

SHEET NO.	TOTAL SHEETS
1	9

CITY OF WICHITA, KANSAS

MICHAEL E. LINDEBAK, P.E., CITY ENGINEER

STORM WATER ~~SEWER~~ NO. 124

DRAIN

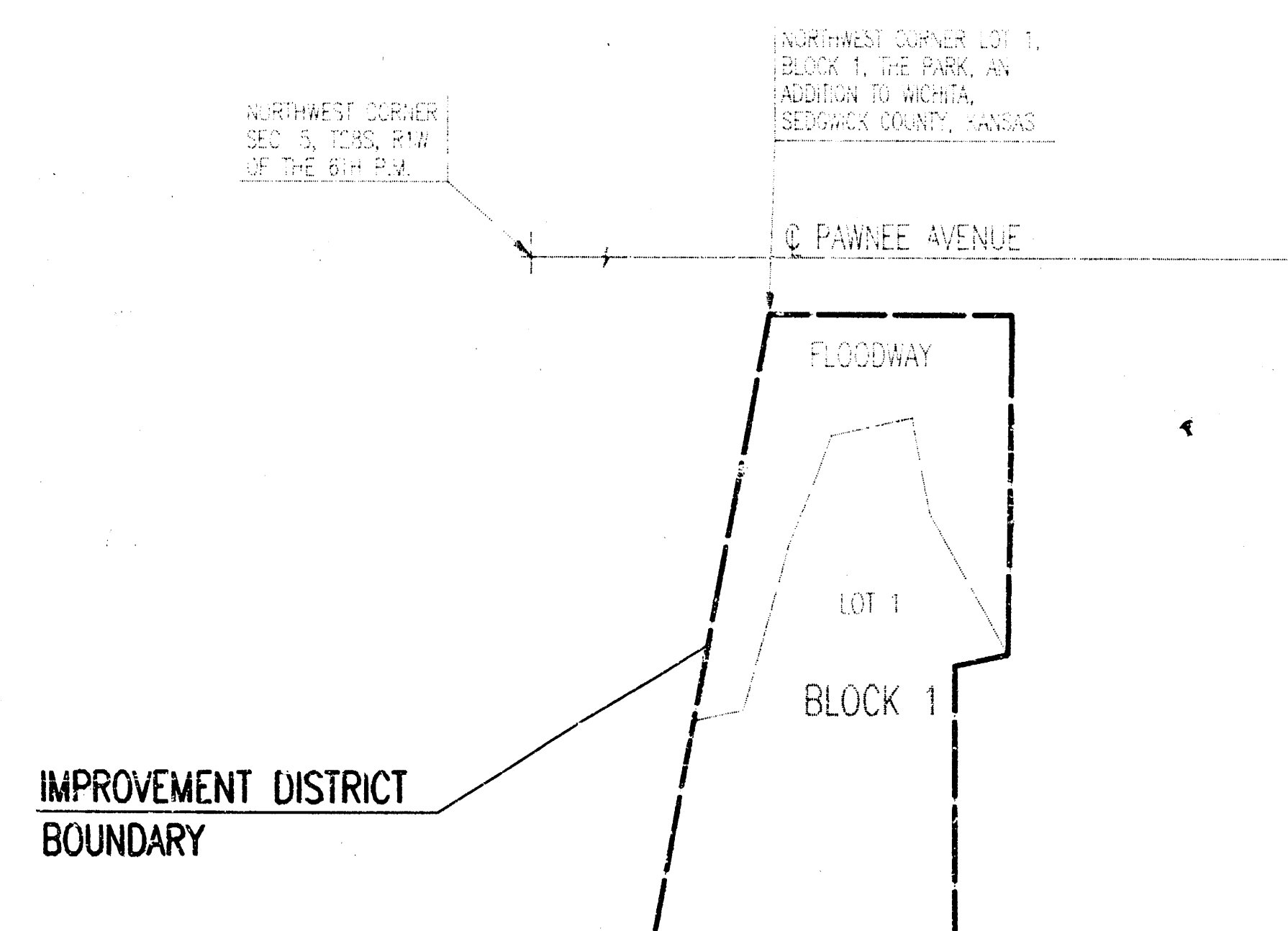
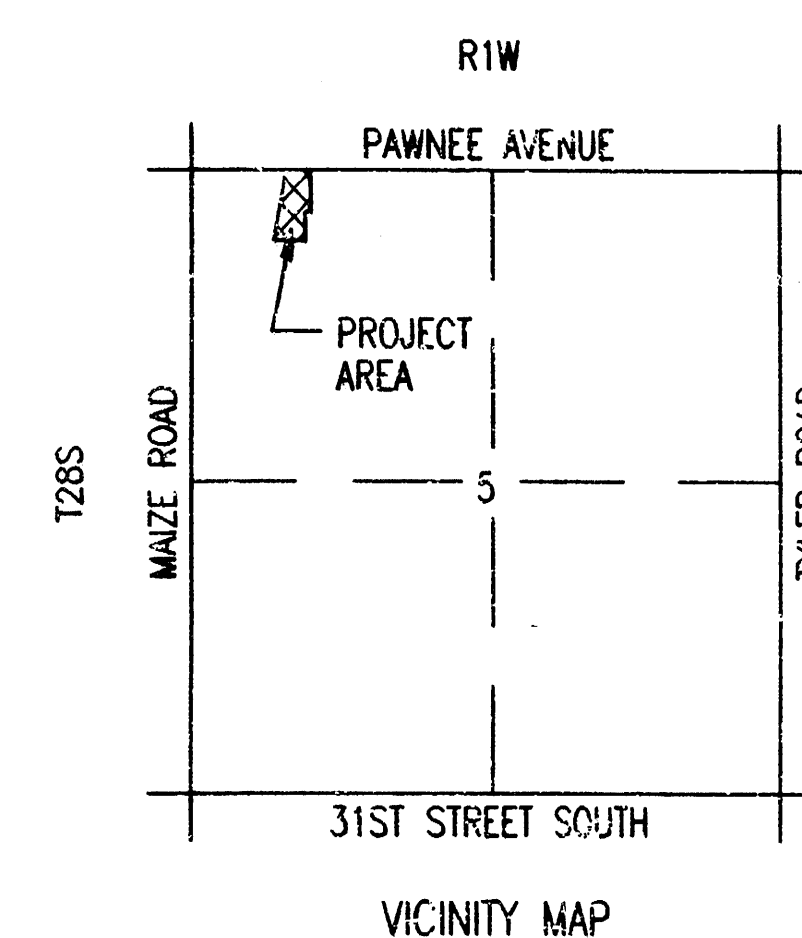
IN

PARK CHATEAU

INDEX OF SHEETS

1.	TITLE SHEET
2.	PAVING DETAILS
3.	3'-6"x4' RCB GENERAL NOTES
4.	3'-6"x4' RCB LAYOUT
5.-9.	3'-6"x4' RCB DETAILS

CITY OF WICHITA PROJECT NO. 468-76-245-82636-000-000-001
INDEX NO. 750927



SCALE: 1" = 150'

Booked
2-11-98
D-380
MCG

GENERAL NOTES

UNDERGROUND UTILITY SERVICE LINES AND OVERHEAD UTILITY POLE LINES ARE TO BE ADJUSTED AS NECESSARY BY OTHERS PRIOR TO CONSTRUCTION UNLESS THE PLANS SPECIFICALLY CALL FOR THEIR ADJUSTMENT BY THE CONTRACTOR. EXISTING UTILITIES SHALL BE LOCATED AS SHOWN ON THE PLANS, REPRESENT THE BEST INFORMATION AVAILABLE FOR DESIGN. LOCATION INFORMATION HAS BEEN OBTAINED FROM VARIOUS UTILITY COMPANIES AND IS EITHER FROM COMPANY RECORD DRAWINGS OR COMPANY PROVIDED FIELD LOCATIONS. THE CONTRACTOR WILL BE REQUIRED TO WORK AROUND EXISTING UTILITIES WITHIN THE RIGHT-OF-WAY WHICH DO NOT CONFLICT WITH PROPOSED CONSTRUCTION. CONTRACTOR SHALL SATISFY HIMSELF OF SUBSURFACE CONDITIONS PRIOR TO BIDDING.

TREES AND SHRUBS IN PUBLIC RIGHT-OF-WAY WHICH ARE IN DIRECT CONFLICT WITH PROPOSED NEW CONSTRUCTION SHALL BE REMOVED BY THE CONTRACTOR WITH THE ENGINEER'S APPROVAL. TREES AND SHRUBS WHICH ARE NOT IN DIRECT CONFLICT WITH PROPOSED NEW CONSTRUCTION SHALL BE SAVED AND PROTECTED FROM DAMAGE.

RUBBLE FROM THE REMOVAL OF MISCELLANEOUS STRUCTURES SHALL BE DISPOSED OF ON SITES TO BE PROVIDED BY THE CONTRACTOR AND APPROVED AS NOTED.

ALL DISPOSAL SITES MUST BE APPROVED BY THE KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT. MATERIAL EITHER STOCKPILED OR DISPOSED OF IN A FLOOD PLAIN WOULD REQUIRE A KANSAS STATE BOARD OF AGRICULTURE PERMIT. ANY MATERIAL DUMPED IN WATERS OF THE UNITED STATES OR WETLANDS IS SUBJECT TO U.S. CORPS OF ENGINEERS PERMITTING REGULATIONS. ANY MATERIAL BURIED OR STOCKPILED BEYOND APPROVED CONSTRUCTION LIMITS WOULD REQUIRE ADDITIONAL ARCHEOLOGICAL INVESTIGATIONS UNLESS BURIED IN A PREVIOUSLY APPROVED BORROW LOCATION.

EXCESS EXCAVATED MATERIAL AND EXCESS TOPSOIL SHALL BE STOCKPILED OR WASTED WITHIN THE PLAT LIMITS. THE CONTRACTOR SHALL CONTACT THE OWNER'S ENGINEER AT 262-2691 FOR INFORMATION PERTAINING TO THE ACCEPTABLE LOCATIONS FOR THE DISPOSITION OF EXCESS MATERIAL. WASTE MATERIAL SHALL BE GRADED SMOOTH AND SLOPED TO DRAIN. THIS WORK SHALL BE CONSIDERED SUBSIDIARY TO OTHER BID ITEMS.

CONTRACTOR SHALL PROVIDE A MINIMUM FORTY-EIGHT (48) HOUR ADVANCE NOTICE (EXCLUDING WEEKENDS AND HOLIDAYS) PRIOR TO BEGINNING ANY EXCAVATION, TO KANSAS ONE-CALL SYSTEM, A UTILITY LOCATION SERVICE, AT (316) 687-2470. TO REQUEST THE FOLLOWING UTILITY COMPANIES TO LOCATE ALL EXISTING LINES WITHIN THE PROJECT AREA: K.G.&E. GAS, PEOPLES NATURAL GAS, K.G.&E. ELECTRIC, SOUTHWESTERN BELL TELEPHONE, MULTIMEDIA CABLEVISION, CITY OF WICHITA SEWER MAINTENANCE AND CITY OF WICHITA WATER DEPARTMENT.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR PRESERVING PROPERTY IRONS. THE CONTRACTOR WILL BE REQUIRED TO RE-ESTABLISH ANY PROPERTY IRONS WHICH ARE DAMAGED OR DESTROYED BY HIS CONSTRUCTION OPERATIONS. SUCH IRONS SHALL BE RE-ESTABLISHED BY A LICENSED LAND SURVEYOR IN ACCORDANCE WITH STATE LAWS.

THE WATER DEPARTMENT SHALL FIELD LOCATE WATER VALVES ONE (1) TIME DURING CONSTRUCTION WHEN REQUESTED BY THE CONTRACTOR. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PRESERVE SUCH FIELD LOCATIONS DURING THE CONSTRUCTION PROCESS. WATER VALVES, WATER VALVE BOXES OR FIRE HYDRANTS DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE.

THE CONTRACTOR SHALL ADJUST WATER VALVE BOXES AS DIRECTED BY THE ENGINEER. THIS WORK TO BE SUBSIDIARY TO OTHER BID ITEMS.

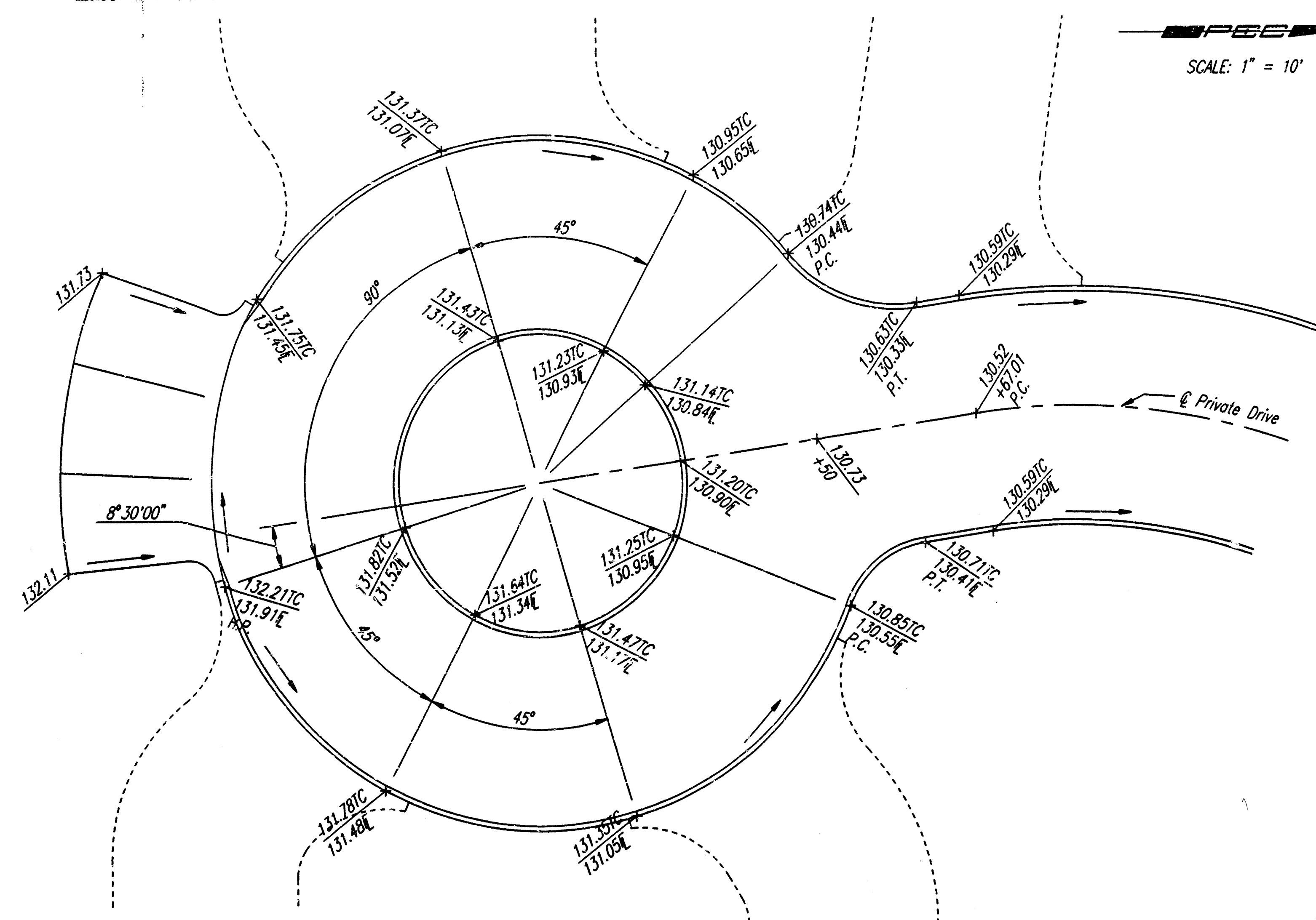
ALL AREAS DISTURBED DURING CONSTRUCTION SHALL BE SEEDED, FERTILIZED, AND MULCHED ACCORDING TO CITY OF WICHITA STANDARDS AND SPECIFICATIONS.



APRIL, 1997

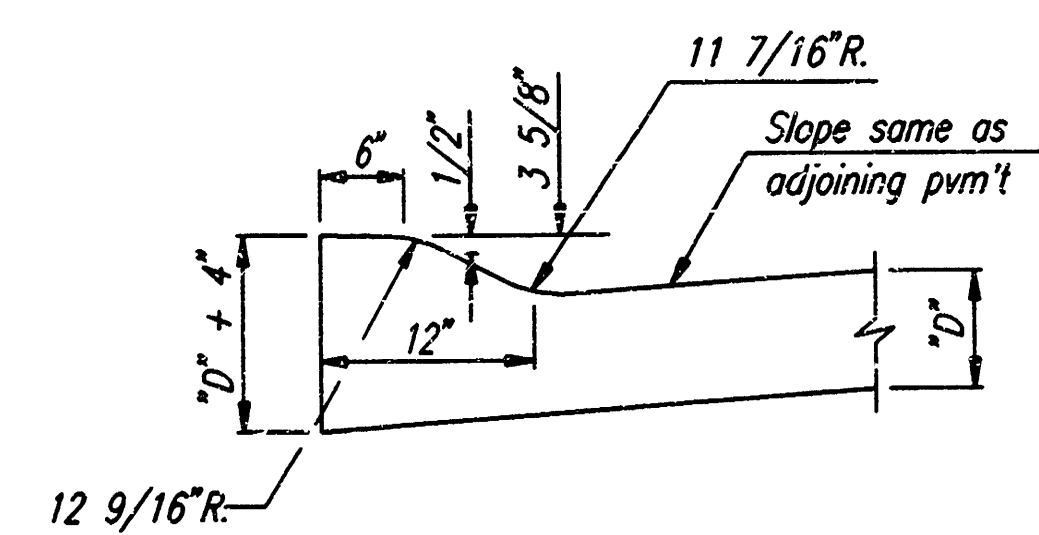
PLANS PREPARED BY
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

SHEET NO.	TOTAL SHEETS
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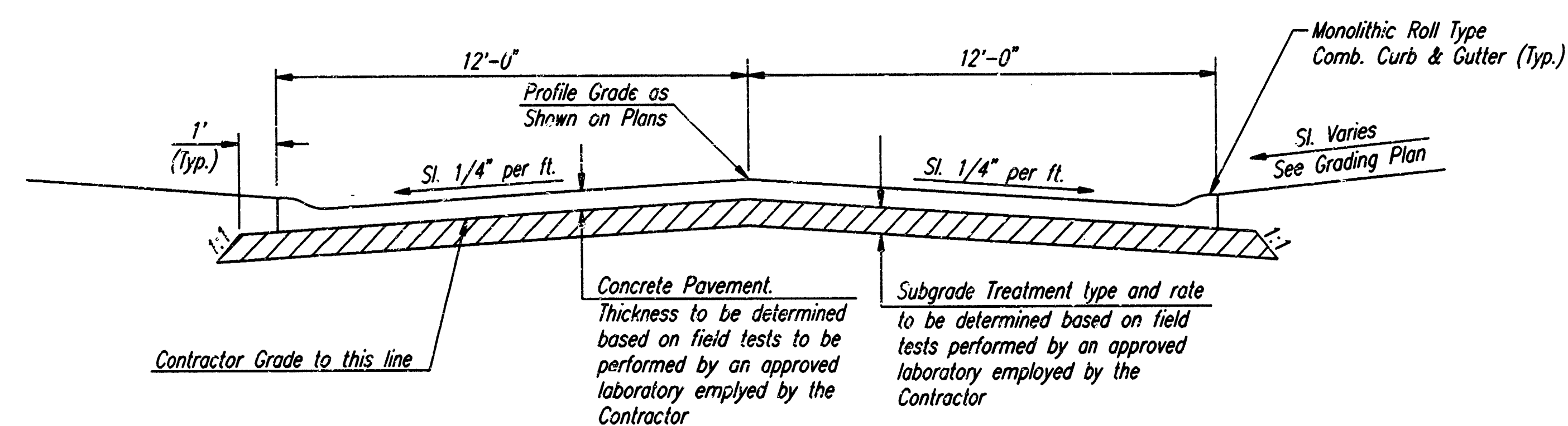


CUL-DE-SAC DETAIL

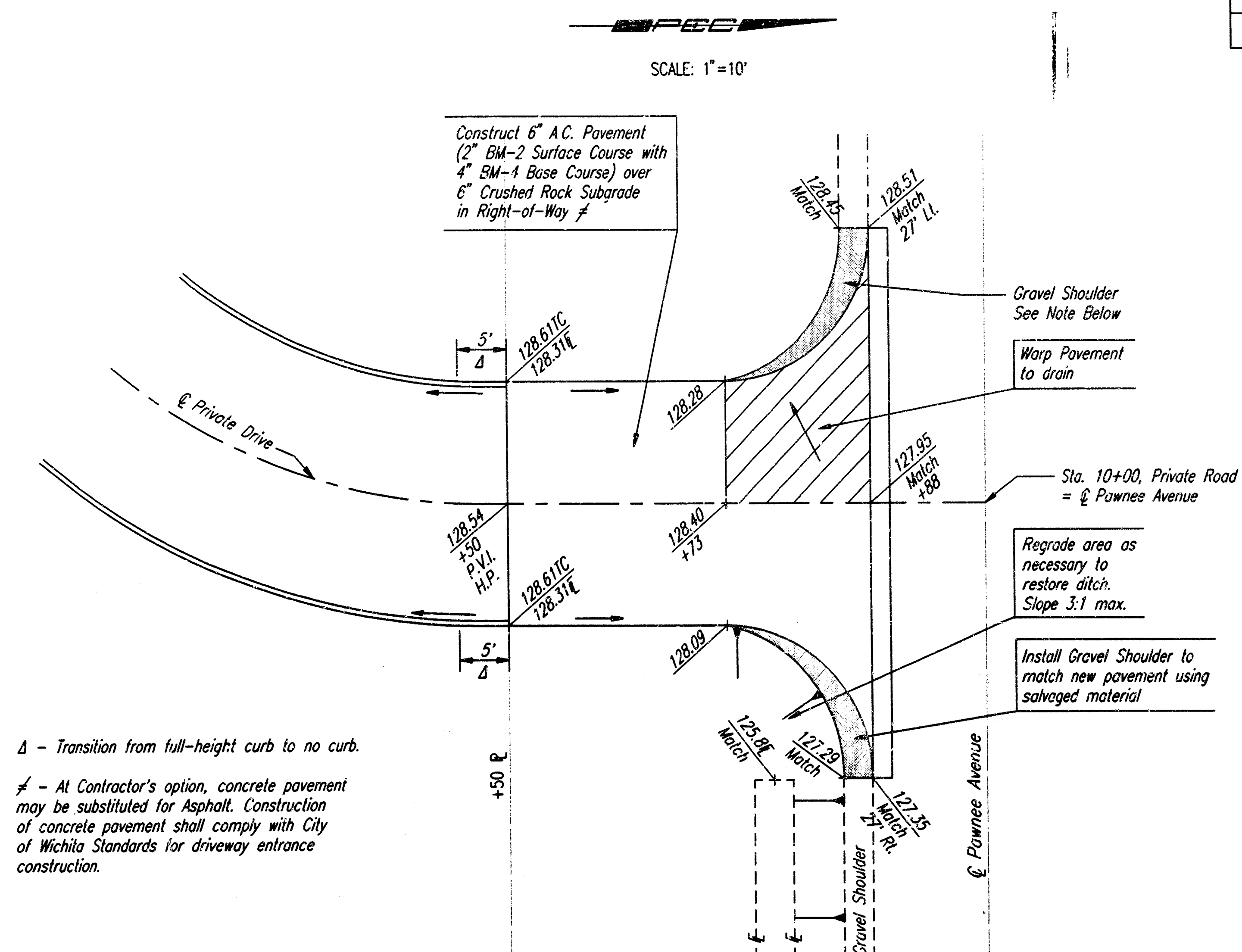
Note: Center of cul-de-sac = Sta. 4+20.36, Private Road



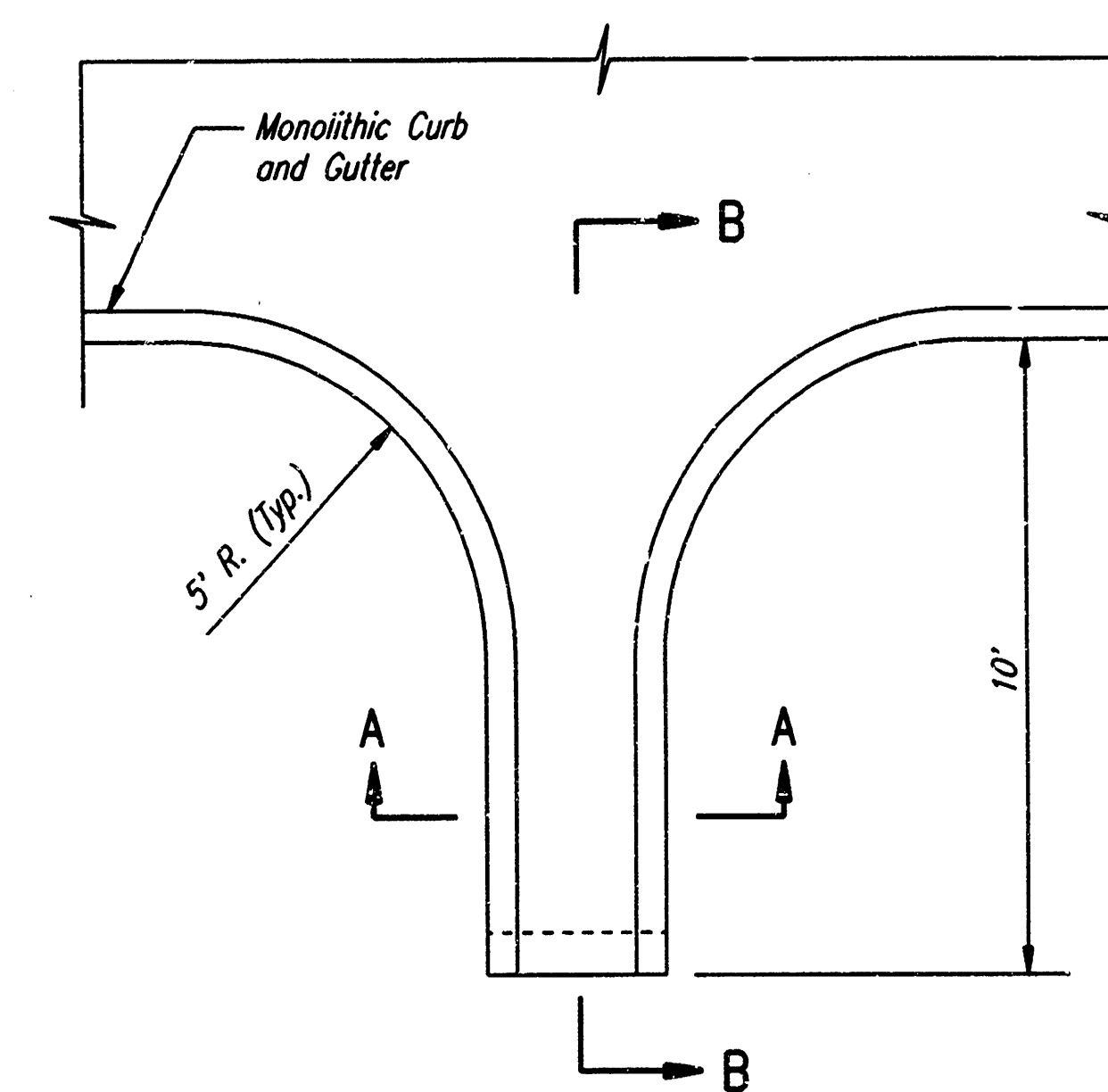
ROLL TYPE COMBINED CURB AND GUTTER



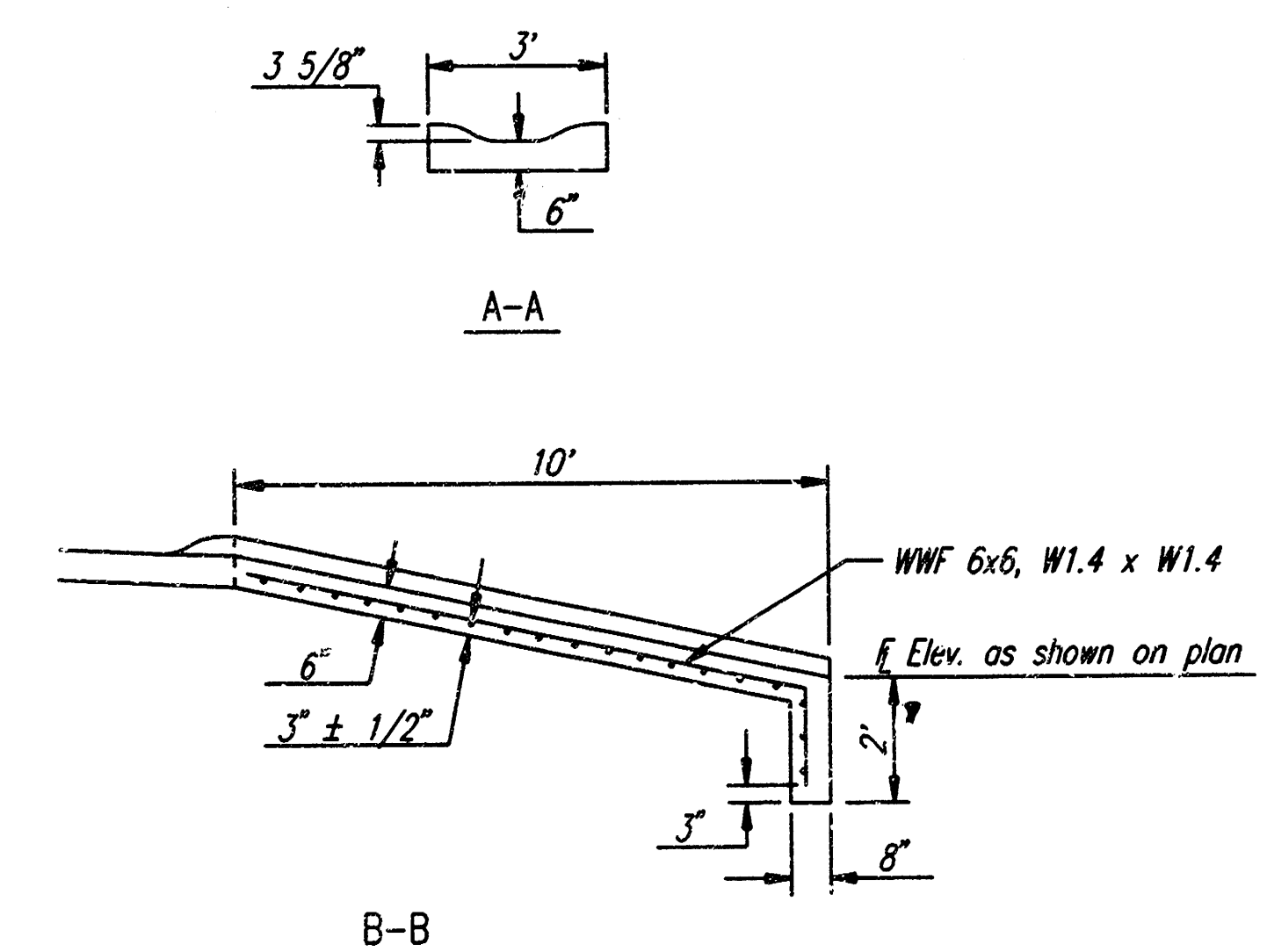
TYPICAL SECTION
PRIVATE DRIVE
(Provided to facilitate grading in RCB area)



INTERSECTION DETAIL



PLAN



FLUME INLET DETAILS

PAVING DETAILS

PROJECT NO. 458-82636		SEDGWICK COUNTY	
PROFESSIONAL ENGINEERING CONSULTANTS, P.A. ENGINEERS WICHITA, KANSAS			
Designed by	MWB, DAP	Checked by DAP	
Drawn by	DEP	Date APR., 1997	Job No. 96266-1

DSNR: RAS OPER: DEP SCALE: 1=10.00
Q:\1996\96266\DETAILS.DWG 04-01-1997 3:42:14 pm

GENERAL NOTES

LOADING:
HS20-44

AASHTO Specifications
1992 Edition and latest
Interim Specifications.

UNIT STRESSES:

Class AAA Concrete $f_c = 4,000$ psi $f_c = 1,600$ psi
Reinforcing Steel (Grade 60) $f_y = 60,000$ psi $f_s = 24,000$ psi

CONSTRUCTION: The Contractor has the option of constructing either the Precast option (see Detail B, this sheet) or the Cast-in-Place option (see Detail A, this sheet.) Payment for the structure will be the same regardless of which option is used for construction.

CONCRETE: Class AAA Concrete shall be used throughout for the Cast-in-Place and shall comply to Section 402 of the 1990 Kansas State Department of Transportation Standard Specifications for State Road and Bridge Construction. Bevel all exposed edges with a $\frac{3}{4}$ inch triangular mauling, unless otherwise noted.

PRECAST CONCRETE: Precast Box Sections shall meet the appropriate design and inspection requirements of AASHTO M 273, and A.S.T.M. Designation C-850, Table 2 and the loading specifications. (Depth of fill is less than 2 ft.)

The intermediate joints shall be sealed with a mastic compound which shall be provided for approval with the shop detail submittal. The Contractor shall furnish, to the Engineer, detail plans and shop drawings showing the proposed Precast layout and all other details for manufacture and delivery of any Precast items to be incorporated in the work.

SEAL COURSE: A Seal Course shall be constructed below the R.C.B. as shown in the plans. The seal course shall consist of 3" of Class A Concrete below all Cast-in-Place Concrete. The seal course below Precast sections shall consist of either 3" of Class A Concrete or a 6" Granular Base (Type BD-1 or UD-1) at the Contractor's option. No reinforcing shall be placed until the seal course has gained sufficient strength to permit working upon it without injury.

REINFORCING STEEL: All dimensions relative to reinforcing steel placement are to the centerline of bars unless otherwise noted. Bar bending and dimensions shall be as shown and noted on the bending diagrams. All reinforcing steel shall conform to the requirements of ASTM A615, Grade 60.

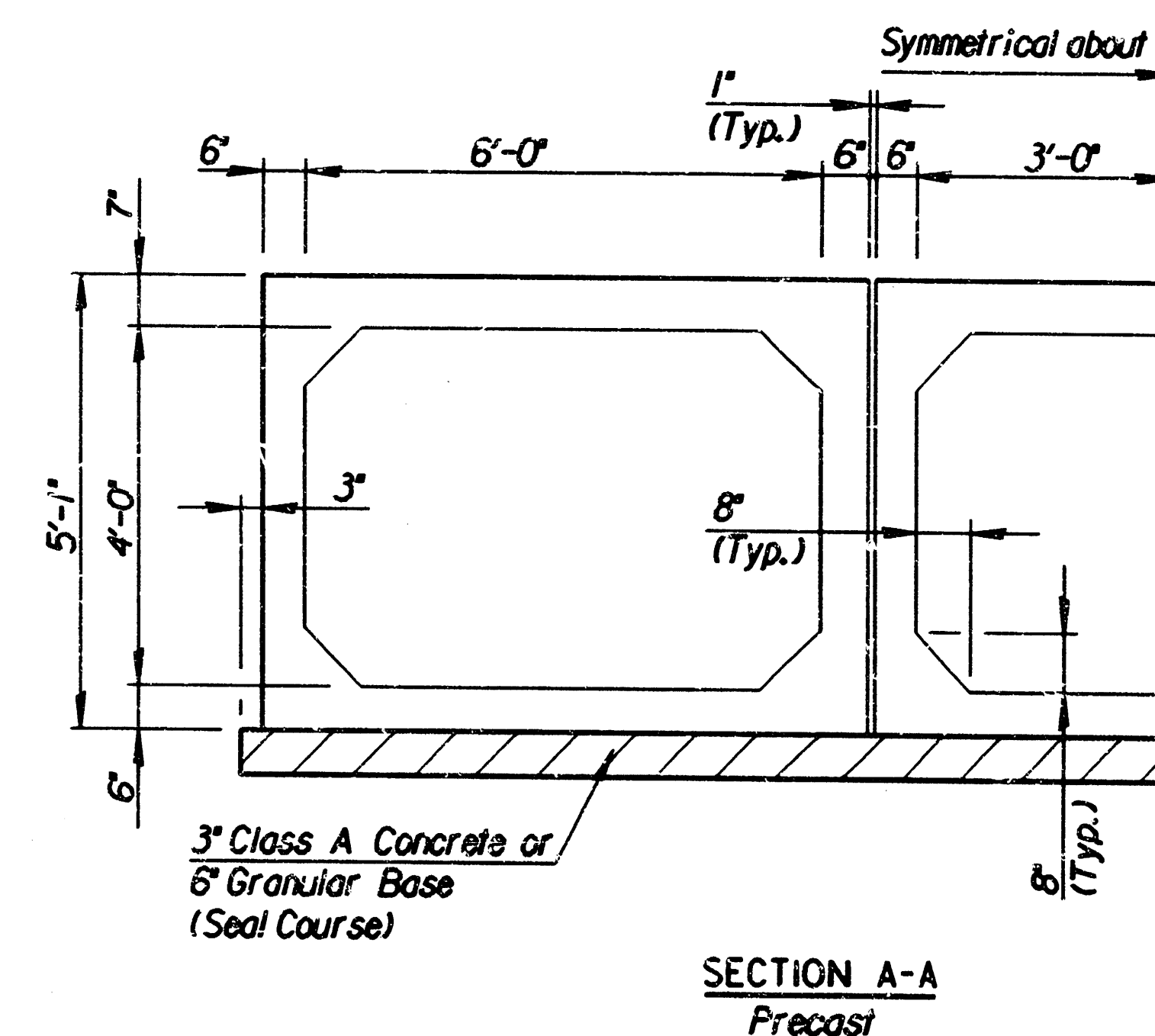
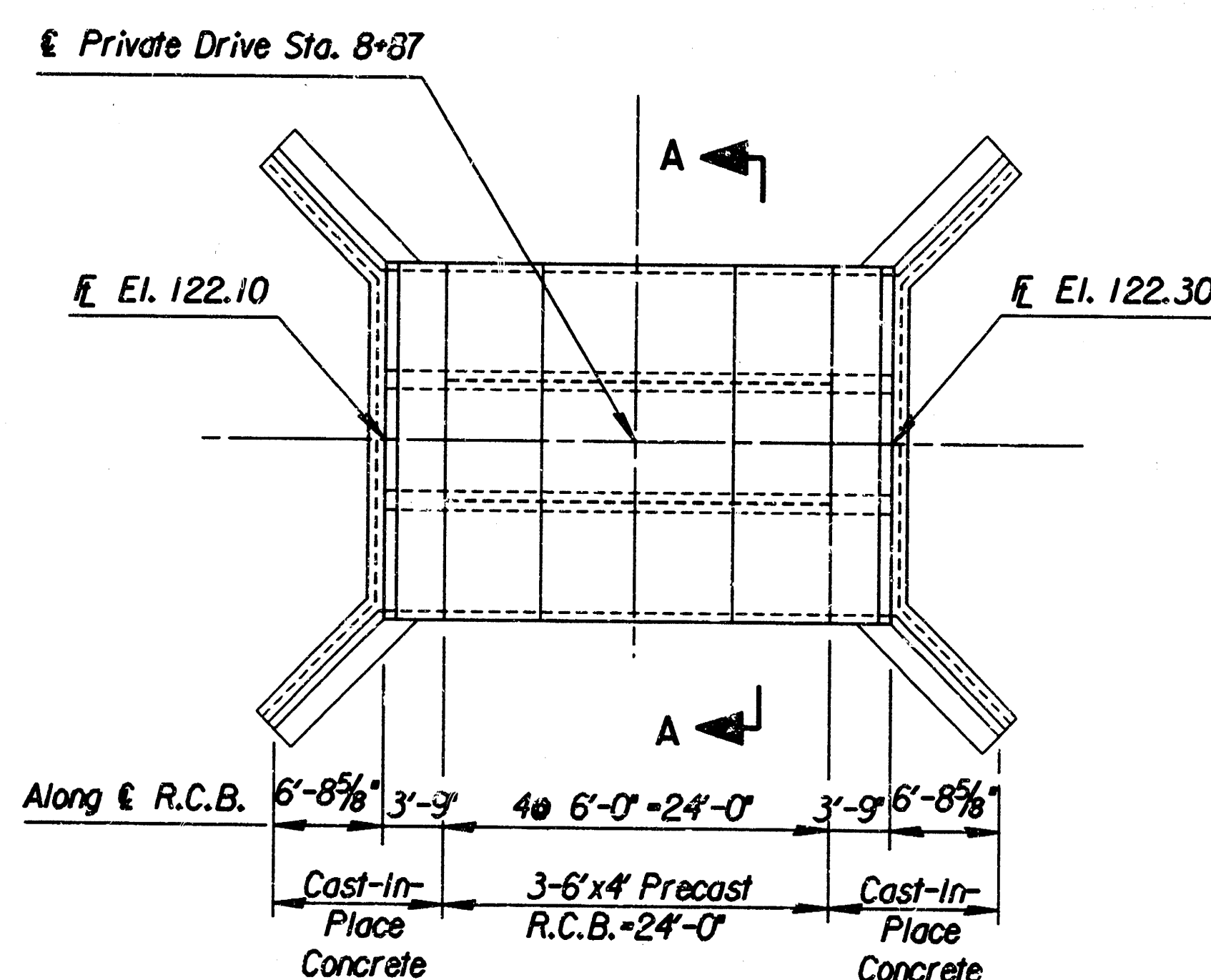
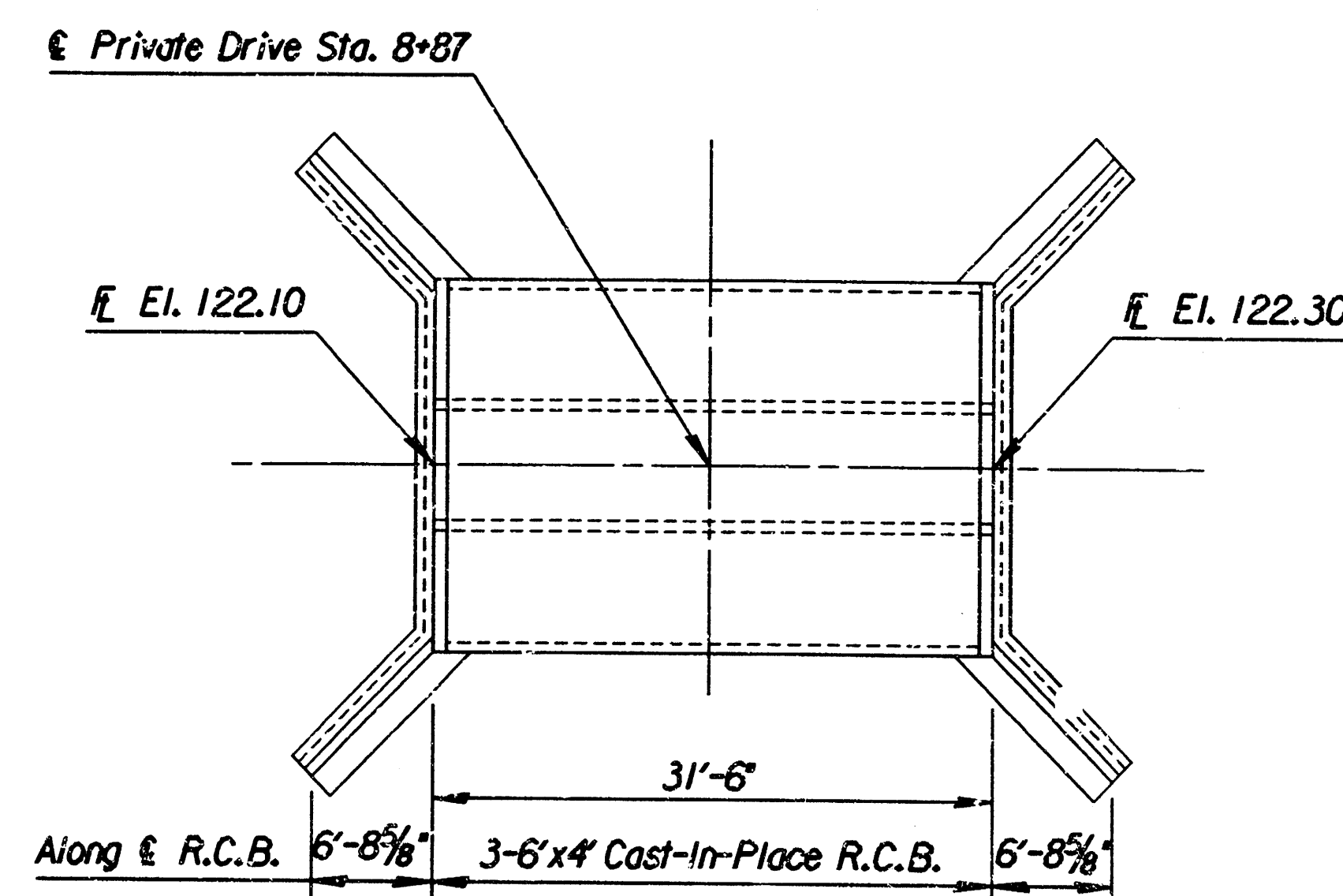
JOINTS: Construction joints shall only be formed at locations shown or as approved by the Engineer.

EXCAVATION: All excavation and backfill shall extend to two (2) feet beyond sides of box and wingwall.

PROJECT SCOPE: City of Wichita Project No. 468-82636 will be limited to the construction of the 3'-6"x4' R.C. Box, limited channel shaping and fill plus compaction (90% Standard Density) in a band 40' along E. Park Chateau (Sta. 8+67 to 9+07) to the contractor's grading limits, 26' plus in width, as denoted in the typical sections. Paving, curb and gutter and slope drains are by others.

BASIS OF PAYMENT

The "3'-6"x4' R.C. Box" shall be bid as a lump sum which shall include all labor, material, excavation, compaction, concrete, reinforcing steel, seal course, and all other incidentals necessary to complete the work. Quantities shown are for information only.



"3'-6"x4' R.C. BOX"	
* BILL OF MATERIALS (CAST-IN-PLACE)	
Class AAA Concrete	54.5 C.Y.
Reinforced Steel (Grade 60)	8560 Lbs.
Seal Course (Class A Concrete)	7.2 C.Y.
* BILL OF MATERIALS (PRECAST OPTION)	
Class AAA Concrete	22.6 C.Y.
Reinforced Steel (Grade 60)	2700 Lbs.
Precast Box (6"x4')	72 L.F.
† Seal Course (Class A Concrete)	7.2 C.Y.
† Seal Course (Granular Base)	14.4 C.Y.

* For Information Only
† Choose only one option

1			
No.	Revisions	By	Date
PARK CHATEAU			
3'-6"x4'x31'-6" R.C.B.			
GENERAL NOTES			
PROJECT NO. 468-82636		SEDGWICK COUNTY	
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.			
ENGINEERS			
WICHITA, KANSAS			
Designed by	RWA	Checked by	RAS
Drawn by	WAF	Date	Mar. 1997
		Job No.	96266-1

SHEET NO.	TOTAL SHEETS
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DRAINAGE DATA

Drainage Area ——— 0.83 Sq. Mi.
Design Frequency ——— 100 Yr.
Design Discharge ——— 700 CFS
Design High Water Elevation ——— 128.6 Ft.

Overlapping Elevation (Sta. N.A.) ——— N.A. Ft.
Overlapping Discharge ——— N.A. CFS
Overlapping Frequency ——— N.A. Yr.
Historic Highwater Elevation ——— Unknown Ft.
Q₁₀₀ ——— 700 CFS
Highwater Elevation at Q₁₀₀ ——— 128.6 Ft.

CURVE 3
Δ = 77°47'33"
D = 61°14'22"
R = 93.56'
T = 75.48'
L = 127.03'
E = 26.65'
P.C. Sta. 6+79.07
P.T. Sta. 8+06.10

CURVE 4
Δ = 39°09'01"
D = 95°29'35"
R = 60.00'
T = 21.34'
L = 41.00'
E = 3.68'
P.C. Sta. 9+06.14
P.T. Sta. 9+47.14

SITE PLAN

NW Cor. Lot 1, Block 1,
The Park Chateau

No.		Revisions		By	Date
PARK CHATEAU					
R.C.B. LAYOUT					
PROJECT NO. 468-82636			SEDGWICK COUNTY		
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.					
WICHITA, KANSAS					
Designed by	RAS	Checked by	RAS		
Drawn by	MAF	Date	Mar. 1997	Job No.	96266-1

BM#101 - R.R. SPIKE IN SE FACE PP. N. SIDE PANNEE, AT HOUSE #10106
770' W. OF YELLOWSTONE STREET
ELEV. = 129.28

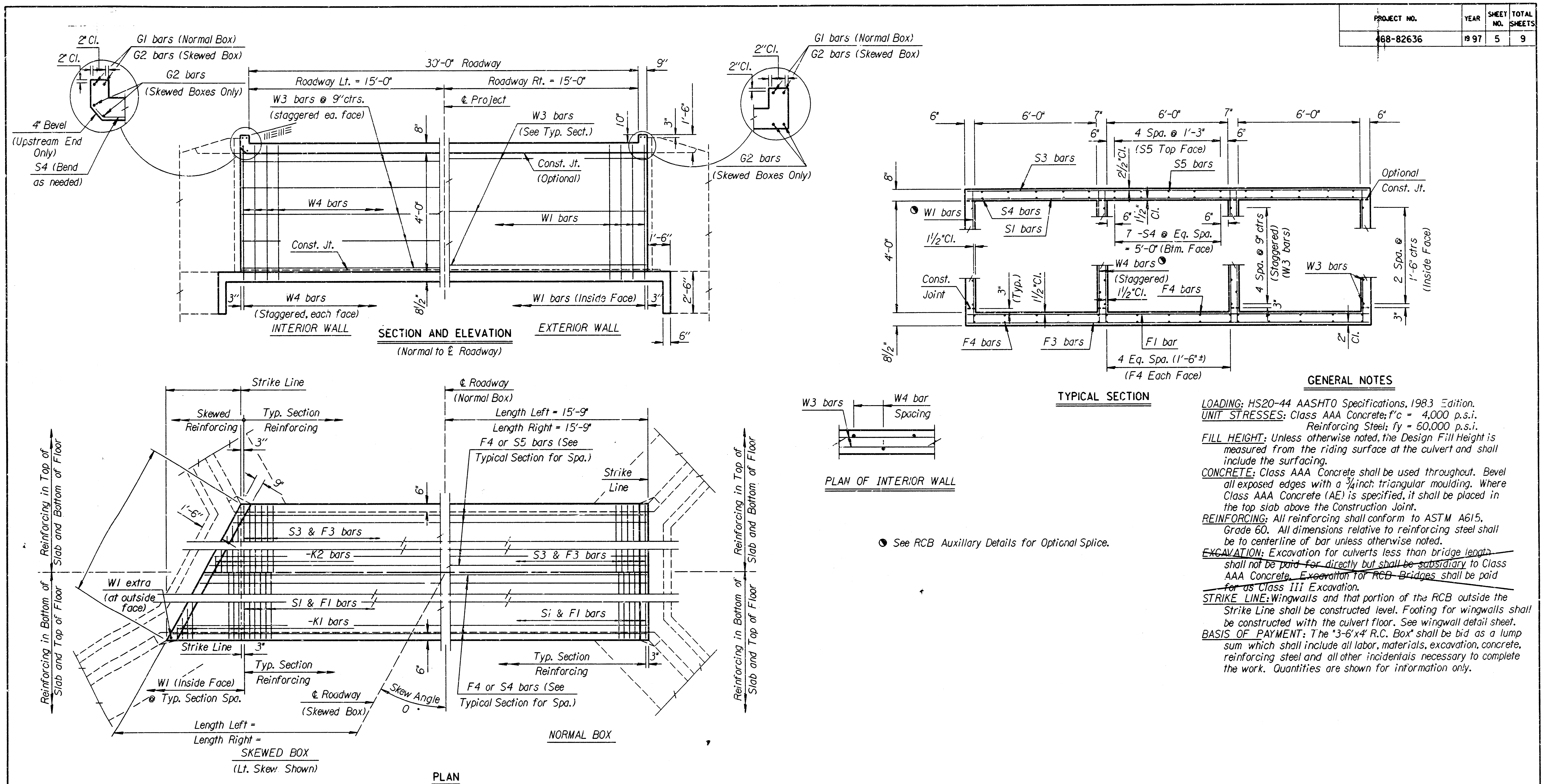
BM#102 - R.R. SPIKE IN W. FACE 20' HEDGE TREE, 90' E. OF SW CORNER
LOT 1, BLOCK 1, PARK CHATEAU
ELEV. = 132.13

1/1996/96266/001/gradplan.dgn
Drawn by: dso/mef
Plotted by: ras 3-15-97

VERSION: 5.1.0 COMPILED: 03/01/95

DESIGN	CHECK	DATE	DATE	DATE	DATE
DESIGN	CHECK	DATE	DATE	DATE	DATE
DESIGN	CHECK	DATE	DATE	DATE	DATE
DESIGN	CHECK	DATE	DATE	DATE	DATE
DESIGN	CHECK	DATE	DATE	DATE	DATE

Drawing File: 1:96266/001/RCB3-6X4.DGN
Plotted by: ras 3-15-97
View=



CULVERT SUMMARY													
Flow Line Elev. Lt.	Flow Line Elev. Rt.	Crown Gr. Elev.	Design Fill Ht.	Skew	Left Wings	Right Wings	Scour Apron	Soil Saver	Granular Backfill	Concrete Barrel (Cu.Yds.)	Concrete Wings (Cu.Yds.)	Concrete Total (Cu.Yds.)	Reinf. Steel (Gr. 60) Barrel (Lbs.)
122.30	122.10	128.41	2	0	FLARED	FLARED	NO	NO	NO	43.36	11.12	54.48	7694.51

BAR SCHEDULE																																		
F1								F3				F4			S1								S3				S4			S5				
Size	Spa.	No.	Length	Size	Spa.	No.	Length	Size	Spa.	No.	Length	Size	No.	Length	Size	Spa.	No.	Length	Size	Spa.	No.	Length	Size	Spa.	No.	Length	Size	No.	Length					
5	5½"	69	19'-10"	-	-	-	-	5	7"	54	19'-10"	4	30	31'-2"	5	5½"	69	19'-10"	-	-	-	-	5	7"	54	19'-10"	5	21	31'-2"	4	15	31'-2"		
K1				K2				W1							W3			W4			G1			G2										
Size	Spa.	No.	Length	Size	Spa.	No.	Length	Size	Spa.	No.	Length	Size	Spa.	No.	Length	Size	Spa.	No.	Length	Size	Spa.	No.	Length	Size	No.	Length	Size	No.	Length	Size	Spa.	No.	Length	
-	-	-	-	-	-	-	-	4	9"	84	5'-1"	-	-	-	-	4	16	31'-2"	4	9"	84	5'-1"	5	4	19'-10"	-	-	-	-	-	-	-	-	-

Minimum Splice Lengths	
#4	1'-4"
#5	1'-8"
#6	2'-0"

SUMMARY OF QUANTITIES	
Class AAA Concrete	54.5 C.Y.
Class AAA Concrete (AE)	0.0 C.Y.
Reinforcing Steel (Gr. 60)	8560 Lbs.
Reinforcing Steel (Epoxy Coated)	0 Lbs.
Class III Excavation	0 C.Y.
Foundation Stabilization (Set)	0 C.Y.
Concrete for Seal Course (Set)	0 C.Y.
Granular Backfill (Wingwalls) (Set)	0 C.Y.

NO.	DATE	REVISIONS	BY	APP'D
KANSAS DEPARTMENT OF TRANSPORTATION				
Sta. 8+87				
TRIPLE 6' x 4' RCB				
BR 3-06-04 SEDGWICK CO.				
DESIGNED	DETAILS	QUANTITIES	TRACED	CHECKED
DESIGN CH.	DETAIL CH.	QUANT. CH.	TRACE CH.	

VERSION: 5.1.0 COMPILED: 03/01/95

DESIGN	DATE	DATE	DATE	DATE
DATE	DATE	DATE	DATE	DATE
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DESIGN	DATE	DATE	DATE	DATE
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DATE	DATE	DATE	DATE	DATE

Drawing File: 12/96266/001/RCB3-614.DGN
Plotted by: ras 3-15-97 View=

PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
168-82636	97	6	9

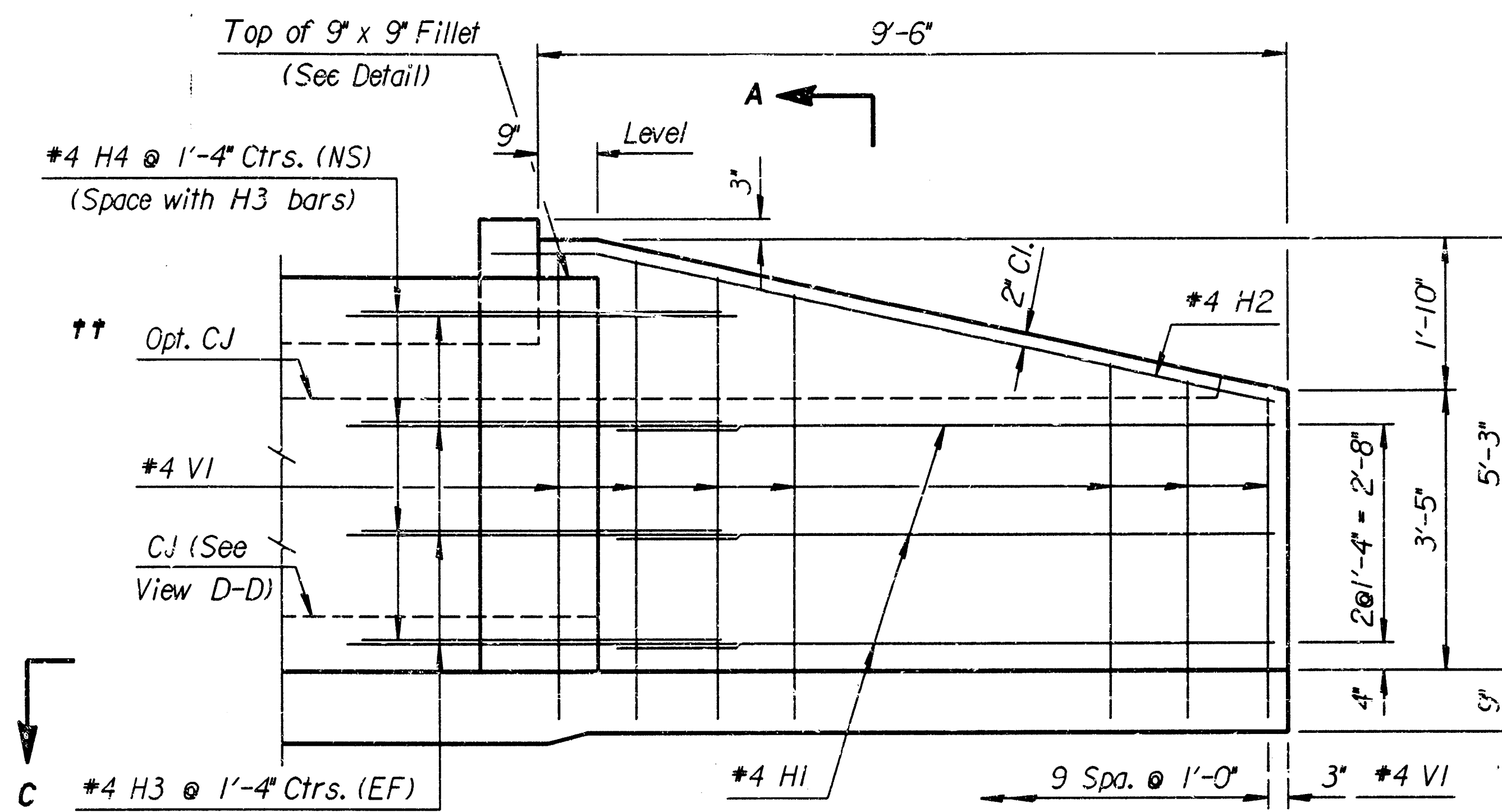
GENERAL NOTES

UNIT STRESSES: Class AAA Concrete; $f'_c = 4,000$ p.s.i.
Reinforcing Steel; $f_y = 60,000$ p.s.i.

CONCRETE: Class AAA Concrete shall be used throughout. Bevel all exposed edges with a $\frac{3}{4}$ inch triangular mounding.

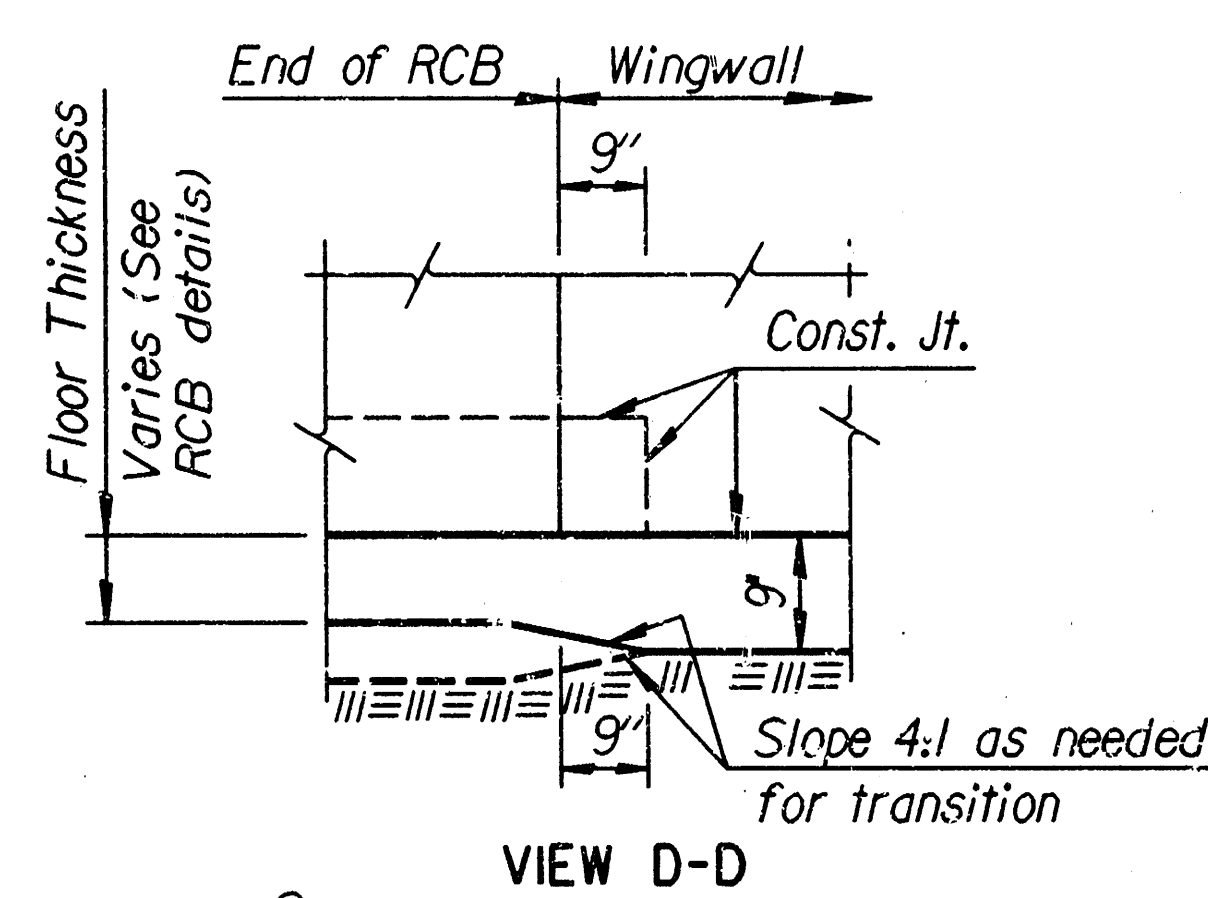
REINFORCING: All reinforcing shall conform to ASTM A615, Grade 60. Welded Wire Fabric shall conform to ASTM A185. All dimensions relative to reinforcing steel shall be to center-line of bar unless otherwise noted.

QUANTITIES: Wingwall Quantities include all quantities outside the neat lines of the box, excluding the hubguard.

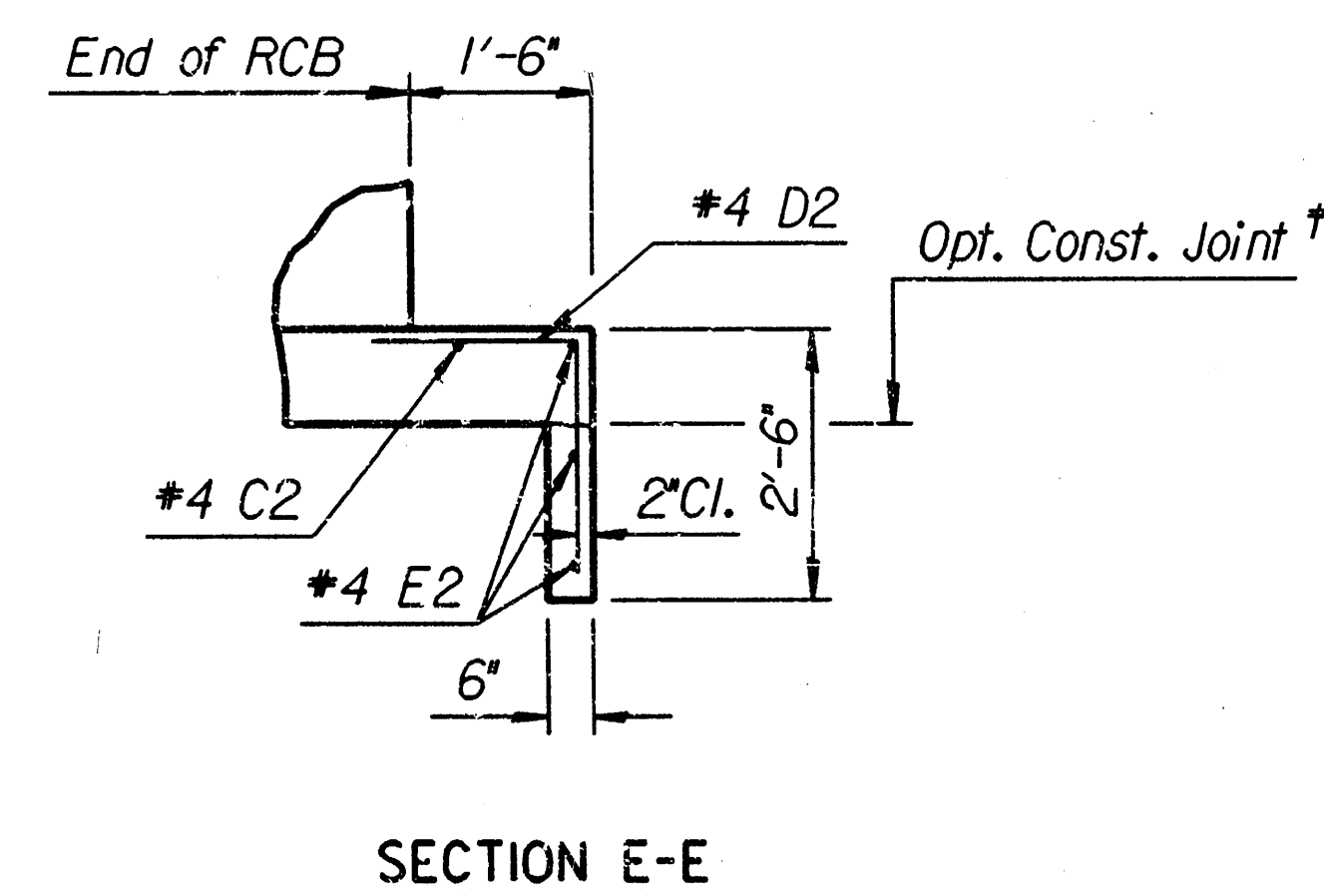


See RCB Details for location of construction joint.

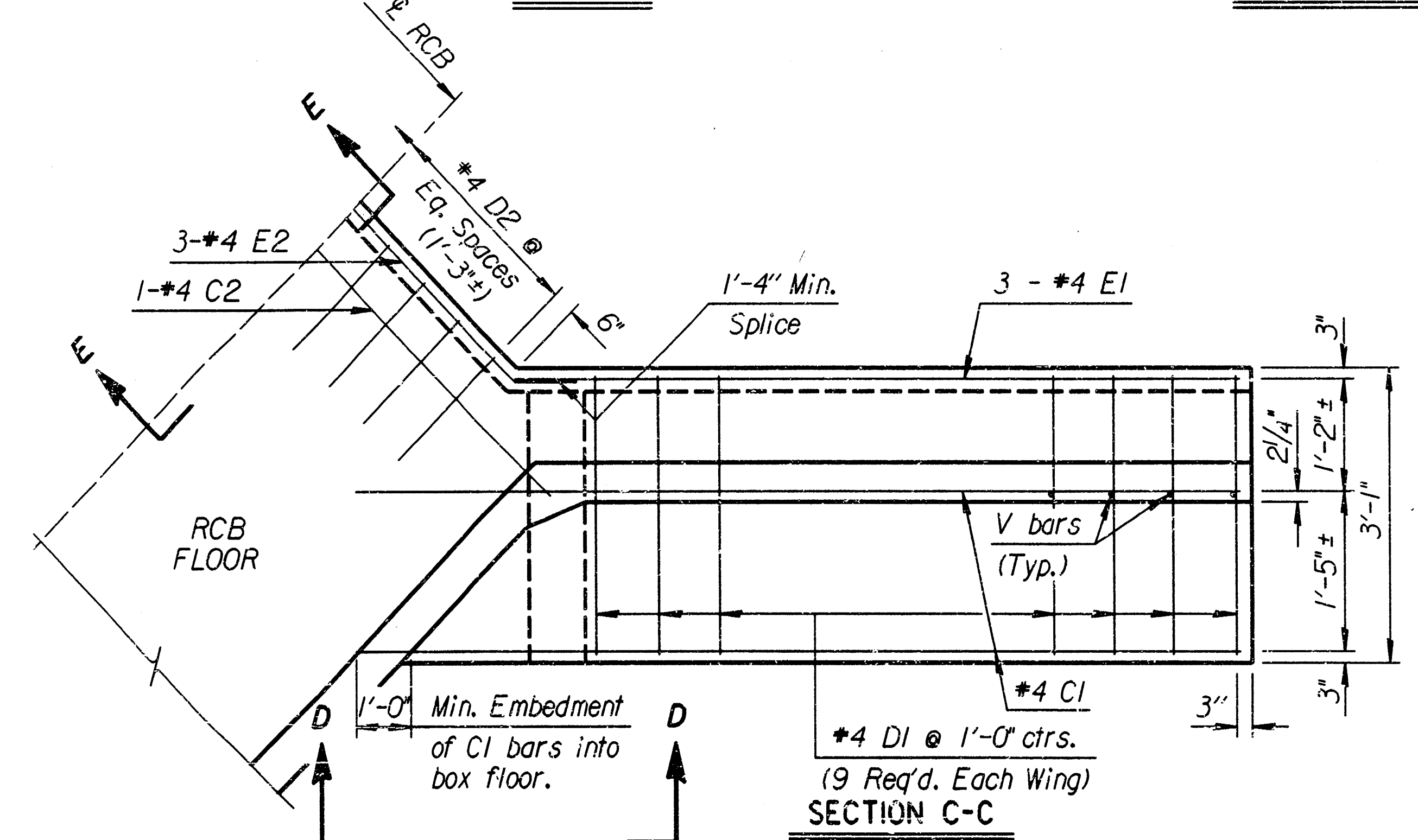
ELEVATION OF WINGWALL
(Backface Shown)



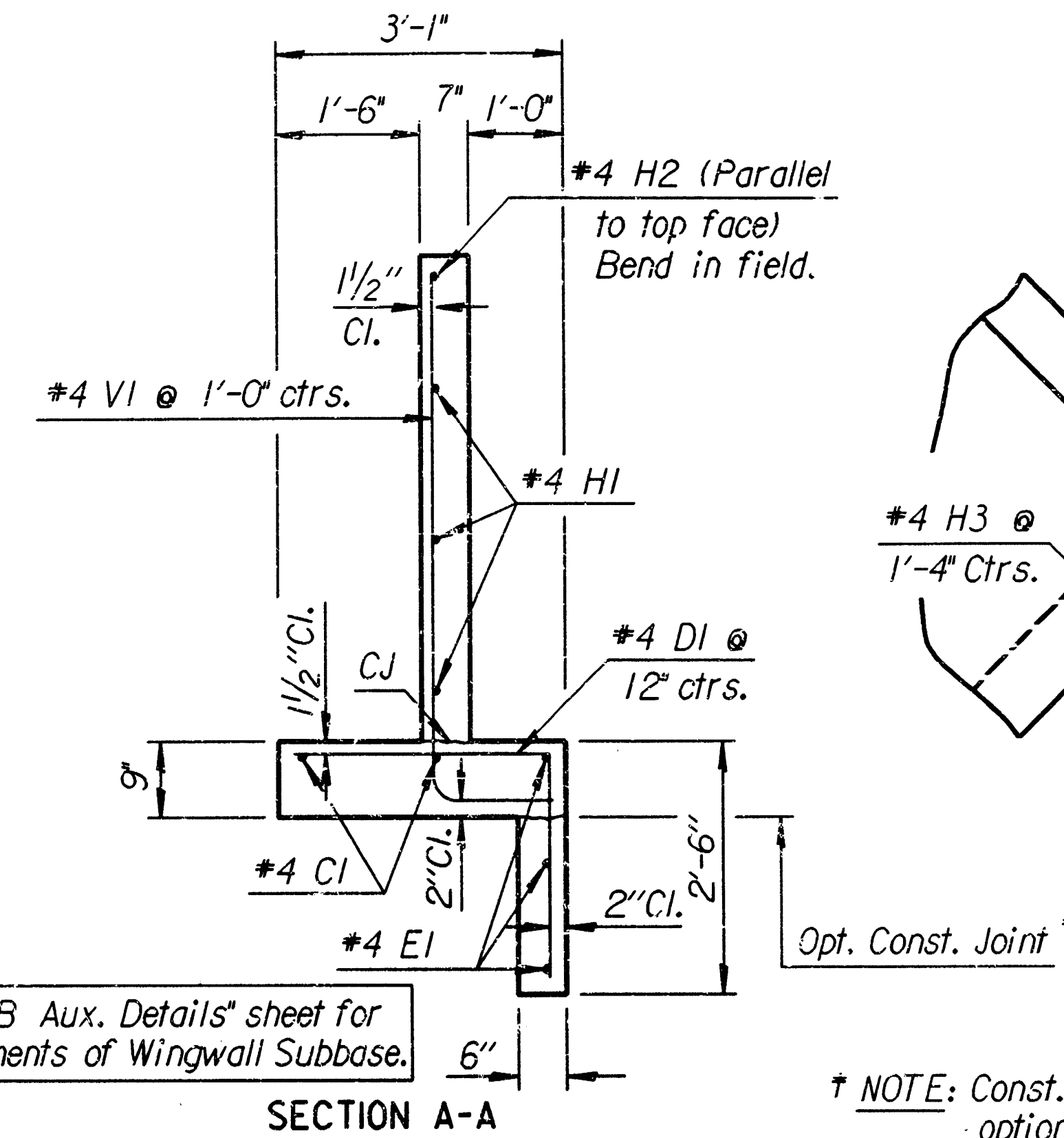
VIEW D-D



SECTION E-E



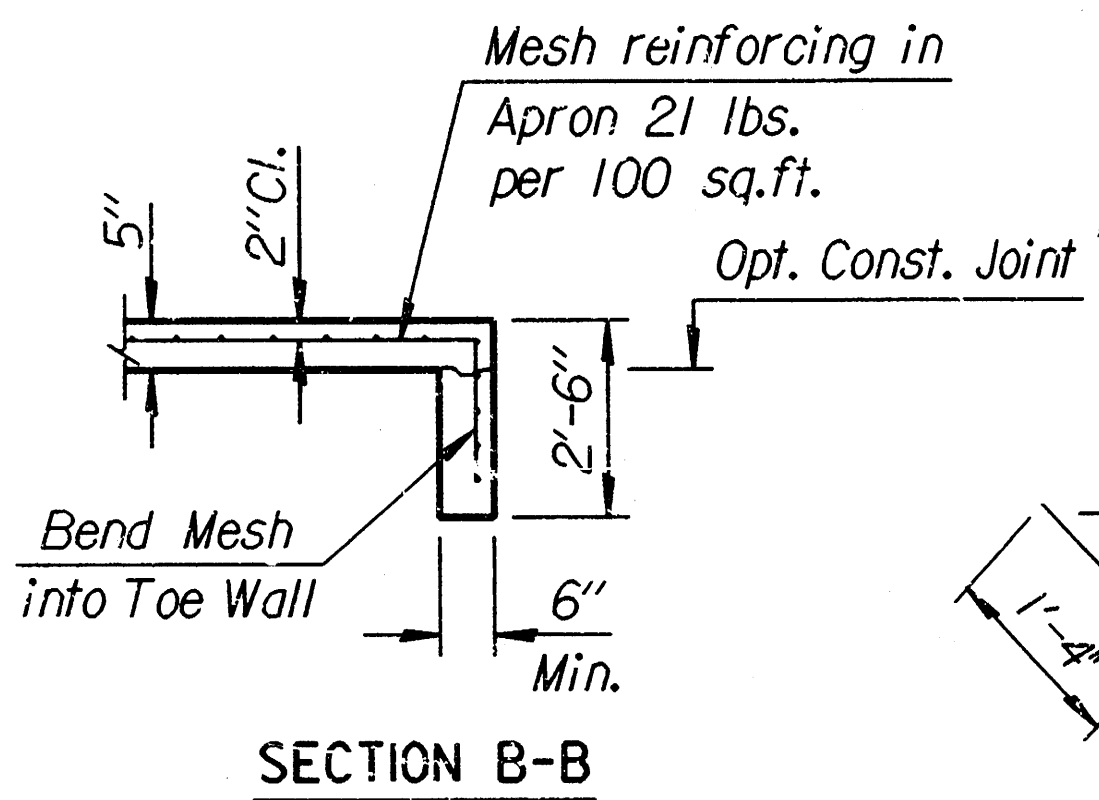
SECTION C-C



SECTION A-A

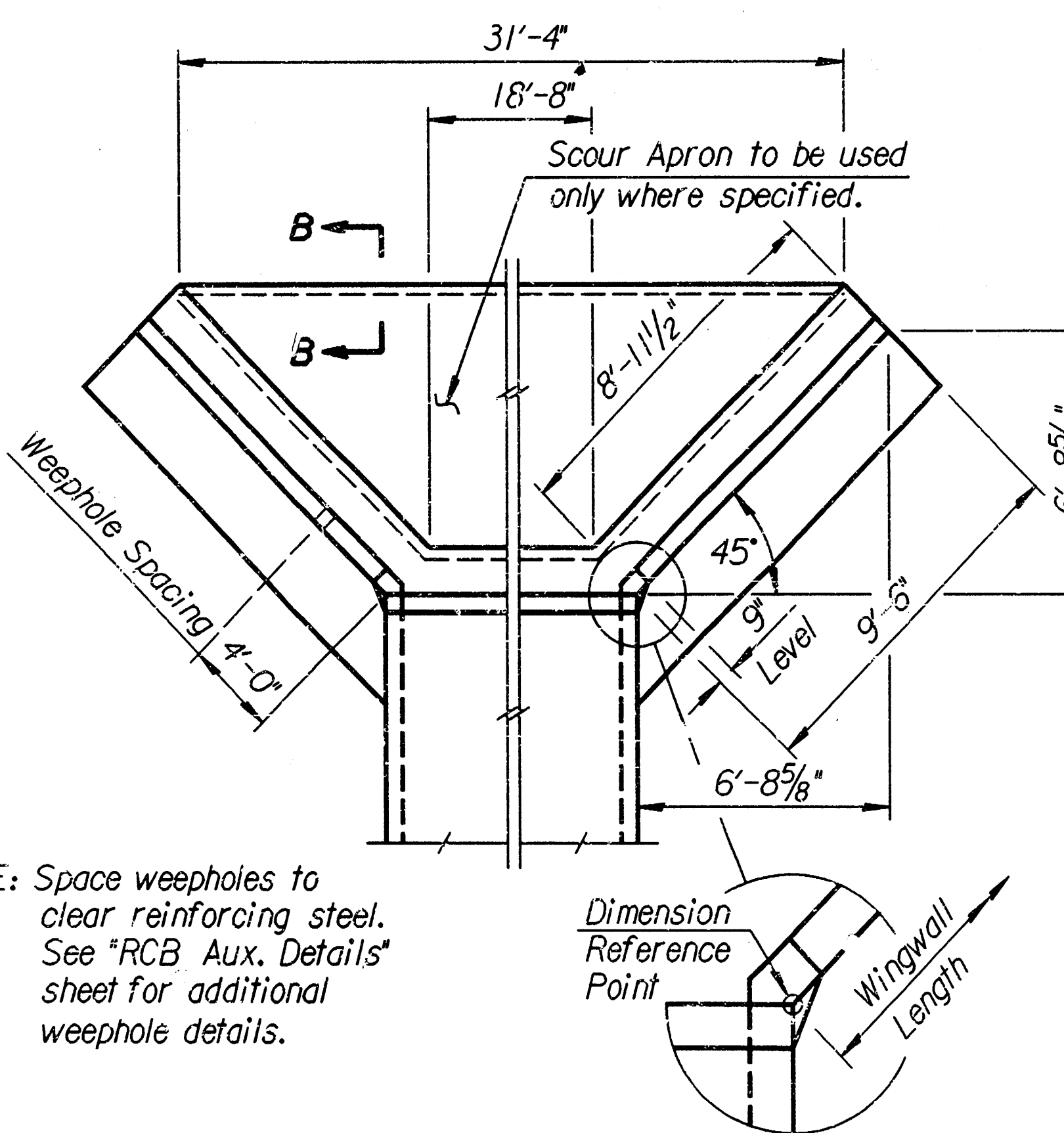
See "RCB Aux. Details" sheet for requirements of Wingwall Subbase.

NOTE: Const. Jt. may be used at Contractor's option when approved by the Engineer. DI bars or mesh may be spliced thus: Minimum overlap shall be 1'-3". No increase in quantities or cost shall be allowed when Contractor elects this option.



SECTION B-B

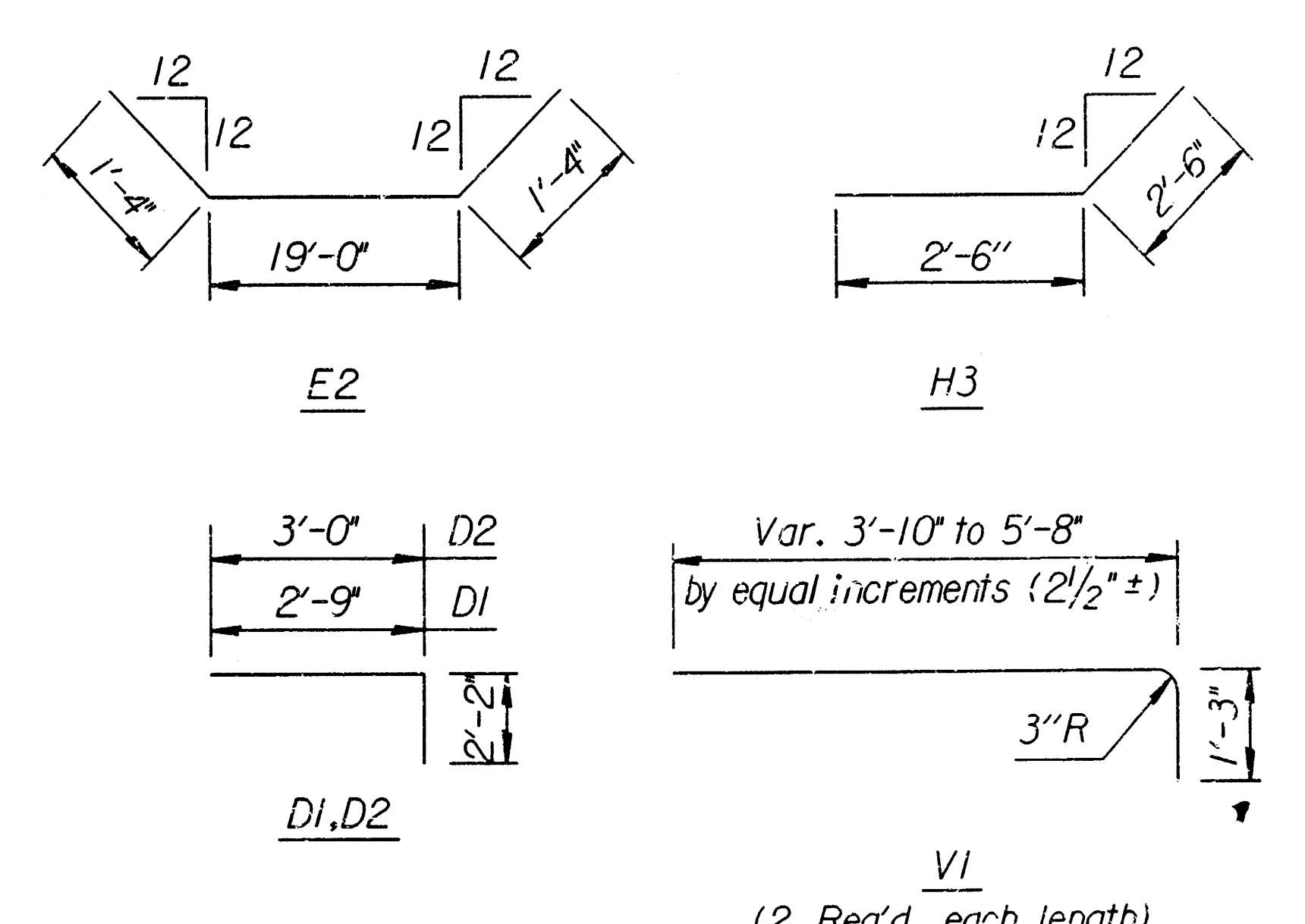
NOTE: Space weepholes to clear reinforcing steel. See "RCB Aux. Details" sheet for additional weephole details.



WING DIMENSIONS FOR NORMAL BOX
(3 1/2:1 Embankment Slope)

Quantities listed below are included in the Summary of Quantities shown on the RCB details.

WINGWALL QUANTITIES (One End Only)	
Class AAA Concrete:	
Wingwalls	5.56 CY.
Apron	0.00 CY.
Soil Saver	0.00 CY.
Reinforcing Steel	432.98 Lbs.
Welded Wire Fabric	0.00 Lbs.

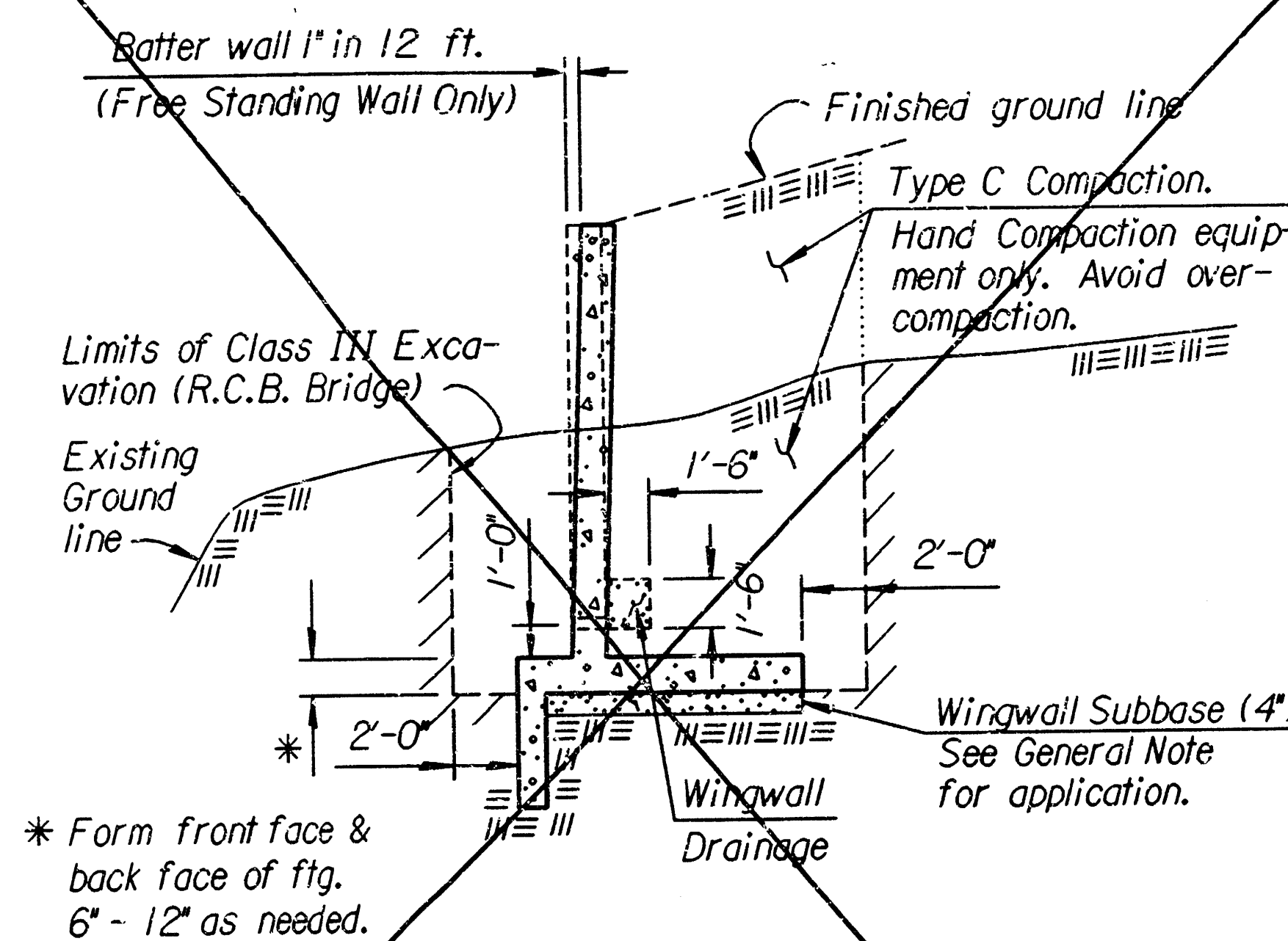


BENDING DIAGRAM

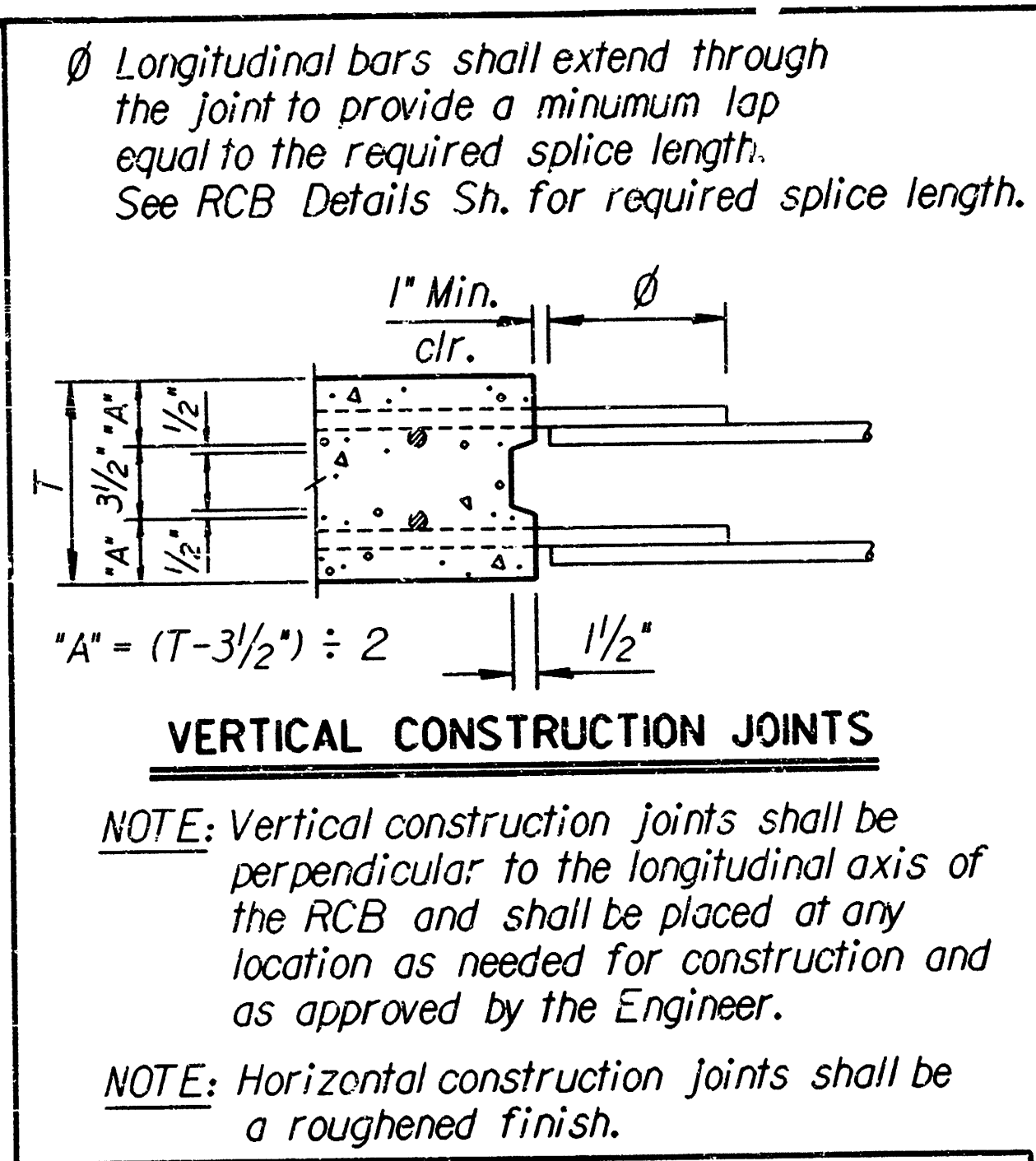
(All dimensions are out to out of bars.)

NO.	DATE	REVISIONS	BY	APP'D
KANSAS DEPARTMENT OF TRANSPORTATION St.G. 8+87 FLARED WINGWALLS 4 FT. RISE (0'SKEW) BR 10-00-01 SEDGWICK CO. DESIGNED BY: KENNETH F. MURST CHECKED BY: TRACY CR.				

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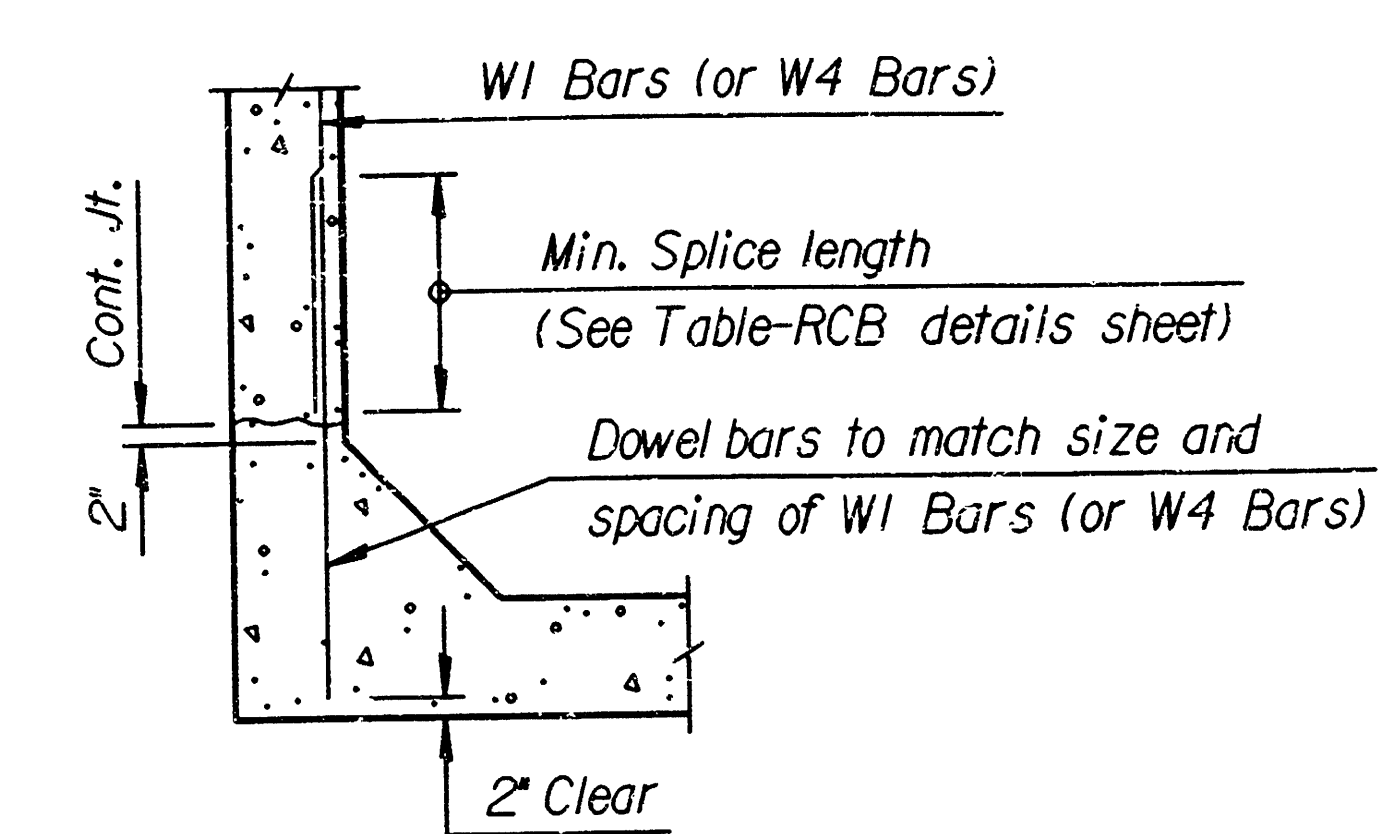
SECTION THRU WINGWALL



VERTICAL CONSTRUCTION JOINTS

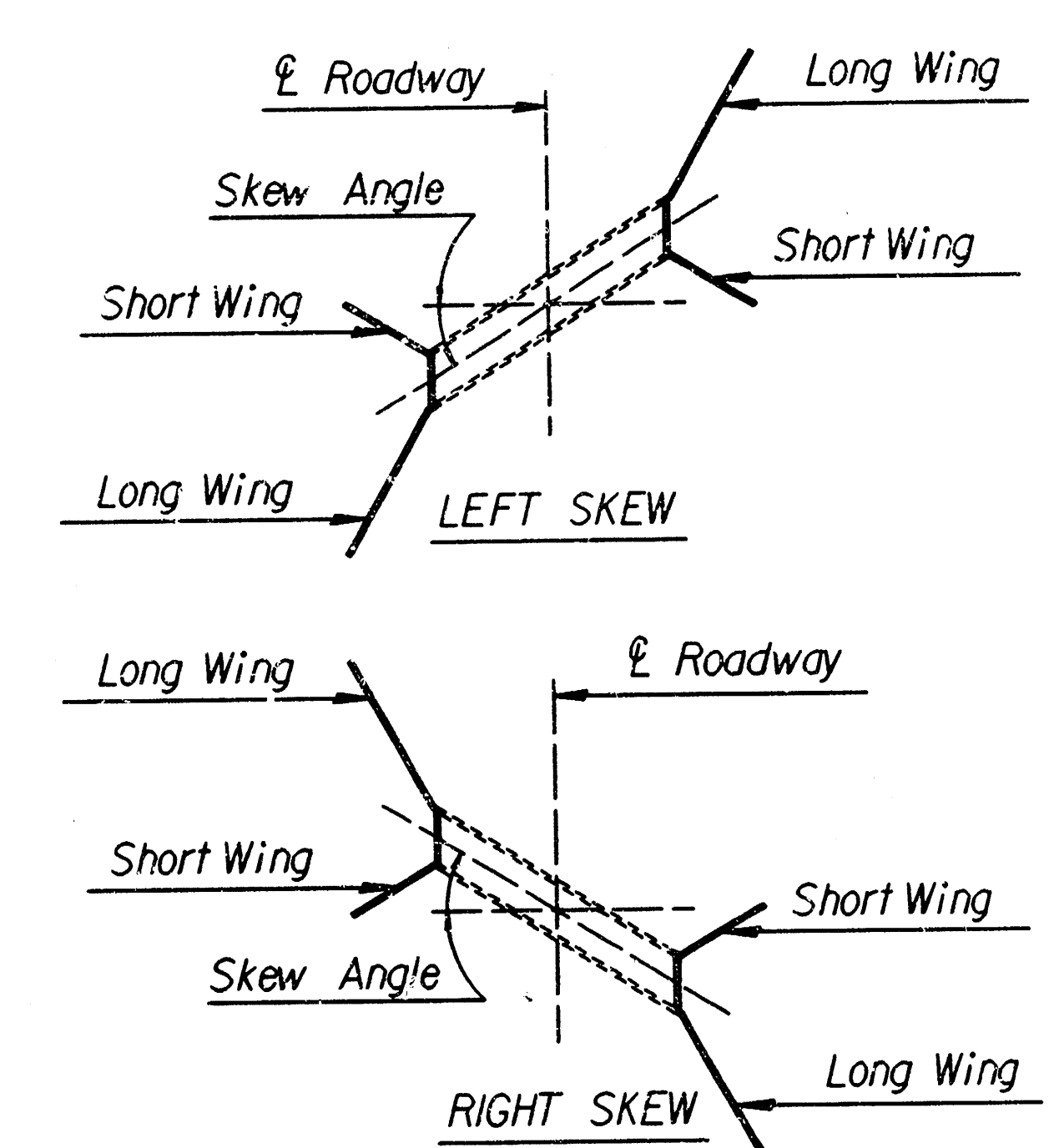
NOTE: Vertical construction joints shall be perpendicular to the longitudinal axis of the RCB and shall be placed at any location as needed for construction and as approved by the Engineer.

NOTE: Horizontal construction joints shall be a roughened finish.

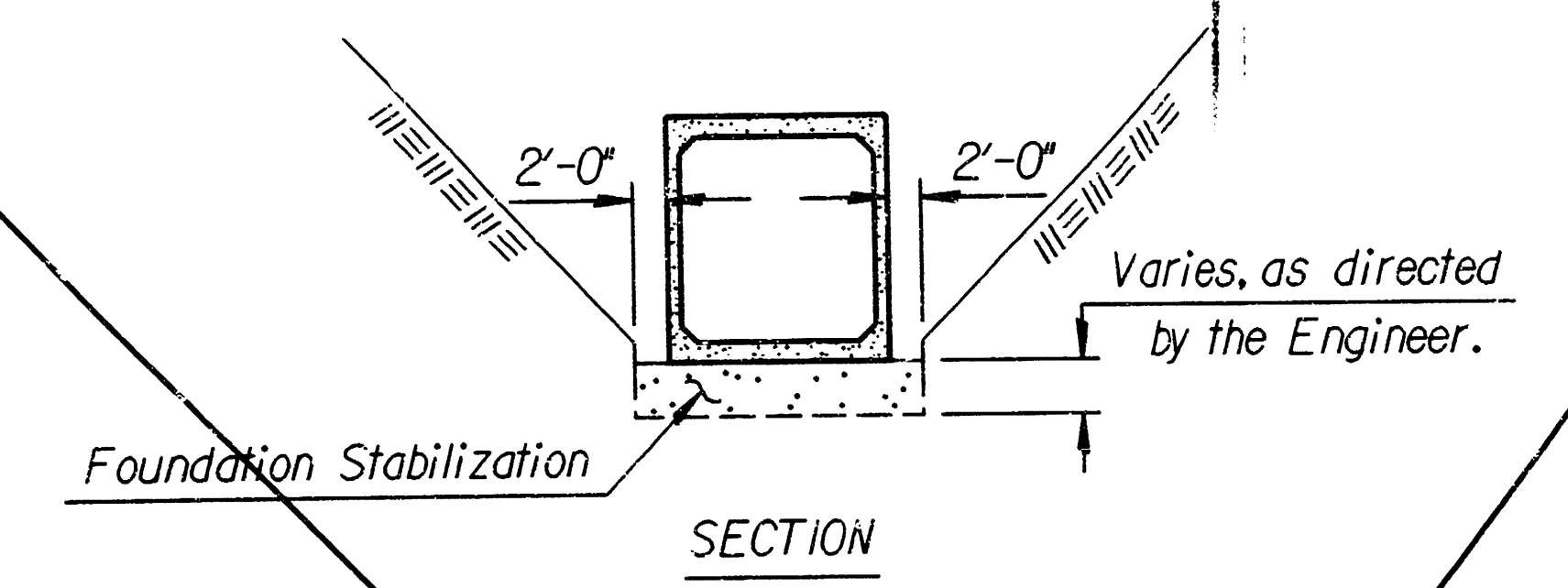


OPTIONAL BAR DETAIL

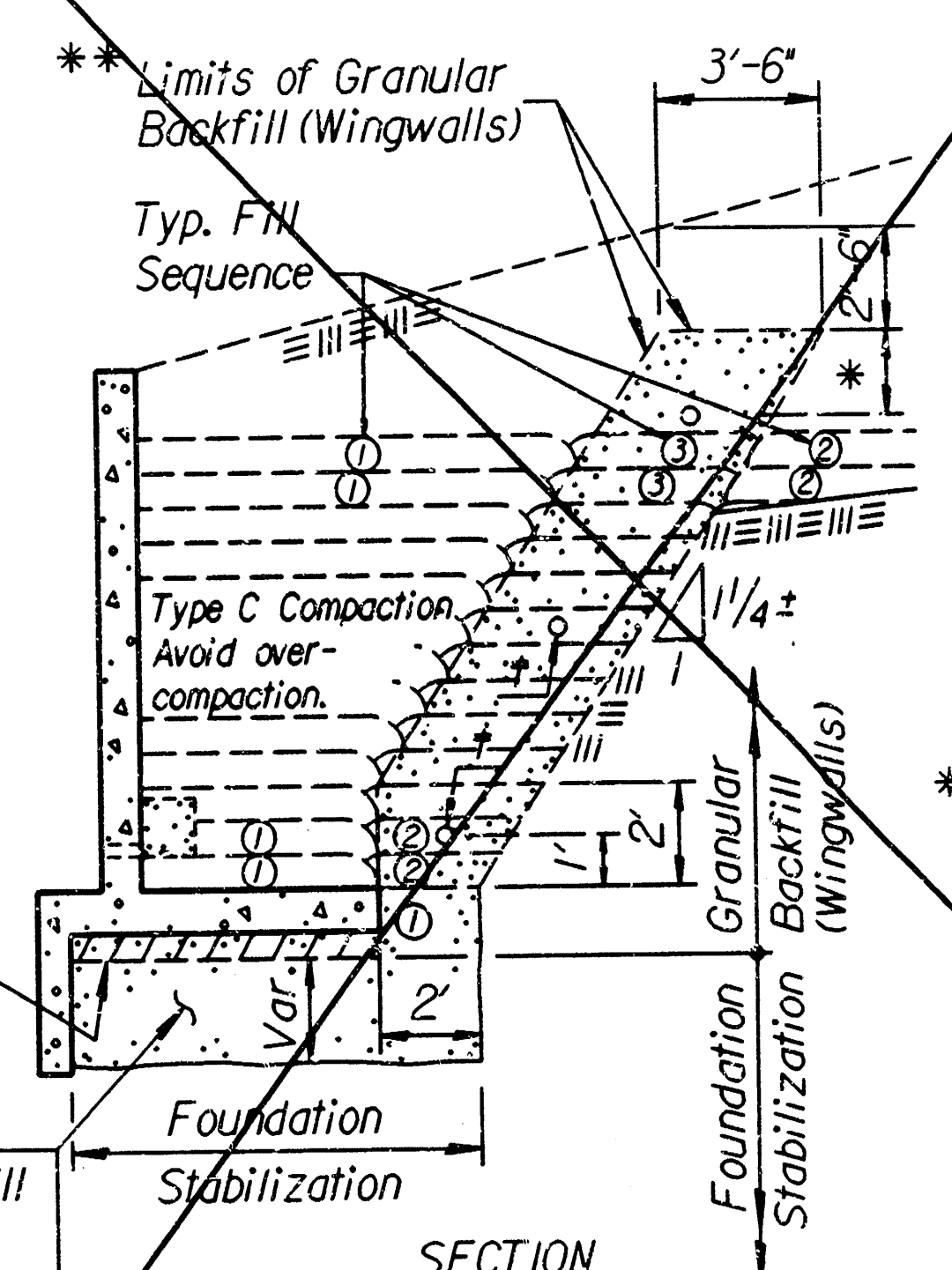
The Contractor shall have the option of using Dowel Bars to match vertical wall bars as shown, however no allowance will be made for additional steel required for bar laps.



PLAN VIEW SKEWED R.C.B.



SECTION



SECTION

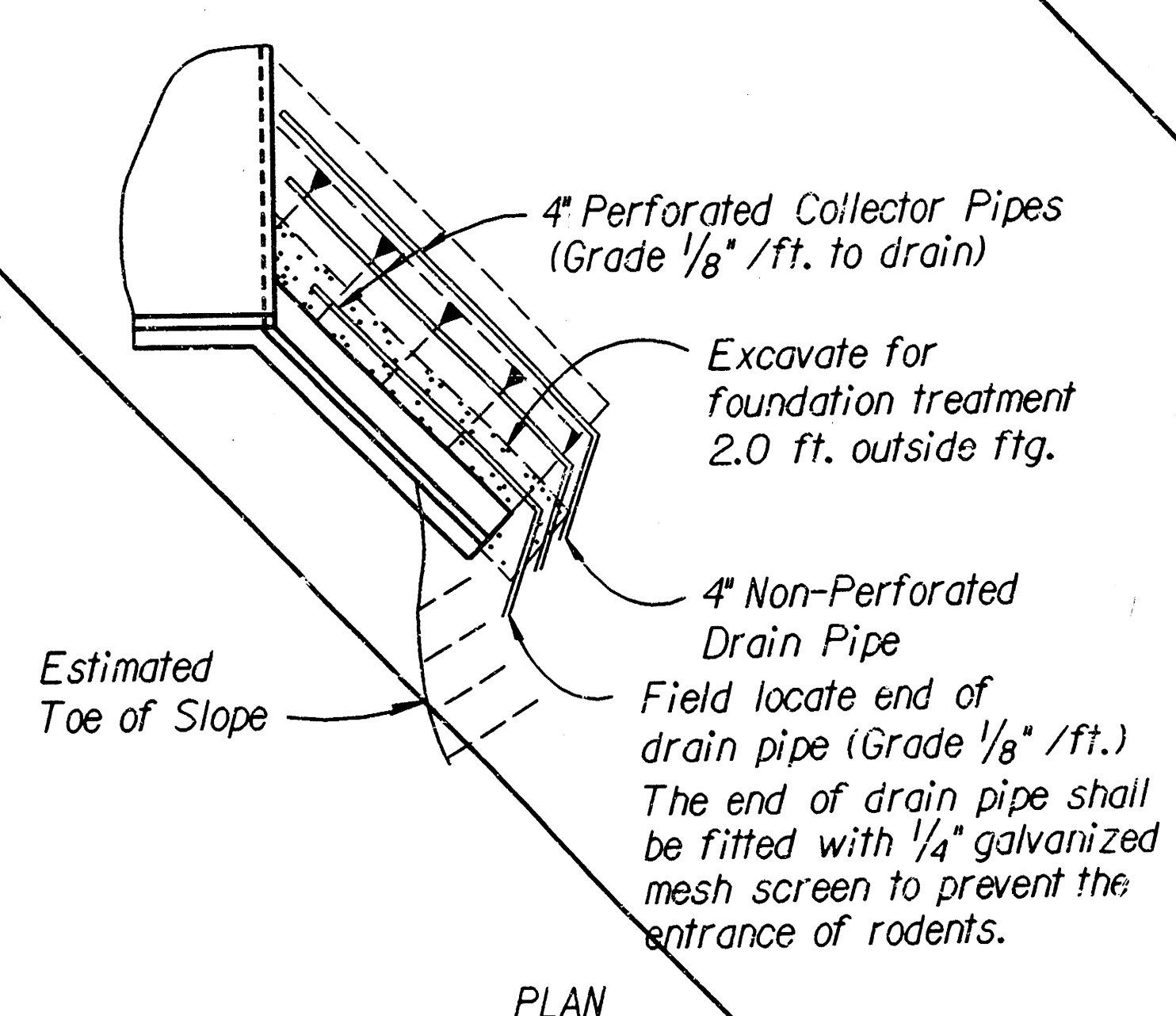
* Omit Drain Pipe when distance is less than 2'-0".

* 4" Perforated Pipe (Install ea. 4' in Elev.)

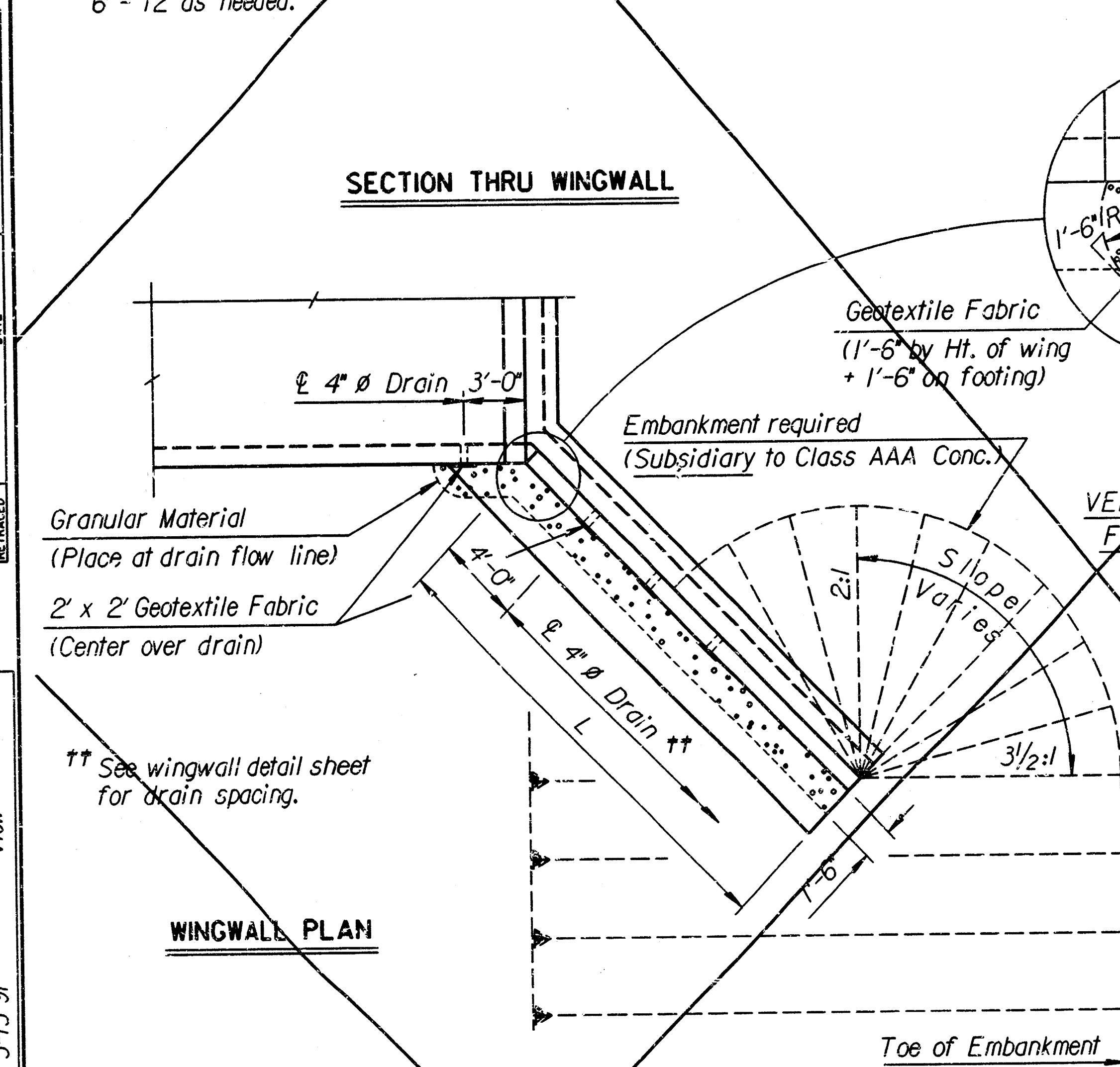
** NOTE: As an alternative, all backfill for the wall (within 2'-6" of finish grade) may be granular backfill material. Measurement for quantity shall be to the same limits as listed in the General Notes.

Footings Subbase (4") See note on "Section Thru Wingwall"

Overexcavate and backfill with granular material. Compact in 8" lifts meeting Type B Compaction requirements.



GRANULAR BACKFILL AND FOUNDATION STABILIZATION



WINGWALL PLAN

GENERAL NOTES

Wingwall Drainage:

- All wingwalls with weepholes shall have horizontal wingwall drainage as shown. Free-standing wingwalls shall also have the vertical wingwall drainage.

- Construction and materials for wingwall drainage, including weepholes, geotextile fabric and granular material shall be subsidiary to the bid item, "Class AAA Concrete". Granular material for wingwall drainage shall conform to the requirements of UD-1. Weepholes may be a formed opening or corrugated polyethylene tubing.

Wingwall Subbase:

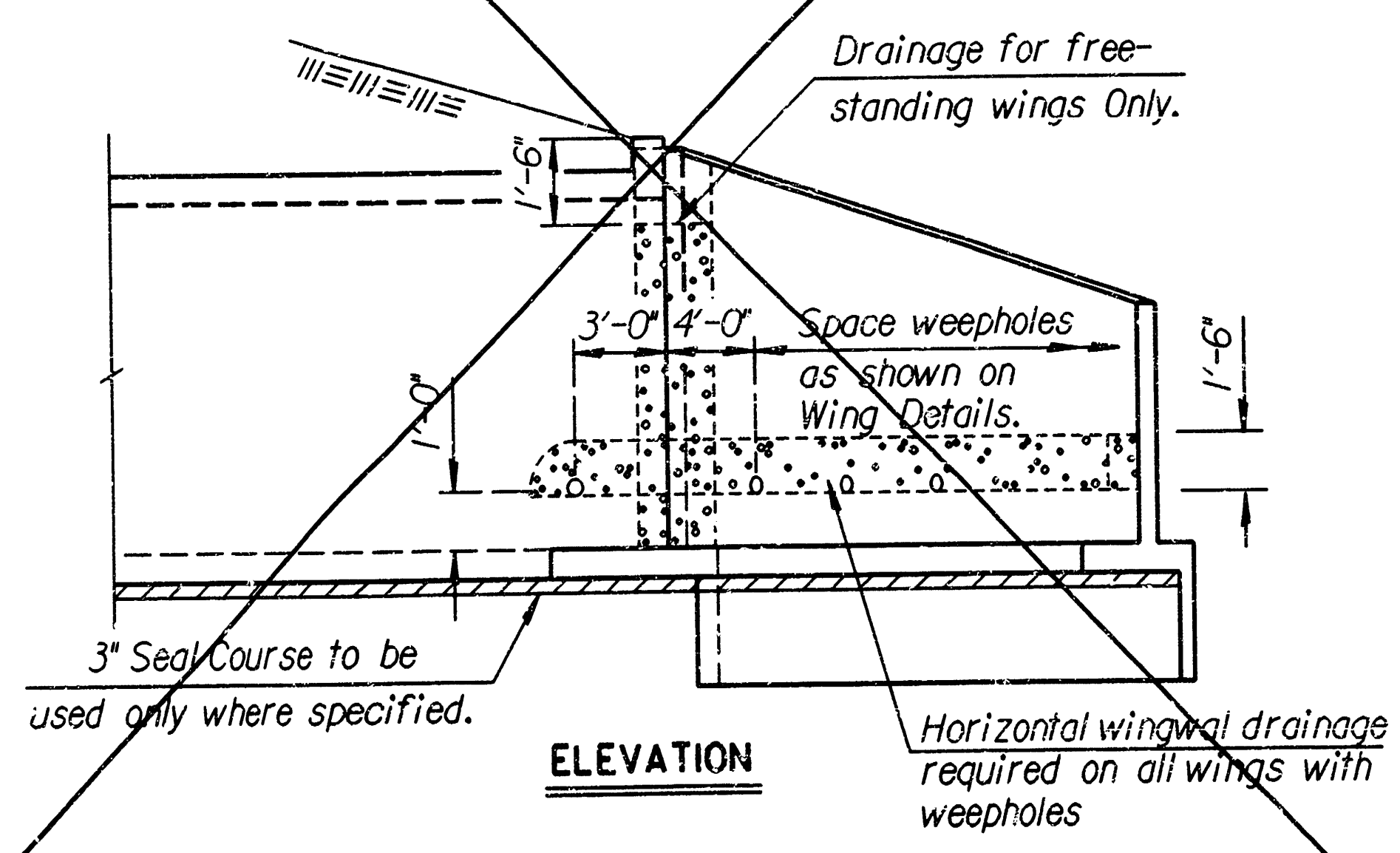
- Wingwall subbase shall be constructed at all wingwall footings to assure the assumed coefficient of friction between the concrete footing and the foundation, with the following exceptions:

- Wingwall subbase will not be required for footings on RCB's 6 feet or less in height unless otherwise determined by the Engineer.
- The subbase will also not be required for footings founded on rock or clean, granular material as determined by the Engineer.

- Subbase shall consist of 4" compacted granular material consisting of commercial grade clean sand or UD-1 material. All excavation, material and labor necessary to construct the wingwall subbase shall be subsidiary to "Class AAA Concrete".

Seal Course:

Seal Course consisting of 3" min. of Commercial Grade Concrete shall be constructed to the limits directed by the Engineer. No reinforcing in the floor of the slab or wall footing shall be placed until the Seal Course has gained sufficient strength to permit working upon it without injury.



ELEVATION

GENERAL NOTES

Foundation Stabilization:

- At sites where the wingwall footing or culvert floor is located within the limits of an existing streambed or is founded on unsuitable material, the Engineer will determine the depth of Foundation Stabilization.
- Foundation Stabilization may be required under the box and/or wingwalls as directed by the Engineer. The granular material placed for foundation stabilization shall be measured and paid for at the contract price per cubic yard for "Foundation Stabilization". Material for Foundation Stabilization shall be suitable backfill material as approved by the Engineer. The excavation for the placement of granular material shall be subsidiary to the bid item, "Foundation Stabilization".

Granular Backfill (Wingwalls):

- In locations where the material behind the wingwall consist of soils judged as high plasticity clays, fat clays, expansive clays or organic clays, Granular Backfill (Wingwalls) shall be used. Granular Backfill construction may be used separately or combined with Foundation Stabilization as directed by the Engineer.
- Measurement for the bid item, "Granular Backfill (Wingwalls)", shall be measured in Cubic Yards to the theoretical limits as shown. Drainage pipe, rodent screens, and excavation shall be subsidiary to the bid item, "Granular Backfill (Wingwalls)".
- Material for Granular Backfill (Wingwalls) shall conform to the requirements of UD-1 or BD-1. Drainage Pipe shall be corrugated polyethylene tubing conforming to KDOT Specifications.

Drawn By: KDOT/PEC
 Design: 10-2-91
 Date: 10-2-91
 Plotted by: ras 3-15-97
 View=

KANSAS DEPARTMENT OF TRANSPORTATION			
RCB AUXILIARY DETAILS			
SHEET NO. 23			
DESIGNED	RAM	DESIGNED	KENNETH F. HURST
DESIGN CK.	RAM	DESIGNED	TRACED
DESIGN CK.	RRR	DESIGNED	TRACED CK.

Std. Base File : /usr2/stand/us/bro31.dgn
 Server File : /usr
 Server : wch
 View: PLOT1
 Plotted By : MAF
 Plot File : i:/1995/96266/001/bro31.dgn
 Plot Date : 3-15-97

PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
468-82636	1997	8	9

GENERAL NOTES

PRECAST BOX CULVERTS: If precast boxes are specified, construct them at the locations shown in the plans and according to the requirement shown on this sheet. When approved by the Engineer, precast box culverts may be used in lieu of cast-in-place box culverts. If the Contractor chooses the precast option, use the cast-in-place quantities as the cost basis. This cost includes all labor, equipment, material and incidentals necessary to complete the installation.

Unless otherwise approved by the Engineer, use cast-in-place collars at horizontal and vertical changes in RCB alignment. Use cast-in-place end sections and wingwalls except as noted on this sheet. The Engineer may require cast-in-place sections at junctions of drainage structures.

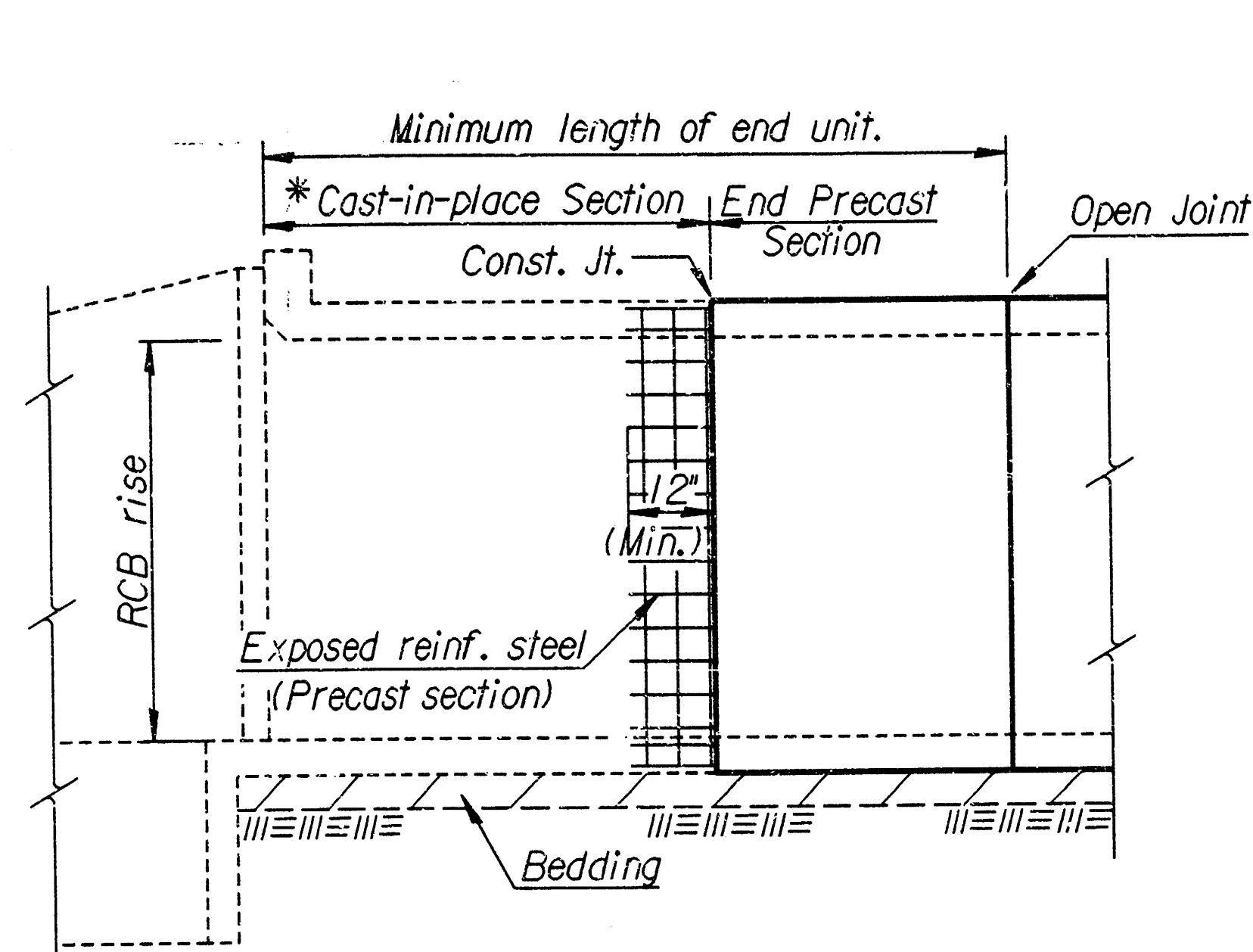
Cast-in-place concrete work shall conform to the requirements of the KDOT Specifications and KDOT's "Guidelines for Structural Design and Detail of Reinforced Concrete Box Culverts". Use Class AAA concrete and Grade 60 reinforcing steel conforming to ASTM A615M for cast-in-place construction.

SPECIFICATIONS: Single-cell Precast Concrete Box Culverts shall conform to the requirements of the following specifications except as noted in the KDOT Specifications. Design multiple-cell precast boxes in accordance with the criteria used to develop the single-cell precast boxes. (See Appendices of ASTM Specification C789M and C850M and the latest AASHTO Specifications.)

Condition	Min. Fill	AASHTO	Equiv. ASTM
> 2'-0" fill	2'-0"	M259, Table 2	C789, Table 2
< 2'-0" fill	0	M273, Table 2	C850, Table 2

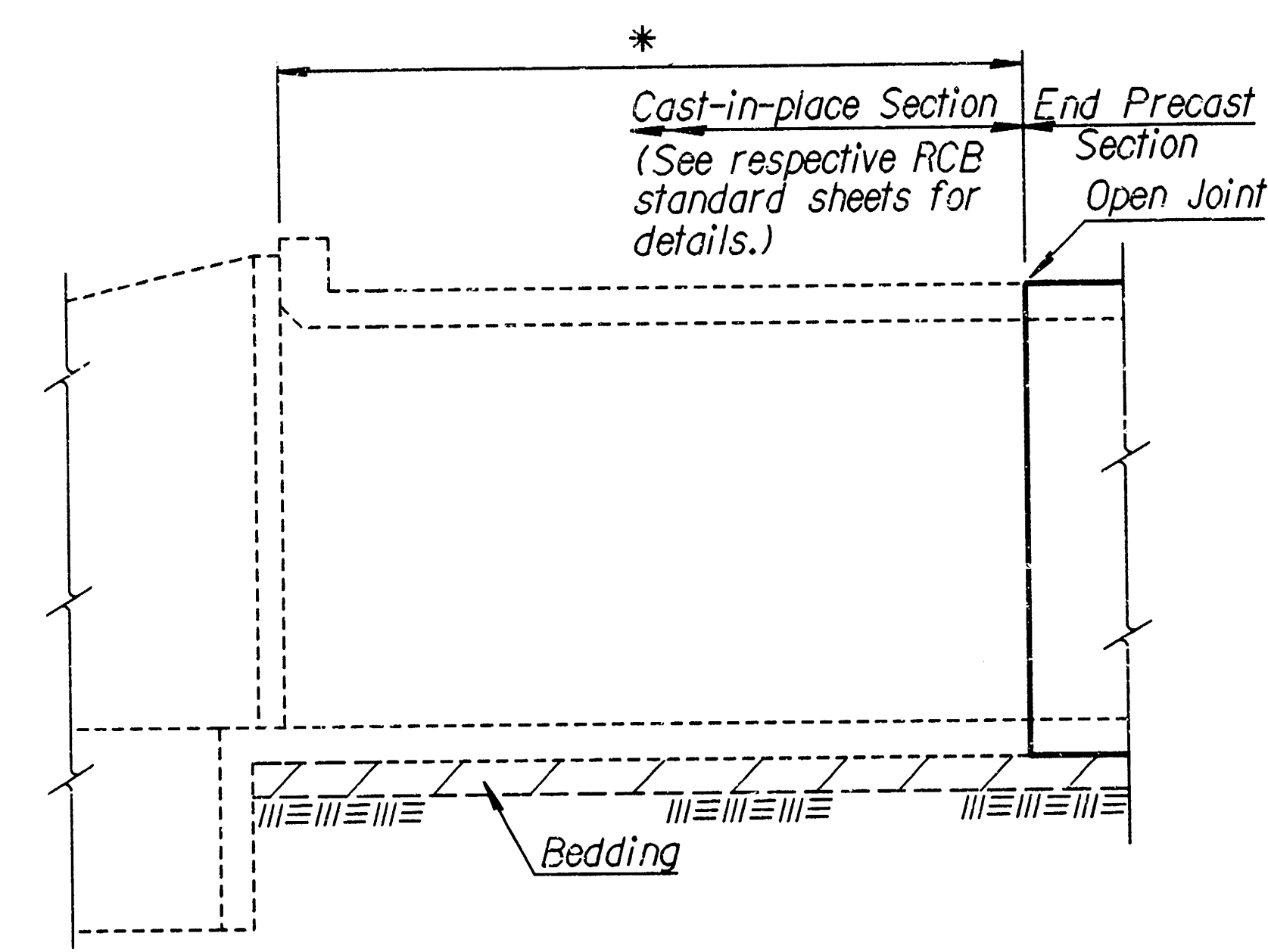
NOTE: See "Bridge Excavation" sheet, (Std. No. 100), for excavation details and basis of payment.

NOTE: Minimum length of precast section shall be 4'-0".



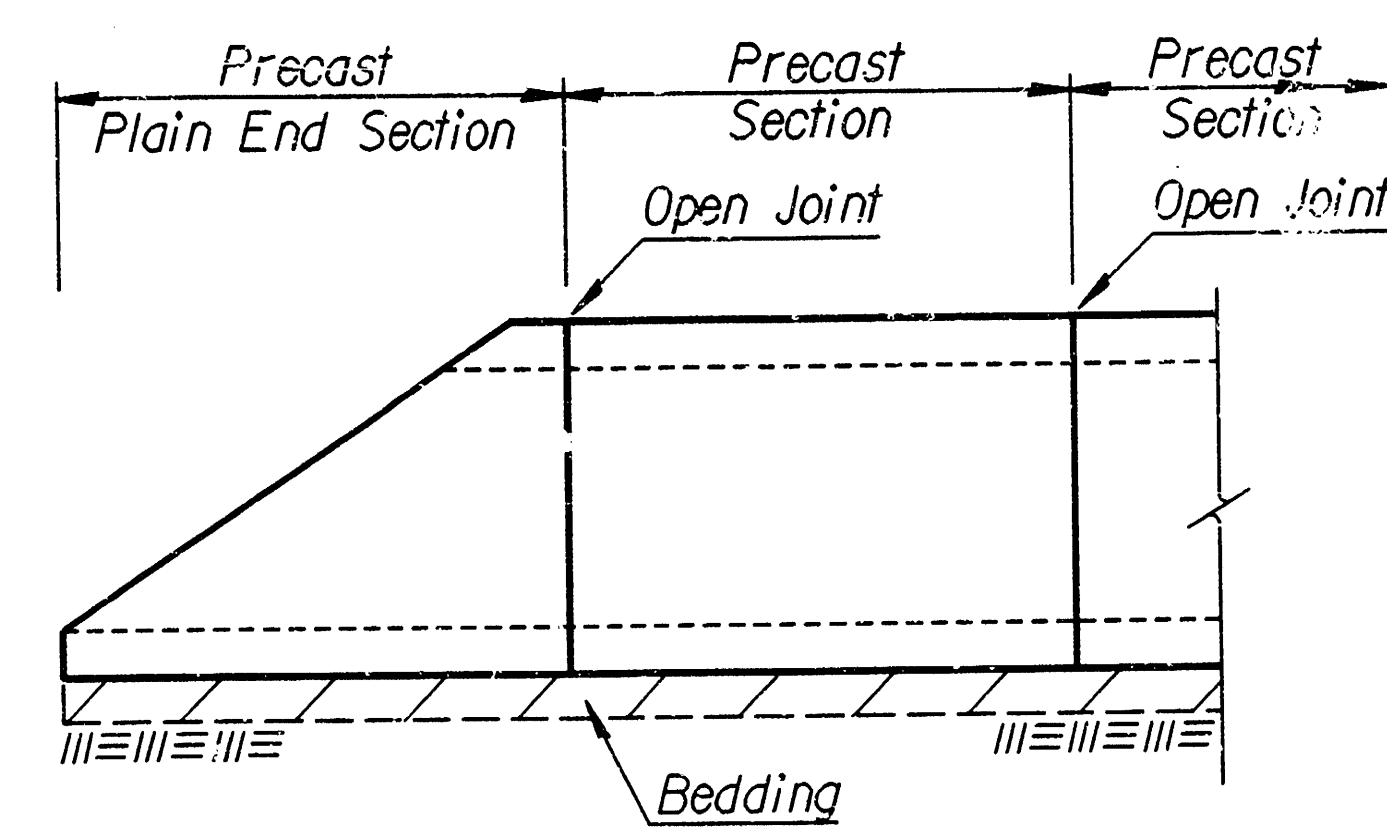
ELEVATION AT HEADWALL

(End unit using combination of cast-in-place and precast sections.)



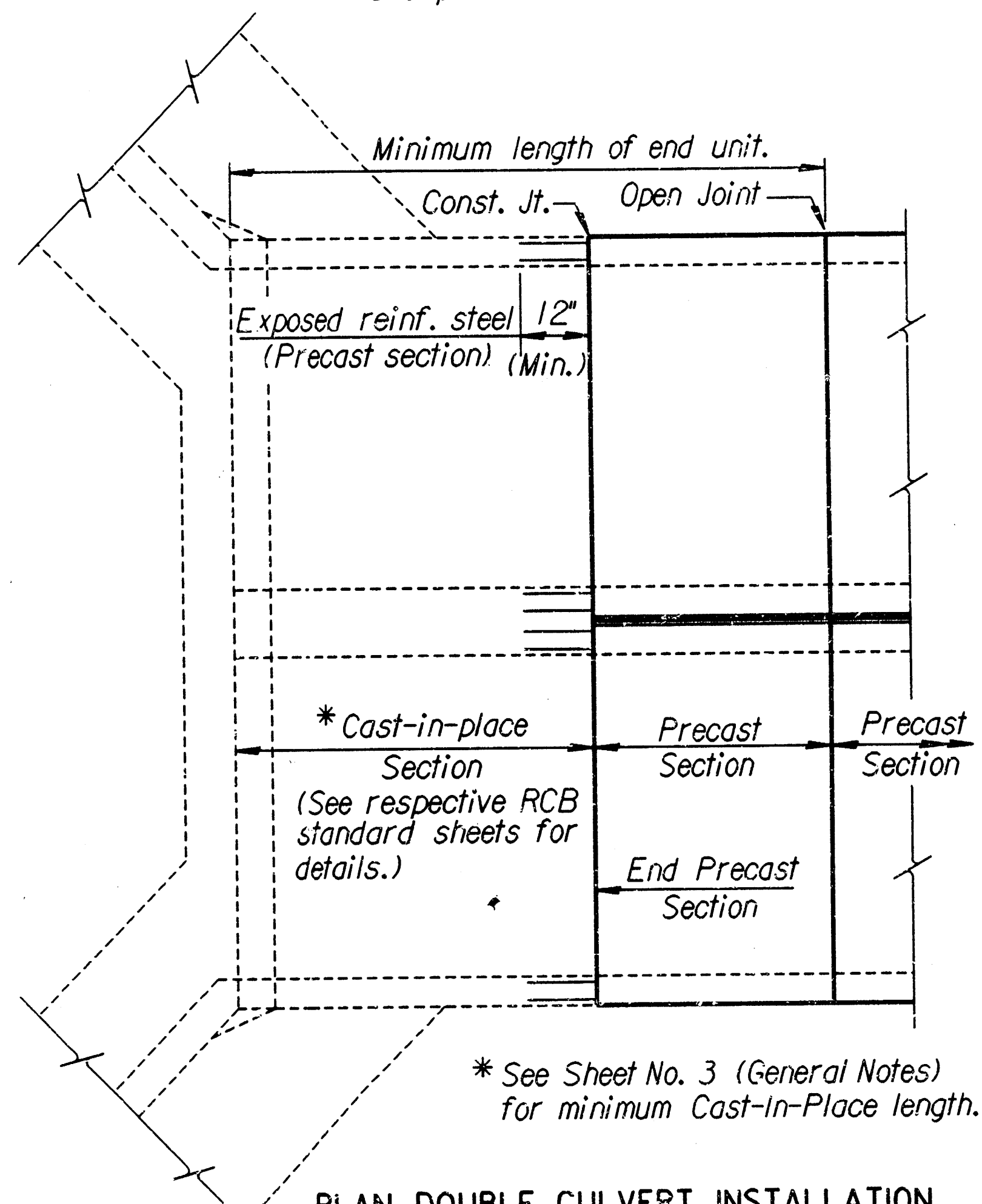
ELEVATION AT HEADWALL

(End unit using cast-in-place construction.)



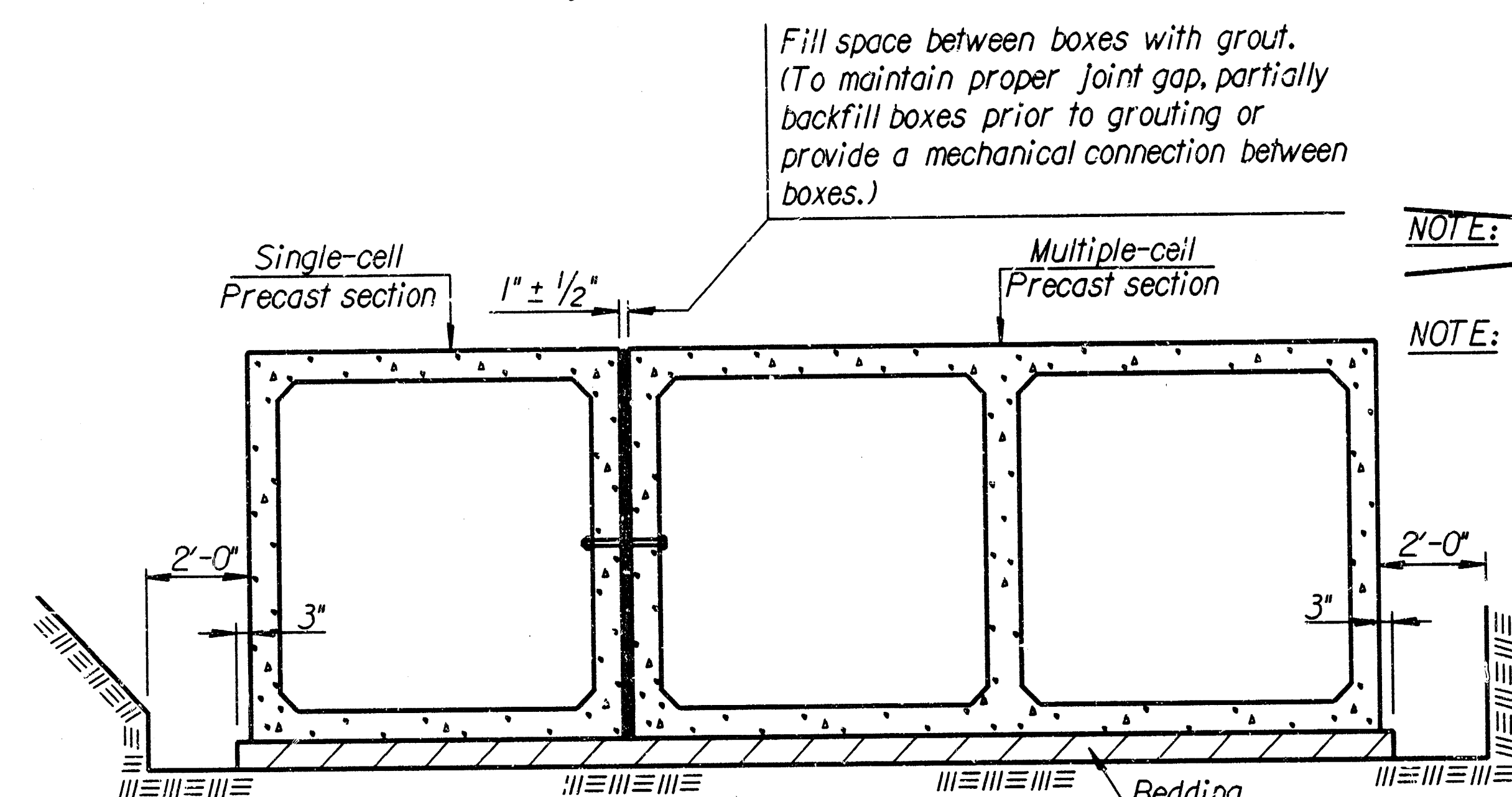
ELEVATION AT PRECAST END SECTION

(Precast End Sections are permitted where straight wings are shown in the plans or at the downstream end for single cell RCB with a rise of six feet or less.)

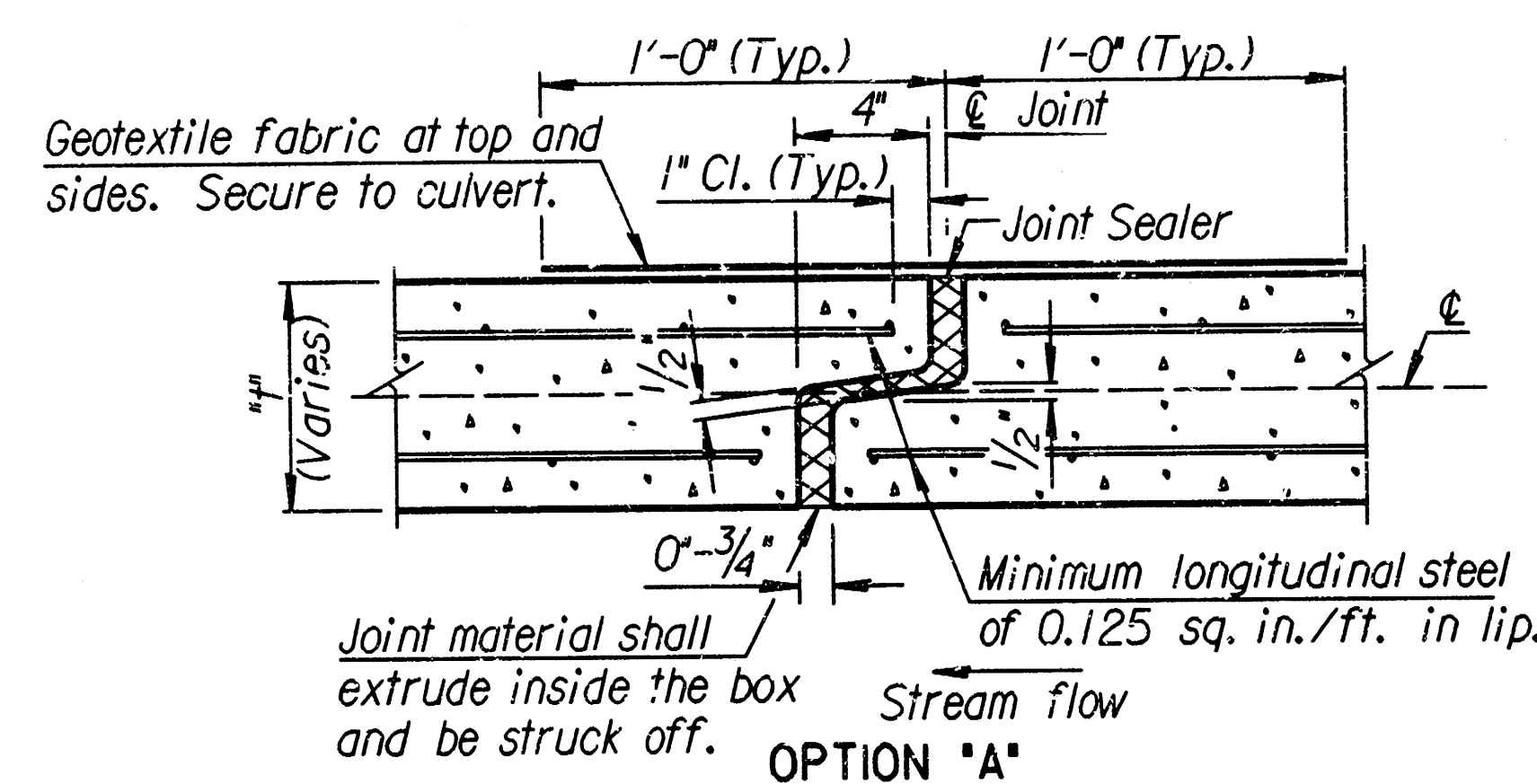


PLAN DOUBLE CULVERT INSTALLATION

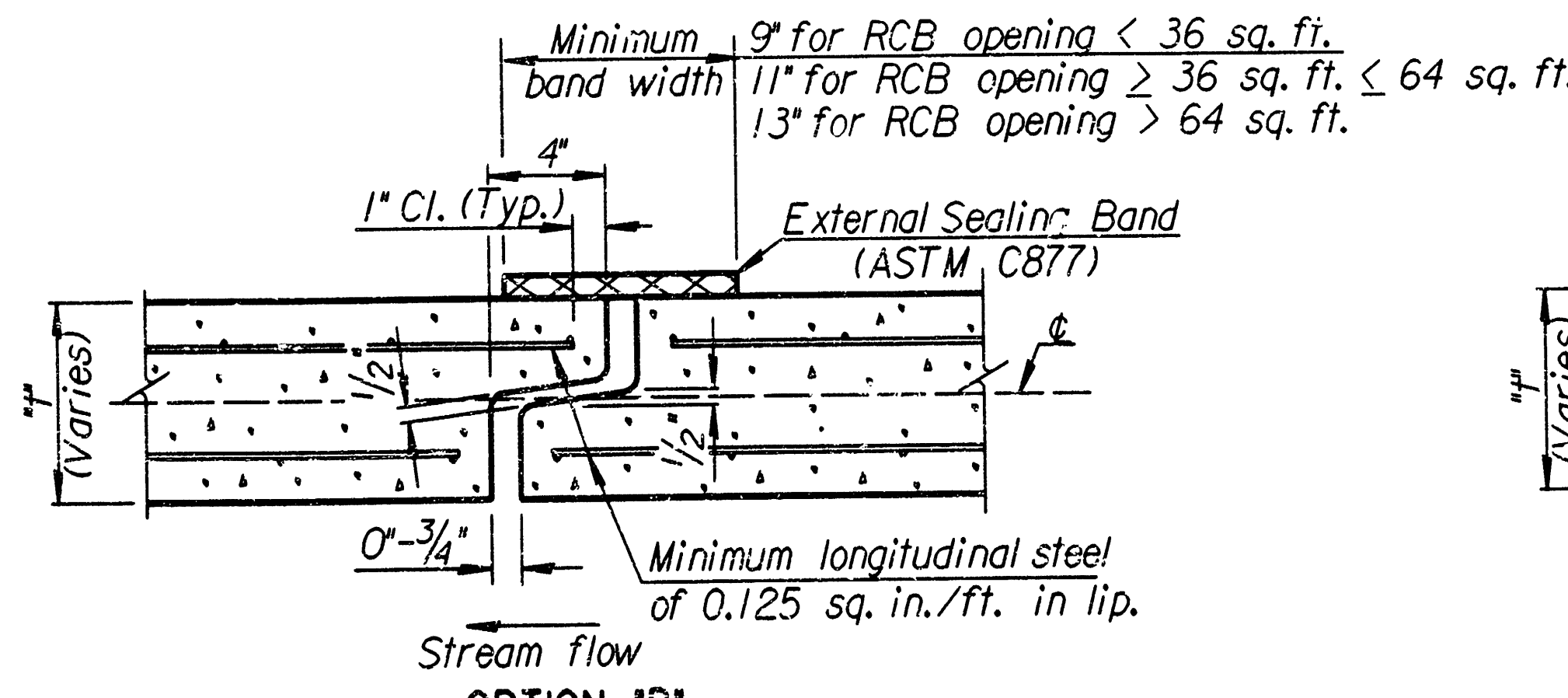
(End unit using combination of cast-in-place and precast sections.)



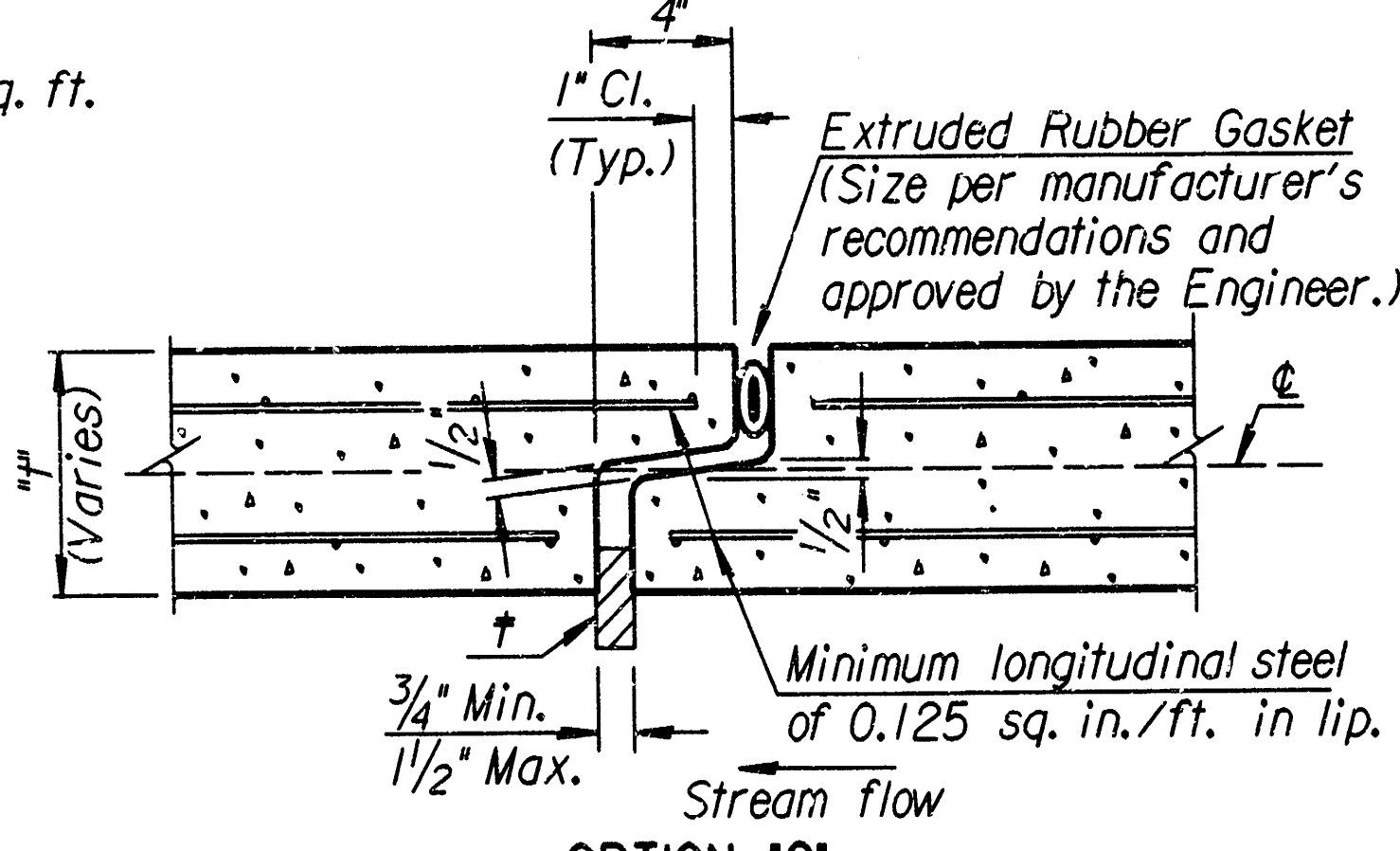
TYPICAL INSTALLATION DETAILS



OPTION "A"



OPTION "B"



OPTION "C"

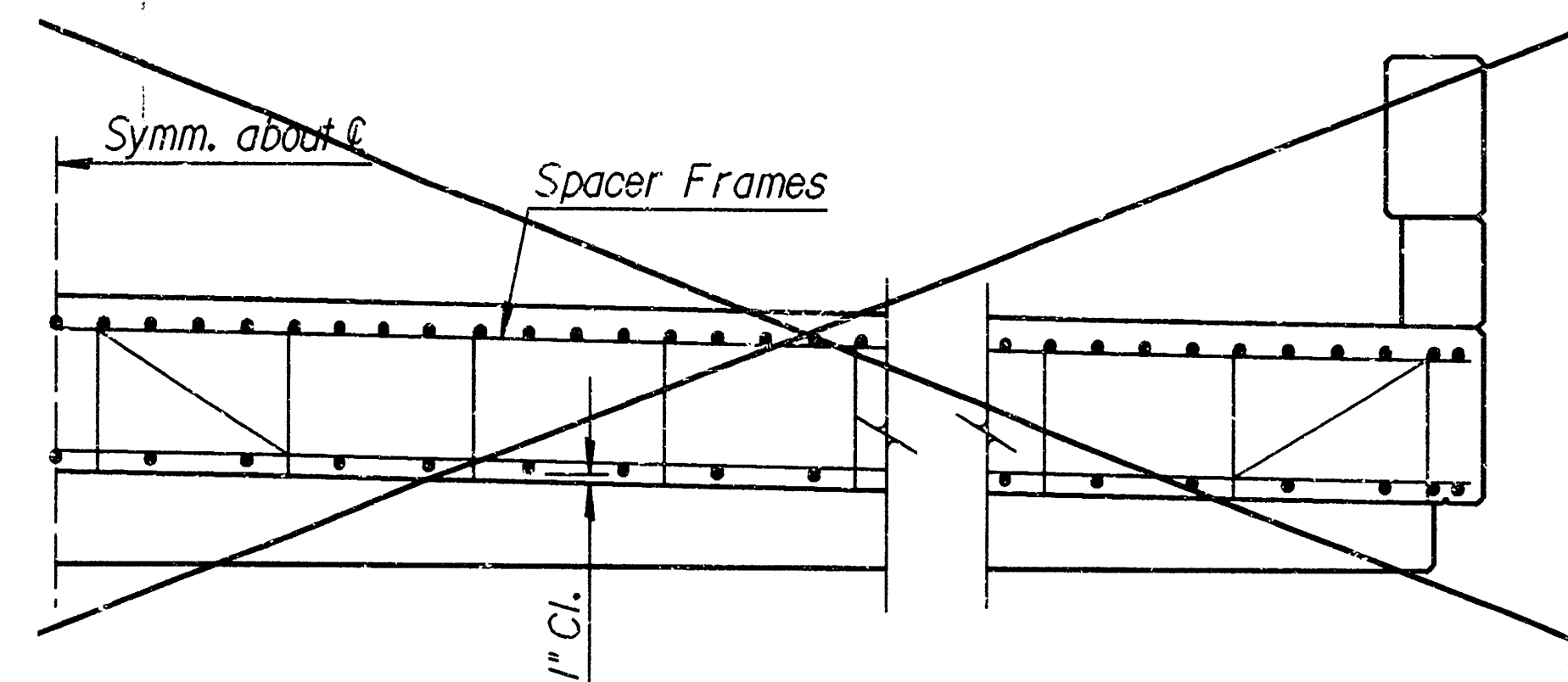
OPEN JOINT DETAIL

* Insert temporary, 3/4"-1" wide, hardwood wedges to prevent over-compressing gasket.

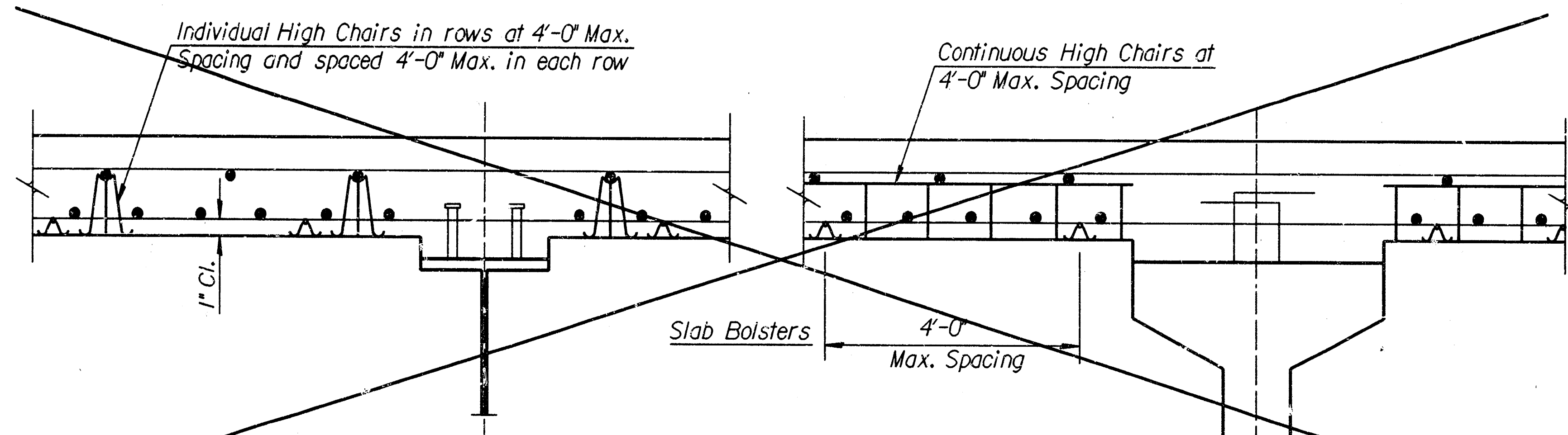
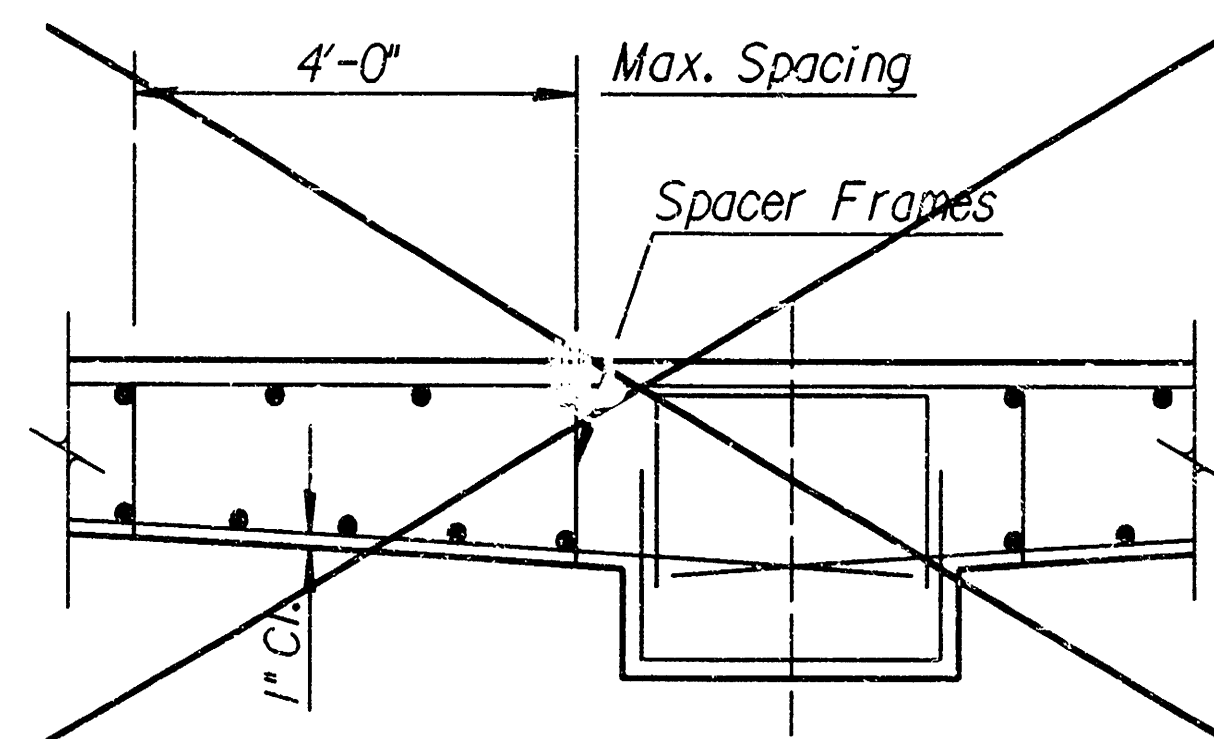
NO.	DATE	REVISIONS	BY	APP'D
4	1-17-95	Revised general notes	LRR	KFH
3	6-22-94	Added option 'C' & revised notes	RAM	KFH
2	3-1-93	Revised general notes	RAM	KFH
1	9-1-92	Revised general notes & detail notes	RAM	KFH

KANSAS DEPARTMENT OF TRANSPORTATION			
PRECAST CONCRETE BOX CULVERT DETAILS			
BRO31			
FWHA APPROVAL	1-26-95	APP'D	KENNETH F. HURST
DESIGNED	DETAILED	PP QUANTITIES	CADD
DESIGN CK.	DETAIL CK.	RAM QUANT. CK.	CADD CK.

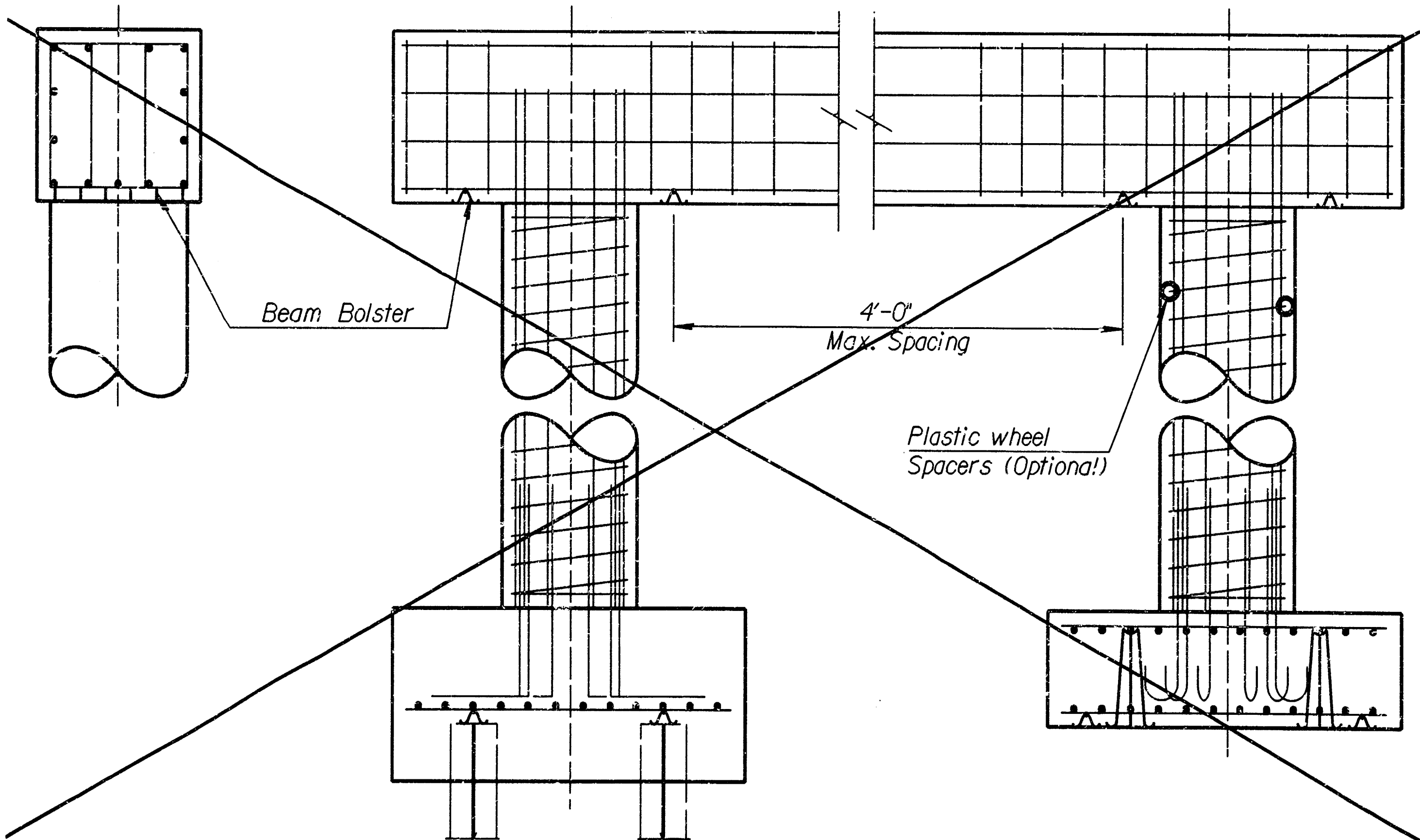
Plotted By : maf
 Plot File : i:/1996/96266/001/br120.dgn
 Plot Date : 3-15-97
 Std. Base File : i:/usr2/stand/us/br120.dgn
 Working File : i:/usr2/
 Back Up File : wibh
 View : PLOT



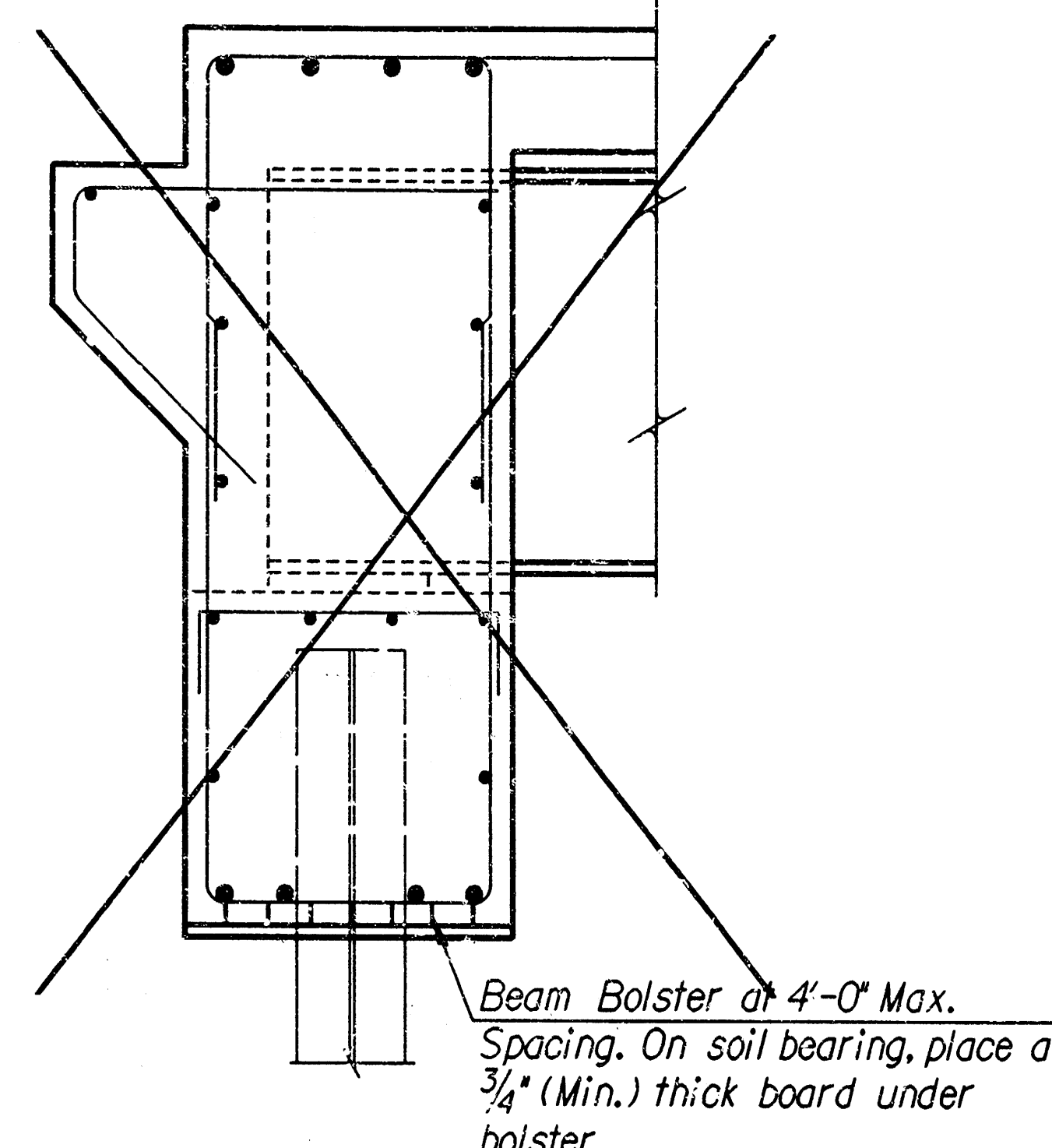
CONTINUOUS HAUNCHED SLAB



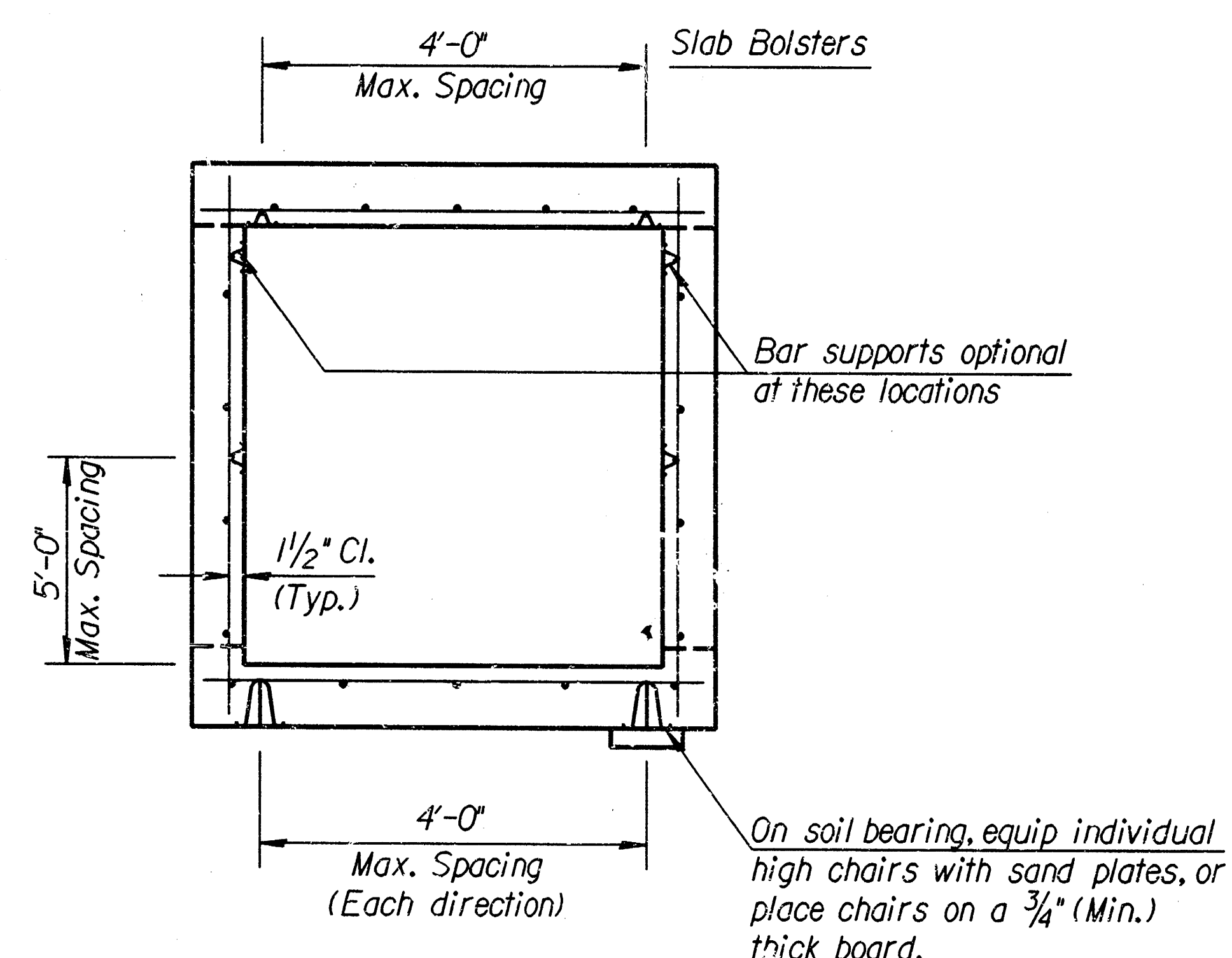
DECK GIRDERS



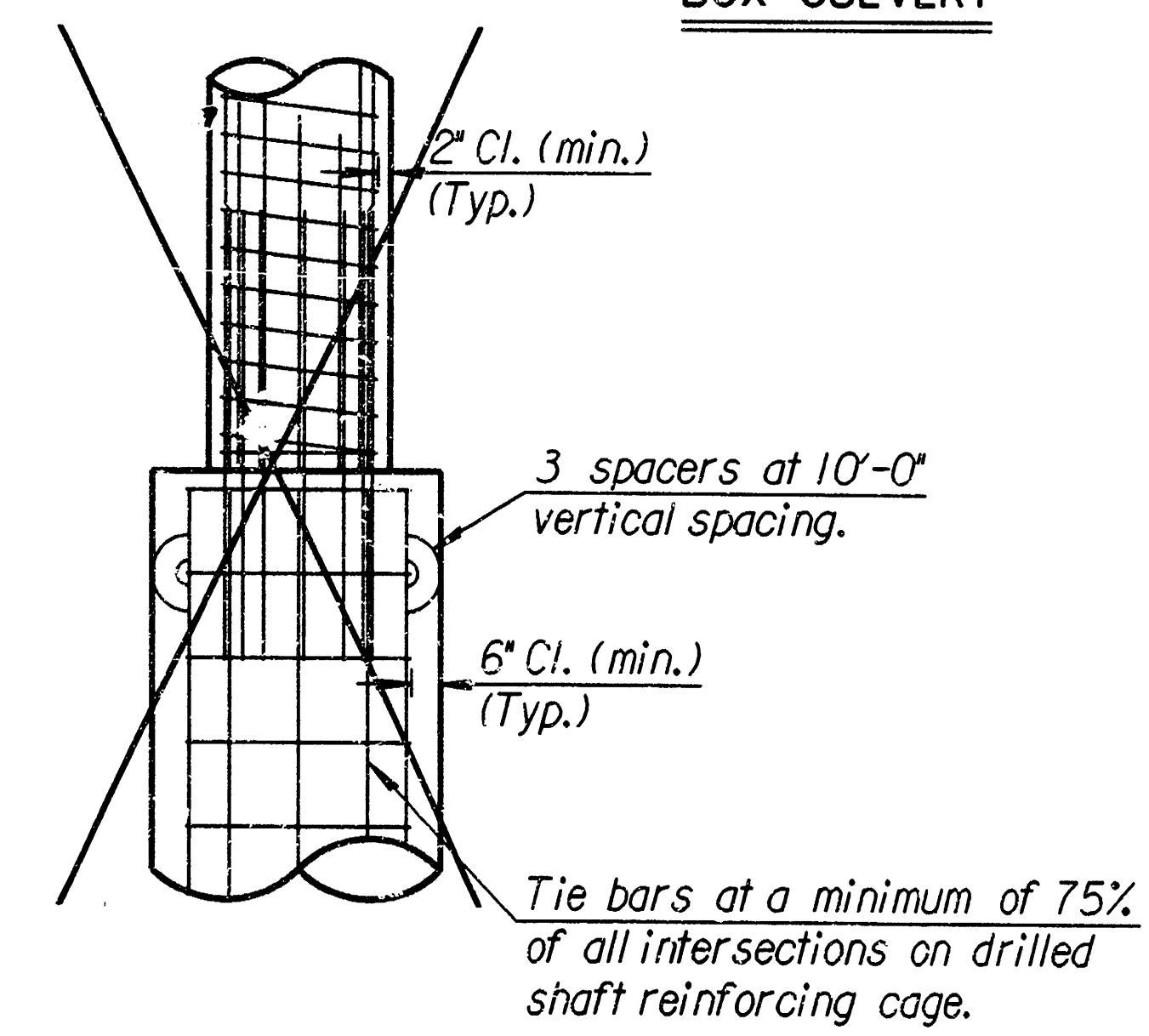
PIER



ABUTMENT



BOX CULVERT



DRILLED SHAFT

PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
468-82636	1997	9	9

TYPICAL SECTION

Reference is made to the latest edition of the CRSI "Manual of Standard Practice" for recommended industry practices concerning reinforcing steel.

Use only the following types of bar supports:

- 1) Wire Bar Supports:
 - a) Non-epoxy coated reinforcing: Class 1, 2, or 3 Protection
- 2) Plastic Bar Supports
- 3) Supplementary bars

Do not weld reinforcing steel to bar supports or to other reinforcing steel.

Tie bars at all intersections around the perimeter of each mat and at not less than 2'-0" centers or at every intersection, whichever is greater.

Where more than one length of bar support is required, lap the end legs so they are locked or tied together.

Use proper height supports to maintain the distance between the reinforcing and the formed surface or the top surface of deck slabs within 1/4" of that indicated on the plans.

Spacings shown are maximums. Use sufficient supports, as determined by the Engineer, to retain the reinforcing steel in position.

Construct any platforms, required for the support of workers and/or equipment during concrete placement, directly on the forms and not on the reinforcing steel.

Designs and arrangements of Supports or Spacers other than as shown on this sheet, may be used with the permission of the Engineer.

3					
2					
1					
NO.	DATE	REVISIONS	BY	APP'D	
KANSAS DEPARTMENT OF TRANSPORTATION					
SUPPORTS AND SPACERS FOR REINFORCING STEEL					
DESIGNED	RAM	DETAILED	CFK	QUANTITIES	CAED
DESIGN CK.	LRR	DETAIL CK.	RAM	QUANT. CK.	RAM