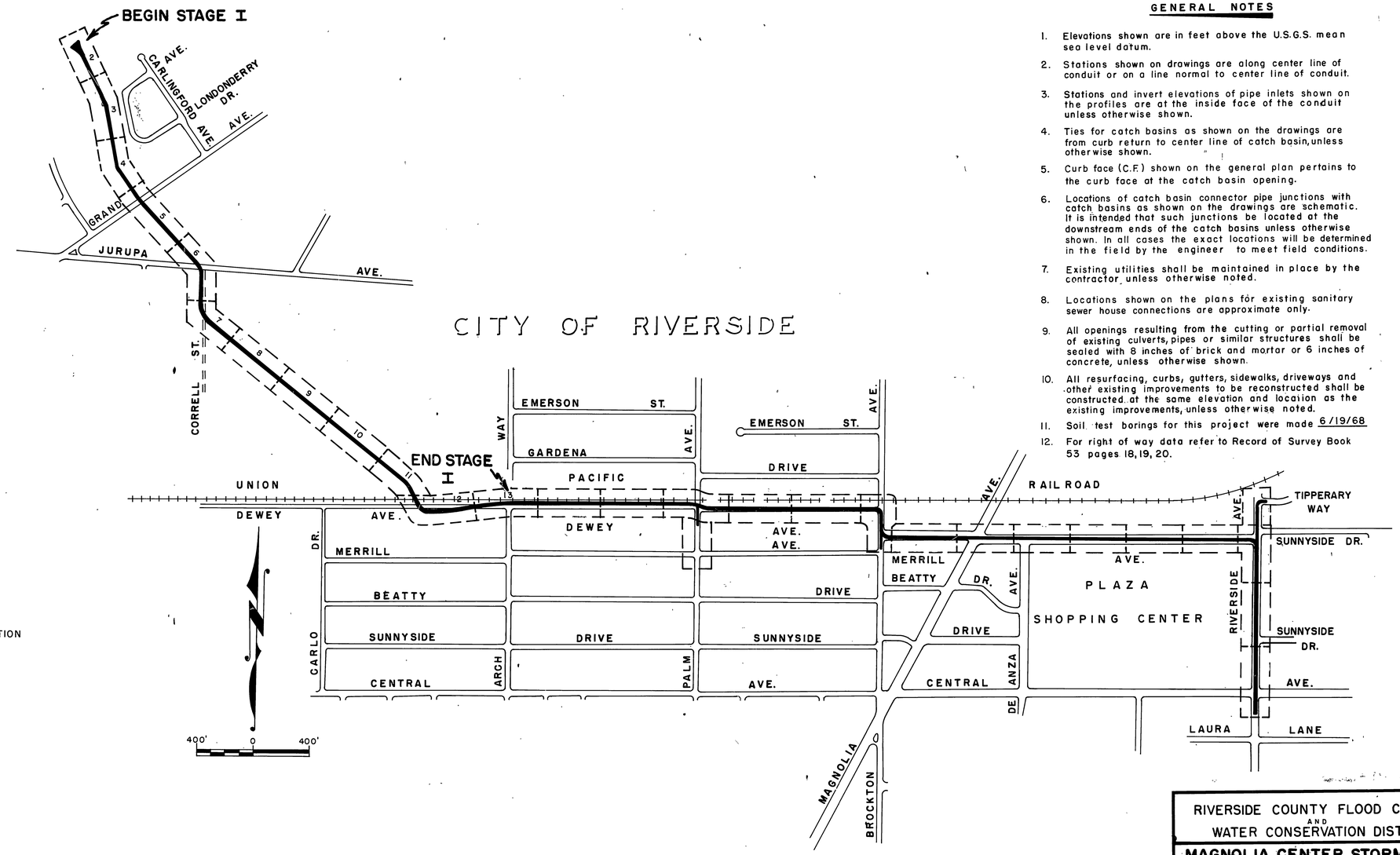
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

LEGEND

- PRIVATE OR SECONDARY ROAD
- EXISTING FLOW LINE
- SANITARY SEWER LINE — SS8
- GAS LINE — G2
- WATER LINE — W4
- STORM DRAIN LINE — SD18
- CULVERT WITH HEADWALLS
- POWER POLES
- ANCHOR & POLE
- GAS METER
- WATER METER
- WATER VALVE
- FIRE HYDRANT
- MANHOLE
- FENCE (Not Chain link)
- WALL—BLOCK OR MASONRY
- CATCH BASIN
- RIGHT OF WAY LINE (FLOOD CONTROL) — R/W
- TEMPORARY CONST. EASEMENT — T.C.E.
- STREET RIGHT OF WAY
- FENCE (Chain link to be const.)
- FENCE (Chain link exist.)

ABBREVIATIONS

C.M.P.	CORRUGATED METAL PIPE
R.C.P.	REINFORCED CONCRETE PIPE
C.B.	CATCH BASIN
P.C.C.	POINT OF COMPOUND CURVE
P.I.	POINT OF INTERSECTION
P.R.C.	POINT OF REVERSE CURVE
P.V.I.	POINT OF VERTICAL INTERSECTION
R.C.B.	REINFORCED CONCRETE BOX
T.S.	TRANSITION STRUCTURE
J.S.	JUNCTION STRUCTURE
M.H.	MANHOLE



GENERAL NOTES

1. Elevations shown are in feet above the U.S.G.S. mean sea level datum.
2. Stations shown on drawings are along center line of conduit or on a line normal to center line of conduit.
3. Stations and invert elevations of pipe inlets shown on the profiles are at the inside face of the conduit unless otherwise shown.
4. Ties for catch basins as shown on the drawings are from curb return to center line of catch basin, unless otherwise shown.
5. Curb face (C.F.) shown on the general plan pertains to the curb face at the catch basin opening.
6. Locations of catch basin connector pipe junctions with catch basins as shown on the drawings are schematic. It is intended that such junctions be located at the downstream ends of the catch basins unless otherwise shown. In all cases the exact locations will be determined in the field by the engineer to meet field conditions.
7. Existing utilities shall be maintained in place by the contractor unless otherwise noted.
8. Locations shown on the plans for existing sanitary sewer house connections are approximate only.
9. All openings resulting from the cutting or partial removal of existing culverts, pipes or similar structures shall be sealed with 8 inches of brick and mortar or 6 inches of concrete, unless otherwise shown.
10. All resurfacing, curbs, gutters, sidewalks, driveways and other existing improvements to be reconstructed shall be constructed at the same elevation and location as the existing improvements, unless otherwise noted.
11. Soil test borings for this project were made 6/19/68
12. For right of way data refer to Record of Survey Book 53 pages 18, 19, 20.

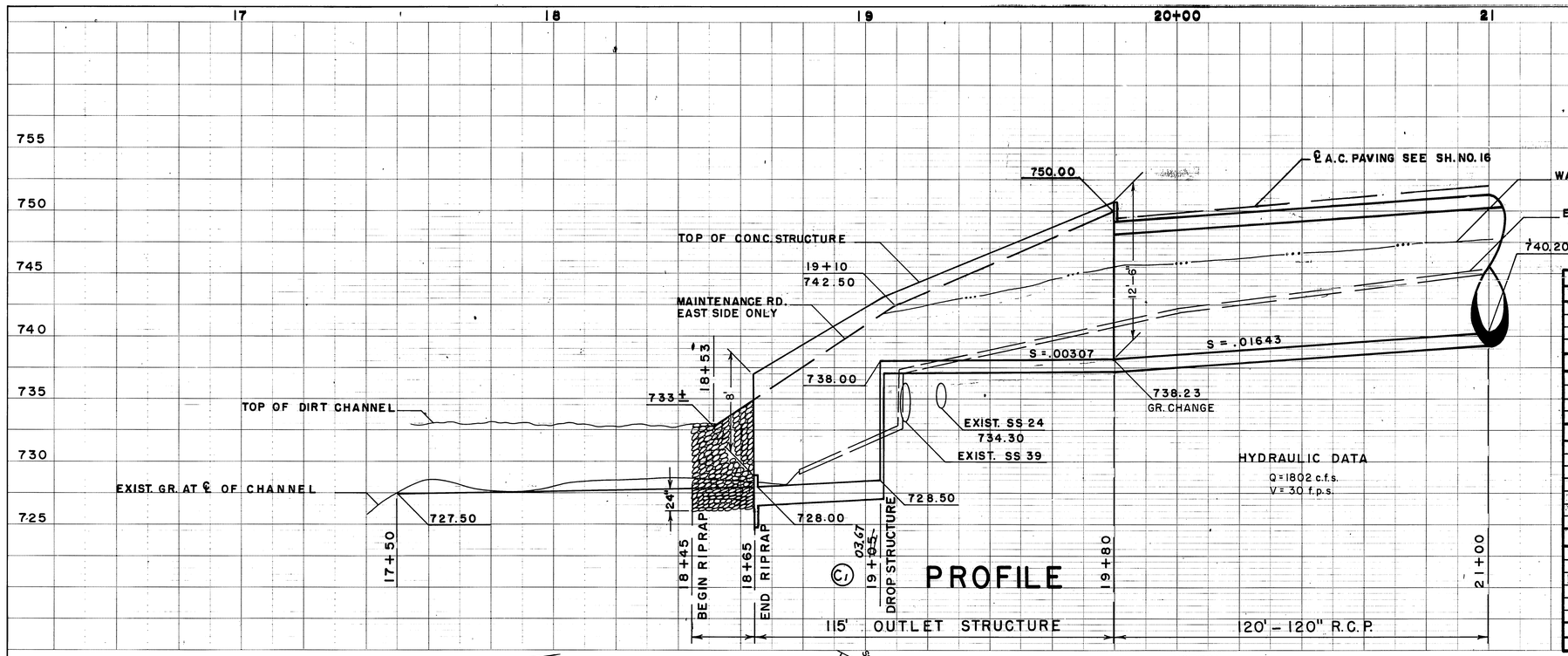
AS BUILT
PROJECT NO. 1-0-190

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

MAGNOLIA CENTER STORM DRAIN
STAGE I
MAP & GENERAL NOTES
ABBREVIATIONS & LEGEND

Approved: John W. Bryant, Chief Engineer R.E. No 8822	Designed: J.H. & W.S.	Sheet No 1 of
	Drawn: R.L. Pentze	Dwg. No 1-237
Date: 12-3-68	Checked: D.M.M.	
	Date Drawn: SEPT. 1968	

D-175



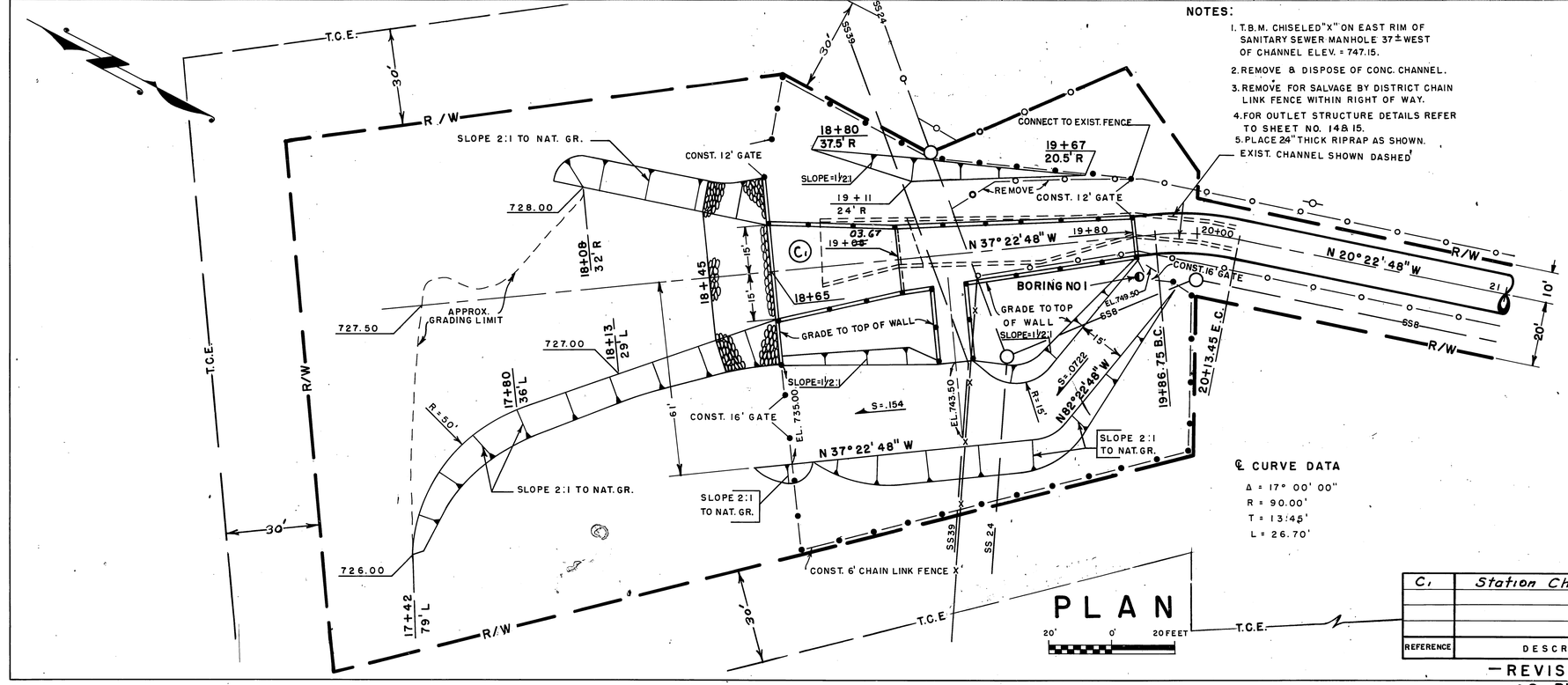
MAIN LINE SUMMARY

STATIONS FROM	STATIONS TO	LENGTH	PIPE DIA.	PROPOSALS I	PROPOSALS II	PROPOSALS ~~III~~
19+80	27+80	800'	120"	~~850-D~~	850-D	~~850-D~~
27+80	29+60	180	120	~~950-D~~	950-D	~~950-D~~
29+60	32+40	280	120	~~1100-D~~	1100-D	~~1100-D~~
32+40	35+85	345	120	~~1350-D~~	1350-D	~~1350-D~~
JUNCTION AT JURUPA AVE.				~~J.S. NO. 4~~	J.S. NO. 4	~~J.S. NO. 4~~
36+00	37+60	160	120	~~1350-D~~	1350-D	~~1350-D~~
37+60	39+55	195	120	~~1250-D~~	1250-D	~~1250-D~~
39+55	39+65	10	120	~~1250-D~~	T.S. NO. I	~~T.S. NO. I~~
39+65	40+00	35	120	~~1250-D~~	9'-7"x11'-6" R.C.B.	~~9'-7"x11'-6" R.C.B.~~
JUNCTION AT CORRELL ST.				~~J.S. NO. 4~~	J.S. NO. I	~~J.S. NO. I~~
40+13	43+20	307	~~138~~	~~1100-D~~	9'-7"x11'-6" R.C.B.	~~9'-7"x11'-6" R.C.B.~~
43+20	44+20	100	~~138~~	~~1000-D~~	↓	↓
44+20	45+20	100	~~138~~	~~900-D~~		
45+20	54+80	960	~~138~~	~~850-D~~		
54+80	56+40	160	~~138~~	~~900-D~~		
56+40	59+50	310	~~138~~	~~1000-D~~	↓	↓
59+50	59+60			~~T.S. NO. 3~~	T.S. NO. I	~~T.S. NO. I~~
JACKING AT U.P. R.R.						
59+60	60+36	76	~~120~~	~~2100-D~~	2100-D	~~2100-D~~
60+36	60+46	10	~~120~~	~~1100-D~~	T.S. NO. I	~~1100-D~~
60+46	62+80	234	~~120~~	~~1100-D~~	8'-5"x10' R.C.B.	~~1100-D~~
62+80	63+60	80	~~120~~	~~1250-D~~	↑	~~1250-D~~
63+60	65+00	140	~~120~~	~~1100-D~~		~~1100-D~~
65+00	66+63	163	~~120~~	~~950-D~~		~~950-D~~
JUNCTION AT ARCH WAY				~~J.S. NO. 4~~	J.S. NO. I	~~J.S. NO. 4~~
66+78	66+90	12	~~120~~	~~950-D~~	8'-5"x10' R.C.B.	~~950-D~~

NOTES:

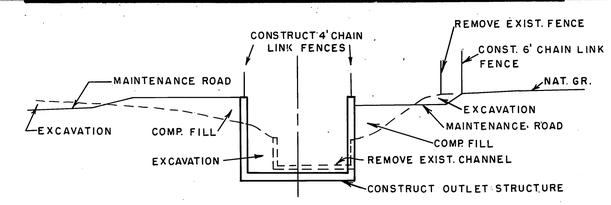
1. T.B.M. CHISELED "X" ON EAST RIM OF SANITARY SEWER MANHOLE 37± WEST OF CHANNEL ELEV. = 747.15.
2. REMOVE & DISPOSE OF CONC. CHANNEL.
3. REMOVE FOR SALVAGE BY DISTRICT CHAIN LINK FENCE WITHIN RIGHT OF WAY.
4. FOR OUTLET STRUCTURE DETAILS REFER TO SHEET NO. 14 & 15.
5. PLACE 24" THICK RIPRAP AS SHOWN.

EXIST. CHANNEL SHOWN DASHED



℄ CURVE DATA

Δ = 17° 00' 00"
R = 90.00'
T = 13.45'
L = 26.70'



CROSS SECTION

STA. 19+60

10' 0 10 FEET

PROJECT NO. 1 - 0 - 190

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

MAGNOLIA CENTER STORM DRAIN STAGE I

PLAN & PROFILE

STA. 17+50 TO STA. 21+00

REFERENCE	DESCRIPTION	APPROVED	DATE
C.	Station Change	JCV	7-20-70

— REVISIONS —

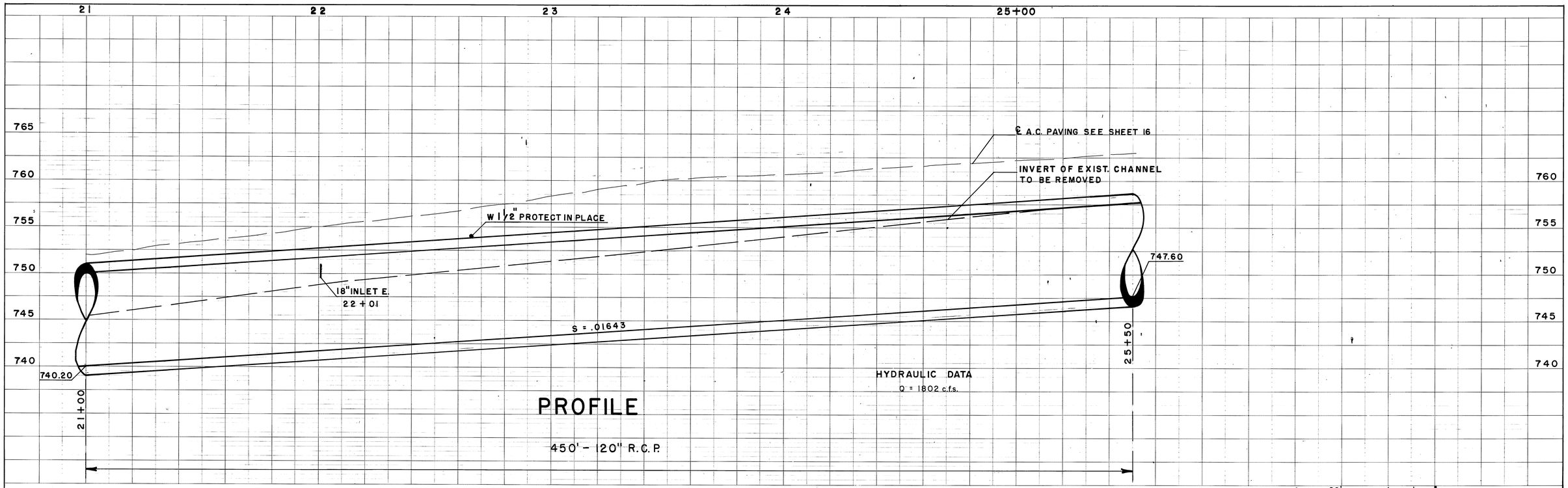
AS BUILT K.E.C. Co. Contractor Stage I Completed 8/5/69

Approved: John W. Bugbee, Chief Engineer R.E. No 8822
Date: 12-3-68

Designed: J. H. B. W.S.
Drawn: E. L. Pa
Checked: D. M. M.
Date Drawn: SEPT. 1968

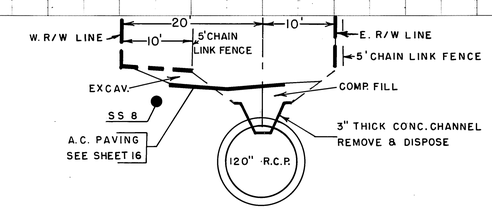
Sheet No 2 of
Dwg. No 1-237

D-175



NOTES:

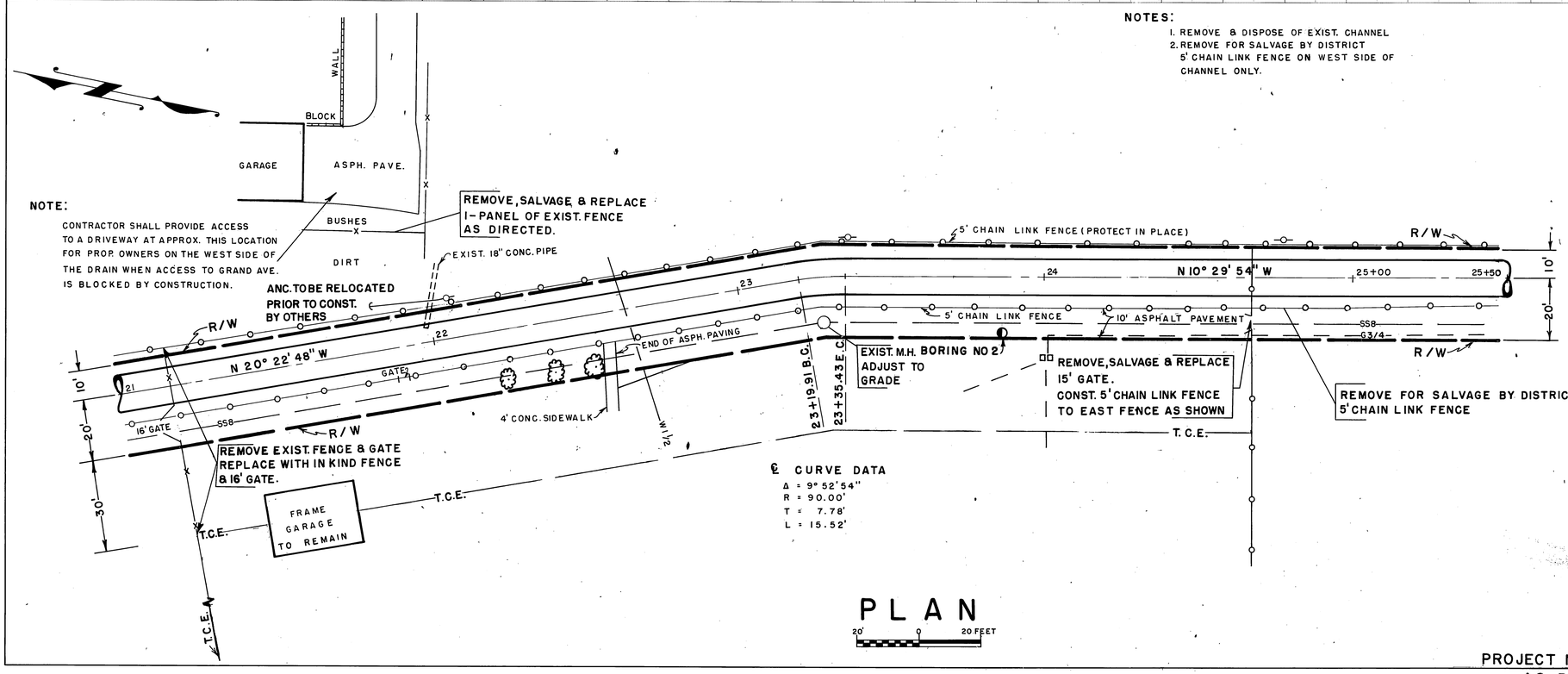
1. REMOVE & DISPOSE OF EXIST. CHANNEL
2. REMOVE FOR SALVAGE BY DISTRICT 5' CHAIN LINK FENCE ON WEST SIDE OF CHANNEL ONLY.



CROSS SECTION

STA. 24+00

10' 0 10 FEET



NOTE:

CONTRACTOR SHALL PROVIDE ACCESS TO A DRIVEWAY AT APPROX. THIS LOCATION FOR PROP. OWNERS ON THE WEST SIDE OF THE DRAIN WHEN ACCESS TO GRAND AVE. IS BLOCKED BY CONSTRUCTION.

PLAN

20' 0 20 FEET

PROJECT NO. 1-0-190

AS BUILT

REFERENCE	DESCRIPTION	APPROVED	DATE
	No Changes		7-20-70

— REVISIONS —

REVISED DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

MAGNOLIA CENTER STORM DRAIN STAGE I

PLAN & PROFILE

STA. 21+00 TO STA. 25+50

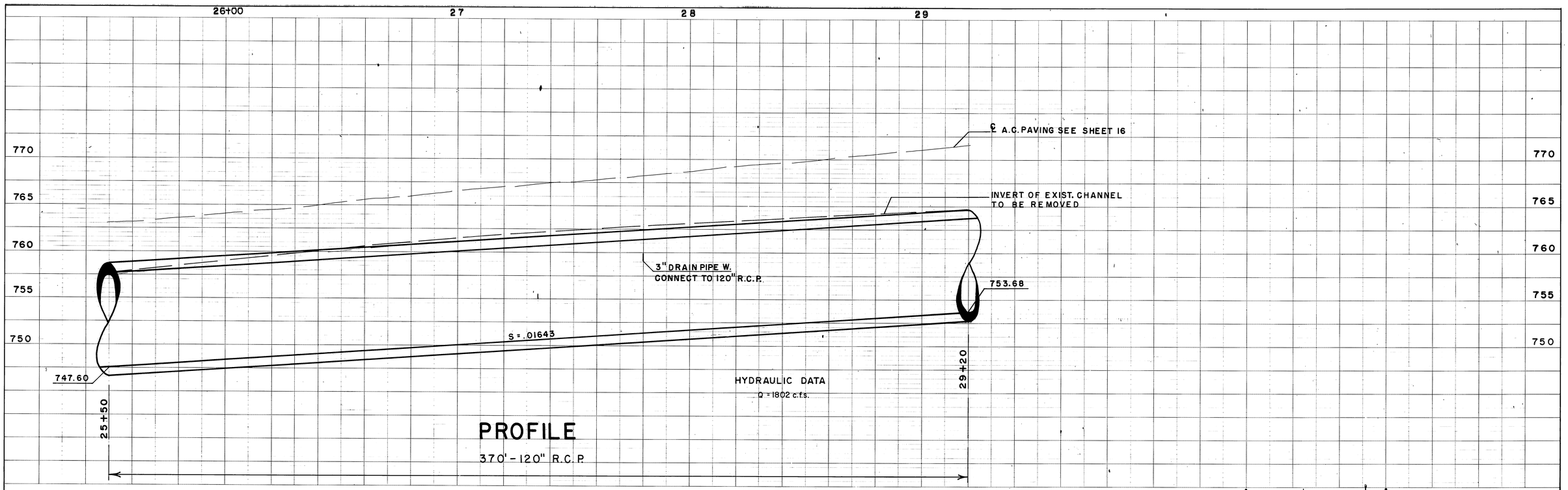
APPROVED: John W. Bryant, CHIEF ENGINEER R.E. NO. 8022 — DATE: 12-3-68

Designed: J.H. & W.S.
Drawn: R.L. Pauls
Checked: D.M.M.
Date Drawn: SEPT. 1968

Sheet No. 3 of

Dwg. No. 1-237

D-175

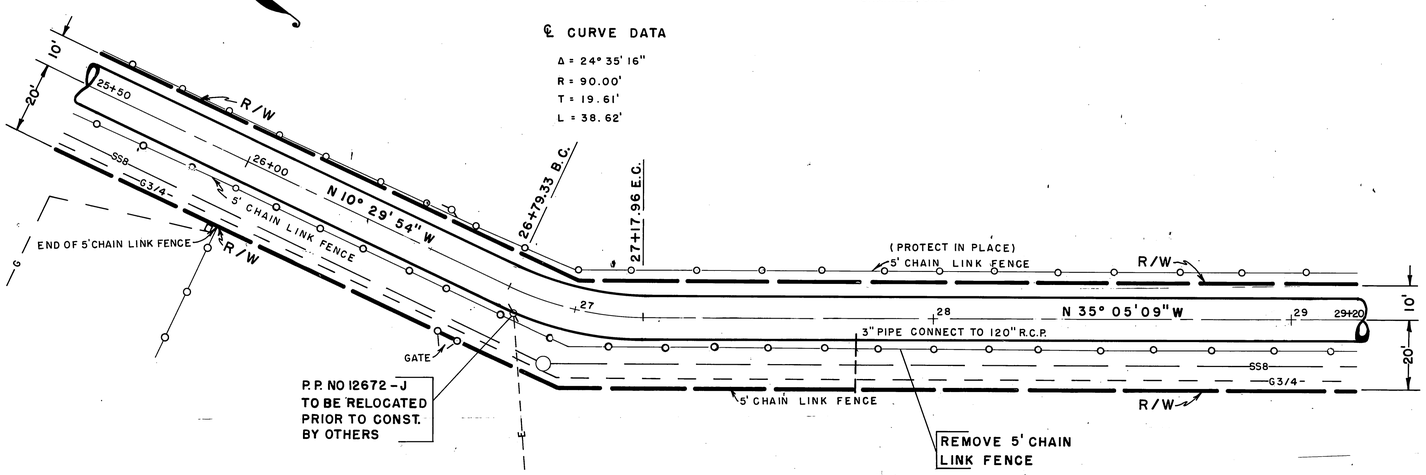


PROFILE

370' - 120" R.C.P.

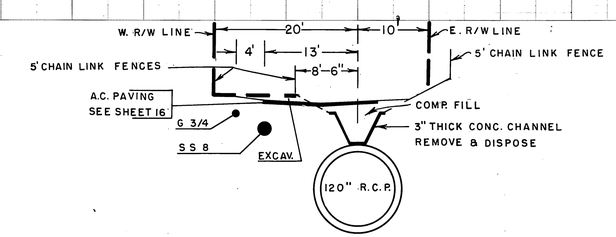
NOTES:

1. T.B.M. SOUTH RIM OF SANITARY SEWER MANHOLE NEAR STA. 27+00. ELEV. 767.03
2. REMOVE & DISPOSE OF EXIST. CONC. CHANNEL.
3. REMOVE FOR SALVAGE BY DISTRICT EXISTING 5' HIGH CHAIN LINK FENCE ON WEST SIDE OF CHANNEL ONLY.



PLAN

20' 0 20 FEET



CROSS SECTION

STA. 28+00

10' 0 10 FEET

Reference	Description	Approved	Date
	No Changes		7-20-70

— REVISIONS —

Revised Date

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

MAGNOLIA CENTER STORM DRAIN STAGE I

PLAN & PROFILE

STA. 25+50 TO STA. 29+20

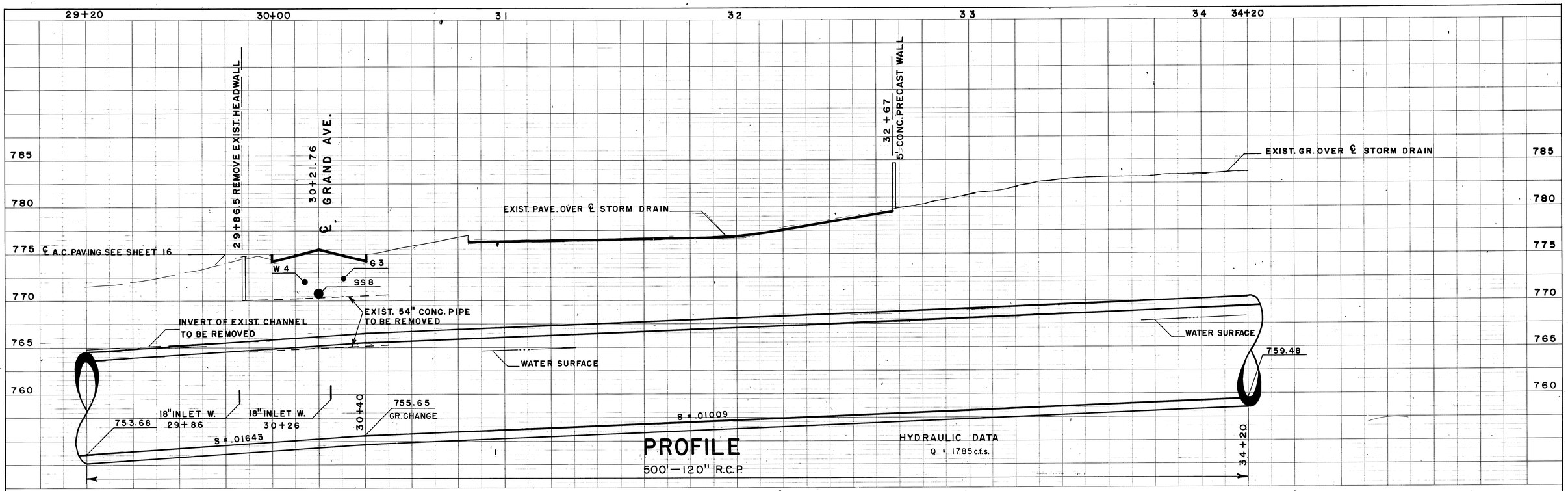
Approved: John W. Bryant, Chief Engineer R.E. No. 6822
Date: 12-3-68

Designed: J.H. & W.S.
Drawn: R. L. Pinto
Checked: D.M.M.
Date Drawn: SEPT. 1968

Sheet No. 4 of
Dwg. No. 1-237

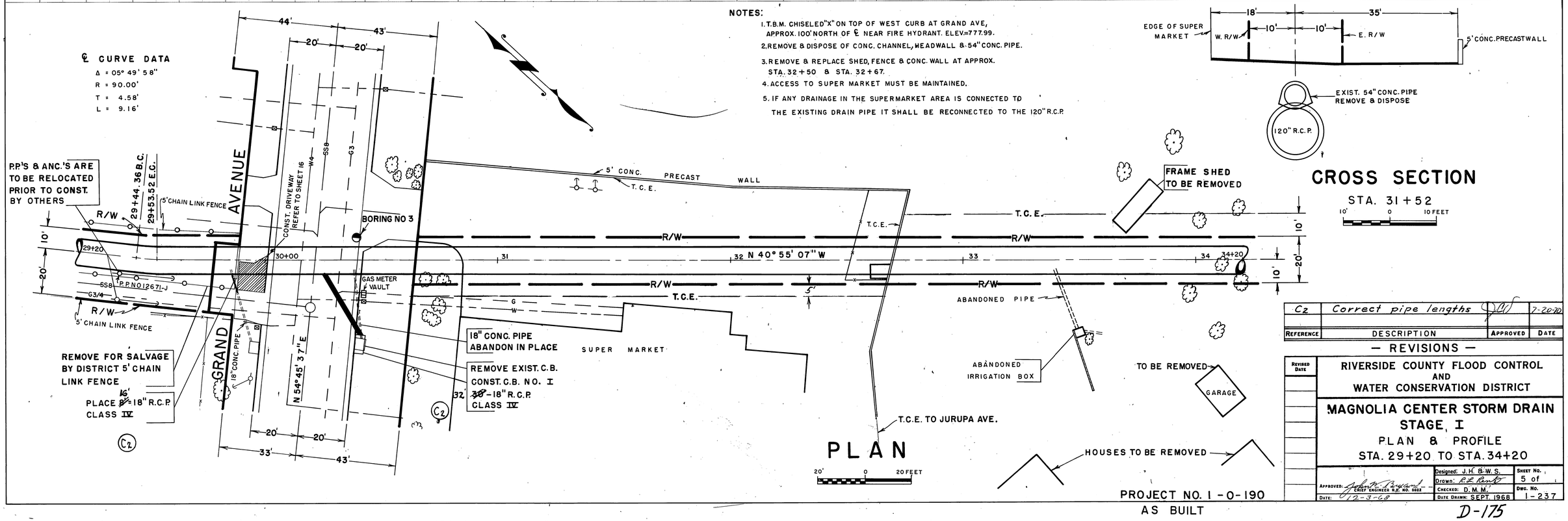
PROJECT NO. 1-0-190

AS BUILT K.E.C. Co. Contractor Stage I Completed 8/5/69 D-175



NOTES:

1. T.B.M. CHISELED "X" ON TOP OF WEST CURB AT GRAND AVE, APPROX. 100' NORTH OF ℄ NEAR FIRE HYDRANT. ELEV=777.99.
2. REMOVE & DISPOSE OF CONC. CHANNEL, HEADWALL & 54" CONC. PIPE.
3. REMOVE & REPLACE SHED, FENCE & CONC. WALL AT APPROX. STA. 32+50 & STA. 32+67.
4. ACCESS TO SUPER MARKET MUST BE MAINTAINED.
5. IF ANY DRAINAGE IN THE SUPERMARKET AREA IS CONNECTED TO THE EXISTING DRAIN PIPE IT SHALL BE RECONNECTED TO THE 120" R.C.P.



CROSS SECTION

STA. 31+52

10' 0 10 FEET

REFERENCE	DESCRIPTION	APPROVED	DATE
C2	Correct pipe lengths		7-20-70

— REVISIONS —

REVISED DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

MAGNOLIA CENTER STORM DRAIN STAGE, I

PLAN & PROFILE

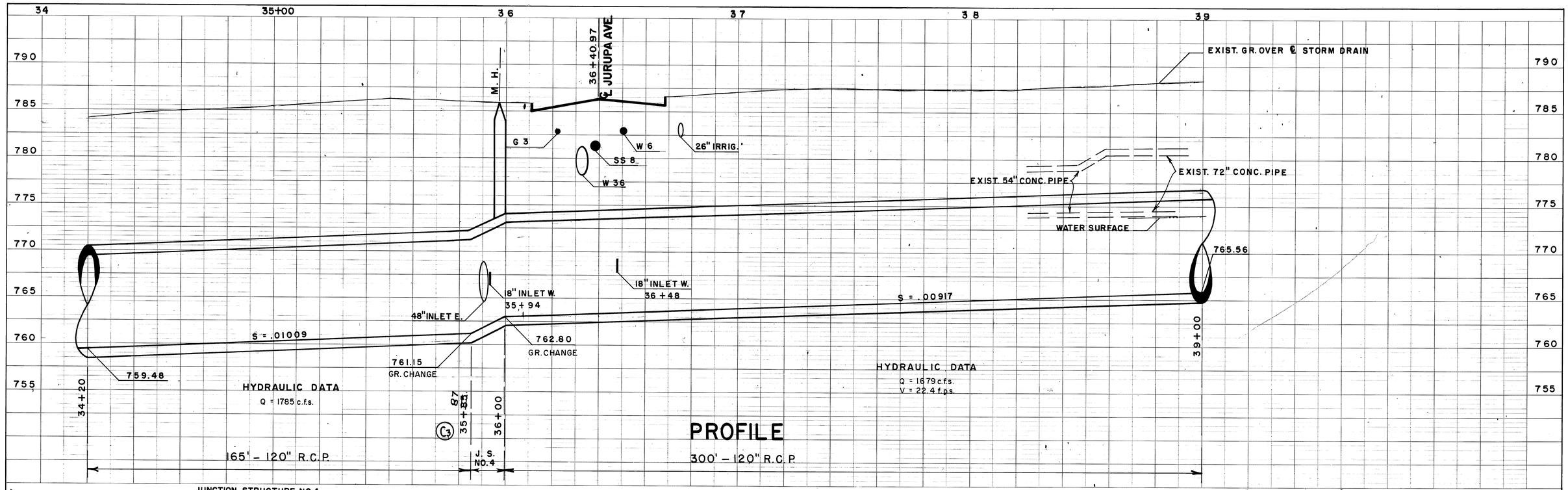
STA. 29+20 TO STA. 34+20

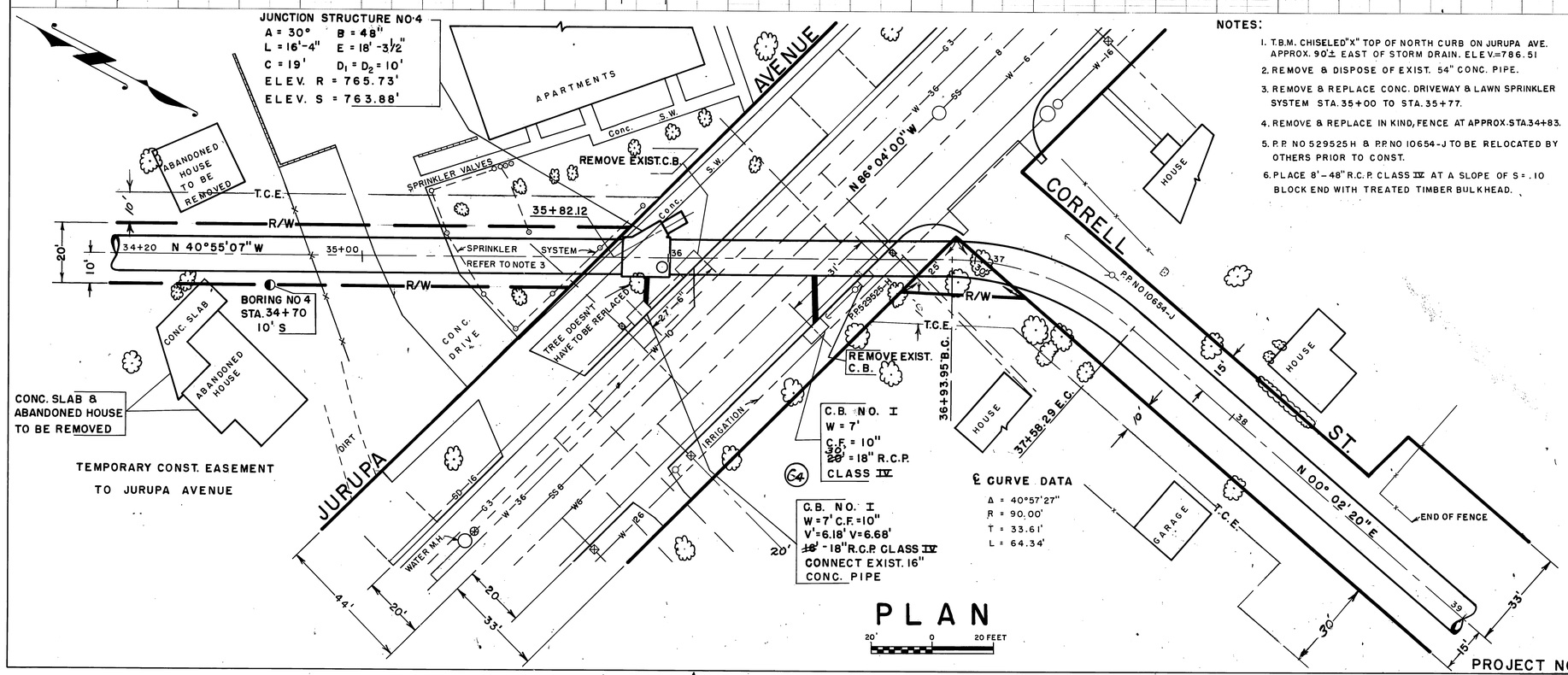
APPROVED: CHIEF ENGINEER R.E. NO. 5052	Designed: J.H. & W.S.	SHEET NO. 5 of
	Drawn: R.D. Rankin	
	Checked: D.M.M.	DWG. NO. 1-237
DATE: 12-3-68	DATE DRAWN: SEPT. 1968	

PROJECT NO. 1-0-190

AS BUILT

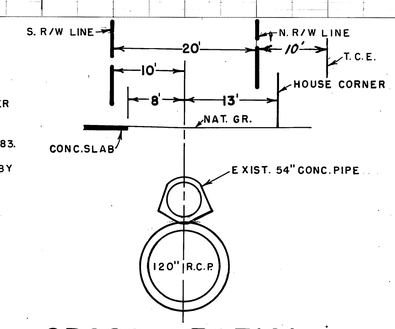
D-175





NOTES:

1. T.B.M. CHISELED "X" TOP OF NORTH CURB ON JURUPA AVE. APPROX. 90'± EAST OF STORM DRAIN. ELEV.=786.51
2. REMOVE & DISPOSE OF EXIST. 54" CONC. PIPE.
3. REMOVE & REPLACE CONC. DRIVEWAY & LAWN SPRINKLER SYSTEM STA. 35+00 TO STA. 35+77.
4. REMOVE & REPLACE IN KIND, FENCE AT APPROX. STA. 34+83.
5. P.P. NO 529525 H & P.P. NO 10654-J TO BE RELOCATED BY OTHERS PRIOR TO CONST.
6. PLACE 8'-48" R.C.P. CLASS IV AT A SLOPE OF S = .10 BLOCK END WITH TREATED TIMBER BULKHEAD.



CROSS SECTION

STA. 34+50

10' 0 10 FEET

REFERENCE	DESCRIPTION	APPROVED	DATE
C3	Station Change		7-20-70
C4	Correct Pipe Lengths		

— REVISIONS —

REVISED DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

MAGNOLIA CENTER STORM DRAIN STAGE I

PLAN & PROFILE

STA. 34+20 TO STA. 39+00

APPROVED: John W. Bryant, CHIEF ENGINEER R.E. NO. 5828
DATE: 12-3-68

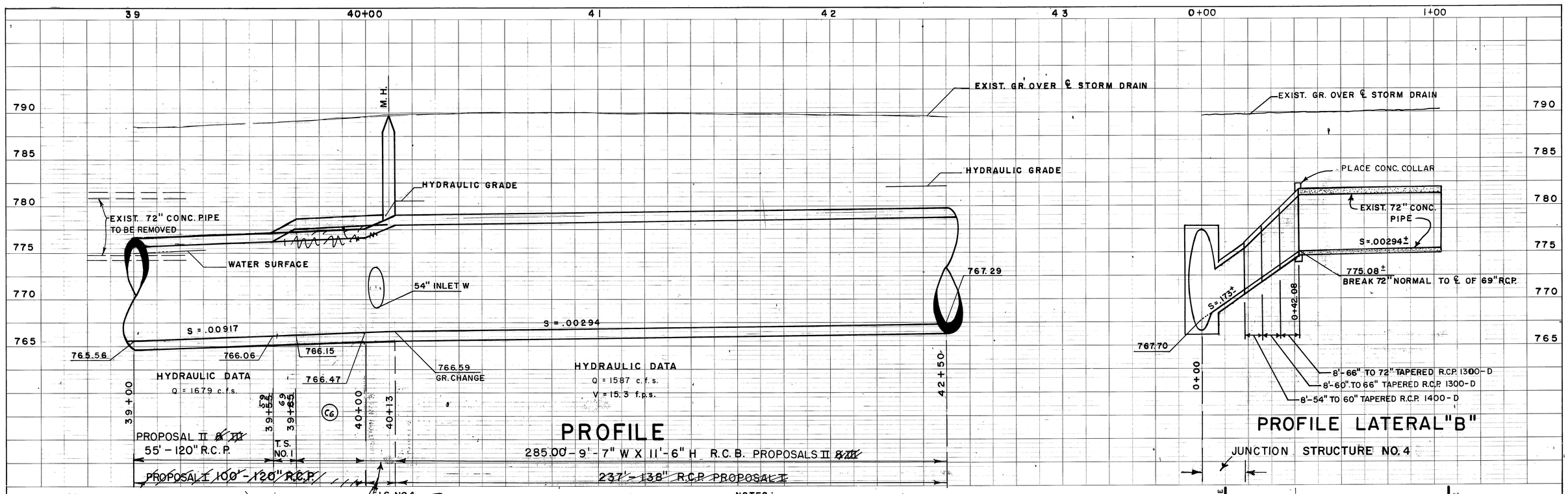
Designed: J.H. & W.S.
Drawn: R.L. Burke
Checked: D.M.M.
Date Drawn: SEPT. 1968

SHEET NO. 6 of
DWG. NO. 1-237

PROJECT NO. 1-0-190

AS BUILT

D-175



REFERENCE	DESCRIPTION	APPROVED	DATE
C5	Station Change		
C6	Station Change & Proposal Change		7-20-70

— REVISIONS —

REVISED DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

MAGNOLIA CENTER STORM DRAIN STAGE I

PLAN & PROFILE

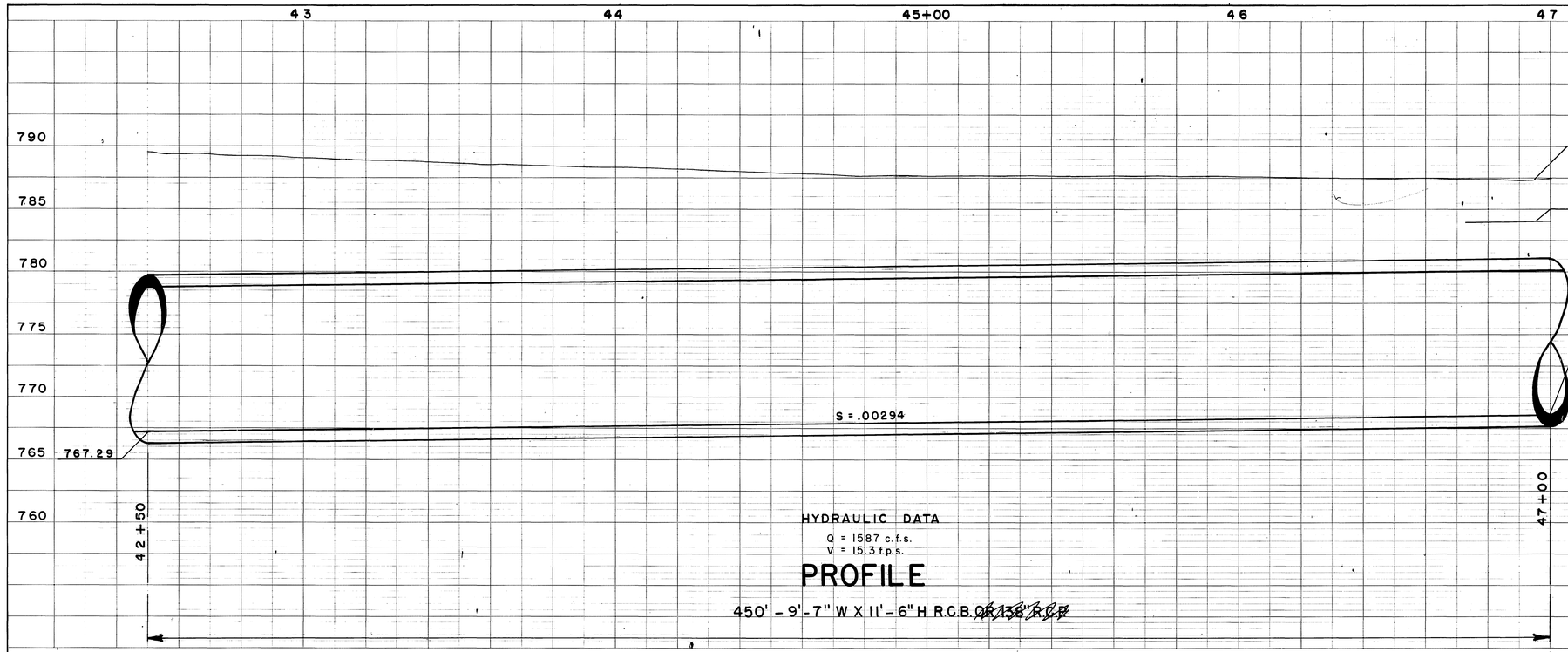
STA. 39+00 TO STA. 42+50

APPROVED: John W. Crippen, CHIEF ENGINEER R.C. FLOOD CONTROL	Designed: J.H. & W.S	SHEET NO. 7 of
DATE: 12-3-68	Drawn: K.B.	DWG. NO. 1-237
	CHECKED: D.M.M.	
	DATE DRAWN: SEPT 1968	

PROJECT NO. 1-0-190

AS BUILT

D-175



Blockouts were placed at the following locations
Rt. & Lt. are shown facing upstream

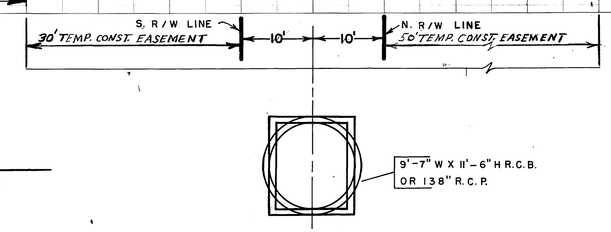
STATION	LOCATION	SIZE	ELEV. F.L. OF INLET
46+66.51	Lt.	15" R.C.P.	777.02
48+20.23	Lt.	" "	" .47
49+64.30	Rt.	" "	778.00
50+14.02	Lt.	33" R.C.P.	776.50
52+34.	Lt.	27" R.C.P.	778.69
53+19.46	Lt.	15" R.C.P.	781.05
55+76	Rt.	15" R.C.P.	780.00

HYDRAULIC DATA
Q = 1587 c.f.s.
V = 15.3 f.p.s.

PROFILE

450' - 9'-7" W X 11'-6" H R.C.B. ~~OR 138" R.C.P.~~

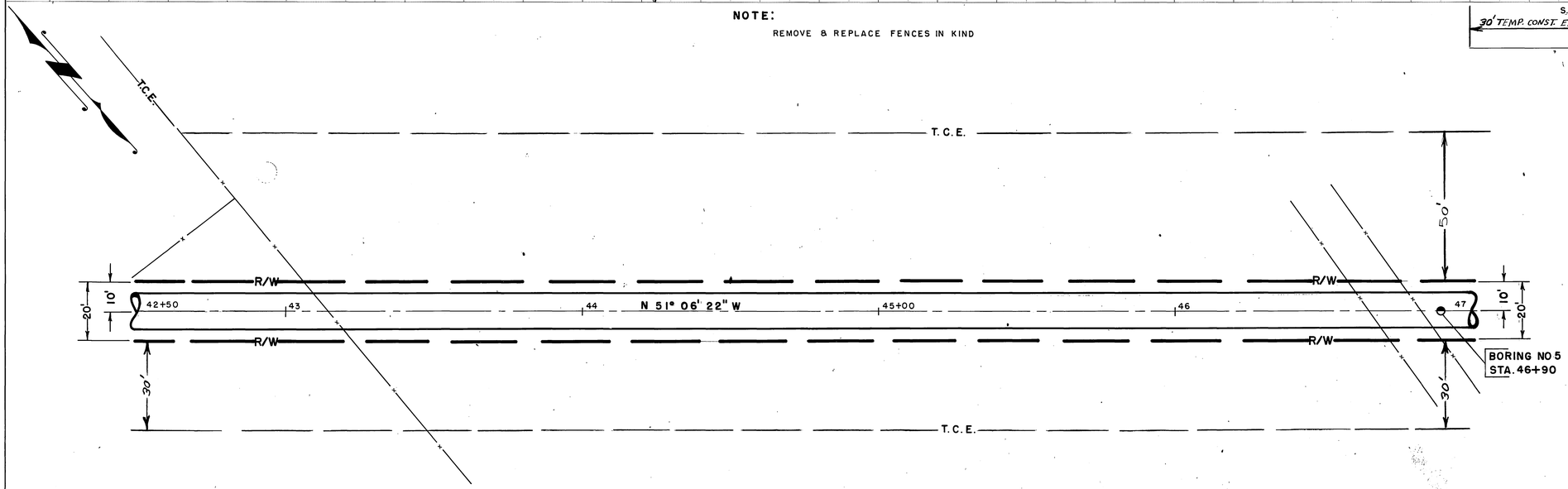
NOTE:
REMOVE & REPLACE FENCES IN KIND



CROSS SECTION

STA. 45+00

10' 0 10 FEET



PLAN

20' 0 20 FEET

REFERENCE	DESCRIPTION	APPROVED	DATE
C	Blockouts		1-20-70

— REVISIONS —

REVISED DATE

RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

MAGNOLIA CENTER STORM DRAIN
STAGE I
PLAN & PROFILE
STA. 42+50 TO STA. 47+00

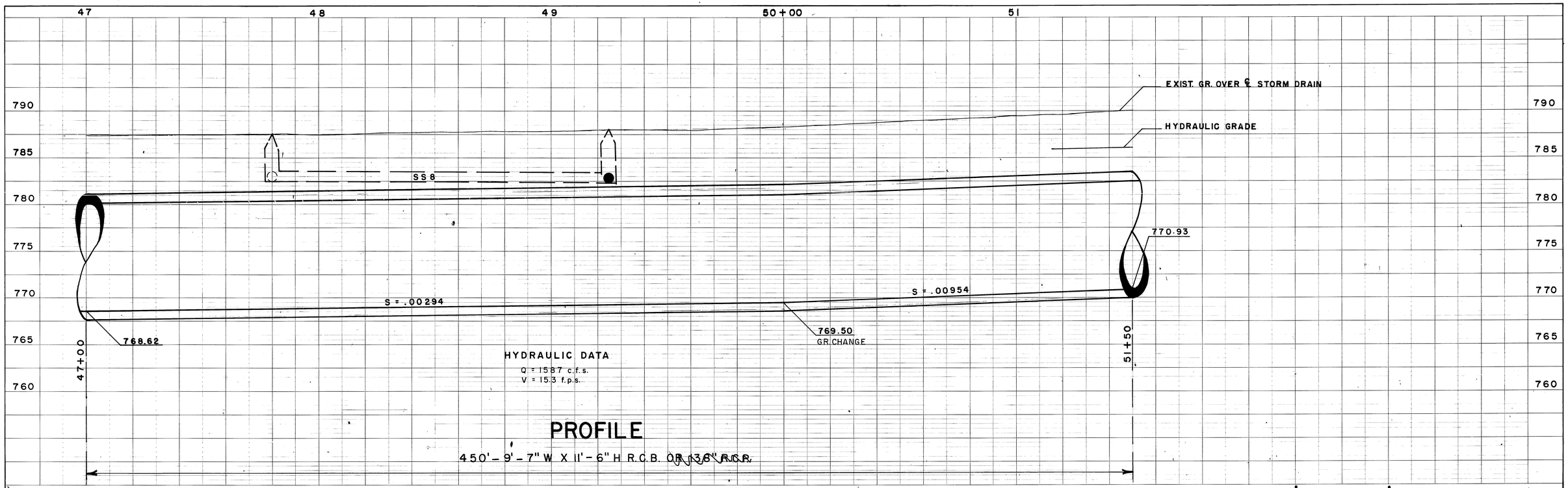
APPROVED: John V. Bryant
CHIEF ENGINEER R.E. NO. 6822
DATE: 12-3-68

Designed: J.H & W.S.
Drawn: R.L. Rente
Checked: D.M.M.
Date Drawn: SEPT. 1968

Sheet No. 8 of
Dwg. No. 1-237

PROJECT NO. 1-0-190
AS BUILT

D-175

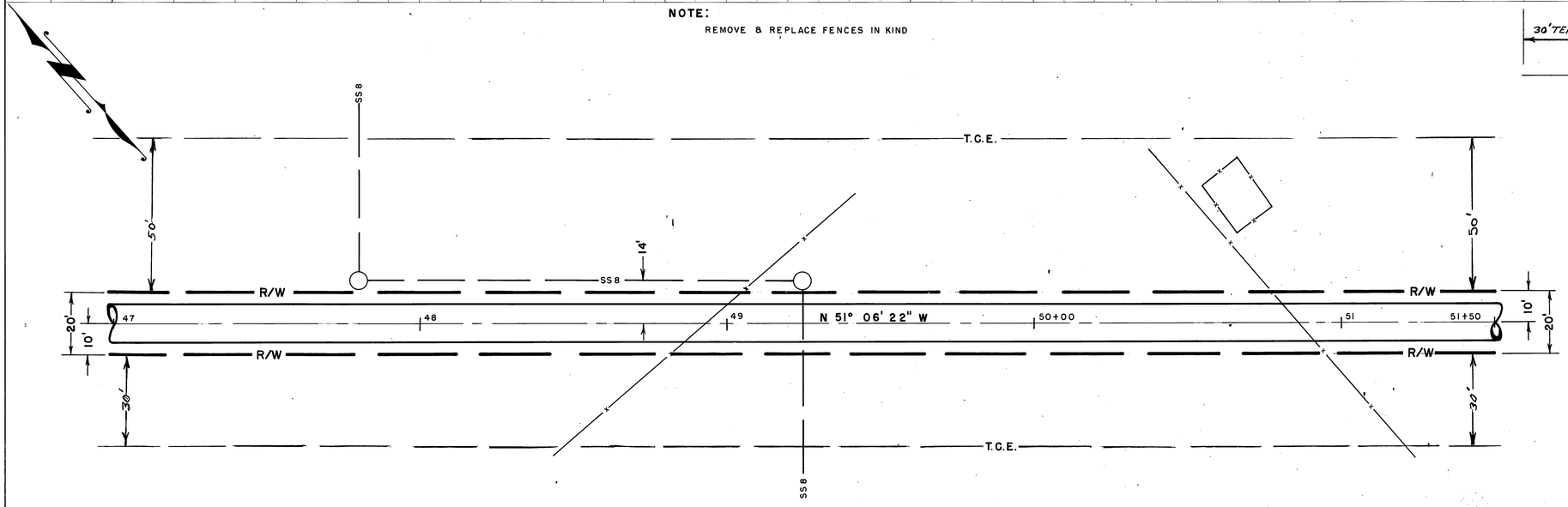


PROFILE

450'-9'-7" W X 11'-6" H R.C.B. OR 138" R.C.P.

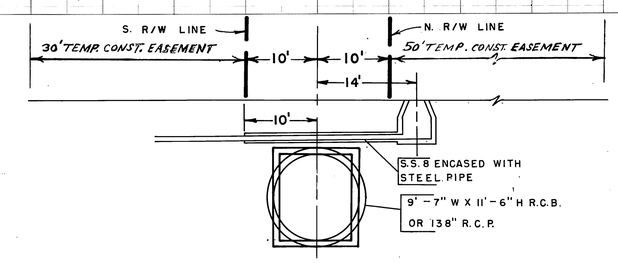
NOTE:

REMOVE & REPLACE FENCES IN KIND



PLAN

20' 0 20 FEET



CROSS SECTION

STA. 49+25

10' 0 10 FEET

REFERENCE	DESCRIPTION	APPROVED	DATE
	No Changes		7-20-70

— REVISIONS —

REVISED DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

MAGNOLIA CENTER STORM DRAIN STAGE I

PLAN & PROFILE

STA. 47+00 TO STA. 51+50

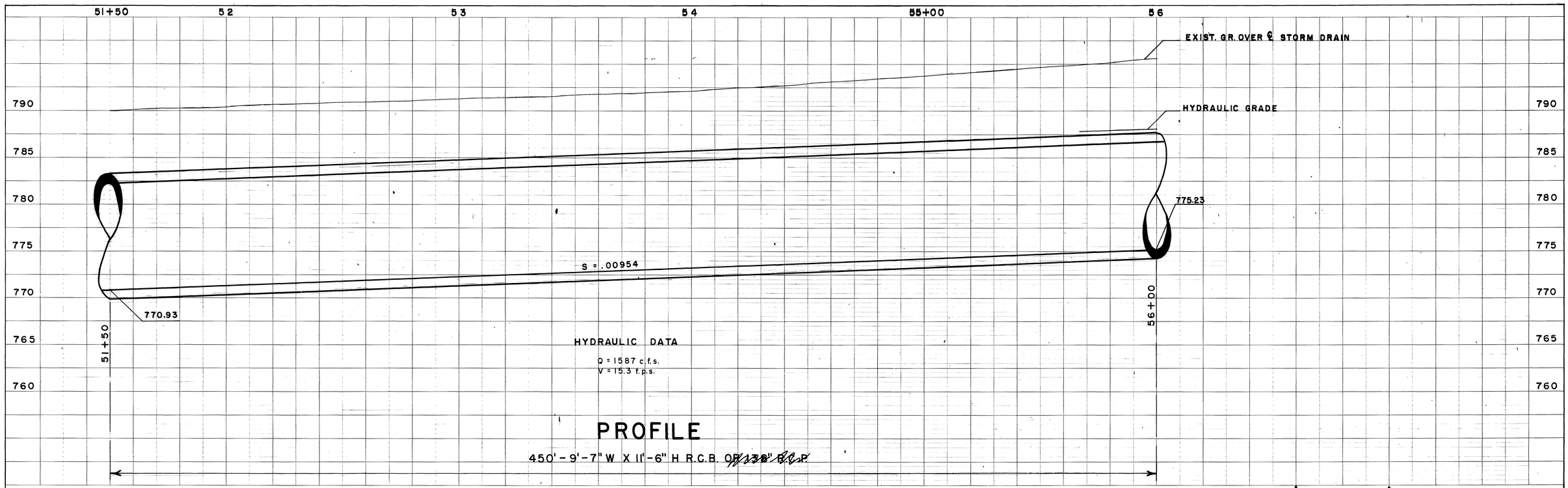
APPROVED: John W. Bryant, CHIEF ENGINEER R.E. NO. 5822
DATE: 12-3-68

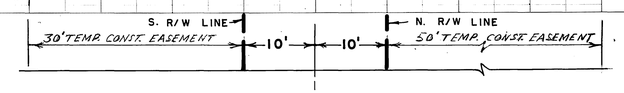
Designed: J.H. & W.S.
Drawn: R. L. Pantz
Checked: D.M.M.
Date Drawn: SEPT. 1968

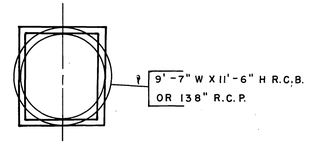
Sheet No. 9 of
Dwg. No. 1-237

PROJECT NO. 1-0-190
AS BUILT

D-175



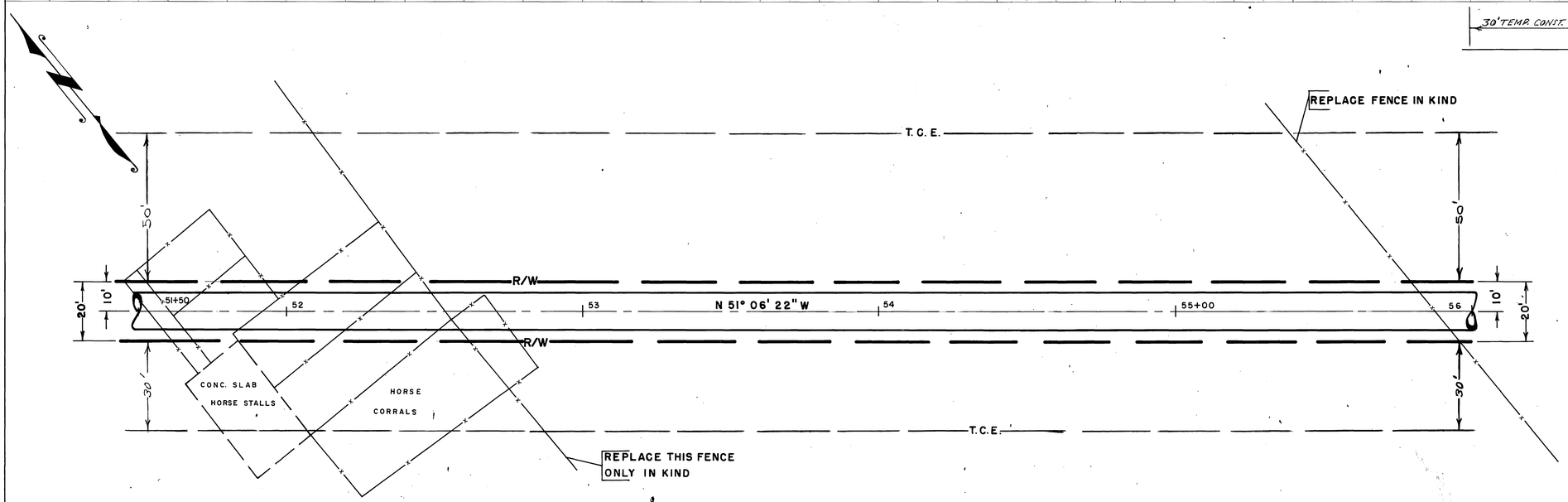




CROSS SECTION

STA. 54+00

10' 0 10 FEET



REMOVE FENCES, CONC. SLAB AND STALLS SHOWN HERE. (DO NOT RESTORE)

PLAN

20' 0 20 FEET

Reference	Description	Approved	Date
	No Changes		7-20-70

— REVISIONS —

Revised Date

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

MAGNOLIA CENTER STORM DRAIN STAGE I

PLAN & PROFILE

STA. 51+50 TO STA. 56+00

Approved: John W. Bunnell, Chief Engineer R.C. No. 5822
Date: 12-3-68

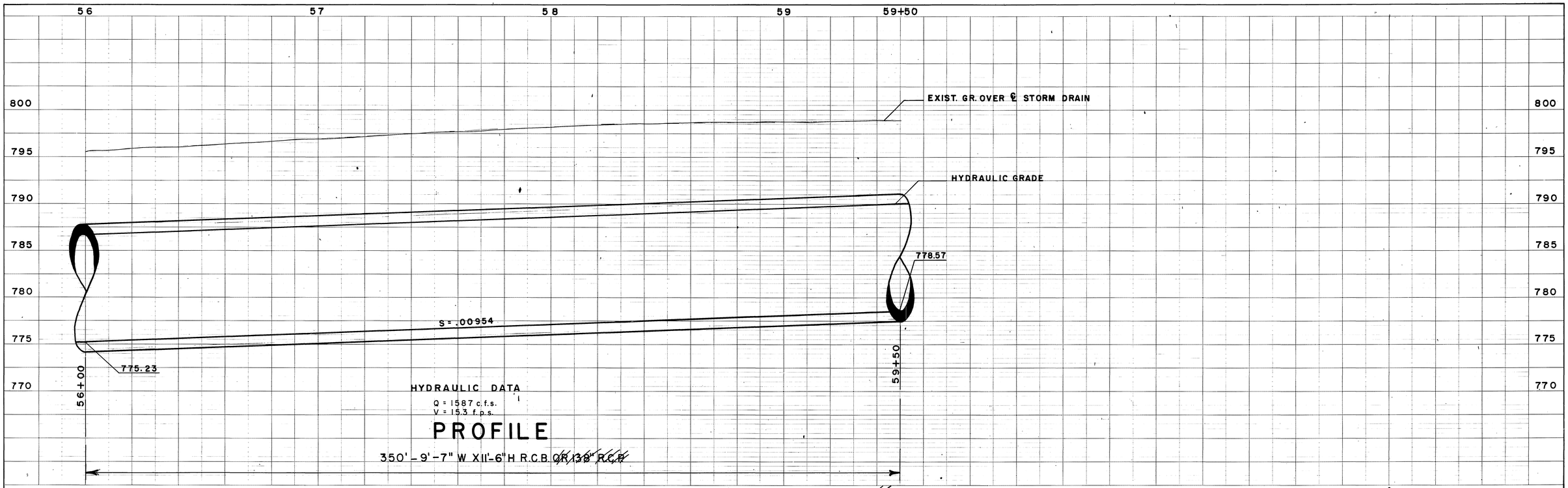
Designed: J. H. & W.S.
Drawn: R. L. Pinto
Checked: D. M. M.
Date Drawn: SEPT. 1968

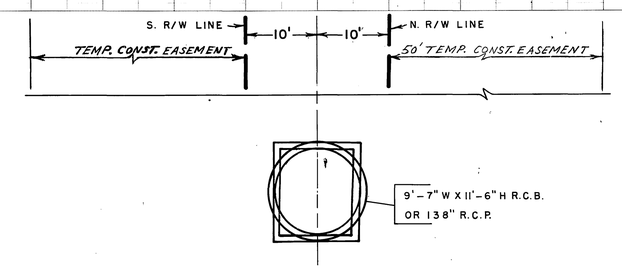
Sheet No. 10 of
Dwg. No. 1-237

PROJECT NO. 1-0-190

AS BUILT

D-175

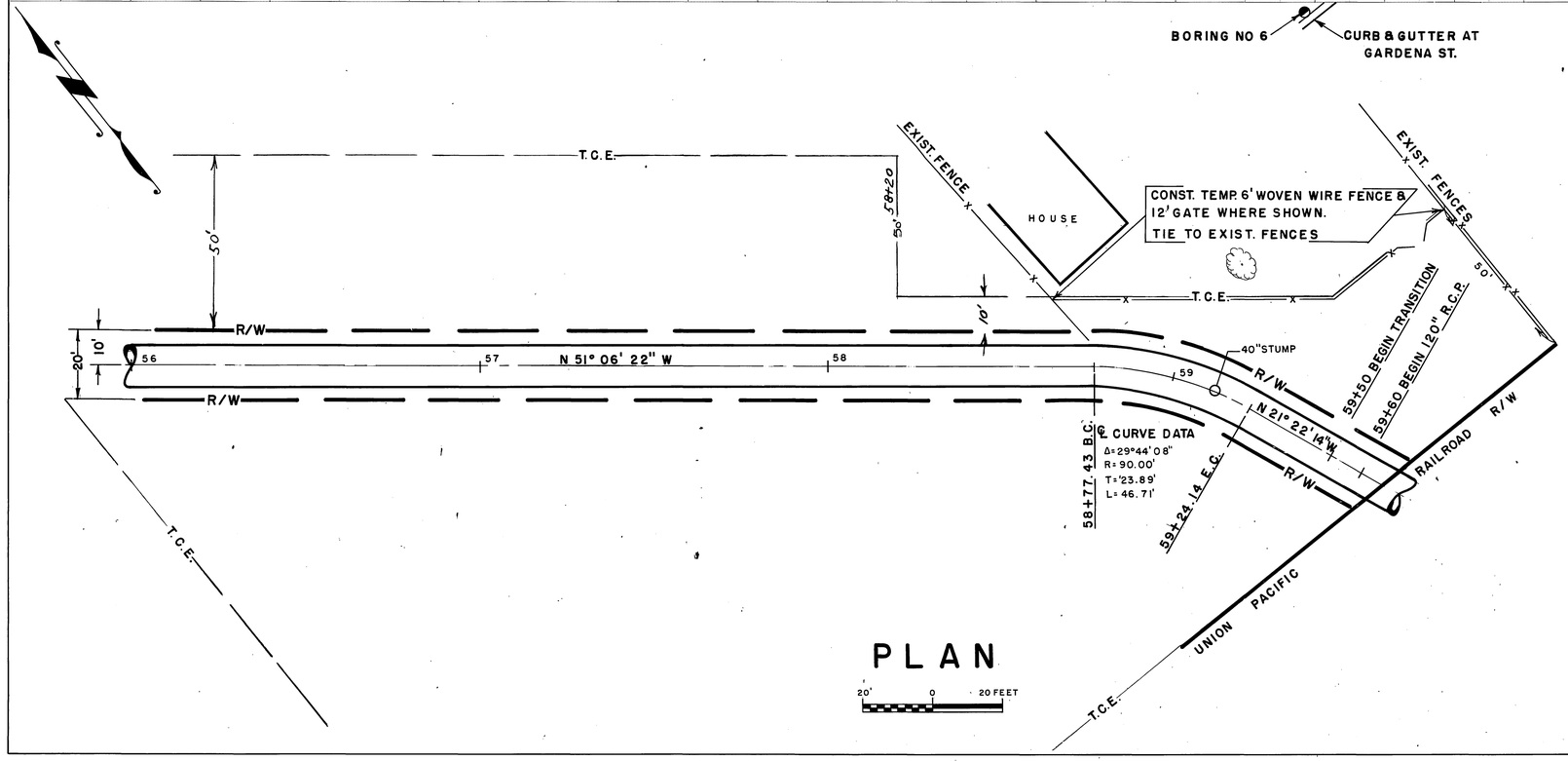




CROSS SECTION

STA. 58+00

10' 0 10 FEET



PLAN

20' 0 20 FEET

Reference	Description	Approved	Date
	No Changes		7-22-70

— REVISIONS —

Revised Date

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

MAGNOLIA CENTER STORM DRAIN STAGE I

PLAN & PROFILE

STA. 56+00 TO STA. 59+50

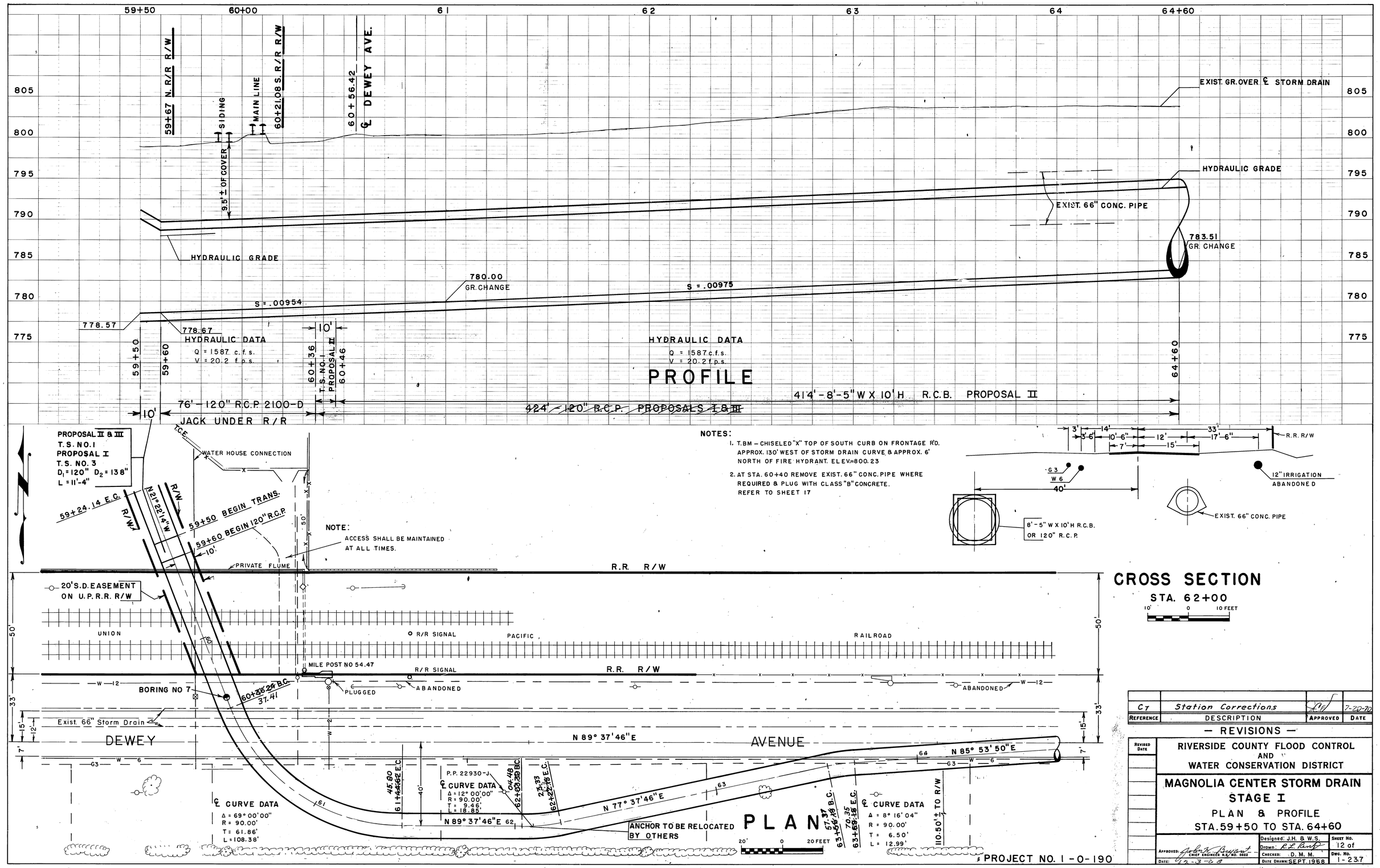
Approved: John W. Bayard, Chief Engineer R.E. No. 5022
Date: 12-3-68

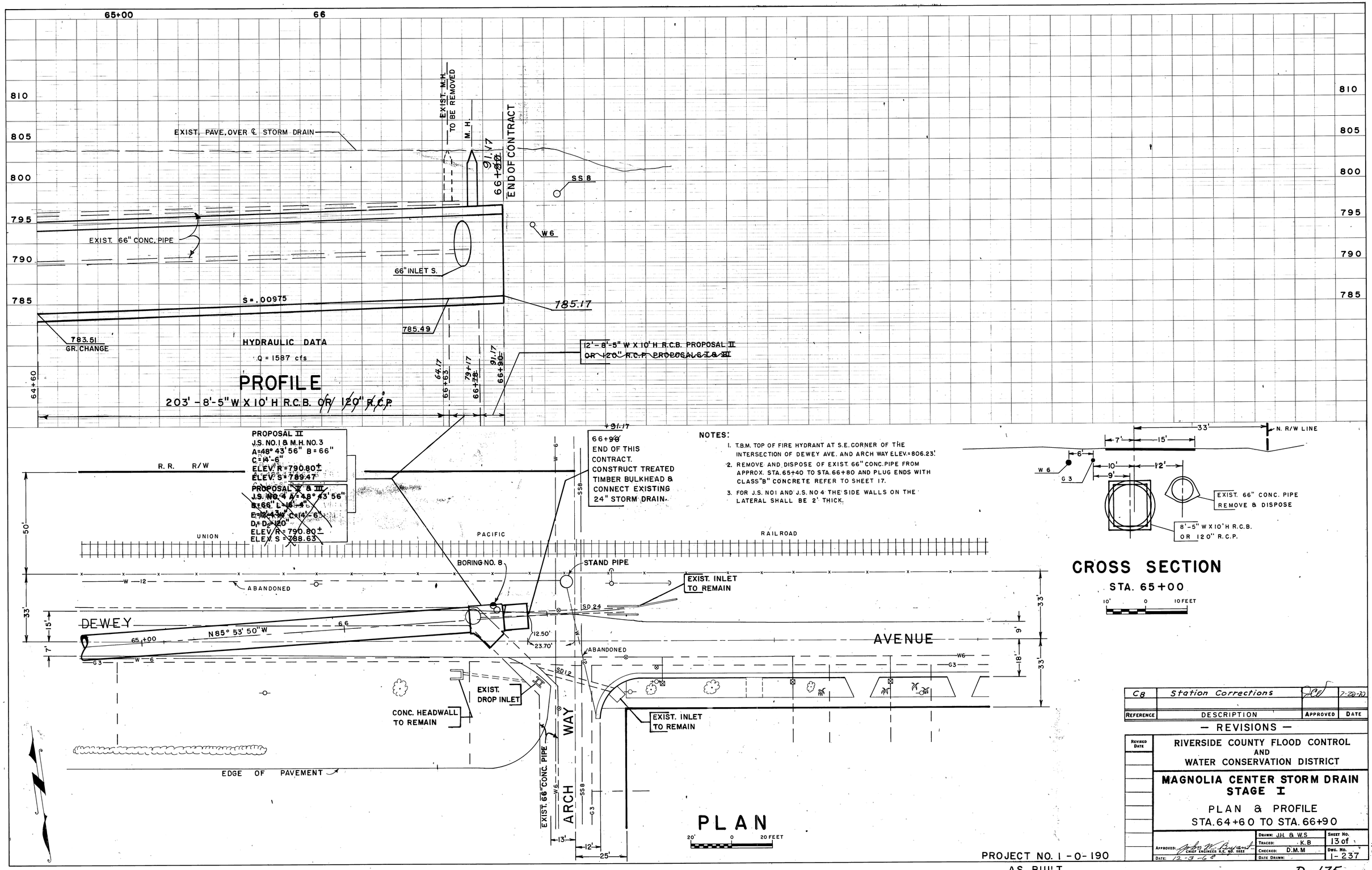
Designed: J.H. & W.S.
Drawn: R.L. Bard
Checked: D.M.M.
Date Drawn: SEPT. 1968

Sheet No. 11 of
Dwg. No. 1-237

PROJECT NO. 1-0-190
AS BUILT

D-175


59+50
60+00
61
62
63
64
64+60
805
800
795
790
785
780
775
59+67 N. R/R R/W
SIDING
MAIN LINE
60+21.08 S. R/R R/W
60+56.42
℄ DEWEY AVE.
9.5'± OF COVER
EXIST. GR. OVER ℄ STORM DRAIN
HYDRAULIC GRADE
EXIST. 66" CONC. PIPE
783.51
GR. CHANGE
HYDRAULIC GRADE
780.00
GR. CHANGE
S = .00975
S = .00954
778.57
778.67
HYDRAULIC DATA
Q = 1587 c.f.s.
V = 20.2 f.p.s.
10'
59+50
59+60
60+36
T.S. NO. I
PROPOSAL II
60+46
HYDRAULIC DATA
Q = 1587 c.f.s.
V = 20.2 f.p.s.
PROFILE
64+60
414'-8'-5" W X 10' H R.C.B. PROPOSAL II
76'-120" R.C.P. 2100-D
JACK UNDER R/R
~~424'-120" R.C.P. PROPOSALS I & III~~
10'
PROPOSAL II & III
T.S. NO. I
PROPOSAL I
T.S. NO. 3
D1 = 120" D2 = 138"
L = 11'-4"
T.C.E.
WATER HOUSE CONNECTION
59+24.14 E.C.
N 21° 22' 14" W
R/W
59+50 BEGIN TRANS.
59+60 BEGIN 120" R.C.P.
10'
50'
NOTE:
ACCESS SHALL BE MAINTAINED AT ALL TIMES.
PRIVATE FLUME
R.R. R/W
20' S.D. EASEMENT ON U.P.R.R. R/W
UNION
R/R SIGNAL
PACIFIC
RAILROAD
MILE POST NO 54.47
R/R SIGNAL
R.R. R/W
BORING NO 7
60+28.24 B.C.
37.41
PLUGGED
ABANDONED
ABANDONED
Exist. 66" Storm Drain
DEWEY
AVENUE
N 89° 37' 46" E
N 85° 53' 50" E
N 77° 37' 46" E
N 89° 37' 46" E
45.80
61+44.62 E.C.
P.P. 22930-J
℄ CURVE DATA
Δ = 12° 00' 00"
R = 90.00'
T = 9.46'
L = 18.85'
04.48
62+03.30 B.C.
23.33
62+22.78 E.C.
57.37
63+56.18 B.C.
70.35
63+69.18 E.C.
℄ CURVE DATA
Δ = 8° 16' 04"
R = 90.00'
T = 6.50'
L = 12.99'
110.50'± TO R/W
℄ CURVE DATA
Δ = 69° 00' 00"
R = 90.00'
T = 61.86'
L = 108.38'
ANCHOR TO BE RELOCATED BY OTHERS
PLAN
20' 0 20 FEET
NOTES:
1. T.BM – CHISELED "X" TOP OF SOUTH CURB ON FRONTAGE RD. APPROX. 130' WEST OF STORM DRAIN CURVE & APPROX. 6' NORTH OF FIRE HYDRANT. ELEV.=800.23
2. AT STA. 60+40 REMOVE EXIST. 66" CONC. PIPE WHERE REQUIRED & PLUG WITH CLASS "B" CONCRETE. REFER TO SHEET 17
3' 14' 33'
3' 6" 10' 6" 12' 17' 6"
7' 15'
R.R. R/W
G 3
W 6
40'
12" IRRIGATION ABANDONED
8'-5" W X 10' H R.C.B. OR 120" R.C.P.
EXIST. 66" CONC. PIPE
CROSS SECTION
STA. 62+00
10' 0 10 FEET
PROJECT NO. I-0-190
AS BUILT
D-175
C1 Station Corrections 7-20-70
REFERENCE DESCRIPTION APPROVED DATE
— REVISIONS —
REVISED DATE
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
MAGNOLIA CENTER STORM DRAIN STAGE I
PLAN & PROFILE
STA. 59+50 TO STA. 64+60
APPROVED: CHIEF ENGINEER R.E. NO. 0822
DATE: 12-3-68
Designed: J.H. & W.S.
Drawn: R.E. Pauly
Checked: D.M.M.
Date Drawn: SEPT. 1968
Sheet No. 12 of
Dwg. No. I-237



Reference	Description	Approved	Date
C8	Station Corrections		2-20-70

— REVISIONS —

Revised Date

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

MAGNOLIA CENTER STORM DRAIN STAGE I

PLAN & PROFILE
STA. 64+60 TO STA. 66+90

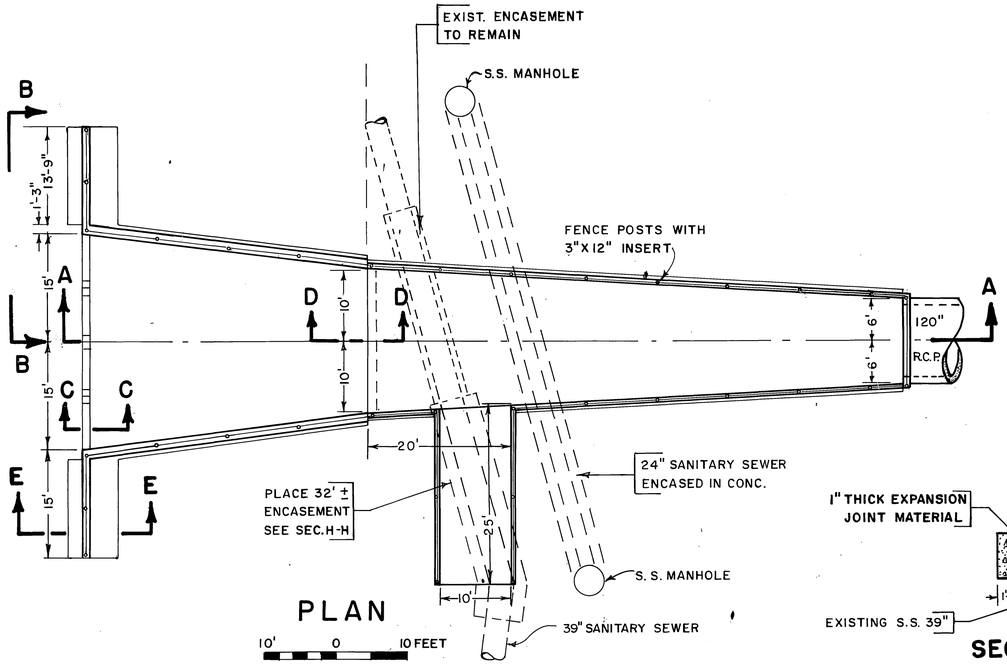
Approved: John W. Bryant, Chief Engineer R.E. No. 0022
Date: 12-3-68

Drawn: J.H. & W.S.
Traced: K.B.
Checked: D.M.M.
Date Drawn:

Sheet No. 13 of
Dwg. No. 1-237

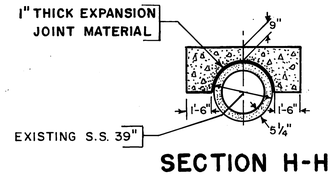
PROJECT NO. 1-0-190
AS BUILT

D-175

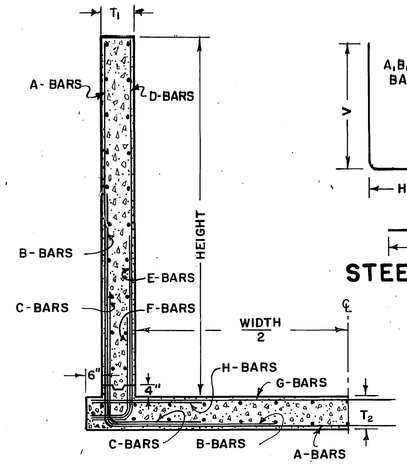


PLAN

10' 0 10 FEET

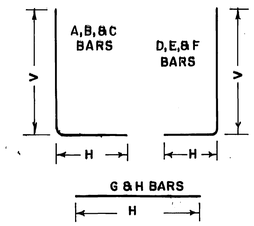


SECTION H-H



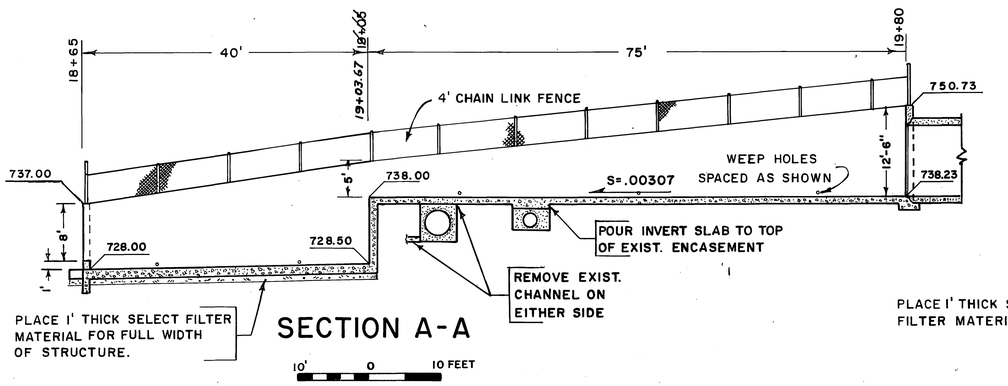
TYPICAL SECTION

NO SCALE



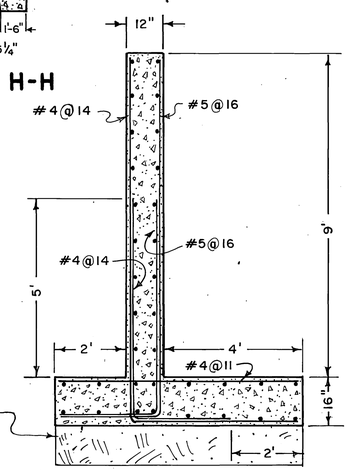
STEEL SCHEDULE

STATIONS	19+80 to 19+55	19+55 to 19+30	19+30 to 19+05	19+05 to 18+65	18+65 to 18+55
WIDTH - VARIES	12' to 14'-6"	14'-6" to 17'-4"	17'-4" to 20'	20' to 25'	25' to 30'
HEIGHT-VARIES	12'-6" to 10'	10' to 7'-6"	7'-6" to 5'	14'-6" to 11'-9"	11'-9" to 9'
T_1	10"	10"	10"	15"	15"
T_2	11"	11"	11"	16"	16"
A - BARS	#6@12	#4@12	#4@12	#6@12	#6@12
V-VARIES	13'-1½" to 10'-7½"	10'-7½" to 8'-1½"	8'-1½" to 5'-7½"	15'-6½" to 12'-9½"	12'-9½" to 10'-0½"
H-VARIES	7'-8" to 9'	8'-8" to 10'	10' to 11'-4"	12'-1" to 14'-7"	14'-7" to 17'-1"
B - BARS	#6@12	#4@12	——	#6@12	#6@12
V	5'-5"	4'-5½"		6'-8½"	3'-8"
H - VARIES	7'-8" to 9'	6'-5"		12'-1" to 14'-7"	8'-9½"
C - BARS	#6@12	#4@12	——	#6@12	——
V	2'-3½"	2'-10"		4'-3½"	
H - VARIES	6'-8½" to 8'-0½"	3'-1"		8'-8"	
D - BARS	#4@12	#4@12	#4@12	#4@12	#4@12
V - VARIES	13'-1½" to 10'-7½"	10'-7½" to 8'-1½"	8'-1½" to 5-7½"	15'-6½" to 12'-9½"	12'-9½" to 10'-0½"
H	1'-1"	1'-1"	1'-1"	1'-6"	1'-6"
E - BARS	#4@12	#4@12	——	#4@12	#4@12
V	5'	2'-5"		6'-5"	3'-3½"
H	1'-1"	1'-1"		1'-6"	1'-6"
F - BARS	#4@12	——	——	#4@12	——
V	2'-6"			4'-1½"	
H	1'-1"			1'-6"	
G - BARS	#4@4	#4@6	#4@12	#5@8	#6@12
H - VARIES	7'-10" to 9'-2"	9'-2" to 10'-6"	10'-6" to 11'-10"	12'-5" to 14'-11"	15'-1" to 17'-7"
H - BARS	——	——	——	#5@8	——
H				9'-8½"	



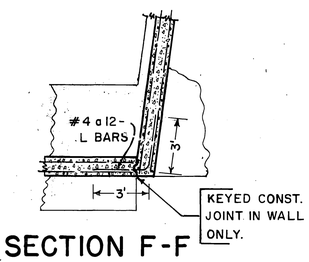
SECTION A-A

10' 0 10 FEET

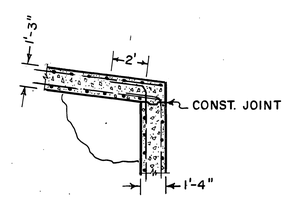


SECTION E-E

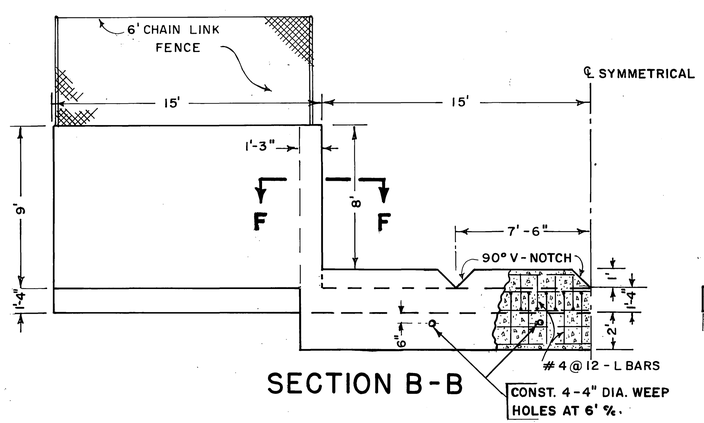
2' 1' 0 2 FEET



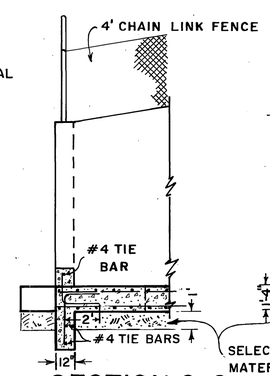
SECTION F-F



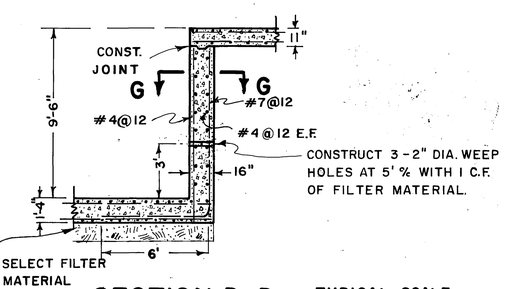
SECTION G-G



SECTION B-B



SECTION C-C



SECTION D-D

TYPICAL SCALE

4' 3' 2' 1' 0 4'

STRUCTURAL NOTES

OUTLET STRUCTURE

1. All longitudinal bars shall be # 4 @ 12.
2. Clear cover = 1½" E.F. in walls & 2" E.F. in slabs.
3. Length of steel is to back of bar bend.
4. The H - dimension of the A, G, & B bars include 15 bar dia. for a 30 bar dia. Splice at ℄ where required.
5. Construct cold joint in walls at Sta. 19+05.

GENERAL NOTES

ALL TYPES OF STRUCTURES

1. Dimensions from face of concrete to steel are to center of bar unless otherwise shown.
2. Concrete dimensions shall be measured horizontally or vertically on the profile, and parallel to or at right angles (or radially) to centerline of conduit on the plan except as otherwise shown.
3. All bar bends and hooks shall conform to the American Concrete Institute's "Building Code Requirements for Reinforced Concrete" Section 801.
4. Placing of reinforcement shall conform to the American Concrete Institute's "Building Code Requirements for Reinforced Concrete" Section 803.
5. Transverse construction joints shall not be placed within 30 inches of manhole or junction structure openings.
6. Transverse construction joints in walls and slabs shall be in the same plane. No staggering of joints will be permitted.
7. The transverse reinforcing steel shall terminate 1½ inches from the conc. surfaces unless otherwise shown on the structural details.
8. Exposed edges of concrete members shall be rounded or beveled.
9. No splices in transverse steel reinforcement will be permitted other than shown on the drawing without approval of the Engineer. No more than 2 splices will be permitted in any longitudinal bar between transverse joints. Splices shall be staggered.
10. Longitudinal steel shall be lapped 20 bar diameters at splices. Transverse steel shall be lapped 30 bar diameters at splices.

PROJECT NO. 1 - 0 - 190

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

MAGNOLIA CENTER STORM DRAIN STAGE I

OUTLET STRUCTURE DETAILS

REFERENCE	DESCRIPTION	APPROVED	DATE
C9	Station Change	JCD	7-20-70

— REVISIONS —

AS BUILT

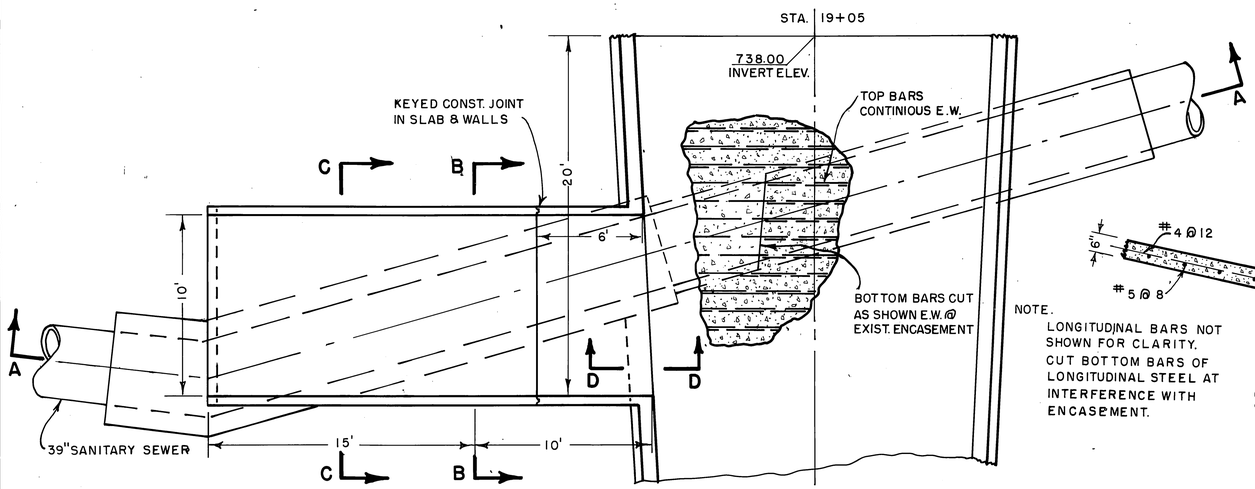
Approved: John W. Dupont, Chief Engineer R.E. No 8822

Date: 12-3-68

Designed: JACK HANSON
Drawn: KEN BILODEAU
Checked: D.M.M.
Date Drawn: Nov. 1968

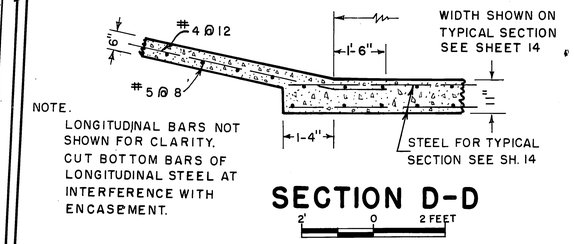
Sheet No 14 of
Dwg. No 1-237

D-175



PLAN VIEW

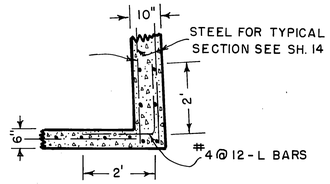
4' 0 4 FEET



NOTE.
LONGITUDINAL BARS NOT SHOWN FOR CLARITY. CUT BOTTOM BARS OF LONGITUDINAL STEEL AT INTERFERENCE WITH ENCASEMENT.

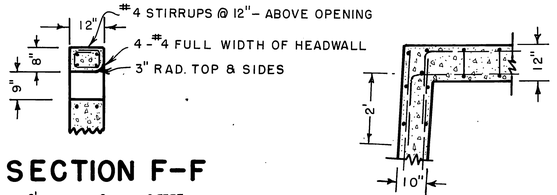
SECTION D-D

2' 0 2 FEET



SECTION E-E

2' 0 2 FEET

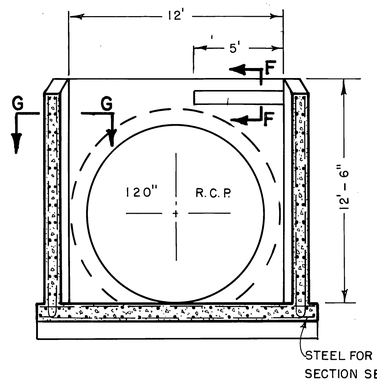


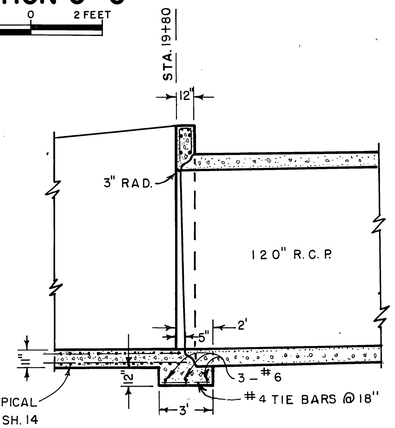
SECTION F-F

2' 0 2 FEET

SECTION G-G

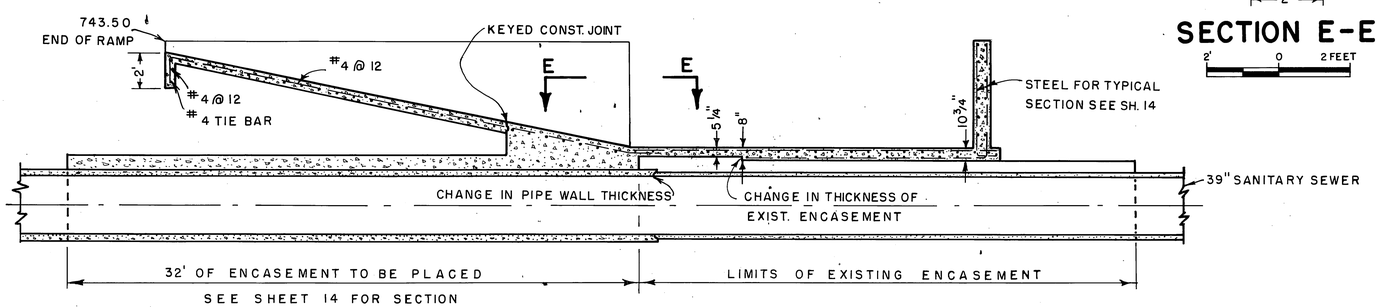
2' 0 2 FEET





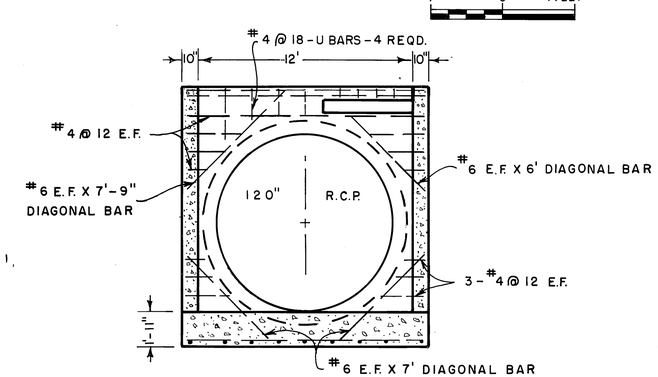
HEADWALL DETAILS

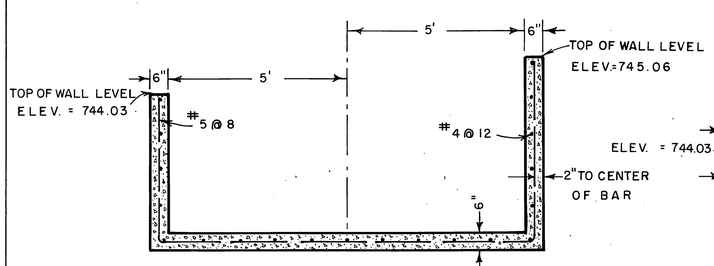
4' 0 4 FEET



SECTION A-A

4' 0 4 FEET

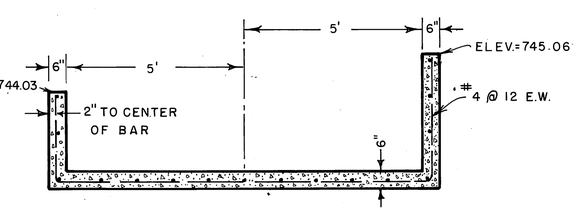




SECTION B-B

TYPICAL FROM CHANNEL
TO SECTION B - B

2' 0 2 FEET



SECTION C-C

TYPICAL FROM B-B
TO END OF RAMP

REFERENCE	DESCRIPTION	APPROVED	DATE
	No Changes	JCF	7-20-70

— REVISIONS —

AS BUILT

PROJECT NO. 1 - 0 - 190

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

MAGNOLIA CENTER STORM DRAIN
STAGE I

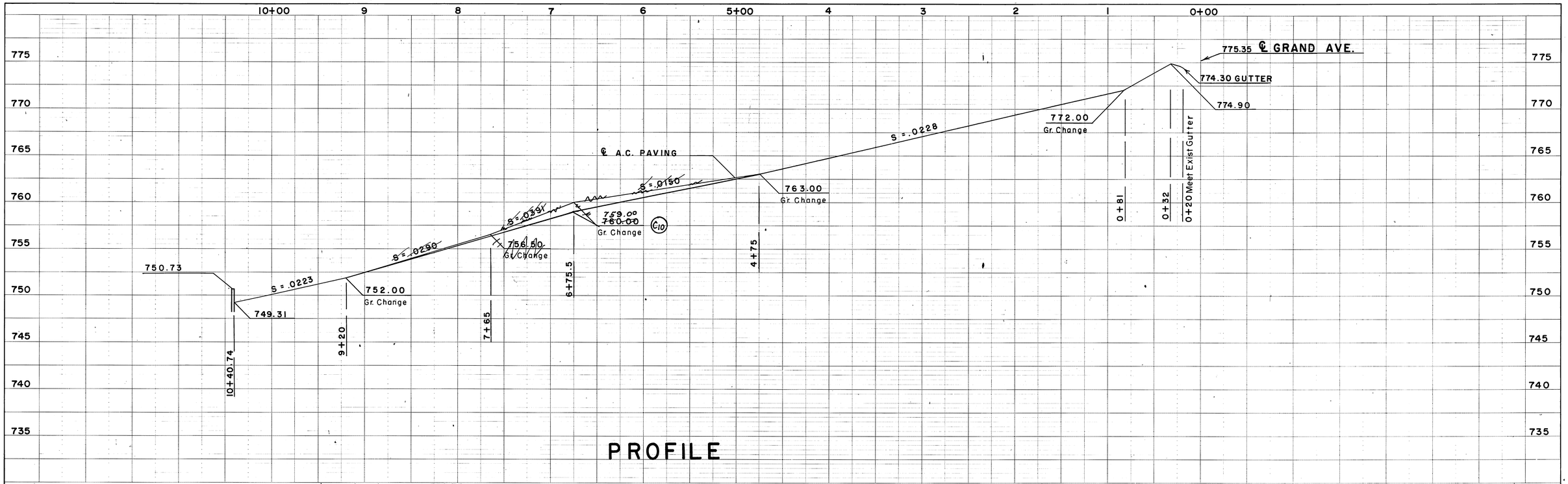
OUTLET STRUCTURE DETAILS

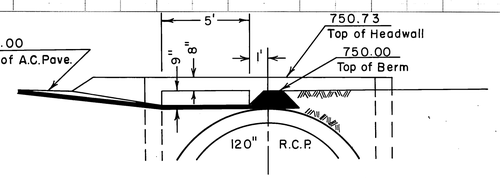
Approved: John W. Dufford
Chief Engineer, R.E. No 8822
Date: 12-3-68

Designed: J. H.
Drawn: K. B.
Checked: J. H.
Date Drawn: 12/11/68

Sheet No 15 of
Dwg. No 1-237

D-175





SECTION A-A

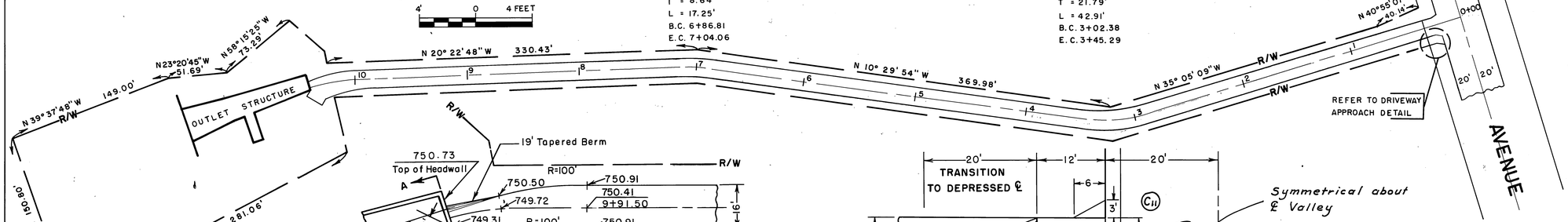
4' 0 4 FEET

℄ CURVE DATA

Δ = 9° 52' 54"
R = 100'
T = 8.64'
L = 17.25'
B.C. 6+86.81
E.C. 7+04.06

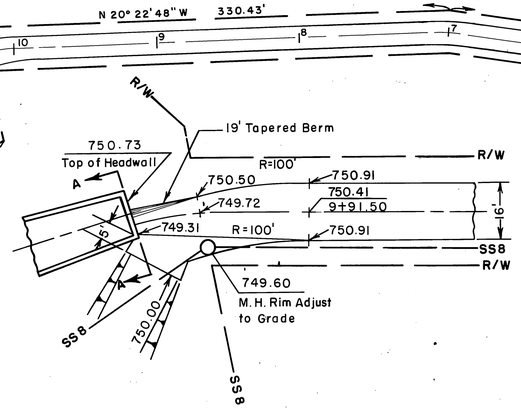
℄ CURVE DATA

Δ = 24° 35' 16"
R = 100'
T = 21.79'
L = 42.91'
B.C. 3+02.38
E.C. 3+45.29



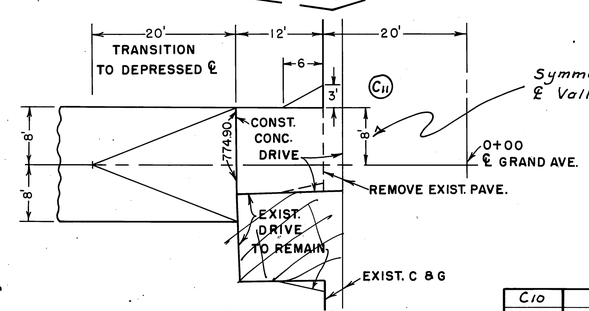
PLAN

50' 0 50 FEET



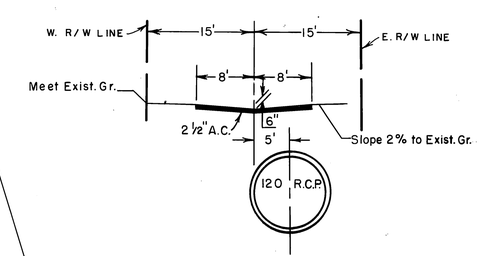
DETAILS AT HEADWALL

20' 0 20 FEET



DRIVEWAY APPROACH DETAIL

10' 0 10 FEET



TYPICAL CROSS SECTION

10' 0 10 FEET

REFERENCE	DESCRIPTION	APPROVED	DATE
C10	Grade Change		7-20-70
C11	Change Driveway Approach		

— REVISIONS —

AS BUILT

PROJECT NO. ___-0-___

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

MAGNOLIA CENTER STORM DRAIN STAGE I

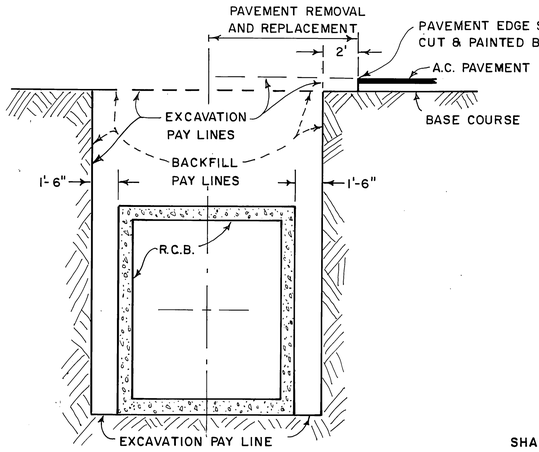
MAINTENANCE ROAD AT OUTLET

Approved: John W. Bryant, Chief Engineer R.E. No 8822
Date: 12-3-68

Designed:
Drawn: R. L. Banks
Checked:
Date Drawn:

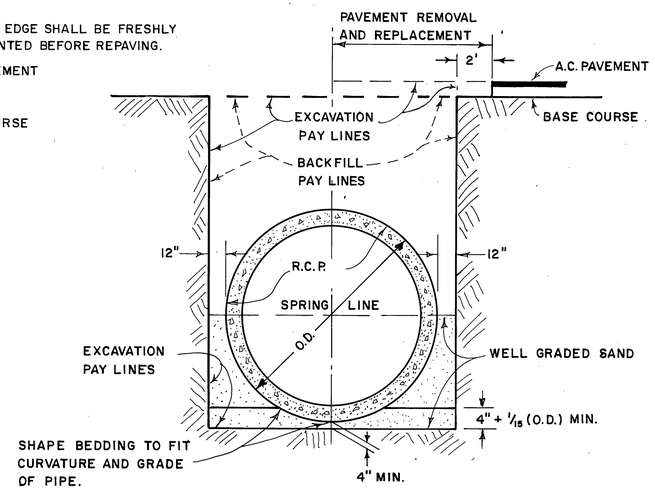
Sheet No 16 of
Dwg. No 1-237

D-175

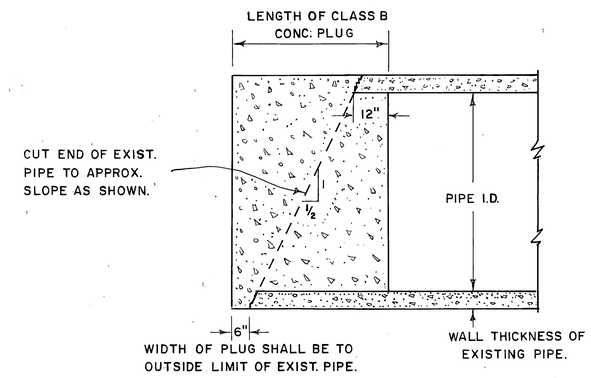


CASE I

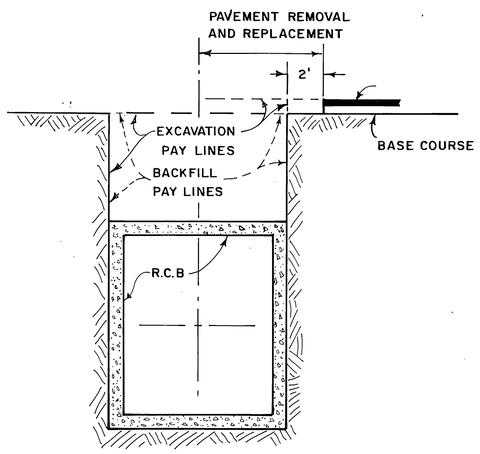
WITH OUTSIDE FORMING



R.C.P. BEDDING

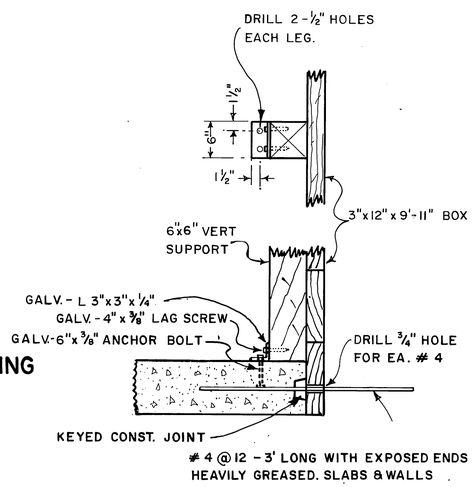


LONGITUDINAL SECTION OF CLASS "B" CONC. PIPE PLUG



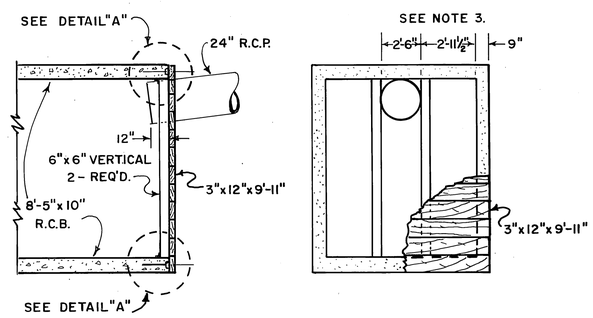
CASE II

WITHOUT OUTSIDE FORMING

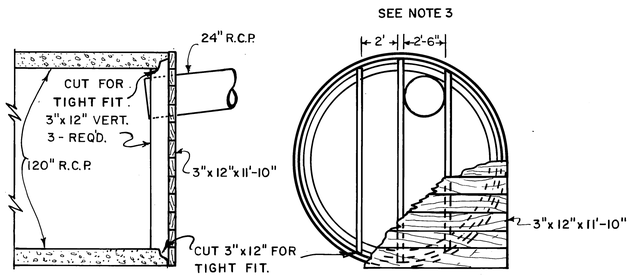


DETAIL "A"

1' 0 1 FT.



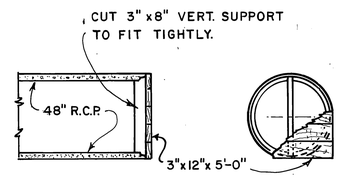
PROPOSAL II



PROPOSALS I & III

TIMBER BULKHEAD DETAILS AT STA. 66+90

4' 3' 2' 1' 0 4 FEET



TIMBER BULKHEAD DETAIL AT STA. 36+00

NOTES

1. NAIL 3"x12" TO VERTICAL SUPPORTS WITH 40d GALV. NAILS 3" %.
2. ALL LUMBER SHALL BE CREOSOTED DOUGLAS FIR, 1500 f CONSTRUCTION GRADE.
3. DIMENSIONS TO VERT. SUPPORT MAY VARY DUE TO THE ANGLE AND O.D OF 24" R.C.P.

PROJECT NO. 1 - 0 - 190

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

MAGNOLIA CENTER STORM DRAIN STAGE I

EXCAVATION & BACKFILL PAY LINES AND MISCELLANEOUS DETAILS

REFERENCE	DESCRIPTION	APPROVED	DATE
	No Changes		

— REVISIONS —

AS BUILT

Approved: John W. Bragaw, Chief Engineer R.E. No 8822, Date Feb. 19 68

Designed: JACK HANSON
Drawn: Ken Billodeau
Checked: D.M.M.
Date Drawn: DEC. 1968

Sheet No 17 of
Dwg No 1-237

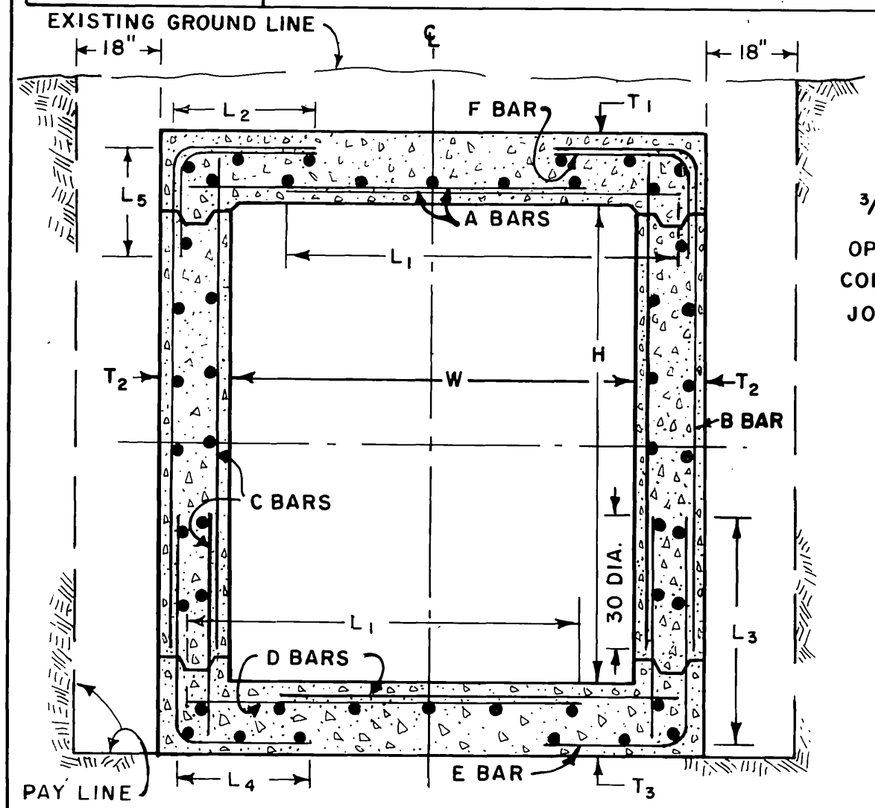
D-175

DATA	DETAIL SCHEDULE									
	A	B	C	D	E	F	G	H	I	J
DESIGN COVER	8'	10'	12'	8'	10'	12'				
WIDTH W	9'-7"	9'-7"	9'-7"	8'-5"	8'-5"	8'-5"				
HEIGHT H	11'-6"	11'-6"	11'-6"	10'	10'	10'				
TOP SLAB T_1	9"	9	9	9	9	9				
SIDE WALLS T_2	9"	9	9	9	9	9				
BOTTOM SLAB T_3	10"	10	10	10	10	10				
A - BARS	#6@5½	#6@5	#6@5	#6@7	#6@6	#6@6				
B - BARS	5@8	5@7	5@11	4@7	4@6½	4@6				
C - BARS	4@6	4@6	4@6	4@10	4@10	4@10				
D - BARS	8@8	8@7	8@7	6@5½	6@5	6@4¾				
E - BARS	5@8	5@7	5@5½	4@7	4@6½	4@6				
F - BARS			4@11							
L_1	9'-6"	9-6	9-6	8-5	8-5	8-5				
L_2	2'-6"	2-6	2-6	2-4	2-4	2-4				
L_3	2'-8"	2-8	2-8	2-4	2-4	2-4				
L_4	2'-6"	2-6	2-6	2-3	2-3	2-3				
L_5			2-4							
CONCRETE cy/ft.	1.29	1.29	1.29	1.14	1.14	1.14				
STEEL lbs./ft	204	221	215	141	151	156				
REMARKS										

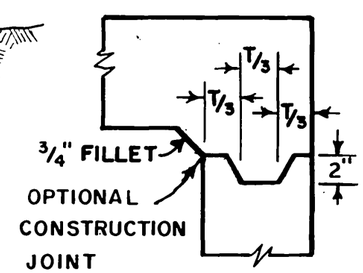
LOCATION SCHEDULE		
STATION FROM	STATION TO	BOX
39+65	43+40	C
43+40	46+40	B
46+40	54+60	A
54+60	59+50	B
60+46	65+40	F
65+40	66+63	E
66+63	66+90	D

NOTES

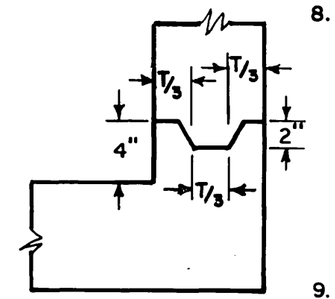
1. All longitudinal bars shall be #4, spacing shall be 18" c/c. Bars in top and bottom slabs shall be spaced symmetrically about the center-line. Bars in wall shall be spaced symmetrically about mid-height of walls.
2. Clear cover = 1½" top and side walls and 2" each face of bottom slab
3. Length of steel is to back of bar bend.
4. Terminate all transverse bars 1½" from face of concrete.
5. A and D bars spacing is measured at centerline. Alternate bars are extended into alternate walls as shown.
6. At transverse construction joints break longitudinal steel and place #4 @ 12 - 3 ft. long with one end wrapped to prevent bond.
7. Unless otherwise shown on the drawings, transverse joint keyways (in both slabs and walls), as detailed for longitudinal keyways at the base of the walls, shall be placed at the end of each pour, but the spacing thereof shall not exceed 50 feet or be less than 10 feet. All construction joints in bottom slab, top slab, and side walls shall be in the same plane. No staggering of joints will be permitted.
8. Unless otherwise shown on the details, in curved sections transverse bars shall be placed radially. Straight transverse bars in top and bottom slabs shall be spaced as shown on the typical sections. Spacing shall be at the centerline of the construction. Straight bars and L-Bars in walls shall be spaced as shown on the typical sections with the spacing measured between the vertical legs of bars.
9. At the begining and ending of all pours, a complete curtain of reinforcement shall be place three inches from the transverse construction joints.
10. The walls and top slab may be poured monolithic, but after walls have been poured, a delay of not less than 2 hours shall be made before pouring of the top slab is started.
11. All construction joints shall be sandblasted to the satisfaction of the Engineer.



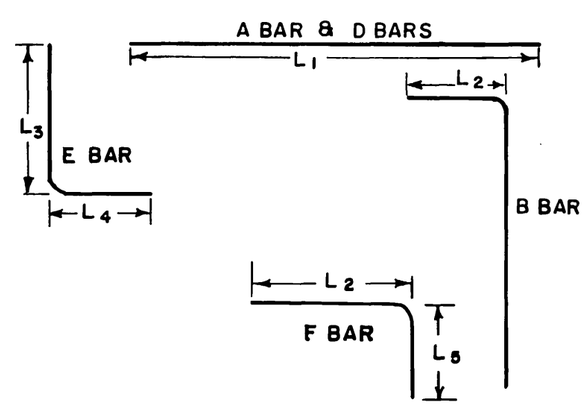
TYPICAL SECTION



TOP CORNER JOINT



BOTTOM CORNER JOINT



BAR DIAGRAM FOR R.C.B.

REVISIONS

REFERENCE	DESCRIPTION	APPROVED	DATE

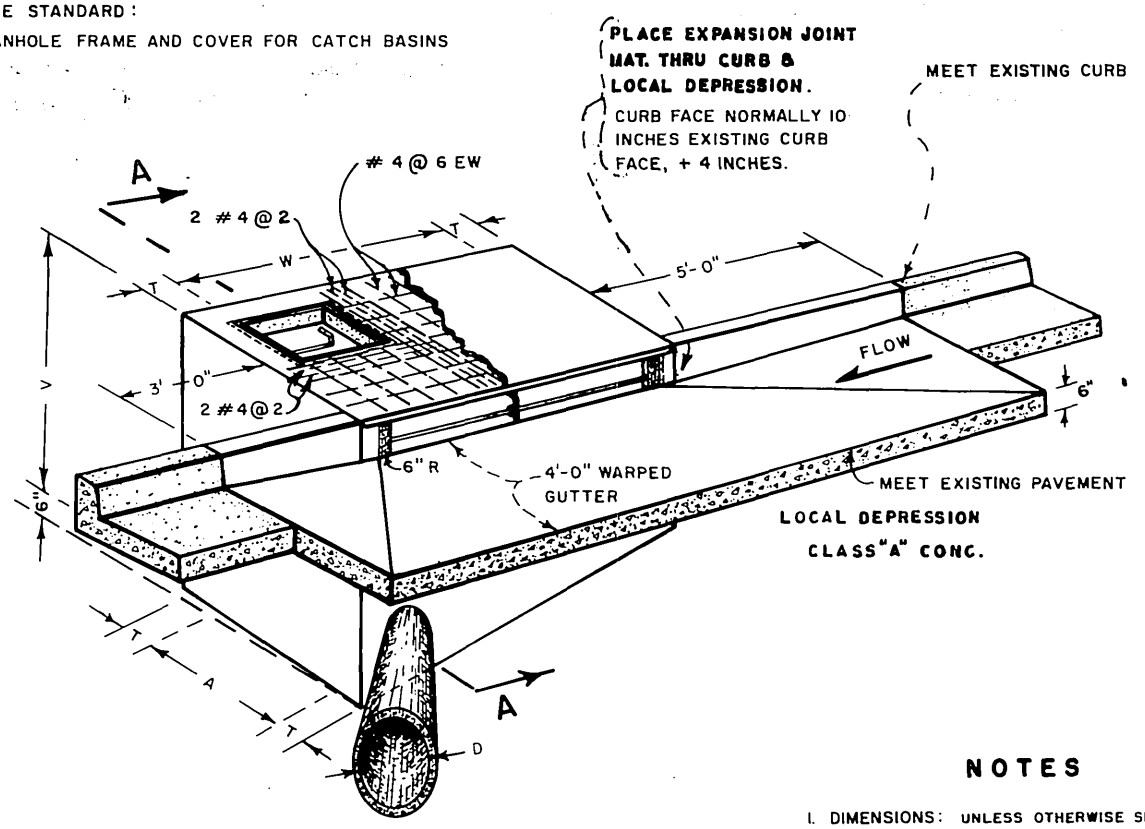
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

SINGLE CELL R.C.B. STRUCTURAL DETAILS

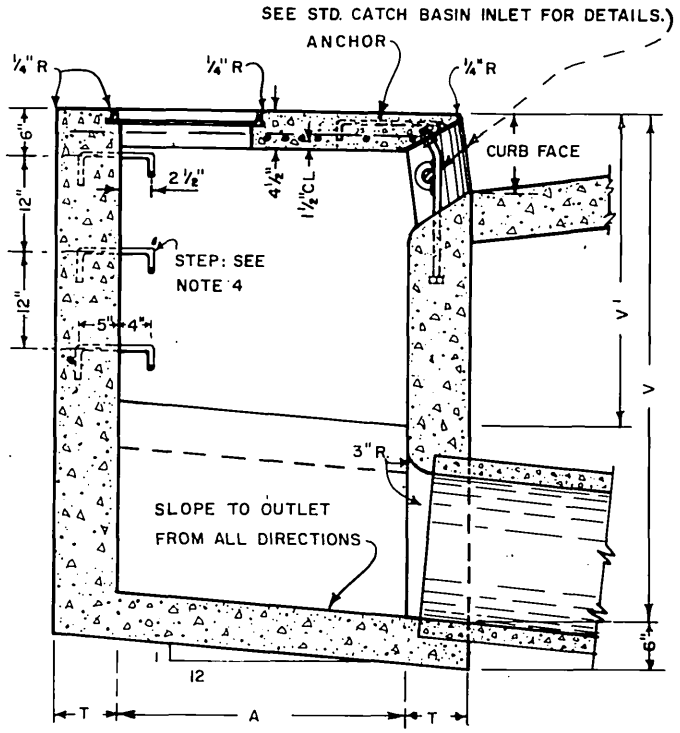
PROJECT NO. 1-0-190

APPROVED		DRAWN BY	SHEET NO 18
DATE 11-23-68		CHECKED BY J.H.&D.M.M.	DR NO 1-237
		DATE DRAWN	

SEE STANDARD:
MANHOLE FRAME AND COVER FOR CATCH BASINS



PERSPECTIVE OF CATCH BASIN NO. 1



SECTION A-A

NOTES

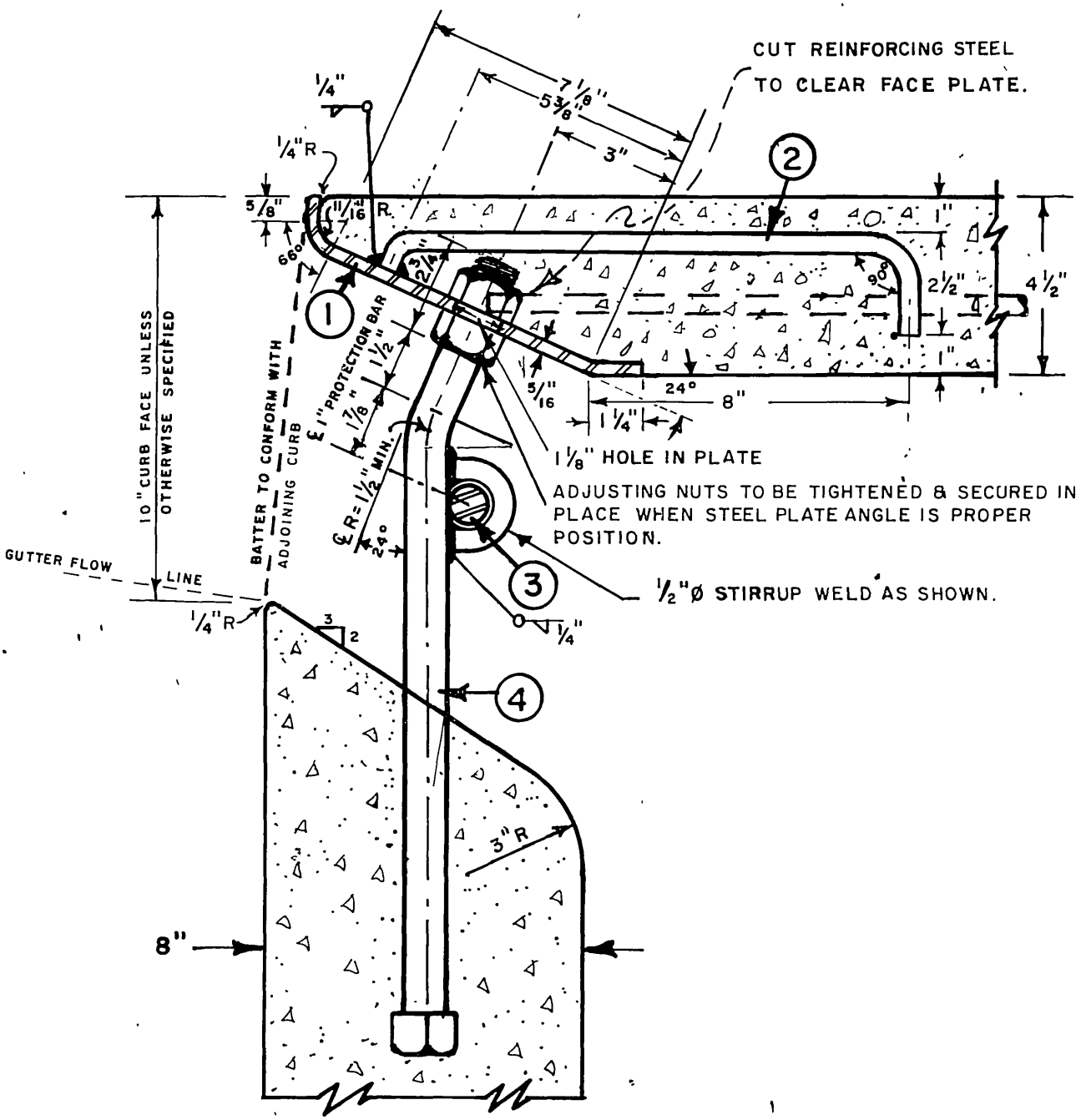
1. DIMENSIONS: UNLESS OTHERWISE SPECIFIED.
   V = 5.25 FEET.
   V' = 3.0 FEET.
   W = 7 FEET.
   T = 8 INCHES IF V IS LESS THAN 8 FEET.
   T = 10 INCHES IF V IS 8 FEET OR MORE.
   D = 18 INCHES.
   A = D PLUS 12 INCHES.
   (38 INCHES MIN.)
2. CONCRETE SHALL BE CLASS "A" P.C.C. (6.0 SACK)
3. THE SURFACE OF ALL EXPOSED CONC. SHALL CONFORM TO SLOPE, GRADE, COLOR, FINISH AND SCORING IN THE EXISTING OR PROPOSED CURB AND WALK ADJACENT TO THE BASIN. THE BASIN FLOOR SHALL BE GIVEN A TIGHT WOOD FLOAT FINISH. CURVATURE OF THE LIP AND SIDEWALLS AT THE GUTTER OPENING SHALL NOT BE MADE BY PLASTERING. THE OUTLET PIPE SHALL BE TRIMMED TO FINAL SHAPE AND LENGTH BEFORE THE CONCRETE IS POURED.
4. STEPS: ¾ INCH PLAIN ROUND GALVANIZED STEEL STEPS SHALL BE INSTALLED 12 INCHES APART WHEN V EXCEEDS 4 FEET 6 INCHES. THE TOP STEP SHALL BE 6 INCHES BELOW THE SURFACE AND SHALL BE 2½ INCHES CLEAR FROM THE WALL. ONLY ONE STEP 12 INCHES FROM THE BOTTOM SHALL BE INSTALLED IF V IS 4 FEET 6 INCHES OR LESS. THE STEPS SHALL BE ANCHORED NOT LESS THAN 4 INCHES IN THE WALL OF THE BASIN.

PROJECT NO. 1-0-190

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

CATCH BASIN NO. 1

Approved: Robert L. Bryant, Chief Engineer R.E. No. 8822	Designed: LAFCD	Sheet No. 19 of
	Drawn: Ken Bilodeau	
	Checked: J. Hanson	Dwg. No. 1-237
Date: 12-9-68	Date Drawn: 8/20/68	



NOTES

1. FACE PLATE 5/16" X 10" ROLLED PLATE (ASTM A7) FORMED AS SHOWN.
2. FACE PLATE ANCHORAGE 1/2" Ø STEEL ANCHOR 42" OC MAX. PLACED AS SHOWN.
3. PROTECTION BAR A PLAIN ROUND STEEL BAR 1" DIA. SHALL BE INSTALLED, BAR SHALL BE EMBEDDED 5 INCHES AT EACH END.
4. SUPPORT BAR 1 INCH DIA. X 20" LONG WITH SQ. HEAD AND HEX. NUTS, BEND AS SHOWN. SPACING SHALL NOT EXCEED 4 FEET.
5. ALL EXPOSED METAL PARTS SHALL BE GALVANIZED.

PROJECT NO. 1-0-190

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

CATCH BASIN INLET

Approved: Chief Engineer RE No 8822	Designed E.R.F.C.D.	Sheet No 20 of
	Drawn Ken Bilodeau	
	Checked Jack Hansen	Dwg No 1-237
Date 12-3-68	Date Drawn 8/2/68	

L.A. F.C.D. NO. 2-D232 CITY OF L.A. NO. B-3651

NOTES

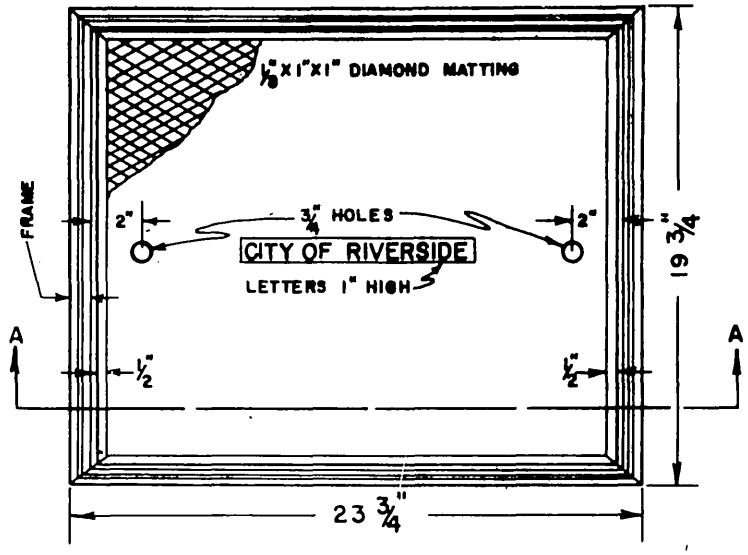
(1) THE MATERIAL AND FINISH SHALL CONFORM TO THE SPECIFICATIONS APPLICABLE THERETO.

(2) COVER SHALL FIT IN EITHER POSITION.

(3) FRAME & COVER SHALL BE SET TO SIDEWALK ELEVATIONS.

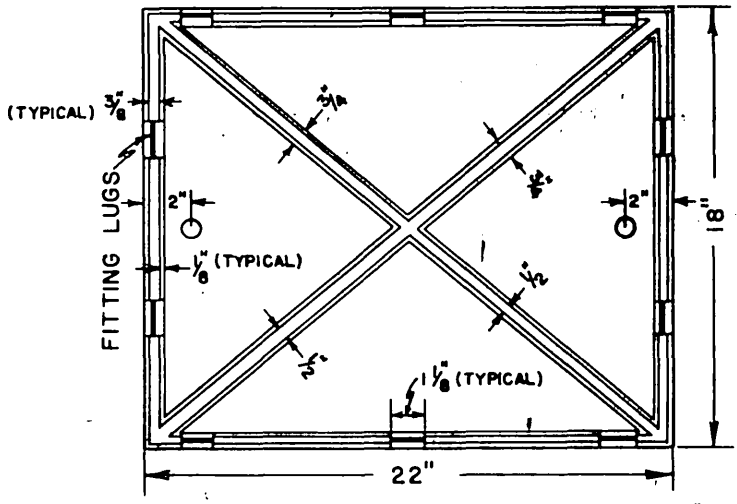
(4) WEIGHTS: FRAME — 25 POUNDS
COVER — 55 POUNDS

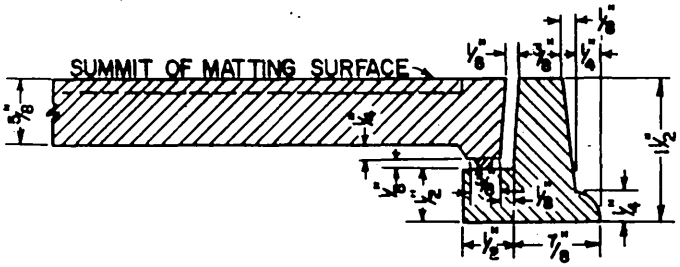
FRAME & COVER PLAN



SECTION A-A

BOTTOM PLAN OF COVER

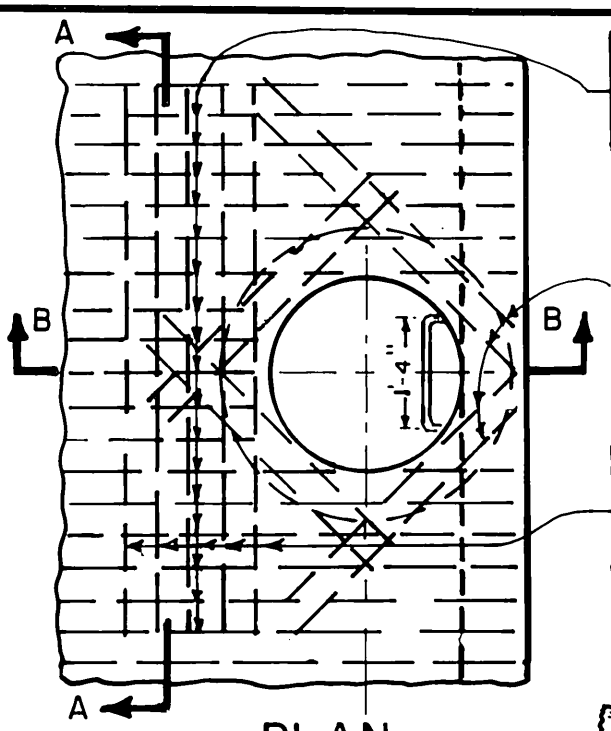




DETAIL OF FRAME & COVER CONNECTION

PROJECT NO. 1-0-190

REVISED DATE	RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT		
	CATCH BASIN COVER TYPE I		
	APPROVED [signature] CHIEF ENG. R.E. NO. 6822 DATE: 12-9-68	DR.	DATE / /
		TRAC.	SH. NO. 21
		CHECKED	DWG. T-237



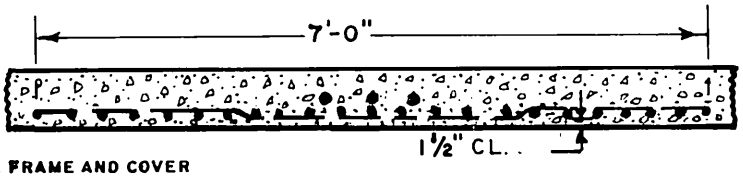
Size and spacing of steel as shown on improvement plan, except that 5 bars on each side of shaft shall be not smaller than # 5 @ 4" or equivalent

5 @ 4" X 5'

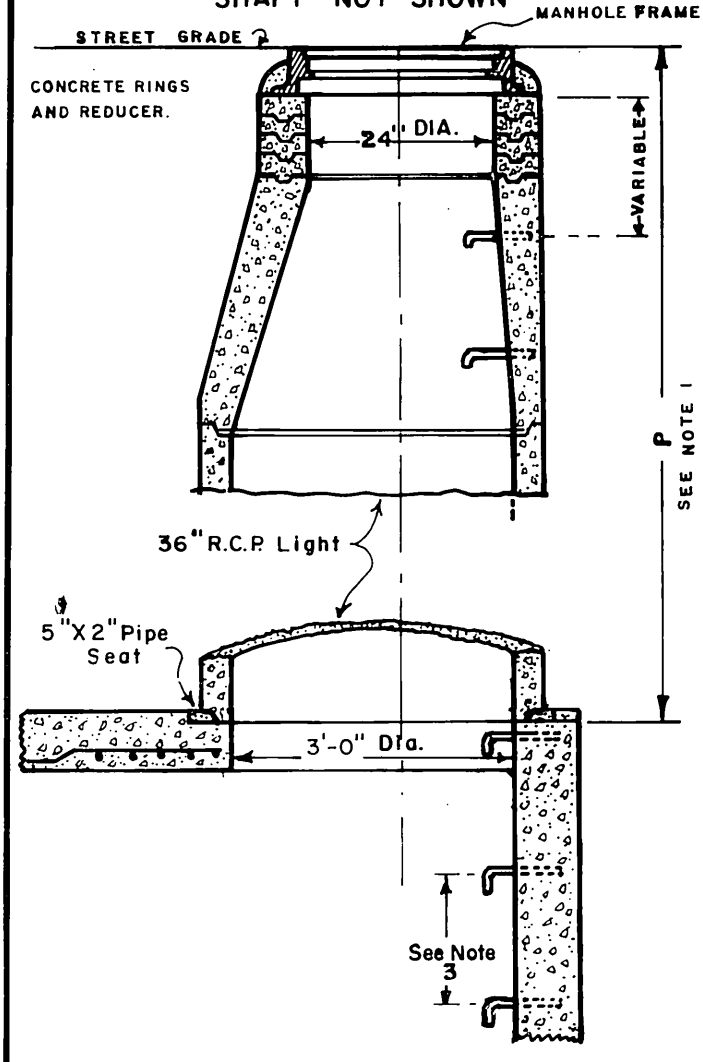
5 bars 7' long, 4" o.c. of size shown for transverse steel on improvement plan, except not less than # 5. Warp these bars under bars that have been cut for shaft opening.

PLAN

SHAFT NOT SHOWN



SECTION A-A



SECTION B-B

MANHOLE FOR BOX SECTION STORM DRAIN

NOTE

1.- DEPTH P: When depth P from street grade to top of pipe seat is less than 2'-10½" in paved streets or 3'-6" in unpaved streets, construct 2 ft. diameter shaft, using concrete rings as per Standard Plan for concrete rings; otherwise, construct 3 ft. shaft as shown on this plan.

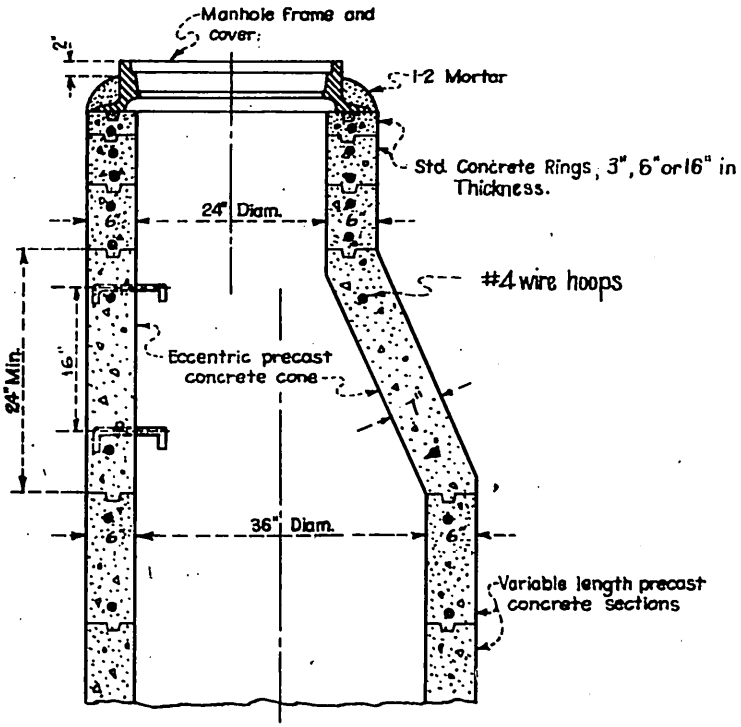
2- STATIONS shown on improvement plan refer to center line of shaft.

3- STEPS shall be ¾" round galvanized steel anchored not less than 6" in walls of structure and unless otherwise shown shall be spaced 16" or 17" on centers. The lowest step shall be not more than 2 feet above the floor.

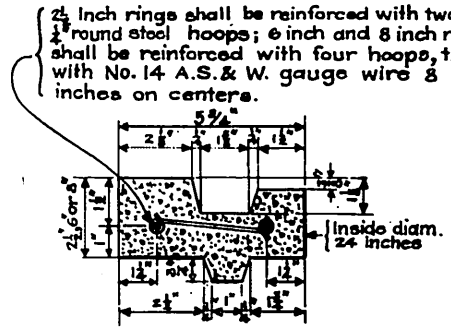
PROJECT NO. 1-0-190

Revised Date	RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT		
	MANHOLE NO. 3		
	APPROVED Johnston V. Bryant CHIEF ENG R.E. NO. 8822 DATE 12-3-68	DR K.R.B. DATE / / TRAC K.R.B. CHECKED	SH NO. 22 DWG 1-237

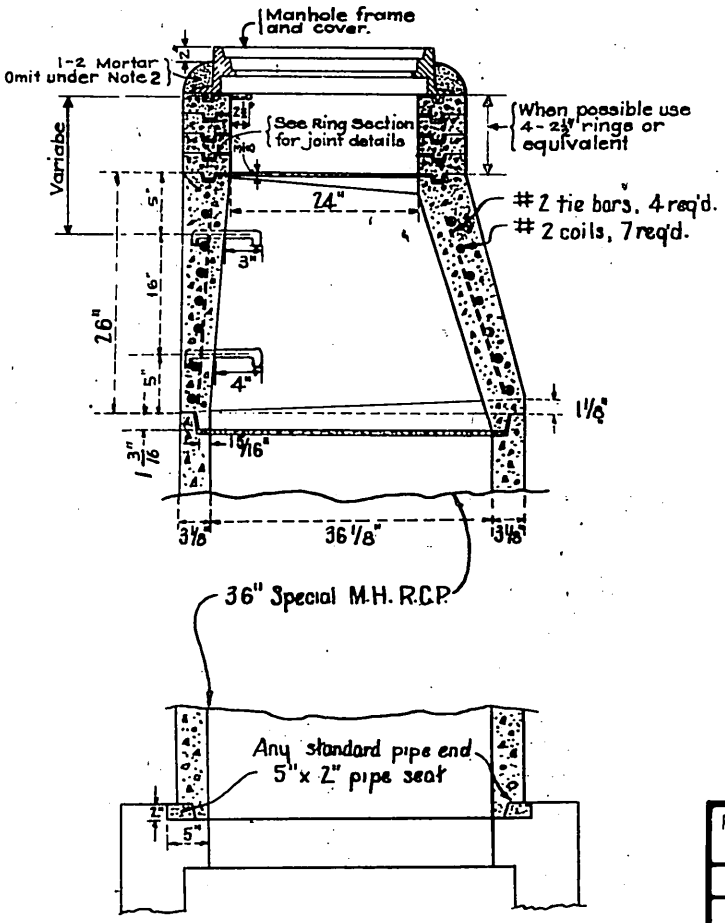
L.A.C.F.C. 2-D104



VERTICAL SECTION OF PLAIN CONCRETE ECCENTRIC MANHOLE SHAFT



CROSS SECTION OF REINFORCED CONCRETE RING



VERTICAL SECTION OF REINFORCED CONCRETE ECCENTRIC MANHOLE SHAFT

NOTES

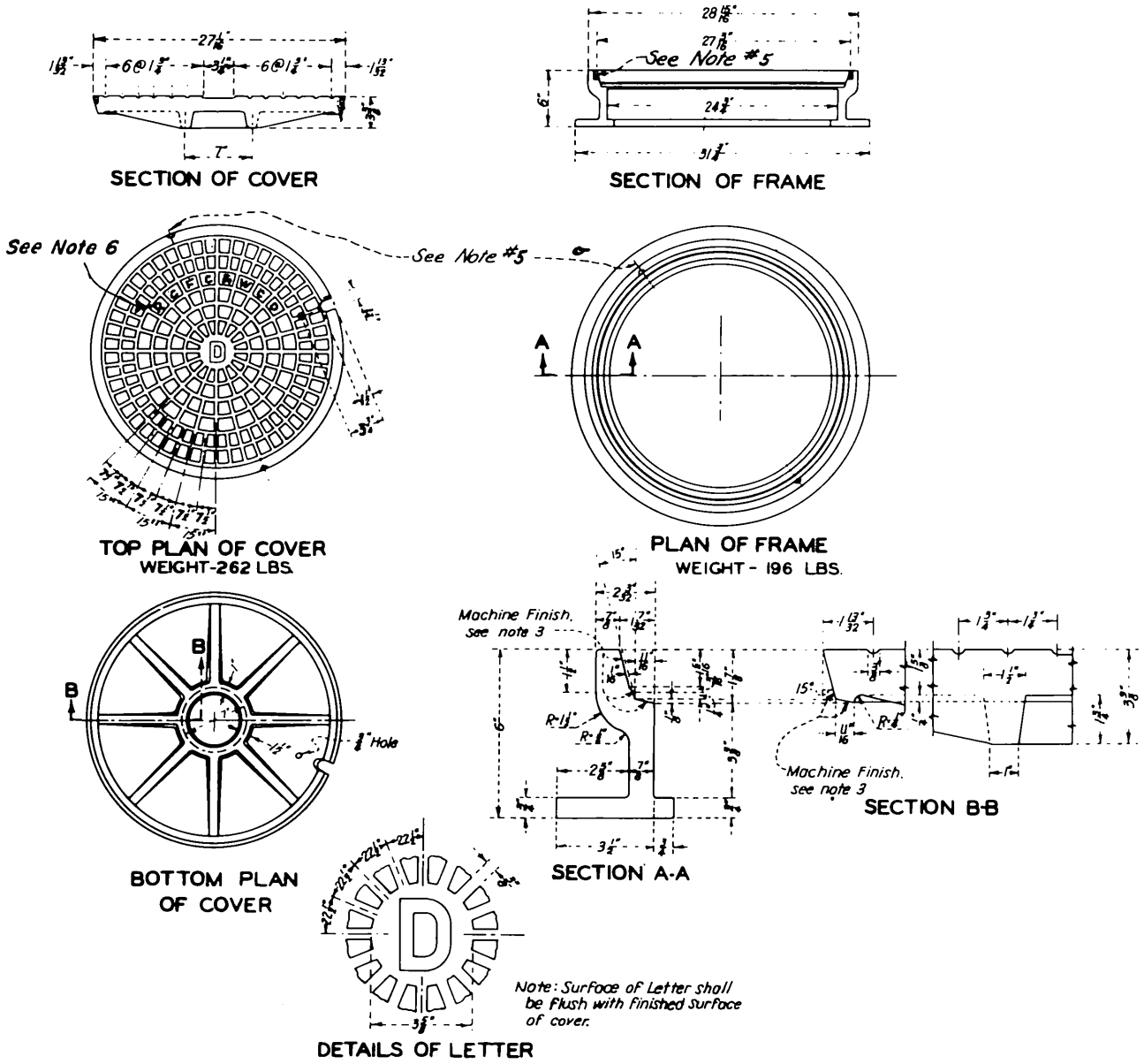
1. ALL JOINTS shall be filled with 1-2 mortar and neatly pointed or wiped on inside of shaft.
2. COLLAR of 1-2 mortar around cover frame shall be omitted in rock and oil streets and in paved streets.
3. STEPS shall be ¾ inch round galvanized steel. Top step shall be placed directly beneath the manhole cover frame.

   Width of all steps shall be 14 inches between leg centers. Except where shown otherwise, spacing of steps in shaft shall be 16 or 17 inches on center.
4. ECCENTRIC MANHOLE shaft, reducer, and rings may be plain concrete. For unreinforced sections, the minimum thickness shall be 6 inches. The concrete used shall be of such strength so as to develop 3500 p.s.i. or greater in 28 days.

PROJECT NO. 1-0-190

REVISED DATE	RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT		
	MANHOLE SHAFT TYPE I FOR CAST PIPE		
	APPROVED CHIEF ENG RE NO 8822 DATE 12-3-68	DR / DATE / /	
		TRAC	SH NO 23
		CHECKED	DWG 1-237

L.A. C.F.C. Std. No. 2-D181



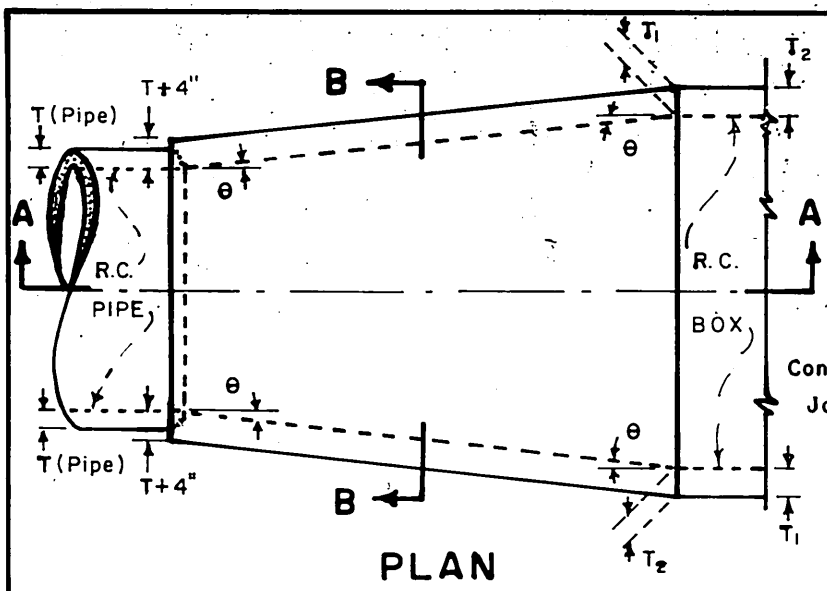
NOTES

1. The Manhole Frame and Cover shall be made of gray cast iron conforming to the latest A.S.T.M. standard A48, class 30 or better.
2. All parts of the Manhole Frame and Cover except machined surfaces shall be coated with asphaltum paint.
3. The Manhole Frame and Cover shall be tested for accuracy of fit and shall be marked in sets before delivery. The Cover shall fit the Frame snugly but not tightly.
4. The weights of the Frame and Cover shall not vary more than two percent from those given hereon.
5. Covers for manholes located in right of way, easements, alleys, parkways and all other places except paved streets shall be provided with allen socket set screw locking devices. The Contractor shall drill and tap two holes to a depth of 1" at 90° to pick hole and install 3/4" x 3/4" allen socket set screws therein.
6. Cast Letters R.C.F.C.& W.C.D.

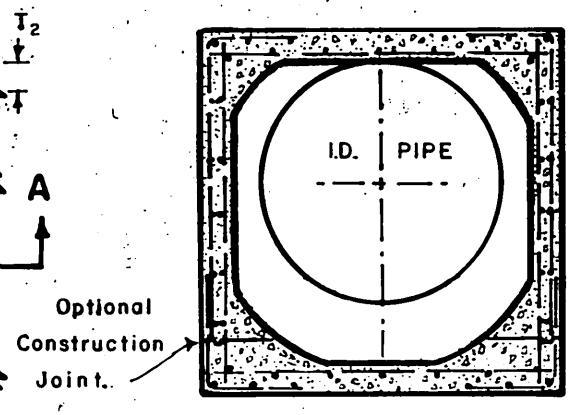
PROJECT NO. 1-0-190

REVISED DATE	RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT		
	MANHOLE FRAME & COVER NON-ROCKING		
	APPROVED John R. Bayer CHIEF ENG R.E. NO 8822 DATE 12-3-68	DR	DATE / /
		TRAC	SH. NO. 24
		CHECKED	DWG 1-237

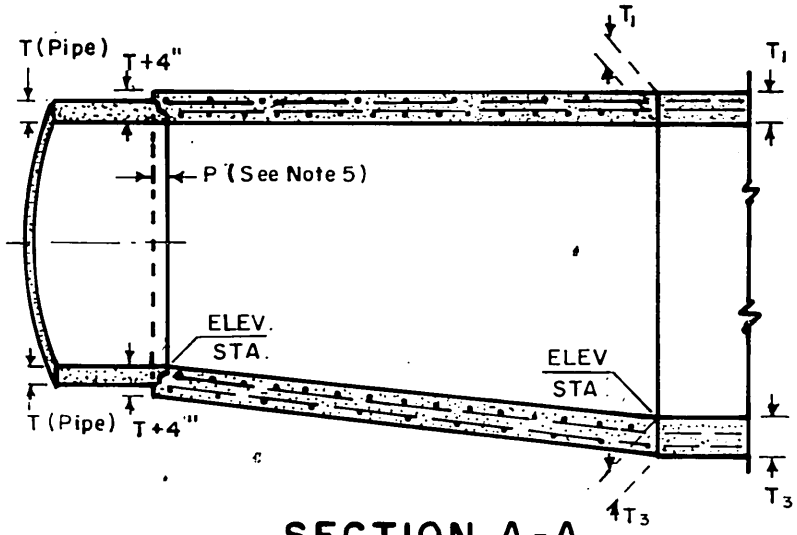
D-175



PLAN



SECTION B-B



SECTION A-A

NOTES

1. The horizontal angle of divergence or convergence, θ, shall not exceed 5°45'
2. Reinforcing steel bar sizes, spacing, pattern and cover over the steel shall be that of the box section. The bar lengths shall vary uniformly throughout the transition.
3. The concrete thickness shall be that of the box section unless the wall thickness of the pipe plus 4 inches is greater, in which case the concrete thickness shall vary uniformly from that of the box section to that of the pipe wall plus 4" inches.
4. The interior surface shall be smooth and vary uniformly between the two adjoining sections.
5. At pipe juncture, embedment P shall be 5 inches for pipe sizes of 96 inches or less and 8 inches for pipe sizes over 96" inches.
6. Keyed construction joints of the same dimensions as those of the box may be carried through the transition structure at contractor's option. See Sec. B-B above.
7. The transition structure shall be constructed in accordance with the general structural notes applying to box as shown on the project drawings.
8. Concrete shall be Class A.

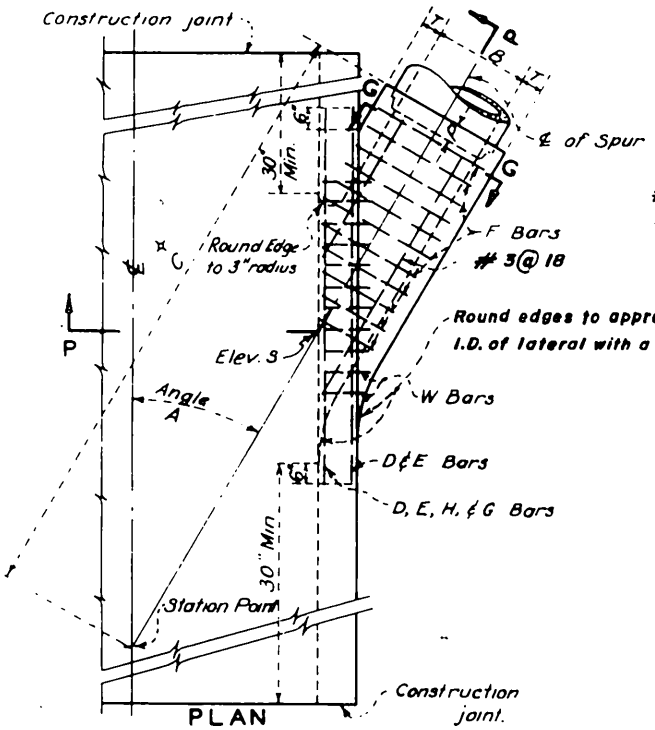
PROJECT NO. 1-0-190

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

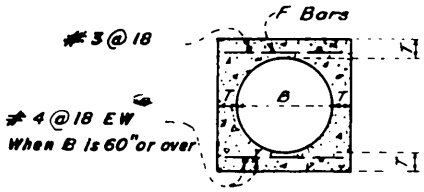
TRANSITION STRUCTURE NO. 1

Approved: Chief Engineer R.E. No 8822	Designed: L.A.F.C.D.	Sheet No 25 of
	Drawn: K R B	Dwg. No 1-237
Date: 12-3-68	Checked: J. K.	
	Date Drawn: 10/68	

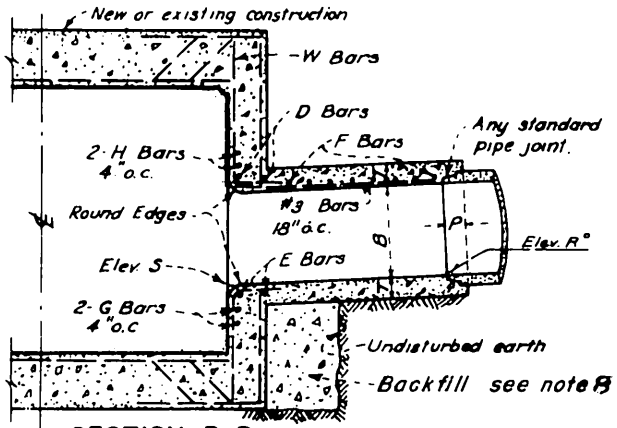
L.A.F.C.D. NO. 2-D235



PLAN



SECTION G-G



SECTION P-P

TABLE
for dimensions and bar sizes

B (inches)	T (inches)	D,E,H,& G Bars	F Bars
12	4	#5	#4@6
15	4¼		
18	4½		
21	5		
24	5¼		
27	5½		
30	6		
33	6¼		
36	6½		
39	7		
42	7¼	#6	#5@6
45	7¾		
48	8		
51	8½		
54	9		
57	9¼		
60	9½		
63	10		
66	10¼		
69	10¾		
72	11		
78	11¾		
84	12½		
90	13½	#7	#6@6
96	14		
102	15½		
108	16		
114	16½		
120	17		
126	17		
132	17½		
138	17½		
144	18		

NOTES

1. Values for A, B, C, Elev. R, and Elev. S are shown on the Project Dwgs. Table of Values for T shown on this plan.
2. Stations specified on drawings apply at the intersection of center lines of main line and laterals, except that stations for catch basin connector pipe apply at inside wall of structure.
3. Reinforcing steel shall be straight bars 1½" clear from face of concrete unless otherwise shown.

   W bars are of size and spacing specified for wall steel on plan, and shall be cut in center of opening and bent into top and bottom of junction structure.

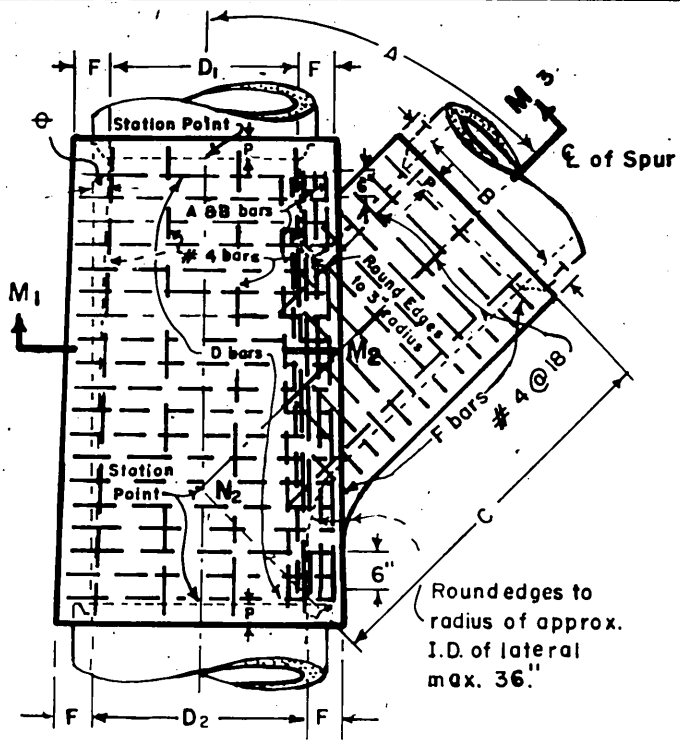
   Omit H bars when soffit of spur is 12" or less below soffit of main line, and omit G bars when invert of spur is 12" or less above floor of main line.
4. Junction structure shall be poured monolithically with main line storm drain, manhole or transition.
5. Floor of structure shall be steel-troweled to the spring line.
6. f'c = 3000 psi at 28 days.
7. Embedment, P, shall be 5" for B = 96" or less and 8" for B over 96".
8. Backfill under structure with 1-3-5 mix concrete, or compact soil to relative density required by specifications. Backfill may be omitted if structure is laid on undisturbed earth to storm drain wall.

PROJECT NO. 1-0-190

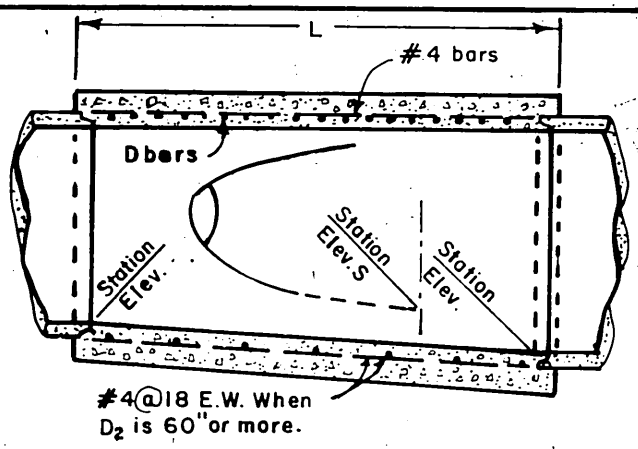
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

JUNCTION STRUCTURE NO. - 1

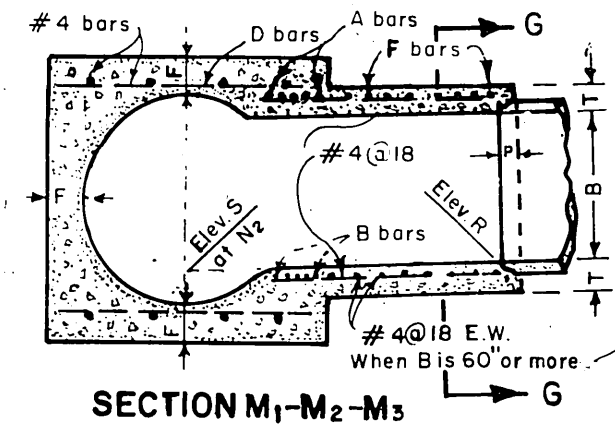
Approved: John M. Dyer Jr. Chief Engineer R.E. No. 6882	Designed:	Sheet No 26 of
Date: 12-3-68	Drawn: Ken Bilodeau	Dwg No 1-237
	Checked:	
	Date Drawn: AUG 1968	



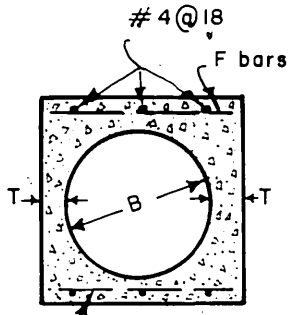
PLAN



LONGITUDINAL SECTION



SECTION M_1-M_2-M_3



SECT. G-G

TABLE

For dimensions and bars size

D_2 or B	F or T	A or B bars	D or F bars	P
12	4	# 5 @ 3	# 4 @ 6	5"
15	4 1/4			
18	4 1/2			
21	5			
24	5 1/4			
27	5 1/2			
30	6			
33	6 1/4			
36	6 1/2			
39	7			
42	7 1/2	# 6 @ 3	# 5 @ 6	
45	7 3/4			
48	8			
51	8 1/2			
54	9			
57	9 1/4			
60	9 1/2			
63	10			
66	10 1/4			
69	10 3/4			
72	11			
78	11 3/4			
84	12 1/2			
90	13 1/4	# 7 @ 3	# 6 @ 6	8"
96	14			
102	15 1/2			
108	16			
114	16 1/2			
120	17			
126	17			
132	17 1/2			
138	17 1/2			
144	18			

NOTES

1. The horizontal Angle of convergence or divergence, θ shall not exceed 5° 45'.
2. Values for A, B, C, D_1, D_2, L, Elev. R_T and Elev. S are shown on improvement plan. Elev. S applies at center of main line on prolonged invert of spur. The length of the structure may be increased to meet pipe ends, using D bars in extended portion of same diameter and spacing as specified.
3. Concrete shall be Class A. Floor of the structure shall be steel-troweled to springing line. Structure shall be poured in one continious operation, except that the contractor shall have the option of placing at the springing line a construction joint with a longitudinal keyway.
4. Reinforcing steel clear cover shall be 1½" tie bars shall be No. 4 & Spaced 18" c/c.
5. When dimension C is not specified the spur shall not be constructed and a A & B bars shall be omitted.

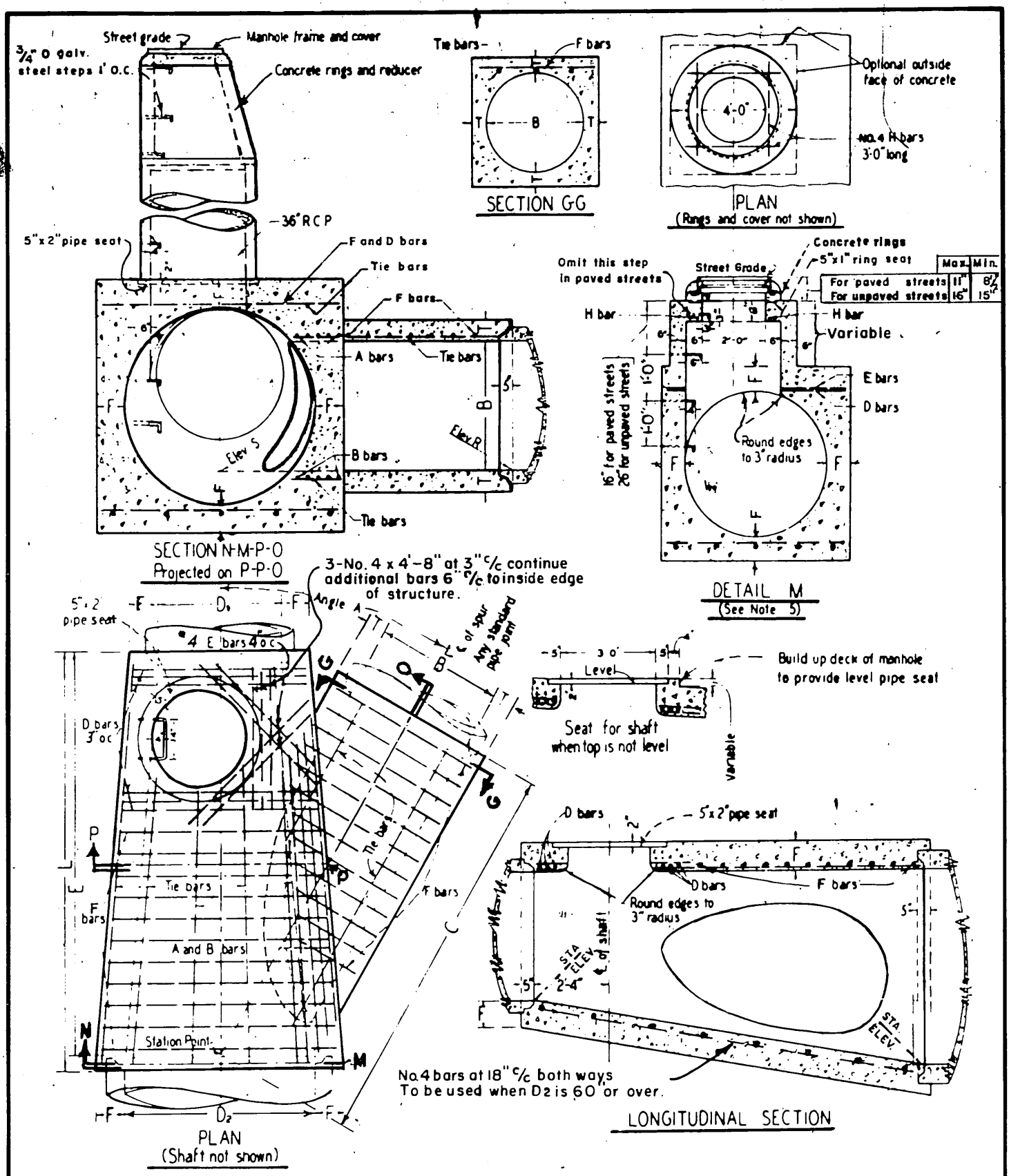
PROJECT NO. I -0- 190

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

TRANSITION STRUCTURE NO. 3

Approved: John W. Bryant, Chief Engineer, R.E. No. 8822	Designed: L.A.C.F.C.	Sheet No. 27 of
	Drawn: Ken Biloskegu	
	Checked: J. Hanson	Dwg. No. I-237
Date: 12-3-68	Date Drawn: 9/23/68	

L.A. County Flood Control Std. 2D-188



	Max.	Min.
For paved streets	11"	8 1/2"
For unpaved streets	16"	15"

TABLE OF BAR SIZES		
D2 or B	A & B bars	D or F bars
12"-39"	No. 5 at 3"	No. 4 at 6"
42"-84"	No. 6 at 3"	No. 5 at 6"
90"-144"	No. 7 at 3"	No. 6 at 6"

PROJECT NO. 1-0-190

REVISED DATE	RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
	JUNCTION STRUCTURE NO. 4
	APPROVED John W. Byard CHIEF ENG. R.E. NO. 8822 DATE 12-3-68

DR	DATE
TRAC	SH NO 28
CHECKED	DWG 1-237

City of Riv. Std. No. 402
City of L.A. Std. No. B-1528, L.A.C.F.C. Std. No 2-D112

NOTES

1 - VALUES for A, B, C, D_1, D_2, E, L, Elevation R, and Elevation S are shown on the improvement plan
TABLE of values for F and T hereon

2 - LATERALS: If laterals enter on both sides of manhole, access shaft shall be located on side receiving the smaller lateral

3 - CENTER OF MANHOLE SHAFT shall be located over center line of main storm drain when D_1 is 48" or less, in which case place 4 E bars symmetrically around shaft at 45° with center line.

4 - LENGTH L (shown on improvement plan) may be increased at option of Contractor to meet pipe ends, but any change in location of spur must be approved by the Engineer.

5 - DETAIL M : When depth of manhole from street grade to top of box is less than 2'-10½" for paved streets or 3'-6" for unpaved streets, construct monolithic shaft as per Detail M
The Contractor shall have the option of constructing shaft as per Detail M for any depth of manhole.
When diameter D_1 is 48" or less, center of shaft shall be located as per Note 3

6 - REINFORCING STEEL shall be round, deformed, straight bars, 1½" clear from face of concrete unless shown otherwise.
Tie bars shall be No 4 and spaced 18" on centers or closer.

7 - CONCRETE shall be class A

8 - STEPS shall be ¾" round, galvanized steel and anchored not less than 6 inches in the walls of structure Unless otherwise shown the spacing shall be 12" on centers. The lowest step shall be not more than 2 feet above the invert (Alhambra Fdy. A-3320 or equal.)

9 - RINGS, REDUCER, AND PIPE for access shaft shall be seated in cement mortar and neatly pointed or wiped inside shaft.

10 - FLOOR of manhole shall be steel troweled to springing line

11 - BODY of manhole, including spur, shall be poured in one continuous operation, except that the Contractor shall have the option of placing at the springing line a construction joint with longitudinal keyway.

12 - ELEVATION "S" applies at center of main line on prolongation of invert of spur

TABLE OF VALUES FOR F AND T

D_2	F
12"	4"
15"	4¼"
18"	4½"
21"	5"
24"	5¼"
27"	5½"
30"	6"
33"	6¼"
36"	6½"
39"	7"
42"	7¼"
45"	7½"
48"	8"
51"	8½"
54"	9"
57"	9¼"
60"	9½"
63"	10"
66"	10¼"
69"	10½"
72"	11"
78"	11¾"
84"	12¾"
90"	13¾"
96"	14"
102	15½
108	16
114	16½
120	17
126	17
132	17½
138	17½
144	18

B	T
12"	4"
15"	4¼"
18"	4½"
21"	5"
24"	5¼"
27"	5½"
30"	6"
33"	6¼"
36"	6½"
39"	7"
42"	7¼"
45"	7½"
48"	8"
51"	8½"
54"	9"
57"	9¼"
60"	9½"
63"	10"
66"	10¼"
69"	10½"
72"	11"

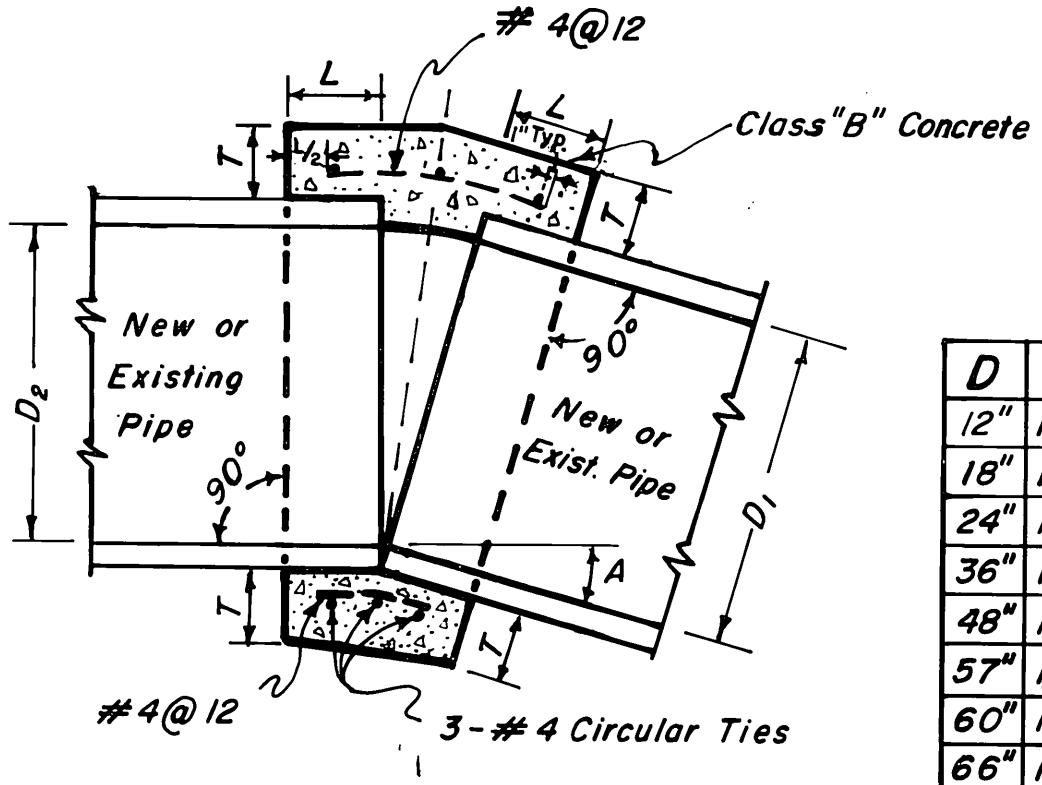
PROJECT NO. 1-0-190

REVISED DATE	RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
	JUNCTION STRUCTURE NO 4

APPROVED John W. Bay Jr. CHIEF ENG. R.E. NO. 8822
DATE 12-3-68

DR.	DATE / /		
TRAC.	SH. NO. 29		
CHECKED	DWG. 1-237		

City of L.A. Std. No. B-1528



D	L	T
12"	1.0'	4"
18"	1.0'	5"
24"	1.0'	6"
36"	1.5'	8"
48"	1.5'	10"
57"	1.5'	10"
60"	1.75'	11"
66"	1.75'	11"
72	1.75'	11"

NOTES

1. A concrete collar is required where the change in grade exceeds 0.10 ft. per foot.
2. Where pipes of different diameters are joined with a concrete collar, L and T shall be those of the larger pipe. D, D_1 or D_2 whichever is greater.
3. For pipe larger than 72" a special collar detail is required.
4. For pipe size not listed use next size larger.
5. Omit reinforcing on pipes 24" and less in diameter and on all pipes where angle A is less than 10°.
6. Where reinforcing is required the diameter of the circular ties shall be D + (2 x wall thickness) + 8".
7. When D_1 is equal to or less than D_2, join inverts and when D_1 is greater than D_2, join soffits.
8. Pipe may be corrugated metal pipe, concrete pipe, or reinforced concrete pipe.

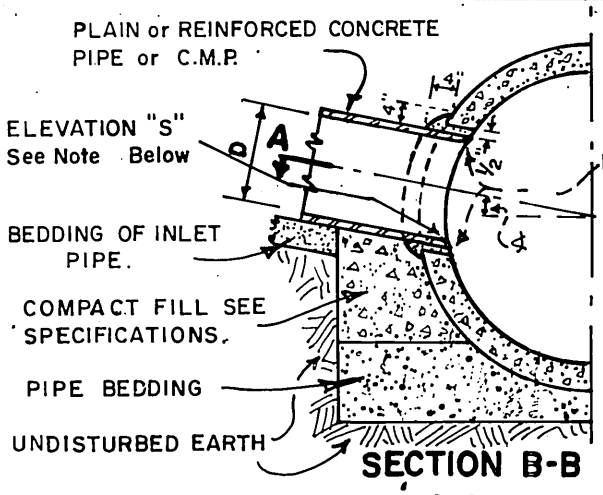
L.A. C.F.C. 2-0393

PROJECT NO. 1-0-190

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

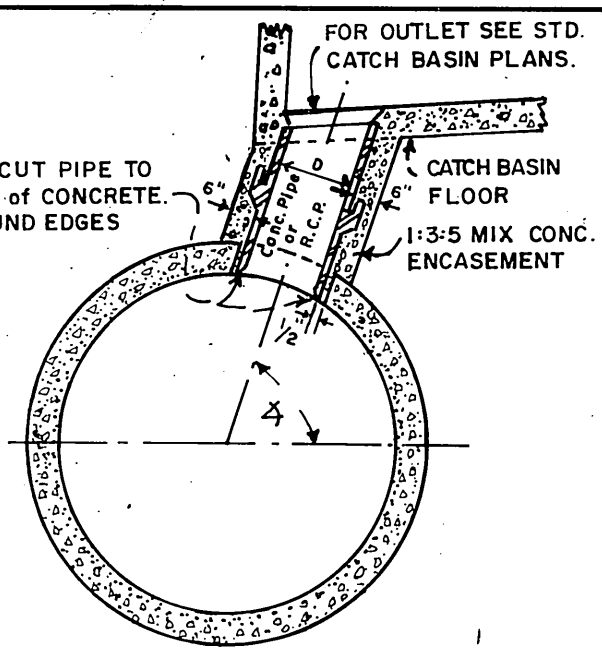
CONCRETE COLLAR FOR PIPES 12 INCHES THROUGH 72 INCHES

Approved: John W. Dougant, Chief Engineer / R.E. No. 8822
Date: 12-2-68
Designed:
Drawn: Ken Bilodeau
Checked:
Date Drawn: 8/14/68
Sheet No. 30 of
Dwg. No. 1-237



SECTION B-B

CASE-1

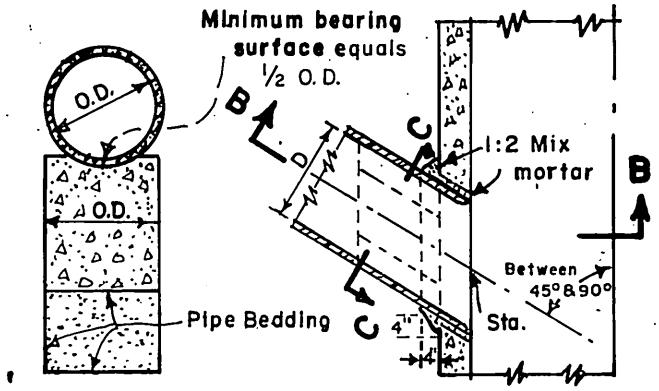


CASE-2

CATCH BASIN ABOVE STORM DRAIN

NOTE

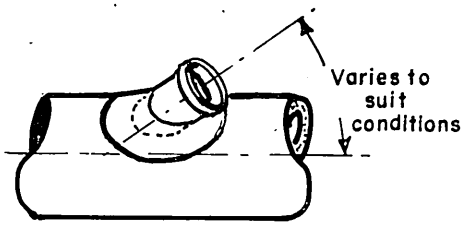
ALL CONNECTOR PIPES (within the angles specified for Case 2.) shall be encased when laid within the main line excavated trench, or when laid on fill which has not been densified.



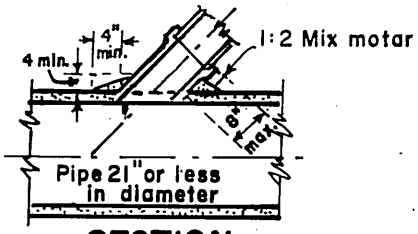
SECTION C-C

SECTION A-A

CASE-1-SIDE INLET



PLAN



SECTION

CASE-3-SADDLE CONNECTION

NOTES CASES 1 & 2

1. D shall be 24" or less, and in no case shall the inlet pipe exceed one-half the inside diameter of the main storm. If ∢ is 45° or less, use Case 1; If ∢ is greater than 45° use Case 2.
2. ℄ of inlet shall be on radius of main storm drain except when elevation "S" is shown on project drawing. PROFILE.
3. The minimum opening into the existing storm drain shall be the outside diameter of the connecting pipe plus 1 inch.
4. All corrugated metal pipe and fittings shall be galvanized.
5. Sta. at F.L. & center of pipe, shown on project dwg. PROFILE.

NOTES CASE-3-SADDLE CONNECTION

1. Connections to pipes 21" or less in diameter without junction structures or precast Y branches shall be made with saddles.
2. Trim or cut saddle to fit snugly over the outside of the main pipe and so it's axis will be on the line and grade of the connecting pipe.
3. The opening into the pipe shall be cut and trimmed to fit the saddle so that no part will project within the bore of the saddle pipe.
4. The connecting pipe shall be supported as shown in Case 1 and 2.

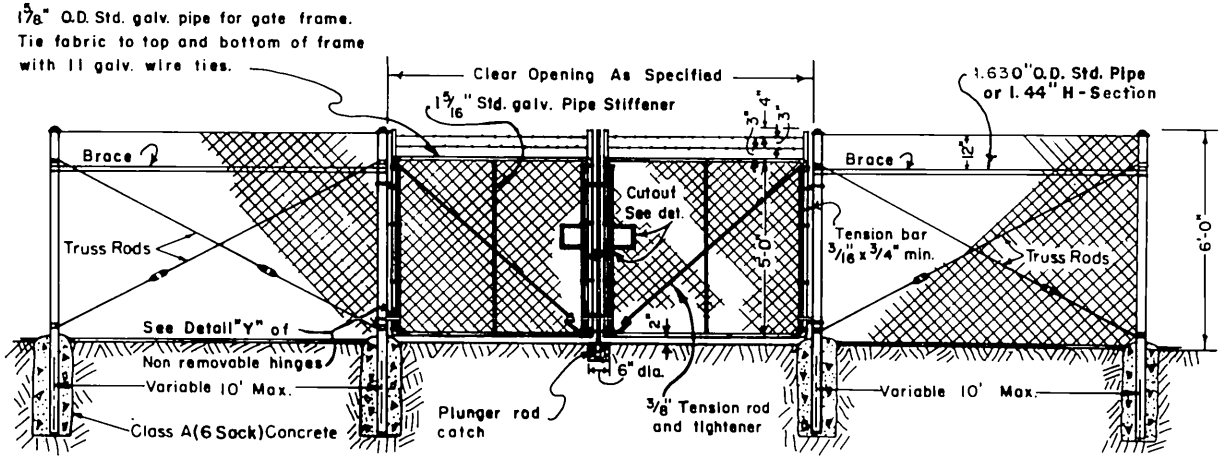
L.A.C.F.C. 2-D 193

PROJECT NO. 1-0-190

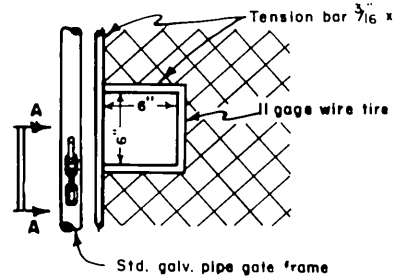
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

CONNECTOR PIPE DETAILS

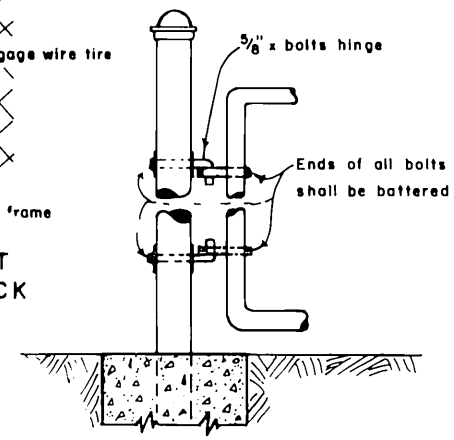
Approved: John W. Bryant, Chief Engineer R.E. No 8822	Designed:	Sheet No 31 of
Date: 12-3-68	Drawn: Ken Bladen	Dwg. No 1-25
	Checked:	
	Date Drawn:	



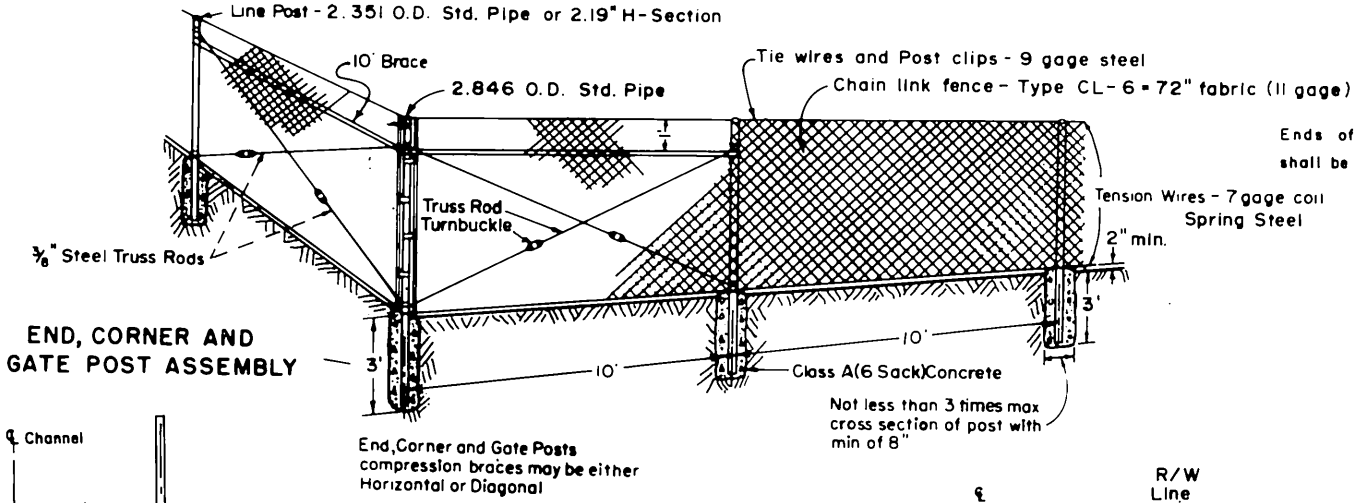
DOUBLE DRIVE GATE DETAIL



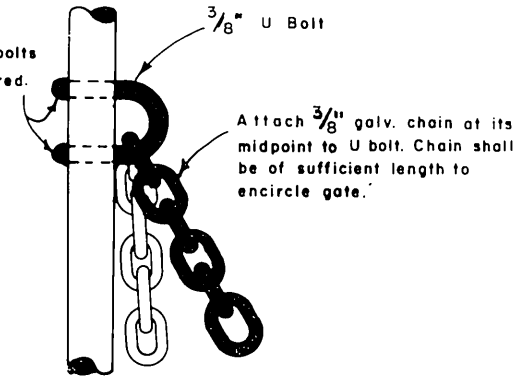
DETAIL OF CUTOUT
FOR CHAIN AND LOCK



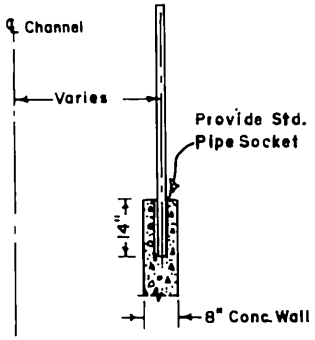
DETAIL "Y" (OPTIONAL)



END, CORNER AND
GATE POST ASSEMBLY

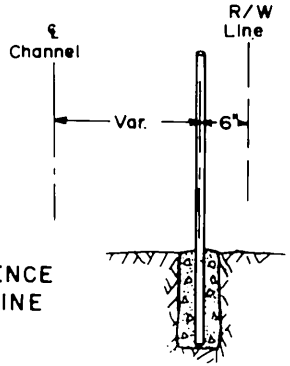


DETAIL A-A



TYPICAL FOR FENCE
IN CHANNEL WALL

Line post at 1,000' maximum intervals
braced and trussed in both directions.



TYPICAL FOR FENCE
ALONG R/W LINE

PROJECT NO. 1-0-190

REVISED DATE	RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT		
	CHAIN LINK FENCE DETAILS		
	APPROVED John W. Bryant CHIEF ENG R.E. NO 8822 DATE 12-3-68	DR K.R.B.	DATE 9/25/68
		TRAC K.R.B.	SH. NO. 32
		CHECKED J.H.	DWG. 1-237

D-175

C1R

DETOUR AHEAD

C2R

ROAD CLOSED

C5R(LT)

DETOUR

C7R

END DETOUR

C14R

END ROAD WORK

C9R

FLAGMAN AHEAD

C13R

END CONSTRUCTION

C16R

ONE LANE ROAD AHEAD

C17

ROAD WORK SPEED LIMIT 25

END 25 MILE ZONE

C18R

ROAD CONSTRUCTION AHEAD

C19R

ROAD CLOSED AHEAD

C20R

LEFT LANE CLOSED AHEAD

C21R

SINGLE LANE AHEAD

C22R

MEN WORKING

C23R

ROAD WORK AHEAD

C5R(V)

DETOUR

R7R

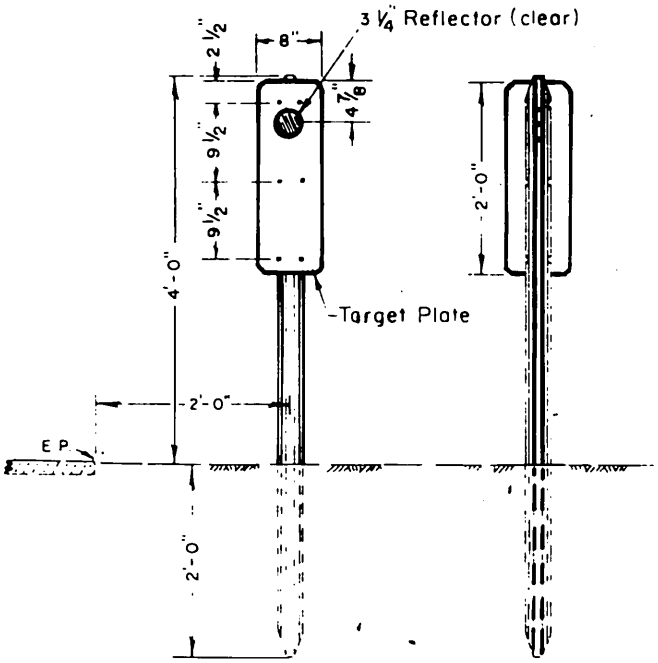
KEEP RIGHT

Note: Refer to State of California, Dept. of Public Works, Div. of Highways, Uniform Sign Chart Dated January 1962, for the Color and Dimensions of the above signs.

REVISED DATE	RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT		
	CONSTRUCTION SIGNS		
	APPROVED John R. Bryant CHIEF ENG. R.E. NO. 8822 DATE 12-19-68	DR.	DATE / /
		TRAC.	SH. NO. 33
		CHECKED	DWG. 1-237

PROJECT NO. 1-0-190

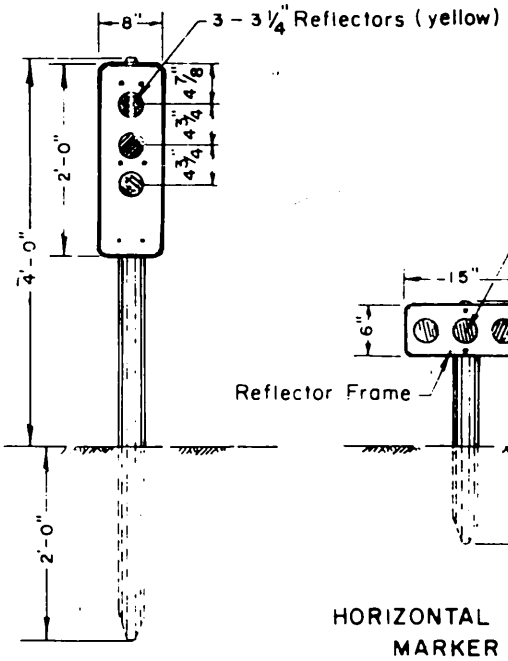
City of Riv. No. 658



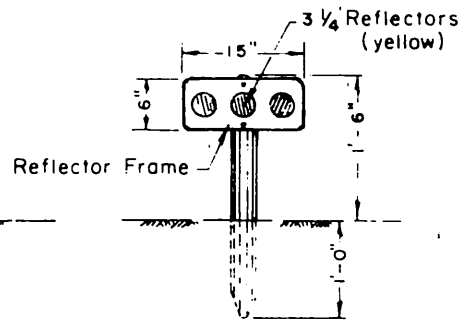
FRONT

REAR

GUIDE MARKER

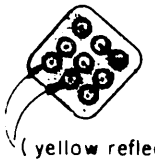


CLEARANCE MARKER



HORIZONTAL REFLECTOR MARKER W61R

W21R

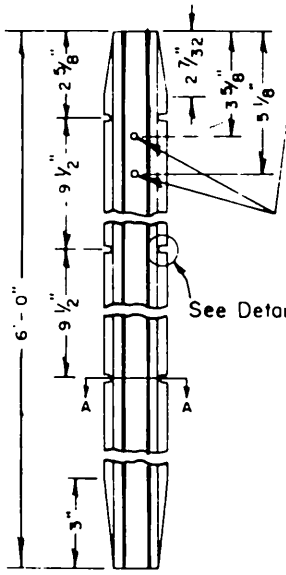


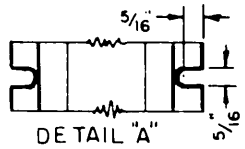
(yellow reflectors)

W35R

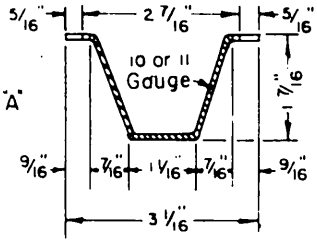
W56R

W57R





DETAIL "A"



SECTION A-A

METAL MARKER POST

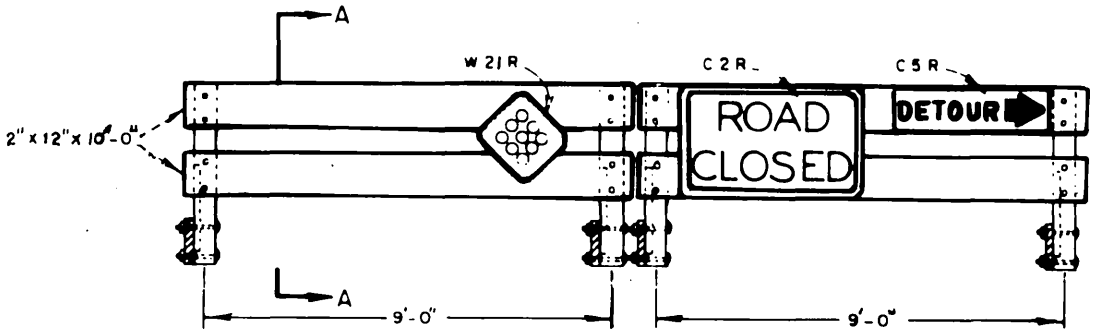
COLOR LEGEND

- White
- Yellow
- Black

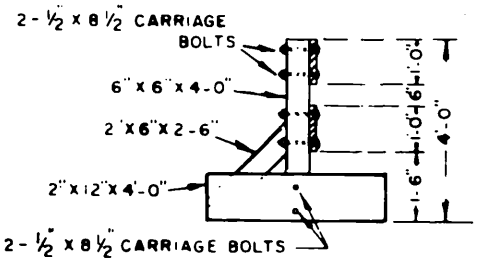
ADAPTED FROM STATE OF CALIFORNIA, DEPT. OF PUBLIC WORKS, DIV. OF HIGHWAYS, STD. DWG. NO. A74-6 & UNIFORM SIGN CHART

REVISED DATE	RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT		
	SIGNS & MARKERS		
	APPROVED John W. Bryant CHIEF ENG. R.E. NO. 8822 DATE: 12-5-68	DR. / DATE / /	
		TRAC.	SH. NO. 34
		CHECKED	DWG. 1-237

PROJECT NO. 1-0-190



STANDARD BARRICADE WITH TYPICAL DETOUR SIGNS



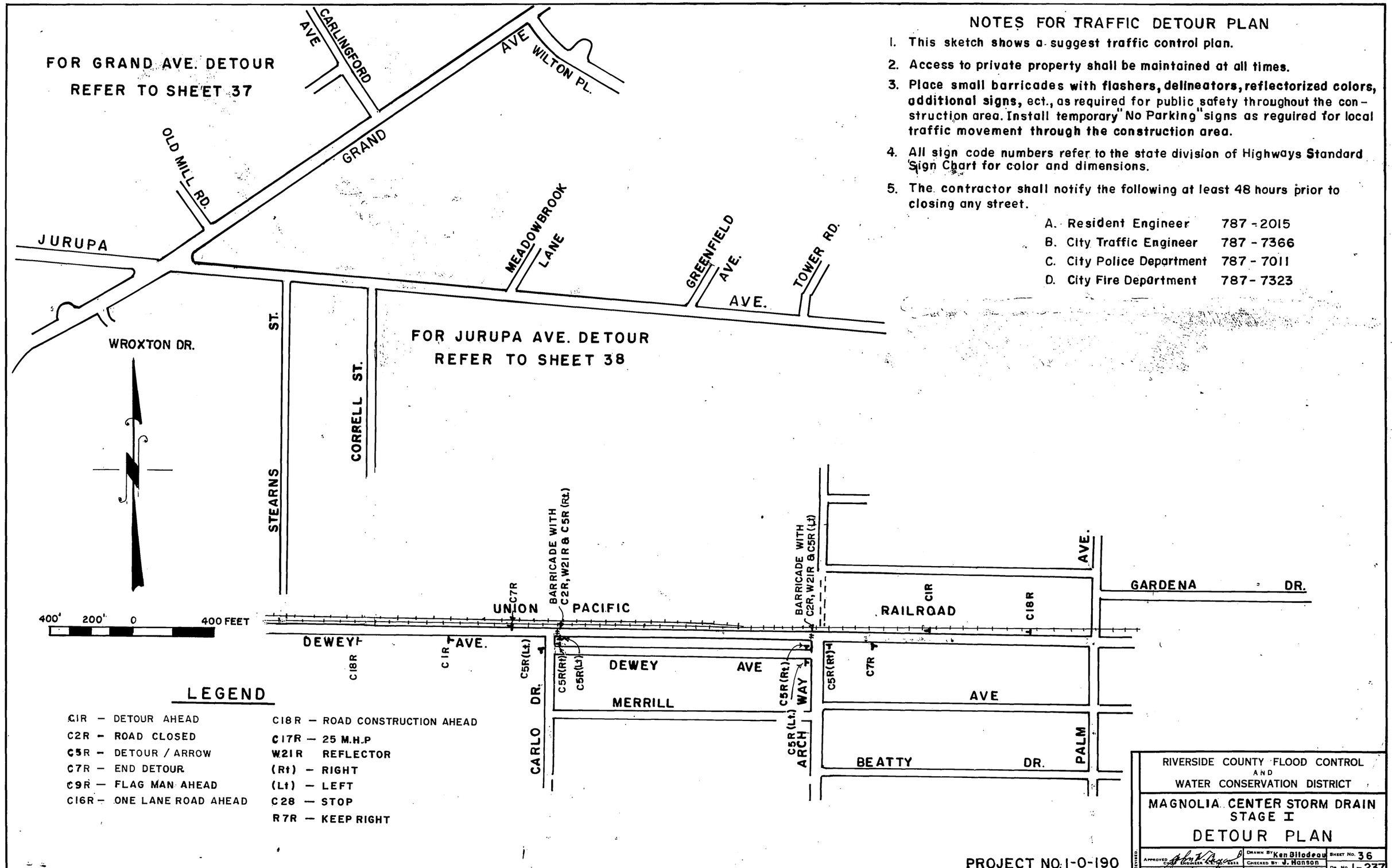
SECTION A-A

NOTE:

1. All lumber to be select structural D.F. S.4 S.
2. Barricades to be given two coats of signal yellow paint after assembly.
3. Signs, reflectors, and barricades to be furnished and installed by the contractor as directed by the engineer.

PROJECT NO. 1-0-190

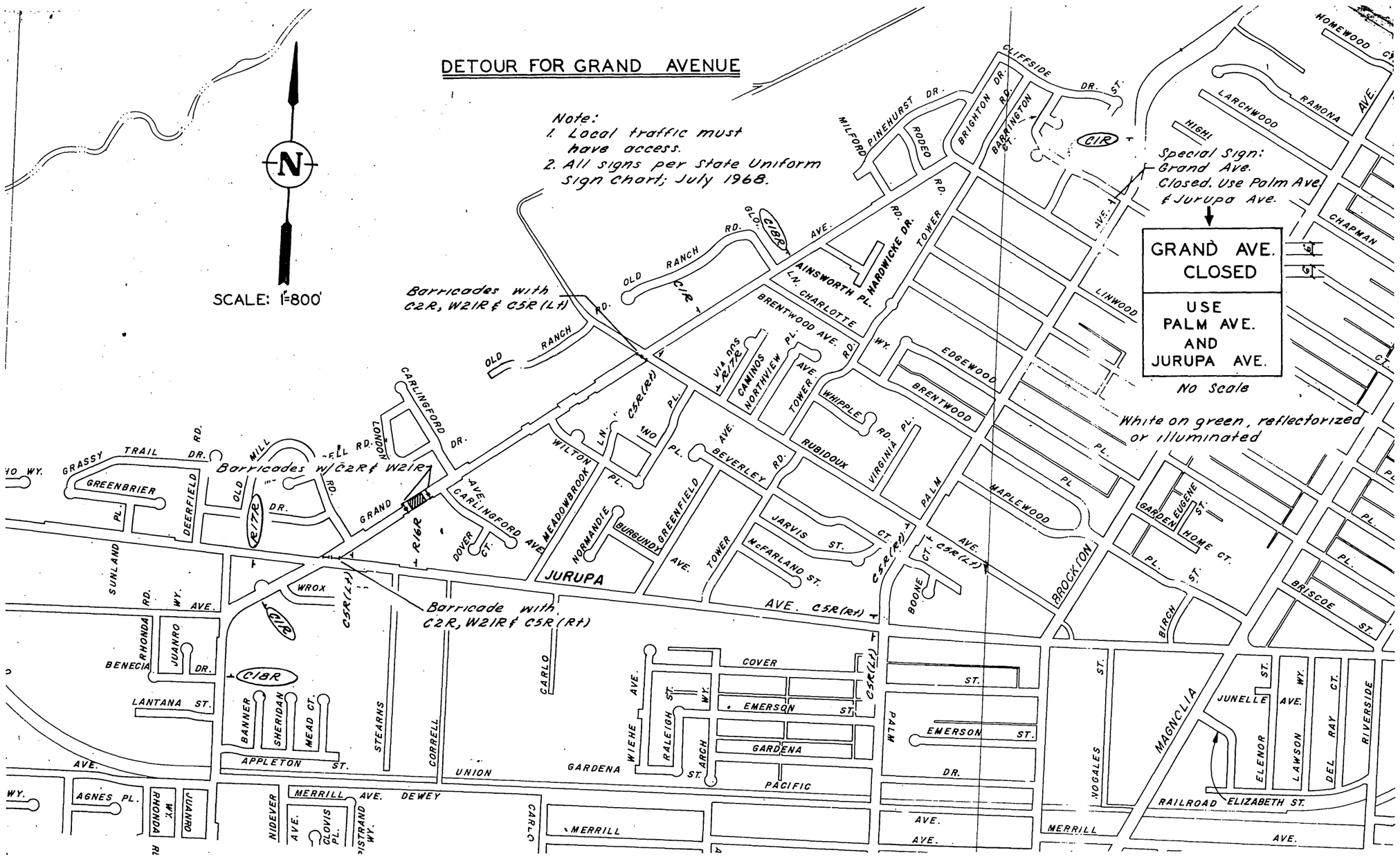
REVISED DATE	RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT		
	CONSTRUCTION BARRICADES		
	Approved John W. Bryant CHIEF ENG. RE NO. 8822	DR	DATE / /
		TRAC	SH. 35
	DATE 8-30-68	CHECKED	DWG. 1-237



NOTES FOR TRAFFIC DETOUR PLAN

1. This sketch shows a suggest traffic control plan.
2. Access to private property shall be maintained at all times.
3. Place small barricades with flashers, delineators, reflectorized colors, additional signs, ect., as required for public safety throughout the construction area. Install temporary "No Parking" signs as required for local traffic movement through the construction area.
4. All sign code numbers refer to the state division of Highways Standard Sign Chart for color and dimensions.
5. The contractor shall notify the following at least 48 hours prior to closing any street.

A.	Resident Engineer	787 - 2015
B.	City Traffic Engineer	787 - 7366
C.	City Police Department	787 - 7011
D.	City Fire Department	787 - 7323



RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

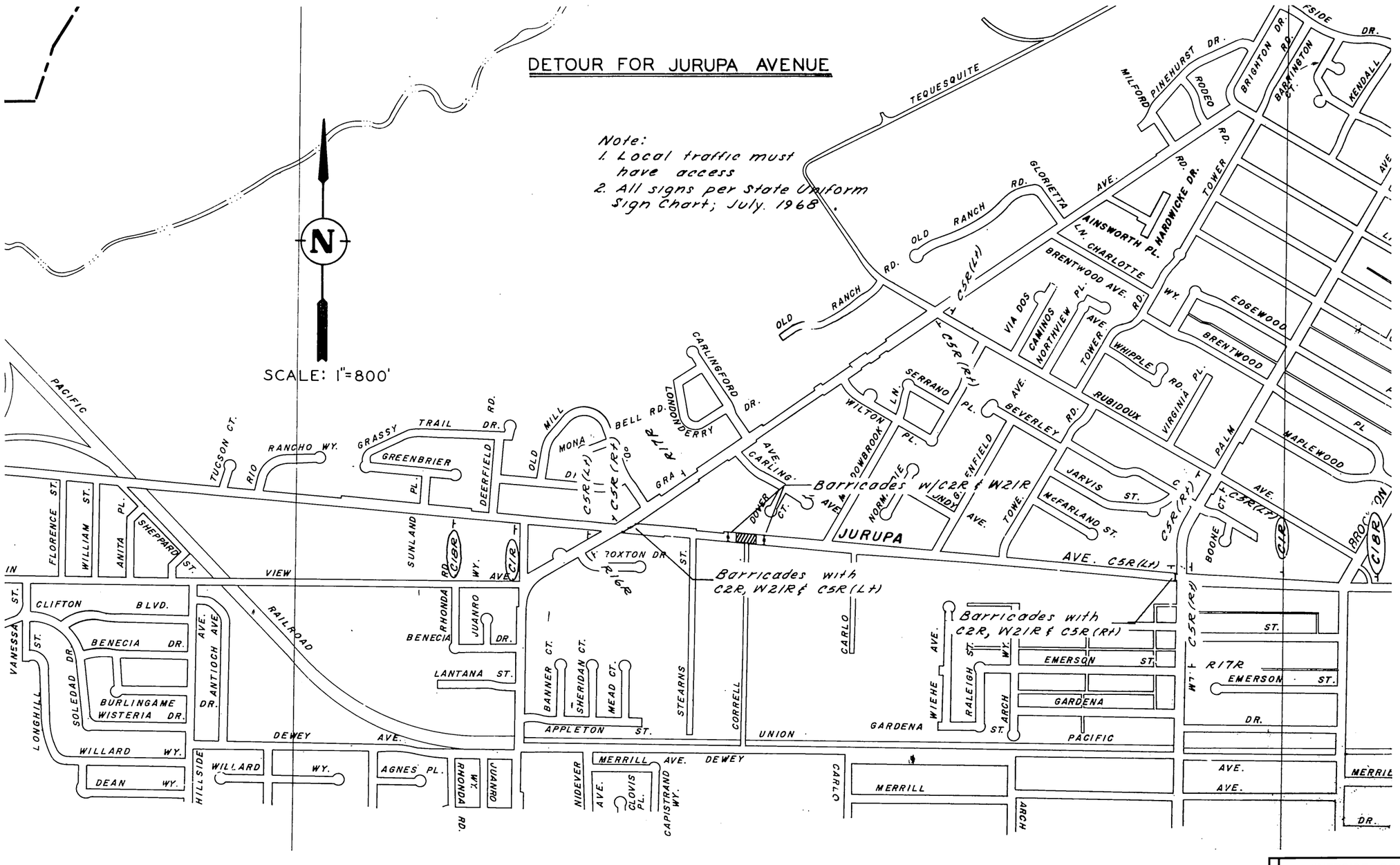
MAGNOLIA CENTER STORM DRAIN
STAGE I

GRAND AVE. DETOUR

REVIEWED: APPROVED CHIEF ENGINEER R.E. No. 8822	DRAWN BY TRAFFIC DEPT.	SHEET No 37
DATE: 12-2-68	CHECKED BY	
	DATE DRAWN	DR No 1-237

PROJECT NO. 1-0-190

D-175



RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

MAGNOLIA CENTER STORM DRAIN
STAGE I

JURUPA AVE. DETOUR

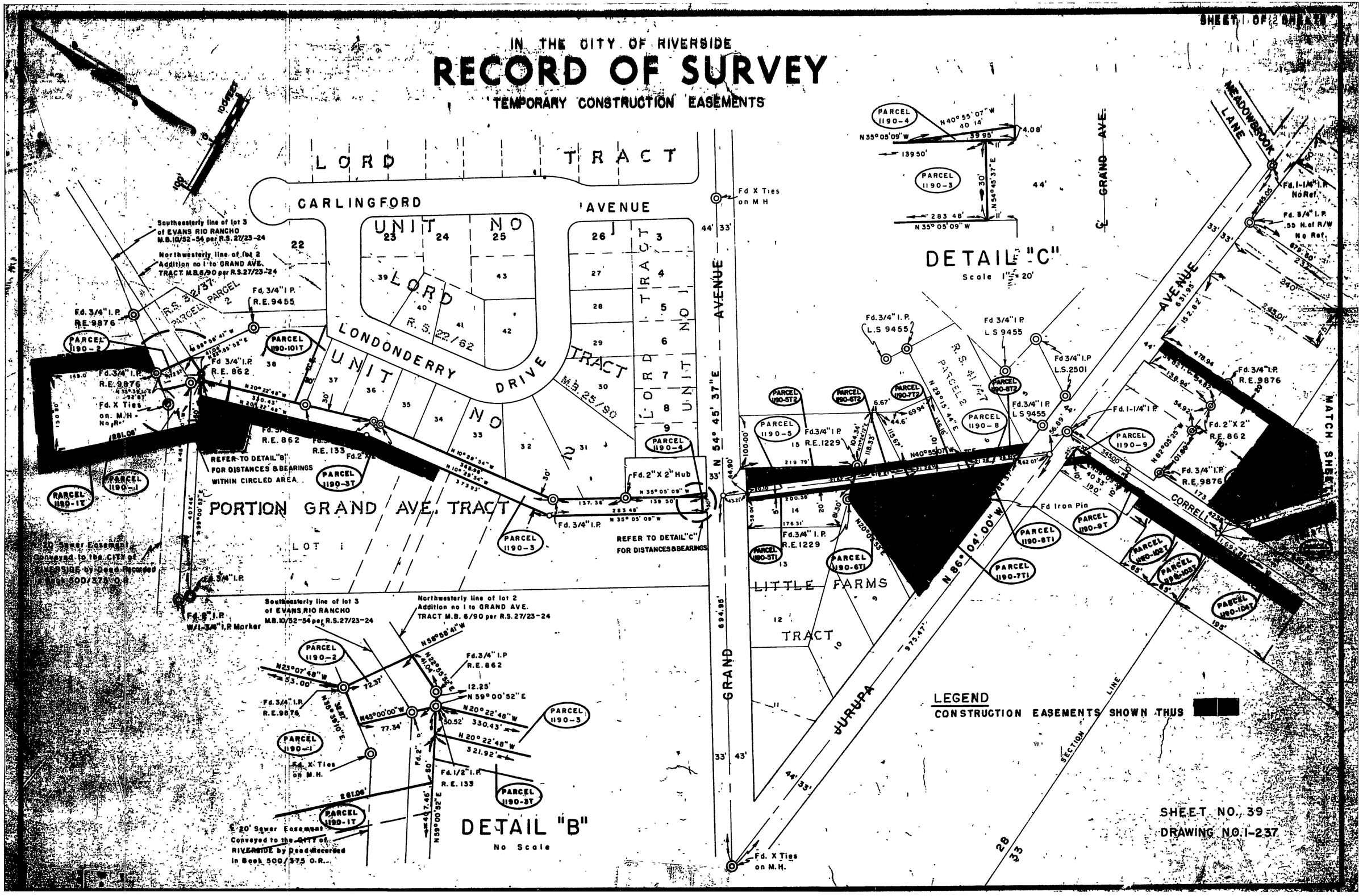
REVISED	DRAWN BY TRAFFIC DEPT.	SHEET NO 38
APPROVED Robert Bryant CHIEF ENGINEER R.E. NO 8822	CHECKED BY	
DATE: 12-8-68	DATE DRAWN	DR. NO 1-237

PROJECT NO. 1-0-190

IN THE CITY OF RIVERSIDE

RECORD OF SURVEY

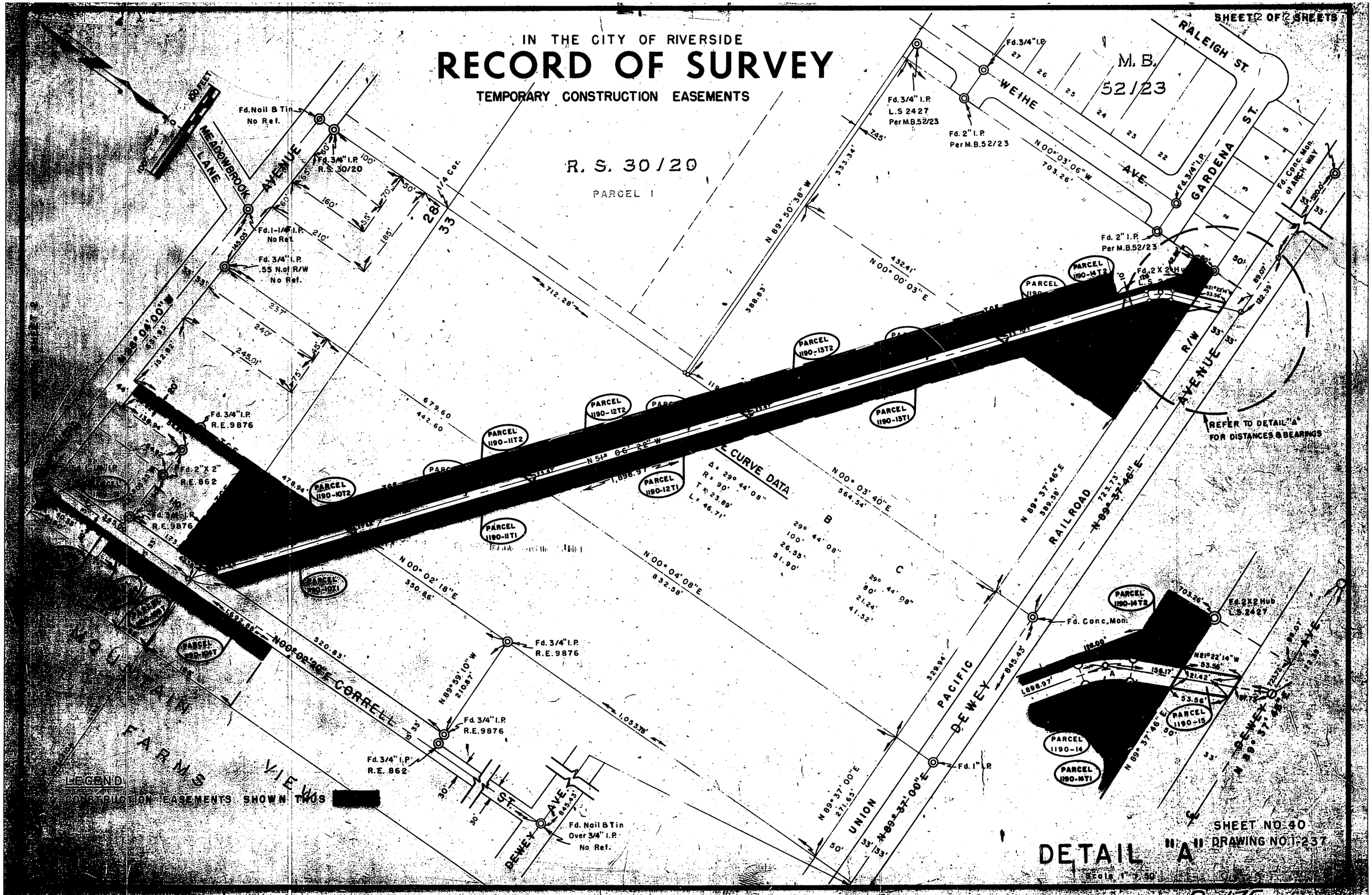
TEMPORARY CONSTRUCTION EASEMENTS



IN THE CITY OF RIVERSIDE

RECORD OF SURVEY

TEMPORARY CONSTRUCTION EASEMENTS



SHEET NO. 40

DRAWING NO. 1-237

DETAIL "A"

Scale 1" = 50'

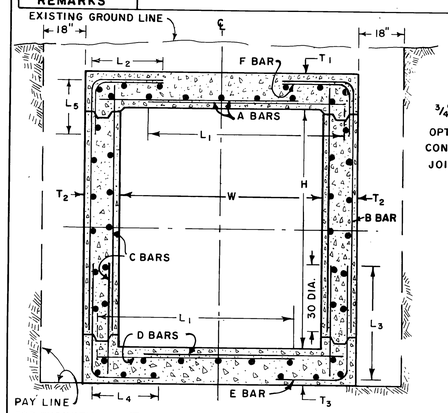
D-175

DATA	DETAIL SCHEDULE									
	A	B	C	D	E	F	G	H	I	J
DESIGN COVER	8'	10'	12'	8'	10'	12'				
WIDTH W	9'-7"	9'-7"	9'-7"	8'-5"	8'-5"	8'-5"				
HEIGHT H	11'-6"	11'-6"	11'-6"	10'	10'	10'				
TOP SLAB T_1	9"	9	9	9	9	9				
SIDE WALLS T_2	9"	9	9	9	9	9				
BOTTOM SLAB T_3	10"	10	10	10	10	10				
A - BARS	#6@5½	#6@5	#6@5	#6@7	#6@6	#6@6				
B - BARS	5@8	5@7	5@11	4@7	4@6½	4@6				
C - BARS	4@6	4@6	4@6	4@10	4@10	4@10				
D - BARS	8@8	8@7	8@7	6@5½	6@5	6@4¾				
E - BARS	5@8	5@7	5@5½	4@7	4@6½	4@6				
F - BARS			4@11							
L_1	9'-6"	9-6	9-6	8-5	8-5	8-5				
L_2	2'-6"	2-6	2-6	2-4	2-4	2-4				
L_3	2'-8"	2-8	2-8	2-4	2-4	2-4				
L_4	2'-6"	2-6	2-6	2-3	2-3	2-3				
L_5			2-4							
CONCRETE cy/ft.	1.29	1.29	1.29	1.14	1.14	1.14				
STEEL lbs./ft	204	221	215	141	151	156				
REMARKS										

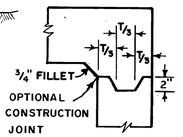
LOCATION SCHEDULE		
STATION FROM	STATION TO	BOX
39+65	43+40	C
43+40	46+40	B
46+40	54+60	A
54+60	59+50	B
60+46	65+40	F
65+40	66+63	E
66+63	66+90	D

NOTES

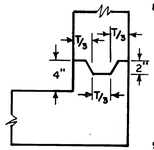
1. All longitudinal bars shall be #4, spacing shall be 18" c/c. Bars in top and bottom slabs shall be spaced symmetrically about the centerline. Bars in wall shall be spaced symmetrically about mid-height of walls.
2. Clear cover = 1½" top and side walls and 2" each face of bottom slab
3. Length of steel is to back of bar bend.
4. Terminate all transverse bars 1½" from face of concrete.
5. A and D bars spacing is measured at centerline. Alternate bars are extended into alternate walls as shown.
6. At transverse construction joints break longitudinal steel and place #4 @ 12 - 3 ft. long with one end wrapped to prevent bond.
7. Unless otherwise shown on the drawings, transverse joint keyways (in both slabs and walls), as detailed for longitudinal keyways at the base of the walls, shall be placed at the end of each pour, but the spacing thereof shall not exceed 50 feet or be less than 10 feet. All construction joints in bottom slab, top slab, and side walls shall be in the same plane. No staggering of joints will be permitted.
8. Unless otherwise shown on the details, in curved sections transverse bars shall be placed radially. Straight transverse bars in top and bottom slabs shall be spaced as shown on the typical sections. Spacing shall be at the centerline of the construction. Straight bars and L-Bars in walls shall be spaced as shown on the typical sections with the spacing measured between the vertical legs of bars.
9. At the begining and ending of all pours, a complete curtain of reinforcement shall be place three inches from the transverse construction joints.
10. The walls and top slab may be poured monolithic, but after walls have been poured, a delay of not less than 2 hours shall be made before pouring of the top slab is started.
11. All construction joints shall be sandblasted to the satisfaction of the Engineer.



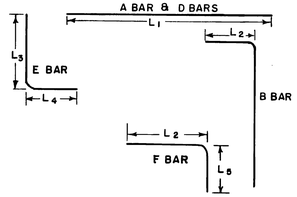
TYPICAL SECTION



TOP CORNER JOINT



BOTTOM CORNER JOINT



BAR DIAGRAM FOR R.C.B.

REVISIONS

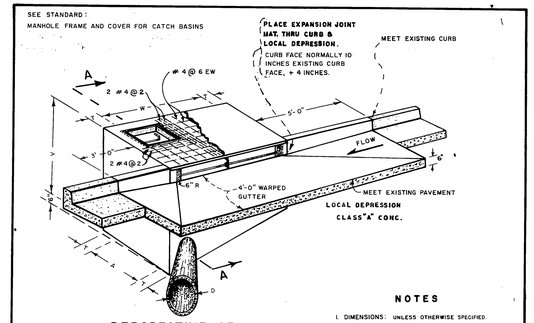
REFERENCE	DESCRIPTION	APPROVED	DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

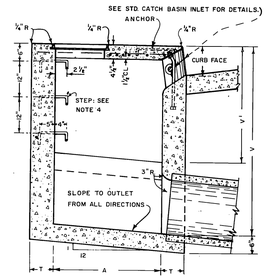
SINGLE CELL R.C.B. STRUCTURAL DETAILS

Designed by Ken Bulcdesu · Checked by J.M.B.O.M.M. · Date Drawn · Sheet No. 18 · Dwg No. 1-237

PROJECT NO. 1-0-190



PERSPECTIVE OF CATCH BASIN NO. 1



SECTION A-A

NOTES

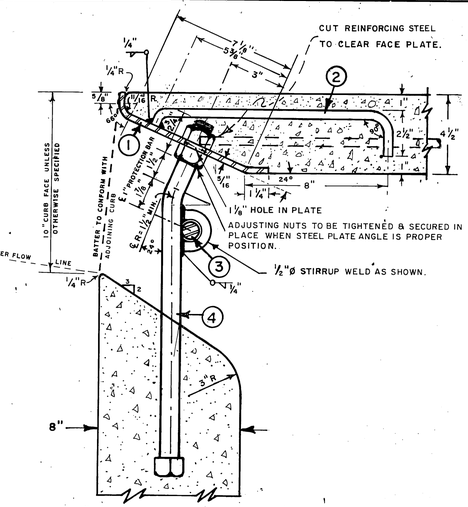
1. DIMENSIONS: UNLESS OTHERWISE SPECIFIED.
   V = 5.25 FEET.
   V' = 5.0 FEET.
   W = 7 FEET.
   T = 8 INCHES IF V IS LESS THAN 8 FEET.
   T = 10 INCHES IF V IS 8 FEET OR MORE.
   D = 18 INCHES.
   A = D PLUS 12 INCHES. (38 INCHES MIN.)
2. CONCRETE SHALL BE CLASS "A" P.C.C. (6.0 SACK)
3. THE SURFACE OF ALL EXPOSED CONC. SHALL CONFORM TO SLOPE, GRADE, COLOR, FINISH AND SCORING IN THE EXISTING OR PROPOSED CURB AND WALK ADJACENT TO THE BASIN. THE BASIN FLOOR SHALL BE GIVEN A TIGHT WOOD FLOAT FINISH. CURVATURE OF THE LIP AND SIDEWALLS AT THE GUTTER OPENING SHALL NOT BE MADE BY PLASTERING. THE OUTLET PIPE SHALL BE TRIMMED TO FINAL SHAPE AND LENGTH BEFORE THE CONCRETE IS POURED.
4. STEPS: ¾ INCH PLAIN ROUND GALVANIZED STEEL STEPS SHALL BE INSTALLED 12 INCHES APART WHEN V EXCEEDS 4 FEET 6 INCHES. THE TOP STEP SHALL BE 6 INCHES BELOW THE SURFACE AND SHALL BE 2½ INCHES CLEAR FROM THE WALL. ONLY ONE STEP 12 INCHES FROM THE BOTTOM SHALL BE INSTALLED IF V IS 4 FEET 6 INCHES OR LESS. THE STEPS SHALL BE ANCHORED NOT LESS THAN 4 INCHES IN THE WALL OF THE BASIN.

PROJECT NO. 1-0-190

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

CATCH BASIN NO. 1

Designed L.A.F.C.D. · Drawn Ken Bulcdesu · Checked J.M.B.O.M.M. · Date Drawn 8/20/68 · Sheet 19 of 20 · Dwg No. 1-237



NOTES

1. FACE PLATE 5/16" X 10" ROLLED PLATE (ASTM A7) FORMED AS SHOWN.
2. FACE PLATE ANCHORAGE 1/2" Ø STEEL ANCHOR 42" OC MAX. PLACED AS SHOWN.
3. PROTECTION BAR A PLAIN ROUND STEEL BAR 1" DIA. SHALL BE INSTALLED, BAR SHALL BE EMBEDDED 5 INCHES AT EACH END.
4. SUPPORT BAR 1 INCH DIA. X 20" LONG WITH SQ. HEAD AND HEX. NUTS, BEND AS SHOWN. SPACING SHALL NOT EXCEED 4 FEET.
5. ALL EXPOSED METAL PARTS SHALL BE GALVANIZED.

PROJECT NO. 1-0-190

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

CATCH BASIN INLET

Designed L.A.F.C.D. · Drawn Ken Bulcdesu · Checked J.M.B.O.M.M. · Date Drawn 8/1/68 · Sheet 20 of 20 · Dwg No. 1-237

CITY OF L.A. NO. B-3651

L.A.F.C.D. NO. 2-0232

NOTES

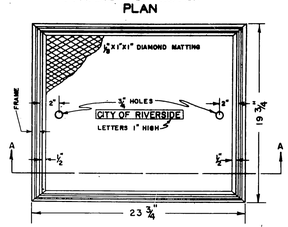
(1) THE MATERIAL AND FINISH SHALL CONFORM TO THE SPECIFICATIONS APPLICABLE THERETO.

(2) COVER SHALL FIT IN EITHER POSITION.

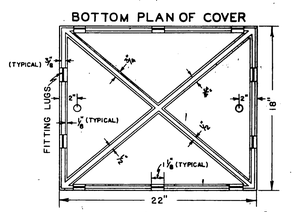
(3) FRAME & COVER SHALL BE SET TO SIDEWALK ELEVATIONS.

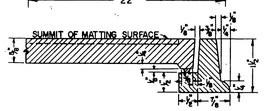
(4) WEIGHTS: FRAME — 25 POUNDS
COVER — 55 POUNDS

FRAME & COVER PLAN



SECTION A-A





DETAIL OF FRAME & COVER CONNECTION

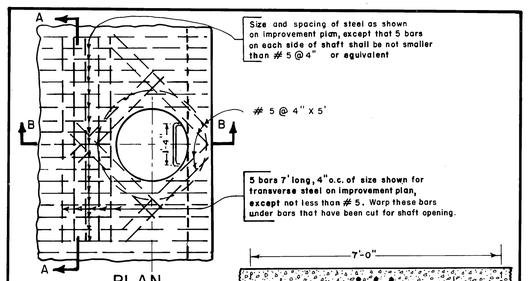
PROJECT NO. 1-0-190

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

CATCH BASIN COVER TYPE I

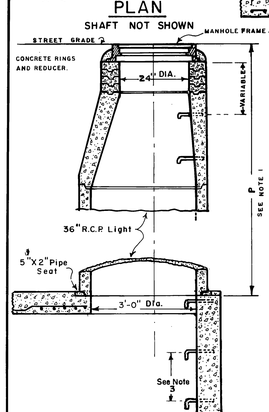
Approved · Chief Eng. R.C.F.C.&W.C.D. · Date · Dr. · Checked · Trac. · Sh. No. 21 · Dwg. 1-237

CITY OF RIV. NO. 450



PLAN

SHAFT NOT SHOWN



SECTION A-A

NOTE

1.- DEPTH P: When depth P from street grade to top of pipe seat is less than 2'-10½" in paved streets or 3'-6" in unpaved streets, construct 2 ft. diameter shaft, using concrete rings as per Standard Plan for concrete rings; otherwise, construct 3 ft. shaft as shown on this plan.

2- STATIONS shown on improvement plan refer to center line of shaft.

3- STEPS shall be ¾" round galvanized steel anchored not less than 6" in walls of structure and unless otherwise shown shall be spaced 16" or 17" on centers. The lowest step shall be not more than 2 feet above the floor.

SECTION B-B

MANHOLE FOR BOX SECTION STORM DRAIN

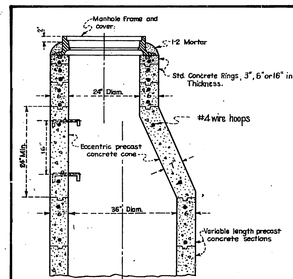
PROJECT NO. 1-0-190

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

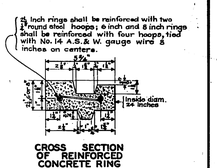
MANHOLE NO. 3

Approved · Chief Eng. R.C.F.C.&W.C.D. · Date · Dr. K.R.B. · Checked · Trac. 22 · Sh. No. · Dwg. 1-237

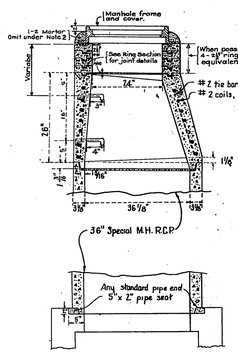
L.A.C.F.C. 2-0104



VERTICAL SECTION OF PLAIN CONCRETE ECCENTRIC MANHOLE SHAFT



CROSS SECTION OF REINFORCED CONCRETE RING



VERTICAL SECTION OF REINFORCED CONCRETE ECCENTRIC MANHOLE SHAFT

NOTES

1. ALL JOINTS shall be filled with 1:2 mortar and neatly pointed or wiped on inside of shaft.
2. COLLAR of 1:2 mortar around cover frame shall be omitted in rock and oil streets and in paved alleys.
3. STEPS shall be ¾ inch round galvanized steel. Top step shall be placed directly beneath the manhole cover frame.
   Width of all steps shall be 14 inches between leg centers. Except where shown otherwise, spacing of steps in shaft shall be 16" or 17 inches on center.
4. ECCENTRIC MANHOLE shaft, reducer, and rings may be plain concrete.
   For unreinforced sections, the minimum thickness shall be 6 inches. The concrete used shall be of such strength so as to develop 3500 p.s.i. or greater in 28 days.

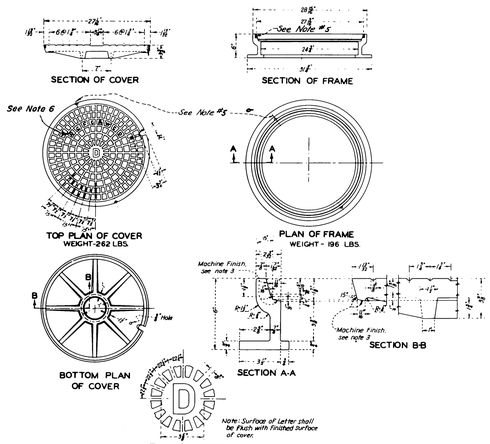
PROJECT NO. 1-0-190

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

MANHOLE SHAFT TYPE I FOR CAST PIPE

Approved · Chief Eng. R.C.F.C.&W.C.D. · Date · Dr. · Checked · Trac. · Sh. No. 23 · Dwg. 1-237

L.A.C.F.C. Std. No. 2-0181
City of L.A. Std. B-2855



NOTES

1. The Manhole Frame and Cover shall be made of gray cast iron conforming to the latest A.S.T.M. standard A48, class 30 or better.
2. All parts of the Manhole Frame and Cover except machined surfaces shall be coated with asphaltum paint.
3. The Manhole Frame and Cover shall be tested for accuracy of fit and shall be marked in sets before delivery. The Cover shall fit the Frame snugly but not tightly.
4. The weights of the Frame and Cover shall not vary more than two percent from those given hereon.
5. Covers for manholes located in right of way, easements, alleys, parkways and all other places except paved streets shall be provided with allen socket set screw locking devices. The Contractor shall drill and tap two holes to a depth of 1" at 90° to pick hole and install ¾"x¾" allen socket set screws therein.
6. Cast Letters R.C.F.C.&W.C.D.

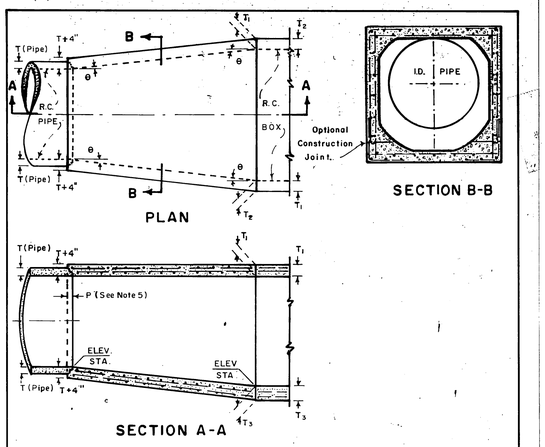
PROJECT NO. 1-0-190

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

MANHOLE FRAME & COVER NON-ROCKING

Approved · Chief Eng. R.C.F.C.&W.C.D. · Date · Dr. · Checked · Trac. · Sh. No. 24 · Dwg. 1-237

D-175



NOTES

1. The horizontal angle of divergence or convergence, θ, shall not exceed 5° 45'.
2. Reinforcing steel bar sizes, spacing, pattern and cover over the steel shall be that of the box section. The bar lengths shall vary uniformly throughout the transition.
3. The concrete thickness shall be that of the box section unless the wall thickness of the pipe plus 4 inches is greater, in which case the concrete thickness shall vary uniformly from that of the box section to that of the pipe wall plus 4" inches.
4. The interior surface shall be smooth and vary uniformly between the two adjoining sections.
5. At pipe juncture, embedment P shall be 5 inches for pipe sizes of 96 inches or less and 8 inches for pipe sizes over 96" inches.
6. Keyed construction joints of the same dimensions as those of the box may be carried through the transition structure at contractor's option. See Sec. B-B above.
7. The transition structure shall be constructed in accordance with the general structural notes applying to box as shown on the project drawings.
8. Concrete shall be Class A.

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

TRANSITION STRUCTURE NO. 1

Designed: K.R.B. Drawn: K.R.B. Checked: A.K. Date Drawn: 10/68 — Sheet No. 25 of 29 — Dwg. No. I-237

PROJECT NO. I-0-190

L.A.F.C.D. NO. 2-0235

NOTES

1 - VALUES for A, B, C, D_1, D_2, E, L, Elevation R, and Elevation S are shown on the improvement plan
TABLE of values for F and T hereon
2 - LATERALS: If laterals enter on both sides of manhole, access shaft shall be located on side receiving the smaller lateral
3 - CENTER OF MANHOLE SHAFT shall be located over center line of main storm drain when D_1 is 48" or less, in which case place 4 E bars symmetrically around shaft at 45° with center line.
4 - LENGTH L (shown on improvement plan) may be increased at option of Contractor to meet pipe ends, but any change in location of spur must be approved by the Engineer.
5 - DETAIL M: When depth of manhole from street grade to top of box is less than 2'-10½" for paved streets or 3'-6" for unpaved streets, construct monolithic shaft as per Detail M
The Contractor shall have the option of constructing shaft as per Detail M for any depth of manhole.
When diameter D_1 is 48" or less, center of shaft shall be located as per Note 3
6 - REINFORCING STEEL shall be round, deformed, straight bars, 1½" clear from face of concrete unless shown otherwise.
Tie bars shall be No. 4 and spaced 18" on centers or closer.
7 - CONCRETE shall be class A
8 - STEPS shall be ¾" round, galvanized steel and anchored not less than 6 inches in the walls of structure. Unless otherwise shown the spacing shall be 12" on centers. The lowest step shall be not more than 2 feet above the invert. (Alhambra Fdy. A-3320 or equal.)
9 - RINGS, REDUCER, AND PIPE for access shaft shall be seated in cement mortar and neatly pointed or wiped inside shaft.
10 - FLOOR of manhole shall be steel troweled to springing line
11 - BODY of manhole, including spur, shall be poured in one continuous operation, except that the Contractor shall have the option of placing at the springing line a construction joint with longitudinal keyway.
12 - ELEVATION "S" applies at center of main line on prolongation of invert of spur

TABLE OF VALUES FOR F AND T

D_2	F	B	T
12"	4"	12"	4"
15"	4¼"	15"	4¼"
18"	4½"	18"	4½"
21"	5"	21"	5"
24"	5¼"	24"	5¼"
27"	5½"	27"	5½"
30"	6"	30"	6"
33"	6¼"	33"	6¼"
36"	6½"	36"	6½"
39"	7"	39"	7"
42"	7¼"	42"	7¼"
45"	7¾"	45"	7¾"
48"	8"	48"	8"
51"	8½"	51"	8½"
54"	9"	54"	9"
57"	9¼"	57"	9¼"
60"	9½"	60"	9½"
63"	10"	63"	10"
66"	10¼"	66"	10¼"
69"	10¾"	69"	10¾"
72"	11"	72"	11"
78"	11¾"		
84"	12½"		
90"	13¼"		
96"	14"		
102"	15½"		
108"	16"		
114"	16½"		
120"	17"		
126"	17"		
132"	17½"		
138"	17½"		
144"	18"		

PROJECT NO. I-0-190

Revised	Date	RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
		JUNCTION STRUCTURE NO 4

APPROVED: Chief Eng. R.E. NO 8855 — DR. — DATE 12-3-68 — TRAC. — SH. NO 29 — CHECKED — DWG. I-237

City of Riv. Std. No. 432
City of L.A. Std. No. B-1228

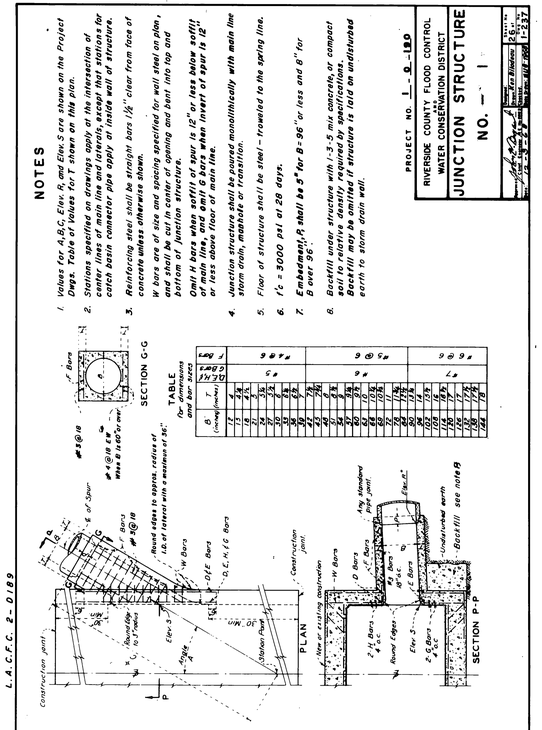


TABLE for dimensions and bar sizes

B (Concrete)	T (Concrete)	D & K Bars	L	E Bars	F Bars
12"	4"	#4@18	6'0"	9'0"	#4@18
15"	4¼"				
18"	4½"				
21"	5"	#5@18	9'0"	9'0"	#5@18
24"	5¼"				
27"	5½"				
30"	6"				
33"	6¼"				
36"	6½"				
39"	7"	#6@18	9'0"	9'0"	#6@18
42"	7¼"				
45"	7¾"				
48"	8"				
51"	8½"				
54"	9"				
57"	9¼"				
60"	9½"				
63"	10"				
66"	10¼"				
69"	10¾"				
72"	11"				
78"	11¾"				
84"	12½"				
90"	13¼"				
96"	14"				
102"	15½"				
108"	16"				
114"	16½"				
120"	17"				
126"	17"				
132"	17½"				
138"	17½"				
144"	18"				

NOTES

1. Values for A, B, C, Elev. R, and Elev. S are shown on the Project Improvement Plan. Elev. R is shown at the intersection of center lines of main line and lateral, except that stations for catch basin connector pipe apply at inside wall of structure.
2. Reinforcing steel shall be straight bars 1½" clear from face of concrete unless otherwise shown.
3. W bars are of size and spacing specified for wall steel on plan, and shall be cut in center of opening and bent into top and bottom of junction structure.
   Omit H bars when soffit of spur is 12" or less below soffit of main line, and omit G bars when invert of spur is 12" or less above floor of main line.
4. Junction structure shall be poured monolithically with main line storm drain, except at construction joint.
5. Floor of structure shall be steel - troweled to the spring line.
6. $f'c$ = 3000 psi at 28 days.
7. Embedment, S shall be 5" for B = 96" or less and 8" for B over 96".
8. Backfill under structure with 1-3.5 mix concrete, or compact backfill may be omitted if approved by the Engineer. Backfill over structure is to be undisturbed earth to storm drain wall.

PROJECT NO. I-0-190

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

JUNCTION STRUCTURE NO. - 1

Designed: Ken Bilodeau — Drawn: Ken Bilodeau — Checked: J. Nelson — Date Drawn: 11/68 — Sheet No. 26 of 29 — Dwg. No. I-237

L.A.C.F.C. 2-0189

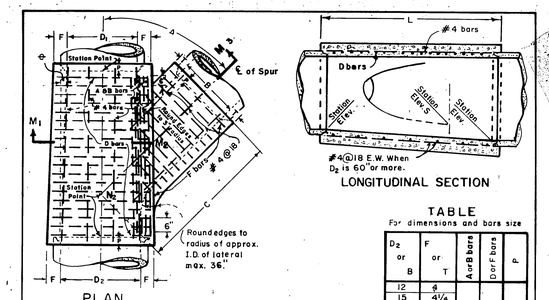


TABLE
For dimensions and bars size

D_2 or B	F or T	A or B bars	D or F bars	P
12	4	#5@3	#4@6	5"
15	4¼			
18	4½			
21	5			
24	5¼			
27	5½			
30	6			
33	6¼			
36	6½			
39	7	#6@3	#5@6	
42	7¼			
45	7¾			
48	8			
51	8½			
54	9			
57	9¼			
60	9½			
63	10			
66	10¼			
69	10¾			
72	11			
78	11¾			
84	12½			
90	13¼			
96	14			
102	15½	#7@3	#6@6	8"
108	16			
114	16½			
120	17			
126	17			
132	17½			
138	17½			
144	18			

NOTES

1. The horizontal Angle of convergence or divergence, θ shall not exceed 5° 45'.
2. Values for A, B, C, D_1, D_2, L, Elev. R, and Elev. S are shown on improvement plan. Elev. S applies at center of main line on prolonged invert of spur. The length of the structure may be increased to meet pipe ends, using D bars in extended portion of same diameter and spacing as specified.
3. Concrete shall be Class A. Floor of the structure shall be steel - troweled to springing line. Structure shall be poured in one continious operation, except that the contractor shall have the option of placing at the springing line a construction joint with a longitudinal keyway.
4. Reinforcing steel clear cover shall be 1½" tie bars shall be No. 4 @ Spaced 18" %.
5. When dimension C is not specified the spur shall not be constructed and a A & B bars shall be omitted.

PROJECT NO. I-0-190

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

TRANSITION STRUCTURE NO. 3

Designed: L.A.F.C.D. Drawn: Ken Bilodeau — Checked: J. Nelson — Date Drawn: 9/23/68 — Sheet No. 27 of 29 — Dwg. No. I-237

L.A. County Flood Control Std. 20-188

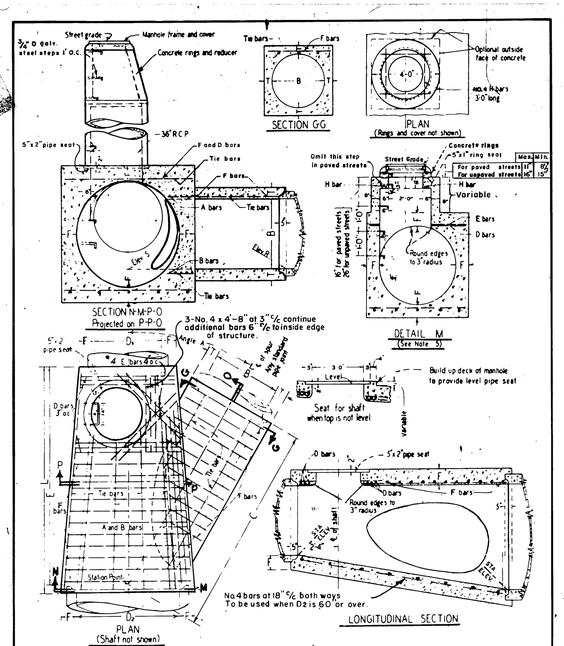


TABLE OF BAR SIZES

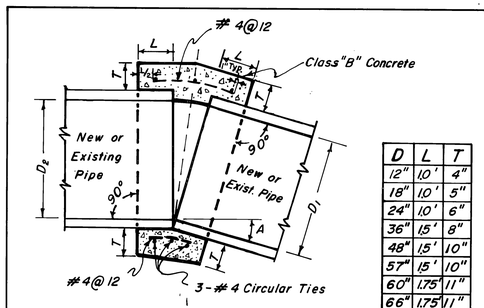
Dz or B	A & B bars	D or F bars
12"-39"	No. 5 at 3"	No. 4 at 6"
42"-84"	No. 6 at 3"	No. 5 at 6"
90"-144"	No. 7 at 3"	No. 6 at 6"

PROJECT NO. I-0-190

Revised	Date	RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
		JUNCTION STRUCTURE NO. 4

APPROVED: Chief Eng. R.E. NO 8855 — DR. — DATE — TRAC. — SH. NO 28 — CHECKED — DWG. I-237

City of Riv. Std. No. 432
City of L.A. Std. No. B-1228, L.A.C.F.C. Std. No. 2-0112



D	L	T
12"	10'	4"
18"	10'	5"
24"	10'	6"
36"	15'	8"
48"	15'	10"
57"	15'	10"
60"	17.5'	11"
66"	17.5'	11"
72	17.5'	11"

NOTES

1. A concrete collar is required where the change in grade exceeds 0.10 ft. per foot.
2. Where pipes of different diameters are joined with a concrete collar, L and T shall be those of the larger pipe. D, D_1 or D_2 whichever is greater.
3. For pipe larger than 72" a special collar detail is required.
4. For pipe size not listed use next size larger.
5. Omit reinforcing on pipes 24" and less in diameter and on all pipes where angle A is less than 10°.
6. Where reinforcing is required the diameter of the circular ties shall be D + (2 x wall thickness) + 8".
7. When D_1 is equal to or less than D_2, join inverts and when D_1 is greater than D_2, join soffits.
8. Pipe may be corrugated metal pipe, concrete pipe, or reinforced concrete pipe.

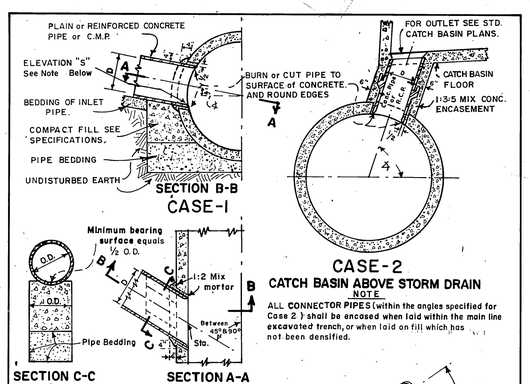
PROJECT NO. I-0-190

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

CONCRETE COLLAR FOR PIPES 12 INCHES THROUGH 72 INCHES

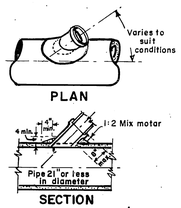
Designed: — Drawn: Ken Bilodeau — Checked: — Date Drawn: 8/16/68 — Sheet No. 30 of 29 — Dwg. No. I-237

L.A.C.F.C. 2-0393



NOTES CASES 1 & 2

1. D shall be 24" or less, and in no case shall the inlet pipe exceed one-half the inside diameter of the main storm. If ∢ is 45° or less, use Case 1, if ∢ is greater than 45° use Case 2.
2. ℄ of inlet shall be on radius of main storm drain except when elevation "S" is shown on project drawing PROFILE.
3. The minimum opening into the existing storm drain shall be the outside diameter of the connecting pipe plus 1 inch.
4. All corrugated metal pipe and fittings shall be galvanized.
5. Sta. at FL. & center of pipe, shown on project dwg. PROFILE



NOTES CASE-3-SADDLE CONNECTION

1. Connections to pipes 21" or less in diameter without junction structures or precast Y branches shall be made with saddles.
2. Trim or cut saddle to fit snugly over the outside of the main pipe and so it's axis will be on the line and grade of the connecting pipe.
3. The opening into the pipe shall be cut and trimmed to fit the saddle so that no part will project within the bore of the saddle pipe.
4. The connecting pipe shall be supported as shown in Case 1 and 2.

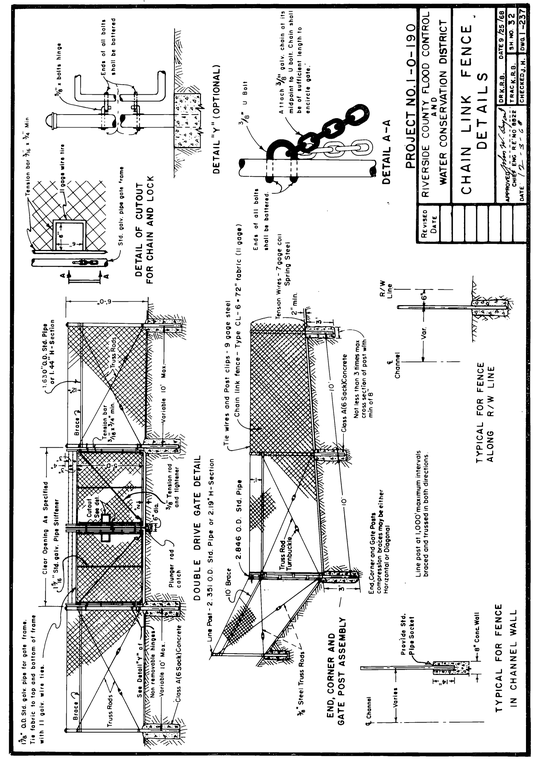
PROJECT NO. I-0-190

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

CONNECTOR PIPE DETAILS

Designed: — Drawn: Ken Bilodeau — Checked: — Date Drawn: — Sheet No. 31 of 29 — Dwg. No. I-237

L.A.C.F.C. 2-0193



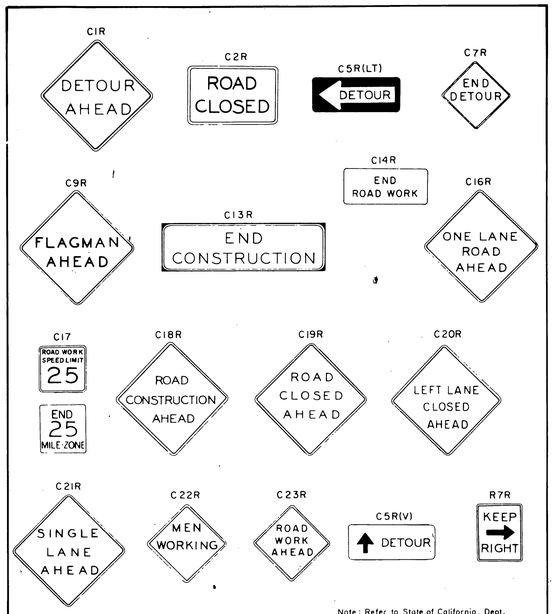
PROJECT NO. I-0-190

Revised	Date	RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
		CHAIN LINK FENCE DETAILS

APPROVED: Chief Eng. R.E. NO 8855 — DR. A.B. — DATE 7/15/68 — TRAC. — SH. NO 27 — CHECKED — DWG. I-237

D-175

City of Riv. No. 658

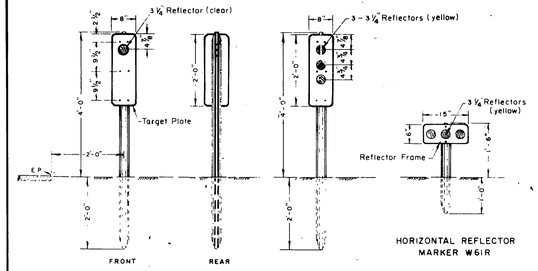


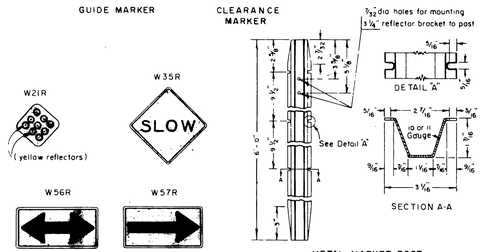
Note: Refer to State of California, Dept. of Public Works, Div. of Highways, Uniform Sign Chart Dated January 1962, for the Color and Dimensions of the above signs.

Revised Date	RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
	CONSTRUCTION SIGNS
	Approved: Chief Eng. R.E. No. 8822 — Dr. / Trac. / Checked — Date 12-3-69 — Sh. No. 33 — Dwg. I-237

PROJECT NO. I-0-190

City of Riv. Std. No. 665





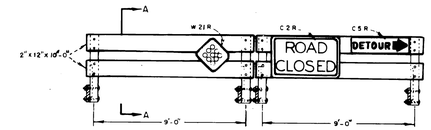
COLOR LEGEND
- White
- Yellow
- Black

ADAPTED FROM STATE OF CALIFORNIA, DEPT. OF PUBLIC WORKS, DIV. OF HIGHWAYS, STD. DWG. NO. A74-6 & UNIFORM SIGN CHART

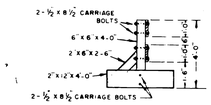
Revised Date	RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
	SIGNS & MARKERS
	Approved: Chief Eng. R.E. No. 8822 — Dr. / Trac. / Checked — Date 12-3-69 — Sh. No. 34 — Dwg. I-237

PROJECT NO. I-0-190

City of Riv. Std. No. 657



STANDARD BARRICADE WITH TYPICAL DETOUR SIGNS



SECTION A-A

NOTE:
1. All lumber to be select structural D.F. S.4 S.
2. Barricades to be given two coats of signal yellow paint after assembly.
3. Signs, reflectors, and barricades to be furnished and installed by the contractor as directed by the engineer.

PROJECT NO. I-0-190

Revised Date	RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
	CONSTRUCTION BARRICADES
	Approved: Chief Eng. R.E. No. 8822 — Dr. / Trac. / Checked — Date 8-30-68 — Sh. No. 35 — Dwg. I-237

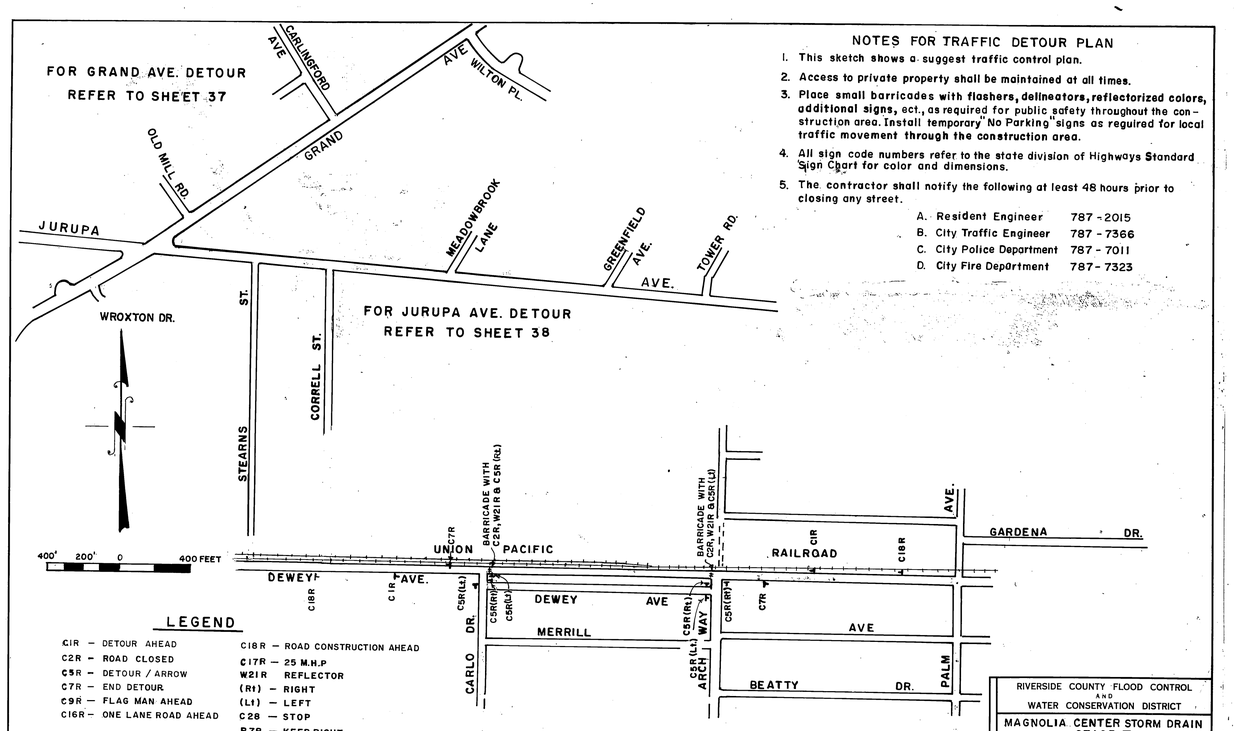
FOR GRAND AVE. DETOUR REFER TO SHEET 37

FOR JURUPA AVE. DETOUR REFER TO SHEET 38

NOTES FOR TRAFFIC DETOUR PLAN

1. This sketch shows a suggest traffic control plan.
2. Access to private property shall be maintained at all times.
3. Place small barricades with flashers, delineators, reflectorized colors, additional signs, ect., as required for public safety throughout the construction area. Install temporary "No Parking" signs as required for local traffic movement through the construction area.
4. All sign code numbers refer to the state division of Highways Standard Sign Chart for color and dimensions.
5. The contractor shall notify the following at least 48 hours prior to closing any street.

A.	Resident Engineer	787-2015
B.	City Traffic Engineer	787-7366
C.	City Police Department	787-7011
D.	City Fire Department	787-7323

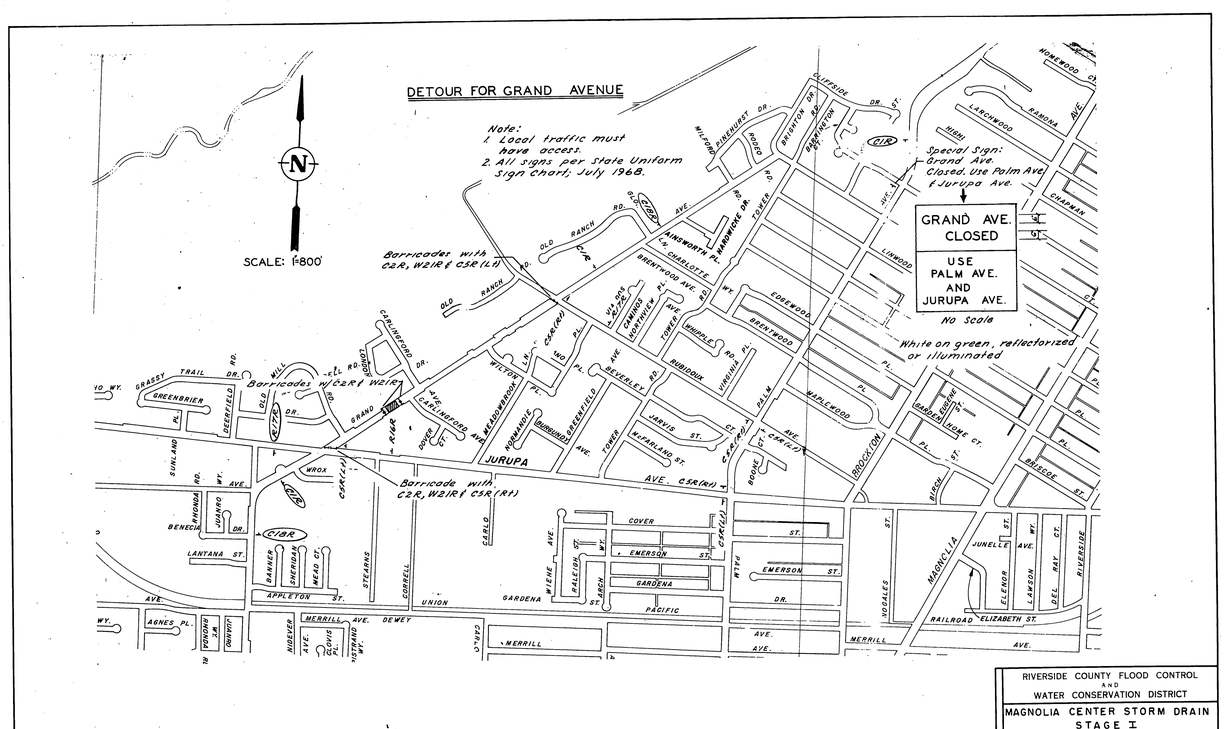


LEGEND

C1R — DETOUR AHEAD	C18R — ROAD CONSTRUCTION AHEAD
C2R — ROAD CLOSED	C17R — 25 M.H.P
C5R — DETOUR / ARROW	W21R REFLECTOR
C7R — END DETOUR	(Rt) — RIGHT
C9R — FLAG MAN AHEAD	(Lt) — LEFT
C16R — ONE LANE ROAD AHEAD	C28 — STOP
	R7R — KEEP RIGHT

	RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
	MAGNOLIA CENTER STORM DRAIN STAGE I
	DETOUR PLAN
	Approved: Chief Eng. R.E. No. 8822 — Drawn: Ken Oliveira — Checked By: J. Hanson — Date Drawn: Sept 1969 — Sheet No. 36 — Dr. No. I-237

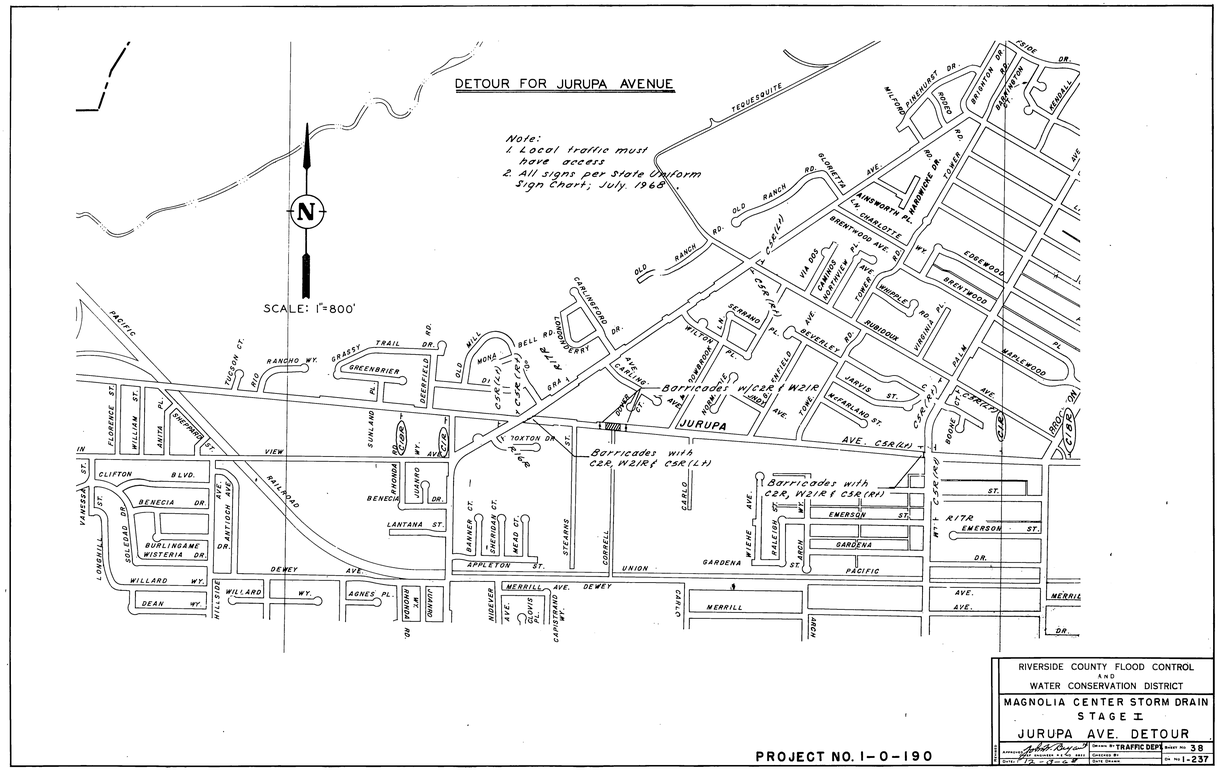
PROJECT NO. I-0-190



	RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
	MAGNOLIA CENTER STORM DRAIN STAGE I
	GRAND AVE. DETOUR
	Approved: Chief Eng. R.E. No. 8822 — Dr. / Trac. / Checked — Date 12-3-69 — Sheet No. 37 — Dr. No. I-237

PROJECT NO. I-0-190

D-175

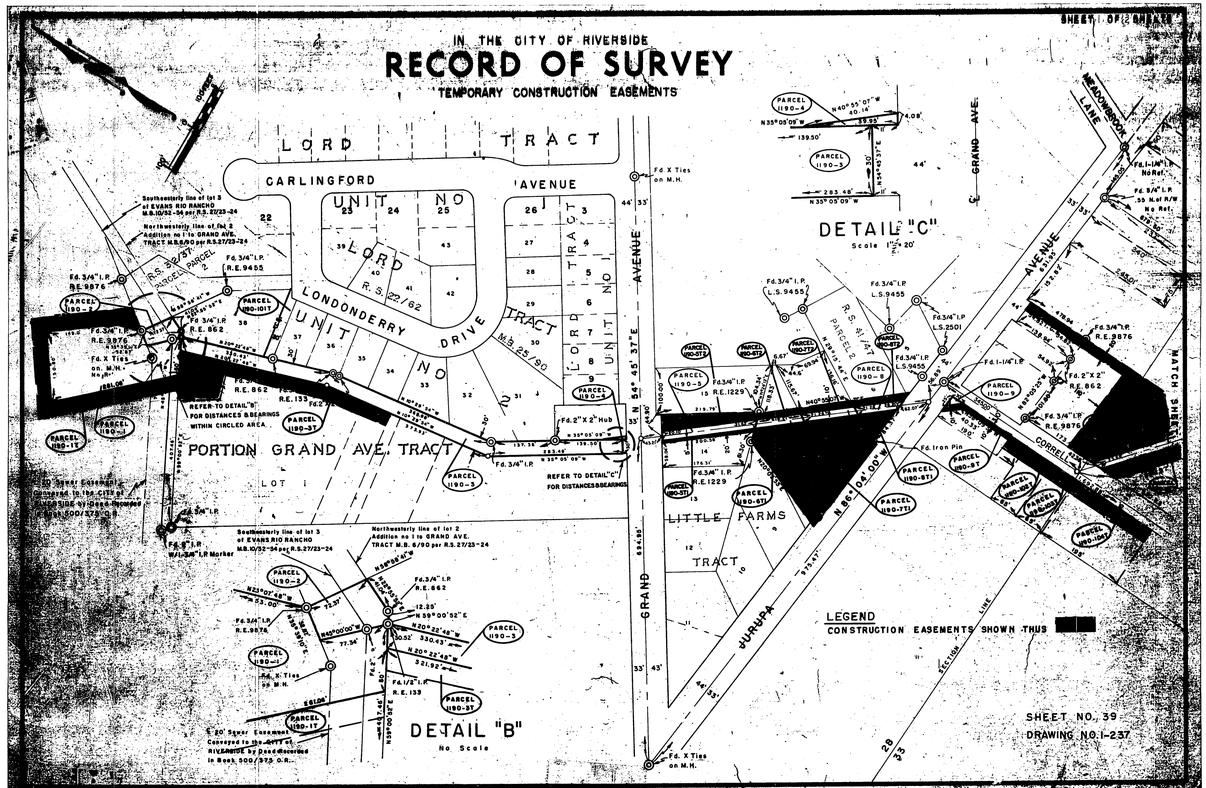


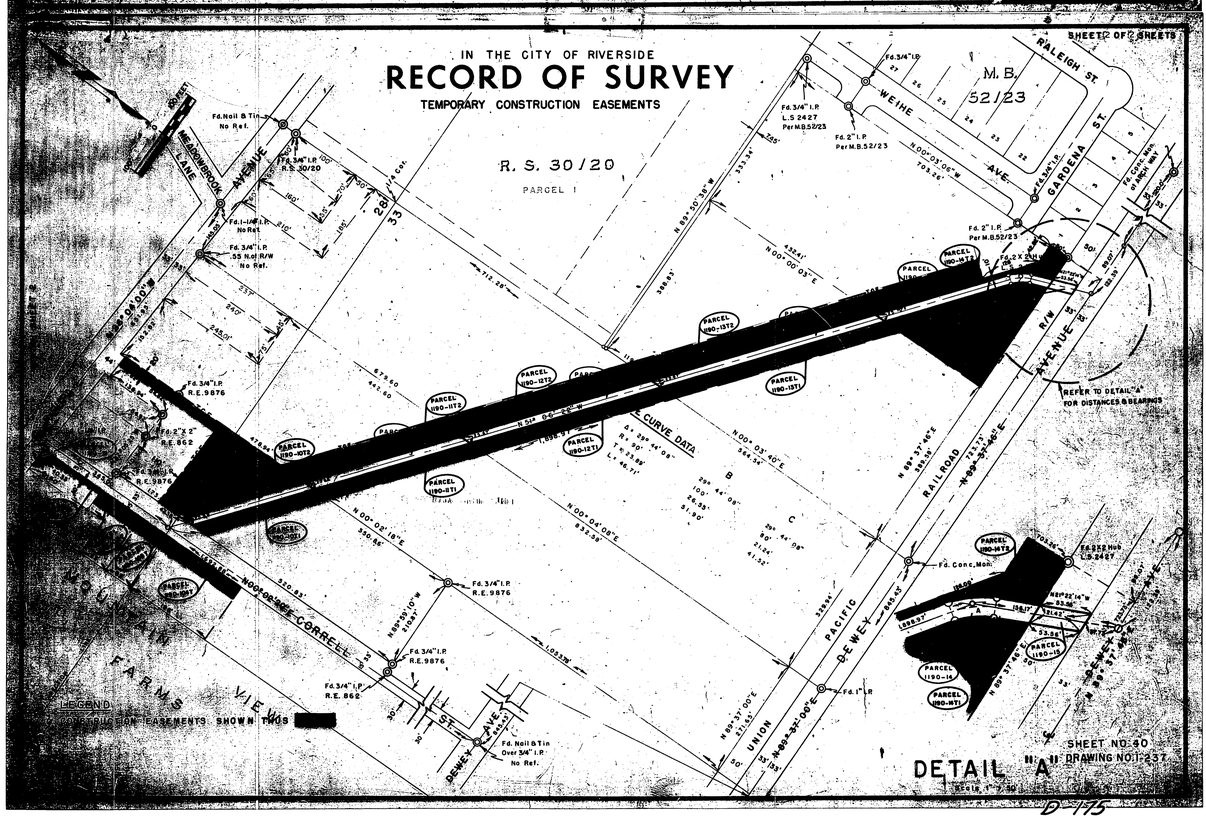
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

MAGNOLIA CENTER STORM DRAIN
STAGE I
JURUPA AVE. DETOUR

TRAFFIC DEPT. — Sheet No. 38
Dr. No. I-237

PROJECT NO. I-0-190





D-175