project HUR-162-(1.53)(2.56) Huron County
Date of Letting 11-8 1995 Contract No. 589-95

PLAN PREPARED BY:
R.E. WARNER & ASSOCIATES
2001 CROCKER RD.
WESTLAKE, OHIO 44145
216-835-9400

MICROFILME
APR 19 1996

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
HUR-162-(1.53)(2.56)
NORWICH TOWNSHIP
HURON COUNTY



SCALE IN MILES



Portion to be improved	
State Routes	
Other Roads	

Plan 0 20' 40'

Profile Horiz. 0 20' 40' Vertical 0 5' 10'

Cross Section: Horiz. 0 5' 10' Vertical 0 5' 10'

SUPPLEMENTAL SPECIFICATIONS	
802	3-23-95
944	3-23-95
820	6-14-95

SUPPLEMENTAL PRINTS OF STANDARD CONSTRUCTION DRAWINGS					
BP-3.1	2-21-92	MC-4	7-26-76	AS-1-81	11-27-81
BP-4.1	2-21-92	MC-10	5-1-76		
		MC-11	8-1-78	DBR-2-73	4-10-73
GR-1.1	5-6-91	TC-41.10	8-29-84	PSBD-1-81	6-20-89
GR-1.2	10-30-92	TC-41.20	6-21-94	EXJ-3-82	8-1-84
GR-1.3	2-21-92	TC-52.10	4-3-79	EXJ-4-87	1-5-89
GR-2.1	5-6-91	TC-52.20	4-3-79		
		MT-99.10	11-14-86		
GR-3.4	5-6-91	MT-101.60	7-1-92		
GR-4.1	5-6-91	MT-105.10	7-1-92		
GR-4.2	5-6-91	MT-105.11	7-1-92		

The Standard Specifications of the State of Ohio Department of Transportation, including changes and supplemental specifications listed in the proposal shall govern this improvement.

I hereby approve these plans and declare that the making of this improvement will require the closing to traffic of the highway, and that detours will be provided as indicated on sheet 6.

Approved P.A. Harwood, jr
Date 6-14-94 District Deputy Director of
Transportation

Approved B.D. Harkless / BKH
Date 7-26-94 Engineer, Bureau of Bridges and
Structural Design

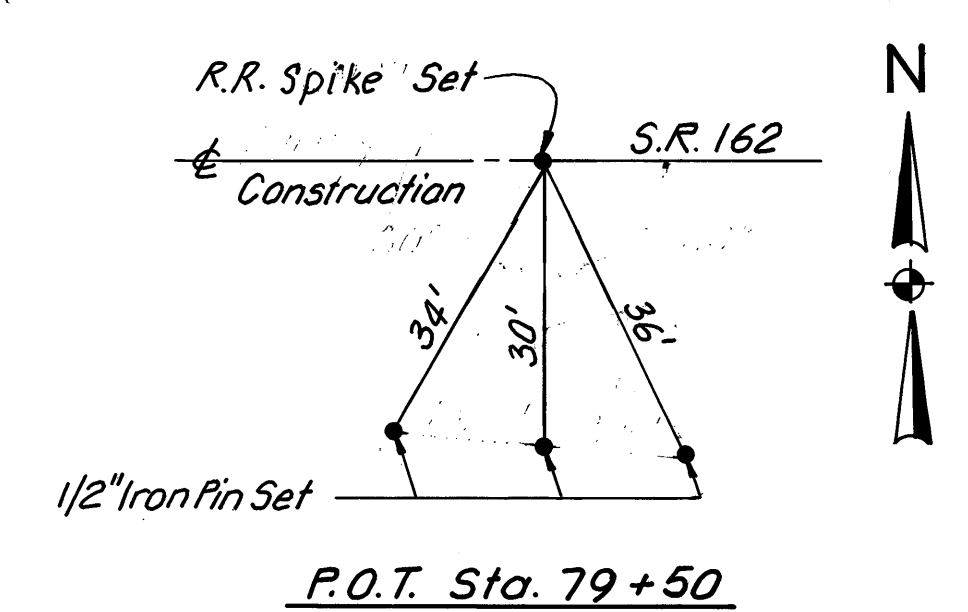
Approved Christopher L. Ryan
Date 10-13-94 Deputy Director, Design

Approved *Jerry Wray*
Date 10-13-94 Director, Department of
Transportation

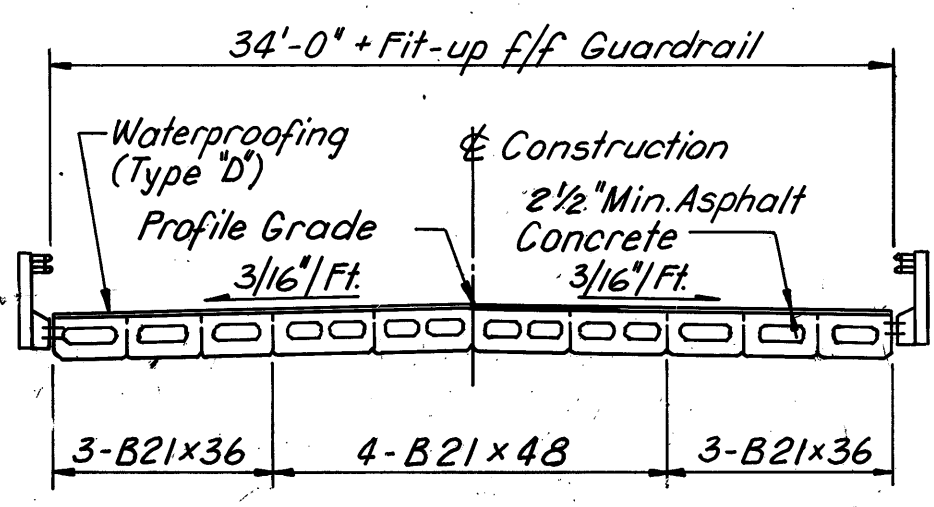
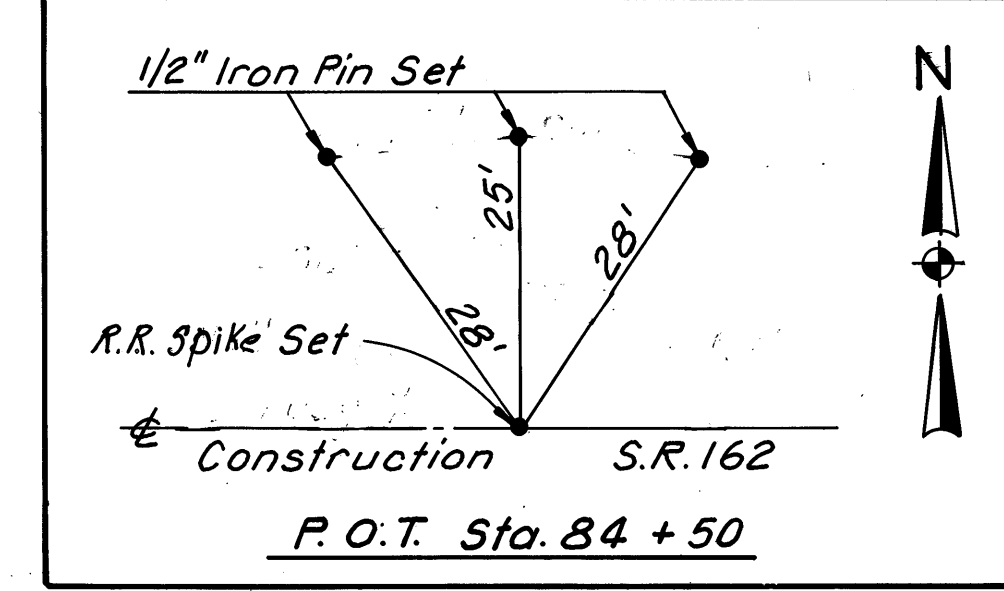
DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

Approved _____
DIVISION ADMINISTRATOR DATE _____

Revised 9-12-95



Local Benchmark: Drill Hole in top of North West Wing Wall.
Elevation: 846.69
Hur-162-0154
Sta. 81+36.00, 19' Lt.



TRANSVERSE SECTION

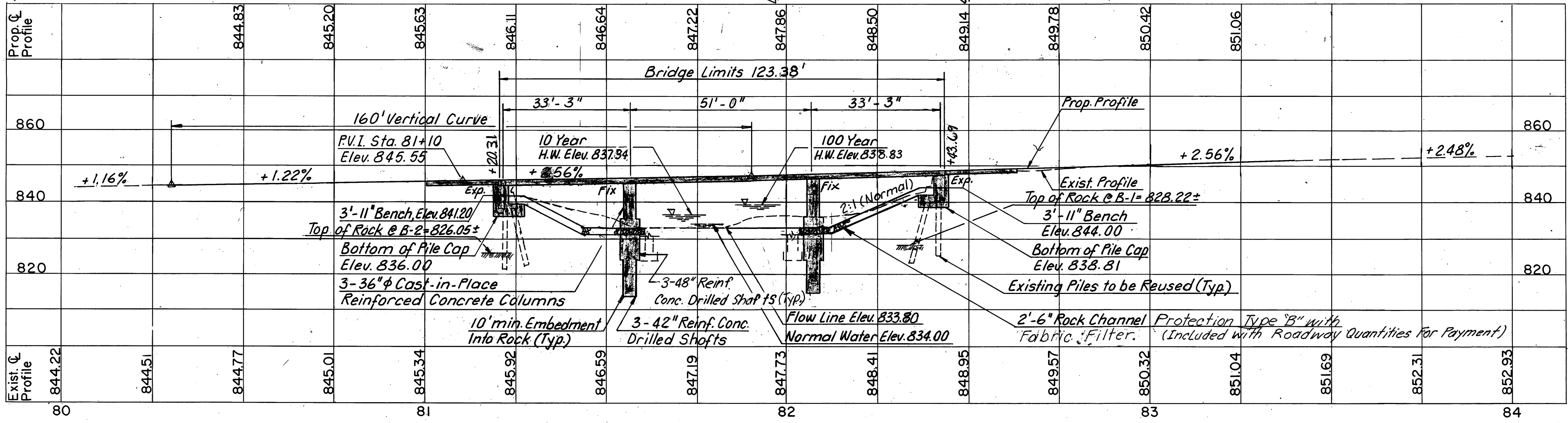
Note: Sta. 82+00 & S.R. 162 = Sta. 20+50 & Channel

● Indicates Location of Test Boring

Note: Earthwork Limits Shown are Approximate.
Actual Slopes Shall Conform to Plan Cross Sections.

Design Traffic
1992 ADT 440
2012 ADT 710

DRAINAGE AREA	
Drainage Area: 11.32 Sq. Miles	
10 Year	100 Year
Q = 1229 C.F.S.	Q = 2159 C.F.S.
V = 7.01 F.P.S.	V = 8.54 F.P.S.
H.W. Elev. = 837.34	H.W. Elev. = 838.83
Minimum Bottom of Deck Elev. = 843.29 at Sta. 81 + 8.51	
Minimum Clearance = 5.95 Feet for 10 Year Flood	



PROFILE ALONG C SURVEY & CONSTRUCTION

EXISTING STRUCTURE DATA

TYPE: Three-Span Prestressed Box Beam
Structure File No. 3902641
SPANS: 40'-2"±, 40'-2"±, 40'-2"±
ROADWAY: 32'± f/f of Guardrail
SUBSTRUCTURE: Stub Abut. & Wall Piers
WEARING COURSE: Asphalt Concrete
ALIGNMENT: Tangent
SKEW: 40° L.F.
CONDITION: Fair
DATE BUILT: 1961

PROPOSED STRUCTURE

TYPE: Three-Span Prestressed Concrete Box Beams With Reinforced Concrete Capped Pile Abutments & Drilled Shaft / Concrete Column Piers
SPANS: 33'-3", 51'-0", 33'-3"
ROADWAY: 34'-0" f/f of Guardrail
Skew: 40° L.F.
LOADING: HS-20-44 and Alternate Military Loading
WEARING: SURFACE 2 1/2" Min. Asph. Conc.
APPROACH SLAB: (AS-1-81) 20'-0" Long
ALIGNMENT: Tangent
CROWN: 3/16" Ft.

R.E. WARNER & ASSOCIATES
CONSULTING ENGINEERS
WESTLAKE, OHIO 44145

SITE PLAN

BRIDGE NO. HUR-162-0154
OVER SLATE RUN
HURON COUNTY STA. 81+20.31
STA. 82+43.69

PRESENT TOPOGRAPHY		PROPOSED WORK			
SURVEYED	DRAWN	DESIGNED	DRAWN	CHECKED	REVIEWED
NAH	SSM	CLH	SSM	CDW	ART

Reviewed By Burgess & Niple, Ltd.
VDP 6-29-94



2 / 14

DESIGN	DRAWN	TRACED	CHECKED	REVIEW	DATE	REVISION
CLH	GSC		CDW	ART	5/94	

GENERAL NOTES

REFERENCE: Shall be made to Standard Drawings: DBR-2-73 (Dated 4-10-73), PSBD-1-81 SHEETS 1,2,3 and 4 of 4 (Dated 6-20-89), AS-1-81 sheets 1,2 and 3 of 3 (Dated 11-27-81), EXJ-3-82 sheets 1,2,3 and 4 of 4 (Dated 8-1-84), and EXJ-4-87 sheets 2 and 5 (Dated 1-5-89), and to Supplemental Specification: 944 (Dated 5-2-94) Smooth Lined Corrugated Polyethylene Pipe.

DESIGN SPECIFICATION:
This structure conforms to "Standard Specifications for Highway Bridges" adopted by the American Association of State Highway and Transportation Officials, 1992, the 1993 Interim Specifications, and the ODOT Bridge Design Manual.

DESIGN DATA: Design Loading - HS20-44 and the Alternate Military Loading.

- Concrete Class C - f'c = 4000 p.s.i. for substructure.
- Reinforcing Steel - ASTM A615, A616 or A617 Grade 60- Fy = 60,000 p.s.i.
- Spiral reinforcement may be plain bars, ASTM A82, or A615.
- Concrete for prestressed concrete beams - unit stresses, 2200 p.s.i.
compression, 444 p.s.i. tension.
- Prestressing strand ASTM A416 - f's = 270,000 p.s.i. initial stress 0.70 f's.
- Reinforcing steel in the prestressed box beams may be Grade 40,
40,000 p.s.i. yield or Grade 60, 60,000 p.s.i. yield.

DECK PROTECTION METHOD:
Type "D" waterproofing, asphalt concrete overlay, steel drip strips, and sealing of concrete surfaces.

ITEM SPECIAL, SEALING OF CONCRETE SURFACES:
A concrete sealer shall be applied to the concrete surfaces shown on sheets 5 / 14, 6 / 14, 7 / 14, and 11 / 14. See proposal for surface preparation requirements, application rates, material requirements and application procedures.

EXISTING STRUCTURE VERIFICATION:
Details and dimensions shown on these plans pertaining to the existing structure have been obtained from plans of the existing structure and/of from field observations and measurements. Consequently, they are indicative of the existing structure and the proposed work but they shall be considered tentative and approximate. The Contractor is referred to CMS Sections 102.05, and 105.02.

Contract bid prices shall be upon a recognition of the uncertainties described above and upon examination of the existing structure by the Contractor. However, all project work shall be based upon actual details and dimensions which have been verified by the Contractor in the field.

ITEM 202, PORTIONS OF EXISTING STRUCTURE REMOVED, AS PER PLAN:
When no longer needed to maintain traffic the existing structure shall be removed as noted. The Forward and Rear Abutments shall be removed. The Abutment piling should be removed to Elev 838 for the Rear Abutment, and to Elev. 840.8 for the Forward Abutment. Excercise caution so as to not damage portions which are to remain. Piers shall be removed to an elevation 1 foot below the ground line.

UTILITY LINES:
All expense involved in relocating the affected utility line shall be borne by the owners. The Contractor and Owners are requested to cooperate by arranging their work in such a manner that inconvenience to either will be held to a minimum.

ITEM 518, 6" PERFORATED CORRUGATED PLASTIC PIPE, AS PER PLAN:
Corrugated pipe used in abutment drainage shall be 6 inch diameter, plastic corrugated as per Supplemental Specification 944, AASHTO M252, Type SP.

ITEM 518, 6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS, AS PER PLAN:
Corrugated pipe used in abutment drainage shall be 6 inch diameter, plastic corrugated as per Supplemental Specification 944, AASHTO M252, Type S. This item shall include all elbows, tees, and end caps required to complete the abutment drainage system.

PILE DESIGN LOADS:
The design load for each abutment piling is 43 tons per pile.

DECK JOINT PAINTING:
After cleaning in the field as directed, and preferably after installation of joint seals, all upper exposed steel surfaces excluding roadway surfaces in traveled lanes shall be painted with a system OZEU prime, intermediate, and finish coat of paint described in the proposal note for OZEU painting. Cost for field cleaning and painting shall be included in the price bid per linear foot for the deck expansion joints.

DECK JOINT MATERIALS:
Steel for deck joints that is to be fully encased in concrete may be unpainted ASTM A36 or A588. All other steel portions of the joints shall be ASTM A588. Steel shall be abrasively cleaned in the shop prior to final assembly. Steel retainers and elastomeric strip seals shall be provided by the same manufacturer. A closed-cell elastomeric backer rod shall be installed in retainers by the joint fabricator after steel cleaning to protect groove surfaces from contamination prior to seal installation or field painting. Shop painting is not required.

ELASTOMERIC SEALS:
The joint seal for each bridge deck joint shall be furnished in one continuous piece.

STRUCTURAL EXPANSION JOINTS INCLUDING ELASTOMERIC STRIP SEALS:

Refer to Standard Drawings EXJ-4-87 and EXJ-3-82 for notes with the following exceptions.

MATERIALS: Steel portions of the joints that are fully encased in concrete may be unpainted ASTM A36 or A588. All other portions shall be ASTM A588, painted as specified. The elastomeric extrusions and the steel extrusions or welded retainers shall be as manufactured by the D.S. Brown Company of North Baltimore, Ohio; the Watson Bowman and Acme Corporation of Amherst, New York; Struc-tural Accessories of Lenoir, North Carolina; or an approved alternate.

PAINTING: The upper exposed portions of the expansion joints shall be painted in conformance with the proposal note for system OZEU as specified in standard drawing EXJ-4-87.

ITEM 511 CLASS S CONCRETE, AS PER PLAN:
All coarse aggregate to be #8 limestone.

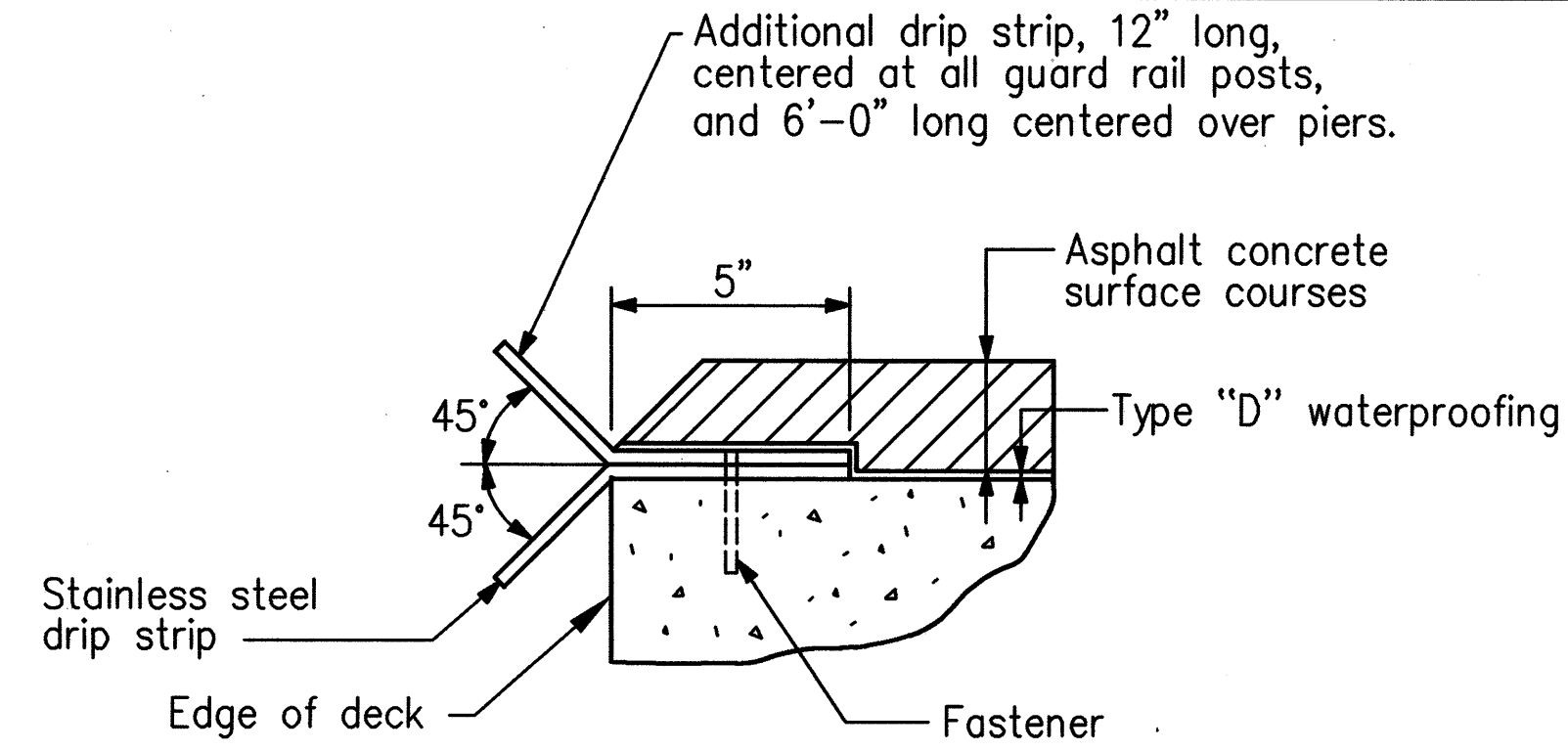
ITEM 511 CLASS C CONCRETE, AS PER PLAN:
All coarse aggregate to be #8 limestone.

ITEM 518 POROUS BACKFILL WITH FILTER FABRIC, AS PER PLAN:
All porous backfill to be #57 gravel.

ITEM 503 COFFERDAMS, CRIBS AND SHEETING, AS PER PLAN:
Clean material is to used and the stream bed is to be returned as near as possible to the original condition.

R.E.WARNER & ASSOCIATES CONSULTING ENGINEERS WESTLAKE, OHIO 44145										3 / 14	
GENERAL NOTES											
BRIDGE NO. HUR-162-0154 OVER SLATE RUN											
DESIGN	DRAWN	TRACED	CHECKED	REVIEW	DATE	REVISED					
CLH	GSC		CDW	ARC	5/94						

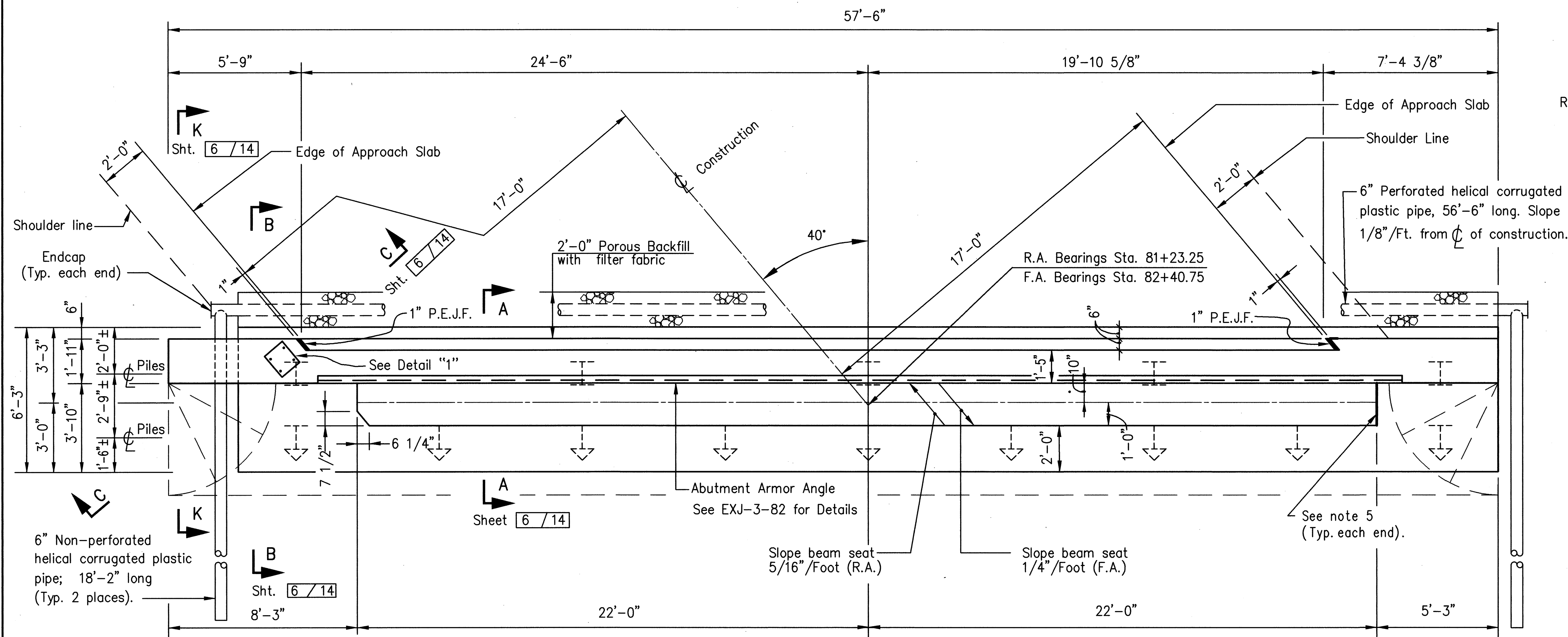
CALC. BY. <u>CLH</u>		DATE. <u>5/94</u>		ESTIMATED QUANTITIES		CHK'D BY <u>CDW</u>		DATE <u>5/94</u>	
ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	PIERS	SUPER.	ABUTS	GEN'L	
202	11203	Lump		Portions of Structure Removed, over 20 Foot, as per Plan				Lump	
403	20000	31	Cu.Yd.	Asphalt Concrete, AC-20		31			
404	20000	16	Cu.Yd.	Asphalt Concrete, AC-20		16			
503	11101	Lump		Cofferdams, Cribbs and Sheeting, as per Plan				Lump	
503	21100	45	Cu.Yd.	Unclassified Excavation			45		
Special	50794804	60	Lin. Ft.	Drilled Shafts, 42" Diameter, into Bedrock	60				
Special	50794902	48	Lin. Ft.	Drilled Shafts, 48" Diameter, above Bedrock	48				
509	15824	17421	Lb.	Epoxy Coated Reinforcing Steel, Grade 60	6627	800	9994		
511	34001	5	Cu.Yd.	Class S Concrete, Superstructure, as per Plan		5			
511	41001	42	Cu.Yd.	Class C Concrete, Pier above Footings, as per Plan	42				
511	43501	166	Cu.Yd.	Class C Concrete, Abutment Including footing, as per Plan			166		
512	55800	435	Sq.Yd.	Type D Waterproofing		435			
Special	51267500	74	Sq.Yd.	Sealing of Concrete Surfaces (See Proposal Note)	14	60			
Special	51267502	60	Sq.Yd.	Sealing of Concrete Surfaces (Epoxy)(See Proposal Note)			60		
515	50500	12	Each	Prestressed Concrete Box Beam. (30-40' Length)(B21 x 36)(See Proposal Note)		12			
515	50900	6	Each	Prestressed Concrete Box Beam. (50-62' Length)(B21 x 36)(See Proposal Note)		6			
515	53700	8	Each	Prestressed Concrete Box Beam. (30-40' Length)(B21 x 48)(See Proposal Note)		8			
515	53900	4	Each	Prestressed Concrete Box Beam. (40-52' Length)(B21 x 48)(See Proposal Note)		4			
516	11210	94	Lin.Ft.	Structural Expansion Joint Including Elastomeric Strip Seal (See Proposal Note)		94			



DRIP STRIP DETAIL

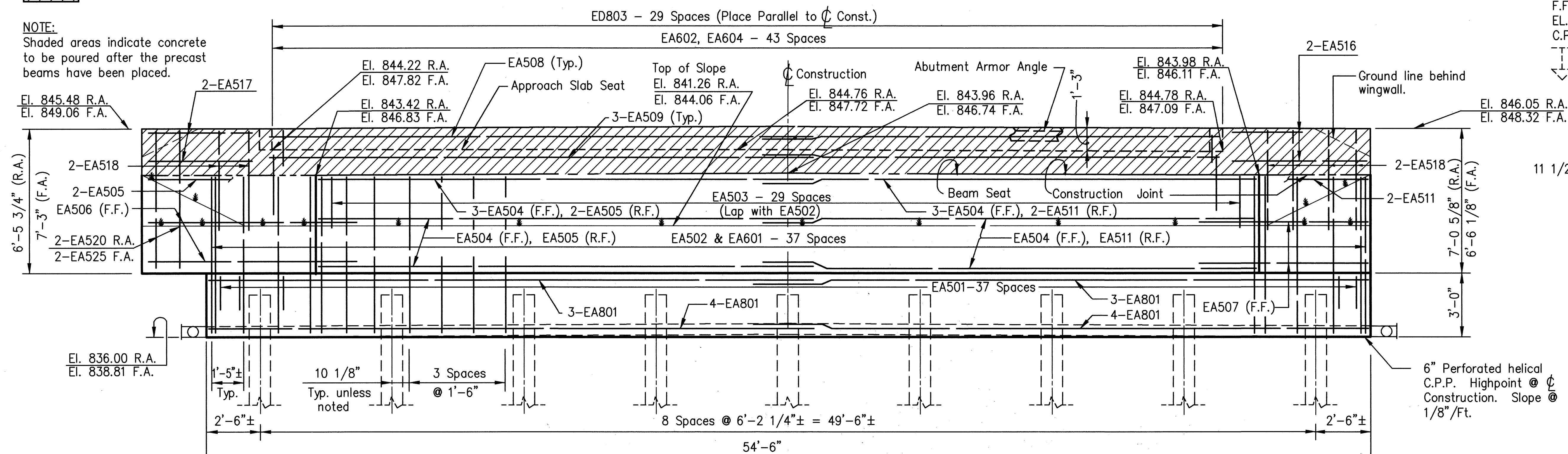
STAINLESS STEEL DRIP STRIP: Prior to applying waterproofing, a bent drip strip shall be installed along the edges of the deck. An additional 1'-0" long drip strip shall also be installed centered on each post.

The strip shall be fastened at 1'-6" O/C maximum with 1-1/4" x 5/16" x 1-1/4" flat head drive pins.



P L A N

NOTE:
Shaded areas indicate concrete to be poured after the precast beams have been placed.



E L E V A T I O N

NOTES

1. POROUS BACKFILL WITH FILTER FABRIC, AS PER PLAN 2'-0" thick shall extend up to the plane of the subgrade, to one foot below the embankment surface, and laterally to the ends of the wingwalls. Geotextile fabric shall conform with 712.09, Type A, and is included with porous backfill for payment. The porous backfill material shall be #57 gravel.
2. BRIDGE SEAT REINFORCING. Reinforcing steel in the vicinity of the bridge seat shall be accurately placed to avoid interference with the drilling of anchor bar holes.
3. For Reinforcing Steel Schedule see Sheet 14 / 14.
4. REINFORCING SPLICE LENGTHS shall be 2'-9" for #5 bars, 3'-4" for #6 bars, 4'-5" for #8 bars.
5. Epoxy Seal top and front surfaces of abutment breastwalls as shown in Detail "2", sheet 6 / 14, and exposed surfaces of wingwalls, as shown in Detail "3", sheet 6 / 14. Include beam seat ends.
6. Backwall and wingwall concrete above the level of the box beam seat shall not be placed until after the box beams have been erected.
7. NOTATIONS:

R.A.	Rear Abutment
F.A.	Forward Abutment
Brg's	Bearings
P.E.J.F.	Preformed Expansion Joint Filler
R.F.	Rear Face
F.F.	Front Face
EL.	Elevation
C.P.P.	Corrugated Plastic Pipe
∇	Existing Battered Pile

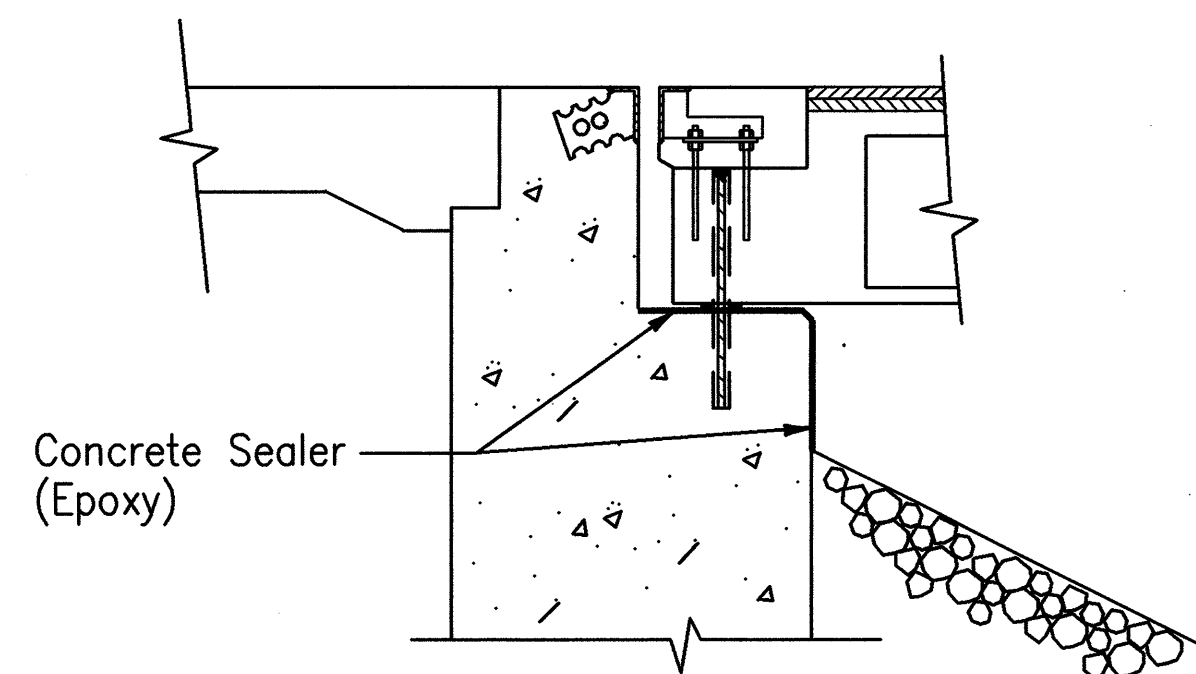
R.E. WARNER & ASSOCIATES
CONSULTING ENGINEERS
WESTLAKE, OHIO 44145

5 / 14

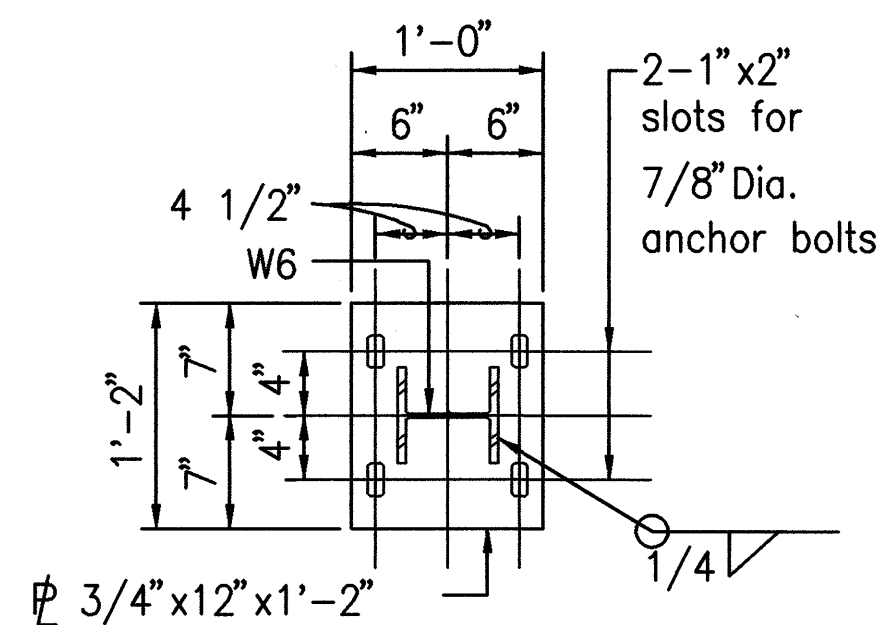
FORWARD AND REAR
ABUTMENT DETAILS

BRIDGE NO. HUR-162-0154
OVER SLATE RUN

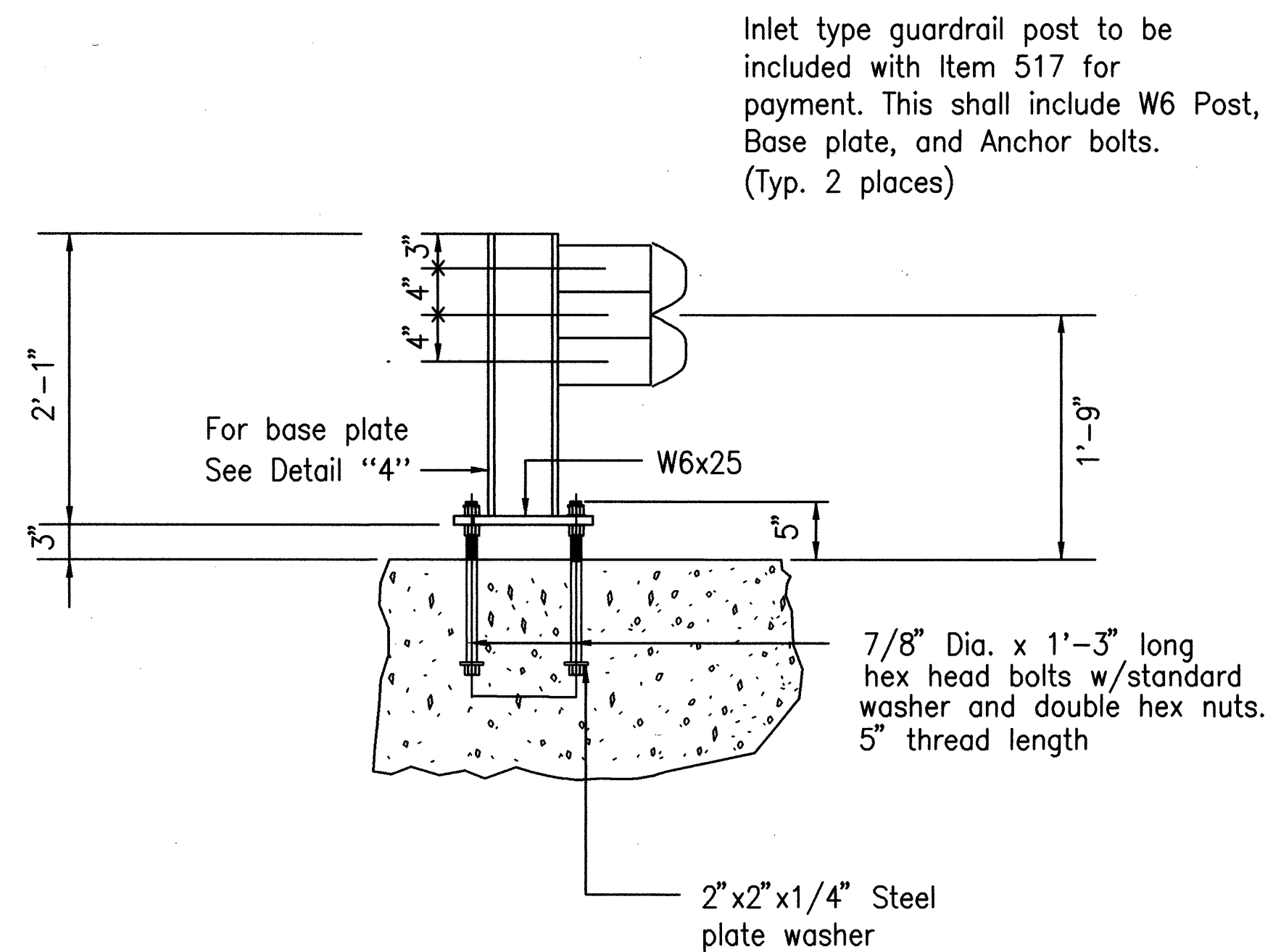
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CLH	63C		CDW	ART	5/94	



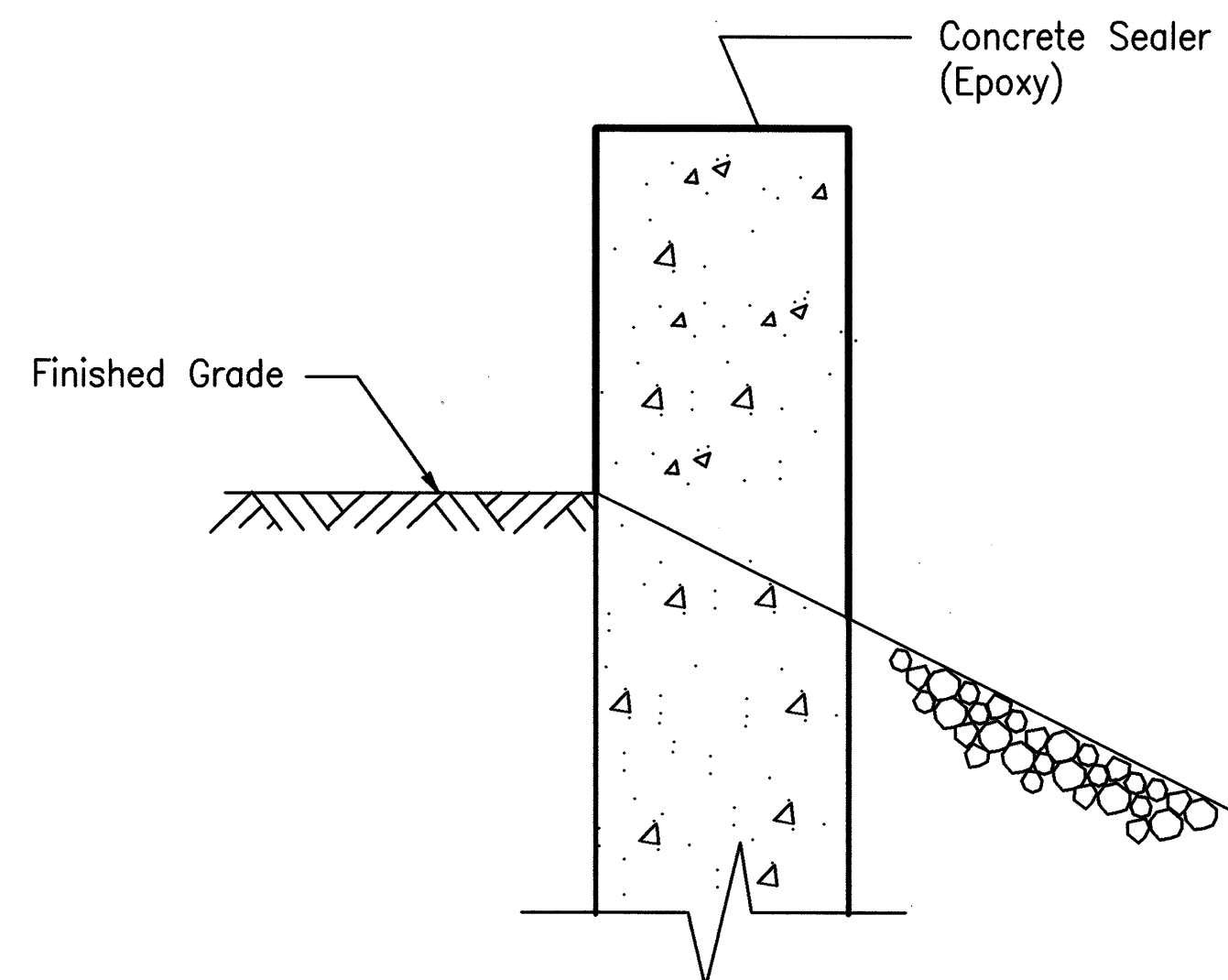
DETAIL "2"
CONCRETE SEALER AT BRIDGE SEAT

See Sheet **5 / 14**

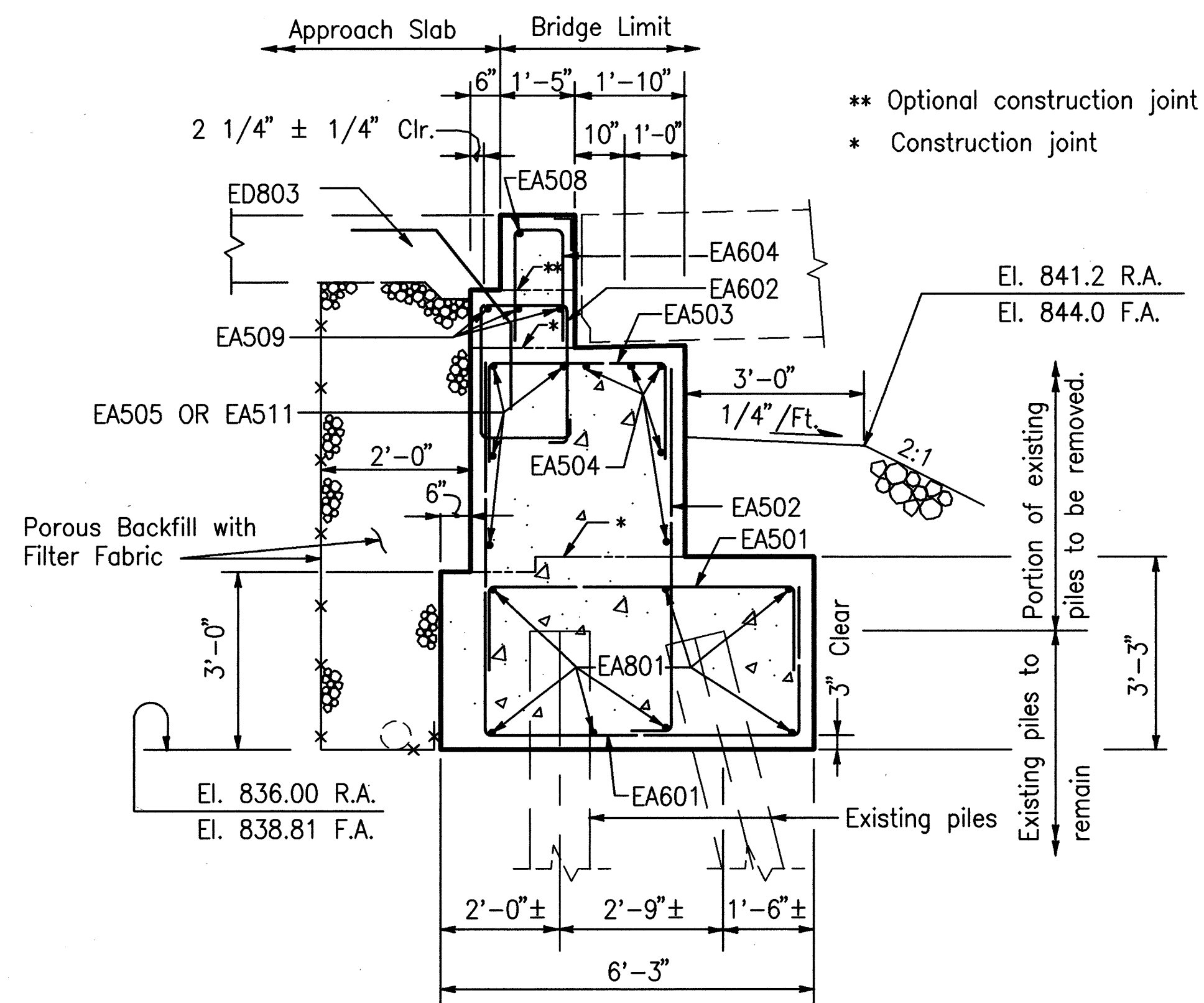
DETAIL "4"
BASE PLATE



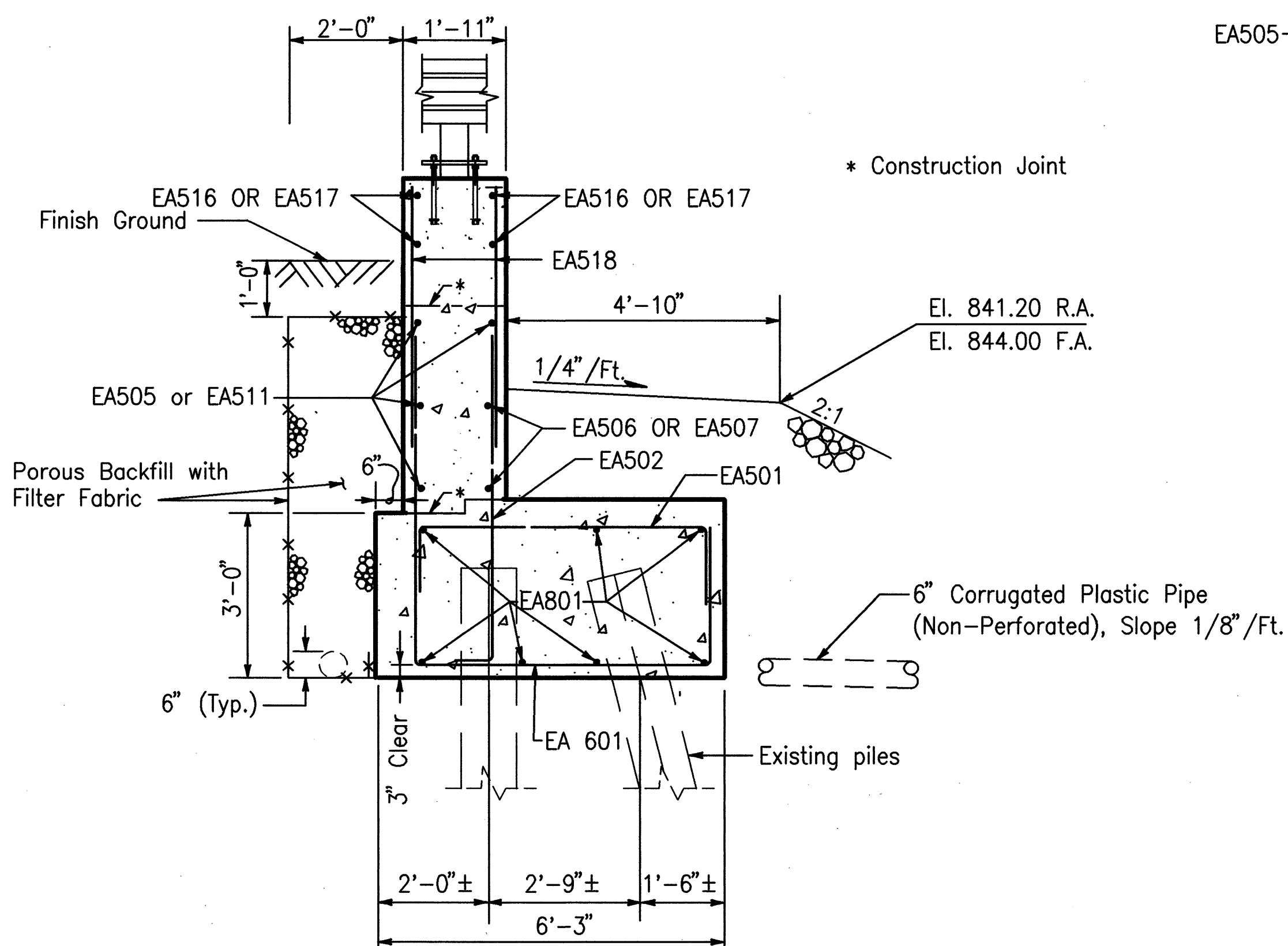
SECTION C-C

See Sheet **5 / 14**

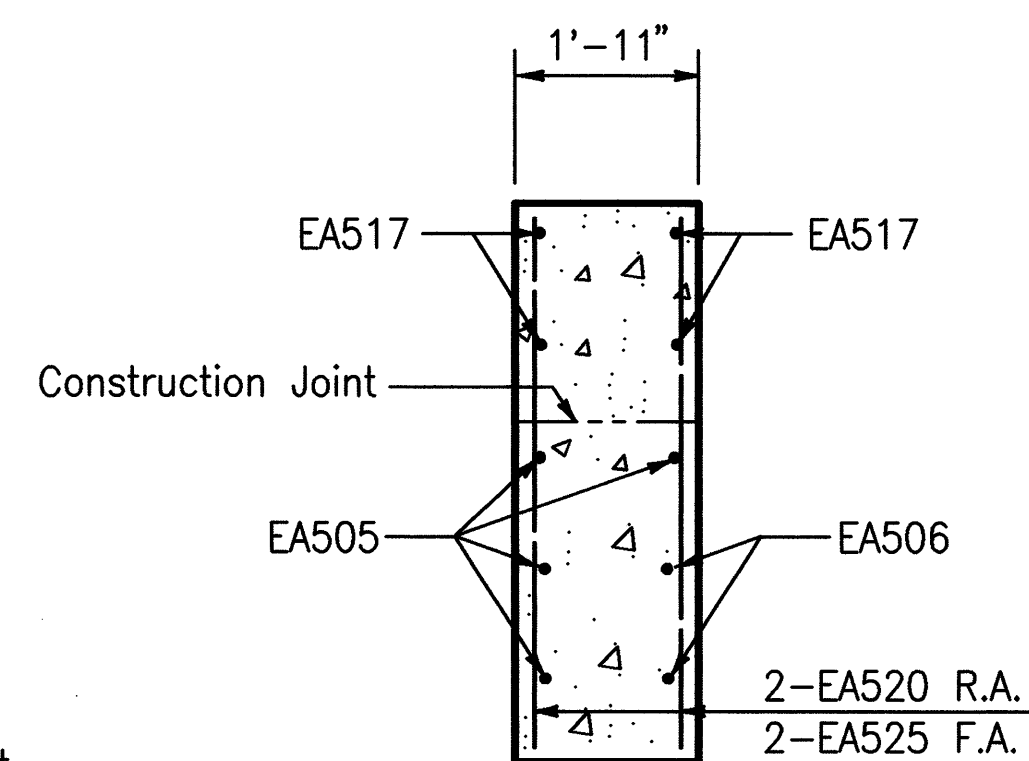
DETAIL "3"
CONCRETE SEALER AT WINGWALL
(N.T.S.)

See Sheet **5 / 14**

SECTION A-A

See Sheet **5 / 14**

SECTION B-B

See Sheet **5 / 14**

SECTION K-K

See Sheet **5 / 14****NOTE:**

Pile Inspection: After abutment piles are exposed by concrete removals, at least 1 foot of additional pile length below abutment bottom (for the two most corroded piles) shall be carefully uncovered to permit pile inspection, photographing, evaluation, and approval by the Engineer. The Director shall be notified if severe corrosion is found. After pile approval, all exposed piles shall be cleaned prior to encasing them in new abutment concrete. Cost of providing pile access and cleaning shall be included in Item 202 for payment.

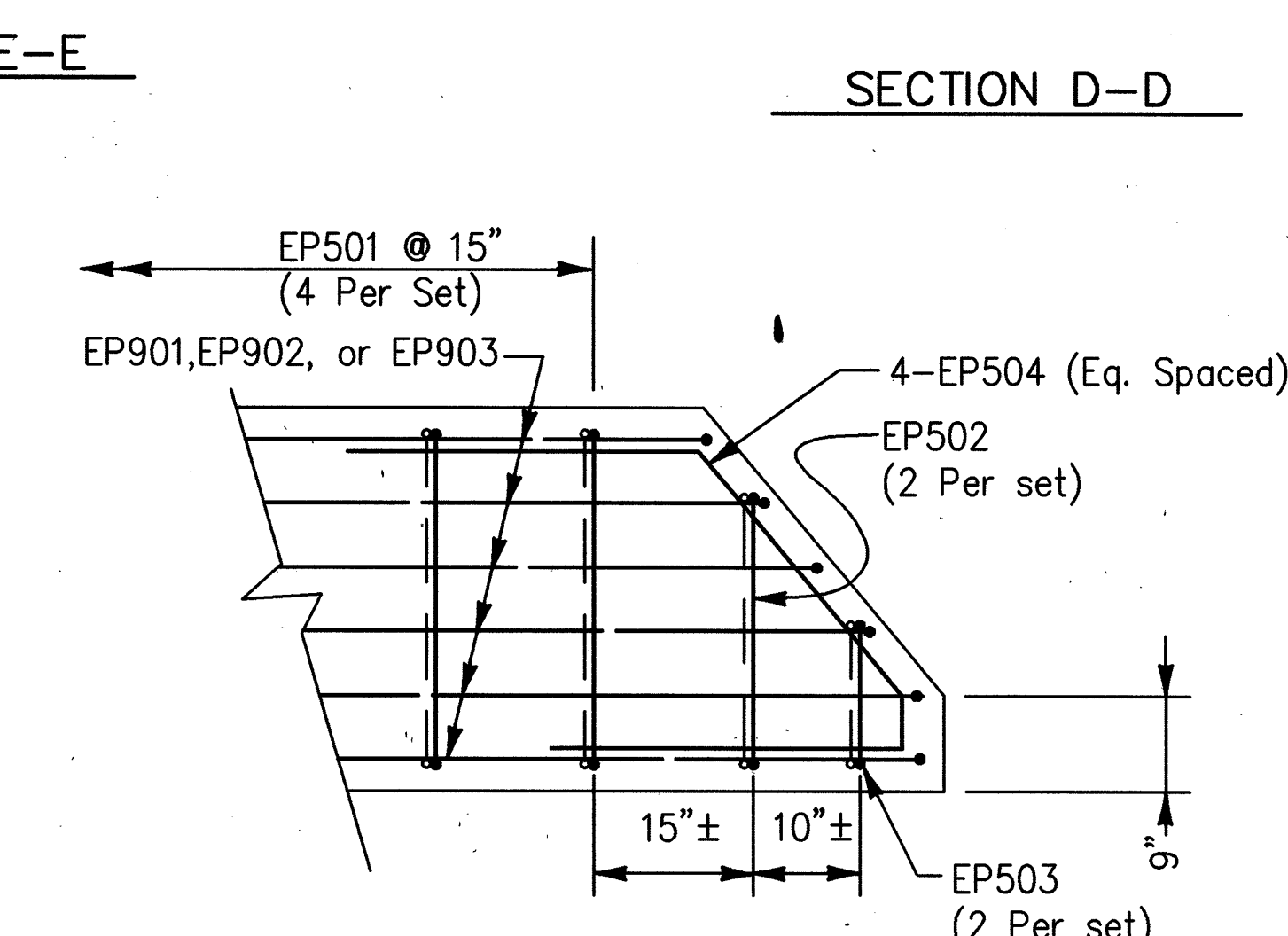
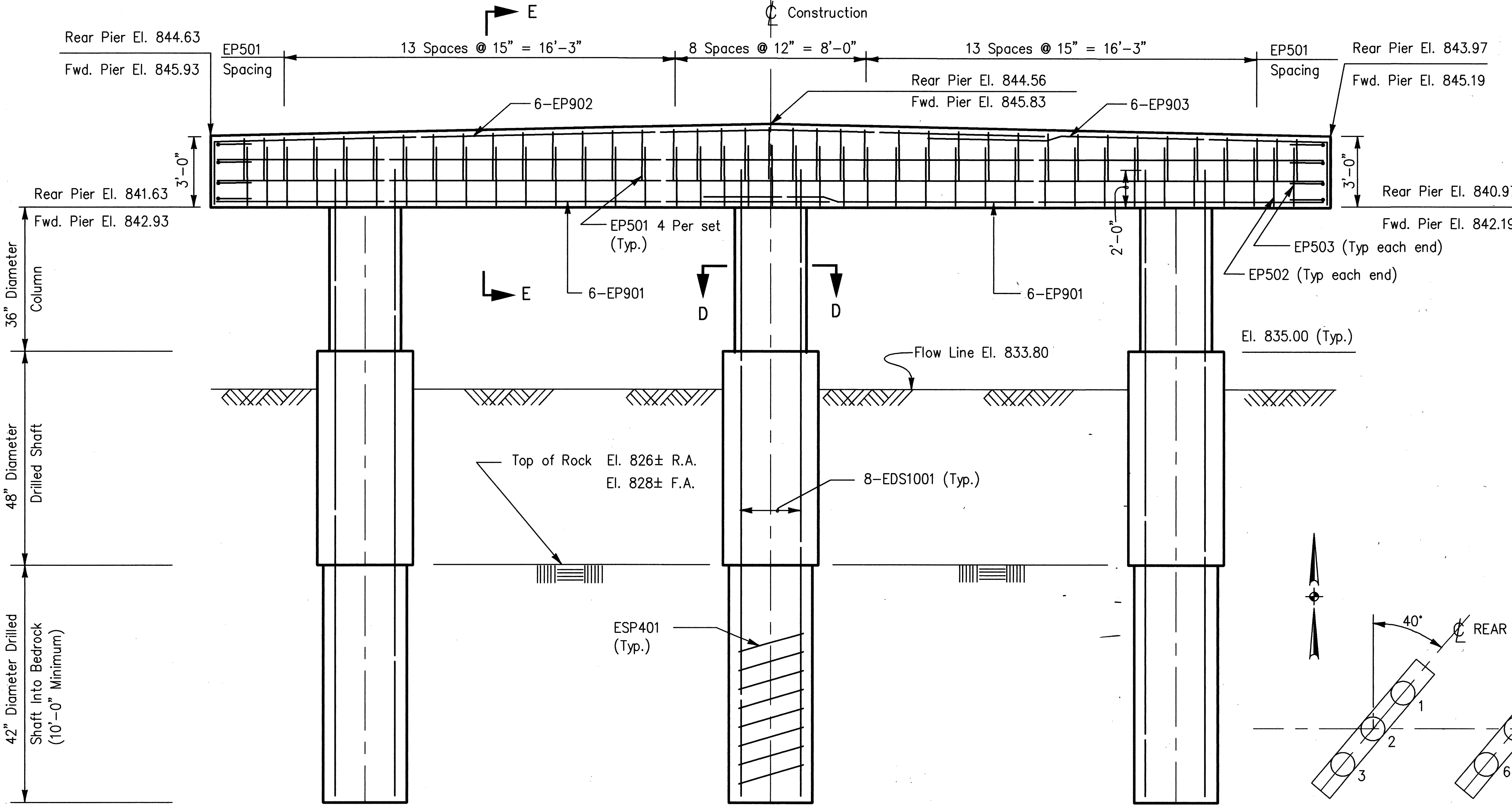
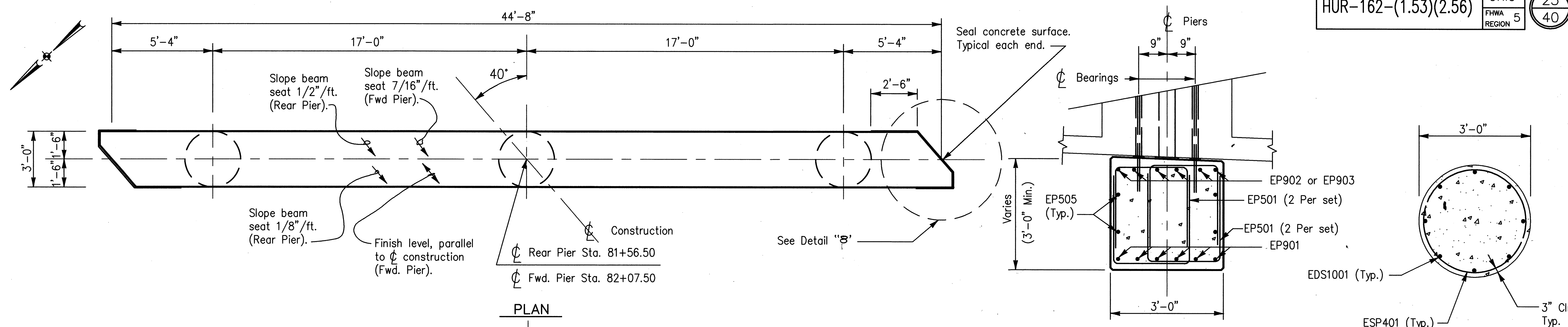
R.E. WARNER & ASSOCIATES
CONSULTING ENGINEERS
WESTLAKE, OHIO 44145

6 / 14

ABUTMENT DETAILS

BRIDGE NO. HUR-162-0154
OVER SLATE RUN

DESIGN	DRAWN	TRACED	CHECKED	REVIEW	DATE	REVISED
CLH	ASC		CDW	AKT	5/94	



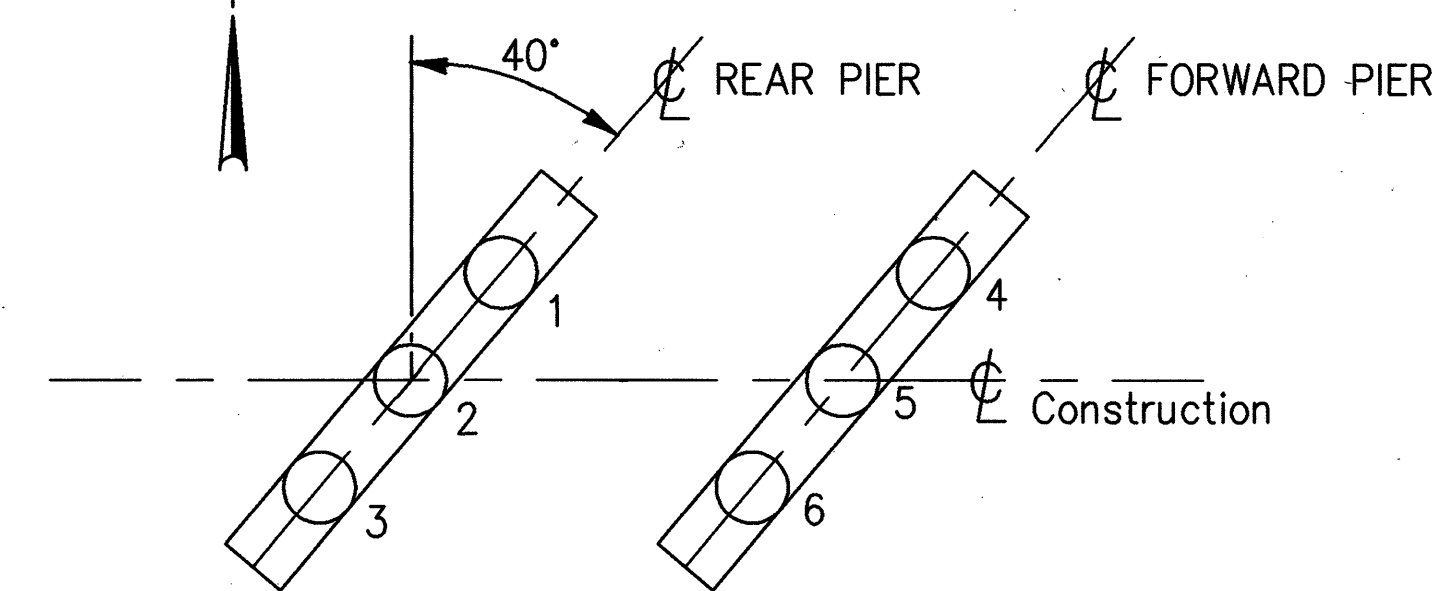
NOTES

BRIDGE SEAT REINFORCING: Reinforcing steel in the vicinity of the bridge seat shall be accurately placed to avoid interference with the drilling of anchor bar holes.

For reinforcing schedule, see sht. 14/14 .

For additional details see sht. 13/14 .

REINFORCING SPLICE LENGTHS: Shall be 5'-7" for #9 bars.



R.E. WARNER & ASSOCIATES CONSULTING ENGINEERS WESTLAKE, OHIO 44145						7/14
PIER DETAILS						
BRIDGE NO. HUR-162-0154 OVER SLATE RUN						
DESIGN	DRAWN	TRACED	CHECKED	REVIEW	DATE	REVISED
CLH	GSC		CDW	ART	5/94	

ITEM SPECIAL – DRILLED SHAFTS

DESCRIPTION

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING DRILLED SHAFTS OF THE TYPE AND SIZE SPECIFIED IN THE PLANS. THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIAL, AND APPURTENANCES REQUIRED TO COMPLETE THE WORK AS SPECIFIED. THE LENGTH(S) OF THE DRILLED SHAFTS SHOWN IN THESE PLANS HAS BEEN ESTIMATED FROM AVAILABLE SUBSURFACE INFORMATION. THE CONTRACTOR IS EXPECTED TO FURNISH THE PROPOSED DRILLED SHAFTS AS PER THESE PLAN REQUIREMENTS, WITH THE UNDERSTANDING THAT THE ACTUAL LENGTH REQUIRED BASED ON CONDITIONS ENCOUNTERED DURING CONSTRUCTION MAY DIFFER FROM THE ESTIMATED LENGTH SHOWN IN THE PLANS.

THE LIMITS OF EACH DRILLED SHAFT SHALL BE DEFINED AT THE TOP BY THE PLAN ELEVATION AND AT THE BOTTOM BY THE ELEVATION OF THE BOTTOM OF THE BEDROCK SOCKET AS APPROVED BY THE ENGINEER.

A CASING WILL BE NECESSARY FOR THE CONSTRUCTION OF EACH PIER DRILLED SHAFT AND THE CASINGS SHALL BE LEFT IN PLACE.

CONTRACTOR QUALIFICATION

THE CONTRACTOR SHALL SUBMIT INFORMATION TO THE ENGINEER TO DOCUMENT THAT HIS PERSONNEL ARE EXPERIENCED IN THE CONSTRUCTION OF DRILLED SHAFTS OF THE TYPE AND SIZE SPECIFIED ON THE PLANS. THIS INFORMATION SHALL BE SUBMITTED AT THE PRECONSTRUCTION CONFERENCE. THE PROJECT ENGINEER IS REQUESTED TO INFORM BUREAU OF BRIDGES, ATTENTION: FOUNDATION ENGINEER (TEL. 614-466-2399) OF THE DATES WHEN THE CONTRACTOR WILL BE CONSTRUCTING THE DRILLED SHAFTS.

CASING

THE CASINGS SHALL BE MADE OF STEEL, SHALL BE WATER TIGHT AND SHALL BE OF AMPLE STRENGTH TO WITHSTAND HANDLING STRESSES AND EXTERNAL SUBSURFACE PRESSURES. THE CASING SHALL BE SEATED INTO THE BEDROCK, THUS ATTEMPTING TO SEAL OUT INCOMING WATER. THE CASING LENGTH SHALL BE AS NECESSARY TO CONSTRUCT EACH DRILLED SHAFT.

THE DIAMETER OF THE FURNISHED CASING(S) SHALL BE LARGE ENOUGH TO ALLOW THE CONSTRUCTION OF A BEDROCK SOCKET WITH A DIAMETER EQUAL TO OR GREATER THAN THE PLAN DIAMETER.

EXCAVATION

WHEN OBJECTS SUCH AS LARGE BOULDERS ARE ENCOUNTERED, THEY SHALL BE REMOVED. BLASTING METHODS MAY BE USED, AND WHEN USED, SHALL BE CONDUCTED SO AS TO AVOID DISTURBANCE TO THE BEDROCK FORMATION BELOW AND OUTSIDE THE LIMITS OF THE PROPOSED DRILLED SHAFT EXCAVATIONS. THE DRILLED SHAFTS SHALL PENETRATE INTO BEDROCK TO A DEPTH THAT PROVIDES A BEDROCK SOCKET LENGTH THAT IS NOT LESS THAN THE BEDROCK SOCKET LENGTH SHOWN IN THE PLANS. WHEN A CASING WHICH EXTENDS DOWN TO BEDROCK IS USED, THE BEDROCK SOCKET SHALL BE MEASURED FROM THE BOTTOM OF THE CASING TO THE BOTTOM OF THE DRILLED BEDROCK EXCAVATION. WHEN THE ENGINEER IS ASSURED THAT A PORTION OF THE METAL CASING IS EMBEDDED IN BEDROCK, UPON THE ENGINEER'S CONCURRENCE, THE EMBEDDED DISTANCE MAY BE INCLUDED AS PART OF THE BEDROCK SOCKET.

DEWATERING

THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTROLLING ANY INCOMING WATER TO THE EXTENT THAT THE SHAFT EXCAVATION IS MAINTAINED DRY ENOUGH FOR PERFORMANCE OF THE REQUIRED INSPECTION OPERATION. THE PREFERRED METHOD OF CONSTRUCTION IS TO PLACE THE CONCRETE IN A CLEAN, DRY EXCAVATION. THE CONTRACTOR IS EXPECTED TO MAKE A REASONABLE ATTEMPT TO SEAL WATER OUT OF THE DRILLED SHAFT EXCAVATION.

BOTTOM CLEANOUT

THE BOTTOM OF THE DRILLED SHAFT EXCAVATION SHALL BE AS CLEAN AS PRACTICABLE (NO MORE THAN ONE INCH OF LOOSE MATERIAL ON THE BOTTOM) PRIOR TO CONCRETE PLACEMENT. DRILLING SPOILS THAT ADHERE TO THE VERTICAL SIDES OF THE BEDROCK SOCKETS ARE TO BE REMOVED.

APPROVAL BEFORE CONCRETE PLACEMENT

THE CONTRACTOR SHALL SUBMIT TO THE PROJECT ENGINEER FOR APPROVAL A WRITTEN PLAN OF STEPS AND PROCEDURES HE PROPOSES TO FOLLOW WHEN PLACING AND MONITORING THE CONCRETE PLACEMENT. CONCRETE SHALL NOT BE PLACED IN ANY DRILLED SHAFT EXCAVATION WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE DRILLED SHAFT EXCAVATION SHALL BE INSPECTED IMMEDIATELY BEFORE THE CONCRETE IS PLACED. A LIGHT POWERFUL ENOUGH TO THOROUGHLY INSPECT THE SIDES, BOTTOM AND REINFORCING STEEL CAGE OF THE DRILLED SHAFT IS REQUIRED. CONCRETE SHALL NOT BE PLACED DURING INCLEMENT WEATHER CONDITIONS WHICH PREVENT A THOROUGH INSPECTION.

CONCRETE PLACEMENT

THE CONCRETE FOR THE DRILLED SHAFT SHALL BE PLACED AS PER ITEM 511 EXCEPT AS MODIFIED BY THE PLANS. THE CONCRETE PLACEMENT OPERATION SHALL BE CONTINUOUS FROM START TO FINISH. IF THE DRILLED SHAFT HAS A BEDROCK SOCKET, THE CONCRETE FOR THE BEDROCK SOCKET SHALL BE PLACED AGAINST THE IN-SITU BEDROCK. THE CONCRETE FOR THE DRILLED SHAFT SHALL BE PLACED PROMPTLY AFTER THE FINAL INSPECTION OF THE SHAFT. IF PRACTICABLE, THE CONCRETE SHALL BE PLACED IN A CLEAN DRY EXCAVATION. CARE SHALL BE TAKEN TO ENSURE THAT CONCRETE IS NOT BEING PLACED IN MOVING WATER. THE CONCRETE CAN BE PLACED IN A DRY DRILLED SHAFT EXCAVATION BY THE FREE FALL METHOD PROVIDED THE CONCRETE FALLS TO ITS FINAL POSITION THROUGH AIR WITHOUT STRIKING THE SIDES OF THE HOLE, THE REINFORCING STEEL CAGE OR ANY OTHER OBSTRUCTION. THE FREE FALL METHOD ALLOWS THE CONCRETE TO BE DROPPED FROM THE TOP THROUGH A CENTERING CHUTE TO THE CONCRETE'S FINAL POSITION.

IF THE ENGINEER DETERMINES THAT DEWATERING IS NOT PRACTICABLE THE ENGINEER CAN REQUIRE THAT THE CONCRETE BE PLACED UNDER WATER. THE DRILLED SHAFT EXCAVATION SHALL BE FILLED WITH WATER TO SUCH A DEPTH THAT ALL WATER MOTION HAS CEASED. THE CONCRETE SHALL THEN BE PLACED BY MEANS OF A CONCRETE PUMP. THE CONCRETE PUMP PIPE SHALL HAVE A DIAMETER THAT IS NOT LESS THAN 4 INCHES. THE CONCRETE PUMP EQUIPMENT SHALL BE SO ARRANGED THAT NO VIBRATIONS RESULT WHICH MIGHT DAMAGE FRESH CONCRETE. PIPES CARRYING CONCRETE FROM THE PUMP TO THE SHAFT SHOULD BE ARRANGED WITH A MINIMUM NUMBER OF BENDS. THE PIPE USED TO CONVEY THE CONCRETE TO THE BOTTOM OF THE DRILLED SHAFT EXCAVATION SHALL BE ANCHORED TO THE STEEL CASING TO PREVENT THE PIPE FROM UNDULATING DURING THE INITIAL PLACEMENT OF THE CONCRETE. THE PUMPING EQUIPMENT SHALL BE SUITABLE IN KIND AND ADEQUATE IN CAPACITY FOR THE WORK REQUIRED. THE USE OF ALUMINUM PIPE AS A CONVEYANCE FOR THE CONCRETE WILL NOT BE PERMITTED. AN ADEQUATE QUANTITY OF GROUT, MORTAR OR CONCRETE WITH COARSE AGGREGATE OMITTED SHALL BE PUMPED THROUGH THE EQUIPMENT AHEAD OF THE SPECIFICATION CONCRETE TO PROVIDE LUBRICATION TO THE PUMPING SYSTEM. THE CONCRETE USED FOR LUBRICATION SHALL NOT BE PLACED IN THE SHAFT. THE LUBRICATION PROCESS WILL NOT BE REPEATED AS LONG AS THE PUMPING OPERATIONS ARE CONTINUOUS. THE OPERATION OF THE PUMP SHALL BE SUCH THAT A CONTINUOUS STREAM OF CONCRETE WITHOUT AIR POCKETS IS PRODUCED. IN ORDER TO PREVENT THE CONTAMINATION OF THE CONCRETE PLACED INITIALLY AT THE BOTTOM OF THE SHAFT, THE OUTLET END OF THE PUMPING PIPE SHALL BE SEALED WITH A DIAPHRAGM OR PLUG THAT IS FLUSHED OUT WHEN THE HYDROSTATIC PRESSURE FROM THE COLUMN OF CONCRETE EXCEEDS THAT OF THE WATER IN THE SHAFT. THE INITIAL RATE OF CONCRETE PLACEMENT MUST BE CAREFULLY CONTROLLED SO AS NOT TO LIFT OR DISPLACE THE CAGE OF REINFORCING STEEL. THE CONVEYING SYSTEM SHALL BE WATER TIGHT AND THE OUTLET END SHALL ALWAYS REMAIN WELL BELOW THE TOP OF THE FRESHLY PLACED CONCRETE. THE PREFERRED CONCRETE PLACEMENT PROCEDURE IS TO MAINTAIN THE OUTLET END OF THE PUMPING SYSTEM AT APPROXIMATELY 10 FEET BELOW THE TOP OF THE FRESH CONCRETE. WHEN THE CONCRETE REACHES THE TOP OF THE DRILLED SHAFT COLUMN ALL LAITANCE SHALL BE REMOVED.

TOLERANCES

THE CONTRACTOR SHALL LOCATE AND CONSTRUCT THE TOP CENTER OF THE PIER DRILLED SHAFTS WITHIN A TWO-INCH RADIUS OF THE POSITION INDICATED BY THE PLANS. THE PIER SHAFTS ARE TO BE INSTALLED VERTICALLY AND MUST BE WITHIN 1.0 PERCENT OF PLUMB FOR THE TOTAL LENGTH OF THE DRILLED SHAFT.

CONCRETE

CONCRETE FOR ALL DRILLED SHAFTS SHALL BE CLASS S CONCRETE AND SHALL BE IN ACCORDANCE WITH ITEM 511 EXCEPT AS MODIFIED AND SUPPLEMENTED HEREIN. THE REQUIRED SLUMP IS SIX (6) INCHES, PLUS OR MINUS ONE INCH. THE MAXIMUM WATER TO CEMENT RATIO SHALL BE 0.50. IF CONCRETE IS PLACED UNDER WATER, THE REQUIREMENTS OF ADDING 10 PERCENT MORE CEMENT TO THE CONCRETE MIX SHALL BE WAIVED. THE MAXIMUM COARSE AGGREGATE SIZE SHALL BE LIMITED TO NO.8. THE TOP 3 TO 5 FEET OF CONCRETE IN THE DRILLED SHAFTS ARE REQUIRED TO BE VIBRATED. ONLY A MINIMAL VIBRATORY EFFORT IS NECESSARY. SPECIAL CARE CARE SHALL BE TAKEN NOT TO OVER-VIBRATE THE DRILLED SHAFT CONCRETE.

REINFORCING STEEL

ALL REINFORCING STEEL SHALL BE EPOXY COATED AND SHALL MEET THE REQUIREMENTS OF 509. THE REINFORCING STEEL SHALL BE GRADE 60. THE SPIRAL REINFORCING STEEL MAY BE PLAIN BARS ASTM A82 OR A615. THE REINFORCING STEEL CAGE SHALL BE COMPLETELY ASSEMBLED PRIOR TO PLACEMENT AND THE LENGTH SHALL BE AS NECESSARY TO CONSTRUCT EACH DRILLED SHAFT. SEE PLAN SHEETS FOR DETAILS OF REINFORCING STEEL. NOTE THAT THE LENGTHS PROVIDED IN THE REINFORCING STEEL LIST ARE ESTIMATED LENGTHS. THE REINFORCING STEEL SHOULD BE PLACED AT PLAN LOCATION.

SPACERS

CONCRETE SPACERS OR OTHER APPROVED NONCORROSIVE SPACING DEVICES SHALL BE USED AT SUFFICIENT INTERVALS (NEAR THE BOTTOM AND AT INTERVALS NOT EXCEEDING 10 FEET) TO INSURE CONCENTRIC SPACING FOR THE ENTIRE CAGE LENGTH. SPACERS SHALL BE CONSTRUCTED OF APPROVED MATERIAL EQUAL IN QUALITY AND DURABILITY TO THE CONCRETE SPECIFIED FOR THE SHAFT. THE SPACERS SHALL HAVE ADEQUATE DIMENSIONS TO INSURE A MINIMUM 3 INCH ANNULAR SPACE BETWEEN THE OUTSIDE OF THE REINFORCING CAGE AND THE SIDE OF THE EXCAVATED HOLE. CYLINDRICAL CONCRETE FEET (BOTTOM SUPPORTS) SHALL BE PROVIDED TO INSURE THAT THE BOTTOM OF THE CAGE IS MAINTAINED THE PROPER DISTANCE ABOVE THE BASE.

INSPECTION

AN INSPECTION RECORD CHART HAS BEEN INCLUDED WITH THE PLANS ON SHEET 10/14 AND SHOULD BE COMPLETED BY THE ENGINEER. MEASUREMENTS SHOULD BE OBTAINED PRIOR TO PLACING CONCRETE. THE CONTRACTOR SHOULD PROVIDE ALL NECESSARY EQUIPMENT NEEDED TO OBTAIN MEASUREMENTS FOR COMPLETING THE CHART. THE CONTRACTOR SHALL ASSIST THE ENGINEER IN OBTAINING THESE MEASUREMENTS. WHEN THE INSPECTION RECORD CHART IS COMPLETED, THE PROJECT ENGINEER SHOULD SUBMIT A COPY TO THE BUREAU OF BRIDGES AND STRUCTURAL DESIGN: ATTENTION: FOUNDATION ENGINEER.

HUR-162-(1.53)(2.56)

OHIO
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REGION 5

26
40

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8 / 14

DRILLED SHAFT NOTES

BRIDGE NO. HUR-162-0154
OVER SLATE RUN

DESIGN	DRAWN	TRACED	CHECKED	REVIEW	DATE	REVISED
CLH	GSC		CDW	AET	5/94	

SAFETY PROVISIONS

THE CONTRACTOR SHALL HAVE AT THE JOB SITE ALL EQUIPMENT AND MATERIALS NEEDED TO PROVIDE SAFE CONSTRUCTION AND INSPECTION OF THE DRILLED SHAFTS AS REQUIRED BY CITY, STATE AND FEDERAL SAFETY REQUIREMENTS. SAFETY PROVISIONS SHALL INCLUDE, BUT NOT BE LIMITED TO THE REQUIREMENTS SPECIFIED BY THE PLANS, SPECIAL PROVISIONS, AND PROPOSAL.

METHOD OF MEASUREMENT

THE TOTAL PAY LENGTH OF EACH DRILLED SHAFT SHALL BE THE COMPLETED AND ACCEPTED LENGTH MEASURED ALONG THE AXIS OF THE DRILLED SHAFT FROM THE BOTTOM OF THE BEDROCK SOCKET TO THE PROPOSED TOP ELEVATION, AS PER PLAN. THE REINFORCING STEEL THAT PROJECTS FROM THE DRILLED SHAFT INTO THE PIER COLUMN AS SPECIFIED BY THE PLANS IS INCLUDED WITH THE DRILLED SHAFT FOR PAYMENT BUT SHALL NOT BE INCLUDED IN THE MEASURED LENGTH OF THE DRILLED SHAFT. THE TOTAL LENGTH OF EACH DRILLED SHAFT SHALL BE DIVIDED INTO TWO SEGMENTS. THE LENGTH OF THE LOWER SEGMENT IS THE LENGTH OF THE BEDROCK SOCKET AND THE LENGTH OF THE UPPER SEGMENT IS THE LENGTH OF THE DRILLED SHAFT ABOVE THE BEDROCK SOCKET.

BASIS OF PAYMENT

PAYMENT FOR FURNISHING AND INSTALLING DRILLED SHAFTS WILL BE MADE AT THE CONTRACT UNIT PRICE PER LINEAR FOOT OF ACCEPTED SHAFT LENGTH AS PER ITEM SPECIAL - #50794902, 48 INCH DIAMETER DRILLED SHAFTS ABOVE THE BEDROCK SOCKET" AND ITEM SPECIAL- #50794804, 42 INCH DIAMETER DRILLED SHAFTS IN BEDROCK". WHICH SHALL INCLUDE ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO COMPLETE THE ITEMS AS SPECIFIED.

DESIGN PARAMETERS

THE DESIGN LOAD TO BE SUPPORTED BY EACH DRILLED SHAFT IS 142 TONS AT THE PIERS. THE ALLOWABLE DESIGN END BEARING PRESSURE IS 15 TONS PER SQUARE FOOT.

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9 / 14

DRILLED SHAFT NOTES

BRIDGE NO. HUR-162-0154
OVER SLATE RUN

DESIGN	DRAWN	TRACED	CHECKED	REVIEW	DATE	REVISED
CLH	BSC		CDW	ART	5/94	

OHIO	
IWA 5 REGION	

[illegible]

PIER 1 AND 2

The diagram illustrates the vertical dimensions and geological context of two piers. The piers are shown as vertical structures with a hatched pattern. The dimensions are labeled on the left side of the piers:

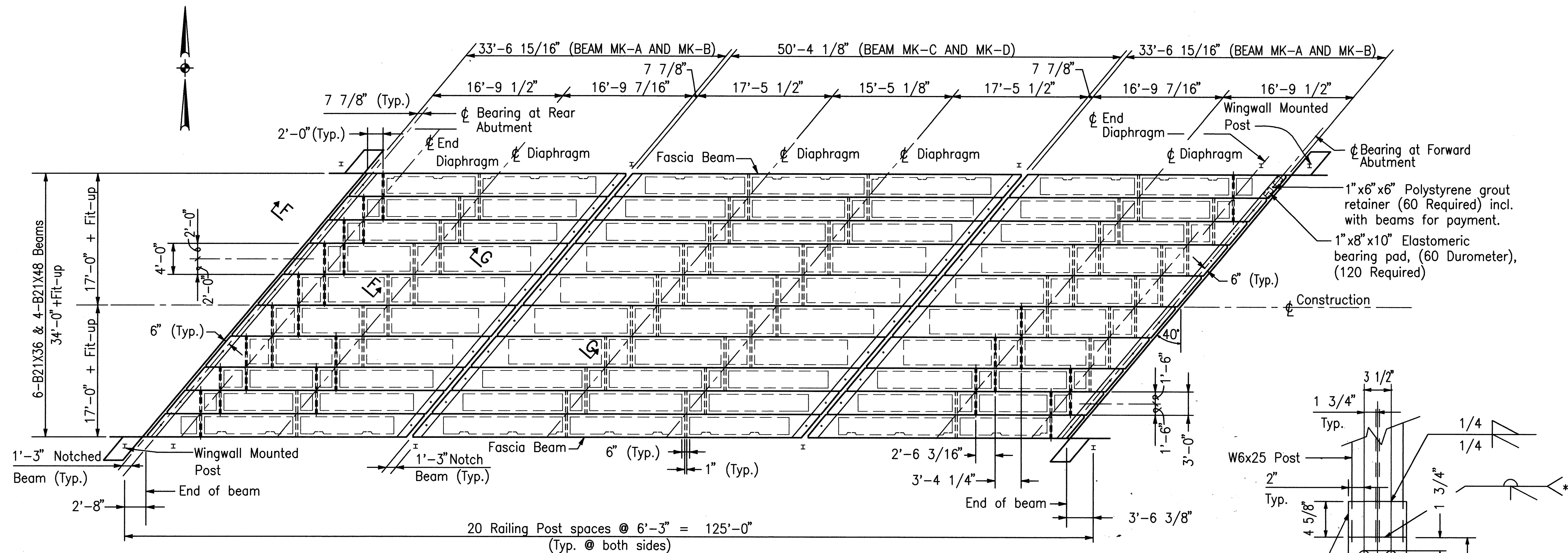
- PAY LENGTH ABOVE BEDROCK**: The total height of the pier above the bedrock.
- PAY LENGTH INTO BEDROCK**: The height of the pier embedded in the bedrock.
- LENGTH THROUGH AIR OR WATER**: The height of the pier above the water surface.
- LENGTH THROUGH WATER**: The height of the pier submerged in water.
- LENGTH THROUGH BEDROCK SOCKET**: The height of the pier embedded in the bedrock.
- LENGTH THROUGH OVERBURDEN**: The height of the pier above the ground line.

On the right side of the piers, the following geological features are indicated:

- DRILLED SHAFT TOP ELEVATION**: The top of the pier structure.
- AS SHOWN IN THE PLANS**: A reference to the plan view.
- WATER SURFACE**: The level of the water.
- OVERBURDEN**: The material above the ground line.
- GROUND LINE**: The surface of the ground.
- TOP OF BEDROCK**: The upper boundary of the bedrock.
- BOTTOM OF BEDROCK SOCKET**: The lower boundary of the pier's embedment in the bedrock.

PIER

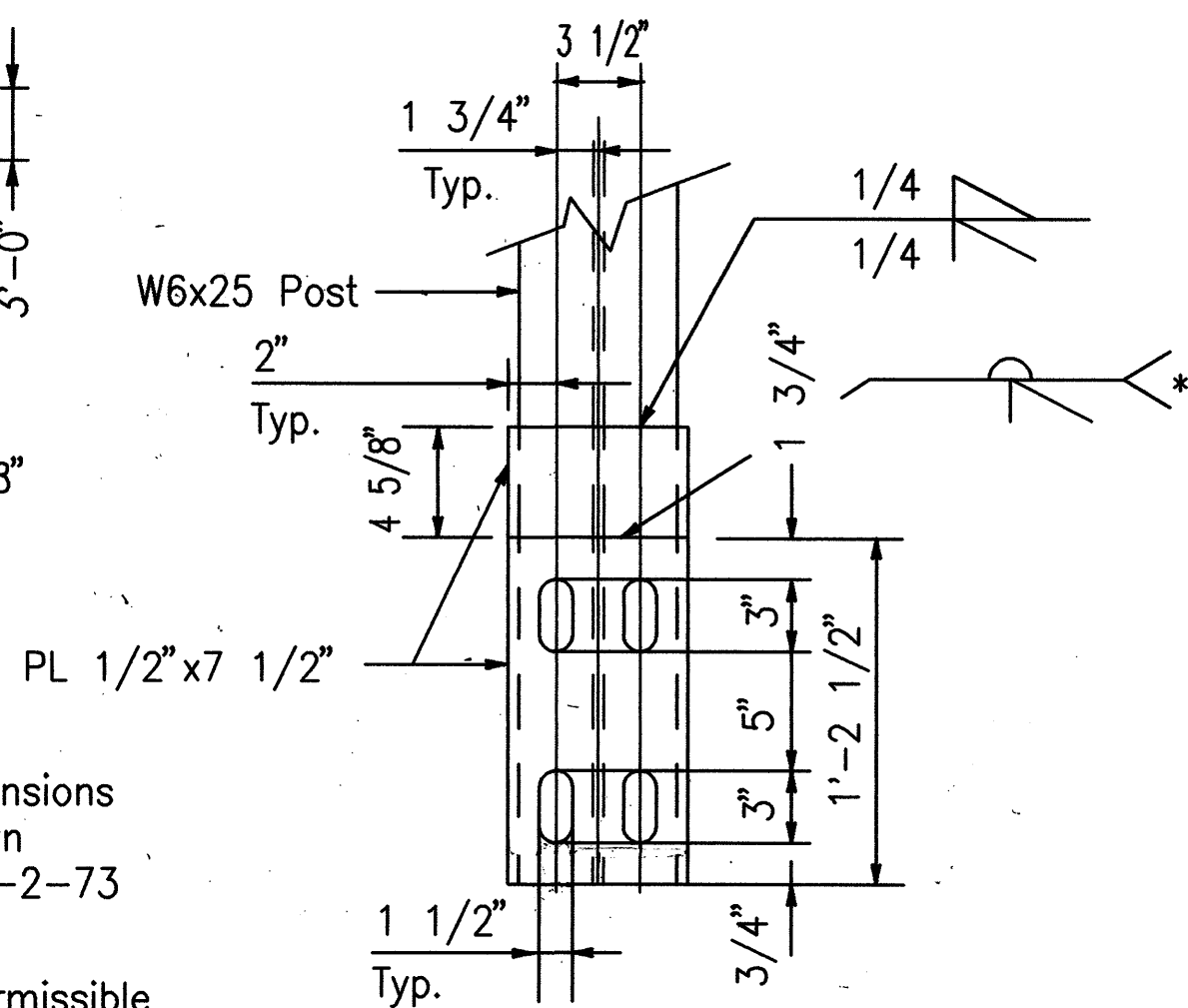
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PLAN

For dimensions
not shown
see DBR-2-73

* Bend permissible
in lieu of weld.



SECTION H-H

NOTES:

ASPHALT CONCRETE SURFACE COURSE shall consist of a variable thickness of 403 and a 1 1/4" thickness of 404. The 403 shall be placed in two operations. The first course shall be 1 1/4" uniform thickness. The second course shall be feathered to place the surface parallel to and 1 1/4" below pavement surface elevation.

CAMBER:

BEAM MK-A AND MK-B (SPAN-1): Net final camber of beam is 7/8". This is in excess of camber of the profile grade. An increased asphalt thickness of 7/8" at the abutment and 2 1/8" at the pier is required to satisfy beam alignment and minimum thickness requirement. This adjustment shall be achieved by thickening the 403 leveling course from 1 3/8" at the center of the span to 2 1/8" at the abutment and 3 3/8" at the pier.

BEAM MK-C AND MK-D (SPAN-2): Net final camber of beam is 2 1/8". This is 2 1/8" in excess of the amount required to place the top of the beam parallel to the profile grade. This excess amount shall be compensated for by thickening the 403 leveling course from 1 1/4" at center to 3 3/8" at the piers.

BEAM MK-A AND MK-B (SPAN-3): Net final camber of beam is 7/8". This is in excess of camber of the profile grade. An increased asphalt thickness of 1 3/8" at the abutment and 2 1/8" at the pier is required to satisfy beam alignment and minimum thickness requirement. This adjustment shall be achieved by thickening the 403 leveling course from 1 3/8" at the center of the span to 2 5/8" at the abutment and 3 3/8" at the pier.

SECTION F-F See Sheet 13/14

SECTION G-G See Sheet 13/14

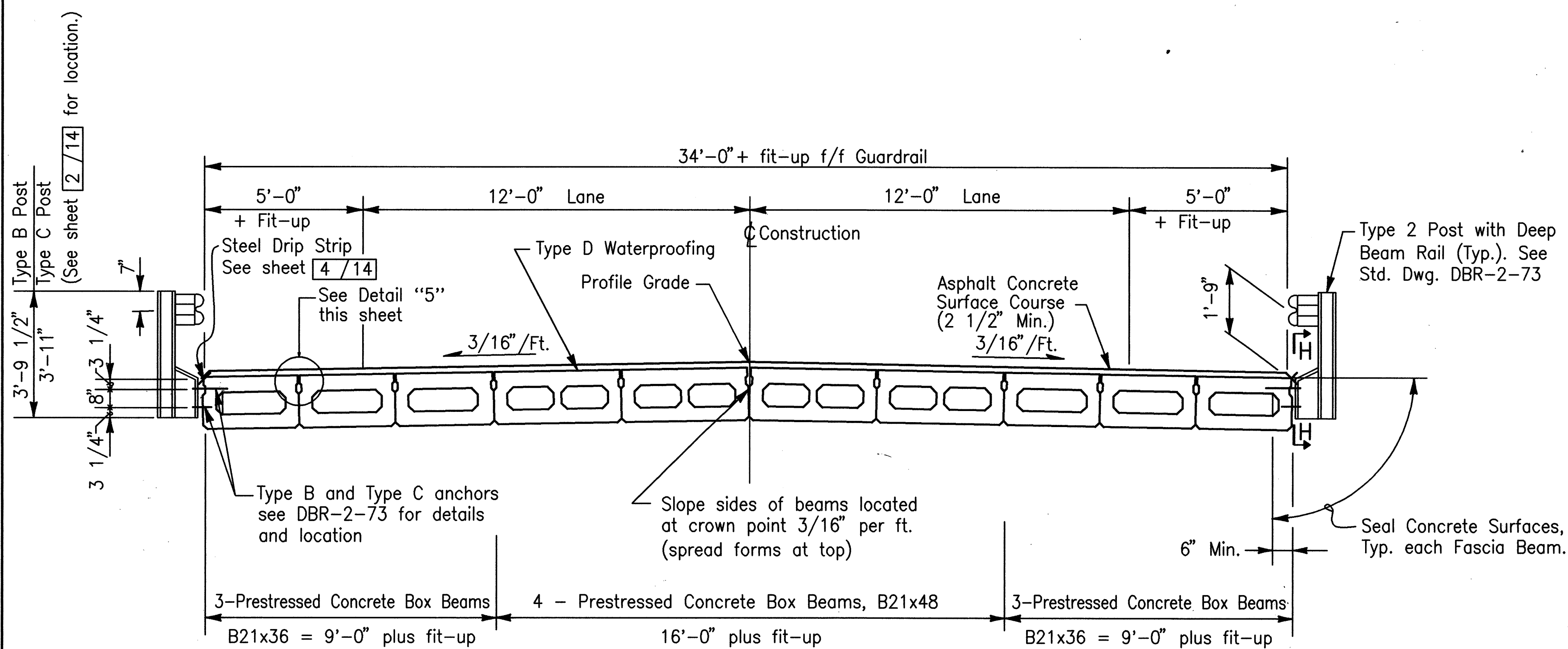
FASCIA BEAMS: To avoid interference with the anchors for the bridge railing posts, the longitudinal reinforcing bars near the fascia shall be shifted as necessary. Fabricator's shop drawings shall show complete details of the beam reinforcement. The keyway on exterior side of the fascia beams shall be omitted.

GUARDRAIL POSTS: Slots shall be provided in all guardrail posts, so that vertical adjustments may be made after placement to provide a straight-smooth guardrail line across the structure. See Section H-H this sheet. For additional details see std. dwg. DBR-2-73.

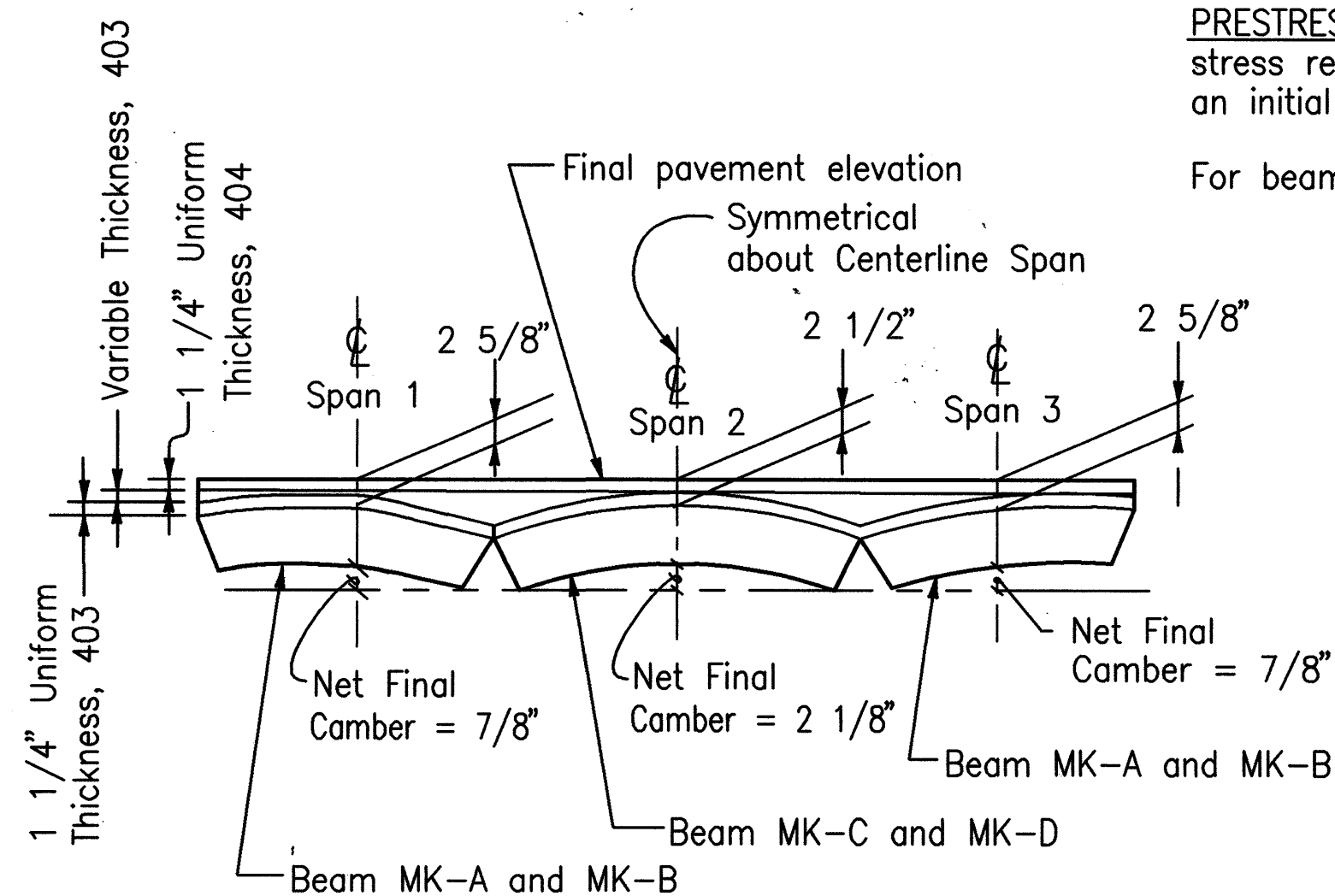
STANDARD DETAILS AND NOTES: All prestressed concrete box beam construction to be in conformance with standard drawing PSBD-1-81, Sheets 1, 2, 3 of 4 except as noted on these plans.

PRESTRESSING STRANDS are ASTM A416 1/2 in. PRESTRESSING, stress relieved strands with an ultimate strength of 270,000 psi and an initial tension of 28,900 lbs. per strand.

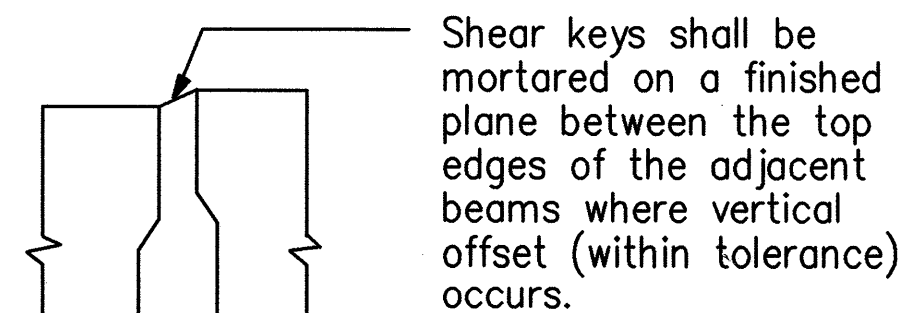
For beam notches at piers see sheet 13/14



TRANSVERSE SECTION



ASPHALT THICKNESS DIAGRAM



DETAIL "5"

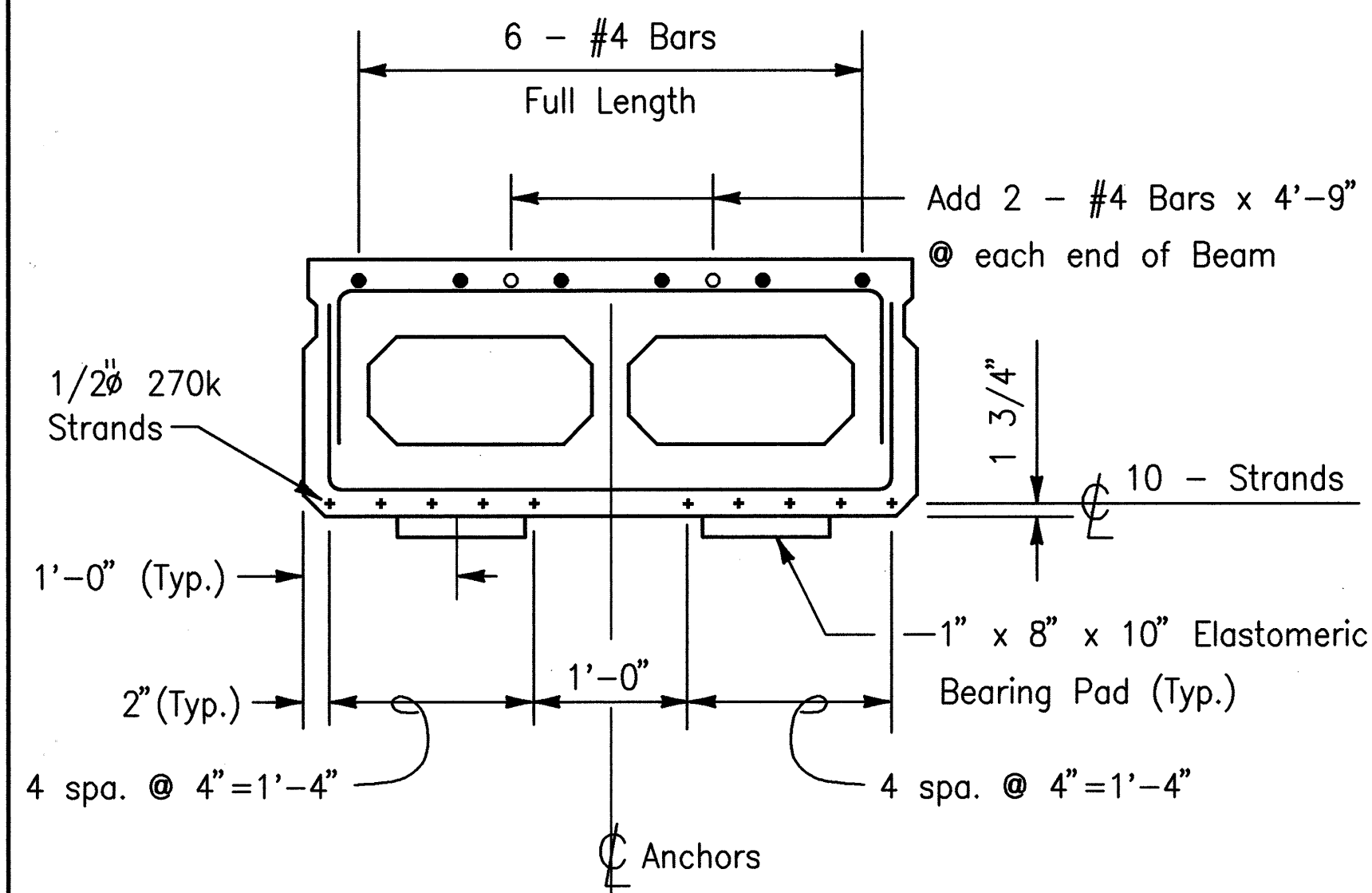
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11/14

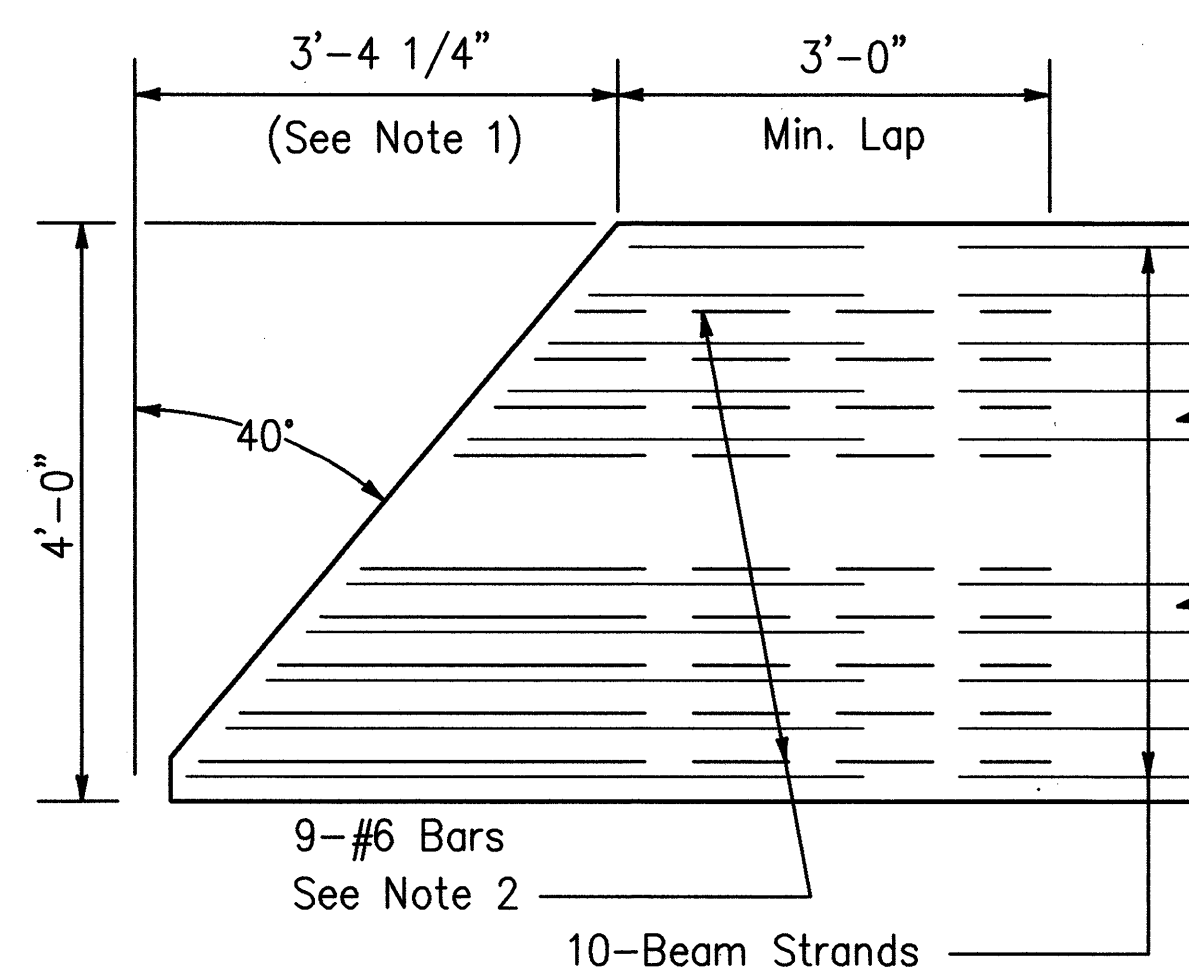
SUPERSTRUCTURE

BRIDGE NO. HUR-162-0154
OVER SLATE RUN

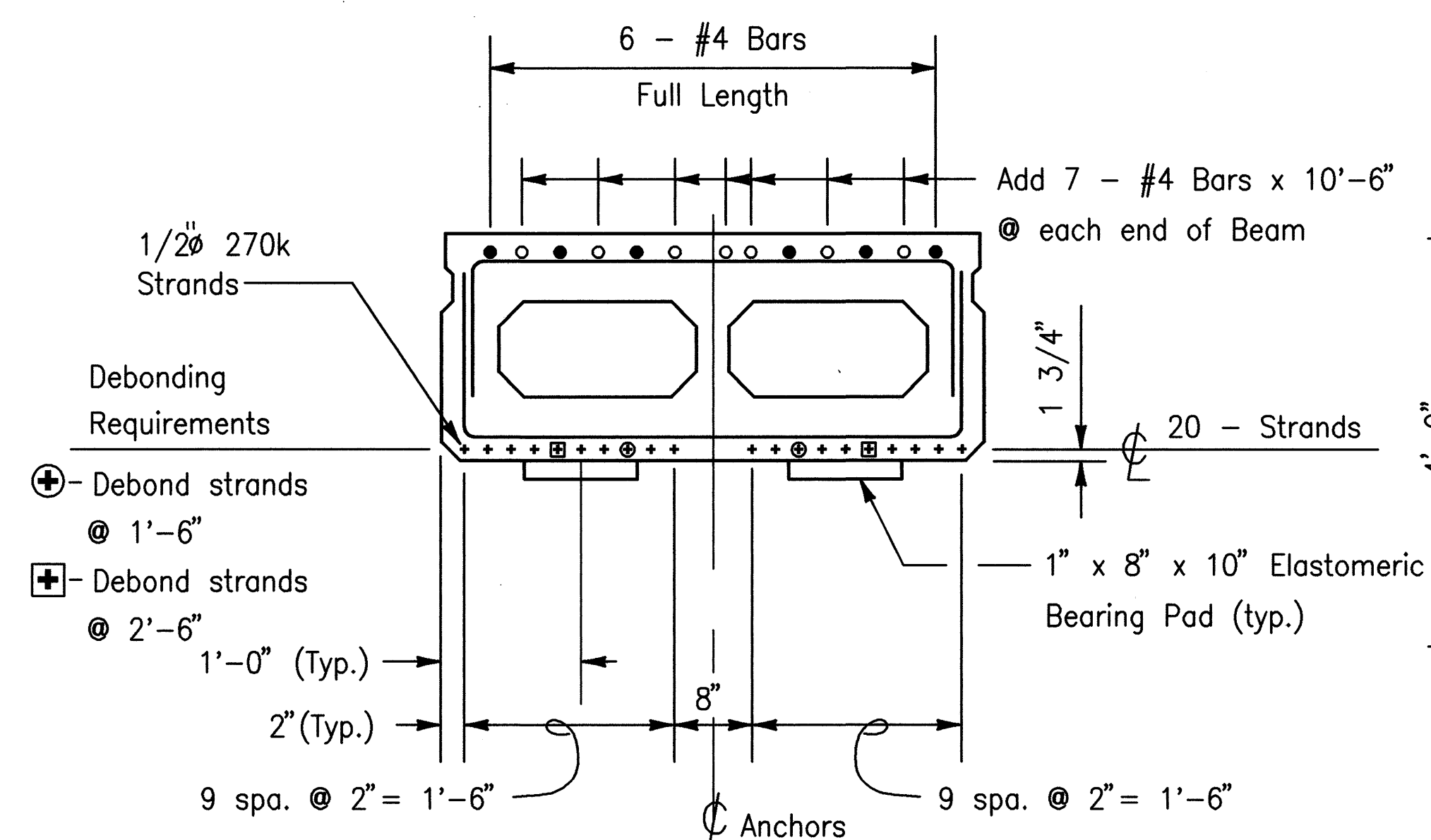
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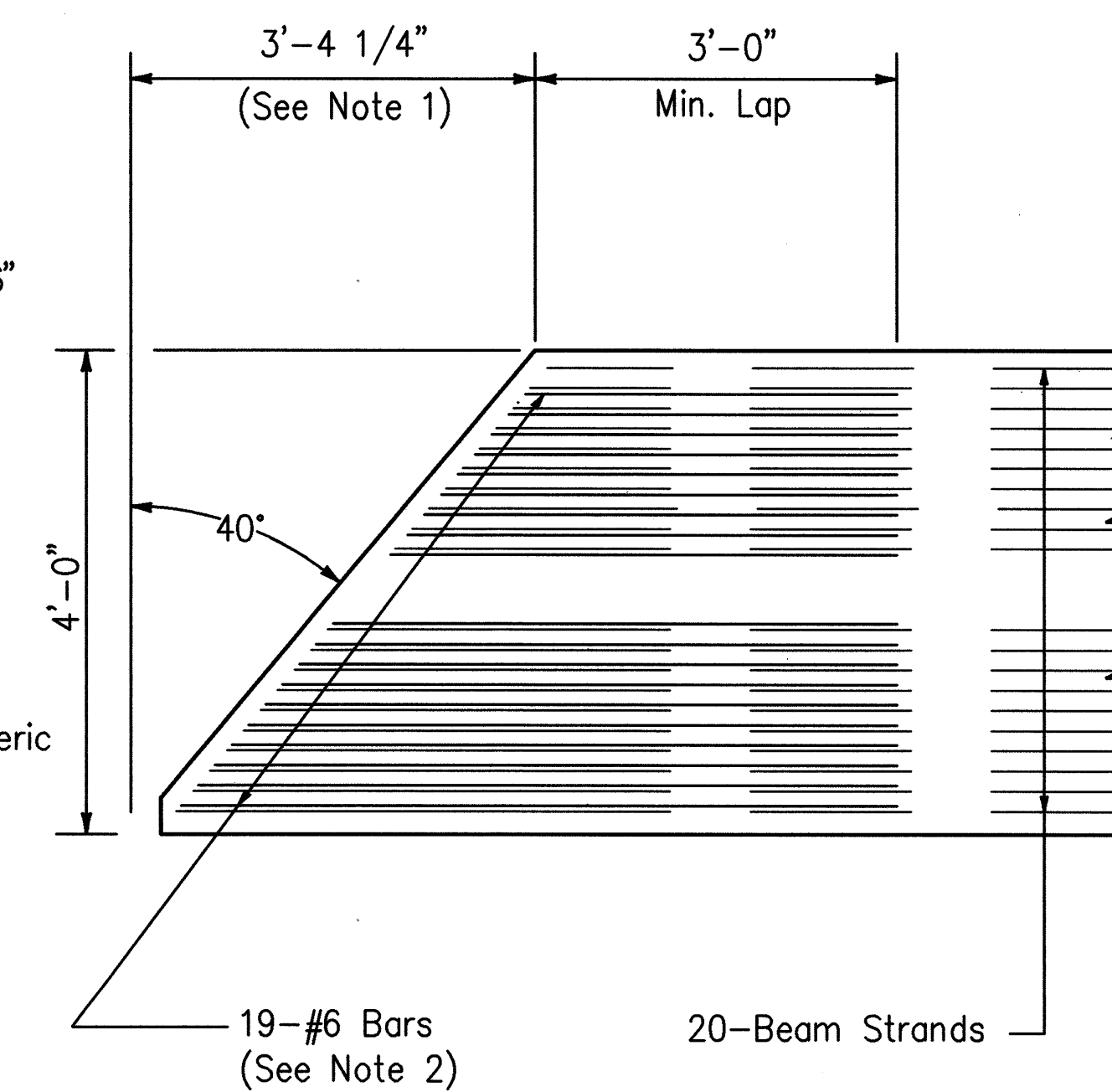
TYPICAL BOX BEAM B21X48
(BEAM MK-A)



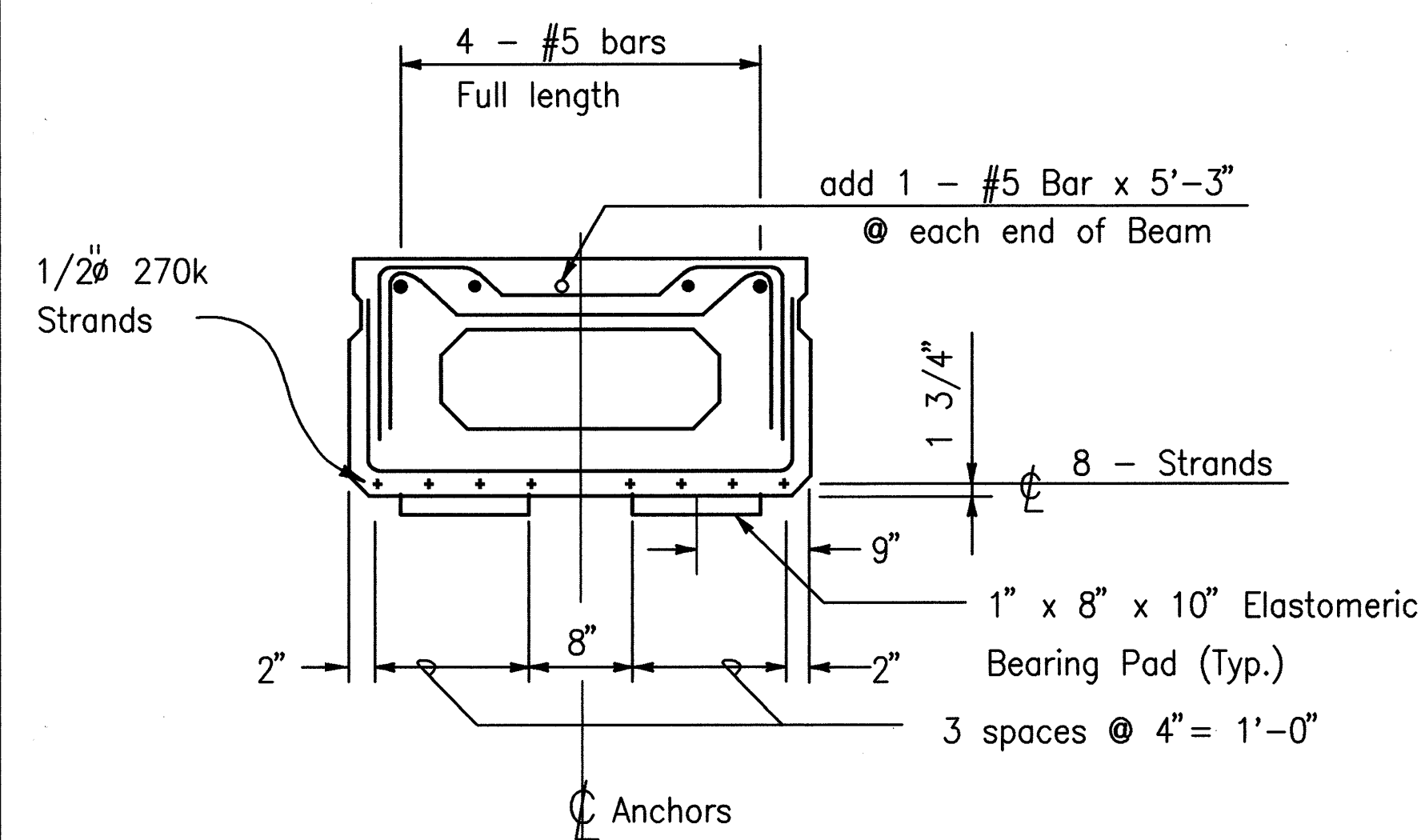
BOTTOM VIEW OF BEAM END
(BEAM MK-A)



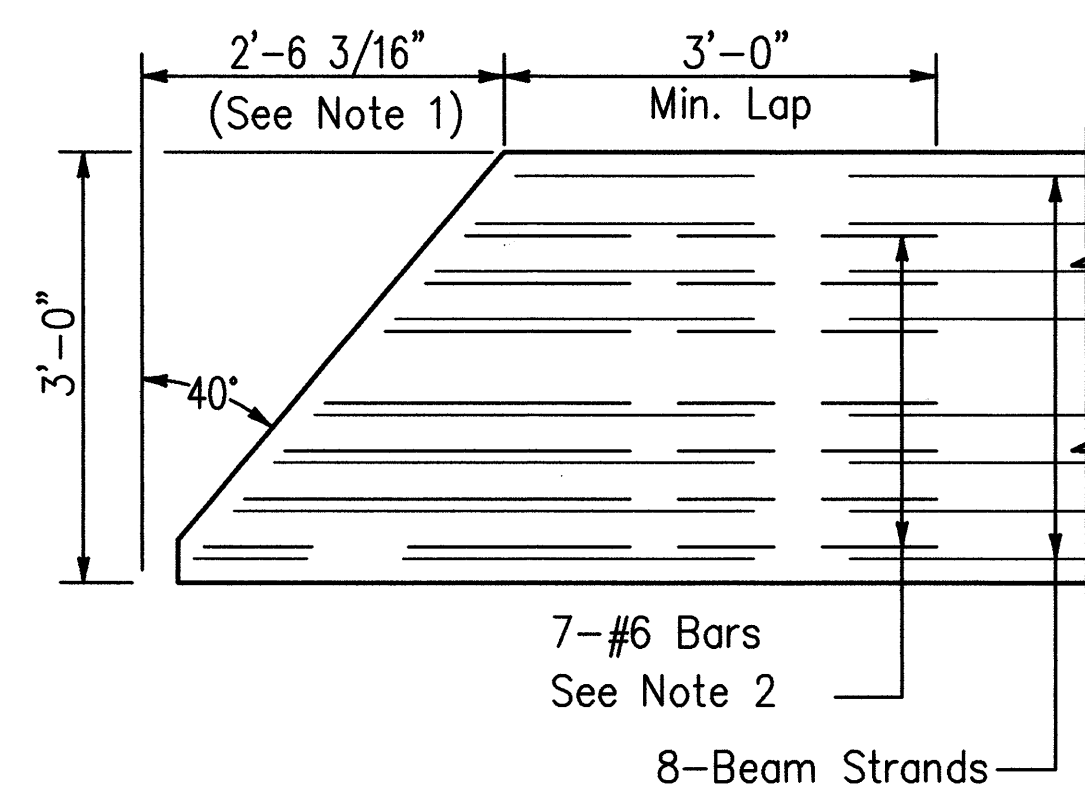
TYPICAL BOX BEAM B21X48
(BEAM MK-C)



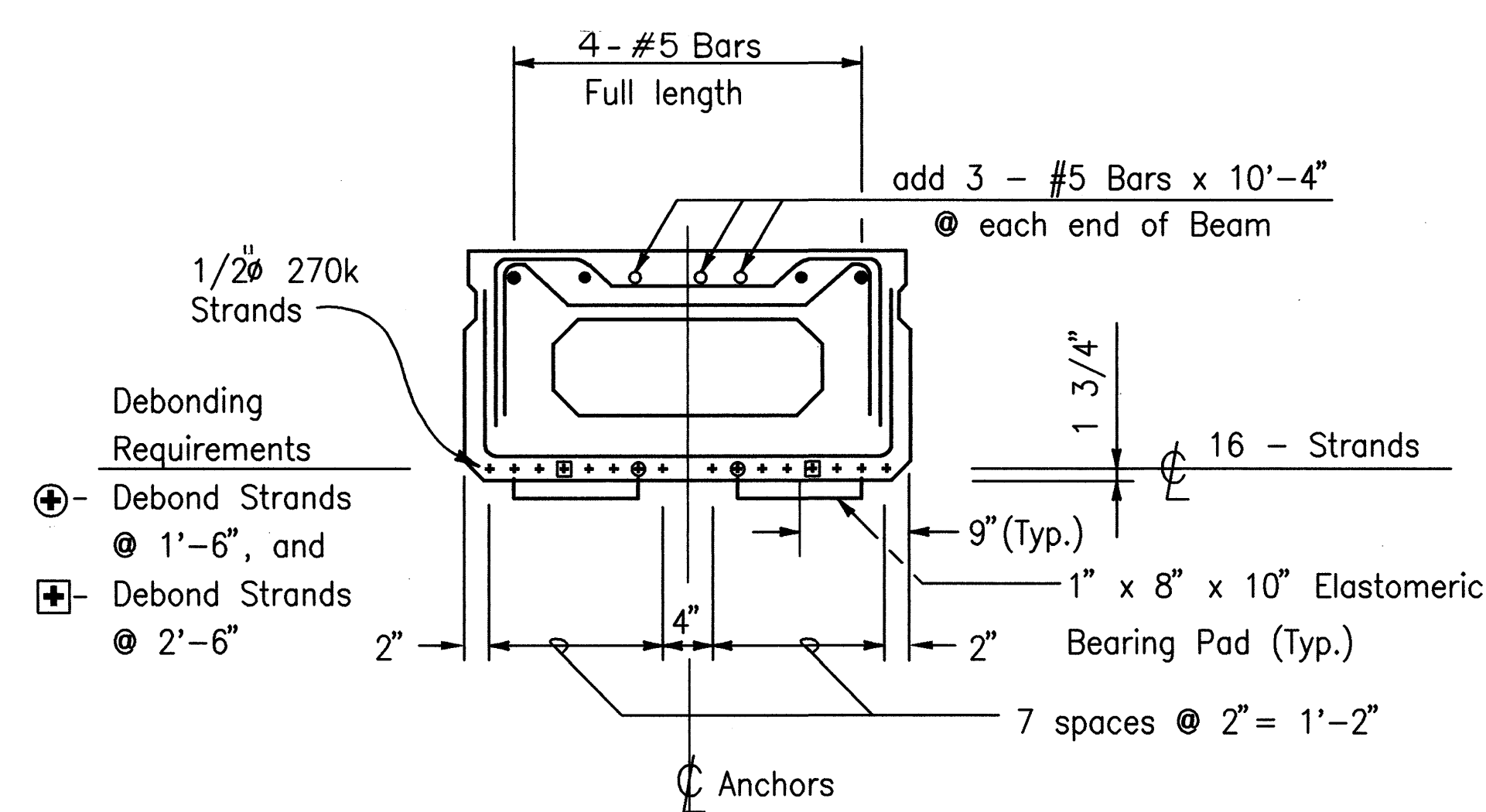
BOTTOM VIEW OF BEAM END
(BEAM MK-C)



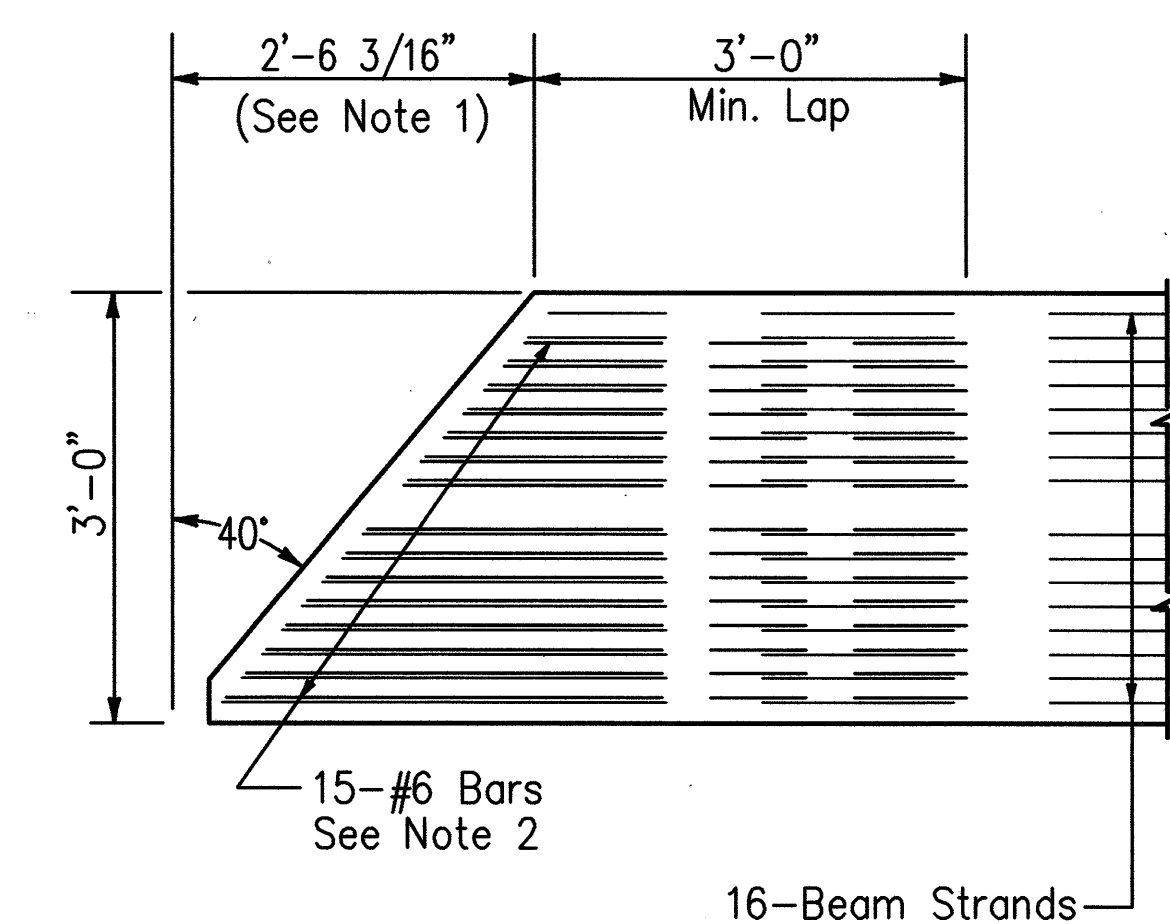
TYPICAL BOX BEAM B21X36
(BEAM MK-B)



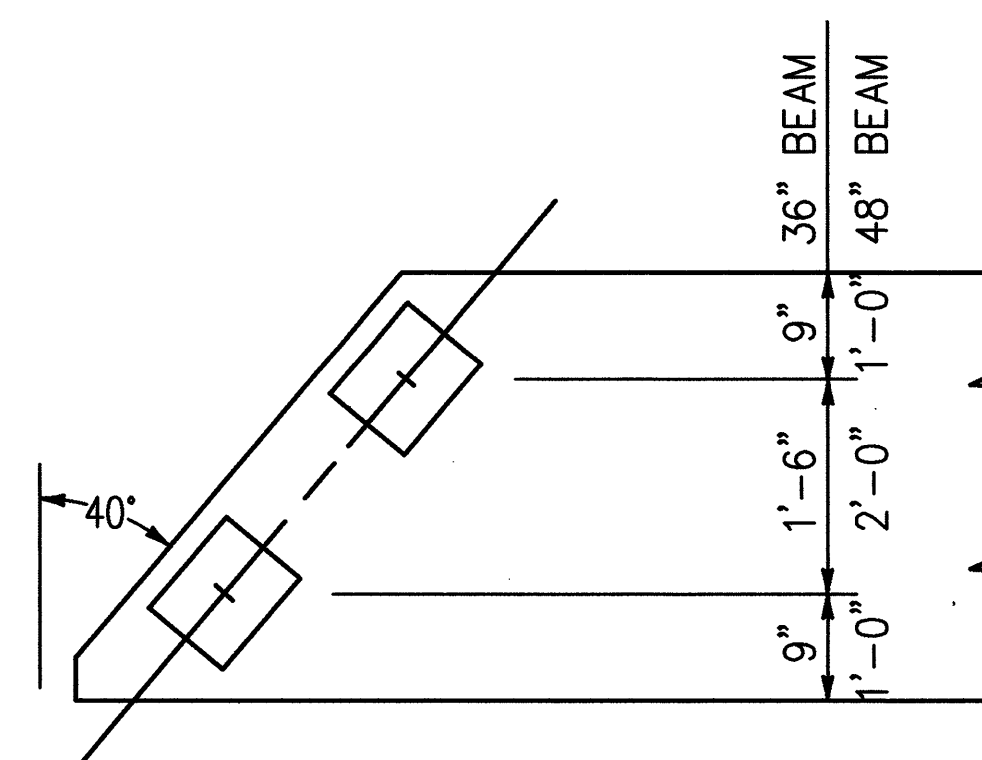
BOTTOM VIEW OF BEAM END
(BEAM MK-B)



TYPICAL BOX BEAM B21X36
(BEAM MK-D)



BOTTOM VIEW OF BEAM END
(BEAM MK-D)



BEARING PAD PLAN

NOTES:

1. Debond all strands in this area, 3" minimum. This debonding is in addition to the debonding required to control excessive stress due to prestressing.
2. Additional No.6 reinforcing bars, grade 60.

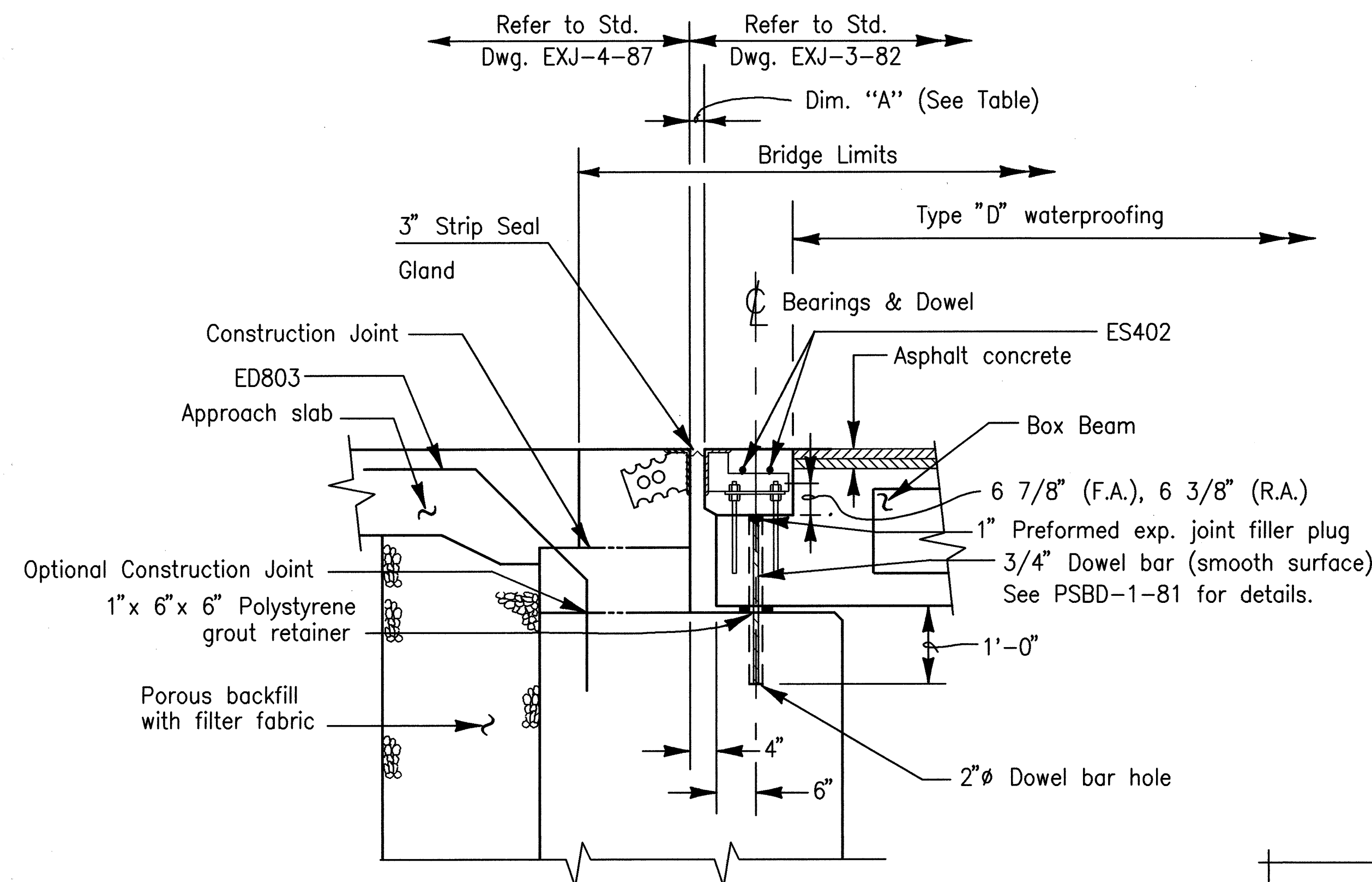
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12/14

PRECAST BOX BEAM DETAILS

BRIDGE NO. HUR-162-0154
OVER SLATE RUN

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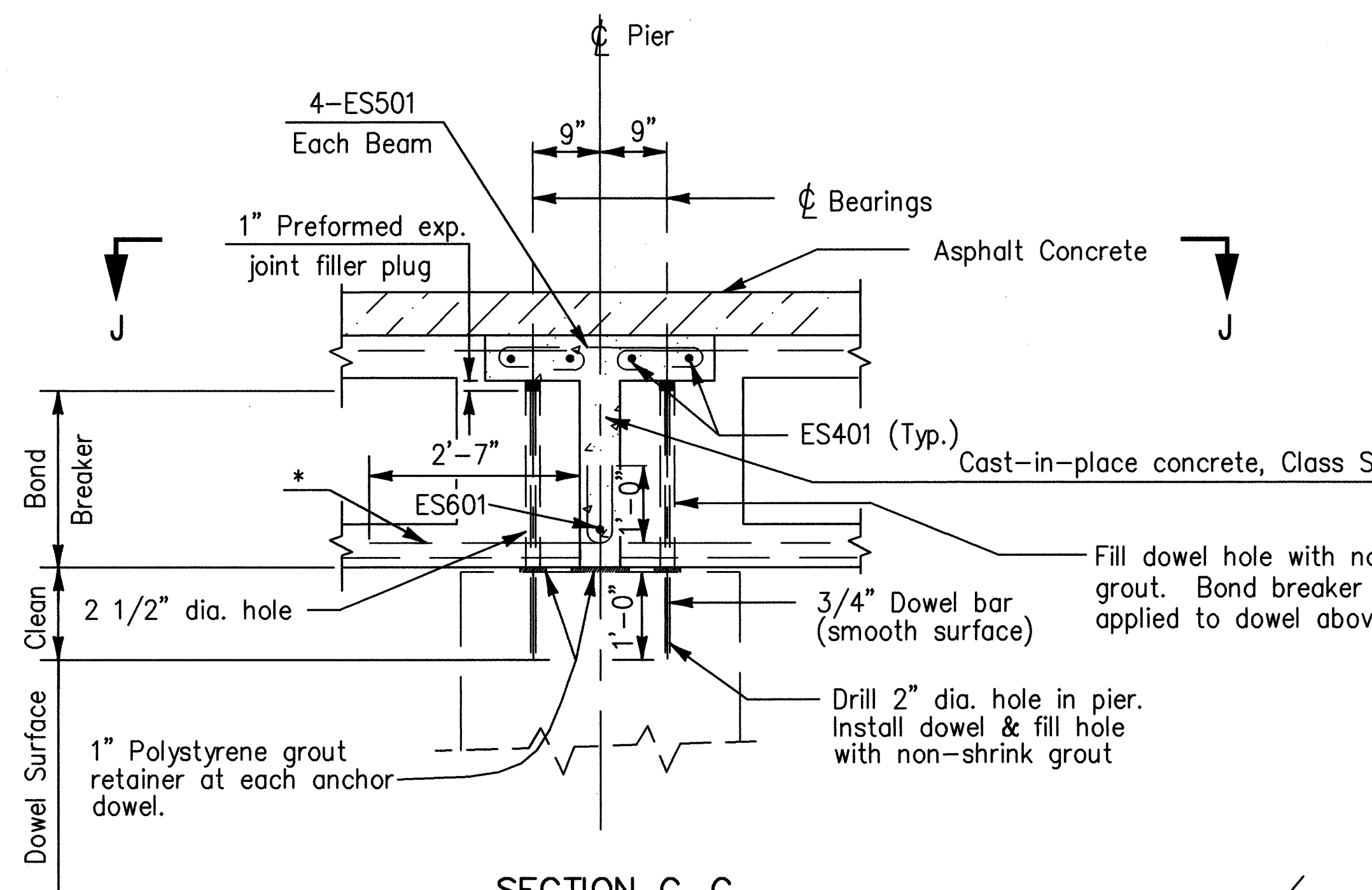


SECTION F-F

See Sheet 11/14

TEMP	30°	40°	50°	60°	70°	80°	90°
DIM. A	1 13/16"	1 13/16"	1 3/4"	1 3/4"	1 3/4"	1 11/16"	1 11/16"

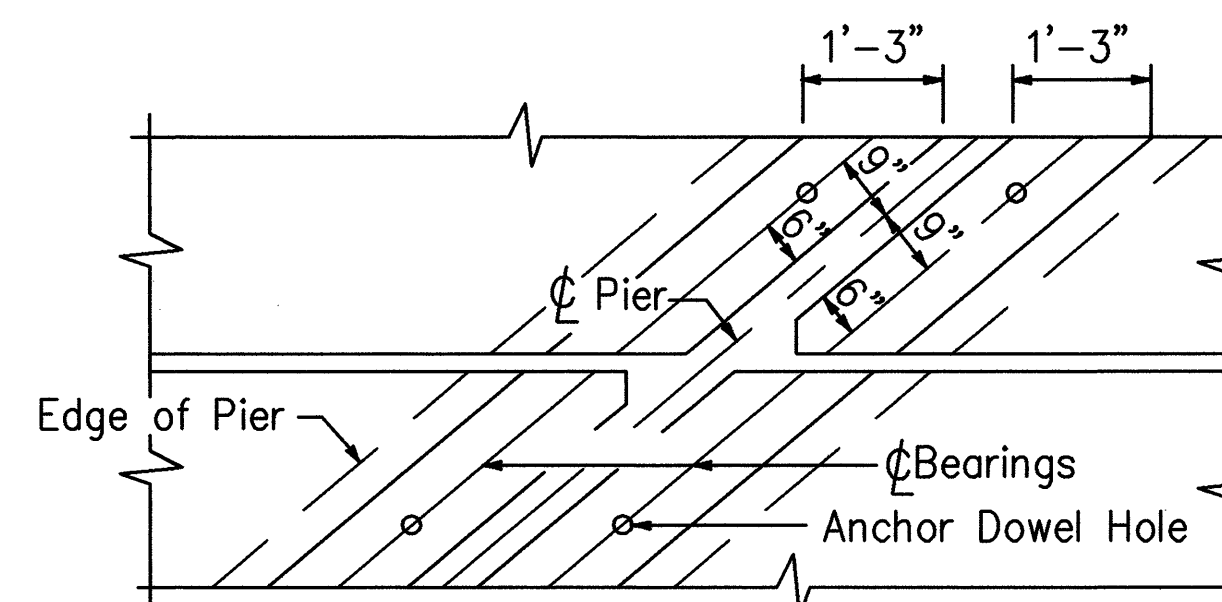
DIMENSION "A"



SECTION G-G

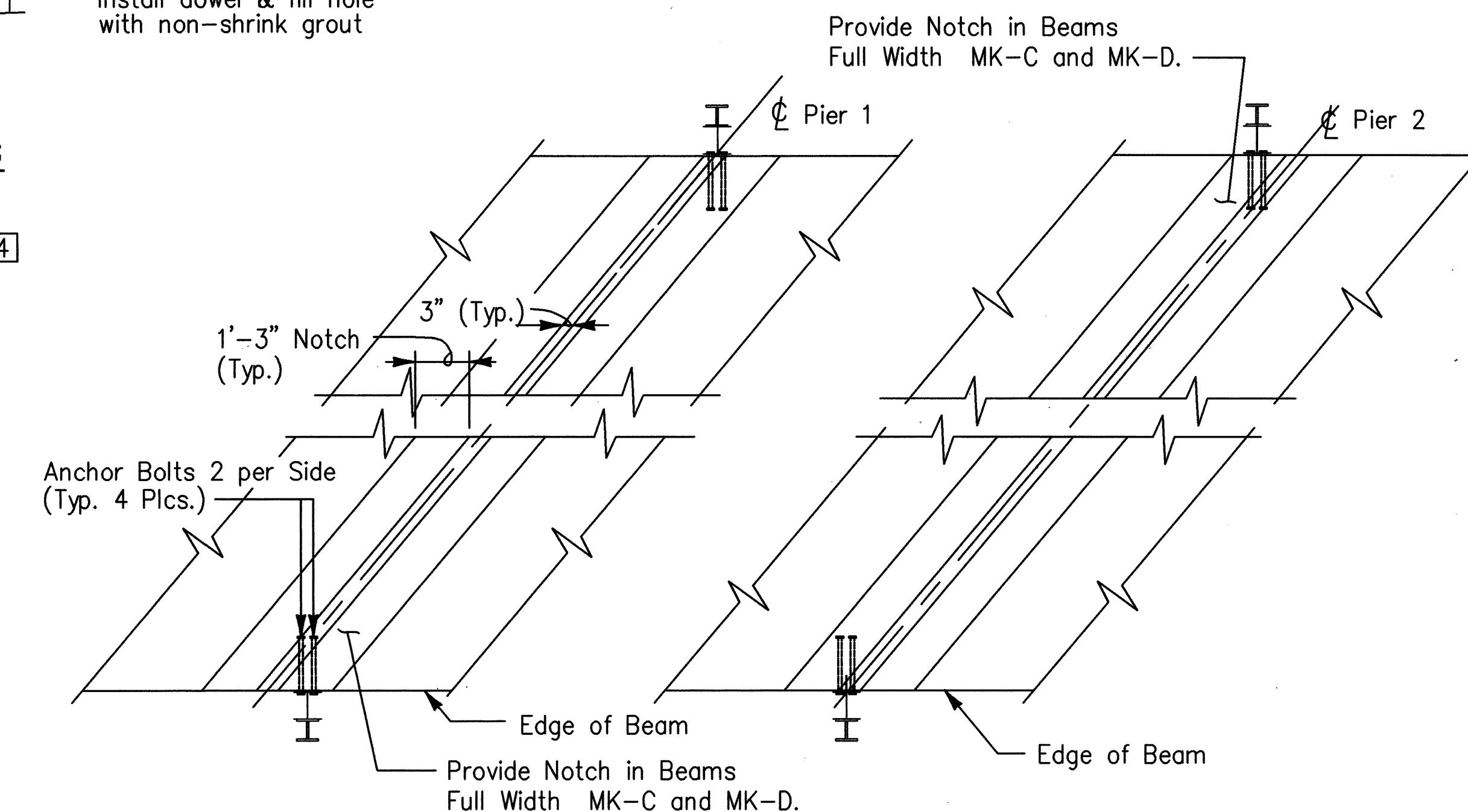
N.T.S.

See Sheet 11/14



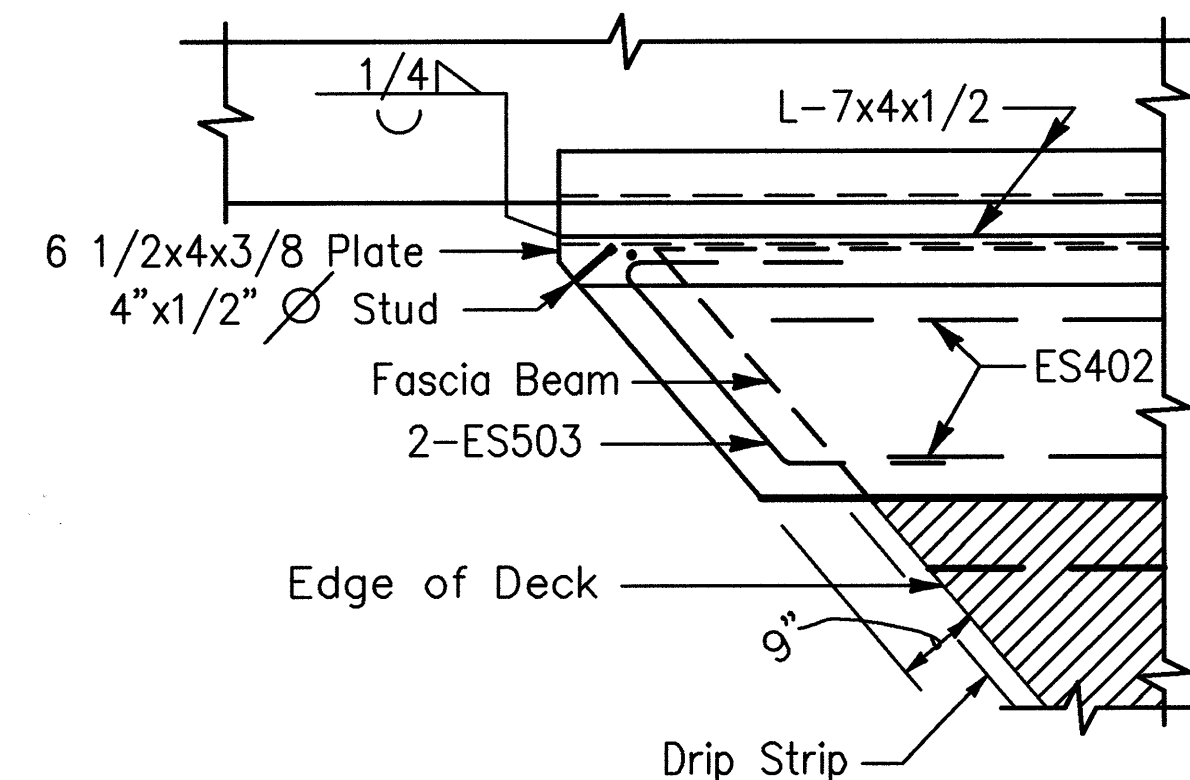
VIEW J-J

Concrete fill not shown

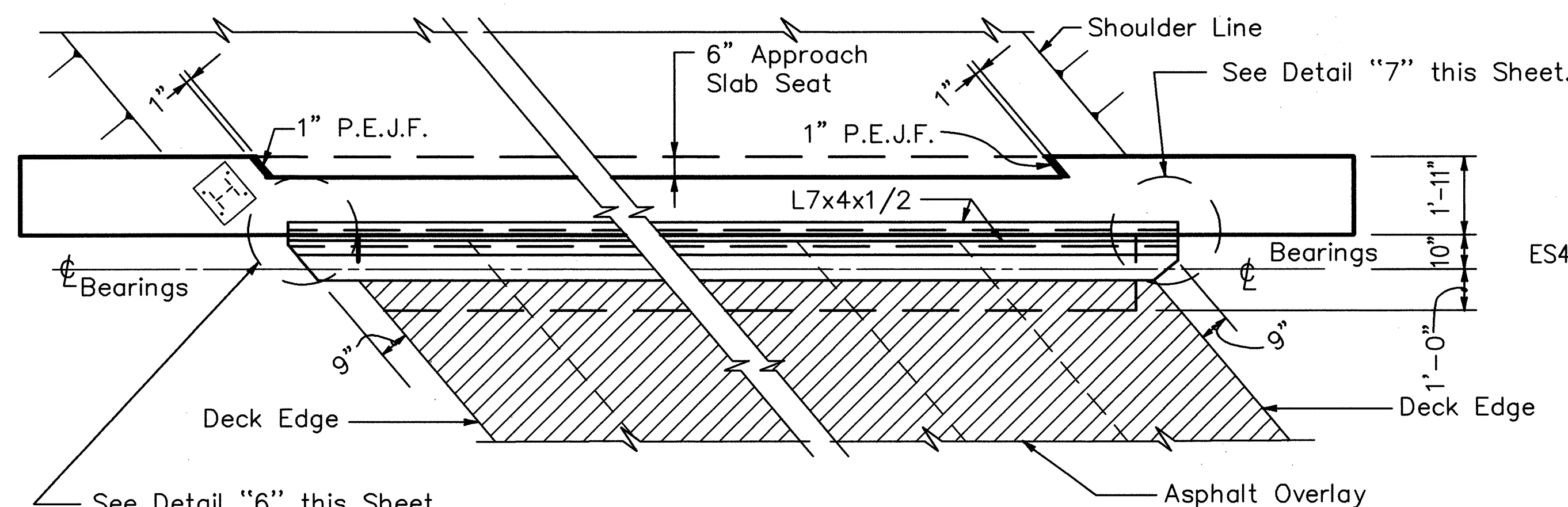


GUARDRAIL ANCHORS AT PIERS

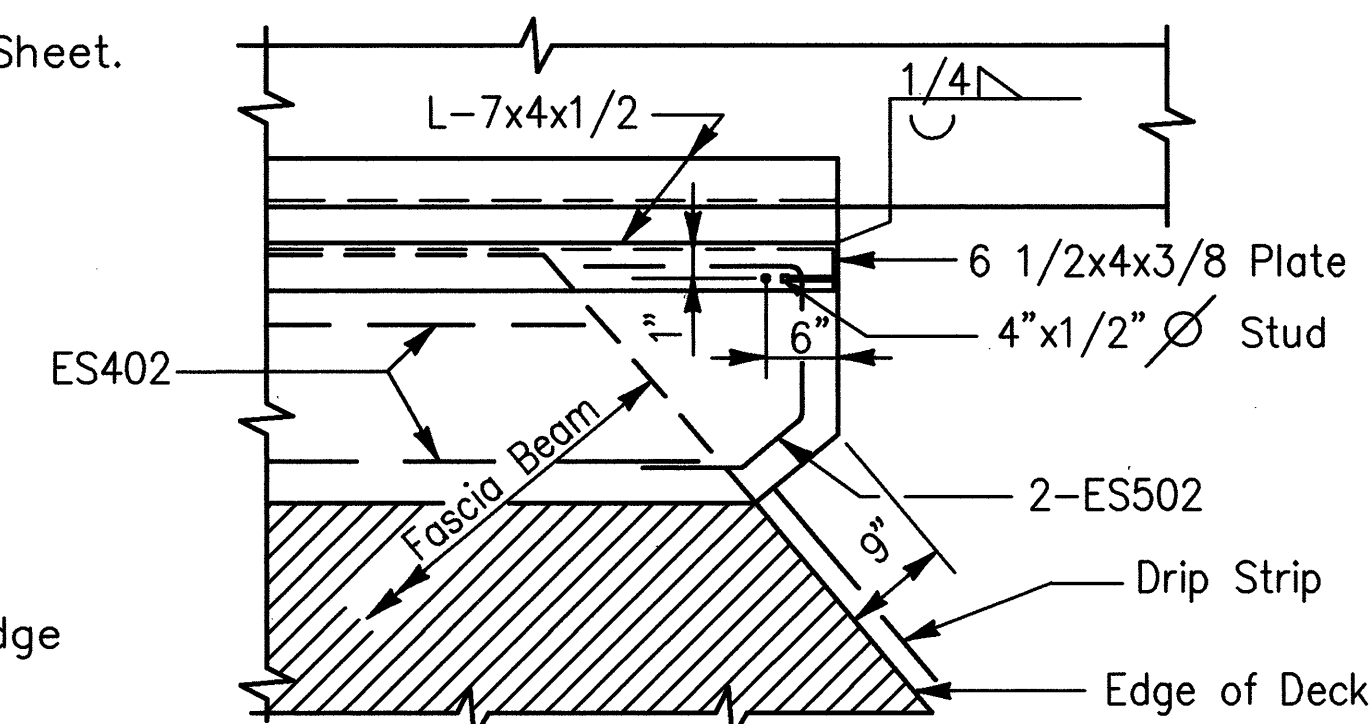
See Sheet 11/14



DETAIL "6"



PARTIAL PLAN AT ABUTMENT



DETAIL "7"

PROCEDURE: Place polystyrene grout retainer. Drill and clean dowel holes. Then place non-shrinking grout, dowel, and 1 inch minimum thickness preformed expansion joint filler plug.

* Precast fabricator to provide 6 #6 bars each beam end in 48" wide beams, and 4 #6 bars each beam end in 36" wide beams. #6 bars shall be located on top of stirrups and shall be uniformly spaced across the beam.

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13/14

MISCELLANEOUS SUPERSTRUCTURE
DETAILS

BRIDGE NO. HUR-162-0154
OVER SLATE RUN

DESIGN	DRAWN	TRACED	CHECKED	REVIEW	DATE	REVISED
CLH	SSC		CDW	AT	5/21	

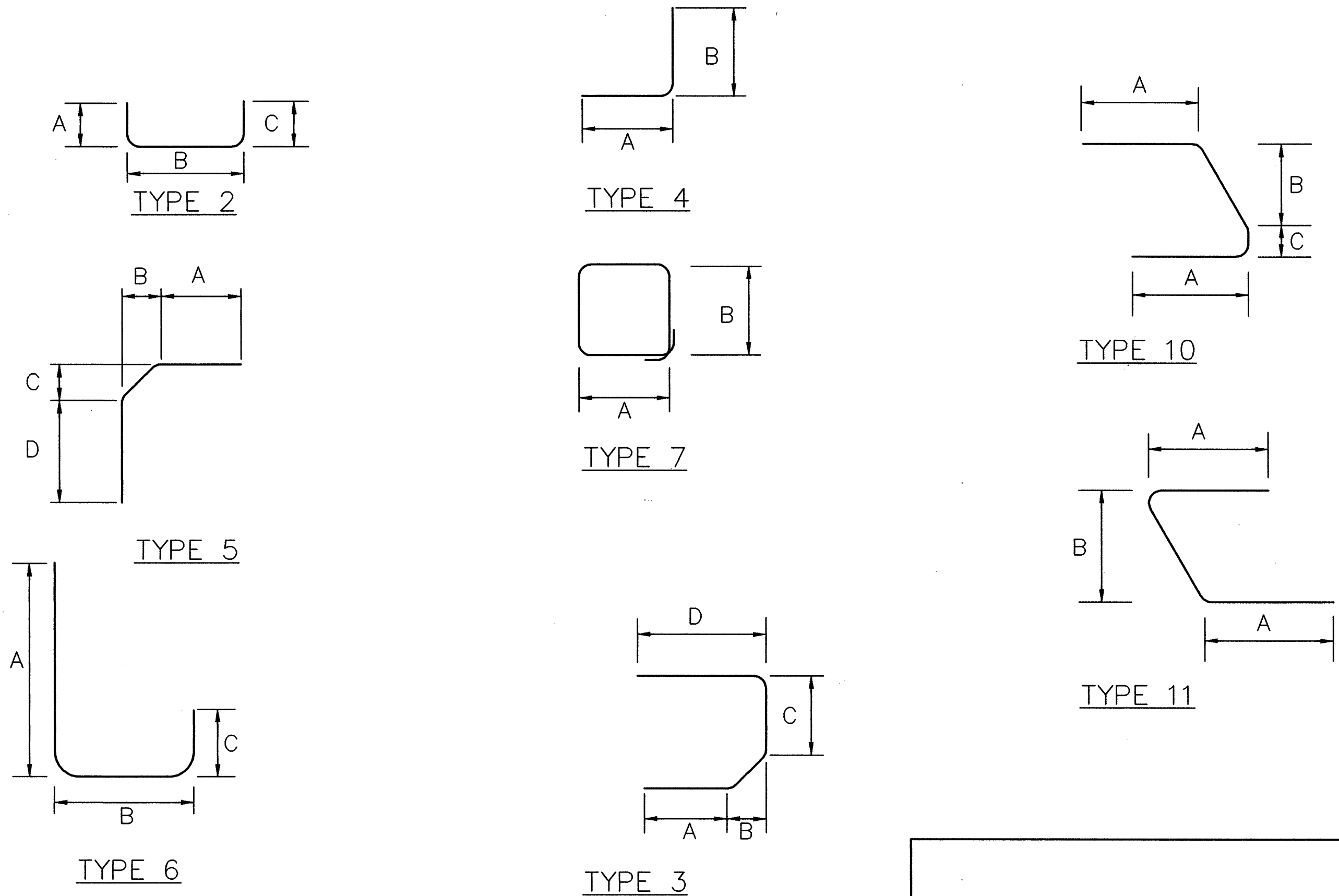
PIER REINFORCING STEEL SCHEDULE												
MARK	NUMBER			LENGTH	TYPE	A	B	C	D	E		WEIGHT
	REAR	FWD	TOTAL									
EP501	140	140	280	6'-6"	2	2'-6"	1'-9"	2'-6"				1898
EP502	4	4	8	6'-11"	2	2'-6"	2'-2"	2'-6"				58
EP503	4	4	8	5'-11"	2	2'-6"	1'-2"	2'-6"				49
EP504	8	8	16	8'-5"	10	2'-9"	2'-7"	0'-6"				141
EP505	8	8	16	24'-10"	STR.							415
EP901	12	12	24	24'-10"	STR.							2026
EP902	6	6	12	33'-6"	STR.							1367
EP903	6	6	12	16'-6"	STR.							673
DS1001	24	24	48	27'-8"	STR.							5714*
ESP401	3	3	6	25'-11"	12	2'-8"	0'-4 1/2"					2883*
TOTAL WEIGHT												6627

* Included with Item special 507 for Payment.

SUPERSTRUCTURE REINFORCING STEEL SCHEDULE												
MARK	NUMBER			LENGTH	TYPE	A	B	C	D	E		WEIGHT
	REAR	FWD	TOTAL									
ES401	8	8	16	24'-3"	STR.							259
ES402	4	4	8	24'-3"	STR.							130
ES501	40	40	80	2'-10"	8	2'-2"						237
ES502	2	2	4	3'-5"	3	0'-8"	0'-5"	1'-0"	1'-6"			15
ES503	2	2	4	3'-1"	11	1'-0"	1'-2"					13
ES601	2	2	4	24'-3"	STR.							146
TOTAL WEIGHT												800

ABUTMENT REINFORCING STEEL SCHEDULE												
MARK	NUMBER			LENGTH	TYPE	A	B	C	D	E		WEIGHT
	REAR	FWD	TOTAL									
EA501	38	38	76	8'-1"	2	1'-6"	5'-4"	1'-6"				641
EA502	38	38	76	8'-2"	4	0'-8"	7'-8"					647
EA503	30	30	60	6'-2"	2	1'-6"	3'-5"	1'-6"				386
EA504	10	10	20	23'-2"	STR.							483
EA505	4	4	8	31'-5"	STR.							262
EA506	2	2	4	9'-9"	STR.							41
EA507	2	2	4	7'-11"	STR.							33
EA508	2	2	4	23'-7"	STR.							98
EA509	6	6	12	23'-7"	STR.							295
EA511	4	4	8	28'-5"	STR.							237
EA516	4	4	8	6'-6"	STR.							54
EA517	4	4	8	5'-0"	STR.							42
EA518	12	12	24	4'-8"	STR.							117
EA520	4	0	4	6'-2"	STR.							26
EA525	0	4	4	6'-11"	STR.							29
EA601	38	38	76	15'-3"	6	7'-8"	5'-4"	2'-7"				1741
EA602	44	44	88	9'-3"	7	1'-7"	2'-5"					1223
EA604	44	44	88	4'-5"	2	1'-10"	1'-1"	1'-10"				584
EA801	14	14	28	29'-3"	STR.							2187
ED803	30	30	60	5'-5"	5	1'-5"	1'-10"	1'-10"	1'-5"			868
TOTAL WEIGHT												9,994

BENDING DIAGRAMS



NOTES:

1. BAR MARKS with a prefix E indicate Epoxy Coated bars.
2. ALL DIMENSIONS are out to out.
3. REFER TO CMS SECTION 509.05 for standard bend dimensions.

SPIRAL REINFORCING BARS:

The "length" shown in the steel list for the spiral bars is the length of the spiral along the axis of the spiral. One and one-half closed-coil turns shall be provided at ends of each spiral unit. Four steel channel, tee or angle spacers, weighing approximately 0.80 lb per linear feet of spacer, shall be provided for each spiral unit. They shall be equally spaced along the periphery of the coils. The number of pounds of these spacers, based on 3.20 lbs per linear foot, is included in the weight of spiral bars.

R.E. WARNER & ASSOCIATES CONSULTING ENGINEERS WESTLAKE, OHIO 44145										14/14
REINFORCING STEEL SCHEDULE										
BRIDGE NO. HUR-162-0154 OVER SLATE RUN										
DESIGN CLW	DRAWN GSC	TRACED	CHECKED CDW	REVIEW AET	DATE 5/74	REVISED				