

**CONSTRUCTION PLANS FOR STREET AND DRAINAGE IMPROVEMENTS  
TO  
WEST LEARJET WAY  
AND  
PARALLEL SERVICE ROAD  
FOR**

***BOMBARDIER LEARJET***

**WICHITA, KANSAS  
PROJECT NO. 472 83845  
OCA 706873**

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- GENERAL NOTES:**
- Utility service lines, poles, valve boxes, meters and etc. are to be adjusted as necessary by others prior to or during construction unless the plans specifically call for their adjustment by the Contractor. Existing utilities and their location, as shown on the plans, represent the best information obtainable for design. The Contractor will be required to work around existing utilities within the right-of-way which do not conflict with proposed construction.
  - A saw cut of at least one-half the depth of existing surface courses or one-fourth the depth of the existing total pavement thickness shall be provided at locations where proposed construction abuts an existing surface course or pavement for which partial removal of that surface or pavement is required. Sawed joint to facilitate removal within three (3) feet of existing joints will not be permitted, and for such instances the limits of removal shall extend to the existing joint. Such saw cuts will not be paid for directly and this cost shall be considered as subsidiary to the project costs.
  - Rubble from the removal of miscellaneous structures and excess excavation which is to be wasted shall be disposed of on sites to be provided by the Contractor. These sites shall be approved by the Engineer as to suitability, appearance and site location. Locations that, in the opinion of the Engineer, will leave an unsightly appearance will not be approved.
- 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 archaeological investigations unless buried in a previously approved borrow location.
- 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.
  - The Contractor shall be responsible for preserving property irons. The Contractor will be required to reestablish any property irons which are damaged or destroyed by his construction operations. Such irons shall be reestablished by a licensed land surveyor in accordance with state laws.
  - All transition curb paid for as Roll Type Curb.
  - Trees are to be removed only as needed. The cost is subsidiary to street construction costs.
  - All disturbed areas shall be seeded with Permanent Seeding (K-31). (See Storm Water Pollution Prevention Plan)

**UTILITY OWNERS**

SBC  
154 N. Broadway  
Wichita, KS 67202  
316-268-2601

Kansas Gas Service  
1021 E. 26th Street N.  
Wichita, KS 67219  
316-832-3122

Cox Communications  
801 E. Douglas  
Wichita, KS 67202  
316-262-4270

Westar  
1900 E. Central  
Wichita, KS 67214  
316-261-6824

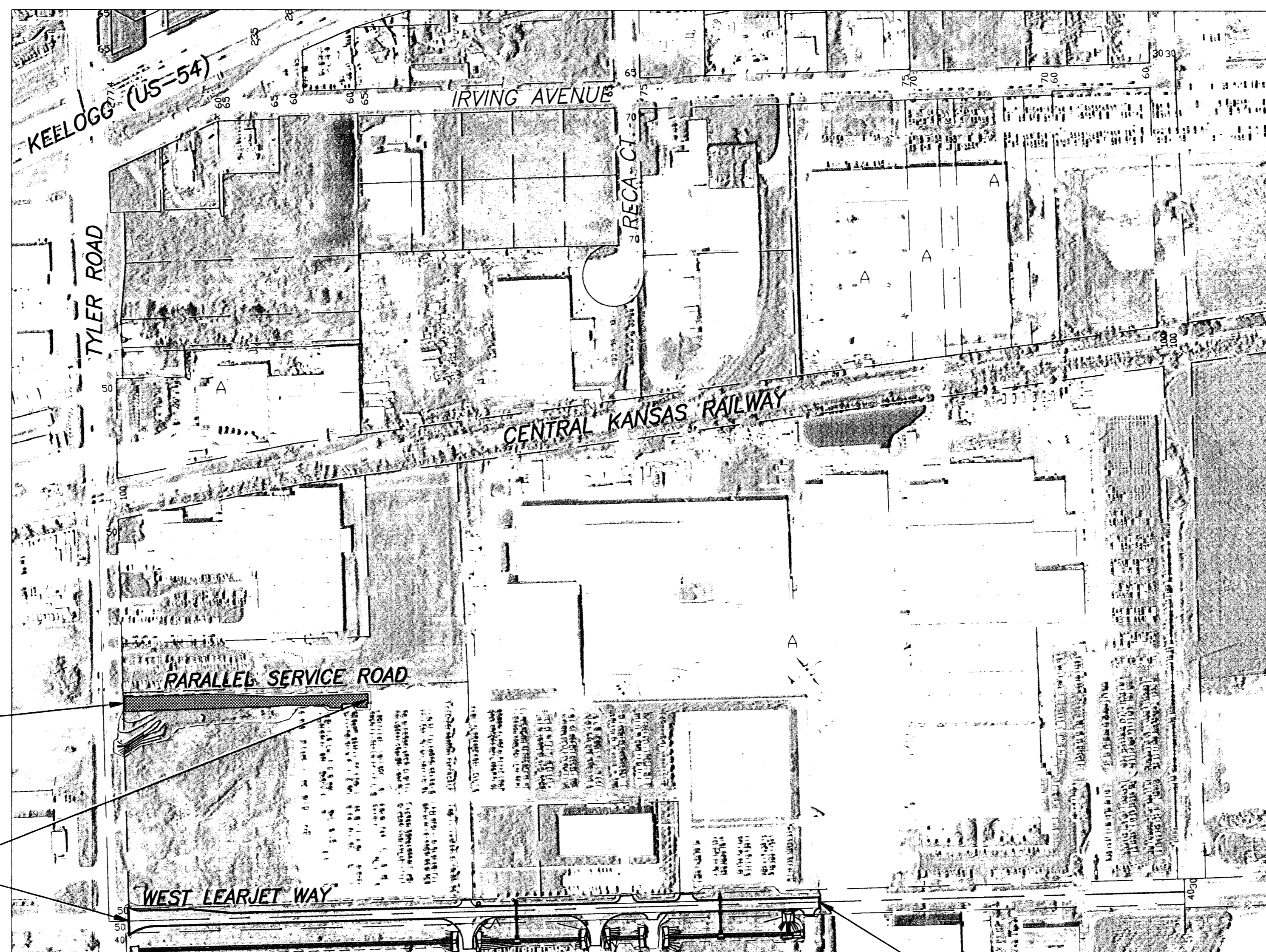
Wichita Water Department  
455 N. Main 8th Floor  
Wichita, KS 67202  
316-268-4555

Wichita Airport Authority  
2173 Air Cargo Road  
Wichita, KS 67209  
316-946-4700

Aquila  
1-800-303-0357

Koch Gateway Pipeline  
PO Box 1478  
Houston, TX 77251-1478

Peoples Gas  
3845 West Harry  
Wichita, KS 67213  
316-941-1657



STA. 5+53.38,  
BEGIN PROJECT

STA. 11+50.00,  
END PROJECT

STA. 10+47.43,  
BEGIN PROJECT

STA. 27+44.00,  
END PROJECT

TOTAL PROJECT LENGTH: 2,293.19'

**APRIL 2004**

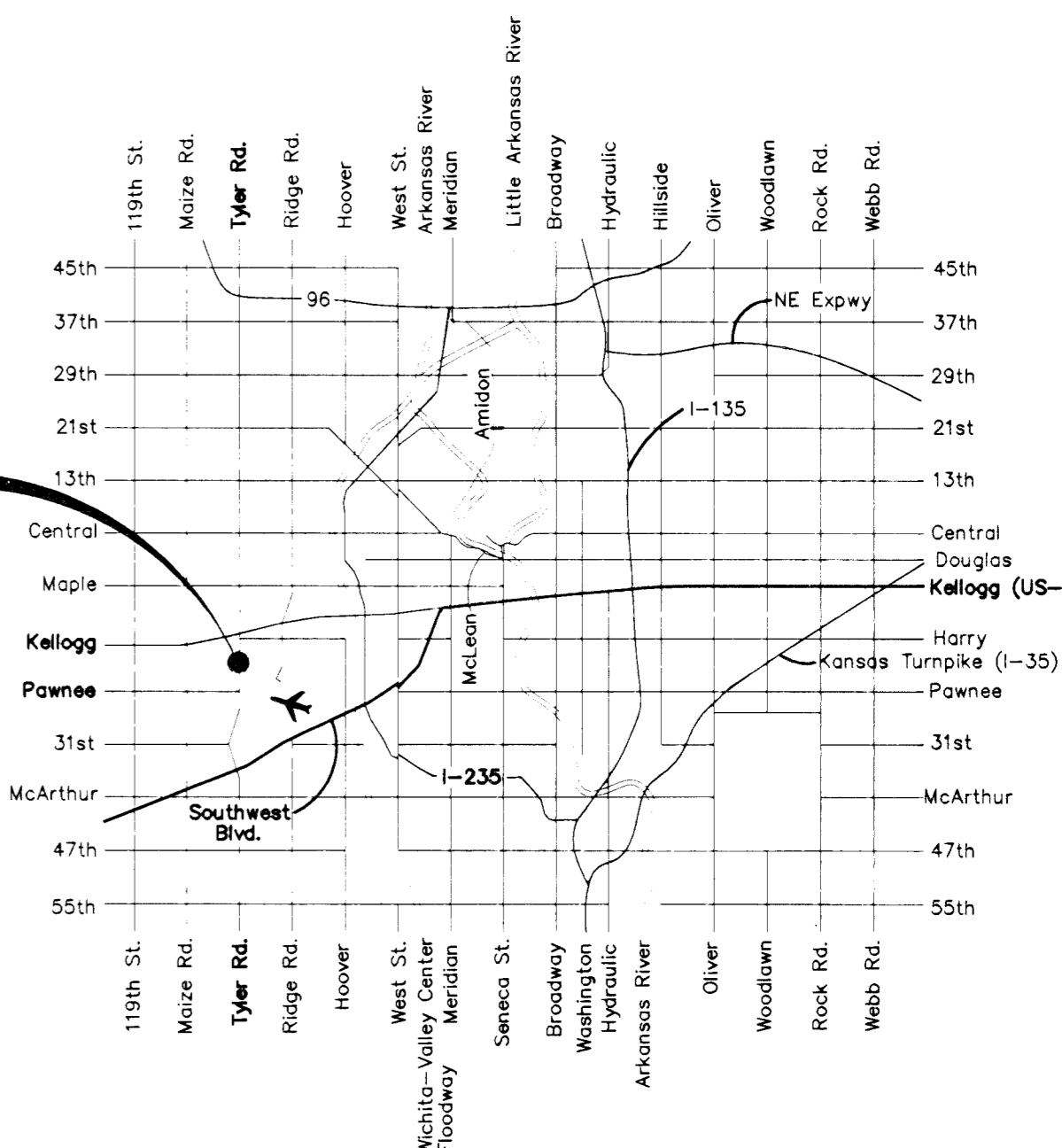
PLANS PREPARED  
BY



POE & ASSOCIATES, INC.  
CONSULTING ENGINEERS  
5940 E. Central, Suite 200 • Wichita, KS 67208-4242  
Phone 316/685-4114 • FAX 316/685-4444



PROJECT SITE



Scale 1" = 200'

**BENCH MARKS**

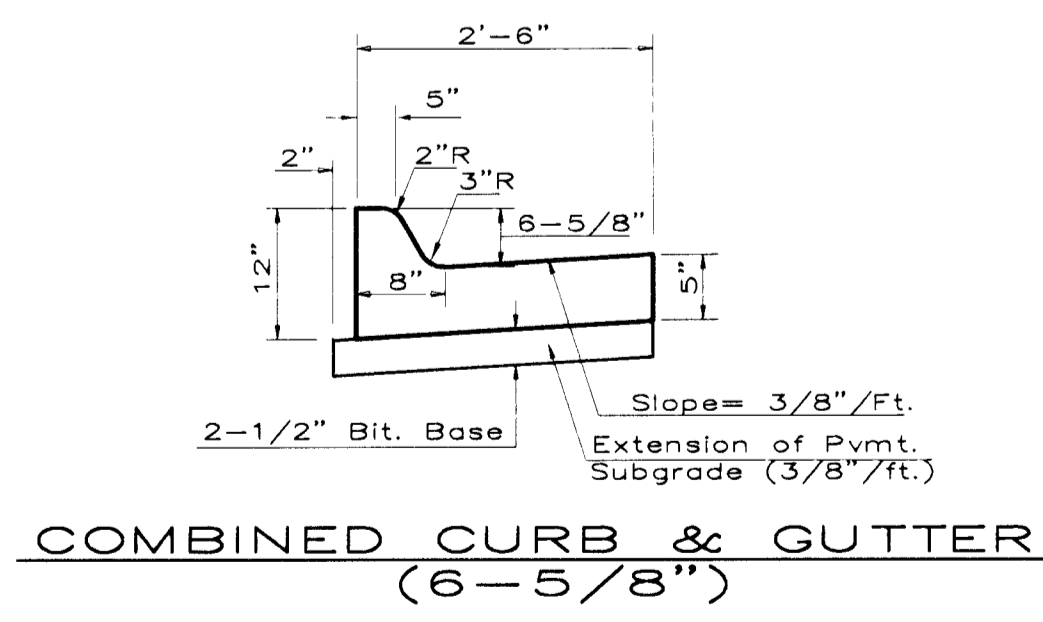
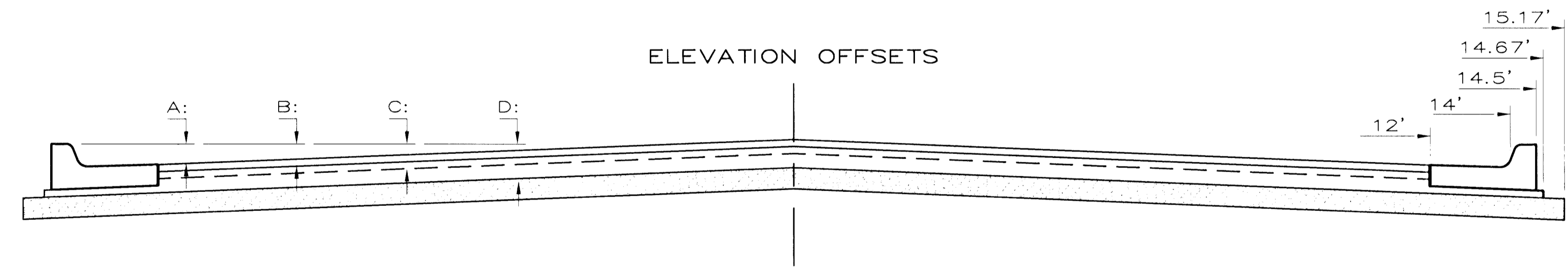
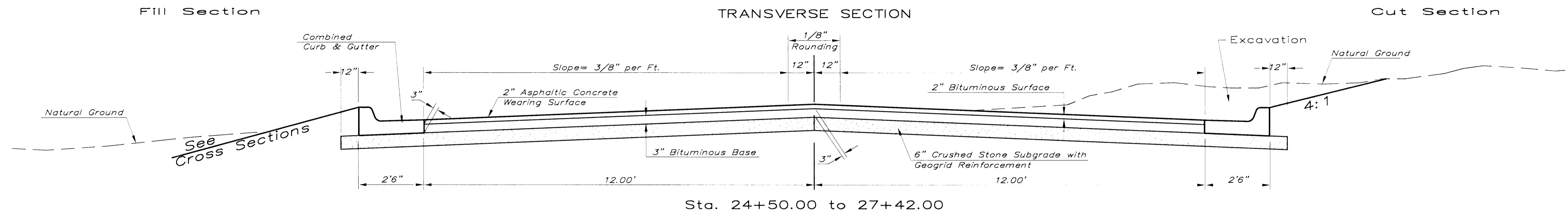
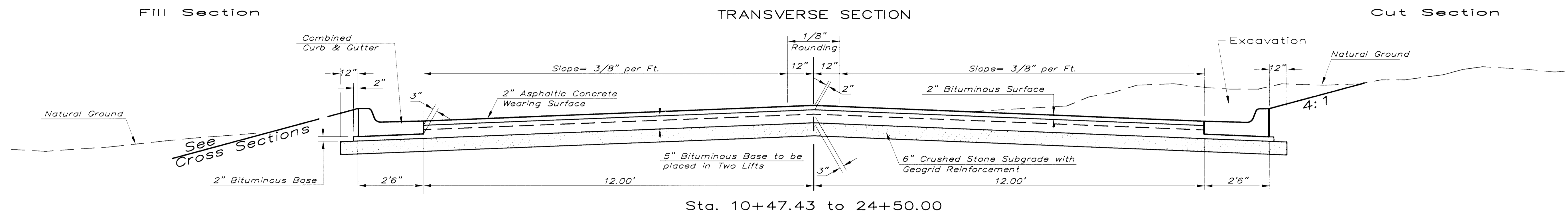
**BENCHMARK #3**

"□" Cut on concrete light pole on S. side of Lear Jet Way on E. Side of entrance to Customer Service Building  
Elev. 145.91

**BENCHMARK #4**

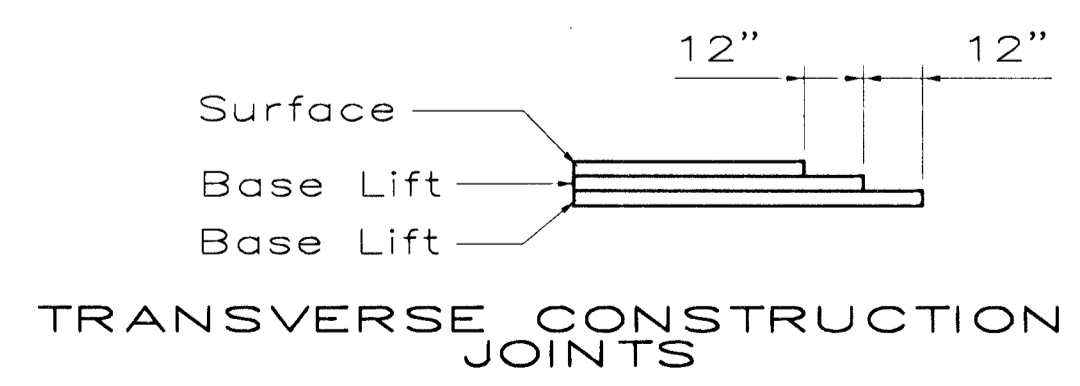
"+" Cut on S.E. corner of area inlet 107' N. of Centerline Lear Jet Way and 42' E. of Centerline Tyler  
Elev. 140.37

# TYPICAL 29' B-B PAVEMENT DETAILS



DISTANCE FROM CENTERLINE (LT. & RT.)

	0'	2'	4'	6'	7'	8'	10'	12'	14'	14.5'	14.67'	15.17'
A: Top of Curbs to Top of Surface Lift	0.13	0.18	0.24	0.30	0.33	0.36	0.43	0.49	-	-	-	-
B: Top of Curbs to Top of Upper Base Lift	0.30	0.35	0.41	0.47	0.50	0.53	0.60	0.66	-	-	-	-



Transverse construction joints shall be constructed in flexible base pavements at locations where pavement joins existing flexible base pavement as shown by the detail. All costs associated with the construction of the transverse joint shall be included in the bid price for Square Yards 7" ASPHALTIC CONCRETE (5" BITUMINOUS BASE).

## General Notes

- THE ASPHALTIC CONCRETE PAVEMENT BETWEEN THE COMBINED CURB AND GUTTER SHALL BE PAID AS SQUARE YARDS OF 7" ASPHALTIC CONCRETE W/ (5" BITUMINOUS BASE) OR SQUARE YARDS OF 5" ASPHALTIC CONCRETE W/(3" BITUMINOUS BASE).
- THE BITUMINOUS BASE UNDER AND BEHIND THE COMB. CURB AND GUTTER SHALL BE PAID AS SQUARE YARDS OF 2 1/2" BITUMINOUS BASE.
- A TACK COAT OF EMULSIFIED ASPHALT (SC-1H OR CSS-1H) SHALL BE APPLIED AT AN APPROXIMATE RATE OF 0.05 GALLONS PER SQUARE YARD BETWEEN EACH LIFT OF ASPHALTIC MATERIAL.
- BITUMINOUS BASE AND ASPHALTIC CONCRETE WEARING SURFACE SHALL BE PLACED WITH A LAYDOWN MACHINE HAVING AUTOMATIC CONTROLS FOR LINE AND GRADE.
- CONSTRUCTION JOINTS IN EACH LIFT SHALL BE STAGGERED A MINIMUM DISTANCE OF ONE (1) FOOT FROM JOINTS IN PRECEDING LIFTS AND PLACED SO THAT A JOINT WILL BE CONSTRUCTED ON THE CENTERLINE OF THE TOP LIFT.
- CONTRACTOR TO BID ONLY ONE SUBGRADE TREATMENT ALTERNATE WHEN ALTERNATES ARE PROVIDED IN THE PROPOSAL AND CONTRACT. THE ALTERNATE CHOSEN BY THE SUCCESSFUL BIDDER SHALL BE USED IN CONSTRUCTING THIS PROJECT.

THE CITY OF WICHITA  
CITY ENGINEER'S OFFICE  
452 NORTH MAIN STREET  
WICHITA, KANSAS 67202  
(316) 268-4501  
(316) 268-4114 FAX

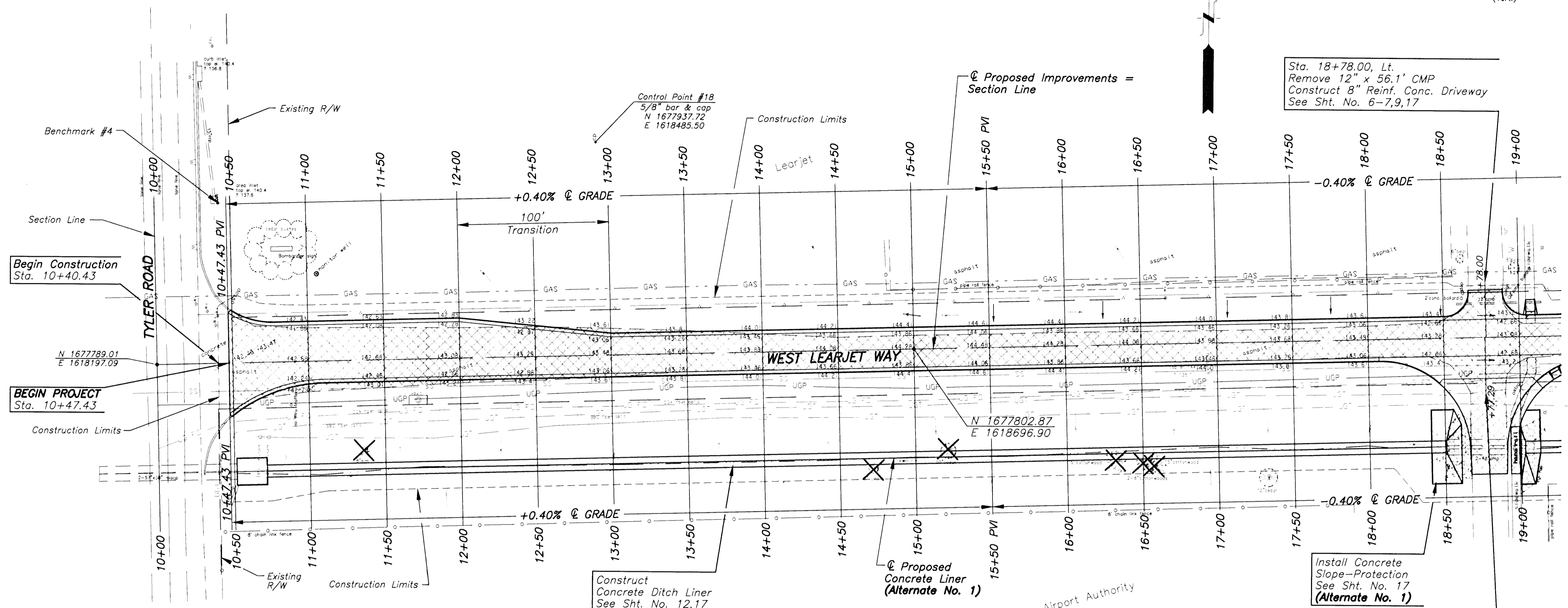
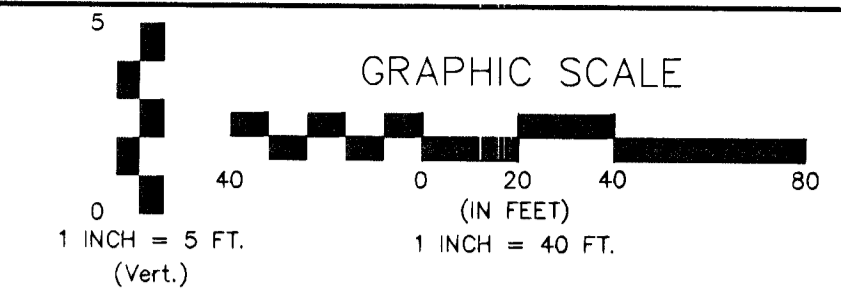
### 29' PAVEMENT TYPICAL SECTION

JAMES ARMOUR, P.E. - CITY ENGINEER

PROJECT NUMBER: 1774    INDEX CODE: \_\_\_\_\_

DATE: MARCH 04    SHEET 2 OF 32

- Control Point #18
- 5/8" Bar & Cap
  - Northing = 1677937.72, Easting = 1618485.50
  - Sta. 12+92.42, 140.66' Lt.



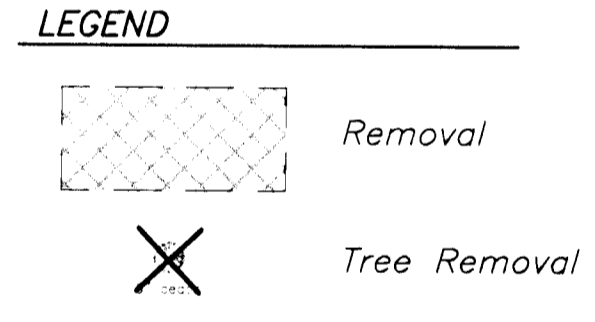
Sta. 18+78.00, Lt.  
Remove 12" x 56.1' CMP  
Construct 8" Reinf. Conc. Driveway  
See Sht. No. 6-7,9,17

Construct Concrete Ditch Liner  
See Sht. No. 12,17  
(Alternate No. 1)

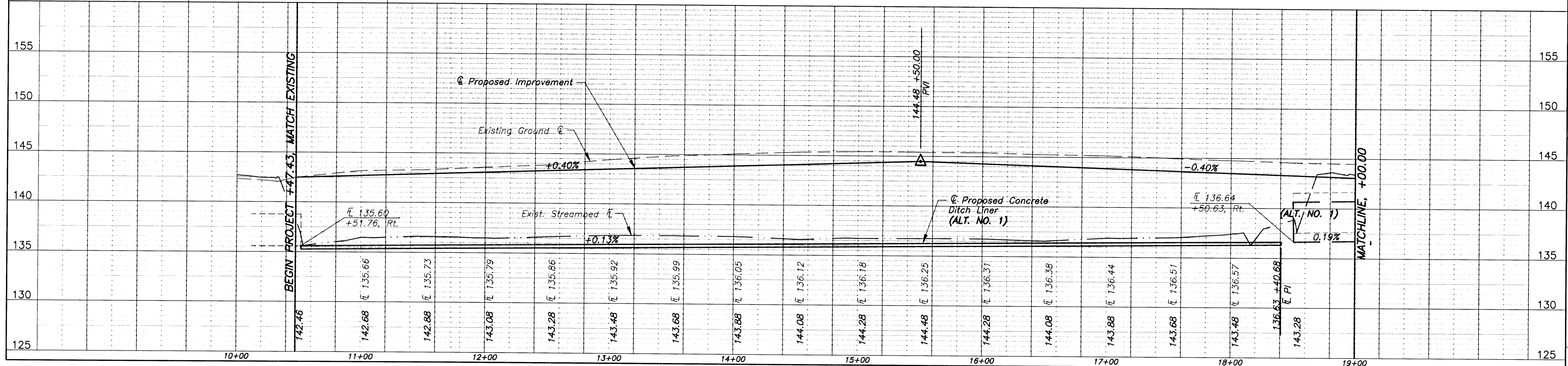
Install Concrete Slope-Protection  
See Sht. No. 17  
(Alternate No. 1)

Sta. 18+77.29, Rt.  
Construct Entrance w/ Valley Gutter  
Construct Side Road  
Remove & Reset 2-48" x 52.07' CMP  
See Sht. No. 6-8,13-14,17

- Notes:
- See Sht. Nos. 6-7 for Geometric Plan and Pavement Marking Plan.



BENCHMARK #4  
\*+\* Cut on S.E. corner of area inlet 107' N. of Centerline Learjet Way and 42' E. of Centerline Tyler Sta. 10+42.20, 105.76' Lt. Elev. 140.37



Revision

Approved By

Date

By

West Learjet Way  
Plan and Profile

BOMBARDIER LEARJET  
WICHITA, KANSAS

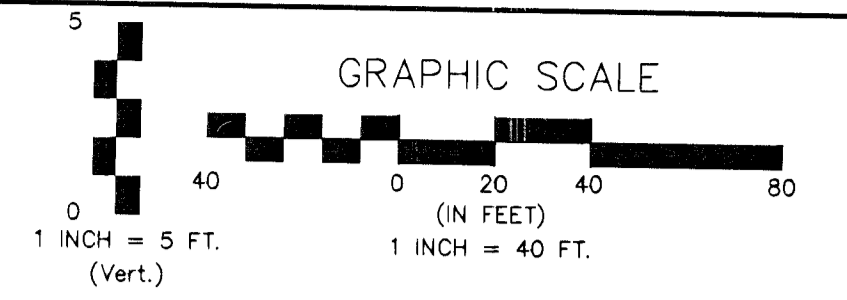
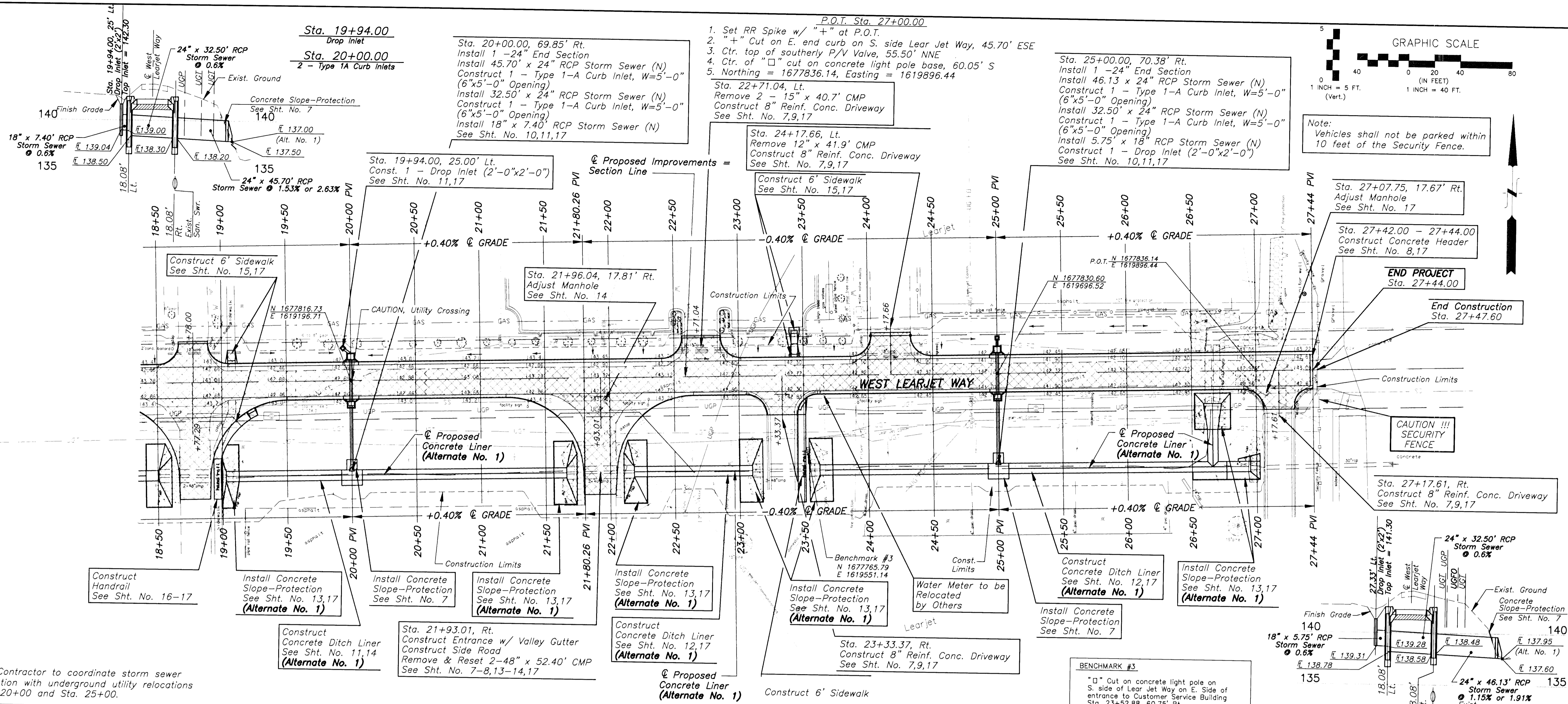
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CONSULTING ENGINEERS  
5940 E. Central, Suite 200 • Wichita, KS 67208-4742  
Phone: 316/685-4114 • FAX: 316/685-4444

**PE**

FINAL

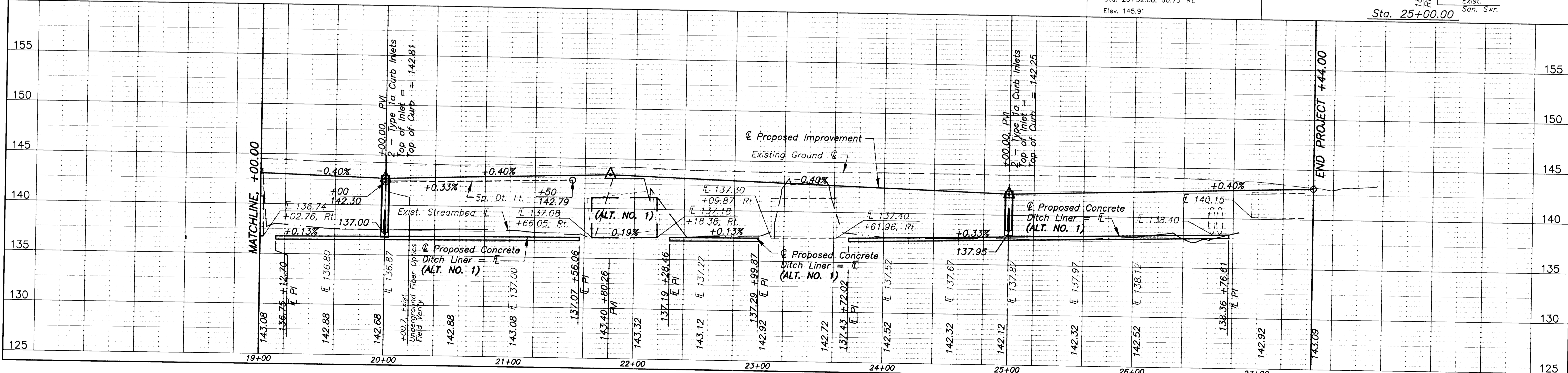
Designed By: P. Ferguson  
Drawn By: J. Ulrich  
Poe Job No.: 1774  
Date: March 2004

3 of 32



Note: Vehicles shall not be parked within 10 feet of the Security Fence.

Note: Contractor to coordinate storm sewer construction with underground utility relocations at Sta. 20+00 and Sta. 25+00.



1. Set RR Spike w/ "+" at P.O.T.
2. "+" Cut on E. end curb on S. side Lear Jet Way, 45.70' ESE
3. Ctr. top of southerly P/V Valve, 55.50' NNE
4. Ctr. of "□" cut on concrete light pole base, 60.05' S
5. Northing = 1677836.14, Easting = 1619896.44

Revision

Approved

By

Date

NO.

WEST LEARJET WAY  
PLAN AND PROFILE

**BOMBARDIER LEARJET**  
WICHITA, KANSAS

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CONSULTING ENGINEERS  
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Wichita, KS 67208-4242  
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**POE**

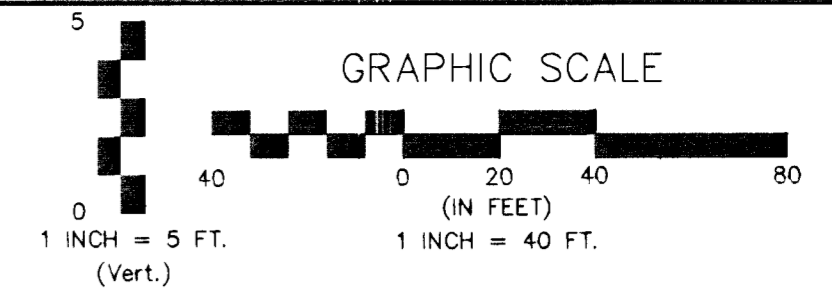
Designed By: P. Ferguson  
Drawn By: J. Urnuh  
Poe Job No.: 1774  
Date: March 2004

**FINAL**

SHEET

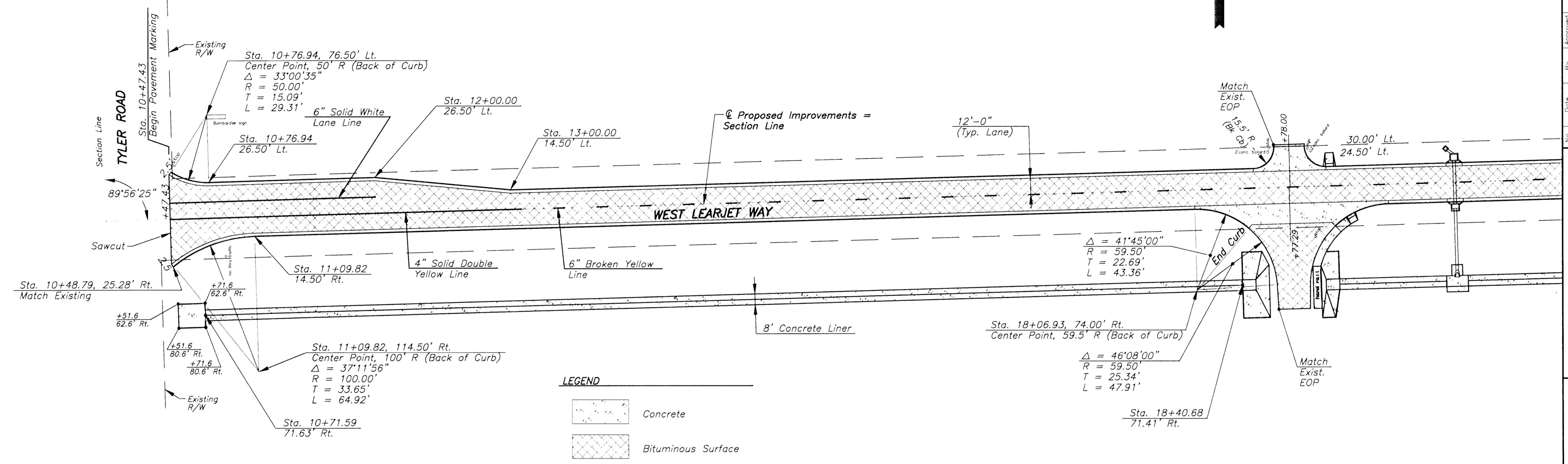
4 of 32





Pavement Marking	Location
6" Solid White Lane Line	Sta. 10+47.43 to Sta. 12+00.00
4" Solid Double Yellow Line	Sta. 10+47.43 to Sta. 13+00.00
6" Broken Yellow Line	Sta. 13+00.00 to Sta. 24+42.00

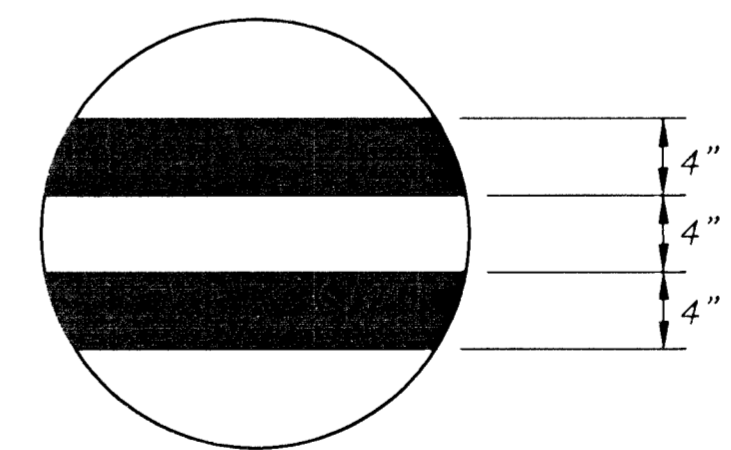
**PAVEMENT MARKING NOTE:**  
 All pavement markings shall be Cold Plastic pavement marking material. Material and installation shall be according to the latest edition of the Kansas Department of Transportation Standard Specifications.



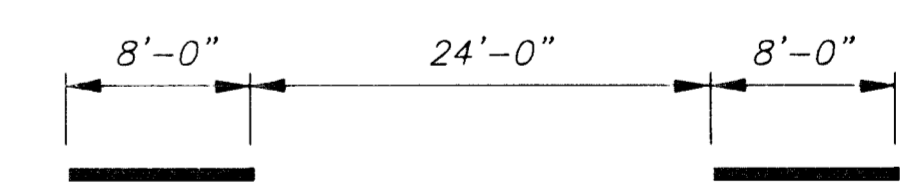
**LEGEND**

	Concrete
	Bituminous Surface

**SIGNING NOTE:**  
 Traffic signs shall be maintained at all times by Contractor



4" Solid Double Yellow Line



6" Broken Yellow Line

**WICHITA AIRPORT AUTHORITY**  
 Contact Person  
 John Oswald  
 (316) 946-4715

**BOMBARDIER LEARJET**  
 Contact Person  
 Jack Soden  
 (316) 946-3194

Revision

Approved

By

Date

No.

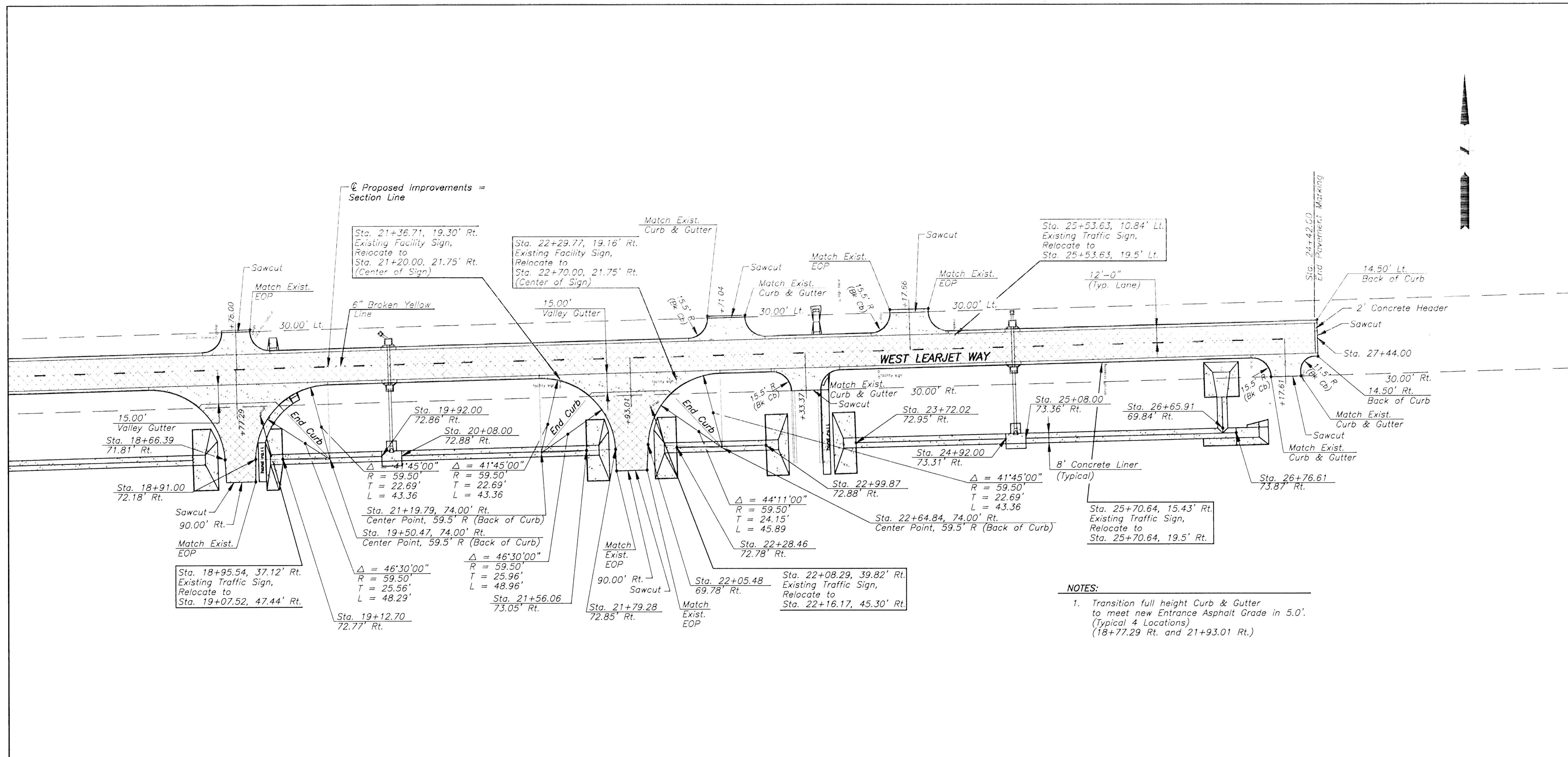
**WEST LEARJET WAY  
 GEOMETRIC, PAVEMENT MARKING, AND SIGNING PLAN  
 BOMBARDIER LEARJET  
 WICHITA, KANSAS**

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**CONSULTING ENGINEERS**  
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 Phone 316/685-4114 • FAX 316/685-4444

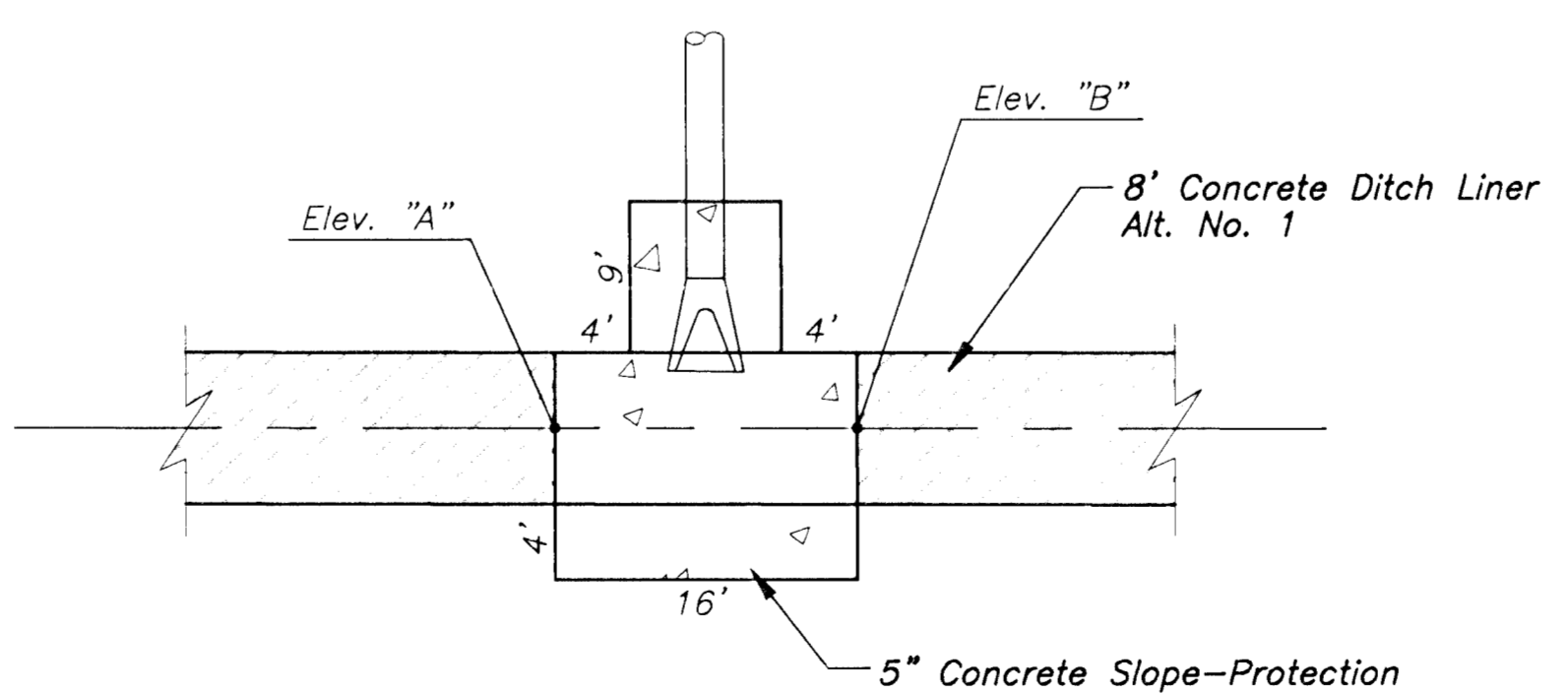
**PE**

**FINAL**

Designed By: P. Ferguson  
 Drawn By: J. Unruh  
 P.O. Job No.: 1774  
 Date: March 2004



- NOTES:**
1. Transition full height Curb & Gutter to meet new Entrance Asphalt Grade in 5.0'. (Typical 4 Locations) (18+77.29 Rt. and 21+93.01 Rt.)



**CONCRETE SLOPE-PROTECTION**  
Sta. 20+00.00 Rt., Sta. 25+00.00 Rt.

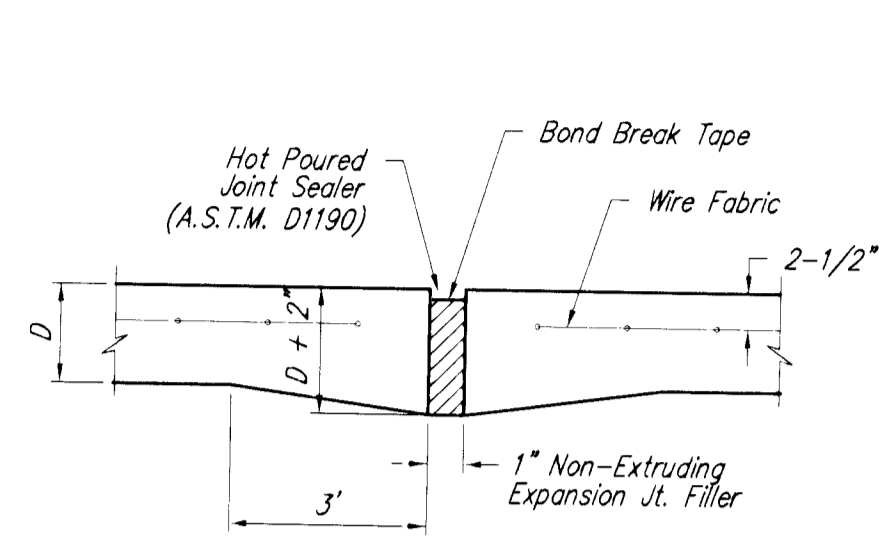
**NOTE:**  
Concrete Slope-Protection at outfall of storm sewer at Sta. 20+00.00 and Sta. 25+00.00 shall be constructed to match existing grades if Alternate No. 1 is NOT executed. If Alternate No. 1 IS executed, Concrete Slope-Protection shall be constructed to meet proposed Ditch Liner grades. (See Table this Sheet.)

	Sta. 20+00.00		Sta. 25+00.00	
	Elev. "A"	Elev. "B"	Elev. "A"	Elev. "B"
Alternate No. 1, Executed	136.86	136.88	137.79	137.85
Alternate No. 1, Not Executed	137.50	137.52	137.55	137.60

**WEST LEARJET WAY**  
 GEOMETRIC, PAVEMENT MARKING, AND SIGNING PLAN  
**BOMBARDIER LEARJET**  
 WICHITA, KANSAS

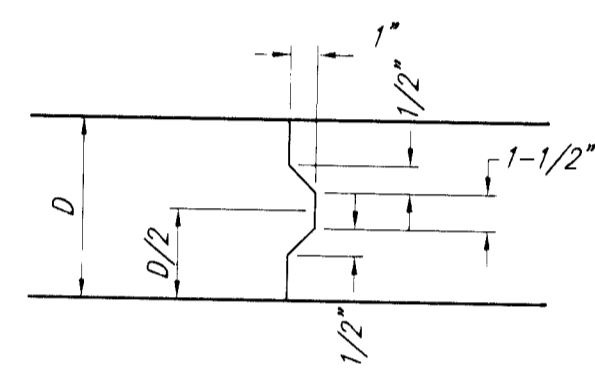
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**FINAL**  
 Designed By: P. Ferguson  
 Drawn By: J. Uhrh  
 P.O. Job No.: 1774  
 Date: March 2004

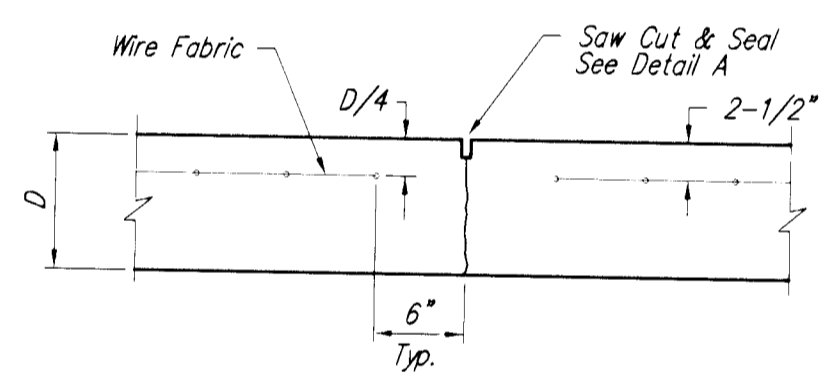


**EXPANSION JOINT**

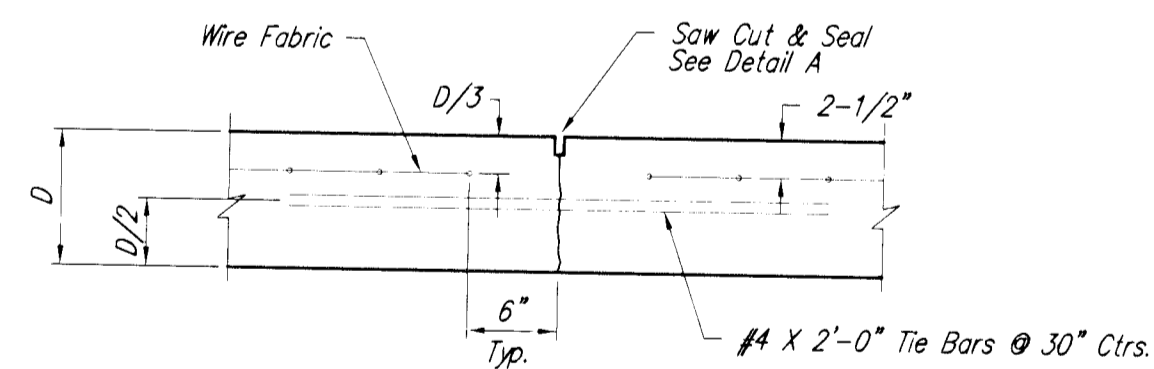
NOTE: Extra Thickness to be Subsidiary to Price of Square Yards Pavement



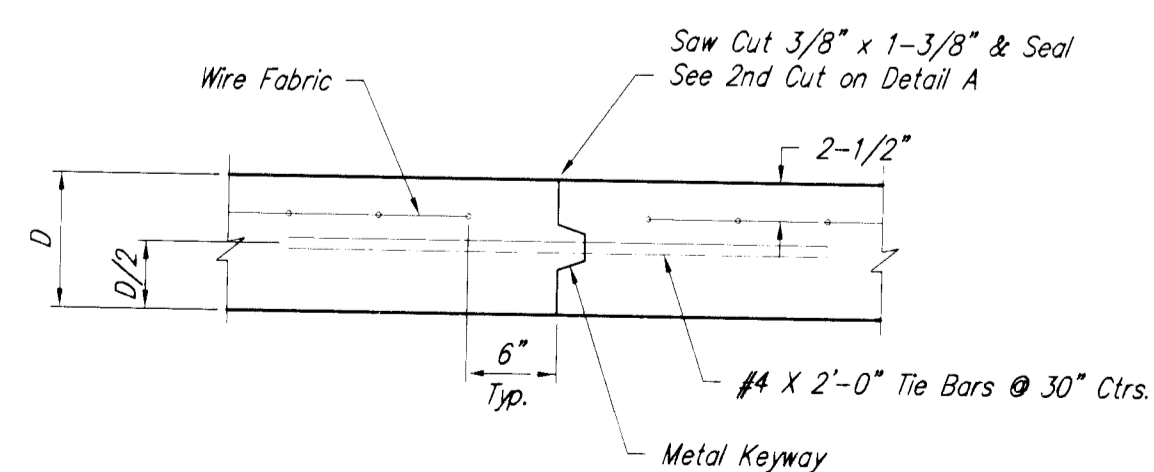
**KEYWAY DETAIL**



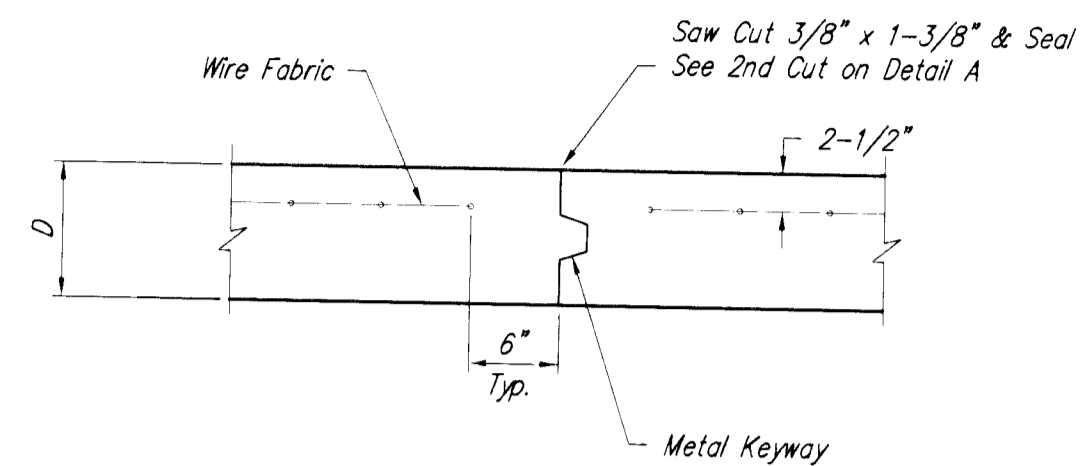
**CONTRACTION JOINT DETAIL (C.J.)**



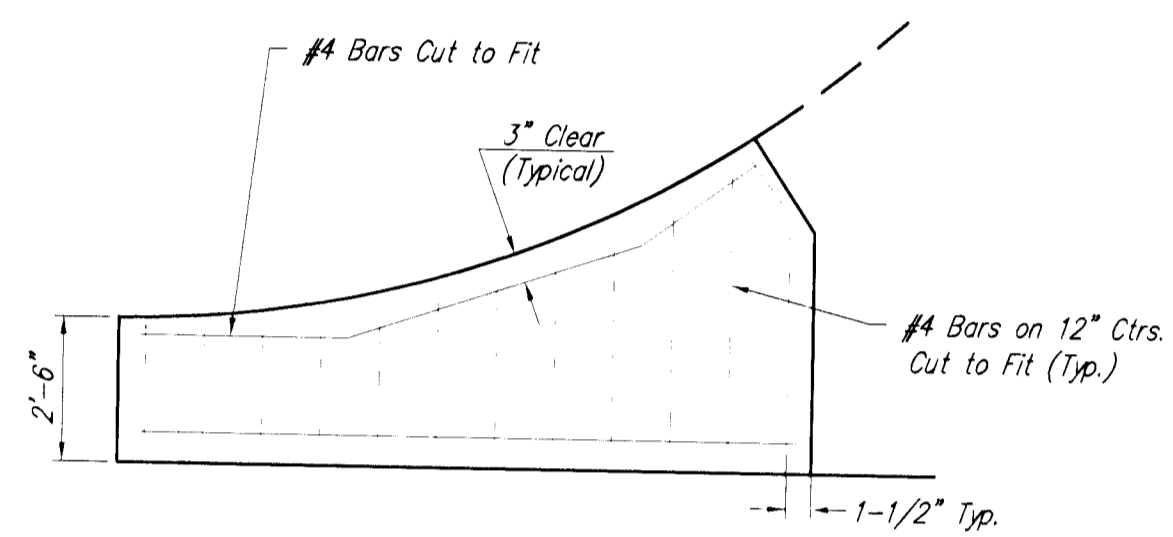
**LONGITUDINAL JOINT DETAIL (L.J.)**



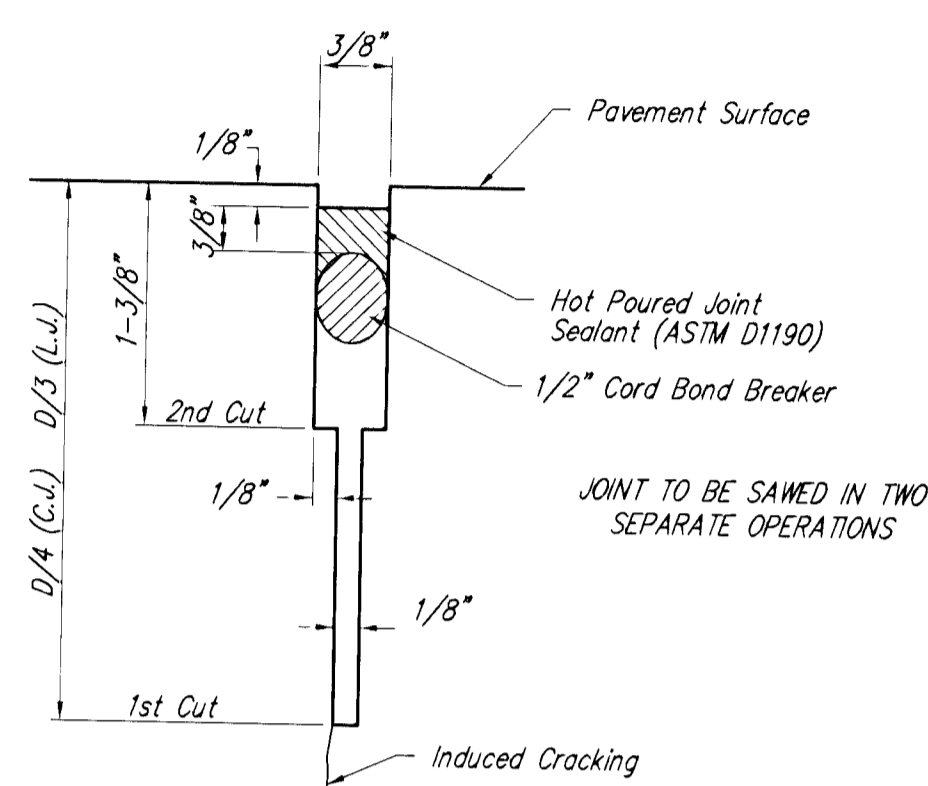
**OPTIONAL LONGITUDINAL JOINT DETAIL (L.J.)**



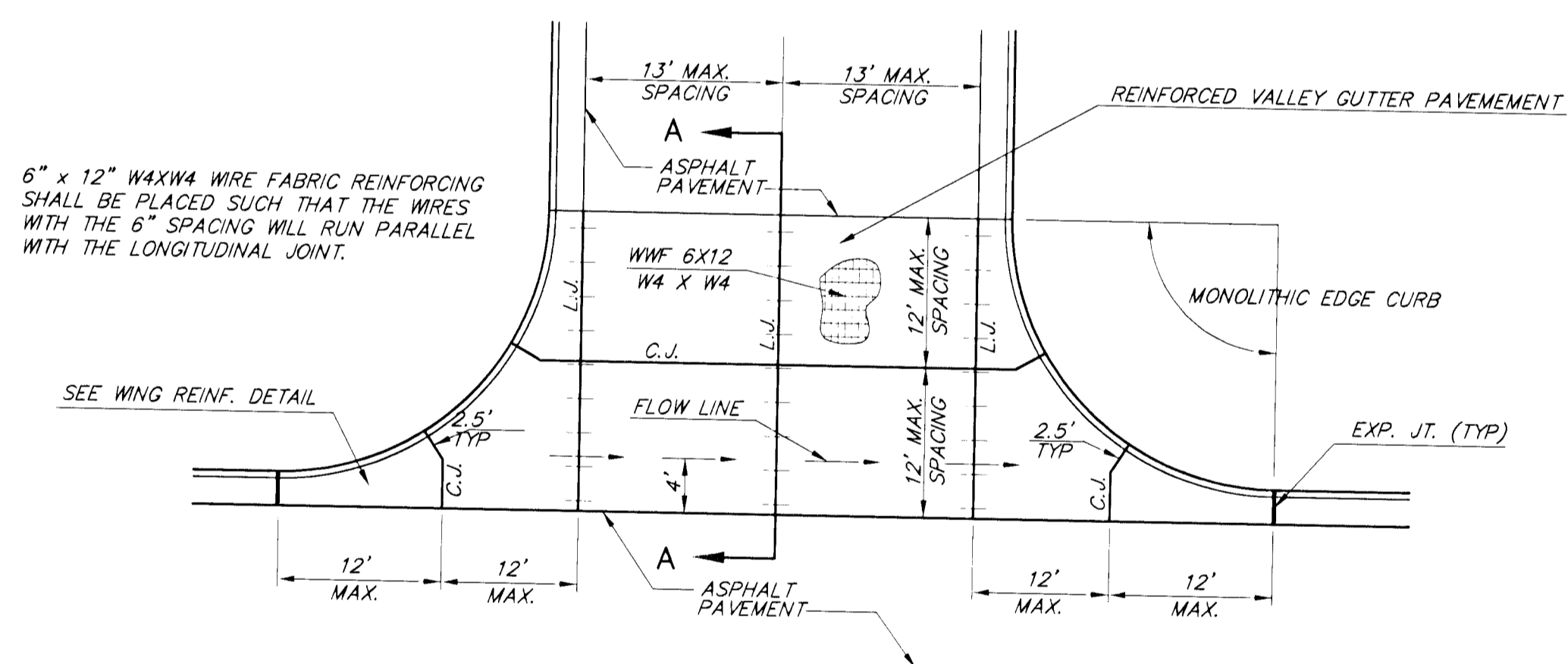
**OPTIONAL CONTRACTION JOINT**



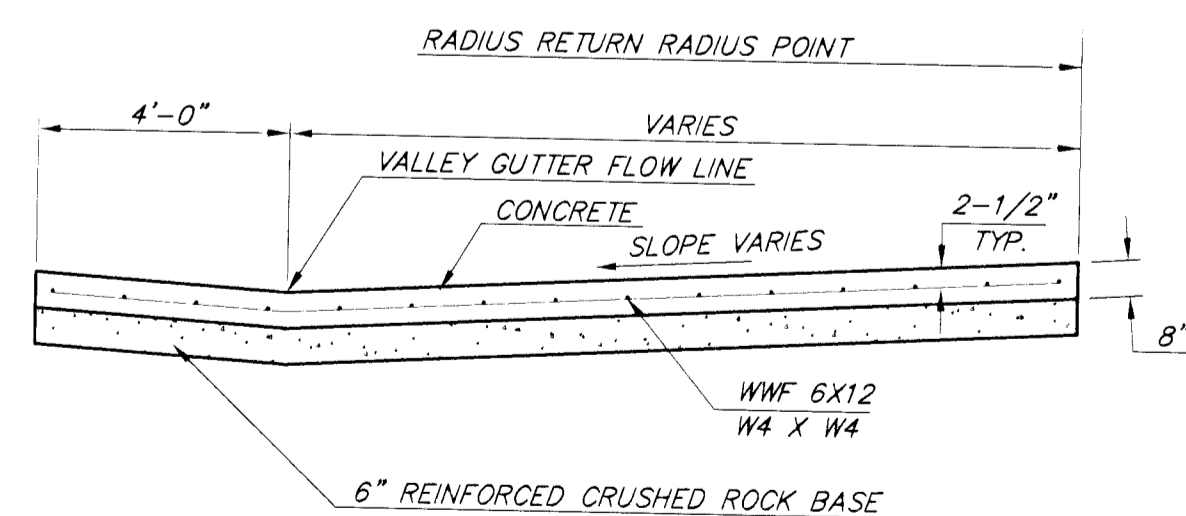
**WING REINFORCING DETAIL**



**SAW JOINT DETAIL**



**PLAN**



**SECTION A-A**

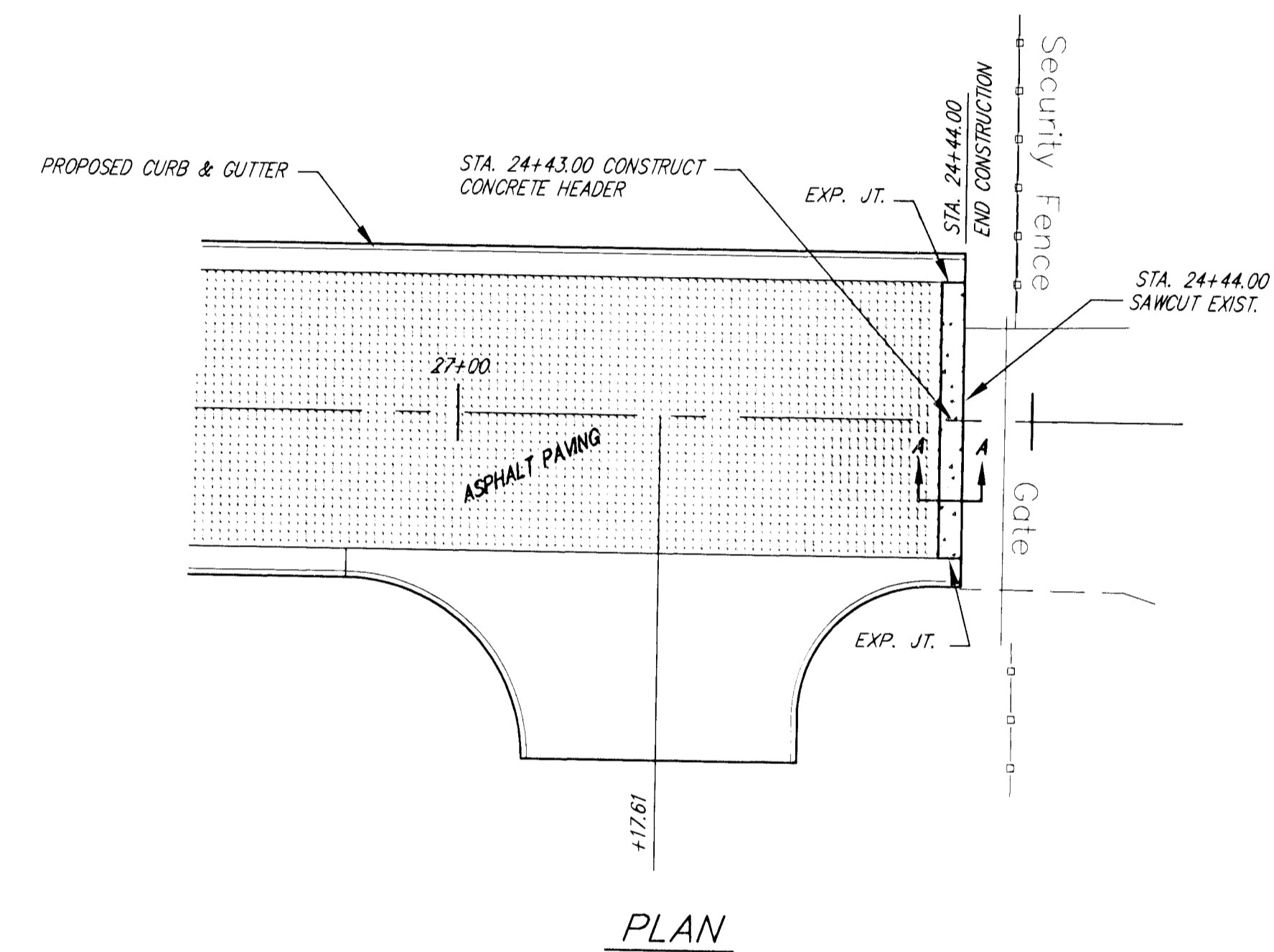
**REINFORCED VALLEY GUTTER DETAIL**

**CONCRETE HEADER NOTES**

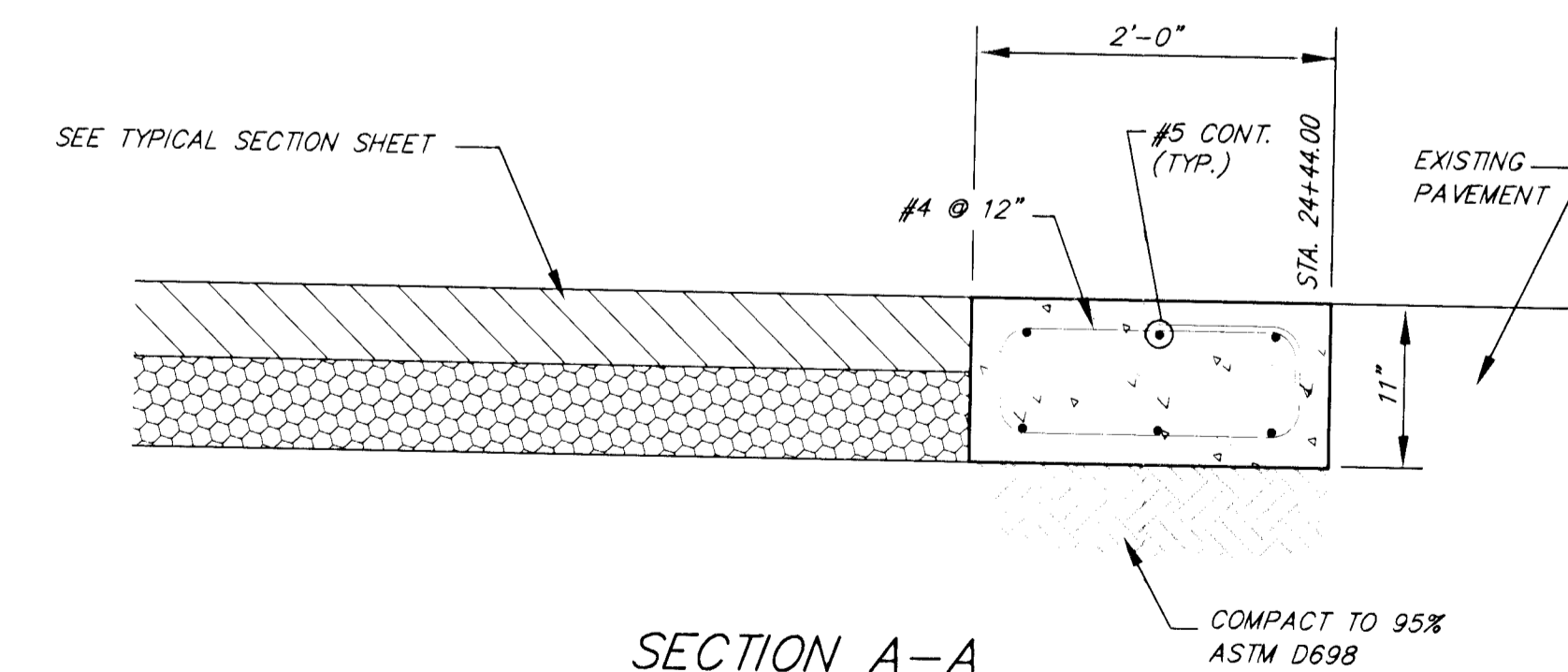
CONCRETE: CONCRETE SHALL BE AS PER CITY OF WICHITA STANDARD SPECIFICATIONS FOR CONCRETE PAVING MIX EXCEPT THAT IT SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4,000 P.S.I. LIGHT BROOM FINISH SURFACE.

REINFORCING STEEL: ALL DIMENSIONS RELATIVE TO REINFORCING STEEL ARE TO CENTERLINE OF BAR UNLESS OTHERWISE NOTED. ALL CLEARANCES SHALL BE 2" UNLESS OTHERWISE NOTED. ALL REINFORCING STEEL SHALL CONFORM TO A.S.T.M. DESIGNATION A615 GRADE 60.

PAYMENT: CONCRETE HEADER SHALL BE PAID FOR AT THE UNIT PRICE BID PER EACH IN PLACE INCLUDING CONCRETE, REINFORCING STEEL, EXCAVATION ALL OTHER MISCELLANEOUS MATERIALS, LABOR, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.



**PLAN**



**SECTION A-A**

**CONCRETE HEADER DETAIL**

Revision				
No.	Date	By	Approved	
1				
2				
3				
4				

WEST LEARLET WAY  
VALLEY GUTTER/CONCRETE HEADER DETAILS  
**BOMBARDIER LEARJET**  
WICHITA, KANSAS

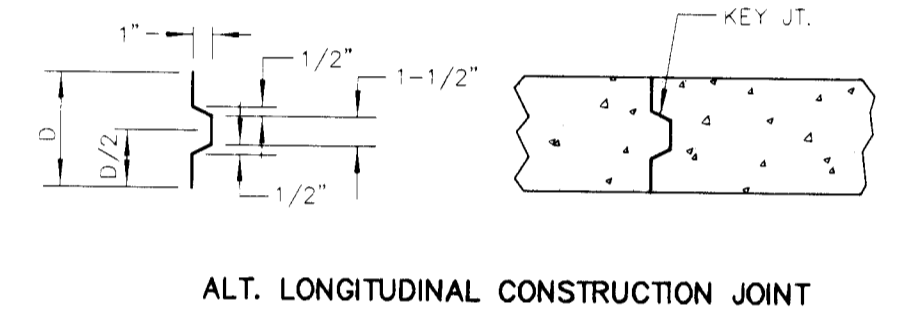
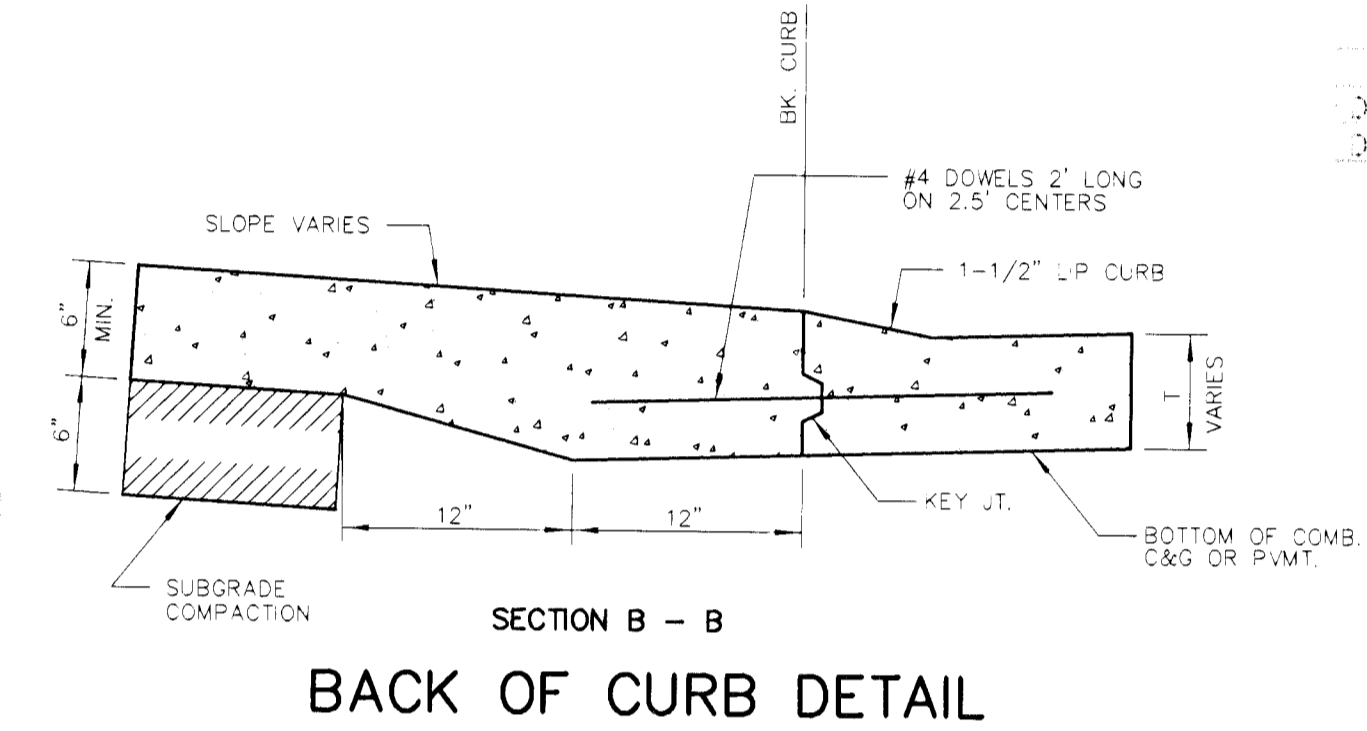
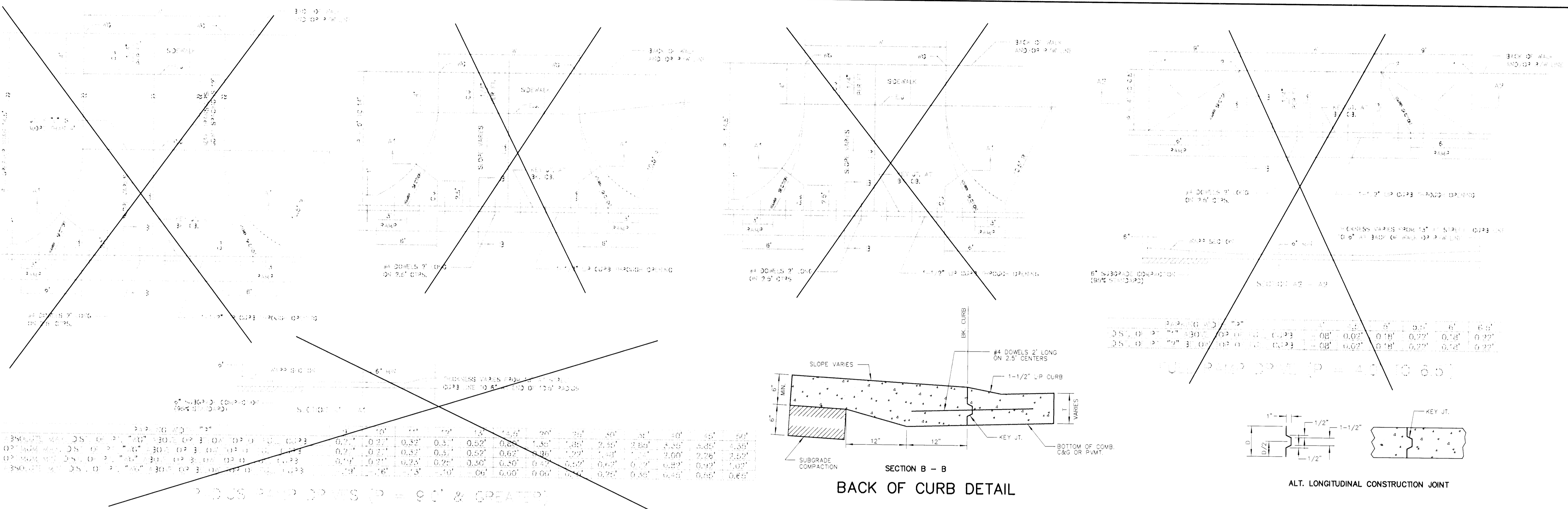
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CONSULTING ENGINEERS  
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Phone 316/865-4114 • FAX 316/865-4444

**PE**

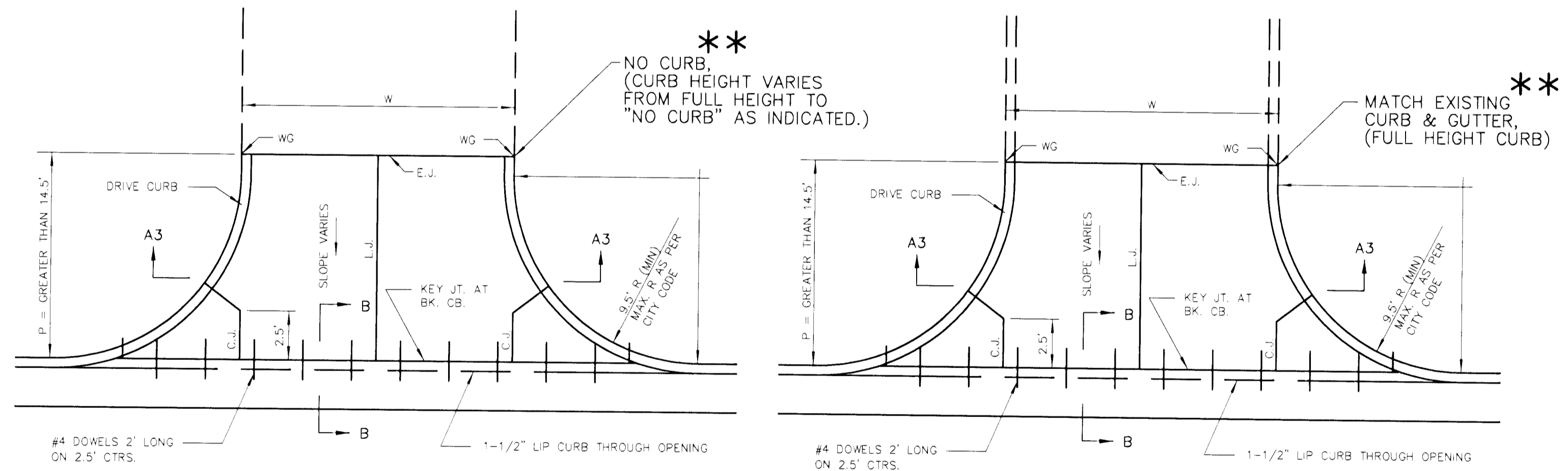
**FINAL**

Designed By: P. Ferguson  
Drawn By: J. Umlich  
Poe Job No.: 1774  
Date: March 2004

Sheet  
8 of 32

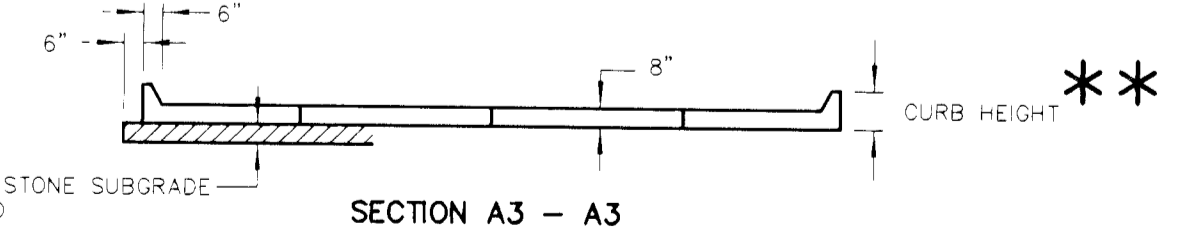


PARKING WIDTH "P"	14.5'	20'	25'	30'	35'	40'	45'	50'
ABSOLUTE MAX. DIST. OF PT. "WG" ABOVE OR BELOW TOP OF FULL CURB	0.72'	1.27'	1.77'	2.27'	2.77'	3.27'	3.77'	4.27'
OPTIMUM MAX. DIST. OF PT. "WG" ABOVE OR BELOW TOP OF FULL CURB	0.70'	1.04'	1.30'	1.56'	1.82'	2.08'	2.34'	2.60'
OPTIMUM MIN. DIST. OF PT. "WG" ABOVE OR BELOW TOP OF FULL CURB	0.30'	0.42'	0.52'	0.62'	0.72'	0.82'	0.92'	1.02'
ABSOLUTE MIN. DIST. OF PT. "WG" ABOVE OR BELOW TOP OF FULL CURB	0.00'	0.00'	0.15'	0.25'	0.35'	0.45'	0.55'	0.65'



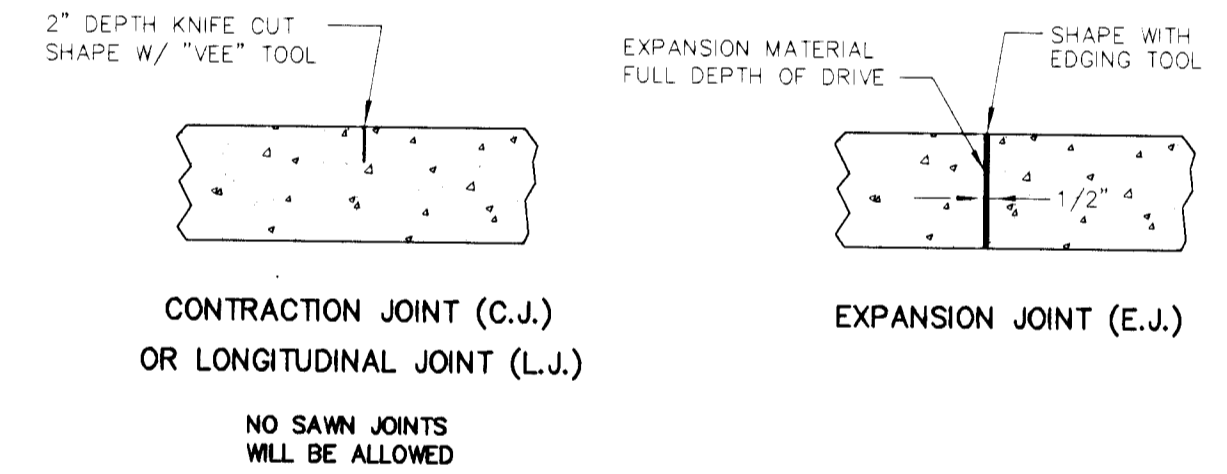
18+78.00, LT.  
24+17.66, LT.

22+71.04, LT.  
23+33.37, RT.  
27+17.61, RT.



PARKING WIDTH "P"	14.5'	20'	25'	30'	35'	40'	45'	50'
ABSOLUTE MAX. DIST. OF PT. "WG" ABOVE OR BELOW TOP OF FULL CURB	0.72'	1.27'	1.77'	2.27'	2.77'	3.27'	3.77'	4.27'
OPTIMUM MAX. DIST. OF PT. "WG" ABOVE OR BELOW TOP OF FULL CURB	0.70'	1.04'	1.30'	1.56'	1.82'	2.08'	2.34'	2.60'
OPTIMUM MIN. DIST. OF PT. "WG" ABOVE OR BELOW TOP OF FULL CURB	0.30'	0.42'	0.52'	0.62'	0.72'	0.82'	0.92'	1.02'
ABSOLUTE MIN. DIST. OF PT. "WG" ABOVE OR BELOW TOP OF FULL CURB	0.00'	0.00'	0.15'	0.25'	0.35'	0.45'	0.55'	0.65'

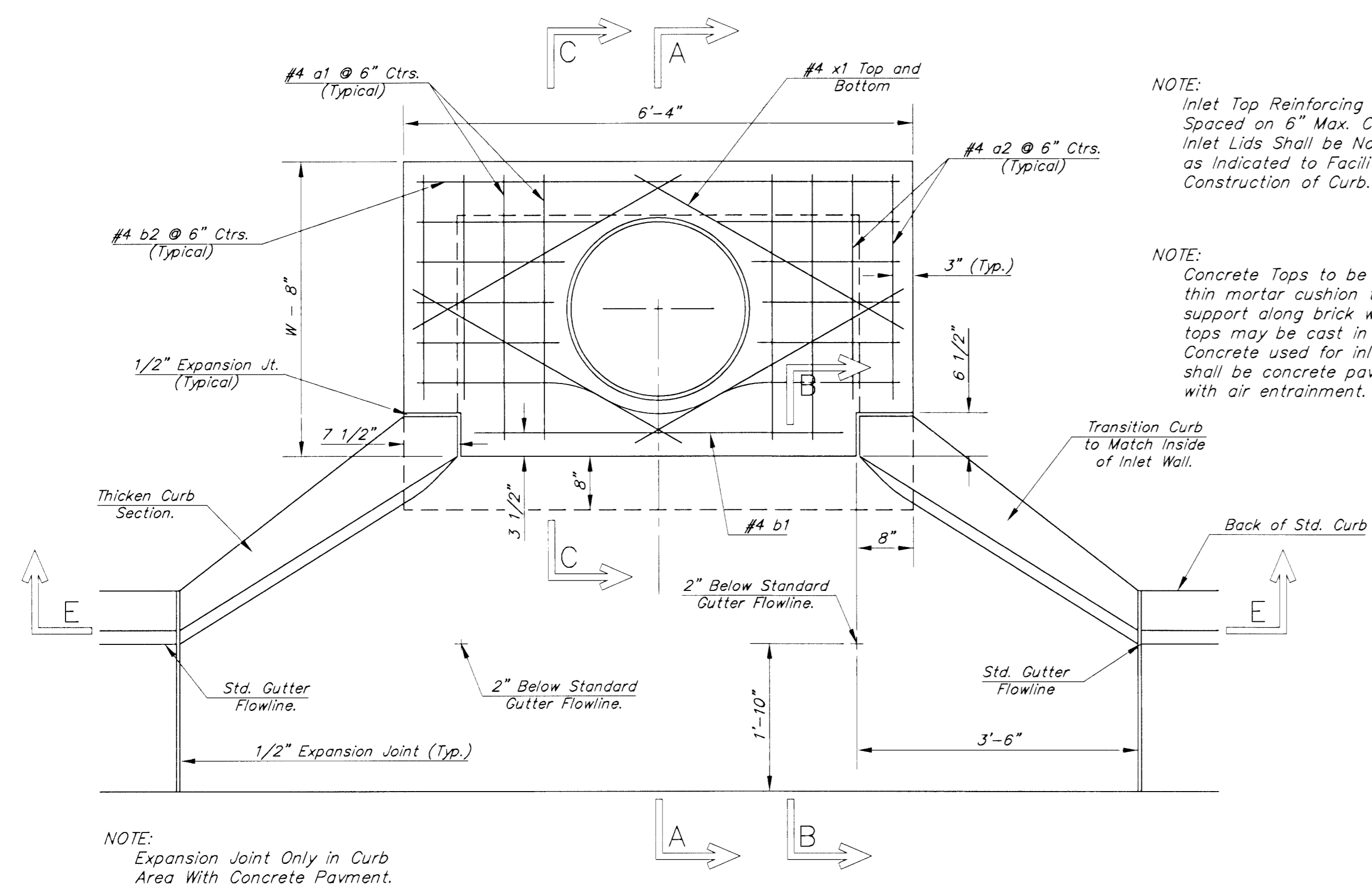
FULL RADIUS DRIVES (P = 14.5' & GREATER)



- GENERAL NOTES**
- DRIVEWAY CONSTRUCTION DETAILED ON THIS SHEET IS FOR USE WITH FULL HEIGHT STREET CURBS AND IN AREAS WITHOUT FULL WALK CONSTRUCTION IN THE PARKING. SEE OTHER DETAIL SHEETS FOR DRIVEWAY CONSTRUCTION WITH ROLL CURB AND/OR FULL WALK.
  - ONE LONGITUDINAL JOINT SHALL BE CONSTRUCTED ALONG THE CENTERLINE OF DRIVES HAVING A "W" DIMENSION OF 24' OR LESS. TWO LONGITUDINAL JOINTS SHALL BE CONSTRUCTED WITH EQUAL SPACINGS NOT TO EXCEED 10' FOR DRIVES WITH A "W" DIMENSION GREATER THAN 24'.
  - DRIVEWAY WIDTH DENOTED AS "W" ON THE DETAIL DRAWINGS SHALL BE A MINIMUM OF 10' AND A MAXIMUM OF 30'. THE MAXIMUM OPENING FOR RADIUS TYPE DRIVES WITH CURBS THROUGH THE RADIUS SHALL NOT EXCEED 52' AT THE STREET CURB LINE.
  - CONTRACTION JOINT SPACING IN THE DRIVEWAY WALK SECTION SHALL BE A MINIMUM OF 3' AND A MAXIMUM OF 8' AND ARE TO BE EQUALLY SPACED WITHIN THIS RANGE. WALK SECTION SHALL BE CONSTRUCTED TO THE SAME THICKNESS AS THE DRIVEWAY.
  - DOWEL BARS SHALL BE OMITTED FROM THE KEYS CONSTRUCTION JOINT ALONG THE BACK OF THE STREET CURB LINE WHEN DRIVEWAYS ARE CONSTRUCTED IN CONJUNCTION WITH NEW CONCRETE PAVEMENT CONSTRUCTION.
  - ADDITIONAL THICKNESS OF DRIVE AS INDICATED IN THE DRAWINGS WILL NOT BE PAID FOR DIRECTLY AND THIS COST SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE DRIVEWAY CONSTRUCTION.
  - ONE HALF INCH EXPANSION JOINTS SHALL BE INSTALLED WHEREVER DRIVE CONSTRUCTION ABUTS SIDEWALK. ONE HALF INCH EXPANSION JOINTS SHALL ALSO BE INSTALLED ALONG THE PROPERTY LINE AND/OR BACK OF WALK LINE WHEN DRIVE CONSTRUCTION ALONG THIS LINE ABUTS CONCRETE PARKING LOTS OR CONCRETE DRIVE EXTENSION.
  - DRIVEWAYS SHALL BE CONSTRUCTED AT 8" AND SHALL BE REINFORCED WITH 6"x12" W4-W4 WELDED WIRE FABRIC.
  - OPTIMUM DRIVEWAY ELEVATIONS SHOWN IN THE TABLES ARE TO BE USED WHEREVER POSSIBLE. ABSOLUTE MAXIMUM AND MINIMUM ELEVATIONS ARE TO BE USED ONLY WHEN THESE VALUES WILL PERMIT NEW CONSTRUCTION TO MATCH EXISTING DRIVES OR PARKING LOTS. VALUES SHOWN IN THE TABLES ARE BASED ON A FULL CURB HEIGHT ELEVATION OF 0.55' ABOVE THE GUTTER FLOW LINE, AND MUST BE ADJUSTED ACCORDINGLY FOR OTHER CURB HEIGHTS. VALUES SHOWN IN THE TABLES WITH MINUS SIGNS INDICATE ELEVATIONS BELOW TOP OF FULL HEIGHT CURB.

PARKING WIDTH "P"	14.5'	20'	25'	30'	35'	40'	45'	50'
ABSOLUTE MAX. DIST. OF PT. "WG" ABOVE OR BELOW TOP OF FULL CURB	0.72'	1.27'	1.77'	2.27'	2.77'	3.27'	3.77'	4.27'
OPTIMUM MAX. DIST. OF PT. "WG" ABOVE OR BELOW TOP OF FULL CURB	0.70'	1.04'	1.30'	1.56'	1.82'	2.08'	2.34'	2.60'
OPTIMUM MIN. DIST. OF PT. "WG" ABOVE OR BELOW TOP OF FULL CURB	0.30'	0.42'	0.52'	0.62'	0.72'	0.82'	0.92'	1.02'
ABSOLUTE MIN. DIST. OF PT. "WG" ABOVE OR BELOW TOP OF FULL CURB	0.00'	0.00'	0.15'	0.25'	0.35'	0.45'	0.55'	0.65'

FULL RAMP DRIVE (P = 20' TO 80')

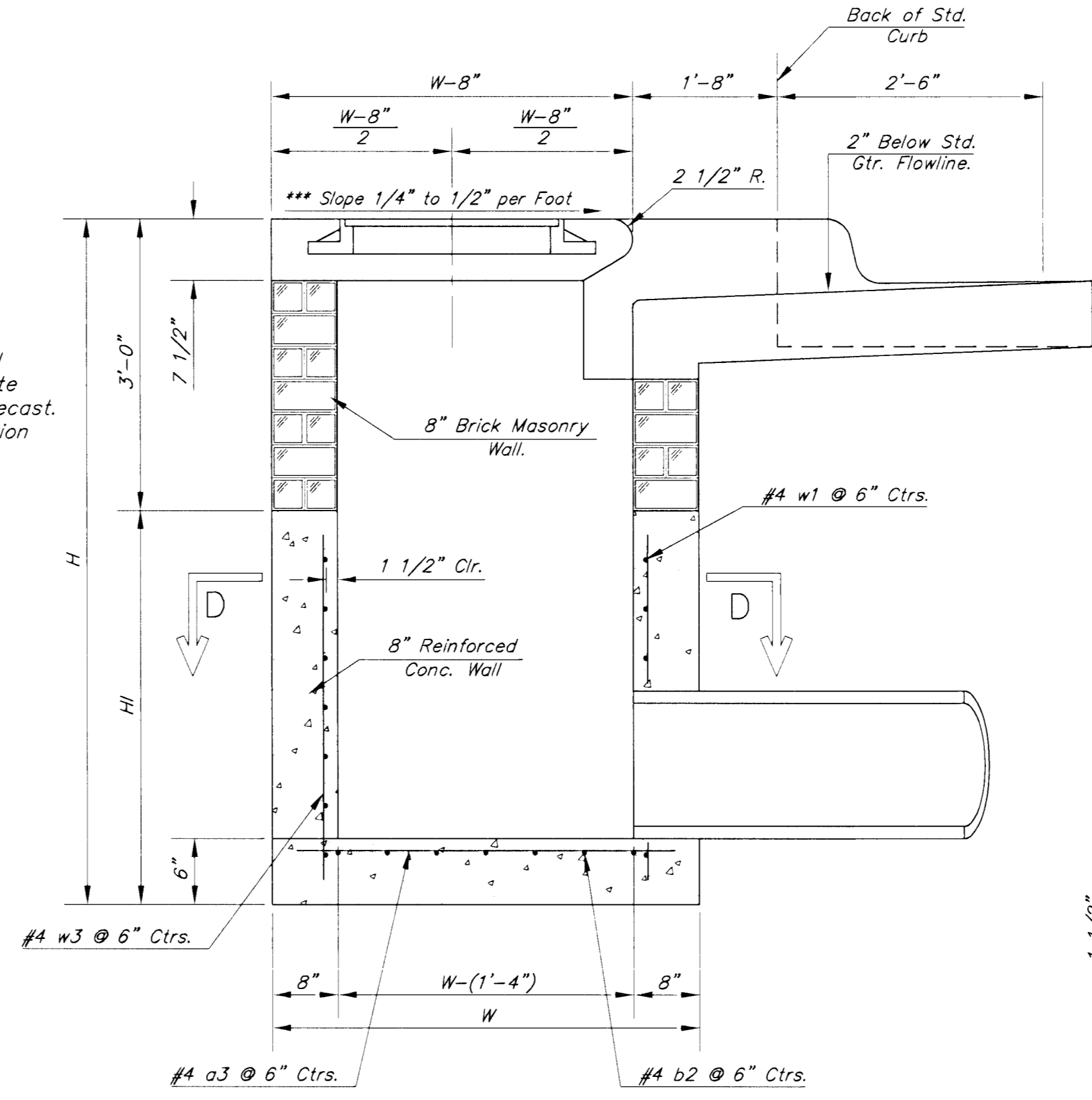


NOTE: Inlet Top Reinforcing shall be Spaced on 6" Max. Centers. Inlet Lids Shall be Notched Out as Indicated to Facilitate Construction of Curb.

NOTE: Concrete Tops to be installed on thin mortar cushion to insure full support along brick walls. Concrete tops may be cast in place or precast. Concrete used for inlet construction shall be concrete pavement mix with air entrainment.

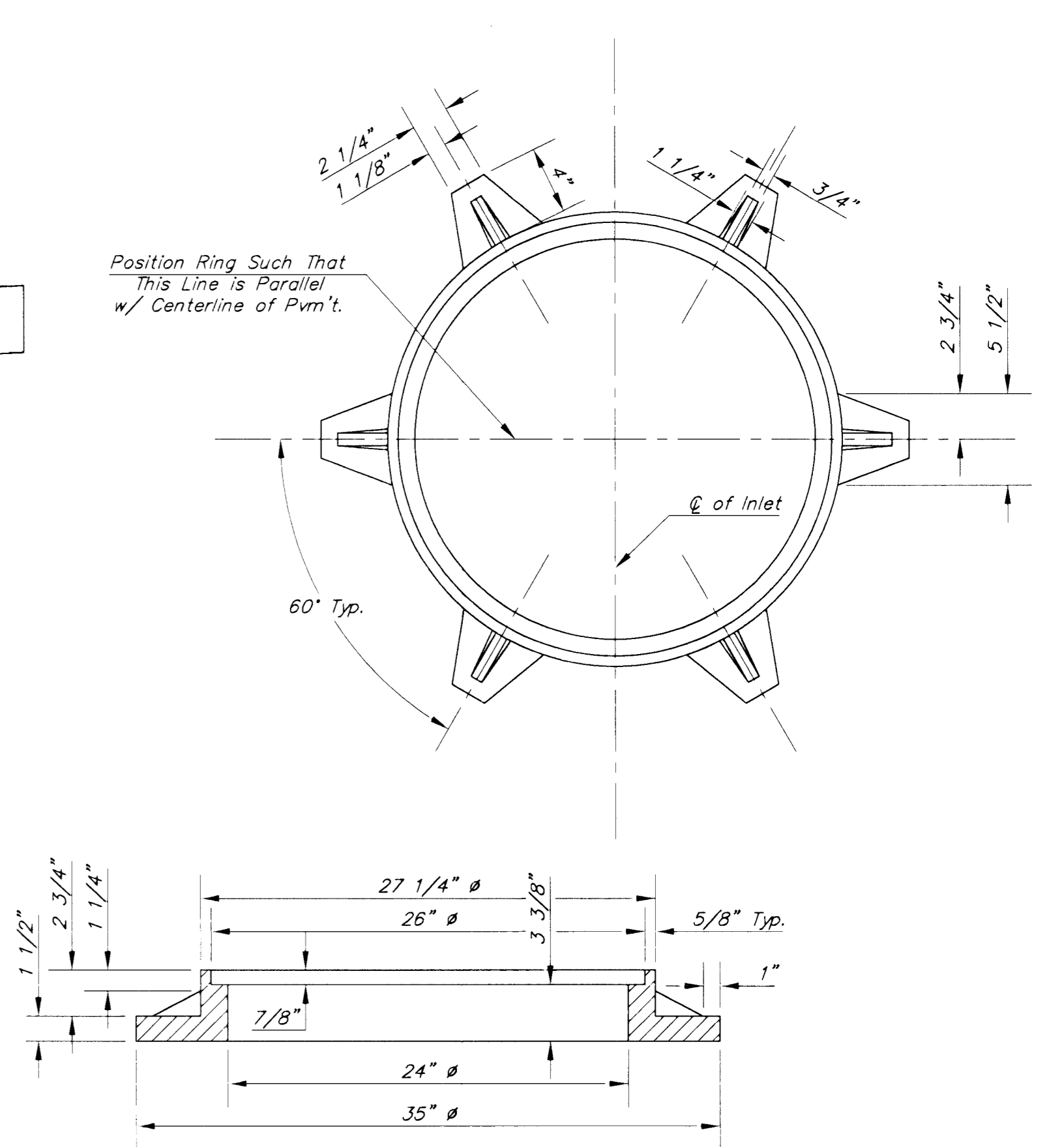
NOTE: Expansion Joint Only in Curb Area With Concrete Pavement.

PLAN



SECTION A-A

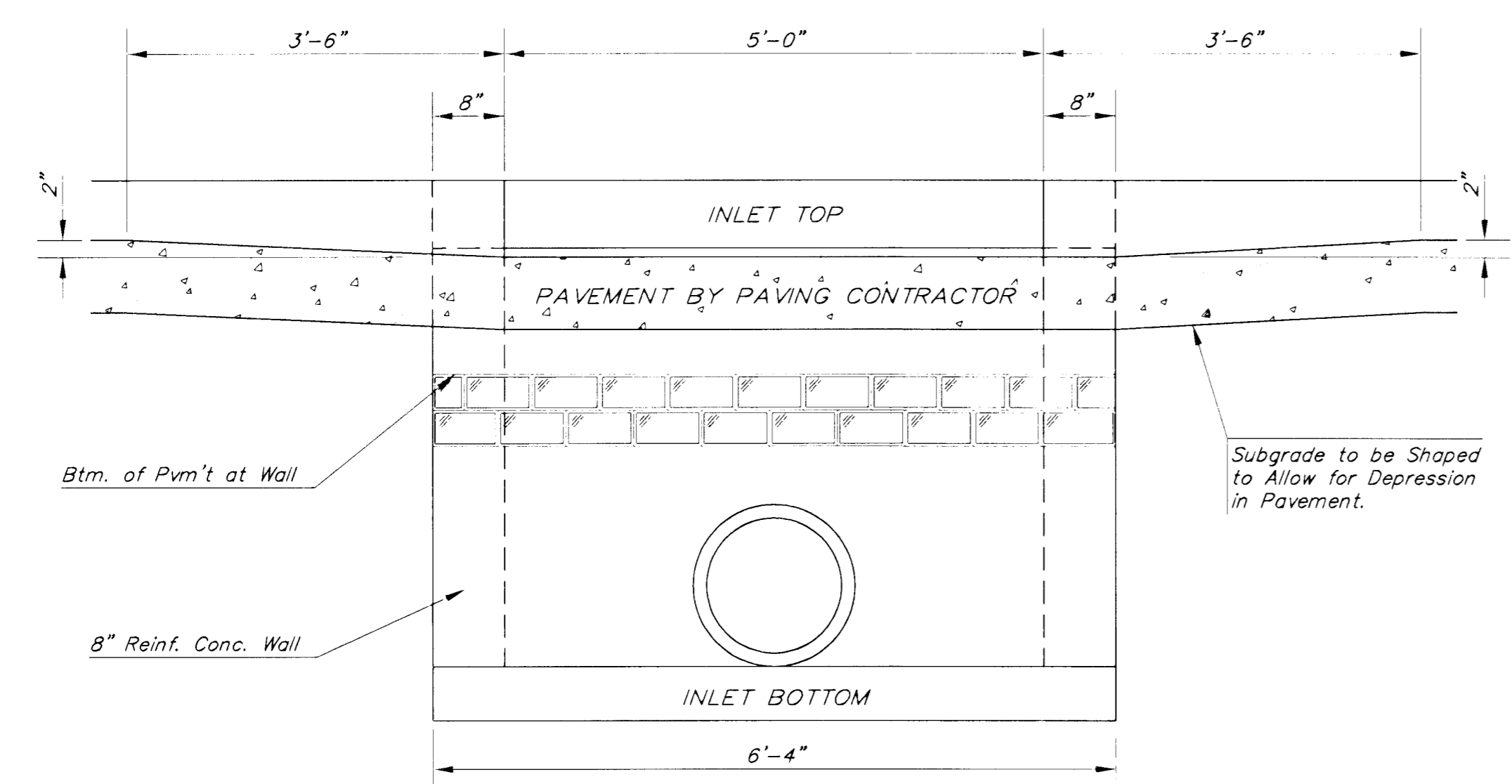
\*\*\*NOTE: Slope of Inlet tops to Match Sidewalk or Parking Slopes within Limits Indicated.



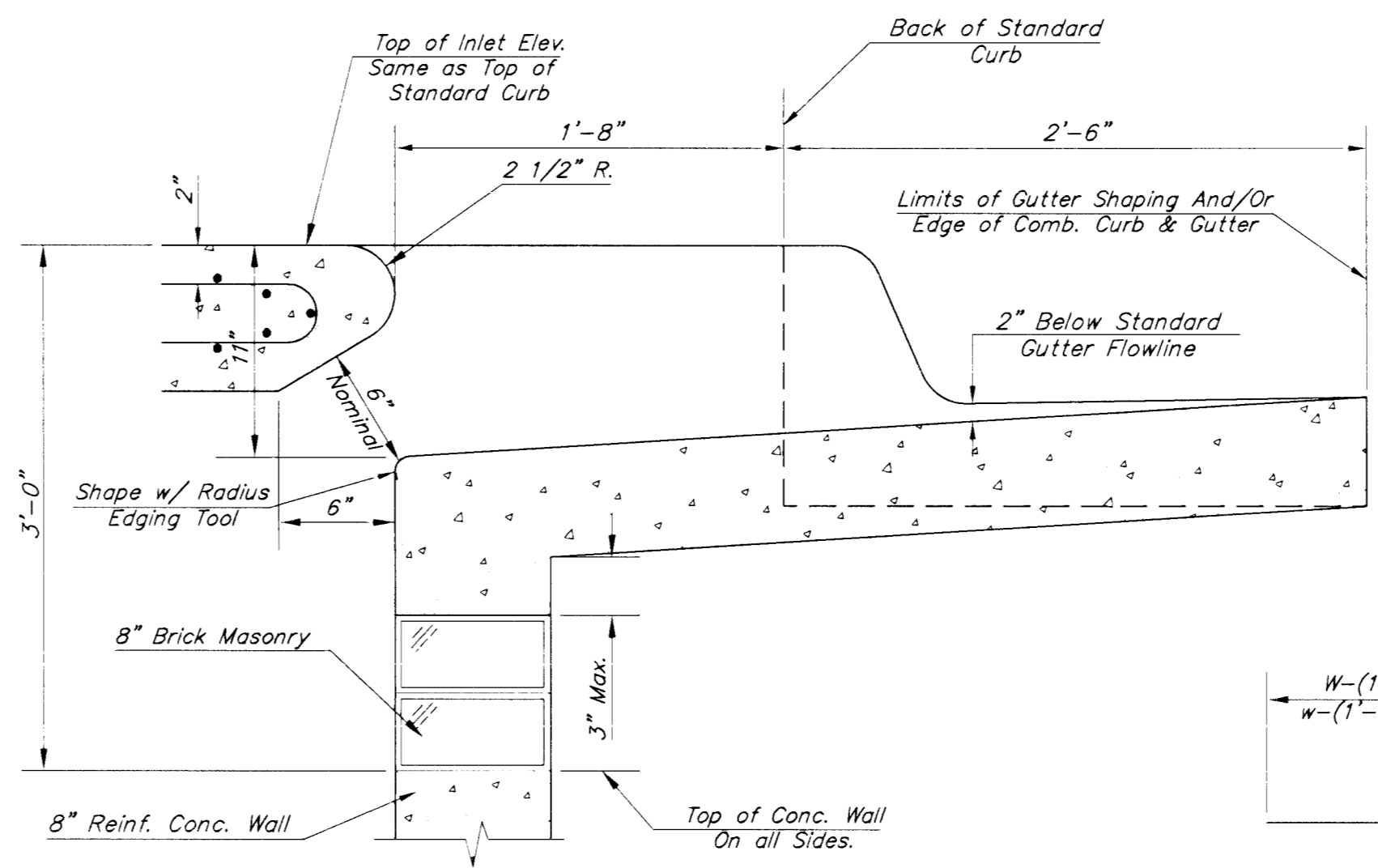
MANHOLE RING AND COVER

Weight = 180 Lbs.

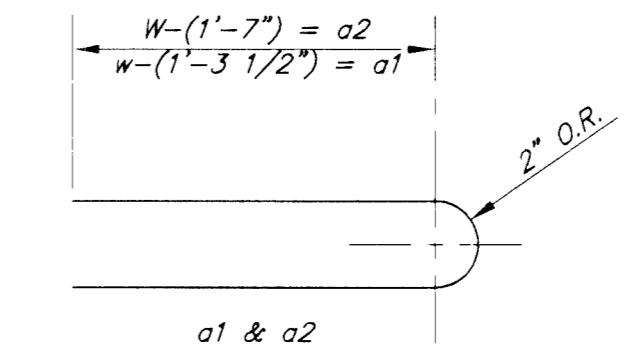
\*See City of Wichita Standard Manhole Ring and Cover Detail Sheet for Cover Details to Be Used With Inlet Frame.



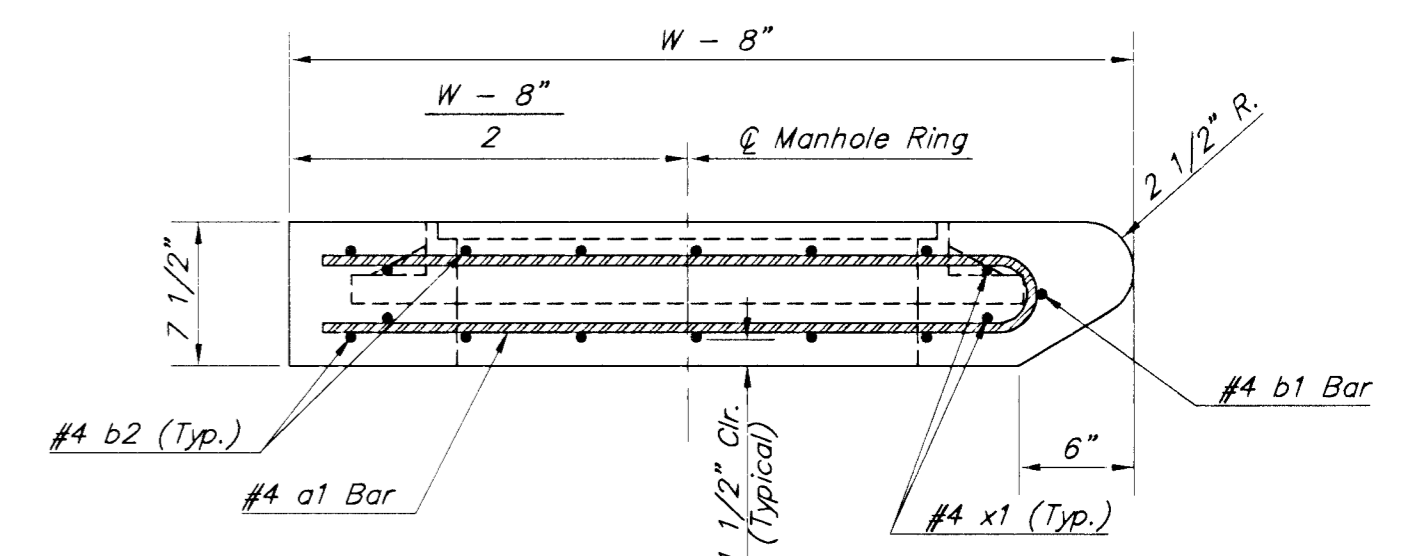
SECTION E-E



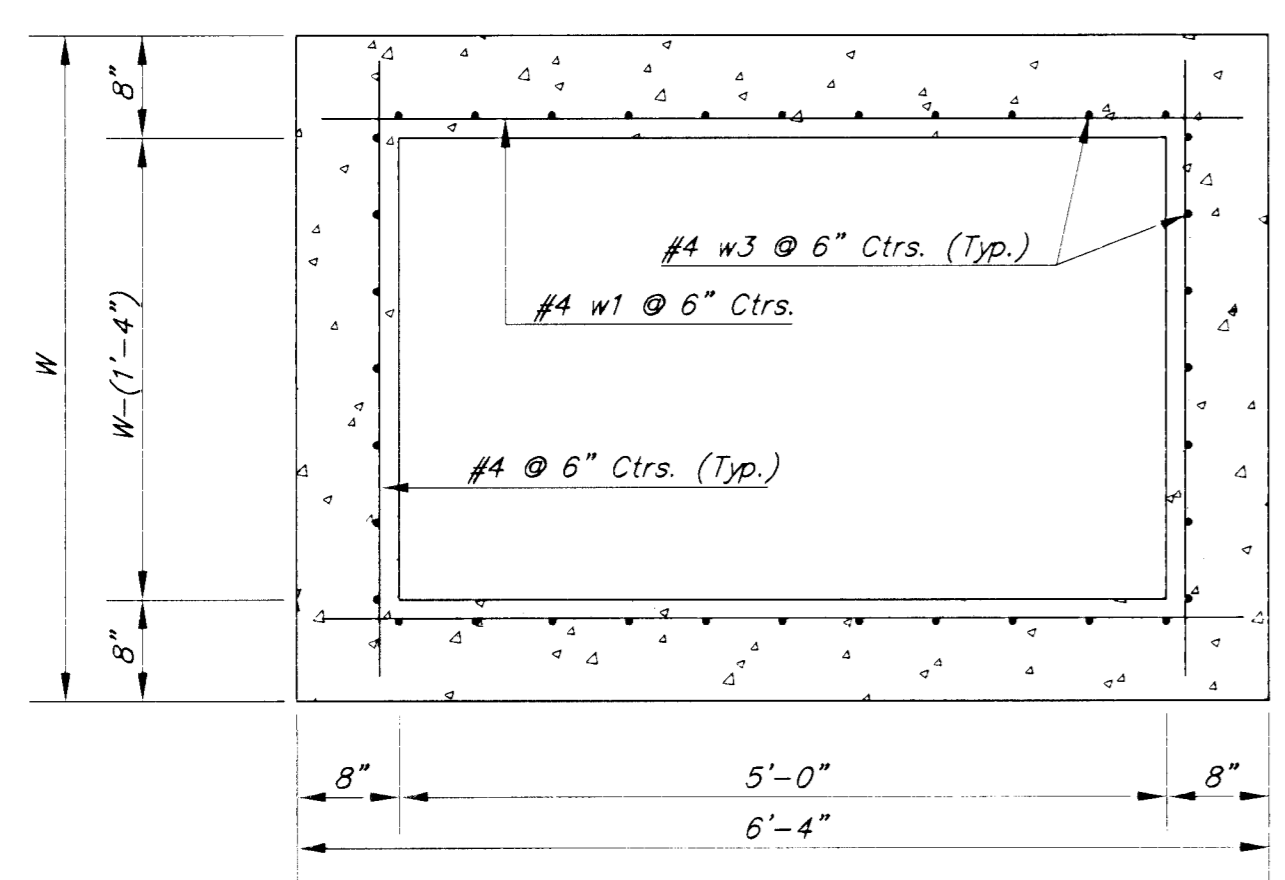
SECTION B-B



BENDING DIAGRAM



SECTION A-A



SECTION D-D

NOTE: Contractor shall have the option of constructing 8" brick masonry walls between the concrete inlet base and top on this inlet when W=6'-4" and H=7'-0" or less.

Additional curb and gutter construction necessary to connect set-back inlet to pavement will be paid for at the unit price bid for each inlet hookup.

Inlet invert shall be shaped with 8 sack sand mix concrete to create flow channels and to increase hydraulic efficiency such that the inlet will be self-cleaning between all inlet and/or outlet pipes.

The ends of all pipes installed in inlets shall be cut off flush with the inside face of the inlet wall.

PRECAST SLAB AND FLOOR REINFORCING											
		W = 4'-4"		W = 5'-4"		W = 6'-4"		W = 7'-4"		W = 8'-4"	
MARK	SIZE	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH
a1	#4	6	6'-7"	6	8'-7"	6	10'-7"	6	12'-7"	6	14'-7"
a2	#4	4	6'-0"	4	8'-0"	4	10'-0"	4	12'-0"	4	14'-0"
a3	#4	13	4'-1"	13	5'-1"	13	6'-1"	13	7'-1"	13	8'-1"
b1	#4	1	4'-9"	1	4'-9"	1	4'-9"	1	4'-9"	1	4'-9"
b2	#4	23	6'-1"	29	6'-1"	35	6'-1"	41	6'-1"	47	6'-1"
x1	#4	8	3'-10"	8	4'-2"	8	4'-6"	8	4'-10"	8	5'-2"

WALL REINFORCING											
		W = 4'-4"		W = 5'-4"		W = 6'-4"		W = 7'-4"		W = 8'-4"	
MARK	SIZE	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH
w1	#4	①	6'-1"	①	6'-1"	①	6'-1"	①	6'-1"	①	6'-1"
w2	#4	①	4'-1"	①	5'-1"	①	6'-1"	①	7'-1"	①	8'-1"
w3	#4	32	②	36	②	40	②	44	②	48	②

\* Field Bend or Cut Reinforcing as Required for Clearance.  
 ① 4 (H1 - 12") (H1 - 21") Rounded down to nearest 0.5'  
 ② H1 - 3"

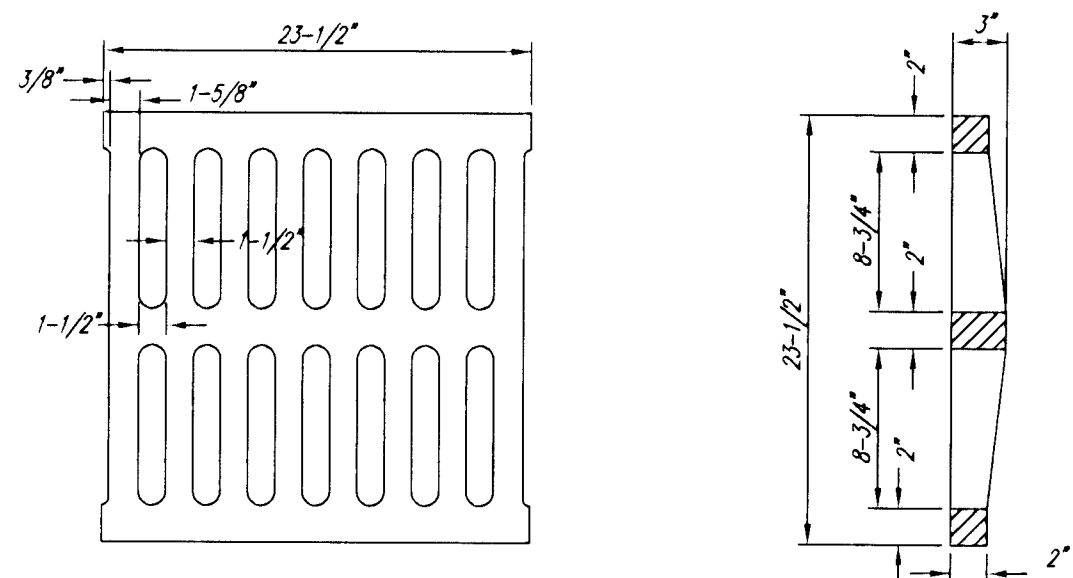
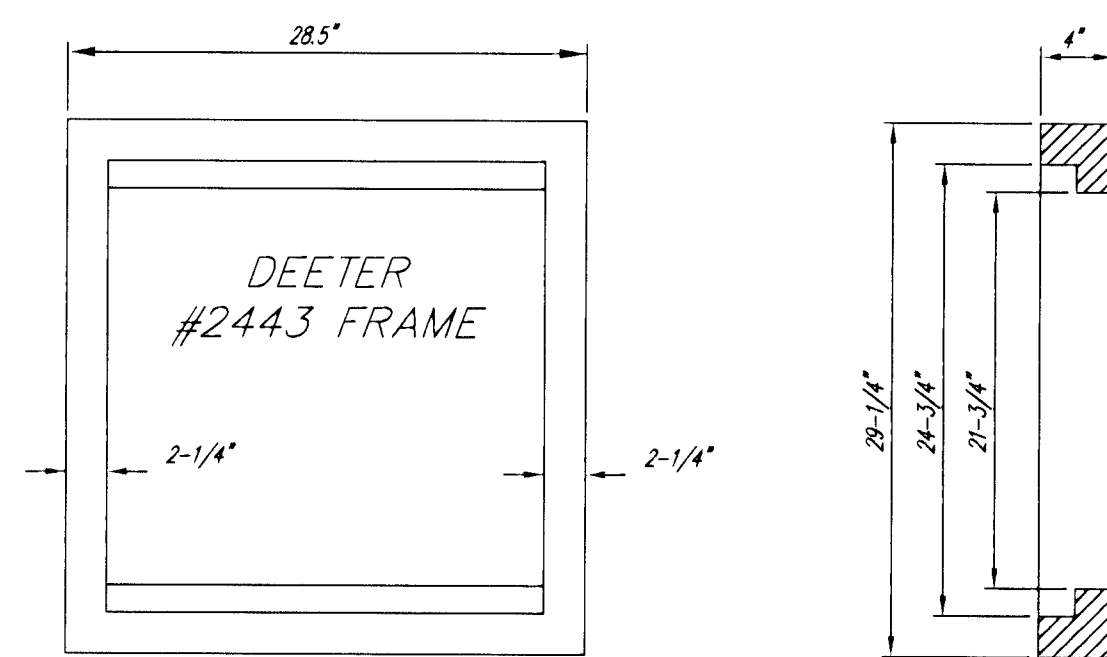
THE CITY OF WICHITA  
CITY ENGINEER'S OFFICE  
CITY HALL - SEVENTH FLOOR  
455 NORTH MAIN STREET  
WICHITA, KANSAS 67202  
(316) 268-2501  
(316) 268-4114 FAX

**STANDARD TYPE 1-A  
CURB INLET**  
OPENING = 6" x 5'-0"

JAMES ARMOUR, P.E. - CITY ENGINEER

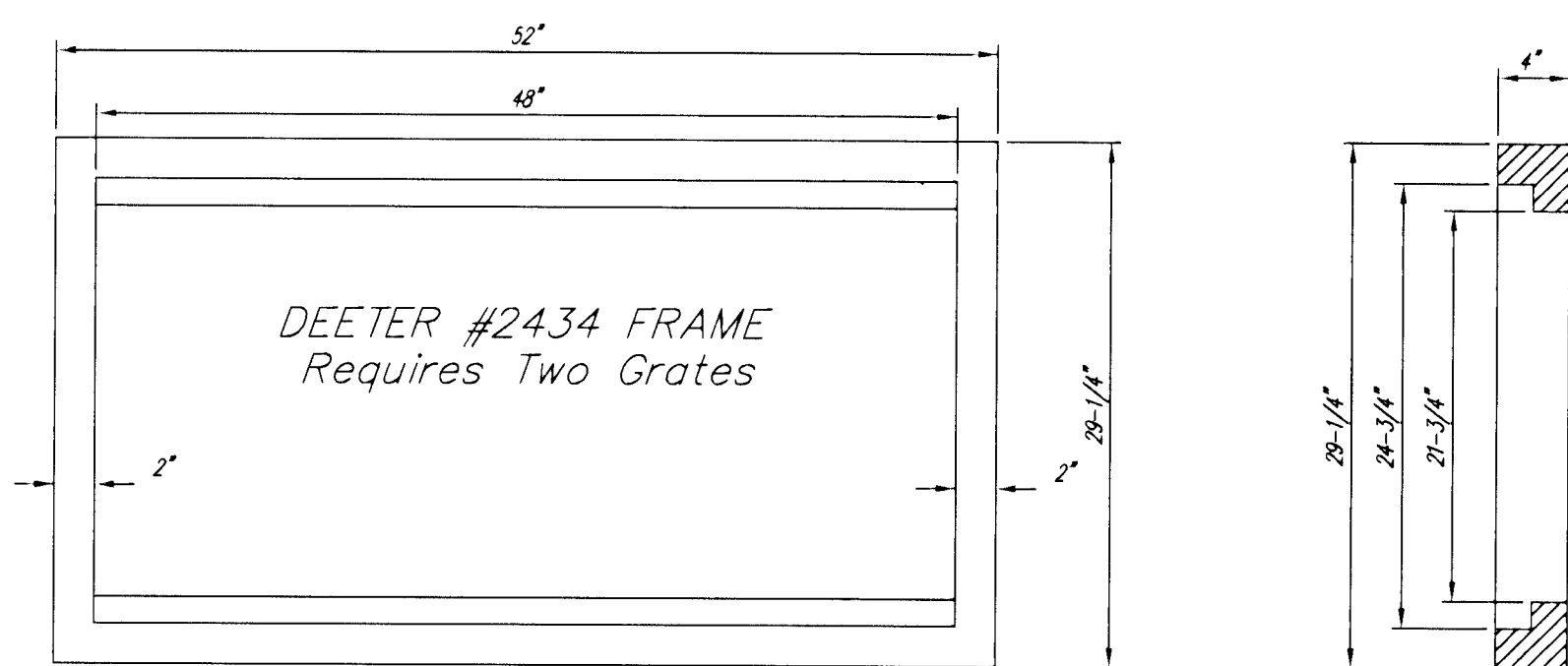
PROJECT NUMBER: 1774  
INDEX CODE: \_\_\_\_\_

DATE: MARCH 04  
SHEET 10 OF 32



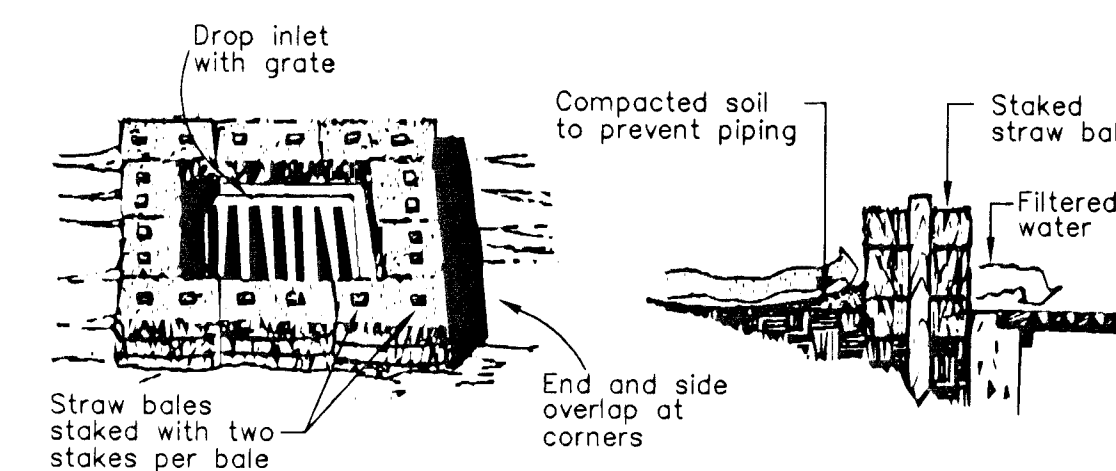
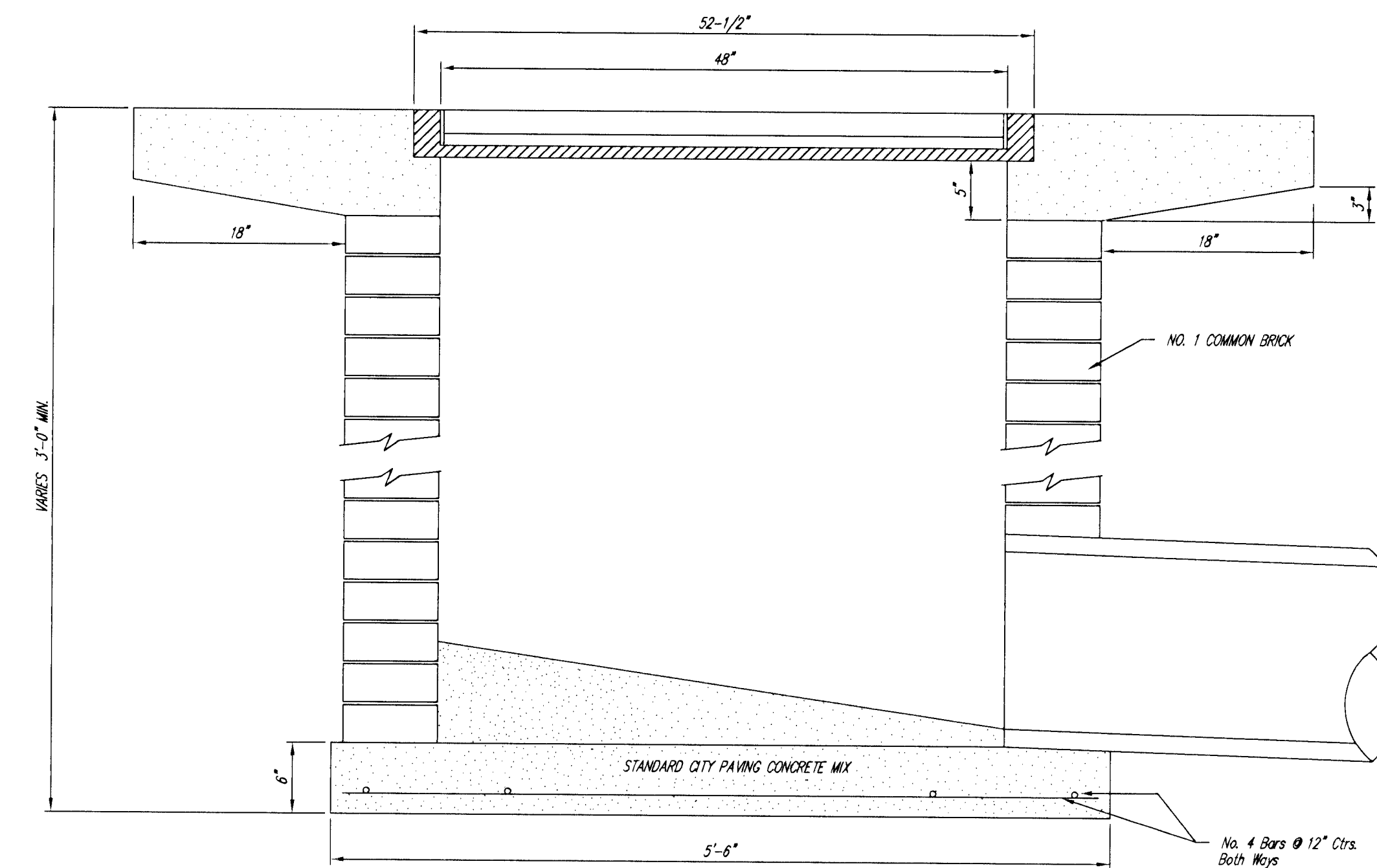
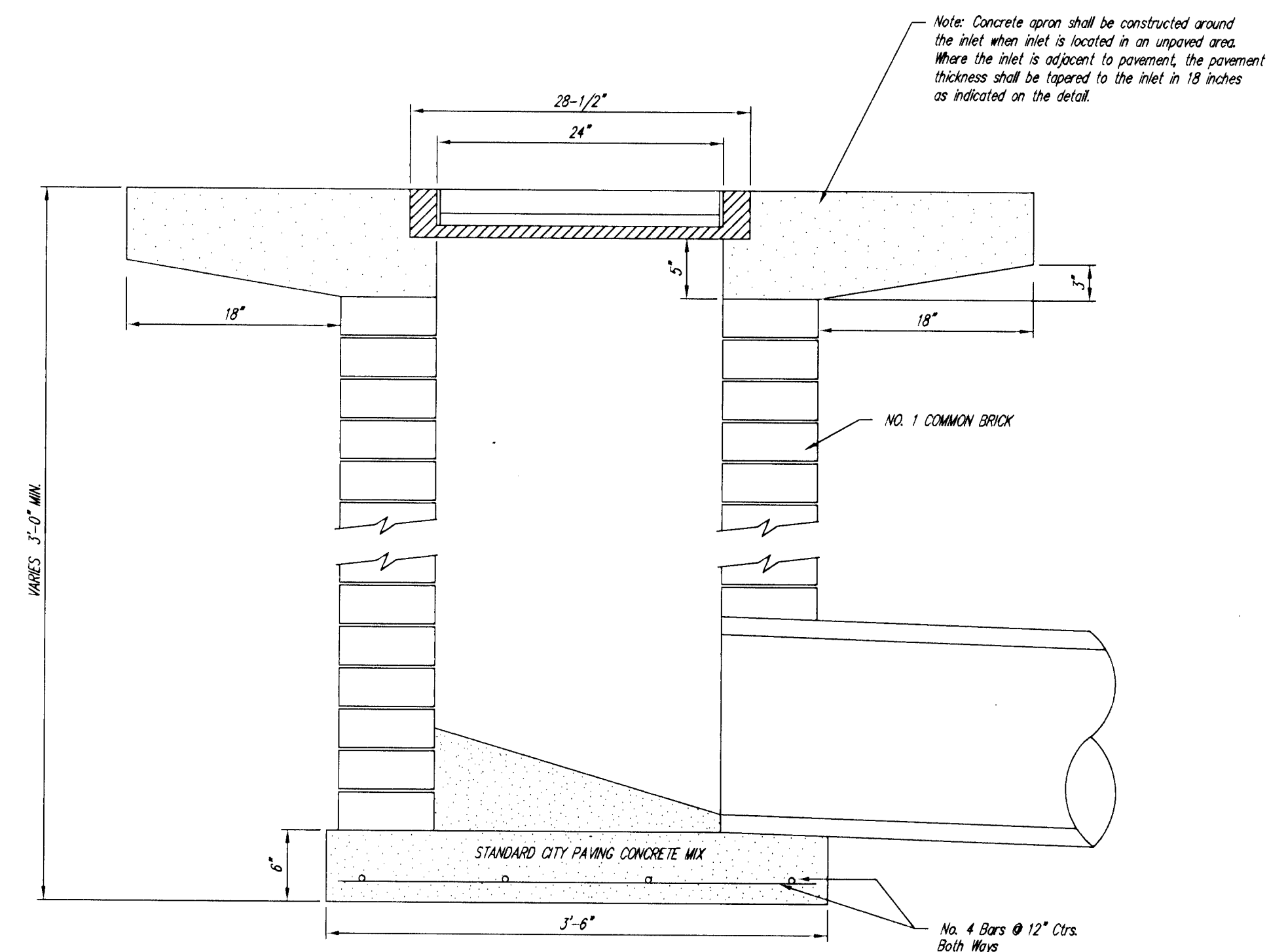
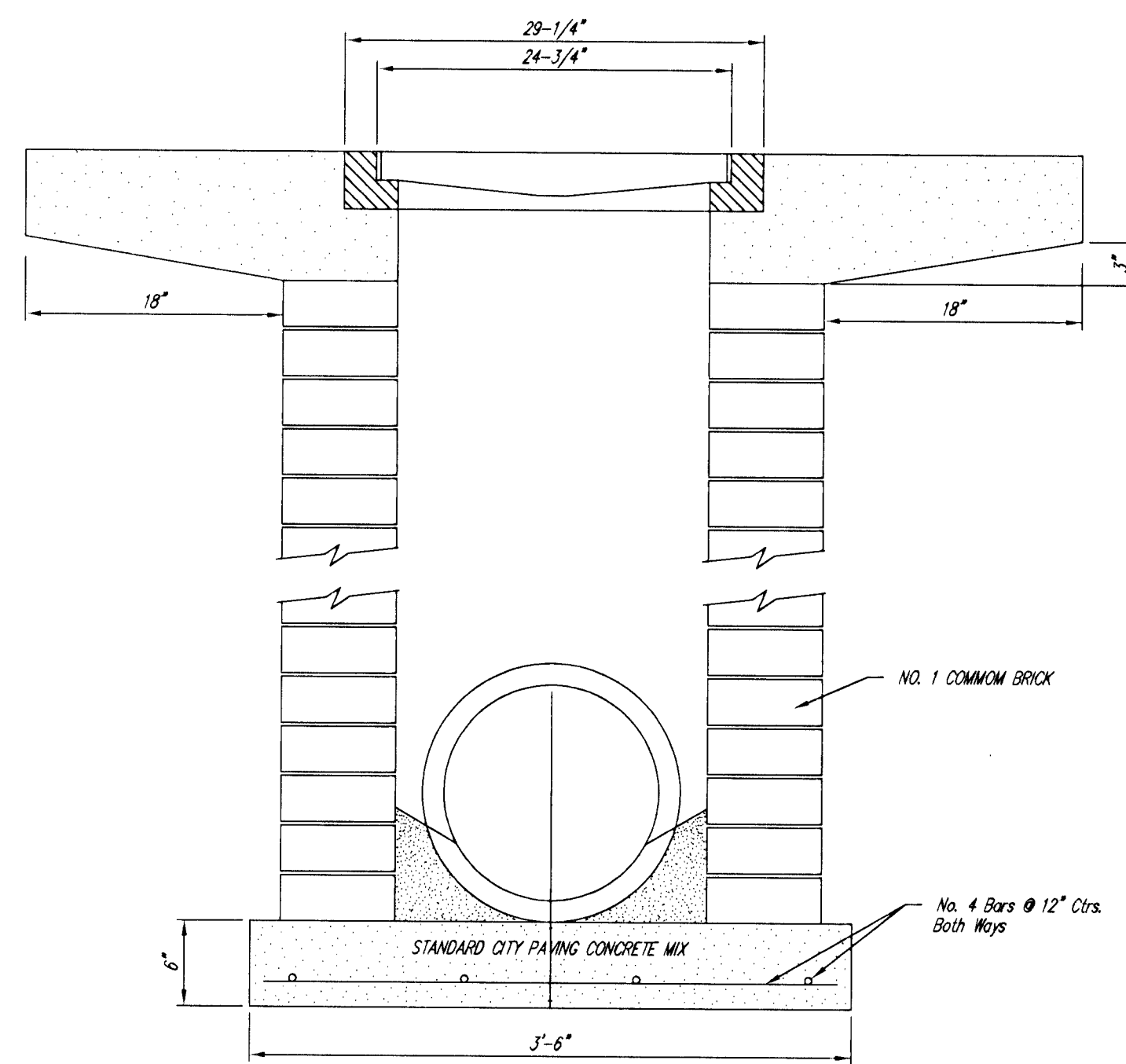
DEETER #2433 GRATE

24" x 24" Frame and Grate Detail



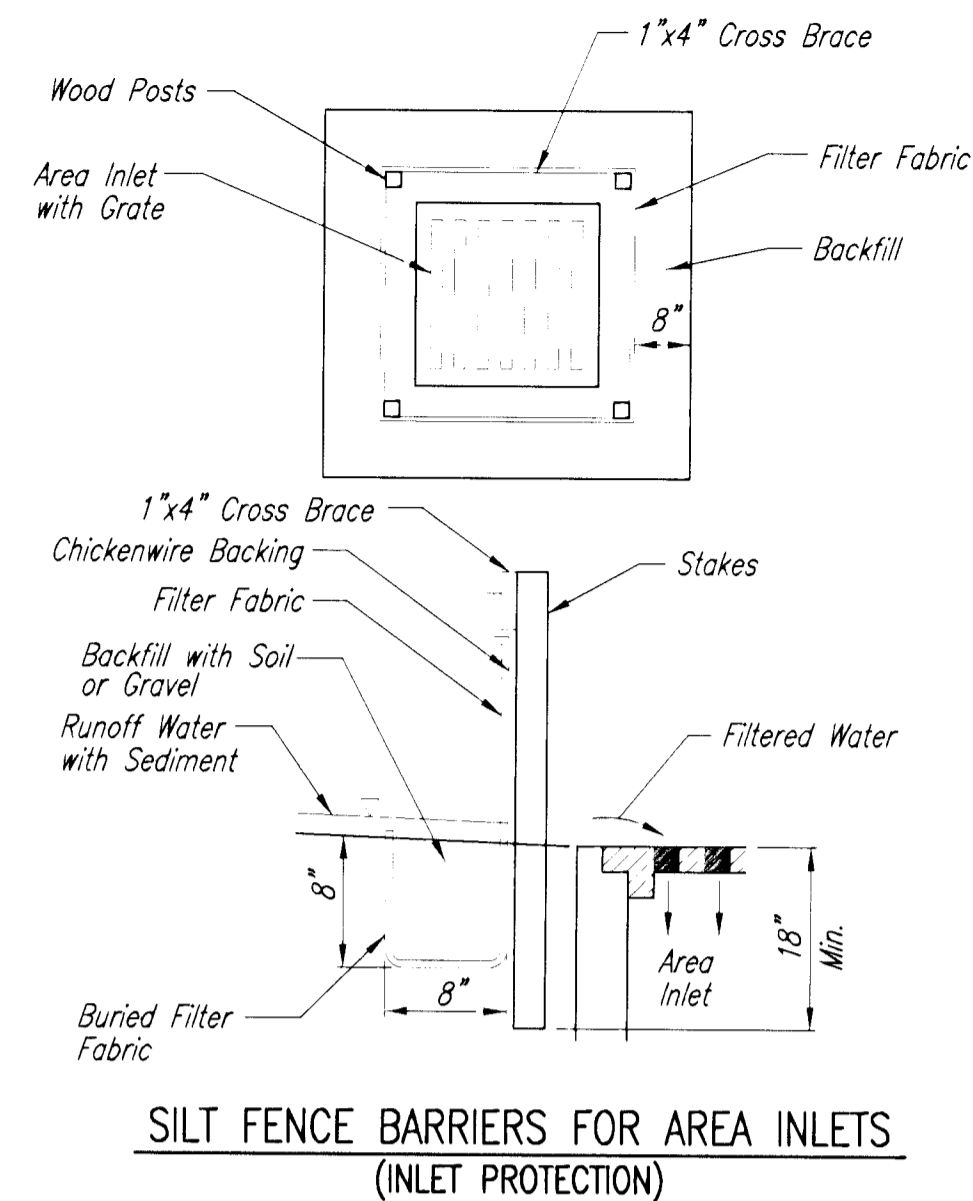
Double 24" x 24" Frame Detail

NOTE: Grates shall be imprinted on the top surface with "CITY OF WICHITA" using letters at least 1" in height. Other marking methods may be approved by the engineer.



HAY BALE SEDIMENT BARRIER

<b>HAY BALE BARRIER &amp; DROP INLET</b>	
2' X 2 1/2' X 4'	
JAMES ARMOUR P.E. - CITY ENGINEER	
PROJECT NUMBER	INDEX CODE
1774	
DATE	SHEET 11 OF 32
MARCH 04	



**Material Specification:**

Silt fence fabric should conform to the AASHTO M288 96 silt fence specification. The wire or polymeric mesh backing used to help support the silt fence fabric should conform to the AASHTO M288 96 silt fence specification. The posts used to support the silt fence fabric should be a hardwood material with the following minimum dimensions: 2" square (nominal) by 4" long. The material used to frame the tops of the posts should be 1" by 4" boards. Silt fence fabric and support backing should be attached to the wooden posts and frame with staples, wire, zip ties, or nails.

**Placement:**

Place a silt fence drop inlet barrier in a location where it is unlikely to be overtopped. Water should flow through silt fence, not over it. Silt fence barriers for area inlets often fail when repeatedly overtopped. When used as a barrier for area inlets, silt fence fabric and posts must be supported at the top by a wooden frame. When a silt fence barrier for area inlets is located near an inlet that has steep approach slopes, the storage capacity behind the barrier is drastically reduced. Timely removal of sediment must occur for a barrier to operate properly in this location.

**Proper installation method:**

Excavate a trench around the perimeter of the area inlet that is at least 8" deep by 8" wide. Drive posts to a depth of at least 18" around the perimeter of the area inlet. The distance between posts should be 4' or less. If the distance between two adjacent corner posts is more than 4', add another post(s) between them. Connect the tops of all the posts with a wooden frame made of 1" by 4" boards. Use nails or screws for fastening. Attach the wire or polymeric-mesh backing to the outside of the post/frame structure with staples, wire, zip ties, or nails. Roll out a continuous length of silt fence fabric long enough to wrap around the perimeter of the area inlet. Add more length for overlapping the fabric joint. Place the edge of the fabric in the trench, starting at the outside edge of the trench. Line all three sides of the trench with the fabric. Backfill over the fabric in the trench with the excavated soil and compact. After filling the trench, approximately 24" to 36" of silt fence fabric should remain exposed. Attach the silt fence to the outside of the post/frame structure with staples, wire, zip ties, or nails. The joint should be overlapped to the next post.

Note: When a silt fence barrier for area inlet is placed in a shallow median ditch, make sure that the top of the barrier is not higher than the paved road. In this configuration, water may spread onto the roadway causing a hazardous condition.

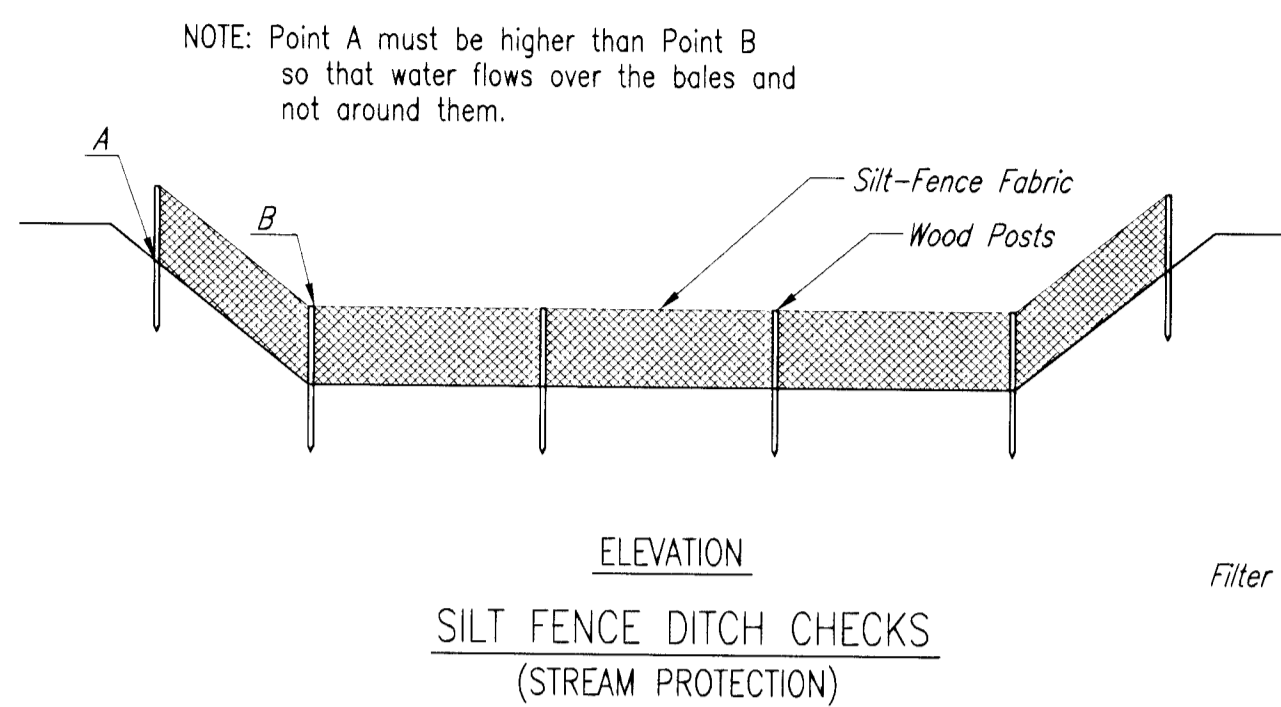
**List of common placement/installation mistakes to avoid:**

Water should flow through a silt fence barrier for area inlet—not over it. Place a silt fence barrier for area inlet in a location where it is unlikely to be overtopped. Silt fence barrier for area inlets often fail when repeatedly overtopped. Do not place posts on the outside of the silt fence barrier for area inlet. In this configuration, the force of the water is not resisted by the posts, but only by the staples (wire, zip-ties, nails, etc.). The silt fence will rip and fail. Do not install silt fence barrier for area inlets without framing the top of the posts. The corner posts around area inlets are stressed in two directions whereas a normal silt fence is only stressed in one direction. This added stress requires more support.

**Inspection and Maintenance:**

Silt fence barrier for area inlets should be inspected every 7 days and within 24 hours of a rainfall of 1/2" or more. The following is a list of questions that should be addressed during each inspection:

- Does water flow under the silt fence?
- Does the silt fence sag excessively?
- Has the silt fence torn or become detached from the posts?
- Does sediment need to be removed from behind the area inlet barrier?



**Material Specification:**

Silt fence fabric should conform to the AASHTO M288 96 silt fence specification. The posts used to support the silt fence fabric should be a hardwood material with the following minimum dimensions: 2" square (nominal) by 4" long. Silt fence fabric should be attached to the wooden posts with staples, wire, zip ties, or nails.

**Placement:**

Place silt fence in ditches where it is unlikely that it will be overtopped. Water should flow through a silt fence ditch check, not over it. Silt fence ditch checks often fail when overtopped. Silt fence ditch checks should be placed perpendicular to the flowline of the ditch. The silt fence should extend far enough so that the ground level at the ends of the fence is higher than the top of the low point of the fence. This prevents water from flowing around the check. Checks should not be placed in ditches where high flows are expected. Rock checks should be used instead. Silt fence should be placed in ditches with slopes of 6% or less. For slopes steeper than 6%, rock checks should be used.

The following table provides check spacing for a given ditch grade:

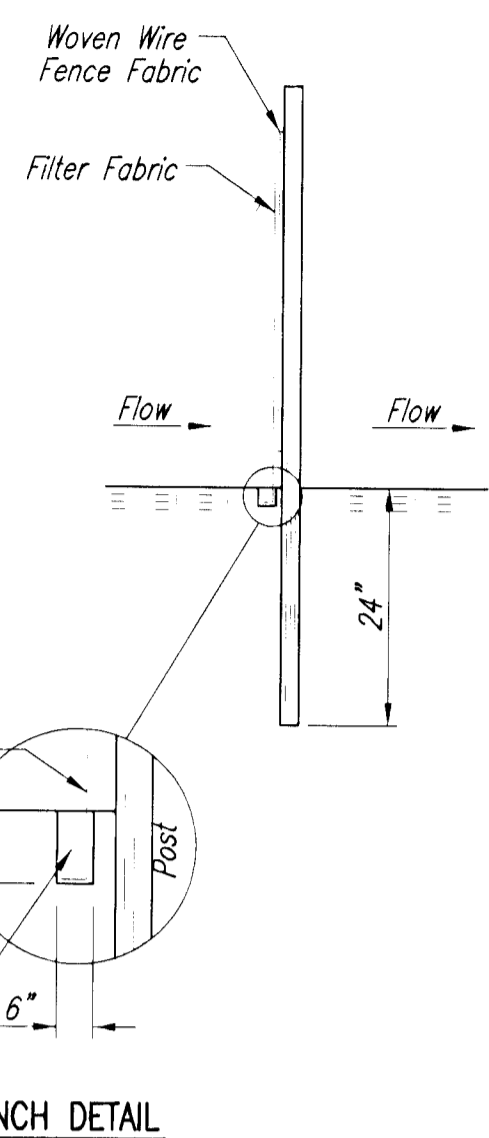
Ditch Check Ditch grade (%)	Spacing Check (feet)	Ditch Check Ditch grade (%)	Spacing Check (feet)
0.5	200	4.0	50
1.0	200	5.0	40
2.0	100	6.0	30
3.0	65		

**Proper installation method:**

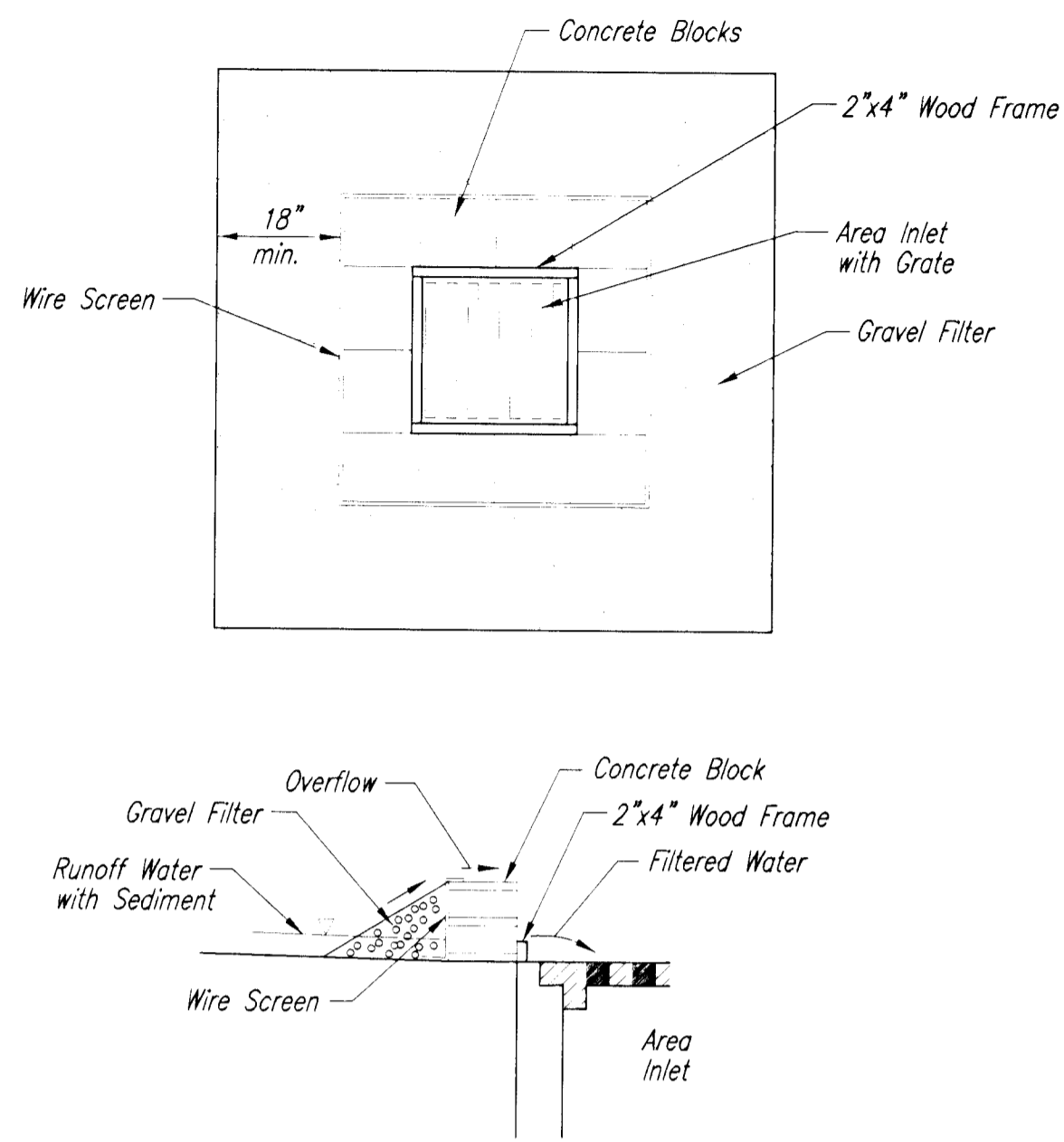
Excavate a trench perpendicular to the ditch flowline that is at least 12" deep by 6" wide. Extend the trench in a straight line along the entire length of the proposed ditch check. Place the soil on the upstream side of the trench for later use. Roll out a continuous length of silt fence fabric on the downstream side of the trench. Place the edge of the fabric in the trench starting at the top upstream edge of the trench. Line two sides of the trench with the fabric as shown on detail. Backfill over the fabric in the trench with the excavated soil and compact. After filling the trench, approximately 24" to 36" of silt fence fabric should remain exposed. Lay the exposed silt fence on the upstream side of the trench to clear an area for driving in the posts. Just downstream of the trench, drive posts into the ground to a depth of at least 24". Place posts no more than 4' apart. Attach the silt fence to the anchored post with staples, wire, zip ties, or nails.

**List of common placement/installation mistakes to avoid:**

Water should flow through a silt fence ditch check—not over it. Place silt fence in ditches where it is unlikely that it will be overtopped. Silt fence installations quickly deteriorate when water overtops them. Do not place silt fence posts on the upstream side of the silt fence fabric. In this configuration, the force of the water is not restricted by the posts, but only by the staples (wire, zip ties, nails, etc.). The silt fence will rip and fail. Do not place a silt fence ditch check directly in front of a culvert outlet. It will not stand up to the concentrated flow. Do not place silt fence ditch checks in ditches that will likely experience high flows. They will not stand up to concentrated flow. Follow prescribed ditch check spacing guidelines. If spacing guidelines are exceeded, erosion will occur between the ditch checks. Do not allow water to flow around the ditch check. Make sure that the ditch check is long enough so that the ground level at the ends of the fence is higher than the low point on the top of the fence. Do not place silt fence ditch checks in channels with shallow soils underlain by rock. If the check is not anchored sufficiently, it will wash out.



ANCHOR TRENCH DETAIL



CONCRETE BLOCK FILTER FOR AREA DRAIN (INLET PROTECTION)

Gravel barriers provide little filtering of large inflow waters. However, when installed correctly and maintained, they can effectively treat low runoff flows.

Placement of gravel filters around area drains must be completed in a manner that will not cause local flooding.

Gravel filters can be used if the immediate and adjacent area to the area drain consists of soil or pavement.

Only gravel filters are to be installed on top of the pavement.

**Instructions for Installing:**

- STEP 1: Place concrete blocks around the grate. The blocks can be stacked one or two high and should be supported by a 2"x4" board.
- STEP 2: Wrap 1/2" mesh wire screen around the concrete blocks.
- STEP 3: Place 1" to 1-1/2" diameter rock around the blocks and wire screen. Be sure the rock extends down from the top of the concrete block.
- STEP 4: To prevent damage to vehicles, signs warning drivers about the structures may be necessary.

An alternative method is use of gravel bags that are supported to prevent collapsing.

Use of rock having diameters smaller than 1" may result in clogging of pores and reduce the amount of water flowing into an inlet.

**Maintenance:**

All gravel filters installed around area drains should be inspected and repaired after each runoff event. Sediment should be removed when material is within 3" of the top of any block. Periodically, the gravel should be raked to increase infiltration and filtering of runoff waters. Accumulated sediment is to be removed immediately from roads and streets after every runoff event.

**Inspection and Maintenance:**

Silt fence ditch checks should be inspected every 7 days and within 24 hours of a rainfall of 1/2" or more. The following is a list of questions that should be addressed during each inspection:

- Does water flow around the ditch check?
- Does water flow under the ditch check?
- Does the silt fence sag excessively?
- Has the silt fence torn or become detached from the posts?
- Does sediment need to be removed from behind the ditch check?

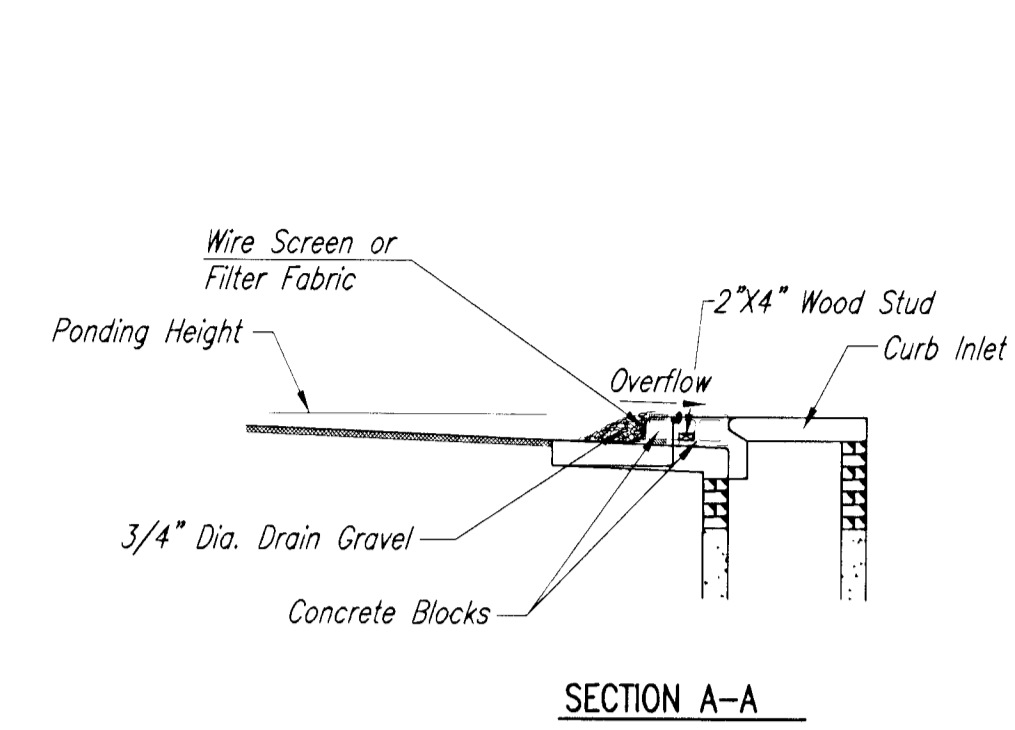
No.	Date	By	Approved				
1							
<b>EROSION CONTROL DETAILS</b> <b>BOMBARDIER LEARJET</b> <b>WICHITA, KANSAS</b>							
<b>POE &amp; ASSOCIATES OF KANSAS, INC.</b> <b>CONSULTING ENGINEERS</b> <small>5940 E. Central, Suite 200 • Wichita, KS 67208-4242</small> <small>Phone 316/685-4114 • FAX 316/685-4444</small>							
<b>FINAL</b>							
<small>Designed By: P. Ferguson          Drawn By: J. Ulrich          Pore Job No.: 1774          Date: March 2004</small>							
Sheet 20 of 32							

Revision	
Approved	
By	
Date	
No.	

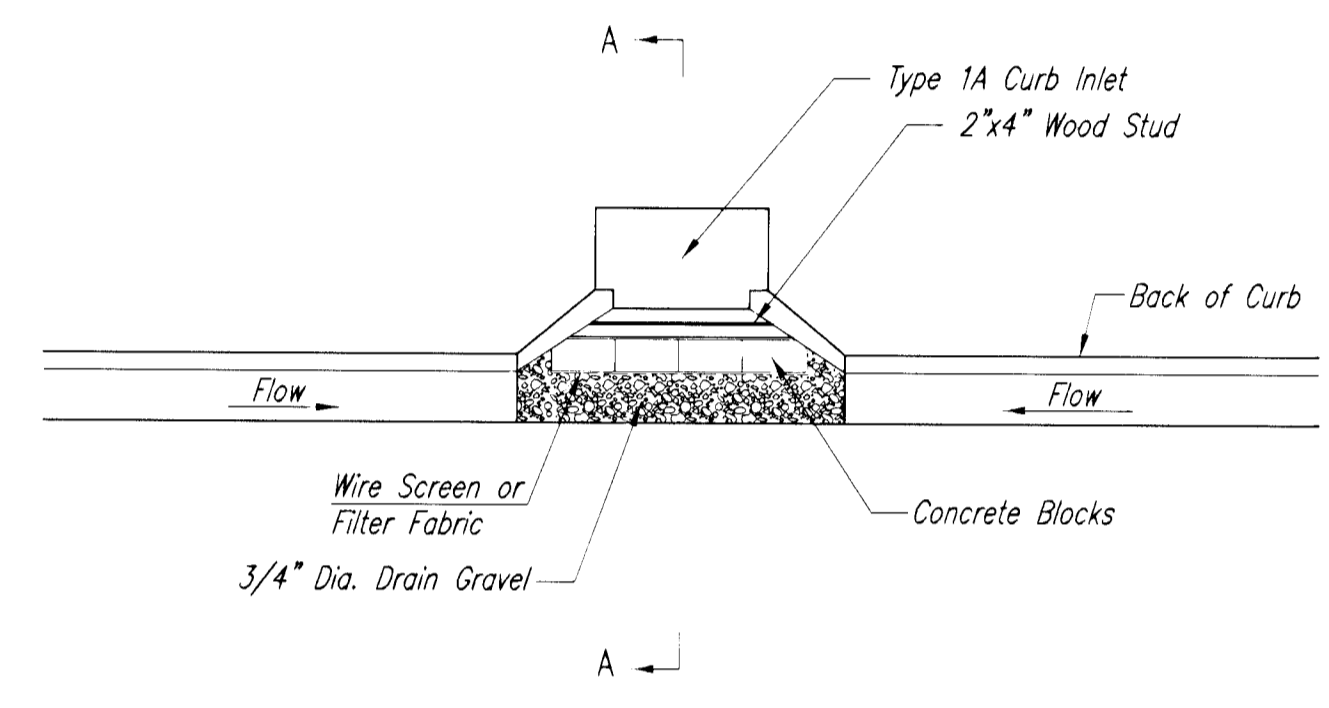
EROSION CONTROL  
DETAILS  
**BOMBARDIER LEARIET**  
WICHITA, KANSAS

POE & ASSOCIATES OF KANSAS, INC.  
CONSULTING ENGINEERS  
5940 E. Leeward, Suite 200 • Wichita, KS 67214  
Phone 316/685-4114 • FAX 316/685-4444

**FINAL**  
Designed By: P. Ferguson  
Drawn By: J. Unruh  
Poe Job No.: 1774  
Date: March 2004



SECTION A-A



CURB INLET GRAVEL FILTERS  
(INLET PROTECTION-RESIDENTIAL STREETS ONLY)

NOTE: Other types of curb inlet protection may be approved by the city so long as equal protection is provided.

A gravel inlet filter shall be installed at sump locations on residential streets. This type of protection is not to be used on arterial or collector streets at any time that it would pose an undue traffic hazard.

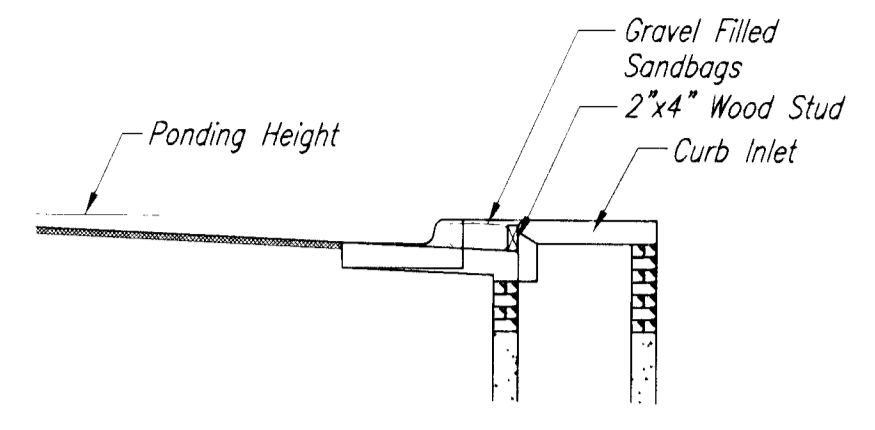
**Instructions for Installing:**

- STEP 1: Place concrete blocks around the inlet as shown on drawing. Insert 2x4 board as shown.
- STEP 2: Wrap 1/2" mesh wire screen around the concrete blocks.
- STEP 3: Place 1" to 1-1/2" diameter rock around the blocks and wire screen. Be sure the rock extends down from the top of the concrete block.
- STEP 4: To prevent damage to vehicles, signs warning drivers about the structures may be necessary. An alternative installation is the use of gravel bags supported by a 2x4" board to prevent collapsing.

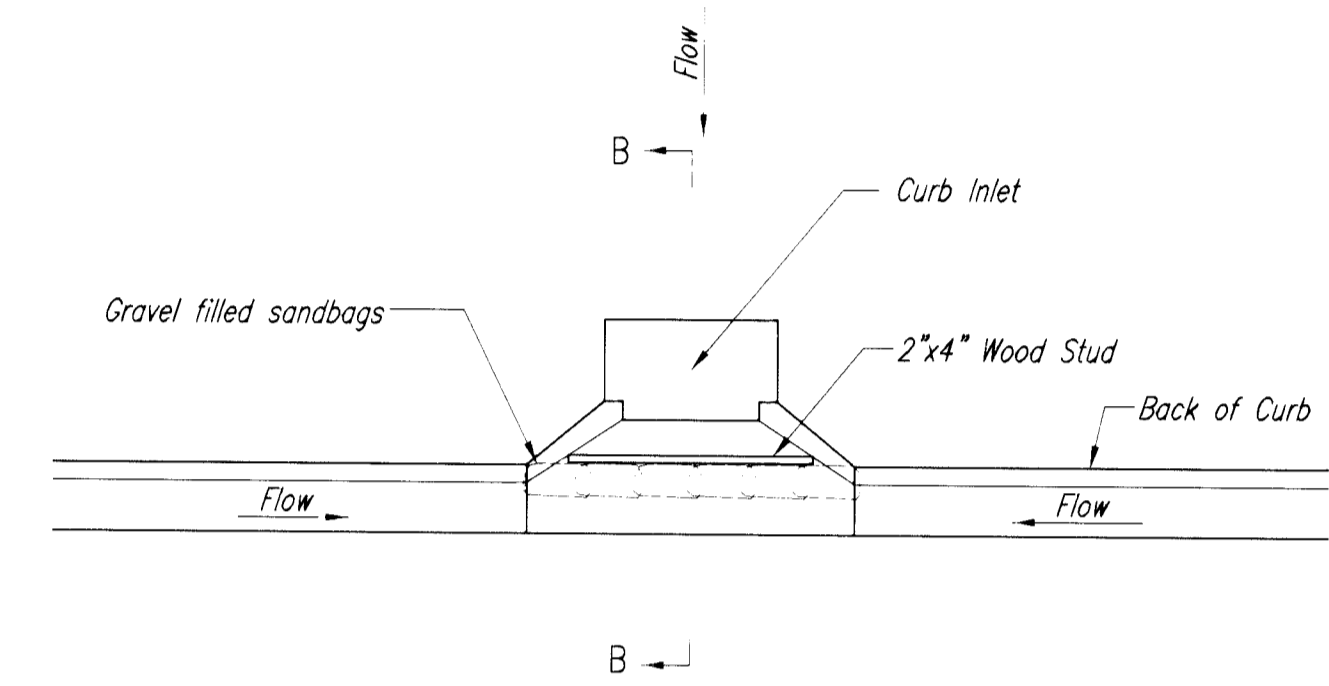
Use of rock with diameters smaller than 1" in the bag may result in clogging of pores and reduce the amount of water flowing into an inlet.

**Maintenance:**

All curb inlet gravel filters shall be inspected and repaired after each runoff event. Sediment deposits are to be removed once material is within 8 cm (3 inches) of the top of any block. Periodically, the gravel shall be raked to increase infiltration and filtering of runoff waters. Accumulated sediment is to be removed immediately from roads and streets.

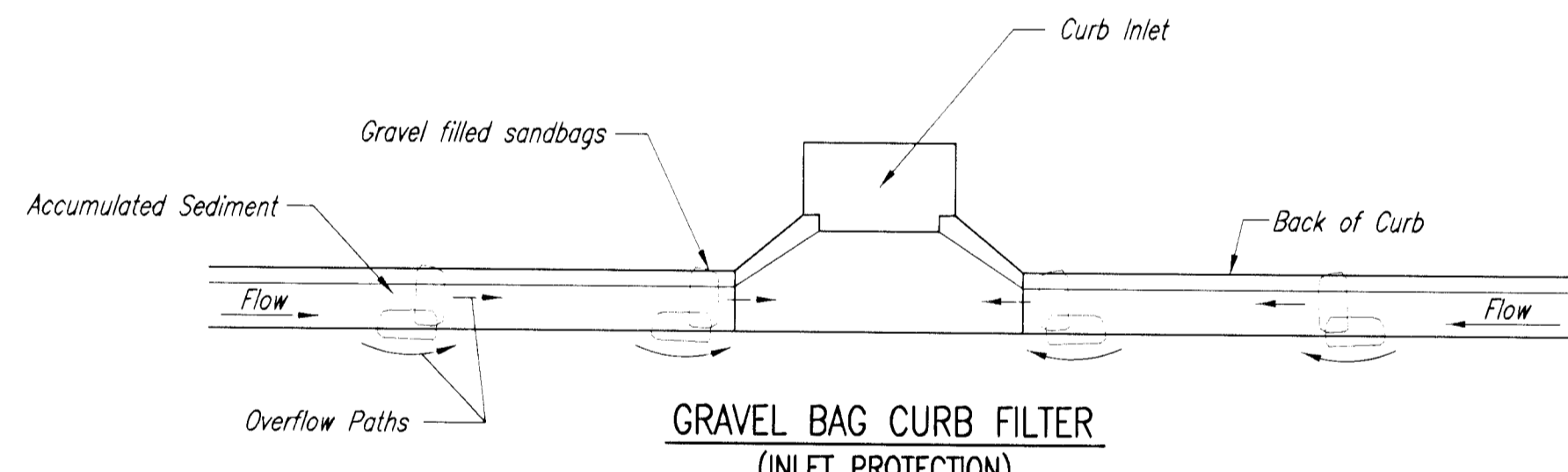


SECTION B-B



CURB INLET SANDBAG FILTERS  
(INLET PROTECTION)

NOTE: Other types of curb inlet protection may be approved by the City so long as equal protection is provided.



GRAVEL BAG CURB FILTER  
(INLET PROTECTION)

NOTE: Place two or more sets of bags in a manner that results in maximum support. The flow line bag must be lower than top of curb.

**CURB SEDIMENT TRAPS.**

When inlets are located on streets having a grade (i.e., sump conditions do not exist), installing gravel (or sand) bags in the gutter flow line to create small sediment traps can be considered. Gravel bags are recommended over sand bags to allow for drainage.

If the spacing between bags becomes too large, little sediment may be trapped. Spacing of bags should be completed using the table or graph that illustrates placement distances based upon street slope. When installed in the gutter, bag tops must be lower than the sidewalk.

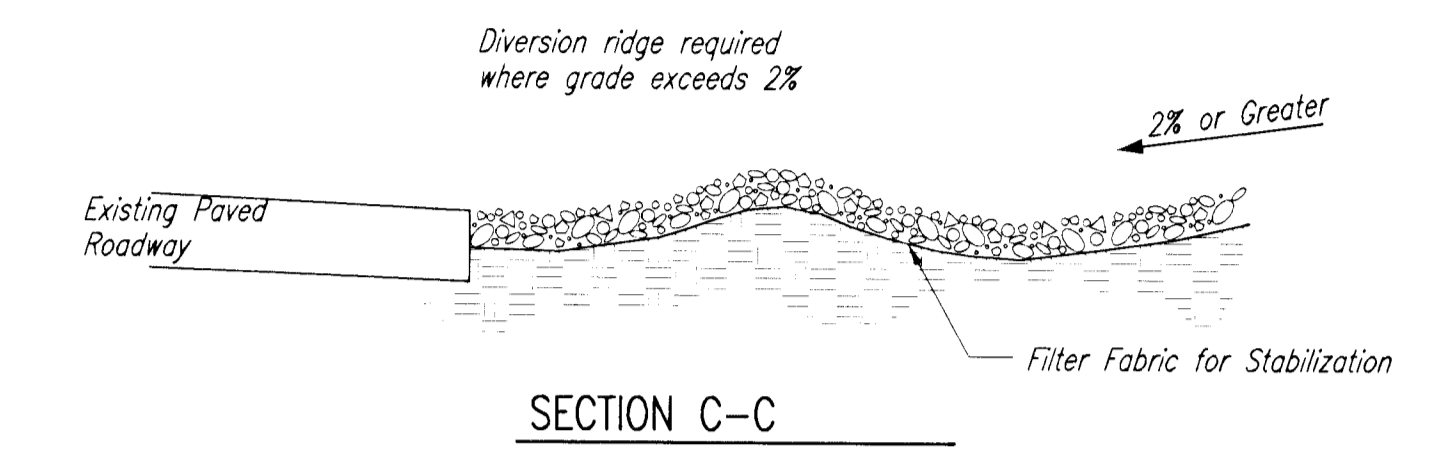
**Spacing:**

Gravel bags are to be placed according to street grades using the following table or graph that appears below.

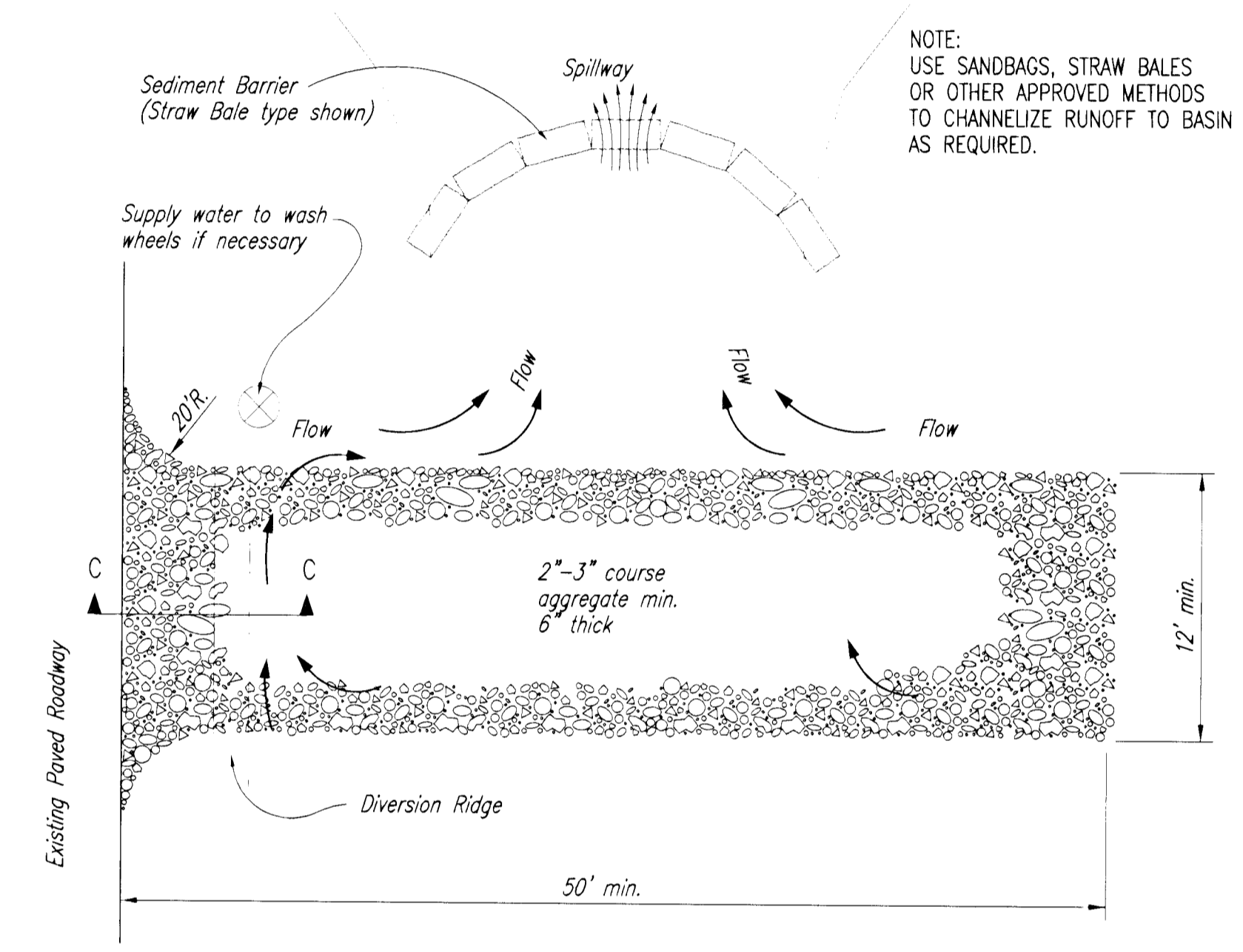
GRADE (%)	SPACING (FEET)
0.5	75
1.0	45
2.0	18
3.0	12
4.0	9
5.0	6

**Maintenance:**

Collected sediment shall be removed after every runoff event. Bags that are destroyed by vehicular traffic or through natural deterioration are to be immediately replaced.



SECTION C-C



STABILIZED CONSTRUCTION ENTRANCE

**NOTES:**

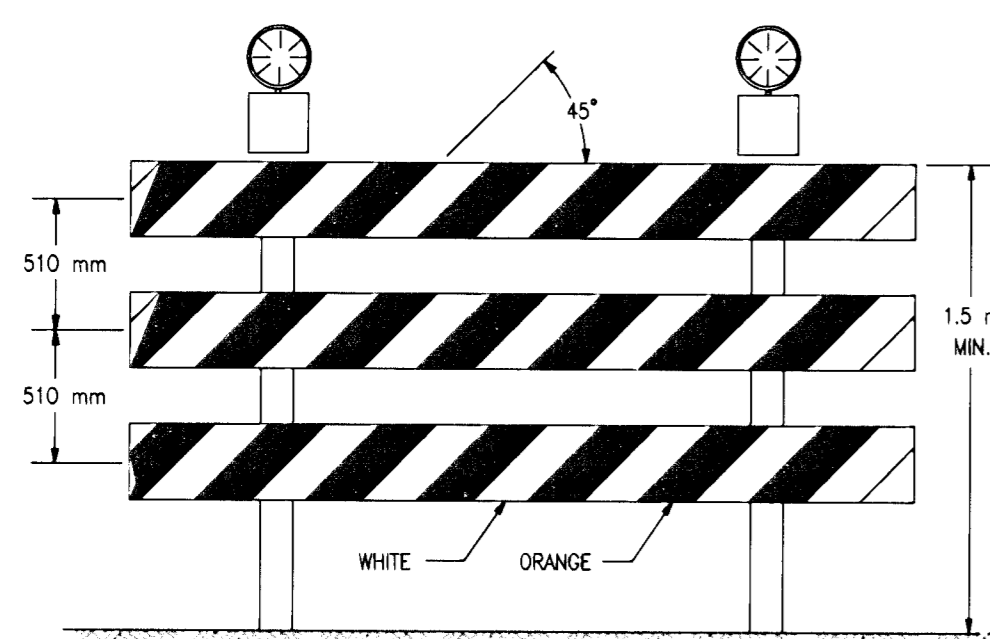
- 1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
- 2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
- 3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN, AS SHOWN ABOVE.
- 4. DRIVE ENTRANCES ONTO RESIDENTIAL LOTS WILL NOT BE REQUIRED TO HAVE THE SEDIMENT BARRIER SHOWN, BUT WHEEL WASHING MAY BE REQUIRED IF STABILIZED ENTRANCE IS NOT SUFFICIENT TO KEEP MUD FROM BEING TRACKED ONTO ADJACENT STREET. ENTRANCE SHALL EXTEND FROM BACK OF CURB TO DWELLING.

**GENERAL NOTES**

THE INTENTION OF THESE DRAWINGS FOR CONSTRUCTION TRAFFIC CONTROL IS TO PROVIDE THE CONTRACTOR A SCHEME FOR ORGANIZING THE WORK WHILE MAINTAINING ACCESS. THE OBJECTIVE OF THE SCHEME IS THE SAFE, EXPEDITIOUS MOVEMENT OF TRAFFIC AND SAFETY OF THE WORK FORCE. THIS SCHEME IS NOT INTENDED TO BE COMPLETE AND WILL REQUIRE ADDITIONAL DETAIL TO BE PROVIDED BY THE CONTRACTOR WHICH MAY INCLUDE, BUT NOT LIMITED TO, ADDITIONAL SIGNING, BARRICADES, MARKINGS, TEMPORARY SURFACING, AND DETOURS. ALL TRAFFIC CONTROLS FOR STREET CONSTRUCTION, MAINTENANCE, UTILITY, AND EMERGENCY OPERATIONS SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

THE SEQUENCE SHOWN IS INTENDED AS A GUIDE FOR MAJOR ITEMS ONLY. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE COORDINATION OF ALL MAJOR ITEMS. VARIATIONS TO THE SEQUENCE SHOWN MAY BE USED AS APPROVED BY THE ENGINEER. REGARDLESS OF SEQUENCE USED, CONSTRUCTION TRAFFIC SHALL BE ESSENTIALLY IN ACCORDANCE WITH THAT SHOWN. PART OF THE WORK SHOWN FOR A SPECIFIC PHASE MAY BE ACCOMPLISHED IN OTHER PHASES. MAJOR WORK NOT CONSTRUCTED WITHIN THE INDICATED PHASE SHALL BE APPROVED BY THE ENGINEER.

ALL SIGNS AND PAVEMENT MARKINGS CONFLICTING WITH THIS TRAFFIC CONTROL SHALL BE COVERED OR REMOVED AS DIRECTED BY THE ENGINEER.

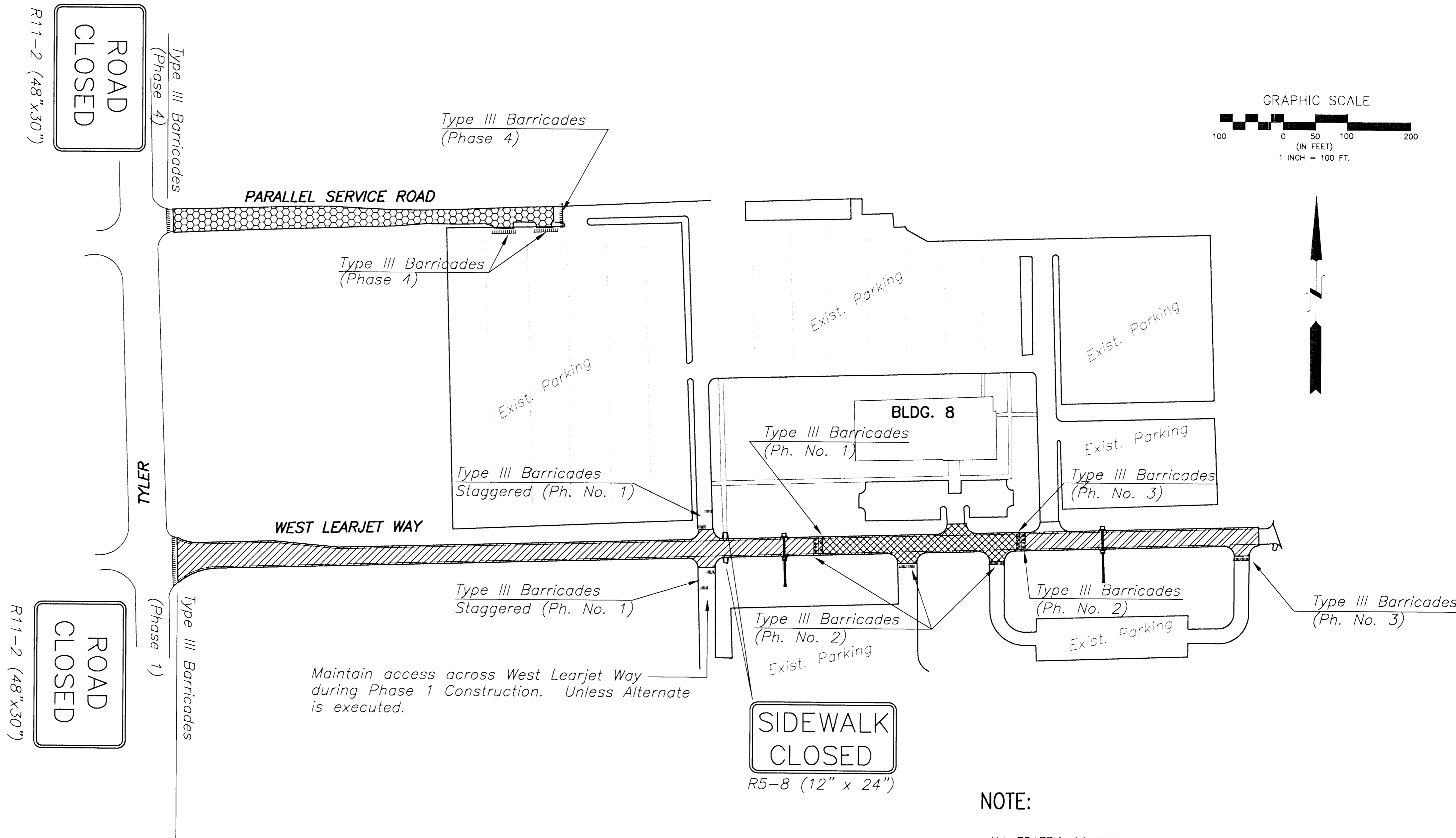


**TYPE III BARRICADE WITH LIGHTS**

A MINIMUM OF TWO LIGHTS SHALL BE USED AT EACH LOCATION WHERE A TYPE III BARRICADE OR BARRICADES ARE USED. A LIGHT SHALL BE MOUNTED ON THE OUTSIDE CORNER OF THE END BARRICADES WHEN MORE THAN ONE IS USED. (SEE MOST RECENT KDOT SPECIFICATIONS) FLASHING WARNING LIGHTS SHALL BE MAINTAINED SO AS TO BE CAPABLE OF BEING VISIBLE ON A CLEAR NIGHT FROM A DISTANCE OF 3,000 FEET.

SUPPORTS USED FOR MOUNTING SIGNS OR DEVICES FOR TEMPORARY CONDITIONS SHALL BE CONSTRUCTED TO YIELD UPON IMPACT. ADDITIONAL SUPPORTS MAY BE PLACED ON THE BACK SIDE OF SIGNS IN THE FORM OF BRACING FOR RESISTING WIND CURRENTS. GUY WIRES AND TIE-DOWNS WILL NOT BE ALLOWED.

SIGNS MOUNTED ON TYPE III BARRICADES SHOULD NOT COVER MORE THAN 50 PERCENT OF THE TOP TWO RAILS OR 33 PERCENT OF THE TOTAL AREA OF THE THREE RAILS.



Maintain access across West Learjet Way during Phase 1 Construction. Unless Alternate is executed.

**NOTE:**

ALL TRAFFIC CONTROL DEVICES, THEIR INSTALLATION AND MAINTENANCE SHALL COMPLY WITH THE REQUIREMENTS OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS.

CONSTRUCTION SEQUENCE	ITEMS OF WORK	TRAFFIC HANDLING	REMARKS
Phase 1	Grading, Paving, Ditch Grading (If Executed) Culvert Reseting (If Executed) Storm Sewer	No Traffic on Phase 1, Allow access across West Learjet Way except if Culverts are reset.	Erect Warning Signs and Barricades as needed. Close sidewalk if culvert reseting is executed.
Phase 2	Grading, Paving, Ditch Grading (If Executed) Culvert Reseting (If Executed)	No Traffic on Phase 2, Allow access across West Learjet Way except if Culverts are reset.	Erect Warning Signs and Barricades as needed.
Phase 3	Grading, Paving, Ditch Grading (If Executed) Storm Sewer	No Traffic on Phase 3,	Erect Warning Signs and Barricades as needed. Phases 3 & 4 may be constructed concurrently.
Phase 4	Milling and Overlay Grading and Storm Sewer	No Traffic on Phase 4,	Erect Warning Signs and Barricades as needed. Phases 3 & 4 may be constructed concurrently.
Phase 5	Seeding, Pavement Marking		Erect Warning Signs and Barricades as needed.

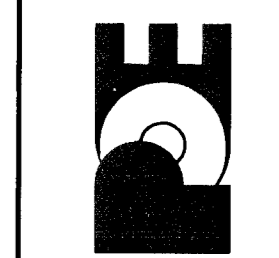
**LEGEND**

- PHASE 1
- PHASE 2
- PHASE 3
- PHASE 4

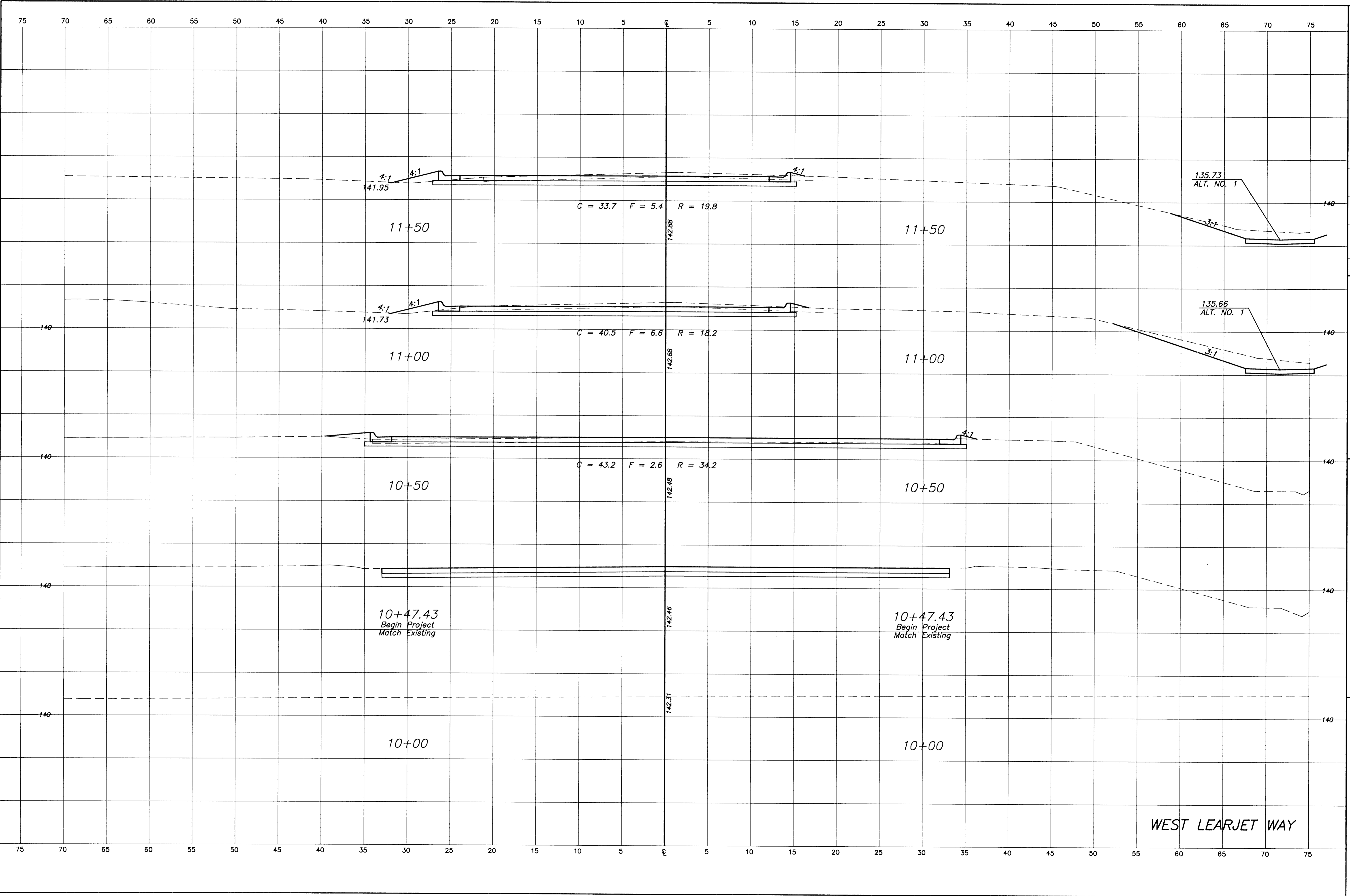
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Approved	
By	
Date	
No.	1

WEST LEARJET WAY  
CONSTRUCTION SEQUENCE/TRAFFIC HANDLING  
**BOMBARDIER LEARJET**  
WICHITA, KANSAS

POE & ASSOCIATES OF KANSAS, INC.  
CONSULTING ENGINEERS  
5940 E. Central, Suite 200 • Wichita, KS 67208-4242  
Phone 316/685-4114 • FAX 316/685-4444



**FINAL**  
Designed By: P. Ferguson  
Drawn By: P. Ferguson  
Poe Job No.: 1774  
Date: March 2004

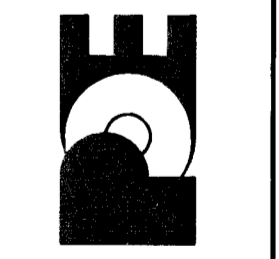


WEST LEARJET WAY

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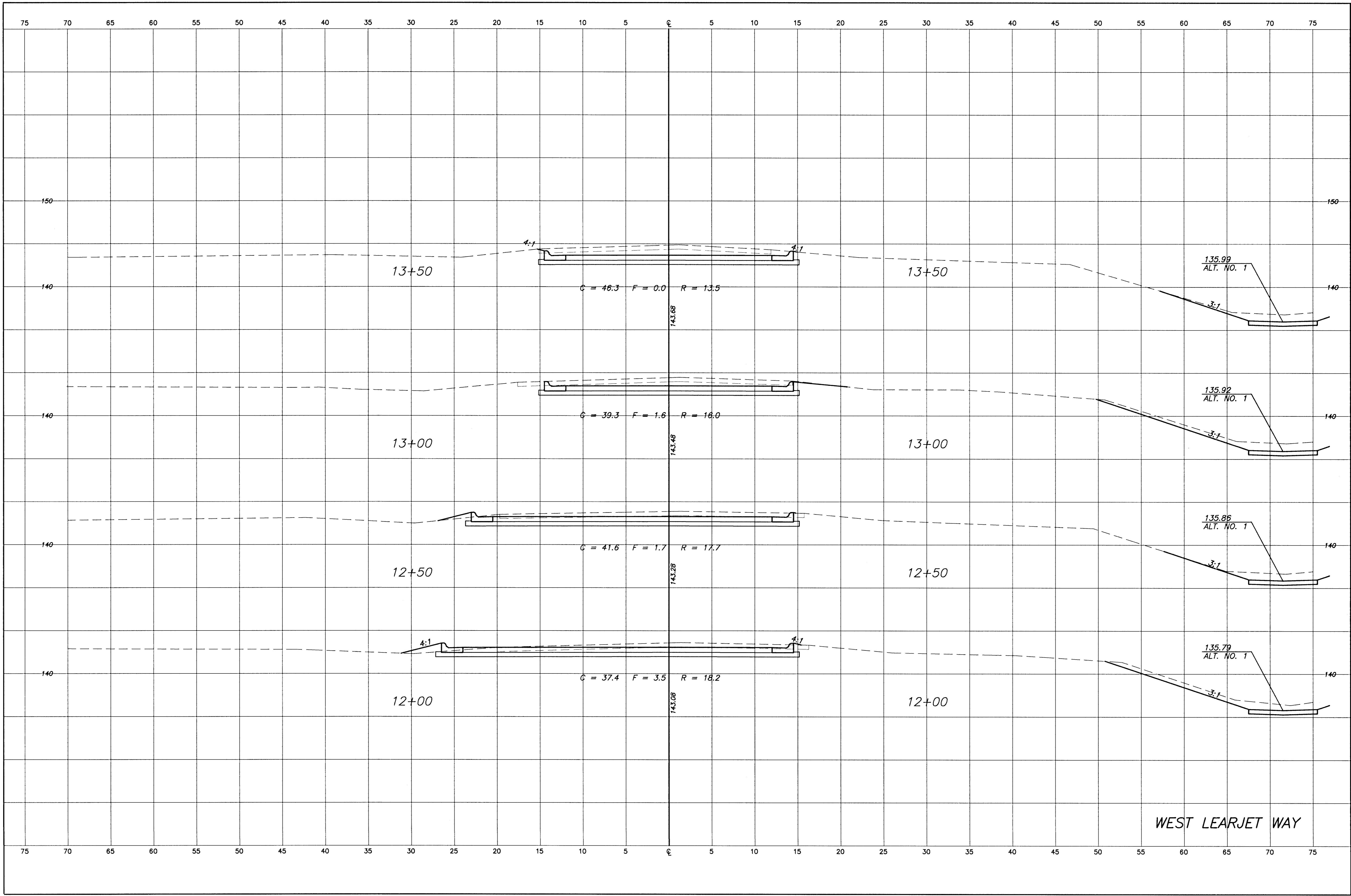
WEST LEARJET WAY  
CROSS SECTIONS  
BOMBARDIER LEARJET  
WICHITA, KANSAS

POE & ASSOCIATES OF KANSAS, INC.  
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**FINAL**

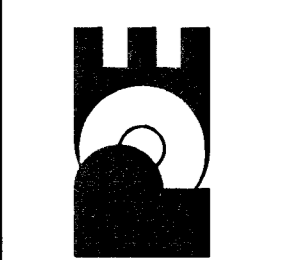
Designed By: P. Ferguson  
Drawn By: J. Unruh  
Poe Job No.: 1774  
Date: March 2004



No.	Date	By	Approved	Revision
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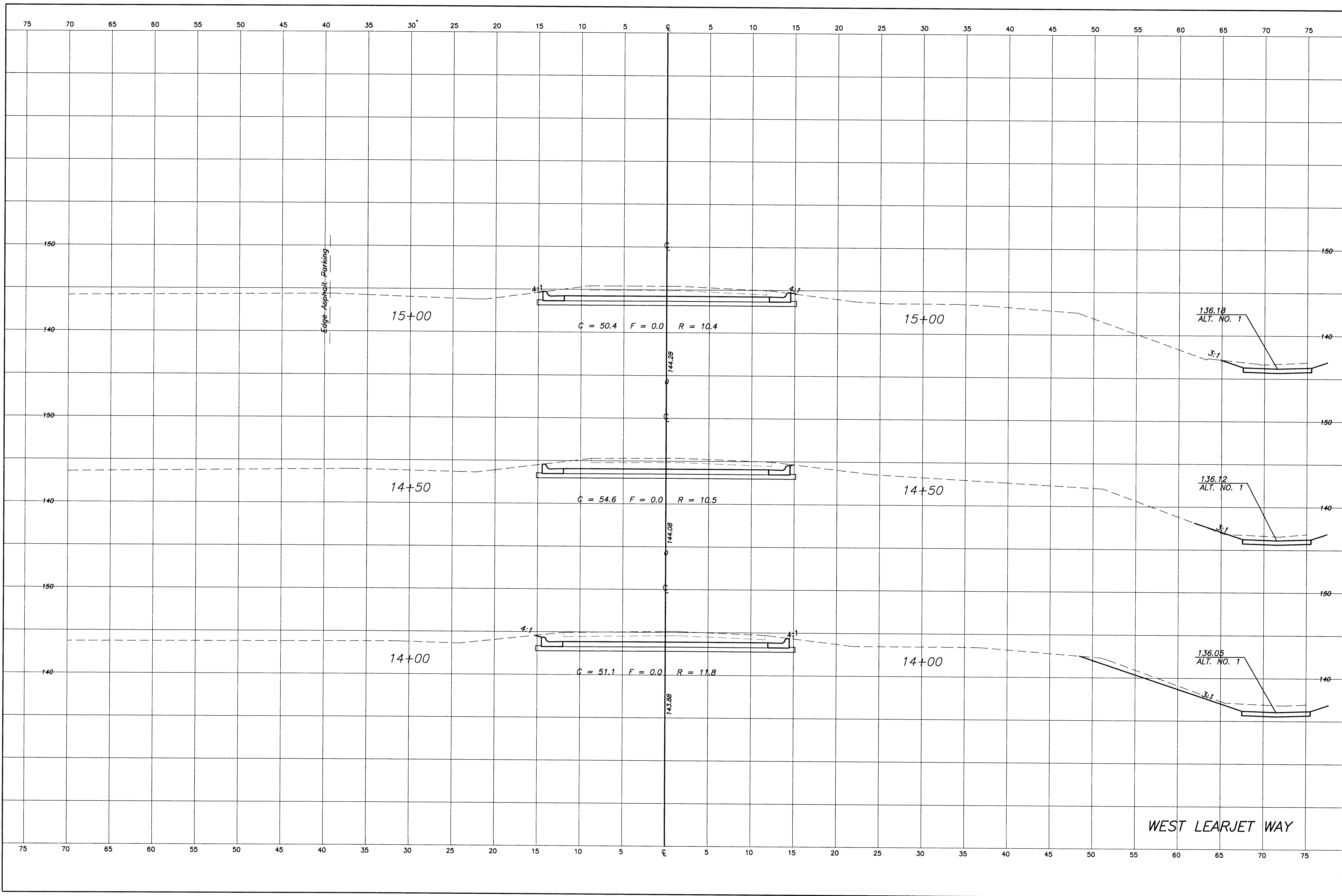
WEST LEARJET WAY  
CROSS SECTIONS  
BOMBARDIER LEARJET  
WICHITA, KANSAS

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**FINAL**

Designed By: P. Ferguson  
Drawn By: J. Ulrich  
Poe Job No.: 1774  
Date: March 2004

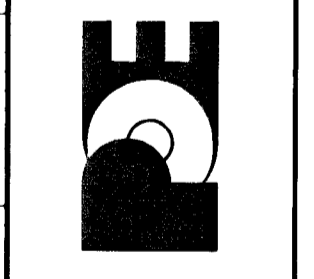


WEST LEARJET WAY

No.	Date	By	Approved	Revision

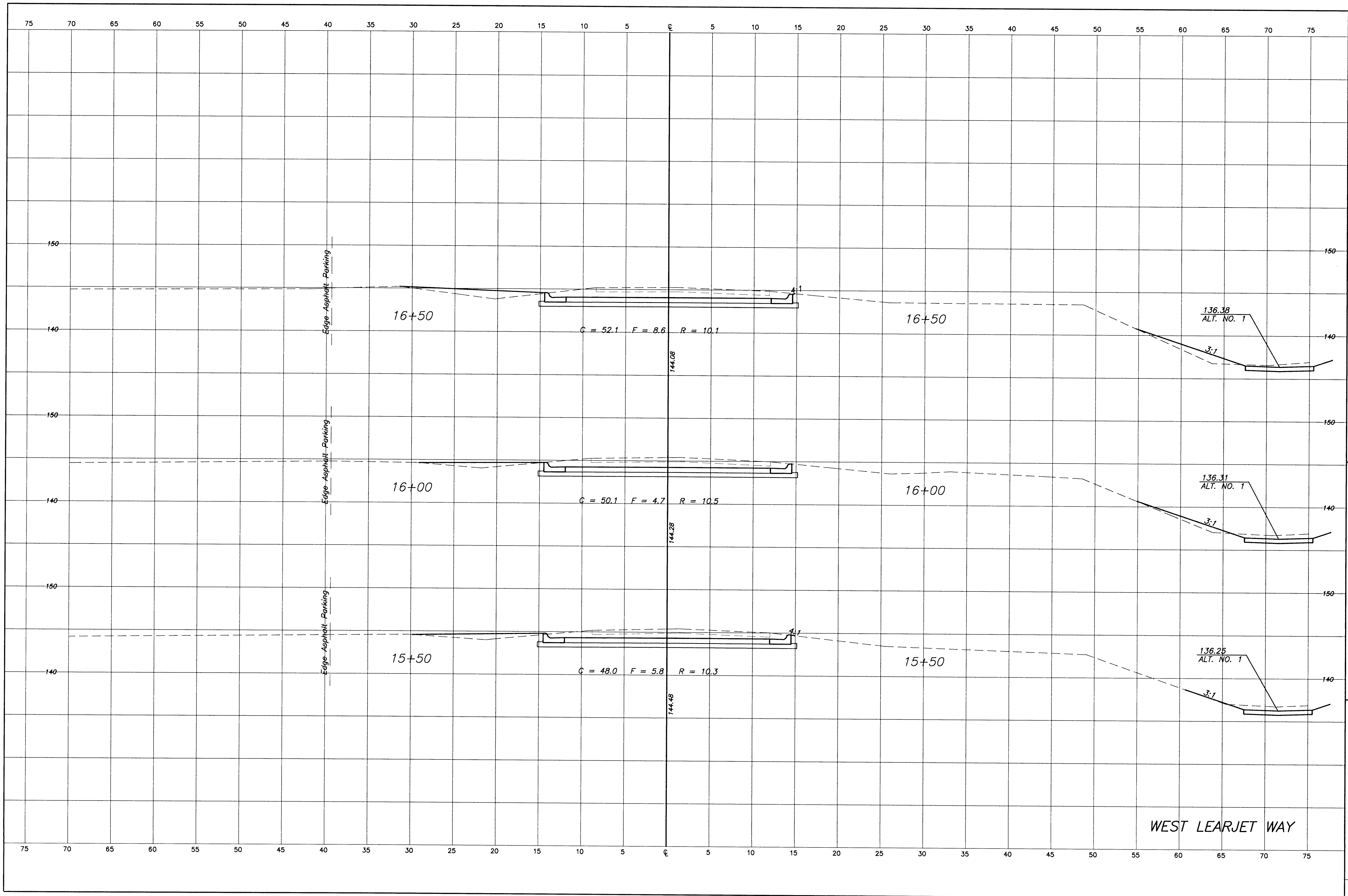
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CROSS SECTIONS  
BOMBARDIER LEARJET  
WICHITA, KANSAS

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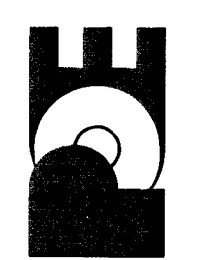
Designed By: P. Ferguson  
Drawn By: J. Ulrich  
Poe Job No.: 1774  
Date: March 2004



No.	Date	By	Approved	Revision

WEST LEARJET WAY  
CROSS SECTIONS  
BOMBARDIER LEARJET  
WICHITA, KANSAS

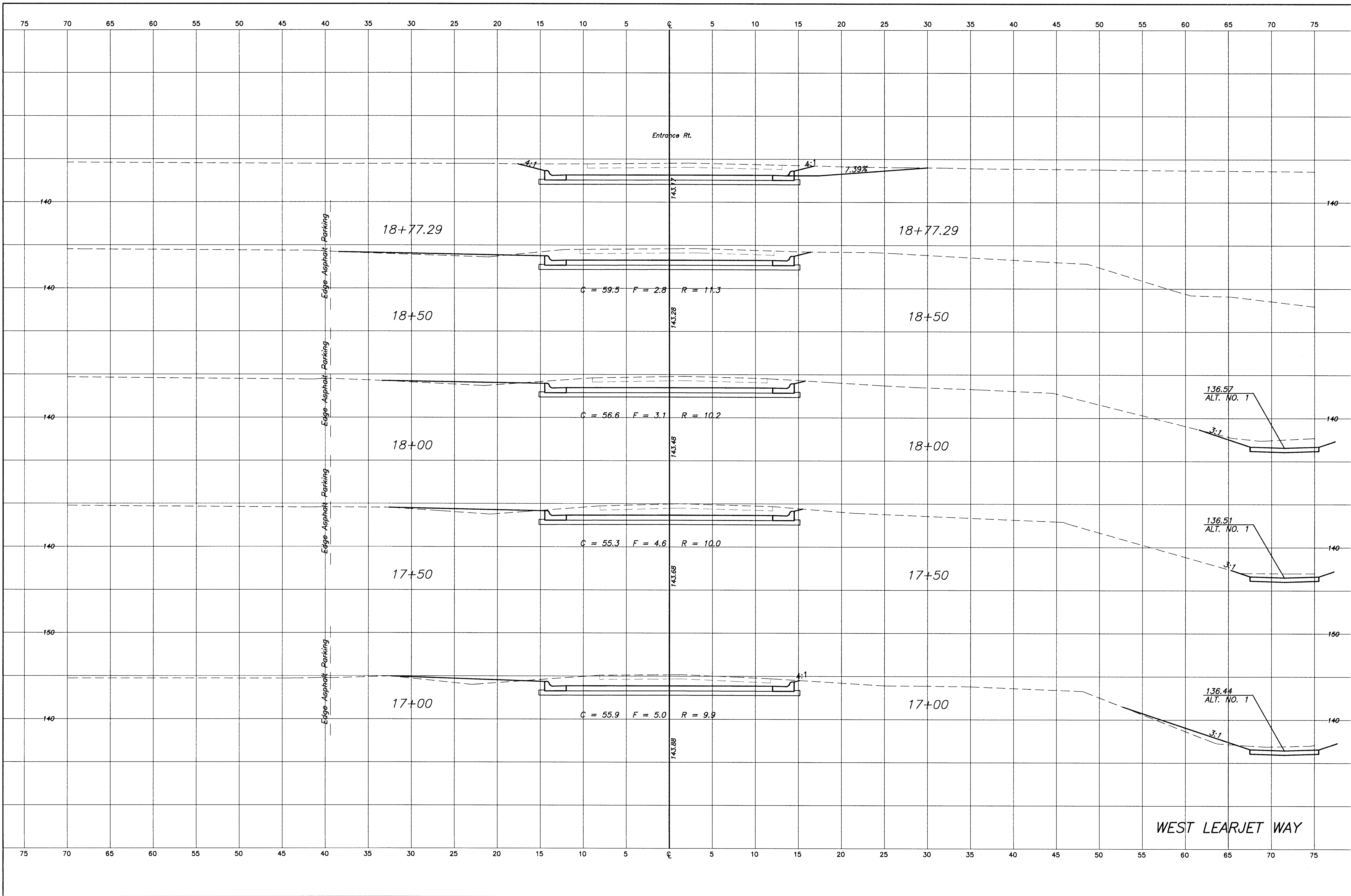
POE & ASSOCIATES OF KANSAS, INC.  
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Designed By: P. Ferguson  
Drawn By: J. Ulrich  
Poe Job No.: 1774  
Date: March 2004

Sheet  
26 of 32



Revision

By: Approved

Date

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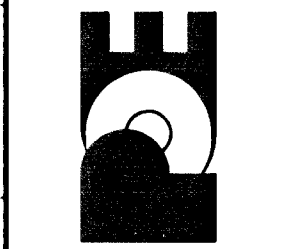
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WEST LEARJET WAY  
CROSS SECTIONS  
BOMBARDIER LEARJET  
WICHITA, KANSAS

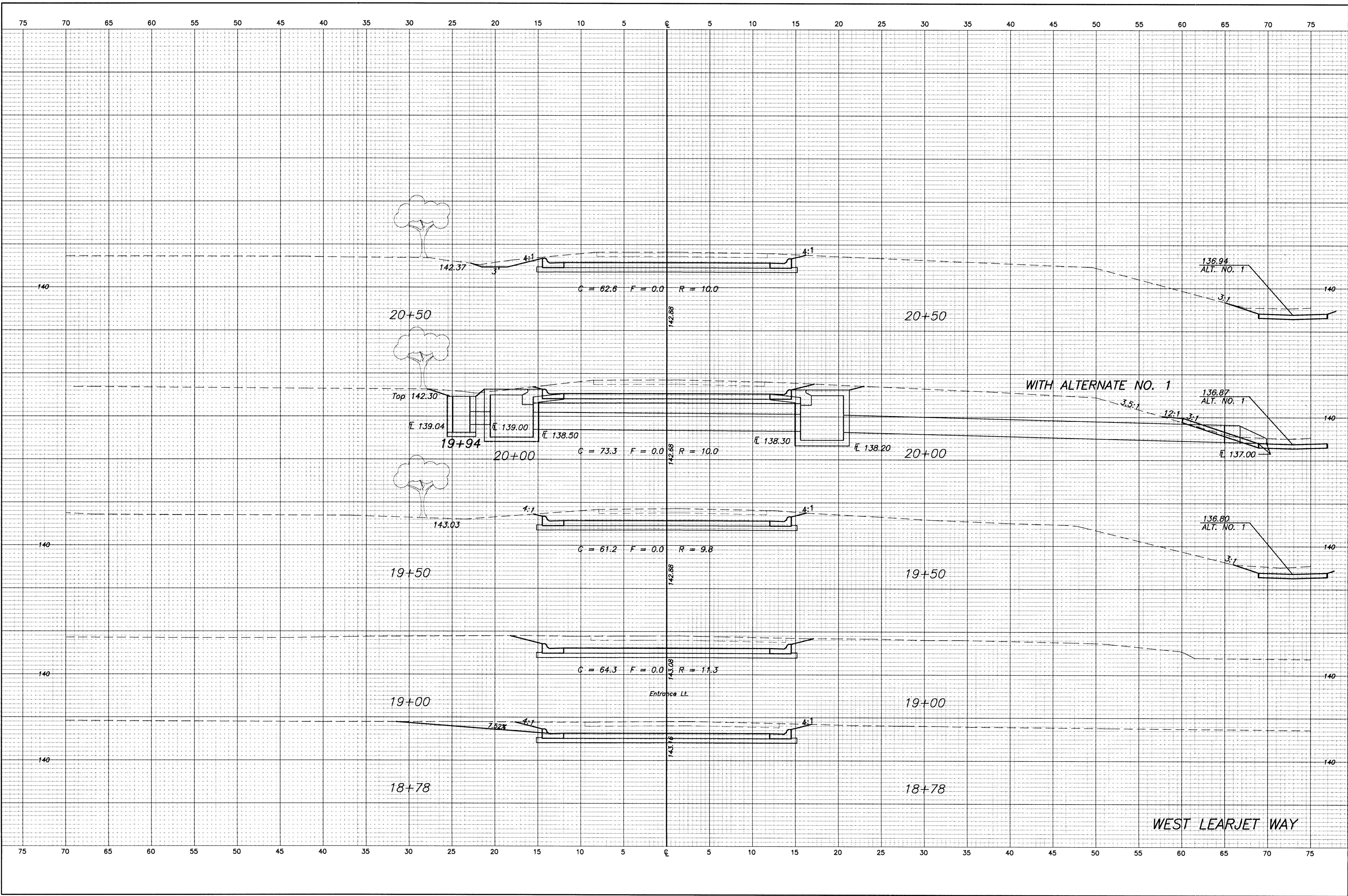
POE & ASSOCIATES OF KANSAS, INC.  
CONSULTING ENGINEERS  
5940 E. Central, Suite 200 • Wichita, KS 67208-4242  
Phone 316/688-4114 • FAX 316/688-4444



**FINAL**

Designed By: P. Ferguson  
Drawn By: J. Unruh  
Poe Job No.: 1774  
Date: March 2004

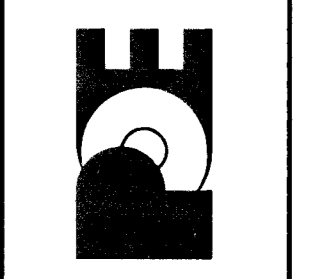
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27 of 32



No.	Date	By	Approved	Revision
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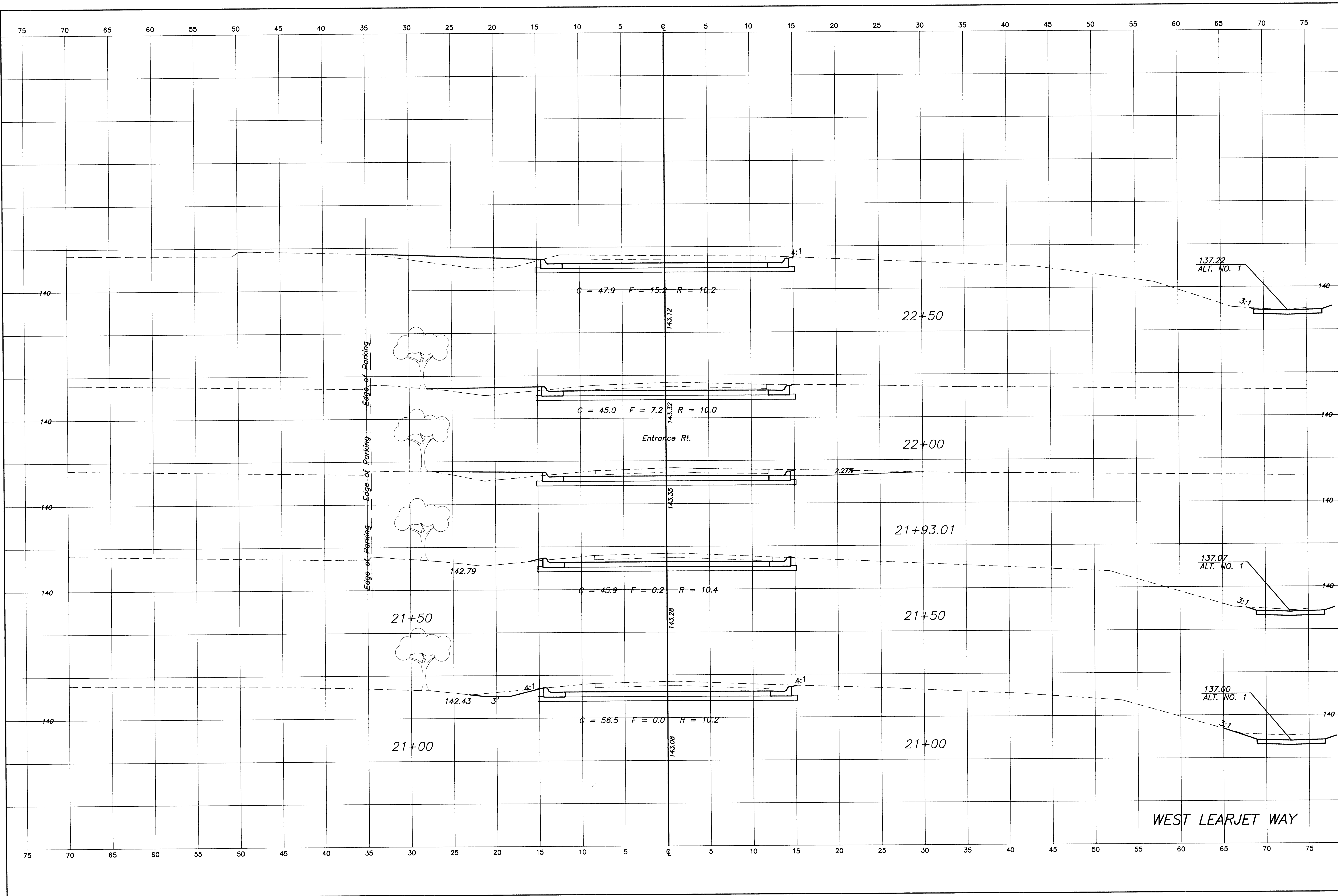
WEST LEARJET WAY  
CROSS SECTIONS  
BOMBARDIER LEARJET  
WICHITA, KANSAS

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CONSULTING ENGINEERS  
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**FINAL**

Designed By: P. Ferguson  
Drawn By: J. Urruh  
Poe Job No.: 1774  
Date: March 2004



Revision	
By	Approved
Date	
No.	

WEST LEARJET WAY  
CROSS SECTIONS  
BOMBARDIER LEARJET  
WICHITA, KANSAS

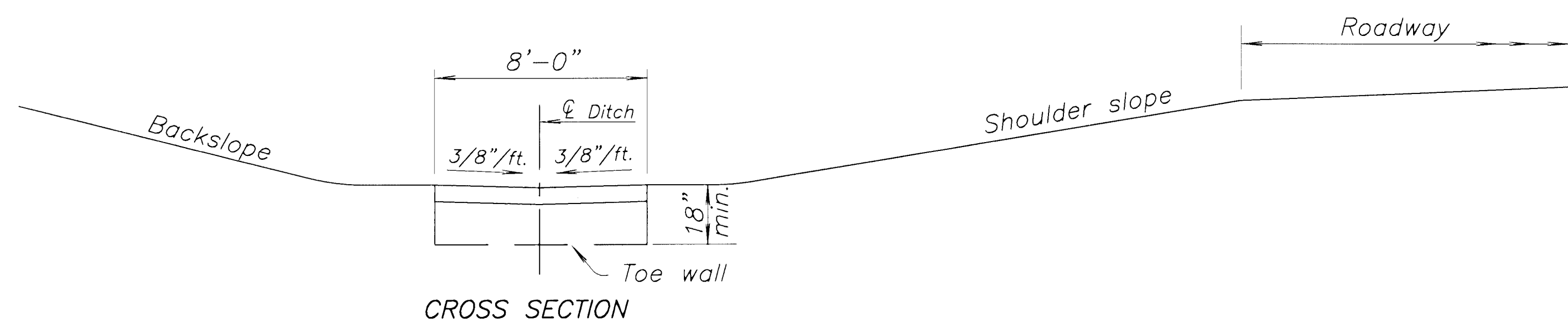
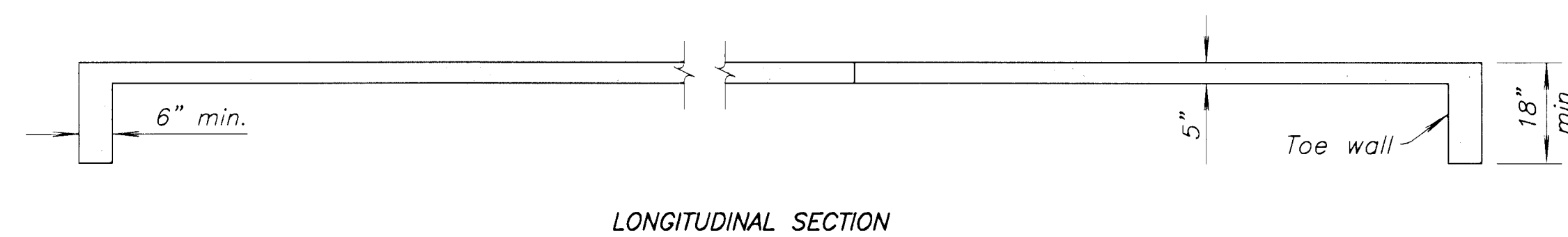
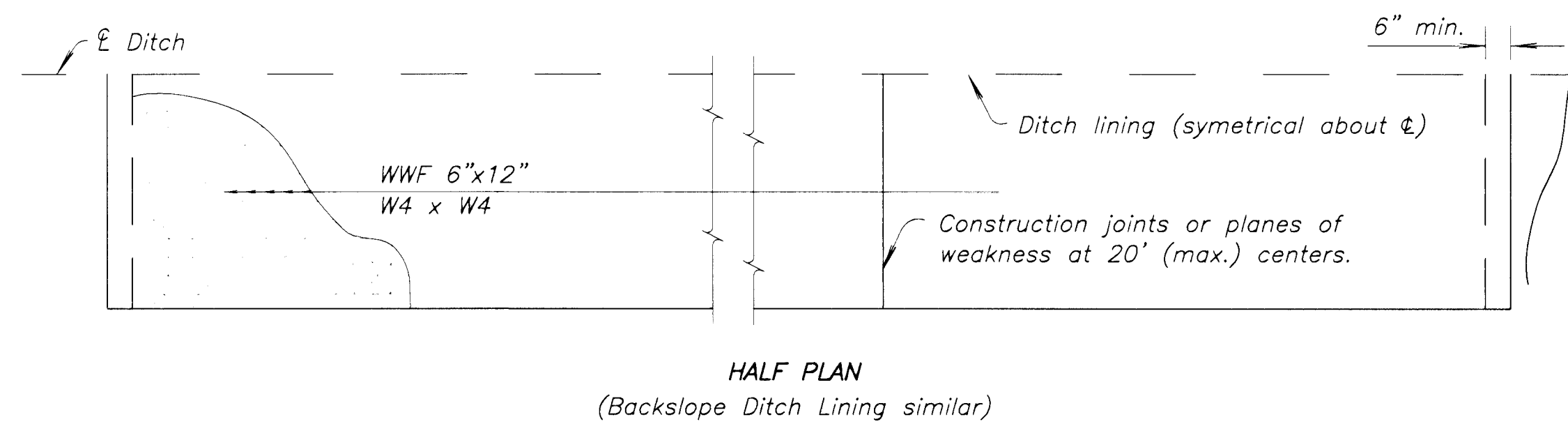
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**PE**

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Designed By: P. Ferguson  
Drawn By: J. Urruh  
Poe Job No.: 1774  
Date: March 2004

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29 of 32



**GENERAL NOTES:**

Standard City Paving Mix shall be used in Concrete Ditch Lining.

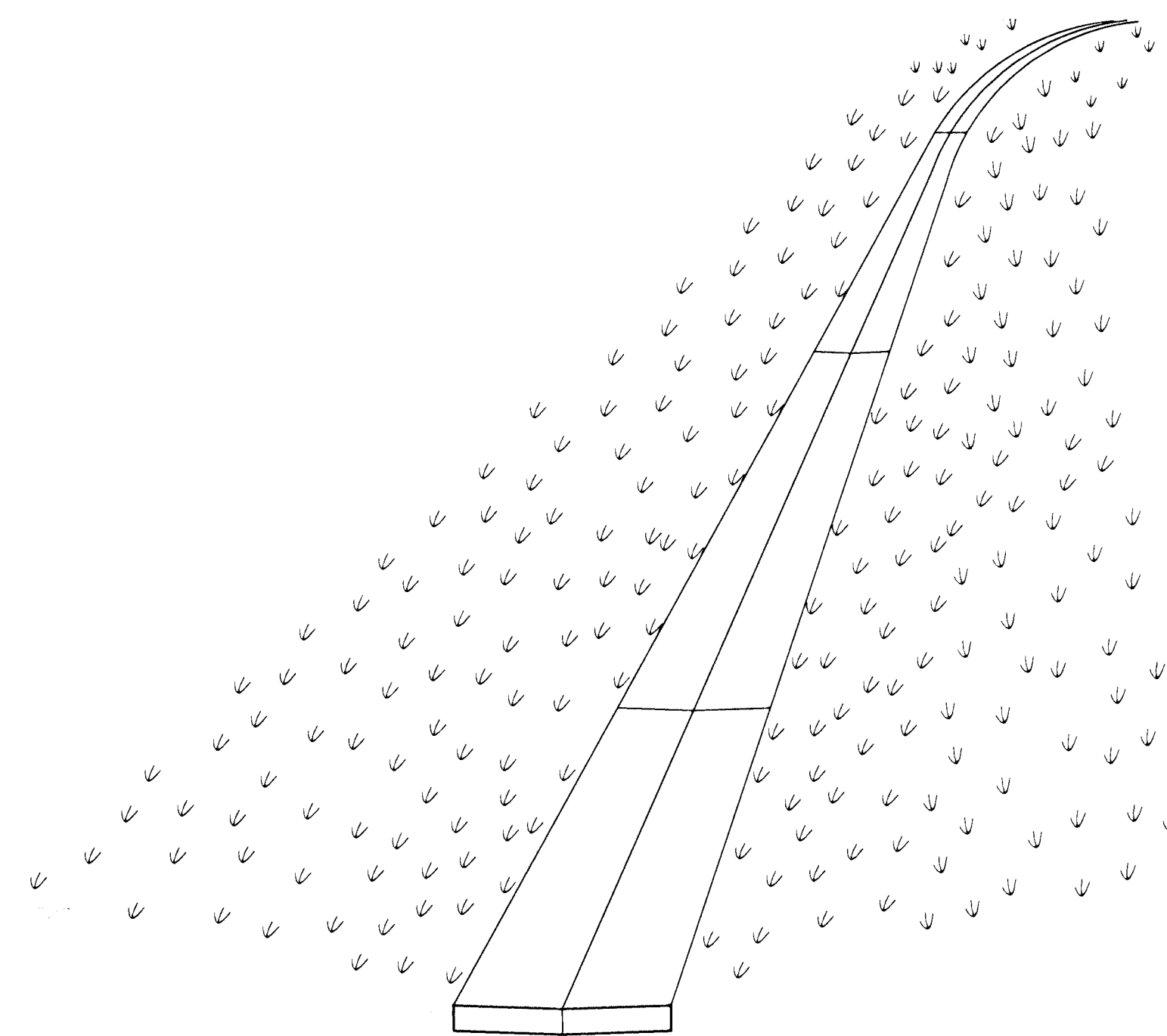
Wire reinforcing mesh shall be of the electrically welded square mesh type (WWF 6"x12" - W4xW4).

Reinforcement as shown is included in the unit price bid for "Concrete Ditch Lining".

Measurements of Concrete Ditch Lining shall be in sq. yds. of outside surface area. Add 1"-6" times "W" for each toewall.

The exact location and dimensions may be adjusted, if required, by the Engineer at the time of construction.

Longitudinal construction joints may be constructed at the Contractor's option.



**CONCRETE DITCH LINING**  
Alt. No. 1

**FINAL**

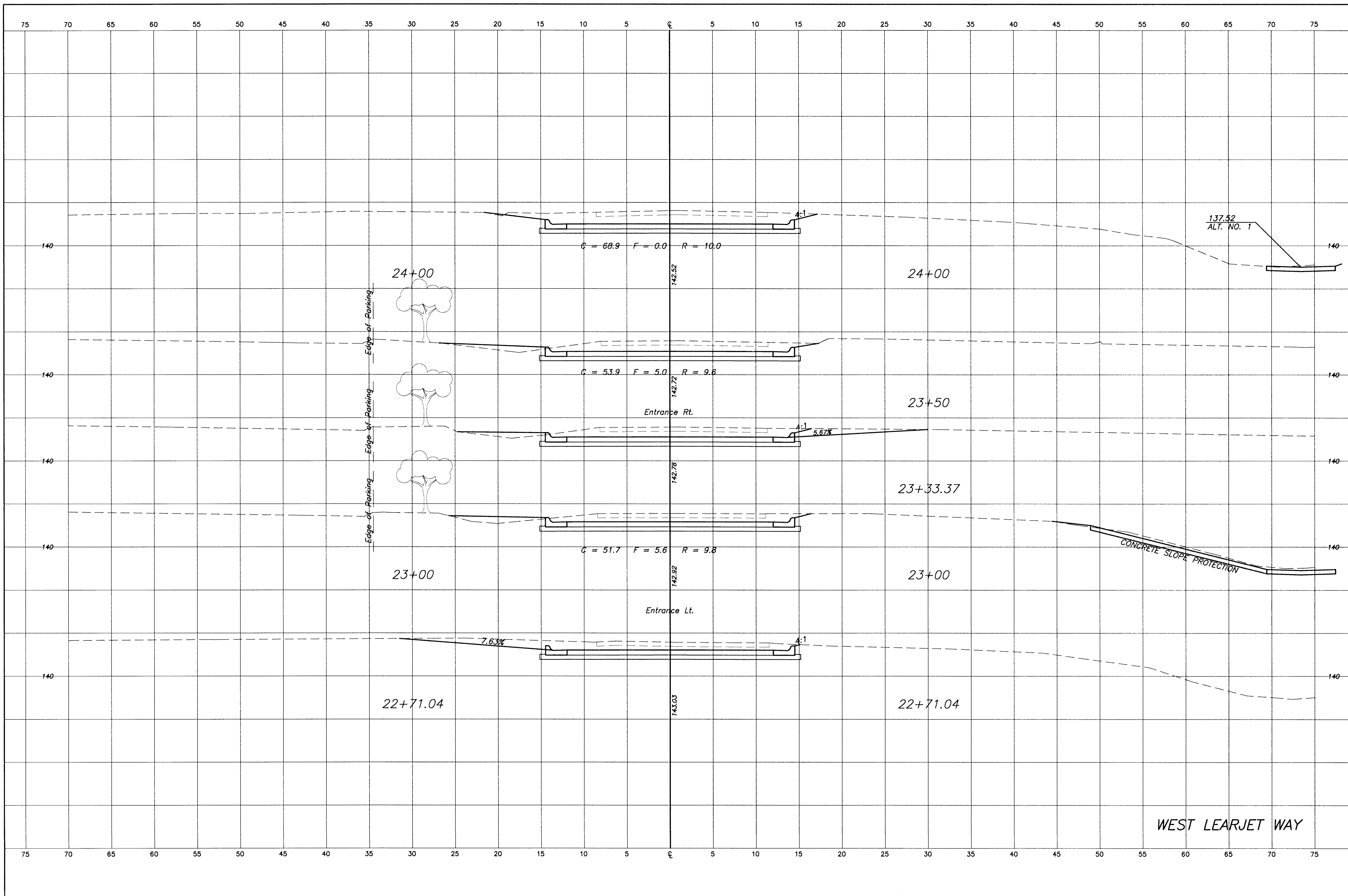
Designed By: P. Ferguson  
Drawn By: J. Unruh  
Poe Job No.: 1774  
Date: March 2004

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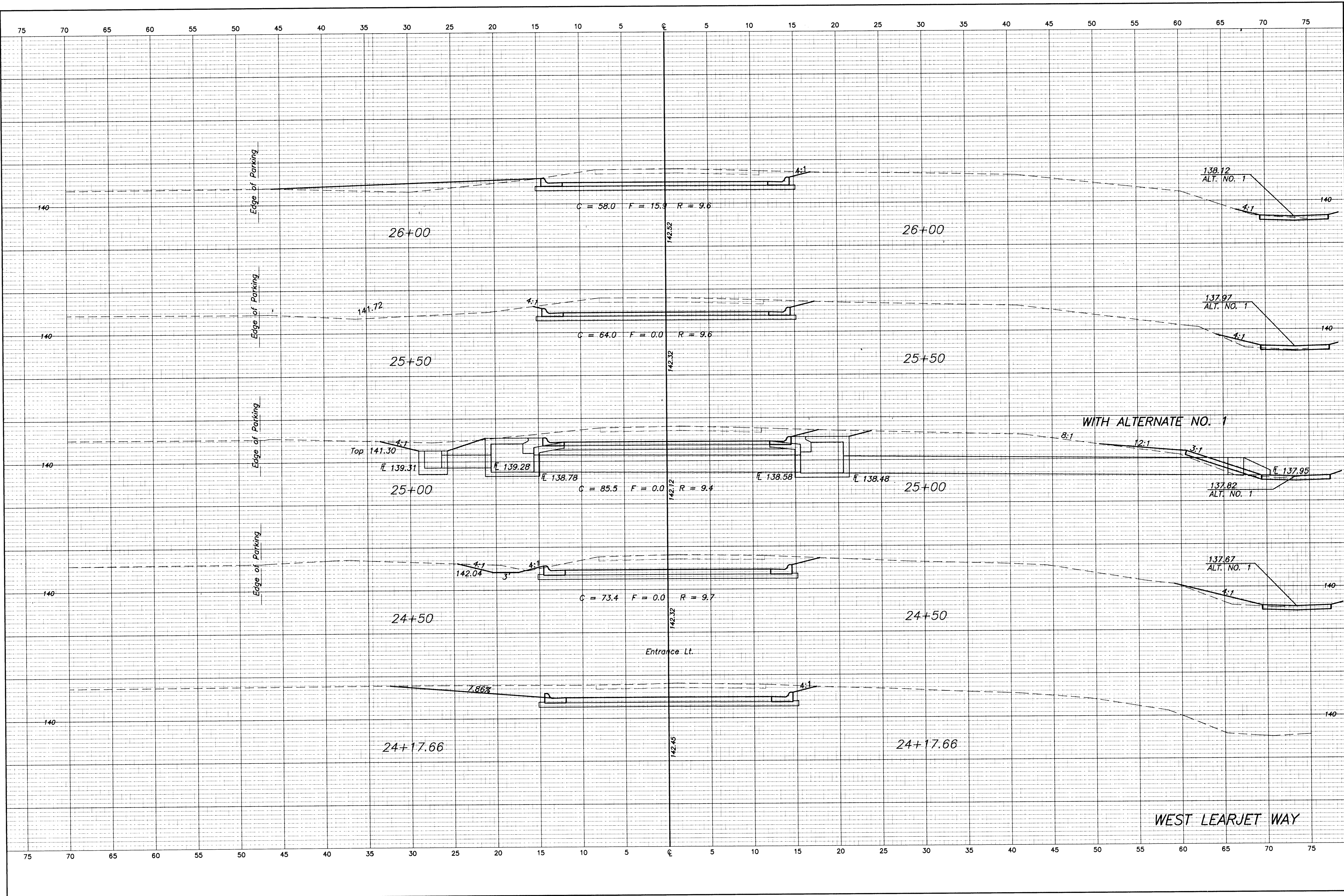


WEST LEARJET WAY  
CONCRETE DITCH LINING  
BOMBARDIER LEARJET  
WICHITA, KANSAS

No.	Date	By	Approved	Revision
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No.	Date	By	Approved	Revision
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<b>WEST LEARJET WAY</b> CROSS SECTIONS <b>BOMBARDIER LEARJET</b> WICHITA, KANSAS				
<b>POE &amp; ASSOCIATES OF KANSAS, INC.</b> <b>CONSULTING ENGINEERS</b> <small>5940 E. Central, Suite 200 • Wichita, KS 67208-4242</small> <small>Phone 316/685-4114 • FAX 316/685-4444</small>				
<b>FINAL</b>				
Designed By:	P. Ferguson			
Drawn By:	J. Unruh			
Poe Job No.:	1774			
Date:	March, 2004			
<b>WEST LEARJET WAY</b>				
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Revision	
By	
Date	
No.	

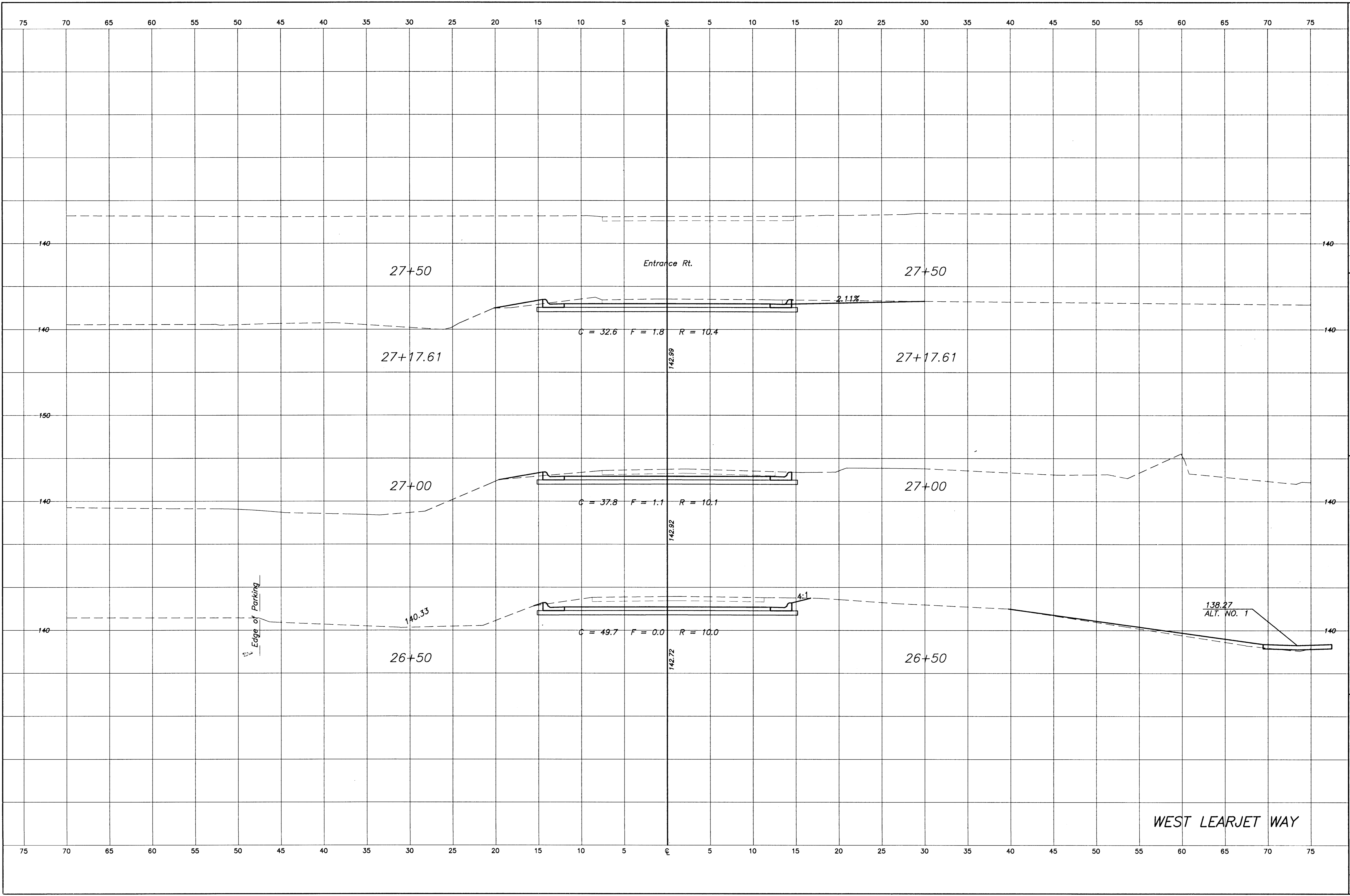
WEST LEARJET WAY  
CROSS SECTIONS  
BOMBARDIER LEARJET  
WICHITA, KANSAS

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**FINAL**

Designed By: P. Ferguson  
Drawn By: J. Uhrich  
Poe Job No.: 1774  
Date: March, 2004

52  
31 of 32



75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	
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WEST LEARJET WAY  
CROSS SECTIONS  
BOMBARDIER LEARJET  
WICHITA, KANSAS

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CONSULTING ENGINEERS  
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Phone 316/865-4114 • FAX 316/865-4444

**POE**

Designed By: P. Ferguson  
Drawn By: J. Unruh  
Proc. Job No.: 1774  
Date: March 2004

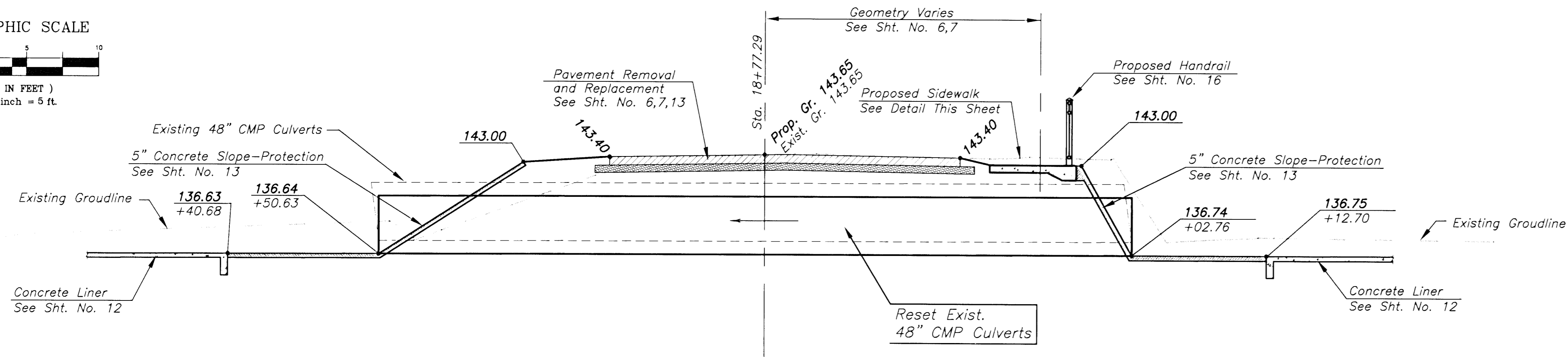
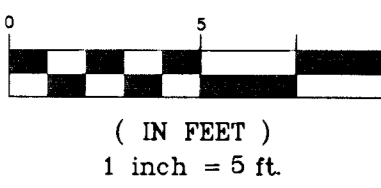
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WEST LEARJET WAY

32 of 32

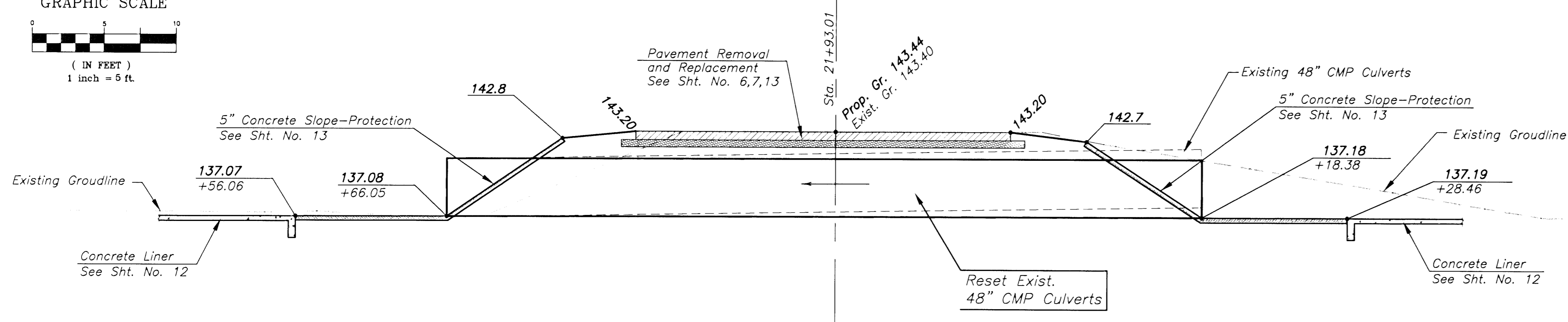
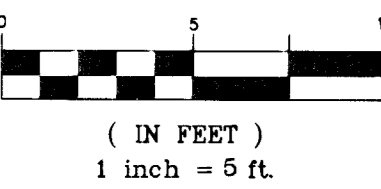


GRAPHIC SCALE



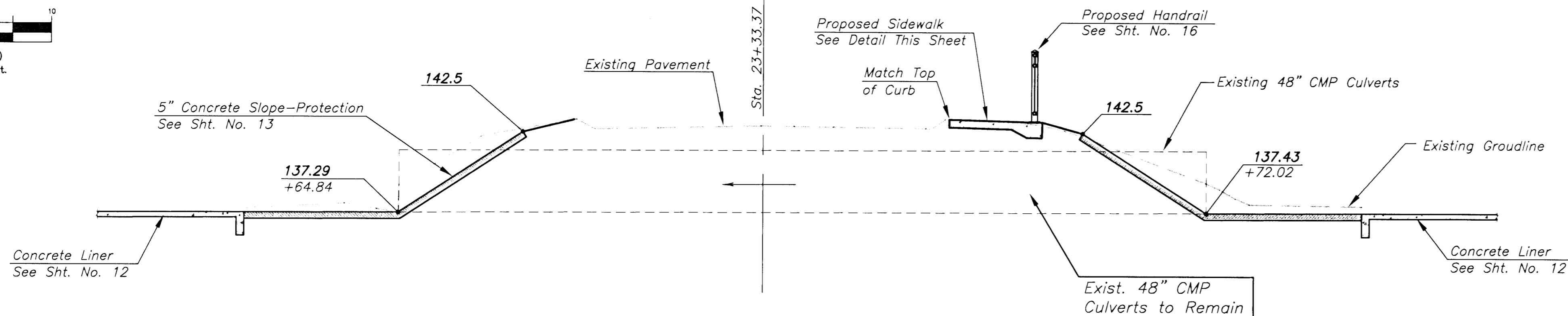
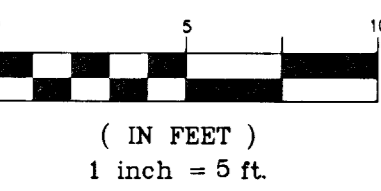
**STA. 18+77.29 RESET 2-48" CMP CULVERTS**  
ALTERNATE NO. 1

GRAPHIC SCALE



**STA. 21+93.01 RESET 2-48" CMP CULVERTS**  
ALTERNATE NO. 1

GRAPHIC SCALE

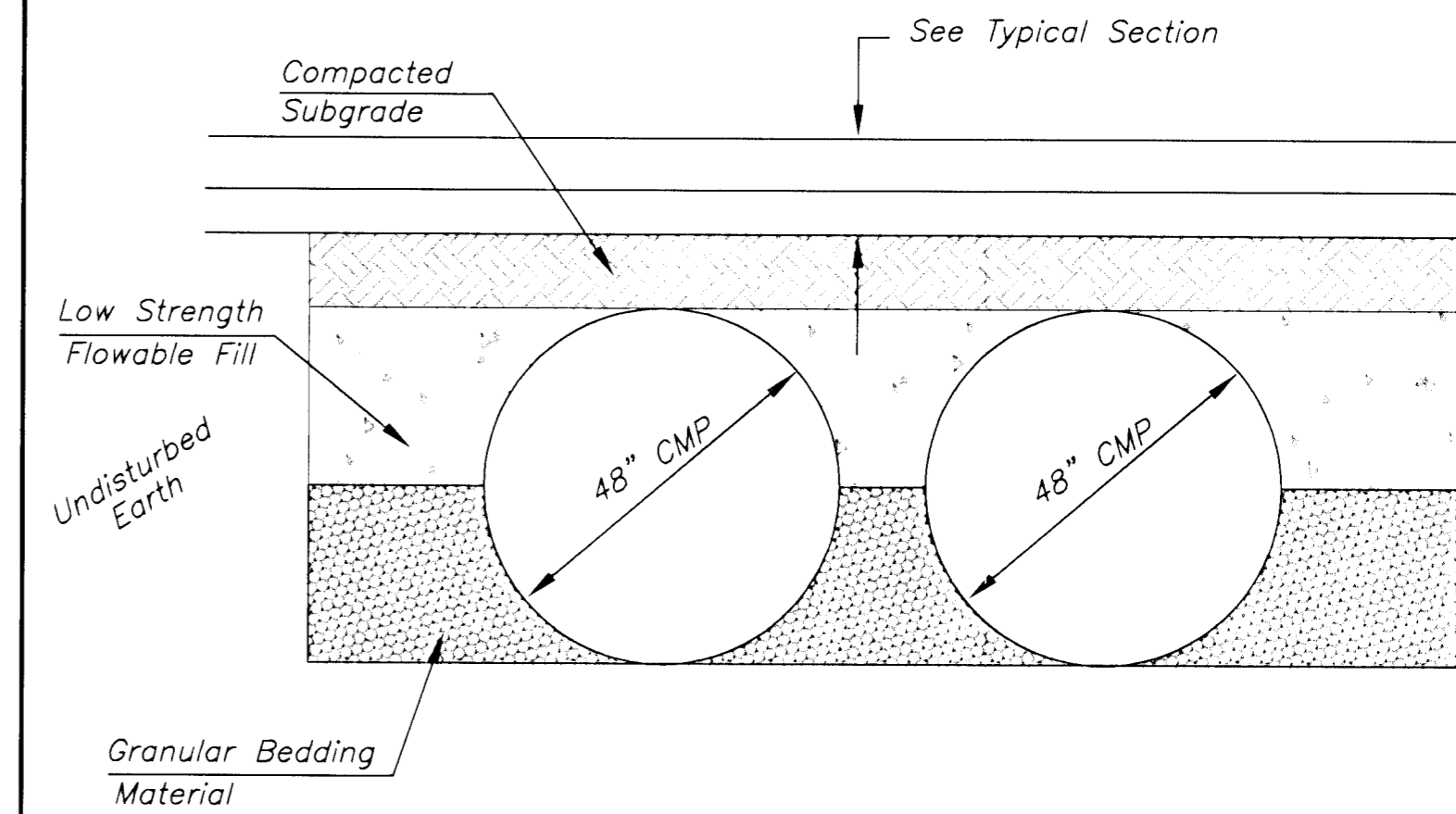


**STA. 23+33.37 2-48" CMP CULVERTS**  
ALTERNATE NO. 1

**NOTES:**

All material, equipment and labor necessary for the resetting of the culverts shall be subsidiary to the bid item.

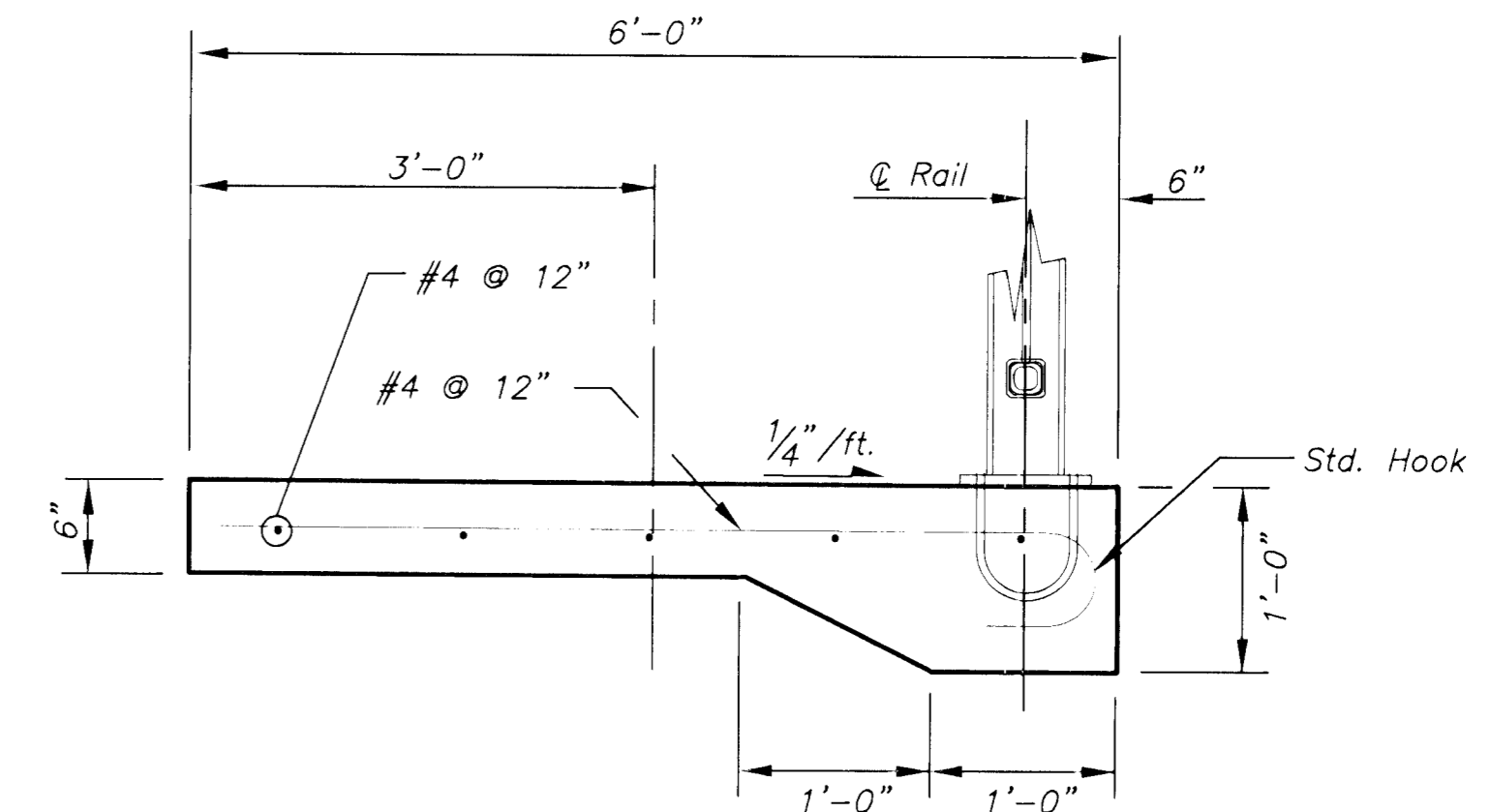
Contractor shall be responsible for handling culverts in such a manner as to avoid damage during resetting. Any damaged culvert shall be replaced at the Contractor's expense.



**SECTION THRU CMP CULVERTS**

1 inch = 2 ft.

Granular Bedding Material shall be an approved material consisting of a durable crushed rock conforming with the requirements of the latest revision of ASTM C-33 Size No. 67 (3/4" to No. 4); to be placed in not more than 6" layers and compacted by slicing with a shovel or vibrating. Soundness, abrasion, and absorption limits shall be as required for coarse aggregates.



**SIDEWALK DETAIL**  
Not to Scale

**SIDEWALK GENERAL NOTES**

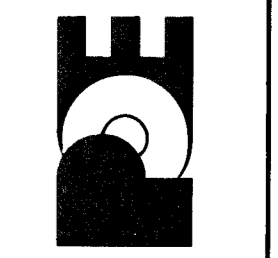
CONCRETE: BEVEL ALL EXPOSED EDGES WITH A 3/4" TRIANGULAR MOLDING OR FINISH WITH AN APPROVED EDGING TOOL. CONCRETE SHALL BE AS PER CITY OF WICHITA STANDARD SPECIFICATIONS FOR CONCRETE PAVING MIX.

REINFORCING STEEL: ALL DIMENSIONS RELATIVE TO REINFORCING STEEL ARE TO CENTERLINE OF BAR UNLESS OTHERWISE NOTED. ALL CLEARANCES SHALL BE 2" UNLESS OTHERWISE NOTED. ALL REINFORCING STEEL SHALL CONFORM TO A.S.T.M. DESIGNATION A615 GRADE 60.

No.	Date	By	Approved

WEST LEARJET WAY  
CULVERT DETAILS  
**BOMBARDIER LEARJET**  
WICHITA, KANSAS

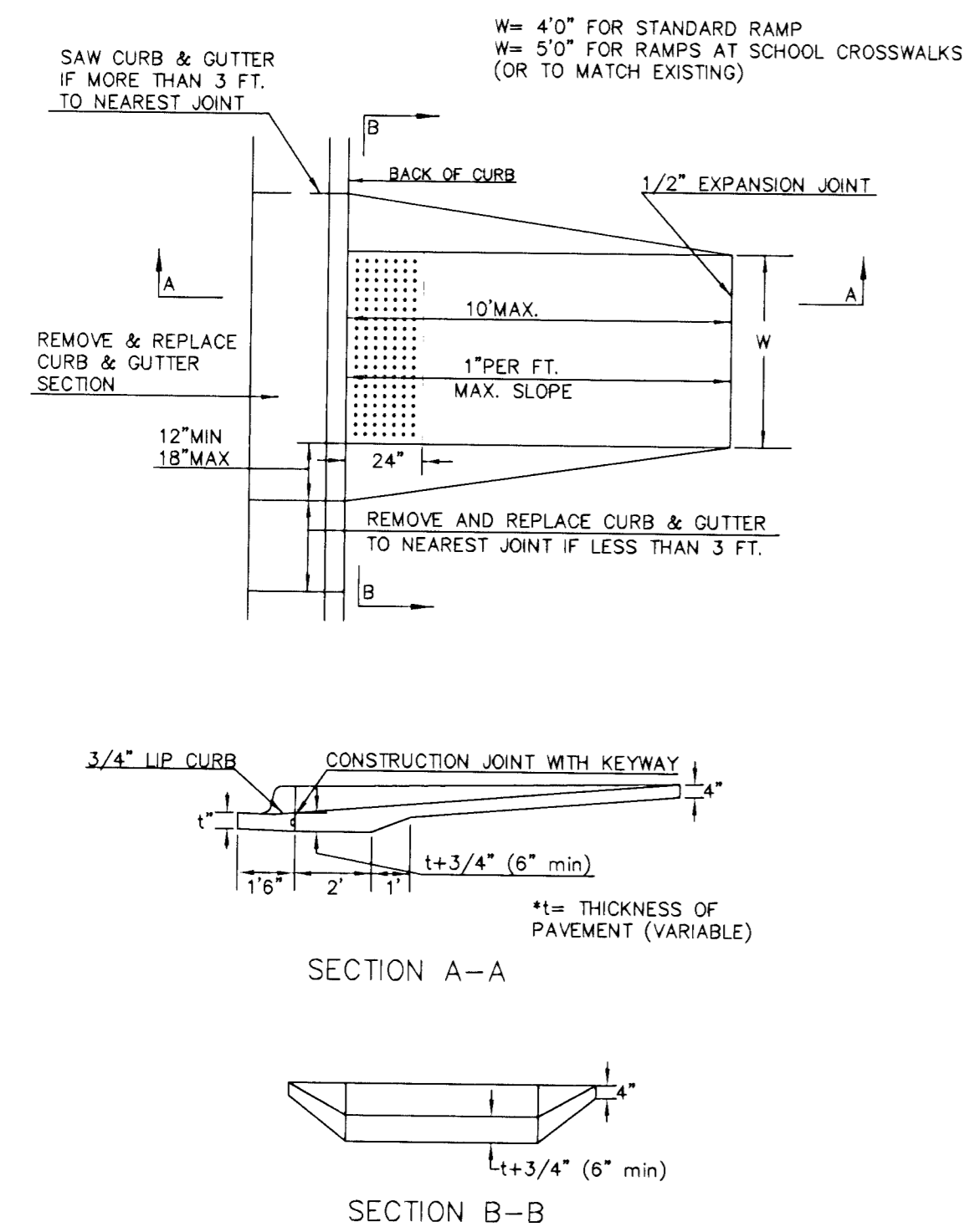
POE & ASSOCIATES OF KANSAS, INC.  
CONSULTING ENGINEERS  
3940 E. Central, Suite 200 • Wichita, KS 67208-4747  
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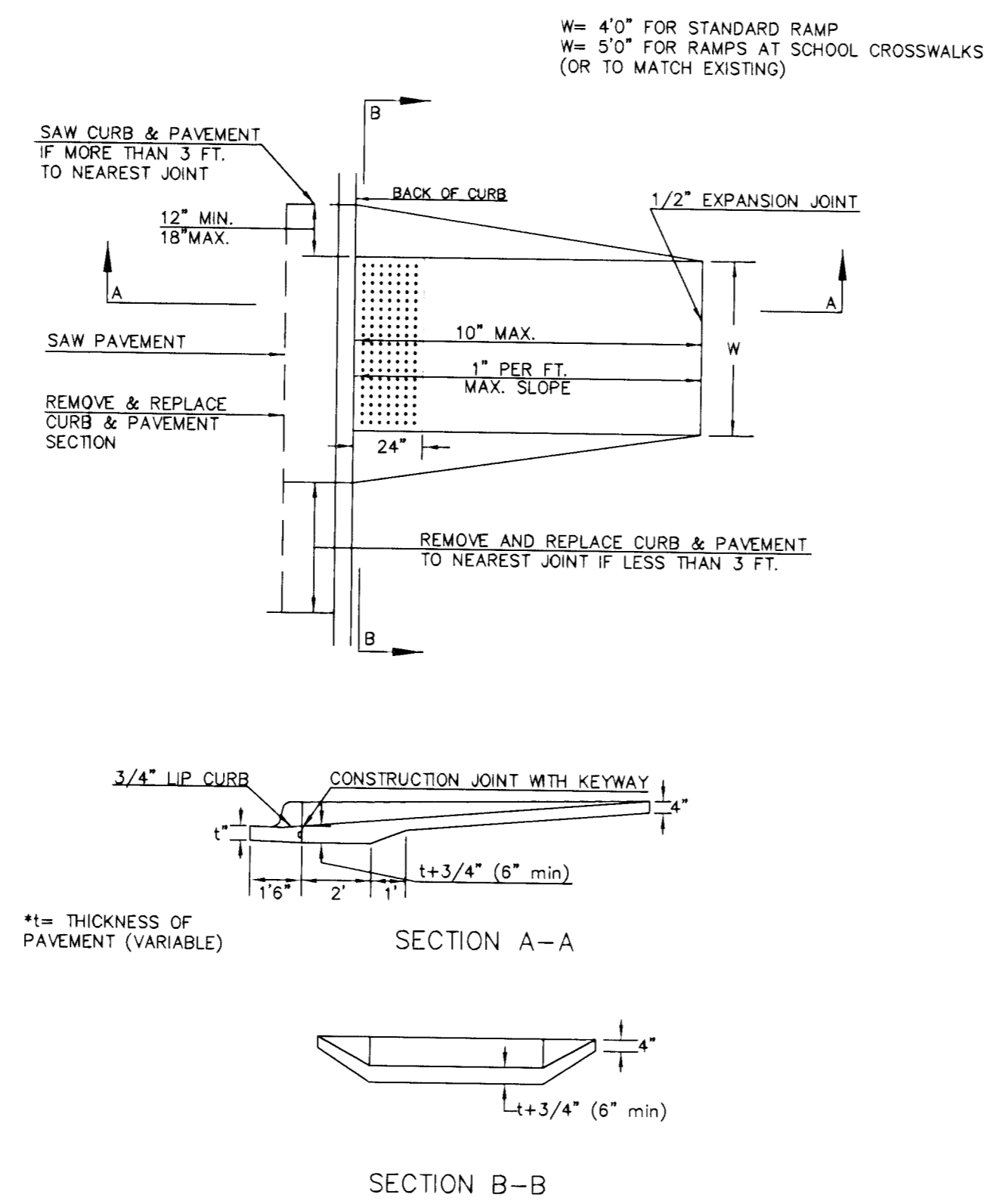
**FINAL**

Designed By: P. Ferguson  
Drawn By: J. Urruh  
Poe Job No.: 1774  
Date: March, 2004

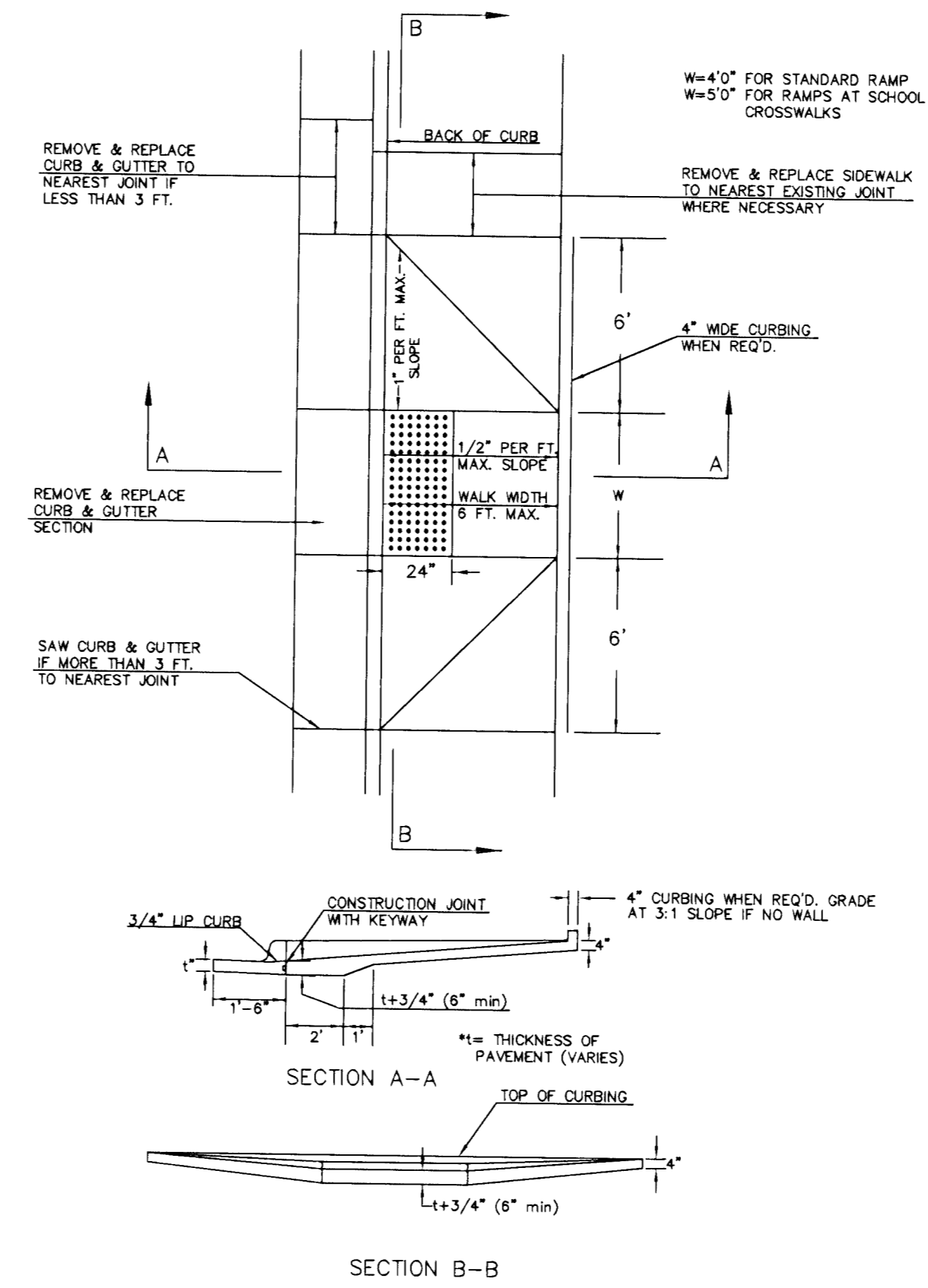
STANDARD WHEELCHAIR RAMP CONSTRUCTION DETAIL FOR STREETS WITH COMBINED CURB & GUTTER (TYPE A)



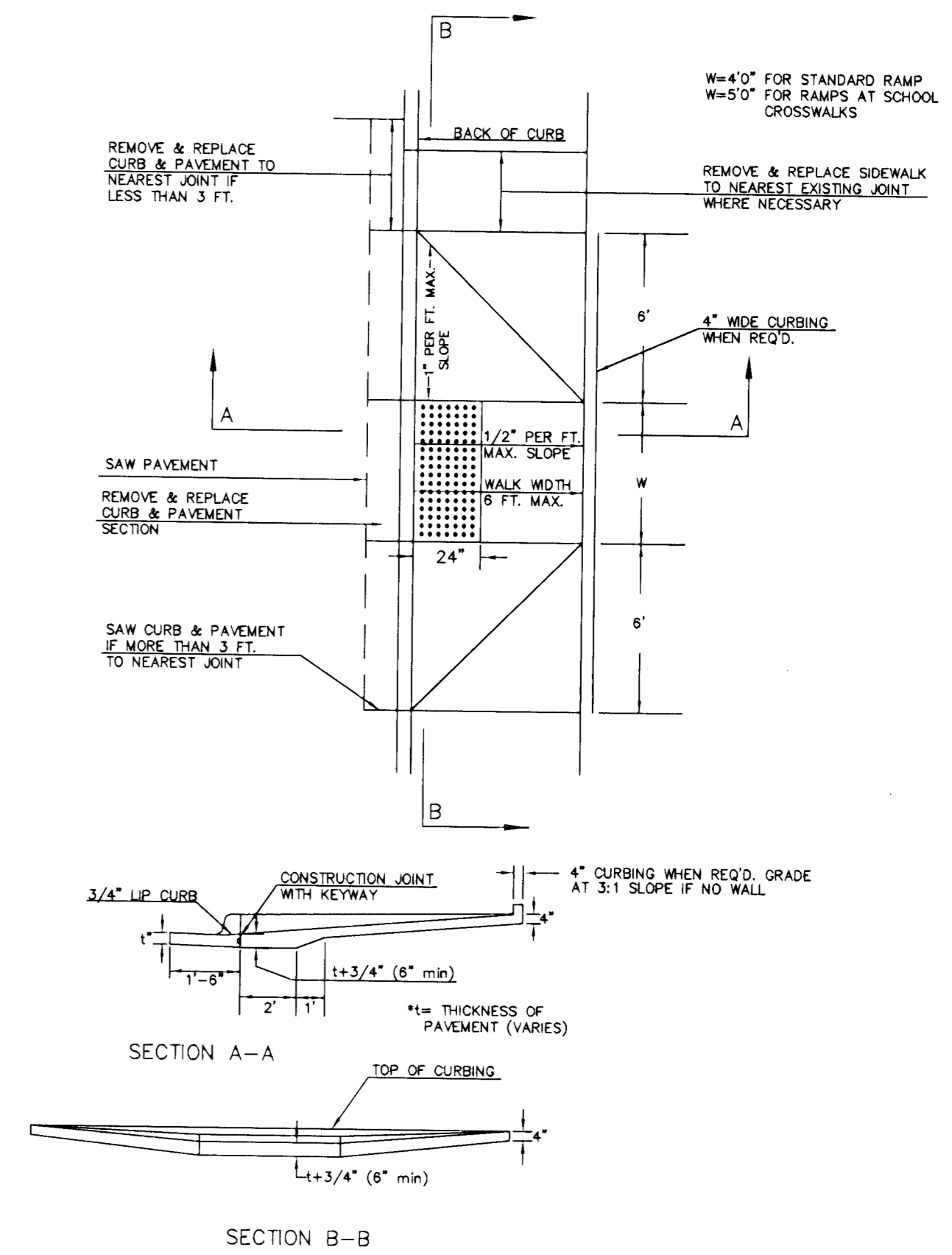
STANDARD WHEELCHAIR RAMP CONSTRUCTION DETAIL FOR CONCRETE STREETS WITH MONOLITHIC CURB (TYPE A)



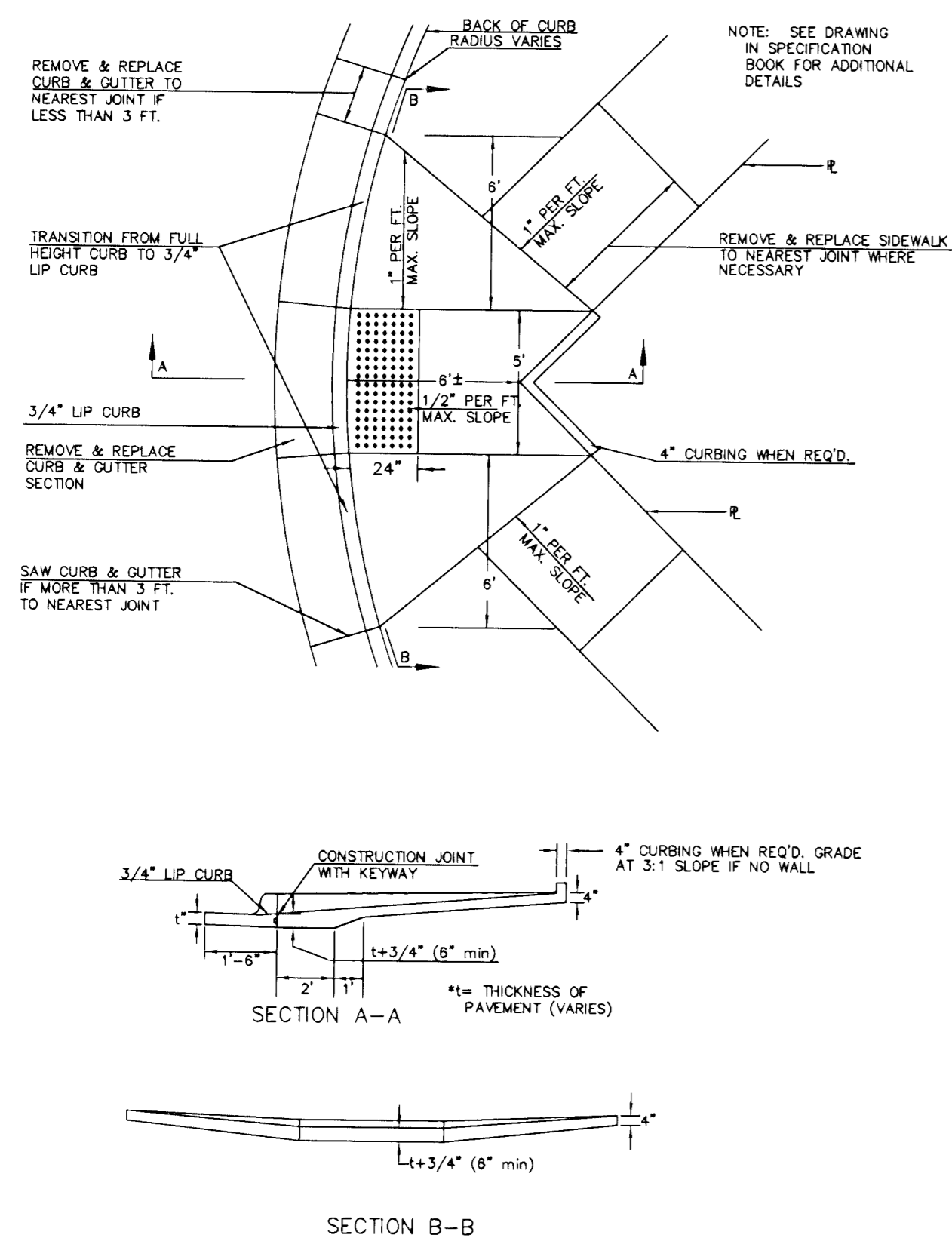
STANDARD WHEELCHAIR RAMP CONSTRUCTION DETAIL FOR STREETS WITH COMBINED CURB & GUTTER AND FULL WALK (TYPE B)



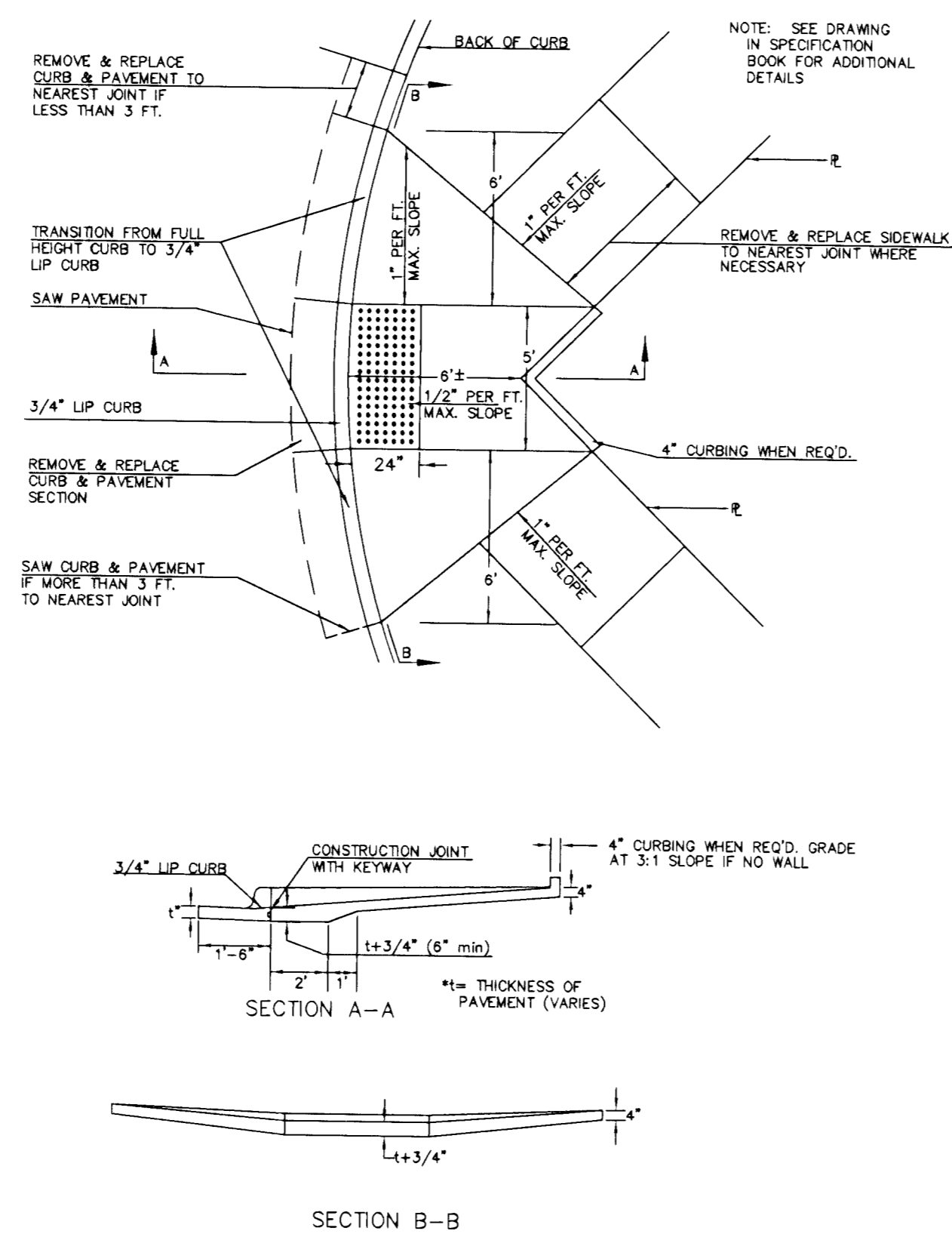
STANDARD WHEELCHAIR RAMP CONSTRUCTION DETAIL FOR STREETS WITH MONOLITHIC CURB AND FULL WALK (TYPE B)



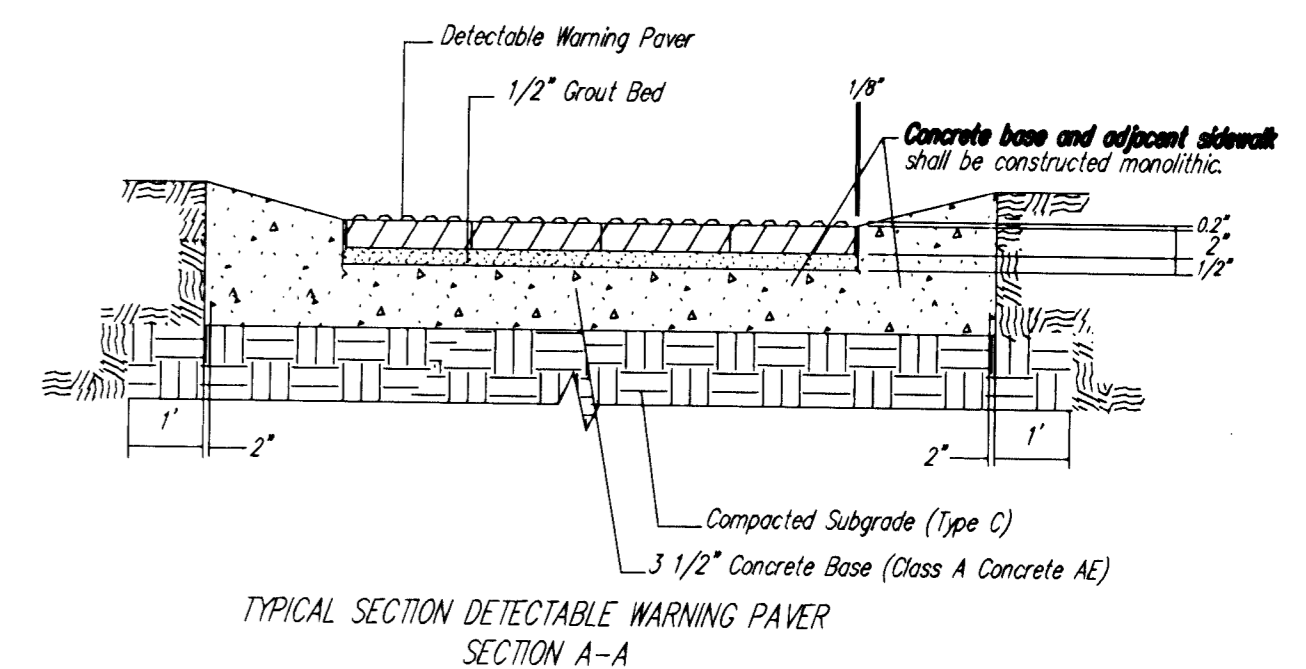
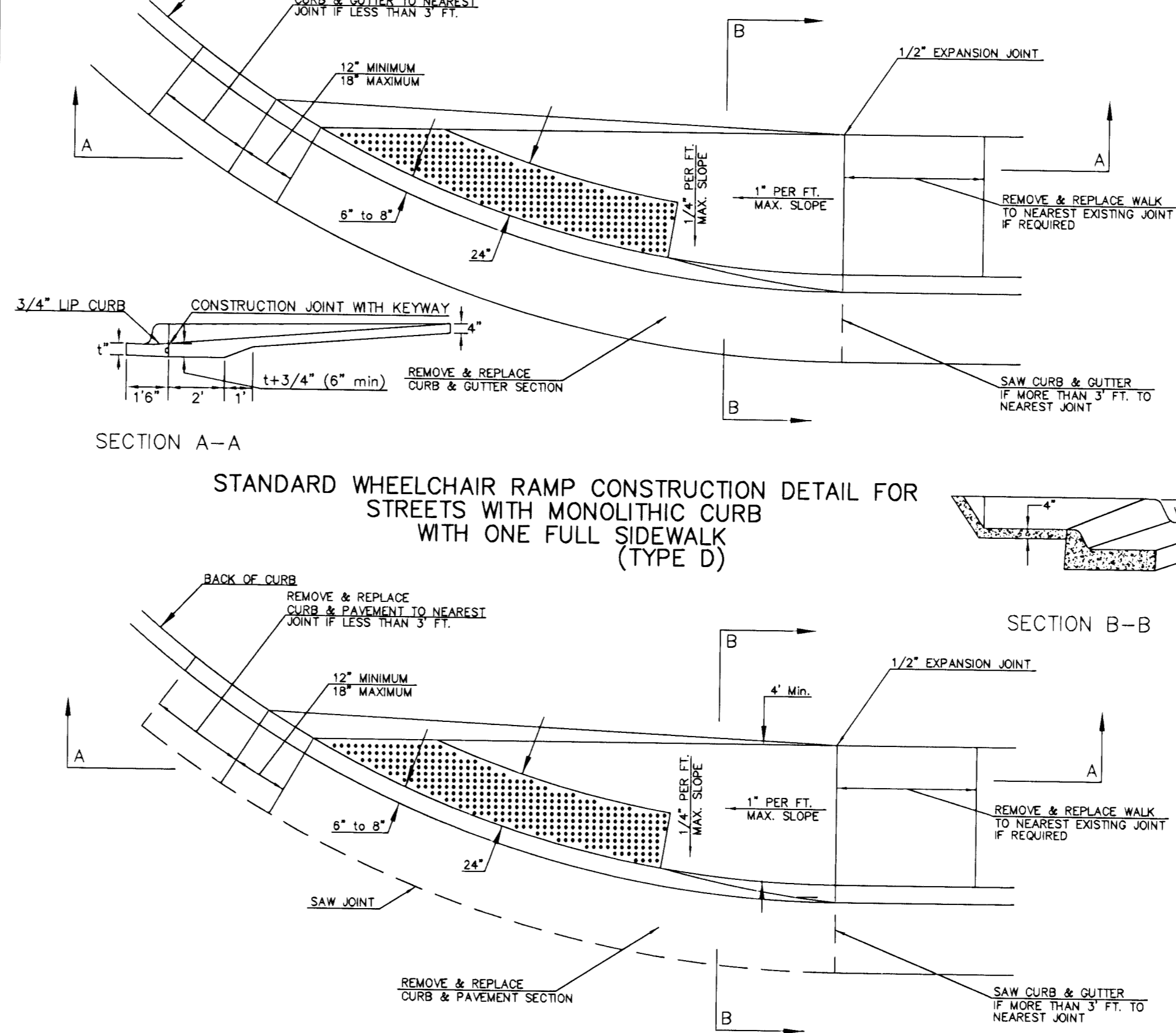
STANDARD WHEELCHAIR RAMP CONSTRUCTION DETAIL FOR STREET WITH COMBINED CURB AND GUTTER ON RADIUS WITH 6'± FROM BACK OF CURB TO PROPERTY CORNER (TYPE C)



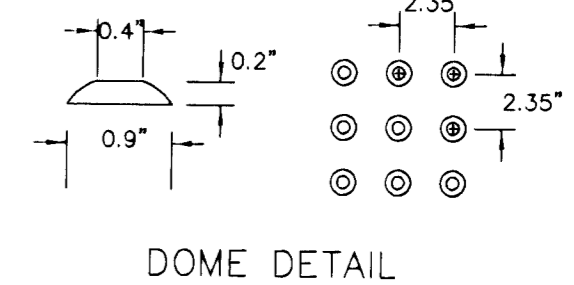
STANDARD WHEELCHAIR RAMP CONSTRUCTION DETAIL FOR STREET WITH MONOLITHIC CURB ON RADIUS WITH 6'± FROM BACK OF CURB TO PROPERTY CORNER (TYPE C)



STANDARD WHEELCHAIR RAMP CONSTRUCTION DETAIL FOR STREETS WITH COMBINED CURB & GUTTER WITH ONE FULL SIDEWALK (TYPE D)



NOTE: HANOVER DETECTABLE WARNING PAVERS (OR AN APPROVED ALTERNATE) SHALL BE USED IN ALL WHEELCHAIR RAMPS. THE 11 3/4" RED 15" PAVER SHALL BE USED IN ALL APPLICATIONS.  
 HANOVER ARCHITECTURAL PRODUCTS  
 240 BENDER ROAD  
 HANOVER, PA 17331  
 1-717-637-0500  
 www.hanoverpavers.com



WHEEL CHAIR RAMP DWG

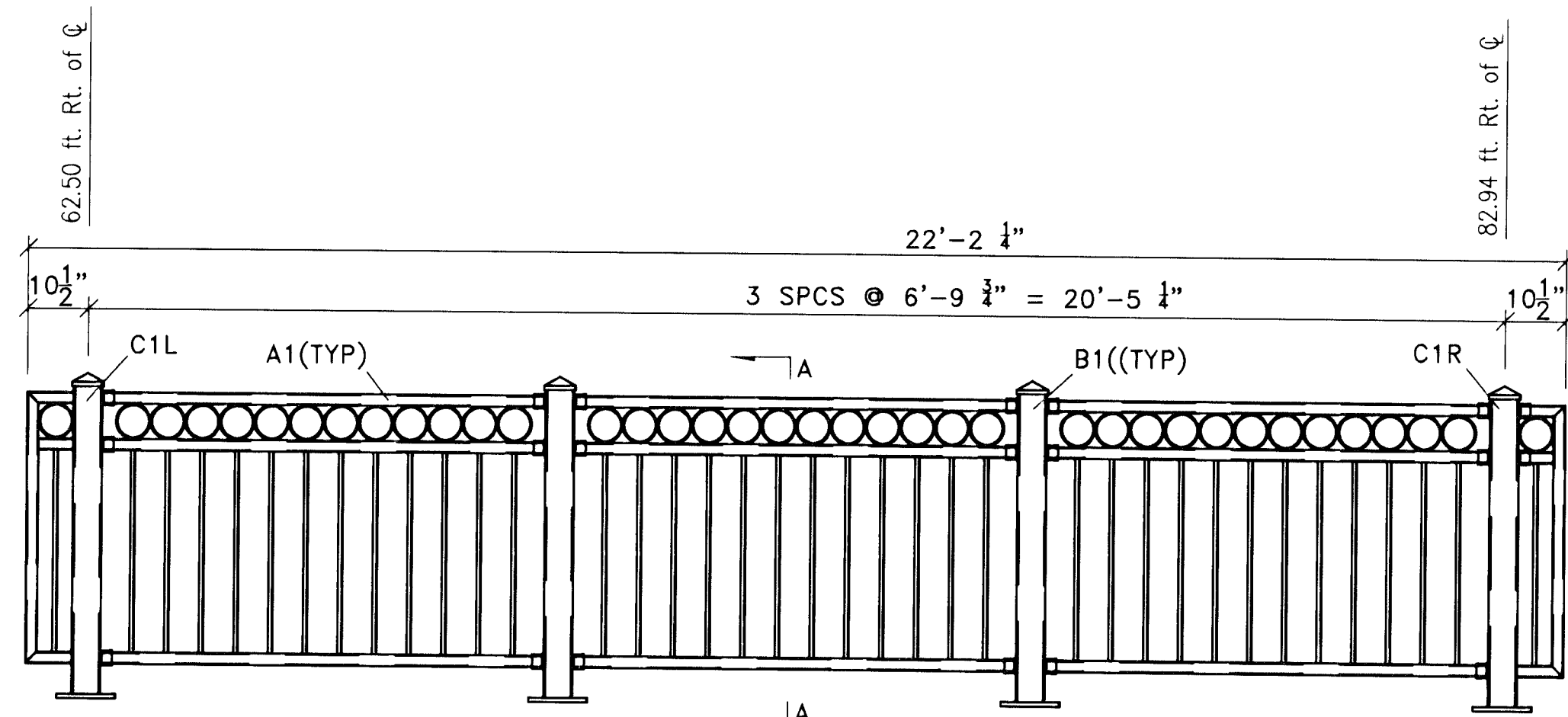
**WHEELCHAIR RAMP DETAILS**

CITY ENGINEER  
 NEIL CABLE, P.E.

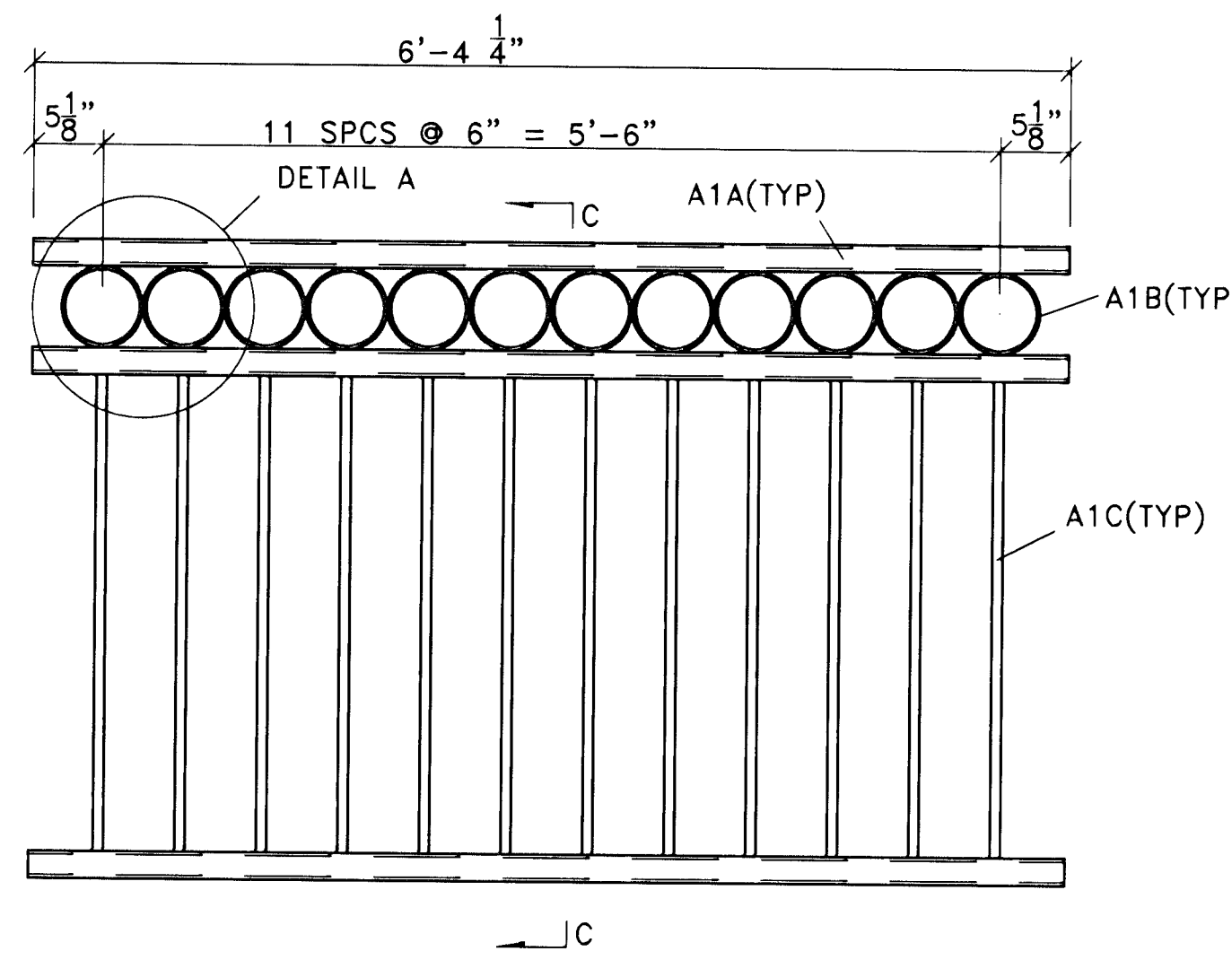
PROJECT NUMBER: 1774    OCA NUMBER:    DATE: MARCH 04

CITY ENGINEER'S OFFICE  
 CITY HALL - SEVENTH FLOOR  
 455 NORTH MAIN STREET  
 WICHITA, KANSAS 67202-1620  
 (316) 268-4501  
 (316) 268-4114 FAX

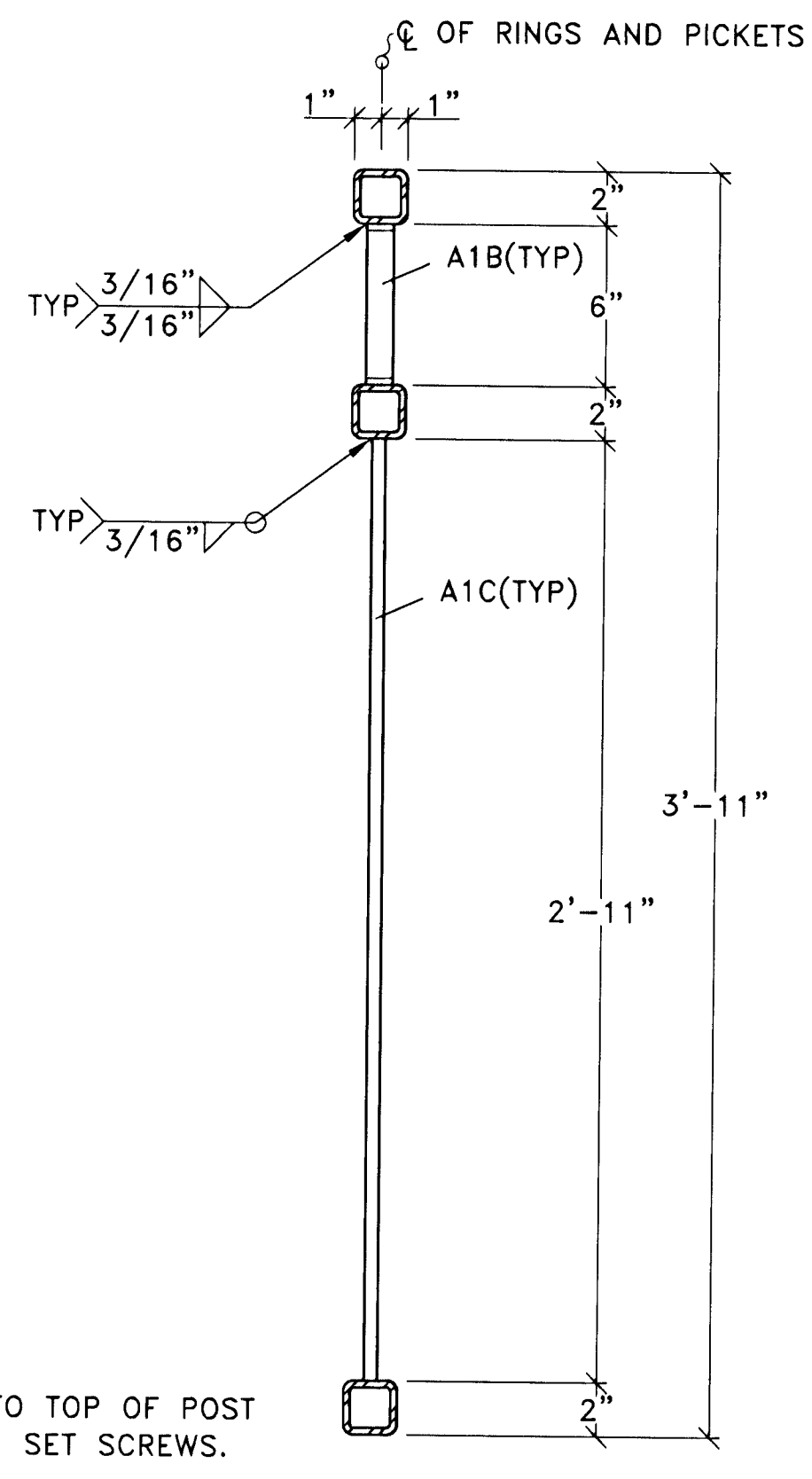
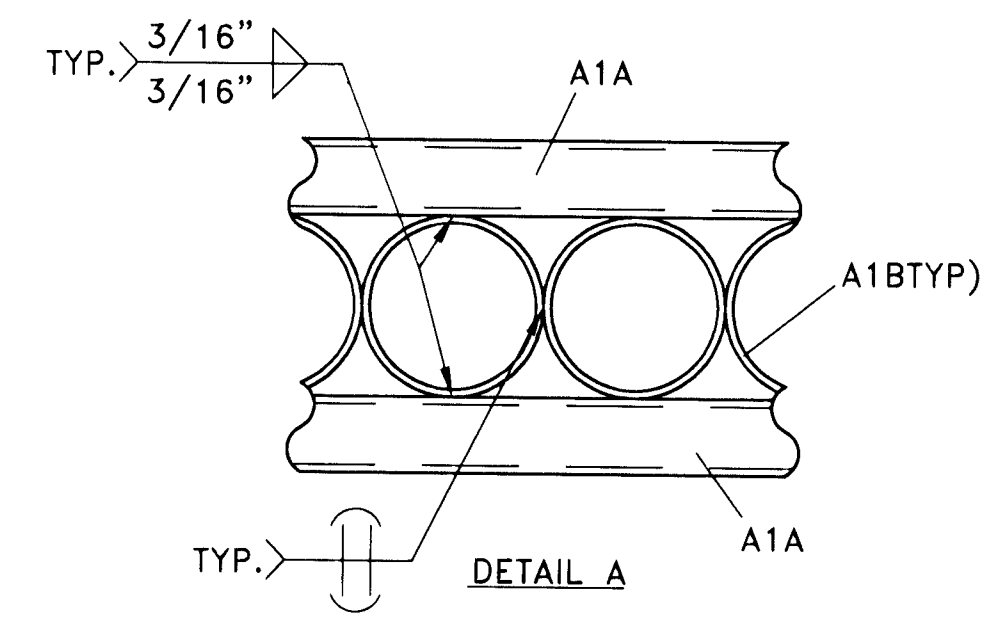
DESIGN:    DRAWN:    SHEET: 15 OF 32



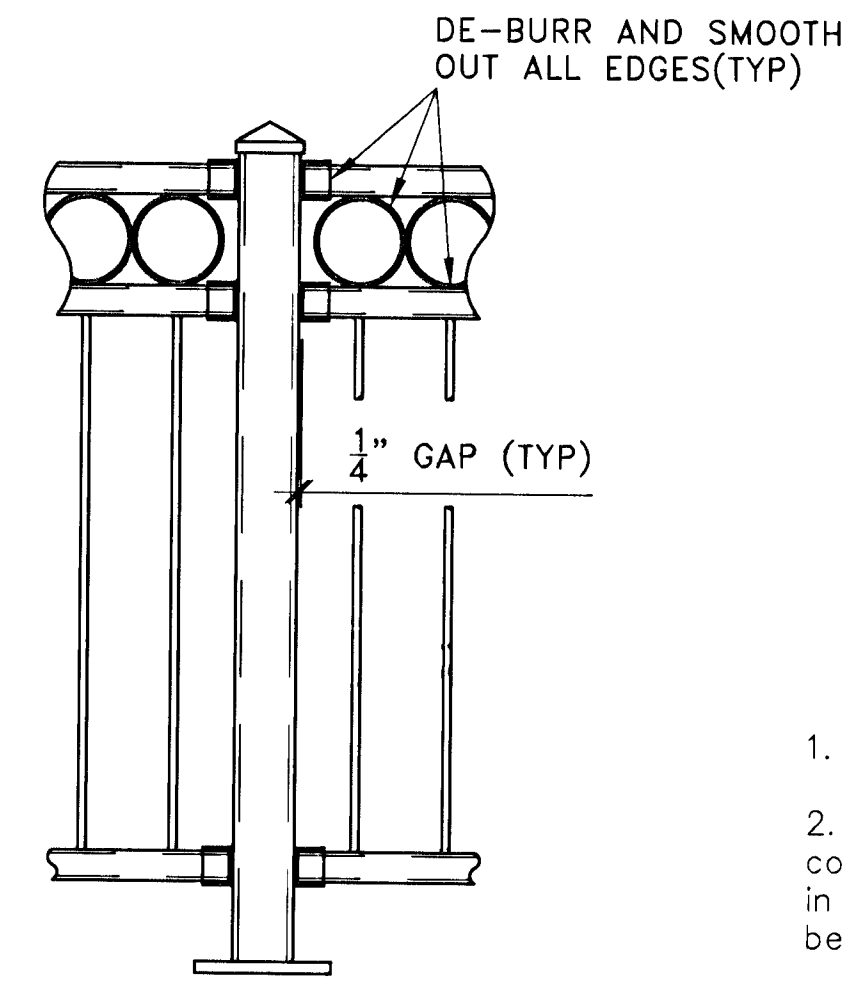
HANDRAIL ELEVATION



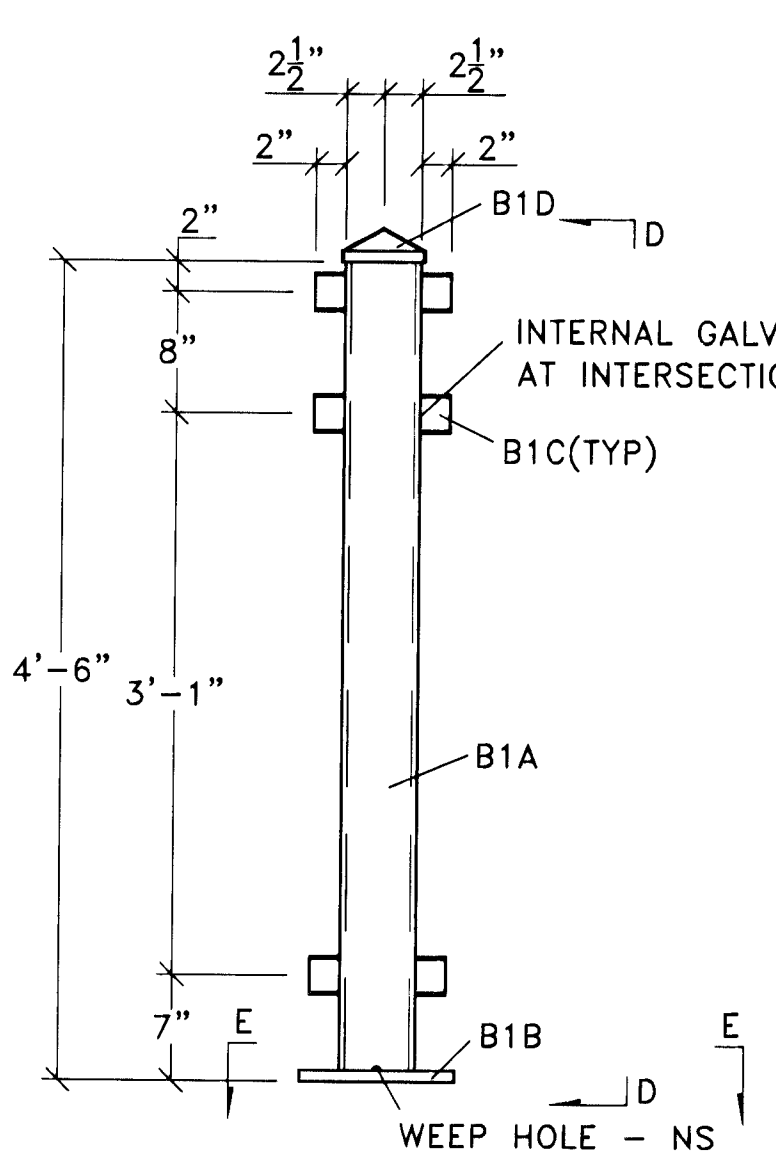
3 EA. HANDRAIL PANEL MKA1



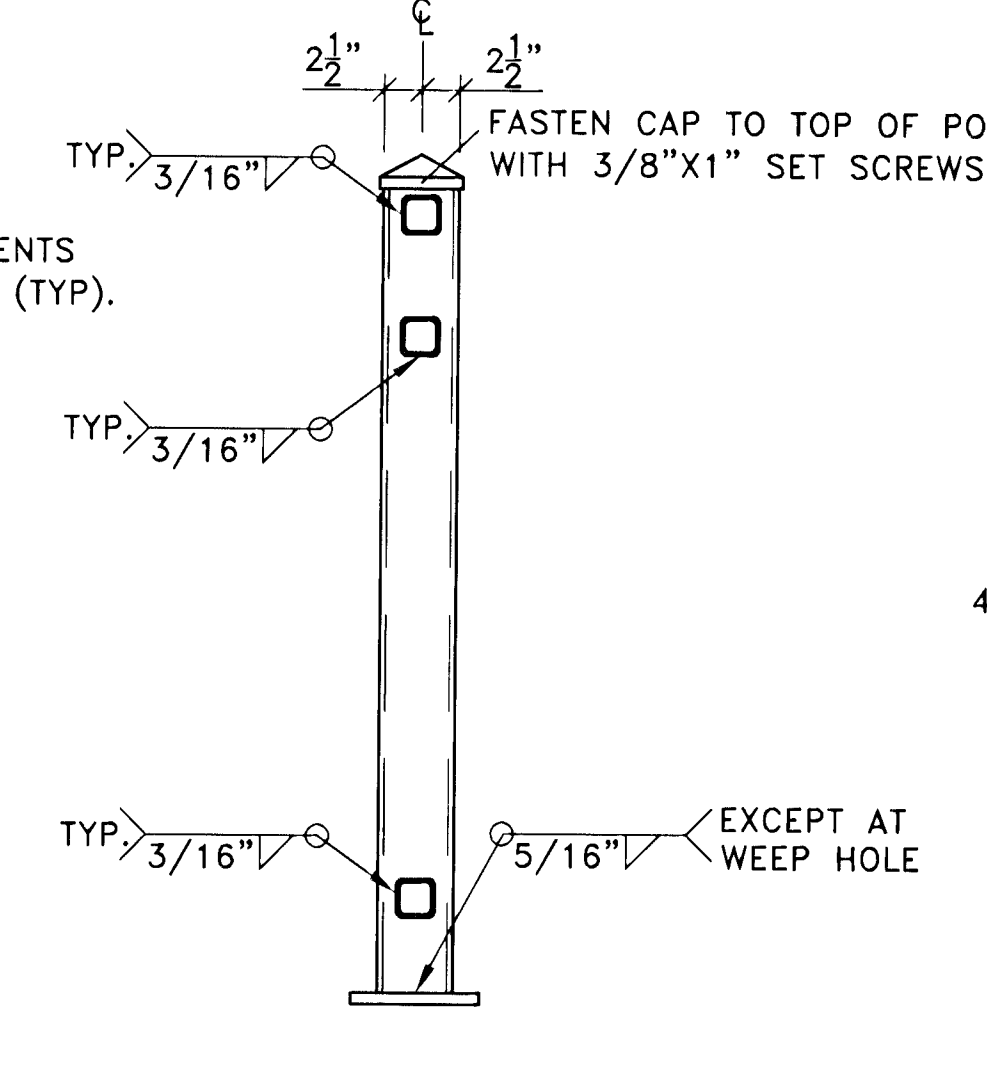
SECTION A



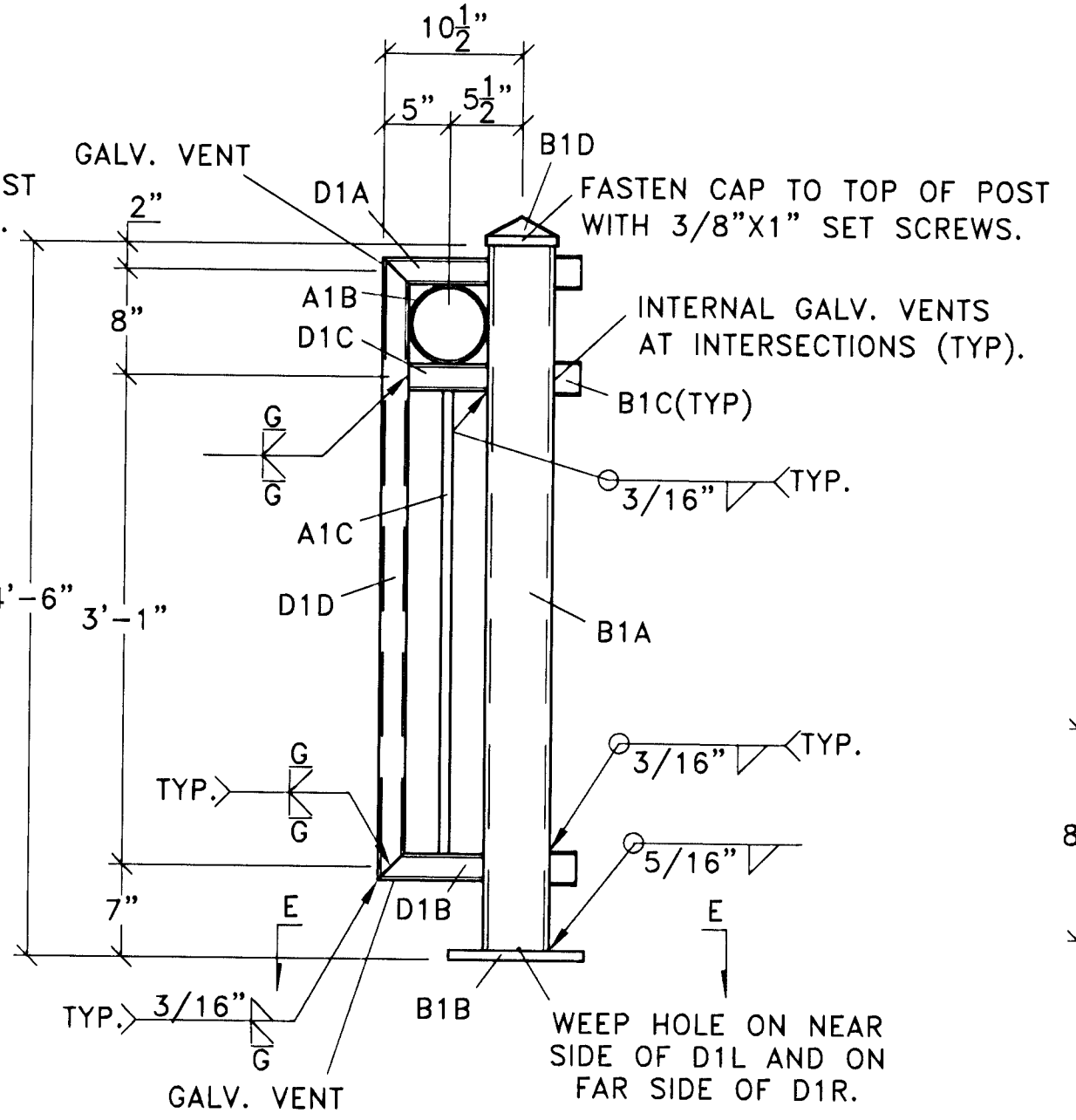
SECTION B



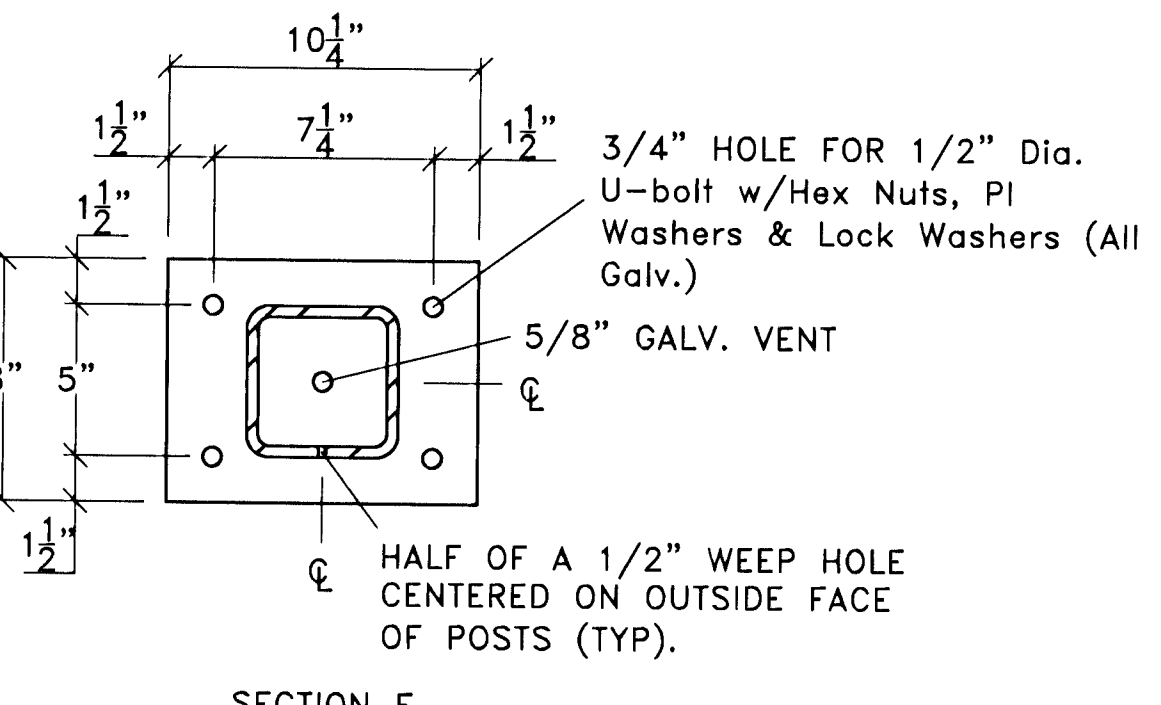
2 EA. POST ASSEMBLY MKB1



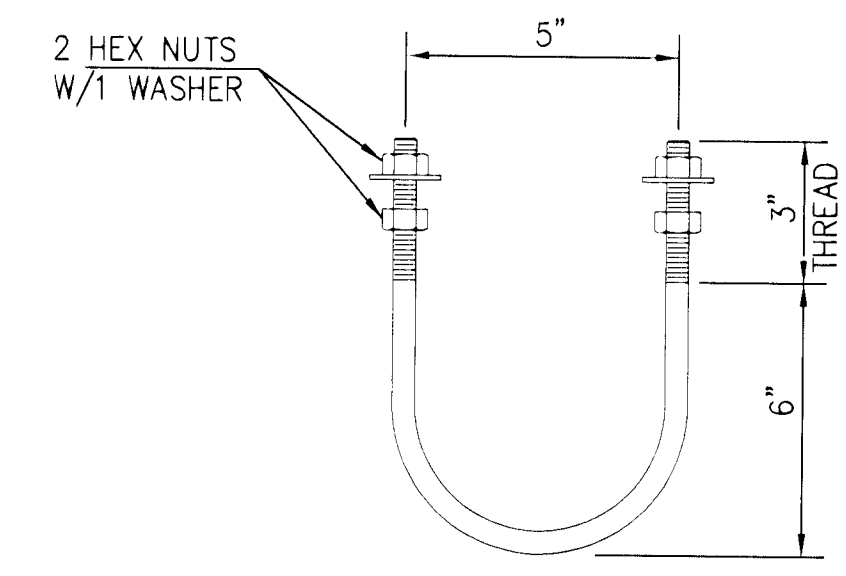
SECTION D



1 EA. POST ASSEMBLY MKC1L  
1 EA. POST ASSEMBLY MKC1R



SECTION E



1/2" Ø U-BOLT - 42,000 PSI MIN. YIELD  
U-BOLTS SHALL BE STAINLESS STEEL.

EXPANSION ANCHORS NOT ALLOWED

HANDRAIL NOTES

1. Shims may be used between concrete and base plates of posts.
2. All parts of Handrail shall be painted. The primer coat shall conform to the inorganic Zinc System. Surface preparation shall be in accordance with that for structural steel. The finish coat shall be in accordance with water-borne acrylic finish coating.
3. The Contractor shall submit color chart for approval by the Learjet Supervisor of Facilities Planning.
4. All material, equipment and labor necessary for the installation of the handrail shall be subsidiary to the bid item.

MATERIALS		
MK.	DESCRIPTION	SPECIFICATION
A1A	2"X2"X1/4" TUBE	ASTM A500 Gr.B <sup>SMALL TO A123</sup>
D1A		
D1B		
D1C		
D1D		
B1A	5"X5"X3/8" TUBE	
B1C	2 1/2"X2 1/2"X3/16" TUBE	
A1B	6" O.D. X 1/4" WALL PIPE	
A1C	3/4" ROUND BAR	A36
B1B	3/4"X8" PLATE	
B1D	5" POST CAP	A569
	1/2" U-bolt	

WEST LEARJET WAY  
 HANDRAIL DETAILS  
**BOMBARDIER LEARJET**  
 WICHITA, KANSAS

POE & ASSOCIATES OF KANSAS, INC.  
 CONSULTING ENGINEERS  
 5940 E. Central, Suite 200 • Wichita, KS 67208-4242  
 Phone 316/685-4114 • FAX 316/685-4444

**FINAL**  
 Designed By: P. Ferguson  
 Drawn By: J. Unruh  
 P.O. Job No.: 1774  
 Date: March, 2004

No. Date By Approved

16 of 32

STATION TO STATION	EARTHWORK					
	EXCAVATION YD <sup>3</sup>	COMPACTED FILL YD <sup>3</sup>	LOOSE FILL YD <sup>3</sup>	*SUBGRADE PREPARATION YD <sup>2</sup>	*EXCAVATION OF CHANNEL YD <sup>3</sup>	*COMPACTION OF CHANNEL YD <sup>2</sup>
10+47.43 TO 27+44.00 (WEST LEARJET WAY)	1,078	---	115	7,222.5	---	---
10+51.59 TO 26+76.62 (CHANNEL - ALT. NO. 1)	---	---	---	---	6,844	3,708
5+33.00 TO 9+50.00 (SERVICE ROAD)	126	---	---	---	---	---
TOTALS	1,204	---	115	7,222.5	6,844	3,708

\* ALT. NO. 1

SIDEWALK CONSTRUCTION (6")(AE)					
STATION TO STATION	LENGTH FT.	WIDTH FT.	YD <sup>2</sup>	REMARKS	
18+77.29	72.5	6'	48.3	PORTION AT HANDRAIL REINFORCED	
23+33.37	67.5	6'	45.0	PORTION AT HANDRAIL REINFORCED	
TOTAL			93.3		

SIDEWALK WHEELCHAIR RAMP					
STATION	SIDE	WIDTH FT.	QUANTITY	YD <sup>2</sup>	
19+08	LT.	6.0	1	8.4	
19+23	RT.	6.0	1	4.6	
23+43.24	LT.	6.0	2	14.4	
23+48.33	RT.	6.0	1	6.5	
TOTAL			5	33.9	

SEEDING (FOR INFORMATIN ONLY)		
LOCATION	AREA ACRES	REMARKS
SERVICE ROAD	0.7	
WEST LEARJET WAY	1.3	
CHANNEL - ALT. NO. 1	2.5	

MONOLITHIC EDGE CURB		
STATION	LENGTH FT.	REMARKS
18+77.29	86.7	CURB FOR SIDE ENT. W/ VALLEY GUTTER
18+78.00	51.7	CURB FOR SIDE ENTRANCES
21+93.01	86.7	CURB FOR SIDE ENT. W/ VALLEY GUTTER
22+71.04	51.7	CURB FOR SIDE ENTRANCES
23+33.37	48.7	CURB FOR SIDE ENTRANCES
24+17.66	53.7	CURB FOR SIDE ENTRANCES
27+17.61	46.5	CURB FOR SIDE ENTRANCES
TOTAL	425.7	

CURB-GUTTER (COMBINED) (AE) 6 5/8"		
STATION TO STATION	LENGTH FT.	REMARKS
10+47.43 TO 27+42.00	2,822.7	
TOTAL	2,822.7	

CURB-GUTTER (AE) 1 1/2" LIP CURB		
STATION TO STATION	LENGTH FT.	REMARKS
10+47.43 TO 27+42.00	285.5	
TOTAL	285.5	

CONCRETE PAVEMENT - VALLEY GUTTERS (8")(AE)			
STATION	SIDE	QUANTITY YD <sup>2</sup>	REMARKS
18+77.29	RT.	171.7	
21+93.01	RT.	174.2	
TOTAL		345.9	

CONCRETE PAVEMENT - DRIVEWAY (8")(AE)			
STATION	SIDE	QUANTITY YD <sup>2</sup>	REMARKS
18+78.00	LT.	55.7	
22+71.04	LT.	68.7	
23+33.37	RT.	52.6	
24+17.66	LT.	73.2	
27+17.61	RT.	50.2	
TOTAL		300.4	

AC PAVEMENT 5" BASE COURSE		
STATION TO STATION	YD <sup>2</sup>	REMARKS
10+47.43 TO 24+50.00	4,559.3	INCLUDES PAVEMENT BEHIND VALLEY GUTTER
TOTAL	4,559.3	

AC PAVEMENT 3" BASE COURSE		
STATION TO STATION	YD <sup>2</sup>	REMARKS
24+50.00 TO 27+42.00	778.7	
TOTAL	778.7	

AC PAVEMENT 2" SURFACE COURSE		
STATION TO STATION	YD <sup>2</sup>	REMARKS
10+47.43 TO 27+42.00	5,338.0	INCLUDES PAVEMENT BEHIND VALLEY GUTTER
TOTAL	5,338.0	

OVERLAY - AC PAVEMENT 2" SURFACE COURSE (BM-1B)		
STATION TO STATION	YD <sup>2</sup>	REMARKS
5+53.38 TO 11+50.00	1,984.8	PARALLEL SERVICE ROAD
TOTAL	1,984.8	

MILLING (2" NOMINAL)		
STATION TO STATION	YD <sup>2</sup>	REMARKS
5+53.38 TO 11+50.00	1,984.8	PARALLEL SERVICE ROAD
TOTAL	1,984.8	

SUBGRADE (CRUSHED STONE) (6")				
STATION TO STATION	DEPTH IN.	WIDTH FT.	QUANTITY YD <sup>2</sup>	REMARKS
10+47.43 TO 27+42.00	6	31	7,242.3	SIDE ENTRANCES INCLUDED
TOTAL			7,242.3	

GEOGRID REINFORCEMENT (FOR BASE)				
STATION TO STATION	DEPTH IN.	WIDTH FT.	QUANTITY YD <sup>2</sup>	REMARKS
10+47.43 TO 27+42.00	6	31	7,242.3	SIDE ENTRANCES INCLUDED
TOTAL			7,242.3	

* PAVEMENT REMOVAL			
STATION TO STATION	WIDTH	T	YD <sup>3</sup>
10+47.43 TO 27+44.00	VARIABLE	6.5"	976.8
TOTAL			976.8

\* INCLUDES SIDE ENTRANCES

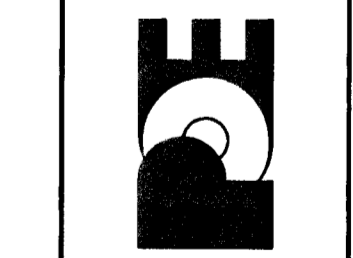
RECAPITULATION OF ROAD QUANTITIES		
ITEM	QUANTITY	UNIT
MOBILIZATION	1	LS
PAVEMENT REMOVAL	976.8	C.Y.
EXCAVATION	1,204	C.Y.
LOOSE FILL	115	C.Y.
SUBGRADE PREPARATION	7,242.3	S.Y.
EXCAVATION OF CHANNEL - ALT. NO. 1	6,844	C.Y.
COMPACTION OF CHANNEL - ALT. NO. 1	3,708	S.Y.
7" AC PAVEMENT (5" BITUMINOUS BASE)	4,559.3	S.Y.
5" AC PAVEMENT (3" BITUMINOUS BASE)	778.7	S.Y.
REINFORCED CRUSHED ROCK BASE (6")	7,242.3	S.Y.
SIDEWALK CONSTRUCTION (6")(AE)	93.3	S.Y.
CONCRETE PAVEMENT - VALLEY GUTTERS (8")(AE)	345.9	S.Y.
CONCRETE PAVEMENT - DRIVEWAYS (8")(AE)	300.4	S.Y.
DITCH LINING (CONCRETE) - ALT. NO. 1	1,227.8	S.Y.
DITCH LINING (CONCRETE)	56.9	S.Y.
CONCRETE SLOPE PROTECTION - ALT. NO. 1	768.7	S.Y.
TOE WALL - ALT. NO. 1	650.0	L.F.
SIDEWALK WHEELCHAIR RAMP	5	EACH
2" CONCRETE HEADER	1	EACH
CURB-GUTTER (AE) 1 1/2" LIP CURB	285.5	L.F.
CURB-GUTTER (COMBINED) (AE) 6 5/8"	2,822.7	L.F.
MONOLITHIC EDGE CURB	425.7	L.F.
DROP INLET (2'-0"x2'-0")	3	EACH
TYPE 1-A CURB INLET (6" OPENING X 5'-0")	4	EACH
STORM SEWER (24")(RCP)	156.9	L.F.
STORM SEWER (18")(RCP)	30.7	L.F.
END SECTION (24")(RC)	2	EACH
CONNECT TO EXIST. INLET	1	EACH
MANHOLE ADJUSTMENT	2	EACH
WATERMETER ADJUSTMENT	1	EACH
HANDRAIL	44.4	L.F.
RIP-RAP REMOVAL	392.0	S.Y.
PAVEMENT MARKING	1	L.S.
SIGNING	1	L.S.
PERMANENT SEEDING (FESCUE K-31)	1	L.S.
PERMANENT SEEDING (FESCUE K-31) - ALT. NO. 1	1	L.S.
TEMPORARY EROSION CONTROL	1	L.S.
TEMPORARY EROSION CONTROL - ALT. NO. 1	1	L.S.
RESET 48" CULVERTS (CMP) - ALT. NO. 1	4	EACH
OVERLAY - AC PAVEMENT 2" SURFACE COURSE (BM-1B)	1,984.8	S.Y.
MILLING (2" NOMINAL)	1,984.8	S.Y.
TRAFFIC CONTROL	1	L.S.

PAVEMENT MARKING (FOR INFORMATION ONLY)			
STATION TO STATION	4" SOLID DOUBLE YELLOW	6" BROKEN YELLOW	6" SOLID WHITE LANE LINE
10+47.43 TO 13+00.00	252.5'		
13+00.00 TO 24+42.00		286'	
10+47.43 TO 12+00.00			152.5'

DITCH LINING (CONCRETE) - ALT. NO. 1				
STATION TO STATION	SIDE	W	T	YD <sup>2</sup>
10+71.59 TO 18+40.68	RT.	8'	5"	683.6
19+12.70 TO 19+92.00	RT.	8'	5"	70.5
20+08.00 TO 21+56.06	RT.	8'	5"	131.6
22+28.46 TO 22+99.87	RT.	8'	5"	63.5
23+72.02 TO 24+92.00	RT.	8'	5"	106.6
25+08.00 TO 26+76.61	RT.	8'	5"	172.0
TOTAL				1,227.8

SUMMARY OF QUANTITIES  
BOMBARDIER LEARJET  
WICHITA, KANSAS

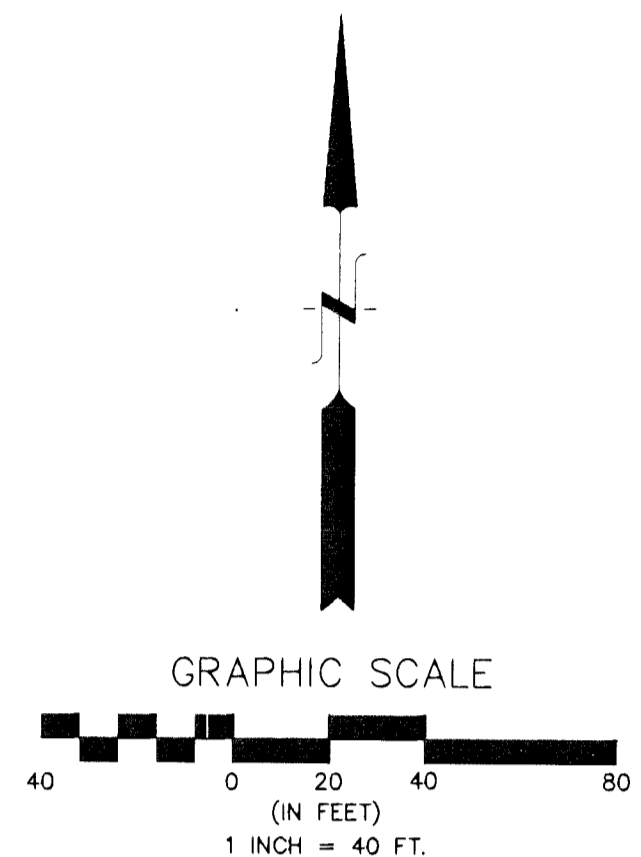
POE & ASSOCIATES OF KANSAS, INC.  
CONSULTING ENGINEERS  
5940 E. Central, Suite 200  
Wichita, KS 67208-4242  
Phone 316/685-4114 FAX 316/685-4444



FINAL  
Designed By: P. Ferguson  
Drawn By: J. Unruh  
Poe Job No.: 1774  
Date: March, 2004

TYLER ROAD

PARALLEL SERVICE ROAD



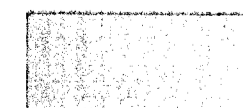
TYLER ROAD

SILT FENCE BARRIER

WEST LEARJET WAY

**NOTE:**  
Place Permanent Seeding (K-31 Fescue) with fertilizer under blanket and at all other disturbed areas. See City of Wichita Specifications for rates of application.

**LEGEND**



8' Excelsior I (Curlex) Blanket

No.	Date	By	Approved	Revision

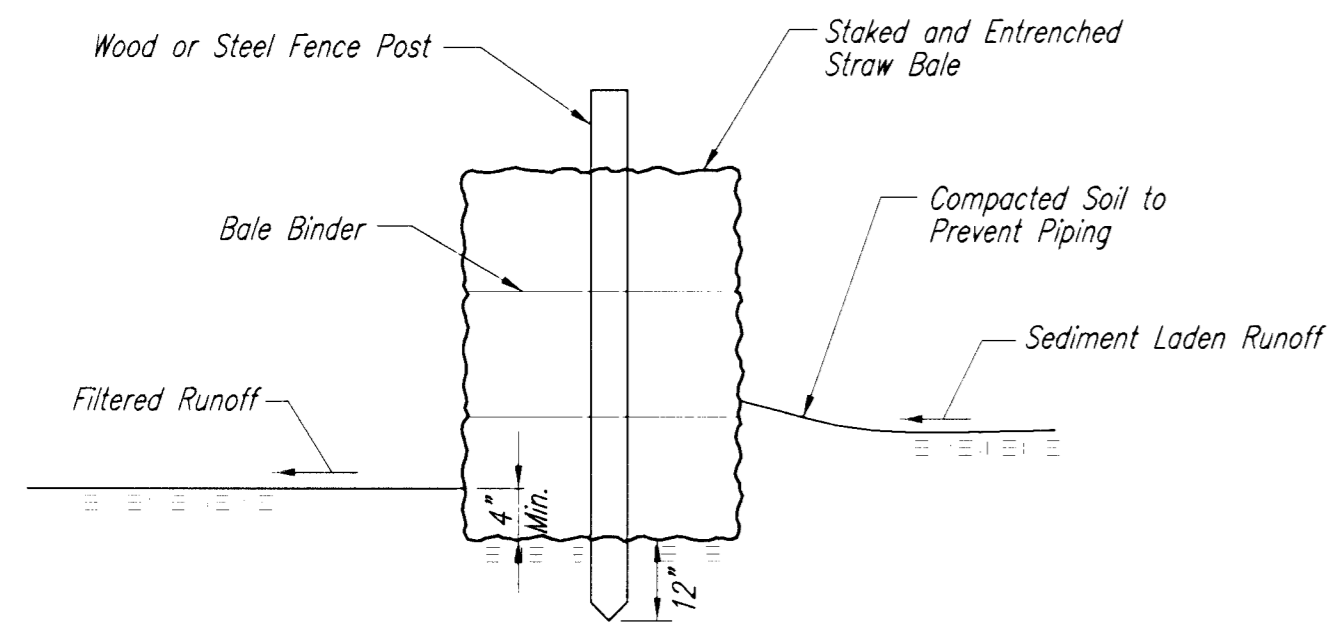
WEST LEARJET WAY  
EROSION CONTROL PLAN  
**BOMBARDIER LEARJET**  
WICHITA, KANSAS

POE & ASSOCIATES OF KANSAS, INC.  
CONSULTING ENGINEERS  
5940 E. Central, Suite 200 • Wichita, KS 67208-4242  
Phone 316/685-4114 • FAX 316/685-4444



**FINAL**

Designed By: P. Ferguson  
Drawn By: J. Ulrich  
Pore Job No.: 1774  
Date: March 2004



**STRAW BALE BARRIERS**

**Material Specification:**

Bale slope barriers may be constructed of wheat straw, oat straw, prairie hay, or bromegrass hay that is free of weeds declared noxious by the Kansas State Board of Agriculture. The stakes used to anchor the bales should be a hardwood material with the following minimum dimensions: 2" square (nominal) by 4' long.

**Placement:**

A slope barrier should be used at the toe of a slope when a ditch does not exist. The slope barrier should be placed on nearly level ground 5' to 10' away from the toe of a slope. The barrier is placed away from the toe of the slope to provide adequate storage for settling out sediment.

When practicable, bale slope barriers should be placed along contours to avoid a concentration of flow.

Bale slope barriers can also be placed along right-of-way fence lines to keep sediment from crossing onto adjacent property. When placed in this manner, the slope barrier will not likely follow contours.

**Proper installation method:**

Excavate a trench the length of the planned slope barrier that is 4" deep and a bale's width wide. Make sure that the trench is excavated along a single contour. When practicable, slope barriers should be placed along contours to avoid a concentration of flow. Place the soil on the upslope side of the trench for later use.

Place the bales in the trench, making sure that they are butted tightly. Two stakes should be driven through each bale along the centerline of the ditch check, approximately 6" to 8" in from the bale ends. Stakes should be driven at least 12" into the ground. Once all the bales have been installed and anchored, place the excavated soil against the upslope side of the check and compact it. The compacted soil should be no more than 3" to 4" deep.

**List of common placement/installation mistakes to avoid:**

When practicable, do not place bale slope barriers across contours. Slope barriers should be placed along contours to avoid a concentration of flow. Concentrated flow over a slope barrier creates a scour hole on the downslope side of the barrier. The scour hole eventually undermines the bales and the barrier fails.

Do not place bale slope barriers in areas with shallow soils underlain by rock. If the barrier is not anchored sufficiently, it will wash out.

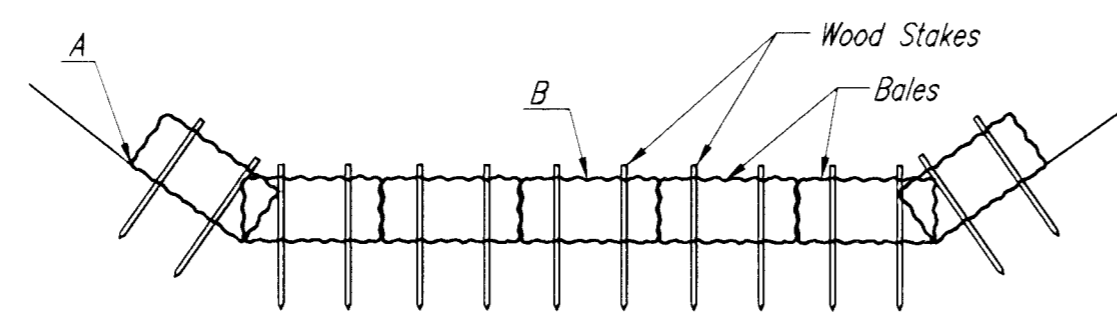
Bale slope barriers must be dug into the ground. Bales at ground level do not work because they allow water to flow under the barrier.

**Inspection and Maintenance:**

Bale slope barriers should be inspected every 7 days and within 24 hours of a rainfall of 1/2" or more. The following is a list of questions that should be addressed during each inspection:

- Are there any points along the slope barrier where water is concentrating?
- Does water flow under the slope barrier?
- Does water flow through spaces between abutting bales?
- Are any bales dislodged?
- Are bales decomposing due to age and/or water damage?
- Does sediment need to be removed from behind the slope barrier?

NOTE: Point A must be higher than Point B so that water flows over the bales and not around them.



**STRAW BALE DITCH CHECKS**

**Material Specification:**

Bale ditch checks may be constructed of wheat straw, oat straw, prairie hay, or bromegrass hay that is free of weeds declared noxious by the Kansas State Board of Agriculture. The stakes used to anchor the bales should be a hardwood material with the following minimum dimensions: 2" square (nominal) by 4' long.

Optional: The downstream scour apron should be constructed of a double-netted straw erosion-control blanket at least 6' wide.

Optional: The metal landscape staples used to anchor the erosion-control blanket should be at least 8" long.

**Placement:**

Bale ditch checks should be placed perpendicular to the flowline of the ditch. The ditch check should extend far enough so that the ground level at the ends of the check is higher than the top of the lowest center bale. This prevents water from flowing around the check.

Checks should not be placed in ditches where high flows are expected. Rock checks should be used instead.

Bales should be placed in ditches with slopes of 6% or less. For slopes steeper than 6%, rock checks should be used.

The following table provides check spacing for a given ditch grade:

Ditch grade (%)	Check Spacing (feet)
0.5	200
1.0	200
2.0	100
3.0	65
4.0	50
5.0	40
6.0	30

**Proper installation method:**

Excavate a trench perpendicular to the ditch flowline that is 4" deep and a bale's width wide. Extend the trench in a straight line along the entire length of the proposed ditch check. Place the soil on the upstream side of the trench—it will be used later.

Optional: On the downstream side of the trench, roll out a length of erosion-control blanket (scour apron) equal to the length of the trench. Place the upstream edge of the erosion-control blanket along the bottom upstream edge of the trench. The erosion control blanket should be anchored in the trench with one row of 8" landscape staples placed on 18" centers. The remainder of the erosion-control blanket (the portion that is not lying in the trench) will serve as the downstream scour apron. This section of the blanket should be anchored to the ground with 8" landscape staples placed around the perimeter of the blanket on 18" centers. The remainder of the blanket should be anchored using two evenly spaced rows of 8" landscape staples on 18" centers placed perpendicular to the flowline of the ditch.

Place the bales in the trench, making sure that they are butted tightly. Two stakes should be driven through each bale along the centerline of the ditch check, approximately 6" to 8" in from the bale ends. Stakes should be driven at least 12" into the ground. Once all the bales have been installed and anchored, place the excavated soil against the upstream side of the check and compact it. The compacted soil should be no more than 3" to 4" deep and extend upstream no more than 24".

**List of common placement/installation mistakes to avoid:**

Do not place a bale ditch check directly in front of a culvert outlet. It will not stand up to the concentrated flow.

Do not place bale ditch checks in ditches that will likely experience high flows. They will not stand up to concentrated flow.

Follow prescribed ditch-check spacing guidelines. If spacing guidelines are exceeded, erosion will occur between the ditch checks.

Do not allow water to flow around the ditch check. Make sure that the ditch check is long enough so that the ground level at the ends of the check is higher than the top of the lowest center bale.

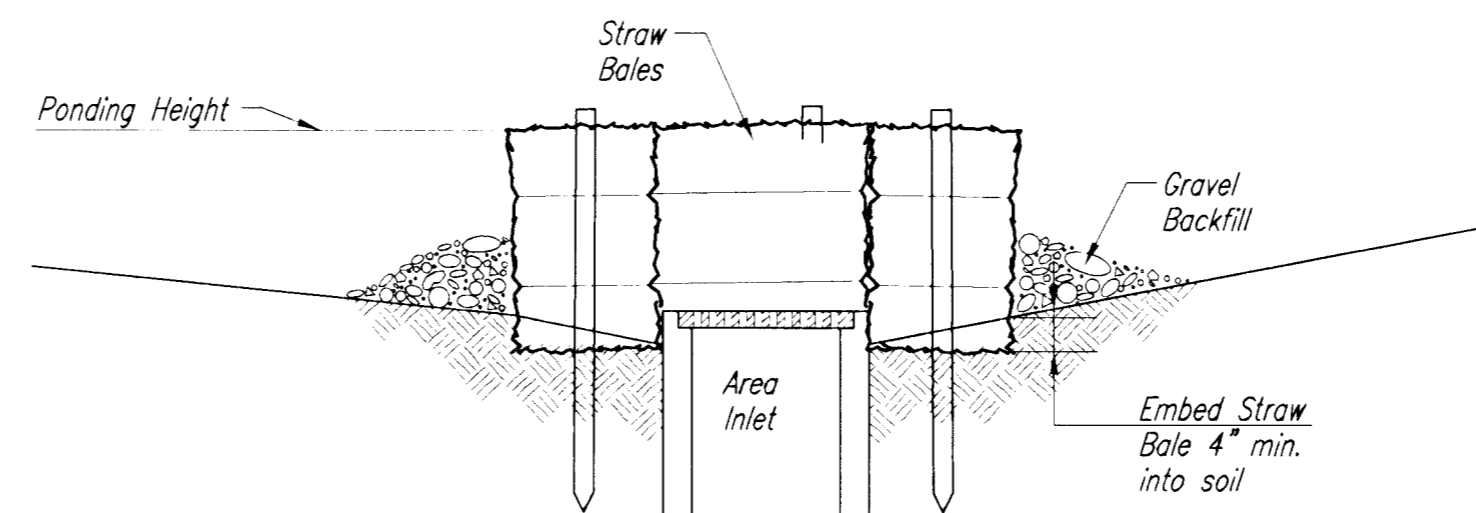
Do not place bale ditch checks in channels with shallow soils underlain by rock. If the check is not anchored sufficiently, it will wash out.

Bale ditch checks must be dug into the ground. Bales at ground level do not work because they allow water to flow under the check.

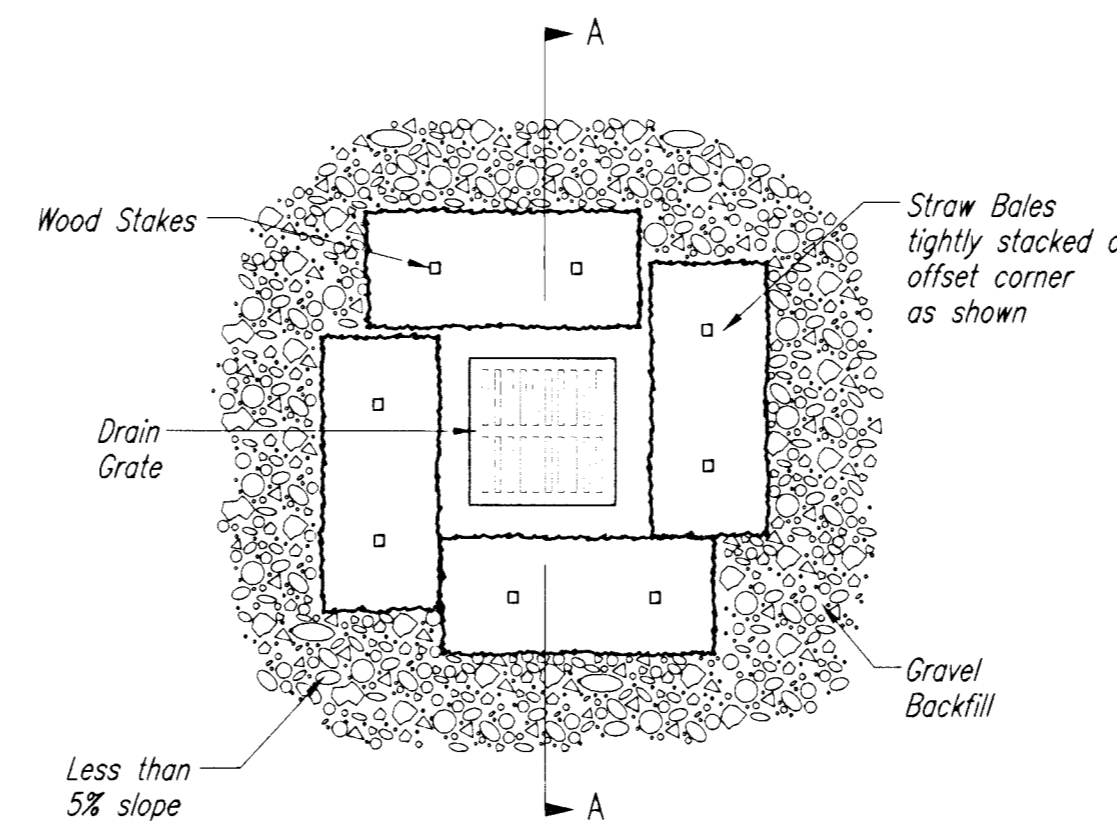
**Inspection and Maintenance:**

Bale ditch checks should be inspected every 7 days and within 24 hours of a rainfall of 1/2" or more. The following is a list of questions that should be addressed during each inspection:

- Does water flow around the ditch check?
- Does water flow under the ditch check?
- Does water flow through spaces between abutting bales?
- Are any bales and/or scour aprons (optional) dislodged?
- Are bales decomposing due to age and/or water damage?
- Does sediment need to be removed from behind the ditch check?



**SECTION A-A**



**STRAW BALE BARRIERS FOR AREA INLETS (INLET PROTECTION)**

**Material Specification:**

Bale area inlet barriers should be constructed of wheat straw, oat straw, prairie hay, or bromegrass hay that is free of weeds declared noxious by the Kansas State Board of Agriculture.

The stakes used to anchor the bales should be a hardwood material with the following minimum dimensions: 2" square (nominal) by 4' long.

**Placement:**

Bale area inlet barriers should be placed directly around the perimeter of a drop inlet. When a bale area inlet barrier is located near an inlet that has steep approach slopes, the storage capacity behind the barrier is drastically reduced. Timely removal of sediment must occur for a barrier to operate properly in this location.

**Proper Installation Method:**

Excavate a trench around the perimeter of the area inlet that is at least 4" deep by a bale's width wide.

Place the bales in the trench, making sure that they are butted tightly. Some bales may need to be shortened to fit into the trench around the area inlet. Two stakes should be driven through each bale, approximately 6" to 8" in from the bale ends. Stakes should be driven at least 12" into the ground.

Once all the bales have been installed and anchored, place the excavated soil against the receiving side of the barrier and compact it. The compacted soil should be no more than 3" to 4" deep.

Note: When a bale area inlet barrier is placed in a shallow median ditch, make sure that the top of the barrier is not higher than the paved road. In this configuration, water may spread onto the roadway causing a hazardous condition.

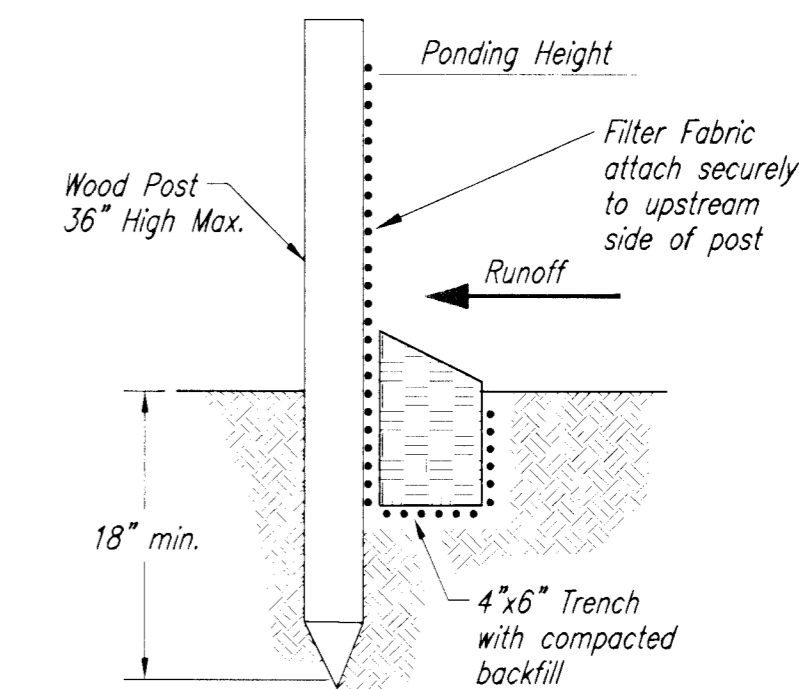
**List of common placement installation mistakes to avoid:**

Bales should be placed directly against the perimeter of the area inlet. This allows overtopping water to flow directly into the inlet instead of onto nearby soil causing scour. Bale area inlet barriers must be dug into the ground. Bales at ground level do not work because they allow water to flow under the barrier.

**Inspection and Maintenance:**

Bale area inlet barriers should be inspected every 7 days and within 24 hours of a rainfall of 1/2" or more. The following is a list of questions that should be addressed during each inspection:

- Does water flow under the area inlet barrier?
- Does water flow through spaces between abutting bales?
- Are any bales dislodged?
- Are bales decomposing due to age and/or water damage?
- Does sediment need to be removed from behind the area inlet barrier?



**SILT FENCE BARRIERS**

**SILT FENCE BARRIERS**

**Material Specification:**

Silt fence fabric should conform to the AASHTO M288 96 silt fence specification. The posts used to support the silt fence fabric should be a hardwood material with the following minimum dimensions: 2" square (nominal) by 4' long. Silt fence fabric should be attached to the wooden posts with staples, wire, zip ties, or nails.

**Placement:**

A slope barrier should be used at the toe of a slope when a ditch does not exist. The slope barrier should be placed on nearly level ground 5' to 10' away from the toe of a slope. The barrier is placed away from the toe of the slope to provide adequate storage for settling out sediment.

When practicable, silt fence slope barriers should be placed along contours to avoid a concentration of flow.

Silt fence slope barriers can also be placed along right-of-way fence lines to keep sediment from crossing onto adjacent property. When placed in this manner, the slope barrier will not likely follow contours.

**Proper installation method:**

Excavate a trench the length of the planned slope barrier that is 6" deep by 4" wide. Make sure that the trench is excavated along a single contour. When practicable, slope barriers should be placed along contours to avoid a concentration of flow. Place the soil on the upslope side of the trench for later use.

Roll out a continuous length of silt fence fabric on the downslope side of the trench. Place the edge of the fabric in the trench starting at the top upslope edge. Line all three sides of the trench with the fabric. Backfill over the fabric in the trench with the excavated soil and compact. After filling the trench, approximately 24" to 36" of silt-fence fabric should remain exposed.

Lay the exposed silt fence upslope of the trench to clear an area for driving in the posts. Just downslope of the trench, drive posts into the ground to a depth of at least 18". Place posts no more than 4' apart.

Attach the silt fence to the anchored post with staples, wire, zip ties, or nails.

**List of common placement/installation mistakes to avoid:**

When practicable, do not place silt fence slope barriers across contours. Slope barriers should be placed along contours to avoid a concentration of flow. When the flow concentrates, it overtops the barrier and the silt fence slope barrier quickly deteriorates.

Do not place silt-fence posts on the upslope side of the silt fence fabric. In this configuration, the force of the water is not restricted by the posts, but only by the staples (wire, zip ties, nails, etc.). The silt fence will rip and fail.

Do not place silt fence slope barriers in areas with shallow soils underlain by rock. If the barrier is not sufficiently anchored, it will wash out.

Silt fence slope barriers must be dug into the ground—silt fence at ground level does not work because water will flow underneath.

**Inspection and Maintenance:**

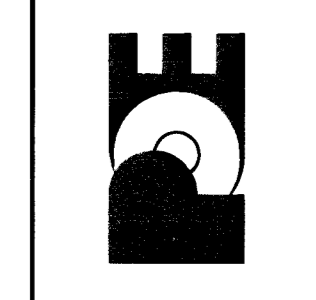
Silt fence slope barriers should be inspected every 7 days and within 24 hours of a rainfall of 1/2" or more. The following is a list of questions that should be addressed during each inspection:

- Are there any points along the slope barrier where water is concentrating?
- Does water flow under the slope barrier?
- Do the silt fences sag excessively?
- Has the silt fence torn or become detached from the posts?
- Does sediment need to be removed from behind the slope barrier?

No.	Date	By	Approved	Revision

EROSION CONTROL  
DETAILS  
**BOMBARDIER LEARJET**  
WICHITA, KANSAS

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**FINAL**

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