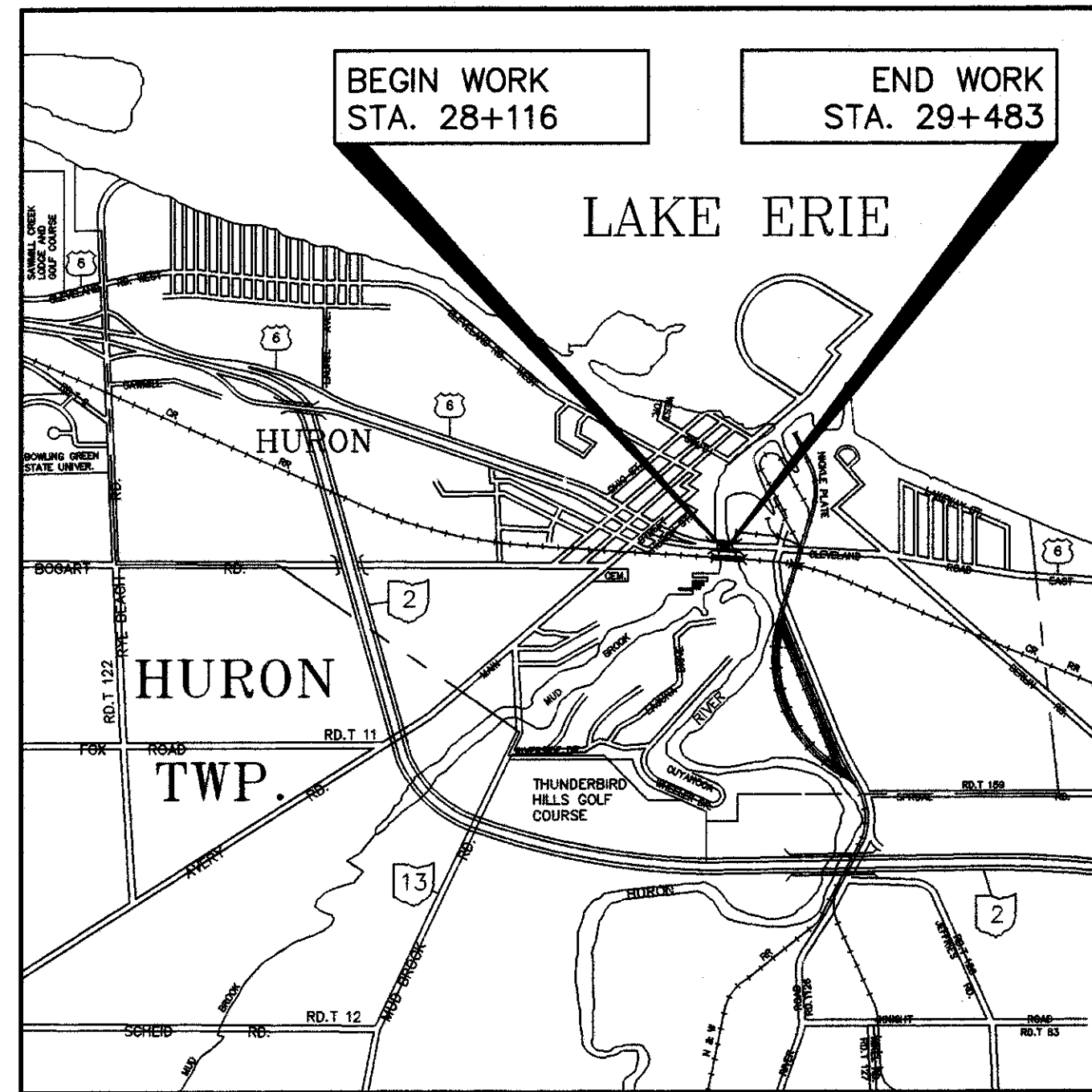


ERI-6-28.839
990630
DIST. 03
09-01-99
PID # 12011

G:\95108\W01\9510801 2-14-98 8:44:57 am EST
PLOT SCALE 1:1



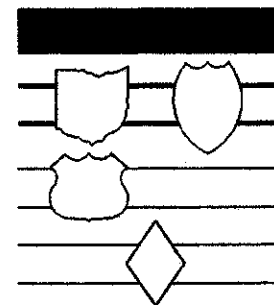
LOCATION MAP

Latitude 41°-23'-23" N
Longitude 82°-33'-12" W



SCALE IN KILOMETERS

Portion to be improved
State & Federal Routes
U.S. Route
Other Roads

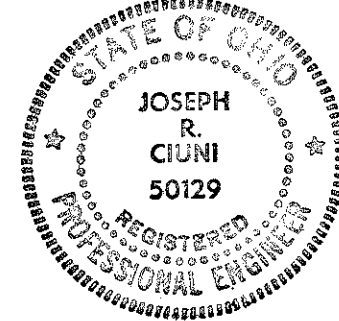


DESIGN DESIGNATION

Current Year (1998) A.D.T. = 11,380
Design Year (2018) A.D.T. = 14,800
D.H.V. (2018) = 1,480
D(Directional Distribution) = 55%
T(24 Hour) = 3%
V(Design Speed) = 60 k.p.h.
V(Legal Speed) = 35 m.p.h.
Functional Classification = URBAN PRINCIPAL ARTERIAL

DESIGN EXCEPTIONS
None Required

STRUCTURE PLANS REVIEWED
by
URS GREINER



SPECIAL PROVISIONS
WATERWAY PERMIT NWP#3 DATED: 1-28-98

UNDERGROUND UTILITIES
2 WORKING DAYS
BEFORE YOU DIG
CALL...800-362-2764 (TOLL FREE)
OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS
MUST BE CALLED DIRECTLY

Prepared By:

adache-ciuni-lynn associates
CONSULTING ENGINEERS 4401 ROCKSIDE ROAD, CLEVELAND, OHIO 44131

STANDARD CONSTRUCTION DRAWINGS										SUPPLEMENTAL SPECIFICATIONS	
DRAWING. NO.	DATE	DRAWING NO.	DATE	DRAWING NO.	DATE	DRAWING NO.	DATE	DRAWING NO.	DATE	NUMBER	DATE
RM-3.1M	10-21-97	EXJ-4-87M	2-18-97							806	9-9-97
RM-4.2M	10-21-97									815	5-30-98
										844	1-6-99
MT-35.10M	1-30-95	PCB-91M	3-20-95							863	9-9-97
MT-35.11M	1-30-95									910	7-28-98
MT-95.30M	4-25-94									954	9-9-97
MT-95.32M	4-25-94										
MT-95.41M	4-25-94	TC-41.20M	7-1-94							842	1-6-99
MT-95.81M	4-25-94	TC-42.10M	3-31-94							899	10-21-98
MT-101.60M	4-25-94	TC-42.20M	3-31-94							814	6-2-98
MT-110.20M	3-1-96	TC-52.10M	7-29-94							904	5-5-98
MT-110.30M	3-1-96	TC-52.20M	7-29-94							905	4-1-98
										906	5-5-98

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

ERI-6-28.839

CITY OF HURON ERIE COUNTY



PROJECT DESCRIPTION

Rehabilitation of the existing structure over the Huron River by replacement of Span 15, substructure patching, bridge drainage system modification and improvement, and wearing course retexturing.

1997 SPECIFICATIONS

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 not require the closing to traffic of the highway and that provisions for the maintenance and safety of traffic will be as set forth on the plans and estimates.

Approved _____
Date 12-15-98 District Deputy Director

Approved _____
Date 2-24-99 Director, Department of Transportation

FEDERAL PROJECT NO.
TE21-G990 (2.84)

PID NO.
12011

STATE JOB NO.

RAILROAD INVOLVEMENT
NONE

ERI-6-28.839

1
92

UTILITIES

LISTED BELOW ARE ALL UTILITIES LOCATED WITHIN THE PROJECT CONSTRUCTION LIMITS TOGETHER WITH THEIR RESPECTIVE OWNERS:

GTE TELEPHONE OPERATIONS
NORTH AREA
83 TOWNSEND AVE.
NORWALK, OHIO 44853
(419) 744-3619

CITY OF HURON
P.O. BOX 468
HURON, OHIO 44839
(419) 433-5000

COLUMBIA GAS OF OHIO, INC.
2110 CALDWELL STREET
SANDUSKY, OHIO 44871-2358
(419) 625-4554 EXT. 19

ERIE COUNTY DEPARTMENT OF ENVIRONMENTAL SERVICES
P.O. BOX 469
554 RIVER ROAD
HURON, OHIO 44839
(419) 433-7303

OHIO EDISON
6326 LAKE AVE.
ELYRIA, OHIO 44035-4034
(440) 324-0207

CONTINGENCY QUANTITIES

THE CONTRACTOR SHALL NOT ORDER MATERIALS OR PERFORM WORK FOR ITEMS DESIGNATED BY PLAN NOTE TO BE USED "AS DIRECTED BY THE ENGINEER" UNLESS AUTHORIZED BY THE ENGINEER. THE ACTUAL WORK LOCATIONS AND QUANTITIES USED FOR SUCH ITEMS SHALL BE INCORPORATED INTO THE FINAL CHANGE ORDER GOVERNING COMPLETION OF THIS PROJECT.

WORK LIMITS

THE WORK LIMITS SHOWN ON THESE PLANS ARE FOR PHYSICAL CONSTRUCTION ONLY. THE INSTALLATION AND OPERATION OF ALL TEMPORARY TRAFFIC CONTROL AND TEMPORARY TRAFFIC CONTROL DEVICES REQUIRED BY THESE PLANS SHALL BE PROVIDED BY THE CONTRACTOR WHETHER INSIDE OR OUTSIDE THESE WORK LIMITS.

ASBESTOS NOTIFICATION

An asbestos survey of the bridge(s) schedules for demolition or renovation was conducted by a certified asbestos hazard evaluation specialist. The survey determined that no asbestos is present on the bridge(s).

A copy of the Ohio Environmental Protection Agency (OEPA) Notification of Demolition and Renovation form, partially completed and signed by the bridge owner, will be provided to the successful bidder at the preconstruction meeting. The contractor shall complete the form and return it to the District Construction Engineer. The completion of this form may be performed at the preconstruction meeting. The District Construction Engineer shall submit it to (OEPA District Office or the Local Air Authority) at least ten (10) working days prior to the start of the demolition of the bridge. The District Construction Engineer shall provide a copy of the completed form to the contractor. The contractor shall not commence demolition of the structure until the above requirements are met.

Information required on the form will include:

- The contractors name and address
- The scheduled dates for the start and completion of the bridge removal or renovation
- A description of the planned demolition or renovation work and the method(s) to be used

A copy of the OEPA form is available for inspection at the ODOT District 3 Office, 906 N. Clark Street, Ashland, Ohio, 44805.

Basis for Payment

The contractor shall furnish all fees, labor, and material necessary to complete and submit the OEPA Notification form. Payment for this work shall be included in the bid item 202-Structure Removed.

ENVIRONMENTAL COMMITMENTS

1. BANK STABILIZATION WILL BE LIMITED TO WITHIN 45 METERS (148 FEET) UPSTREAM AND DOWNSTREAM OF THE EXISTING STRUCTURE. BANK STABILIZATION WILL BE LIMITED TO REGRADING OF THE BANKS FOR THE TOE-OF-SLOPE (IN-STREAM) TO THE TOP OF BANK AND WILL INCLUDE PLACEMENT OF ROCK CHANNEL PROTECTION WHERE REQUIRED. THIS WILL EXCLUDE WORK SUCH AS WIDENING, DEEPENING OR RELOCATION. THIS STABILIZATION WILL BE KEPT TO A MINIMUM.
2. IN-STREAM WORK WILL BE LIMITED WHERE PRACTICABLE AND ONLY CLEAN NON-ERODIBLE MATERIAL WILL BE USED FOR FORDS AND COFFERDAMS. THIS TEMPORARILY PLACED MATERIAL WILL BE REMOVED AND THE STREAM BOTTOM RESTORED TO NEAR NATURAL CONDITIONS WHEN THE WORK IS COMPLETED.
3. WRITTEN PERMISSION WILL BE OBTAINED FROM THE CHIEF OF ODNR'S DIVISION OF WILDLIFE FOR ANY NECESSARY IN-STREAM BLASTING.
4. THE SPECIFICATIONS SET FORTH IN THE MOST CURRENT VERSION OF ODOT'S CONSTRUCTION AND MATERIAL SPECIFICATION, LOCATION AND DESIGN MANUAL AND STANDARD DRAWINGS WILL BE USED TO ENSURE ADEQUATE EROSION AND SEDIMENT CONTROL DURING CONSTRUCTION.
5. IF THIS PROJECT IS LOCATED WITHIN FLOOD PLAINS, IT WILL COMPLY WITH NECESSARY FLOOD PLAIN CRITERIA. THOSE PROJECTS IN FEMA DESIGNATED FLOOD PLAINS WILL BE COORDINATED WITH THE APPROPRIATE AUTHORITIES.
6. NO ADDITIONAL RIGHT OF WAY IS REQUIRED.
7. **STREAM CHANNEL EXCAVATION**
THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT ANY INCIDENTAL DISCHARGES ASSOCIATED WITH THE EXCAVATION AND HAULING OF MATERIAL FROM THE STREAM CHANNEL. THIS PERTAINS TO ANY EXCAVATION OPERATIONS SUCH AS, FOUNDATION PIER OR ABUTMENT EXCAVATION, CHANNEL CLEAN OUT, EXCAVATION FOR ROCK CHANNEL PROTECTION AND REMOVAL OF ANY TEMPORARY FILL ASSOCIATED WITH CONSTRUCTION OPERATIONS.
8. **DEMOLITION DEBRIS**
THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS TO AVOID AND/OR LIMIT DEMOLITION DEBRIS FROM ENTERING THE STREAM. ANY MATERIAL THAT DOES FALL INTO THE STREAM SHALL BE REMOVED AS SOON AS POSSIBLE.
9. NO WETLANDS WERE FOUND WITHIN THE PROJECT AREA.

ITEM 614. MAINTAINING TRAFFIC

A MINIMUM OF ONE LANE OF TRAFFIC IN EACH DIRECTION SHALL BE MAINTAINED AT ALL TIMES BY USE OF THE EXISTING PAVEMENT AND EXISTING AND REHABILITATED BRIDGE.

LENGTH AND DURATION OF LANE CLOSURES AND RESTRICTIONS SHALL BE AT THE APPROVAL OF THE ENGINEER. IT IS THE INTENT TO MINIMIZE THE IMPACT TO THE TRAVELING PUBLIC. LANE CLOSURES OR RESTRICTIONS OVER SEGMENTS OF THE PROJECT IN WHICH NO WORK IS ANTICIPATED WITHIN A REASONABLE TIME FRAME, AS DETERMINED BY THE ENGINEER, SHALL NOT BE PERMITTED. THE LEVEL OF UTILIZATION OF MAINTENANCE OF TRAFFIC DEVICES SHALL BE COMMENSURATE WITH THE WORK IN PROGRESS. ALL EXISTING LANES SHALL BE OPEN BETWEEN NOVEMBER 15 THRU APRIL 15.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER FOR THE MAINTENANCE OF TRAFFIC.

ITEM 253	PAVEMENT REPAIR (100 mm Average Thickness)	50	SQ. METERS
ITEM 614	BITUMINOUS CONCRETE FOR MAINTAINING TRAFFIC	25	CU. METERS

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH 614 AND OTHER APPLICABLE PORTIONS OF THE SPECIFICATIONS, AS WELL AS THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR 614, MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLAN.

ITEM 202. CONCRETE MEDIAN REMOVED, AS PER PLAN

THE CONCRETE MEDIAN SHALL BE REMOVED IN ACCORDANCE WITH 202.05 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS. THE TEMPORARY PAVEMENT EXPOSED SHALL BE REPAIRED IN ACCORDANCE WITH ITEM 253 OR ITEM 448 AS DIRECTED BY THE ENGINEER. WHERE NO PAVEMENT IS EXPOSED, THE MEDIAN SHALL BE REPAIRED AS SHOWN ON SHEET 7.

PAYMENT SHALL INCLUDE ALL LABOR, EQUIPMENT AND MATERIALS TO PERFORM THE WORK AND SHALL BE PAID FOR AT THE CONTRACT PRICE PER SQUARE METER FOR ITEM 202, CONCRETE MEDIAN REMOVED, AS PER PLAN.

ITEM 622. PORTABLE CONCRETE BARRIER, 813 mm, BRIDGE MOUNTED

IT IS ANTICIPATED THAT THE SAME BARRIER WILL BE USED IN VARIOUS PHASES OF CONSTRUCTION. MOVEMENT OF THE CONCRETE BARRIER BETWEEN PHASES SHALL BE ACCOMPLISHED IN ONE WORKING DAY. FLAGGERS SHALL BE UTILIZED FOR PROTECTION OF VEHICULAR TRAFFIC UNTIL MOVEMENT OF THE BARRIER IS COMPLETE. SEE STD. CONST. DWG. PCB-91M. BARRIER THAT IS TO BE ANCHORED SHALL HAVE THE ANCHOR HOLES CORE DRILLED.

ITEM 622. PORTABLE CONCRETE BARRIER, 813 mm, BRIDGE MOUNTED, AS PER PLAN

BARRIER USED ON THE OPEN GRID DECK SHALL BE ANSHORED AS PER DETAIL ON SHEET 4. PORTABLE CONCRETE BARRIER, AS PER PLAN SHALL ONLY BE USED IN PHASE 2. PAYMENT SHALL INCLUDE ALL LABOR, EQUIPMENT AND MATERIALS NECESSARY TO PERFORM THE WORK AND SHALL BE PAID FOR AT THE CONTRACT PRICE PER METER FOR ITEM 622, PORTABLE CONCRETE BARRIER, 813 mm, BRIDGE MOUNTED, AS PER PLAN.

ITEM 614 - TEMPORARY IMPACT ATTENUATOR G.R.E.A.T. TYPE

THIS WORK SHALL CONSIST OF FURNISHING IMPACT ATTENUATORS AS REQUIRED IN THE PLANS. THIS ITEM SHALL INCLUDE ALL RELATED HARDWARE, NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER TO CONSTRUCT COMPLETE AND FUNCTIONAL G.R.E.A.T. IMPACT ATTENUATOR SYSTEMS. THE ATTENUATORS SHALL BE PLACED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND AT THE LOCATIONS SHOWN ON THE PLANS. THE IMPACT ATTENUATOR SHALL BE MANUFACTURED BY THE ENERGY ABSORPTION SYSTEMS, INC., ONE EAST WACKER DRIVE, CHICAGO, ILLINOIS 60601: TELEPHONE (312) 467-6750.

THE CONTRACTOR HAS THE OPTION OF USING A QUADGUARD cz SYSTEM WHICH IS MANUFACTURED BY THE SAME COMPANY. THE MANUFACTURER SHALL PROVIDE THE MODEL NECESSARY FOR THE CONDITIONS SET FORTH IN THESE PLANS.

THE NOSE COVER OF THE ATTENUATOR SHALL MEET THE REQUIREMENTS OF STANDARD DRAWING MT-95.81M.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSPECTING, REPAIRING, AND OTHERWISE RESTORING THE IMPACT ATTENUATOR IN ACCORDANCE WITH THE MANUFACTURER'S MAINTENANCE INSTRUCTIONS WHILE IT IS IN USE ON THE PROJECT. SUCH REPAIRS SHALL BE PERFORMED WITHIN 24 HOURS OF THE INCIDENT WHICH CAUSED DAMAGE TO THE PROJECT. IN ADDITION TO ANY EXTRA UNITS SUPPLIED FOR THIS PROJECT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUPPLYING ALL NECESSARY MATERIALS, LABOR AND EQUIPMENT REQUIRED TO PERFORM THE ABOVE DESCRIBED RESTORATION OF THE ATTENUATOR.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER FOR USE IN THE ABOVE MENTIONED RESTORATION ONLY WHEN IT IS DECIDED THAT MINOR OR MAJOR REPAIRS CANNOT BE PERFORMED IN A SAFE AND TIMELY MANNER:

ITEM 614 - TEMPORARY IMPACT ATTENUATOR (REPLACEMENT), G.R.E.A.T. TYPE,	
MODEL NO. 200200NF6GCZ, BIDIRECTIONAL	1 EACH

FOR LOCATIONS OF THE ATTENUATORS SEE PLAN SHEETS 5 THRU 17. THESE TEMPORORILY LOCATED ATTENUATORS SHALL BE BID PER EACH PER THE FOLLOWING PAY ITEM DESCRIPTION:

ITEM 614 - TEMPORARY IMPACT ATTENUATOR, G.R.E.A.T. TYPE,	
MODEL NO. 200200NF6GCZ, BIDIRECTIONAL	

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT PRICE BID FOR EACH, ITEM 614, TEMPORARY IMPACT ATTENUATOR AND SHALL BE CONSIDERED FULL PAYMENT FOR FURNISHING, INSTALLING AT THE SPECIFIED LOCATIONS, RESTORATION AFTER EACH VEHICLE IMPACT, INCLUDING ALL LABOR, TOOLS, EQUIPMENT AND MISCELLANEOUS HARDWARE AND MATERIALS NECESSARY TO COMPLETE THESE ITEMS OF WORK.

ITEM 614. BARRIER REFLECTORS

REFLECTORS AND THEIR MOUNTING SHALL CONFORM TO THE CONSTRUCTION AND MATERIAL SPECIFICATIONS, ITEM 626 EXCEPT THAT SPACING SHALL BE AS NOTED ON SHEET 4.

COVERING OF SIGNS

WHERE THE PLANS CALL FOR A PERMANENT SIGN TO BE COVERED, THE CONTRACTOR SHALL DO SO IN SUCH A MANNER AS TO AVOID DAMAGING THE PERMANENT SIGN WHEN THE COVER IS REMOVED. THE COVER SHALL BE TOTALLY OPAQUE. THE USE OF ADHESIVE TAPE APPLIED DIRECTLY TO A SIGN FACE IS STRICTLY PROHIBITED.

WORK IN AND OVER THE HURON RIVER

ALL CONSTRUCTION OPERATIONS IN AND OVER THE HURON RIVER SHALL CONFORM TO THE REQUIREMENTS OF THE UNITED STATES COAST GUARD. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN NAVIGATION LIGHTS AND OTHER NAVIGATION SIGNALS, BUOYS, OR FACILITIES WHICH MAY BE REQUIRED BY THE U.S. COAST GUARD ON CONSTRUCTION EQUIPMENT, ON VESSELS OR FOR DIRECTING BOAT TRAFFIC NECESSARY TO MEET, BUT NOT LIMITED TO, 104.04, 107.07 AND 107.09. A MAINTENANCE OF BOAT TRAFFIC PLAN MUST BE SUBMITTED TO AND APPROVED BY THE U.S. COAST GUARD. A COPY OF THE USCG APPROVED PLAN SHALL BE SUBMITTED TO THE ENGINEER BEFORE WORK CAN COMMENCE IN AND OVER THE HURON RIVER.

THE CONTRACTOR SHALL NOTIFY THE COMMANDING OFFICER, U.S. COAST GUARD, MARINE SAFETY OFFICE THIRTY (30) DAYS IN ADVANCE OF COMMENCEMENT OF WORK IN AND ABOVE THE RIVER SO THAT NAVIGATION INTERESTS MAY BE NOTIFIED OF THE PRESENCE OF CONSTRUCTION EQUIPMENT. THE CONTRACTOR SHALL ALSO NOTIFY THEM WHEN WORK IS COMPLETED. THE ADDRESS AND PHONE NUMBER ARE: COMMANDING OFFICER, USCG-MSO-TOLEDO, FED BLDG RM 501, 234 SUMMIT ST., TOLEDO, OH 43604 TELE: 419-259-6372 FAX NO.: 419-259-6374

PUBLIC RELATIONS: THE CONTRACTOR SHOULD PROVIDE WRITTEN NOTIFICATION OF THE STARTING DATE OF THIS PROJECT TO EACH OF THE UP-STREAM BOATING FACILITIES WHOSE CUSTOMERS MAY TRAVEL UNDER THIS BRIDGE.

THE CONTRACTOR SHALL PROVIDE COPIES OF CORRESPONDENCE WITH THE U.S. COAST GUARD AND BOATING FACILITIES TO THE ENGINEER.

ALL COSTS NECESSARY TO MEET THE ABOVE REQUIREMENTS, INCLUDING PERMITS SHALL BE INCLUDED FOR PAYMENT PER LUMP SUM IN ITEM 614- "MAINTAINING TRAFFIC, MISC.: BOAT TRAFFIC".

SEQUENCE OF CONSTRUCTION

PHASE 1

WORK REQUIRED:

- 1) REMOVE CONCRETE MEDIAN AT WEST END OF STRUCTURE FOR SUBSEQUENT PHASES (STA 28+784+/- TO STA 28+838+/-) SEE DETAIL, SHEET 7.
- 2) REMOVE MEDIAN AT EAST END OF STRUCTURE FOR SUBSEQUENT PHASE (STA. 29+157 TO STA 29+244). SEE DETAIL, SHEET 8.

REQUIREMENTS:

- 1) MAINTAIN ONE 3.60M (MINIMUM) LANE IN EACH DIRECTION UTILIZING OUTSIDE LANES BY USING STD. CONST. DWG. MT-95.30M AND MT-95.32M, AND DETAILS ON SHEETS 5 THRU 8.

PHASE 2

WORK REQUIRED:

- 1) REMOVE EXISTING SUPERSTRUCTURE OF SPAN 15 ON WESTBOUND LANES AND REPLACE WITH NEW SUPERSTRUCTURE.

REQUIREMENTS:

- 1) MAINTAIN TWO-WAY TRAFFIC ON EASTBOUND LANES. SEE PLAN SHEETS 9-11 FOR FURTHER DETAILS.

PHASE 3

WORK REQUIRED:

- 1) REMOVE EXISTING SUPERSTRUCTURE OF SPAN 15 ON EASTBOUND LANES AND REPLACE WITH NEW SUPERSTRUCTURE.

REQUIREMENTS:

- 1) MAINTAIN TWO-WAY TRAFFIC ON WESTBOUND LANES. SEE PLAN SHEETS 12-14 FOR FURTHER DETAILS.

PHASE 4

WORK REQUIRED:

- 1) REPLACE CONCRETE MEDIAN AT WEST END OF STRUCTURE AND RETURN BACK TO PREVIOUS CONDITION.
- 2) REPLACE CONCRETE MEDIAN AT EAST END OF STRUCTURE AND RETURN TO PREVIOUS CONDITION.

REQUIREMENTS:

- 1) MAINTAIN ONE 3.60M (MINIMUM) LANE IN EACH DIRECTION UTILIZING THE OUTSIDE LANES BY USING STD. CONST. DWG. MT-95.30M AND MT-95.32M, AND DETAILS ON SHEETS 15 THRU 17.

PROJECT TIME LIMITATIONS

THIS PROJECT HAS A LIMITED TIME OF CONSTRUCTION DUE TO THE ECONOMIC IMPACTS THIS PROJECT HAS ON THE AREA. THE OHIO DEPARTMENT OF TRANSPORTATION HAS COMMITTED TO THE AREA COMMUNITIES AND BUSINESSES TO LIMIT THE CONTRACTOR TO HAVE ALL EXISTING LANES OPEN TO TRAFFIC FOUR WEEKS PRIOR TO THE COMPLETION DATE. THIS DATE IS CONSIDERED AN INTERIM COMPLETION DATE.

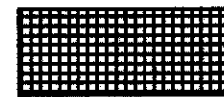
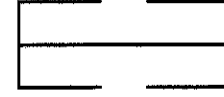
EXCEPTION: THE CONTRACTOR MAY WORK ON THE STRUCTURE AT ANY TIME BEYOND THE TIME LIMITS MENTIONED ABOVE AS LONG AS: 1.) THE WORK DOES NOT REQUIRE ANY LANE CLOSURES LASTING MORE THAN ONE (1) HOUR AND 2.) A MINIMUM OF ONE LANE OF TRAFFIC SHALL BE MAINTAINED IN EACH DIRECTION.

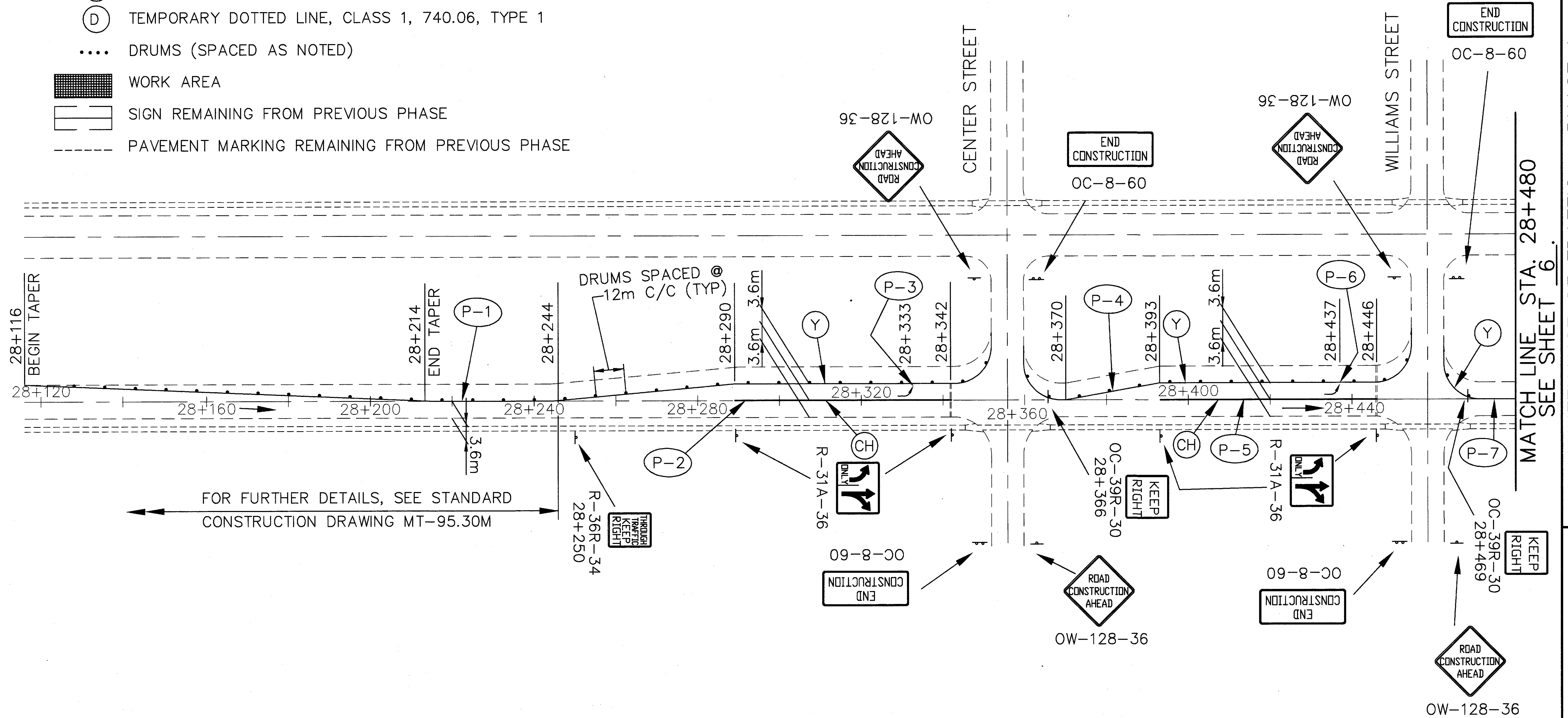
THERE SHALL NOT BE ANY EXTENSIONS DUE TO MATERIAL DELAYS WHATSOEVER.

SHOULD THE CONTRACTOR FAIL TO MEET ANY OF THESE REQUIREMENTS, THE CONTRACTOR SHALL BE ASSESSED LIQUIDATED DAMAGES PER 108.07.

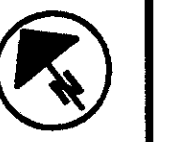
THE CONTRACTOR WILL BE REQUIRED TO PARTICIPATE IN ALL CURRENT MEETINGS OF THE ERIE 2 RECONSTRUCTION FOCUS GROUP DUE TO THE IMPACT OF THIS PROJECT ON THE COMMUNITY. DETAILS OF THE FOCUS GROUP FUNCTIONS AND MEETING SCHEDULES CAN BE OBTAINED FROM THE DISTRICT THREE CONSULTANT ADMINISTRATOR (1-419-281-0513 EXTENSION 200).

LEGEND

- (Y) TEMPORARY YELLOW EDGE LINE, CLASS 1, 740.06, TYPE 1
- (W) TEMPORARY WHITE EDGE LINE, CLASS 1, 740.06, TYPE 1
- (C) TEMPORARY DOUBLE SOLID YELLOW CENTER LINE, CLASS 1, 740.06, TYPE 1
- (CH) TEMPORARY CHANNELIZING LINE, CLASS 1, 740.06, TYPE 1
- (D) TEMPORARY DOTTED LINE, CLASS 1, 740.06, TYPE 1
- DRUMS (SPACED AS NOTED)
-  WORK AREA
-  SIGN REMAINING FROM PREVIOUS PHASE
- PAVEMENT MARKING REMAINING FROM PREVIOUS PHASE



FOR QUANTITIES, SEE SHEET 4.



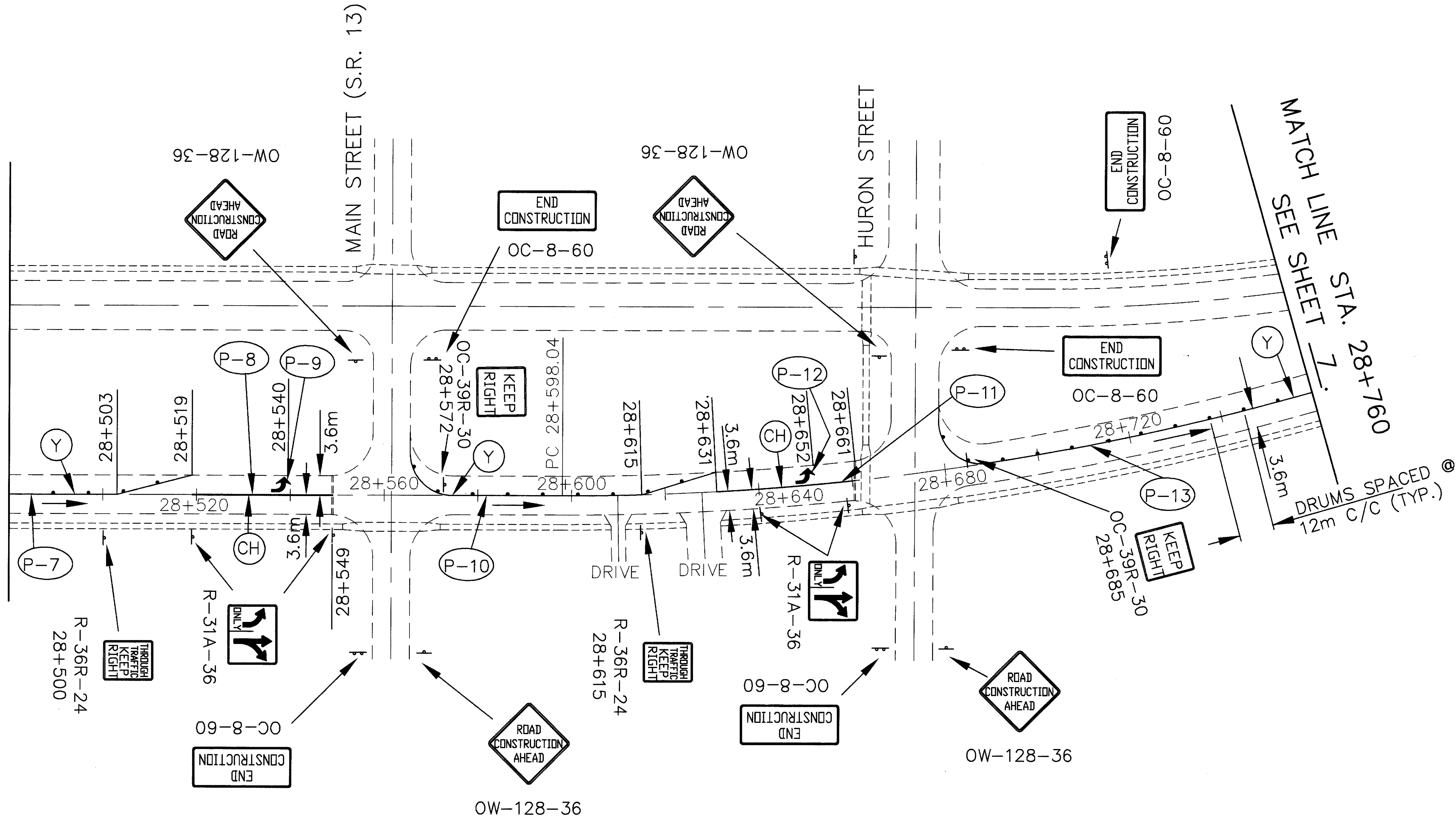
CALCULATED
 B.F.
 CHECKED
 L.P.C.

MAINTENANCE OF TRAFFIC - PHASE 1
 STA. 28+116 TO STA. 28+480

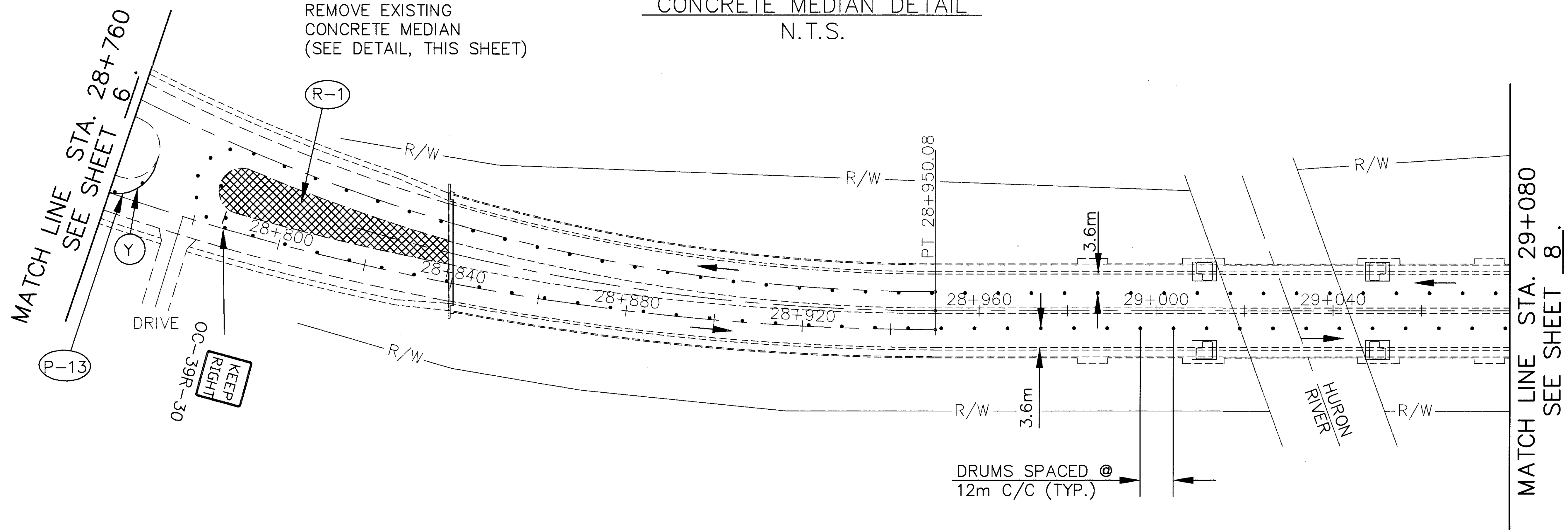
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MATCH LINE STA. 28+480
 SEE SHEET 5.



FOR LEGEND, SEE SHEET 5.
 FOR QUANTITIES, SEE SHEET 4.



TEMPORARY PAVEMENT
 CONSTRUCTED FOR 1983
 BRIDGE REHABILITATION
 (TO REMAIN)

203mm
 MIN.

ITEM 253 OR ITEM 448, ASPHALT CONCRETE
 SURFACE COURSE, TYPE 1, PG 64-22.
 AS DIRECTED

EXISTING 152mm
 CONCRETE MEDIAN
 TO BE REMOVED

5.2 m MIN. TO 9.8 m MAX.

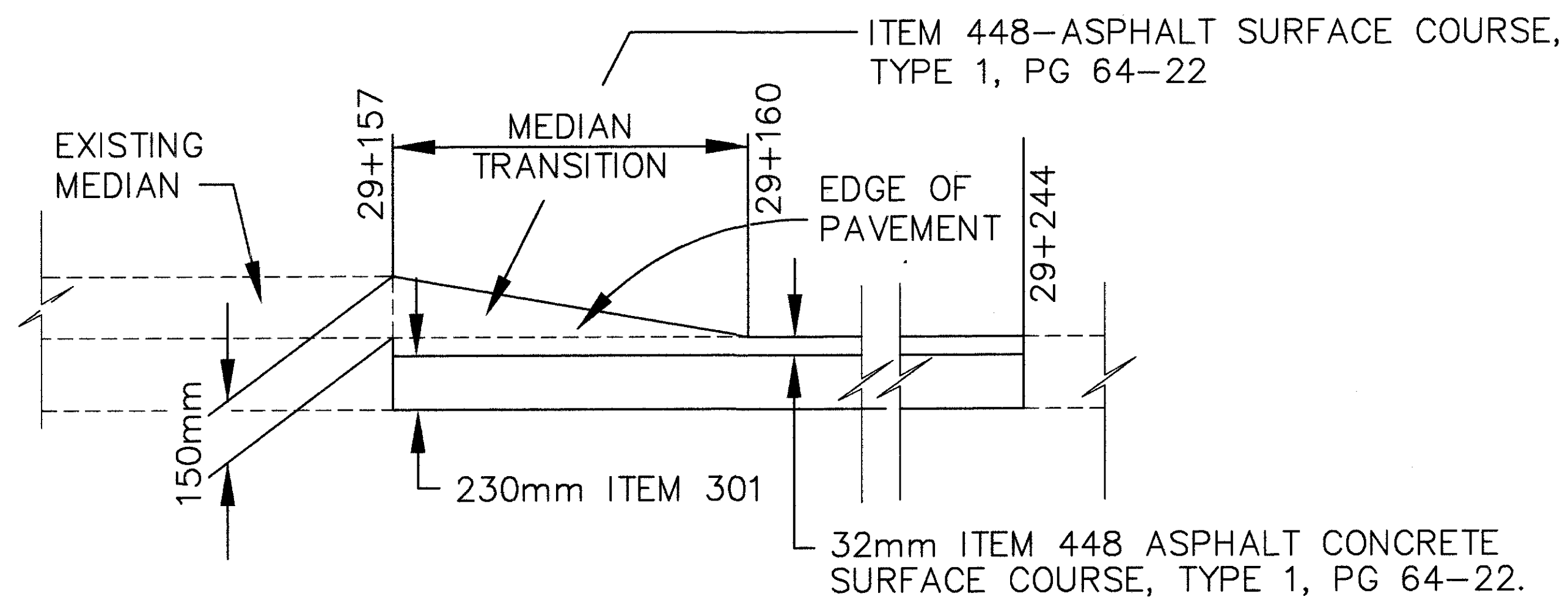
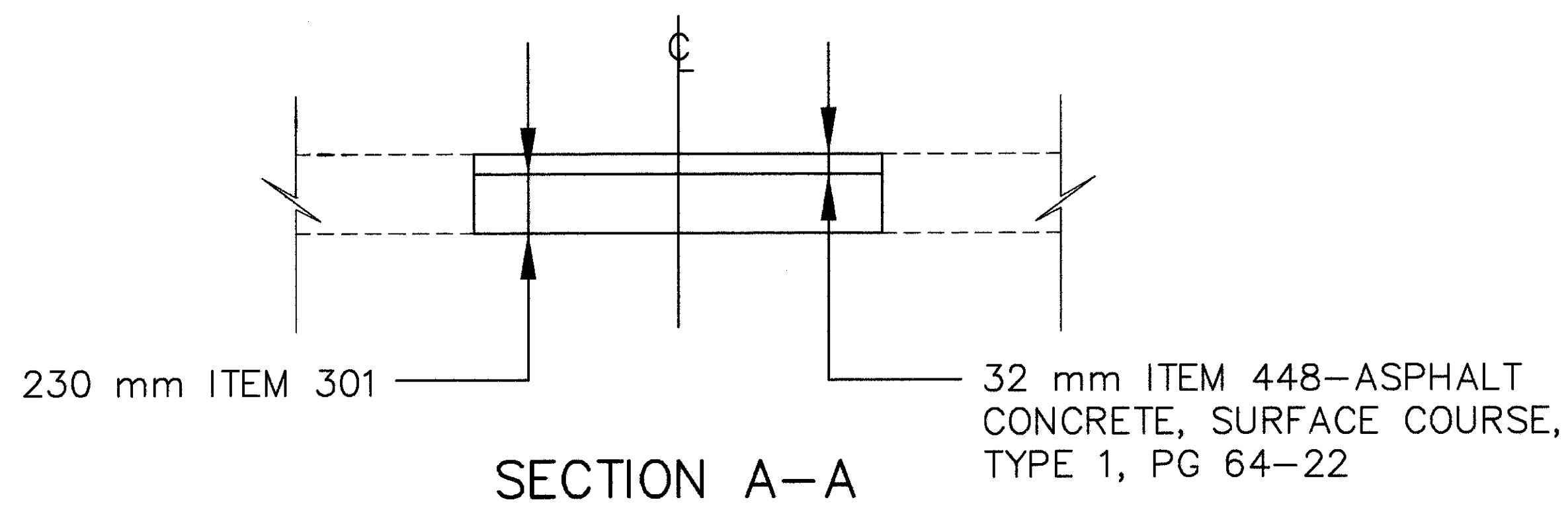
- MEDIAN REMOVAL

CONCRETE MEDIAN DETAIL
 N.T.S.

REMOVE EXISTING
 CONCRETE MEDIAN
 (SEE DETAIL, THIS SHEET)

FOR LEGEND, SEE SHEET 5.
 FOR QUANTITIES, SEE SHEET 4.

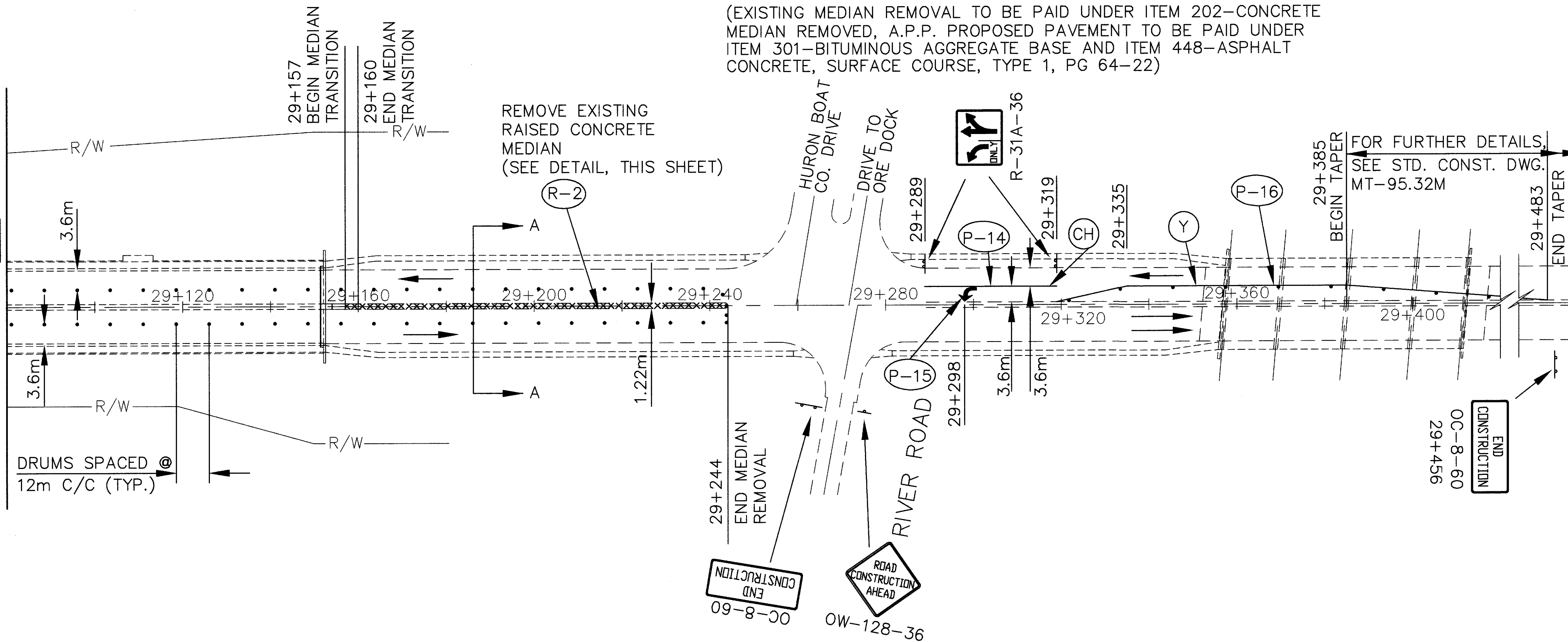
MATCH LINE STA. 29+080
SEE SHEET 7.



MEDIAN DETAIL

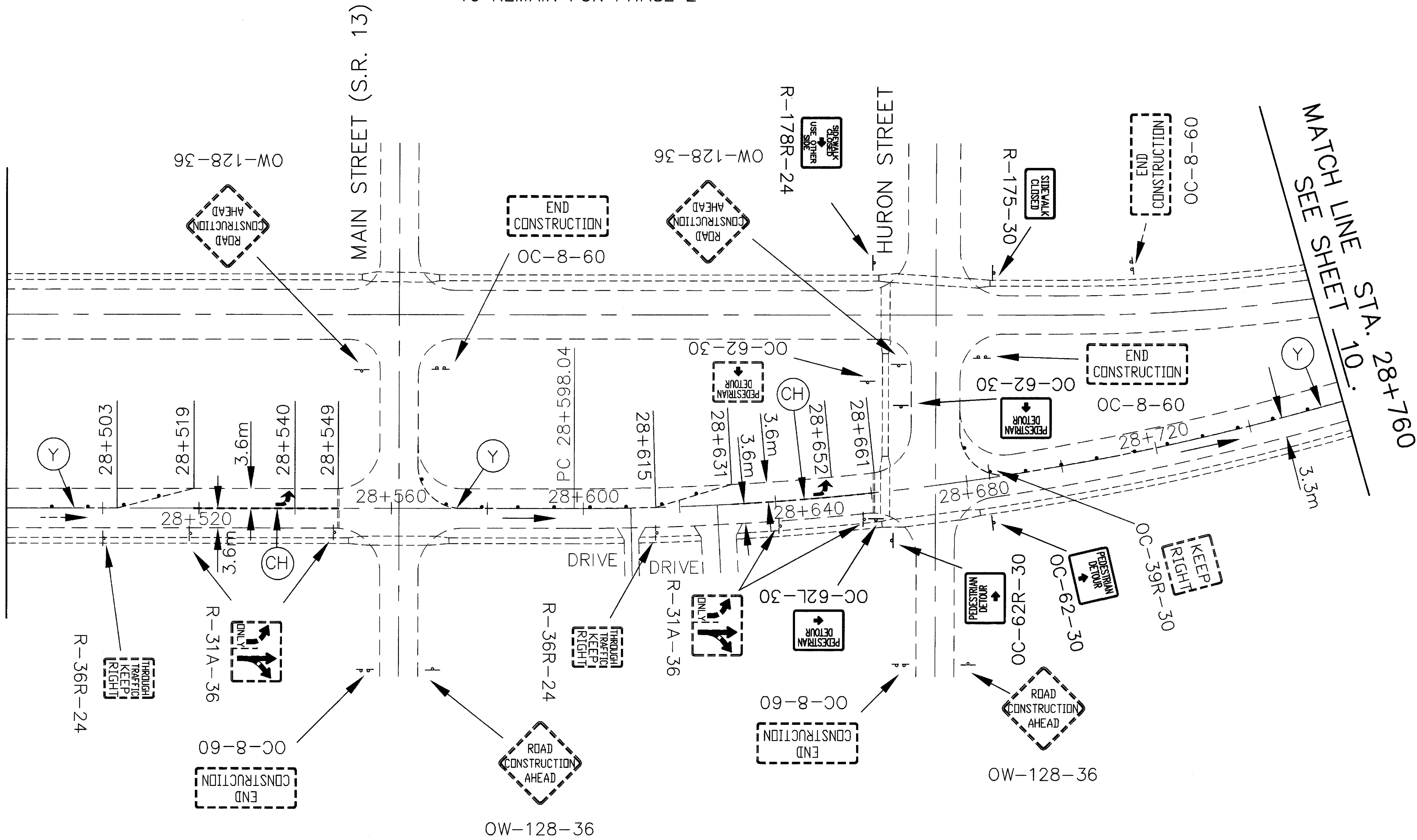
STA. 29+157 TO STA. 29+244

(EXISTING MEDIAN REMOVAL TO BE PAID UNDER ITEM 202-CONCRETE MEDIAN REMOVED, A.P.P. PROPOSED PAVEMENT TO BE PAID UNDER ITEM 301-BITUMINOUS AGGREGATE BASE AND ITEM 448-ASPHALT CONCRETE, SURFACE COURSE, TYPE 1, PG 64-22)



FOR LEGEND, SEE SHEET 5.
FOR QUANTITIES, SEE SHEET 4.

MATCH LINE STA. 28+480
SEE SHEET 5.



NOTE :
ALL TEMPORARY SIGNING
AND STRIPING FROM PHASE 1
WEST OF HURON ROAD
TO REMAIN FOR PHASE 2

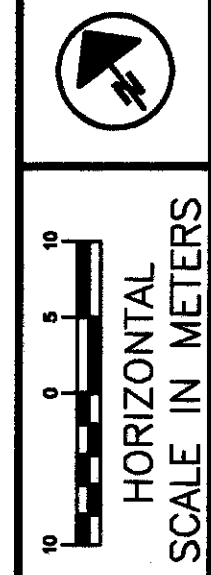
FOR LEGEND, SEE SHEET 5.
FOR QUANTITIES, SEE SHEET 4.

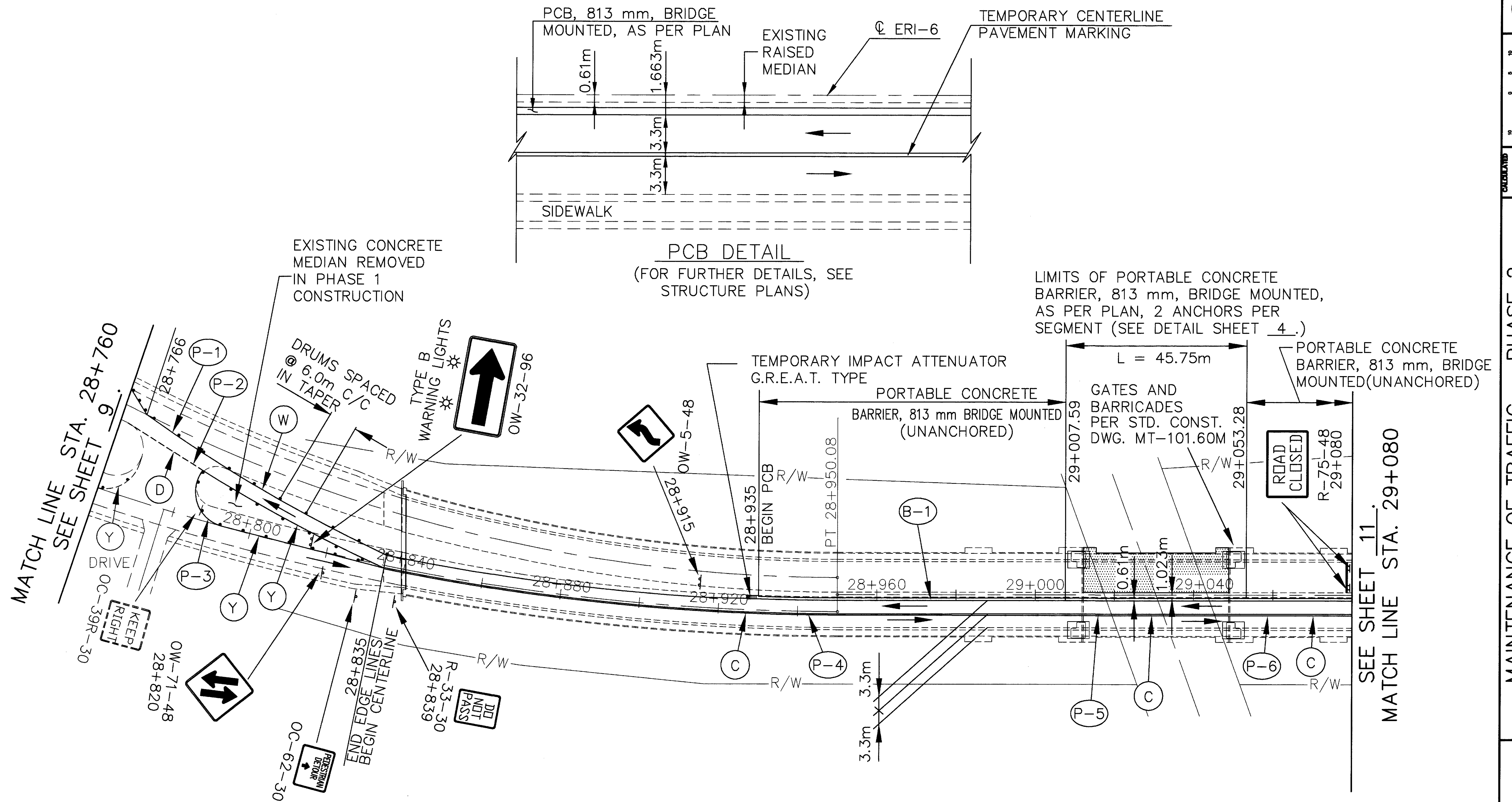
ERI - 6 - 28.839

MAINTENANCE OF TRAFFIC - PHASE 2
STA. 28+480 TO STA. 28+760

9
92

CHECKED
B.F.
L.P.C.



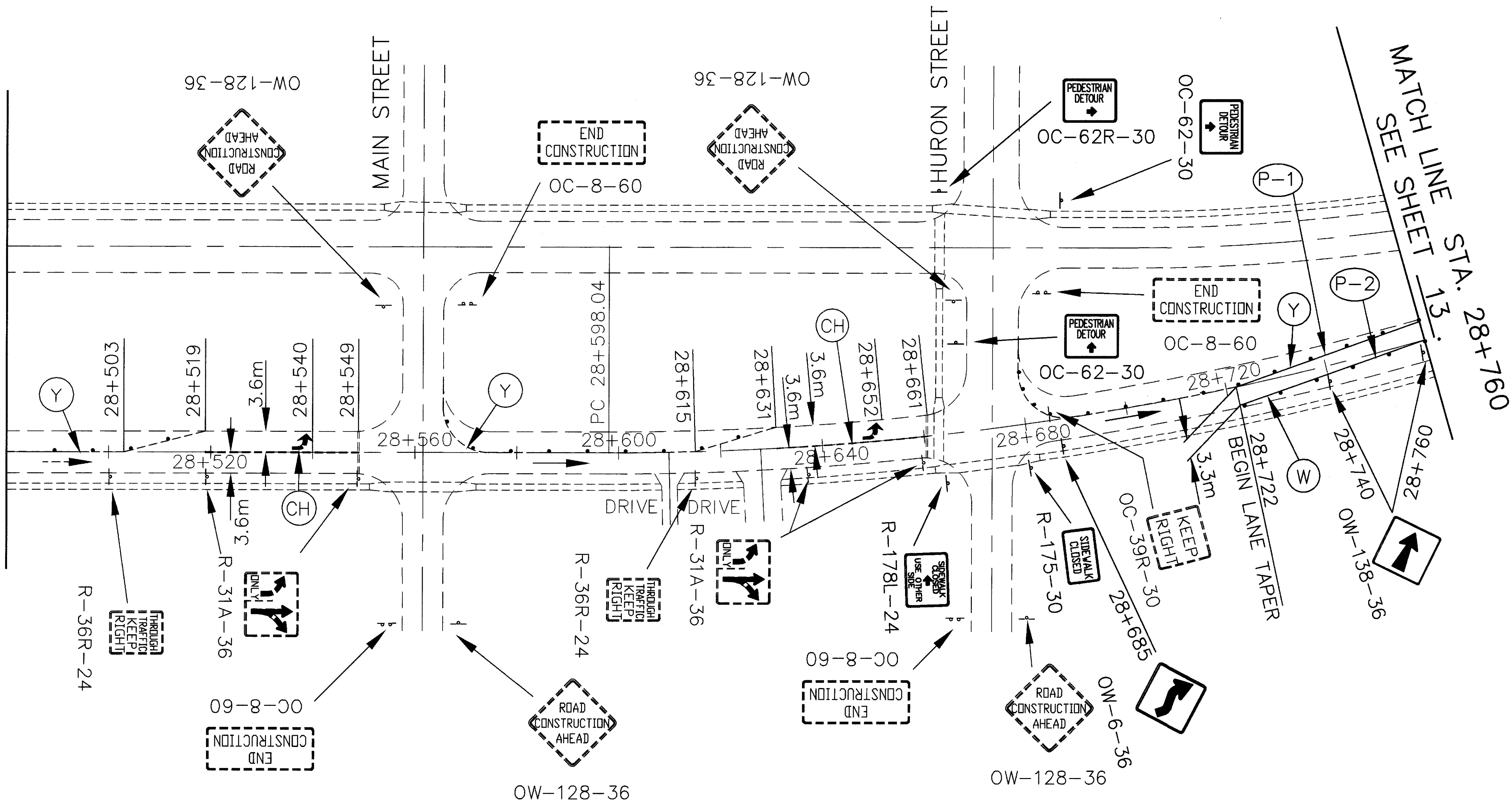


FOR LEGEND, SEE SHEET 5.
FOR QUANTITIES, SEE SHEET 4.



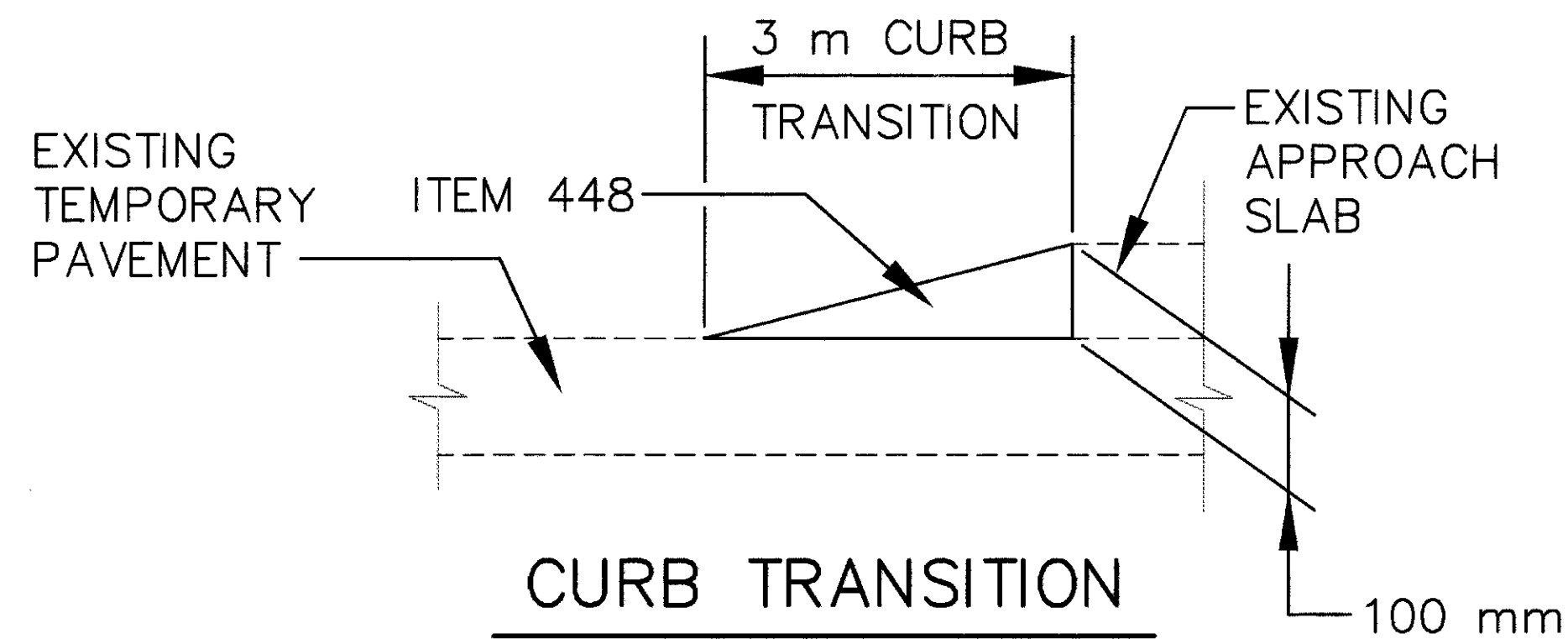
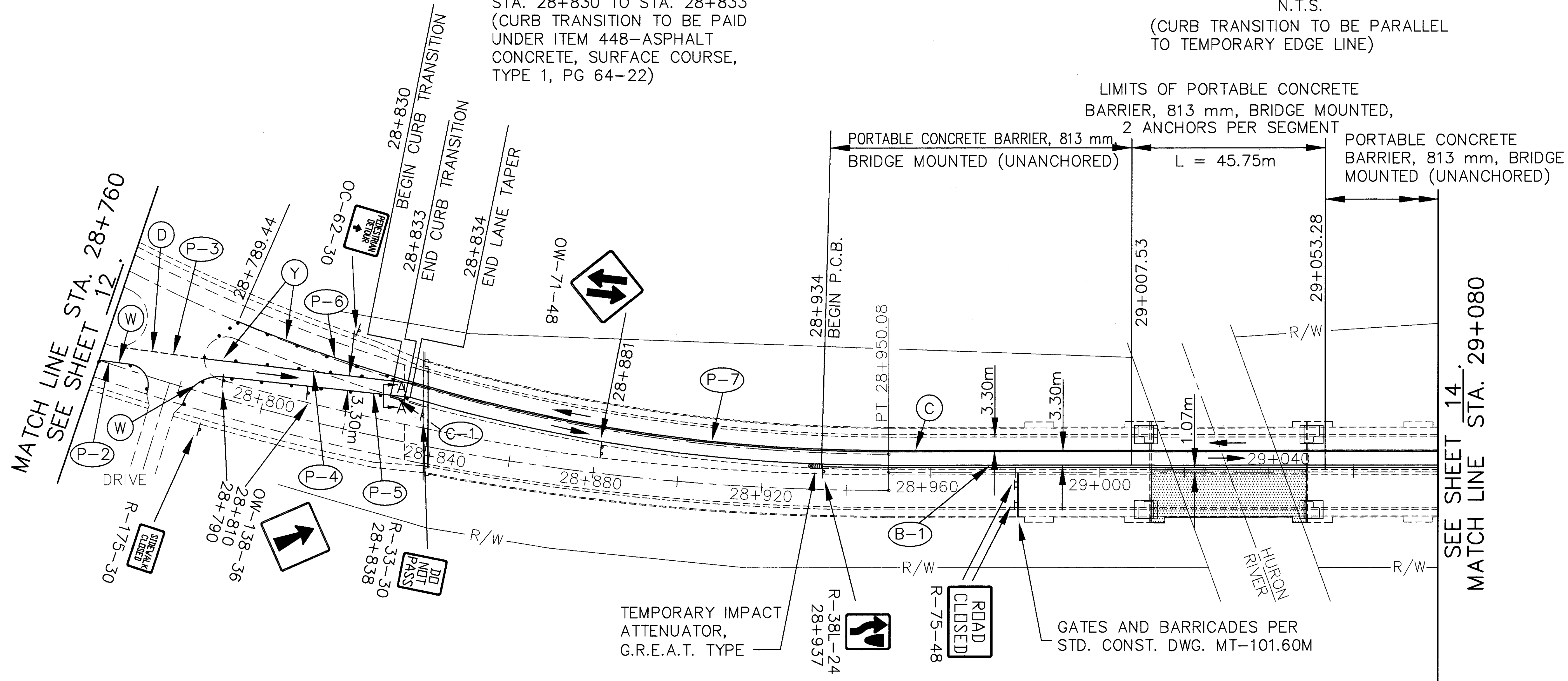
FOR LEGEND, SEE SHEET 5.
FOR QUANTITIES, SEE SHEET 6.

MATCH LINE STA. 28+480
SEE SHEET 5.

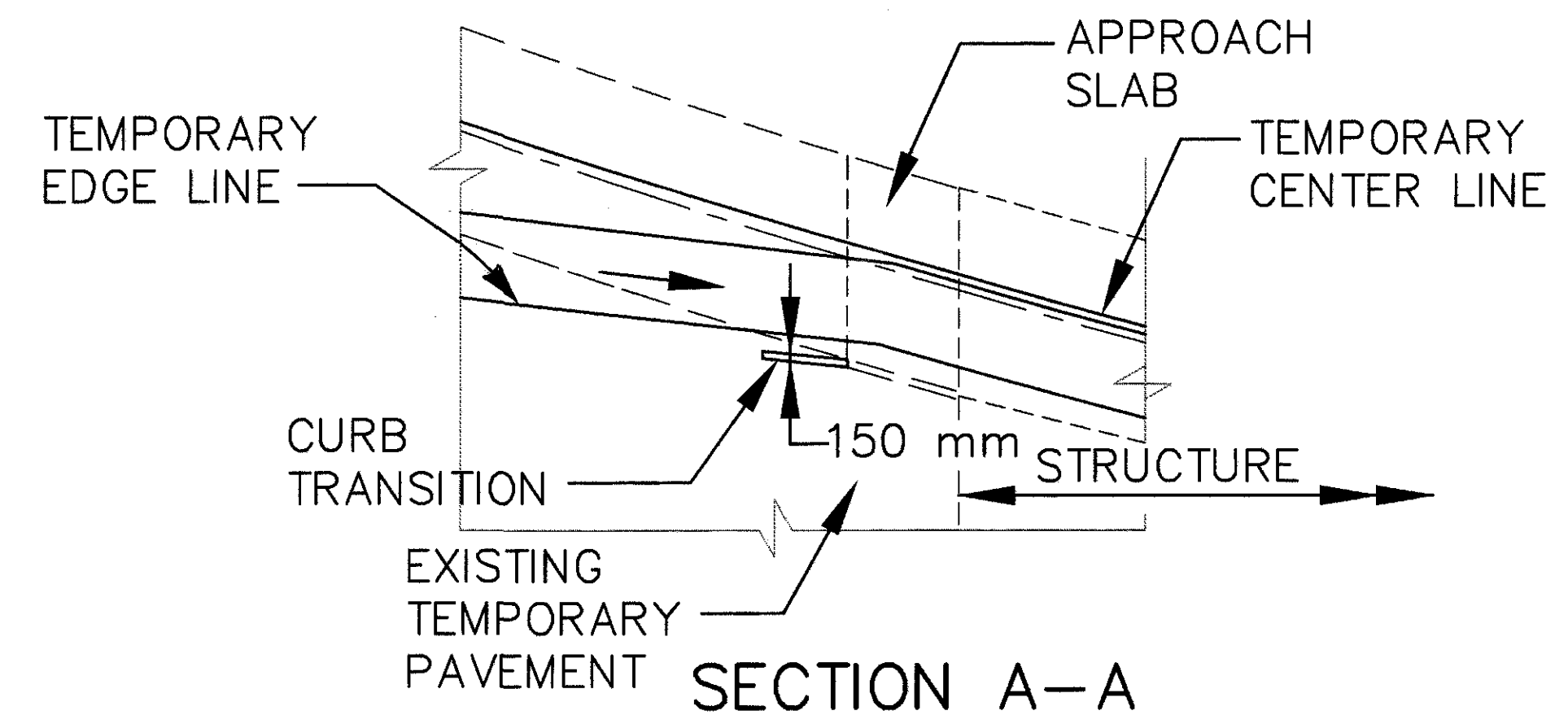


NOTE :
ALL TEMPORARY SIGNING AND
STRIPING FROM PHASE 1 WEST OF
HURON STREET TO REMAIN FOR PHASE 3

FOR LEGEND, SEE SHEET 5.
FOR QUANTITIES, SEE SHEET 4.



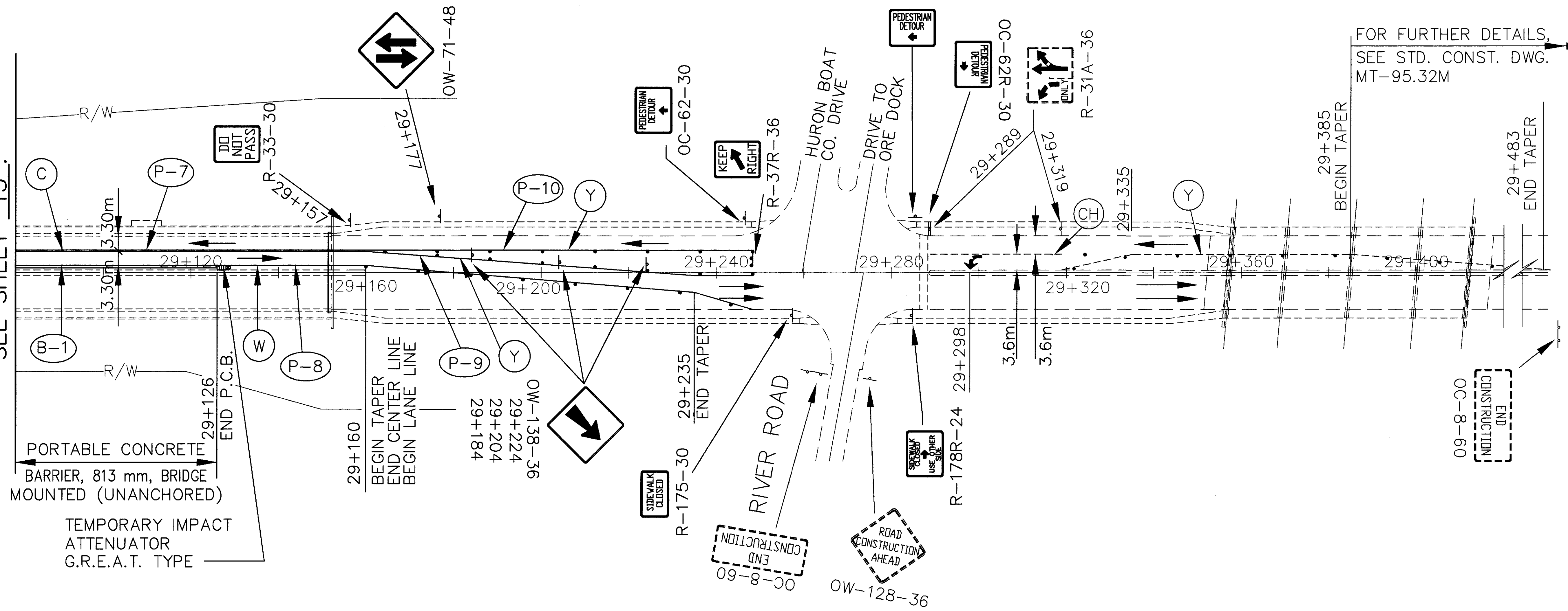
N.T.S.
STA. 28+830 TO STA. 28+833
(CURB TRANSITION TO BE PAID
UNDER ITEM 448-ASPHALT
CONCRETE, SURFACE COURSE,
TYPE 1, PG 64-22)



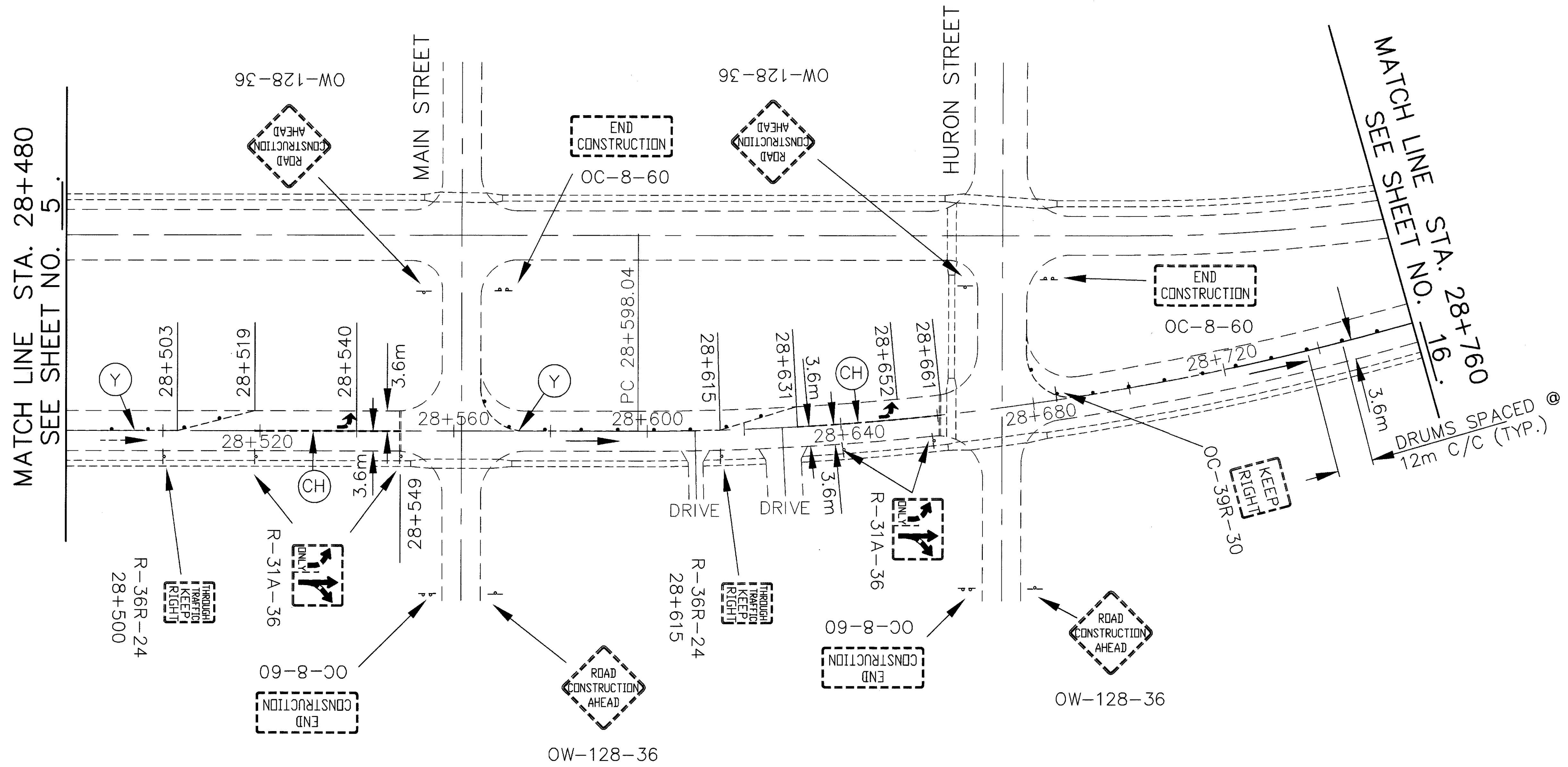
N.T.S.
(CURB TRANSITION TO BE PARALLEL
TO TEMPORARY EDGE LINE)

FOR LEGEND, SEE SHEET 5.
FOR QUANTITIES, SEE SHEET 4.

MATCH LINE STA. 29+080.000
SEE SHEET 13.



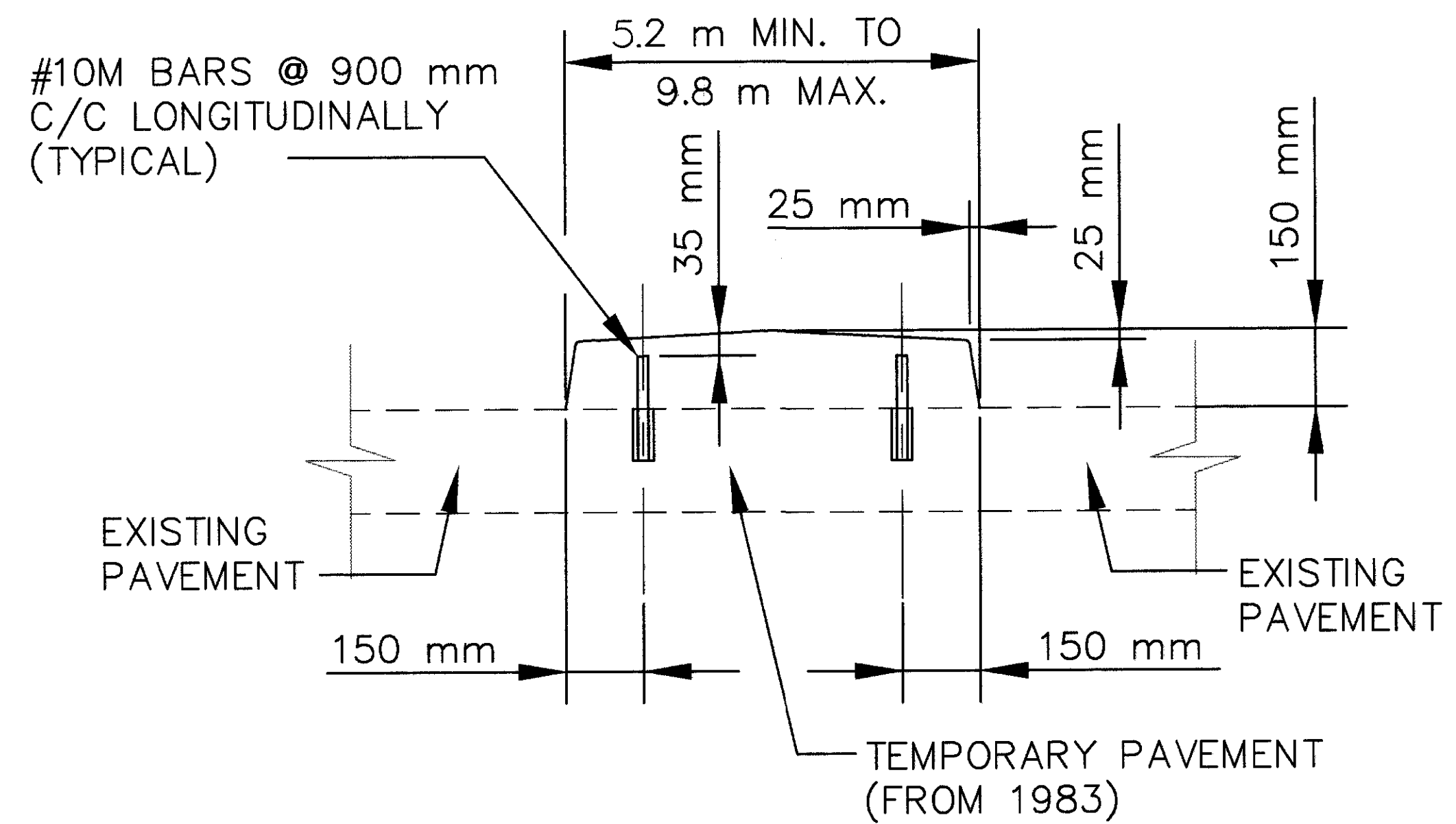
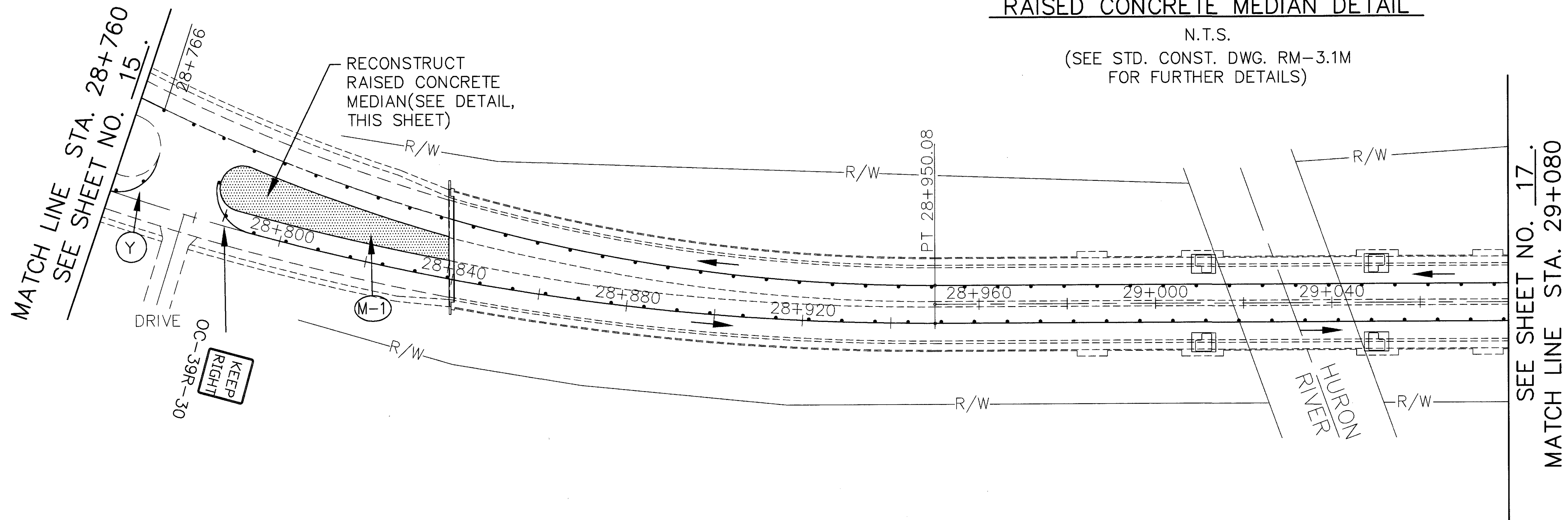
FOR LEGEND, SEE SHEET 5.
FOR QUANTITIES, SEE SHEET 4.



NOTE :

ALL TEMPORARY SIGNING AND STRIPING
FROM PHASE 1 WEST OF HURON STREET
TO REMAIN FOR PHASE 4.

FOR LEGEND, SEE SHEET NO. 5.
FOR QUANTITIES, SEE SHEET NO. 4.



RAISED CONCRETE MEDIAN DETAIL

N.T.S.

(SEE STD. CONST. DWG. RM-3.1M
FOR FURTHER DETAILS)

FOR LEGEND, SEE SHEET NO. 5.
FOR QUANTITIES, SEE SHEET NO. 4.



CALCULATED
B.F.
CHECKED
L.P.C.

MAINTENANCE OF TRAFFIC - PHASE 4
STA. 28+760 TO STA. 29+080

ERI -6- 28.839

16
92

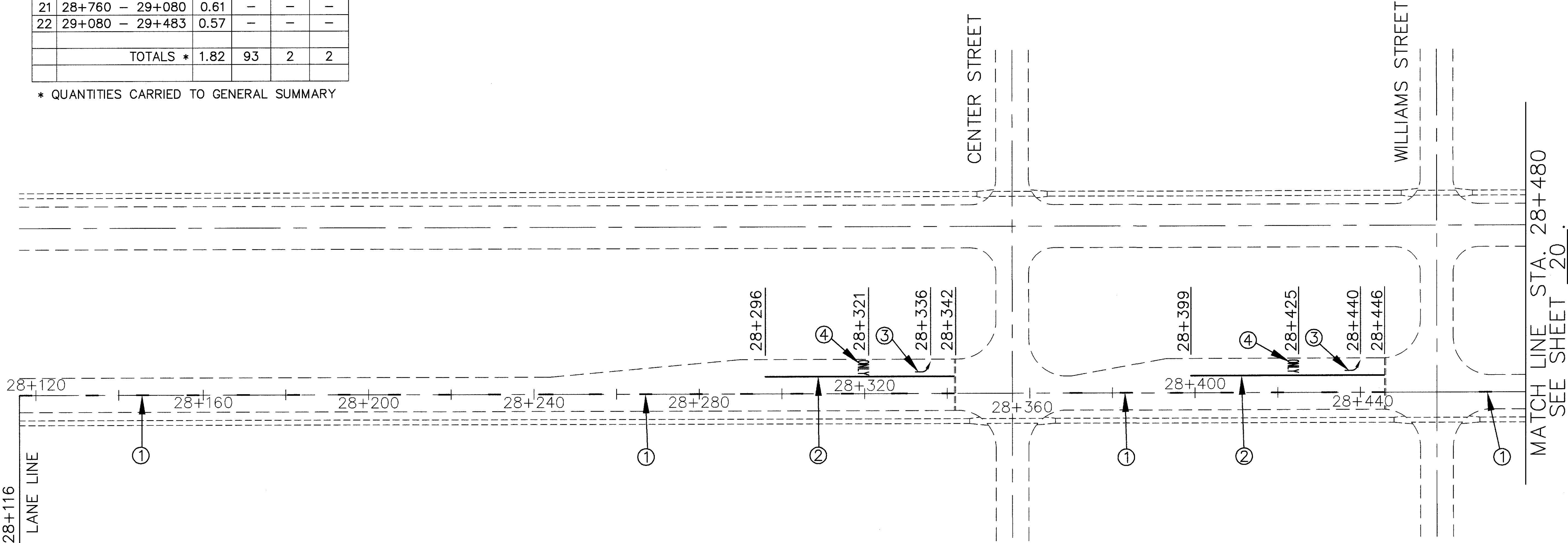
END
CONSTRUCTION
OC-8-60

$$\frac{17}{92}$$

S H E E T										N U M B E R S										ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	REF
ITEM		2		3			4				19														
																				ROADWAY					
202							521										202	30601	521	SQUARE METER	CONCRETE MEDIAN REMOVED, AS PER PLAN	3			
																				PAVEMENT					
254							104										254	01000	104	SQUARE METER	PAVEMENT PLANNING, BITUMINOUS				
301							24										301	46000	24	CU. METER	BITUMINOUS AGGREGATE BASE, PG 64-22				
448							5										448	47020	5	CU. METER	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG 64-22				
612							521										612	42000	521	SQUARE METER	CONCRETE MEDIAN				
																				LIGHTING					
																				SEE STRUCTURE PLANS					
																				TRAFFIC CONTROL					
642											1.82						642	00202	1.82	KILOMETER	LANE LINE, TYPE 2				
642											93						642	00402	93	METER	CHANNELIZING LINE, TYPE 2				
642											2						642	01302	2	EACH	LANE ARROW, TYPE 2				
642											2						642	01402	2	EACH	WORD ON PAVEMENT, 1800mm, TYPE 2				
																				MAINTENANCE OF TRAFFIC					
253				50													253	01000	50	SQUARE METER	PAVEMENT REPAIR				
614							2										614	12350	2	EACH	TEMPORARY IMPACT ATTENUATOR, G.R.E.A.T. TYPE				
614				1													614	12360	1	EACH	TEMPORARY IMPACT ATTENUATOR (REPLACEMENT), G.R.E.A.T. TYPE				
614							2										614	12370	2	EACH	REMOVE AND REPLACE TEMPORARY IMPACT ATTENUATOR				
614				25													614	13000	25	CU. METER	BITUMINOUS CONCRETE FOR MAINTAINING TRAFFIC				
							50										614	13302	50	EACH	BARRIER REFLECTOR, TYPE B2				
614							48										614	13350	48	EACH	OBJECT MARKER				
614							0.05										614	21100	0.05	KILOMETER	TEMPORARY CENTER LINE, CLASS I, 642 PAINT				
614							0.60										614	21200	0.60	KILOMETER	TEMPORARY CENTER LINE, CLASS I, 740.06, TYPE 1				
614							2.02										614	22200	2.02	KILOMETER	TEMPORARY EDGE LINE, CLASS I, 740.06, TYPE 1				
614							195										614	23400	195	METER	TEMPORARY CHANNELIZING LINE, CLASS I, 740.06, TYPE 1				
614				LUMP													614	18002	LUMP		MAINTAINING TRAFFIC, MISC.: BOAT TRAFFIC	3, 30, 32			
614							71										614	24400	71	METER	TEMPORARY DOTTED LINE, CLASS I, 740.06, TYPE 1				
614							5										614	30400	5	EACH	TEMPORARY LANE ARROW, CLASS I, 740.06, TYPE 1				
622							338										622	40040	338	METER	PORTABLE CONCRETE BARRIER, 813 mm, BRIDGE MOUNTED				
622							46										622	40041	46	METER	PORTABLE CONCRETE BARRIER, 813 mm, BRIDGE MOUNTED, AS PER PLAN	4			
																				FOR STRUCTURE GENERAL SUMMARY, SEE SHEET 31.					
614																	614	11000	LUMP		MAINTAINING TRAFFIC				
623																	623	10000	LUMP		CONSTRUCTION LAYOUT STAKES				
624																	624	10000	LUMP		MOBILIZATION				
806																	806	16000	6	MONTH	FIELD OFFICE, TYPE A				

STA. 28+116
BEGIN LANE LINE

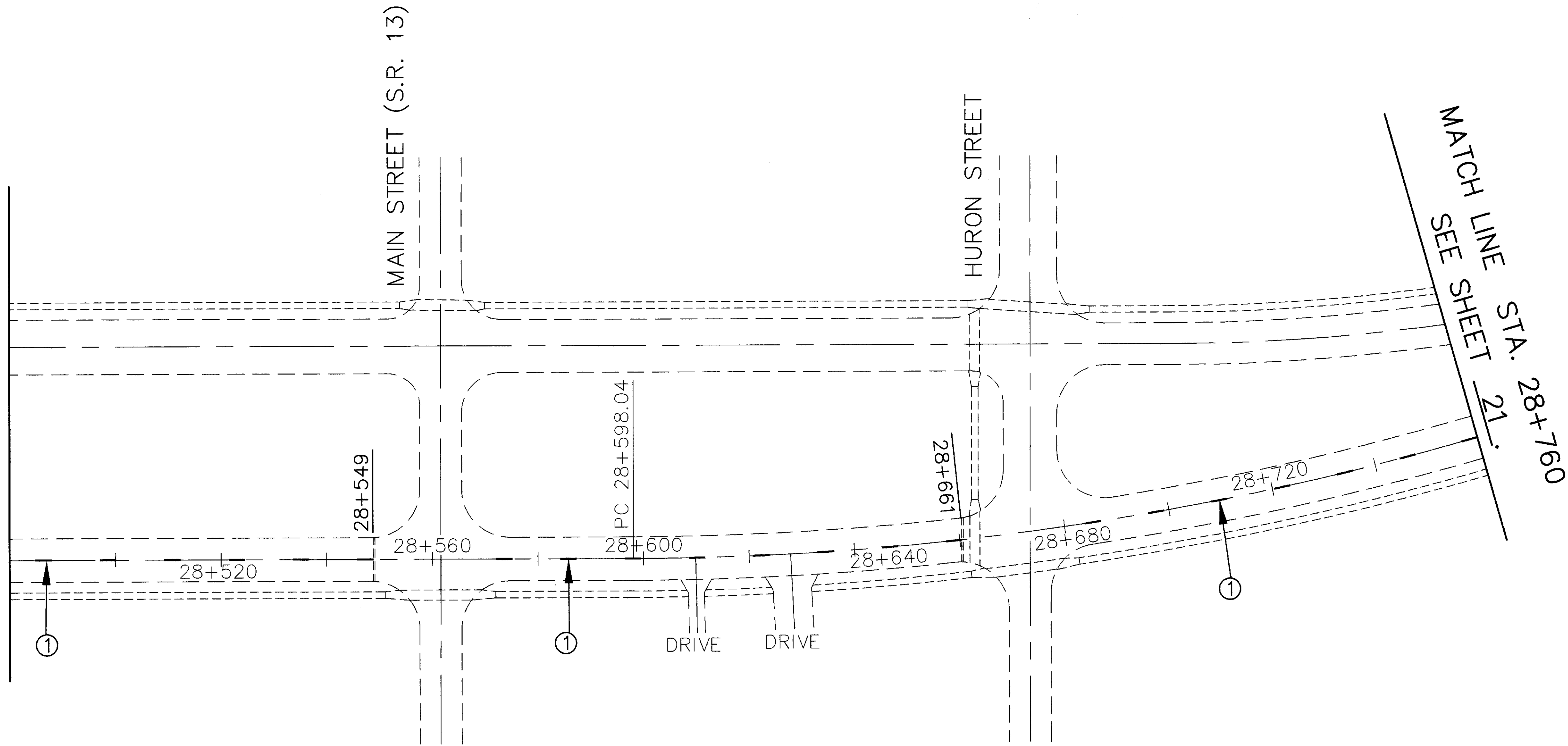
- LEGEND
- ① LANE LINE, TYPE 2
 - ② CHANNELIZING LINE, WHITE, TYPE 2
 - ③ LANE ARROW, TYPE 2
 - ④ WORD ON PAVEMENT, 1800 mm, TYPE 2



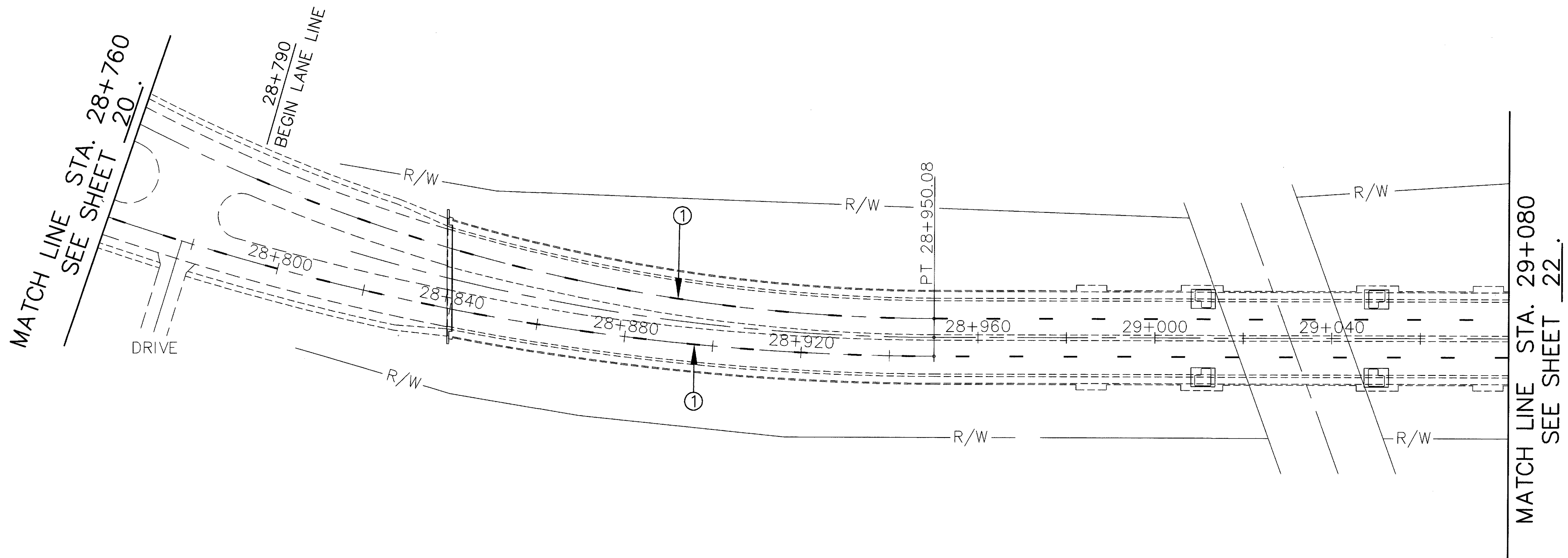
SHEET NUMBER	STA. TO STA.	642			
		LANE LINE, TYPE 2	CHANNELIZING LINE, TYPE 2	LANE ARROW, TYPE 2	WORD ON PAVEMENT, 1800 mm, TYPE 2
		km	m	EACH	EACH
19	28+116 - 28+480	0.36	93	2	2
20	28+480 - 28+760	0.28	-	-	-
21	28+760 - 29+080	0.61	-	-	-
22	29+080 - 29+483	0.57	-	-	-
	TOTALS *	1.82	93	2	2

* QUANTITIES CARRIED TO GENERAL SUMMARY

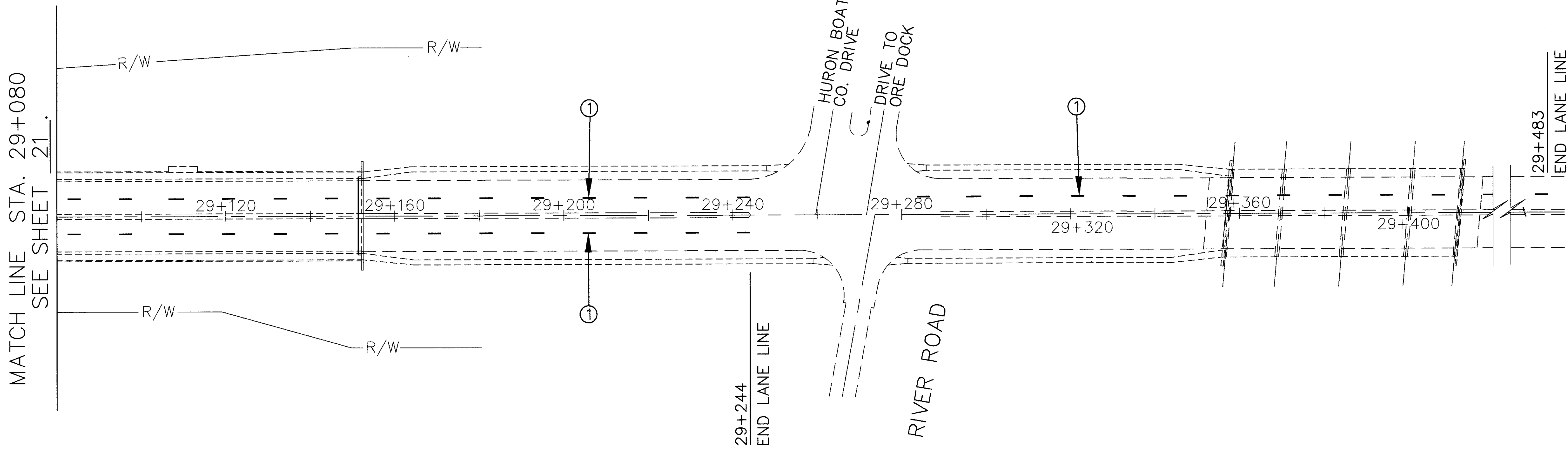
MATCH LINE STA. 28+480
SEE SHEET 19.



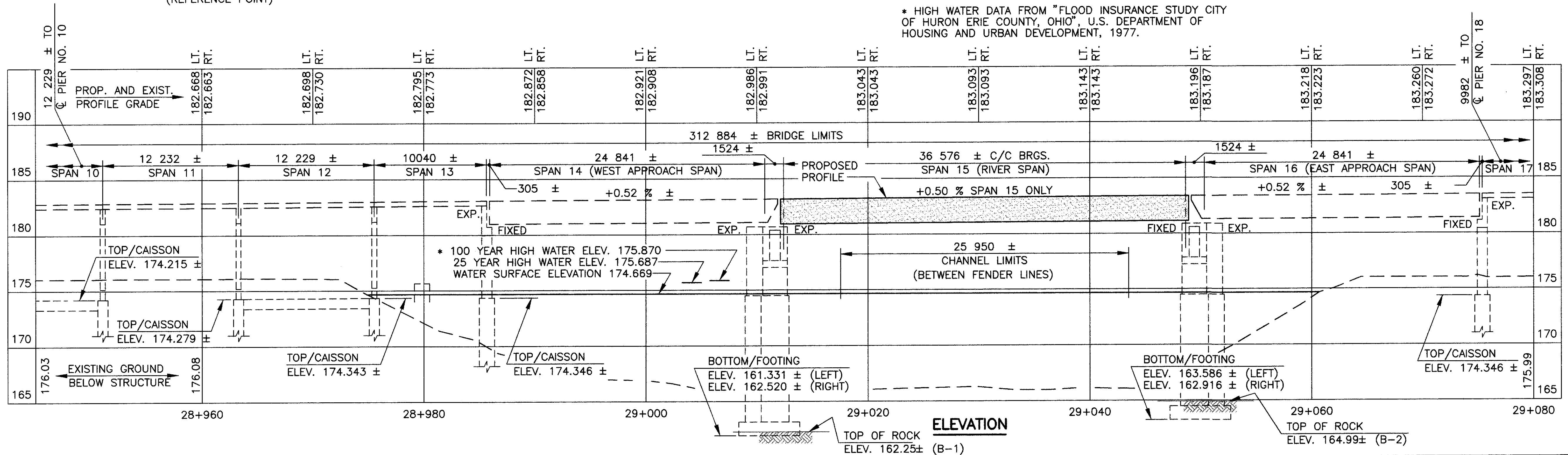
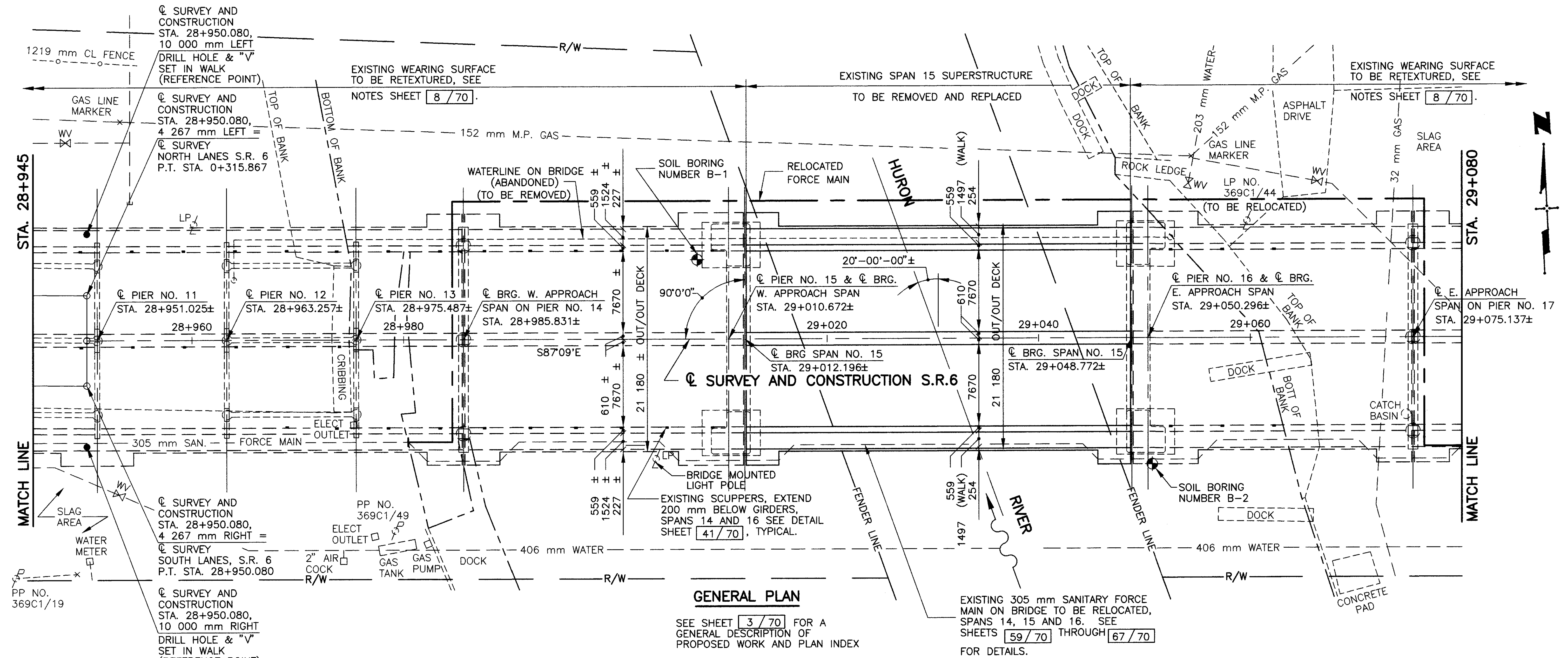
FOR LEGEND, SEE SHEET 19.
FOR QUANTITIES, SEE SHEET 19.



FOR LEGEND, SEE SHEET 19.
FOR QUANTITIES, SEE SHEET 19.



FOR LEGEND, SEE SHEET 19.
FOR QUANTITIES, SEE SHEET 19.



REFERENCE SHALL BE MADE TO STANDARD DRAWINGS:

EXJ-4-87M REVISED 02-18-97
PCB-91M DATED 03-20-95

AND TO SUPPLEMENTAL SPECIFICATIONS:

815 DATED 05-30-96
844 DATED 01-06-99
863 DATED 09-09-97
910 DATED 7-28-98
954 DATED 09-09-97

DESIGN SPECIFICATIONS:

THIS STRUCTURE CONFORMS TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 1996, AND THE ODOT BRIDGE DESIGN MANUAL.

DESIGN LOADING:

SPAN 15 SUPERSTRUCTURE AND DECK:

MS18, CASE II AND THE ALTERNATE MILITARY LOADING.

DESIGN DATA:

CONCRETE CLASS S - COMPRESSIVE STRENGTH 31.0 MPa (SUPERSTRUCTURE)

CONCRETE CLASS C - COMPRESSIVE STRENGTH 27.5 MPa (SUBSTRUCTURE)

REINFORCING STEEL - ASTM A615M, A616M OR A617M GRADE 400 MINIMUM YIELD STRENGTH 400 MPa.

STRUCTURAL STEEL - ASTM A709M, GRADE 345 - YIELD STRENGTH 345 MPa

ASTM A709M, GRADE 250 - YIELD STRENGTH 250 MPa

DECK PROTECTION METHOD:

EPOXY COATED REINFORCING STEEL.

65 MM CONCRETE COVER.

MONOLITHIC WEARING SURFACE IS ASSUMED, FOR DESIGN PURPOSES, TO BE 25 mm THICK.

SEQUENCE OF OPERATIONS:

THE FOLLOWING NARRATIVE IS DESCRIPTIVE OF THE GENERAL SEQUENCE OF PHASED DEMOLITION AND CONSTRUCTION TO BE USED IN RECONSTRUCTING SPAN 15 AND REHABILITATING THE REST OF THIS BRIDGE. ADDITIONAL DETAILS OF THE PHASED DEMOLITION AND CONSTRUCTION ARE SHOWN ON SHEETS 11/70 AND 12/70. THE CONTRACTOR SHALL SUBMIT IN WRITING HIS/HER PROPOSED METHODS AND SEQUENCE FOR PERFORMING THIS WORK TO THE DIRECTOR FOR REVIEW AND APPROVAL PRIOR TO COMMENCING WORK.

PHASE 2:

ESTABLISH PHASE 2 TRAFFIC MAINTENANCE AND SHIFT TRAFFIC (2 LANES) TO THE RIGHT SIDE OF THE BRIDGE.

INSTALL PORTABLE CONCRETE BARRIER ON EXISTING STEEL GRID DECK IN SPAN 15 AS DETAILED IN THE PLANS.

REMOVE LEFT SIDE OF SUPERSTRUCTURE IN SPAN 15 TO THE LIMITS SHOWN IN THE PLANS.

CONSTRUCT NEW BRIDGE SEATS ON PIERS 15 AND 16 FOR THE LEFT PORTION OF PROPOSED SUPERSTRUCTURE, FOR SPAN 15.

ERECT NEW PLATE GIRDERS FOR LEFT PORTION OF SPAN 15 (GIRDERS 'A', 'B' AND 'C').

INSTALL NEW STRIP SEAL EXPANSION JOINTS AT PIER 15 AND 16 FOR LEFT PORTION OF SPAN 15.

CONSTRUCT NEW REINFORCED CONCRETE DECK FOR LEFT PORTION OF SPAN 15.

INSTALL NEW STEEL PEDESTRIAN RAILINGS ON LEFT SIDE OF DECK IN SPAN 15.

WHILE TRAFFIC IS MAINTAINED ON RIGHT SIDE OF BRIDGE,

THE EXISTING STEEL RAILING ON THE LEFT SIDE OF THE EXISTING BRIDGE SHALL BE DISASSEMBLED, REFINISHED AND REINSTALLED.

RELOCATE THE EXISTING SANITARY FORCE MAIN FROM THE RIGHT SIDE OF THE BRIDGE TO THE LEFT SIDE OF THE BRIDGE IN SPANS 14, 15 AND 16.

PHASE 3:

ESTABLISH PHASE 3 TRAFFIC MAINTENANCE AND SHIFT TRAFFIC (2 LANES) TO THE LEFT SIDE OF THE BRIDGE.

REMOVE THE REMAINING EXISTING SUPERSTRUCTURE IN SPAN 15.

CONSTRUCT NEW BRIDGE SEATS ON PIERS 15 AND 16 FOR THE RIGHT PORTION OF THE PROPOSED SUPERSTRUCTURE FOR SPAN 15.

ERECT PLATE GIRDERS FOR RIGHT PORTION OF SPAN 15 (GIRDERS 'D', 'E' AND 'F').

INSTALL NEW STRIP SEAL EXPANSION JOINTS AT PIERS 15 AND 16 FOR RIGHT PORTION OF SPAN 15.

CONSTRUCT NEW REINFORCED CONCRETE DECK FOR RIGHT PORTION OF SPAN 15.

TIE PHASE 2 FRAMING TO THE PHASE 3 FRAMING IN SPAN 15 BY INSTALLING CROSSFRAMES BETWEEN GIRDERS C AND D. CONNECTION BOLTS SHALL BE TIGHTENED TO A HAND SNUG CONDITION.

INSTALL NEW STEEL PEDESTRIAN RAILING ON RIGHT SIDE OF DECK IN SPAN 15.

WHILE TRAFFIC IS MAINTAINED ON LEFT SIDE OF BRIDGE,

THE EXISTING STEEL RAILINGS ON THE RIGHT SIDE OF THE EXISTING BRIDGE SHALL BE DISASSEMBLED, REFINISHED AND REINSTALLED.

PHASE 4:

POUR DECK SLAB CLOSURE STRIP AND APPLY HMWM AT CONSTRUCTION JOINTS.

FULLY TIGHTEN CROSSFRAME CONNECTION BOLTS BETWEEN GIRDERS 'C' AND 'D'.

RE-ESTABLISH NORMAL TRAFFIC PATTERNS.

THE FOLLOWING ITEMS OF WORK ON THE BRIDGE ARE INDEPENDENT OF TRAFFIC MAINTENANCE CONSIDERATIONS:

EXTEND ALL THE EXISTING SCUPPERS IN SPANS 1 THROUGH 14 AND 16 THROUGH 23 TO 200 MILLIMETERS BELOW THE EXISTING DECK OR SUPERSTRUCTURE FRAMING.

SOUND THE UNDERSIDE OF THE EXISTING CONCRETE DECKS IN SPANS 1 THROUGH 14 AND 16 THROUGH 23, REMOVING ALL LOOSE, DELAMINATED OR DETERIORATED CONCRETE. IN SPANS 1 THROUGH 14 AND 16 THROUGH 23, ALL REMOVAL AREAS ARE TO BE CLEANED AND SEALED.

PATCH AND SEAL EXISTING CONCRETE SUBSTRUCTURE UNITS AS SHOWN ON THE PLANS.

PAINT THE EXISTING STEEL SUPERSTRUCTURE IN SPANS 14 AND 16.

ITEM 202--PORTIONS OF STRUCTURE REMOVED, OVER 6 METER SPAN, AS PER PLAN:

DESCRIPTION:

THIS WORK SHALL CONSIST OF THE REMOVAL OF THE EXISTING STEEL GRID DECK, CONCRETE SIDEWALKS, STEEL BARRIERS, STEEL RAILINGS, DECK JOINTS AND THE STEEL SUPERSTRUCTURE AND ASSOCIATED APPURTENANCES IN SPAN 15, AS SHOWN IN THE PLANS AND THE EXISTING ABANDONED WATERLINE IN SPANS 14, 15 AND 16. THIS REMOVAL SHALL BE PERFORMED IN PHASES AS SHOWN IN THE PLANS. THE USE OF EXPLOSIVES, HEADACHE BALLS AND/OR HOE-RAMS WILL NOT BE PERMITTED. THE METHOD OF REMOVAL SHALL BE APPROVED BY THE ENGINEER.

PROTECTION OF TRAFFIC:

PRIOR TO DEMOLITION OF ANY PORTIONS OF THE EXISTING SUPERSTRUCTURE, THE CONTRACTOR SHALL SUBMIT PLANS FOR THE PROTECTION OF TRAFFIC (VEHICULAR, PEDESTRIAN, BOAT, ETC.) ADJACENT TO AND/OR UNDER THE STRUCTURE TO THE DIRECTOR FOR APPROVAL. THESE PLANS SHALL INCLUDE PROVISIONS FOR ANY DEVICES AND STRUCTURES THAT MAY BE NECESSARY TO ENSURE SUCH PROTECTION. TEMPORARY VERTICAL CLEARANCES SPECIFIED ON THE PLANS OR IN THE PROPOSAL SHALL BE MAINTAINED AT ALL TIMES EXCEPT AS OTHERWISE APPROVED BY THE DIRECTOR.

WORK IN AND OVER THE HURON RIVER:

ALL CONSTRUCTION OPERATIONS IN AND OVER THE HURON RIVER SHALL CONFORM TO THE REQUIREMENTS OF THE U.S. COAST GUARD. THE CONTRACTOR SHALL NOTIFY THE COMMANDER, NINTH COAST GUARD DISTRICT, BRIDGE BRANCH, 1240 E. NINTH STREET, CLEVELAND, OHIO 44199 (TELEPHONE, 216-902-6084), TEN DAYS IN ADVANCE OF COMMENCEMENT OF WORK IN AND ABOVE THE RIVER SO THAT NAVIGATION INTERESTS MAY BE NOTIFIED OF THE PRESENCE OF CONSTRUCTION EQUIPMENT, THE CONTRACTOR SHALL NOTIFY THE SAME OFFICE WHEN THE WORK IS COMPLETED. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN NAVIGATION LIGHTS AND OTHER NAVIGATION SIGNALS OR FACILITIES WHICH MAY BE REQUIRED BY THE U.S. COAST GUARD ON TEMPORARY CONSTRUCTION OR VESSELS. REFER TO THE BOAT MAINTENANCE OF TRAFFIC PLANS, SHEET 10/70.

REMOVAL METHODS:

CONCRETE MAY BE REMOVED BY CUTTING AND BY MEANS OF HAND OPERATED PNEUMATIC HAMMERS EMPLOYING POINTED OR BLUNTED CHISEL TYPE TOOLS. FOR REMOVALS ABOVE STEEL MEMBERS, A HAMMER HEAVIER THAN 16 KILOGRAM BUT NOT TO EXCEED 41 KILOGRAM MAY BE USED AT THE APPROVAL OF THE ENGINEER, TO ENSURE ADEQUATE DEPTH CONTROL AND TO PREVENT NICKING OR GOUGING ANY PRIMARY STEEL MEMBERS TO REMAIN. THE WEIGHT OF THE HAMMER SHALL BE APPROVED BY THE ENGINEER.

PLOT SCALE: 1" = 100'
ADDITIONAL SHEETS: 11, 13, 17, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

LOADING LIMITATIONS:

NO PART OF THE STRUCTURE SHALL BE **SUBJECTED** TO UNIT STRESSES THAT EXCEED 136.5% OF THE ALLOWABLE UNIT STRESSES GIVEN IN THE **AASHTO** STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES DUE EITHER TO DEMOLITION, **ERECTION** OR CONSTRUCTION METHODS, OR TO THE USE OR MOVEMENT OF DEMOLITION OR **ERECTION** EQUIPMENT ON OR ACROSS THE STRUCTURE. STRUCTURAL ANALYSIS COMPUTATIONS, BY A REGISTERED PROFESSIONAL ENGINEER, SHOWING THE ALLOWABLE STRESSES **AND** THE MAXIMUM STRESSES PRODUCED BY THE CONTRACTOR'S METHODS OR EQUIPMENT SHALL BE SUBMITTED TO THE DIRECTOR FOR REVIEW AND APPROVAL AT LEAST TWO WEEKS PRIOR TO THE START OF THE WORK.

PAYMENT:

THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE BID FOR ITEM 202--PORTIONS OF STRUCTURE REMOVED, OVER 6 METER SPAN, AS PER PLAN, WHICH PRICE AND PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK IN CONFORMANCE WITH THESE REQUIREMENTS, WITH PERTINENT PROVISIONS OF 202, AND TO THE SATISFACTION OF THE ENGINEER.

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 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, 105.02 AND TO SS SECTION 863.07.

CONTRACT BID PRICES SHALL BE BASED UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PREBID 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.

REPLACEMENT OF EXISTING REINFORCING STEEL:

ANY EXISTING REINFORCING BARS WHICH ARE TO BE INCORPORATED INTO THE NEW WORK AND WHICH ARE MADE UNUSABLE BY THE CONTRACTOR'S CONCRETE REMOVAL OPERATIONS SHALL BE REPLACED WITH NEW STEEL AT THE CONTRACTOR'S COST. ANY EXISTING REINFORCING BARS DEEMED BY THE ENGINEER TO BE UNUSABLE BECAUSE OF CORROSION SHALL BE REPLACED WITH NEW STEEL. COST OF ADDITIONAL REINFORCING STEEL SHALL BE INCLUDED WITH THE APPROPRIATE CONCRETE ITEM.

CONCRETE PARAPETS:

AS SOON AS A CONCRETE SAW CAN BE OPERATED WITHOUT DAMAGING THE FRESHLY PLACED CONCRETE, 25 mm DEEP CONTROL JOINTS SHALL BE SAWED INTO THE PERIMETER OF THE CONCRETE PARAPET. THE SAW CUT SHALL BE MADE IN THE COMPLETE CIRCUMFERENCE OF THE PARAPET, STARTING AND ENDING AT THE ELEVATION OF THE CONCRETE DECK. THE SAWCUTS SHALL BE PLACED AT A MINIMUM OF 2000 mm AND A MAXIMUM OF 3000 mm CENTERS. THE USE OF AN EDGE GUIDE, FENCE, OR JIG IS REQUIRED TO INSURE THAT THE CUT JOINT IS STRAIGHT, TRUE, AND ALIGNED ON ALL FACES OF THE PARAPET. THE JOINT WIDTH SHALL BE THE WIDTH OF THE SAW BLADE, A NOMINAL WIDTH OF 6 mm. THE PERIMETER OF THE DEFLECTION CONTROL JOINT SHALL BE SEALED TO A MINIMUM DEPTH OF 25 mm WITH A CAULKING MATERIAL CONFORMING TO FEDERAL SPECIFICATION, TT-S-00227E TO A MINIMUM DEPTH OF 25 mm.

ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, AS PER PLAN

THE WORK UNDER THIS ITEM SHALL CONFORM TO THE REQUIREMENTS OF ITEM 516, THE STANDARD DRAWING EXJ-4-87M AND THE DETAILS SHOWN IN THESE PLANS. EXISTING JOINT ARMOR AT THE ENDS OF SPANS 14 AND 16 SHALL BE MODIFIED AND USED AS PART OF THE JOINT ARMOR FOR THE NEW EXPANSION JOINTS AS DETAILED IN THE PLANS.

THE JOINTS SHALL BE INSTALLED PART-WIDTH AS SHOWN IN THE PLANS. THE JOINT SEAL SHALL BE SUPPLIED AND INSTALLED IN A SINGLE PIECE.

PAYMENT FOR THIS WORK WILL BE MADE AT THE CONTRACT PRICE BID PER METER FOR ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, AS PER PLAN.

RAILING, GENERAL

STEEL RAILINGS ON THE BRIDGE SHALL BE REHABILITATED INCLUDING PROVIDING NEW POSTS ON THE NEW DECK FOR SPAN 15 AND SEVERAL NEW RAILING PANELS AT THE ENDS OF SPAN 15. EXISTING STEEL RAILING PANELS AND POSTS FOR SPANS 1 THROUGH 14 AND SPANS 16 THROUGH 23 SHALL BE REHABILITATED FOR REUSE AS DESCRIBED BELOW.

ITEM 517 - RAILING, MISC.: NEW RAILING POST

UNDER THIS ITEM, NEW STRUCTURAL STEEL POSTS SHALL BE FABRICATED AND INSTALLED ON SPAN 15 OF THE BRIDGE.

NEW POSTS SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF SUPPLEMENTAL 863 AND AS DETAILED ON THE PLANS. THE POSTS SHALL BE FABRICATED USING ASTM A709M, GRADE 250 STEEL.

THE FABRICATED POSTS SHALL HAVE THEIR SURFACE PREPARED AND SHOP PAINTED IN ACCORDANCE WITH THE REQUIREMENTS OF ITEM 514--FIELD PAINTING, MISC.: COMPLETE SHOP PAINTING OF STRUCTURAL STEEL.

THE PAINTED POSTS SHALL BE INSTALLED AT THE LOCATIONS SHOWN IN THE PLANS. A CONTINGENCY QUANTITY OF TWO (2) POSTS IS INCLUDED FOR REPLACEMENT OF DETERIORATED EXISTING POSTS AS DIRECTED BY THE ENGINEER.

PAYMENT FOR THIS WORK SHALL BE MADE AT THE CONTRACT PRICE BID PER EACH FOR ITEM 517 - RAILING, MISC.: NEW RAILING POST, WHICH PRICE SHALL INCLUDE ALL MATERIAL, EQUIPMENT AND LABOR NECESSARY TO COMPLETE THIS WORK.

ITEM 517 - RAILING, MISC.: NEW RAILING PANEL

UNDER THIS ITEM, NEW STRUCTURAL STEEL RAILING PANELS SHALL BE FABRICATED AND INSTALLED ON THE BRIDGE.

NEW RAILING PANELS SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF SUPPLEMENTAL 863 AND AS DETAILED ON THE PLANS. THE PANELS SHALL BE FABRICATED USING ASTM A709M, GRADE 250 STEEL.

THE FABRICATED PANELS SHALL HAVE THEIR SURFACES PREPARED AND SHOP PAINTED IN ACCORDANCE WITH THE REQUIREMENTS OF ITEM 514--FIELD PAINTING, MISC.: COMPLETE SHOP PAINTING OF STRUCTURAL STEEL.

THE PAINTED PANELS SHALL BE INSTALLED AT THE LOCATIONS SHOWN IN THE PLANS. A CONTINGENCY QUANTITY OF ONE (1) PANEL IS INCLUDED FOR REPLACEMENT OF A DETERIORATED EXISTING RAILING PANEL AS DIRECTED BY THE ENGINEER.

PAYMENT FOR THIS WORK SHALL BE MADE AT THE CONTRACT PRICE BID PER EACH FOR ITEM 517 - RAILING, MISC.: NEW RAILING PANEL, WHICH PRICE SHALL INCLUDE ALL MATERIAL, EQUIPMENT AND LABOR NECESSARY TO COMPLETE THIS WORK.

ITEM 517 - RAILING, MISC.: RAILING PANEL REMOVED AND REINSTALLED.

UNDER THIS ITEM, ALL THE EXISTING STEEL RAILING PANELS ON THE BRIDGE SHALL BE CAREFULLY REMOVED FROM THE EXISTING POSTS AND MATCH MARKED TO IDENTIFY THEIR INSTALLED LOCATIONS. RAILING REMOVAL AND REINSTALLATION SHALL BE PROPERLY COORDINATED WITH THE PROJECT CONSTRUCTION PHASING.

THE PANELS SHALL BE TRANSPORTED TO A STEEL FABRICATION SHOP FOR CLEANING, AND PAINTING IN ACCORDANCE WITH THE REQUIREMENTS OF ITEM 514--FIELD PAINTING MISC.: COMPLETE SHOP PAINTING OF STRUCTURAL STEEL.

THE PAINTED PANELS SHALL BE PROPERLY PROTECTED FROM DAMAGE UNTIL THEY ARE REINSTALLED. RAILING PANELS SHALL BE REINSTALLED IN THEIR PROPER LOCATION ON EXISTING OR NEW PAINTED POSTS IN ACCORDANCE WITH SUPPLEMENTAL 863 AND AS DETAILED ON THE PLANS. ALL NEW HARDWARE SHALL BE PROVIDED FOR REINSTALLATION.

PAYMENT FOR THIS WORK SHALL BE MADE AT THE CONTRACT PRICE BID PER EACH FOR ITEM 517 - RAILING, MISC.: RAILING PANEL REMOVED AND REINSTALLED, WHICH PRICE SHALL INCLUDE ALL MATERIAL, EQUIPMENT AND LABOR NECESSARY TO COMPLETE THIS WORK.

RAILING, MISC.: EXISTING RAILING PANEL REPAIRED

THIS ITEM OF WORK SHALL CONSIST OF THE REPAIR OF EXISTING STEEL RAILING PANELS PREVIOUSLY REMOVED FROM THE STRUCTURE UNDER ITEM 517--RAILING, MISC.: RAILING PANEL REMOVED AND REINSTALLED. REPAIRS SHALL BE MADE USING ASTM A709M, GRADE 250 STEEL, IN ACCORDANCE WITH APPLICABLE PROVISIONS OF SUPPLEMENTAL 863 AND AS DETAILED IN THE PLANS. ALL REPAIRS SHALL BE MADE FOLLOWING REMOVAL OF THE PANEL AND PRIOR TO PAINTING. REPAIRS SHALL BE MADE ONLY TO THOSE PANELS SPECIFICALLY IDENTIFIED FOR REPAIR BY THE ENGINEER.

THE FOLLOWING CONTINGENCY QUANTITIES HAVE BEEN CARRIED TO THE STRUCTURE QUANTITIES, SHEET **9 / 70**. THESE QUANTITIES SHALL BE USED AS DIRECTED BY THE ENGINEER TO REPAIR DETERIORATED RAILING PANELS.

ITEM	DESCRIPTION	QUANTITY	UNIT
517	RAILING, MISC.: RAILING PANEL CHANNEL REPAIRED	40	EACH
517	RAILING, MISC.: RAILING CONNECTION ANGLE REPAIRED	10	EACH
517	RAILING, MISC.: RAILING PANEL SPINDLE REPAIRED	5	EACH

PAYMENT FOR THESE ITEMS SHALL BE MADE AT THE UNIT PRICE BID PER EACH. WHICH PRICE SHALL CONSTITUTE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO COMPLETE THE REPAIRS IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.

STRUCTURE GENERAL NOTES

BRIDGE NUMBER ERI-6-28839
OVER HURON RIVER

ERI-6-28.839

5 / 70

27
92

adache-cjuni-lynn
associates
CONSULTING ENGINEERS
4407 ROCKSIDE RD. CLEVELAND, OHIO 44131

DATE
12/97
REVIEWED
TAB
STRUCTURE FILE NUMBER
2201984

DRAWN
TES
DESIGNED
AJM
CHECKED
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ITEM SPECIAL – SOUNDING CONCRETE DECK BOTTOM:

THIS WORK SHALL CONSIST OF SUPPLYING THE MATERIALS, LABOR AND EQUIPMENT NECESSARY FOR SOUNDING DECK BOTTOMS IN ORDER THAT THE ENGINEER MAY CONFIRM THE AREAS OF DETERIORATED CONCRETE MARKED IN THE FIELD AND SHOWN ON THE PLANS. THE CONTRACTOR SHALL SOUND THE DECK BOTTOM OF SPANS 1 THROUGH 14, AND 16 THROUGH 23 WITH HAMMERS, IN THE VICINITY OF MARKED AREAS AND REMOVE SPALLS, DELAMINATIONS AND LOOSE CONCRETE IN THE DECK BOTTOM. SPALLS FORMING ARE EVIDENCED BY A VISIBLE EDGE.

THE PAY AREA UNDER THIS ITEM SHALL BE THE NUMBER OF SQUARE METERS THAT ARE SATISFACTORILY SOUNDED, CLEANED OF DETERIORATED CONCRETE, AND ACCEPTED. THE ACCEPTED QUANTITIES WILL BE PAID FOR AT THE CONTRACT PRICE BID PER SQUARE METER FOR ITEM SPECIAL – SOUNDING CONCRETE DECK BOTTOM, WHICH PRICE AND PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, LABOR AND EQUIPMENT NECESSARY TO COMPLETE THE WORK AS DESCRIBED ABOVE.

MODIFICATION AND REPAIR OF EXISTING CONCRETE ELEMENTS

GENERAL

EXISTING REINFORCED CONCRETE STRUCTURAL ELEMENTS WHICH ARE INCORPORATED IN THIS STRUCTURE ARE TO BE MODIFIED AND/OR REPAIRED. A CONDITION SURVEY WAS PERFORMED IN SEPTEMBER AND OCTOBER OF 1995. REPAIR AREAS WERE DETERMINED BY VISUAL INSPECTION AND SOUNDING, AND DELINEATED FOR REPAIR BY PAINTING. THE STRUCTURAL ELEMENTS INSPECTED INCLUDE THE ABUTMENTS (EXPOSED SURFACES ONLY), THE PIERS (EXPOSED SURFACES ONLY), AND THE DECK SLABS (DECK BOTTOM ONLY). THE RECORDS OF THIS INSPECTION ARE THE BASIS FOR THE REPAIR PLANS AS DETAILED IN SHEETS 13/70 THROUGH 30/70 AND SHEETS 50/70 THROUGH 56/70.

ABUTMENTS:

DELINEATED AREAS ON THE FORWARD ABUTMENT SHALL BE REPAIRED PER THE REQUIREMENTS OF ITEM 520 – PNEUMATICALLY PLACED MORTAR, AS PER PLAN, AND SEALED PER THE REQUIREMENTS OF ITEM SPECIAL – SEALING OF CONCRETE SURFACES (EPOXY).

NO REPAIRS WERE NECESSARY ON THE REAR ABUTMENT AT THE TIME OF INSPECTION.

REFER TO SHEET 13/70 FOR ABUTMENT REPAIR DETAILS.

PIERS:

DELINEATED AREAS ON PIERS 4, 7 THROUGH 12, AND 17 THROUGH 23 SHALL BE REPAIRED PER THE REQUIREMENTS OF ITEM 520 – PNEUMATICALLY PLACED MORTAR, AS PER PLAN, AND SEALED PER THE REQUIREMENTS OF ITEM SPECIAL – SEALING OF CONCRETE SURFACES (EPOXY).

DELINEATED AREAS ON PIER 14 SHALL BE REPAIRED PER THE REQUIREMENTS OF ITEM 519 – PATCHING CONCRETE STRUCTURES. A REINFORCED CONCRETE PAD SHALL BE CONSTRUCTED ON PIER 14 PER THE REQUIREMENTS OF ITEM 511 – CLASS 'C' CONCRETE, PIER, AS PER PLAN. PATCHED AREAS AND THE REINFORCED CONCRETE PAD SHALL BE SEALED PER THE REQUIREMENTS OF ITEM SPECIAL – SEALING OF CONCRETE SURFACES (EPOXY).

DELINEATED AREAS ON PIERS 15 AND 16 SHALL BE REPAIRED PER THE REQUIREMENTS OF ITEM 519 – PATCHING CONCRETE STRUCTURES. NEW BRIDGE SEATS SHALL BE CONSTRUCTED ON PIERS 15 AND 16 PER THE REQUIREMENTS OF ITEM 511 – CLASS 'C' CONCRETE, PIER, AS PER PLAN. A CATHODIC PROTECTION SYSTEM SHALL BE INSTALLED ON PIERS 15 AND 16 PER THE REQUIREMENTS OF ITEM SPECIAL – CATHODIC PROTECTION SYSTEM FOR PIERS 15 AND 16 AFTER THE COMPLETION OF THE ABOVE REPAIRS AND MODIFICATIONS.

NO REPAIRS WERE NECESSARY ON PIERS 2, 3, 5, 6 AND 13 AT THE TIME OF INSPECTION.

REFER TO SHEETS 14/70 THROUGH 30/70 FOR PIER REPAIR DETAILS.

REFER TO SHEETS 31/70 AND 32/70 FOR PIER 15 AND 16 MODIFICATION DETAILS.

REFER TO SHEETS 33/70 THROUGH 37/70 FOR PIER 15 AND 16 CATHODIC PROTECTION SYSTEM DETAILS.

SUPERSTRUCTURE:

DELINEATED AREAS ON THE DECK SLAB UNDERSIDE IN SPANS 1 THROUGH 14 AND 16 THROUGH 23 SHALL BE INSPECTED AND CLEANED PER THE REQUIREMENTS OF ITEM SPECIAL – SOUNDING CONCRETE DECK BOTTOM, AND SEALED PER THE REQUIREMENTS OF ITEM SPECIAL – SEALING OF CONCRETE SURFACES (EPOXY).

REFER TO SHEETS 50/70 THROUGH 56/70 FOR DECK SLAB REPAIR DETAILS.

ADDITIONAL REQUIREMENTS:

A. CUTLINE CONSTRUCTION JOINT PREPARATION:

SAW CUT BOUNDARIES OF PROPOSED CONCRETE REMOVALS 25 mm DEEP. REMOVE CONCRETE TO A ROUGH SURFACE. WHERE PRACTICABLE, THE EXISTING REINFORCING STEEL WHERE REQUIRED IN THE PLANS SHALL BE LEFT IN PLACE. INSTALL DOWEL BARS IF SPECIFIED. PRIOR TO CONCRETE PLACEMENT ABRASIVELY CLEAN JOINT SURFACE AND EXPOSED REINFORCEMENT TO REMOVE LOOSE AND DISINTEGRATED CONCRETE AND LOOSE RUST. THE JOINT SURFACE AND EXPOSED REINFORCEMENT SHALL BE THOROUGHLY CLEANED OF ALL DIRT, DUST, OR OTHER FOREIGN MATERIAL BY THE USE OF WATER, AIR UNDER PRESSURE, OR OTHER METHODS THAT PRODUCE SATISFACTORY RESULTS. CONCRETE BONDING SURFACES SHALL BE WET WITHOUT FREE WATER AS CONCRETE IS PLACED.

B. SUBSTRUCTURE CONCRETE REMOVAL:

SUBSTRUCTURE CONCRETE REMOVAL SHALL BE BY MEANS OF APPROVED PNEUMATIC HAMMERS EMPLOYING POINTED AND BLUNT CHISEL TOOLS. HYDRAULIC HOE-RAM TYPE HAMMERS WILL NOT BE PERMITTED. THE WEIGHT OF THE HAMMER SHALL NOT BE MORE THAN 16 KILOGRAMS FOR REMOVAL WITHIN 450 mm OF PORTIONS TO BE PRESERVED. OUTSIDE THE 450 mm LIMIT, A HAMMER HEAVIER THAN 16 KILOGRAMS, BUT NOT TO EXCEED 41 KILOGRAMS, MAY BE USED AT THE APPROVAL OF THE ENGINEER. PNEUMATIC HAMMERS SHALL NOT BE PLACED IN DIRECT CONTACT WITH REINFORCING STEEL THAT IS TO BE RETAINED IN THE REBUILT STRUCTURE.

CONTINGENCY QUANTITIES:

THE FOLLOWING CONTINGENCY QUANTITIES HAVE BEEN CARRIED TO THE STRUCTURAL

QUANTITIES, SHEET 9/70. THESE QUANTITIES SHALL BE USED AS DIRECTED BY THE ENGINEER TO REPAIR NEW OR INCREASED AREAS OF DETERIORATION ON THE ABUTMENTS, PIERS AND DECK SLABS NOT DELINEATED DURING THE 1995 CONDITION SURVEY. USE OF THE CONTINGENCY QUANTITIES IS NOT LIMITED TO ELEMENTS SCHEDULED FOR REPAIR IN THESE PLANS. THAT IS, THESE QUANTITIES MAY BE USED ON ELEMENTS LISTED AS REQUIRING NO REPAIR AT THE TIME OF INSPECTION.

ITEM	DESCRIPTION	QUANTITY	UNIT
519	PATCHING CONCRETE STRUCTURES	200	SQ. METERS
520	PNEUMATICALLY PLACED MORTAR, AS PER PLAN	100	SQ. METERS
SPECIAL	SOUNDING CONCRETE DECK BOTTOM	100	SQ. METERS
SPECIAL	SEALING CONCRETE SURFACES (EPOXY)	400	SQ. METERS

NO PAYMENT WILL BE MADE FOR ANY PORTION OF THESE CONTINGENCY QUANTITIES UNLESS THEIR USE IS SPECIFICALLY AUTHORIZED BY THE ENGINEER.

ITEM ~~842~~ – CLASS C CONCRETE, PIER, AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF CONSTRUCTING A REINFORCED CONCRETE PAD ON PIER 14, AND RECONSTRUCTING THE BRIDGE SEAT OF PIERS 15 AND 16. ALL OF THE PROVISIONS OF ITEM ~~842~~ OF THE SUPPLEMENTAL SPECIFICATIONS SHALL APPLY, EXCEPT AS MODIFIED HEREIN.

EXISTING CONCRETE SURFACES AS SHOWN IN THE PLANS SHALL BE ROUGHENED AND CLEANED AND AN EPOXY BONDING AGENT APPLIED PRIOR TO FORMING AND PLACING THE NEW CONCRETE IN ORDER TO ENSURE AN INTEGRAL BOND BETWEEN THE PROPOSED AND EXISTING CONCRETE. DOWEL HOLES SHALL BE DRILLED AND ANCHOR BOLTS SHALL BE PROVIDED AND INSTALLED AS DETAILED IN THE PLANS. ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO SATISFY THESE REQUIREMENTS SHALL BE CONSIDERED INCIDENTAL TO ITEM ~~842~~ – CLASS 'C' CONCRETE, PIERS, AS PER PLAN.

ITEM 520 – PNEUMATICALLY PLACED MORTAR, AS PER PLAN:

ALL OF THE PROVISIONS OF ITEM 520 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS SHALL APPLY, EXCEPT AS MODIFIED HEREIN. THIS ITEM SHALL INCLUDE ANY TEMPORARY SHORING REQUIRED DURING THE PATCHING OPERATIONS TO ENSURE STRUCTURAL INTEGRITY OF THE MEMBER BEING PATCHED.

DESCRIPTION:

THIS ITEM APPLIES TO THE SURFACE REPAIR OF CONCRETE STRUCTURES USING SHOTCRETE APPLIED (PNEUMATICALLY PLACED) MORTAR AND INCLUDES THE REMOVAL OF CONCRETE, CONCRETE SURFACE PREPARATION, THE FURNISHING AND PLACING OF REINFORCING STEEL INCLUDING WIRE FABRIC, DOWELS AND/OR EXPANSION ANCHOR BOLTS WHEN REQUIRED, AND THE PREPARING AND APPLYING OF THE MORTAR IN THE AREAS SHOWN OR NOTED ON THE PLANS OR WHEN DIRECTED BY THE ENGINEER. THE THICKNESS OF THE MORTAR SHALL NOT BE LESS THAN 13 mm.

SURFACE PREPARATION:

AFTER THE DAMAGED CONCRETE IS REMOVED ALL SURFACES TO WHICH THE MORTAR IS TO BOND, INCLUDING EXPOSED REINFORCING STEEL AND THE WORK FACE OF ANY PREVIOUSLY PLACED MORTAR, SHALL BE CLEANED BY ABRASIVE BLASTING OR ULTRA HIGH PRESSURE WATER BLASTING NOT MORE THAN 24 HOURS PRIOR TO THE PLACEMENT OF THE MORTAR. STEEL SURFACES SHALL BE CLEANED TO THE NEARWHITE (SA 2 1 /2/SSPC-SP10) PREPARATION GRADE. BLASTING ABRASIVES CONTAINING MORE THAN 1% FREE SILICA WILL NOT BE ALLOWED. THESE SURFACES SHALL BE MADE FREE OF SPALLS, LANTANCE, AND ALL CONTAMINANTS DETRIMENTAL TO THE ACHIEVEMENT OF AN ADEQUATE BOND. ULTRA-HIGH PRESSURE HYDRO-DEMOLITION OF 138 MPa OR MORE IS AN ACCEPTABLE METHOD OF SURFACE PREPARATION.

MATERIALS:

THE REQUIREMENTS FOR 520.06 AND 520.07 SHALL BE VOID. MORTAR UTILIZED MUST MEET THE FOLLOWING CRITERIA:

- A.

IF THE MORTAR IS A PRE-PACKAGED, BRANDED ENTITY, PREPARATION IN EITHER THE WET OR DRY PROCESS SHALL CONFORM TO MANUFACTURER'S RECOMMENDATIONS.
- B.

IF THE MIX USED EMPLOYS MATERIALS BATCHED AT THE JOBSITE, BATCHED BY THE SHOTCRETING CONTRACTOR HIMSELF PRIOR TO USE ON THE JOBSITE, OR SUPPLIED IN A READY MIX TRUCK, THE INGREDIENTS OF THESE MIXES MUST BE READILY DOCUMENTABLE, IN BOTH QUALITY AND QUANTITY. THIS APPLIES TO BOTH QUALIFICATION TESTING PRIOR TO JOBSITE APPLICATION AND FOR JOBSITE APPLICATION.

SHOTCRETE MORTAR WILL MEET THE FOLLOWING TEST REQUIREMENTS:

COMPRESSIVE STRENGTH: (ASTM C-109, 75 mm CUBES)

1 DAY.	.12.5 MPa
7 DAY.	.38.0 MPa
28 DAY.	.48.5 MPa

FLEXURAL STRENGTH: (ASTM C-78)

7 DAY.	.8.0 MPa
28 DAY.	.10.5 MPa

TENSILE STRENGTH: (ASTM C-496)

7 DAY.	.4.0 MPa
28 DAY.	.5.5 MPa

MODULUS OF ELASTICITY: (ASTM C-469) @ 28 DAYS. 24,150 MPa TO 27,600 MPa

BOND STRENGTH (ASTM C882 MODIFIED) 12.0 MPa
* - MORTAR SCRUBBED SUBSTRATE

CHLORIDE ION PERMEABILITY (AASHTO T-277) 500 COULOMBS OR LESS

THE MORTAR MAY CONTAIN MICROSILICA, POLYMERS, WATER REDUCING AGENTS OR OTHER ADDITIVES IN ANY COMBINATION THAT WILL PRODUCE THE REQUIRED PERFORMANCE.

PLACING:

THE MORTAR SHALL BE PNEUMATICALLY PLACED.

WHEN WET MIX SHOTCRETING IS EMPLOYED, THE NOZZLE OPERATOR MUST BE ABLE TO DEMONSTRATE EXPERIENCE AND CAPABILITY IN THE SHOTCRETE APPLICATION PROCESS.

WHEN DRY MIX SHOTCRETING IS EMPLOYED, THE NOZZLE OPERATOR MUST BE QUALIFIED ACCORDING TO THE GUIDELINES PRESENTED IN ACI 506 R 85.

IF THE FLOW OF MATERIAL AT THE NOZZLE IS NOT UNIFORM, RESULTING IN SLUGS, POCKETS, OR SLOUGHING OF THE SHOTCRETE, THE NOZZLE OPERATOR SHALL DIRECT THE NOZZLE AWAY FROM THE REPAIR AREA UNTIL THE FAULTY CONDITIONS ARE CORRECTED. SUCH DEFECTS SHALL BE REPLACED AS THE WORK PROGRESSES.

SHOTCRETING SHALL BE TEMPORARILY SUSPENDED IF RAIN OCCURS WHICH MAY CAUSE WASHOUTS OR SLOUGHING OF THE REPAIR SURFACE. MORTAR SHALL BE PLACED ONLY WHEN THE AMBIENT TEMPERATURE IS AT LEAST 4 DEGREES C AND RISING AND THE TEMPERATURE OF THE STRUCTURE TO BE REPAIRED IS AT LEAST 10 DEGREES C.

THE CONTRACTOR SHALL COOL THE INGREDIENTS OR TAKE OTHER APPROPRIATE MEASURES WHEN PREMATURE STIFFENING OF THE MORTAR OCCURS IN WARM WEATHER.

THE MORTAR SHALL BE PNEUMATICALLY PLACED CONTINUOUSLY ON VERTICAL AND OVERHEAD SURFACES UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

PRECONSTRUCTION TESTING:

AN INVESTIGATION SHALL BE MADE PRIOR TO THE START OF THE WORK TO CHECK THE OPERATION OF THE EQUIPMENT, THE QUALIFICATIONS OF THE APPLICATION CREWS, AND TO ENSURE THAT A SATISFACTORY QUALITY OF PNEUMATICALLY PLACED MORTAR CAN BE PRODUCED.

TEST PANELS SHALL BE FABRICATED BY SHOOTING MORTAR ONTO THE PLYWOOD BOTTOM OF A SQUARE 455 mm X 455 mm OPEN BOX THAT IS 200 mm DEEP. REINFORCEMENT IN THE LARGER SIZES AND TIGHTER SPACING FOUND IN A BRIDGE SHALL BE INCORPORATED IN OTHER TEST PANELS WHICH ARE 610 mm SQUARE. THE BOXES SHALL BE MOUNTED VERTICALLY OR HORIZONTALLY TO SIMULATE THE ACTUAL JOB CONDITION. THE MORTAR SHALL BE APPLIED USING THE PERSONNEL, EQUIPMENT, AND PROCEDURES PROPOSED FOR THE JOB UNTIL THE BOX IS FULL. THE MIXING WATER SHALL BE ADJUSTED TO PROVIDE MORTAR OF THE PROPER CONSISTENCY AS RECOMMENDED BY THE MANUFACTURER. THE QUANTITY OF MIXING WATER INTRODUCED INTO THE MIX SHALL BE MEASURABLE AND SHALL BE DOCUMENTED DURING ANY SHOTCRETE APPLICATION PROCEDURE.

THREE CORES SHALL BE TAKEN FROM EACH PANEL AND TESTED ACCORDING TO ASTM C 42 BY AN INDEPENDENT TESTING LABORATORY APPROVED BY THE STATE. A COMPRESSIVE STRENGTH OF AT LEAST 48.5 MPa AT 28 DAYS WILL BE REQUIRED. ADDITIONAL CORES SHALL BE TAKEN AND TESTED AS NECESSARY TO VERIFY THAT THE TEST PANEL MORTAR MEETS ALL THE REQUIREMENTS OF MATERIALS SECTION B.

THE PANELS SHALL ALSO BE BROKEN SO THAT THE INTERIOR PORTIONS CAN BE CAREFULLY EXAMINED. THEY SHALL BE SUBSTANTIALLY FREE OF HOLLOW AREAS AND SAND POCKETS AND THE MORTAR SHALL BE WELL BONDED TO THE REINFORCEMENT.

EACH CREW MUST FABRICATE SATISFACTORY PANELS SIMULATING THE ACTUAL ON SITE CONDITIONS (E.G. VERTICAL OR OVERHEAD APPLICATION) BEFORE APPLYING THE MORTAR TO THE STRUCTURE.

INSPECTION AND TESTING:

ALL PATCHED AREAS SHALL BE SOUNDED AFTER CURING AND BEFORE FINAL ACCEPTANCE. ALL UNSOUND AREAS AND AREAS EXHIBITING CRACKING SHALL BE REMOVED AND REPATCHED.

THE ACCEPTANCE OF THE SHOTCRETED MORTAR WILL ALSO BE BASED ON CORES TAKEN FROM PATCHED AREAS AND TEST PANELS ON AN ALTERNATING BASIS AND TESTING AS FOLLOWS:

- ⊙ 35 SQUARE METERS

SHOOT PANEL AND TEST
- ⊙ 70 SQUARE METERS

IN-PLACE CORE TEST
- ⊙ 105 SQUARE METERS

SHOOT PANEL AND TEST
- ⊙ 140 SQUARE METERS

IN-PLACE CORE TEST

THE LOCATION OF THE IN-PLACE CORES WILL BE DETERMINED BY THE ENGINEER. ONE IN-PLACE CORE WILL BE TAKEN FOR EACH 70 SQUARE METERS OF SHOTCRETING. THE CORES SHALL EXTEND COMPLETELY THROUGH THE PATCHED AREA AND INTO THE UNDERLYING SOUND CONCRETE AT LEAST 50 mm. THE CORES WILL BE VISUALLY INSPECTED AT THE SITE BY THE ENGINEER FOR HOLLOW AREAS, SAND POCKETS, VOIDS AROUND THE REINFORCING STEEL AND LACK OF BOND TO THE UNDERLYING CONCRETE.

ADDITIONAL 455 mm X 455 mm X 200 mm DEEP TEST PANELS SHALL BE SHOT FOR EACH 70 SQUARE METERS OF SHOTCRETING THROUGHOUT THE ENTIRE PATCHING OPERATION AND CORES SHALL BE TAKEN TO VERIFY THE PROPERTIES OF THE MORTAR PRODUCED.

THE AVERAGE 28-DAY COMPRESSIVE STRENGTH OF THE CORES AS DETERMINED ACCORDING TO ASTM C42 BY AN INDEPENDENT LABORATORY SHALL BE NOT LESS THAN 41.5 MPa AND NO CORE SHALL TEST LOWER THAN 34.5 MPa. CORES TAKEN FROM TEST PANELS SHALL BE TESTED TO VERIFY THAT THE MORTAR MEETS ALL THE REQUIREMENTS IN MATERIALS SECTION B.

ALL PATCHES DETERMINED TO BE DEFECTIVE BY SOUNDING, VISIBLE CRACKS, UNACCEPTABLE CORES OR TESTS SHALL BE REMOVED, REPLACED AND CORED. PATCH REPLACEMENT WILL CONTINUE UNTIL ONLY ACCEPTABLE PATCHES REMAIN. CORE HOLES SHALL BE SURFACE PREPPED AS DESCRIBED ABOVE AND FILLED BY HAND PACKING WITH A MORTAR THAT MEETS ALL THE REQUIREMENTS OF MATERIALS SECTION B.

ALL TEST PANEL, CORING, REPAIR OF CORE HOLES, INDEPENDENT LABORATORY TESTING OF THE CORES AND REPLACEMENT OF THE REJECTED AREAS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AND INCLUDED IN THE UNIT BID PRICE FOR THIS ITEM.

BASIS OF PAYMENT:

PAYMENT SHALL BE MADE AT THE CONTRACT UNIT BID PRICE FOR:

ITEM	UNIT	DESCRIPTION
520	SQ. METER	PNEUMATICALLY PLACED MORTAR, AS PER PLAN

ITEM 863 - STRUCTURAL STEEL, MISC.: FORCE MAIN BRACKETS

THIS ITEM SHALL CONSIST OF THE FURNISHING AND ERECTION OF THE STRUCTURAL STEEL BRACKETS WHICH SUPPORT THE RELOCATED SANITARY FORCE MAIN AND THE COMPLETE ACCESS PLATFORM AS DETAILED IN THESE PLANS. ALL OF THE PROVISIONS OF SUPPLEMENTAL SPECIFICATION 863 SHALL APPLY, EXCEPT AS MODIFIED HEREIN.

ALL STRUCTURAL STEEL USED FOR THE FABRICATION OF THE BRACKETS AND PLATFORM SHALL BE ASTM A709M, GRADE 345. HIGH STRENGTH BOLTS SHALL BE A325M, GALVANIZED, OF THE DIAMETER DETAILED IN THE PLANS. ANCHOR BOLTS FOR THE ATTACHMENT OF THE BRACKETS TO CONCRETE MEMBERS MAY BE EITHER HIGH STRENGTH STEEL, GALVANIZED OR STAINLESS STEEL.

THE COST OF FIELD DRILLING EXISTING STIFFENER ANGLES IN SPANS 14 AND 16 FOR THE ATTACHMENT OF HANGER BRACKET "A" SHALL BE CONSIDERED INCIDENTAL TO THIS ITEM. THE COST OF PROVIDING AND INSTALLING ANCHOR BOLTS FOR HANGER BRACKET "C" THE ACCESS PLATFORM AND THE FIXED POINT BRACKETS SHALL BE CONSIDERED INCIDENTAL TO THIS ITEM.

ALL FORCE MAIN BRACKETS AND THE COMPLETE ACCESS PLATFORM SHALL BE SHOP PAINTED IN ACCORDANCE WITH THE REQUIREMENTS OF ITEM 514-FIELD PAINTING, MISC.: COMPLETE SHOP PAINTING OF STRUCTURAL STEEL. REFER TO THE STRUCTURAL GENERAL NOTES FOR A DESCRIPTION OF THIS PAY ITEM.

PAYMENT FOR THIS ITEM SHALL BE MADE AT THE LUMP SUM CONTRACT PRICE BID FOR ITEM 863 -**STRUCTURAL STEEL MISC. LEVEL FABRICATION** FORCE MAIN BRACKETS, WHICH PRICE SHALL CONSTITUTE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO FURNISH AND INSTALL THE BRACKETS IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.

PLOT SCALE: 1" = 100'
DATE: 10-13-97 10:49 PM EST

PAINTING - GENERAL:

STEEL PORTIONS OF THE EXISTING AND PROPOSED BRIDGE SUPERSTRUCTURE SHALL BE PAINTED. FOLLOWING IS A DESCRIPTION OF THE PAINTING METHODS TO BE USED FOR THE VARIOUS PORTIONS OF THE SUPERSTRUCTURE.

THE EXISTING SUPERSTRUCTURE STEEL IN SPANS 14 AND 16 SHALL BE FIELD PAINTED IN ACCORDANCE WITH THE REQUIREMENTS OF SUPPLEMENTAL SPECIFICATION 815--FIELD PAINTING OF EXISTING STEEL, SYSTEM OZEU. NEW STEEL SUPPORT BRACKETS FOR THE RELOCATED FORCE MAIN IN SPAN 14 AND 16 SHALL BE COMPLETELY SHOP PAINTED IN ACCORDANCE WITH THE REQUIREMENTS OF ITEM 514--FIELD PAINTING MISC.: COMPLETE SHOP PAINTING OF STRUCTURAL STEEL.

THE PROPOSED SUPERSTRUCTURE STEEL AND NEW STEEL SUPPORT BRACKETS FOR THE RELOCATED FORCE MAIN IN SPAN 15 SHALL BE COMPLETELY SHOP PAINTED IN ACCORDANCE WITH ITEM 514--FIELD PAINTING, MISC.: COMPLETE SHOP PAINTING OF STRUCTURAL STEEL.

EXISTING PEDESTRIAN RAILING PANELS ARE TO BE REPAINTED FOR THE FULL LENGTH OF THE BRIDGE. ALL EXISTING RAILING PANELS ARE TO BE REMOVED AND MATCH MARKED FOR REINSTALLATION. ALL EXISTING RAILING PANELS SHALL BE SHOP PAINTED IN ACCORDANCE WITH THE REQUIREMENTS OF ITEM 514--FIELD PAINTING MISC.: COMPLETE SHOP PAINTING OF STRUCTURAL STEEL.

EXISTING STEEL RAILING POSTS IN SPANS 1 THROUGH 14 AND 16 THROUGH 23 ARE TO REMAIN IN PLACE. ALL EXISTING RAILING POSTS SHALL BE FIELD PAINTED IN ACCORDANCE WITH THE REQUIREMENTS OF SUPPLEMENTAL SPECIFICATION 815--FIELD PAINTING OF EXISTING STEEL, SYSTEM OZEU.

NEW RAILING POSTS ARE BEING PROVIDED FOR SPAN 15. NEW RAILING PANELS ARE BE PROVIDED TO FIT BETWEEN THE EXISTING POSTS ON SPAN 14 AND 16 AND THE NEW POSTS AT THE ENDS OF SPAN 15. THESE POSTS AND PANELS SHALL BE SHOP PAINTED IN ACCORDANCE WITH THE REQUIREMENTS OF ITEM 514--FIELD PAINTING, MISC.: COMPLETE SHOP PAINTING OF STRUCTURAL STEEL.

PAYMENT FOR PAINTING THE VARIOUS ITEMS AS DESCRIBED ABOVE SHALL BE MADE AT THE CONTRACT LUMP SUM PRICES BID FOR THE APPROPRIATE ITEMS AS SPECIFIED IN THE NOTES.

ITEM 514--FIELD PAINTING, MISC.: COMPLETE SHOP PAINTING OF STRUCTURAL STEEL:

THE WORK UNDER THIS ITEM SHALL CONSIST OF SUPPLYING THE MATERIALS, LABOR AND EQUIPMENT NECESSARY TO PROPERLY PREPARE AND COMPLETELY SHOP PAINT STRUCTURAL STEEL.

SURFACE PREPARATION, COATING MATERIALS AND REQUIRED COATING THICKNESS SHALL ALL BE IN ACCORDANCE WITH THE REQUIREMENTS FOR SYSTEM OZEU AS DETAILED IN SUPPLEMENTAL SPECIFICATION 815.

THE THREE SEPARATE COATS: PRIMER, INTERMEDIATE AND FINISH COATS SHALL BE APPLIED IN THE SHOP WITH ALLOWANCE FOR PROPER CURING OF EACH COAT. THE FINISH COATED GIRDERS AND OTHER PIECES SHALL NOT BE HANDLED OR MOVED UNTIL PROPERLY CURED.

ONLY THE ORGANIC ZINC PRIMER SHALL BE APPLIED TO CERTAIN SURFACES IN THE SHOP. MASK OR OTHERWISE PROTECT THESE SURFACES FROM THE APPLICATION OF THE INTERMEDIATE AND FINISH COATS, INCLUDING OVERSPRAY. THESE SURFACES INCLUDE:

1. FAYING SURFACES OF MAIN GIRDER SPLICES, SPLICE PLATES, BOTTOM OF FLANGES AT BEARINGS, CROSSFRAMES AND END CROSSFRAMES.
2. EXTERNAL SURFACES OF FIELD BOLTED CONNECTIONS (INCLUDING THE EXTERNAL SURFACES AND EDGES OF SPLICE PLATES.
3. SURFACES THAT WILL BE IN CONTACT WITH CONCRETE. DO NOT APPLY ANY COATING WITHIN 50 mm OF LOCATIONS DESIGNATED FOR FIELD WELDING.

THE CONTRACTOR SHALL USE EXTREME CARE IN HANDLING THE STEEL IN THE SHOP, DURING SHIPPING, DURING FIELD STORAGE AND ERECTION AND DURING SUBSEQUENT CONSTRUCTION OF THE BRIDGE.

ALL AREAS DAMAGED DURING SHIPPING, HANDLING ERECTION OR SUBSEQUENT CONSTRUCTION SHALL BE PROPERLY RECOATED IN THE FIELD. THE AREAS OUTLINED ABOVE SHALL RECEIVE FIELD INTERMEDIATE AND FINISH COATS. PROPER SURFACE PREPARATION SHALL BE PROVIDED AND THE INDIVIDUAL COATS OF PAINT SHALL BE FEATHERED INTO ADJACENT LAYERS. ALL FIELD CLEANING, COATING AND TOUCH-UP PAINTING OF DAMAGED AND UNCOATED AREAS IS INCLUDED IN THE COST OF THIS ITEM.

PAYMENT FOR THIS WORK SHALL BE MADE AT THE CONTRACT LUMP SUM PRICE BID FOR ITEM 514--FIELD PAINTING, MISC.: COMPLETE SHOP PAINTING OF STRUCTURAL STEEL.

ITEM 518 - SCUPPER LENGTHENING, AS PER PLAN

UNDER THIS ITEM, THE EXISTING SCUPPERS IN THE CONTINUOUS SLAB PORTIONS OF THE BRIDGE (SPANS 1 THROUGH 13 AND SPANS 17 THOUGH 23) SHALL BE LENGTHENED AS DETAILED IN THE PLANS.

ALL STEEL SECTIONS, PIPES, STRUCTURAL STEEL TUBES, BOLTS AND ANCHOR BOLTS SHOWN ON THE PLANS SHALL BE GALVANIZED IN ACCORDANCE WITH SECTION 711.02 OF THE CMS. THE STEEL EXTENSIONS AND SUPPORTS SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 863.

PAYMENT FOR THIS WORK SHALL BE MADE AT THE CONTRACT PRICE BID PER EACH FOR ITEM 518 - SCUPPER LENGTHENING, AS PER PLAN.

ITEM 844 - HIGH PERFORMANCE CONCRETE, AS PER PLAN

THE DESIGN MIX SHALL BE MIX NO. 4 LIMESTONE. THE OPTION OF SLIPFORM CONSTRUCTION OF THE BRIDGE RAILING PER 511.081 IS NOT PERMITTED.

SEALING OF CONCRETE SURFACES

THE SEALER SHALL BE THE "BUFF" COLOR MEETING FEDERAL COLOR STANDARD No. 37722 AS PER THE DETAILS IN THE PLANS.

IN ADDITION TO THE AREAS SHOWN IN THE PLANS, PIERS 14 AND 17 SHALL BE SEALED WITH EPOXY SEALER 300 MM (1'-0") BELOW THE BEAM SEAT, THE BEAM SEAT WHICH IS 560 MM (1'-10") AND THE BACKWALL WHICH IS 1.68 METERS (5'-6") THEN Laterally 17.84 METERS (58'-6"). THE LATERAL LIMITS DO NOT INCLUDE THE AREAS UNDER THE SIDEWALK. THE QUANTITY HAS BEEN ESTIMATED AT 91 SQUARE METERS (108.30 SQ. YD.) WHICH INCLUDES BOTH PIERS.

FOR ADDITIONAL NOTES SEE THE PROPOSAL NOTE TITLED " SEALING OF CONCRETE SURFACES".

ITEM 614 - MAINTENANCE OF TRAFFIC, MISC.: MAINTENANCE OF BOAT TRAFFIC

IN ADDITION TO ITEM 107.09 AND APPLICABLE PROVISIONS OF ITEM 614 OF THE CONSTRUCTION AND MATERIALS SPECIFICATIONS, THE FOLLOWING REQUIREMENTS SHALL BE COMPLIED WITH DURING THE REMOVAL AND REPLACEMENT OF SPAN 15, REHABILITATION AND MODIFICATION OF PIERS 15 AND 16, AND ANY OTHER OPERATIONS WHICH MAY AFFECT BOAT TRAFFIC ON THE HURON RIVER.

- 1) ANY BARGES USED DURING CONSTRUCTION SHALL BE REMOVED FROM THE MAIN CHANNEL DURING HOURS OF DARKNESS ON WORKDAYS, AND AT ALL TIMES DURING WEEKENDS AND HOLIDAYS; OR LOCATED BEHIND THE CHANNEL MARKERS AS PROVIDED BY THE BOAT MAINTENANCE OF TRAFFIC PLAN.
- 2) BOAT TRAFFIC MAY BE STOPPED FOR SHORT PERIODS OF TIME IF HAZARDOUS CONDITIONS EXIST AND SATISFACTORY FLAGGING FACILITIES ARE PROVIDED.
- 3) *SEE PLAN NOTE ON SHEET 3 "WORK IN AND OVER THE HURON RIVER".*

THE CONTRACTOR SHALL FURNISH, INSTALL, MAINTAIN, REMOVE AND RESET AS NECESSARY HAZARD WARNING REGULATORY BOUYS AND LIGHTED CHANNEL MARKER BOUYS. THE BOUYS AND LIGHTING SYSTEM (30FPM) SHALL BE USCG APPROVED AS SUPPLIED BY: TIDELAND SIGNAL CORPORATION, P.O.B. 52430, HOUSTON, TEXAS 77052, TELEPHONE (713)681-6101; AUTOMATIC POWER INC., NAVIGATIONAL AIDS, P.O.B. 23078, HOUSTON, TEXAS, 77223-0738, TELEPHONE (713)228-5208; SMITH AND NEPHEW INC., P.O.B. 578, DEPT. B, GERMANTOWN, WISCONSIN 53022, TELEPHONE 1(800)228-3693; OR APPROVED EQUAL. THE NECESSARY LIGHTS, HARDWARE AND ANCHORING DEVICES AS RECOMMENDED BY THE MANUFACTURER SHALL ALSO BE PROVIDED.

WHEN NO LONGER NEEDED TO MAINTAIN BOAT TRAFFIC, AND AS DIRECTED BY THE ENGINEER, THE CONTRACTOR SHALL REMOVE THE DEVICES. ALL MATERIALS INCLUDING LIGHTS, HARDWARE AND ANCHORING DEVICES SHALL BECOME THE PROPERTY OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION.

PAYMENT FOR THIS WORK SHALL BE MADE AT THE CONTRACT LUMP SUM PRICE BID FOR ITEM 614 - MAINTAINING TRAFFIC, MISC.: BOAT TRAFFIC. WHICH PRICE SHALL CONSTITUTE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO PERFORM THIS WORK IN ACCORDANCE WITH THESE SPECIFICATIONS.

ITEM 518 - SCUPPER VERTICAL EXTENSION, TYPE 1, AS PER PLAN

ITEM 518 - SCUPPER VERTICAL EXTENSION, TYPE 2, AS PER PLAN

UNDER THIS ITEM, THE EXISTING SCUPPERS IN SPANS 14 AND 16 SHALL BE VERTICALLY EXTENDED AS DETAILED IN THE PLANS.

ALL STEEL SECTIONS, PIPES, STRUCTURAL STEEL TUBES, BOLTS AND ANCHOR BOLTS SHOWN ON THE PLANS SHALL BE GALVANIZED IN ACCORDANCE WITH SECTION 711.02 OF THE CMS. THE STEEL EXTENSIONS AND SUPPORTS SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH SS 863.

PAYMENT FOR THIS WORK SHALL BE MADE AT THE CONTRACT PRICE BID PER EACH FOR ITEM 518 - VERTICAL EXTENSION, *AS PER PLAN, TYPE 1* OR ITEM 518 SCUPPER VERTICAL EXTENSION, *AS PER PLAN* TYPE 2.

STRUCTURE GENERAL NOTES

BRIDGE NUMBER ERI-6-28839
OVER HURON RIVER

ERI-6-28.839

8 / 70

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92

adache-ciuni-lynn
associates
CONSULTING ENGINEERS
4401 ROCKSIDE RD., CLEVELAND, OHIO 44131

DATE 12/97
REVIEWED TAB
STRUCTURE FILE NUMBER 2201984

DESIGNED AJM
CHECKED LPC
DRAWN TES
REVISED

ITEM	ITEM EXTENSION	TOTAL	UNIT	DESCRIPTION	SUPER	PIERS	ABUTMENTS	GENERAL	REFERENCE
202	11203	LUMP		PORTIONS OF STRUCTURE REMOVED, OVER 6th SPAN, AS PER PLAN				LUMP	4
202	98000	LUMP		REMOVAL, MISC.; REMOVAL OF EXISTING NAVIGATIONAL LIGHTING SYSTEM					70
842	43001	9.4	CU. METER	CLASS C CONCRETE, PIER, AS PER PLAN		9.4			6
SPECIAL	51267502	8.51	SQ. METER	SEALING OF CONCRETE SURFACES (EPOXY)	305	1+2	4	400	8
SPECIAL	51267504	410	SQ. METER	SEALING OF CONCRETE SURFACES (NON-EPOXY)	410				8
514	27704	LUMP		FIELD PAINTING, MISC.; COMPLETE SHOP PAINTING OF STRUCTURAL STEEL	LUMP				8
516	11211	48.5	METER	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, AS PER PLAN	48.5				5
516	44101	6	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN, 345mm X 335mm X 52mm W/371mm X 626mm X 84mm LOAD PLATE	6				43
516	44101	6	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN, 345mm X 52mm W/371mm X 800mm X 84mm LOAD PLATE	6				43
517	76302	40	EACH	RAILING, MISC.; NEW RAILING POST	38			2	5
517	76302	5	EACH	RAILING, MISC.; NEW RAILING PANEL	4			1	5
517	76302	284	EACH	RAILING, MISC.; RAILING PANEL REMOVED AND REINSTALLED	284				5
517	76302	40	EACH	RAILING, MISC.; RAILING PANEL CHANNEL REPAIRED				40	5
517	76302	10	EACH	RAILING, MISC.; RAILING PANEL CONNECTION ANGLE REPAIRED				10	5
517	76302	5	EACH	RAILING, MISC.; RAILING PANEL SPINDLE REPAIRED				5	5
518	12701	4	EACH	SCUPPER, VERTICAL EXTENSION, AS PER PLAN, TYPE 1	4				8
518	12701	20	EACH	SCUPPER, VERTICAL EXTENSION, AS PER PLAN, TYPE 2	20				8
518	12901	94	EACH	SCUPPER, LENGTHENING, AS PER PLAN	94				8
SPECIAL	51910000	227	SQ. METER	SOUNDING CONCRETE DECK BOTTOM	127			100	6
519	11100	424	SQ. METER	PATCHING CONCRETE STRUCTURE	178	46		200	
SPECIAL	51923000	LUMP		CATHODIC SYSTEM, PROTECTION FOR PIERS 15 AND 16		LUMP			36
520	11101	136	SQ. METER	PNEUMATICALLY PLACED MORTAR, AS PER PLAN		32	4	100	6
625	98200	LUMP		LIGHTING, MISC.; SERVICE TO NAVIGATION LIGHTING, AS PER PLAN				LUMP	70
625	98200	LUMP		LIGHTING, MISC.; CENTER CHANNEL MARKER LIGHTS, AS PER PLAN				LUMP	70
625	98200	LUMP		LIGHTING, MISC.; SIDE CHANNEL MARKER LIGHTS, AS PER PLAN				LUMP	70
SPECIAL	69098100	143.2	METER	MISC.; 305mm RELOCATED SANITARY SEWAGE FORCE MAIN *				143.2	66
815	00100	LUMP		SURFACE PREPARATION OF EXISTING STEEL, SYSTEM OZEU	LUMP				8
815	00200	LUMP		FIELD PAINTING OF EXISTING STEEL, PRIME COAT, SYSTEM OZEU	LUMP				8
815	00300	LUMP		FIELD PAINTING OF EXISTING STEEL, INTERMEDIATE COAT, SYSTEM OZEU	LUMP				8
815	00400	LUMP		FIELD PAINTING OF EXISTING STEEL, FINISH COAT, SYSTEM OZEU	LUMP				8
815	00500	2000	METER	CAULKING	2000				38
844	48000	325.0	CU. METER	HIGH PERFORMANCE CONCRETE, SUPERSTRUCTURE (DECK), MIX 4	325.0				8
844	48020	18.0	CU. METER	HIGH PERFORMANCE CONCRETE, SUPERSTRUCTURE (PARAPET), MIX 4	18.0				8
844	49000	LUMP		HIGH PERFORMANCE CONCRETE, TRIAL MIX	LUMP				8
844	49010	LUMP		HIGH PERFORMANCE CONCRETE TESTING	LUMP				8
863	10000	LUMP		STRUCTURAL STEEL MEMBERS, MISCELLANEOUS LEVEL FABRICATION, FORCE MAIN BRACKETS *	LUMP				7
863	10080	LUMP	LUMP	STRUCTURAL STEEL MEMBERS, LEVEL 4 FABRICATION, A709M, GRADE 345	LUMP				
863	20000	1206	EACH	WELDED STUD SHEAR CONNECTOR	1206				

*(Y060)

STRUCTURE QUANTITIES
BRIDGE NUMBER ERI-6-28839
OVER HURON RIVER

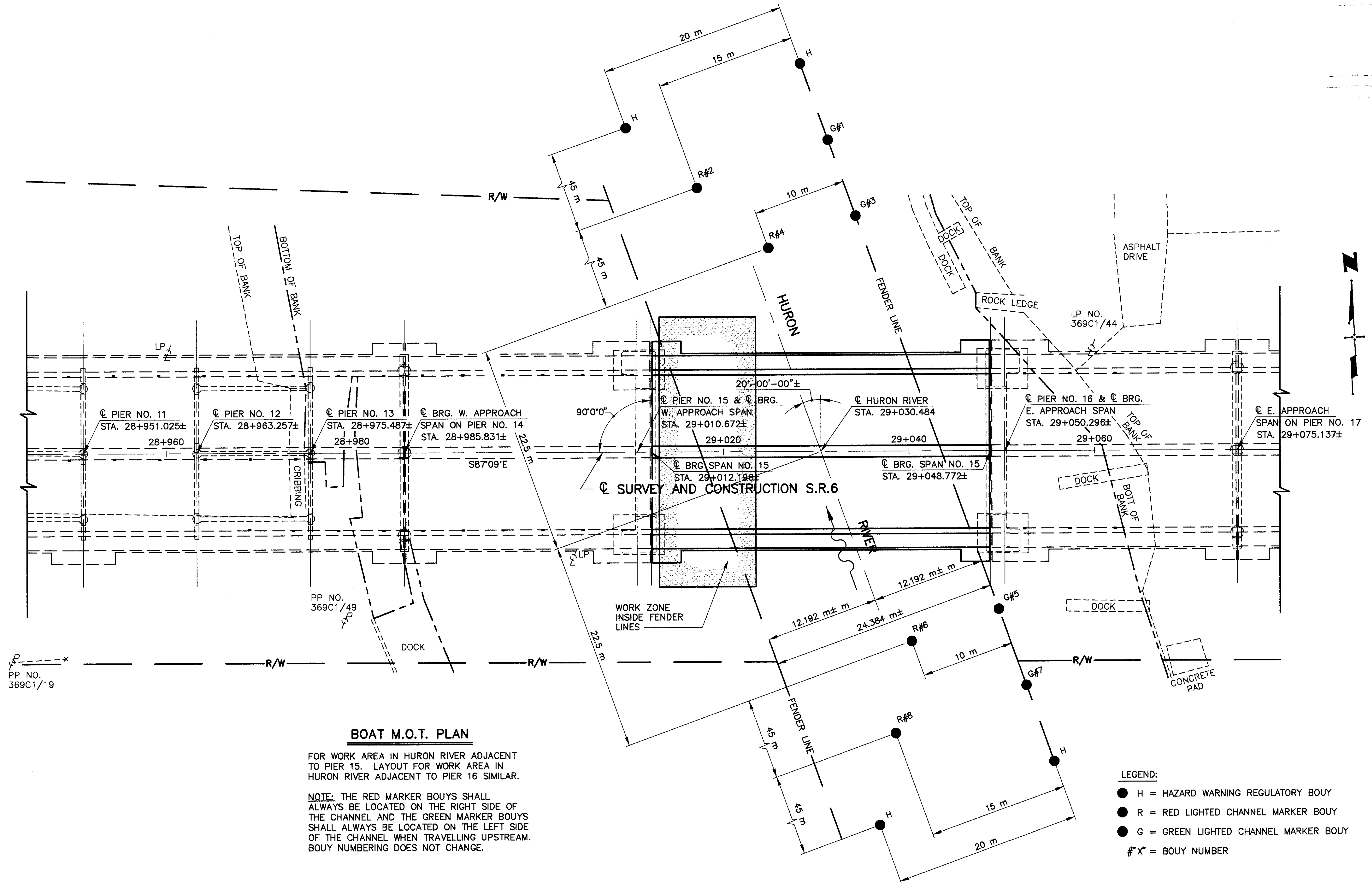
ERI-6-28.839

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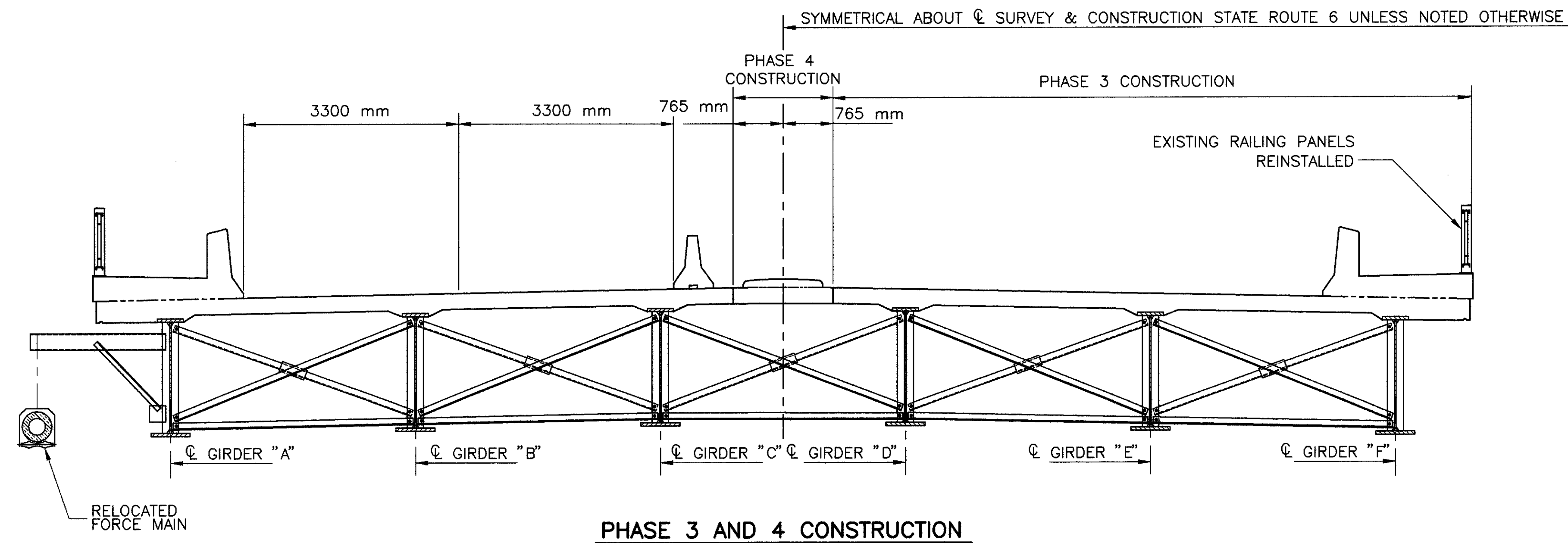
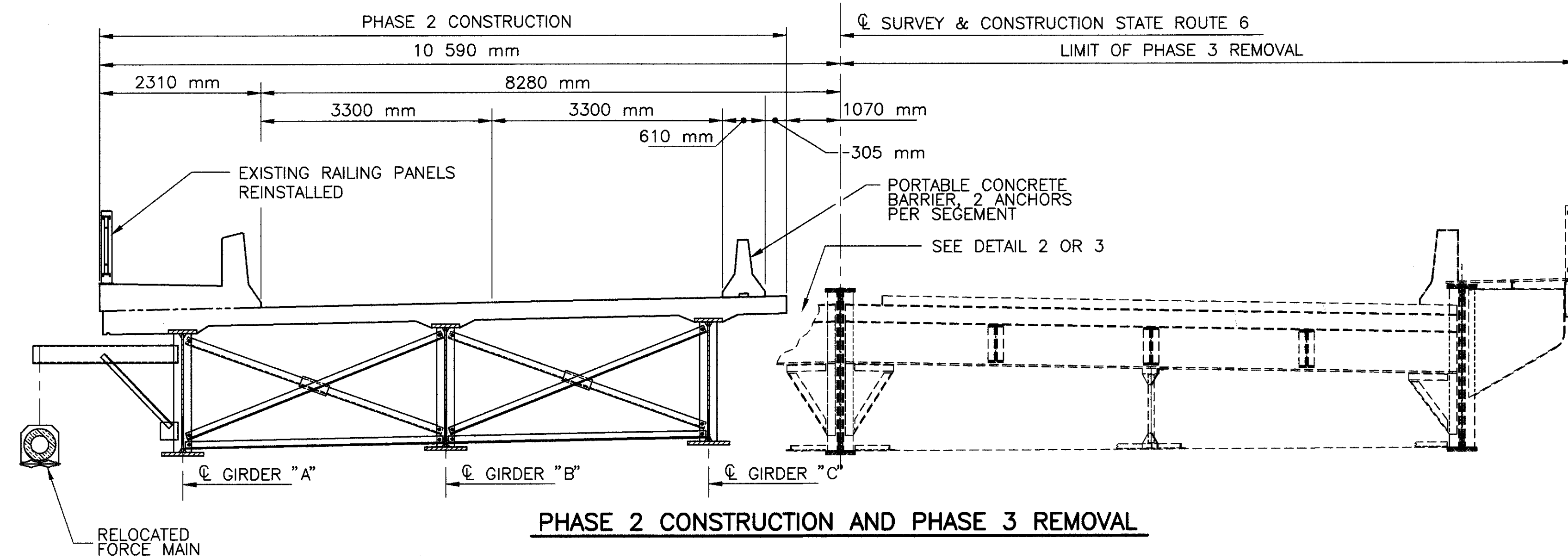
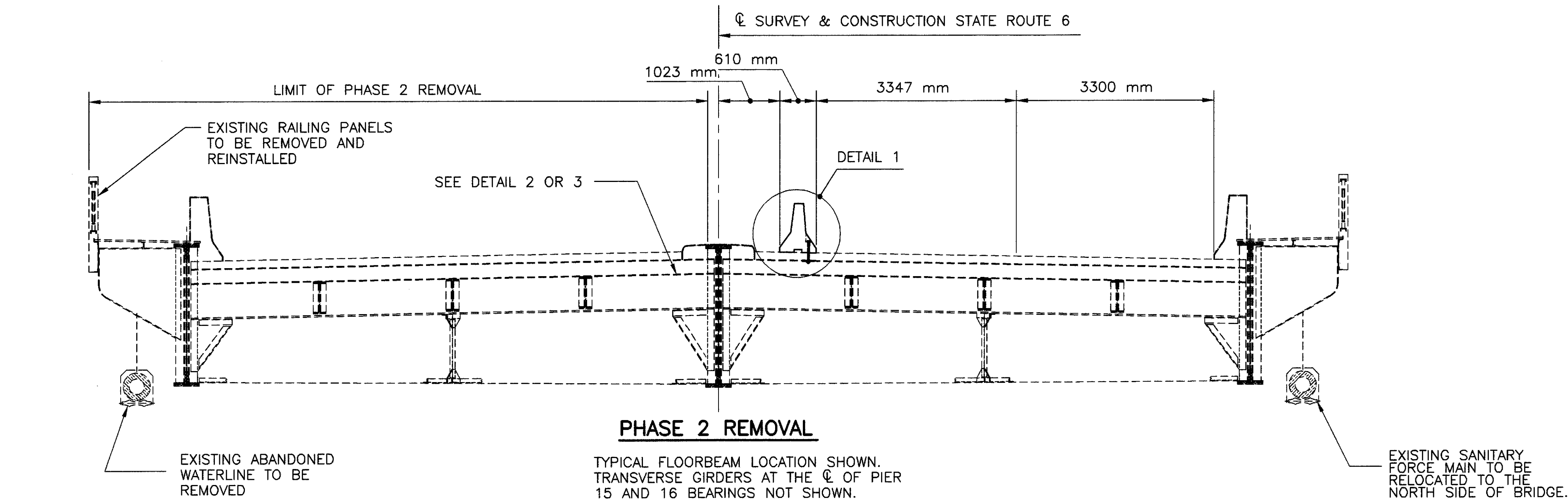
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Q odache-ciumi-lynn
C ASSOCIATES
CONSULTING ENGINEERS
4401 ROCKSIDE RD. CLEVELAND, OHIO 44131

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12/97
STRUCTURE FILE NUMBER
2201984



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PLOT SCALE 1:50



NOTES:

REFER TO THE STRUCTURAL GENERAL NOTES, SHEET 4/70 FOR A DETAILED DESCRIPTION OF THE SEQUENCE OF OPERATIONS.

REFER TO THE MAINTENANCE OF TRAFFIC PLANS, SHEETS 3/92 THROUGH 17/92 FOR A DETAILED

DESCRIPTION OF THE TRAFFIC MAINTENANCE REQUIREMENTS FOR EACH PHASE OF THE DEMOLITION / CONSTRUCTION.

PHASED REMOVAL OF THE SPAN 15 SUPERSTRUCTURE SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF, AND PAID FOR UNDER ITEM 202-PORTIONS OF STRUCTURE REMOVED, OVER 6 METER SPAN, AS PER PLAN. REFER TO THE STRUCTURAL GENERAL NOTES, SHEET 4/70

REFER TO SHEET 12/70 FOR DETAILS 1, 2 AND 3.

REFER TO THE STRUCTURAL GENERAL NOTES, SHEET 5/70 FOR SPECIFIC REMOVAL REQUIREMENTS FOR EXISTING RAILING PANELS TO BE REINSTALLED PER ITEM 517 - RAILING MISC. : RAILING PANEL REMOVED AND REINSTALLED.

PHASE CONSTRUCTION DETAILS-SPAN 15

BRIDGE NUMBER ERI-6-28839
OVER HURON RIVER

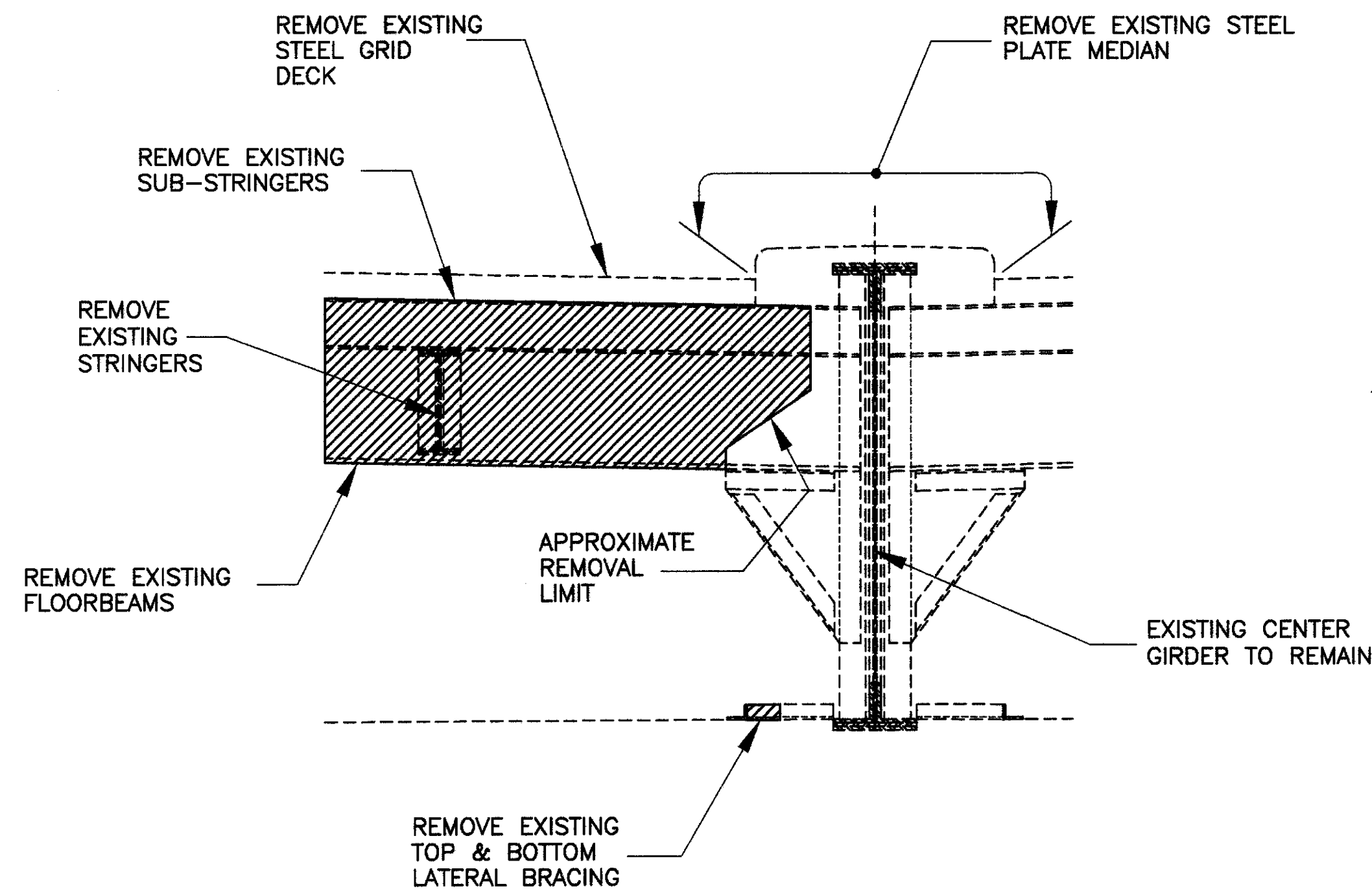
ERI-6-28.839

11/70

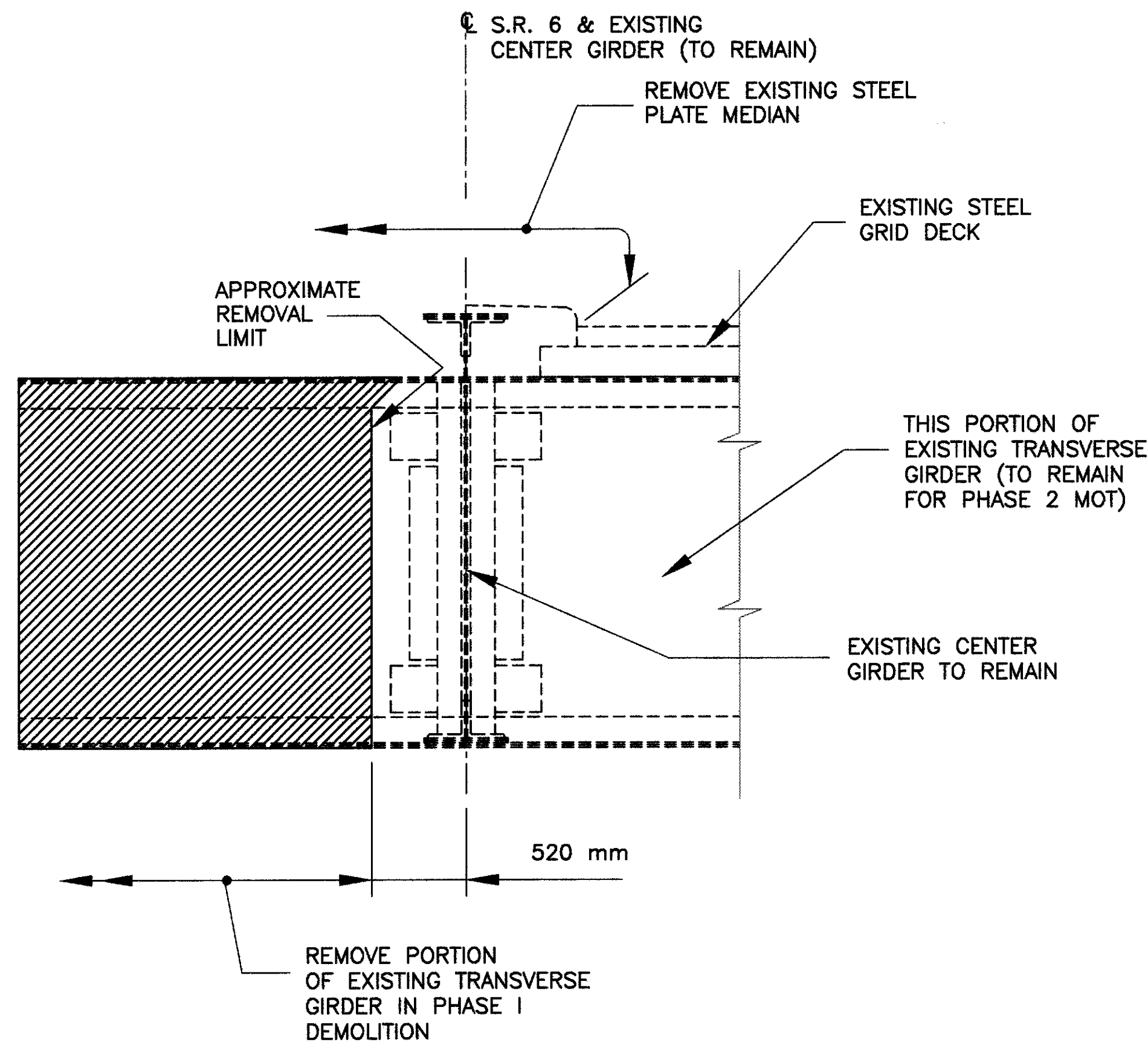
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associates
CONSULTING ENGINEERS
4401 ROCKSIDE RD. CLEVELAND, OHIO 44131

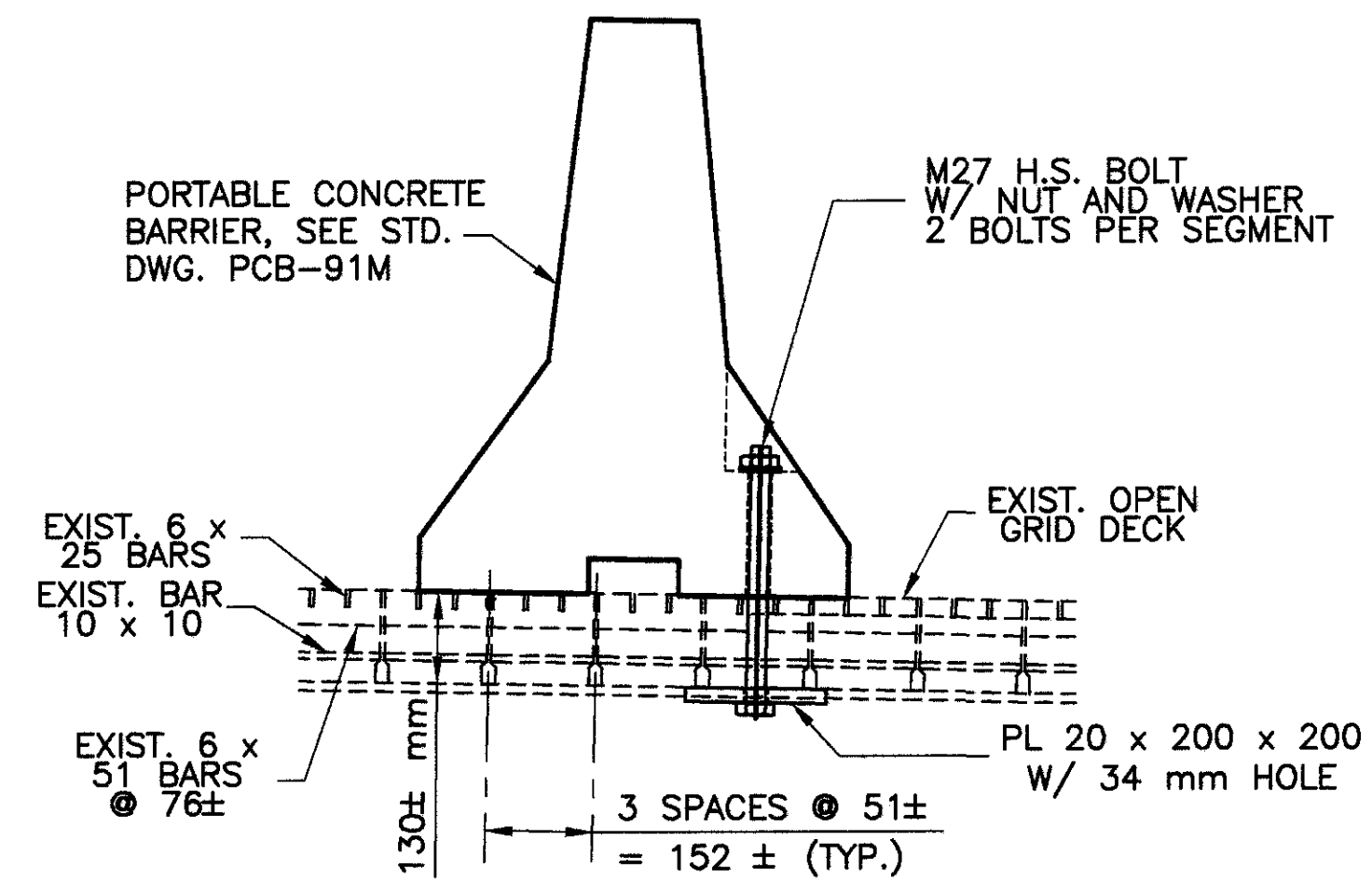
DESIGNED	DATE	REVIEWED	DATE
AJM	12/97	TAB	12/97
CHECKED	FILE NUMBER	STRUCTURE FILE NUMBER	
LPC		2201984	



DETAIL 2
FLOORBEAM, STRINGER AND
BRACING REMOVAL DETAIL (PHASE 2)



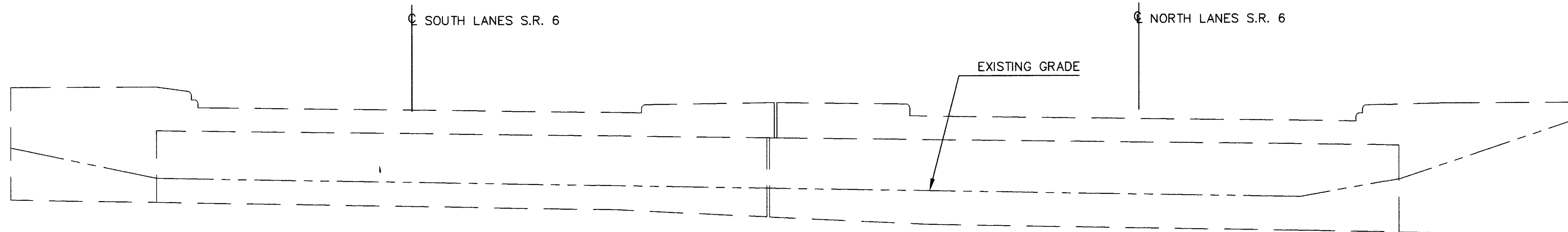
DETAIL 3
CROSS GIRDER REMOVAL DETAIL (PHASE 2)



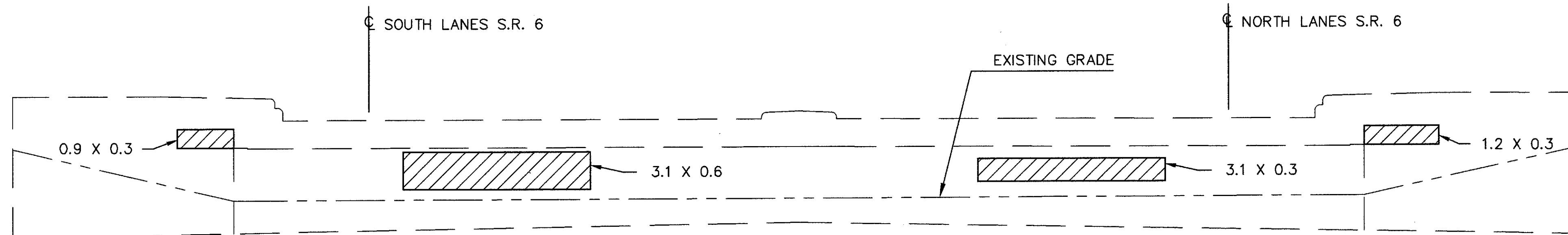
DETAIL 1 (PHASE 2)

NOTES:

REFER TO SHEET **11/70** FOR NOTES GOVERNING THIS WORK.



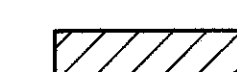
ELEVATION - REAR ABUTMENT
(NO REPAIRS NECESSARY)



ELEVATION - FORWARD ABUTMENT

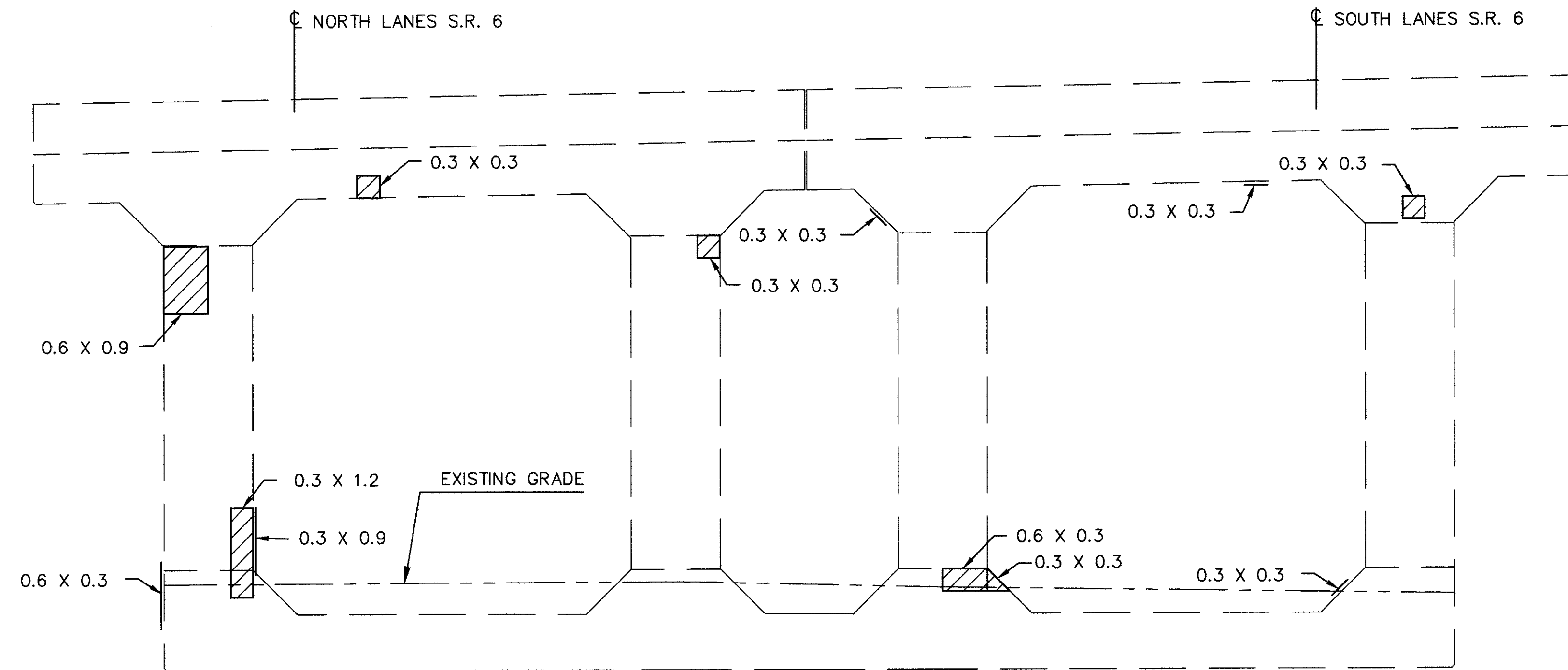
NOTES:

THE SUBSTRUCTURE UNIT(S) SHOWN ON THIS SHEET IS(ARE) TO BE REPAIRED USING THE METHODS AND MATERIALS SPECIFIED BY ITEM 520-PNEUMATICALLY PLACED MORTAR, AS PER PLAN. REFER TO THE STRUCTURE GENERAL NOTES, SHEETS 6 / 70 AND 7 / 70 FOR A DESCRIPTION OF THIS PAY ITEM.

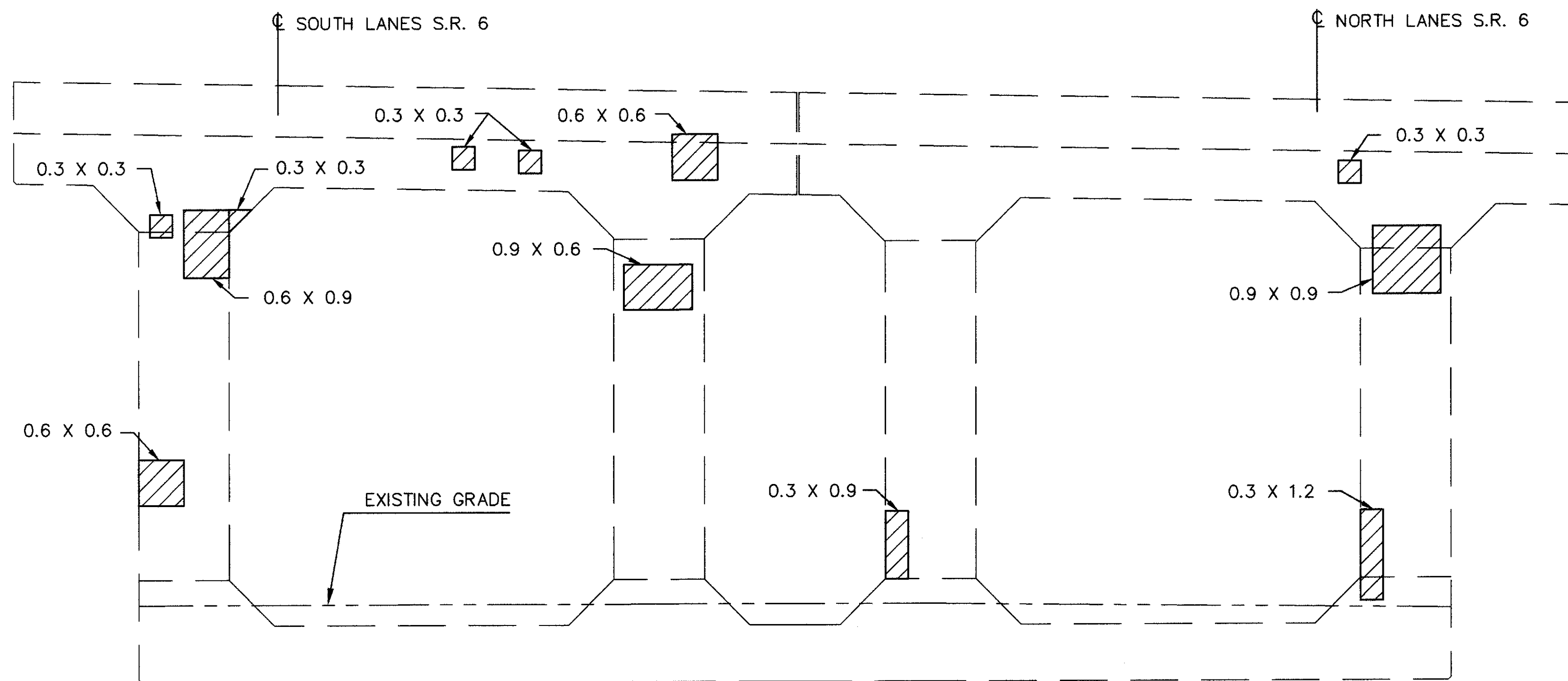
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 INDICATES APPROXIMATE REPAIR LIMITS ON SURFACES NOT SHOWN IN ELEVATION VIEW.

REPAIR AREA = 3.42 SQUARE METERS THIS SHEET.



ELEVATION - WEST FACE



ELEVATION - EAST FACE

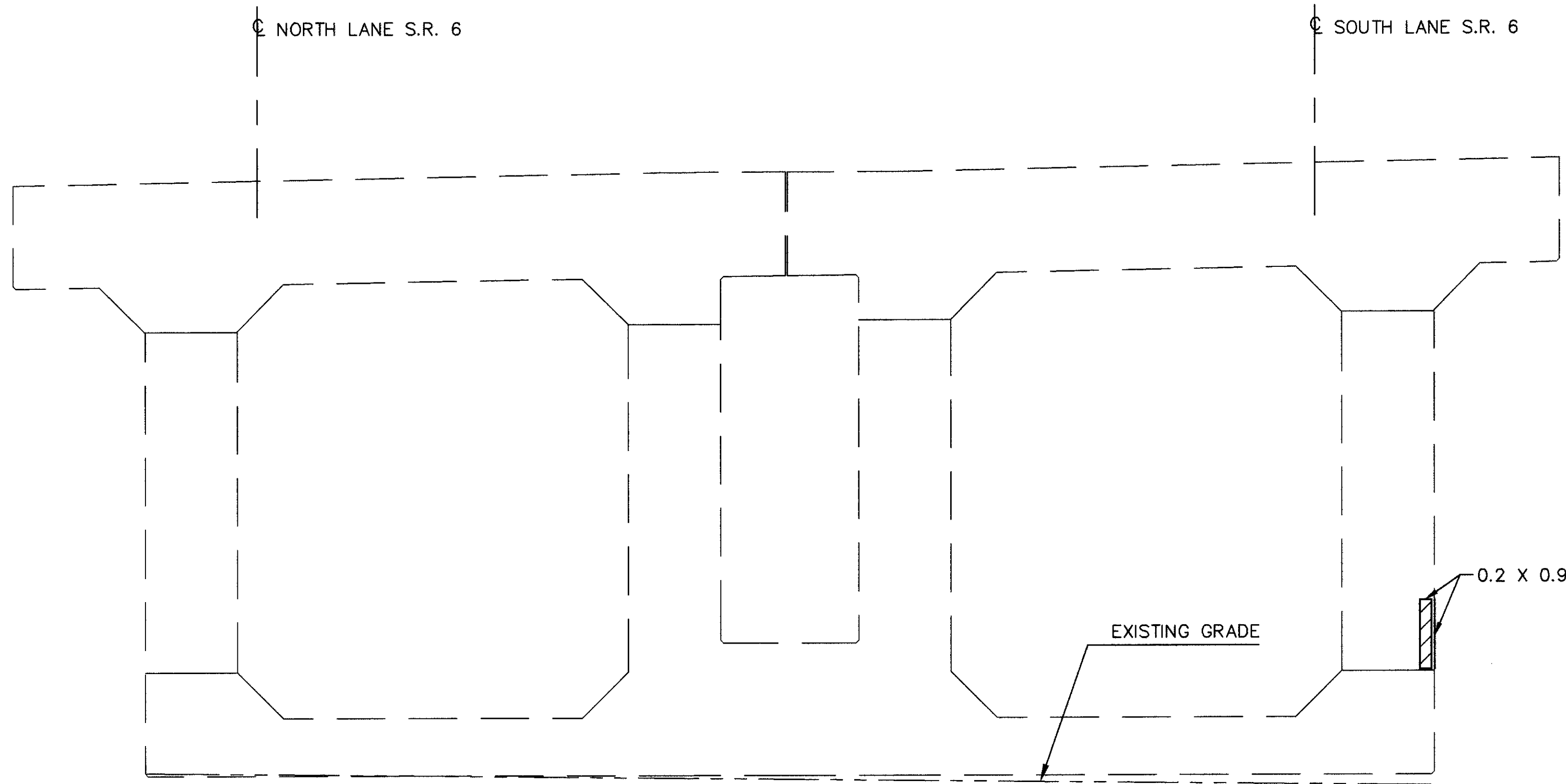
NOTES:

THE SUBSTRUCTURE UNIT(S) SHOWN ON THIS SHEET IS(ARE) TO BE REPAIRED USING THE METHODS AND MATERIALS SPECIFIED BY ITEM 520-PNEUMATICALLY PLACED MORTAR, AS PER PLAN. REFER TO THE STRUCTURE GENERAL NOTES, SHEETS 6 / 70 AND 7 / 70 FOR A DESCRIPTION OF THIS PAY ITEM.

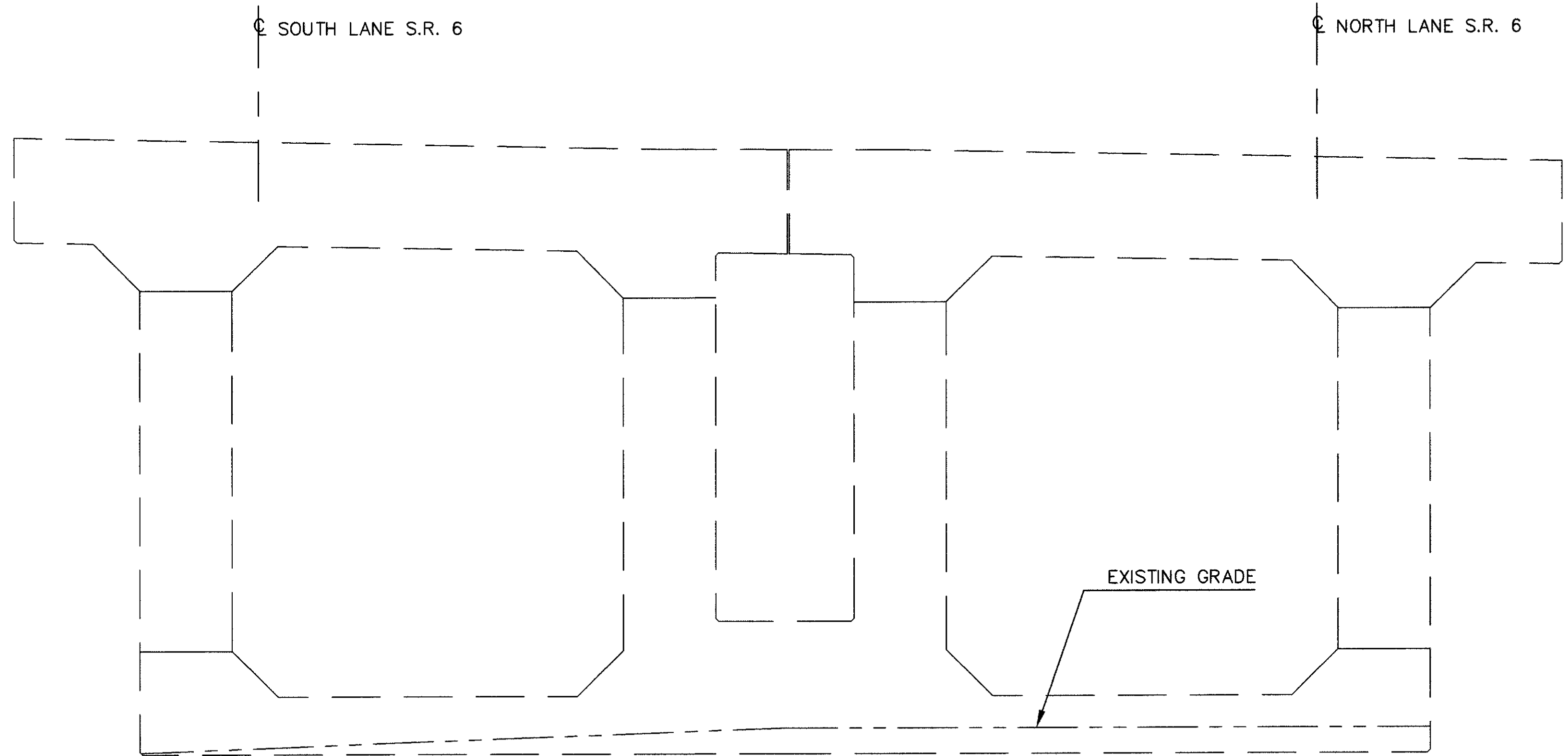
 INDICATES APPROXIMATE REPAIR LIMITS SHOWN IN ELEVATION VIEW. REPAIR AREA DIMENSIONS IN METERS.

INDICATES APPROXIMATE REPAIR LIMITS
ON SURFACES NOT SHOWN IN ELEVATION
VIEW.

REPAIR AREA = 5.85 SQUARE METERS
THIS SHEET.



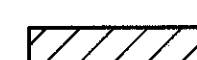
ELEVATION - WEST FACE



ELEVATION - EAST FACE

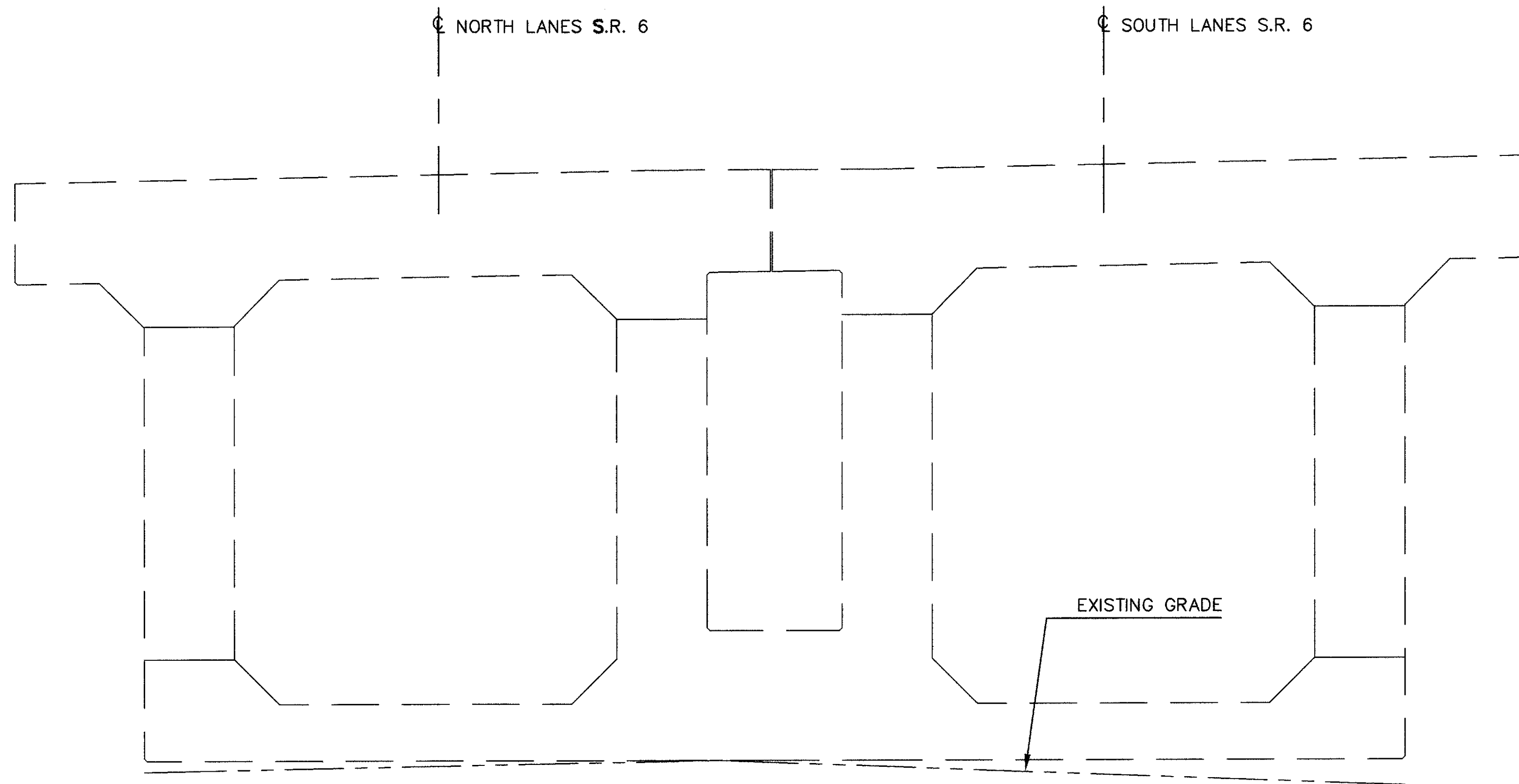
NOTES:

THE SUBSTRUCTURE UNIT(S) SHOWN ON THIS SHEET IS(ARE) TO BE REPAIRED USING THE METHODS AND MATERIALS SPECIFIED BY ITEM 520-PNEUMATICALLY PLACED MORTAR, AS PER PLAN. REFER TO THE STRUCTURE GENERAL NOTES, SHEETS 6 / 70 AND 7 / 70 FOR A DESCRIPTION OF THIS PAY ITEM.

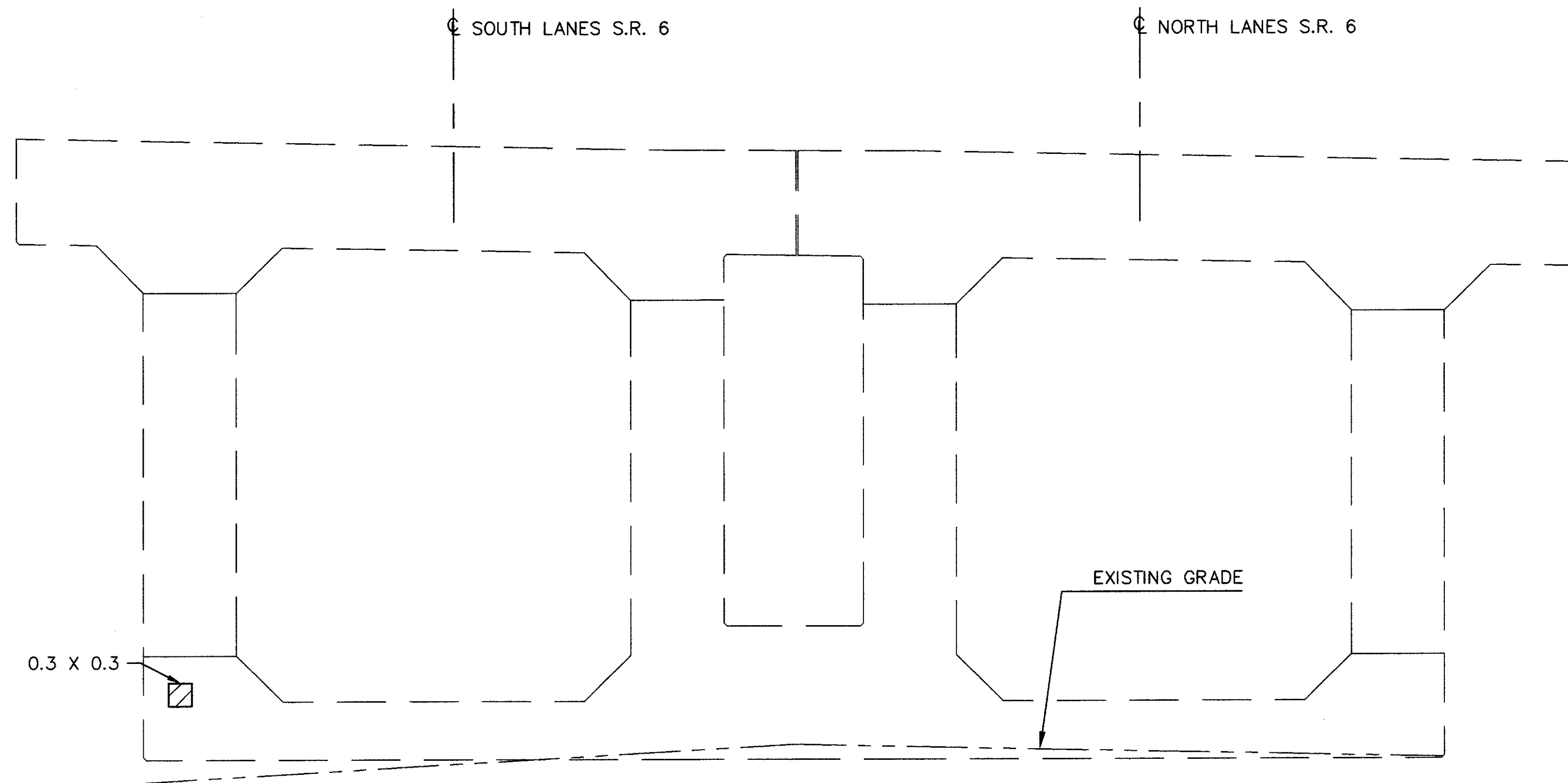
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 INDICATES APPROXIMATE REPAIR LIMITS ON SURFACES NOT SHOWN IN ELEVATION VIEW.

REPAIR AREA = 0.36 SQUARE METERS THIS SHEET.



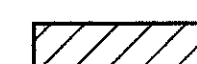
ELEVATION - WEST FACE



ELEVATION - EAST FACE

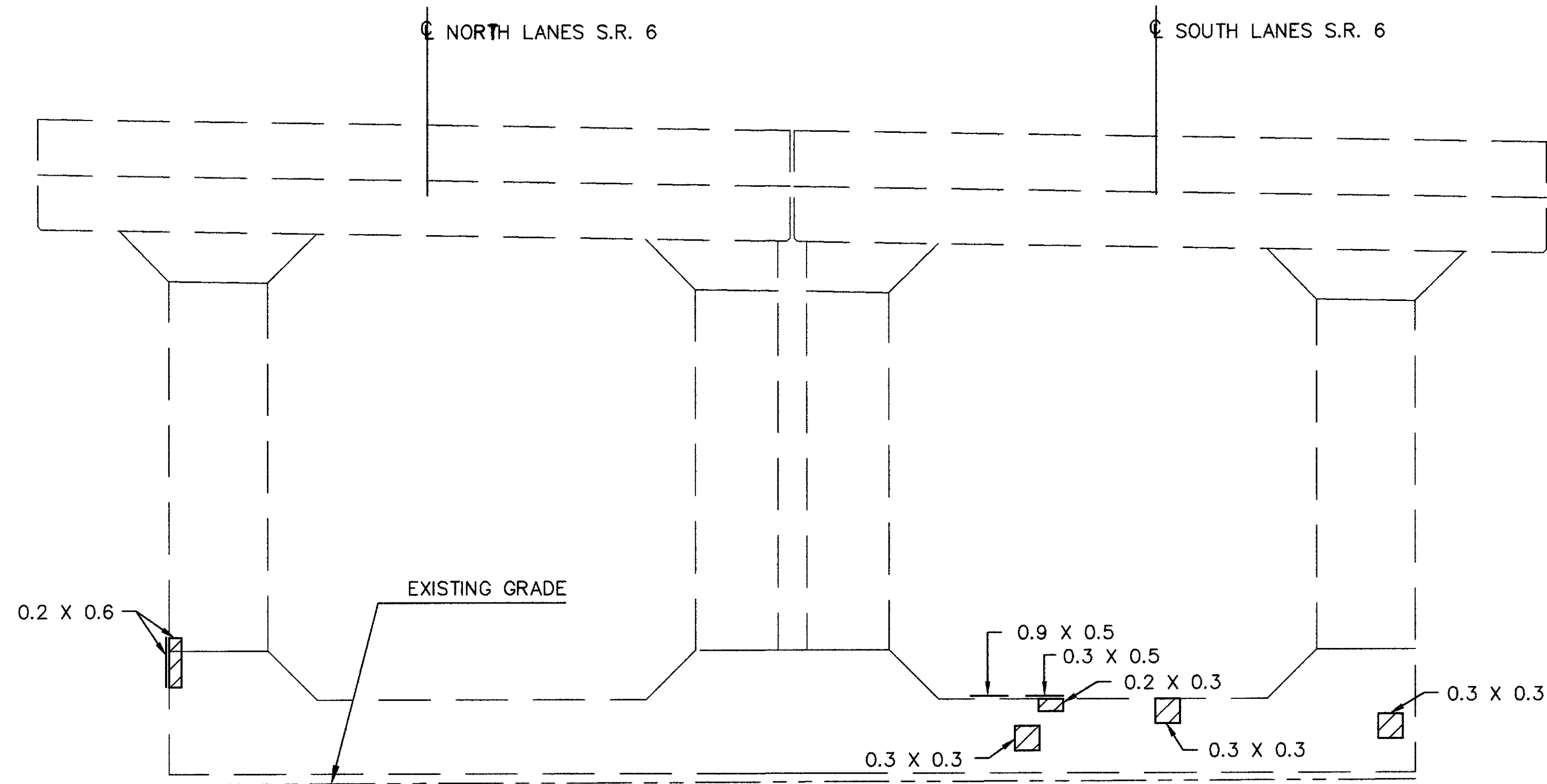
NOTES:

THE SUBSTRUCTURE UNIT(S) SHOWN ON THIS SHEET IS(ARE) TO BE REPAIRED USING THE METHODS AND MATERIALS SPECIFIED BY ITEM 520-PNEUMATICALLY PLACED MORTAR, AS PER PLAN. REFER TO THE STRUCTURE GENERAL NOTES, SHEETS 6 / 70 AND 7 / 70 FOR A DESCRIPTION OF THIS PAY ITEM.

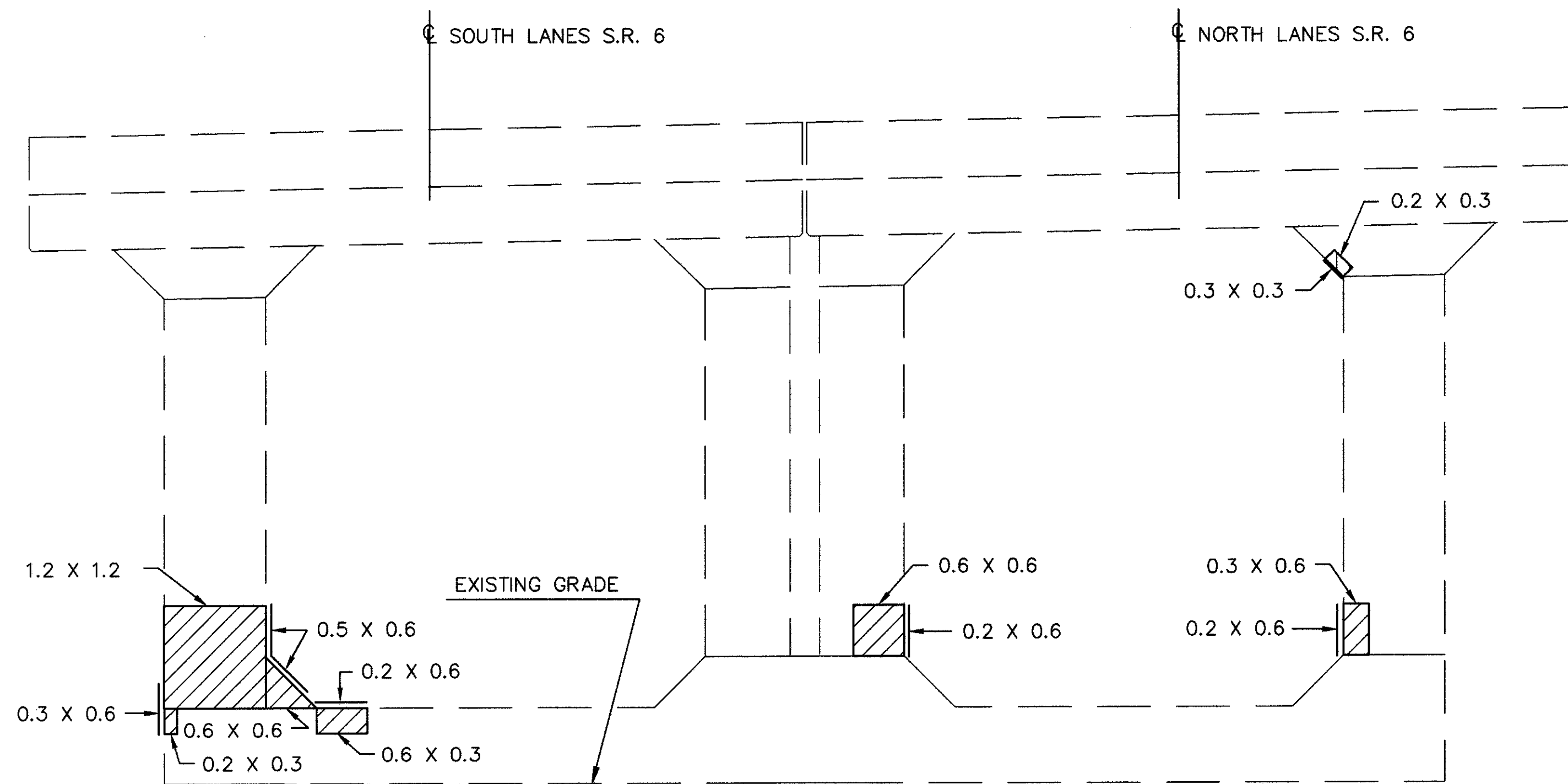
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 INDICATES APPROXIMATE REPAIR LIMITS ON SURFACES NOT SHOWN IN ELEVATION VIEW.

REPAIR AREA = 0.09 SQUARE METERS THIS SHEET.



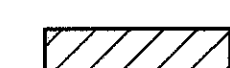
ELEVATION - WEST FACE



ELEVATION - EAST FACE

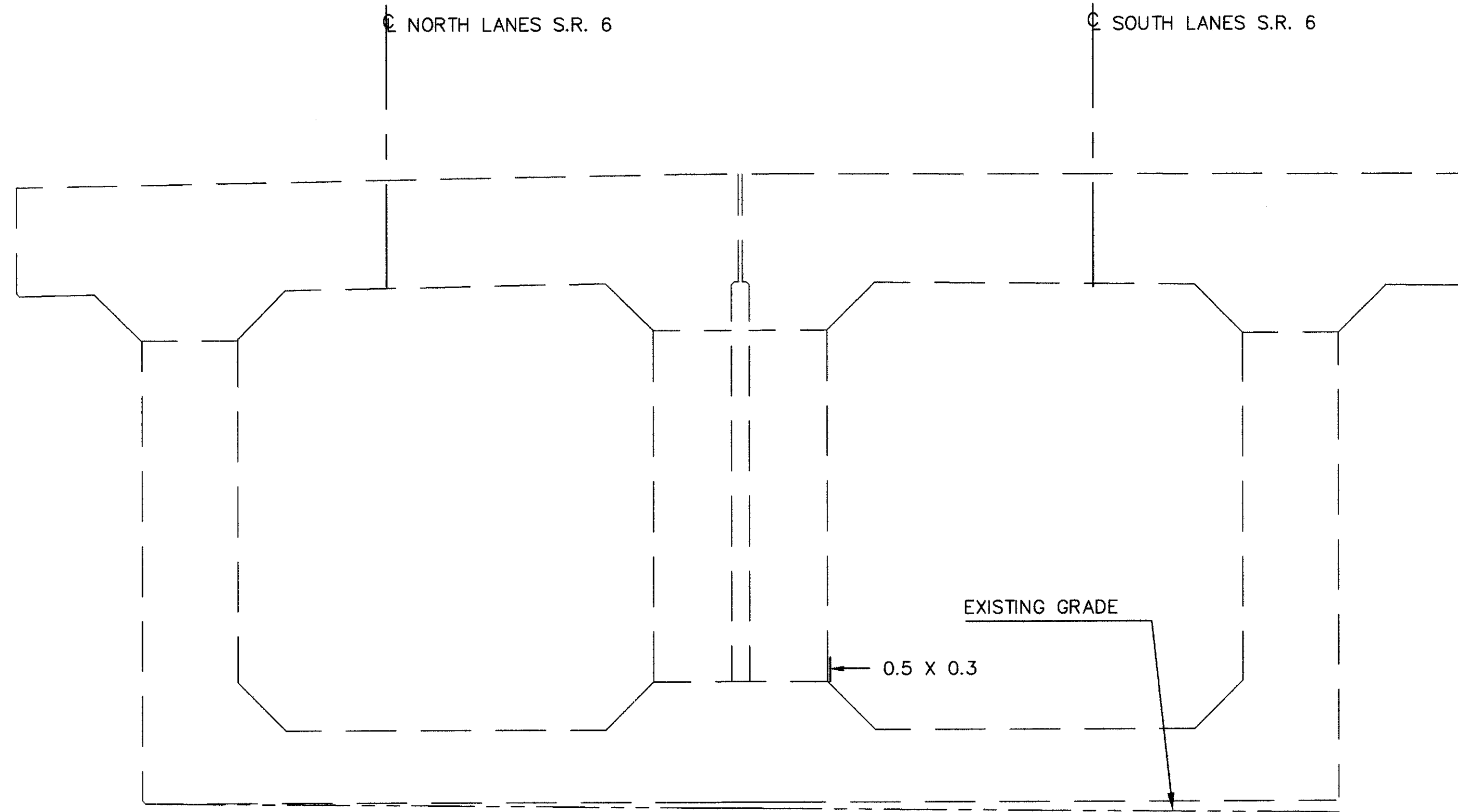
NOTES:

THE SUBSTRUCTURE UNIT(S) SHOWN ON THIS SHEET IS(ARE) TO BE REPAIRED USING THE METHODS AND MATERIALS SPECIFIED BY ITEM 520-PNEUMATICALLY PLACED MORTAR, AS PER PLAN. REFER TO THE STRUCTURE GENERAL NOTES, SHEETS 6/70 AND 7/70 FOR A DESCRIPTION OF THIS PAY ITEM.

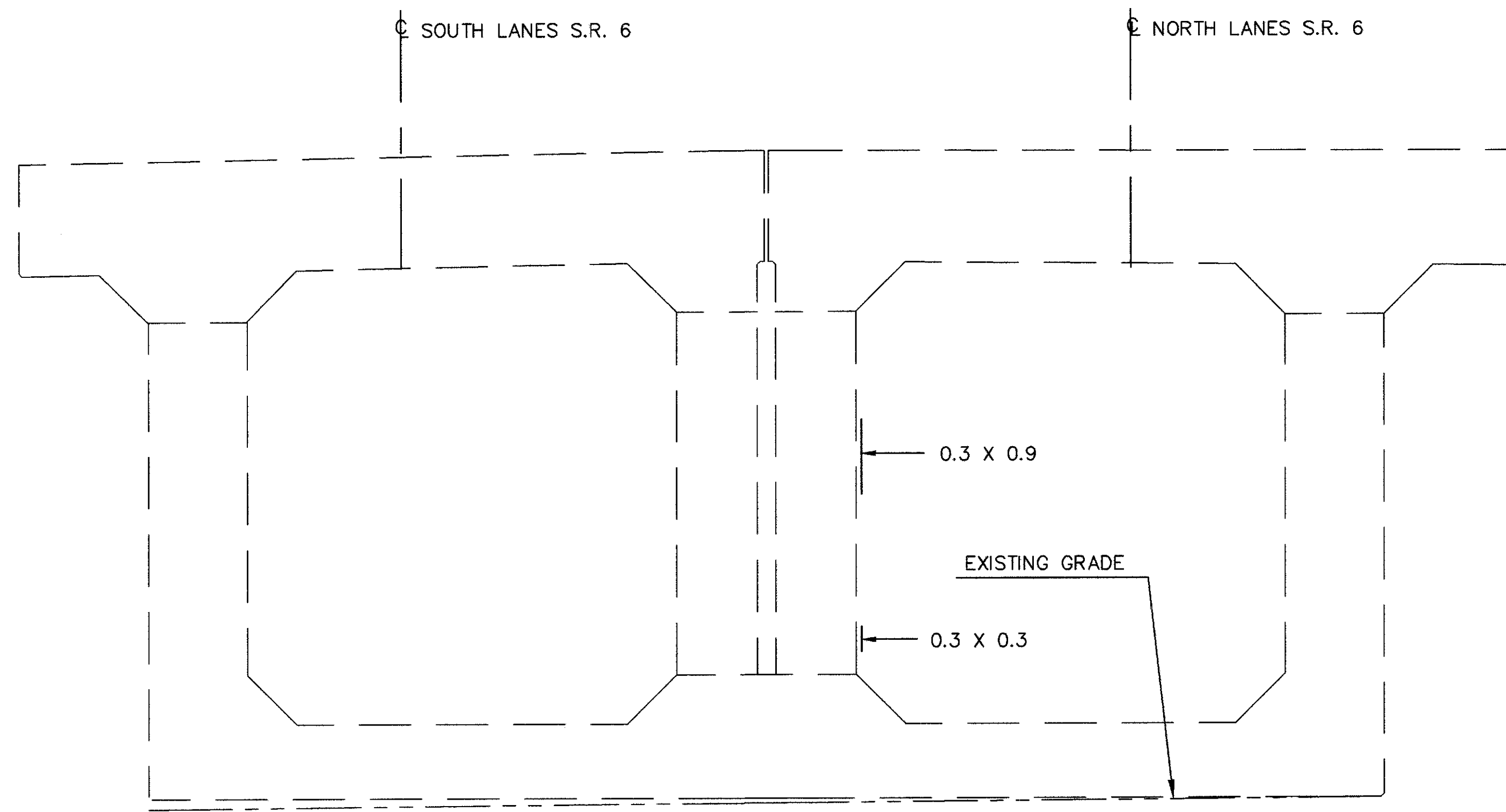
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 INDICATES APPROXIMATE REPAIR LIMITS ON SURFACES NOT SHOWN IN ELEVATION VIEW.

REPAIR AREA = 4.95 SQUARE METERS THIS SHEET.



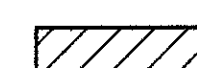
ELEVATION - WEST FACE



ELEVATION - EAST FACE

NOTES:

THE SUBSTRUCTURE UNIT(S) SHOWN ON THIS SHEET IS(ARE) TO BE REPAIRED USING THE METHODS AND MATERIALS SPECIFIED BY ITEM 520-PNEUMATICALLY PLACED MORTAR, AS PER PLAN. REFER TO THE STRUCTURE GENERAL NOTES, SHEETS 6 / 70 AND 7 / 70 FOR A DESCRIPTION OF THIS PAY ITEM.

 INDICATES APPROXIMATE REPAIR LIMITS SHOWN IN ELEVATION VIEW. REPAIR AREA DIMENSIONS IN METERS.

 INDICATES APPROXIMATE REPAIR LIMITS ON SURFACES NOT SHOWN IN ELEVATION VIEW.

REPAIR AREA = 0.51 SQUARE METERS THIS SHEET.

PIER NO. 10 REPAIR
BRIDGE NUMBER ERI-6-28839
OVER HURON RIVER

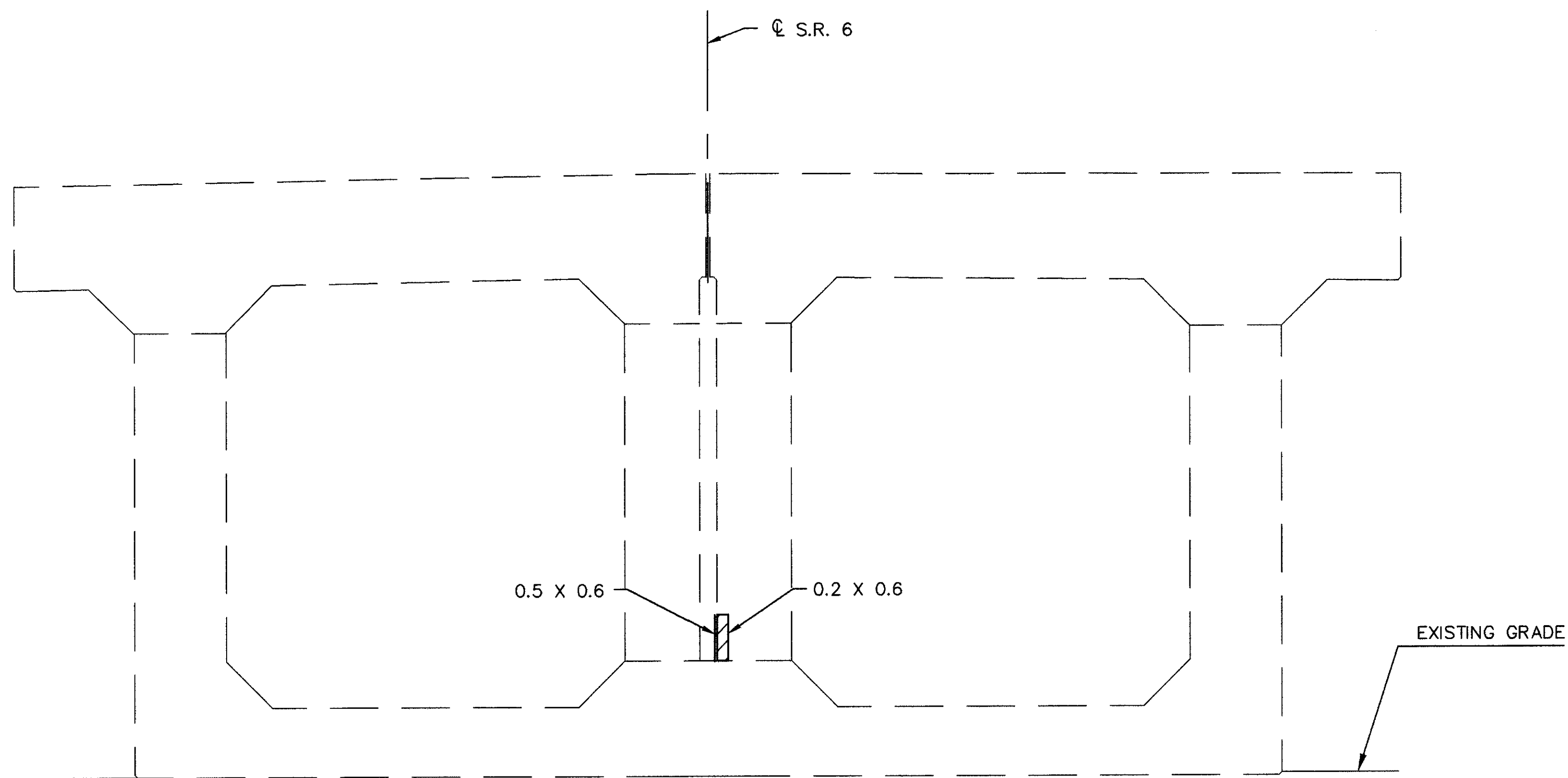
ERI-6-28.839

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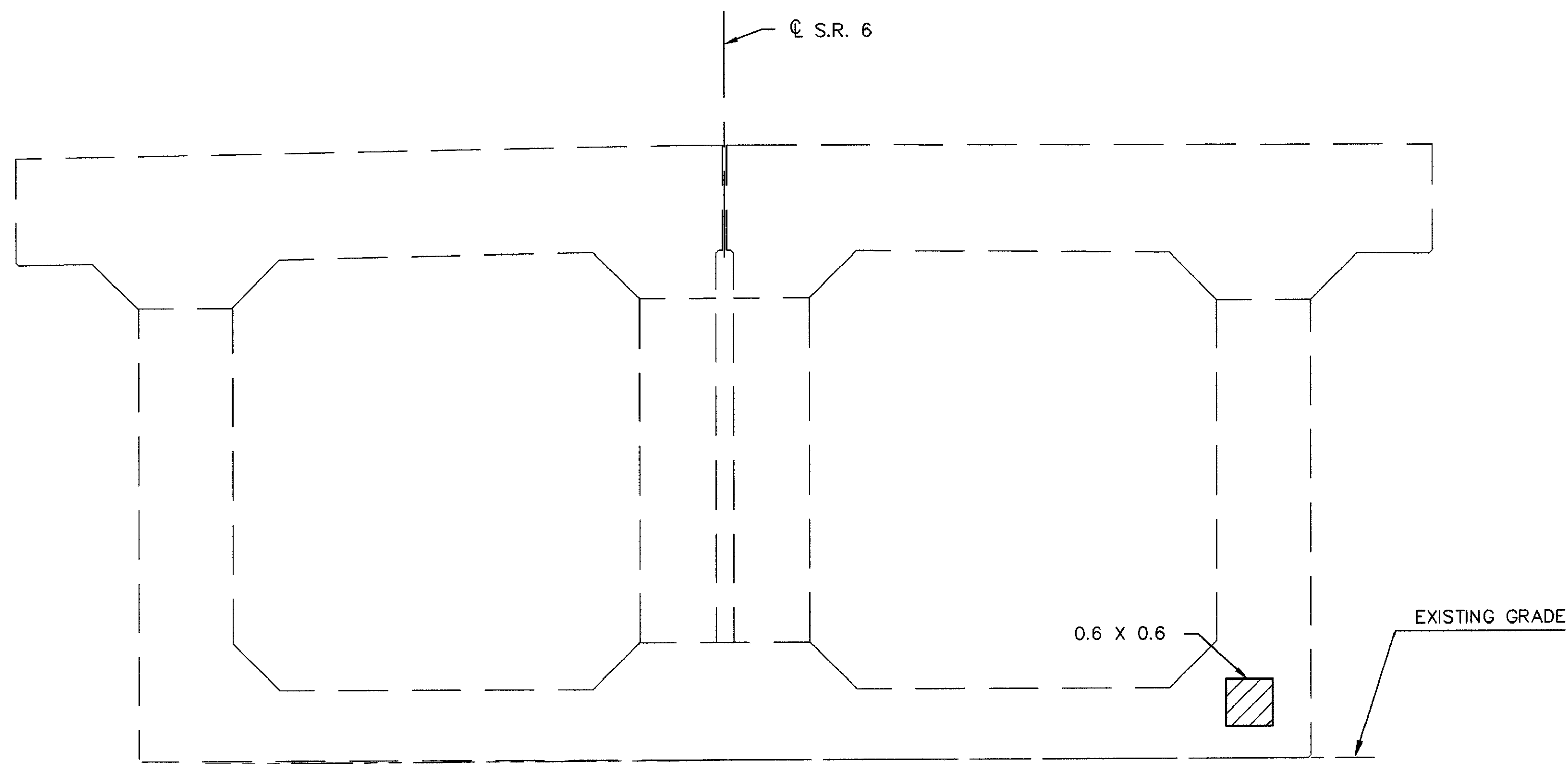
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adache-cjuni-lynn
associates
CONSULTING ENGINEERS
4407 ROCKSIDE RD. CLEVELAND, OHIO 44131

DESIGNED RCK	CHECKED DP	DRAWN RCK	REVIEWED TAB	DATE 12/97
STRUCTURE FILE NUMBER 2201984				



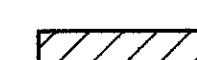
ELEVATION - WEST FACE



ELEVATION - EAST FACE

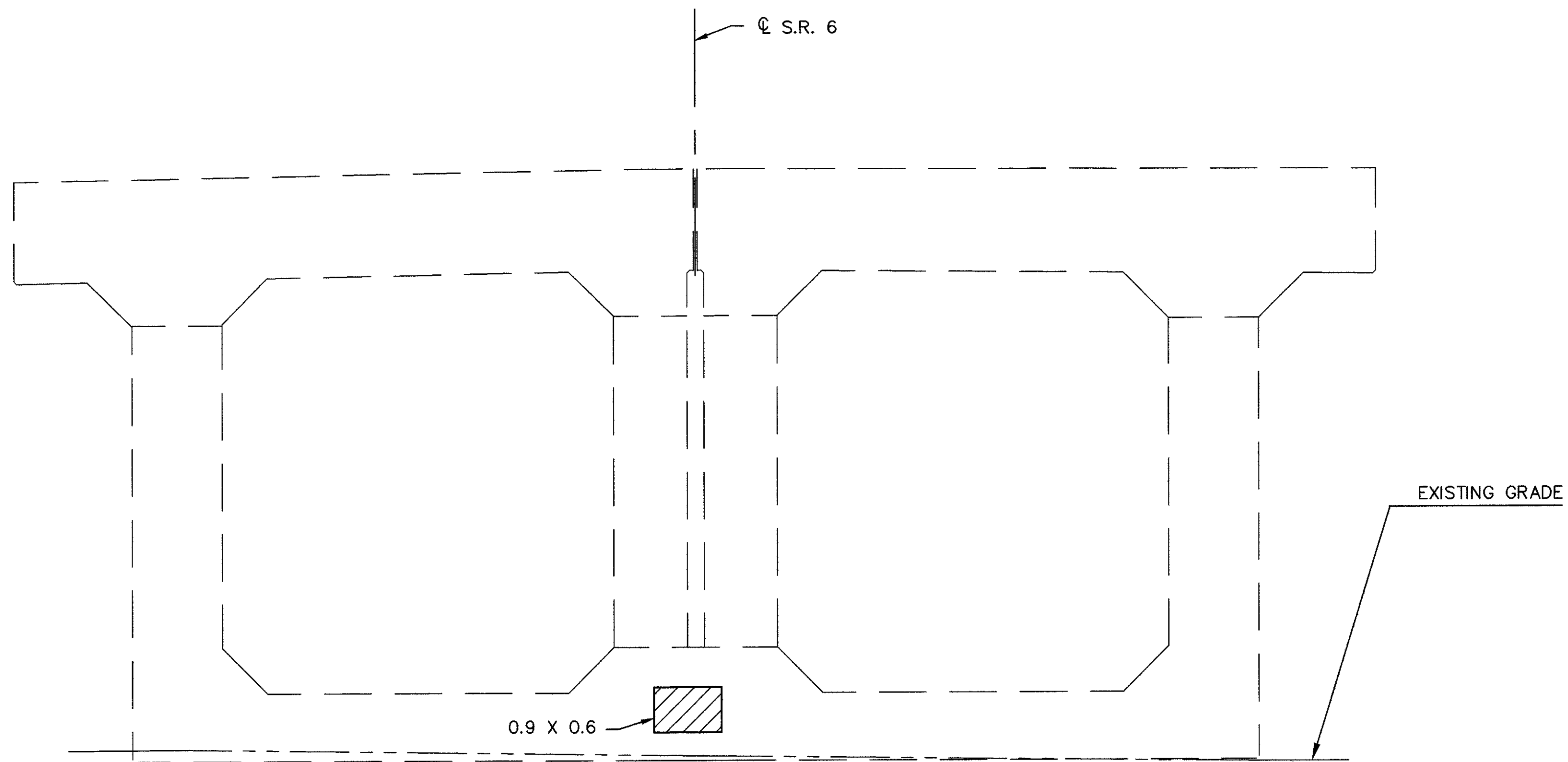
NOTES:

THE SUBSTRUCTURE UNIT(S) SHOWN ON THIS SHEET IS(ARE) TO BE REPAIRED USING THE METHODS AND MATERIALS SPECIFIED BY ITEM 520-PNEUMATICALLY PLACED MORTAR, AS PER PLAN. REFER TO THE STRUCTURE GENERAL NOTES, SHEETS 6/70 AND 7/70 FOR A DESCRIPTION OF THIS PAY ITEM.

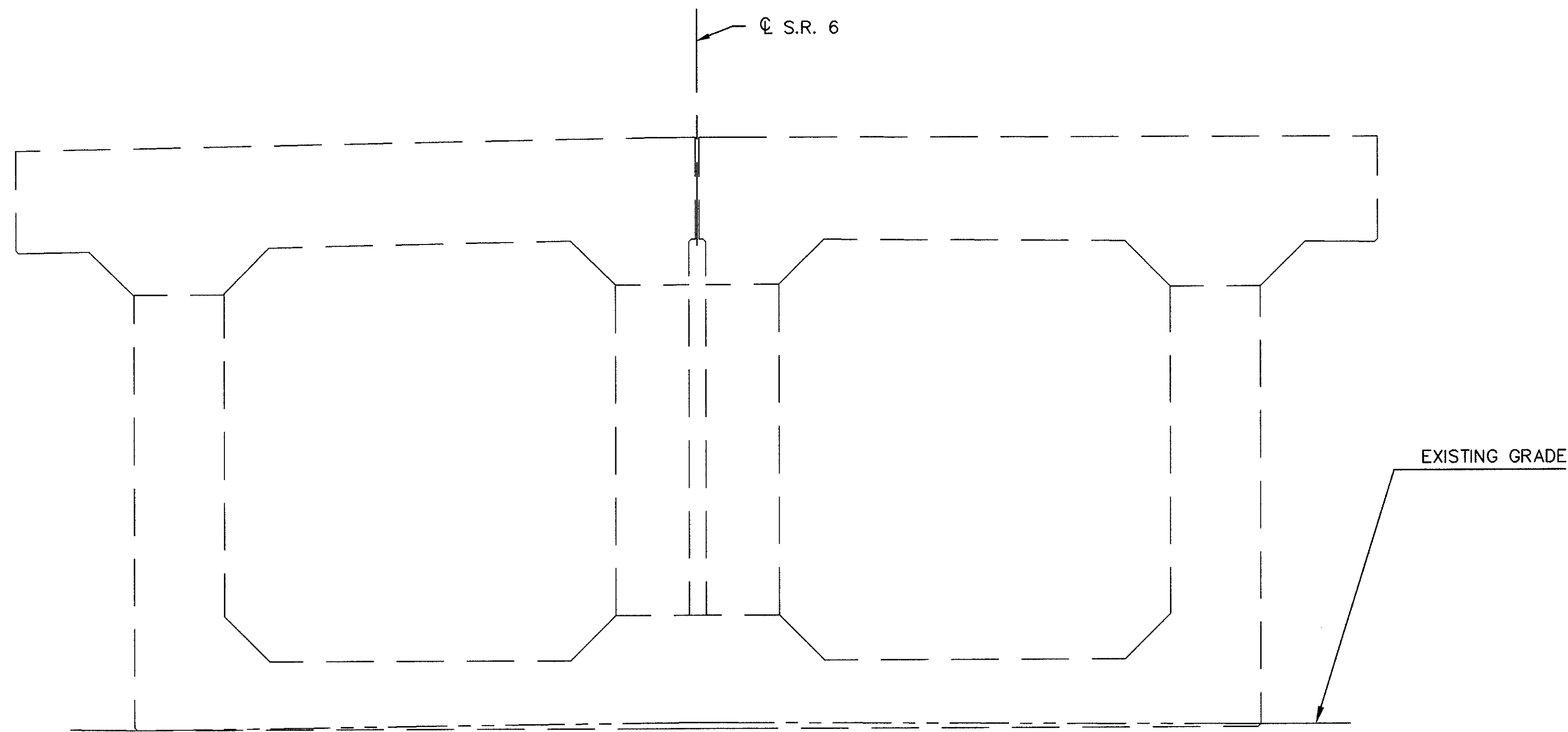
 INDICATES APPROXIMATE REPAIR LIMITS SHOWN IN ELEVATION VIEW. REPAIR AREA DIMENSIONS IN METERS.

 INDICATES APPROXIMATE REPAIR LIMITS ON SURFACES NOT SHOWN IN ELEVATION VIEW.

REPAIR AREA = 0.78 SQUARE METERS THIS SHEET.



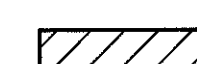
ELEVATION - WEST FACE



ELEVATION - EAST FACE

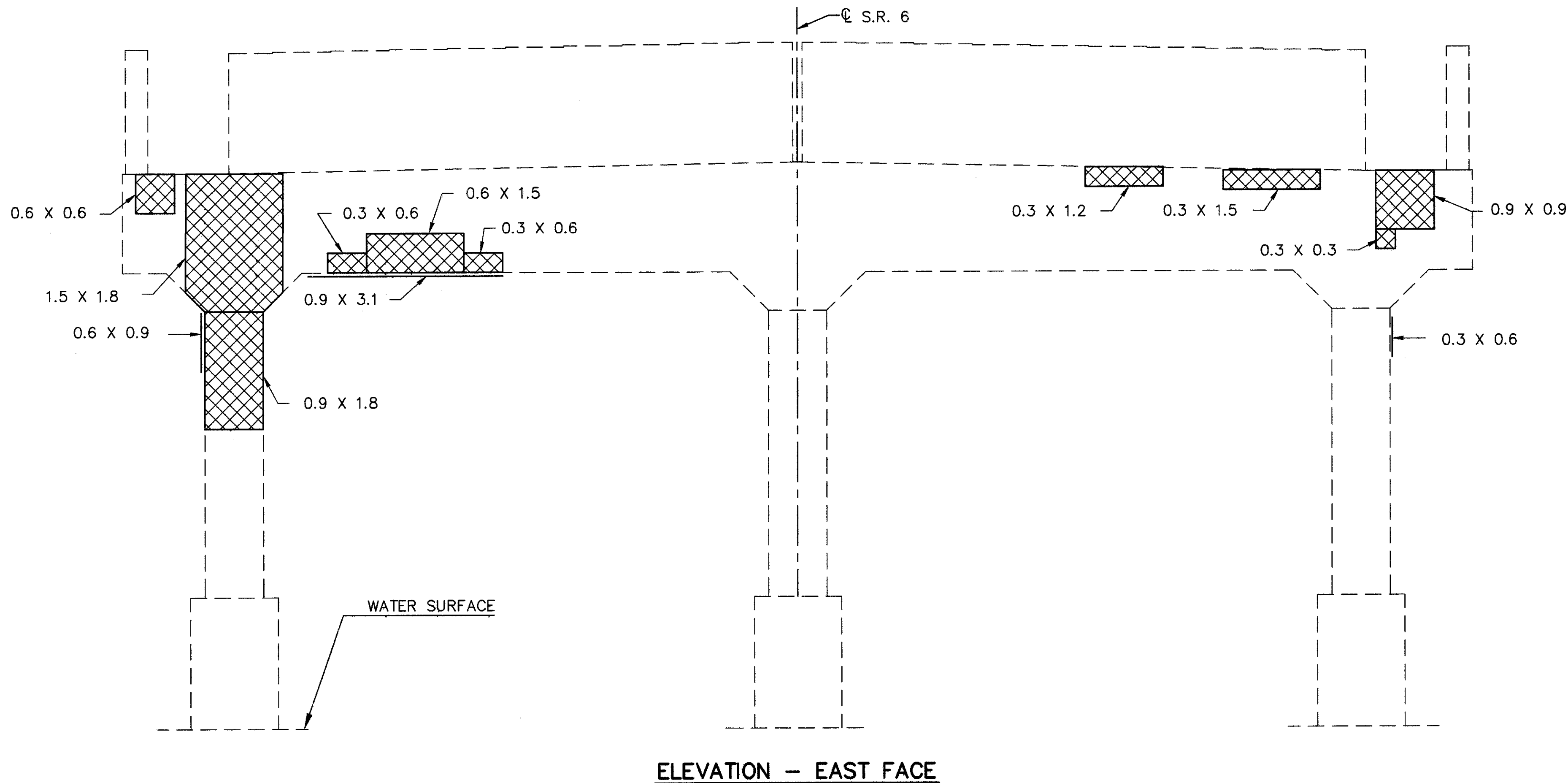
NOTES:

THE SUBSTRUCTURE UNIT(S) SHOWN ON THIS SHEET IS(ARE) TO BE REPAIRED USING THE METHODS AND MATERIALS SPECIFIED BY ITEM 520-PNEUMATICALLY PLACED MORTAR, AS PER PLAN. REFER TO THE STRUCTURE GENERAL NOTES, SHEETS 6/70 AND 7/70 FOR A DESCRIPTION OF THIS PAY ITEM.

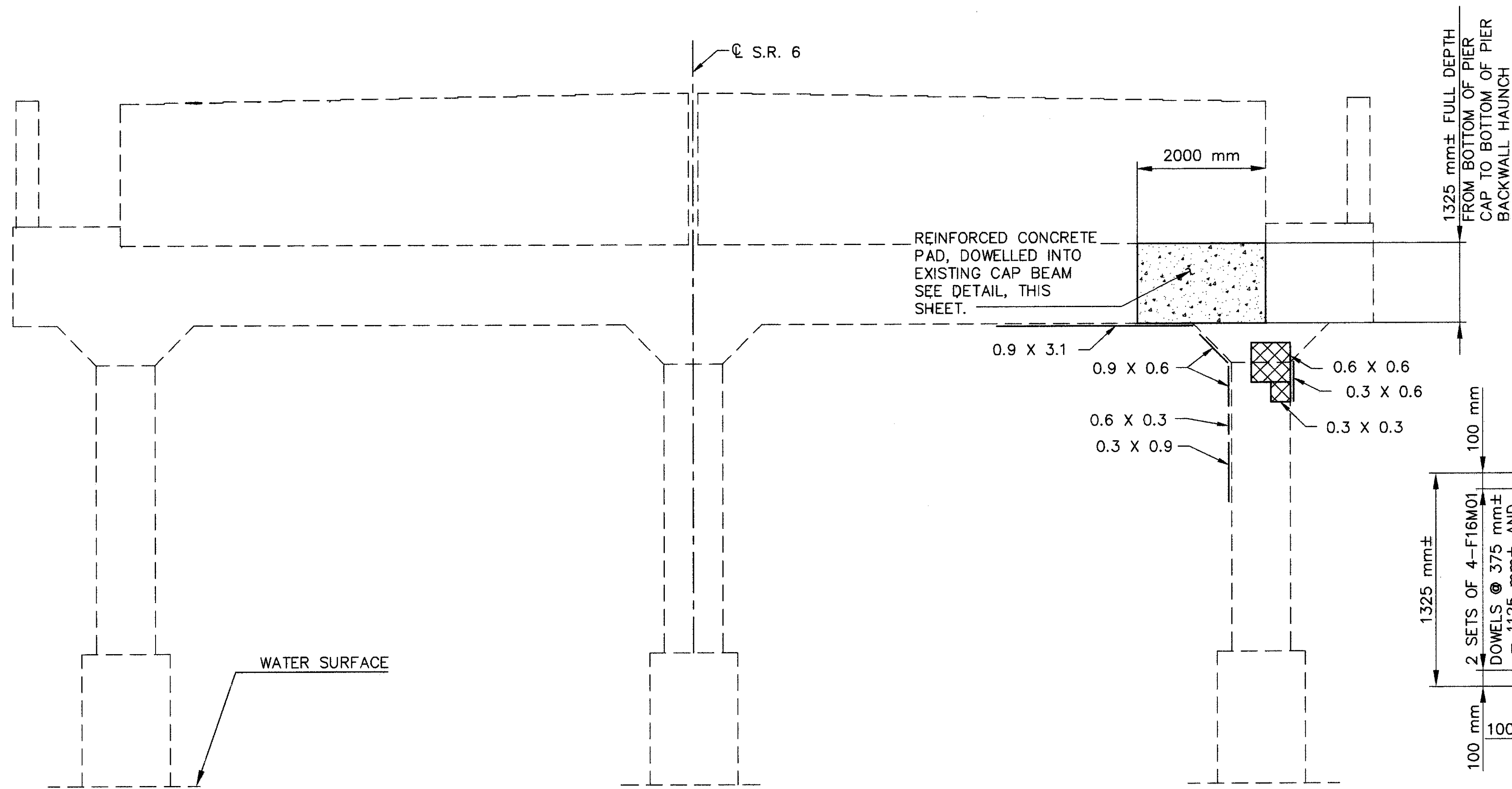
 INDICATES APPROXIMATE REPAIR LIMITS SHOWN IN ELEVATION VIEW. REPAIR AREA DIMENSIONS IN METERS.

 INDICATES APPROXIMATE REPAIR LIMITS ON SURFACES NOT SHOWN IN ELEVATION VIEW.

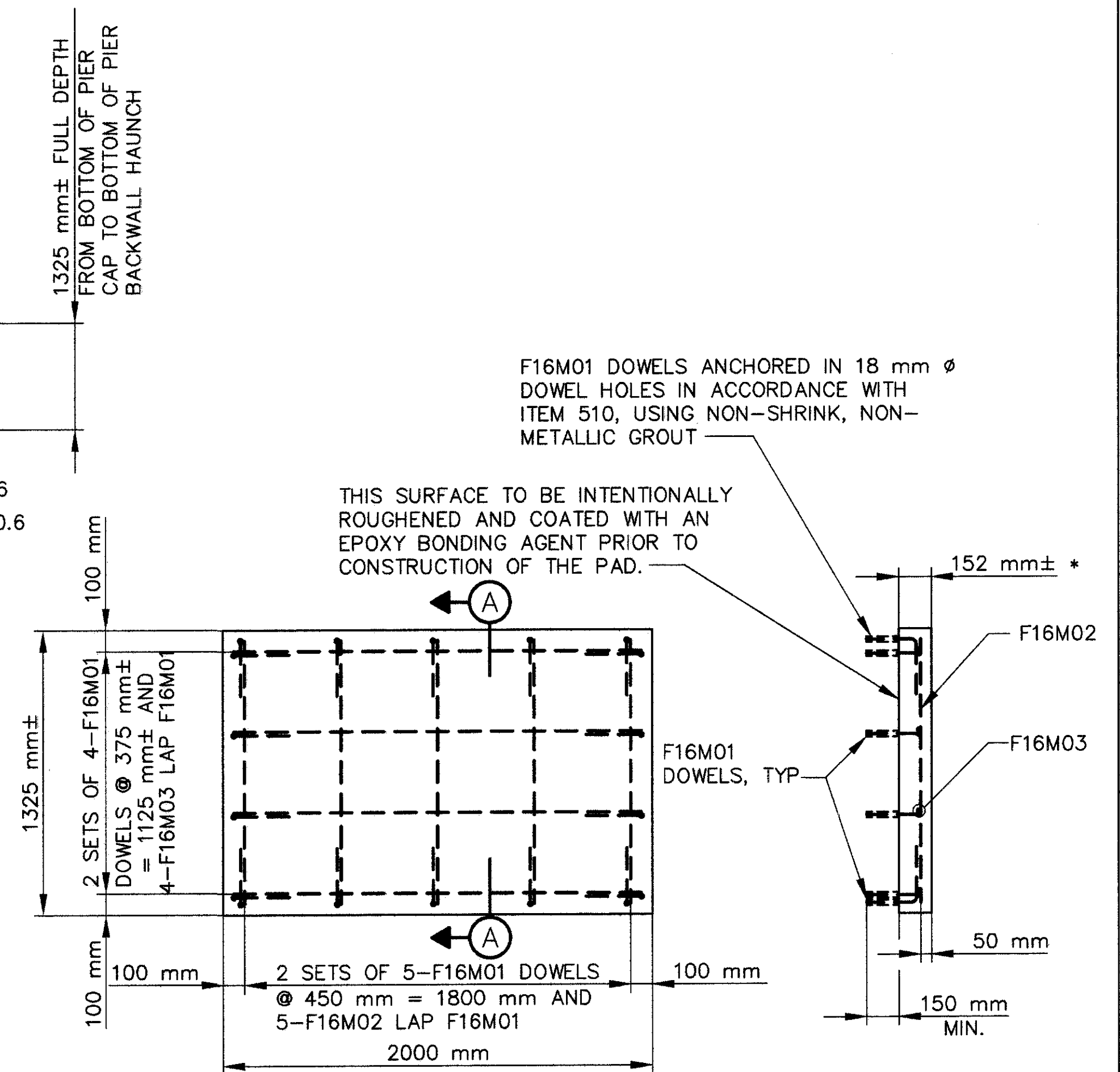
REPAIR AREA = 0.54 SQUARE METERS THIS SHEET.



ELEVATION - EAST FACE



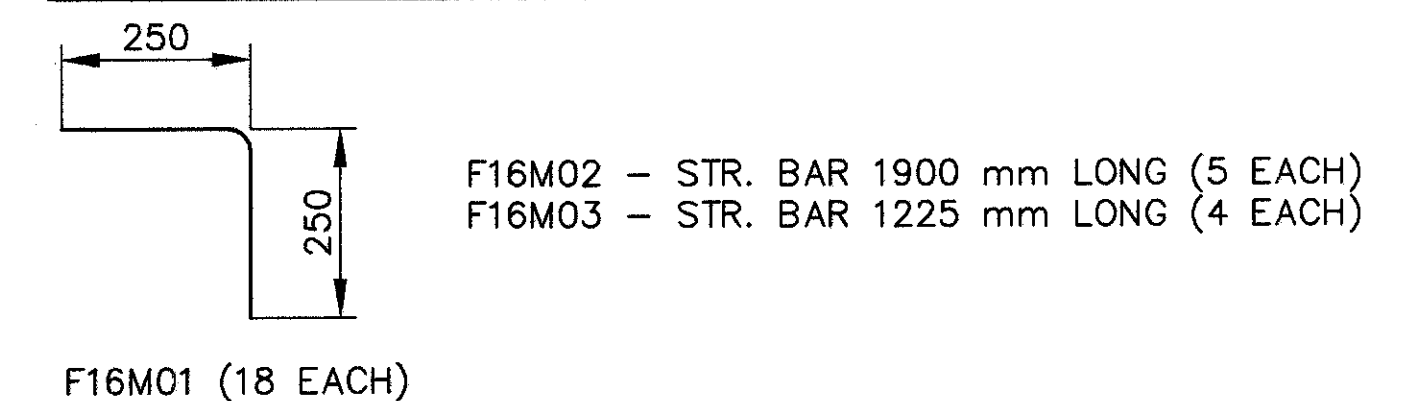
ELEVATION - WEST FACE



SECTION A-A

* MATCH BACKWALL HAUNCH

REINFORCING SCHEDULE:



REINFORCED CONCRETE PAD DETAIL

NOTES:

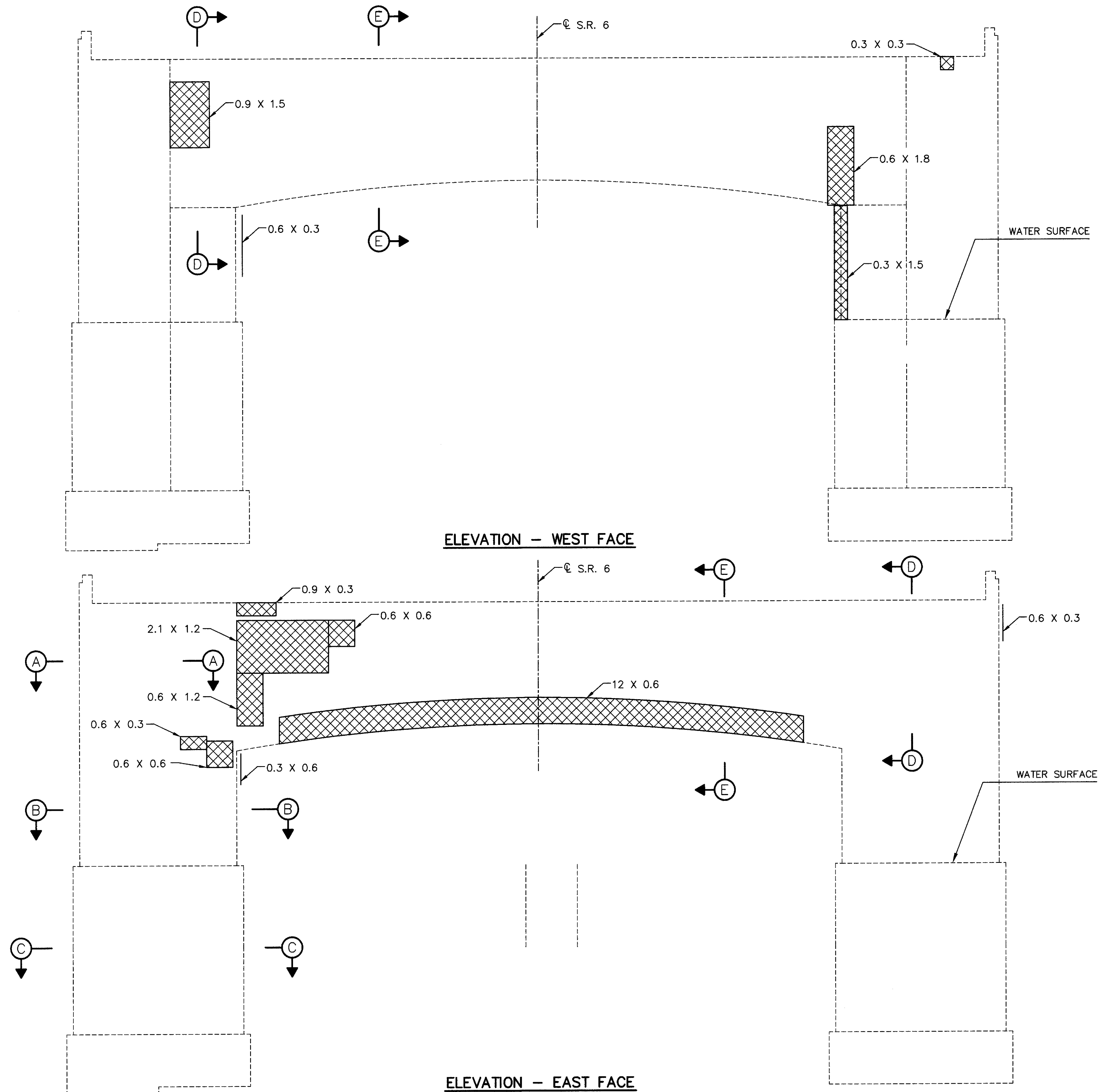
THE SUBSTRUCTURE UNIT(S) SHOWN ON THIS SHEET IS(ARE) TO BE REPAIRED USING THE METHODS AND MATERIALS SPECIFIED BY ITEM 519-PATCHING CONCRETE STRUCTURES.

INDICATES APPROXIMATE REPAIR LIMITS SHOWN IN ELEVATION VIEW. REPAIR AREA DIMENSIONS IN METERS.

INDICATES APPROXIMATE REPAIR LIMITS ON SURFACES NOT SHOWN IN ELEVATION VIEW.

REPAIR AREA = 16.11 SQUARE METERS THIS SHEET.

REINFORCED CONCRETE PAD CONSTRUCTION SHALL BE PAID FOR UNDER ITEM 511-CLASS 'C' CONCRETE PIER, AS PER PLAN. THE COST OF ROUGHENING THE EXISTING PIER CAP SURFACES, AND THE PROVISION AND APPLICATION OF THE EPOXY BONDING AGENT SHALL BE CONSIDERED INCIDENTAL TO THIS PAY ITEM.



NOTES:

THE SUBSTRUCTURE UNIT(S) SHOWN ON THIS SHEET IS(ARE) TO BE REPAIRED USING THE METHODS AND MATERIALS SPECIFIED BY ITEM 519-PATCHING CONCRETE STRUCTURES.

 INDICATES APPROXIMATE REPAIR LIMITS SHOWN IN ELEVATION VIEW. REPAIR AREA DIMENSIONS IN METERS. REPAIR AREA DIMENSIONS IN METERS.

 INDICATES APPROXIMATE REPAIR LIMITS ON SURFACES NOT SHOWN IN ELEVATION VIEW.

REPAIR AREA = 15.12 SQUARE METERS THIS SHEET.

A CATHODIC PROTECTION SYSTEM WILL BE INSTALLED ON THIS PIER FOLLOWING THE COMPLETION OF ALL REPAIRS AND MODIFICATIONS. NO SEALER IS TO BE APPLIED ON ANY SURFACE OF THIS PIER. REFER TO SHEETS 33/70 THROUGH

37/70 FOR DETAILS OF THE CATHODIC PROTECTION SYSTEM.

REFER TO SHEETS 31/70 AND 32/70

FOR DETAILS OF OTHER MODIFICATIONS REQUIRED ON THIS PIER.

PIER NO. 15 REPAIR
BRIDGE NUMBER ERI-6-28839
OVER HURON RIVER

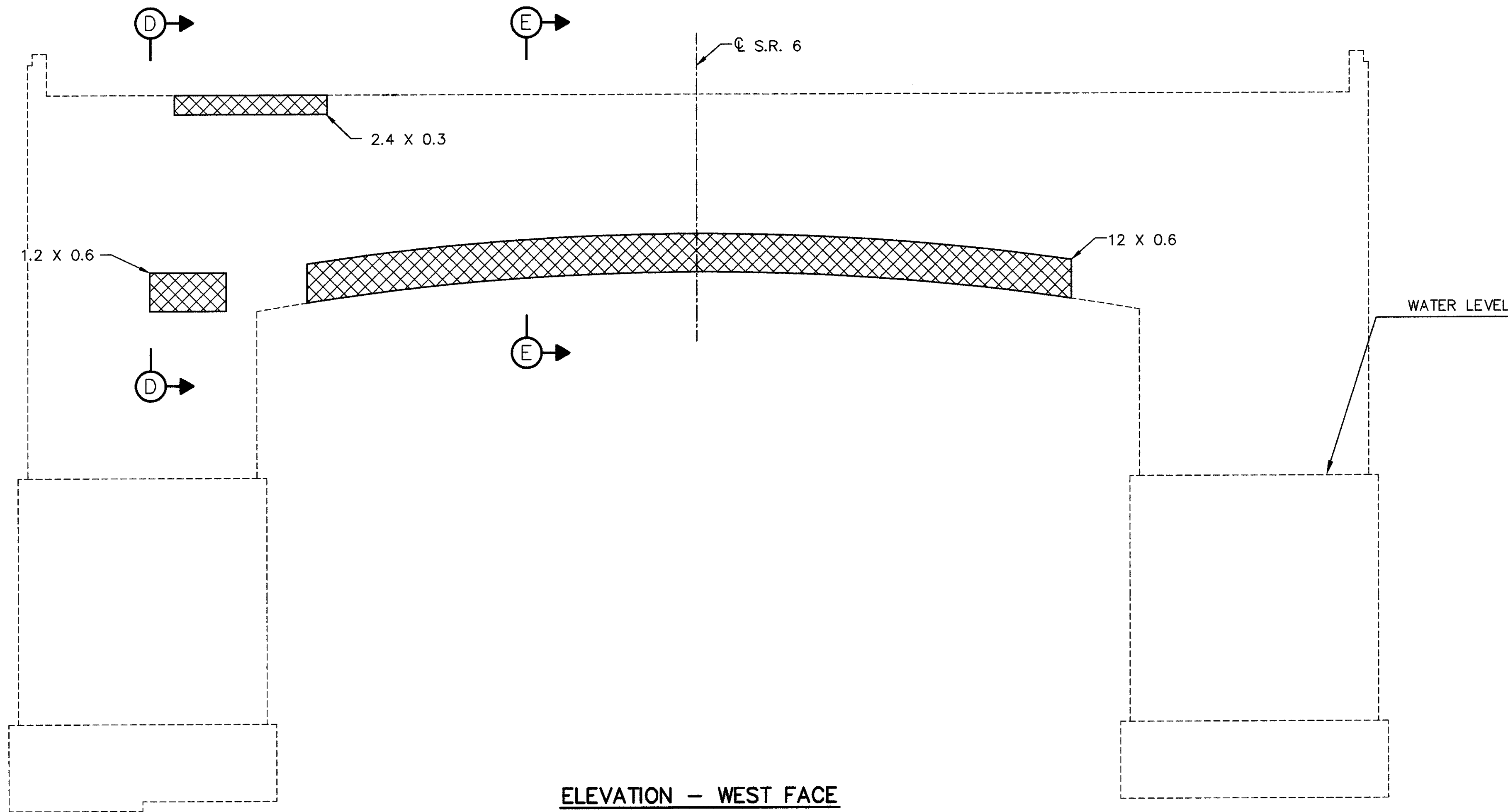
ERI-6-28.839

22/70

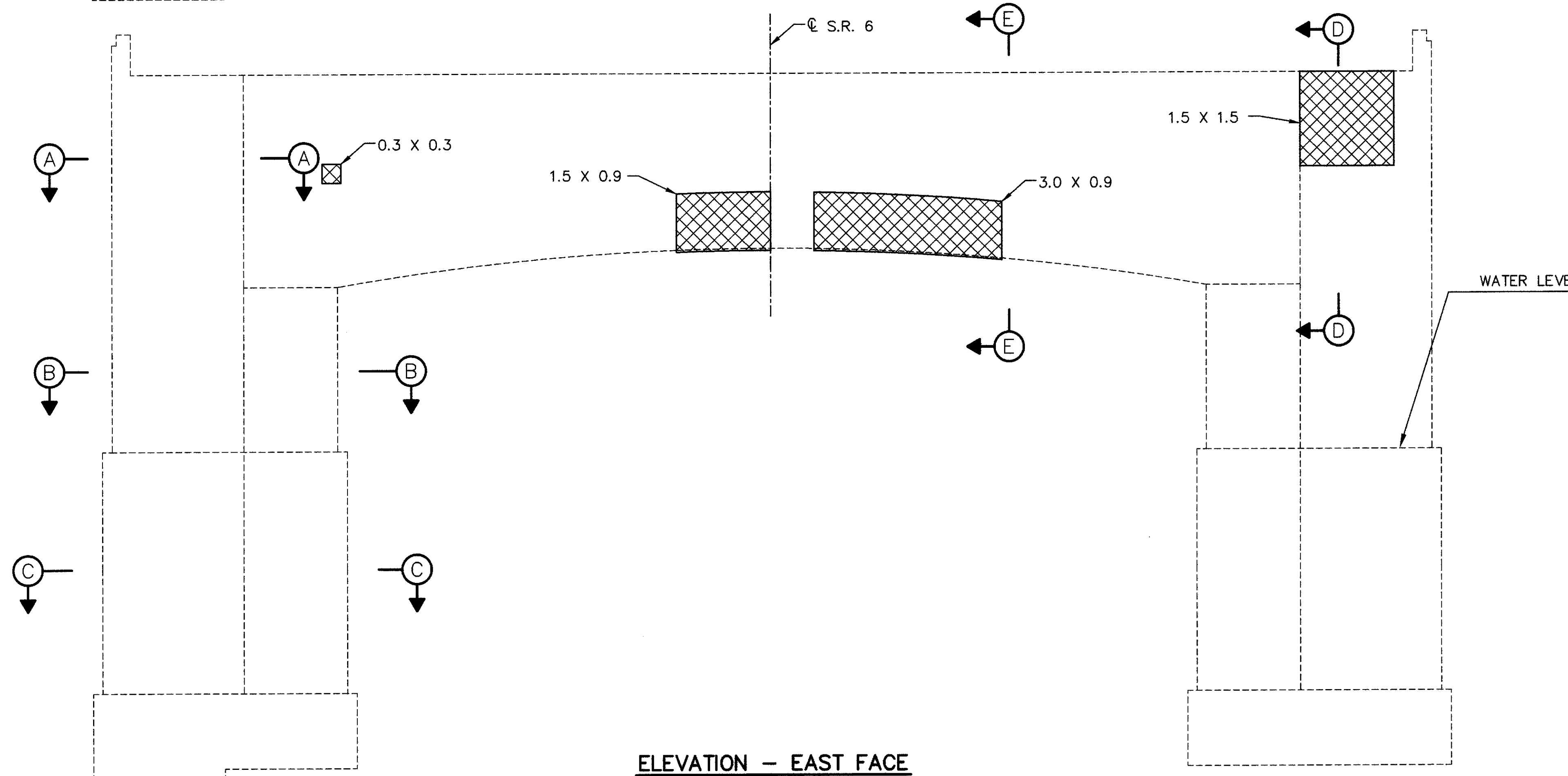
44
92

adache-cjuni-lynn
associates
CONSULTING ENGINEERS
4401 ROCKSIDE RD. CLEVELAND, OHIO 44131

DESIGNED	TES	DRAWN	TES	REVIEWED	TAB	DATE	12/97
CHECKED	DP	REVISED		STRUCTURE FILE NUMBER			2201984



ELEVATION - WEST FACE



ELEVATION - EAST FACE

NOTES:

THE SUBSTRUCTURE UNIT(S) SHOWN ON THIS SHEET IS(ARE) TO BE REPAIRED USING THE METHODS AND MATERIALS SPECIFIED BY ITEM 519-PATCHING CONCRETE STRUCTURES.

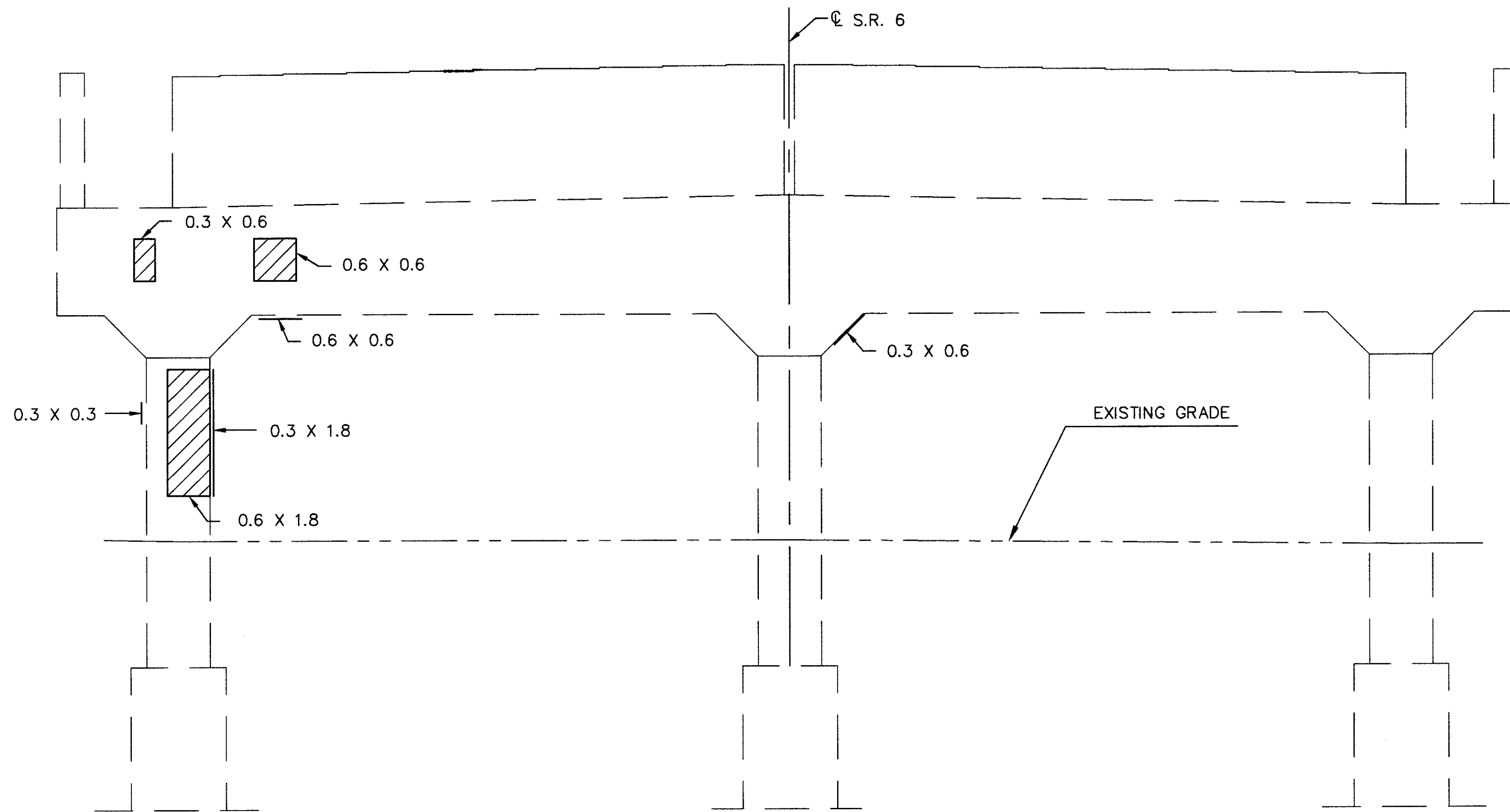
 INDICATES APPROXIMATE REPAIR LIMITS SHOWN IN ELEVATION VIEW. REPAIR AREA DIMENSIONS IN METERS.

 INDICATES APPROXIMATE REPAIR LIMITS ON SURFACES NOT SHOWN IN ELEVATION VIEW.

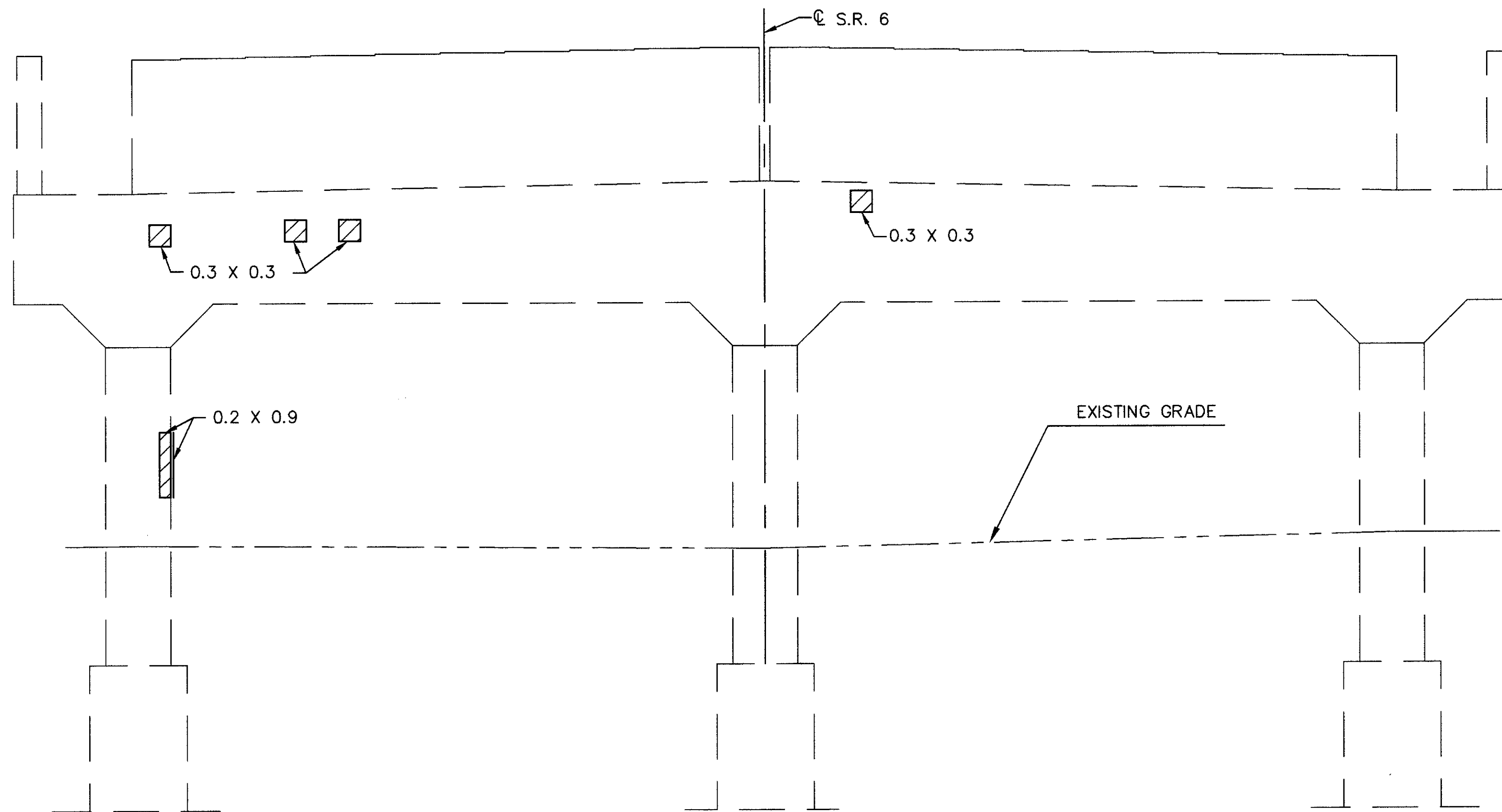
REPAIR AREA = 15.03 SQUARE METERS THIS SHEET.

A CATHODIC PROTECTION SYSTEM WILL BE INSTALLED ON THIS PIER FOLLOWING THE COMPLETION OF ALL REPAIRS AND MODIFICATIONS. NO SEALER IS TO BE APPLIED ON ANY SURFACE OF THIS PIER. REFER TO SHEETS 33/70 THROUGH 37/70 FOR DETAILS OF THE CATHODIC PROTECTION SYSTEM.

REFER TO SHEETS 31/70 AND 32/70 FOR DETAILS OF OTHER MODIFICATIONS REQUIRED ON THIS PIER.



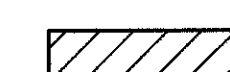
ELEVATION - WEST FACE



ELEVATION - EAST FACE

NOTES:

THE SUBSTRUCTURE UNIT(S) SHOWN ON THIS SHEET IS(ARE) TO BE REPAIRED USING THE METHODS AND MATERIALS SPECIFIED BY ITEM 520-PNEUMATICALLY PLACED MORTAR, AS PER PLAN. REFER TO THE STRUCTURE GENERAL NOTES, SHEETS 6/70 AND 7/70 FOR A DESCRIPTION OF THIS PAY ITEM.

 INDICATES APPROXIMATE REPAIR LIMITS SHOWN IN ELEVATION VIEW. REPAIR AREA DIMENSIONS IN METERS.

 INDICATES APPROXIMATE REPAIR LIMITS ON SURFACES NOT SHOWN IN ELEVATION VIEW.

REPAIR AREA = 3.51 SQUARE METERS THIS SHEET.

PIER NO. 17 REPAIR
BRIDGE NUMBER ERI-6-28839
OVER HURON RIVER

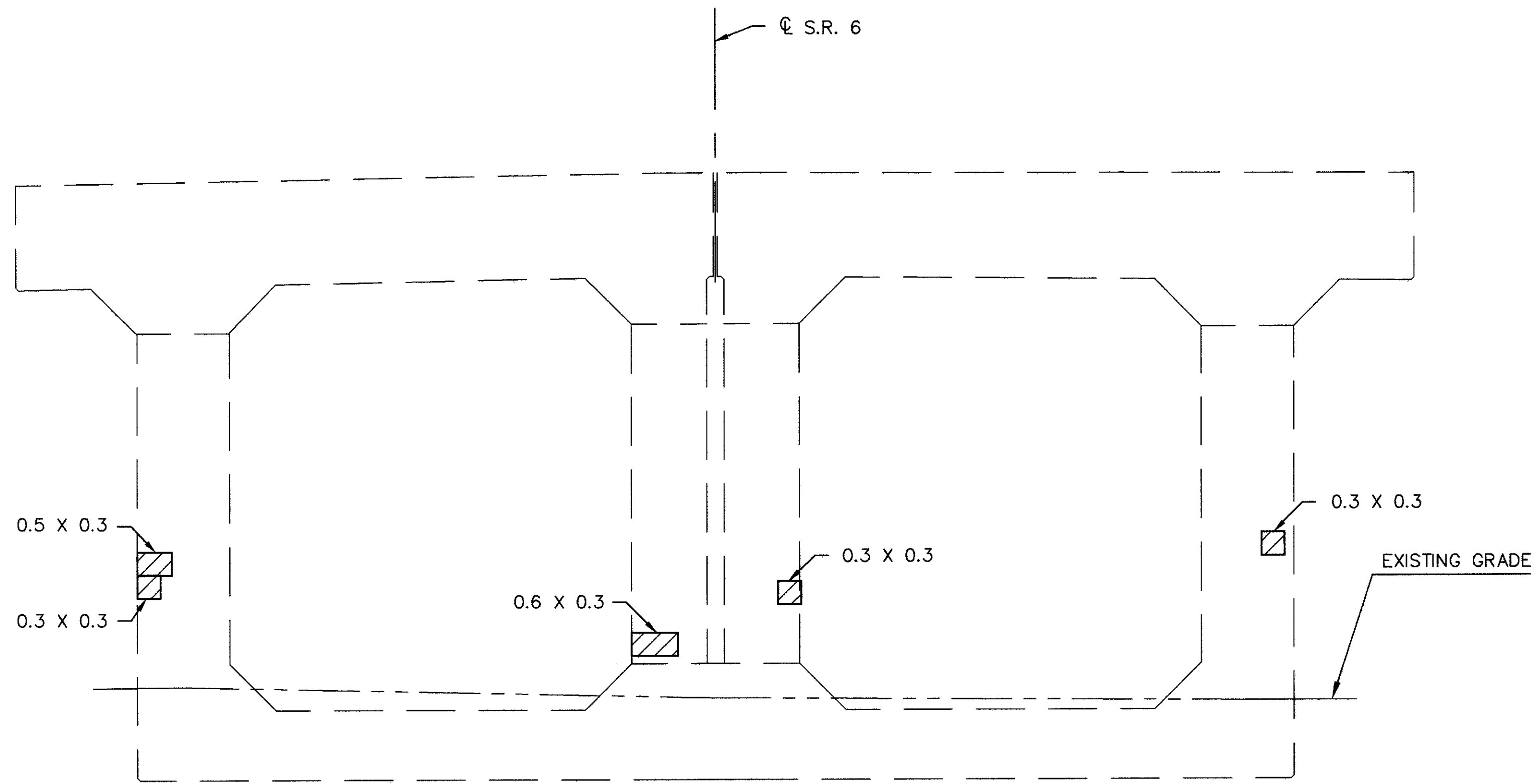
ERI-6-28.839

24/70

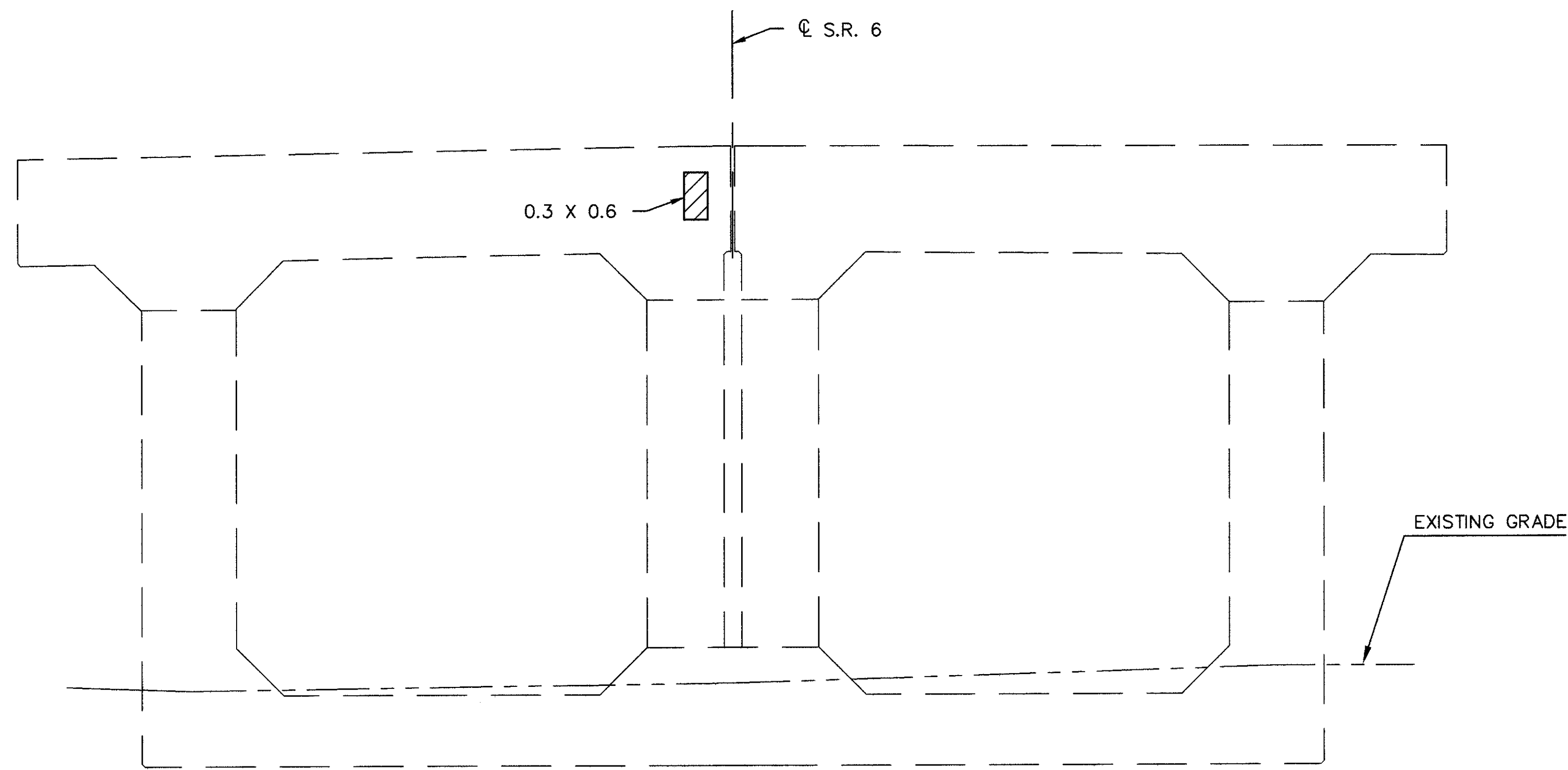
46
92

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4401 ROCKSIDE RD. CLEVELAND, OHIO 44131

DESIGNED	RCK	CHECKED	DP
DRAWN	RCK	REVISED	
REVIEWED	TAB	DATE	12/97
STRUCTURE FILE NUMBER		2201984	



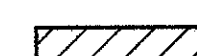
ELEVATION - WEST FACE



ELEVATION - EAST FACE

NOTES:

THE SUBSTRUCTURE UNIT(S) SHOWN ON THIS SHEET IS(ARE) TO BE REPAIRED USING THE METHODS AND MATERIALS SPECIFIED BY ITEM 520-PNEUMATICALLY PLACED MORTAR, AS PER PLAN. REFER TO THE STRUCTURE GENERAL NOTES, SHEETS 6/70 AND 7/70 FOR A DESCRIPTION OF THIS PAY ITEM.

 INDICATES APPROXIMATE REPAIR LIMITS SHOWN IN ELEVATION VIEW. REPAIR AREA DIMENSIONS IN METERS.

 INDICATES APPROXIMATE REPAIR LIMITS ON SURFACES NOT SHOWN IN ELEVATION VIEW.

REPAIR AREA = 0.78 SQUARE METERS THIS SHEET.

PIER NO. 18 REPAIR
BRIDGE NUMBER ERI-6-28839
OVER HURON RIVER

ERI-6-28.839

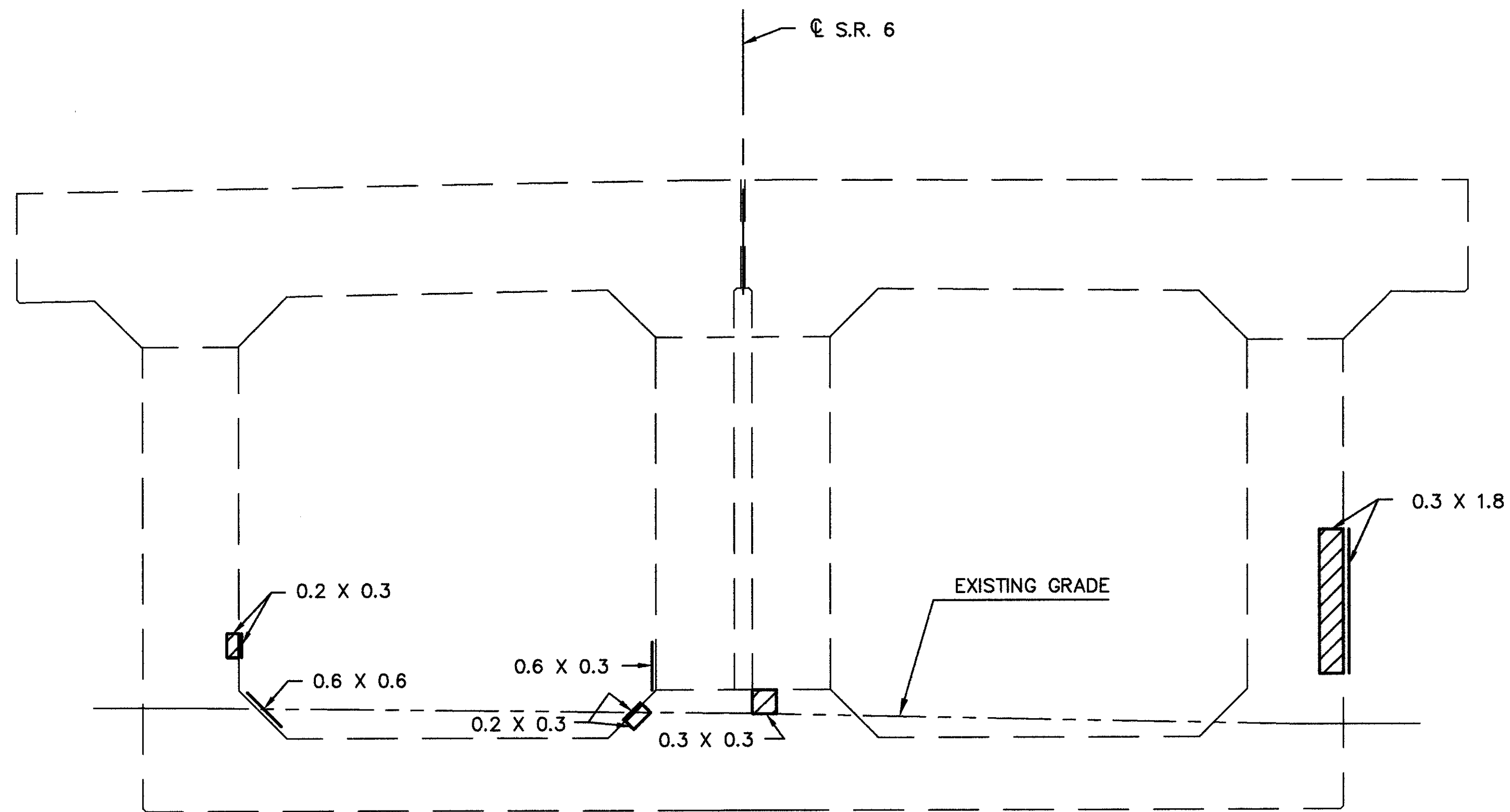
25/70

47
92

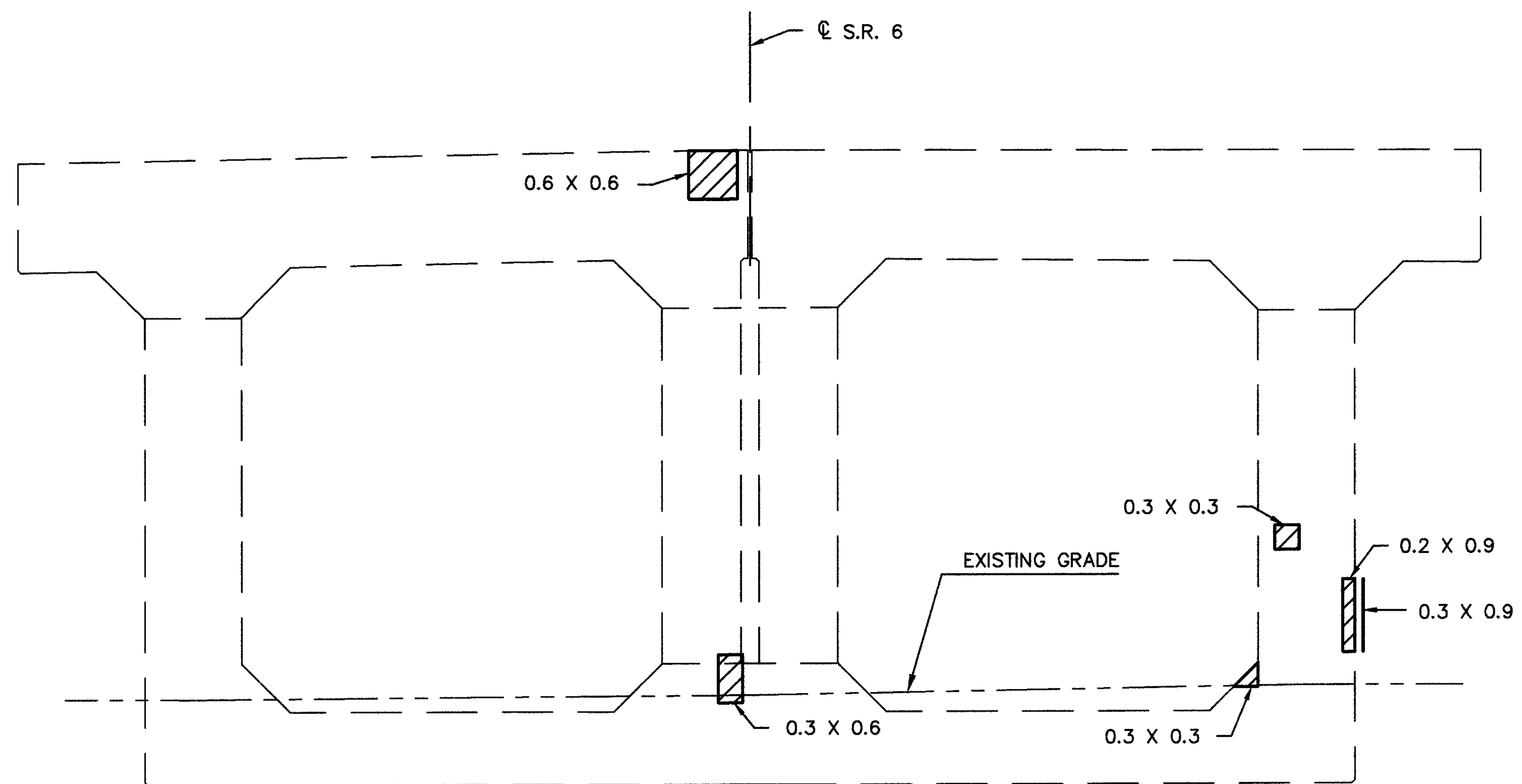
adache-cjuni-lynn
associates
CONSULTING ENGINEERS
4407 ROCKSIDE RD. CLEVELAND, OHIO 44131

DATE
12/97
REVIEWED
TAB
STRUCTURE FILE NUMBER
2201984

DRAWN
RCK
REVIEWED
DP



ELEVATION - WEST FACE



ELEVATION - EAST FACE

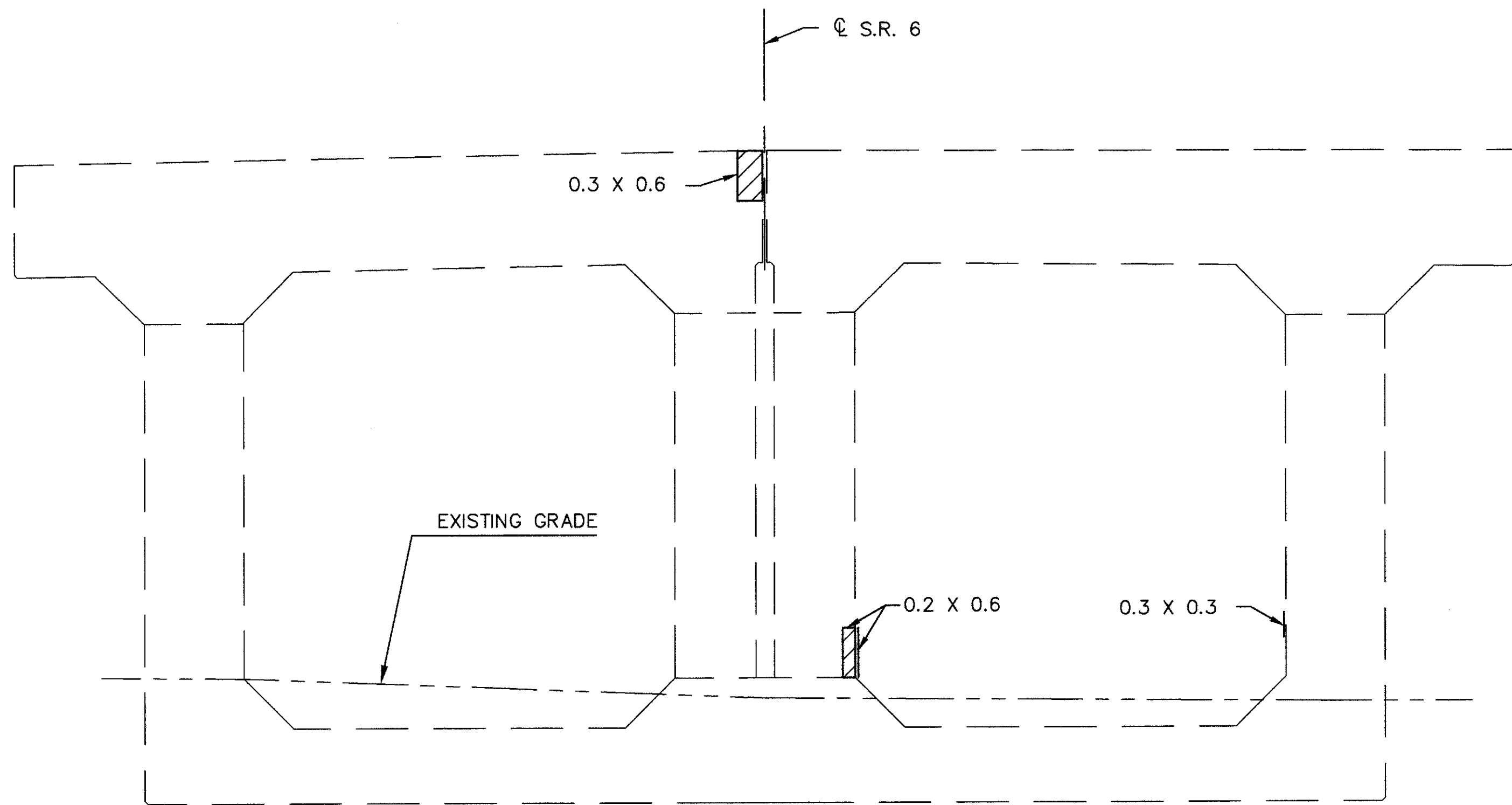
NOTES:

THE SUBSTRUCTURE UNIT(S) SHOWN ON THIS SHEET IS(ARE) TO BE REPAIRED USING THE METHODS AND MATERIALS SPECIFIED BY ITEM 520-PNEUMATICALLY PLACED MORTAR, AS PER PLAN. REFER TO THE STRUCTURE GENERAL NOTES, SHEETS 6/70 AND 7/70 FOR A DESCRIPTION OF THIS PAY ITEM.

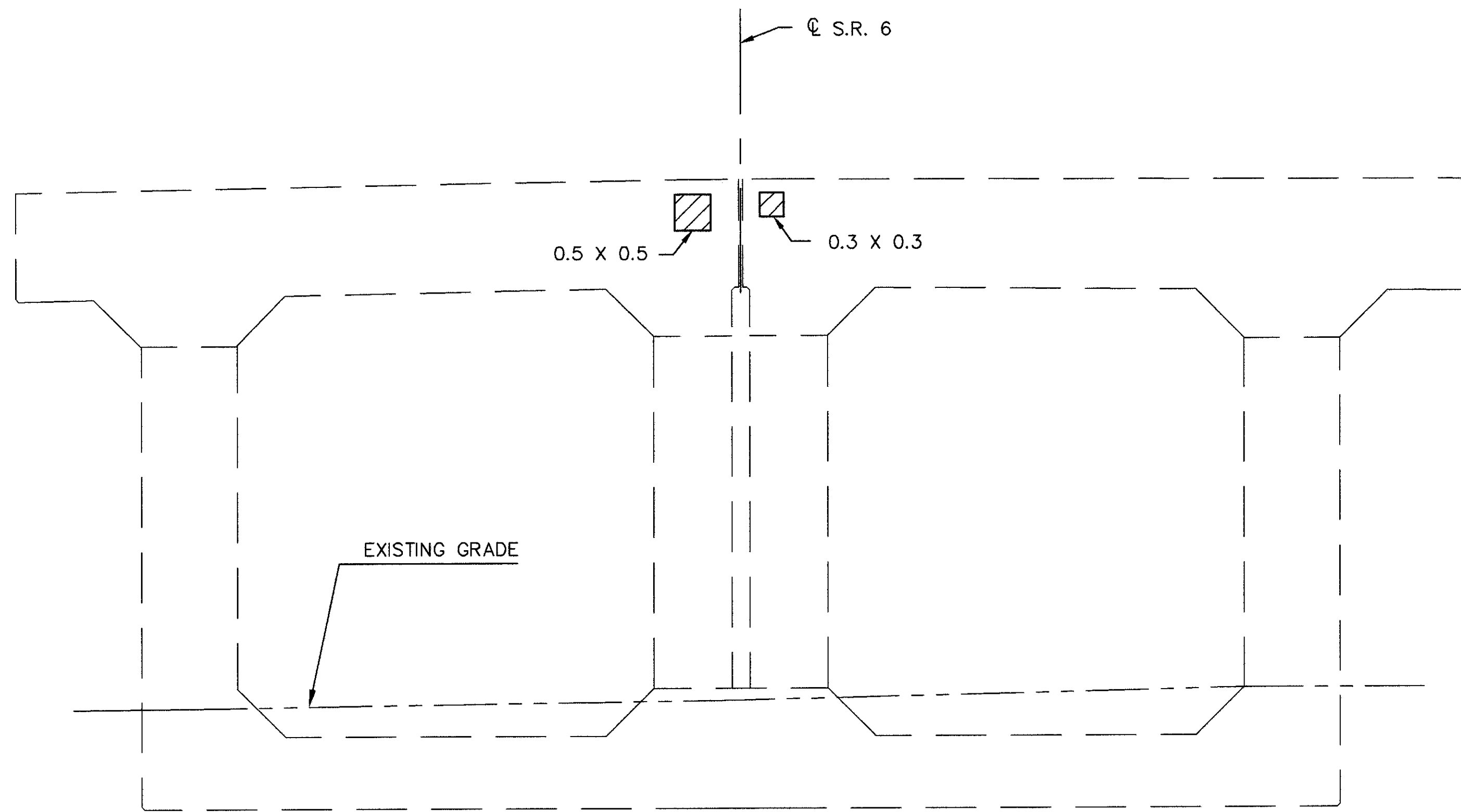
 INDICATES APPROXIMATE REPAIR LIMITS SHOWN IN ELEVATION VIEW. REPAIR AREA DIMENSIONS IN METERS.

 INDICATES APPROXIMATE REPAIR LIMITS ON SURFACES NOT SHOWN IN ELEVATION VIEW.

REPAIR AREA = 3.12 SQUARE METERS THIS SHEET.



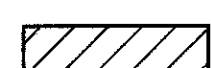
ELEVATION - WEST FACE



ELEVATION - EAST FACE

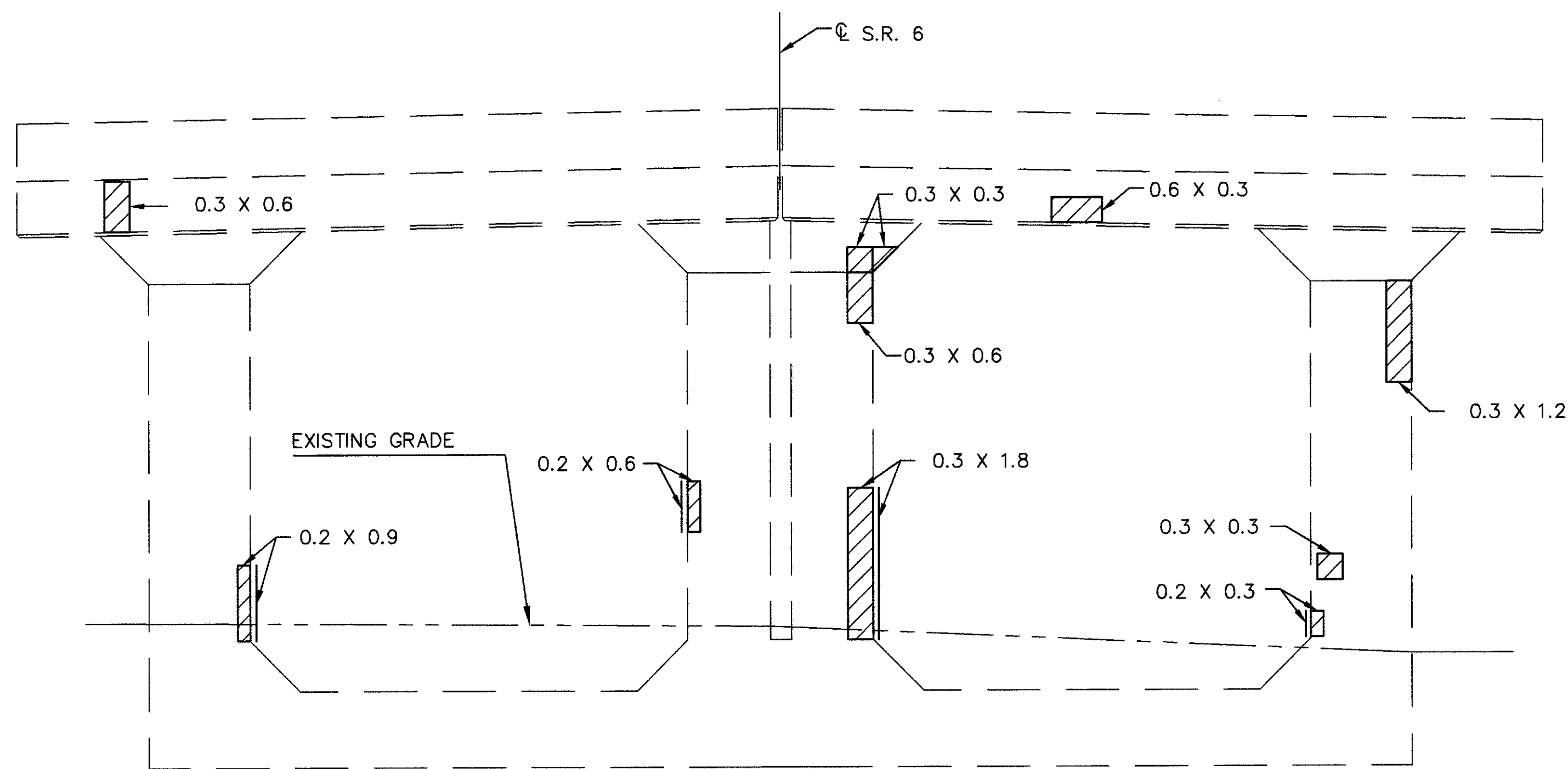
NOTES:

THE SUBSTRUCTURE UNIT(S) SHOWN ON THIS SHEET IS(ARE) TO BE REPAIRED USING THE METHODS AND MATERIALS SPECIFIED BY ITEM 520--PNEUMATICALLY PLACED MORTAR, AS PER PLAN. REFER TO THE STRUCTURE GENERAL NOTES, SHEETS 6 / 70 AND 7 / 70 FOR A DESCRIPTION OF THIS PAY ITEM.

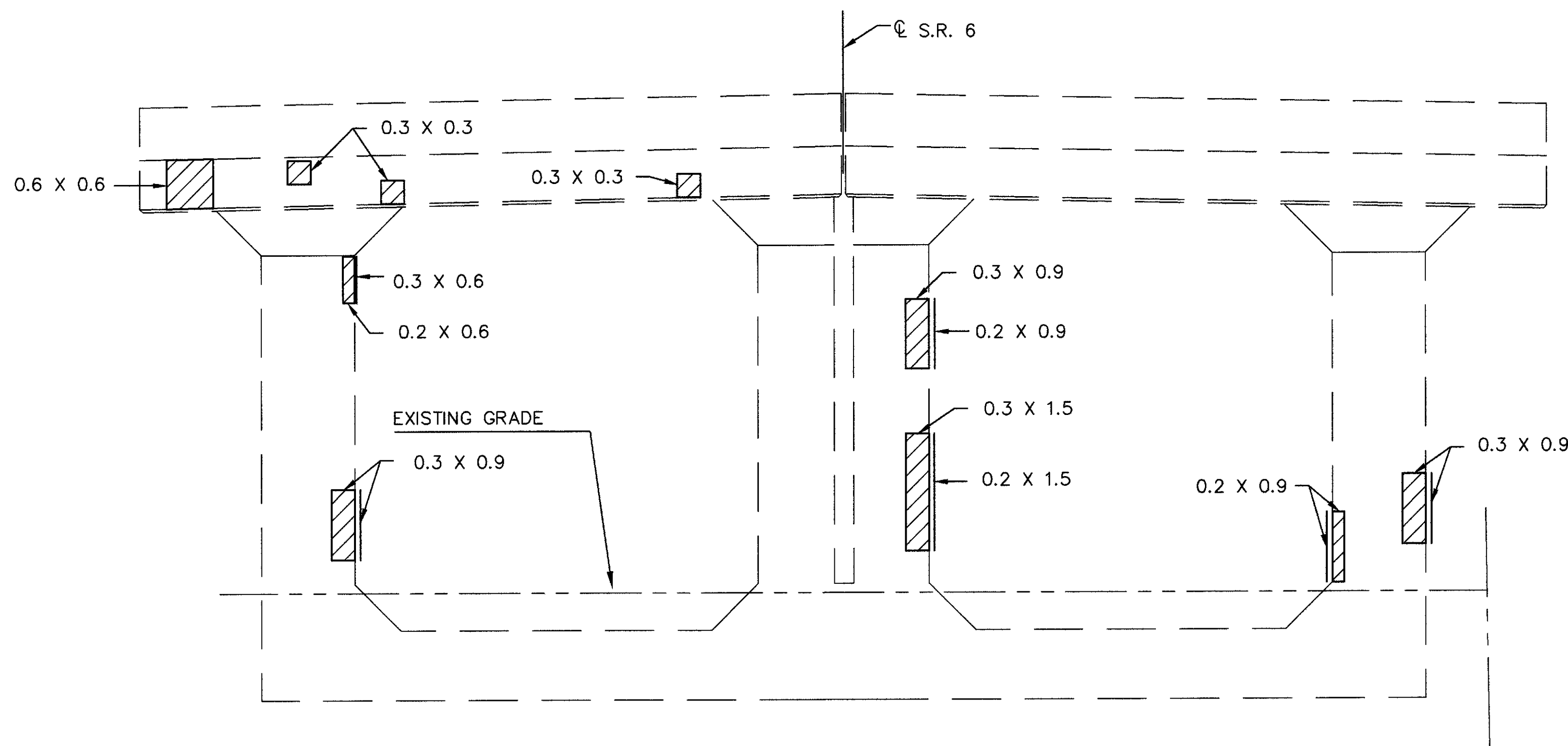
 INDICATES APPROXIMATE REPAIR LIMITS SHOWN IN ELEVATION VIEW. REPAIR AREA DIMENSIONS IN METERS.

 INDICATES APPROXIMATE REPAIR LIMITS ON SURFACES NOT SHOWN IN ELEVATION VIEW.

REPAIR AREA = 0.85 SQUARE METERS THIS SHEET.



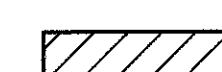
ELEVATION - WEST FACE



ELEVATION - EAST FACE

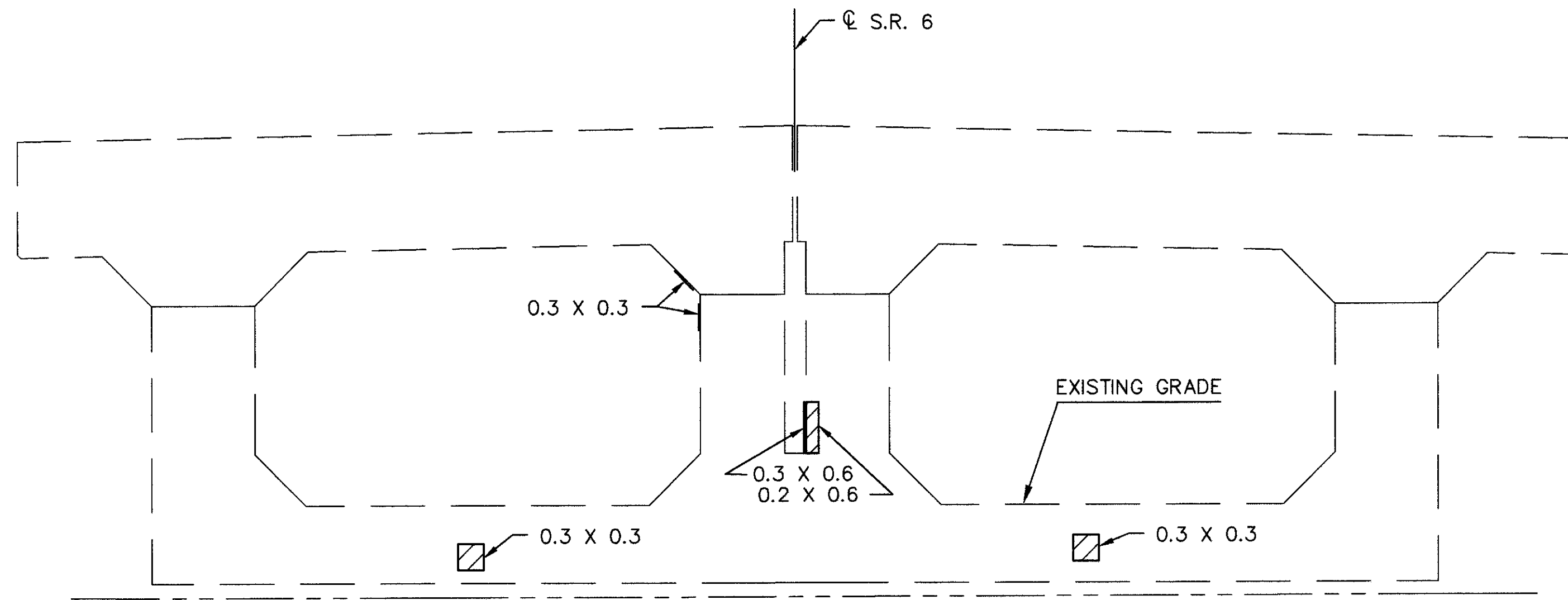
NOTES:

THE SUBSTRUCTURE UNIT(S) SHOWN ON THIS SHEET IS(ARE) TO BE REPAIRED USING THE METHODS AND MATERIALS SPECIFIED BY ITEM 520-PNEUMATICALLY PLACED MORTAR, AS PER PLAN. REFER TO THE STRUCTURE GENERAL NOTES, SHEETS 6 / 70 AND 7 / 70 FOR A DESCRIPTION OF THIS PAY ITEM.

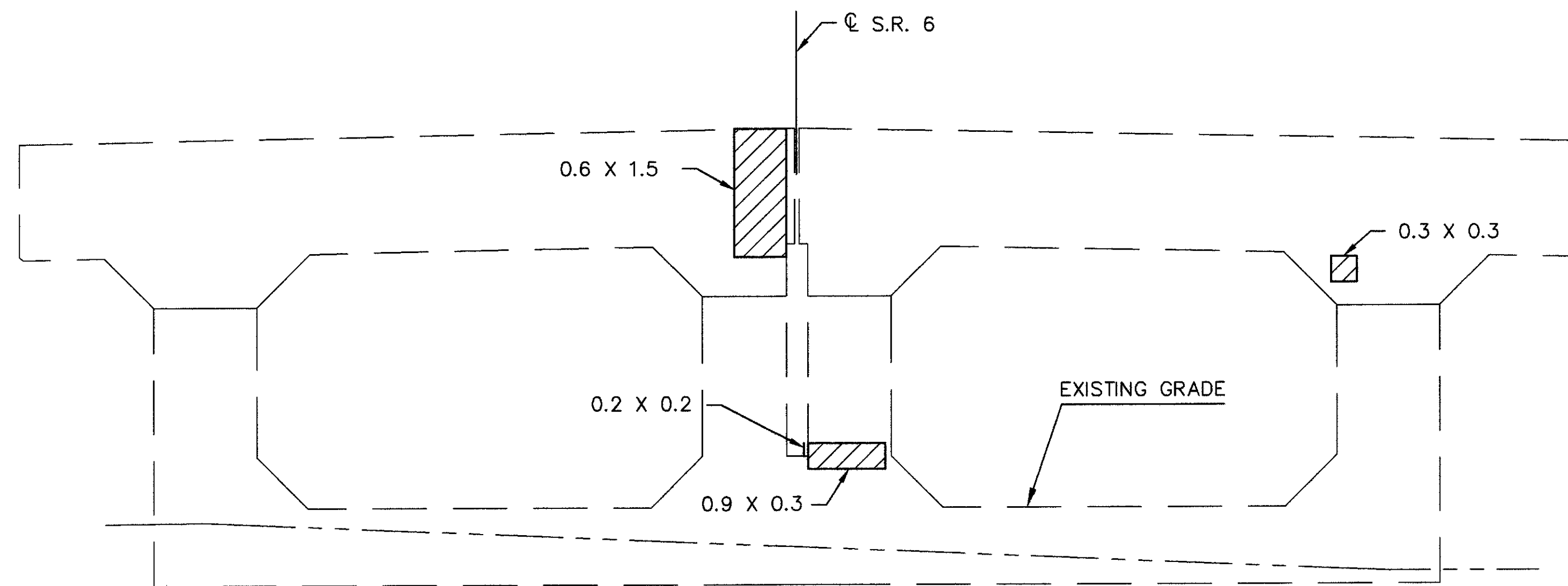
 INDICATES APPROXIMATE REPAIR LIMITS SHOWN IN ELEVATION VIEW. REPAIR AREA DIMENSIONS IN METERS.

 INDICATES APPROXIMATE REPAIR LIMITS ON SURFACES NOT SHOWN IN ELEVATION VIEW.

REPAIR AREA = 6.54 SQUARE METERS THIS SHEET.



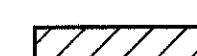
ELEVATION - WEST FACE



ELEVATION - EAST FACE

NOTES:

THE SUBSTRUCTURE UNIT(S) SHOWN ON THIS SHEET IS(ARE) TO BE REPAIRED USING THE METHODS AND MATERIALS SPECIFIED BY ITEM 520-PNEUMATICALLY PLACED MORTAR, AS PER PLAN. REFER TO THE STRUCTURE GENERAL NOTES, SHEETS 6/70 AND 7/70 FOR A DESCRIPTION OF THIS PAY ITEM.

 INDICATES APPROXIMATE REPAIR LIMITS SHOWN IN ELEVATION VIEW. REPAIR AREA DIMENSIONS IN METERS.

 INDICATES APPROXIMATE REPAIR LIMITS ON SURFACES NOT SHOWN IN ELEVATION VIEW.

REPAIR AREA = 1.96 SQUARE METERS THIS SHEET.

PIER NO. 22 REPAIR
BRIDGE NUMBER ERI-6-28839
OVER HURON RIVER

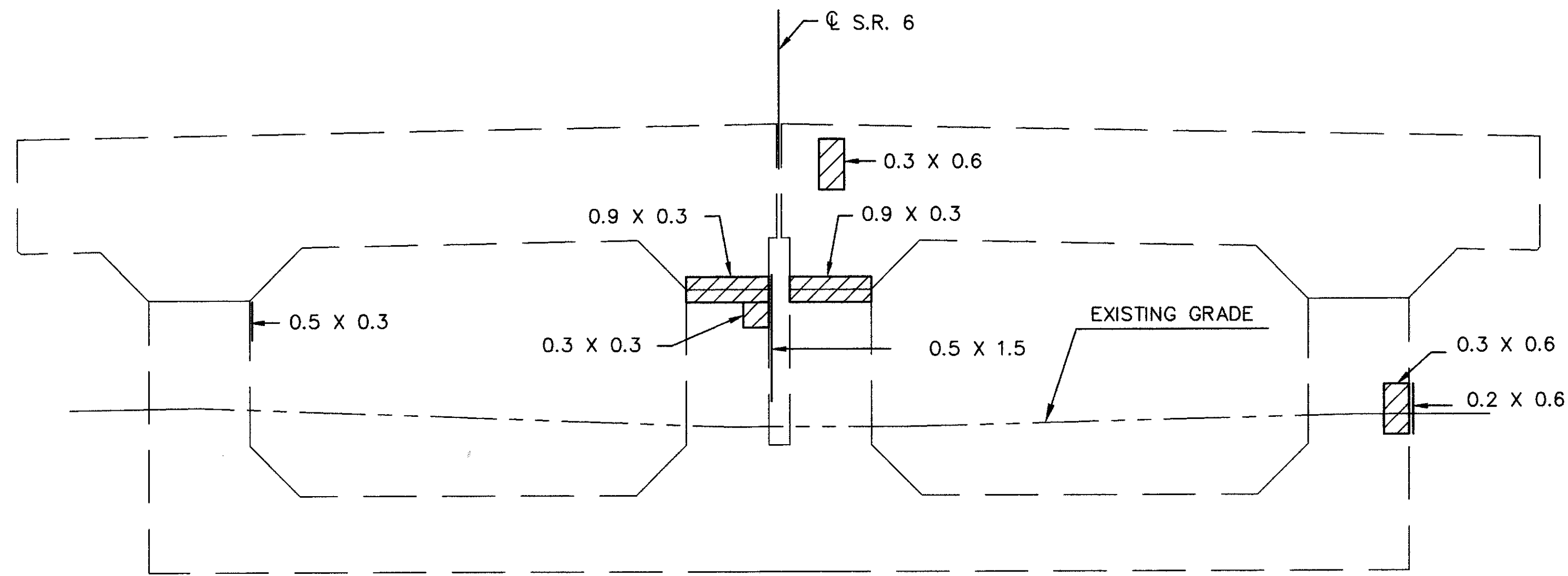
ERI-6-28.839

29/70

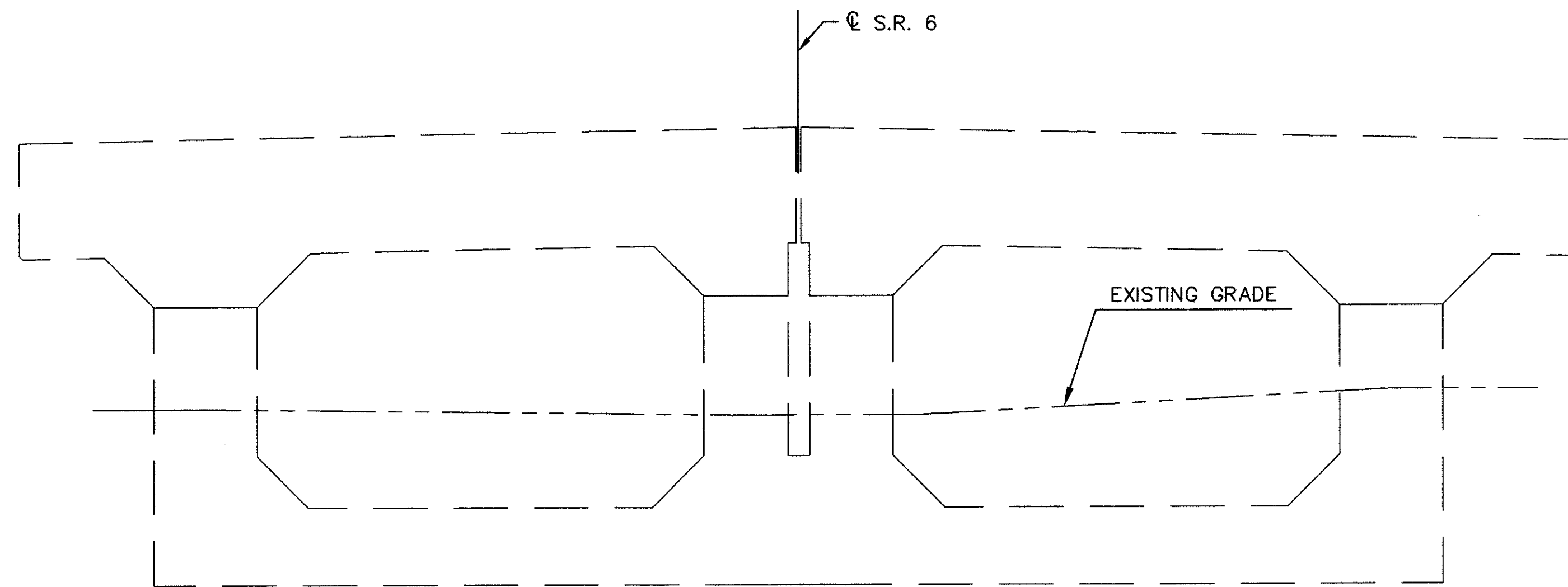
51
92

adache-cjuni-lynn
associates
CONSULTING ENGINEERS
4401 ROCKSIDE RD. CLEVELAND, OHIO 44131

DESIGNED RCK	CHECKED DP	DRAWN RCK	REVIEWED TAB	DATE 12/97	STRUCTURE FILE NUMBER 2201984
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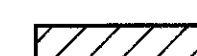
ELEVATION - WEST FACE



ELEVATION - EAST FACE

NOTES:

THE SUBSTRUCTURE UNIT(S) SHOWN ON THIS SHEET IS(ARE) TO BE REPAIRED USING THE METHODS AND MATERIALS SPECIFIED BY ITEM 520-PNEUMATICALLY PLACED MORTAR, AS PER PLAN. REFER TO THE STRUCTURE GENERAL NOTES, SHEETS 6/70 AND 7/70 FOR A DESCRIPTION OF THIS PAY ITEM.

 INDICATES APPROXIMATE REPAIR LIMITS SHOWN IN ELEVATION VIEW. REPAIR AREA DIMENSIONS IN METERS.

 INDICATES APPROXIMATE REPAIR LIMITS ON SURFACES NOT SHOWN IN ELEVATION VIEW.

REPAIR AREA = 2.01 SQUARE METERS THIS SHEET.

PIER NO. 23 REPAIR
BRIDGE NUMBER ERI-6-28839
OVER HURON RIVER

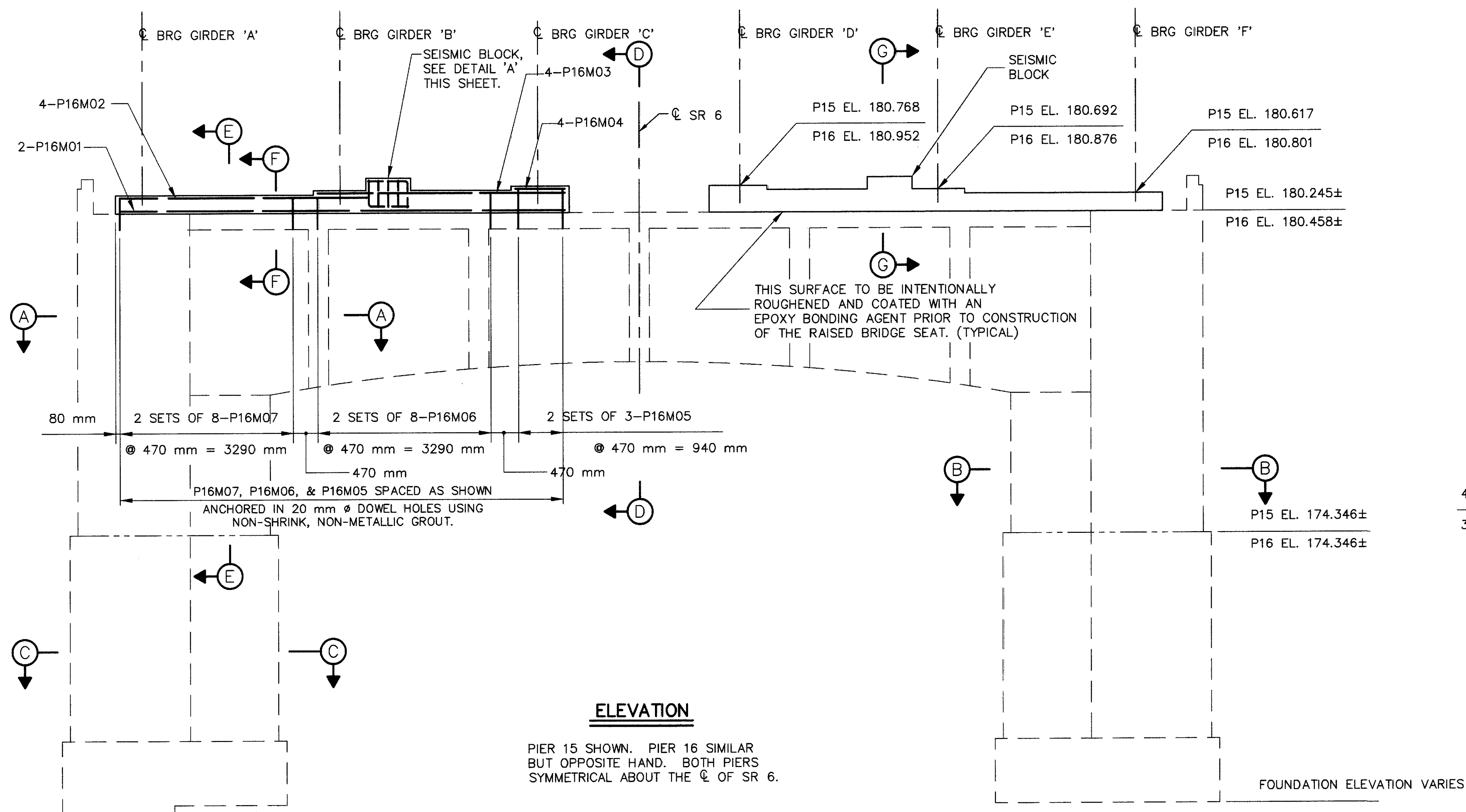
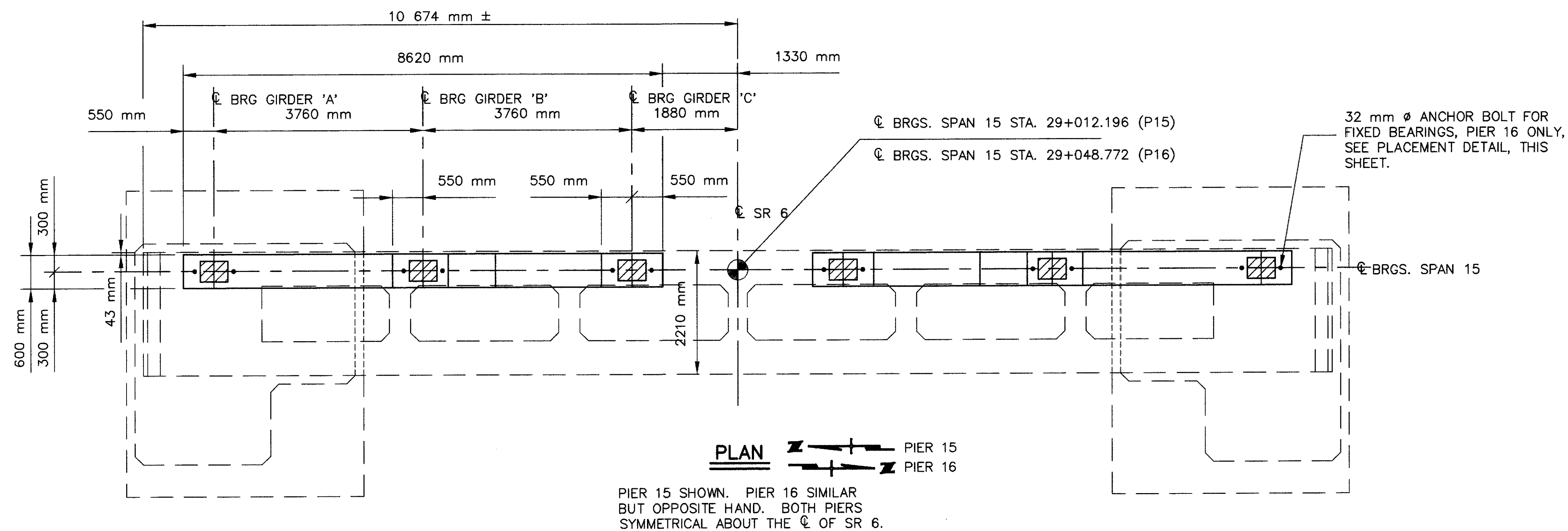
ERI-6-28.839

30/70

52
92

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CONSULTING ENGINEERS
4401 ROCKSIDE RD. CLEVELAND, OHIO 44131

DESIGNED	RCK	CHECKED	DP
DRAWN	RCK	REVISED	
REVIEWED	TAB	DATE	12/97
STRUCTURE FILE NUMBER	2201984		



NOTES:

BRIDGE SEAT REINFORCING: REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT SHALL BE ACCURATELY PLACED TO AVOID INTERFERENCE WITH THE DRILLING OF BEARING ANCHOR HOLES OR THE PRE-SETTING OF BEARING ANCHORS.

FOR DETAILS AND SECTIONS, SEE SHEET 32 / 70

FOR REINFORCING SCHEDULE, SEE SHEET 49 / 70

BRIDGE SEAT RECONSTRUCTION SHALL BE PAID FOR UNDER
ITEM **842** - CLASS 'C' CONCRETE, PIER, AS PER PLAN.
THE COST OF ROUGHENING THE EXISTING BRIDGE SEAT
SURFACES, AND THE PROVISION AND APPLICATION OF
THE EPOXY BONDING AGENT SHALL BE CONSIDERED
INCIDENTAL TO THIS PAY ITEM.

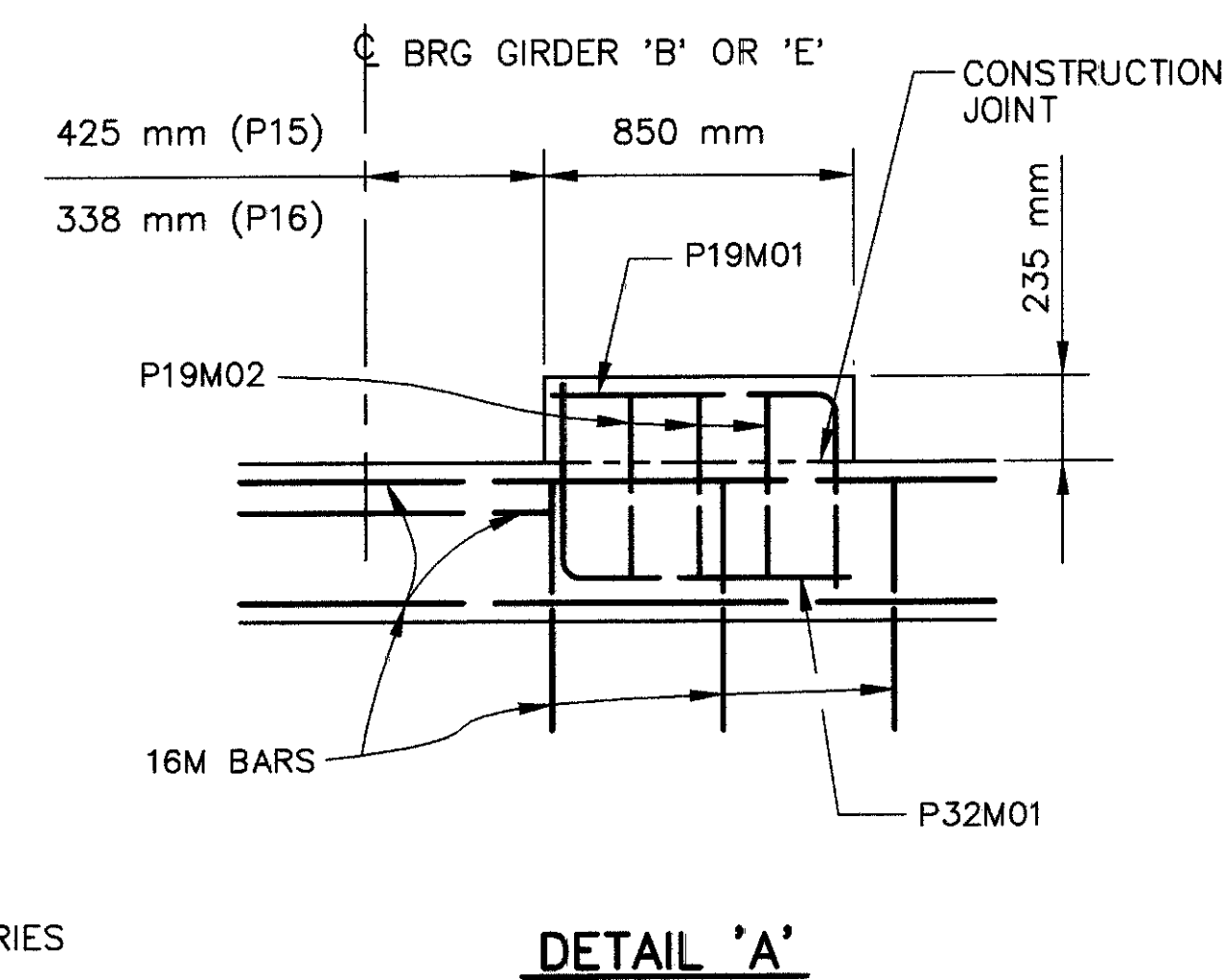
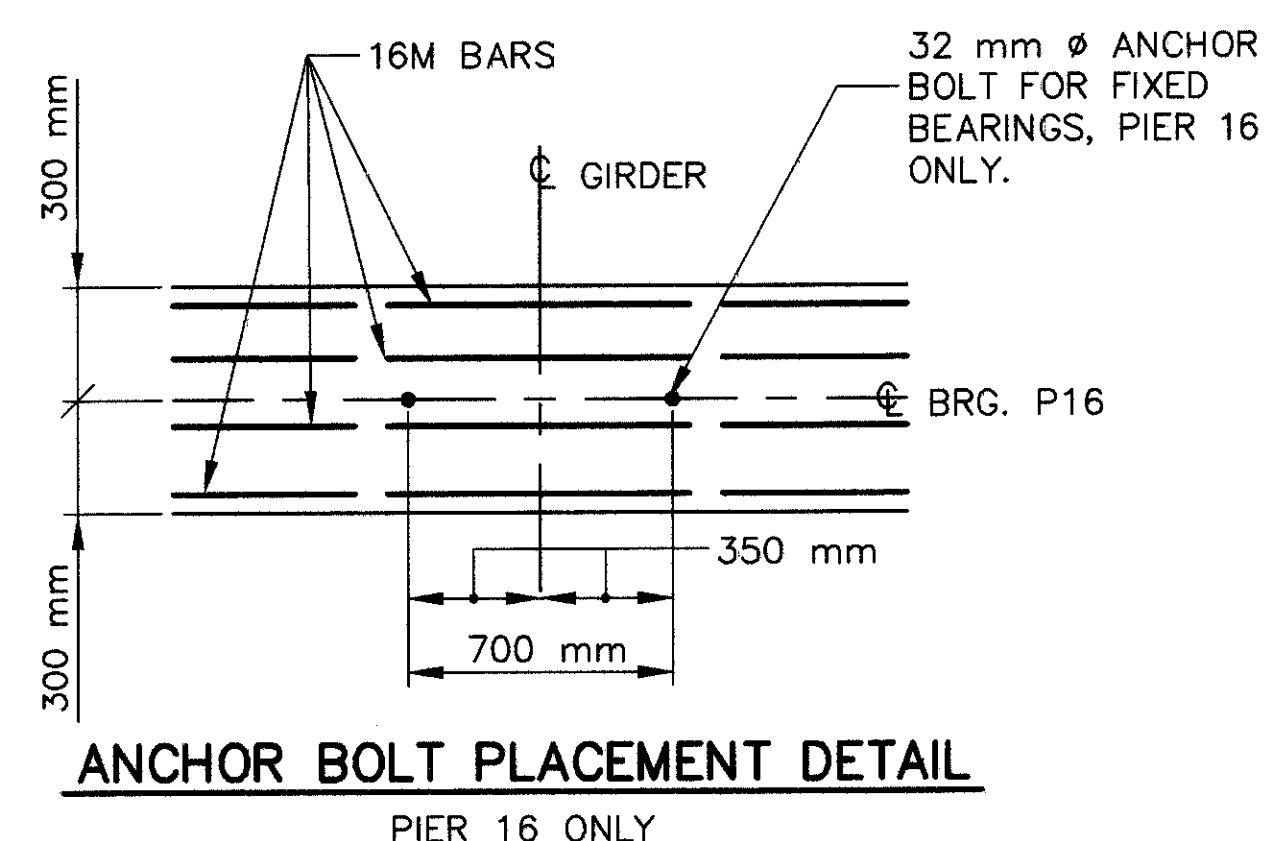
CAP BEAM REINFORCING STEEL AND INTERNAL TRUSS
STEEL NOT SHOWN. REFER TO ORIGINAL CONSTRUCTION
DRAWINGS.

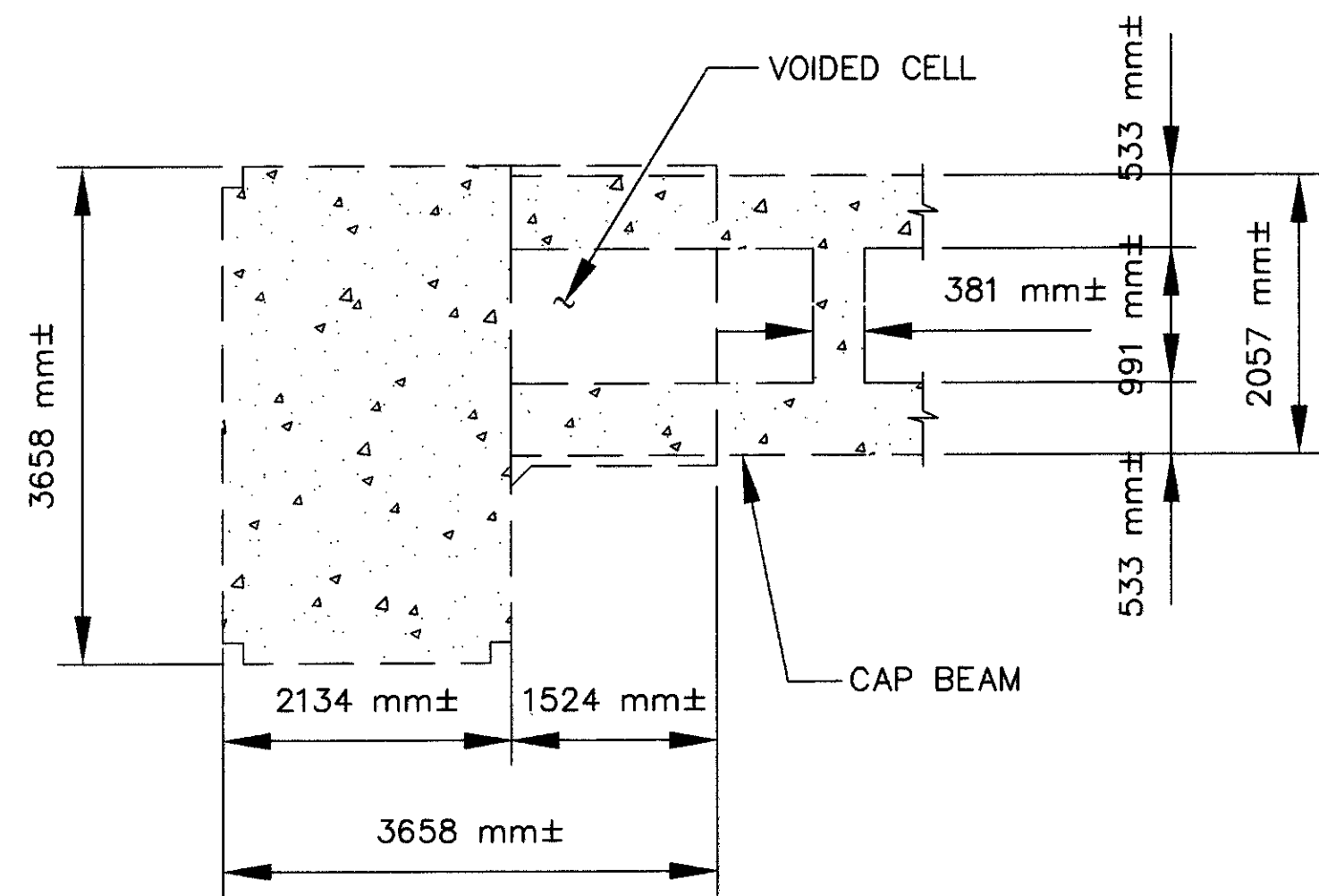
CHAMFERS, FILLETS AND RUSTICATION GROOVES IN EXISTING
CONCRETE NOT SHOWN. REFER TO ORIGINAL CONSTRUCTION
DRAWINGS.

REFER TO SHEETS 22 / 70 AND 23 / 70 FOR REPAIR DETAILS.

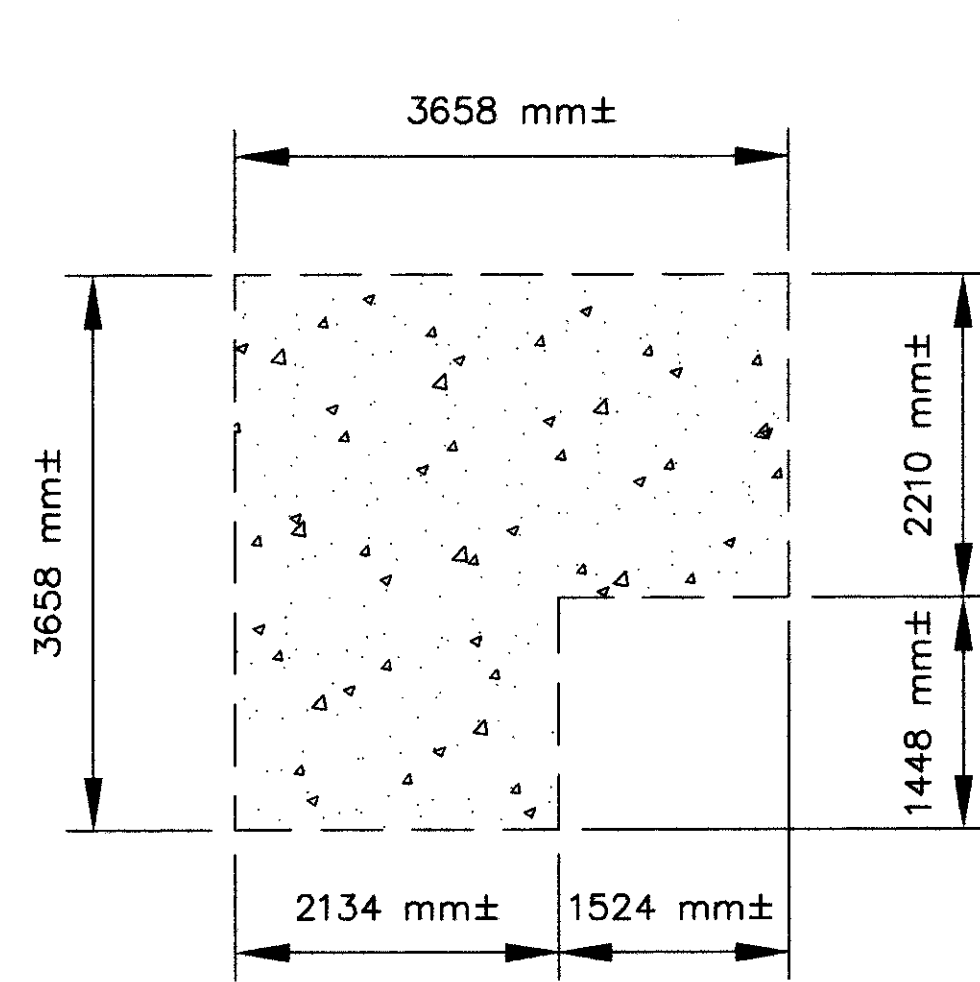
REFER TO SHEET 43 / 70 FOR BEARING DETAILS.

BRIDGE SEAT RECONSTRUCTION SHALL BE PERFORMED DURING THE APPROPRIATE CONSTRUCTION PHASE.

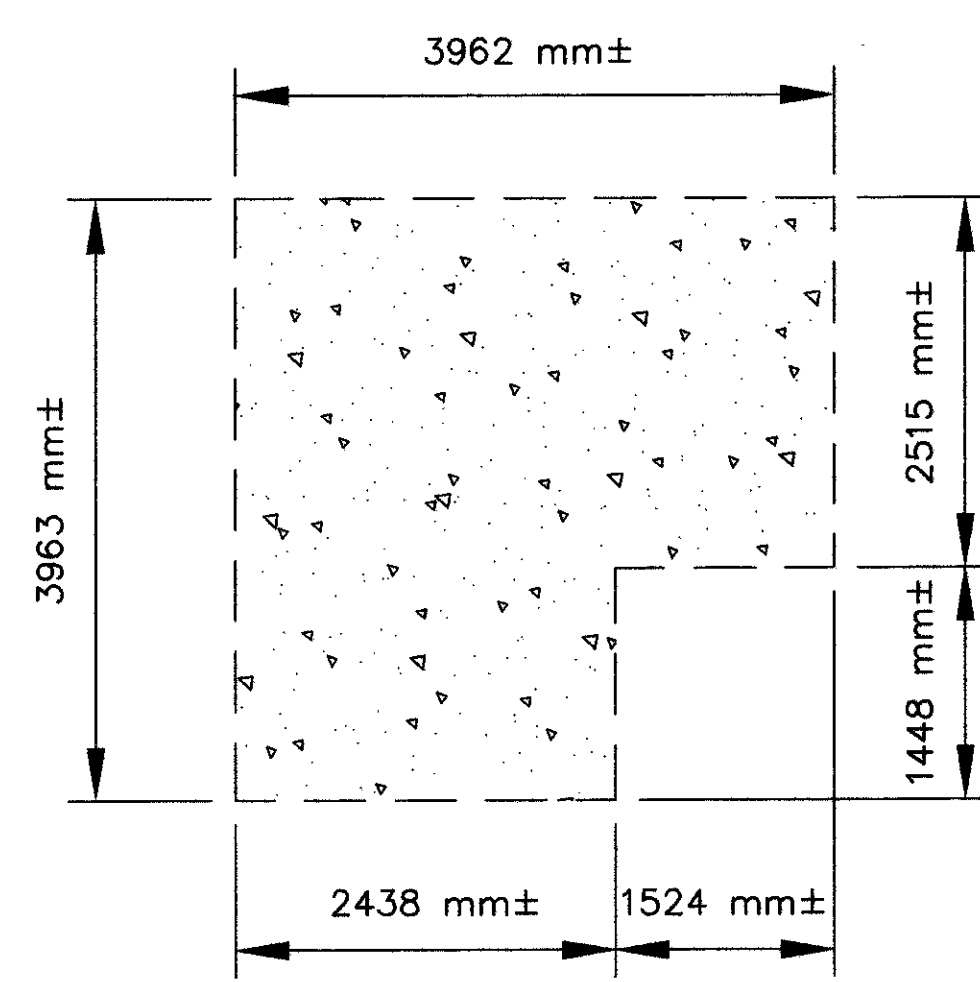




SECTION A-A
EXISTING CAP BEAM AND COLUMN SECTION



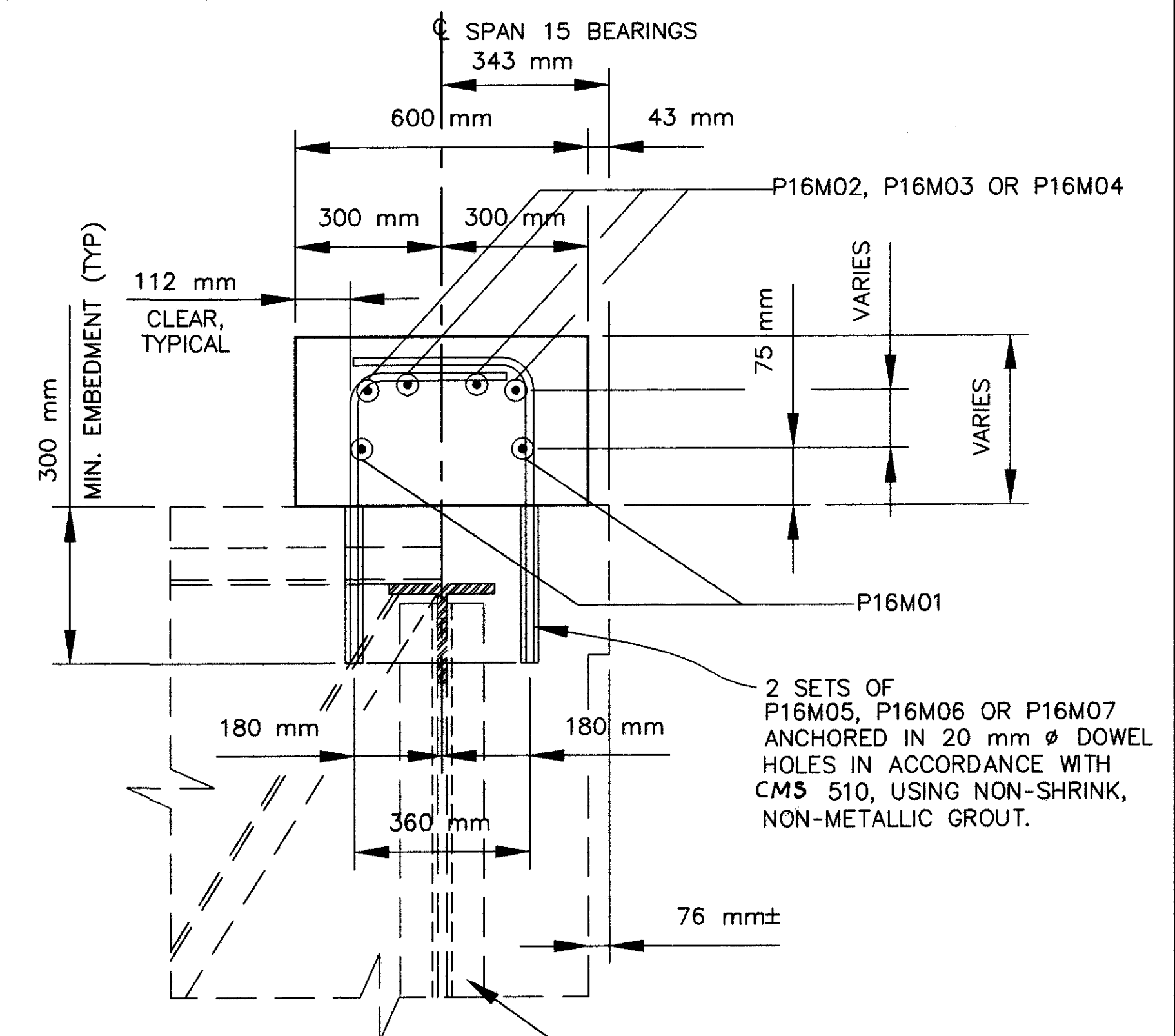
SECTION B-B
EXISTING COLUMN SECTION



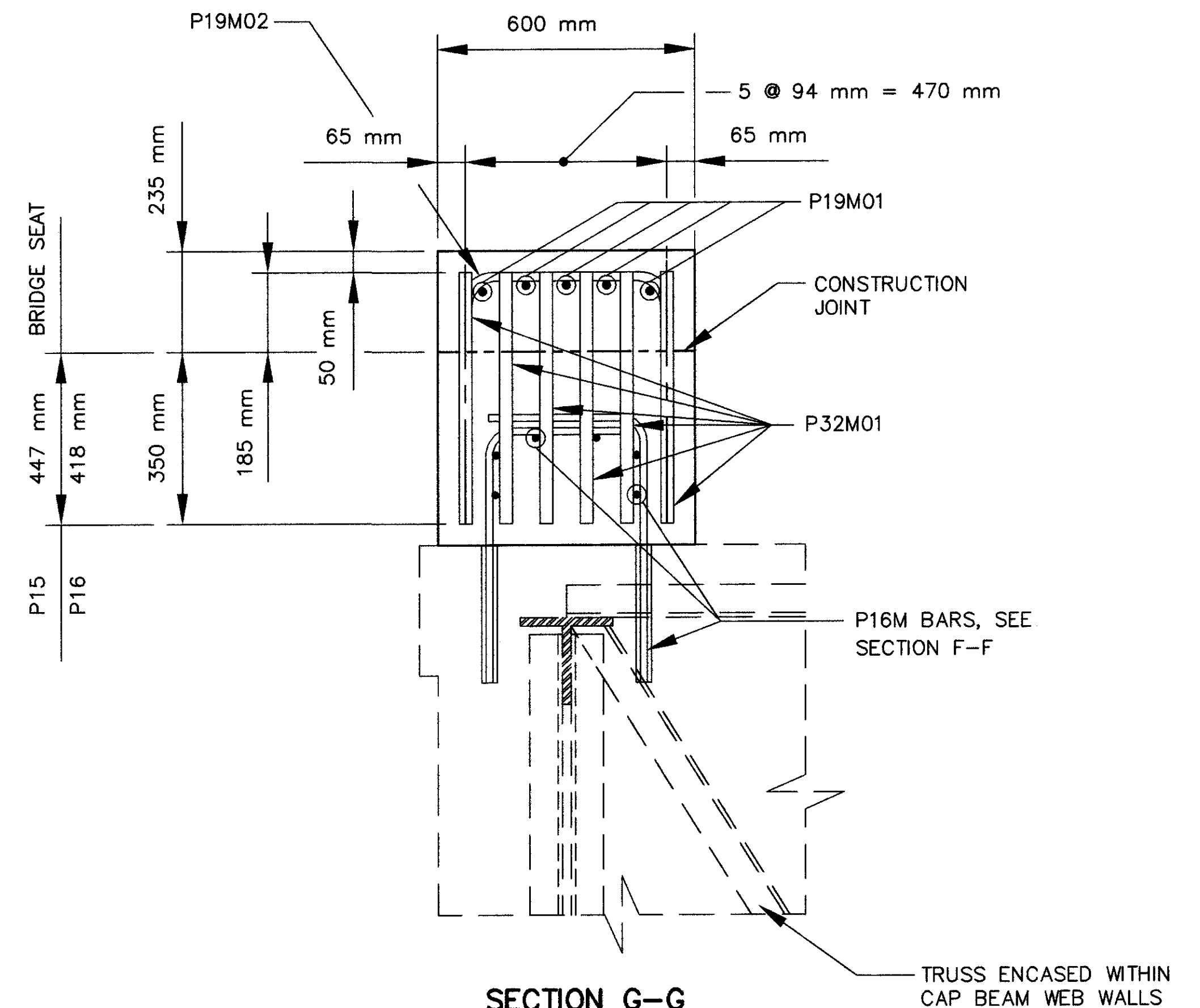
SECTION C-C
EXISTING COLUMN SECTION

NOTES:

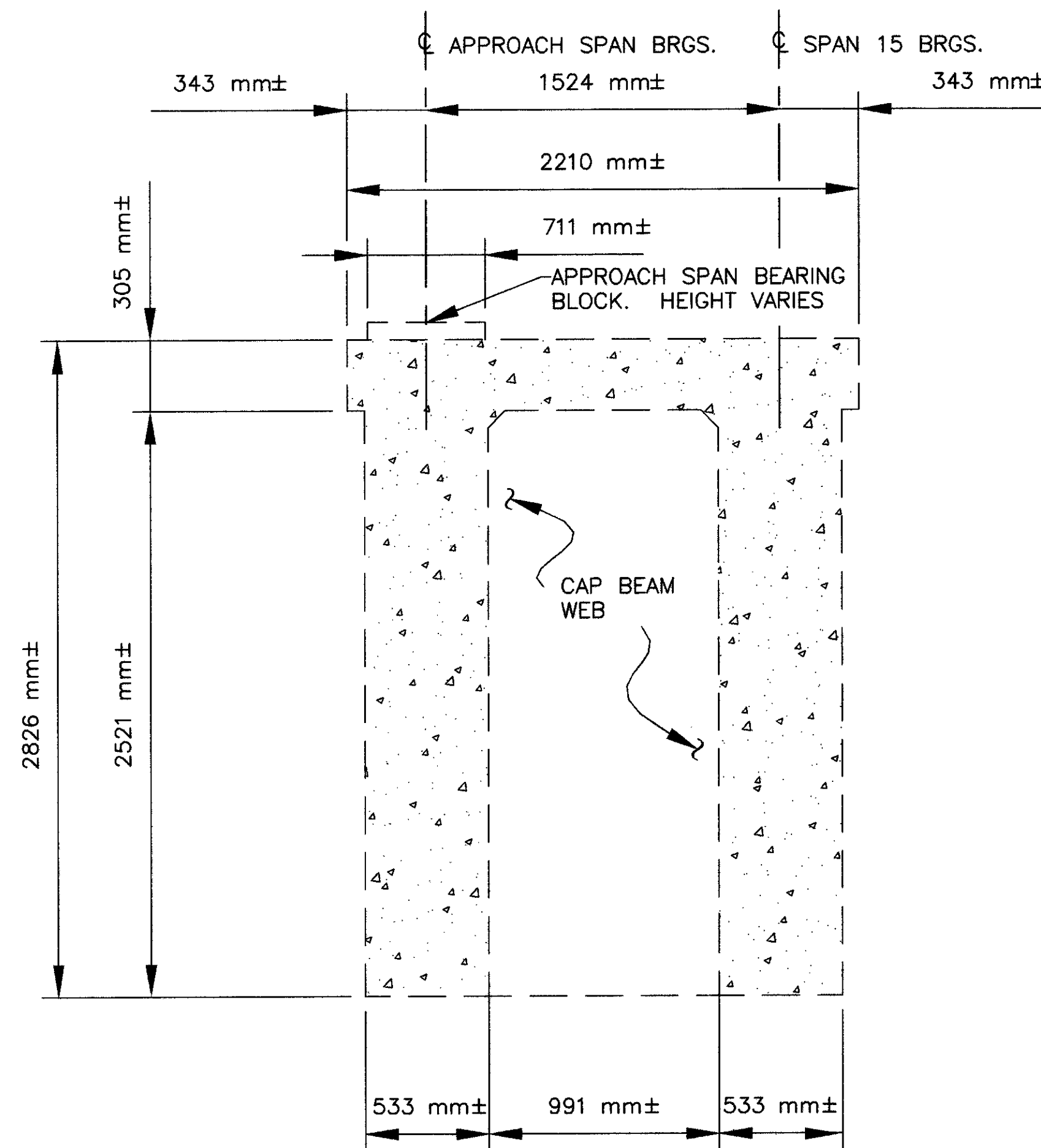
FOR LOCATION OF SECTIONS AND NOTES,
SEE SHEET 31/70



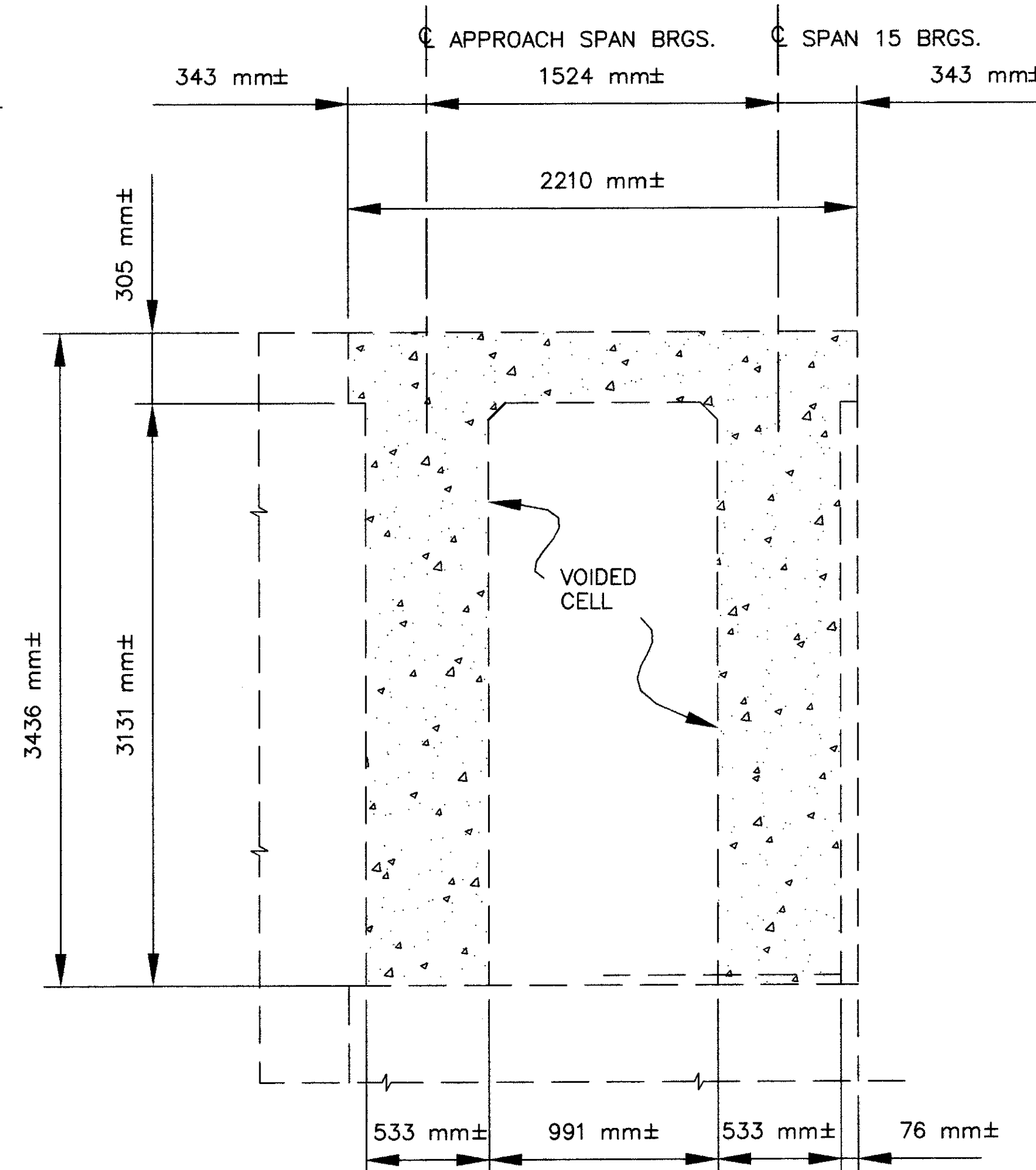
SECTION F-F
BRIDGE SEAT RAISING



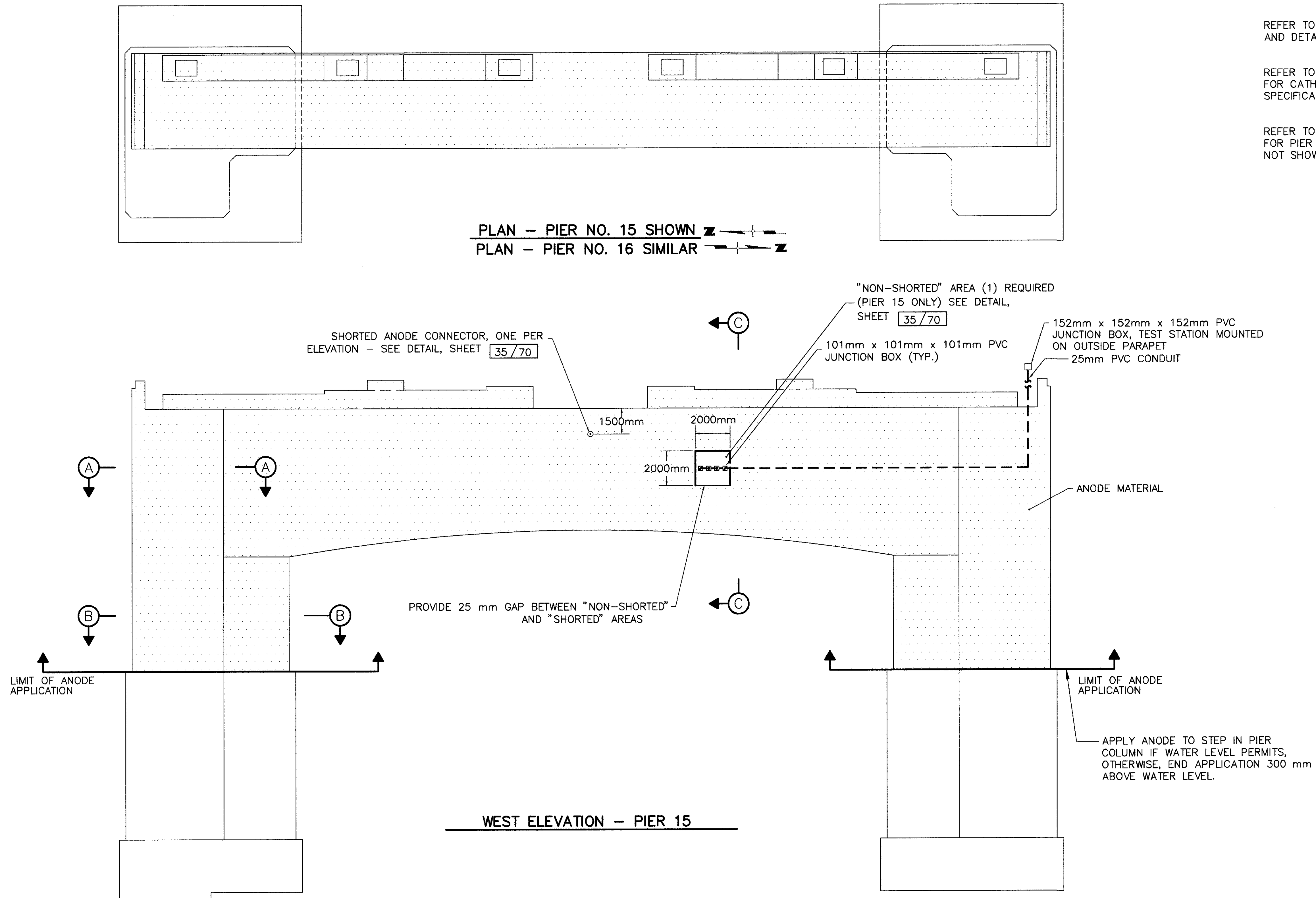
SECTION G-G
BRIDGE SEAT RAISING
AND SEISMIC BLOCK



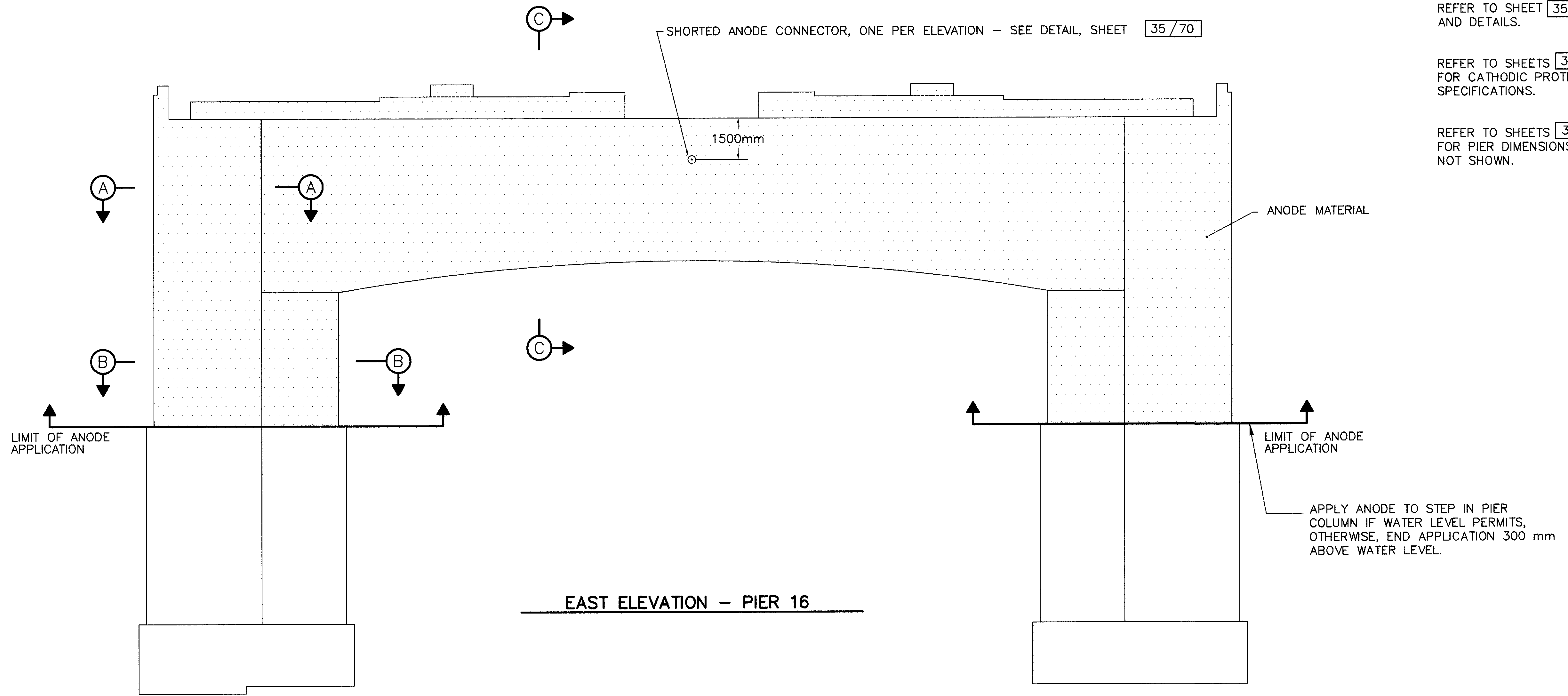
SECTION D-D
EXISTING CAP BEAM MIDSPAN SECTION



SECTION E-E
EXISTING CAP BEAM FULL DEPTH SECTION



THIS DESIGN DRAWING IS NOT APPLICABLE FOR USE AS STANDARD CORROSION CONTROL PROCEDURES FOR OTHER PROJECTS DUE TO VARIABLE CONDITIONS AT OTHER SITES. NEITHER THIS DESIGN NOR ANY PART THEREOF MAY BE DUPLICATED IN ANY WAY FOR OTHER PROJECTS, EXCEPT BY WRITTEN AGREEMENT WITH CORRPRO COMPANIES, INC.



EAST ELEVATION - PIER 16

SUMMARY OF QUANTITIES *

ITEM No.	DESCRIPTION	PIER 15	PIER 16
1	THERMALLY SPRAYED AL/Zn ANODE	345 SQ METER	351 SQ METER
2	REFERENCE ELECTRODES AND GROUNDS	2 EA	-
3	SYSTEM NEGATIVE	1 EA	-
4	NON-SHORTED ANODE CONNECTORS	1 EA	-
5	SHORTED ANODE CONNECTORS	2 EA	2 EA
6	CONDUIT AND JUNCTION BOX	LOT	-

* ESTIMATED QUANTITIES PROVIDED FOR REFERENCE PURPOSES ONLY. COMPLETED SYSTEMS TO BE PAID FOR UNDER THE CONTRACT LUMP SUM PRICE BID FOR ITEM SPECIAL - CATHODIC SYSTEM.

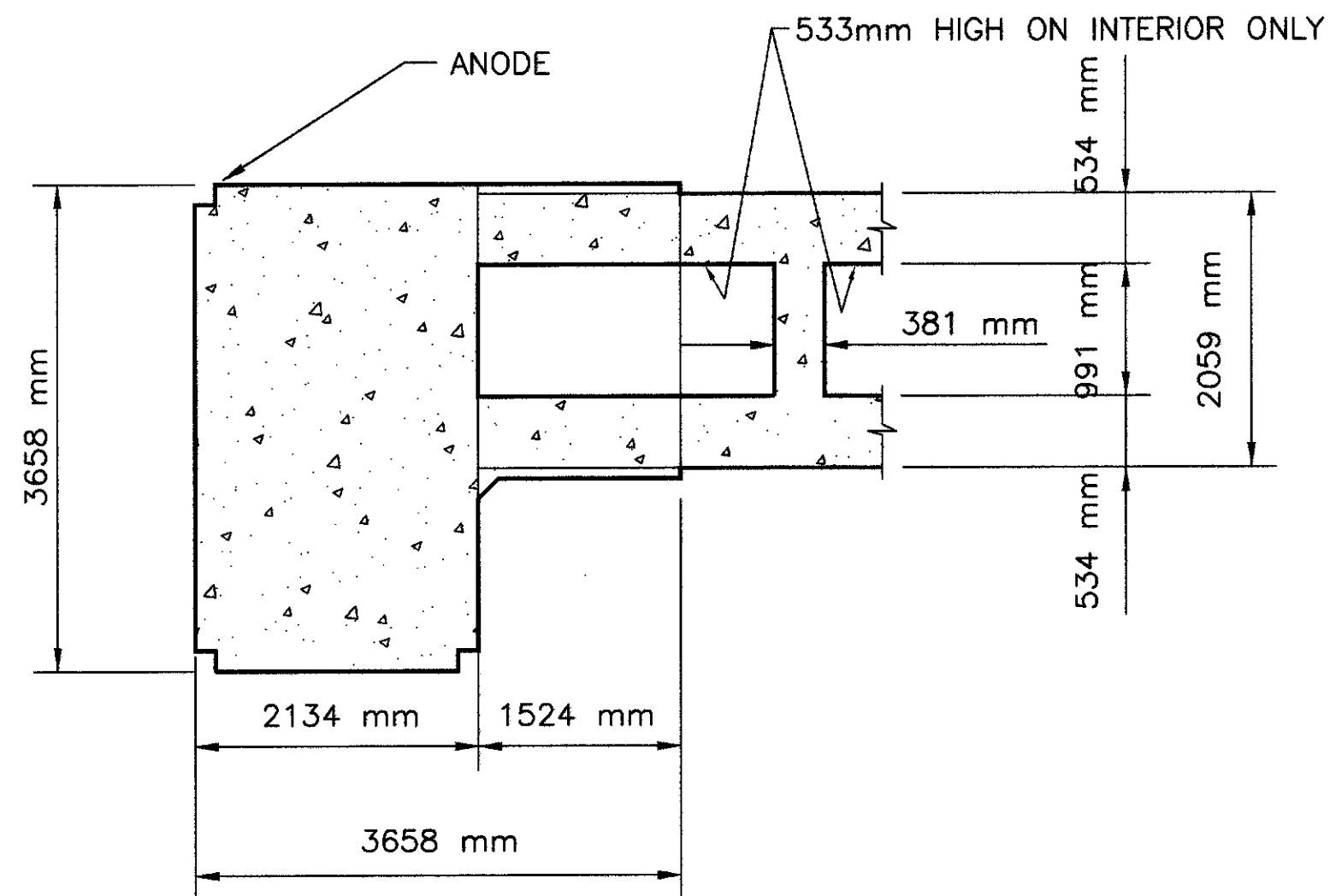
THIS DESIGN DRAWING IS NOT APPLICABLE FOR USE AS STANDARD CORROSION CONTROL PROCEDURES FOR OTHER PROJECTS DUE TO VARIABLE CONDITIONS AT OTHER SITES. NEITHER THIS DESIGN NOR ANY PART THEREOF MAY BE DUPLICATED IN ANY WAY FOR OTHER PROJECTS, EXCEPT BY WRITTEN AGREEMENT WITH CORRPRO COMPANIES, INC.

NOTES:

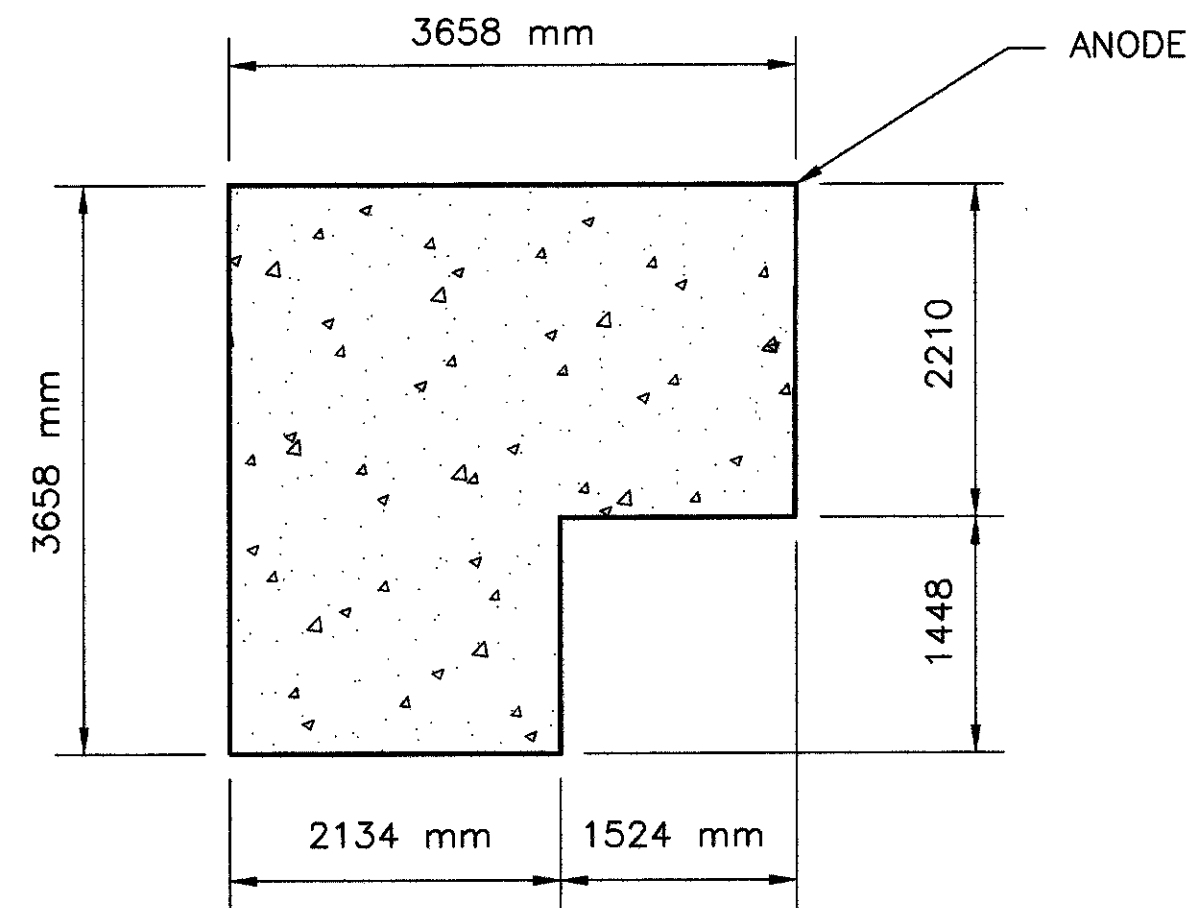
REFER TO SHEET 35/70 FOR SECTIONS AND DETAILS.

REFER TO SHEETS 36/70 AND 37/70 FOR CATHODIC PROTECTION SYSTEM SPECIFICATIONS.

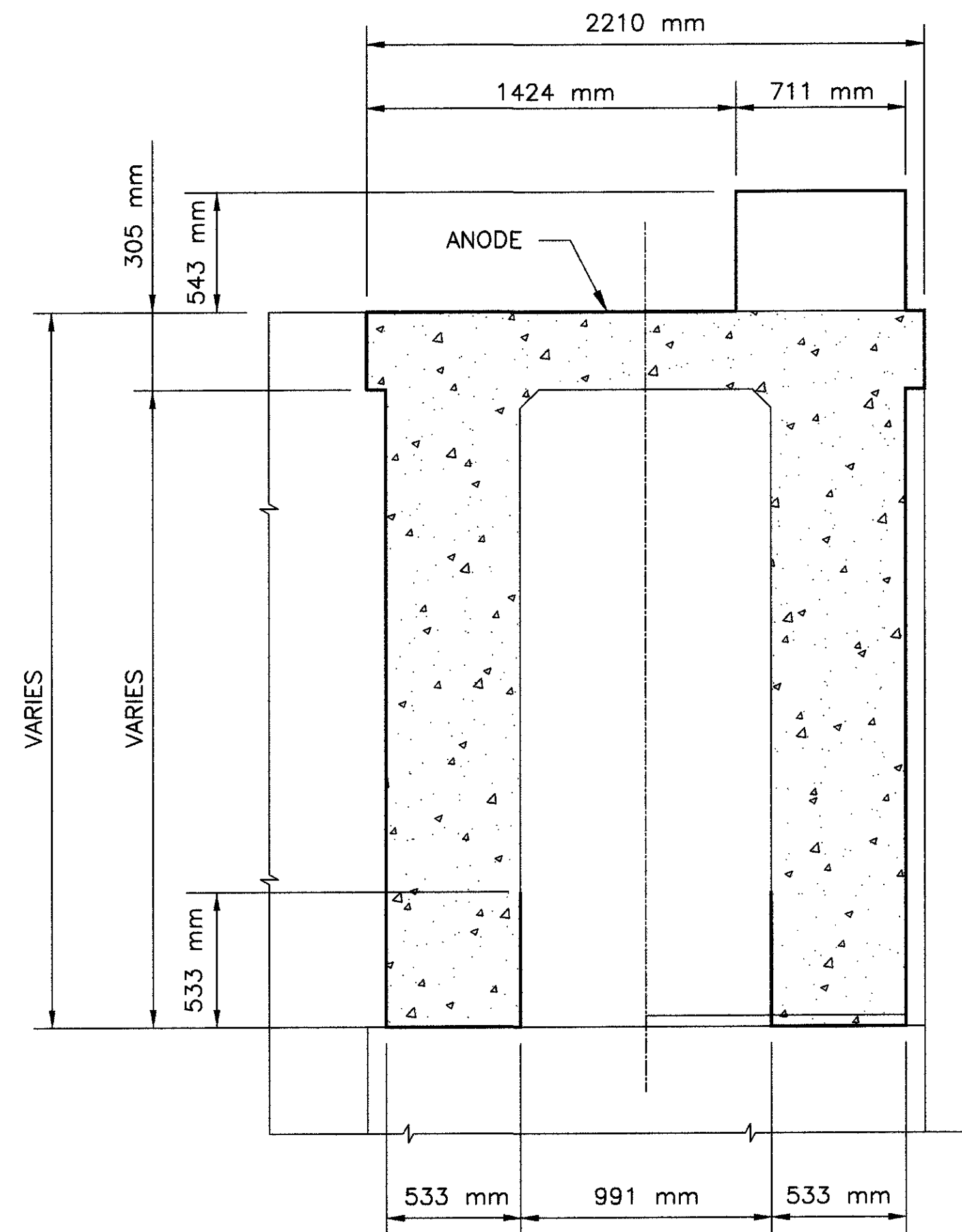
REFER TO SHEETS 31/70 AND 32/70 FOR PIER DIMENSIONS AND ELEVATIONS NOT SHOWN.



SECTION A-A



SECTION B-B

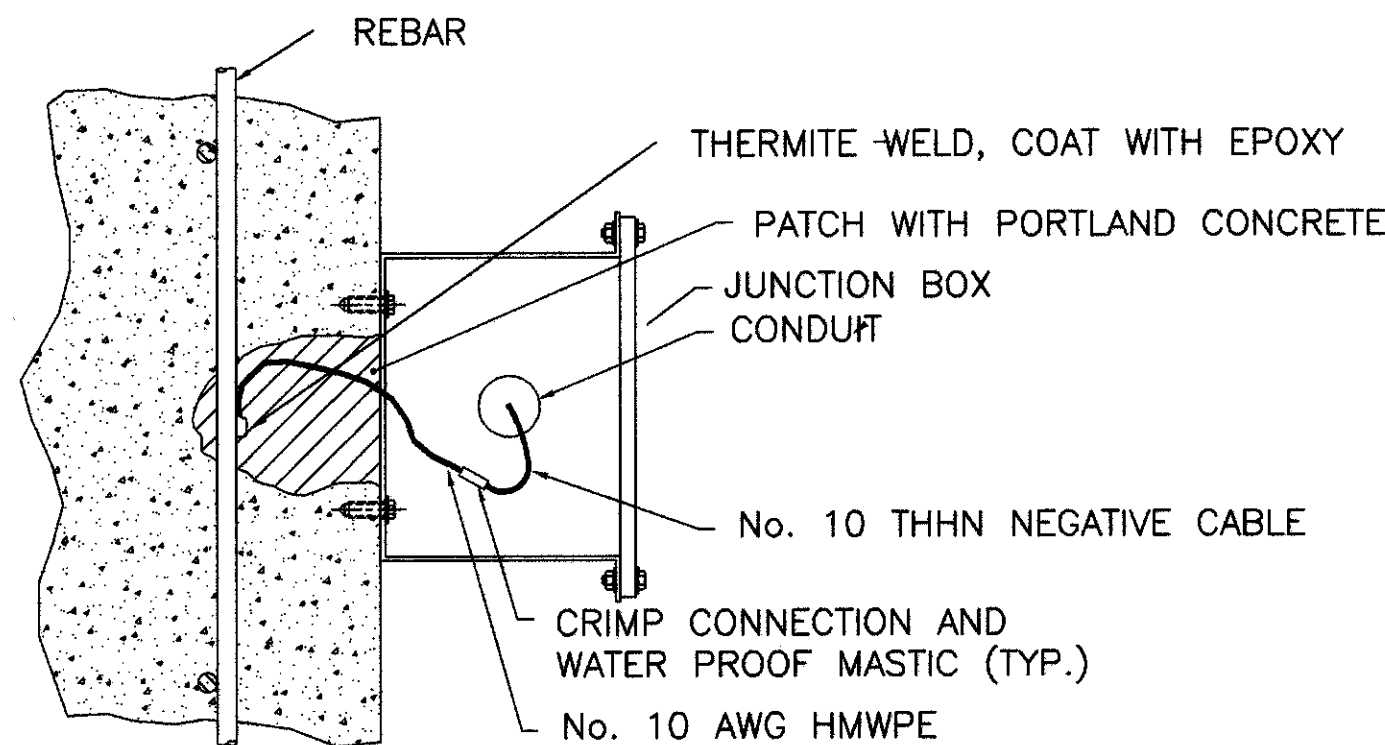
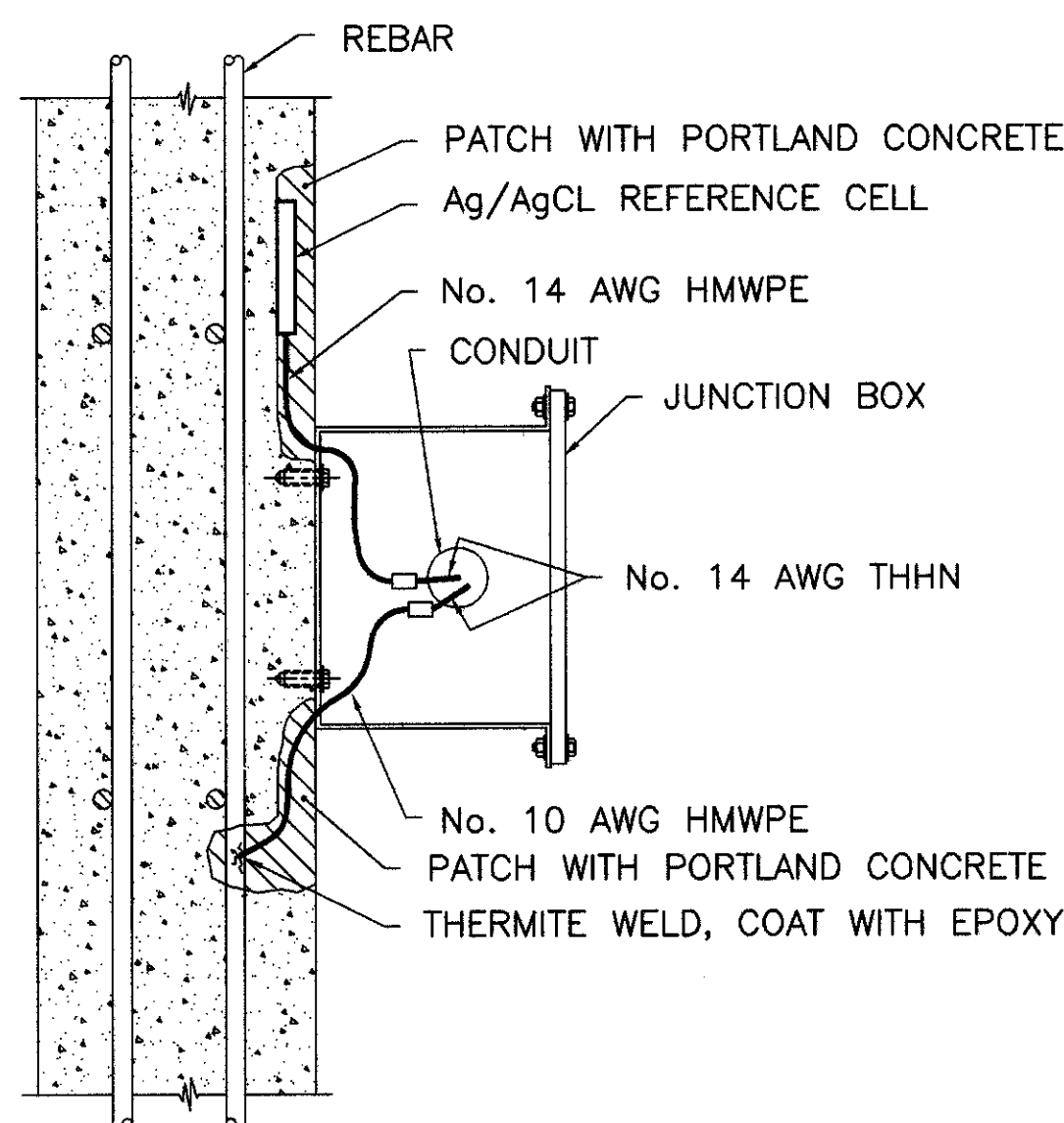


SECTION C-C

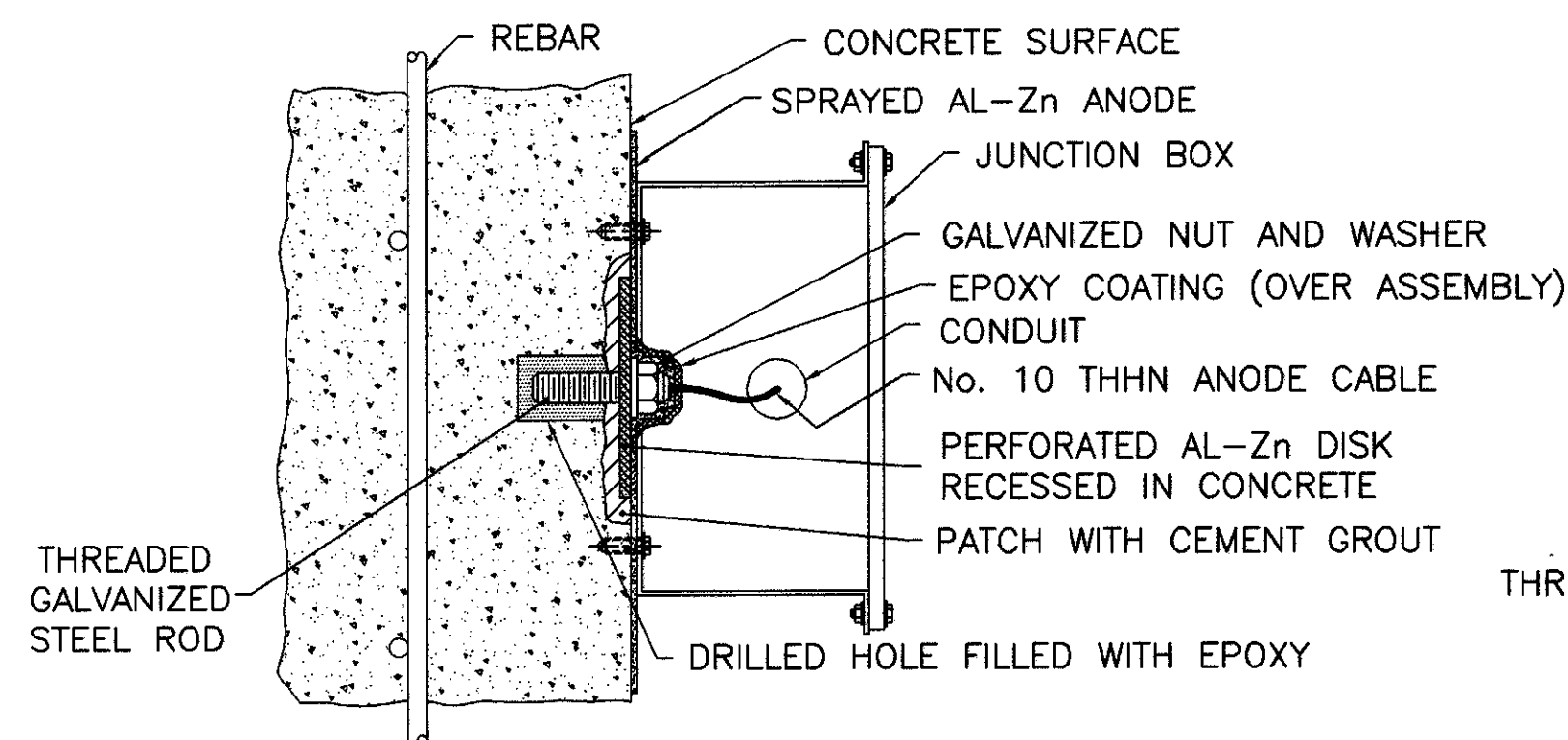
NOTES:

REFER TO SHEETS 36/70 AND 37/70
FOR CATHODIC PROTECTION SYSTEM
SPECIFICATIONS.

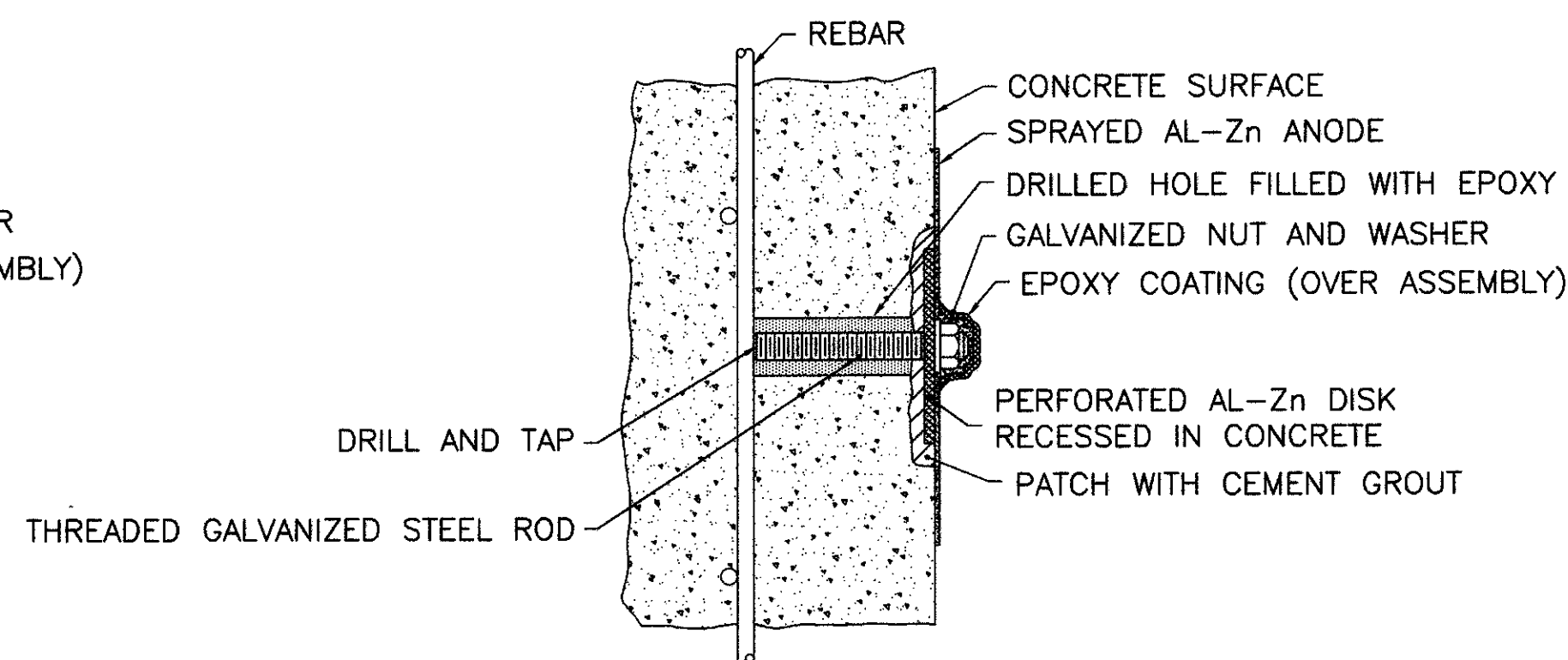
REFER TO SHEETS 31/70 AND 32/70
FOR PIER DIMENSIONS AND ELEVATIONS
NOT SHOWN.



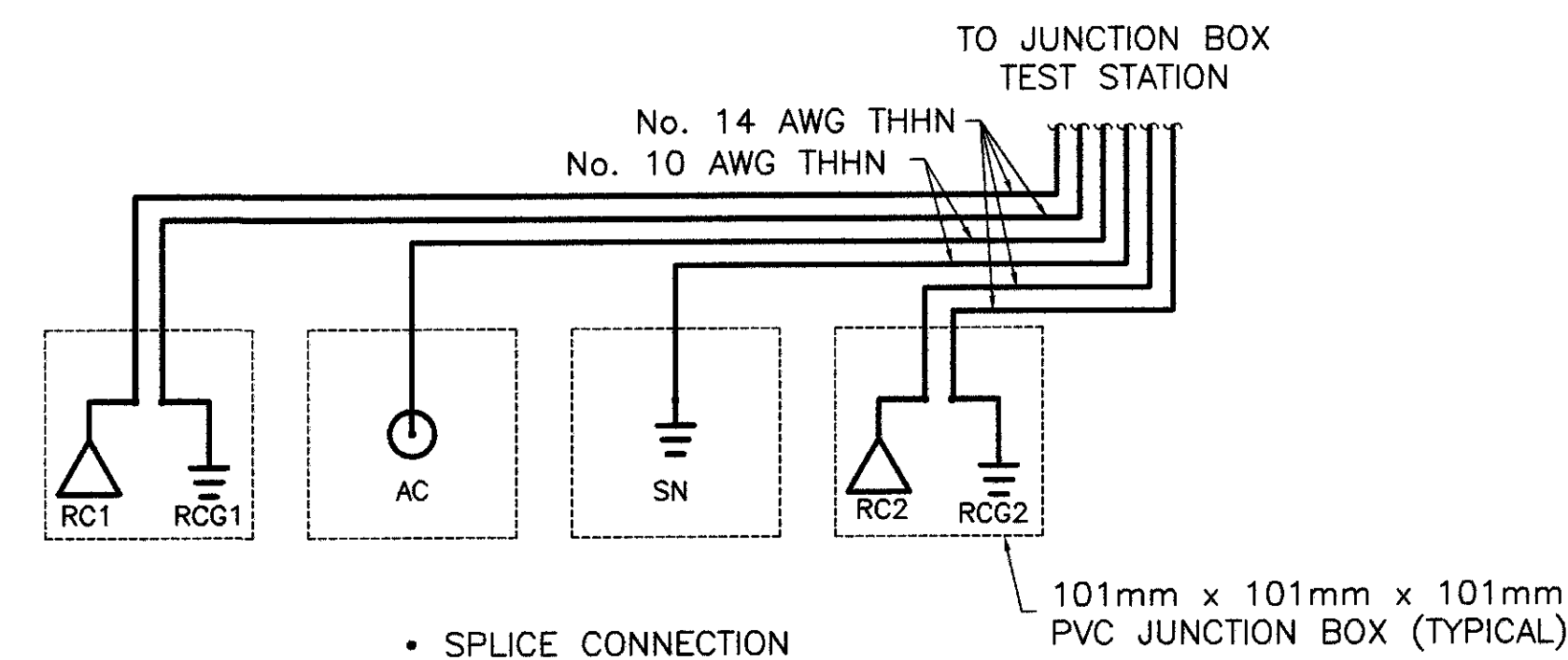
SYSTEM NEGATIVE DETAIL
NON-SHORTED AREA ONLY (N.T.S.)



NON-SHORTED ANODE CONNECTOR FOR
AL-Zn ANODE SYSTEM
(N.T.S.)



SHORTED ANODE CONNECTOR FOR
AL-Zn ANODE SYSTEM
(N.T.S.)



WIRING SCHEMATIC FOR NON-SHORTED SECTION

LEGEND
AC = ANODE CONNECTOR
RC = REFERENCE CELL
RCG = REFERENCE CELL GROUND
SN = SYSTEM NEGATIVE

THIS DESIGN DRAWING IS NOT APPLICABLE
FOR USE AS STANDARD CORROSION CONTROL
PROCEDURES FOR OTHER PROJECTS DUE TO
VARIABLE CONDITIONS AT OTHER SITES.
NEITHER THIS DESIGN NOR ANY PART THEREOF
MAY BE DUPLICATED IN ANY WAY FOR OTHER
PROJECTS, EXCEPT BY WRITTEN AGREEMENT
WITH CORRPRO COMPANIES, INC.

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PLOT SCALE: 1=50

ITEM SPECIAL -- CATHODIC SYSTEM

1.0 DESCRIPTION. THIS SPECIFICATION PERTAINS TO THE UNIFORM APPLICATION, BY THERMAL SPRAYING, OF AN ALUMINUM-ZINC ANODE ON THE SURFACE OF CONCRETE PIERS, FOR THE PURPOSE OF STOPPING REINFORCING CORROSION BY GALVANIC CATHODIC PROTECTION (CP). WHEN ELECTRICALLY SHORTED TO THE REINFORCING STEEL IN THE CONCRETE, A SMALL DIRECT CURRENT WILL PASS FROM THE SACRIFICIAL ANODE THROUGH THE CONCRETE TO THE STEEL, THEREBY CATHODICALLY PROTECTING THE STEEL FROM ANY FURTHER CORROSION.

THE ELECTRICALLY SHORTED CP SYSTEM SHALL CONSIST OF AN ALUMINUM-ZINC ANODE COATING, ANODE CONNECTORS, AND ALL NECESSARY WIRING. IN ADDITION, A NON-ELECTRICALLY SHORTED AREA SHALL ALSO BE INSTALLED, FOR THE PURPOSE OF MONITORING THE CP SYSTEM PERFORMANCE. THE NON-SHORTED SYSTEM CONSISTS OF AN ALUMINUM-ZINC ANODE COATING, ANODE CONNECTORS, EMBEDDED REFERENCE CELLS, SYSTEM GROUNDS, AND ALL NECESSARY WIRING.

THE CP SYSTEM FURNISHED SHALL INCLUDE ALL THE MATERIALS IDENTIFIED IN THESE SPECIFICATIONS AND ON THE DRAWINGS. REQUEST FOR SUBSTITUTION OF ANY MATERIALS MUST CONTAIN APPROPRIATE DOCUMENTATION THAT SUCH SUBSTITUTIONS ARE EQUAL TO THE SPECIFIED ITEM.

THE THERMAL SPRAY OPERATOR SHALL HAVE ADEQUATE TECHNICAL TRAINING, SHOP AND FIELD EXPERIENCE TO SAFELY AND PROFICIENTLY APPLY THIS SACRIFICIAL ANODE COATING ON CONCRETE STRUCTURES. THE OPERATOR SHALL DEMONSTRATE THE ABILITY TO SET UP, OPERATE AND SECURE THERMAL SPRAY EQUIPMENT. THE CONTRACTOR SHALL SUBMIT A VALIDATION OF OPERATOR QUALIFICATION RECORDS.

THE FOLLOWING ARE STANDARDS THAT MUST BE OBSERVED:

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM):
ASTMD1002 STRENGTH PROPERTIES OF ADHESIVES IN SHEAR BY TENSION LOADING
ASTMD 4285 STANDARD TEST METHOD FOR INDICATING OIL OR WATER IN COMPRESSED AIR
ASTMD 4541 STANDARD TEST METHOD FOR PULL-OFF STRENGTH OF COATINGS USING PORTABLE ADHESION TESTERS

FEDERAL SPECIFICATIONS:
BB-O-925 OXYGEN, TECHNICAL, GAS AND LIQUID, FOR THERMAL SPRAYING.
BB-A-106 ACETYLENE, TECHNICAL, DISSOLVED, FOR FLAME SPRAYING.

2.0 MATERIALS AND EQUIPMENT. THE MATERIALS AND EQUIPMENT THAT THE CONTRACTOR SHALL SUPPLY AND PROVIDE INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:

2.1 ABRASION OF CONCRETE SURFACE. THE ABRASIVE BLASTING EQUIPMENT SHALL BE CONVENTIONAL, AIR PRESSURE-TYPE BLASTER. A MAXIMUM OF 550 kPa SHALL BE MAINTAINED AT THE BLAST NOZZLE.

THE ABRASIVE MATERIAL SHALL BE CLEAN AND DRY NON-METALLIC GRIT WITH NO MINERAL CONSTITUENTS WHICH TEND TO BREAK DOWN AND REMAIN ON THE SURFACE IN VISIBLE QUANTITY. THE ABRASIVE SIZE SHALL BE SELECTED FROM 20-40 MESH, AND SHALL BE HARD AND ANGULAR IN SHAPE. NO ABRASIVES THAT HAVE BEEN USED TO REMOVE OIL AND/OR GREASE SHALL BE REUSED.

COMPRESSED AIR USED FOR ABRASIVE BLASTING SHALL BE CLEAN, OIL-FREE AND DRY PER ASTM D 4285. AIR LINE FILTERS AND MOISTURE SEPARATORS SHALL BE INSTALLED UPSTREAM FROM THE BLASTING EQUIPMENT. THESE SHALL BE INSPECTED DAILY FOR CLEANLINESS AND CORRECT OPERATION.

2.2 ALUMINUM-ZINC ALLOY APPLICATION EQUIPMENT. THE APPLICATION EQUIPMENT SHALL BE ELECTRIC-ARC OR OXYACETYLENE COMBUSTION SPRAY TYPE. INPUT REQUIREMENTS FOR OXYACETYLENE COMBUSTION SPRAY ARE: OXYGEN AT 2.69 CU. METER/HOUR, ACETYLENE AT 105 kPa AND 1.42 CU. METER/HOUR, AND ATOMIZING AIR AT 690 kPa AND 0.88 CU. METER/HOUR.

THE CONTRACTOR IS RESPONSIBLE FOR MAKING THE NECESSARY MODIFICATIONS TO THE METALLIZING SYSTEM REQUIRED TO SPRAY THE ALUMINUM-ZINC ALLOY WIRE.

2.3 ALUMINUM-ZINC ALLOY ANODE SYSTEM. THE ALUMINUM-ZINC ALLOY SHALL BE FURNISHED IN WIRE FORM HAVING A NOMINAL DIAMETER OF 3.18 mm. THE WIRE SHALL HAVE THE FOLLOWING COMPOSITION:
AL-20ZN-0.2IN

THE ANODE CONNECTOR SHALL CONSIST OF A PERFORATED ALUMINUM-ZINC ALLOY DISK, GALVANIZED STUD, NUT AND WASHERS. THE DISK SHALL BE THE SAME MATERIAL AS THE ALLOY WIRE. THE ANODE CONNECTOR SHALL BE DISK SHAPE AND SHALL BE 89 mm IN DIAMETER AND 19 mm THICK, AS SHOWN ON THE DRAWINGS. THE DISK SHALL HAVE A MINIMUM OF 8 HOLES 19 mm IN DIAMETER.

THE ANODE WIRES AND ANODE CONNECTORS SHALL BE KEPT CLEAN, DRY AND FREE OF OXIDES AT ALL TIMES.

2.4 REFERENCE ELECTRODES. THE REFERENCE ELECTRODE SHALL BE SILVER-SILVER CHLORIDE DESIGNED FOR PERMANENT INSTALLATION IN CONCRETE STRUCTURES. THE ELECTRODE SHALL BE SUPPLIED WITH A BLACK NO. 14 AWG STRANDED COPPER LEAD WIRE WITH HMWPE TYPE INSULATION.

THE LEAD WIRE TO REFERENCE ELECTRODE CONNECTION SHALL BE COMPLETELY SEALED TO PREVENT MOISTURE PENETRATION INTO THE CONNECTION.

2.5 EPOXY MATERIAL. THE EPOXY FOR THE ANODE CONNECTORS SHALL BE CONCRESEIVE AEX 1419 AS MANUFACTURED BY ADHESIVE ENGINEERING CO., DP-420 BY 3M CO., OR APPROVED EQUAL.

2.6 GASES FOR FLAME SPRAYING. OXYGEN GAS SHALL BE EQUAL OR EQUIVALENT TO FEDERAL SPECIFICATION BB-O-925 -- OXYGEN, TECHNICAL, GAS AND LIQUID, FOR THERMAL SPRAYING.

THE ACETYLENE GAS SHALL BE EQUAL OR EQUIVALENT TO FEDERAL SPECIFICATION BB-A-106 -- ACETYLENE, TECHNICAL, DISSOLVED, FOR FLAME SPRAYING. OTHER FUEL GASES AS SPECIFIED BY THE THERMAL SPRAY EQUIPMENT MANUFACTURER OR PROPANE MAY ALSO BE USED.

3.0 INSTALLATION. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. THE CONTRACTOR SHALL COORDINATE INSTALLATION OF THE CATHODIC PROTECTION SYSTEM AND COMPONENTS WITH ALL OTHER OPERATIONS, SUCH AS REPAIR OF CONCRETE, ETC., IF NECESSARY. SPECIAL CAUTION AND SCHEDULING MAY BE REQUIRED TO PREVENT DAMAGE OF INSTALLED COMPONENTS BY THE SUBSEQUENT OPERATIONS.

3.1 INSTALLATION SEQUENCE. INSTALLATION SHALL PROCEED IN ACCORDANCE WITH THE FOLLOWING SEQUENCE.

3.1.1 INSTALLATION OF REFERENCE ELECTRODES AND REFERENCE ELECTRODE GROUNDS. ALL INSTRUMENTATION SHALL BE INSTALLED AS DETAILED ON THE DRAWINGS AND AT THE LOCATIONS SHOWN. THIS WORK SHALL BE CONDUCTED SIMULTANEOUSLY WITH CONCRETE REPAIRS, IF ANY REPAIR IS NECESSARY.

THE REFERENCE ELECTRODES SHALL BE LOCATED ACCORDING TO THE LAYOUT PLANS. AFTER LOCATING THE REINFORCING STEEL IN THE CONCRETE AT EACH LOCATION WITH A PACHOMETER, THE CONTRACTOR SHALL EXCAVATE AN AREA APPROXIMATELY 100 mm X 200 mm TO THE DEPTH OF THE REINFORCING STEEL USING CAUTION SO AS NOT EXPOSE THE STEEL IN THE EXCAVATION.

AFTER PROPERLY INSTALLING THE REFERENCE ELECTRODE IN THE EXCAVATED AREA, THE AREA SHALL BE BACKFILLED WITH ADEQUATELY AIR-ENTRAINED CONCRETE PATCHING MATERIAL.

THE REFERENCE ELECTRODE WIRE(S) SHALL BE ROUTED TO THE LOCATION WHERE THE JUNCTION BOX WILL BE INSTALLED. THE REFERENCE ELECTRODE WIRE SHALL BE SPLICED TO A AWG NO. 14 WIRE WITH THHN INSULATION IN THE JUNCTION BOX AND ROUTED IN THE CONDUIT TO THE TEST STATION.

3.1.2 INSTALLATION OF SYSTEM GROUNDS (FOR NON-SHORTED ANODE SYSTEM ONLY). THIS WORK SHALL BE CONDUCTED SIMULTANEOUSLY WITH CONCRETE REPAIRS, IF ANY REPAIR IS NECESSARY. AT EACH OF THE LOCATIONS SPECIFIED ON THE LAYOUT PLANS, A SYSTEM GROUND WIRE SHALL BE CONNECTED TO THE REINFORCING STEEL.

THE SYSTEM GROUND WIRES SHALL BE NO. 10 AWG COPPER WIRES WITH HMWPE INSULATION. THE CONNECTION OF EACH GROUND WIRE TO THE REINFORCING STEEL SHALL BE MADE USING THE THERMITE BRAZING OR WELDING PROCESS, IN ACCORDANCE WITH APPROPRIATE MANUFACTURERS INSTRUCTIONS. THE CONNECTIONS AND ANY EXPOSED COPPER STRANDED WIRES IN THE EXCAVATED AREA SHALL BE COMPLETELY COATED WITH A 100 PERCENT SOLID EPOXY, BEFORE THE AREA IS REPAIRED WITH APPROVED CEMENT PATCHING MATERIALS.

EACH SYSTEM GROUND WIRE SHALL THEN BE ROUTED TO A NEARBY PVC JUNCTION BOX, WHERE IT SHALL BE SPLICED (WATER PROOF) TO A #10 AWG COPPER WIRE WITH THHN INSULATION LEAD WIRE AND ROUTED IN THE CONDUIT TO THE TEST STATION.

A REFERENCE CELL GROUND WIRE OF #10 AWG WITH HMWPE INSULATION SHALL BE INSTALLED AS INDICATED IN SECTION 3.1.2.

3.1.3 INSTALLATION OF ANODE CONNECTOR (FOR NON-SHORTED ANODE SYSTEM ONLY). THIS SHALL BE INSTALLED AT EACH LOCATION DESIGNATED IN THE LAYOUT PLANS, USING THE FOLLOWING PROCEDURES:

1. USING A CONCRETE COVER METER OR PACHOMETER, LOCATE THE EXACT POSITIONS OF REINFORCING STEEL AT THE LOCATION, WHERE A NON-SHORTED-SYSTEM ANODE CONNECTOR IS TO BE INSTALLED. MARK A SPOT BETWEEN THESE POSITIONS -- AVOIDING THE STEEL.

2. AT THE SPOT, DRILL A 20 mm DIAMETER BY 30 mm DEEP HOLE INTO THE CONCRETE, MAKING SURE NO STEEL IS EXPOSED.

3. CHIP AN AREA, OF APPROXIMATELY 100 mm DIAMETER AND TO A MINIMUM DEPTH OF 25 mm, IN THE CONCRETE SURROUNDING THIS DRILLED HOLE WHERE THE ANODE CONNECTOR DISK IS TO BE INSTALLED. THE CHIPPED AREA SHALL BE FILLED WITH CEMENTITIOUS GROUT. PRIOR TO HARDENING OF THE GROUT, PLACE THE ANODE CONNECTOR DISK AND PRESS IT AGAINST THE GROUT SO THAT THE DISK IS RECESSED INTO THE GROUT SURFACE, AS SHOWN IN THE PLANS.

4. INSERT A 6.4 mm DIAMETER GALVANIZED, THREADED ROD (STUD) INTO THE DRILLED HOLE, AND SECURE THE ROD IN THE HOLE BY BACKFILLING WITH AN EPOXY ADHESIVE. THE THREADED ROD MUST EXTEND TO THE OUTER CONCRETE SURFACE TO FACILITATE ATTACHMENT OF THE ANODE CONNECTOR DISK.

5. THEN SECURE THE GALVANIZED WASHER AND NUT OVER THE ANODE CONNECTOR DISK.

3.1.4 INSTALLATION OF ANODE CONNECTOR (FOR SHORTED SYSTEM ONLY). ANODE CONNECTORS PROVIDE THE ELECTRICAL CONNECTION BETWEEN THE SACRIFICIAL ANODE AND THE REINFORCING STEEL. FOR EACH ANODE CONNECTOR, A THREADED GALVANIZED ROD (STUD) WILL BE ATTACHED TO THE REINFORCING STEEL TO FACILITATE ATTACHMENT OF THE ANODE CONNECTOR DISK. THE FOLLOWING PROCEDURES SHALL BE FOLLOWED:

1. USING A CONCRETE COVER METER OR PACHOMETER, LOCATE REINFORCING STEEL AT THE LOCATION WHERE A SHORTED-SYSTEM ANODE CONNECTOR IS TO BE INSTALLED.

2. DRILL A 25 mm DIAMETER HOLE INTO THE CONCRETE TO EXPOSE THE REINFORCING STEEL .

3. CHIP AN AREA, OF APPROXIMATELY 100 mm DIAMETER AND TO A MINIMUM DEPTH OF 25 mm, IN THE CONCRETE SURROUNDING THIS DRILLED HOLE WHERE THE ANODE CONNECTOR DISK IS TO BE INSTALLED. THE CHIPPED AREA SHALL BE FILLED WITH CEMENTITIOUS GROUT. PRIOR TO HARDENING OF THE GROUT, PLACE THE ANODE CONNECTOR DISK AND PRESS IT AGAINST THE GROUT SO THAT THE DISK IS RECESSED INTO THE GROUT SURFACE, AS SHOWN IN THE PLANS.

4. ATTACH A 6.4 mm DIAMETER GALVANIZED, THREADED ROD (STUD) TO THE EXPOSED STEEL, USING THE TAPPING METHOD. THE THREADED ROD MUST EXTEND TO THE OUTER CONCRETE SURFACE TO FACILITATE ATTACHMENT OF THE ANODE CONNECTOR DISK.

5. THE THREADED ROD OF THE ANODE CONNECTOR SHALL THEN BE SECURED INSIDE THE DRILL HOLE WITH AN EPOXY ADHESIVE.

6. SECURE THE GALVANIZED WASHER AND NUT OVER THE ANODE CONNECTOR DISK.

3.1.5 PREPARATION OF THE CONCRETE SURFACE. WORK PERFORMED UNDER THIS SECTION CONSISTS OF ROUGHENING AND CLEANING THE CONCRETE SURFACES, BY ABRASIVE BLASTING, SO THAT AN ADEQUATE BOND BETWEEN THE CONCRETE AND THE THERMAL SPRAYED ALUMINUM-ZINC ALLOY CAN BE SECURED. THE MAIN PURPOSE IS TO REMOVE DUST, GRIT, COATINGS, CHALK MARKS, PAINTS, CURING COMPOUNDS, AND OTHER SUBSTANCES WHICH MIGHT INHIBIT BONDING OF THE ANODE TO THE CONCRETE.

ABRASIVE BLASTING OF A PARTICULAR AREA SHALL NOT TAKE PLACE MORE THAN 24 HOURS BEFORE APPLICATION OF SACRIFICIAL ANODE COATING. FURTHERMORE, ABRASIVE BLASTING SHALL NOT BEGIN BEFORE CONCRETE REPAIRS ARE COMPLETED AND PATCH MATERIALS ARE ALLOWED TO CURE PROPERLY. ABRASIVE BLASTING SHALL NOT TAKE PLACE ON SURFACES THAT WILL BE WET OR DAMP FOLLOWING BLASTING. THE INSULATION ON ALL EXPOSED WIRING SHALL BE COVERED WITH SHIELDING MATERIAL OF SUFFICIENT ABRASION RESISTANCE TO PREVENT DAMAGE FROM THE ABRASIVE BLASTING OPERATIONS.

3.1.6 APPLICATION OF ALUMINUM–ZINC ANODE COATING. ALL ANODE CONNECTORS SHALL BE INSTALLED BEFORE APPLICATION OF THE ANODE COATING ON THE SURFACE OF THE DESIGNATED CONCRETE (SEE LAYOUT PLANS). THE CONTRACTOR SHALL FURNISH LABOR, MATERIALS, AND EQUIPMENT FOR INSTALLATION OF THE ANODE.

1. THE SACRIFICIAL ANODE SHALL BE APPLIED WITHIN 24 HOURS AFTER PREPARATION OF THE CONCRETE SURFACE.

2. SURFACES SHALL BE THOROUGHLY VACUUMED OR BLOWN CLEAN WITHIN 15 MINUTES BEFORE THERMAL SPRAYING OF THE AREA IS STARTED. ANY OIL, GREASE, SOIL, WATER, OR OTHER FOREIGN MATTER THAT MAY HAVE DEPOSITED ON THE SURFACE AFTER THE SURFACE PREPARATION HAS BEEN COMPLETED, SHALL BE REMOVED BEFORE SPRAY APPLICATION. COATING APPLICATION SHALL ONLY BE PERFORMED WHEN THE CONCRETE SURFACE IS CLEAN AND DRY.

3. ALL METALLIC COMPONENTS OR APPURTENANCES SUCH AS DRAIN PIPES, CONDUIT, OR BEARING STEEL PLATES SHALL BE ISOLATED FROM THE ANODE AND TEMPORARILY COVERED WITH A SUITABLE MASKING MATERIALS WHICH SHALL EXTEND, FROM THE OBJECTS, BY AT LEAST 25 mm ON THE CONCRETE SURFACES.

4. THE INSTALLATION AREAS SHALL BE ENCLOSED DURING SPRAYING FOR DUST CONTAINMENT. THE ENCLOSURE SHALL CONSIST OF TARPS, PANELS, OR OTHER METHODS TO PREVENT DUST FROM ESCAPING THE IMMEDIATE AREA SUCH THAT IT WOULD CONSTITUTE A HEALTH HAZARD. PERSONNEL CONDUCTING SPRAYING OPERATIONS WITHIN THE ENCLOSURE SHALL BE PROVIDED WITH A HOOD WITH EXTERNAL AIR SUPPLY FOR RESPIRATION ACCORDING TO OSHA 19–10–134.

5. WHEN THE CONCRETE SURFACE TEMPERATURE IS LESS THAN 5 DEGREES CELSIUS ABOVE THE DEW POINT, THE SACRIFICIAL ANODE SHALL NOT BE SPRAYED WITHOUT ENCLOSURE AND DEHUMIDIFYING EQUIPMENT. THE DEW POINT SHALL BE DETERMINED USING A PSYCHROMETER. THERMAL SPRAYING SHALL NOT BE PERFORMED WHEN THERE IS EXCESSIVE WIND THAT COULD INTERFERE WITH THE OPERATION.

6. DURING APPLICATION, THE THERMAL SPRAY NOZZLE SHALL BE MAINTAINED AT A TRAVEL SPEED AND A DISTANCE FROM THE WORK SURFACE SUCH THAT ANODE DEPOSIT EFFICIENCY AND BOND STRENGTH ARE MAXIMIZED. TRAVEL SPEED SHALL BE APPROXIMATELY 300 mm PER SECOND. THE DISTANCE FROM THE NOZZLE TO THE SURFACE SHOULD BE APPROXIMATELY 150 mm.

7. THIS STEP DIFFERS FOR THE NON–SHORTED AND THE SHORTED SYSTEMS. THEREFORE, FOLLOW THE APPROPRIATE STEPS OUTLINED BELOW, ACCORDING TO THE DESIGNATION OF AN AREA (SEE LAYOUT PLANS):

FOR NON–SHORTED SYSTEM ONLY: THE SPRAY APPLICATION OF THE SACRIFICIAL ANODE SHALL BEGIN BY METALLIZING THE AREA(S) IN WHICH THE ANODE CONNECTOR WAS INSTALLED. FIRST, CONNECT A VOLTMETER BETWEEN THE THREADED ROD AND A SYSTEM GROUND, TO DETECT ELECTRICAL SHORT CIRCUITS BETWEEN THE ANODE AND THE REINFORCING STEEL. BEGIN BY SPRAYING THE ANODE, IN A CONTINUOUS COATING, OVER THE CONNECTOR DISK AND THEN PROCEEDING TOWARD THE SURROUNDING CONCRETE, TO FACILITATE SHORT CIRCUIT DETECTION, WHILE WATCHING THE VOLTMETER FOR ANY SHARP VOLTAGE DROP (I.E., TO NEAR 0 MILLIVOLT), WHICH IS A DEFINITE INDICATION OF A SHORT CIRCUIT. WHEN A SHORT CIRCUIT IS DETECTED, ALL INSTALLATION WORK SHALL STOP UNTIL THE SHORT IS IDENTIFIED AND ELIMINATED.

FOR SHORTED SYSTEM ONLY: THE SPRAY APPLICATION OF THE SACRIFICIAL ANODE SHALL BEGIN BY METALLIZING THE AREA(S) IN WHICH THE ANODE CONNECTOR WAS INSTALLED. BEGIN BY SPRAYING THE ANODE, IN A CONTINUOUS COATING, OVER THE CONNECTOR DISK AND THEN PROCEEDING TOWARD THE SURROUNDING CONCRETE.

8. THE COATING SHOULD BE APPLIED IN MULTIPLE PASSES AND SHOULD OVERLAP ON EACH PASS IN A CROSSHATCH PATTERN TO ENSURE COMPLETE COVERAGE. UNIFORM GUN MOVEMENT SHOULD BE USED TO ENSURE CONSISTENT THICKNESS. SUFFICIENT SACRIFICIAL ANODE WILL BE SPRAYED TO ACHIEVE A THICKNESS OF 300 MICRONS. THE THICKNESS OF THE COATING SHALL BE MEASURED AT A MINIMUM OF 5 LOCATIONS PER APPROX. 10 SQ. METER USING DUCT TAPE AS FOLLOWS:

A) ATTACH PIECES OF DUCT TAPE (25 mm X 25 mm) ON CONCRETE SURFACE.
B) SPRAY THE SACRIFICIAL ANODE ONTO THE DUCT TAPE.
C) REMOVE THE DUCT TAPE WITH THE SPRAYED ANODE COATING.
D) SEPARATE THE SPRAYED COATING ANODE FROM THE DUCT TAPE.
E) MEASURE THE THICKNESS OF THE ANODE COATING WITH A CALIPER OR MICROMETER.

THE MAXIMUM TOLERANCES OF THE COATING THICKNESS ARE 50 MICRONS. THE CONCRETE AREAS LEFT UNCOATED, AFTER THE REMOVAL OF PIECES OF THE DUCT TAPE, SHALL THEN BE SPRAYED TO RESTORE THE ANODE COATING.

9. THE ALUMINUM–ZINC ALLOY ANODE WIRE IS RELATIVELY DUCTILE; THEREFORE, THE WIRE SHALL BE CAREFULLY HANDLED TO PREVENT SHARP BENDS OR NICKS. TO READILY SPRAY COILED ANODE WIRE FOR USE IN A FLAME SPRAY GUN, A STRAIGHTENING DEVICE IS RECOMMENDED.

10. COMPRESSED AIR USED FOR SPRAYING SHALL BE CLEAN, OIL–FREE AND DRY, PER ASTM D 4285. AIR LINE FILTERS AND MOISTURE SEPARATORS SHALL BE INSTALLED UPSTREAM FROM THE SPRAYING EQUIPMENT. THESE SHALL BE INSPECTED DAILY FOR CLEANLINESS AND CORRECT OPERATION. ANY INDICATION OF MALFUNCTION IN THE EQUIPMENT, INDICATED BY OIL OR WATER IN THE FILTER OR TRAPS, SHALL BE CORRECTED IMMEDIATELY.

11. THE ANODE COATING SHALL NOT CONTAIN ANY LUMPS, BLISTERS, COARSE TEXTURE, OR LOOSELY ADHERING PARTICLES, NOR SHALL IT CONTAIN ANY CRACKS, PINHOLES, OR CHIPS WHICH EXPOSE THE CONCRETE SUBSTRATE. UNACCEPTABLE AREAS SHALL BE REPAIRED. REPAIR WORK SHALL BE CONDUCTED AS FOLLOWS:

A) REMOVE ALL DEGRADED ANODE COATING BY SCRAPING OR STRIP BLASTING OR BOTH. DURING THIS PROCESS, LIGHT BLASTING SHALL BE APPLIED TO THE AREAS WITHOUT EXPOSING LARGE AGGREGATES.

B) RE–APPLY SACRIFICIAL ANODE.

C) INSPECT THE SPRAYED ANODE THICKNESS, AS DESCRIBED ABOVE.

3.1.7 COMPLETION OF INSTALLATION OF THE ANODE CONNECTORS. THIS STEP DIFFERS FOR THE NON– SHORTED AND THE SHORTED SYSTEMS. THEREFORE, FOLLOW THE APPROPRIATE STEPS, OUTLINED BELOW, IN ACCORDANCE TO THE DESIGNATION OF AN AREA (SEE LAYOUT PLANS):

FOR NON–SHORTED ANODE CONNECTORS. SECURELY ATTACH A RED NO. 10 AWG THHN COPPER LEAD WIRE BETWEEN THE ANODE CONNECTOR DISK AND THE GALVANIZED WASHER AND NUT – MAKING SURE THAT THE NUT IS FIRMLY TIGHTENED. ENCLOSE THE CONNECTION WITH A PVC JUNCTION BOX, BEFORE ROUTING THE LEAD WIRE THROUGH A CONDUIT TO THE TEST STATION ANOTHER JUNCTION BOX, WHERE IT IS TO BE CONNECTED (THROUGH A 0.1 OHM RESISTOR) TO A SYSTEM NEGATIVE.

FOR SHORTED ANODE CONNECTORS: CHECK TO MAKE SURE THAT THE GALVANIZED WASHER AND NUT ARE TIGHTLY SECURED OVER THE ANODE CONNECTOR DISK AND ATTACHED TO THE GALVANIZED AND THREADED ROD. THEN COVER THE WASHER–AND–NUT ASSEMBLY WITH EPOXY ADHESIVE.

3.1.8 ADHESION TESTING. AFTER THE SACRIFICIAL ANODE COATING IS APPLIED, ADHESION STRENGTH SHALL BE MEASURED TO ENSURE ADEQUATE BOND.

ADHESION STRENGTH WILL BE MEASURED WITH A PROCEQ, MODEL DYNA Z 5, OR EQUAL. A MINIMUM OF ONE ADHESION TEST SHALL BE PERFORMED PER 45 SQ. METER OF CONCRETE SURFACE AREA. THE TARGET ADHESION STRENGTH OF THE SACRIFICIAL ANODE COATING SHALL BE GREATER THAN 103.5 kPa. THE CONTRACTOR SHALL REMOVE THE ANODE COATING FROM AREAS, WHERE THE ADHESION STRENGTH IS BELOW 345 kPa, AND RECOAT WITH ANODE, IN ACCORDANCE WITH THESE SPECIFICATIONS.

3.1.9 INSTALLATION OF JUNCTION BOXES AND CONDUIT.

1. THE CONTRACTOR SHALL INSTALL SCHEDULE 40 PVC CONDUIT AND JUNCTION BOXES FOR THE CATHODIC PROTECTION SYSTEM.

2. ALL CONDUIT JOINTS, FITTINGS, COUPLINGS AND ADAPTERS SHALL BE JOINTED BY MEANS OF A SOLVENT CEMENT OR AS RECOMMENDED BY THE CONDUIT MANUFACTURER.

3. THE JUNCTION BOXES AND THE CONDUIT SHALL BE SECURED ON THE CONCRETE SURFACE USING STAINLESS STEEL (GRADE 304 OR 316) BOLTS WITH A VINYLESTER ADHESIVE RESIN.

4. THE CONDUIT SHALL BE SECURED ON THE CONCRETE SURFACE USING NON–METALLIC CLAMPS OR HANGERS TO THE STRUCTURE IN CONFORMANCE WITH THE PERTINENT ELECTRICAL CODES.

5. ANY CONDUIT SECTIONS TO BE BENT MUST BE HEATED EVENLY OVER THE ENTIRE LENGTH OR THE CURVE. ONLY ELECTRICAL HEATERS DESIGNED SPECIFICALLY FOR THE SIZE AND PURPOSE OF BENDING NON–METALLIC CONDUIT SHALL BE USED. CONDUIT BENDING SHALL BE PERFORMED ACCORDING TO CONDUIT MANUFACTURER S RECOMMENDATIONS. FOR BLIND BENDS OR FOR COMPOUND TURNS IN A CONDUIT RUN, THE HEATED CONDUIT MAY BE SOLVENT CEMENTED IN PLACE WHILE STILL FLEXIBLE. THE USE OF TORCHES OR OTHER FLAME–TYPE DEVICES SHALL NOT BE PERMITTED. PVC CONDUIT SECTIONS THAT WERE EXPOSED TO EXCESSIVE HEATING, AS EVIDENT BY BROWN DISCOLORATION, SHALL BE DISCARDED.

3.1.10 INSTALLATION OF ELECTRICAL WIRING.

1. WIRING FOR THE CATHODIC PROTECTION SYSTEM SHALL BE PERFORMED IN ACCORDANCE TO THE PLANS AND MATERIAL SPECIFICATIONS.

2. ALL WIRING SHALL BE INSTALLED OR ROUTED IN PVC CONDUIT.

3. ALL CATHODIC PROTECTION WIRES SHALL BE IDENTIFIED IN THE JUNCTION BOXES, AND AT THE TEST STATION USING DURABLE IDENTIFICATION TAGS. EACH WIRE SHALL BE CLEARLY MARKED AS TO ITS FUNCTION. CARE SHALL BE TAKEN TO IDENTIFY EACH WIRE CORRECTLY IN ACCORDANCE WITH THE LEGEND SHOWN IN ANY SCHEMATIC WIRING DIAGRAM.

4. ALL CONNECTIONS AND WIRE SPLICES SHALL BE HOUSED IN JUNCTION BOXES AND ENCAPSULATED TO PREVENT ANY MOISTURE INTRUSION AND ALSO TO PROVIDE ELECTRICAL INSULATION FROM OTHER NEARBY CONNECTIONS OR WIRES.

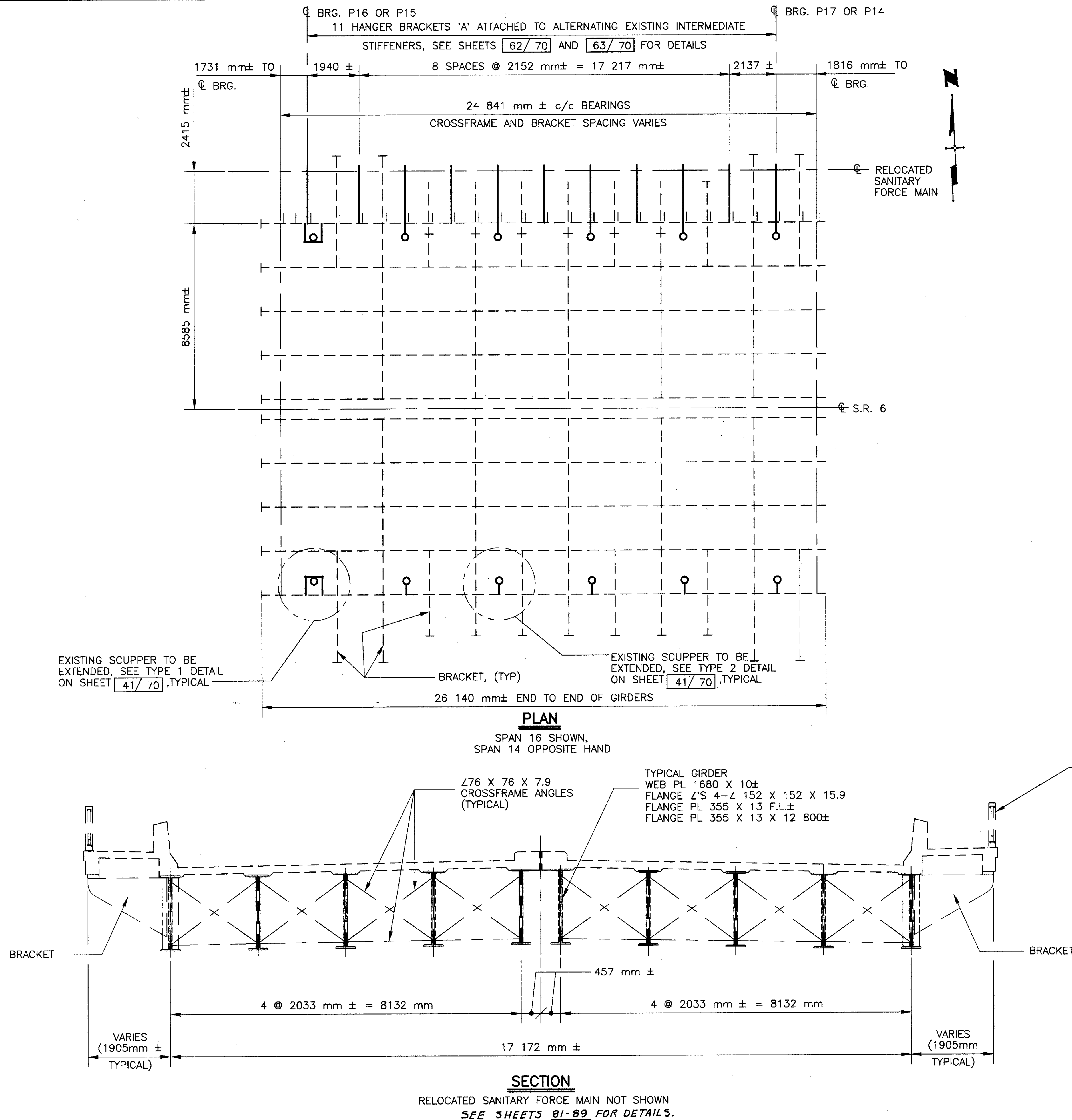
4.0 ENERGIZATION AND TESTING OF THE SYSTEM. IN THE TEST STATION JUNCTION BOX, CONNECT THE ANODE LEAD WIRE FROM THE NON–SHORTED ANODE CONNECTOR TO A SYSTEM GROUND, THROUGH A 0.1 OHM SHUNT. (ALWAYS PROPERLY SEAL ALL CONNECTIONS IN THE JUNCTION BOXES WITH WATERPROOF MATERIALS TO PREVENT FUTURE MOISTURE INTRUSION.) AT THE TEST STATION, PROPERLY MARK EACH WIRE AND ITS FUNCTION WITH DURABLE IDENTIFICATION TAGS.

LIKEWISE, ROUTE ALL LEAD WIRES FROM THE EMBEDDED REFERENCE ELECTRODES AND THEIR GROUNDS, WITHOUT SPLICES, TO THE TEST STATION AND PROPERLY MARK THE WIRES.

MEASURE AND RECORD THE CIRCUIT RESISTANCE BETWEEN THE ANODE AND THE STEEL, THE VOLTAGE DROP ACROSS EACH SHUNT, AND THE POTENTIAL OF THE STEEL IN THE TEST STATION JUNCTION BOX.

5.0 MEASUREMENT AND PAYMENT. THE ACCEPTED INSTALLATION OF THE COMPLETED CATHODIC *SYSTEM PROTECTION* FOR PIERS 15 AND 16 SHALL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE BID FOR ITEM SPECIAL – CATHODIC PROTECTION SYSTEM FOR PIERS 15 AND 16, WHICH PRICE SHALL CONSTITUTE FULL COMPENSATION FOR ALL LABOR, MATERIALS, HANDLING INSTALLATION, EQUIPMENT, SURFACE PREPARATION APPLICATION, TESTING INCIDENTALS AND REPAIRS AS NECESSARY TO PROVIDE A COMPLETE, FUNCTIONING SYSTEM.

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NOTES:

INFORMATION PROVIDED IS SCHEMATIC IN NATURE. THE CONTRACTOR MAY REVIEW THE EXISTING CONSTRUCTION DRAWINGS AND MUST FIELD VERIFY ALL EXISTING DIMENSIONS.

EXISTING SPANS 14 AND 16 ARE TO BE FIELD PAINTED IN THEIR ENTIRETY IN ACCORDANCE WITH THE REQUIREMENTS OF THE VARIOUS PAY ITEMS FOR ITEM 815 - FIELD PAINTING OF EXISTING STEEL, SYSTEM OZEU.

THE FOLLOWING IS A LISTING OF THE PRIMARY STRUCTURAL MEMBERS TO BE FIELD PAINTED:

- RIVETED BUILT-UP GIRDERS
- FULL CROSSFRAME BAYS
- PARTIAL CROSSFRAME BAYS
- BRACKETS
- BALCONY BRACKETS (NOT SHOWN)
- MISCELLANEOUS DETAIL METAL (JOINTS, BEARINGS, SCUPPERS, ETC.)
- ALL OTHER NON-SPECIFIED STRUCTURAL STEEL DETAILS

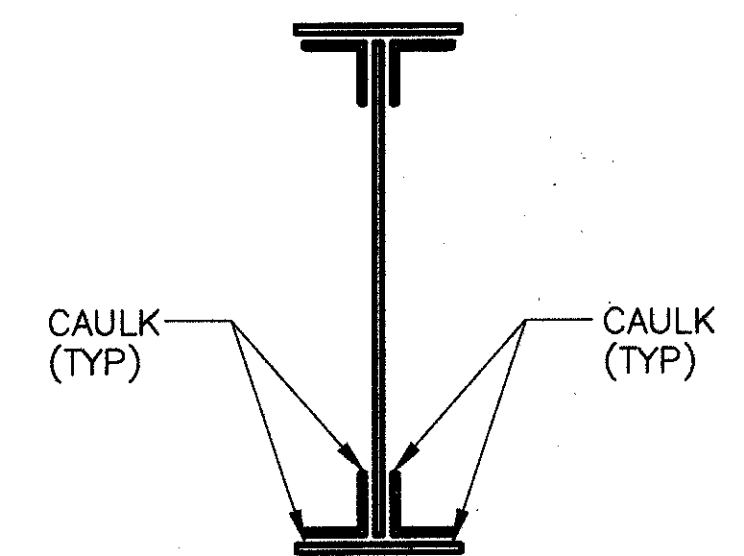
JOINTS BETWEEN THE BOTTOM FLANGE ANGLE AND WEB PLATE, AND BOTTOM FLANGE ANGLE AND BOTTOM FLANGE PLATE SHALL BE CAULKED IN ACCORDANCE WITH THE REQUIREMENTS OF ITEM - 815 CAULKING. SEE DETAIL, THIS SHEET.

BRACKET "A" SHALL BE ATTACHED TO EXISTING INTERMEDIATE STIFFENER ANGLES. THE COST OF FIELD DRILLING THE EXISTING ANGLES SHALL BE CONSIDERED INCIDENTAL TO THE COST OF ITEM 863 - STRUCTURAL STEEL, MISC.: FORCE MAIN BRACKETS.

BRACKET 'A' SHALL BE SHOP PAINTED IN ACCORDANCE WITH THE REQUIREMENTS OF ITEM 514-FIELD PAINTING, MISC.: COMPLETE SHOP PAINTING OF STRUCTURAL STEEL.

FOR DETAIL 1 AND DETAIL 2, SEE SHEET 41/70.

FOR PAINTING OF RAILING SEE NOTE
"RAILING, GENERAL", SHEET 8/70



CAULKING DETAIL

FRAMING PLAN, SPANS 14 AND 16
BRIDGE NUMBER ERI-6-28839
OVER HURON RIVER

ERI-6-28.839

38/70

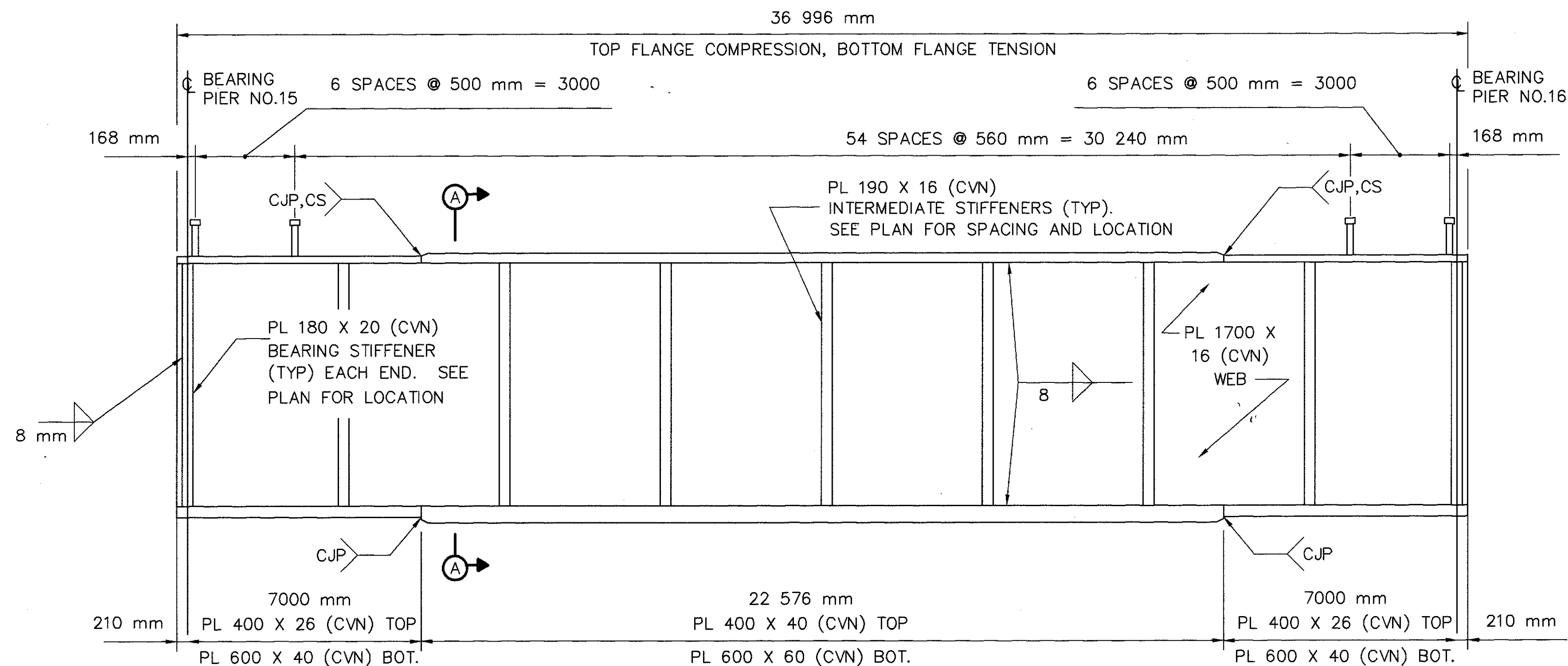
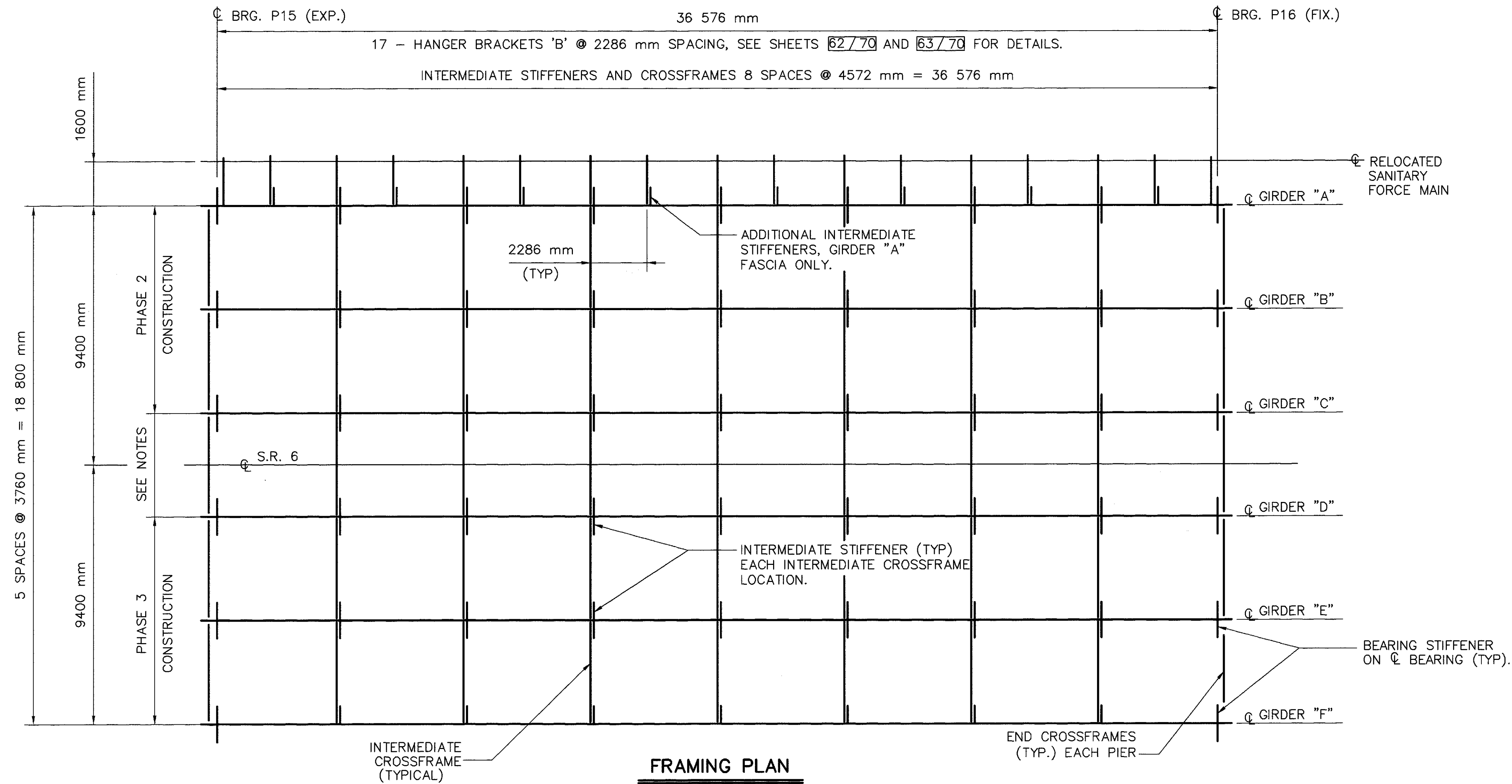
60
92

adache-cini-lynn
associates
CONSULTING ENGINEERS
4407 ROCKSIDE RD. CLEVELAND, OHIO 44131

DATE
12/97
REVIEWED
TAB
STRUCTURE FILE NUMBER
2201984

DRAWN
TES
DESIGNED
LPC
CHECKED
AJM

CONCRETE BRIDGE FRAME 12-3-97 2:25:48 PM CST



NOTES

WHERE A SHAPE OR PLATE IS DESIGNATED (CVN) THE MATERIAL SHALL MEET SPECIFIED MINIMUM NOTCH TOUGHNESS REQUIREMENTS AS SPECIFIED IN 711.01.

HIGH STRENGTH BOLTS SHALL BE 22 mm DIAMETER A325M, GALVANIZED, UNLESS OTHERWISE NOTED.

WELDED ATTACHMENT OF SUPPORTS FOR CONCRETE DECK FINISHING MACHINE MAY BE MADE TO AREAS OF THE FASCIA STRINGER FLANGES DESIGNATED "COMPRESSION". ATTACHMENTS SHALL NOT BE MADE TO AREAS DESIGNATED "TENSION". FILLET WELDS TO COMPRESSION FLANGES SHALL BE NOT CLOSER THAN 25 mm FROM EDGE OF FLANGE, BE NOT MORE THAN 50 mm LONG, AND BE NOT SMALLER THAN THE MINIMUM SIZE REQUIRED BY AASHTO.

ALL STRUCTURAL STEEL SHALL BE, ASTM A709M, GRADE 345, UNLESS OTHERWISE NOTED. ALL NEW STRUCTURAL STEEL FOR SPAN 15 SHALL BE COMPLETELY SHOP PAINTED IN ACCORDANCE WITH THE REQUIREMENTS OF ITEM 514-FIELD PAINTING, MISC.: COMPLETE SHOP PAINTING OF STRUCTURAL STEEL.

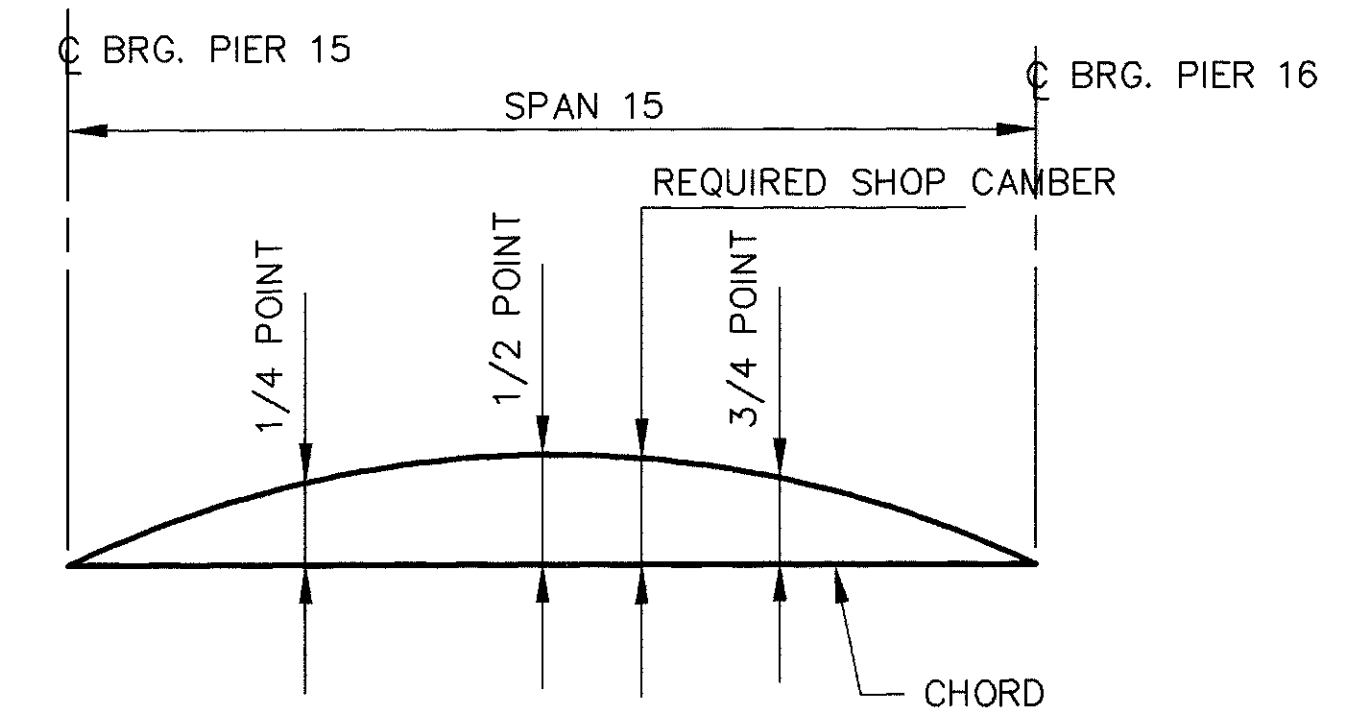
INTERMEDIATE CROSSFRAMES BETWEEN GIRDERS 'C' AND 'D' SHALL BE INSTALLED DURING PHASE 3 CONSTRUCTION AND THE BOLTS INSTALLED IN A HAND SNUG POSITION ONLY. AFTER THE CONCRETE FOR THE PHASE 4 DECK IS PLACED THE CROSSFRAME BOLTS MAY BE FULLY TIGHTENED.

FOR ELASTOMERIC BEARING DETAILS, SEE SHEET 43/70

REFER TO SHEET 41/70 FOR SECTION A-A CROSSFRAME AND STIFFENER DETAILS.

"CS" INDICATES BUTT WELD SUBJECT TO COMPRESSIVE STRESSES ONLY.

"CJP" INDICATES A COMPLETE PENETRATION WELD.

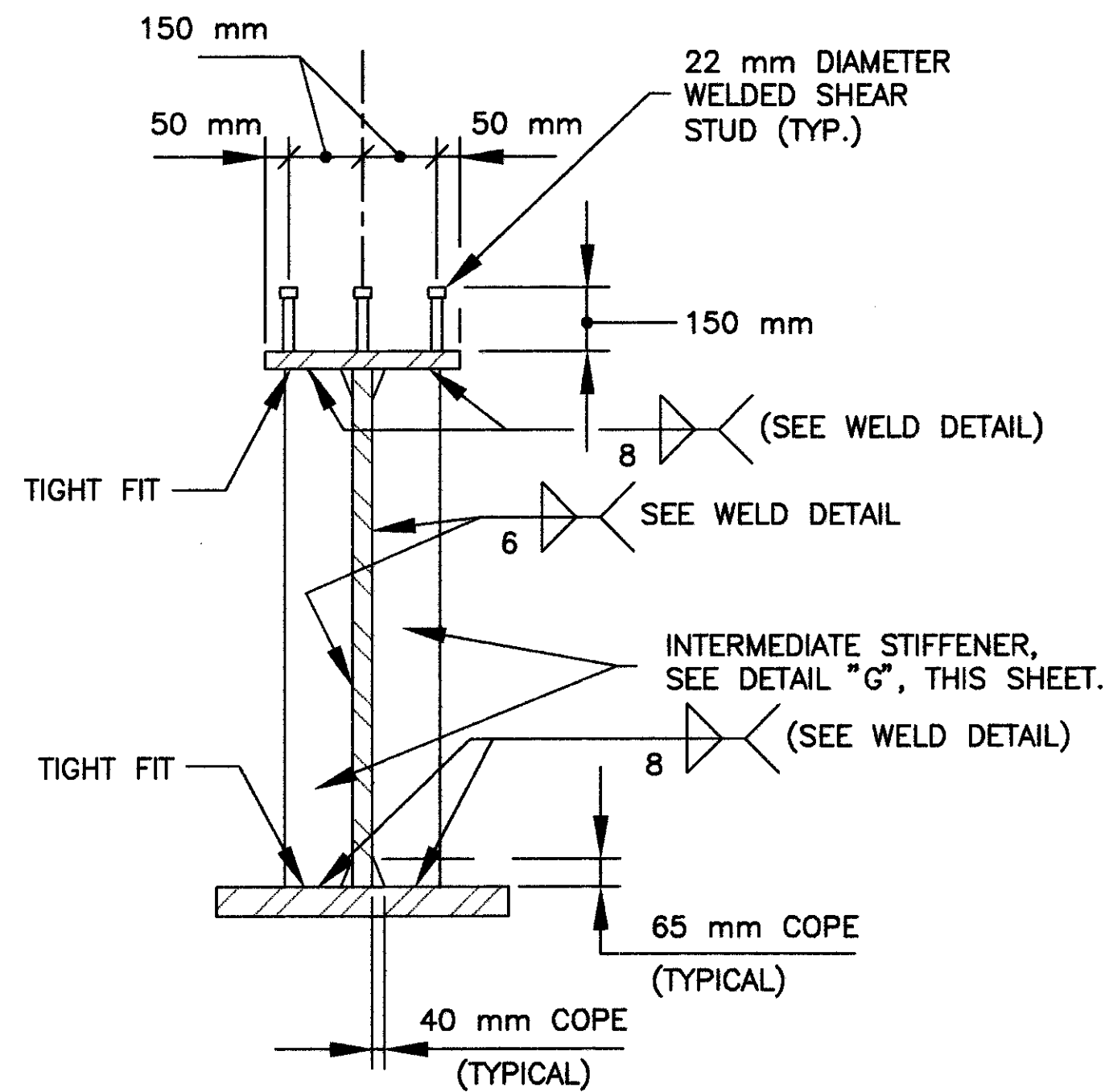


LAYOUT DIAGRAM

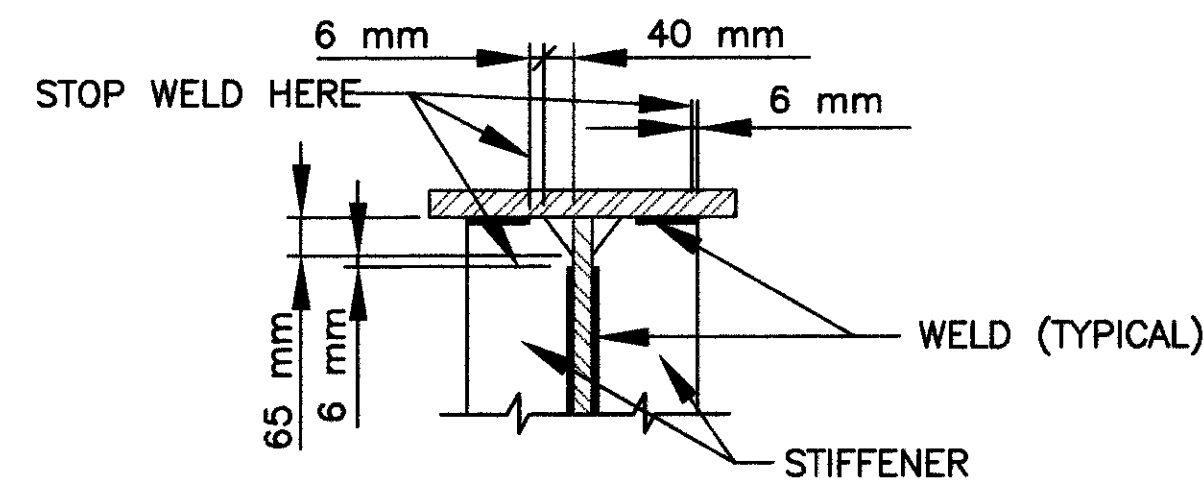
A POSITIVE CAMBER VALUE INDICATES THE CAMBER IS ABOVE THE CHORD BETWEEN ADJACENT BEARINGS IN THAT SPAN.

DEFLECTION AND CAMBER TABLE (mm)

		SPAN 15			
		1/4	1/2	3/4	
BEAMS A & F	DEFLECTION DUE TO WEIGHT OF STEEL	13	18	13	
	DEFLECTION DUE TO REMAINING DEAD LOAD	51	72	51	
	REQUIRED SHOP CAMBER	64	90	64	
BEAMS B, C, D, & E	DEFLECTION DUE TO WEIGHT OF STEEL	13	18	13	
	DEFLECTION DUE TO REMAINING DEAD LOAD	57	81	57	
	REQUIRED SHOP CAMBER	70	99	70	



SECTION A-A

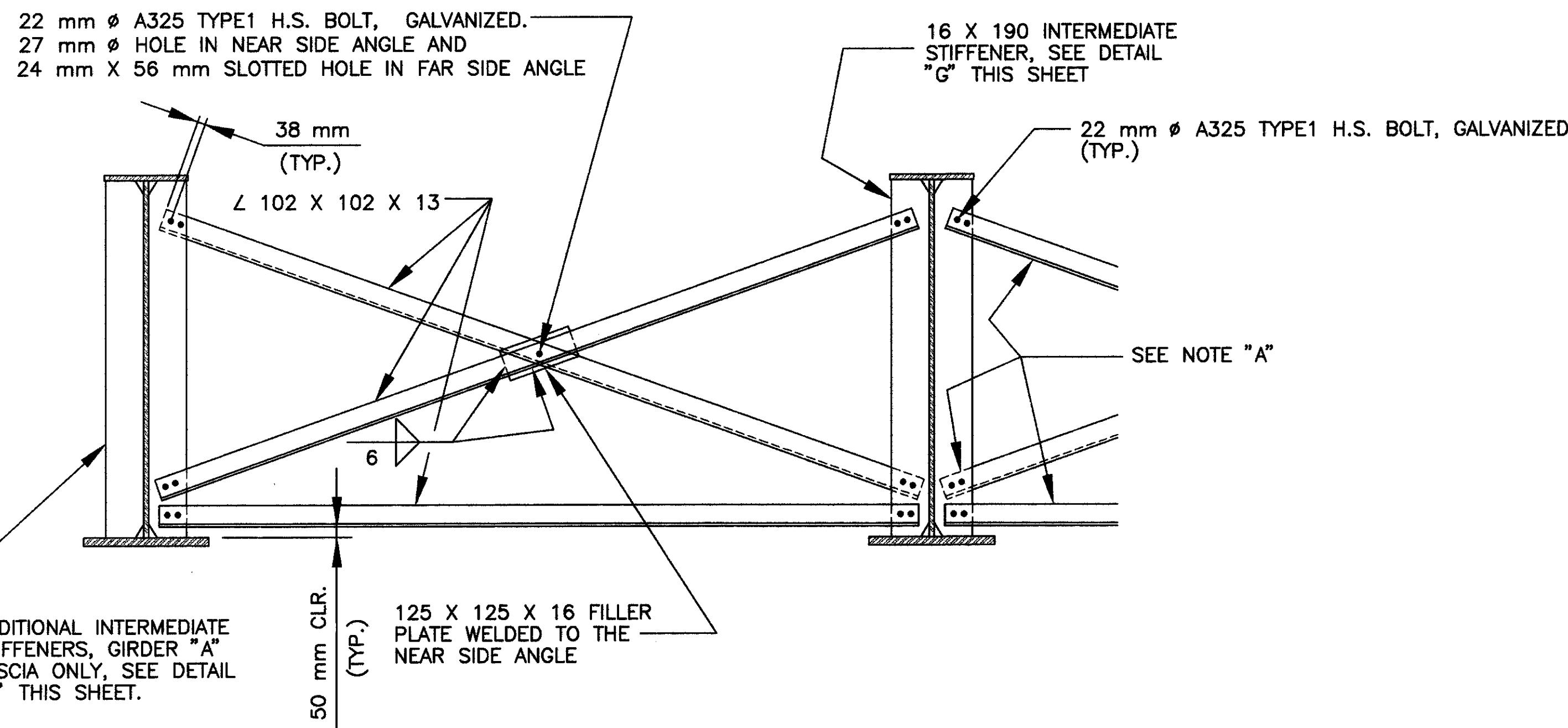


WELD DETAIL

NOTES:

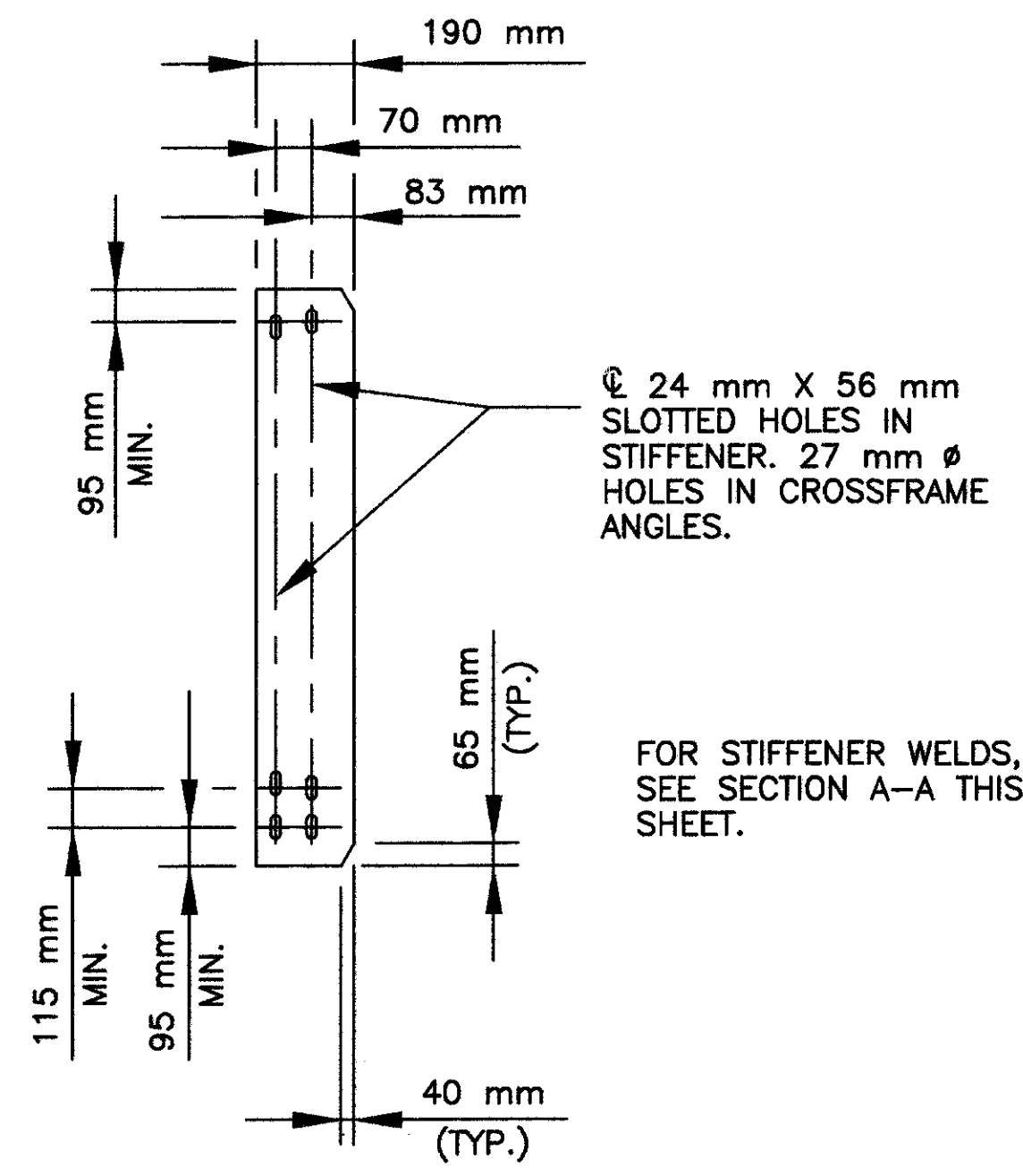
FOR LOCATION OF SECTION A-A, SEE SHEET 39/70

FOR END CROSSFRAME DETAILS AND DIMENSIONS, REFER TO STD. DWG. EXJ-4-87M. THE BOTTOM ANGLE IN GIRDER BAYS 'BC' AND 'DE' SHALL BE SET 110 mm ABOVE THE GIRDER BOTTOM FLANGE TO CLEAR THE SEISMIC BLOCK.

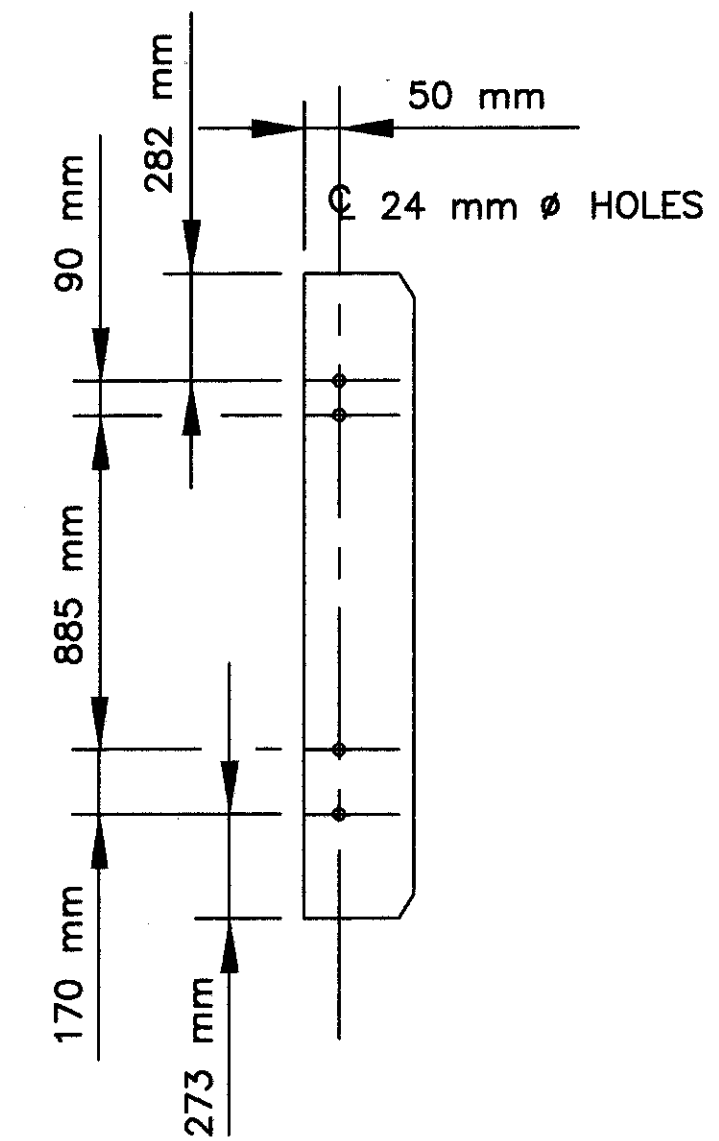


INTERMEDIATE CROSSFRAME DETAILS

NOTE "A" :
MATCH CROSSFRAME LEGS ON
EACH SIDE OF THE GIRDER WEB.

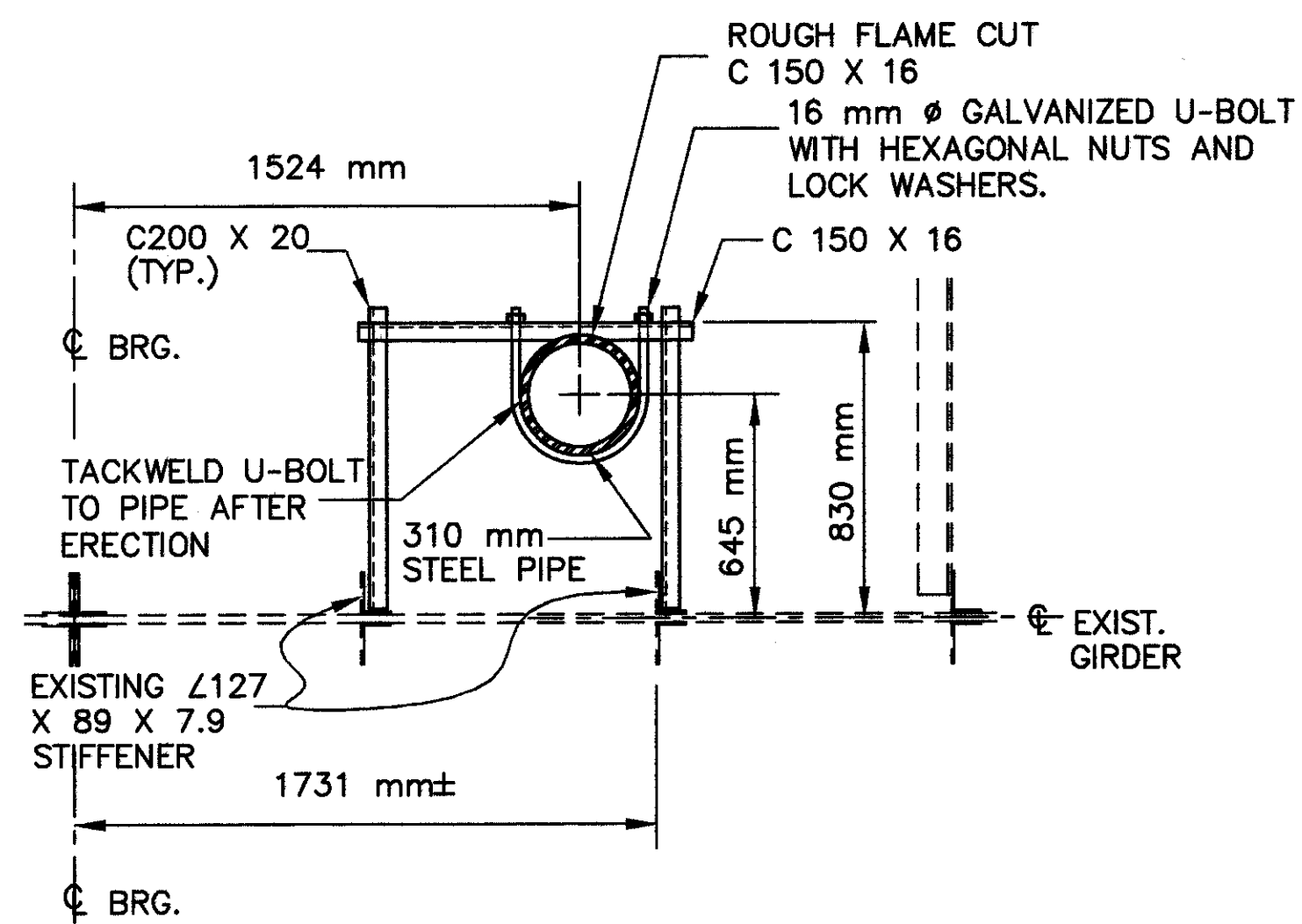


DETAIL "G"

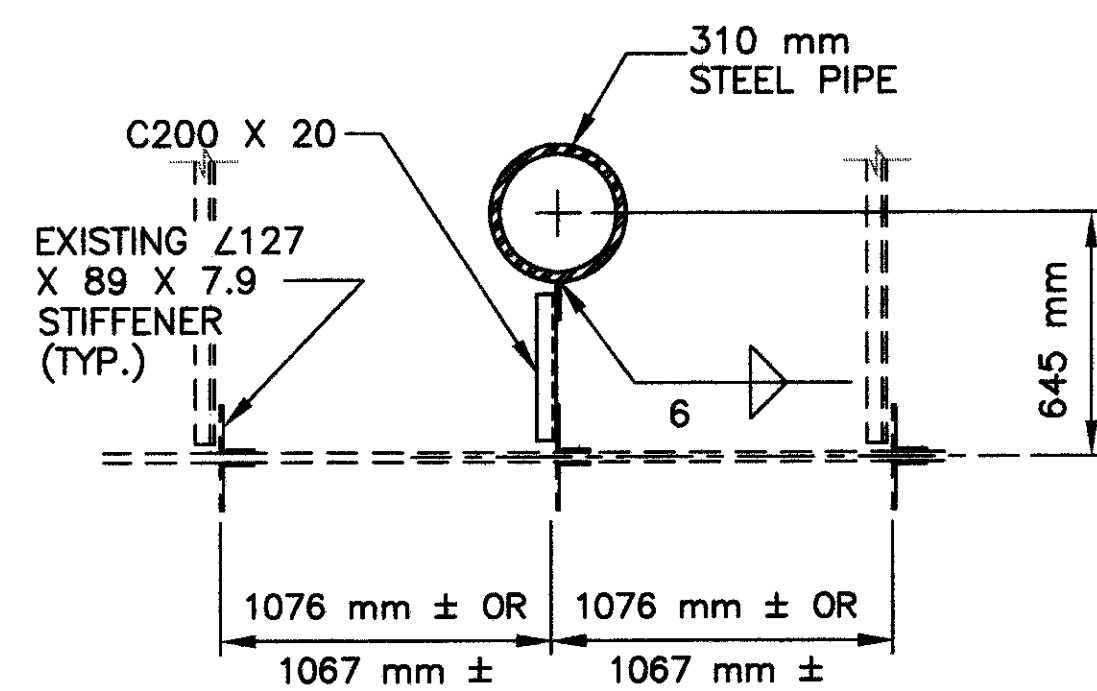


DETAIL "H"

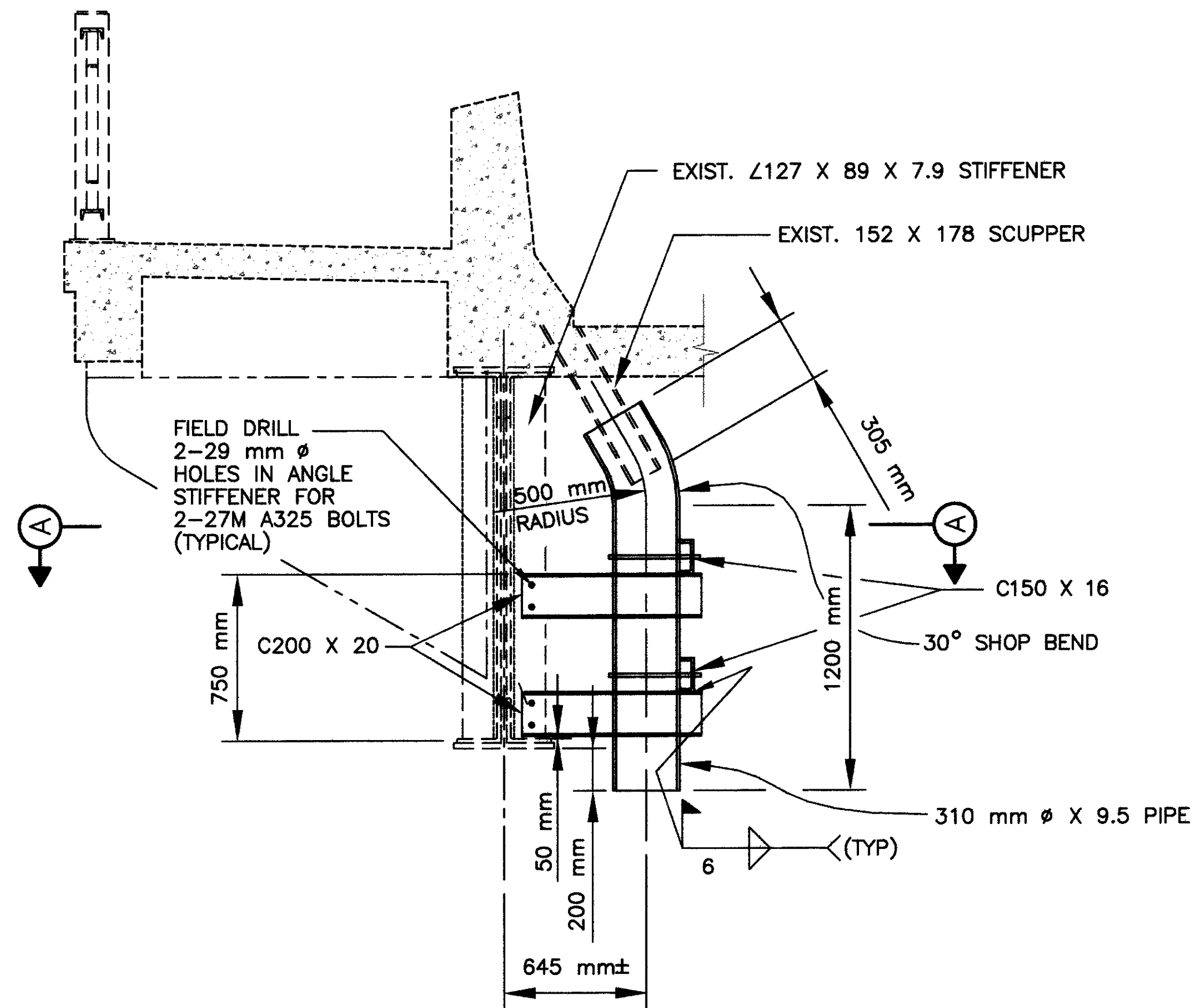
REFER TO DETAIL "G" FOR
DIMENSIONS NOT SHOWN.



SECTION A-A

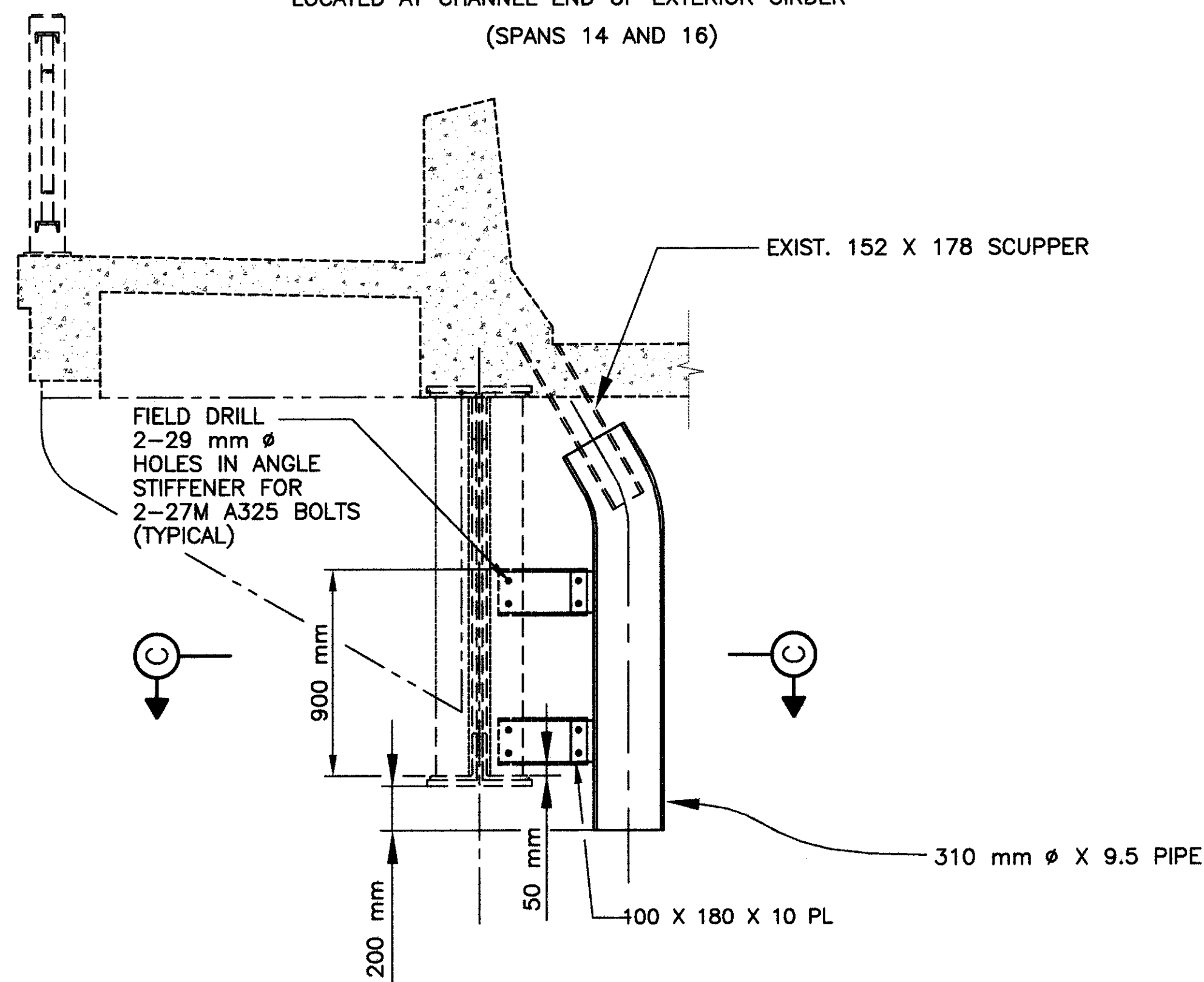


SECTION C-C



SCUPPER VERTICAL EXTENSION TYPE 1

LOCATED AT CHANNEL END OF EXTERIOR GIRDER
(SPANS 14 AND 16)



SCUPPER VERTICAL EXTENSION TYPE 2

(SPANS 14 AND 16)

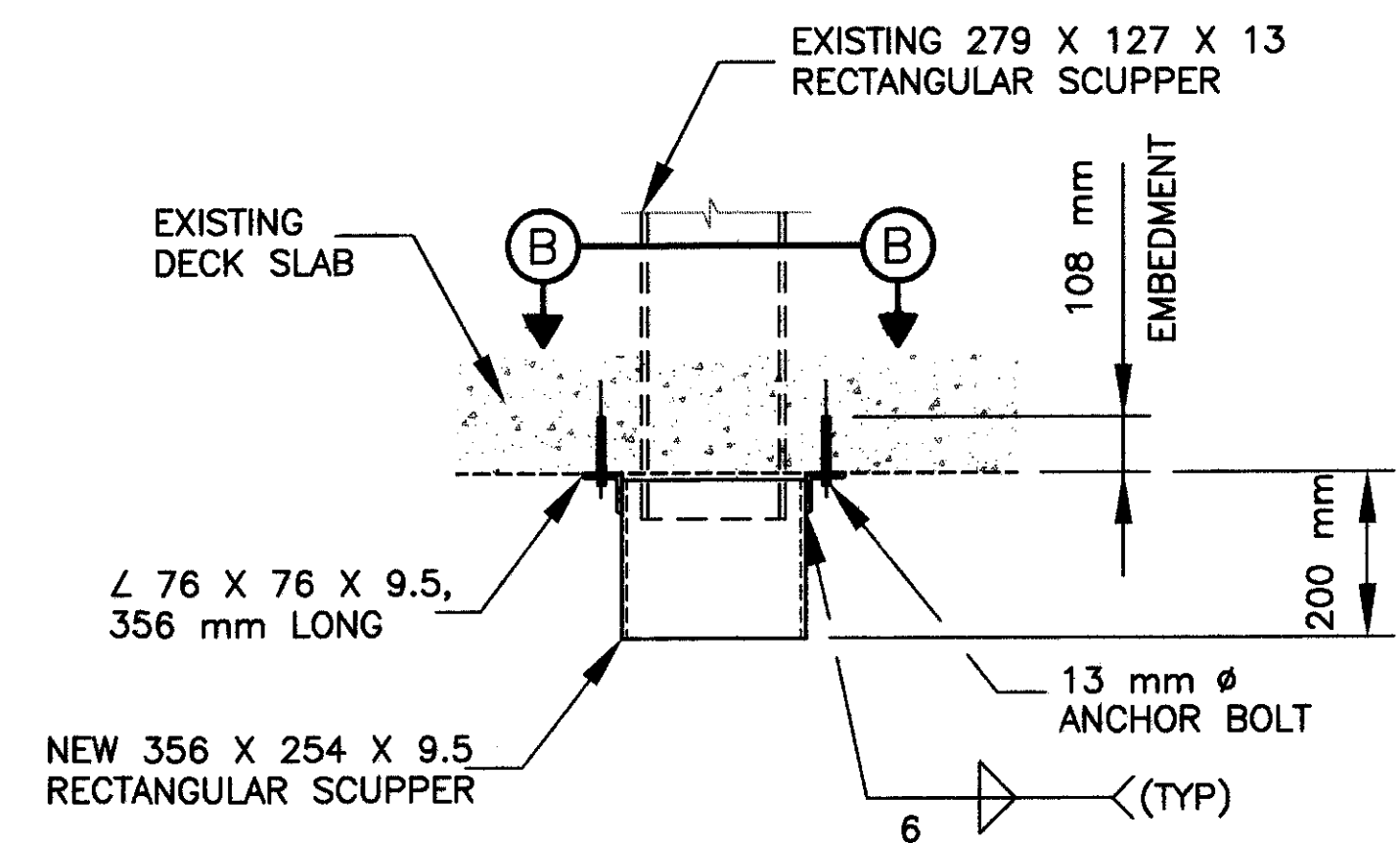
REFER TO DETAIL ABOVE FOR DIMENSIONS NOT SHOWN.

NOTES:

FOR SCUPPER LOCATIONS, SEE
SHEETS **38/70** AND **50/70** THROUGH **56/70**.

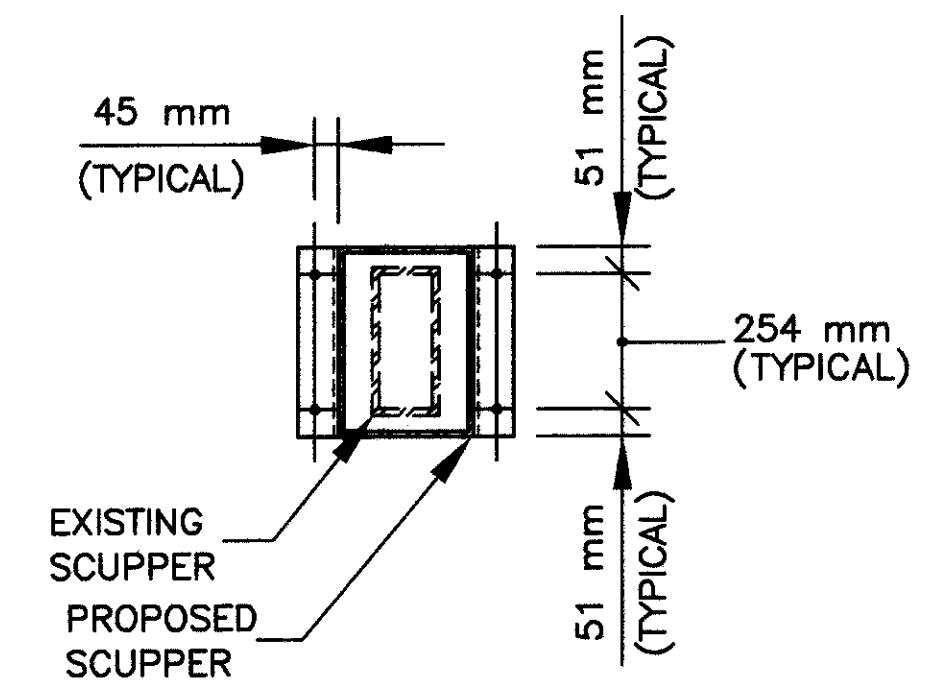
PAYMENT FOR THIS WORK SHALL BE MADE
UNDER ITEM 518-SCUPPER LENGTHENING,
AS PER PLAN, ITEM 518 - SCUPPER VERTICAL
EXTENSION, TYPE 1, AS PER PLAN, OR ITEM
518 - SCUPPER VERTICAL EXTENSION, TYPE 2,
AS PER PLAN.

REFER TO SHEET **8/70** FOR SPECIFICATIONS
GOVERNING THIS WORK.



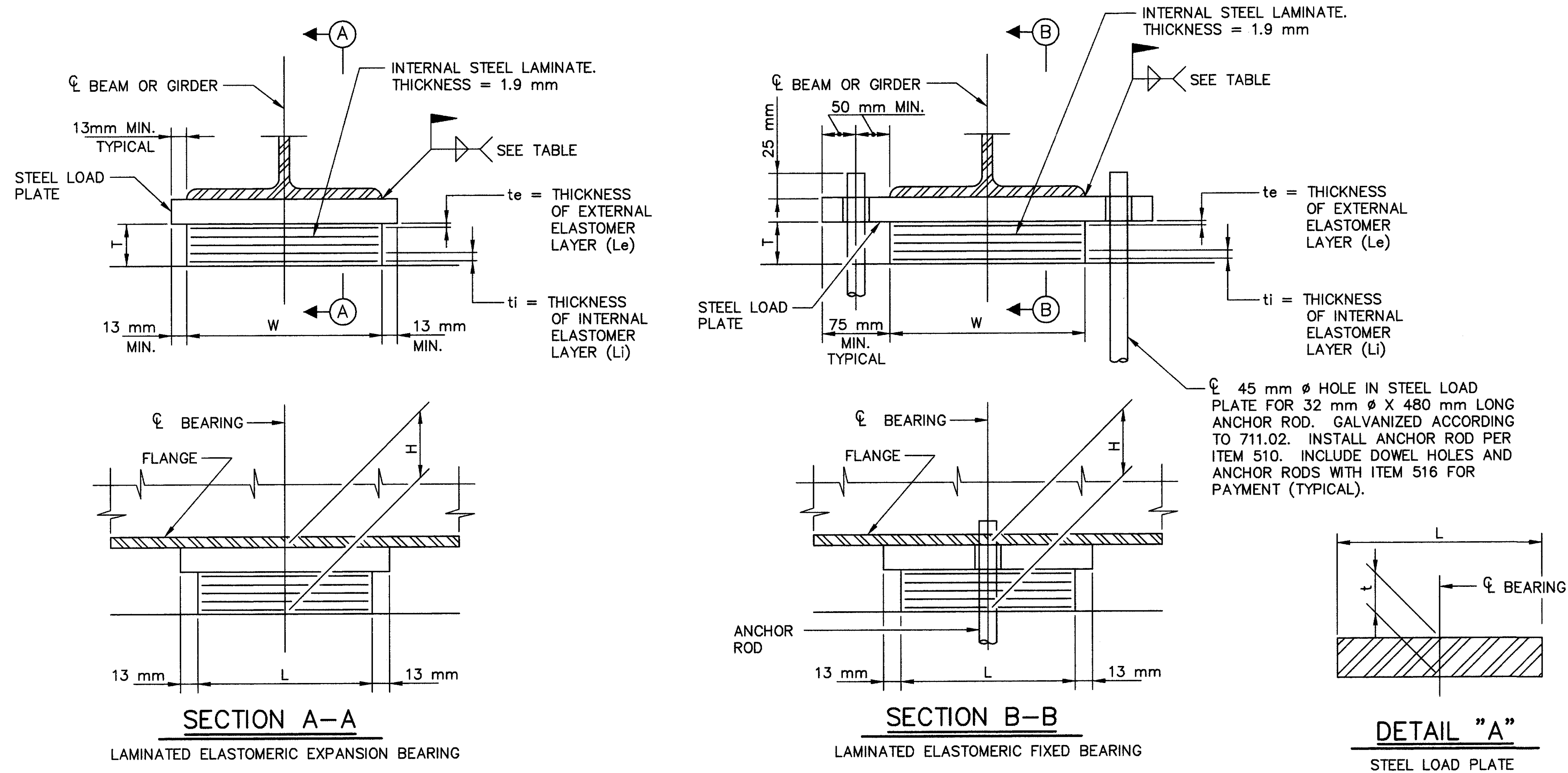
SCUPPER LENGTHENING DETAIL

(CONCRETE SPANS 1-13 AND 17-23)



SECTION B-B

G:\95108\BRIDGE\BEARINGS 10-28-97 9:38:11 a.m. EST



LAMINATED ELASTOMERIC BEARINGS

(50 DUROMETER)

BEARING LOCATION	BEARING TYPE	DEAD LOAD kN	LIVE LOAD kN	TOTAL LOAD (DL+LL) kN	L	W	ti	te	NO. OF ti'S	NUMBER OF INTERNAL LAMINATES (1.9 mm)	T	STEEL LOAD PLATE (L X W X t) SEE DET. "A"	FILLET WELD SIZE	H (TOTAL BEARING HEIGHT)	SKIEW ANGLE θ
PIER 15	EXPANSION	811	307	1118	345	535	10	7	3	4	52	371X626X84	10	136	0°
PIER 16	FIXED	811	307	1118	345	535	10	7	3	4	52	371X800X84	10	136	0°

NOTES:

TOLERANCES:

INDIVIDUAL ELASTOMER LAYER THICKNESS ± 20% OF DESIGN VALUE (NOT TO EXCEED ±3mm)

PLAN DIMENSIONS -0, ±6mm

DESIGN THICKNESS ≤ 32mm -0, ±3mm

DESIGN THICKNESS > 32mm -0, ±6mm

LOAD PLATE: THE STEEL LOAD PLATE SHALL BE BONDED BY VULCANIZATION TO THE ELASTOMER DURING THE MOLDING PROCESS. WELDING OF THE LOAD PLATE TO THE SUPERSTRUCTURE SHALL BE CONTROLLED SO THAT THE PLATE TEMPERATURE AT THE ELASTOMER BONDED SURFACE SHALL NOT EXCEED 150° C AS DETERMINED BY THE USE OF PYROMETRIC STICKS OR OTHER TEMPERATURE MONITORING DEVICES.

BEARING ANCHOR RODS: AT THE OPTION OF THE CONTRACTOR, THE BEARING RODS (OR FORMED HOLES), LOCATED AND SUPPORTED BY TEMPLATES, MAY BE CAST-IN-PLACE.

BEARING REPOSITIONING: IF PLACEMENT OF THE DECK CONCRETE IS DONE AT AN AMBIENT TEMPERATURE HIGHER THAN 27° C OR LOWER THAN 4° C, THE BEAMS OR GIRDERS SHALL BE RAISED WHEN THE AMBIENT TEMPERATURE IS 15° C, ± 5° C TO ALLOW THE BEARINGS TO RETURN TO THEIR UNDEFORMED SHAPE.

BASIS OF PAYMENT: THE UNIT BID PRICE SHALL INCLUDE ALL MATERIALS, LABOR AND INCIDENTALS NECESSARY TO FURNISH AND INSTALL LAMINATED ELASTOMERIC BEARINGS EITHER FIXED OR EXPANSION. PAYMENT WILL BE MADE AT THE CONTRACT PRICE FOR ITEM 518 - ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE) 345 x 535 x 52 WITH 371 x 626 x 84 LOAD PLATE, AS PER PLAN OR ITEM 516 - ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE) 345 x 535 x 52 WITH 371 x 800 x 84 LOAD PLATE, AS PER PLAN OR ITEM 516 -

ITEM 516 AND SECTIONS 18.2.5 THRU 18.2.8 OF AASHTO, DIVISION II, CONSTRUCTION. BEARING MATERIAL SHALL BE GRADE 3, 50 DUROMETER AND THE BEARING SHALL MEET THE LOAD TEST REQUIREMENTS FOR DESIGN METHOD A. TESTING SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE BEARINGS, EACH.

ELASTOMERIC BEARING DETAILS

BRIDGE NUMBER ERI-6-28839
OVER HURON RIVER

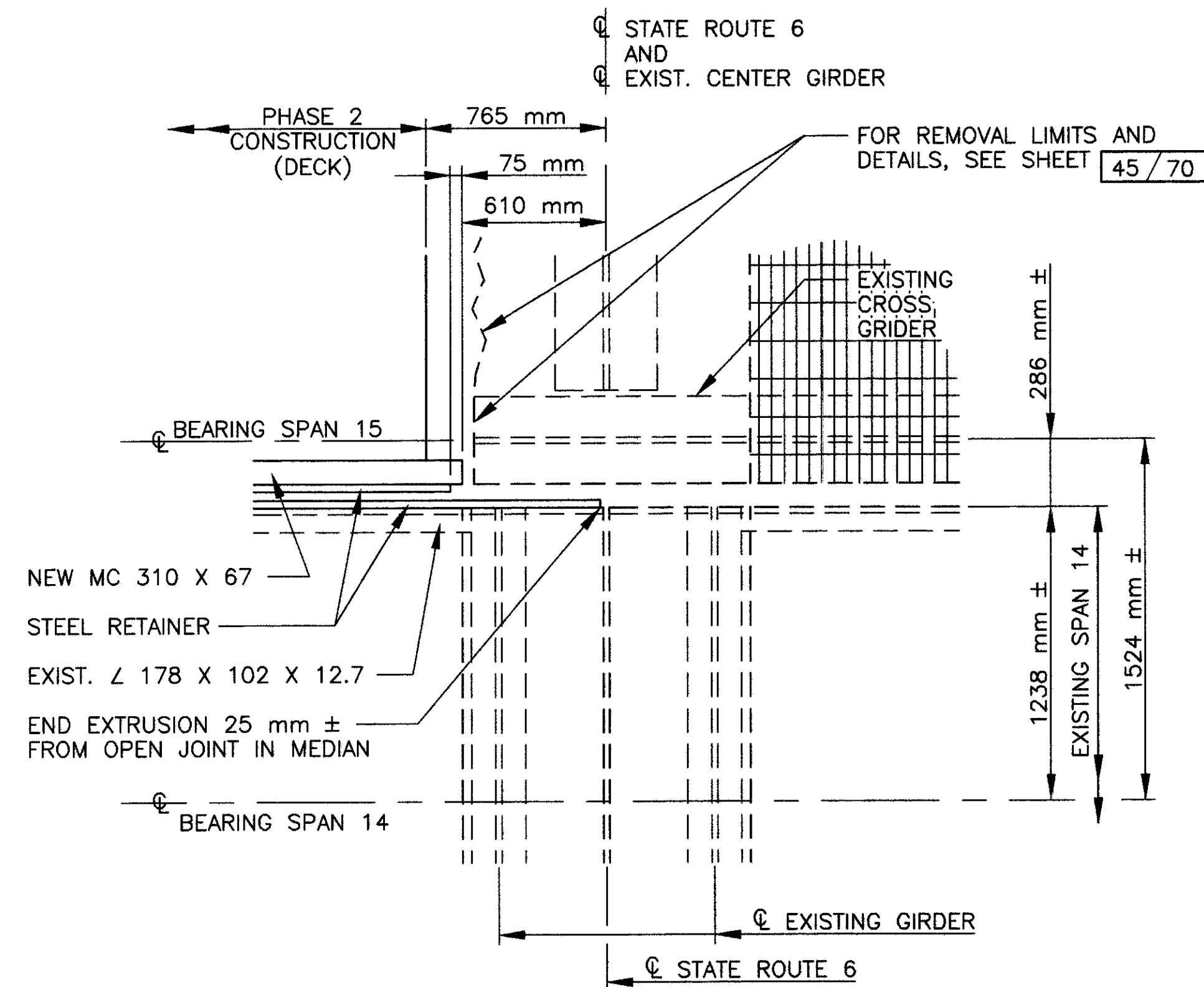
ERI-6-28.839

43/70

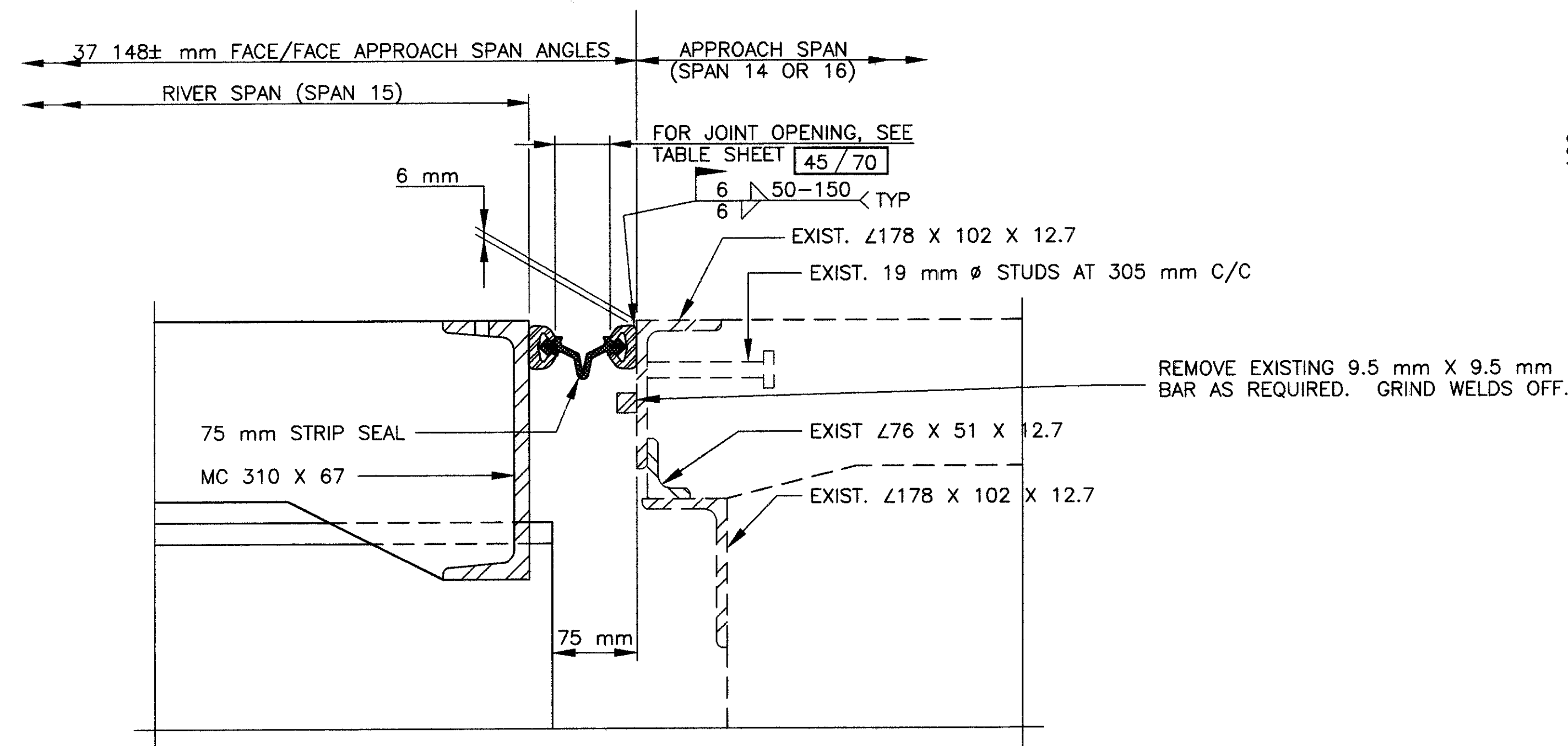
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92

adache-cini-lynn
associates
CONSULTING ENGINEERS
4401 ROCKSIDE RD. CLEVELAND, OHIO 44131

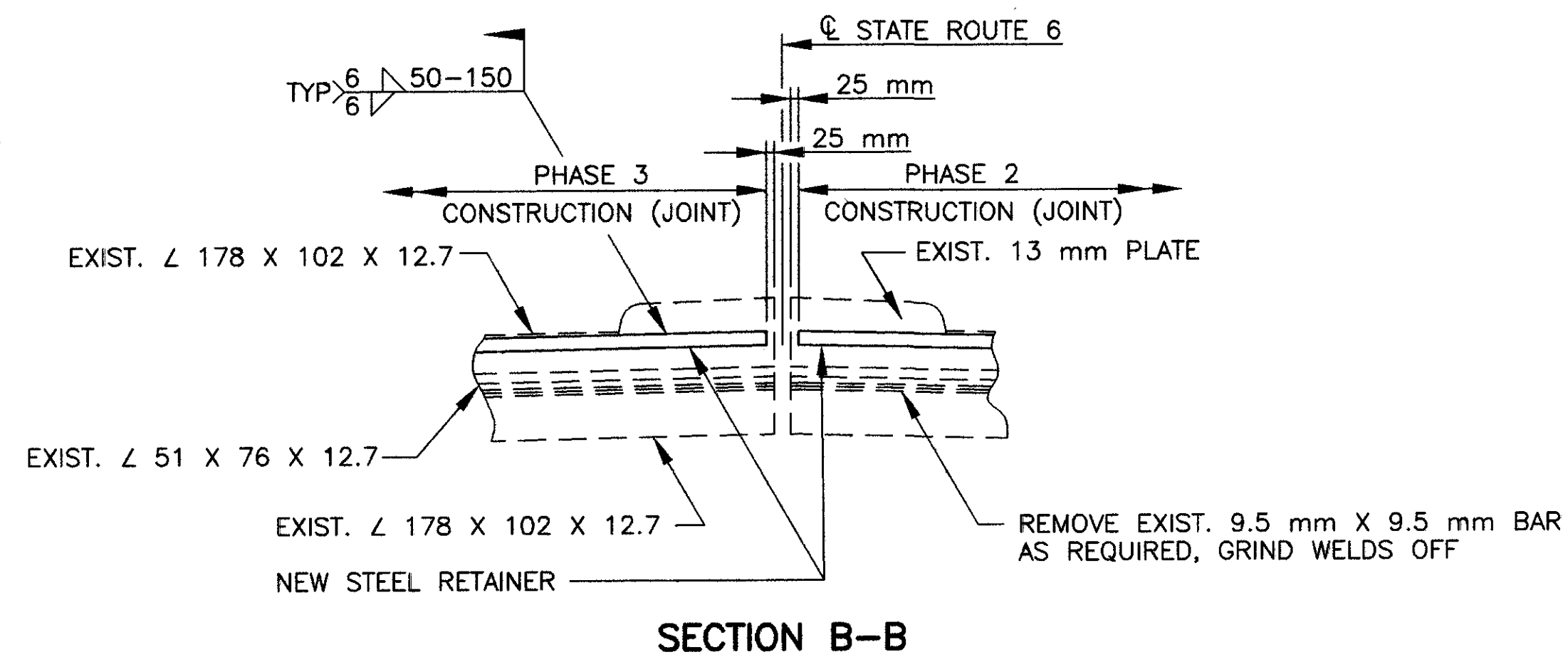
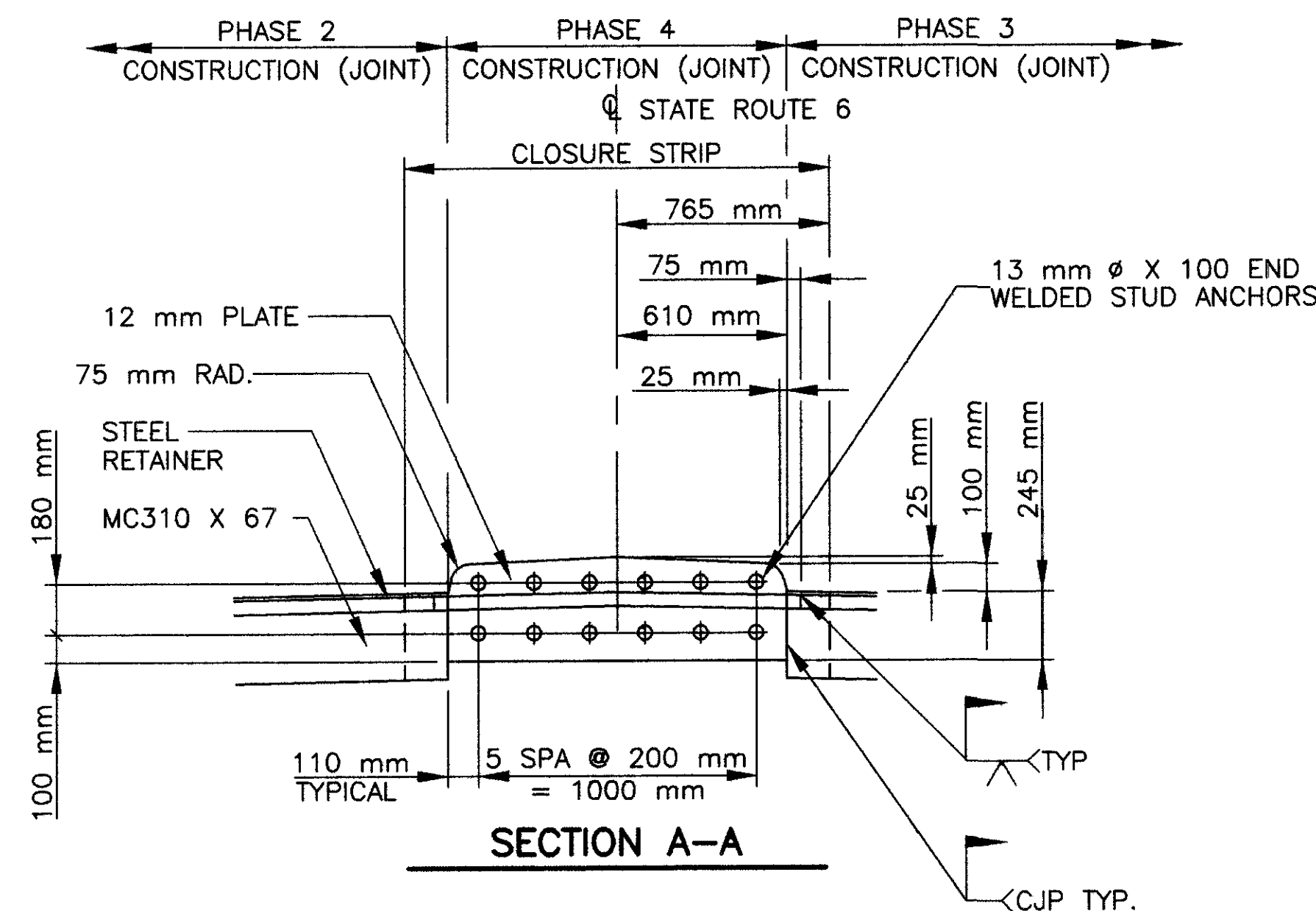
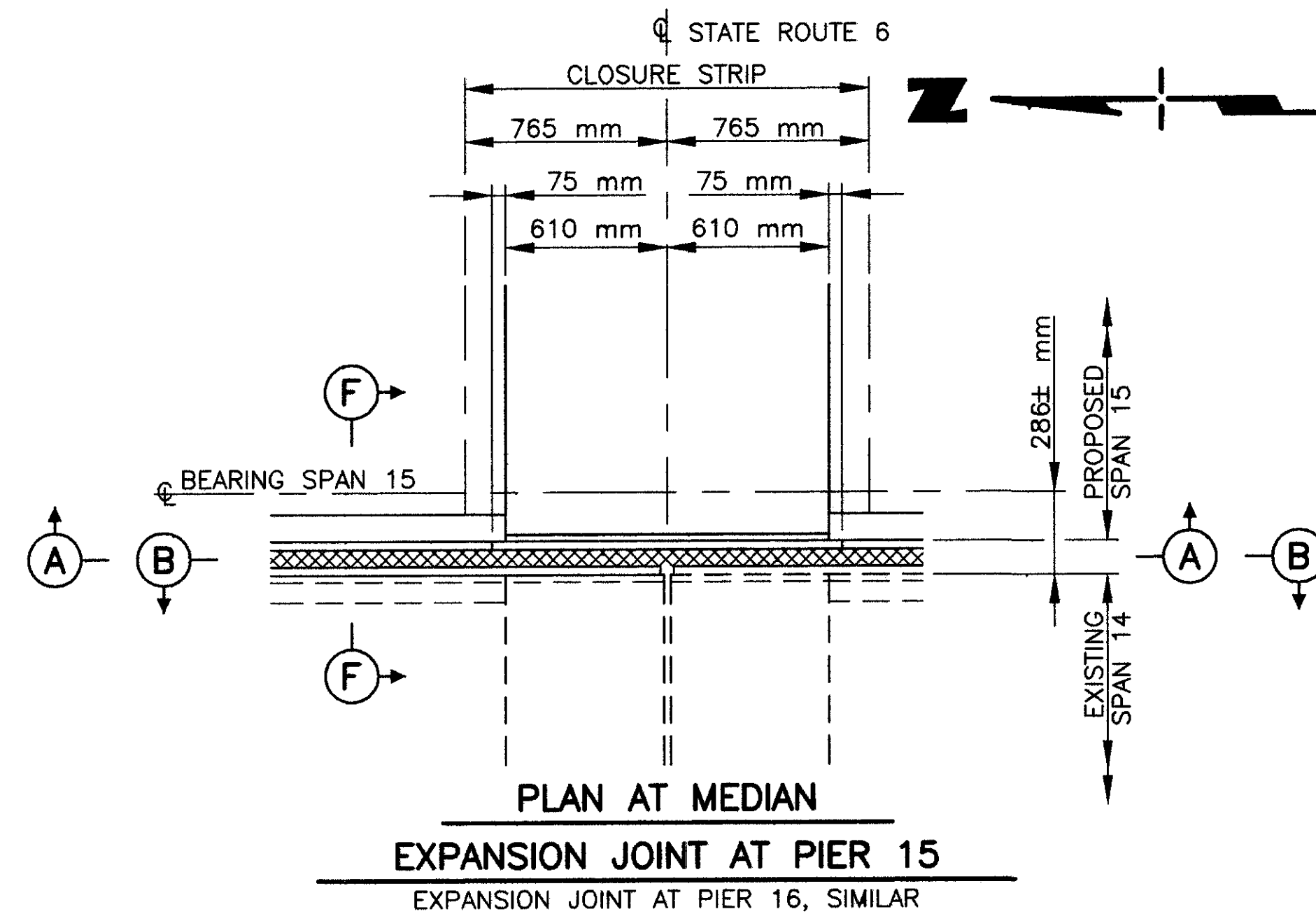
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PARTIAL PLAN AT EXISTING EXPANSION JOINT AT MEDIAN
SPAN 15 - PHASE 2

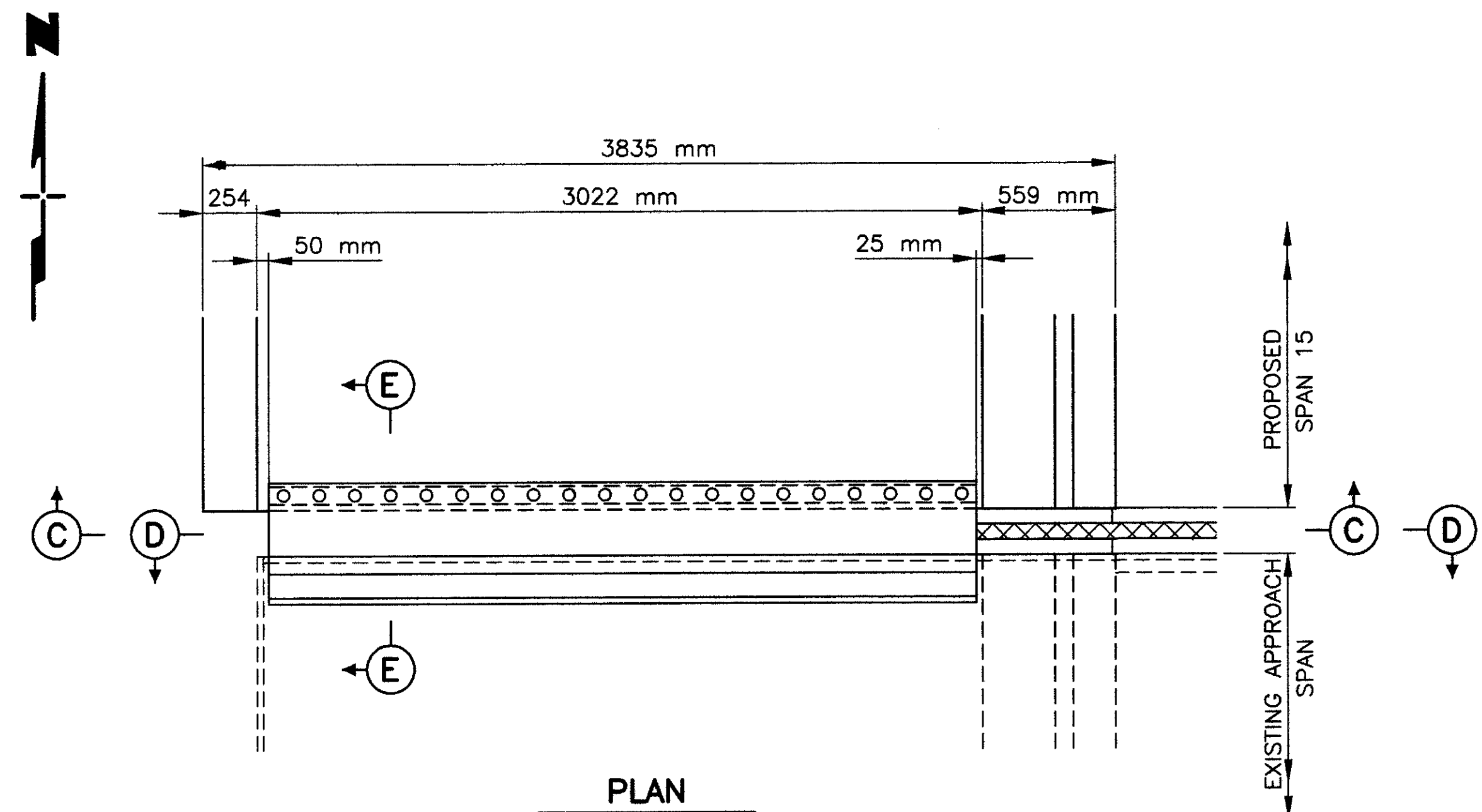


SECTION F-F
FOR ANCHOR BARS AND SUPPORT OF
MC, SEE ODOT STD DWG EXJ-4-87M

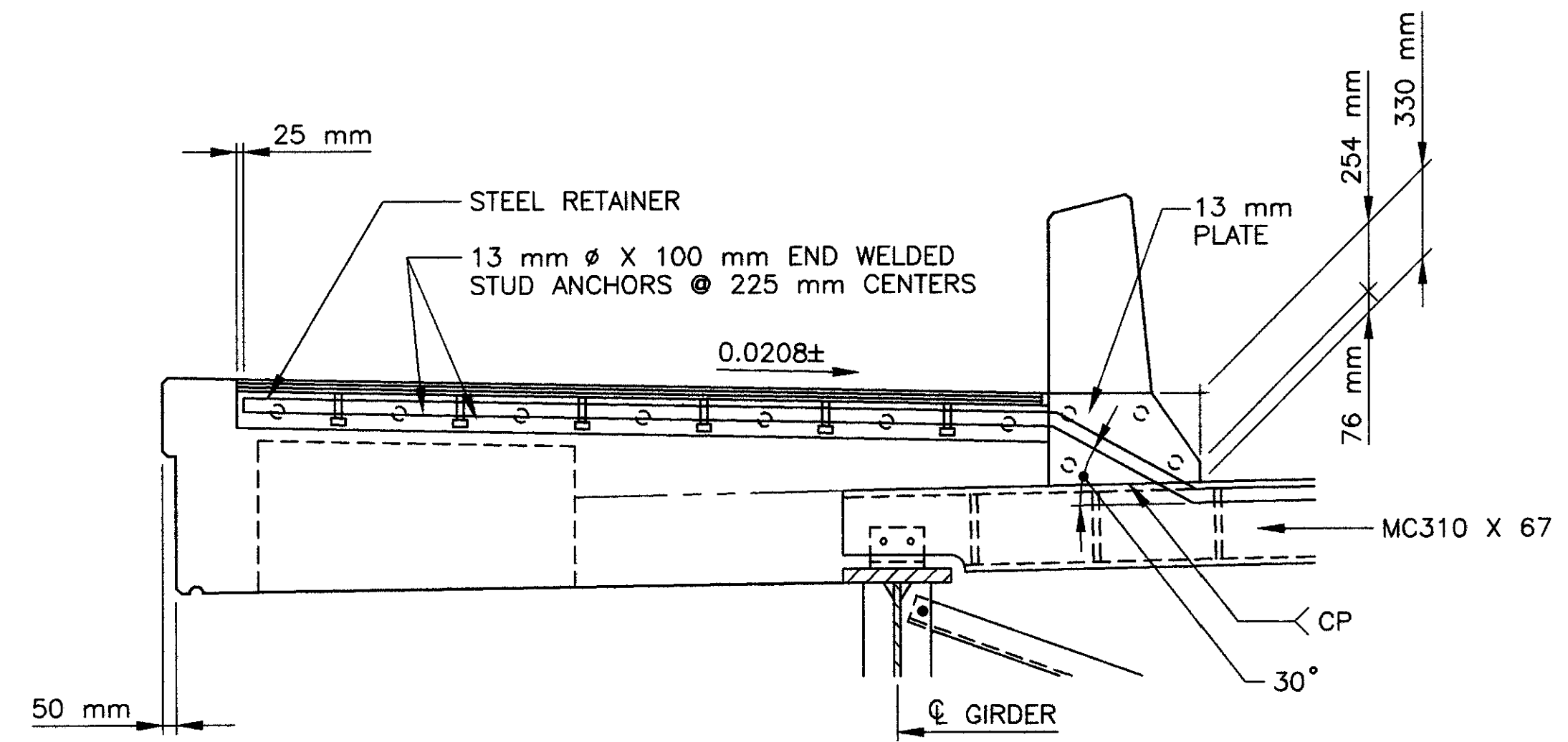


INSTALLATION PROCEDURE FOR EXPANSION JOINTS:
THE NEW DECK FOR SPAN 15 WILL BE CONSTRUCTED
IN PHASES WHILE TRAFFIC IS MAINTAINED, THEREFORE
THE NEW EXPANSION JOINTS MUST BE INSTALLED IN
PHASES.

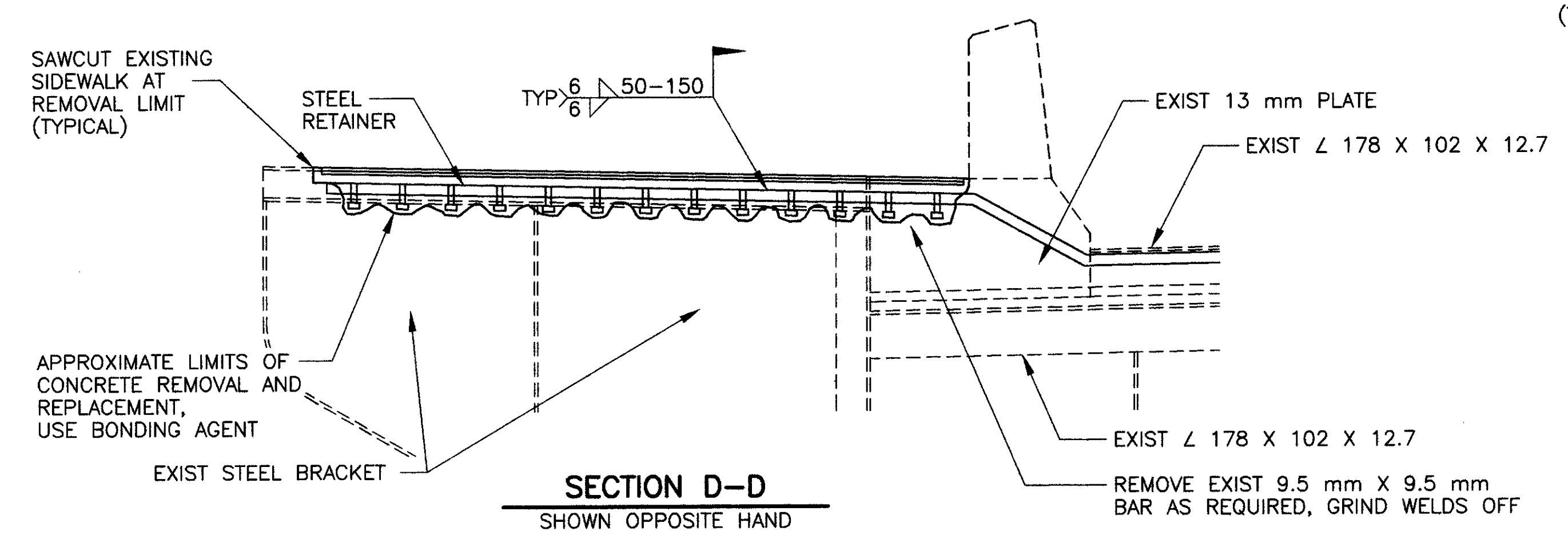
1. AFTER THE EXISTING DECK SLAB AND JOINT ARMOR FOR SPAN 15 ARE REMOVED FOR PHASE 2 CONSTRUCTION, THE EXISTING 9.5mm X 9.5mm BAR SHALL BE REMOVED FROM THE FACE OF THE ARMOR ANGLE FOR SPANS 14 AND 16. ONCE THE BARS ARE REMOVED ANY REMAINING WELD METAL SHALL BE GROUND OFF TO LEAVE A SMOOTH FACE. AT THE SIDEWALK, CONCRETE SHALL BE REMOVED TO THE LIMITS SHOWN ON THE PLANS FOR THE APPROACH SPANS AND THE TOP LEG OF THE JOINT ARMOR ANGLE SHALL BE REMOVED.
2. INSTALL THE NEW STRIP SEAL RETAINER ONTO THE EXISTING ARMOR ANGLE FOR THE LEFT HALF OF THE BRIDGE AS SHOWN ON THE PLANS. FIELD METALLIZE THE EXISTING JOINT ARMOR ANGLE.
3. INSTALL THE NEW EXPANSION JOINT ARMOR AND RETAINER FOR THE LEFT HALF (PHASE 2) OF SPAN 15 AS SHOWN IN THE PLANS AND THE STANDARD DRAWING EXJ-4-87M.
4. INSTALL STRIP SEAL GLAND PART WIDTH FOR PHASE 2.
5. AFTER THE REMAINING PORTION OF SPAN 15 IS REMOVED, REPEAT STEPS 1 AND 2 FOR THE RIGHT HALF OF THE BRIDGE.
6. INSTALL THE NEW EXPANSION JOINT ARMOR AND RETAINER FOR PHASE 3 CONSTRUCTION AS SHOWN ON THE PLANS.
7. AFTER THE DECK SLAB FOR PHASE 3 HAS CURED, INSTALL THE END PLATE FOR THE MEDIAN BARRIER (PHASE 4).
8. INSTALL A NEW STRIP SEAL GLAND THE FULL WIDTH OF THE BRIDGE.



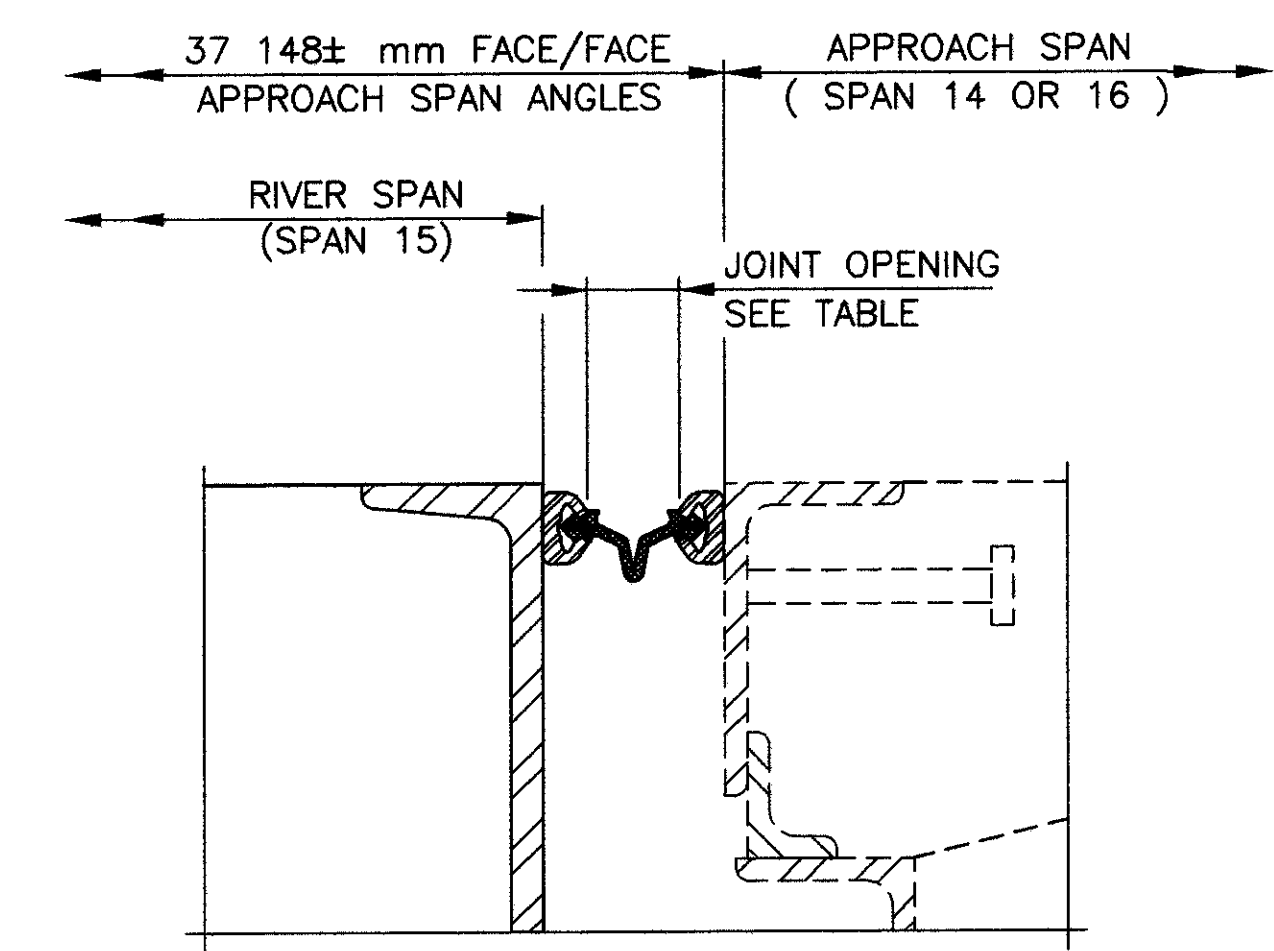
PLAN
TYPICAL EXPANSION JOINT AT BALCONY
 FOR DETAILS AND CALL-OUTS NOT SHOWN
 SEE ODOT STD DWG EXJ-4-87M



SECTION C-C

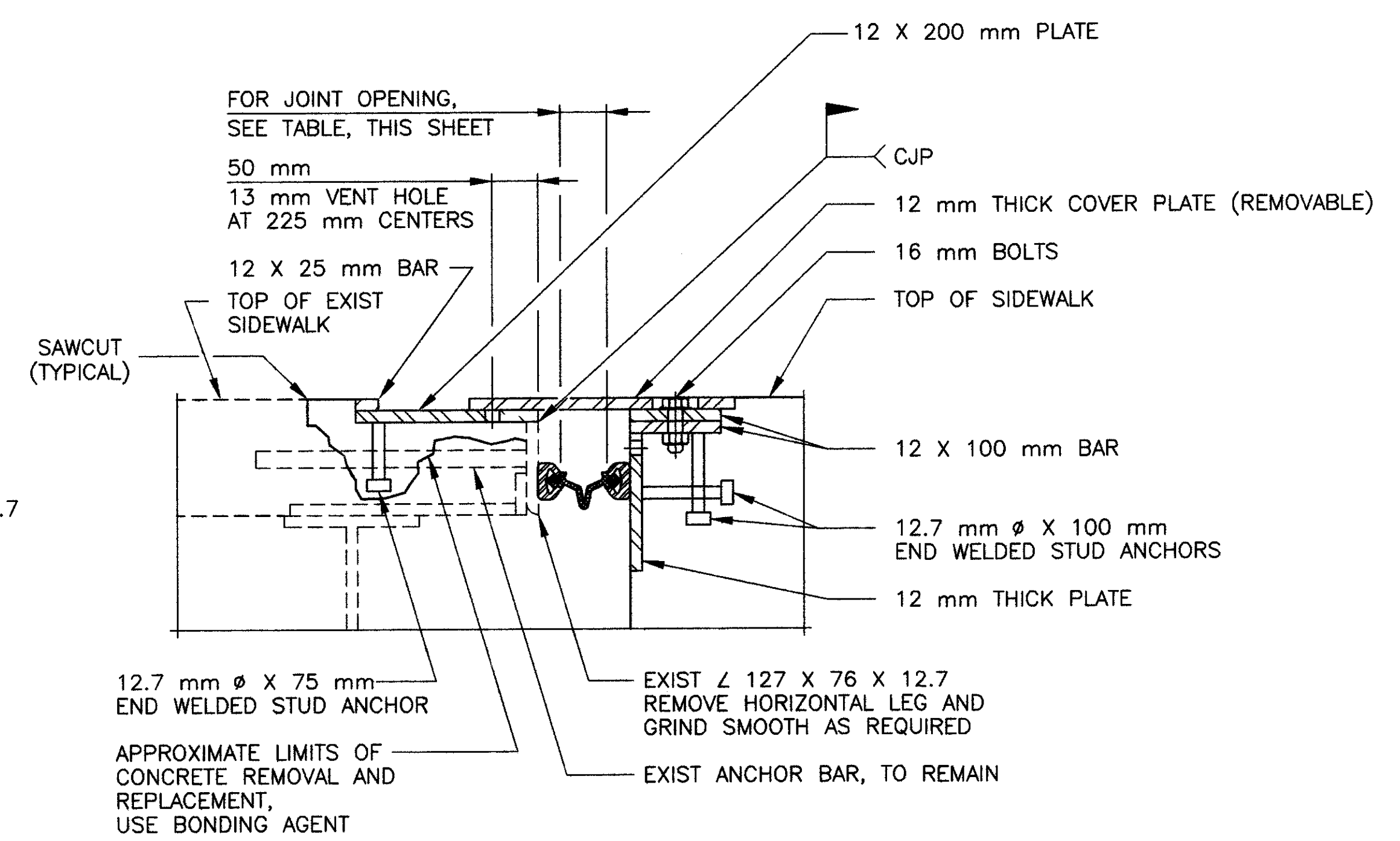


SECTION D-D
 SHOWN OPPOSITE HAND



STRIP SEAL
JOINT OPENING DETAIL

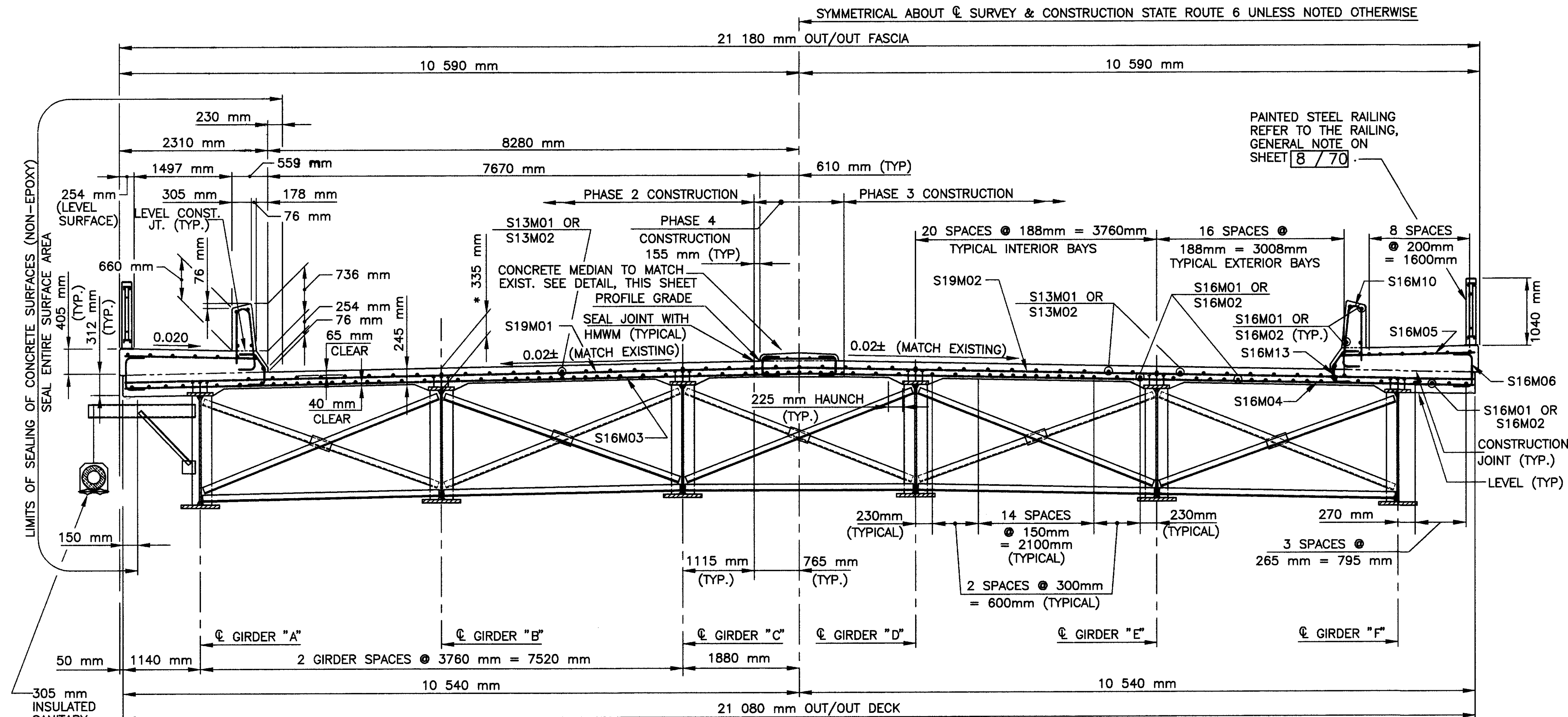
JOINT OPENING	
TEMPERATURE (°C)	JOINT WIDTH (mm)
0°	46
5°	44
10°	42
15°	40
20°	38
25°	36
30°	34
35°	31



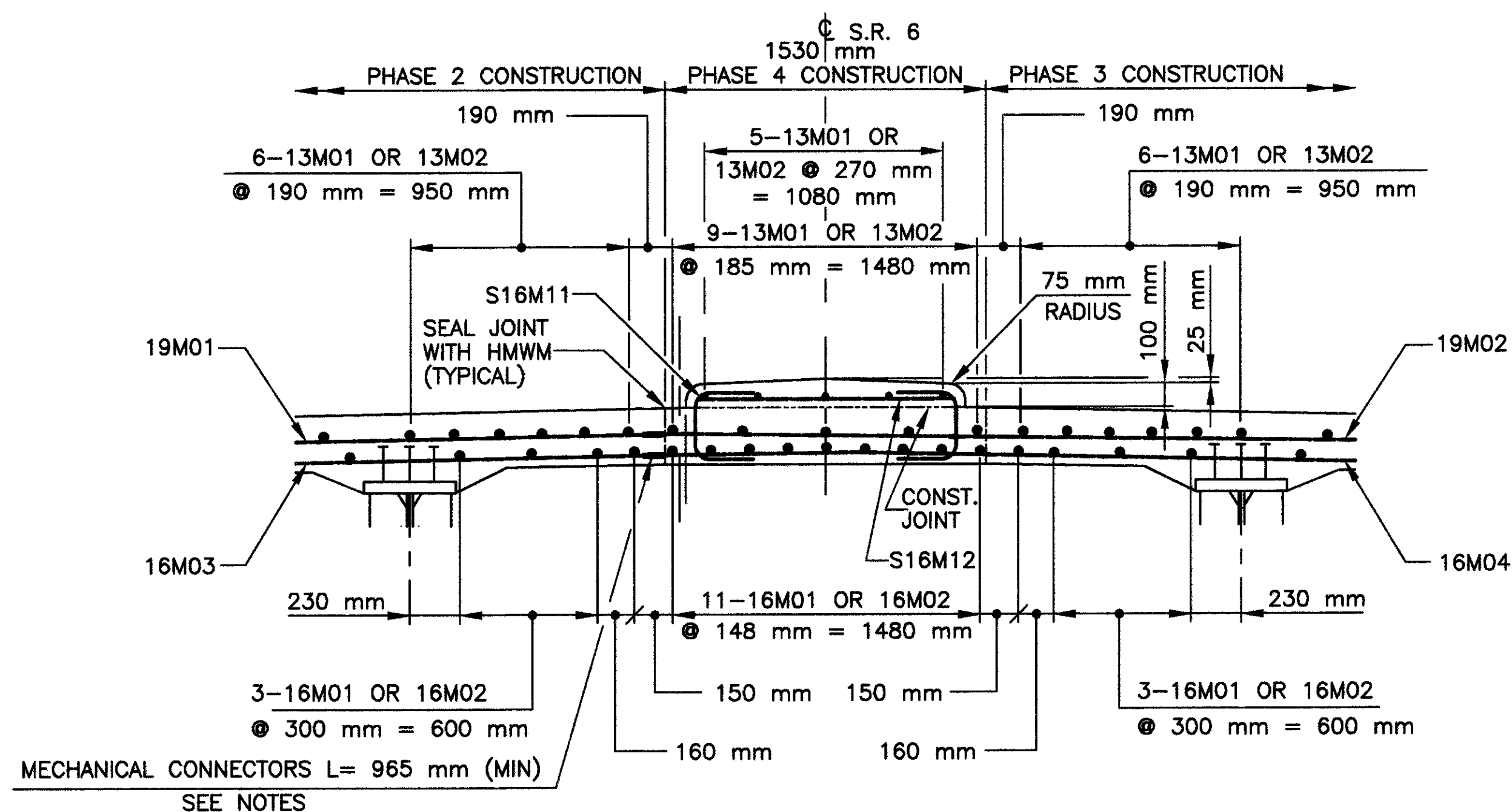
SECTION E-E
 FOR DETAILS AND CALL-OUTS NOT SHOWN, SEE ODOT STD DWG EXJ-4-87M

NOTES:
 FOR ADDITIONAL NOTES AND DETAILS, SEE ODOT STD DWG EXJ-4-87M.
 FOR DECK SLAB AND SIDEWALK REINFORCEMENT, SEE SHEET 46/70
 FOR STRUCTURAL STEEL FRAMING FOR SPAN 15, SEE SHEET 39/70
 FOR JOINT ARMOR ELEVATIONS, SEE SCREED ELEVATIONS SHEET 48/70

G:\95108\BRIDGE\JOINT03 10-28-97 9:25:20 am EST
 PLOT SCALE 1:20



TRANSVERSE SECTION - SPAN 15



MEDIAN REINFORCING DETAIL

NOTES:

*DECK SLAB DEPTH: THE DISTANCE SHOWN FROM THE TOP OF THE DECK SLAB TO THE BOTTOM OF THE TOP FLANGE IS THE THEORETICAL DESIGN DIMENSION INCLUDING THE DESIGN HAUNCH THICKNESS OF 50 mm. THE QUANTITY OF DECK CONCRETE TO BE PAID FOR SHALL BE BASED UPON THIS DIMENSION, MINUS THE DESIGN HAUNCH THICKNESS, EVEN THOUGH DEVIATION FROM IT MAY BE NECESSARY BECAUSE THE TOP FLANGE OF THE GIRDER MAY NOT HAVE THE EXACT CAMBER OR CONFORMATION REQUIRED TO PLACE IT PARALLEL TO THE FINISHED GRADE. DEDUCTION SHALL BE MADE FOR VOLUME OF ENCASED STEEL PLATES AS PER 842.18.

A HAUNCH WIDTH OF 225 mm SHALL BE USED FOR COMPUTING QUANTITY OF CONCRETE. HOWEVER, THE HAUNCH WIDTH MAY VARY BETWEEN 150 mm AND 300 mm.

FOR INTERMEDIATE CROSS FRAME DETAILS, SEE SHEET 40/70.

FOR STRUCTURAL GENERAL NOTES, SEE SHEETS 4/70 THROUGH 8/70.

FOR FRAMING PLAN, SEE SHEET 39/70.

FOR SLAB PLAN, SEE SHEET 47/70.

FOR DECK SCREED ELEVATIONS, SEE SHEET 48/70.

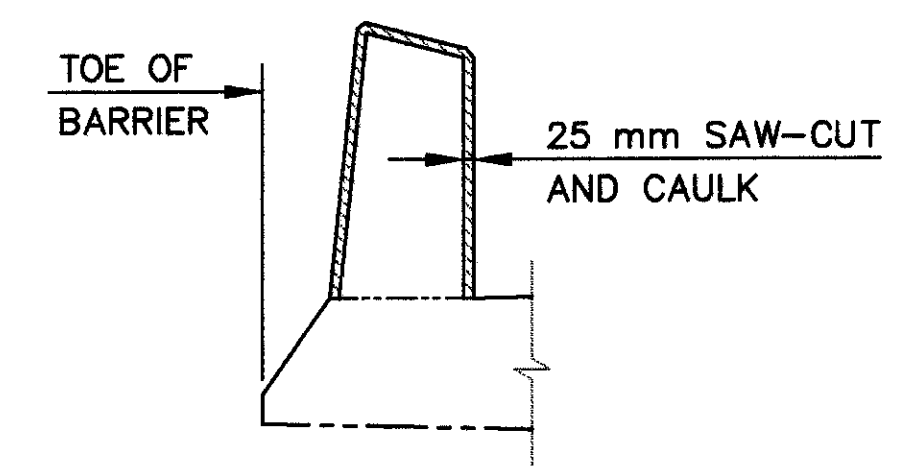
FOR REINFORCING STEEL LIST AND BAR BENDING DIAGRAM, SEE SHEET 49/70.

FOR RAILING DETAILS, SEE SHEET 57/70.

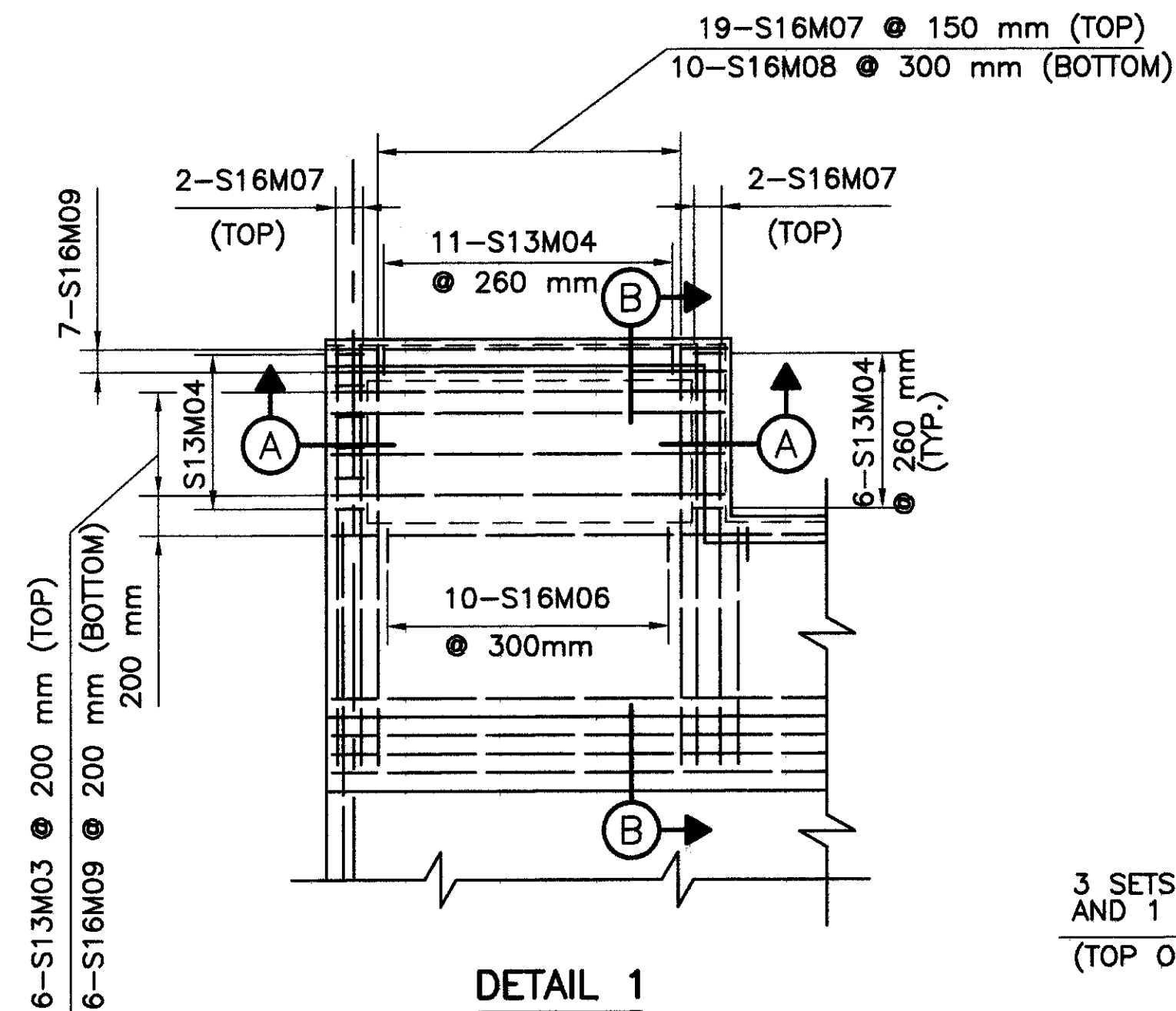
FOR DRAINAGE DETAIL THRU SIDEWALK BARRIER, SEE SECTION B-B SHEET 47/70.

FIELD BEND TRANSVERSE BARS TO FIT CROWN. BENDING SHALL BE INCLUDED WITH ITEM 844 FOR PAYMENT. EPOXY COATED BARS DAMAGED BY FIELD BENDING SHALL BE REPAIRED AS PER 709.00 AT NO ADDITIONAL COST TO THE STATE.

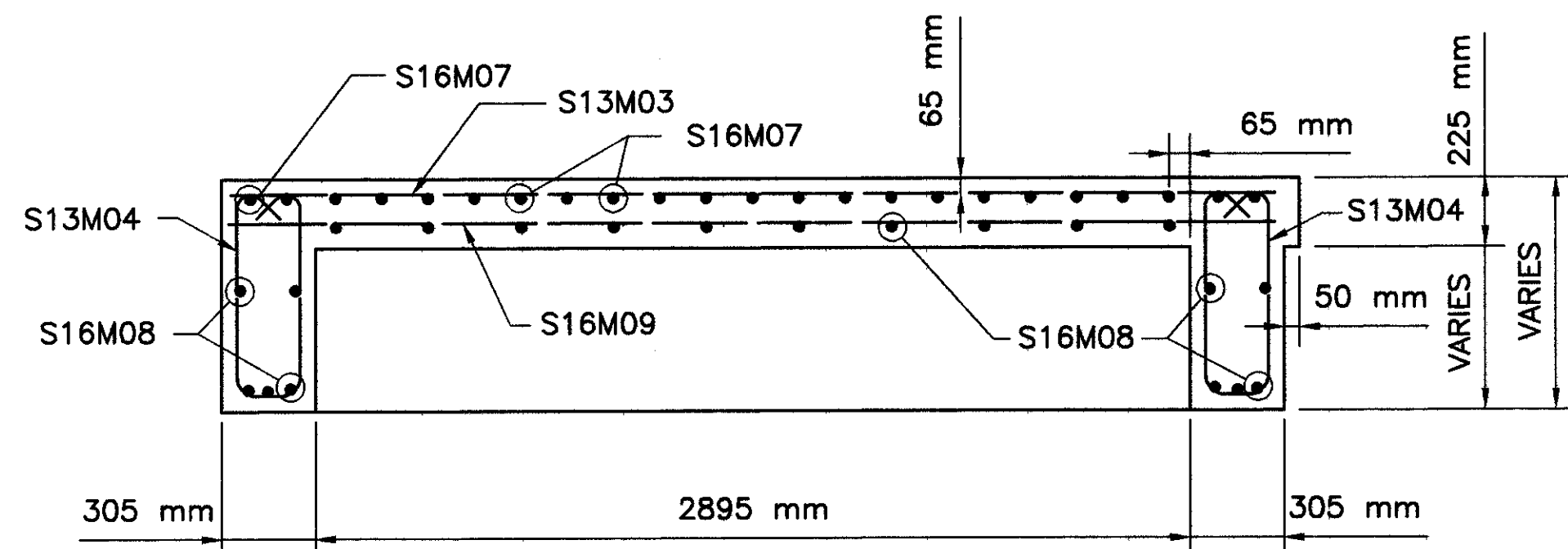
AN APPROVED TYPE OF MECHANICAL CONNECTOR FOR REINFORCING BARS SHALL BE PROVIDED WHERE REQUIRED. INSTALLATION OF THE CONNECTOR SHALL CONFORM WITH THE MANUFACTURER'S RECOMMENDED PROCEDURES. IF A DOWEL BAR SPLICE TYPE OF CONNECTOR IS FURNISHED THE MINIMUM DOWEL BAR TO BE FURNISHED WITH THE CONNECTOR SHALL BE GIVEN BY THE DIMENSION 'L' SHOWN ON THE PLAN. CONNECTORS SHALL BE EPOXY COATED AND THE COATING SHALL CONFORM TO THE SAME SPECIFICATION REINFORCING STEEL. COATINGS WHICH HAVE BEEN DAMAGED SHALL BE REPAIRED ACCORDING TO 709.00 OF THE CMS. CONNECTOR SHALL CONFORM WITH 509 AND BE INCLUDED FOR PAYMENT WITH ITEM 844 HIGH PERFORMANCE CONCRETE, SUPERSTRUCTURE (DECK).



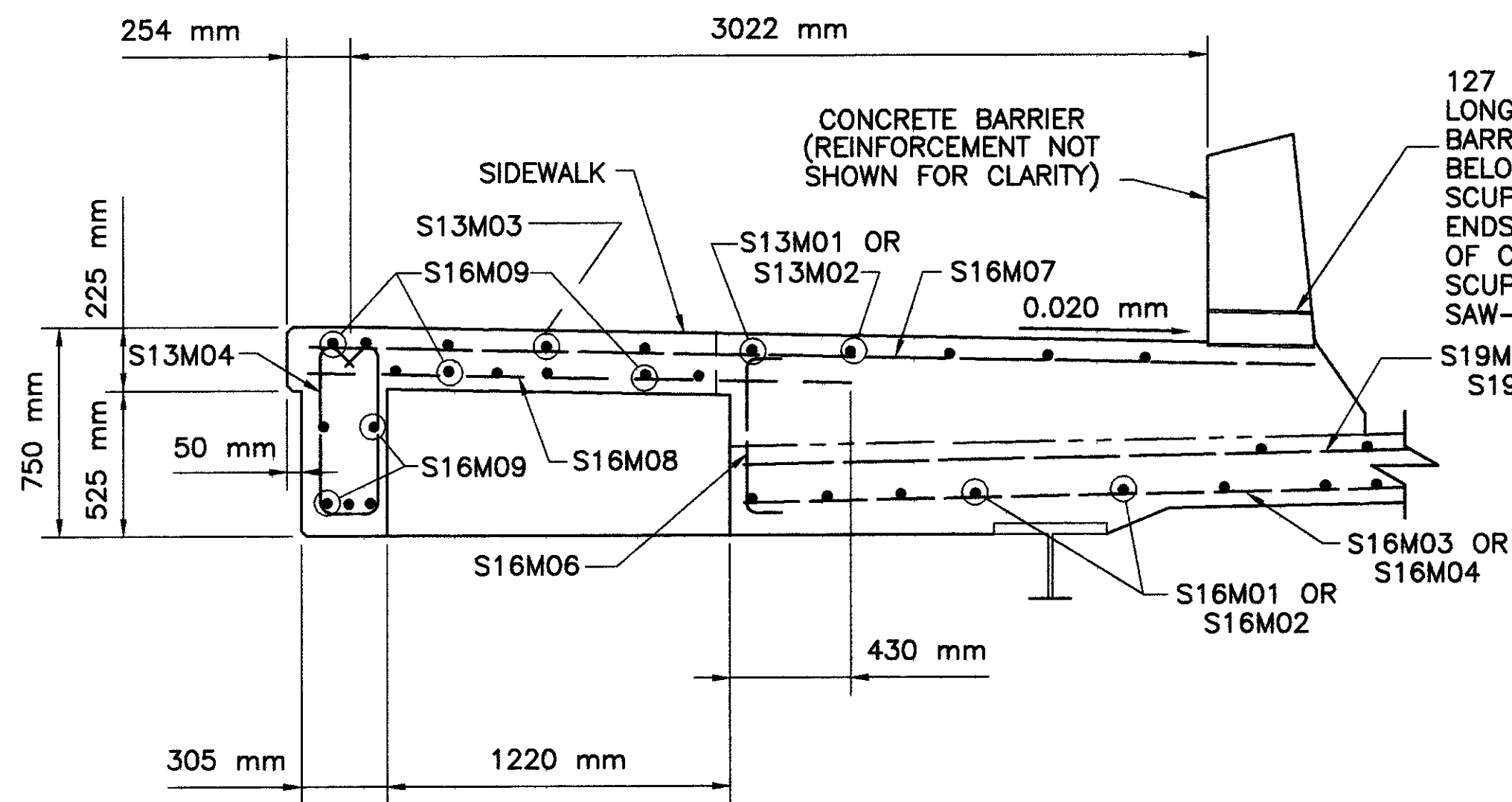
"SAW-CUT" BARRIER JOINT DETAIL



DETAIL 1
 (TYPICAL AT ALL FOUR (4) CORNERS)

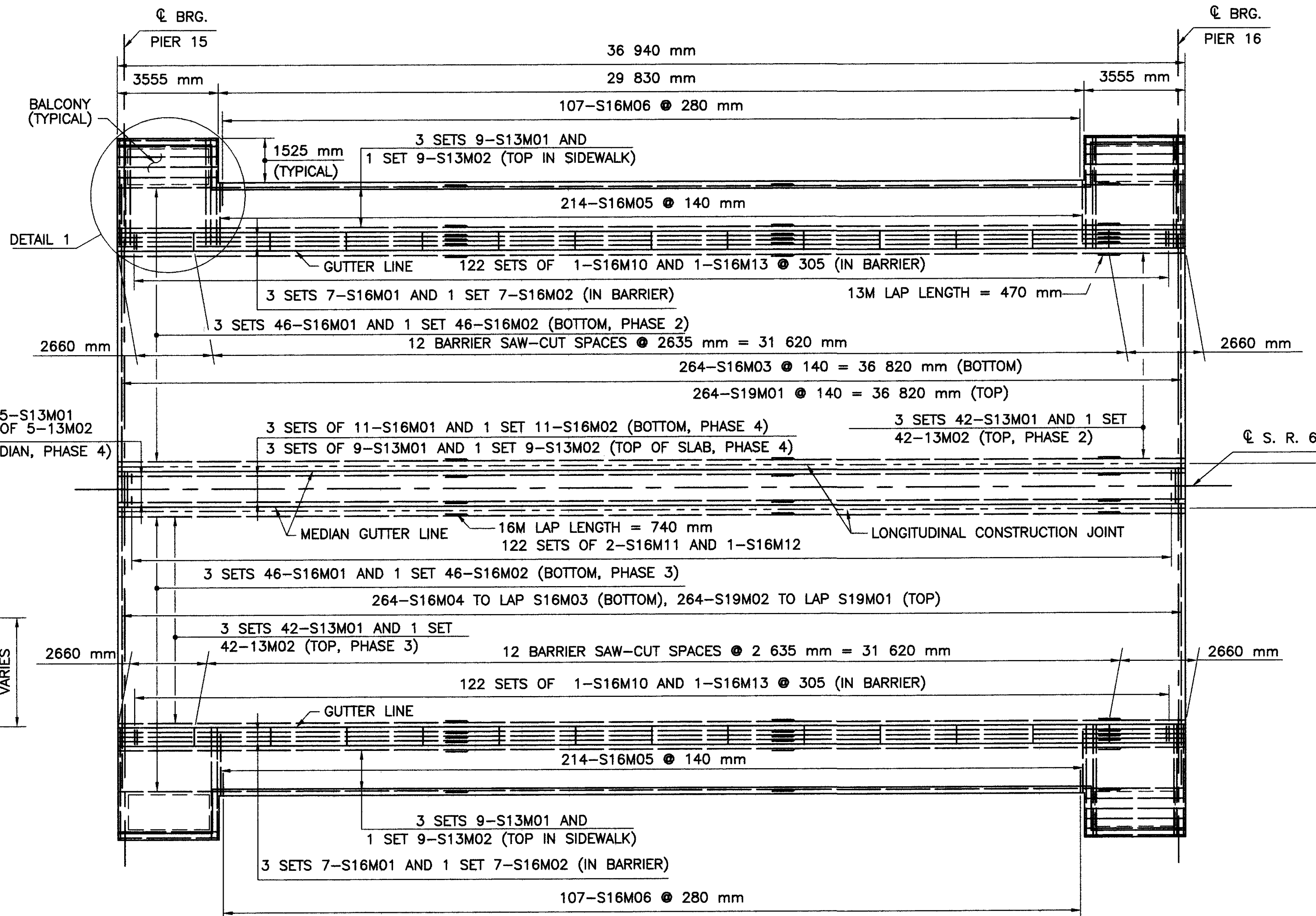


SECTION A-A



SECTION B-B

3 SETS OF 5-S13M01
 AND 1 SET OF 5-13M02
 (TOP OF MEDIAN, PHASE 4)



SLAB PLAN

NOTES:

THE TRANSVERSE DECK REINFORCING BARS SHALL BE FIELD BENT TO CONFORM TO THE ROADWAY CROWN. FIELD BENDING SHALL BE INCLUDED WITH ITEM 844 - HIGH PERFORMANCE CONCRETE, SUPERSTRUCTURE (DECK) FOR PAYMENT.

FOR STRUCTURAL GENERAL NOTES, SEE SHEET 4/70.

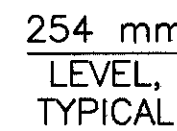
FOR ESTIMATED QUANTITIES, SEE SHEET 9/70.

FOR REINFORCING BAR SCHEDULES AND BAR BENDING DIAGRAM, SEE SHEET 49/70.

FOR FRAMING PLAN, SEE SHEET 39/70.

FOR TRANSVERSE SECTION SEE SHEET 46/70.

FOR SCREED TABLE SEE SHEET 48/70.



PROPOSED SECTION

SCREED ELEVATIONS TABLE						
LOCATION	℄ BRG. PIER NO. 15	1/4		1/2	3/4	℄ BRG. PIER NO. 16
D	182.851	182.949		183.015	183.040	183.035
E	183.004	183.108		183.177	183.199	183.188
F	183.004	183.108		183.177	183.199	183.188
G	182.851	182.949		183.015	183.040	183.035
℄ GIRDER A	182.828	182.927		182.992	183.017	183.012
℄ GIRDER B	182.903	183.007		183.076	183.098	183.087
℄ GIRDER C	182.979	183.083		183.152	183.174	183.163
℄ GIRDER D	182.979	183.083		183.152	183.174	183.163
℄ GIRDER E	182.903	183.007		183.076	183.098	183.087
℄ GIRDER F	182.828	182.927		182.992	183.017	183.012

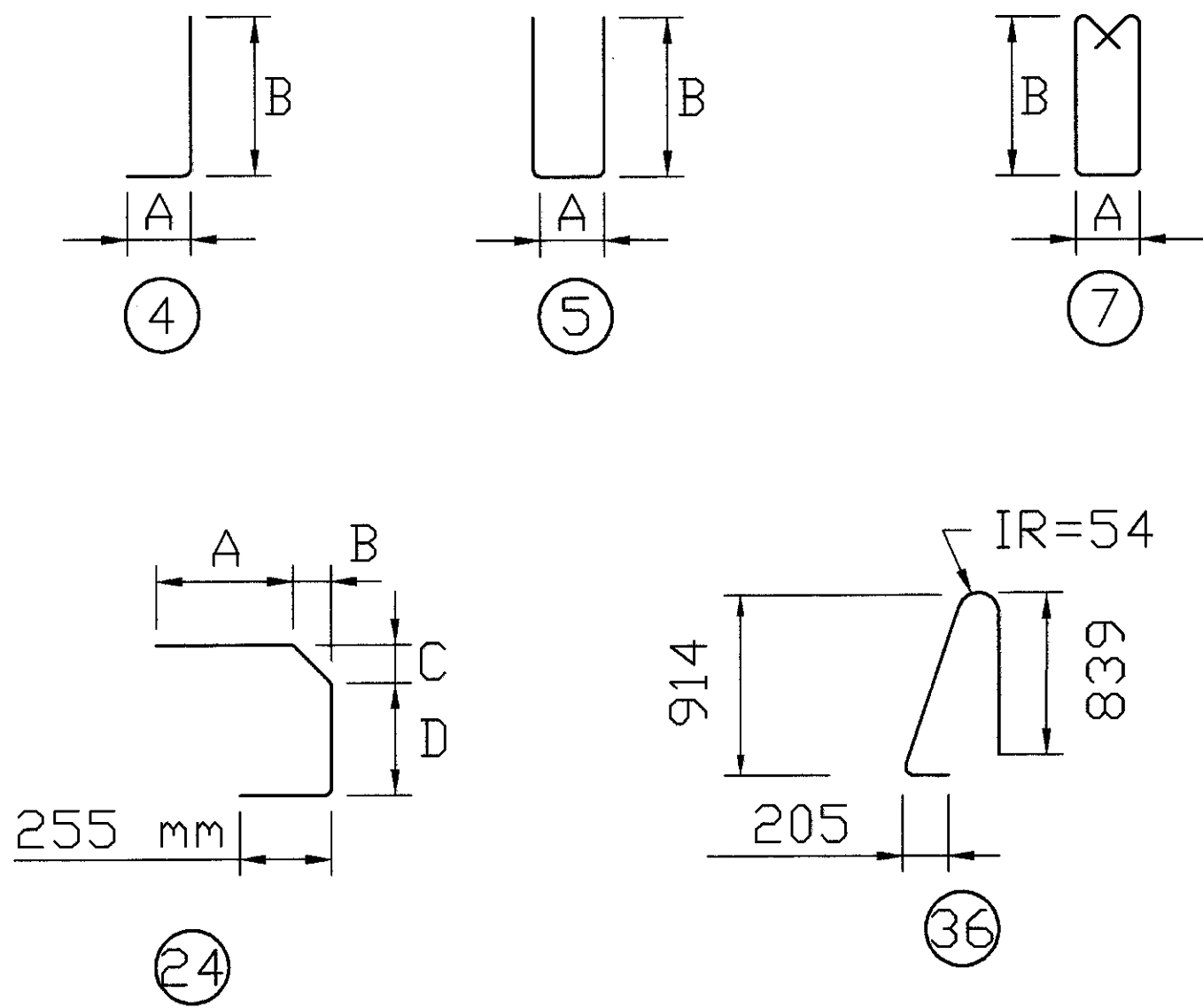
NOTES:

SCREED ELEVATIONS SHOWN ARE FOR THE DECK SLAB SURFACE PRIOR TO CONCRETE PLACEMENT. ALLOWANCE HAS BEEN MADE FOR ANTICIPATED CALCULATED DEAD LOAD DEFLECTIONS.

DECK SLAB REINFORCING

MARK	NUMBER REQUIRED	LENGTH	TYPE	DIM A	DIM B	DIM C	DIM D	INCREMENT	MASS
		mm		mm	mm	mm	mm	mm	KILOGRAMS
S13M01	348	12000	STR						4151
S13M02	116	2250	STR						259
S13M03	24	3400	STR						81
S13M04	92	1580	7	205	605				144
S16M01	351	12000	STR						6537
S16M02	117	3060	STR						556
* S16M03	264	9725	STR						3985
* S16M04	264	12020	STR						4925
S16M05	428	2130	STR						1415
S16M06	254	1030	5	550	280				406
S16M07	92	3550	STR						507
S16M08	80	1900	STR						236
S16M09	52	3400	STR						274
S16M10	244	2260	36						856
S16M11	244	645	5	235	245				244
S16M12	122	1120	STR						212
S16M13	244	955	24	230	152	216	230		362
* S19M01	264	9725	STR						6033
* S19M02	264	12020	STR						7457
								TOTAL	38 640

BAR BENDING DIAGRAMS



PIER 15 REINFORCING

MARK	NUMBER REQUIRED	LENGTH	TYPE	DIM A	DIM B	DIM C	DIM D	INCREMENT	MASS
		mm		mm	mm	mm	mm	mm	KILOGRAMS
16M01	4	8520	STR						54
16M02	8	4320	STR						54
16M03	8	4770	STR						60
16M04	8	1010	STR						13
16M05	12	1115	4	380	775				21
16M06	32	1040	4	380	700				52
16M07	32	965	4	380	625				48
19M01	10	1210	4	535	725				28
19M02	6	1445	5	470	535				20
32M01	12	1160	4	535	725				89
								TOTAL	420

PIER 16 REINFORCING

MARK	NUMBER REQUIRED	LENGTH	TYPE	DIM A	DIM B	DIM C	DIM D	INCREMENT	MASS
		mm		mm	mm	mm	mm	mm	KILOGRAMS
16M01	4	8520	STR						54
16M02	8	4320	STR						54
16M03	8	4770	STR						60
16M04	8	1010	STR						13
16M05	12	1085	4	380	745				20
16M06	32	1010	4	380	670				50
16M07	32	935	4	380	595				46
19M01	10	1210	4	535	725				28
19M02	6	1445	5	470	535				20
32M01	12	1160	4	535	725				89
								TOTAL	413

NOTES:

ALL REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ITEM 509.

ALL REINFORCING STEEL SHALL BE EPOXY COATED.

BAR DIMENSIONS ARE OUT-TO-OUT UNLESS OTHERWISE SHOWN.

MASS OF REINFORCING BARS PROVIDED FOR INFORMATION ONLY.

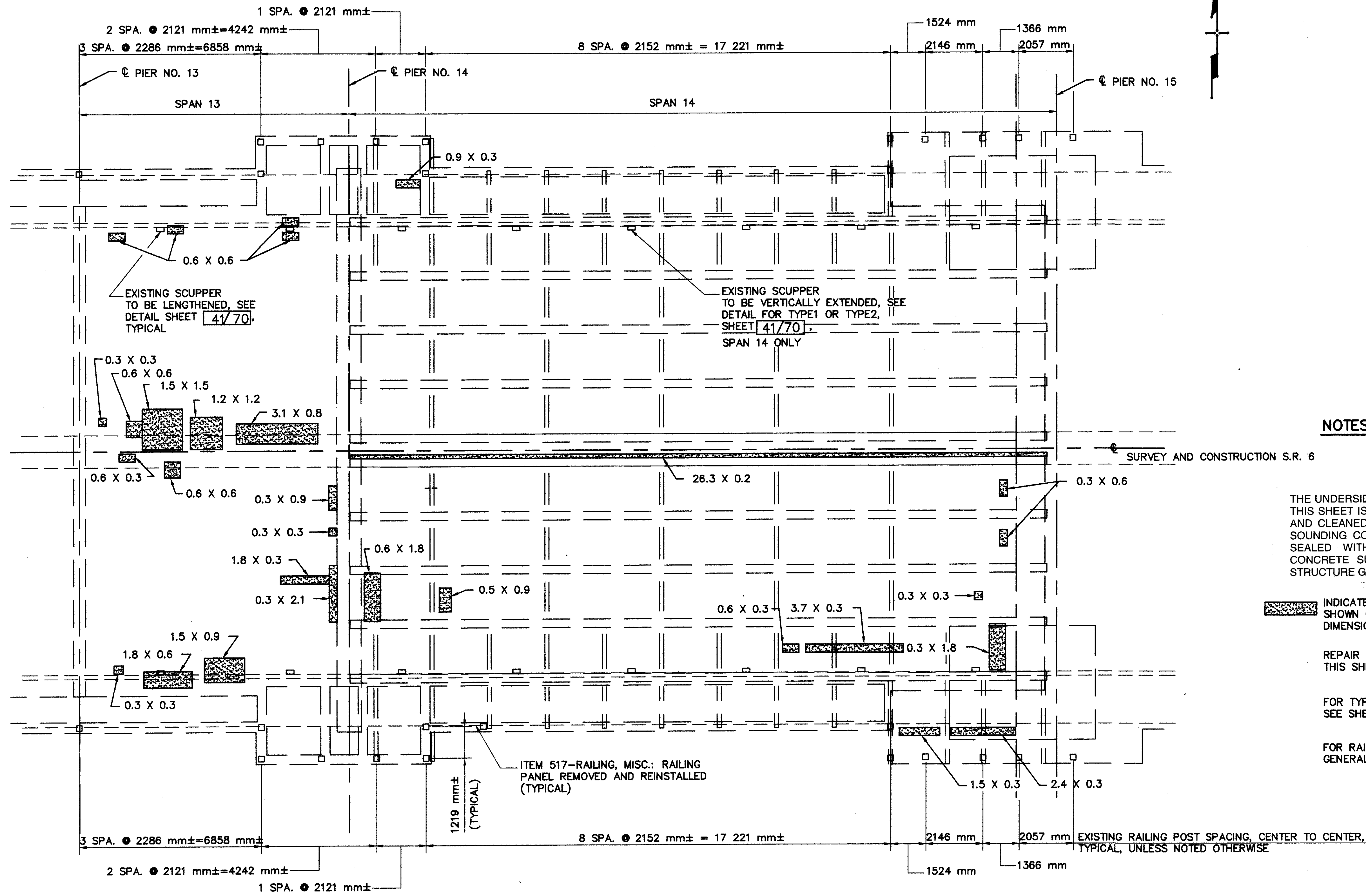
THE BAR SIZE NUMBER IS SPECIFIED ON THE PLANS IN THE BAR MARK COLUMN. THE FIRST TWO DIGITS INDICATES THE BAR SIZE NUMBER. FOR EXAMPLE, A 15M01 IS A 15M BAR. BAR DIMENSIONS SHOWN ARE OUT TO OUT UNLESS OTHERWISE INDICATED. R INDICATES INSIDE RADIUS, UNLESS OTHERWISE NOTED. "STD." WRITTEN IN PLACE OF A DIMENSION INDICATES A STANDARD BEND AT THE END OF THE BAR.

* REINFORCING BAR UTILIZES A MECHANICAL CONNECTOR. BAR LENGTH FOR PAYMENT IS MEASURED TO THE CONSTRUCTION JOINT. EXTRA BAR LENGTH AND/OR BAR END PREPARATION MAY BE NECESSARY DEPENDING UPON THE TYPE OF MECHANICAL CONNECTOR FURNISHED.



EXISTING RAILING POST SPACING, CENTER
TO CENTER, TYPICAL, UNLESS NOTED OTHERWISE

G:\95108\BRIDGE\SLAB5-9 12-3-97 3:57:52 pm EST
PLOT SCALE: 1 = 60



NOTES:

THE UNDERSIDE OF THE DECK SLAB(S) SHOWN ON THIS SHEET IS (ARE) TO BE INSPECTED, SOUNDED AND CLEANED AS SPECIFIED FOR ITEM SPECIAL-SOUNDING CONCRETE DECK BOTTOM AND THEN SEALED WITH ITEM SPECIAL - SEALING OF CONCRETE SURFACES (EPOXY). REFER TO THE STRUCTURE GENERAL NOTES ON SHEET 6/70.

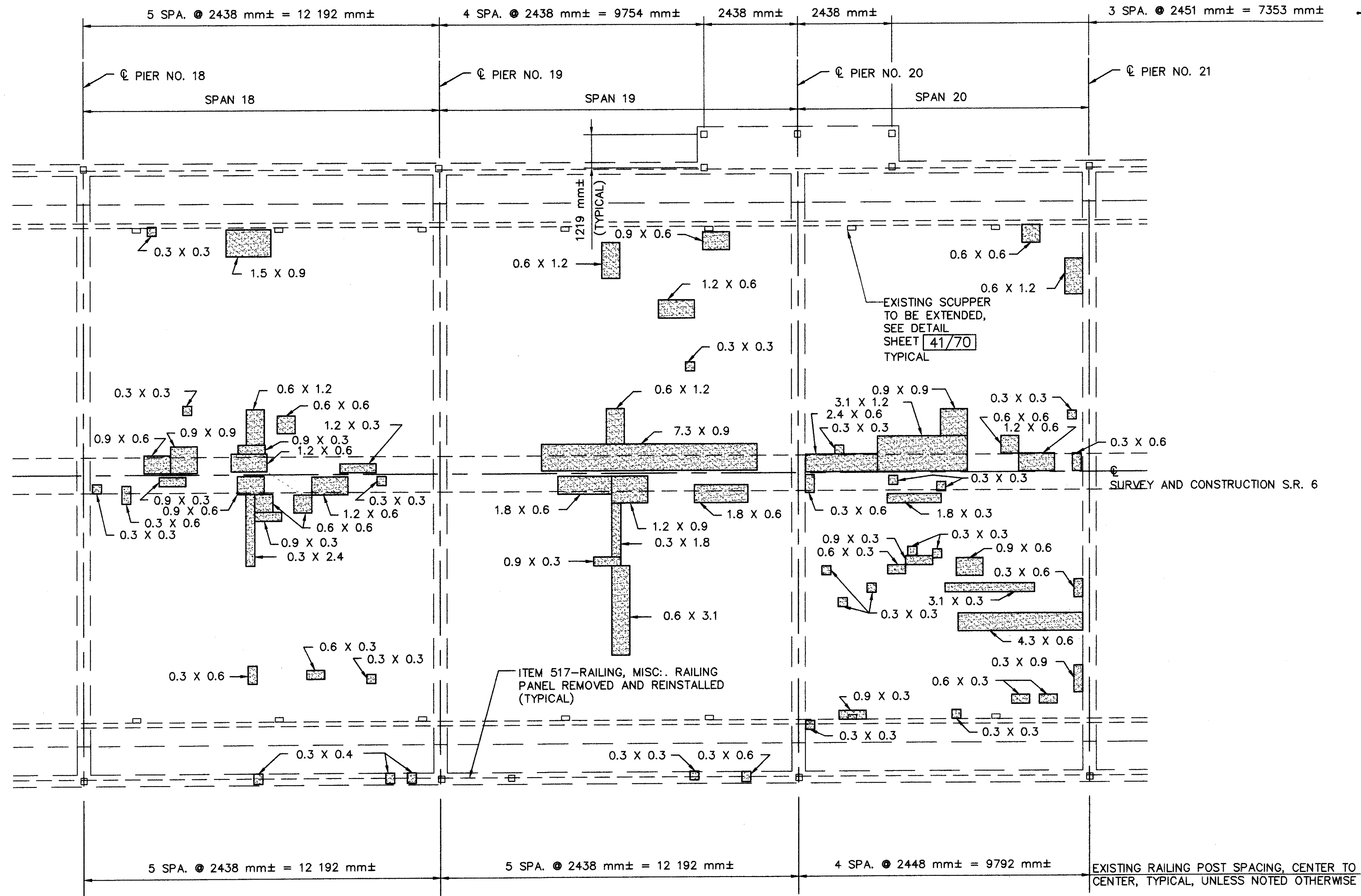
INDICATES APPROXIMATE REPAIR LIMITS SHOWN ON SLAB PLAN. REPAIR AREA DIMENSIONS IN METERS.

REPAIR AREA = 22 SQ. METERS THIS SHEET.

FOR TYPICAL EXISTING RAILING ELEVATION, SEE SHEET 58/70.

FOR RAILING REPAIR NOTES, SEE STRUCTURE GENERAL NOTES SHEET 5/70.

SLAB PLAN



SLAB PLAN

NOTES:

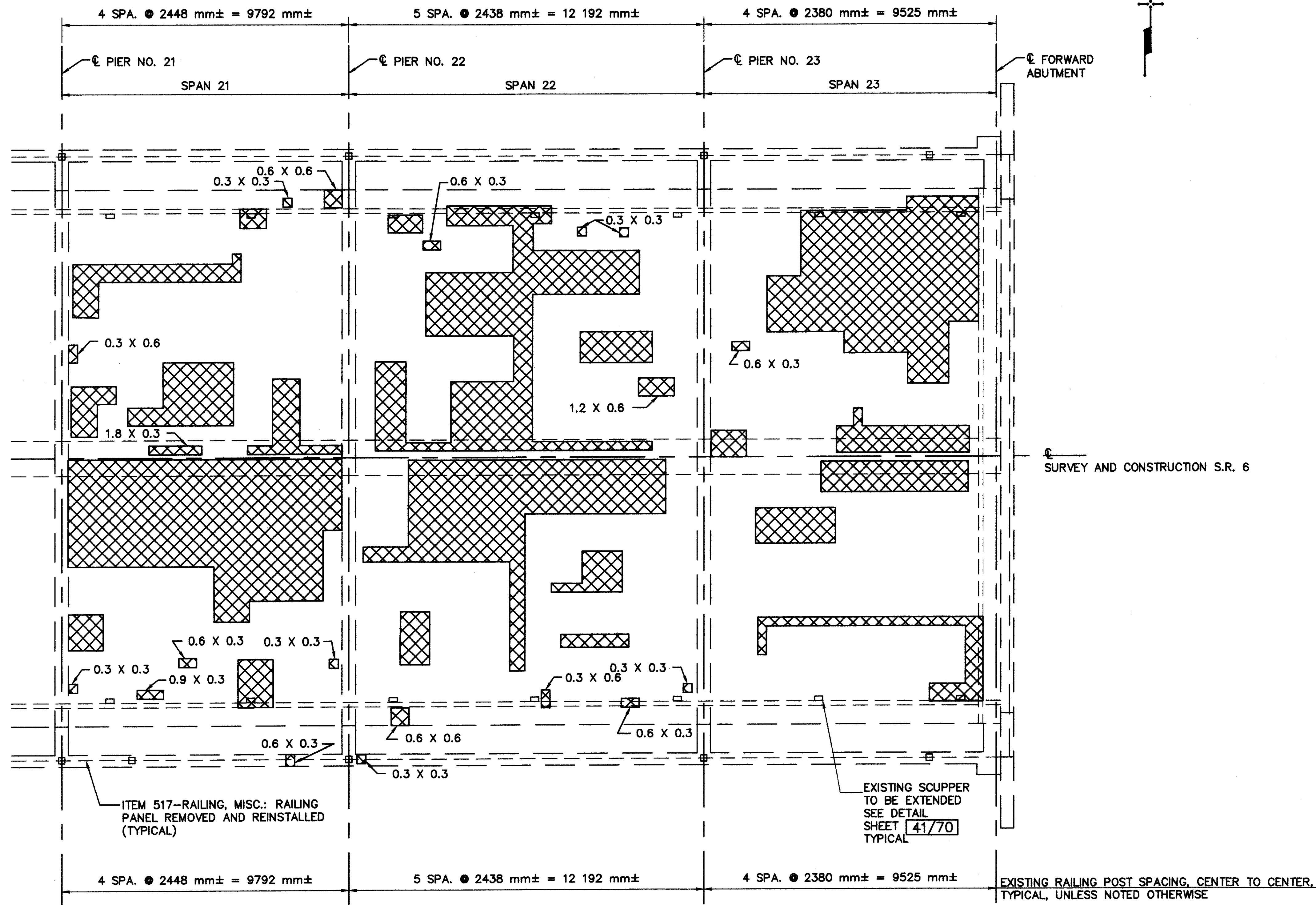
THE UNDERSIDE OF THE DECK SLAB(S) SHOWN ON THIS SHEET IS (ARE) TO BE INSPECTED, SOUNDED AND CLEANED AS SPECIFIED FOR ITEM SPECIAL-SOUNDING CONCRETE DECK BOTTOM AND THEN SEALED WITH ITEM SPECIAL - SEALING OF CONCRETE SURFACES (EPOXY). REFER TO THE STRUCTURE GENERAL NOTES ON SHEET 6/70.

INDICATES APPROXIMATE REPAIR LIMITS SHOWN ON SLAB PLAN. REPAIR AREA DIMENSIONS IN METERS.

REPAIR AREA = 42 SQ. METERS THIS SHEET.

FOR TYPICAL EXISTING RAILING ELEVATION, SEE SHEET 58/70.

FOR RAILING REPAIR NOTES, SEE STRUCTURE GENERAL NOTES SHEET 5/70.



SLAB PLAN

NOTES:

THE UNDERSIDE OF THE DECK SLAB(S) SHOWN ON THIS SHEET IS (ARE) TO BE INSPECTED, SOUNDED AND CLEANED AS SPECIFIED FOR ITEM SPECIAL-SOUNDING CONCRETE DECK BOTTOM AND THEN SEALED WITH ITEM SPECIAL - SEALING OF CONCRETE SURFACES (EPOXY). REFER TO THE STRUCTURE GENERAL NOTES ON SHEET 6/70.

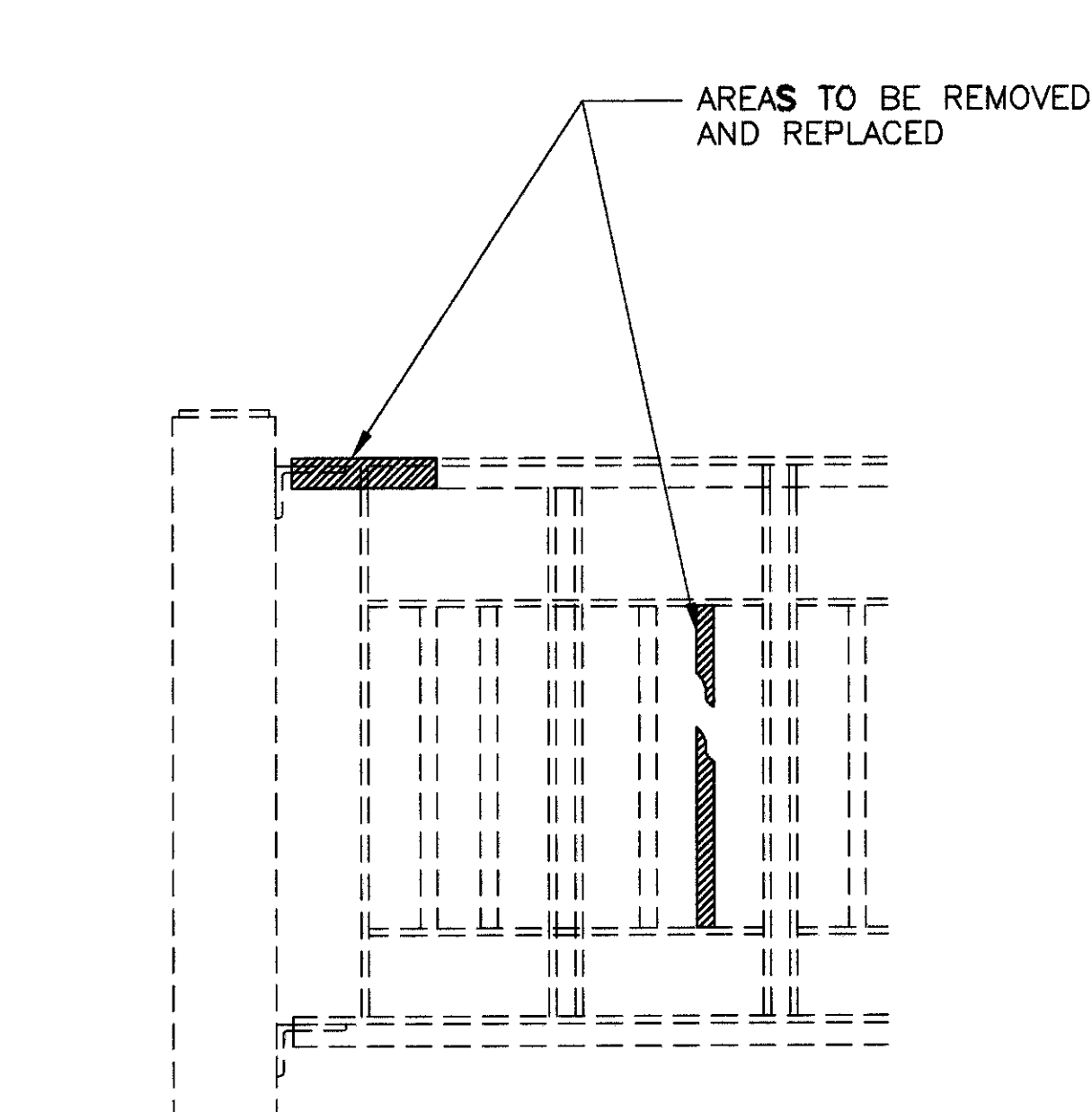
INDICATES APPROXIMATE REPAIR LIMITS SHOWN ON SLAB PLAN. REPAIR AREA DIMENSIONS IN METERS.

REPAIR AREAS THIS SHEET:

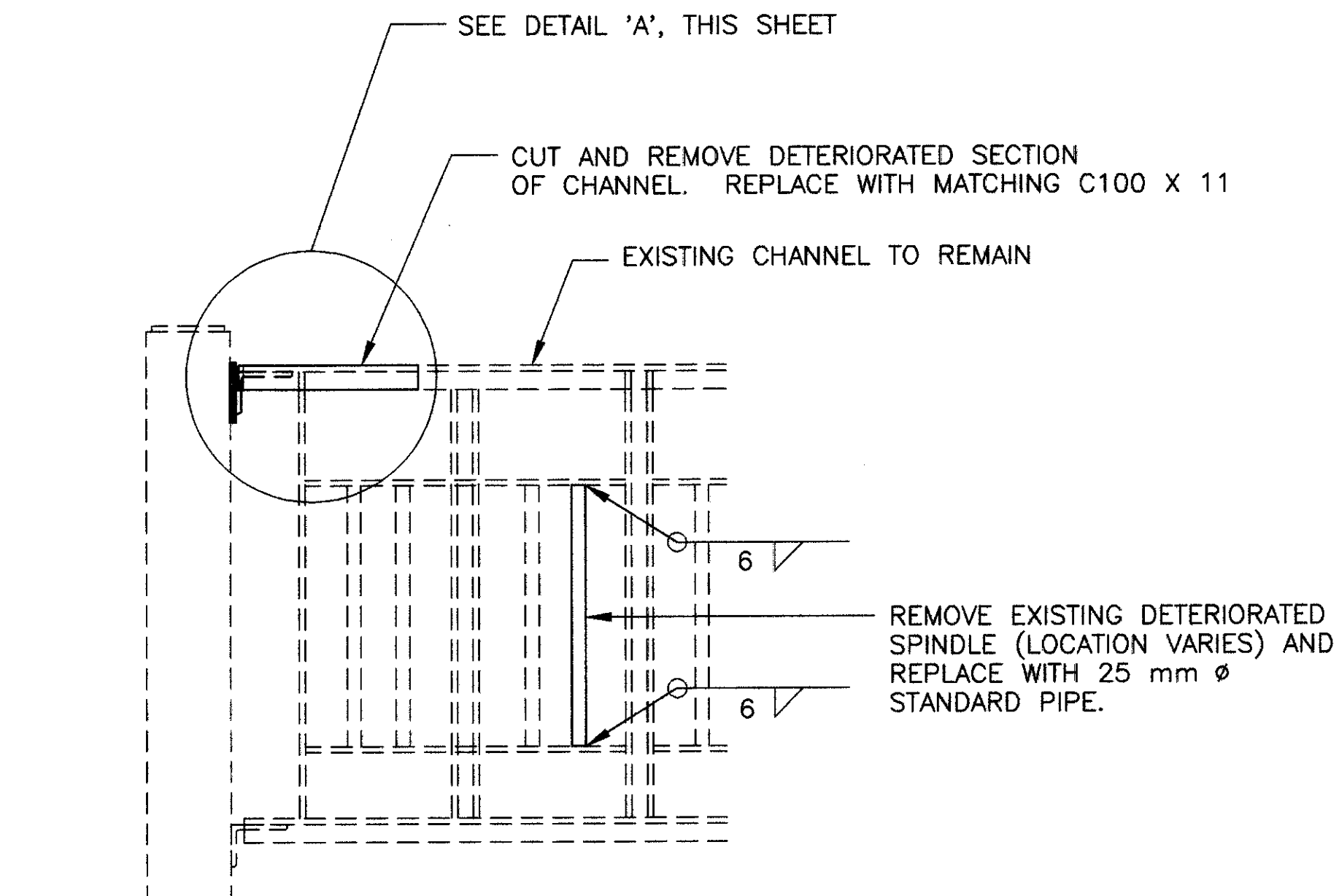
SPAN 21 = 62 SQ. METERS
 SPAN 22 = 68 SQ. METERS
 SPAN 23 = 48 SQ. METERS

FOR TYPICAL EXISTING RAILING ELEVATION, SEE SHEET 58/70

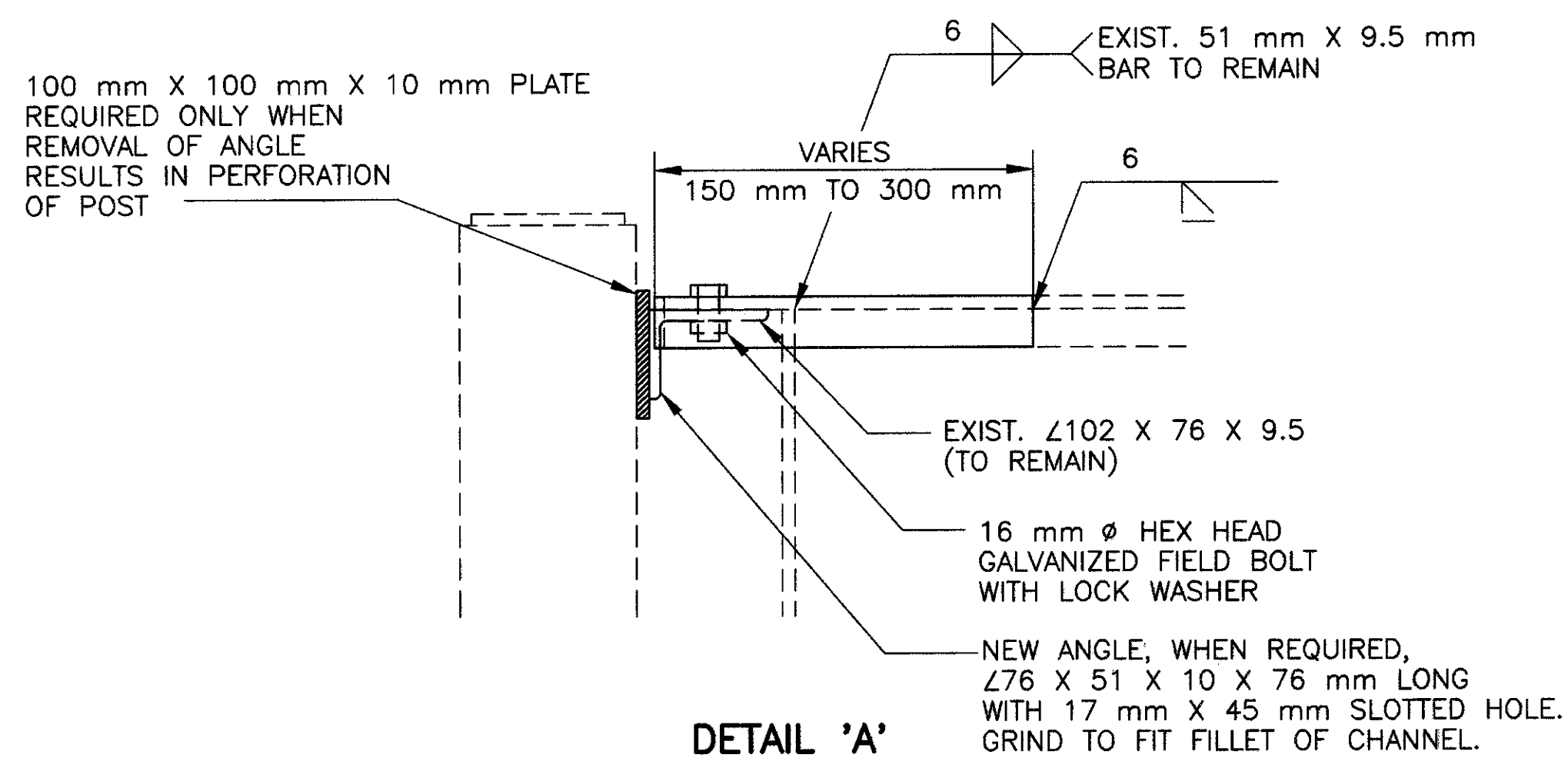
FOR RAILING REPAIR NOTES, SEE STRUCTURE GENERAL NOTES SHEET 5/70



EXISTING RAILING PANEL – TYPICAL



PROPOSED RAILING PANEL REPAIR – TYPICAL



NOTES:

RAILING PANEL CHANNEL REPAIR SHALL BE PAID FOR UNDER ITEM 517- RAILING, MISC.: RAILING PANEL CHANNEL REPAIRED.

RAILING CONNECTION ANGLE REPAIRED SHALL BE PAID FOR UNDER ITEM 517- RAILING, MISC.: RAILING CONNECTION ANGLE REPAIRED.

RAILING PANEL SPINDLE REPAIRED SHALL BE PAID FOR UNDER ITEM 517- RAILING, MISC.: RAILING PANEL SPINDLE REPAIRED.

REFER TO SHEET 5 / 70 FOR SPECIFICATIONS GOVERNING THIS WORK.

REFER TO SHEET 57 / 70 FOR ADDITIONAL RAILING DETAILS.

ERI-6-28.839

RAILING DETAILS – SPAN 15
BRIDGE NUMBER ERI-6-28839
OVER HURON RIVER

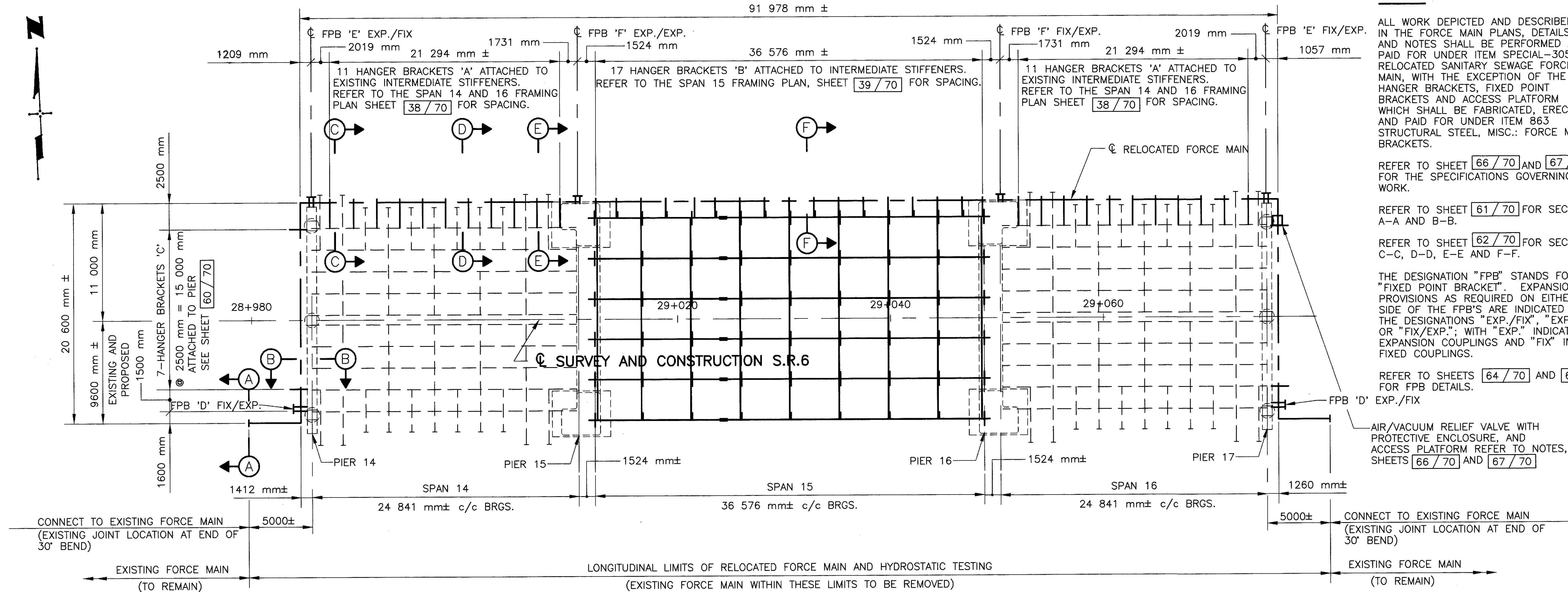
58 / 70

80
92

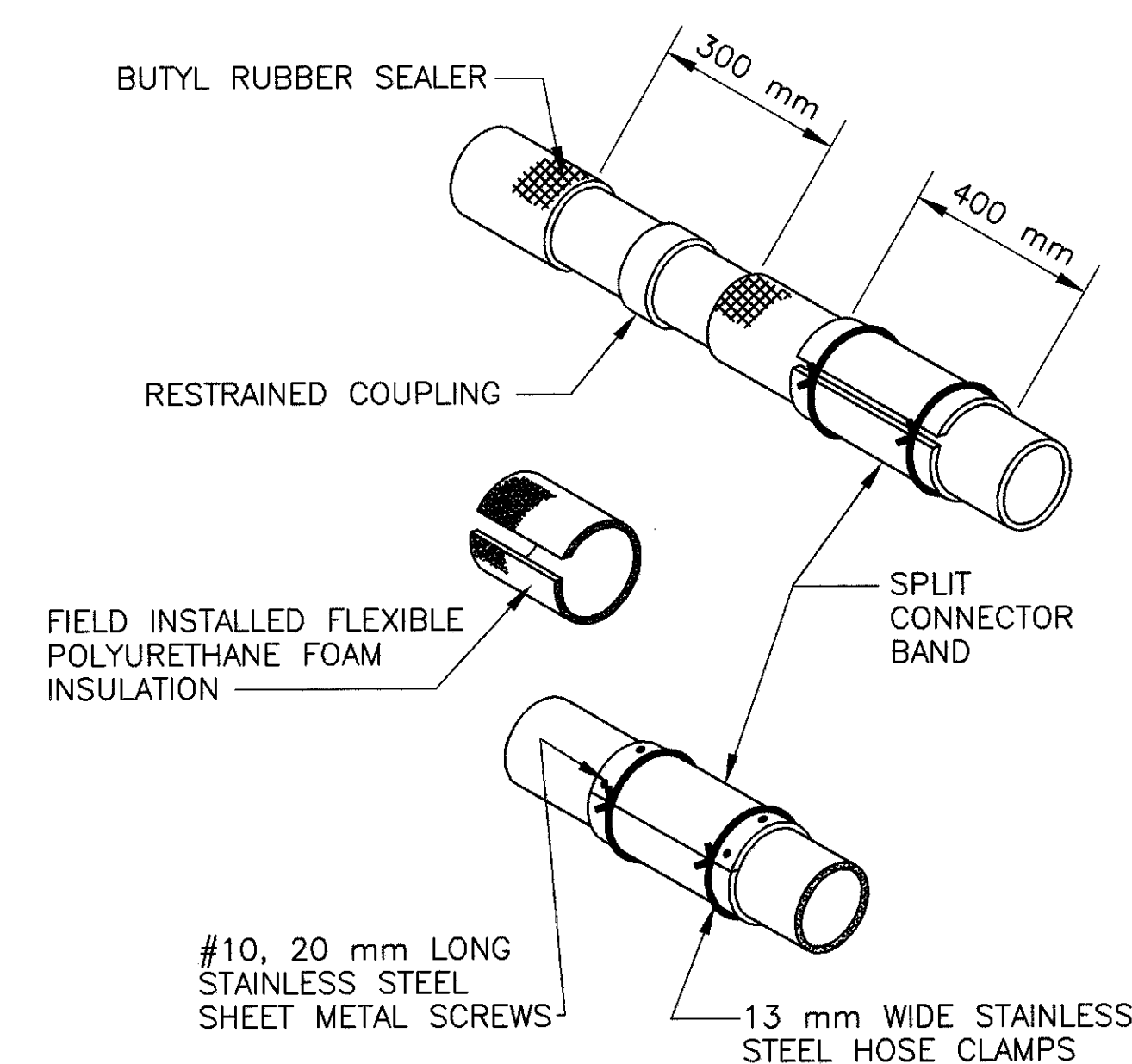
adache-ciuni-lynn
associates
CONSULTING ENGINEERS
4401 ROCKSIDE RD. CLEVELAND, OHIO 44131

DATE 12/97
REVIEWED TAB
STRUCTURE FILE NUMBER 2201984

DRAWN TES
DESIGNED LPC
CHECKED AJM



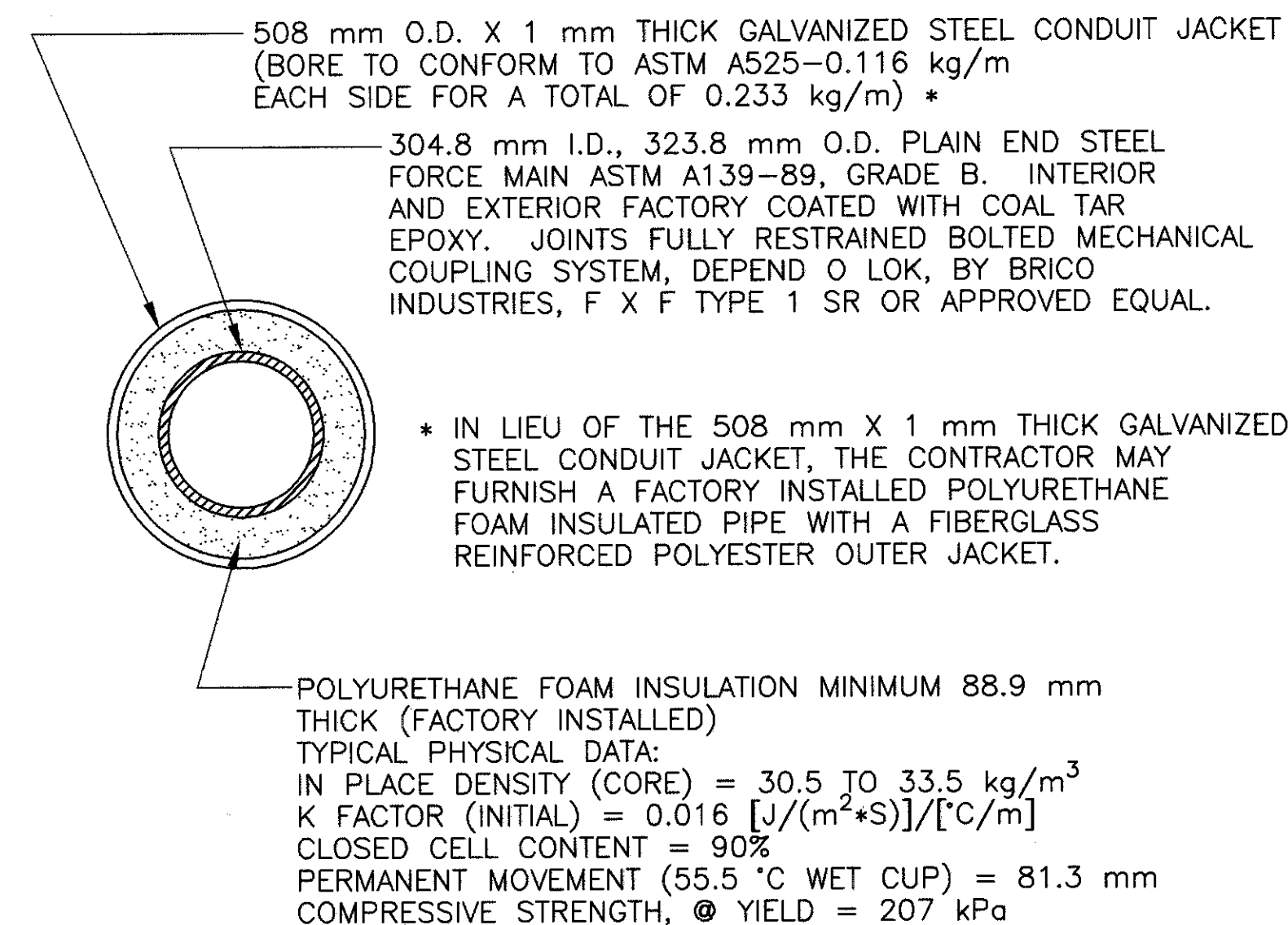
PLAN



TYPICAL FIELD JOINT DETAILS

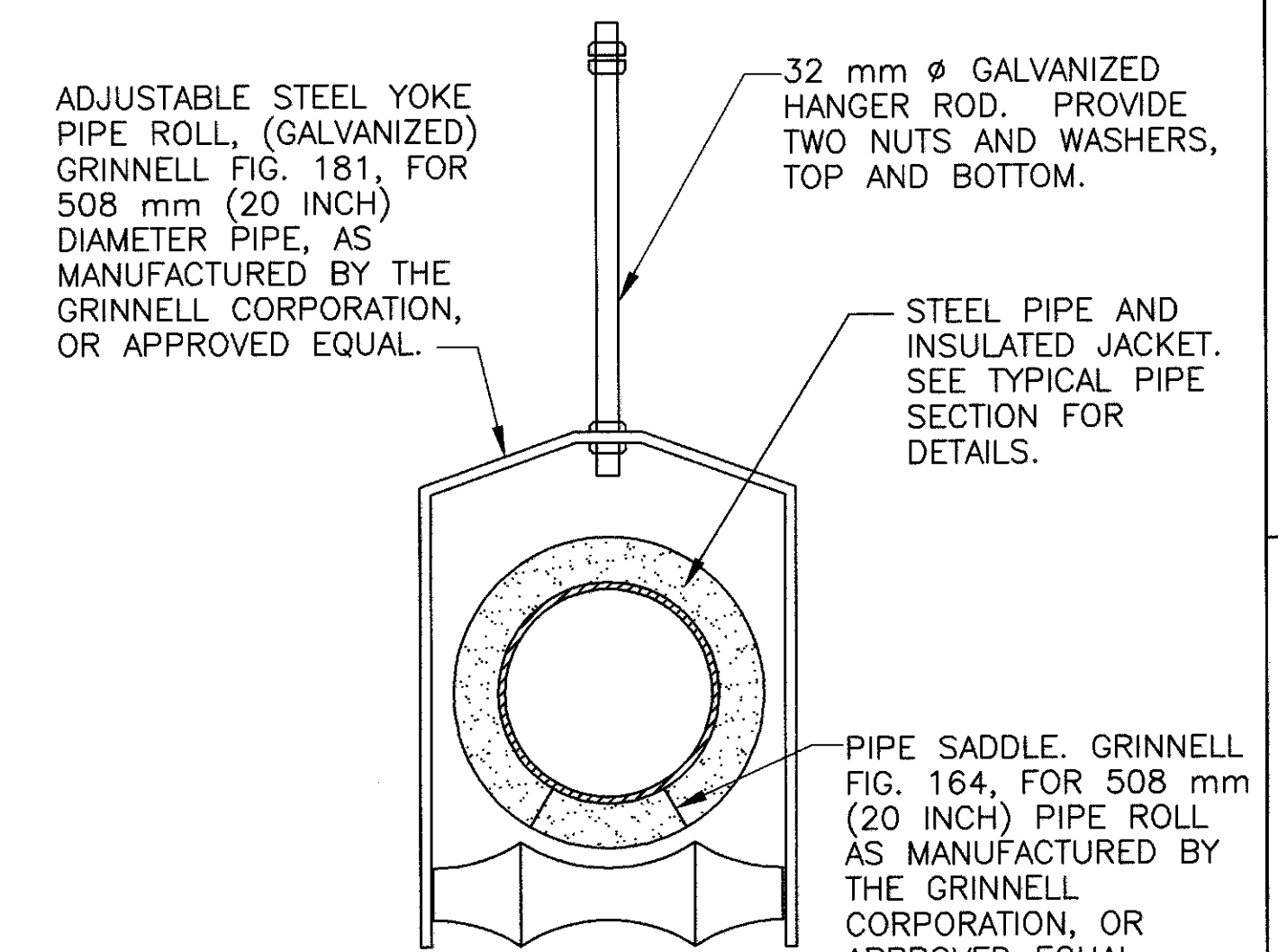
FIELD JOINT SEQUENCE:

1. SLIDE SPLIT CONNECTOR BAND ON TO UNIT. MAKE JOINT AND TEST.
2. WRAP FLEXIBLE POLYURETHANE FOAM AROUND EXPOSED PIPE AND COUPLING AND TAPE INTO PLACE.
3. APPLY BUTYL RUBBER SEALER TO BOTH SIDES OF JOINT.
4. CENTER SPLIT CONNECTOR BAND OVER JOINT AND DRAW DOWN TIGHT WITH HOSE CLAMPS. SECURE SPLIT CONNECTOR BAND TO JACKET WITH SHEET METAL SCREWS (4 SCREWS PER END).



TYPICAL PIPE SECTION

PIPE AND INSULATION



HANGER ROD AND
PIPE YOKE ASSEMBLY DETAIL

MINIMUM LOAD CAPACITY OF ENTIRE ASSEMBLY IS 7100 N.

NOTES:

ALL WORK DEPICTED AND DESCRIBED IN THE FORCE MAIN PLANS, DETAILS AND NOTES SHALL BE PERFORMED AND PAID FOR UNDER ITEM SPECIAL-305 mm RELOCATED SANITARY SEWAGE FORCE MAIN, WITH THE EXCEPTION OF THE HANGER BRACKETS, FIXED POINT BRACKETS AND ACCESS PLATFORM WHICH SHALL BE FABRICATED, ERECTED AND PAID FOR UNDER ITEM 863 STRUCTURAL STEEL, MISC.: FORCE MAIN BRACKETS.

REFER TO SHEET **66/70** AND **67/70** FOR THE SPECIFICATIONS GOVERNING THIS WORK.

REFER TO SHEET **61/70** FOR SECTIONS A-A AND B-B.

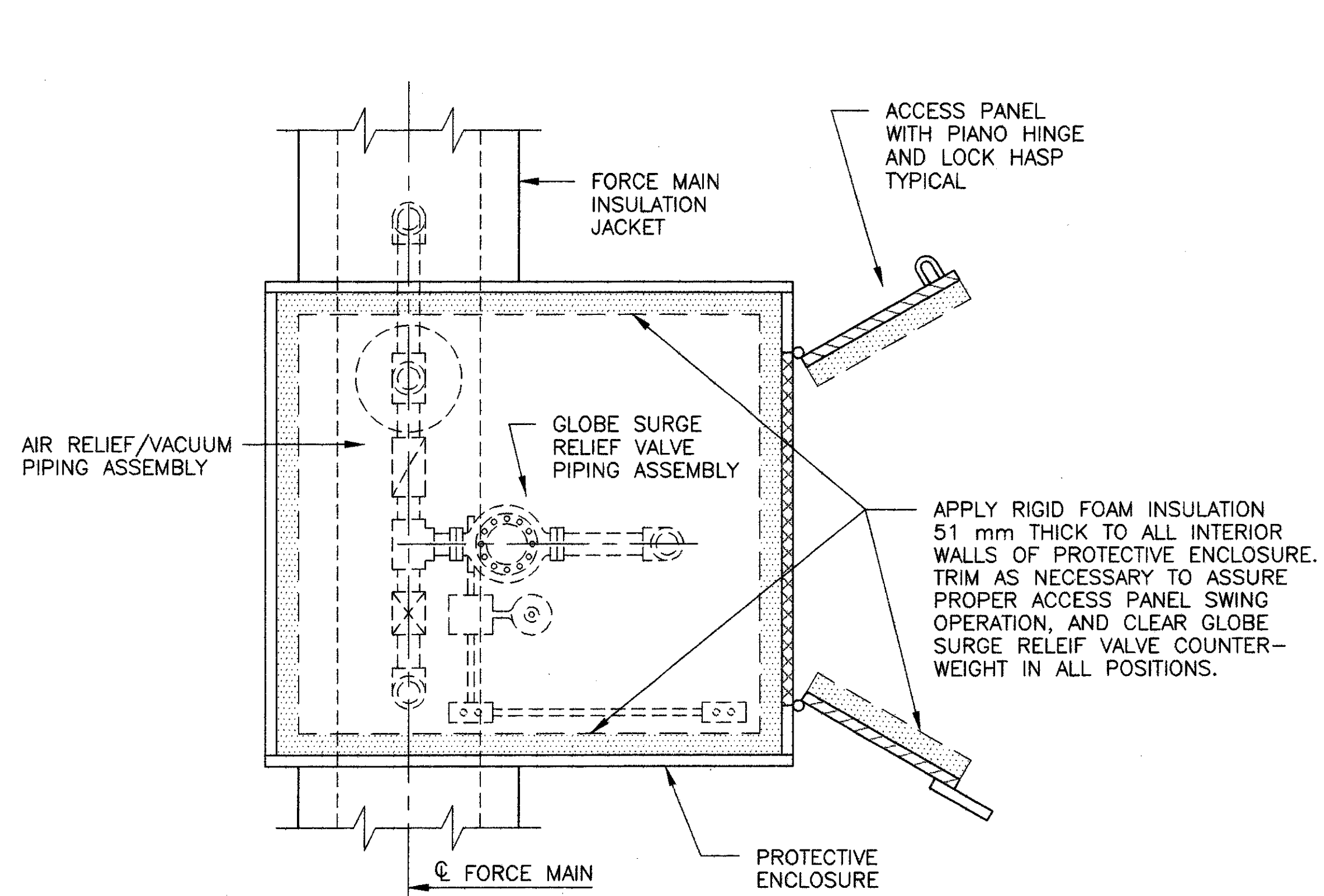
REFER TO SHEET **62/70** FOR SECTIONS C-C, D-D, E-E AND F-F.

THE DESIGNATION "FPB" STANDS FOR "FIXED POINT BRACKET". EXPANSION PROVISIONS AS REQUIRED ON EITHER SIDE OF THE FPB'S ARE INDICATED BY THE DESIGNATIONS "EXP./FIX", "EXP./EXP." OR "FIX/EXP."; WITH "EXP." INDICATING EXPANSION COUPLINGS AND "FIX" INDICATING FIXED COUPLINGS.

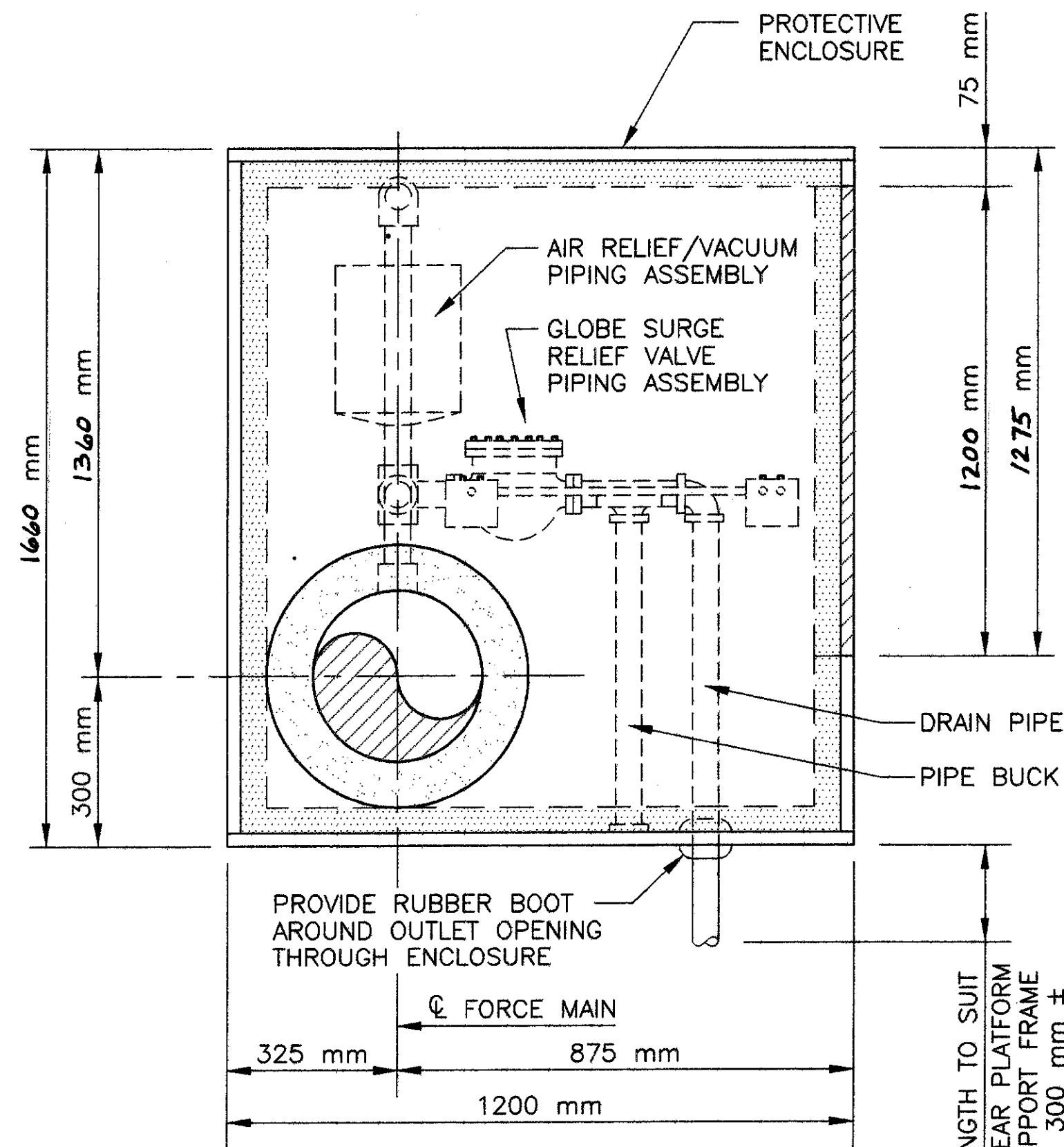
REFER TO SHEETS **64/70** AND **65/70** FOR FPB DETAILS.

AIR/VACUUM RELIEF VALVE WITH PROTECTIVE ENCLOSURE, AND ACCESS PLATFORM REFER TO NOTES, SHEETS **66/70** AND **67/70**

G:\95108\BRIDGE\RAIN-7R 1-27-99 1:32:58 pm EST
PLOT SCALE 1:10



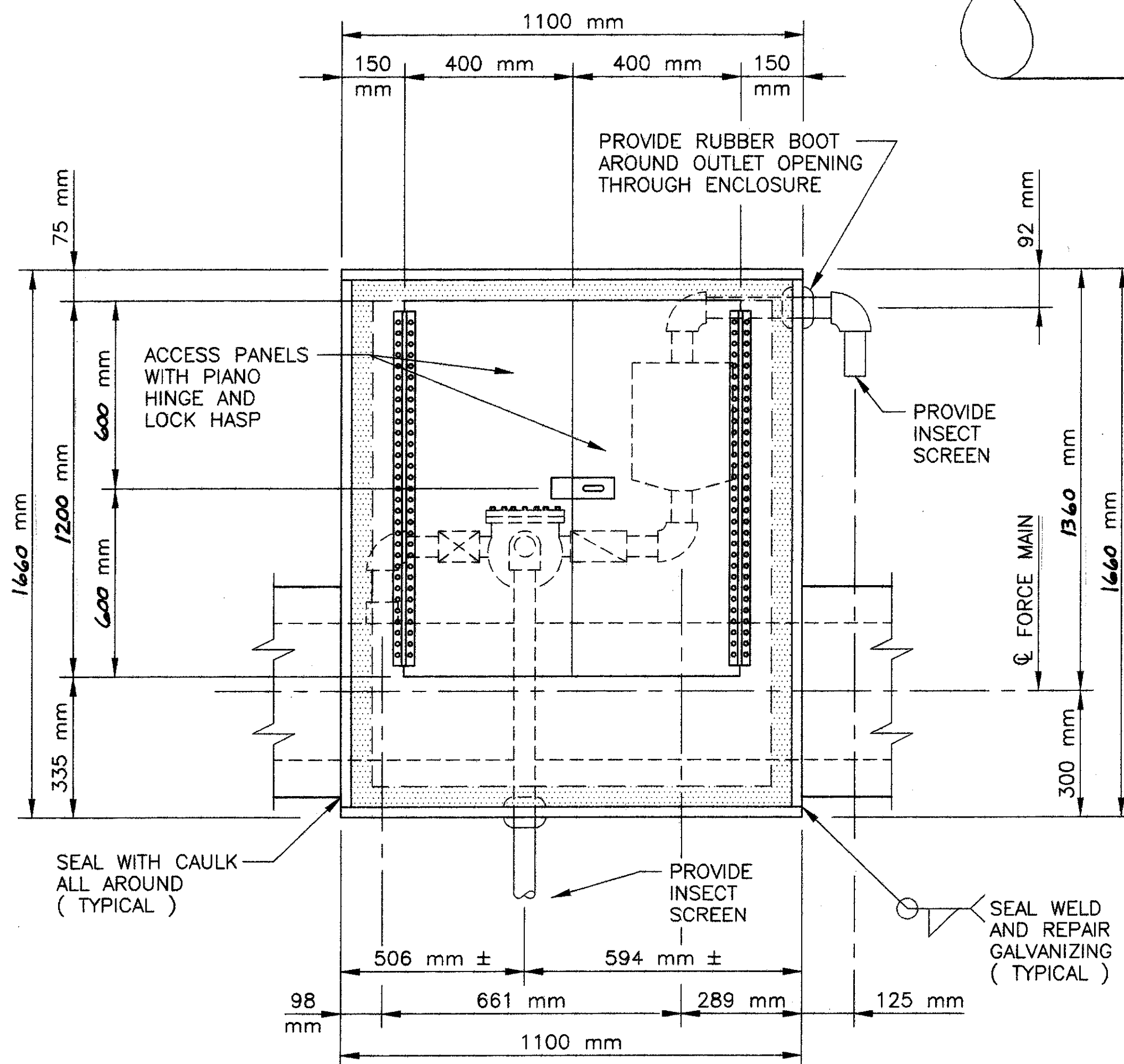
TOP VIEW
ACCESS DOORS SHOWN OPEN



FRONT VIEW

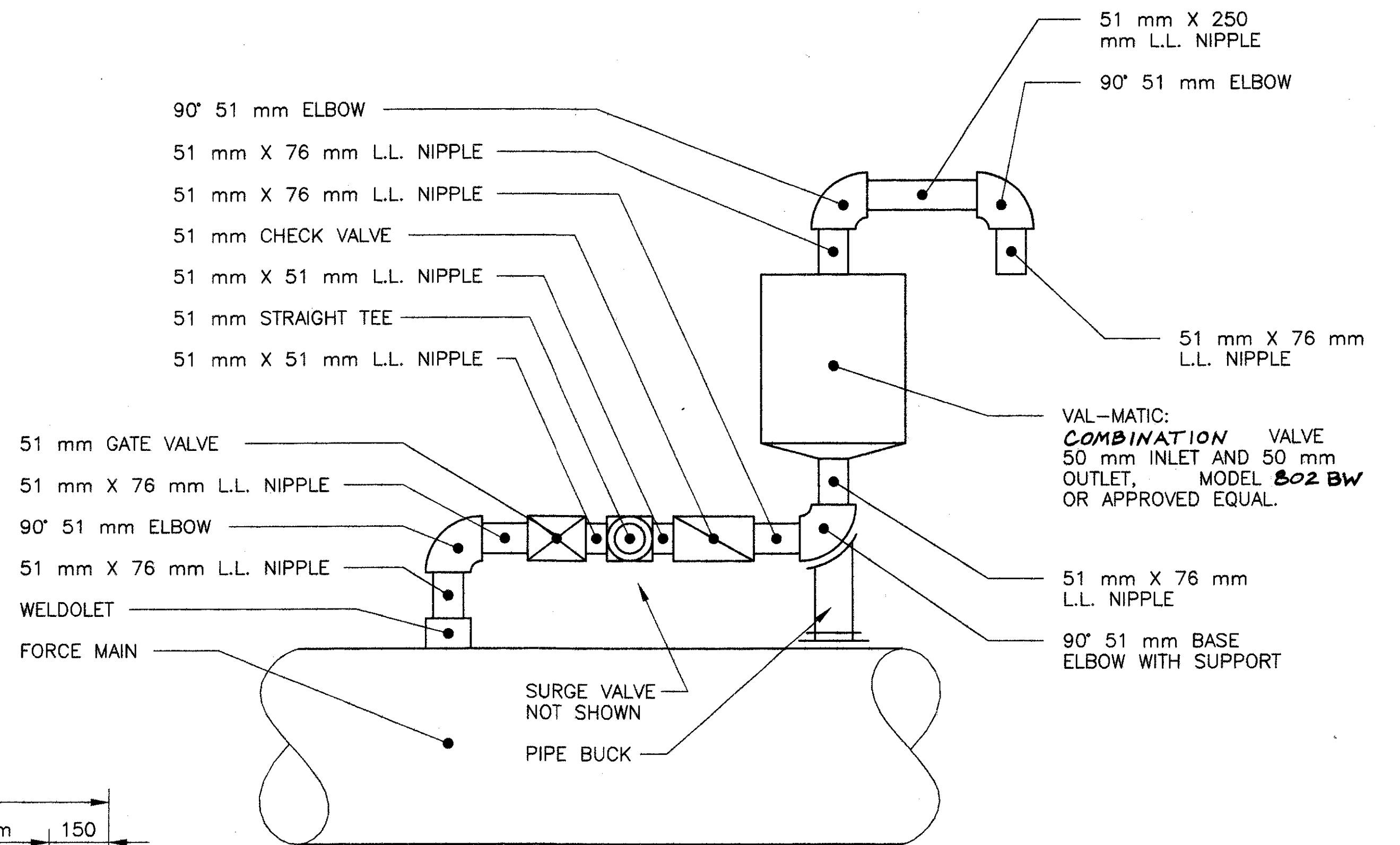
PROTECTIVE ENCLOSURE

CONSTRUCT FROM 5 mm THICK GALVANIZED STEEL PLATE. USE BOLTED OR WELDED CONSTRUCTION. ENCLOSURE SHALL BE CONNECTED TO FORCE MAIN AND AIR RELIEF/VACUUM PIPING. ASSEMBLY SHALL BE INTERNALLY BRACED AGAINST ENCLOSURE. ENCLOSURE FABRICATOR SHALL PROVIDE DETAILS WITH SHOP DRAWINGS *TO BE* APPROVED BY THE ENGINEER.

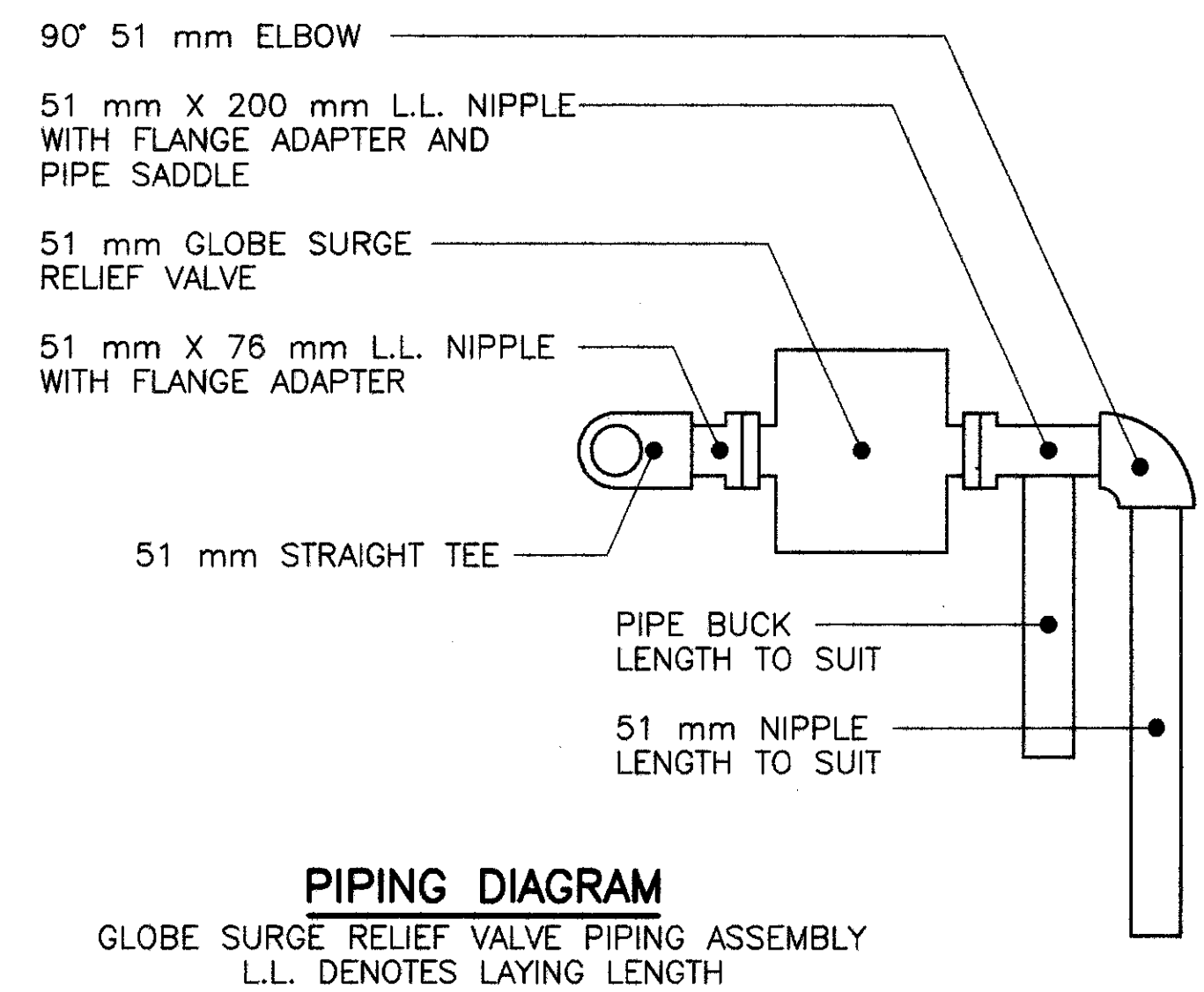


SIDE VIEW

GLOBE SURGE RELIEF VALVE COUNTERWEIGHT AND OIL RESIVOIR, NOT SHOWN



PIPING DIAGRAM
AIR RELIEF/VACUUM PIPING ASSEMBLY
L.L. DENOTES LAYING LENGTH



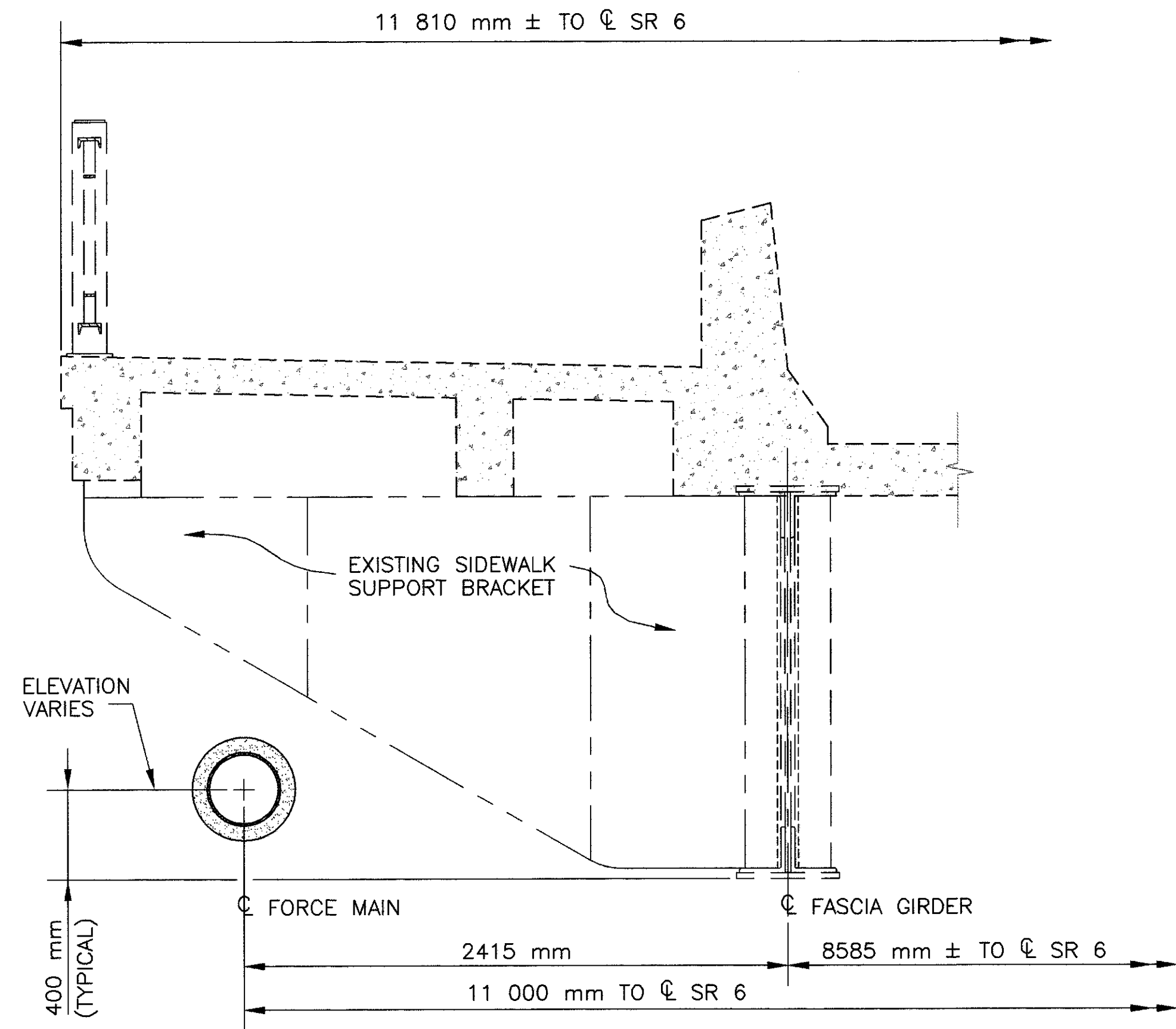
PIPING DIAGRAM
GLOBE SURGE RELIEF VALVE PIPING ASSEMBLY
L.L. DENOTES LAYING LENGTH

NOTES:

1. THE ENCLOSURE MUST BE CUSTOM FABRICATED. AN ALTERNATE ENCLOSURE MAY BE CONSTRUCTED OF ALUMINUM PLATE. THE SIZE OF THE ENCLOSURE MUST BE VERIFIED PRIOR TO FABRICATION. IF THE PLUMBING OF THE PIPES, SYSTEM AND VALVES REQUIRE AN ENCLOSURE OF A DIFFERENT SIZE THAN SHOWN IN THE PLANS, THE ENCLOSURE SHALL BE SIZED ACCORDINGLY AT THE CONTRACTOR'S EXPENSE.

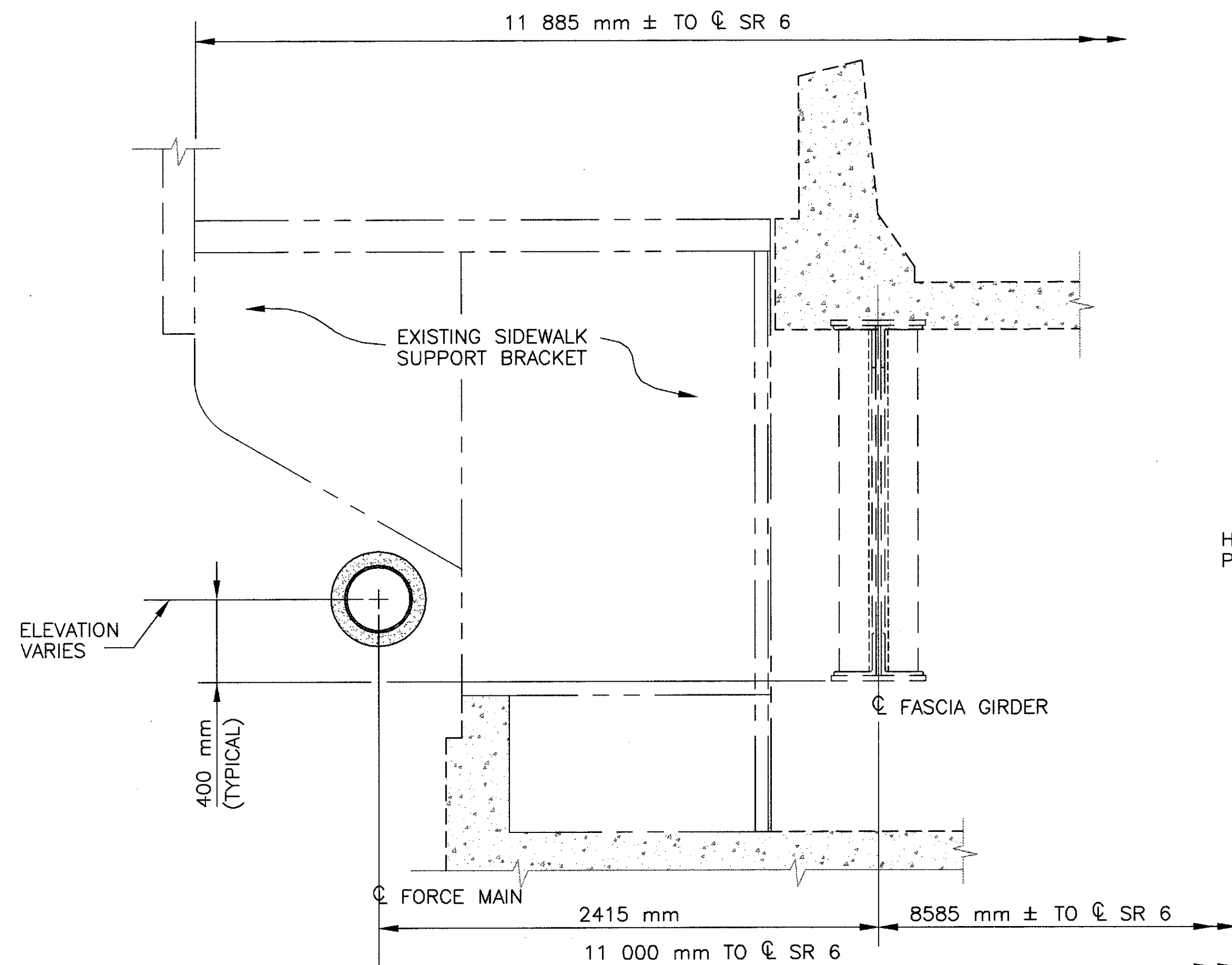
2. FOR ADDITIONAL NOTES SEE SHEETS 66/70 AND 67/70.

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PLOT SCALE 1:20



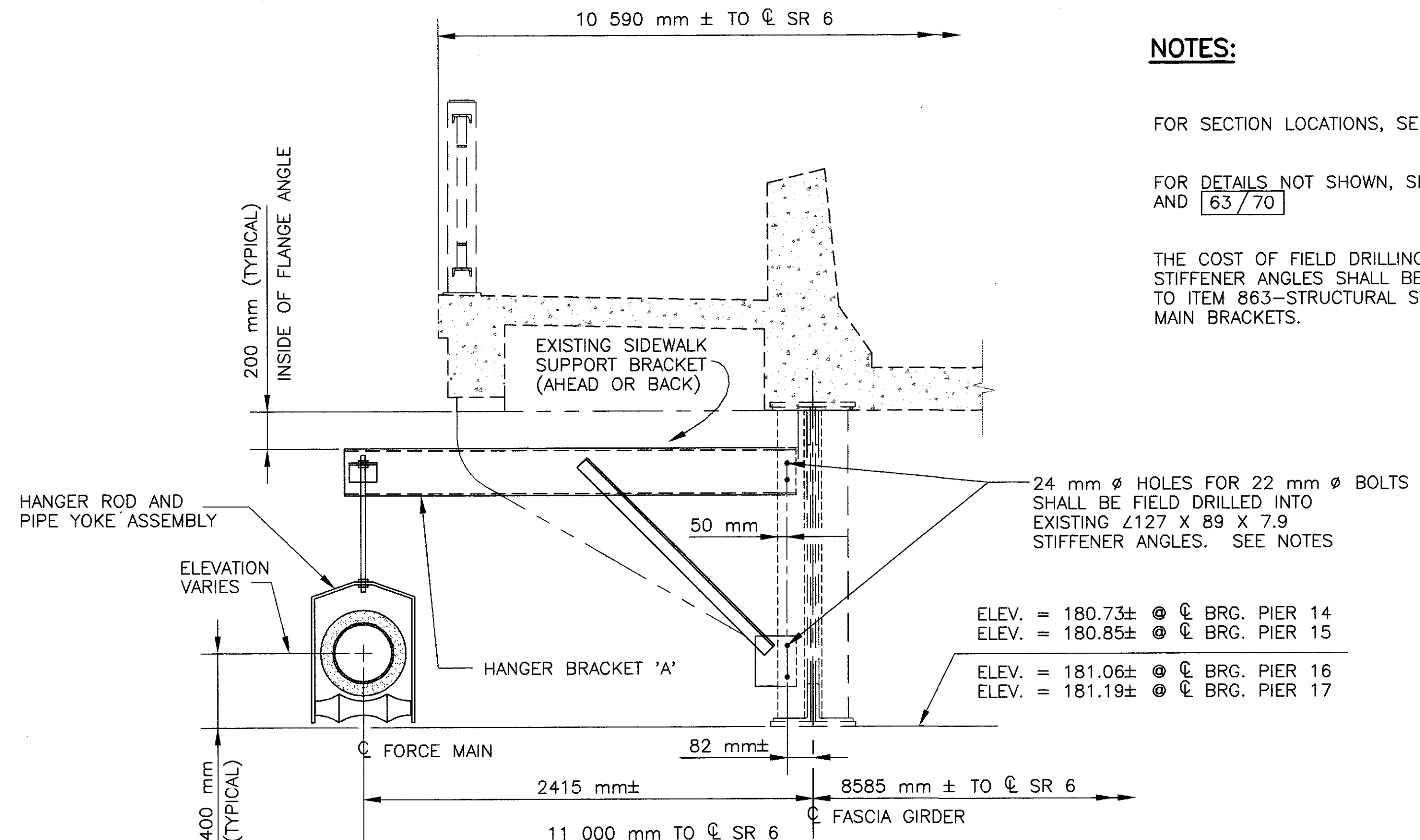
SECTION C-C

SPANS 14 AND 16 AT PIER 14 AND 17 BALCONIES



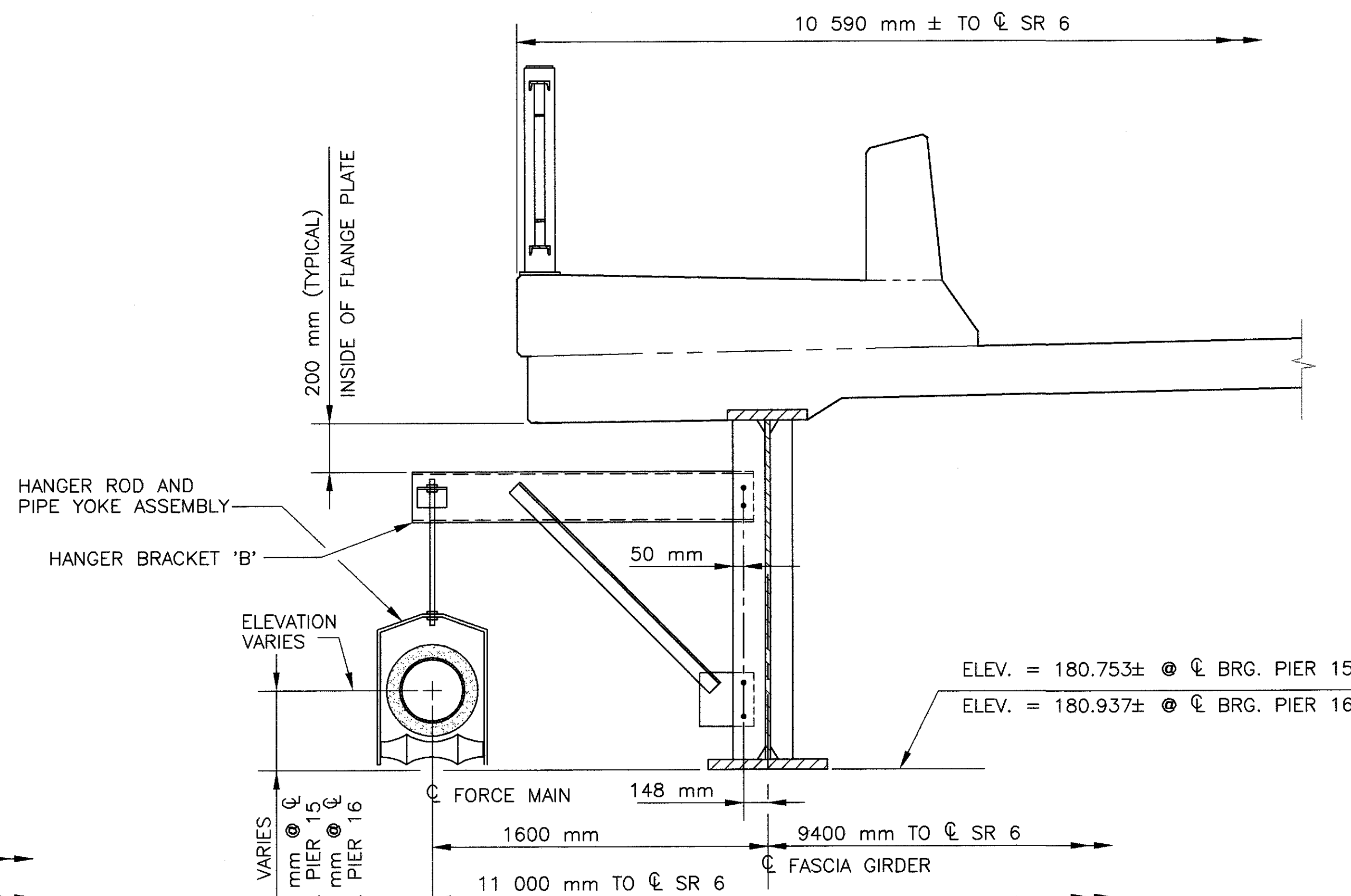
SECTION E-E

SPANS 14 AND 16 AT PIER 15 AND 16 BALCONIES



SECTION D-D

NORMAL SECTION SPANS 14 AND 16



SECTION F-F

NORMAL SECTION SPAN 15

NOTES:

FOR SECTION LOCATIONS, SEE SHEET 59/70

FOR DETAILS NOT SHOWN, SEE SHEETS 59/70 AND 63/70

THE COST OF FIELD DRILLING HOLES IN THE EXISTING STIFFENER ANGLES SHALL BE CONSIDERED INCIDENTAL TO ITEM 863-STRUCTURAL STEEL, MISC.: FORCE MAIN BRACKETS.

FORCE MAIN RELOCATION DETAILS
BRIDGE NUMBER ERI-6-28839
OVER HURON RIVER

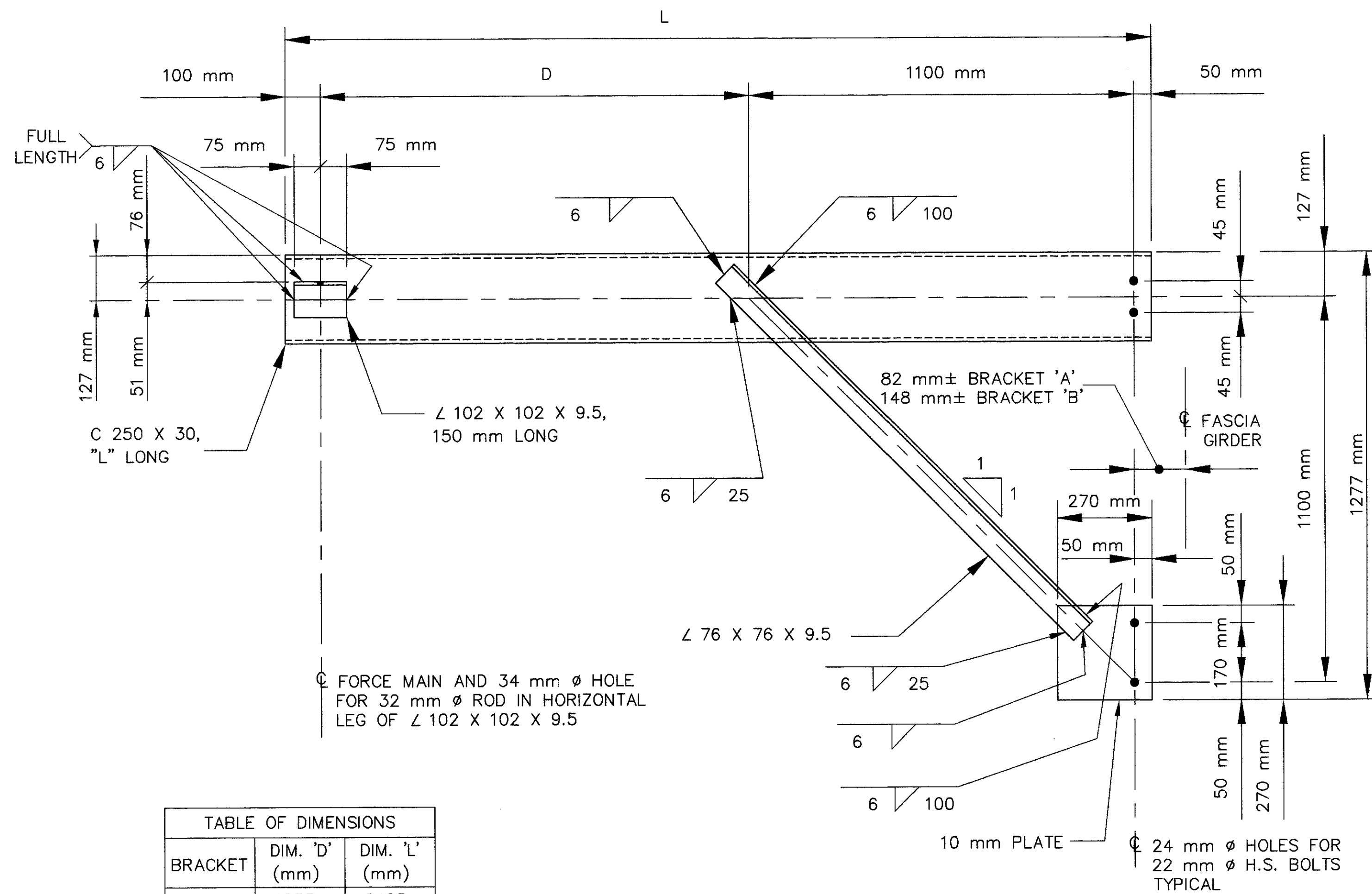
ERI-6-28.839

62/70

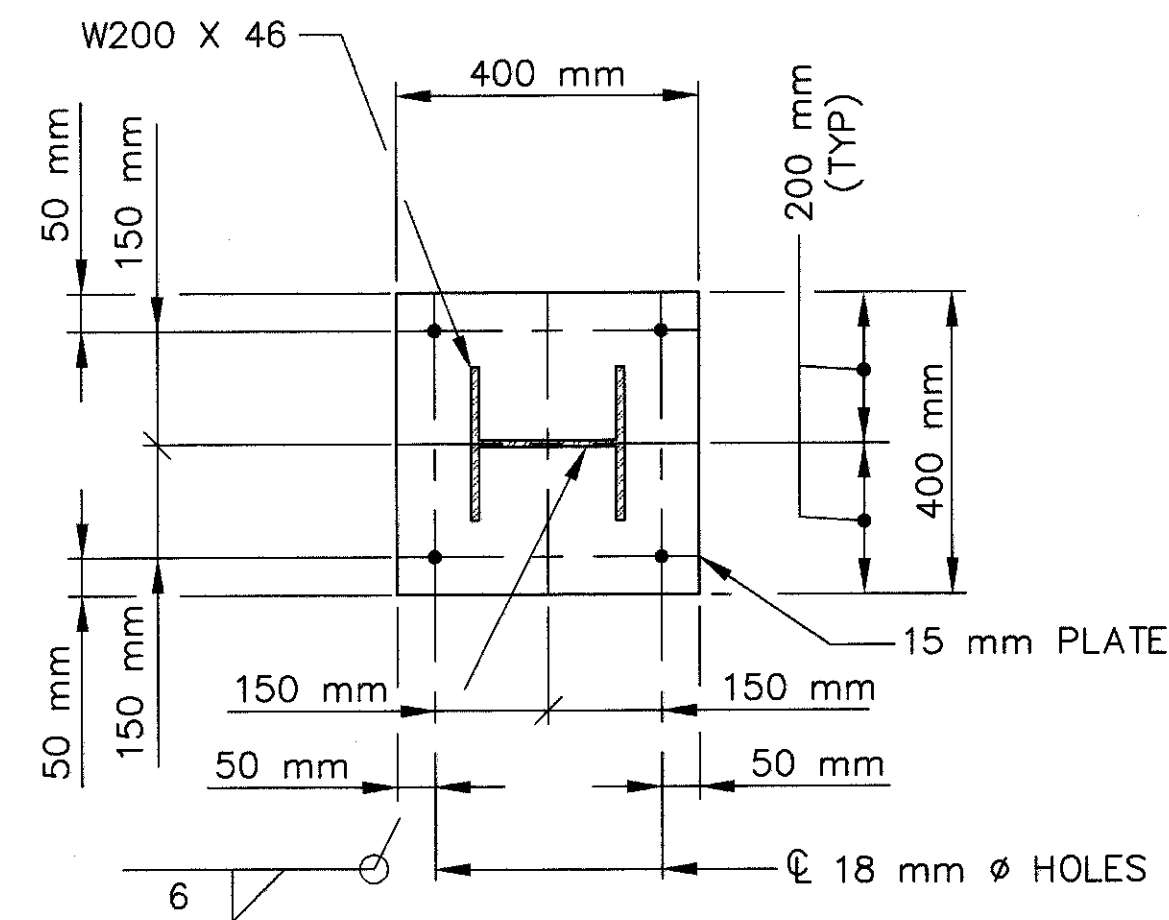
84
92

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4401 ROCKSIDE RD. CLEVELAND, OHIO 44131

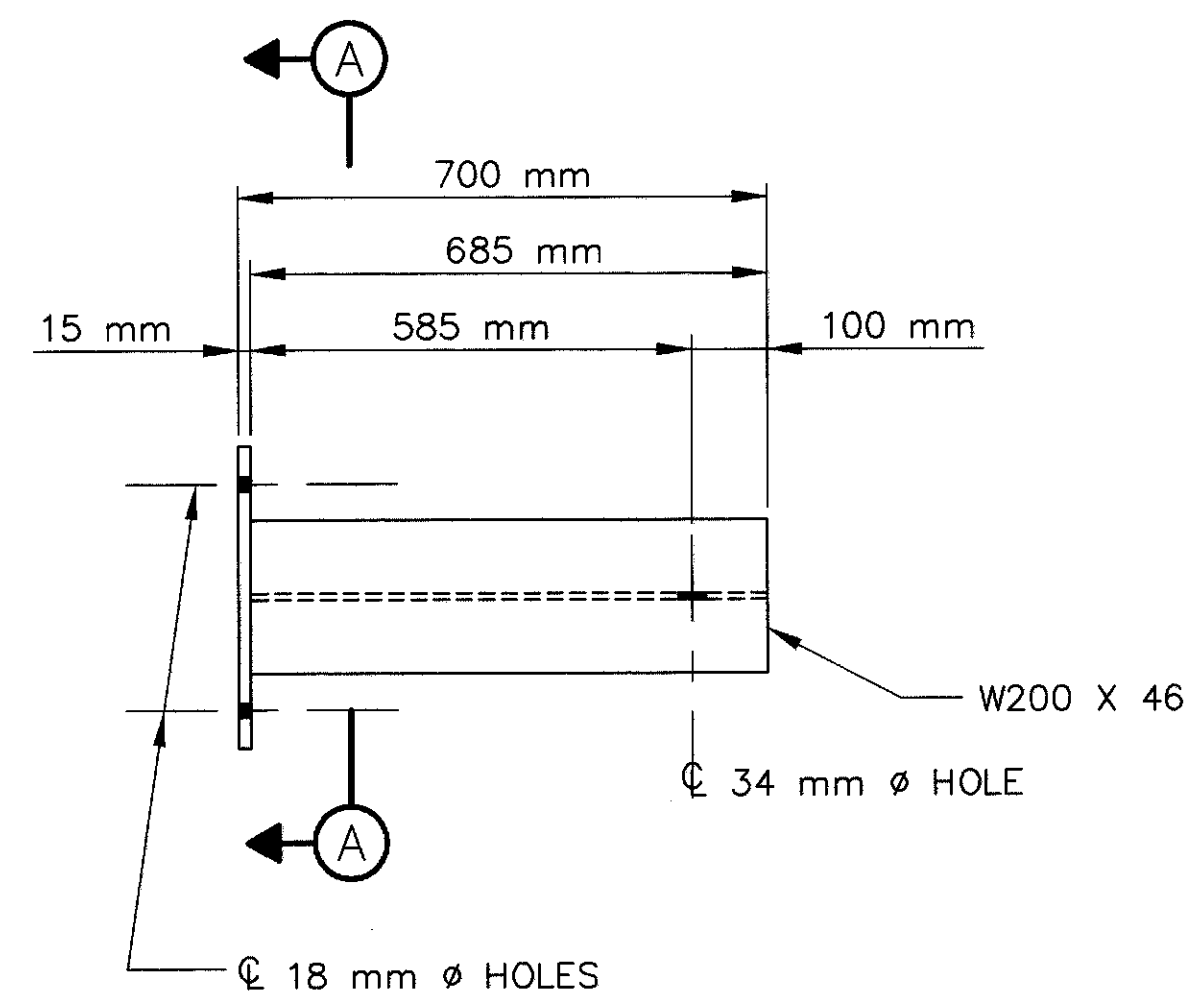
DATE 12/97
REVIEWED TAB
DRAWN TES
DESIGNED LPC
CHECKED ROM



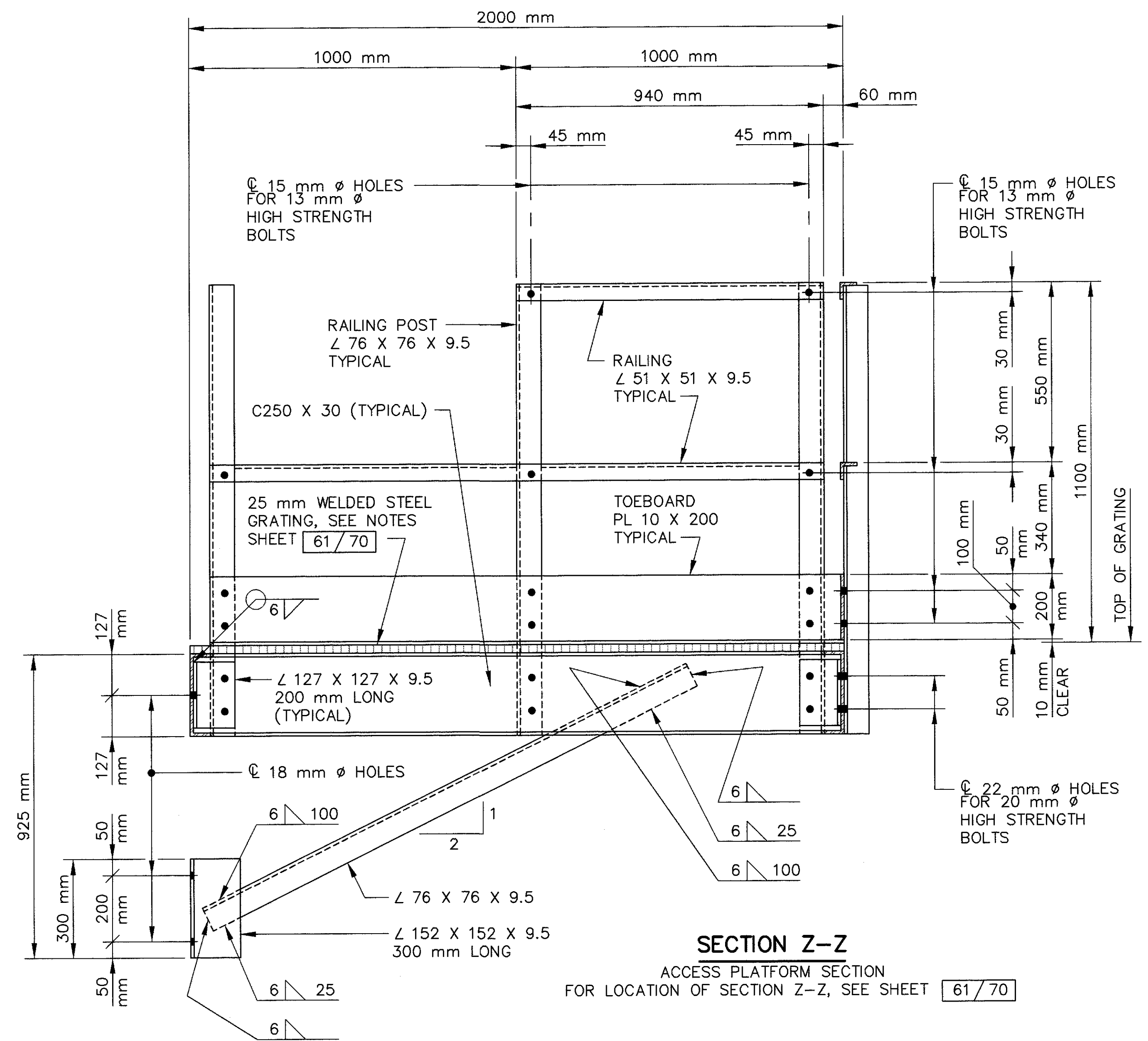
HANGER BRACKET 'A' AND 'B' DETAIL



VIEW A-A



HANGER BRACKET 'C' DETAIL



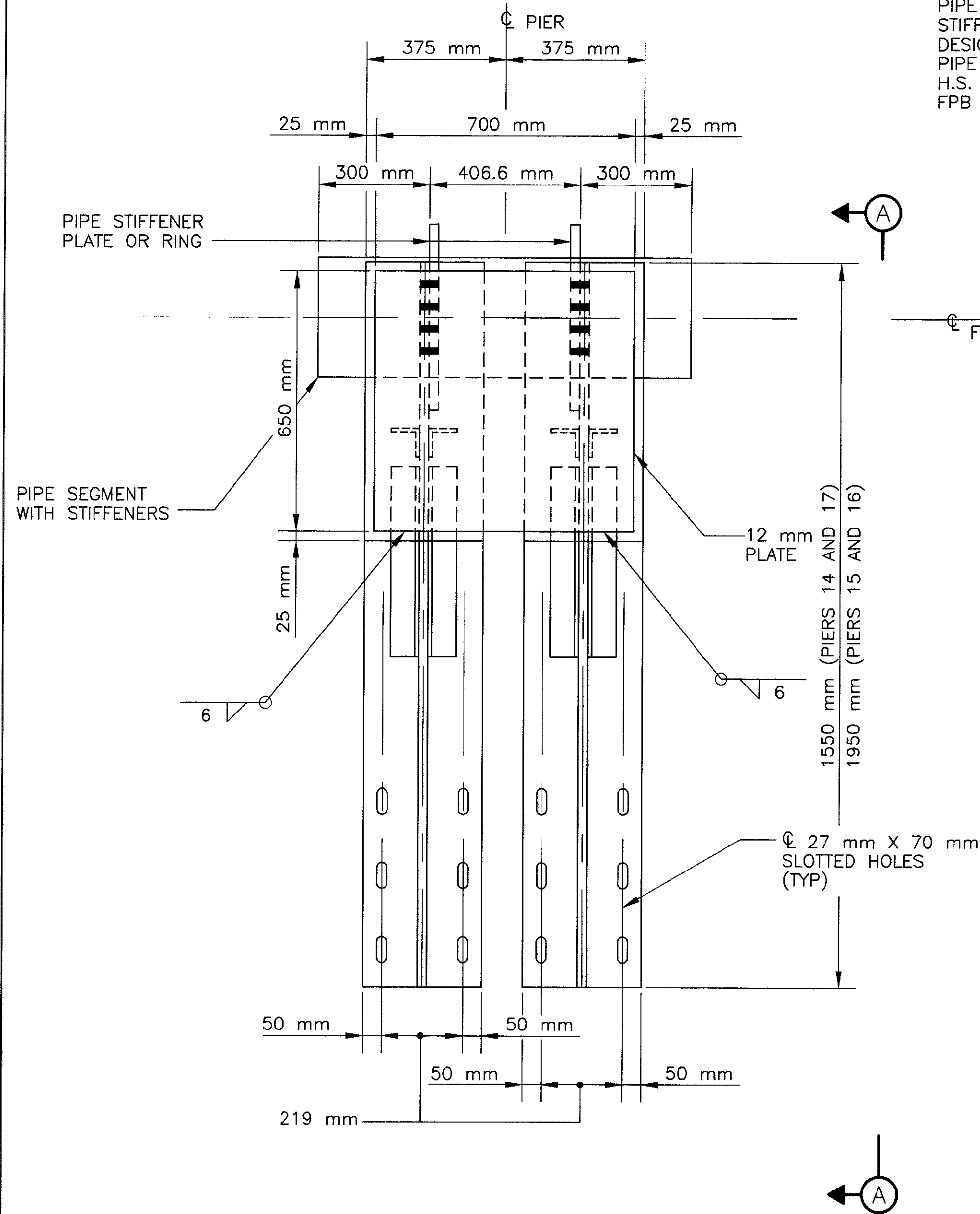
SECTION Z-Z
ACCESS PLATFORM SECTION
FOR LOCATION OF SECTION Z-Z, SEE SHEET 61/70

NOTES:

HANGER BRACKETS 'A', 'B', 'C', AND THE ACCESS PLATFORM SHALL BE PAID FOR UNDER ITEM 863 - STRUCTURAL STEEL, MISCELLANEOUS: FORCE MAIN BRACKETS. REFER TO STRUCTURAL GENERAL NOTES, SHEETS 4/70 THROUGH SHEET 8/70



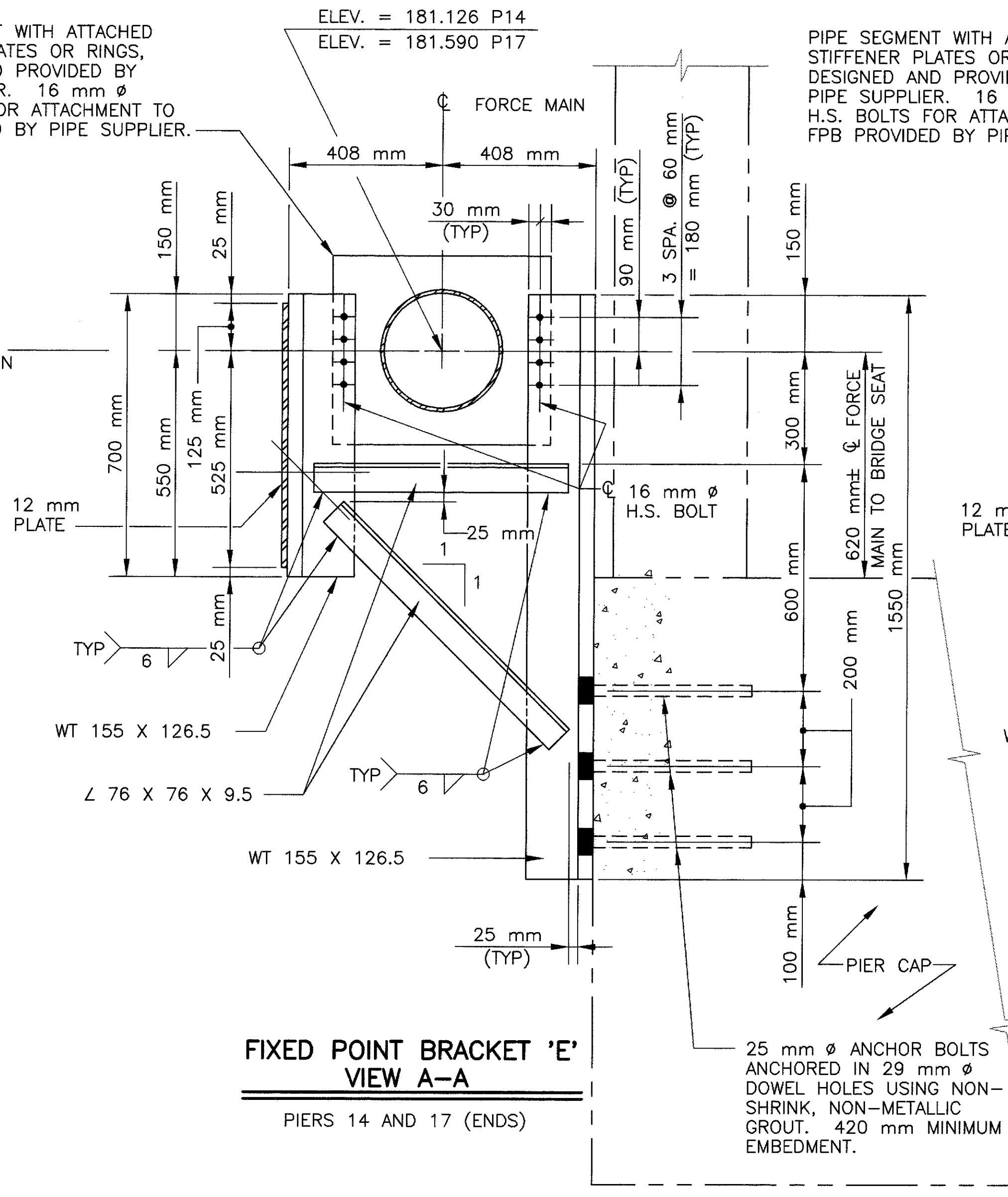
BRIDGE NUMBER ERI-6-28839
OVER HURON RIVER



FIXED POINT BRACKET 'E' AND 'F' ELEVATION

PIER 14, 15, 16 AND 17 (ENDS)

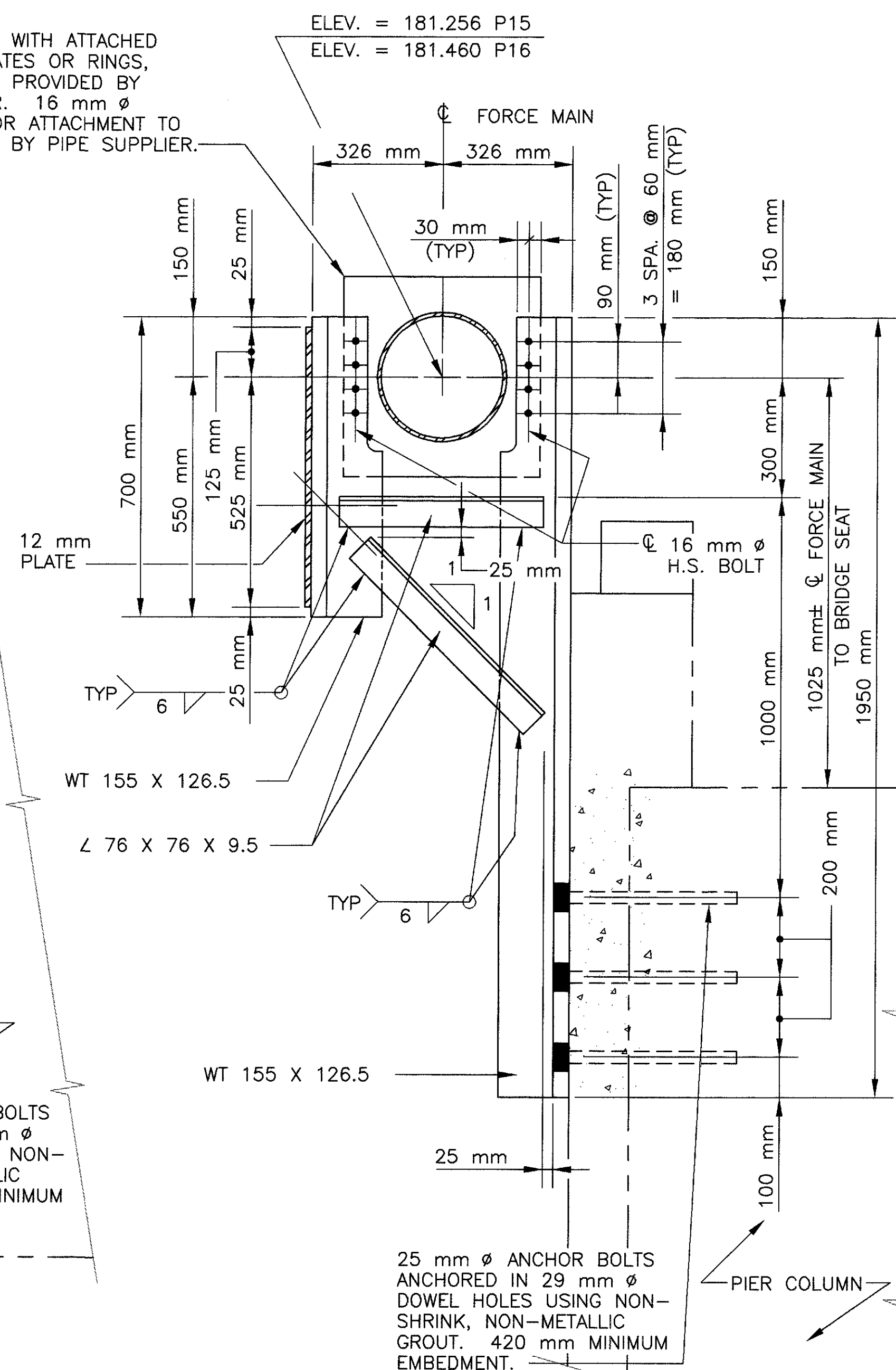
PIPE SEGMENT WITH ATTACHED STIFFENER PLATES OR RINGS, DESIGNED AND PROVIDED BY PIPE SUPPLIER. 16 mm Ø H.S. BOLTS FOR ATTACHMENT TO FPB PROVIDED BY PIPE SUPPLIER.



FIXED POINT BRACKET 'E' VIEW A-A

PIERS 14 AND 17 (ENDS)

PIPE SEGMENT WITH ATTACHED STIFFENER PLATES OR RINGS, DESIGNED AND PROVIDED BY PIPE SUPPLIER. 16 mm Ø H.S. BOLTS FOR ATTACHMENT TO FPB PROVIDED BY PIPE SUPPLIER.



FIXED POINT BRACKET 'F' VIEW A-A

PIERS 15 AND 16 (ENDS)

NOTES:

REFER TO SHEET 59/70 FOR BRACKET LOCATIONS.

THIS WORK SHALL BE PAID FOR UNDER ITEM 863-STRUCTURAL STEEL, MISC.: FORCE MAIN BRACKETS.

REFER TO SHEET 7/70 FOR SPECIFICATIONS GOVERNING THIS WORK.

CONDUIT JACKET AND INSULATION NOT SHOWN FOR CLARITY.

ALL ANGLES L76 X 76 X 9.5.
ALL TEES WT155 X 126.5

FORCE MAIN RELOCATION DETAILS

BRIDGE NUMBER ERI-6-28839
OVER HURON RIVER

ERI-6-28.839

65/70

87
92

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4401 ROCKSIDE RD. CLEVELAND, OHIO 44131

DESIGNED LPC
CHECKED ROM
DRAWN TES
REVIEWED TAB
DATE 12/97
STRUCTURE FILE NUMBER 2201984

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PLOT SCALE 1:1

ITEM SPECIAL – 305 mm RELOCATED SANITARY SEWAGE FORCE MAIN:

SCOPE OF WORK:

THE WORK CONTEMPLATED UNDER THIS ITEM COMPRISES THE REMOVAL AND DISPOSAL OF A PORTION OF THE EXISTING 304.8 mm I.D. SANITARY SEWAGE FORCE MAIN, INCLUDING ALL APPURTENANCES AND THE INSTALLATION OF A NEW RELOCATED 304.8 mm I.D. SECTION OF FORCE MAIN, INCLUDING ALL APPURTENANCES, AS SHOWN IN THESE CONTRACT PLANS FOR BRIDGE NUMBER ERI-6-28839 OVER THE HURON RIVER.

GENERAL NOTES:

AFTER AWARD OF CONTRACT, THE CONTRACTOR THROUGH THE PROJECT ENGINEER SHALL SUBMIT TO THE ERIE COUNTY SANITARY ENGINEER A CONSTRUCTION SCHEDULE RELATING TO THE SANITARY SEWAGE FORCE MAIN WORK. THE LENGTH OF TIME FOR AND THE STARTING DATE OF THE SUSPENSION OF SERVICE FOR THE SANITARY SEWAGE FORCE MAIN SHALL BE COORDINATED WITH THE ERIE COUNTY SANITARY ENGINEER WHO SHALL BE RESPONSIBLE FOR TURNING OFF/ON THE VALVES. THE MAXIMUM DURATION FOR A SANITARY FORCE MAIN OUTAGE (TIE-IN) SHALL BE 4 HOURS AND SHALL ONLY OCCUR BETWEEN 10:00 PM AND 4:00 AM IN JULY OR AUGUST.

THE CONTRACTOR SHALL NOTIFY THE ERIE COUNTY SANITARY ENGINEERS OFFICE THREE (3) WEEKS PRIOR TO STARTING ANY WORK ON THE REMOVAL OF A PORTION OF THE EXISTING SANITARY SEWAGE FORCE MAIN.

THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN PERFORMING ANY WORK IN THE AREA OF THE EXISTING FORCE MAIN. ANY DAMAGE TO PORTIONS OF THE EXISTING FORCE MAIN TO REMAIN SHALL BE REPAIRED OR REPLACED AT THE EXPENSE OF THE CONTRACTOR.

DEFINITIONS:

WHENEVER IN THESE SPECIFICATIONS OR IN OTHER CONTRACT DOCUMENTS THE FOLLOWING TERMS OR PRONOUNS IN PLACE OF THEM ARE USED, THE INTENT AND MEANING SHALL BE INTERPRETED AS FOLLOWS:

”THE STATE”

THE STATE IS THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION ACTING THROUGH ITS AUTHORIZED REPRESENTATIVE.

”ENGINEER”

THE ENGINEER IS DISTRICT DEPUTY DIRECTOR OR DISTRICT ENGINEER, THE DISTRICT CONSTRUCTION ENGINEER OR THE DISTRICT MAINTENANCE ENGINEER OR THE PROJECT ENGINEER ASSIGNED TO ADMINISTER THE CONTRACT, OR THEIR DULY DESIGNATED DEPUTIES, AGENTS, OR REPRESENTATIVES.

”THE COUNTY”

THE COUNTY IS THE ERIE COUNTY SANITARY ENGINEER OR DULY DESIGNATED DEPUTIES, AGENTS OR REPRESENTATIVES.

STATUS OF COUNTY INSPECTORS:

INSPECTORS AS DESIGNATED BY THE ERIE COUNTY SANITARY ENGINEER ARE AUTHORIZED TO INSPECT ALL WORK DONE AND MATERIALS FURNISHED. SUCH INSPECTION MAY EXTEND TO ALL OR ANY PART OF THE FORCE MAIN, AND TO THE PREPARATION OR MANUFACTURE OF THE MATERIALS TO BE USED IN THE FORCE MAIN. THE COUNTY INSPECTOR AS DESIGNATED BY THE ERIE COUNTY SANITARY ENGINEER WILL MAKE WORK INSTRUCTIONS THROUGH THE PROJECT ENGINEER. ARRANGEMENTS FOR COUNTY INSPECTORS ARE TO BE MADE BY NOTIFYING THE ERIE COUNTY SANITARY ENGINEER, WITHIN THE TIME SPECIFIED. NO WORK SHALL BE ACCEPTED UNLESS INSPECTED.

ACCESS TO WORK AND PLACE OF MANUFACTURE:

THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND ERIE COUNTY SANITARY ENGINEER AT LEAST SEVEN (7) DAYS PREVIOUS TO THE COMMENCEMENT OF THE MANUFACTURE OF ANY MATERIALS, OF THE TIME AND PLACE WHERE THE MANUFACTURE IS TO COMMENCE, IN ORDER THAT A REPRESENTATIVE OF THE ENGINEER AND ERIE COUNTY SANITARY ENGINEER MAY BE PRESENT TO INSPECT THE MANUFACTURE. THE CONTRACTOR SHALL PROVIDE, WITHOUT CHARGE OR EXPENSE TO THE STATE AND COUNTY, ALL NECESSARY ASSISTANCE TO THE ENGINEER AND COUNTY WHEN REQUIRED FOR INSPECTION OR VERIFICATION OF WORK DONE.

DIMENSIONS, DETAILED DRAWINGS AND ELEVATIONS:

FIGURED DIMENSIONS ON DRAWINGS SHALL TAKE PRECEDENCE OVER MEASUREMENTS BY SCALE, AND DETAILED DRAWINGS ARE TO TAKE PRECEDENCE OVER GENERAL DRAWINGS AND SHALL BE CONSIDERED AS EXPLANATORY OF THEM AND NOT AS INDICATING EXTRA WORK. IF, HOWEVER, ANY OF THE DETAILED DRAWINGS SHOW MORE ELABORATE OR EXPENSIVE WORK THAN IS NORMALLY SPECIFIED AND INDICATED BY THE CONTRACT DRAWINGS, NOTICE THEREOF MUST BE GIVEN TO THE ENGINEER BY THE CONTRACTOR WITHIN TEN (10) DAYS AFTER RECEIPT OF SUCH DETAILED DRAWINGS IN ORDER THAT THE DRAWINGS MAY BE AMENDED OR THE ADDITIONAL EXPENSE ON ACCOUNT OF SUCH WORK MAY BE ADJUSTED AND AUTHORIZED. IF THE ENGINEER DOES NOT RECEIVE SUCH NOTICE FROM THE CONTRACTOR WITHIN THE (10) DAYS AFTER THE DETAILED DRAWINGS HAVE BEEN RECEIVED BY HIM, IT IS HEREBY AGREED THAT THE CONTRACTOR ACCEPTS THE DRAWINGS AND WILL EXECUTE THEM WITHOUT CLAIM FOR EXTRA COMPENSATION.

ERRORS AND DISCREPANCIES:

IF THE CONTRACTOR, IN THE COURSE OF HIS WORK, FINDS ANY DISCREPANCY BETWEEN THE PLANS, DESCRIPTION AND LOCATION OF WORK AND ESTIMATE OF QUANTITIES, THE PHYSICAL CONDITION OF THE LOCALITY, OR ANY ERRORS IN PLANS OR IN THE LAYOUT AS GIVEN BY THE DRAWINGS AND INSTRUCTIONS WHICH MAKE IT IMPOSSIBLE FOR HIM TO COMPLETE THE WORK REQUIRED UNDER THE PLANS AND SPECIFICATIONS, IT SHALL BE HIS DUTY TO IMMEDIATELY INFORM THE ENGINEER IN WRITING AND THE ENGINEER SHALL VERIFY THE SAME. ANY WORK DONE AFTER SUCH DISCOVERY, UNTIL AUTHORIZED, SHALL BE DONE AT THE CONTRACTOR’S RISK.

FLOODS AND FREEZING WEATHER:

PROPER FACILITIES SHALL BE PROVIDED FOR PROTECTING THE WORK FROM DAMAGE BY FLOOD RAIN OR FROST, AND WORK DONE IN FREEZING WEATHER SHALL BE DONE IN SUCH MANNER AS THE ENGINEER MAY APPROVE. VALVES SHALL BE PROTECTED FROM FREEZING.

ADDITIONAL WORK:

ATTENTION IS CALLED TO THE FACT THAT THE WORK OF THIS CONTRACT INCLUDES CERTAIN INCIDENTAL WORK TO THE ITEMIZED REQUIREMENTS HEREOF, THOUGH NOT EXCLUSIVE AS FOLLOWS: TO PERFORM ALL INSTALLATION, COMPLETE, AND PRESSURE TEST THE INSTALLATION. THE STATE WILL MAKE NO SPECIFIC OR SEPARATE PAYMENT OR ALLOWANCE, BUT THE COST THEREFORE SHALL BE INCLUDED IN THE PRICES STIPULATED TO BE PAID FOR UNDER THE VARIOUS FORCE MAIN PAY ITEMS. TO BE PERFORMED UNDER THIS CONTRACT.

TESTING FORCE MAIN:

- (A) ALL PIPES, VALVES, FITTINGS, AND COUPLINGS, SHALL BE INSTALLED IN SUCH A MANNER AS TO LEAVE ALL JOINTS WATERTIGHT. AFTER THE PIPE IS INSTALLED, SUCH LENGTHS OF HE MAIN AS THE ENGINEER AND/OR COUNTY MAY DETERMINE, SHALL BE TESTED UNDER HYDROSTATIC PRESSURE OF NOT LESS THAN 689.5 kPa.
- (B) THE HYDROSTATIC TEST SHALL BE UNDER THE DIRECTION OF THE ERIE COUNTY SANITARY ENGINEER OR HIS DESIGNATE. THE CONTRACTOR MAY OBTAIN WATER FOR TESTING BY OBSERVING THE RULES AND REGULATIONS ENFORCED IN THE MUNICIPALITIES OR TOWNSHIPS IN WHICH THE WORK IS BEING DONE. THE COUNTY WILL FURNISH A PRESSURE GAUGE FOR MEASURING THE PRESSURE ON THE MAIN, BUT THE CONTRACTOR SHALL FURNISH A SUITABLE PUMP, PIPES, BULK HEADS, FITTINGS AND ALL APPLIANCES, LABOR, FUEL AND OTHER APPURTENANCES NECESSARY TO MAKE THESE TESTS.
- (C) THE HYDROSTATIC TEST PRESSURE SHALL BE FOR A DURATION OF A MINIMUM OF TWO (2) HOURS WITH ALL VALVES CLOSED DURING WHICH TIME THE INTERNAL PRESSURE SHALL REMAIN WITHIN 34.5 kPa OF THE SPECIFIED TEST PRESSURE. SHOULD THE TEST PRESSURE DROP MORE THAN 34.5 kPa THE CONTRACTOR SHALL RECHARGE THE MAIN TO THE SPECIFIED TEST PRESSURE AND LOCATE AND REPAIR THE LEAK AT THE SATISFACTION OF THE COUNTY. ANY DAMAGED OR DEFECTIVE PIPE, PIPE JOINTS, FITTINGS, VALVES, OR APPURTENANCES SHALL BE REPAIRED OR REPLACED WITH SOUND MATERIAL AND THE HYDROSTATIC PRESSURE TEST REPEATED.
- (D) AFTER THE MAIN HAS BEEN PRESSURE TESTED IT WILL BE DRAINED AND CONNECTED TO THE EXISTING MAIN AT TWO LOCATIONS.
- (E) IN COLD WEATHER IMMEDIATELY AFTER TESTING THE FORCE MAIN, THE CONTRACTOR SHALL OPEN ALL AIR RELIEF VALVES, BYPASSES AND DRAINS, AND PROPERLY TAKE ALL OTHER PRECAUTIONS NECESSARY TO PREVENT INJURY TO THE FORCE MAIN AND APPURTENANCES DUE TO FREEZING.
- (F) IN ORDER TO BE ABLE TO MAKE PROPER ALLOWANCE FOR LEAKAGE AT VALVES, AIR RELIEF VALVES, BYPASSES, AND DRAINS, ONLY SECTIONS OF THE FORCE MAIN TO BE TESTED SHALL HAVE SUCH VALVES, TEST PLUGS AND CAPS ACCESSIBLE.
- (G) IN TESTING THE NEW FORCE MAIN, THE CONTRACTOR SHALL NOT BE PERMITTED TO USE ANY PART OF THE EXISTING MAINS IN HIS TEST UNLESS OTHERWISE SHOWN ON THE CONTRACT DRAWINGS. THE LIMITS OF THE HYDROSTATIC TEST SHALL BE AS SHOWN ON THE PLANS. THE CONTRACTOR SHALL PROVIDE BLIND FLANGES, PLUGS OR CAPS, DEPENDING ON DESIGN, TO THE TESTED LENGTH OF THE PROPOSED MAIN SO THAT IT WILL BE COMPLETELY INDEPENDENT OF THE SAID EXISTING MAINS. PROPER RESTRAINT OF ALL BLIND FLANGES, PLUGS OR CAPS TO PREVENT BLOWOFF SHALL BE PROVIDED. NO EXTRA PAYMENT WILL BE MADE AND THE ENTIRE COST SHALL BE DEEMED TO BE INCLUDED IN THE BID PRICE.

PIPE:

THE PIPE SHALL BE 323.8 mm O.D. AND 304.8 mm I.D. FABRICATED STEEL PIPE WITH A BOLTED MECHANICAL COUPLING SYSTEM AT EACH JOINT AS SHOWN ON THE DRAWINGS. THE INSTALLATION LENGTH OF PIPE SHALL NOT EXCEED 13.7 m FROM JOINT TO JOINT. ALL STEEL PIPE AND BENDS SHALL BE FABRICATED IN ACCORDANCE WITH AWWA C200-86 AND AWWA C208-83. STEEL PIPE AND BENDS SHALL BE FABRICATED FROM STEEL MEETING THE REQUIREMENTS OF ASTM A139-89 GRADE B. EACH LENGTH OF STEEL PIPE SHALL BE HYDROSTATICALLY TESTED BY THE MANUFACTURER TO PRODUCE A PIPE WALL STRESS OF NOT LESS THAN 60% OF THE MINIMUM YIELD POINT OF THE STEEL, ASTM A139-89b. THE RECORDS OF THESE TESTS SHALL BE SUPPLIED TO THE ENGINEER BY THE CONTRACTOR.

adache-cinni-lynn associates CONSULTING ENGINEERS 4401 ROCKSIDE RD. CLEVELAND, OHIO 44131	
DATE 12/97	REVIEWED TAB STRUCTURE FILE NUMBER 2201984
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FORCE MAIN RELOCATION NOTES BRIDGE NUMBER ERI-6-28839 OVER HURON RIVER	
ERI-6-28.839	
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PIPE JOINTS:

ALL PIPE FIELD JOINTS SHALL HAVE A MECHANICAL COUPLING SYSTEM OF A TYPE MANUFACTURED BY BRICO INDUSTRIES INC., FIXED (F) X FIXED (F) DEPEND-O-LOK RESTRAINED COUPLINGS. WHERE EXPANSION COUPLINGS ARE INDICATED ON THE PLANS THEY SHALL BE OF A TYPE MANUFACTURED BY BRICO INDUSTRIES, DEPEND-O-LOK FIXED (F) X EXPANSION (E) COUPLING. SIMILAR JOINTS AS MANUFACTURED BY DRESSER MANUFACTURING, ROCKWELL INTERNATIONAL OR OTHER APPROVED EQUAL MAY BE SUBSTITUTED FOR THE SPECIFIED JOINTS AT NO ADDITIONAL COST TO THE STATE.

BRICO INDUSTRIES, INC.
P.O. BOX 48776
ATLANTA, GA. 30362
(800)841-6624

DRESSER MANUFACTURING
41 FISHER AVE.
BRADFORD, PA. 16701
(814)368-3131

ROCKWELL INTERNATIONAL
400 NORTH LEXINGTON AVE.
PITTSBURGH, PA. 15208
(412)247-3214

VALVES:

THE *COMBINATION* VALVE AS REQUIRED IN THE PLANS SHALL BE OF A TYPE MANUFACTURED BY VAL-MATIC VALVE AND MANUFACTURING CORP. THE VALVE SHALL BE FURNISHED WITH BACK WASH ACCESSORIES. THE MODEL SIZE OF THE VALVE SHALL BE SELECTED BY THE MANUFACTURER BASED UPON FLOW AND PRESSURE REQUIREMENTS SUPPLIED BY THE COUNTY. SIMILAR VALVES AS MANUFACTURED BY G.A. INDUSTRIES, INC., CLA-VAL COMPANY OR OTHER APPROVED EQUAL MAY BE SUBSTITUTED FOR THE SPECIFIED VALVE AT NO ADDITIONAL COST TO THE STATE. THIS VALVE HAS BEEN SIZED BASED UPON FLOW RATES PROVIDED BY THE ERIE COUNTY SANITARY ENGINEER.

VAL-MATIC VALVE AND MANUFACTURING CORP.
405 RIVERSIDE DRIVE
ELMHURST, IL. 60126
(708) 941-7600

G.A. INDUSTRIES, INC.
9025 MARSHALL ROAD
CRANBERRY TWP., PA. 16066
(412) 776-1020

CLA-VAL COMPANY
P.O. BOX 1325
NEWPORT BEACH, CA. 92659
(714) 722-4800

THE GLOBE SURGE RELIEF VALVE AS REQUIRED IN THE PLANS SHALL BE OF A TYPE MANUFACTURED BY APCO VALVE AND PRIMER CORPORATION. THE VALVE SHALL BE FURNISHED WITH ALL NECESSARY APPURTENANCES AND ACCESSORIES, INCLUDING FREEZE-PROOF OIL, TO COMPLETE THE INSTALLATION. THE MODEL SIZE OF THE VALVE SHALL SELECTED BY THE MANUFACTURER BASED UPON FLOW AND PRESSURE REQUIREMENTS SUPPLIED BY THE COUNTY. THIS VALVE HAS BEEN SIZED BASED UPON FLOW RATES PROVIDED BY THE ERIE COUNTY SANITARY ENGINEER.

APCO VALVE AND PRIMER COMPANY
1420 S. WRIGHT BOULEVARD
SCHAUMBURG, IL. 60193-4599
(708) 529-9000

PROTECTIVE ENCLOSURE:

THE *COMBINATION* VALVE PROTECTIVE ENCLOSURE SHALL BE FABRICATED *AS NOTED ON SH. 83A*. THE ENCLOSURE SHALL BE FABRICATED TO APPROXIMATELY THE SAME DIMENSIONS AS SHOWN IN THE PLANS. THESE DIMENSIONS MUST BE CLOSLEY ADHERED TO DUE TO SPACE LIMITATIONS. MINOR ADJUSTMENTS MAY BE MADE AS NECESSARY FOR THE SPECIFIC VALVES AND FITTINGS PROVIDED. CONSTRUCTION OF THE ENCLOSURE MAY BE EITHER WELDED OR BOLTED. A LOCKABLE, HINGED DOOR SHALL BE PROVIDED ON THE ENCLOSURE TO ALLOW ACCESS TO THE VALVE.

HANGER ROD AND PIPE YOKE ASSEMBLY:

ALL HANGER RODS, ADJUSTABLE STEEL YOKE PIPE ROLLS AND PIPE SADDLES, WHERE INDICATED ON THE PLANS , SHALL BE OF A TYPE MANUFACTURED BY THE GRINNELL CORPORATION, B-LINE SYSTEMS, INC. OR AN APPROVED EQUAL.

GRINNELL CORPORATION
3 TYCO PARK
EXETER, NH. 03833
(603) 778-9200

B-LINE SYSTEMS, INC.
509 WEST MONROE STREET
HIGHLAND, IL. 62249
(618) 654-2184

PIPE COVER:

- (A) PIPE INSULATION SHALL BE A POLYURETHANE FOAM INSULATION NOT LESS THAN 88.9 mm THICK WHICH IS FACTORY INSTALLED.

IN PLACE DENSITY (CORE) = 30.5 TO 33.5 KILOGRAM / CUBIC METER
K FACTOR (INITIAL) = 0.016 [JOULE/(SQ. METER * SECOND)]/[°C/METER]
CLOSED CELL CONTENT = 90%
MVT, PERM-CLU (55.5 °C, WET CUP) = 81.3 MILLIMETER
COMPRESSIVE STRENGTH AT YIELD = 207 KILOPASCALS

- (B) THE INSULATION COVER SHALL BE A 1 mm THICK GALVANIZED STEEL CONDUIT BORED TO CONFORM TO ASTM A525, 0.116 KILOGRAMS PER METER EACH SIDE.

- (C) IN LIEU OF A 1 mm THICK GALVANIZED STEEL CONDUIT THE CONTRACTOR MAY FURNISH A FACTORY INSTALLED POLYURETHANE FOAM INSULATED PIPE WITH A FIBERGLASS REINFORCED POLYESTER OUTER JACKET.

** SEE NOTE 1 ON THIS SHEET.*

PAINT:

THE STEEL PIPE FORCE MAIN, BENDS AND COUPLINGS SHALL BE COATED ON THE INTERIOR AND EXTERIOR BY THE FABRICATOR WITH A ONE COAT APPLICATION OF COAL TAR-EPOXY HIGH BUILD COATING NOT LESS THAN 17 DRY MILS OR MORE THAN 20 DRY MILS.

SUBSEQUENT TO ASSEMBLY OF THE PIPE SYSTEM IN THE FIELD THE CONTRACTOR WILL TOUCH UP ANY IMPERFECTIONS ON THE EXTERIOR OF THE SYSTEM WITH THE SAME PAINT APPLIED BY THE FABRICATOR IF AND WHERE REQUIRED. PRIOR TO APPLICATION OF PAINT THE STEEL SHALL BE CLEANED TO NEAR WHITE BLAST CLEANING SSPC-SP10 OR PICKLING SSPC-SP8.

TRANSPORTATION AND DELIVERY:

- (A) THE CONTRACTOR SHALL TRANSPORT, DELIVER AND DISTRIBUTE ALONG THE LINE OF THE WORK, THE PIPE, SPECIALS AND APPURTENANCES.
- (B) PIPE SHALL BE LOADED FOR SHIPMENT UPON SUITABLE CARS OR TRUCKS WHICH SHALL BE PROVIDED WITH WOODEN SKIDS. IN LOADING AND UNLOADING THE PIPE MORE THAN ORDINARY CARE MUST BE TAKEN TO PREVENT ANY INJURY TO STEEL PIPE ENDS AND PROTUBERANT STEEL CONNECTIONS. SUCH WORK MUST BE DONE SLOWLY WITH THE PIPE AT ALL TIMES UNDER PERFECT CONTROL, AND UNDER NO CONDITION SHALL THE PIPE BE DROPPED.
- (C) IN DISTRIBUTING THE PIPE IN THE FIELD, EACH PIPE MUST BE PLACED AS NEARLY AS POSSIBLE TO THE POINT WHERE IT IS TO BE INSTALLED, AND FACING IN THE PROPER DIRECTION. SUITABLE SKIDS OR BLOCKS MUST ALSO BE LEFT UNDER EACH PIPE, AND THE PIPE SECURELY WEDGED IN PLACED TO PREVENT ITS BEING MOVED UNTIL REQUIRED. A FABRIC SLING SHALL BE USED FOR LIFTING PIPE. NO IRON CHAINS SHALL BE USED. PIPE WHICH HAS BEEN IMPROPERLY DISTRIBUTED AND WHICH MUST BE MOVED LONGITUDINALLY ALONG THE LOCATION OF PLACEMENT SHALL BE RELOADED ON A TRUCK, OR LIFTED AND SWUNG BY A CRANE OR MOVED BY SUCH MEANS AS MAY BE SATISFACTORY TO THE ENGINEER.

EXPERIENCE QUALIFICATIONS:

CONTRACTOR WILL BE REQUIRED TO SHOW TO THE SATISFACTION OF THE ENGINEER THAT THE TYPE AND SIZE OF PIPE AND FITTINGS HE PROPOSES TO FURNISH, WILL BE MADE BY A MANUFACTURER WHOSE PIPE HAS BEEN SUCCESSFULLY USED FOR LIKE WORK OUTSIDE THE BUILDER'S WORKS FOR A PERIOD OF NOT LESS THAN FIVE YEARS.

COMBINATION VALVE INSTALLATION:

THE CONTRACTOR SHALL FURNISH ALL MATERIALS FOR AND SHALL PROPERLY SET IN PLACE AND CONNECT AT THE LOCATION SHOWN ON THE DRAWINGS OR AS DIRECTED BY THE ENGINEER, THE *COMBINATION* VALVE AND GLOBE SURGE RELIEF VALVE SPECIFIED OR ORDERED, ALL AS REQUIRED FOR THE COMPLETION OF THE WORK INCLUDED UNDER THIS CONTRACT. THIS INCLUDES THE PROTECTIVE ENCLOSURE, INSULATION, AND ACCESS PLATFORM.

INSPECTION:

THE ENGINEER OR HIS AUTHORIZED DESIGNATE WILL INSPECT THE MATERIAL AND WORK DONE, AS THE INTEREST OF THE COUNTY OR STATE MAY REQUIRE. HE SHALL HAVE UNRESTRICTED ACCESS TO THE CONTRACTOR'S PLANT, AND TO ALL PARTS OF THE WORK; AND OTHER PLACES AT WHICH THE PREPARATION OF THE MATERIAL AND THE CONSTRUCTION OF THE DIFFERENT PARTS OF THE WORK TO BE DONE UNDER THESE SPECIFICATIONS ARE CARRIED ON, AND HE SHALL RECEIVE ALL FACILITIES AND ASSISTANCE TO CARRY OUT HIS WORK OF INSPECTION AND TESTING IN A MANNER SATISFACTORY TO THE ENGINEER. SUCH INSPECTION SHALL NOT RELIEVE THE CONTRACTOR FROM ANY OBLIGATION TO PERFORM SAID WORK STRICTLY IN ACCORDANCE WITH THE SPECIFICATIONS, OR ANY MODIFICATIONS THEREOF AS HEREIN PROVIDED, AND WORK NOT SO CONSTRUCTED SHALL BE REMOVED AND MADE GOOD BY THE CONTRACTOR AT HIS OWN EXPENSE.

DRAWINGS:

- (A) THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL A MINIMUM OF FIVE (5) SETS OF PRINTS OF ALL SHOP DRAWINGS GENERATED BY THE PIPE OR STRUCTURAL FABRICATOR OF ALL PIPE, FITTINGS AND MISCELLANEOUS OR SPECIAL DETAILS OF PIPE AND FITTING JOINTS INCLUDING LINE AND ASSEMBLY LAYOUT, COUPLING DETAILS, PIPE JOINT RENDERINGS, EXPANSION JOINTS, WELDING DETAILS, FACTORY APPLIED INSULATION, FIELD APPLIED INSULATION, JACKET, SLEEVE PACKING DETAILS, PIPE SUPPORT DETAILS INCLUDING CLAMP, SHIMS AND PLATES, AIR VACUUM RELIEF VALVE, PROTECTIVE ENCLOSURE, AND ANY OTHER PIPE APPURTENANCES. THE LINE AND ASSEMBLY LAYOUT SHALL INCLUDE ALL PIPE AND FITTING DIMENSIONS, LOCATIONS OF ALL PIPE JOINT AND TYPE, ALL PIPE SUPPORTS, ELEVATIONS OF THE PIPE AT SUPPORTS, EXPANSION JOINTS AND LOCATION OF ANY OTHER PIPE APPURTENANCES. NO WORK SHALL BE DONE IN THE SHOP UNTIL AFTER THE DRAWINGS HAVE BEEN APPROVED.

- (B) THE APPROVAL OF THE DRAWINGS BY THE ENGINEER SHALL NOT RELIEVE THE CONTRACTOR OF ANY OF HIS OBLIGATIONS IN CONNECTION WITH THIS CONTRACT.

MEASUREMENT:

THE NUMBER OF LINEAR METERS OF STEEL PIPE TO BE PAID FOR SHALL BE THE ACTUAL NUMBER OF LINEAR METERS FURNISHED AND PLACED IN ACCORDANCE WITH THESE SPECIFICATIONS AS MEASURED ALONG THE AXIS OF THE PIPING.

PAYMENT:

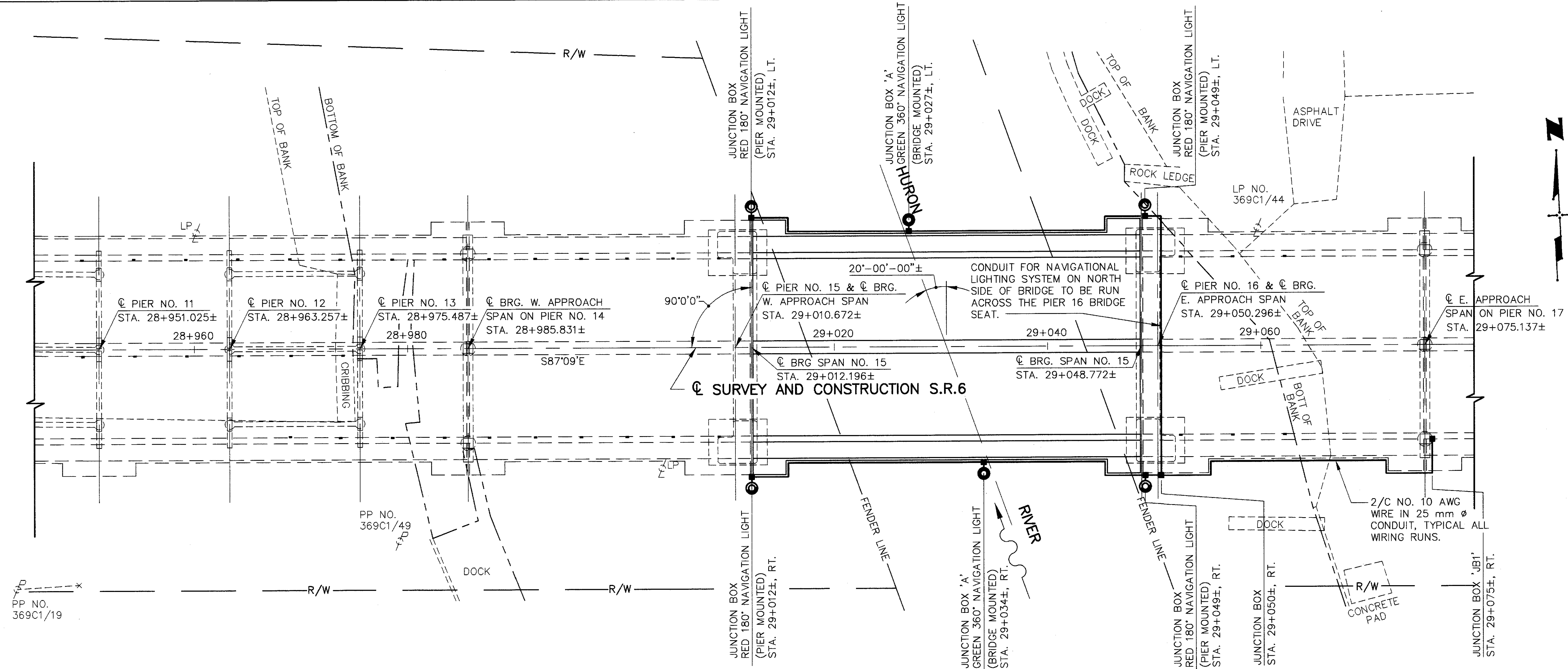
THE LENGTH MEASURED AS PROVIDED ABOVE SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER METER FOR ITEM SPECIAL - 305 mm RELOCATED SANITARY SEWAGE FORCE MAIN. THIS PRICE AND PAYMENT SHALL CONSTITUTE FULL COMPENSATION FOR FURNISHING ALL MATERIALS, HAULING, PLACING, DEMOLITION OF EXISTING PIPE TO BE REMOVED, RECONNECTION TO EXISTING PIPE AT TWO LOCATIONS, ALL JOINT COUPLINGS AND EXPANSION JOINTS, PIPE FITTINGS, PIPE INSULATION AND COVER, HANGER ROD AND PIPE YOKE ASSEMBLIES, TESTING, *COMBINATION* VALVE, GLOBE SURGE RELIEF VALVE PROTECTIVE, ENCLOSURE, AND FOR ALL LABOR, EQUIPMENT, TOOLS, AND INCIDENTALS NECESSARY TO COMPLETE THIS ITEM.

NOTE:

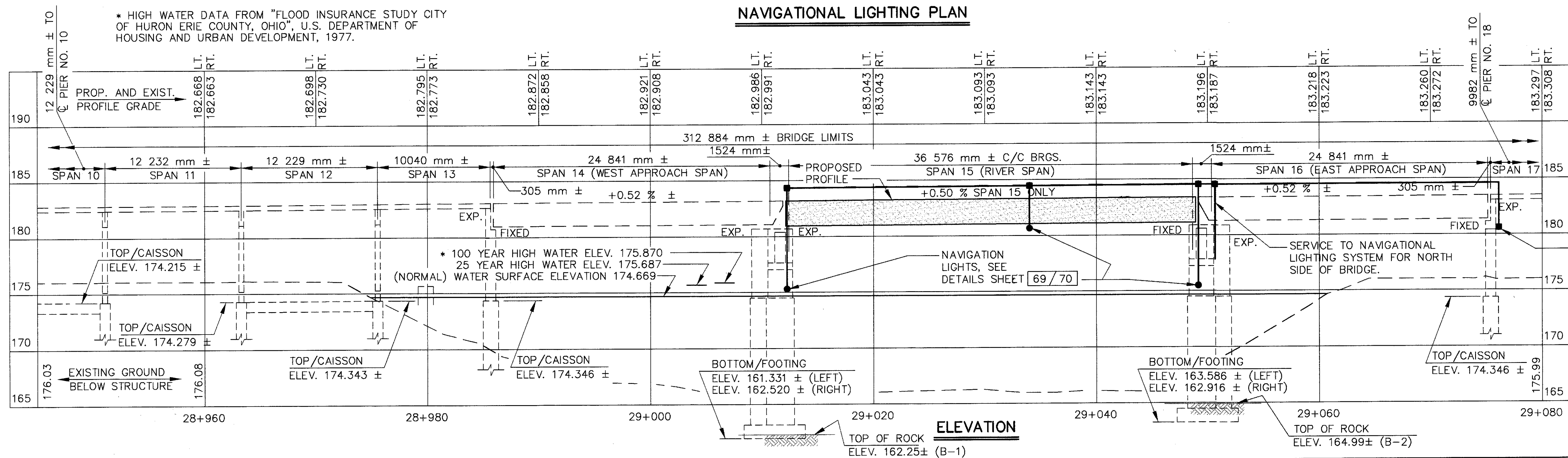
1. THE POLY PIPE COVER IS A STANDARD MATERIAL COMMONLY SUPPLIED IN THE INDUSTRY. IT'S BASICALLY A STANDARD 18" PIPE WITH AN INSULATED JACKET CONVERTED TO METRIC.

67 / 70 89 92	ERI-6-28.839	FORCE MAIN RELOCATION NOTES BRIDGE NUMBER ERI-6-28839 OVER HURON RIVER	DESIGNED	DRAWN	REVIEWED	DATE	adache-ciuni-lynn associates CONSULTING ENGINEERS 4401 ROCKSIDE RD. CLEVELAND, OHIO 44131	
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NAVIGATIONAL LIGHTING PLAN



NAVIGATIONAL LIGHTING PLAN
BRIDGE NUMBER ERI-6-28839
OVER HURON RIVER

ERI-6-28.839

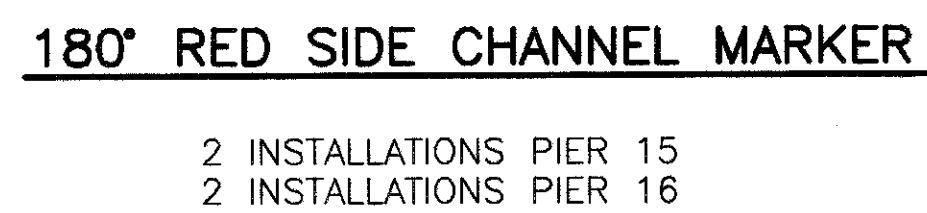
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adache-cuni-lynn
associates
CONSULTING ENGINEERS
4401 ROCKSIDE RD. CLEVELAND, OHIO 44131

DATE 12/97
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REFER TO SHEET 68 / 70 FOR MARKER LIGHT LOCATIONS.

REFER TO SHEET 70 / 70 FOR SPECIFICATIONS GOVERNING THIS WORK.



BRACKET DETAILS

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NAVIGATIONAL LIGHTING – GENERAL

THE EXISTING NAVIGATIONAL LIGHTING SYSTEM ON BRIDGE NUMBER ERI-6-28839 OVER THE HURON RIVER SHALL BE REMOVED, AND A NEW NAVIGATIONAL LIGHTING SYSTEM INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THESE SPECIFICATIONS AND THE DETAILS OF THE PLANS. IN GENERAL, THE NEW SYSTEM WILL CONSIST OF RED SIDE CHANNEL MARKER LIGHTS LOCATED ON THE NORTH AND SOUTH COLUMNS OF PIERS 15 AND 16; GREEN CENTER CHANNEL MARKER LIGHTS LOCATED ON THE NORTH AND SOUTH FASCIA OF SPAN 15; AND THE NECESSARY CONDUIT – ENCASED SERVICE LINES TO POWER THE LIGHTS. THE NEW SERVICE LINES SHALL BE CONNECTED TO THE EXISTING POWER SUPPLY LOCATED ON THE SOUTH COLUMN OF PIER 17.

PRIMARY ELEMENTS OF THE LIGHTING SYSTEM SHALL CONSIST OF COMPONENTS MANUFACTURED BY THE APPLETON ELECTRIC COMPANY, TIDELAND SIGNAL CORPORATION, B&B ELECTROMATIC CORPORATION, AUTOMATIC POWER INC. NAVIGATIONAL AIDS OR APPROVED EQUALS. CONDUIT- ENCASED SERVICES AND THE CONNECTION TO THE EXISTING POWER SUPPLY SHALL BE CONSTRUCTED OF INDIVIDUAL ELEMENTS (CONDUIT, CONDUIT BENDS, CONDUIT ANCHORS, WIRE, PULL BOXES, JUNCTION BOXES, MISCELLANEOUS DETAIL ITEMS, ETC.) WHICH CONFORM TO CURRENT INDUSTRY STANDARDS AND THE REQUIREMENTS OF CMS ITEM 625. IN ADDITION TO THE ABOVE REQUIREMENTS, THE COMPLETE INSTALLATION SHALL BE SUBJECT TO THE APPROVAL AND ACCEPTANCE OF THE UNITED STATES COAST GUARD.

ITEM 202 – REMOVAL MISC.: REMOVAL OF EXISTING NAVIGATIONAL LIGHTING SYSTEM

THE EXISTING NAVIGATIONAL LIGHTING SYSTEM SHALL BE REMOVED IN ITS ENTIRETY TO THE EXISTING POWER SUPPLY ON PIER 16. REMOVAL OPERATIONS SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE PROVISIONS OF CMS ITEMS 202 AND 625. ALL NAVIGATIONAL LIGHTING ASSEMBLIES AND/OR FIXTURES REMOVED SHALL REMAIN THE PROPERTY OF THE STATE OF OHIO. THE CONTRACTOR SHALL DELIVER THESE ITEMS TO THE PROJECT ENGINEER FOR STORAGE OR DISPOSAL. THE UNITED STATES COAST GUARD, NINTH DISTRICT, CLEVELAND, OHIO (216) 902-6086 SHALL BE CONTACTED A MINIMUM OF TWO WEEKS PRIOR TO COMMENCING WITH THIS REMOVAL OPERATION. TEMPORARY NAVIGATIONAL AIDS REQUIRED FOR THE MAINTENANCE OF BOAT TRAFFIC SHALL BE IN PLACE AND OPERATIONAL PRIOR TO COMMENCING WITH THIS REMOVAL OPERATION.

PAYMENT FOR THIS WORK SHALL BE MADE AT THE CONTRACT LUMP SUM PRICE BID FOR ITEM 202 – REMOVAL MISC.: REMOVAL OF EXISTING NAVIGATIONAL LIGHTING SYSTEM, WHICH PRICE SHALL CONSTITUTE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO PERFORM THIS WORK IN ACCORDANCE WITH THESE SPECIFICATIONS.

ITEM 625 – LIGHTING MISC.: SERVICE TO NAVIGATION LIGHTING, AS PER PLAN:

THIS ITEM OF WORK SHALL CONSIST OF PROVIDING ELECTRICAL SERVICE FROM THE EXISTING POWER SUPPLY ON PIER 16 TO THE VARIOUS NAVIGATIONAL LIGHTING ASSEMBLIES. THE LIMITS OF THIS WORK EXTEND FROM THE POWER SUPPLY TO JUNCTION BOX "A" FOR THE CENTER CHANNEL MARKERS, AND TO OUTLET BOX "B" FOR THE SIDE CHANNEL MARKERS. ALL CONDUIT, CONDUIT BENDS, CONDUIT ANCHORS, WIRE, PULL BOXES, JUNCTION BOXES AND MISCELLANEOUS INCIDENTAL ITEMS SHALL BE FURNISHED AND INSTALLED. EXPANSION PROVISIONS FOR THE CONDUIT RUNS SHALL BE MADE AS NECESSARY AT THE PIER 15, 16 AND 17 EXPANSION JOINTS.

A SCHEMATIC PLAN OF THE DESIRED SERVICE ROUTING IS SHOWN ON SHEET 68/70. THE COMPLETED INSTALLATION SHALL BE VAPOR-TIGHT. JUNCTION BOXES SHALL BE PROVIDED AT A MAXIMUM SPACING OF 15 METERS. THE MAXIMUM TOTAL BEND IN A CONDUIT RUN BETWEEN PULL BOXES SHALL NOT EXCEED 270°. ALL ELEMENTS COMPRISING THE LIGHTING SERVICE AND THE COMPLETED INSTALLATION SHALL COMPLY WITH APPLICABLE PROVISIONS OF CMS ITEM 625 AND UNITED STATES COAST GUARD REGULATIONS.

PAYMENT FOR THIS WORK SHALL BE MADE AT THE CONTRACT LUMP SUM PRICE BID FOR ITEM 625 – LIGHTING MISC.: SERVICE TO NAVIGATION LIGHTING, AS PER PLAN, WHICH PRICE SHALL CONSTITUTE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO COMPLETE THIS INSTALLATION IN ACCORDANCE WITH THESE SPECIFICATIONS.

ITEM 625 – LIGHTING MISC.: SIDE CHANNEL MARKER LIGHTS, AS PER PLAN:

THIS ITEM OF WORK CONSISTS OF FURNISHING AND INSTALLING FOUR (4) WALL MOUNTED SIDE CHANNEL MARKER LIGHTS INCLUDING THE OUTLET BOX, LIGHT FIXTURE AND ALL INCIDENTALS NECESSARY TO COMPLETE THE INSTALLATION. APPLICABLE PROVISIONS OF CMS ITEM 625 SHALL BE ADHERED TO.

THE MARKER LIGHTS SHALL BE EQUIPPED WITH RED, 180° LENSES AND SHALL BE AS MANUFACTURED BY APPLETON ELECTRIC COMPANY, TIDELAND SIGNAL CORPORATION, B&B ELECTROMATIC CORPORATION OR APPROVED EQUAL.

PAYMENT FOR THIS WORK SHALL BE MADE AT THE CONTRACT LUMP SUM PRICE BID FOR ITEM 625 – LIGHTING MISC.: SIDE CHANNEL MARKER LIGHTS, AS PER PLAN WHICH PRICE SHALL CONSTITUTE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO COMPLETE THIS INSTALLATION INCLUDING OUTLET BOX "B", THE LIGHTING FIXTURES AND ALL INCIDENTALS IN ACCORDANCE WITH THESE SPECIFICATIONS.

ITEM 625 – LIGHTING MISC.: CENTER CHANNEL MARKER LIGHTS, AS PER PLAN:

THIS ITEM OF WORK CONSISTS OF FURNISHING AND INSTALLING TWO (2) PIVOTING, SUSPENDED CENTER CHANNEL MARKER LIGHTS INCLUDING THE MOUNTING BRACKETS AND INCIDENTALS NECESSARY TO COMPLETE THE INSTALLATION. APPLICABLE PROVISIONS OF CMS ITEM 625 SHALL BE ADHERED TO.

THE MARKER LIGHTS SHALL BE EQUIPPED WITH GREEN, 360° LENSES AND SHALL BE AS MANUFACTURED BY TIDELAND SIGNAL CORPORATION, B&B ELECTROMATIC CORPORATION, AUTOMATIC POWER INC. NAVIGATIONAL AIDS OR APPROVED EQUAL.

THE PIVOT ASSEMBLY SHALL BE SUPPLIED BY THE MANUFACTURER OF THE CENTER CHANNEL MARKER LIGHT. THE PIVOT ASSEMBLY SHALL HAVE A LOCKING SYSTEM CAPABLE OF LOCKING IN THE UP POSITION FOR SERVICING AND IN THE DOWN POSITION FOR NORMAL OPERATION. THE PIVOT ASSEMBLY SHALL BE GALVANIZED. THE RETRIEVAL CHAIN SHALL BE SASH TYPE STAINLESS STEEL #35, RATED FOR A SERVICE LOAD OF 1 KILO-NEWTON.

THE MOUNTING BRACKET SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE PROVISIONS OF CMS ITEM 513. THE MOUNTING BRACKET SHALL BE GALVANIZED IN ACCORDANCE WITH THE PROVISIONS OF CMS ITEM 513 AND 711.02. ANCHOR BOLTS FOR THE MOUNTING BRACKET SHALL BE PROVIDED AND INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF CMS ITEMS 509 AND 510.

PAYMENT FOR THIS WORK SHALL BE MADE AT THE CONTRACT LUMP SUM PRICE BID FOR ITEM 625 – LIGHTING MISC.: CENTER CHANNEL MARKER LIGHTS, AS PER PLAN, WHICH PRICE SHALL CONSTITUTE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO COMPLETE THIS INSTALLATION INCLUDING JUNCTION BOX "A", THE MOUNTING BRACKET, THE PIVOTING LIGHT FIXTURE AND ALL INCIDENTALS IN ACCORDANCE WITH THESE SPECIFICATIONS.

UNITED STATES COAST GUARD, NINTH DISTRICT
1240 EAST NINTH STREET
CEVELAND, OHIO 44199-2060
(216)902-6086

TIDELAND SIGNAL CORPORATION
P.O. BOX 52430
HOUSTON, TEXAS 77052
(713)681-6101

AUTOMATIC POWER INC., NAVIGATIONAL AIDS
P.O. BOX 23078
HOUSTOM, TEXAS 77223-0738
(713)228-5208

SMITH AND NEPHEW, INC.
P.O. BOX 578, DEPT. B
GERMANTOWN, WISCONSIN 53022
1(800)228-3693

APPLETON ELECTRIC COMPANY
1701 WEST WELLINGTON AVENUE
CHICAGO, ILLINOIS 60657
(312)327-7200

B&B ELECTRONIC CORPORATION
P.O. BOX 99
NORWOOD, LOUISIANA 70761
(504)629-5234

NAVIGATIONAL LIGHTING NOTES
BRIDGE NUMBER ERI-6-28839
OVER HURON RIVER

ERI-6-28.839

70/70

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adache-ciuni-lynn
associates
CONSULTING ENGINEERS
4401 ROCKSIDE RD. CLEVELAND, OHIO 44131

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SPECIAL PROVISIONS

WATERWAY PERMITS

FOR

ERI - 6 - 28.839

Pid No. 12011

U.S. ARMY CORPS OF ENGINEERS

PERMIT NUMBER: NWP #3

OHIO EPA

PERMIT NUMBER: NOT APPLICABLE

DATE: 1-28-98

NATIONWIDE PERMIT

3. Maintenance. The repair, rehabilitation, or replacement of any previously authorized, currently serviceable, structure or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3, provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Minor deviations in the structure's configuration or filled area including those due to changes in materials, construction techniques, or current construction codes or safety standards which are necessary to make repair, rehabilitation, or replacement, are permitted provided the environmental effects resulting from such repair, rehabilitation, or replacement are minimal. Currently serviceable means useable as is or with some maintenance but not so degraded as to essentially require reconstruction. This NWP authorizes the repair, rehabilitation, or replacement of those structures destroyed by storms, floods, fire or other discrete events, provided the repair, rehabilitation, or replacement is commenced or under contract to commence within two years of the date of their destruction or damage. In cases of catastrophic events, such as hurricanes or tornadoes, this two-year limit may be waived by the District Engineer, provided the permittee can demonstrate funding, contract, or other similar delays. Maintenance dredging and beach restoration are not authorized by this NWP. (Sections 10 and 404)

For activities involving a discharge, the Ohio State Certification General Conditions apply to this nationwide permit.

OHIO STATE CERTIFICATION GENERAL CONDITIONS FOR NATIONWIDE PERMITS.

The following general conditions apply to Nationwide Permits 3, 4, 5, 6, 7, 12, 13, 14, 15, 16, 18, 19, 20, 22, 23, 25, 26, 27, 29, 30, 31, 32, 33, 34, 36, 37, 38, and 40.

Steps shall be taken, upon completion of the projects, to ensure bank stability. This may include, but is not limited to, the placement of riprap or bank seeding.

Any damages to the immediate environment of the project by equipment needed for construction or hauling will be repaired immediately.

Care must be employed throughout the course of this project to avoid the creation of unnecessary turbidity which may degrade water quality or adversely affect aquatic life outside the project areas.

For Nationwide Permits 14, 21, 26 (1-3 acres), 29, 33, 37, and 38, that require Agency coordination, in accordance with the Nationwide Permit General Condition entitled "Notification", Number 13(e)(i), the Corps shall submit a pre-construction notification to Ohio EPA for review and comment.

NATIONWIDE PERMIT CONDITIONS

GENERAL CONDITIONS:

The following general conditions must be followed in order for any authorization by a NWP to be valid:

1. **Navigation.** No activity may cause more than a minimal adverse effect on navigation.
2. **Proper maintenance.** Any structure or fill authorized shall be properly maintained, including maintenance to ensure public safety.
3. **Erosion and siltation controls.** Appropriate erosion and siltation controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date.
4. **Aquatic life movements.** No activity may substantially disrupt the movement of those species of aquatic life indigenous to the waterbody, including those species which normally migrate through the area, unless the activity's primary purpose is to impound water.
5. **Equipment.** Heavy equipment working in wetlands must be placed on mats, or other measures must be taken to minimize soil disturbance.
6. **Regional and case-by-case conditions.** The activity must comply with any regional conditions which may have been added by the Division Engineer (see 33 CFR 330.4(e) and with any case specific conditions added by the Corps or by the State or tribe in its section 401 water quality certification.
7. **Wild and Scenic Rivers.** No activity may occur in a component of the National Wild and Scenic River System; or in a river officially designated by Congress as a "study river" for possible inclusion in the system, while the river is in an official study status, unless the appropriate Federal agency, with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely effect the Wild and Scenic River designation, or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency in the area (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service.)
8. **Tribal rights.** No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.
9. **Water quality certification.** In certain states, an individual Section 401 water quality certification must be obtained or waived (see 33 CFR 330.4(c)).

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10. Coastal zone management. In certain states, an individual State coastal zone management consistency concurrence must be obtained or waived (see Section 330.4(d))

11. Endangered Species.

(a) No activity is authorized under any NWP which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act, or which is likely to destroy or adversely modify the critical habitat of such species. Non-federal permittees shall notify the District Engineer if any listed species or critical habitat might be affected or is in the vicinity of the project, and shall not begin work on the activity until notified by the District Engineer that the requirements of the Endangered Species Act have been satisfied and that the activity is authorized.

(b) Authorization of an activity by a nationwide permit does not authorize the "take" of a threatened or endangered species as defined under the Federal Endangered Species Act. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the U.S. Fish and Wildlife Service or the National Marine Fisheries Service, both lethal and non-lethal "takes" of protected species are in violation of the Endangered Species Act. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. Fish and Wildlife Service and National Marine Fisheries Service or their world wide web pages at <http://www.fws.gov/~r9endspp/endspp.html> and http://kingfish.spp.mnfs.gov/tmcintyr/prot_res.html#ES and Recovery, respectively.

12. Historic properties. No activity which may affect historic properties listed, or eligible for listing, in the National Register of Historic Places is authorized, until the DE has complied with the provisions of 33 CFR Part 325, Appendix C. The prospective permittee must notify the District Engineer if the authorized activity may affect any historic properties listed, determined to be eligible, or which the prospective permittee has reason to believe may be eligible for listing on the National Register of Historic Places, and shall not begin the activity until notified by the District Engineer that the requirements of the National Historic Preservation Act have been satisfied and that the activity is authorized. Information on the location and existence of historic resources can be obtained from the State Historic Preservation Office and the National Register of Historic Places (see 33 CFR 330.4(g)).

13. Notification.

(a) **Timing:** Where required by the terms of the NWP, the prospective permittee must notify the District Engineer with a Pre-Construction Notification (PCN) as early as possible and shall not begin the activity: (1) Until notified by the District Engineer that the activity may proceed under the NWP with any special conditions imposed by the District or Division

Engineer; or (2) If notified by the District or Division Engineer that an individual permit is required; or (3) Unless 30 days (or 45 days for NWP 26 only) have passed from the District Engineer's receipt of the notification and the prospective permittee has not received notice from the District or Division Engineer. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) **Contents of Notification:** The notification must be in writing and include the following information:

- (1) Name, address and telephone numbers of the prospective permittee;
- (2) Location of the proposed project;
- (3) Brief description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause; any other NWP(s), regional general permit(s) or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity; and
- (4) For NWPs S 18, 21, 26, 29, 34, and 38, the PCN must also include a delineation of affected special aquatic sites, including wetlands (see paragraph 13(f));
- (5) For NWP 21 - Surface Coal Mining Activities, the PCN must include an OSM or State approved mitigation plan.
- (6) For NWP 29-Single-Family Housing, the PCN must also include:
 - (i) Any past use of this NWP by the individual permittee and/or the permittee's spouse;
 - (ii) A statement that the single-family housing activity is for a personal residence of the permittee;
 - (iii) A description of the entire parcel, including its size, and a delineation of wetlands. For the purpose of this NWP, parcels of land measuring 0.5 acre or less will not require a formal on-site delineation. However, the applicant shall provide an indication of where the wetlands are and the amount of wetlands that exists on the property. For parcels greater than 0.5 acre in size, a formal wetland delineation must be prepared in accordance with the current method required by the Corps. (See paragraph 13(f));
 - (iv) A written description of all land (including, if available, legal descriptions) owned by the prospective permittee and/or the prospective permittee's spouse, within a one mile radius of the parcel, in any form of ownership (including any land owned as a partner, corporation, joint tenant, co-tenant, or as a tenant-by-the-entirety) and any land on which a purchase and sale agreement or other contract for sale or purchase has been executed;

(7) For NWP 31 Maintenance of Existing Flood Control Projects, the prospective permittee must either notify the District Engineer with a Pre-Construction Notification (PCN) prior to each maintenance activity or submit a five year (or less) maintenance plan. In addition, the PCN must include all of the following:

(I) Sufficient baseline information so as to identify the approved channel depths and configurations and existing facilities. Minor deviations are authorized, provided that the approved flood control protection or drainage is not increased;

(ii) A delineation of any affected special aquatic sites, including wetlands; and,

(iii) Location of the dredged material disposal site.

(8) For NWP 33-Temporary Construction, Access, and Deterring, the PCN must also include a restoration plan of reasonable measures to avoid and minimize adverse effects to aquatic sources.

(c) Form of Notification: The standard individual permit application form (Form ENG 4345) may be used as the notification but must clearly indicate that it is a PCN and must include all of the information required in (b) (1)-(7) of General Condition 13. A letter may also be used.

(d) District Engineer's Decision: In reviewing the pre-construction notification for the proposed activity, the District Engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative-adverse environmental effects or may be contrary to the public interest. The prospective permittee may, optionally, submit a proposed mitigation plan with the pre-construction notification to expedite the process and the District Engineer will consider any optional mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects of the proposed work are minimal. If the District Engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse effects are minimal, the District Engineer will notify the permittee and include any conditions the DE deems necessary.

Any mitigation proposal must be approved by the District Engineer prior to commencing work. If the prospective permittee elects to submit a mitigation plan, the District Engineer will expeditiously review the proposed mitigation plan, but will not commence a second 30-day (or 45-day for NWP 26) notification procedure. If the net adverse effects of the project (with the mitigation proposal) are determined by the District Engineer to be minimal, the District Engineer will provide a timely written response to the applicant stating that the project can proceed under the terms and conditions of the nationwide permit.

If the District Engineer determines that the adverse effects of the proposed work are more than minimal, then he will notify the applicant either: (1) that the project does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (2) that the project is authorized under the NWP subject to the applicant's submitting a mitigation proposal that would reduce the adverse effects to the minimal level; or (3) that the project is authorized under the NWP with specific modifications or conditions.

(e) Agency Coordination: The District Engineer will consider any comments from Federal and State agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.

(i) For NWP 14, 21, 26 (between 1 and 3 acres of impact), 29, 33, 37, and 38. The District Engineer will, upon receipt of a notification, provide immediately, e.g., facsimile transmission, overnight mail or other expeditious manner, a copy to the appropriate offices of the Fish and Wildlife Service, State natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO), and, if appropriate, the National Marine Fisheries Service. With the exception of NWP 37, these agencies will then have 5 calendar days from the date the material is transmitted to telephone or fax the District Engineer notice that they intend to provide substantive, site-specific comments. If so contacted by an agency, the District Engineer will wait an additional 10 calendar days (16 calendar days for NWP 26 PCNs) before making a decision on the notification. The District Engineer will fully consider agency comments received within the specified time frame, but will provide no response to the resource agency. The District Engineer will indicate in the administrative record associated with each notification that the resource agencies' concerns were considered. Applicants are encouraged to provide the Corps multiple copies of notifications to expedite agency notification.

(ii) Optional Agency Coordination For NWPs 5, 7, 12, 13, 17, 18, 27, 31, and 34, where a Regional Administrator of EPA, a Regional Director of USFWS, or Regional Director of NMFS has formally requested general notification from the District Engineer for the activities covered by any of these NWPs, the Corps will provide the requesting agency with notification on the particular NWPs. However, where the agencies have a record of not generally submitting substantive comments on activities covered by any of these NWPs, the Corps district may discontinue providing notification to those regional agency offices. The District Engineer will coordinate with the resource agencies to identify which activities involving a PCN that the agencies will provide substantive comments to the Corps. The District Engineer may also request comments from the agencies on a case by case basis when the District Engineer determines that such comments would assist the Corps in reaching a decision whether effects are more than minimal either individually or cumulatively.

(iii) Optional Agency Coordination, 401 Denial. For NWP 26 only, where the State has denied its 401 water quality certification for activities with less than 1 acre of wetland impact, the EPA regional administrator may request agency coordination of PCNs between 1/3 and 1 acre. The request may only include acreage limitations within the 1/3 to 1 acre range for which the state has denied water quality certification. In cases where the EPA has requested coordination of projects as described here, the Corps will forward the PCN to EPA only. The PCN will then be forwarded to the Fish and Wildlife Service and the National Marine Fisheries Service by EPA under agreements among those agencies. Any agency receiving the PCN will be bound by the time frames for providing comments to the Corps.

(f) Wetlands Delineations: Wetland delineations must be prepared in accordance with the current method required by the Corps. For NWP 29 see paragraph (b)(6)(iii) for parcels less than 0.5 acres in size. The permittee may ask the Corps to delineate the special aquatic site. There may be some delay if the Corps does the delineation. Furthermore, the 30-day period (45 days for NWP 26) will not start until the wetland delineation has been completed and submitted to the Corps, where appropriate.

(g) Mitigation: Factors that the District Engineer will consider when determining the acceptability of appropriate and practicable mitigation include, but are not limited to:

- (I) To be practicable, the mitigation must be available and capable of being done considering costs, existing technology, and logistics in light of the overall project purposes;
- (ii) To the extent appropriate, permittees should consider mitigation banking and other forms of mitigation including contributions to wetland trust funds, "in lieu fees" to organizations such as The Nature Conservancy, state or county natural resource management agencies, where such fees contribute to the restoration, creation, replacement, enhancement, or preservation of wetlands. Furthermore, examples of mitigation that may be appropriate and practicable include but are not limited to: reducing the size of the project; establishing wetland or upland buffer zones to protect aquatic resource values; and replacing the loss of aquatic resource values by creating, restoring, and enhancing similar functions and values. In addition, mitigation must address wetland impacts, such as functions and values, and cannot be simply used to offset the acreage of wetland losses that would occur in order to meet the acreage limits of some of the NWPs (e.g., for NWP 26, 5 acres of wetlands cannot be created to change a 6-acre loss of wetlands to a 1-acre loss; however, 2 created acres can be used to reduce the impacts of a 3-acre loss.).

14. Compliance certification. Every permittee who has received a Nationwide permit verification from the Corps will submit a signed certification regarding the completed work and any required mitigation. The certification will be forwarded by the Corps with the authorization letter and will include:

- a. A statement that the authorized work was done in accordance with the Corps authorization, including any general or specific conditions;
- b. A statement that any required mitigation was completed in accordance with the permit conditions;
- c. The signature of the permittee certifying the completion of the work and mitigation.

15. Multiple use of Nationwide permits. In any case where any NWP number 12 through 40 is combined with any other NWP number 12 through 40, as part of a single and complete project, the permittee must notify the District Engineer in accordance with paragraphs a, b, and c on the "Notification General Condition number 13. Any NWP number 1 through 11 may be combined with any other NWP without notification to the Corps, unless notification is otherwise required by the terms of the NWPs. As provided at 33 CFR 330.6(c) two or more different NWPs can be combined to authorize a single and complete project. However, the same NWP cannot be used more than once for a single and complete project.

SECTION 404 ONLY CONDITIONS:

In addition to the General Conditions, the following conditions apply only to activities that involve the discharge of dredged or fill material into waters of the U.S., and must be followed in order for authorization by the NWPs to be valid:

1. Water supply intakes. No discharge of dredged or fill material may occur in the proximity of a public water supply intake except where the discharge is for repair of the public water supply intake structures or adjacent bank stabilization.

2. Shellfish production. No discharge of dredged or fill material may occur in areas of concentrated shellfish production, unless the discharge is directly related to a shellfish harvesting activity authorized by NWP 4.

3. Suitable material. No discharge of dredged or fill material may consist of unsuitable material (e.g. trash, debris, car bodies, asphalt, etc.) and material discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).

4. Mitigation. Discharges of dredged or fill material into waters of the United States must be minimized or avoided to the maximum extent practicable at the project site (i.e. on-site), unless the District Engineer approves a compensation plan that the District Engineer determines is more beneficial to the environment than on-site minimization or avoidance measures.

5. Spawning areas. Discharges in spawning areas during spawning seasons must be avoided to the maximum extent practicable.

6. Obstruction of high flows. To the maximum extent practicable, discharges must not permanently restrict or impede the passage of normal or expected high flows or cause the relocation of the water (unless the primary purpose of the fill is to impound waters).

7. Adverse effects from impoundments. If the discharge creates an impoundment of water, adverse effects on the aquatic system caused by the accelerated passage of water and/or the restriction of its flow shall be minimized to the maximum extent practicable.

8. Waterfowl breeding areas. Discharges into breeding areas for migratory waterfowl must be avoided to the maximum extent practicable.

9. Removal of temporary fills. Any temporary fills must be removed in their entirety and the affected areas returned to their preexisting elevation.