

APPENDIX 'A'

REFERENCE DRAWINGS

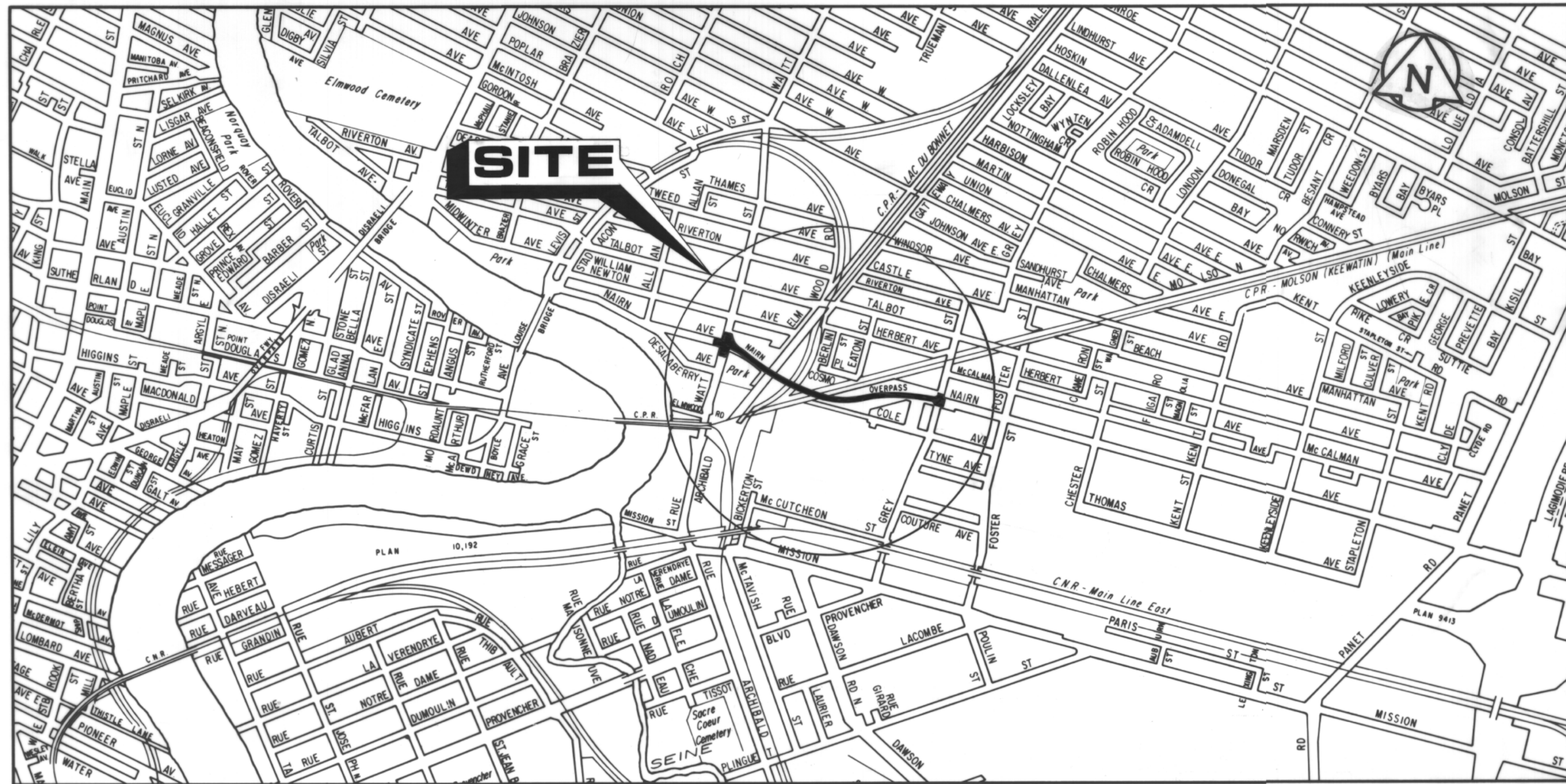


THE CITY OF WINNIPEG

WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

NAIRN AVENUE OVERPASS STRUCTURAL STRENGTHENING AND RELATED WORKS

P.D. NO. 85-74



Underwood McLellan Ltd.
Consulting Engineers and Planners

RELEASED FOR CONSTRUCTION BY:
James R. Call
MANAGER OF STREETS AND TRAFFIC
DATE: 15.04.10

RECORD DRAWING

B-5566



DRAWING NO.
B121-85-01

LIST OF DRAWINGS

GENERAL

BI21-85-01 COVER SHEET
 BI21-85-01A TIME CAPSULE LOCATION
 BI21-85-02 DESIGN DATA AND DRAWING LIST
 BI21-85-03 GENERAL ARRANGEMENT AND ITEMS OF PROPOSED WORKS

BRIDGE DRAWINGS

BI21-85-04 PLAN AND GENERAL EXPLANATION OF EXISTING AND PROPOSED OVERPASS
 BI21-85-05 ABUTMENT AND WINGWALL MODIFICATIONS
 BI21-85-06 PIER MODIFICATIONS
 BI21-85-07 GIRDER STRENGTHENING - I
 BI21-85-08 GIRDER STRENGTHENING - II
 BI21-85-09 BEARING DETAILS
 BI21-85-10 DECK DIMENSIONS AND REINFORCING
 BI21-85-11 SCREED ELEVATIONS
 BI21-85-12 CONCRETE TRAFFIC BARRIER DETAILS
 BI21-85-13 ALUMINUM TRAFFIC BARRIER RAIL DETAILS
 BI21-85-14 ALUMINUM PEDESTRIAN HANDRAIL DETAILS - I
 BI21-85-15 ALUMINUM PEDESTRIAN HANDRAIL DETAILS - II
 BI21-85-16 EXPANSION JOINT DETAILS
 BI21-85-17 DECK DRAIN DETAILS
 BI21-85-18 ELECTRICAL AND EMBEDDED WORK AND MISCELLANEOUS DETAILS
 BI21-85-19 APPROACH SLAB
 BI21-85-20 SLOPE PAVING DRAINAGE CHANNEL DETAILS
 BI21-85-21A REINFORCING STEEL SCHEDULE
 BI21-85-21B REINFORCING STEEL SCHEDULE

ROAD DRAWINGS

BI21-85-22 LEGEND
 BI21-85-23 GEOMETRY WATT ST. TO STA. 4+25
 BI21-85-24 GEOMETRY STA. 4+25 TO GREY ST.
 BI21-85-25 EXISTING CONDITIONS AND REMOVALS WATT ST TO STA. 1+75
 BI21-85-26 EXISTING CONDITIONS AND REMOVALS STA. 1+75 TO STA. 3+50
 BI21-85-27 EXISTING CONDITIONS AND REMOVALS STA.3+50 TO STA. 5+35
 BI21-85-28 EXISTING CONDITIONS AND REMOVALS STA. 5+35 TO STA. 7+10
 BI21-85-29 EXISTING CONDITIONS AND REMOVALS STA. 7+10 TO GREY ST.
 BI21-85-30 GRADING, PAVING AND UTILITIES WATT ST. TO STA. 1+75
 BI21-85-31 GRADING, PAVING AND UTILITIES STA. 1+75 TO STA. 3+50
 BI21-85-32 GRADING, PAVING AND UTILITIES STA. 3+50 TO STA. 5+35
 BI21-85-33 GRADING, PAVING AND UTILITIES STA. 5+35 TO STA. 7+10
 BI21-85-34 GRADING, PAVING AND UTILITIES STA. 7+10 TO GREY ST.
 BI21-85-35 PROFILE WATT ST. TO STA. 1+75
 BI21-85-36 PROFILE STA. 1+75 TO STA. 3+25
 BI21-85-37 PROFILE STA. 3+25 TO STA. 5+00
 BI21-85-38 PROFILE STA. 5+00 TO STA 6+50
 BI21-85-39 PROFILE STA. 6+50 TO GREY ST.
 BI21-85-40 CROSS-SECTIONS
 BI21-85-41 CONCRETE MEDIAN BARRIER DETAILS - I
 BI21-85-42 CONCRETE MEDIAN BARRIER DETAILS - II
 BI21-85-43 MISCELLANEOUS DETAILS
 BI21-85-44 ALUMINUM BALANCED BARRIER LAYOUT
 BI21-85-45 ALUMINUM BALANCED BARRIER STANDARD DETAILS
 BI21-85-46 3 BAY 0.762m WIDE G.R.E.A.T. UNIT AND
 CANTILEVER SIGN PEDESTAL DETAILS
 BI21-85-47 DETOUR

DESIGN DATA

DESIGN SPECIFICATIONS - AASHTO 1983
 LIVE LOADING - HSS25-44 TRUCK LOADING
 HS25-44 LANE LOADING
 CONCRETE - $f_c^1 = 45 \text{ MPa}$ GIRDERS AND PIER 6 STRENGTHENING
 - $f_c^1 = 40 \text{ MPa}$ APPROACH SLAB
 - $f_c^1 = 30 \text{ MPa}$ REMAINDER
 REINFORCING STEEL - CSA G30.12-M77 GRADE 400
 ALL REINFORCING WITH SUFFIX "C" IS EPOXY COATED
 STRUCTURAL STEEL - CSA CAN 3 - G40.21-M81 GRADE 300 W
 PRESTRESSING - $f_s^1 = 1860 \text{ MPa}$ PRESTRESSING STRANDS FOR GIRDER STRENGTHENINGS
 - $f_s^1 = 1230 \text{ MPa}$ THREAD BARS FOR PIER 6 STRENGTHENING
 ALUMINUM PEDESTRIAN HANDRAIL - CSA HA SERIES - 1975
 CLEAR COVER TO REINFORCING STEEL - 80± 20 ABUTMENTS AND WINGWALLS
 - 40± 10 BOTTOM DECK SLAB
 - 80± 20 TOP DECK SLAB
 - 70± 20 SIDEWALK AND APPROACH SLABS
 - 50± 10 TRAFFIC BARRIERS
 - OTHERS AS NOTED ON DRAWINGS

LIST OF ABBREVIATIONS

B.H. BORE HOLE I.F. INSIDE FACE
 C/W COMPLETE WITH L.L. LIVE LOAD
 D.L. DEAD LOAD O.F. OUTSIDE FACE
 DWL DOWEL OPT. OPTIONAL
 E.F. EACH FACE U/N UNLESS NOTED
 E.S. EQUALLY SPACED W.P. WORK POINT

RECORD DRAWING

B-5568

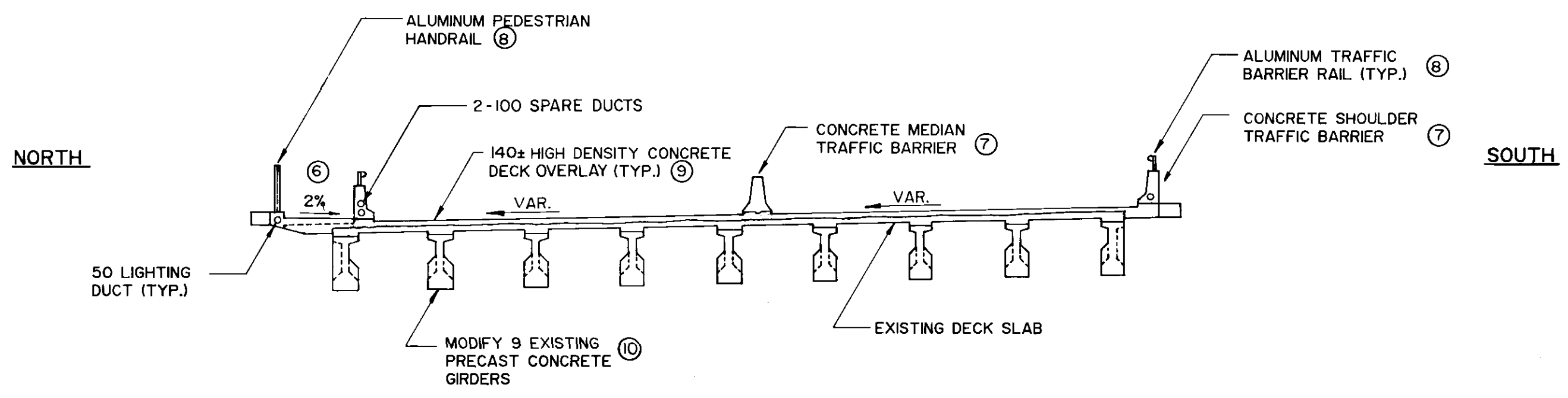
	the uma group Underwood McLellan Ltd. Consulting Engineers and Planners	THE CITY OF WINNIPEG WORKS & OPERATIONS DIVISION STREETS & TRANSPORTATION DEPARTMENT	NAIRN AVENUE OVERPASS DECK REHABILITATION, STRUCTURAL STRENGTHENING AND RELATED WORKS DESIGN DATA AND DRAWING LIST	
	DESIGNED BY: K.U. DRAWN BY: R.S. CHECKED BY: J.T. DATE: APRIL 1985 JOB No. 0265-216-01	ACCEPTED BY: <i>[Signature]</i> DATE: <i>1985-08-16</i>	ACCEPTED BY: <i>[Signature]</i> DATE: <i>1985-04-16</i>	SCALE: N.T.S. DRAWING NO: BI21-85-02
	NO. REVISIONS DATE APP.	APPROVED BY: <i>[Signature]</i> DATE: <i>June 15/84</i>	RECORD DRAWING NOV.86	DESIGN DATA AND DRAWING LIST
	ENGINEER'S SEAL	THE CITY OF WINNIPEG	NAIRN AVENUE OVERPASS	DESIGN DATA AND DRAWING LIST

PROPOSED BRIDGE WORKS

- ① REMOVE EXISTING CONCRETE MEDIAN, SIDEWALK SLABS AND STEEL BRIDGE RAILS ON NORTH AND SOUTH SIDES. REFERENCE DRAWING No. B121-85-04 & 10
- ② REMOVE EXISTING EXPANSION JOINTS AT PIERS 3 & 8 AND EAST & WEST ABUTMENTS AND INSTALL NEW EXPANSION JOINTS. B121-85-04, 05, 10 & 16
- ③ REMOVE EXISTING ASPHALT AND DETERIORATED CONCRETE FROM DECK SLAB TO AT LEAST TOP LAYER OF DECK REINFORCING STEEL. B121-85-04 & 10
- ④ REMOVE EXISTING TOP LAYER OF DECK REINFORCING STEEL AND PLACE NEW EPOXY COATED TOP REINFORCING STEEL. B121-85-04 & 10
- ⑤ REMOVE EXISTING DECK DRAINAGE SYSTEM AND INSTALL NEW DECK DRAINAGE SYSTEM. B121-85-04, 17 & 20
- ⑥ CONSTRUCT NEW CONCRETE SIDEWALK ON NORTH SIDE. B121-85-04 & 10
- ⑦ CONSTRUCT NEW CONCRETE SHOULDER TRAFFIC BARRIERS & CONCRETE MEDIAN TRAFFIC BARRIERS. B121-85-04, 05, 10, 12 & 19
- ⑧ INSTALL NEW ALUMINUM PEDESTRIAN HANDRAIL AND ALUMINUM TRAFFIC BARRIER RAILS. B121-85-04, 12 & 13
- ⑨ PLACE HIGH DENSITY CONCRETE DECK OVERLAY B121-85-04 & 10
- ⑩ STRENGTHEN CONCRETE GIRDERS AND REPAIR DETERIORATED AREAS OF GIRDERS B121-85-04, 07 & 08
- ⑪ STRENGTHEN PIER 6. B121-85-04 & 06
- ⑫ CONCRETE REPAIRS TO PIERS 3 & 8. B121-85-18
- ⑬ MODIFICATIONS AND REPAIRS TO ABUTMENTS AND WING WALLS. B121-85-04 & 05
- ⑭ REMOVE EXISTING BEARINGS AND REPLACE WITH NEW BEARINGS. MODIFICATIONS TO PIERS TO ACCOMMODATE NEW BEARINGS. B121-85-04, 06 & 09
- ⑮ REMOVE EXISTING AND CONSTRUCT NEW APPROACH SLABS. B121-85-04 & 19

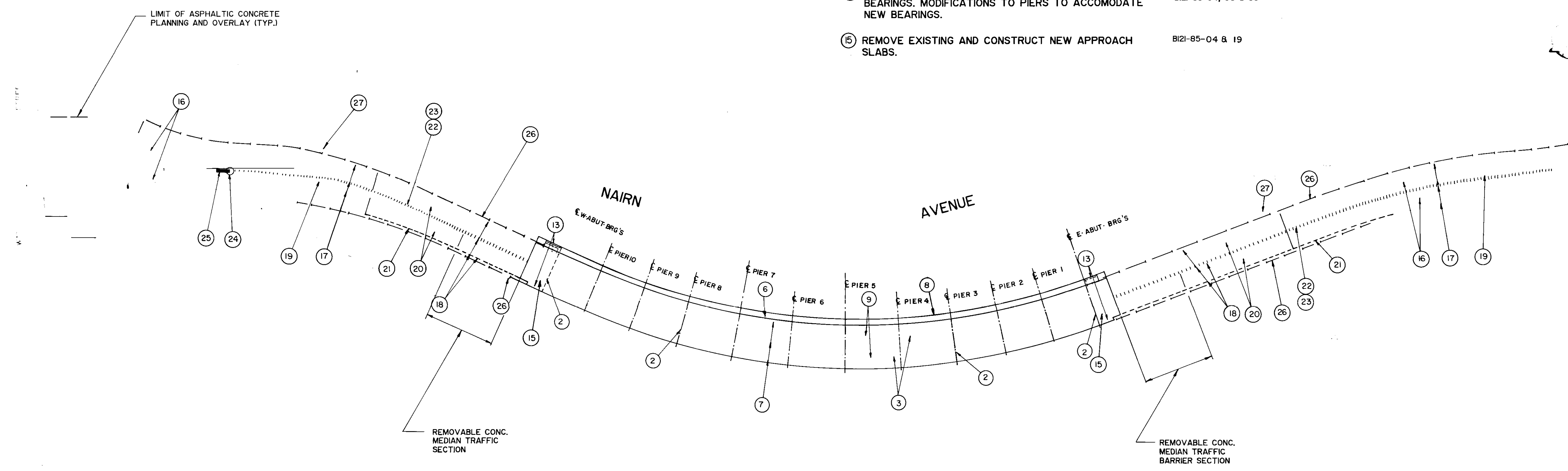
PROPOSED ROAD WORKS

- ⑯ PLANE EXISTING ASPHALTIC CONCRETE OVERLAY AND CONSTRUCT NEW ASPHALTIC CONCRETE OVERLAY. REFERENCE DRAWING No. B121-85-25, 26, 28 & 29
- ⑰ REMOVE EXISTING CONCRETE CURB. B121-85-25, 26, 28 & 29
- ⑱ REMOVE EXISTING CONCRETE CURB AND GUTTER. B121-85-25, 26, 28 & 29
- ⑲ REMOVE EXISTING CONCRETE MEDIAN SLAB. B121-85-25, 26, 28 & 29
- ⑳ REMOVE EXISTING ASPHALTIC CONCRETE PAVEMENT AND CONSTRUCT 230mm PLAIN DOWELLED CONCRETE PAVEMENT. B121-85-25, 26, 28 & 29
- ㉑ CONSTRUCT CONCRETE BARRIER CURB. B121-85-30, 31, 33 & 34
- ㉒ CONSTRUCT CONCRETE MEDIAN BARRIER SLAB. B121-85-30, 31, 33 & 34
- ㉓ CONSTRUCT CAST-IN-PLACE CONCRETE MEDIAN BARRIER. B121-85-30, 31, 33 & 34
- ㉔ CONSTRUCT CONCRETE CANTILEVER SIGN PEDESTAL. B121-85-30, 31, 33 & 34
- ㉕ SUPPLY AND INSTALL G.R.E.A.T. BARRIER. B121-85-30, 31, 33 & 34
- ㉖ SUPPLY AND INSTALL ALUMINUM BALANCED BARRIER. B121-85-30, 31, 33 & 34
- ㉗ CONSTRUCT MONOLITHIC CONCRETE CURB AND SIDEWALK B121-85-30, 31, 33 & 34
- ㉘ CONSTRUCT AND MAINTAIN DETOURS B121-85-48



PROPOSED DECK CROSS-SECTION

SCALE - 1 : 100



PLAN

SCALE - 1 : 1000

B-5569

RECORD DRAWING

① RECORD DRAWING NOV. 86/185

Knpkal
June 17/84

THE CITY

Nairn Avenue Overpass

DECK REHABILITATION, STRUCTURAL STRENGTHENING AND RELATED WORKS

GENERAL ARRANGEMENT AND ITEMS OF PROPOSED WORKS

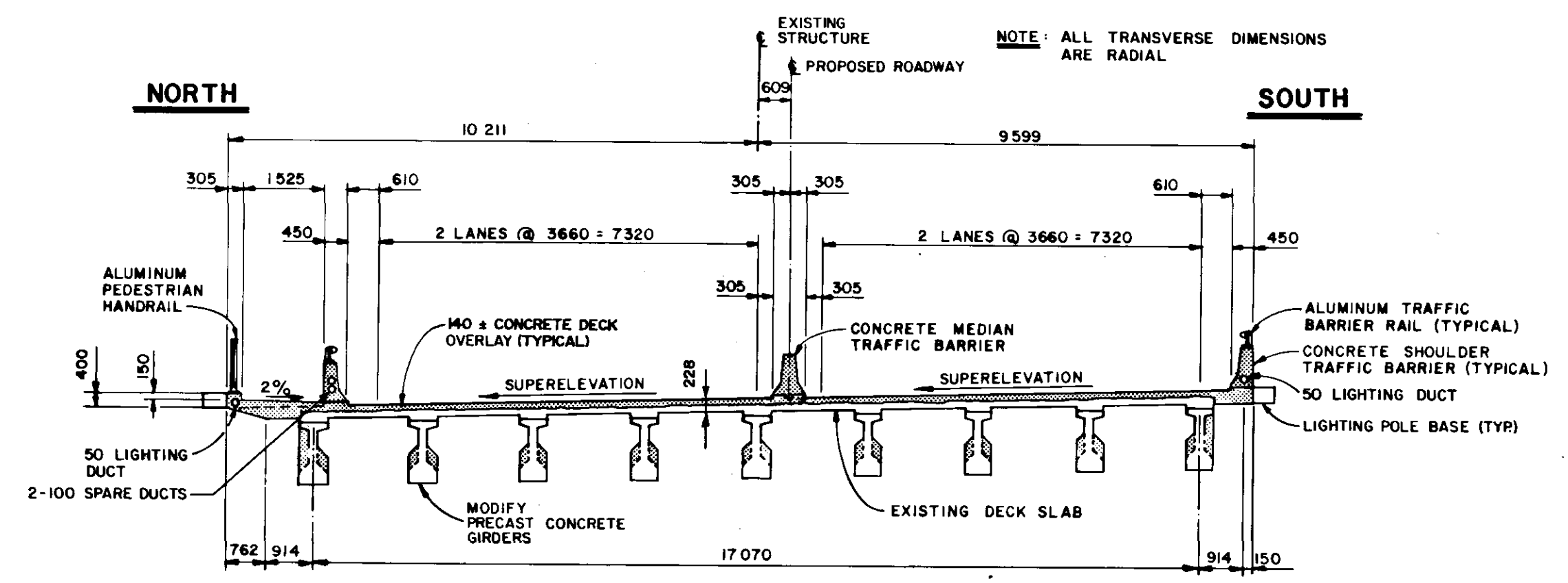
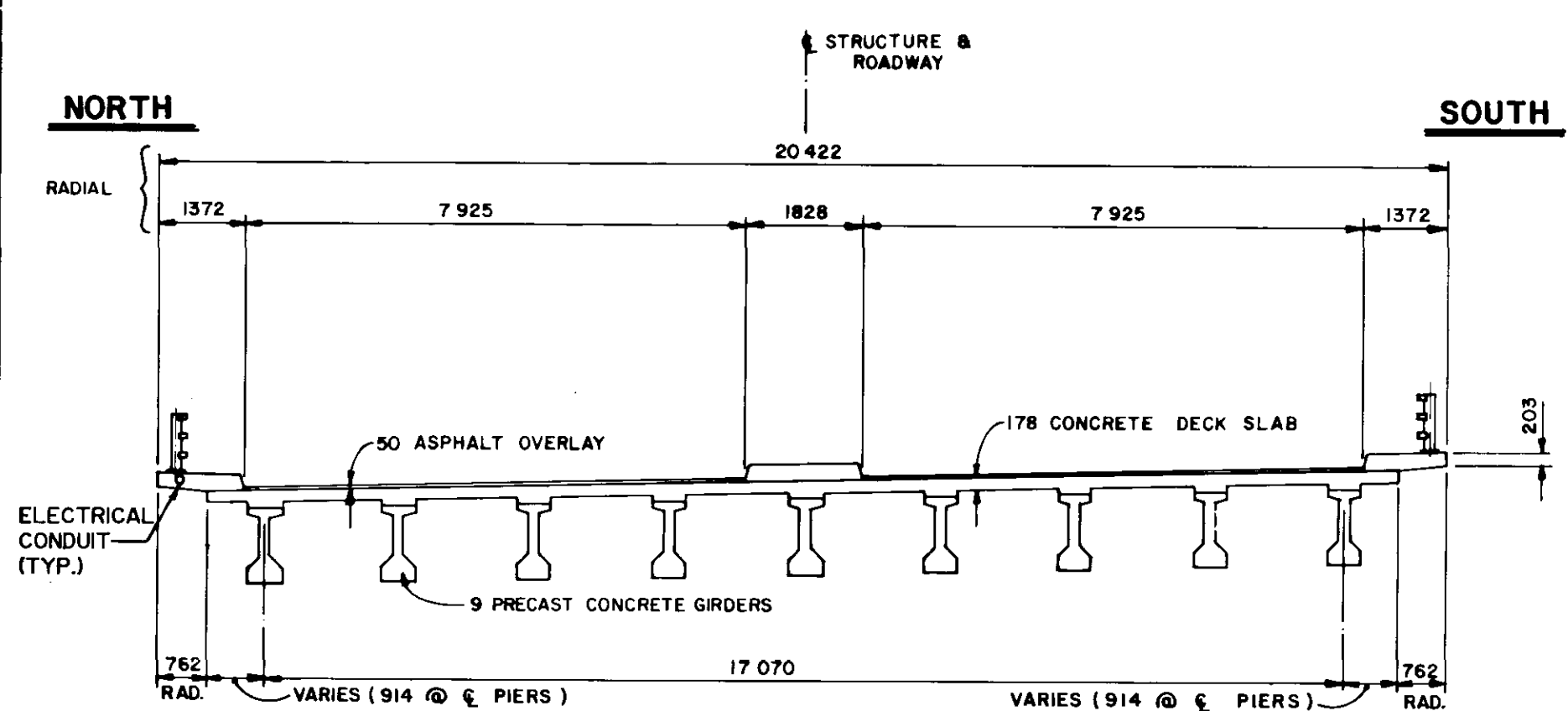
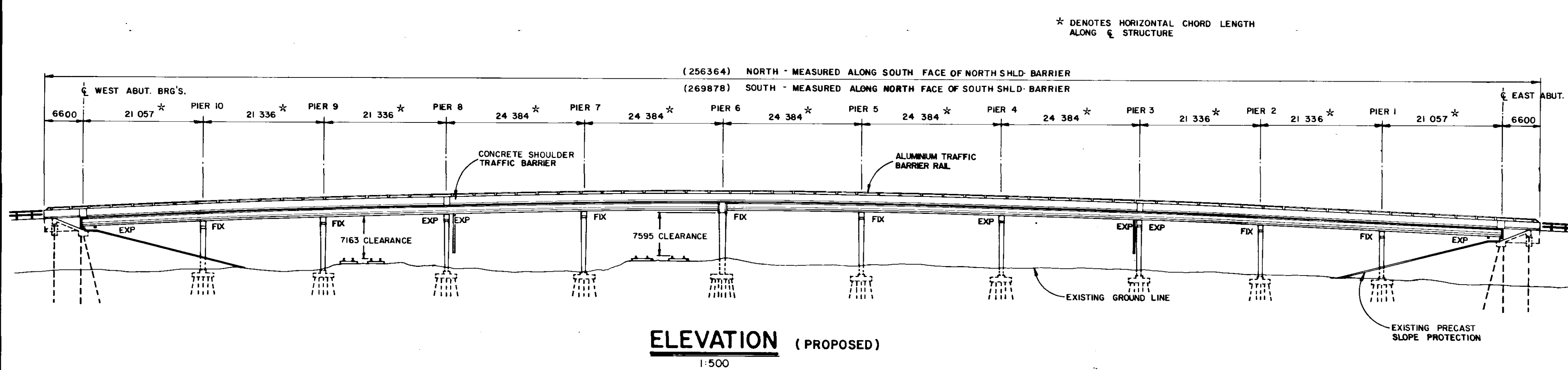
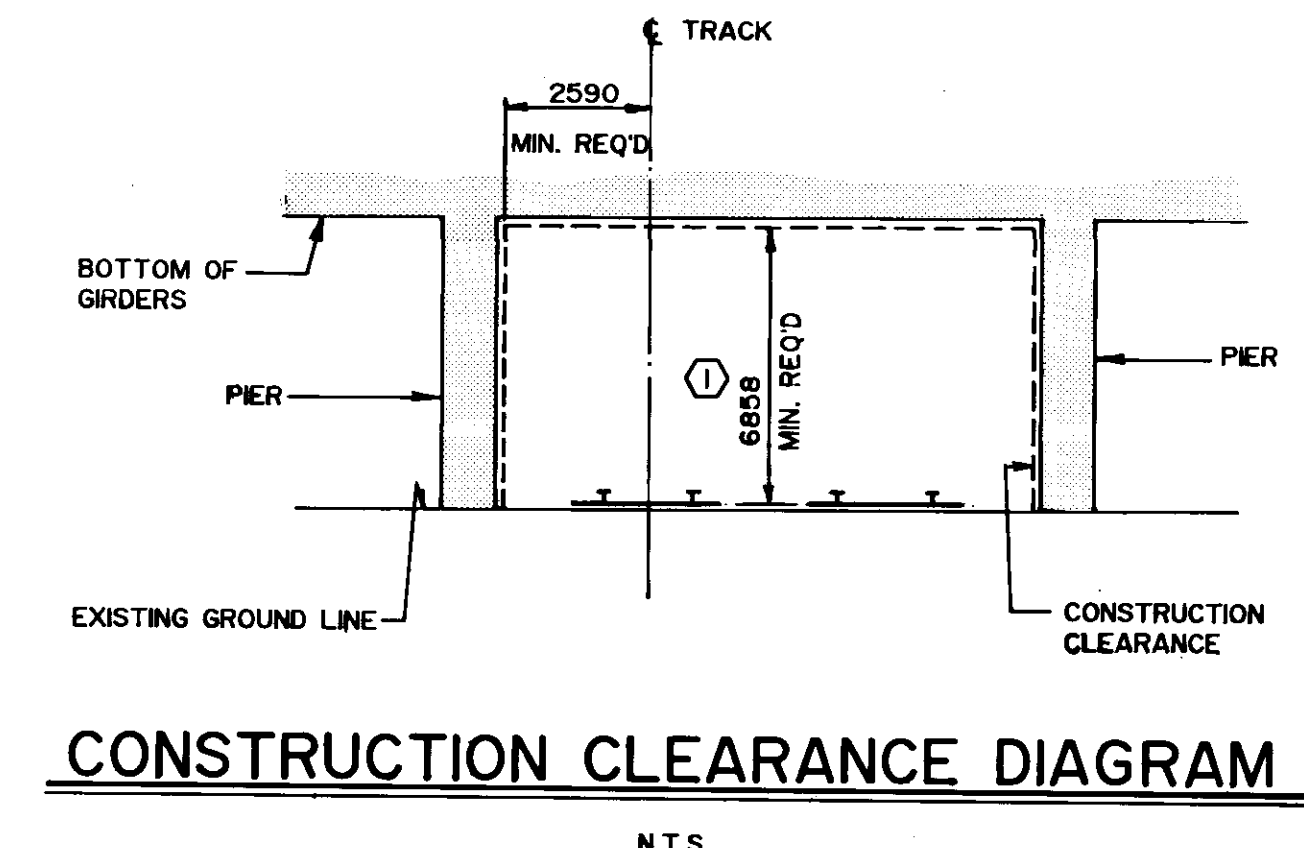
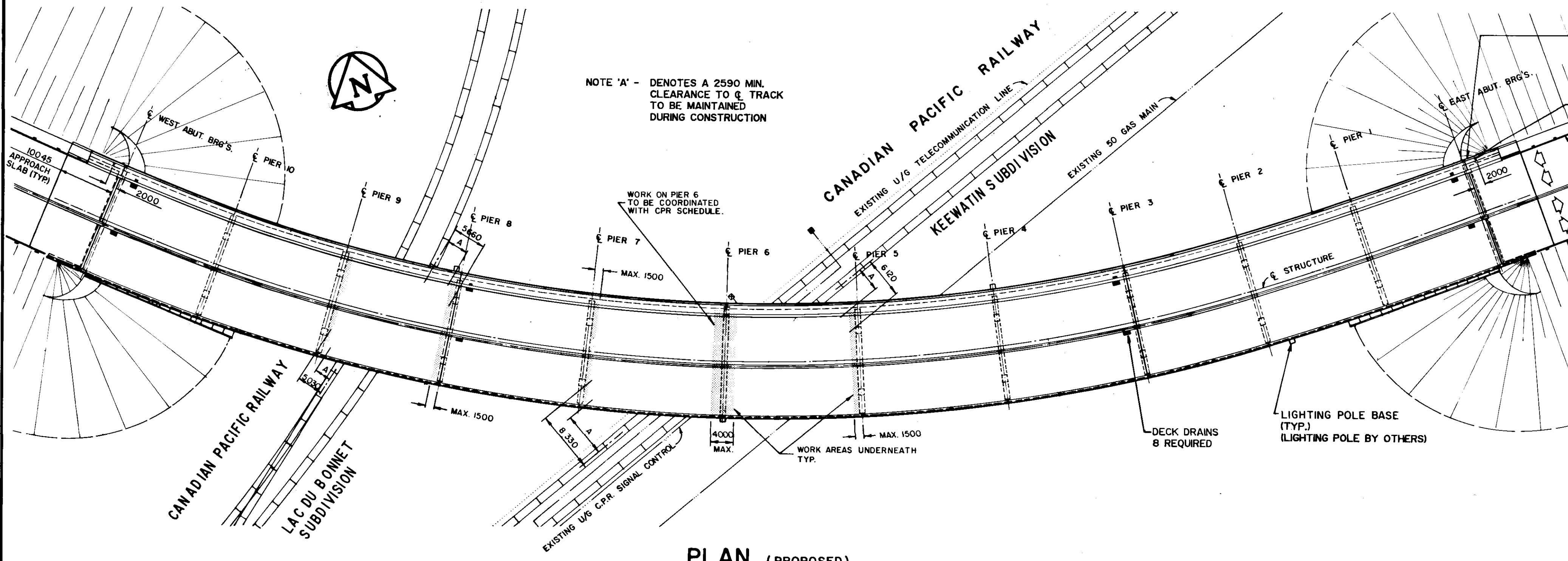
Wunder, P. Eng. 1985-04-16
Abbott, P. Eng. 85 04 16

AS NOTED B121-85-03

K.U. bgd
APRIL 1985
JOB No. 0265-216-01

J.T.
June 15/84

RECORD DRAWING NOV. 86/185



EXISTING DECK CROSS-SECTION
SCALE = 1:100

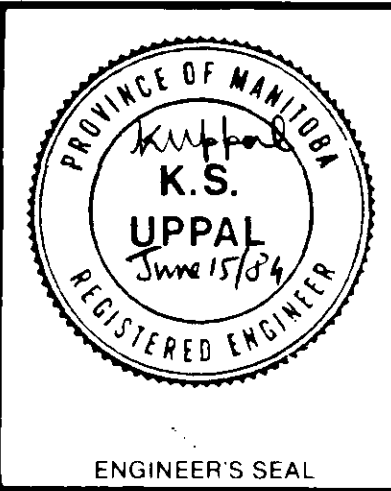
PROPOSED DECK CROSS-SECTION
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RECORD DRAWING

B-5570
METRIC

WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

NO	REVISIONS	DATE	APP
3	RECORD DRAWING	NOV.86	
2	DECK HOARDING DETAILS ADDED	JAN.-86	
1	ADDENDUM NO. 2	MAY-85	



the uma group		Underwood McLellan Ltd. Consulting Engineers and Planners	
DESIGNED BY:	K.U.	DRAWN BY:	A.T.
CHECKED BY:	J.T.	DATE:	APRIL 1985
APPROVED:	[Signature]	JOB No:	0265-216-01
		DATE:	June 14 1984

THE CITY OF WINNIPEG

WORKS & OPERATIONS DIVISION

STREETS & TRANSPORTATION DEPARTMENT

NAIRN AVENUE OVERPASS
DECK REHABILITATION, STRUCTURAL STRENGTHENING AND RELATED WORKS

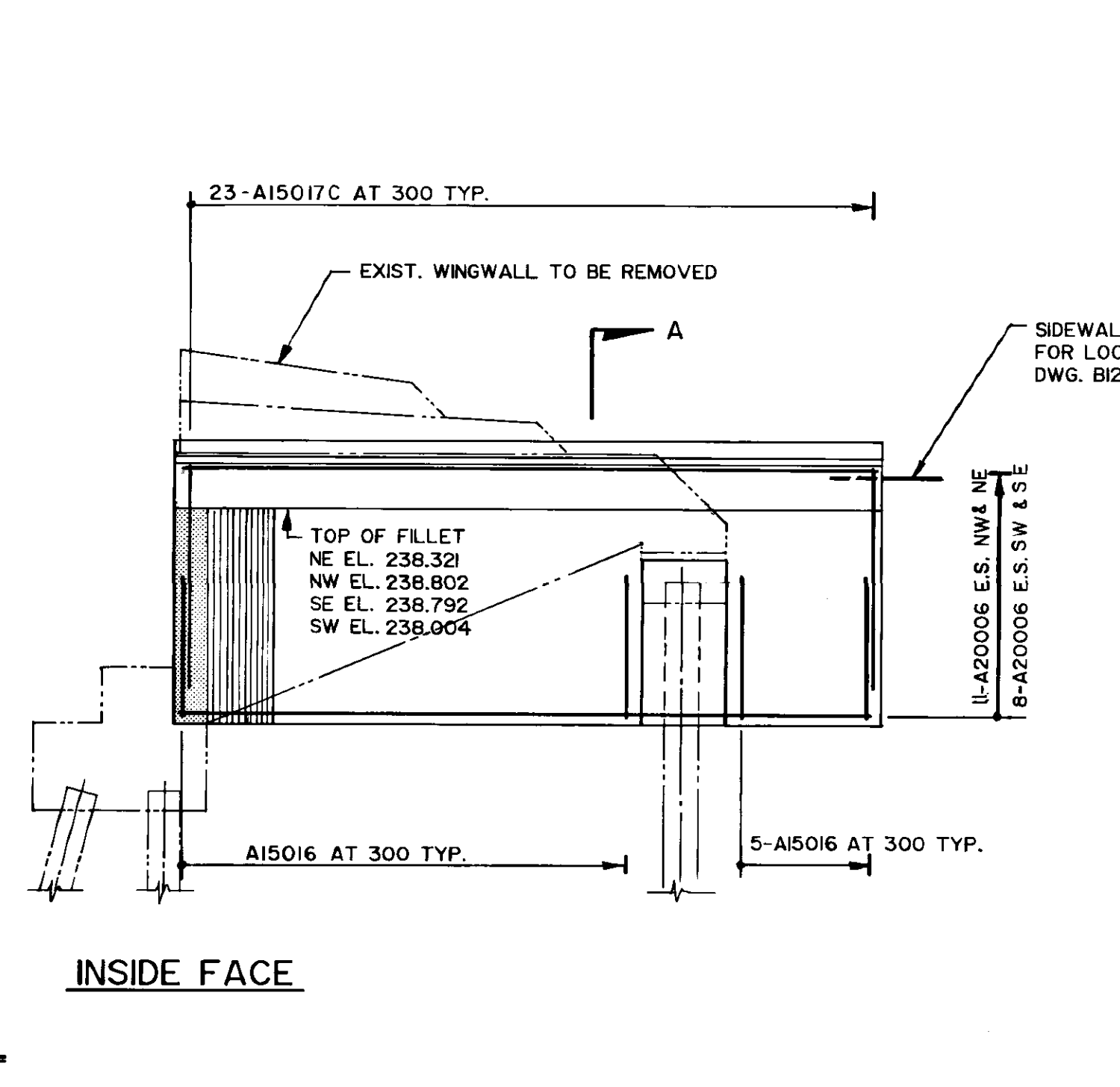
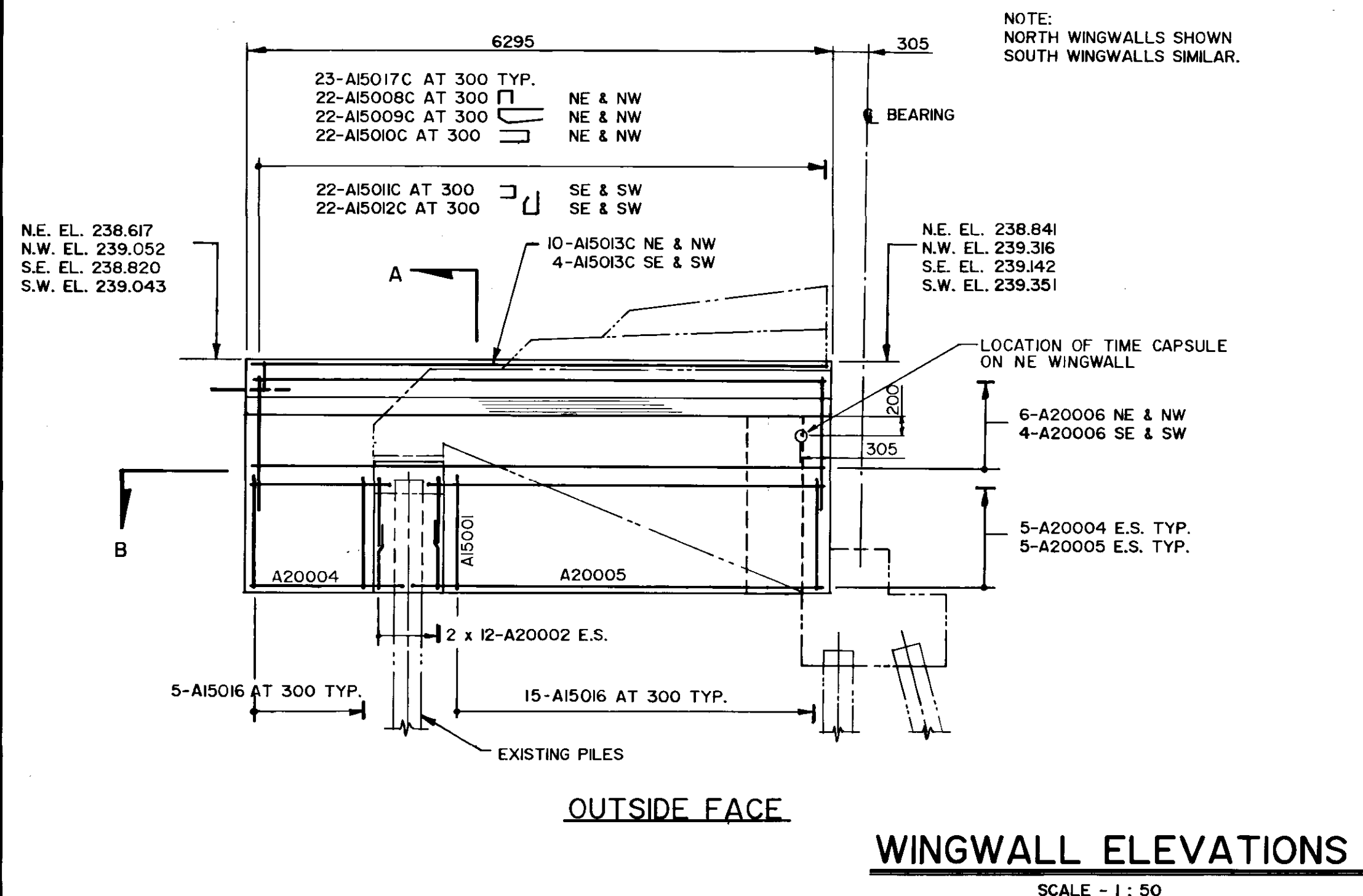
PLAN AND GENERAL ELEVATION OF EXISTING AND PROPOSED OVERPASS

AUTHORIZED BY: [Signature] DATE: 1985-04-16

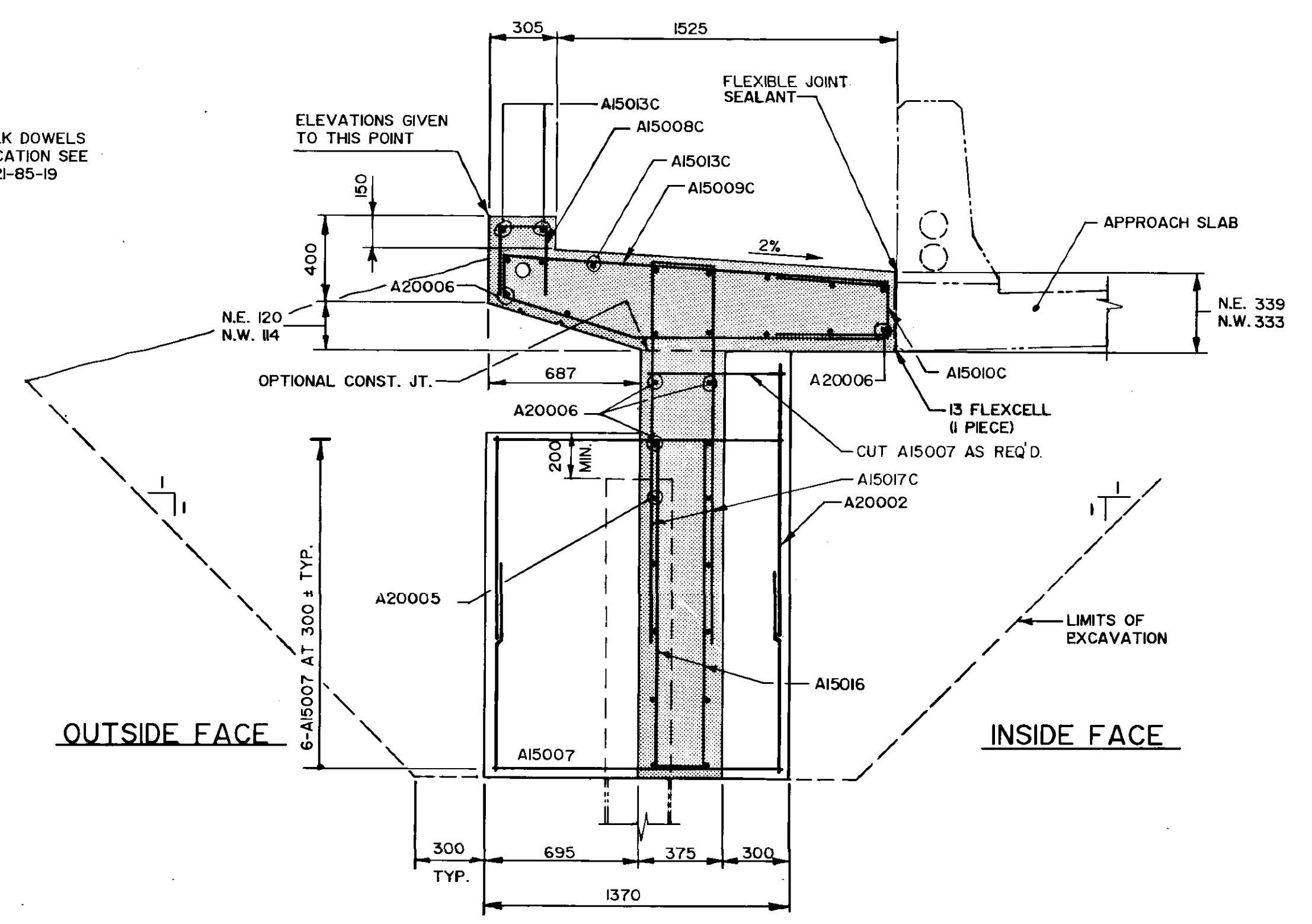
ACCEPTED BY: [Signature] DATE: 05-04-85

SCALE: AS SHOWN

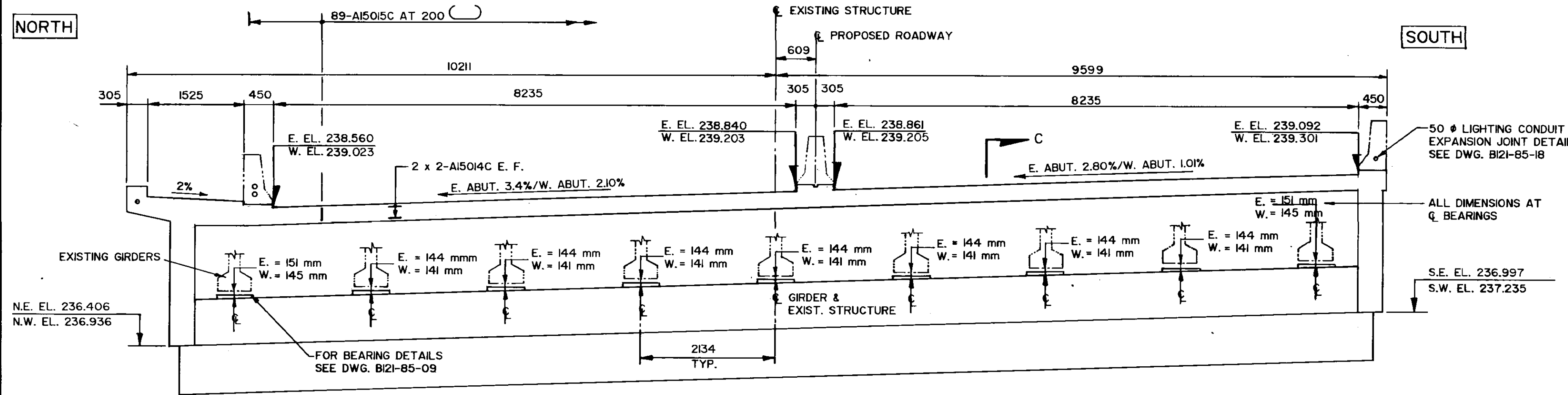
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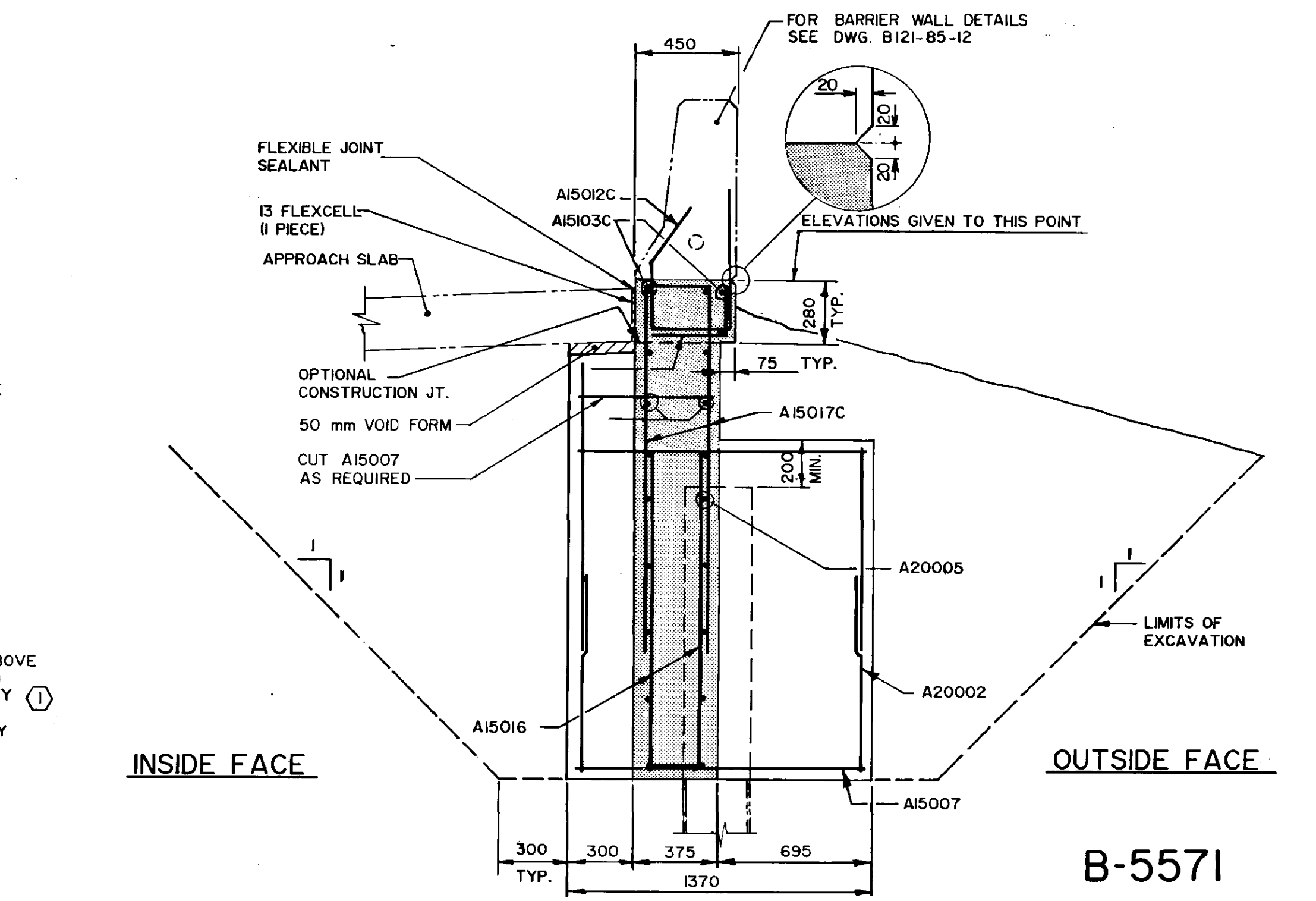
WINGWALL ELEVATIONS
SCALE - 1 : 50



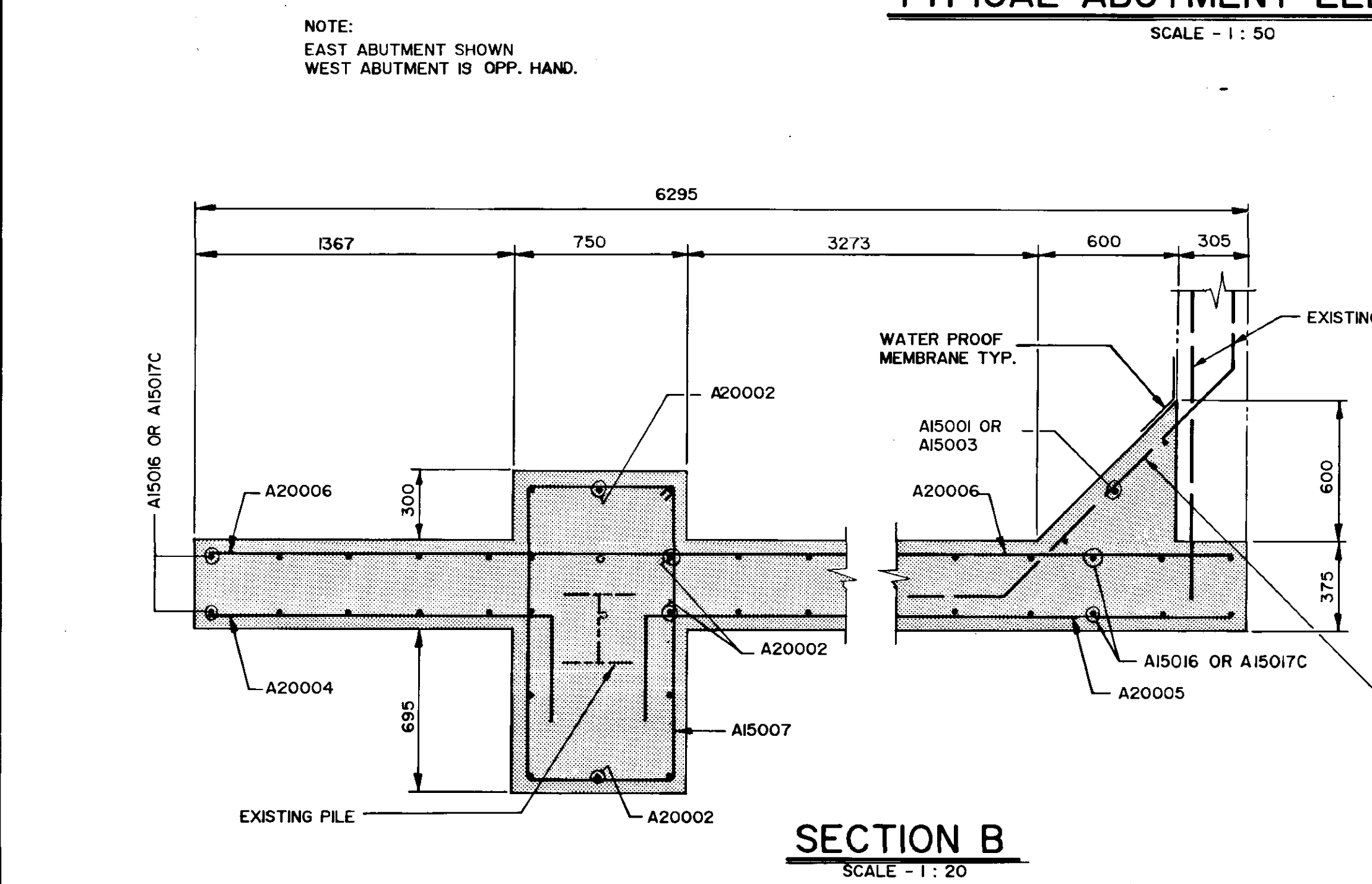
SECTION A
SCALE - 1 : 20
(N.W. & N.E. WINGWALLS)



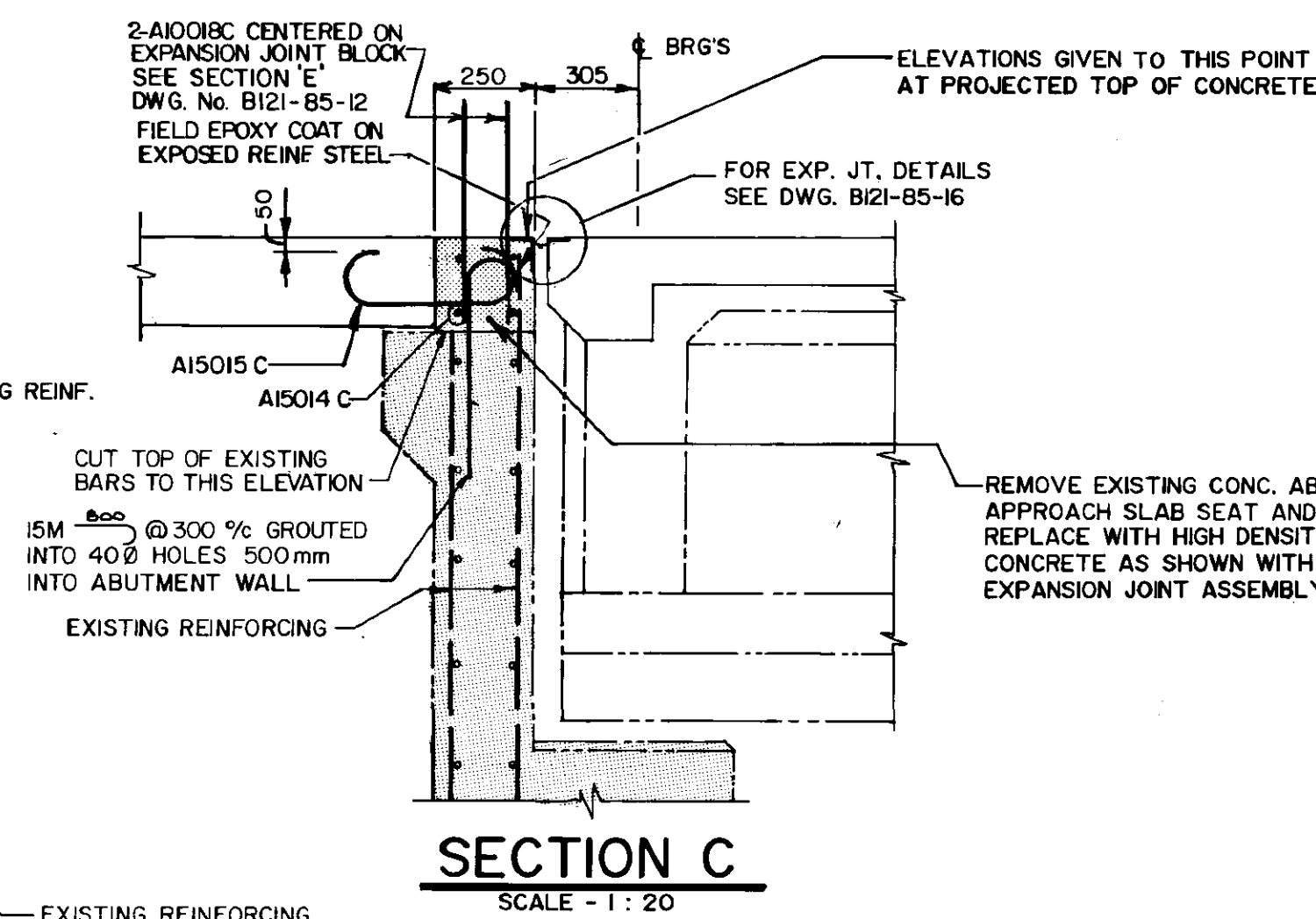
TYPICAL ABUTMENT ELEVATION
SCALE - 1 : 50



SECTION A
SCALE - 1 : 20
(S.W. & S.E. WINGWALLS)



SECTION B
SCALE - 1 : 20



SECTION C
SCALE - 1 : 20

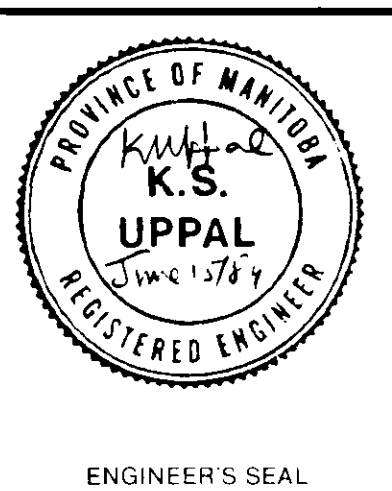
RECORD DRAWING

SECTION A
SCALE - 1 : 20
(S.W. & S.E. WINGWALLS)

**B-5571
METRIC**

WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

NO.	REVISIONS	DATE	APP.
1	RECORD DRAWING	NOV-86	
2	ADDENDUM NO. 1	MAY-85	



DESIGNED BY: K.U.	DRAWN BY: E.J.B.
CHECKED BY: J.T.	DATE: APRIL 1985
APPROVED BY:	DATE: <i>June 10 1984</i>

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

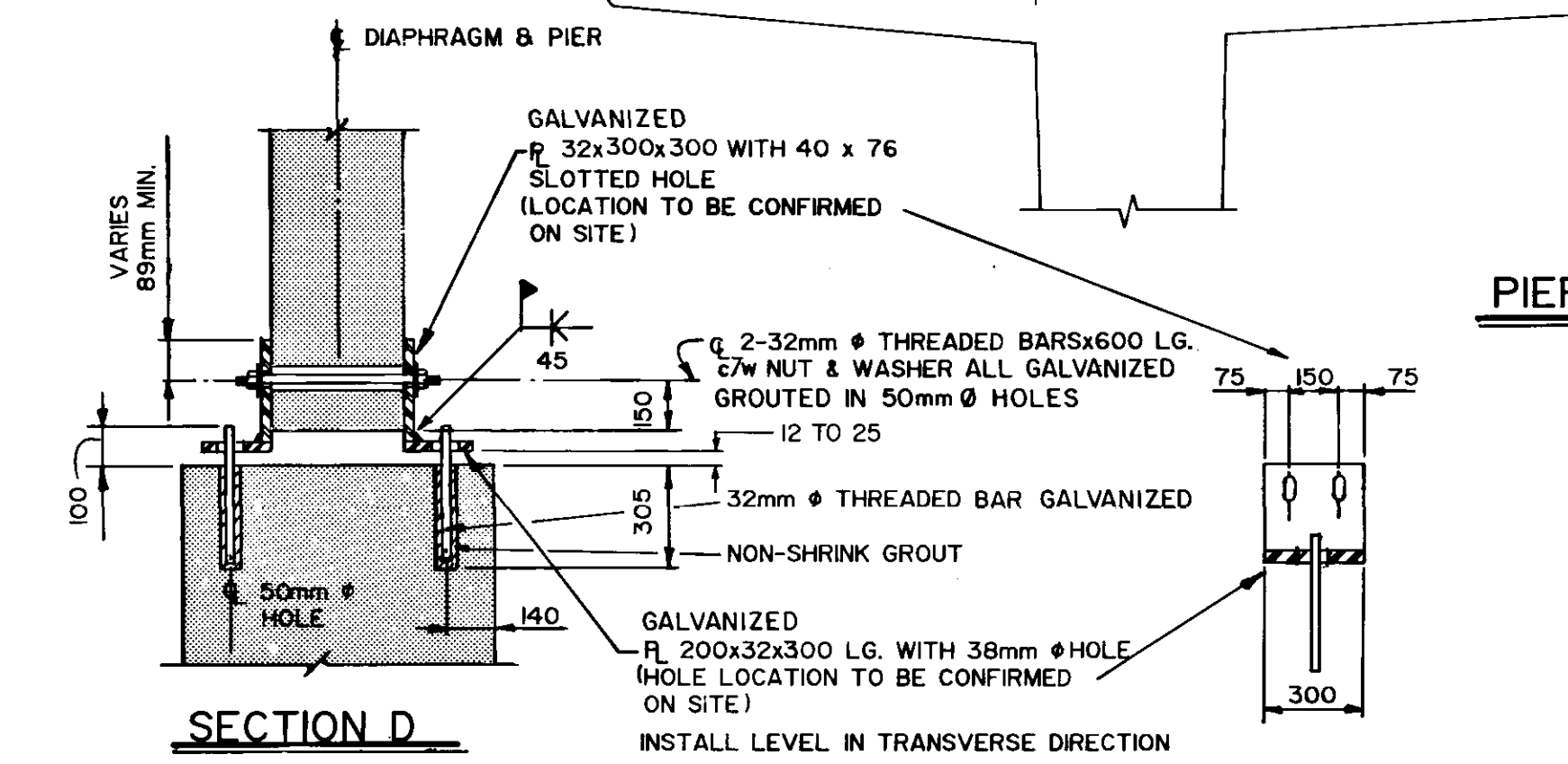
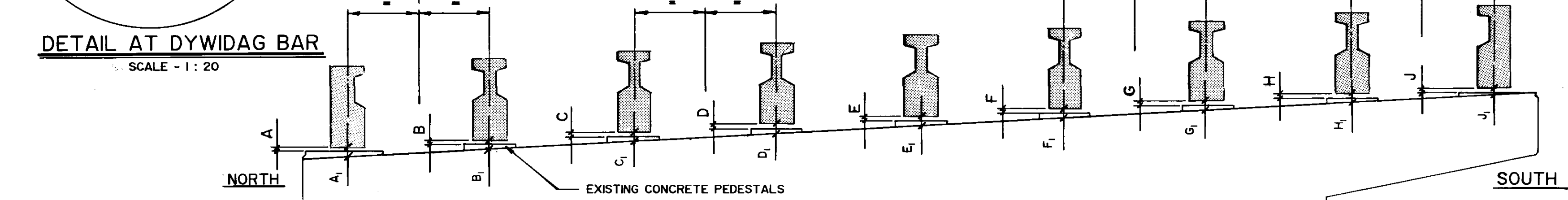
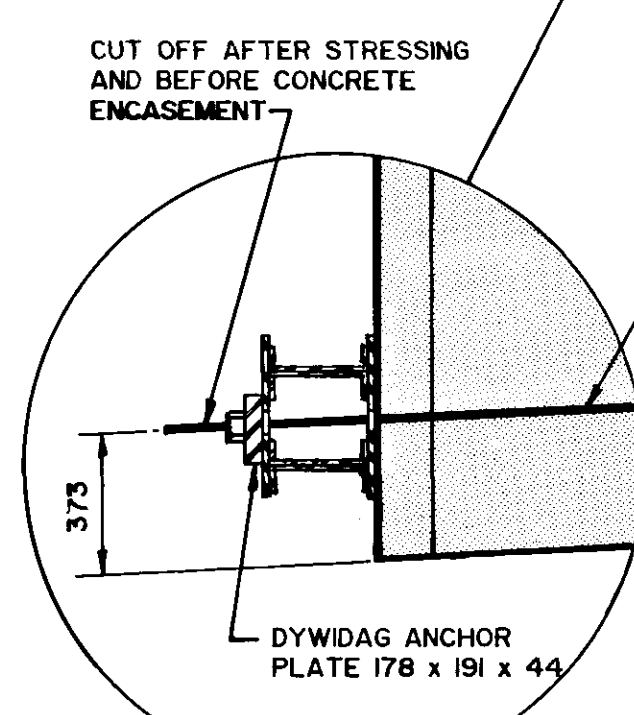
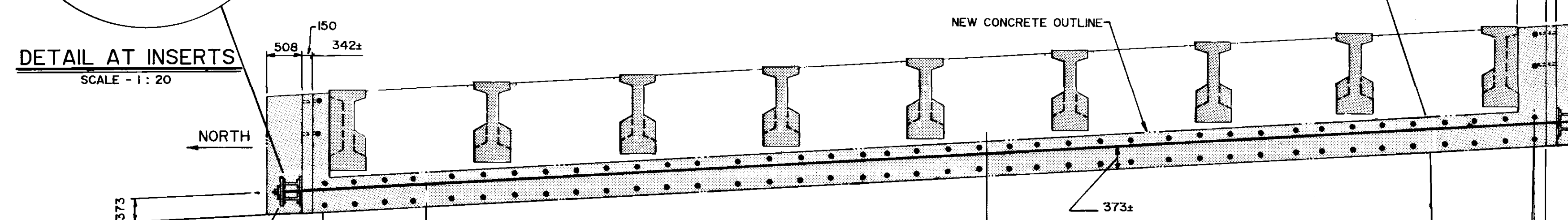
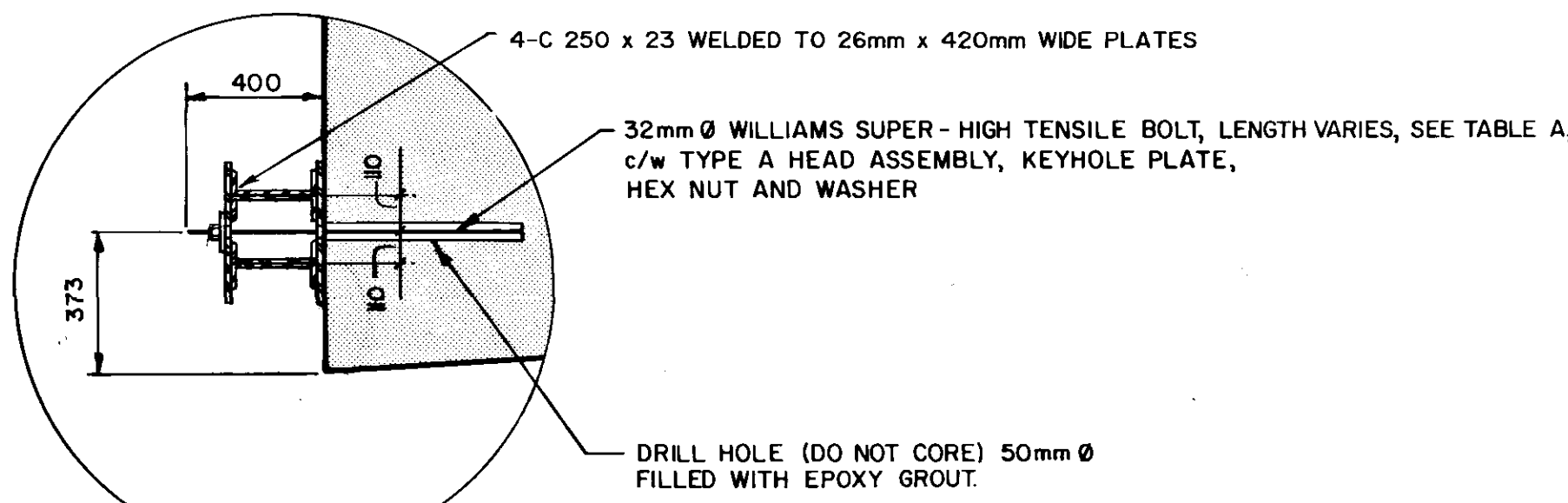
NAIRN AVENUE OVERPASS
DECK REHABILITATION, STRUCTURAL STRENGTHENING AND RELATED WORKS

ABUTMENT AND WINGWALL MODIFICATIONS

AUTHORIZED BY: *Winnipeg P. Eng. 1985-04-16*

ACCEPTED BY: *Streets & Bridges Engineer* DATE: *25 04 86*

SCALE: AS SHOWN DRAWING NO. B121-85-05



TYPICAL AT PIERS 1, 2, 5, 7, 9 & 10 SCALE - 1:20

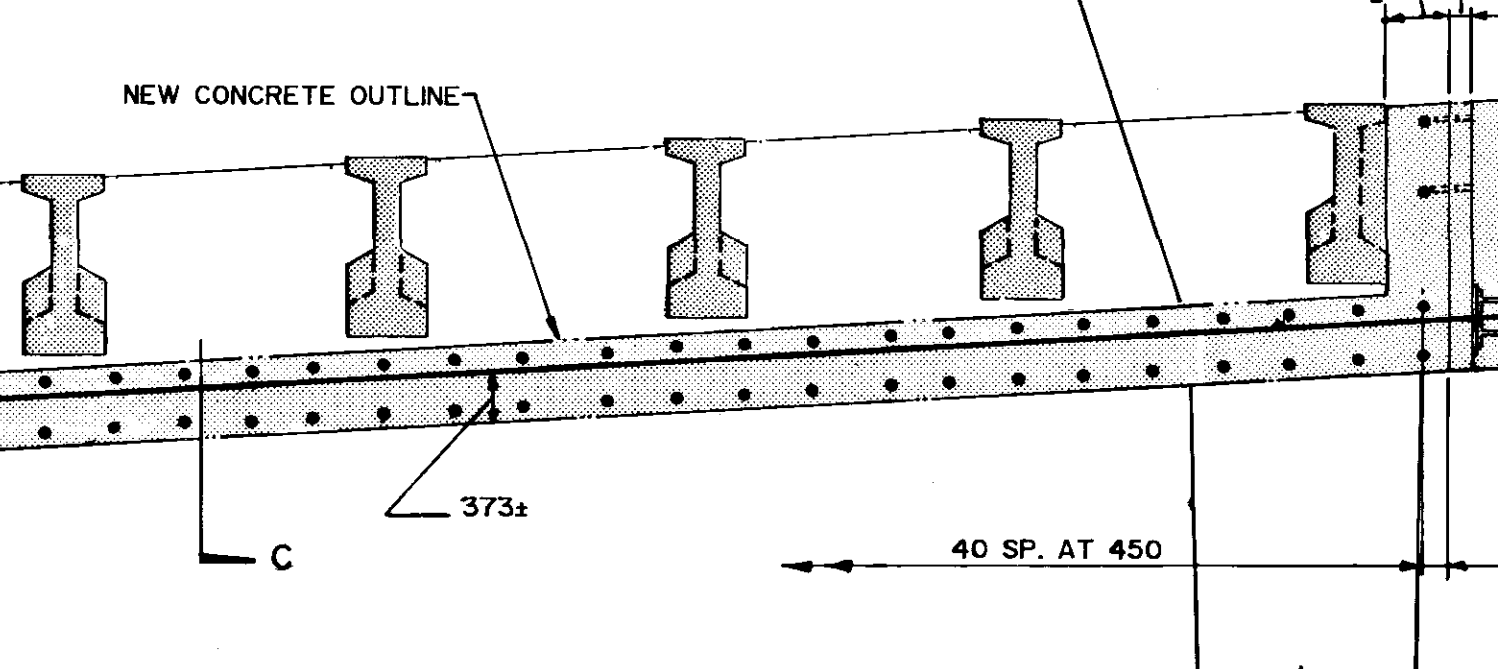
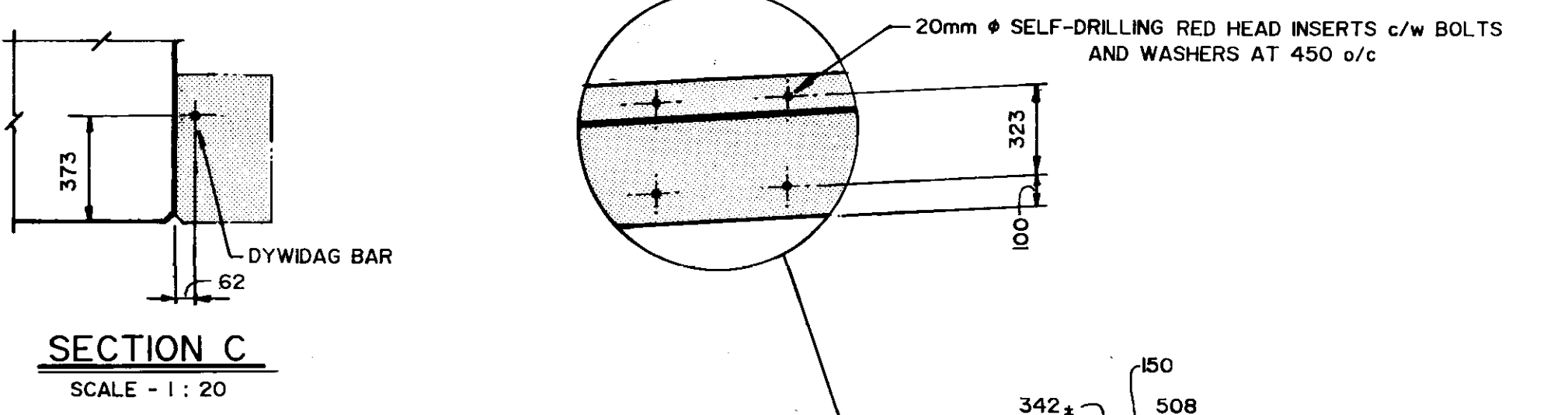
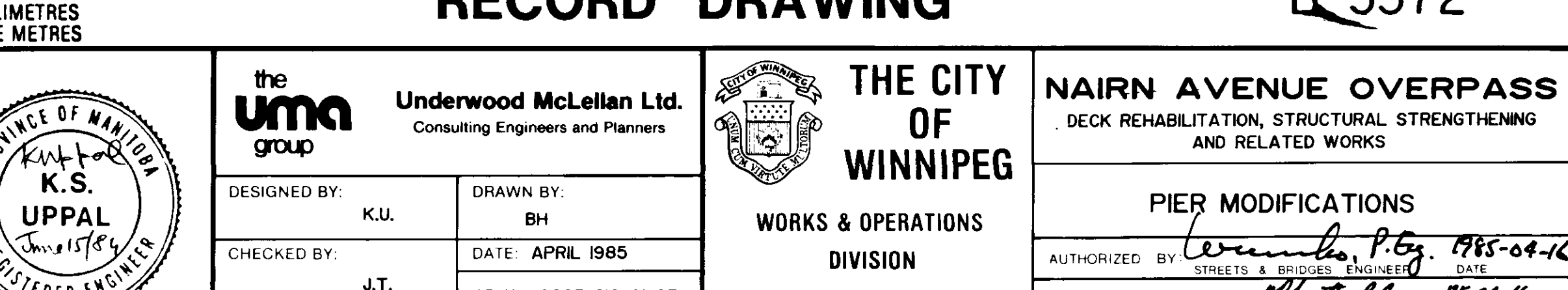
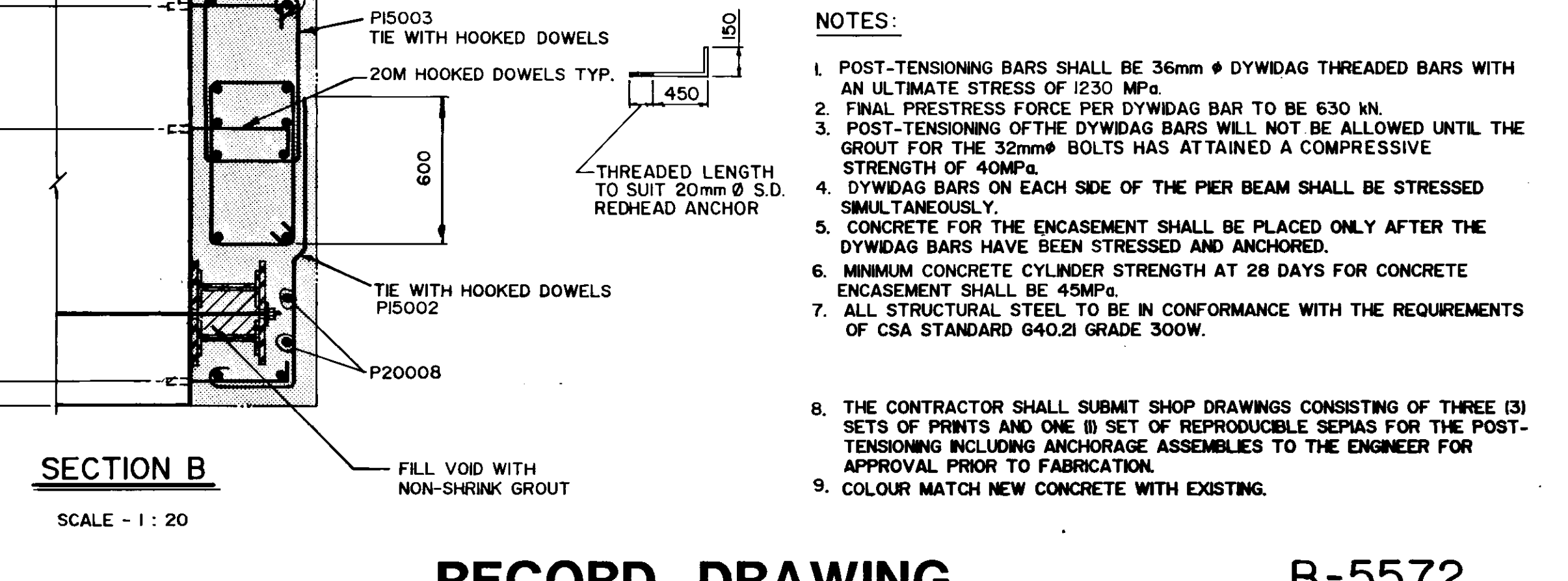
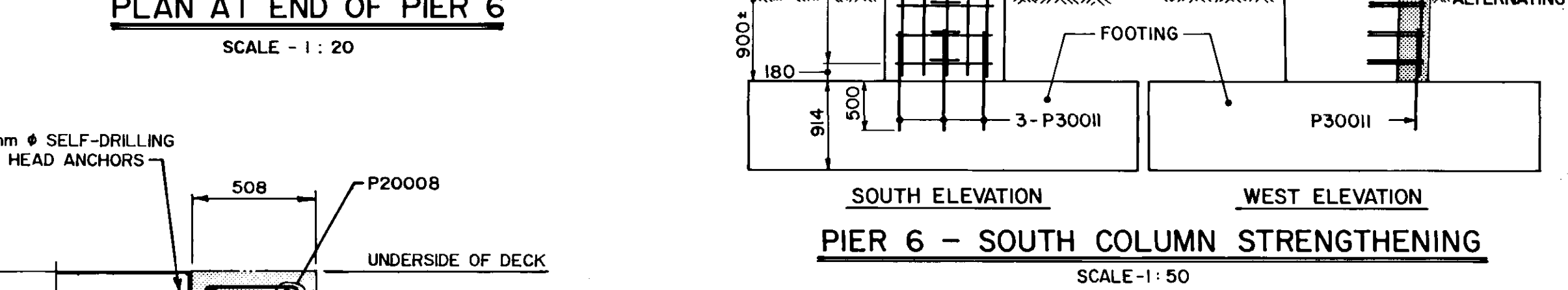
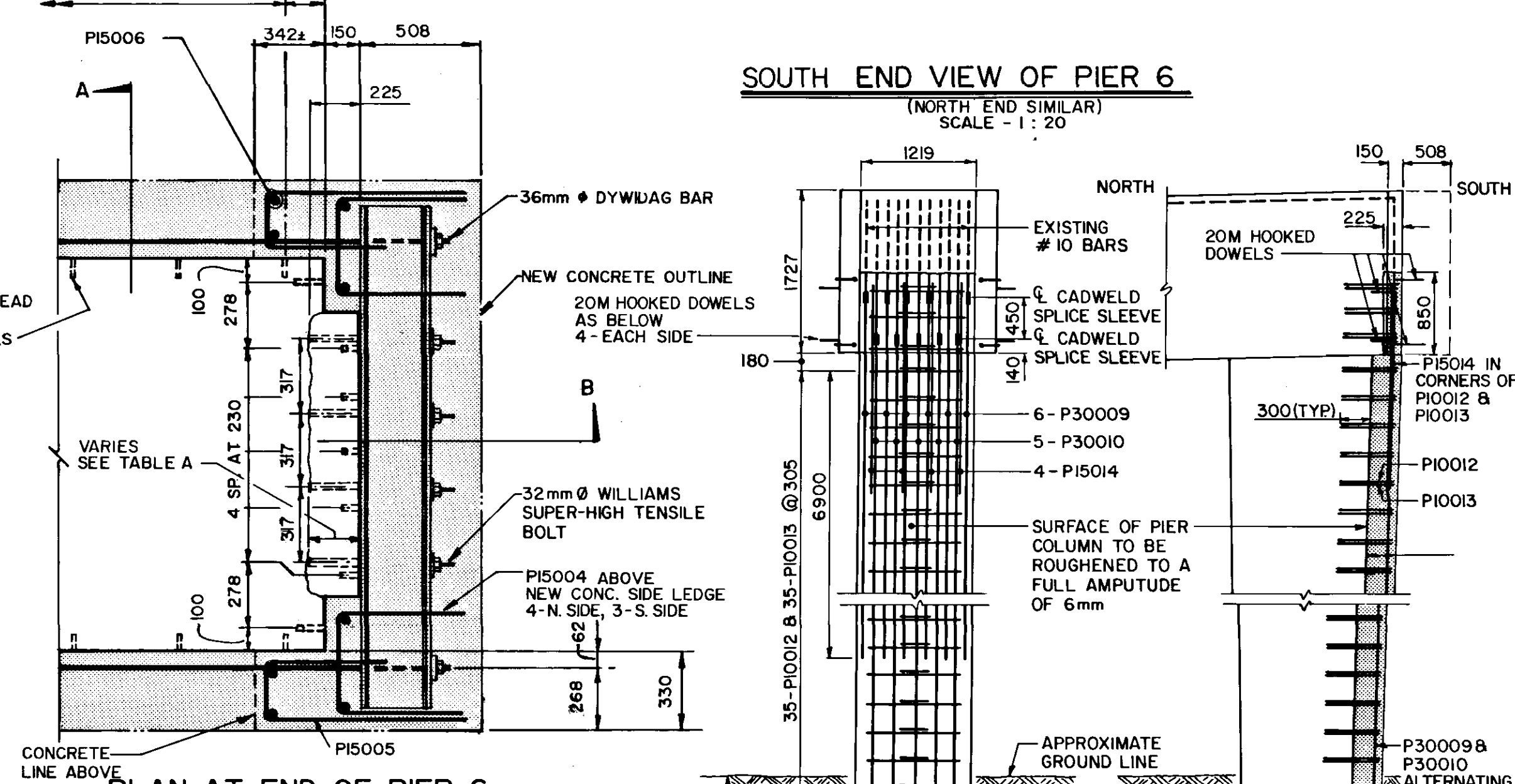
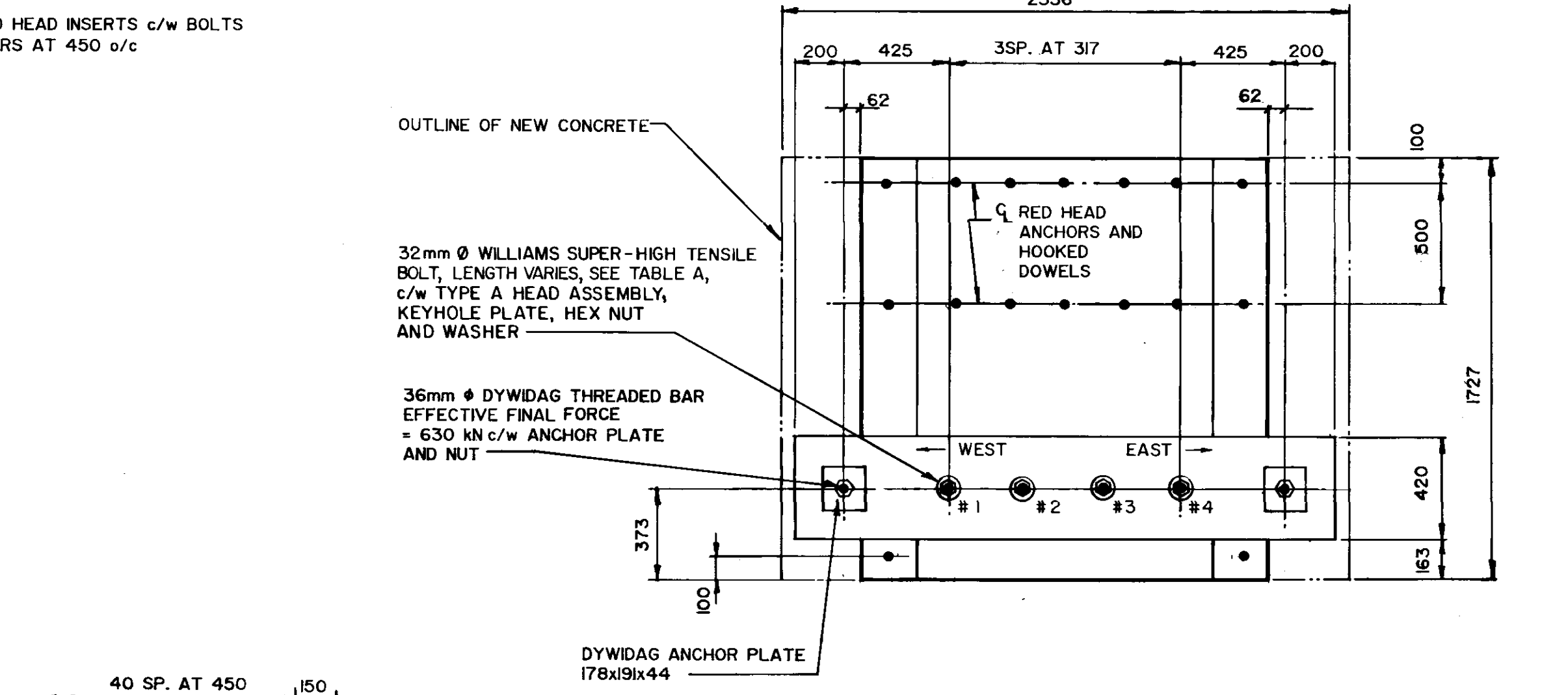
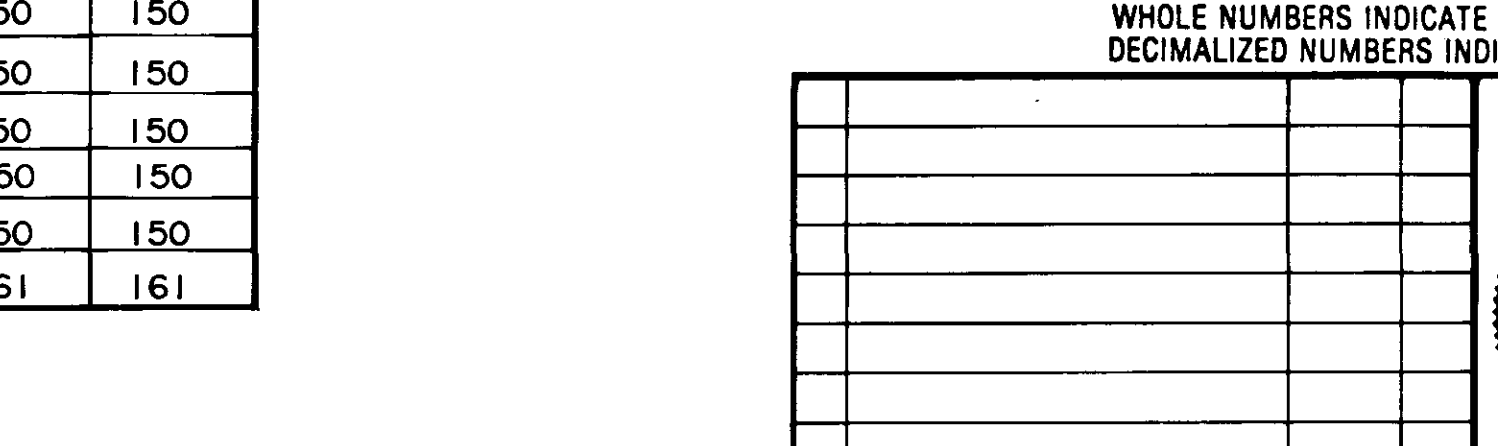
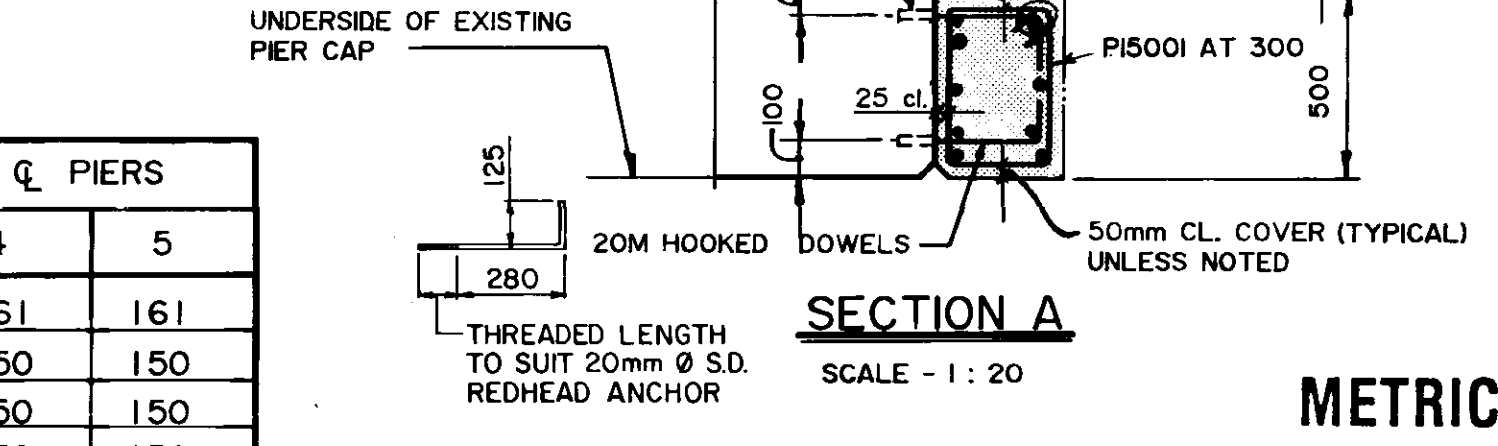
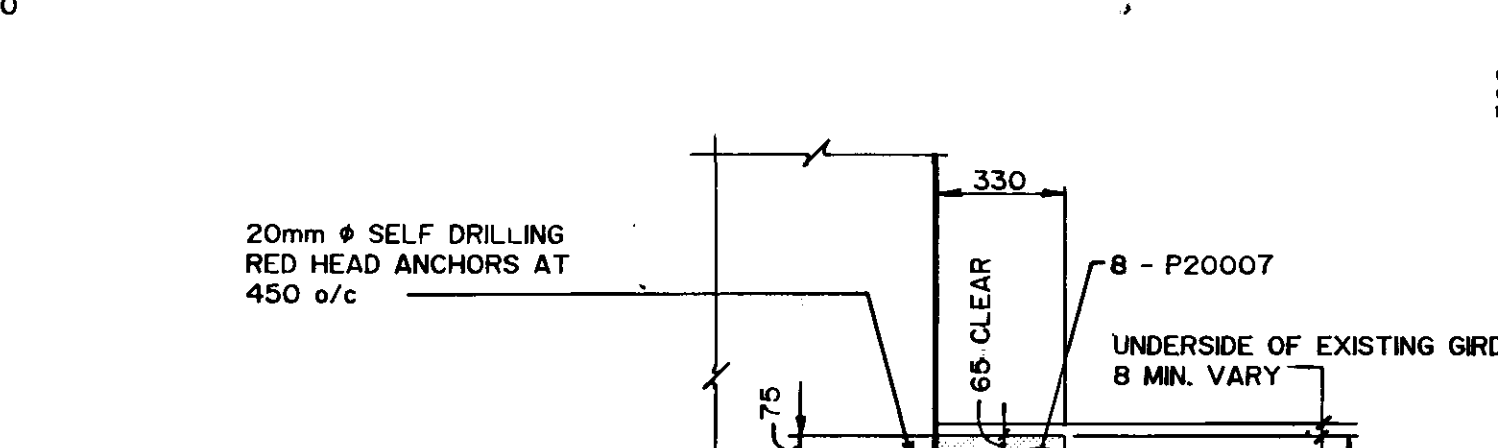
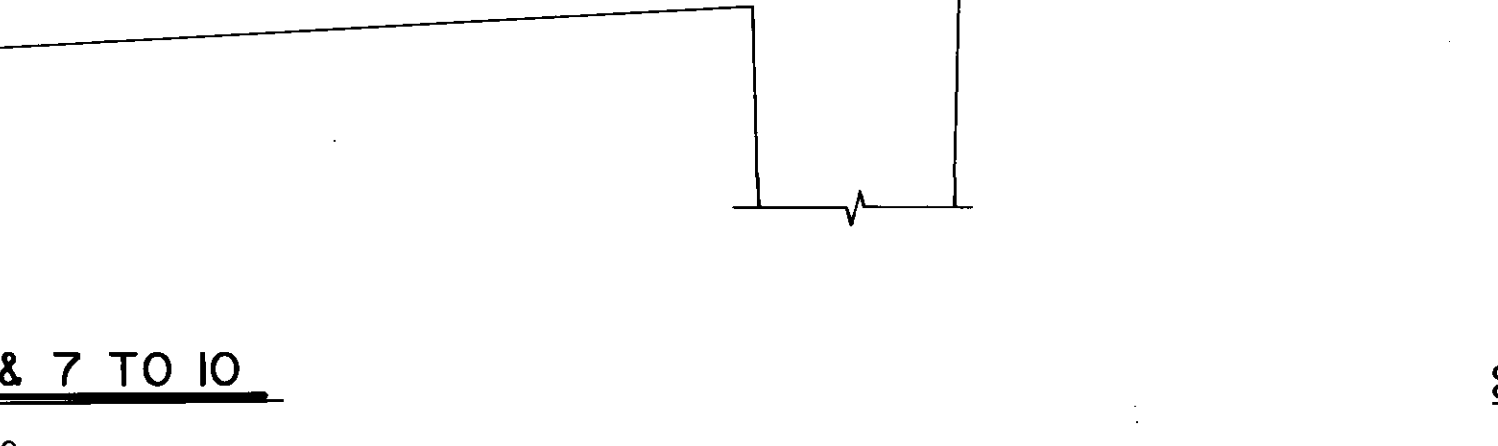
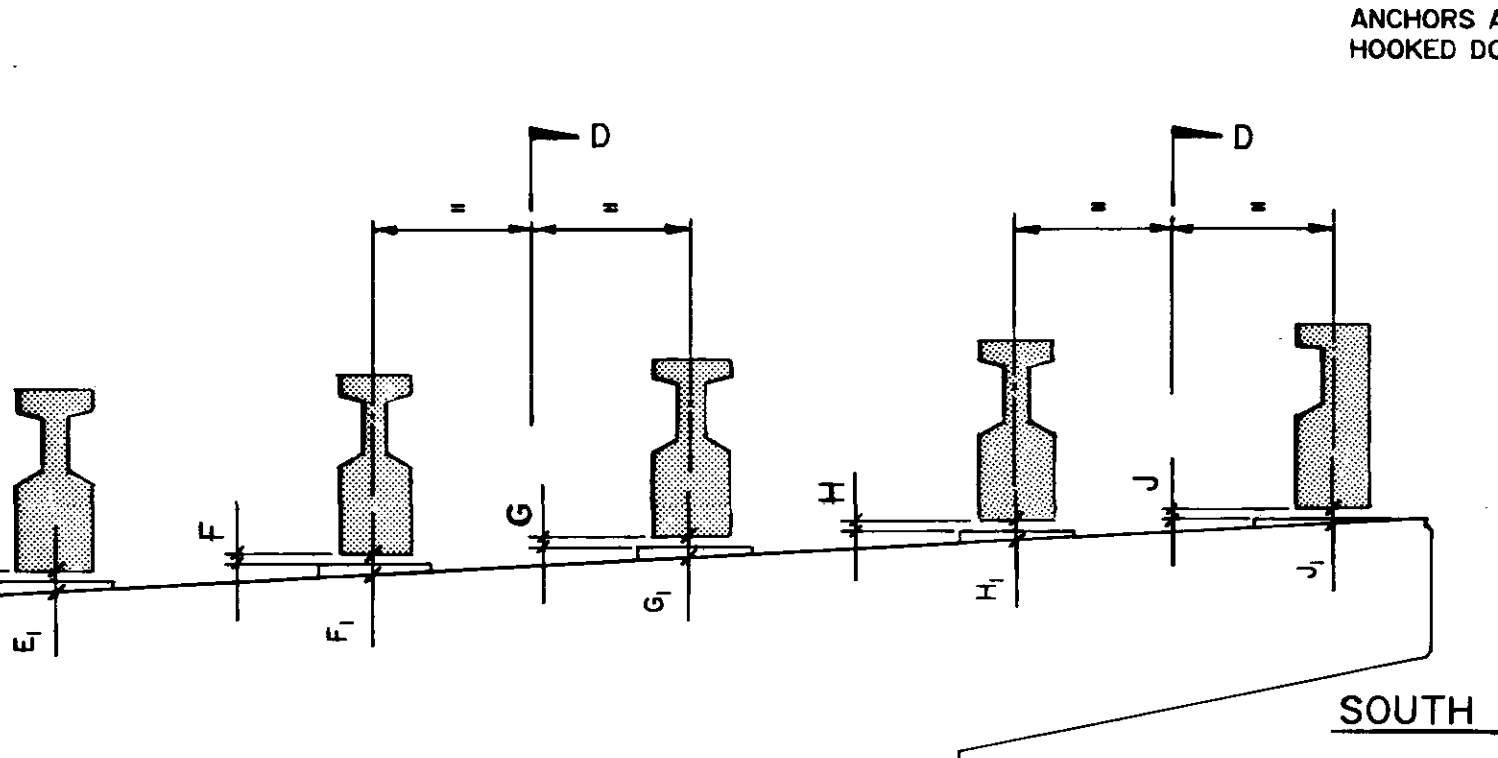


TABLE A: WILLIAMS SUPER HIGH TENSILE BOLT DATA

NORTH SIDE	HOLE DEPTH(mm)	TEST LOAD (kN)	SOUTH SIDE		
			HOLE DEPTH(mm)	TEST LOAD (kN)	
#1	438	0.645	#1	610	1.392
#2	508	1.165	#2	685	1.357
#3	508	1.165	#3	381	0.645
#4	457	0.778	#4	381	0.614



DEPTH	DISTANCE AT C PERS					
	1	2	5	7	9	10
A	25	25	25	25	25	25
B	25	25	25	25	25	25
C	25	25	25	25	25	25
D	25	25	25	25	25	25
E	25	25	25	25	25	25
F	25	25	25	25	25	25
G	25	25	25	25	25	25
H	25	25	25	25	25	25
J	25	25	25	25	25	25

DEPTH	DISTANCE AT C PERS		
	3	4	5
A ₁	161	161	161
B ₁	150	150	150
C ₁	150	150	150
D ₁	150	150	150
E ₁	150	150	150
F ₁	150	150	150
G ₁	150	150	150
H ₁	150	150	150
J ₁	161	161	161

- NOTES:**
- POST-TENSIONING BARS SHALL BE 36mm ϕ DYWIDAG THREADED BARS WITH AN ULTIMATE STRESS OF 1230 MPa.
 - FINAL PRESTRESS FORCE PER DYWIDAG BAR TO BE 630 kN.
 - POST-TENSIONING OF THE DYWIDAG BARS WILL NOT BE ALLOWED UNTIL THE GROUT FOR THE 32mm ϕ BOLTS HAS ATAINED A COMPRESSIVE STRENGTH OF 40MPa.
 - DYWIDAG BARS ON EACH SIDE OF THE PIER BEAM SHALL BE STRESSED SIMULTANEOUSLY.
 - CONCRETE FOR THE ENCASEMENT SHALL BE PLACED ONLY AFTER THE DYWIDAG BARS HAVE BEEN STRESSED AND ANCHORED.
 - MINIMUM CONCRETE CYLINDER STRENGTH AT 28 DAYS FOR CONCRETE ENCASEMENT SHALL BE 45MPa.
 - ALL STRUCTURAL STEEL TO BE IN CONFORMANCE WITH THE REQUIREMENTS OF CSA STANDARD G40.21 GRADE 300W.
 - THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS CONSISTING OF THREE (3) SETS OF PRINTS AND ONE (1) SET OF REPRODUCIBLE SEPIAS FOR THE POST-TENSIONING INCLUDING ANCHORAGE ASSEMBLIES TO THE ENGINEER FOR APPROVAL PRIOR TO FABRICATION.
 - COLOUR MATCH NEW CONCRETE WITH EXISTING.

RECORD DRAWING B-5572

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

DESIGNED BY: K.U.	DRAWN BY: BH
CHECKED BY: J.T.	DATE: APRIL 1985
APPROVED BY: <i>[Signature]</i>	DATE: <i>[Date]</i>

JOB No. 0265-216-01-03

the **uma** group Underwood McLellan Ltd. Consulting Engineers and Planners

PROVINCE OF MANITOBA K.S. UPPAL REGISTERED ENGINEER

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

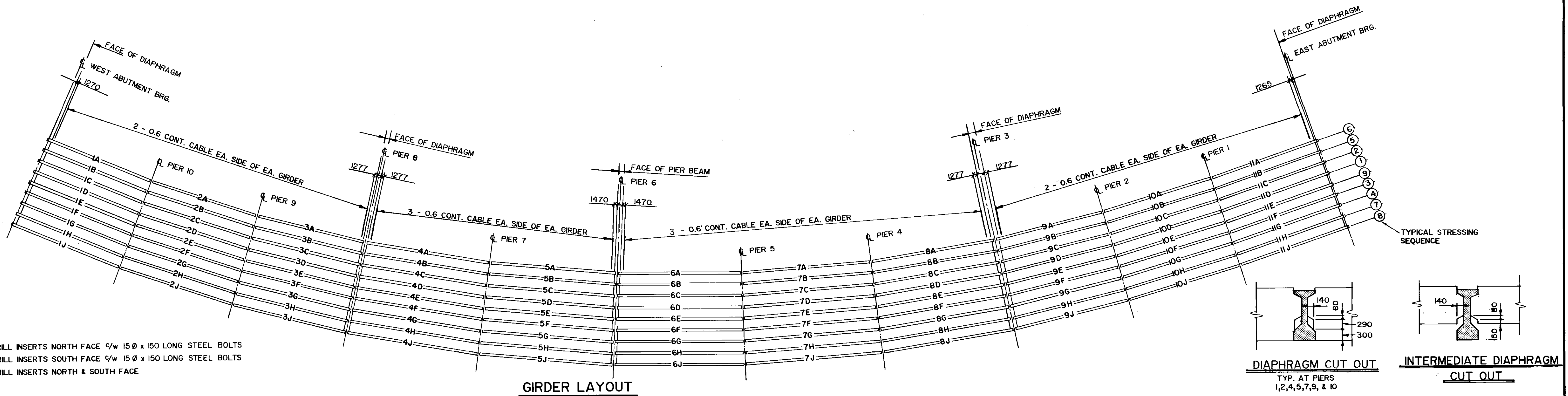
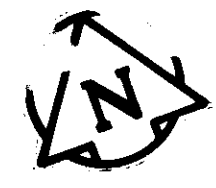
NAIRN AVENUE OVERPASS
DECK REHABILITATION, STRUCTURAL STRENGTHENING AND RELATED WORKS

PIER MODIFICATIONS

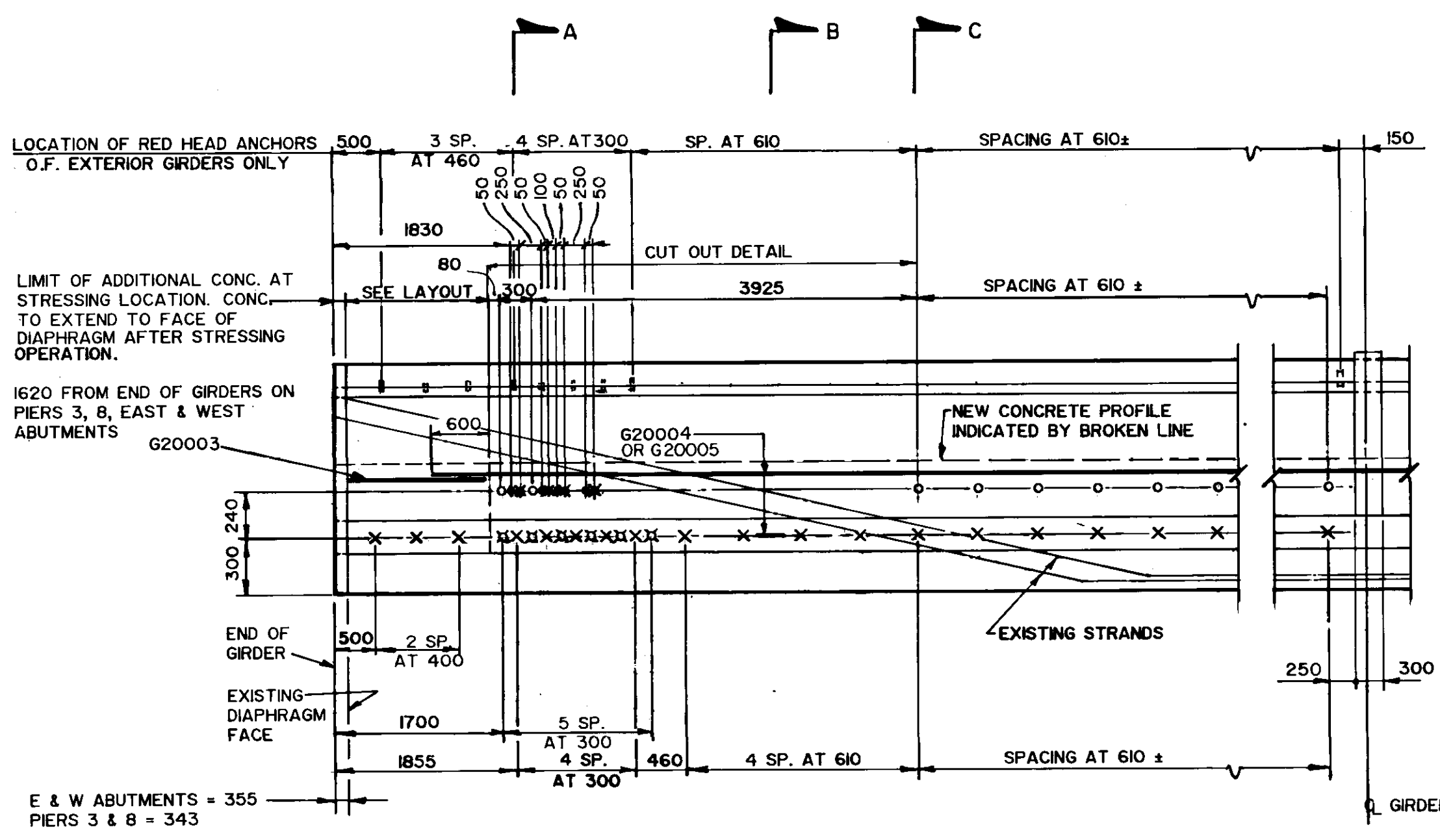
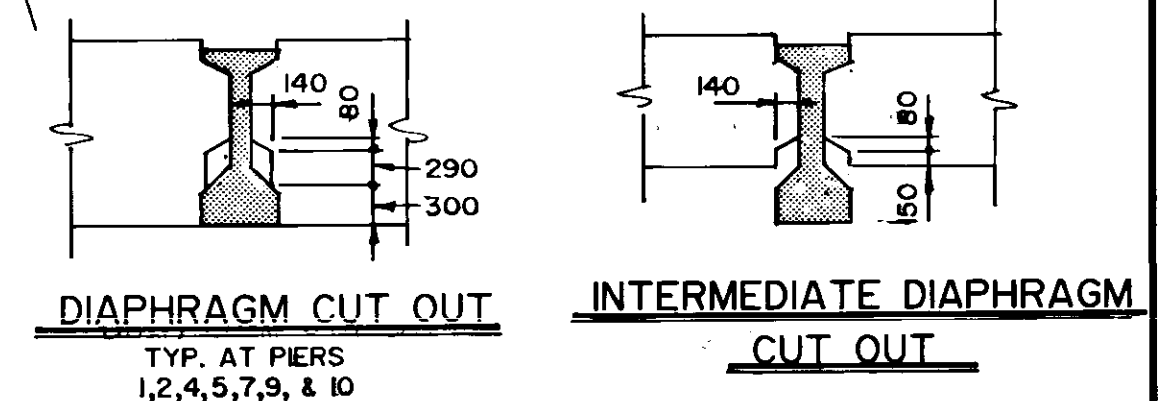
AUTHORIZED BY: *[Signature]* DATE: *[Date]*

ACCEPTED BY: *[Signature]* DATE: *[Date]*

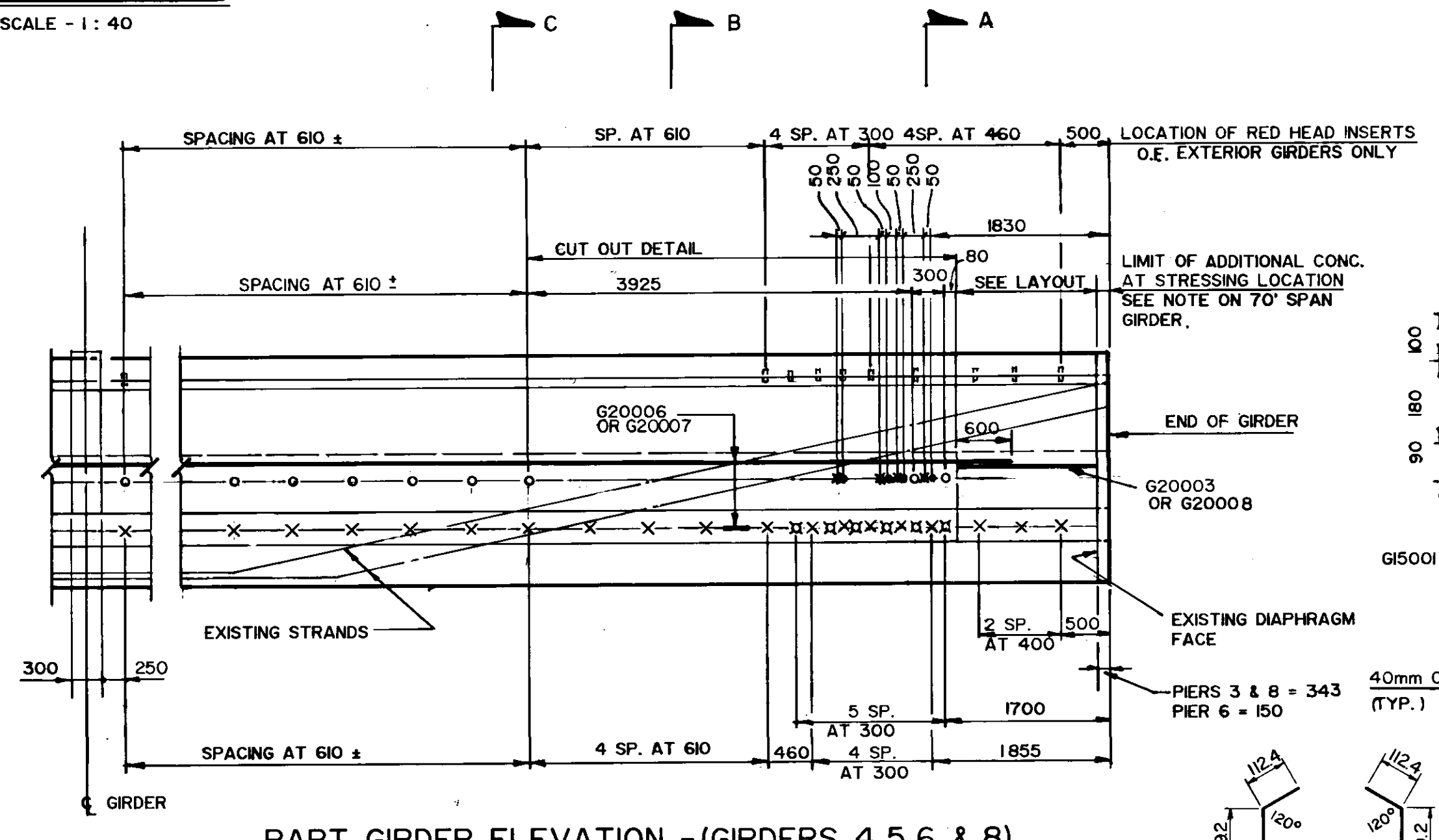
SCALE: AS NOTED DRAWING NO. B121-85-06



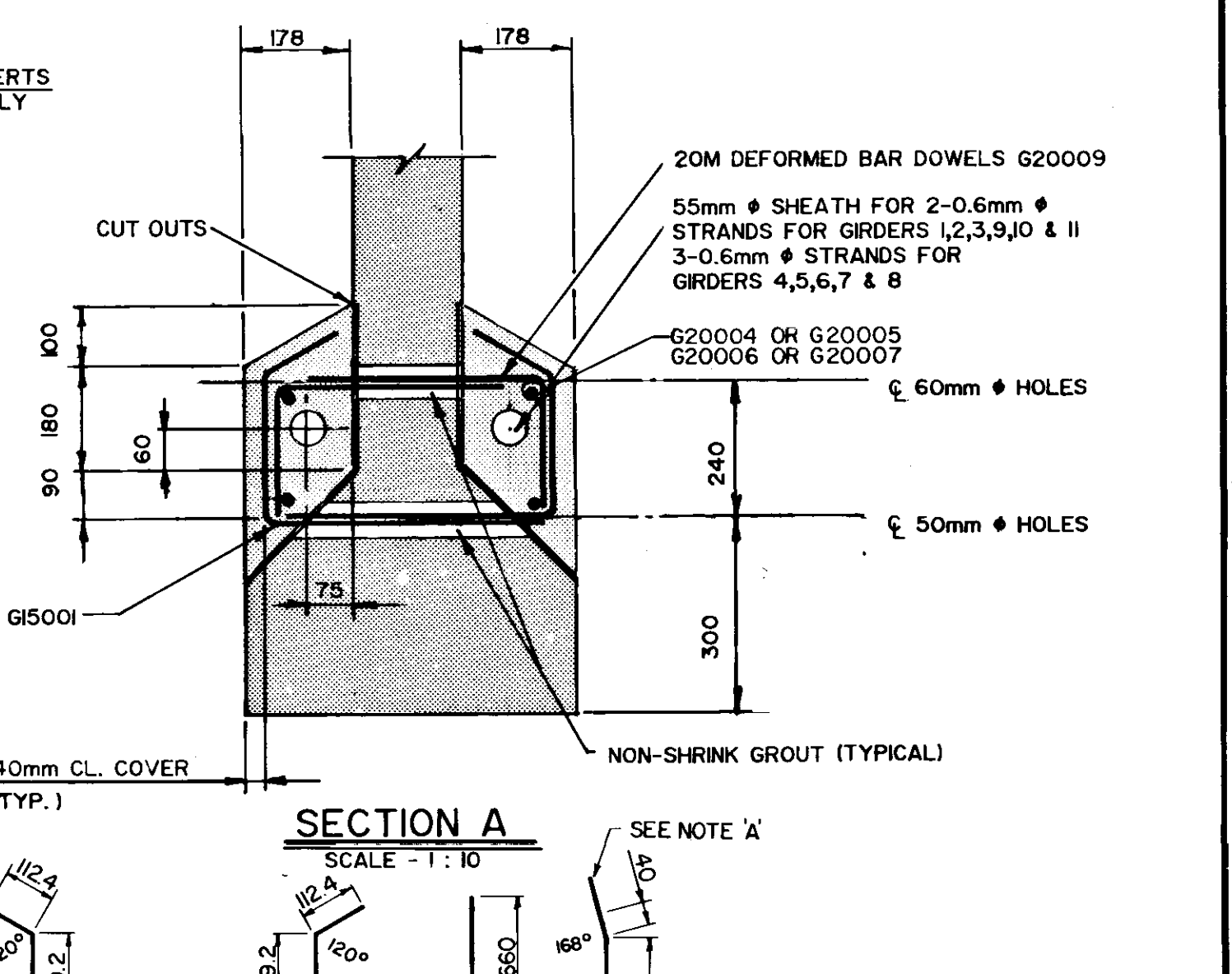
- LEGEND**
- — 60mm DIA. HOLES
 - ✕ — 50mm DIA. HOLES
 - — "RED HEAD" SELF-DRILL INSERTS NORTH FACE ϕ/w 15 ϕ x 150 LONG STEEL BOLTS
 - — "RED HEAD" SELF-DRILL INSERTS SOUTH FACE ϕ/w 15 ϕ x 150 LONG STEEL BOLTS
 - ✕ — "RED HEAD" SELF-DRILL INSERTS NORTH & SOUTH FACE



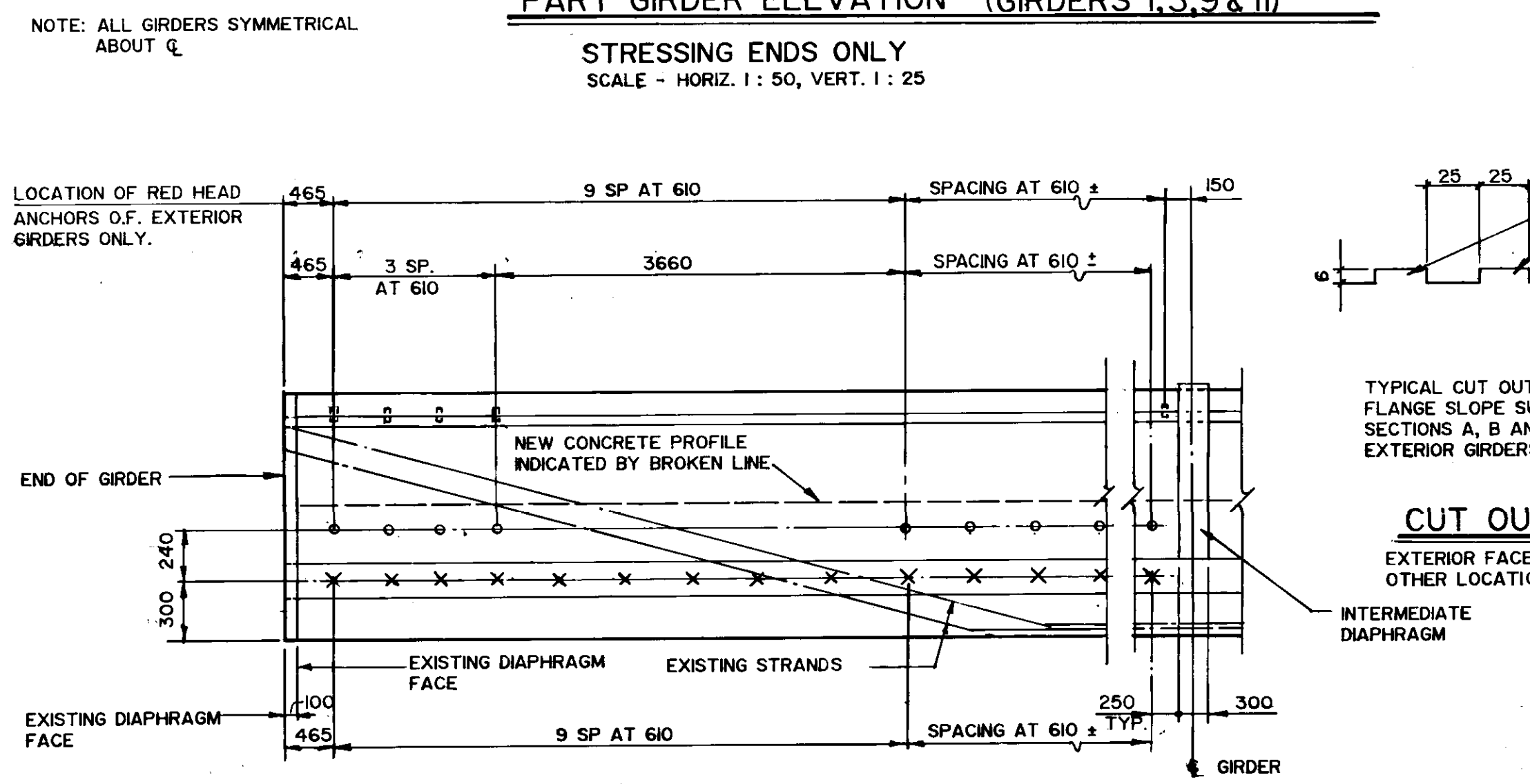
PART GIRDER ELEVATION - (GIRDERS 1,3,9 & 11)
STRESSING ENDS ONLY
SCALE - HORIZ. 1:50, VERT. 1:25



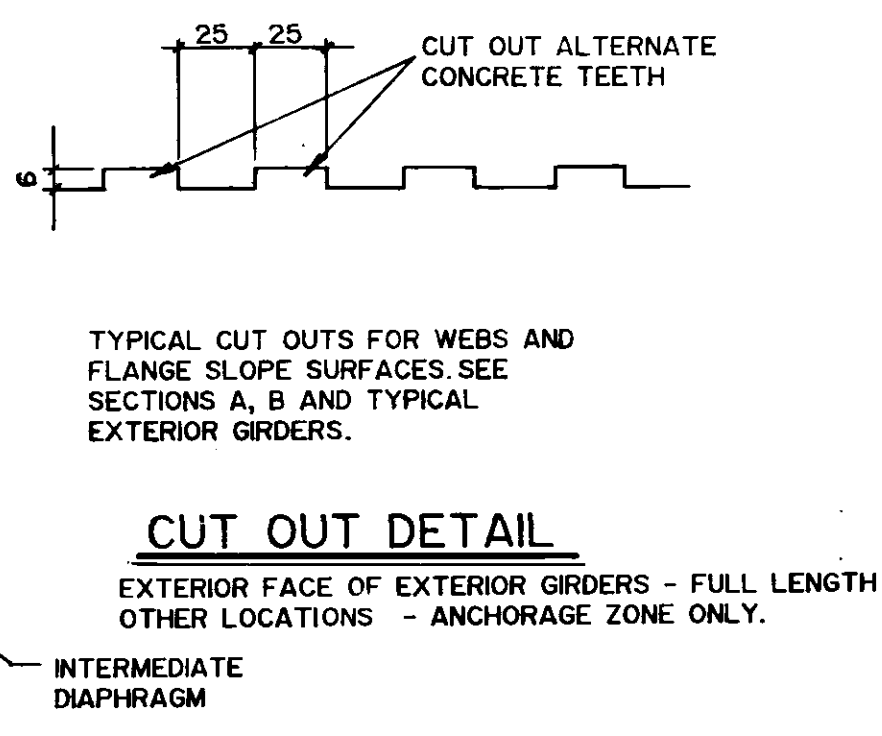
PART GIRDER ELEVATION - (GIRDERS 4,5,6, & 8)
STRESSING ENDS ONLY
SCALE - HORIZ. 1:50, VERT. 1:25



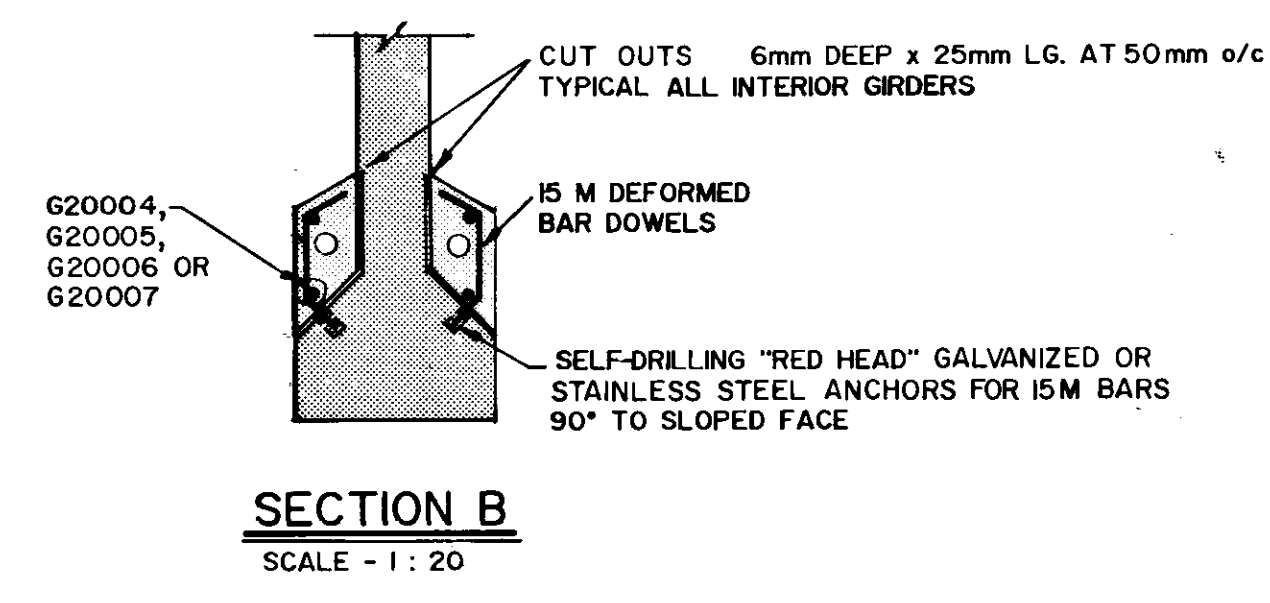
SECTION A
SCALE - 1:10



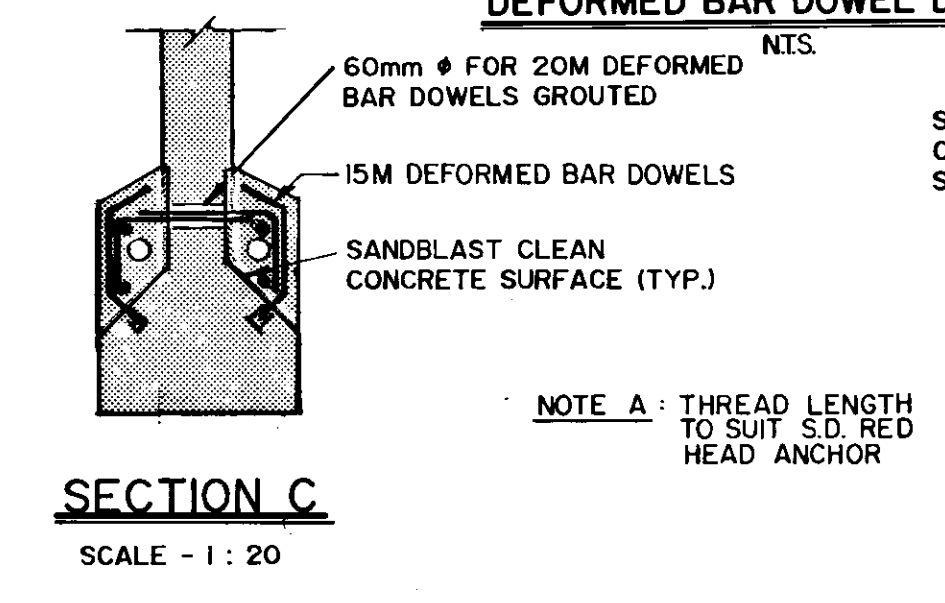
PART GIRDER ELEVATION (NON-STRESSING END)
TYPICAL
SCALE - HOR. 1:50, VERT. 1:25



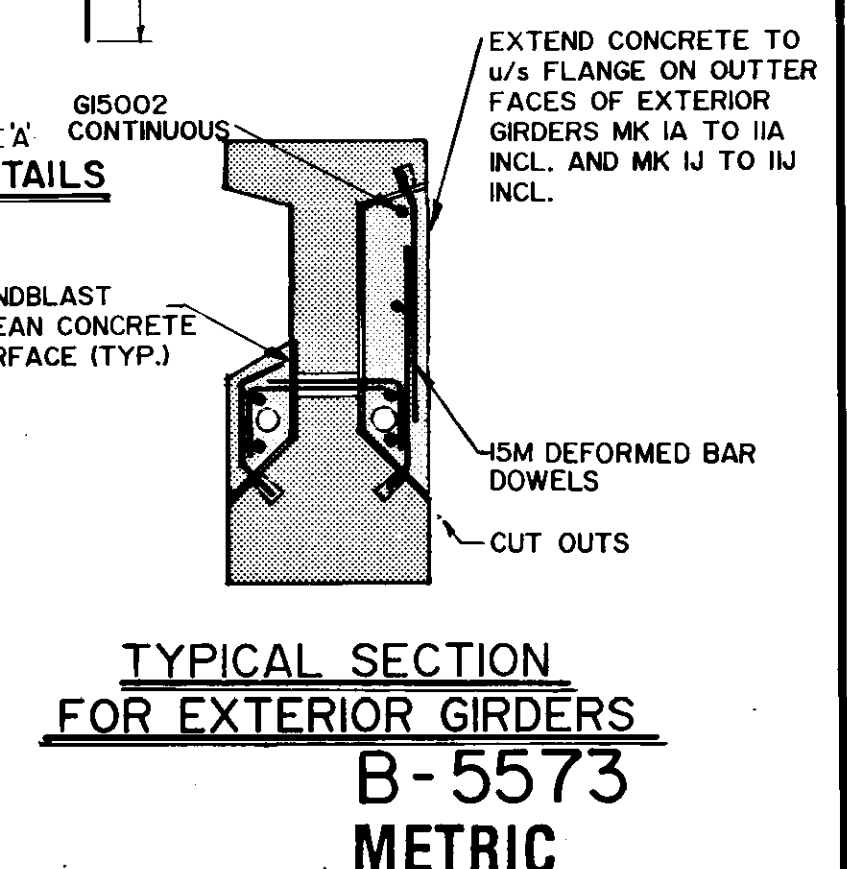
CUT OUT DETAIL
EXTERIOR FACE OF EXTERIOR GIRDERS - FULL LENGTH
OTHER LOCATIONS - ANCHORAGE ZONE ONLY.



SECTION B
SCALE - 1:20



SECTION C
SCALE - 1:20



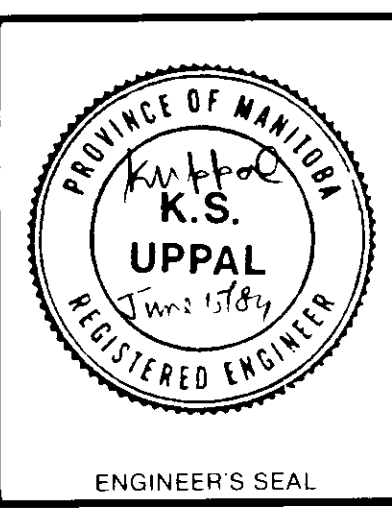
TYPICAL SECTION FOR EXTERIOR GIRDERS
B-5573
METRIC

RECORD DRAWING

THIS DRAWING TO BE READ IN CONJUNCTION WITH DWG. B121-85-08

WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

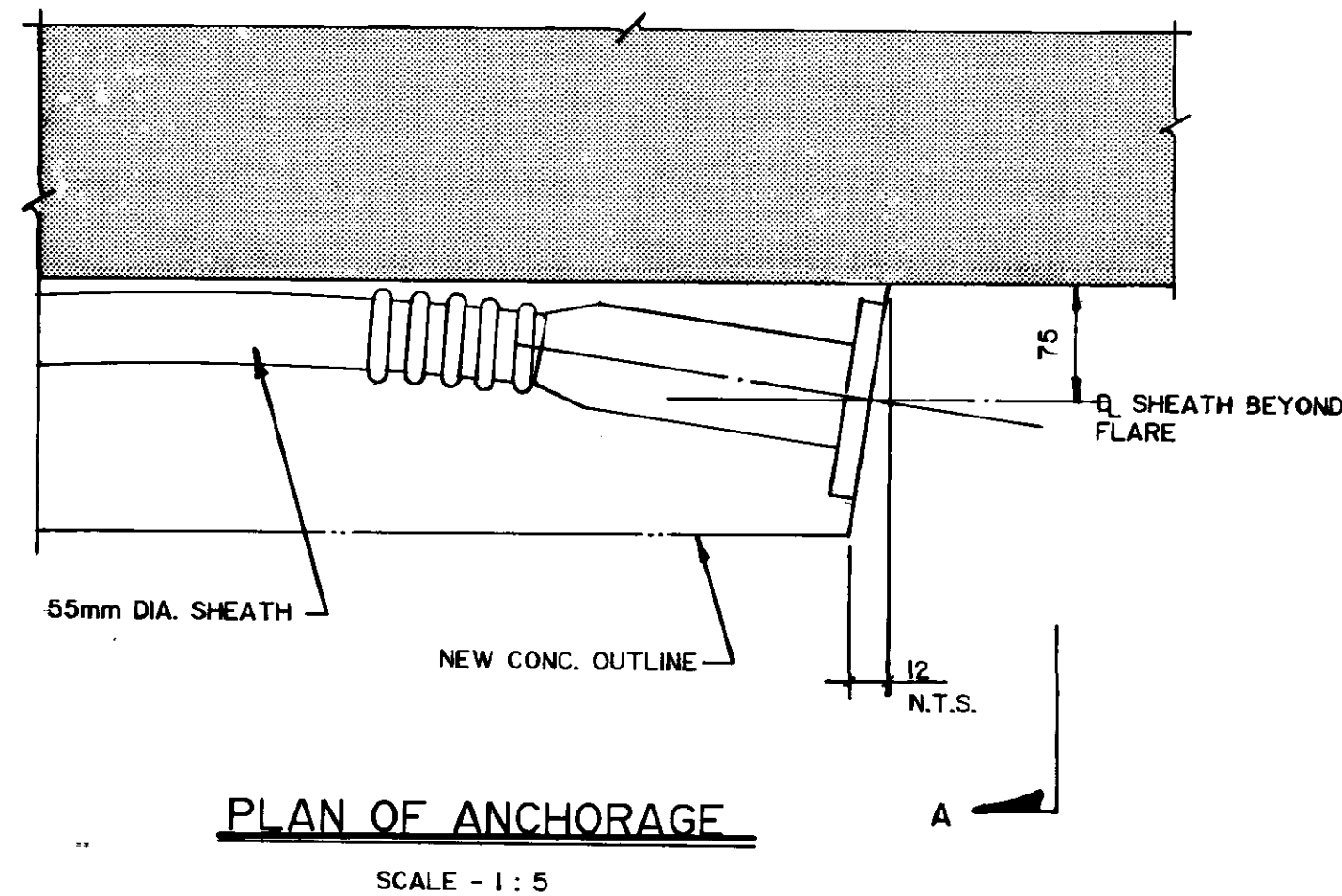
NO.	REVISIONS	DATE	APP.
1	RECORD DRAWING	NOV. 86	[Signature]



the uma group		Underwood McLellan Ltd. Consulting Engineers and Planners	
DESIGNED BY:	G.T./K.U.	DRAWN BY:	BH
CHECKED BY:	J.T.	DATE:	APRIL 1985
APPROVED BY:	[Signature]	DATE:	June 14/84

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

NAIRN AVENUE OVERPASS DECK REHABILITATION, STRUCTURAL STRENGTHENING AND RELATED WORKS	
GIRDER STRENGTHENING - 1	
AUTHORIZED BY:	[Signature] DATE: 1985-04-16
ACCEPTED BY:	[Signature] DATE: 85 04 16
SCALE: AS NOTED	DRAWING NO. B121-85-07



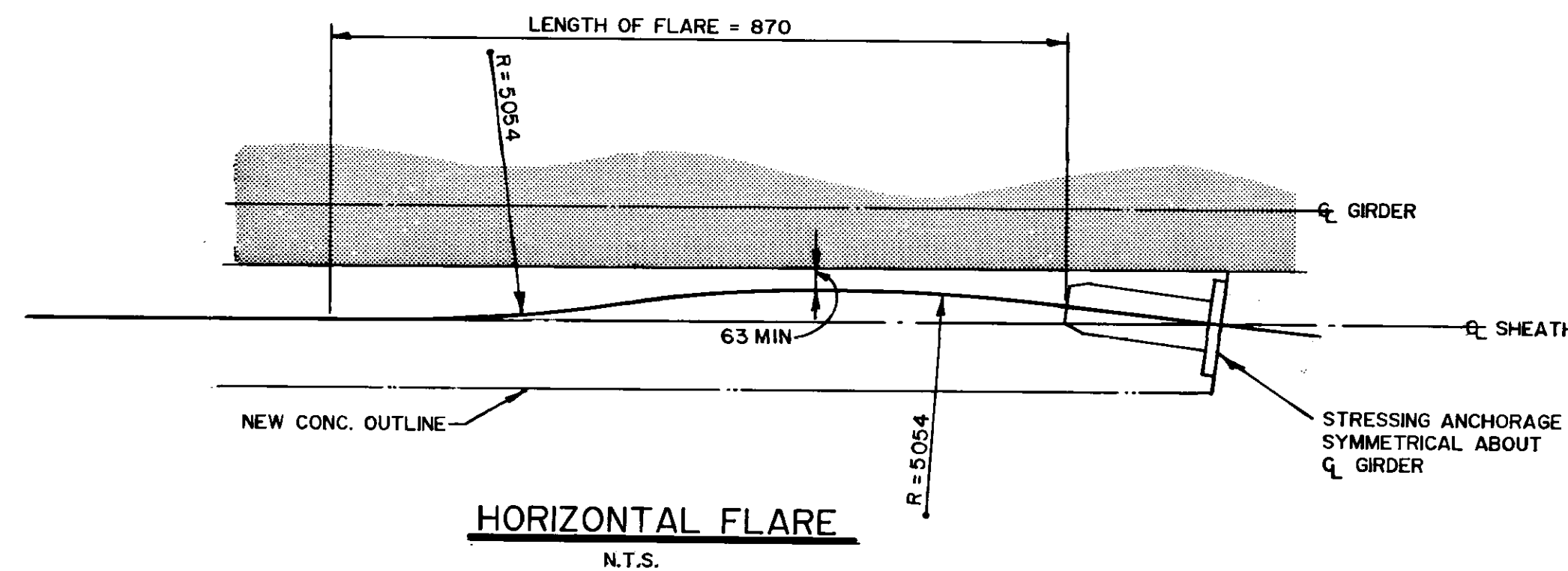
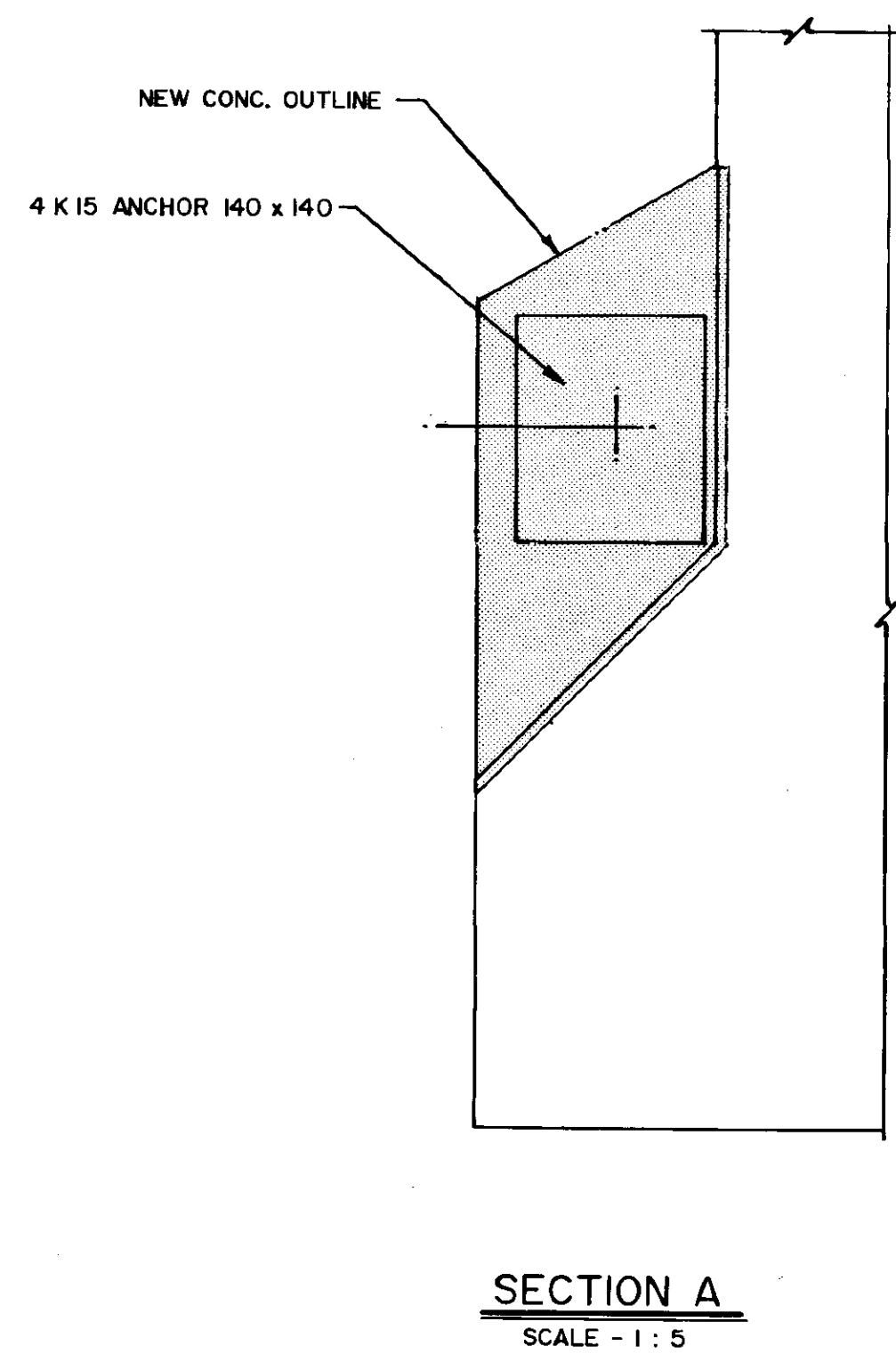
GIRDER	LENGTH
1A	20 785
1B, 3C, 9C	20 895
1C	21 000
1D	21 105
1E, 3E, 9E	21 210
1F	21 320
1G	21 425
1H, 10H	21 530
1J	21 640
2A	20 565
2B	20 720
2C	20 870
2D	21 020
2E	21 170
2F	21 325
2G	21 475
2H	21 630
2J	21 780
3A, 9A	20 585
3B, 9B	20 740
3D, 9D	21 050
3F, 9F	21 365

GIRDER	LENGTH
3G, 9G	21 520
3H, 9H	21 670
3J, 9J	21 830
4A, 8A	23 540
4B, 8B	23 715
4C, 8C	23 895
4D, 8D	24 070
4E, 8E	24 250
4F, 8F	24 425
4G, 8G	24 605
4H, 8H	24 780
4J, 8J	24 960
5A	23 500
5B	23 675
5C	23 855
5D	24 030
5E	24 210
5F	24 390
5G	24 565
5H	24 740
5J	24 920
6A, 7A	22 900
6B, 7B	23 075

GIRDER	LENGTH
6C, 7C	23 255
6D, 7D	23 430
6E, 7E	23 610
6F, 7F	23 785
6G, 7G	23 965
6H, 7H	24 145
6J, 7J	24 320
10A	20 700
10B	20 820
10C	20 940
10D	21 060
10E	21 175
10F	21 290
10G, 11H	21 405
10J	21 645
11A	20 965
11B	21 025
11C	21 090
11D	21 150
11E	21 215
11F	21 280
11G	21 340
11J	21 465

GIRDER POST-TENSIONING DATA							
GROUP	LOCATION	TYPE OF CABLES	No. OF CABLES	CABLE STRESSED	ELONGATION	CABLE TENSION	ANCHOR SET
A	GIRDER GROUPS 1A, 2A & 3A TO 1E, 2E & 3E GIRDER GROUPS 9A, 10A, & 11A TO 9E, 10E, & 11E	2/0.6	(2 PER GIRDER) 20	ONE END	410 mm	390kN	10 mm
B	GIRDER GROUPS 1F, 2F, & 3F TO 1J, 2J, & 3J GIRDER GROUPS 9F, 10F, & 11F TO 9J, 10J, & 11J	2/0.6	(2 PER GIRDER) 16	ONE END	430 mm	390 kN	10 mm
C	GIRDER GROUPS 4A & 5A TO 4E & 5E	3/0.6	(2 PER GIRDER) 10	ONE END	300 mm	587 kN	10 mm
D	GIRDER GROUPS 4F & 5F TO 4J & 5J	3/0.6	(2 PER GIRDER) 8	ONE END	320 mm	587 kN	10 mm
E	GIRDER GROUPS 6A, 7A & 8A TO 6E, 7E & 8E	3/0.6	(2 PER GIRDER) 10	BOTH ENDS	470 mm	600 kN	10 mm
F	GIRDER GROUPS 6F, 7F, & 8F TO 6J, 7J, & 8J	3/0.6	(2 PER GIRDER) 8	BOTH ENDS	500 mm	600 kN	10 mm

ASSUMED $\mu = 0.18 / \text{RAD}$ $K = 0.0023 / \text{M}$ $ES = 193\ 053 \text{ MPa}$



PRESTRESSING NOTES:

- FREYSSINET POST-TENSIONING SYSTEM.
- STRAND SHALL BE LOW RELAXATION STRAND WITH A NOMINAL DIAMETER OF 15mm AND A MINIMUM ULTIMATE STRENGTH OF 261 kN PER STRAND.
- CABLE SHEATHS SHALL BE BRIGHT, RIGID CORRUGATED TYPE (55mm O.D.) OR EQUIVALENT APPROVED BY THE ENGINEER.
- REQUIRED ELONGATION OF CABLES AND CABLE TENSION AT JACK (BEFORE ANCHORING) ARE SHOWN IN TABLE. ELONGATIONS ARE APPROXIMATE AND MAY BE ADJUSTED BY THE ENGINEER AFTER STRAND SAMPLES HAVE BEEN TESTED.
- SHEATH GROUTING VENTS SHALL BE PROVIDED AT HIGH POINTS AND AT BOTH ENDS OF ALL CABLES.
- WELDING WILL NOT BE PERMITTED WITHIN 3.0 M OF ANY CABLE SHEATH.
- MINIMUM CONCRETE CYLINDER STRENGTH AT 28 DAYS = 45MPa FOR ALL CONCRETE.
- MINIMUM CONCRETE CYLINDER STRENGTH BEFORE STRESSING = 30MPa.
- ALL CABLES SHALL BE STRESSED IN THE SEQUENCE SHOWN ON DRAWING NO. B121-85-07.
- CABLE SHEATHS SHALL BE SECURELY HELD AGAINST MOVEMENTS AT INTERVALS NOT EXCEEDING 1000 mm.
- FOR EACH GIRDER, CABLES ON EACH SIDE SHALL BE STRESSED SIMULTANEOUSLY. CABLES STRESSED FROM BOTH ENDS FOR GROUP E & F.

NOTE
THIS DRAWING TO BE READ IN
CONJUNCTION WITH DWG. B121-85-07

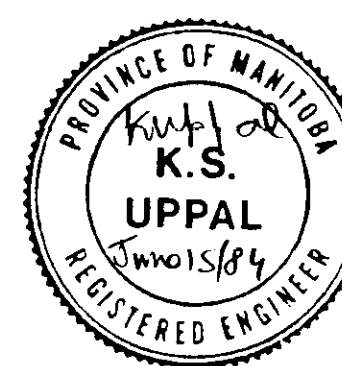
B-5574

METRIC

WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

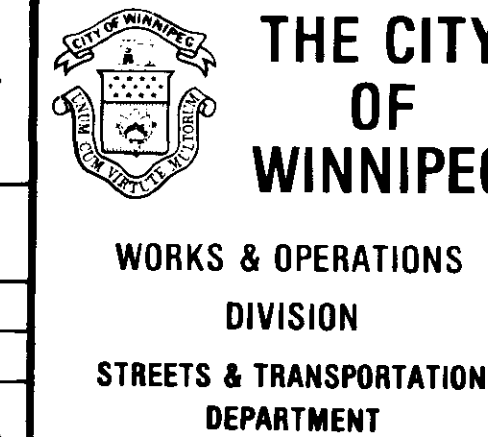
RECORD DRAWING

NO	REVISIONS	DATE	APP
1	RECORD DRAWING	NOV.86	MB



the **uma** group
Underwood McLellan Ltd.
Consulting Engineers and Planners

DESIGNED BY: G J / K.U. DRAWN BY: BH
CHECKED BY: J.T. DATE: APRIL 1985
APPROVED BY: [Signature] DATE: [Signature] JOB No. 0265-216-01



NAIN AVENUE OVERPASS
DECK REHABILITATION, STRUCTURAL STRENGTHENING AND RELATED WORKS

GIRDER STRENGTHENING - II

AUTHORIZED BY: [Signature] P. Eng. 1985-04-16
ACCEPTED BY: [Signature] P. Eng. 1985-04-16

SCALE: AS SHOWN DRAWING NO. B121-85-08

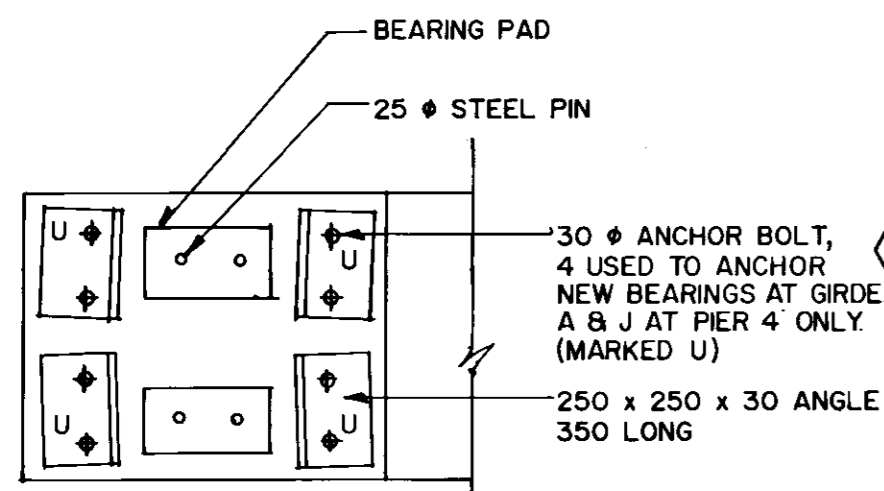
BEARING DESIGN DATA TABLE

	WEST ABUT.	PIERS												EAST ABUT.
		10	9	8-WEST	8-EAST	7	6	5	4	3-WEST	3-EAST	2	1	
DEAD LOAD	287	567	567	287	318	643	632	632	643	318	287	567	567	287
DEAD LOAD & LIVE LOAD	620	1000	1000	620	650	1080	1070	1070	1080	650	620	1000	1000	620
LATERAL LOAD *	65	-	-	65	65	-	-	-	110	65	65	-	-	65
LONGITUDINAL MOVEMENT	+8mm -19mm	-	-	+8mm -19mm	+16mm -44mm	-	-	-	+16mm -44mm	+24mm -66mm	+8mm -19mm	-	-	+8mm -19mm

* LOADS EXPRESSED IN KILOWEIGHTS
▲ AT SETTING TEMPERATURE OF 15°C.
① LATERAL LOAD APPLIES ONLY TO GUIDED EXPANSION BEARINGS

NOTES:

- ALL STRUCTURAL STEEL SHALL CONFORM TO CSA G40.21 GRADE 300W AND SHALL BE GALVANIZED IN ACCORDANCE WITH CSA G164.
- ALL WELDING SHALL CONFORM TO CSA W59.
- CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF THE BEARINGS TO THE ENGINEER FOR APPROVAL PRIOR TO FABRICATION.
- BEARINGS MUST BE MODIFIED TO FIT AS SHOWN. TAKE FIELD MEASUREMENTS BEFORE FABRICATION TO ENSURE PROPER FIT.
- PLATE MODIFICATIONS:
ANCHOR PLATE EXTENSIONS FABRICATED BY WELDING EXTENSION TO THE DIMENSIONED PLATES OR FABRICATED AS ONE PIECE. WELDS FOR PLATE EXTENSIONS, 20mm PENETRATION WELDS FOR GUIDED BEARINGS AND 15mm PENETRATION WELDS FOR FREE BEARINGS.



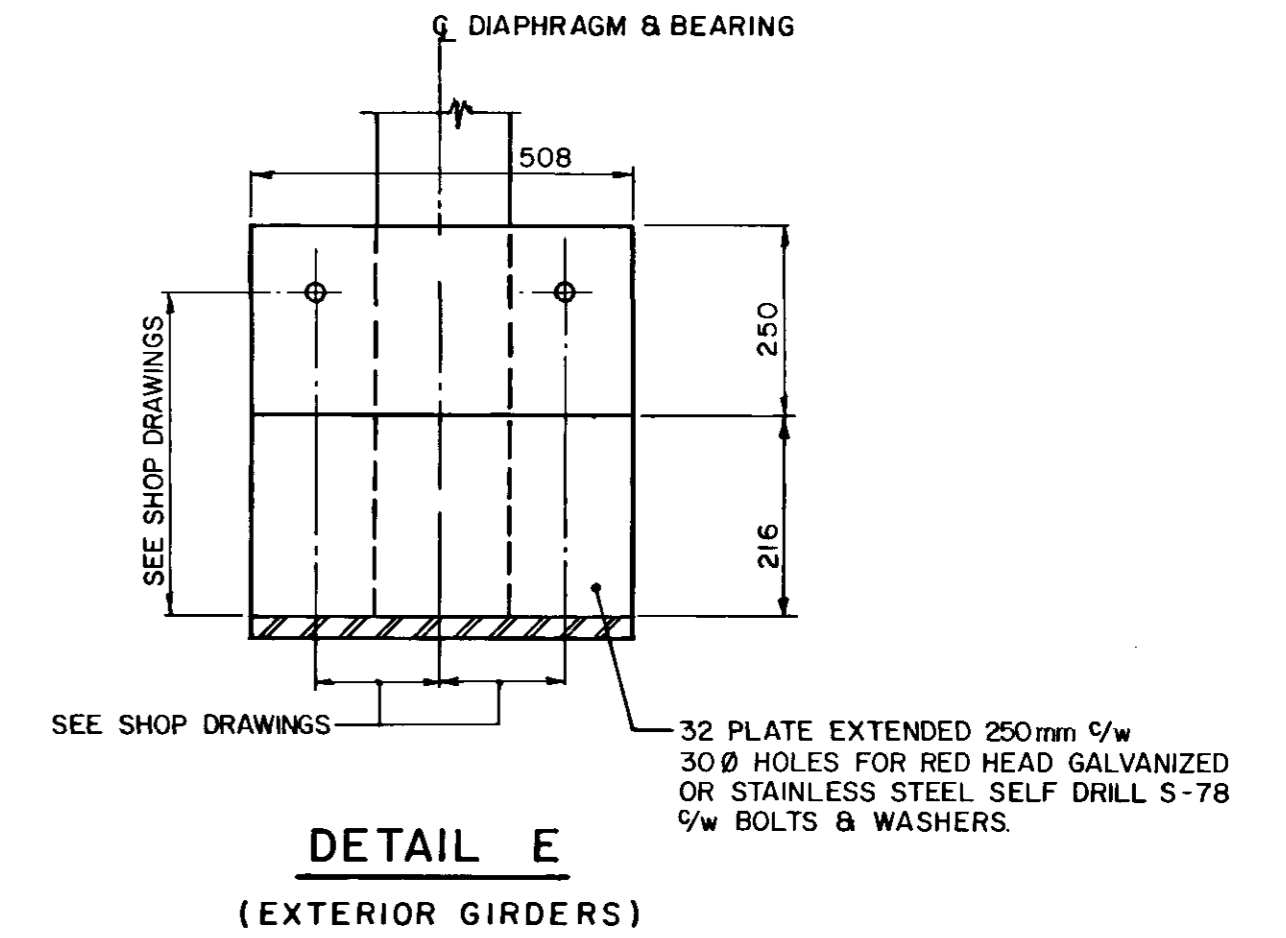
TYPICAL EXISTING HOLD DOWN DETAIL AT EXPANSION BEARINGS (OUTSIDE GIRDERS ONLY)

CONSTRUCTION SEQUENCE (EXPANSION BEARINGS ONLY)

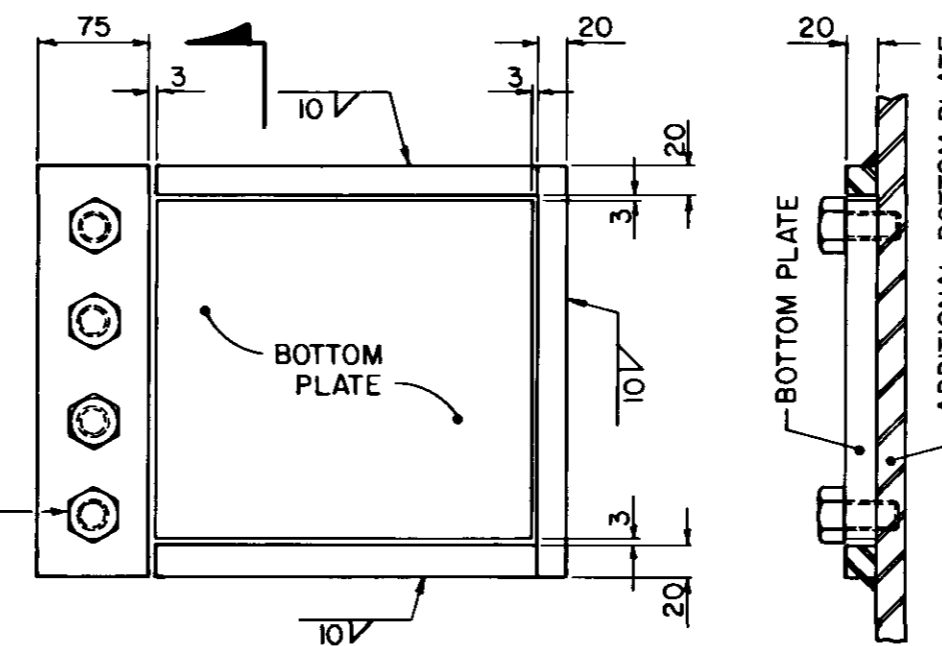
- REMOVE EXISTING HOLD DOWN ANGLES.
- LIFT GIRDERS 16mm MAXIMUM AND SUPPORT GIRDERS.
- REMOVE EXISTING CONCRETE PEDESTAL DOWN TO TOP OF PIER OR ABUTMENT.
- CUT OFF EXISTING PINS, FLUSH WITH EXISTING CONCRETE. (PINS OCCUR AT ALL GIRDERS)
- REMOVE ANCHOR BOLTS 40mm INTO THE EXISTING CONCRETE SURFACES (20mm FOR CONCRETE GIRDER SURFACES) AND PATCH THE HOLE FLUSH UTILIZING PATCHING MORTAR. (ANGLES AND ANCHOR BOLTS OCCUR AT OUTSIDE GIRDERS ONLY)
- INSTALL SELF-DRILL ANCHORS.
- DRILL HOLES FOR ANCHOR BARS AND GROUT ANCHOR BARS.
- INSTALL NEW EXPANSION BEARINGS AND LEVEL WITH SHIMS OR WEDGES.
- INSTALL GROUT UNDER BEARINGS.
- LOWER GIRDER AFTER GROUT HAS REACHED MINIMUM COMPRESSIVE STRENGTH OF 30MPa. ENSURE THE GIRDERS SIT AT EXACTLY THE SAME ELEVATION AS EXISTING.
- INSTALL ANCHOR PLATES TO ABUTMENTS, PIERS, GIRDERS AND DIAPHRAGM.

CONSTRUCTION SEQUENCE (FIXED BEARINGS ONLY)

- SUPPORT GIRDERS.
- REMOVE EXISTING BEARING PADS.
- CUT OFF EXISTING STEEL BARS AT CONCRETE FACES.
- RAISE GIRDERS 16mm MAXIMUM.
- INSTALL NEW BEARING PADS.
- LOWER GIRDERS TO SIT ON NEW BEARING PADS.
- INSTALL FIXING ANCHORS AND PLATES (SEE SECTION D ON DWG. B121-85-06).

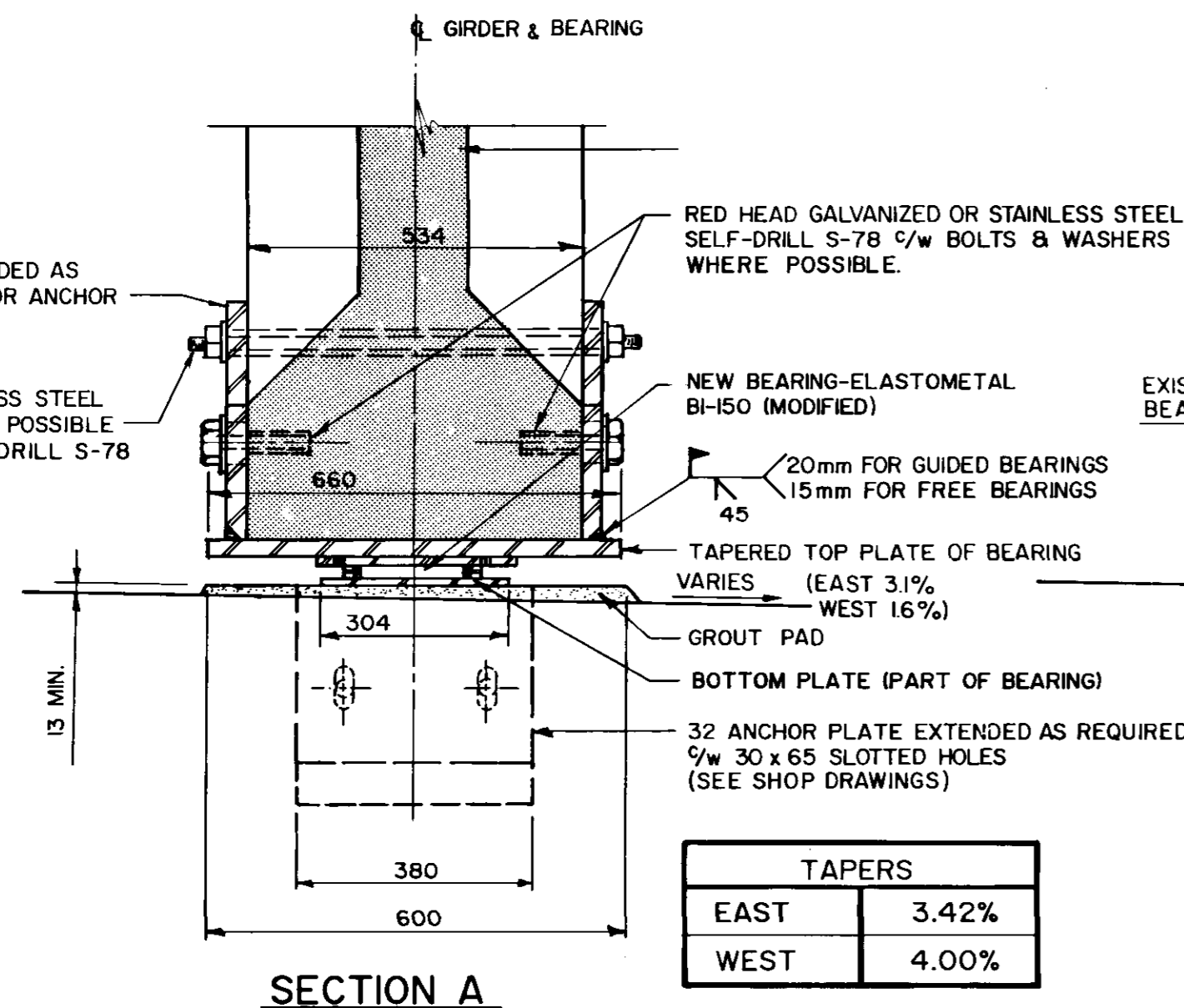


DETAIL E (EXTERIOR GIRDERS)

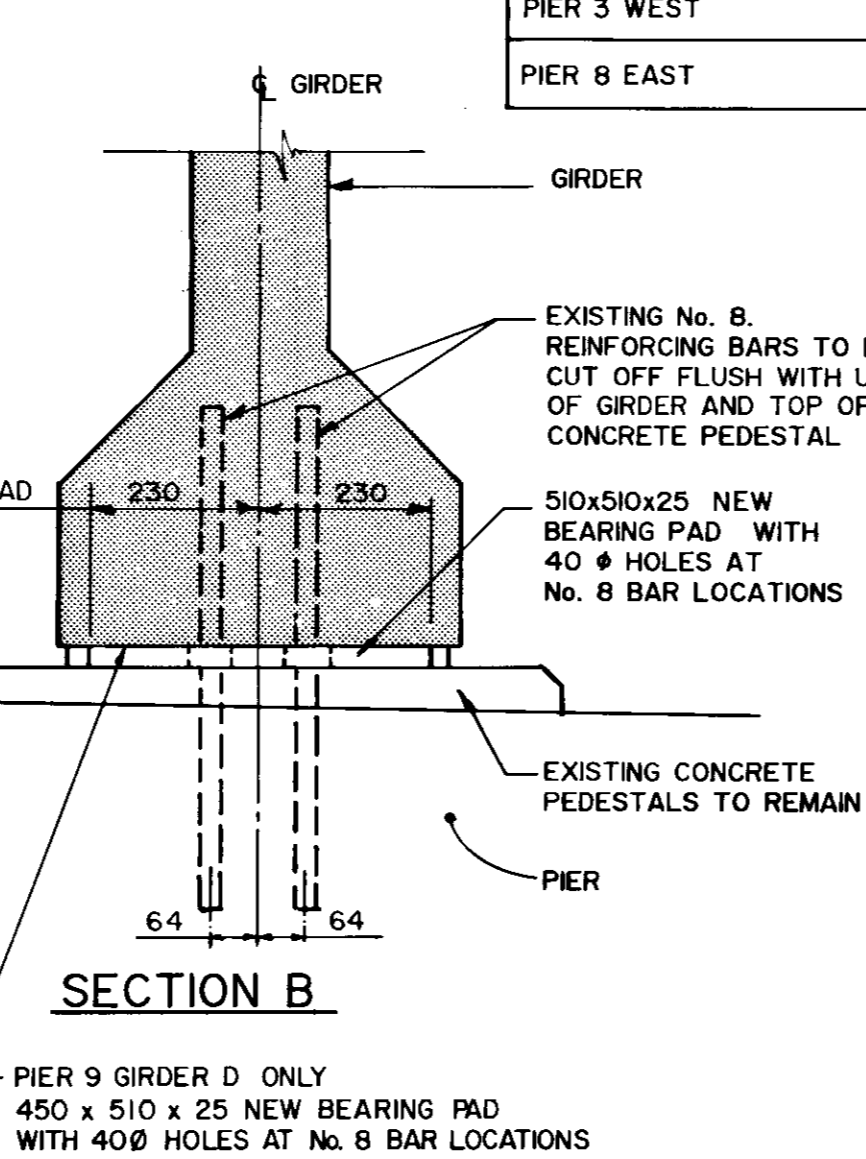


DETAIL F SCALE 1:5

EXPANSION BEARINGS TEMPERATURE ADJUSTMENTS		
LOCATION	ZERO OFFSET TEMPERATURE	ADJUSTMENT mm/5°C
ABUTMENTS, PIER 3 EAST AND PIER 8 WEST	-1.0°C	1.70
PIER 3 WEST	-11.6°C	3.95
PIER 8 EAST	-11.6°C	2.65

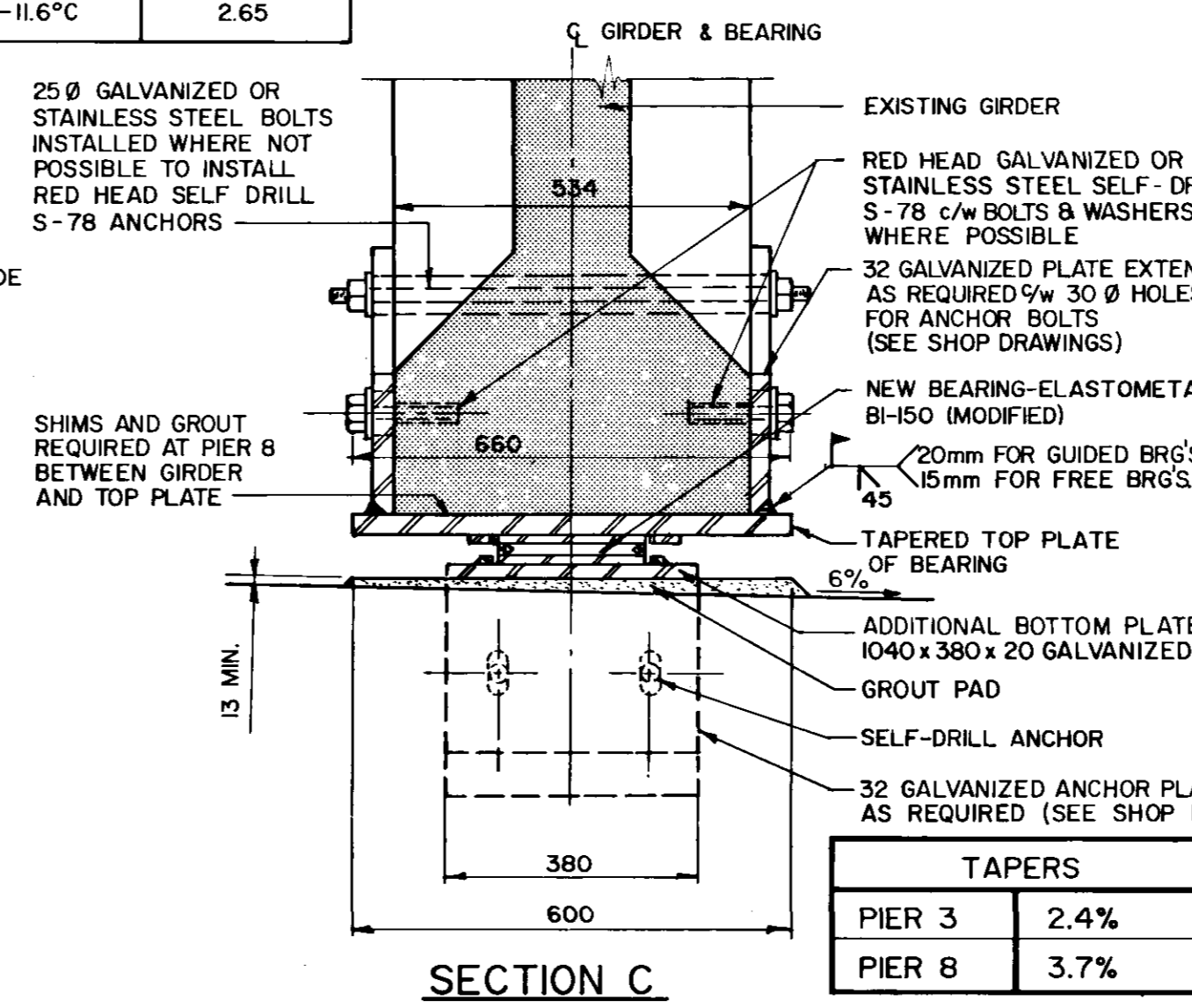


TAPERS	
EAST	3.42%
WEST	4.00%



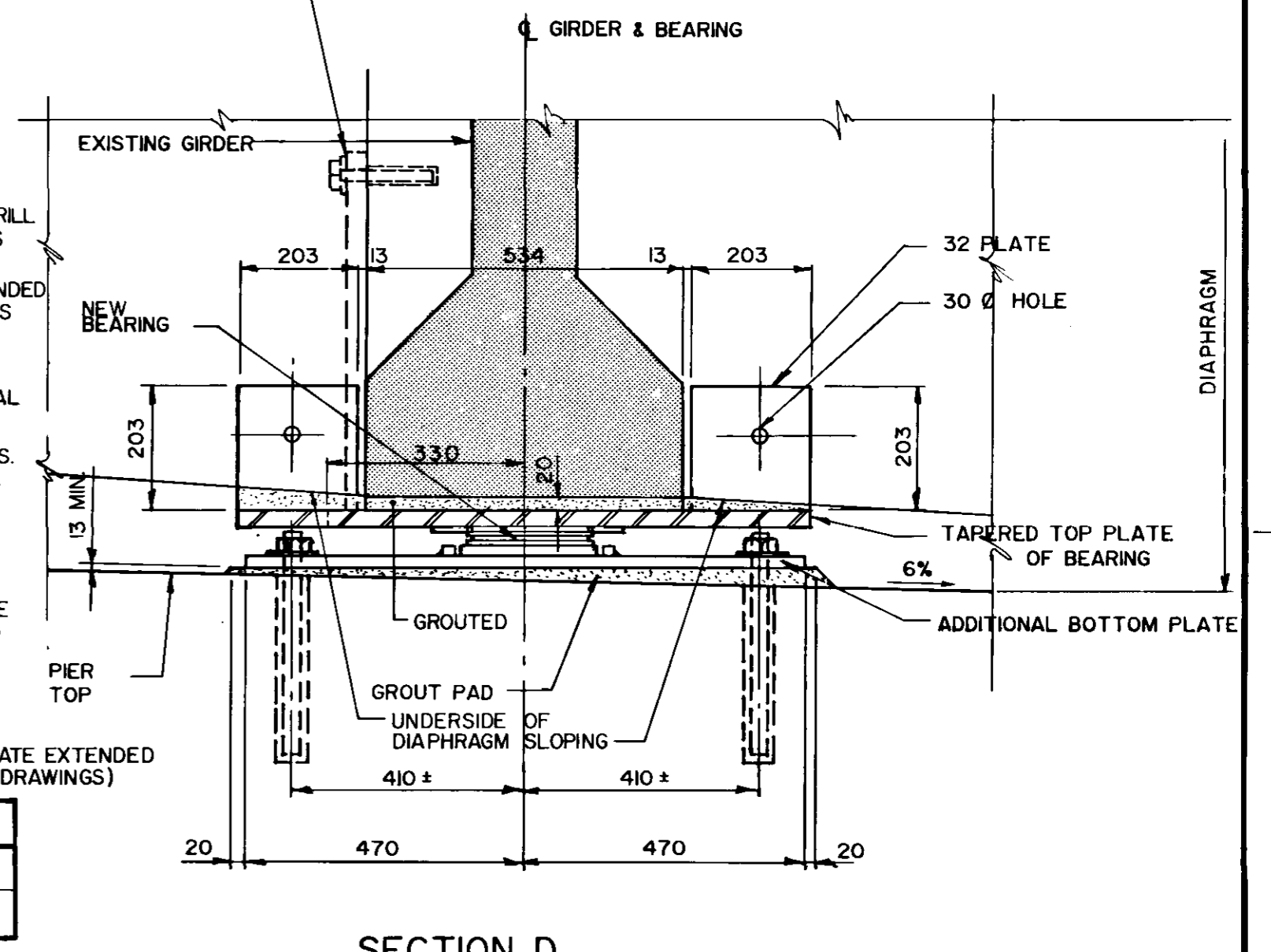
SECTION B

PIER 9 GIRDER D ONLY
450 x 510 x 25 NEW BEARING PAD WITH 40 Ø HOLES AT NO. 8 BAR LOCATIONS

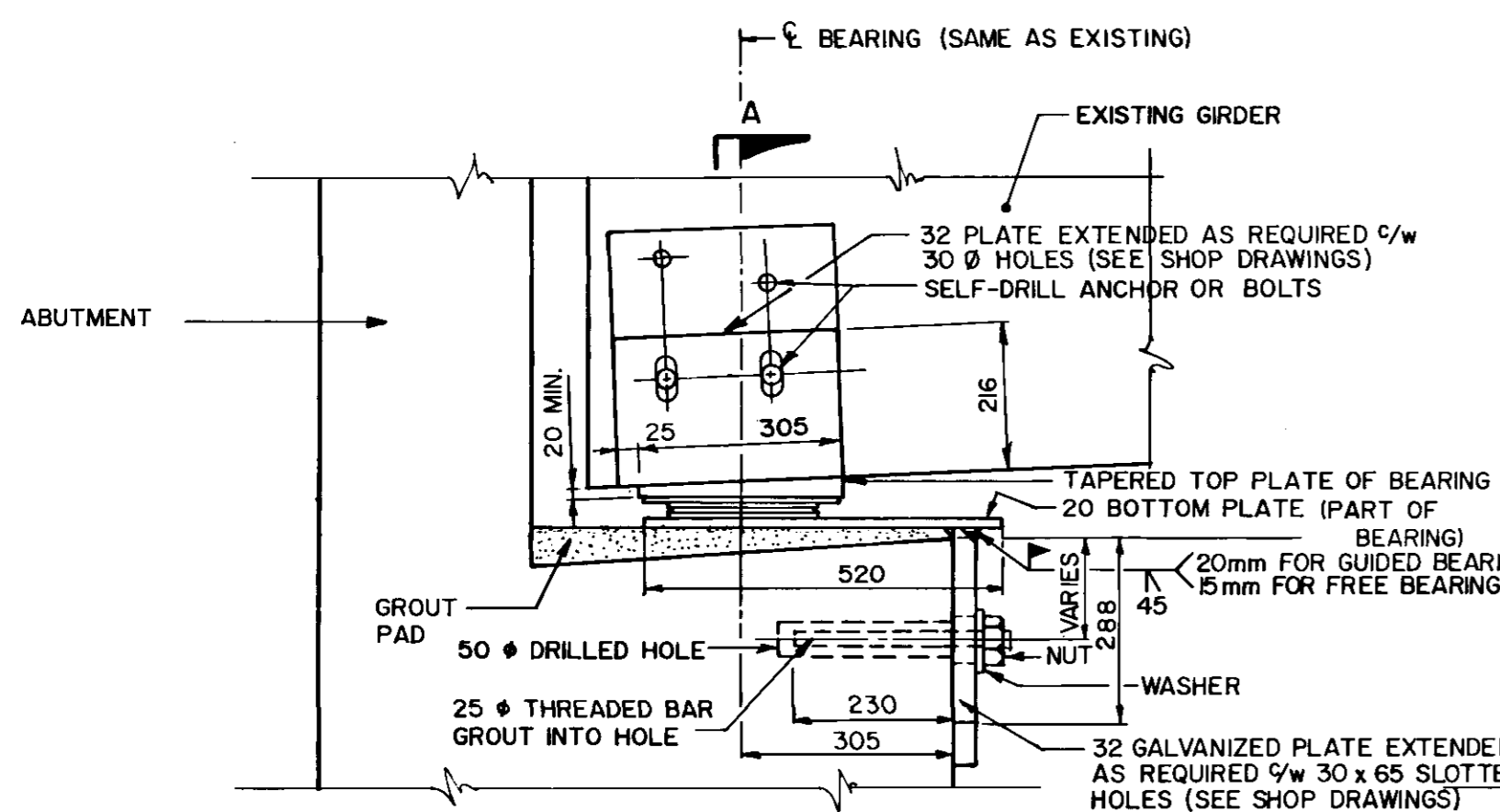


TAPERS	
PIER 3	2.4%
PIER 8	3.7%

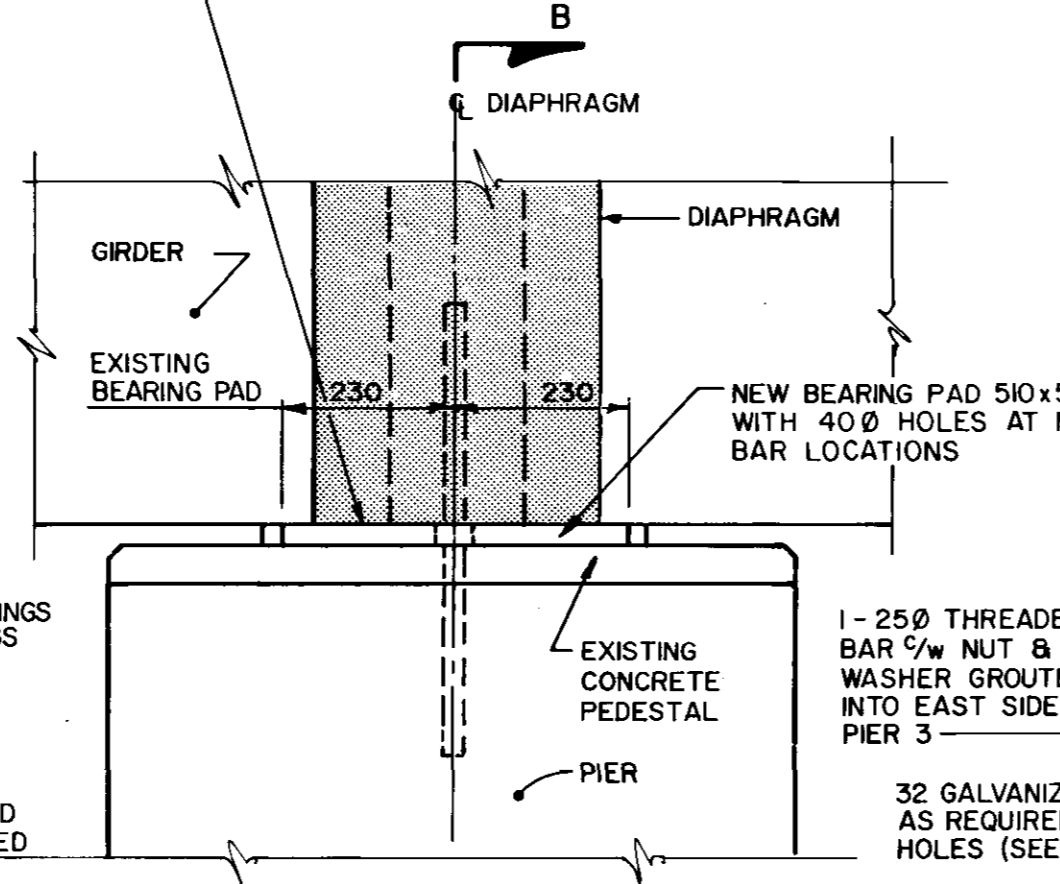
SECTION C



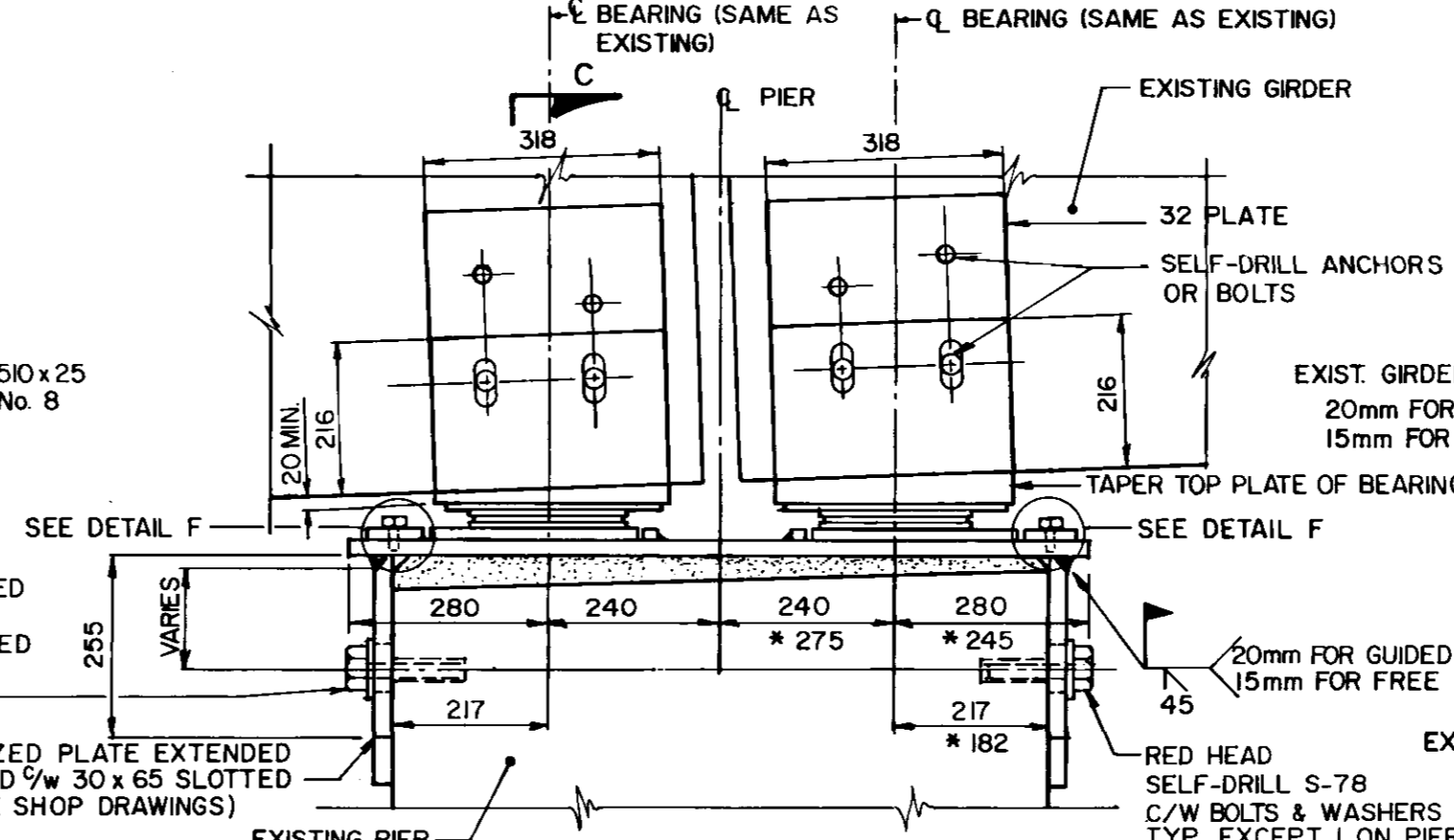
SECTION D (INTERIOR GIRDER SHOWN)



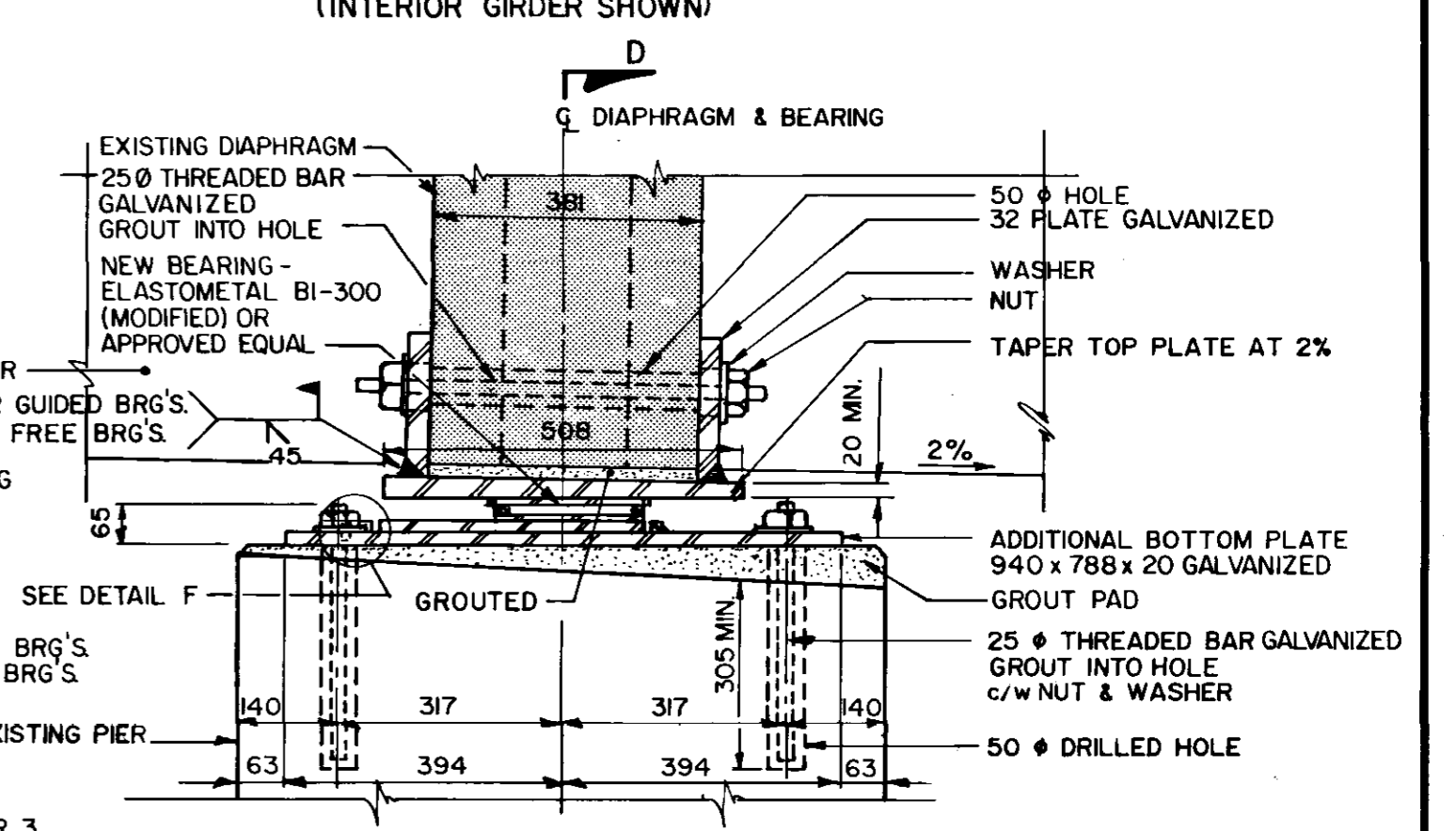
ABUTMENTS (EXPANSION BEARINGS)



PIERS 1, 2, 5, 7, 9 & 10 (FIXED BEARINGS)



PIERS 3 & 8 (EXPANSION BEARINGS)



PIER 4 (EXPANSION BEARINGS)

① GUIDED EXPANSION BEARINGS MODIFIED ELASTOMETAL TYPE BI-150 (8 REQUIRED, 4 CENTRAL BEARINGS ON EACH ABUTMENT)
FREE EXPANSION BEARINGS MODIFIED ELASTOMETAL TYPE B2-150 (10 REQUIRED)

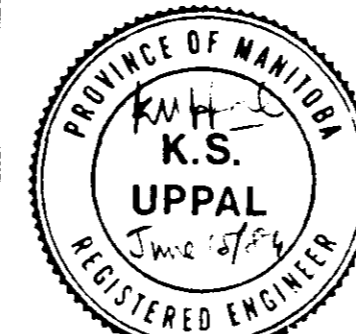
① GUIDED EXPANSION BEARINGS MODIFIED ELASTOMETAL TYPE BI-150 (16 REQUIRED, 4 CENTRAL BEARINGS ON EACH BEARING LINE)
FREE EXPANSION BEARINGS MODIFIED ELASTOMETAL TYPE B2-150 (20 REQUIRED)

① GUIDED EXPANSION BEARINGS MODIFIED ELASTOMETAL TYPE BI-300 (4 CENTRAL BEARINGS)
FREE EXPANSION BEARINGS MODIFIED ELASTOMETAL TYPE B2-300 (5 REQUIRED)

RECORD DRAWING

METRIC

WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES



the **uma** group
Underwood McLellan Ltd.
Consulting Engineers and Planners

DESIGNED BY: K.U. DRAWN BY: J.R.C.
CHECKED BY: J.T. DATE: APRIL 1985
JOB NO. 0265-216-01-03

APPROVED BY: *J. K. L.* DATE: *June 14, 1984*

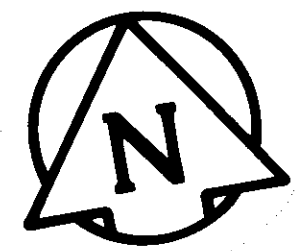
THE CITY OF WINNIPEG
WORKS & OPERATIONS DIVISION
STREETS & TRANSPORTATION DEPARTMENT

NAIRN AVENUE OVERPASS
DECK REHABILITATION, STRUCTURAL STRENGTHENING AND RELATED WORKS.

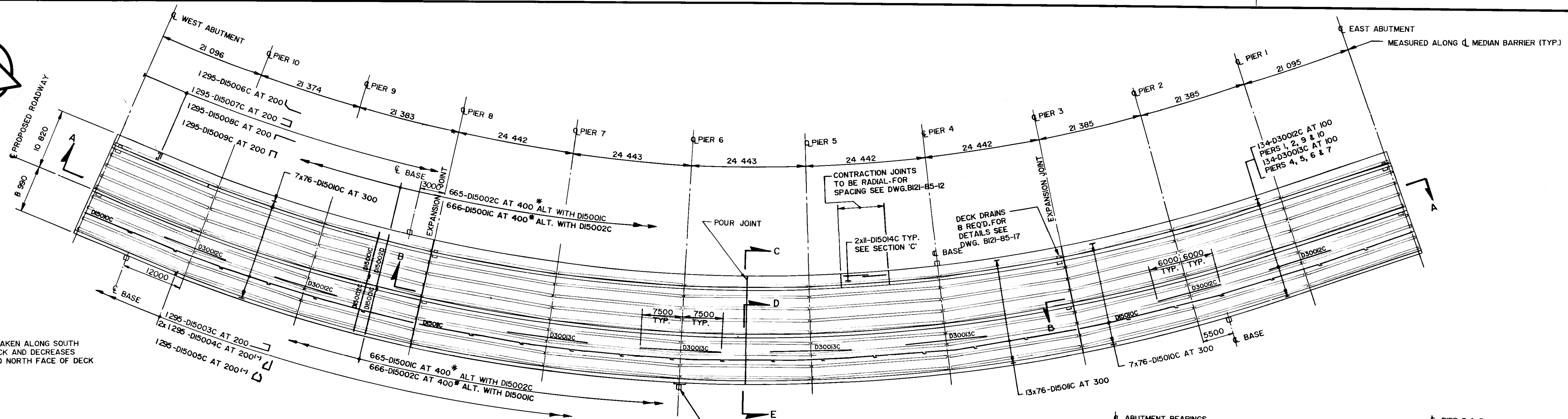
BEARING DETAILS

AUTHORIZED BY: *Corcoran, P. Eng. 1985-04-16*
ACCEPTED BY: *Abraham, P. Eng. 1985-04-16*
SCALE: 1:10 DRAWING NO. B121-85-09

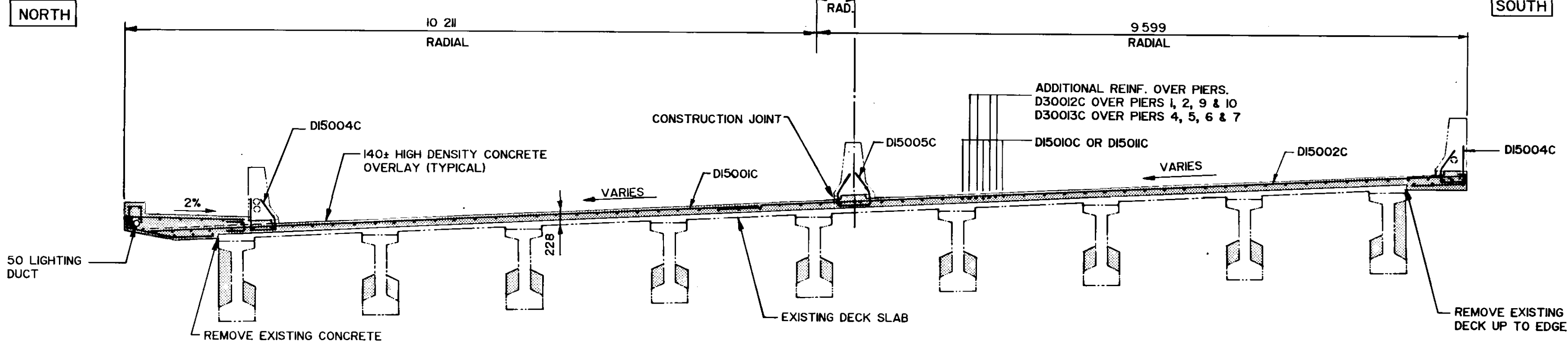
B-5575



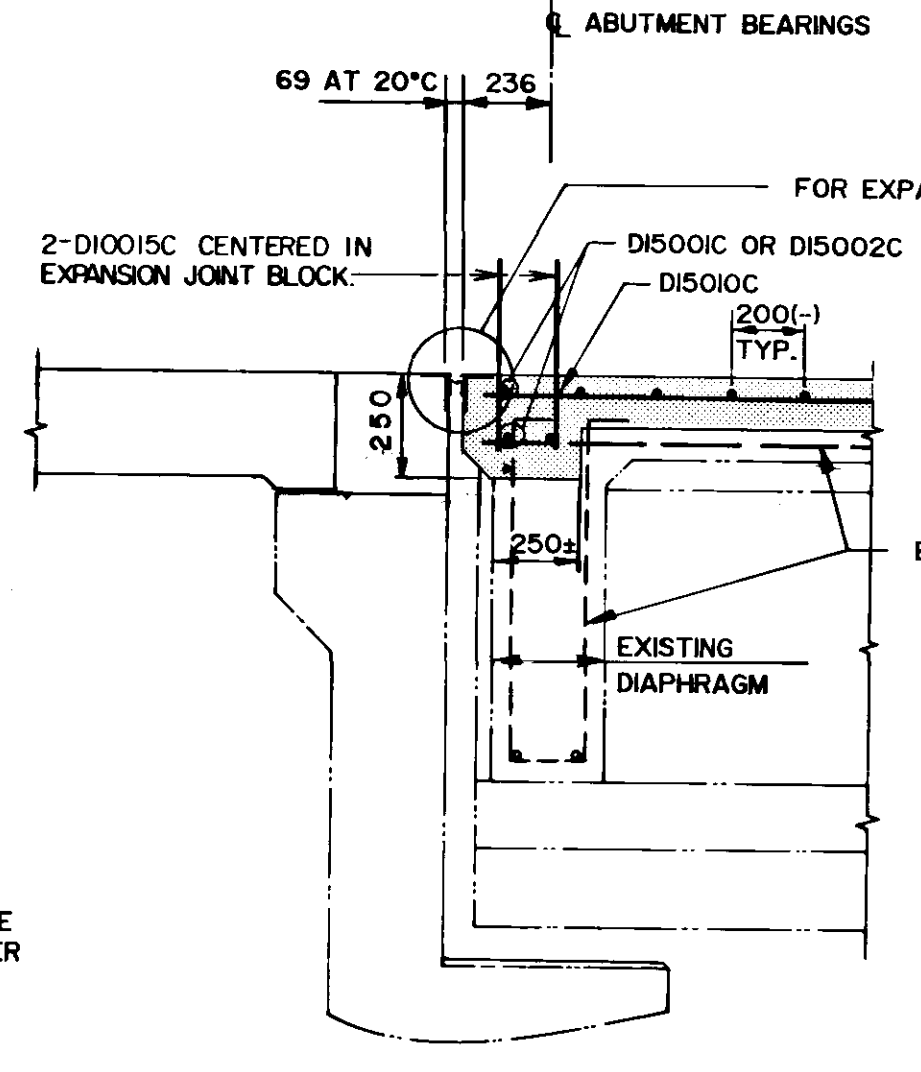
* SPACING TAKEN ALONG SOUTH FACE OF DECK AND DECREASES RADIALLY TO NORTH FACE OF DECK



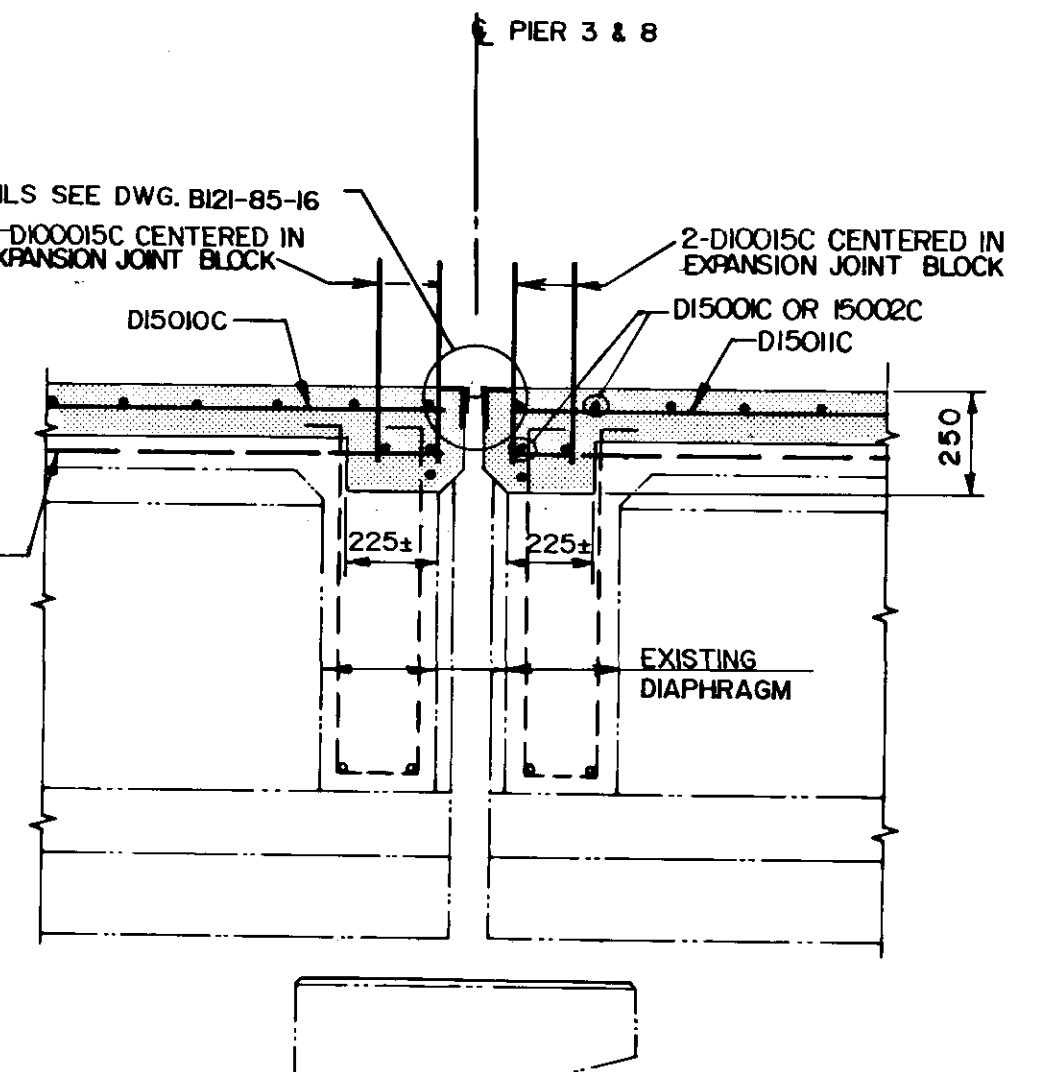
PLAN SCALE - 1 : 400



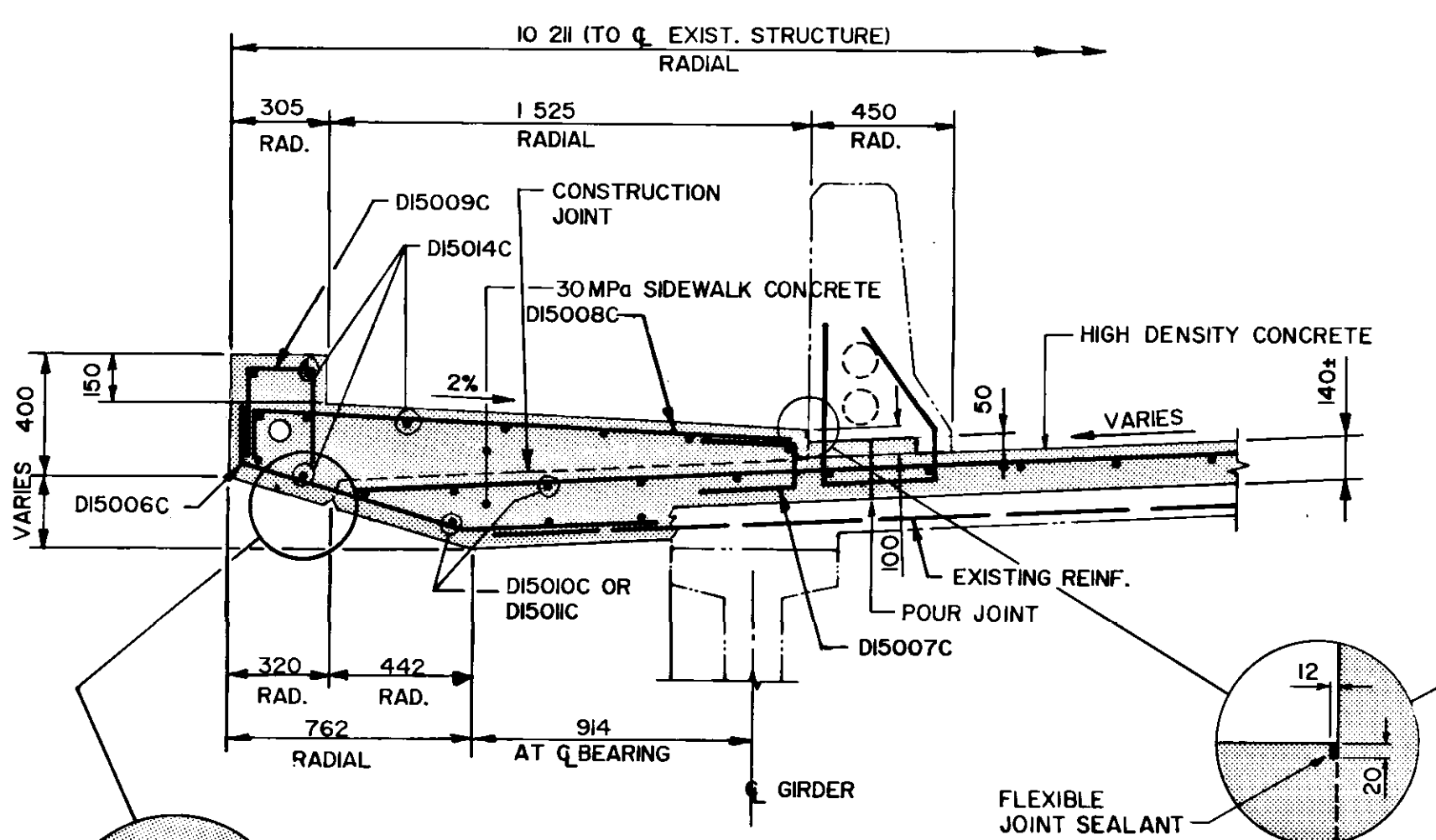
TYPICAL CROSS SECTION SCALE - 1 : 50



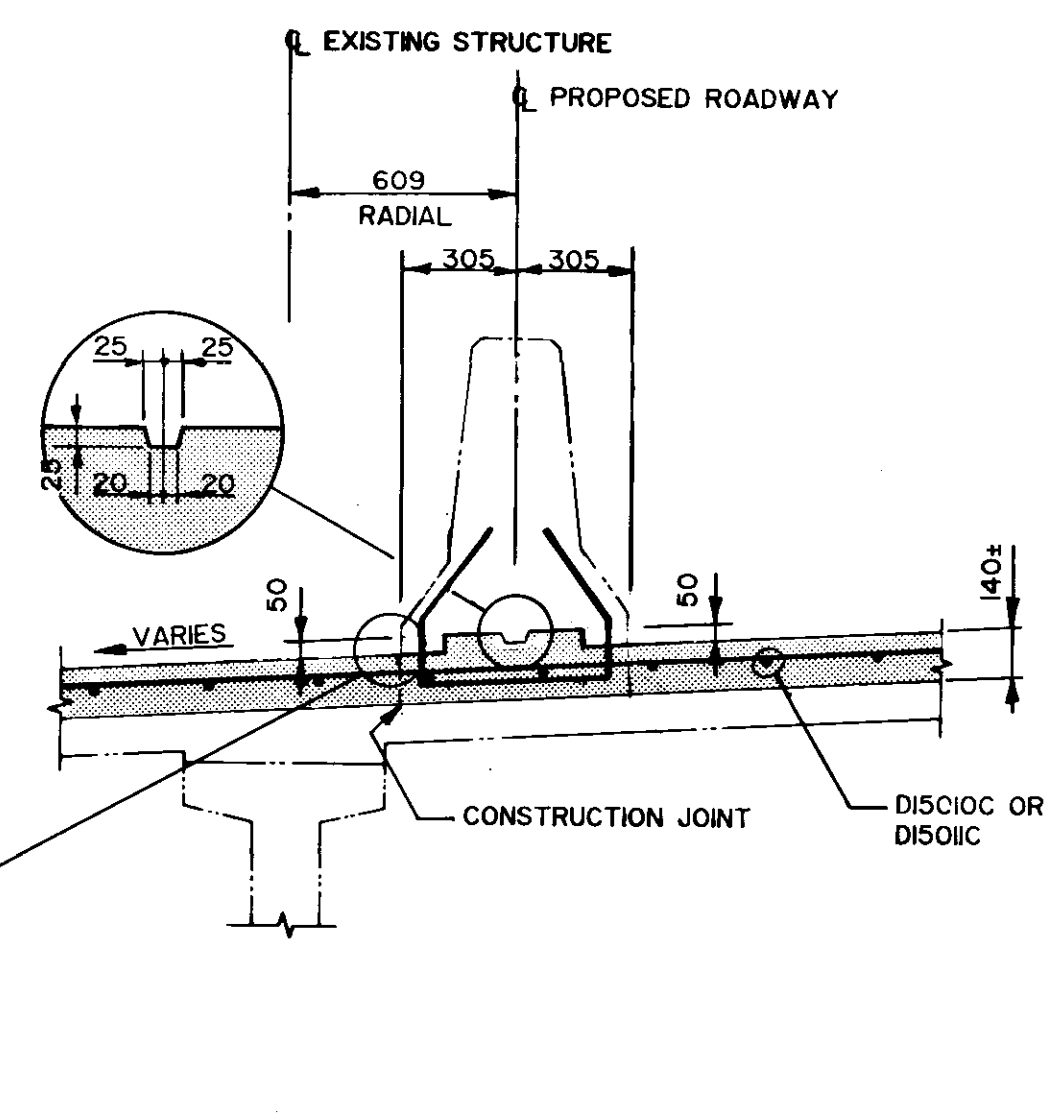
SECTION A SCALE - 1 : 20



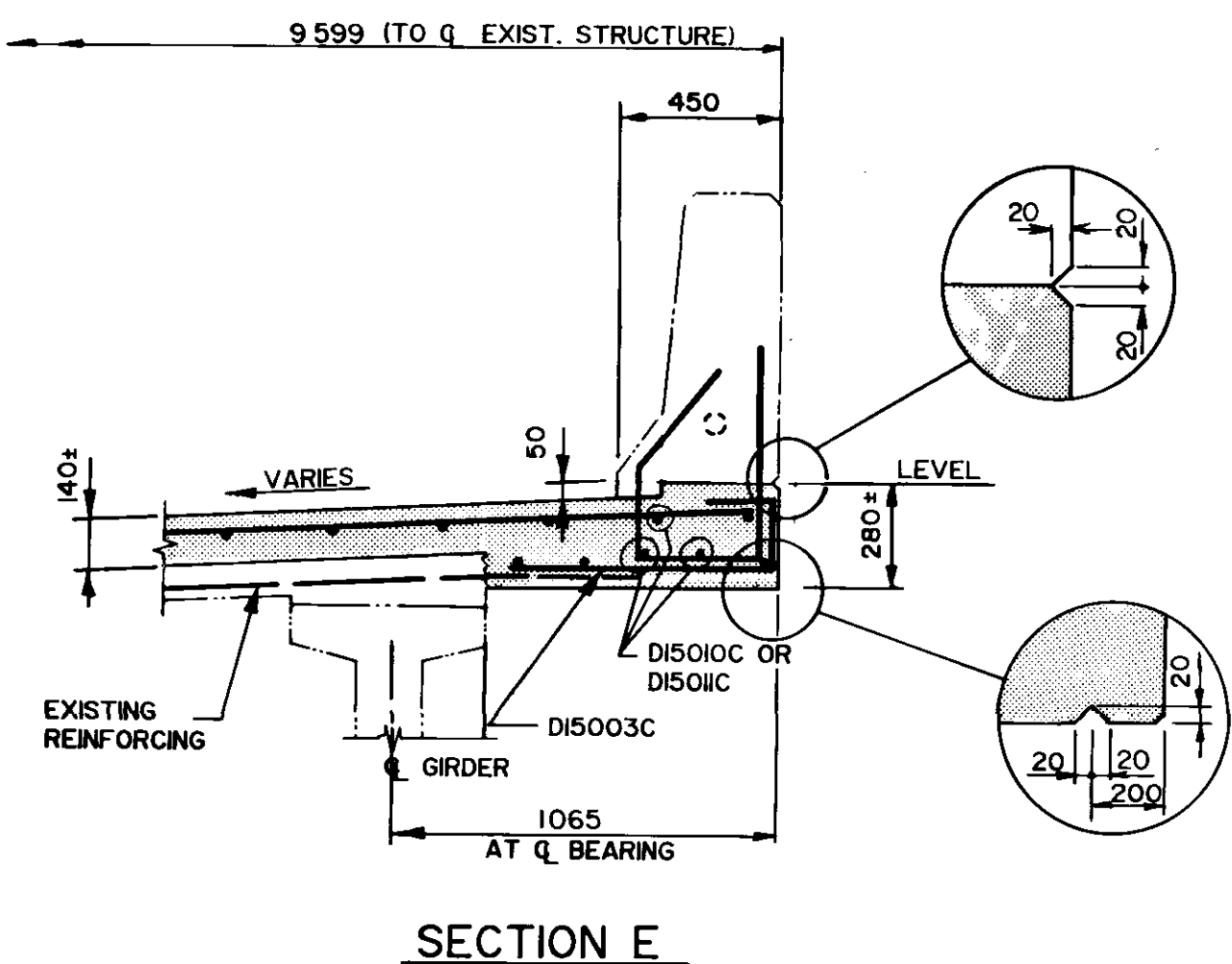
SECTION B SCALE - 1 : 20



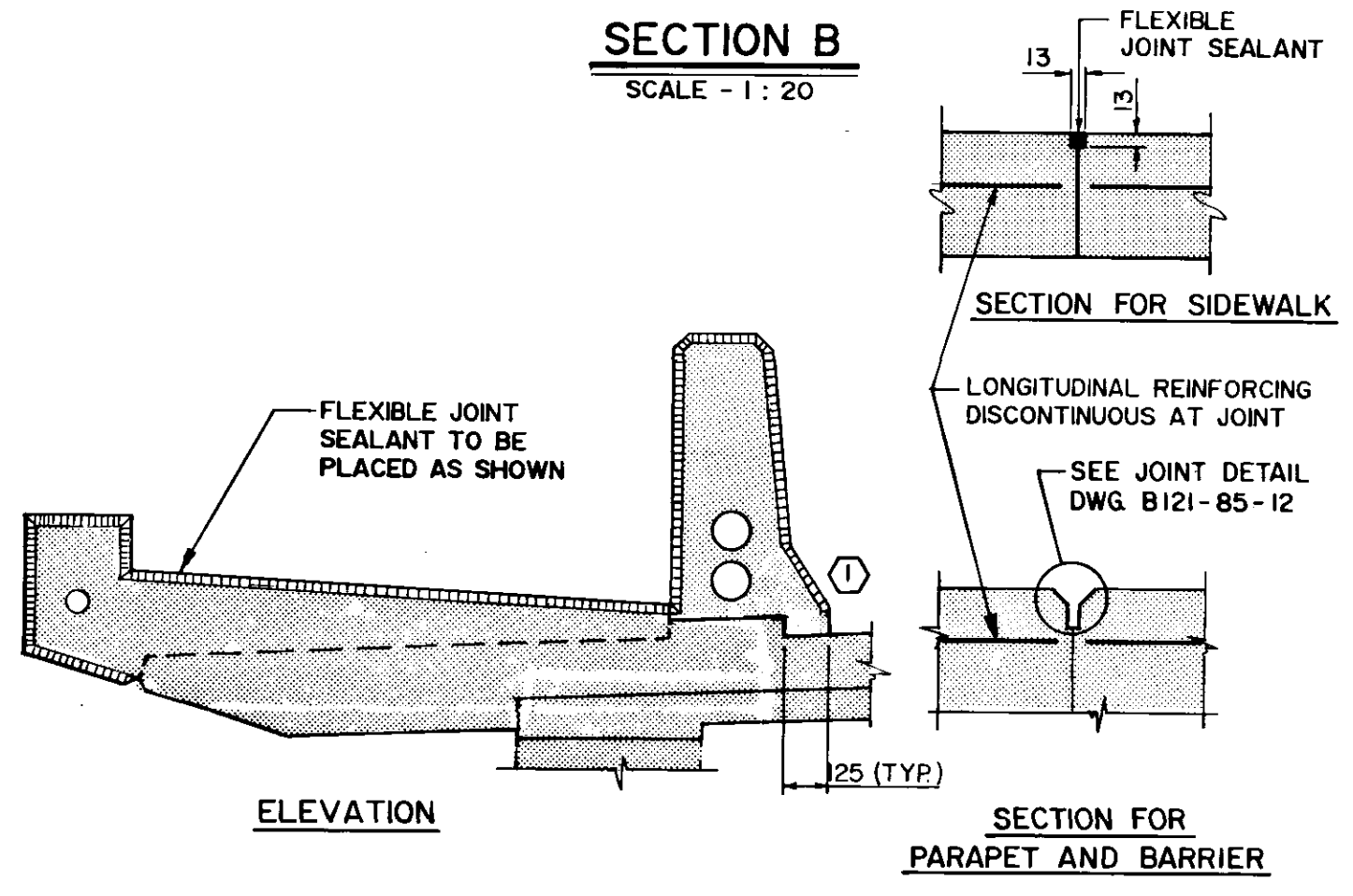
SECTION C SCALE - 1 : 20



SECTION D SCALE - 1 : 20



SECTION E SCALE - 1 : 20

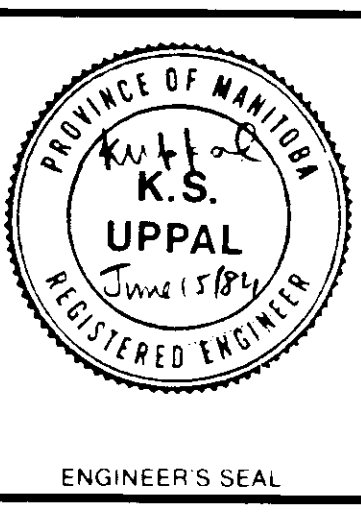


CONTRACTION JOINT DETAIL B-5576 METRIC N.T.S.

RECORD DRAWING

WHOLE NUMBERS INDICATE MILLIMETRES DECIMALIZED NUMBERS INDICATE METRES

NO	REVISIONS	DATE	APP
2	RECORD DRAWING	NOV-86	
1	ADDENDUM NO. 1	MAY-85	



the **uma** group
Underwood McLellan Ltd.
Consulting Engineers and Planners

DESIGNED BY: K.U. DRAWN BY: EJB
CHECKED BY: J.T. DATE: APRIL 1985
APPROVED BY: [Signature] DATE: June 10 1984

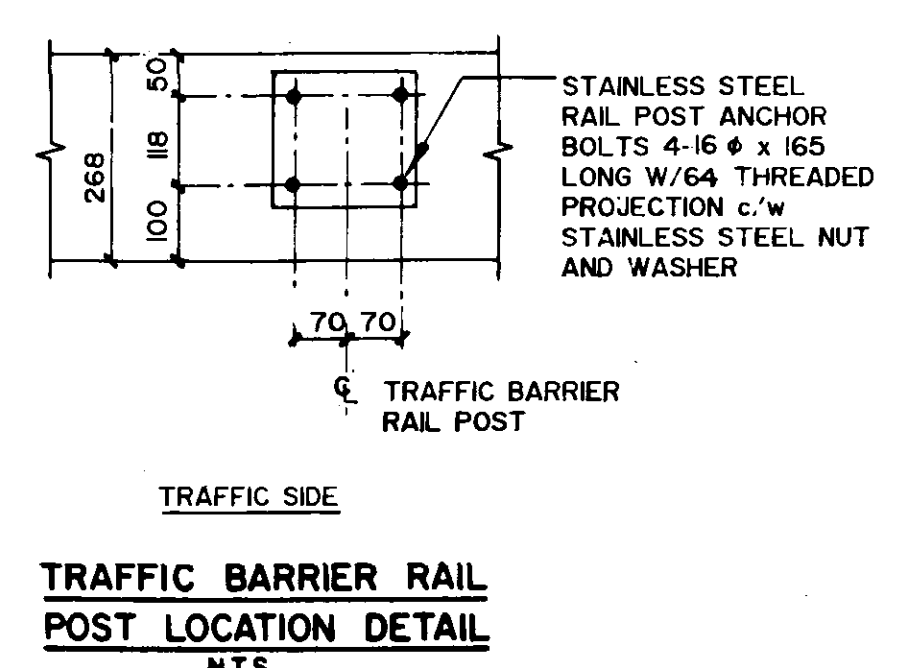
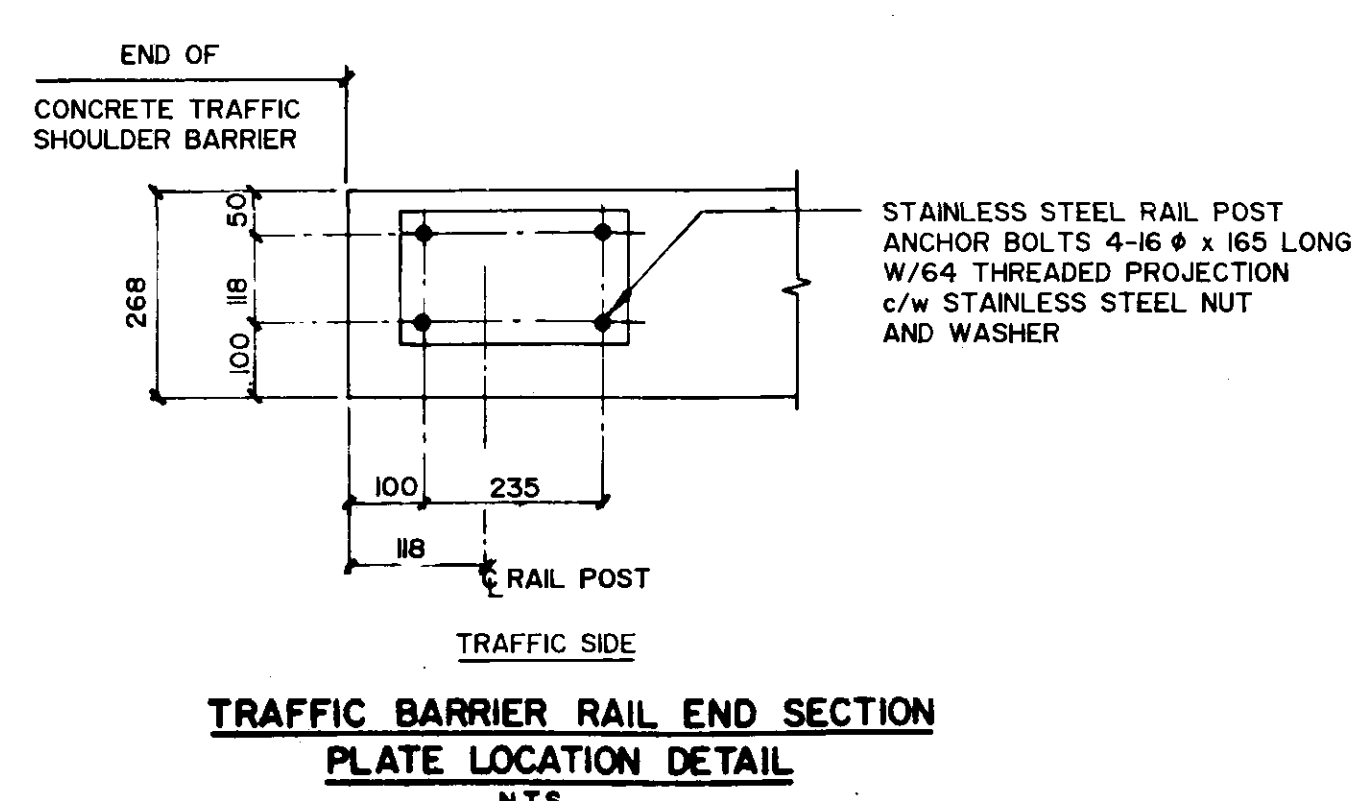
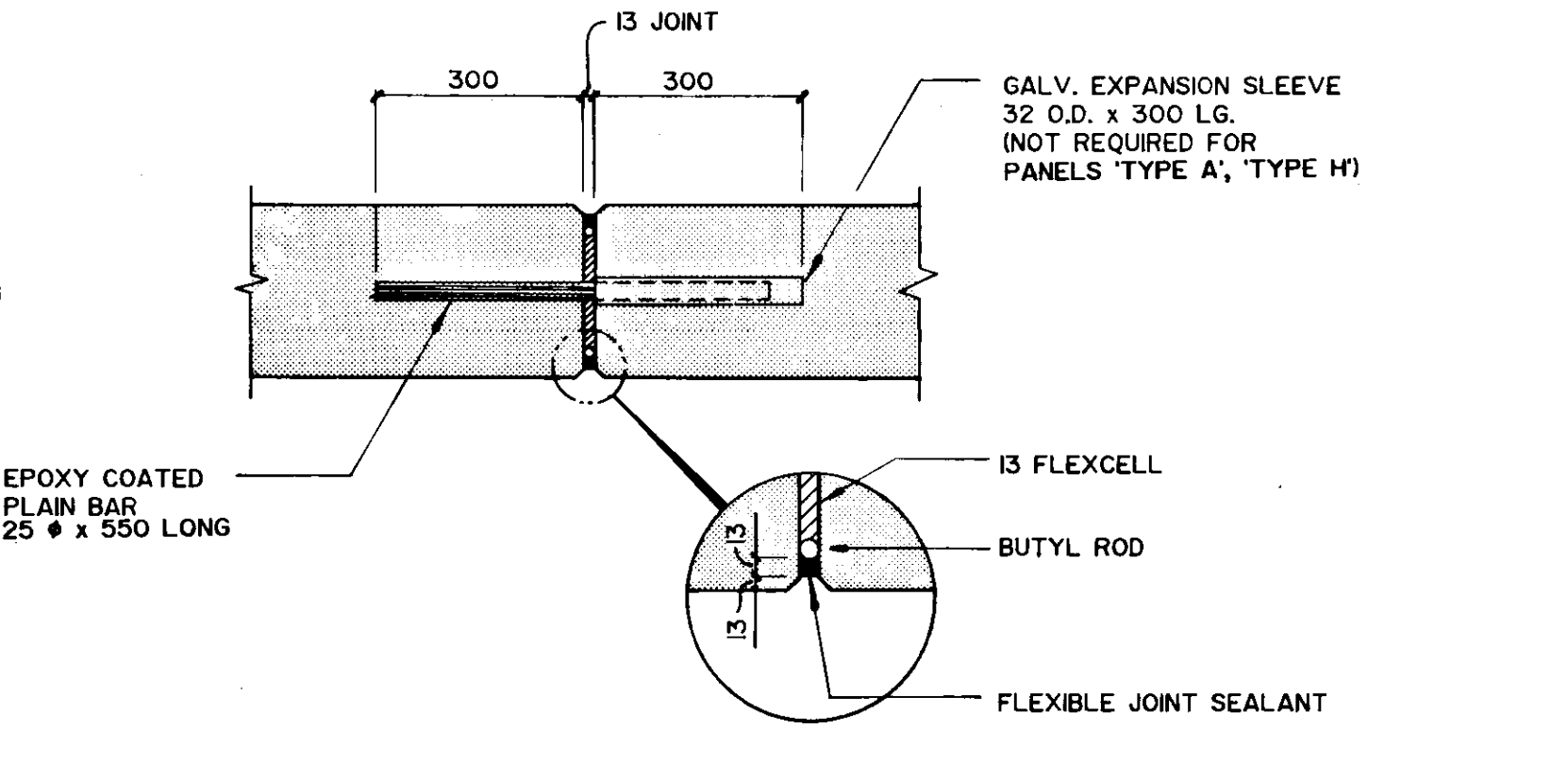
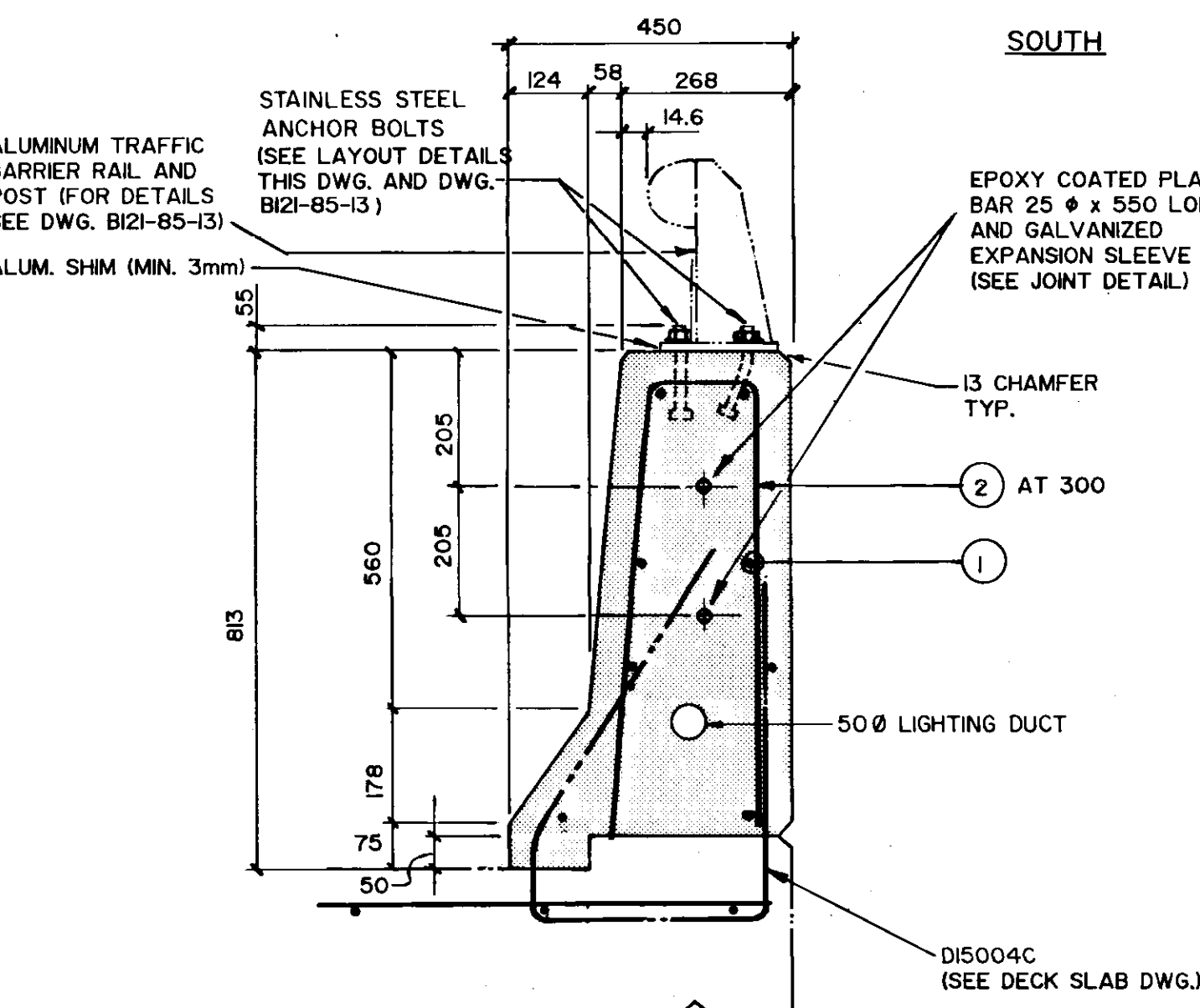
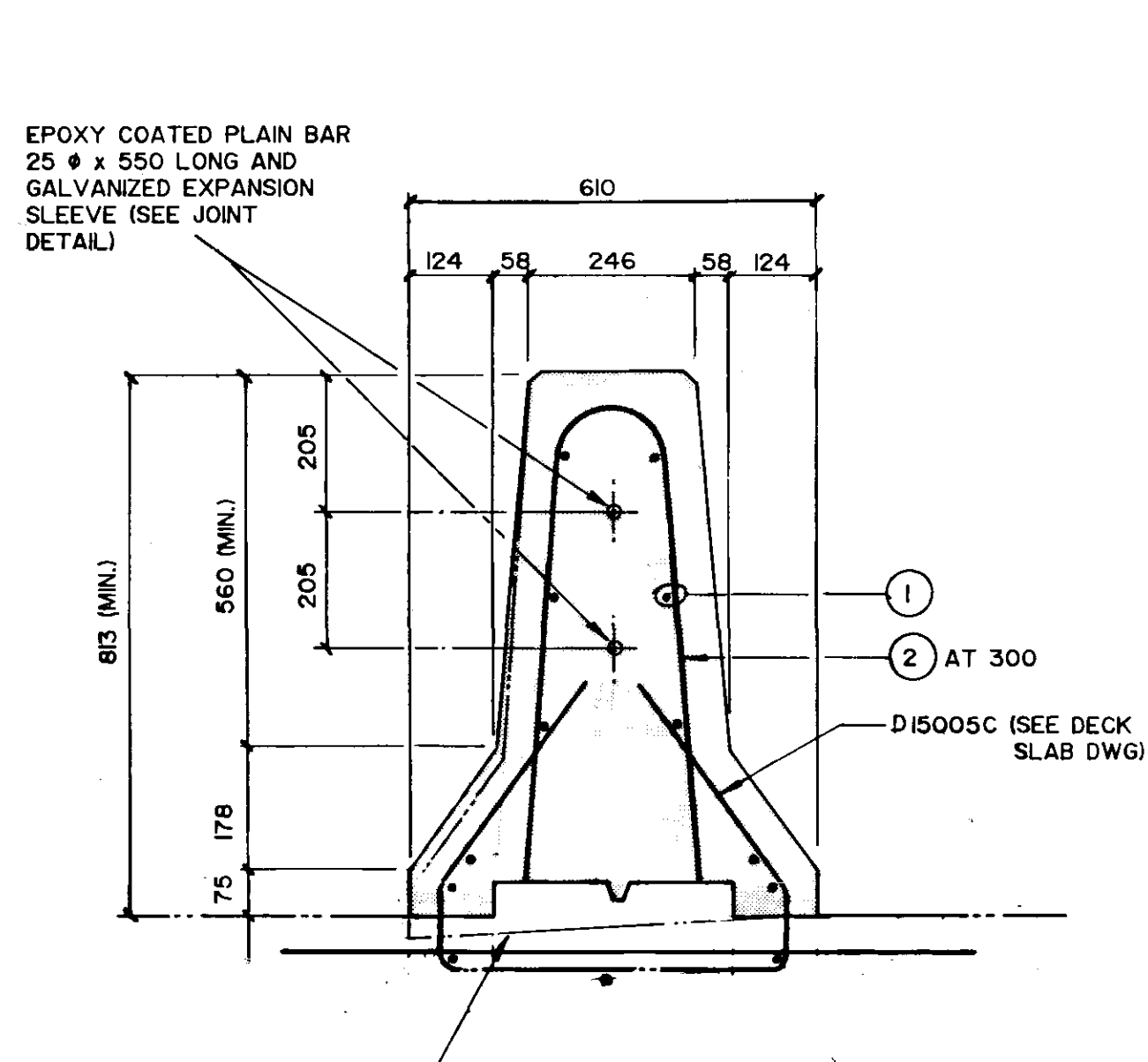
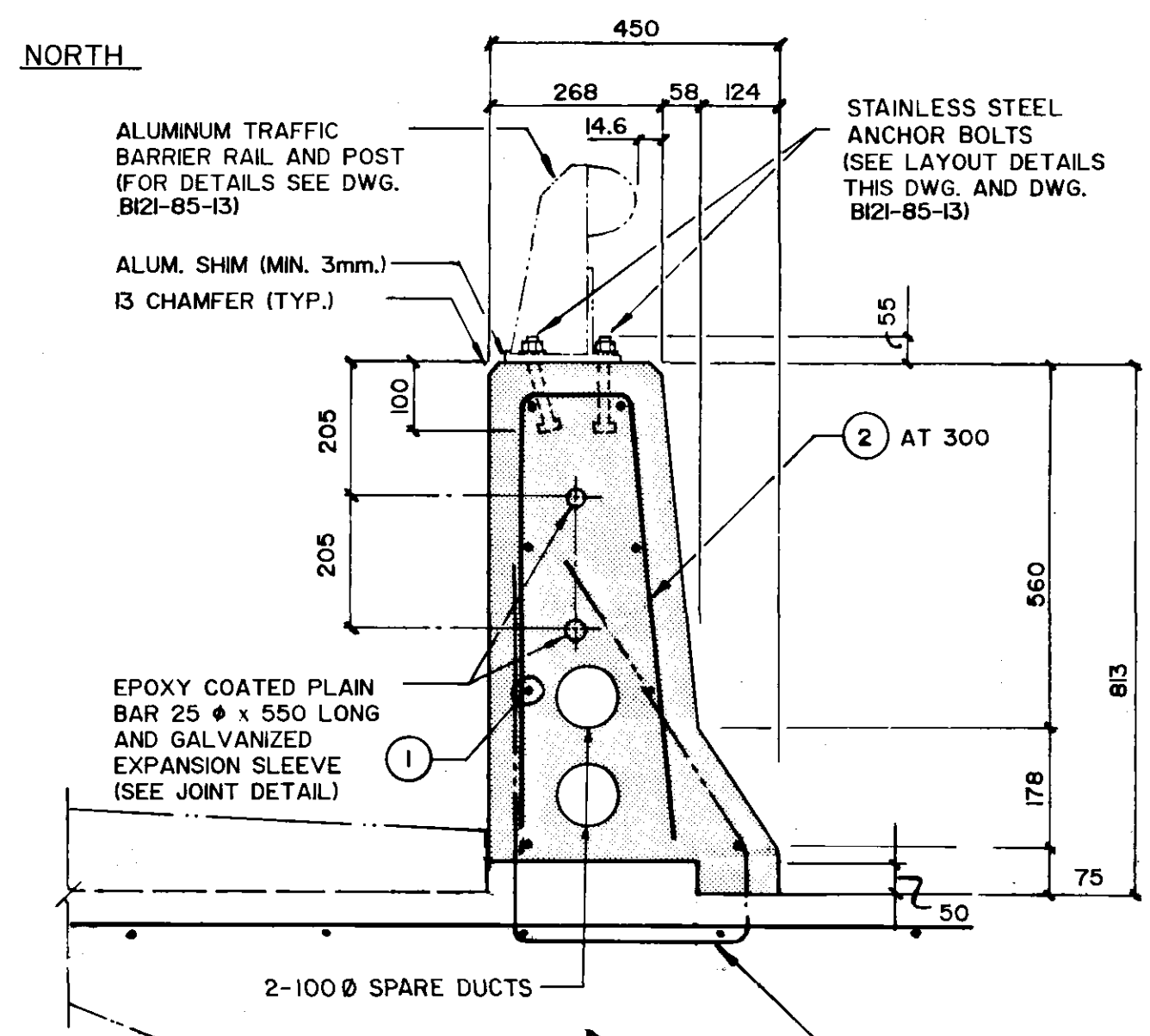
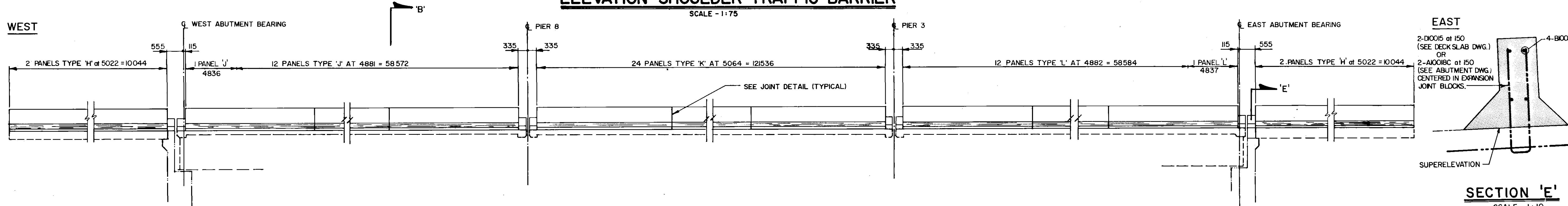
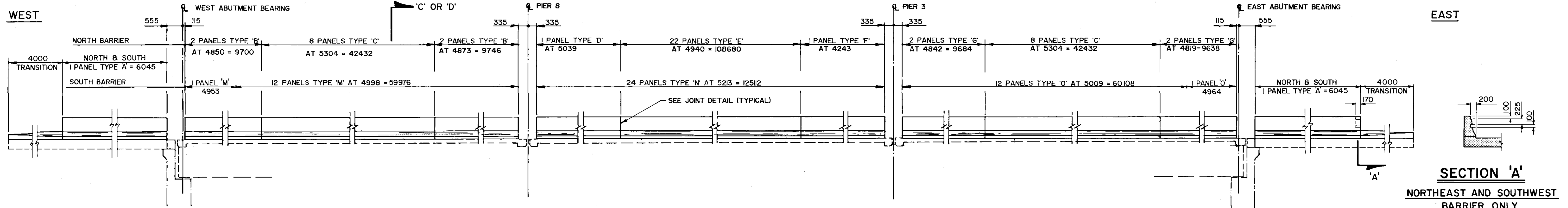
THE CITY OF WINNIPEG
WORKS & OPERATIONS DIVISION
STREETS & TRANSPORTATION DEPARTMENT

NAIN AVENUE OVERPASS
DECK REHABILITATION, STRUCTURAL STRENGTHENING AND RELATED WORKS

DECK DIMENSIONS AND REINFORCING

AUTHORIZED BY: [Signature] DATE: 1985-04-16
ACCEPTED BY: [Signature] DATE: 1985-04-16

SCALE: AS SHOWN DRAWING NO: B121-85-10



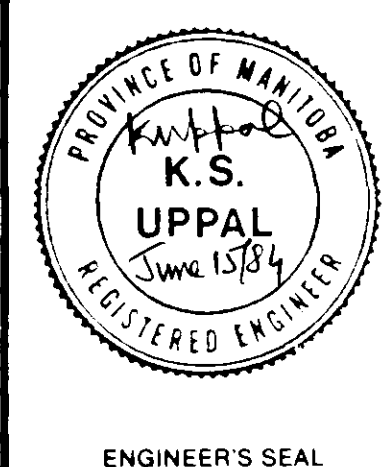
SHOULDER TRAFFIC BARRIER											
PANEL 'A'		PANEL 'B'		PANEL 'C'		PANEL 'D'		PANEL 'E'		PANEL 'F'	
QTY/PAN.	BAR MK.	QTY/PAN.	BAR MK.	QTY/PAN.	BAR MK.	QTY/PAN.	BAR MK.	QTY/PAN.	BAR MK.	QTY/PAN.	BAR MK.
8	B15001C	16	B15003C	16	B15004C	16	B15005C	16	B15003C	8	B15006C
21	B15007C	17	B15007C	19	B15007C	18	B15007C	17	B15007C	15	B15007C

MEDIAN TRAFFIC BARRIER							
PANEL 'H'		PANEL 'J'		PANEL 'K'		PANEL 'L'	
QTY/PAN.	BAR MK.	QTY/PAN.	BAR MK.	QTY/PAN.	BAR MK.	QTY/PAN.	BAR MK.
16	B15005C	16	B15003C	16	B15005C	16	B15003C
17	B15002C	17	B15002C	18	B15002C	17	B15002C

RAIL POST ANCHOR BOLT LAYOUT DETAILS
(PLAN VIEW)

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

NO.	REVISIONS	DATE	APP.
2	RECORD DRAWING	NOV.86	
1	ADDENDUM NO. 1	MAY-85	



the UMa group
Underwood McLellan Ltd.
Consulting Engineers and Planners

DESIGNED BY: K.U. DRAWN BY: B.H.
CHECKED BY: J.T. DATE: APRIL 1985
JOB No. 0265-216-01
APPROVED BY: [Signature] DATE: June 14/84

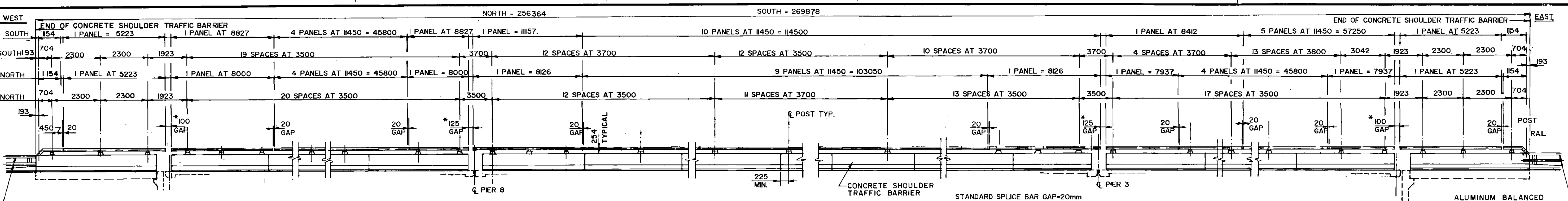
THE CITY OF WINNIPEG
WORKS & OPERATIONS DIVISION
STREETS & TRANSPORTATION DEPARTMENT

NAIRN AVENUE OVERPASS
DECK REHABILITATION, STRUCTURAL STRENGTHENING AND RELATED WORKS

CONCRETE TRAFFIC BARRIER DETAILS

AUTHORIZED BY: [Signature] DATE: 1985-04-18
ACCEPTED BY: [Signature] DATE: 1985-04-16
SCALE: AS NOTED DRAWING NO: B121-85-12

B-5578 RECORD DRAWING

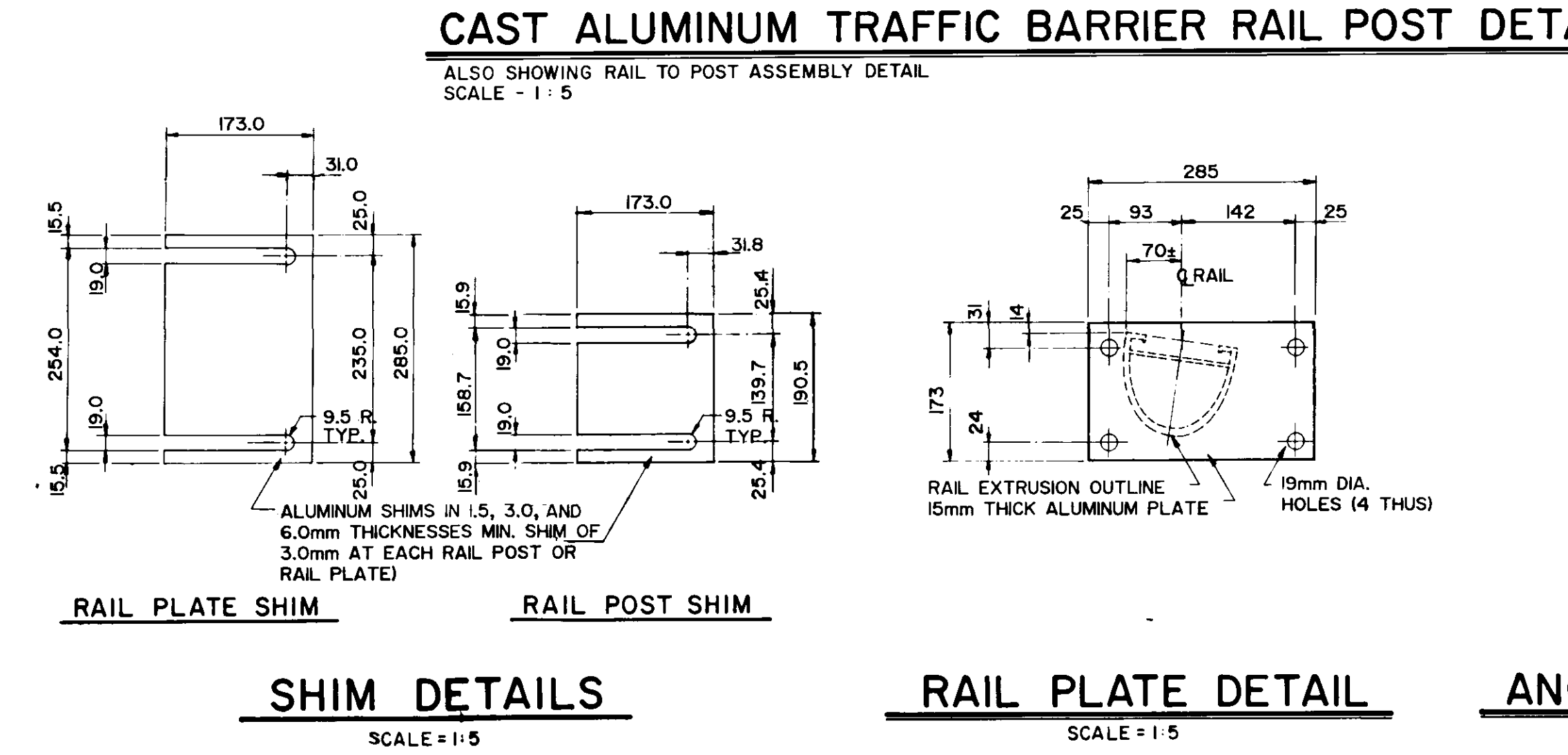
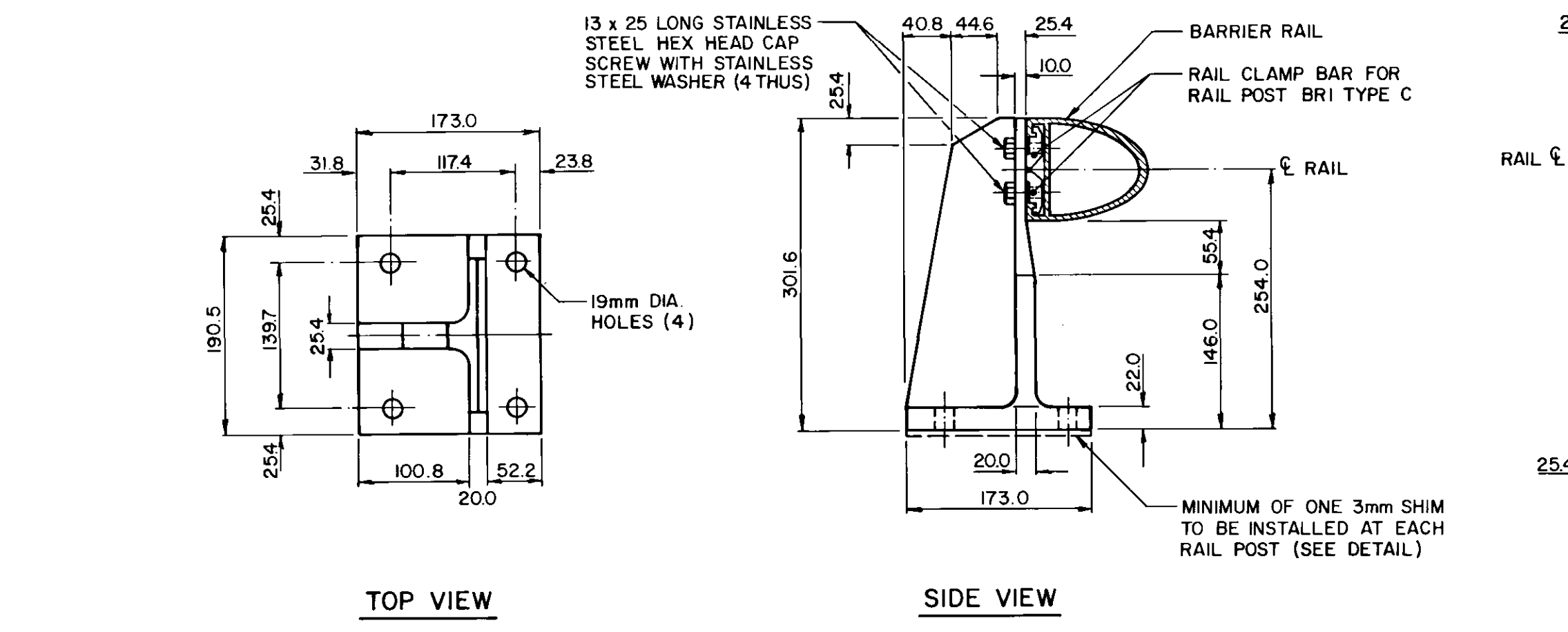
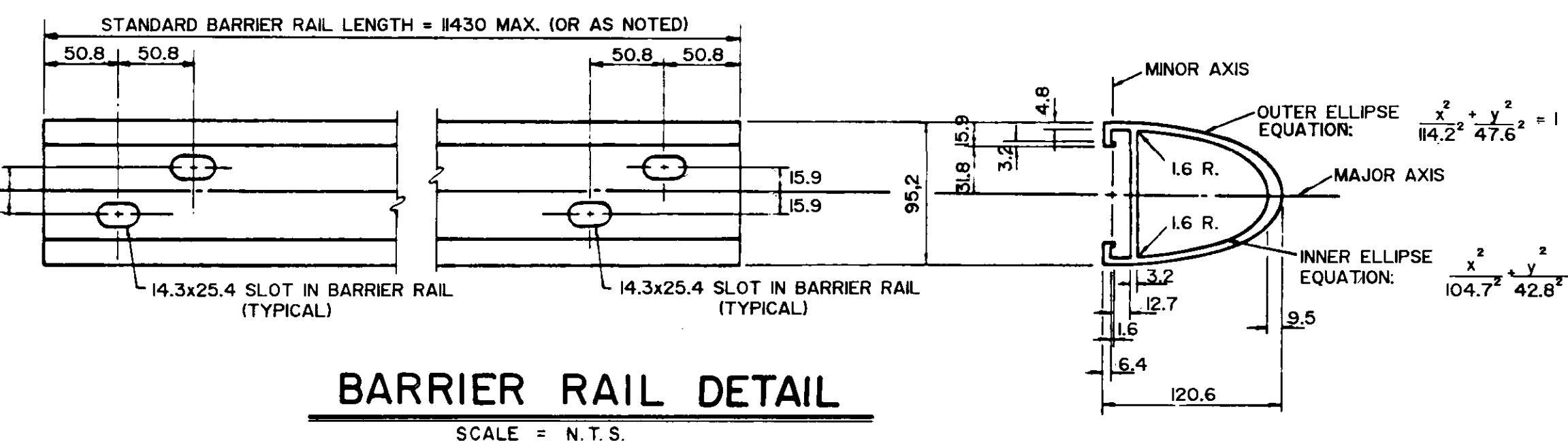
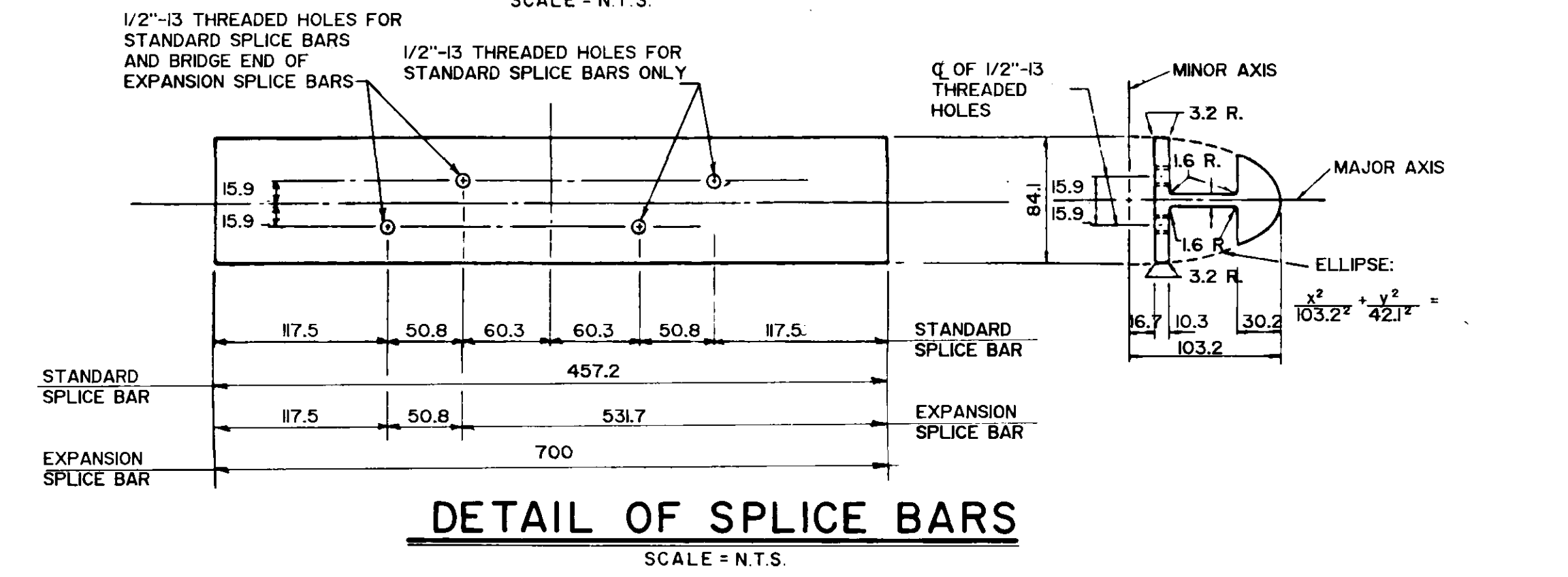
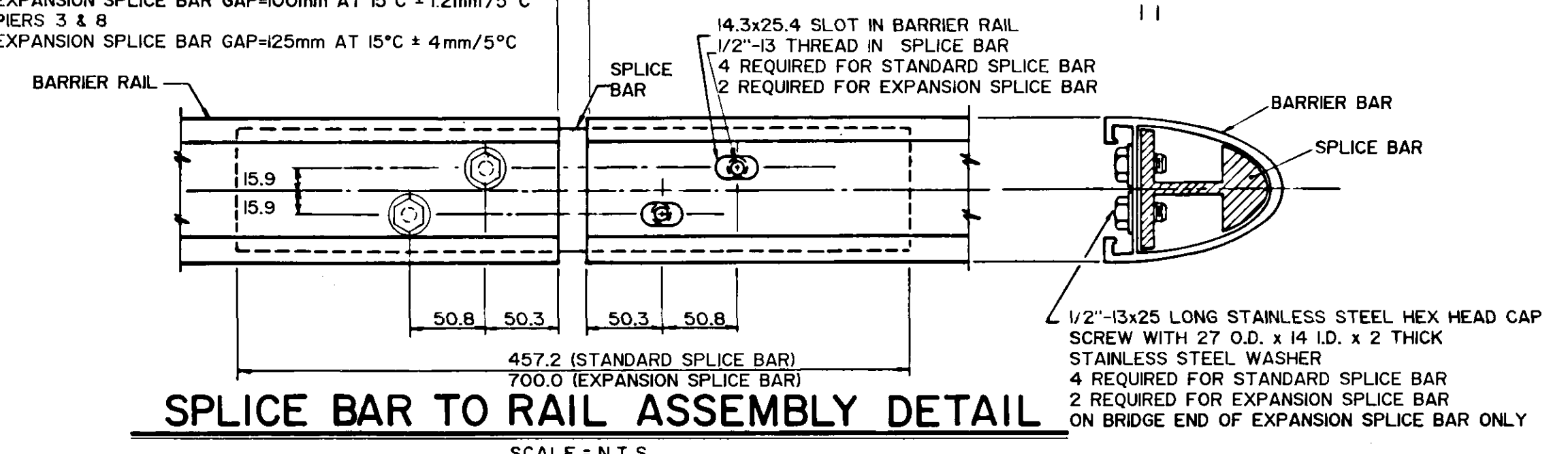
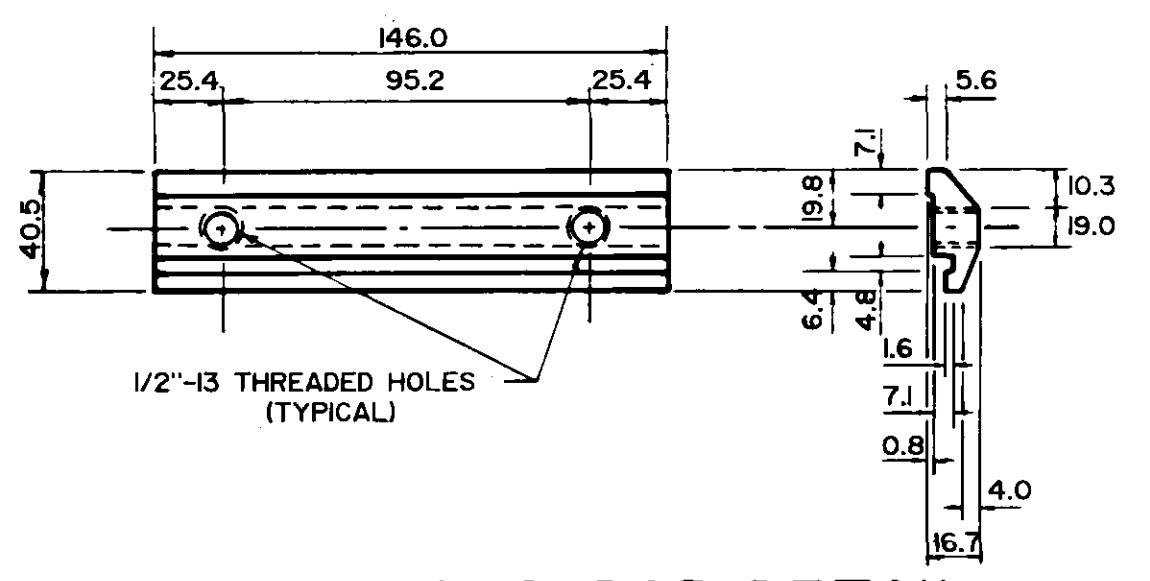
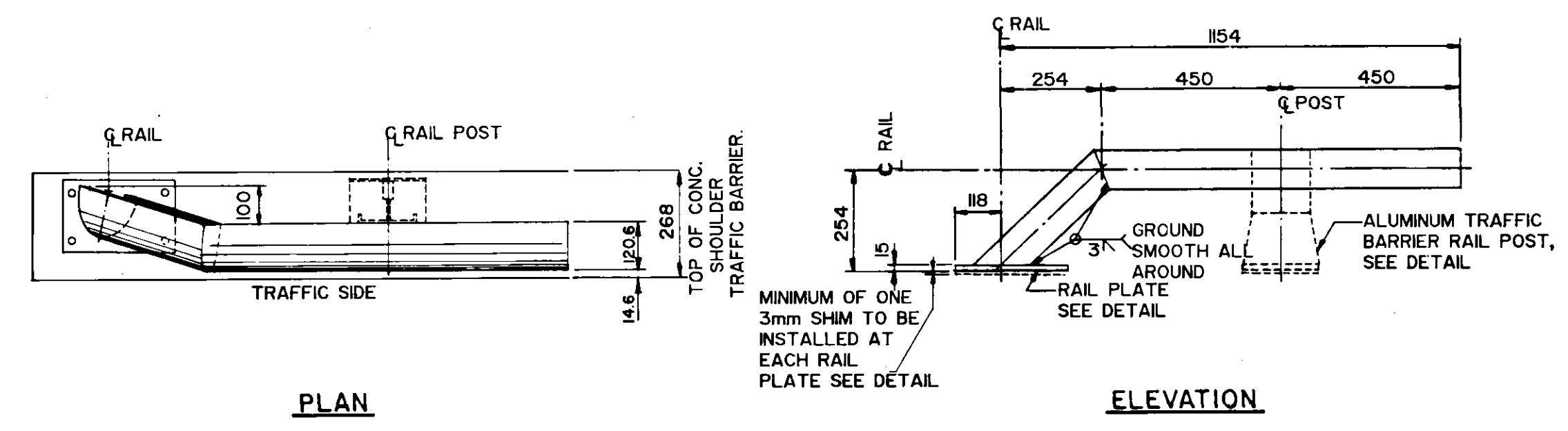


NOTE: * DENOTES DIMENSION AT INSTALLATION TEMPERATURE OF 15°C. SEE "SPLICE BAR TO RAIL ASSEMBLY DETAIL" FOR VARIATION WITH TEMPERATURE

LAYOUT OF ALUMINUM TRAFFIC BARRIER RAIL
(SHOWING FRONT ELEVATION TYPICAL FOR BOTH CONCRETE SHOULDER BARRIERS)
SCALE = 1:100

STANDARD SPLICE BAR GAP=20mm
EAST & WEST ABUTMENTS
EXPANSION SPLICE BAR GAP=100mm AT 15°C ± 1.2mm/5°C
PIERS 3 & 8
EXPANSION SPLICE BAR GAP=25mm AT 15°C ± 4mm/5°C

ALUMINUM BALANCED BARRIER ON APPROACHES



NOTES

1. THE 19mm DIA. HOLES (4) IN THE BASE OF THE BARRIER RAIL POSTS AND RAIL PLATES ARE DESIGNED TO ACCOMMODATE 16mm DIA. RAIL POST ANCHOR BOLTS AS DETAILED. SUPPLY WITH EACH ANCHOR BOLT: ONE STAINLESS STEEL PLAIN WASHER, ONE STAINLESS STEEL LOCK WASHER, AND ONE STAINLESS HEX NUT.
2. A COMBINATION OF 15, 3.0, AND/OR 6.0mm THICK ALUMINUM RAIL POST OR PLATE SHIMS ARE TO BE USED AS REQUIRED TO SET THE BARRIER RAIL TO THE SPECIFIED HEIGHT. (MINIMUM 3.0mm SHIM REQUIRED AT EACH POST OR PLATE).
3. REMOVE ALL BURRS AND SHARP EDGES IN THE SHOP. AFTER THE INSTALLATION OF THE BARRIER HAS BEEN COMPLETED, THE TOP EDGES AND CORNERS OF THE BARRIER RAIL POSTS SHALL BE ROUNDED SMOOTH TO THE SATISFACTION OF THE ENGINEER.
4. * DENOTES DIMENSION AT INSTALLATION TEMPERATURE OF 15°C SEE SPLICE BAR TO RAIL ASSEMBLY DETAIL FOR DIMENSION VARIATION WITH TEMPERATURE.
5. FOR BILL OF MATERIALS SEE DWG. B21-85-18.
6. BOTTOM SURFACE OF SHIM (SURFACE IN CONTACT WITH CONCRETE) IS TO BE PAINTED WITH 2 COATS OF ALKALI RESISTANT BITUMINOUS PAINT, EACH COAT BEING 1mm IN THICKNESS.

SPECIFICATIONS

1. EXTRUDED ALUMINUM SHAPES SHALL CONFORM TO THE REQUIREMENTS OF A.S.T.M. B221, ALLOY 6061-T6 OR ALLOY 6355-T5 (MINIMUM ELONGATION 10%).
2. USE ALLOY 535.2 TO CAST RAIL POST.
3. THE STAINLESS STEEL HEX HEAD AND SOCKET HEAD CAP SCREWS SHALL MEET THE REQUIREMENTS OF A.S.T.M. A 276 TYPE 430, AND THE DIMENSIONAL REQUIREMENTS OF A.S.I. B 18.3.
4. DIMENSIONAL TOLERANCES NOT SHOWN OR IMPLIED ARE INTENDED TO BE THOSE CONSISTENT WITH THE PROPER FUNCTIONING OF THE PART, INCLUDING ITS APPEARANCE, AND ACCEPTED MANUFACTURING PRACTICES.

RECORD DRAWING

B-5579

	DESIGNED BY:	K.U.	DRAWN BY:	BH
	CHECKED BY:	J.T.	DATE:	APRIL 1985
	APPROVED BY:	<i>[Signature]</i>	DATE:	JUNE 15 1984
	NO. RECORD DRAWING	NOV. 86	REVISIONS	DATE

the **uma** group

Underwood McLellan Ltd.
Consulting Engineers and Planners

THE CITY OF WINNIPEG

WORKS & OPERATIONS DIVISION

STREETS & TRANSPORTATION DEPARTMENT

NAIRN AVENUE OVERPASS
DECK REHABILITATION, STRUCTURAL STRENGTHENING AND RELATED WORKS

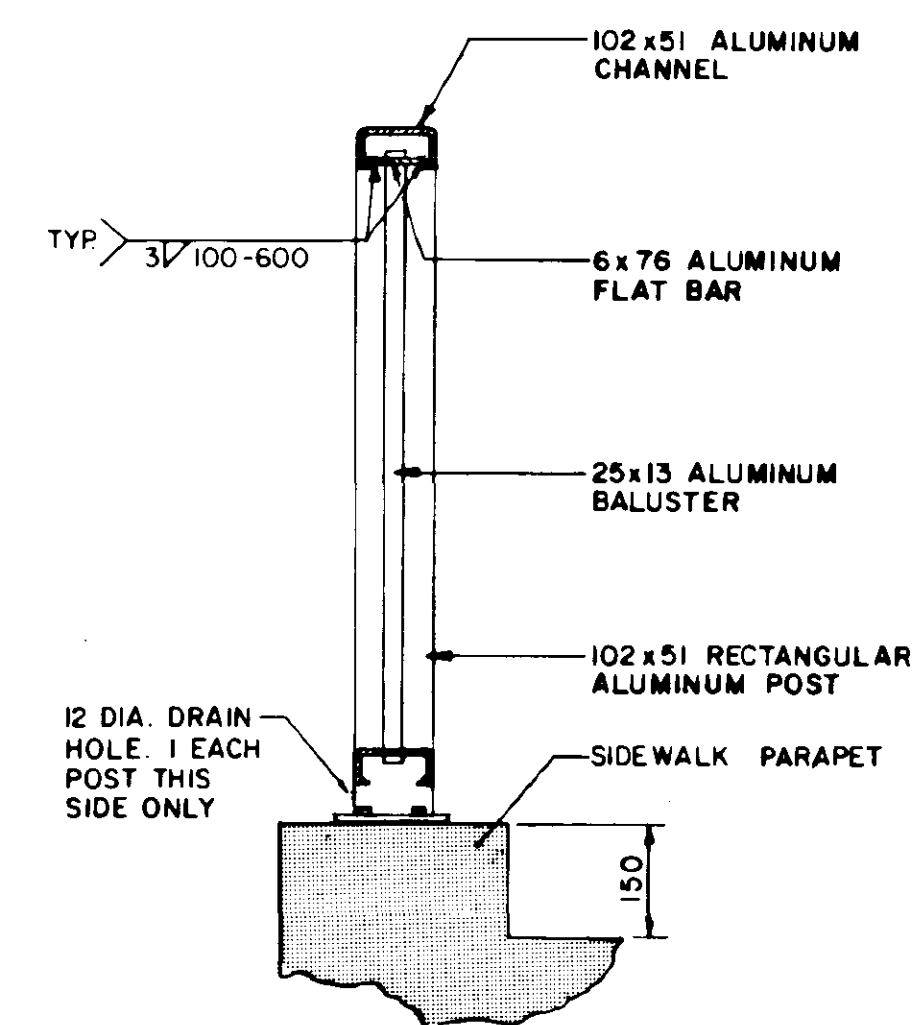
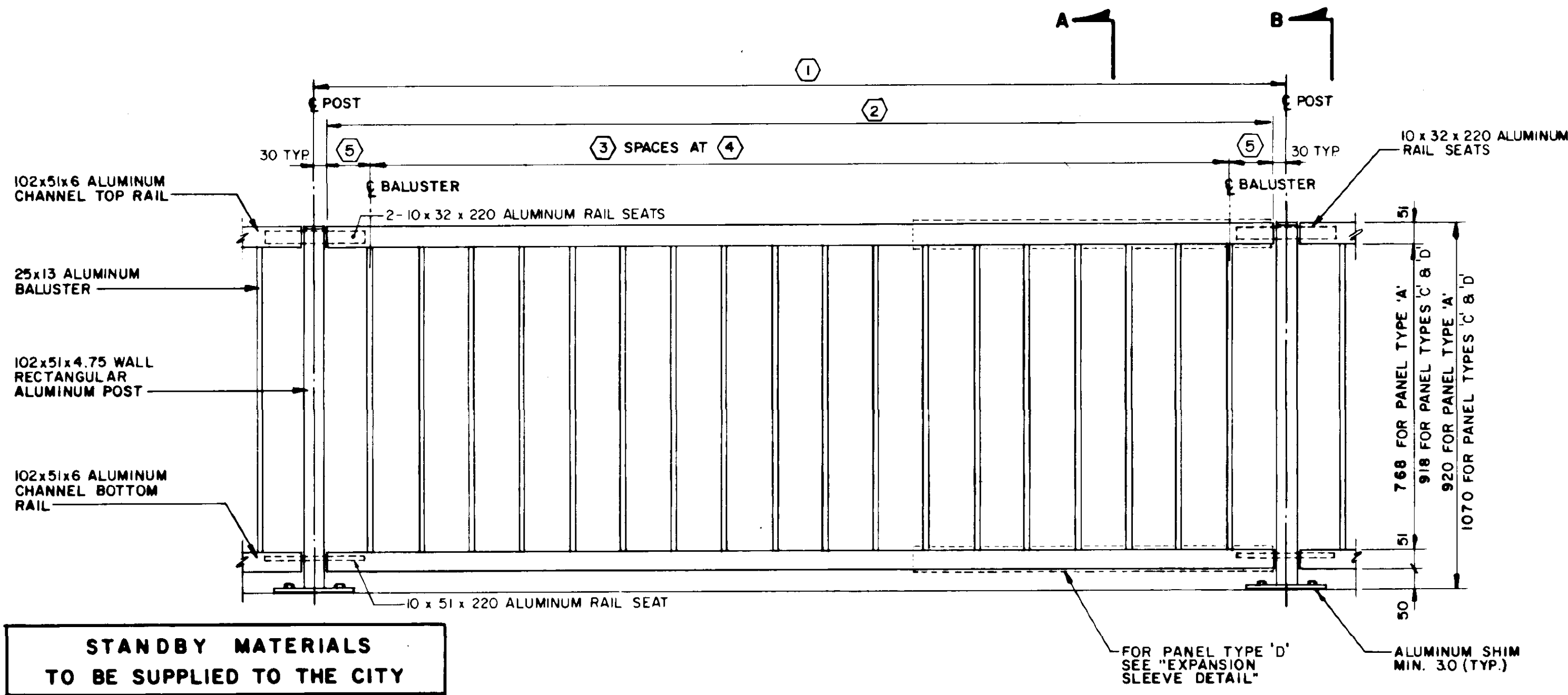
ALUMINUM TRAFFIC BARRIER RAIL DETAILS

AUTHORIZED BY: *[Signature]* 1985-04-16

ACCEPTED BY: *[Signature]* 1985-04-16

SCALE: AS NOTED

DRAWING NO. B121-85-13

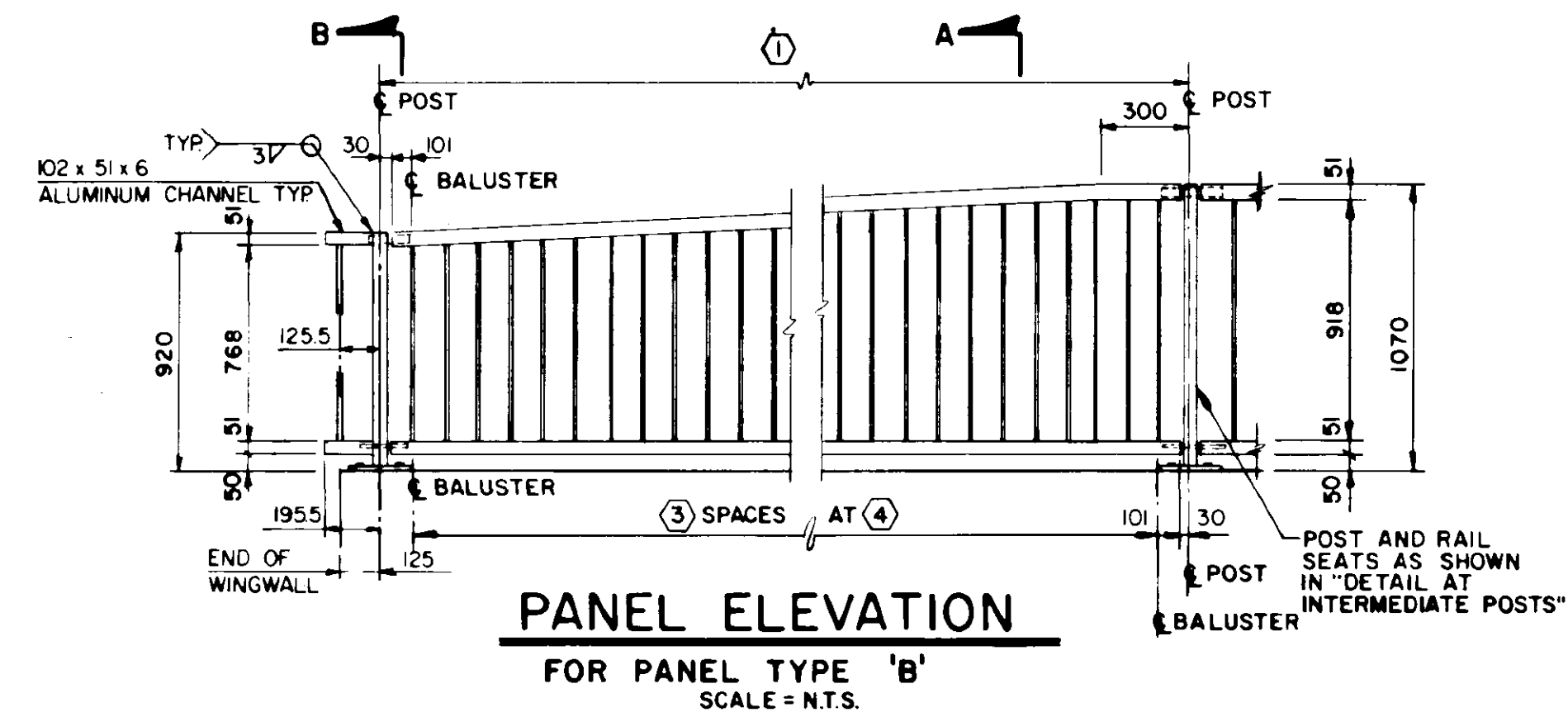


- NOTES:**
- THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NO. B121-85-15 AND THE SPECIAL PROVISIONS.
 - THE UNDERSIDE OF THE POST SHIM SHALL BE PAINTED WITH ALKALI RESISTANT BITUMINOUS PAINT MEETING THE REQUIREMENTS OF CGSB 31.GP.3M.
 - HANDRAIL ANCHORAGE SHALL BE s/s ACROW-RICHMOND TYPE.
 - ALL CHANNELS, POSTS, & BARS SHALL BE SUPPLIED IN ACCORDANCE WITH C.S.A. SPECIFICATION HA.5. GS11R-T4. CASTINGS FOR END CAPS SHALL BE IN ACCORDANCE WITH C.S.A. SPECIFICATION HA.9 G170-T6.
 - THE M.I.G. PROCESS OF WELDING SHALL BE USED.
 - RAIL POSTS SHALL BE SET VERTICAL.
 - ALL SLOTTED HOLES MUST BE FINISHED SMOOTH & TRUE.
 - s/s DENOTES STAINLESS STEEL.
 - THE CONTRACTOR SHALL SUBMIT COMPLETE PEDESTRIAN HANDRAIL SHOP DRAWINGS CONSISTING OF THREE PRINTS AND ONE REPRODUCIBLE SEPIA TO THE ENGINEER FOR APPROVAL PRIOR TO FABRICATION.

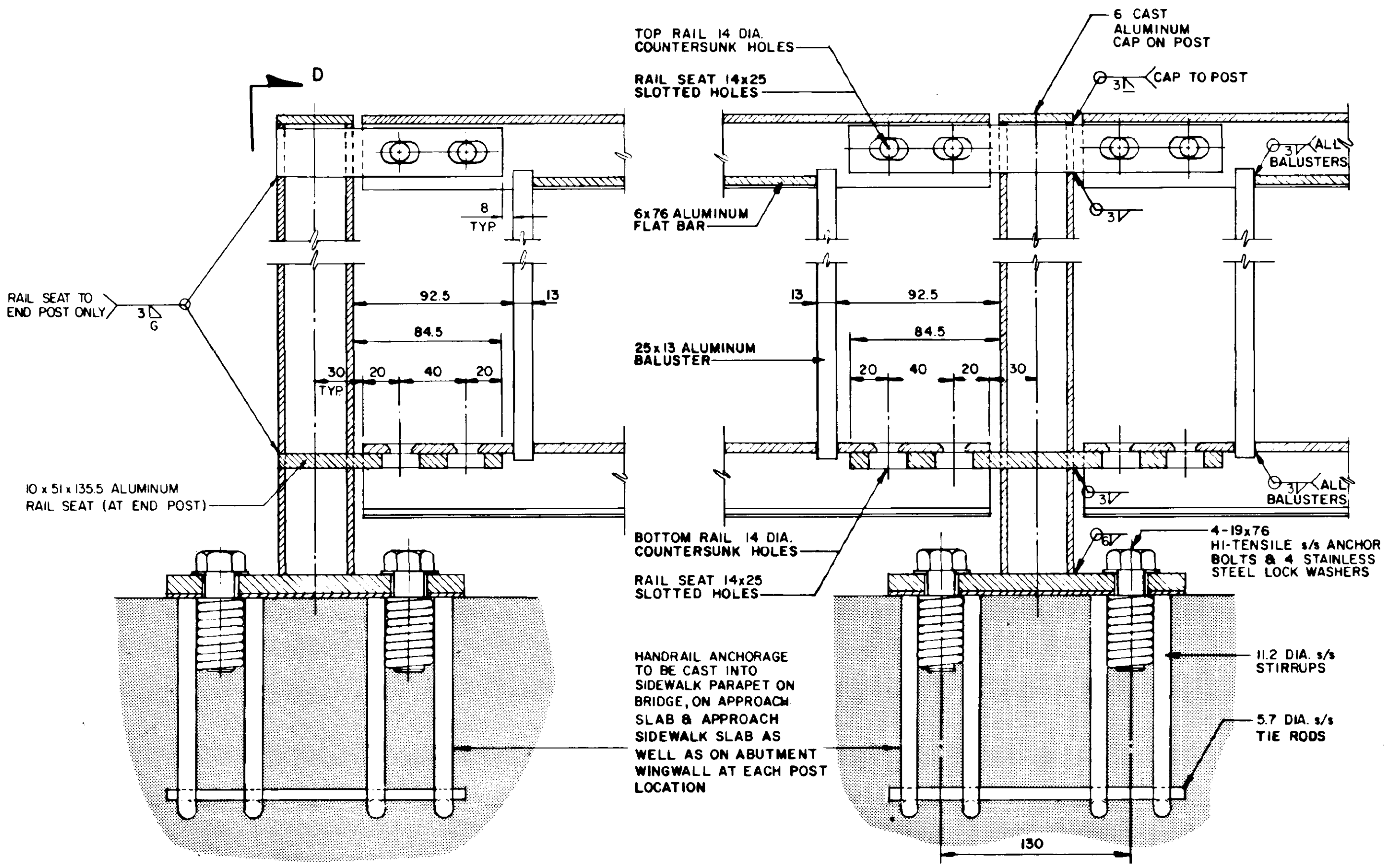
STANDBY MATERIALS TO BE SUPPLIED TO THE CITY		
ITEM	QUANTITY	DESCRIPTION
1	50	19x76 HI-TENSILE s/s ANCHOR BOLTS c/w s/s LOCK WASHERS
2	100	13 s/s FLAT HEAD SOCKET CAP SCREW c/w s/s NUTS & WASHERS
3	20	EACH OF 1.5, 3.0 & 6.0 THICK ALUMINUM PEDESTRIAN HANDRAIL POST SHIMS
4	1 SET	ALL COMPONENTS ASSEMBLED FOR ONE COMPLETE HANDRAIL SECTION, PANEL 'C', INCLUDING TWO POSTS

PANEL ELEVATION
FOR PANEL TYPES 'A', 'C', & 'D'
SCALE = N.T.S.

SECTION A
SCALE = 1:10

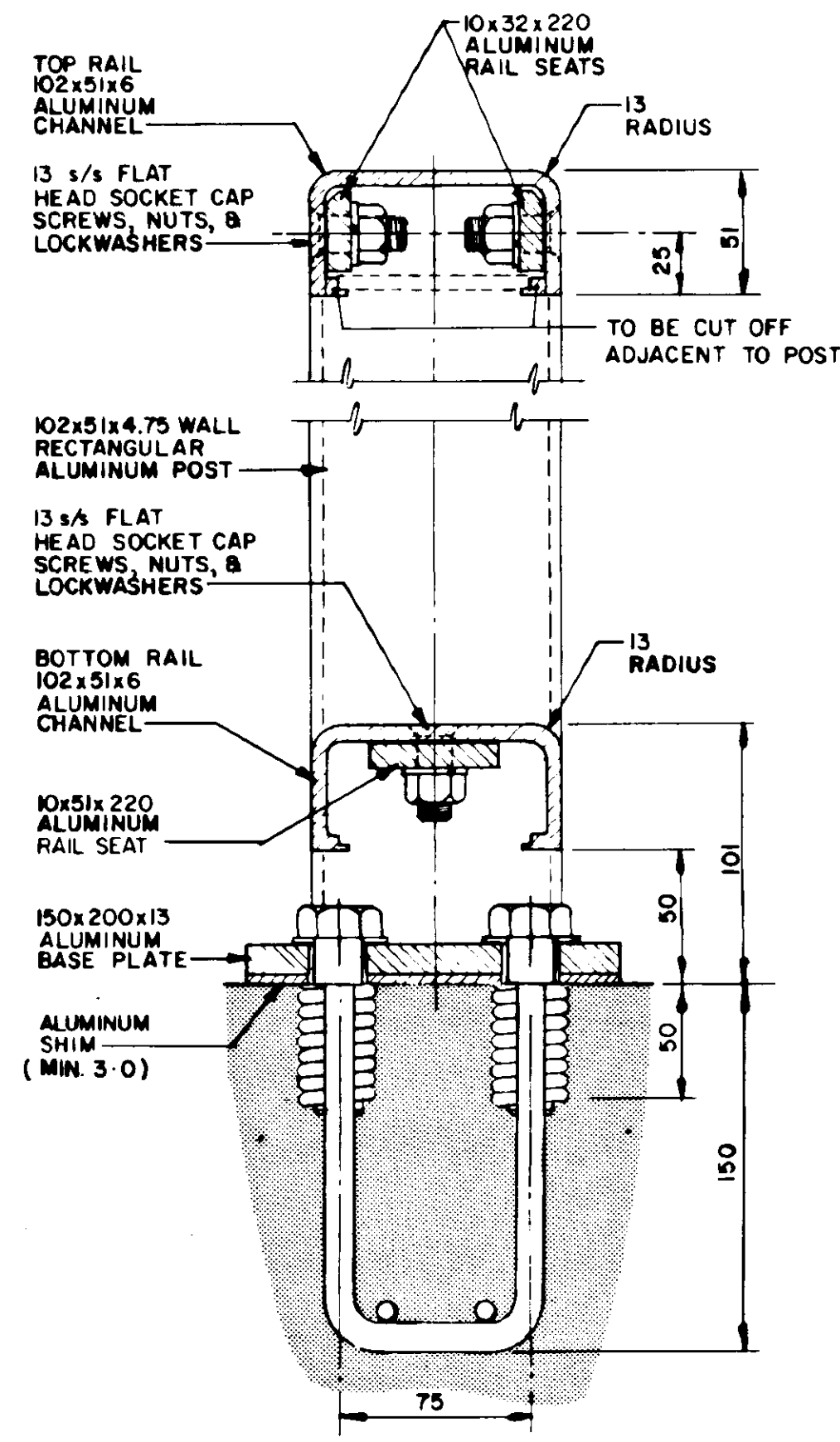


PANEL ELEVATION
FOR PANEL TYPE 'B'
SCALE = N.T.S.

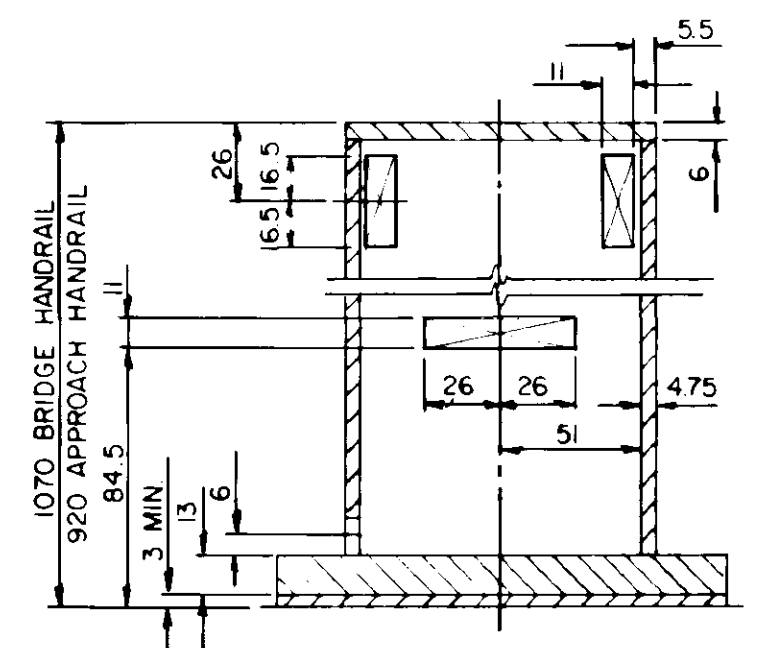


DETAIL AT END POSTS
SCALE = 1:2.5

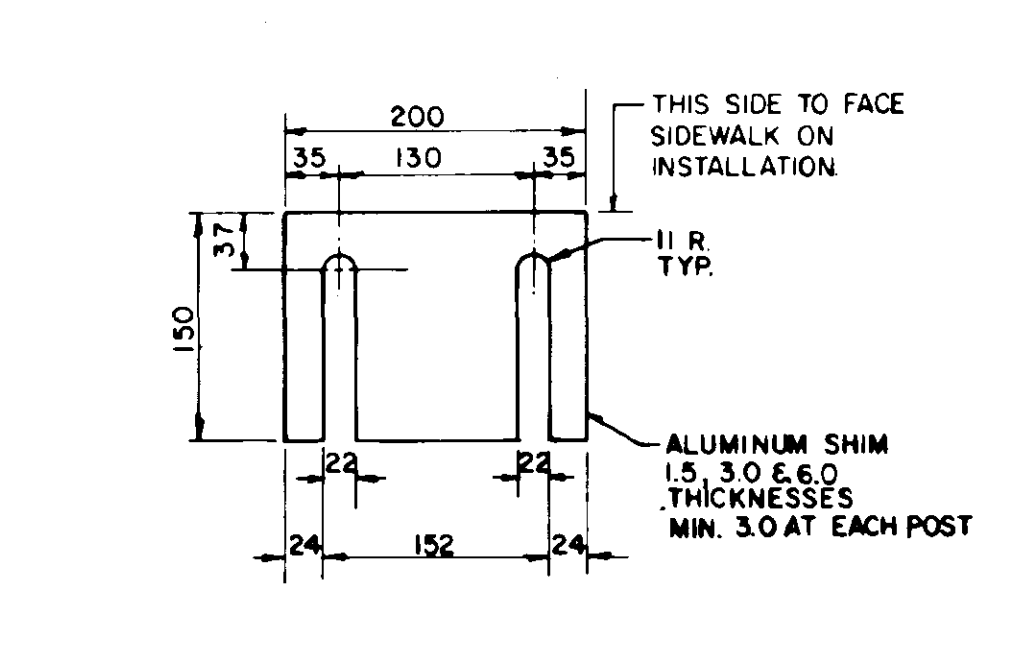
DETAIL AT INTERMEDIATE POSTS
SCALE = 1:2.5



SECTION B
SCALE = 1:2.5



SECTION D
(SLOTS IN POST FOR RAIL SEATS)
SCALE = 1:2.5



PEDESTRIAN POST SHIM
SCALE = 1:5

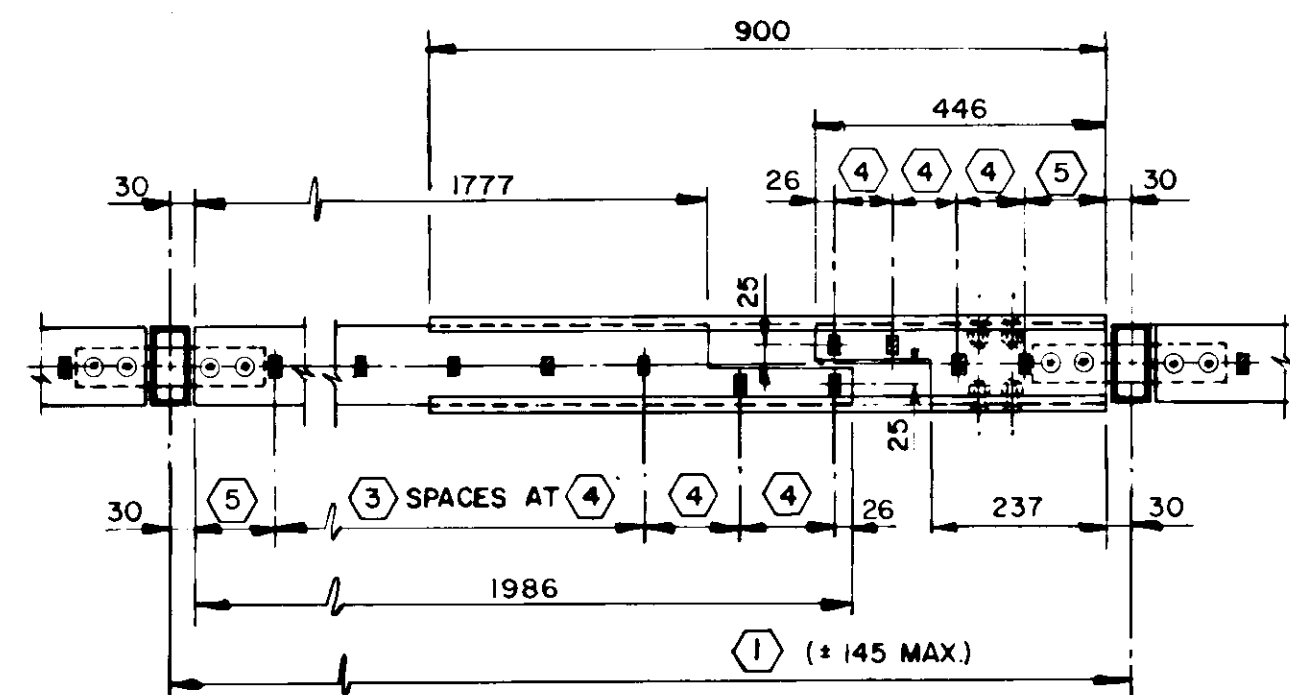
RECORD DRAWING

B-5580

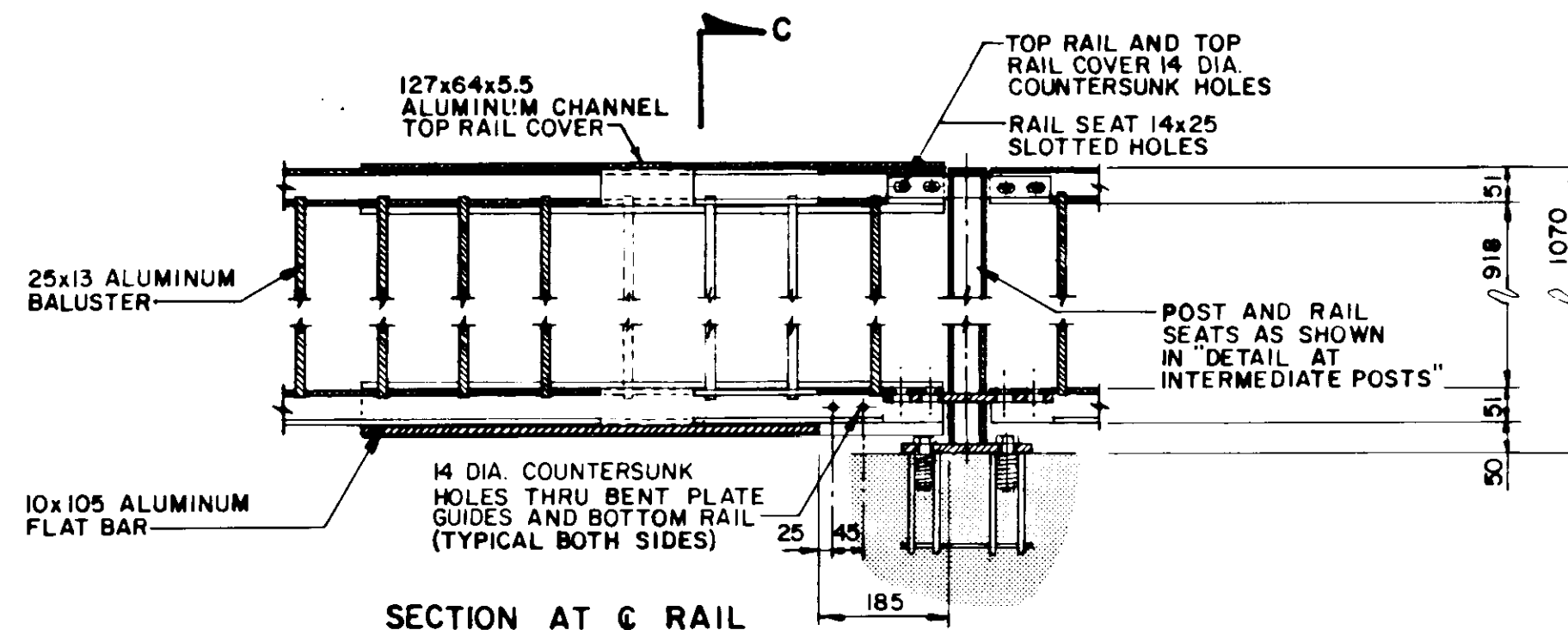
METRIC

WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

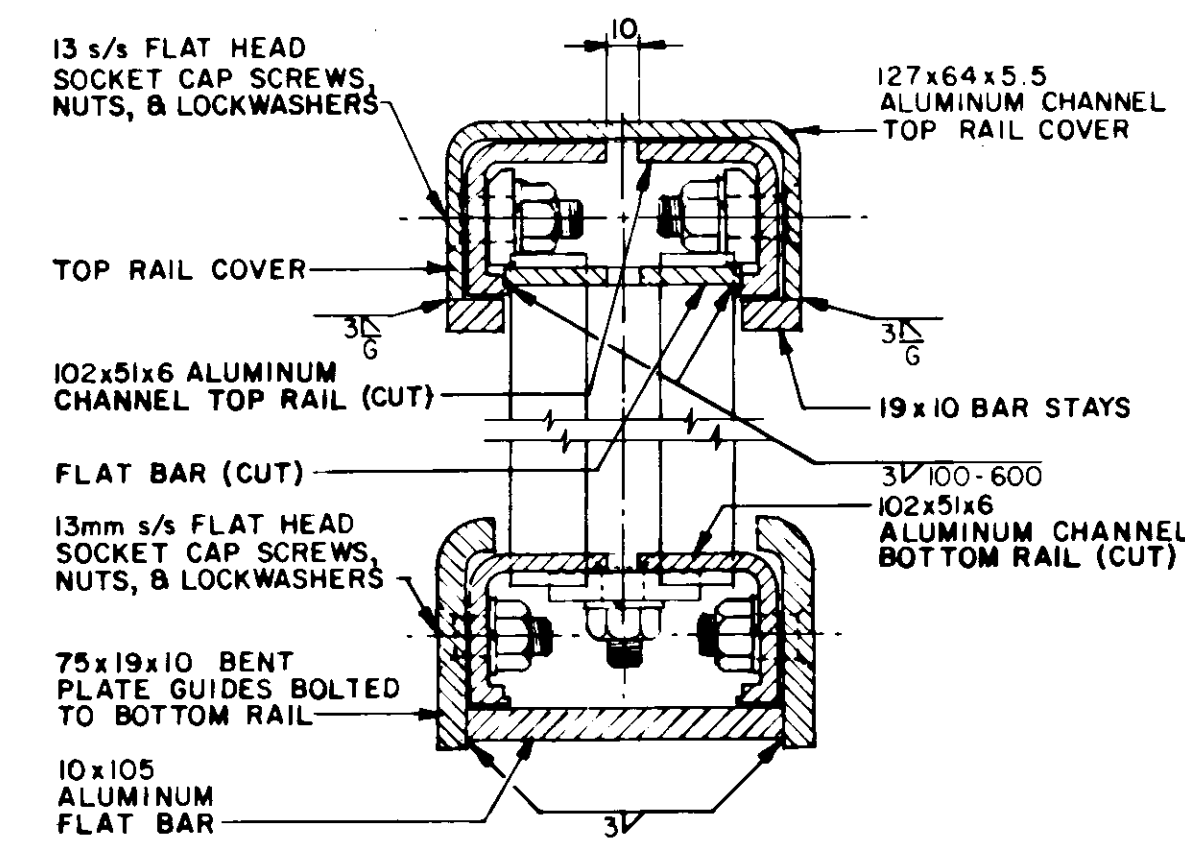
		the uma group Underwood McLellan Ltd. Consulting Engineers and Planners	THE CITY OF WINNIPEG WORKS & OPERATIONS DIVISION STREETS & TRANSPORTATION DEPARTMENT	NAIRN AVENUE OVERPASS DECK REHABILITATION, STRUCTURAL STRENGTHENING AND RELATED WORKS ALUMINUM PEDESTRIAN HANDRAILS - I AUTHORIZED BY <i>Wm. L. P. G.</i> 1985-04-16 ACCEPTED BY <i>Wm. L. P. G.</i> 1985-04-16 SCALE AS NOTED DRAWING NO B121-85-14
DESIGNED BY: K.U.	DRAWN BY: B.A.			
CHECKED BY: J.T.	DATE: APRIL 1985			
APPROVED BY: <i>J. T.</i>	JOB No. 0265-216-01			
NO. 1	RECORD DRAWING	NOV. 86		
	REVISIONS	DATE	APP.	



PLAN



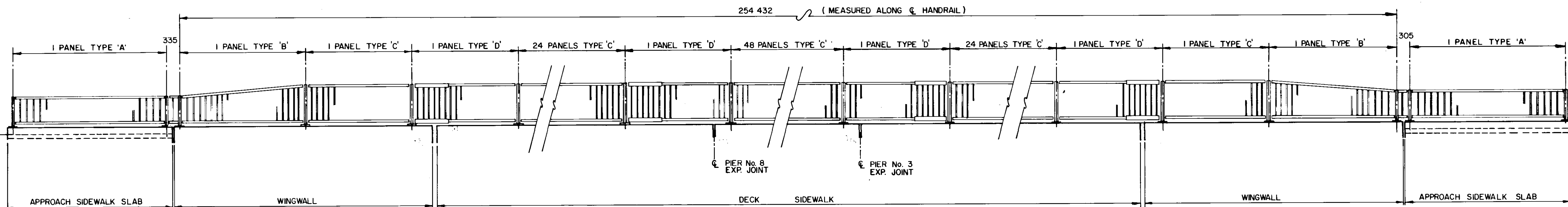
SECTION AT C RAIL
EXPANSION SLEEVE DETAIL
FOR PANEL TYPE 'D'
SCALE = 1:10



SECTION C
SCALE = 1:2.5

WEST

EAST



ELEVATION
N.T.S.

PANEL DATA						
PANEL TYPE	No. REQ'D	①	②	③	④	⑤
'A'	2	3 250	3 190	27	111	96.5
'B'	2	2 776	2 716	23	110	93
'C'	98	2 440	2 380	20	110	90
'D'	4	2 440	2 380	15	110	90

NOTES
- THIS DRAWING TO BE READ IN CONJUNCTION WITH
DRAWING No. B121-85-14

NOTE: * FOR LOCATION OF DIMENSIONS INDICATED THUS: ① SEE THIS DRAWING AND DWG. B121-85-14

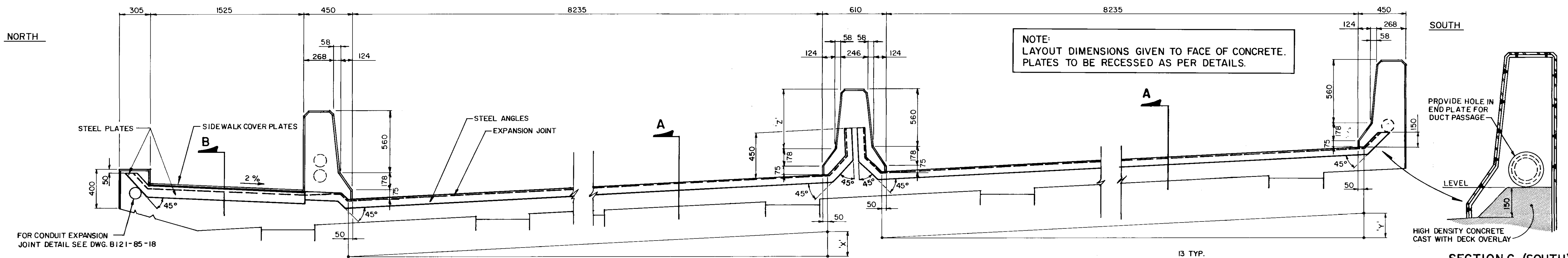
B-5581

METRIC

RECORD DRAWING

WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

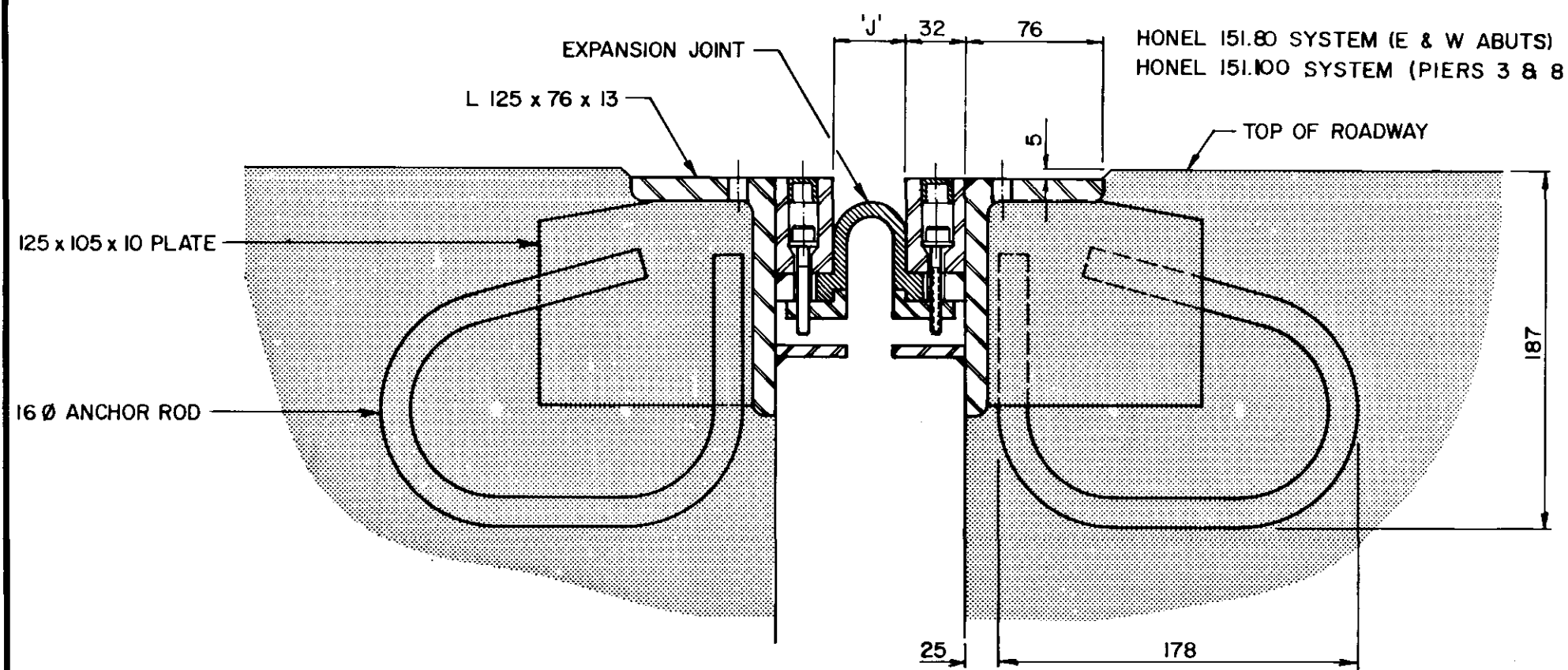
	the uma group Underwood McLellan Ltd. Consulting Engineers and Planners	THE CITY OF WINNIPEG WORKS & OPERATIONS DIVISION STREETS & TRANSPORTATION DEPARTMENT	NAIRN AVENUE OVERPASS DECK REHABILITATION, STRUCTURAL STRENGTHENING AND RELATED WORKS ALUMINUM PEDESTRIAN HANDRAILS - II	
	DESIGNED BY: K.U. CHECKED BY: J.T. APPROVED BY: <i>[Signature]</i>	DRAWN BY: B.A. DATE: APRIL 1985 JOB No. 0265-216-01 DATE: <i>[Signature]</i>	AUTHORIZED BY: <i>[Signature]</i> 1985-04-16 ACCEPTED BY: <i>[Signature]</i> 1985-04-16 SCALE: AS NOTED DRAWING NO: B121-85-15	DATE:
	RECORD DRAWING REVISIONS: NO. DATE APP.	NOV. 86	DATE:	DATE:
	ENGINEER'S SEAL			DATE:



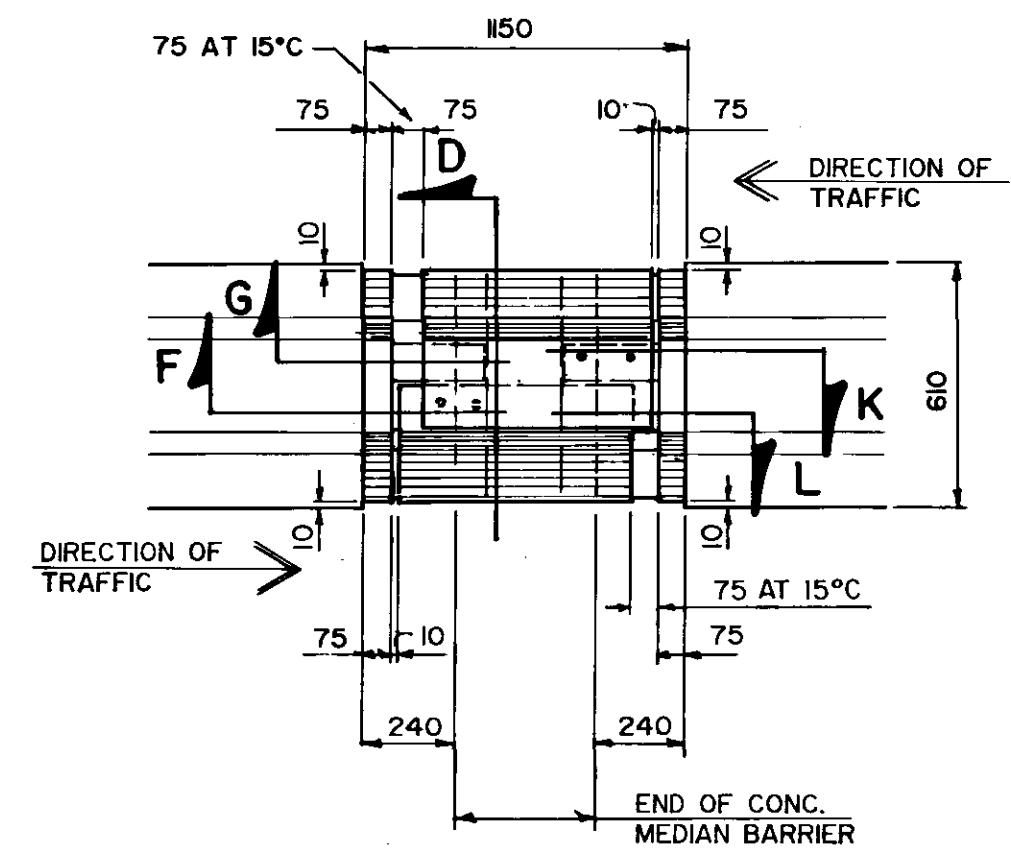
DIMENSIONS	'X'	'Y'	'Z'
CL W. ABUT. BRG'S	176	83	566
CL E. ABUT. BRG'S	285	237	576
CL PIER 3	484	484	595
CL PIER 8	484	484	595

ELEVATION - EXPANSION JOINT ASSEMBLY

SCALE 1 : 20



SECTION A
N.T.S.

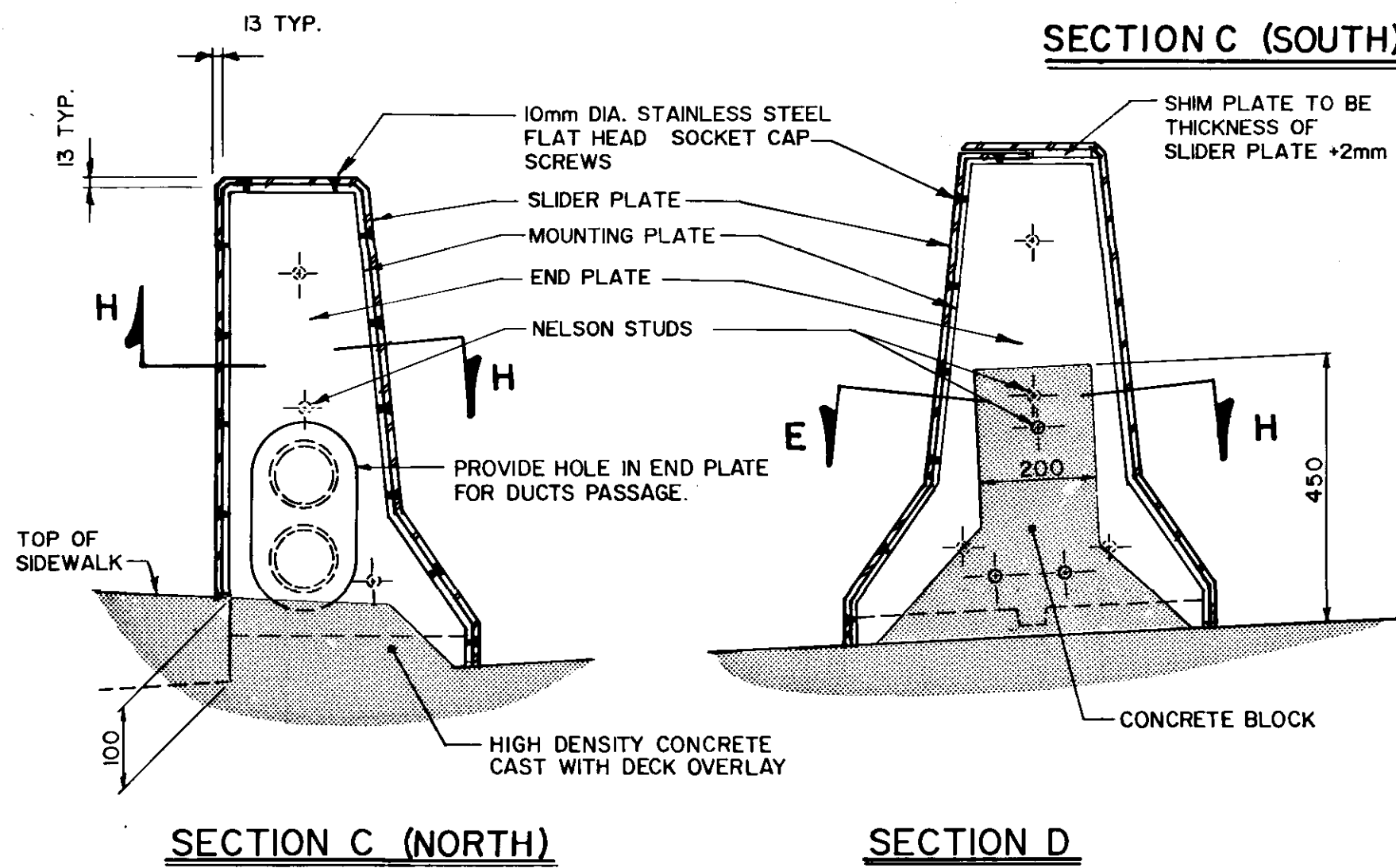


SLIDER PLATE PLANS

N.T.S.

DIM. 'J'	TEMPERATURE WIDTH ADJUSTMENT TABLE						
	5°	10°	15°	20°	25°	30°	MIN. MAX.
E & W ABUT'S	40	39	38	37	36	34	12 64
PIERS 3 & 8	58	54	50	46	42	38	25 125

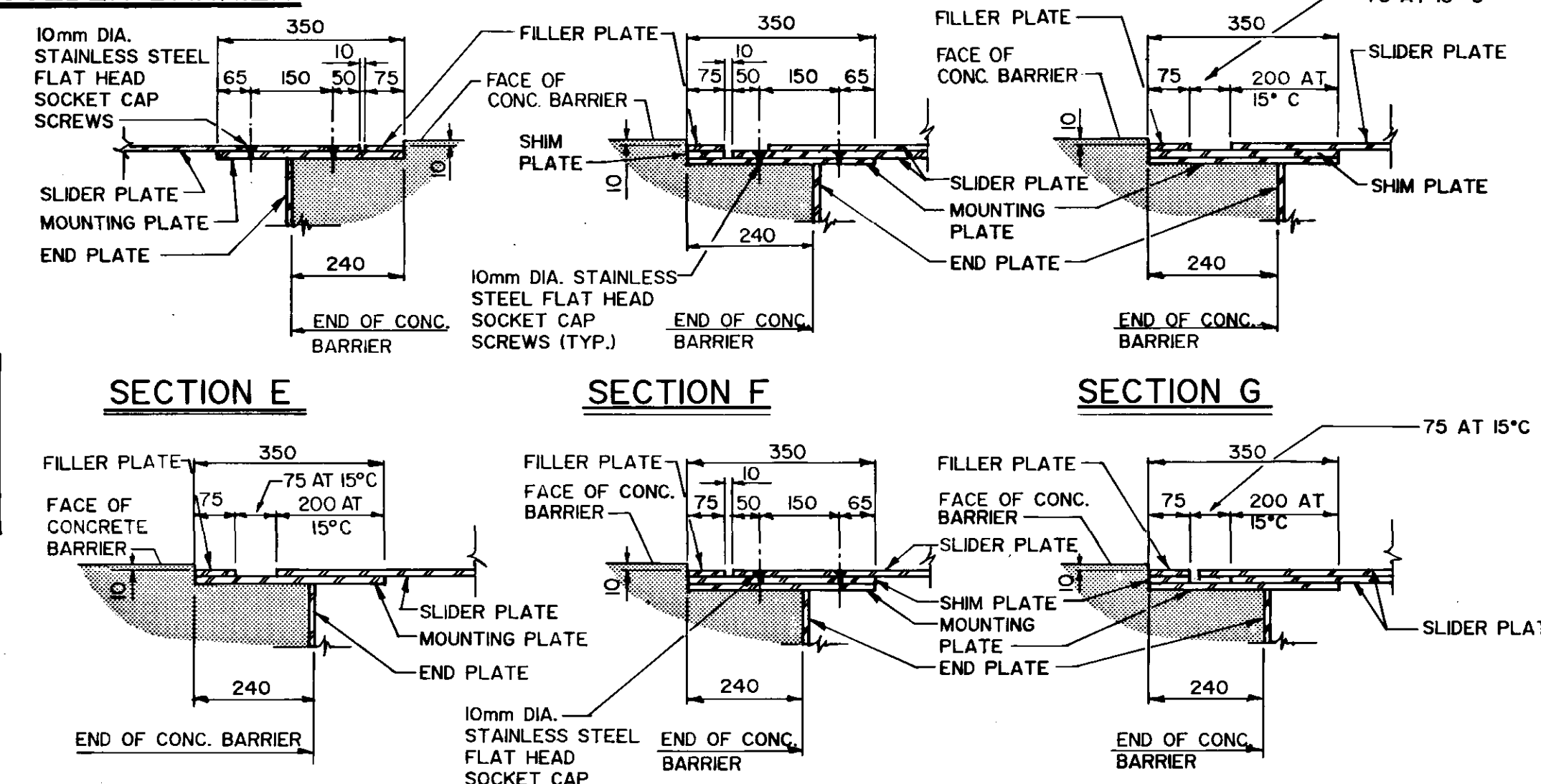
NOTE: 5° DENOTES TEMPERATURE IN CELSIUS



SECTION C (NORTH)

SECTION D

SHOULDER BARRIER



SECTION H

SECTION K

SECTION L

SCALE OF SECTIONS - 1 : 10

RECORD DRAWING

B-5582

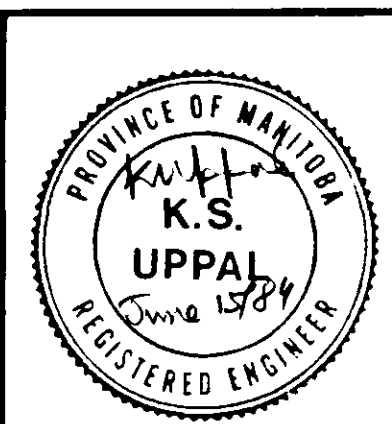
METRIC

WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

NOTES:

- MANUFACTURER'S SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL AT LEAST FOURTEEN (14) WORKING DAYS PRIOR TO FABRICATION. THE EXPANSION JOINT ASSEMBLIES SHALL BE DESIGNED TO CARRY AASHTO HS30-44 LIVE LOADING.
- STEEL SHALL BE IN ACCORDANCE WITH CSA STANDARD G40.21M GRADE 300 W OR EQUAL.
- STEEL EXTRUSIONS SHALL BE IN ACCORDANCE WITH CSA STANDARD G40.21 M GRADE 230 G MINIMUM.
- ALL STEEL SURFACES SHALL BE HOT DIP GALVANIZED TO A NET RETENSION OF 600 GM/M² IN ACCORDANCE WITH CSA STANDARD G 164 AFTER FABRICATION AND INSTALLED IN ONE CONTINUOUS PIECE.
- JOINT ASSEMBLY SHALL BE FABRICATED AND COMPLETELY SHOP ASSEMBLED AND PRESET TO DIMENSION 'J' FOR 15° C PRIOR TO SHIPMENT.
- WELDING SHALL BE OF LOW HYDROGEN CLASSIFICATION. MANUAL ELECTRODES SHALL BE E7016 OR E7018. ALL WELDING SHALL BE IN ACCORDANCE WITH CSA STANDARD W59.
- SEAL SHALL BE PREFORMED RUBBER SEAL. EACH RUBBER SEAL SHALL BE SUPPLIED AND INSTALLED IN ONE CONTINUOUS PIECE. NO SPLICES IN THE RUBBER SEAL WILL BE PERMITTED.
- JOINT ASSEMBLY SHALL BE INSTALLED 5 MM BELOW ELEVATION AND GRADE OF BRIDGE DECK.
- AFTER REMOVAL OF CLAMPING CHANNELS AND SPACER DAM, BOLT AND BLEEDER HOLES TO BE FILLED WITH AN APPROVED EPOXY GROUT.
- INSTALLATION TEMPERATURE SHALL BE TAKEN AS THE MEAN SHADE AIR TEMPERATURE PRIOR TO JOINT INSTALLATION AT THE STRUCTURE AS FOLLOWS: FOR CONCRETE STRUCTURES-48 HOURS.
- ALL AREAS OF DAMAGED GALVANIZING SHALL BE REPAIRED BY USING THE GALVALOY PROCEDURE AS SPECIFIED.

NO	REVISIONS	DATE	APP
1	RECORD DRAWING	NOV.86	AP



the **uma** group
Underwood McLellan Ltd.
Consulting Engineers and Planners

DESIGNED BY: K.U. DRAWN BY: J.R.C.
CHECKED BY: J.T. DATE: APRIL 1985
JOB No. 0265-216-01

APPROVED BY: [Signature] DATE: June 15/84

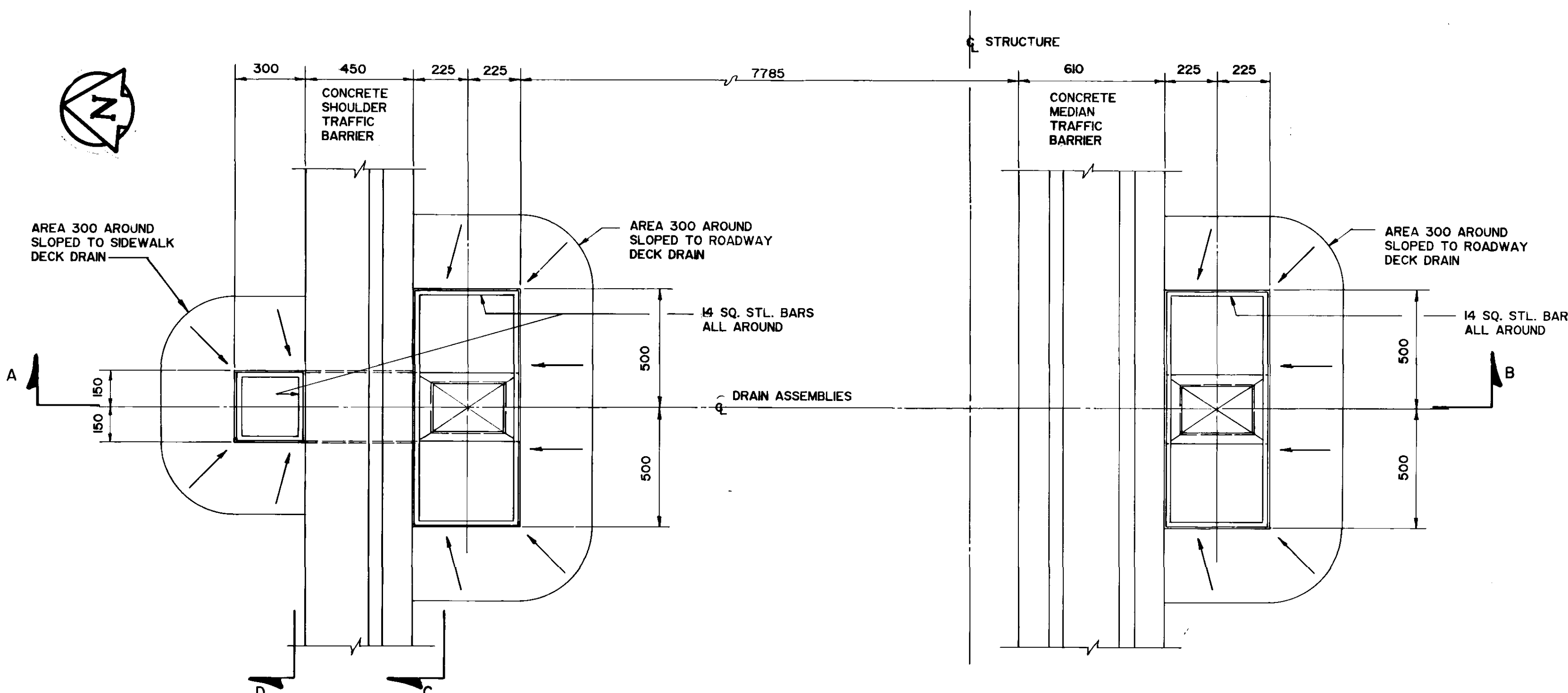
THE CITY OF WINNIPEG
WORKS & OPERATIONS DIVISION
STREETS & TRANSPORTATION DEPARTMENT

NAIRN AVENUE OVERPASS
DECK REHABILITATION, STRUCTURAL STRENGTHENING AND RELATED WORKS

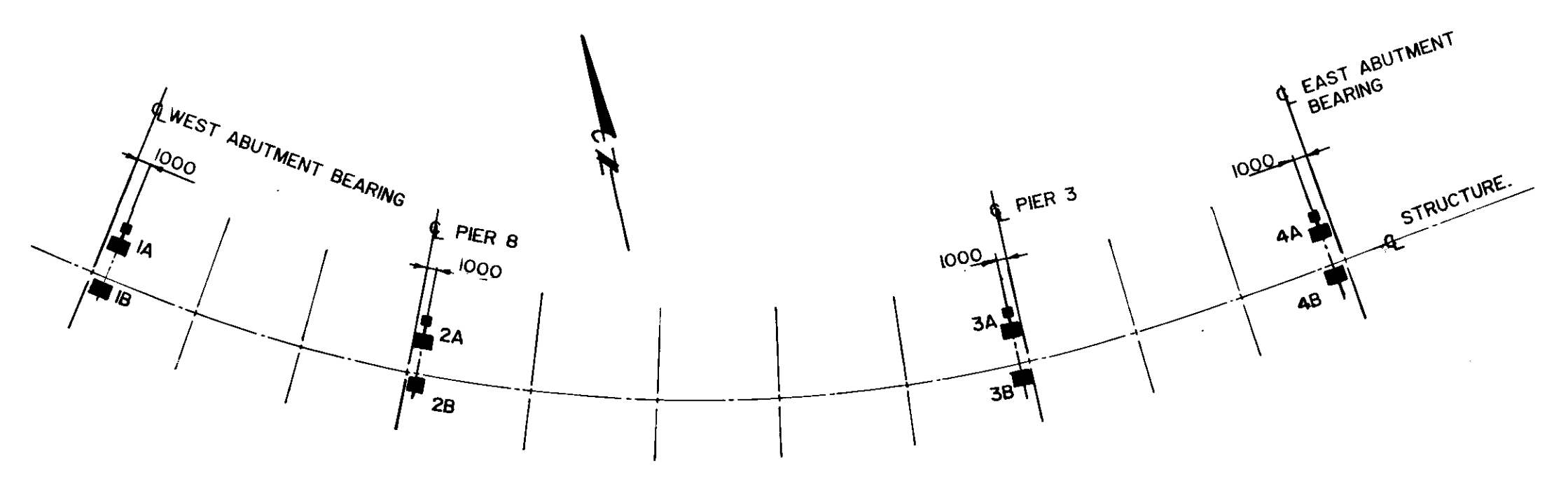
EXPANSION JOINT DETAILS

AUTHORIZED BY: [Signature] DATE: 1985-04-16
ACCEPTED BY: [Signature] DATE: 1985-04-16

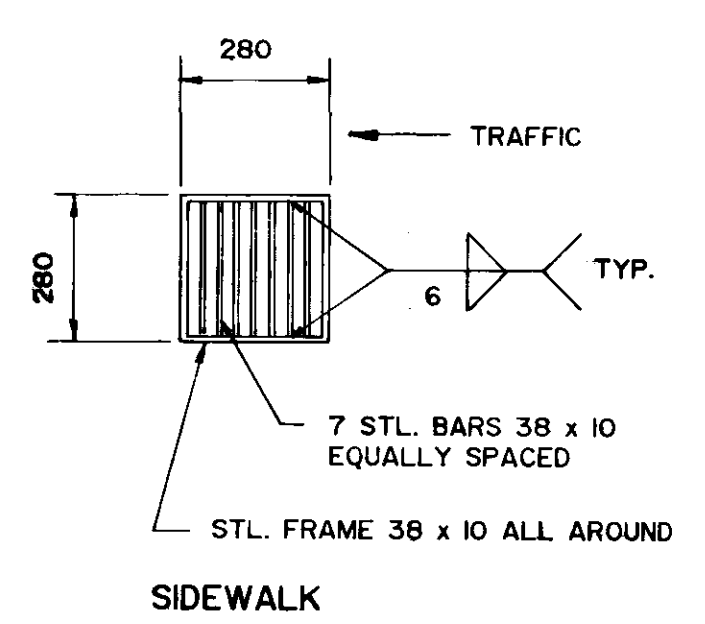
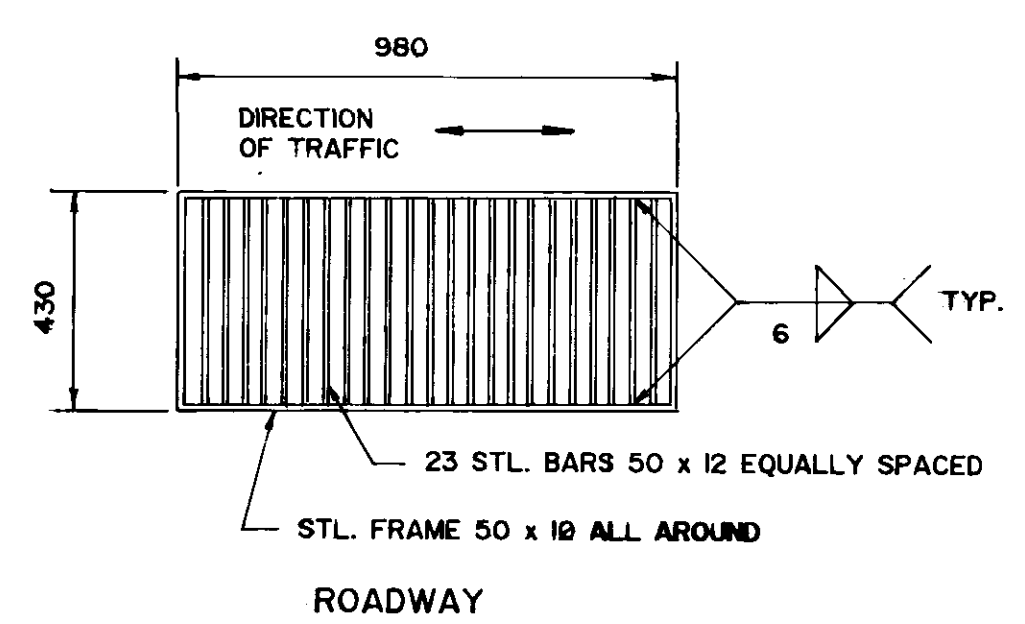
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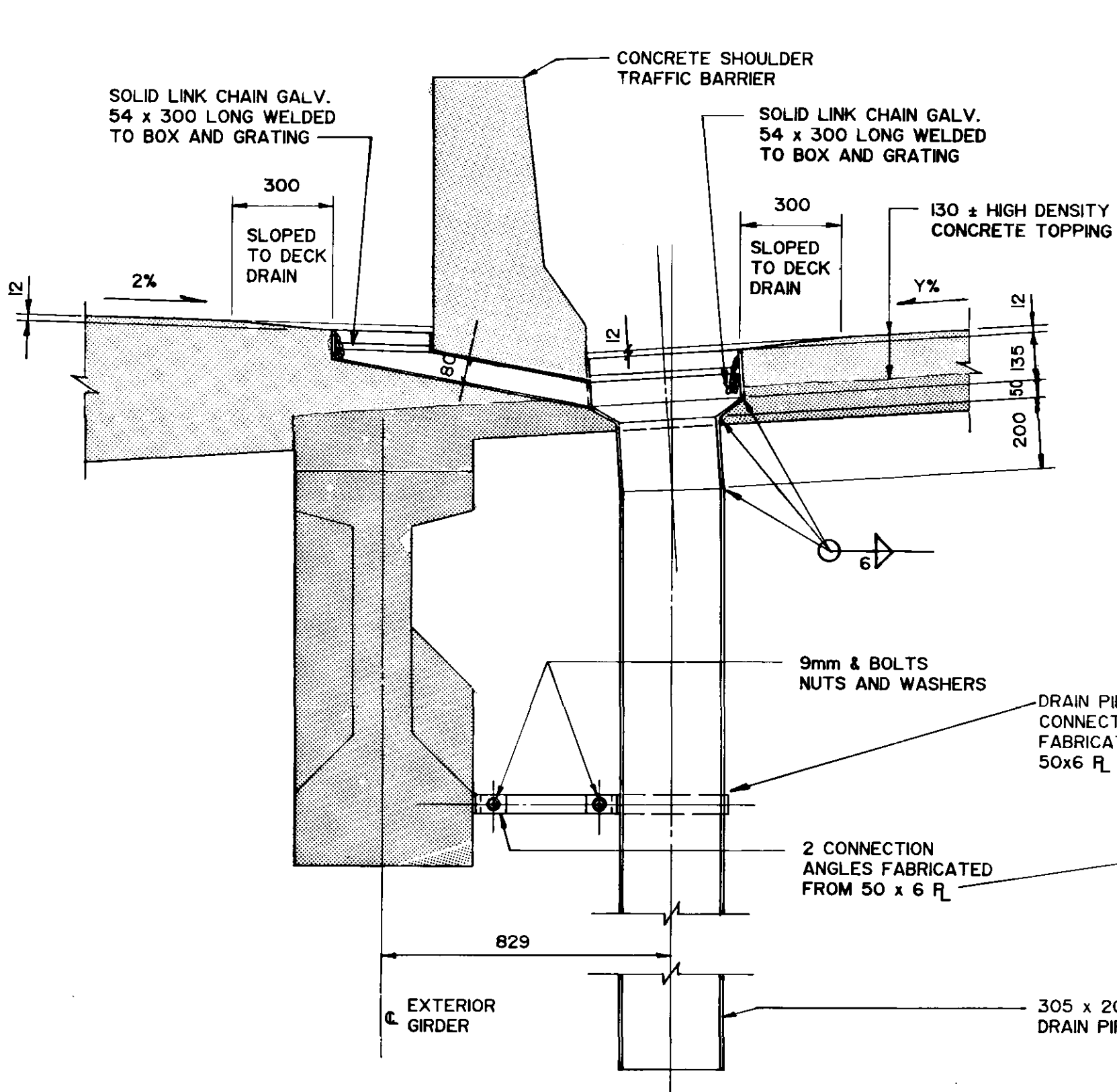
PLAN



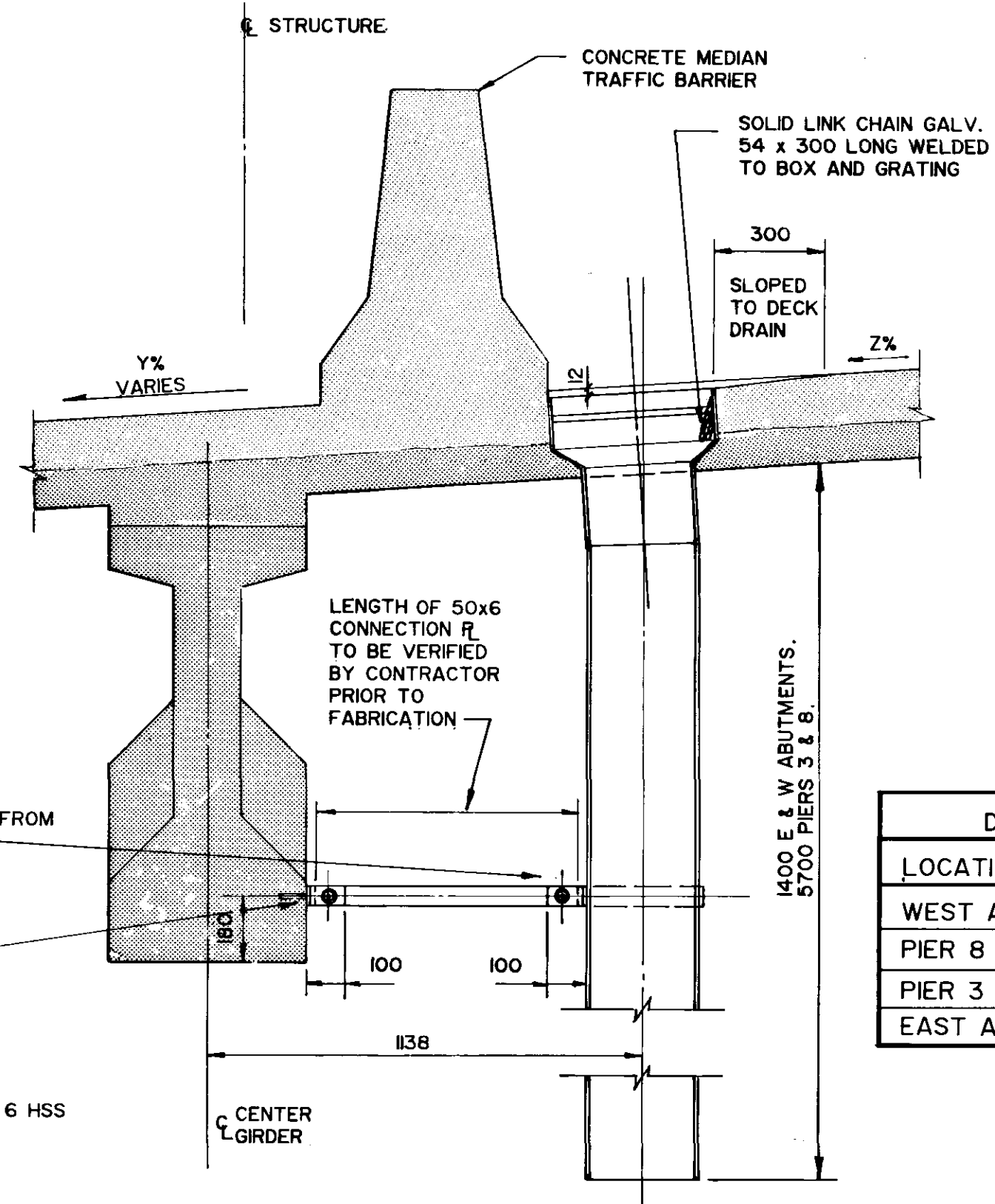
KEY PLAN



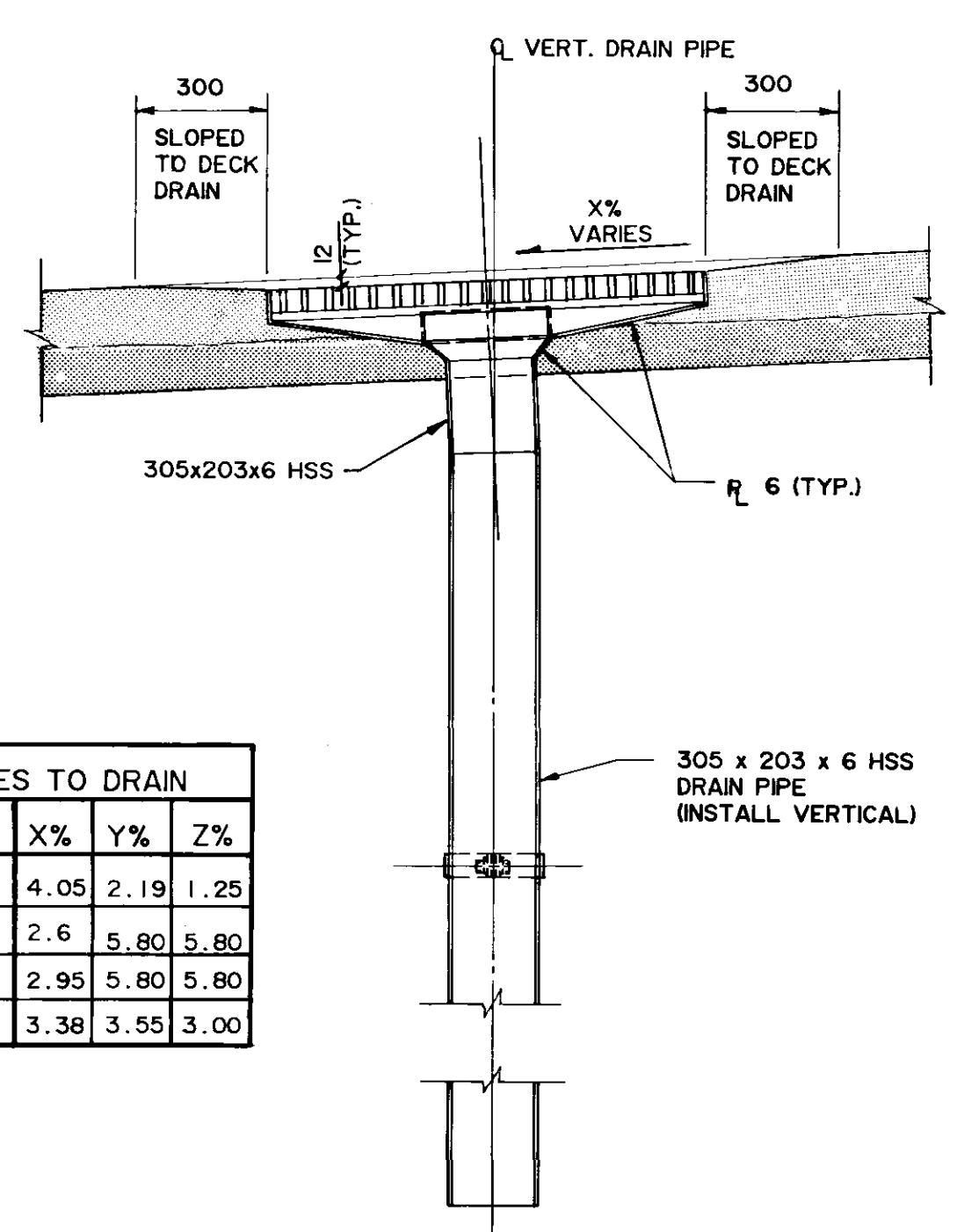
GRATING DETAIL PLANS



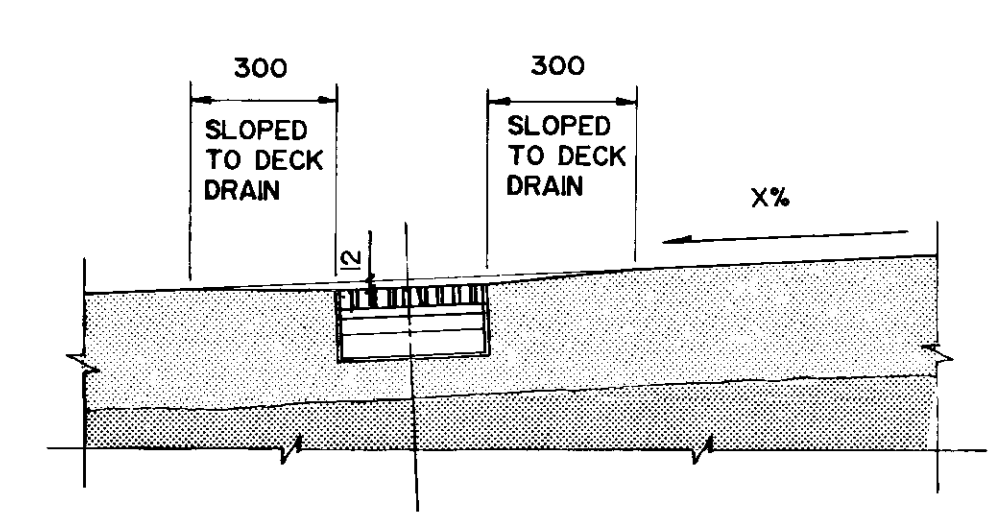
SECTION 'A'



SECTION 'B'



SECTION 'C'



SECTION 'D'

DECK SLOPES TO DRAIN			
LOCATION	X%	Y%	Z%
WEST ABUT.	4.05	2.19	1.25
PIER 8	2.6	5.80	5.80
PIER 3	2.95	5.80	5.80
EAST ABUT.	3.38	3.55	3.00

NOTES:

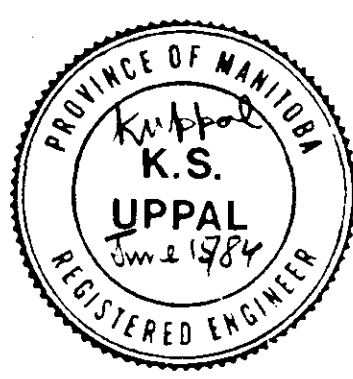
- DECK DRAINS SHALL BE FABRICATED FROM STEEL CONFORMING TO THE REQUIREMENTS OF CSA STANDARD G40.21M, GRADE 300W.
- DECK DRAINS AND CONNECTORS SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH CSA STANDARD G64 TO A RETENTION OF 600 gm/m². ALL GALVANIZING TO BE DONE AFTER FABRICATION.
- SHOP DRAWINGS CONSISTING OF THREE (3) SETS OF PRINTS AND ONE (1) SET OF REPRODUCIBLE SEPIAS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL AT LEAST TEN (10) WORKING DAYS PRIOR TO FABRICATION.
- ALL FASTENERS, WASHERS, NUTS AND INSERTS SHALL BE STAINLESS STEEL.

B-5583
METRIC

WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

RECORD DRAWING

NO	REVISIONS	DATE	APP
1	RECORD DRAWING	NOV.86	



the uma group
Underwood McLellan Ltd.
Consulting Engineers and Planners

DESIGNED BY: K.U. DRAWN BY: J.D.
CHECKED BY: J.T. DATE: APRIL 1985
JOB No. 0265-216-01

APPROVED BY: [Signature] DATE: June 15/84

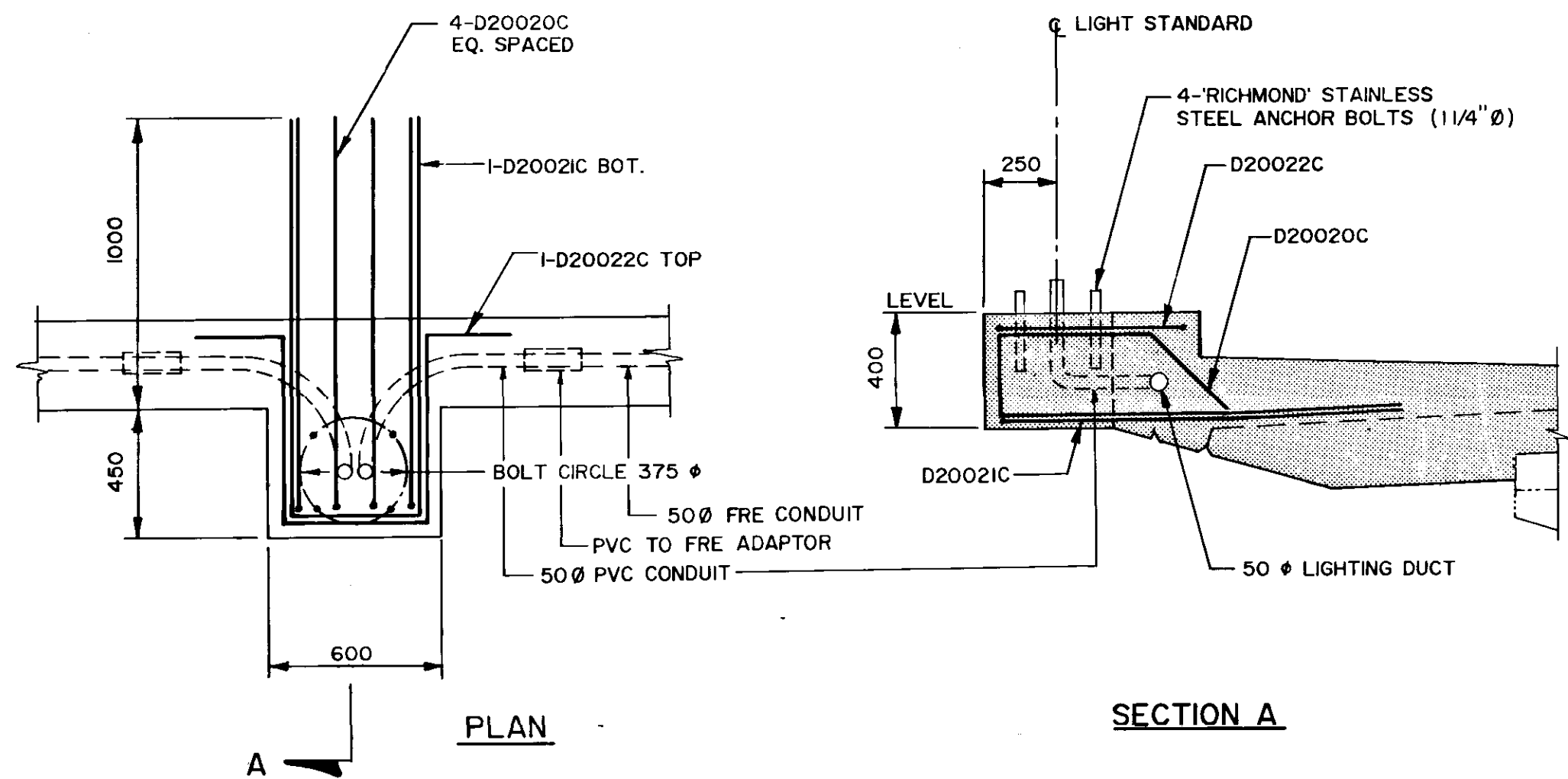
THE CITY OF WINNIPEG
WORKS & OPERATIONS DIVISION
STREETS & TRANSPORTATION DEPARTMENT

NAIRN AVENUE OVERPASS
DECK REHABILITATION, STRUCTURAL STRENGTHENING AND RELATED WORKS

DECK DRAIN DETAILS

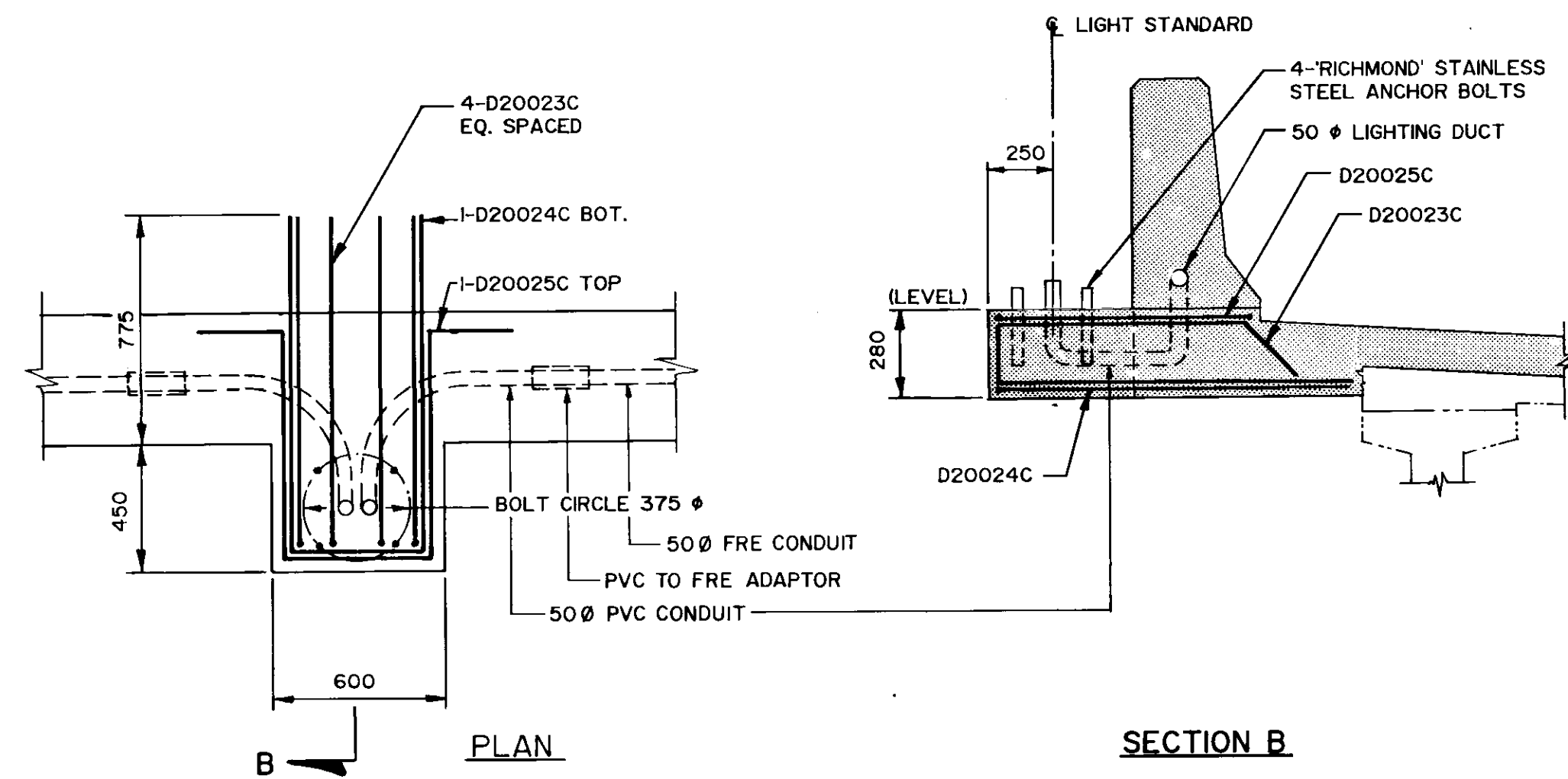
AUTHORIZED BY: [Signature] DATE: 1985-04-16
ACCEPTED BY: [Signature] DATE: 1985-04-16

SCALE: 1 : 150 DRAWING NO. B121-85-17



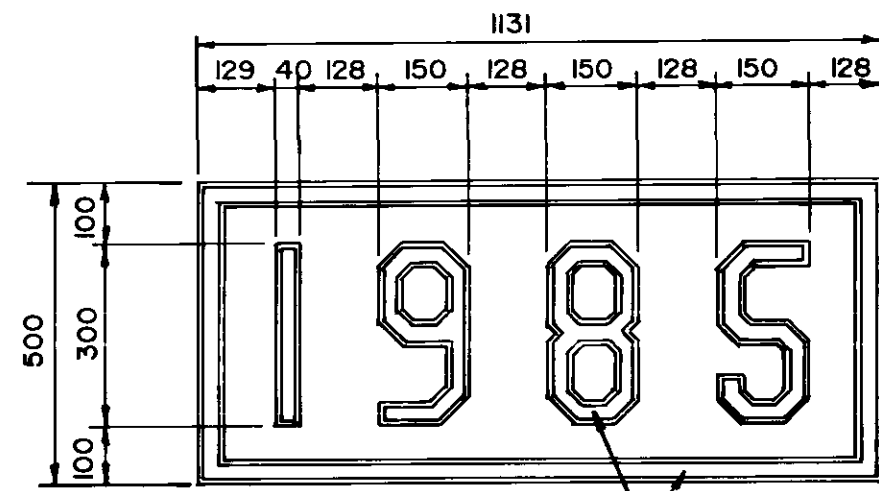
LIGHTING POLE BASE DETAIL

NORTH SIDE
SCALE - 1 : 20



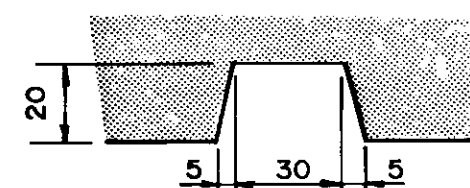
LIGHTING POLE BASE DETAIL

SOUTH SIDE
SCALE - 1 : 20



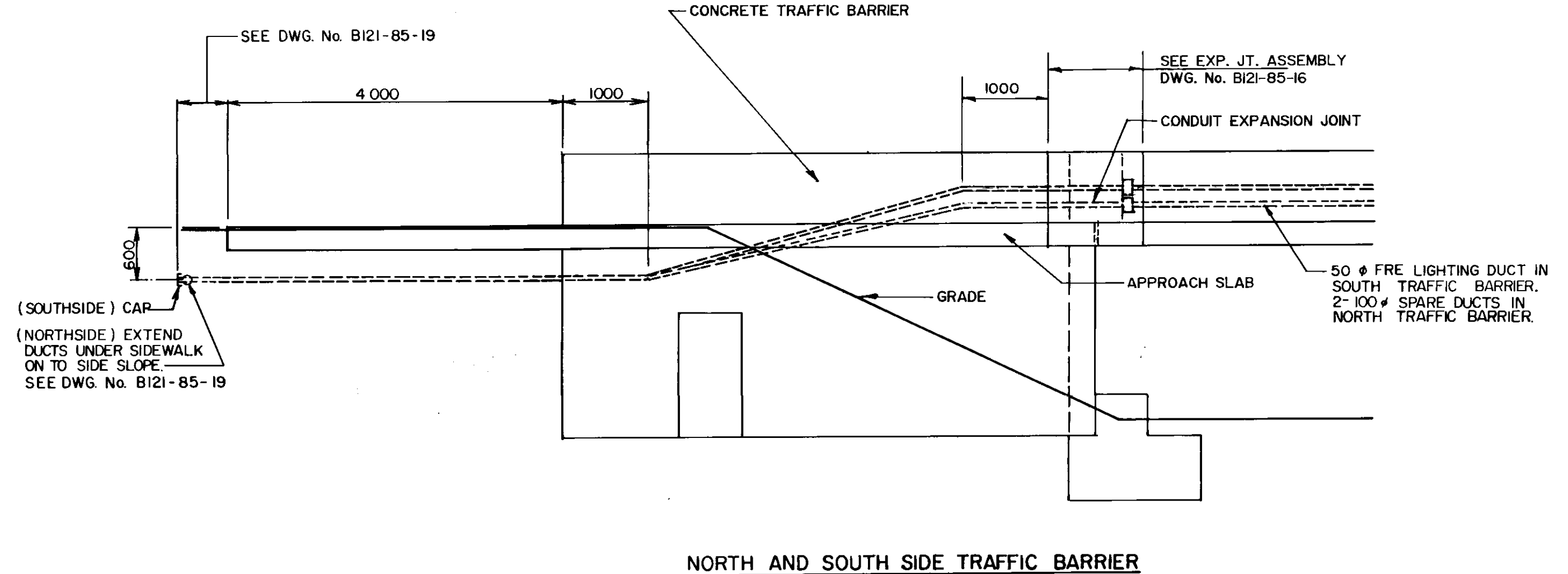
20x40 RECESS SEE DETAIL

DATE ELEVATION
SCALE - 1 : 12.5

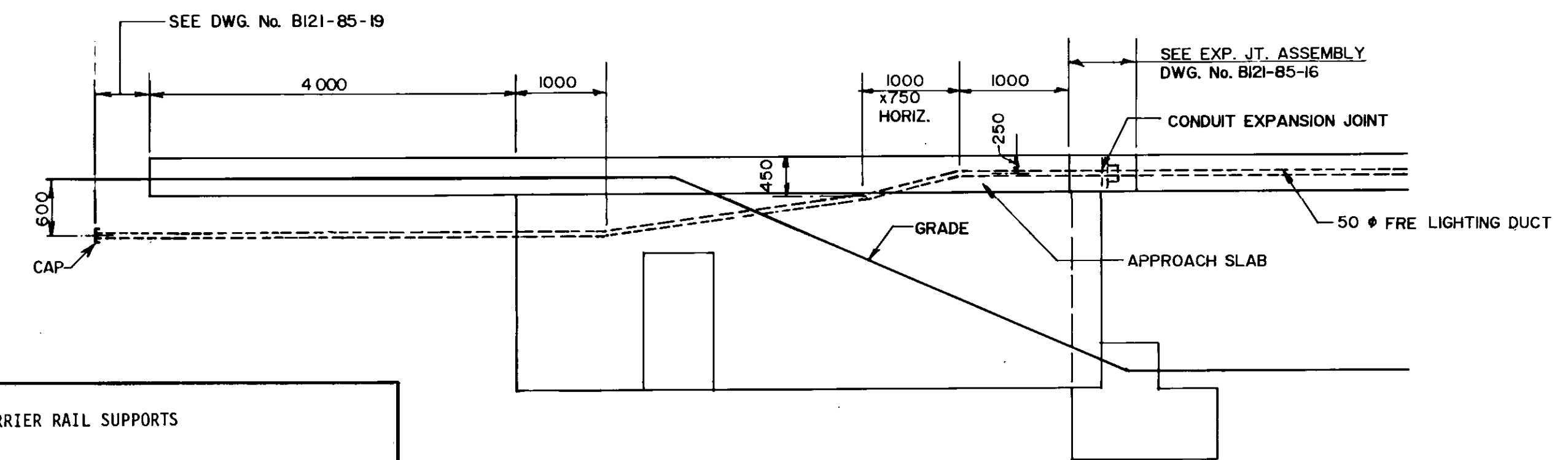


RECESS DETAIL
SCALE - 1 : 2

DATE DETAILS



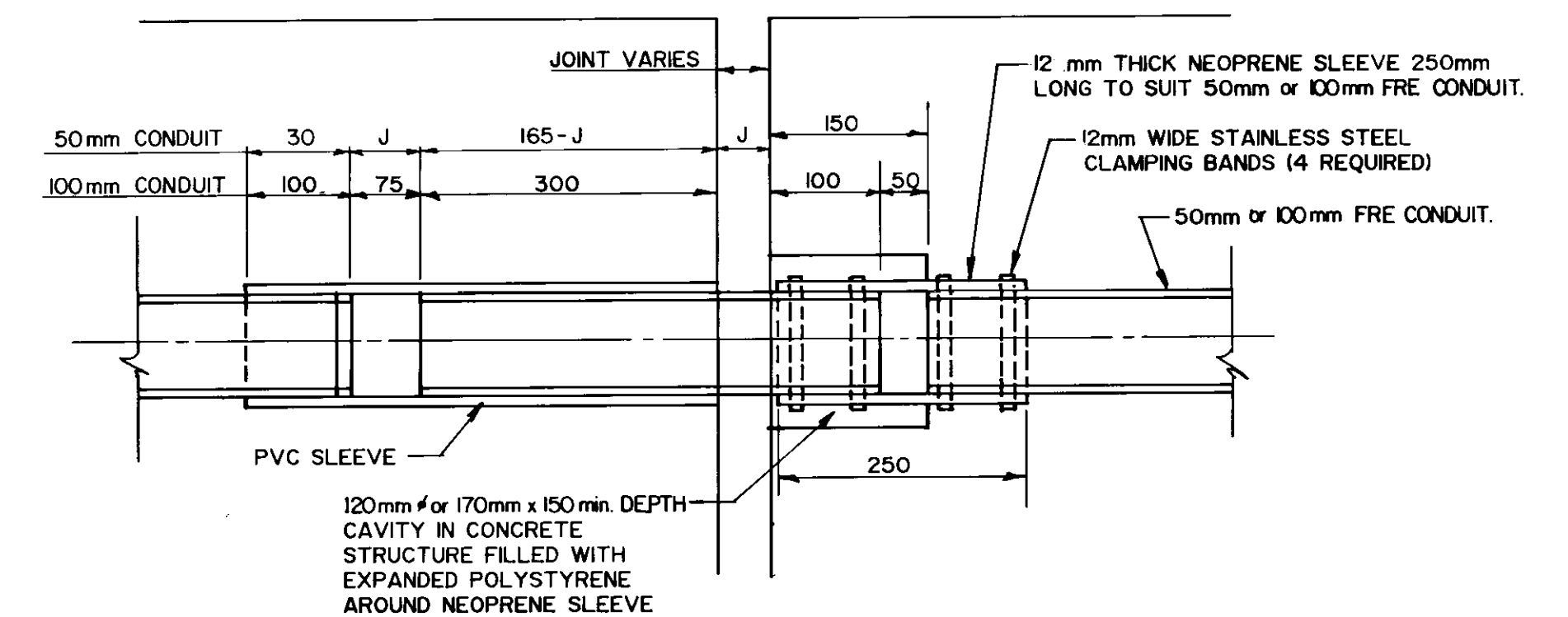
NORTH AND SOUTH SIDE TRAFFIC BARRIER



NORTH SIDE (SIDEWALK) SEE DWG. B121-85-19

CONDUIT TERMINATION DETAILS

SCALE - 1 : 50



TYPICAL CONDUIT EXPANSION JOINT ASSEMBLY

ABUTMENTS AND PIERS 3 & 8

B-5584

METRIC

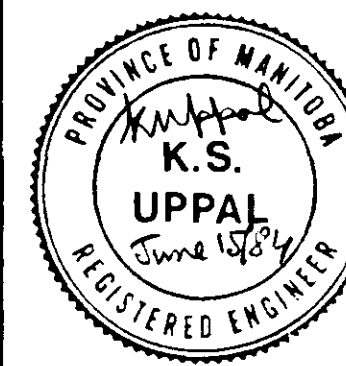
RECORD DRAWING

WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

ALUMINUM TRAFFIC BARRIER RAIL SUPPORTS		
BILL OF MATERIALS		
ITEM	NO. REQUIRED FOR INSTALLATION	NO. TO BE SUPPLIED TO CITY FOR STANDBY
Barrier Rail 11430 mm	36	-
Barrier Rail 8827 mm	2	-
Barrier Rail 8412 mm	1	-
Barrier Rail 8126 mm	2	-
Barrier Rail 8000 mm	2	-
Barrier Rail 7937 mm	2	-
Barrier Rail 5223 mm	4	-
Barrier Rail 11157 mm	1	-
Rail End Section	4 - 2 Right Hand - 2 Left Hand	4 - 2 Right Hand - 2 Left Hand
Rail Post (BR1 Type C)	162	5*
Standard Splice Bar	44	-
Expansion Splice Bar	8	10
Rail Clamp Bar (For BR1 Type C Posts)*	324	10
Cap Screws	840	-
Washers	840	-
Shims for Rail Posts	As Required	10 Ea. of 1.5, 3.0 and 6.0 mm Thickness
Shims for Rail End Section	As required	10 Ea. of 1.5, 3.0 and 6.0 mm Thickness
Rail Post Anchor Bolts	Straight = 332 Prebent = 332	Straight = 4 Prebent = 4

* See Drawing B121-85-13 For Details.

NO	REVISIONS	DATE	APP
1	RECORD DRAWING	NOV.86	



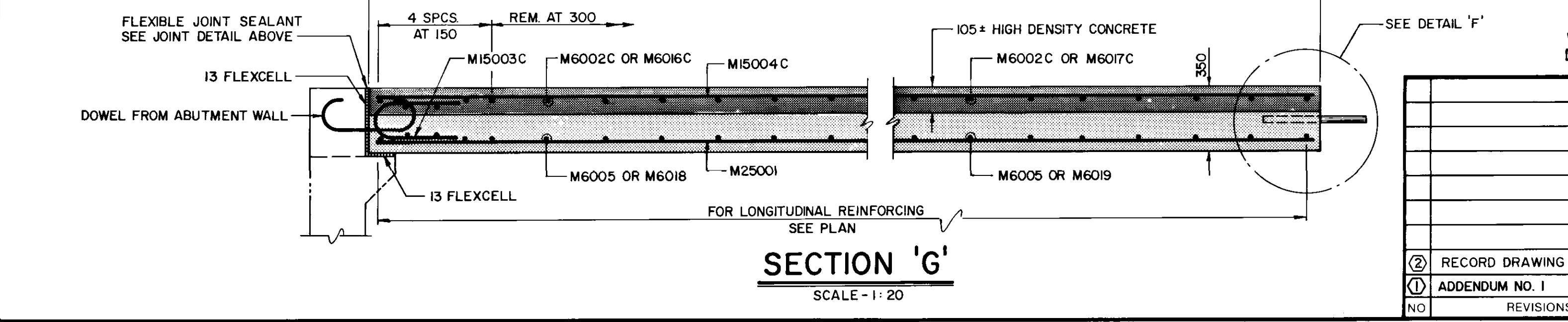
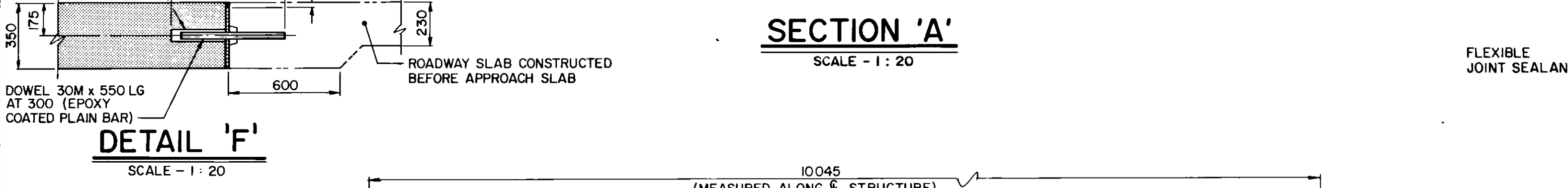
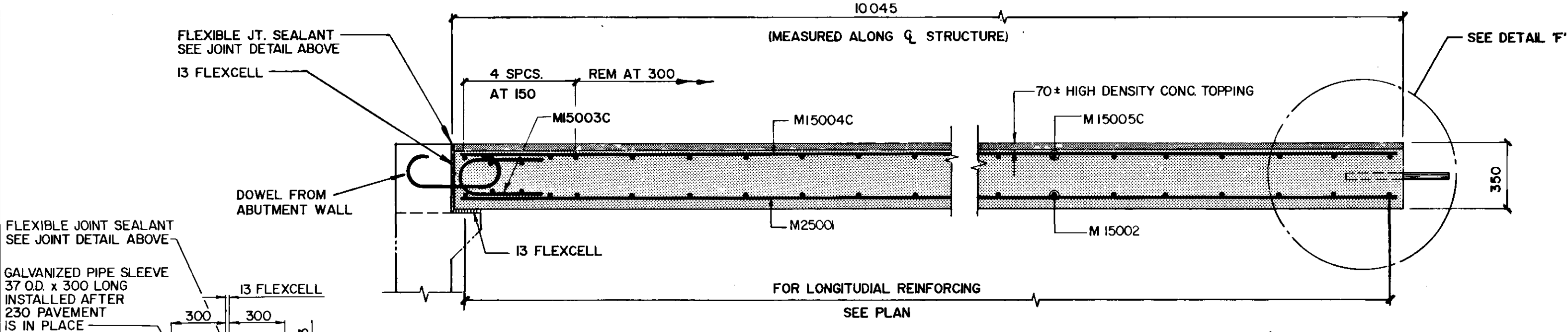
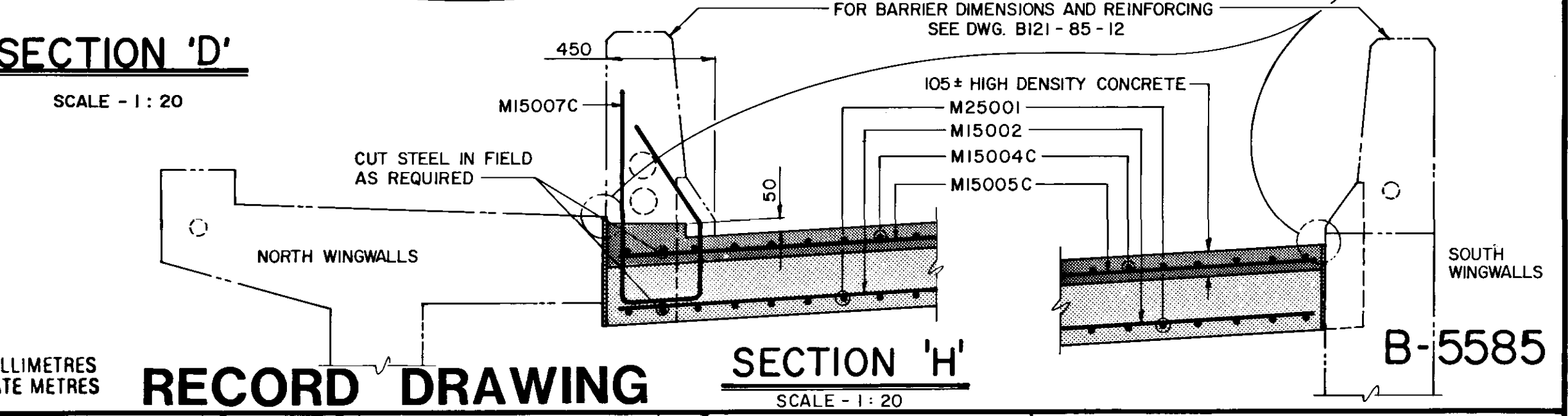
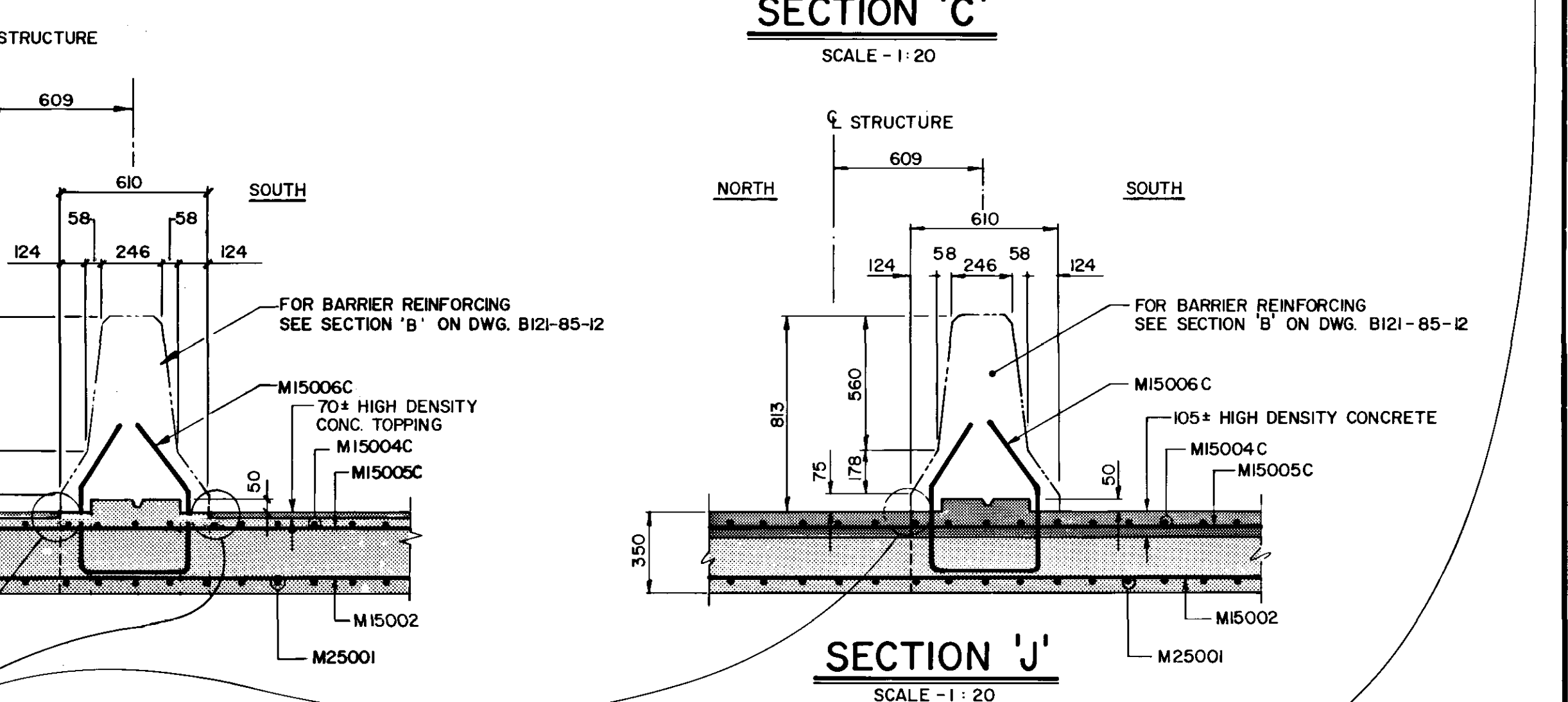
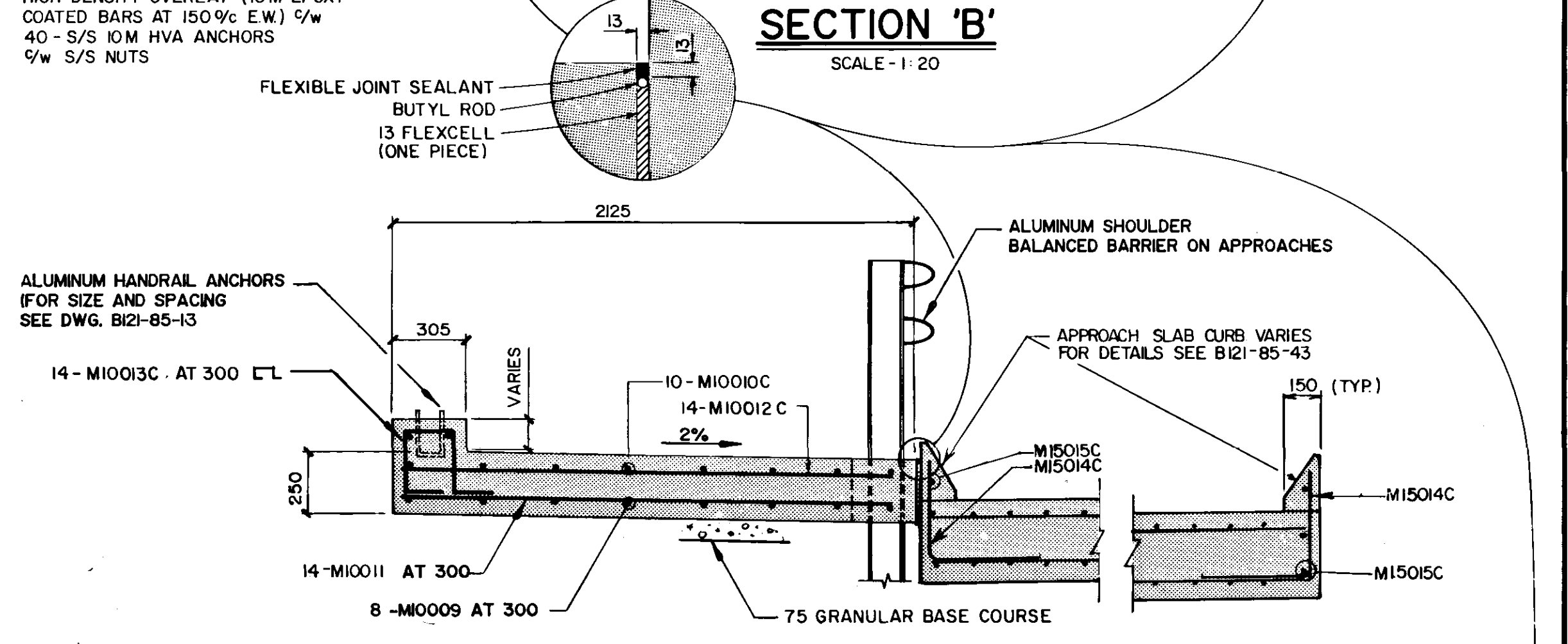
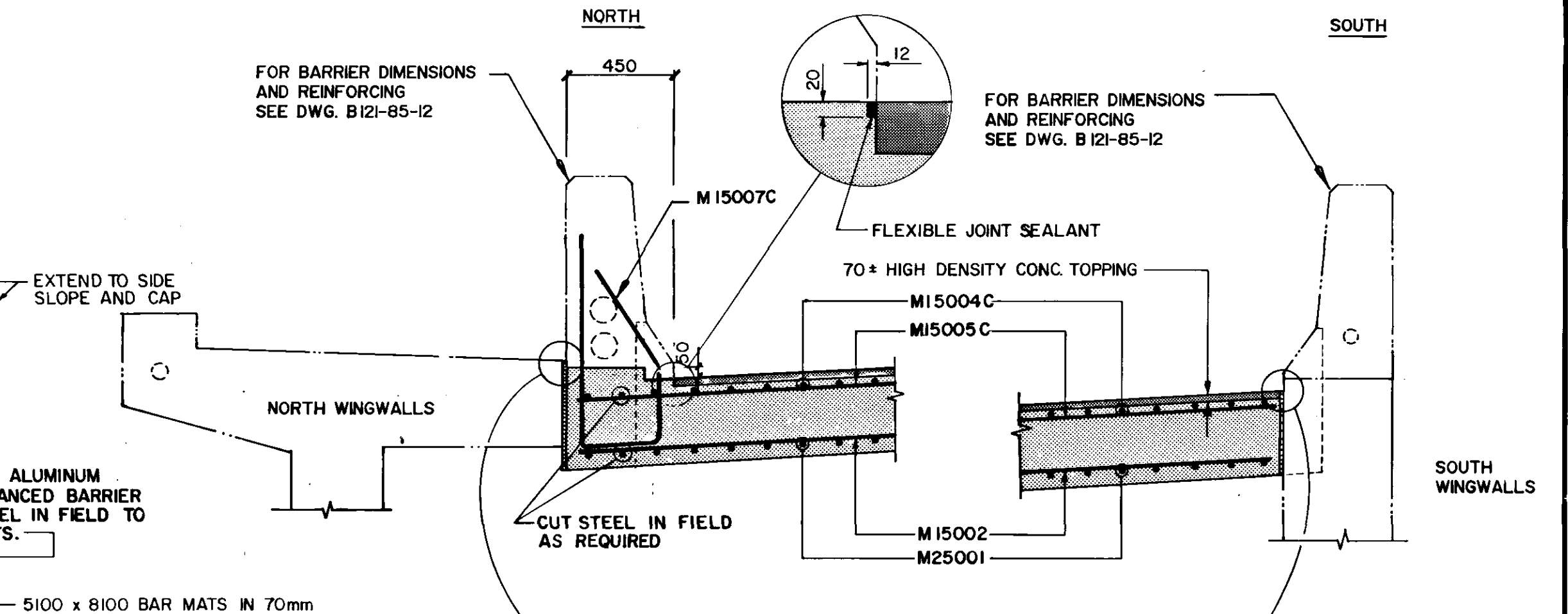
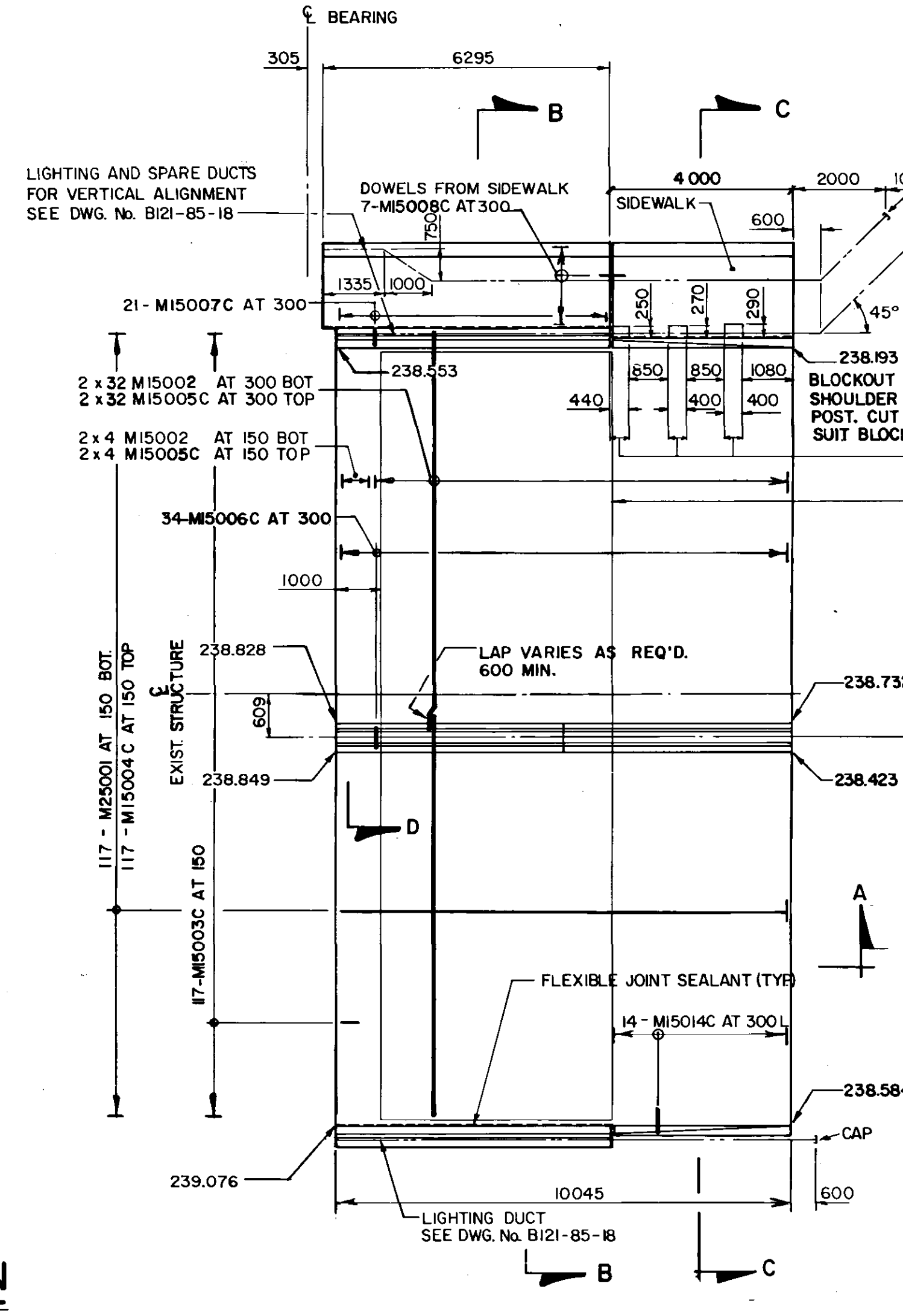
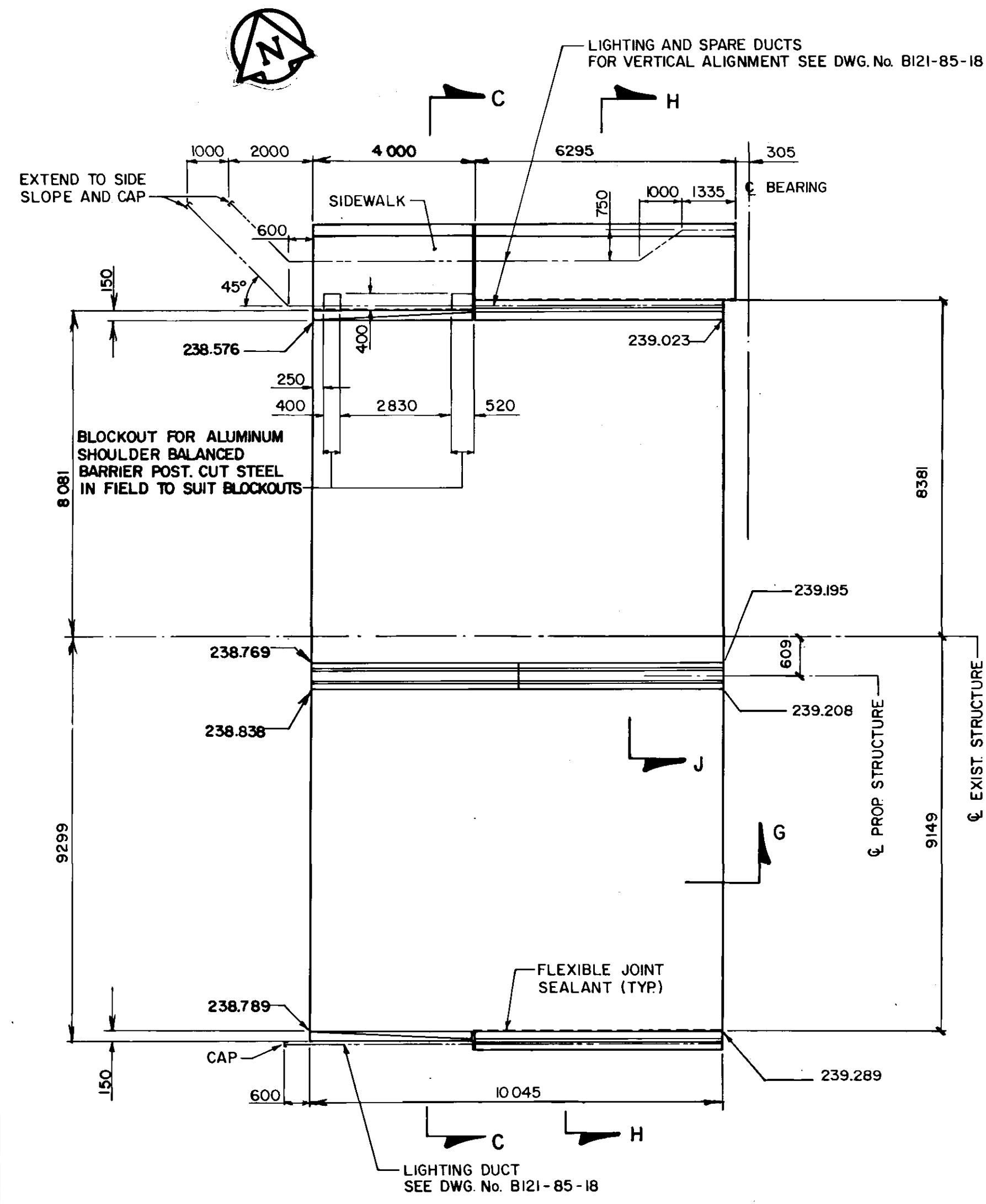
ENGINEER'S SEAL

the **uma** group
Underwood McLellan Ltd.
Consulting Engineers and Planners

DESIGNED BY: K.U.
DRAWN BY: J.R.C./E.J.B.
CHECKED BY: J.T.
DATE: APRIL 1985
JOB No. 0265-216-01
APPROVED BY: [Signature] DATE: June 15/89

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

NAIRN AVENUE OVERPASS
DECK REHABILITATION, STRUCTURAL STRENGTHENING AND RELATED WORKS
ELECTRICAL EMBEDDED WORK AND MISCELLANEOUS DETAILS
AUTHORIZED BY: [Signature] DATE: 85-04-16
ACCEPTED BY: [Signature] DATE: 85-04-16
SCALE: AS NOTED
DRAWING NO: B121-85-18



METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

RECORD DRAWING

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

NAIRN AVENUE OVERPASS
DECK REHABILITATION, STRUCTURAL STRENGTHENING AND RELATED WORKS.

APPROACH SLAB

DESIGNED BY: K.U. DRAWN BY: B.H.
CHECKED BY: J.T. DATE: APRIL 1985
JOB No. 0265-216-01

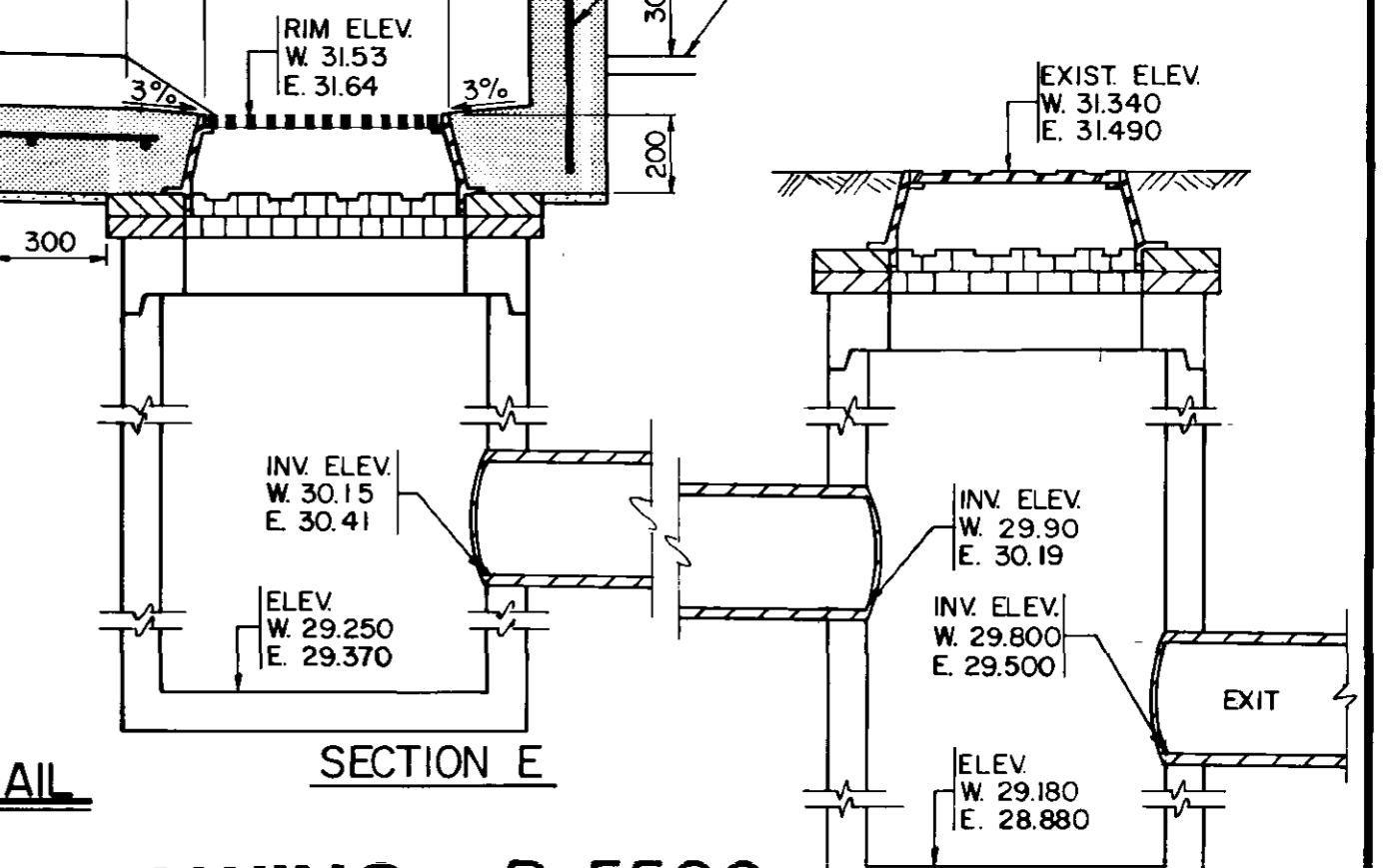
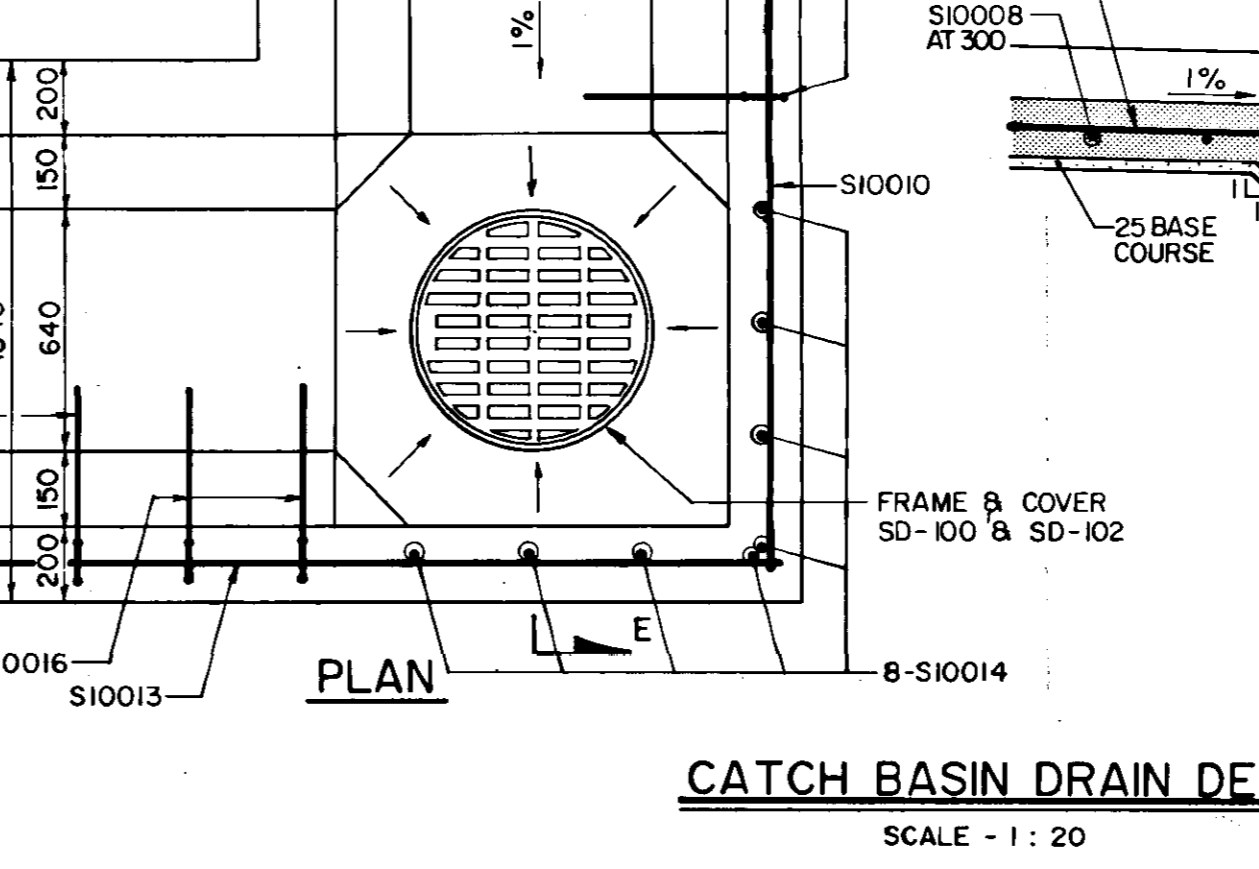
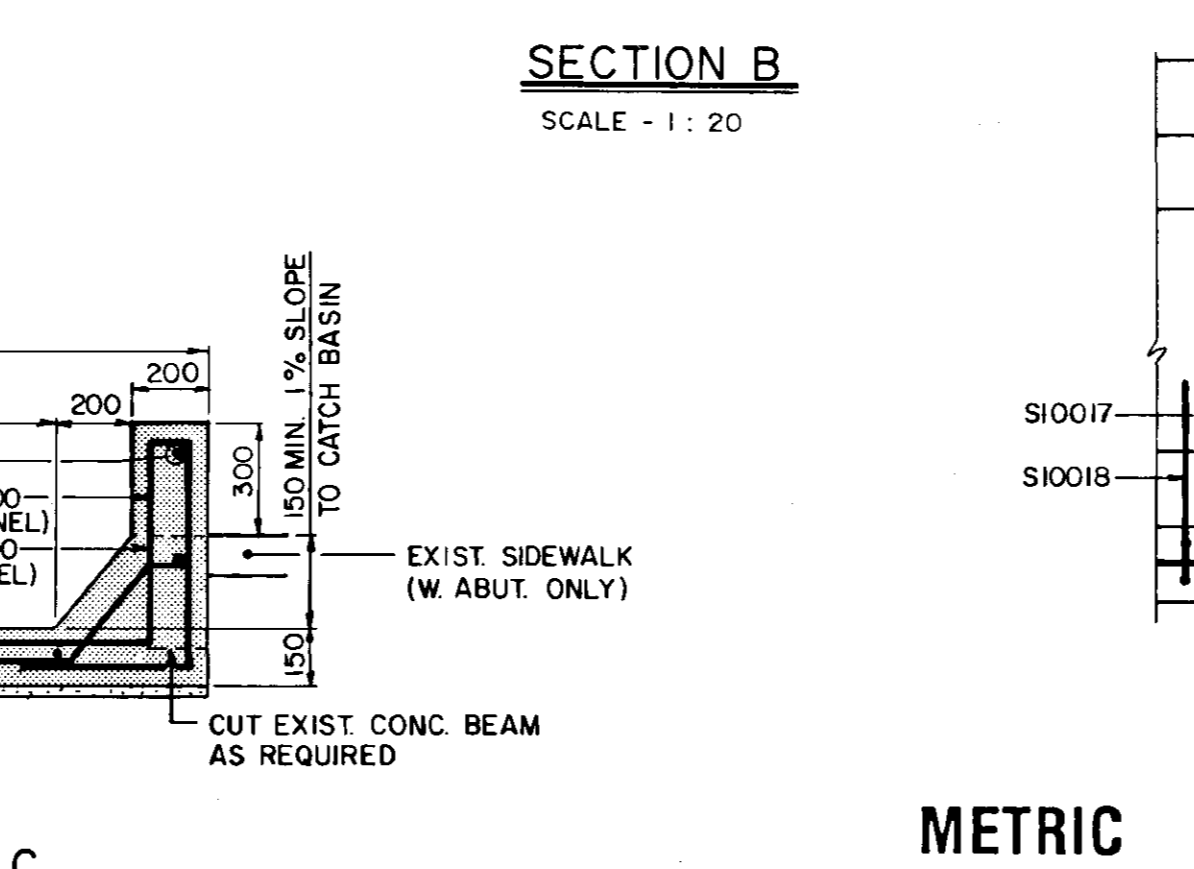
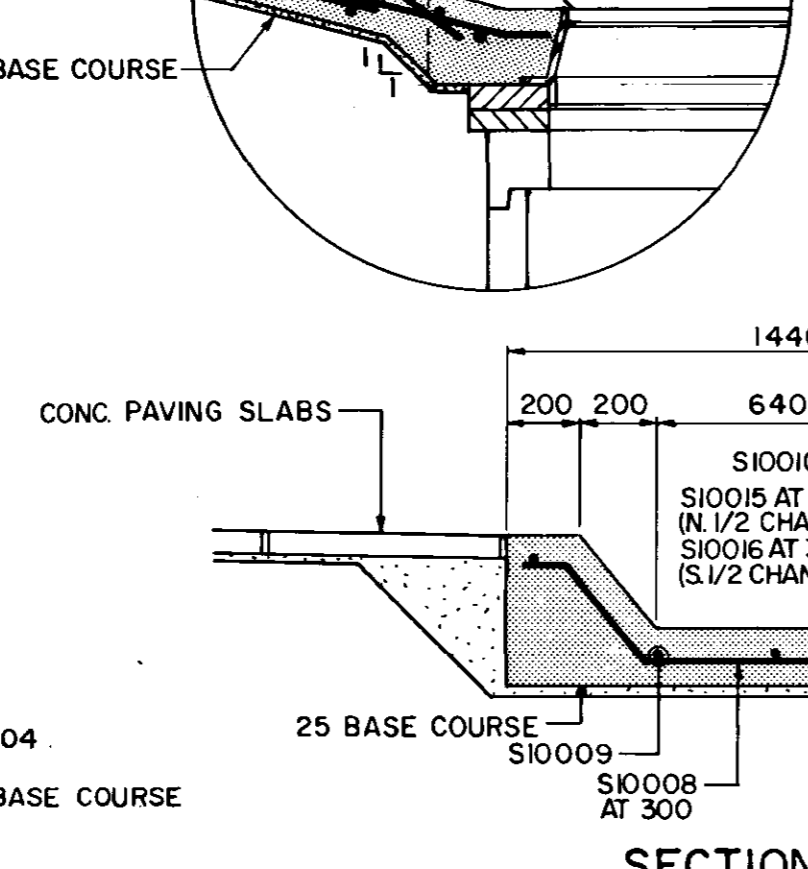
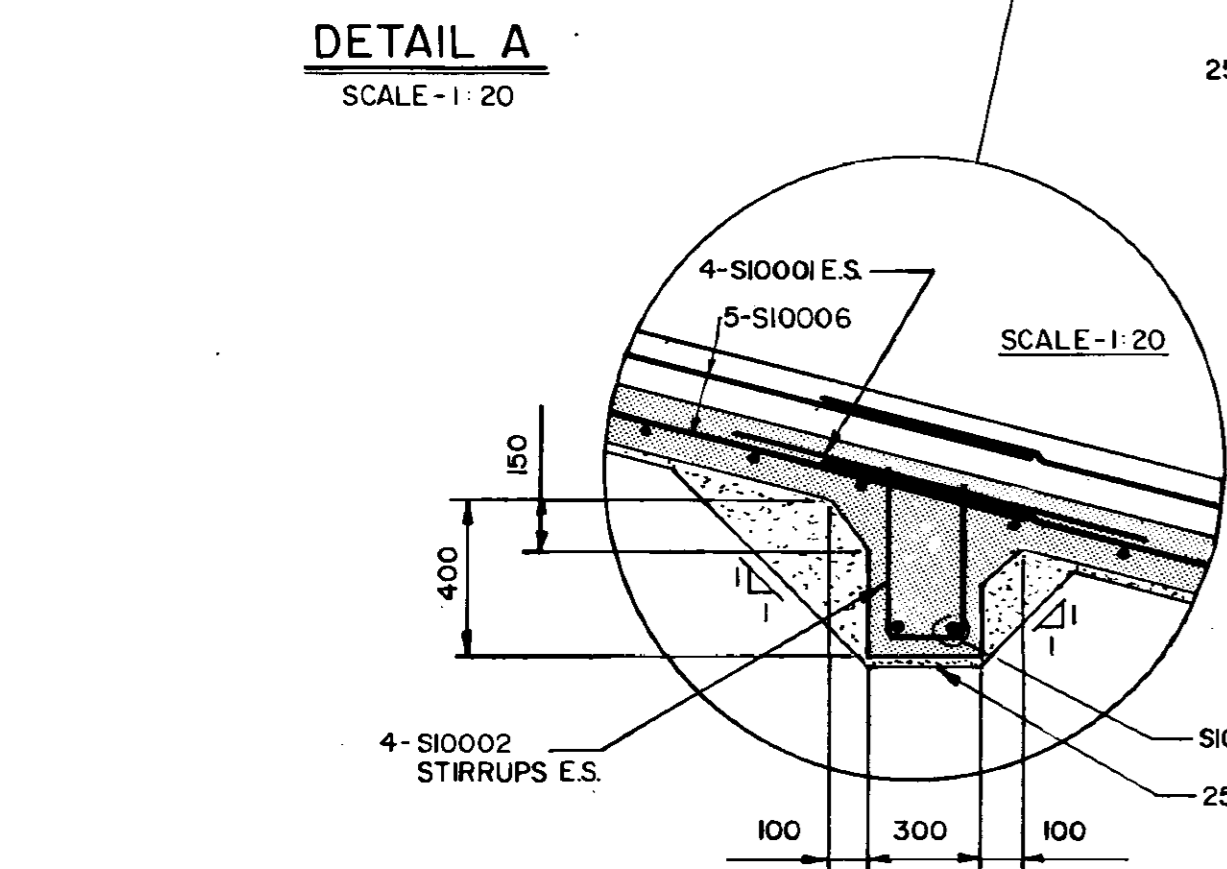
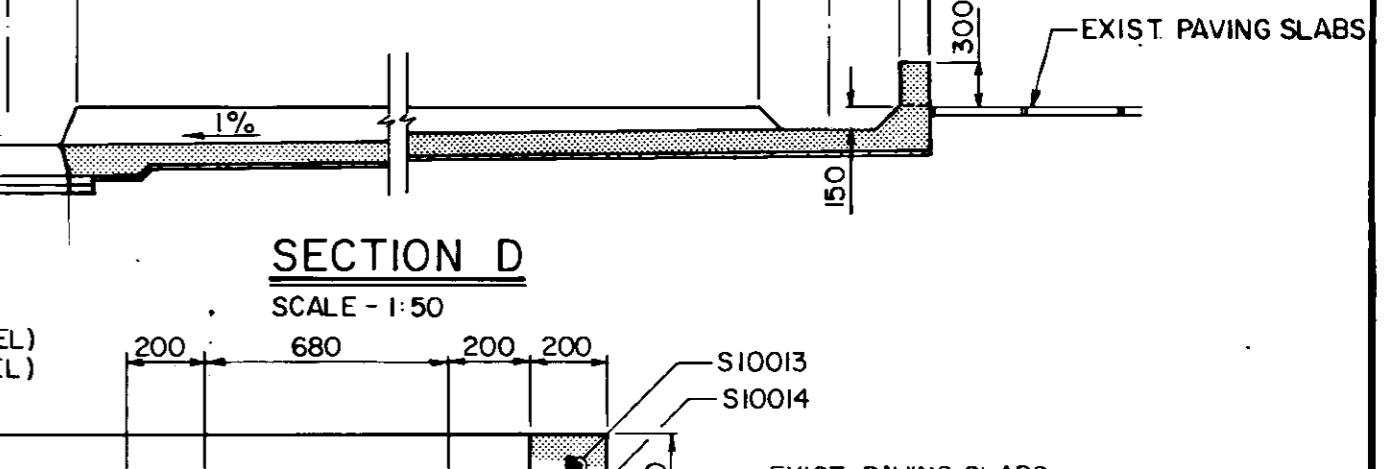
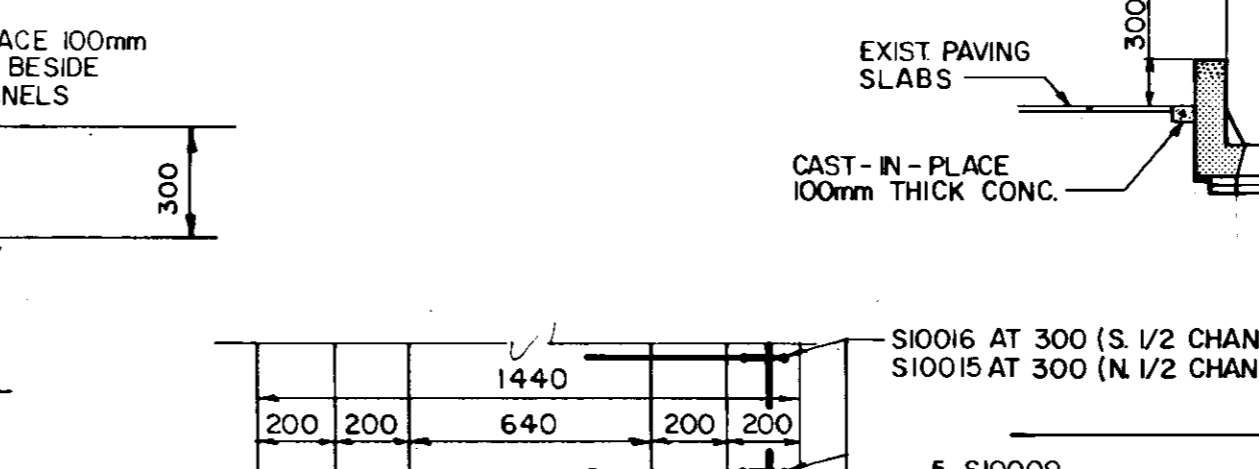
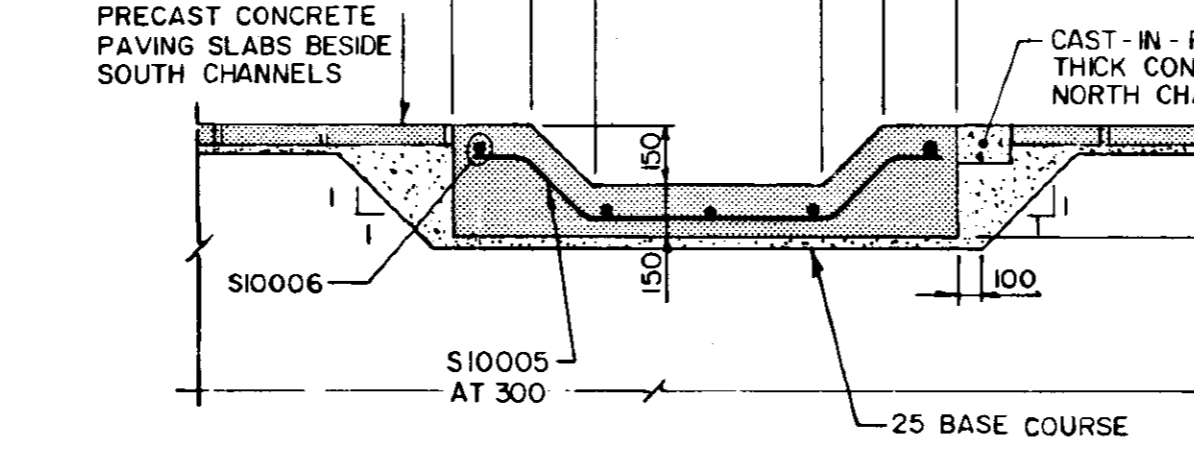
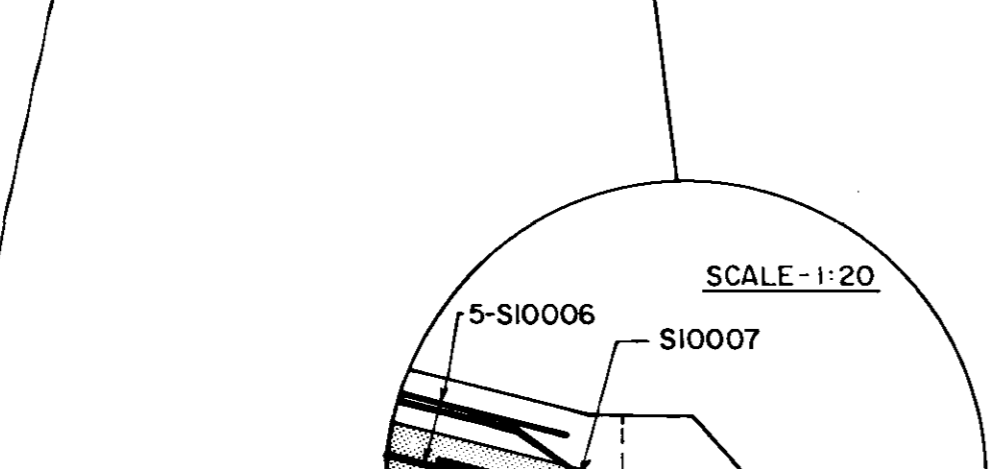
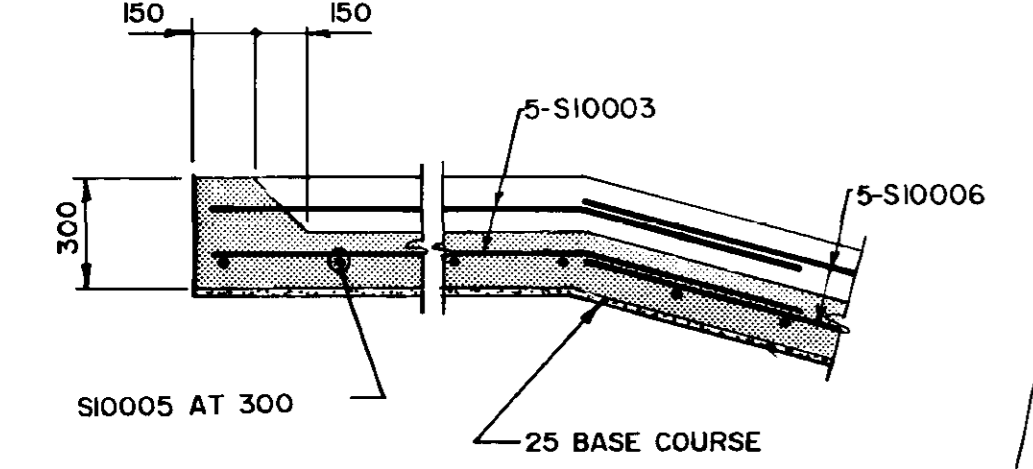
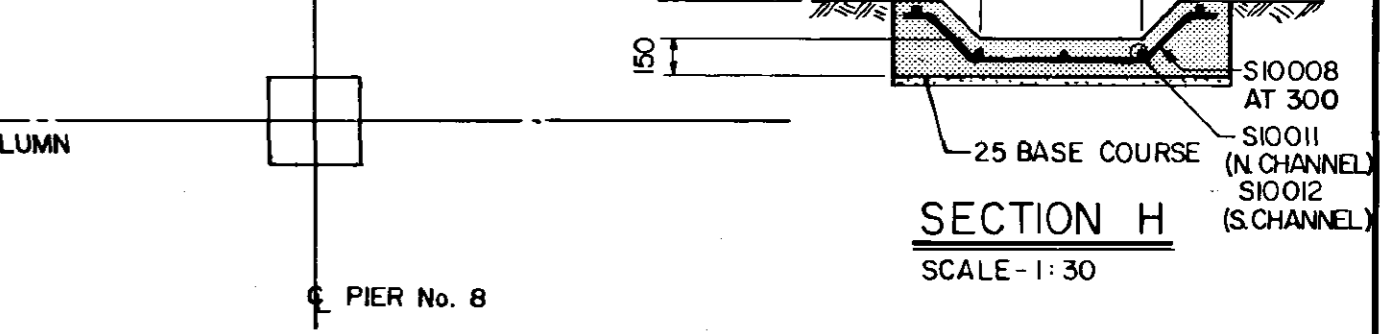
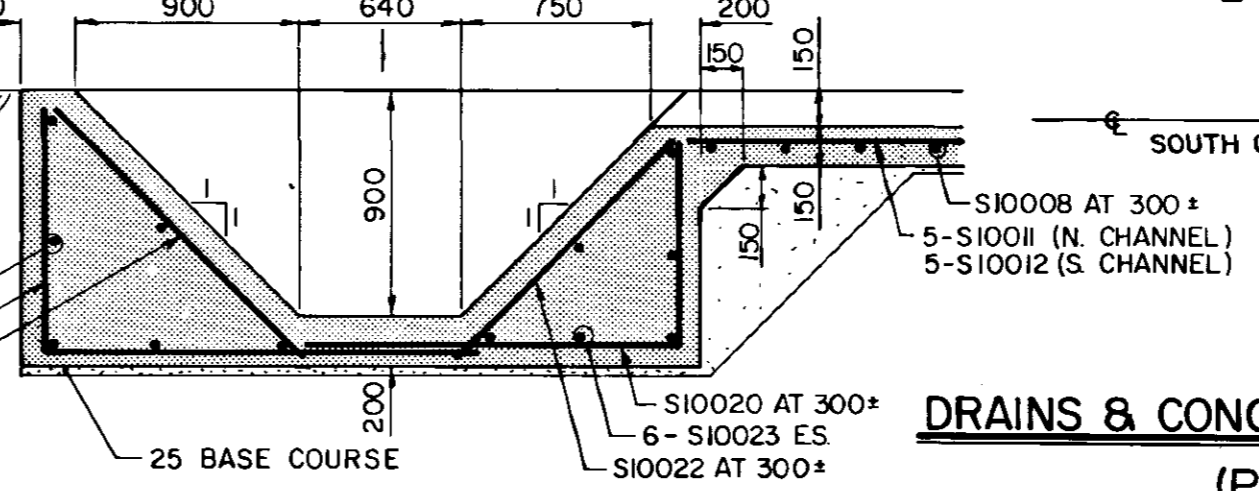
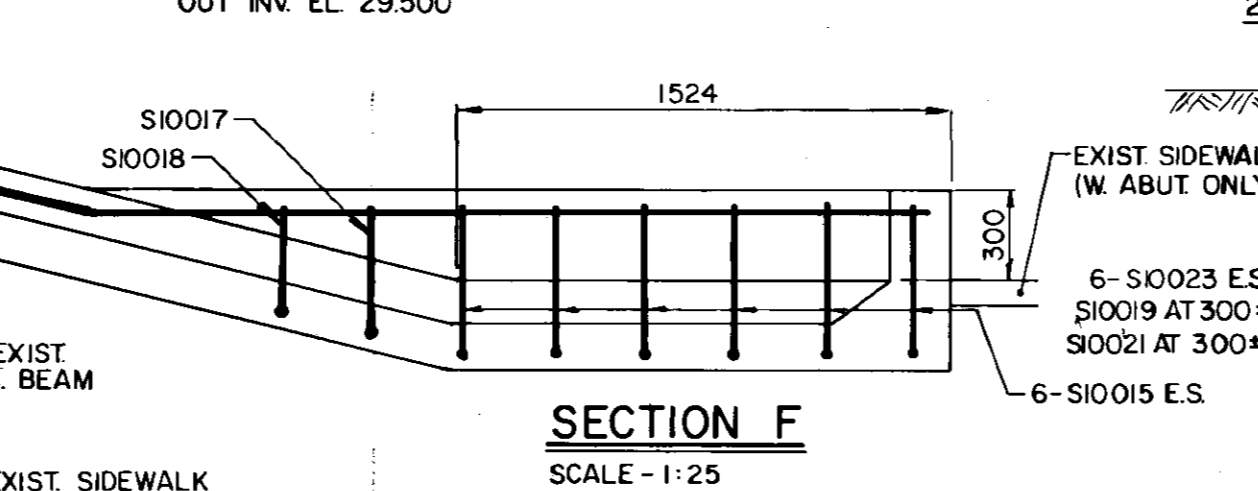
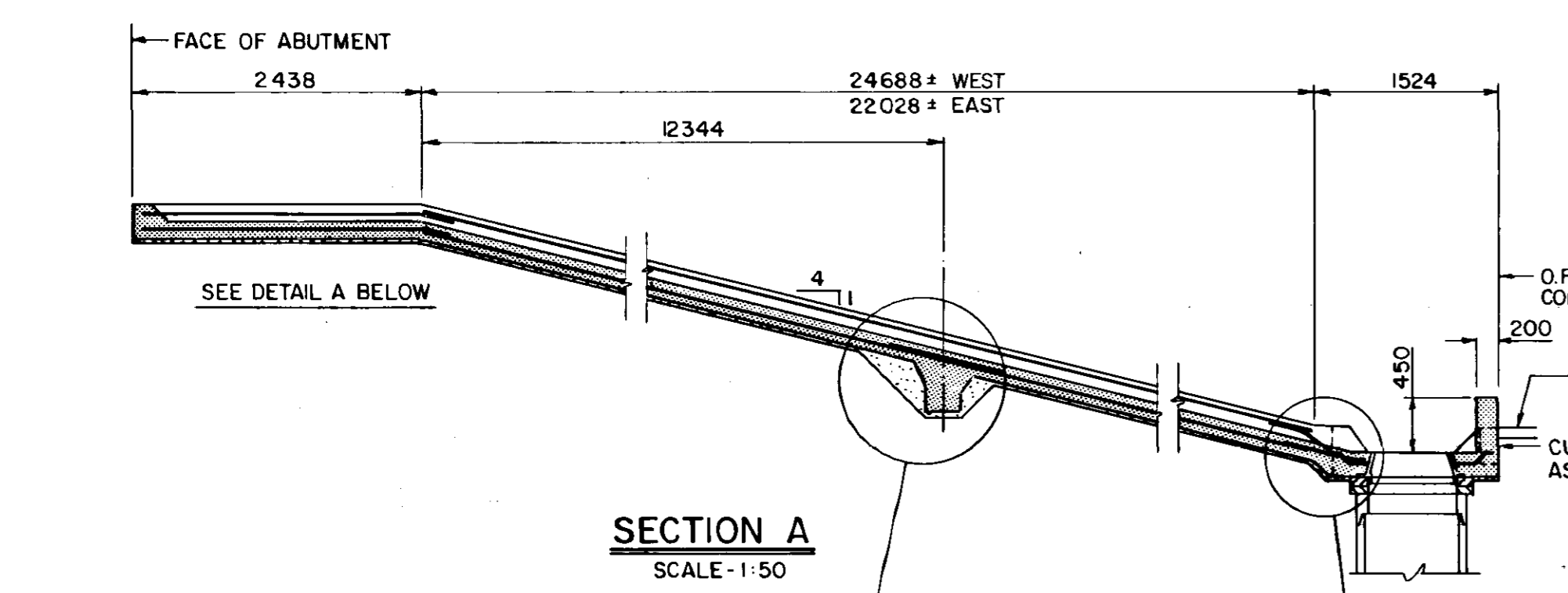
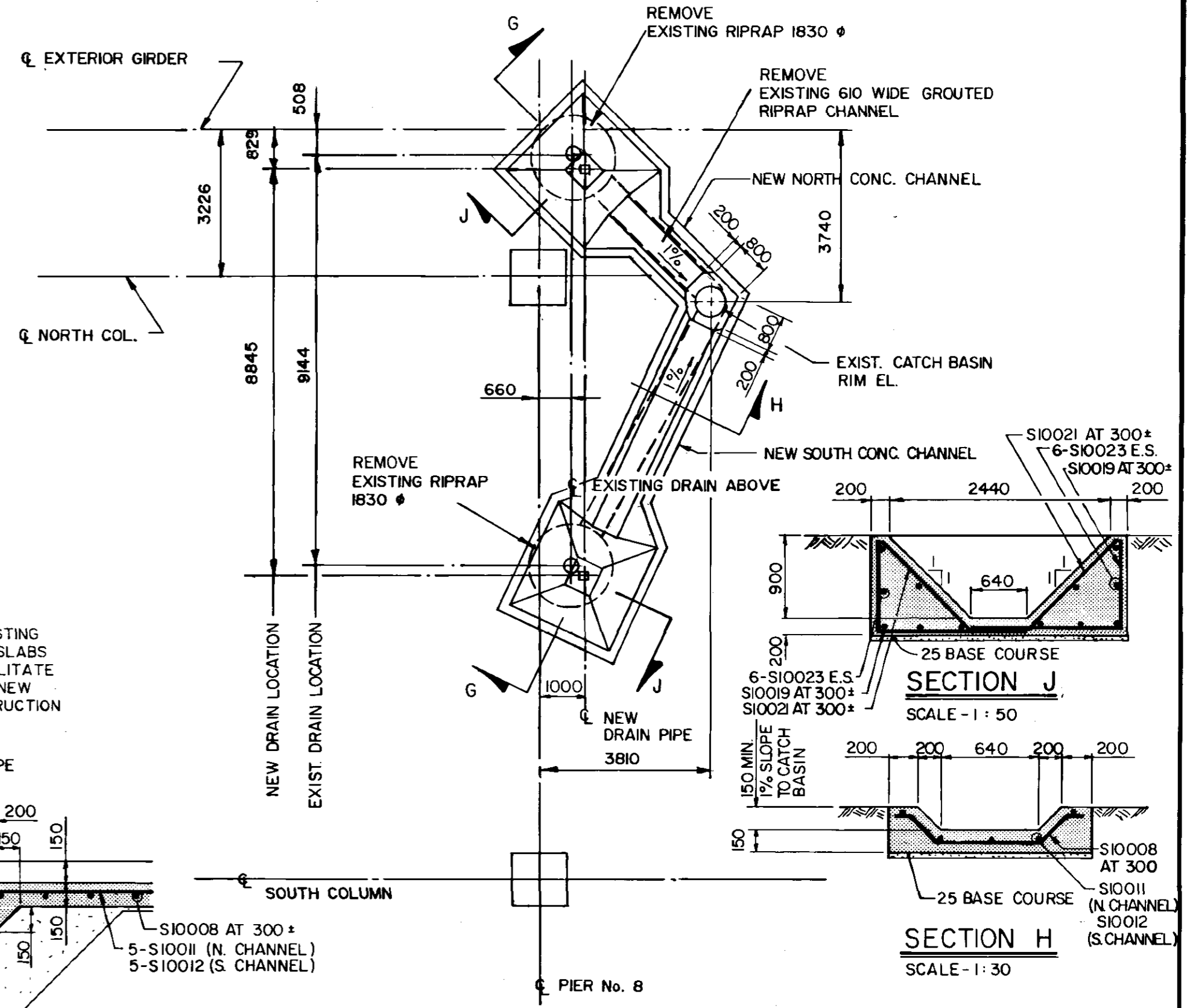
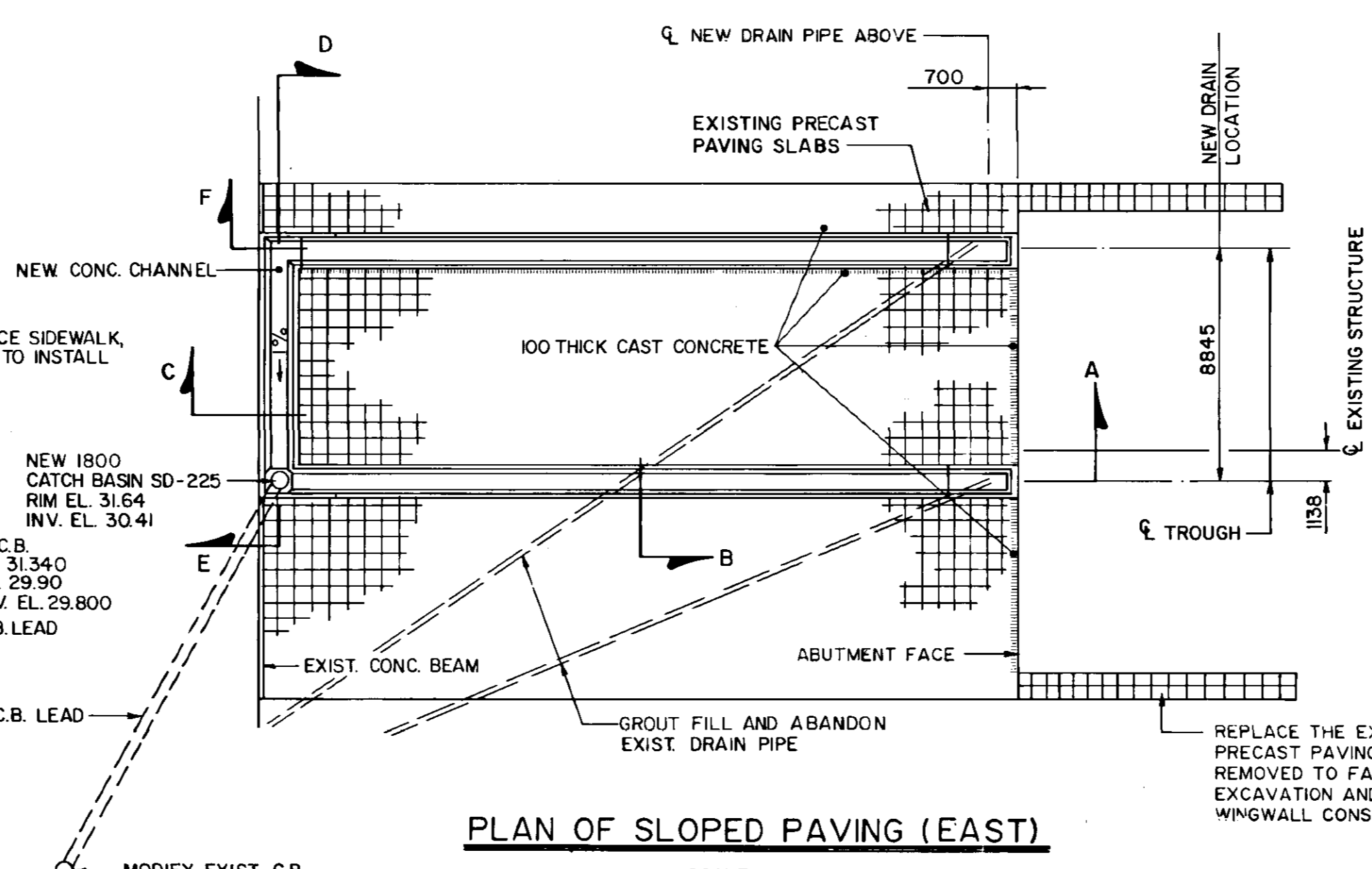
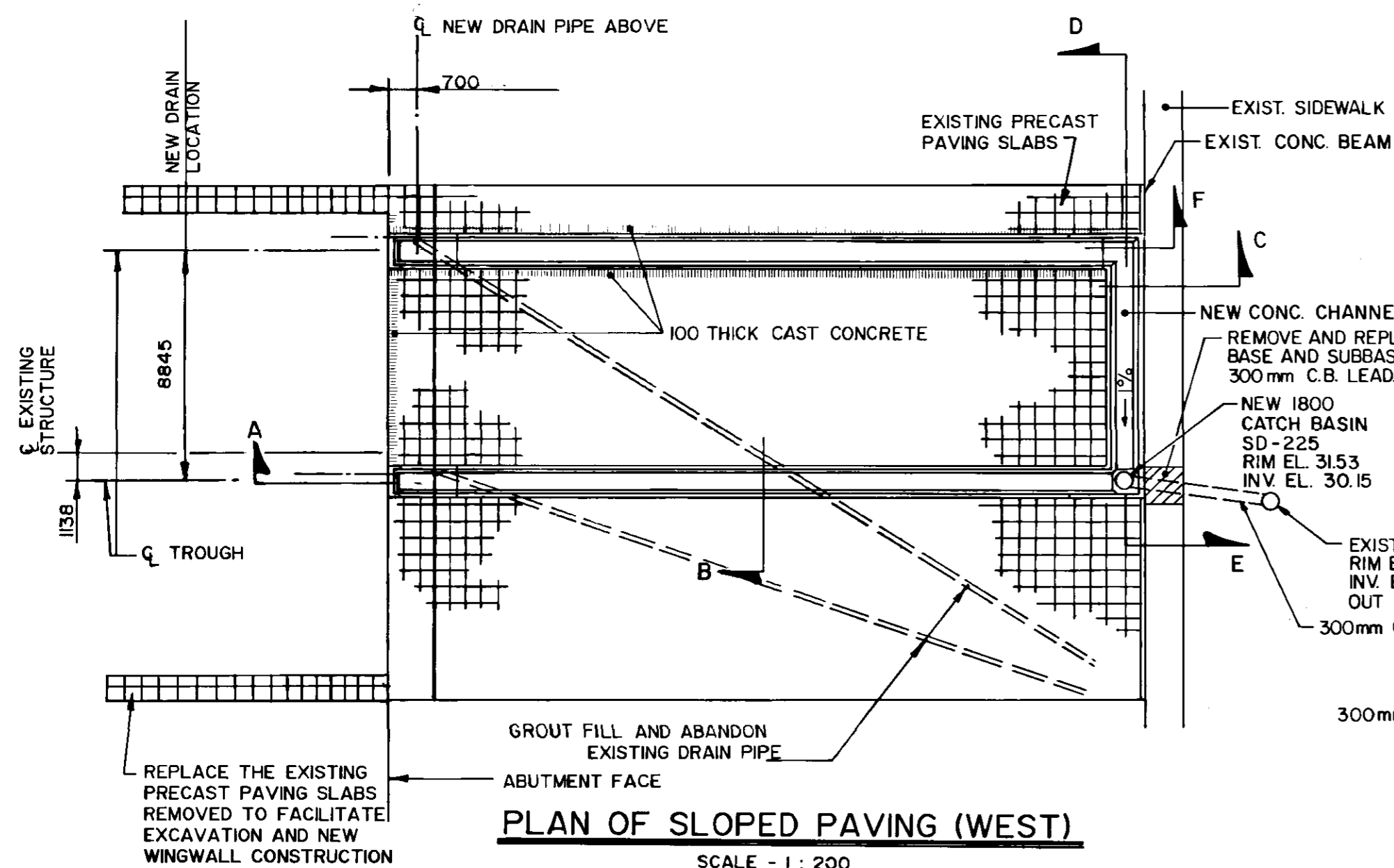
APPROVED BY: [Signature] DATE: [Signature] 1985/04/16

REVISIONS: NO. REVISIONS DATE APP.

ENGINEER'S SEAL: PROVINCE OF MANITOBA, K.S. UPPAL, REGISTERED ENGINEER

THE CITY OF WINNIPEG, THE UMA GROUP, Underwood McLellan Ltd. Consulting Engineers and Planners

AUTHORIZED BY: [Signature] DATE: 1985-04-16
ACCEPTED BY: [Signature] DATE: 1985-04-16
SCALE: AS NOTED DRAWING NO. B121-85-19

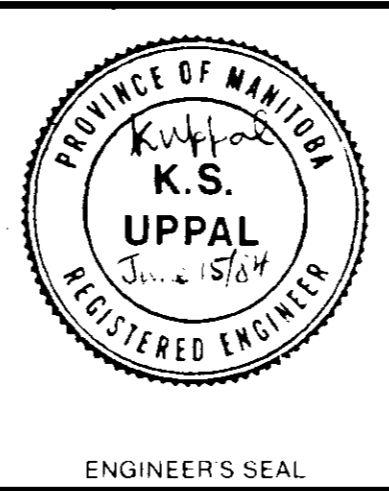


NOTE:
1. SECTIONS A TO F FOR SLOPED PAVING (EAST) ARE SHOWN OPPOSITE HAND.

NOTE: S10009 FIELD BEND FOR CATCH BASIN

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

NO.	REVISIONS	DATE	APP.
2	RECORD DRAWING	NOV. 86	
1	GENERAL REVISIONS	6. 6. 86	



DESIGNED BY:	K.U.	DRAWN BY:	BH
CHECKED BY:	J.T.	DATE:	APRIL 1985
APPROVED BY:		JOB No.	0265-216-01

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

NAIRN AVENUE OVERPASS
DECK REHABILITATION, STRUCTURAL STRENGTHENING AND RELATED WORKS
SLOPE PAVING DRAINAGE CHANNEL DETAILS
AUTHORIZED BY: *W. ...* DATE: *...*
ACCEPTED BY: *...* DATE: *...*
SCALE: AS NOTED
DRAWING NO. B121-85-20

RECORD DRAWING B-5586

