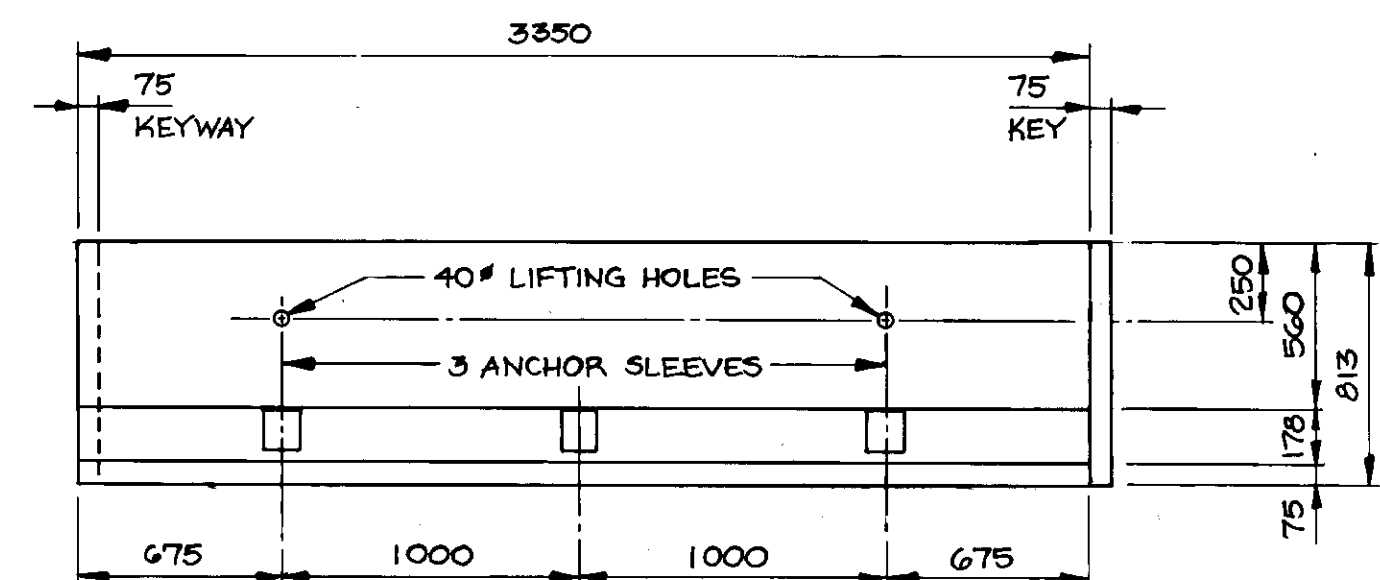
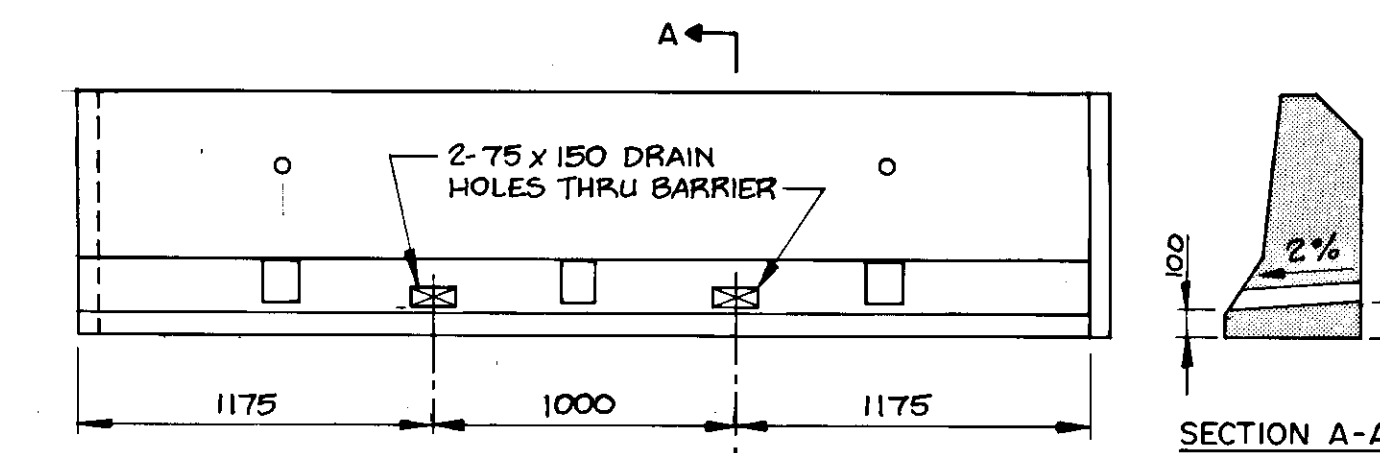


TYPE 'A' - 28 REQ'D

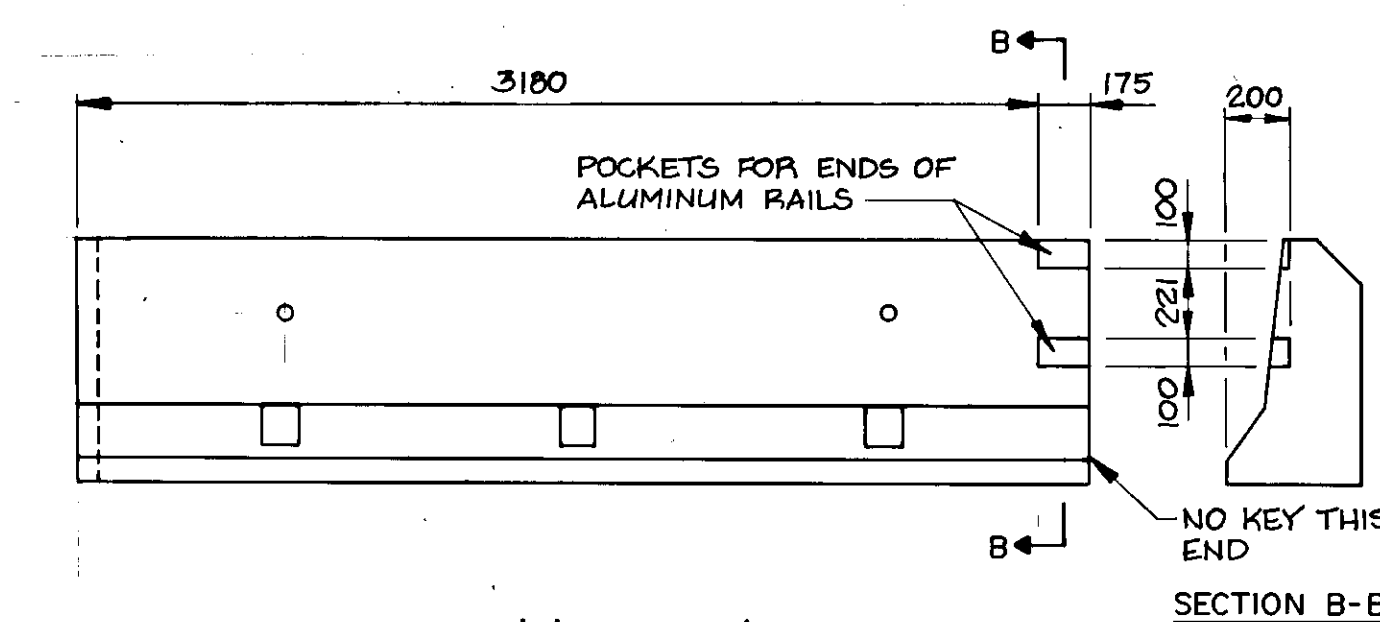
NOTE
FOR THIS CONTRACT ANCHOR BOLTS ARE REQ'D IN ONLY 3 (UNSHADED) OF THE 6 ANCHOR SLEEVES; SEE INSTALLATION NOTES



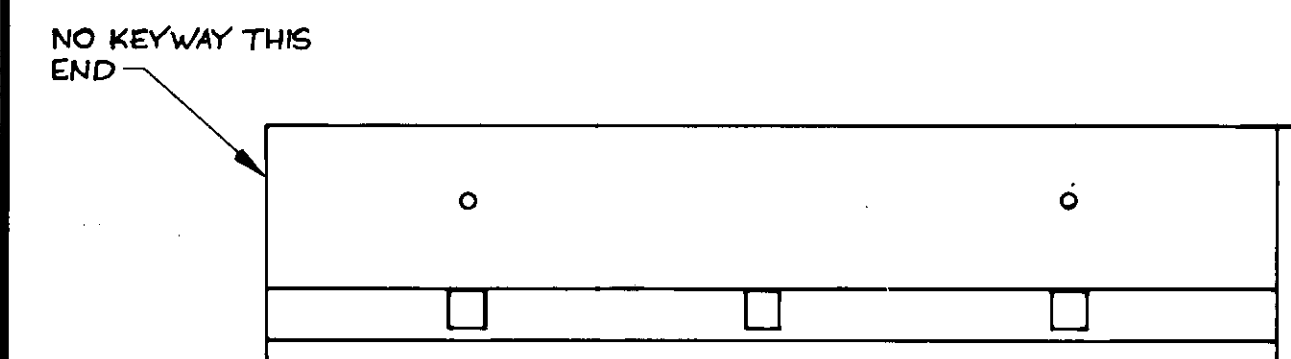
TYPE 'B' - 60 REQ'D



TYPE 'C' - 40 REQ'D



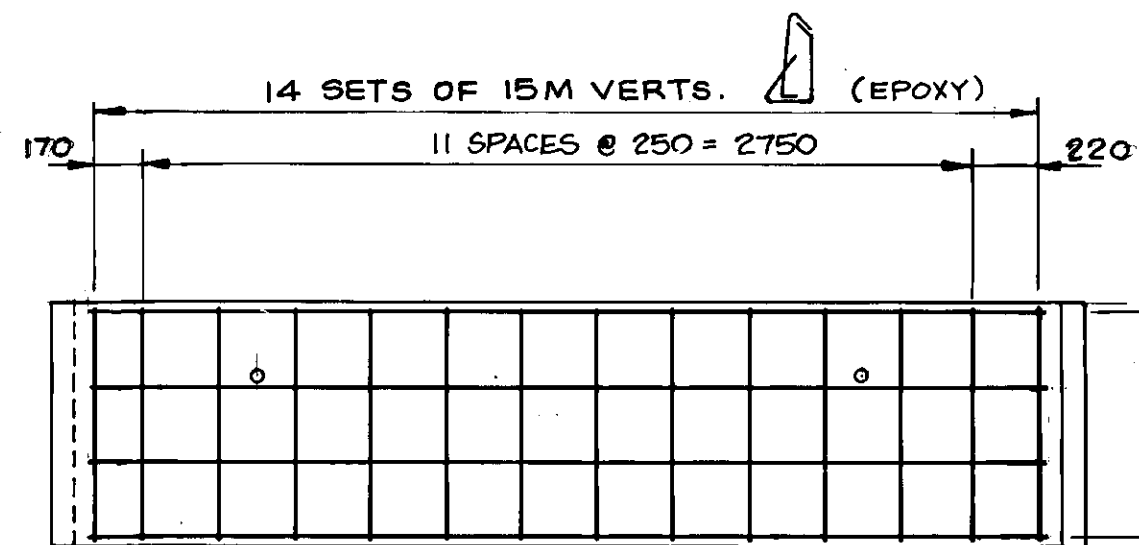
TYPE 'D' - 1 REQ'D



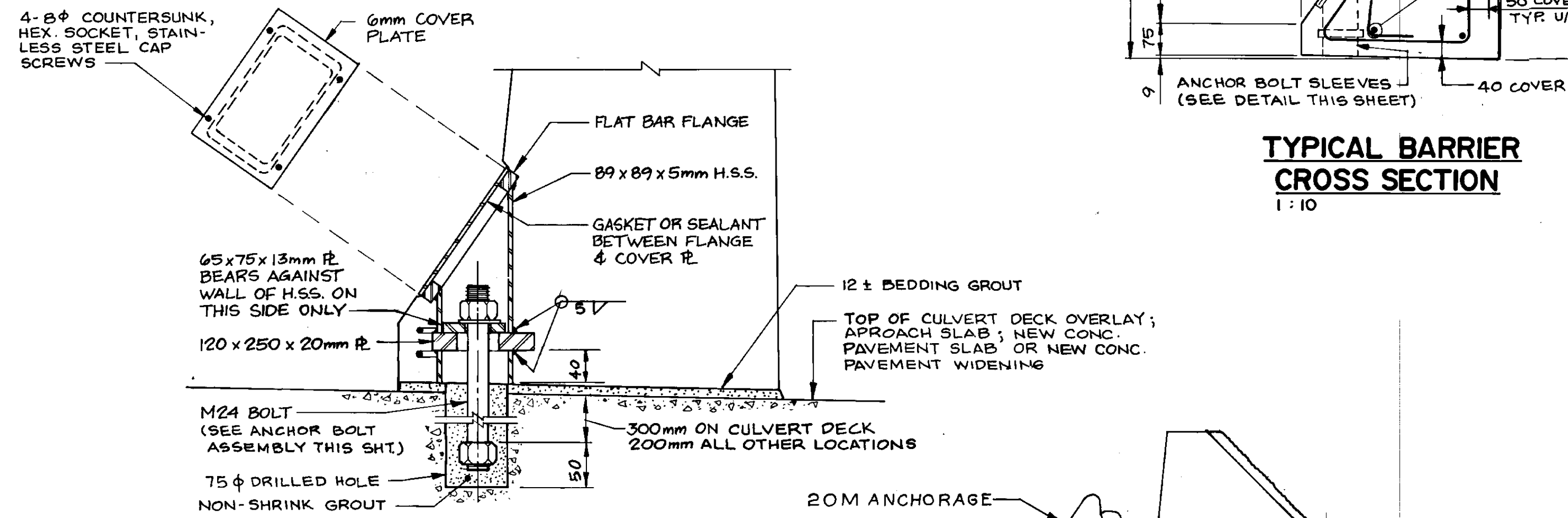
TYPE 'E' - 1 REQ'D

BARRIER ELEVATIONS
1:25

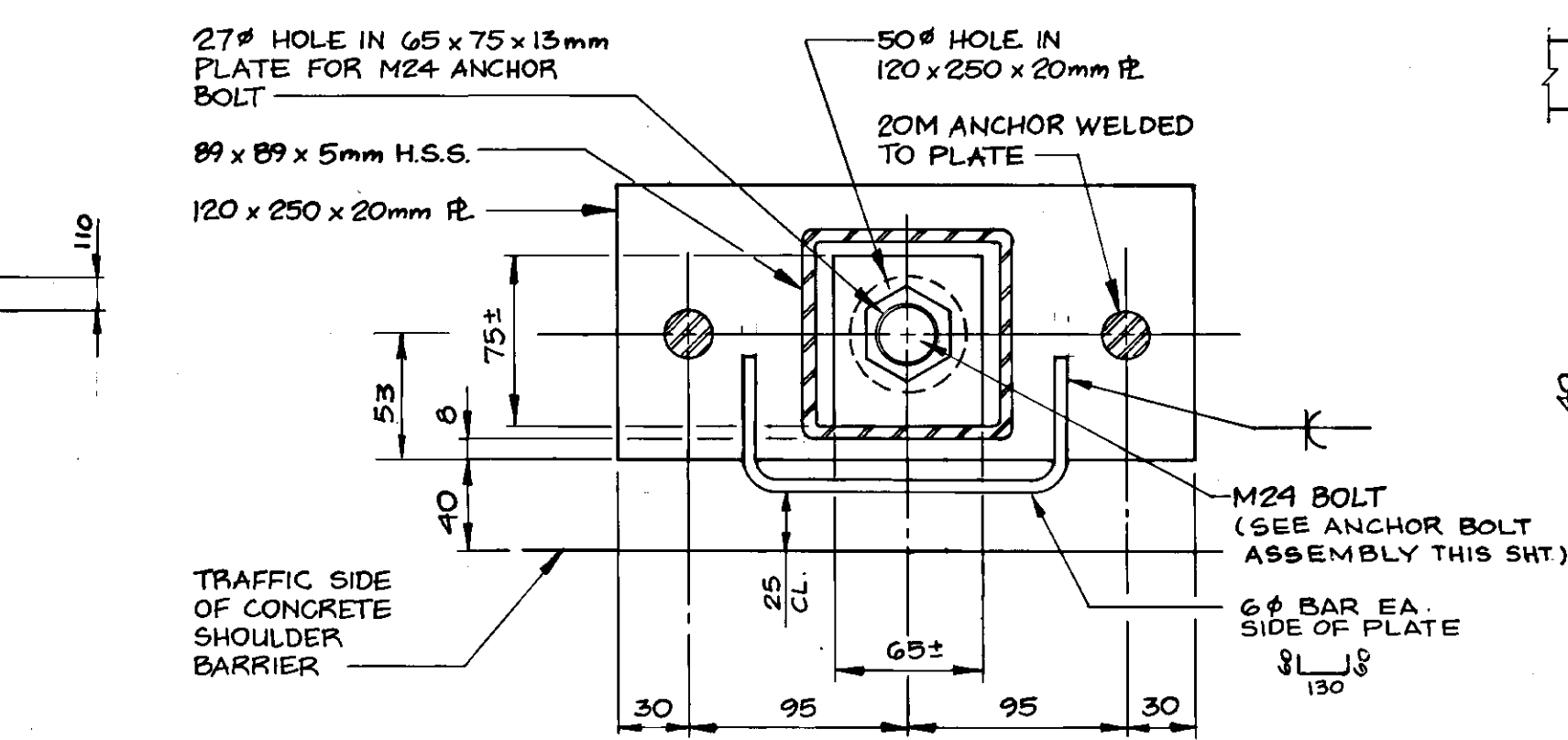
END VIEW OF TYPICAL BARRIER
N.T.S.



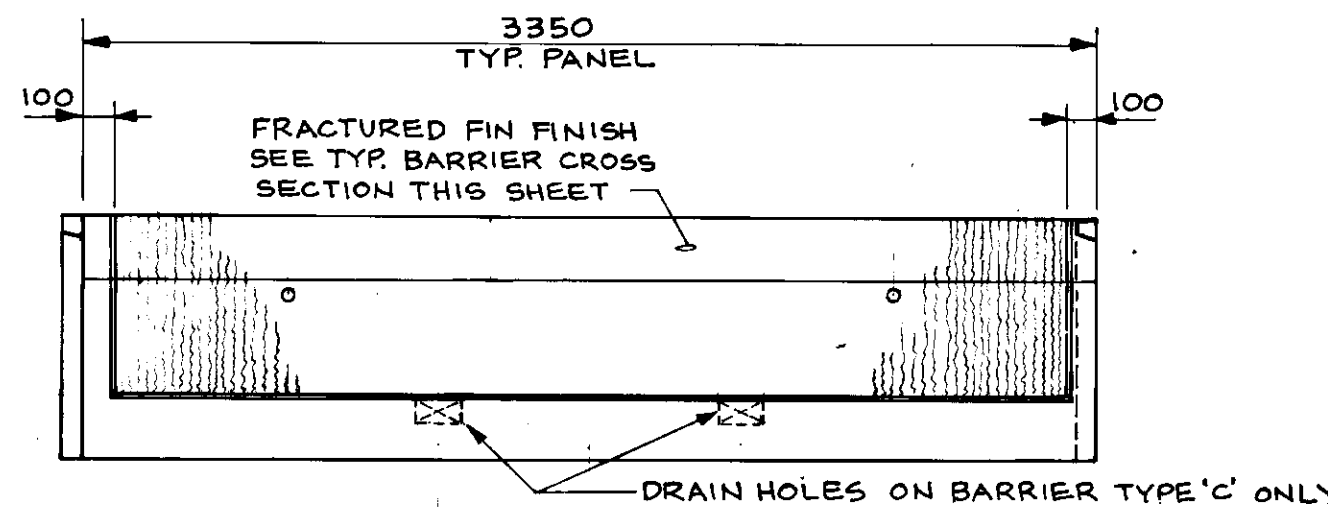
BARRIER ELEVATION
SHOWING REINFORCING
TYPICAL ALL TYPES
1:25



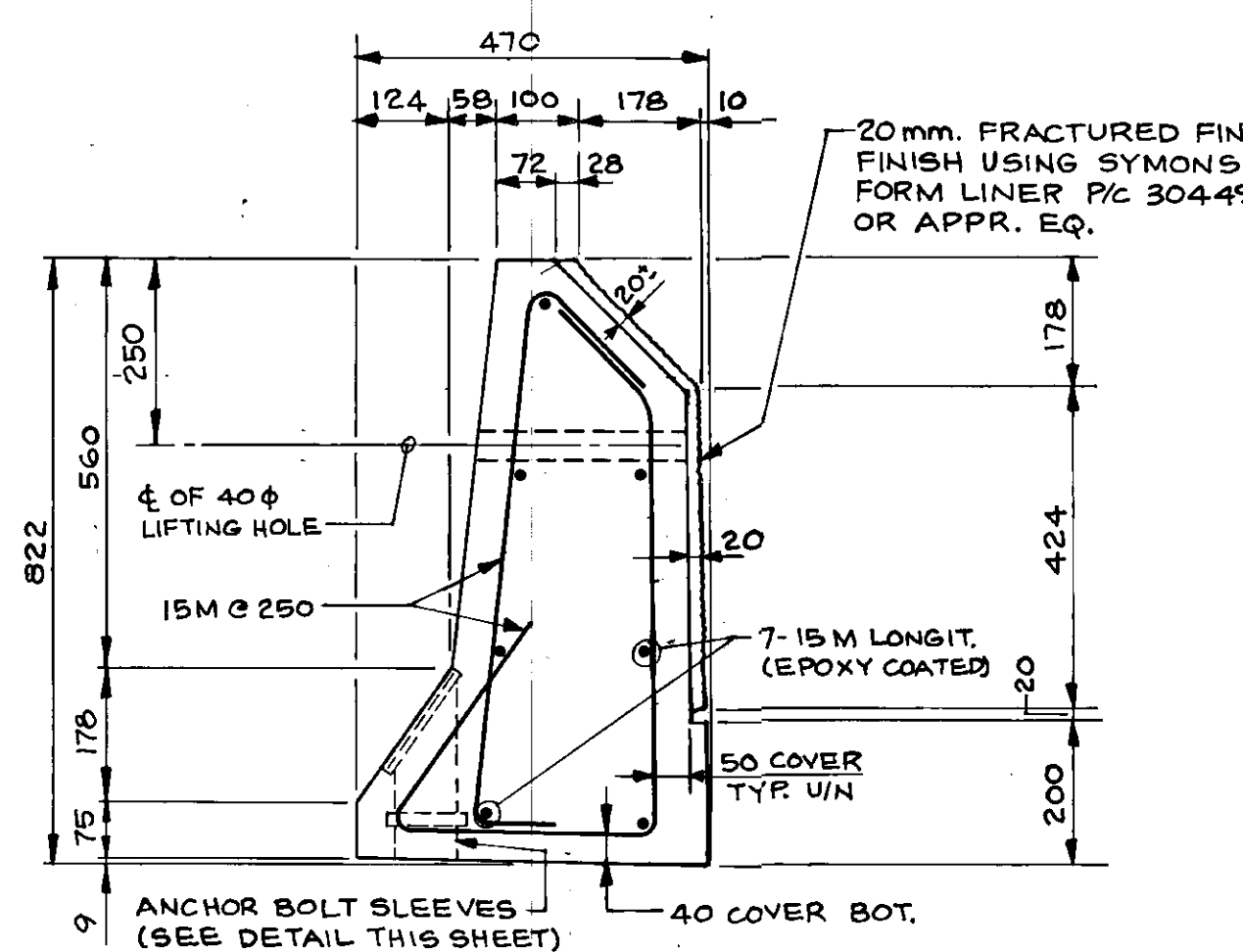
SECTION THRU SLEEVE
1:5



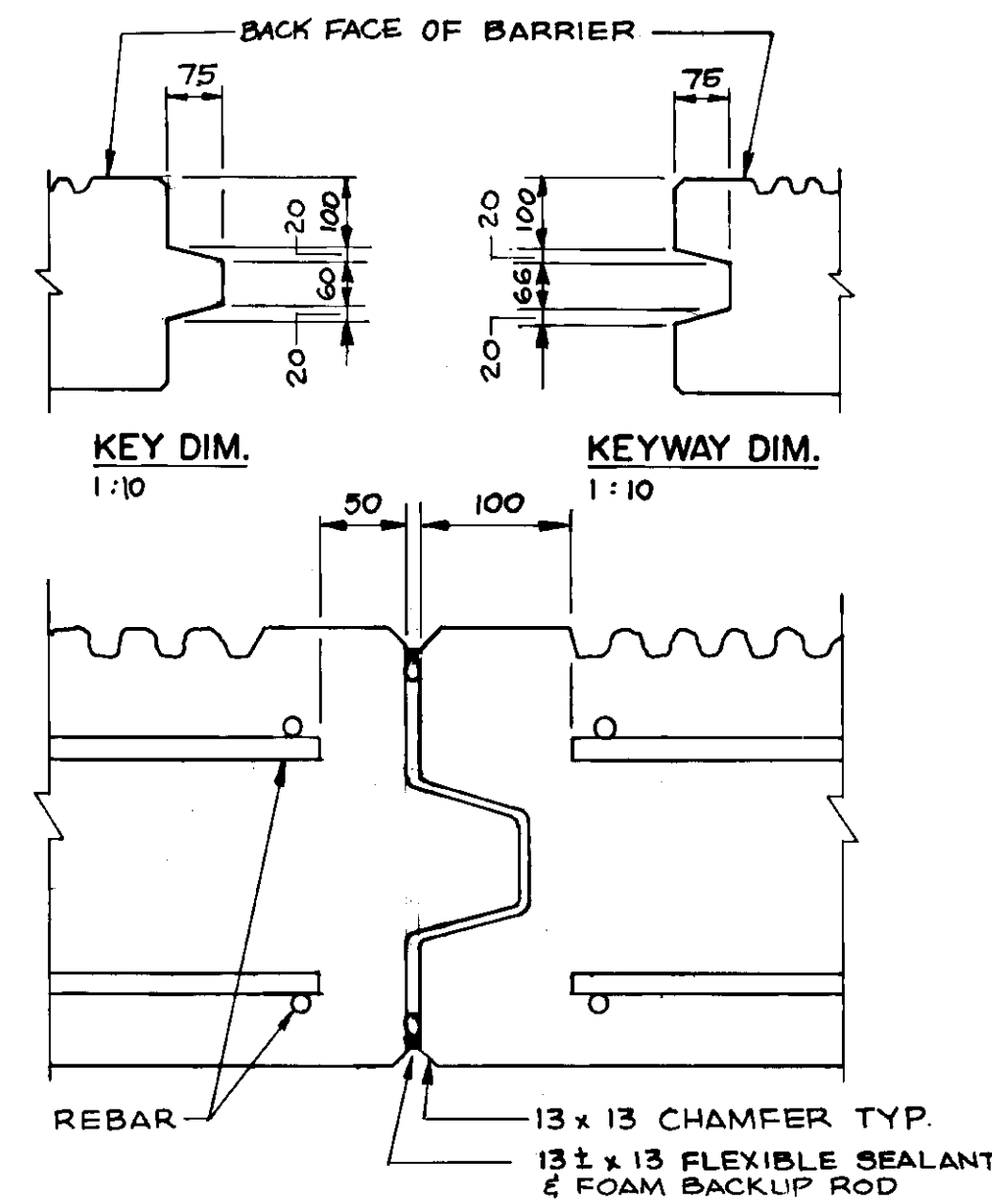
ANCHOR SLEEVE DETAILS
1:3



TYPICAL BARRIER BACK ELEVATION
1:25



TYPICAL BARRIER
CROSS SECTION
1:10



END KEY DETAIL
1:5

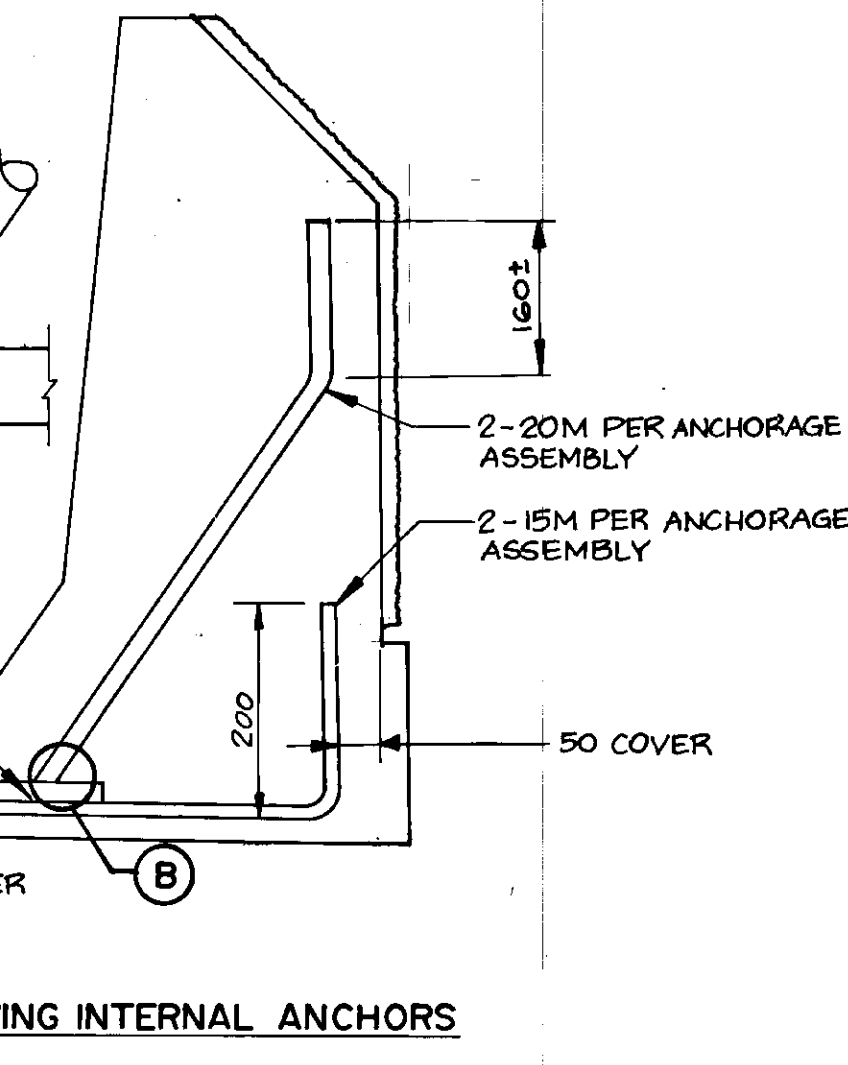
NOTE:
AFTER FABRICATION OF BARRIERS ALL EXPOSED EDGES IN MALE-FEMALE KEWAY CHAMFERED (ROUNDED-OFF) 10-13 mm BY GRINDING

FABRICATION NOTES

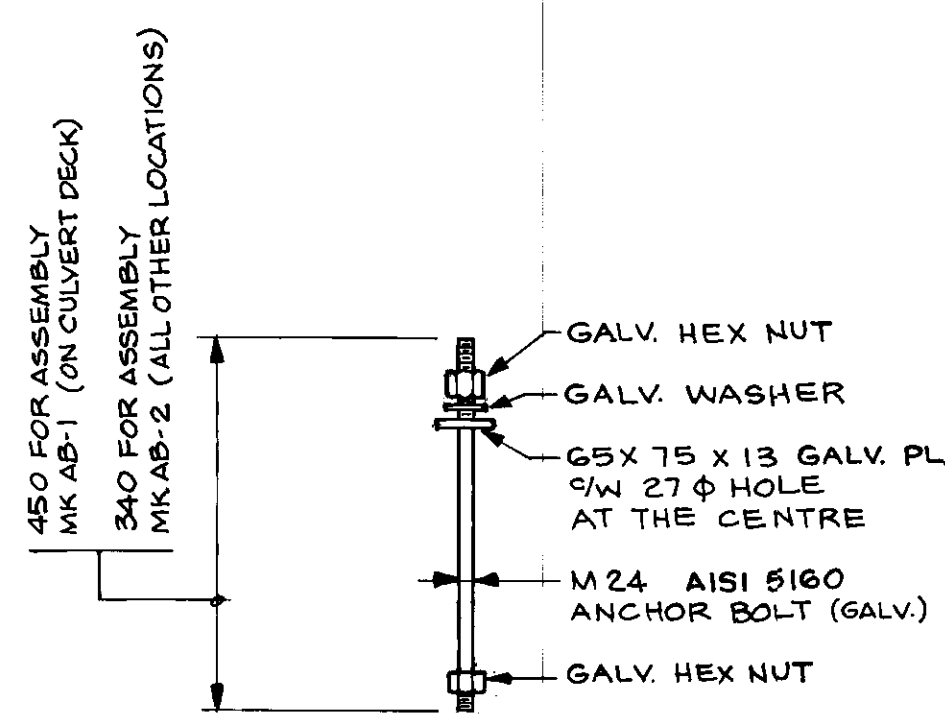
1. CONCRETE MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS = 32 MPa
2. REINFORCING STEEL FOR ANCHORAGE ASSEMBLIES SHALL BE WELDABLE, LOW ALLOY DEFORMED STEEL BARS CONFORMING TO CSA G30.16, GRADE 400 MPa.
3. REBAR WELDING SHALL CONFORM TO CSA W188
4. REINFORCING STEEL FOR OTHER THAN ANCHORAGE ASSEMBLIES SHALL BE EPOXY COATED, DEFORMED STEEL BARS CONFORMING TO CSA G30.12, GRADE 400 MPa.
5. STRUCTURAL STEEL PLATE SHALL CONFORM TO CSA G40.21M, GRADE 300W.
6. HOLLOW STRUCTURAL SECTIONS SHALL CONFORM TO CSA G40.21, GRADE 350W.
7. STRUCTURAL STEEL WELDING SHALL CONFORM TO CSA W47.1 AND W59.
8. ANCHOR BOLTS SHALL BE AISI 5160 HIGH STRENGTH ALLOY STEEL.
9. ALL ANCHORAGE ASSEMBLIES AND ANCHOR BOLT ASSEMBLY COMPONENTS SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
10. HOT-DIP GALVANIZING SHALL BE IN ACCORDANCE WITH CSA G164 TO A MINIMUM NET RETENTION OF 600 gm²

INSTALLATION NOTES

1. INSTALLATION OF THE BARRIERS SHALL COMMENCE AT MIDSPAN OF THE OMAND'S CREEK CULVERT AND ADVANCE EACH WAY FROM THAT POINT. THE CONTRACTOR SHALL ALLOW FOR SMALL VARIATIONS IN THE ERRECTED LENGTH OF THE BARRIERS WHEN LOCATING HOLES FOR THE ANCHOR BOLTS
2. FOR LOCATION OF THE VARIOUS BARRIER TYPES SEE DRAWINGS NO. U200-95-30 TO -35 INCLUSIVE.
3. FOR BARRIERS TYPE 'A' (THE TYPICAL BARRIER ACROSS THE CULVERT) ONLY 3 OF THE 6 ANCHORAGE ASSEMBLIES IN EACH UNIT SHALL BE USED FOR THIS CONTRACT. IT IS ANTICIPATED THAT ALL 6 ANCHORAGES WILL BE USED FOR THE FUTURE LOCATION AS SHOWN ON DRAWING NO. U200-95-17
4. FOR BARRIERS TYPES 'B', 'C', 'D' & 'E' ALL OF THE 3 ANCHORAGES IN EACH UNIT SHALL BE USED.
5. ANTICIPATED SEQUENCE OF INSTALLATION FOR BARRIER UNITS:
 - a. LOCATE AND DRILL HOLES FOR ANCHOR BOLTS.
 - b. SET BARRIER UNIT TO LINE AND GRADE USING APPROPRIATE SHIMS AND BEDDING GROUT.
 - c. PLACE NON SHRINK GROUT AND ANCHOR BOLT ASSEMBLIES INTO THE PREDRILLED HOLES IN THE CONCRETE SLAB.
 - d. AFTER GROUT HAS REACHED DESIGN STRENGTH TIGHTEN NUTS ON ANCHOR BOLTS FOR "SNUG" BEARING AND INSTALL COVER PLATES w/ GASKET OR SEALANT.
 - e. INSTALL FLEXIBLE JOINT SEALANT AND FOAM BACKUP ROD.



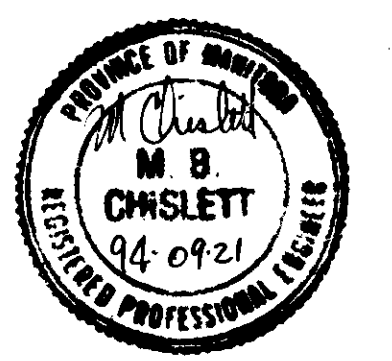
SECTION SHOWING INTERNAL ANCHORS
1:7.5



ASSEMBLY MK AB-1 - 24 REQ'D
ASSEMBLY MK AB-2 - 336 REQ'D
ANCHOR BOLT ASSEMBLY
1:10

RECORD DRAWING

APPROVED BY: [Signature] DATE: Dec 20/96



NO.	REVISIONS	DATE	BY

DILLON
Consulting Engineers • Planners
Environmental Scientists

DESIGNED BY M.B.C.	CHECKED BY WPS / S.S.R.
DRAWN BY B.A.S.	APPROVED BY [Signature]
HOR. SCALE VERTICAL:	AS SHOWN
DATE	SEPT 1994

PROVINCE OF MANITOBA
S.S. RIHAL
REGISTERED PROFESSIONAL ENGINEER

CONSULTANT DRAWING NO.
92-3813-02 - 37

THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

PORTAGE AVE. CULVERT & UNDERPASS
OMAND'S CREEK CULVERT REHABILITATION,
UNDERPASS, ROADWAY RESURFACING
AND RELATED WORKS

CITY DRAWING NUMBER
U200-95-37

SHEET OF

PRECAST CONCRETE SHOULDER
BARRIER DETAILS

B-5983-37