

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

**SECTION 5
MULBERRY CHANNEL MASTER PLAN**

5.1 GENERAL

The Mulberry Channel watershed extends from its confluence with Midland Draw (approximately 1,500 feet north of U.S. Highway 80) westward to approximately the intersection of Midkiff Road and Illinois Avenue. All of the Mulberry Channel watershed is located within the detailed Geographic Information System (GIS) coverage and detailed study area of this Master Drainage Plan. Figure 5-1 illustrates the area of the detailed study on the Mulberry Channel watershed and the position of the Mulberry Channel in relation to the City.

The Mulberry Channel watershed is located completely within the corporate limits of the City of Midland. Currently, much of the Mulberry Channel watershed is developed. Except for Subarea MU5, no substantial land use changes are anticipated in the future. However, in an effort to improve existing drainage and to offset slight land use changes in the future, improvements to the Mulberry Channel are recommended. Because of a lack of suitable land, improvements to the Mulberry Channel are the best runoff mitigation solution.

5.2 HYDROGRAPHS

A single hydrograph was plotted for the location shown on Figure 5-1 for three hydrologic conditions: 1) existing land use hydrologic conditions, 2) future land use hydrologic conditions and assuming zero stormwater runoff mitigation efforts and 3) future land use hydrologic conditions with all recommended drainage improvements installed.

The hydrograph plot shown in Figure 5-2 is for the Mulberry Channel immediately upstream of the Midland Draw confluence and illustrates the three conditions listed above. Note that the hydrographs for each condition have only one peak. This peak, which occurs at approximately 13.5 hours, is the result of runoff

from the the Mulberry Channel watershed subareas plus runoff that is diverted from the Scharbauer Channel watershed. It is apparent from the three hydrographs that the future hydrograph resulting from modifications to the Mulberry Channel shows a higher peak discharge than the other two hydrograph cases. This higher peak is the result of channel improvements that reduce the storage at lower flow rates within the channel. Also, the proposed new crossing at Lamesa Road (discussed in a later paragraph) allows a higher peak discharge from a storage area at the upstream end of the Mulberry Channel. By allowing a higher peak discharge at Lamesa Road, a reduction in flood elevations can be achieved in the area west of Lamesa Road.

5.3 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 Year 2020 Land Use Plan. The existing condition analysis provided a base line comparison for the effectiveness of various stormwater runoff mitigation measures.

5.3.1 Existing Land Use

As noted earlier in Section 1, the Mulberry Channel watershed consists of approximately 4 square miles of drainage area. Because the complete area is considered urban, curve numbers were based on an average antecedent moisture condition (referred to as AMC II).

The Mulberry Channel watershed subareas and existing condition characteristics are listed in Table 5-1. The times of concentration listed with each subarea were determined using procedures contained in the City of Midland Storm Drainage Design Manual.

5.3.2 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 5-3 through Figure 5-7 show only the future land use condition. The future condition characteristics for the Mulberry Channel watershed subareas are listed in Table 5-1. Direct comparisons of the curve numbers and times of concentration in Table 5-1 show that three subareas (MU3, MU4, and MU5) are expected to experience land use changes in the future that result in an increase in curve number. Subarea MU3 and Subarea MU4 are expected to have an increase of 1 curve number unit in the future. Subarea MU5 is expected to have more substantial development in the future resulting in an increase of 10 curve numbers units. The other two subareas in the Mulberry Channel watershed (MU1 and MU2) are either completely or near completely developed and are not expected to experience any significant land use changes. Table 5-2 compares the existing and proposed peak flow rates for selected points along the main channel.

5.4 CHANNEL AND ASSOCIATED ROADWAY DRAINAGE IMPROVEMENTS

Recommended improvements to the Mulberry Channel and associated roadway drainage structures are presented in order from the downstream to upstream direction. Table 5-3 and Table 5-4 summarize the proposed improvements. Included in Table 5-3 and Table 5-4 are the table numbers for the detailed preliminary opinions of cost and figure numbers that correspond to drawings which illustrate channel and drainage structure improvements. It is important to note that right-of-way costs are not included in the opinions of cost because of the fluctuating nature of land prices. Also, the proposed rights-of-way listed in Table 5-3 are the minimum required for channel improvements. Alleys or other easements located within the overbanks adjacent to the channel will require additional right-of-way.

5.4.1 Fairgrounds Road to Tilden Street Channel Improvements

The first reach in which channel improvements are planned for the Mulberry Channel is the reach extending from the drainage structure at Fairgrounds Road to the low water crossing at Tilden Street. This reach corresponds to channel stations 31+87 to 54+30. Proposed improvements include widening the existing channel to a maximum bottom width of 50 feet. A channel grade of approximately 0.20 percent is planned for this reach. These improvements will require a minimum of approximately 95 feet to 105 feet of total right-of-way.

5.4.2 Tilden Street to Lincoln Street Channel Improvements

Excavation of the existing channel is proposed from the low water crossing at Tilden Street (Station 54+30) to the low water crossing at Lincoln Street (Station 57+80). A 50-foot bottom width channel at a grade of approximately 0.20 percent is planned. The proposed improvements will require a minimum of approximately 105 feet of total right-of-way.

5.4.3 Lincoln Street to Carver Street Channel Improvements

Channel excavation is proposed from the Lincoln Street low water crossing at Station 57+80 to Carver Street at Station 69+55. The channel will have a bottom width of 28 feet and a grade of approximately 0.20 percent. It is anticipated that no additional right-of-way will be required in this reach.

5.4.4 Carver Street Drainage Structure

A new roadway drainage structure is proposed at Carver Street. The drainage structure is located at Station 69+55. The proposed multiple box structure consists of four 9-foot by 7-foot (span by height) concrete box culverts.

5.4.5 Carver Street to Tyler Street Channel Improvements

A 30-foot bottom width channel is proposed for the channel reach from Carver Street (Station 69+55) to the Tyler Street low water crossing at Station 77+10. The planned channel grade is approximately 0.19 percent. No additional right-of-way is anticipated for this reach.

5.4.6 Tyler Street to Lee Street Channel Improvements

From the Tyler Street low water crossing (Station 77+10) to the Lee Street low water crossing (Station 81+00), excavation of the channel to a 50-foot bottom width is planned. The channel grade for this reach is approximately 0.19 percent. A minimum of approximately 110 feet of total right-of-way is anticipated to accomplish the proposed channel improvements.

5.4.7 Lee Street to Lamesa Road Channel Improvements

Excavation of the existing channel is planned from the low water crossing at Lee Street (Station 81+00) to Lamesa Road (Station 85+45). The proposed channel will consist of a 50-foot bottom

width at a grade of approximately 0.19 percent. Minimum right-of-way required for the proposed improvements is approximately 95 feet.

END

5.4.8 Lamesa Road Drainage Structure

A new drainage structure is proposed for the channel crossing at Lamesa Road (Station 85+45). The planned drainage structure consists of five 9-foot by 5-foot (span by height) concrete box culverts.

5.5 PLAYA LAKES

The Mulberry Channel watershed has no well defined playa lakes that can be used to provide storage for stormwater runoff in the future. However, a portion of Subarea MU3 has significant existing storage capacity which provides substantial mitigation of stormwater runoff. This storage capacity has been accounted for in runoff computations for the Mulberry Channel watershed.

5.6 DETENTION BASINS

Because of the extensive development in the subareas of the Mulberry Channel watershed, no suitable locations are available for regional detention basins. However, due to existing flooding concerns, on-site detention may be required as future development occurs, especially if it involves a change of land use that could compound the existing flooding problems.

5.7 ZERO MODIFICATION SUBAREAS

The only subarea in the Mulberry Channel watershed with master planned improvements is MU4. All other subareas are considered to be "Zero Modification Subareas" because they are either near completely developed, improvements are not required to existing facilities, or no significant area is available for use in regional stormwater runoff mitigation schemes.

Table 5-1

**Mulberry Channel 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	
MU1	1,171.49	1.83	91	1.93	91	1.93	In detailed study area.
MU2	175.56	0.27	85	1.16	85	1.16	In detailed study area.
MU3	410.65	0.64	89	1.15	90	1.15	In detailed study area.
MU4	491.20	0.77	87	1.75	88	1.75	In detailed study area.
MU5	193.91	0.30	75	1.72	85	1.53	In detailed study area.

Table 5-2

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

SUBAREA I.D.	DESIGNATED LOCATION	EXISTING DISCHARGE		FUTURE DISCHARGE	
		Peak (cfs)	Peak Time (hrs)	Peak (cfs)	Peak Time (hrs)
MU3	Lamesa Road	675	15.00	1,088	13.50
MU4	Fairgrounds Road	1,478	13.50	1,969	13.50
MU5	Prior to Confluence with Midland Draw	1,671	13.50	2,174	13.75

TABLE 5-3

Planned Channel Improvements Summary

SUBAREA I.D.	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)
MU4		Fairgrounds Road to Tilden Street	31+87 to 54+30	95 to 105 minimum	40 to 50	3:1 to 3.5:1, 3:1 to 3.5:1	0.20	5-5	\$182,680
MU4		Tilden Street to Lincoln Street	54+30 to 57+80	105 minimum	50	3:1, 3:1	0.20		
MU4		Lincoln Street to Carver Street	57+80 to 69+55	80 minimum	28	2:1 to 2.5:1, 2:1 to 2.5:1	0.20		
MU4		Carver Street to Tyler Street	69+55 to 77+10	80 minimum	30	2:1 to 2.5:1, 2:1 to 2.5:1	0.19	5-7	\$74,760
MU4		Tyler Street to Lee Street	77+10 to 81+00	110 minimum	50	3:1, 3:1	0.19		
MU4		Lee Street to Lamesa Road	81+00 to 85+45	95 minimum	50	3:1, 3:1	0.19		

Note: Side slopes for left bank and right bank looking downstream.

TABLE 5-4

Planned Channel Crossing Improvements Summary

STREET CROSSING	FIGURE NUMBER	PROPOSED STRUCTURE	PRELIMINARY BUDGET OPINION OF COST TABLE NUMBER	OPINION OF COST (TOTALS)
Carver Street		4 - 9 ft by 7 ft CBC	5-6	\$113,590
Lamesa Road		5 - 9 ft by 5 ft CBC	5-8	\$204,055

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

**TABLE 5-5
MULBERRY CHANNEL
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS**

**DRAINAGE IMPROVEMENTS FROM
FAIRGROUNDS ROAD TO CARVER STREET**

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 CHANNEL EXCAVATION	C.Y.	\$4.00	32,800	\$131,200
2 SOIL PREPARATION, SEEDING & FERTILIZING	ACRE	\$1,200.00	8	\$9,600
3 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$14,080
4 ENGINEERING				\$10,800
5 SURVEYING, TESTING & RPR				\$17,000
TOTAL IMPROVEMENTS FROM FAIRGROUNDS ROAD TO CARVER STREET				\$182,680

**TABLE 5-6
MULBERRY CHANNEL
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS**

CARVER STREET CROSSING

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 ROADWAY GRADING & SUBGRADE PREPARATION	S.Y.	\$4.00	450	\$1,800
2 8" FLEXIBLE BASE	S.Y.	\$3.00	450	\$1,350
3 PRIME COAT	S.Y.	\$0.30	450	\$135
4 1-3/4" ASPHALTIC CONCRETE PAVEMENT	S.Y.	\$3.00	450	\$1,350
5 24" CURB AND GUTTER	LF.	\$6.50	200	\$1,300
6 STRUCTURAL CONCRETE	C.Y.	\$350.00	140	\$49,000
7 MISCELLANEOUS CONCRETE	S.Y.	\$30.00	220	\$6,600
8 PEDESTRIAN AND MBGF RAILING	LF.	\$100.00	200	\$20,000
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	\$8,755
12 ENGINEERING				\$6,700
13 SURVEYING, TESTING & RPR				\$10,600
TOTAL FOR CARVER STREET CROSSING				\$113,590

**TABLE 5-7
MULBERRY CHANNEL
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS**

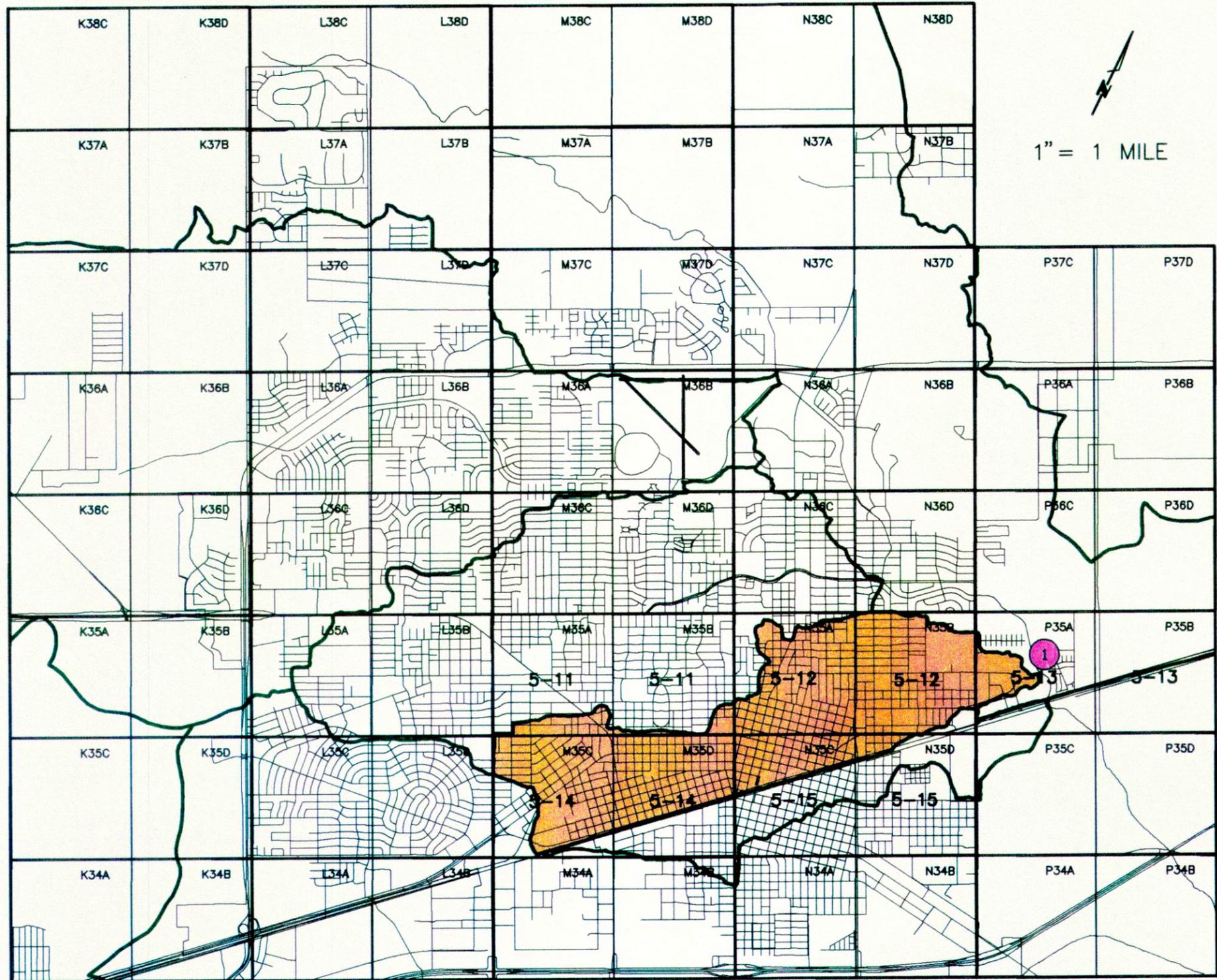
**DRAINAGE IMPROVEMENTS FROM
CARVER STREET TO LAMESA ROAD**

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 CHANNEL EXCAVATION	C.Y.	\$4.00	13,200	\$52,800
2 SOIL PREPARATION, SEEDING & FERTILIZING	ACRE	\$1,200.00	4	\$4,800
3 CONSTRUCTION CONTINGENCIES	L.S.	10%	1	\$5,760
4 ENGINEERING				\$4,400
5 SURVEYING, TESTING & RPR				\$7,000
TOTAL IMPROVEMENTS FROM CARVER STREET TO LAMESA ROAD				\$74,760

**TABLE 5-8
MULBERRY CHANNEL
PRELIMINARY BUDGET OPINION OF COST
CITY OF MIDLAND, TEXAS**

LAMESA ROAD CROSSING

ITEM	UNIT	UNIT PRICE	QUANTITY	TOTAL
1 ROADWAY GRADING & SUBGRADE PREPARATION	S.Y.	\$4.00	1,100	\$4,400
2 8" FLEXIBLE BASE	S.Y.	\$3.00	1,100	\$3,300
3 PRIME COAT	S.Y.	\$0.30	1,100	\$330
4 1-3/4" ASPHALTIC CONCRETE PAVEMENT	S.Y.	\$3.00	1,100	\$3,300
5 24" CURB AND GUTTER	L.F.	\$6.50	200	\$1,300
6 STRUCTURAL CONCRETE	C.Y.	\$350.00	320	\$112,000
7 MISCELLANEOUS CONCRETE	S.Y.	\$30.00	220	\$6,600
8 PEDESTRIAN AND MBGF RAILING	L.F.	\$100.00	200	\$20,000
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	\$15,725
12 ENGINEERING				\$12,100
13 SURVEYING, TESTING & RPR				\$19,000
TOTAL FOR LAMESA ROAD CROSSING				\$204,055



LEGEND

1 MULBERRY CHANNEL PRIOR TO CONFLUENCE WITH MIDLAND DRAW

PAGE

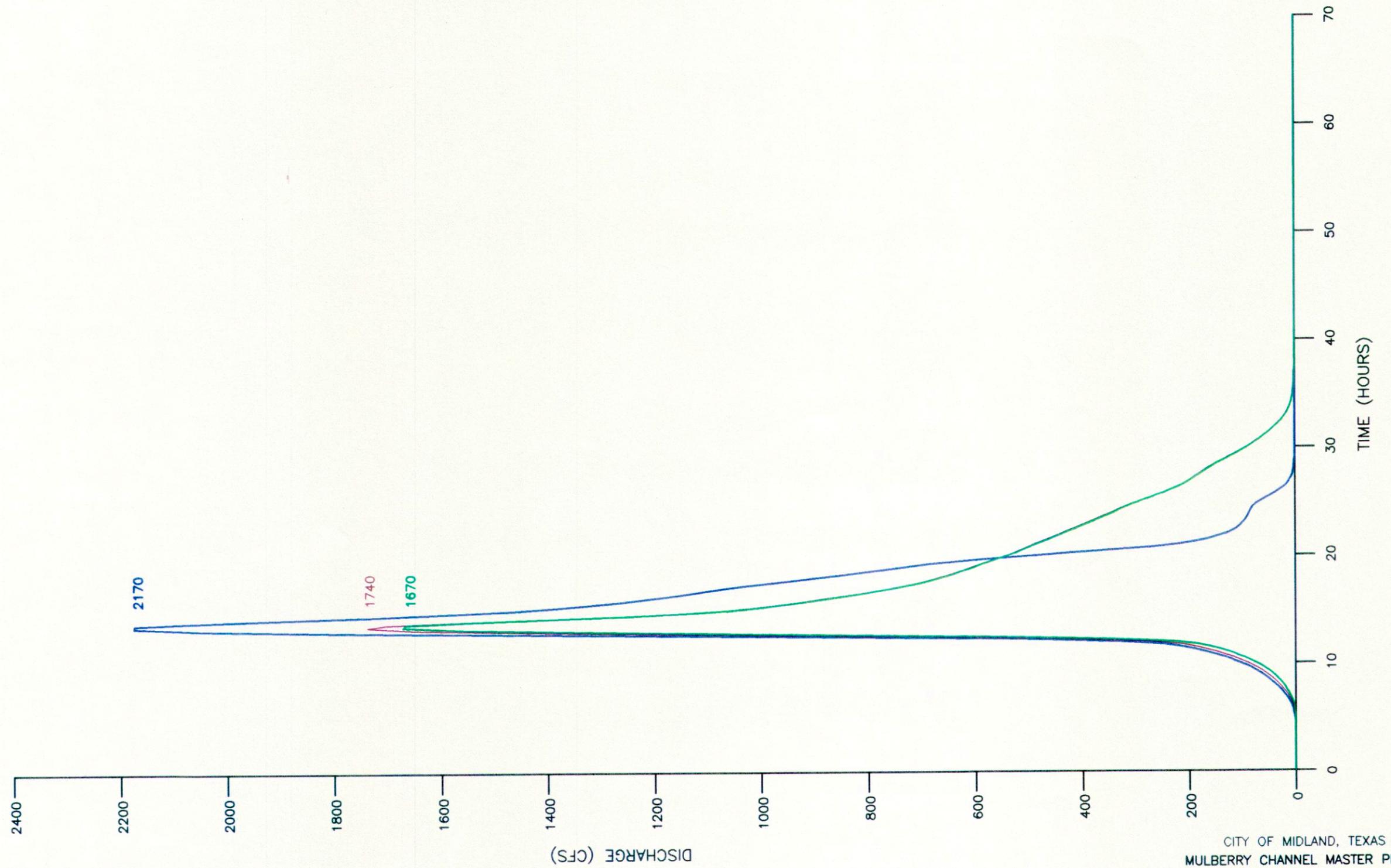
5-10

MULBERRY CHANNEL WATERSHED, INDEX TO SECTION MAPS

FIGURE 5-1

CITY OF MIDLAND, TEXAS
 MULBERRY CHANNEL MASTER PLAN
 WATERSHED MAP INDEX

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MULBERRY CHANNEL PRIOR TO CONFLUENCE WITH MIDLAND DRAW

LEGEND

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

CITY OF MIDLAND, TEXAS
MULBERRY CHANNEL MASTER PLAN
HYDROGRAPH



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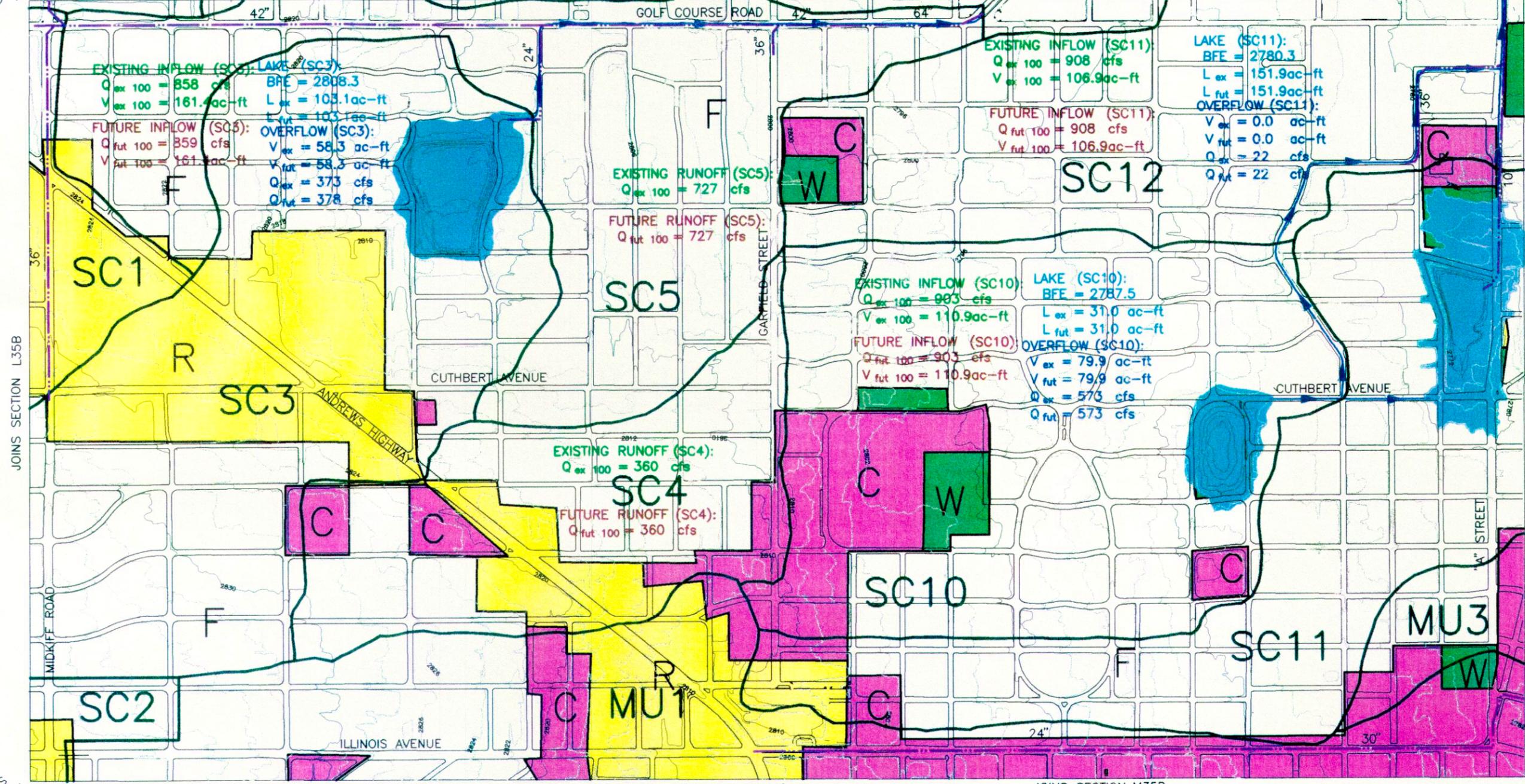
FIGURE 5-2

JOINS SECTION L36D

JOINS SECTION M36C

JOINS SECTION M36D

JOINS SECTION N36C



JOINS SECTION L35B

JOINS SECTION N35A

JOINS SECTION L35D

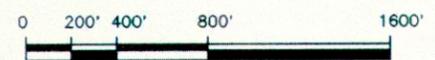
JOINS SECTION M35C

JOINS SECTION M35D

JOINS SECTION N35C

SECTION M35A

SECTION M35B



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CITY OF MIDLAND, TEXAS
 MULBERRY CHANNEL MASTER PLAN
 SECTION MAP



FIGURE 5-3

M35AB 2/19/95 5 rsk

JOINS SECTION M36D

JOINS SECTION P36C

JOINS SECTION N36C

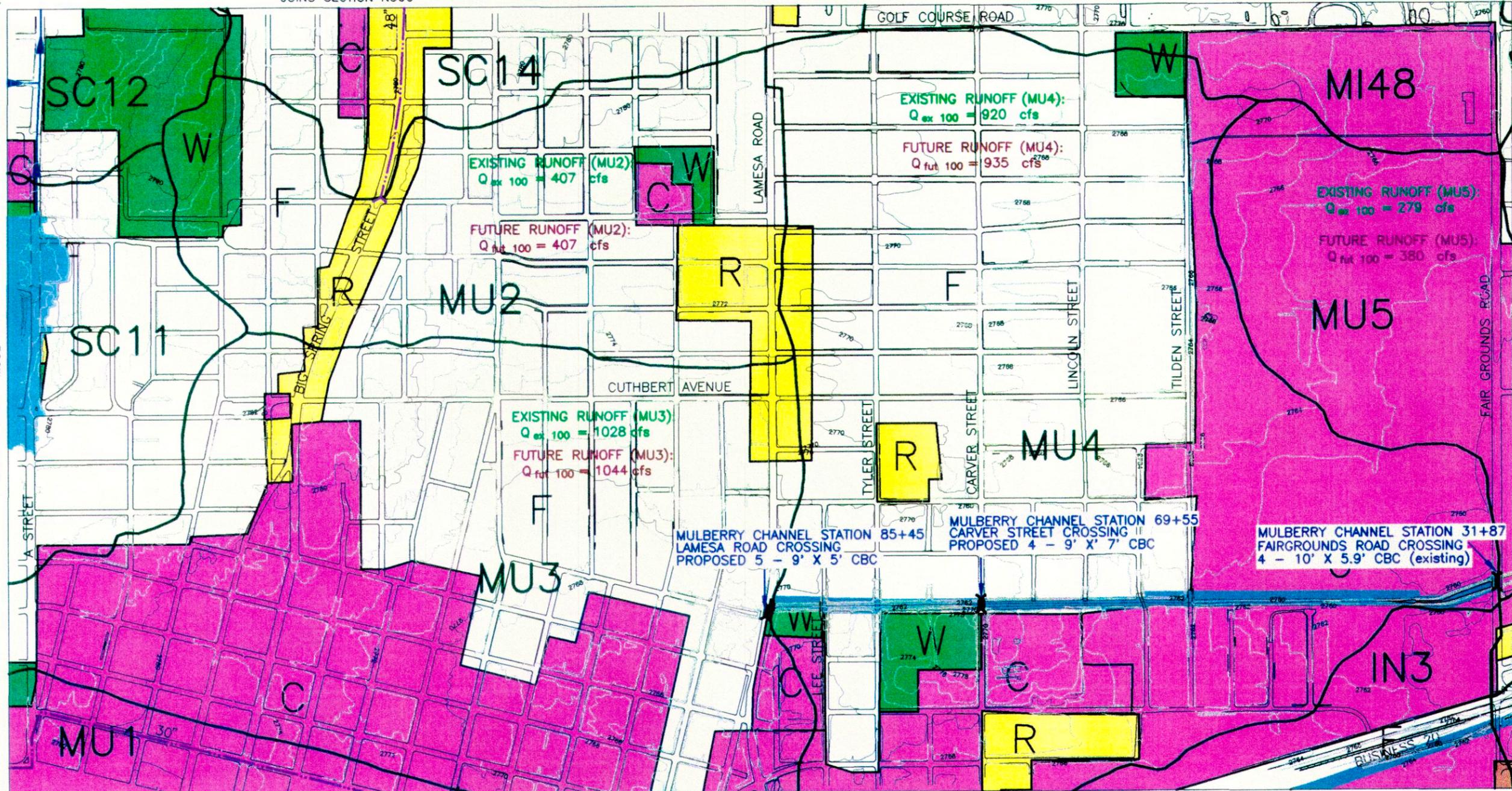
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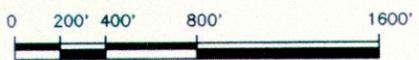
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JOINS SECTION P35C



SECTION N35A

SECTION N35B



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CITY OF MIDLAND, TEXAS
MULBERRY CHANNEL MASTER PLAN
SECTION MAP

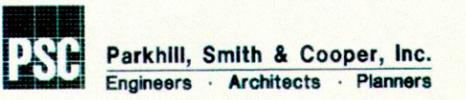


FIGURE 5-4

N35AB 2/12/91 RISK

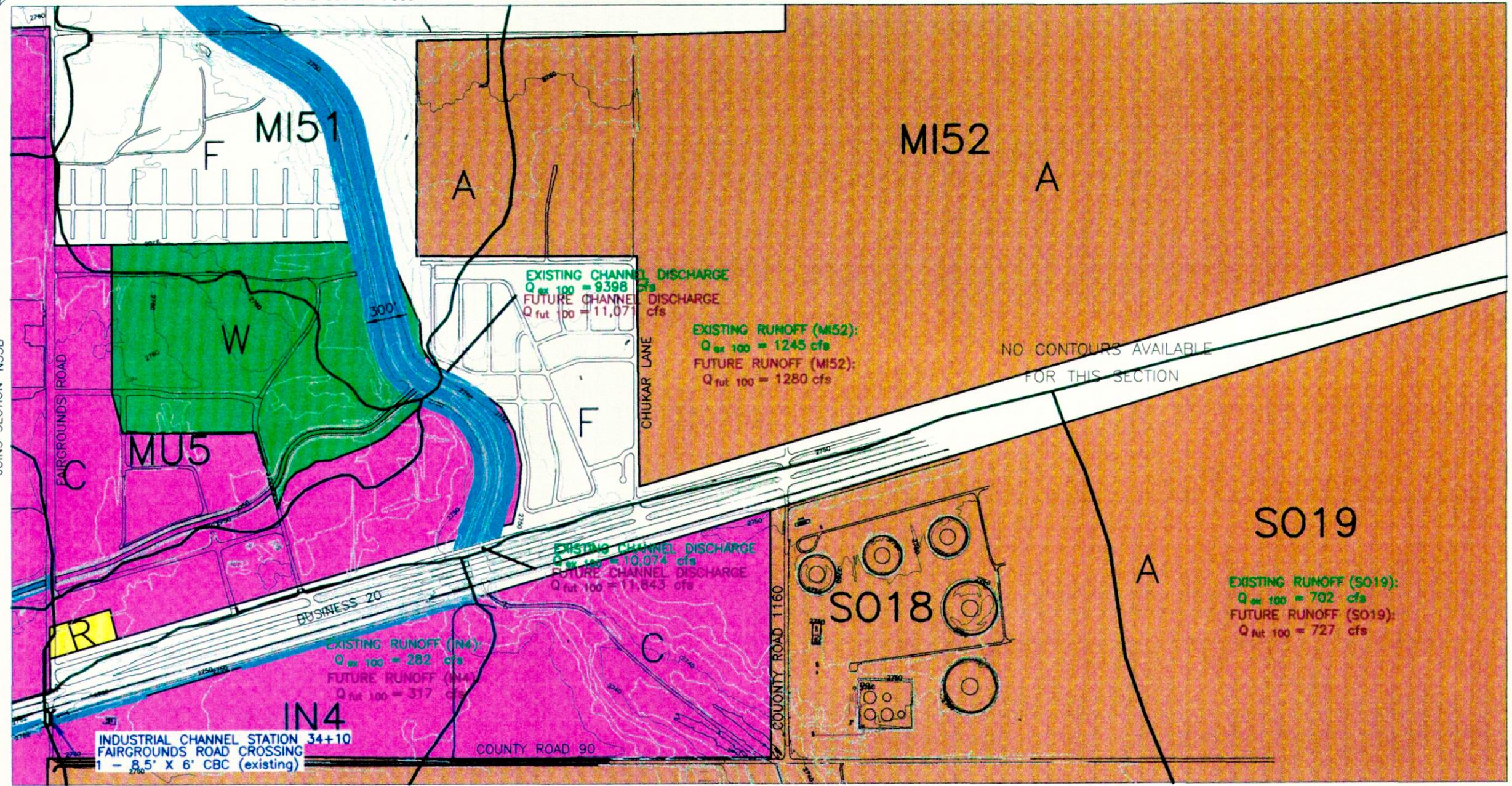
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JOINS SECTION P36C

JOINS SECTION P36D

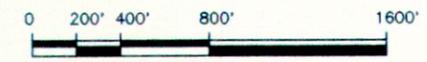
JOINS SECTION N35B

EASTERN EXTENT OF MAPS



SECTION P35A

SECTION P35B



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CITY OF MIDLAND, TEXAS
MULBERRY CHANNEL MASTER PLAN
SECTION MAP

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FIGURE 5-5

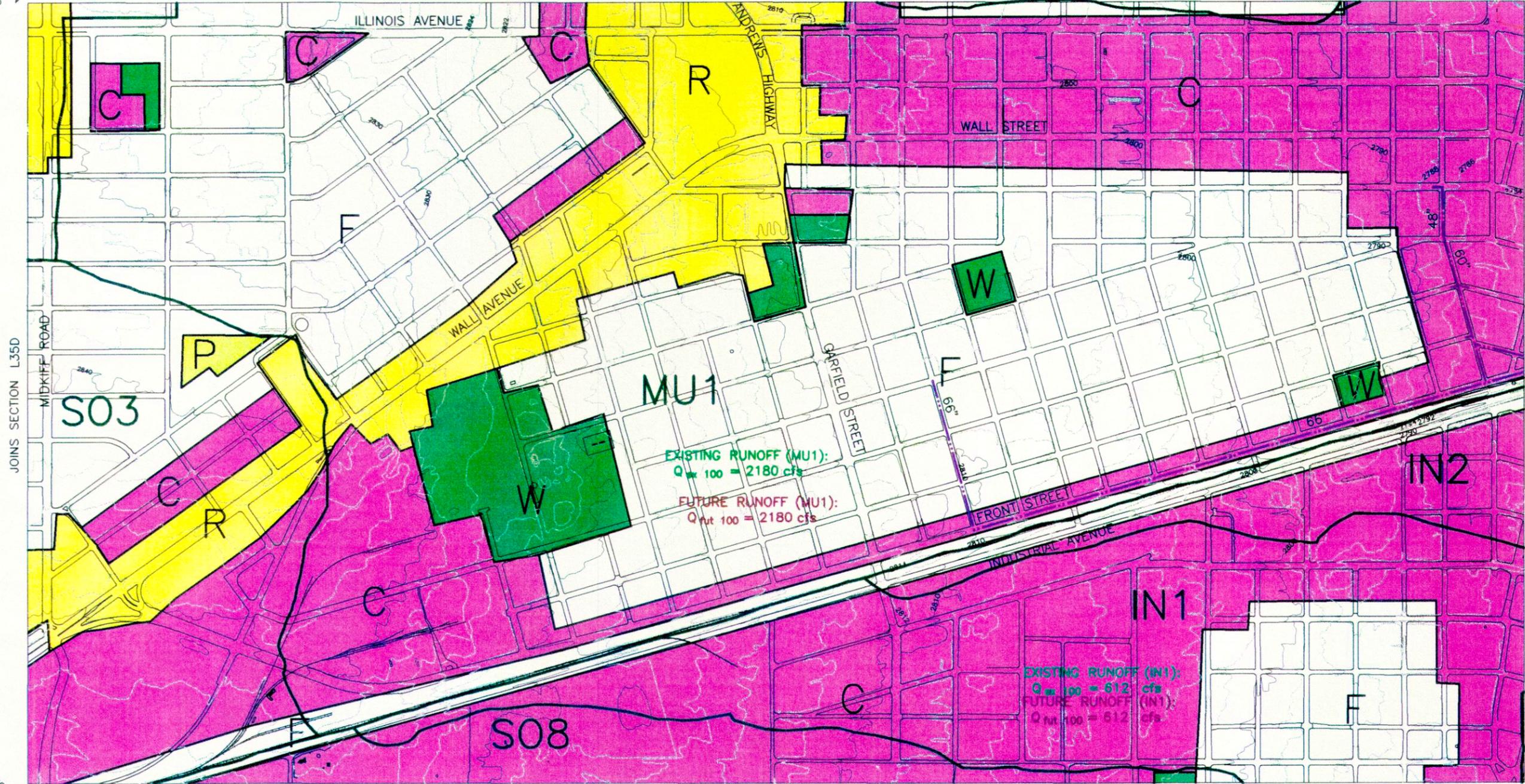
P35AB 2/15/90 RSK

JOINS SECTION L35B

JOINS SECTION N35A

JOINS SECTION M35A

JOINS SECTION M35B



JOINS SECTION L35D

JOINS SECTION N35C

JOINS SECTION L34B

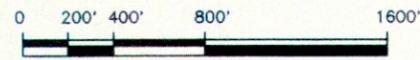
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JOINS SECTION M34B

JOINS SECTION N34A

SECTION M35C

SECTION M35D



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CITY OF MIDLAND, TEXAS
 MULBERRY CHANNEL MASTER PLAN
 SECTION MAP

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FIGURE 5-6

M35CD 2/20/97 rnk

JOINS SECTION M35B

JOINS SECTION N35A

JOINS SECTION N35B

JOINS SECTION P35A

JOINS SECTION M35D

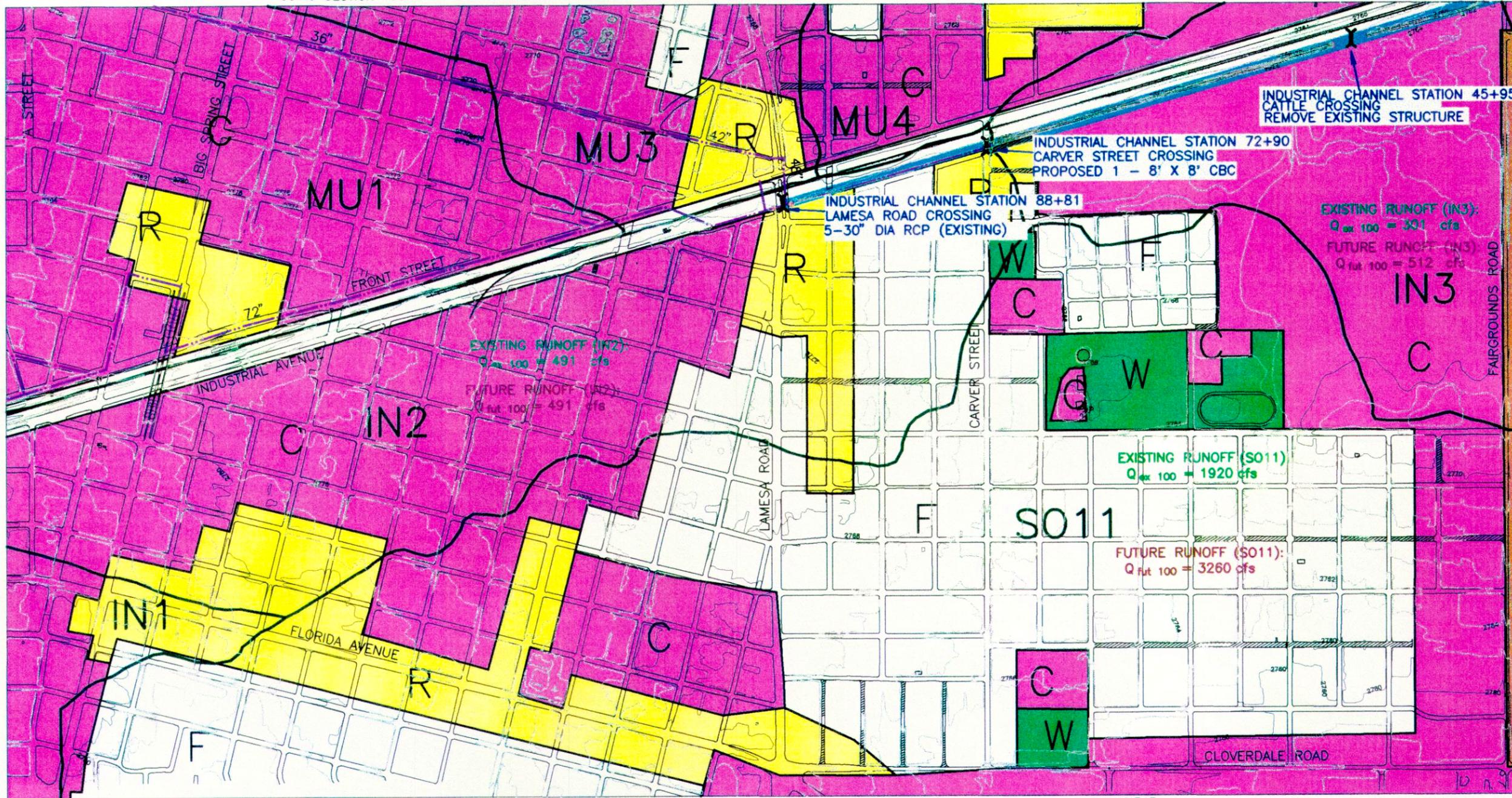
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JOINS SECTION N34A

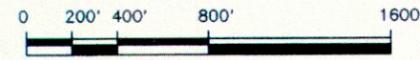
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SECTION N35C

SECTION N35D



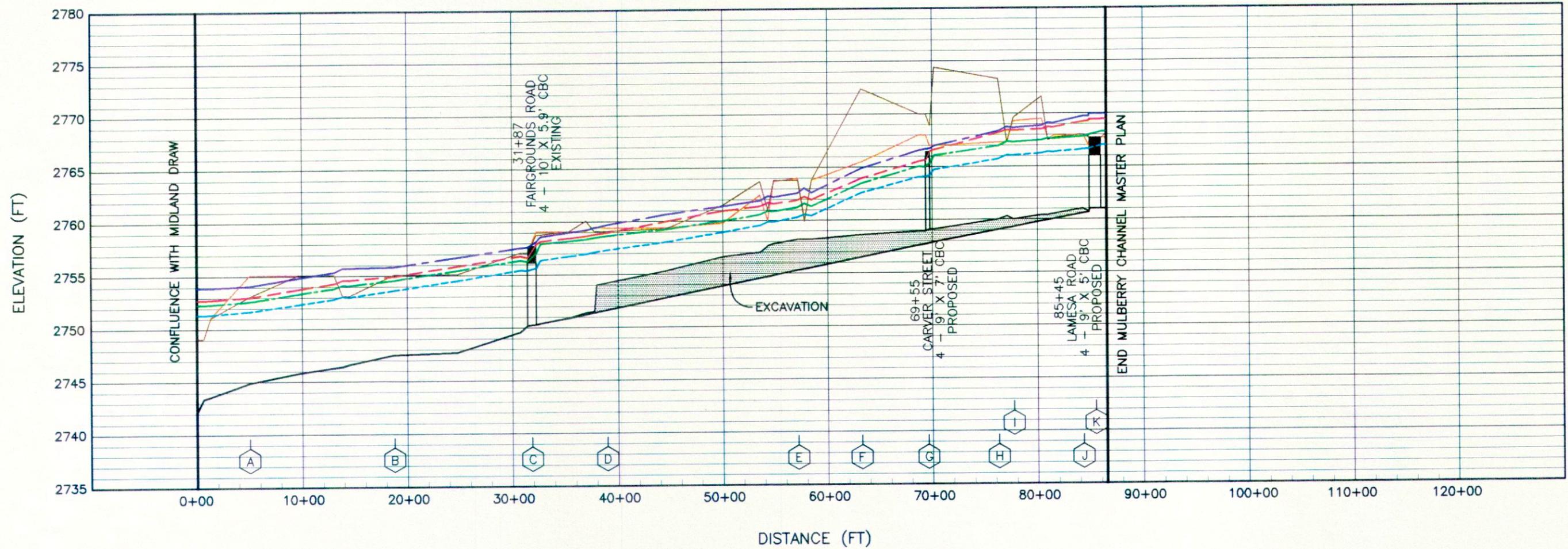
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CITY OF MIDLAND, TEXAS
 MULBERRY CHANNEL MASTER PLAN
 SECTION MAP

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FIGURE 5-7

N35CD 7/13/95 jlc



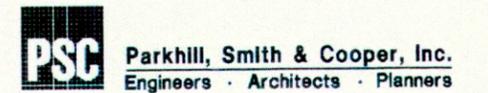
LEGEND

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

MULBERRY CHANNEL
 STATION 0+00 TO STATION 85+45
 FIGURE 5-8

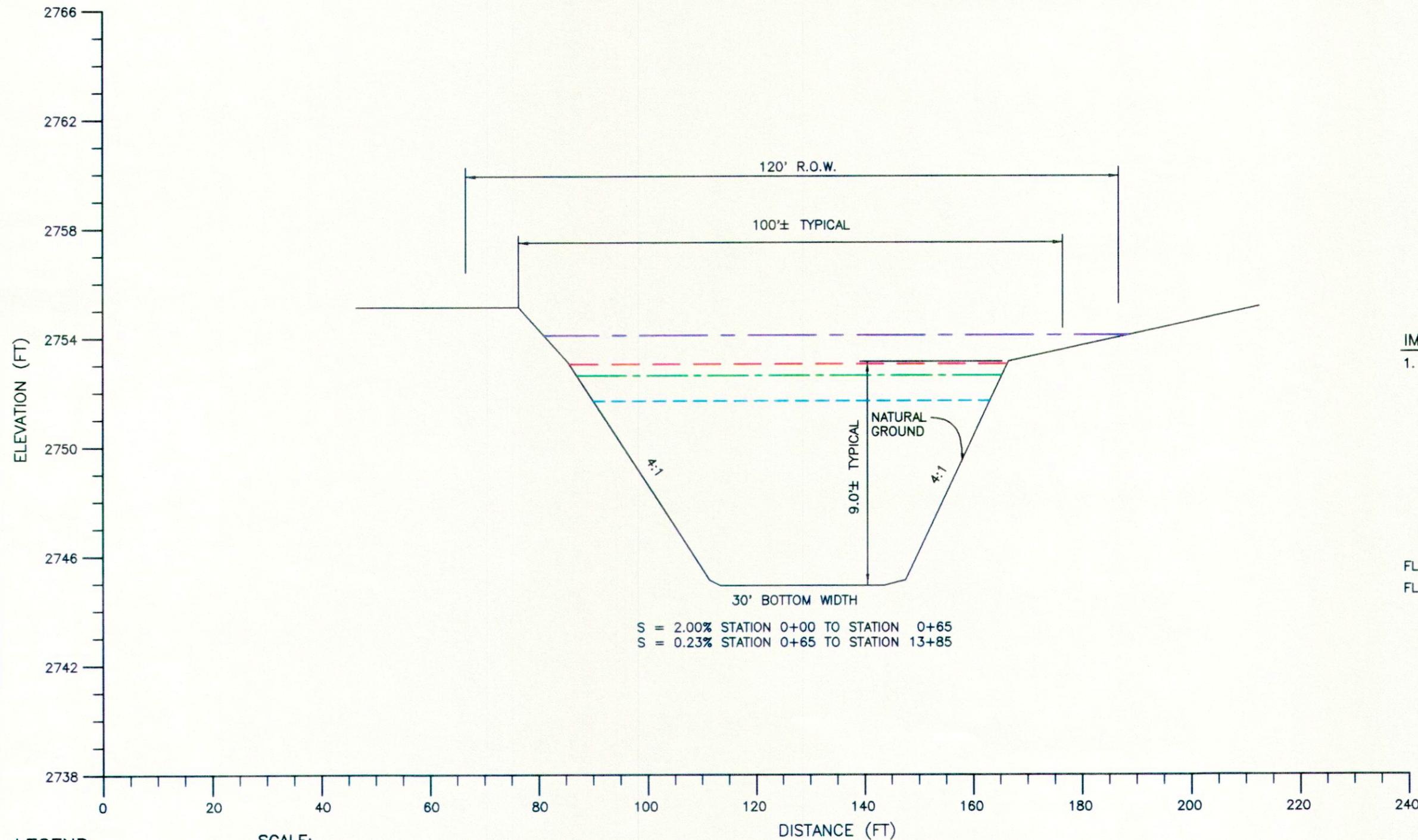
SCALE:
 V: 1" = 10'
 H: 1" = 1000'

CITY OF MIDLAND, TEXAS
 MULBERRY CHANNEL MASTER PLAN
 PROFILE



MULBERRY/28/RSK

CROSS SECTION A
STATION 5+00



IMPROVEMENTS RECOMMENDED
1. NONE

FL ELEVATION AT 0+00 = 2742.08
FL ELEVATION AT 13+85 = 2746.40

LEGEND

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

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

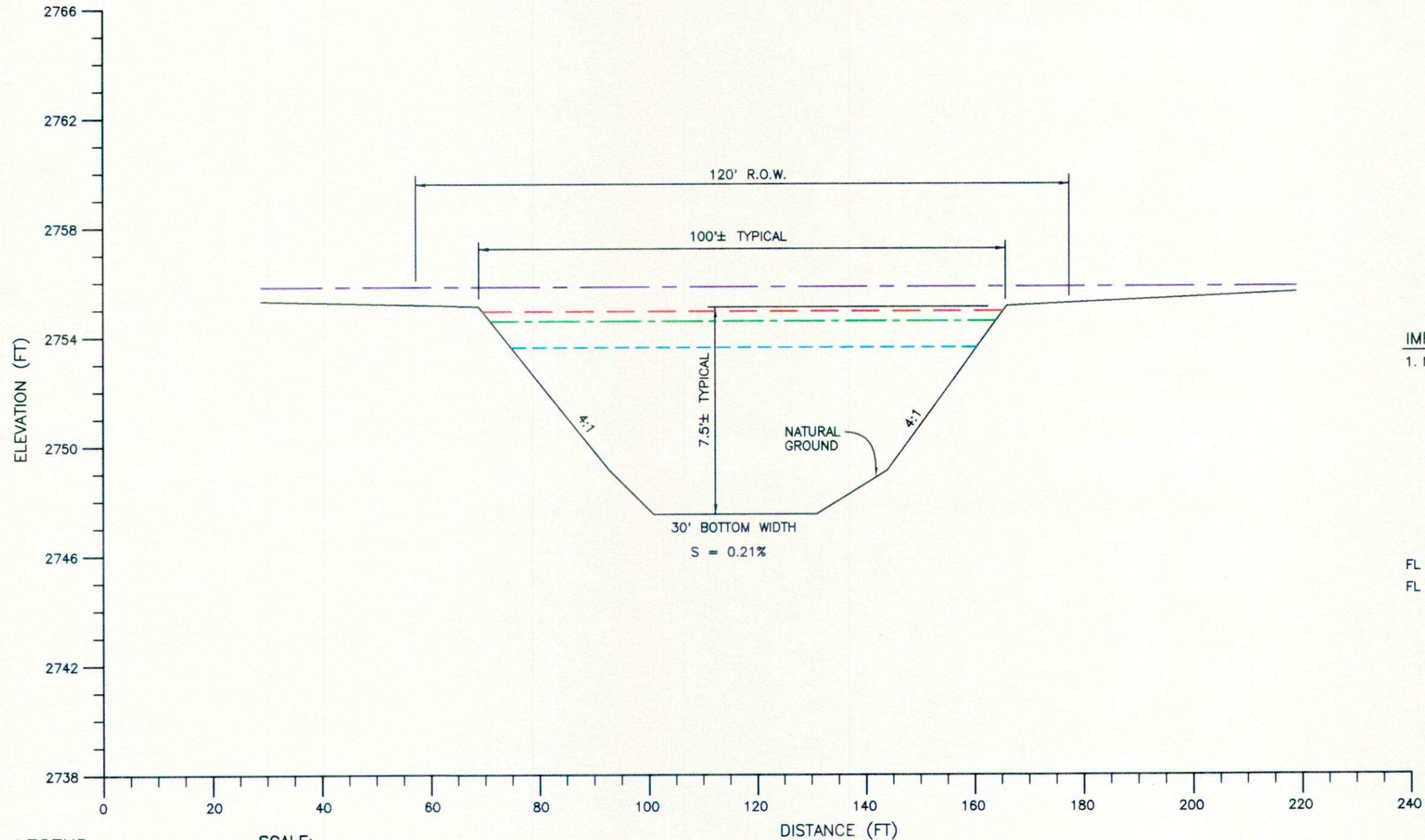
CONFLUENCE WITH MIDLAND DRAW TO SAN ANDRES DRIVE
STATION 0+00 TO STATION 13+85

FIGURE 5-9

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

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CROSS SECTION B
STATION 18+75



IMPROVEMENTS RECOMMENDED
1. NONE

FL ELEVATION AT 13+85 = 2746.40
FL ELEVATION AT 31+87 = 2750.26

LEGEND

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

SCALE:

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

SAN ANDRES DRIVE TO FAIRGROUNDS ROAD
STATION 13+85 TO STATION 31+87

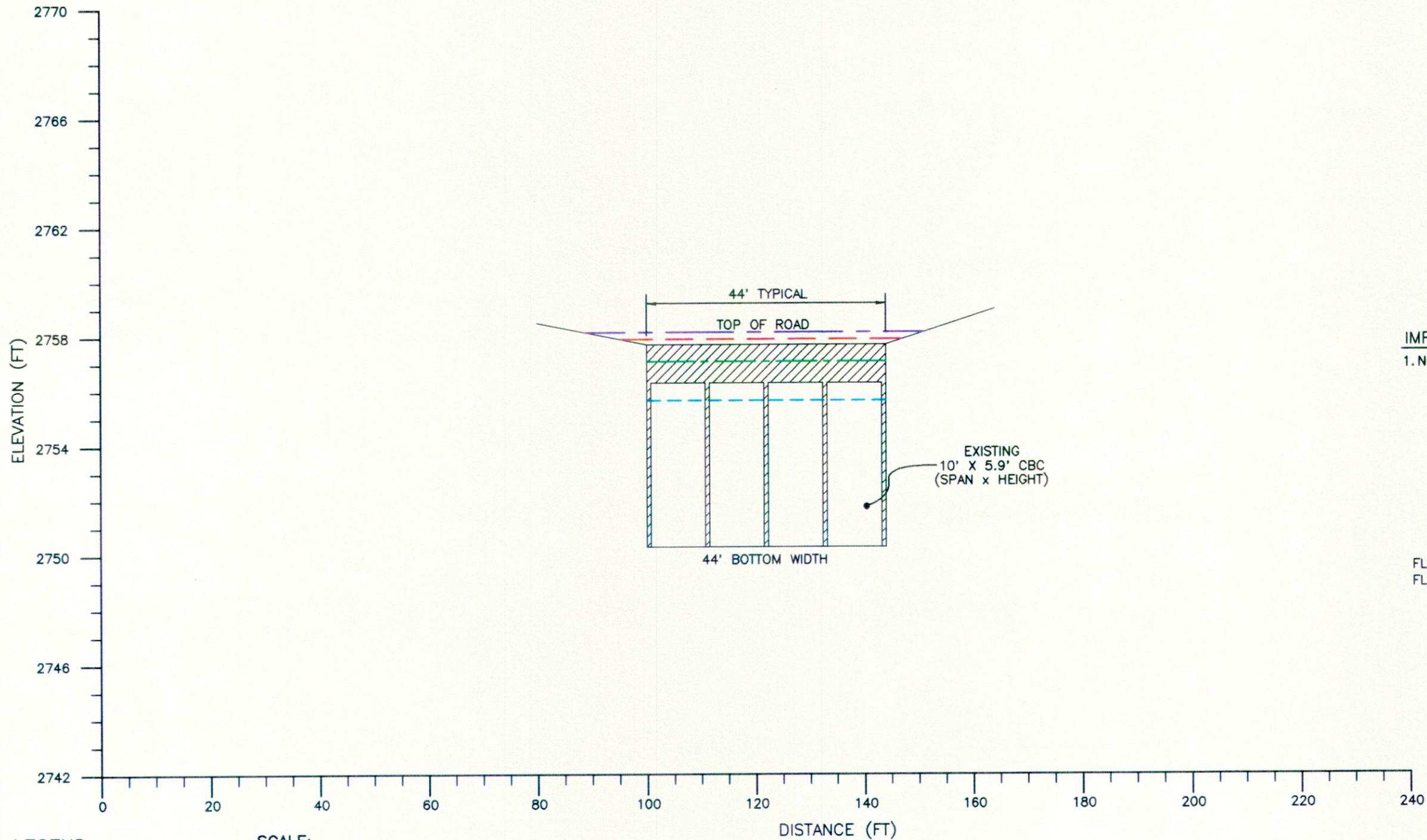
FIGURE 5-10

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

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1875 3/28/95-2.00 RSK

CROSS SECTION C
STATION 31+87



IMPROVEMENTS RECOMMENDED
1. NONE

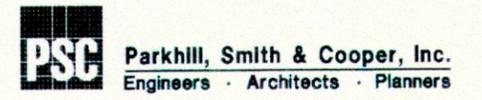
FL ELEVATION AT 31+46 = 2750.18
FL ELEVATION AT 32+28 = 2750.34

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

FAIRGROUNDS ROAD CROSSING

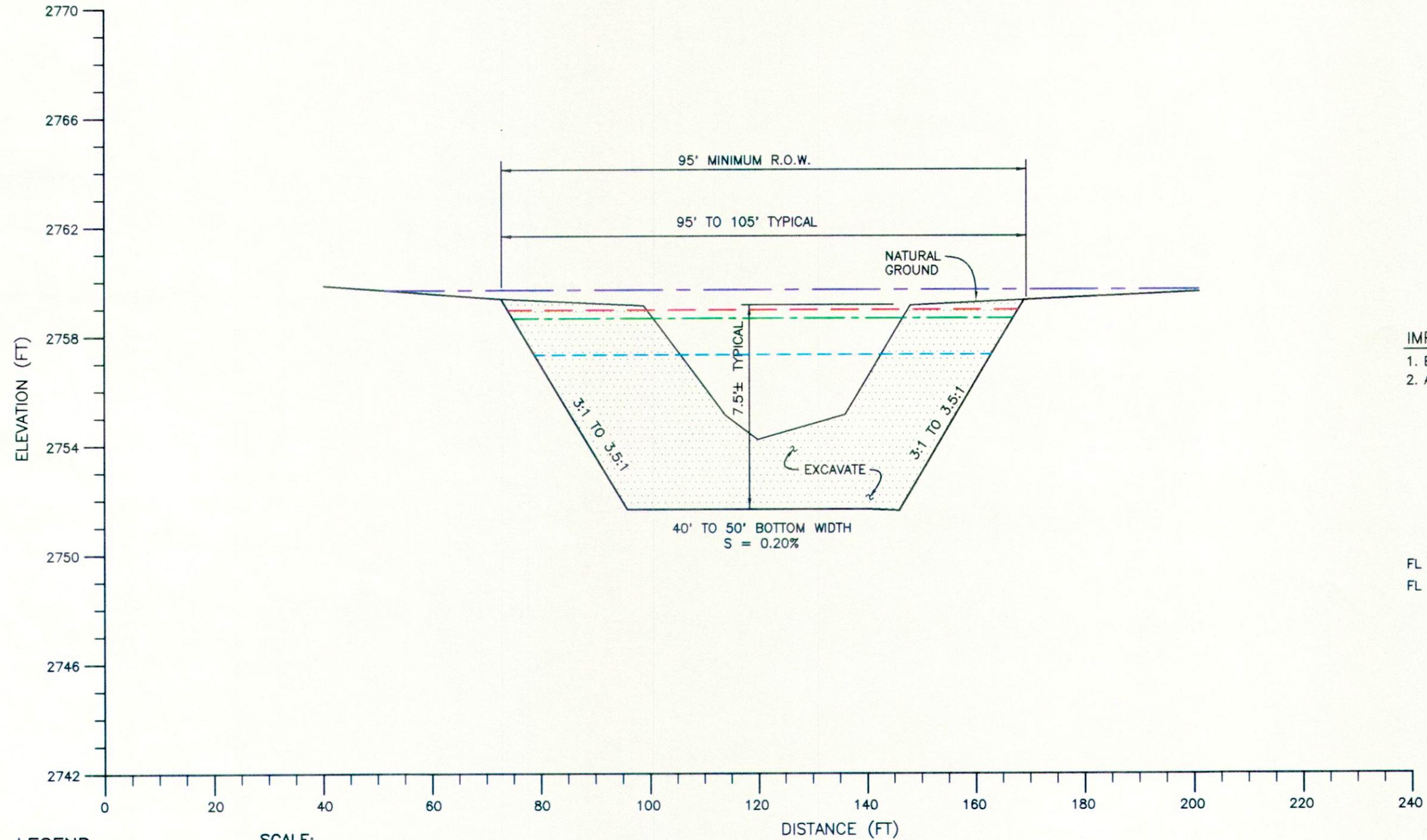
FIGURE 5-11

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



3187 3/28/95-2.00 RSK

CROSS SECTION D
STATION 38+95



IMPROVEMENTS RECOMMENDED

1. EXCAVATE CHANNEL
2. ACQUIRE ADDITIONAL RIGHT-OF-WAY

FL ELEVATION AT 31+87 = 2750.26

FL ELEVATION AT 54+30 = 2754.72

LEGEND

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

SCALE:

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

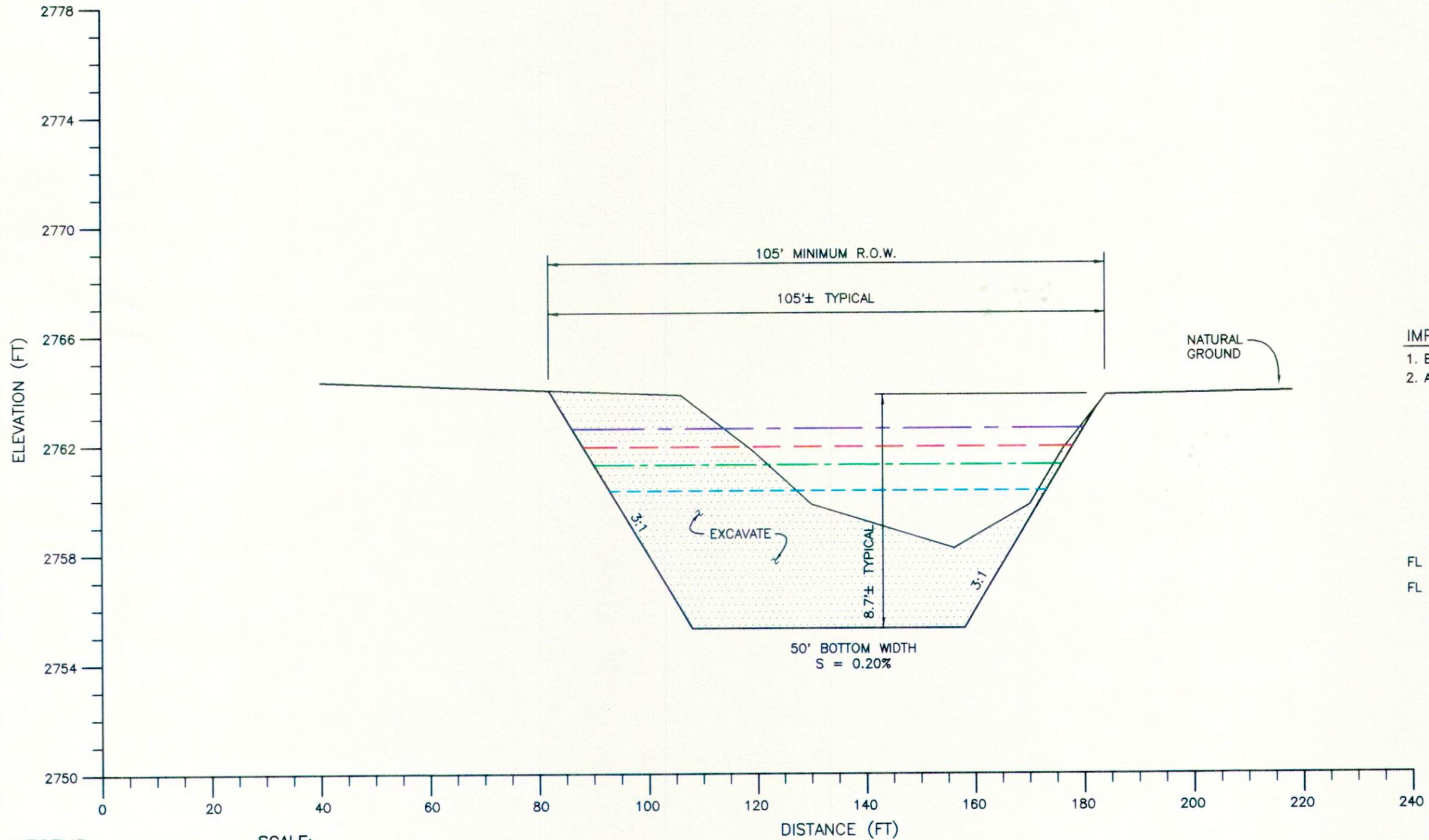
FAIRGROUNDS ROAD TO TILDEN STREET
STATION 31+87 TO STATION 54+30

FIGURE 5-12

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

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

CROSS SECTION E
STATION 57+15



IMPROVEMENTS RECOMMENDED

1. EXCAVATE CHANNEL
2. ACQUIRE ADDITIONAL RIGHT-OF-WAY

FL ELEVATION AT 54+30 = 2754.72

FL ELEVATION AT 57+80 = 2755.42

LEGEND

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

SCALE:

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

TILDEN STREET TO LINCOLN STREET
STATION 54+30 TO STATION 57+80

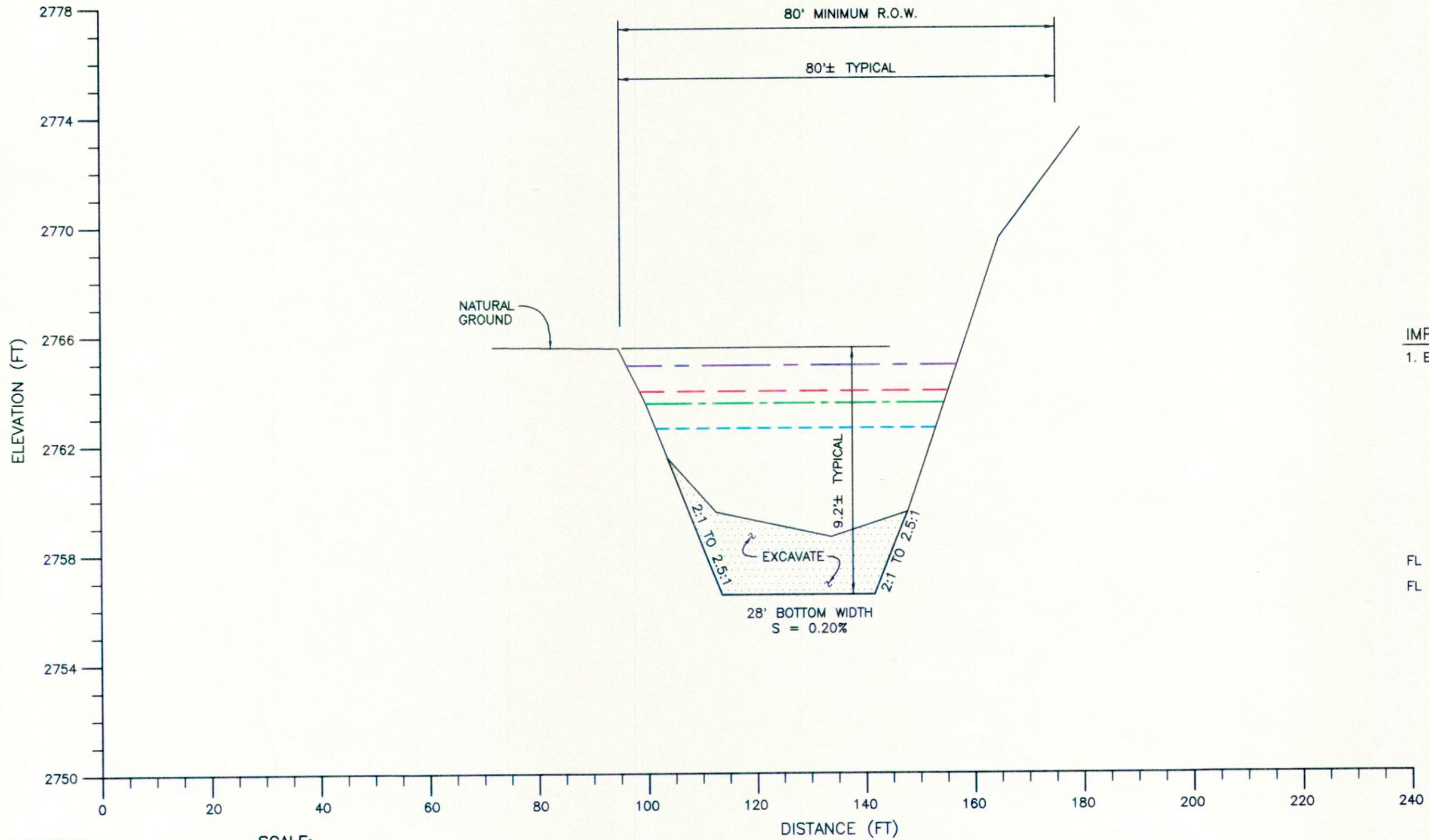
FIGURE 5-13

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



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

CROSS SECTION F
STATION 63+20



IMPROVEMENTS RECOMMENDED
1. EXCAVATE CHANNEL

FL ELEVATION AT 57+80 = 2755.42
FL ELEVATION AT 69+55 = 2757.75

LEGEND

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

SCALE:

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

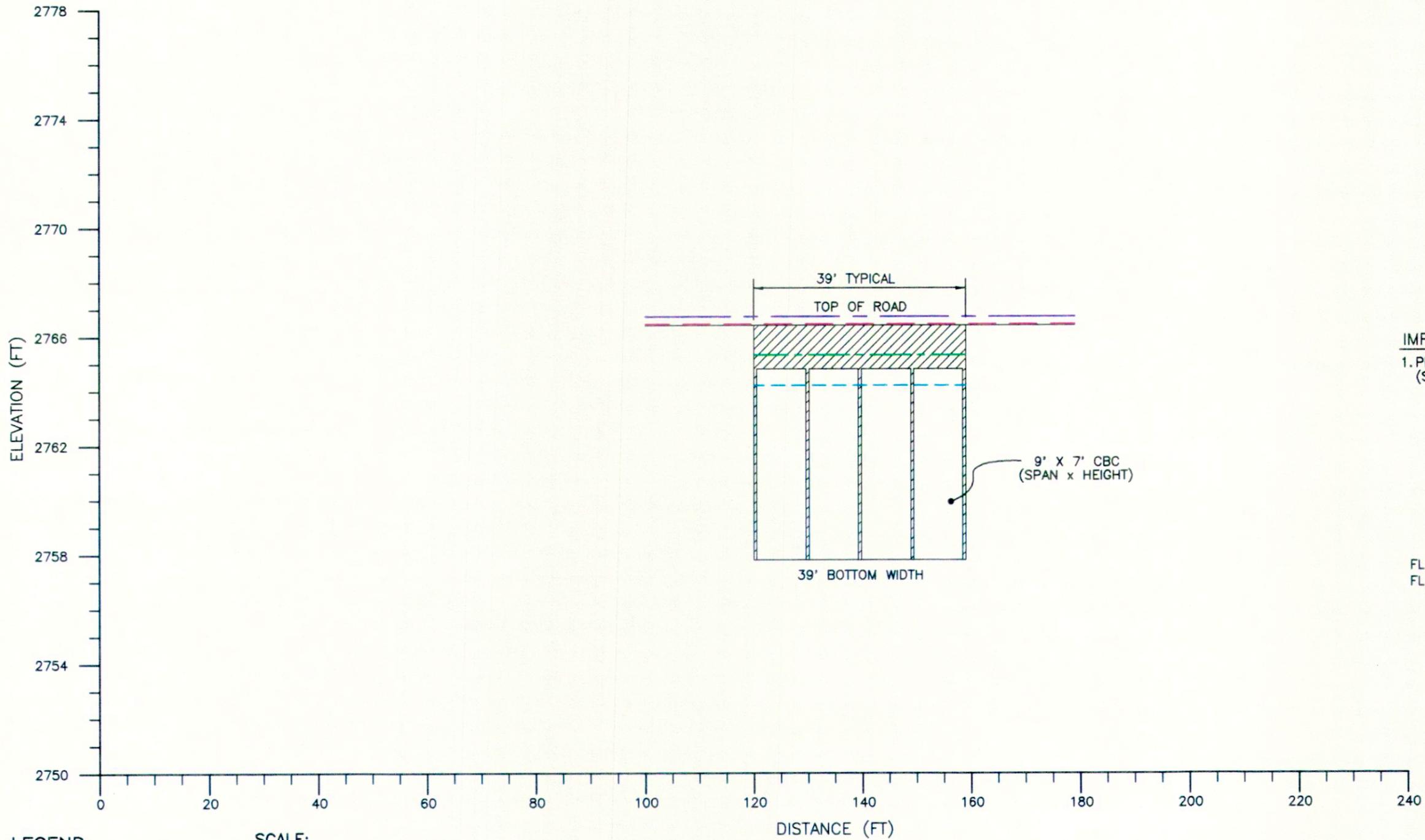
LINCOLN STREET TO CARVER STREET
STATION 57+80 TO STATION 69+55

FIGURE 5-14

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

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

CROSS SECTION G
STATION 69+55



IMPROVEMENTS RECOMMENDED
1. PROPOSED 4 - 9' X 7' CBC
(SPAN X HEIGHT)

FL ELEVATION AT 69+35 = 2757.70
FL ELEVATION AT 69+75 = 2757.80

LEGEND

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

SCALE:

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

CARVER STREET CROSSING

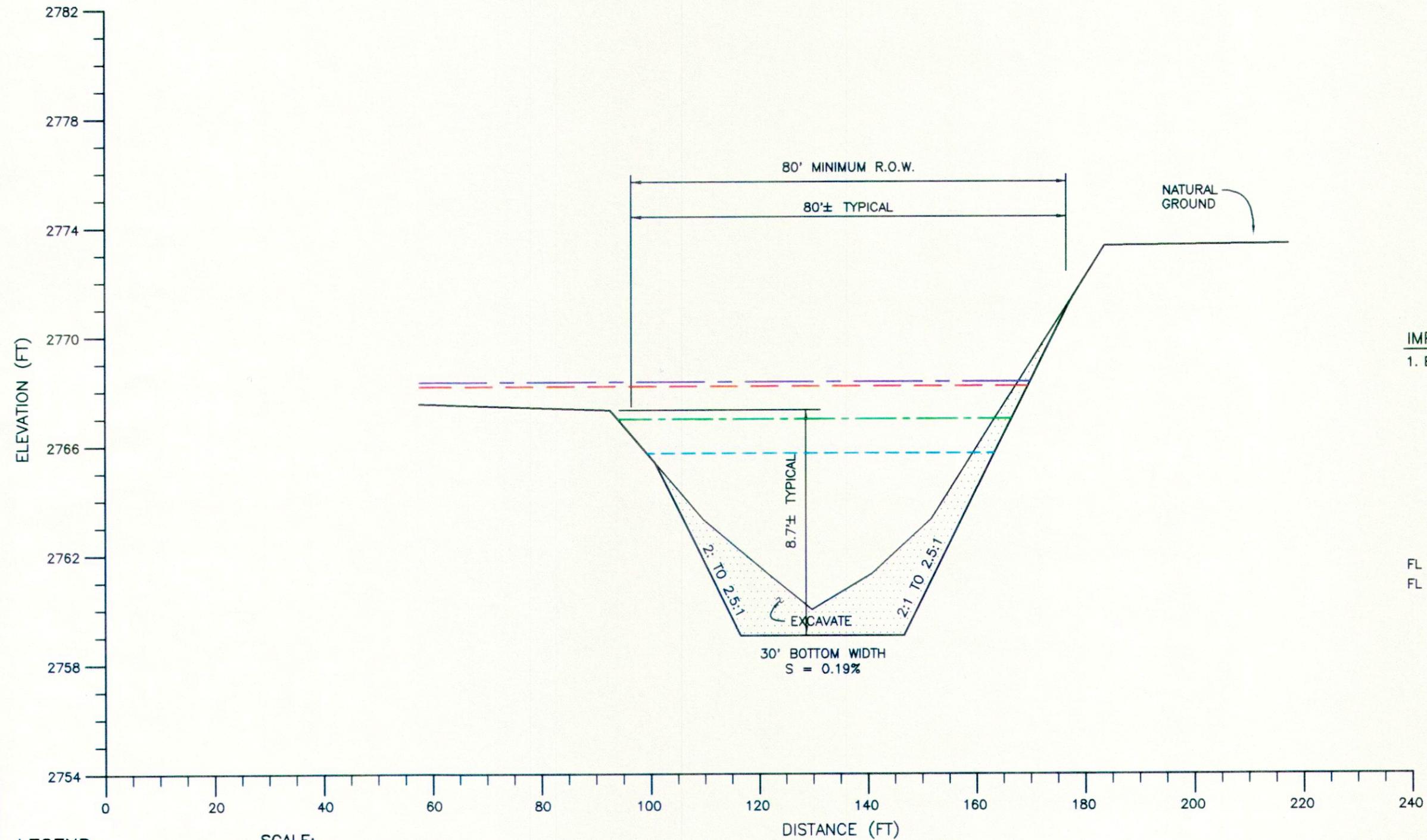
FIGURE 5-15

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



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

CROSS SECTION H
STATION 76+25



IMPROVEMENTS RECOMMENDED
1. EXCAVATE CHANNEL

FL ELEVATION AT 69+55 = 2757.75
FL ELEVATION AT 77+10 = 2759.21

LEGEND

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

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

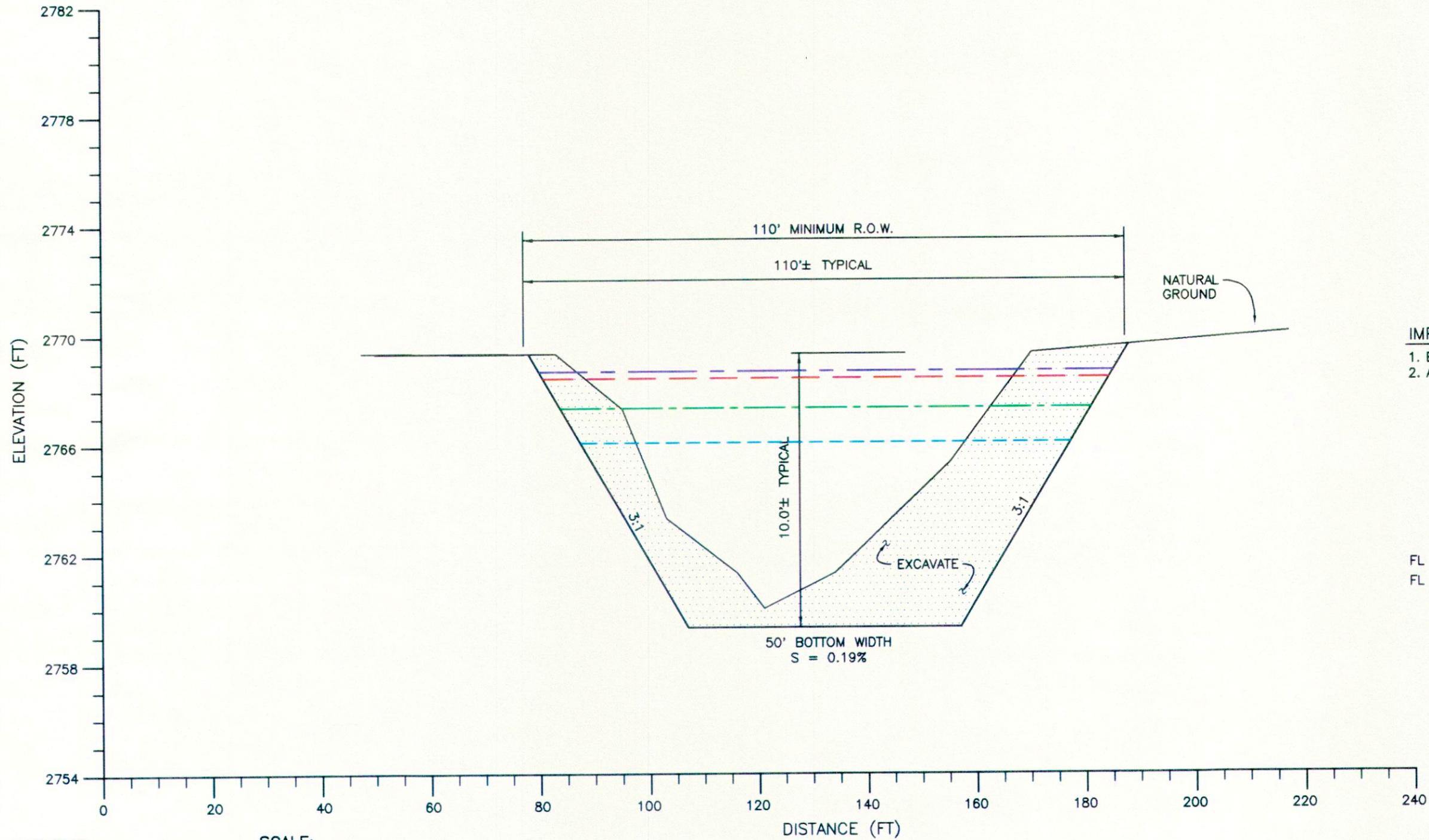
CARVER STREET TO TYLER STREET
STATION 69+55 TO STATION 77+10

FIGURE 5-16

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

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

CROSS SECTION I
STATION 77+70



- IMPROVEMENTS RECOMMENDED**
1. EXCAVATE CHANNEL
 2. ACQUIRE ADDITIONAL RIGHT-OF-WAY

FL ELEVATION AT 77+10 = 2759.21
FL ELEVATION AT 81+00 = 2759.95

LEGEND

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

SCALE:

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

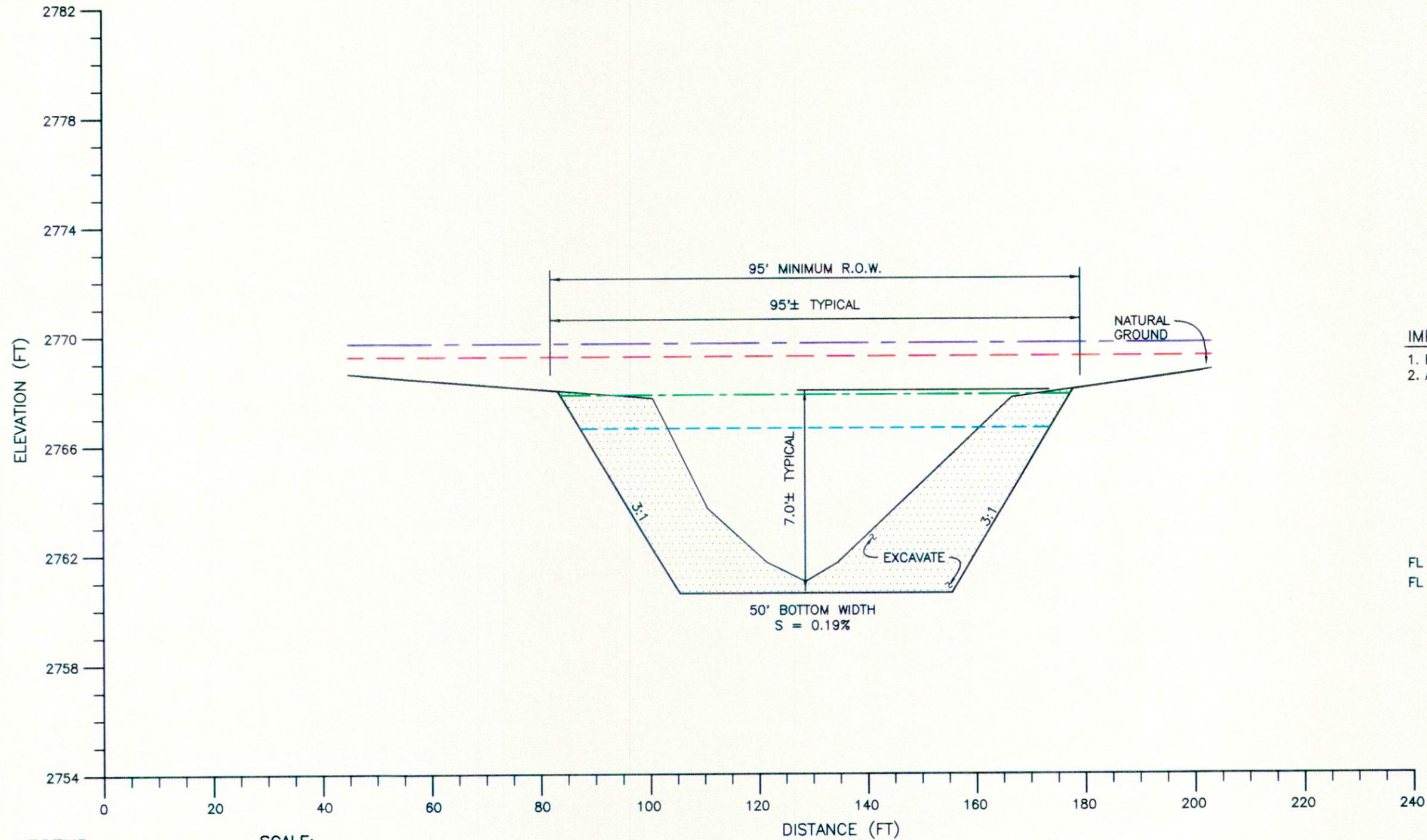
TYLER STREET TO LEE STREET
STATION 77+10 TO STATION 81+00

FIGURE 5-17

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

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

CROSS SECTION J
STATION 84+30



- IMPROVEMENTS RECOMMENDED**
1. EXCAVATE CHANNEL
 2. ACQUIRE ADDITIONAL RIGHT-OF-WAY

FL ELEVATION AT 81+00 = 2759.95
FL ELEVATION AT 85+45 = 2761.00

LEGEND

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

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

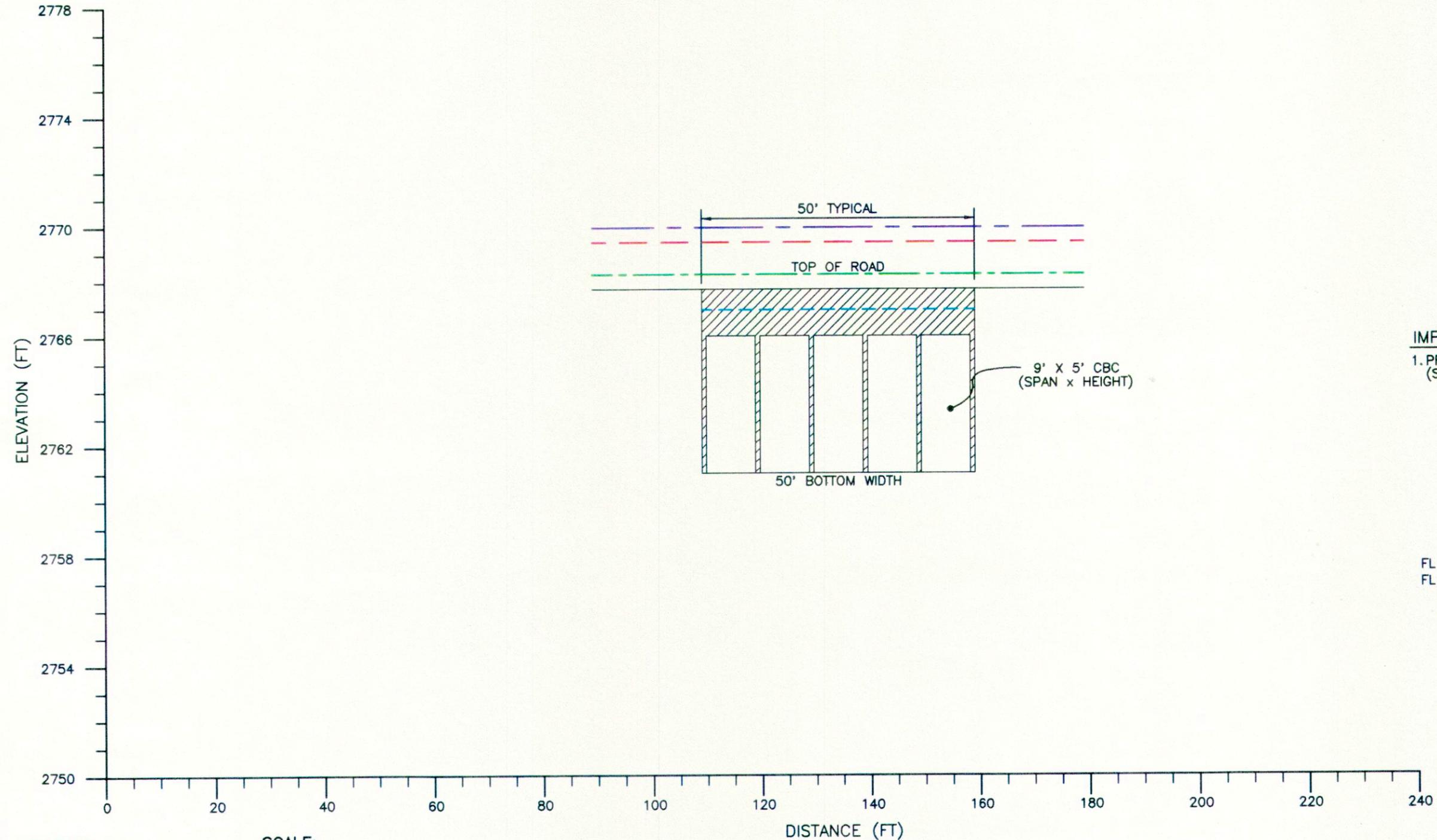
LEE STREET TO LAMESA ROAD
STATION 81+00 TO STATION 85+45

FIGURE 5-18

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

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

CROSS SECTION K
STATION 85+45



IMPROVEMENTS RECOMMENDED

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

FL ELEVATION AT 84+90 = 2761.00
FL ELEVATION AT 86+00 = 2761.00

LEGEND

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

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

LAMESA ROAD CROSSING

FIGURE 5-19

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

PSC Parkhill, Smith & Cooper, Inc.
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8545 3/28/96 2:30 RSK