

**CITY OF MIDLAND, TEXAS
MASTER DRAINAGE PLAN**

**SECTION 2
JAL DRAW MASTER PLAN**

2.1 GENERAL

The Jal Draw watershed extends from Midland Airpark westward to an upstream point 41 miles west of Holiday Hill Road. This same upstream point corresponds to a distance of 29 miles west of the intersection at Odessa of Texas State Highway 338 and U.S. Highway 385. The majority of the Jal Draw watershed lies west of the City of Midland's detailed Geographic Information System (GIS) coverage and the detailed study area of this Master Drainage Plan.

Figure 2-1 illustrates the area of the detailed study on Jal Draw and the position of Jal Draw relative to the City. Jal Draw discharges into Midland Draw at the eastern edge of Midland Airpark.

2.2 HYDROGRAPHS

Hydrographs were plotted for the three locations shown on Figure 2-1 for three hydrologic conditions each: 1) existing land use hydrologic conditions; 2) future land use hydrologic conditions assuming zero stormwater runoff mitigation efforts; and, 3) future land use hydrologic conditions with all recommended drainage improvements installed.

The first hydrograph plot shown in Figure 2-2 is for the Jal Draw at Holiday Hill Road location and illustrates the three conditions listed above. Note that the hydrographs for each condition have three to four distinct peaks. The peaks which occur in the earlier hours are from the watershed subareas nearest to, and within, the detailed study area and are referred to as the "in-town" peaks. The two peaks which occur after the 21-hour hydrograph time, referred to as the "out-of-town" peaks, are from the major portion of the watershed west of the detailed study area. The comparative plots of the hydrographs illustrate the effectiveness of the proposed improvements in the mitigation of stormwater runoff.

The remaining two hydrograph plots, Figure 2-3 for Jal Draw at Midland Drive and Figure 2-4 for Jal Draw prior to the Midland Draw Confluence, show the importance of the in-town hydrograph peak magnitudes. If urban development were to proceed without stormwater runoff controls, then the frequency and magnitude for potential downstream flood damage would also increase.

2.3 LAND USE

Two land use conditions were analyzed in the development of the Master Drainage Plan: existing conditions as of June 1993 and future conditions based on the City's Comprehensive Plan and current zoning. The existing condition analysis provided a base line comparison the effectiveness of various stormwater runoff mitigation measures.

2.3.1 Existing Land Use

As noted previously in Section 1, the Jal Draw watershed consists of approximately 208 square miles of drainage area. The vast majority of this area lies west of the City of Midland and is primarily native range land. Native range land was assigned a reduced curve number based on a dryer than average antecedent moisture condition (referred to as AMC I.4) and natural basin storage, while the urban areas were assigned higher curve numbers based on an average antecedent moisture condition (referred to as AMC II).

Drainage subareas outside of the detailed study area were generally maintained in a consistent manner with the Corps of Engineers 1991 Flood Insurance Study for the City of Midland. However, drainage subareas within the detailed Master Drainage Plan study area were greatly refined over those of the Flood Insurance Study because the City's GIS mapping was available for master planning purposes. For example, the Flood Insurance Study defined the Jal Draw watershed by dividing the watershed into 17 subareas. With the GIS maps available for the Master Drainage Plan, the same watershed was refined to include 50 subareas.

The Jal Draw watershed subareas and existing condition characteristics are listed in Table 2-1. Those subareas which lie outside of the detailed master planning area, and thus are not shown in this plan's section maps, are noted appropriately. The times of concentration listed with each subarea were determined using procedures contained in the City of Midland Storm Drainage Design Manual.

2.3.2 Future Land Use

Future land use conditions were based on the City of Midland's Comprehensive Plan and current zoning. The section maps in Figure 2-5 through Figure 2-18 show only the future land use condition. The future condition characteristics for the Jal Draw watershed subareas are listed in Table 2-1. Direct comparisons of the curve numbers and times of concentration in Table 2-1 show which subareas are expected to experience the greatest land use change. For example, subarea JA6 is expected to experience massive land use change with a curve number transition from 58 to 85 and a time of concentration reduction from 1.18 hours to 0.61 hours. In contrast, subarea JA16 lists no change in the curve number, 83, or the time of concentration, 0.92 hours. This means that JA16 was already fully developed under existing land use conditions. Similar comparisons such as these examples for JA6 and JA16 can also be made for the remaining listed subareas. Certain subareas have a reduced curve number in order to reflect the impact of existing playa lakes within the subarea for which no routing method was used. Table 2-2 compares the resulting existing and proposed peak flow rates for selected points along the main channel. Playa lake hydrology and hydraulic characteristics are summarized in Table 2-3 for existing and future conditions.

2.4 CHANNELS AND ASSOCIATED ROADWAY DRAINAGE IMPROVEMENTS

Recommended improvements to the Jal Draw channel and associated roadway drainage structures are presented in order from the downstream to upstream direction. Table 2-4 and Table 2-5 summarize the proposed improvements. Listed in Table 2-4 and Table 2-5 are the table numbers for the detailed preliminary budget opinions of cost and figure numbers which correspond to drawings that illustrate channel and drainage structure improvements. Also included in Table 2-4 and Table 2-5 are the opinions of cost for the improvements from the detailed cost tables. It is important to note that right-of-way costs are not included in the opinions of cost due to the fluctuating nature of land prices.

2.4.1 Midland Draw Confluence to North A Street Channel Improvements

The reach from the Midland Draw Confluence to North A Street corresponds to Jal Draw channel stations from 0+00 to 29+90. The proposed improvements are to regrade the existing channel bottom with a grade of 0.17 percent, widen the channel reach to an 80-foot bottom width and install a post and cable fence.

2.4.2 North A Street Drainage Structure

A new roadway drainage structure is planned at North A Street when that street is extended across the Jal Draw channel to provide access to Midland Airpark. The location for this drainage structure is at Station 29+90. Once the proposed seven 10-foot by 9-foot (span by height) concrete box drainage structure is installed, then the existing Airpark Drive structure at Station 31+40 can be removed.

2.4.3 North A Street to North I Street Channel Improvements

Channel excavation is proposed from North A Street to North I Street, Station 29+90 to Station 73+10. The existing channel bottom elevation and grade of 0.11 percent will be maintained, but the channel bottom width will be excavated to 100 feet and a post and cable fence installed.

2.4.4 Haynes Avenue to Norwood Street Channel Improvements

The channel reach on Jal Draw between Haynes Avenue and Norwood Street, Station 167+70 to Station 210+00 has channel enlargement proposed for its improvements. The proposed channel grade is 0.19 percent with the channel bottom width increased to 36 feet. A post and cable fence is also proposed as part of the improvements.

2.4.5 Norwood Street Drainage Structure

At the upstream end of the Haynes Avenue to Norwood Street channel reach, a new roadway drainage structure is proposed for Norwood Street itself (Station 210+00). A culvert consisting of five 10-foot by 9.5-foot concrete boxes (span by height) will replace the existing Norwood Street drainage structure.

2.4.6 Norwood Street to Midland Drive Channel Improvements

Additional excavation is proposed for the Jal Draw channel reach from Norwood Street to

Midland Drive, Station 210+00 to Station 222+40. A post and cable fence is proposed throughout this channel reach. A drop structure at Station 220+80 just downstream of Midland Drive is proposed to avoid some utility conflicts. From Station 210+00 to Station 220+80 a 36-foot bottom width channel on a 0.18 percent grade is planned. The two-foot drop structure is planned at Station 220+80. Upstream of the drop structure, from Station 220+80 to Station 222+40, a 44-foot bottom width channel is planned on a grade of 0.44 percent. No additional right-of-way is required.

2.4.7 Midland Drive to Access Road Channel Improvements

A new access road is proposed at Station 232+65, upstream of Midland Drive. Between Midland Drive and the proposed access road, additional excavation is planned for an 80-foot bottom channel width with a 0.11 percent slope. A post and cable fence on each side of the channel is also planned. Right-of-way for the channel construction and maintenance roads is proposed to increase from 120 feet to 200 feet.

2.4.8 Access Road Drainage Structure

The proposed access road mentioned in Paragraph 2.4.7 is planned at Station 232+65 on the Jal Draw Channel. A multiple barrel culvert consisting of nine 5-foot by 5-foot concrete box culverts (span by height) is planned.

2.4.9 JA7 to JA8 Outlet Channel (Greathouse Channel)

A detention basin is planned in subarea JA7, the particulars of which are discussed in paragraph 2.5 of this section. As a part of this detention basin, there is a planned outlet channel and associated roadway drainage structures. Improvement to the channel from the Jal Draw Channel confluence to Loop 250 (Station 0+00 to Station 8+73) consists of a 30-foot bottom width channel with a 140-foot right-of-way. The bottom slope is 0.38 percent. Metal beam guard fencing is proposed for the reach.

A culvert drainage structure consisting of three 5-foot by 3-foot concrete boxes (span by height) is planned for the Loop 250 North Frontage Road at Station 10+90. Excavation upstream from the Loop 250 North Frontage Road crossing (Station 10+90) continues to Briarwood Avenue (Station 30+08) and consists of a 20-foot bottom width channel with a 0.53 percent bottom slope. The right-of-way width is 107 feet. Post and cable fencing is proposed.

The planned outlet structure for Playa JA7 comprises three 3-foot by 3-foot concrete box culverts (span by height). The structure is located at Briarwood Avenue (Station 30+08).

2.4.10 Access Road to Loop 250 Channel Improvements

The planned Jal Draw channel improvements continue from the proposed access road to the existing culverts at West Loop 250, Station 232+65 to Station 270+00. Channel excavation to an 80-foot bottom width with post and cable fence is planned for this reach. The channel slope has two values within the reach length, 0.11 percent from Station 232+65 to Station 248+70 and 0.33 percent from Station 248+70 to Station 270+00. Right-of-way is proposed to increase from 120 feet to 200 feet.

2.4.11 Loop 250 to Holiday Hill Road Channel Improvements

From Loop 250 westward to Holiday Hill Road, improvement by channel excavation is proposed from Station 270+00 to Station 281+13. A 48-foot bottom width channel section with a channel slope of 0.53 percent is proposed along with a post and cable fence.

2.4.12 Holiday Hill Road Drainage Structure

The proposed Holiday Hill Road drainage structure, Jal Draw Station 281+13, is a multiple barrel culvert which consists of seven 6-foot by 5-foot concrete box culverts (span by height).

2.4.13 Holiday Hill Road to Crowley Boulevard Channel Improvements

As of the date of this master plan, the Jal Draw topography west of Holiday Hill Road is in its natural state; a shallow and wide natural depression forming Jal Draw itself. The extent of channel improvements planned for Jal Draw west of Holiday Hill Road were determined in order to provide in-line detention storage.

The first reach proposed for improvement is west of Holiday Hill Road to the future Crowley Boulevard, Jal Draw Station 281+13 to Station 309+40. The planned improvements are to excavate a 400-foot bottom width channel at a channel slope of 0.15 percent and install a post and cable fence.

2.4.14 Crowley Boulevard Drainage Structure

A culvert drainage structure is proposed at Crowley Boulevard, Jal Draw Station 309+40. The planned structure consists of eight 5-foot by 3-foot concrete box culverts (span by height).

2.4.15 Crowley Boulevard to One Mile West of Holiday Hill Road Channel Improvements

A constructed channel to provide in-line detention storage is proposed for the Jal Draw channel reach from the future Crowley Boulevard westward to one mile west of Holiday Hill Road, Jal Draw Station 309+40 to Station 339+15. The planned improvements include excavation of a 400-foot bottom width channel with a post and cable fence. The planned bottom slope is 0.15 percent.

2.4.16 Roadway Drainage Structure One Mile West of Holiday Hill Road

A future roadway is planned on the north-south section line one mile west of Holiday Hill Road at Jal Draw Station 339+15. This future roadway will require a drainage structure to pass stormwater runoff under the roadway and also serve as a control point for the next upstream channel reach. The planned improvements are for a multiple barrel culvert consisting of ten 4-foot by 4-foot concrete box culverts (span by height).

2.4.17 Channel Improvement, One Mile West to 1.5 Miles West of Holiday Hill Road

Further in-line channel detention is planned for the Jal Draw channel reach which extends from one mile west of Holiday Hill Road to 1.5 miles west of Holiday Hill Road, Jal Draw Station 339+15 to Station 368+65. The proposed improvements include the excavation of a 400-foot bottom width channel and the installation of post and cable fence. The bottom slope is 0.15 percent.

2.4.18 Roadway Drainage Structure 1.5 Miles West of Holiday Hill Road

The future roadway planned on the half section line 1.5 miles west of Holiday Hill Road, Jal Draw Station 368+65, incorporates a culvert drainage structure. This culvert drainage structure will serve as a control point for an upstream reach of the planned Jal Draw channel. Six 4-foot by 4-foot concrete box culverts (span by height) are proposed to form a multiple barrel culvert installation.

2.4.19 Channel Improvements 1.5 Miles West to 2.0 Miles West of Holiday Hill Road

Additional in-line channel storage is planned for the Jal Draw reach which extends from 1.5 miles west of Holiday Hill Road to 2.0 miles west of Holiday Hill Road, Jal Draw Station 368+65 to Station 392+50. Planned improvements are for the excavation of a 400-foot bottom width channel on a channel slope of 0.15 percent and the installation of post and cable fence.

2.5 PLAYA LAKES

The Jal Draw playa lakes and their watershed subareas are shown in plan view on Figure 2-5 through Figure 2-18. The blue shading covering each playa location is the approximate surface area of the lake at the base flood elevation (BFE) listed with the playa. It should be noted that the surface area shown in blue shading is based upon the current topography as shown in the City's GIS in order to get the required storage volume. This surface area may be reduced by excavating a deeper lake in order to get the required storage volume. However, the lake must be drained with a drawdown storm drain through either a gravity line or a pump station. Other information listed with each playa (Qex, Vex, etc.) is explained in the Legend Sheet of Figure 1-2 in Section 1 of this Master Drainage Plan. The tabulated information for each playa lake is repeated in Table 2-3 for easy reference. Each playa lake carries the same designation as its subarea identification. Improvements planned for each playa lake are listed in Table 2-6.

2.6 DETENTION BASINS

Detention basins are presented here separately from playa lakes since detention basins are entirely man-made storage structures. Three detention basins are proposed in the Jal Draw detailed study area; one each in subarea JA8, subarea JA18 and subarea JA24. Planned improvements and an estimated cost are shown in Table 2-6.

2.6.1 Basin JA8

Basin JA8 is planned for a location in subarea JA8 east of west Loop 250 and just south of Wadley Avenue as shown on Figure 2-11 and Figure 2-15. This excavated detention basin is expected to help control the storm runoff from approximately 285 acres in JA8 south of the basin's location. A 9-foot by 6-foot storm drain (span by height) is proposed to provide the outlet from Basin JA8. As shown in Figure 2-11, the storm drain's planned route is north to the Jal Draw channel via Sagemont Drive and Pinemont Drive. Figure 2-59 and Figure 2-60 show the storm drain profile and proposed basin cross sections.

2.6.2 Basin JA18

Basin JA18, located in subarea JA18, is shown on Figure 2-12 adjacent to the Jal Draw channel. This basin is proposed to discharge directly to the channel via two 30-inch diameter culvert pipes as shown in Figure 2-61.

2.6.3 Basin JA24

Subarea JA24 in Figure 2-12 contains detention Basin JA24. As with Basin JA18 discussed above, Basin JA24 also discharges directly to the Jal Draw Channel. The outlet for Basin JA24 is proposed as a 48-inch diameter multiple barrel culvert installation as shown in Figure 2-62.

2.7 **ZERO MODIFICATION SUBAREAS**

There are a few of the Jal Draw watershed subareas in which existing development was so nearly complete that little change was evident between the June 1993 existing hydrologic conditions and the projected Year 2020 hydrologic conditions. With so little hydrologic differential and given the density of development, the opportunity for stormwater runoff mitigation was negligible. These subareas have been labeled as "Zero Modification Subareas" since no runoff improvements are planned in them. These subareas are JA15, JA16, JA17, JA19, JA20, JA21 and JA22.

END

TABLE 2-1

Jal Draw Master Plan
Watershed Subarea Characteristics

SUBAREA I.D.	AREA (ACRES)	AREA (SQ. MI.)	EXISTING CONDITION JUNE 1993		FUTURE CONDITION YEAR 2020		NOTES
			CN	Tc HOURS	CN	Tc HOURS	
			340A*	2873.6	4.49	59	
340B*	8569.6	13.39	58	12.06	58	12.06	Upstream of detailed study area.
340C*	6547.2	10.23	57	8.83	57	8.83	Upstream of detailed study area.
340D*	6156.8	9.62	56	6.36	56	6.36	Upstream of detailed study area.
340E*	6777.6	10.59	57	9.78	57	9.78	Upstream of detailed study area.
340F	1721.6	2.69	60	2.93	60	2.93	Upstream of detailed study area.
341*	7232.0	11.30	56	15.69	56	15.69	Upstream of detailed study area.
342*	3552.0	5.55	56	9.21	56	9.21	Upstream of detailed study area.
345*	8710.4	13.61	53	11.53	53	11.53	Upstream of detailed study area.
349A*	8057.6	12.59	43	17.66	43	17.66	Upstream of detailed study area.
349B*	7820.8	12.22	43	15.25	43	15.25	Upstream of detailed study area.
350*	14924.8	23.32	50	11.17	50	11.17	Upstream of detailed study area.
354*	4384.0	6.85	25	14.58	25	14.58	Upstream of detailed study area.
355*	4012.8	6.27	47	6.35	47	6.35	Upstream of detailed study area.
356*	3481.6	5.44	55	15.63	55	15.63	Upstream of detailed study area.
357*	6060.8	9.47	50	6.66	50	6.66	Upstream of detailed study area.
359*	4908.8	7.67	59	9.15	59	9.15	Upstream of detailed study area.
360*	7648.0	11.95	56	8.50	56	8.50	Upstream of detailed study area.
361*	1465.6	2.29	1	8.67	1	8.67	Upstream of detailed study area.
362*	1907.2	2.98	57	9.02	57	9.02	Upstream of detailed study area.
363*	4819.2	7.53	58	4.19	58	4.19	Upstream of detailed study area.
JA1	123.8	0.19	58	0.91	85	0.45	In detailed study area.
JA2	102.0	0.16	58	0.36	85	0.18	In detailed study area.
JA3*	1369.3	2.14	61	1.98	89	0.99	In detailed study area.
JA3A	11.4	0.02	70	0.22	89	0.22	In detailed study area.

SUBAREA I.D.	AREA (ACRES)	AREA (SQ. MI.)	EXISTING CONDITION JUNE 1993		FUTURE CONDITION YEAR 2020		NOTES
			CN	Tc HOURS	CN	Tc HOURS	
			JA4	216.8	0.34	61	
JA5A	114.5	0.18	58	1.23	58	1.23	Upstream of detailed study area.
JA5B	439.5	0.69	58	1.59	59	1.59	Upstream of detailed study area.
JA5FT*	2579.2	4.03	57	2.55	80	1.68	In detailed study area.
JA5XG*	537.6	0.84	57	1.90	54	1.90	Upstream of detailed study area.
JA6	237.2	0.37	58	1.18	85	0.61	In detailed study area.
JA7	467.4	0.73	59	1.90	85	0.94	In detailed study area.
JA8	937.5	1.46	85	1.31	87	1.31	In detailed study area.
JA9	24.8	0.04	80	0.19	97	0.09	In detailed study area.
JA10	66.0	0.10	73	0.34	84	0.23	In detailed study area.
JA11	618.4	0.97	69	1.99	74	1.99	In detailed study area.
JA11A	107.1	0.17	72	0.81	83	0.37	In detailed study area.
JA12	75.6	0.12	73	0.78	73	0.78	In detailed study area.
JA13	142.1	0.22	84	1.02	86	1.02	In detailed study area.
JA14	816.6	1.28	86	1.10	87	1.10	In detailed study area.
JA15	56.0	0.09	93	0.33	93	0.33	In detailed study area.
JA16	226.5	0.35	83	0.92	83	0.92	In detailed study area.
JA17	252.0	0.39	84	1.23	85	1.23	In detailed study area.
JA18	191.9	0.30	70	2.12	88	1.06	In detailed study area.
JA19	50.9	0.08	90	0.24	94	0.12	In detailed study area.
JA20	1165.0	1.82	85	2.03	87	2.03	In detailed study area.
JA21	77.7	0.12	85	0.48	86	0.48	In detailed study area.
JA22	48.3	0.08	83	0.31	88	0.31	In detailed study area.
JA23	50.3	0.08	62	0.50	85	0.25	In detailed study area.
JA24	327.7	0.51	69	1.08	88	0.64	In detailed study area.

* Curve numbers in these subareas are reduced in order to reflect the impact of existing playa lakes for which no routing method was used.

TABLE 2-2

**Channel Subarea Hydrologic Characteristics
Based on 100-Year 24-Hour Event**

SUBAREA LD.	DESIGNATED LOCATION	EXISTING DISCHARGE		FUTURE DISCHARGE	
		Peak (cfs)	Peak Time (hrs)	Peak (cfs)	Peak Time (hrs)
JA5FT	Just Upstream of Holiday Hill Road	5,978	44.25	5,958	43.75
JA8	Midland Drive	5,951	45.00	5,950	44.25
JA14	Whitney Drive (before diversion)	5,914	46.25	5,918	45.50
JA17	Garfield Street	3,933	46.25	3,934	45.75
JA18	"I" Street	3,933	46.50	3,934	45.75
JA24	Immediately before Midland Draw Confluence	3,932	46.75	3,933	46.25

TABLE 2-3

Playa Lake Hydrologic and Hydraulic Characteristics
Based on 100-Year 24-Hour Event

SUBAREA ID.	EXISTING INFLOW		FUTURE INFLOW		LAKE ELEVATION-VOLUME			OVERFLOW CHARACTERISTICS			
	Peak (cfs)	Volume (Ac. Ft.)	Peak (cfs)	Volume (Ac. Ft.)	Base Flood Elevation (msl)	Existing Lake* Volume (Ac. Ft.)	Future Lake Volume (Ac. Ft.)	Existing Overflow Volume (Ac. Ft.)	Future Overflow Volume (Ac. Ft.)	Existing Overflow Peak (cfs)	Future Overflow Peak (cfs)
JA1	143	23.6	422	52.5	2863.5	19.3	48.2	4.3	4.3	12	8
JA2	162	19.5	499	43.3	2856.9	155.8	155.8	0	0	0	0
JA3	1,088	294.4	3,718	632.1	2842.2	149.8	487.6	144.6	144.5	443	254
JA4	262	46.6	759	94.0	2840.4	9.0	49.6	46.6	44.4	173	173
JA6	232	45.3	775	100.6	2860.0	234.0	48.2	0	0	0	0
JA7	348	93.1	1,210	198.3	2834.1	28.2	133.4	64.9	64.9	243	208
JA8	542	82.6	1,161	128.9	2837.5	0	26.2	82.6	102.7	542	535
JA9	116	9.4	146	13.4	2828.1	8.4	12.4	1.0	1.0	3	3
JA10	185	20.8	299	27.4	2828.2	11.8	18.4	9.0	9.0	49	24
JA11	708	174.2	789	201.0	2823.1	287.4	287.4	0	0	0	0
JA11A	221	32.9	389	43.5	2827.1	34.4	41.3	0	2.2	0	7
JA12	164	23.9	164	23.9	2816.4	10.5	10.5	13.4	13.4	43	43
JA13	347	59.0	360	61.6	2814.2	30.1	30.1	28.9	31.5	178	263
JA15	259	28.1	259	28.1	2809.6	12.3	12.3	15.8	15.8	160	160
JA18	209	55.7	501	86.8	2793.8	0	39.5	55.7	47.3	209	112
JA19	257	24.0	284	25.9	2871.5	132.9	132.9	0	0	0	0
JA23	97	11.2	238	21.4	2797.2	39.6	45.9	0	0	0	0
JA24	527	92.3	1,108	148.3	2789.1	0	77.4	92.3	70.9	527	178

* Estimated from City's 2-foot GIS contours.

TABLE 2-4

Planned Channel Improvements Summary

SUBAREA ID.	FIGURE NUMBER	REACH LOCATION	STATION RANGE	PROPOSED RIGHT-OF-WAY (ft)	BOTTOM WIDTH (ft)	SIDE SLOPES (Left Bank, Right Bank)	BOTTOM SLOPE (%)	PRELIMINARY BUDGET OPINION OF COST TABLE NUMBER	OPINION OF COST (TOTALS)
JA24	2-12, 2-13, 2-19, 2-21	Midland Draw Confluence to "A" Street	0+00 to 29+90	VARIABLES	80	4:1, 4:1	0.17	2-7	\$734,060
JA24	2-12, 2-13, 2-19, 2-23	"A" Street to "I" Street	29+90 to 73+10	VARIABLES	100	4:1, 4:1	0.11	2-9	\$871,120
JA14	2-11, 2-19, 2-35	Haynes Avenue to Norwood Street	167+70 to 210+00	120	36	2:1, 2:1	0.19	2-10	\$307,280
JA14	2-11, 2-19, 2-20, 2-37, 2-38	Norwood Street to Midland Drive	210+00 to 222+40	120	36 to 44	2:1, 2:1	0.18 to 0.44	2-12	\$181,700
JA8	2-11, 2-20, 2-40	Midland Drive to Proposed Access Road	222+40 to 232+65	200	80	4:1, 4:1	0.11	2-13	\$168,480
JA8*	2-11, 2-53, 2-54	Jal Draw Confluence to Loop 250	0+00 to 8+73	140	30	4:1, 4:1	0.38	2-15	\$194,700
JA8*	2-11, 2-53, 2-57	Loop 250 North Frontage Road to Briarwood Avenue	10+90 to 30+08	107	20	4:1, 4:1	0.53	2-17	\$209,440
JA8	2-11, 2-20, 2-42	Proposed Access Road to Loop 250	232+65 to 270+00	200	80	4:1, 2:1	0.11 to 0.33	2-19	\$597,760
JA8	2-10, 2-11, 2-20, 2-44	Loop 250 to Holiday Hill Road	270+00 to 281+13	120	48	2:1, 2:1	0.53	2-20	\$56,340
JA5FT	2-10, 2-20, 2-46	Holiday Hill Road to Crowley Boulevard	281+13 to 309+40	500	400	4:1, 4:1	0.15	2-22	\$1,314,140
JA5FT	2-10, 2-20, 2-48	Crowley Boulevard to 1.0 Mile Crossing West of Holiday Hill Road	309+40 to 339+15	500	400	4:1, 4:1	0.15	2-24	\$1,452,180
JA5FT	2-10, 2-20, 2-50	1.0 Mile to 1.5 Mile Crossing West of Holiday Hill Road	339+15 to 368+65	500	400	4:1, 4:1	0.15	2-26	\$1,600,730
JA5FT	2-10, 2-14, 2-20, 2-52	1.5 Mile Crossing to 2.0 Miles West of Holiday Hill Road	368+65 to 392+50	500	400	4:1, 4:1	0.15	2-28	\$1,346,760

* Information provided is for the Greathouse Channel.
 Note: Side slopes for left bank and right bank looking downstream.

TABLE 2-5

Planned Channel Crossing Improvements Summary

STREET CROSSING	FIGURE NUMBER	PROPOSED STRUCTURE	PRELIMINARY BUDGET OPINION OF COST TABLE NUMBER	OPINION OF COST (TOTALS)
Jal Draw at:				
North "A" Street	2-12, 2-13, 2-19, 2-22	7 - 10 ft x 9 ft CBC	2-8	\$646,990
Norwood Street	2-11, 2-19, 2-36	5 - 10 ft x 9.5 ft CBC	2-11	\$235,970
Proposed Access Road	2-11, 2-20, 2-41	9 - 5 ft x 5 ft CBC	2-14	\$216,530
Holiday Hill Road	2-10, 2-11, 2-20, 2-45	7 - 6 ft x 5ft CBC	2-21	\$328,950
Crowley Boulevard	2-10, 2-20, 2-47	8 - 5 ft x 3 ft CBC	2-23	\$430,150
1.0 Mile Crossing West of Holiday Hill Road	2-10, 2-20, 2-49	10 - 4 ft x 4 ft CBC	2-25	\$461,900
1.5 Mile Crossing West of Holiday Hill Road	2-10, 2-20, 2-51	6 - 4 ft x 4 ft CBC	2-27	\$393,850
Greathouse Channel at:				
Loop 250 North Frontage Road	2-11, 2-56	3 - 5 ft x 3 ft CBC	2-16	\$90,905
Briarwood Avenue	2-11, 2-58	3 - 3 ft x 3 ft CBC	2-18	\$66,296

Note: CBC = Concrete Box Culvert. Sizes are span by height for one barrel.

TABLE 2-6

Playa Lake and Detention Basin Planned Improvement Summary

SUBAREA I.D.	FIGURE NUMBER	LAKE CREST ELEVATION (msl)	REQUIRED EXCAVATION BELOW CREST ELEVATION (CY)	DRAWDOWN STORM DRAIN	OVERFLOW PATH	OTHER IMPROVEMENTS AND NOTES	PRELIMINARY BUDGET OPINION OF COST TABLE NUMBER	OPINION OF COST (TOTALS)
JA1	2-7	2863.5	46,600	800 ft of 24 in	To JA2		2-29	\$280,300
JA2	2-7	2863.0	None Planned	5,600 ft of 24 in	To Jal Draw Channel		2-30	\$273,520
JA3	2-10, 2-14	2841.5	545,000	1,400 ft of 24 in	To Jal Draw Channel		2-31	\$2,896,900
JA4	2-10	2838.5	65,500	1,400 ft of 24 in	To Jal Draw Channel		2-32	\$409,980
JA6	2-7	2863.5	None Planned	5,200 ft of 24 in	To Jal Draw Channel		2-33	\$250,752
JA7	2-8, 2-11	2833.8	169,700	3 - 3 ft x 3 ft CBC	Greathouse Channel		2-34	\$881,100
JA8	2-11, 2-15, 2-59, 2-60	2837.5	44,000	2,200 ft of 1 - 9 ft x 6 ft Box	To Jal Draw Channel		2-35	\$1,399,485
JA9	2-8, 2-11	2828.0	6,450	None Planned	To Jal Draw Channel		2-36	\$33,500
JA10	2-8	2828.0	10,600	1,400 ft of 24 in	To JA11		2-37	\$132,685
JA11	2-8	2824.5	None Planned	1,500 ft of 24 in	To JA13		2-38	\$82,800
JA11A	2-8	2827.0	11,100	1,000 ft of 36 in	To JA11	Drawdown pump station.	2-39	\$352,200
JA12	2-8	2816.0	None Planned	3,000 ft of 24 in	To JA13		2-40	\$165,600
JA13	2-8	2814.0	None Planned	Existing	To Jal Draw Channel	Volume reduced through fill of adjacent tracts.	None	None
JA15	2-12	2809.0	None Planned	Existing	To Jal Draw Channel		None	None
JA18	2-12, 2-61	2793.8	64,500	150 ft of 30 in	To Jal Draw Channel		2-41	\$343,625
JA19	2-18	2881.0	None Planned	None Planned	None Planned	Existing capacity exceeds 500-year 24-hour subarea runoff.	None	None
JA23	2-12	2799.0	10,200	3,350 ft of 24 in	To Jal Draw Channel		2-42	\$213,850
JA24	2-12, 2-62	2789.1	124,200	200 ft of 48 in	To Jal Draw Channel		2-43	\$671,500

Note: CBC = Concrete Box Culvert. Size given is span by height for one barrel.

**TABLE 2-7
JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS**

**DRAINAGE IMPROVEMENTS FROM
CONFLUENCE WITH MIDLAND DRAW TO NORTH A STREET**

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 CHANNEL EXCAVATION	C.Y.	\$4.00	108,000	\$432,000
2 POST & CABLE FENCE	L.F.	\$20.00	5,900	\$118,000
3 SOIL PREPARATION, SEEDING & FERTILIZING	ACRE	\$1,200.00	13	\$15,600
4 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$56,560
5 ENGINEERING				\$43,500
6 SURVEYING, TESTING & RPR				\$68,400
TOTAL IMPROVEMENTS FROM CONFLUENCE WITH MIDLAND DRAW TO NORTH A STREET				\$734,060

**TABLE 2-8
JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS**

NORTH A STREET CROSSING

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 ROADWAY GRADING & SUBGRADE PREPARATION	S.Y.	\$4.00	7,600	\$30,400
2 8" FLEXIBLE BASE	S.Y.	\$3.00	4,500	\$13,500
3 12" FLEXIBLE BASE	S.Y.	\$4.00	3100	\$12,400
4 PRIME COAT	S.Y.	\$0.30	7,600	\$2,280
5 1-3/4" ASPHALTIC CONCRETE PAVEMENT	S.Y.	\$3.00	4,500	\$13,500
6 4" ASPHALTIC CONCRETE PAVEMENT	S.Y.	\$6.50	3100	\$20,150
7 24" CURB AND GUTTER	L.F.	\$6.50	3,000	\$19,500
8 STRUCTURAL CONCRETE	C.Y.	\$350.00	900	\$315,000
9 MISCELLANEOUS CONCRETE	S.Y.	\$30.00	707	\$21,210
10 PEDESTRIAN AND MBGF RAILING	L.F.	\$100.00	425	\$42,500
11 REMOVE EXISTING STRUCTURE	L.S.	\$6,000.00	1	\$6,000
12 TRAFFIC CONTROL	L.S.	\$2,000.00	1	\$2,000
13 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$49,850
14 ENGINEERING				\$38,400
15 SURVEYING, TESTING & RPR				\$60,300
TOTAL FOR NORTH A STREET CROSSING				\$646,990

**TABLE 2-9
JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS**

**DRAINAGE IMPROVEMENTS FROM
NORTH A STREET TO NORTH I STREET**

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 CHANNEL EXCAVATION	C.Y.	\$4.00	119,000	\$476,000
2 POST & CABLE FENCE	L.F.	\$20.00	8500	\$170,000
3 SOIL PREPARATION, SEEDING & FERTILIZING	ACRE	\$1,200.00	21	\$25,200
4 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$67,120
5 ENGINEERING				\$51,600
6 SURVEYING, TESTING & RPR				\$81,200
TOTAL IMPROVEMENTS FROM NORTH A STREET TO NORTH I STREET				\$871,120

**TABLE 2-10
JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS**

**DRAINAGE IMPROVEMENTS FROM
HAYNES AVENUE TO NORWOOD STREET**

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 CHANNEL EXCAVATION	C.Y.	\$4.00	30,000	\$120,000
2 POST & CABLE FENCE	L.F.	\$20.00	5,300	\$106,000
3 SOIL PREPARATION, SEEDING & FERTILIZING	ACRE	\$1,200.00	9	\$10,800
4 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$23,680
5 ENGINEERING				\$18,200
6 SURVEYING, TESTING & RPR				\$28,600
TOTAL IMPROVEMENTS FROM HAYNES AVENUE TO NORWOOD STREET				\$307,280

TABLE 2-11
JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS

NORWOOD STREET CROSSING

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 ROADWAY GRADING & SUBGRADE PREPARATION	S.Y.	\$4.00	400	\$1,600
2 8" FLEXIBLE BASE	S.Y.	\$3.00	400	\$1,200
3 PRIME COAT	S.Y.	\$0.30	400	\$120
4 1-3/4" ASPHALTIC CONCRETE PAVEMENT	S.Y.	\$3.00	400	\$1,200
5 24" CURB AND GUTTER	L.F.	\$6.50	100	\$650
6 STRUCTURAL CONCRETE	C.Y.	\$350.00	340	\$119,000
7 MISCELLANEOUS CONCRETE	S.Y.	\$30.00	400	\$12,000
8 PEDESTRIAN AND MBGF RAILING	L.F.	\$100.00	400	\$40,000
9 REMOVE EXISTING STRUCTURE	L.S.	\$3,000.00	1	\$3,000
10 TRAFFIC CONTROL	L.S.	\$3,000.00	1	\$3,000
11 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$18,200
12 ENGINEERING				\$14,000
13 SURVEYING, TESTING & RPR				\$22,000
TOTAL FOR NORWOOD STREET CROSSING				\$235,970

TABLE 2-12
JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS

DRAINAGE IMPROVEMENTS FROM
NORWOOD STREET TO MIDLAND DRIVE

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 CHANNEL EXCAVATION	C.Y.	\$4.00	8,300	\$33,200
2 STRUCTURAL CONCRETE	C.Y.	\$350.00	140	\$49,000
3 MISCELLANEOUS CONCRETE	S.Y.	\$30.00	1,100	\$33,000
4 POST & CABLE FENCE	L.F.	\$20.00	1,240	\$24,800
5 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$14,000
6 ENGINEERING				\$10,800
7 SURVEYING, TESTING & RPR				\$16,900
TOTAL IMPROVEMENTS FROM NORWOOD STREET TO MIDLAND DRIVE				\$181,700

TABLE 2-13

**JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS**

**DRAINAGE IMPROVEMENTS FROM
MIDLAND DRIVE TO PROPOSED ACCESS ROAD**

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 CHANNEL EXCAVATION	C.Y.	\$4.00	21,500	\$86,000
2 POST & CABLE FENCE	L.F.	\$20.00	1,950	\$39,000
3 SOIL PREPARATION, SEEDING & FERTILIZING	ACRE	\$1,200.00	4	\$4,800
4 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$12,980
5 ENGINEERING				\$10,000
6 SURVEYING, TESTING & RPR				\$15,700
TOTAL IMPROVEMENTS FROM MIDLAND DRIVE TO PROPOSED ACCESS ROAD				\$168,480

TABLE 2-14

**JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS**

PROPOSED ACCESS ROAD CROSSING

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 ROADWAY GRADING & SUBGRADE PREPARATION	S.Y.	\$4.00	1,350	\$5,400
2 8" FLEXIBLE BASE	S.Y.	\$3.00	1,350	\$4,050
3 PRIME COAT	S.Y.	\$0.30	1,350	\$405
4 1-3/4" ASPHALTIC CONCRETE PAVEMENT	S.Y.	\$3.00	1,350	\$4,050
5 24" CURB AND GUTTER	L.F.	\$6.50	400	\$2,600
6 STRUCTURAL CONCRETE	C.Y.	\$350.00	225	\$78,750
7 MISCELLANEOUS CONCRETE	S.Y.	\$30.00	900	\$27,000
8 PEDESTRIAN AND MBGF RAILING	L.F.	\$100.00	425	\$42,500
9 TRAFFIC CONTROL	L.S.	\$2,000.00	1	\$2,000
10 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$16,675
11 ENGINEERING				\$12,900
12 SURVEYING, TESTING & RPR				\$20,200
TOTAL FOR PROPOSED ACCESS ROAD CROSSING				\$216,530

TABLE 2-15
GREATHOUSE CHANNEL
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS

DRAINAGE IMPROVEMENTS FROM
CONFLUENCE WITH JAL DRAW TO LOOP 250

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 CHANNEL EXCAVATION	C.Y.	\$4.00	2,500	\$10,000
2 PEDESTRIAN AND MBGF RAILING	L.F.	\$100.00	1,400	\$140,000
3 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$15,000
4 ENGINEERING				\$11,500
5 SURVEYING, TESTING & RPR				\$18,200
TOTAL IMPROVEMENTS FROM CONFLUENCE WITH JAL DRAW TO LOOP 250				\$194,700

TABLE 2-16
GREATHOUSE CHANNEL
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS

LOOP 250 NORTH FRONTAGE ROAD CROSSING

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 ROADWAY GRADING & SUBGRADE PREPARATION	S.Y.	\$4.00	100	\$400
2 8" FLEXIBLE BASE	S.Y.	\$3.00	100	\$300
3 PRIME COAT	S.Y.	\$0.30	100	\$30
4 1-3/4" ASPHALTIC CONCRETE PAVEMENT	S.Y.	\$3.00	100	\$300
5 24" CURB AND GUTTER	L.F.	\$6.50	50	\$325
6 STRUCTURAL CONCRETE	C.Y.	\$350.00	85	\$29,750
7 MISCELLANEOUS CONCRETE	S.Y.	\$30.00	130	\$3,900
8 PEDESTRIAN AND MBGF RAILING	L.F.	\$100.00	300	\$30,000
9 TRAFFIC CONTROL	L.S.	\$5,000.00	1	\$5,000
10 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$7,000
11 ENGINEERING				\$5,400
12 SURVEYING, TESTING & RPR				\$8,500
TOTAL FOR LOOP 250 NORTH FRONTAGE ROAD CROSSING				\$90,905

TABLE 2-17
GREATHOUSE CHANNEL
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS

DRAINAGE IMPROVEMENTS FROM
LOOP 250 NORTH FRONTAGE ROAD TO BRIARWOOD AVENUE

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 CHANNEL EXCAVATION	C.Y.	\$4.00	21,000	\$84,000
2 POST & CABLE FENCE	L.F.	\$20.00	3,870	\$77,400
3 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$16,140
4 ENGINEERING				\$12,400
5 SURVEYING, TESTING & RPR				\$19,500
TOTAL IMPROVEMENTS FROM LOOP 250 NORTH FRONTAGE ROAD TO BRIARWOOD AVENUE				\$209,440

TABLE 2-18
GREATHOUSE CHANNEL
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS

BRIARWOOD AVENUE CROSSING

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 ROADWAY GRADING & SUBGRADE PREPARATION	S.Y.	\$4.00	120	\$480
2 8" FLEXIBLE BASE	S.Y.	\$3.00	120	\$360
3 PRIME COAT	S.Y.	\$0.30	120	\$36
4 1-3/4" ASPHALTIC CONCRETE PAVEMENT	S.Y.	\$3.00	120	\$360
5 24" CURB AND GUTTER	L.F.	\$6.50	40	\$260
6 STRUCTURAL CONCRETE	C.Y.	\$350.00	76	\$26,600
7 MISCELLANEOUS CONCRETE	S.Y.	\$30.00	100	\$3,000
8 PEDESTRIAN AND MBGF RAILING	L.F.	\$100.00	170	\$17,000
9 TRAFFIC CONTROL	L.S.	\$3,000.00	1	\$3,000
10 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$5,100
11 ENGINEERING				\$3,900
12 SURVEYING, TESTING & RPR				\$6,200
TOTAL FOR BRIARWOOD AVENUE CROSSING				\$66,296

TABLE 2-19
JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS

DRAINAGE IMPROVEMENTS FROM
PROPOSED ACCESS ROAD TO LOOP 250

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 CHANNEL EXCAVATION	C.Y.	\$4.00	76,500	\$306,000
2 POST & CABLE FENCE	L.F.	\$20.00	6,950	\$139,000
3 SOIL PREPARATION, SEEDING & FERTILIZING	ACRE	\$1,200.00	13	\$15,600
4 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$46,060
5 ENGINEERING				\$35,400
6 SURVEYING, TESTING & RPR				\$55,700
TOTAL IMPROVEMENTS FROM PROPOSED ACCESS ROAD TO LOOP 250				\$597,760

TABLE 2-20
JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS

DRAINAGE IMPROVEMENTS FROM
LOOP 250 TO HOLIDAY HILL ROAD

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 CHANNEL EXCAVATION	C.Y.	\$4.00	1,900	\$7,600
2 POST & CABLE FENCE	L.F.	\$20.00	1,670	\$33,400
3 SOIL PREPARATION, SEEDING & FERTILIZING	ACRE	\$1,200.00	2	\$2,400
4 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$4,340
5 ENGINEERING				\$3,300
6 SURVEYING, TESTING & RPR				\$5,300
TOTAL IMPROVEMENTS FROM LOOP 250 TO HOLIDAY HILL ROAD				\$56,340

TABLE 2-21
JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS

HOLIDAY HILL ROAD CROSSING

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 ROADWAY GRADING & SUBGRADE PREPARATION	S.Y.	\$4.00	4,200	\$16,800
2 10" FLEXIBLE BASE	S.Y.	\$4.25	4,200	\$17,850
3 PRIME COAT	S.Y.	\$0.30	4,200	\$1,260
4 3" ASPHALTIC CONCRETE PAVEMENT	S.Y.	\$5.00	4,200	\$21,000
5 24" CURB AND GUTTER	L.F.	\$6.50	1,000	\$6,500
6 STRUCTURAL CONCRETE	C.Y.	\$350.00	250	\$87,500
7 MISCELLANEOUS CONCRETE	S.Y.	\$30.00	1,400	\$42,000
8 PEDESTRIAN AND MBGF RAILING	L.F.	\$100.00	575	\$57,500
9 TRAFFIC CONTROL	L.S.	\$3,000.00	1	\$3,000
10 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$25,340
11 ENGINEERING				\$19,500
12 SURVEYING, TESTING & RPR				\$30,700
TOTAL FOR HOLIDAY HILL ROAD CROSSING				\$328,950

TABLE 2-22
JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS

DRAINAGE IMPROVEMENTS FROM
HOLIDAY HILL ROAD TO CROWLEY BLVD.

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 CHANNEL EXCAVATION	C.Y.	\$3.00	277,000	\$831,000
2 CLEARING AND GRUBBING	ACRE	\$1,000.00	32	\$32,000
3 POST & CABLE FENCE	L.F.	\$20.00	5,550	\$111,000
4 SOIL PREPARATION, SEEDING & FERTILIZING	ACRE	\$1,200.00	32	\$38,400
5 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$101,240
6 ENGINEERING				\$78,000
7 SURVEYING, TESTING & RPR				\$122,500
TOTAL IMPROVEMENTS FROM HOLIDAY HILL ROAD TO CROWLEY BLVD				\$1,314,140

TABLE 2-23
JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS

CROWLEY BOULEVARD CROSSING

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 ROADWAY GRADING & SUBGRADE PREPARATION	S.Y.	\$4.00	4,200	\$16,800
2 10" FLEXIBLE BASE	S.Y.	\$4.25	4,200	\$17,850
3 PRIME COAT	S.Y.	\$0.30	4,200	\$1,260
4 3" ASPHALTIC CONCRETE PAVEMENT	S.Y.	\$5.00	4,200	\$21,000
5 24" CURB AND GUTTER	L.F.	\$6.50	1,000	\$6,500
6 STRUCTURAL CONCRETE	C.Y.	\$350.00	320	\$112,000
7 MISCELLANEOUS CONCRETE	S.Y.	\$30.00	1,600	\$48,000
8 PEDESTRIAN AND MBGF RAILING	L.F.	\$100.00	1,050	\$105,000
9 TRAFFIC CONTROL	L.S.	\$3,000.00	1	\$3,000
10 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$33,140
11 ENGINEERING				\$25,500
12 SURVEYING, TESTING & RPR				\$40,100
TOTAL FOR CROWLEY BOULEVARD CROSSING				\$430,150

TABLE 2-24
JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS

DRAINAGE IMPROVEMENTS FROM
CROWLEY BLVD. TO 1.0 MILE WEST OF HOLIDAY HILL ROAD

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 CHANNEL EXCAVATION	C.Y.	\$3.00	309,000	\$927,000
2 CLEARING AND GRUBBING	ACRE	\$1,000.00	34	\$34,000
3 POST & CABLE FENCE	L.F.	\$20.00	5,850	\$117,000
4 SOIL PREPARATION, SEEDING & FERTILIZING	ACRE	\$1,200.00	34	\$40,800
5 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$111,880
6 ENGINEERING				\$86,100
7 SURVEYING, TESTING & RPR				\$135,400
TOTAL IMPROVEMENTS FROM CROWLEY BLVD. TO 1.0 MILE WEST OF HOLIDAY HILL ROAD				\$1,452,180

TABLE 2-25
JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS

1.0 MILE CROSSING WEST OF HOLIDAY HILL ROAD

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 ROADWAY GRADING & SUBGRADE PREPARATION	S.Y.	\$4.00	4,200	\$16,800
2 10" FLEXIBLE BASE	S.Y.	\$4.25	4,200	\$17,850
3 PRIME COAT	S.Y.	\$0.30	4,200	\$1,260
4 3" ASPHALTIC CONCRETE PAVEMENT	S.Y.	\$5.00	4,200	\$21,000
5 24" CURB AND GUTTER	L.F.	\$6.50	1,000	\$6,500
6 STRUCTURAL CONCRETE	C.Y.	\$350.00	390	\$136,500
7 MISCELLANEOUS CONCRETE	S.Y.	\$30.00	1,600	\$48,000
8 PEDESTRIAN AND MBGF RAILING	L.F.	\$100.00	1,050	\$105,000
9 TRAFFIC CONTROL	L.S.	\$3,000.00	1	\$3,000
10 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$35,590
11 ENGINEERING				\$27,400
12 SURVEYING, TESTING & RPR				\$43,000
TOTAL FOR 1.0 MILE CROSSING WEST OF HOLIDAY HILL ROAD				\$461,900

TABLE 2-26
JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS

DRAINAGE IMPROVEMENTS FROM
1.0 MILE TO 1.5 MILES WEST OF HOLIDAY HILL ROAD

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 CHANNEL EXCAVATION	C.Y.	\$3.00	347,500	\$1,042,500
2 CLEARING AND GRUBBING	ACRE	\$1,000.00	34	\$34,000
3 POST & CABLE FENCE	L.F.	\$20.00	5,800	\$116,000
4 SOIL PREPARATION, SEEDING & FERTILIZING	ACRE	\$1,200.00	34	\$40,800
5 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$123,330
6 ENGINEERING				\$94,900
7 SURVEYING, TESTING & RPR				\$149,200
TOTAL IMPROVEMENTS FROM 1.0 MILE TO 1.5 MILES WEST OF HOLIDAY HILL ROAD				\$1,600,730

TABLE 2-27
JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS

1.5 MILE CROSSING WEST OF HOLIDAY HILL ROAD

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 ROADWAY GRADING & SUBGRADE PREPARATION	S.Y.	\$4.00	4,200	\$16,800
2 10" FLEXIBLE BASE	S.Y.	\$4.25	4,200	\$17,850
3 PRIME COAT	S.Y.	\$0.30	4,200	\$1,260
4 3" ASPHALTIC CONCRETE PAVEMENT	S.Y.	\$5.00	4,200	\$21,000
5 24" CURB AND GUTTER	L.F.	\$6.50	1,000	\$6,500
6 STRUCTURAL CONCRETE	C.Y.	\$350.00	240	\$84,000
7 MISCELLANEOUS CONCRETE	S.Y.	\$30.00	1,600	\$48,000
8 PEDESTRIAN AND MBGF RAILING	L.F.	\$100.00	1,050	\$105,000
9 TRAFFIC CONTROL	L.S.	\$3,000.00	1	\$3,000
10 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$30,340
11 ENGINEERING				\$23,400
12 SURVEYING, TESTING & RPR				\$36,700
TOTAL FOR 1.5 MILE CROSSING WEST OF HOLIDAY HILL ROAD				\$393,850

TABLE 2-28
JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS

DRAINAGE IMPROVEMENTS FROM
1.5 MILES TO 2.0 MILES WEST OF HOLIDAY HILL ROAD

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 CHANNEL EXCAVATION	C.Y.	\$3.00	294,000	\$882,000
2 CLEARING AND GRUBBING	ACRE	\$1,000.00	28	\$28,000
3 POST & CABLE FENCE	L.F.	\$20.00	4,700	\$94,000
4 SOIL PREPARATION, SEEDING & FERTILIZING	ACRE	\$1,200.00	28	\$33,600
5 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$103,760
6 ENGINEERING				\$79,900
7 SURVEYING, TESTING & RPR				\$125,500
TOTAL IMPROVEMENTS FROM 1.5 MILES TO 2.0 MILES WEST OF HOLIDAY HILL ROAD				\$1,346,760

TABLE 2-29
JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS

PLAYA JA1 IMPROVEMENTS

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 PLAYA EXCAVATION	C.Y.	\$4.00	46,600	\$186,400
2 24" DRAWDOWN STORM DRAIN INCLUDING MATERIALS, EXCAVATION, AND BACKFILL	L.F.	\$37.00	800	\$29,600
3 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$21,600
4 ENGINEERING				\$16,600
5 SURVEYING, TESTING & RPR				\$26,100
TOTAL FOR PLAYA JA1 IMPROVEMENTS				\$280,300

TABLE 2-30
JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS

PLAYA JA2 IMPROVEMENTS

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 24" DRAWDOWN STORM DRAIN INCLUDING MATERIALS, EXCAVATION, AND BACKFILL	L.F.	\$37.00	5,600	\$207,200
2 8" FLEXIBLE BASE	S.Y.	\$3.00	400	\$1,200
3 PRIME COAT	S.Y.	\$0.30	400	\$120
4 1-3/4" ASPHALTIC CONCRETE PAVEMENT	S.Y.	\$3.00	400	\$1,200
5 TRAFFIC CONTROL	L.S.	\$1,000.00	1	\$1,000
6 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$21,100
7 ENGINEERING				\$16,200
8 SURVEYING, TESTING & RPR				\$25,500
TOTAL FOR PLAYA JA2 IMPROVEMENTS				\$273,520

**TABLE 2-31
JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS**

PLAYA JA3 IMPROVEMENTS

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 PLAYA EXCAVATION	C.Y.	\$4.00	545,000	\$2,180,000
2 24" DRAWDOWN STORM DRAIN INCLUDING MATERIALS, EXCAVATION, AND BACKFILL	L.F.	\$37.00	1,400	\$51,800
3 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$223,200
4 ENGINEERING				\$171,900
5 SURVEYING, TESTING & RPR				\$270,000
TOTAL FOR PLAYA JA3 IMPROVEMENTS				\$2,896,900

**TABLE 2-32
JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS**

PLAYA JA4 IMPROVEMENTS

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 PLAYA EXCAVATION	C.Y.	\$4.00	65,500	\$262,000
2 24" DRAWDOWN STORM DRAIN INCLUDING MATERIALS, EXCAVATION, AND BACKFILL	L.F.	\$37.00	1,400	\$51,800
3 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$31,380
4 ENGINEERING				\$24,200
5 SURVEYING, TESTING & RPR				\$40,600
TOTAL FOR PLAYA JA4 IMPROVEMENTS				\$409,980

TABLE 2-33
JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS

PLAYA JA6 IMPROVEMENTS

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 24" DRAWDOWN STORM DRAIN INCLUDING MATERIALS, EXCAVATION, AND BACKFILL	L.F.	\$37.00	5,200	\$192,400
2 8" FLEXIBLE BASE	S.Y.	\$3.00	40	\$120
3 PRIME COAT	S.Y.	\$0.30	40	\$12
4 1-3/4" ASPHALTIC CONCRETE PAVEMENT	S.Y.	\$3.00	40	\$120
5 TRAFFIC CONTROL	L.S.	\$500.00	1	\$500
6 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$19,300
7 ENGINEERING				\$14,900
8 SURVEYING, TESTING & RPR				\$23,400
TOTAL FOR PLAYA JA6 IMPROVEMENTS				\$250,752

TABLE 2-34
JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS

PLAYA JA7 IMPROVEMENTS

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 PLAYA EXCAVATION	C.Y.	\$4.00	169,700	\$678,800
2 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$67,900
3 ENGINEERING				\$52,300
4 SURVEYING, TESTING & RPR				\$82,100
TOTAL FOR PLAYA JA7 IMPROVEMENTS				\$881,100

TABLE 2-35
JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS
BASIN JA8 IMPROVEMENTS

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 BASIN EXCAVATION	C.Y.	\$4.00	44,000	\$176,000
2 1-9X6 CONCRETE BOX DRAWDOWN STORM DRAIN INCLUDING MATERIALS, EXCAVATION, AND BACKFILL	L.F.	\$395.00	2,200	\$869,000
3 48" PRECAST MANHOLES FURNISHED AND INSTALLED	EACH	\$1,200.00	8	\$9,600
4 8" FLEXIBLE BASE	S.Y.	\$3.00	2,950	\$8,850
5 PRIME COAT	S.Y.	\$0.30	2,950	\$885
6 1-3/4" ASPHALTIC CONCRETE PAVEMENT	S.Y.	\$3.00	2,950	\$8,850
7 TRAFFIC CONTROL	L.S.	\$5,000.00	1	\$5,000
8 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$107,800
9 ENGINEERING				\$83,000
10 SURVEYING, TESTING & RPR				\$130,500
TOTAL FOR BASIN JA8 IMPROVEMENTS				\$1,399,485

TABLE 2-36
JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS
BASIN JA9 IMPROVEMENTS

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 BASIN EXCAVATION	C.Y.	\$4.00	6,450	\$25,800
2 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$2,600
3 ENGINEERING				\$2,000
4 SURVEYING, TESTING & RPR				\$3,100
TOTAL FOR BASIN JA9 IMPROVEMENTS				\$33,500

**TABLE 2-37
JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS**

BASIN JA10 IMPROVEMENTS

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 BASIN EXCAVATION	C.Y.	\$4.00	10,600	\$42,400
2 24" DRAWDOWN STORM DRAIN INCLUDING MATERIALS, EXCAVATION, AND BACKFILL	L.F.	\$37.00	1,400	\$51,800
3 8" FLEXIBLE BASE	S.Y.	\$3.00	950	\$2,850
4 PRIME COAT	S.Y.	\$0.30	950	\$285
5 1-3/4" ASPHALTIC CONCRETE PAVEMENT	S.Y.	\$3.00	950	\$2,850
6 TRAFFIC CONTROL	L.S.	\$2,000.00	1	\$2,000
7 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$10,200
8 ENGINEERING				\$7,900
9 SURVEYING, TESTING & RPR				\$12,400
TOTAL FOR BASIN JA10 IMPROVEMENTS				\$132,685

**TABLE 2-38
JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS**

PLAYA JA11 IMPROVEMENTS

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 24" DRAWDOWN STORM DRAIN INCLUDING MATERIALS, EXCAVATION, AND BACKFILL	L.F.	\$37.00	1,500	\$55,500
2 8" FLEXIBLE BASE	S.Y.	\$3.00	1,000	\$3,000
3 PRIME COAT	S.Y.	\$0.30	1,000	\$300
4 1-3/4" ASPHALTIC CONCRETE PAVEMENT	S.Y.	\$3.00	1,000	\$3,000
5 TRAFFIC CONTROL	L.S.	\$2,000.00	1	\$2,000
6 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$6,400
7 ENGINEERING				\$4,900
8 SURVEYING, TESTING & RPR				\$7,700
TOTAL FOR PLAYA JA11 IMPROVEMENTS				\$82,800

TABLE 2-39
JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS

BASIN JA11A IMPROVEMENTS

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 BASIN EXCAVATION	C.Y.	\$4.00	11,100	\$44,400
2 DRAWDOWN PUMP STATION INSTALLED	L.S.	\$150,000.00	1	\$150,000
3 36" DRAWDOWN STORM DRAIN INCLUDING MATERIALS, EXCAVATION, AND BACKFILL	L.F.	\$77.00	1,000	\$77,000
4 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$27,100
5 ENGINEERING				\$20,900
6 SURVEYING, TESTING & RPR				\$32,800
TOTAL FOR BASIN JA11A IMPROVEMENTS				\$352,200

TABLE 2-40
JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS

PLAYA JA12 IMPROVEMENTS

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 24" DRAWDOWN STORM DRAIN INCLUDING MATERIALS, EXCAVATION, AND BACKFILL	L.F.	\$37.00	3,000	\$111,000
2 8" FLEXIBLE BASE	S.Y.	\$3.00	2,000	\$6,000
3 PRIME COAT	S.Y.	\$0.30	2,000	\$600
4 1-3/4" ASPHALTIC CONCRETE PAVEMENT	S.Y.	\$3.00	2,000	\$6,000
5 TRAFFIC CONTROL	L.S.	\$4,000.00	1	\$4,000
6 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$12,800
7 ENGINEERING				\$9,800
8 SURVEYING, TESTING & RPR				\$15,400
TOTAL FOR PLAYA JA12 IMPROVEMENTS				\$165,600

TABLE 2-41
JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS

BASIN JA18 IMPROVEMENTS

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 BASIN EXCAVATION	C.Y.	\$4.00	64,500	\$258,000
2 2-30" DRAWDOWN STORM DRAIN INCLUDING MATERIALS, EXCAVATION, AND BACKFILL	L.F.	\$45.00	150	\$6,750
3 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$26,475
4 ENGINEERING				\$20,400
5 SURVEYING, TESTING & RPR				\$32,000
TOTAL FOR BASIN 18 IMPROVEMENTS				\$343,625

TABLE 2-42
JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS

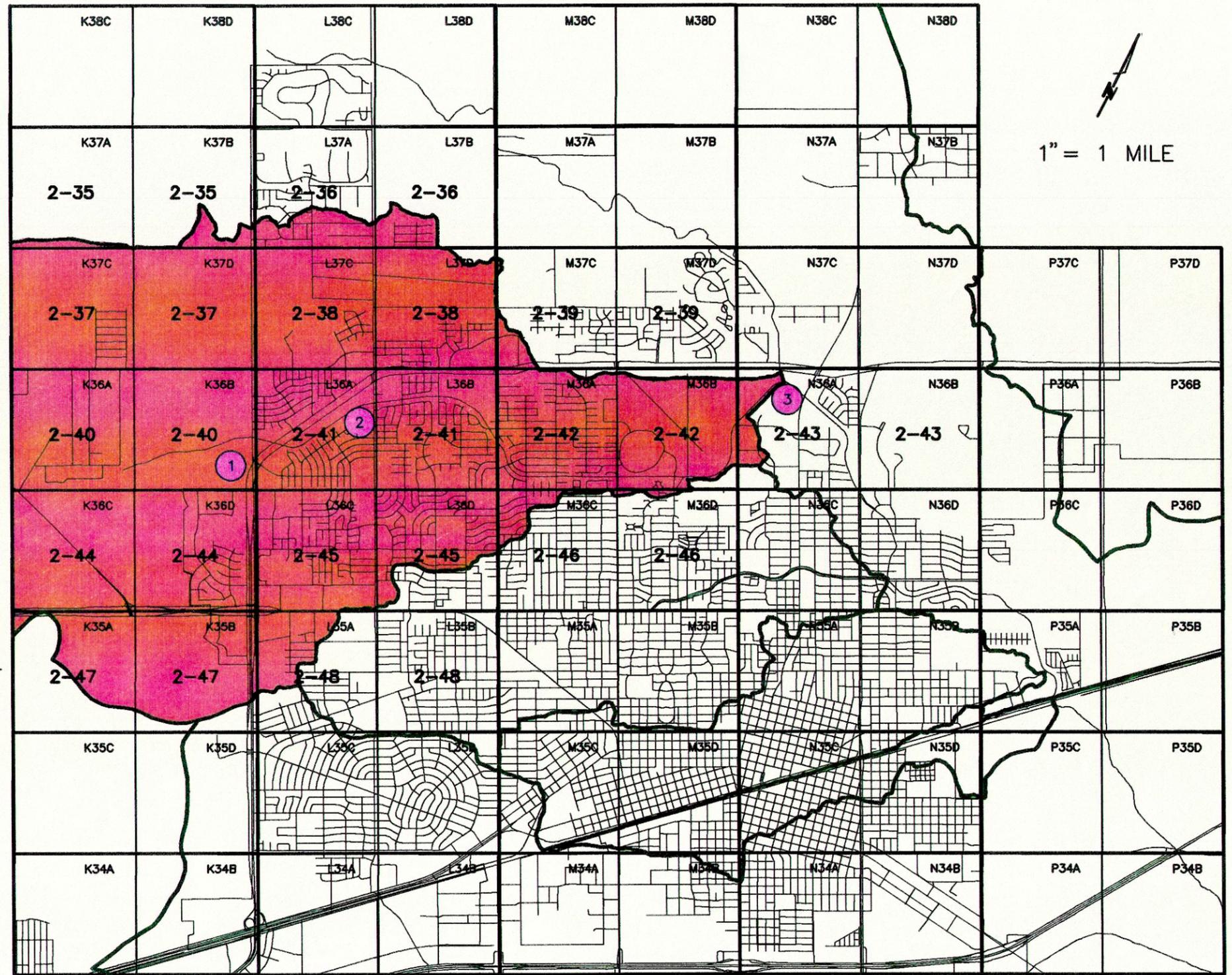
PLAYA JA23 IMPROVEMENTS

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 PLAYA EXCAVATION	C.Y.	\$4.00	10,200	\$40,800
2 24" DRAWDOWN STORM DRAIN INCLUDING MATERIALS, EXCAVATION, AND BACKFILL	L.F.	\$37.00	3,350	\$123,950
3 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$16,500
4 ENGINEERING				\$12,700
5 SURVEYING, TESTING & RPR				\$19,900
TOTAL FOR PLAYA JA23 IMPROVEMENTS				\$213,850

TABLE 2-43
JAL DRAW
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS

BASIN JA24 IMPROVEMENTS

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 BASIN EXCAVATION	C.Y.	\$4.00	124,200	\$496,800
2 2-48" DRAWDOWN STORM DRAIN INCLUDING MATERIALS, EXCAVATION, AND BACKFILL	L.F.	\$120.00	200	\$24,000
3 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$50,600
4 ENGINEERING				\$38,900
5 SURVEYING, TESTING & RPR				\$61,200
TOTAL FOR BASIN JA24 IMPROVEMENTS				\$671,500

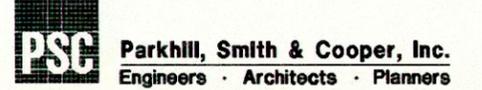


LEGEND	PAGE
① JAL DRAW AT HOLIDAY HILL ROAD	2-32
② JAL DRAW AT MIDLAND DRIVE	2-33
③ JAL DRAW PRIOR TO CONFLUENCE WITH MIDLAND DRAW	2-34

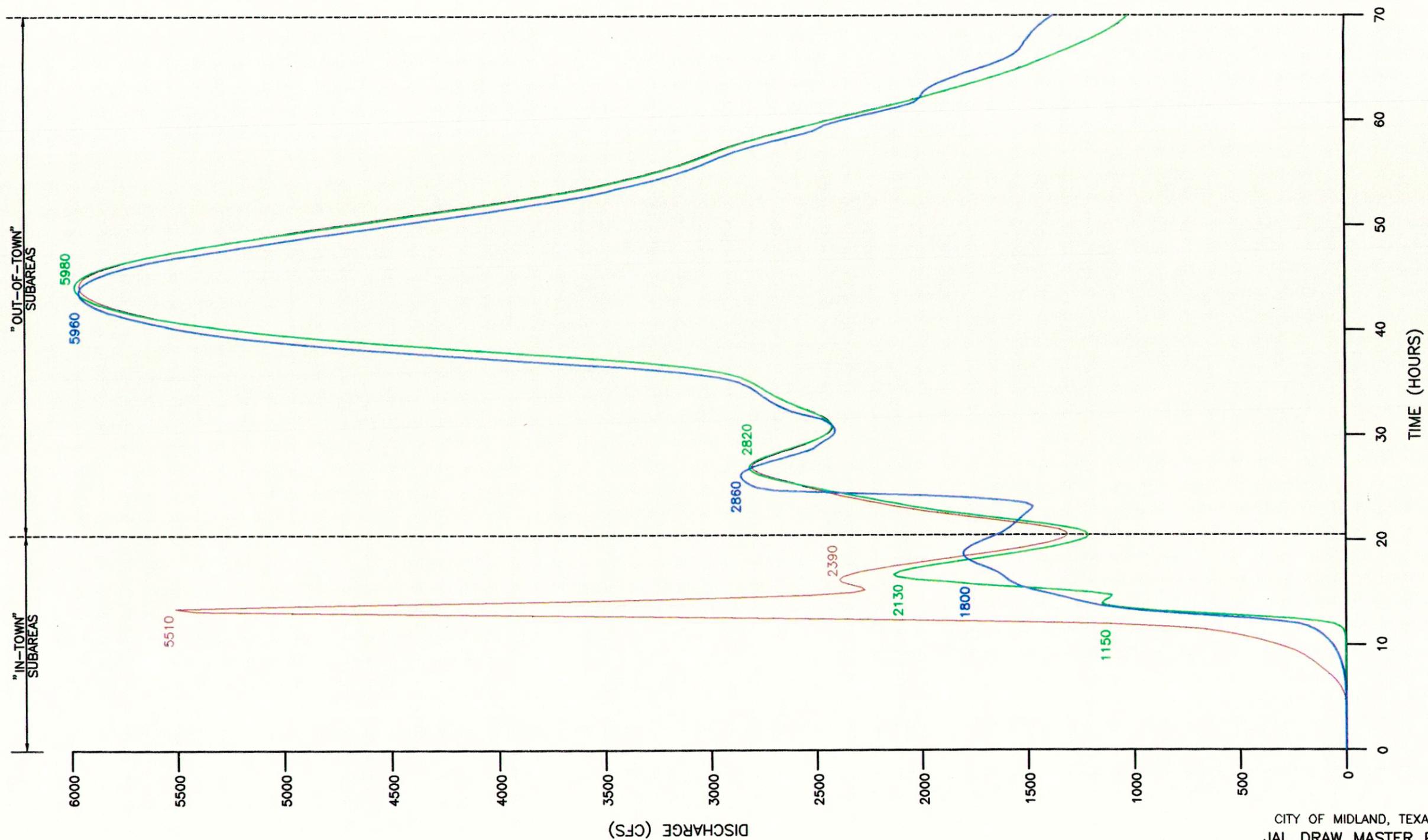
JAL DRAW WATERSHED, INDEX TO SECTION MAPS

FIGURE 2-1

CITY OF MIDLAND, TEXAS
 JAL DRAW MASTER PLAN
 WATERSHED MAP INDEX



JALINIX 5/18/18 jlc



LEGEND

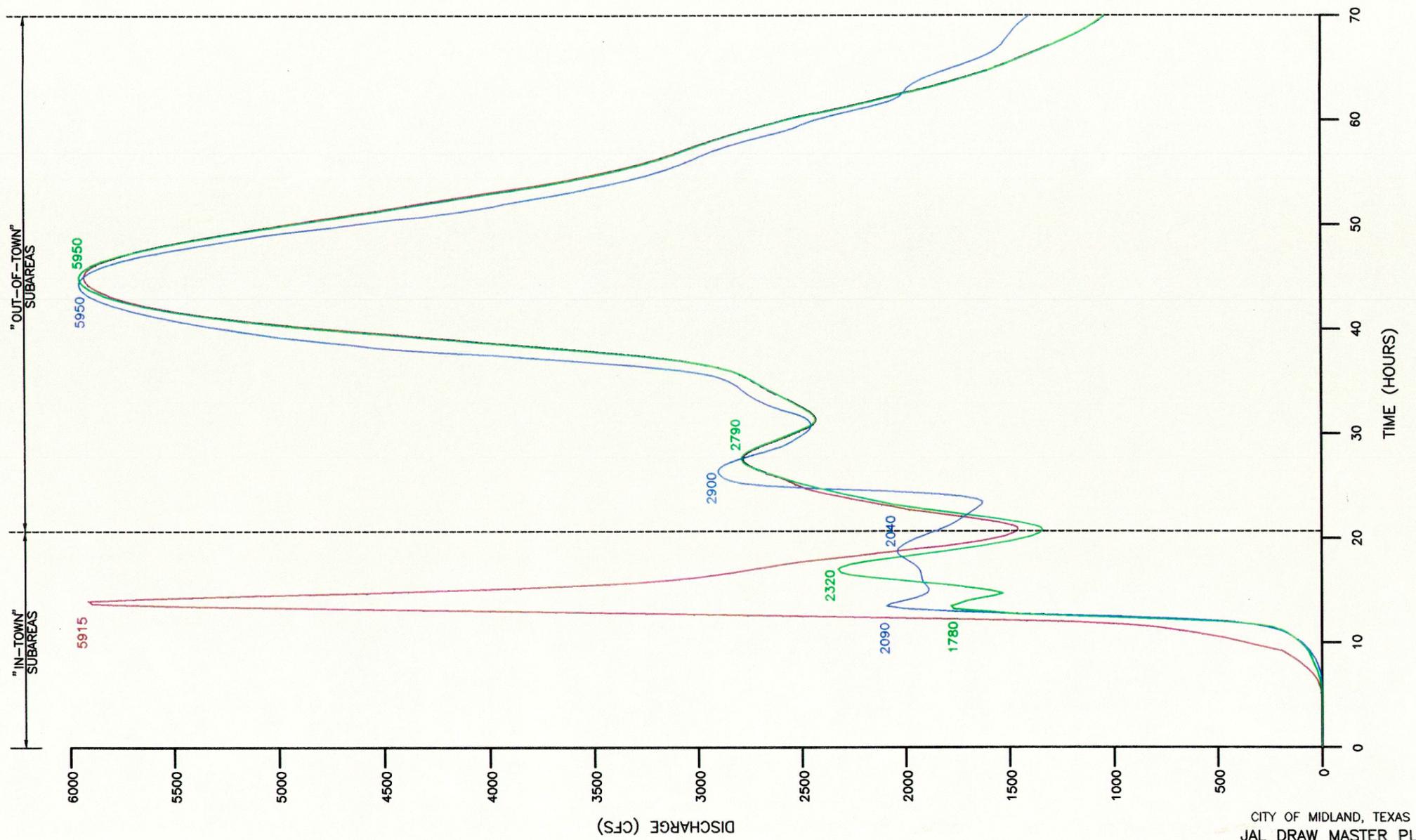
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- 100-YEAR FUTURE, YEAR 2020 NO MODIFICATIONS —
- 100-YEAR FUTURE, YEAR 2020 WITH MODIFICATIONS —

JAL DRAW AT HOLIDAY HILL RD

FIGURE 2-2

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CITY OF MIDLAND, TEXAS
 JAL DRAW MASTER PLAN
 HYDROGRAPH



LEGEND

- 100-YEAR EXISTING, JUNE 1993 CONDITIONS —
- 100-YEAR FUTURE, YEAR 2020 NO MODIFICATIONS —
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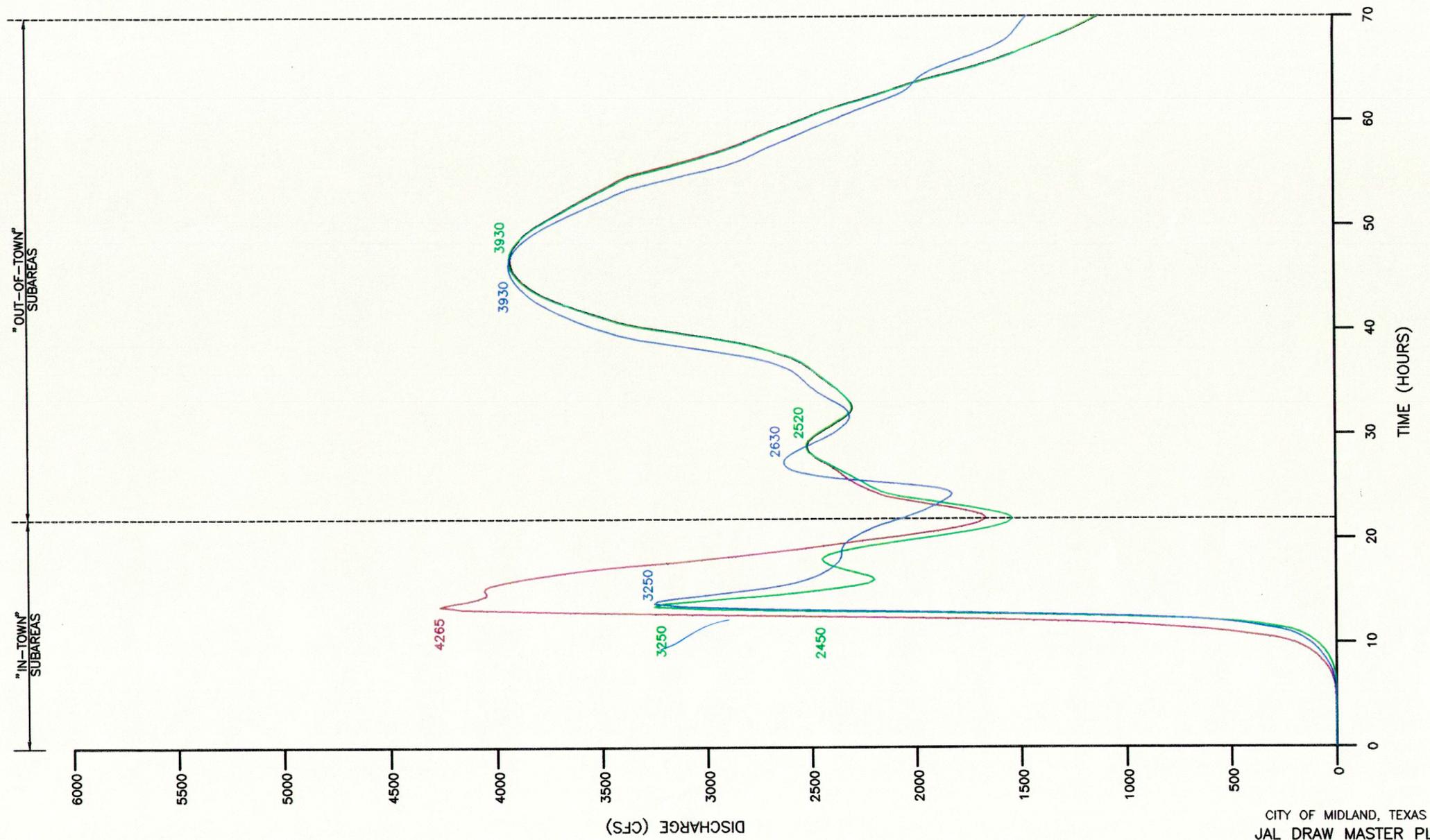
JAL DRAW AT MIDLAND DRIVE

FIGURE 2-3

CITY OF MIDLAND, TEXAS
 JAL DRAW MASTER PLAN
 HYDROGRAPH



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LEGEND

- 100-YEAR EXISTING, JUNE 1993 CONDITIONS
- 100-YEAR FUTURE, YEAR 2020 NO MODIFICATIONS
- 100-YEAR FUTURE, YEAR 2020 WITH MODIFICATIONS

JAL DRAW PRIOR TO CONFLUENCE WITH MIDLAND DRAW

FIGURE 2-4

CITY OF MIDLAND, TEXAS
 JAL DRAW MASTER PLAN
 HYDROGRAPH

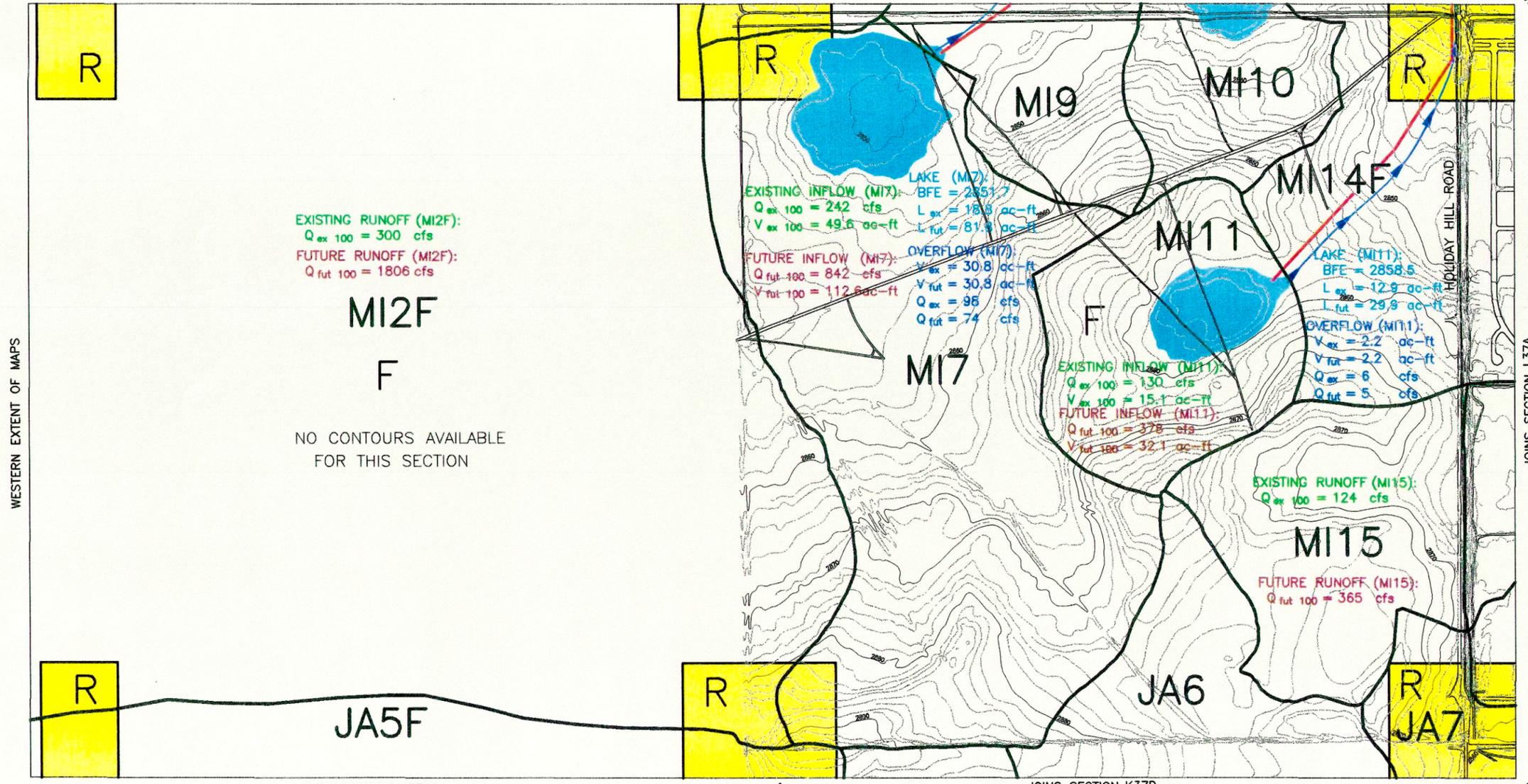


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JOINS SECTION K38C

JOINS SECTION K38D

JOINS SECTION L38C



WESTERN EXTENT OF MAPS

JOINS SECTION L37A

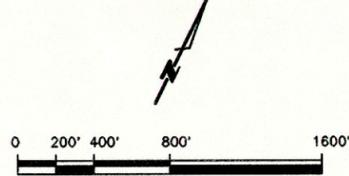
JOINS SECTION K37C

JOINS SECTION K37D

JOINS SECTION L37C

SECTION K37A

SECTION K37B

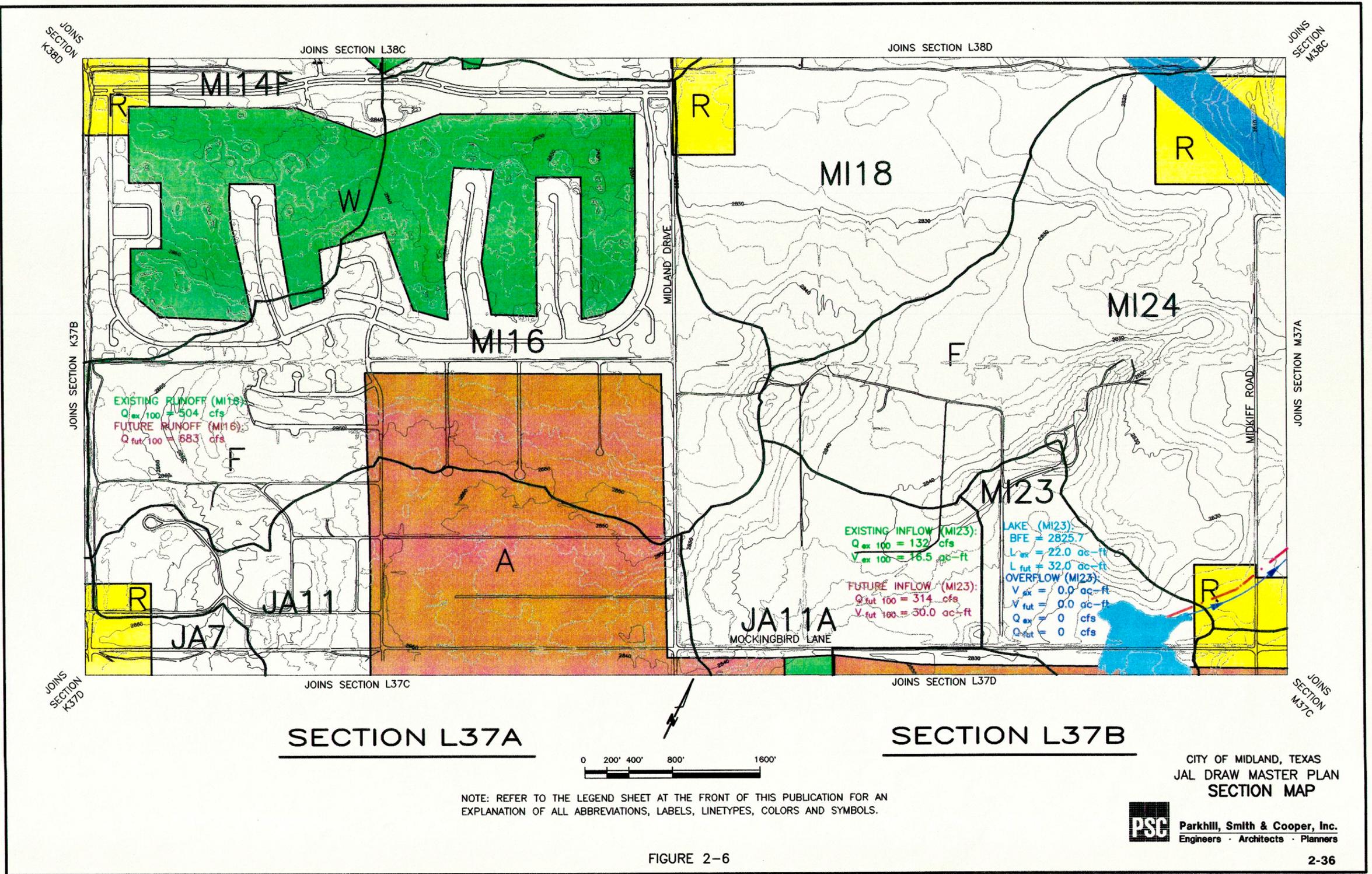


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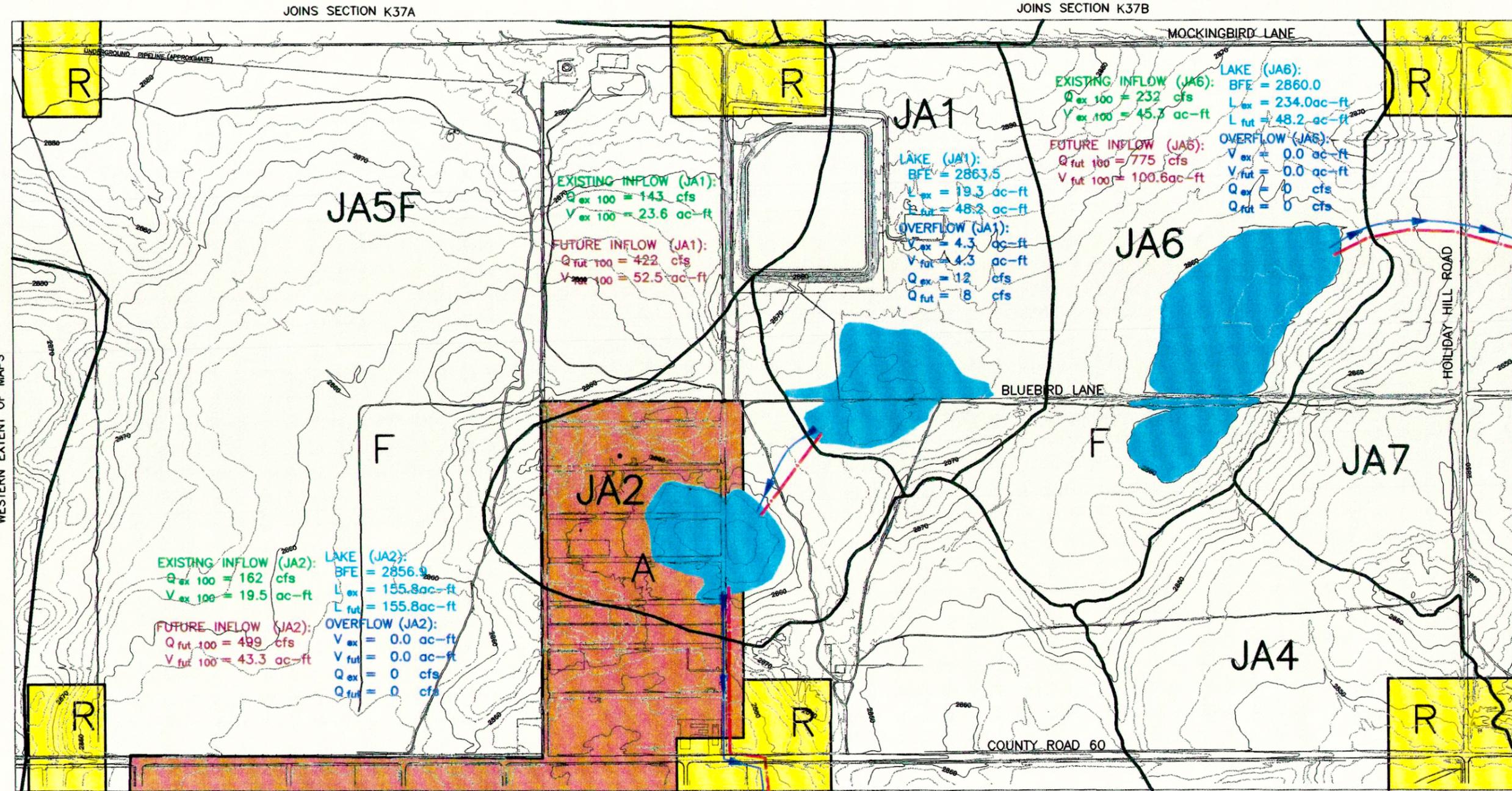
CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
SECTION MAP

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FIGURE 2-5

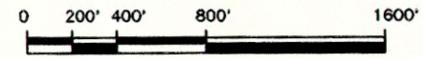


L37AB 6/21/11 RSK



SECTION K37C

SECTION K37D



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SECTION MAP

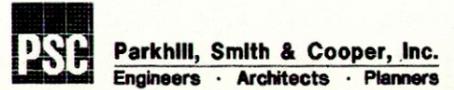
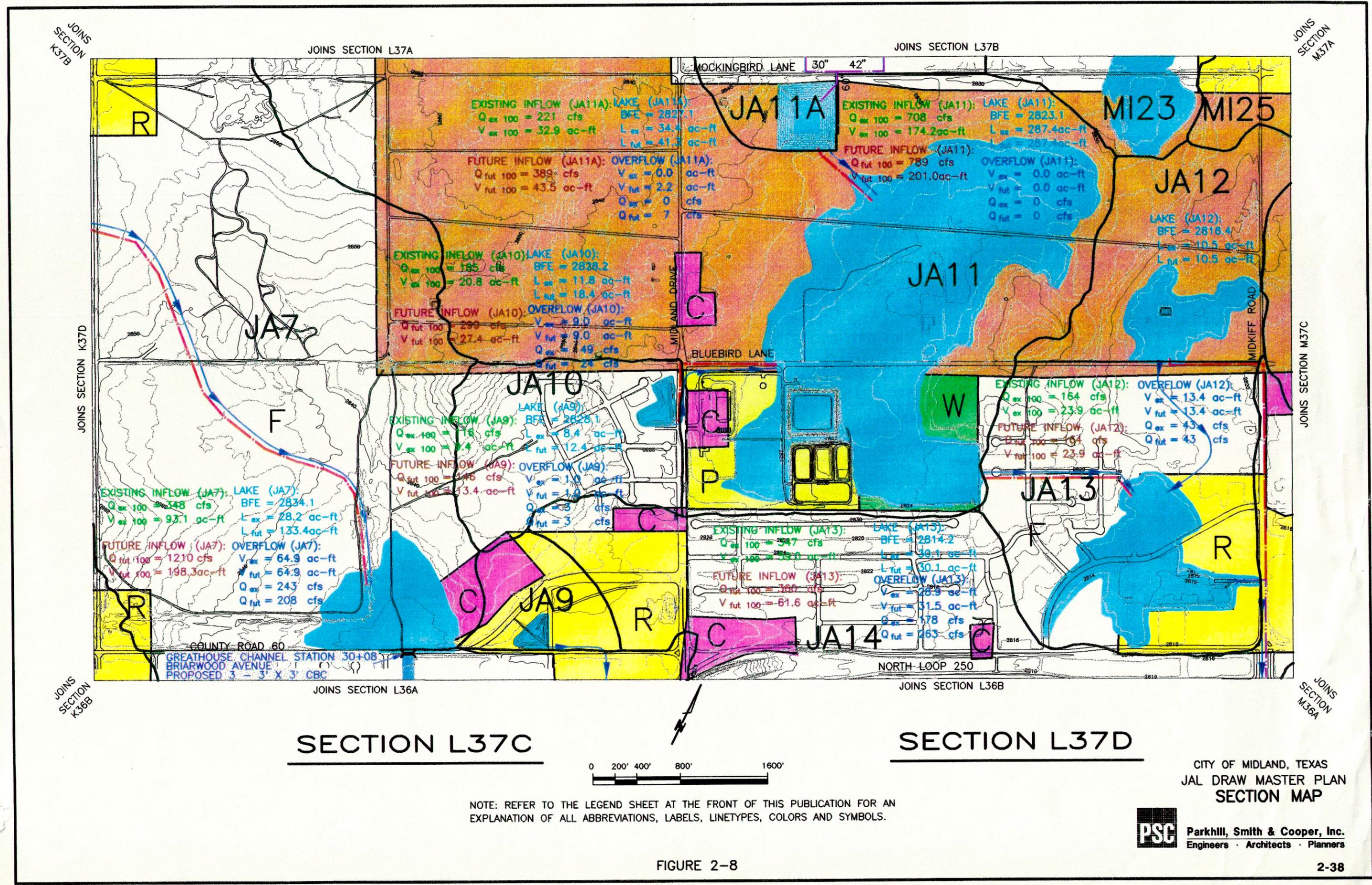


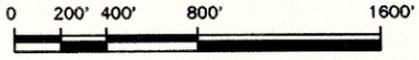
FIGURE 2-7

K37CD 6/22/00 RSK



SECTION L37C

SECTION L37D



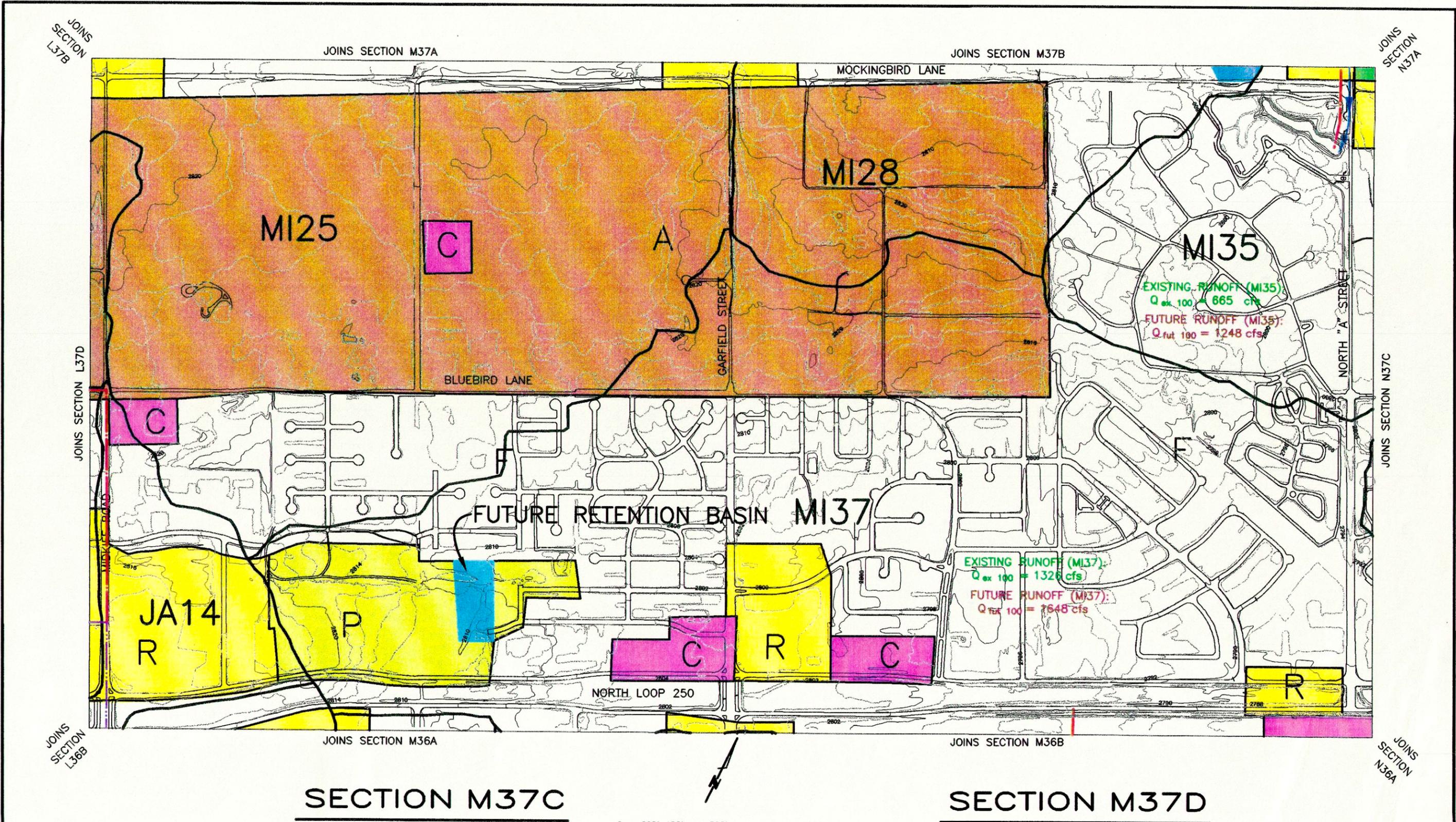
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JAL DRAW MASTER PLAN
SECTION MAP

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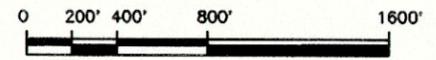
FIGURE 2-8

L37CD 6/22/13 30 RSK



SECTION M37C

SECTION M37D



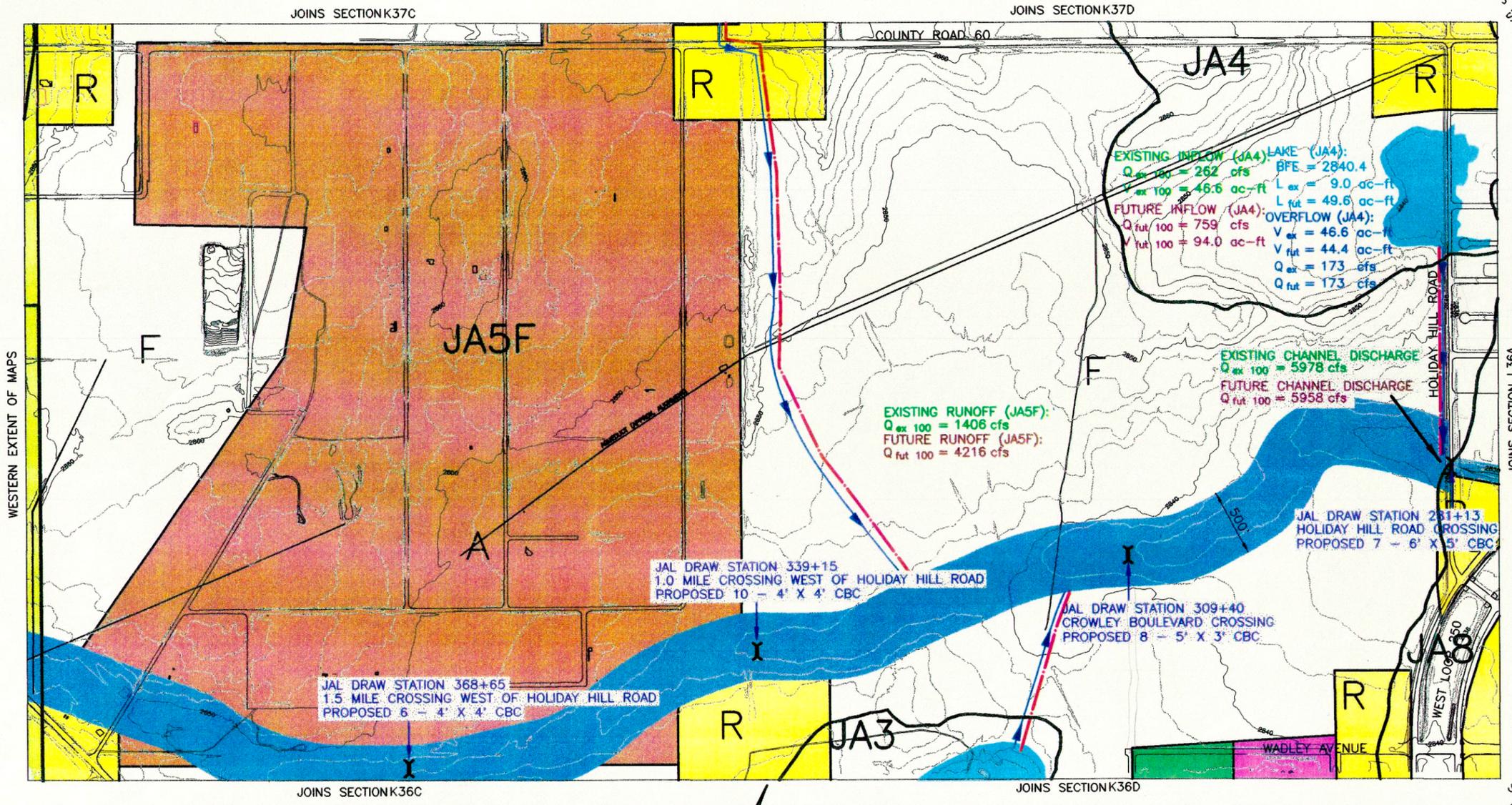
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FIGURE 2-9

M37CD 2/1 30 RSK



SECTION K36A

SECTION K36B



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FIGURE 2-10

CITY OF MIDLAND, TEXAS
 JAL DRAW MASTER PLAN
 SECTION MAP

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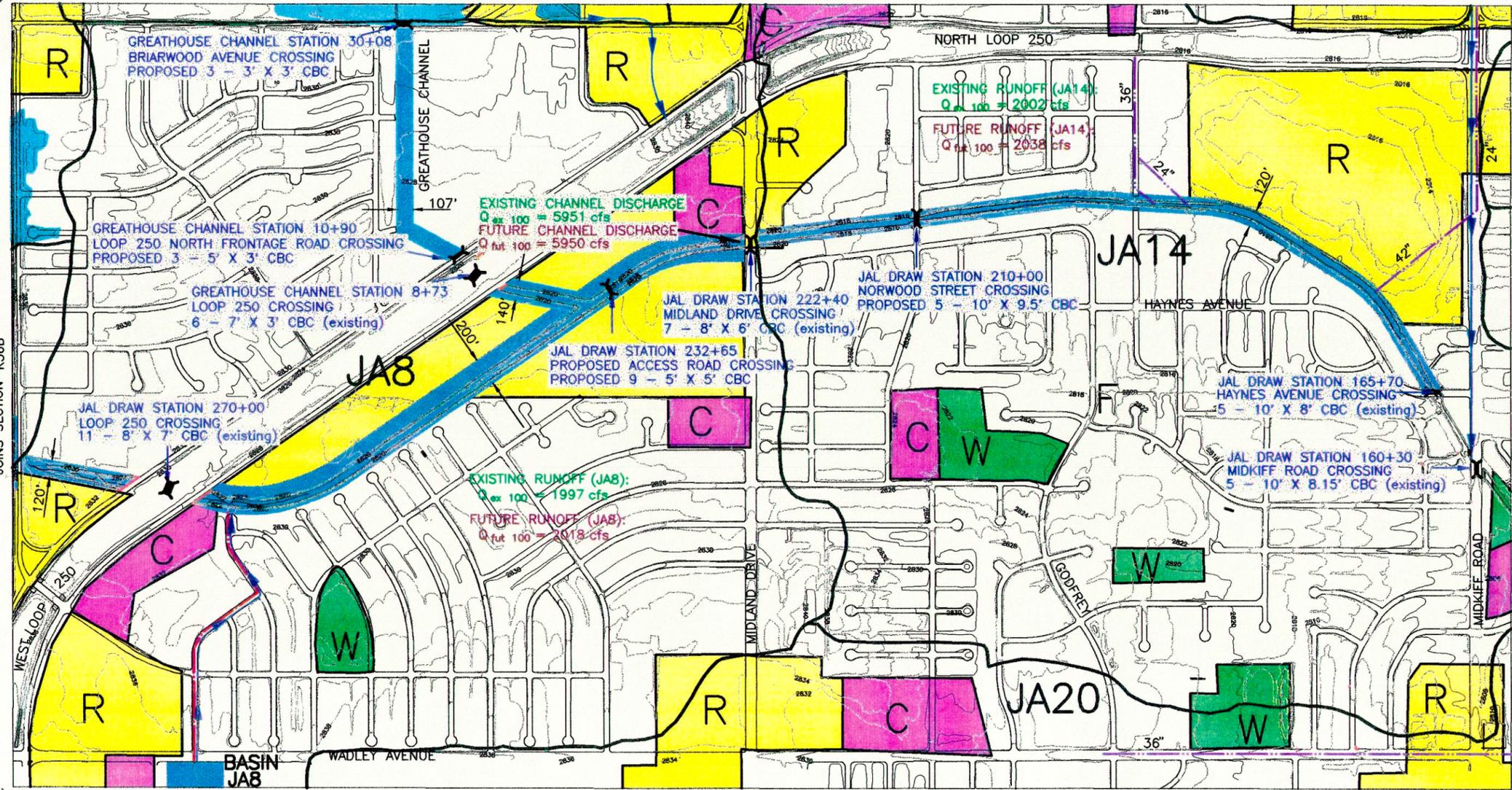
K36AB 3/21/15 RSK

JOINS SECTION K37D

JOINS SECTION L37C

JOINS SECTION L37D

JOINS SECTION M37C



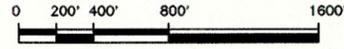
JOINS SECTION K36B

JOINS SECTION M36A

JOINS SECTION K36D

SECTION L36A

SECTION L36B



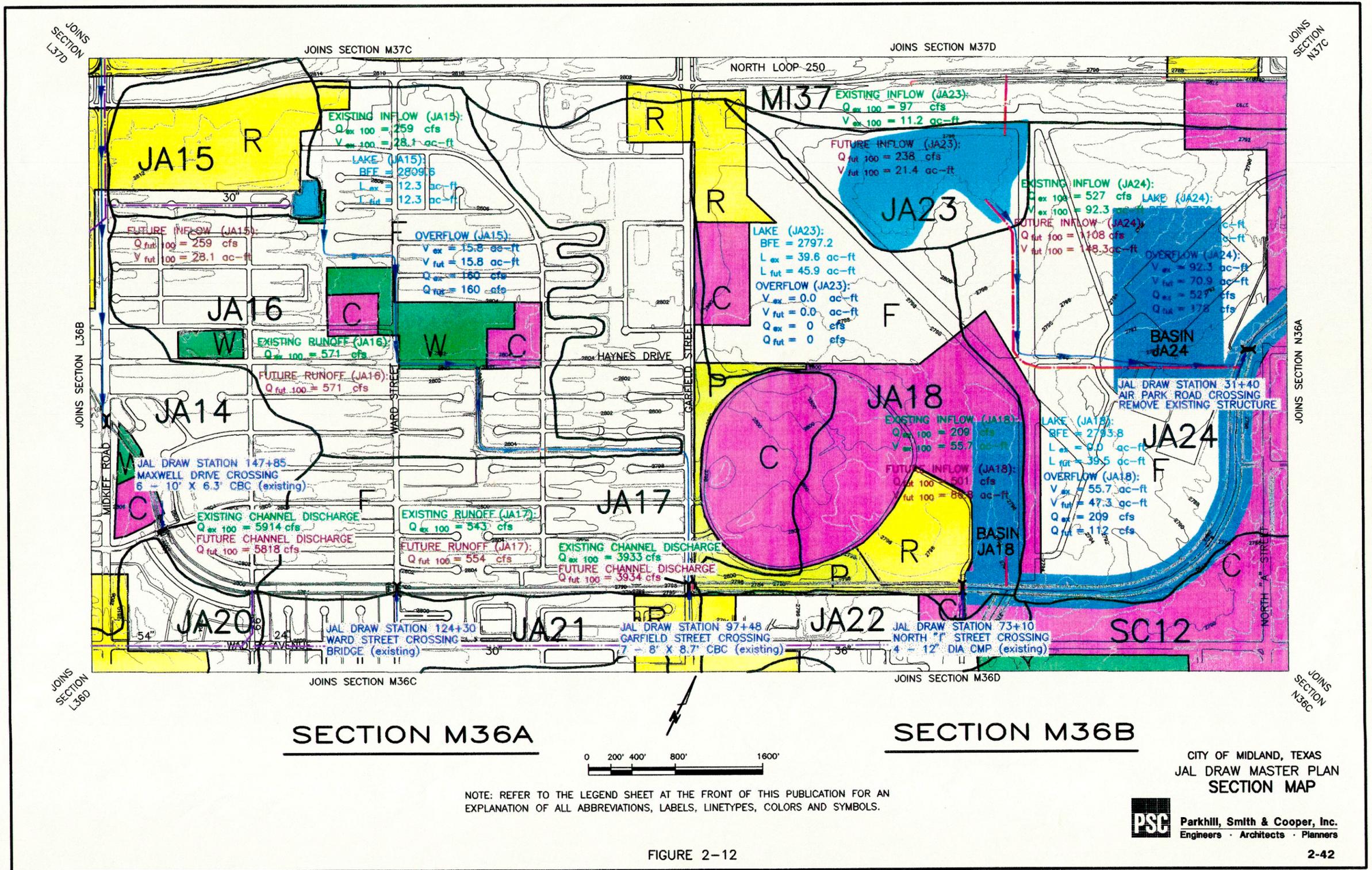
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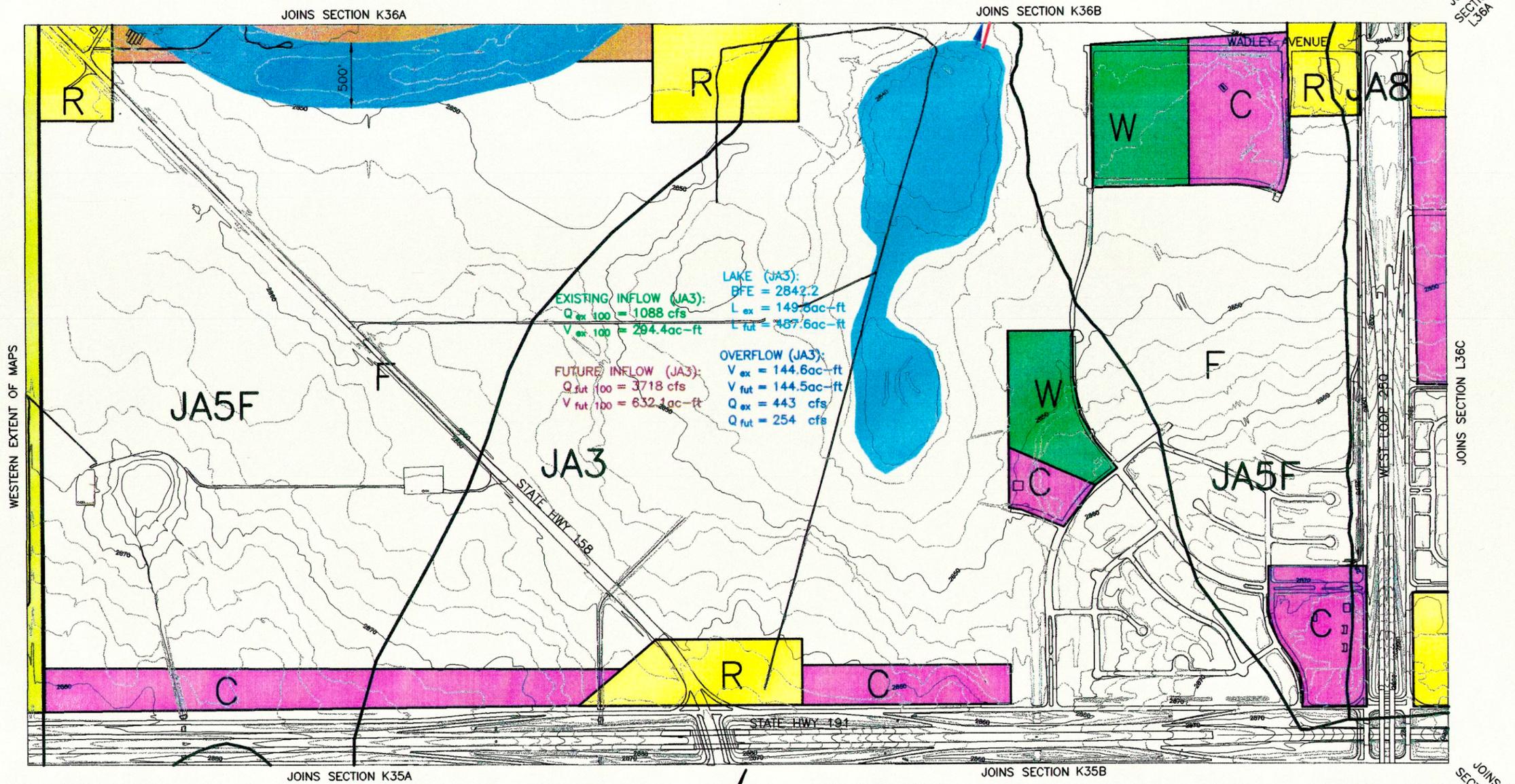
CITY OF MIDLAND, TEXAS
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FIGURE 2-11

L36AB 3/21/00 RSK





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FIGURE 2-14

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JOINS SECTION K36B

JOINS SECTION L36A

JOINS SECTION L36B

JOINS SECTION M36A

JOINS SECTION K36D

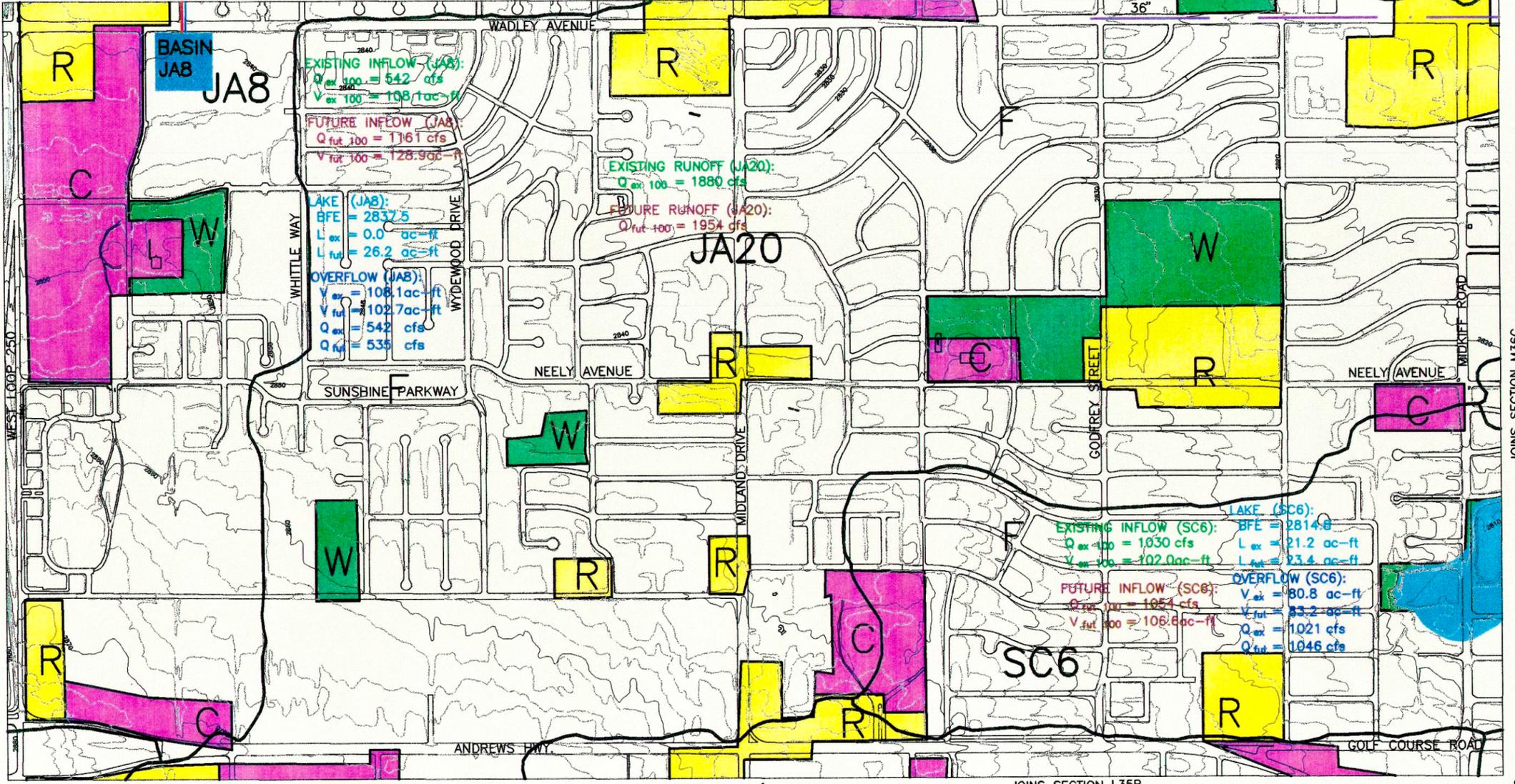
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JOINS SECTION K35B

JOINS SECTION L35A

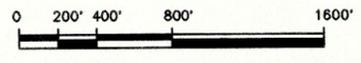
JOINS SECTION L35B

JOINS SECTION M35A



SECTION L36C

SECTION L36D

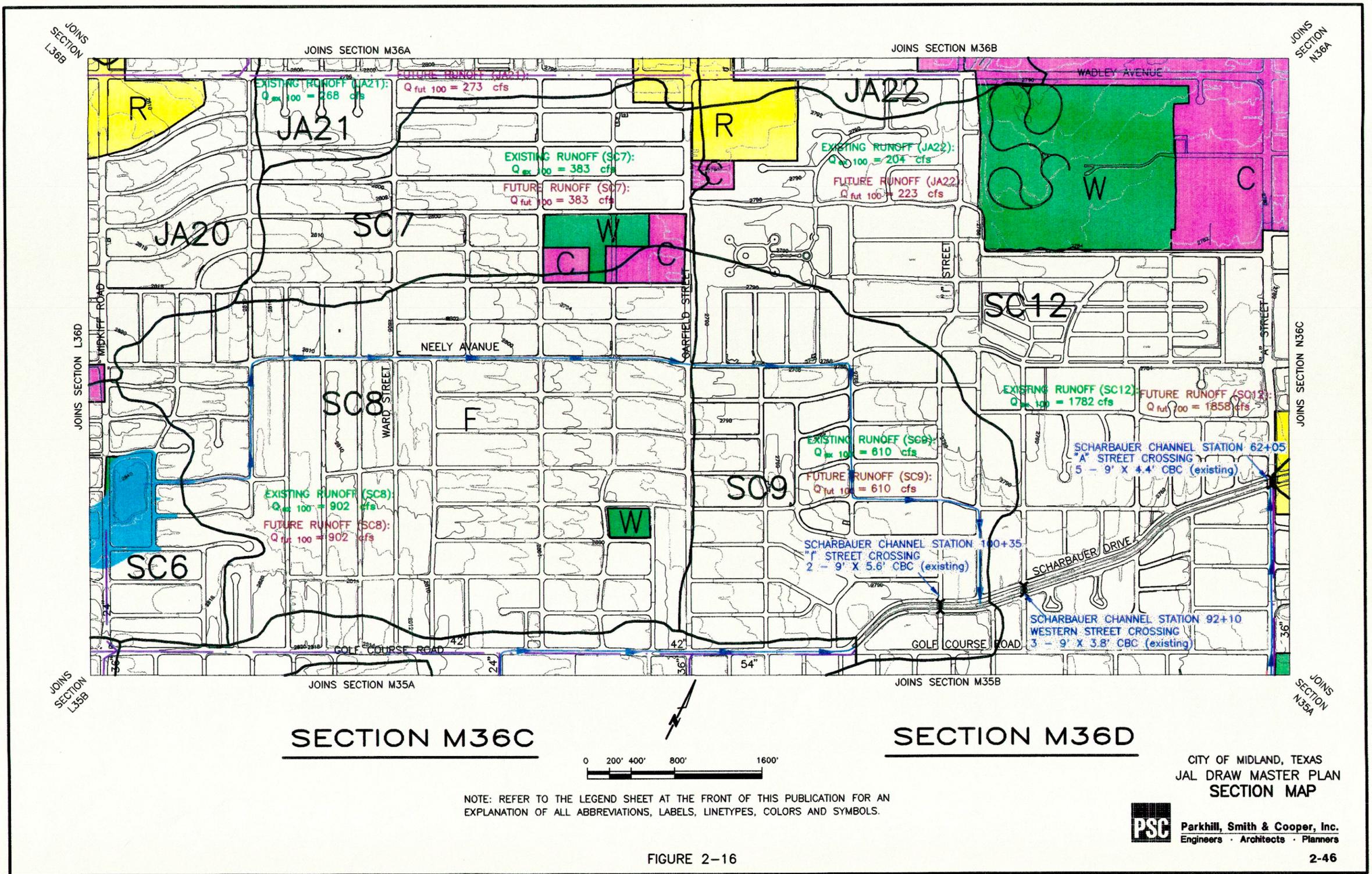


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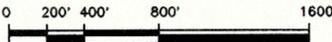
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FIGURE 2-15



SECTION M36C

SECTION M36D



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CITY OF MIDLAND, TEXAS
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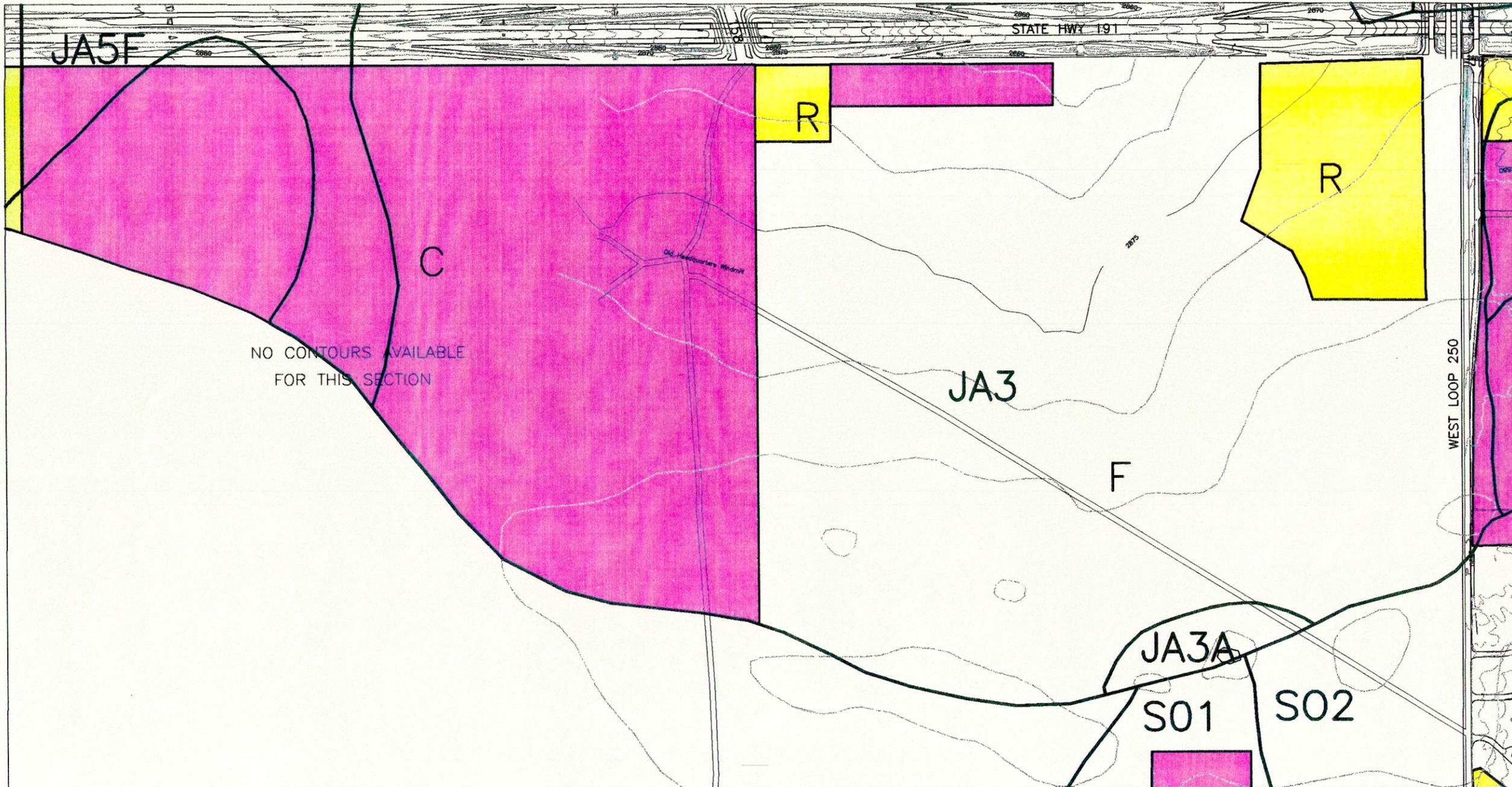
FIGURE 2-16

M36CD 6/22/35 RSK

JOINS SECTION L36C

JOINS SECTION K36C

JOINS SECTION K36D



WESTERN EXTENT OF MAPS

NO CONTOURS AVAILABLE FOR THIS SECTION

JOINS SECTION K35C

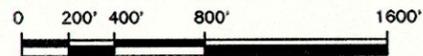
JOINS SECTION K35D

JOINS SECTION L35A

JOINS SECTION L35C

SECTION K35A

SECTION K35B



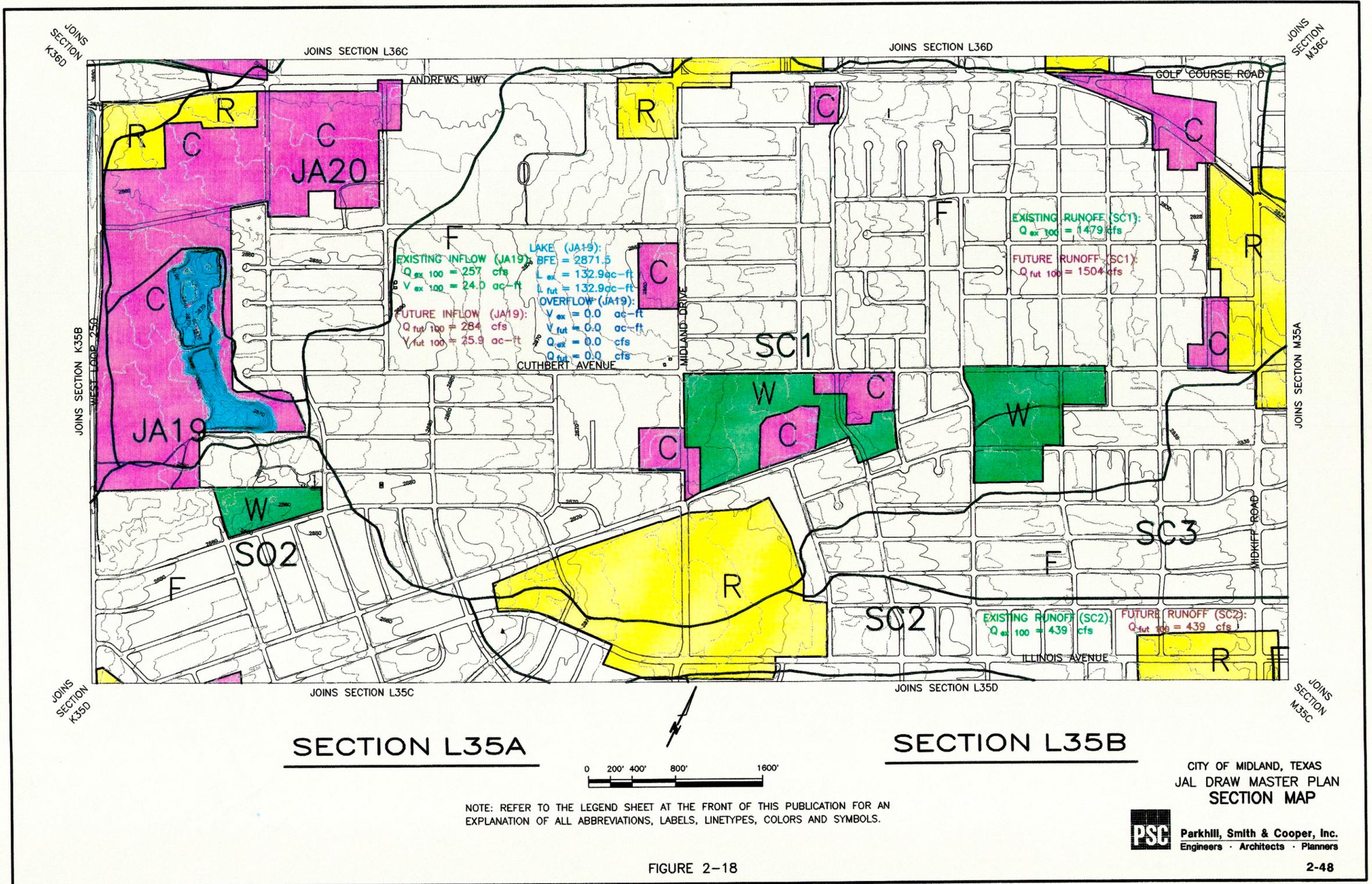
NOTE: REFER TO THE LEGEND SHEET AT THE FRONT OF THIS PUBLICATION FOR AN EXPLANATION OF ALL ABBREVIATIONS, LABELS, LINETYPES, COLORS AND SYMBOLS.

CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
SECTION MAP

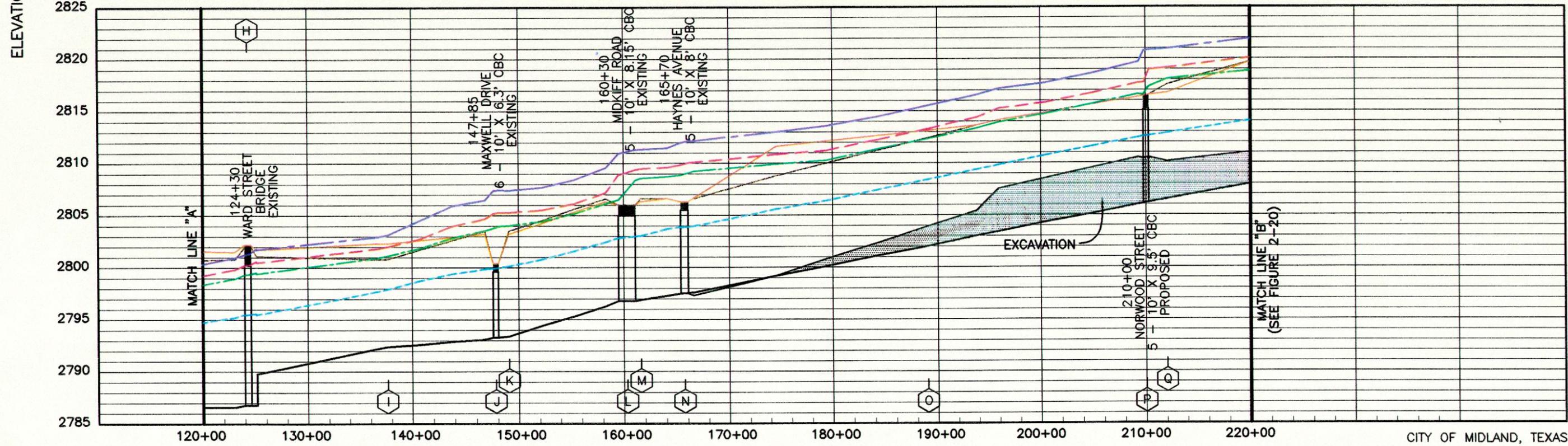
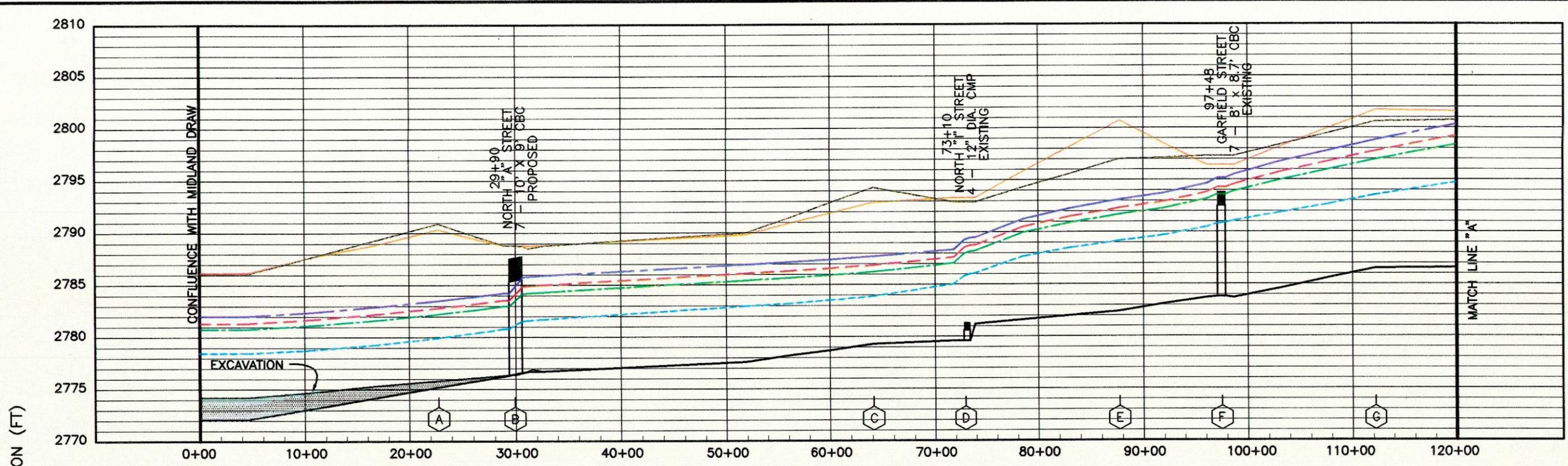
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FIGURE 2-17

K35AB 6/23/00 rsk



L35AB 6/23/11 RSK



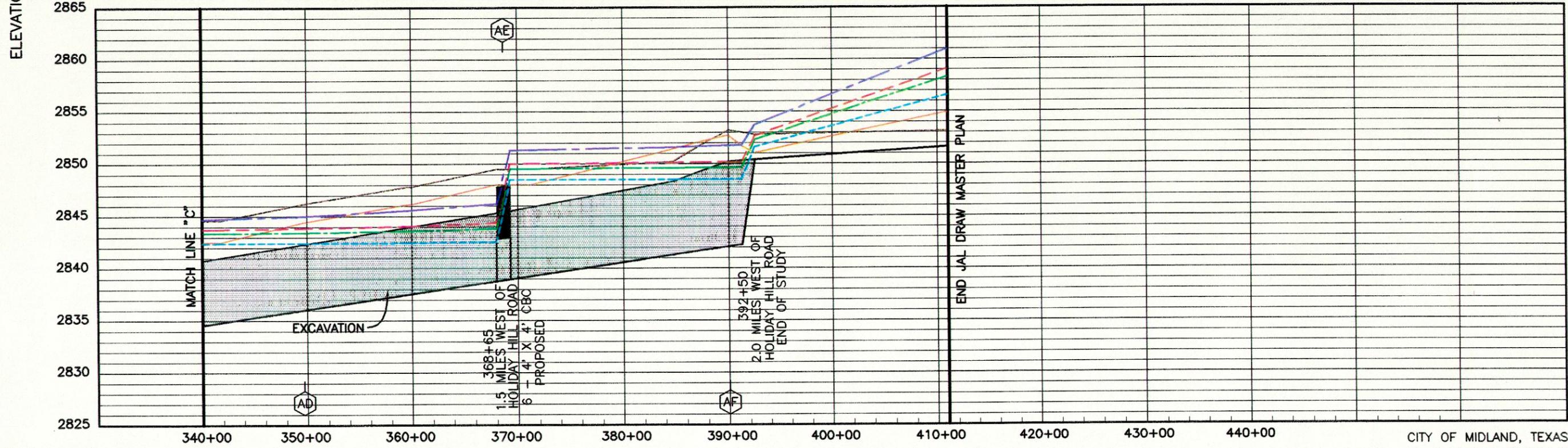
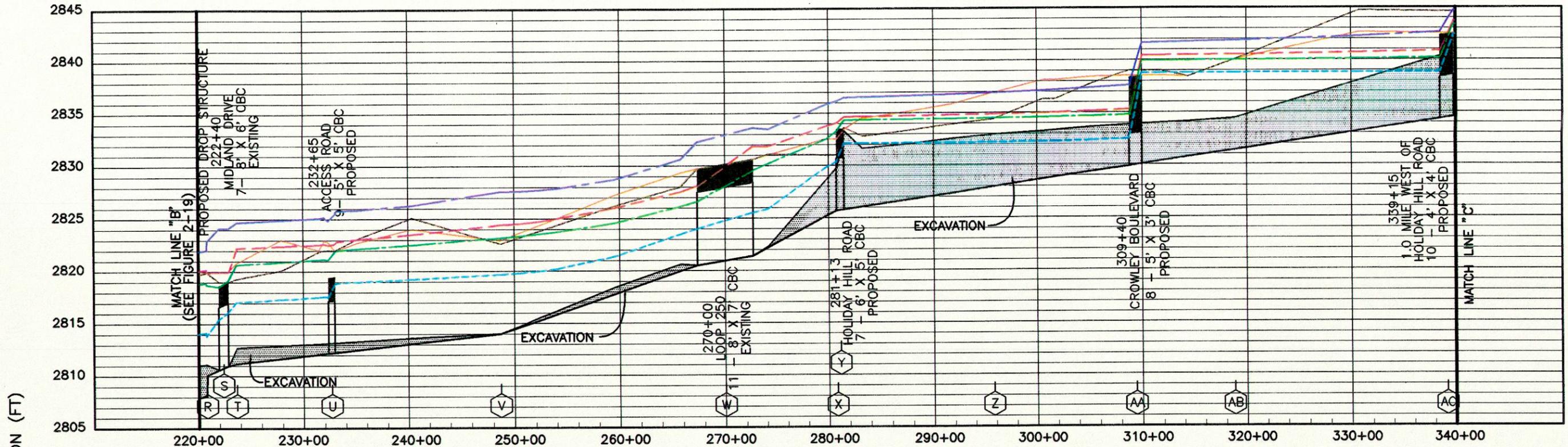
LEGEND

INVERT	—————	10-YEAR	- - - - -
LEFT BANK	—————	50-YEAR	- · - · -
RIGHT BANK	—————	100-YEAR	- · - · -
CROSS SECTION LOCATION	⊙	500-YEAR	- · - · -

JAL DRAW
STATION 0+00 TO STATION 220+00
FIGURE 2-19

SCALE:
 V: 1" = 10'
 H: 1" = 1000'

CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
PROFILE



LEGEND

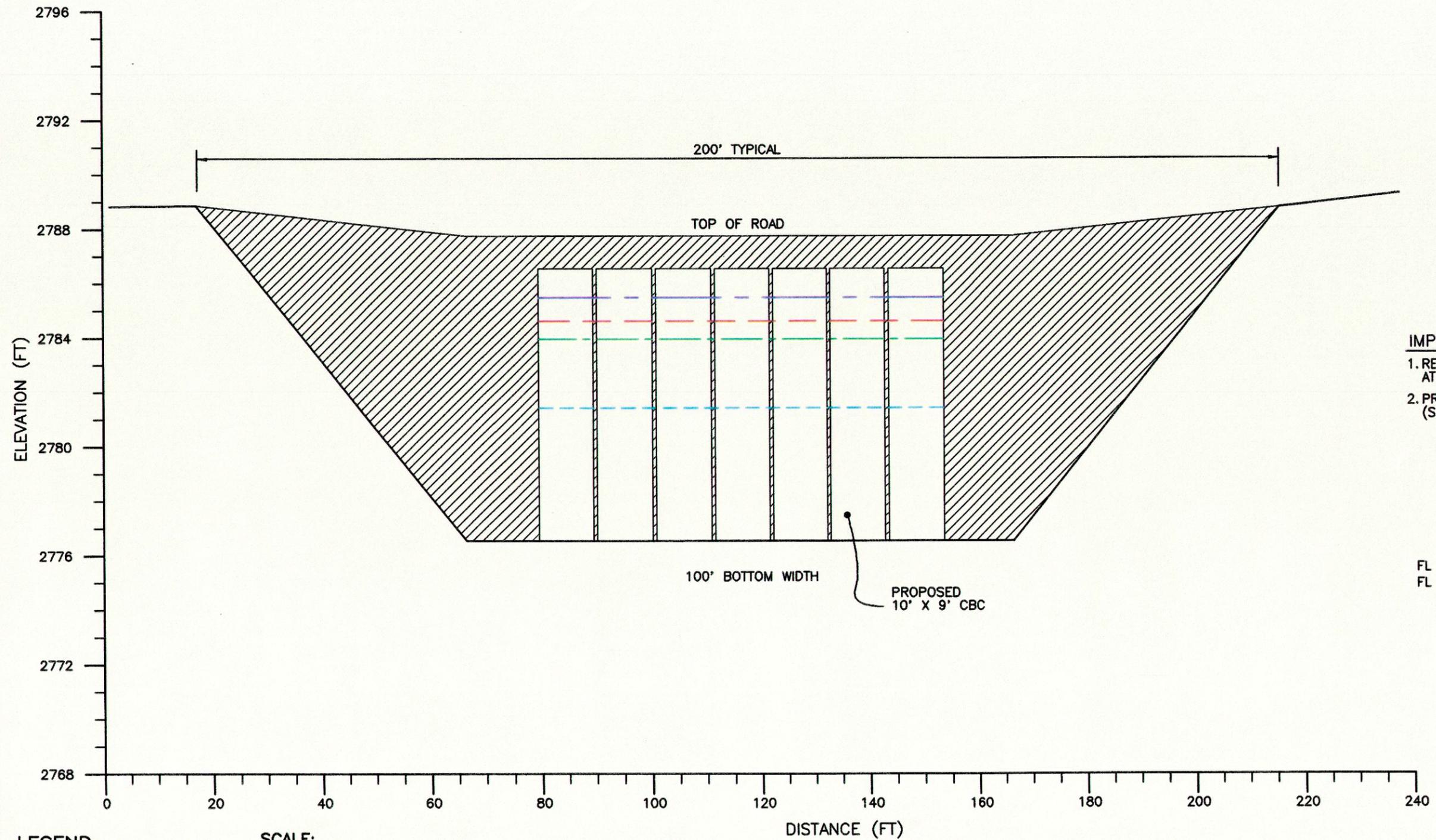
INVERT	—	10-YEAR	- - - -
LEFT BANK	—	50-YEAR	- - - -
RIGHT BANK	—	100-YEAR	- - - -
CROSS SECTION LOCATION	(A)	500-YEAR	- - - -

JAL DRAW
STATION 220+00 TO STATION 411+00
FIGURE 2-20

SCALE:
V: 1" = 10'
H: 1" = 1000'

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CROSS SECTION B
STATION 29+90



IMPROVEMENTS RECOMMENDED

1. REMOVE EXISTING STRUCTURE AT STATION 31+40 (AIRPARK DRIVE)
2. PROPOSED 7 - 10' X 9' CBC (SPAN & HEIGHT)

FL ELEVATION AT 28+85 = 2776.33
FL ELEVATION AT 30+45 = 2776.55

LEGEND

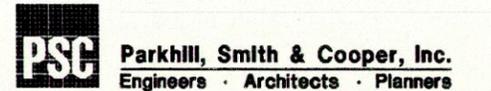
INVERT	—————
10-YEAR	- - - - -
50-YEAR	- · - · -
100-YEAR	- - - - -
500-YEAR	- · - · -

SCALE:
V: 1" = 4'
H: 1" = 20'

"A" STREET CROSSING

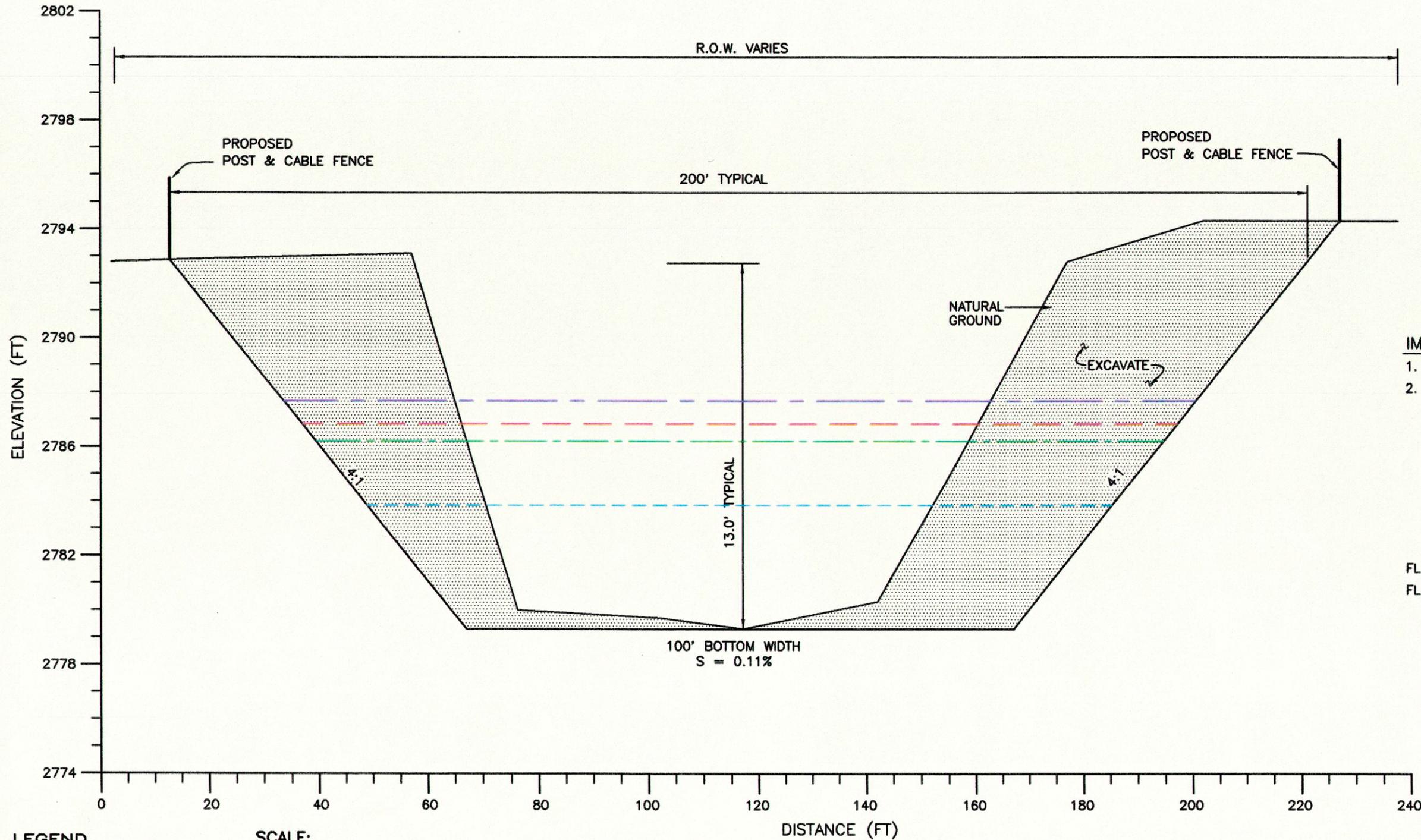
FIGURE 2-22

CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
TYPICAL CROSS SECTION



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CROSS SECTION C
STATION 64+10



IMPROVEMENTS RECOMMENDED

1. EXCAVATE CHANNEL
2. INSTALL POST & CABLE FENCE

FL ELEVATION AT 29+90 = 2776.44
FL ELEVATION AT 73+10 = 2779.60

LEGEND

INVERT	—————
10-YEAR	-----
50-YEAR	-----
100-YEAR	-----
500-YEAR	-----

SCALE:

V: 1" = 4'
H: 1" = 20'

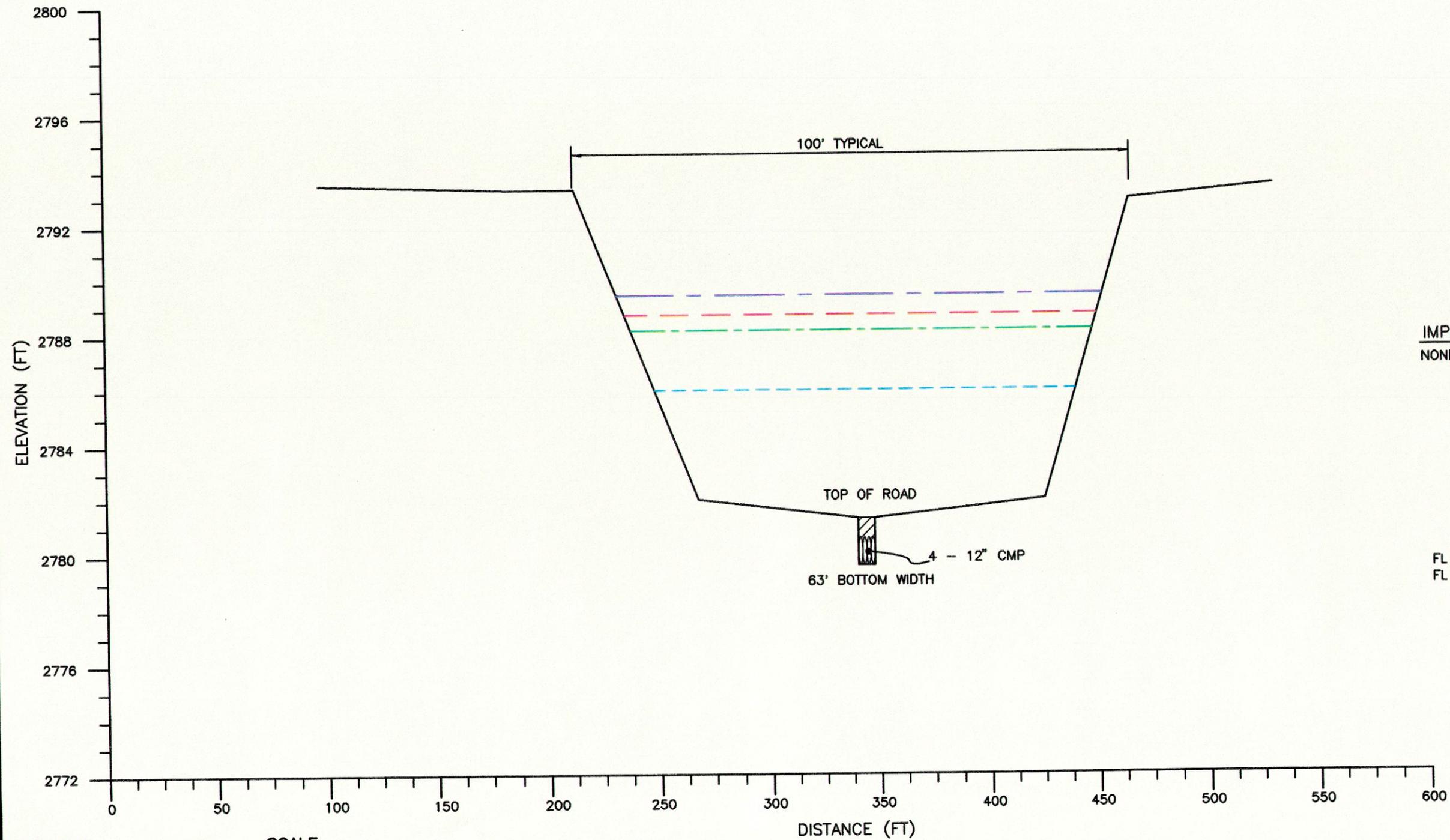
"A" STREET TO "I" STREET
STATION 29+90 TO STATION 73+10

FIGURE 2-23

CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
TYPICAL CROSS SECTION

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CROSS SECTION D
STATION 73+10



IMPROVEMENTS RECOMMENDED
NONE

FL ELEVATION AT 72+80 = 2779.60
FL ELEVATION AT 73+40 = 2779.60

LEGEND

- INVERT —————
- 10-YEAR - - - - -
- 50-YEAR - - - - -
- 100-YEAR - - - - -
- 500-YEAR - - - - -

SCALE:

V: 1" = 4'
H: 1" = 20'

"I" STREET CROSSING

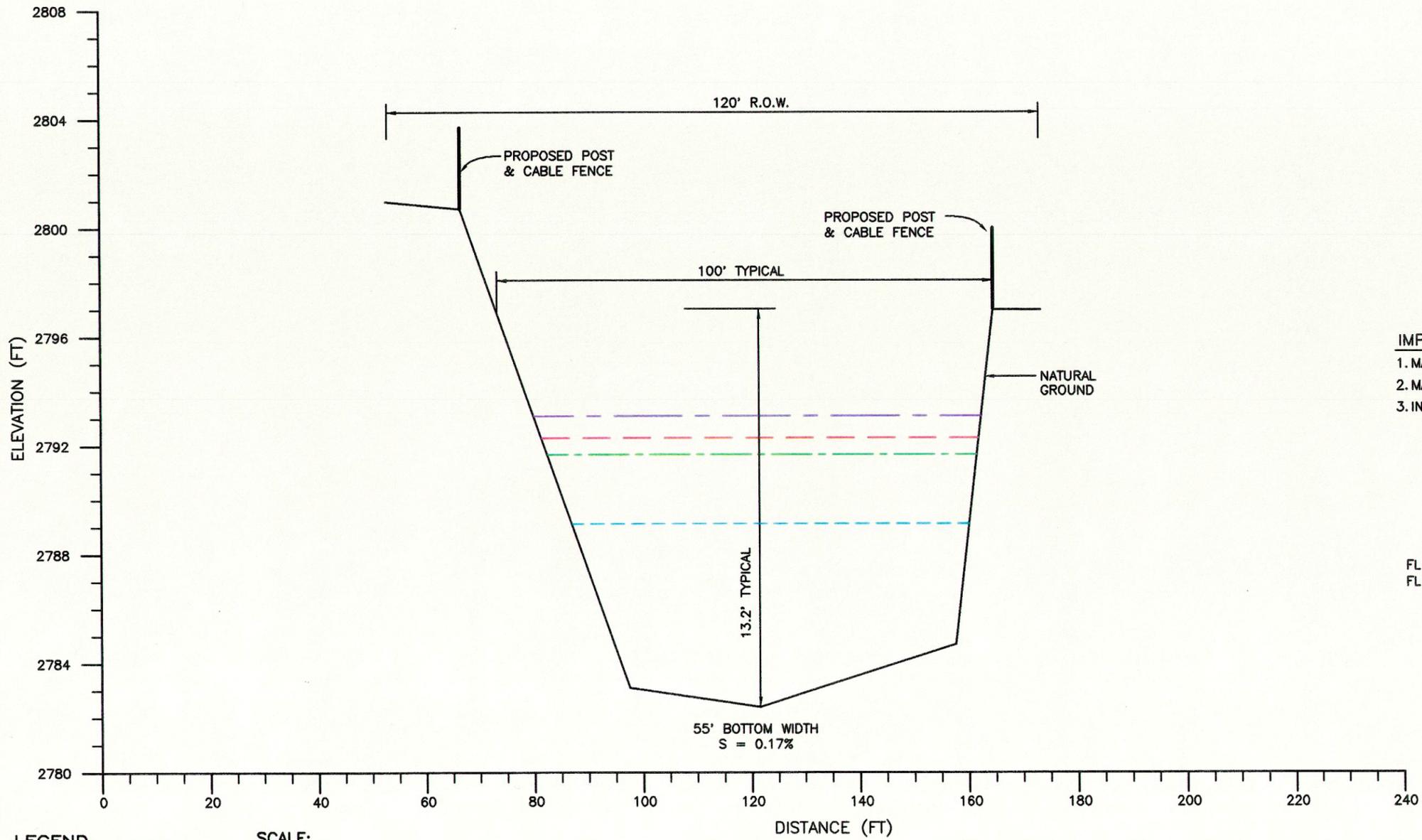
FIGURE 2-24

CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
TYPICAL CROSS SECTION



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CROSS SECTION E
STATION 87+70



- IMPROVEMENTS RECOMMENDED**
1. MAINTAIN SIDE SLOPES
 2. MAINTAIN EXISTING CHANNEL SLOPE
 3. INSTALL POST & CABLE FENCE

FL ELEVATION AT 73+10 = 2779.60
FL ELEVATION AT 97+48 = 2783.80

LEGEND

INVERT	—————
10-YEAR	-----
50-YEAR	-----
100-YEAR	-----
500-YEAR	-----

SCALE:
V: 1" = 4'
H: 1" = 20'

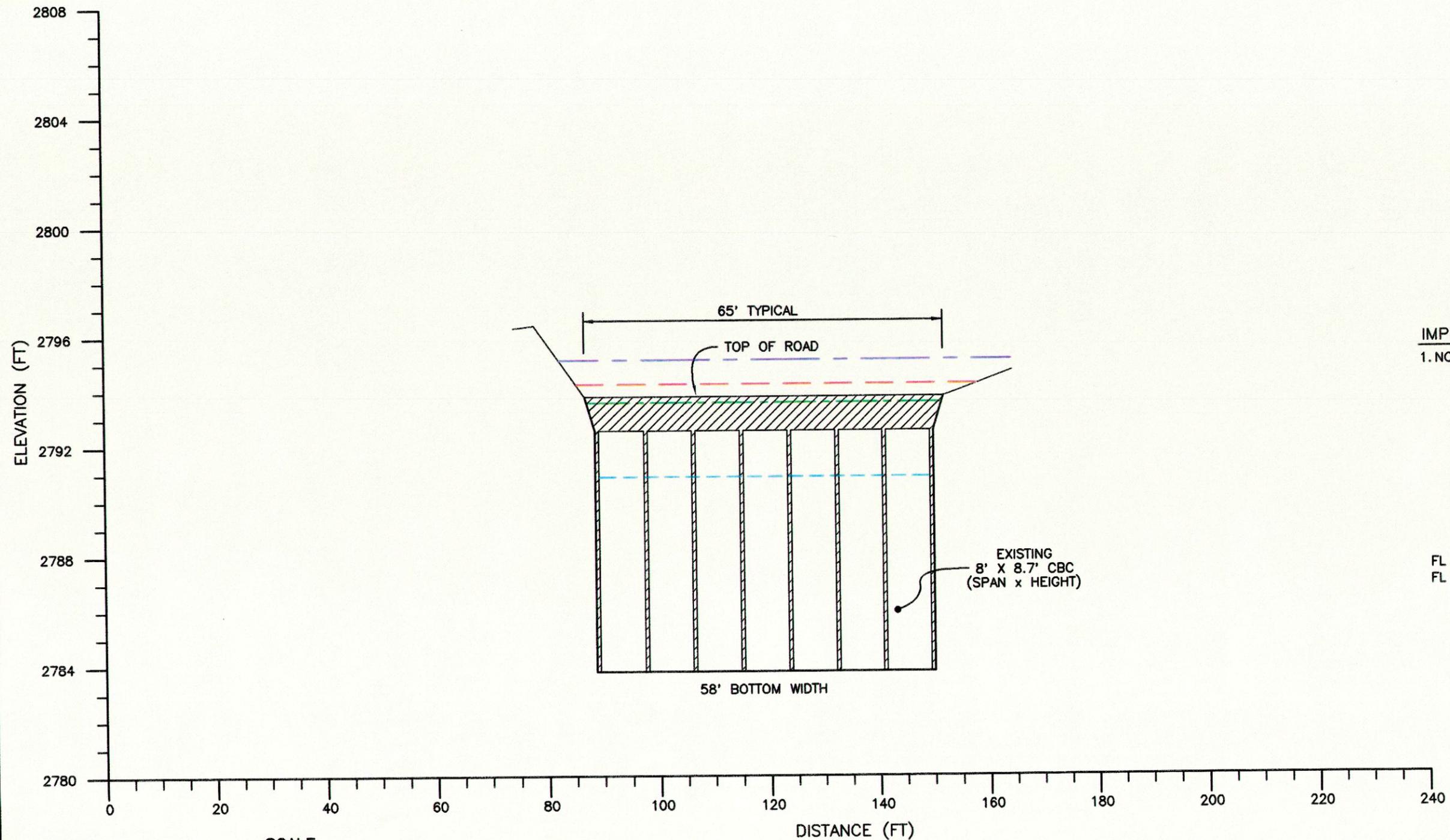
"I" STREET TO GARFIELD STREET
STATION 73+10 TO STATION 97+48

FIGURE 2-25

CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
TYPICAL CROSS SECTION

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CROSS SECTION F
STATION 97+48



IMPROVEMENTS RECOMMENDED
1. NONE

FL ELEVATION AT 97+10 = 2783.80
FL ELEVATION AT 97+85 = 2783.80

LEGEND

INVERT	—————
10-YEAR	- - - - -
50-YEAR	- · - · -
100-YEAR	- - - - -
500-YEAR	- · - · -

SCALE:
V: 1" = 4'
H: 1" = 20'

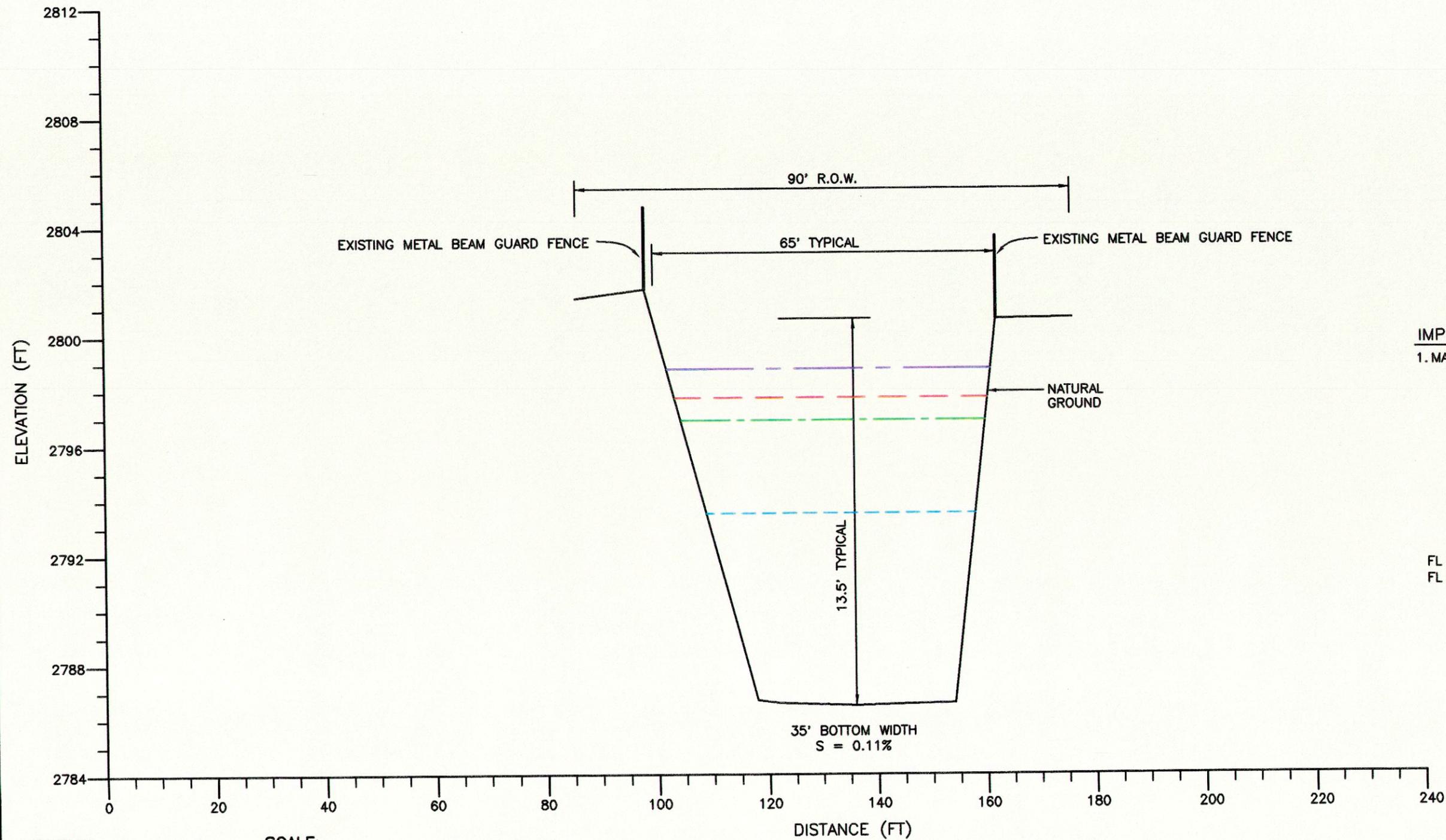
GARFIELD STREET CROSSING

FIGURE 2-26

CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
TYPICAL CROSS SECTION

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CROSS SECTION G
STATION 112+20



IMPROVEMENTS RECOMMENDED
1. MAINTAIN SIDE SLOPES

FL ELEVATION AT 97+48 = 2783.80
FL ELEVATION AT 124+30 = 2786.80

LEGEND

- INVERT ———
- 10-YEAR - - - - -
- 50-YEAR - - - - -
- 100-YEAR - - - - -
- 500-YEAR - - - - -

SCALE:

V: 1" = 4'
H: 1" = 20'

GARFIELD STREET TO WARD STREET
STATION 97+48 TO STATION 124+30

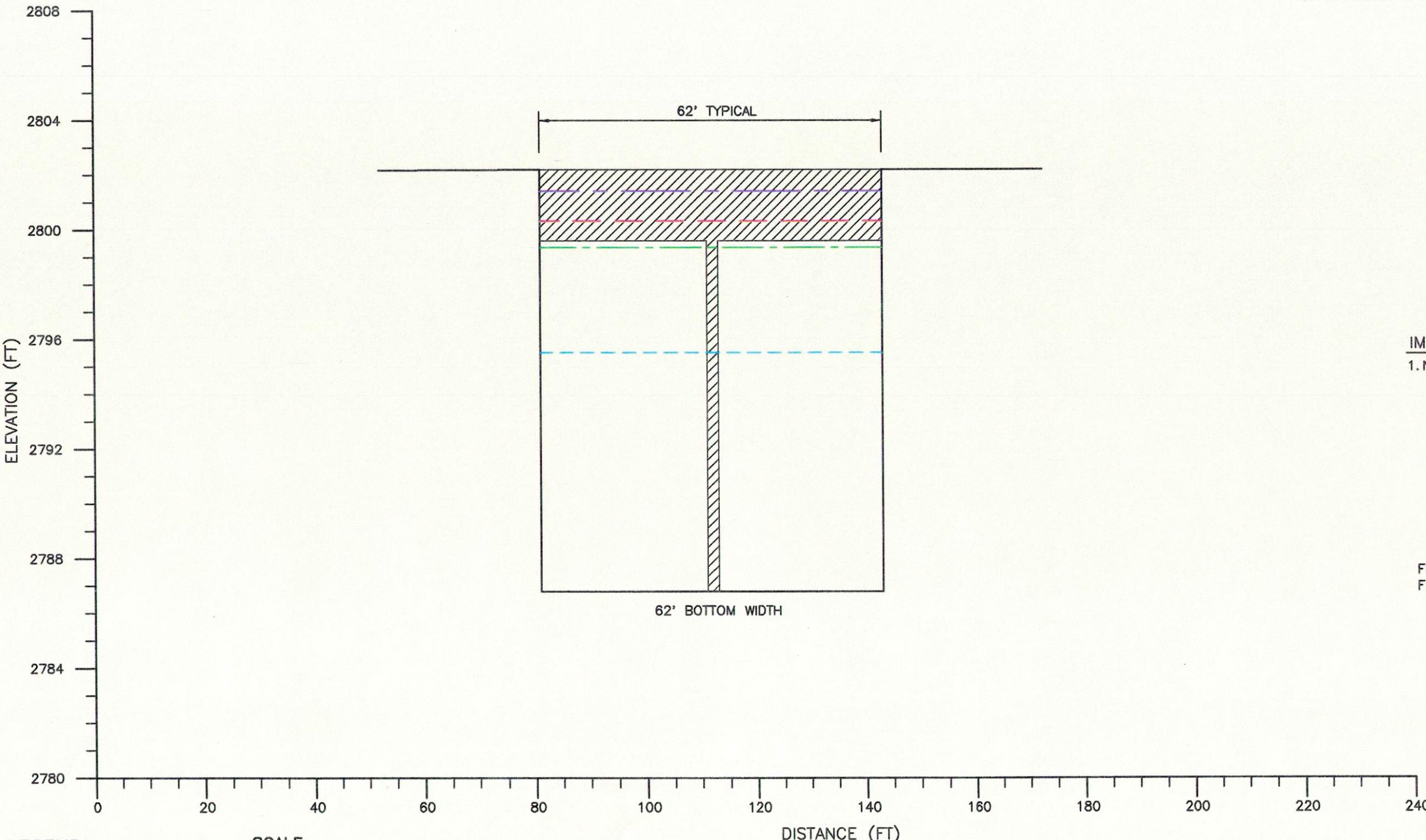
FIGURE 2-27

CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
TYPICAL CROSS SECTION

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11220 05/15/05 11:35 JLC

CROSS SECTION H
STATION 124+30



IMPROVEMENTS RECOMMENDED
1. NONE

FL ELEVATION AT 124+00 = 2786.80
FL ELEVATION AT 124+60 = 2786.80

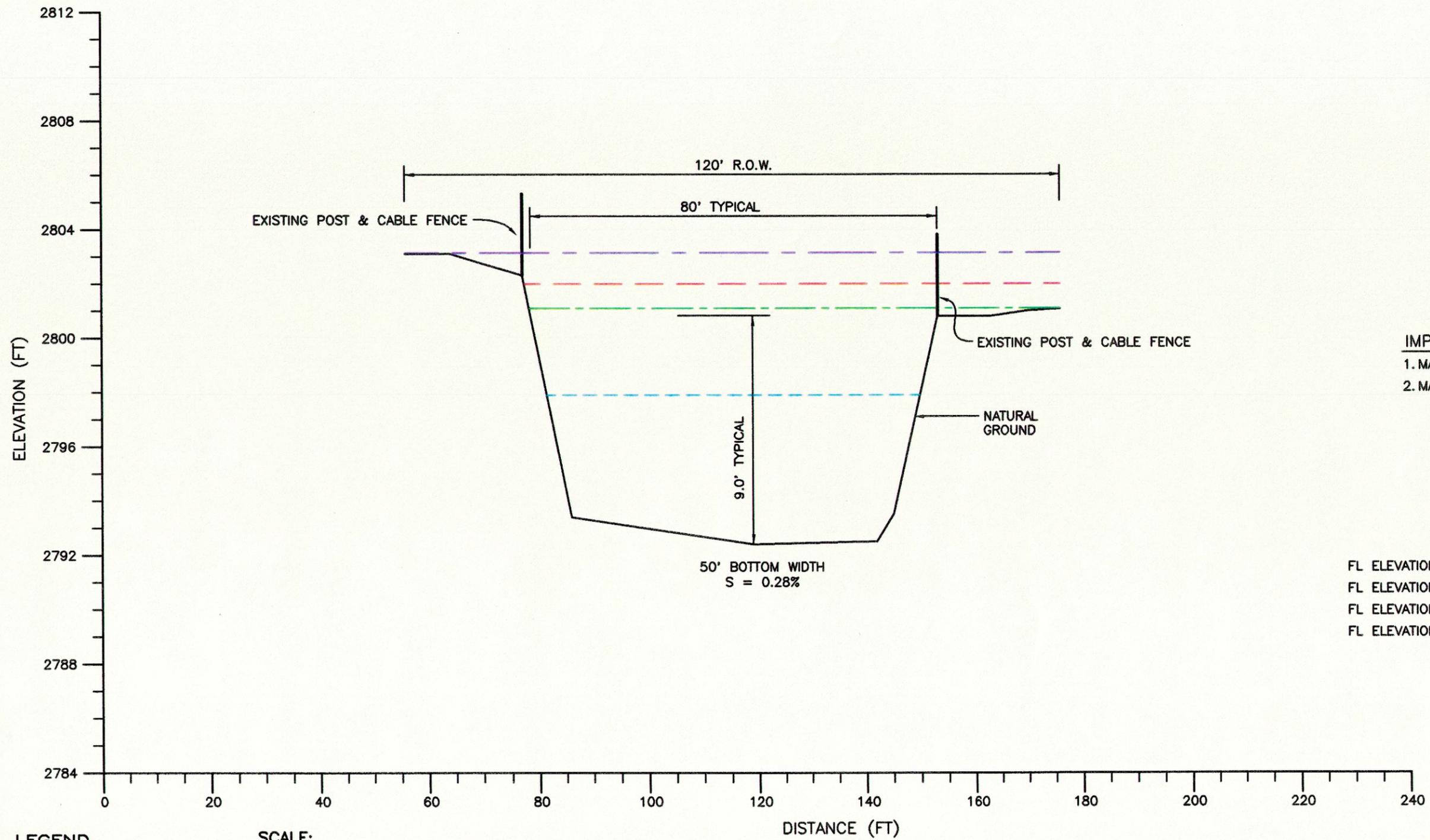
LEGEND	SCALE:
INVERT —————	V: 1" = 4'
10-YEAR - - - - -	H: 1" = 20'
50-YEAR - - - - -	
100-YEAR - - - - -	
500-YEAR - - - - -	

WARD STREET BRIDGE

FIGURE 2-28

CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
TYPICAL CROSS SECTION
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CROSS SECTION I
STATION 137+60



IMPROVEMENTS RECOMMENDED

1. MAINTAIN SIDE SLOPES
2. MAINTAIN EXISTING CHANNEL WIDTH

FL ELEVATION AT 124+30 = 2786.80
 FL ELEVATION AT 125+10 = 2786.80 (BOTTOM)
 FL ELEVATION AT 125+10 = 2789.80 (TOP)
 FL ELEVATION AT 147+80 = 2793.30

LEGEND

INVERT	—————
10-YEAR	- - - - -
50-YEAR	- · - · -
100-YEAR	- - - - -
500-YEAR	- · - · -

SCALE:
 V: 1" = 4'
 H: 1" = 20'

WARD STREET TO MAXWELL DRIVE
 STATION 124+30 TO STATION 147+80

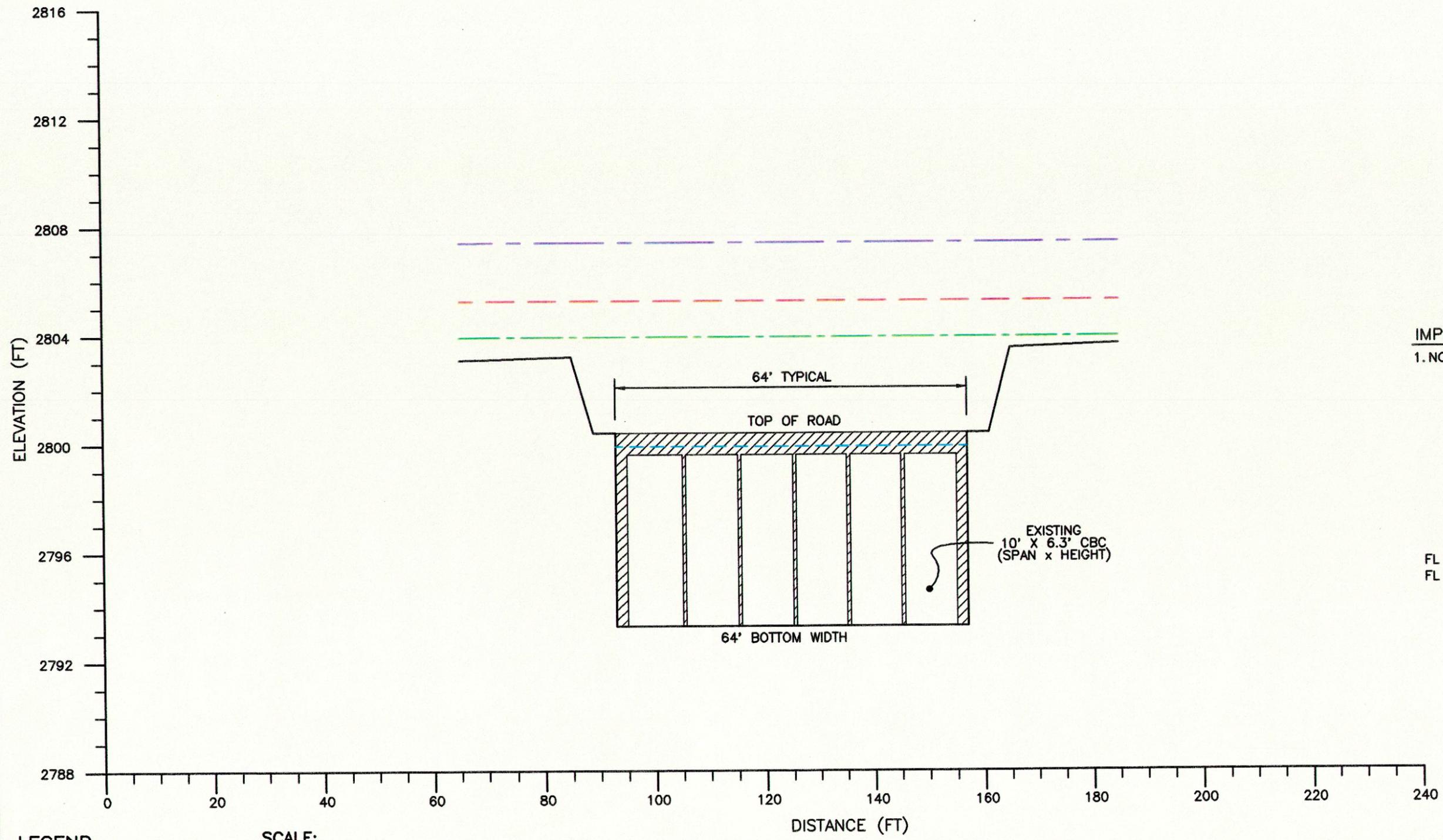
FIGURE 2-29

CITY OF MIDLAND, TEXAS
 JAL DRAW MASTER PLAN
 TYPICAL CROSS SECTION

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13760 05/17/05 5:30 JLC

CROSS SECTION J
STATION 147+80



IMPROVEMENTS RECOMMENDED
1. NONE

FL ELEVATION AT 147+55 = 2793.30
FL ELEVATION AT 148+05 = 2793.30

LEGEND		SCALE:	
INVERT	—————	V: 1" = 4'	
10-YEAR	- - - - -	H: 1" = 20'	
50-YEAR	- · - · -		
100-YEAR	- · - · -		
500-YEAR	- · - · -		

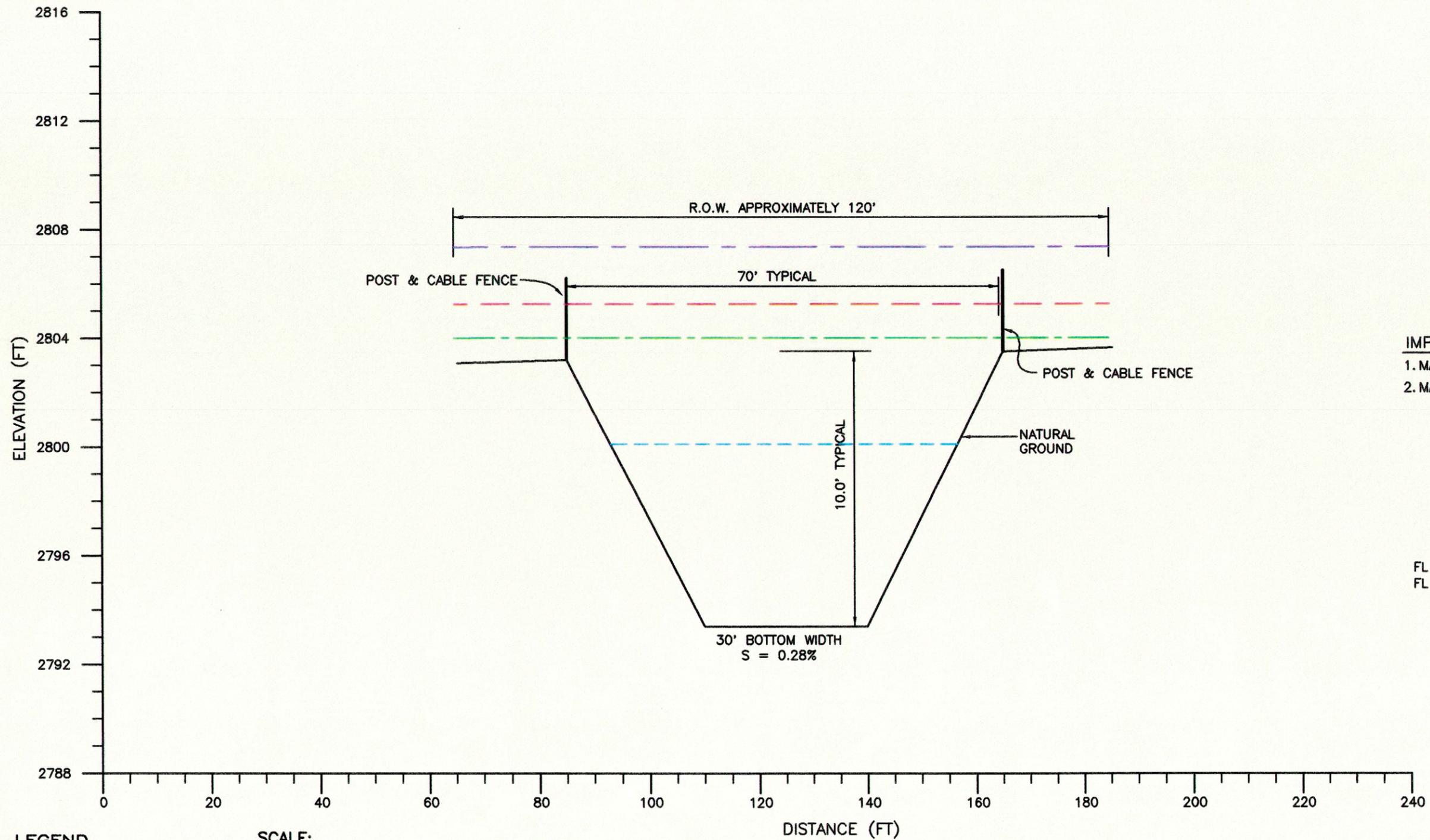
MAXWELL DRIVE CROSSING

FIGURE 2-30

CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
TYPICAL CROSS SECTION

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CROSS SECTION K
STATION 149+05



- IMPROVEMENTS RECOMMENDED
1. MAINTAIN SIDE SLOPES
 2. MAINTAIN EXISTING CHANNEL WIDTH

FL ELEVATION AT 147+80 = 2793.30
FL ELEVATION AT 160+30 = 2796.80

LEGEND

INVERT	—————
10-YEAR	- - - - -
50-YEAR	- - - - -
100-YEAR	- - - - -
500-YEAR	- - - - -

SCALE:
V: 1" = 4'
H: 1" = 20'

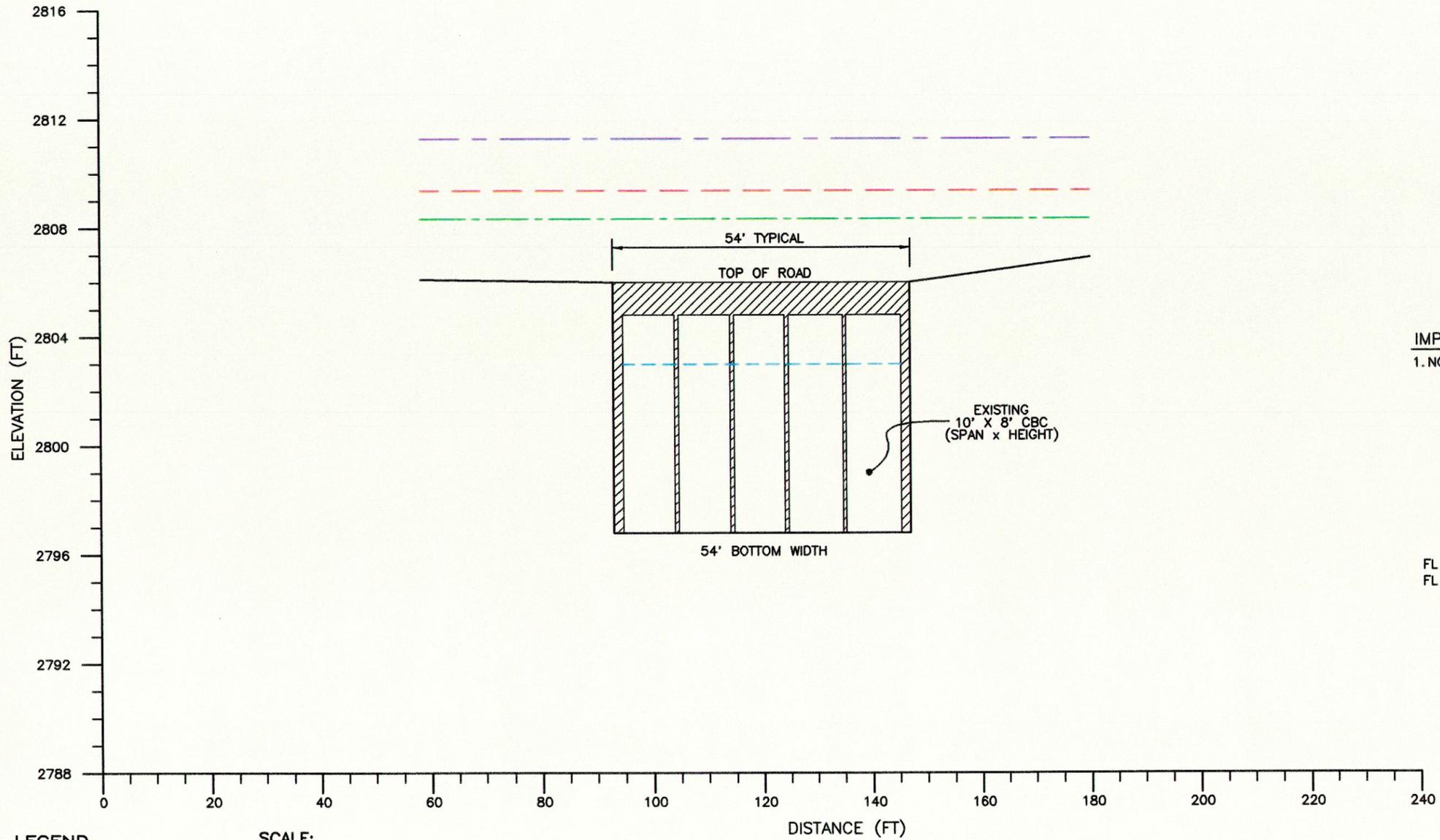
MAXWELL DRIVE TO MIDKIFF ROAD
STATION 147+80 TO STATION 160+30

FIGURE 2-31

CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
TYPICAL CROSS SECTION

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CROSS SECTION L
STATION 160+30



IMPROVEMENTS RECOMMENDED

1. NONE

FL ELEVATION AT 159+50 = 2796.80
FL ELEVATION AT 161+10 = 2796.80

LEGEND

INVERT ———
10-YEAR - - - -
50-YEAR - - - -
100-YEAR - - - -
500-YEAR - - - -

SCALE:

V: 1" = 4'
H: 1" = 20'

MIDKIFF ROAD CROSSING

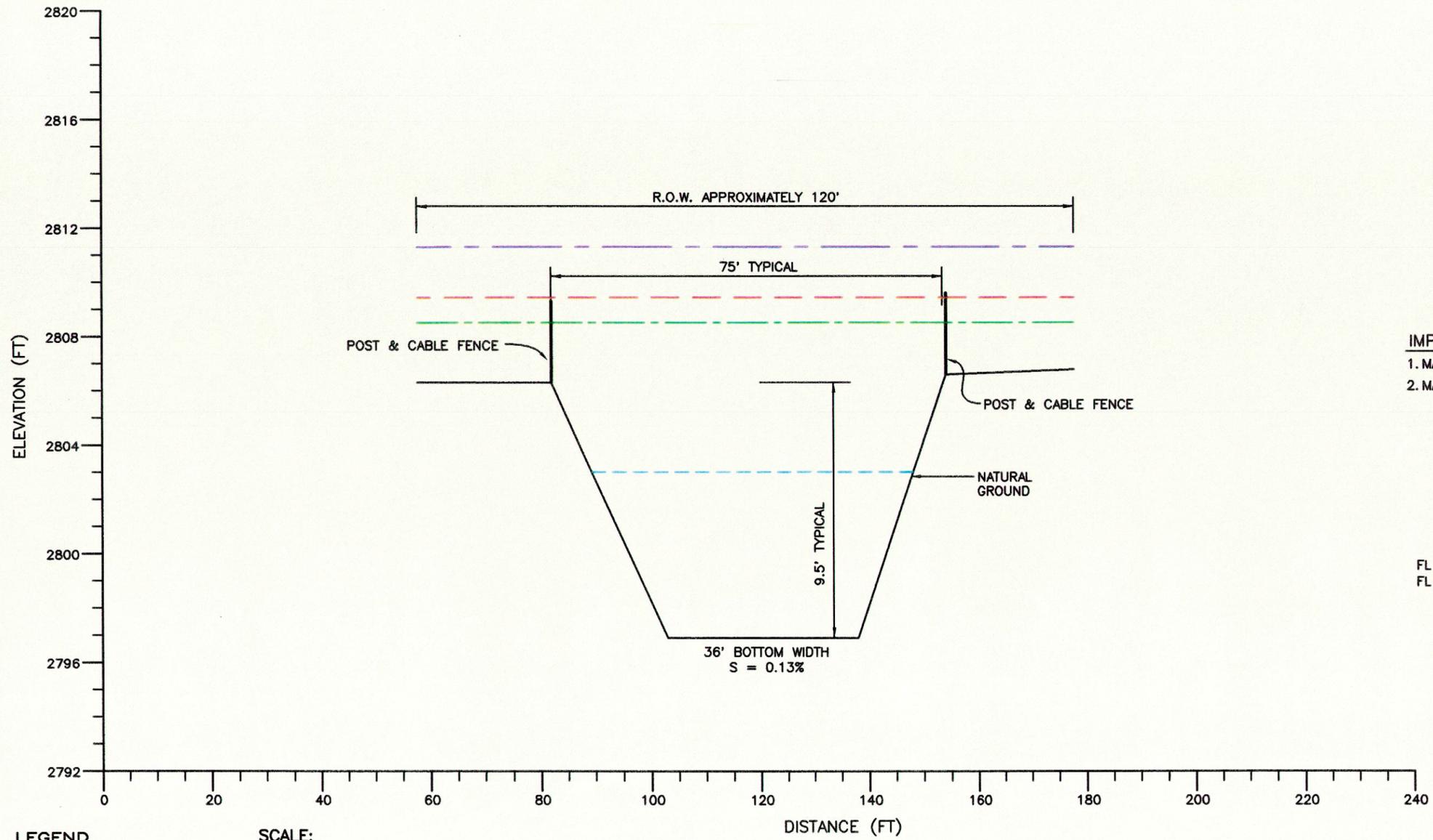
FIGURE 2-32

CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
TYPICAL CROSS SECTION



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CROSS SECTION M
STATION 161+60



IMPROVEMENTS RECOMMENDED
 1. MAINTAIN SIDE SLOPES
 2. MAINTAIN EXISTING CHANNEL WIDTH

FL ELEVATION AT 160+30 = 2796.80
 FL ELEVATION AT 165+70 = 2797.50

LEGEND

INVERT ———
 10-YEAR ———
 50-YEAR ———
 100-YEAR ———
 500-YEAR ———

SCALE:

V: 1" = 4'
 H: 1" = 20'

MIDKIFF ROAD TO HAYNES AVENUE
 STATION 160+30 TO STATION 165+70

FIGURE 2-33

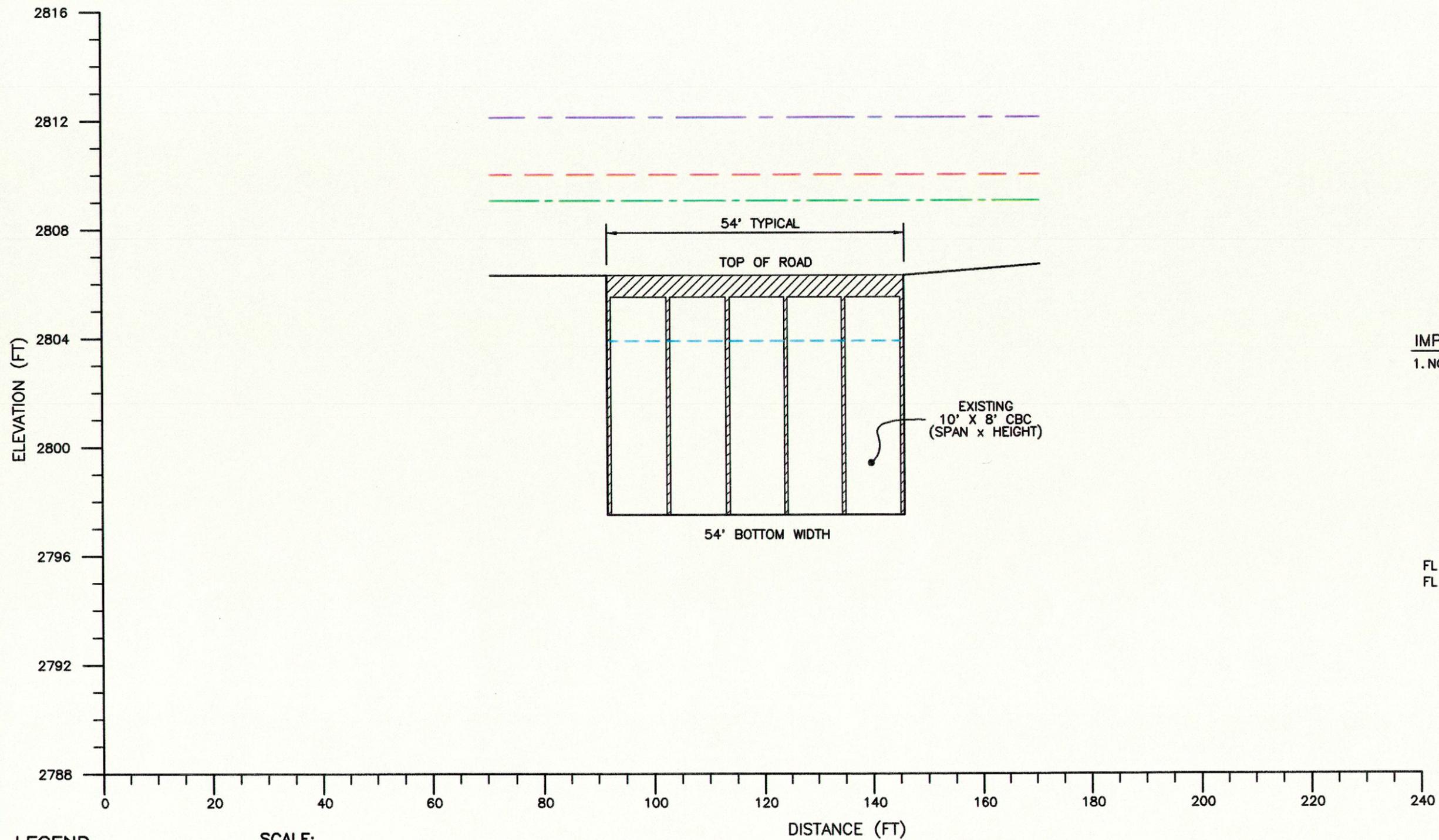
CITY OF MIDLAND, TEXAS
 JAL DRAW MASTER PLAN
 TYPICAL CROSS SECTION



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16130 05/15/05 11:40 JLC

CROSS SECTION N
STATION 165+70



IMPROVEMENTS RECOMMENDED
1. NONE

FL ELEVATION AT 165+35 = 2797.50
FL ELEVATION AT 166+05 = 2797.50

LEGEND	SCALE:
INVERT —————	V: 1" = 4'
10-YEAR - - - - -	H: 1" = 20'
50-YEAR - - - - -	
100-YEAR - - - - -	
500-YEAR - - - - -	

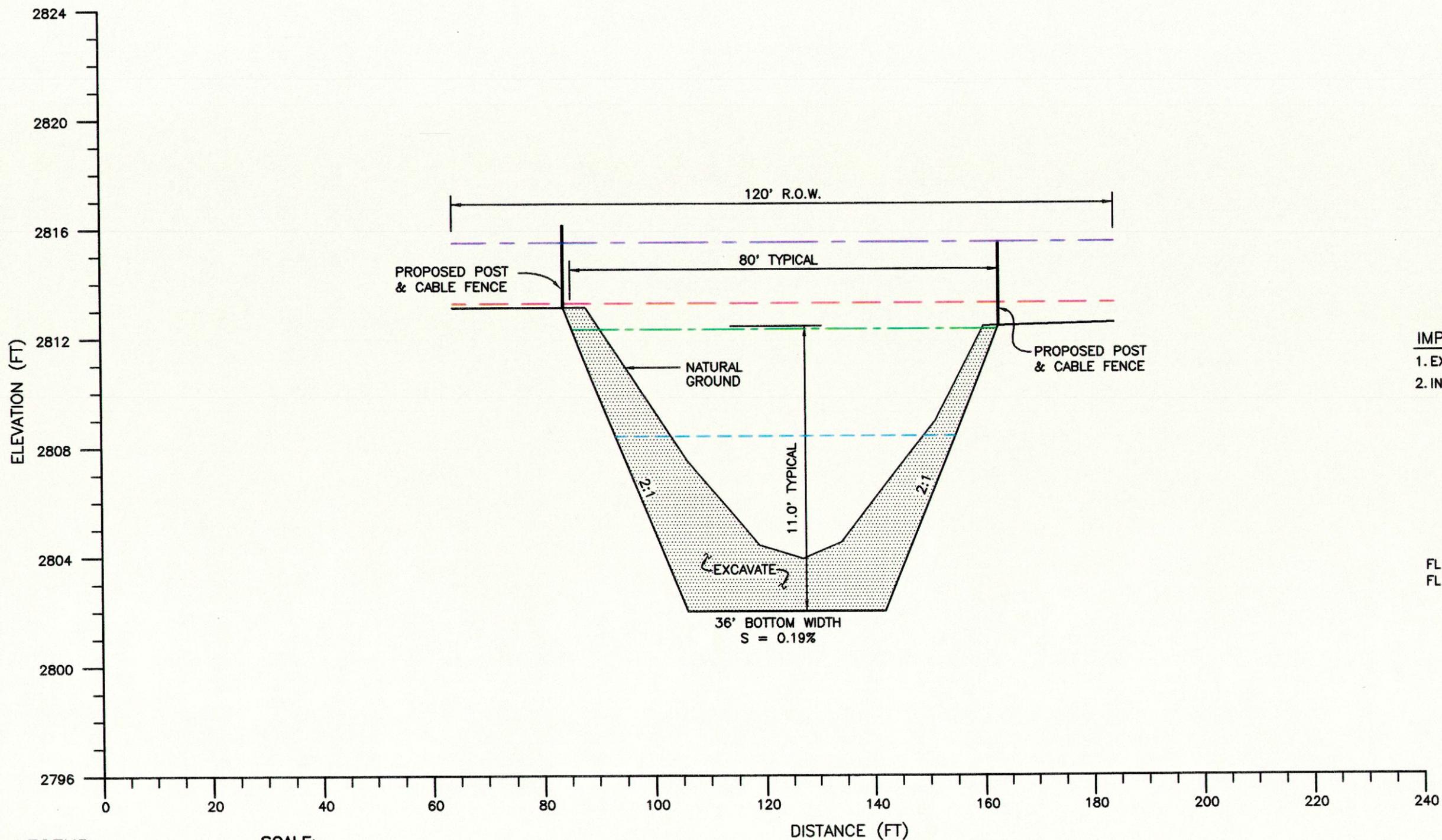
HAYNES AVENUE CROSSING

FIGURE 2-34

CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
TYPICAL CROSS SECTION

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CROSS SECTION 0
STATION 189+00



IMPROVEMENTS RECOMMENDED
1. EXCAVATE CHANNEL
2. INSTALL POST & CABLE FENCE

FL ELEVATION AT 165+70 = 2797.50
FL ELEVATION AT 210+00 = 2806.15

LEGEND		SCALE:	
INVERT	—————	V: 1" = 4'	H: 1" = 20'
10-YEAR	- - - - -		
50-YEAR	- - - - -		
100-YEAR	- - - - -		
500-YEAR	- - - - -		

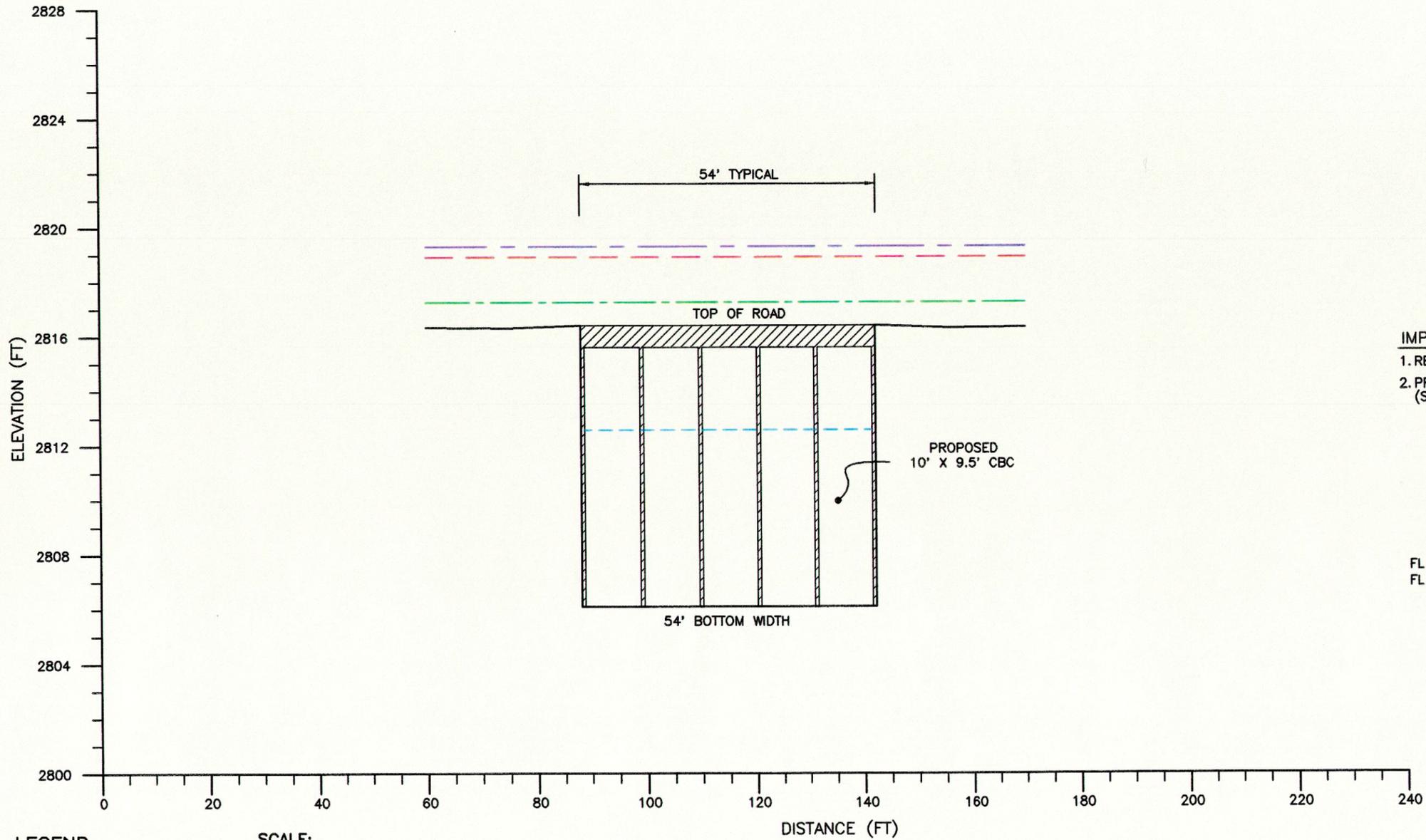
HAYNES AVENUE TO NORWOOD STREET
STATION 165+70 TO STATION 210+00

FIGURE 2-35

CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
TYPICAL CROSS SECTION

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CROSS SECTION P
STATION 210+00



- IMPROVEMENTS RECOMMENDED**
1. REMOVE EXISTING STRUCTURE
 2. PROPOSED 5 - 10' X 9.5' CBC (SPAN X HEIGHT)

FL ELEVATION AT 209+75 = 2806.10
FL ELEVATION AT 210+25 = 2806.20

LEGEND

INVERT	—————
10-YEAR	- - - - -
50-YEAR	- - - - -
100-YEAR	- - - - -
500-YEAR	- - - - -

SCALE:
V: 1" = 4'
H: 1" = 20'

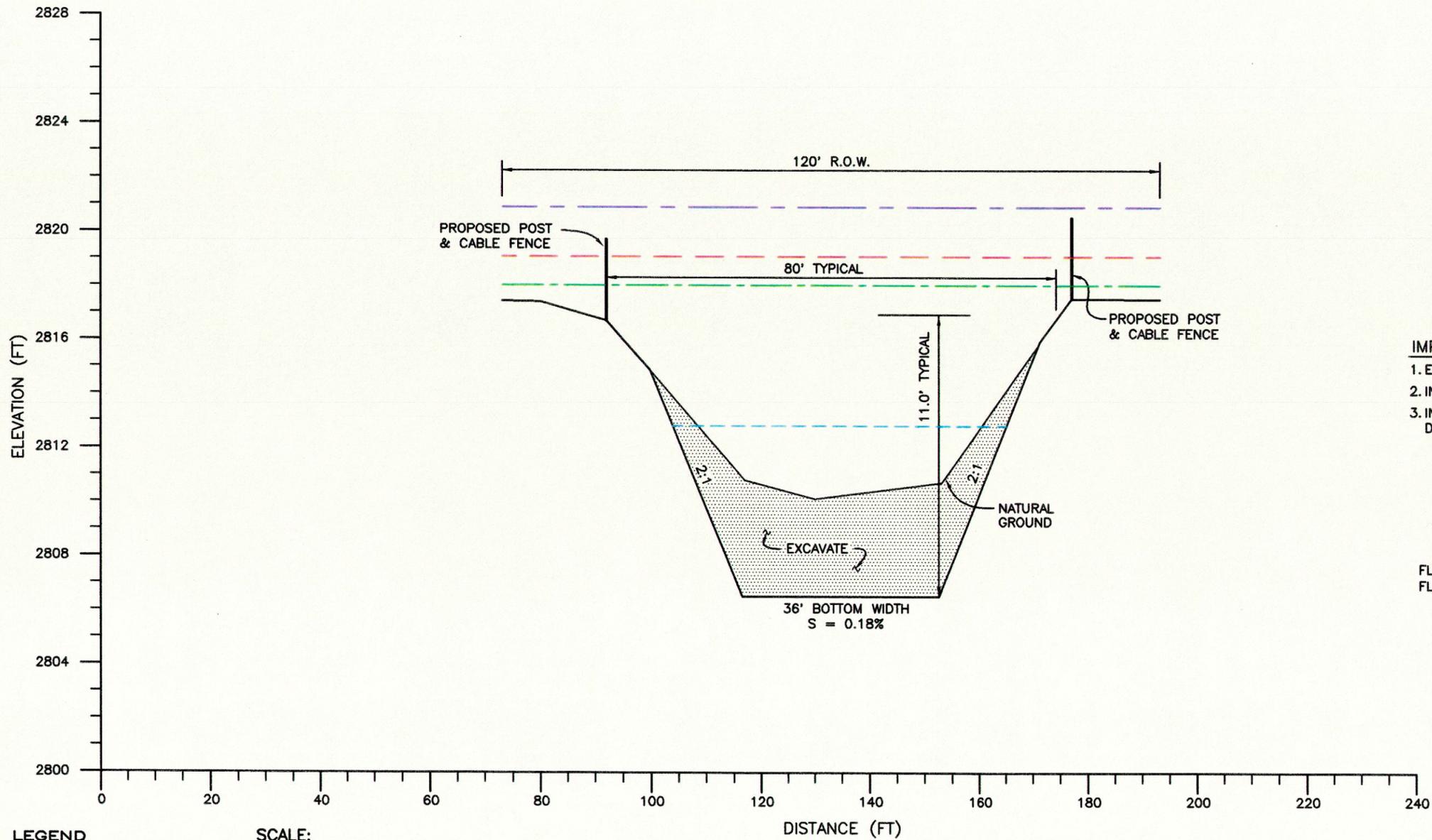
NORWOOD STREET CROSSING

FIGURE 2-36

CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
TYPICAL CROSS SECTION

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CROSS SECTION Q
STATION 212+00



- IMPROVEMENTS RECOMMENDED**
1. EXCAVATE CHANNEL
 2. INSTALL POST & CABLE FENCE
 3. INSTALL DROP STRUCTURE
DOWNSTREAM FROM MIDLAND DRIVE

FL ELEVATION AT 210+00 = 2806.15
FL ELEVATION AT 220+80 = 2808.10

LEGEND

INVERT	—————
10-YEAR	- - - - -
50-YEAR	- · - · -
100-YEAR	- - - - -
500-YEAR	- · - · -

SCALE:
V: 1" = 4'
H: 1" = 20'

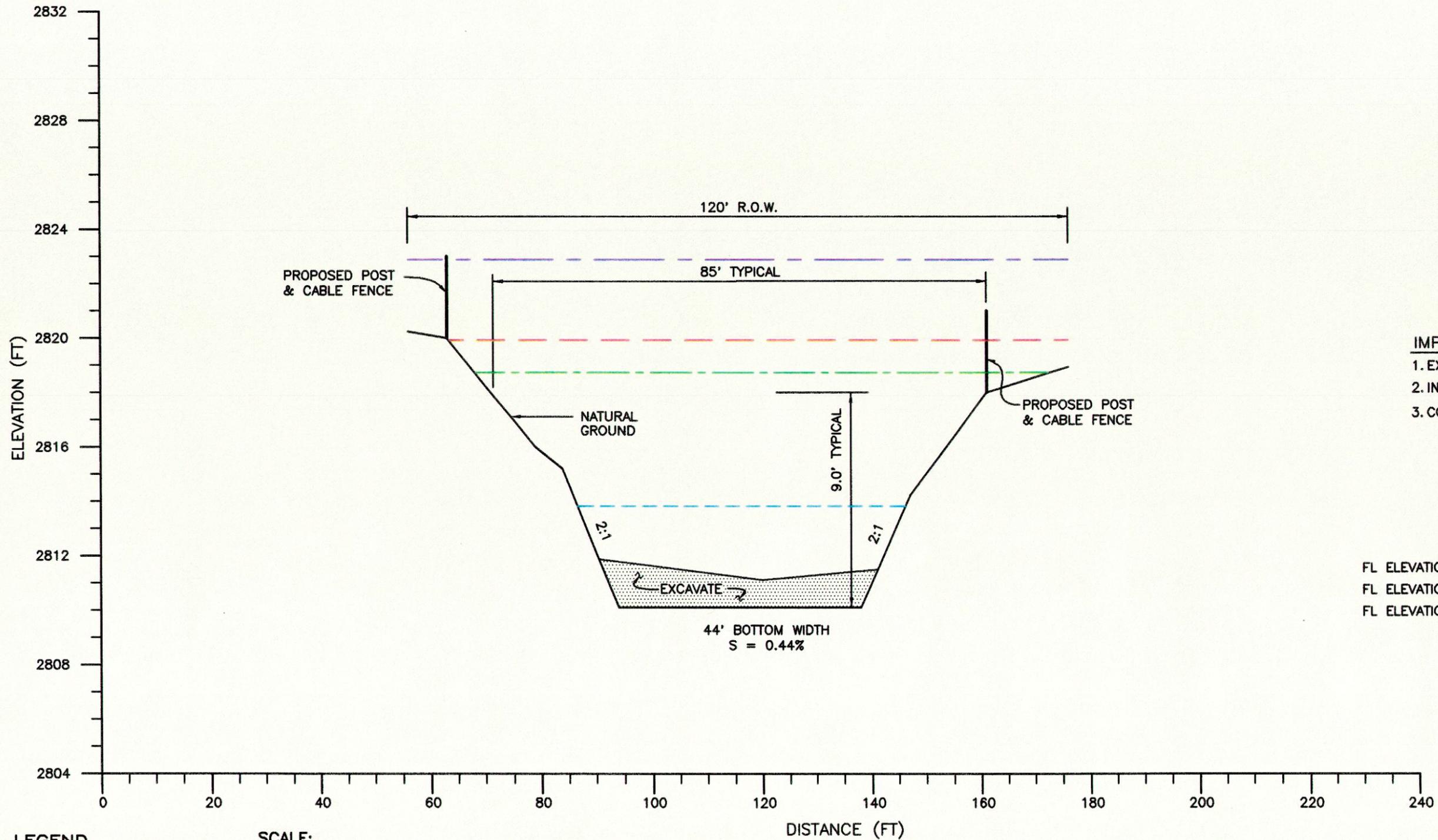
NORWOOD STREET TO DROP STRUCTURE D/S FROM MIDLAND DRIVE
STATION 210+00 TO STATION 220+80

FIGURE 2-37

CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
TYPICAL CROSS SECTION

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CROSS SECTION R
STATION 220+81



IMPROVEMENTS RECOMMENDED

1. EXCAVATE CHANNEL
2. INSTALL POST & CABLE FENCE
3. CONCRETE LINED CHANNEL

FL ELEVATION AT 220+80 = 2808.10 (BOTTOM)
 FL ELEVATION AT 220+80 = 2810.10 (TOP)
 FL ELEVATION AT 222+40 = 2810.80

LEGEND

INVERT	—————
10-YEAR	- - - - -
50-YEAR	- · - · -
100-YEAR	- - - - -
500-YEAR	- · - · -

SCALE:
 V: 1" = 4'
 H: 1" = 20'

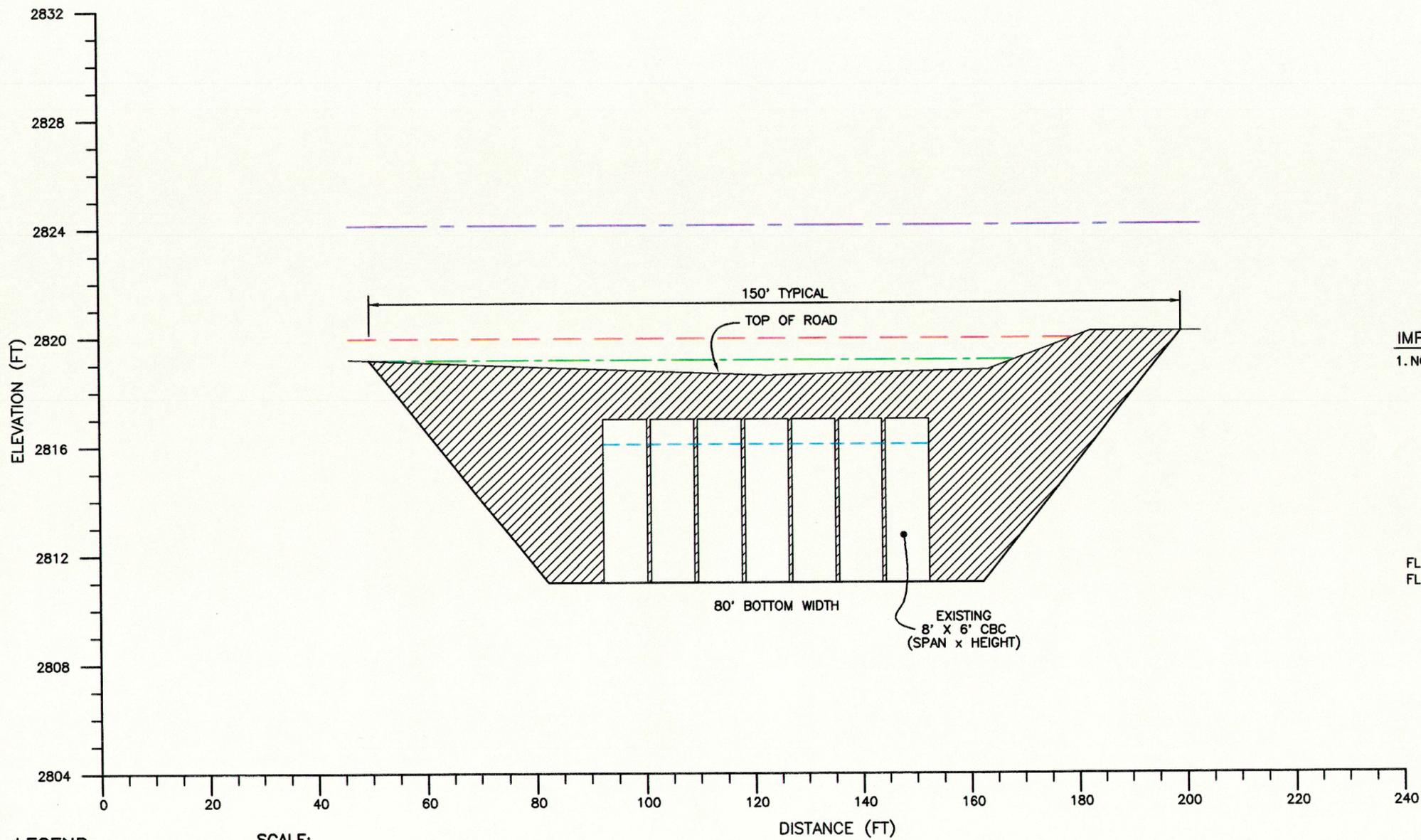
DROP STRUCTURE D/S FROM MIDLAND DRIVE TO MIDLAND DRIVE
 STATION 220+80 TO STATION 222+40

FIGURE 2-38

CITY OF MIDLAND, TEXAS
 JAL DRAW MASTER PLAN
 TYPICAL CROSS SECTION

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CROSS SECTION S
STATION 222+40



IMPROVEMENTS RECOMMENDED
1. NONE

FL ELEVATION AT 221+95 = 2810.60
FL ELEVATION AT 222+85 = 2811.00

LEGEND	
INVERT	—————
10-YEAR	- - - - -
50-YEAR	- · - · -
100-YEAR	- · - · -
500-YEAR	- · - · -

SCALE:
V: 1" = 4'
H: 1" = 20'

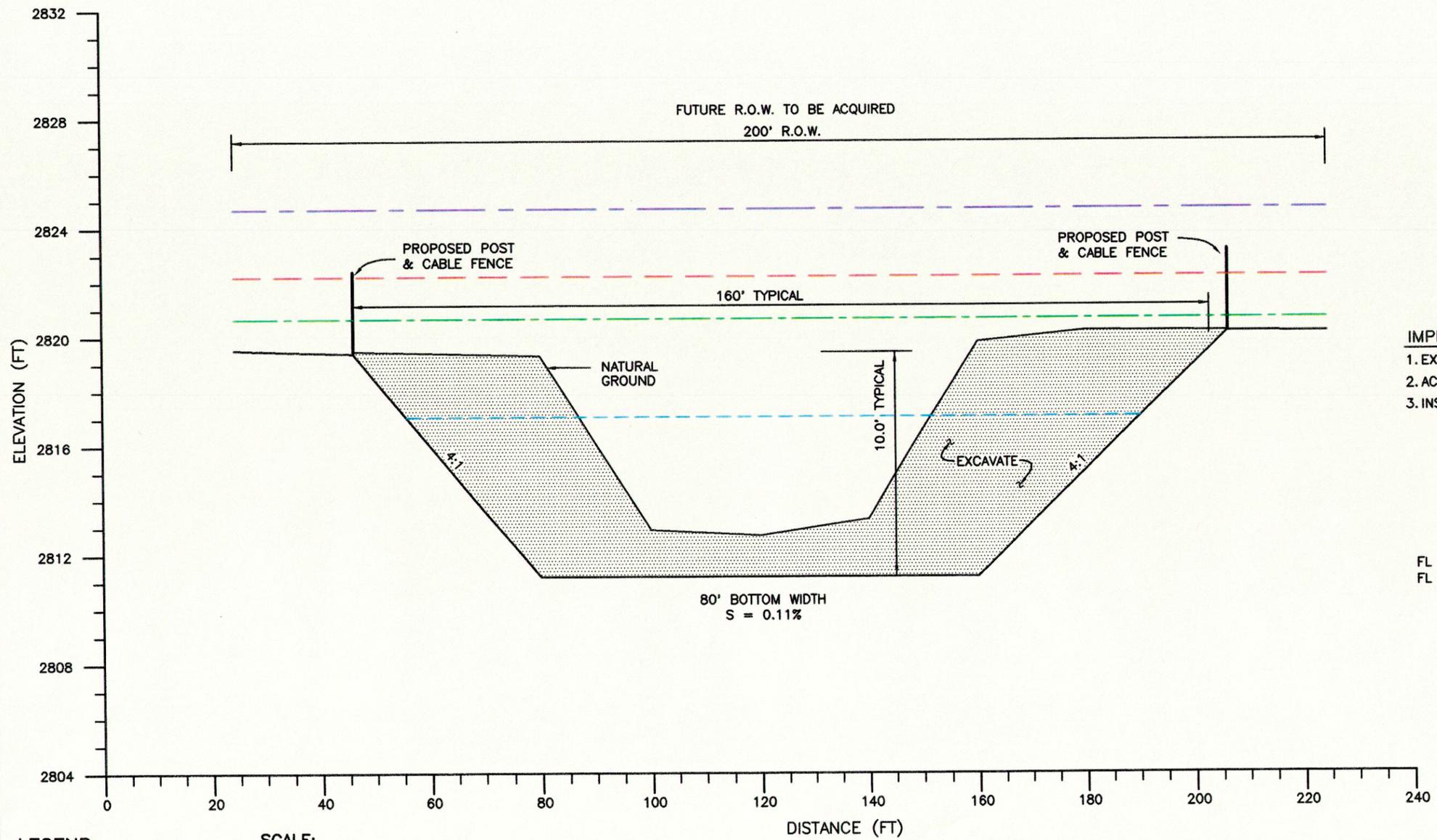
MIDLAND DRIVE CROSSING

FIGURE 2-39

CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
TYPICAL CROSS SECTION

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CROSS SECTION T
STATION 223+65



- IMPROVEMENTS RECOMMENDED**
1. EXCAVATE CHANNEL
 2. ACQUIRE ADDITIONAL RIGHT-OF-WAY
 3. INSTALL POST & CABLE FENCE

FL ELEVATION AT 222+40 = 2810.80
FL ELEVATION AT 232+65 = 2812.20

LEGEND		SCALE:	
INVERT	—————	V: 1" = 4'	
10-YEAR	- - - - -	H: 1" = 20'	
50-YEAR	- - - - -		
100-YEAR	- - - - -		
500-YEAR	- - - - -		

MIDLAND DRIVE TO PROPOSED ACCESS ROAD
STATION 222+40 TO STATION 232+65

FIGURE 2-40

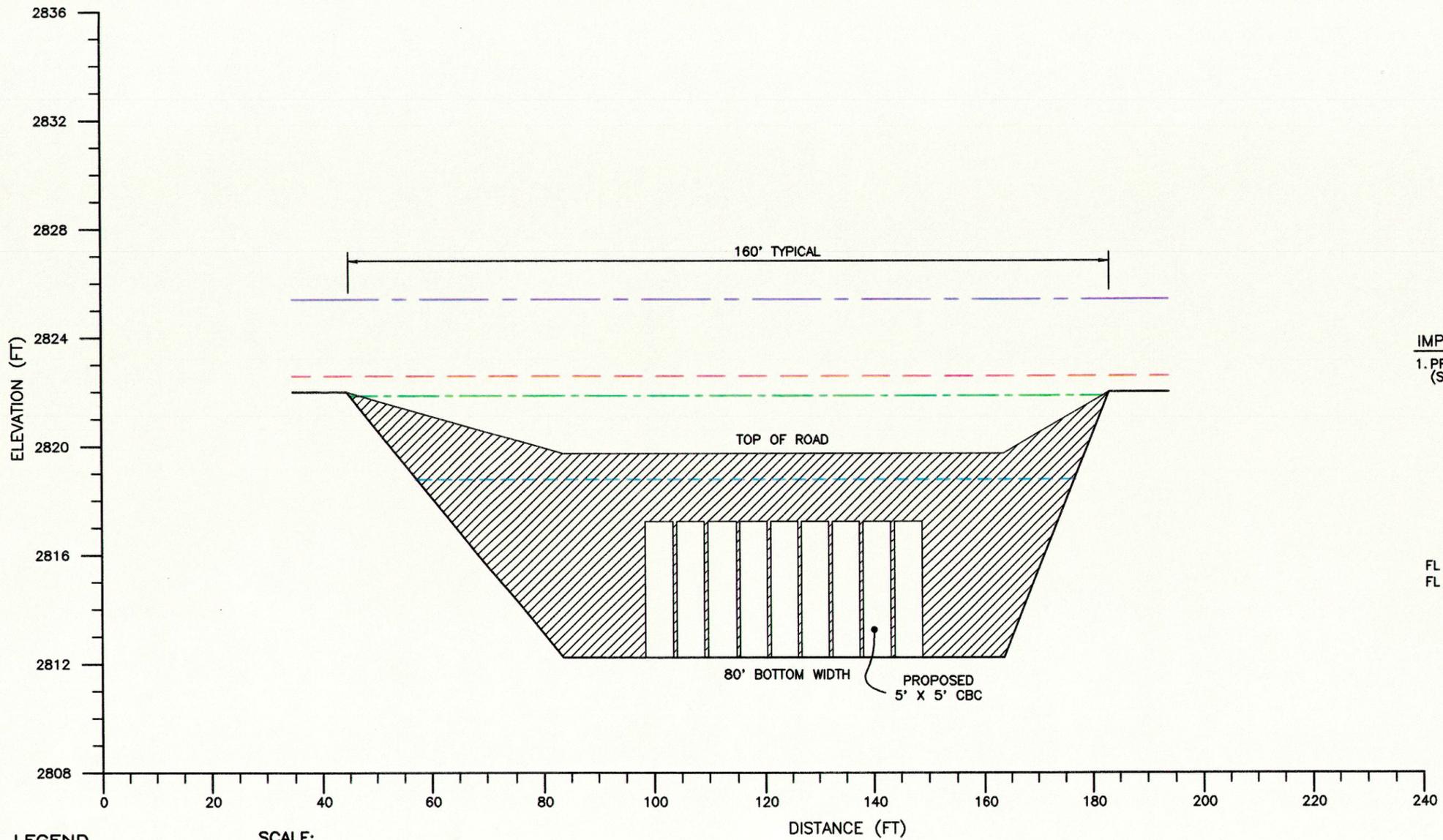
CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
TYPICAL CROSS SECTION

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2-70

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CROSS SECTION U
STATION 232+65



IMPROVEMENTS RECOMMENDED
1. PROPOSED 9 - 5' X 5' CBC
(SPAN X HEIGHT)

FL ELEVATION AT 232+35 = 2812.17
FL ELEVATION AT 232+95 = 2812.24

LEGEND

INVERT	—————
10-YEAR	-----
50-YEAR	-----
100-YEAR	-----
500-YEAR	-----

SCALE:
V: 1" = 4'
H: 1" = 20'

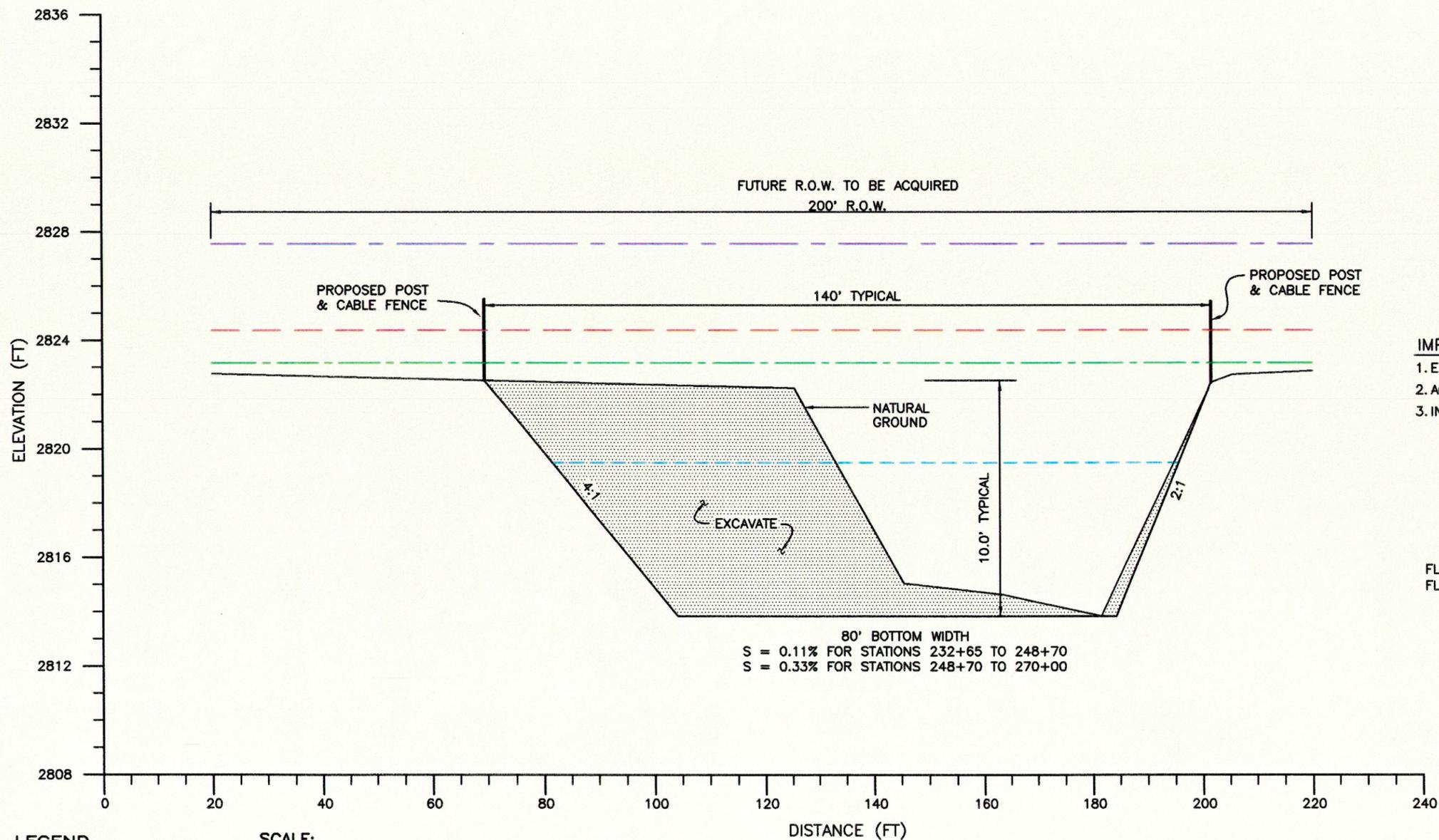
PROPOSED ACCESS ROAD CROSSING

FIGURE 2-41

CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
TYPICAL CROSS SECTION

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CROSS SECTION V
STATION 248+70



IMPROVEMENTS RECOMMENDED
1. EXCAVATE CHANNEL
2. ACQUIRE ADDITIONAL RIGHT-OF-WAY
3. INSTALL POST & CABLE FENCE

FL ELEVATION AT 232+65 = 2812.20
FL ELEVATION AT 270+00 = 2820.95

LEGEND	
INVERT	—————
10-YEAR	-----
50-YEAR	-----
100-YEAR	-----
500-YEAR	-----

SCALE:
V: 1" = 4'
H: 1" = 20'

PROPOSED ACCESS ROAD TO LOOP 250
STATION 232+65 TO STATION 270+00

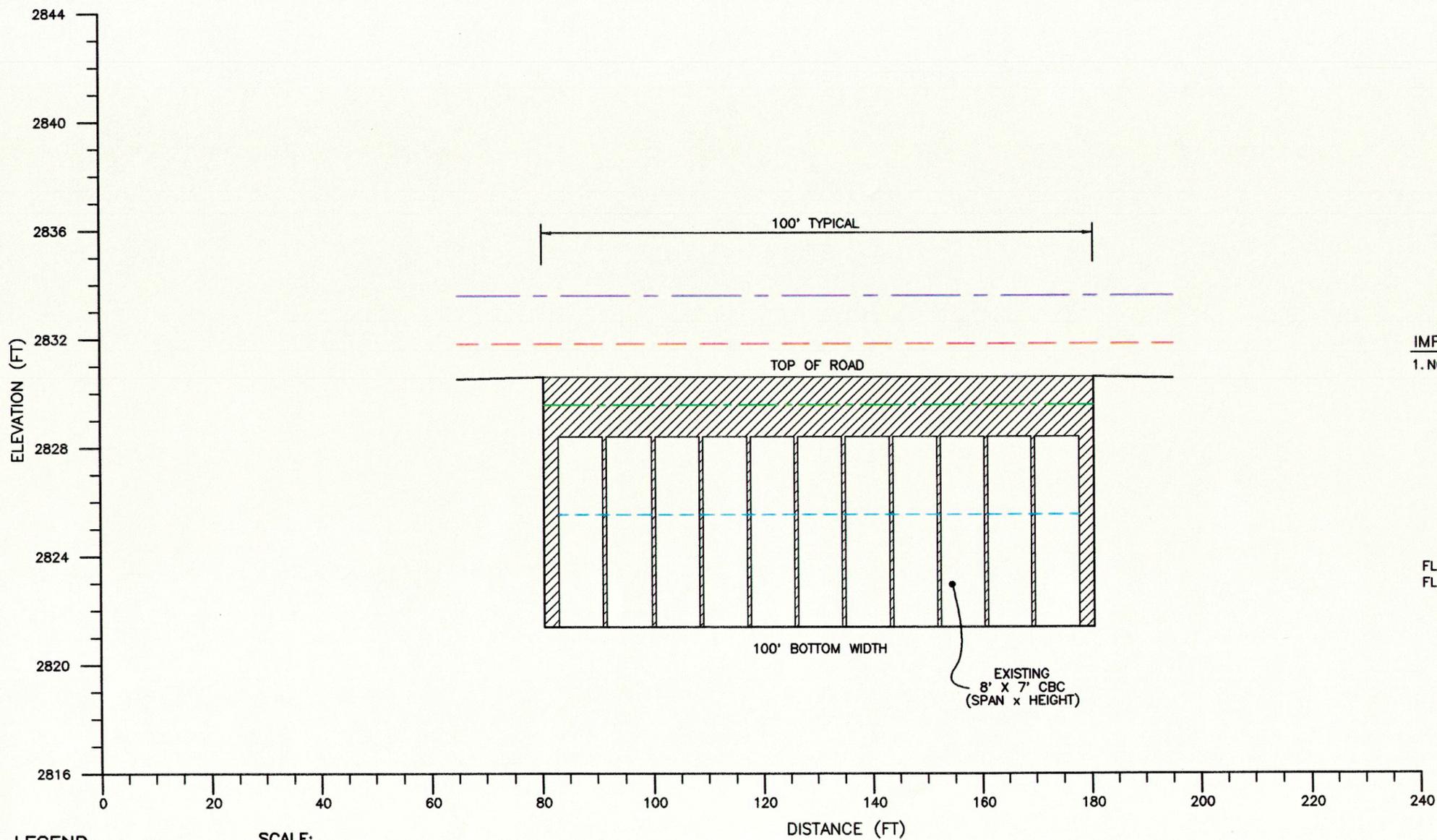
FIGURE 2-42

CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
TYPICAL CROSS SECTION

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2-72

CROSS SECTION W
STATION 270+00



IMPROVEMENTS RECOMMENDED
1. NONE

FL ELEVATION AT 267+35 = 2820.50
FL ELEVATION AT 272+65 = 2821.40

LEGEND

INVERT ————

10-YEAR - - - - -

50-YEAR - - - - -

100-YEAR - - - - -

500-YEAR - - - - -

SCALE:
V: 1" = 4'
H: 1" = 20'

LOOP 250 CROSSING

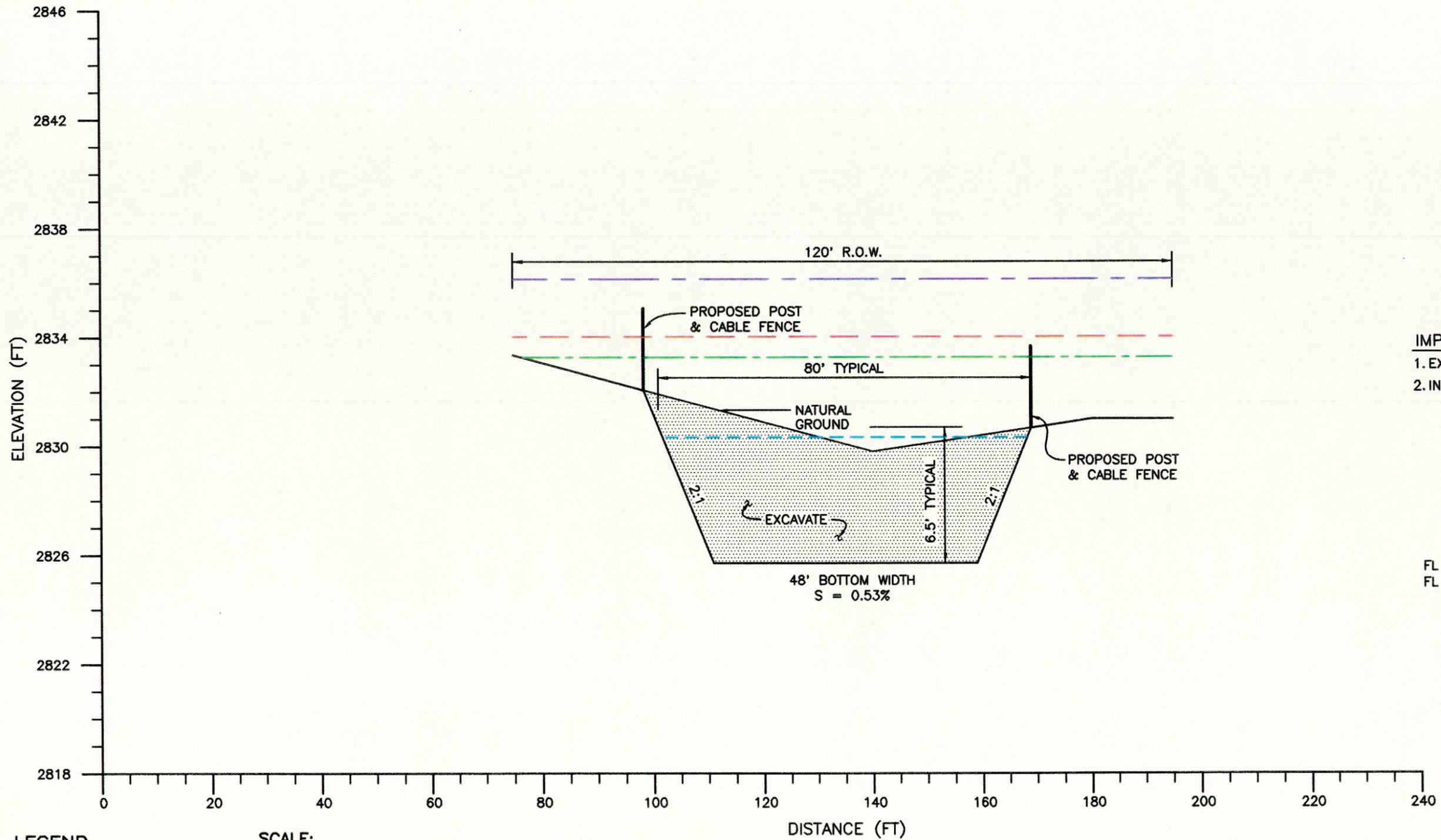
FIGURE 2-43

CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
TYPICAL CROSS SECTION

PSC Parkhill, Smith & Cooper, Inc.
Engineers · Architects · Planners

2-73

CROSS SECTION X
STATION 280+75



- IMPROVEMENTS RECOMMENDED**
1. EXCAVATE CHANNEL
 2. INSTALL POST & CABLE FENCE

FL ELEVATION AT 270+00 = 2820.95
FL ELEVATION AT 281+13 = 2825.75

LEGEND

INVERT	—————
10-YEAR	- - - - -
50-YEAR	- · - · -
100-YEAR	- - - - -
500-YEAR	- · - · -

SCALE:

V: 1" = 4'
H: 1" = 20'

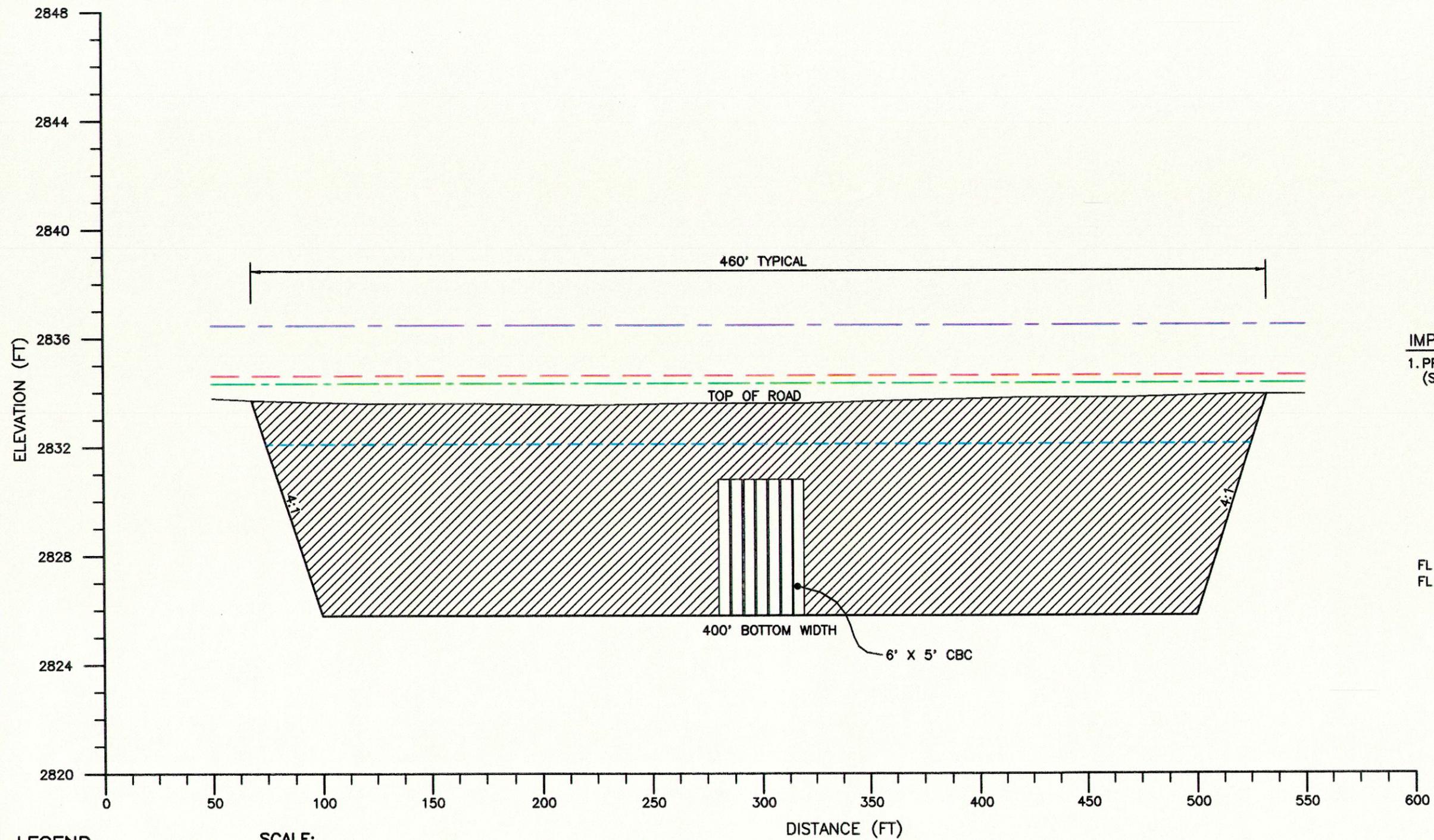
LOOP 250 TO HOLIDAY HILL ROAD
STATION 270+00 TO STATION 281+13

FIGURE 2-44

CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
TYPICAL CROSS SECTION

PSC Parkhill, Smith & Cooper, Inc.
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CROSS SECTION Y
STATION 281+13



IMPROVEMENTS RECOMMENDED
1. PROPOSED 7 - 6' X 5' CBC
(SPAN X HEIGHT)

FL ELEVATION AT 280+75 = 2825.70
FL ELEVATION AT 281+50 = 2825.80

LEGEND

INVERT	—————
10-YEAR	- - - - -
50-YEAR	- - - - -
100-YEAR	- - - - -
500-YEAR	- - - - -

SCALE:
V: 1" = 4'
H: 1" = 50'

HOLIDAY HILL ROAD CROSSING

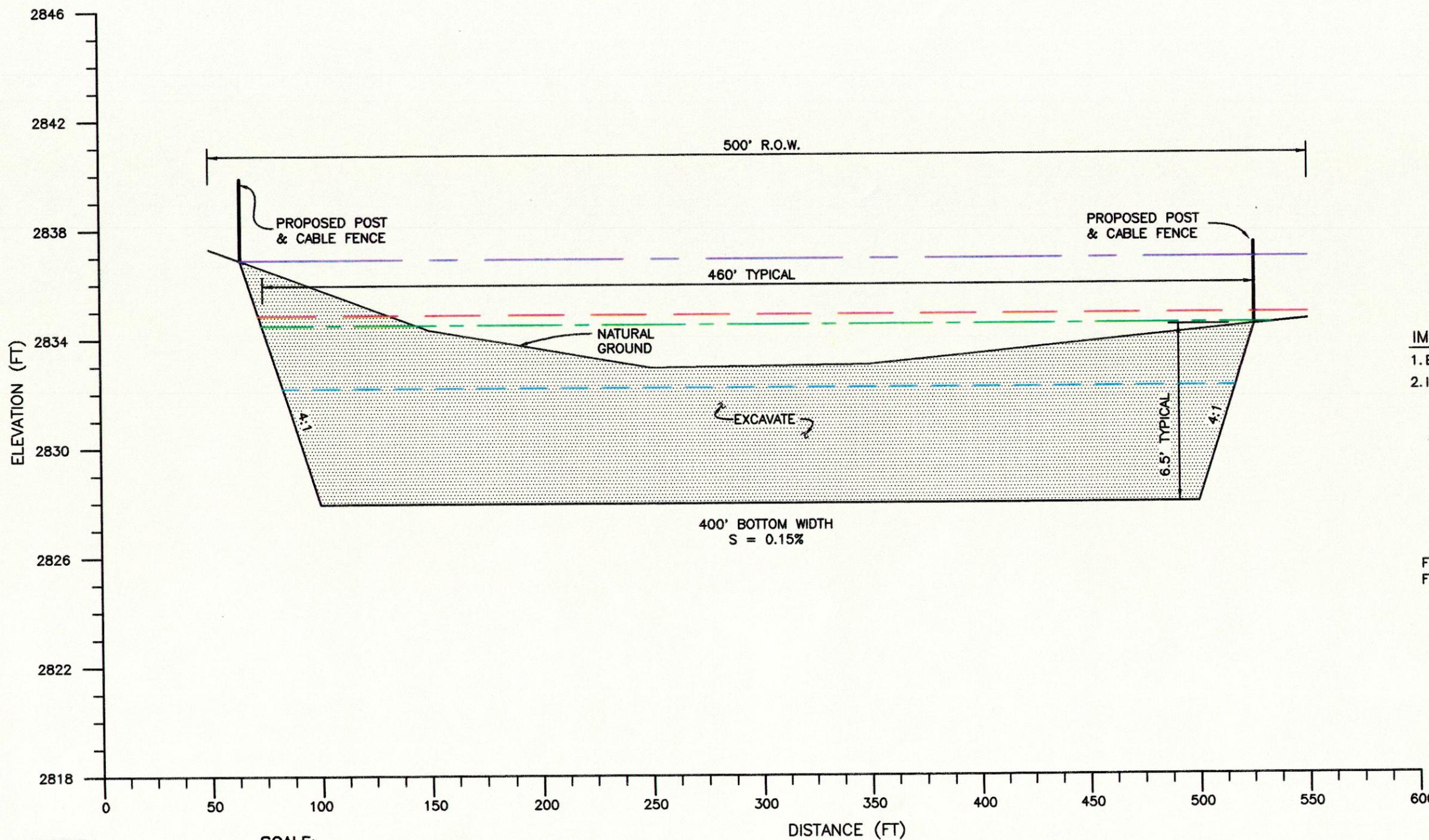
FIGURE 2-45

CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
TYPICAL CROSS SECTION

PSC Parkhill, Smith & Cooper, Inc.
Engineers · Architects · Planners

28113 07/31/05 4:45 JLC

CROSS SECTION Z
STATION 295+80



IMPROVEMENTS RECOMMENDED

1. EXCAVATE CHANNEL
2. INSTALL POST & CABLE FENCE

FL ELEVATION AT 281+13 = 2825.75
FL ELEVATION AT 309+40 = 2830.00

LEGEND

INVERT	—
10-YEAR	---
50-YEAR	---
100-YEAR	---
500-YEAR	---

SCALE:

V: 1" = 4'
H: 1" = 50'

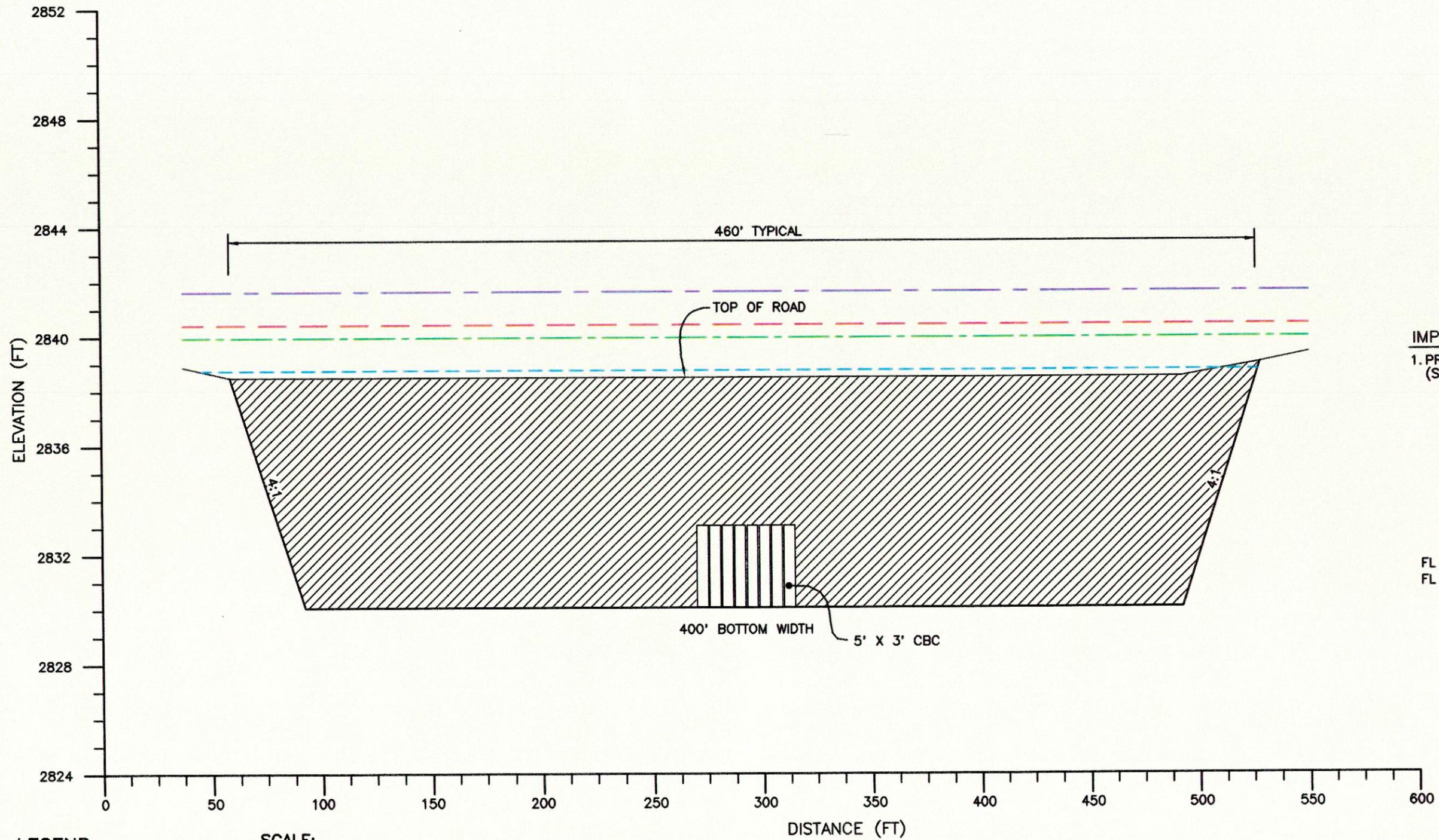
HOLIDAY HILL ROAD TO CROWLEY BOULEVARD
STATION 281+13 TO STATION 309+40

FIGURE 2-46

CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
TYPICAL CROSS SECTION

PSC Parkhill, Smith & Cooper, Inc.
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CROSS SECTION AA
STATION 309+40



IMPROVEMENTS RECOMMENDED
1. PROPOSED 8 - 5' X 3' CBC
(SPAN X HEIGHT)

FL ELEVATION AT 308+80 = 2829.89
FL ELEVATION AT 310+00 = 2830.07

LEGEND

INVERT	—————
10-YEAR	- - - - -
50-YEAR	- - - - -
100-YEAR	- - - - -
500-YEAR	- - - - -

SCALE:
V: 1" = 4'
H: 1" = 50'

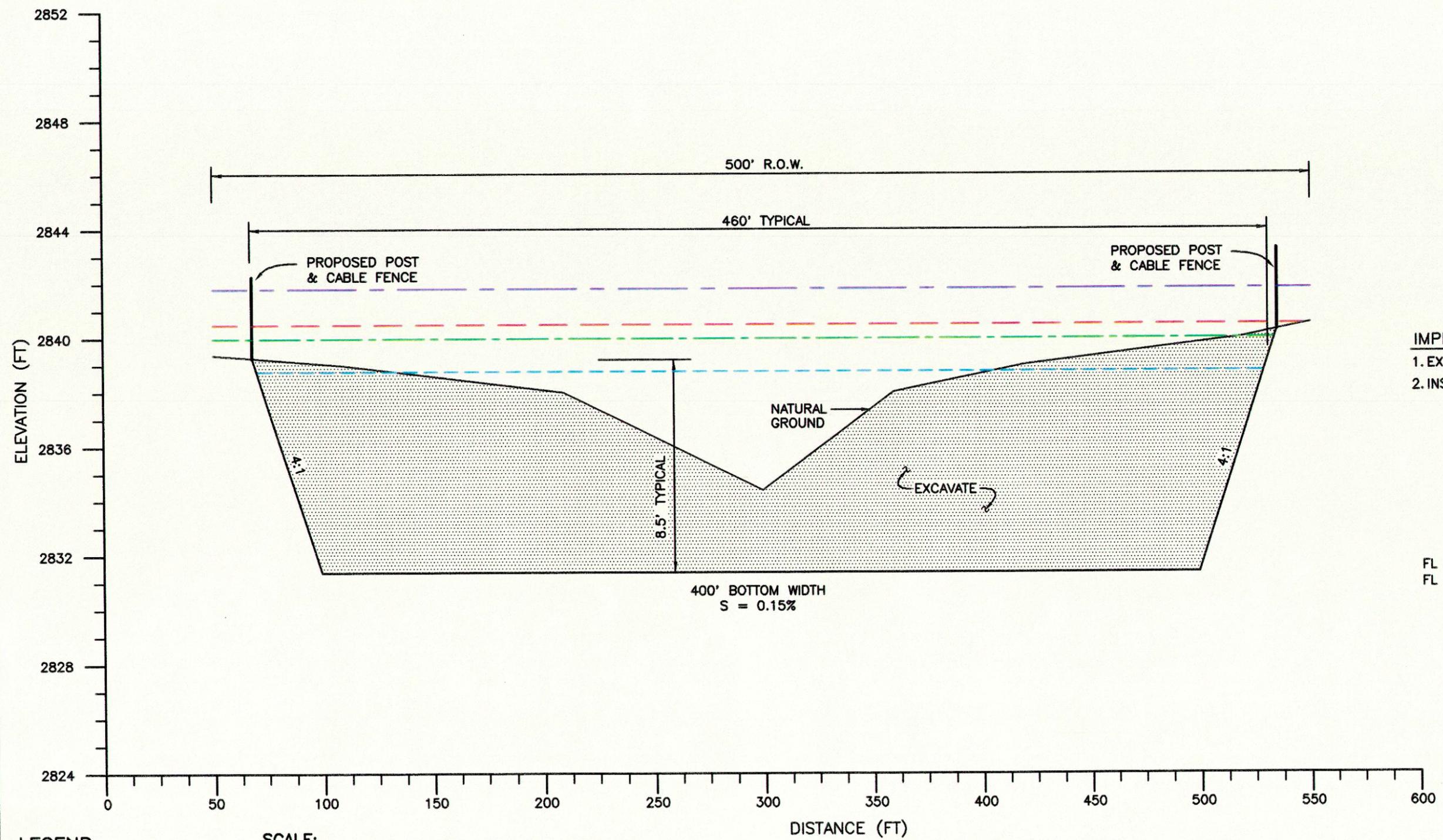
CROWLEY BOULEVARD CROSSING

FIGURE 2-47

CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
TYPICAL CROSS SECTION

PSC Parkhill, Smith & Cooper, Inc.
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CROSS SECTION AB
STATION 318+80



- IMPROVEMENTS RECOMMENDED**
1. EXCAVATE CHANNEL
 2. INSTALL POST & CABLE FENCE

FL ELEVATION AT 309+40 = 2830.00
FL ELEVATION AT 339+15 = 2834.45

LEGEND		SCALE:	
INVERT	—————	V: 1" = 4'	
10-YEAR	-----	H: 1" = 50'	
50-YEAR	-----		
100-YEAR	-----		
500-YEAR	-----		

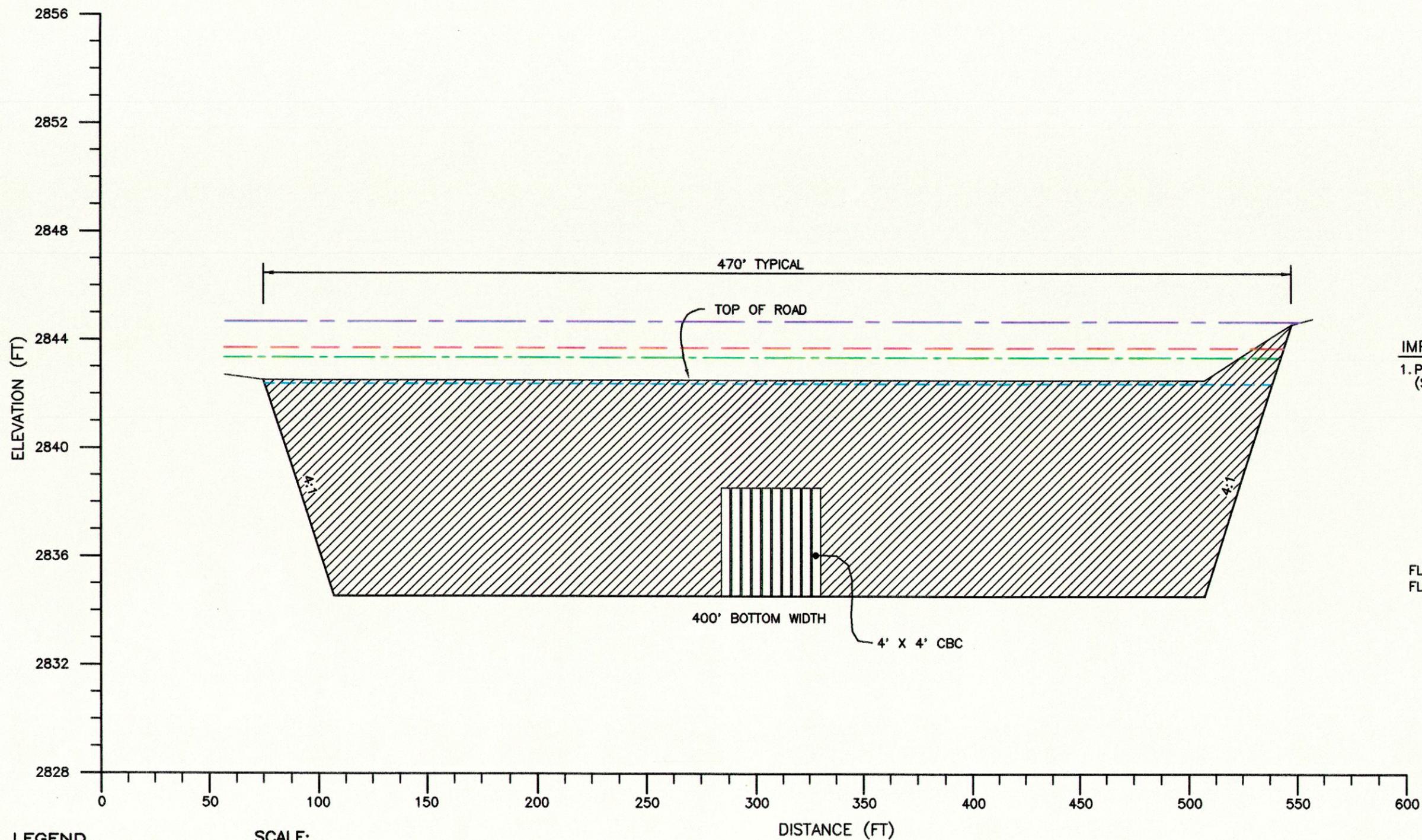
CROWLEY BOULEVARD TO 1.0 MILES WEST OF HOLIDAY HILL ROAD
STATION 309+40 TO STATION 339+15

FIGURE 2-48

CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
TYPICAL CROSS SECTION

PSC Parkhill, Smith & Cooper, Inc.
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CROSS SECTION AC
STATION 339+15



IMPROVEMENTS RECOMMENDED

1. PROPOSED 10 - 4' X 4' CBC (SPAN X HEIGHT)

FL ELEVATION AT 338+50 = 2834.35
FL ELEVATION AT 339+80 = 2834.54

LEGEND

INVERT	—————
10-YEAR	- - - - -
50-YEAR	- - - - -
100-YEAR	- - - - -
500-YEAR	- - - - -

SCALE:
V: 1" = 4'
H: 1" = 50'

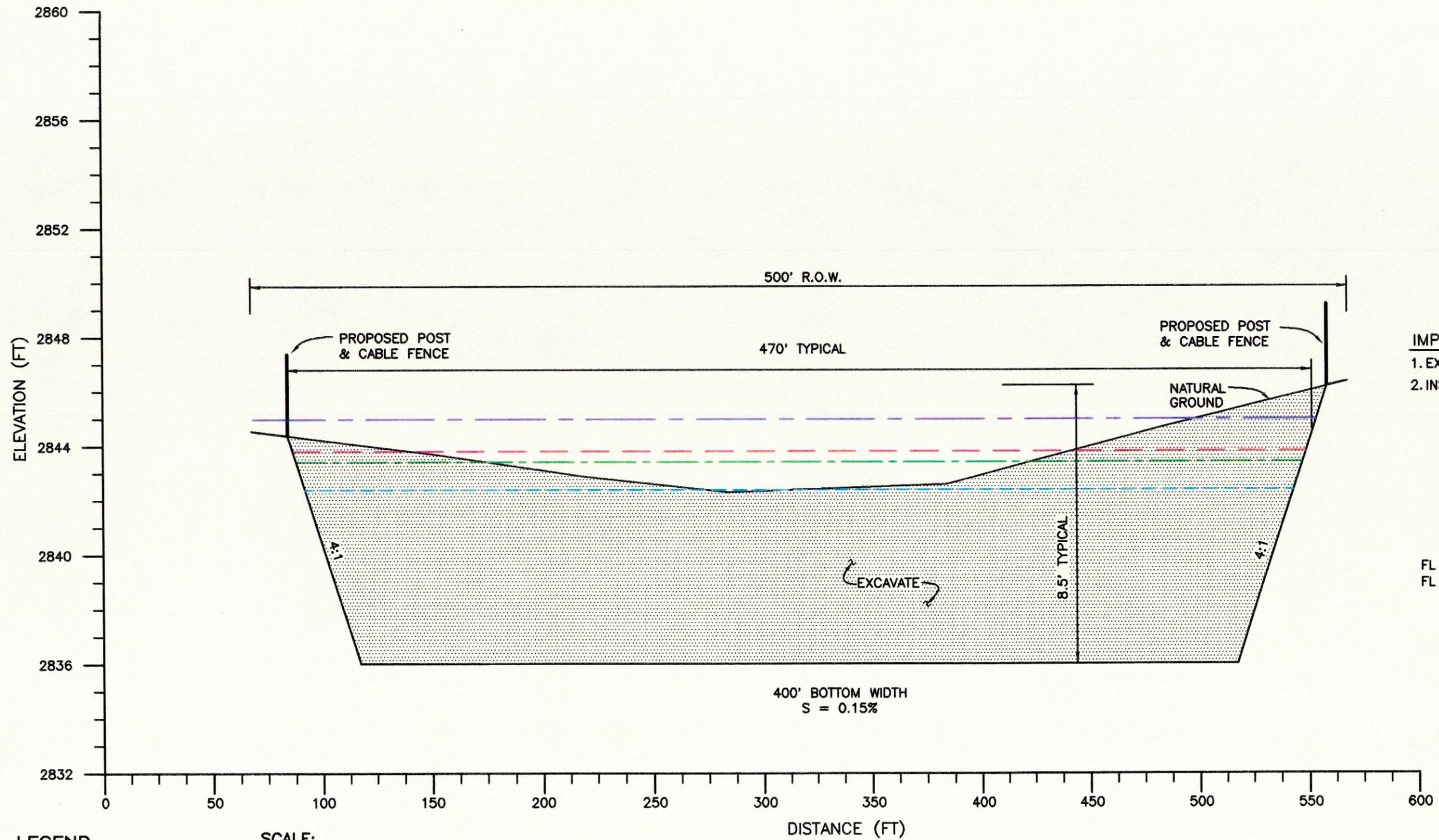
CROSSING 1.0 MILES WEST OF HOLIDAY HILL ROAD

FIGURE 2-49

CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
TYPICAL CROSS SECTION

PSC Parkhill, Smith & Cooper, Inc.
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CROSS SECTION AD
STATION 349+65



IMPROVEMENTS RECOMMENDED

1. EXCAVATE CHANNEL
2. INSTALL POST & CABLE FENCE

FL ELEVATION AT 339+15 = 2834.45
FL ELEVATION AT 368+65 = 2838.85

LEGEND

INVERT	—————
10-YEAR	- - - - -
50-YEAR	- · - · -
100-YEAR	- · - · -
500-YEAR	- - - - -

SCALE:

V: 1" = 4'
H: 1" = 50'

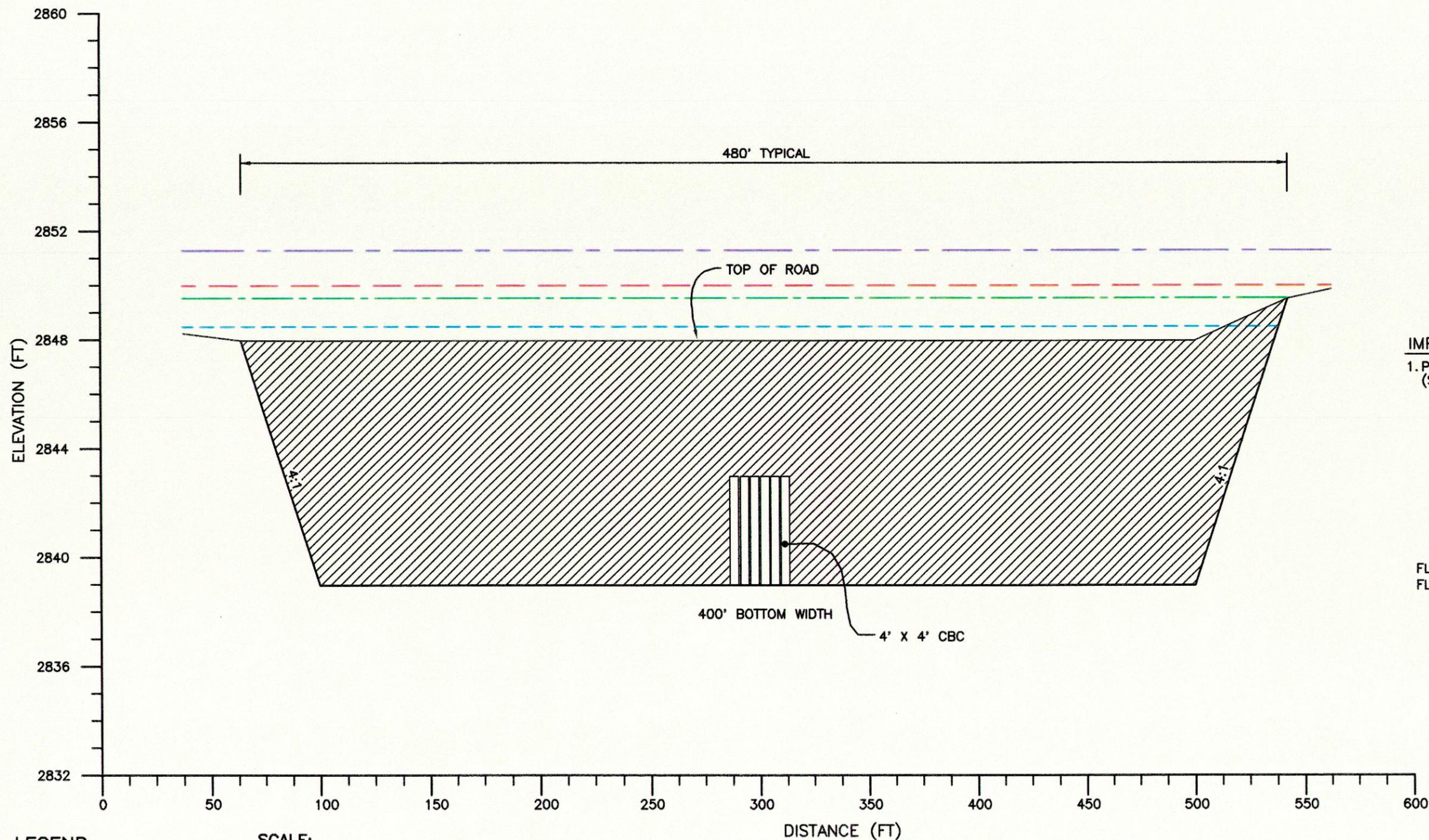
1.0 MILE TO 1.5 MILES WEST OF HOLIDAY HILL ROAD
STATION 319+15 TO STATION 368+65

FIGURE 2-50

CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
TYPICAL CROSS SECTION

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CROSS SECTION AE
STATION 368+65



IMPROVEMENTS RECOMMENDED

- 1. PROPOSED 6 - 4' X 4' CBC (SPAN X HEIGHT)

FL ELEVATION AT 368+00 = 2838.77
FL ELEVATION AT 369+30 = 2838.97

LEGEND

INVERT	—————
10-YEAR	- - - - -
50-YEAR	- - - - -
100-YEAR	- - - - -
500-YEAR	- - - - -

SCALE:
V: 1" = 4'
H: 1" = 50'

1.5 MILE CROSSING WEST OF HOLIDAY HILL ROAD

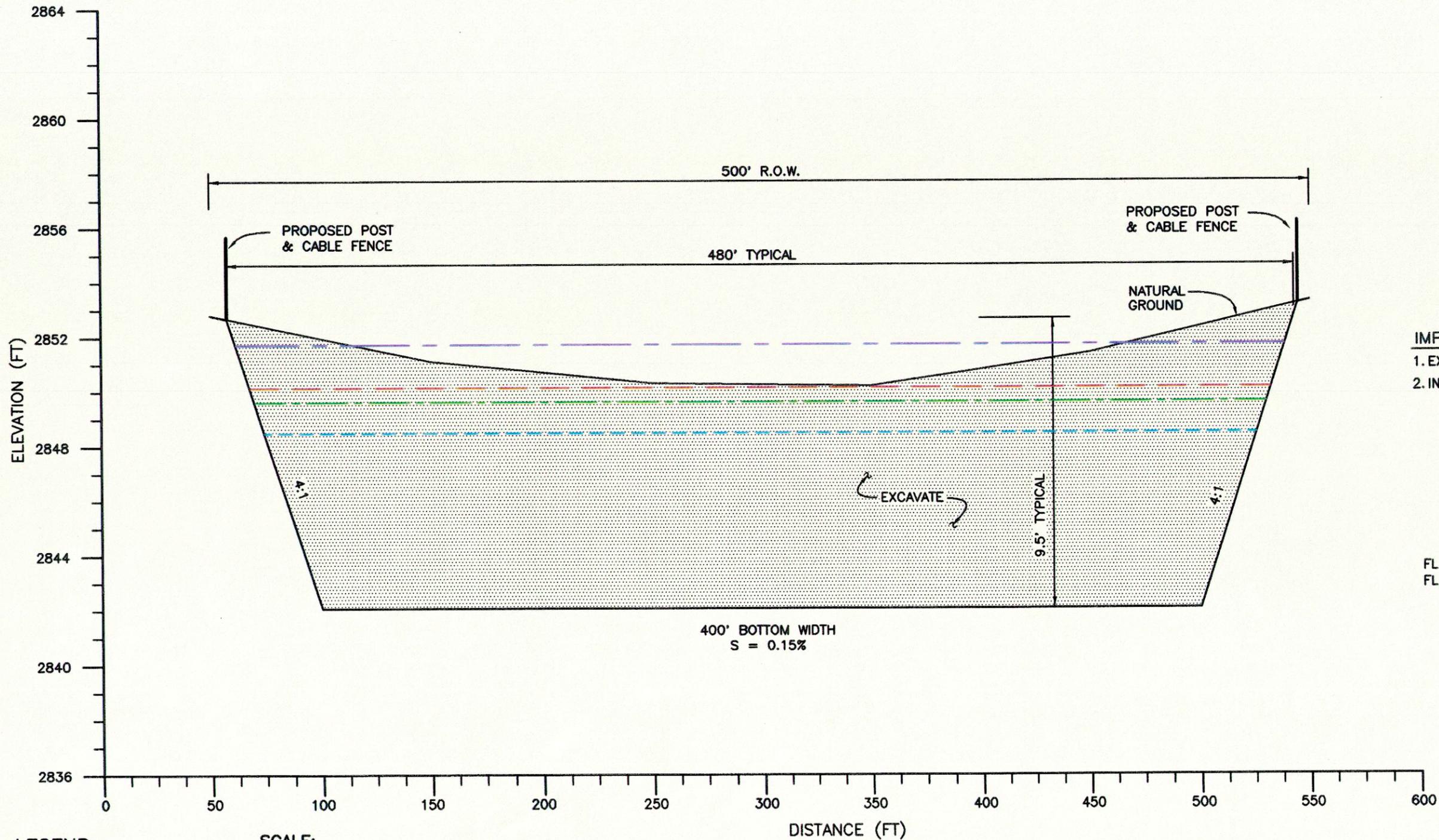
FIGURE 2-51

CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
TYPICAL CROSS SECTION

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36855 07/2/04 4:50 JLC

CROSS SECTION AF
STATION 390+00



- IMPROVEMENTS RECOMMENDED**
1. EXCAVATE CHANNEL
 2. INSTALL POST & CABLE FENCE

FL ELEVATION AT 368+65 = 2838.85
FL ELEVATION AT 392+50 = 2842.45

LEGEND

INVERT	—————
10-YEAR	- - - - -
50-YEAR	- · - · -
100-YEAR	- · - · -
500-YEAR	- · - · -

SCALE:

V: 1" = 4'
H: 1" = 50'

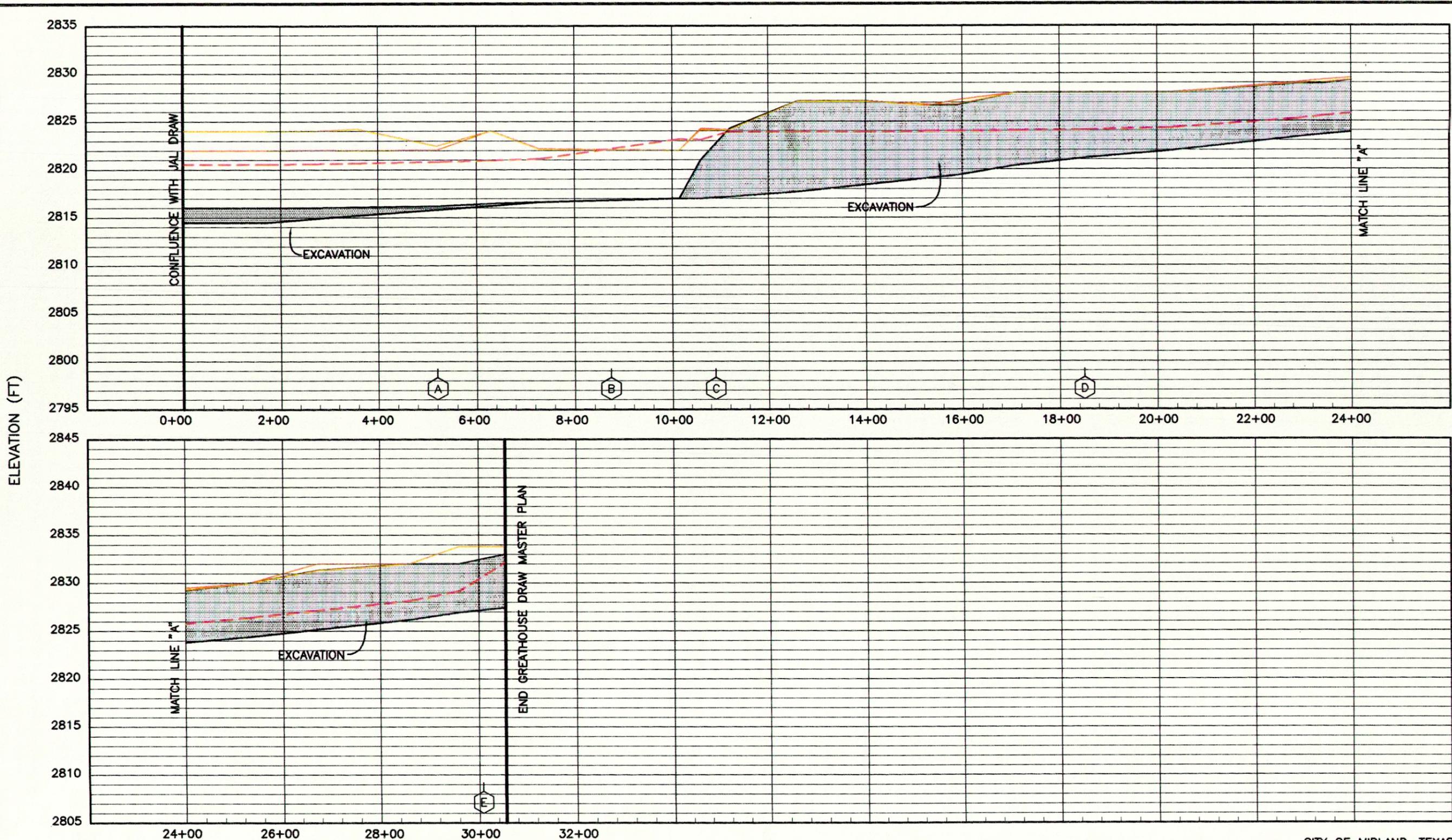
1.5 MILES TO 2.0 MILES WEST OF HOLIDAY HILL ROAD
STATION 368+65 TO STATION 392+50

FIGURE 2-52

CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
TYPICAL CROSS SECTION

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39/00 07/31/05 4:50 JLC



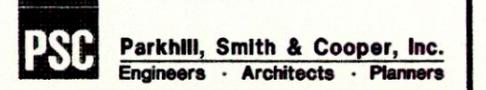
LEGEND

INVERT	—	CROSS SECTION LOCATION	⬡
LEFT BANK	—	100-YEAR	- - -
RIGHT BANK	—		

GREATHOUSE CHANNEL
STATION 0+00 TO STATION 30+55
 FIGURE 2-53

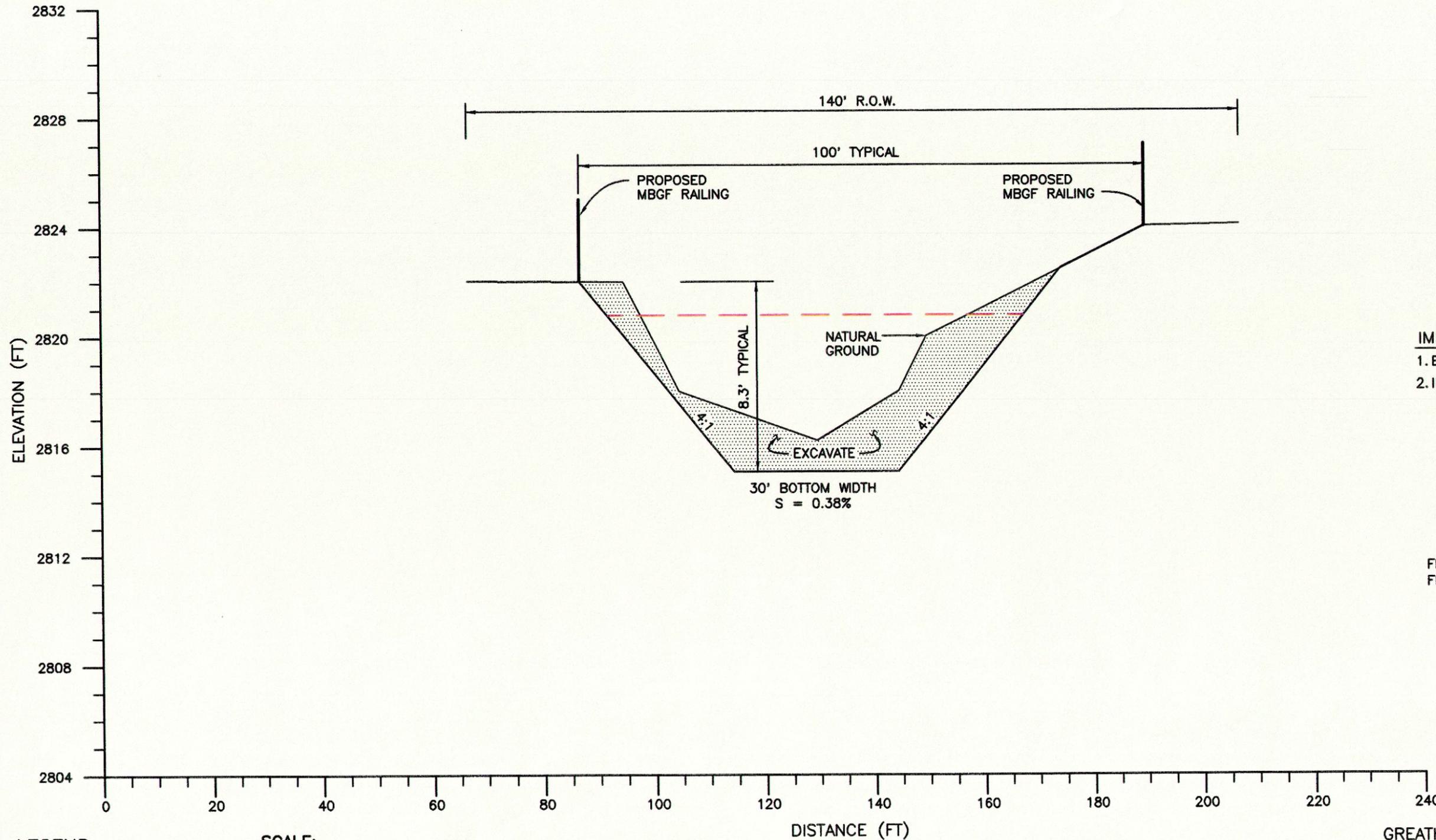
SCALE:
 V: 1" = 10'
 H: 1" = 200'

CITY OF MIDLAND, TEXAS
 GREATHOUSE CHANNEL MASTER PLAN
 PROFILE



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CROSS SECTION A
STATION 5+20



IMPROVEMENTS RECOMMENDED

1. EXCAVATE CHANNEL
2. INSTALL MBGF RAILING

FL ELEVATION AT 0+00 = 2812.50
FL ELEVATION AT 8+73 = 2816.80

LEGEND
 INVERT —————
 100-YEAR - - - - -

SCALE:
 V: 1" = 4'
 H: 1" = 20'

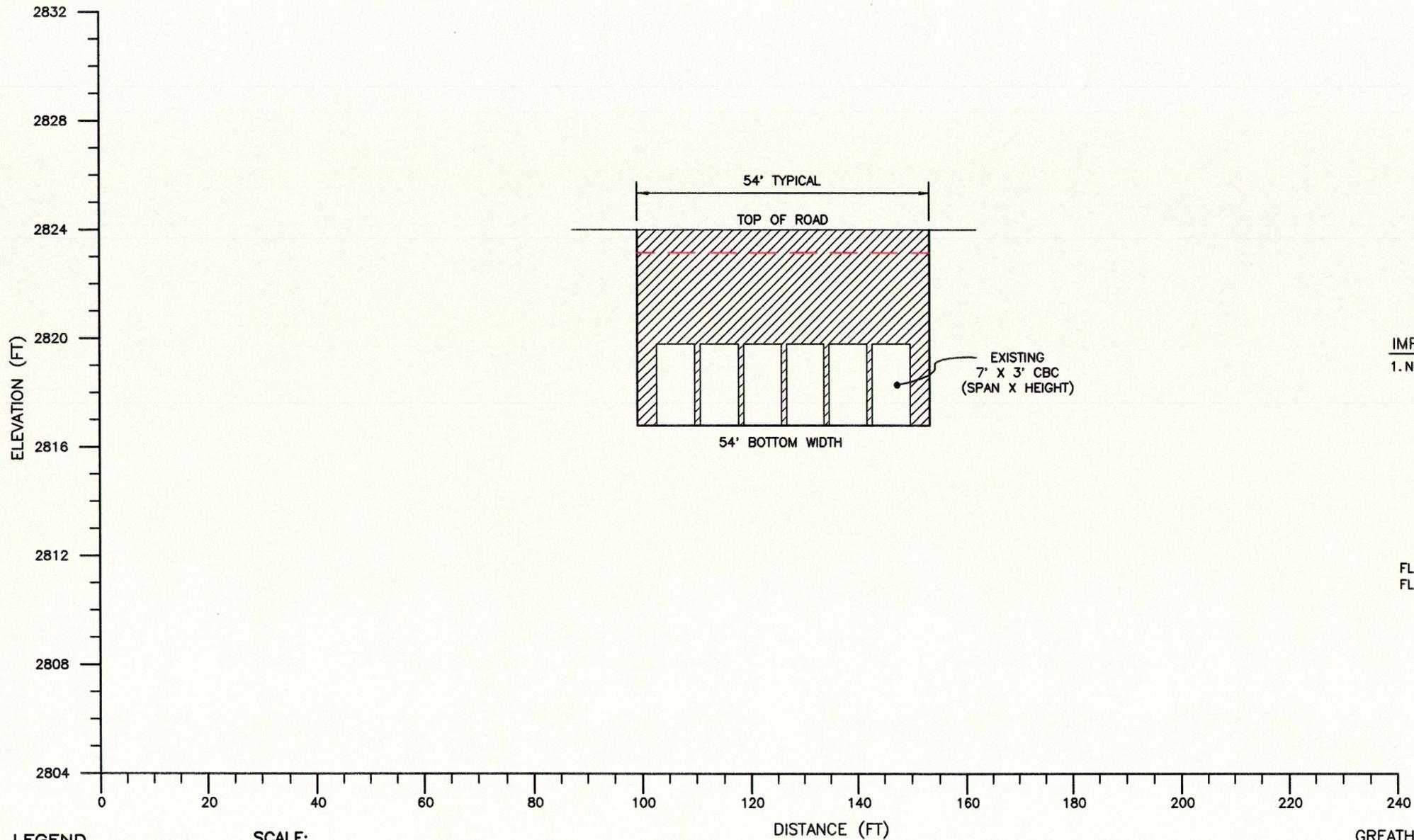
CONFLUENCE WITH JAL DRAW TO LOOP 250
STATION 0+00 TO STATION 8+73

FIGURE 2-54

CITY OF MIDLAND, TEXAS
GREATHOUSE CHANNEL MASTER PLAN
TYPICAL CROSS SECTION

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CROSS SECTION B
STATION 8+73



IMPROVEMENTS RECOMMENDED
1. NONE

FL ELEVATION AT 7+30 = 2816.60
FL ELEVATION AT 10+15 = 2816.99

LEGEND

INVERT ———
100-YEAR - - - - -

SCALE:

V: 1" = 4'
H: 1" = 20'

LOOP 250 CROSSING
STATION 7+30 TO STATION 10+15

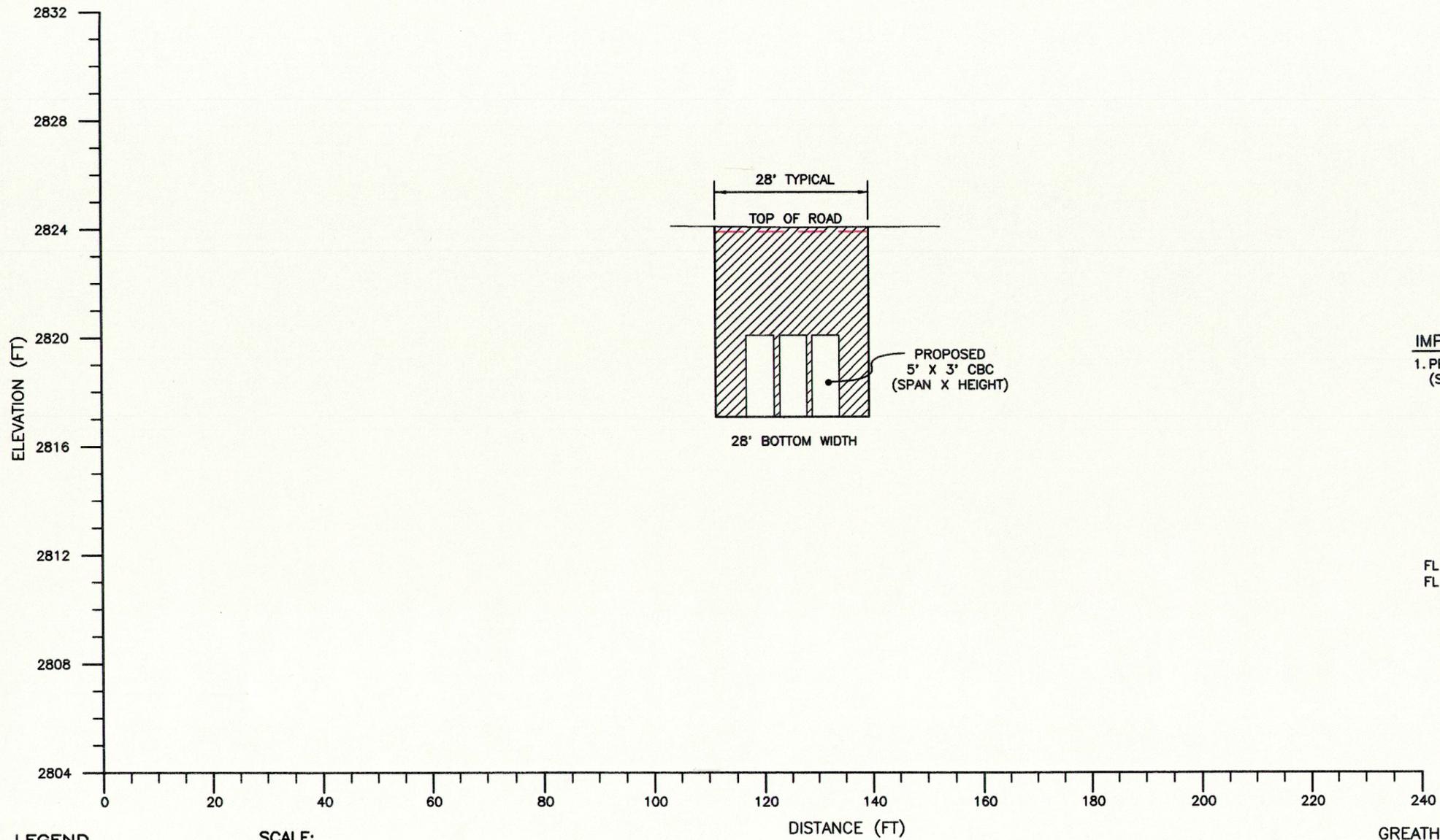
FIGURE 2-55

CITY OF MIDLAND, TEXAS
GREATHOUSE CHANNEL MASTER PLAN
TYPICAL CROSS SECTION

PSC Parkhill, Smith & Cooper, Inc.
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2-85

CROSS SECTION C
STATION 10+90



IMPROVEMENTS RECOMMENDED

1. PROPOSED 3 - 5' X 3' CBC (SPAN X HEIGHT)

FL ELEVATION AT 10+60 = 2816.99
FL ELEVATION AT 11+20 = 2817.15

LEGEND

INVERT ———
100-YEAR - - - - -

SCALE:

V: 1" = 4'
H: 1" = 20'

LOOP 250 NORTH FRONTAGE ROAD CROSSING
STATION 10+60 TO STATION 11+20

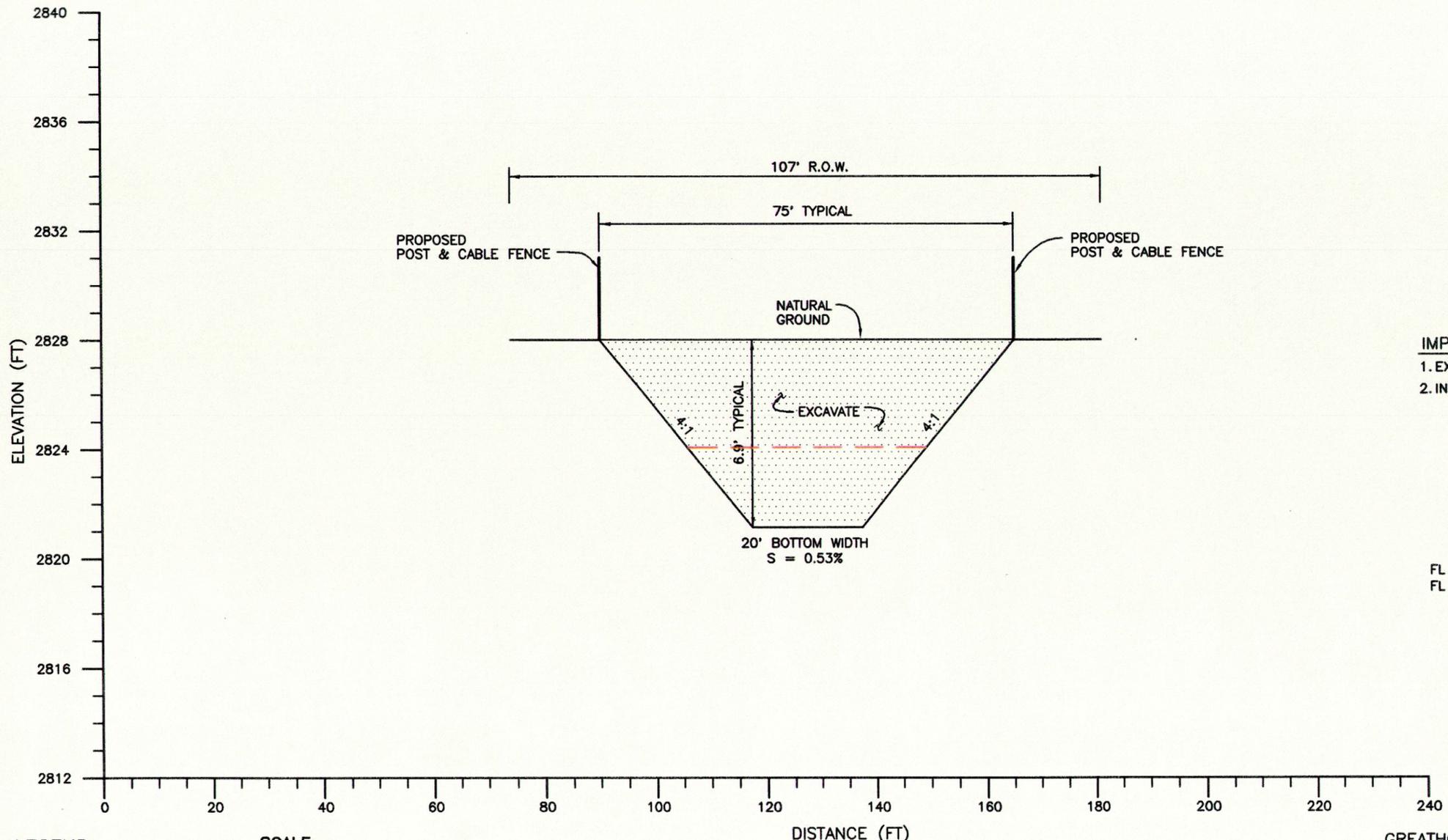
FIGURE 2-56

CITY OF MIDLAND, TEXAS
GREATHOUSE CHANNEL MASTER PLAN
TYPICAL CROSS SECTION



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CROSS SECTION D
STATION 18+50



- IMPROVEMENTS RECOMMENDED**
1. EXCAVATE CHANNEL
 2. INSTALL POST & CABLE FENCE

FL ELEVATION AT 10+90 = 2817.07
FL ELEVATION AT 30+08 = 2827.20

LEGEND

INVERT —————
100-YEAR - - - - -

SCALE:

V: 1" = 4'
H: 1" = 20'

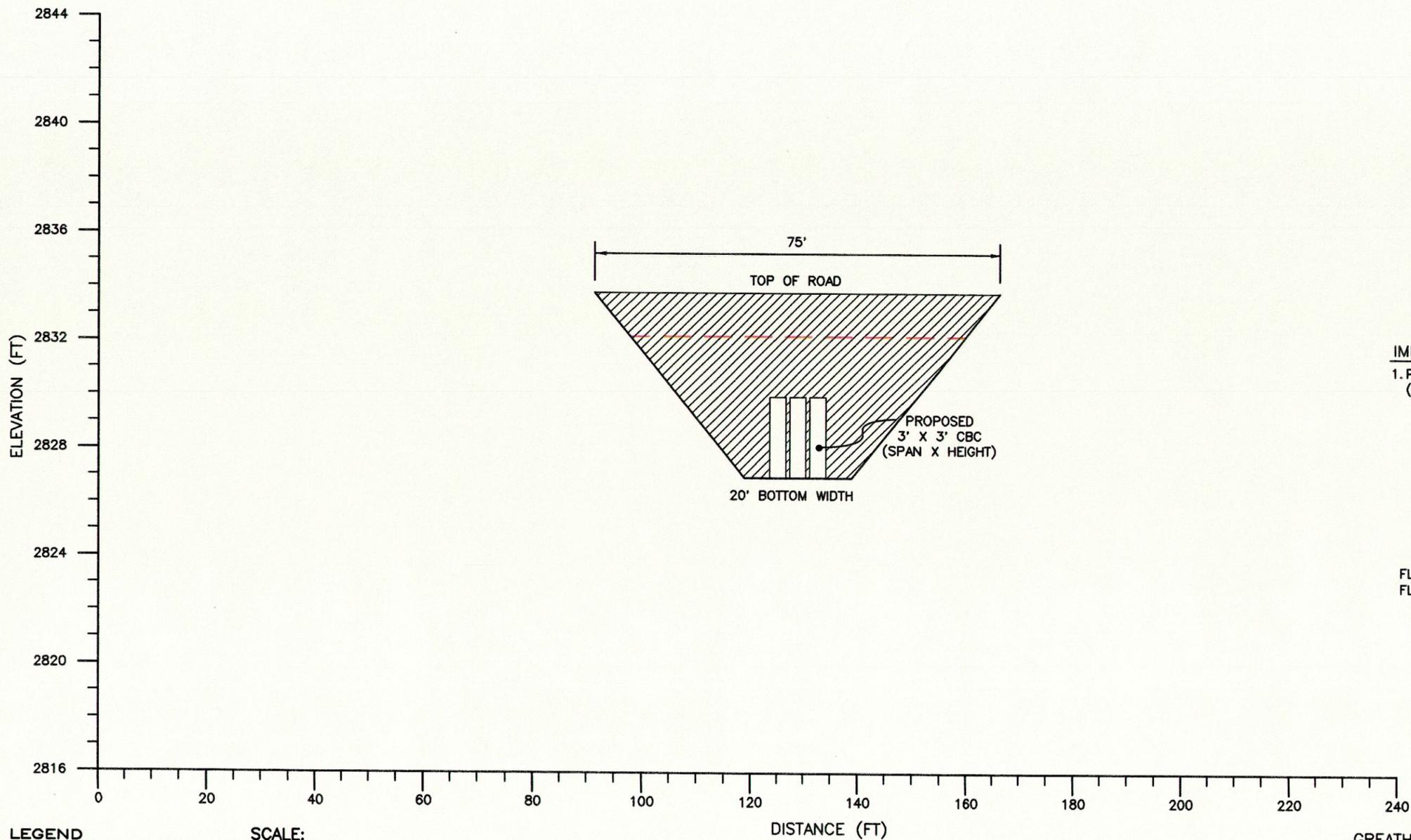
NORTH FRONTAGE ROAD TO BRIARWOOD AVENUE
STATION 10+90 TO STATION 30+08

FIGURE 2-57

CITY OF MIDLAND, TEXAS
GREATHOUSE CHANNEL MASTER PLAN
TYPICAL CROSS SECTION

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CROSS SECTION E
STATION 30+08



IMPROVEMENTS RECOMMENDED

1. PROPOSED 3 - 3' X 3' CBC (SPAN X HEIGHT)

FL ELEVATION AT 29+60 = 2826.94
FL ELEVATION AT 30+55 = 2827.45

LEGEND
INVERT ———
100-YEAR - - - -

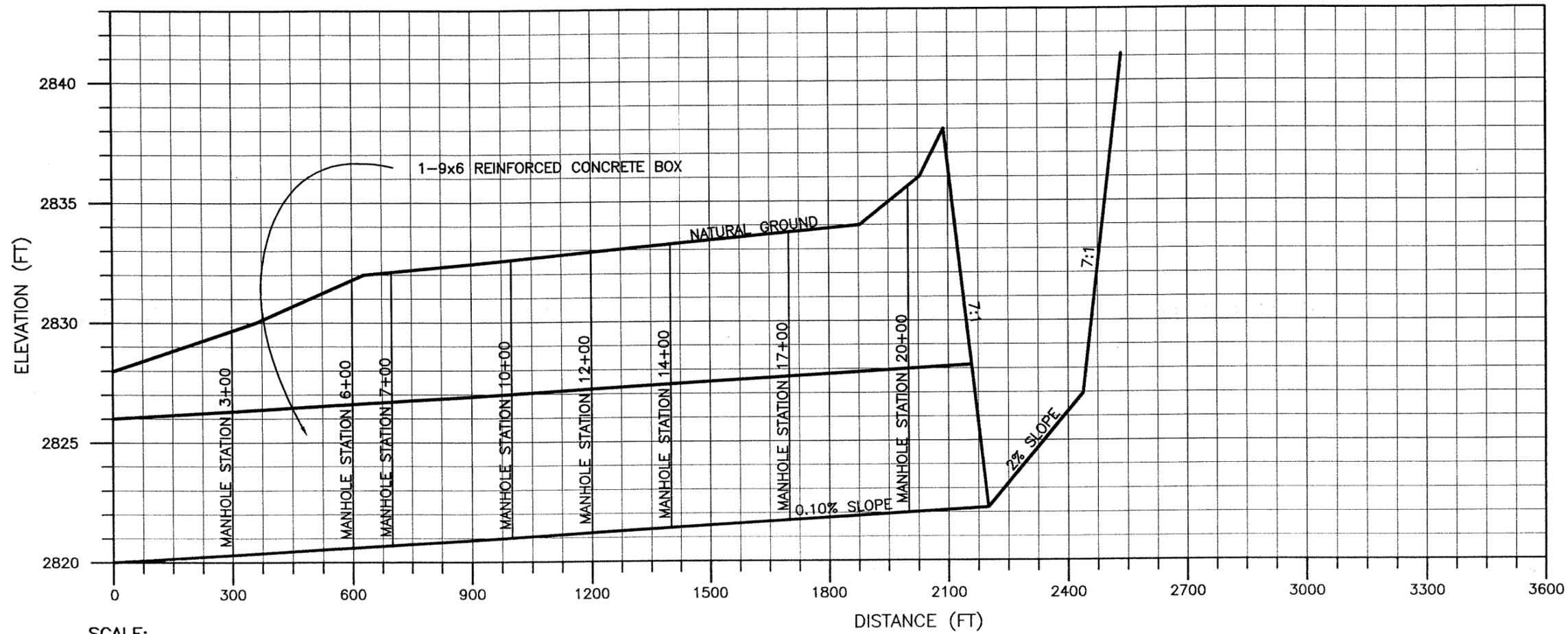
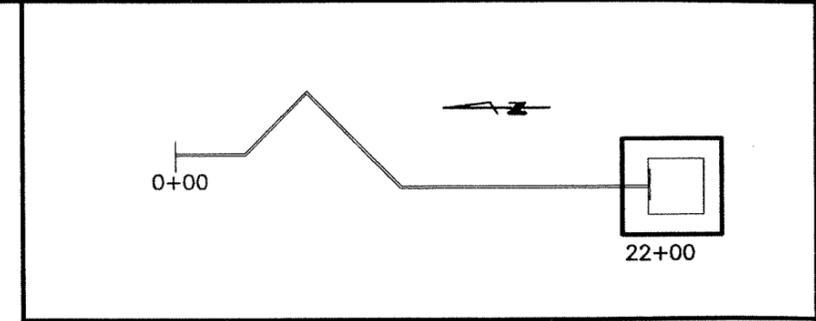
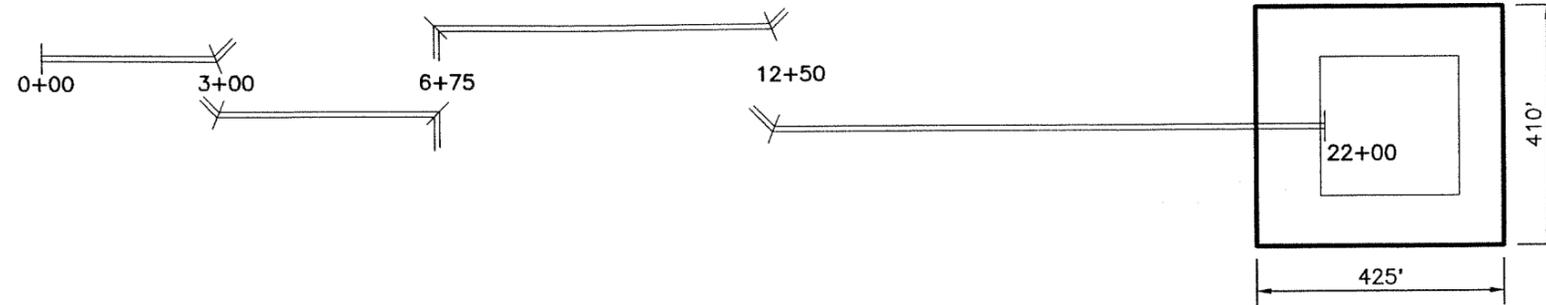
SCALE:
V: 1" = 4'
H: 1" = 20'

BRIARWOOD AVENUE CROSSING
STATION 29+60 TO STATION 30+55

FIGURE 2-58

CITY OF MIDLAND, TEXAS
GREATHOUSE CHANNEL MASTER PLAN
TYPICAL CROSS SECTION

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SCALE:
 V: 1" = 5'
 H: 1" = 300'

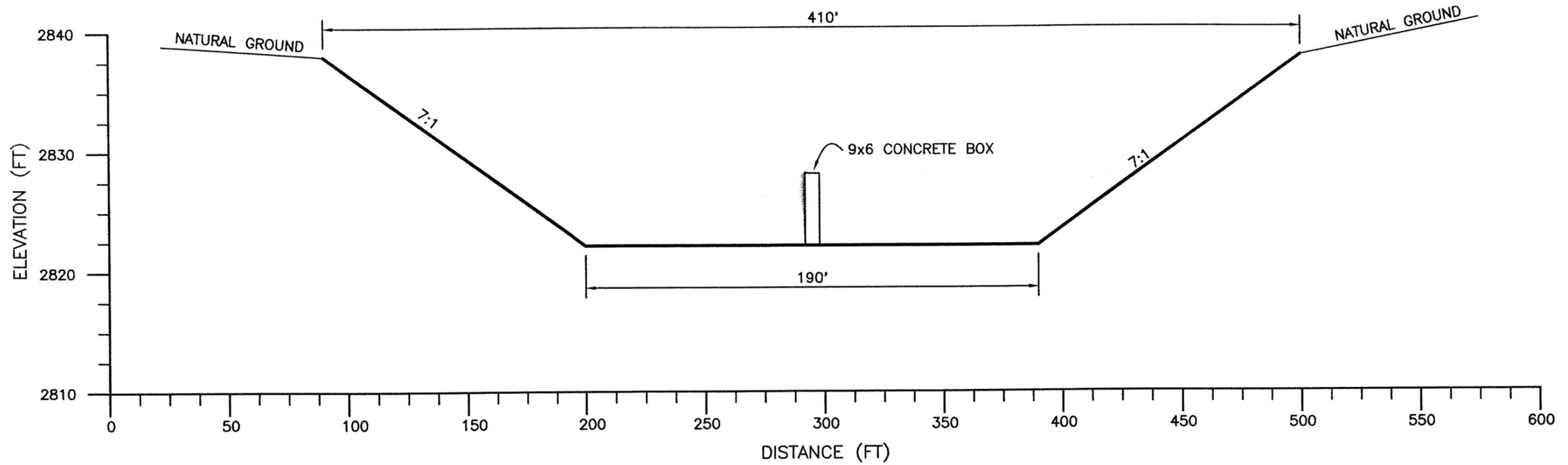
BASIN JA8 DRAWDOWN STORM SEWER PROFILE
 1-9x6 REINFORCED CONCRETE BOX

FIGURE 2-59

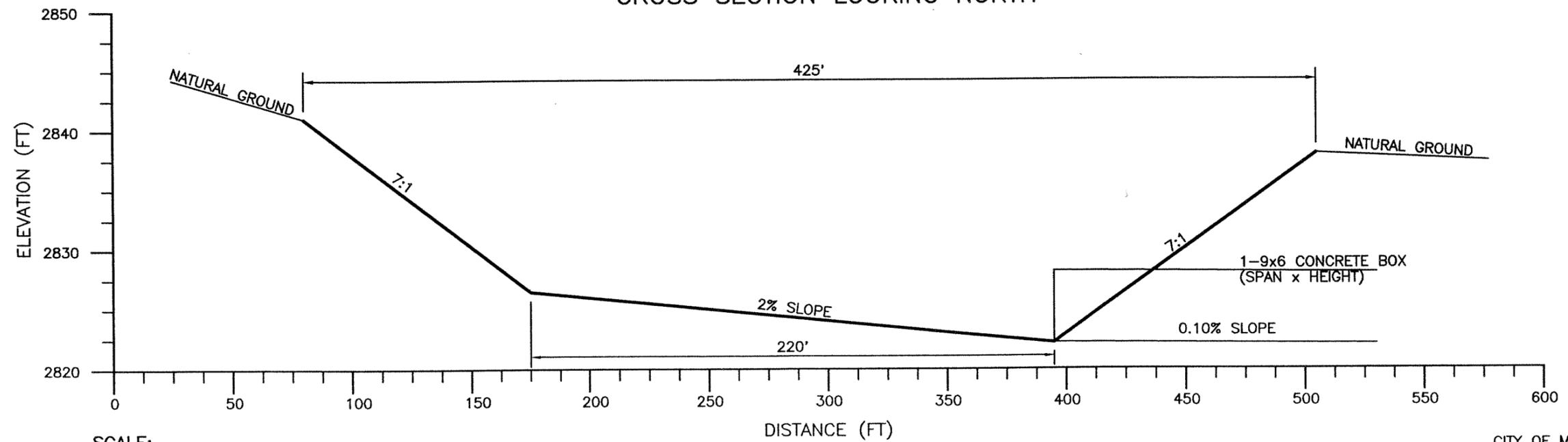
CITY OF MIDLAND, TEXAS
 JAL DRAW MASTER PLAN
 STORM SEWER PROFILE



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CROSS SECTION LOOKING NORTH



CROSS SECTION LOOKING WEST

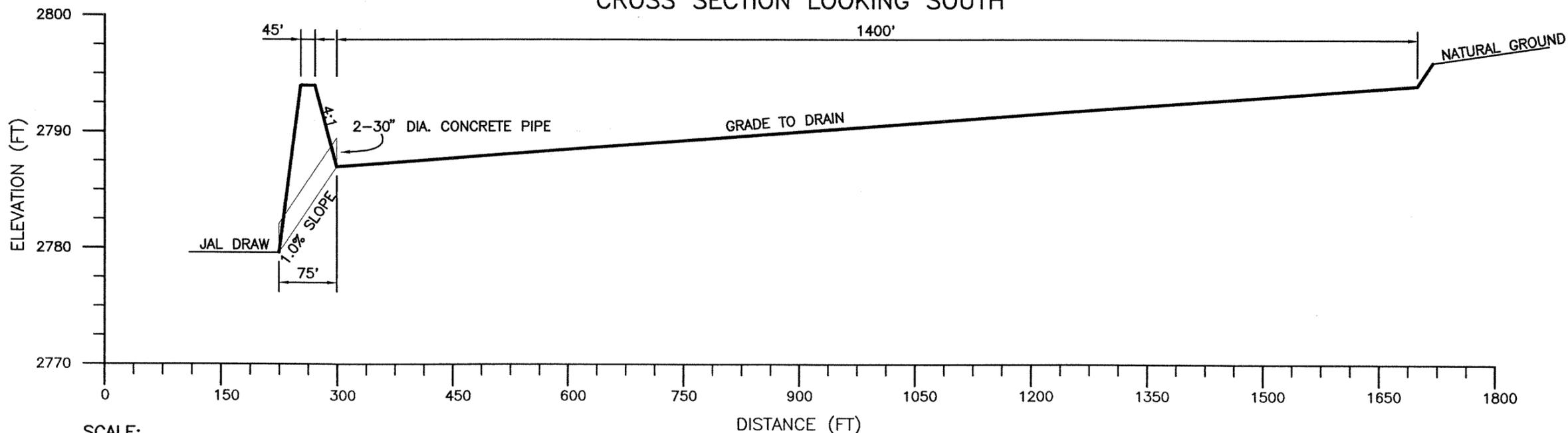
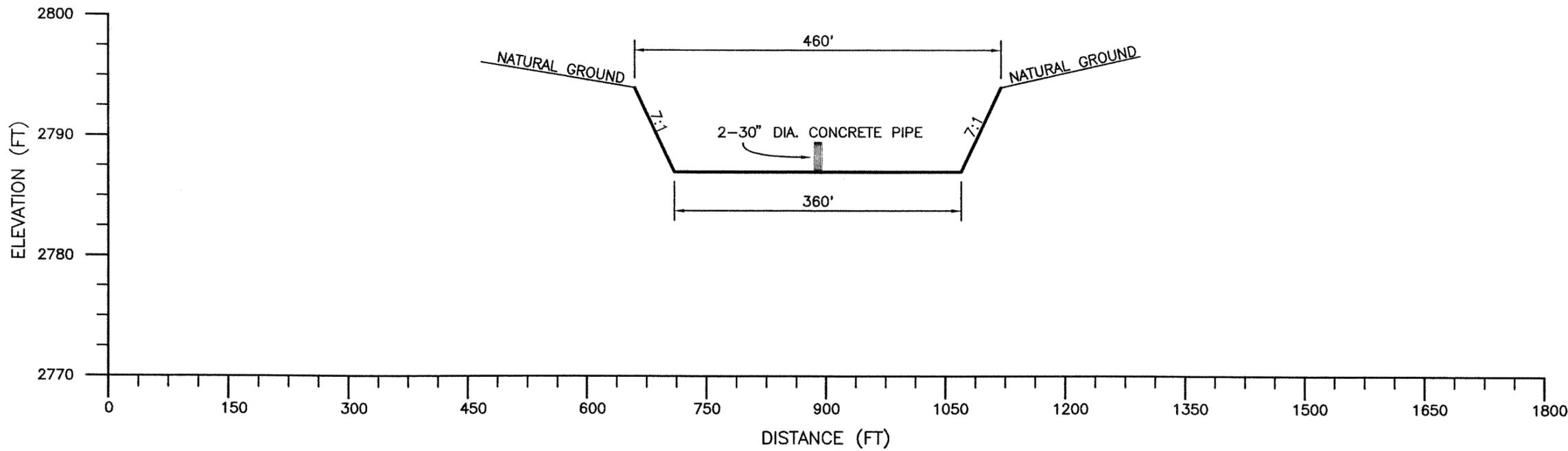
SCALE:
V: 1"=10'
H: 1"=50'

CITY OF MIDLAND, TEXAS
JAL DRAW MASTER PLAN
BASIN JA8



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FIGURE 2-60



SCALE:
 V: 1" = 10'
 H: 1" = 150'

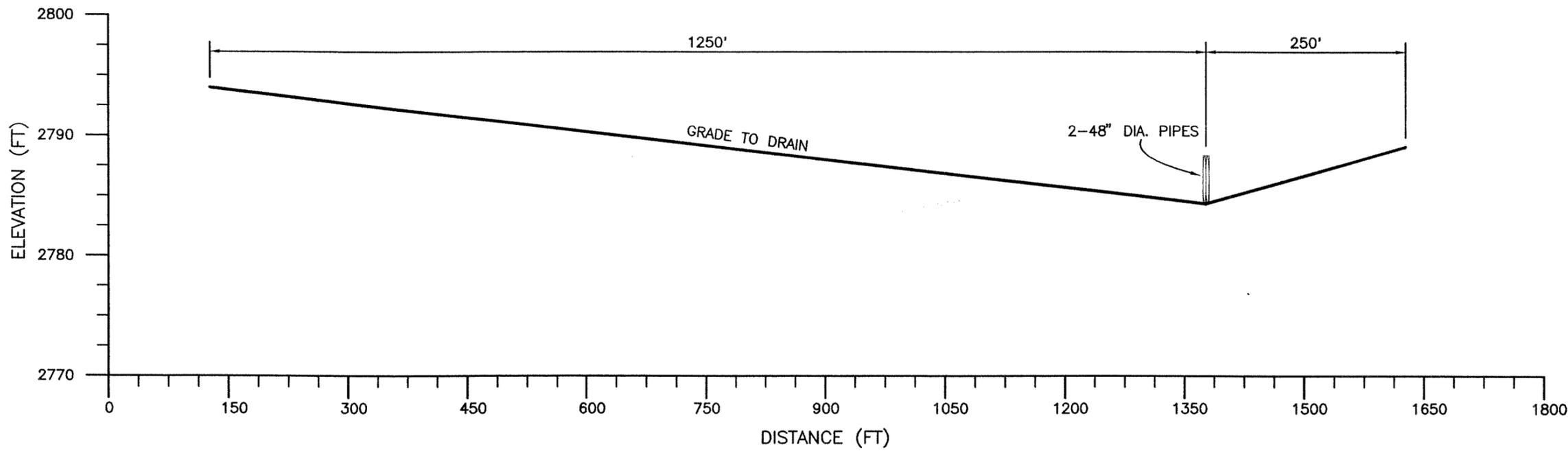
CROSS SECTION LOOKING WEST

CITY OF MIDLAND, TEXAS
 JAL DRAW MASTER PLAN
 BASIN JA18

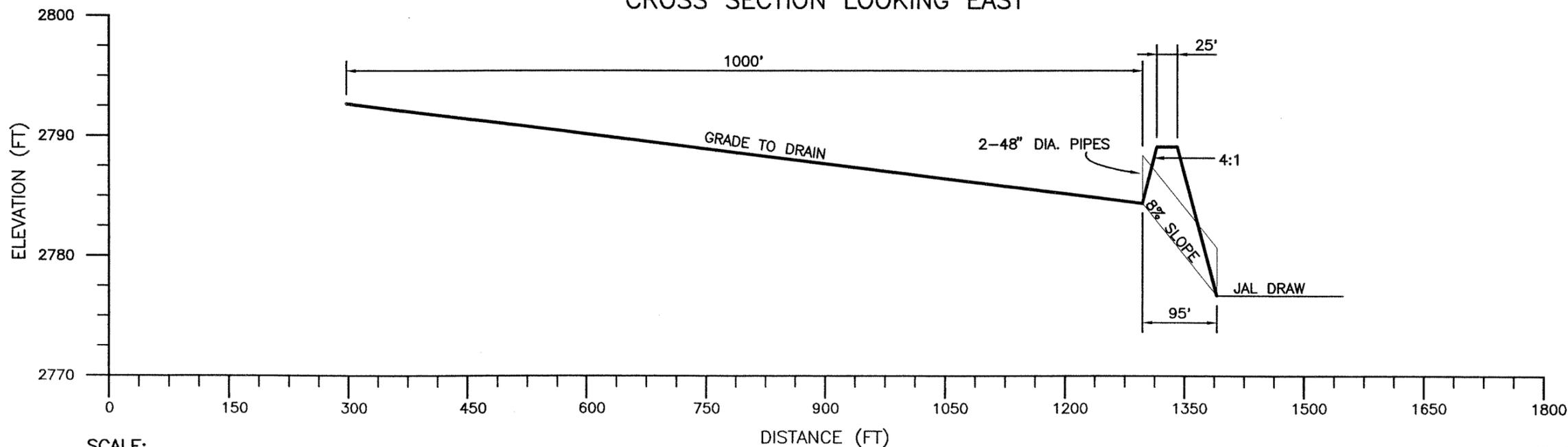
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FIGURE 2-61

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CROSS SECTION LOOKING EAST



CROSS SECTION LOOKING NORTH

SCALE:
 V: 1" = 10'
 H: 1" = 150'

CITY OF MIDLAND, TEXAS
 JAL DRAW MASTER PLAN
 BASIN JA24



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FIGURE 2-62