PLANS FOR THE CONSTRUCTION OF
PAVING, BRIDGE, STORM SEWER, WATER, SANITARY SEWER
SIGNALIZATION AND STREETSCAPE IMPROVEMENTS FOR

ARAPAHO ROAD - PHASE III

FROM SURVEYOR BOULEVARD TO ADDISON ROAD

STATION 34+07.75 TO STATION 87+88.00 (LENGTH = 5381 FT = 1.02 MILES)

PROJECT RECORD COPY I

TOWN OF
ADDISON

R. SCOTT WHEELER
MAYOR

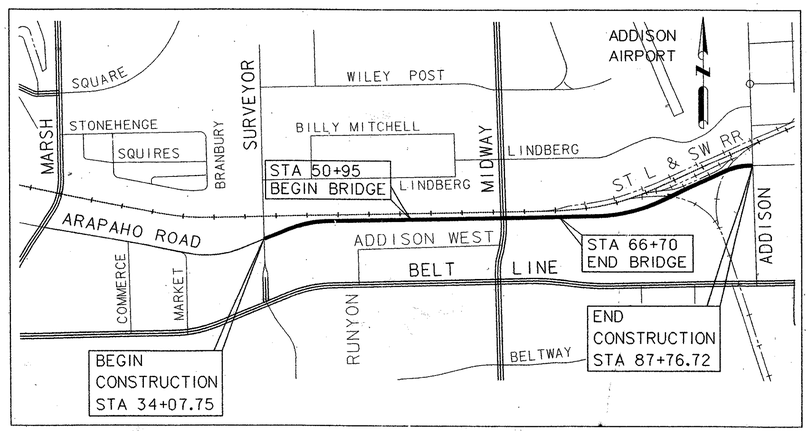
DIANE MALLORY — GLYNDA TURNER
JIMMY NIEMANN — GREGORY S. HIRSH
COUNCIL MEMBERS

FREDERICK M. SILVER
MAYOR PRO TEMPORE

JOE CHOW
DEPUTY MAYOR PRO TEMPORE

RON WHITEHEAD
CITY MANAGER

MIKE MURPHY
DIRECTOR OF PUBLIC WORKS



LOCATION MAP
NOT TO SCALE

OWNER:

TOWN OF ADDISON
DEPARTMENT OF PUBLIC WORKS
16801 WESTGROVE
P.O. BOX 144
ADDISON, TEXAS 75001
(972) 450-2886

ENGINEER:

HNTB CORPORATION
5910 WEST PLANO PARKWAY, SUITE 200
DALLAS, TEXAS 75093
(972) 661-5626

JERRY D. HOLDER, JR.
87171
REGISTERED PROFESSIONAL ENGINEER
07-29-04

HNTB ARCHITECTS ENGINEERS PLANNERS
The HNTB Companies

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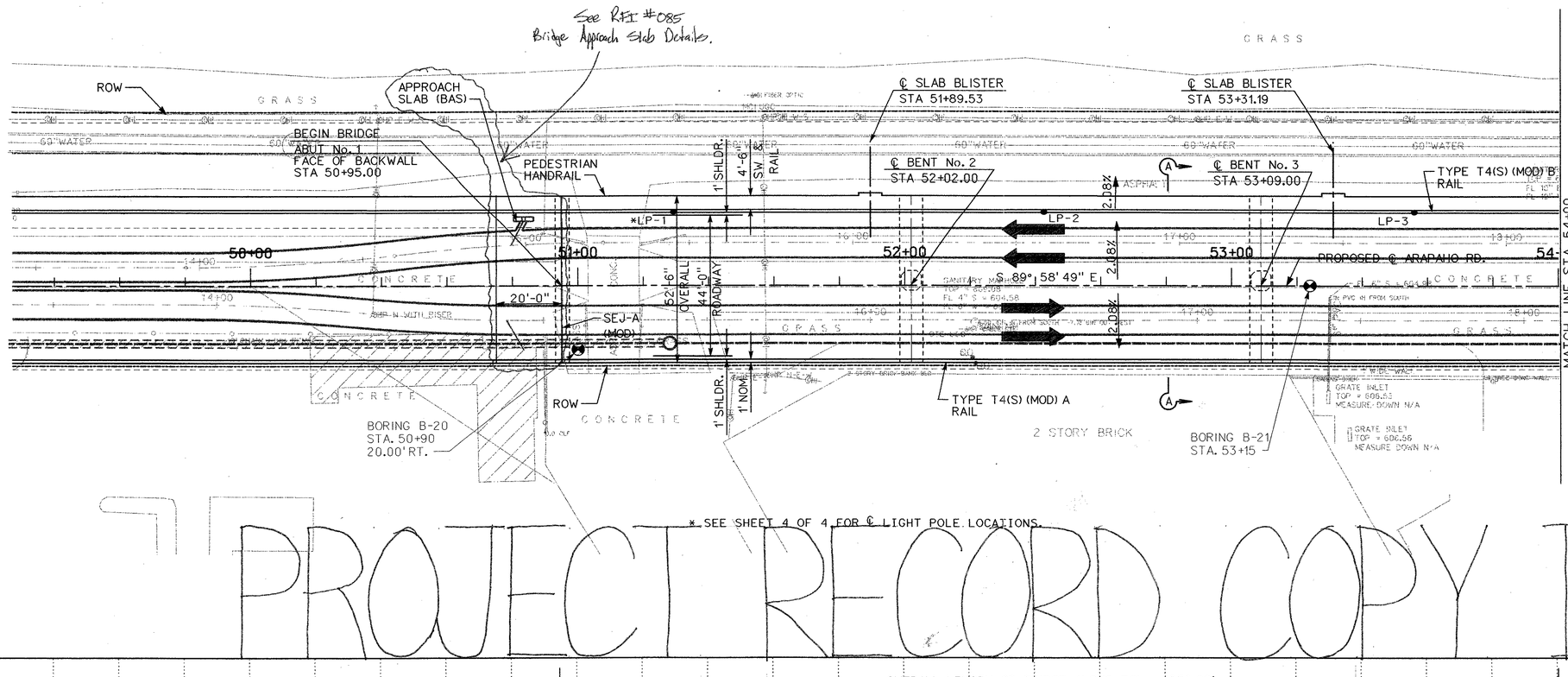
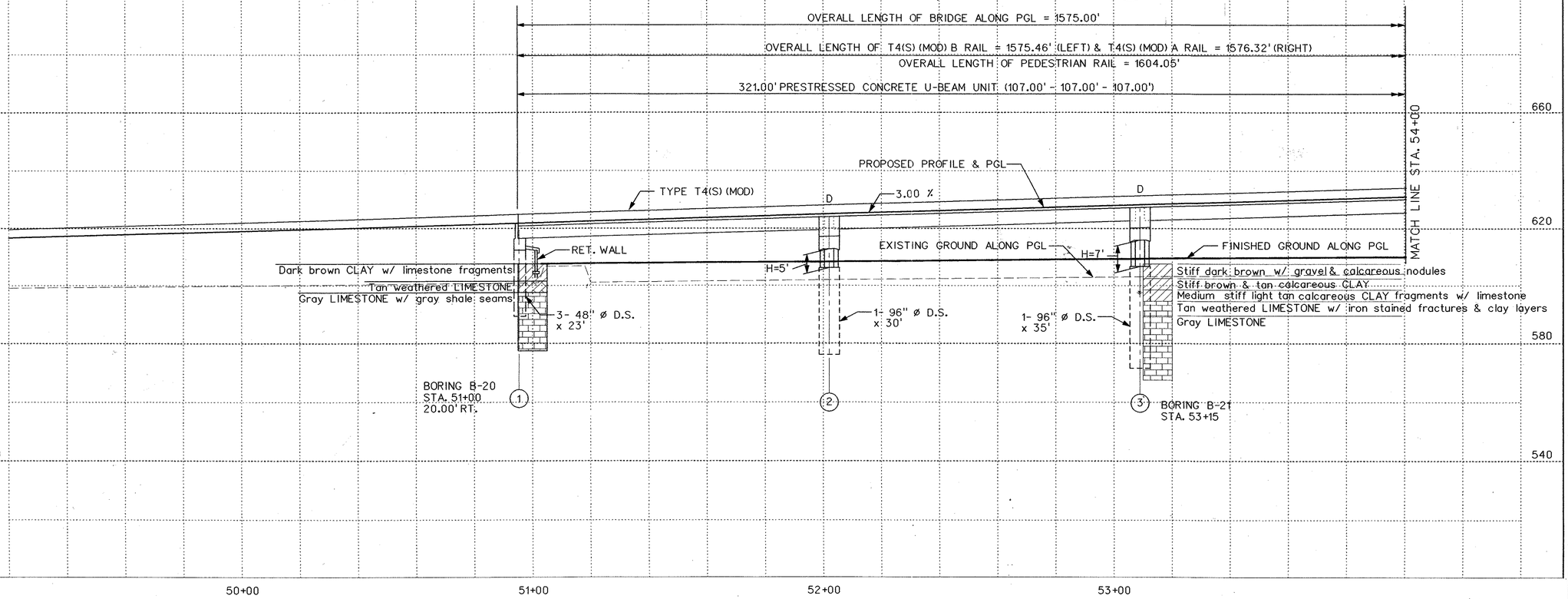


* SEE SHEET 4 OF 4 FOR ℄ LIGHT POLE LOCATIONS.

0 20 40 60 80
SCALE IN FEET

GENERAL NOTES:

1. DESIGNED IN ACCORDANCE WITH AASHTO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" - 16TH EDITION WITH CURRENT INTERIM SPECIFICATIONS, FOR HS20-44 LOADING.
2. ALL DIMENSIONS ARE EITHER HORIZONTAL OR VERTICAL AND MUST BE CORRECTED FOR GRADE, CROWN, AND/OR SUPERELEVATION.
3. ALL BENTS ARE RADIAL UNLESS NOTED OTHERWISE.
4. SEE TEXAS DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND BRIDGES, 1993" FOR THE CONTROLLING CONSTRUCTION SPECIFICATIONS FOR THE BRIDGE.
5. REFER TO BRIDGE LIGHTING PLANS AND BRIDGE LIGHTING DETAILS FOR LOCATIONS AND TYPES OF CONDUIT AND LIGHT FIXTURES. CONTRACTOR IS RESPONSIBLE FOR MOUNTING DETAILS BASED ON LIGHT MANUFACTURES RECOMMENDATIONS.
6. CONTRACTOR IS RESPONSIBLE FOR PROTECTING THE 60" WATER LINE THROUGHOUT CONSTRUCTION.
7. FOR SECTIONS A-A AND B-B SEE TYPICAL SECTIONS SHEET.
8. FOR COLOR SCHEME, SEE SURFACE FINISHES FOR STRUCTURES SHEET.
9. BEAM END CONDITIONS:
   D = DENOTES EXPANSION ALIGNMENT DEVICE (SLOTTED HOLE) IN SLAB.
10. CONTRACTOR TO SUPPLY AND MOUNT TWO 24"x24" BRONZE MONUMENT PLAQUES. CONTRACTOR SHALL COORDINATE WITH THE TOWN OF ADDISON FOR LOCATION, WORDING AND MOUNTING DETAILS FOR THE PLAQUES.



STATE OF TEXAS
CLIFF R. HALL
82211
REGISTERED
PROFESSIONAL ENGINEER
7/2/04

239

NO.	DATE	REVISION	APPROV.

URS
GREYSTONE CENTRE
3010 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

BRIDGE LAYOUT

SHEET 1 OF 4

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-1

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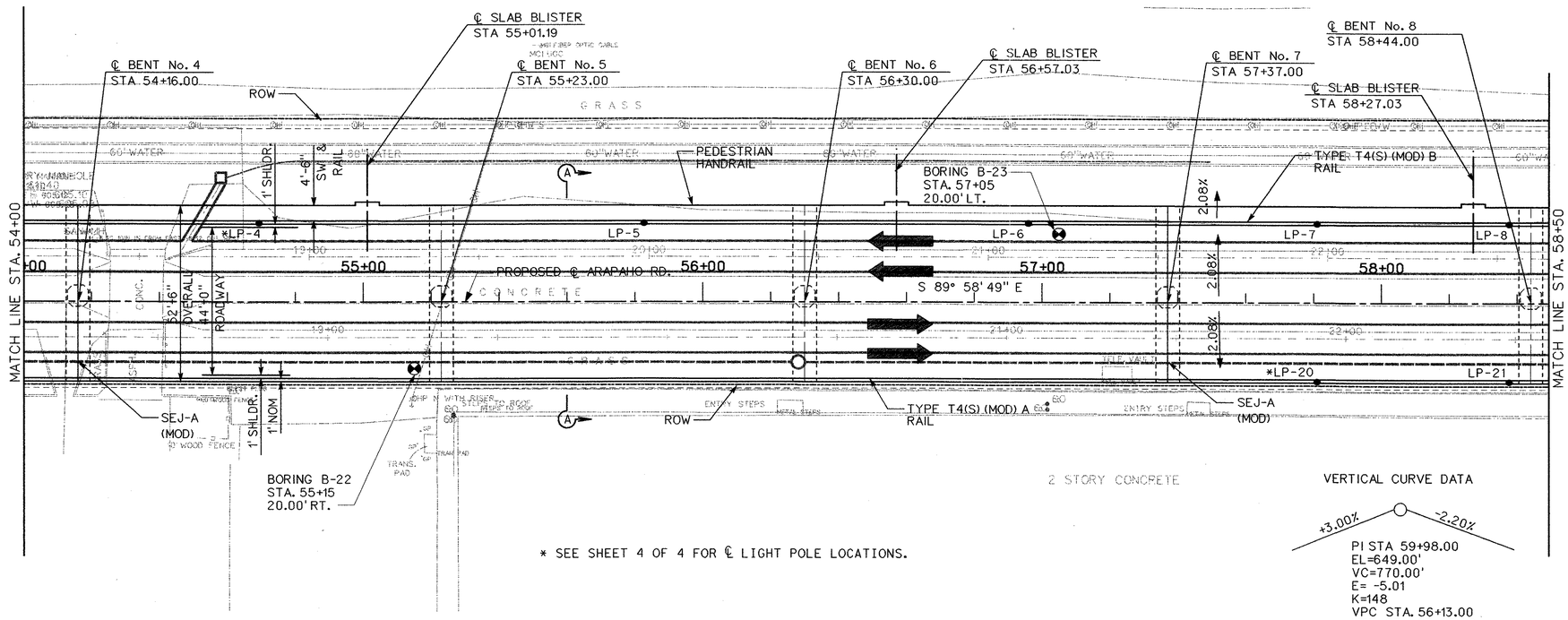
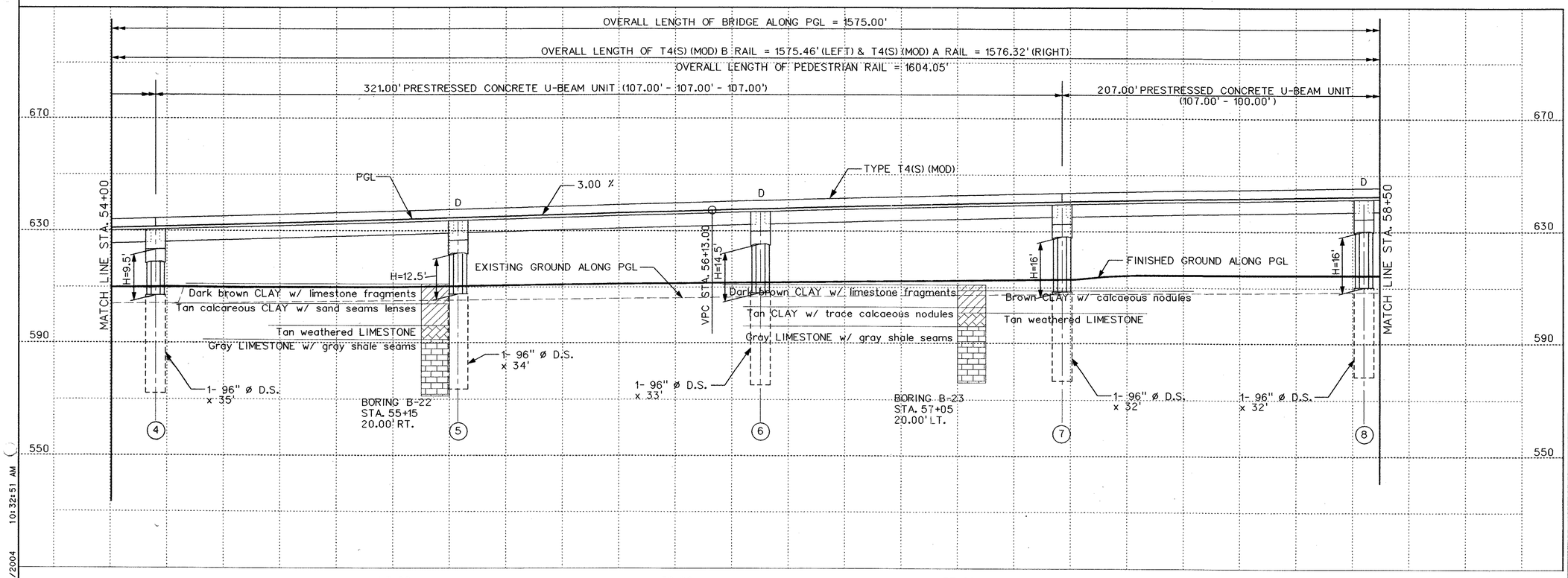


VERTICAL CURVE DATA

+3.00% -2.20%

PI STA 59+98.00
EL=649.00'
VC=770.00'
E= -5.01
K=148
VPC STA. 56+13.00
VPT STA. 63+83.00

0 20 40 60 80
SCALE IN FEET



CLIFF B. HALL 82211 REGISTERED PROFESSIONAL ENGINEER
STATE OF TEXAS
7/2/04

240

NO.	DATE	REVISION	APPROV.

URS GREYSTONE CENTRE
3010 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

BRIDGE LAYOUT

SHEET 2 OF 4

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-2

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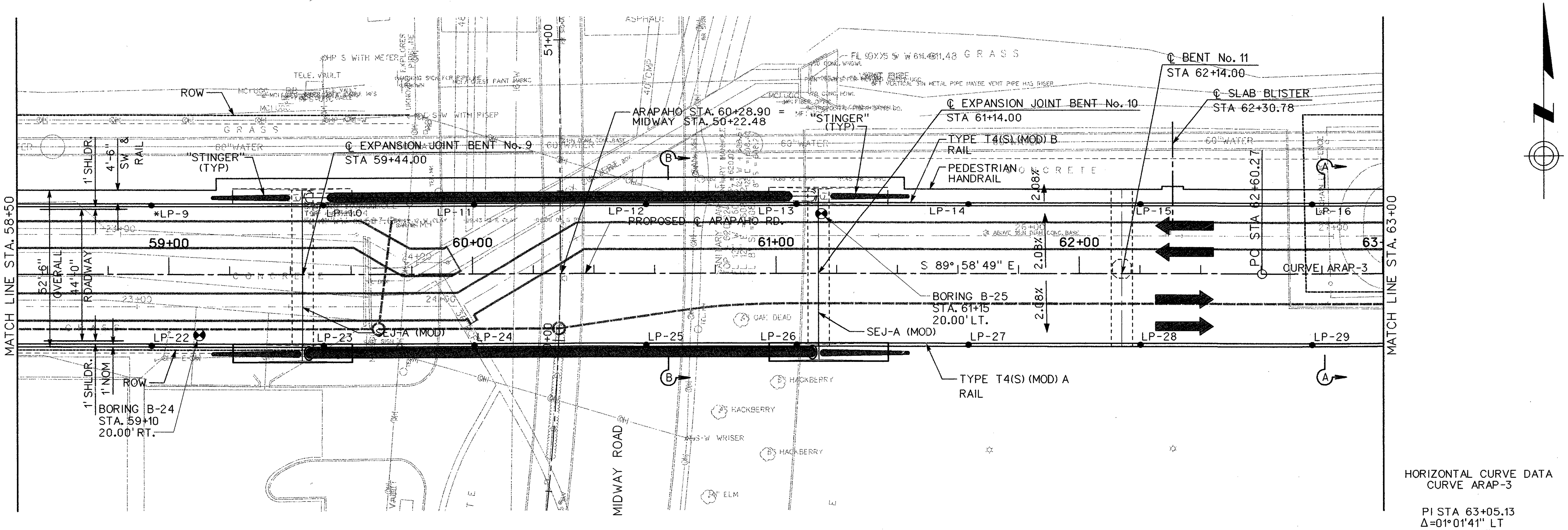


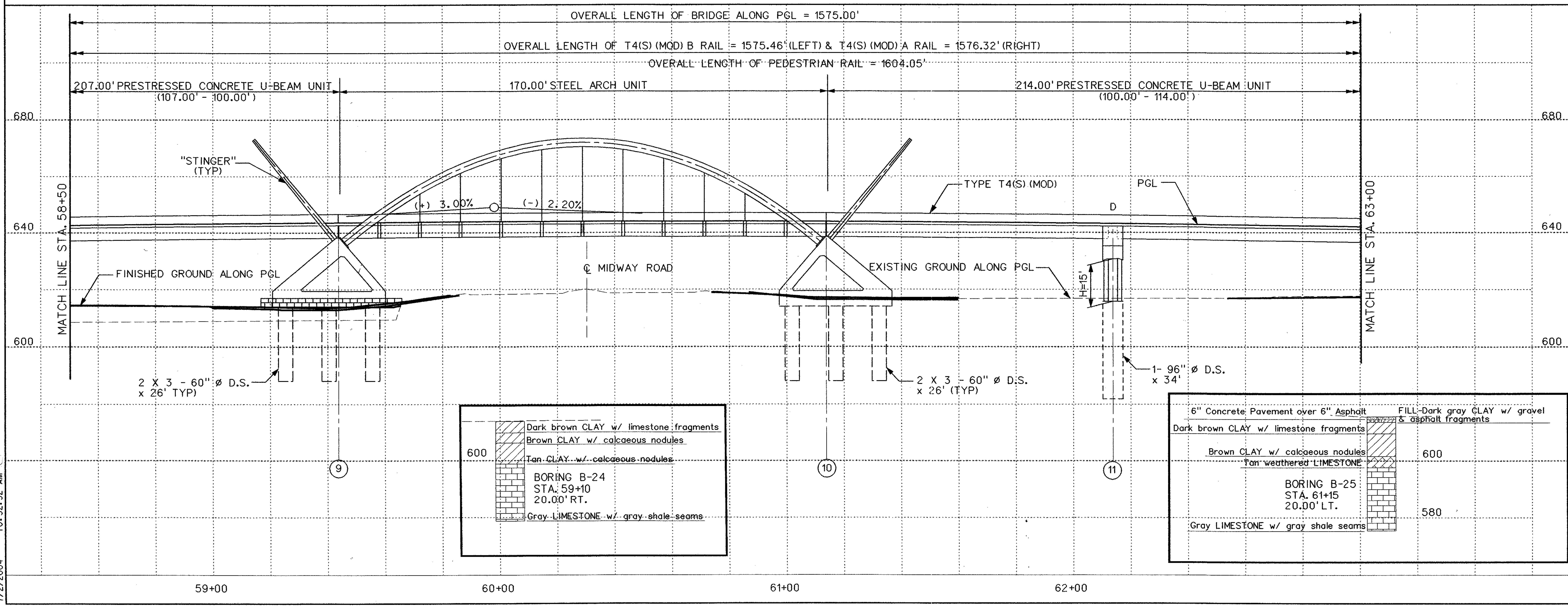
* SEE SHEET 4 OF 4 FOR ℄ LIGHT POLE LOCATIONS.

HORIZONTAL CURVE DATA
CURVE ARAP-3

PI STA 63+05.13
Δ=01°01'41" LT
D=01°08'45"
T=44.86'
L=89.72'
R=5000.00'
PC STA 62+60.27
PT STA 63+49.99

VERTICAL CURVE DATA

+3.00% -2.20%
PI STA 59+98.00
EL=649.00'
VC=770.00'
E= -5.01
K=148
VPC STA. 56+13.00
VPT STA. 63+83.00



STATE OF TEXAS
CLIFF R. HALL
82211
REGISTERED PROFESSIONAL ENGINEER
7/2/04

241

NO.	DATE	REVISION	APPROV.

URS
GREYSTONE CENTRE
5910 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

BRIDGE LAYOUT

SHEET 3 OF 4

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-3

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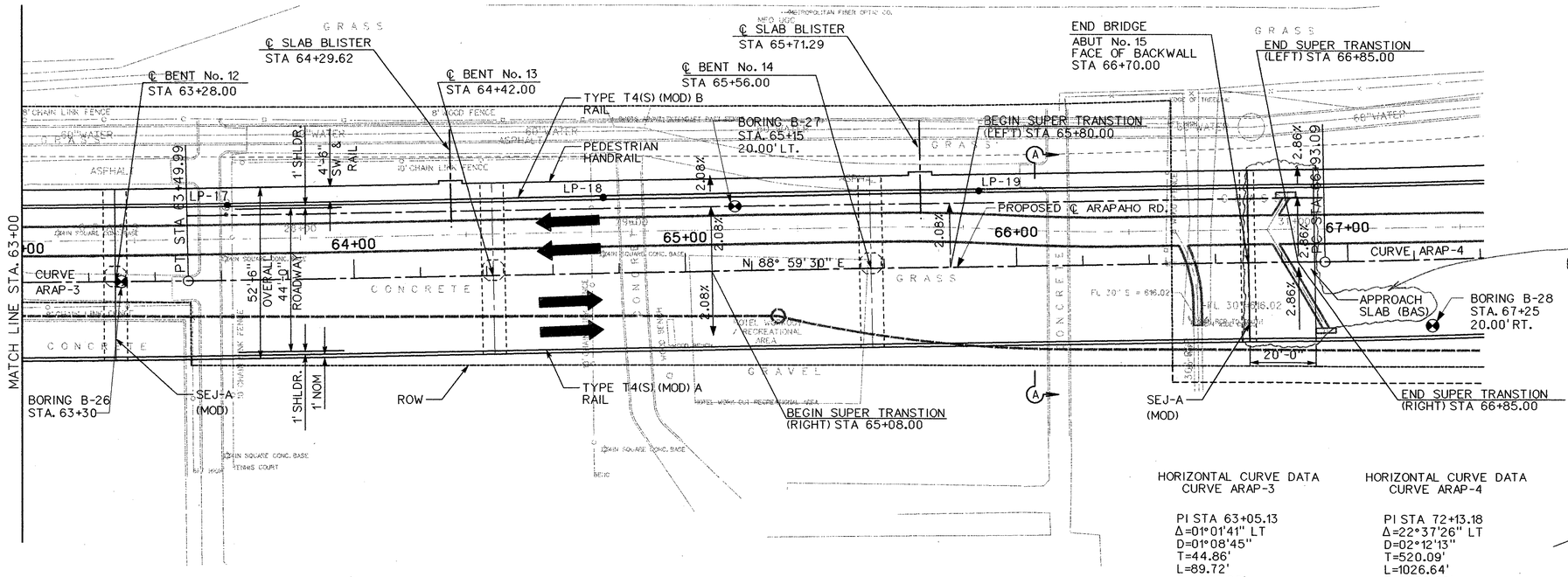


0 20 40 60 80
SCALE IN FEET

LIGHT POLE #	℄ L.P. STATION
NORTH SIDE	
LP-1	51+29.32
LP-2	52.42.65
LP-3	53+55.98
LP-4	54+69.32
LP-5	55+82.65
LP-6	56+95.98
LP-7	57+80.98
LP-8	58+37.65
LP-9	58+94.32
LP-10	59+50.98
LP-11	60+00.57
LP-12	60+57.23
LP-13	61+06.82
LP-14	61+63.48
LP-15	62+20.15
LP-16	62+76.89
LP-17	63+62.24
LP-18	64+75.57
LP-19	65+88.91
SOUTH SIDE	
LP-20	57+80.98
LP-21	58+37.65
LP-22	58+94.32
LP-23	59+50.98
LP-24	60+00.57
LP-25	60+57.23
LP-26	61+06.82
LP-27	61+63.48
LP-28	62+20.15
LP-29	62+76.89

HORIZONTAL CURVE DATA
CURVE ARAP-3

PI STA 63+05.13
Δ=01°01'41" LT
D=01°08'45"
T=44.86'
L=89.72'
R=5000.00'
PC STA 62+60.27
PT STA 63+49.99

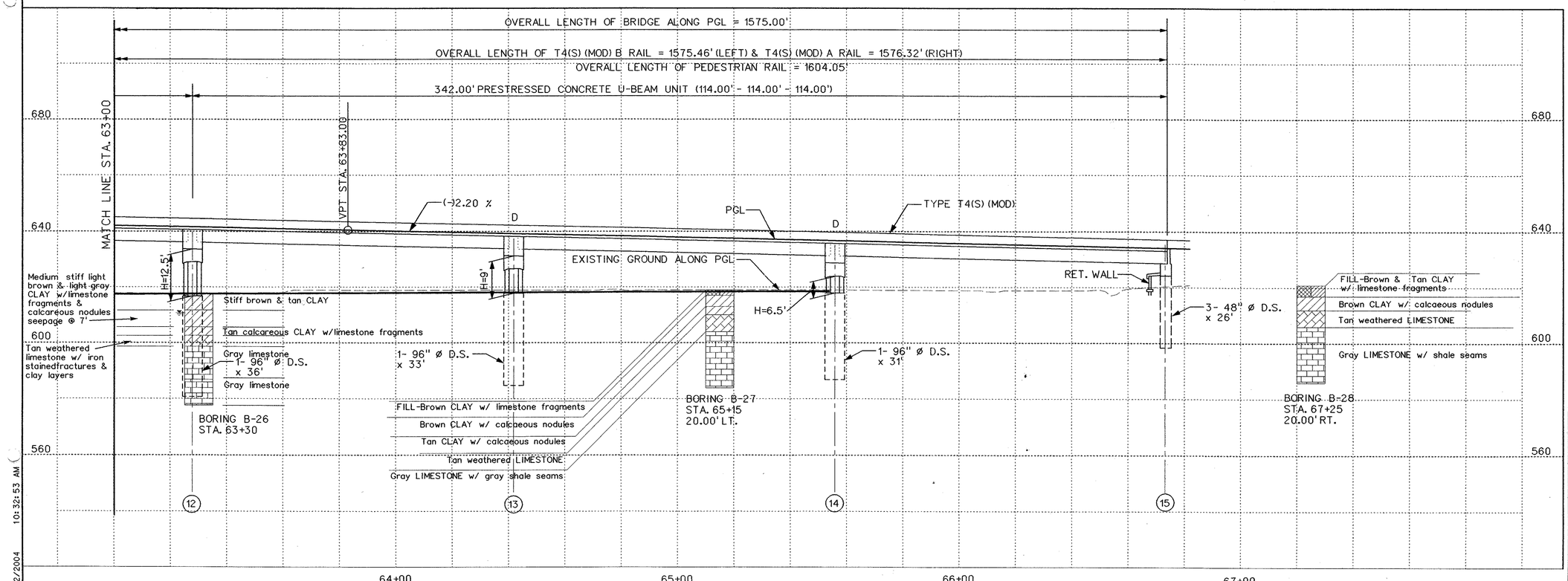
HORIZONTAL CURVE DATA
CURVE ARAP-4

PI STA 72+13.18
Δ=22°37'26" LT
D=02°12'13"
T=520.09'
L=1026.64'
R=2600.00'
PC STA 66+93.09
PT STA 77+19.73

VERTICAL CURVE DATA

+3.00% -2.20%

PI STA 59+98.00
EL=649.00'
VC=770.00'
E= -5.01
K=148
VPC STA. 56+13.00
VPT STA. 63+83.00



STATE OF TEXAS
CLIFF R. HALL
82211
REGISTERED
PROFESSIONAL ENGINEER
7/2/04

242

NO.	DATE	REVISION	APPROV.

URS GREYSTONE CENTRE
3010 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

BRIDGE LAYOUT

SHEET 4 OF 4

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-4

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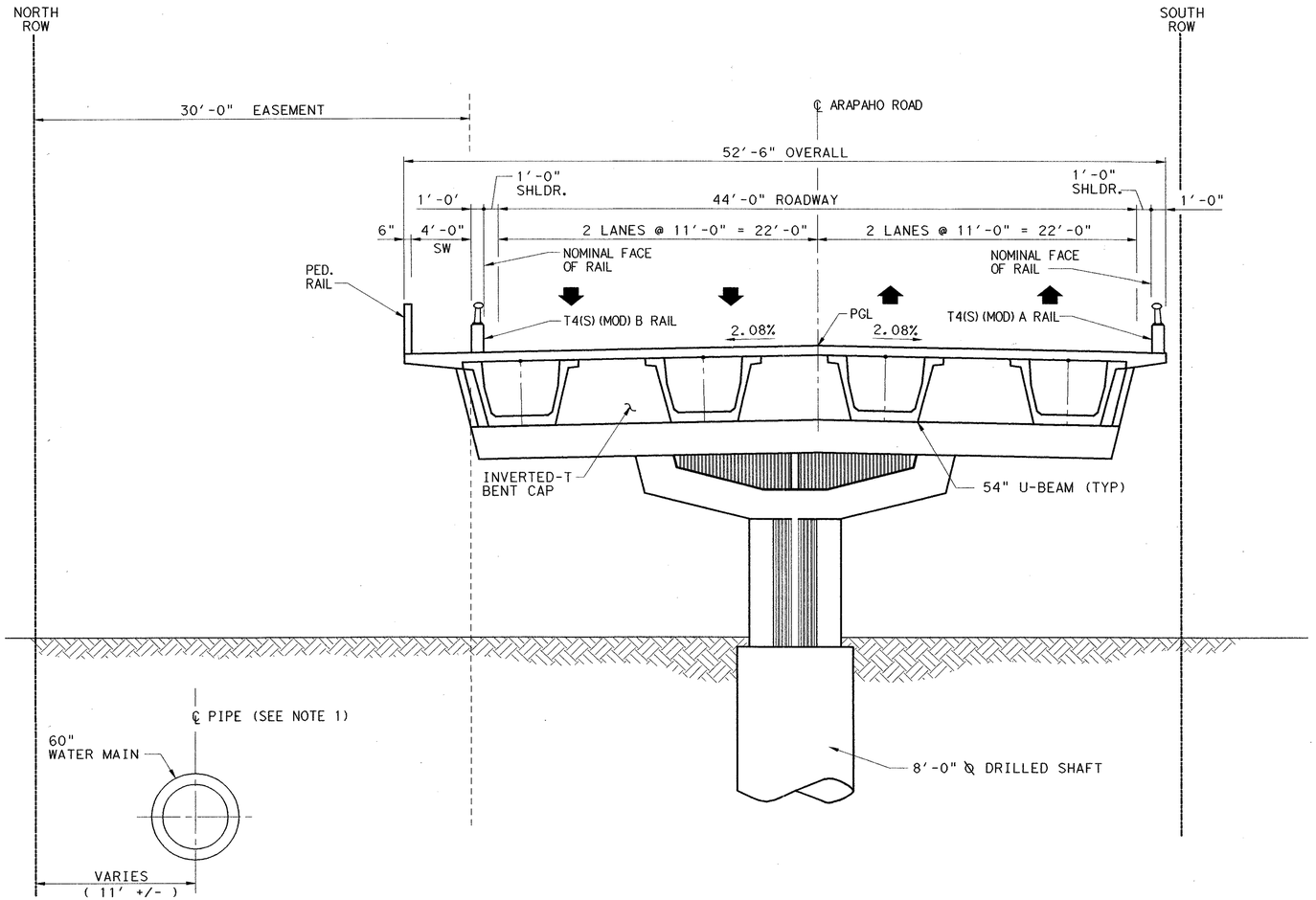

GENERAL NOTES

1. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING THE 60" WATER MAIN THROUGHOUT CONSTRUCTION.
2. CONTRACTOR SHALL TAKE APPROPRIATE MEASURES TO ENSURE THAT ALL HEAVY EQUIPMENT USED IN THE VICINITY OF THE 60" WATER MAIN WILL NOT DAMAGE THE PIPE.

TYPICAL SECTION A-A (SPANS 1-8 & 10-14)

STATE OF TEXAS
CLIFF R. HALL
82211
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PROFESSIONAL ENGINEER
7/2/04

243

NO.	DATE	REVISION	APPROV.
1	05/24/04	ADDENDUM CHANGES	CRH

URS
GREYSTONE CENTRE
3010 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

TYPICAL SECTION

SHEET 1 OF 2

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-5

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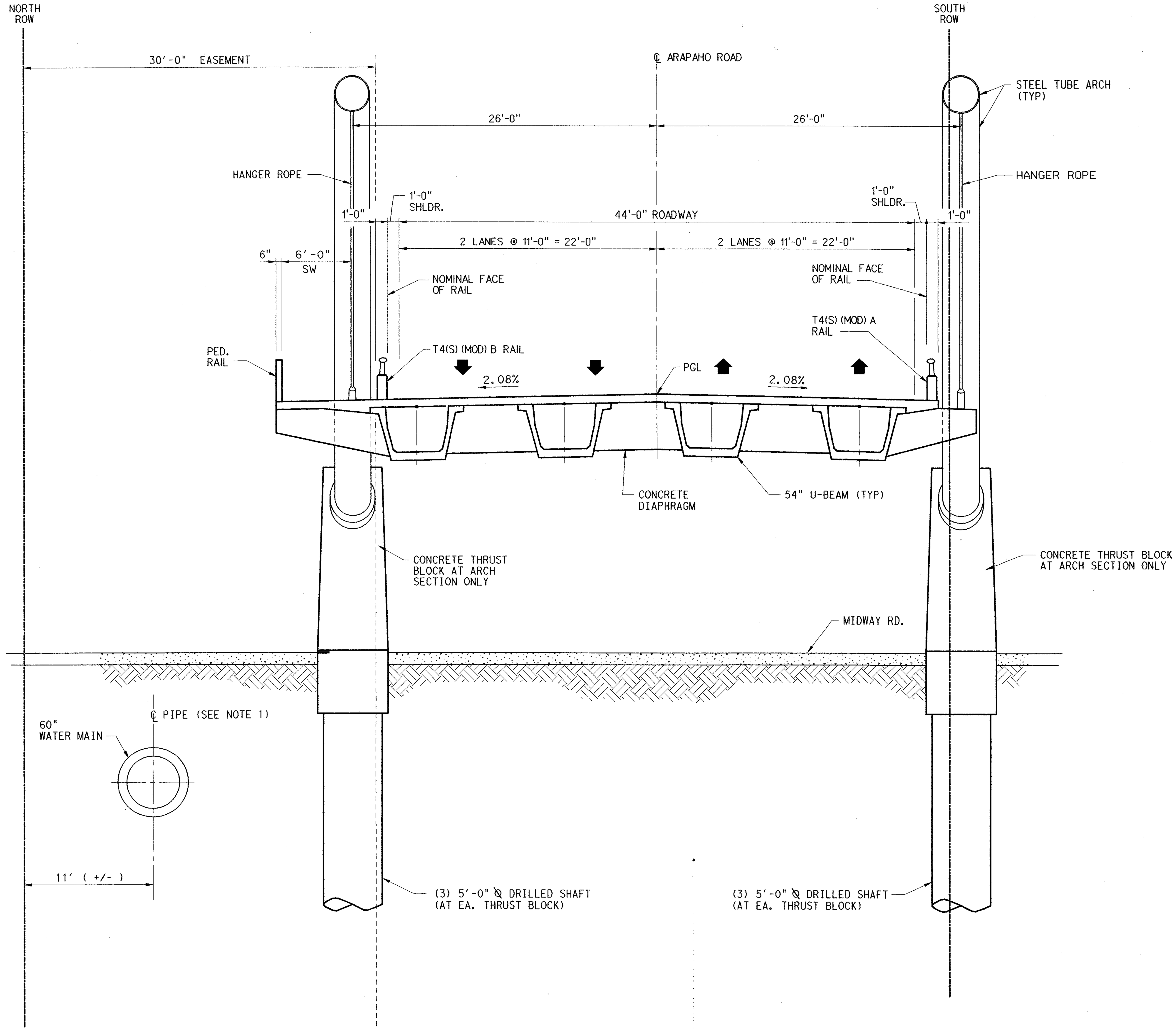
GENERAL NOTES

1. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING THE 60" WATER MAIN THROUGHOUT CONSTRUCTION.
2. CONTRACTOR SHALL TAKE APPROPRIATE MEASURES TO ENSURE THAT ALL HEAVY EQUIPMENT USED IN THE VICINITY OF THE 60" WATER MAIN WILL NOT DAMAGE THE PIPE.



TYPICAL SECTION B-B (SPAN 9)

STATE OF TEXAS — CLIFF R. HALL — 82211 — REGISTERED PROFESSIONAL ENGINEER

7/2/04

244

NO.	DATE	REVISION	APPROV.

URS
GREYSTONE CENTRE
5010 LBJ FREEWAY, SUITE 1500
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

TYPICAL SECTION

SHEET 2 OF 2

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-6

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SUMMARY OF ESTIMATED QUANTITIES

BID ITEM NUMBER	501	502	503	504	505	506	507	508	509	510
TXDOT SPEC NUMBER	416			420				422	425	428
BID ITEM DESCRIPTION	DRILLED SHAFTS			CLASS F CONC 5000 PSI				REINFORCED CONCRETE SLAB (CLASS "S ")	PRESTRESSED CONCRETE MEMBER U54	CONCRETE SURFACE TREATMENT
BRIDGE ELEMENT	48"	60"	96"	ABUT	BENT 2-8 & 11-14	BENT 9 & 10	DIAPHRAGMS			
	LF	LF	LF	CY	CY	CY	CY	SF	LF	SY
TOTAL	147	312	365	79.3	1,037.5	505.2	99.4	83,680	6,089	9,298

BID ITEM NUMBER	511	512	513	514	515	516	517	518	519	520
TXDOT SPEC NUMBER	442	442		450	450	450	454	534		
BID ITEM DESCRIPTION	STRUCT STL (ARCH)	STRUCT STL (STINGER)	STRUCT STRAND (2 1/2") TECH SPEC SSH	PEDESTRIAN RAIL	RAIL T4 (S) (MOD) A	RAIL T4(S) (MOD) B	SEALED EXPANSION JOINT 4" (MOD)	STRUCTURAL APPROACH SLABS	"ADDISON" LOGO FORM LINER	STANDARD 24" x 24" MONUMENT PLAQUE
BRIDGE ELEMENT	LB	LB	LS	LF	LF	LF	LF	CY	LS	EA
TOTAL	175,000	△1 12,701	1	1,604	1,577	1,576	363.7	73.6	1	2

STATE OF TEXAS
CLIFF R. HALL
82211
REGISTERED
PROFESSIONAL ENGINEER
7/1/04

245

NO.	DATE	REVISION	APPROV.
1	08/01/04	ADDENDUM CHANGES	CRH

URS
GREYSTONE CENTRE
3838 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

ESTIMATED QUANTITIES

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-7

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BEARING SEAT ELEVATIONS (FT)

	BEAM 1		BEAM 2		BEAM 3		BEAM 4	
	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT
ABUT 1 (FWD)	615.891	615.985	616.146	616.240	616.307	616.214	616.052	615.958
	BEAM 1		BEAM 2		BEAM 3		BEAM 4	
	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT
BENT 2 (BK)	619.004	619.097	619.259	619.352	619.420	619.326	619.164	619.070
	BEAM 1		BEAM 2		BEAM 3		BEAM 4	
	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT
BENT 2 (FWD)	619.160	619.253	619.414	619.508	619.575	619.481	619.319	619.225
	BEAM 1		BEAM 2		BEAM 3		BEAM 4	
	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT
BENT 3 (BK)	622.218	622.312	622.472	622.566	622.633	622.540	622.377	622.284
	BEAM 1		BEAM 2		BEAM 3		BEAM 4	
	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT
BENT 3 (FWD)	622.373	622.467	622.628	622.721	622.788	622.695	622.532	622.439
	BEAM 1		BEAM 2		BEAM 3		BEAM 4	
	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT
BENT 4 (BK)	625.432	625.525	625.686	625.780	625.847	625.753	625.591	625.497
	BEAM 1		BEAM 2		BEAM 3		BEAM 4	
	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT
BENT 4 (FWD)	625.587	625.680	625.841	625.935	626.002	625.908	625.746	625.652
	BEAM 1		BEAM 2		BEAM 3		BEAM 4	
	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT
BENT 5 (BK)	628.645	628.739	628.900	628.993	629.060	628.967	628.804	628.711
	BEAM 1		BEAM 2		BEAM 3		BEAM 4	
	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT
BENT 5 (FWD)	628.794	628.887	629.058	629.152	629.219	629.126	628.963	628.869
	BEAM 1		BEAM 2		BEAM 3		BEAM 4	
	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT
BENT 6 (BK)	631.845	631.938	632.110	632.203	632.271	632.177	632.014	631.921
	BEAM 1		BEAM 2		BEAM 3		BEAM 4	
	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT
BENT 6 (FWD)	631.996	632.090	632.258	632.351	632.419	632.325	632.157	632.064
	BEAM 1		BEAM 2		BEAM 3		BEAM 4	
	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT
BENT 7 (BK)	634.569	634.663	634.831	634.924	634.992	634.898	634.730	634.636
	BEAM 1		BEAM 2		BEAM 3		BEAM 4	
	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT
BENT 7 (FWD)	634.681	634.774	634.942	635.036	635.104	635.010	634.842	634.748
	BEAM 1		BEAM 2		BEAM 3		BEAM 4	
	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT
BENT 8 (BK)	636.517	636.610	636.778	636.872	636.939	636.846	636.678	636.584
	BEAM 1		BEAM 2		BEAM 3		BEAM 4	
	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT
BENT 8 (FWD)	636.591	636.685	636.853	636.946	637.014	636.920	636.752	636.658
	BEAM 1		BEAM 2		BEAM 3		BEAM 4	
	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT
BENT 9 (BK)	637.651	637.744	637.912	638.006	638.073	637.980	637.812	637.718
	BEAM 1		BEAM 2		BEAM 3		BEAM 4	
	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT
BENT 9 (FWD)	~~637.831~~ 637.608	~~637.738~~ 637.761	~~638.312~~ 637.930	~~638.218~~ 638.023	~~638.317~~ 638.091	~~638.224~~ 637.997	~~638.152~~ 637.829	~~638.059~~ 637.735

See RFI #033
Revised Bearing Seat Grades.

STATE OF TEXAS
CLIFF R. HALL
82211
REGISTERED
PROFESSIONAL ENGINEER
7/2/04

246

NO.	DATE	REVISION	APPROV.

URS GREYSTONE CENTRE
3010 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

BEARING SEAT ELEVATIONS

SHEET 1 OF 2

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-8

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See RFI #033

BEARING SEAT ELEVATIONS (FT)

	BEAM 1 LEFT	BEAM 1 RIGHT	BEAM 2 LEFT	BEAM 2 RIGHT	BEAM 3 LEFT	BEAM 3 RIGHT	BEAM 4 LEFT	BEAM 4 RIGHT
BENT 10 (BK)	~~637.670~~ 637.987	~~637.764~~ 638.081	~~638.150~~ 638.249	~~638.244~~ 638.342	~~638.156~~ 638.410	~~638.250~~ 638.316	~~637.991~~ 638.148	~~638.085~~ 638.055
BENT 10 (FWD)	637.976	638.070	638.238	638.331	638.399	638.305	638.137	638.043
BENT 11 (BK)	637.283	637.376	637.545	637.638	637.706	637.612	637.444	637.350
BENT 11 (FWD)	637.227	637.321	637.489	637.583	637.650	637.557	637.389	637.296
BENT 12 (BK)	635.653	635.746	635.914	636.007	636.076	635.982	635.814	635.720
BENT 12 (FWD)	635.558	635.651	635.820	635.914	635.983	635.890	635.718	635.624
BENT 13 (BK)	~~633.085~~ 633.254	~~633.178~~ 633.347	633.514	633.608	633.676	633.583	633.411	633.317
BENT 13 (FWD)	633.140	633.234	633.402	633.496	633.526	633.460	633.163	633.109
BENT 14 (BK)	630.741	630.834	631.003	631.096	631.185	631.120	630.993	630.928
BENT 14 (FWD)	630.612	630.710	630.873	630.971	630.958	630.918	630.870	630.841
ABUT 15 (BK)	628.027	628.146	628.372	628.490	628.663	628.613	628.963	628.924

STATE OF TEXAS
CLIFF R. HALL
82211
REGISTERED PROFESSIONAL ENGINEER
7/2/04

247

NO.	DATE	REVISION	APPROV.

URS
GREYSTONE CENTRE
5010 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75254

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

BEARING SEAT ELEVATIONS

SHEET 2 OF 2

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-9

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BEARING PAD TAPER - - FABRICATOR'S REPORT

PERPENDICULAR TO THE CENTERLINE OF BEARING.
SUMMATION OF BEARING PAD TAPER DUE TO CROSS-SLOPE, GRADE, AND SKEW, MEASURED IN IN/IN
A POSITIVE TAPER INDICATES INCREASING PAD THICKNESS IN DIRECTION OF INCREASING STATIONS.
A NEGATIVE TAPER INDICATES DECREASING PAD THICKNESS IN DIRECTION OF INCREASING STATIONS.

	BEAM 1	BEAM 2	BEAM 3	BEAM 4
ABUT 1 (FWD)	0.030	0.030	0.030	0.030
	BEAM 1	BEAM 2	BEAM 3	BEAM 4
BENT 2 (BK)	0.030	0.030	0.030	0.030
(FWD)	0.030	0.030	0.030	0.030
	BEAM 1	BEAM 2	BEAM 3	BEAM 4
BENT 3 (BK)	0.030	0.030	0.030	0.030
(FWD)	0.030	0.030	0.030	0.030
	BEAM 1	BEAM 2	BEAM 3	BEAM 4
BENT 4 (BK)	0.030	0.030	0.030	0.030
(FWD)	0.030	0.030	0.030	0.030
	BEAM 1	BEAM 2	BEAM 3	BEAM 4
BENT 5 (BK)	0.030	0.030	0.030	0.030
(FWD)	0.030	0.030	0.030	0.030
	BEAM 1	BEAM 2	BEAM 3	BEAM 4
BENT 6 (BK)	0.030	0.030	0.030	0.030
(FWD)	0.025	0.025	0.025	0.025
	BEAM 1	BEAM 2	BEAM 3	BEAM 4
BENT 7 (BK)	0.025	0.025	0.025	0.025
(FWD)	0.018	0.018	0.018	0.018
	BEAM 1	BEAM 2	BEAM 3	BEAM 4
BENT 8 (BK)	0.018	0.018	0.018	0.018
(FWD)	0.011	0.011	0.011	0.011
	BEAM 1	BEAM 2	BEAM 3	BEAM 4
BENT 9 (BK)	0.011	0.011	0.011	0.011
(FWD)	0.005	0.005	0.005	0.005
	BEAM 1	BEAM 2	BEAM 3	BEAM 4
BENT 10 (BK)	-0.002	-0.002	-0.002	-0.002
(FWD)	-0.007	-0.007	-0.007	-0.007
	BEAM 1	BEAM 2	BEAM 3	BEAM 4
BENT 11 (BK)	-0.007	-0.007	-0.007	-0.007
(FWD)	-0.015	-0.015	-0.014	-0.014
	BEAM 1	BEAM 2	BEAM 3	BEAM 4
BENT 12 (BK)	-0.015	-0.015	-0.014	-0.014
(FWD)	-0.021	-0.021	-0.021	-0.021
	BEAM 1	BEAM 2	BEAM 3	BEAM 4
BENT 13 (BK)	-0.021	-0.021	-0.021	-0.021
(FWD)	-0.022	-0.022	-0.022	-0.020
	BEAM 1	BEAM 2	BEAM 3	BEAM 4
BENT 14 (BK)	-0.022	-0.022	-0.022	-0.020
(FWD)	-0.023	-0.023	-0.021	-0.017
	BEAM 1	BEAM 2	BEAM 3	BEAM 4
ABUT 15 (BK)	-0.023	-0.023	-0.021	-0.017

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NO.	DATE	REVISION	APPROV.

URS
GREYSTONE CENTRE
3010 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

BEARING PAD TAPER REPORT

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-10

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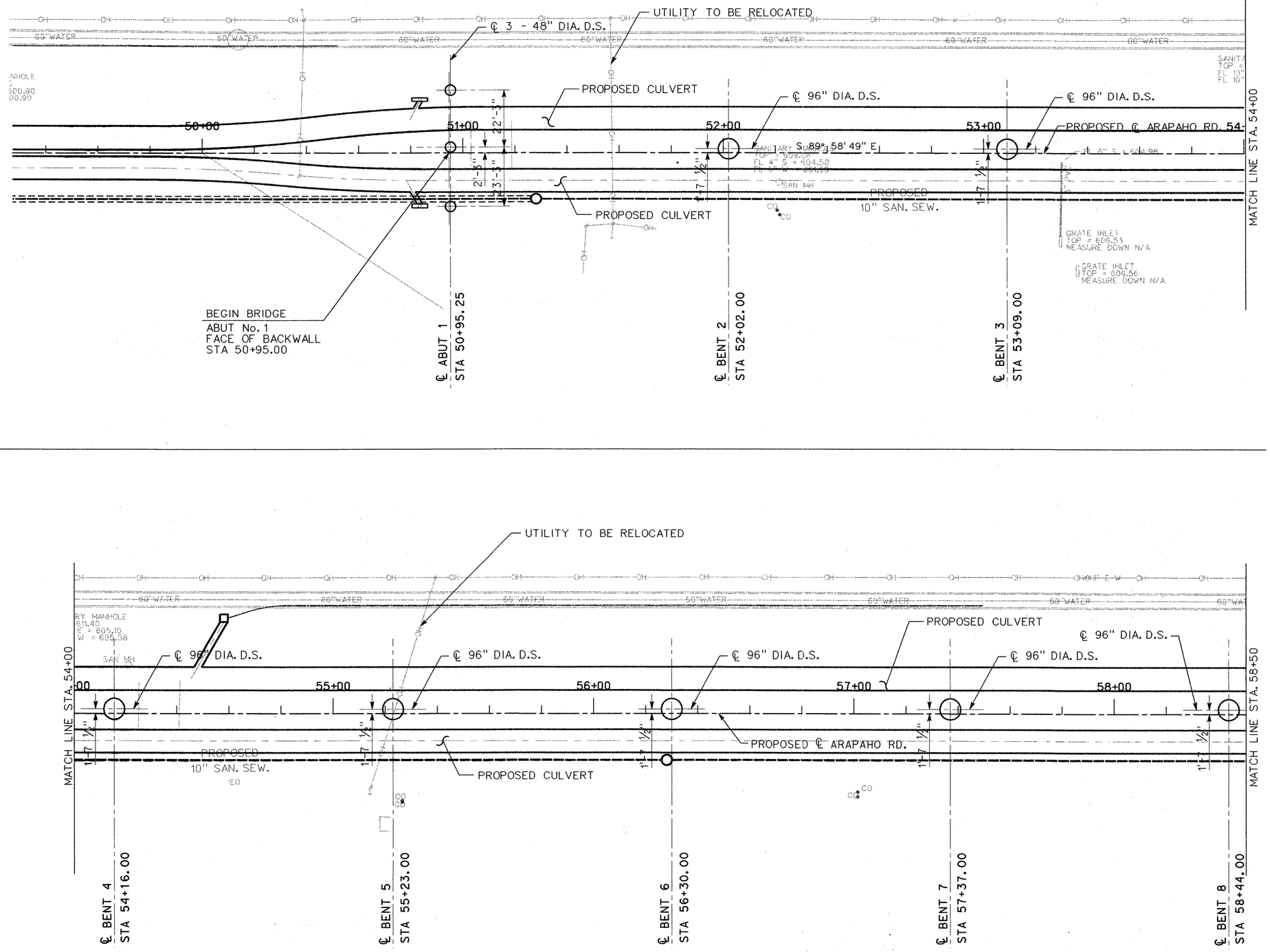

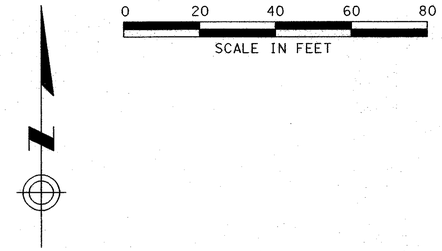

GENERAL NOTES:

1. DESIGNED IN ACCORDANCE WITH AASHTO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" - 16TH EDITION- WITH CURRENT INTERIM SPECIFICATIONS, FOR HS20-44 LOADING.
2. ALL DIMENSIONS ARE EITHER HORIZONTAL OR VERTICAL AND MUST BE CORRECTED FOR GRADE, CROWN, AND/OR SUPERELEVATION.
3. ALL BENTS ARE RADIAL UNLESS NOTED OTHERWISE.
4. CONTRACTOR IS RESPONSIBLE FOR PROTECTING THE 60" WATER LINE THROUGHOUT CONSTRUCTION.
5. THE CONTRACTOR IS RESPONSIBLE FOR MAKING THEIR OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO AND FOR ASSESSING TO THEIR OWN SATISFACTION ANY POTENTIAL CONFLICT BETWEEN THE EQUIPMENT, PLANT OR OPERATION OF EACH UTILITY AND THE PLANNED CONSTRUCTION. THE CONTRACTOR SHALL VERIFY LOCATION OF UNDERGROUND PIPE LINES, CONDUITS, AND STRUCTURES BY CONTACTING OWNERS OF UNDERGROUND UTILITIES AND BY PROSPECTING IN ADVANCE OF EXCAVATION, DRILLING, AND ALL OTHER CONSTRUCTION OPERATIONS.
6. SUBSURFACE INFORMATION SHOWN ON THE BRIDGE LAYOUT DRAWINGS WAS OBTAINED SOLELY FOR USE IN ESTABLISHING DESIGN CONTROLS FOR THE PROJECT. THE ACCURACY OF THIS INFORMATION IS NOT GUARANTEED AND IS NOT TO BE CONSTRUED AS PART OF THE PLANS AND SPECIFICATIONS GOVERNING CONSTRUCTION OF THE PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR MAKING THEIR OWN DETERMINATIONS AS TO ALL SUBSURFACE CONDITIONS AND LIMITS.

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NO.	DATE	REVISION	APPROV.

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3010 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

FOUNDATION LAYOUT

SHEET 1 OF 2

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-11

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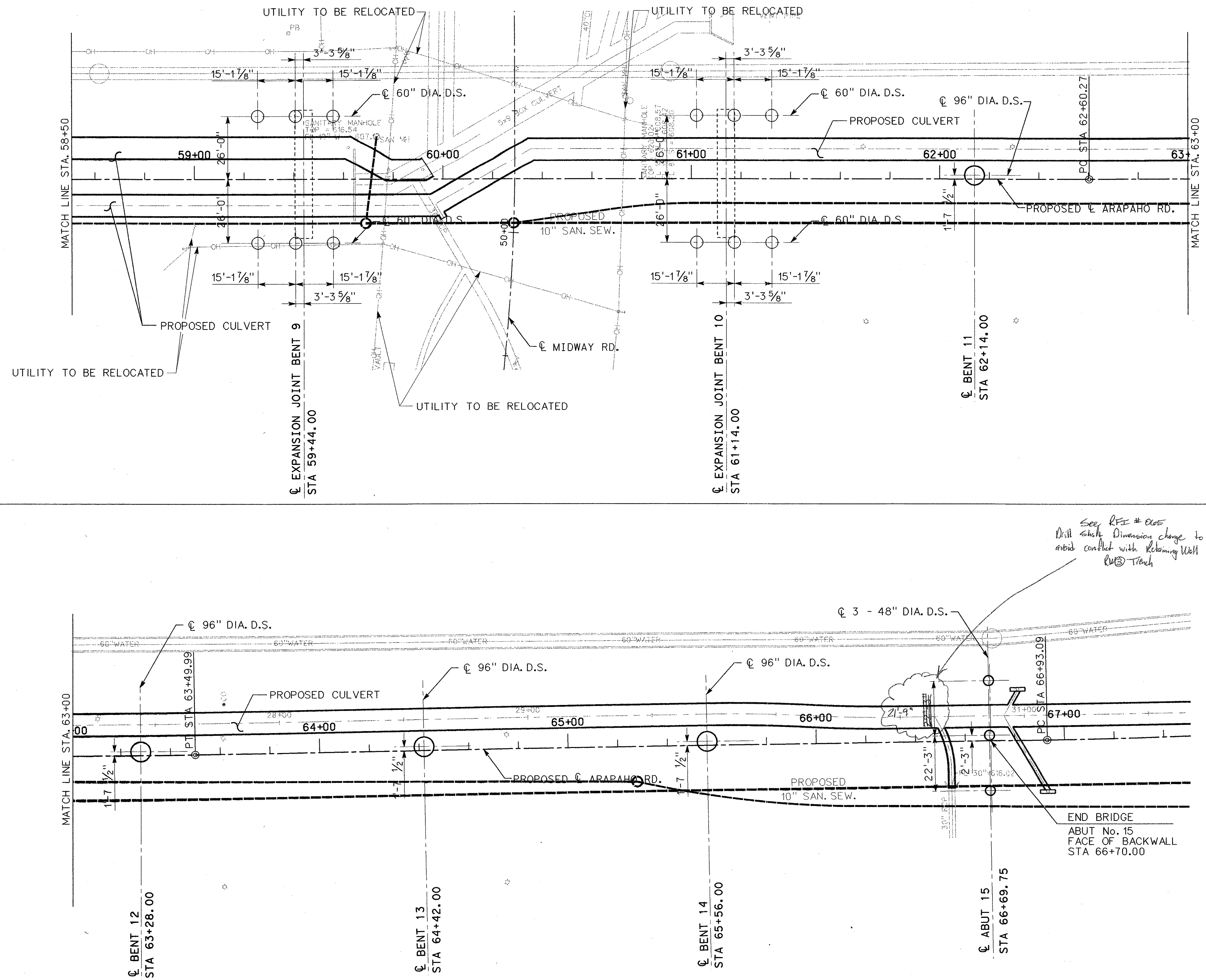

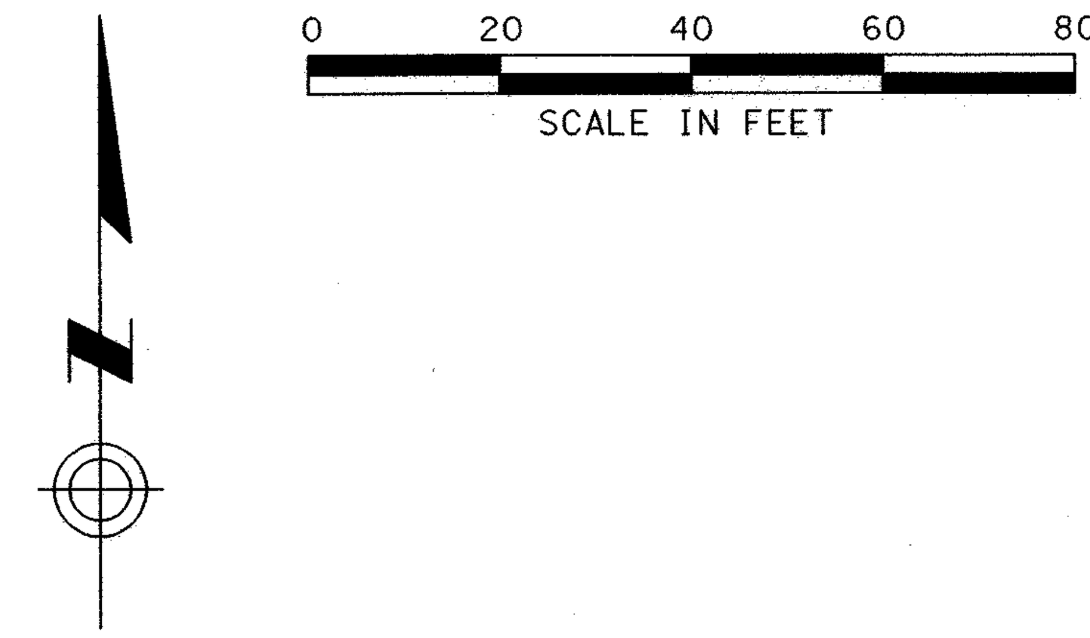

GENERAL NOTES:

1. SEE SHEET 1 FOR GENERAL NOTES.

STATE OF TEXAS
CLIFF R. HALL
82211
REGISTERED PROFESSIONAL ENGINEER
7/2/04

			250
NO.	DATE	REVISION	APPROV.

URS
GREYSTONE CENTRE
3010 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

FOUNDATION LAYOUT

SHEET 2 OF 2

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-12

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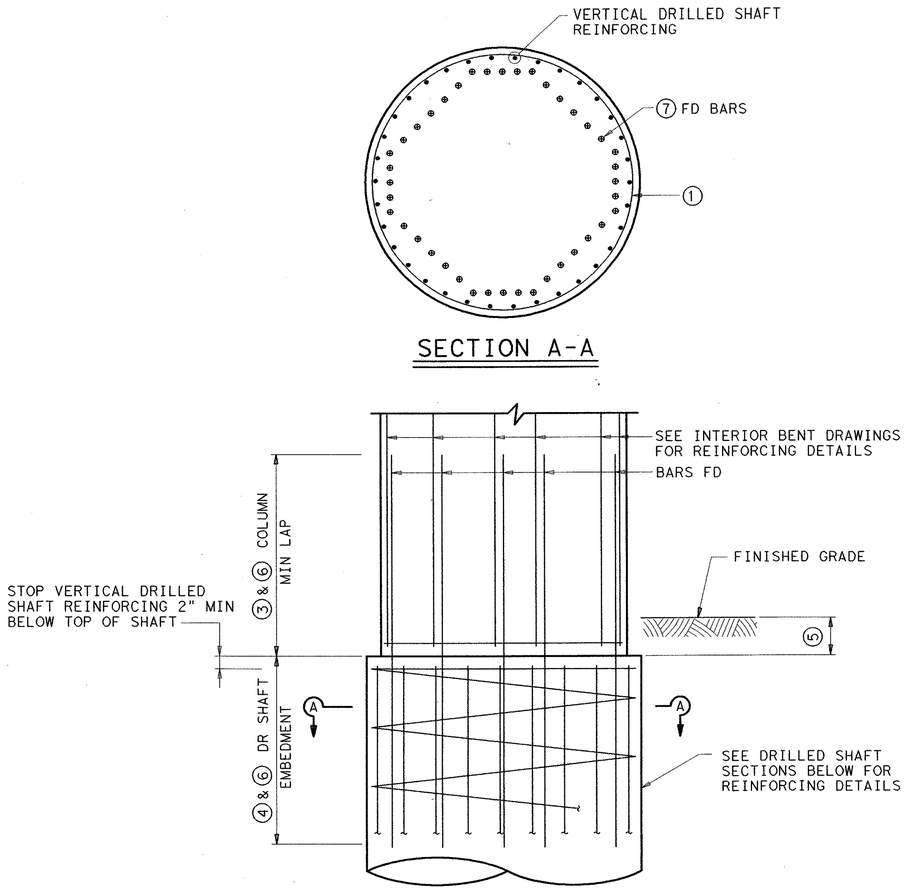
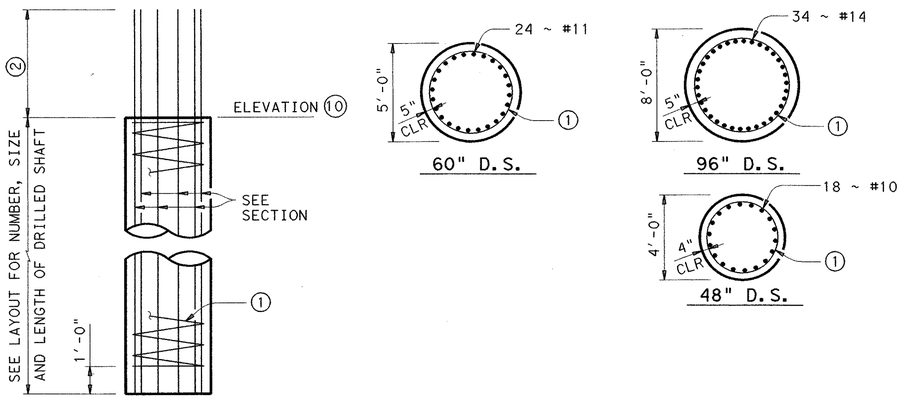


STEPPED DRILLED SHAFT/COLUMN DETAILS - BENTS 2-8 & 11-14



ELEVATION

SECTIONS

DRILLED SHAFTS

DRILLED SHAFT		
BENT NO.	TOP ELEVATION	LOAD (TONS) ⑨
2	607.3	890
3	608.7	896
4	609.5	902
5	609.7	910
6	610.9	915
7	612.1	918
8	614.1	901
9	614.1	805
10	614.1	833
11	615.8	920
12	616.6	953
13	617.5	946
14	617.5	938

0 20 40 60 80

SCALE IN FEET

GENERAL NOTES:

1. DESIGNED ACCORDING TO AASHTO 1996 STANDARD AND CURRENT INTERIM SPECIFICATIONS FOR HIGHWAY BRIDGES.
2. SEE BRIDGE LAYOUT FOR FOUNDATION TYPE TO BE USED.
3. CLASS "C" CONCRETE STRENGTH F'C=3600 PSI.
4. DRILLED SHAFT REINFORCING SHALL BE GRADE 60.
5. ALL DRILLED SHAFTS SHALL BE FOUNDED AT THE LENGTHS INDICATED ON THE BRIDGE LAYOUT SHEETS OR LONGER TO OBTAIN THE SPECIFIED MINIMUM PENETRATION OF TWO SHAFT DIAMETERS INTO THE GRAY UNWEATHERED LIMESTONE.

① 60" & 96" DRILLED SHAFT
#4 SPIRAL AT 9" PITCH (ONE AND ONE HALF FLAT TURN TOP AND BOTTOM)
48" DRILLED SHAFT
#3 SPIRAL AT 6" PITCH (ONE FLAT TURN TOP & BOTTOM)

② MIN EXTENSION
48" DIA = 3'-6" INTO ABUTMENT CAPS
60" DIA = 5'-0" INTO BENT CAPS 9 & 10

③ MIN LAP WITH COLUMN REINF:
#11 BARS = 8'-11"

④ FD BARS MIN EMBEDMENT:
#11 BARS = 8'-11"

⑤ 6" (MIN)

⑥ MIN LENGTH OF FD BARS:
#11 BARS = 17'-10"

⑦ SEE BENT DRAWINGS AND MATCH THE SIZE AND NUMBER OF BARS V IN COLUMN.

⑧ THE CONTRACTOR SHALL FORM THE PORTION OF DRILLED SHAFT EXPOSED ABOVE FINISHED GRADE. THE COST FOR FORMING THE DRILLED SHAFTS SHALL BE CONSIDERED SUBSIDIARY TO THE DRILLED SHAFT PAY ITEM.

⑨ DRILLED SHAFT LOAD PER DRILLED SHAFT.

⑩ SEE DRILLED SHAFT TOP ELEVATIONS ON THIS SHEET AND ABUTMENT DETAILS.

STATE OF TEXAS
CLIFF R. HALL
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PROFESSIONAL ENGINEER
7/2/04

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NO.	DATE	REVISION	APPROV.

URS
GREYSTONE CENTRE
3010 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

FOUNDATION DETAILS

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-13

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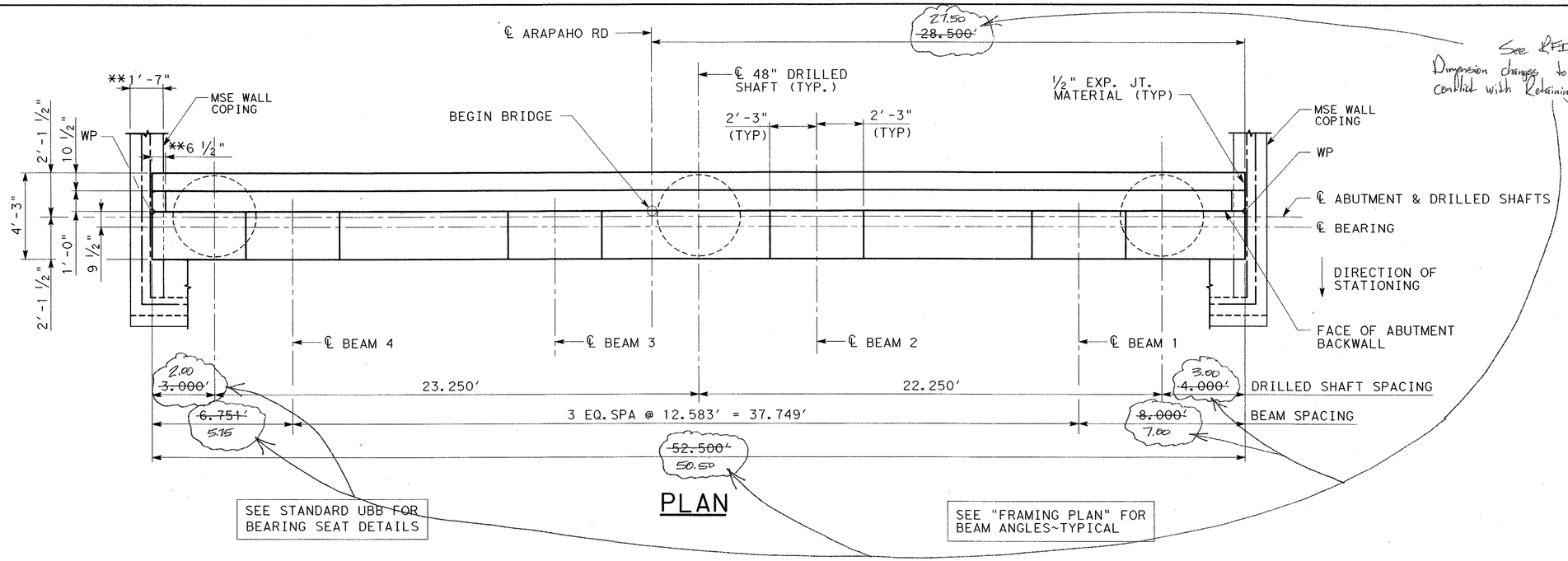

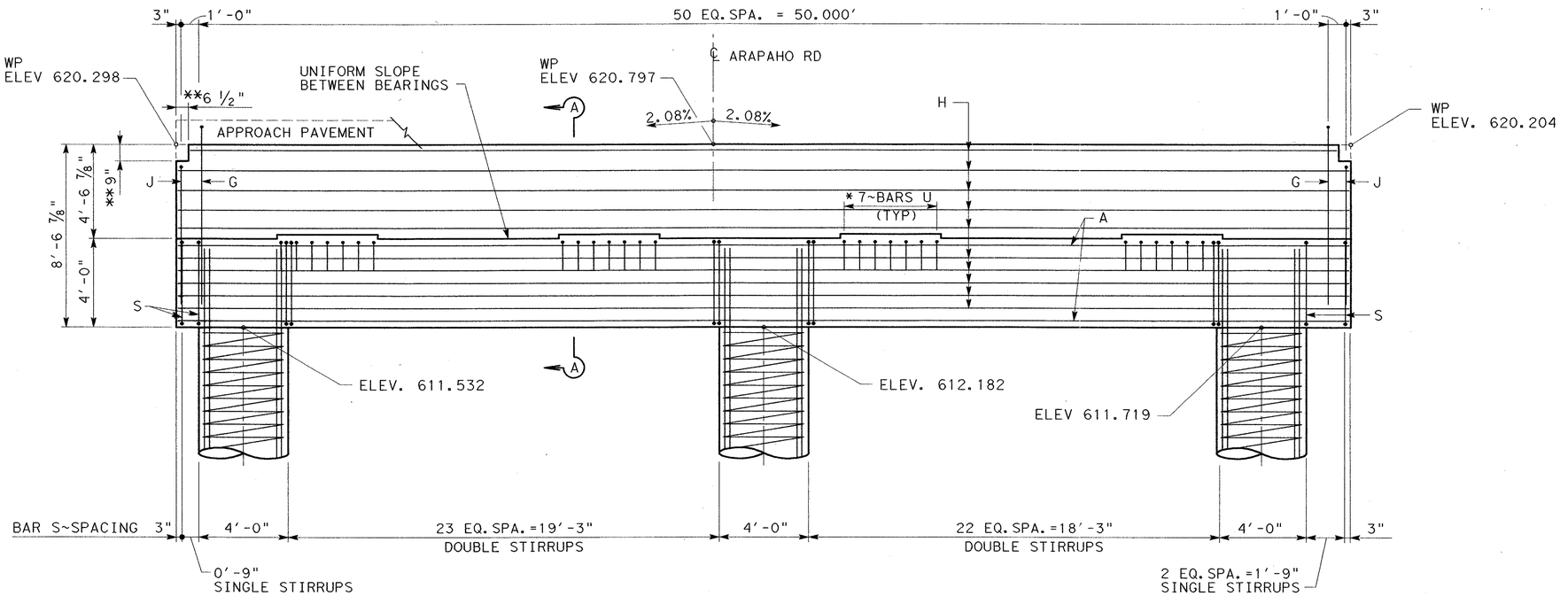

ELEVATION

* 7~BARS U PLACED BETWEEN BARS S AS NECESSARY TO MAINTAIN 6" MAX SPACING UNDER BEARING SEAT.

** VARIES WITH MSE WALL COPING.

GENERAL NOTES:

1. DESIGNED ACCORDING TO AASHTO 1996 STANDARD AND CURRENT INTERIM SPECIFICATIONS.
2. CLASS F CONCRETE STRENGTH f'c = 5,000 PSI.
3. ALL REINFORCING STEEL SHALL BE GRADE 60.
4. REINFORCING STEEL QUANTITY IS FOR CONTRACTOR'S INFORMATION ONLY.
5. CLEAR CONCRETE COVER SHALL BE 2 INCHES UNLESS NOTED OTHERWISE.
6. FOR LIMITS AND COLOR OF PAINT SYSTEM, SEE SURFACE FINISHES FOR STRUCTURES DRAWING
7. CHAMFER ALL EXPOSED CORNERS ¾" UNLESS NOTED OTHERWISE
8. FORM STRAIGHT LINES BETWEEN ELEVATIONS SHOWN. BOTTOM OF CAP SHALL BE PARALLEL TO TOP OF CAP.
9. U-BEAM SPACING AT TOP OF BEAM MAY VARY FROM FRAMING PLAN DUE TO VARYING BEAM CROSS-SLOPES.
10. AVERAGE CALCULATED DRILLED SHAFT LOAD = 225 TONS/D.S.
11. FOR DRILLED SHAFTS, SEE FOUNDATION DETAILS, AND BRIDGE LAYOUT.

STATE OF TEXAS
CLIFF R. HALL
82211
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PROFESSIONAL ENGINEER
7/2/04

252

NO.	DATE	REVISION	APPROV.

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GREYSTONE CENTRE
3010 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

ABUTMENT 1 DETAILS

SHEET 1 OF 2

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-14

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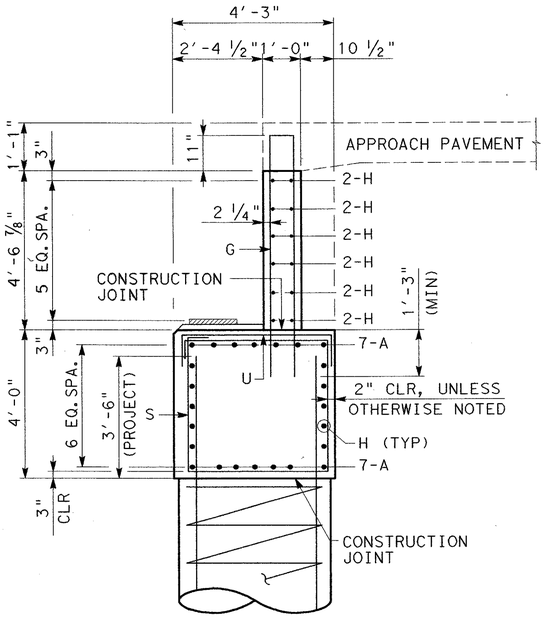
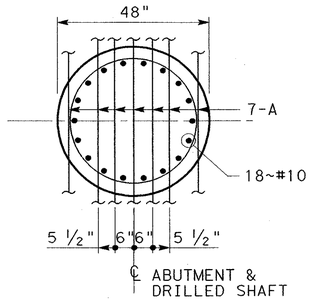
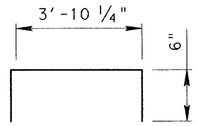


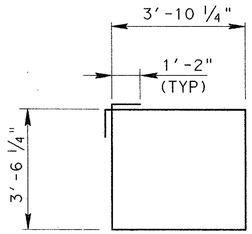
SECTION A-A



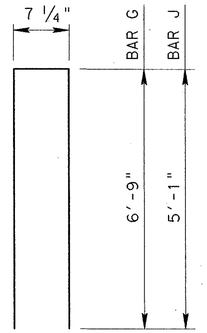
PLAN



BAR U



BAR S



BAR G & J

TABLE OF ESTIMATED QUANTITIES

BAR	NO.	SIZE	LENGTH	WEIGHT
A	14	#11	52'-2"	3880
G	51	#5	14'-1 1/4"	750
H	22	#5	52'-2"	1197
J	2	#5	10'-9 1/4"	23
S	98	#6	17'-1"	2515
U	28	#5	4'-10 1/4"	142
			TOTAL LBS.	8,507

ITEM	UNIT	QUANTITY
REINFORCING STEEL	LB	8,507
CL "F" CONC (CAP)	CY	41.9

STATE OF TEXAS
CLIFF R. HALL
82211
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2/2/04

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NO.	DATE	REVISION	APPROV.

URS
GREYSTONE CENTRE
3010 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

ABUTMENT I DETAILS

SHEET 2 OF 2

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-15

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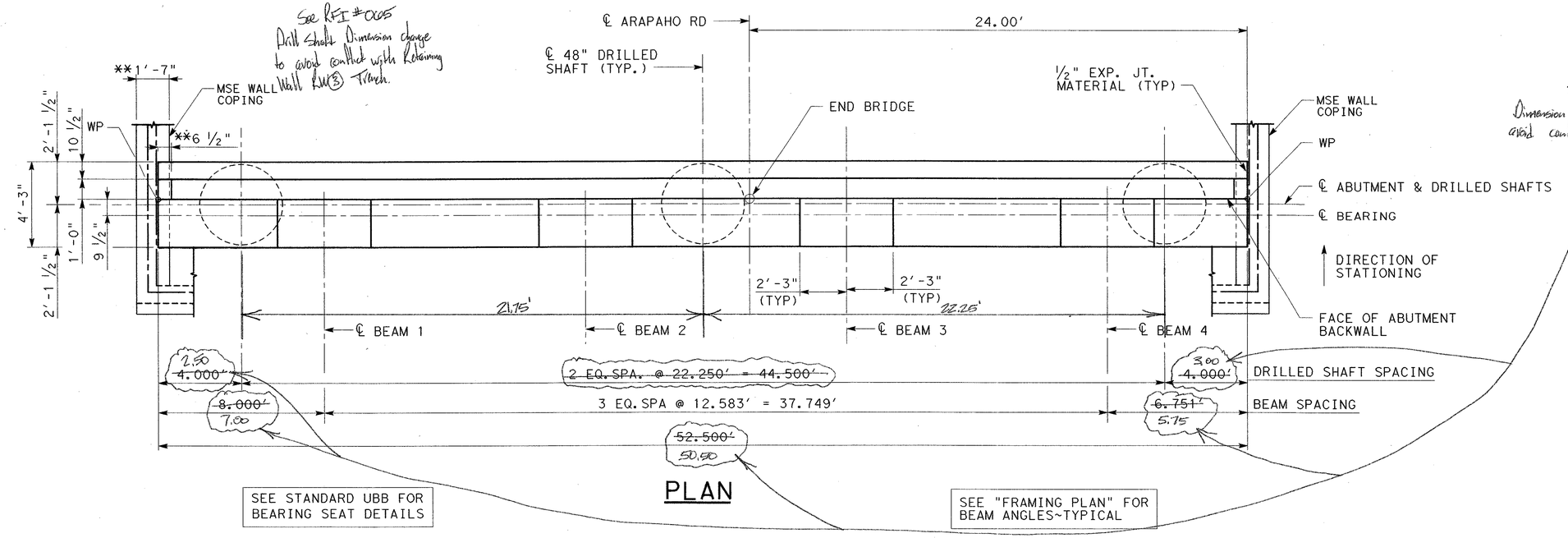
See RFI #0005
Drill Shaft Dimension change to avoid conflict with Retaining Walls RW③ Trench.

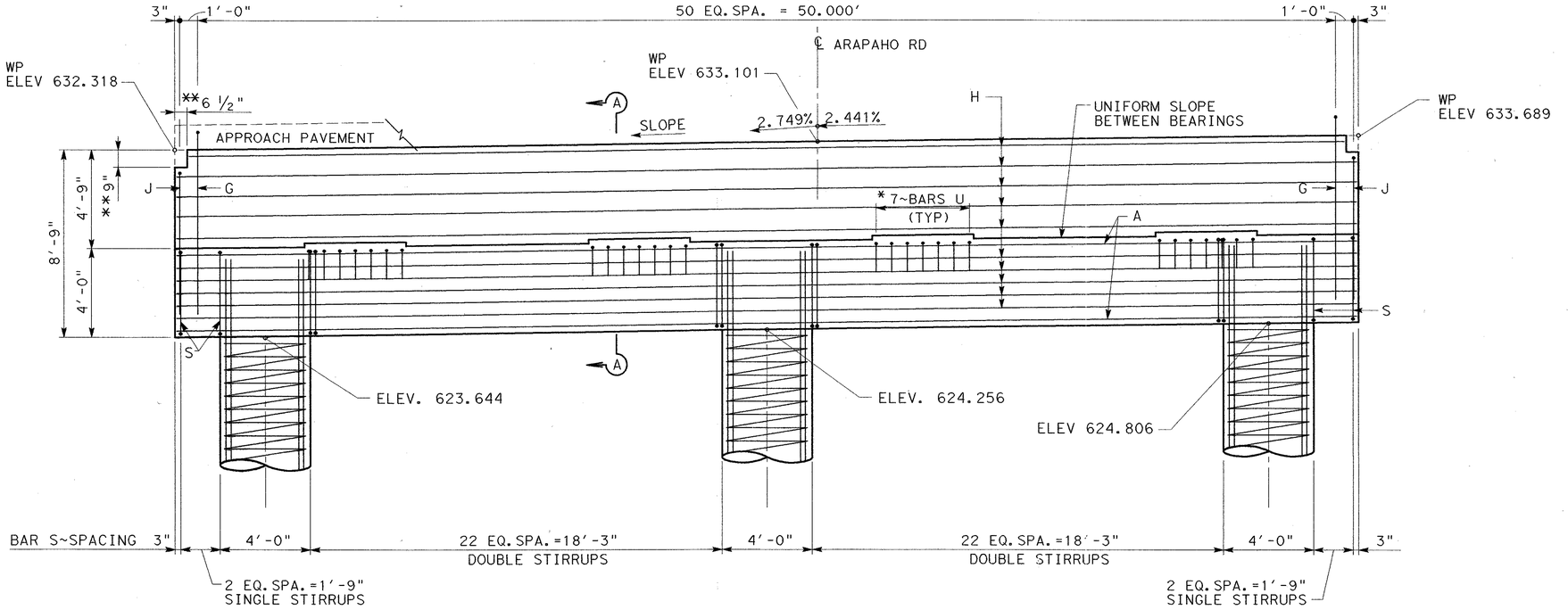


PLAN

See RFI #0005
Dimension changes to Abut #15 Cap to avoid conflict with Retaining Walls RW③ and RW④.

GENERAL NOTES:

1. DESIGNED ACCORDING TO AASHTO 1996 STANDARD AND CURRENT INTERIM SPECIFICATIONS.
2. CLASS F CONCRETE STRENGTH f'c = 5,000 PSI.
3. ALL REINFORCING STEEL SHALL BE GRADE 60.
4. REINFORCING STEEL QUANTITY IS FOR CONTRACTOR'S INFORMATION ONLY.
5. CLEAR CONCRETE COVER SHALL BE 2 INCHES UNLESS NOTED OTHERWISE.
6. FOR LIMITS AND COLOR OF PAINT SYSTEM, SEE SURFACE FINISHES FOR STRUCTURES DRAWING
7. CHAMFER ALL EXPOSED CORNERS ¾" UNLESS NOTED OTHERWISE
8. FORM STRAIGHT LINES BETWEEN ELEVATIONS SHOWN. BOTTOM OF CAP SHALL BE PARALLEL TO TOP OF CAP.
9. U-BEAM SPACING AT TOP OF BEAM MAY VARY FROM FRAMING PLAN DUE TO VARYING BEAM CROSS-SLOPES.
10. AVERAGE CALCULATED DRILLED SHAFT LOAD = 231 TONS/D.S.
11. FOR DRILLED SHAFTS, SEE FOUNDATION DETAILS, AND BRIDGE LAYOUT.



ELEVATION

* 7~BARS U PLACED BETWEEN BARS S AS NECESSARY TO MAINTAIN 6" MAX SPACING UNDER BEARING SEAT.

** VARIES WITH MSE WALL COPING.

STATE OF TEXAS
CLIFF R. HALL
82211
REGISTERED PROFESSIONAL ENGINEER
7/2/04

254

NO.	DATE	REVISION	APPROV.

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GREYSTONE CENTRE
3010 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

ABUTMENT 15 DETAILS

SHEET 1 OF 2

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-16

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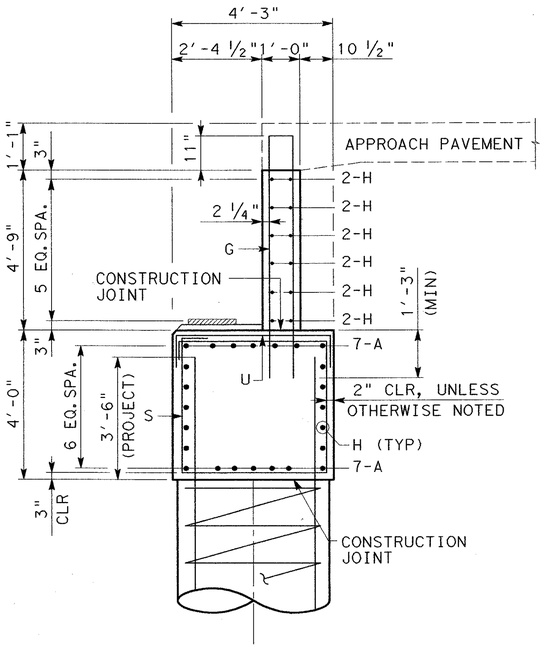
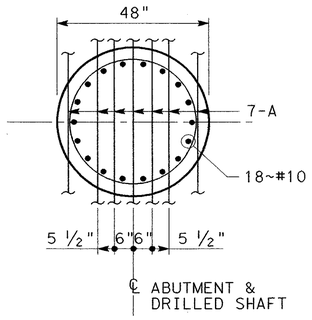
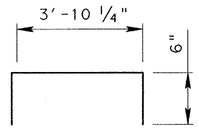


SECTION A-A



PLAN



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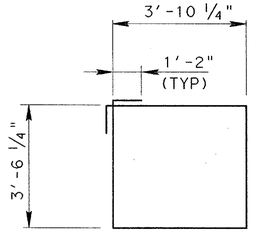

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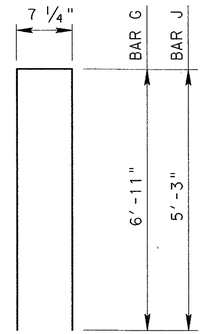

BAR G & J

TABLE OF ESTIMATED QUANTITIES

BAR	NO.	SIZE	LENGTH	WEIGHT
A	14	#11	52'-2"	3880
G	51	#5	14'-5 1/4"	768
H	22	#5	52'-2"	1197
J	2	#5	11'-1 1/4"	23
S	98	#6	17'-1"	2515
U	28	#5	4'-10 1/4"	142
			TOTAL LBS.	8,525

ITEM	UNIT	QUANTITY
REINFORCING STEEL	LB	8,525
CL "F" CONC (CAP)	CY	42.3

STATE OF TEXAS
CLIFF R. HALL
82211
REGISTERED
PROFESSIONAL ENGINEER
7/2/04

255

NO.	DATE	REVISION	APPROV.

URS
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3010 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

ABUTMENT 15 DETAILS

SHEET 2 OF 2

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-17

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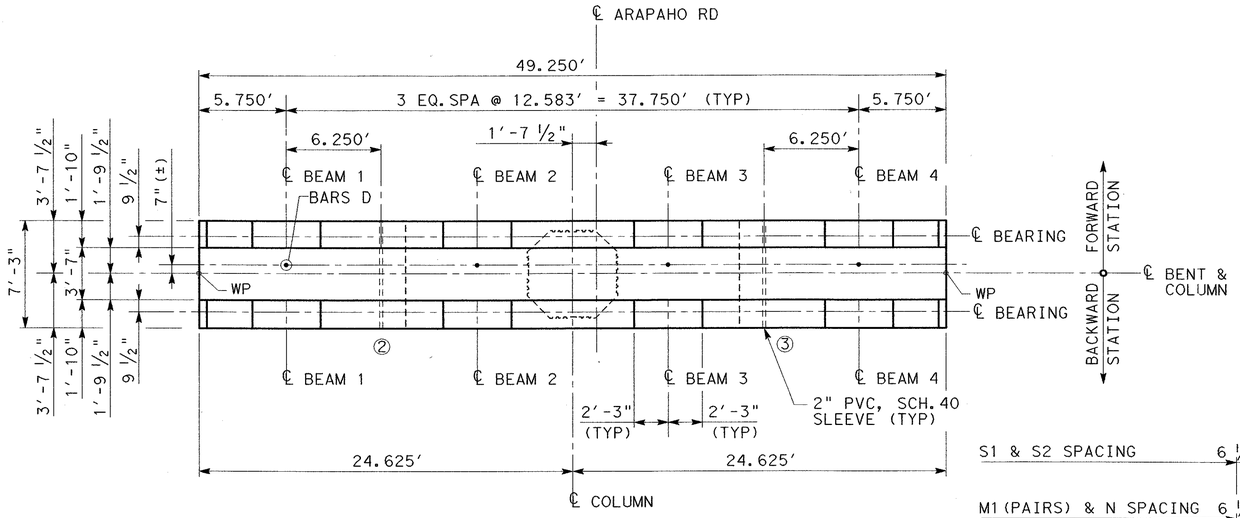
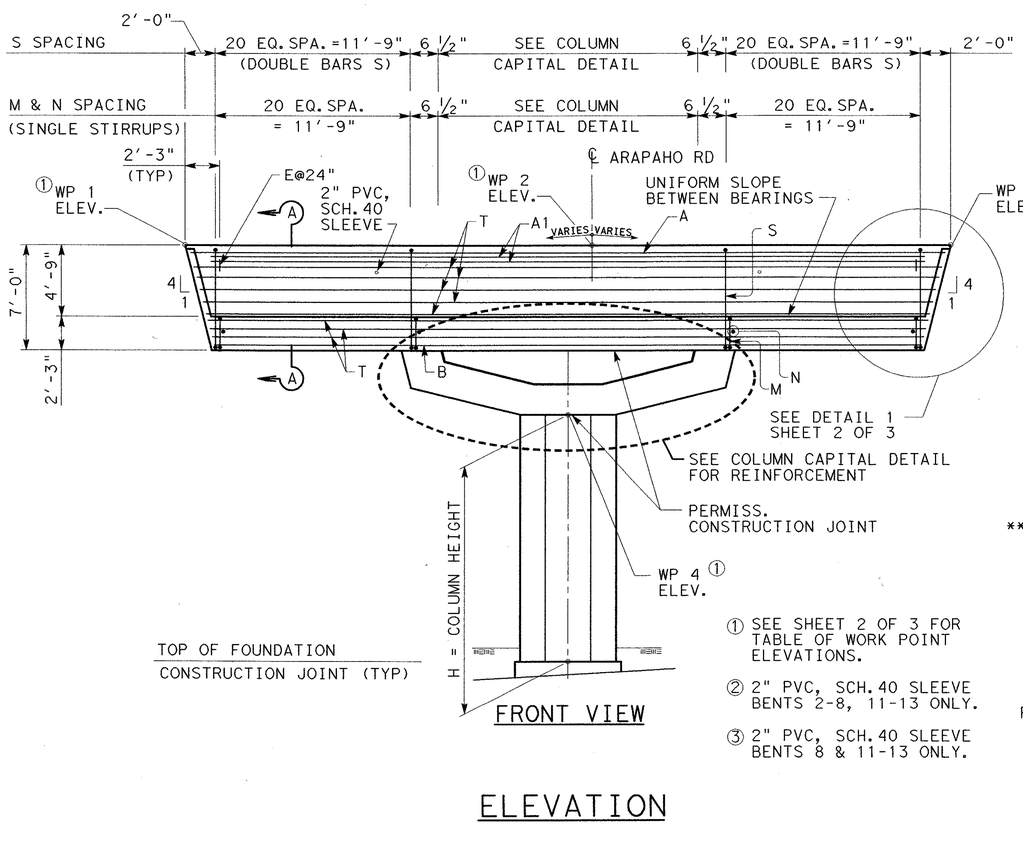


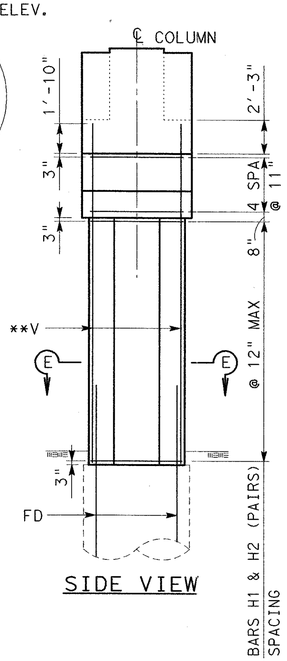
PLAN

SEE "FRAMING PLAN" FOR BEAM ANGLES ~ TYPICAL

ALL BUILD-UPS GREATER THAN 3" SHALL HAVE REINF. STEEL.
SEE UBB STANDARD FOR BEARING SEAT BUILD-UPS



ELEVATION

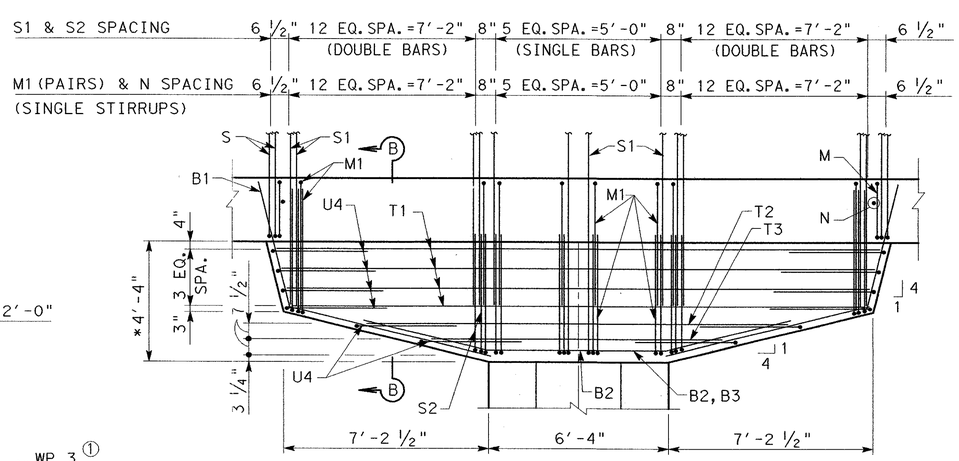


SIDE VIEW

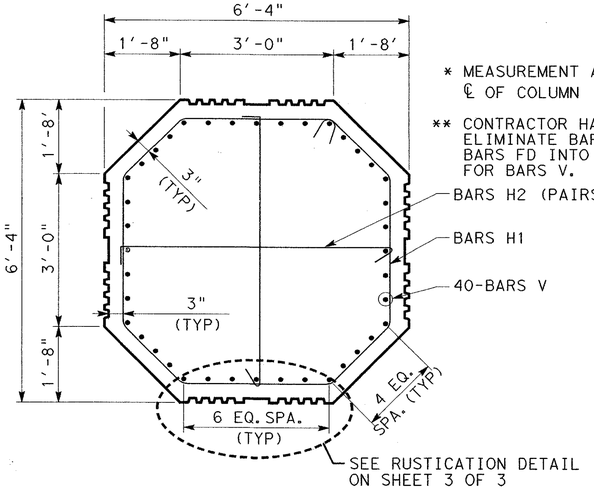
① SEE SHEET 2 OF 3 FOR TABLE OF WORK POINT ELEVATIONS.

② 2" PVC, SCH. 40 SLEEVE BENTS 2-8, 11-13 ONLY.

③ 2" PVC, SCH. 40 SLEEVE BENTS 8 & 11-13 ONLY.



COLUMN CAPITAL DETAIL



SECTION E-E

* MEASUREMENT AT THE ℄ OF COLUMN

** CONTRACTOR HAS THE OPTION TO ELIMINATE BARS V BY EXTENDING BARS FD INTO THE CAP AS REQUIRED FOR BARS V.

BENT	COLUMN HEIGHT "H" (FT)	BAR V (#11) No.	BAR V (#11) Length	BAR V (#11) (lbs)	BARS H1 (#4) 20'-6" No.	BARS H1 (#4) 20'-6" (lbs)	BARS H2 (#4) 7'-0" No.	BARS H2 (#4) 7'-0" (lbs)	BARS FD (#11) 17'-10" No.	BARS FD (#11) 17'-10" (lbs)	CLASS "F" CONCRETE (CY)	SUB-TOTAL REINF STEEL (lbs)	TOTAL ESTIMATED QUANTITIES (COLUMN & CAP) CLASS "F" CONCRETE (CY)	TOTAL ESTIMATED QUANTITIES (COLUMN & CAP) REINF STEEL (lbs)
2	5'-0"	40	10'-11"	2,320	11	151	22	103	40	3,790	6.4	6,363	86.3	27,434
3	7'-0"	40	12'-11"	2,745	13	178	26	122	40	3,790	9.0	6,835	88.9	27,906
4	9'-6"	40	15'-5"	3,276	15	205	30	140	40	3,790	12.2	7,412	92.1	28,458
5	12'-6"	40	18'-5"	3,914	18	246	36	168	40	3,790	16.0	8,119	95.9	29,190
6	14'-6"	40	20'-5"	4,339	20	274	40	187	40	3,790	18.6	8,590	98.5	29,661
7	16'-0"	40	21'-11"	4,658	22	301	44	206	40	3,790	20.5	8,955	100.4	30,001
8	16'-0"	40	21'-11"	4,658	22	301	44	206	40	3,790	20.5	8,955	100.4	30,026
11	15'-0"	40	20'-11"	4,445	21	288	42	196	40	3,790	19.2	8,719	99.1	29,790
12	12'-6"	40	18'-5"	3,914	18	246	36	168	40	3,790	16.0	8,119	95.9	29,165
13	9'-0"	40	14'-11"	3,170	15	205	30	140	40	3,790	11.5	7,306	91.5	28,377
14	6'-6"	40	12'-5"	2,639	12	164	24	112	40	3,790	8.3	6,705	88.3	27,776

GENERAL NOTES:

1. DESIGNED IN ACCORDANCE WITH "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES", 16TH EDITION 1996, WITH CURRENT INTERIM SPECIFICATIONS.
2. REFER TO UBA, UBB, UBNS STANDARD FOR BEAM AND BEARING PAD DETAILS.
3. REINFORCING STEEL QUANTITY IS FOR CONTRACTOR'S INFORMATION ONLY.
4. ALL BAR DIMENSIONS ARE GIVEN TO ℄ BARS. CLEAR CONCRETE COVER SHALL BE 2 INCHES UNLESS NOTED OTHERWISE.
5. FOR LIMITS AND COLOR OF PAINT SYSTEM, SEE PAINT DETAIL AND SURFACE FINISHES FOR STRUCTURES STANDARD DRAWING
6. CLASS "F" CONCRETE STRENGTH f'c=5000 psi.
7. ALL REINFORCING STEEL SHALL BE GRADE 60.
8. REFER TO FOUNDATION DETAIL SHEET FOR FOUNDATION DETAILS AND NOTES.
9. FORM STRAIGHT LINES BETWEEN ELEVATIONS SHOWN. BOTTOM OF CAP SHALL BE PARALLEL TO TOP OF CAP.
10. U-BEAM SPACING AT TOP OF BEAM MAY VARY FROM FRAMING PLAN DUE TO VARYING BEAM CROSS-SLOPES.

STATE OF TEXAS — CLIFF R. HALL — 82211 — REGISTERED PROFESSIONAL ENGINEER
7/2/04

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NO.	DATE	REVISION	APPROV.

URS — GREYSTONE CENTRE, 3010 LBJ FREEWAY, SUITE 1300, DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

BENTS 2 - 8 & 11 - 14 DETAILS

SHEET 1 OF 3

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-18

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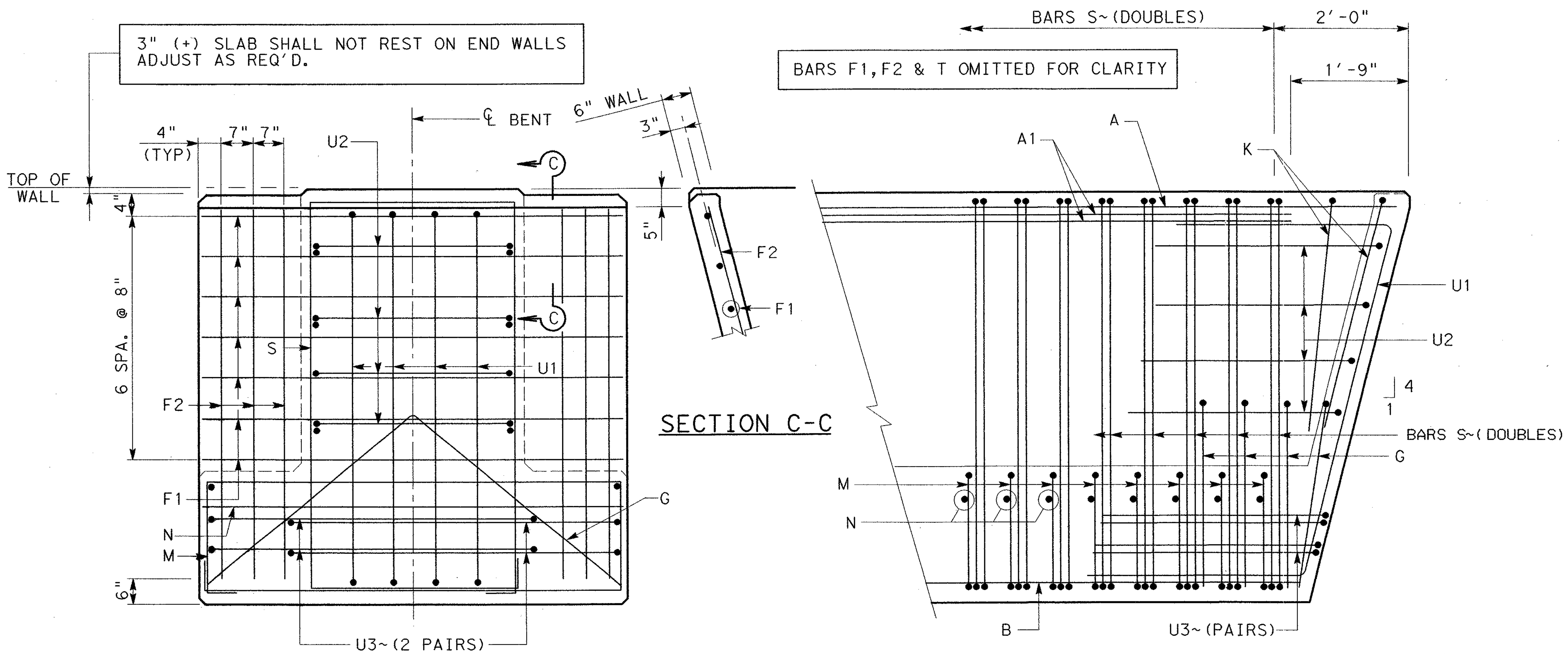
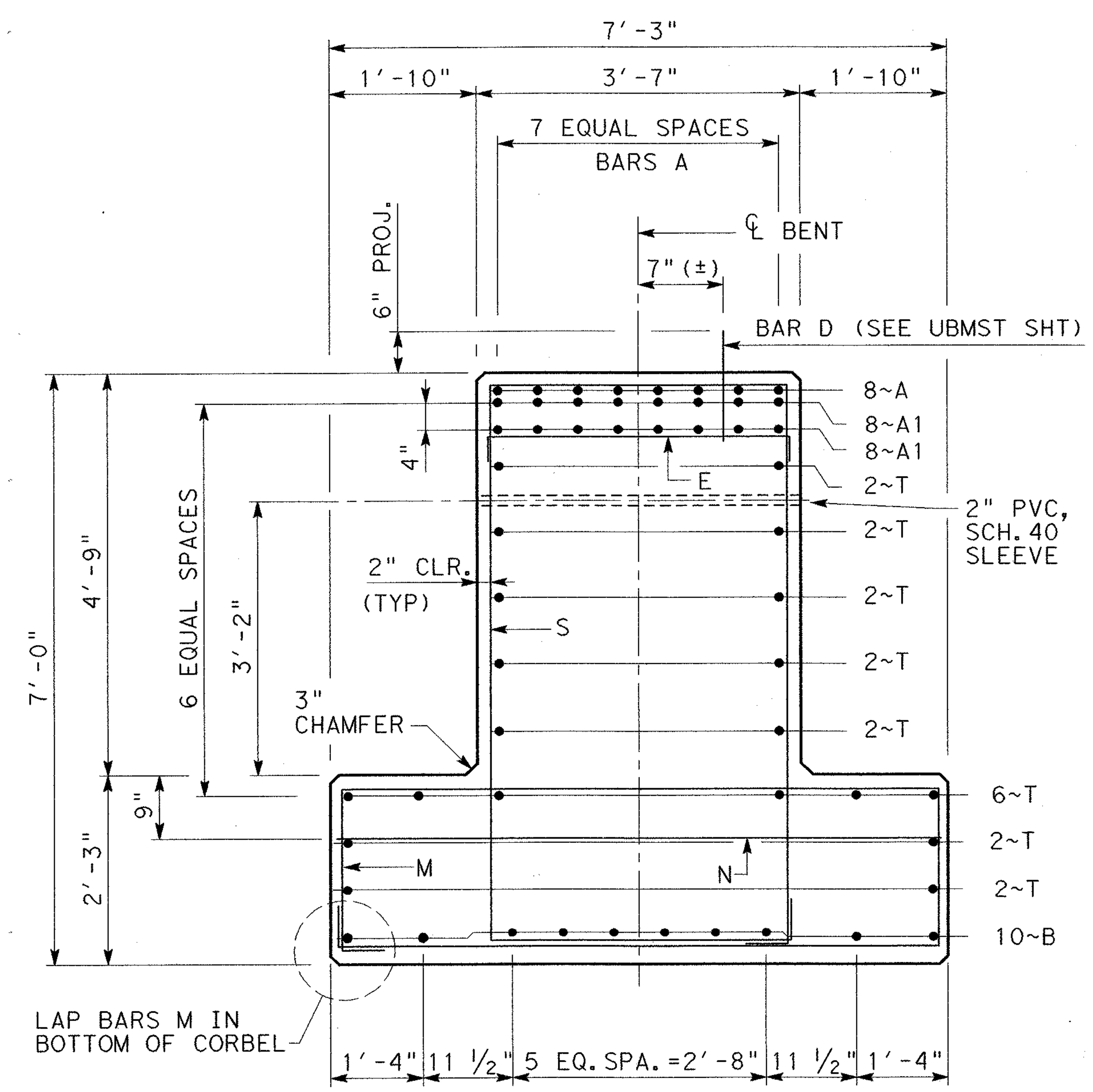


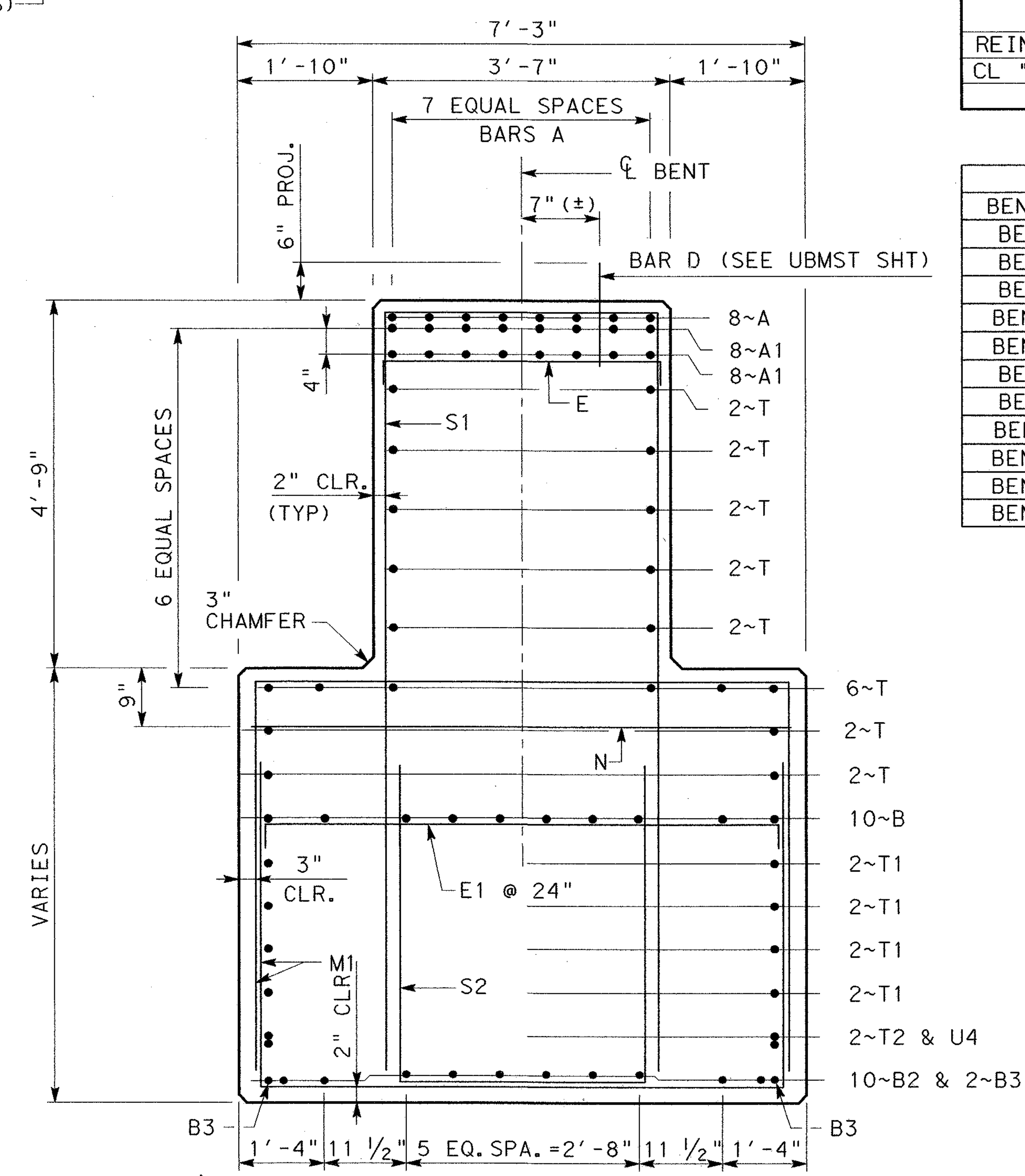
END VIEW

DETAIL 1

ELEVATION



SECTION A-A



SECTION B-B

NOTE: SEE SHEET 1 OF 3 FOR COLUMN BAR PROJECTION

TABLE OF ESTIMATED QUANTITIES FOR ONE BENT CAP

BAR	NO.	SIZE	LENGTH	WEIGHT	
				BENTS 2, 3, 5, 6, 8, 11, 13, 14	BENTS 4, 7, 12
A	8	#11	48'-8 1/2"	2070	2070
A1	16	#11	45'-9"	3889	3889
B	10	#7	45'-6 1/2"	931	931
B1	10	#7	11'-8"	238	238
B2	10	#7	14'-4"	293	293
B3	4	#7	6'-8"	55	55
D	4	1 1/4	1'-6"	25	0
E	23	#5	4'-2 1/2"	101	101
E1	12	#6	7'-8"	138	138
F1	14	#4	6'-10"	64	64
F2	12	#4	6'-5"	51	51
G	8	#7	10'-2"	166	166
K	4	#6	9'-8 1/4"	58	58
M	42	#7	19'-8"	1688	1688
M1	64	#7	15'-4"	2006	2006
N	74	#5	6'-11"	534	534
S	84	#6	21'-6 1/2"	2718	2718
S1	58	#6	21'-4 1/4"	1860	1860
S2	58	#6	11'-10 1/4"	1033	1033
T	20	#7	46'-9 1/2" (AVG)	1913	1913
T1	8	#7	20'-6 1/2" (AVG)	336	336
T2	2	#7	11'-9"	48	48
T3	2	#7	9'-3"	38	38
U1	8	#6	12'-11"	155	155
U2	8	#6	9'-6 3/4"	115	115
U3	8	#6	11'-10"	142	142
U4	12	#7	16'-6 1/2"	406	406
			TOTAL LBS.	21,071	21,046

ITEM	UNIT	QUANTITY	QUANTITY
REINFORCING STEEL	LB	21,071	21,046
CL "F" CONC (CAP)	CY	79.9	79.9

WORK POINT ELEVATIONS (FT)

BENT NO.	WP 1	WP 2	WP 3	WP 4
BENT 2	623.548	624.094	623.616	612.531
BENT 3	626.762	627.308	626.830	615.744
BENT 4	629.976	630.522	630.043	618.958
BENT 5	633.189	633.735	633.257	622.171
BENT 6	636.393	636.939	636.460	625.375
BENT 7	639.116	639.662	639.184	628.099
BENT 8	641.065	641.611	641.133	630.048
BENT 11	641.777	642.323	641.845	630.759
BENT 12	640.107	640.653	640.175	629.089
BENT 13	637.555	638.101	637.623	626.537
BENT 14	635.049	635.595	635.424	624.031

STATE OF TEXAS — CLIFF R. HALL — 82211 — REGISTERED PROFESSIONAL ENGINEER
7/2/04

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NO.	DATE	REVISION	APPROV.

URS — GREYSTONE CENTRE, 5010 LBJ FREEWAY, SUITE 1500, DALLAS, TX 75254

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

BENT 2 - 8 & 11 - 14 DETAILS

SHEET 2 OF 3

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-19

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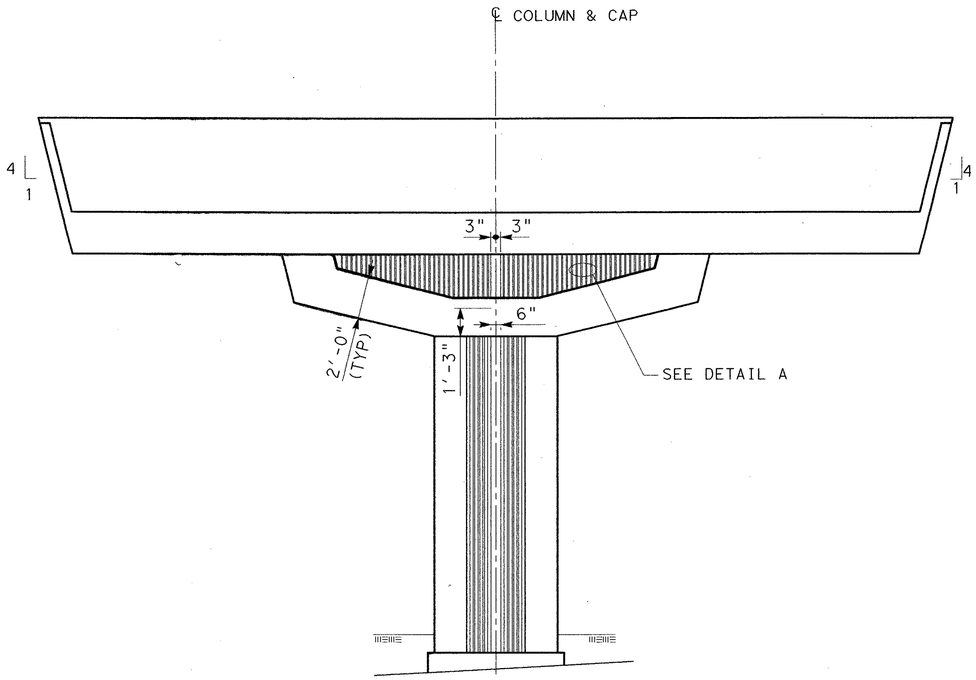
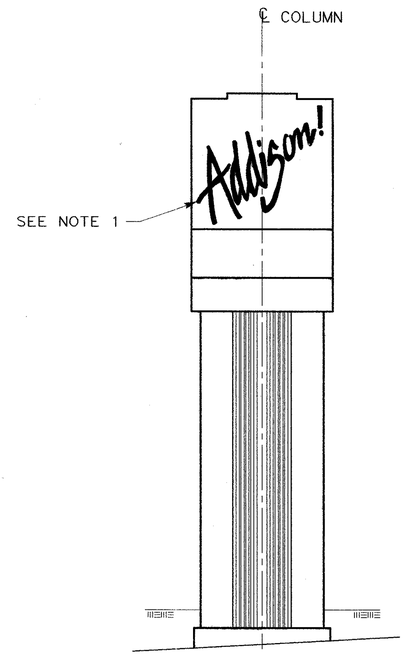


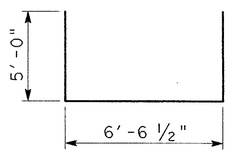
FRONT VIEW



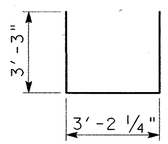
SIDE VIEW

NOTES:

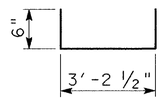
1. CONTRACTOR TO COORDINATE WITH THE TOWN OF ADDISON FOR THE ADDISON LOGO. ADDISON LOGO SHOULD BE FORMED ON THE CAP END AND PROTRUDE 1 ½" FROM THE FACE OF CONCRETE. SEE SURFACE FINISHES FOR STRUCTURES SHEET FOR FINISH COLOR.



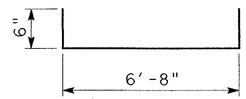
BARS U4



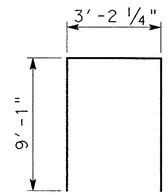
BARS K



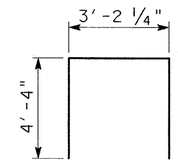
BARS E



BARS E1



BARS S1



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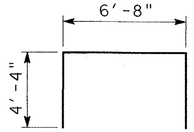
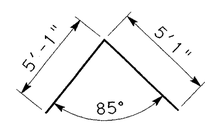
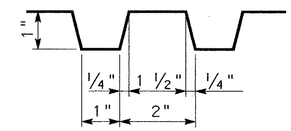


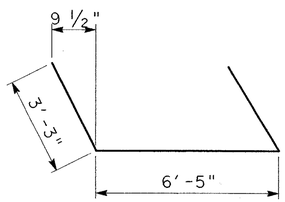
BARS M1



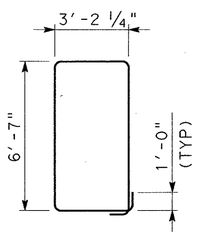
BARS G



DETAIL A



BARS U1



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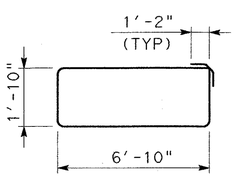

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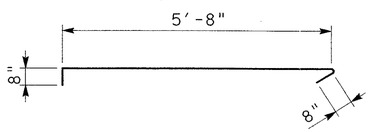
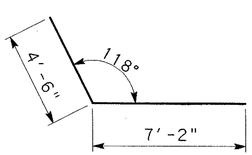
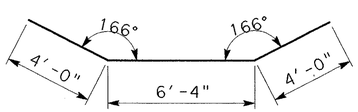


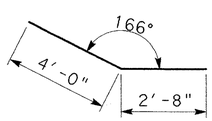
BARS H2



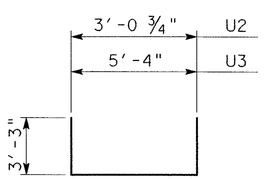
BARS B1



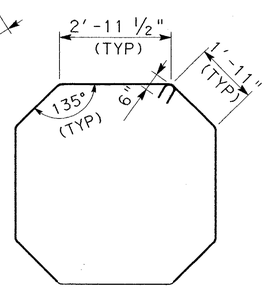
BARS B2



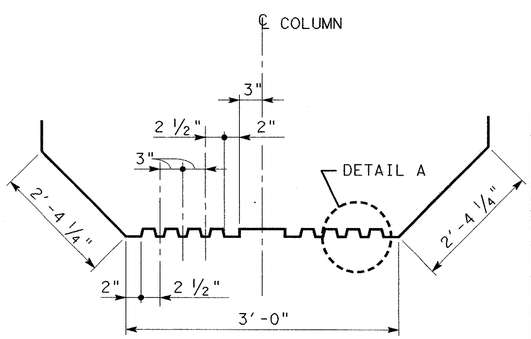
BARS B3



BARS U2 & U3



BARS H1



RUSTICATION DETAIL

NO.	DATE	REVISION	APPROV.

258

URS GREYSTONE CENTRE
5010 LBJ FREEWAY, SUITE 1500
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

BENTS 2 - 8 & 11 - 14 DETAILS

SHEET 3 OF 3

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-20

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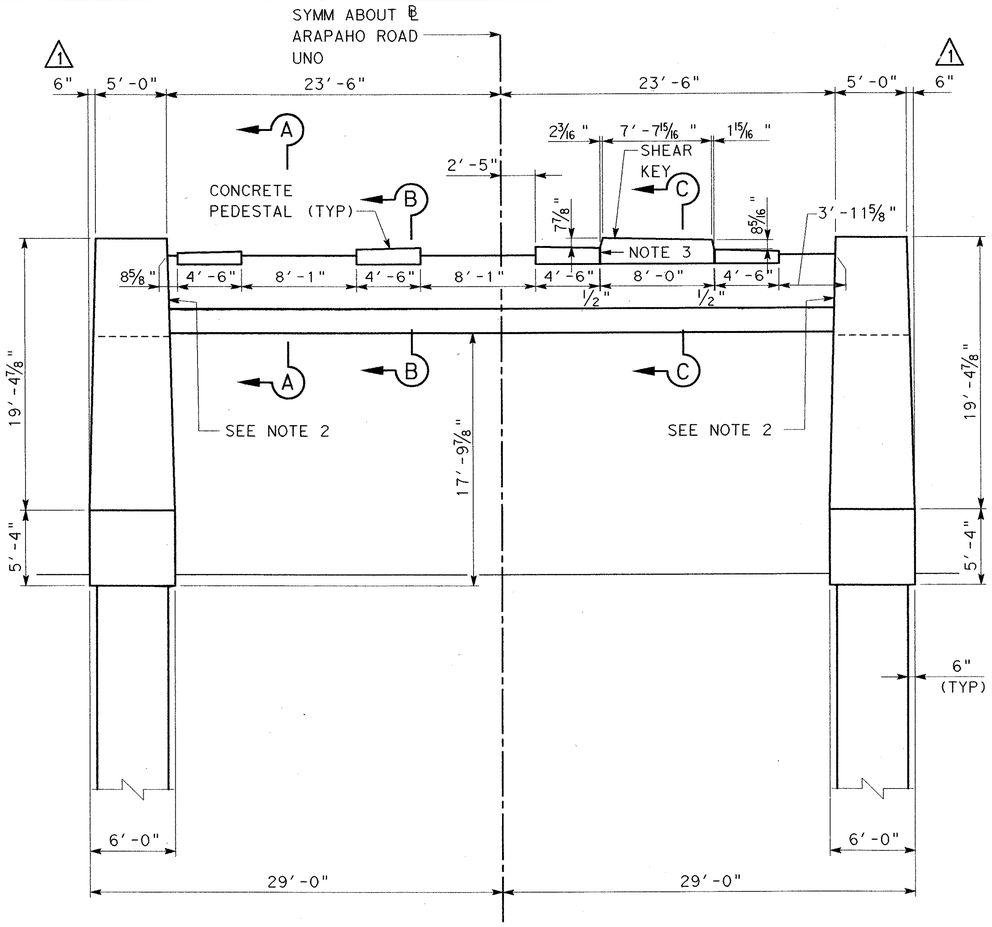
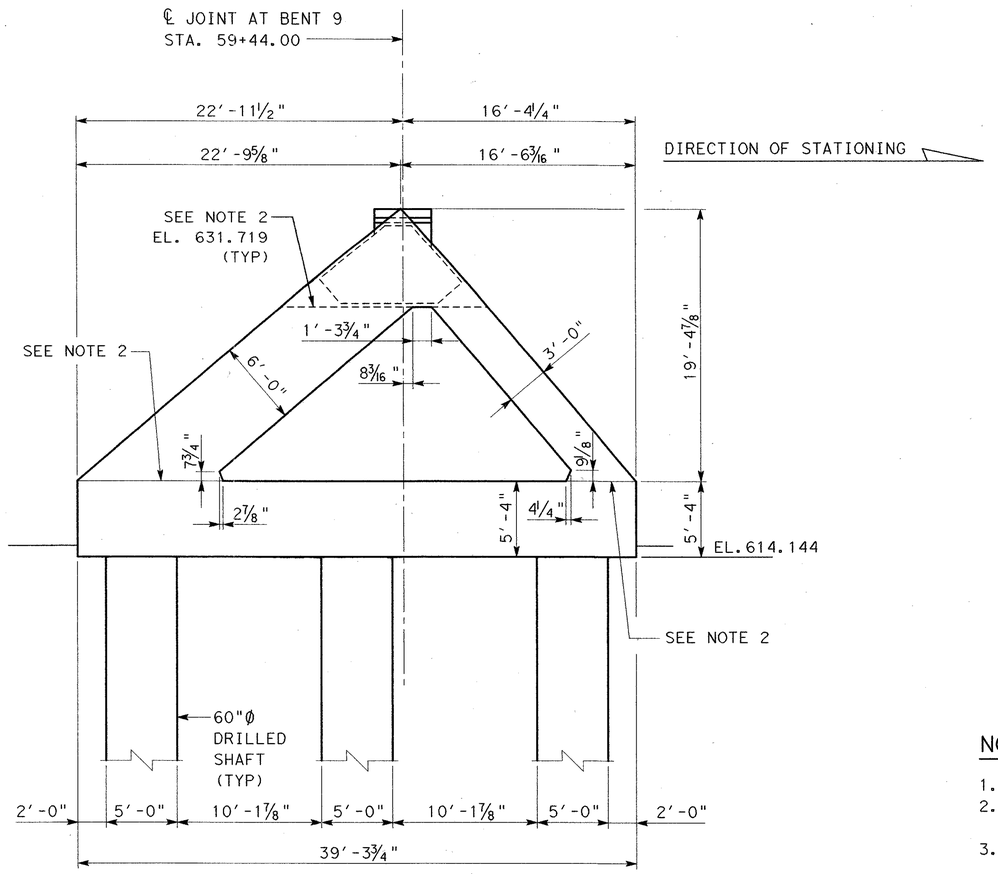


TRANSVERSE ELEVATION

(LOOKING STATIONS AHEAD - STEEL ARCH RIB AND STINGER NOT SHOWN)

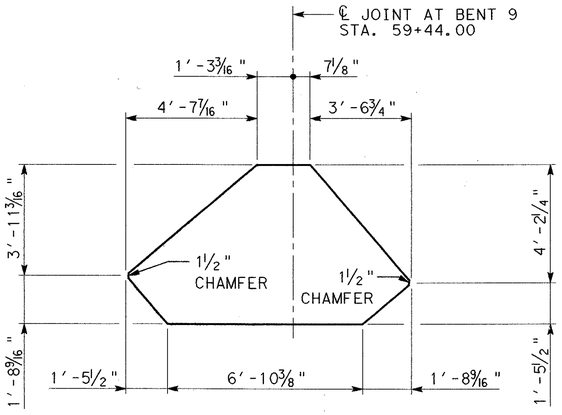


LONGITUDINAL ELEVATION

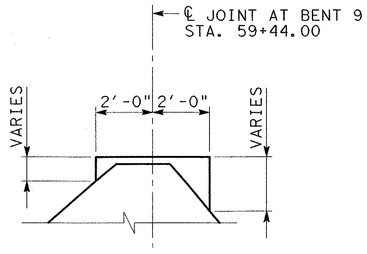
(STEEL ARCH RIB AND STINGER NOT SHOWN)

NOTES

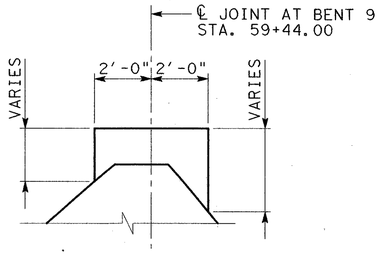
1. U-BEAM SUPERSTRUCTURE NOT SHOWN.
2. CONSTRUCTION JOINT LOCATION. INTENTIONALLY ROUGHEN TO 1/4" AMPLITUDE.
3. 1/2" COMPRESSIBLE EXPANSION MATERIAL BETWEEN BEARING PEDESTALS AND SHEAR KEY AND SUPERSTRUCTURE AND SHEAR KEY.
4. CAMBER ℄ STRUT UP 3/8".



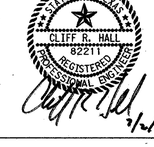
SECTION A-A



SECTION B-B



SECTION C-C



259

NO.	DATE	REVISION	APPROV.
1	06/01/04	ADDENDUM CHANGES	CRH

URS
GREYSTONE CENTRE
5010 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

GEOMETRY
BENT 9

SHEET 1 OF 1

TOWN OF ADDISON, TEXAS

Design	Drawn RJB	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04	NONE	25768	BR-21

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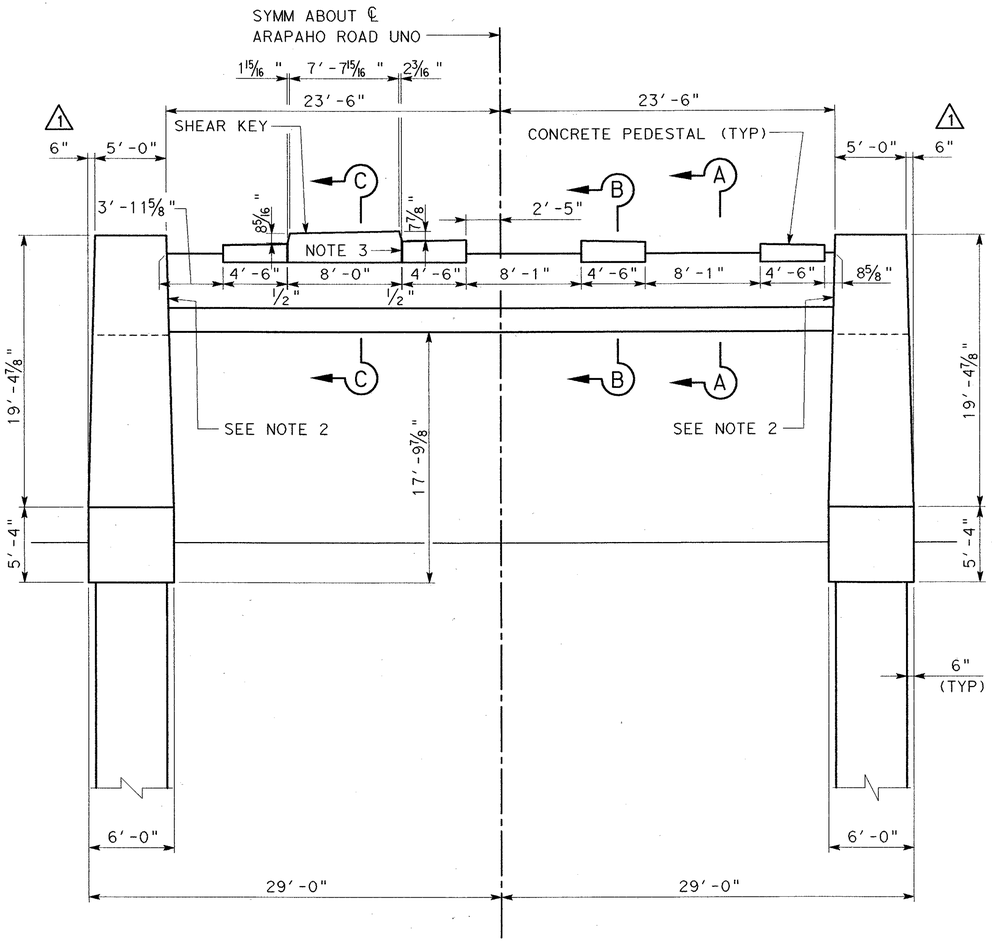
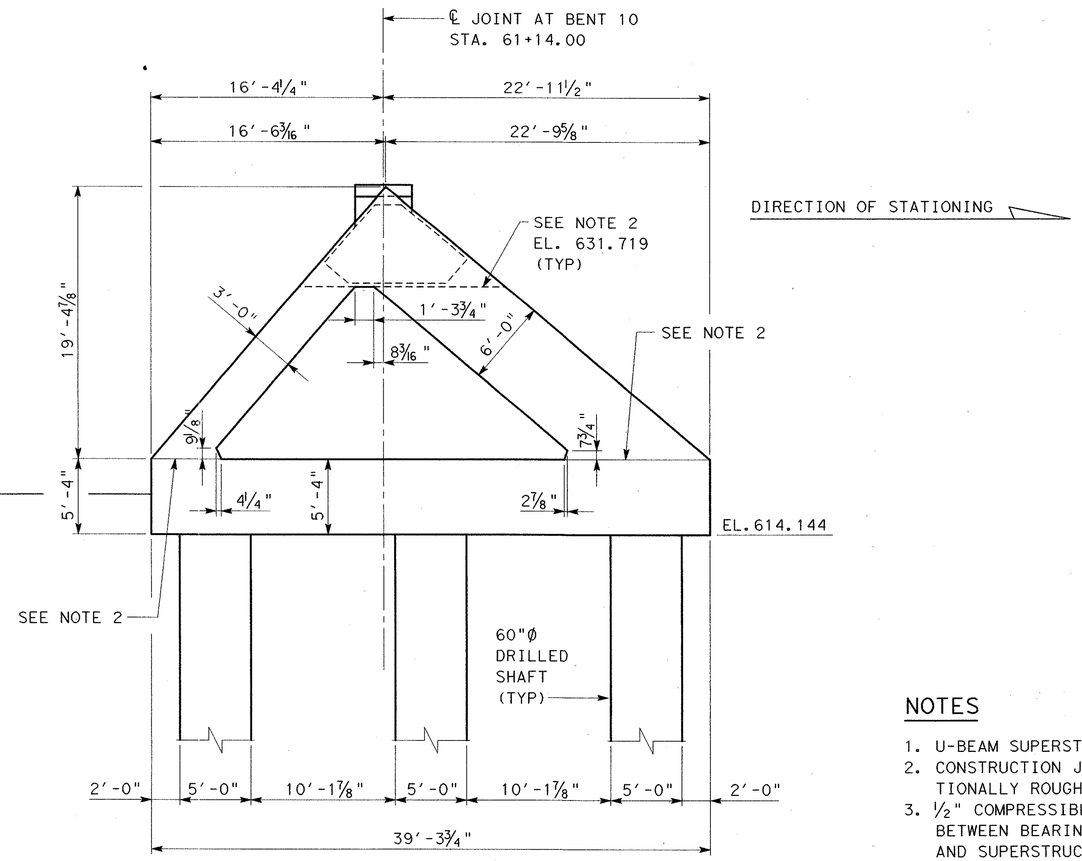


TRANSVERSE ELEVATION

(LOOKING STATIONS BACK - STEEL ARCH RIB AND STINGER NOT SHOWN)

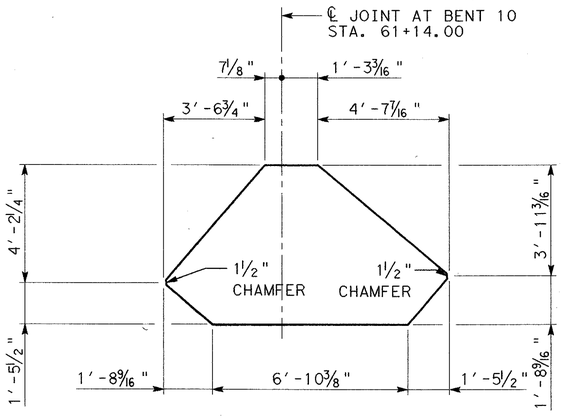


LONGITUDINAL ELEVATION

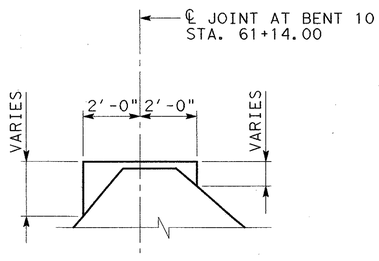
(STEEL ARCH RIB AND STINGER NOT SHOWN)

NOTES

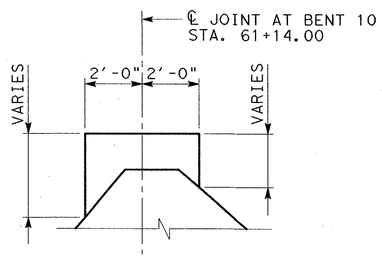
1. U-BEAM SUPERSTRUCTURE NOT SHOWN.
2. CONSTRUCTION JOINT LOCATION. INTENTIONALLY ROUGHEN TO 1/4" AMPLITUDE.
3. 1/2" COMPRESSIBLE EXPANSION MATERIAL BETWEEN BEARING PEDESTALS AND SHEAR KEY AND SUPERSTRUCTURE AND SHEAR KEY.
4. CAMBER ℄ STRUT UP 3/8".



SECTION A-A



SECTION B-B



SECTION C-C

STATE OF TEXAS
CLIFF R. HALL
82211
REGISTERED
PROFESSIONAL ENGINEER
9/2/04

260

NO.	DATE	REVISION	APPROV.
1	06/01/04	ADDENDUM CHANGES	CRH

URS
GREYSTONE CENTRE
3010 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

GEOMETRY
BENT 10

SHEET 1 OF 1

TOWN OF ADDISON, TEXAS

Design	Drawn RJB	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04	NONE	25768	BR-22

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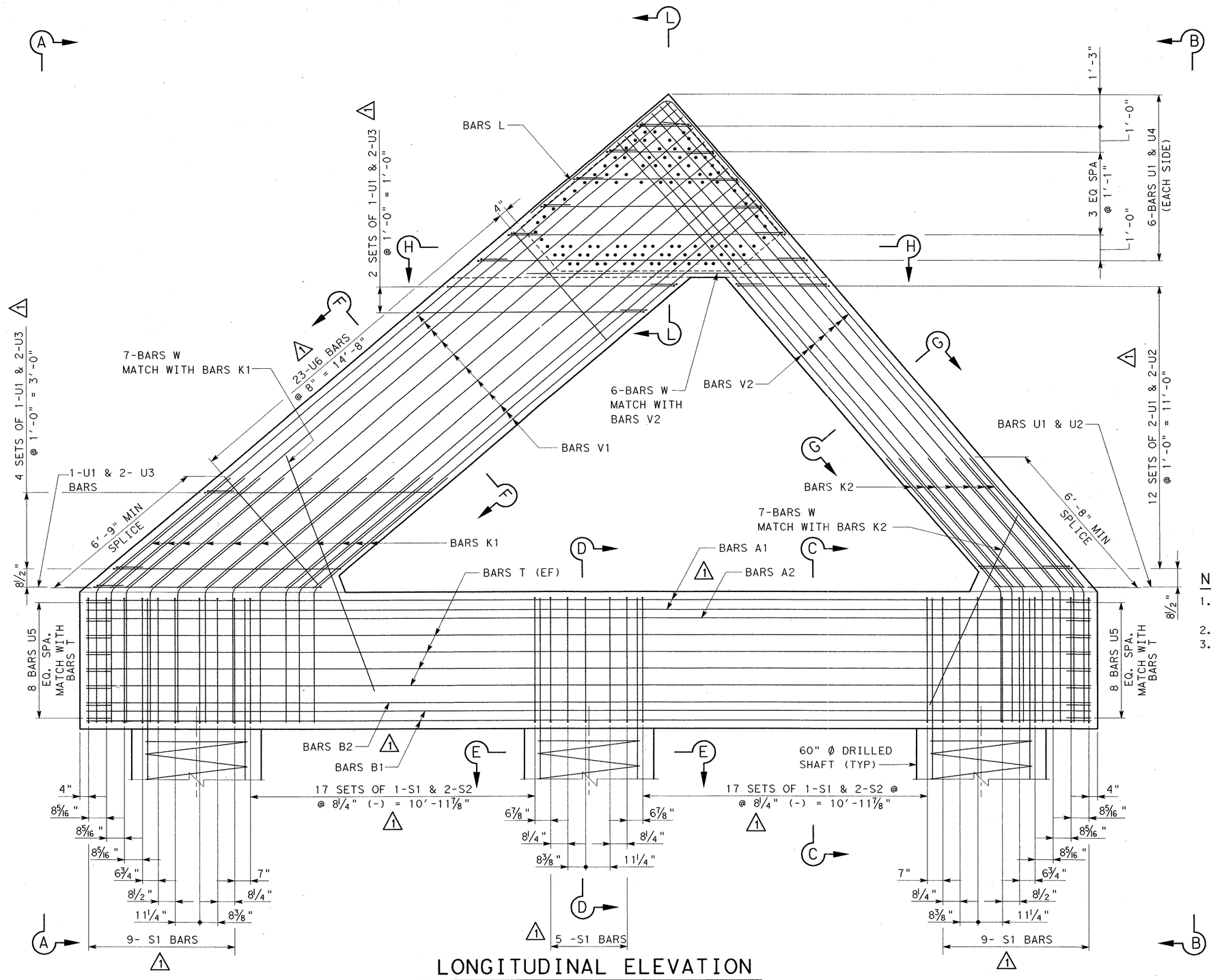

LONGITUDINAL ELEVATION

(ANCHOR BOLTS FOR ARCH RIB AND STINGER NOT SHOWN)

BENTS 9 & 10 TABLE OF ESTIMATED QUANTITIES (PER BENT) ⚠1

BAR	NO.	SIZE	LENGTH	WEIGHT
A1	32	#11	38'-9''	6589
A2	16	#11	42'-9''	3635
B1	32	#11	38'-9''	6589
B2	16	#11	42'-9''	3635
C1	73	#6	3'-7''	393
C2	73	#6	7'-4''	805
C3	73	#6	4'-0''	439
C4	73	#6	8'-9''	960
C5	73	#6	4'-0''	439
C6	73	#6	8'-0''	878
C7	73	#6	7'-4''	805
E1	20	#5	9'-10''	206
E2	24	#5	9'-7''	240
E3	10	#5	10'-7''	111
E4	5	#5	14'-5''	76
H1	60	#11	56'-6''	18012
H2	30	#11	15'-4''	2444
H3	14	#11	39'-0''	2901
K1	104	#9	11'-11''	4214
K2	88	#9	11'-11''	3566
L	14	#6	14'-0''	295
S1	114	#6	22'-7''	3867
S2	136	#6	6'-10''	1396
T	16	#5	38'-9''	647
U1	90	#6	7'-0'' AVG.	947
U2	52	#6	5'-4''	417
U3	28	#6	10'-6''	442
U4	24	#6	9'-1'' AVG.	328
U5	32	#6	7'-6''	361
U6	46	#6	23'-8'' AVG.	1636
V1	104	#9	26'-0'' AVG.	9194
V2	88	#9	23'-10'' AVG.	7131
W	40	#6	4'-0''	241
REINFORCING STEEL			Lb	83839
CLASS "F" CONC (CAP)			CY	252.6

NOTES

1. CLASS "F" CONCRETE STRENGTH f'c=5000 psi OTHER THAN DRILLED SHAFTS.
2. ALL REINFORCING STEEL SHALL BE GRADE 60.
3. CLASS "C" CONCRETE STRENGTH f'c=3600 psi FOR DRILLED SHAFTS.

STATE OF TEXAS
CLIFF R. HALL
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NO.	DATE	REVISION	APPROV.
1	06/01/04	ADDENDUM CHANGES	CRH

URS GREYSTONE CENTRE 3010 LBJ FREEWAY, SUITE 1300 DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

BENTS 9 & 10 DETAILS

SHEET 1 OF 6

TOWN OF ADDISON, TEXAS

Design	Drawn RJB	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04	NONE	25768	BR-23

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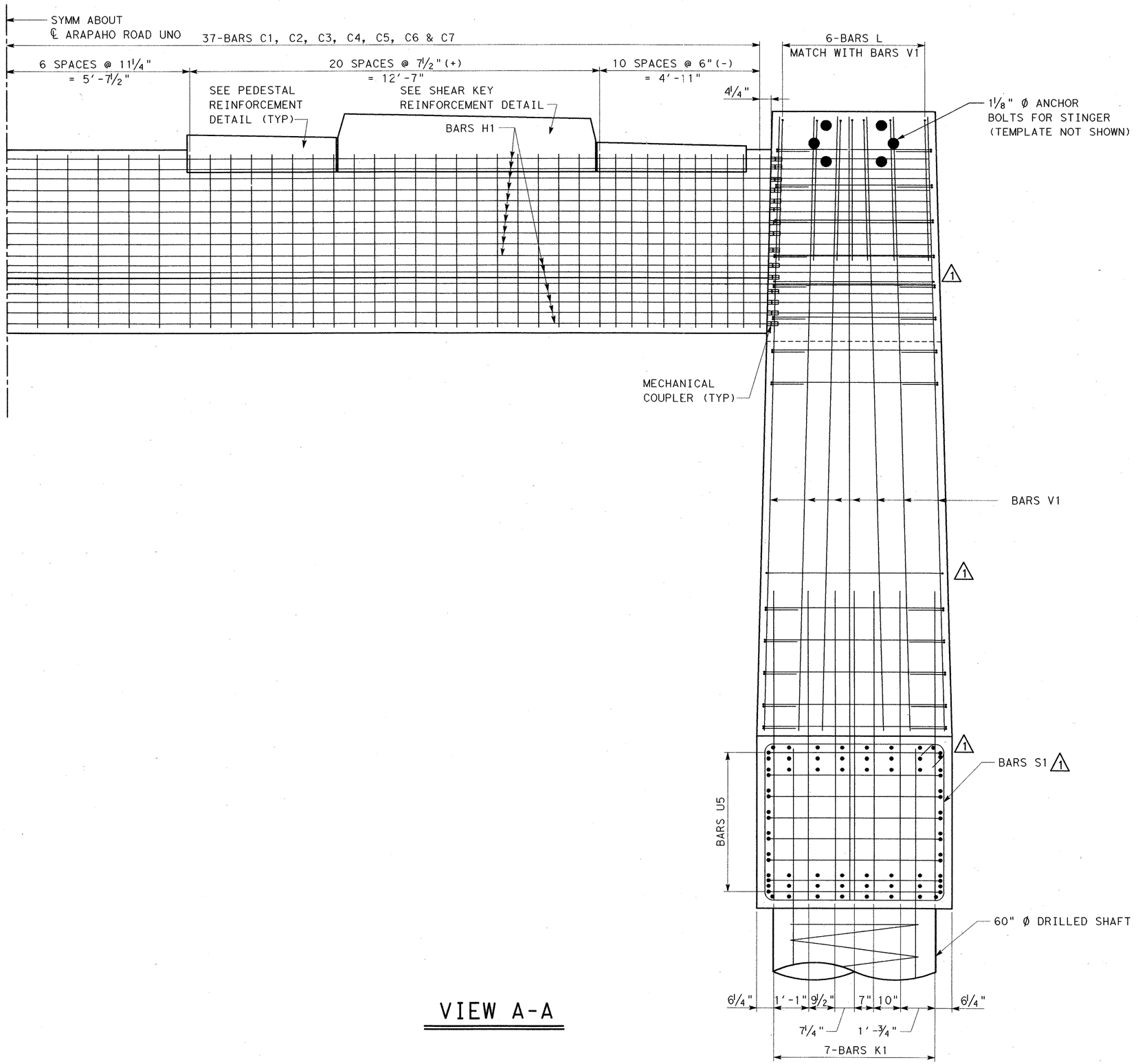

VIEW A-A

STATE OF TEXAS
CLIFF R. HALL
82211
REGISTERED
PROFESSIONAL ENGINEER
7/2/04

262

NO.	DATE	REVISION	APPROV.
1	06/01/04	ADDENDUM CHANGES	CRH

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GREYSTONE CENTRE
3010 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

BENTS 9 & 10 DETAILS

SHEET 2 OF 6

TOWN OF ADDISON, TEXAS

Design	Drawn RJB	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04	NONE	25768	BR-24

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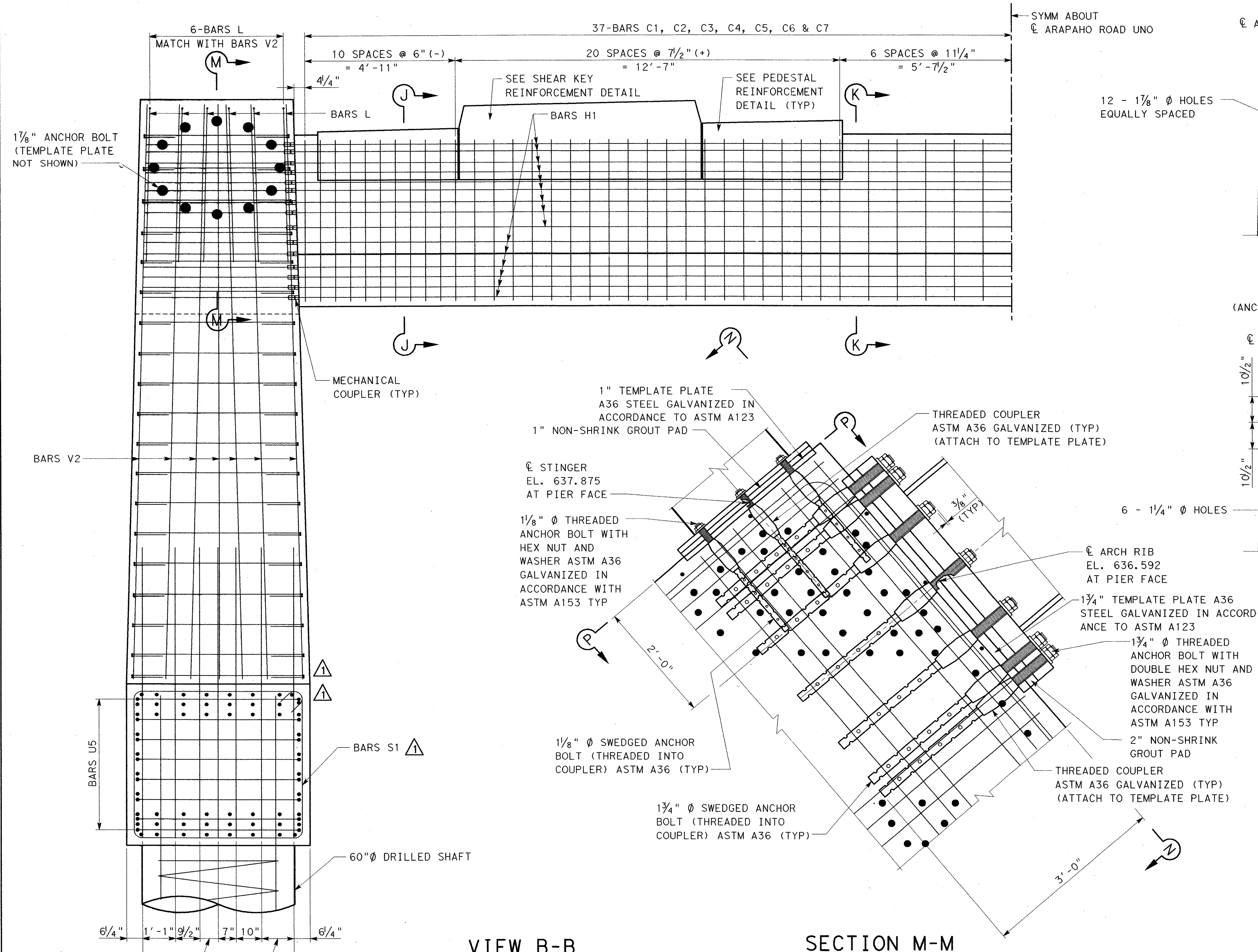
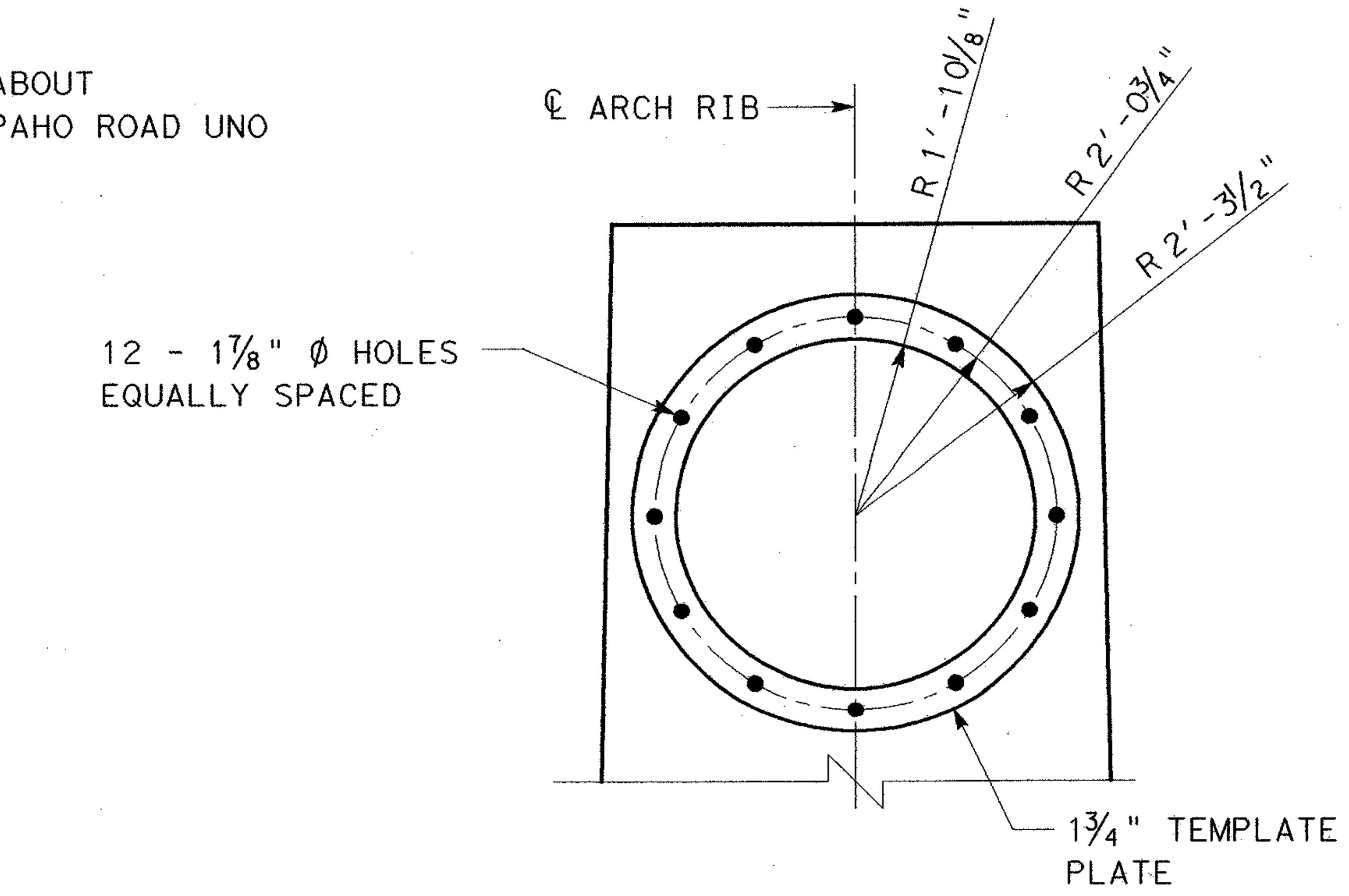


VIEW B-B

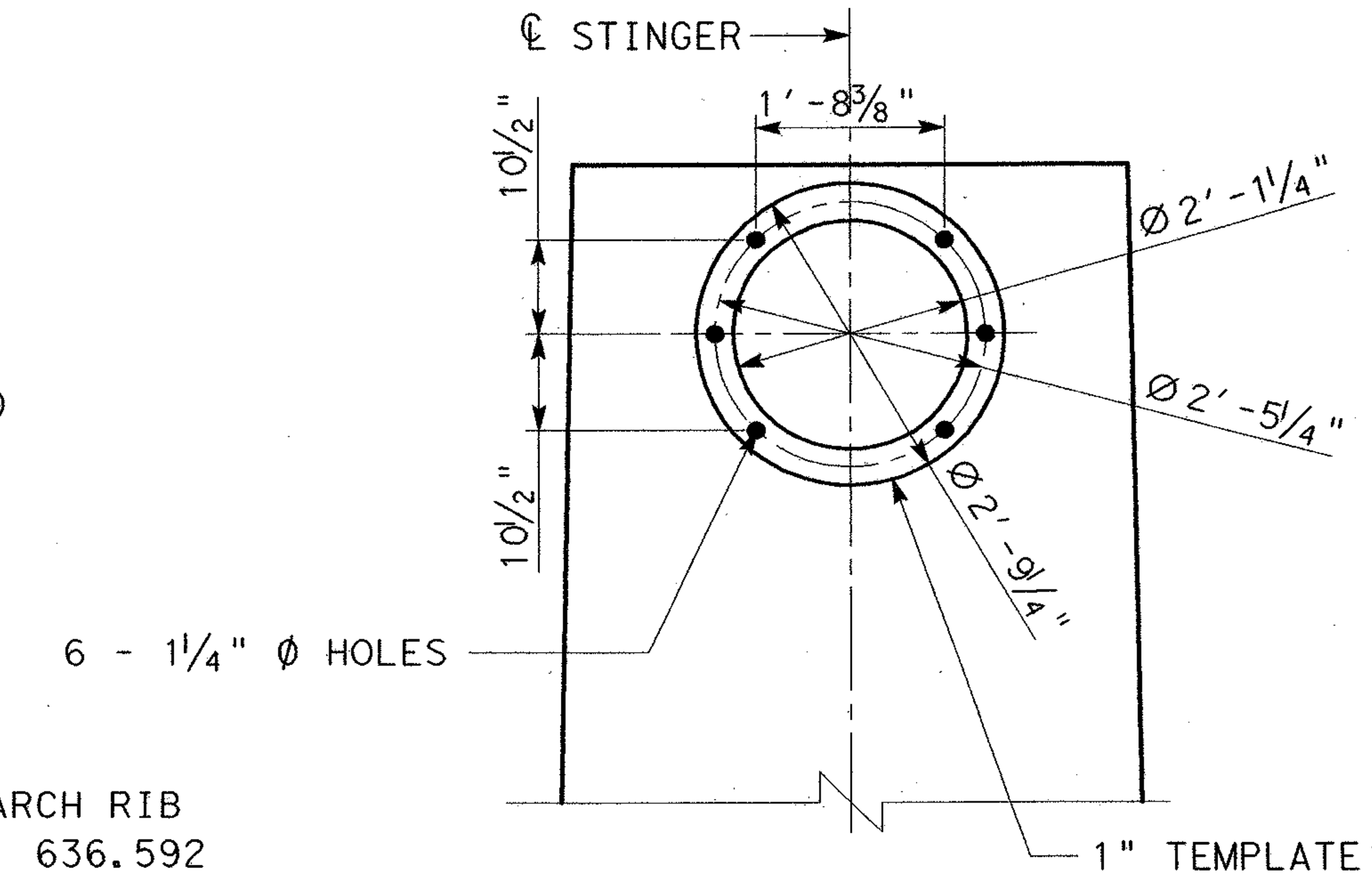
SECTION M-M

(ANCHOR BOLT DETAIL FOR ARCH RIB AND STINGER)



VIEW N-N

(ANCHOR BOLT DETAIL FOR ARCH RIB)



VIEW P-P

(ANCHOR BOLT DETAIL
FOR STINGER)

CLIFF R. HALL 82211 REGISTERED PROFESSIONAL ENGINEER — STATE OF TEXAS
7/2/04

263

NO.	DATE	REVISION	APPROV.
1	06/01/04	ADDENDUM CHANGES	CRH

URS
GREYSTONE CENTRE
5010 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75254

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

BENTS 9 & 10 DETAILS

SHEET 3 OF 6

TOWN OF ADDISON, TEXAS

Design	Drawn RJB	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04	NONE	25768	BR-25

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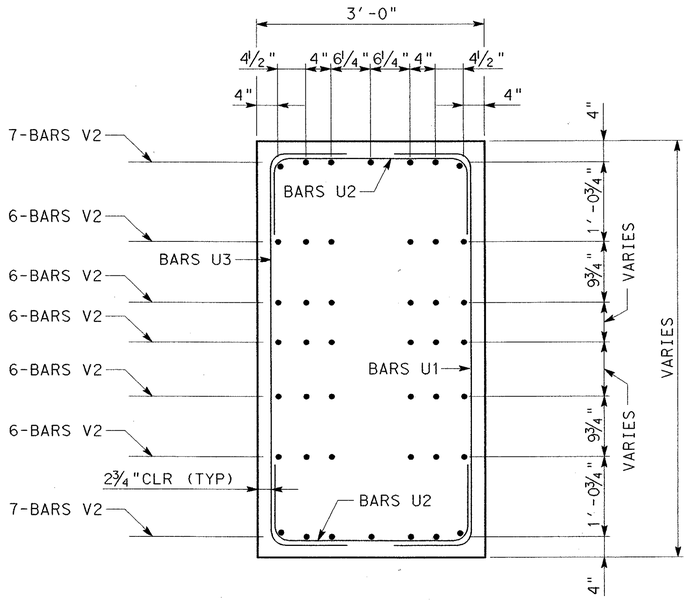
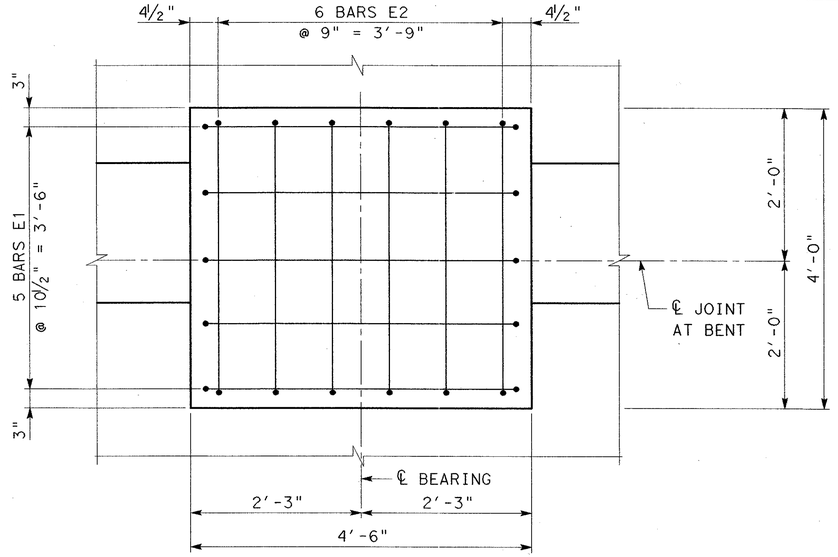
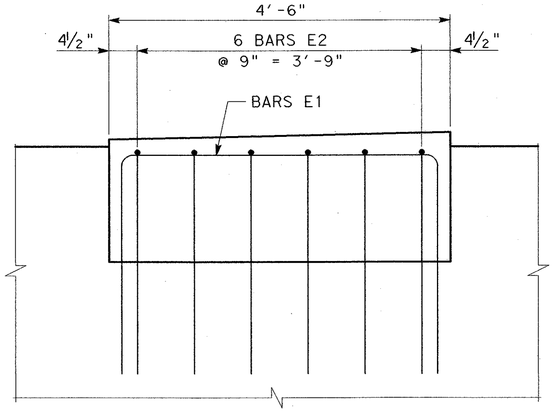


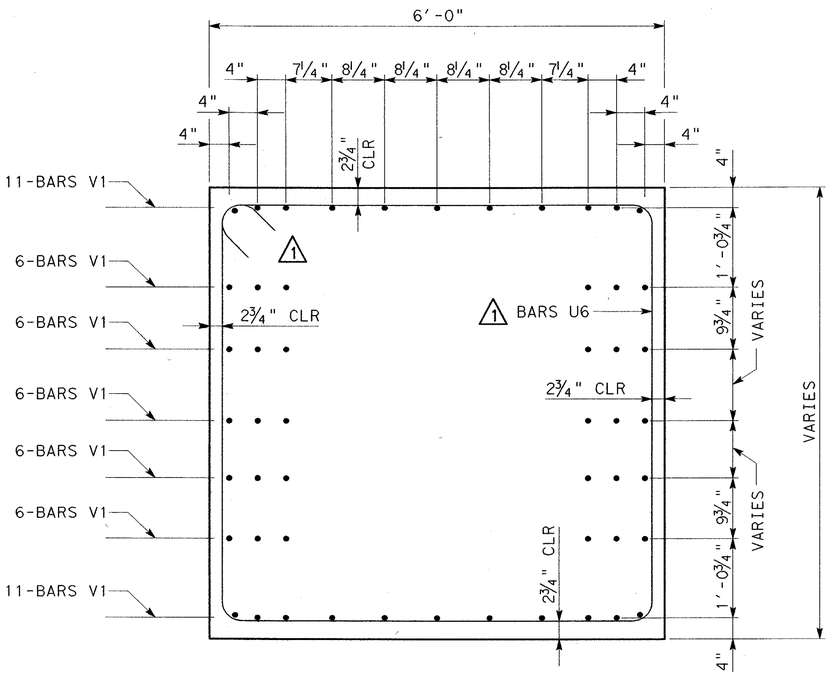
SECTION G-G



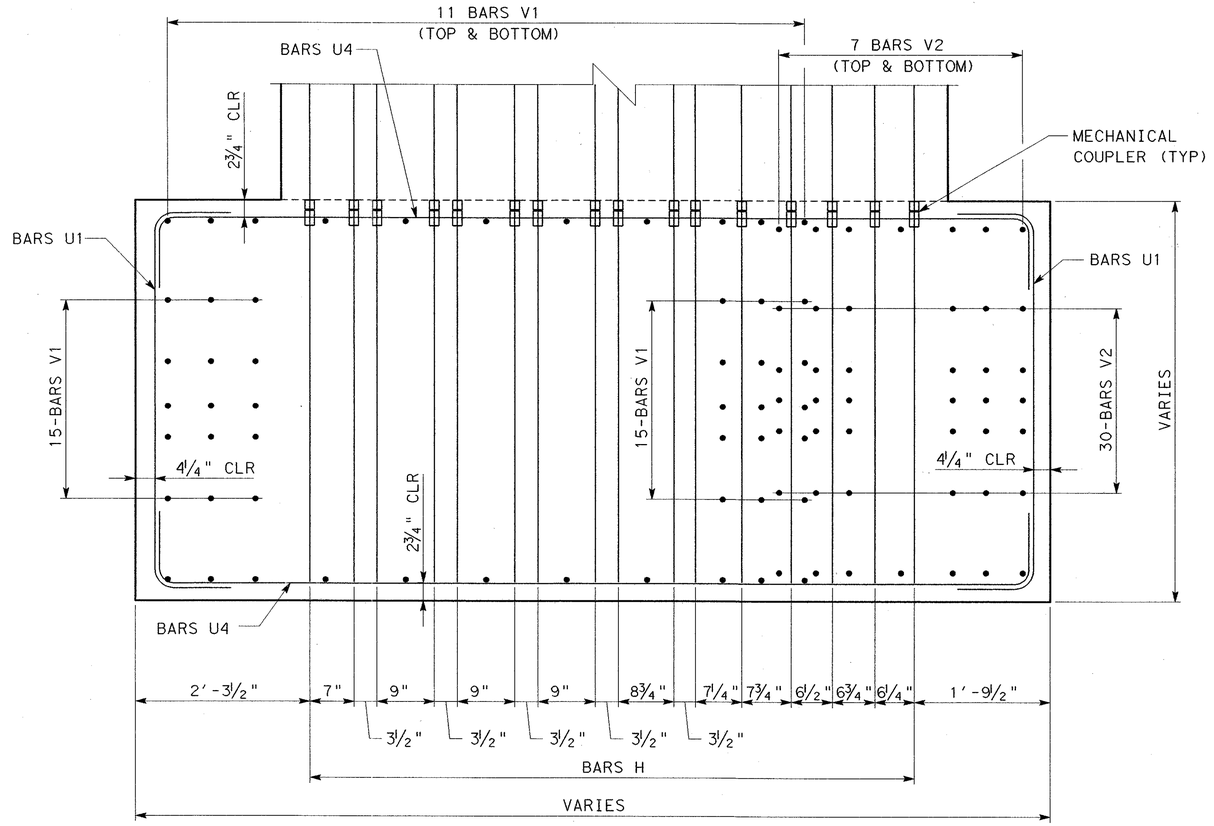
PLAN - PEDESTAL REINFORCING



ELEVATION - PEDESTAL REINFORCING



SECTION F-F



SECTION H-H

STATE OF TEXAS
CLIFF R. HALL
82211
REGISTERED
PROFESSIONAL ENGINEER
7/2/04

264

NO.	DATE	REVISION	APPROV.
1	06/01/04	ADDENDUM CHANGES	CRH

URS GREYSTONE CENTRE
3010 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

BENTS 9 & 10 DETAILS

SHEET 4 OF 6

TOWN OF ADDISON, TEXAS

Design	Drawn RJB	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04	NONE	25768	BR-26

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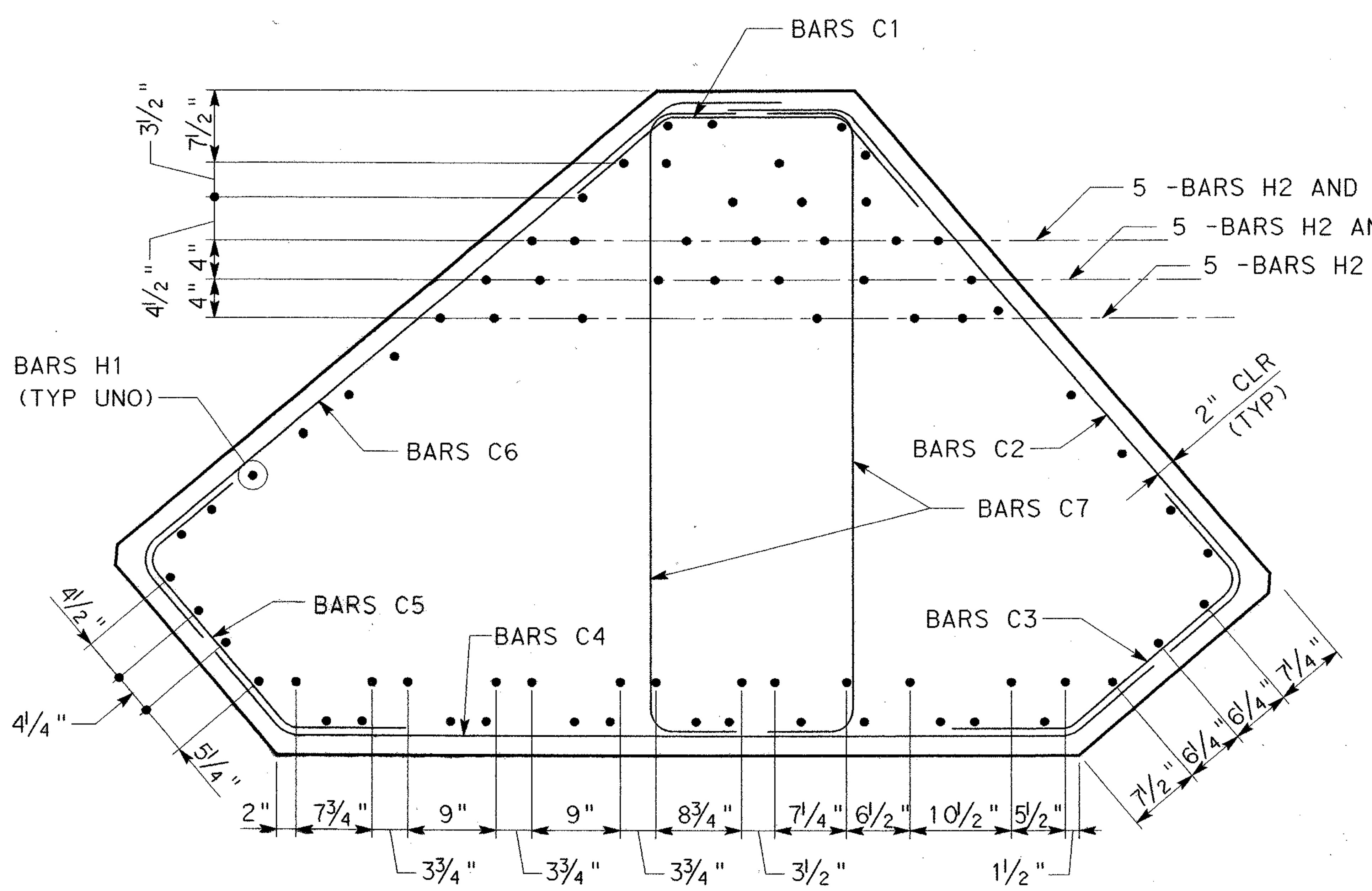
SECTION L-L

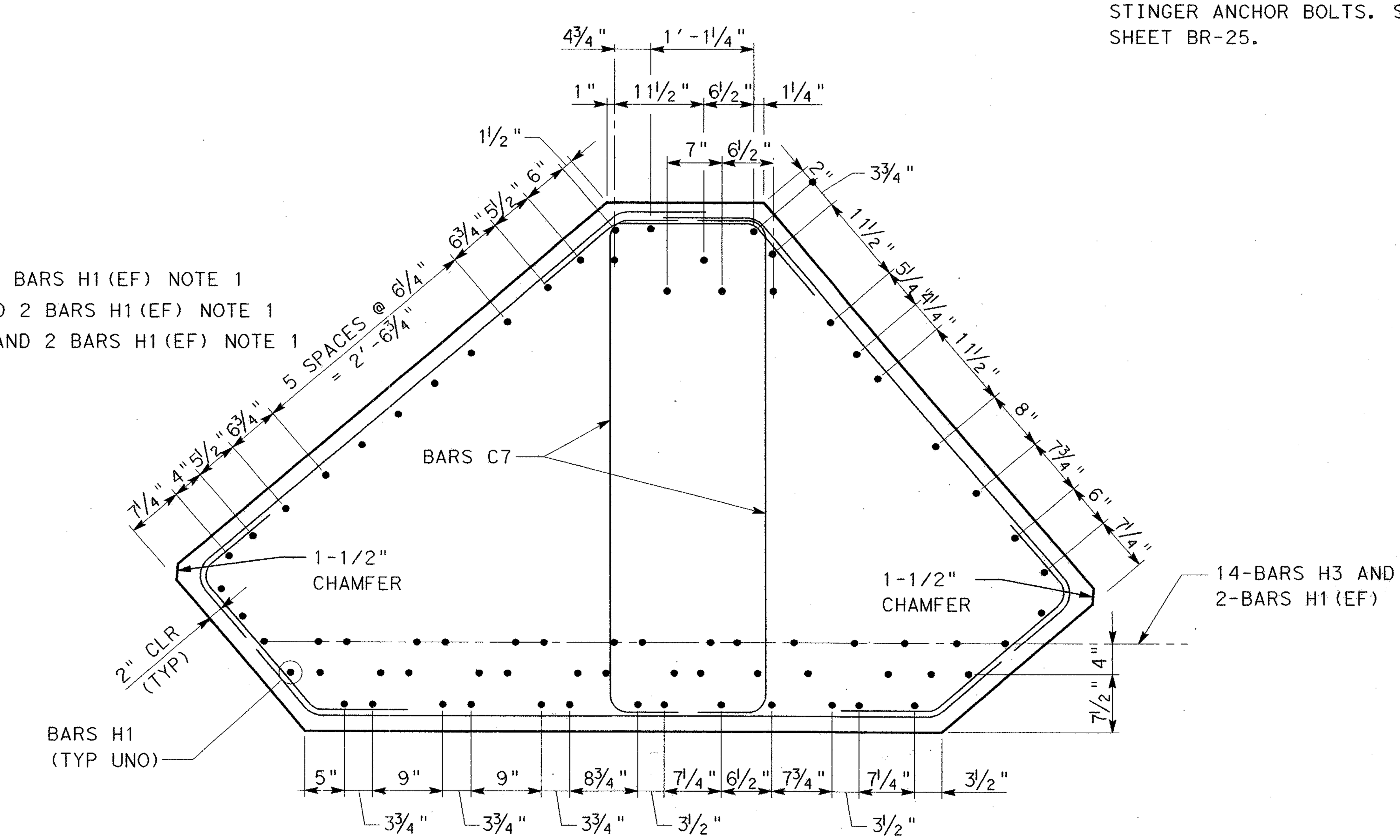
(ANCHOR BOLTS AND COLUMN REINFORCEMENT NOT SHOWN)

NOTES

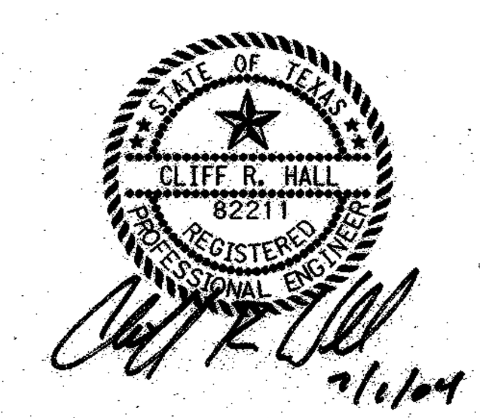
1. SPACE H1 AND H2 BARS TO MISS ARCH RIB AND STINGER ANCHOR BOLTS. SEE SECTION M-M ON SHEET BR-25.



SECTION J-J



SECTION K-K



NO.	DATE	REVISION	APPROV.

265

URS
GREYSTONE CENTRE
5010 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

BENTS 9 & 10 DETAILS

SHEET 5 OF 6

TOWN OF ADDISON, TEXAS

Design	Drawn RJB	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04	NONE	25768	BR-27

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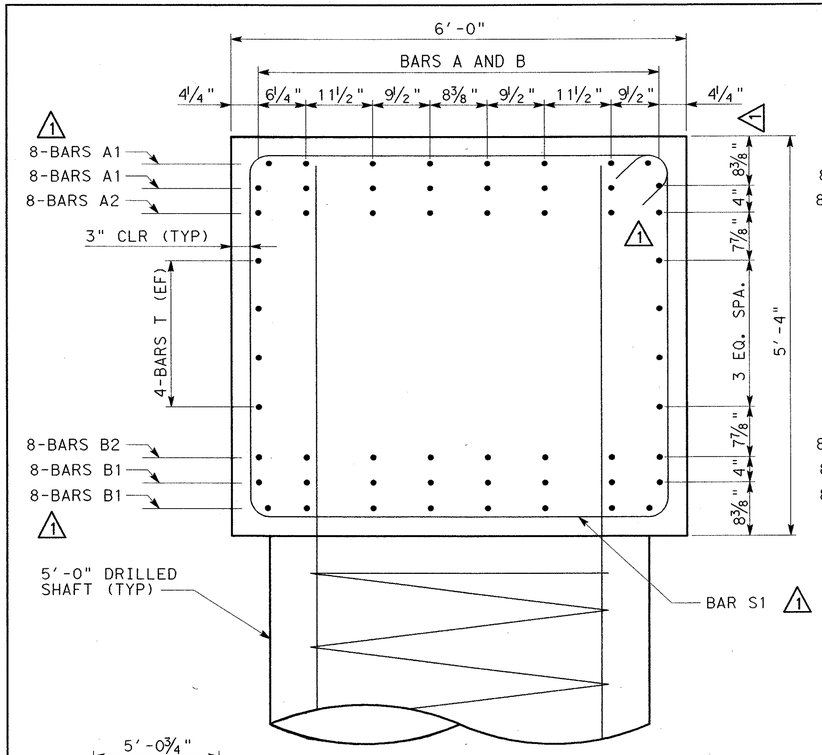
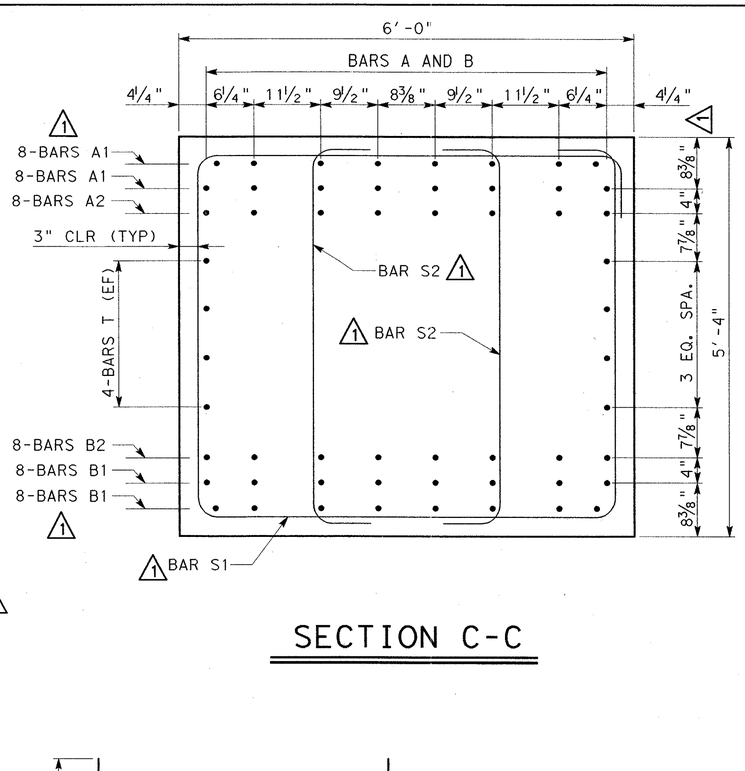
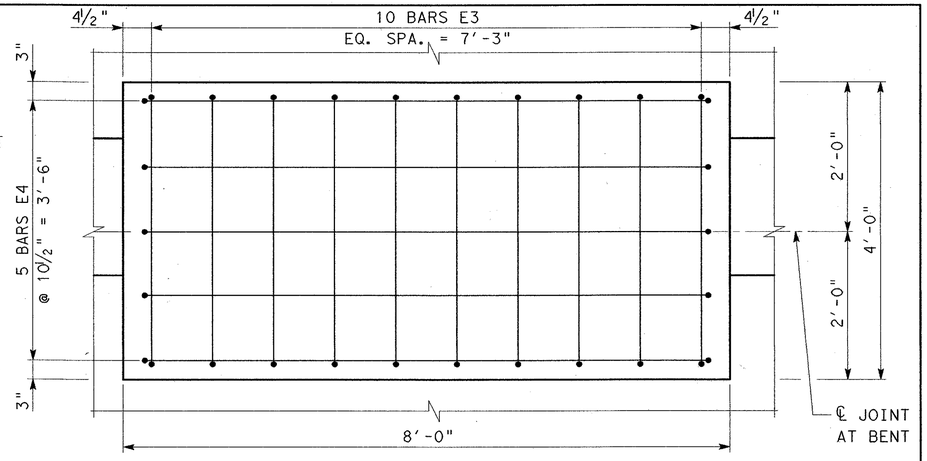
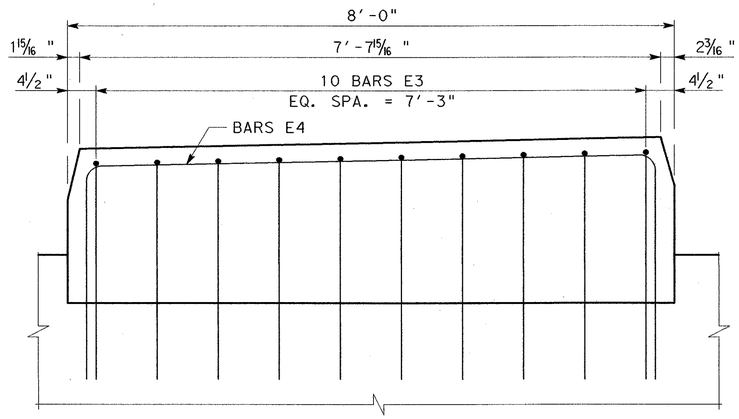


SECTION C-C

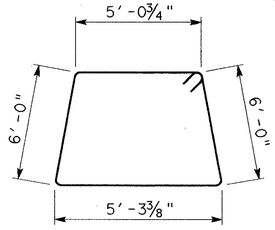




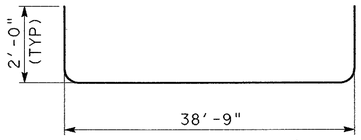
PLAN - SHEAR KEY REINFORCING



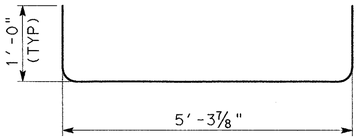
ELEVATION - SHEAR KEY REINFORCING



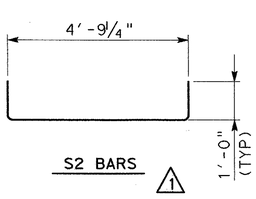
SECTION D-D



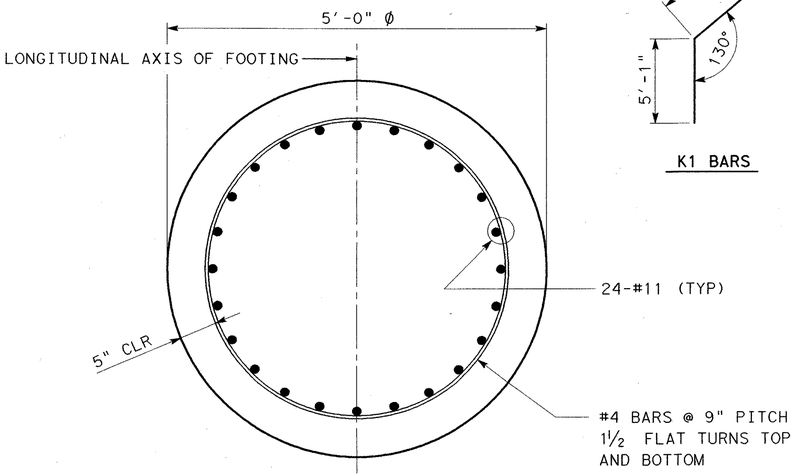
A2 & B2 BARS 1



C7 BARS

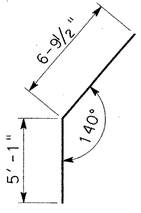


S2 BARS 1

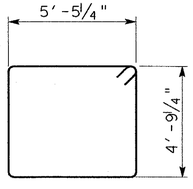


SECTION E-E

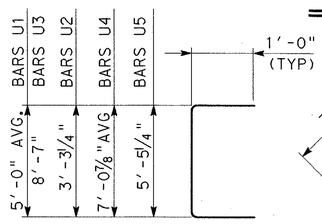
K1 BARS



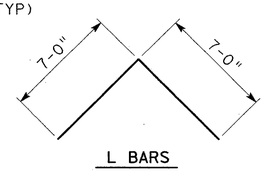
K2 BARS



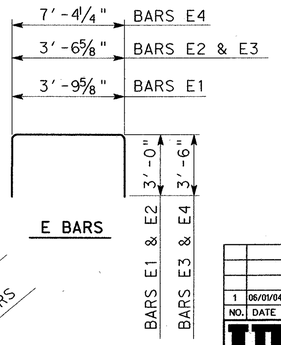
S1 BARS 1



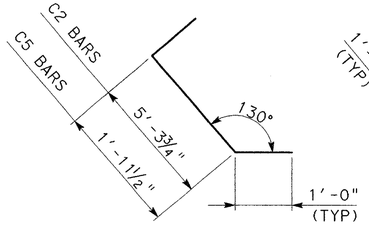
U BARS 1



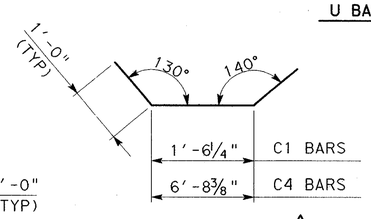
L BARS



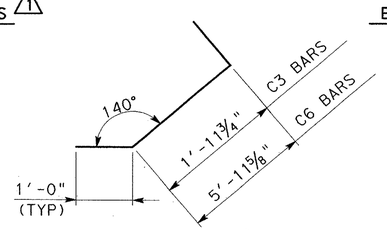
E BARS



C2 & C5 BARS 1



C1 & C4 BARS 1



C3 & C6 BARS 1

REINFORCING BAR BEND DETAILS

CLIFF R. HALL 82211 REGISTERED PROFESSIONAL ENGINEER STATE OF TEXAS
7/2/04

NO.	DATE	REVISION	APPROV.
1	06/01/04	ADDENDUM CHANGES	CRH

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URS GREYSTONE CENTRE 3010 LBJ FREEWAY, SUITE 1300 DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

BENTS 9 & 10 DETAILS

SHEET 6 OF 6

TOWN OF ADDISON, TEXAS

Design	Drawn RJB	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04	NONE	25768	BR-28

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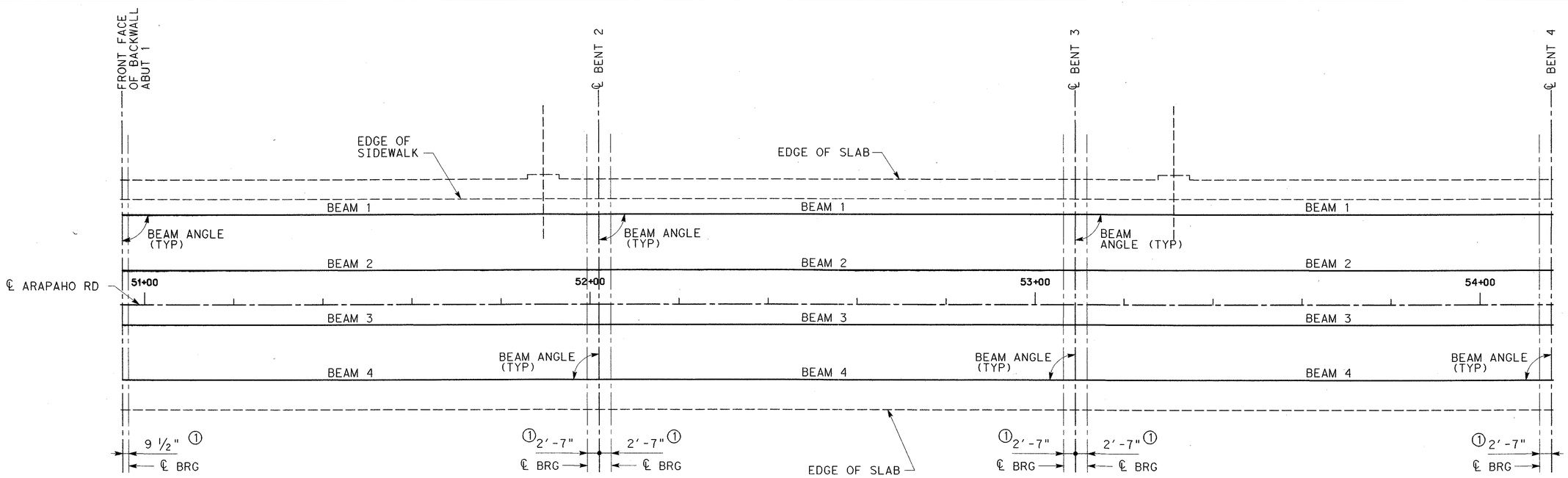

SPAN 1
(TYPE U54 BEAMS)

ABUT NO. 1 (N 0 1 11 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 20.500 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D	M	S
SPAN 1	BEAM 1	0.000	90	0	0
	BEAM 2	12.583	90	0	0
	BEAM 3	12.583	90	0	0
	BEAM 4	12.583	90	0	0
	TOTAL	37.750			

BENT NO. 2 (N 0 1 11 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 20.500 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D	M	S
SPAN 1	BEAM 1	0.000	90	0	0
	BEAM 2	12.583	90	0	0
	BEAM 3	12.583	90	0	0
	BEAM 4	12.583	90	0	0
	TOTAL	37.750			
SPAN 2	BEAM 1	0.000	90	0	0
	BEAM 2	12.583	90	0	0
	BEAM 3	12.583	90	0	0
	BEAM 4	12.583	90	0	0
	TOTAL	37.750			

SPAN 2
(TYPE U54 BEAMS)

BENT NO. 3 (N 0 1 11 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 20.500 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D	M	S
SPAN 2	BEAM 1	0.000	90	0	0
	BEAM 2	12.583	90	0	0
	BEAM 3	12.583	90	0	0
	BEAM 4	12.583	90	0	0
	TOTAL	37.750			
SPAN 3	BEAM 1	0.000	90	0	0
	BEAM 2	12.583	90	0	0
	BEAM 3	12.583	90	0	0
	BEAM 4	12.583	90	0	0
	TOTAL	37.750			

BEAM REPORT, SPAN 1

	HORIZONTAL DISTANCE C-C BENT	C-C BRG.	TRUE LENGTH	BEAM SLOPE
BEAM 1	107.000	103.625	104.755	0.030
BEAM 2	107.000	103.625	104.755	0.030
BEAM 3	107.000	103.625	104.755	0.030
BEAM 4	107.000	103.625	104.755	0.030

BEAM REPORT, SPAN 2

	HORIZONTAL DISTANCE C-C BENT	C-C BRG.	TRUE LENGTH	BEAM SLOPE
BEAM 1	107.000	101.833	102.963	0.030
BEAM 2	107.000	101.833	102.963	0.030
BEAM 3	107.000	101.833	102.963	0.030
BEAM 4	107.000	101.833	102.963	0.030

SPAN 3
(TYPE U54 BEAMS)

BEAM REPORT, SPAN 3

	HORIZONTAL DISTANCE C-C BENT	C-C BRG.	TRUE LENGTH	BEAM SLOPE
BEAM 1	107.000	101.833	102.963	0.030
BEAM 2	107.000	101.833	102.963	0.030
BEAM 3	107.000	101.833	102.963	0.030
BEAM 4	107.000	101.833	102.963	0.030

NOTES:

① SEE TxDOT STANDARD UBB FOR ORIENTATION OF DIMENSION.

② BEAM LENGTHS SHOWN ARE BOTTOM BEAM FLANGE WITH ADJUSTMENTS MADE FOR BEAM SLOPE.

STATE OF TEXAS
CLIFF R. HALL
82211
REGISTERED
PROFESSIONAL ENGINEER
7/2/04

267

NO.	DATE	REVISION	APPROV.

URS
GREYSTONE CENTRE
3010 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

FRAMING PLAN
UNIT I

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-29

7/2/2004 10:32:59 AM

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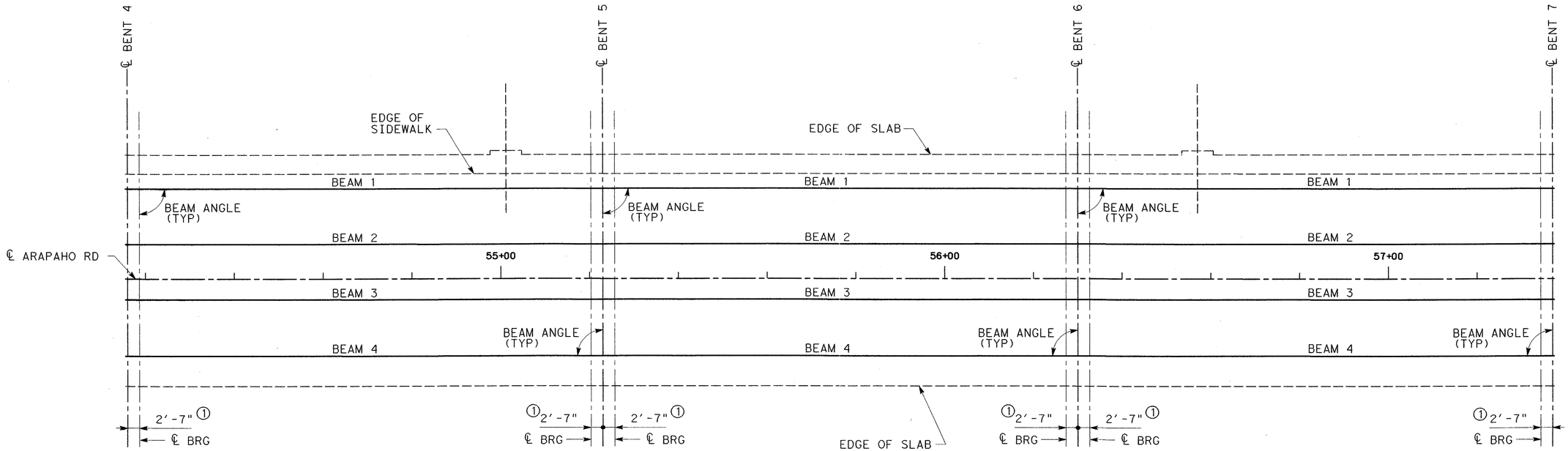

SPAN 4
(TYPE U54 BEAMS)

SPAN 5
(TYPE U54 BEAMS)

SPAN 6
(TYPE U54 BEAMS)

BENT NO. 4 (N 0 1 11 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 20.500 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D	M	S
SPAN 3	BEAM 1	0.000	90	0	0
	BEAM 2	12.583	90	0	0
	BEAM 3	12.583	90	0	0
	BEAM 4	12.583	90	0	0
	TOTAL	37.750			
SPAN 4	BEAM 1	0.000	90	0	0
	BEAM 2	12.583	90	0	0
	BEAM 3	12.583	90	0	0
	BEAM 4	12.583	90	0	0
	TOTAL	37.750			

BENT NO. 5 (N 0 1 11 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 20.500 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D	M	S
SPAN 4	BEAM 1	0.000	90	0	0
	BEAM 2	12.583	90	0	0
	BEAM 3	12.583	90	0	0
	BEAM 4	12.583	90	0	0
	TOTAL	37.750			
SPAN 5	BEAM 1	0.000	90	0	0
	BEAM 2	12.583	90	0	0
	BEAM 3	12.583	90	0	0
	BEAM 4	12.583	90	0	0
	TOTAL	37.750			

BENT NO. 6 (N 0 1 11 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 20.500 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D	M	S
SPAN 5	BEAM 1	0.000	90	0	0
	BEAM 2	12.583	90	0	0
	BEAM 3	12.583	90	0	0
	BEAM 4	12.583	90	0	0
	TOTAL	37.750			
SPAN 6	BEAM 1	0.000	90	0	0
	BEAM 2	12.583	90	0	0
	BEAM 3	12.583	90	0	0
	BEAM 4	12.583	90	0	0
	TOTAL	37.750			

BEAM REPORT, SPAN 4
HORIZONTAL DISTANCE

	C-C BENT	C-C BRG.	TRUE LENGTH	BEAM SLOPE
BEAM 1	107.000	101.833	102.963	0.030
BEAM 2	107.000	101.833	102.963	0.030
BEAM 3	107.000	101.833	102.963	0.030
BEAM 4	107.000	101.833	102.963	0.030

BEAM REPORT, SPAN 5
HORIZONTAL DISTANCE

	C-C BENT	C-C BRG.	TRUE LENGTH	BEAM SLOPE
BEAM 1	107.000	101.833	102.962	0.030
BEAM 2	107.000	101.833	102.962	0.030
BEAM 3	107.000	101.833	102.962	0.030
BEAM 4	107.000	101.833	102.962	0.030

BEAM REPORT, SPAN 6
HORIZONTAL DISTANCE

	C-C BENT	C-C BRG.	TRUE LENGTH	BEAM SLOPE
BEAM 1	107.000	101.833	102.949	0.025
BEAM 2	107.000	101.833	102.949	0.025
BEAM 3	107.000	101.833	102.949	0.025
BEAM 4	107.000	101.833	102.949	0.025

NOTES:

① SEE TxDOT STANDARD UBB FOR ORIENTATION OF DIMENSION.

② BEAM LENGTHS SHOWN ARE BOTTOM BEAM FLANGE WITH ADJUSTMENTS MADE FOR BEAM SLOPE.

STATE OF TEXAS
CLIFF R. HALL
82211
REGISTERED
PROFESSIONAL ENGINEER
7/2/04

268

NO.	DATE	REVISION	APPROV.

URS
GREYSTONE CENTRE
5910 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75254

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

FRAMING PLAN
UNIT 2

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-30

7/2/2004 10:32:59 AM

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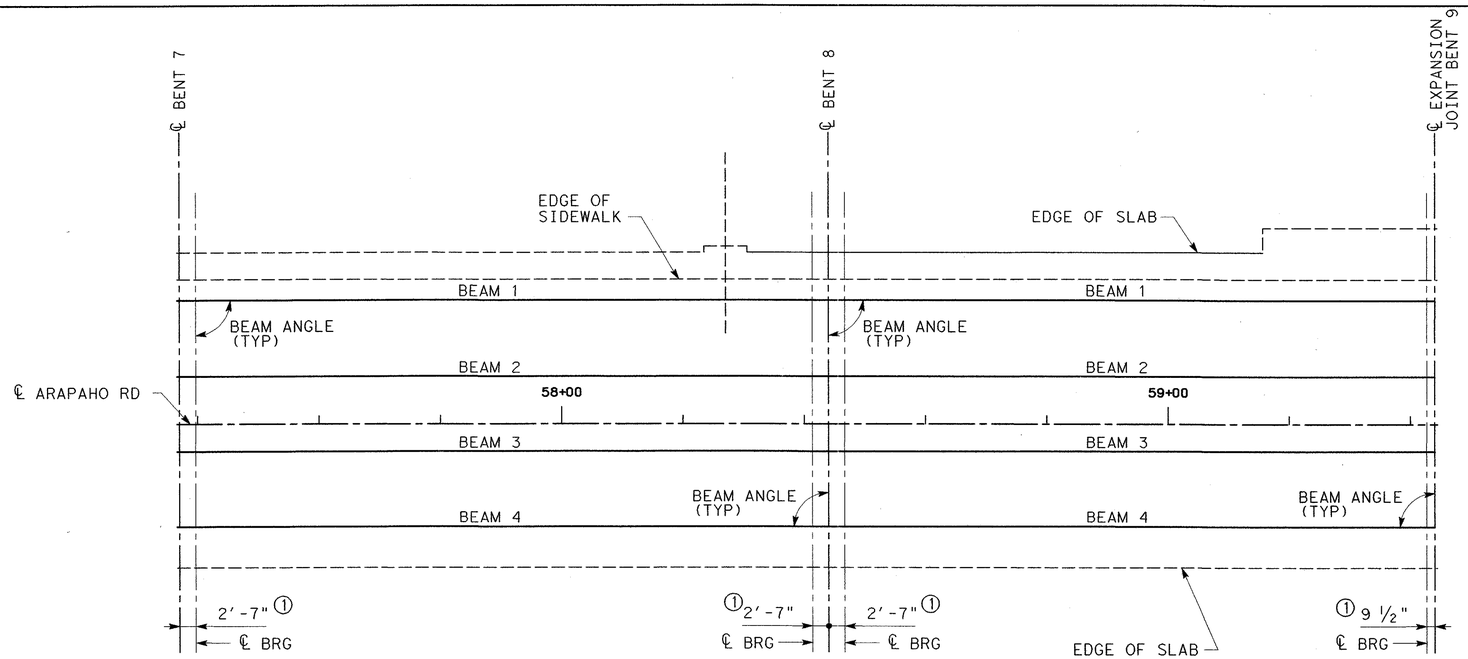

SPAN 7
(TYPE U54 BEAMS)

SPAN 8
(TYPE U54 BEAMS)

BENT NO. 7 (N 0 1 11 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 20.500 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D	M	S
SPAN 6	BEAM 1	0.000	90	0	0
	BEAM 2	12.583	90	0	0
	BEAM 3	12.583	90	0	0
	BEAM 4	12.583	90	0	0
	TOTAL	37.750			
SPAN 7	BEAM 1	0.000	90	0	0
	BEAM 2	12.583	90	0	0
	BEAM 3	12.583	90	0	0
	BEAM 4	12.583	90	0	0
	TOTAL	37.750			

BENT NO. 8 (N 0 1 11 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 20.500 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D	M	S
SPAN 7	BEAM 1	0.000	90	0	0
	BEAM 2	12.583	90	0	0
	BEAM 3	12.583	90	0	0
	BEAM 4	12.583	90	0	0
	TOTAL	37.750			
SPAN 8	BEAM 1	0.000	90	0	0
	BEAM 2	12.583	90	0	0
	BEAM 3	12.583	90	0	0
	BEAM 4	12.583	90	0	0
	TOTAL	37.750			

BENT NO. 9 (N 0 1 11 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 20.500 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D	M	S
SPAN 8	BEAM 1	0.000	90	0	0
	BEAM 2	12.583	90	0	0
	BEAM 3	12.583	90	0	0
	BEAM 4	12.583	90	0	0
	TOTAL	37.750			

BEAM REPORT, SPAN 7
HORIZONTAL DISTANCE

	C-C BENT	C-C BRG.	TRUE LENGTH	BEAM SLOPE
BEAM 1	107.000	101.833	102.933	0.018
BEAM 2	107.000	101.833	102.933	0.018
BEAM 3	107.000	101.833	102.933	0.018
BEAM 4	107.000	101.833	102.933	0.018

BEAM REPORT, SPAN 8
HORIZONTAL DISTANCE

	C-C BENT	C-C BRG.	TRUE LENGTH	BEAM SLOPE
BEAM 1	100.000	96.625	97.714	0.011
BEAM 2	100.000	96.625	97.714	0.011
BEAM 3	100.000	96.625	97.714	0.011
BEAM 4	100.000	96.625	97.714	0.011

NOTES:

① SEE TxDOT STANDARD UBB FOR ORIENTATION OF DIMENSION.

② BEAM LENGTHS SHOWN ARE BOTTOM BEAM FLANGE WITH ADJUSTMENTS MADE FOR BEAM SLOPE.

STATE OF TEXAS
CLIFF R. HALL
82211
REGISTERED
PROFESSIONAL ENGINEER
7/2/04

269

NO.	DATE	REVISION	APPROV.

URS
GREYSTONE CENTRE
3010 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

FRAMING PLAN
UNIT 3

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-31

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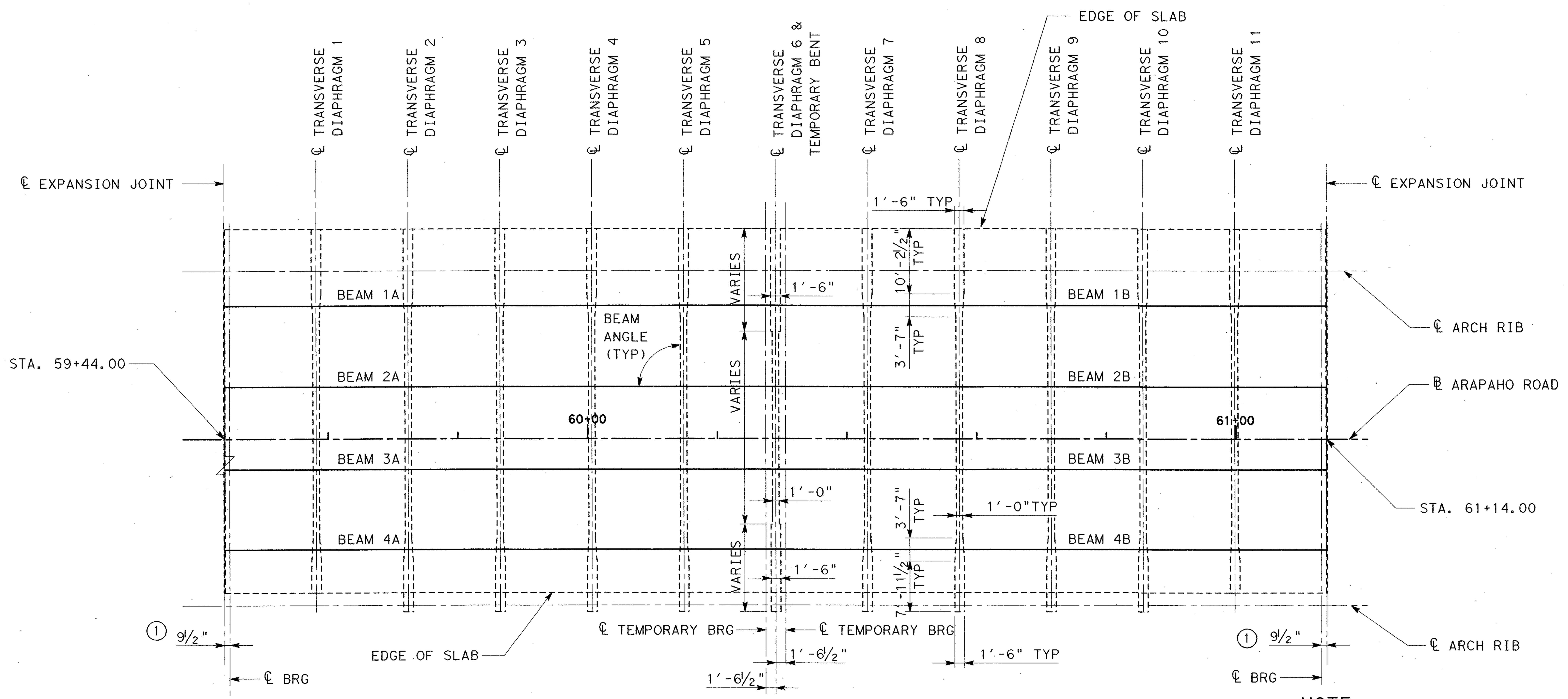

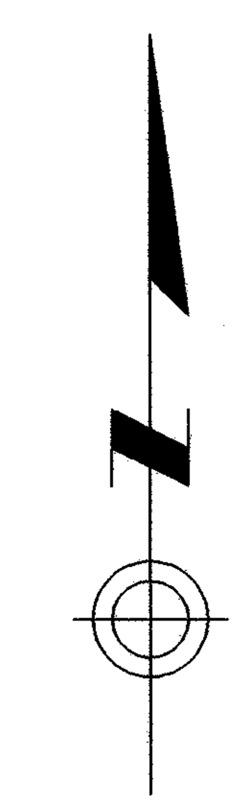

SPAN 9 - UNIT 4

(TYP U54 BEAMS)

NOTE

① SEE TxDOT STANDARD UBB MOD FOR ORIENTATION OF DIMENSION.

② BEAM LENGTHS SHOWN ARE BOTTOM BEAM FLANGE WITH ADJUSTMENTS MADE FOR BEAM SLOPE.

BENT NO. 9 (N 0°1'11" E)				
DISTANCE BETWEEN STATION LINE AND BEAM 1 20.500 LEFT				
SPAN 9 BEAM SPACING		BEAM ANGLE		
(℄ BENT)		D	M	S
BEAM 1	0.000	90	0	0
BEAM 2	12.583'	90	0	0
BEAM 3	12.583'	90	0	0
BEAM 4	12.583'	90	0	0
TOTAL	37.750'			

BENT NO. 10 (N 0°1'11" E)				
DISTANCE BETWEEN STATION LINE AND BEAM 1 20.500 LEFT				
SPAN 9 BEAM SPACING		BEAM ANGLE		
(℄ BENT)		D	M	S
BEAM 1	0.000	90	0	0
BEAM 2	12.583'	90	0	0
BEAM 3	12.583'	90	0	0
BEAM 4	12.583'	90	0	0
TOTAL	37.750'			

BEAM REPORT, SPAN 9				
HORIZONTAL DISTANCE				
℄ - ℄ JOINT		℄ - ℄ BRG	TRUE LENGTH	BEAM SLOPE
BEAM 1A	85.000'	82.6667'	84.1667	0.006
BEAM 2A	85.000'	82.6667'	84.4167'	0.006
BEAM 3A	85.000'	82.6667'	84.4167'	0.006
BEAM 4A	85.000'	82.6667'	84.1667	0.006

BEAM REPORT, SPAN 9				
HORIZONTAL DISTANCE				
℄ - ℄ JOINT		℄ - ℄ BRG	TRUE LENGTH	BEAM SLOPE
BEAM 1B	85.000'	82.6667'	84.1667	0.002
BEAM 2B	85.000'	82.6667'	84.4167'	0.002
BEAM 3B	85.000'	82.6667'	84.4167'	0.002
BEAM 4B	85.000'	82.6667'	84.1667	0.002

STATE OF TEXAS
CLIFF R. HALL
82211
REGISTERED PROFESSIONAL ENGINEER

7/1/04

270

NO.	DATE	REVISION	APPROV.

URS
GREYSTONE CENTRE
3010 LBJ FREEWAY, SUITE 1500
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

FRAMING PLAN
UNIT 4

TOWN OF ADDISON, TEXAS

Design	Drawn RJB	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04	NONE	25768	BR-32

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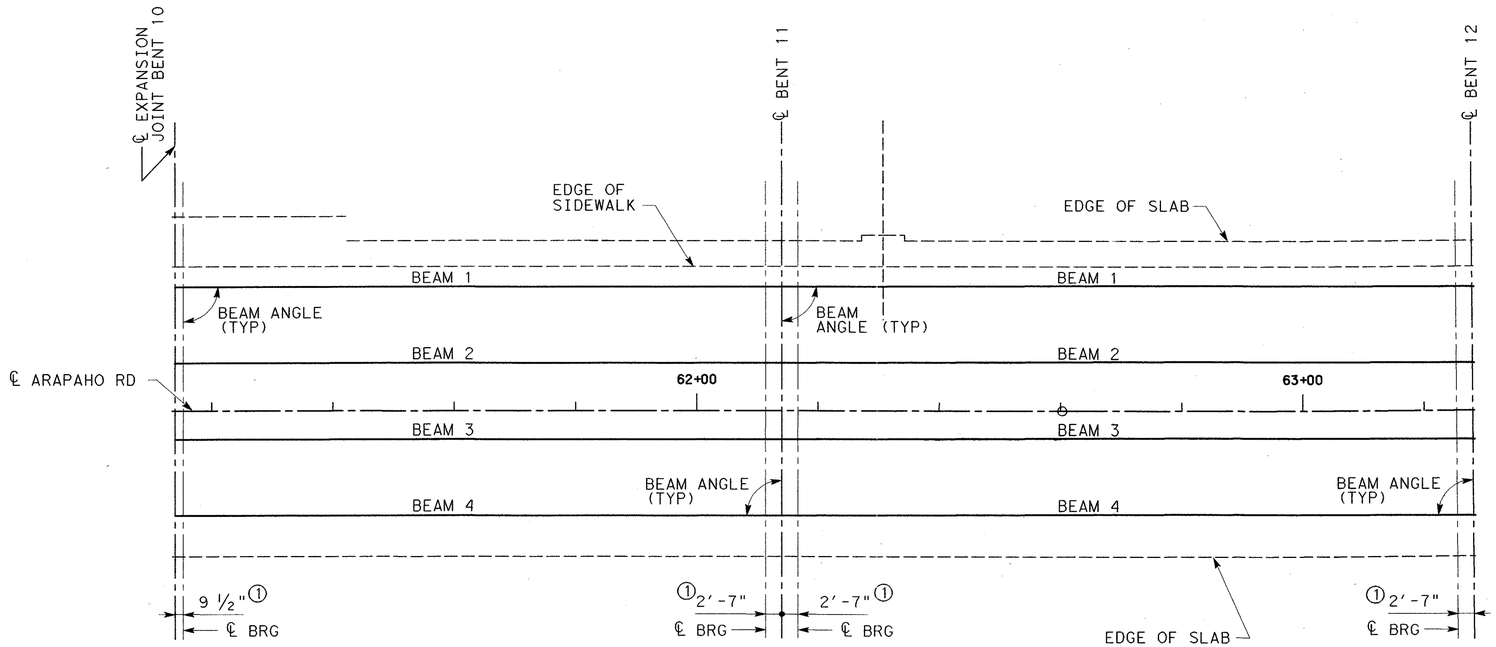

SPAN 10
(TYPE U54 BEAMS)

BENT NO. 10 (N 0 1 11 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 20.500 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D	M	S
SPAN 10	BEAM 1	0.000	90	0	0
	BEAM 2	12.583	90	0	0
	BEAM 3	12.583	90	0	0
	BEAM 4	12.583	90	0	0
	TOTAL	37.750			

BENT NO. 11 (N 0 1 11 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 20.500 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D	M	S
SPAN 10	BEAM 1	0.000	90	0	0
	BEAM 2	12.583	90	0	0
	BEAM 3	12.583	90	0	0
	BEAM 4	12.583	90	0	0
	TOTAL	37.750			
SPAN 11	BEAM 1	0.000	90	13	49
	BEAM 2	12.583	90	13	49
	BEAM 3	12.584	90	13	49
	BEAM 4	12.583	90	13	49
	TOTAL	37.750			

SPAN 11
(TYPE U54 BEAMS)

BENT NO. 12 (N 0 45 23 W)
DISTANCE BETWEEN STATION LINE AND BEAM 1 20.500 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D	M	S
SPAN 11	BEAM 1	0.000	89	27	15
	BEAM 2	12.584	89	27	15
	BEAM 3	12.584	89	27	15
	BEAM 4	12.584	89	27	15
	TOTAL	37.752			
SPAN 12	BEAM 1	0.000	90	13	40
	BEAM 2	12.583	90	13	40
	BEAM 3	12.584	90	13	40
	BEAM 4	12.583	90	13	40
	TOTAL	37.750			

BEAM REPORT, SPAN 10
HORIZONTAL DISTANCE

	C-C BENT	C-C BRG.	TRUE LENGTH	BEAM SLOPE
BEAM 1	100.000	96.625	97.711	-0.007
BEAM 2	100.000	96.625	97.711	-0.007
BEAM 3	100.000	96.625	97.711	-0.007
BEAM 4	100.000	96.625	97.711	-0.007

BEAM REPORT, SPAN 11
HORIZONTAL DISTANCE

	C-C BENT	C-C BRG.	TRUE LENGTH	BEAM SLOPE
BEAM 1	113.721	108.554	109.649	-0.015
BEAM 2	113.892	108.725	109.820	-0.014
BEAM 3	114.062	108.895	109.990	-0.014
BEAM 4	114.233	109.066	110.160	-0.014

NOTES:

① SEE TxDOT STANDARD UBB FOR ORIENTATION OF DIMENSION.

② BEAM LENGTHS SHOWN ARE BOTTOM BEAM FLANGE WITH ADJUSTMENTS MADE FOR BEAM SLOPE.

STATE OF TEXAS
CLIFF R. HALL
82211
REGISTERED
PROFESSIONAL ENGINEER
7/2/04

271

NO.	DATE	REVISION	APPROV.

URS
GREYSTONE CENTRE
3010 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

FRAMING PLAN
UNIT 5

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-33

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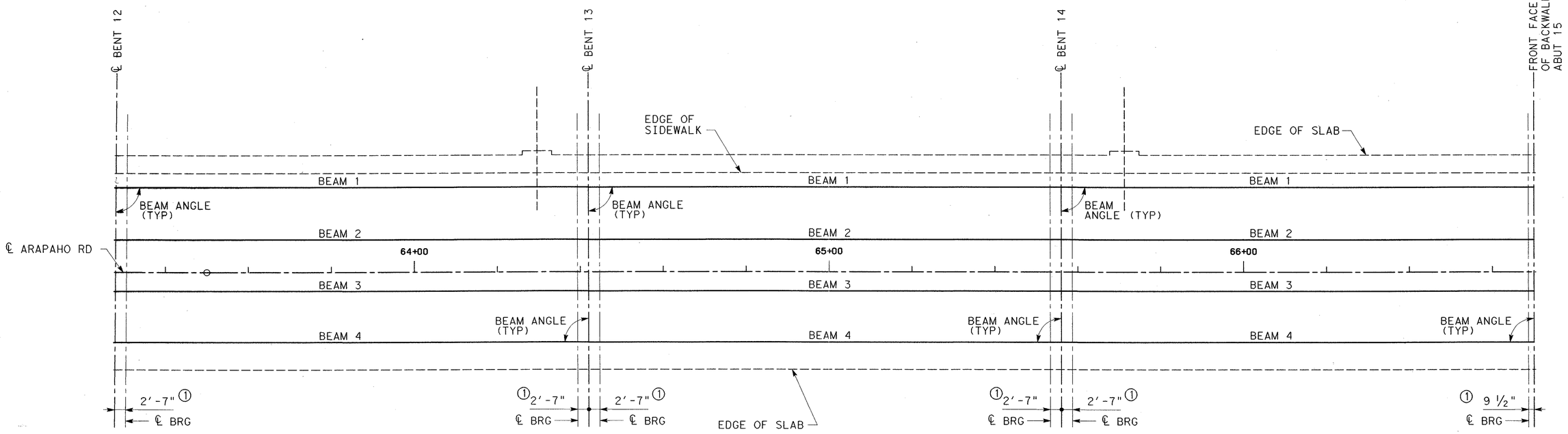

SPAN 12
(TYPE U54 BEAMS)

SPAN 13
(TYPE U54 BEAMS)

SPAN 14
(TYPE U54 BEAMS)

BENT NO. 13 (N 1 0 30 W)
DISTANCE BETWEEN STATION LINES AND BEAM 1 20.500 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D	M	S
SPAN 12	BEAM 1	0.000	89	58	33
	BEAM 2	12.583	89	58	33
	BEAM 3	12.583	89	58	33
	BEAM 4	12.583	89	58	33
	TOTAL	37.750			
SPAN 13	BEAM 1	0.000	90	0	0
	BEAM 2	12.583	90	0	0
	BEAM 3	12.583	90	0	0
	BEAM 4	12.583	90	0	0
	TOTAL	37.750			

BENT NO. 14 (N 1 0 30 W)
DISTANCE BETWEEN STATION LINES AND BEAM 1 20.500 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D	M	S
SPAN 13	BEAM 1	0.000	90	0	0
	BEAM 2	12.583	90	0	0
	BEAM 3	12.583	90	0	0
	BEAM 4	12.583	90	0	0
	TOTAL	37.750			
SPAN 14	BEAM 1	0.000	90	0	0
	BEAM 2	12.583	90	0	0
	BEAM 3	12.583	90	0	0
	BEAM 4	12.583	90	0	0
	TOTAL	37.750			

ABUT NO. 15 (N 1 0 30 W)
DISTANCE BETWEEN STATION LINES AND BEAM 1 20.500 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D	M	S
SPAN 14	BEAM 1	0.000	90	0	0
	BEAM 2	12.583	90	0	0
	BEAM 3	12.583	90	0	0
	BEAM 4	12.583	90	0	0
	TOTAL	37.750			

BEAM REPORT, SPAN 12
HORIZONTAL DISTANCE

	C-C BENT	C-C BRG.	TRUE LENGTH	BEAM SLOPE
BEAM 1	113.910	108.743	109.855	-0.021
BEAM 2	113.965	108.798	109.906	-0.021
BEAM 3	114.021	108.854	109.962	-0.021
BEAM 4	114.076	108.909	110.017	-0.021

BEAM REPORT, SPAN 13
HORIZONTAL DISTANCE

	C-C BENT	C-C BRG.	TRUE LENGTH	BEAM SLOPE
BEAM 1	114.000	108.833	109.943	-0.022
BEAM 2	114.000	108.833	109.943	-0.022
BEAM 3	114.000	108.833	109.942	-0.022
BEAM 4	114.000	108.833	109.938	-0.020

BEAM REPORT, SPAN 14
HORIZONTAL DISTANCE

	C-C BENT	C-C BRG.	TRUE LENGTH	BEAM SLOPE
BEAM 1	114.000	110.625	111.738	-0.023
BEAM 2	114.000	110.625	111.736	-0.023
BEAM 3	114.000	110.625	111.732	-0.021
BEAM 4	114.000	110.625	111.725	-0.017

NOTES:

① SEE TxDOT STANDARD UBB FOR ORIENTATION OF DIMENSION.

② BEAM LENGTHS SHOWN ARE BOTTOM BEAM FLANGE WITH ADJUSTMENTS MADE FOR BEAM SLOPE.

STATE OF TEXAS
CLIFF R. HALL
82211
REGISTERED
PROFESSIONAL ENGINEER
2/2/04

272

NO.	DATE	REVISION	APPROV.

URS
GREYSTONE CENTRE
3010 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

FRAMING PLAN
UNIT 6

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-34

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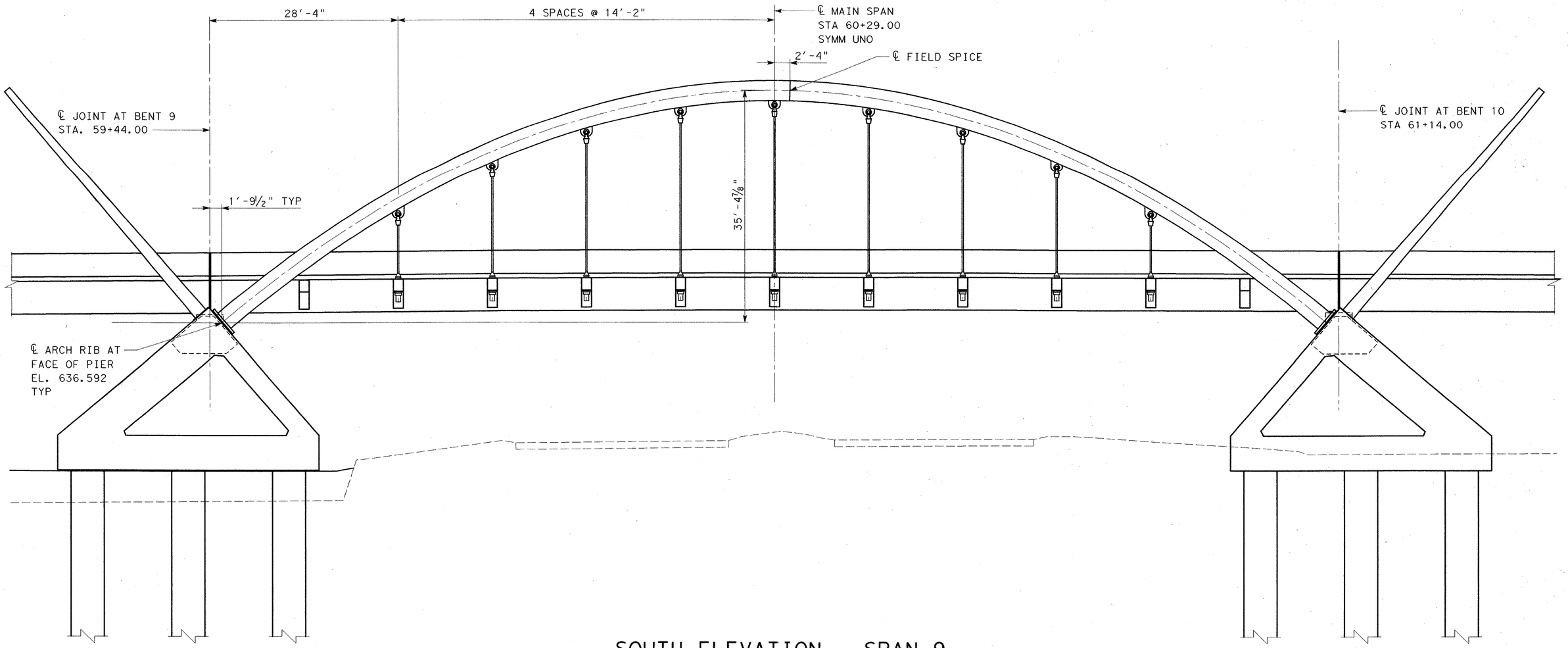

SOUTH ELEVATION - SPAN 9

NOTES

1. FOR PIER GEOMETRY, SEE SHEETS BR-21 & BR-22.
2. NORTH AND SOUTH ARCH HAVE SAME GEOMETRY.

STATE OF TEXAS
CLIFF R. HALL
82211
REGISTERED
PROFESSIONAL ENGINEER
7/1/04

273

NO.	DATE	REVISION	APPROV.

URS GREYSTONE CENTRE
3010 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

GEOMETRY
MAIN SPAN

SHEET 1 OF 1

TOWN OF ADDISON, TEXAS

Design	Drawn RJB	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04	NONE	25768	BR-35

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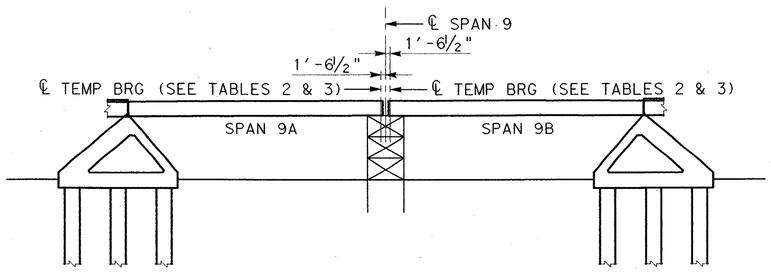
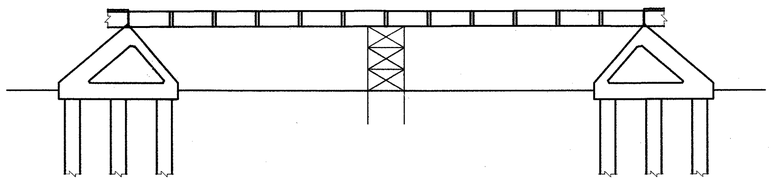
A. ERECT U-BEAMS WITH FALSEWORK AT ℄ SPAN.



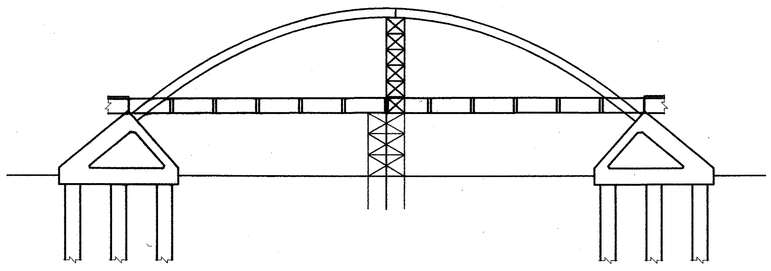
STAGE 1

A. CAST U-BEAM SPLICE AND TRANSVERSE DIAPHRAGMS.



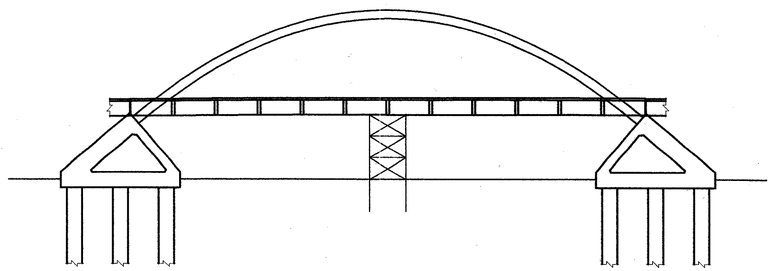
STAGE 2

A. ERECT STEEL ARCH RIB AND FIELD WELD SPLICE.
B. REMOVE ARCH RIB FALSEWORK.



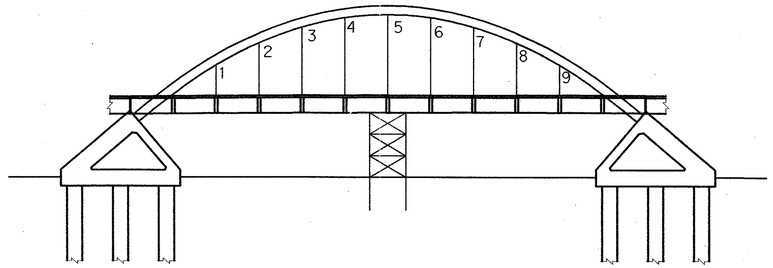
STAGE 3

A. CAST DECK.



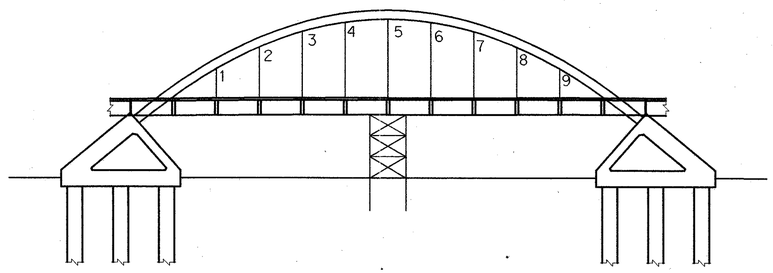
STAGE 4

A. INSTALL HANGERS.
B. STRESS HANGERS TO 5 KIPS.



STAGE 5

A. STRESS HANGERS IN SEQUENCE SHOWN IN TABLE 1.
PERFORM LIFTOFF TESTS AT END OF JACKING SEQUENCE TO VERIFY FINAL HANGER FORCE.



STAGE 6

TABLE 1 - HANGER FORCES

HANGER	JACKING FORCE (KIPS)	AT END OF JACKING SEQ. (KIPS)
NORTH 5	238.1	113.5
SOUTH 5	194.8	88.7
NORTH 6	146.2	106.8
SOUTH 6	116.3	83.6
NORTH 4	159.0	106.7
SOUTH 4	125.6	83.5
NORTH 7	162.4	99.1
SOUTH 7	127.1	77.7
NORTH 3	192.6	98.8
SOUTH 3	150.4	77.5
NORTH 8	158.9	93.7
SOUTH 8	124.6	72.7
NORTH 2	171.1	93.4
SOUTH 2	134.7	72.5
NORTH 9	142.1	146.6
SOUTH 9	111.9	113.7
NORTH 1	146.1	148.4
SOUTH 1	115.2	115.2

TABLE 2 - TEMP. BEARING PED. ELEVS.

BEAM	LEFT	RIGHT
9A-1	638.150	638.244
9A-2	638.412	638.506
9A-3	638.574	638.480
9A-4	638.312	638.218
9B-1	638.156	638.250
9B-2	638.418	638.512
9B-3	638.580	638.486
9B-4	638.317	638.224

TABLE 3 - TEMP. BEARING PAD TAPERS AND REACTIONS

BEAM	TAPER (IN./IN.)	MAX SERVICE DL REACT (KIPS)
9A-1	0.005	185.6
9A-2	0.005	152.2
9A-3	0.005	141.8
9A-4	0.005	146.4
9B-1	-0.002	185.6
9B-2	-0.002	152.2
9B-3	-0.002	141.8
9B-4	-0.002	146.4

NOTES

1. BEARING ELEVATIONS ARE BASED ON 2½" THICKNESS BEARING PADS AND 4'-6" WIDE PEDESTALS.
2. FULL APPROACH SPAN DEAD LOAD SHALL BE IN PLACE PRIOR TO LOADING THE ARCH RIB. STINGERS SHALL BE IN PLACE PRIOR TO THE APPROACH SPAN DECK PLACEMENT. STINGER IS NOT SHOWN ON THIS SHEET.
3. THE CONTRACTOR SHALL SUBMIT FOR REVIEW AND APPROVAL TO THE ENGINEER, A REPORT OF THE ACTUAL HANGER JACKING SEQUENCE DOCUMENTING JACKING AND FINAL HANGER FORCES.

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3010 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

MAIN SPAN
ERECTION SEQUENCE

SHEET 1 OF 2

TOWN OF ADDISON, TEXAS

Design	Drawn RJB	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04	NONE	25768	BR-36

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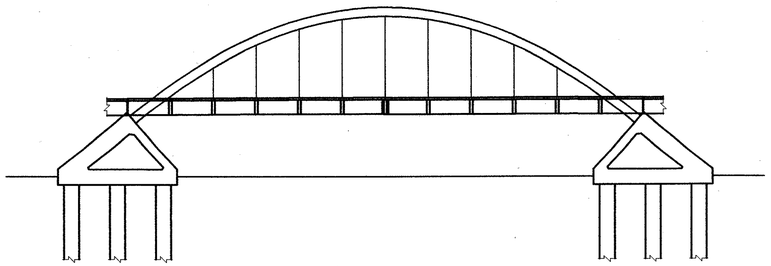
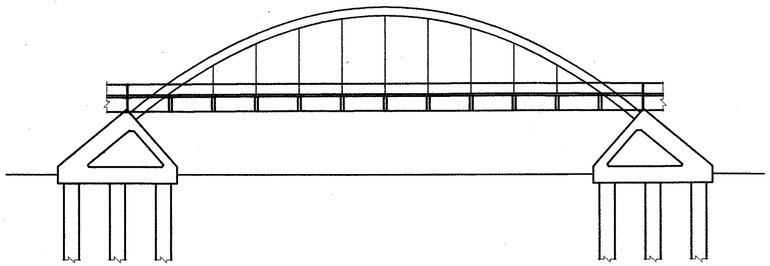
A. RELEASE RESIDUAL FORCE IN FALSEWORK AT ℄ OF SPAN.
B. REMOVE FALSEWORK AT ℄ OF SPAN.



STAGE 7

A. PLACE TRAFFIC AND PEDESTRIAN BARRIERS.



STAGE 8

ERECTION NOTES

1. THE INFORMATION SHOWN ON THE ERECTION SEQUENCE DRAWINGS CONVEYS THE ASSUMPTIONS MADE BY THE DESIGNER IN DESIGNING THE STRUCTURE. ALL INFORMATION SHOWN IS FOR THE CONTRACTOR'S INFORMATION ONLY, AND THE CONTRACTOR IS RESPONSIBLE FOR SELECTING THE MEANS AND METHODS USED TO CONSTRUCT THE STRUCTURE. THE CONTRACTOR SHALL SUBMIT FOR REVIEW AND APPROVAL TO THE ENGINEER, CALCULATIONS OF THE INFLUENCE OF HIS ERECTION SEQUENCE, LOADS AND DETAILS ON THE STRUCTURE, IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. THESE DOCUMENTS SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER OF THE STATE OF TEXAS.

2. THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE AT EACH STAGE OF ERECTION.

3. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL DEVELOP AND SUBMIT FOR THE TOWN OF ADDISON APPROVAL, A DETAILED TRAFFIC CONTROL PLAN THAT WILL CAUSE MINIMUM INTERFERENCE WITH TRAFFIC ALONG, ACROSS AND ADJACENT TO MIDWAY ROAD DURING CONSTRUCTION. SEE TRAFFIC CONTROL PLAN SHEETS (TC-1, TC-2 AND TC-3) FOR FURTHER NOTES AND DETAILS.

4. THE CONTRACTOR SHALL COORDINATE THE TRAFFIC CONTROL MEASURES AND ERECTION SEQUENCING FOR THE BRIDGE ACROSS MIDWAY ROAD WITH ALL OTHER CONSTRUCTION AT MIDWAY ROAD TO MINIMIZE THE INTERFERENCE TO TRAFFIC ALONG MIDWAY ROAD.

5. THE CONTRACTOR SHALL REFER TO TECHNICAL SPECIFICATION SECTION CSS, "TOWN OF ADDISON - CONSTRUCTION (STREETS AND SIDEWALKS)" WHEN PREPARING THE TRAFFIC CONTROL PLAN. LIMITATIONS TO CLOSURES OF MIDWAY ROAD SHALL BE AS SPECIFIED IN ARTICLE IV, DIVISION 1, SEC. 70-113.

6. THE CONTRACTOR SHALL BE RESPONSIBLE TO MAINTAIN AND PROTECT FROM DAMAGE THE DWU 60" WATERLINE THROUGHOUT CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY SPECIAL MEASURES REQUIRED TO PROTECT THE WATERLINE WHEN USING HEAVY EQUIPMENT IN THE VICINITY OF THE WATERLINE.

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ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

MAIN SPAN
ERECTION SEQUENCE

SHEET 2 OF 2

TOWN OF ADDISON, TEXAS

Design	Drawn RJB	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04	NONE	25768	BR-37

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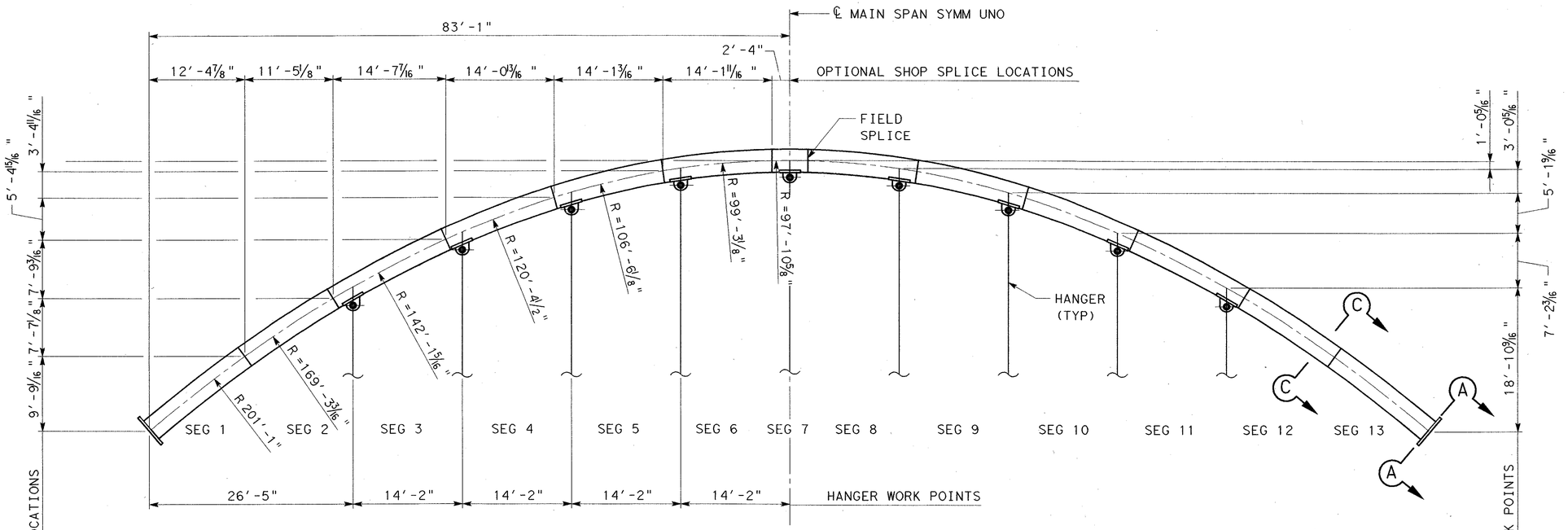


ARCH RIB ELEVATION

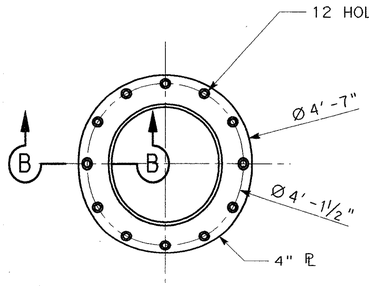
(FINAL GEOMETRY AFTER DEAD LOAD DEFLECTION)

TABLE OF ESTIMATED QUANTITIES *	
SPAN NUMBER	STRUCTURAL STEEL (LBS.)
9	175,000

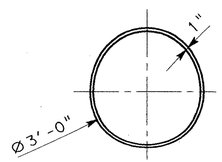
* BOTH ARCH RIBS

NOTES

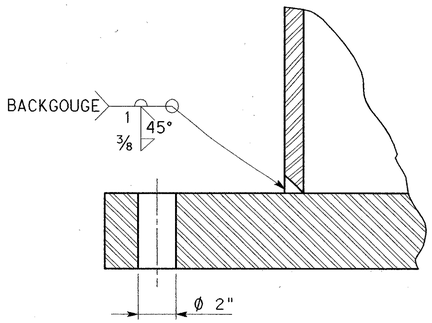
1. STEEL FOR THE ARCH RIB PIPE SHALL BE API 5L GRADE X52 PSL 2 PIPE.
2. ARCH RIB SHALL BE BENT BY INDUCTION BENDING. SEE THE SPECIFICATION FOR INDUCTION BENDING OF STRUCTUAL MEMBERS.
3. STEEL FOR THE OTHER ELEMENTS OF THE ARCH RIB SHALL BE ASTM A709 GRADE 50.
4. PAINT SYSTEM FOR STEEL ARCH RIB SHALL BE PROTECTION SYSTEM II. FOR LIMITS AND COLOR, SEE SURFACE FINISHES FOR STRUCTURES SHEET. THE PAINT SYSTEM SHALL CONFORM TO TXDOT STANDARD SPECIFICATION ITEM 446. THE INSIDE OF THE ARCH RIB SHALL RECEIVE PAINT AS PER TXDOT SPECIFICATION ITEM 441.9. THIS WORK SHALL BE PERFORMED IN THE SHOP.
5. ALL STRUCTURAL STEEL SHALL RECEIVE CHARPY V-NOTCH TESTING FOR TEMPERATURE ZONE I IN ACCORDANCE WITH ASTM A709.
6. THE CONTRACTOR SHALL SUBMIT AN ERECTION PLAN IN ACCORDANCE WITH TXDOT ITEM 441.3(2) FOR APPROVAL.
7. THE INSIDE OF THE ARCH RIB SHALL BE CLEANED BY THE CONTRACTOR, REMOVING ALL DIRT, TRASH, ETC.
8. SHOP ASSEMBLY OF THE ARCH RIBS PRIOR TO SHIPMENT IS REQUIRED TO ENSURE FIT UP.



SECTION A-A



SECTION C-C



SECTION B-B

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ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

ARCH RIB DETAIL
UNIT 4

SHEET 1 OF 4

TOWN OF ADDISON, TEXAS

Design	Drawn RJB	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04	NONE	25768	BR-38

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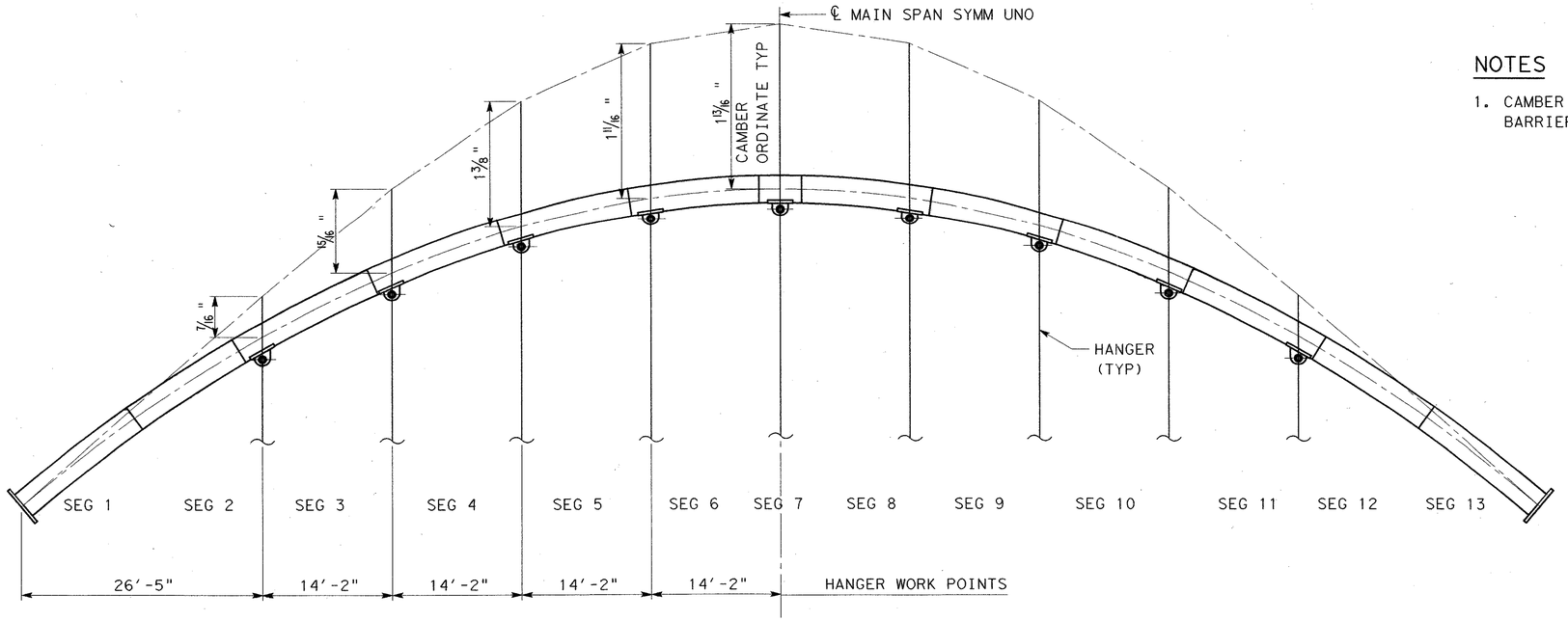
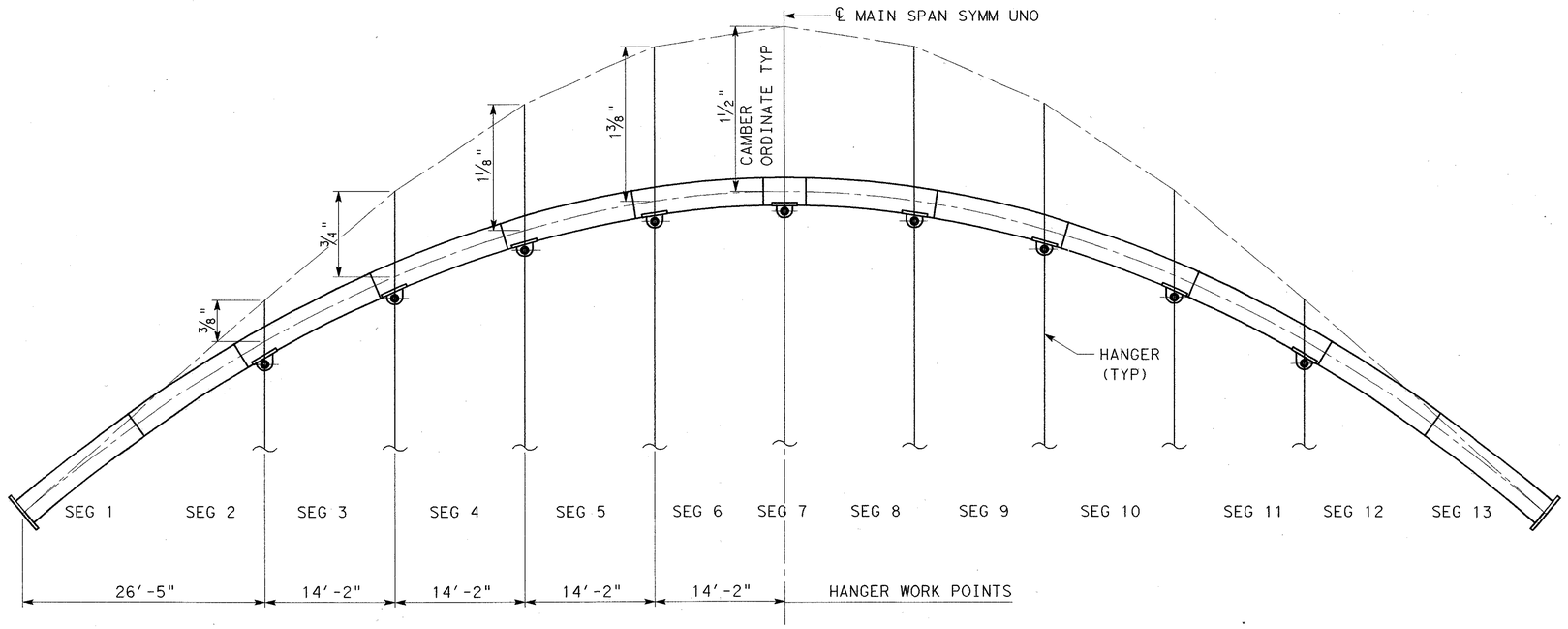


NORTH ARCH RIB CAMBER DIAGRAM



SOUTH ARCH RIB CAMBER DIAGRAM

NOTES

1. CAMBER ORDINATES ARE FOR TOTAL DEAD LOAD (INCLUDING BARRIERS).

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ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

ARCH RIB DETAIL
UNIT 4

SHEET 2 OF 4

TOWN OF ADDISON, TEXAS

Design	Drawn RJB	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04	NONE	25768	BR-39

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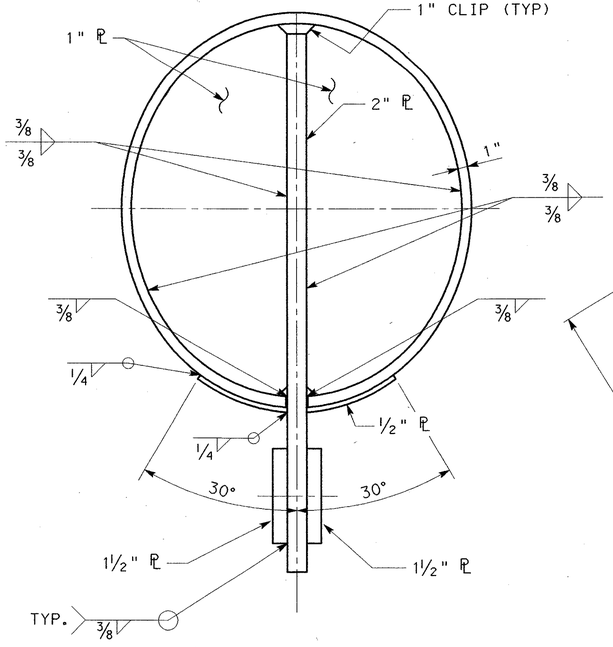

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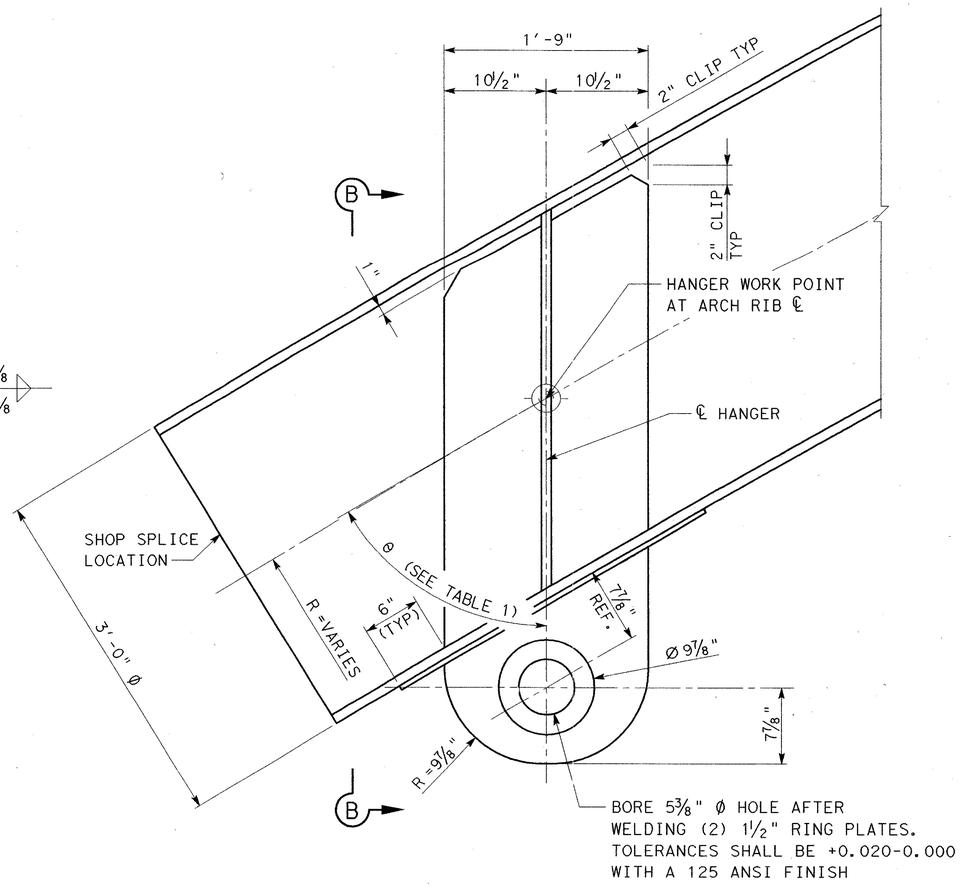
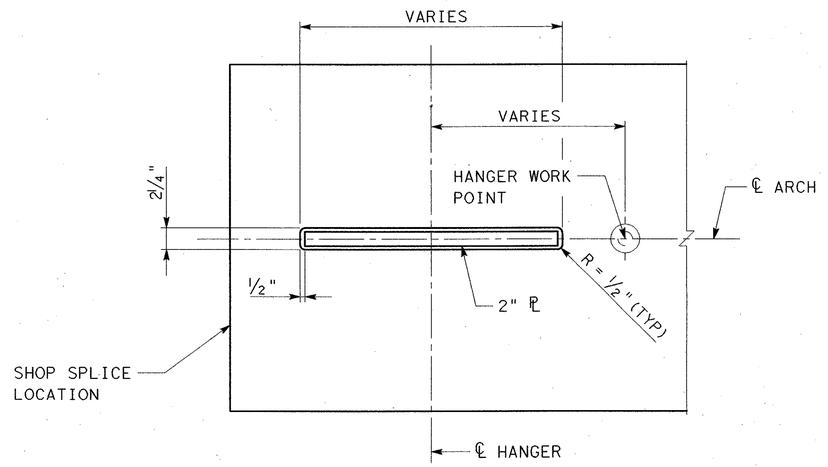


ELEVATION



HANGER SLOT CUTTING DETAIL

HANGER DETAIL

TABLE 1	
HANGER	θ (DEG.)
1 & 9	59.89° TC
2 & 8	66.49° TC
3 & 7	73.83° TC
4 & 6	81.75° TC
5	90.00° TC

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ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

ARCH RIB DETAIL
UNIT 4

SHEET 3 OF 4

TOWN OF ADDISON, TEXAS

Design	Drawn RJB	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04	NONE	25768	BR-40

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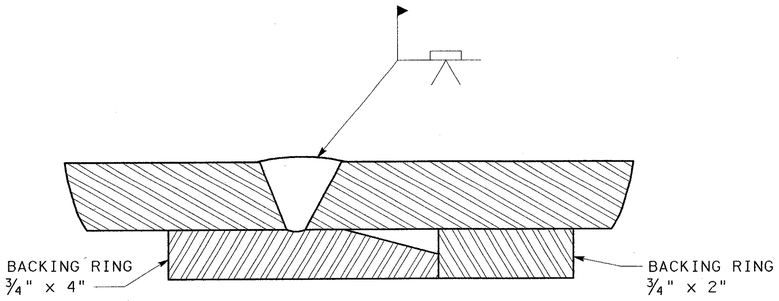
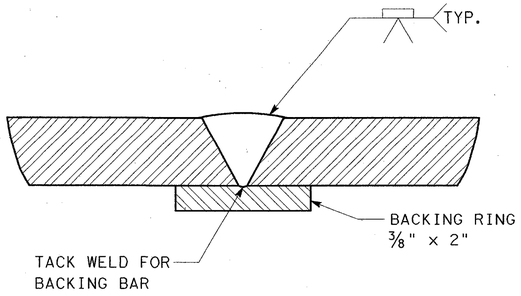


FIELD SPLICE DETAIL



SHOP WELD DETAIL

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ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

ARCH RIB DETAIL
UNIT 4

SHEET 4 OF 4

TOWN OF ADDISON, TEXAS

Design	Drawn RJB	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04	NONE	25768	BR-41

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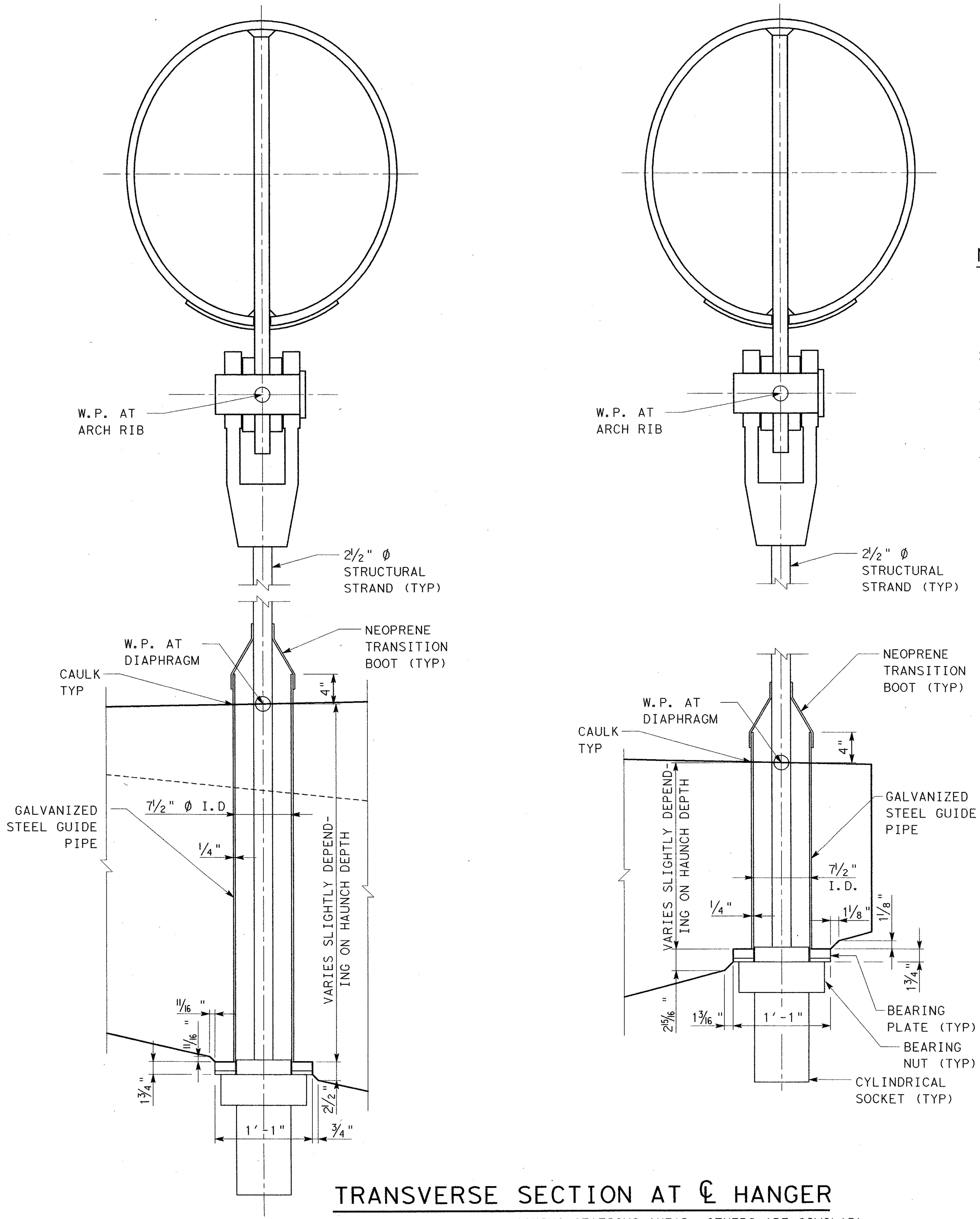
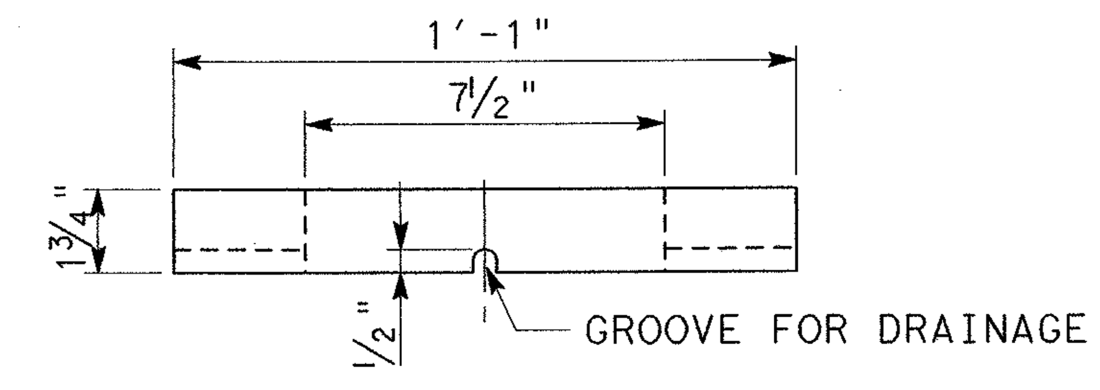


TRANSVERSE SECTION AT ℄ HANGER

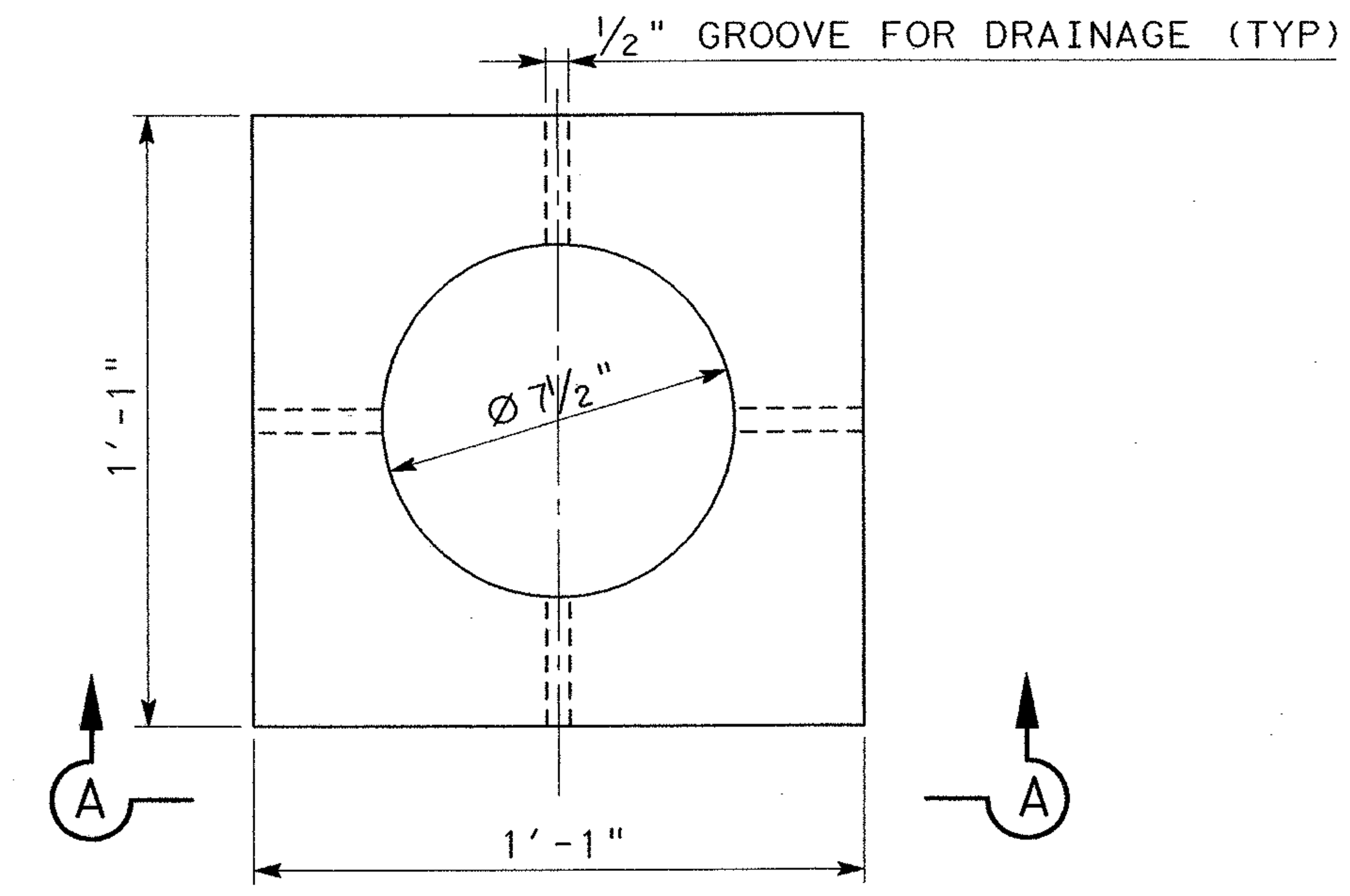
(HANGERS 1 AND 9 SHOWN LOOKING STATIONS AHEAD- OTHERS ARE SIMILAR)

NOTES

1. STRUCTURAL STRAND SHALL CONFORM TO ASTM A586, HELICAL STEEL WIRE STRUCTURAL STRAND, CLASS A. THE BREAKING STRENGTH SHALL BE 790 KIPS. MODULUS OF ELASTICITY ASSUMED FOR DESIGN IS 24,000,000 PSI.
2. NEOPRENE BOOT, GUIDE PIPE AND BEARING PLATE SHALL BE INCLUDED IN THE COST OF THE STRUCTURAL STRAND HANGERS.
3. STEEL GUIDE PIPE AND BEARING PLATE SHALL BE GRADE GRADE 36 STRUCTURAL STEEL AND GALVANIZED IN ACCORDANCE WITH ASTM A123.
4. BASED ON DISTANCE FROM ℄ OF PIN TO BOTTOM OF BEARING PLATE, THERE IS APPROXIMATELY 412′ OF STRUCTURAL HANGER REQUIRED.



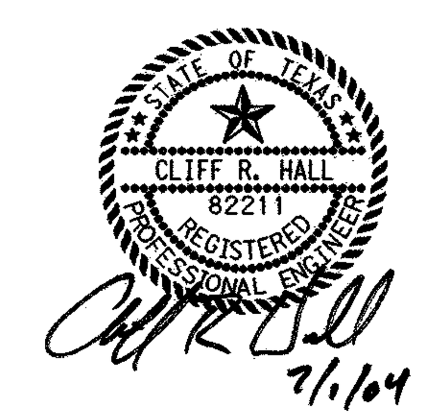
SECTION A-A



BEARING PLATE PLAN

TABLE OF ESTIMATED QUANTITIES	
SPAN NUMBER	HANGERS
9	L.S.

WORKING POINT ELEVATIONS FOR THE ARCH RIBS AND THE DIAPHRAGMS		
HANGER	ELEV. (FT) W.P. AT ARCH	ELEV. (FT) W.P. AT DIAPHRAGM
NORTH 1	653.087	643.329
SOUTH 1	653.087	642.663
NORTH 2	660.412	643.404
SOUTH 2	660.412	642.738
NORTH 3	665.650	643.465
SOUTH 3	665.650	642.799
NORTH 4	668.795	643.512
SOUTH 4	668.795	642.846
NORTH 5	669.844	643.546
SOUTH 5	669.844	642.880
NORTH 6	668.795	643.566
SOUTH 6	668.795	642.900
NORTH 7	665.650	643.573
SOUTH 7	665.650	642.907
NORTH 8	660.412	643.566
SOUTH 8	660.412	642.900
NORTH 9	653.087	643.545
SOUTH 9	653.087	642.879



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ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

HANGER DETAIL

UNIT 4

SHEET 1 OF 1

TOWN OF ADDISON, TEXAS

Design	Drawn RJB	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04	NONE	25768	BR-42

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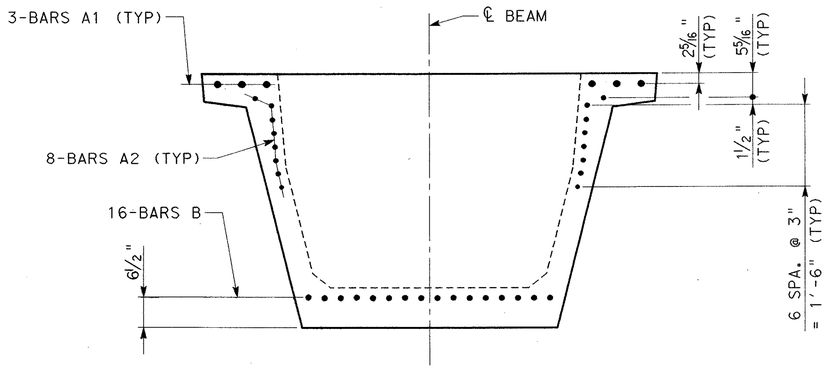

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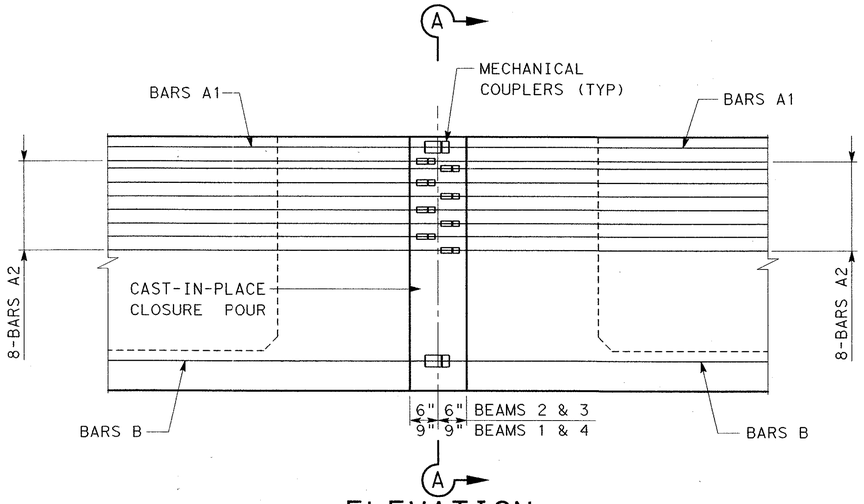
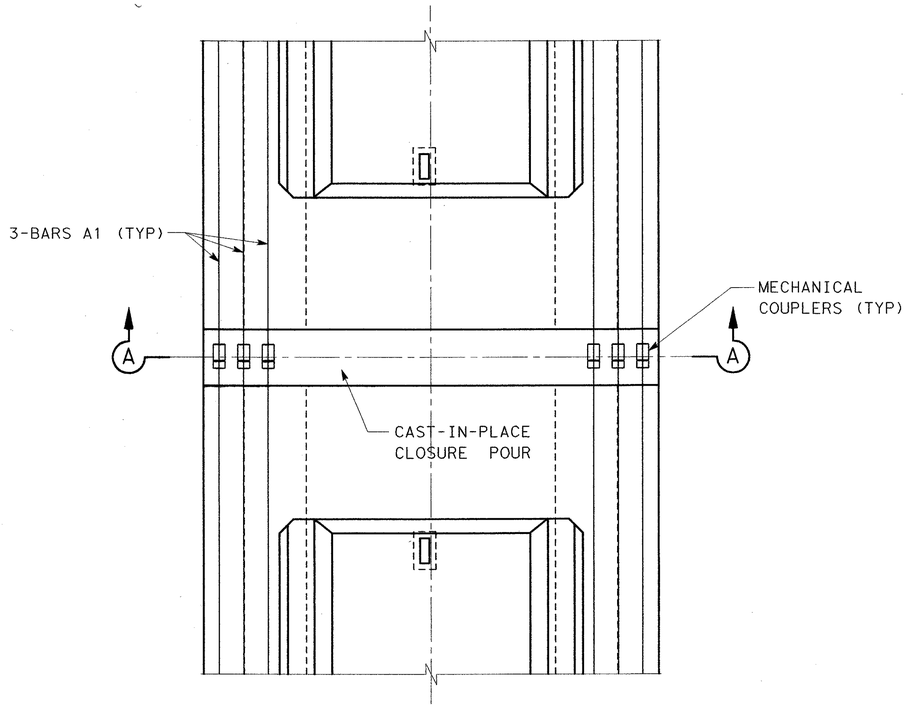


ELEVATION



PLAN

NOTES

1. CLASS "F" CONCRETE STRENGTH f'c=5000 psi FOR CAST-IN-PLACE CLOSURE POUR.
2. ALL REINFORCING STEEL SHALL BE GRADE 60.
3. WORK THESE DETAILS WITH TXDOT UBA DRAWINGS.
4. ROUGHEN CONCRETE SURFACE OF U-BEAM TO A FULL AMPLITUDE OF APPROXIMATELY 1/4" AT CLOSURE POUR.

U-BEAM DETAIL TABLE OF ESTIMATED QUANTITIES

BAR	NO.	SIZE	LENGTH	WEIGHT
A1	6	#11	9'-8''	309
A2	16	#8	9'-8''	413
B	16	#9	5'-0''	272
REINFORCING STEEL			Lb	994

U54 MID SPAN MOMENT CONNECTION

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ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

U-BEAM DETAILS
UNIT 4

SHEET 1 OF 2

TOWN OF ADDISON, TEXAS

Design	Drawn RJB	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04	NONE	25768	BR-43

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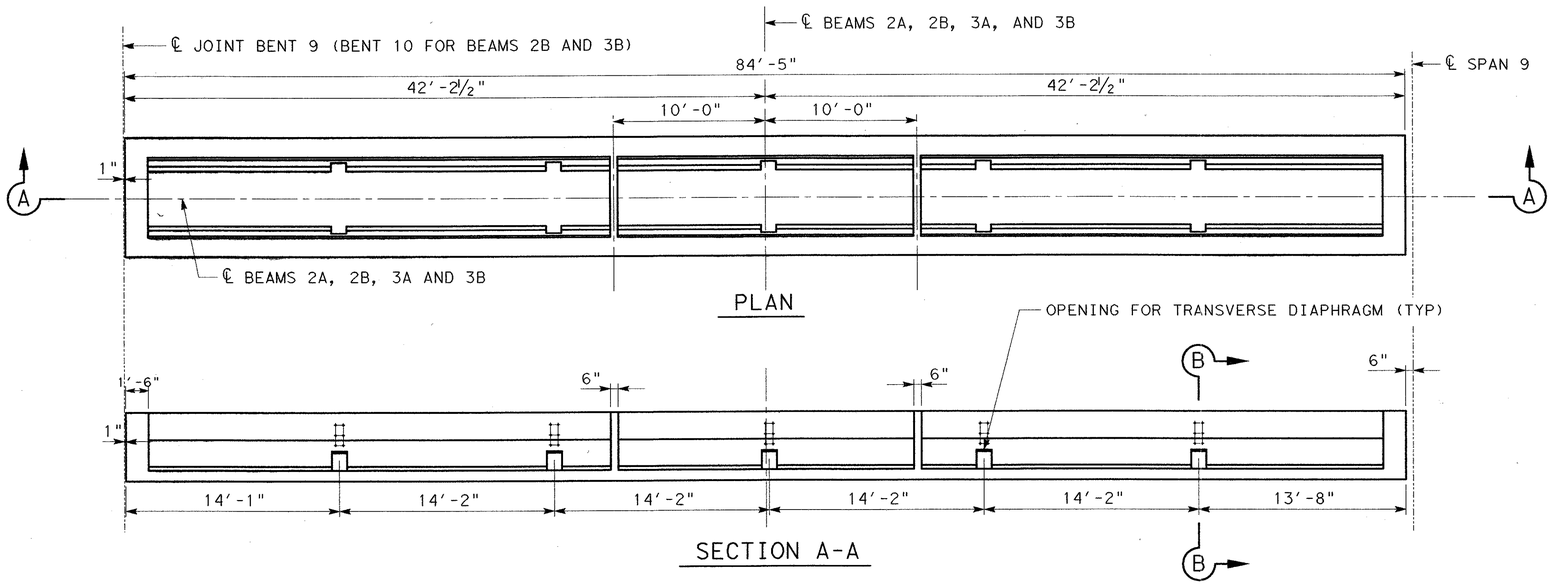
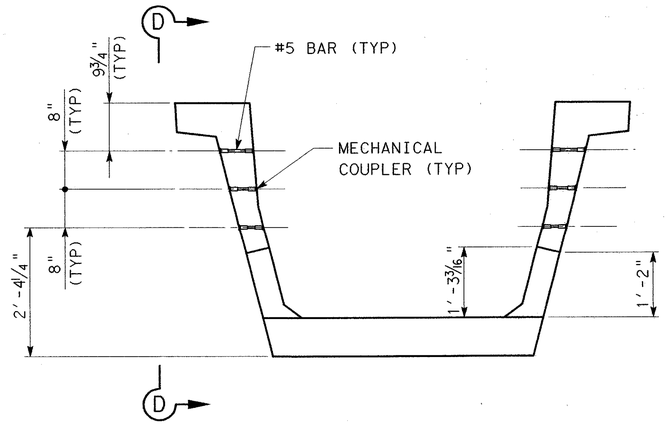


BEAMS 2A, 2B, 3A, AND 3B



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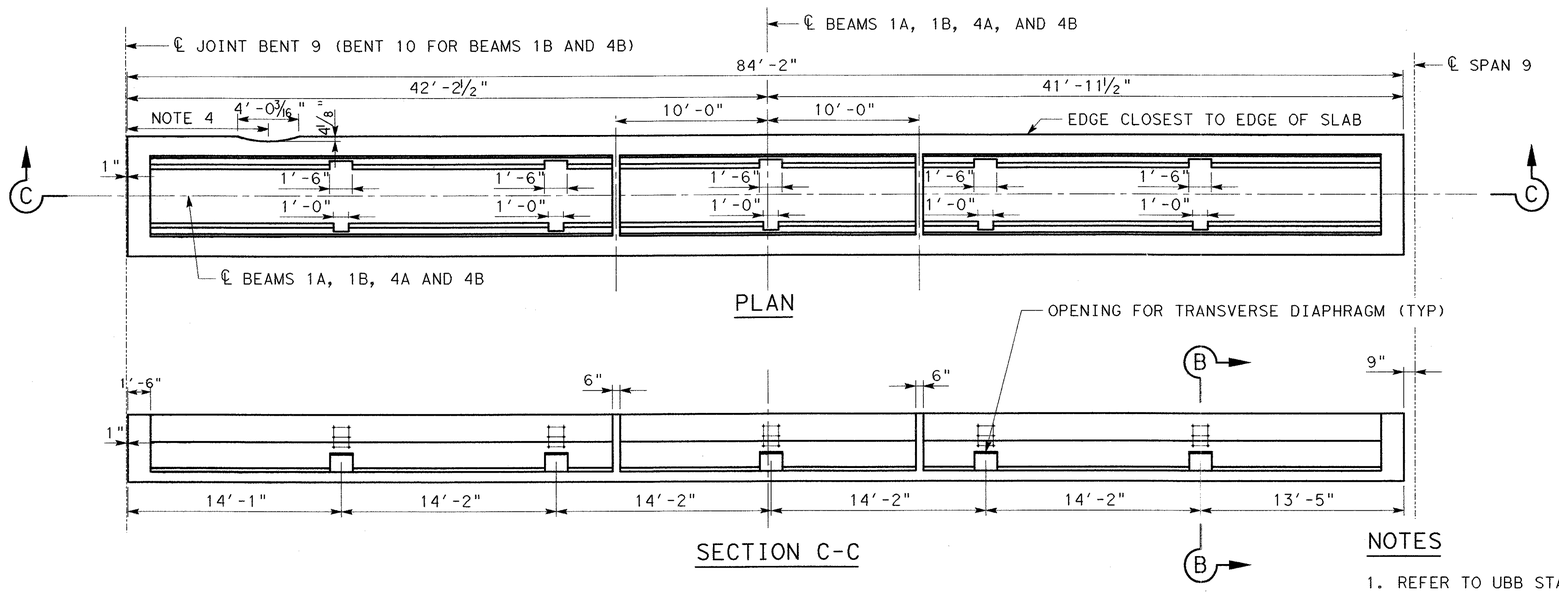
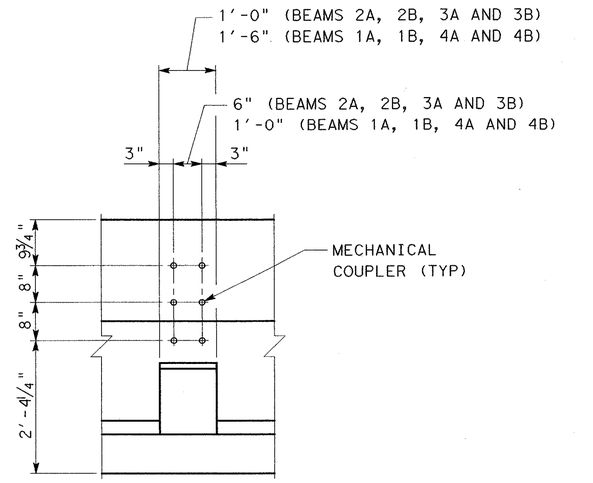


BEAMS 1A, 1B, 4A, AND 4B

(BEAM 1A AND 4B SHOWN, BEAMS 1B AND 4A ARE SIMILAR BUT OPPOSITE HAND)



VIEW D-D

NOTES

1. REFER TO UBB STANDARDS FOR ADDITIONAL DETAILS.
2. FOR ADD'L NON-STANDARD U-BEAM REINFORCEMENT, SEE SHEET BR-43.
3. CUT BARS R AND P TO MISS OPENINGS FOR TRANSVERSE DIAPHRAGMS. CUT BARS U AND X TO MISS NOTCH-OUT IN TOP FLANGE FOR ARCH RIB.
4. NOTCH-OUT TOP FLANGE FOR BEAMS 1A AND 1B TO CLEAR ARCH RIB. SEE SLAB PLAN FOR UNIT 4.
   DISTANCE TO ℄ OF NOTCH-OUT - BEAM 1A - 9′-3½"
   DISTANCE TO ℄ OF NOTCH-OUT - BEAM 1B - 9′-9"

STATE OF TEXAS
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NO.	DATE	REVISION	APPROV.

URS
GREYSTONE CENTRE
3010 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

U-BEAM DETAILS
UNIT 4

SHEET 2 OF 2

TOWN OF ADDISON, TEXAS

Design	Drawn RJB	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04	NONE	25768	BR-44

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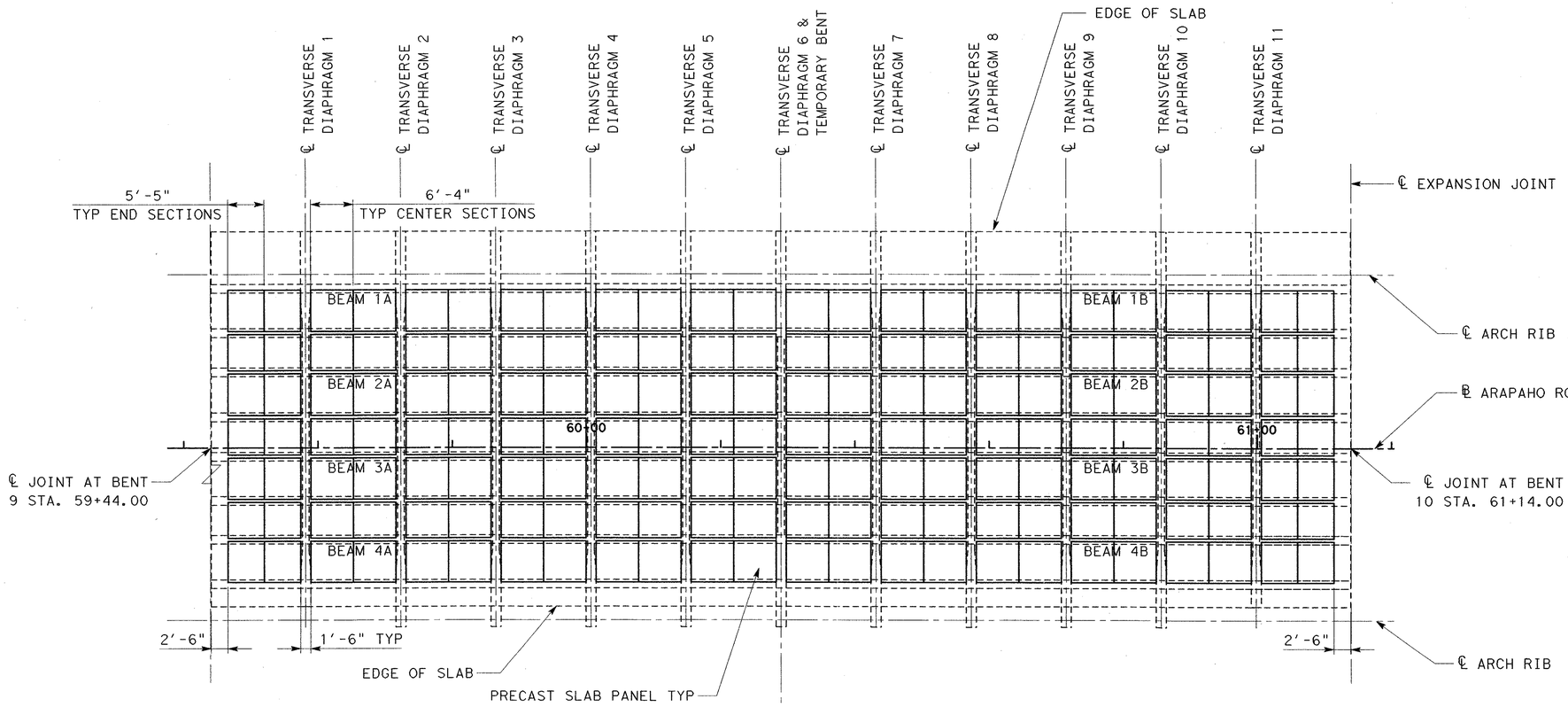

SPAN 9 - UNIT 4

(TYP U54 BEAMS)

NOTE

1. A SPECIAL PRECAST PANEL LAYOUT IS SHOWN FOR UNIT 4 SINCE IT IS REQUIRED TO LEAVE OPENINGS FOR THE TRANSVERSE DIAPHRAGMS.
2. WORK THESE DETAILS WITH TXDOT STANDARD DRAWING PCP(U).

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DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

PRECAST PANEL LAYOUT
UNIT 4

SHEET 1 OF 1

TOWN OF ADDISON, TEXAS

Design	Drawn RJB	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04	NONE	25768	BR-45

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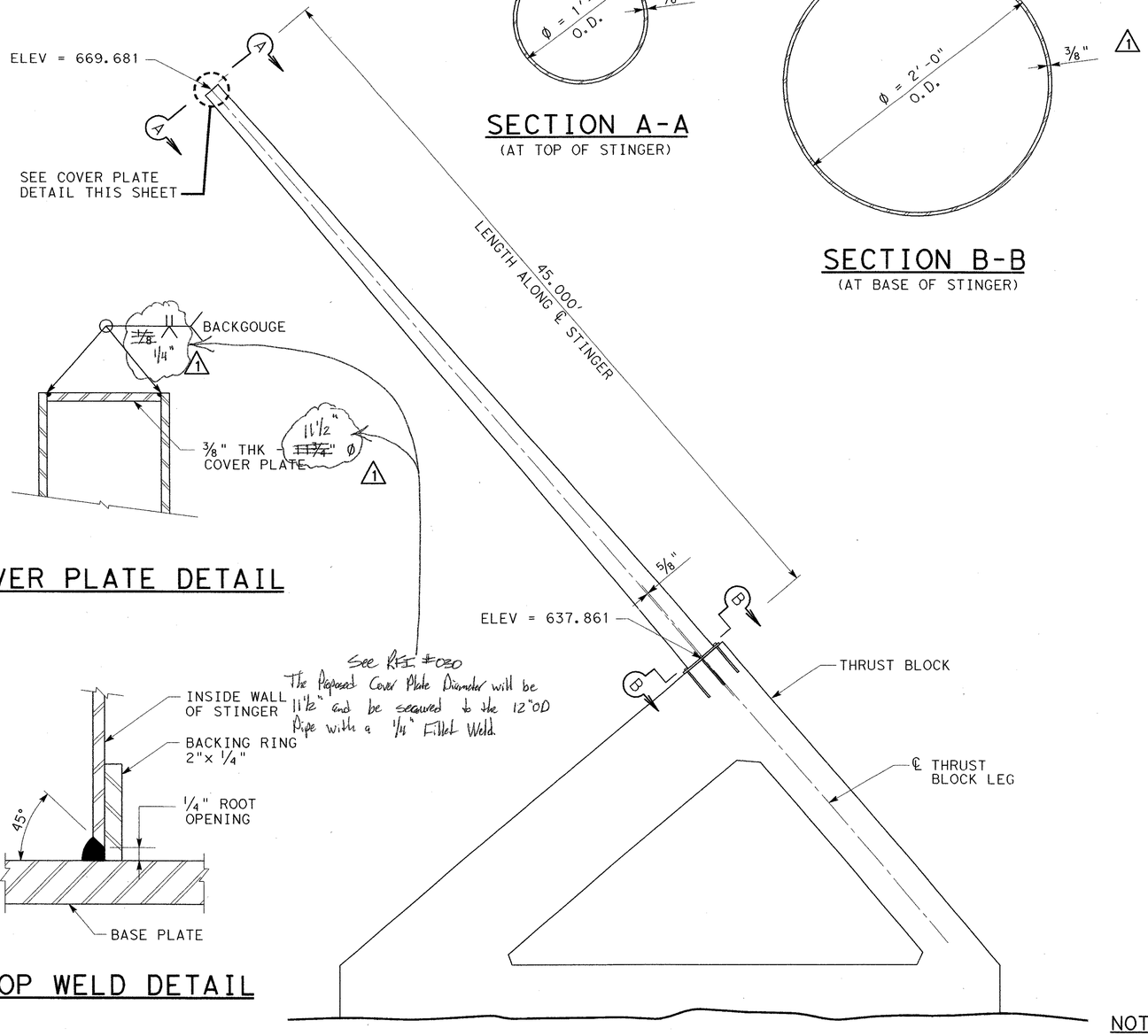


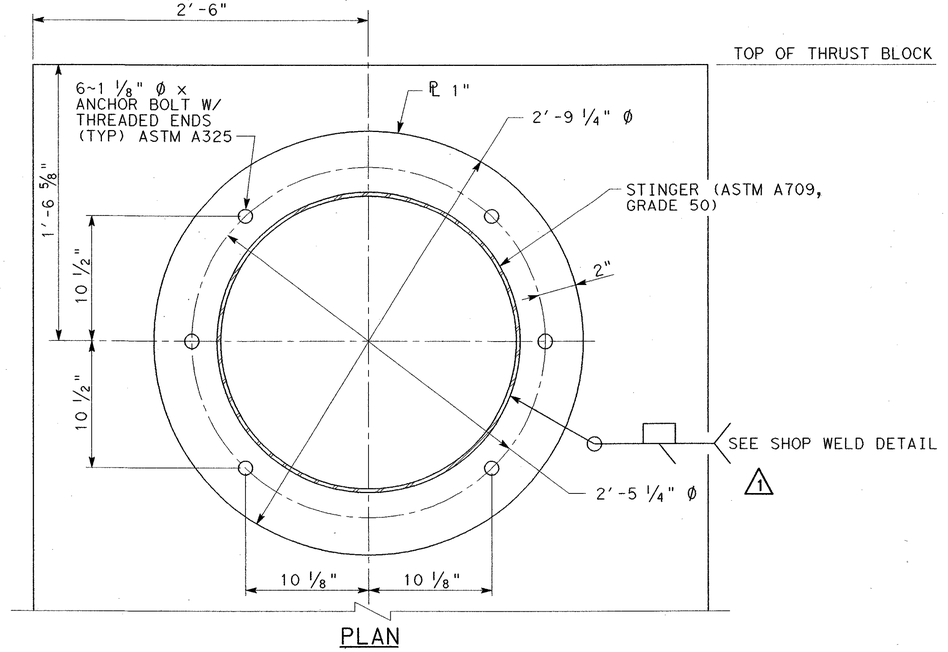
SECTION A-A
(AT TOP OF STINGER)

SECTION B-B
(AT BASE OF STINGER)

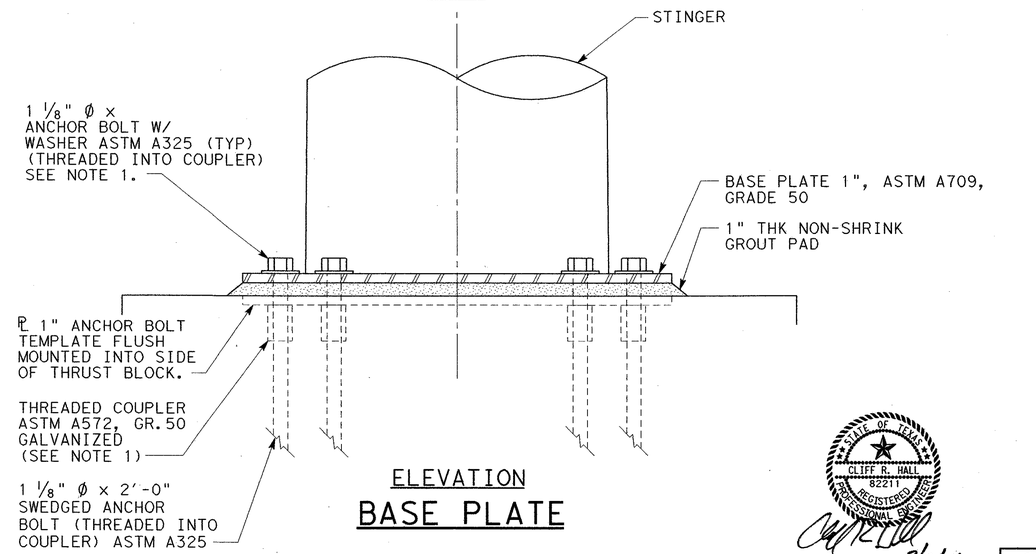
COVER PLATE DETAIL

See RFI #020
The Proposed Cover Plate Diameter will be 11'2" and be seamed to the 12"OD Pipe with a 1/4" Fillet Weld.

SHOP WELD DETAIL



PLAN



ELEVATION
BASE PLATE

ELEVATION

NOTES:

1. SEE BENTS 9 AND 10 DETAILS (SECTION M-M) FOR SWEDGED ANCHOR BOLT AND COUPLER PLACEMENT.
2. STINGER, ANCHOR PLATES AND COVER PLATE, USE ASTM A709, GRADE 50.
3. PAINT SYSTEM FOR STEEL STINGER SHALL BE PROTECTION SYSTEM II. FOR LIMITS, SEE PAINT DETAIL AND SURFACE FINISHES FOR STRUCTURES STANDARD DRAWING. FOR COLOR, SEE THE SPECIFICATION. THE PAINT SYSTEM SHALL CONFORM TO TXDOT STANDARD SPECIFICATION ITEM 446. THE INSIDE OF THE STINGER SHALL RECEIVE PAINT AS PER SPECIFICATION ITEM 441.9. THIS WORK SHALL BE PERFORMED IN THE SHOP.
4. ALL ASTM A709 STRUCTURAL STEEL SHALL RECEIVE CHARPY V-NOTCH TESTING FOR TEMPERATURE ZONE I IN ACCORDANCE WITH ASTM A709.

1

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NO.	DATE	REVISION	APPROV.
1	05/24/04	ADDENDUM CHANGES	CRH

URS GREYSTONE CENTRE 3010 LBJ FREEWAY, SUITE 1300 DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

STINGER DETAILS

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-46

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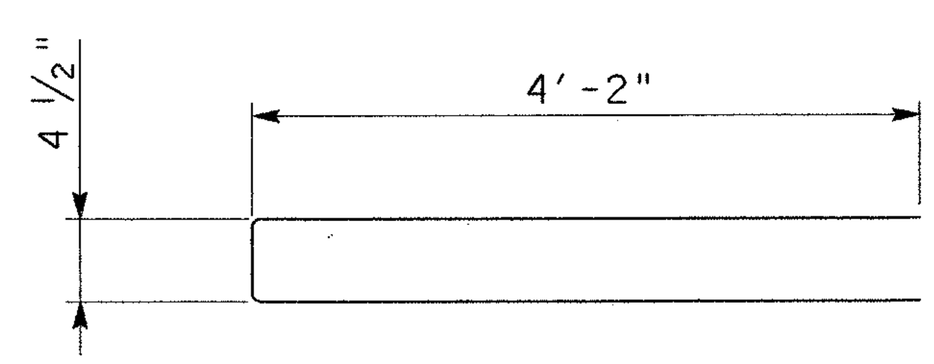
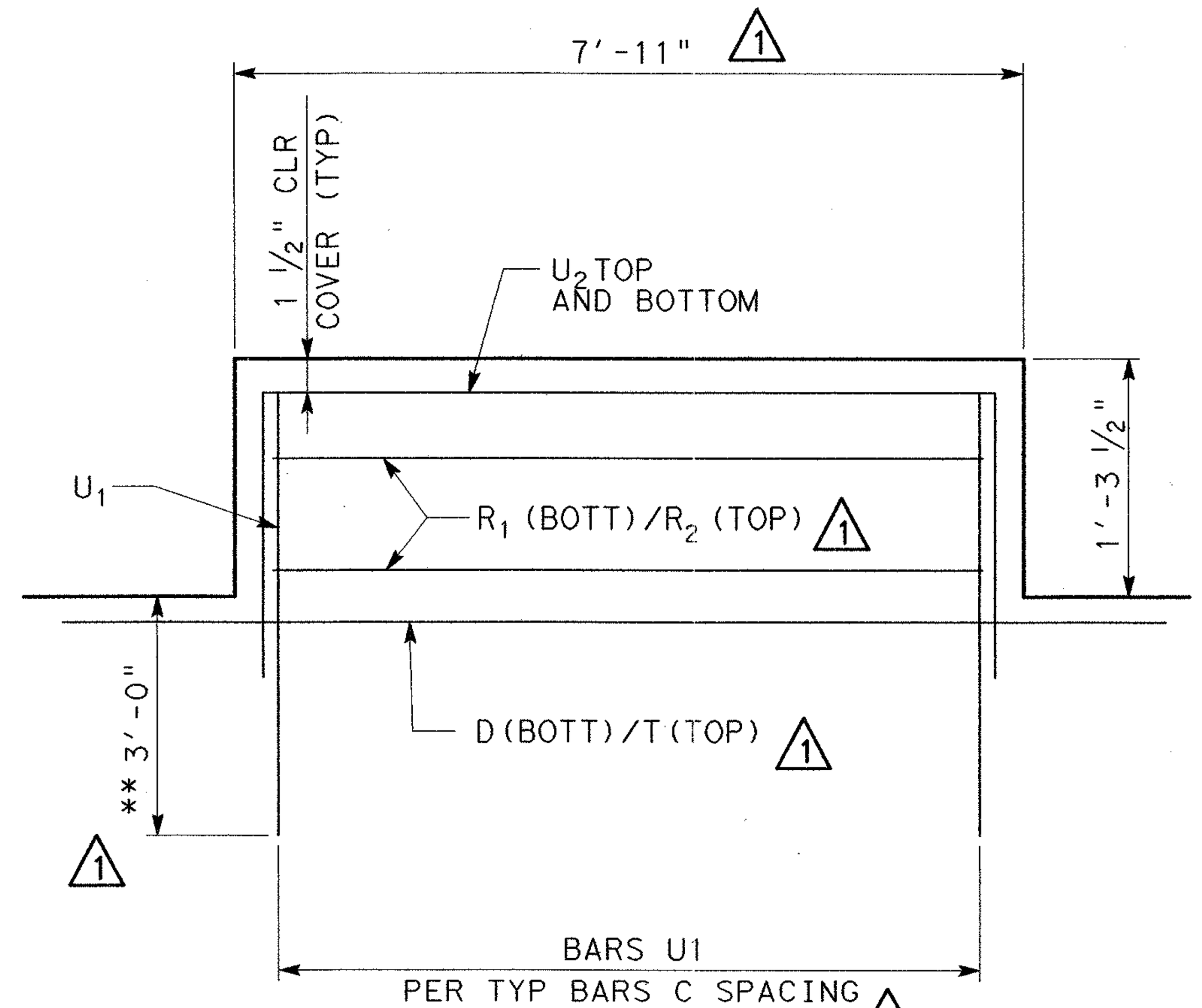
BAR TABLE	
BARS	SIZE
C	#5
B5	#5
D	#5
R1	#5
R2	#4
T	#4
U1	#5
U2	#5
Z	#4

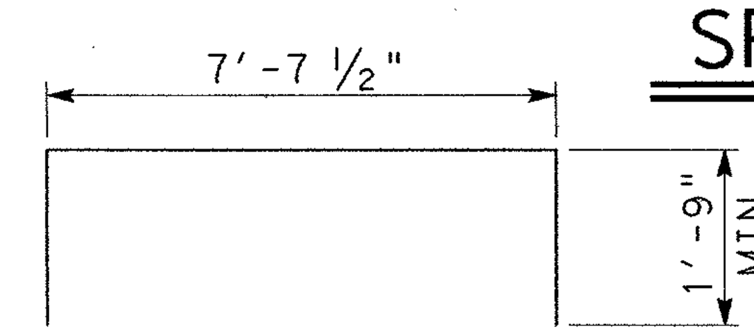


BARS U1

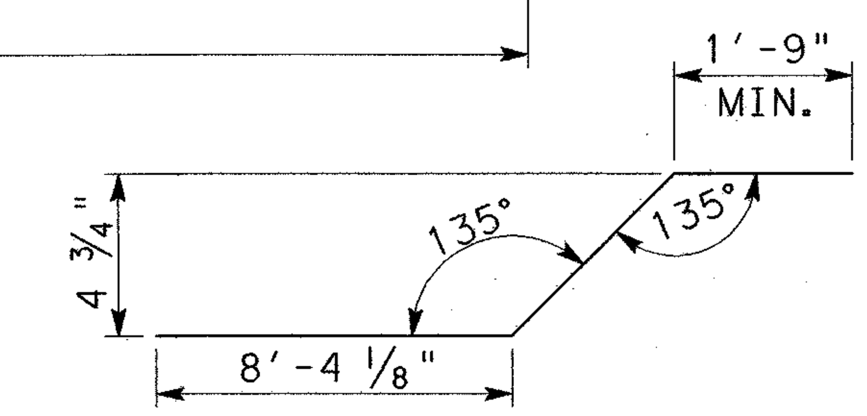


** MIN. EMBEDMENT INTO DECK SLAB

DETAIL A



BARS U2



BARS B5

TABLE OF ESTIMATED QUANTITIES

SPAN NO.	REINF CONC SLAB	(1) PRESTRESSED CONC BEAMS TYPE U54	* CLASS "S" CONC	* (2) TOTAL REINF STEEL
	SF	LF	CY	LB
1	5,628	419.02	139.0	36,582
2	5,618	411.85	138.7	36,517
3	5,628	411.85	139.0	36,582
TOTAL	16,874	1,242.72	416.7	109,681

(1) BEAM LENGTHS SHOWN ARE BOTTOM BEAM FLANGE LENGTHS WITH ADJUSTMENTS MADE FOR BEAM SLOPE.

* FOR CONTRACTORS INFO ONLY

(2) REINFORCING STEEL WEIGHT IS CALCULATED USING AN APPROXIMATE FACTOR OF 6.5 LBS/SF.

GENERAL NOTES:

1. DESIGNED IN ACCORDANCE WITH "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES", 16TH EDITION 1996, WITH INTERIM SPECIFICATIONS.
2. REFER TO UBA, UBB, UBNS STANDARD FOR BEAM AND BEARING PAD DETAILS.
3. REFER TO UBMS STANDARD FOR THICKENED SLAB END DETAILS AND QUANTITY ADJUSTMENTS, AND FOR CONTROL JOINT AND DRIP BEAD DETAILS.
4. REFER TO UBMST STANDARD FOR SLAB DETAILS AT INVERTED TEE BENTS.
5. REFER TO PCP-C OR PMDF-C STANDARDS FOR DETAILS AND QUANTITY ADJUSTMENTS IF EITHER OF THESE OPTIONS ARE USED.
6. REFER TO SEJ-A (MOD) STANDARD SHEET FOR DETAILS TO BE PLACED WITH DECK.
7. CLASS "S" CONCRETE STRENGTH f'c=4000 psi.
8. ALL REINFORCING STEEL SHALL BE GRADE 60.
9. SEE SLAB DETAILS SHEET 1 OF 4 FOR SECTION A-A & SHEET 4 OF 4 FOR SECTION E-E.
10. SEE T4(S) MOD SHEET FOR ADDITIONAL REINFORCEMENT.

STATE OF TEXAS — CLIFF R. HALL — 82211 — REGISTERED PROFESSIONAL ENGINEER — 7/2/04

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1	05/24/04	ADDENDUM CHANGES	CRH

URS — GREYSTONE CENTRE, 5010 LBJ FREEWAY, SUITE 1300, DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

SLAB PLAN
UNIT I

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-47

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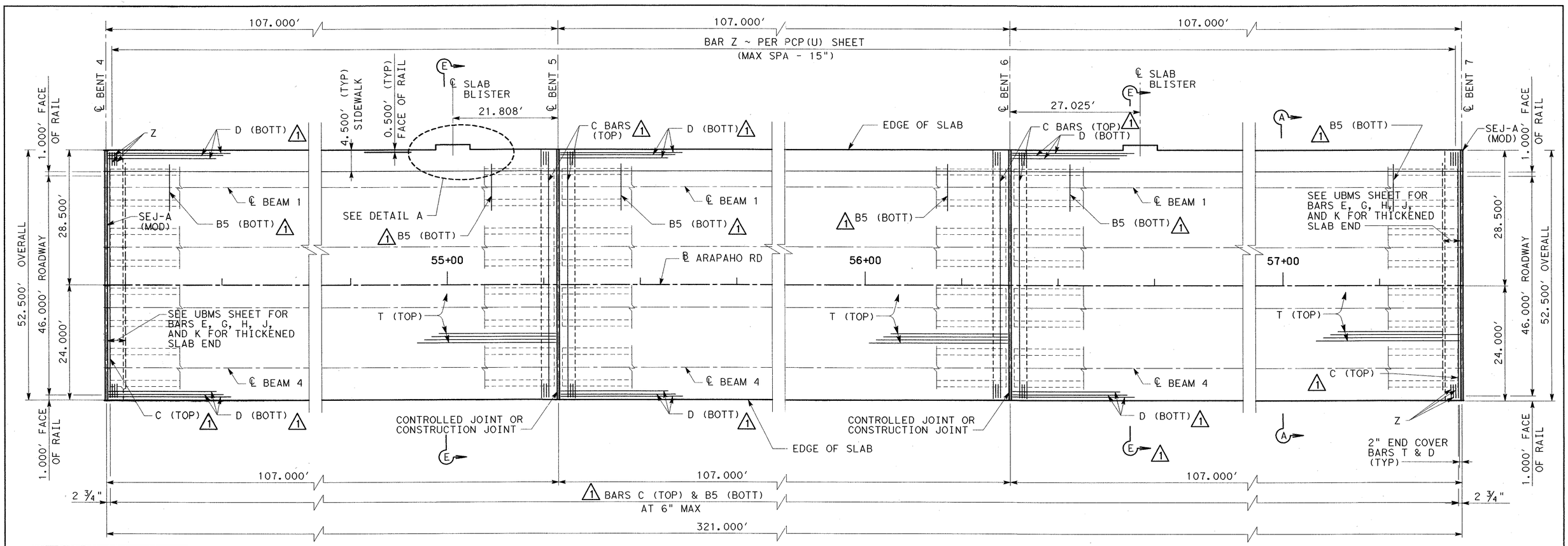
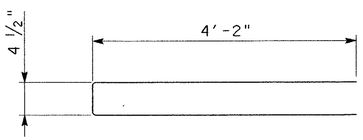


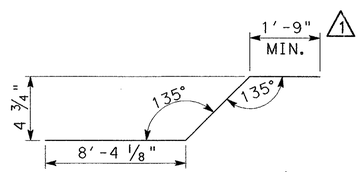
BAR TABLE	
BARS	SIZE
C	#5
B5	#5
D	#5
R1	#5
R2	#4
T	#4
U1	#5
U2	#5
Z	#4

SPAN 4

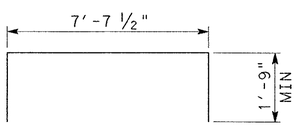


BARS U1 1

SPAN 5

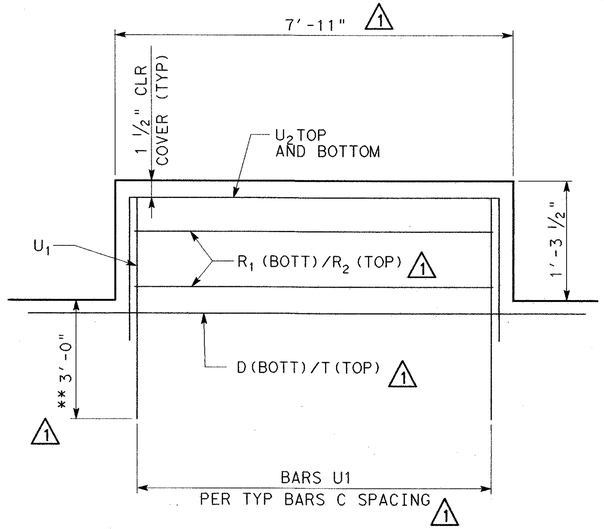


BARS B5 1



BARS U2

SPAN 6



** MIN. EMBEDMENT INTO DECK SLAB

DETAIL A

GENERAL NOTES:

1 1. SEE UNIT 1 SLAB PLANS GENERAL NOTES

TABLE OF ESTIMATED QUANTITIES

SPAN NO.	REINF CONC SLAB	(1) PRESTRESSED CONC BEAMS TYPE U54	CLASS "S" * CONC	(2) TOTAL REINF * STEEL
	SF	LF	CY	LB
4	5,628	411.85	139.0	36,582
5	5,618	411.85	138.7	36,517
6	5,628	411.80	139.0	36,582
TOTAL	16,874	1,235.50	416.7	109,681

(1) BEAM LENGTHS SHOWN ARE BOTTOM BEAM FLANGE LENGTHS WITH ADJUSTMENTS MADE FOR BEAM SLOPE.

(2) REINFORCING STEEL WEIGHT IS CALCULATED USING AN APPROXIMATE FACTOR OF 6.5 LBS/SF.

* FOR CONTRACTORS INFO ONLY

STATE OF TEXAS
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NO.	DATE	REVISION	APPROV.
1	05/24/04	ADDENDUM CHANGES	CRH

URS GREYSTONE CENTRE
5010 LBJ FREEWAY, SUITE 1500
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

SLAB PLAN
UNIT 2

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-48

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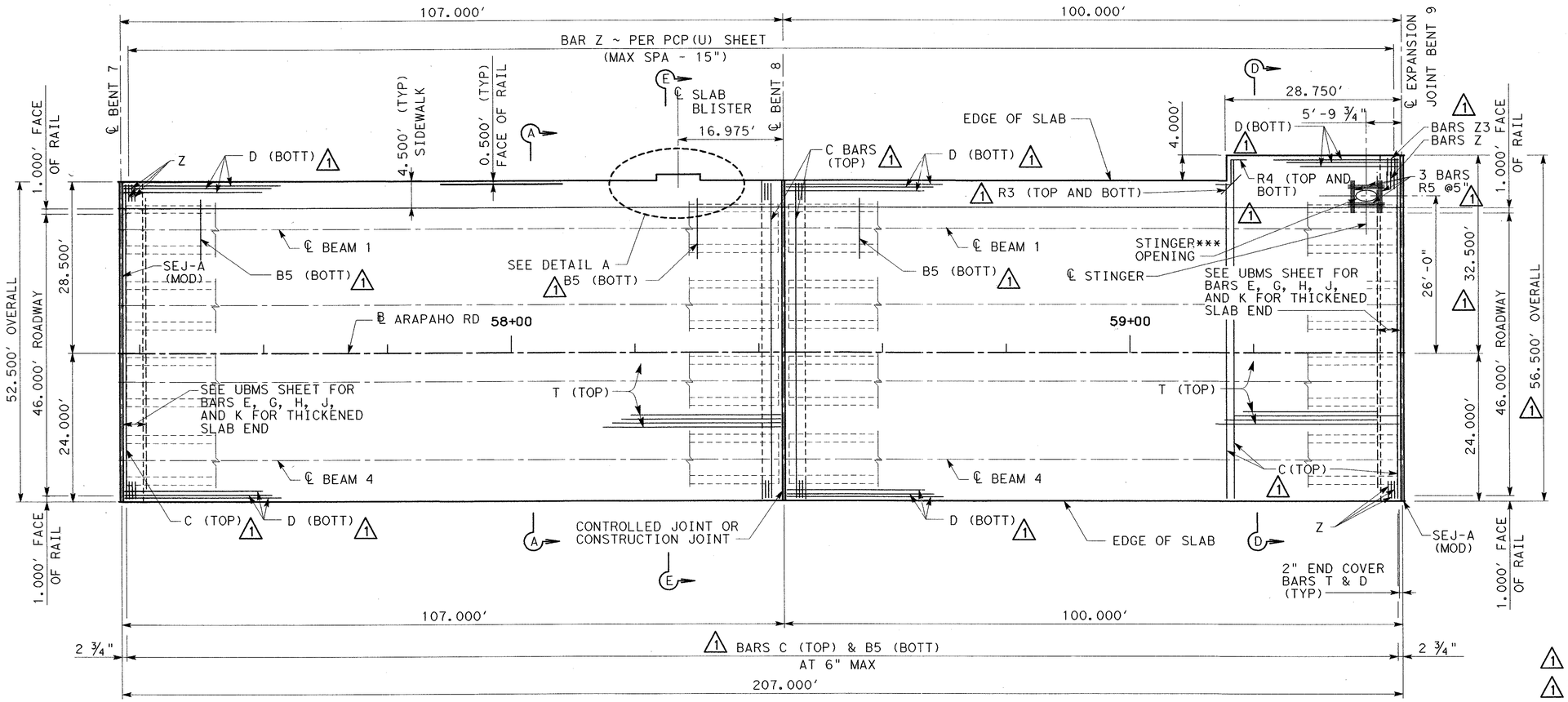
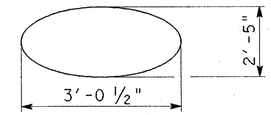




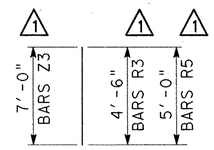
*** STINGER OPENING DIMENSIONS

BAR TABLE	
BARS	SIZE
B5	#5
C	#5
D	#5
R1	#5
R2	#4
R3	#5
R4	#5
R5	#5
T	#4
U1	#5
U2	#5
Z	#4
Z3	#4

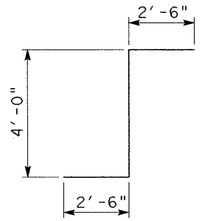
GENERAL NOTES:

1. SEE UNIT 1 SLAB PLANS GENERAL NOTES
2. SEE SLAB DETAILS SHEET 4 OF 4 FOR SECTION D-D.
3. ADJUST AND/OR FIELD CUT BARS C, T, Z & D TO BE CLEAR OF DECK OPENING FOR STINGER.

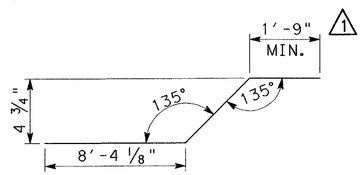
SPAN 7



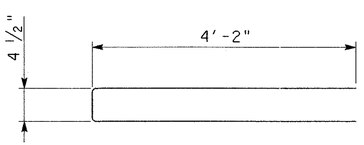
BARS R3 ③
BARS R5
BARS Z3



BARS R4 1

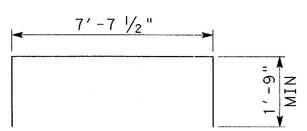


BARS B5 1



BARS U1 1

1 ③ PLACED 45° TO CORNER OF SIDEWALK



BARS U2

TABLE OF ESTIMATED QUANTITIES

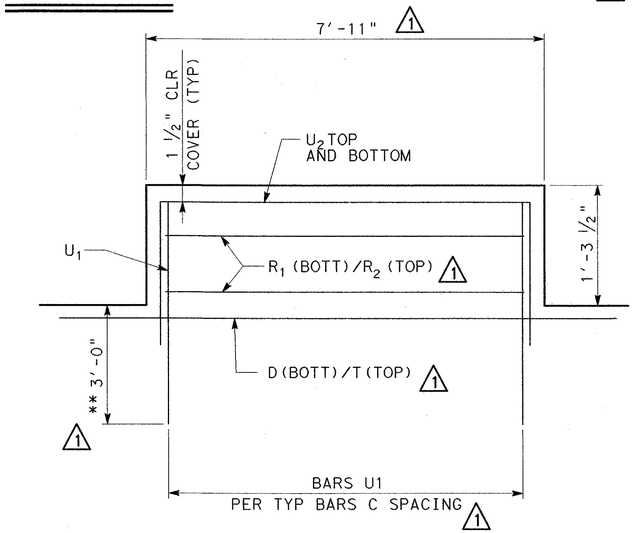
SPAN NO.	REINF CONC SLAB	① PRESTRESSED CONC BEAMS TYPE U54	CLASS "S" * CONC	② TOTAL REINF * STEEL
	SF	LF	CY	LB
7	5,628	411.73	139.0	36,582
8	5,365	390.86	132.5	34,873
TOTAL	10,993	802.59	271.5	71,455

① BEAM LENGTHS SHOWN ARE BOTTOM BEAM FLANGE LENGTHS WITH ADJUSTMENTS MADE FOR BEAM SLOPE.

② REINFORCING STEEL WEIGHT IS CALCULATED USING AN APPROXIMATE FACTOR OF 6.5 LBS/SF.

* FOR CONTRACTORS INFO ONLY

SPAN 8



** MIN. EMBEDMENT INTO DECK SLAB

DETAIL A

STATE OF TEXAS
CLIFF R. HALL
82211
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PROFESSIONAL ENGINEER
7/2/04

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NO.	DATE	REVISION	APPROV.
1	05/24/04	ADDENDUM CHANGES	CRH

URS GREYSTONE CENTRE 5010 LBJ FREEWAY, SUITE 1500 DALLAS, TX 75244

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

SLAB PLAN
UNIT 3

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-49

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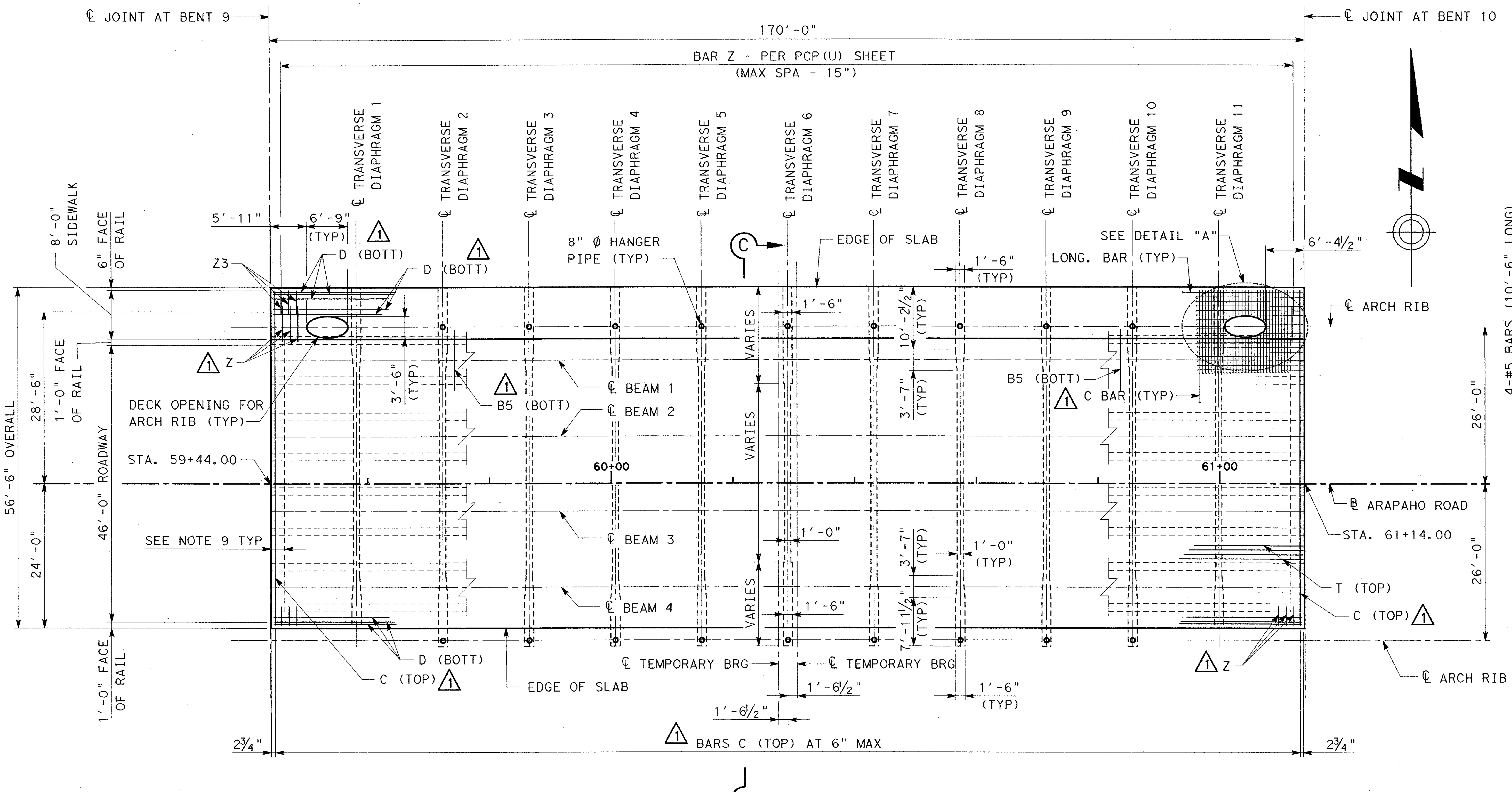
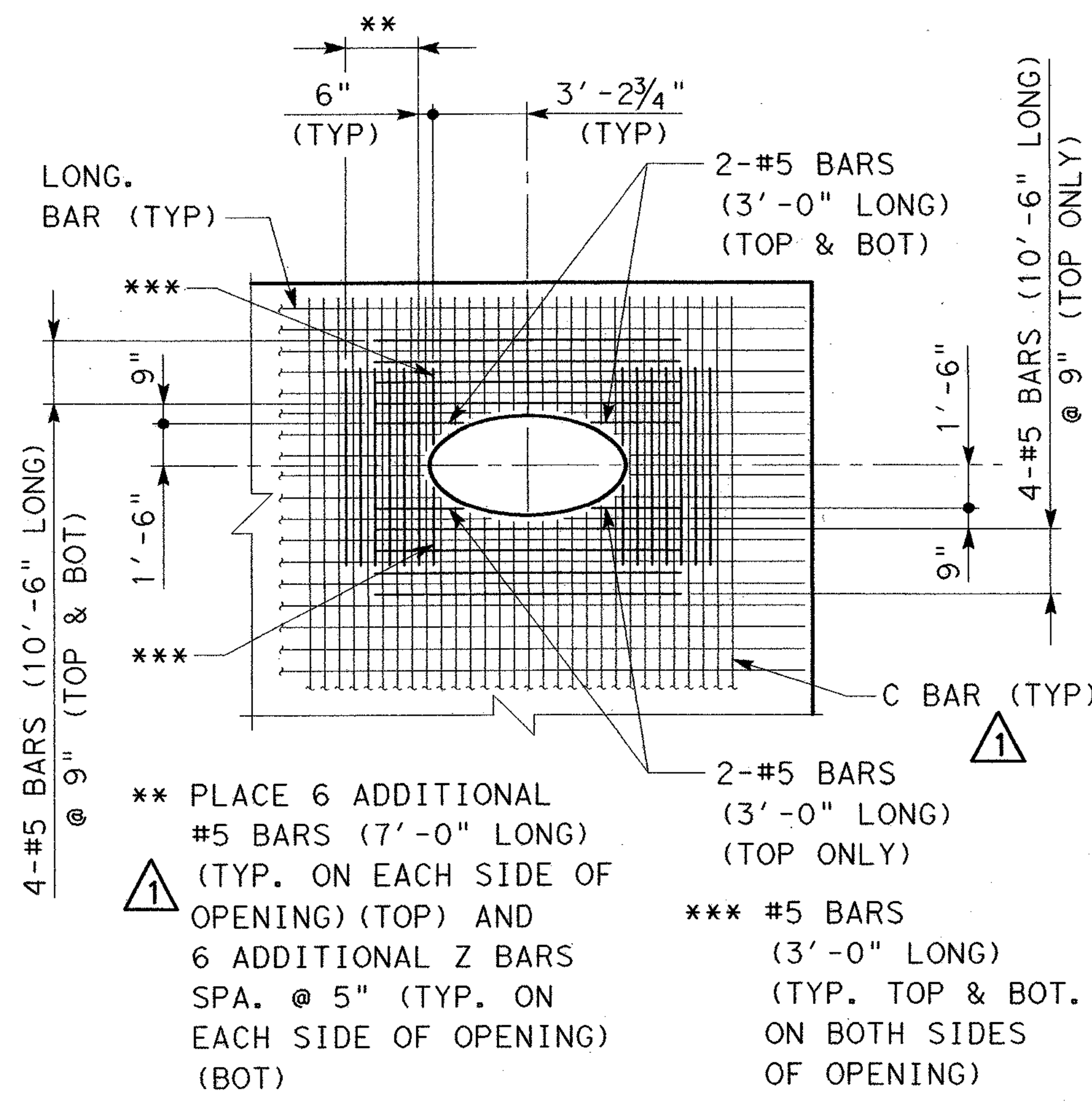


SPAN 9



DETAIL "A"

GENERAL NOTES

1. DESIGNED IN ACCORDANCE WITH "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES", 16TH EDITION 1996, WITH INTERIM SPECIFICATIONS.
2. REFER TO UBA, UBB, UBNS STANDARD FOR BEAM AND BEARING PAD DETAILS.
3. REFER TO UBMS STANDARD FOR THICKENED SLAB END DETAILS AND QUANTITY ADJUSTMENTS.
4. REFER TO UBMS STANDARD FOR CONTROLLED JOINT AND DRIP BEAD DETAILS.
5. REFER TO PCP-U OR PMDF-U STANDARDS FOR DETAILS AND QUANTITY ADJUSTMENTS IF EITHER OF THESE OPTIONS ARE USED.
6. REFER TO SEJ-A(MOD) STANDARD SHEET FOR DETAILS TO BE PLACED WITH DECK.
7. CLASS "S" CONCRETE STRENGTH f'c=4000 psi.
8. ALL REINFORCING STEEL SHALL BE GRADE 60.
9. SEE UBMS SHEET FOR BARS E, G, H, J AND K FOR THICKENED SLAB END.
10. ADJUST BARS C, T, Z AND D TO BE CLEAR OF DECK OPENING FOR ARCH RIB. (△1)
11. SEE SLAB DETAILS SHEET 3 OF 4 FOR SECTION C-C.

TABLE OF ESTIMATED QUANTITIES

SPAN NO.	REINF. CONC. SLAB	(1) PRESTRESSED CONC. BEAMS TYPE U54	CLASS "S" * CONC.	(2) TOTAL REINF. * STEEL
	SF	LF	CY	LB
9	9605	674.33	237.2	62433.

(1) BEAM LENGTHS SHOWN ARE BOTTOM BEAM FLANGE LENGTHS WITH ADJUSTMENTS MADE FOR BEAM SLOPE.

(2) REINFORCING STEEL WEIGHT IS CALCULATED USING AN APPROXIMATE FACTOR OF 6.5 LBS/SF.

BAR TABLE

BARS	SIZE
△1 C	#5
D	#5
T	#4
Z	#4

* FOR CONTRACTORS INFO ONLY

STATE OF TEXAS — CLIFF R. HALL — 82211 — REGISTERED PROFESSIONAL ENGINEER — 7/2/04

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NO.	DATE	REVISION	APPROV.
1	05/24/04	ADDENDUM CHANGES	CRH

URS — GREYSTONE CENTRE, 5010 LBJ FREEWAY, SUITE 1500, DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

SLAB PLAN
UNIT 4

TOWN OF ADDISON, TEXAS

Design	Drawn RJB	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04	NONE	25768	BR-50

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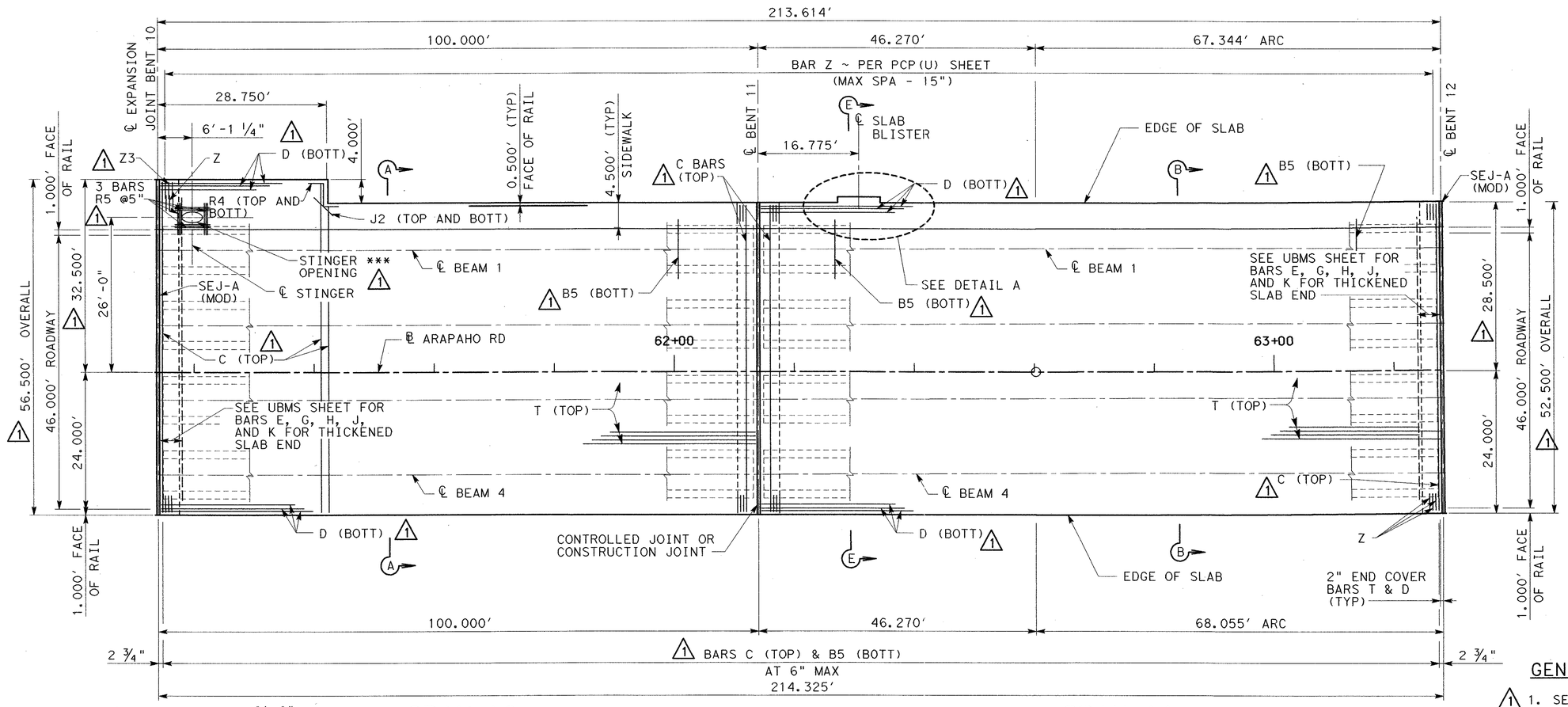
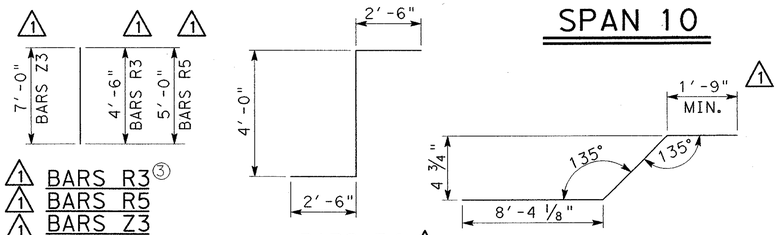


BAR TABLE	
BARS	SIZE
B5	#5
C	#5
D	#5
R1	#5
R2	#4
R3	#5
R4	#5
R5	#5
T	#4
U1	#5
U2	#5
Z	#4
Z3	#4

SPAN 10

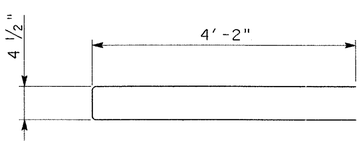


BARS R3 ③
BARS R5
BARS Z3

BARS R4

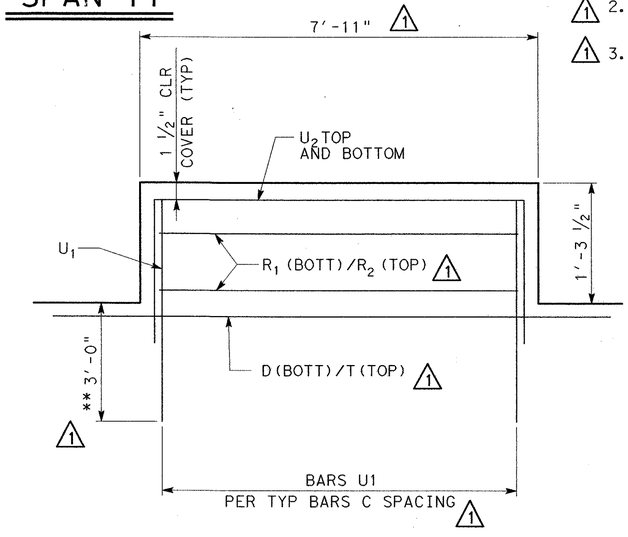
BARS B5

③ PLACED 45° TO CORNER OF SIDEWALK



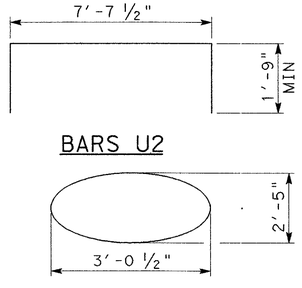
BARS U1

SPAN 11



** MIN. EMBEDMENT INTO DECK SLAB

DETAIL A



BARS U2

*** STINGER OPENING DIMENSIONS

GENERAL NOTES:

1. SEE UNIT 1 SLAB PLANS GENERAL NOTES.
2. SEE SLAB DETAILS SHEET 2 OF 4 FOR SECTION B-B
3. ADJUST AND/OR FIELD CUT BARS C, T, Z & D TO BE CLEAR OF DECK OPENING FOR STINGER.

TABLE OF ESTIMATED QUANTITIES

SPAN NO.	REINF CONC SLAB	① PRESTRESSED CONC BEAMS TYPE U54	CLASS "S" * CONC	② TOTAL REINF * STEEL
	SF	LF	CY	LB
10	5,365	390.84	132.5	34,873
11	5,994	439.62	148.0	38,961
TOTAL	11,359	830.46	280.5	73,834

① BEAM LENGTHS SHOWN ARE BOTTOM BEAM FLANGE LENGTHS WITH ADJUSTMENTS MADE FOR BEAM SLOPE.

② REINFORCING STEEL WEIGHT IS CALCULATED USING AN APPROXIMATE FACTOR OF 6.5 LBS/SF.

* FOR CONTRACTORS INFO ONLY

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NO.	DATE	REVISION	APPROV.
1	05/24/04	ADDENDUM CHANGES	CRH

URS GREYSTONE CENTRE 3010 LBJ FREEWAY, SUITE 1500 DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

SLAB PLAN
UNIT 5

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-51

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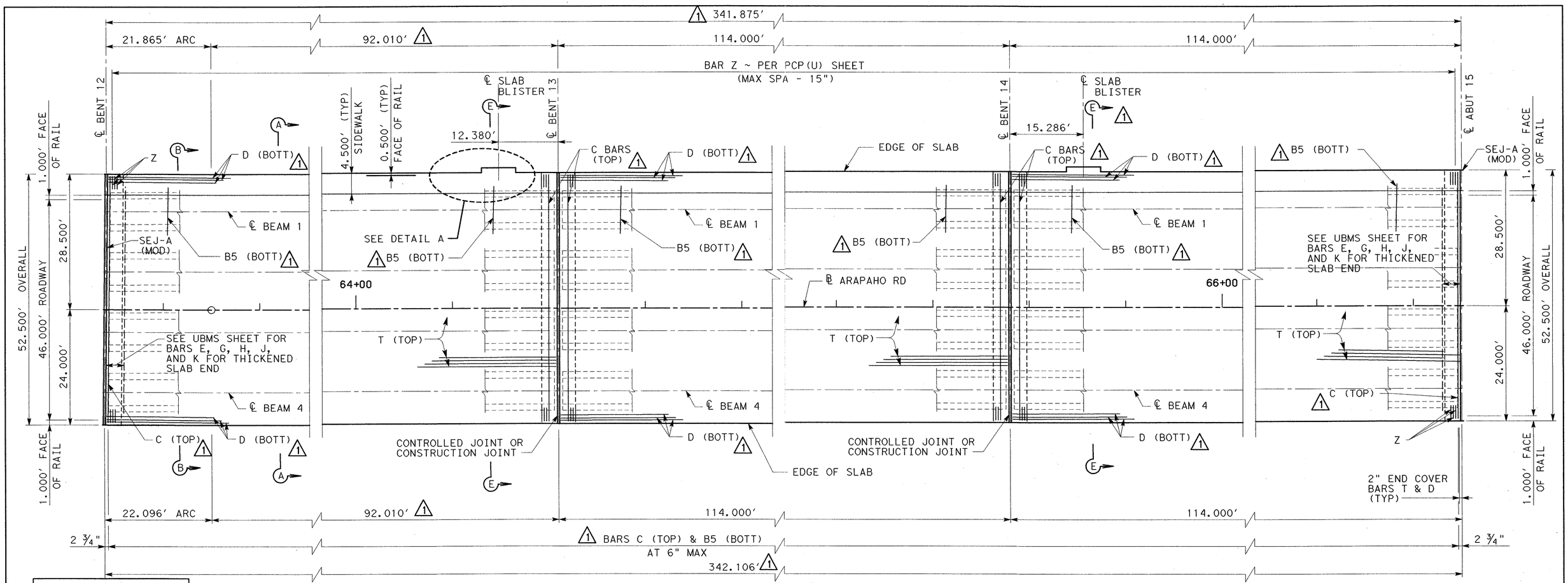
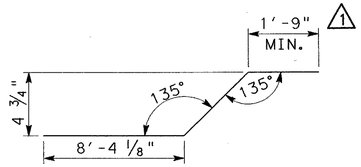
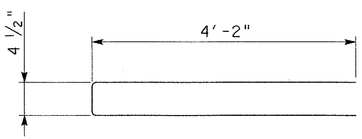


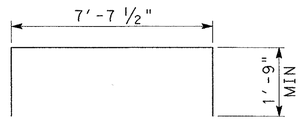
BAR TABLE	
BARS	SIZE
C	#5
B5	#5
D	#5
R1	#5
R2	#4
T	#4
U1	#5
U2	#5
Z	#4



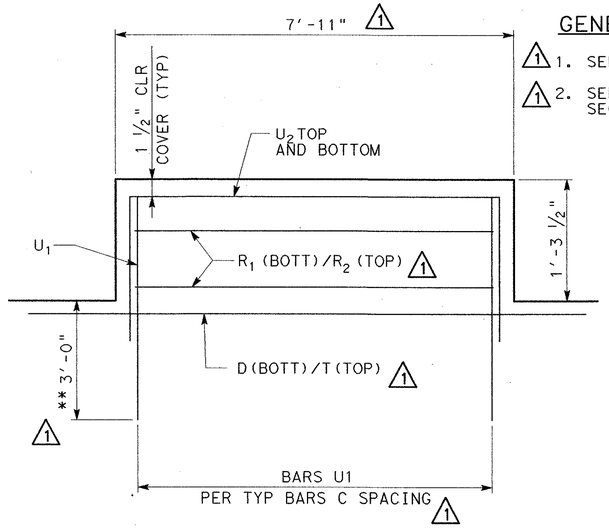
BARS B5 ⚠1



BARS U1 ⚠1



BARS U2



** MIN. EMBEDMENT INTO DECK SLAB

DETAIL A

TABLE OF ESTIMATED QUANTITIES

SPAN NO.	REINF CONC SLAB	① PRESTRESSED CONC BEAMS TYPE U54	CLASS "S" CONC *	② TOTAL REINF STEEL *
	SF	LF	CY	LB
12	5,995	439.74	148.1	38,968
13	5,985	439.77	147.8	38,903
14	5,995	446.93	148.1	38,968
TOTAL	17,975	1,326.44	444.0	116,839

① BEAM LENGTHS SHOWN ARE BOTTOM BEAM FLANGE LENGTHS WITH ADJUSTMENTS MADE FOR BEAM SLOPE.

② REINFORCING STEEL WEIGHT IS CALCULATED USING AN APPROXIMATE FACTOR OF 6.5 LBS/SF.

* FOR CONTRACTORS INFO ONLY

GENERAL NOTES:

⚠1 1. SEE UNIT 1 SLAB DETAILS GENERAL NOTES

⚠1 2. SEE SLAB DETAIL SHEET 2 OF 4 FOR SECTION B-B

STATE OF TEXAS
CLIFF R. HALL
82211
REGISTERED
PROFESSIONAL ENGINEER
7/2/04

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NO.	DATE	REVISION	APPROV.
1	05/24/04	ADDENDUM CHANGES	CRH

URS GREYSTONE CENTRE 3010 LBJ FREEWAY, SUITE 1300 DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

SLAB PLAN
UNIT 6

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-52

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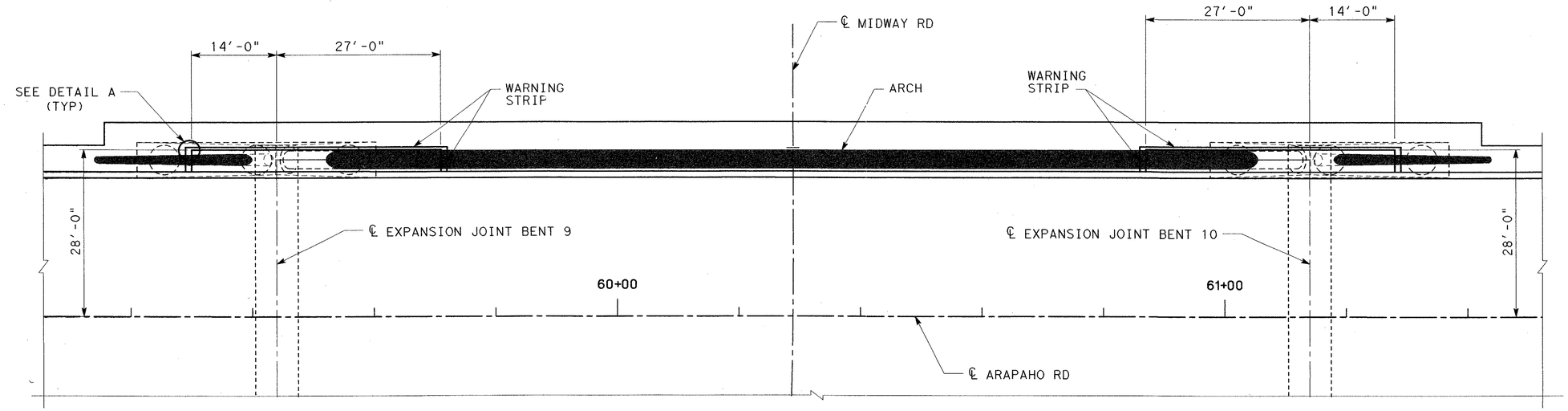
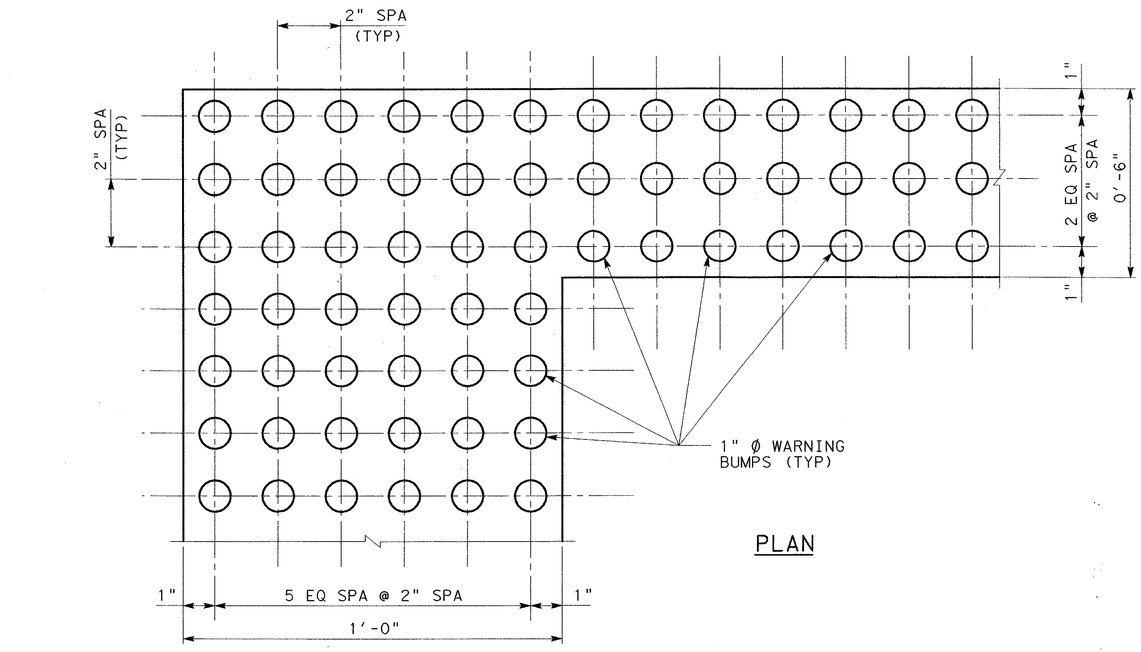
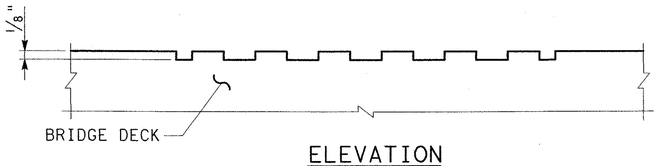
SCALE IN FEET



WARNING STRIP LAYOUT



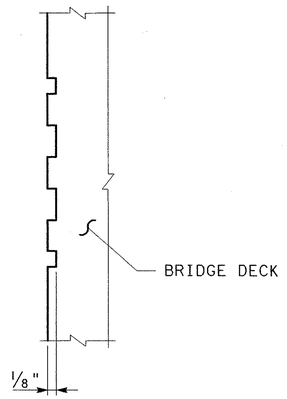
PLAN



ELEVATION

DETAIL A

(TYP FOR ALL 90° TURNS)



ELEVATION

GENERAL NOTES

1. SEE SURFACE FINISHES FOR STRUCTURES SHEET FOR RELEVANT COLOR SCHEME.
2. WARNING STRIP SHALL BE STAMPED INTO CONCRETE DECK

STATE OF TEXAS
CLIFF R. HALL
82211
REGISTERED
PROFESSIONAL ENGINEER
7/2/04

291

NO.	DATE	REVISION	APPROV.

URS
GREYSTONE CENTRE
3010 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

WARNING STRIP DETAIL

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-53

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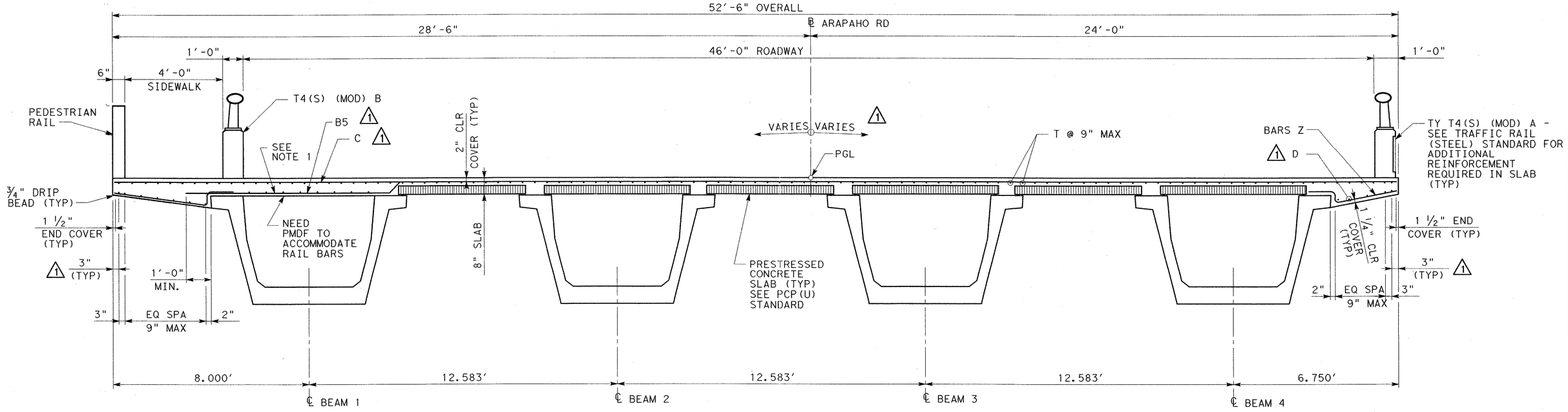
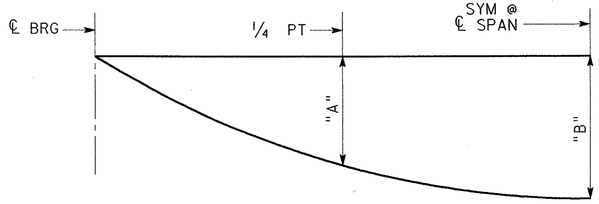


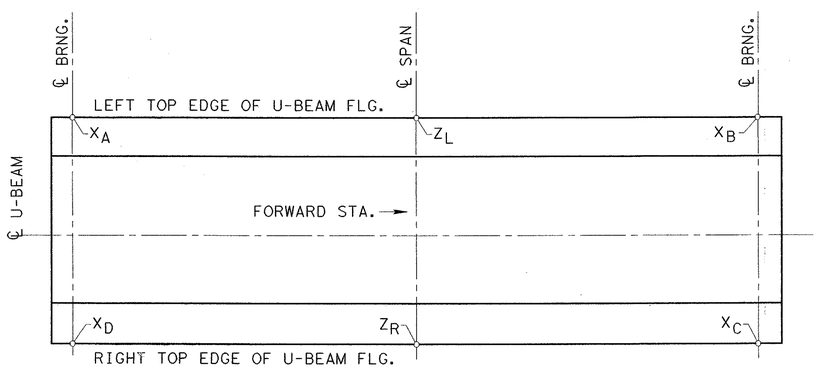
SECTION A-A

NOTE 1: THE USE OF PRECAST PANELS SHALL BE PROHIBITED AT BEAM 1. USE CONVENTIONAL DECK SLAB REINFORCEMENT. SEE TXDOT STANDARD MISCELLANEOUS SLAB DETAILS (FOR PRESTR CONC U-BEAMS) UBMS AND PERMANENT METAL DECK FORMS (FOR PRESTR CONC U-BEAMS) PMDF (U) FOR RELEVANT INFORMATION.



DEAD LOAD DEFLECTION DIAGRAM

NOTE: DEFLECTIONS SHOWN ARE CALCULATED VALUES DUE TO CONCRETE SLAB ONLY. FIELD DEFLECTIONS MAY BE LESS THAN CALCULATED VALUES SHOWN. CALCULATIONS ARE BASED ON AN Ec OF 5,000 KSI.



PLAN SHOWING LOCATION OF SECTION DEPTHS

TABLE OF CALCULATED SECTION DEPTHS

SPAN NO.	BEAM NO.	"X_A" @ ℄ BRNG. (IN)	"X_B" @ ℄ BRNG. (IN)	"X_C" @ ℄ BRNG. (IN)	"X_D" @ ℄ BRNG. (IN)	"Z_L" @ ℄ SPAN ⊛ (IN)	"Z_R" @ ℄ SPAN ⊛ (IN)
1	1	10	10	10	10	9 1/4	9 1/4
1	2	10	10	10	10	9 1/8	9 1/8
1	3	10	10	10	10	9 1/8	9 1/8
1	4	10	10	10	10	9 1/8	9 1/8
2	1	10	10	10	10	9 1/8	9 1/8
2	2	10	10	10	10	9 1/4	9 1/4
2	3	10	10	10	10	9 1/4	9 1/4
2	4	10	10	10	10	9 1/4	9 1/4
3	1	10	10	10	10	9 1/8	9 1/8
3	2	10	10	10	10	9 1/4	9 1/4
3	3	10	10	10	10	9 1/4	9 1/4
3	4	10	10	10	10	9 1/4	9 1/4

⊛ THEORETICAL DIMENSION (SHOWN TO THE NEAREST 1/8")

TABLE OF DEFLECTIONS

SPAN NO.	BEAM NO.	"A" (FT)	"B" (FT)
1	1	0.1249	0.1756
	2	0.1099	0.1544
	3	0.1097	0.1541
	4	0.1150	0.1617
2-7	1	0.1166	0.1639
	2	0.1026	0.1442
	3	0.1024	0.1439
	4	0.1074	0.1509
8 & 10	1	0.1024	0.1439
	2	0.0834	0.1172
	3	0.0832	0.1170
	4	0.0873	0.1227
11-13	1	0.1517	0.2131
	2	0.1334	0.1874
	3	0.1331	0.1871
	4	0.1396	0.1962
14	1	0.1618	0.2273
	2	0.1422	0.1999
	3	0.1420	0.1995
	4	0.1489	0.2093

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NO.	DATE	REVISION	APPROV.
1	05/24/04	ADDENDUM CHANGES	CRH

URS GREYSTONE CENTRE 3010 LBJ FREEWAY, SUITE 1300 DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

SLAB DETAILS

SHEET 1 OF 4

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-54

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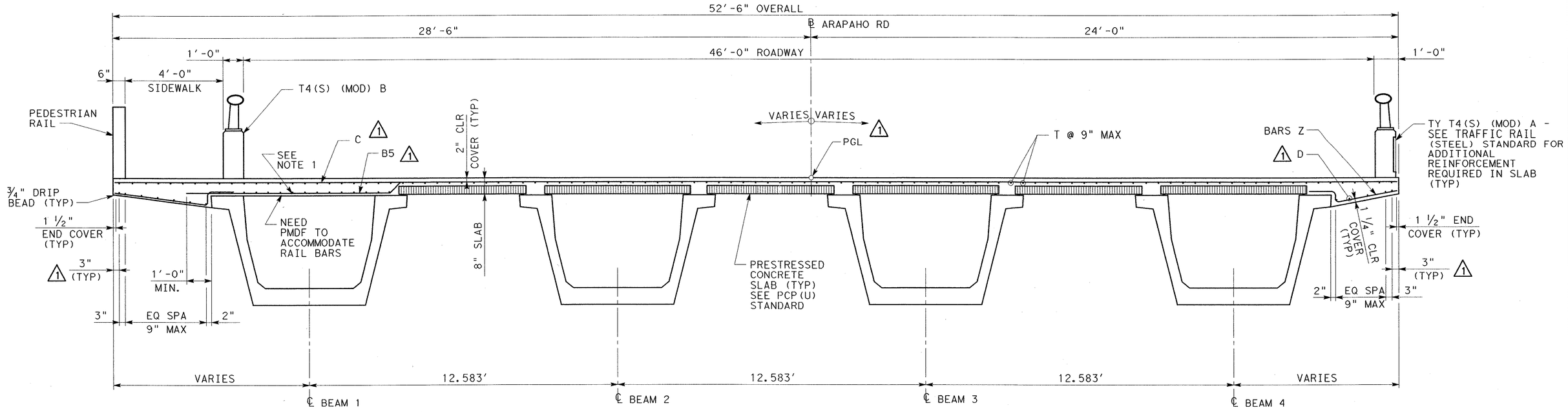
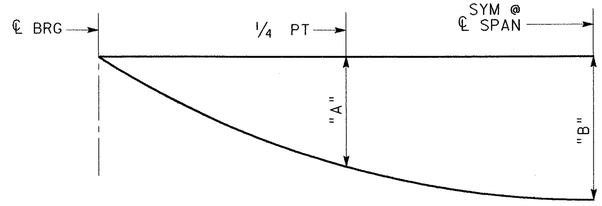
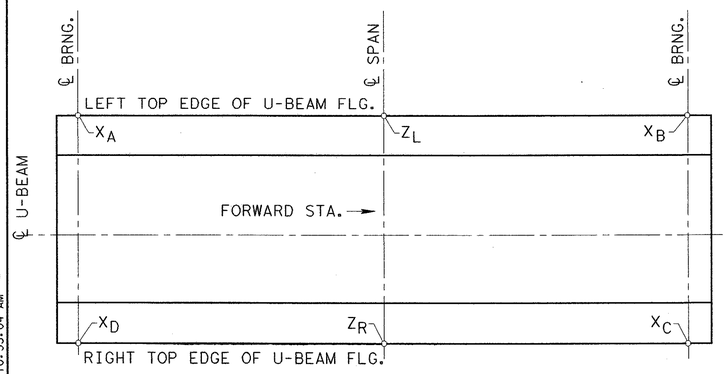


SECTION B-B



DEAD LOAD DEFLECTION DIAGRAM

NOTE: DEFLECTIONS SHOWN ARE CALCULATED VALUES DUE TO CONCRETE SLAB ONLY. FIELD DEFLECTIONS MAY BE LESS THAN CALCULATED VALUES SHOWN. CALCULATIONS ARE BASED ON AN Ec OF 5,000 KSI.



PLAN SHOWING LOCATION OF SECTION DEPTHS

NOTE 1: THE USE OF PRECAST PANELS SHALL BE PROHIBITED AT BEAM 1. USE CONVENTIONAL DECK SLAB REINFORCEMENT. SEE TXDOT STANDARD MISCELLANEOUS SLAB DETAILS (FOR PRESTR CONC U-BEAMS) UBMS AND PERMANENT METAL DECK FORMS (FOR PRESTR CONC U-BEAMS) PMDF (U) FOR RELEVANT INFORMATION.

TABLE OF CALCULATED SECTION DEPTHS

SPAN NO.	BEAM NO.	"X_A" @ ℄ BRNG. (IN)	"X_B" @ ℄ BRNG. (IN)	"X_C" @ ℄ BRNG. (IN)	"X_D" @ ℄ BRNG. (IN)	"Z_L" @ ℄ SPAN ⊛ (IN)	"Z_R" @ ℄ SPAN ⊛ (IN)
4	1	10	10	10	10	9 1/8	9 1/8
4	2	10	10	10	10	9 1/4	9 1/4
4	3	10	10	10	10	9 1/4	9 1/4
4	4	10	10	10	10	9 1/4	9 1/4
5	1	10	10	10	10	9 1/4	9 1/4
5	2	10	10	10	10	9 1/4	9 1/4
5	3	10	10	10	10	9 1/4	9 1/4
5	4	10	10	10	10	9 1/4	9 1/4
6	1	10	10	10	10	10 1/4	10 1/4
6	2	10	10	10	10	10 1/4	10 1/4
6	3	10	10	10	10	10 1/4	10 1/4
6	4	10	10	10	10	10 3/8	10 3/8
7	1	10	10	10	10	10 1/4	10 1/4
7	2	10	10	10	10	10 1/4	10 1/4
7	3	10	10	10	10	10 1/4	10 1/4
7	4	10	10	10	10	10 3/8	10 3/8
8	1	10	10	10	10	10 3/8	10 3/8
8	2	10	10	10	10	10 3/8	10 3/8
8	3	10	10	10	10	10 3/8	10 3/8
8	4	10	10	10	10	10 3/8	10 3/8

⊛ THEORETICAL DIMENSION (SHOWN TO THE NEAREST 1/8")

TABLE OF CALCULATED SECTION DEPTHS

SPAN NO.	BEAM NO.	"X_A" @ ℄ BRNG. (IN)	"X_B" @ ℄ BRNG. (IN)	"X_C" @ ℄ BRNG. (IN)	"X_D" @ ℄ BRNG. (IN)	"Z_L" @ ℄ SPAN ⊛ (IN)	"Z_R" @ ℄ SPAN ⊛ (IN)
10	1	10	10	10	10	10 3/8	10 3/8
10	2	10	10	10	10	10 3/8	10 3/8
10	3	10	10	10	10	10 3/8	10 3/8
10	4	10	10	10	10	10 3/8	10 3/8
11	1	10	10	10	10	10 1/4	10 1/8
11	2	10	10	10	10	10 1/4	10 1/4
11	3	10	10	10	10	10 1/4	10 1/4
11	4	10	10	10	10	10 3/8	10 3/8
12	1	10	10	10	10	9 5/8	9 5/8
12	2	10	10	10	10	9 5/8	9 5/8
12	3	10	10	10	10	9 5/8	9 5/8
12	4	10	10	10	10	9 3/4	9 3/4
13	1	10	10	10	10	9	9
13	2	10	10	10	10	9	9
13	3	10 5/8	10	10 5/8	10	9 1/4	8 5/8
13	4	11 3/4	11 1/8	11 3/4	11 1/8	9 5/8	8 7/8
14	1	10 1/4	10	10 1/4	10	9 5/8	9 1/2
14	2	10 1/4	10	10 1/4	10	9 1/4	9 1/8
14	3	11 1/2	10	13 1/4	11 5/8	9 5/8	11 3/8
14	4	11 1/2	10	13 1/4	11 5/8	9 3/4	11 1/2

⊛ THEORETICAL DIMENSION (SHOWN TO THE NEAREST 1/8")

STATE OF TEXAS
CLIFF R. HALL
82211
REGISTERED PROFESSIONAL ENGINEER
7/2/04

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NO.	DATE	REVISION	APPROV.
1	05/24/04	ADDENDUM CHANGES	CRH

URS
GREYSTONE CENTRE
3010 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

SLAB DETAILS

SHEET 2 OF 4

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-55

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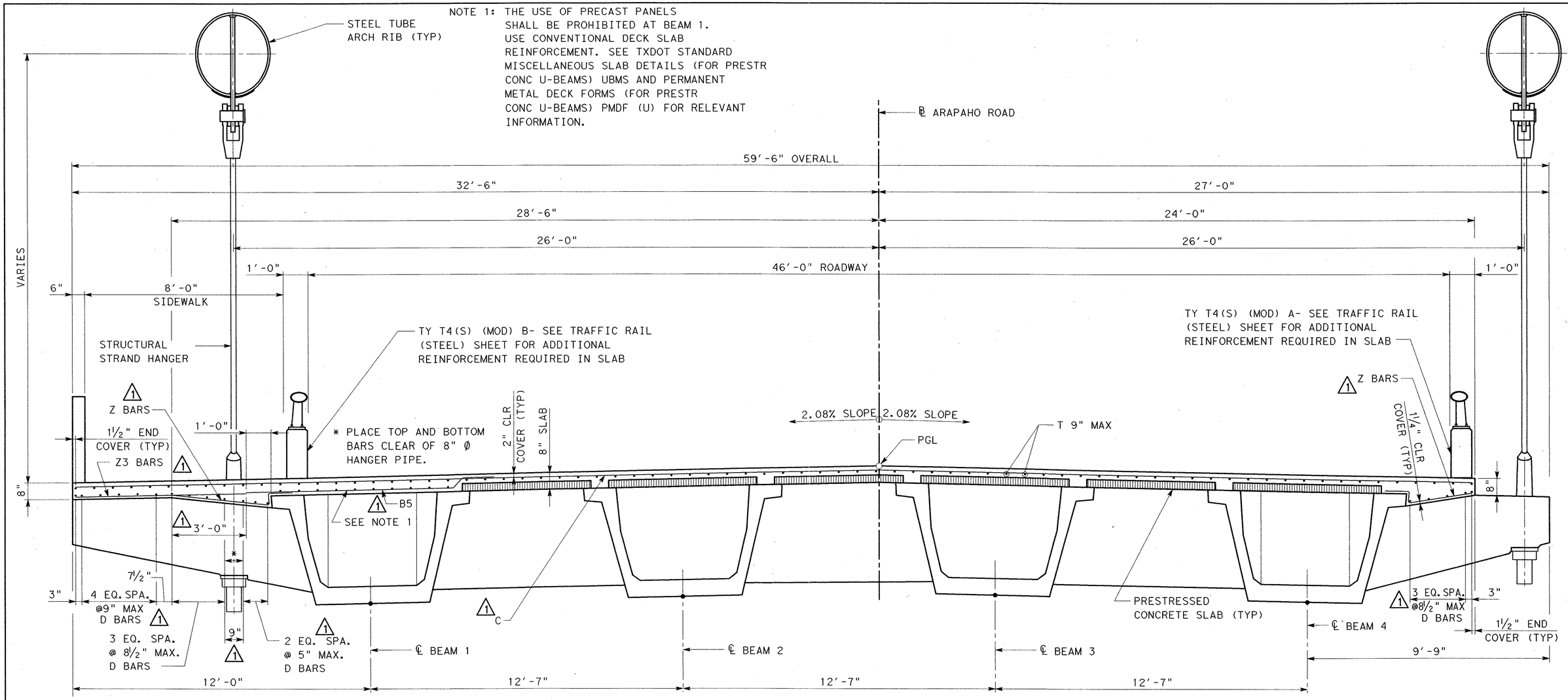
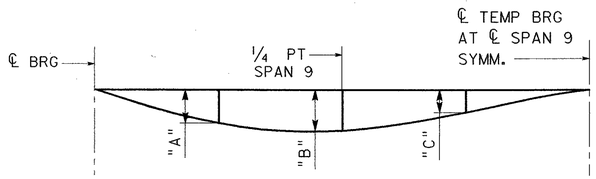
NOTE 1: THE USE OF PRECAST PANELS SHALL BE PROHIBITED AT BEAM 1. USE CONVENTIONAL DECK SLAB REINFORCEMENT. SEE TXDOT STANDARD MISCELLANEOUS SLAB DETAILS (FOR PRESTR CONC U-BEAMS) UBMS AND PERMANENT METAL DECK FORMS (FOR PRESTR CONC U-BEAMS) PMDF (U) FOR RELEVANT INFORMATION.



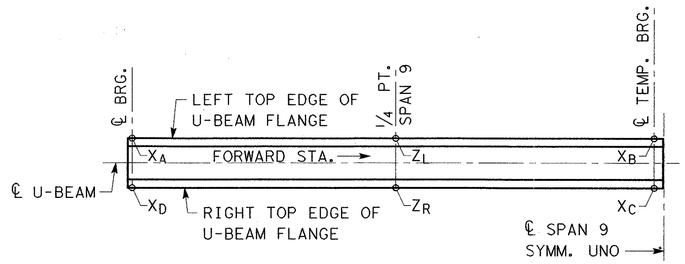
SECTION C-C

TABLE OF DEFLECTIONS				
SPAN NO.	BEAM NO.	"A" (FT)	"B" (FT)	"C" (FT)
9A	ALL	-0.009	-0.007	-0.001
9B	ALL	-0.009	-0.007	-0.001



DEAD LOAD DEFLECTION DIAGRAM

NOTE: DEFLECTIONS SHOWN ARE CALCULATED VALUES DUE TO CONCRETE SLAB AND HANGER INSTALLATION ONLY. FIELD DEFLECTIONS MAY BE LESS THAN CALCULATED VALUES SHOWN. CALCULATIONS ARE BASED ON Ec OF 5,200 KSI.



PLAN SHOWING LOCATION OF SECTION DEPTHS

TABLE OF CALCULATED SECTION DEPTHS							
SPAN NO.	BEAM NO.	"XA" @ ℄ BRNG. (IN.)	"XD" @ ℄ BRNG. (IN.)	"XB" @ ℄ BRNG. (IN.)	"XC" @ ℄ BRNG. (IN.)	"ZL" @ ¼PT. SPAN (IN.)	"ZR" @ ¼PT. SPAN (IN.)
9	1A	10	10	9	9	10⅝	10⅝
9	2A	10	10	9	9	10⅝	10⅝
9	3A	10	10	9	9	10⅝	10⅝
9	4A	10	10	9	9	10⅝	10⅝
9	1B	10	10	9	9	10⅝	10⅝
9	2B	10	10	9	9	10⅝	10⅝
9	3B	10	10	9	9	10⅝	10⅝
9	4B	10	10	9	9	10⅝	10⅝

STATE OF TEXAS · CLIFF R. HALL · 82211 · REGISTERED PROFESSIONAL ENGINEER
7/2/04

294

NO.	DATE	REVISION	APPROV.
1	05/24/04	ADDENDUM CHANGES	CRH

URS GREYSTONE CENTRE 3010 LBJ FREEWAY, SUITE 1500 DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

SLAB DETAILS

SHEET 3 OF 4

TOWN OF ADDISON, TEXAS

Design	Drawn RJB	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04	NONE	25768	BR-56

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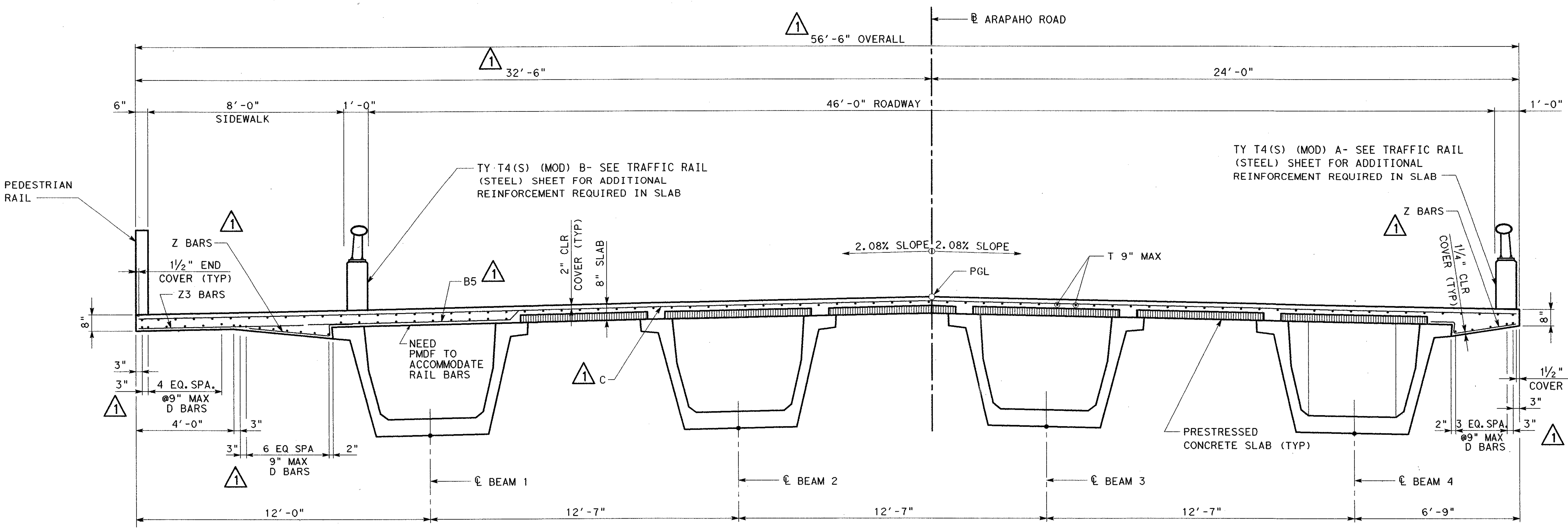
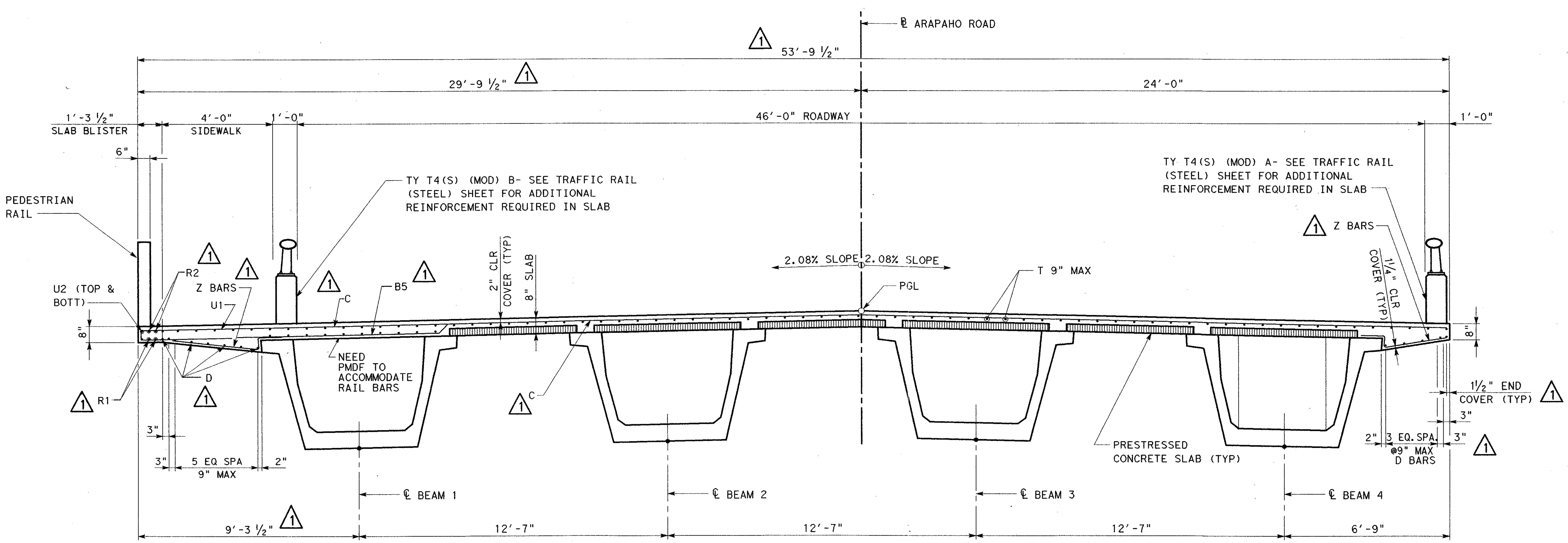


SECTION D-D



SECTION E-E

STATE OF TEXAS
CLIFF R. HALL
82211
REGISTERED PROFESSIONAL ENGINEER
7/2/04

295

NO.	DATE	REVISION	APPROV.
1	05/24/04	ADDENDUM CHANGES	CRH

URS
GREYSTONE CENTRE
5010 LBJ FREEWAY, SUITE 1500
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

SLAB DETAILS

SHEET 4 OF 4

TOWN OF ADDISON , TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-57

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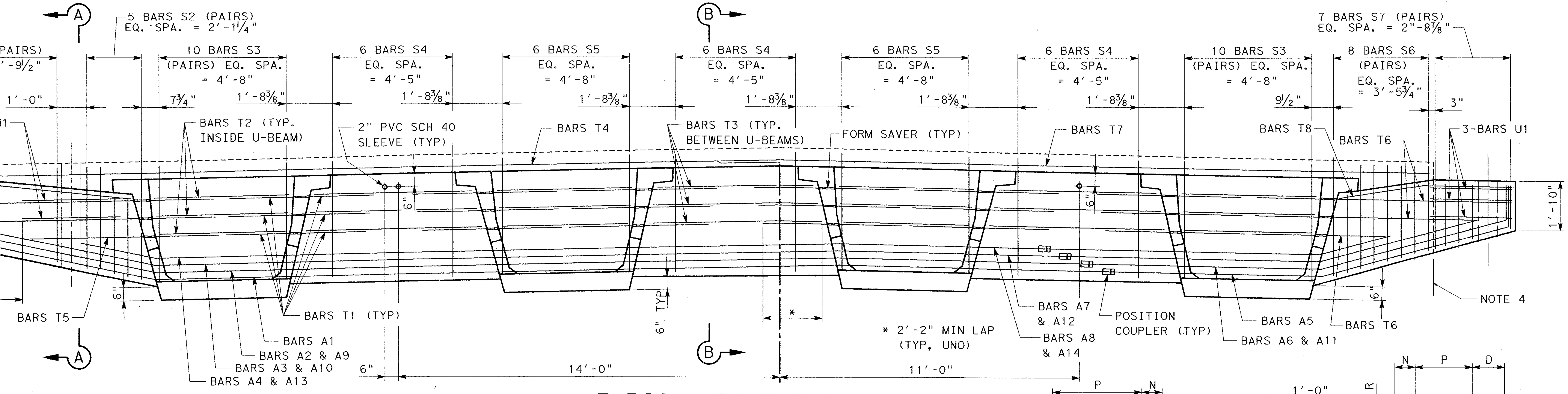
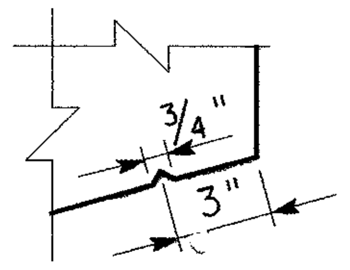


TYPICAL DIAPHRAGM



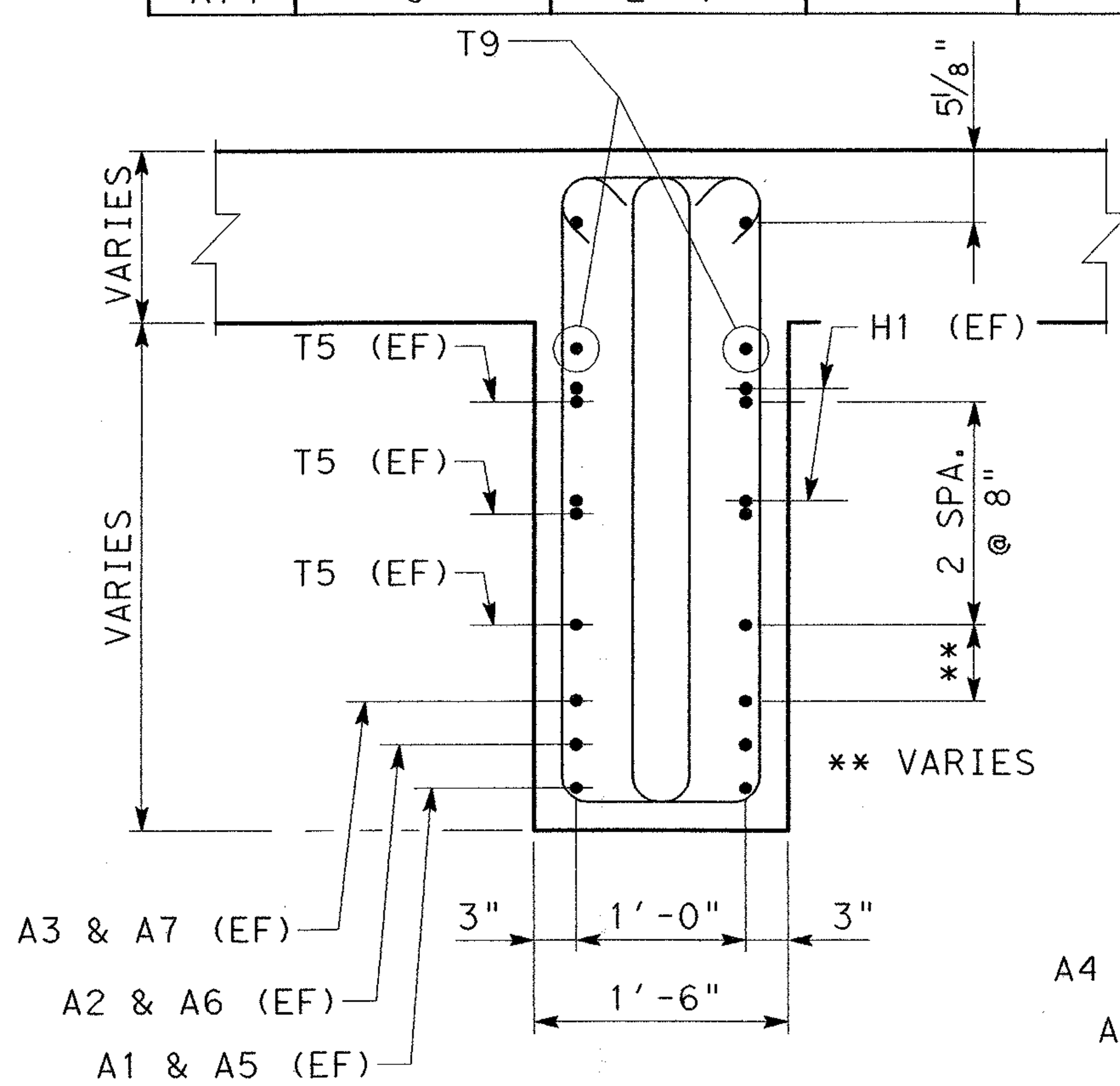
DRIP DETAIL

(TYP BOTH ENDS)

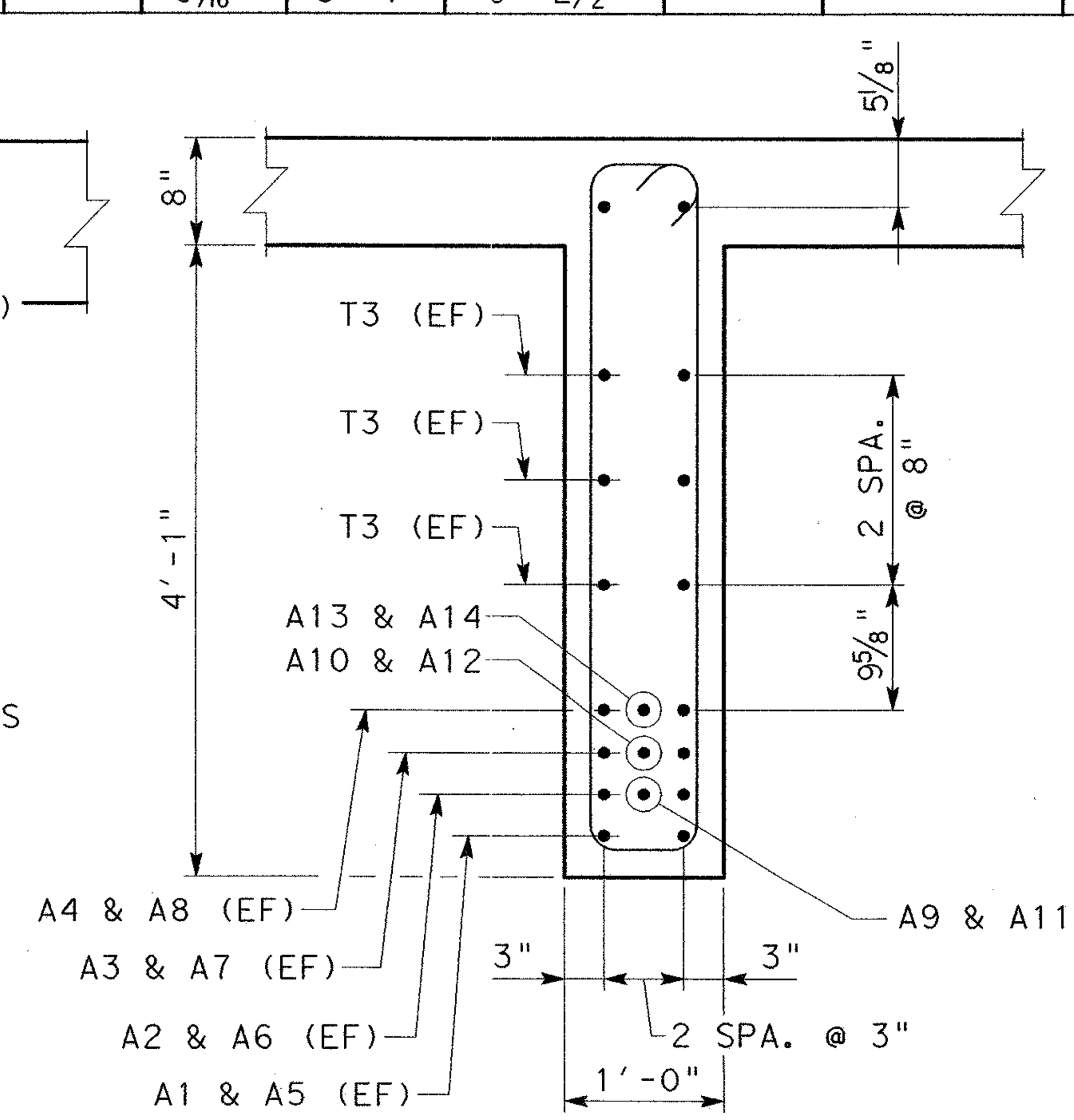
BAR	A	B	D	E	M	N	P	R	H	Θ
A1	2'-1"	9'-4 1/16"	7'-10"	3"	8 3/16"	3'-7"	20'-9"	3"	1'-7"	101
A2	2'-1"	9'-3¼"	7'-10"	3"	8 3/16"	3'-7"	20'-9"	3"	1'-4"	101
A3	2'-1"	9'-2 5/16"	7'-10"	3"	8 3/16"	3'-7"	20'-9"	3"		
A4	7 5/16"	2'-9"	7'-10"	3"	8 3/16"	3'-7"	20'-9"	3"		
A5	1'-11½"	6'-10"			8 3/16"	3'-7"	6'-2½"	3"	1'-6 3/16"	104
A6	1'-11¼"	6'-9"			8 3/16"	3'-7"	6'-2½"	3"	1'-3¼"	104
A7	1'-8"	5'-9"			8 3/16"	3'-7"	6'-2½"	3"		
A8	9"	2'-7"			8 3/16"	3'-7"	6'-2½"	3"		
A9	7 5/16"	2'-9"	7'-10"	3"	8 3/16"	3'-7"	20'-9"			
A10	7 5/16"	2'-9"	7'-10"	3"	8 3/16"	3'-7"	20'-9"			
A11	1'-8"	5'-9"			8 3/16"	3'-7"	6'-2½"			
A12	1'-8"	5'-9"			8 3/16"	3'-7"	6'-2½"			
A13	7 5/16"	2'-9"			8 3/16"	3'-7"	20'-9"			
A14	9"	2'-7"			8 3/16"	3'-7"	6'-2½"			

DIAPHRAGM TABLE OF ESTIMATED QUANTITIES

BAR	NO.	SIZE	LENGTH	WEIGHT
A1	2	#9	44'-0"	300
A2	2	#9	43'-8"	297
A3	2	#9	42'-3"	288
A4	3	#9	35'-8"	364
A5	2	#9	19'-2"	131
A6	2	#9	18'-10"	129
A7	2	#9	16'-6"	113
A8	3	#9	13'-2"	135
A9	1	#9	35'-7"	121
A10	1	#9	35'-7"	121
A11	1	#9	16'-6"	57
A12	1	#9	16'-6"	57
A13	1	#9	39'-1"	133
A14	1	#9	13'-2"	45
T1	84	#5	2'-3" AVG	198
T2	24	#5	5'-1" AVG	128
T3	18	#5	6'-5" AVG	121
T4	2	#5	33'-6"	70
T5	6	#5	6'-10" AVG	43
T6	6	#5	4'-11" AVG	31
T7	2	#5	25'-0"	53
T8	2	#5	5'-5"	12
T9	2	#5	7'-11"	17
H1	4	#6	3'-8"	23
S1	14	#6	9'-10" AVG	207
S2	10	#6	10'-2" AVG	153
S3	20	#6	12'-3" AVG	368
S4	18	#6	11'-9"	318
S5	12	#6	11'-9"	212
S6	16	#6	9'-7" AVG	231
S7	14	#6	7'-1" AVG	149
U1	3	#6	6'-9"	31
U2	3	#6	3'-0"	14
REINFORCING STEEL			Lb	4670
CLASS "F" CONC (CAP)			CY	9.0



SECTION A-A



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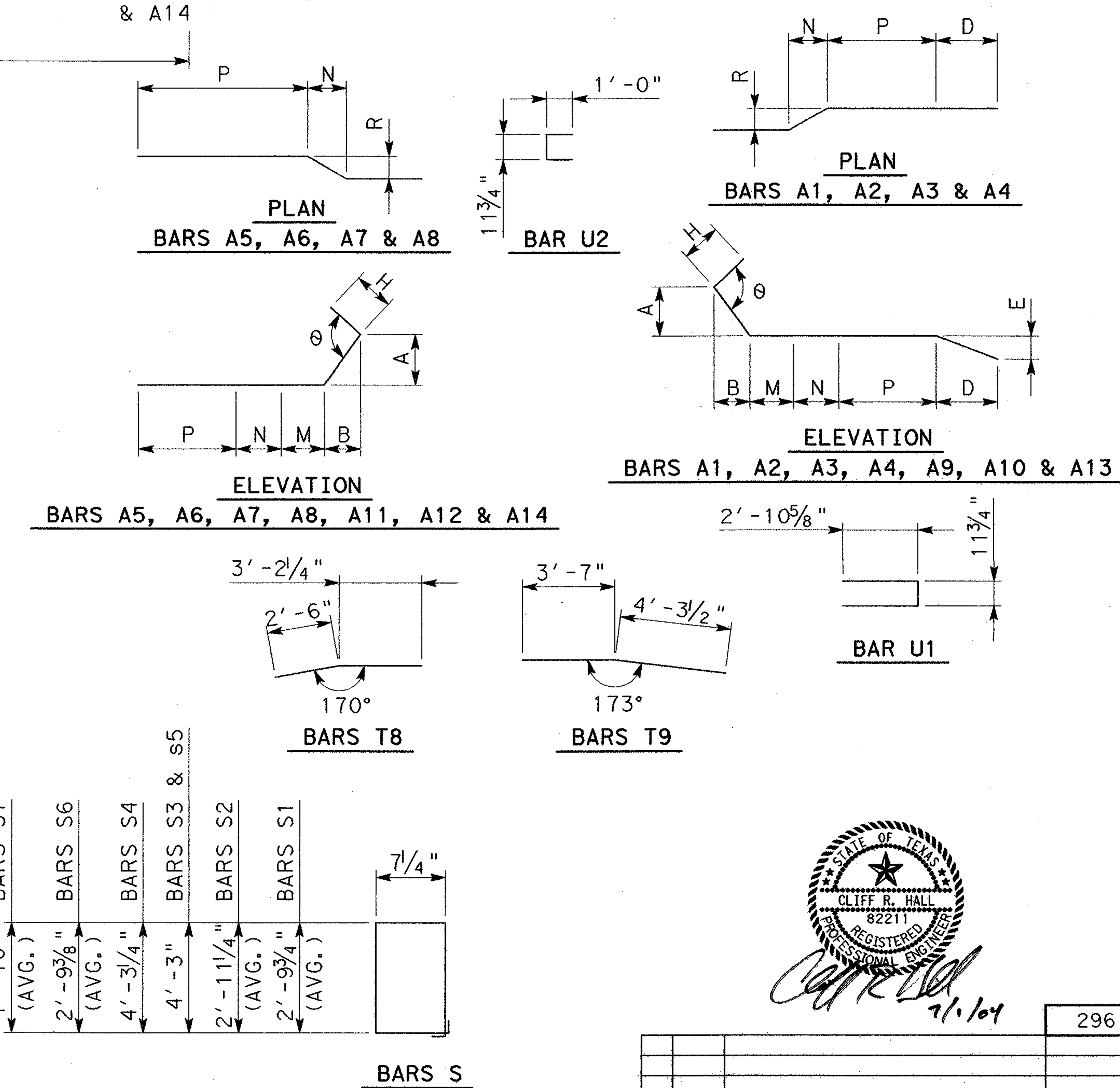

REINFORCING BAR BEND DETAILS

NOTES

1. CLASS "F" CONCRETE STRENGTH f'c=5000 psi.
2. ALL REINFORCING STEEL SHALL BE GRADE 60.
3. ROUGHEN SURFACES BETWEEN U-BEAMS AND DIAPHRAGMS TO A FULL AMPLITUDE OF APPROX. ¼".
4. TRANSVERSE DIAPHRAGMS 1 AND 11 SHALL END AT EDGE OF SLAB. ADJUST REINFORCEMENT ACCORDINGLY.

STATE OF TEXAS
CLIFF R. HALL
82211
REGISTERED PROFESSIONAL ENGINEER
7/1/04

296

NO.	DATE	REVISION	APPROV.

URS
GREYSTONE CENTRE
5010 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

DIAPHRAGM REINFORCEMENT
UNIT 4

SHEET 1 OF 2

TOWN OF ADDISON, TEXAS

Design	Drawn RJB	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04	NONE	25768	BR-58

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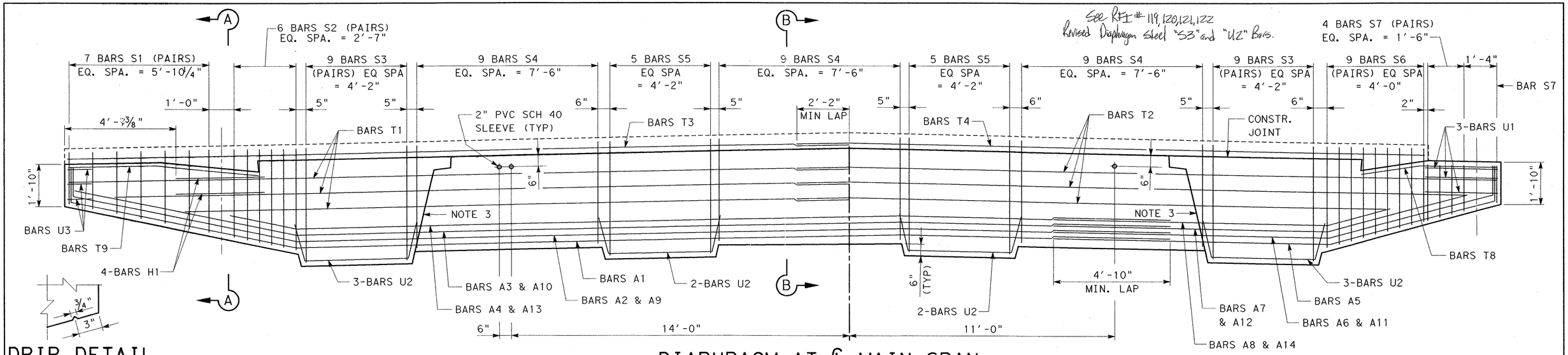
See RFI #119,120,121,122
Revised Diaphragm Steel "S3" and "U2" Bars.



DRIP DETAIL

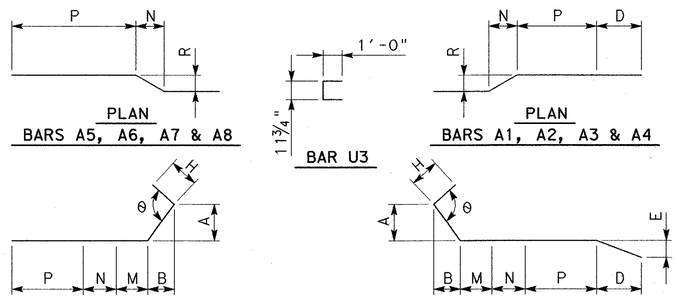
(TYP BOTH ENDS)

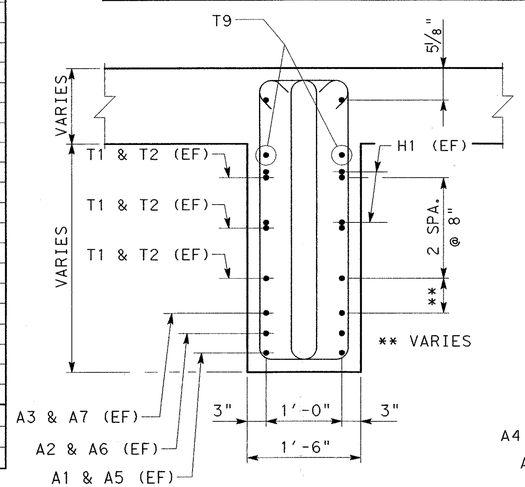
DIAPHRAGM AT ℄ MAIN SPAN

DIAPHRAGM TABLE OF ESTIMATED QUANTITIES

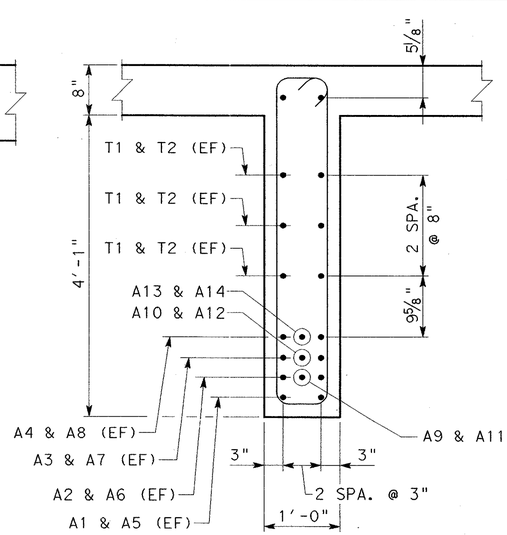
BAR	NO.	SIZE	LENGTH	WEIGHT
A1	2	#9	47'-5"	323
A2	2	#9	47'-1"	321
A3	2	#9	45'-8"	311
A4	3	#9	39'-1"	399
A5	2	#9	20'-3"	138
A6	2	#9	19'-11"	136
A7	2	#9	17'-7"	120
A8	3	#9	14'-3"	146
A9	1	#9	39'-1"	133
A10	1	#9	39'-1"	133
A11	1	#9	17'-7"	60
A12	1	#9	17'-7"	60
A13	1	#9	39'-1"	133
A14	1	#9	14'-3"	49
T1	6	#5	31'-3" AVG	196
T2	6	#5	26'-0" AVG	163
T3	2	#5	33'-6"	70
T4	2	#5	25'-0"	53
T8	2	#5	5'-9"	12
T9	2	#5	7'-11"	17
H1	4	#6	3'-8"	23
S1	14	#6	8'-10" AVG	186
S2	12	#6	11'-3" AVG	203
S3	36	#6	12'-10" AVG	694
S4	54	#6	11'-10"	480
S5	20	#6	12'-10"	193
S6	18	#6	10'-6" AVG	284
S7	10	#6	7'-2" AVG	108
U1	3	#6	6'-9"	31
U2	10	#6	7'-4"	111
U3	3	#6	3'-0"	14
REINFORCING STEEL			Lb	5286
CLASS "F" CONC			CY	9.4

BAR	A	B	D	E	M	N	P	R	H	θ
A1	2'-1"	9'-4¼"	11'-2¾"	5½"	8¼"	3'-7"	20'-8¾"	3"	1'-6¾"	101.38
A2	2'-0⅞"	9'-3¼"	11'-2¾"	5½"	8¼"	3'-7"	20'-8¾"	3"	1'-3¾"	101.38
A3	2'-0⅝"	9'-2¼"	11'-2¾"	5½"	8¼"	3'-7"	20'-8¾"	3"		
A4	7¼"	2'-8¾"	11'-2¾"	5½"	8¼"	3'-7"	20'-8¾"	3"		
A5	1'-11½"	6'-9¾"			8¼"	3'-7"	7'-3½"	3"	1'-6¼"	104.83
A6	1'-11¼"	6'-9"			8¼"	3'-7"	7'-3½"	3"	1'-3¾"	104.83
A7	1'-7¾"	5'-9"			8¼"	3'-7"	7'-3½"	3"		
A8	8¾"	2'-6¾"			8¼"	3'-7"	7'-3½"	3"		
A9	7¼"	2'-8¾"	11'-2¾"	5½"	8¼"	3'-7"	20'-8¾"			
A10	7¼"	2'-8¾"	11'-2¾"	5½"	8¼"	3'-7"	20'-8¾"			
A11	1'-7¾"	5'-9"			8¼"	3'-7"	7'-3½"			
A12	1'-7¾"	5'-9"			8¼"	3'-7"	7'-3½"			
A13	7¼"	2'-8¾"	11'-2¾"	5½"	8¼"	3'-7"	20'-8¾"			
A14	8¾"	2'-6¾"			8¼"	3'-7"	7'-3½"			

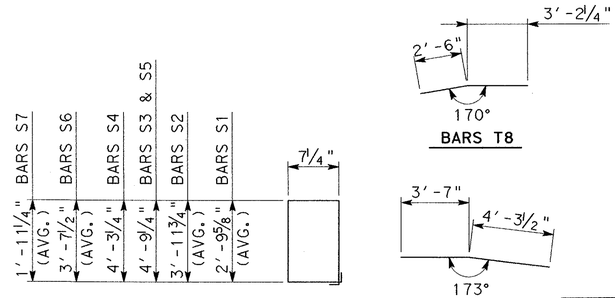


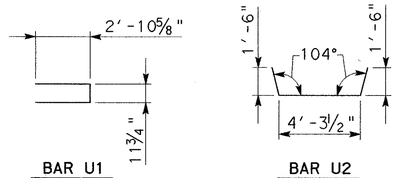


SECTION A-A



SECTION B-B





REINFORCING BAR BEND DETAILS

NOTES

1. CLASS "F" CONCRETE STRENGTH f'c=5000 psi.
2. ALL REINFORCING STEEL SHALL BE GRADE 60.
3. DIAPHRAGM THICKNESS TRANSITION FROM 1'-6" TO 1'-0".
4. LONGITUDINAL U-BEAM CAST-IN-PLACE CLOSURE REINFORCEMENT IS NOT SHOWN. SEE SHEET BR-43.

STATE OF TEXAS
CLIFF B. HALL
82211
REGISTERED
PROFESSIONAL ENGINEER
7.1.04

297

NO.	DATE	REVISION	APPROV.

URS
GREYSTONE CENTRE
3010 LBJ FREEWAY, SUITE 1500
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

DIAPHRAGM REINFORCEMENT UNIT 4

SHEET 2 OF 2

TOWN OF ADDISON, TEXAS

Design	Drawn RJB	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04	NONE	25768	BR-59

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The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

LEVELS DISPLAYED: 1 12 20 44 63 ACC: (LV=1,2 for English)

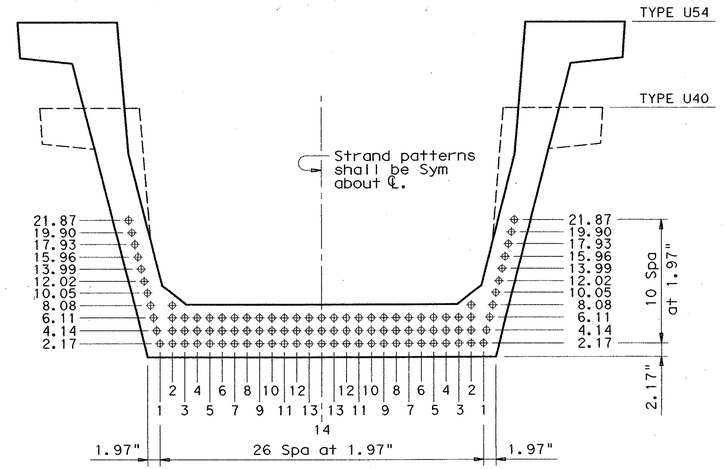
DESIGNED BEAMS (STRAIGHT STRANDS)

STRUCTURE	SPAN	BEAM NO.	BEAM TYPE	PRESTRESSING STRANDS: STRAND PATTERN NO.	TOT NO.	SIZE	STRGTH f's (ksi)	e @ (in.)	e END (in.)	TOT NO. DEB	DEBONDED STRAND PATTERN PER ROW: DIST FROM BOTTOM (in.)	NO. OF STRANDS: TOTAL	DE-BONDED	NUMBER OF STRANDS DEBONDED TO (ft from end): 3	6	9	12	15						CONCRETE: MINIMUM RELEASE STRGTH f'ci (psi)	MINIMUM 28 DAY COMP STRGTH f'c (psi)
ARAPAHO ROAD	1	ALL	U54		62	1/2	270K	18.82	18.16	28	2.17	27	20	2	8	6	2	2	0	0	0	0	0	4848	6539
											4.14	27	8	8	0	0	0	0	0	0	0	0	0		
	2 - 7	1	U54		62	1/2	270K	18.82	18.16	28	2.17	27	20	2	8	6	2	2	0	0	0	0	0	4848	6539
											4.14	27	8	8	0	0	0	0	0	0	0	0	0		
	2 - 7	2 - 4	U54		58	1/2	270K	19.00	18.42	28	2.17	27	20	2	8	6	2	2	0	0	0	0	0	4537	5937
											4.14	27	8	8	0	0	0	0	0	0	0	0	0		
	8	1	U54		56	1/2	270K	19.10	18.55	26	2.17	27	20	2	8	6	2	2	0	0	0	0	0	4412	5891
											4.14	27	6	6	0	0	0	0	0	0	0	0	0		
	8	2 - 4	U54		51	1/2	270K	19.26	18.73	24	2.17	27	20	4	8	4	2	2	0	0	0	0	0	4000	5303
											4.14	24	4	4	0	0	0	0	0	0	0	0	0		
	9	ALL	U54		25	1/2	270K	22.36	22.36	0	2.17	0	0	0	0	0	0	0	0	0	0	0	0	5000	6000
	10	1	U54		56	1/2	270K	19.10	18.55	26	2.17	27	20	2	8	6	2	2	0	0	0	0	0	4412	5891
											4.14	27	6	6	0	0	0	0	0	0	0	0	0		
	10	2 - 4	U54		51	1/2	270K	19.26	18.73	24	2.17	27	20	4	8	4	2	2	0	0	0	0	0	4000	5303
											4.14	24	4	4	0	0	0	0	0	0	0	0	0		
	11 - 13	1	U54		72	1/2	270K	18.47	17.65	34	2.17	27	20	0	8	8	2	2	0	0	0	0	0	5605	7565
											4.14	27	14	12	2	0	0	0	0	0	0	0	0		
	11 - 13	2 - 4	U54		68	1/2	270K	18.60	17.84	32	2.17	27	20	0	8	8	2	2	0	0	0	0	0	5296	6887
											4.14	27	12	12	0	0	0	0	0	0	0	0	0		
	14	ALL	U54		72	1/2	270K	18.47	17.65	34	2.17	27	20	0	8	8	2	2	0	0	0	0	0	5605	7565
											4.14	27	14	12	2	0	0	0	0	0	0	0	0		

OPTIONAL DESIGN

SPAN	BEAM NO.	BEAM TYPE	DESIGN @ TOP COMP STRESS fct (psi)	DESIGN @ BOTT TENSILE STRESS fcb (psi)	REQUIRED MINIMUM ULTIMATE MOMENT CAPACITY (Ft-Kips)	① LIVE LOAD DISTRIB FACTOR (Trk/Bm)	COMP DEAD LOAD (k!f)
1	ALL	U54	3754	-3398	9428	1.035	0.159
2 - 7	1	U54	3754	-3398	9428	1.035	0.159
2 - 7	2 - 4	U54	3509	-3211	9064	1.067	0.141
8	1	U54	3420	-3145	8872	1.091	0.159
8	2 - 4	U54	3175	-2932	8358	1.067	0.141
10	1	U54	3420	-3145	8872	1.091	0.159
10	2 - 4	U54	3175	-2932	8358	1.067	0.141
11 - 13	1	U54	4259	-3822	10502	1.047	0.159
11 - 13	2 - 4	U54	3983	-3605	10049	1.067	0.141
14	ALL	U54	4259	-3822	10502	1.047	0.159

① THE LIVE LOAD DISTRIBUTION FACTORS (LLDF) SHOWN IN THE TABLE FOR SPANS 1-7 & 14 AND BEAM #1 ON SPANS 8 & 10-13 WERE DETERMINED PER AASHTO FOR HS-20 TRUCK LOADING AND MODIFIED TO ACCOUNT FOR THE ADDITIONAL PEDESTRIAN LIVE LOAD. FOR BEAMS 2-4 ON SPAN 8 & 10-13, THE LLDF REPORTED WAS DETERMINED BY THE STANDARD TxDOT METHOD.



TxDOT TYPE U54 & TYPE U40 BMS

GENERAL NOTES:

Designed in accordance with current AASHTO Standard and Interim Specifications.

All concrete shall be Class H. All reinforcing bars shall be Grade 60.

When shown on this sheet, the Fabricator has the option of furnishing either the designed straight strand beam or an approved optional beam design. All optional design submittals and shop drawings shall be signed, sealed and dated by a registered Professional Engineer.

Optional designs shall have a calculated residual camber equal to or greater than that of the designed beam.

Prestress losses for the designed beams have been calculated for a relative humidity of 70 percent. Optional designs shall likewise conform.

Strands for the designed beam shall be located as low as possible on the 1.97" grid system. Fill row "2.17", then row "4.14", then row "6.11", etc., beginning each row in the "1" position and, distributing uniformly as practical, working inward until the required number of strands is reached. All strands, including those in the web, shall be adequately tied to reinforcing steel, bar supports, or other devices to prevent displacement during concrete placement.

Strands in position "1" shall not be debonded. Debonded strands shall be distributed equally about the vertical centerline. Debonded lengths shall decrease working inward, with debonding staggered in each row.

Strands shall be encased in plastic tubing along entire debonded length, and ends of tubing shall be sealed with waterproof tape. Split plastic tubing may be used provided the seam of the tubing is sufficiently sealed with waterproof tape to prohibit grout infiltration. Wrapping of strands with tape to provide debonding will not be permitted.

Full-length debonding of strands shall be permitted only as approved by the Engineer and shall be done on an individual basis. Full-length debonding, when permitted, shall be symmetrical about the vertical centerline of the beam and shall be limited to ten (10) percent of the total number of strands or a maximum of six (6) strands, whichever is less. Full-length debonding of strands in position "1" is not permitted.

Strands for the designed beam shall be ½" 270 ksi low relaxation strands pretensioned to 31.0 k each.

HS20 LOADING

298

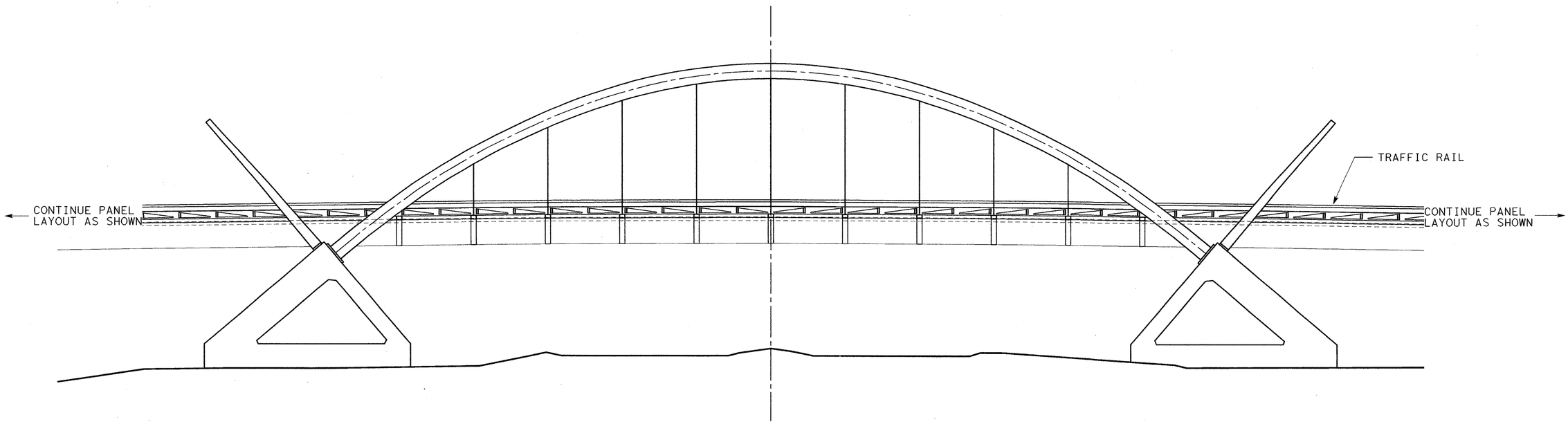
STATE OF TEXAS
CLIFF R. HALL
82211
REGISTERED
PROFESSIONAL ENGINEER
7/1/04

Texas Department of Transportation
Design Division (Bridge)

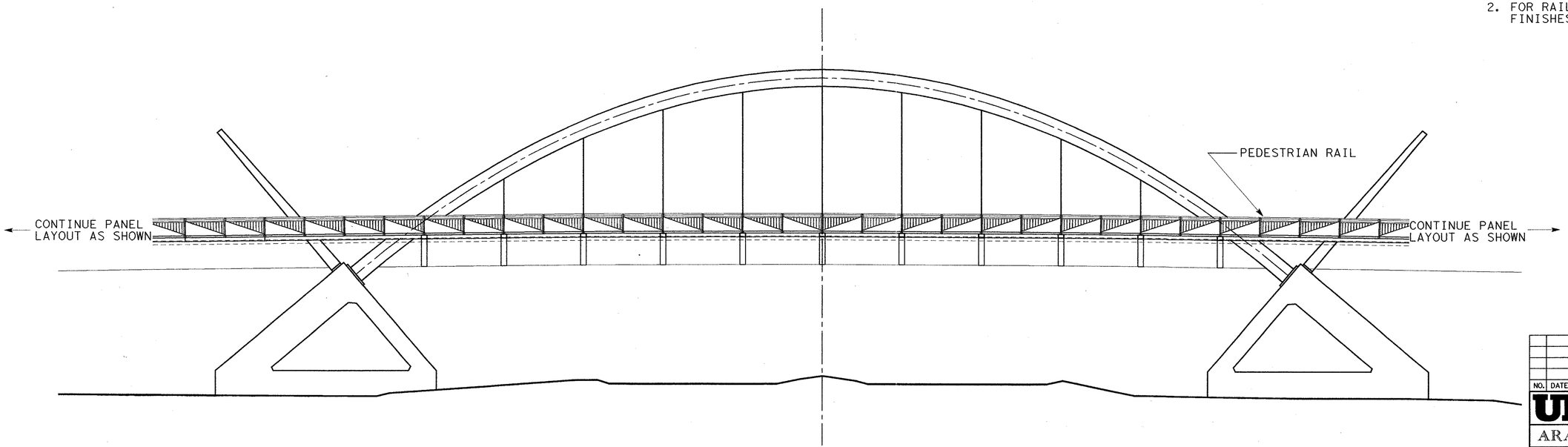
PRESTRESSED CONCRETE U-BEAMS (DESIGN DATA)

UBNS

FILE: ubstd005.dgn	DN:	CK:	DW:	CK:	STD: B543
ORIG DATE:	DIST	FED REG	FEDERAL AID PROJECT #		SHEET
REVISIONS		6			BR-60
©TxDOT March 1998	COUNTY		CONTROL	SECT	JOB	HIGHWAY



ELEVATION
(LOOKING NORTH)



ELEVATION
(LOOKING SOUTH)

GENERAL NOTES:

1. FOR RELEVANT RAIL DIMENSIONS, SEE PEDESTRIAN RAIL SHEETS AND T4(S) MOD SHEETS.
2. FOR RAIL PAINT SCHEMES, SEE SURFACE FINISHES FOR STRUCTURES SHEET.

STATE OF TEXAS
CLIFF R. HALL
82211
REGISTERED
PROFESSIONAL ENGINEER
7/2/04

299

NO.	DATE	REVISION	APPROV.

URS
GREYSTONE CENTRE
3010 LBJ FREEWAY, SUITE 1500
DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

BRIDGE RAIL LAYOUT

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-61

7/2/2004 10:33:05 AM

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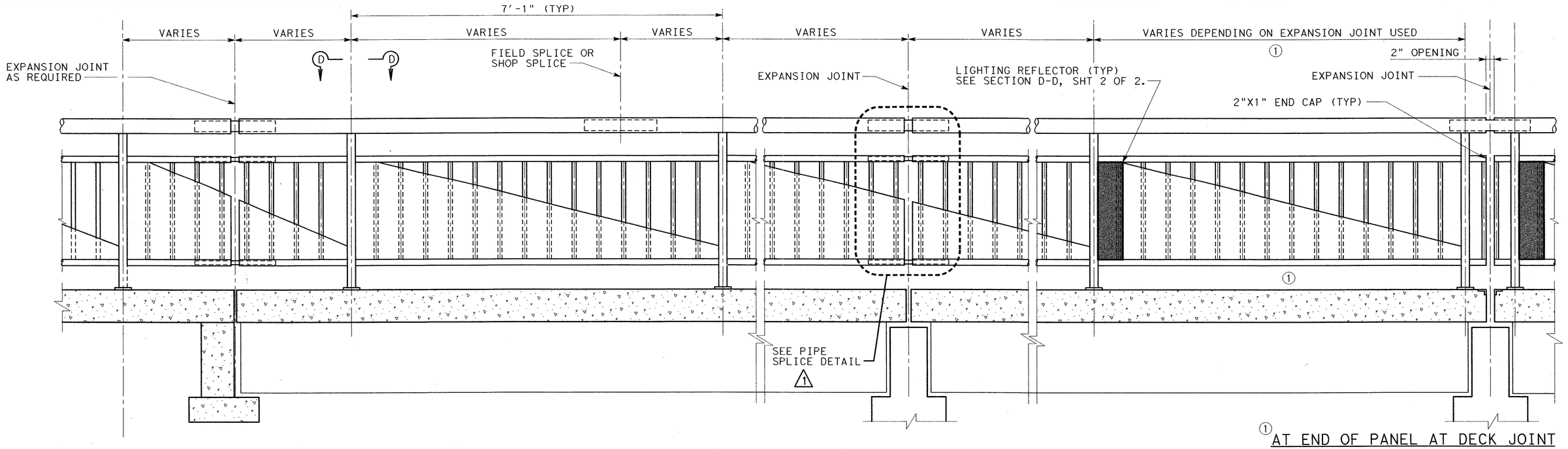


AT ABUTMENTS

AT SHOP/FIELD SPLICE

AT ENDS OF SPAN UNIT

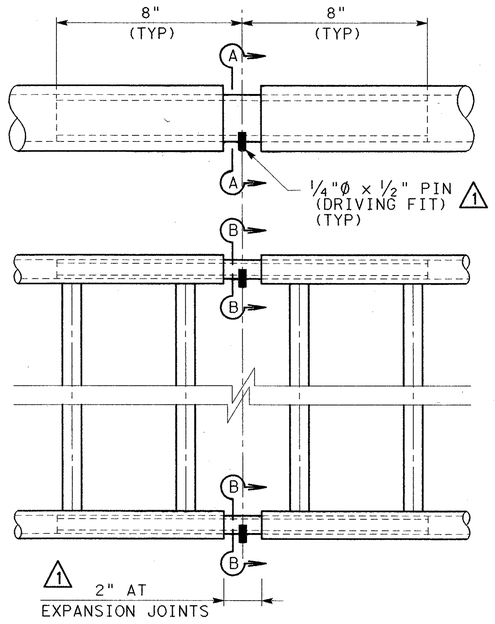
1 AT END OF PANEL AT DECK JOINT

ROADWAY ELEVATION OF RAIL

(LOOKING SOUTH)

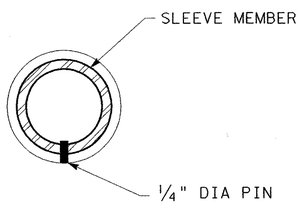
1

1 POST UPRIGHT SHALL BE POSITIONED SO THAT THE BASE PLATE IS A MINIMUM OF 2" FROM THE BACK RAIL OF THE EXPANSION JOINT. FURTHER OFFSET MAY BE REQUIRED DEPENDING UPON LENGTH OF EXPANSION JOINT STUDS. ANCHOR BOLTS FOR RAIL PANEL ARE NOT TO INTERFERE WITH EXPANSION JOINT STUDS.

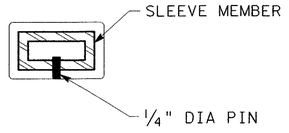


1 PIPE SPLICE DETAIL

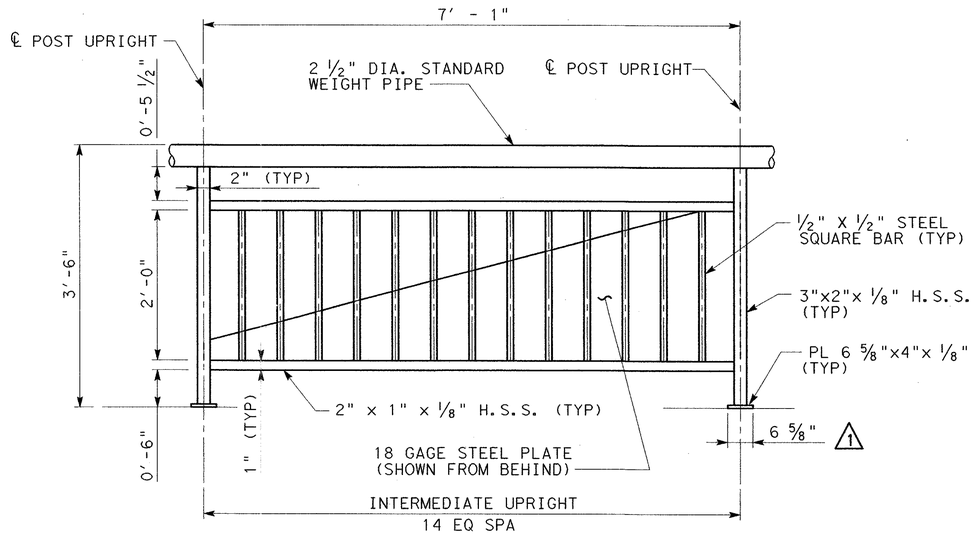
(AT EXPANSION JOINTS)



SECTION CUT A-A



1 SECTION CUT B-B



TYPICAL RAIL PANEL ELEVATION

GENERAL NOTES:

1. DESIGNED IN ACCORDANCE WITH AASHTO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" - 16TH EDITION WITH CURRENT INTERIM SPECIFICATIONS.
2. PIPE FOR PIPE RAIL SHALL CONFORM TO ASTM A53 GRADE B OR A-501. POSTS AND INTERMEDIATE HORIZONTALS SHALL BE ASTM A500, GRADE B. PLATES AND RISERS SHALL BE ASTM A709, GRADE 50. 1
3. ALL ANCHOR BOLTS, NUTS, WASHERS AND BOTTOM PLATES TO BE INCLUDED IN UNIT PRICE BID FOR RAILING.
4. FACE OF RAIL AND POSTS SHALL BE VERTICAL TRANSVERSELY UNLESS OTHERWISE APPROVED BY THE ENGINEER. POSTS SHALL BE PERPENDICULAR TO ADJACENT ROADWAY GRADE. GROUT MAY BE USED UNDER BASE PLATES IF NECESSARY.

STATE OF TEXAS
CLIFF R. HALL
82217
REGISTERED
PROFESSIONAL ENGINEER
7/2/04

300

NO.	DATE	REVISION	APPROV.
1	05/24/04	ADDENDUM CHANGES	CRH

URS GREYSTONE CENTRE 5016 LBJ FREEWAY, SUITE 1300 DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

PEDESTRIAN RAIL DETAILS

SHEET 1 OF 2

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-62

7/2/2004 10:33:05 AM

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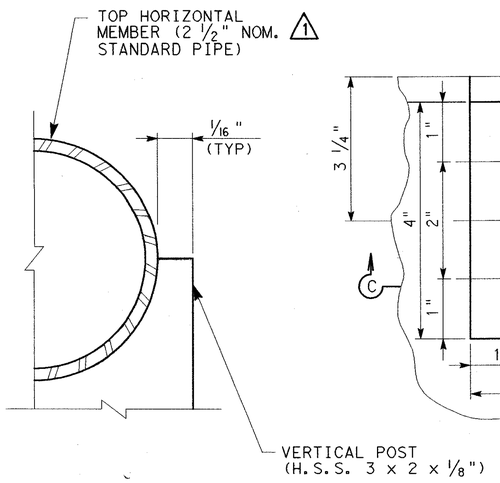
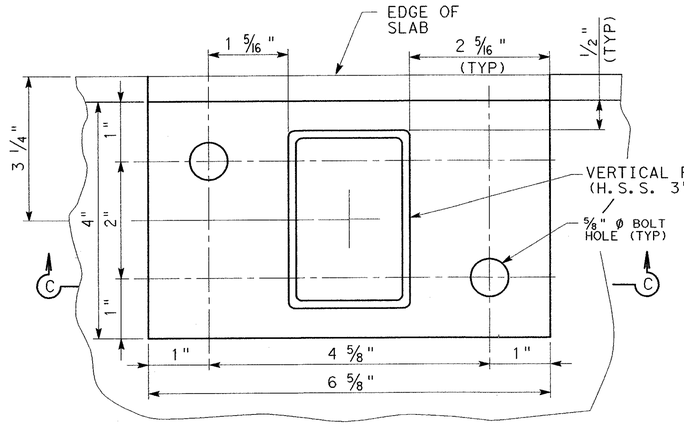
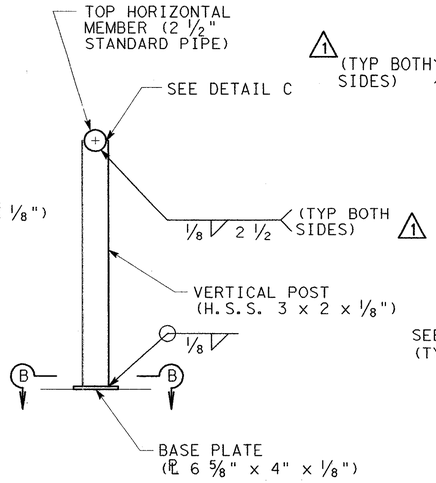


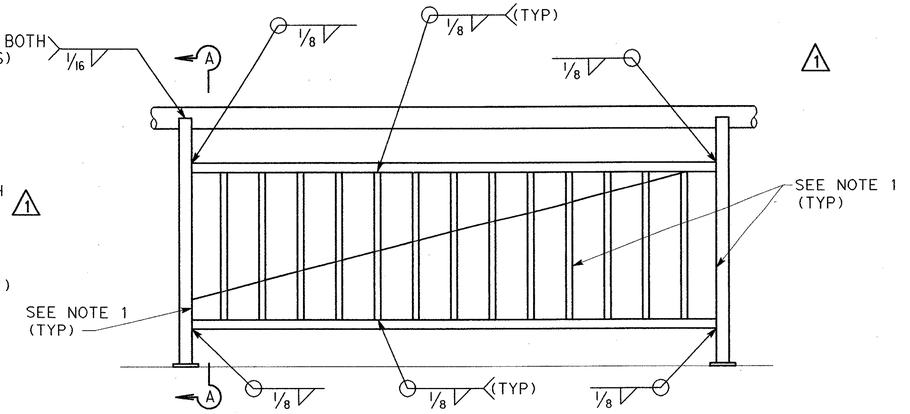
DETAIL C



SECTION B-B
BASE PLATE

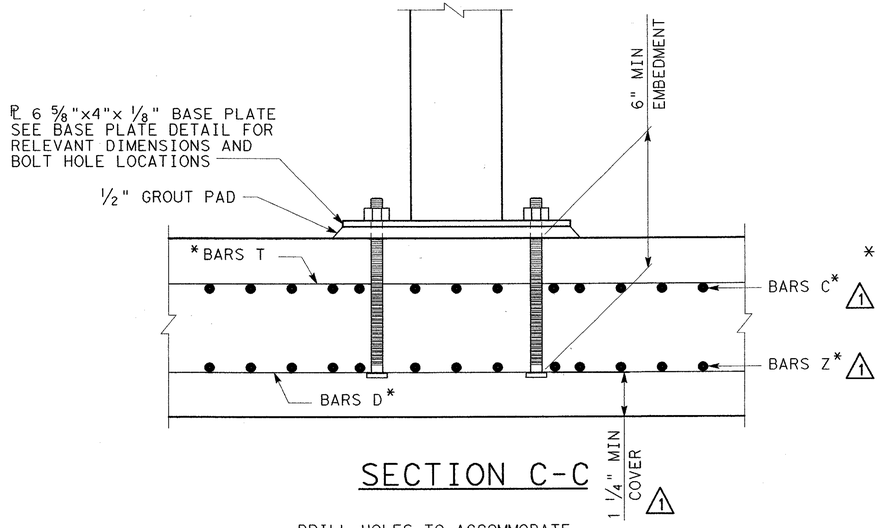


SECTION A-A

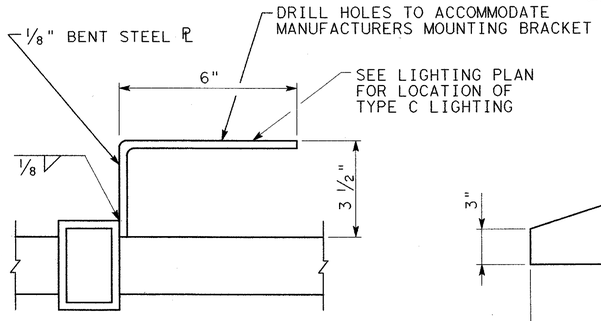


MEMBER CONNECTION DETAIL
(18 GAGE STEEL PLATE SHOWN FROM BEHIND)

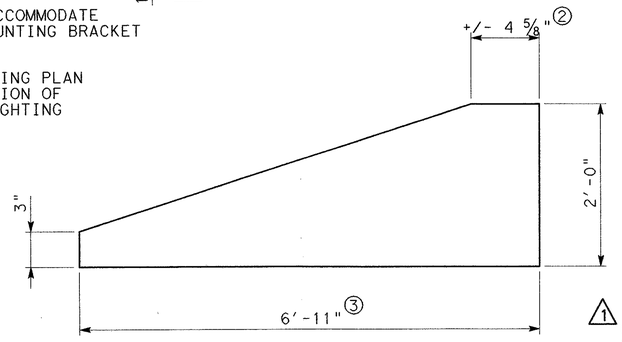
NOTE 1: STEEL PLATE TO BE ATTACHED TO SQUARE ROD AND ALL H.S.S. MEMBERS WITH TACK WELDS WITH MAX SPACE OF 4" BETWEEN TACKS, FULL LENGTH OF RESPECTIVE MEMBER



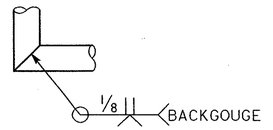
SECTION C-C



LIGHTING REFLECTOR
SECTION D-D

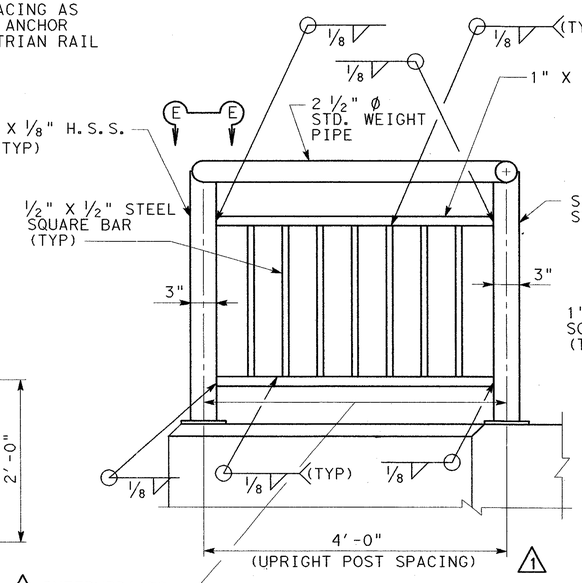


STEEL PLATE DIMENSIONS

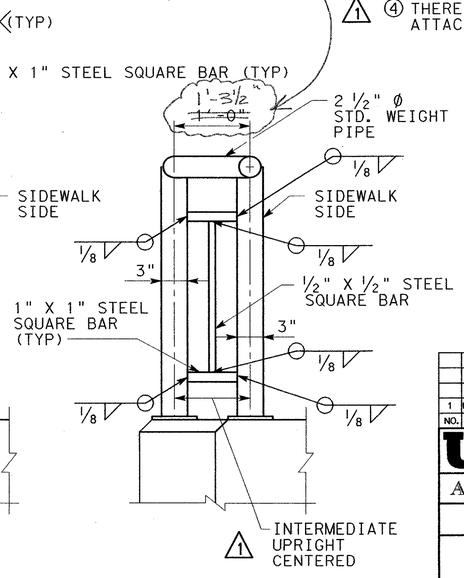


SECTION E-E
CORNERS TO BE MITERED AT 45°

* ADJUST REBAR SPACING AS NEEDED TO CLEAR ANCHOR BOLTS FOR PEDESTRIAN RAIL



AT BRIDGE WIDENING



AT SLAB BLISTER

RAIL WIDENING ELEVATIONS ④ 1

② POINT OF PLATE, BEFORE DIAGONAL, SHOULD LINE UP WITH OUTSIDE EDGE OF 1/2" SQUARE ROD

③ DIMENSION TO BE ADJUSTED WHEN POSTS ARE SPACED LESS THAN 7'-1" %

1 ④ THERE IS NO TRIANGULAR PLATE ATTACHED TO EITHER RAIL WIDENING

STATE OF TEXAS
CLIFF R. HALL
82211
REGISTERED
PROFESSIONAL ENGINEER
7/2/04

NO.	DATE	REVISION	APPROV.
1	05/24/04	ADDENDUM CHANGES	CRH

301

URS GREYSTONE CENTRE 5010 LBJ FREEWAY, SUITE 1300 DALLAS, TX 75244

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

PEDESTRIAN RAIL DETAILS

SHEET 2 OF 2

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-63

7/2/2004 10:33:05 AM

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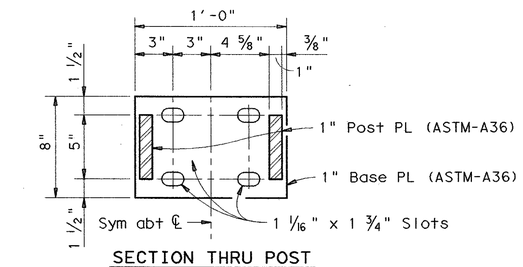
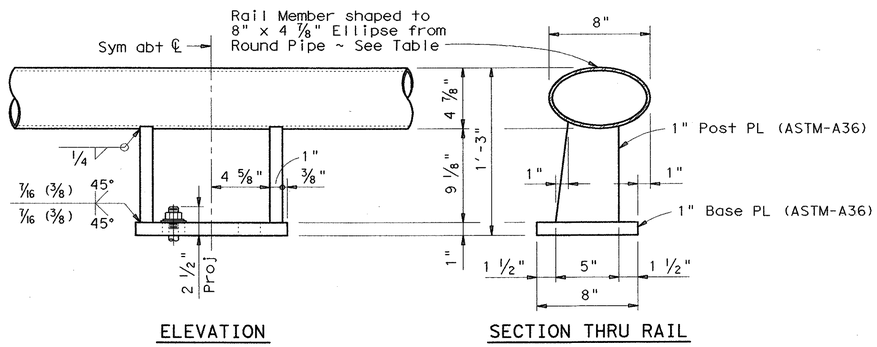
See RFI #102
Detail for transition between T4 Rail and MBGF.
Parapet Panel Length (10' Min ~ 33' Max)
Parapet Panel Length (10' Min ~ 33' Max)
Wingwall Length (Variable)
5'-0" Min
20 7'-1" Max Post Spa
M
10" Min
1'-6" Max
Rail Member Section
10" Min (Typ)
9" Max
End of Bridge Rail for payment
Face of Abut Bkwl
Same as Slab Jt Opening
1/4" Min
3/4" Max
Intermediate Wall Joint (See Detail)
1 ℄ Splice ~ Metal Beam Guard Fence Transitions must be attached to the bridge rail and extended along the embankment unless shown otherwise on the plans. See plan sheet for details and length for payment.
Limits of Abut Wingwall
2 Thrie-Beam Terminal Connector shall receive the same protective coating as the attached Metal Beam Guard Fence.
3 ℄ Exp Jt or Splice Jt as required
4 One shop splice per rail member section is permitted with minimum 85 percent penetration. The weld may be square groove, or single vee groove. Grind smooth.
AT ABUTMENT BENTS
AT SLAB EXP JOINTS
AT INTERMEDIATE WALL JOINTS
ROADWAY ELEVATION OF RAIL
BARS Rb (#5)
BARS U (#5)
BARS V (#5)
5 Length shown for 6 1/2" Min bar embedment with no overlay. Adjust as required.
6 Wingwall Length minus 1'-1 1/2"
7 Increase 2" for structures with overlay.
8 Bolts shall be sufficient length to extend 1/2" to 3/4" beyond nut.
9 4 additional Bars R(#5) 3'-8" in length shall be placed inside Bars U(#5) and centered 2'-0" from end of rail when Terminal Connections are required. Field bend as needed.
Opening
If forming material is not left in place, plug bottom 6" with Conc or slab joint sealing compound.
INTERMEDIATE WALL JOINT DETAIL
Note: Provide intermediate wall joints over all slab construction joints, over interior supports on continuous units, and at equal intervals in between as necessary to maintain a 33' maximum length of unbroken wall. Material used in forming joint may be left in place if it is compressible and light in color such as the following materials: polystyrene, molded cork granules, sponge rubber sheet, etc.
M
20 Post spacing shall align with ped rail posts.
℄ 5 ~ 1" Dia holes and 2 1/2" Dia x 2" deep recesses. Holes and recesses must be formed or cored. Percussion drilling is not permitted. Adjust placement of reinforcing steel as necessary to avoid bolt holes and recesses.
℄ 5 ~ 7/8" Dia A325 Hex Head Bolts with two 1 3/4" O.D. washers. Place washer under each head and nut. 8
℄ Thrie-Beam Terminal Connector (10 Gage) 2
℄ Splice
Top of Abut Wingwall
Note: Bolt recesses are only required when pedestrian sidewalks are adjacent to back of rail.
ELEVATION
SECTION
TERMINAL CONNECTION DETAILS
See RFI #091
Use "10' Curb Transition" to MBGF.
TOP VIEW
Traffic side
Bars U1 Spa at 9" Max
AT ABUT WINGWALL
Sym about ℄ Joint
AT SLAB EXPANSION JOINT
AT INTERMEDIATE WALL JOINT
ELEVATION SHOWING TYPICAL REINFORCING PLACEMENT
Nominal Face of Rail
U1 (#5) at 9" Max
Anchor Bolts
Bolt Anchor PLs (Typ)
U4 (#5) 9" Max
V (#5) at 10 1/2" Max
See RFI #074
Rebar Clearance for T4 Rail.
1 3/4" Clear Clearance
3 3/4" Clear Clearance
10 Top longitudinal slab bar may be adjusted laterally 3" ± to tie reinforcing.
ON CANTILEVER ABUT WINGWALLS OR CIP RETAINING WALLS
ON FOUNDED ABUT WINGWALLS
ON CIP RETAINING WALLS
ON BRIDGE SLAB
M Types T4(S) MOD A
SECTIONS THRU RAIL
CLIFF R. HALL 82211 REGISTERED PROFESSIONAL ENGINEER
7/1/04
M MODIFIED ITEMS
SHEET 1 OF 2 302
Texas Department of Transportation
Bridge Division
TRAFFIC RAIL
(STEEL)
TYPE T4(S) (MOD) A
FILE: rlstde13.dgn DN: JJP CK: RLR DW: JTR CK: DWM
©TxDOT February 2003
REVISIONS
BR-64

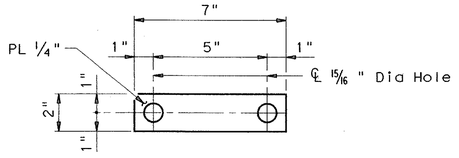


SECTION THRU POST

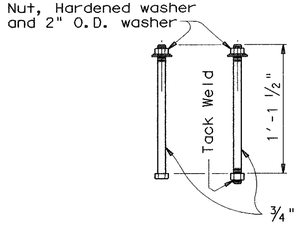


ELEVATION SECTION THRU RAIL

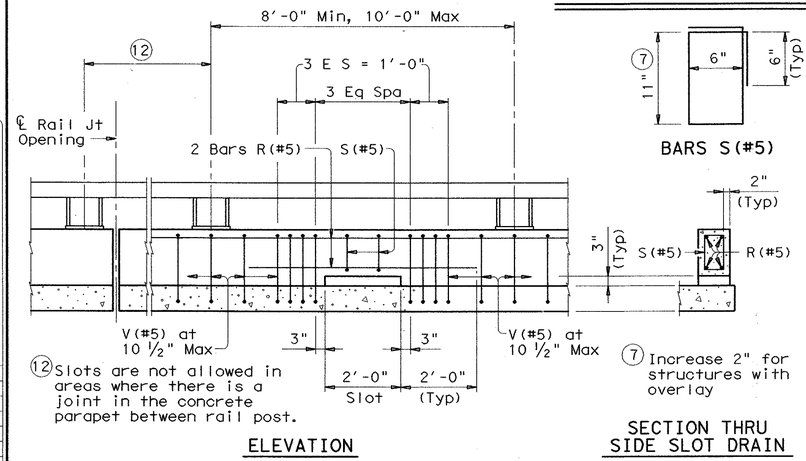
RAIL POST & ANCHORAGE DETAILS



BOLT ANCHORAGE PLATE

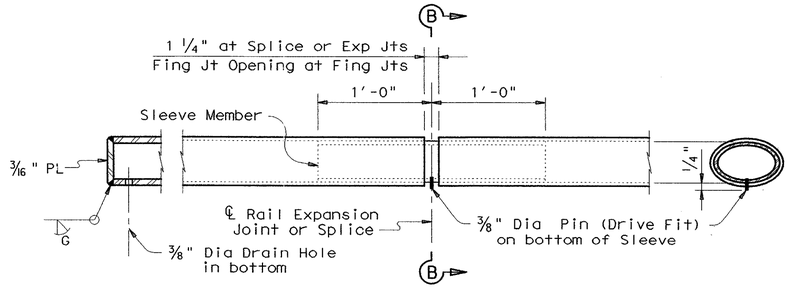


ANCHOR BOLT OPTIONS



OPTIONAL SIDE SLOT DRAIN DETAILS

Note: Side Slot Drains must be centered between rail post within the limits shown. Side Slot Drains may be used where shown elsewhere on the plans or as directed by the Engineer. Drains should not be placed over railroad tracks, lower roadways, or sidewalks. When this rail is used as a separator between a roadway surface and a sidewalk surface, side drain slots will not be permitted.

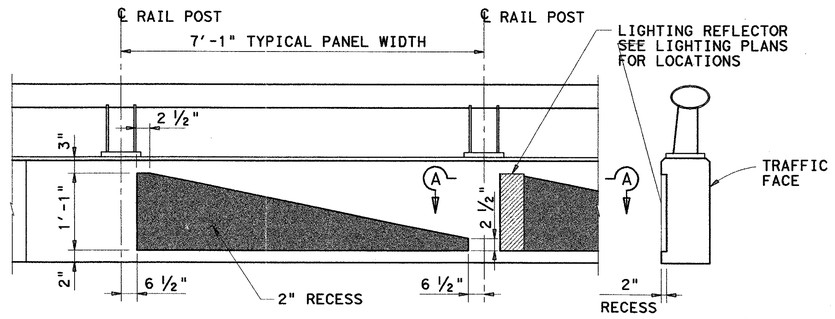


AT RAIL ENDS AT SPLICE OR EXP JTS SECTION B-B

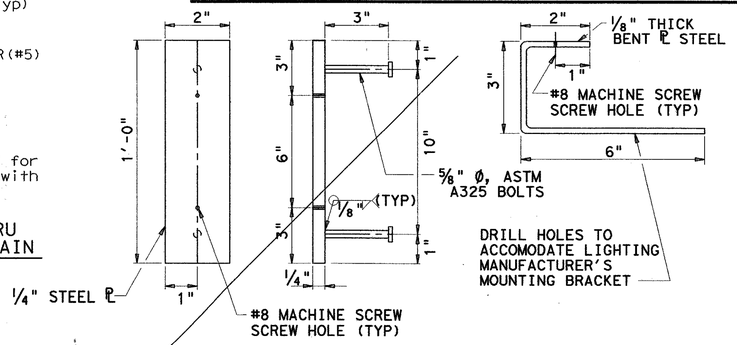
TUBE FABRICATION DETAILS

TUBE & SLEEVE MEMBERS		
8" x 4 7/8" Ellipse	Sleeve Member	
Material	Material	Thickness
6"Dia Std Pipe ASTM-A53 (E or S Gr B)	ASTM-A53 Gr B	0.353"
	ASTM-A36 or A500 Gr B	0.339"
	API-5LX52	0.224"
6 5/8"O.D. Pipe x 0.188" API-5LX52	ASTM-A53 Gr B	0.339"
	ASTM-A36 or A500 Gr B	0.325"
	API-5LX52	0.216"

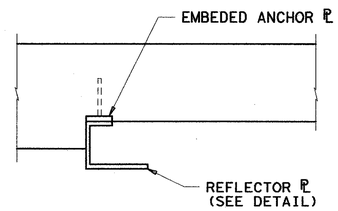
Note: Other sections of equal or greater strength are acceptable for sleeves. The major and minor diameters of the rail member may vary +/- 0.1875 inches from plan dimension. However, the difference between the outside diameters of the sleeve and the inside diameters of the rail shall not exceed 0.125 inches along the major or minor axis. Gaps exceeding this amount up to 0.25 inches are permissible along the 45° axes of the sleeves.



M TYPICAL RAIL ELEVATION TYPE T4(S) MOD A



M EMBEDED ANCHOR PLATE M REFLECTOR ℄



M SECTION A-A

RAIL DATA FOR HORIZONTAL CURVES

	RADIUS TO FACE OF RAIL	MAX CHORD LENGTH	CONSTRUCT OR FABRICATE
Rail Members	Over 2800'	29'-0"	Straight rail sections
	Over 1400' thru 2800'	14'-6"	To required radius or to chords shown (11)
	Over 700' thru 1400'	7'-3"	
	Thru 700'	Zero	To required radius (11)

(11) Shop drawings required (may be submitted as 11"x 17" prints provided they are clearly legible).

For railing not requiring shop drawings, erection drawings showing rail member section lengths, post spacing, and anchor bolt setting shall be submitted to the Area Engineer for approval. If rail member requires shop and erection drawings, these drawings shall be submitted to the Bridge Engineer for approval.

GENERAL NOTES:

This rail has been evaluated to be of equal strength to the T4(A) railing, which has been crash tested to meet NCHRP Report 350 TL-3 criteria. The T4(S) and can be used for design speeds of 50 mph and greater.

Rail Type T4(S) is comprised of the following parts: concrete parapet and wing terminal wall, all reinforcing shown, including that embedded in the slab or wingwalls, MBGF connections, rail member, posts, and all anchorage provisions including bolts, nuts and washers. All these parts are included in price bid per linear foot of rail.

All open ends of the rail shall be capped.

All steel components except reinforcing shall be painted per M **Surface Finishes for Structures sheet.** unless otherwise shown on plans.

Anchor bolts shall be 3/4" Dia ASTM A325 bolts (or A321 threaded rods with one tack welded hex nut each) with one hex nut and one 2" O.D. washer plus one hardened steel washer at each bolt. Nuts shall conform to A563 requirements. The untapped blanks shall be galvanized prior to cutting the threads. Threads for bolts and nuts shall have Class 2A and 2B fit tolerances in accordance with ANSI B1.1.

All concrete shall be Class "C". Chamfer all exposed corners. Epoxy coat Bars V and U if slab bars are epoxy coated.

All reinforcing shall be Grade 60.

Face of rail, posts and parapet shall be vertical transversely unless otherwise approved by the Engineer. Rail posts shall be perpendicular to top of adjacent concrete parapet grade. Grout may be used under rail post base plates if necessary.

Rail member sections shall include not less than two posts nor more than four.

Exposed edges of rail members and rail posts shall be rounded or chamfered to approximately 1/16" by grinding.

Average weight of railing with no overlay: 187 plf (Conc) 25 plf (Steel).

M **See Surface Finishes for Structures sheet for rail paint schemes and colors.**

M **See Rail Layout sheet for proper orientation of triangular recess for rail Type T4(S) MOD A.**

M MODIFIED ITEMS

STATE OF TEXAS CLIFF R. HALL 82211 REGISTERED PROFESSIONAL ENGINEER 7/1/04

SHEET 2 OF 2 303

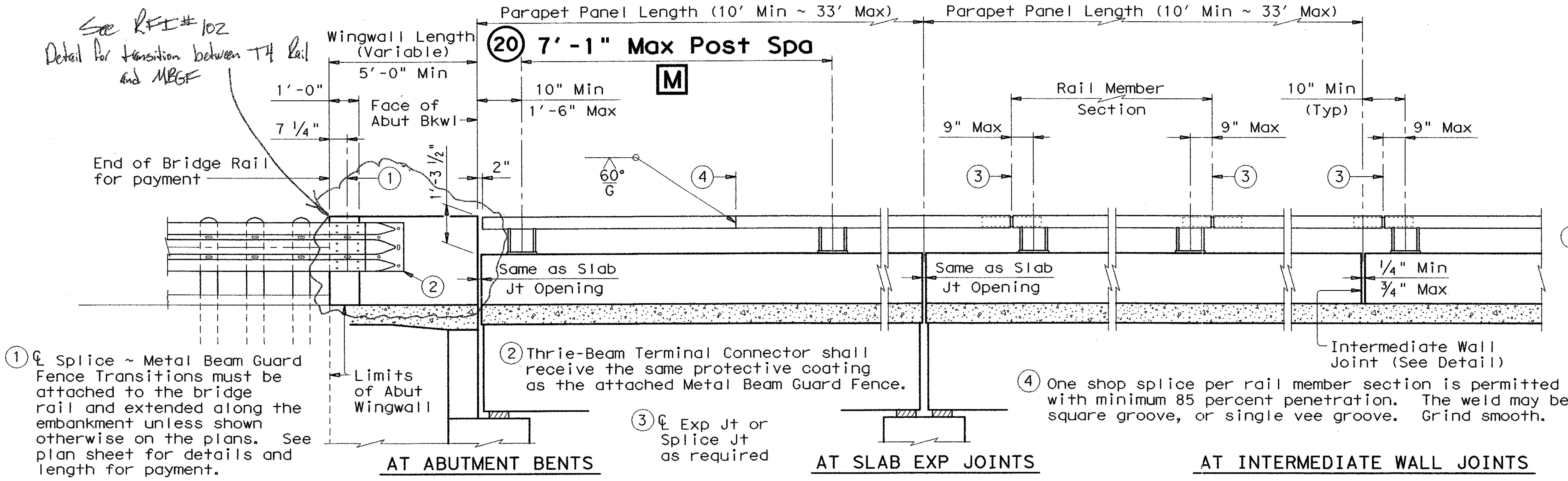
Texas Department of Transportation
Bridge Division

TRAFFIC RAIL (STEEL)

TYPE T4(S) (MOD) A

FILE: rlstde13.dgn	DN: JJP	CK: RLR	DW: JTR	CK: DWM
©TxDOT February 2003	DISTRICT	FEDERAL AID PROJECT		SHEET
REVISIONS				BR-65
	COUNTY	CONTROL	SECT	JOB	HIGHWAY

LEVELS DISPLAYED 1 10 44 2021 606 16 263 ACC:



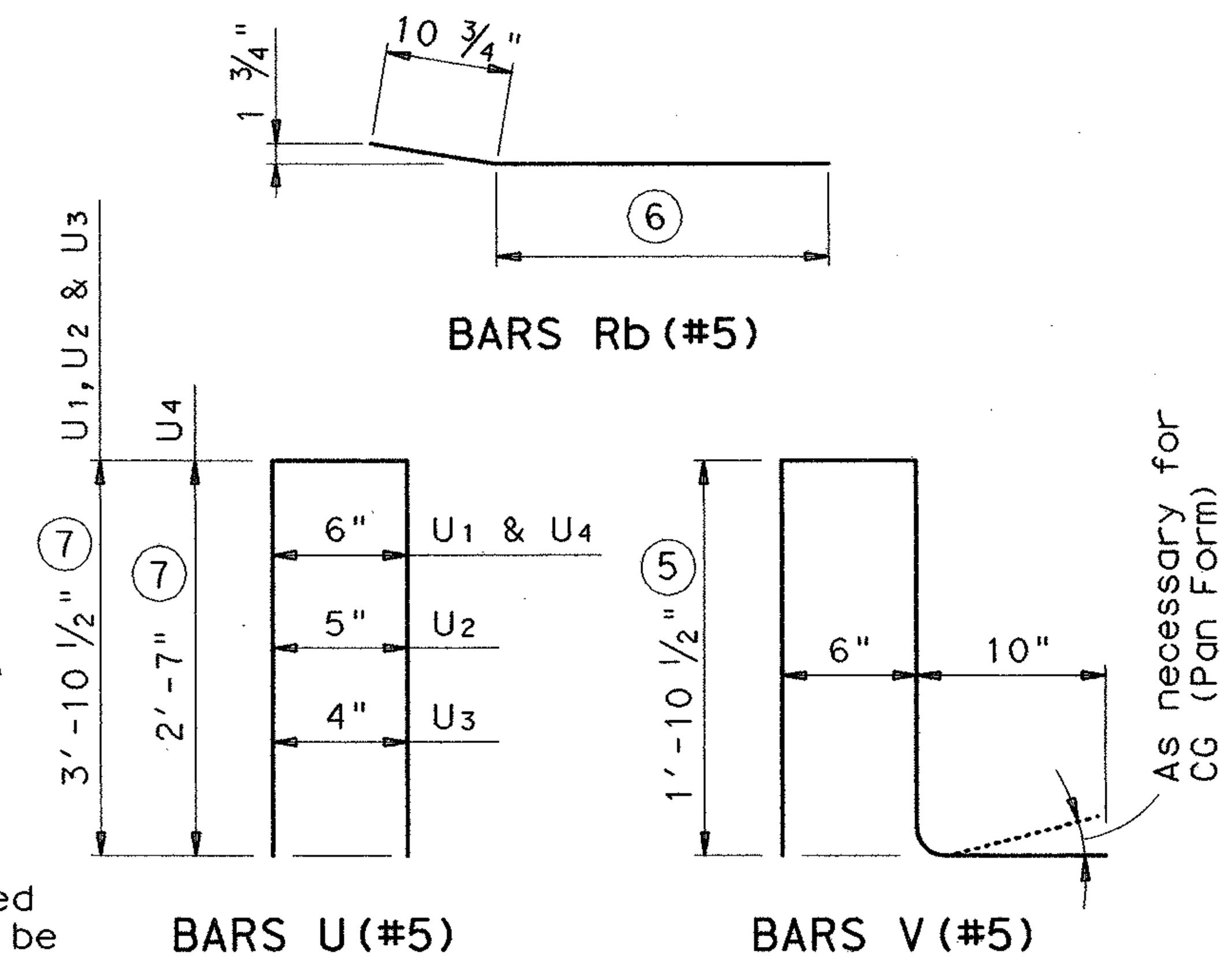
① ℄ Splice ~ Metal Beam Guard Fence Transitions must be attached to the bridge rail and extended along the embankment unless shown otherwise on the plans. See plan sheet for details and length for payment.

② Thrie-Beam Terminal Connector shall receive the same protective coating as the attached Metal Beam Guard Fence.

③ ℄ Exp Jt or Splice Jt as required

④ One shop splice per rail member section is permitted with minimum 85 percent penetration. The weld may be square groove, or single vee groove. Grind smooth.

ROADWAY ELEVATION OF RAIL



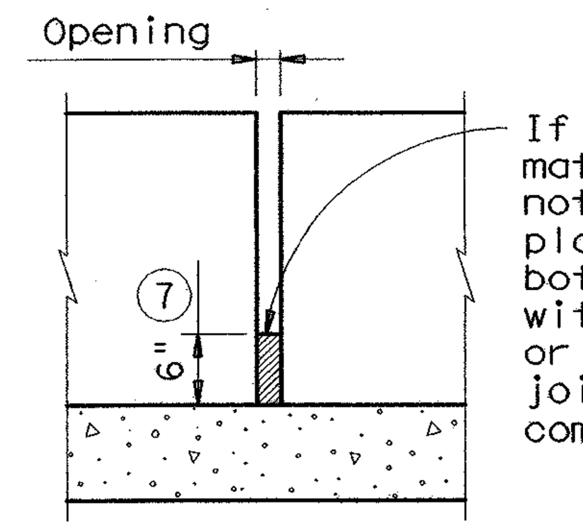
⑤ Length shown for 6 1/2" Min bar embedment with no overlay. Adjust as required.

⑥ Wingwall Length minus 1'-1 1/2"

⑦ Increase 2" for structures with overlay.

⑧ Bolts shall be sufficient length to extend 1/2" to 3/4" beyond nut.

⑨ 4 additional Bars R(#5) 3'-8" in length shall be placed inside Bars U(#5) and centered 2'-0" from end of rail when Terminal Connections are required. Field bend as needed.



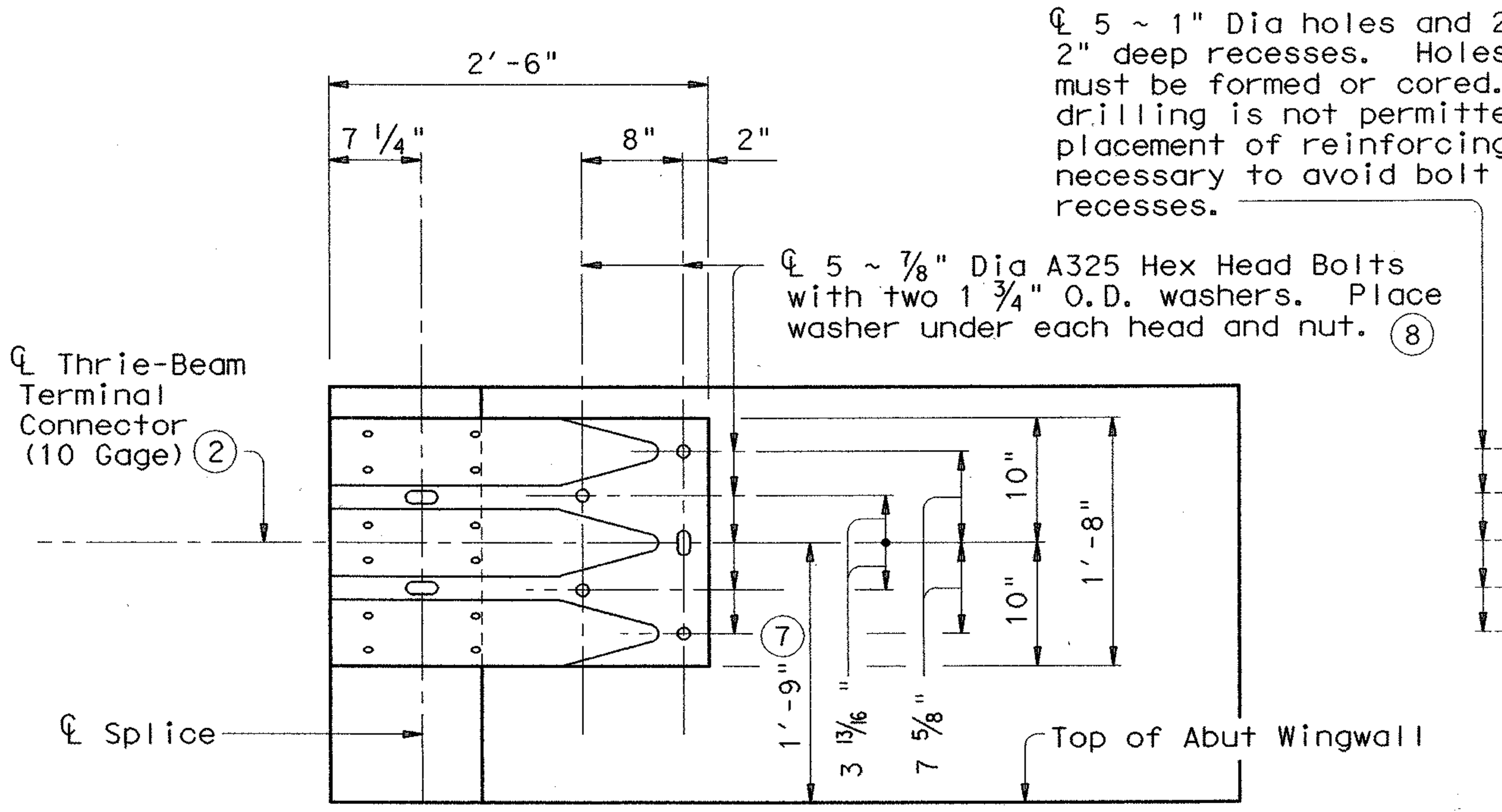
INTERMEDIATE WALL JOINT DETAIL

Note: Provide intermediate wall joints over all slab construction joints, over interior supports on continuous units, and at equal intervals in between as necessary to maintain a 33' maximum length of unbroken wall. Material used in forming joint may be left in place if it is compressible and light in color such as the following materials: polystyrene, molded cork granules, sponge rubber sheet, etc.

M
⑳ **Post spacing shall align with ped rail posts.**

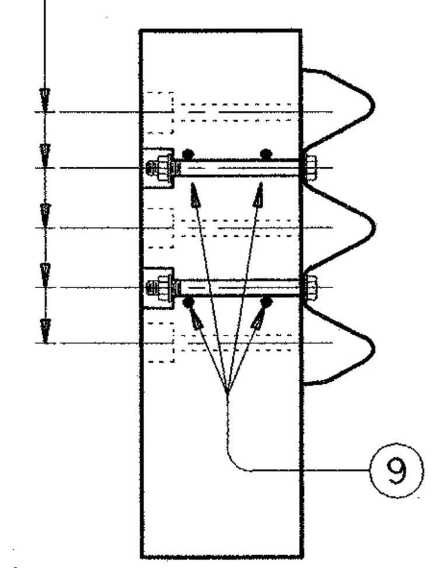
℄ 5 ~ 1" Dia holes and 2 1/2" Dia x 2" deep recesses. Holes and recesses must be formed or cored. Percussion drilling is not permitted. Adjust placement of reinforcing steel as necessary to avoid bolt holes and recesses.

℄ 5 ~ 7/8" Dia A325 Hex Head Bolts with two 1 3/4" O.D. washers. Place washer under each head and nut. ⑧



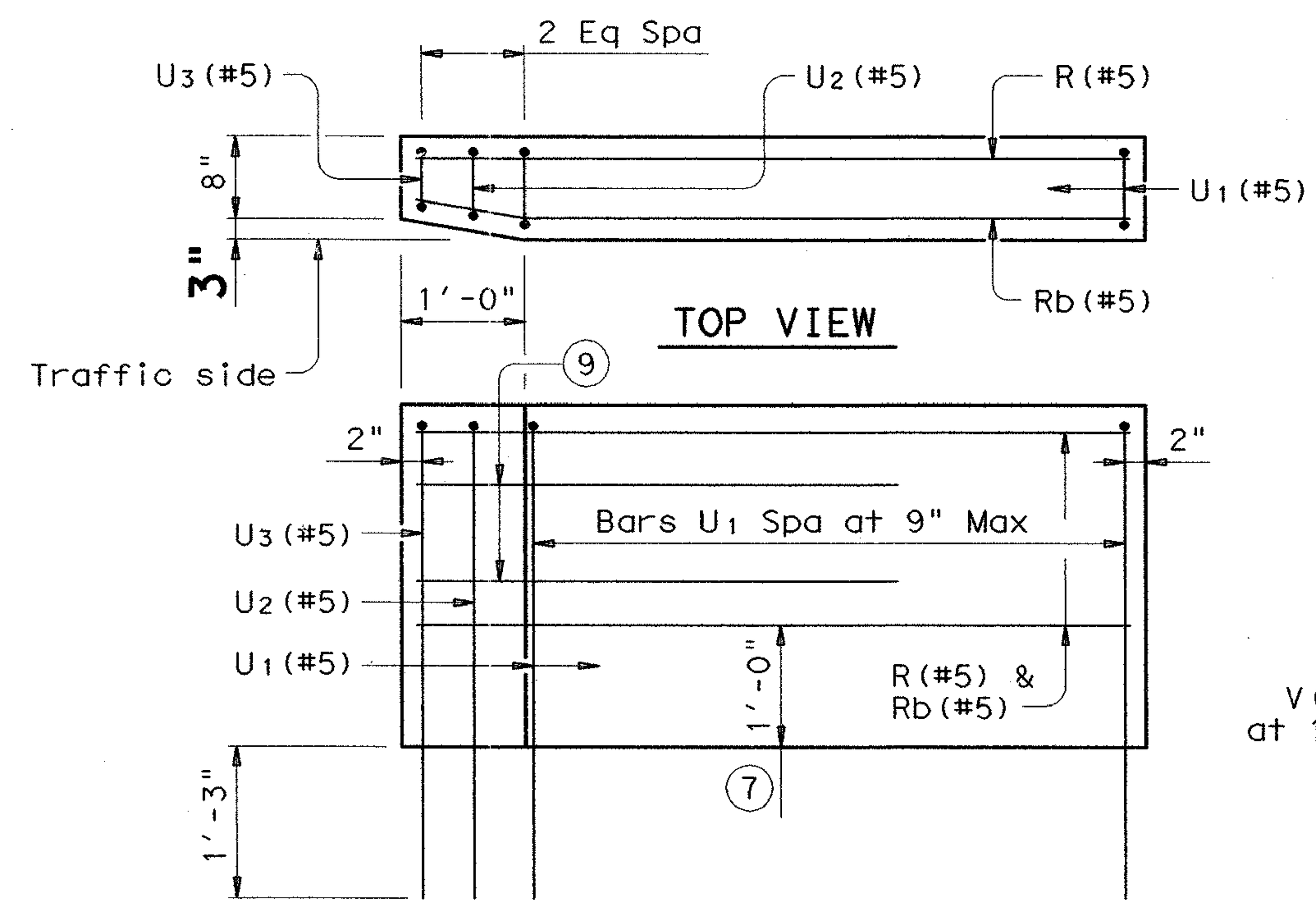
Note: Bolt recesses are only required when pedestrian sidewalks are adjacent to back of rail.

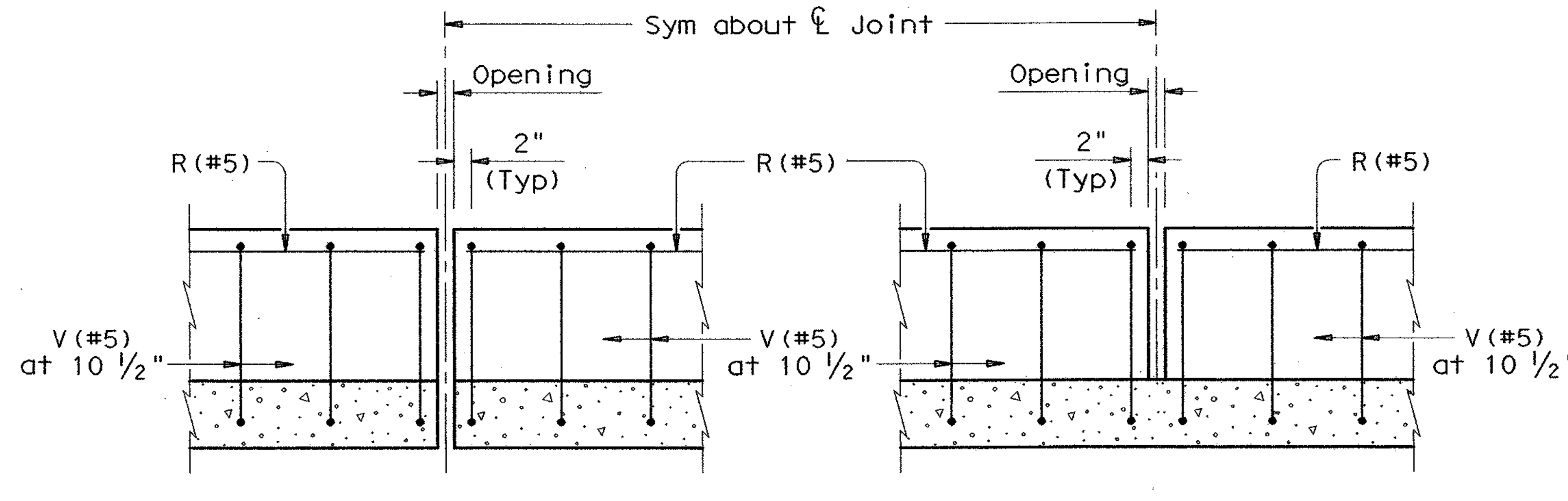
ELEVATION



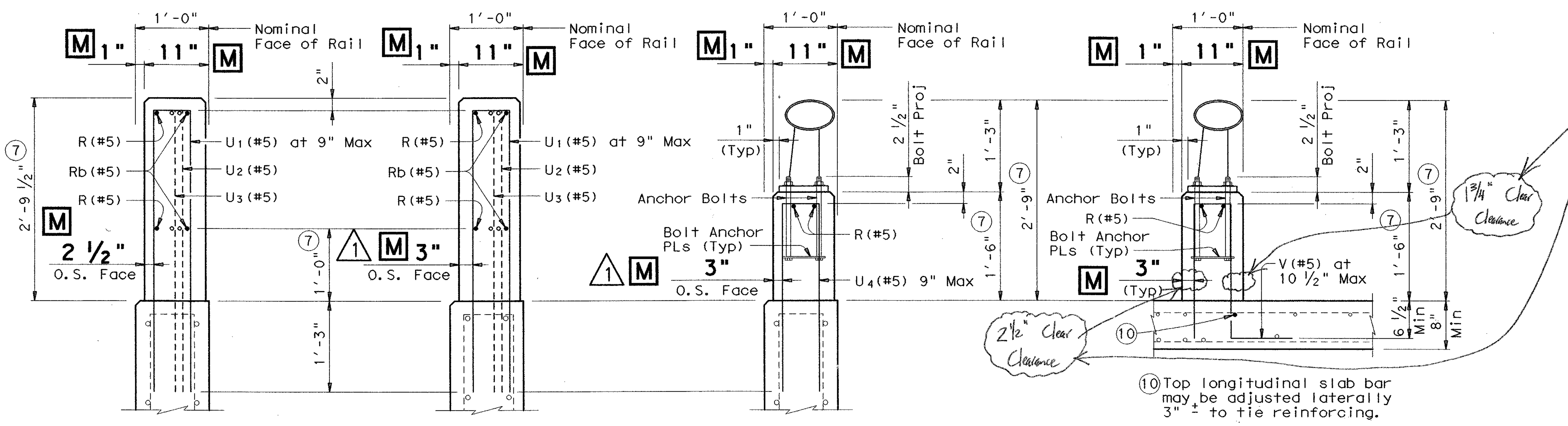
SECTION

TERMINAL CONNECTION DETAILS





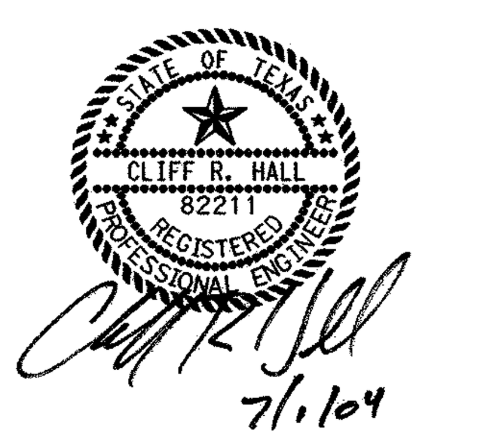
ELEVATION SHOWING TYPICAL REINFORCING PLACEMENT



⑩ Top longitudinal slab bar may be adjusted laterally 3" ± to tie reinforcing.

SECTIONS THRU RAIL

M **Types T4(S) MOD B**



M **MODIFIED ITEMS**

⚠1 05/21/04 - ADDENDUM CHANGES

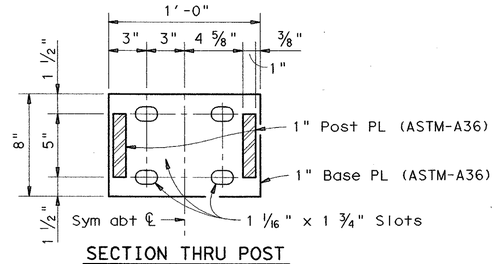
SHEET 1 OF 2 | 304

Texas Department of Transportation
Bridge Division

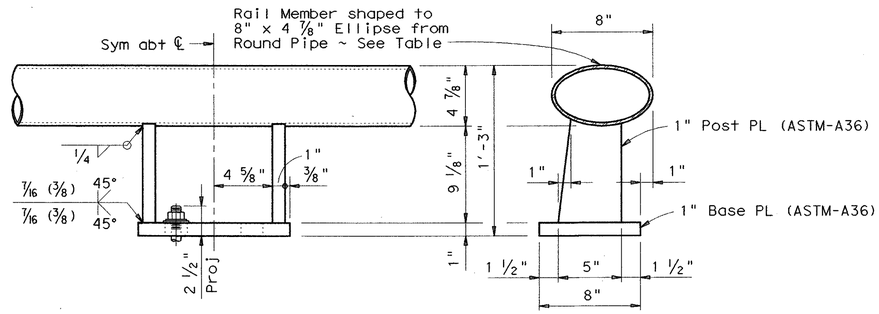
TRAFFIC RAIL (STEEL)

TYPE T4(S) (MOD) B

FILE: rlstde13.dgn	DN: JJP	CK: RLR	DW: JTR	CK: DWM
©TxDOT February 2003	DISTRICT	FEDERAL AID PROJECT		SHEET
REVISIONS				BR-66
	COUNTY	CONTROL	SECT JOB	HIGHWAY



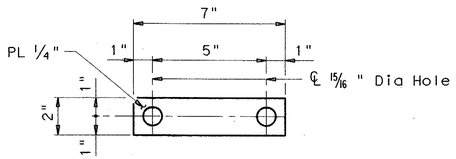
SECTION THRU POST



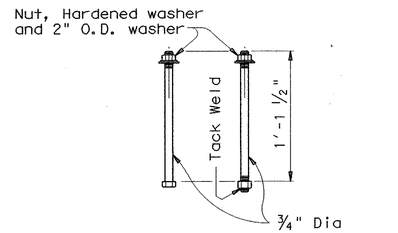
ELEVATION

SECTION THRU RAIL

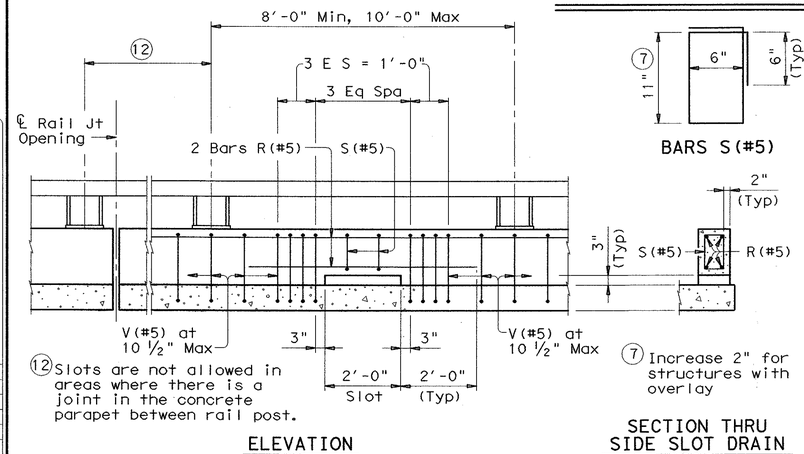
RAIL POST & ANCHORAGE DETAILS



BOLT ANCHORAGE PLATE



ANCHOR BOLT OPTIONS



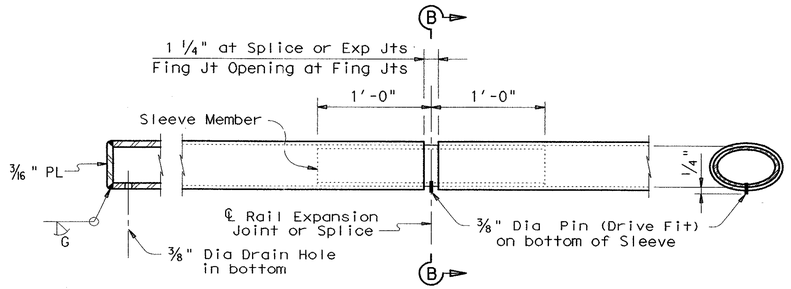
ELEVATION

SECTION THRU SIDE SLOT DRAIN

BARS S(#5)

OPTIONAL SIDE SLOT DRAIN DETAILS

Note: Side Slot Drains must be centered between rail post within the limits shown. Side Slot Drains may be used where shown elsewhere on the plans or as directed by the Engineer. Drains should not be placed over railroad tracks, lower roadways, or sidewalks. When this rail is used as a separator between a roadway surface and a sidewalk surface, side drain slots will not be permitted.



AT RAIL ENDS

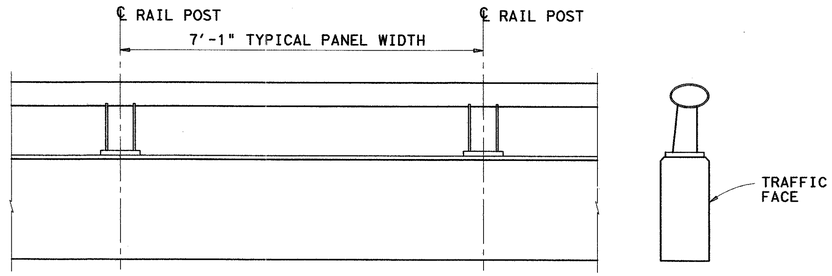
AT SPLICE OR EXP JTS

SECTION B-B

TUBE FABRICATION DETAILS

TUBE & SLEEVE MEMBERS		
8" x 4 7/8" Ellipse	Sleeve Member	
Material	Material	Thickness
6"Dia Std Pipe ASTM-A53 (E or S Gr B)	ASTM-A53 Gr B	0.353"
	ASTM-A36 or A500 Gr B	0.339"
	API-5LX52	0.224"
6 5/8"O.D. Pipe x 0.188" API-5LX52	ASTM-A53 Gr B	0.339"
	ASTM-A36 or A500 Gr B	0.325"
	API-5LX52	0.216"

Note: Other sections of equal or greater strength are acceptable for sleeves. The major and minor diameters of the rail member may vary +/- 0.1875 inches from plan dimension. However, the difference between the outside diameters of the sleeve and the inside diameters of the rail shall not exceed 0.125 inches along the major or minor axis. Gaps exceeding this amount up to 0.25 inches are permissible along the 45° axes of the sleeves.



M TYPICAL RAIL ELEVATION TYPE T4(S) MOD B

RAIL DATA FOR HORIZONTAL CURVES

	RADIUS TO FACE OF RAIL	MAX CHORD LENGTH	CONSTRUCT OR FABRICATE
Rail Members	Over 2800'	29'-0"	Straight rail sections
	Over 1400' thru 2800'	14'-6"	To required radius or to chords shown (11)
	Over 700' thru 1400'	7'-3"	
	Thru 700'	Zero	To required radius (11)

(11) Shop drawings required (may be submitted as 11"x 17" prints provided they are clearly legible).

For railing not requiring shop drawings, erection drawings showing rail member section lengths, post spacing, and anchor bolt setting shall be submitted to the Area Engineer for approval. If rail member requires shop and erection drawings, these drawings shall be submitted to the Bridge Engineer for approval.

GENERAL NOTES:

This rail has been evaluated to be of equal strength to the T4(A) railing, which has been crash tested to meet NCHRP Report 350 TL-3 criteria. The T4(S) and can be used for design speeds of 50 mph and greater.

Rail Type T4(S) is comprised of the following parts: concrete parapet and wing terminal wall, all reinforcing shown, including that embedded in the slab or wingwalls, MBGF connections, rail member, posts, and all anchorage provisions including bolts, nuts and washers. All these parts are included in price bid per linear foot of rail.

All open ends of the rail shall be capped.

All steel components except reinforcing shall be painted per

M **Surface Finishes for Structures sheet.**

unless otherwise shown on plans.

Anchor bolts shall be 3/4" Dia ASTM A325 bolts (or A321 threaded rods with one tack welded hex nut each) with one hex nut and one 2" O.D. washer plus one hardened steel washer at each bolt. Nuts shall conform to A563 requirements. The untapped blanks shall be galvanized prior to cutting the threads. Threads for bolts and nuts shall have Class 2A and 2B fit tolerances in accordance with ANSI B1.1.

All concrete shall be Class "C". Chamfer all exposed corners. Epoxy coat Bars V and U if slab bars are epoxy coated.

All reinforcing shall be Grade 60.

Face of rail, posts and parapet shall be vertical transversely unless otherwise approved by the Engineer. Rail posts shall be perpendicular to top of adjacent concrete parapet grade. Grout may be used under rail post base plates if necessary.

Rail member sections shall include not less than two posts nor more than four.

Exposed edges of rail members and rail posts shall be rounded or chamfered to approximately 1/16" by grinding.

Average weight of railing with no overlay: 187 plf (Conc) 25 plf (Steel).

M **See Surface Finishes for Structures sheet for rail paint schemes and colors.**

M MODIFIED ITEMS

SHEET 2 OF 2 | 305

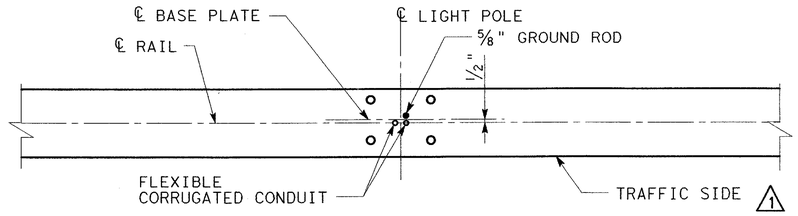
Texas Department of Transportation
Bridge Division

TRAFFIC RAIL
(STEEL)

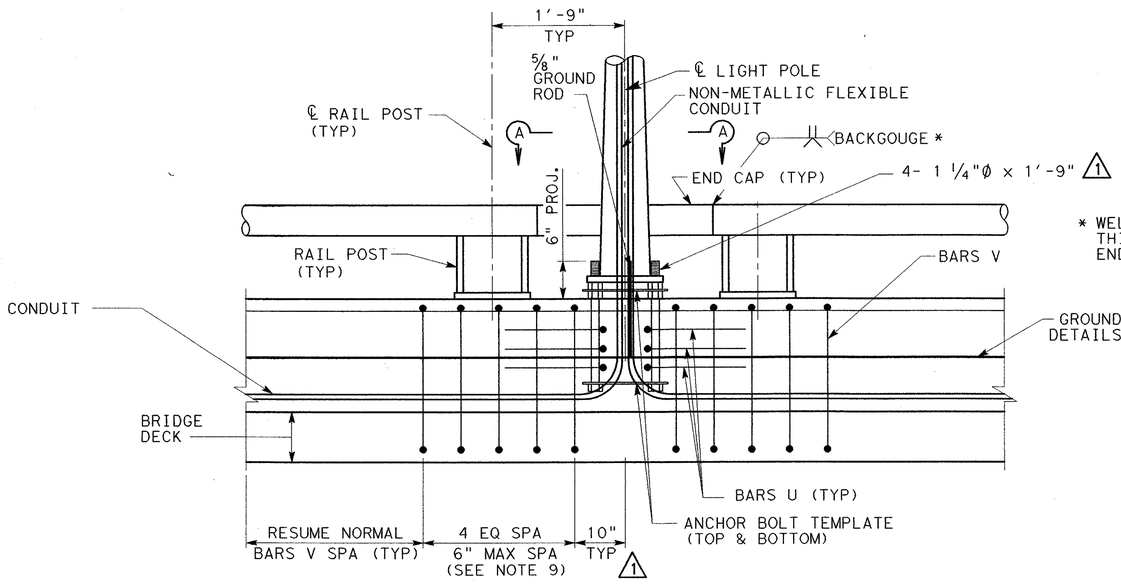
TYPE T4(S) (MOD) B

FILE: rlstde13.dgn	DN: JJP	CK: RLR	DW: JTR	CK: DWM
©TxDOT February 2003	DISTRICT	FEDERAL AID PROJECT		SHEET
REVISIONS				BR-67
	COUNTY	CONTROL	SECT	JOB	HIGHWAY

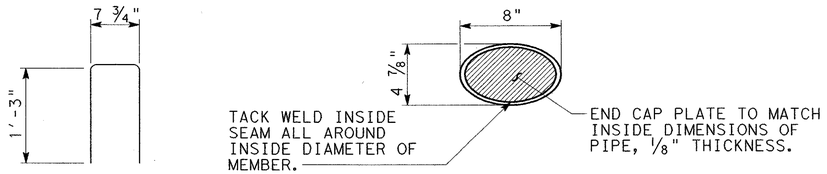
LEVELS DISPLAYED
ACC:
1 2021 60 63



PLAN VIEW AT TOP OF BARRIER

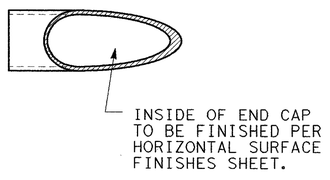


ELEVATION

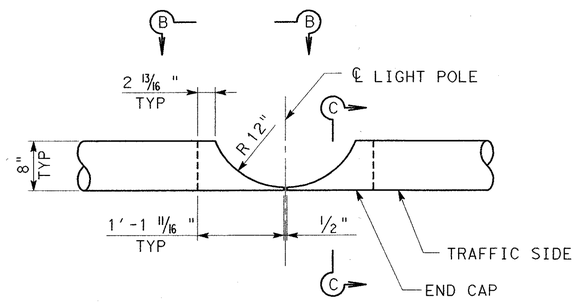


SECTION C-C

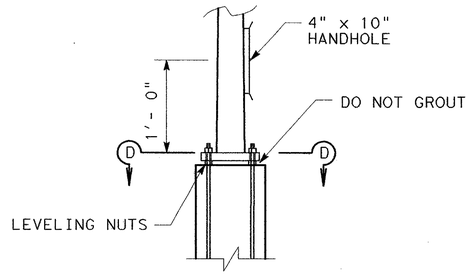
BARS U



SECTION B-B



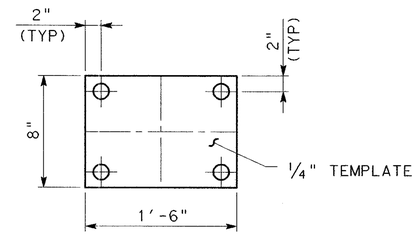
SECTION A-A



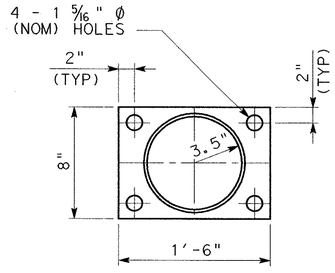
POLE DETAIL

FOUR 1¼" ANCHOR BOLTS (ASTM A193 GRADE B7 WITH THE TOP THREADED NOT LESS THAN 6 INCHES) OR ANCHOR RODS (ASTM A321). THE TOP END OF THE BOLTS, OR RODS, SHALL BE GALVANIZED NOT LESS THAN 8 INCHES AND FURNISHED WITH NUTS (ASTM A563, GRADE DH, GALVANIZED HEAVY HEX) AND FLAT AND LOCK WASHERS AND TEMPLATES. 1

* WELD SIZE TO MATCH RAIL MEMBER THICKNESS. WELD IS TYPICAL TO ALL END CAPS AROUND LIGHTPOLES.



1 ANCHOR BOLT TEMPLATE DETAIL



1 SECTION D-D

1

GENERAL NOTES:

1 1. POLES ON BRIDGE BARRIER SHALL BE GROUNDED USING PROPER GROUNDING MATERIALS AND PRACTICES AS DESCRIBED IN NEC, 2002.

2. ANCHOR BOLTS AND GROUND RODS, AS SHOWN SHALL NOT BE PAID FOR DIRECTLY, BUT WILL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS.

3. SEE LIGHTING PLANS FOR LIGHT POLE TYPE AND BRIDGE LAYOUTS FOR LOCATIONS.

1 4. ALL CONDUIT BENDS SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE, 2002.

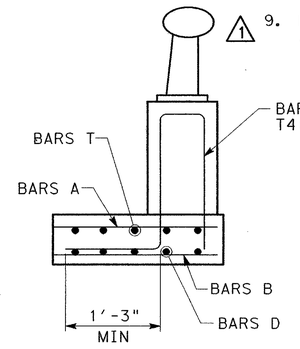
5. JUNCTION BOX SHALL BE CAST IRON, AND SHALL BE MOUNTED FLUSH (-0, + 1/2") WITH CONCRETE SURFACE OF T4(S) (MOD) A AND T4(S) (MOD) B. CAST IRON BOXES SHALL HAVE A GROUNDING STUD OR LUG AND SHALL BE GROUNDED. SEE ED(1) STANDARD FOR TYPES.

6. ALTERNATE FORMING METHODS MAY BE USED ONLY WITH THE PRIOR APPROVAL OF THE ENGINEER.

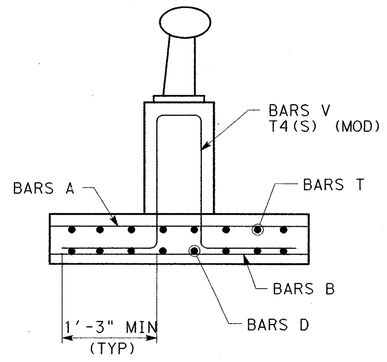
7. THE CONTRACTOR SHALL MAKE ADJUSTMENTS IN CONDUIT LOCATION, CONDUIT BEND, CONDUIT INSTALLATION, JUNCTION BOX AND LOCATION AND JUNCTION BOX MATERIAL BASED UPON FINAL INSTALLATION CONDITION.

8. ALL REBAR CALLOUTS AND DESIGNATIONS PER TxDOT STANDARD TYPE T4(S) (MOD) UNLESS OTHERWISE NOTED.

1 9. MAINTAIN 3" CLEARANCE BETWEEN RAIL POST ANCHOR BOLTS AND BARS V.



TYPICAL SECTION TYPE T4(S) (MOD) A



TYPICAL SECTION TYPE T4(S) (MOD) B

306

NO.	DATE	REVISION	APPROV.
1	05/24/04	ADDENDUM CHANGES	CRH

URS GREYSTONE CENTRE 3010 LBJ FREEWAY, SUITE 1500 DALLAS, TX 75234

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

LIGHT POLE ANCHORAGE DETAILS

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-68

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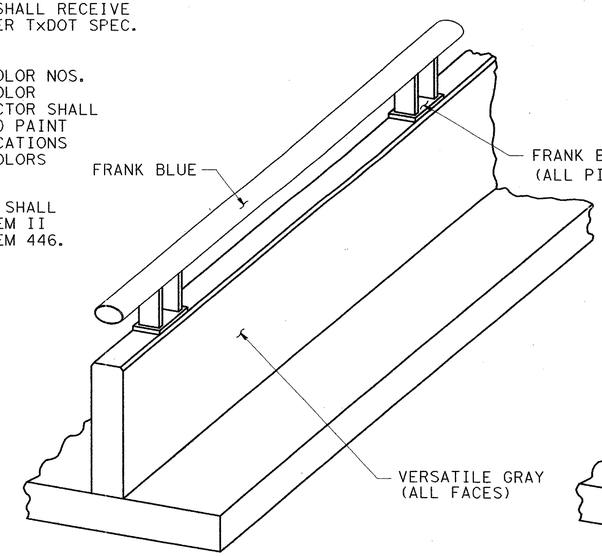
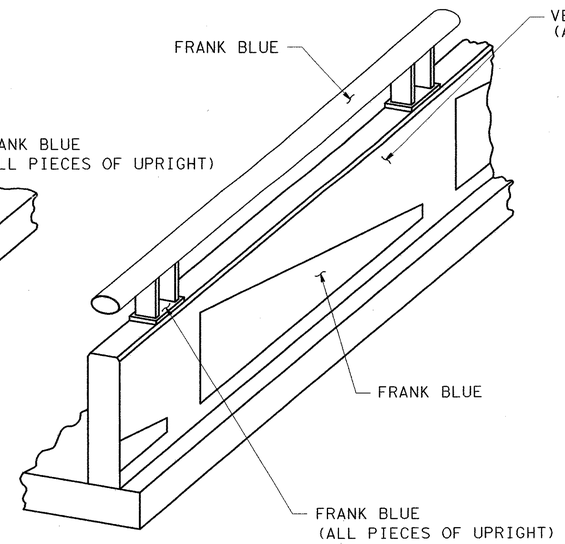
HORIZONTAL SCHEME		SHERWIN WILLIAMS COLOR # 6967 (FRANK BLUE) OR EQUAL	SHERWIN WILLIAMS COLOR # 6072 (VERSATILE GRAY) OR EQUAL
MSE WALL	PANEL		X
	COPING ACCENT		X
	ADDISON LOGO	X	
STRUCTURES	COLUMN		X
	COLUMN CAP		X
	ADDISON LOGO	X	
	BEAM		X
	ARCH	X	
	BENTS 9 & 10 SUPPORTS	X	
	STINGER	X	
	SW WARNING STRIP	X	
RAIL	PEDESTRIAN RAIL	X	
	T4(S) (MOD) A	X	X
	T4(S) (MOD) B	X	X

GENERAL NOTES:

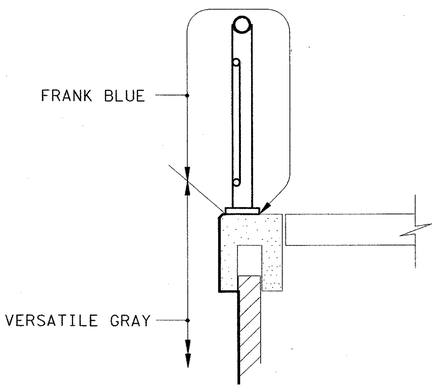
1. CONCRETE SURFACES SHALL RECEIVE A CLASS B FINISH PER TxDOT SPEC. ITEM 427.
2. SHERWIN WILLIAMS COLOR NOS. ARE PROVIDED FOR COLOR REFERENCE. CONTRACTOR SHALL PROVIDE AN APPROVED PAINT AS PER THE SPECIFICATIONS THAT MATCHES THE COLORS AS SHOWN.
3. PAINTING FOR STEEL SHALL BE PROTECTIVE SYSTEM II PER TXDOT SPEC. ITEM 446.



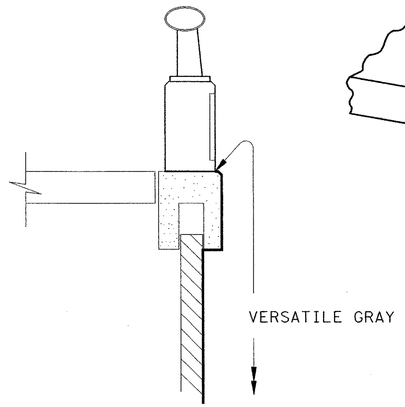
PAINT DETAIL
T4(S) (MOD) B



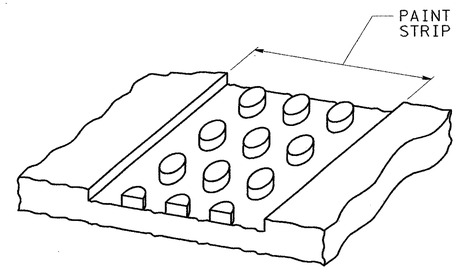
PAINT DETAIL
T4(S) (MOD) A



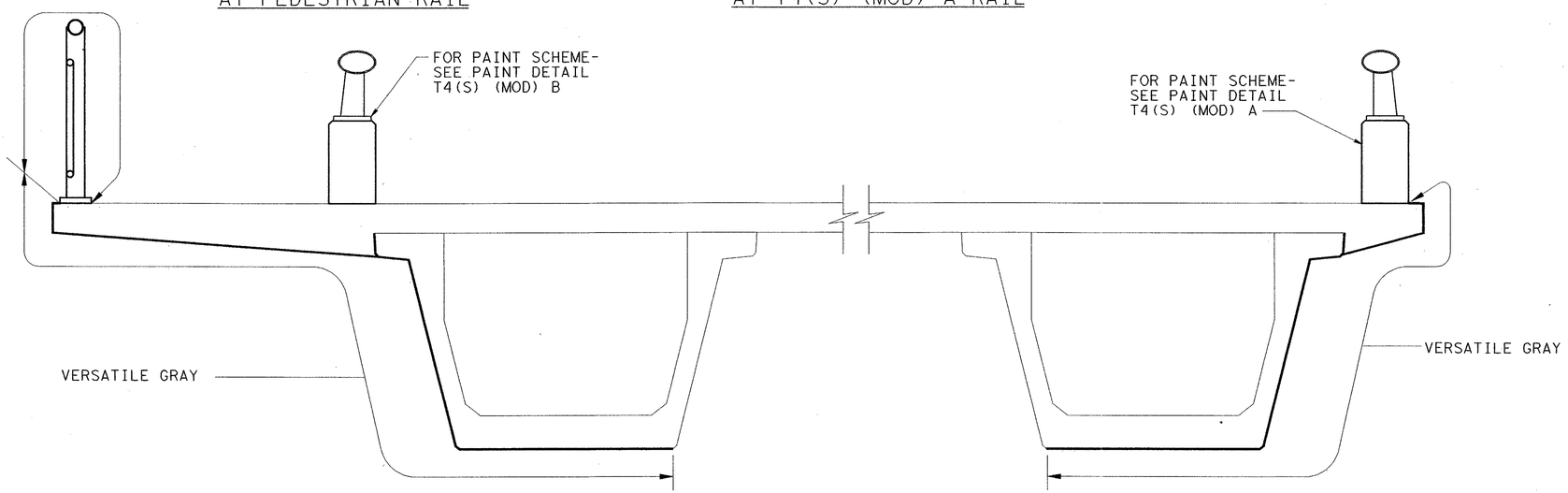
SECTION THRU RETAINING WALL
AT PEDESTRIAN RAIL



SECTION THRU RETAINING WALL
AT T4(S) (MOD) A RAIL



WARNING STRIP



SECTION THRU BRIDGE AT SIDEWALK
("U" BEAM)

SECTION THRU BRIDGE
("U" BEAM)

STATE OF TEXAS
CLIFF R. HALL
82211
REGISTERED
PROFESSIONAL ENGINEER
7/2/04

307

NO.	DATE	REVISION	APPROV.
1	05/24/04	ADDENDUM CHANGES	CRH

URS
GREYSTONE CENTRE
5010 LBJ FREEWAY, SUITE 1300
DALLAS, TX 75244

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

SURFACE FINISHES FOR STRUCTURES

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-69

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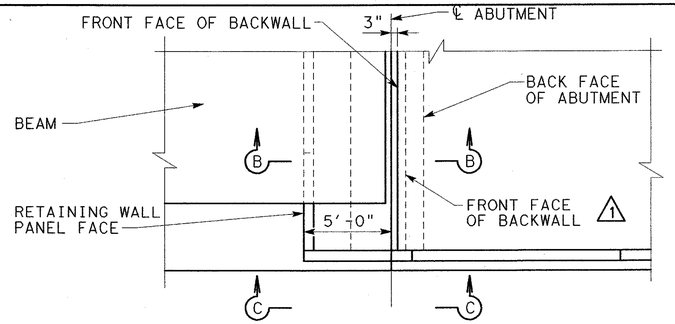
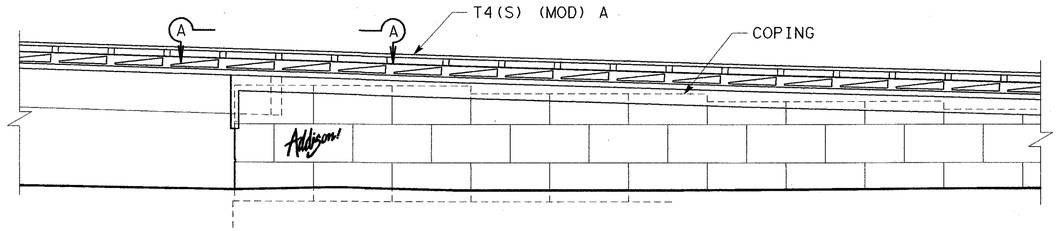
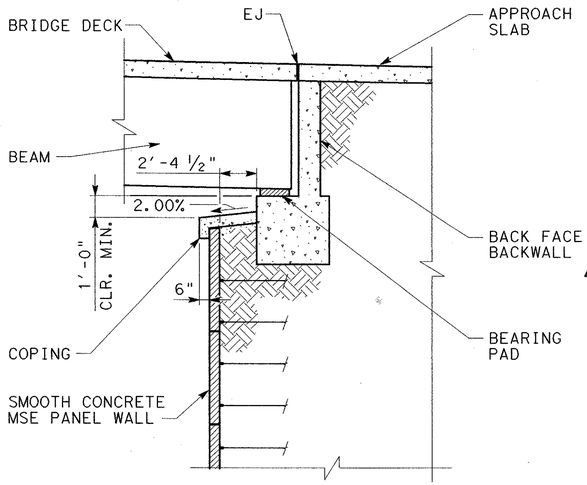


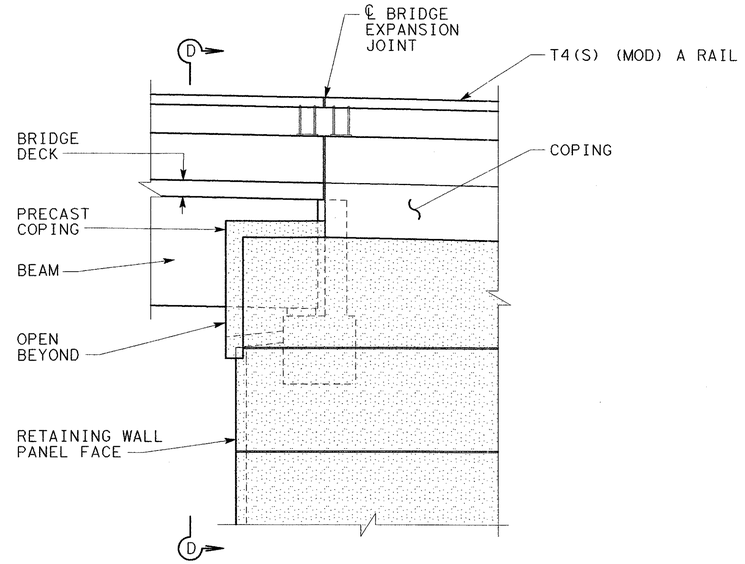
PLAN VIEW - SECTION A-A



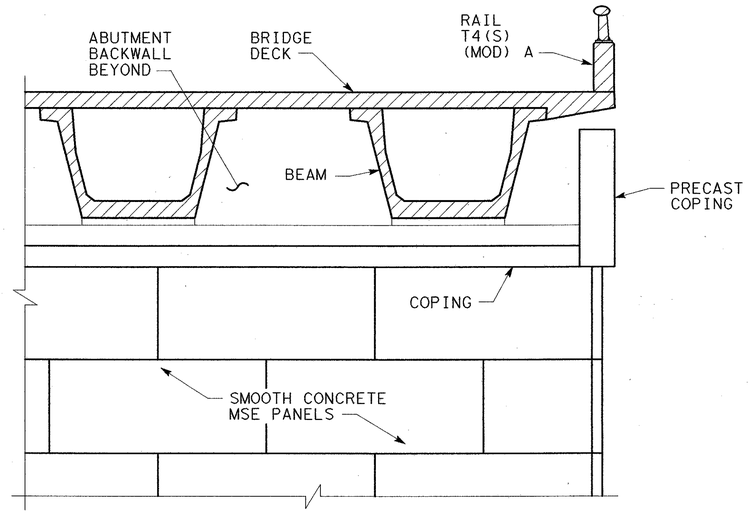
TYPICAL PANEL LAYOUT - ELEVATION



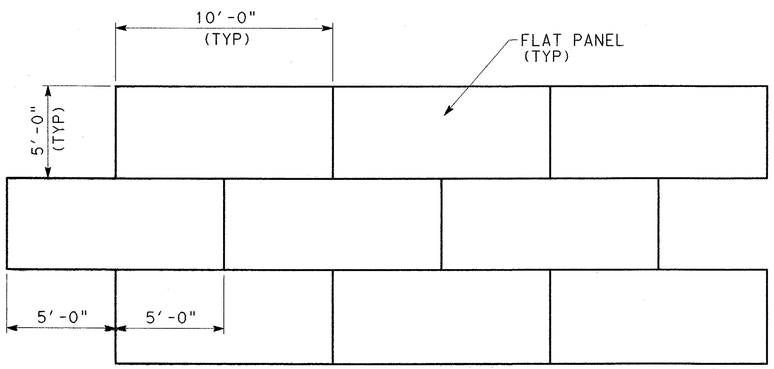
SECTION B-B



SECTION C-C



SECTION D-D



TYPICAL HORIZONTAL STAGGERING PANEL SYSTEM

GENERAL NOTES:

1. SEE RETAINING WALL PLAN, PROFILE, AND DETAIL SHEETS.
2. CONTRACTOR TO COORDINATE WITH THE TOWN OF ADDISON FOR THE ADDISON LOGO. ADDISON LOGO SHOULD BE RECESSED 1" MIN INTO THE PANEL ON THE FIRST FULL PANEL NEAR MID HEIGHT OF THE WALL. TYPICAL FOR EACH SIDE OF THE WALL.
3. SEE SURFACE FINISHES FOR STRUCTURES SHEET FOR RETAINING WALL COLORS.

STATE OF TEXAS
CLIFF R. HALL
82211
REGISTERED
PROFESSIONAL ENGINEER
7/2/04

308

NO.	DATE	REVISION	APPROV.
1	05/24/04	ADDENDUM CHANGES	CRH

URS
GREYSTONE CENTRE
5010 LBJ FREEWAY, SUITE 1500
DALLAS, TX 75244

ARAPAHO ROAD - PHASE III

SURVEYOR BOULEVARD TO ADDISON ROAD

MSE WALL PANEL SCHEME

TOWN OF ADDISON, TEXAS

Design	Drawn	DATE	SCALE	PROJECT NO.	SHEET NO.
Check	Check	05-07-04		25768	BR-70

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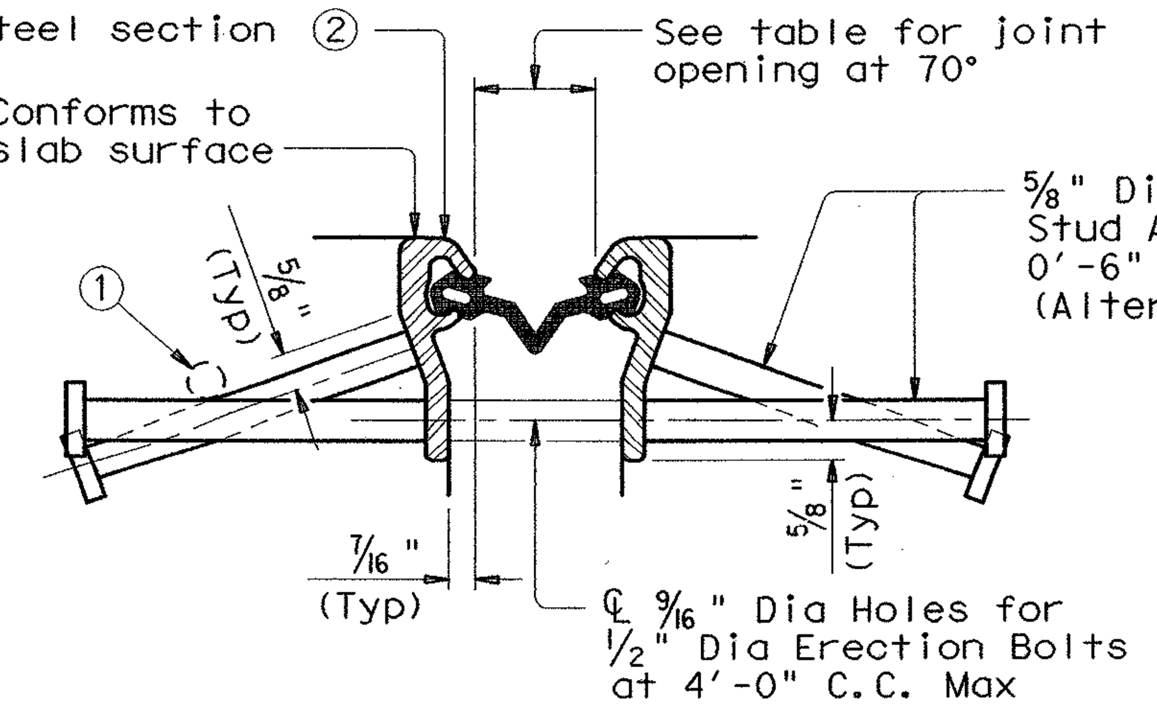
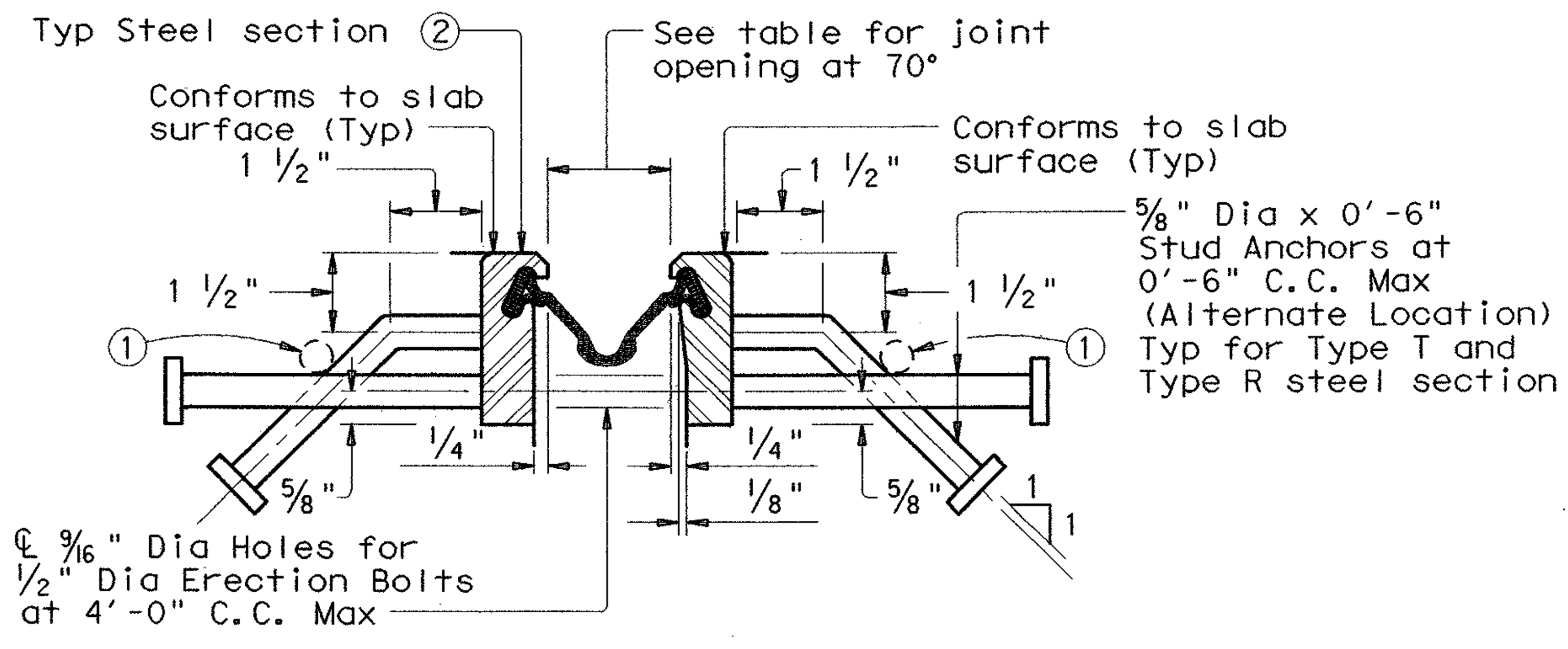


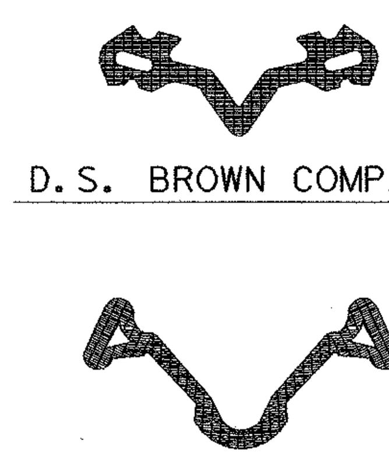
D S BROWN COMPANY



TYPE T TYPE R

WATSON BOWMAN & ACME CORP

SECTIONS THRU SEALED EXPANSION JOINT



D.S. BROWN COMPANY

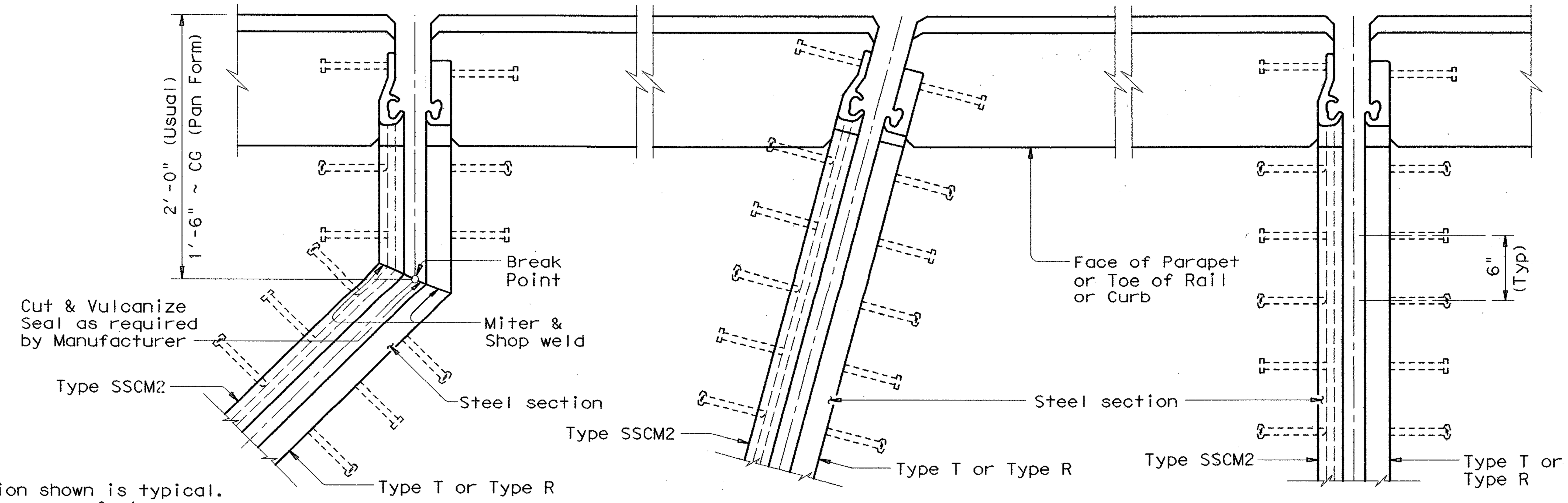
WATSON BOWMAN & ACME CORP

NEOPRENE SEAL

② Shape of steel section shown is typical. Variations depending on manufacturer are permissible.

③ Remove all burrs which will be in contact with seal prior to making splice.

MANUFACTURER	STEEL SECTION ②	NEOPRENE STRIP SEAL 4" JOINT Seal Type	Joint Opening
D.S. Brown	Type SSCM2	A2X	1 ¾"
Watson Bowmon & Acme Corp	Type T	SE400	1 ¾"
Watson Bowmon & Acme Corp	Type R	SE400	1 ¾"



SKEWS WITH SLAB BREAK

SKEWS WITHOUT SLAB BREAK

NORMAL

PLANS OF END CONDITIONS

④ ⅛ Bevel weld, for Type SSCM2 steel section. 3/16 Bevel weld, for Type T and Type R steel sections.

GENERAL NOTES:

Sealed Exp Jts shall be provided in the size and at locations shown on plans.

Minimum slab thickness required for the use of SEJ-A is 6 ½".

Shop fabrication will be required at all intersections of cross slope and at break points.

Corresponding sections of Sealed Exp Jts shall be temporarily shop assembled, checked for fit, and match marked for shipment.

Erection holes shall be punched so as to line up when Sealed Exp Jts are in their final position.

Stud anchors shall be electric arc end-welded with complete fusion.

The neoprene seal shall be continuous and included in the price bid for Sealed Exp Jt.

The Contractor shall arrange for securing the Sealed Exp Jt in position, and placing to the proper grade and alignment by welding braces to adjacent reinf steel, to prestressed beam stirrups, or to anchors cast in concrete diaframs. Cost of temporary bracing is to be included in the price bid for Sealed Exp Jt.

After bracing and welding the steel section, the erection bolts and spacers shall be removed and erection holes sealed before placing slab concrete.

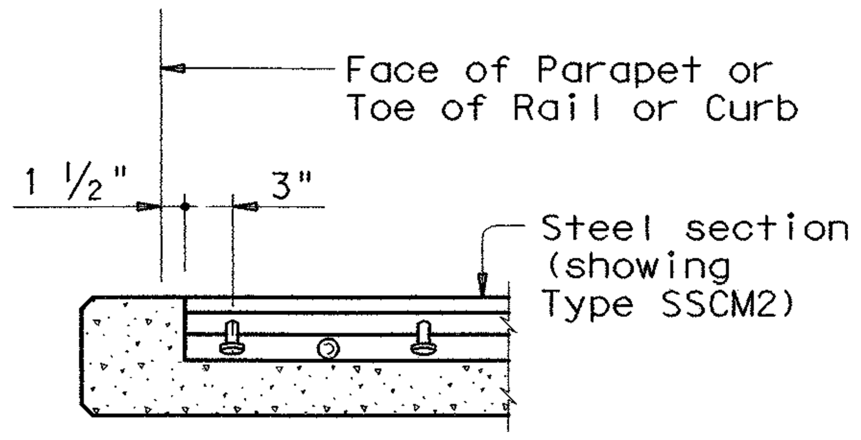
NOTES:

Steel sections shall be shipped in convenient lengths of 24'-0" Max and 10'-0" Min unless otherwise necessary for stage construction or widenings. One shop splice will be permitted in each shipping length provided no piece is less than 2'-0" in length and sufficient studs are added to limit the stud to shop or field splice distance to 2" Min and 4" Max.

Shop and field splices shall be made by butt welding with areas in contact with preformed joint sealer to be ground smooth.

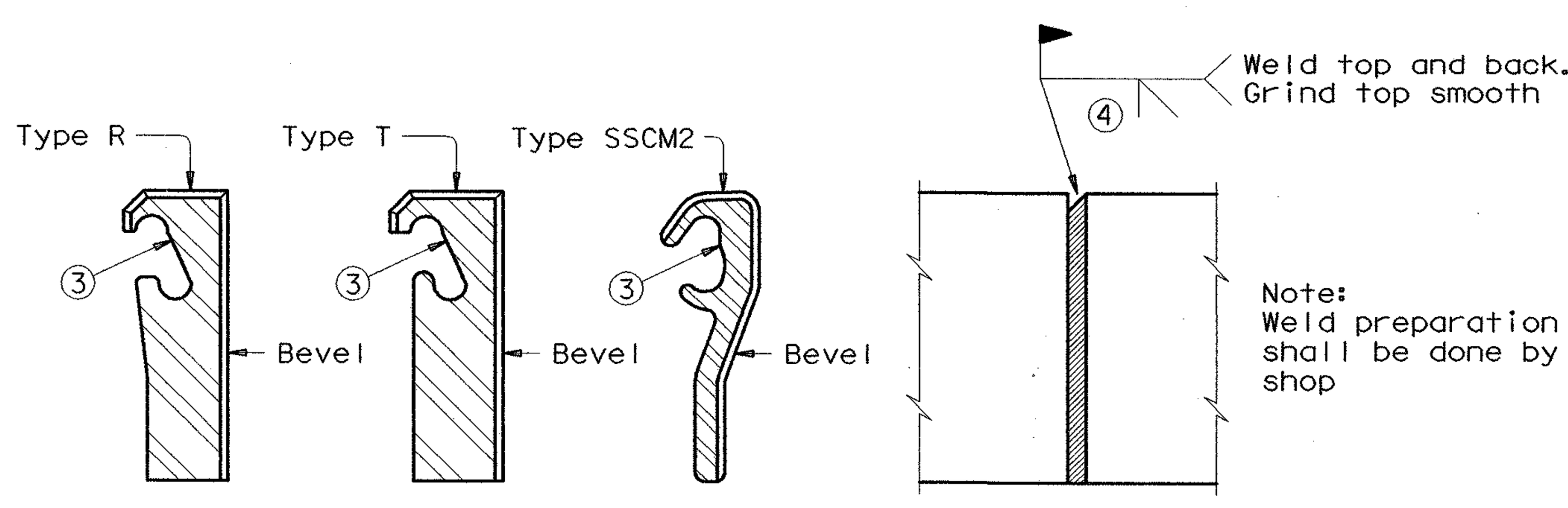
Corresponding sections shall be match marked and bolted together for shipment.

All steel parts are not to be painted or primed unless designated elsewhere on the plans.



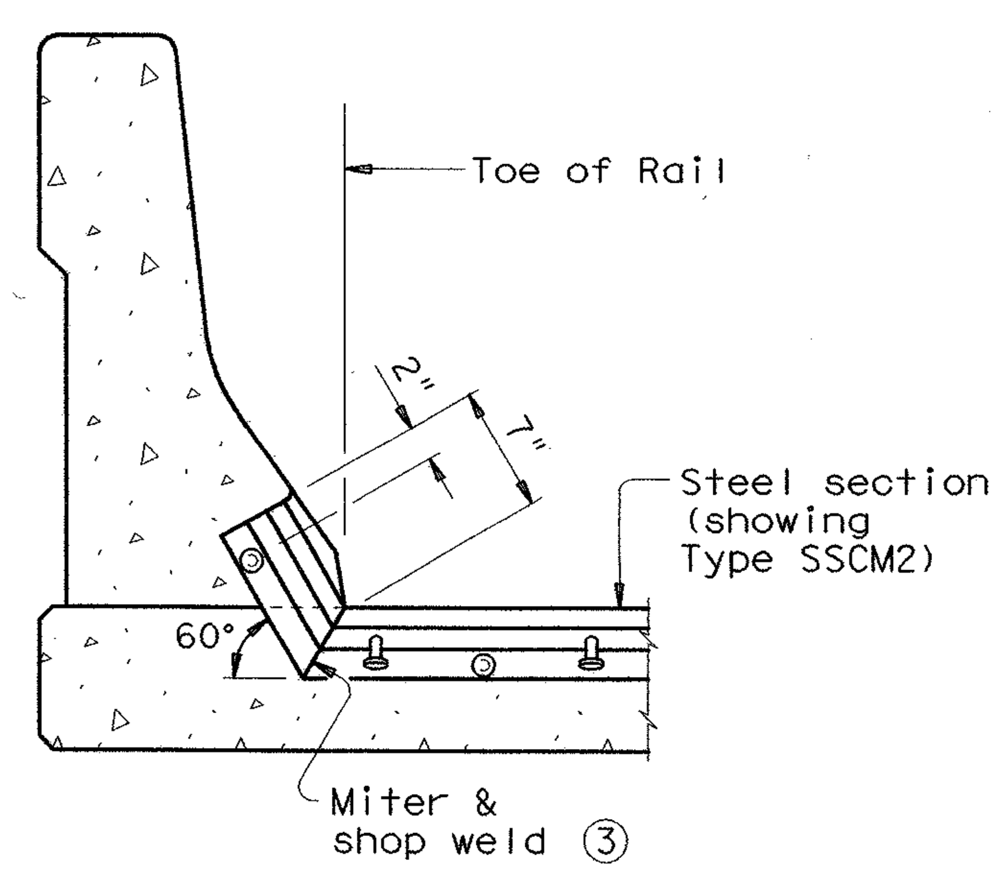
SECTION THRU SLAB

(HIGH SIDE)



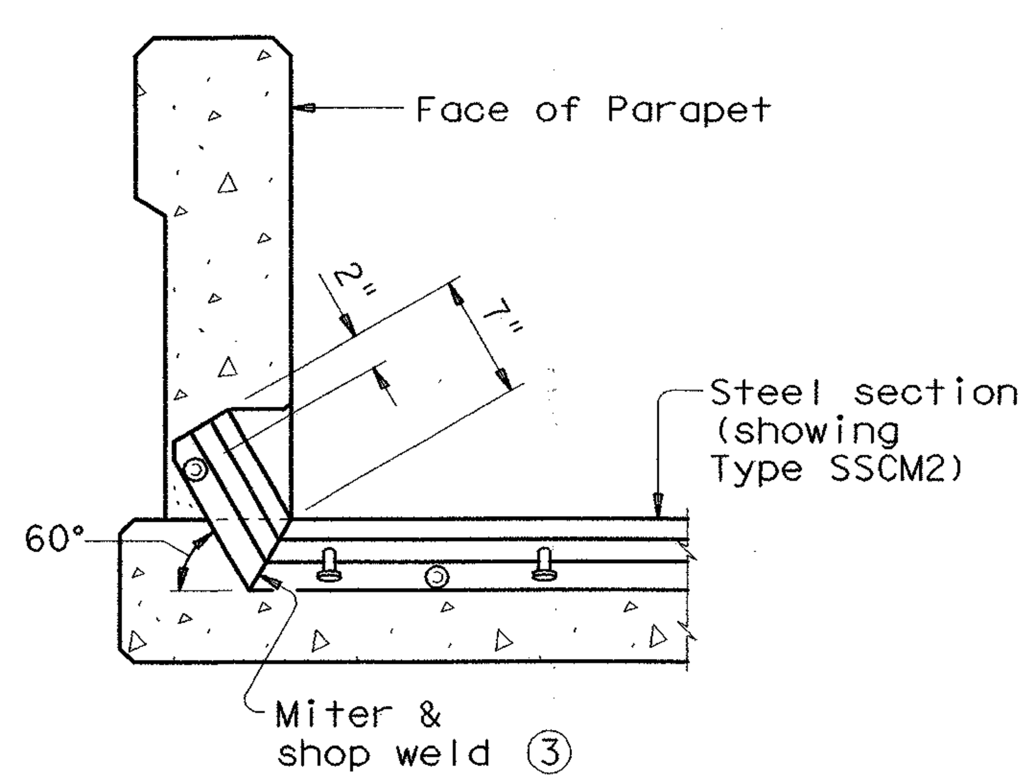
BEVEL AT FIELD SPLICE

(Not to Scale)



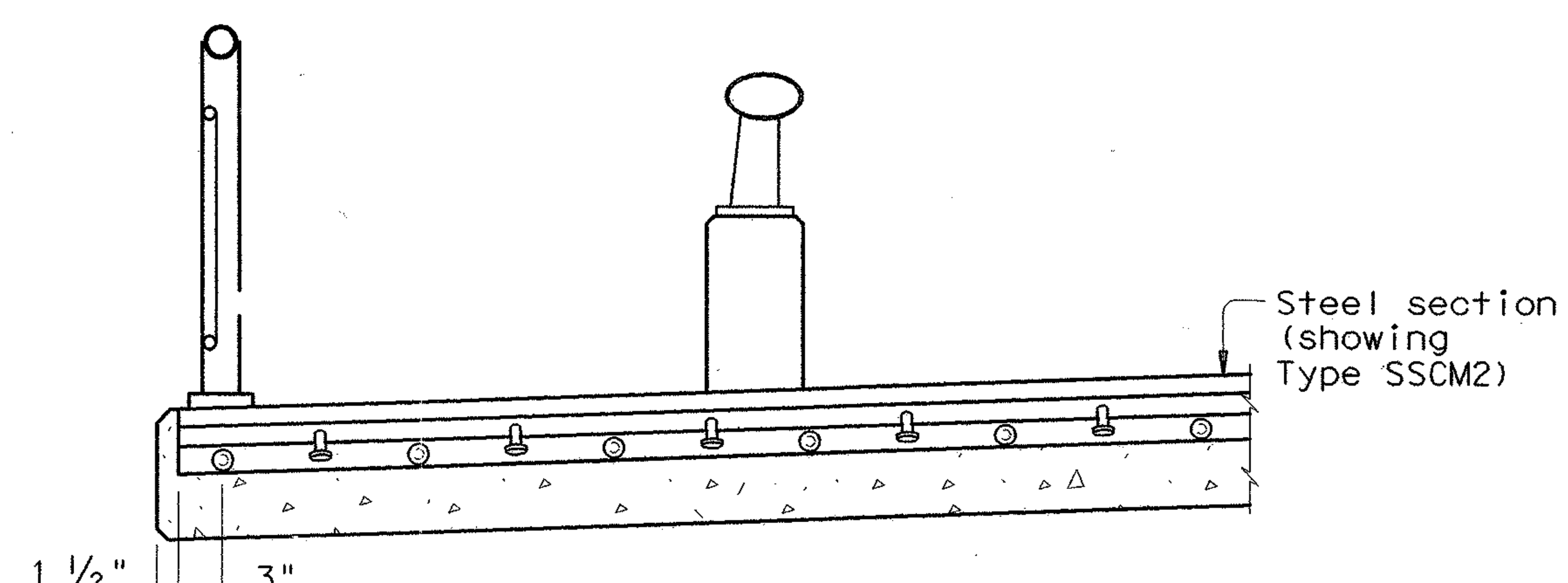
SECTION THRU BARRIER RAIL

(LOW SIDE)



SECTION THRU OTHER PARAPET RAILS

(LOW SIDE)



SECTION THRU SIDEWALK

(LOW SIDE)

M

DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

LEVELS DISPLAYED: 1 2 21 | ACC: 6263 (LV=1,2 for English)

309

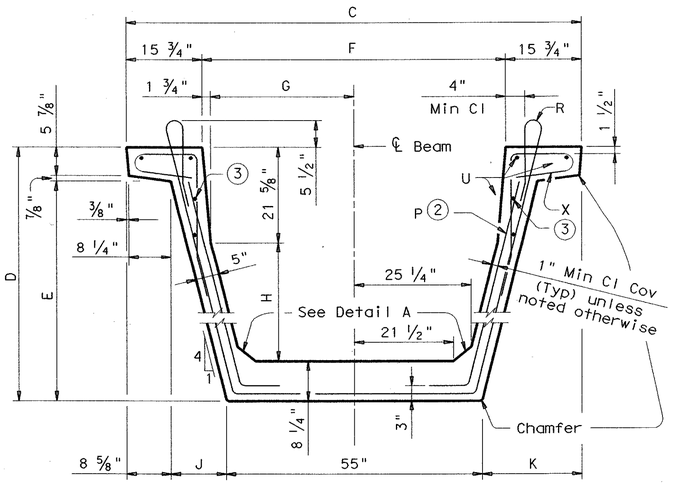
Texas Department of Transportation
Design Division (Bridge)

SEALED EXPANSION JOINT DETAILS

WITHOUT OVERLAY

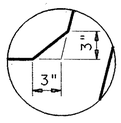
SEJ-A (MOD)

FILE: sejastde.dgn	DN: THD	CK: THD	DW: JTR	CK: LDS	NEG: B272
©TxDOT September 1998	DIST	FED REG	FEDERAL AID PROJECT		SHEET
REVISIONS		6			BS-1
		COUNTY	CONTROL	SECT JOB	HIGHWAY

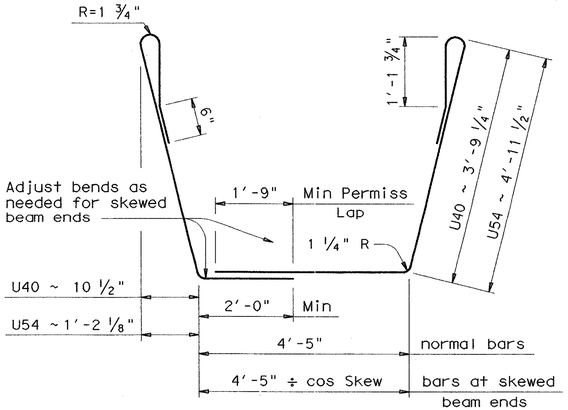


TYPICAL SECTION

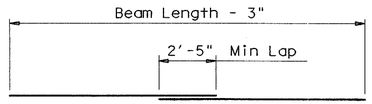
(2) Required for exterior beams only.
(3) Optional Bar U for exterior beams only.



DETAIL A



BARS R(#4)



BARS U(#5)

Bars U may be placed with multiple segments, provided no segment is less than 10 ft in length and 40 ft min C-C splices.

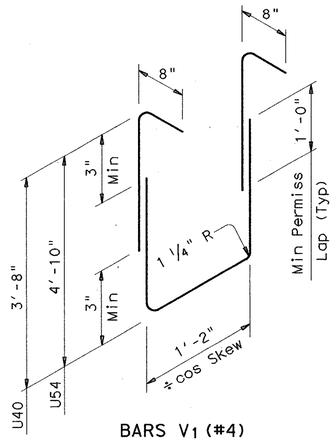
BEAM DIMENSIONS AND SECTION PROPERTIES

Beam Type	C (in.)	D (in.)	E (in.)	F (in.)	G (in.)	H (in.)	J (in.)	K (in.)	Y_t (in.)	Y_b (in.)	Area ($in.^2$)	I ($in.^4$)	Weight (plf)①
U40	89	40	33 1/4	57 1/2	27	10 1/8	8 3/8	17	23.66	16.30	979.9	183,108	1021
U54	96	54	47 1/4	64 1/2	30 1/2	24 1/8	11 7/8	20 1/2	31.58	22.36	1120.0	403,020	1167

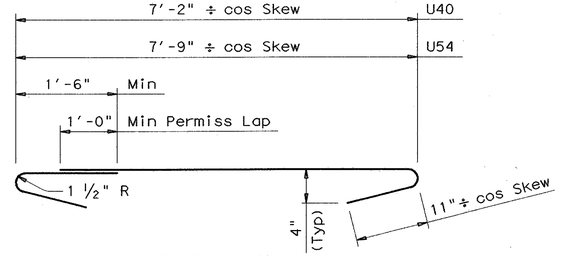
① Weights shown assume a concrete density of 150 pcf and are for the typical section only. These weights do not include weight of diaphragms or endblocks.

BEAM TOLERANCES
(Deviation from planned dimensions)

Type	Tolerance	Maximum
Horizontal Alignment (upon release of stress)	± 1/8" per 10' of length	3/4"
Horizontal Skew at Ends	± 1/8" per 1' of width	1/2"
Vertical Batter at Ends	± 1/8" per 1' of depth	1/2"



BARS V1(#4)
(ISOMETRIC VIEW)

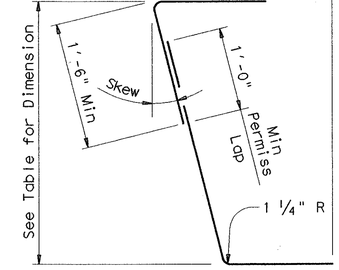


BARS Y(#4)

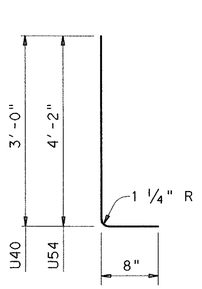
GENERAL NOTES :

All reinforcing steel shall be grade 60.
Reinforcing steel dimension and bend radii are shown to centerline of bars.
Reinforcing steel shall have 1" min clear cover unless noted otherwise.
All acute corners shall be chamfered for Skews greater than 20 Degrees. Any corner of the beam noted with "chamfer" shall be chamfered 3/4" or rounded to a 1 5/8" radius. Optional chamfers, if used shall likewise conform.
Horizontal form joints (seams) will not be permitted.
The beam section dimensions in inches are approximate values converted from the metric beam section dimesions shown on the UBA(M) sheets. The beam section properties are exact conversions of the metric beam section properties shown on the UBA(M) sheets. New forms for U-Beams should be fabricated to the metric dimensions shown on the UBA(M) sheets.
An equal area of welded wire fabric may be substituted for Bars R, P, X and Y.
Shop drawings may be prepared with horizontal skews rounded to the nearest 1/4 degree and batter rounded to the nearest 1/4 inch. These design tolerances are in addition to the fabrication tolerances.
Fabrication tolerances shall be as required for Box Beams under the Item, "Precast Concrete Structures (Fabrication)", except that the horizontal alignment, horizontal skew, and vertical batter shall be as shown above in table labeled "Beam Tolerances".
See Bridge Layout and Clearance Sign Bracket sheets for location of anchors in exterior beam for clearance sign bracket.

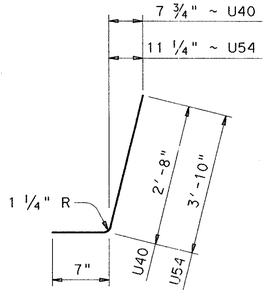
BAR DIMENSION		
Bar	Beam Type	
	U40	U54
DS1	4'-8"	4'-8"
DS2	4'-11"	5'-0"
DS3	5'-2"	5'-5"
DS4	5'-4 1/4"	5'-9 1/2"
DS5	5'-6 1/2"	6'-1 1/4"



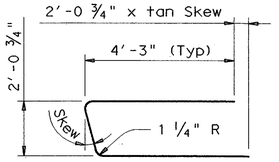
BARS DS1-5 (#4)



BARS F(#4)

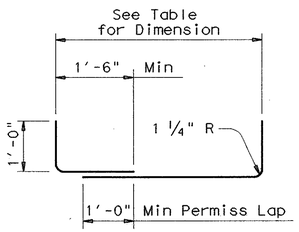


BARS P(#4)

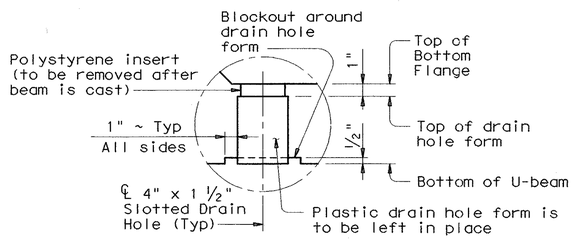


BARS W1(#4)

BAR DIMENSION		
Bar	Beam Type	
	U40	U54
D1	4'-9"	4'-9"
D2	4'-11 1/4"	5'-1"
D3	5'-2"	5'-5 1/2"
D4	5'-4"	5'-10"
D5	5'-6 1/2"	6'-1 1/4"



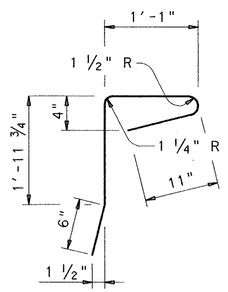
BARS D1-5 (#4)



DRAIN HOLE DETAIL

Blockout to be used at all drain hole locations.

At all interior diaphragm locations, strands shall have 1/4" clear cover to edge of drain hole form.



BARS X(#4)

HS20 LOADING SHEET 1 OF 2 310

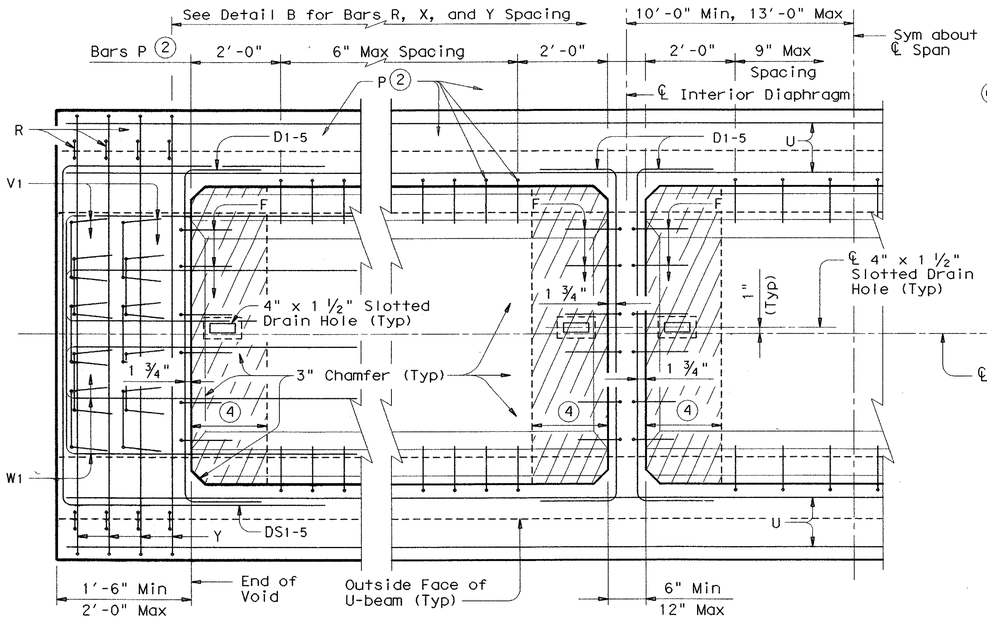
Texas Department of Transportation
Design Division (Bridge)

PRESTRESSED CONCRETE U-BEAM DETAILS

UBA

FILE: ubstd001.dgn	DN:TxDOT	CK:TxDOT	DW: BWH	CK: TGA	STD: B539
©TxDOT March 1998	DIST	FED REG	FEDERAL AID PROJECT •		SHEET
REVISIONS		6			BS-2
	COUNTY		CONTROL	SECT	JOB	HIGHWAY

ACC: (LV=1,2 for English)
LEVELS DISPLAYED: 1 2 6 9

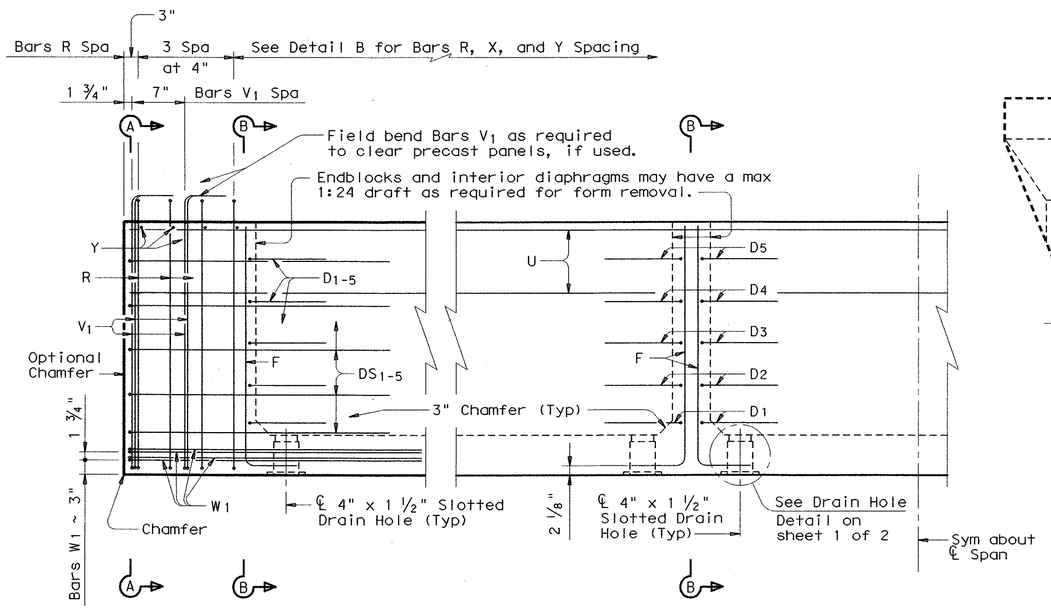


SHOWING SQUARE ENDBLOCK SHOWING INTERIOR DIAPHRAGM

PLAN

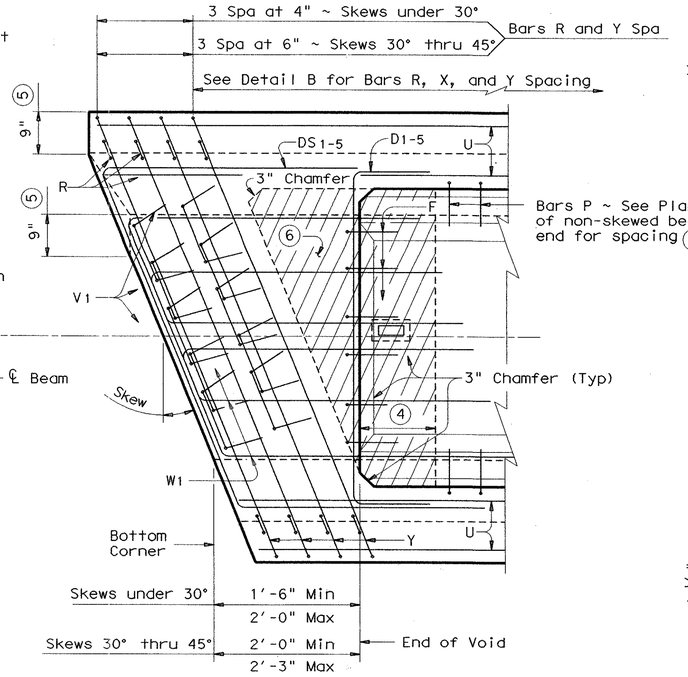
(4) 12" max of inside non-skewed form at the endblock and at interior diaphragms may be replaced with polystyrene. Polystyrene may be left in place. The inside skewed form at the endblock may also be replaced in the skewed area with polystyrene, provided Bars F and D are modified accordingly, and the polystyrene is left in place to act as slab form. Drain holes shall be offset by the width of polystyrene.

(5) For Skews greater than 15 Degrees, top flange and bottom flange shall have 9" breakback, with smooth transition from top flange to bottom flange. Adjust shape of Bars W1 as necessary to maintain 1" min clear cover to face of breakback.



SHOWING ENDBLOCK SHOWING INTERIOR DIAPHRAGM

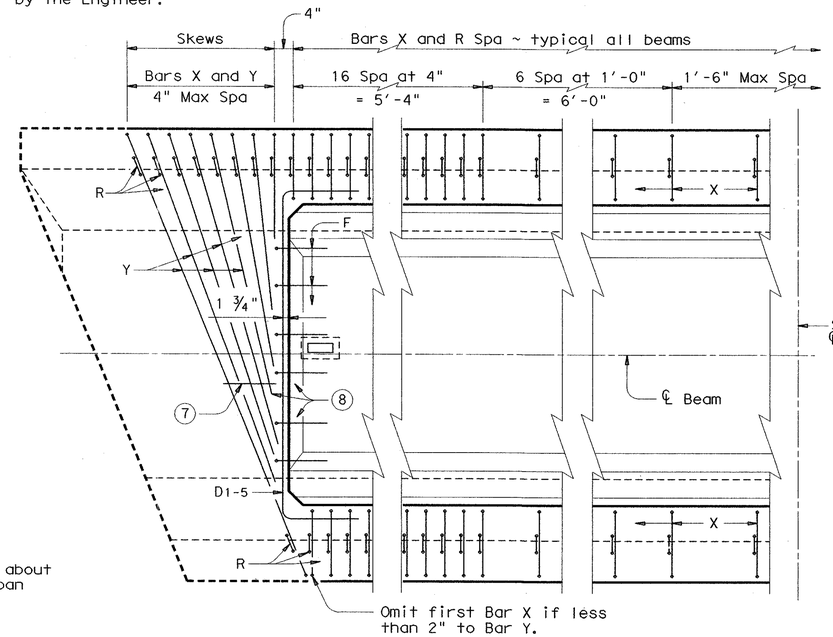
ELEVATION



PLAN ~ SKEWED ENDBLOCK

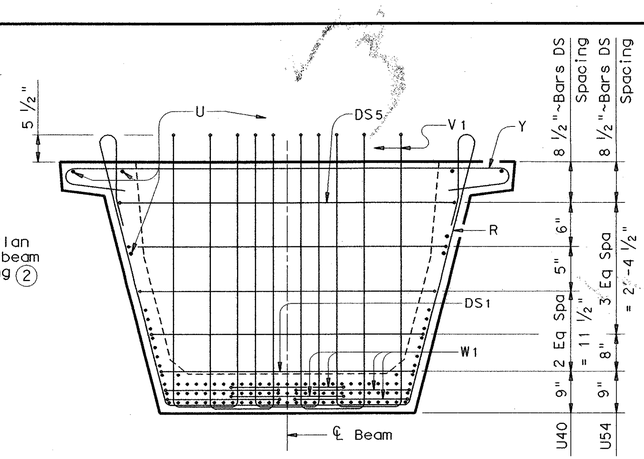
(Skews thru 45°)

(6) Fabricator has the option of using polystyrene to form the cross-hatched area as shown. If this option is used, Bars R shall be as shown in Detail B. Only Bars Y shown as being cut in Detail B shall be omitted. Bars F shall be adjusted in location and Bars D1-5 shall be adjusted in shape and location for the skew. These details shall be shown on the shop plans for approval by the Engineer.

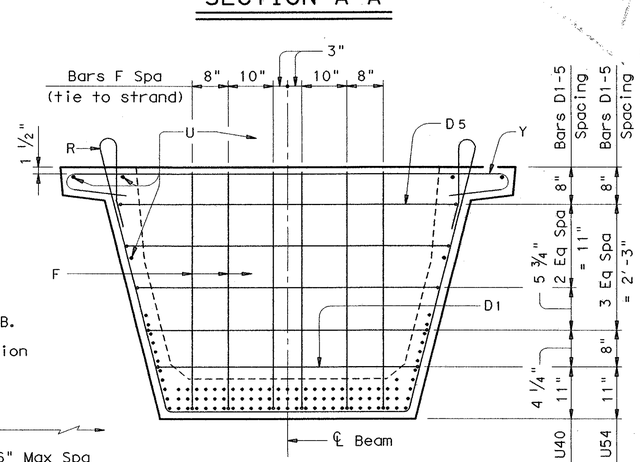


DETAIL B

(Bars U and P not shown for clarity)



SECTION A-A



SECTION B-B

(7) Add support bars for Bars Y as necessary.

(8) Cut Bars Y and Bars R as required to obtain 1" min clear between bars.

HS20 LOADING SHEET 2 OF 2 311

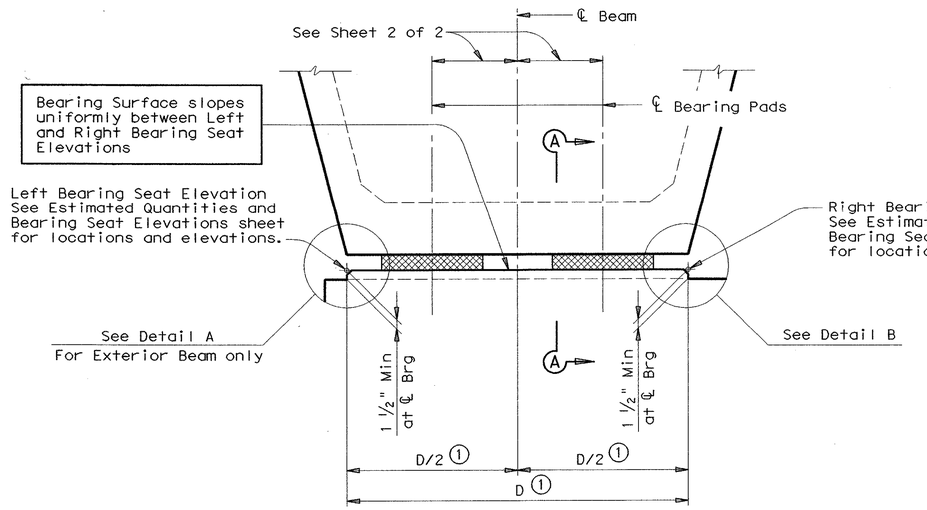
Texas Department of Transportation
Design Division (Bridge)

PRESTRESSED CONCRETE U-BEAM DETAILS

UBA

FILE: ubstd001.dgn	DN: TxDOT	CK: TxDOT	DW: BWH	CK: TGA	STD: B539
©TxDOT March 1998	DIST	FED REG	FEDERAL AID PROJECT #		SHEET
REVISIONS		6			BS-3
	COUNTY		CONTROL	SECT	JOB	HIGHWAY

LEVELS DISPLAYED ACC: (LV=1,2 for English) 63 1 2



VIEW OF BEARING SEAT BUILD-UP

Showing Standard Beam End with Two-Pad Condition.
All other end conditions similar.

②STANDARD BEARING SEAT DIMENSION "D"	
BEAM ANGLE	STANDARD END
75° + thru 90°	4′-6"
60° + thru 75°	5′-0"
45° thru 60°	5′-6"

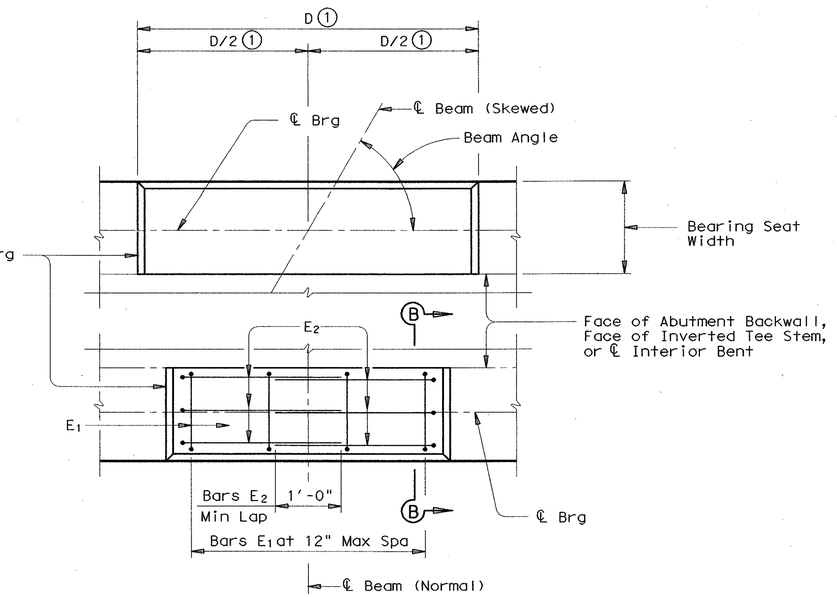
Standard Bearing Seat Dimensions shown are adequate for up to and including two 9" x 19" pads.

① Measured along ℄ of Bearing. See "Estimated Quantities and Bearing Seat Elevations" sheet for "D". Dimension "D" should not conflict with minimum edge distances shown on Details "A" and "B".

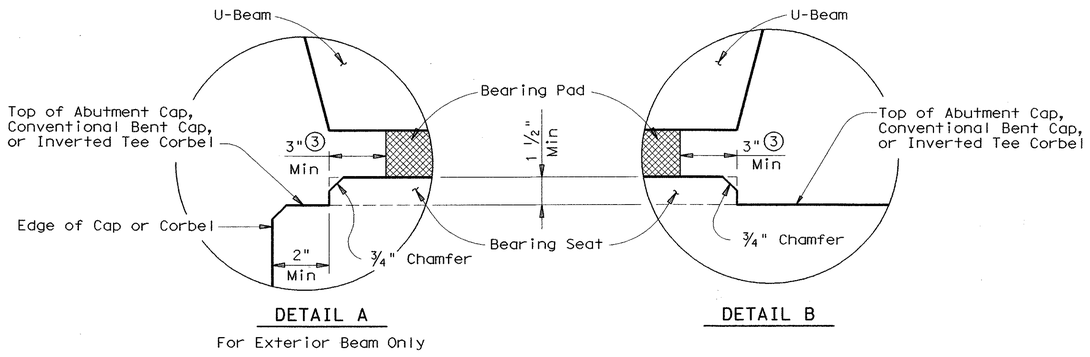
② Unless noted otherwise in the plans.

③ Parallel to ℄ Bearing. Minimum dimensions apply to One-Pad and Two-Pad Conditions.

④ Bearing Seat Build-ups greater than 3" in height shall be reinforced as shown.

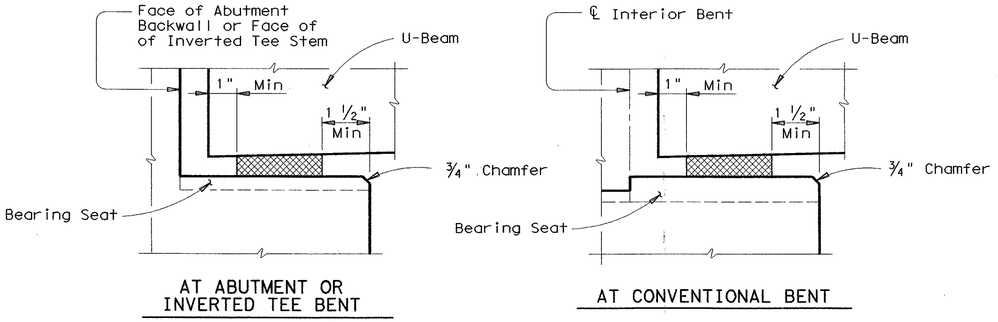


PLAN



DETAIL A
For Exterior Beam Only

DETAIL B

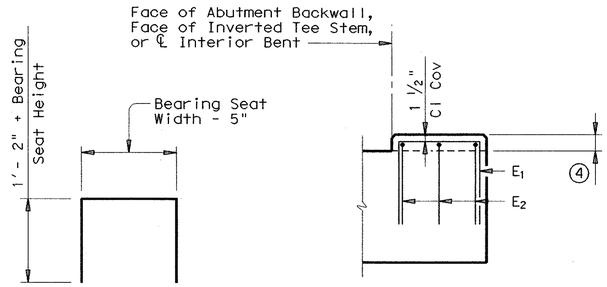


AT ABUTMENT OR INVERTED TEE BENT

AT CONVENTIONAL BENT

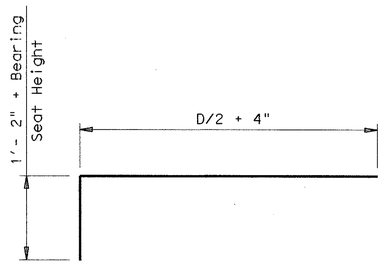
SECTION A-A

Showing Standard Beam End.



BARS E_1 (#5)

SECTION B-B



BARS E_2 (#5)

GENERAL NOTES:

The back bearing of bent shall have one pad and the forward bearing of bent shall have two pads unless noted otherwise in the plans.

Finish Bearing Surface with a wood float finish. Bearing Surface shall be clean and free of all loose material before placing Bearing Pads.

For Transition Bents with backwall, the beams and elastomeric bearing pads shall receive the same treatment as shown for the Abutment.

See Bearing Pad Taper Report sheet for Fabricator's Report of bearing pad taper.

Cost of furnishing and installing elastomeric bearings shall be included in unit price bid for "Prestressed Concrete Beams".

Note: The use of Polyisoprene (natural rubber) for the manufacture of bearing pads will not be permitted.

HS20 LOADING SHEET 1 OF 2 312

Texas Department of Transportation
Design Division (Bridge)

ENGLISH BEAM END AND BEARING DETAILS (FOR PRESTR CONC U-BEAMS)

UBB

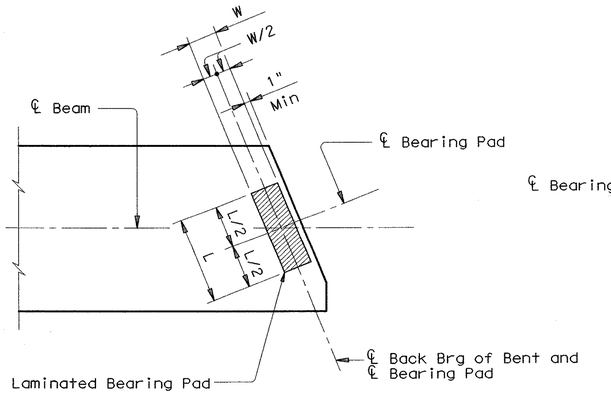
FILE: ubstd002.dgn	DN: TxDOT	CK: TGA	DW: TxDOT	CK: TGA	STD: B540
©TxDOT March 1998	DIST	FED REG	FEDERAL AID PROJECT		SHEET
REVISIONS		6			BS-4
	COUNTY		CONTROL	SECT	JOB	HIGHWAY

LEVELS DISPLAYED 1 2 | ACC: (LV=1,2 for English) 63

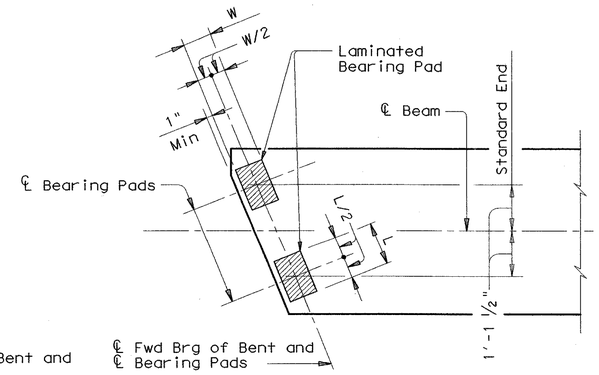
LEVELS DISPLAYED | ACC: (LV=1,2 for English) | 63 | 1/2

BASIC BEARING PAD DIMENSIONS (ALL U-BEAM TYPES) (in)

One-Pad						Two-Pad					
T	W	L	E	N	I	T	W	L	E	N	I
2 ½	9	32	¼	4	⅜	2 ½	9	16	¼	4	⅜



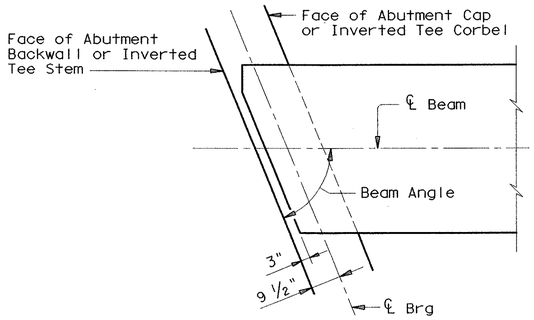
ONE-PAD DETAIL



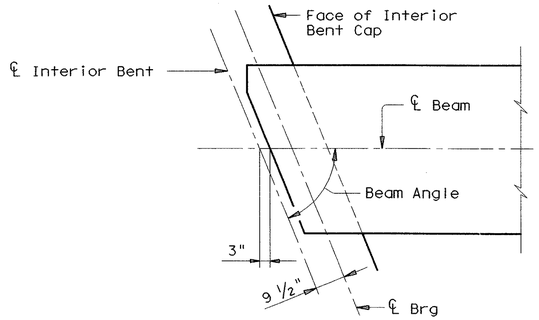
TWO-PAD DETAIL

⑤ Locate permanent mark here

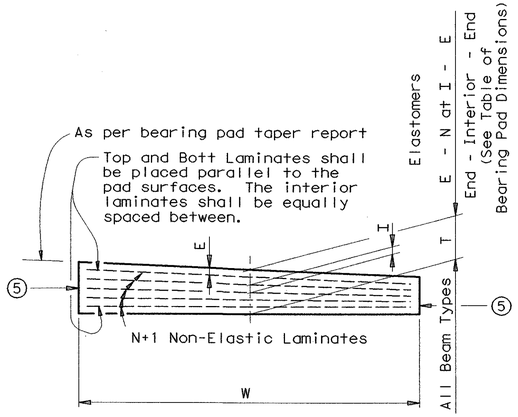
BEARING PAD DETAILS



BEAM END DETAIL
(At Abutment Backwall or Inverted Tee Stem)

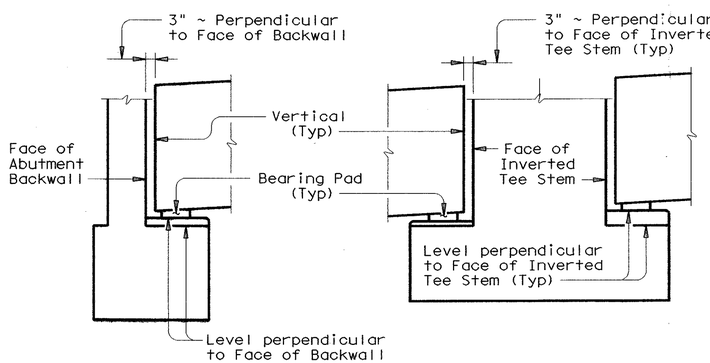


BEAM END DETAIL
(At Conventional Bent)

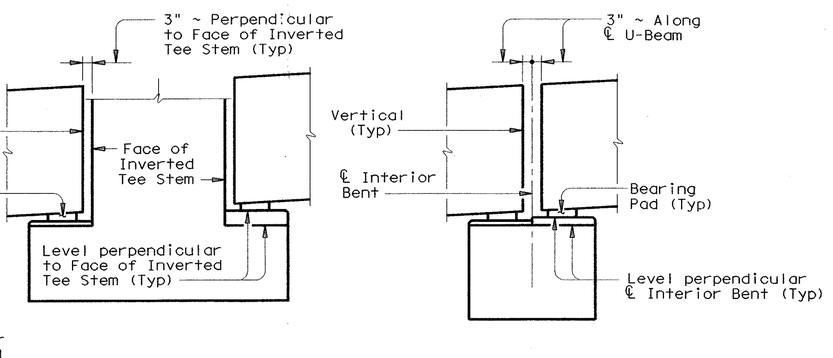


LAMINATED BEARING PAD
(50 DUROMETER)

BEARING DIMENSIONS



AT ABUTMENT



AT INVERTED TEE BENT

AT CONVENTIONAL BENT

STANDARD BEAM END ELEVATIONS

HS20 LOADING SHEET 2 OF 2 313

Texas Department of Transportation
Design Division (Bridge)

ENGLISH BEAM END AND BEARING DETAILS
(FOR PRESTR CONC U-BEAMS)

UBB

FILE: ubstd002.dgn	DN: TxDOT	CK: TGA	DW: TxDOT	CK: TGA	STD: B540
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REVISIONS		6			BS-5
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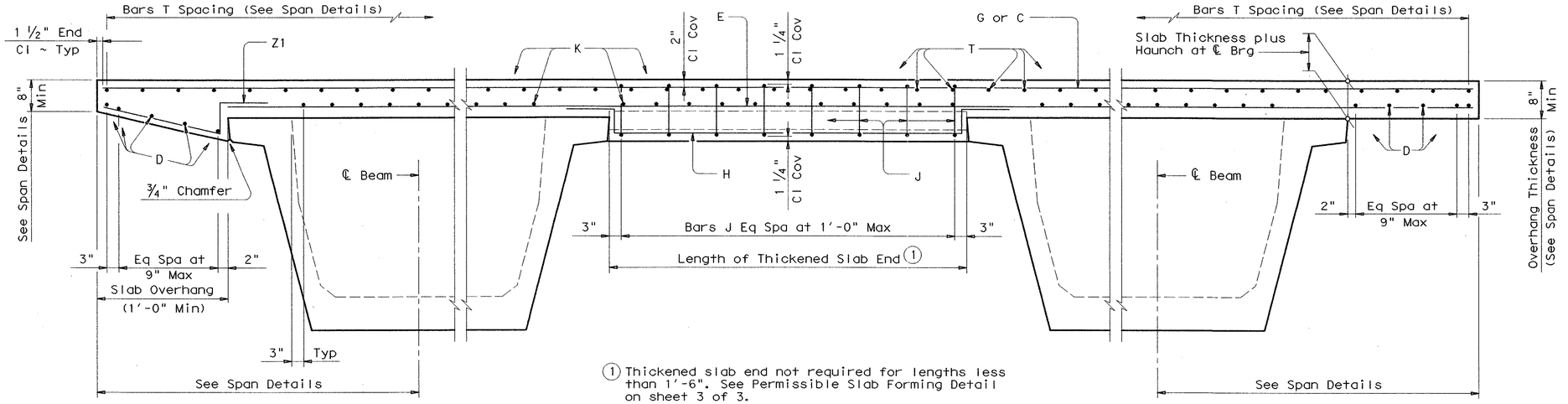


(1) Thickened slab end not required for lengths less than 1'-6". See Permissible Slab Forming Detail on sheet 3 of 3.

SHOWING SLOPED OVERHANG

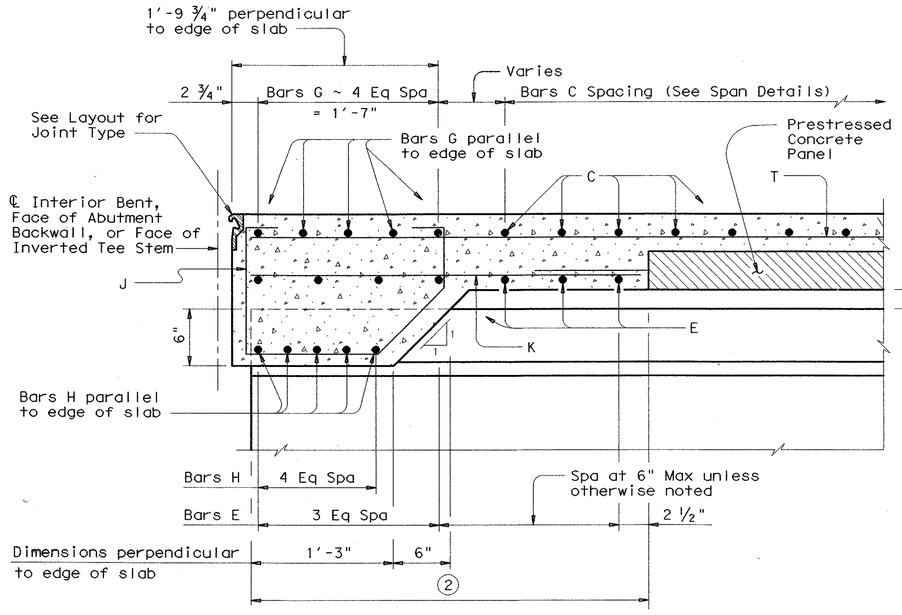
SHOWING NORMAL OVERHANG

TYPICAL TRANSVERSE SECTION AT THICKENED SLAB END

TABLE OF REINFORCING STEEL		
BAR	SIZE	MAX SPA (in)
A	#5	~
C	#5	6
D	#5	9
G	#5	~
H	#6	~
J	#5	12
T	#4	9

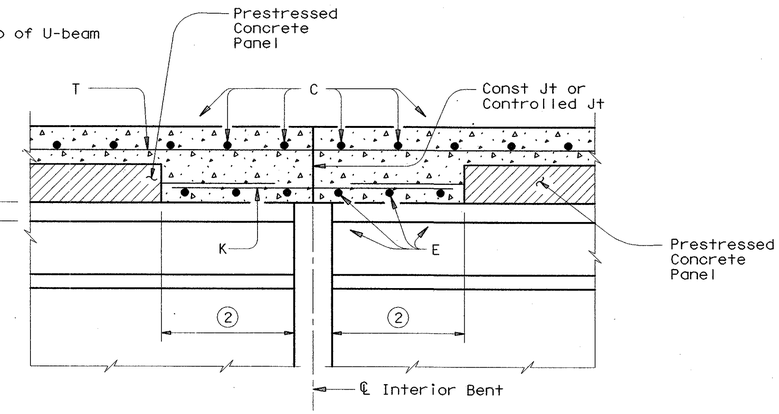
Max Spa as listed unless otherwise shown in plans.

See PCP(U) sheets for details of bottom slab reinforcing bars E, K, M, P and Z not shown.



LONGITUDINAL SECTION THRU THICKENED SLAB END

(2) See PCP(U) sheets for panel placement



LONGITUDINAL SECTION THRU CONTINUOUS SLAB AT CONVENTIONAL BENT

GENERAL NOTES:

All construction materials and debris shall be removed from interior of U-beams, and all drain holes cleared, prior to placement of slab forming over U-beams.

All slab forming and required beam bracing shall be placed prior to installation of overhang formwork.

U-Beams shall be supported in the solid end block region during handling, storage, hauling, and erection.

ACC: (LV=1,2 for English)

LEVELS DISPLAYED 1 2 63

HS20 LOADING SHEET 1 OF 3 314

Texas Department of Transportation
Design Division (Bridge)

MISCELLANEOUS SLAB DETAILS
(FOR PRESTR CONC U-BEAMS)

UBMS

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REVISIONS		6			BS-6
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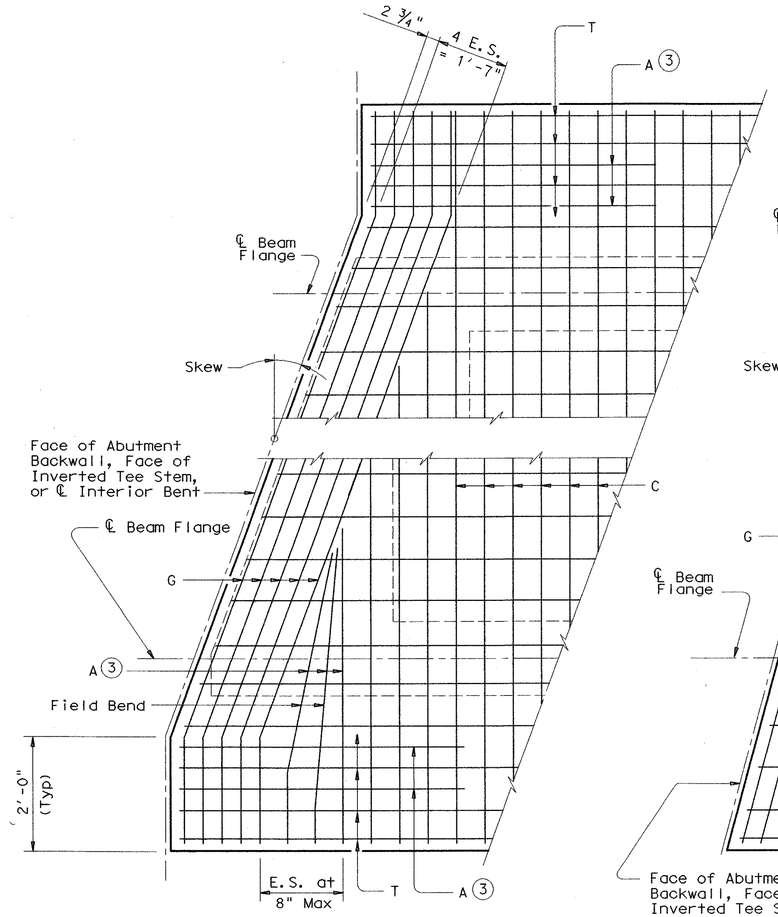
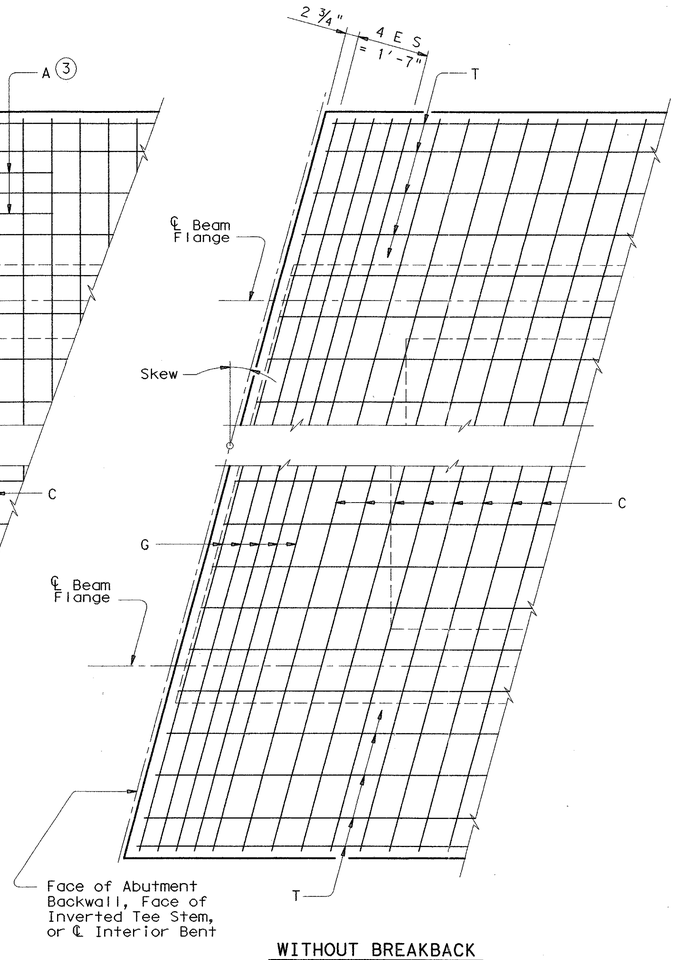


WITH BREAKBACK

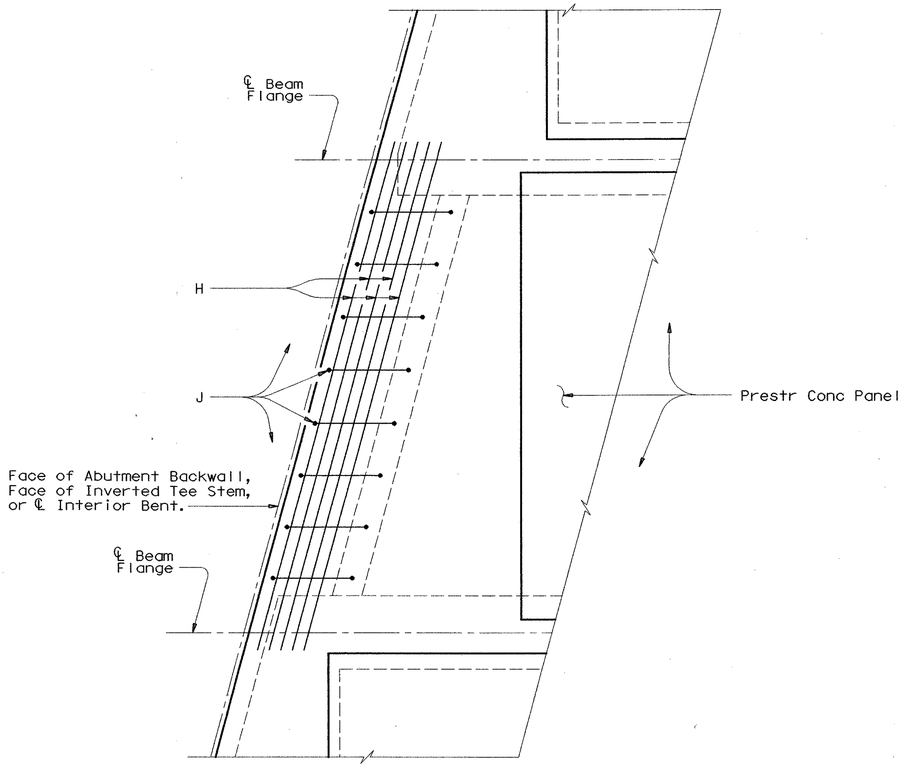


WITHOUT BREAKBACK

TOP SLAB CORNER REINFORCING AT EXPANSION JOINT

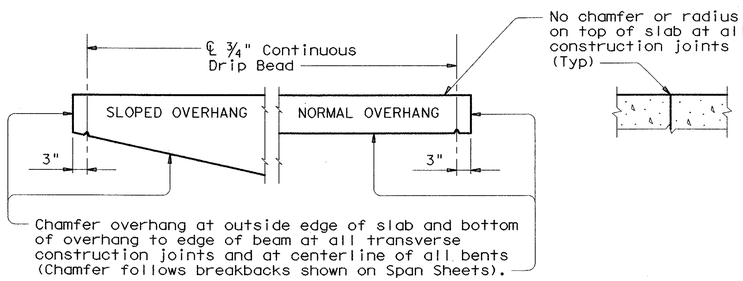
(See PCP(U) for bottom slab reinforcing)

(3) Length of Bars A = 5'-0"

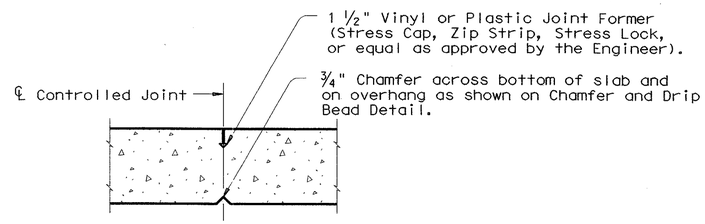


BOTTOM REINFORCING AT THICKENED SLAB END

Showing parallel beams. For non-parallel beams, equally flare Bars J between the edges of the beams.



CHAMFER AND DRIP BEAD DETAIL



CONTROLLED JOINT DETAIL

(Joint Former shall be placed in accordance with manufacturer's recommendations and shall be subsidiary to the Item, "Reinforced Concrete Slab.")

Note: For continuous placement, the minimum rate of concrete placing and finishing shall not be less than 30 linear feet of bridge deck per hour.

HS20 LOADING SHEET 2 OF 3 315

Texas Department of Transportation
Design Division (Bridge)

MISCELLANEOUS SLAB DETAILS
(FOR PRESTR CONC U-BEAMS)

UBMS

FILE: ubstd003.dgn	DN: TxDOT	CK: TGA	DW: BWH	CK: TGA	STD: BS41
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REVISIONS		6			BS-7
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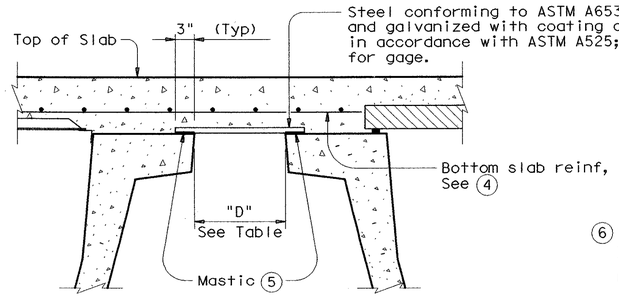
ACC: (LV=1,2 for English)
LEVELS DISPLAYED 1 2 63



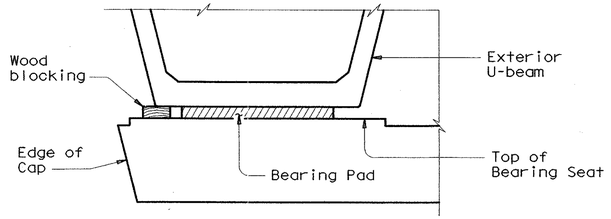
PERMISSIBLE SLAB FORMING DETAIL

(4) Bottom slab reinforcing for Permissible Slab Forming Detail shall match the size and spacing of the top mat of steel as shown on the span details unless otherwise noted, except bottom reinforcing steel shall be No. 5 bars. Transverse bottom slab reinforcing shall have 1" end clear to edge of panel when used with PCP option.

(5) Mastic applied to the top of the flange of the precast concrete U-Beam shall conform to Type 5 Waterproofing (coal tar modified urethane coating) or Class 5 Joint Sealing material (low modulus silicone sealant) or other comparable material as approved by the Engineer. The mastic shall be a maximum width of 3 ½" and shall be applied to a thickness of 30 mils using a roller, squeegee or brush. The galvanized steel shall be aligned and pressed firmly into place while the mastic is still tacky. Ambient temperature at time of application of the mastic shall not be less than 40 degrees Fahrenheit.

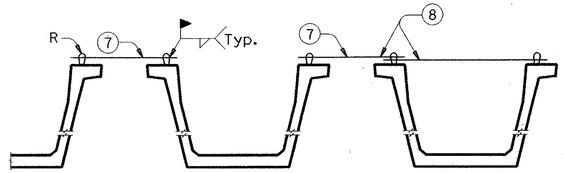
MAX SPAN "D"	(6) GAGE REQ'D
15" thru 18"	6
12" to 15"	8
10" to 12"	10
7" to 10"	12
6" to 7"	14
4" to 6"	15
under 4"	19

(6) The sheet metal gages shown were determined assuming a slab thickness of 12 ½" and a dead load deflection limit of D/180. The Contractor has the option of specifying the sheet metal gage required by actual field conditions in lieu of using this table. In such cases, the Contractor shall determine the sheet metal gage required using the Permanent Metal Deck Forms (PMDF) design criteria shown in the General Notes of the PMDF(U) Standard Sheet and shall submit the appropriate shop detail drawing(s) to the Engineer for approval. Support angles need not be provided unless required to prevent uplift and/or horizontal movement of sheet metal forms.



MINIMUM BLOCKING OF EXTERIOR U-BEAM

Note: Required minimum blocking of exterior U-beam shall be in place before pouring slab concrete. Blocking shall be left in place for at least 4 days after slab is cast and afterwards removed at the Contractor's convenience.



MINIMUM BEAM BRACING

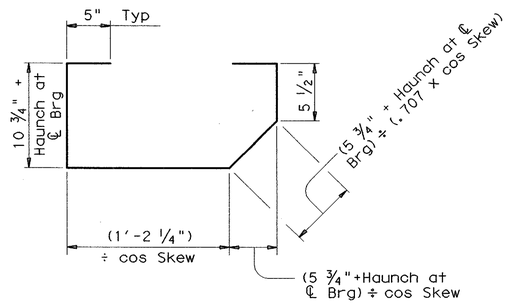
Systems equal to or better than those shown may be used provided details of such systems are submitted to and approved by the Engineer prior to erection.

Use of these systems and/or details does not relieve the Contractor of the responsibility for the adequacy of the bracing and the safety of the structure.

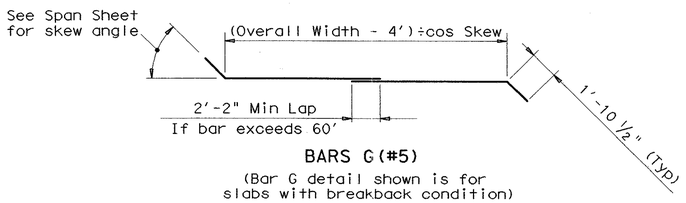
The reinforcement for minimum beam bracing shall not be required when permanent metal deck forms are used.

(7) Two No. 5 bars at each end of each beam shall be welded to bars R between all U-Beams immediately after erection. This reinforcement shall be in addition to that shown for the thickened slab end. This must be in place prior to placing any precast deck panels.

(8) Weld No. 5 bars at 15' max spacing along exterior beam and exterior bay after precast deck panels have been placed and prior to placing overhang formwork. This reinforcement shall be in addition to that shown for the concrete slab.

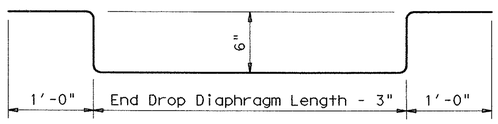


BARS J(#5)

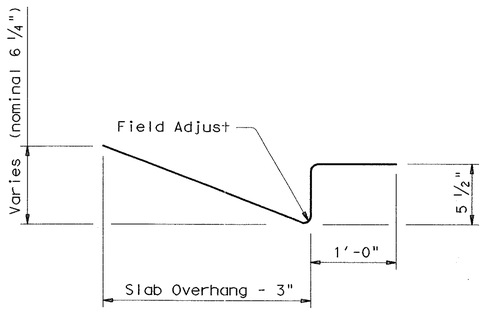


BARS G(#5)

(Bar G detail shown is for slabs with breakback condition)



BARS H(#6)



BARS Z1(#4)

Bars Z1 shall be field adjusted to match actual slope of slab overhangs.

Width of slab overhang will vary along span with curved slab edges. Adjust Bar Z1 dimensions to maintain proper cover.

LEVELS DISPLAYED 1 2 63 ACC: (LV=1,2 for English)

HS20 LOADING SHEET 3 OF 3 316

Texas Department of Transportation
Design Division (Bridge)

MISCELLANEOUS SLAB DETAILS
(FOR PRESTR CONC U-BEAMS)

UBMS

FILE: ubstd003.dgn	DN: TxDOT	CK: TGA	DW: BWH	CK: TGA	STD: B541
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REVISIONS		6			BS-8
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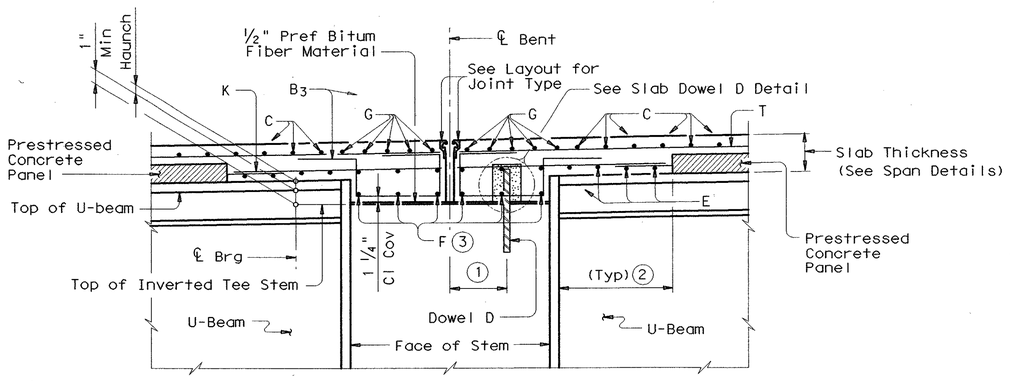
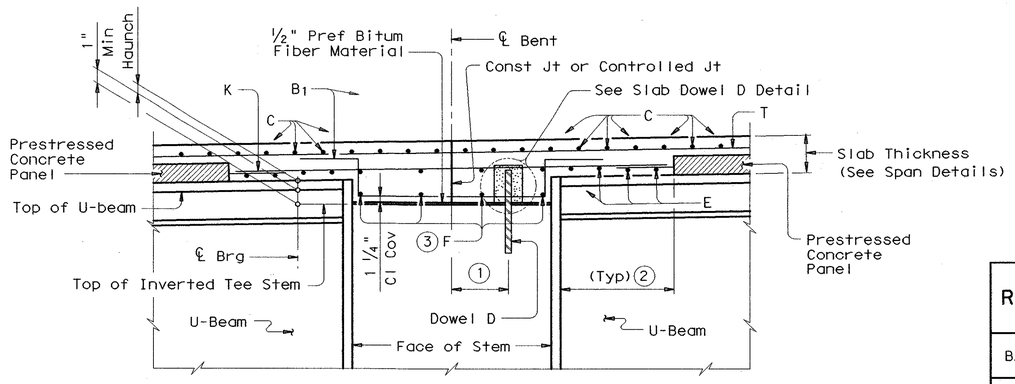


THRU EXPANSION JOINT



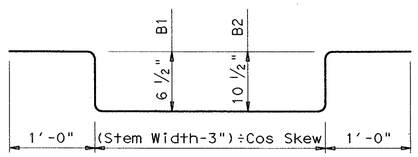
THRU CONTINUOUS SLAB

TABLE OF REINFORCING STEEL		
BAR	SIZE	MAX SPA (in)
B1&3	#4	12
B2&4	#4	~
F	#4	~

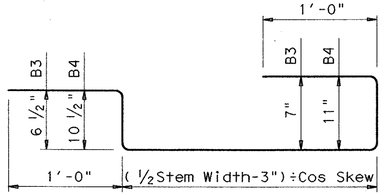
Max Spa as listed unless otherwise shown in plans.

LONGITUDINAL SECTION OF SLAB OVER INVERTED TEE BENT

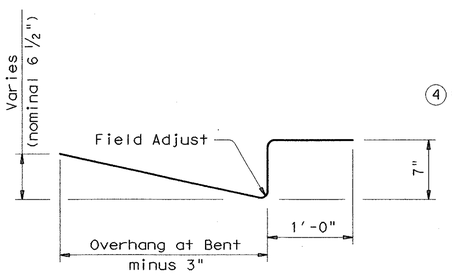
① See Bent sheets for dimension.
② See PCP(U) sheets for panel placement.
③ Bars F are parallel to ℄ Bent.



BARS B_1(#4) and B_2(#4)

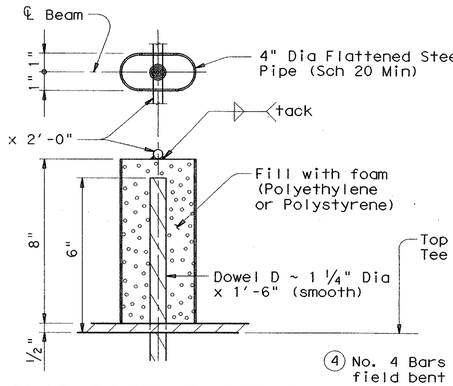


BARS B3(#4) and B4(#4)



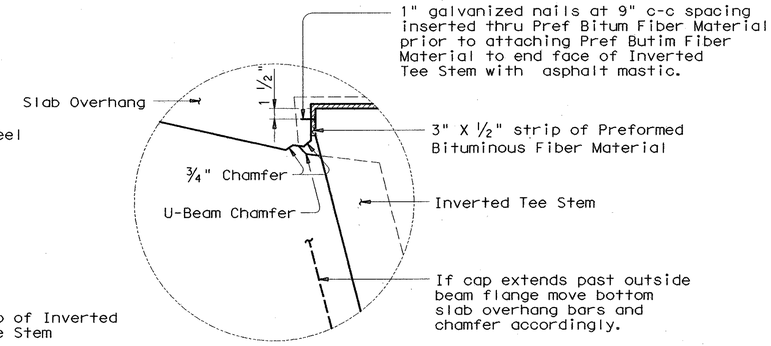
BARS Z_2(#4)

Bars Z_2 shall be field adjusted to match actual slope of slab overhang.

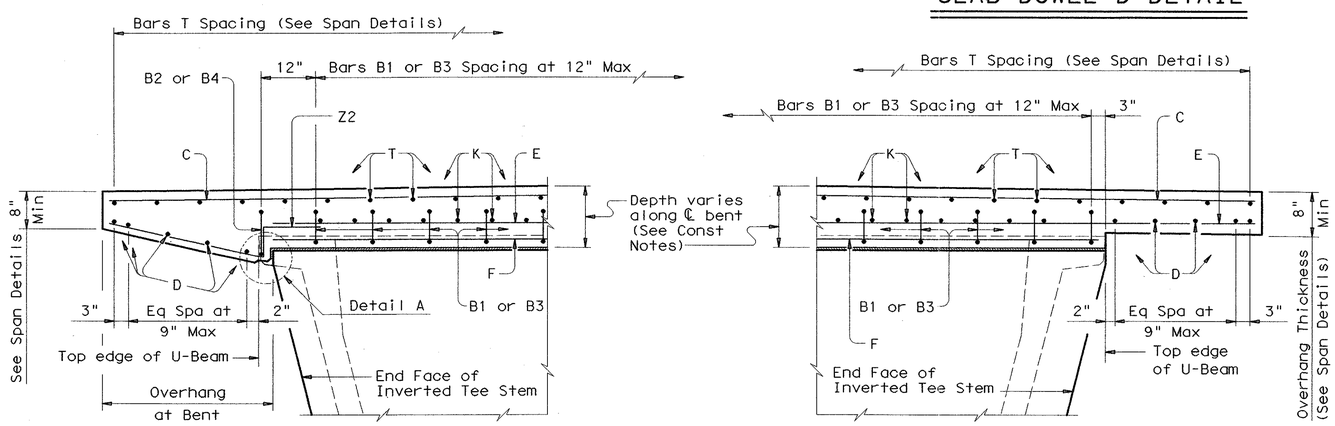


④ No. 4 Bars shall be field bent and tied securely to Bars E or K.

SLAB DOWEL D DETAIL



DETAIL A



SHOWING SLOPED OVERHANG

SHOWING NORMAL OVERHANG

TRANSVERSE SECTION THRU SLAB OVER INVERTED TEE BENT

GENERAL NOTES:

Bars B1, B2, B3 and B4 are dimensioned assuming a 12" slab thickness at the centerline of bent. Slab thickness at the centerline of bent may vary ; adjust bar dimensions as required to maintain proper distance between bar and top of cap.

See Layout and Bent sheets for location of slab dowels.

HS20 LOADING | 317

Texas Department of Transportation
Design Division (Bridge)

MISCELLANEOUS SLAB DETAILS

(FOR PRESTR CONC U-BEAMS AT INVERTED TEE BENTS)

UBMST

FILE: ubstd004.dgn	DN: TxDOT	CK: TGA	DW: BWH	CK: TGA	STD: B542
©TxDOT March 1998	DIST	FED REG	FEDERAL AID PROJECT #		SHEET
REVISIONS		6			BS-9
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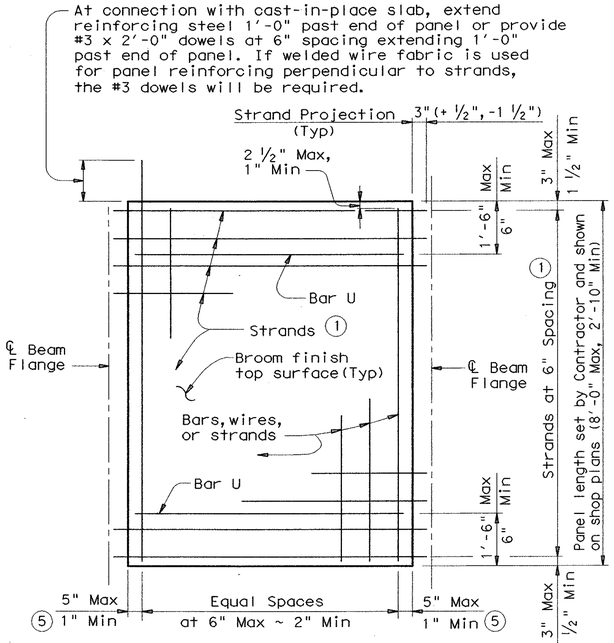
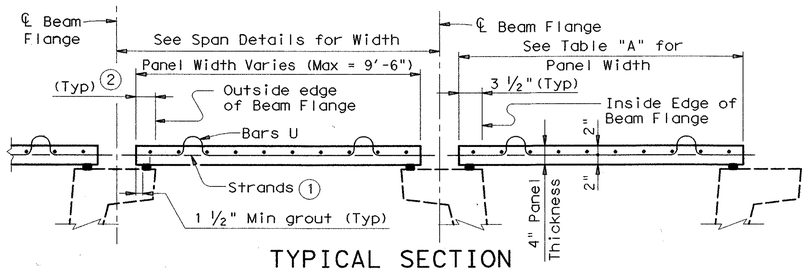
LEVELS DISPLAYED 1 2 63 ACC: (LV=1,2 for English)



TYPICAL PANEL PLAN



TYPICAL SECTION

TABLE "A"	
Beam Type	Panel Width
U40	5'-4 ½"
U54	5'-11 ½"

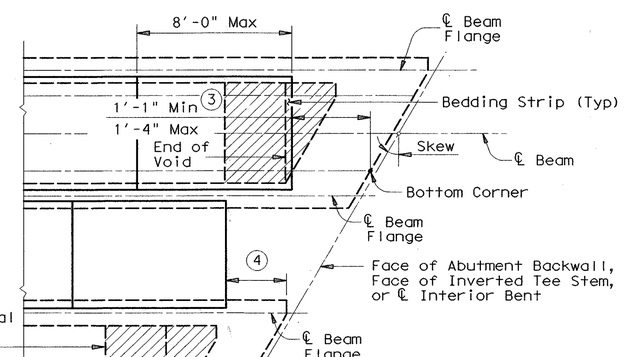
(1) Reinforcing steel #4 (Gr 60) at 6" spacing may be substituted for strands in panels 5'-0" in width or less and shall be required in panels 3'-6" in width or less. Non-prestressed concrete panels shall have the same dimensional tolerances as prestressed concrete panels in accordance with the Item "Precast Concrete Structures".

(2) Typical dimensions for panels:
- 5" - between parallel beams
- 4 ½" Min, 6 ½" Max } between flared beams

(3) For panel placement at ends of dapped end beams,
Skews under 30°, use 2'-9" ±1"
Skews 30° thru 45°, use 3'-3" ± 1"

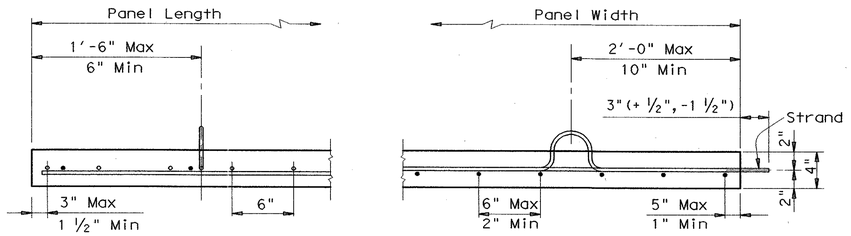
(4) 2'-2" Min at Thickened Slab Ends.
1'-6" Min at Conventional Bents.
3" Min at Inverted Tee Bents.

(5) May be reduced to 0" with welded wire fabric or welded bar mats.

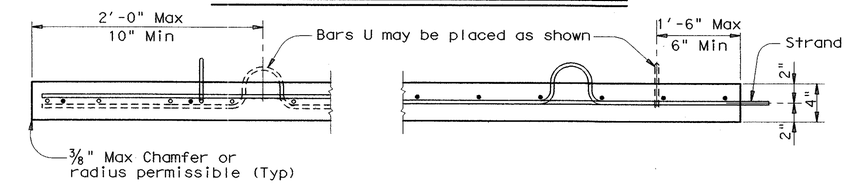


PARTIAL PLAN

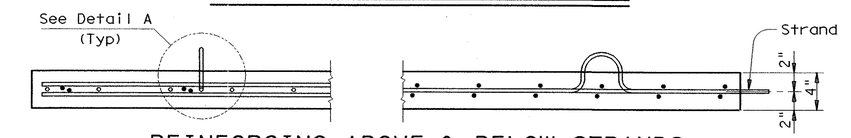
PANEL PLACEMENT DETAIL



REINFORCING BELOW STRANDS

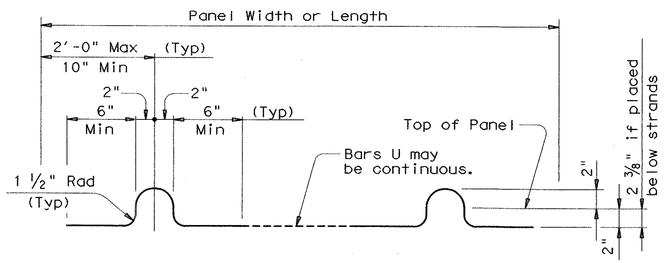


REINFORCING ABOVE STRANDS

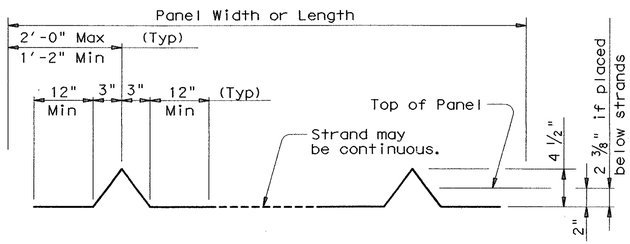


REINFORCING ABOVE & BELOW STRANDS

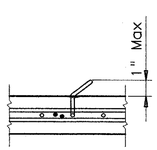
Reinforcing steel may be deformed reinforcing bars, welded wire fabric or welded deformed bar mats. Minimum area of reinforcing perpendicular to strands shall be 0.22 sq inches per foot. Prestressing strands may also be used, spaced at 6" for ½" strands and 4½" for ⅜" strands. Individual bars or wires shall be no larger than #3. Reinforcing parallel to strands shall be as required to ensure proper handling of the fabric or bar mat. A reasonable amount of form oil will be permitted on welded fabric or bar mats.



BARS U(#3)
Note: Four loops required per panel.



OPTIONAL STRAND FOR BARS U
Note: Four loops required per panel.
⅜" or ½" strands may be used.



For panels used with epoxy coated slab reinforcing, the loops of Bars U shall be field bent as shown. Bars U may be field bent to clear slab reinforcing.

DETAIL A

GENERAL NOTES:

Designed in accordance with current AASHTO Standard and Interim Specifications.

See Span Details for possible restrictions on the use of Prestressed Concrete Panels.

All concrete for panels is to be Class H. Release strength f'ci=4000 psi. Minimum 28 day strength f'c=5000 psi.

Prestressing strands to be ⅜" Dia (270k) with an initial tension of 16.1 kips per strand. Larger strands may be used with the same spacing and initial tension.

Suitable holes or anchorage devices for lifting panels may be cast in the panels provided they are shown on the shop plans and approved by the Engineer.

Erected panels shall bear uniformly on bedding strips of fiberboard or extruded polystyrene placed along the top flange edges of each beam. A ¼" gap shall be left at 4'-0" intervals to permit escape of trapped air in the cast-in-place concrete. If additional blocking is needed, special grading details for supporting the panels and extra reinforcing between beam and slab will be required. The cost of this additional blocking will be considered subsidiary to deck construction.

Care must be taken to ensure proper cleaning of construction debris and consolidation of concrete mortar under the edges of the panels. It is also important that the bedding strips be placed at the edges of flanges so that adequate space is provided for the mortar to flow a minimum of 1½" under the panels as the slab concrete is placed. A minimum opening of ¼" between the bottom of the panel and the top of the beam flange shall be maintained to ensure proper flow of mortar.

All reinforcing steel in the cast-in-place slab shall be Grade 60. See Table on Sheet 2 of 3 for size and spacing of reinforcement. See Plan views on sheet 3 of 3 for orientation of bottom reinforcing steel in slab with panels. Reinforcing steel not shown in span sheet quantities shall be subsidiary to the Item "Reinforced Concrete Slab".

See Span Details for slab reinforcing steel to be epoxy coated.

For clear span between beams less than or equal to 18", see Permissible Slab Forming Detail on Miscellaneous Slab Details sheets, UBMS.

Bar laps, where required, shall be as follows:
Uncoated ~ #4 = 1'-5"
~ #5 = 1'-9"
Epoxy Coated ~ #4 = 2'-1"
~ #5 = 2'-7"

Contractor Note: Details as shown on the PCP(U) Standard sheets are to be used in conjunction with the Span Details and applicable Standard sheets.

HS20 LOADING SHEET 1 OF 3 318

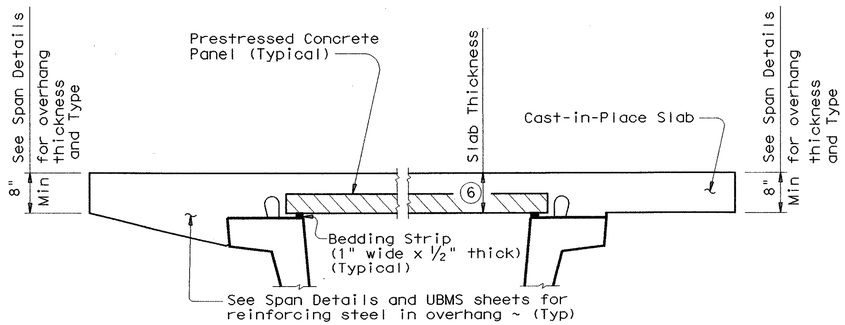
Texas Department of Transportation
Design Division (Bridge)

PRESTRESSED CONCRETE PANEL DETAILS
(FOR PRESTR CONC U-BEAMS)

PCP(U)

FILE: ubstd008.dgn	DN:TxDOT	CK:TxDOT	DW:TxDOT	CK: TGA	STD: 8546
©TxDOT March 1998	DIST	FED REG	FEDERAL AID PROJECT #		SHEET
REVISIONS		6			BS-10
	COUNTY		CONTROL	SECT	JOB	HIGHWAY

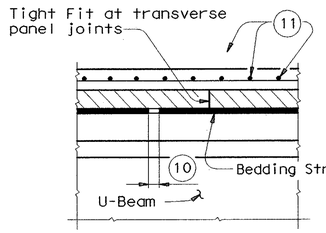
LEVELS DISPLAYED: 1 2 | ACC: | (LV=1,2 for English) 63



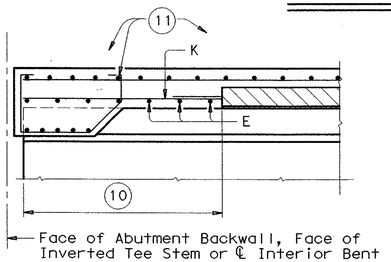
SHOWING SLOPED OVERHANG SHOWING NORMAL OVERHANG

NORMAL GRADING DETAIL

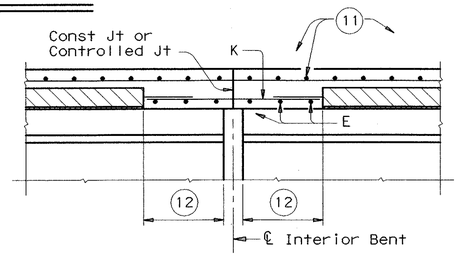
Minimum bedding strip dimensions shall be as shown above. To reduce the quantity of cast-in-place concrete, thickness shown may may be increased by 1/4" increments to a maximum of 1 1/2". Strips may be comprised of one layer or two, except that no layer shall be less than 1/2" thick. All layers of bedding strips shall be bonded to the beam and to each other with an approved adhesive. The same thickness strip shall be used under any one panel edge and the maximum change in thickness between adjacent panels shall be 1/4". Panels may be supported by an alternate method, using a commercial product, if approved by the Engineer of Bridge Design, Design Division.



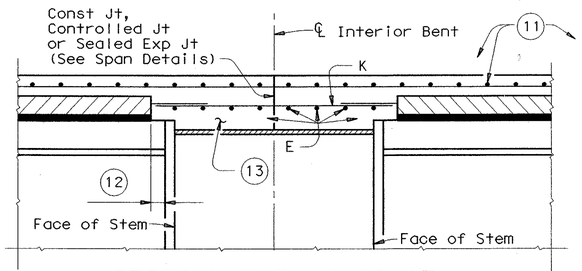
SECTION THRU TRANSVERSE PANEL JOINTS



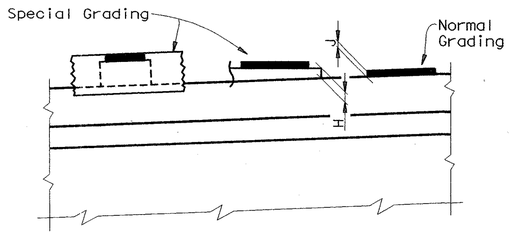
SECTION THRU THICKENED SLAB END



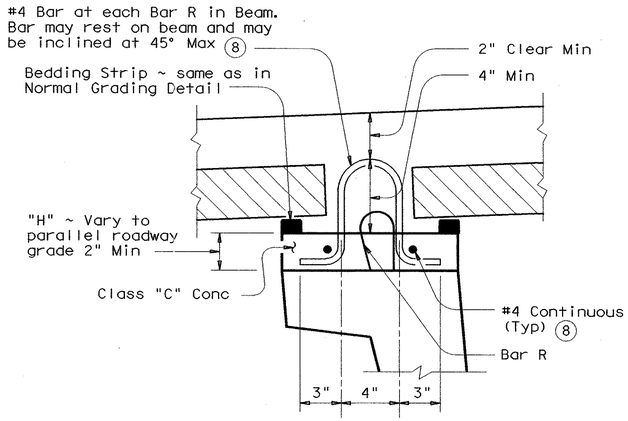
SECTION THRU CONTINUOUS SLAB AT CONVENTIONAL BENT

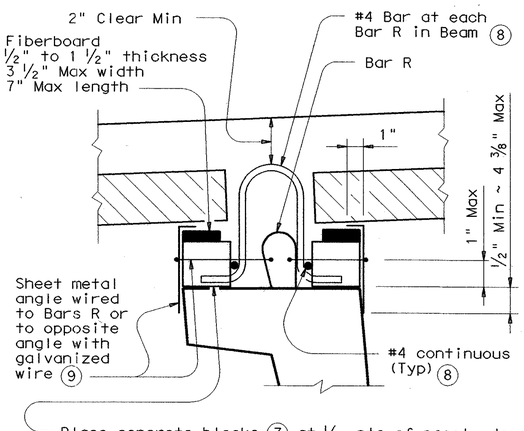


SECTION THRU SLAB AT INVERTED TEE BENT



At grading method changes along the beam, the special grading "H" dimension may be reduced to 1 3/4" and the normal grading "J" dimension may be increased to 2". Some cross-slope conditions may require further H and J adjustments as directed by the Engineer.





Place concrete blocks 7 at 1/4 pts of panel edges (±2" along beam). For panels 4 ft long and less the blocks may be at panel corners and common to two panels. Extruded polystyrene shall not be used for panel bedding with concrete blocks.

SPECIAL GRADING DETAILS

For use where the distance between top of beam and finished grade cannot be achieved within tolerances on cast-in-place slab thickness and thickness of bedding strips. Panels may be supported by an alternate method, using a commercial product, if approved by the Director of Bridge Design, Design Division.

6 The actual thickness constructed may exceed the slab thickness shown on Span Details but, at mid-span of beams the extra thickness shall be no more than 1". Bearing Seat Elevations or finished grade may be adjusted.

7 Concrete blocks used for special grading shall be any convenient plan dimension with a minimum of 2" x 4" and a maximum of 4" x 8". Heights may be from 1 1/8" to 5 1/2".

8 Concrete blocks from 1 1/8" high to 2" high may be used without the additional R bar extensions or longitudinal No. 4 bars.

9 For blocks up to 3 1/2" high, Use 1" x 6" 16 gage galvanized sheet metal angle and for blocks 3 1/2" to 5 1/2" high, use 1" x 8" 16 gage galvanized sheet metal angle. Tie sheet metal thru holes in angle at 12" centers with 14 gage minimum galvanized wire. Sheet metal angles are to be overlapped at splices and left in place. Vent holes 3/8" in diameter are to be placed in angles within the upper 1", spaced at 36" centers.

10 1/4" Open Joint in bedding strip at 4'-0"c/c. Place 6" long piece of bedding strip 1/4" behind opening if necessary to reduce grout leakage.

11 For size and spacing of top slab reinforcing steel and reinforcing steel in Thickened Slab End, see Miscellaneous Slab Details sheets, UBMS, and Span Details.

12 See Panel Placement Detail on sheet 1 of 3 for dimension.

13 See Miscellaneous Slab Details at Inverted Tee Bents sheet, UBMST, for any additional reinforcing steel that may be required over stem.

TABLE OF REINFORCING STEEL

BAR	SIZE	MAX SPA (in.)
A	#5	~
D	#5	9
E	#5	6
K	#5	9
P	#4	18
Z	#4	18

Max Spa as listed unless otherwise shown.

LEVELS DISPLAYED 1 2 ACC: 63 (LV=1,2 for English)

HS20 LOADING SHEET 2 OF 3 319

Texas Department of Transportation
Design Division (Bridge)

PRESTRESSED CONCRETE PANEL DETAILS
(FOR PRESTR CONC U-BEAMS)

PCP(U)

FILE: ubstd008.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TGA	STD: B546
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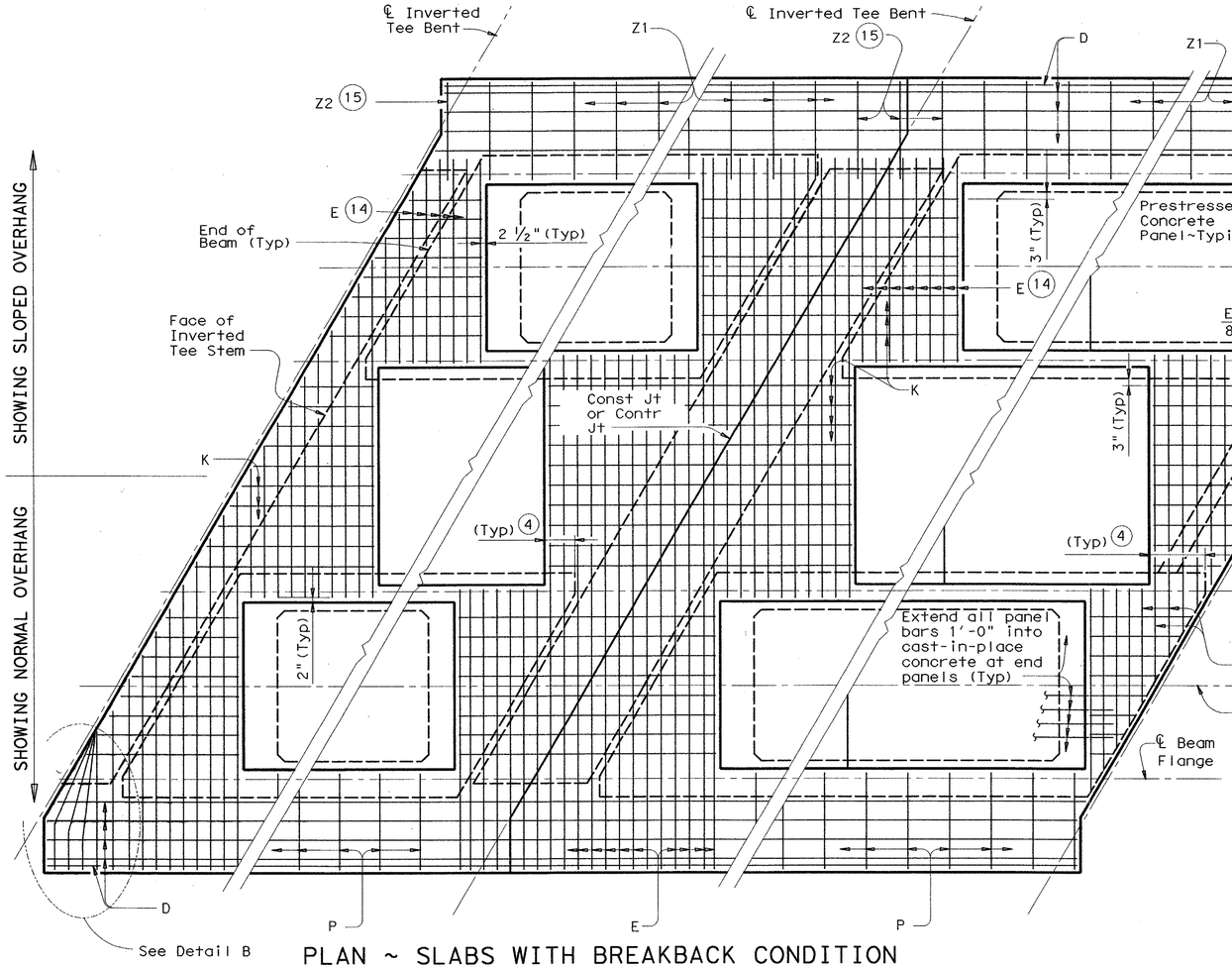
REVISIONS		6			BS-11
	COUNTY		CONTROL	SECT	JOB	HIGHWAY

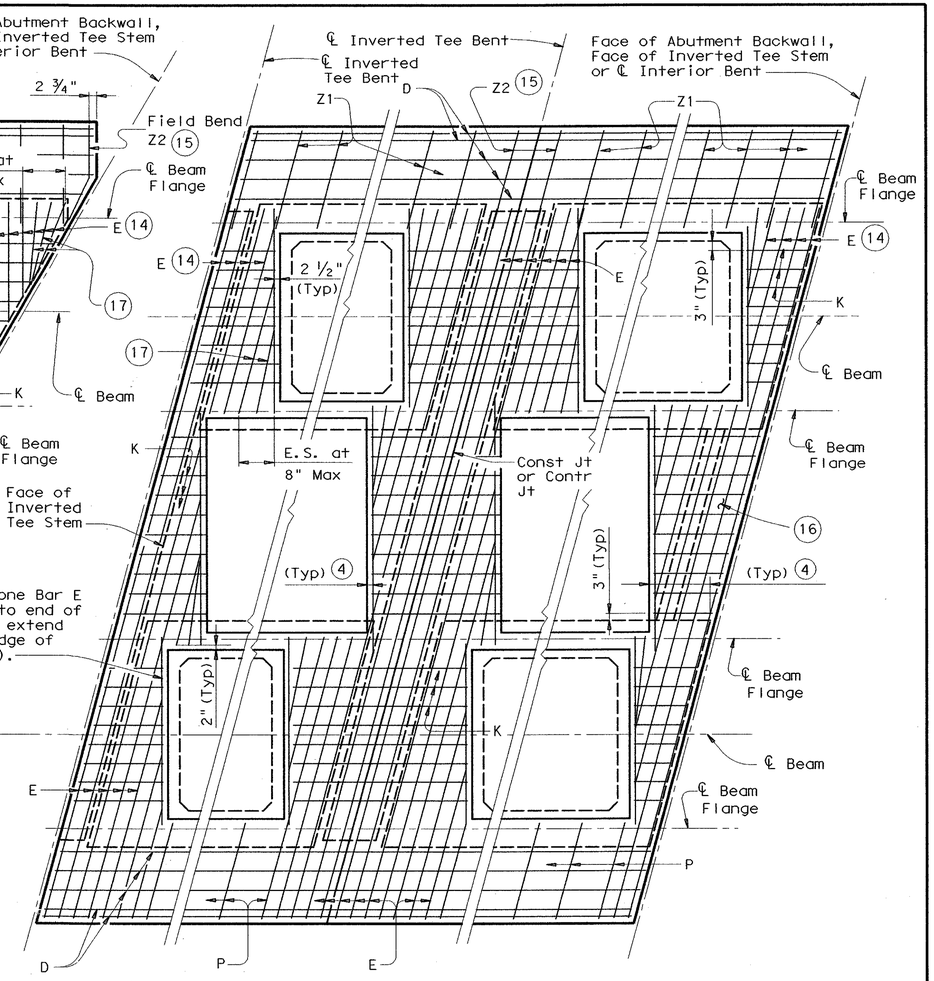
LEVELS DISPLAYED 1 2 | ACC: 63 | (LV=1,2 for English)

SHOWING NORMAL OVERHANG SHOWING SLOPED OVERHANG



PLAN ~ SLABS WITH BREAKBACK CONDITION

(Showing bottom slab reinforcing steel and Inverted Tee Bents.
Bottom slab reinforcing steel similar for Conventional Bents.
For top slab reinforcing steel, see Span Details and UBMS sheets.)



PLAN ~ SLABS WITHOUT BREAKBACK CONDITION

(Showing bottom slab reinforcing steel and Inverted Tee Bents.
Bottom slab reinforcing steel similar for Conventional Bents.
For top slab reinforcing steel, see Span Details and UBMS sheets.)

(4) 2'-2" Min at Thickened Slab Ends.
1'-6" Min at Conventional Bents.
3" Min at Inverted Tee Bents.

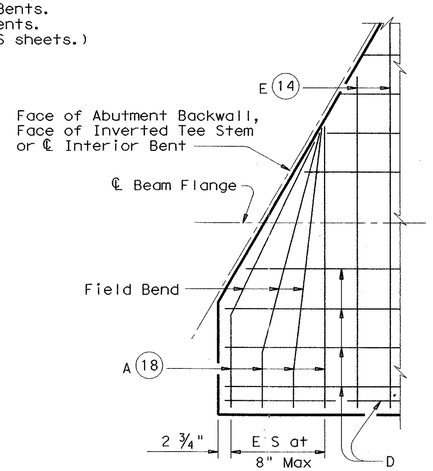
(14) End Bars E at edge of top flange of exterior U-Beam for sloped overhang only.

(15) Bars Z2 are located over Inverted Tee Bent Stem only.

(16) For reinforcing steel in Thickened Slab End, see Miscellaneous Slab Details sheets, UBMS.

(17) Flare Bars E in this region (typ) where required. Min length of Bar E = 3'-0".

(18) Min length of Bars A = 5'-0"



DETAIL B

HS20 LOADING SHEET 3 OF 3 320

Texas Department of Transportation
Design Division (Bridge)

PRESTRESSED CONCRETE PANEL DETAILS
(FOR PRESTR CONC U-BEAMS)

PCP(U)

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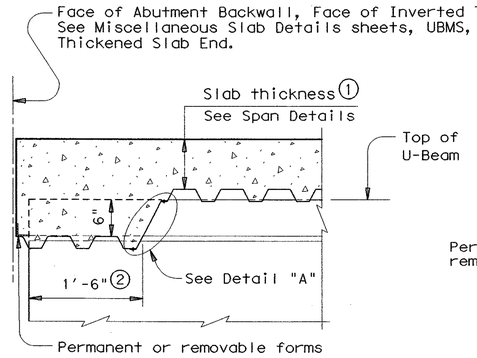
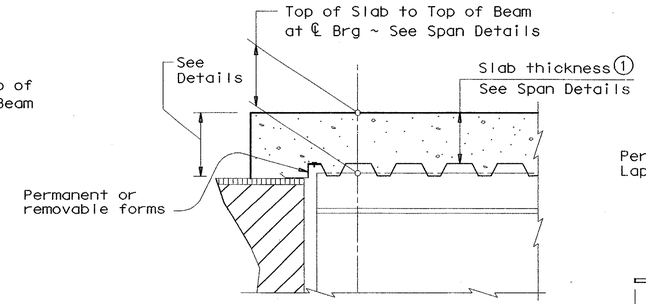
	COUNTY		CONTROL	SECT	JOB	HIGHWAY



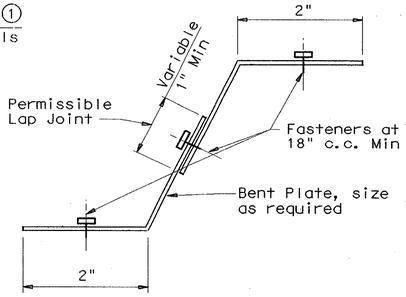
SECTION THRU THICKENED SLAB END

① Slab thickness minus ⅝" if corregations match reinforcing bars

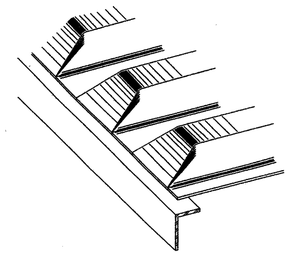
② Perpendicular to edge of slab



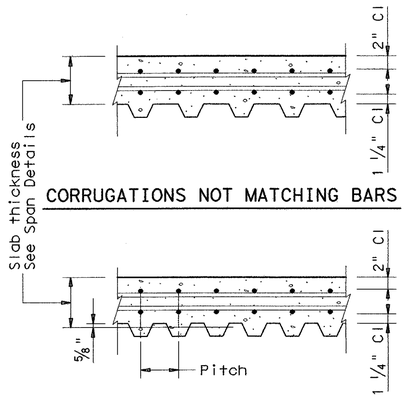
SECTION THRU SLAB OVER ABUTMENT BACKWALL OR INVERTED TEE STEM



DETAIL "A"

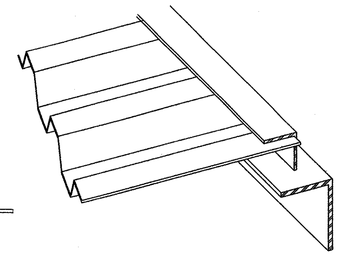


PRECLOSED



The Contractor has the option of furnishing either system, if practical.

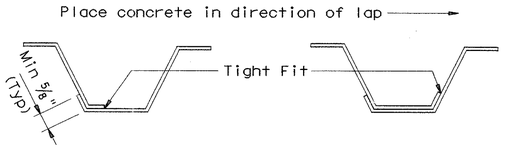
TYPICAL LONGITUDINAL SLAB SECTIONS



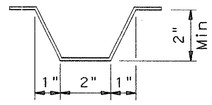
ANGLE HEADER

NOTE: This type is to be used for skewed ends only.

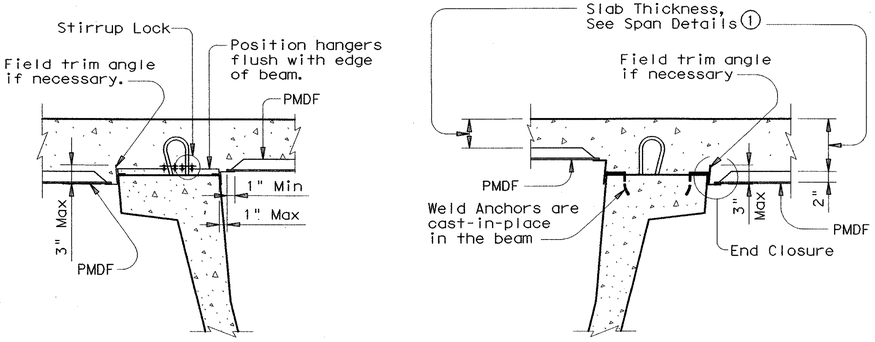
TYPES OF END CLOSURES



SIDE LAP DETAILS



TYPICAL CORRUGATION



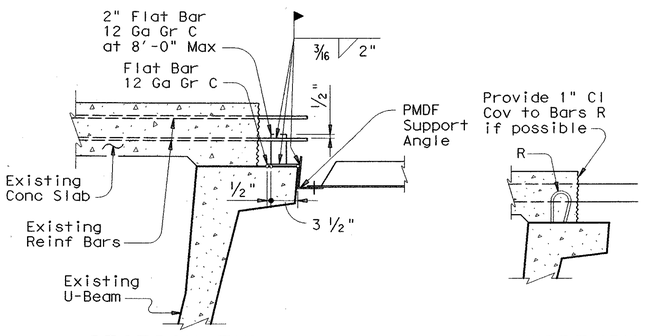
TYPICAL TRANSVERSE SECTIONS

(SHOWING VARIOUS METHODS OF ATTACHING FORMS TO BEAMS)

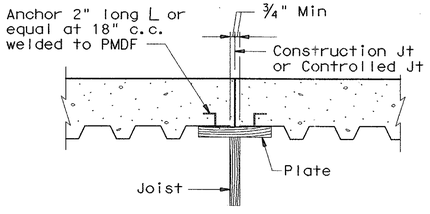
APPROXIMATE QUANTITIES FOR ONE SQUARE FOOT OF SLAB
(for Contractors information only)

Slab Thickness inches	Reinf Steel Lb/SF	Class S Concrete CY/SF
7.25	6.66	0.0255
7.50	6.66	0.0262
7.75	6.66	0.0270
8.00	6.66	0.0278
8.25	6.66	0.0285

These approximate quantities are for a typical square foot of cast-in-place slab over the average PMDF with corrugations not matching bars. The quantities do not include an allowance for slab overhangs, thickened slab ends, or possible haunch over beams.



SECTION THRU BREAKBACK FOR WIDENING



SECTION THRU CONSTRUCTION JOINT

Note: In spans where PMD forms are used, timber forms shall be used at construction joints.

Adequate provision shall be made to support edge of metal form and to provide anchorage of metal form to slab concrete where joined to wood forms.

GENERAL NOTES:

Permanent Metal Deck Forms (PMDF) shall be designed for the dead load of form, reinforcement and concrete plus 50 pounds per square foot for construction loads. The following allowable stresses shall be used in the design:

ASTM A653, Grade	Yield (psi)	Allowable Stress (psi)
33	33,000	23,900
37	37,000	26,800
40	40,000	29,000
50 Class 1	50,000	36,000
80	80,000	36,000
Weld Metal		12,400

Maximum deflection under the weight of forms, reinforcement and concrete, or a minimum of 120 pounds per square foot shall not exceed 1/180 of the form span or ½ inch, whichever is less. The design span for forms shall be clear distance between beam flanges measured parallel to the form flutes minus 2 inches. The minimum thickness of the forms shall be 22 gage and that of the support angles shall be 14 gage. All forms shall be securely fastened to supports.

For size & spacing of slab steel, see span details. Bottom slab reinforcing for PMDF option shall match the size and spacing of top mat of steel, unless noted otherwise, except bottom reinforcing steel shall be No. 5 bars.

For clear span between beams less than or equal to 15", see Permissible Slab Forming Detail on Miscellaneous Slab Details sheets, UBMS.

This standard shall be used as a guide in the preparation of shop detail drawings.

Texas Department of Transportation
Design Division (Bridge)

PERMANENT METAL DECK FORMS
(FOR PRESTR CONC U-BEAMS)

PMDF (U)

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