

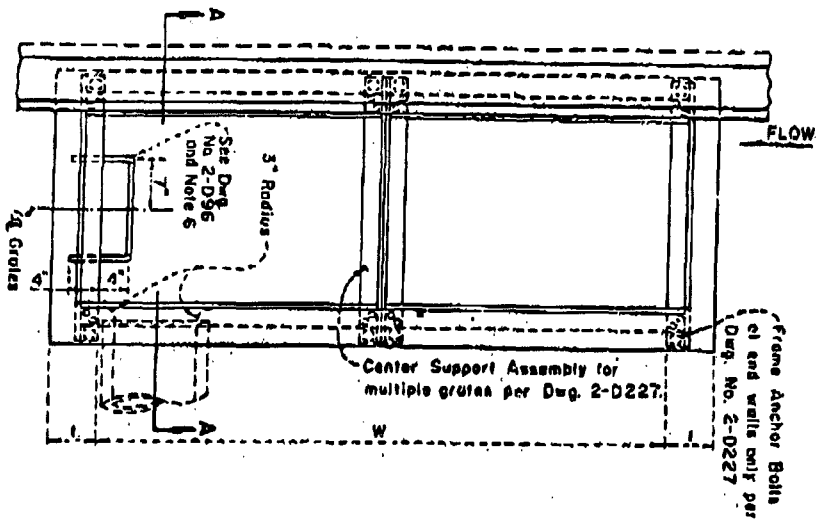
STORM DRAIN STANDARDS

2-1-89

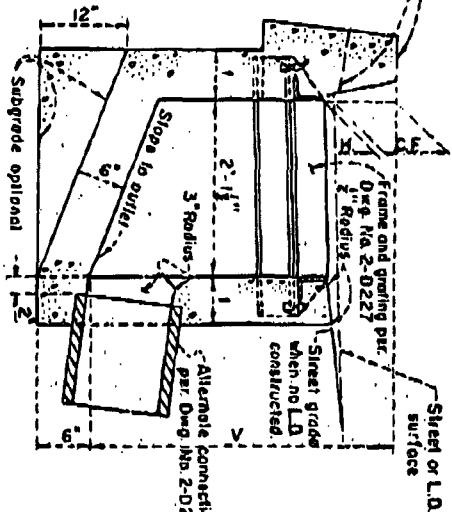
New No.	Title	Old No.	Prev. No.	Orig. No.
SD-01	CB #& Side Opening & Grating	SD-01	CB #3 SS-40	LACFCD 2-D170
SD-02	CB #4 Grating Only	SD-02	CB #4 SS-37	LACFCD 2-D101
SD-03.1	CB #1 Side Opening Only	SD-03	SS-59	LACFCD 2-D160
SD-03.2	CB #2 Side Opening Only	SD-03	SS-59	LACFCD 2-D162
SD-03.3	CB #3 Side Opening Only	SD-03	SS-59	LACFCD 2-D163
SD-03.4	Detail of C.B. Opening - Bent Plate	SD-03.1	SD-04.1	LACFCD 2-D232
SD-03.5	Side Opening C.B. Capacity Table	SD-03.2	OS-05	
SD-04	Std. Loc. Dep. for Grating Basin	SR-05	SS-41	LACFCD 2-D248
SD-04.1	Std. Loc. Dep. for Grating & Side Opening Basin	SR-06	SS-43 Old #5	
SD-04.3	Std. Loc. Dep. for Side opening Basin	SR-09	SS-52 Old #8	LACFCD 2-D88
SD-05.1	Std. St. Dr. M.H. #1	SD-05.1		LACFCD 2-D102
SD-05.2	Std. St. Dr. M.H. #2	SD-05	SS-48	LACFCD 2-D184
SD-06	C.B. Reinforcement	SD-06		LACFCD 2-D172
SD-07	C.B. #5 Alley Basin	SD-07		LACFCD 2-D164
SD-08	Pipe Conn. to Exist. ST. DR.	SD-08		
SD-09.1	Pipe Support Across Trenches	SD-09	SD-09.1	LACFCD 2-D173.1
SD-09.2	Pipe Support Across Trenches	SD-09.2	SD-09.3	LACFCD 2-D173.2
SD-09.3	Pipe Support Across Trenches	SD-09.3	SD-09.4	LACFCD 2-D173.3
SD-10.1	Junction Structure #4	SD-10.1		LACFCD 2-D193
SD-10.2	Junction Structure #2	SD-10.2		LACFCD 2-D112
SD-11	Std. Pressure M.H. Shaft	SD-11		LACFCD 2-D210
SD-12	Depressed Gutter			LACFCD 2-D415
SD-13	Std. Sect. - Reinforced Conc. Culv.	SD-13		
SD-14	Automatic Flap Gate inlet to St.DRAIN	SD-14		LACFCD 2-D192
SD-15	Concrete Collar for Conn. Pipe	SD-15		LACFCD 2-D393
SD-16	CMP Flared Inlet Plan & Section	SD-16		LACFCD 2-D265
SD-17.1	Provisions-Conn. Drain to Channel wall			
SD-17.2	Junct. Str. "A" - Corps of Eng.			
SD-17.3	Junct. Str. "D" - Corps of Eng.			
SD-18.1	Sect. Details Stand. Arch. Sect. "A"			
SD-18.2	Reinfor. Detail Stand. Arch. Sect. "A"			
SD-19	Pipe Bedding in Trenches			LACFCD 2-D177
SD-20.1	St. Drain Data Sheet	OS-08		
SD-20.3	St. Drain Design Sheet	OS-09		

APPROVED BY	DATE	REVISIONS
ASJK		
CHECKED BY		
DW/M		
DESIGNED BY		
GAP		
OPERATED BY		
C/W/M		

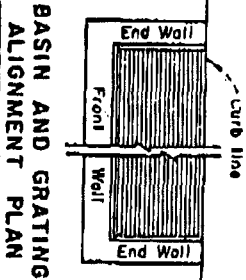
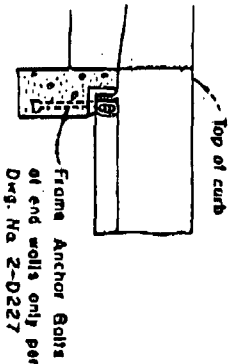
STRUCTURAL PLAN



SECTION A-A



DETAIL OF END WALL



FLOW

CITY OF ALHAMBRA
DEPARTMENT OF PUBLIC WORKS
CATCH BASIN NO. 4
PLAN, SECTION AND DETAILS

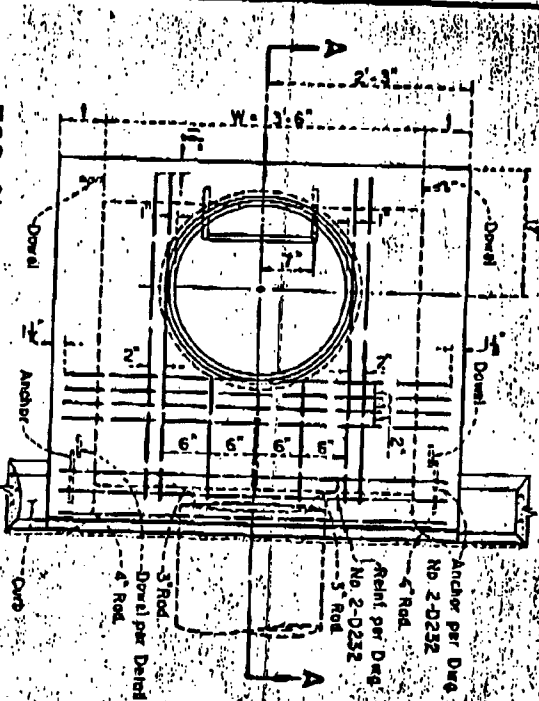
DATE: 9/10/69
 SCALE: NONE
 DRWG. NO. SD-02
 SHEET 1 OF 1 SHEETS

SUPersedes DRAWING OF THE SAME NUMBER DATED OCTOBER, 1959

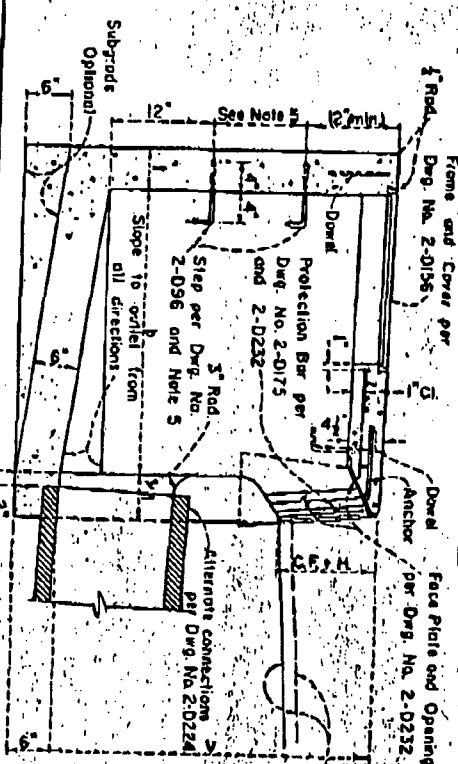
NOTES

1. GRATING: One grating required unless otherwise shown on general plan. Position gratings as required by Sid. Dwg. No. 2-0246.
2. CONNECTOR PIPE: Locate at downstream end of basin unless specifically noted otherwise. Pipe shall be framed to the final slope and length before the placement of concrete.
3. CONCRETE: Design 1/2" - 3000 psi of 28 days. Floor of basin shall slope from all walls to the outlet and shall be given a steel-troweled finish. Street-side walls of the basin shall be poured to the elevation of the L.D. or adjacent street surface. Curb wall of the basin and curb shall be poured monolithically, and the curb surface shall conform in slope, grade, color, and finish to the adjacent curbing.
4. REINFORCEMENT: As required by Sid Dwg. Nos. 2-0171 and 2-0172.
5. DIMENSIONS:
 - Va 3'-6" unless otherwise shown.
 - Wa 2'-11 1/2" for one grating; odd 5'-5 3/8" for each additional grating.
 - 1a 6 inches if V is 4'-0" or less.
 - 1b 8 inches if V is 4'-0" to 8'-0"
 - 1c 10 inches if V is 8'-0" or more.
 - H = 6 inches of depressed driveway curb or when no L.D. is constructed. See Sid. Dwg. No. 2-0246.
6. STEPS: V is 3'-0" (incl), place one step 12 inches above the floor of the basin.
 - V over 3'-0" place steps at 12-inch intervals from floor of the basin to maximum of 12 inches below top of the grating.
 - Construct steps on front wall when connector pipe is aligned to downstream end wall.

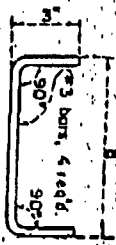
L.A.C.F.C.D. NO. 2-D101



TOP SLAB-STRUCTURAL PLAN



SECTION A-A



DETAIL OF DOWEL

Author by S.T.H.	DATE	REVISIONS
Checked by D.W.H.	DATE	OPERATION
Design by G.L.P.		
Drawn by C.W.H.		

SUPERSEDES DRAWING NO. SD-03 DATED 2/17/66

NOTES

- CONNECTOR PIPE:**
Locate pipe on any alignment around the walls of the basin or shown on the general plan.
Pipe shall be trimmed to the final slope and length before the placement of concrete.
- CONCRETE:**
Design: 3,000 psi compressive strength at 28 days.
Floor of the basin shall slope from all walls to the center and shall be given a steel-troweled surface finish.
Curvature of the sill and side walls of the gutter opening shall be formed by curved forms.
Surface of all exposed concrete shall conform in steps, grade, color, and finish to the existing, or proposed, curb and walk adjacent to the basin.
- REINFORCEMENT:** (See Dwg. No. 2-D171)
Top Slab - No. 3 bars required as spaced on the Structural Plan.
Walk and Floor - As required by Standard Drawing No. 2-D172.
- DIMENSIONS:**
Curb face of catch basin opening (Exist. C.F.H.) shall be as required by Standard Drawings Nos. 2-D188, 2-D45, or as shown on the general plan.
V = 3'-6", 1'-6" inches and b = 3'-2" unless otherwise shown.
5 STEPS: (See Dwg. No. 2-D196)
V = 3'-0" (total), place one step 12 inches above the floor of the basin.
V over 3'-0" - place steps at 12-inch intervals from the floor of the basin with the top step at 12 inches (minimum) below the top surface of the top slab.

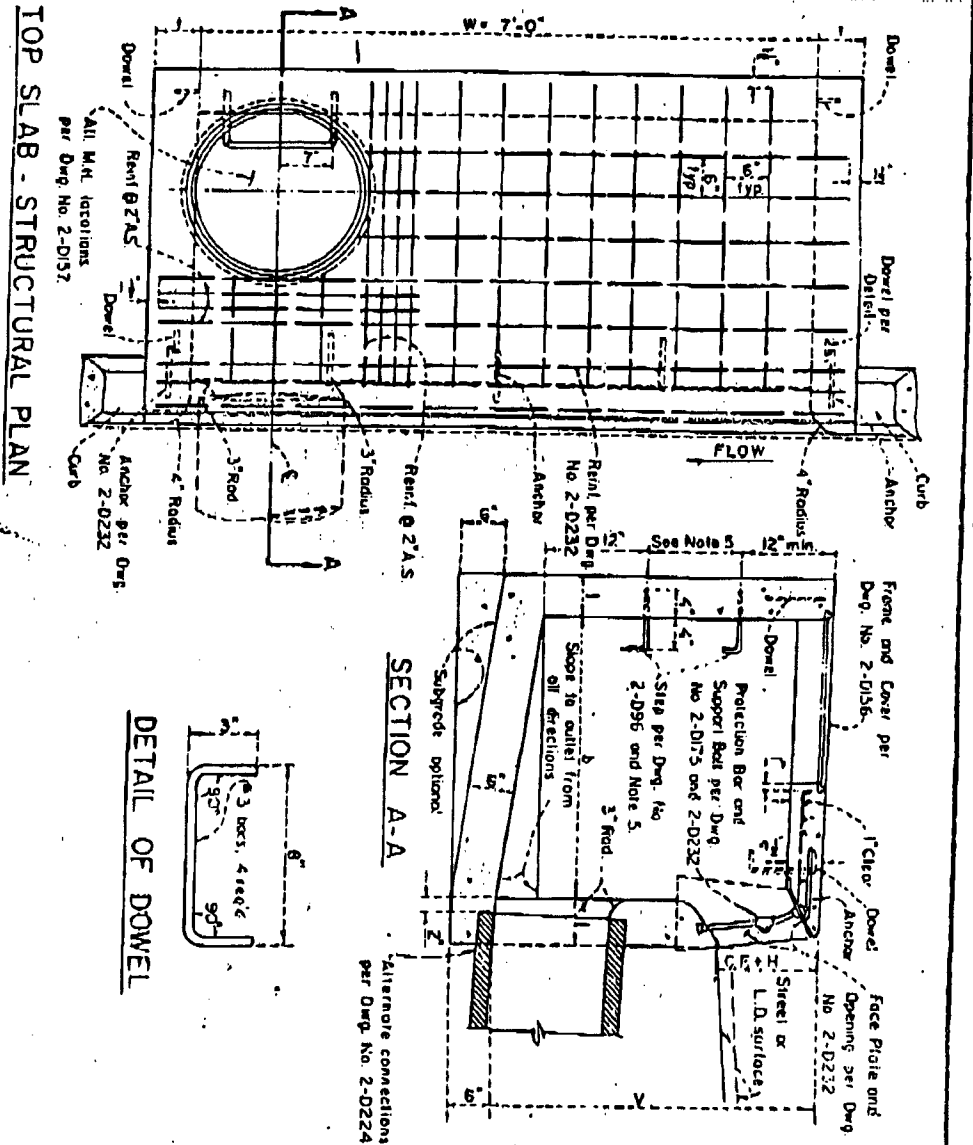
CITY OF ALHAMBRA
DEPARTMENT OF PUBLIC WORKS
CATCH BASIN NO. 1
PLAN, SECTION AND DETAILS

R.C.E. NO. 11460 CITY ENGR
DATE: 9/15/69
SCALE: NONE

DRWG. NO.
SD-03.1

L.A.C.F.C.D. NO. 2-D160

SHT. 1 OF 1 SHT.



Supersedes drawing of the same number dated August 1950.

SYN	REVISIONS
DATE	DESCRIPTION

SYN
DWG
G.P.
C.W.R.

SUPERSEDES DRAWING NO. SD-03 DATED 2/17/64


NOTES

- CONNECTOR PIPE:**
Locate pipe at the downstream end of the basin unless specifically noted otherwise on the general plan. Pipe shall be trimmed to the final shape and length before the placement of concrete.
- CONCRETE:**
Design f_c 3,000psi; compressive strength of 28 days. Floor of the basin shall slope from oil walks to the curb and shall be given a steel-troweled surface finish. Curvature of the sill and side walls at the gutter opening shall be formed by curved forms; end of exposed edges, or corners, and concrete to metal frame edges shall be given a 3" radius edge finish. Surface of all exposed concrete shall conform in grade, slope, color and finish to the existing, or proposed, curb and walk adjacent to the basin.
- REINFORCEMENT:** (Standard Dwg. No. 2-D171)
Top slab - No. 3 bars as required on the Top Slab Structural Plan. Walls and Floor - As required by Standard Dwg. No. 2-D172.
- DIMENSIONS:**
Curb face of the catch basin opening (Exit C.F.) shall be as required by Sid. Dwg. Nos. 2-D88, 2-D41C, or as shown on the general plan.
A. 3'-2" unless otherwise shown.
B. 6 inches if $V \leq 4.0'$ or less.
C. 8 inches if $V > 4.1'$ to 8'-0".
D. 8 inches if $V > 8.1'$ or more.
E. 4'-0" unless otherwise shown on the general plan.
STEPS: (Sid. Dwg. No. 2-D961)
V to 3'-0" (incl). Place one step 12 inches above the floor of the basin.
V over 3'-0" - place steps at 12-inch intervals from the floor of the basin with the top step at 12 inches (maximum) below the top of the manhole.

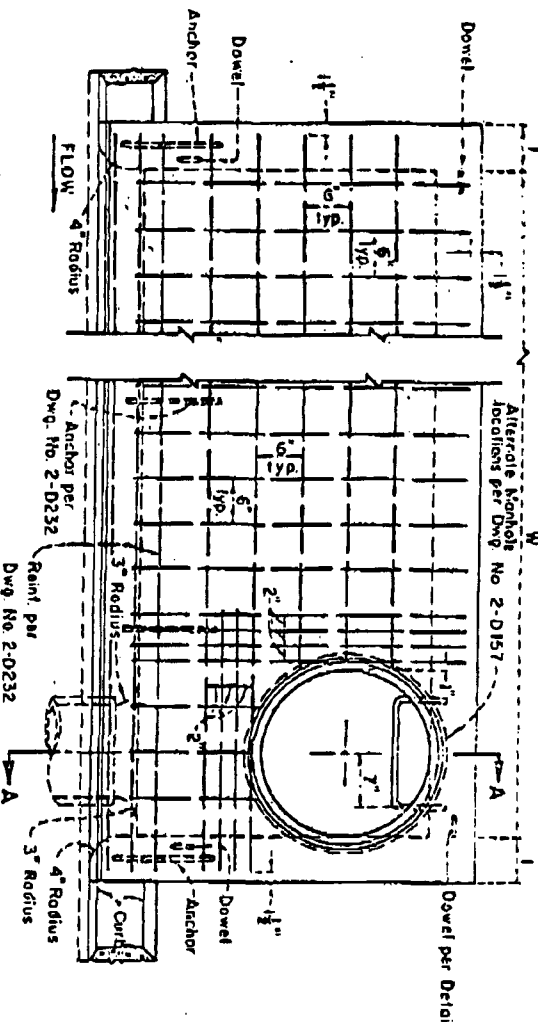
DETAIL OF DOWEL

SECTION A-A

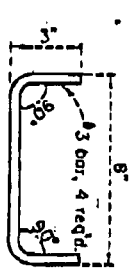
TOP SLAB - STRUCTURAL PLAN

 R.C.E. ND. 11460 CITY ENGR.		DATE: 9/19/69
CITY OF ALHAMBRA DEPARTMENT OF PUBLIC WORKS		SCALE: NONE
CATCH BASIN NO. 2 PLAN, SECTION AND DETAILS		DRWG. NO.
		SD-03.2
		BNT. 1 OF 1 BNT.

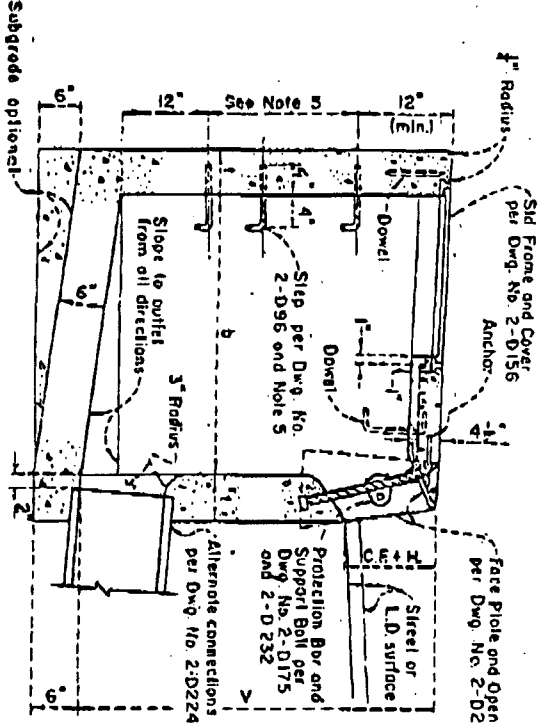
1 A C E R N A I N 3 - R I 5



TOP SLAB - STRUCTURAL PLAN



DETAIL OF DOWEL



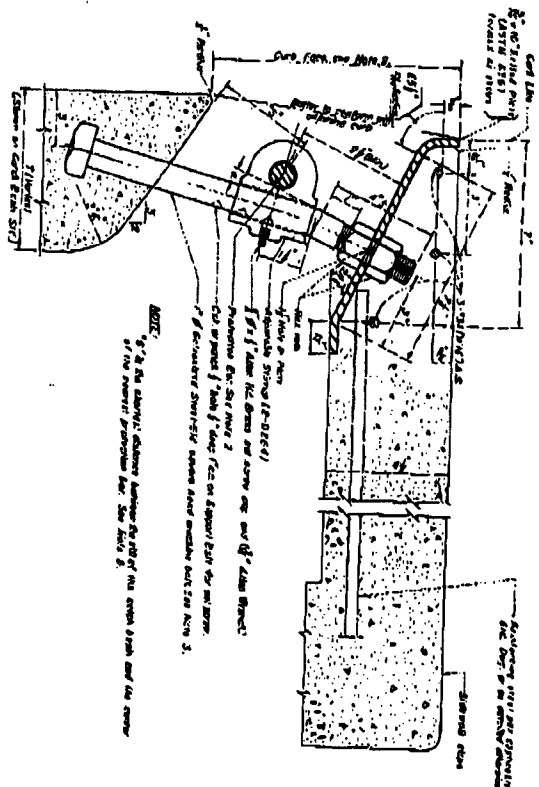
SECTION A-A

SUPERSEDES DRAWING NO. 90-03 DATED 2/17/64

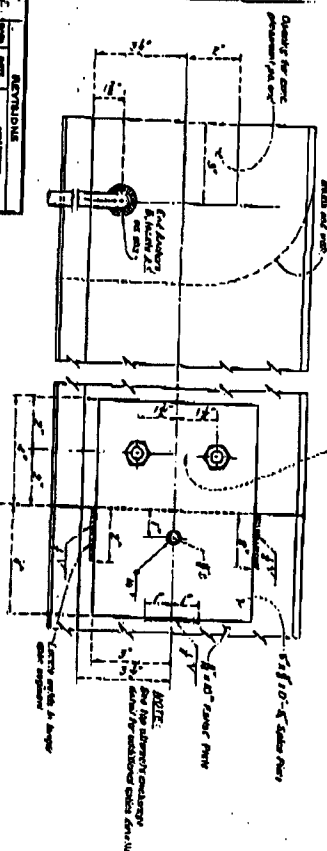
NOTES

1. **CONNECTOR PIPES:**
 Locate pipe at the downstream end of the basin unless specifically noted otherwise on the general plan.
 Pipe shall be trimmed to the final shape and length before the placement of the concrete.
2. **CONCRETE:**
 Design, $f'_c = 3,000$ psi compressive strength at 28 days.
 Floor of the basin shall slope from all walls to the outlet and shall be given a steel-troweled surface finish.
 Curvature of the sill and the side walls at the gutter opening shall be formed by curved forms.
 Surface of all exposed concrete shall conform in grade, slope, color, and finish to the existing, or proposed, curb and walk adjacent to the basin.
3. **REINFORCEMENT:** (Std. Dwg. No. 2-D271)
 Top Slab - No. 3 bars spaced as required on the Structural Plan.
4. **WELLS and FLOOR:** As required by Std. Dwg. No. 2-D172.
5. **DIMENSIONS:**
 Curb face of catch basin opening (Exist. C.F.H.) shall be as required by Std. Dwg. Nos. 2-D 88, 2-D415 or as shown on the general plan.
 Catch basins for W=10 feet or more shall have a "V" depth at the upstream end equal to the curb face of the catch basin plus 12 inches.
 W = 14'-0" and 8'-3"-2" unless otherwise shown.
 V = 4'-0" unless otherwise shown.
 1 = 6" if V = 4'-0" or less.
 1 = 8" if V = 4'-1" to 6'-0".
 1 = 10" if V = 6'-1" or more.
6. **STEPS:** (Std. Dwg. No. 2-D961)
 V to 3'-0" (incl.), place one step 12 inches above the floor of the basin.
 V over 3'-0" , place steps at 12-inch intervals from the floor of the basin with the top step at 12 inches (minimum) below the top surface of the top slab.

 A.C.E. NO. 11400 CITY ENG.	
CITY OF ALHAMBRA DEPT. OF PUBLIC WORKS CATCH BASIN NO. 3	DATE: 6/19/09 SCALE: R02 BRW. NO.
PLAN, SECTION AND DETAILS	30 - 03 3 GNR 2/1/09

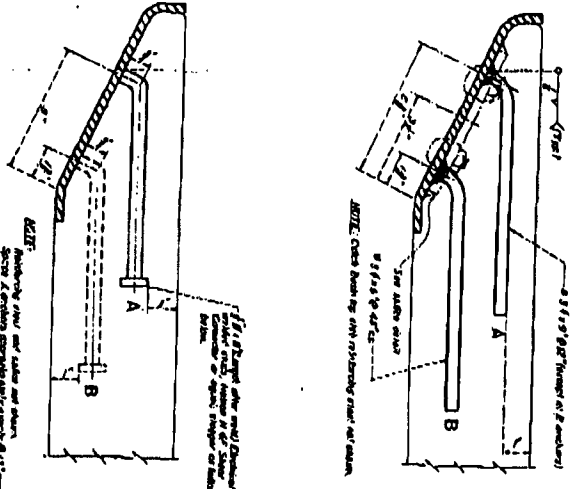


NOTE: 1. The above details are for the catch basin and the opening of the concrete structure for the face of the concrete structure.



FACE PLATE END & SPLICE DETAILS

SUPPLEMENTAL DRAWING NUMBER: SD-031 DATED 2/1/14



ALTERNATE METHODS FOR FACE PLATE ANCHORAGE

NOTE: 1. The above details are for the catch basin and the opening of the concrete structure for the face of the concrete structure.

NOTES

1. Support and edge of slab may be cast in place and shall be supported.
2. Reinforcement for slab shall be installed and supported as shown, extending to the face of the concrete structure.
3. Support shall be such as to keep the slab from sagging or from being damaged.
4. All steel reinforcement shall be provided with lap splices.
5. Reinforcement for slab shall be installed and supported as shown, extending to the face of the concrete structure.
6. All steel reinforcement shall be provided with lap splices.
7. All steel reinforcement shall be provided with lap splices.
8. All steel reinforcement shall be provided with lap splices.
9. All steel reinforcement shall be provided with lap splices.
10. All steel reinforcement shall be provided with lap splices.
11. All steel reinforcement shall be provided with lap splices.
12. All steel reinforcement shall be provided with lap splices.

CITY OF ALHAMBRA
 DEPARTMENT OF PUBLIC WORKS
 SCALE: AS SHOWN
 DATE: 03/14/14
 DRAWN BY: SD 03.4
 CHECKED BY: [Signature]
 PROJECT NO: 15680 CITY ENG.

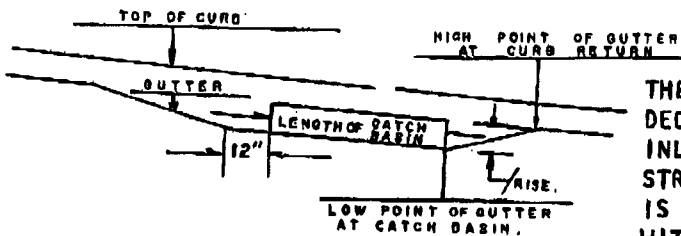
L.A.C.E.C.D. NO. 2-0232

SLOPE OF STREET IN FEET PER FOOT	LENGTH OF CATCH BASIN	CUBIC FEET PER SECOND RISE. GIVEN BOTH IN INCHES & IN FEET.				
		0"	3.5"	6"	8"	2"
		0"	0.30'	0.50'	0.67'	1.00'
.005	3.5	0.5	1.8	2.7	3.5	4.9
.005	7.0	1.8	3.4	4.6	5.6	7.5
.005	10.0	3.0	4.7	6.0	7.0	9.0
.005	14.0	4.6	6.4	7.7	8.8	10.9
.005	21.0	7.4	9.4	10.8	11.7	13.9
.005	28.0	10.2	12.1	13.3	14.6	16.8
.01	3.5	0.5	1.7	2.7	3.4	4.8
.01	7.0	2.0	3.6	4.8	5.8	7.6
.01	10.0	3.2	4.9	6.2	7.3	9.3
.01	14.0	3.9	6.8	8.2	9.3	11.5
.01	21.0	7.8	9.8	11.3	12.3	14.5
.01	28.0	10.7	12.7	14.1	15.3	17.5
.02	3.5	0.4	1.5	2.8	4.0	6.4
.02	7.0	1.9	3.0	4.0	6.3	9.5
.02	10.0	3.1	4.4	6.1	7.7	10.9
.02	14.0	4.8	6.2	8.1	9.6	12.8
.02	21.0	7.7	9.4	11.2	12.4	15.1
.02	28.0	10.6	12.6	14.0	15.2	17.4

SLOPE OF STREET IN FEET PER FOOT	LENGTH OF CATCH BASIN	CUBIC FEET PER SECOND RISE. GIVEN BOTH IN INCHES & IN FEET.				
		0"	3.5"	6"	8"	2"
		0"	0.30'	0.50'	0.67'	1.00'
0.4	3.5	0.2	1.3	2.3	3.3	5.3
0.4	7.0	1.6	2.5	4.0	5.3	8.0
0.4	10.0	2.7	3.6	5.2	5.2	9.4
0.4	14.0	4.1	5.1	6.6	7.9	10.7
0.4	21.0	6.6	7.7	9.1	10.1	12.5
0.4	28.0	9.1	10.3	11.2	12.3	14.3
0.6	3.5	0.0	0.9	1.8	2.7	4.5
0.6	7.0	0.8	1.7	3.0	4.3	6.9
0.6	10.0	1.6	2.4	3.8	5.3	7.9
0.6	14.0	2.6	3.4	4.7	6.8	9.4
0.6	21.0	4.4	5.1	6.0	8.2	10.7
0.6	29.0	6.2	6.8	7.2	9.6	2.0

NOTE

- THIS TABLE WAS CONSTRUCTED BY MAKING ARBITRARY ASSUMPTIONS BASED ON EXPERIMENTAL OBSERVATIONS MADE ON A MINIATURE APPARATUS, AND ON A FEW MEASUREMENTS OF CAPACITIES OF ACTUAL EXISTING INLETS IN STREETS.
- IT IS ADVISABLE TO ALLOW A SMALL OVERFLOW, HEREBY INTERCEPTING A LARGER AMOUNT OF WATER, FOR EXAMPLE: MEASUREMENTS OF FLOW INTO AN INLET 3.5 FEET IN LENGTH ON A FLAT SLOPE SHOWED:
 CAPACITY WITH NO OVERFLOW... 2.0 SEC. FT.
 CAPACITY WITH 44 SEC. FT.
 FLOWING PAST THE INLET... 5.0 SEC. FT.
 THE PROPORTIONATE INCREASE IN CAPACITY DECREASES WITH INCREASE IN LENGTH OF INLET, AND WITH INCREASE IN SLOPE OF STREET, BUT UNTIL FURTHER INVESTIGATION IS MADE, NO DEFINITE DATA ON CAPACITY WITH OVERFLOW CAN BE GIVEN.
- TABULAR VALUES ARE FOR CAPACITIES WITH NO OVERFLOW.



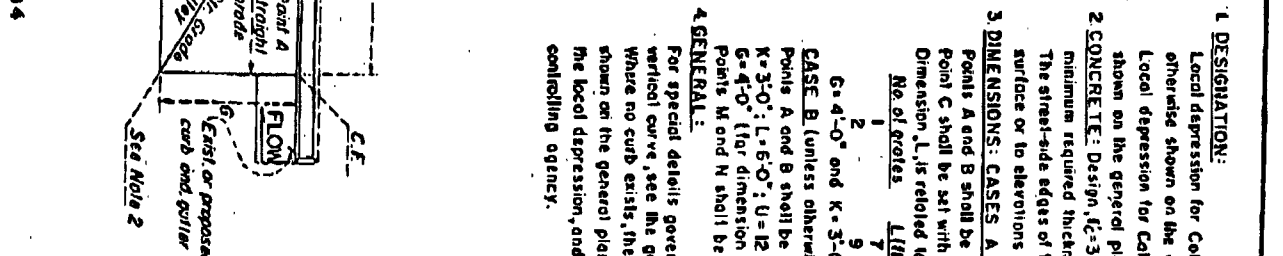
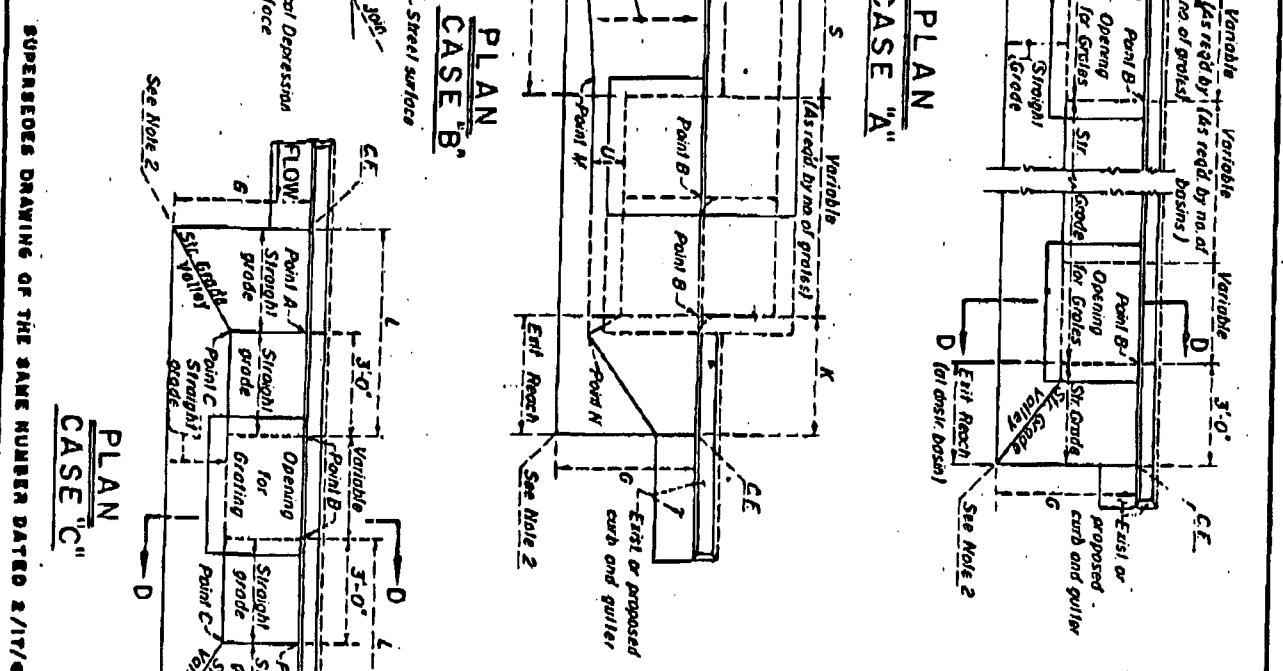
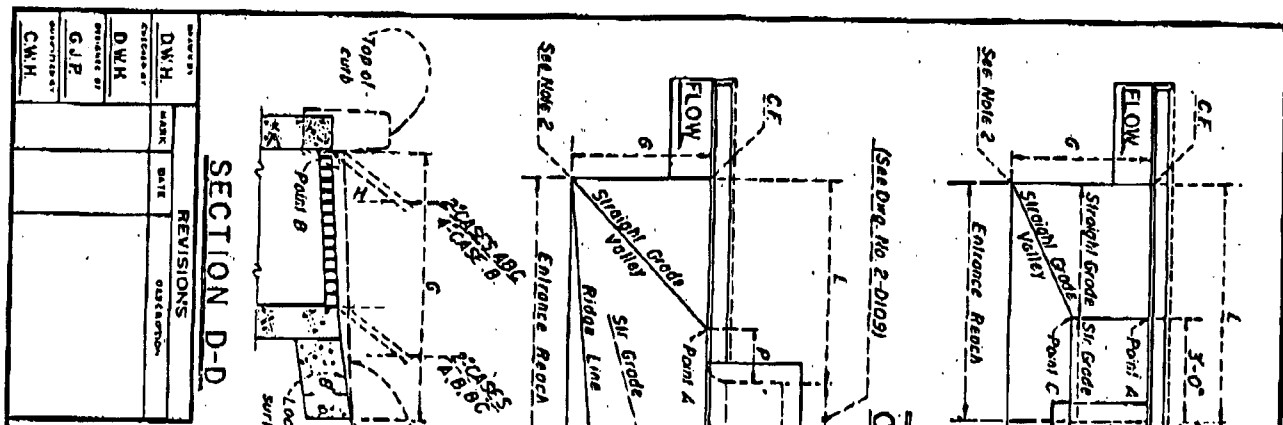
RECOMMENDED FOR APPROVAL

TRAFFIC ENGR. (DATE) 4-7-64
 ABSN'T CITY ENGR. (R.C.E. No. 11480)

△				
△				
Rev.No.	Date	By/App.	ITEM	
DESIGN			P. S. NO.	
DRAWN	B. D. K.	4-7-64	DRWG. NO.	
CHECKED				

CITY OF ALHAMBRA
 ENGINEERING AND STREET DEPARTMENT
 TABLE OF
 SIDE OPENING CATCH BASIN
 CAPACITY

DATE: 4-7-64.
 SCALE: NONE:
 DRWG. No. SD-032
 SHY. or SHYS.



DESIGNED BY D.W.H.	REVISIONS	DATE	QUANTITY
CHECKED BY D.W.H.			
APPROVED BY G.J.P.			
DATE C.W.H.			

UPPEREDES DRAWING OF THE SAME NUMBER DATED 2/17/64

NOTES

- 1 DESIGNATION:**
Local depression for Catch Basin No. 4 and No. 7 shall be CASE A unless otherwise shown on the general plan.
Local depression for Catch Basin No. 6 shall be CASE B unless otherwise shown on the general plan.
- 2 CONCRETE:** Design, 42,3000 psi compressive strength of 28 days with a minimum required thickness of 8 inches.
The street-side edges of the local depression shall conform to the existing street surface or to elevations shown on the general plan.
- 3 DIMENSIONS:** CASES A, B, C (unless otherwise shown)
Points A and B shall be set at 2 inches below the existing gutter grade.
Point C shall be set with the same rise on the grading. See Section D-D.
Dimension, L, is related to the number of grates.

No. of grates	L(ft)	No. of grates	L(ft)
1	7	3	10
2	9	4	11
3	11		

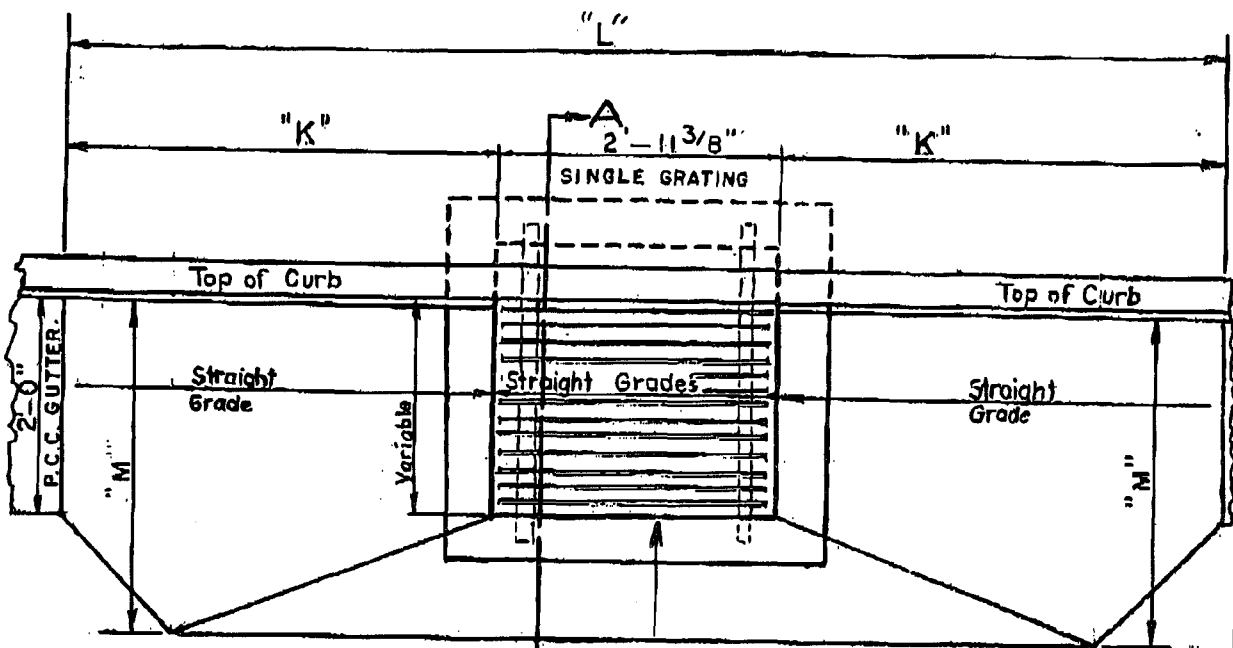
CASE B (unless otherwise shown):
Points A and B shall be set at 4 inches below the existing gutter grade.
K=3'-0"; L=6'-0"; U=12 inches; P=12 inches (S=4'-0"); P=18 inches (S=11'-0")
G=4'-0" (for dimension S, see Standard Drawing No. 2-D109)
Points M and N shall be on a straight grade, and on the street cross-slope.

GENERAL:
For special details governing the construction of the local depression on a vertical curve, see the general plan.
Where no curb exists, the curb face (C.F.) shall be 8 inches unless otherwise shown on the general plan. Such curbs shall be constructed to the ends of the local depression, and the curb section shall conform to that of the controlling agency.

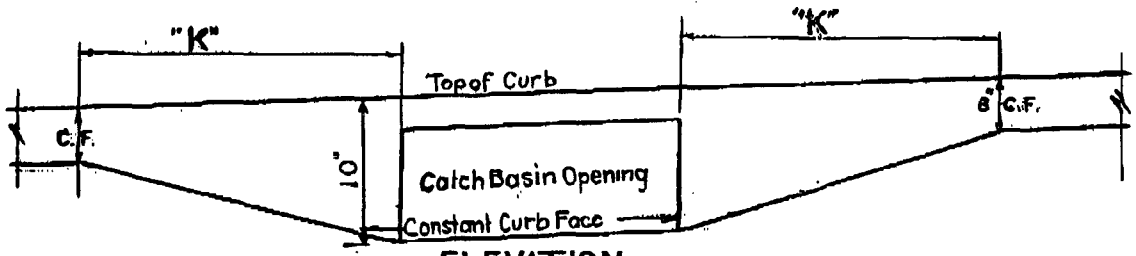
CITY OF ALHAMBRA
DEPARTMENT OF PUBLIC WORKS
LOCAL DEPRESSION
NO. 3
FOR GRATING CATCH BASINS

DATE: 9/26/83
 SCALE: NONE
 SHEET: 1 OF 1 SHEET

L.A.C.F.C.D. NO.2-0248

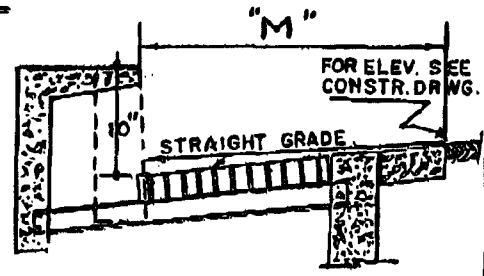


PLAN



ELEVATION

L = AS SPECIFIED
 M = 4' UNLESS OTHERWISE SPECIFIED.
 K = 5' UNLESS OTHERWISE SPECIFIED.




SECTION A-A

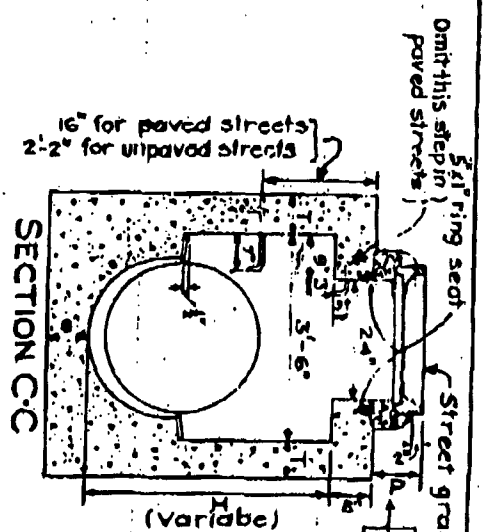
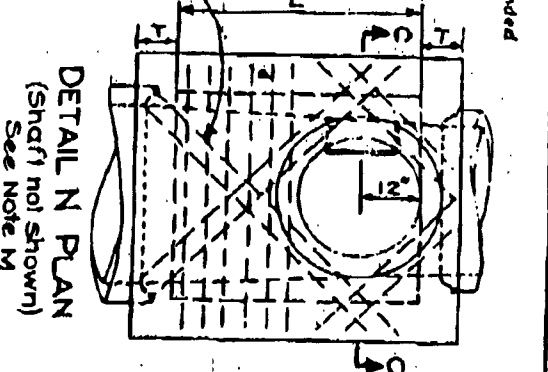
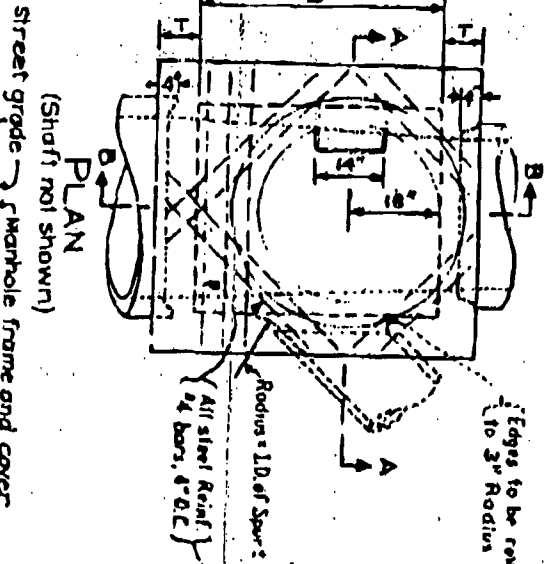
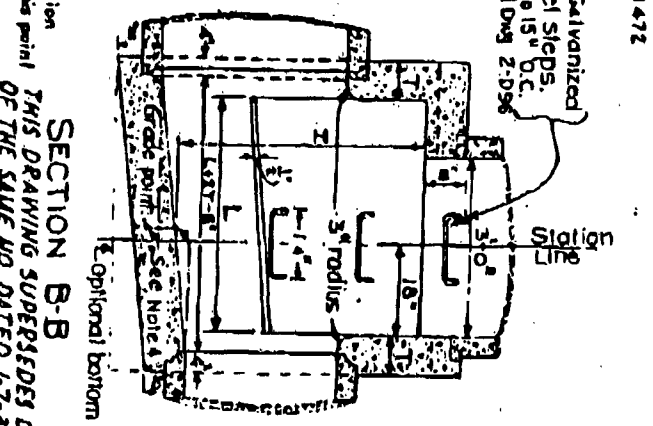
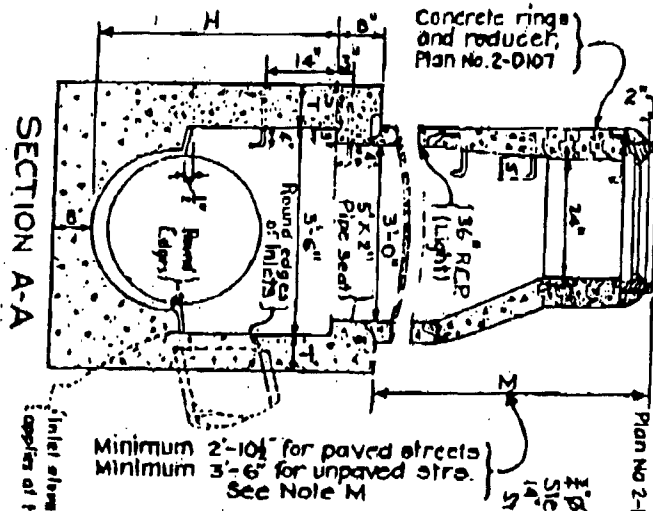
RECOMMENDED
 FOR
 APPROVAL

ASST. CITY ENGINEER R.C.E. N° 11460

CITY OF ALHAMBRA
 ENGINEERING AND STREET DEPARTMENT

STANDARD LOCAL DEPRESSION
FOR GRATING BASIN.

24704	REVISED & RENUMBERED.
REVNS	DATE APP. ITEM.
 CITY ENGINEER R.C.E. 9923	
DATE	2-17-64
SCALE	NONE.
DESIGN	BY DATE REFERENCE.
DRAWN	G.D.K. 2/7/64
CHKD.	
DRWG. N°.	SD-04.1



For Paved Streets	11"	8 1/2"
For unpaved str.	16"	15"

(See Note P)

Minimum 2'-10" for paved streets
 Minimum 3'-6" for unpaved str.
 See Note M

SECTION B-B
 THIS DRAWING SUPERSEDES DWG
 OF THE SAME NO. DATED 1-7-39

NOTES

- M-SHAFT: see construction per Sec. P-C and Detail N when open from street
- P-DEPTH: P only, no reducer on structure limit of 6" when larger values of P would reduce K (in Section C-C) to 3" or less
- T-T shall be 3" for values of H up to and including 8 feet
- T shall be 10" for values of H over 8 feet
- 7 Where Pressure Washed Holes specified on plans see Std Dwg 2-D210 note 3
- 1-STEPS shall be 3" round galvanized steel and anchored not less than 6 inches in the walls of structure. Reinforcing steel steps shall be spaced 12 to 15 inches See Std Dwg 2-D96
- 2-REINFORCING STEEL shall be per 2-D171, straight bars 1/2" clear from concrete.
- 4-STATIONS of manholes shown on Plan except of center line of shaft. Elevations are shown at shaft center and refer to the primary invert grade line. See Note L
- 5-FLOOR or manhole shall be about 1/2" above invert grade line
- 6-RINGS, reducer and pipe access shall be sealed in mortar and neatly pointed or wiped tight shut

<i>W. S. ...</i>		
RE. 15830	DIRECTOR OF PUBLIC WORKS	
CITY ENGINEER		
CITY OF ALHAMBRA		
DEPARTMENT OF PUBLIC WORKS		
MANHOLE NO. 1	DATE 8-10-76	
PLAN, SECTION, AND DETAILS	SCALE: NONE	
	DRWG NO.	SD-05.1

L.A.C.E.C.D. NO. 2-1119

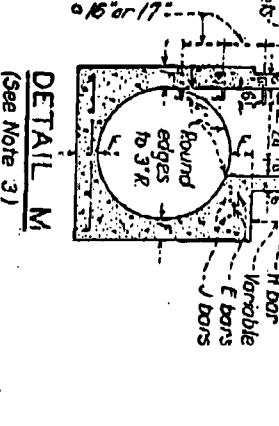
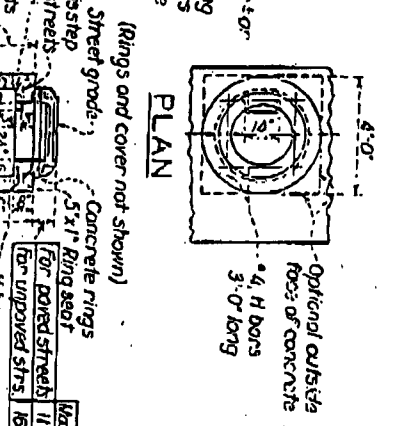
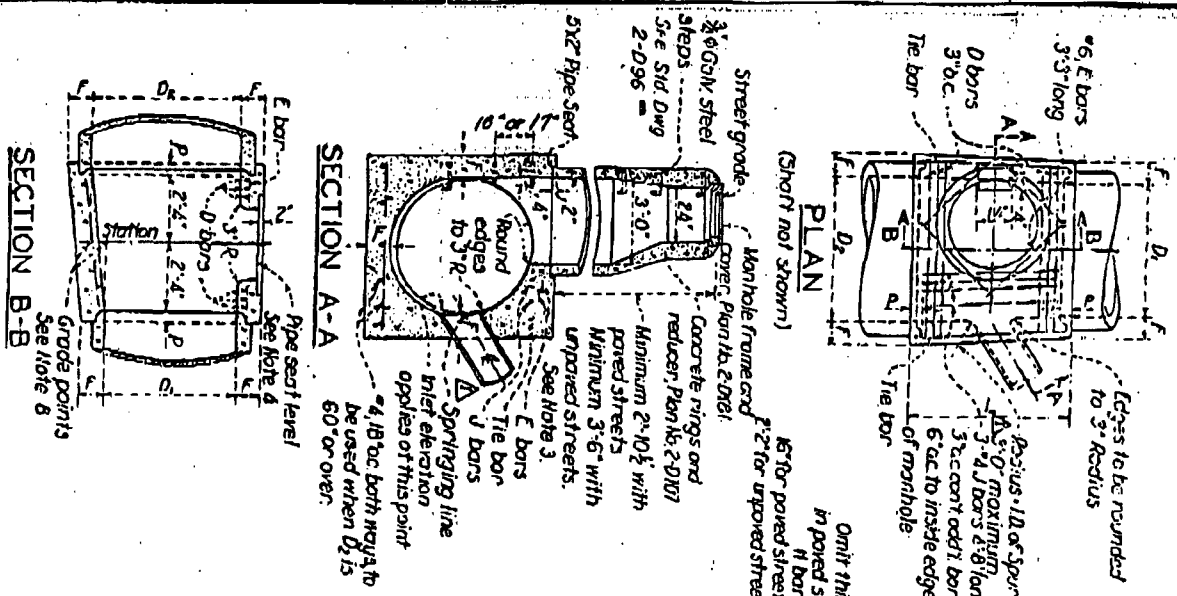


TABLE OF VALUES FOR 'T'

D ₂	F	D ₂	F
36	6 1/2	76	11 1/2
39	7	84	12 1/2
42	7 1/2	90	13 1/2
45	7 3/4	96	14
48	8	102	15 1/2
51	8 1/2	108	16 1/2
54	9	114	17 1/2
57	9 1/2	120	18 1/2
60	9 3/4	126	19 1/2
63	10	132	20 1/2
66	10 1/2	138	21 1/2
69	10 3/4	144	22 1/2
72	11		

NOTES

- 1- TABLE of values for 'F' are on this plan.
- 2- CENTER OF MANHOLE SHAFT shall be located over centerline of street or driveway when diameter D₂ is 48" or less, in which case pipe (F) bars shall be 18" from centerline of shaft at 45° with centerline and end J bars is less than 2'-10 1/2" for paved streets or 3'-6" for unpaved streets. Concrete manhole shafts as per Detail M. Shaft for any depth of manhole shall be constructed as per Detail M. When diameter D₂ is 48" or less, centerline of shaft may be located as per note 2.
- 3- THICKNESS OF DECK shall vary when necessary to provide level pipe seat, but shall not be less than tabular values for F shown on this plan.
- 4- REINFORCING STEEL to be per 2-D111, 1/2" clear from face of concrete unless shown otherwise.
- 5- STEPS shall be 3/4" round galvanized steel and anchored not less than 6" inches in the walls of structure. Unless otherwise shown the spacing shall be 16" or 17" o.c. The lowest step shall not be more than 2'-6" above the invert. See Std. Dwg. 2-D-55.
- 6- RINGS, REDUCER AND PIPE for access shaft shall be seated in mortar and neatly pointed or wiped inside the shaft.
- 7- STATIONS of manholes shown on plan apply to center of shaft.
- 8- ELEVATIONS of manholes shown on plan apply to springing line.
- 9- FLOOR of manhole shall be steel-trowelled to springing line.
- 10- BODY of manhole shall be poured in one continuous operation, except that a construction joint with no longitudinal keyway may be placed at the springing line.
- 11- LENGTH L AND EMBEDMENT P shall have the following values unless otherwise shown on plan.
 For D₂ = 36" or less, L = 5'-6", P = 5'-0"
 For D₂ over 36", L = 6'-0", P = 6'-0"
 L may be increased or location of manhole shifted to meet pipe ends. When L greater than that shown above is specified, D bars shall be continued 6" o.c.
- 12- D BARS shall be #4 for D₂ = 39" or less, #5 for D₂ = 42" to 64" inclusive and #6 for D₂ = 90" or over. The bars shall be #3 bars.
- 13- F = 3000 psi of 28 days.
- 14- Centerline of inlet pipe to intersect inside face of concrete springing line unless otherwise shown.
- 15- Where Pressure Manhole No. 2 is specified on plans see Std. Dwg. 2-D210 note 3.

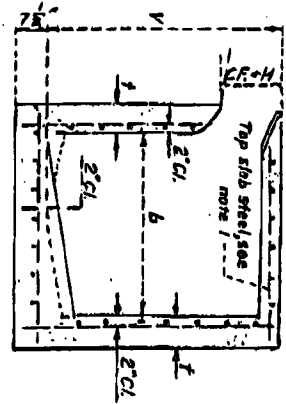
CITY OF ALHAMBRA
 DEPARTMENT OF PUBLIC WORKS
 MANHOLE NO. 2

[Signature]
 R.C.E. NO. 11460 CITY ENGR.
 DATE: 8/17/88
 SCALE: NONE
 DRAWG. NO.
 SD-052
 BKT. 1 OF 1 DWG.

SUPERSEDES DRAWING OF THE SAME NUMBER DATED 2/17/64

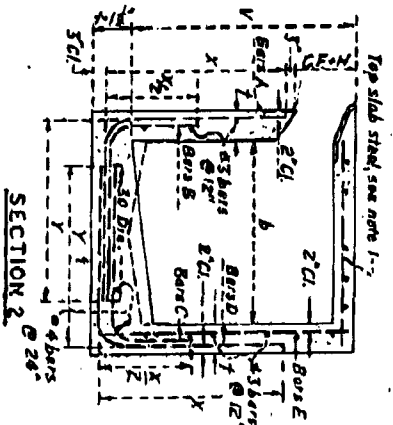
L.A.C.F.C.D. NO. 2-D184

W	W (ft.)	T	FRONT WALL STEEL	REAR & END WALLS & FLOOR STEEL
0-5'	From (incl)	To (in)	Hor. Vert.	Each Way
14'	4	8	#3 @ 6" #3 @ 6"	#3 @ 6"
14'	4	8	#4 @ 12" #4 @ 12"	#4 @ 12"
14'	4	8	#4 @ 10" #4 @ 10"	#4 @ 10"
14'	4	8	#3 @ 6" #3 @ 6"	#3 @ 6"
14'	4	8	#4 @ 12" #4 @ 12"	#4 @ 12"
14'	4	8	#4 @ 10" #4 @ 10"	#4 @ 10"
14'	4	8	#4 @ 12" #4 @ 12"	#4 @ 10"



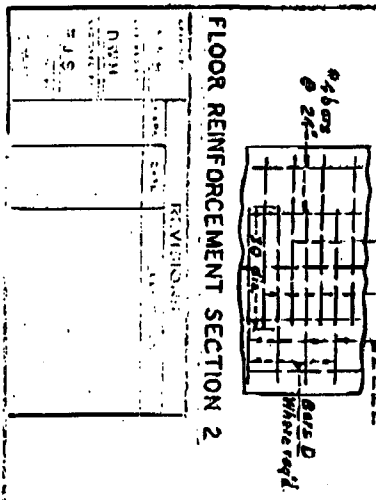
SECTION 1
CATCH BASIN REINFORCEMENT - "W" TO 14' (incl.)

V (ft.)	T	FRONT WALL STEEL	REAR WALL STEEL	END WALL STEEL
From (incl)	To (in)	Bars A B B	Bars C Bars D Bars E	Hor. & Vert.
4	6	#3 @ 24"	#3 @ 12"	#3 @ 18"
4	5	#3 @ 20"	#3 @ 12"	#3 @ 14"
5	6	#3 @ 12"	#3 @ 10"	#3 @ 14"
6	7	#4 @ 17"	#3 @ 8"	#4 @ 24" #3 @ 14"
7	8	#4 @ 13"	#3 @ 6"	#4 @ 24" #3 @ 14"
8	9	#4 @ 15"	#3 @ 12"	#4 @ 20" #3 @ 11"
9	10	#4 @ 12"	#4 @ 12"	#4 @ 20" #3 @ 11"
10	11	#5 @ 15"	#4 @ 11"	#4 @ 11" #3 @ 11"
11	12	#5 @ 18"	#4 @ 11" #4 @ 12"	#3 @ 11"
11	12	#5 @ 18"	#4 @ 11" #4 @ 12"	#3 @ 11"

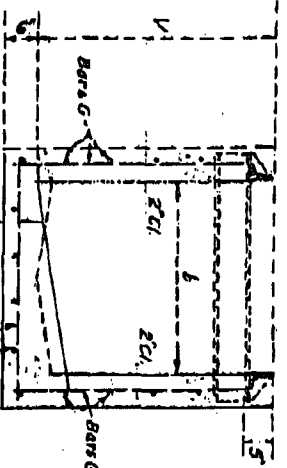


SECTION 2
WALL AND FLOOR STEEL

WALL AND FLOOR STEEL
CATCH BASIN REINFORCEMENT - "W" GREATER THAN 14'



V (ft.)	T	SIDE & END WALL STEEL BARS G
From (incl)	To (in)	Bars G
4	6	#3 @ 6"
4	8	#4 @ 6"
6	12	#5 @ 6"




GRATING BASIN REINFORCEMENT

NOTES

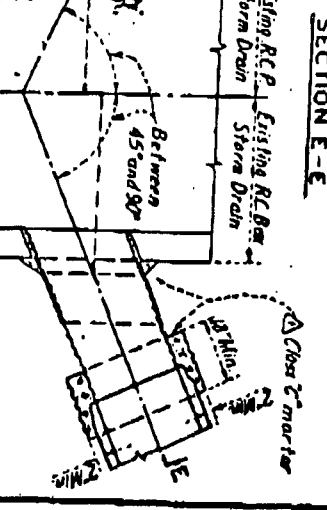
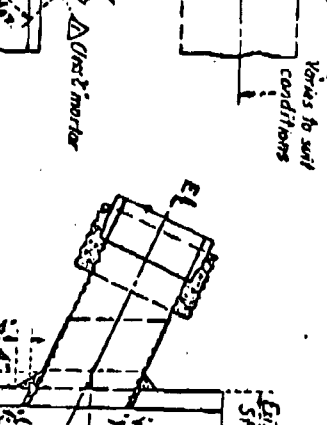
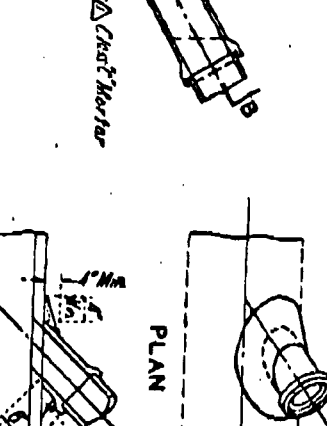
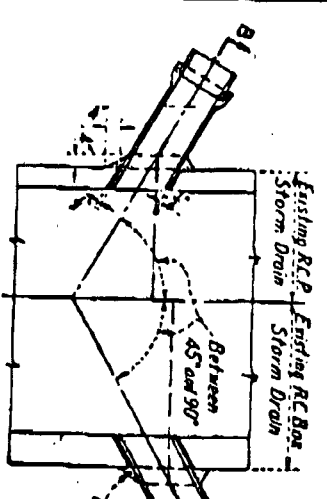
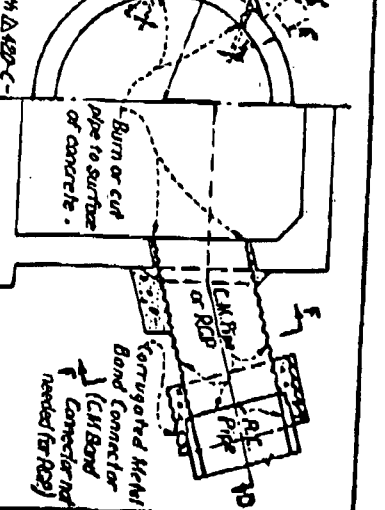
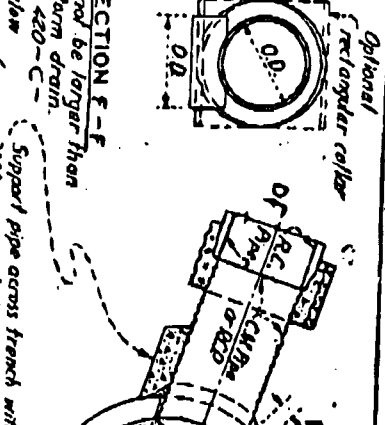
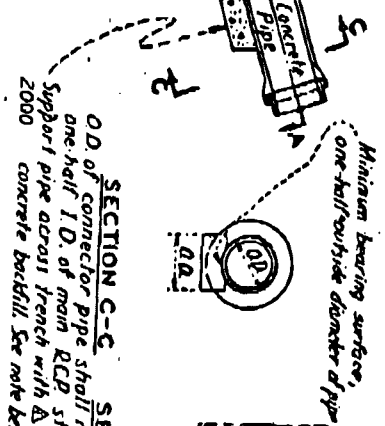
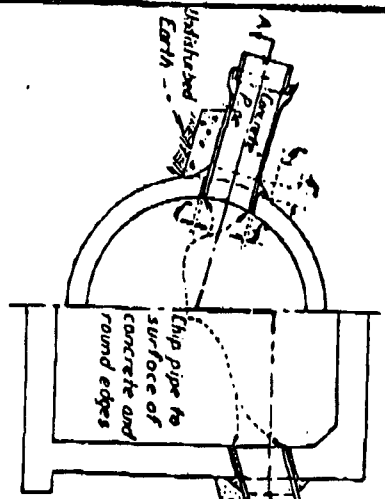
- TOP SLAB REINFORCEMENT:**
For detailing of rebar steel, see Catch Basin Standard Drawings For dimension "b" greater than 4ft., see the special design of the top slab reinforcement shown on the required structural plan.
- WALL AND FLOOR REINFORCEMENT:**
The indicated reinforcing steel applies to Catch Basin Standard Drawings No. 2-UH-109, 160, 162, 164, 170, 185 and 249 and 2. All catch basins constructed on streets designated as State Highways shall include the reinforcing steel shown on this drawing.

- GENERAL:**
Steel reinforcement shall be per Standard Drawing No. 2-D17, Steel to concrete surface, end clearance, shall be 1/2 inches. Valley type invert, shown by dashed line in Section, required when connector pipe is offset to end wall of a catch basin. For the design of catch basins with a depth exceeding 12 feet, see the required structural plans.

SUPersedes DRAWING OF THE SAME NUMBER
DATED 2/17/64

 R.C. McLaughlin CITY ENGINEER	
CITY OF ALHAMBRA	DATE: 8/10/65
DEPT. OF PUBLIC WORKS	SCALE: NONE
CATCH BASIN REINFORCEMENT	DRWG. NO. SD-06
	SHT. 1 OF 1 SH

L.A.C.F.C.D. NO. 2-0172



CASE 1 - PLAIN CONCRETE PIPE
24 INCHES OR LESS DIAMETER

CASE 2 - SADDLE CONNECTION

CASE 3
REINFORCED CONCRETE PIPE
OR CORRUGATED METAL PIPE
24 INCHES OR LESS IN DIAMETER

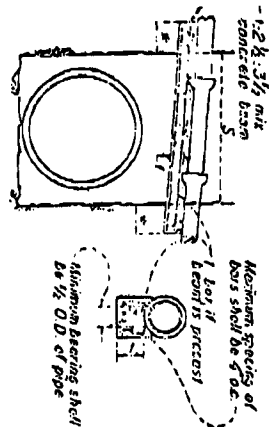
Notes:
 The minimum opening into the existing storm drain shall be the outside diameter of the connecting pipe plus 1 inch.
 The concrete backfill supporting the connecting pipe may be omitted if the pipe is laid on unshaded earth to the storm drain wet.
 All Corrugated Metal Pipe and fillings shall be galvanized.
 Corrugated Metal Pipe shall have an inside diameter at least as great and not more than 3 inches greater than that of the Reinforced Concrete Pipe it connects.
 Band Connectors may be 2 gages lighter than the pipe, but with a minimum gage of 16. They shall be connected at the ends by angles having the minimum dimensions of 2'-2" x 4" and 5'-4" x 6" both.

Notes:
 Connectors to pipes 21" or less in diameter without junction structures or precast Y branches shall be made with saddles.
 Trim or cut saddle to fit snugly over the outside of the main pipe, and so its axis will be on the line and grade of the connecting pipe.
 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.
 The connecting pipe shall be supported as shown in Cases 1 and 3.

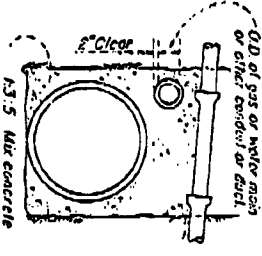
DIA. OF C.M.P.	MIN. GAGE
15"-21"	16
24"	14

CITY OF ALHAMBRA		REV.	DATE	ITEM
ENGINEERING & STREET DEPT				
PIPE CONNECTIONS TO EXISTING STORM DRAINS				
CITY ENGR.	11460	DATE	7-24-72	SCALE
DES.		BY		DATE
DRN.				NO.

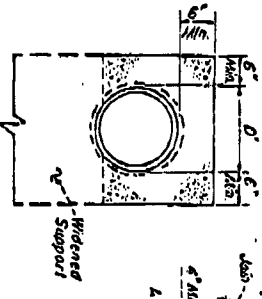
SD-NR



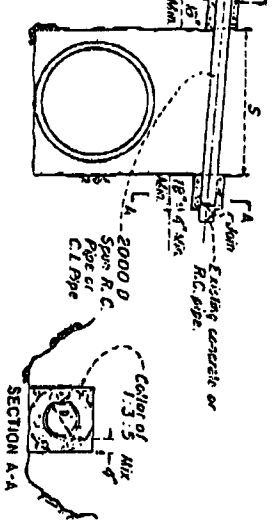
CASE 1
REINFORCED CONCRETE BEAM



CASE 2
CONCRETE SUPPORT WALL



ENCASEMENT DETAIL
FOR SANITARY SEWERS



CASE 3
CAST IRON PIPE OR SPUN REINFORCED
CONCRETE PIPE

See table on this sheet for minimum length of bearing.

DIMENSIONS OF COVER

CLASS	DEPTH OF COVER	MIN. BEARING	MIN. COVER
5	0'-8"0"	8'-16"0"	16'-25"0"
4	8"	8"	8"
3	8"	8"	8"
2	8"	8"	8"
1	8"	8"	8"
0	8"	8"	8"
10	12"	12"	12"
9	11"	11"	11"
8	10"	10"	10"
7	9"	9"	9"
6	8"	8"	8"
5	8"	8"	8"
4	8"	8"	8"
3	8"	8"	8"
2	8"	8"	8"
1	8"	8"	8"
0	8"	8"	8"

- GENERAL NOTES:
1. In the case of ordinary span supports per Case 1, 2 or 5, or per sheet 2 of this standard spec, special shall be provided per the Encasement Detail for Sanitary Sewers, and the support shall be widened to the width of the encasement and lengthened to fully support such encasement.
 2. Any of the cases shown on this standard may be used at the contractor's option unless otherwise shown on the project drawing.
 3. The minimum length of bearing shown by the Engineer shall be increased, if so directed by the Engineer.
 4. 3" trial cores across the span of the pipe support measured along its centerline between the sides of the trench or in cross-section of column supports.

- CASE 1 NOTES:
1. Width of beam shall be outside diameter of pipe plus 2".
 2. Reinforcing steel shall be placed 1/2" clear from sides and bottom of beams.
 3. If beams are precast ends of beams shall be bedded in 1:3:5 mix concrete to edge of trench.
 4. 1/2" min mortar shall be added between top of beams and bottom of pipe to give bearing.

- CASE 2 NOTES:
1. Supporting wall shall have a firm bearing on the subgrade and against the sides of the excavation.
 2. Wall shall be at least 2" free and clear of gas or water main or other conduit or duct.
 3. Extra type A or Type B cross section may be used at the contractor's option.
 4. However, no direct pressure resulting from flooding the ditchfill. The volume of the pileated openings shall not exceed 1/4 the volume of the supporting wall.

- CASE 3 NOTES:
1. Class 2000-D spun reinforced concrete pipe of the same diameter as existing pipe may be used only where width of trench is 5'-0" or less.

ALLOWABLE SPANS FOR CAST IRON PIPE

DEPTH OF COVER	CLASS 150 PIPE INSIDE DIAMETER	CLASS 250 PIPE INSIDE DIAMETER
0'-8"0"	8'-6"	11'-0"
6'-6"	8'-0"	10'-0"
5'-0"	6'-0"	8'-0"

Minimum Lengths of Bearing of Ends of R.C. Beams

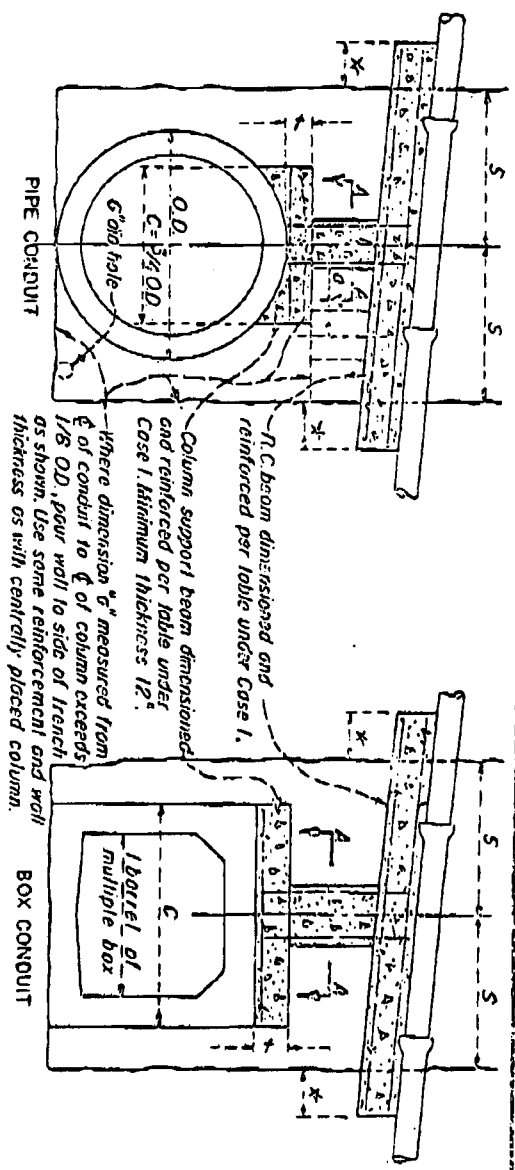
Depth of Cover	S	Min. Bearing
0'-8"0"	0'-18"0"	18"
8'-16"0"	0'-12"0"	12"
12'-24"0"	0'-10"0"	10"
16'-32"0"	0'-7"0"	7"
20'-40"0"	0'-5"0"	5"

SUPERSEDES DRAWING NO. SD-08 DATED 5/1/66

R.C.E. NO. 11460 CITY ENGR.

CITY OF ALHAMBRA DEPARTMENT OF PUBLIC WORKS	DATE: 9/10/65 SCALE: NONE
PIPE SUPPORTS ACROSS TRENCHES	DRWG. NO. SD-09.1 SHEET 1 OF 1 SHEET

L.A.C.F.C.D. NO. 2-D173.1

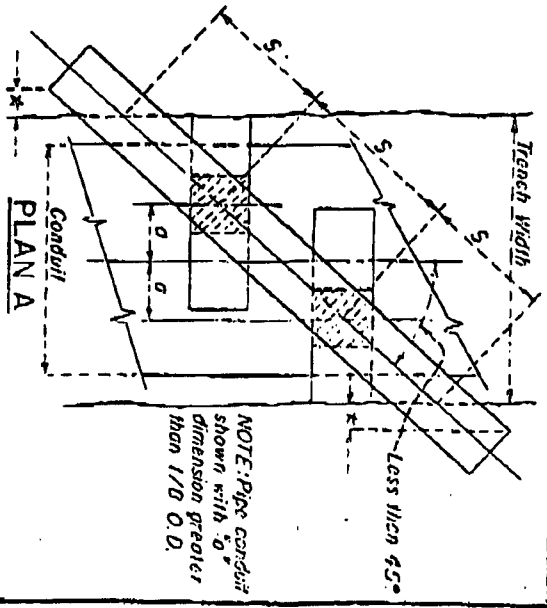


COLUMN SUPPORT WITH REINFORCED CONCRETE BEAM

Column support beam dimensioned and reinforced per table under Case I. Minimum thickness 12".

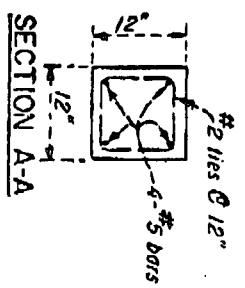
Where dimension "n" measured from ϕ of conduit to ϕ of column exceeds 1/8 O.D., pour wall to side of trench as shown. Use same reinforcement and wall thickness as with centrally placed column.

* See table on Sheet 1 for minimum lengths of bracing.

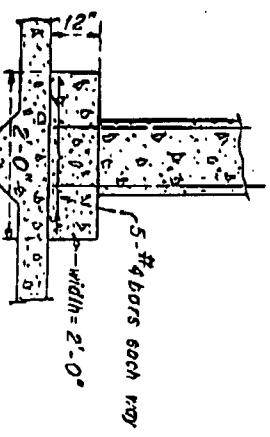


NOTE: Pipe conduit shown with "n" dimension greater than 1/8 O.D.

- NOTES**
1. One or more column supports may be used. Span "S" shall not exceed the values tabulated under Case I.
 2. C = span of column support beam measured normal to conduit.
 3. When the pipe to be supported crosses the trench on a skew angle of less than 45°, each column shall be supported by a beam constructed at right angles to the trench. See PLAN A.
 4. Columns placed directly over interior walls of multiple boxes may be supported per DETAIL B.
 5. Columns falling on one span of a multiple barrel box shall be supported over that span only.
 6. All reinforcing steel shall be 1-1/2" from sides, edges, and bottom of beams and columns.
 7. All concrete shall be 1:2 1/2 : 3 1/2 mix.

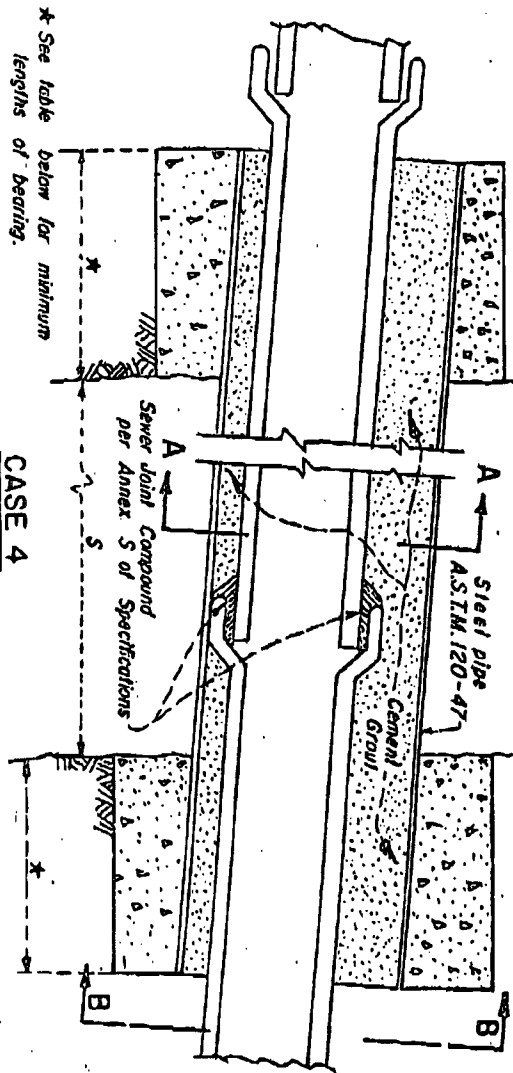


DETAIL B
COLUMN SUPPORT OVER INTERIOR WALL OF MULTIPLE BOX



CITY OF ALHAMBRA		R.C.E. NO. 1460 CITY ENGR.	
DEPARTMENT OF PUBLIC WORKS		DATE: 9/17/69	
PIPE SUPPORTS		SCALE: NONE	
ACROSS TRENCHES		DRWG. NO. SD-09.2	
L.A.C.F.C.D. NO 2-D173 9		SHEET 1 OF 1 SHEET	

SUPERSEDES DRAWING OF THE SAME NUMBER DATED 3/17/64



* See table below for minimum lengths of bearing.

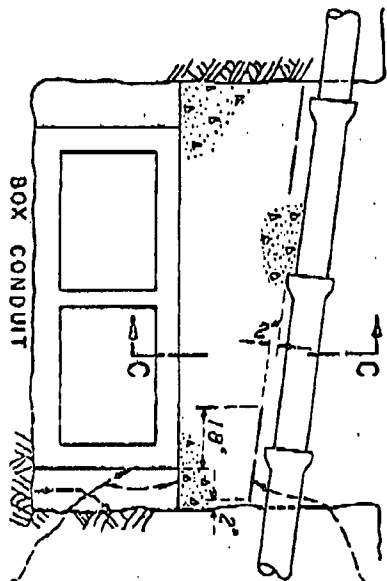
STEEL PIPE ALLOWABLE SPAN(S) IN FEET

DEPTH OF COVER	1/4 SHELL THICKNESS	3/8	1/2	9/8
0'-0"	13	17 1/2	23	27 1/2
0'-16"	9	13 1/2	17	20
16'-23"	7	10 1/2	13	15 1/2

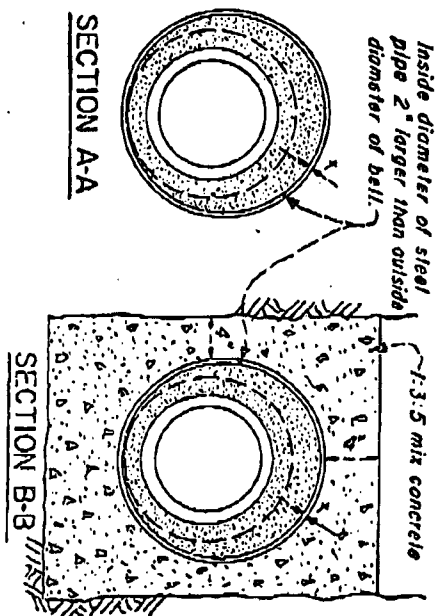
Minimum Length of Bearing of End of Pipe

Depth of Cover	S	Min. Bearing
0'-3.0"	0'-30"	18"
3'-15.0"	0'-22.5"	18"
16'-25.0"	11'-15"	24"
	15'-18"	30"

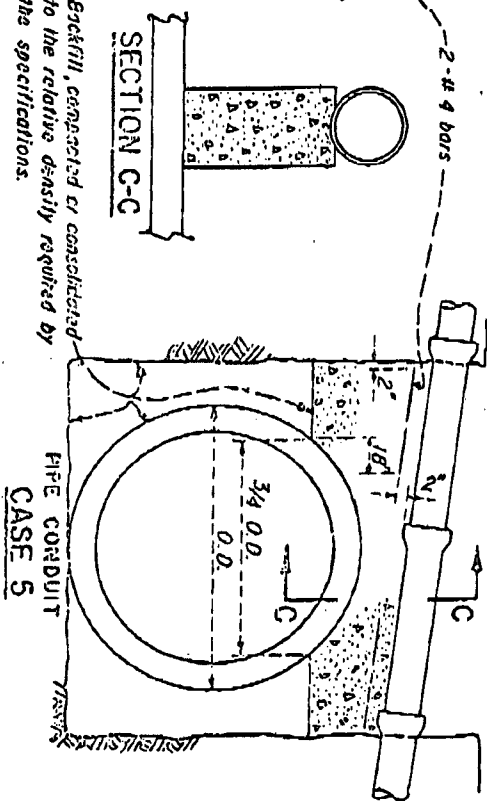
CASE 4



CASE 5



Backfill, compacted or consolidated to the relative density required by the specifications.

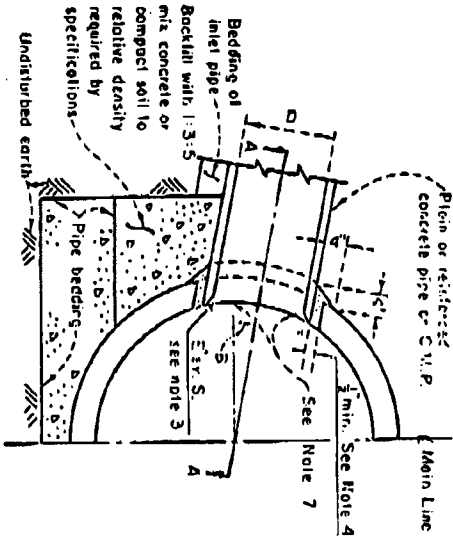


CASE 5 NOTES:

1. The concrete support wall shall be constructed according to the details and notes shown for Case 2, steel except as otherwise shown.

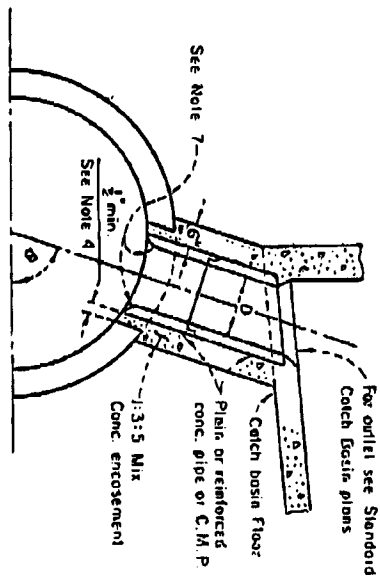
SUPersedes DRAWING OF THE SAME NUMBER DATED 9/11/62

CITY OF ALHAMBRA		R.C.E. NO. 1160 CITY ENGR.	
DEPARTMENT OF PUBLIC WORKS		DATE: 9/17/69	
PIPE SUPPORTS		SCALE: NONE	
ACROSS TRENCHES		DRWG. NO.	
L.A.C.F.C.D. NO 2-N1722		SD-093	
		SHT. 1 OF 1 SHT.	



SECTION B-B
CASE 1

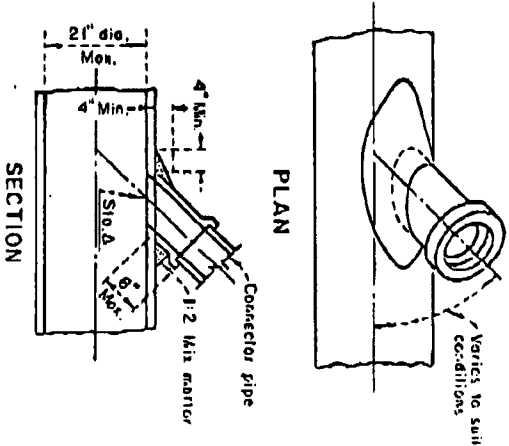
Note: All connector pipes (within the angles specified for Case 2) shall be encased when laid within the main line excavated trench, or when laid on fill which has not been densified.



CASE 2

NOTES: CASE 1 AND CASE 2

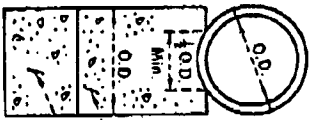
1. Angle A shall be between 45 degrees and 90 degrees and D shall be 24 inches or less. For smaller values of A and larger values of D, use appropriate standard structure.
2. In no case shall the inside diameter of the inlet pipe exceed one-half the inside diameter of the main storm drain.
3. Center line of inlet shall be on radius of main storm drain except where Elevation S is shown on project drawings.
4. The opening into the main storm drain shall be the outside diameter of the inlet pipe plus one inch minimum or 3 inch maximum.
5. All corrugated metal pipe and fittings shall be galvanized.
6. If Angle B is 45 degrees or less, use Case 1. If Angle B is greater than 45 degrees, use Case 2.
7. Burn or chip end of connector pipe flush with inner surface of mainline pipe. Round edge of concrete pipe or reinforced concrete pipe.



SECTION 3 - SADDLE CONNECTION

NOTES: CASE 3

1. Connections to pipes 24 inches 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 its 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 Cases 1 and 2.



SECTION C-C
CASE 1

SECTION A-A

DATE	BY	REVISIONS
8-66	A.S.H.	added

DESIGNED BY K.O.	CHECKED BY V.A.P.	APPROVED BY C.W.H.
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SUPERSEDES DRAWING OF THE SAME NUMBER DATED 8/17/64

Δ B. Station specified on drawings applies at the intersection of inside wall of main storm drain and center line of inlet pipe.

CITY OF ALHAMBRA
DEPARTMENT OF PUBLIC WORKS
JUNCTION STRUCTURE
NO. 4

DATE: 9/6/69
SCALE: NONE
R.C.E. NO. 11460 CITY ENGR.
SD-10.1
SMT. 1 OF 1 SMT.

1 A C F C D N N 2-N103

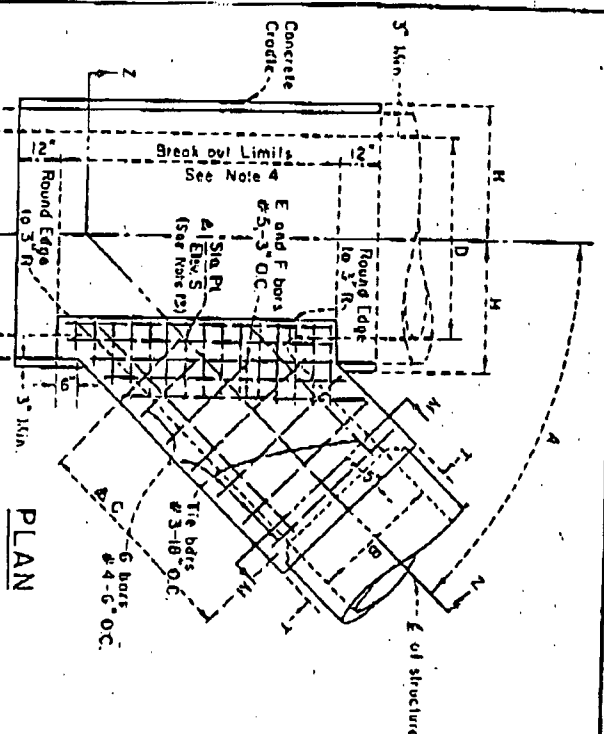
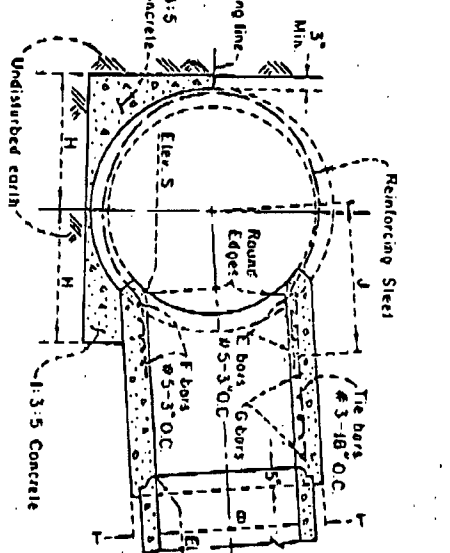
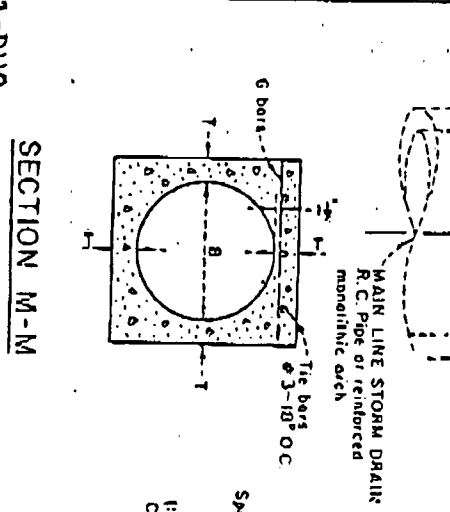


TABLE OF VALUES FOR T

B	T
12"	5"
15"	5"
18"	5"
21"	5"
24"	5 1/2"
27"	5 1/2"
30"	6"
33"	6 1/2"
36"	6 1/2"
39"	7"



- NOTES:
- Junction Structure No. 2 is to be used when O.D. of B is greater than 1/2 the I.D. of D, or D is greater than 24 inches. B shall not exceed 1/2 D, or 39 inches.
 - NOTE: If more than one opening shall be made in one section of pipe. Elevation S one shown when required per Note 12.
 - Elevation S applies at wide wall of structure.
 - Downstream Limit - At the intersection of the outside of the spur wall with the main line pipe wall.
 - Downstream Limit - 6 inches downstream of the intersection of the spur wall with the main line pipe wall.
 - The opening shall be rectangular, cut normal to pipe surface and without doming reinforcing steel. If a joint in the main line pipe falls within the limits of the concrete credit, provide a concrete encasement one foot above the top of the main line pipe to the limits of the credit.
 - The transverse reinforcement in pipe shall be cut at center of opening and bent into top and bottom studs of spur.
 - The main line pipe shall be encased and encased in 1:3:5 mix concrete, extending longitudinally 12 inches beyond the limits of breakout (See Note 4); and transversely a distance of H on each side of the centerline of pipe. H = 1/2 O.D. of pipe + 3 inches minimum.
 - Credit may be omitted on side opposite lateral field when constructed in connection with existing storm drain.
 - Reinforcing steel shall be per E-DFTI, and placed 1/4 inches clear from face of concrete, unless otherwise shown.
 - E and F bars shall be carried to a point not less than J distance from centerline. J = 1/2 D + 6 inches.
 - Concrete strength shall be 3,000 psi at 28 days except as otherwise noted.
 - Floor of structure shall be steel-troweled to spring line.
 - When Junction Structure No. 2 is specified with reinforced monolithic arch storm drain, value D shall refer to the clear span of the arch. Reinforcing steel shall be cut and bent into Junction Structure in the same manner as for pipe. Concrete credit under reinforced monolithic arch is not required.
 - When Elevation "R" and Elevation "S" are not shown on project drawing, inlet pipe shall enter main line radially. When inlet pipe enters main line either than radially, Elevation "S" shall be shown on project drawings, and inlet pipe shall be laid on a straight grade from Elevation "S" to catch basin or grade break in line. Elevation "R" shall be shown on project drawings only when stub is to be provided in main line for future construction of inlet pipe.
 - Stations specified on drawings apply at the intersection of center lines of main line and lateral, except that stations for catch basin connector pipe apply of inside wall of structure.
 - Use Transition Structure No. 3, Standard Drawing E-0104, when A.C. pipe is used for manholes.

2-D112

NO.	DATE	REVISIONS
1	11-27-56	Revised Note 2 and added Note 12
2	03-20-60	Revised C's Layout, Sh. Pr. of Elev's
3	12-8-60	Added Note 14

SUPERSEDES DRAWING OF THE SAME NUMBER DATED 10/14/57

SECTION Z-Z

CITY OF ALHAMBRA

DATE: 9/0/69

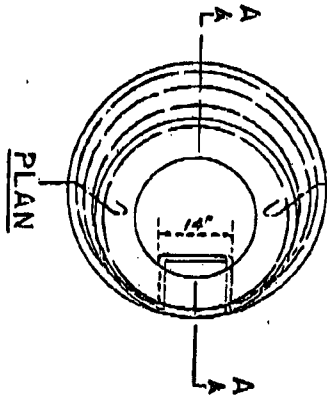
DEPARTMENT OF PUBLIC WORKS

SCALE: NONE

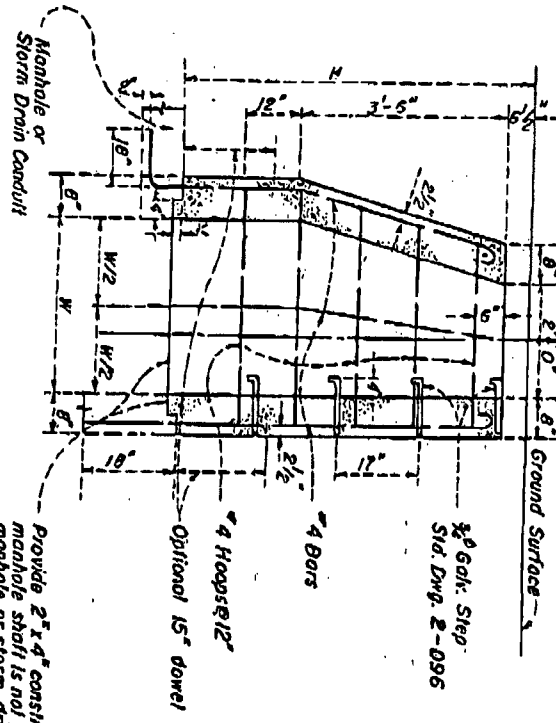
JUNCTION STRUCTURE NO. 2

DRWG. NO. SD-10.2

1 ALHAMBRA



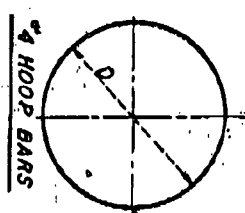
- NOTES:**
1. If "H" is less than 1'-6" W=2'-0" H is between 1'-6" and 2'-6" W=2'-0" H is 2'-6" or more H=3'-0" H is more than 4'-0 1/2" bring walls vertically to 4'-0 1/2" below surface and taper from 3'-0" to 2'-0" as shown.
 2. This structure shall be used for hydrostatic heads up to 25 above the steel pile. 2-D197. It may be used for Standard Pressure Manhole Frame and Cover, Sid. Dwg 2-D197. It may be used for hydrostatic heads up to 25 above the steel pile. Standard Pressure Manhole shaft per this standard and Standard Pressure Manhole Frame and Cover per Sid. Dwg 2-D197 shall be substituted for Concrete Rings, Reducer and Pipe, Sid. Dwg. 2-D107 and Standard Non-Rocking Manhole Frame and Cover Sid. Dwg 2-D181 respectively and for Detail N, (M.H. No. 1) or Detail H (M.H. No. 2 & M.H. No. 4), r=3000 p.s.i. of 28 days.
 3. Where Pressure Manhole No. (2, 3 or 4) is specified on the storm drain plans, Standard Pressure Manhole shaft per this standard and Standard Pressure Manhole Frame and Cover per Sid. Dwg 2-D197 shall be substituted for Concrete Rings, Reducer and Pipe, Sid. Dwg. 2-D107 and Standard Non-Rocking Manhole Frame and Cover Sid. Dwg 2-D181 respectively and for Detail N, (M.H. No. 1) or Detail H (M.H. No. 2 & M.H. No. 4), r=3000 p.s.i. of 28 days.
 4. r=3000 p.s.i. of 28 days.



SECTION A-A

SUPERSEDES DRAWING OF THE SAME NUMBER DATED 8/4/58

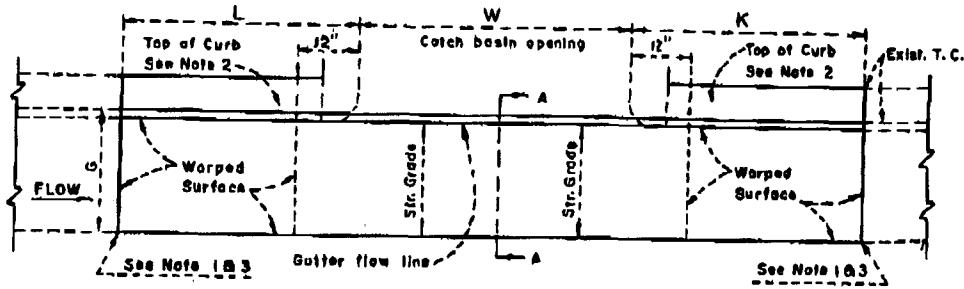
Provide 2" x 4" construction joint when manhole shaft is not poured monolithic with manhole or storm drain conduit.



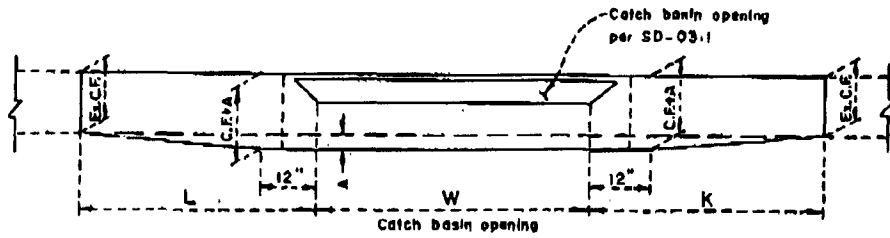
Where H is more than 4'-0" D=3'-1 1/4" for topmost hoop in shaft; each lower hoop in succession increases 3/4" in diameter to a maximum of 4'-0" in the vertical portion of the shaft.

		DATE: 9/16/69
R.C.E. NO. 11460 CITY ENGR.		SCALE: NONE
CITY OF ALHAMBRA		DRWG. NO.
DEPARTMENT OF PUBLIC WORKS		SD-11
STANDARD PRESSURE		SHT. 1 OF 1 SHT.
MANHOLE SHAFT		

L.A.C.F.C.D. NO. 2-D210

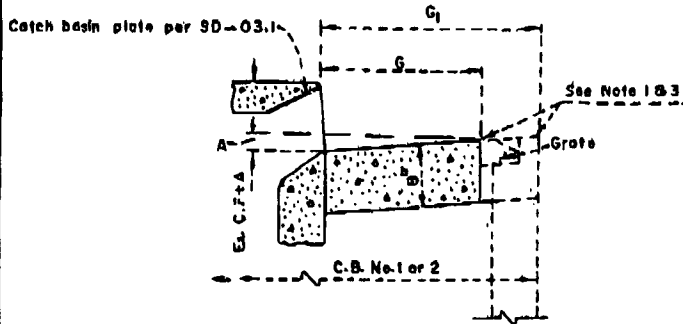


PLAN
for Catch Basins Nos. 1, 2, 3



ELEVATION

Note: Taken along Gutter Flow Line



SECTION A-A

NOTES:

1. Elevations at outer corners and outer edge shall conform to finished street surface unless otherwise shown on project dwg's.
2. Where no curb exists, curbs shall be constructed between ends of Depressed Gutter. The curb section shall conform to SR-01
3. G = Existing gutter
- G₁ = Measured to outer edge for Catch Basins Nos. 1 and 2 (see Section A - A) L = 6 foot, K = 3 foot.
- A = 1 inch when G₁ 1 foot.
- A = 2 inches for lengths of G₁ greater than 1 foot.
4. Concrete compressive strength shall be 3,000 p.s.i. at 28 days.
5. When standard is used to intercept flows from both directions then L = K = G foot.

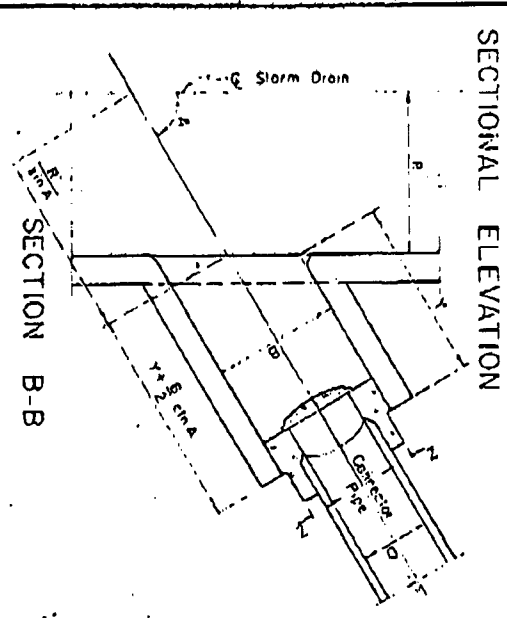
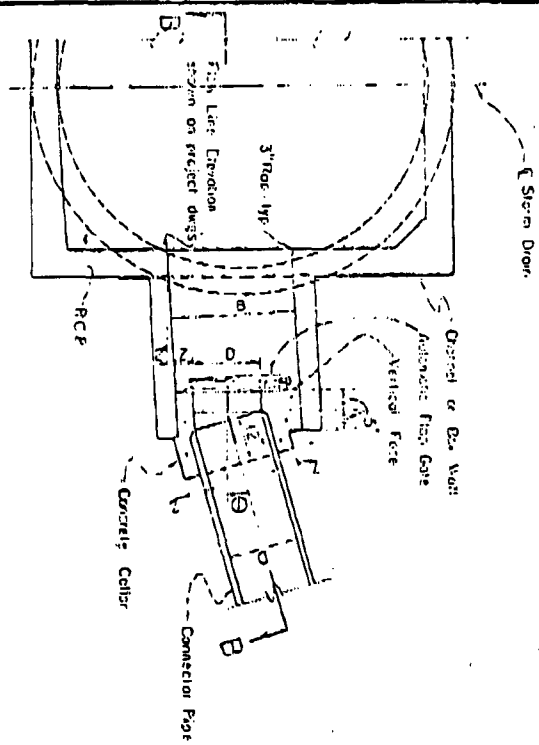
RECOMMENDED
FOR
APPROVAL

TRAFFIC ENGR. (DATE)
[Signature]
CITY ENGR. (R.C.E. No. 11450)

Rev. No.	Date	By/ App.	ITEM
D.R.W. <i>M Hawk</i> (R.C.E. No. 11190)			DATE: 9-28-66
BY DATE REFERENCES:			SCALE: NONE
DESIGN	M.L.K.	9-28-66	F. B. NO.
DRAWN	R.L.E.	9-28-66	DRWG. NO.
CHECKED			SD-12
			SHT. 1 of 1 SHTS.

CITY OF ALHAMBRA
ENGINEERING AND STREET DEPARTMENT

**DEPRESSED GUTTER
FOR CATCH BASINS WITH
MODIFIED FACEPLATE**



D	B	Z	Y
12	24	5.9	4.0
15	27	5.0	4.0
18	33	5.0	4.0
21	39	5.0	4.0
24	42	5.0	4.0
30	51	5.0	4.5
36	60	5.0	5.0
42	72	7.0	5.0
48	81	7.0	5.5
54	87	7.0	7.0
60	96	8.0	8.0
66	106	8.0	8.5
72	114	8.0	9.0
78	125	9.0	9.5
84	138	9.0	10.5
90	144	9.0	11.0

REVISIONS	DATE	DESCRIPTION
1	10-1-65	Revised Notes

SUPERSEDES DRAWING OF THE SAME NUMBER DATED 3/23/64

NOTES:

1. Keep the automatic flapgate on a concrete collar ground in the face of a junction structure. If no junction structure is specified, use J.S. No. 2, Std. Eng. No. 2-0112, when entering pipe and J.S. No. 1, Std. Eng. No. 2-0109, when entering R.C. box. Refer to the contract drawings for a junction structure when entering inspection or rectangular R.C. structure.
2. Mounting bolts shall be of Nickel-Copper Alloy (Nicro) Metal and embedded 5" into the collar.
3. ~~The flapgate shall be a heavy-duty, cast-iron, 20-foot of approved equal automatic flapgate designed for 20 feet of sealing head water pressure shown on the contract drawings.~~
4. The "Y" dimension is measured at the top of the junction structure spur for tapered R.C. Channel.
5. The concrete collar shall be rendered per Std. Eng. No. 2-2393 when on a concrete top.
6. Flapgate may be either spigot back or flat deck unless specified on the contract drawings.
7. The automatic flapgate shall conform to District Standard Specifications and shall be designed for 20 feet of sealing head unless otherwise specified.

CITY OF ALHAMBRA
 DEPARTMENT OF PUBLIC WORKS

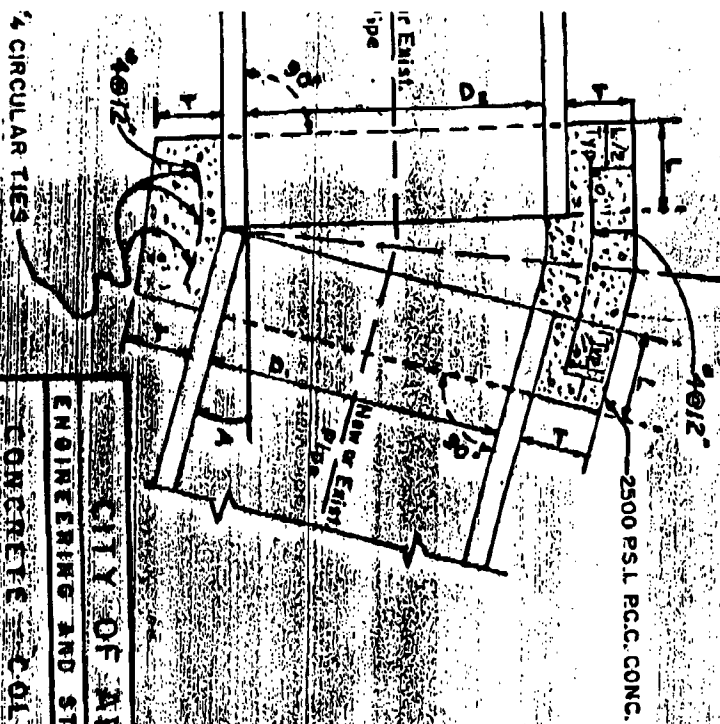
AUTOMATIC FLAP GATE
 INLETS TO STORM DRAINS

SCALE: NONE
 DRWG. NO. SD-14
 SHEET 1 OF 1 SHEET

[Signature]
 R.C.E. NO. 11460 CITY ENGR.

L.A.C.F.C.D. NO. 2-D192

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"



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 = D₁ or D₂, whichever is greater.
3. For pipe larger than 56" 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 link shall be D₁/2x wall thickness + 8".
7. Where D₁ is equal to or less than D₂, join inverts and when D₁ is greater than D₂, join soffits.
8. Pipe may be corrugated metal pipe, concrete pipe or reinforced concrete pipe, Δ or asbestos cement pipe.

CITY OF ALHAMBRA
 ENGINEERING AND STREET DEPARTMENT
 CONCRETE COLLAR FOR
 CONNECTOR PIPE

DESIGNED BY	DATE	SCALE	DRWG. NO.
CHECKED BY	DATE	SCALE	NO.

L.A.C.F.C.D. NO. 20-393

SPECIFIC PROVISIONS FOR CONNECTING DRAINS TO CHANNEL WALL

1. The drain shall have an alignment so that the edge of the proposed wall opening will be at least 5 feet away from the nearest vertical wall joint.
2. Excavation side slopes shall be cut to a slope which will preclude sloughing.
3. Removal of Channel Wall
 - a. Pipe to be connected to channel wall.
Cut a one-inch deep groove in the concrete at the removal limits with a chipping hammer. Remove the remaining concrete in a careful manner leaving a clean plane surface for bonding new concrete. A ball and crane shall not be used for breaking up concrete within the channel right of way.
 - b. Outlet structure to be connected to channel wall.
Make a sawcut one-inch deep on the exposed faces of the channel at the removal limits; cut a groove in the concrete adjacent to the sawcut on the side to be removed to the depth of the sawcut with a chipping hammer. Remove the remaining concrete in a careful manner leaving a clean plane surface for bonding new concrete. A ball and crane shall not be used for breaking up concrete within the channel right of way.
4. Backfill shall be similar to the existing material but shall not contain organic material, broken concrete or pavement, boulders or other material unsuitable for compaction. Backfill shall be compacted to not less than 90 per cent of maximum density in accordance with the American Association of State Highway Officials (AASHTO) Designation T 180-57, "Moisture-Density Relations of Soils Using 10-lb. Rammer and an 18-inch Drop." Compaction of backfill by ponding or consolidating by flooding, poling, sluicing, or jetting will not be permitted.
5. No equipment in excess of H-10 highway loading (as specified in the Standard Specifications, for Highway Bridges, of the American Association of State Highway Officials) and no stockpiling of material will be permitted along the channel within a distance equal to the wall height from the channel wall.
6. Contractor shall paint channel station number on the channel wall with black paint, in large enough letters as to be legible from the opposite bank.
7. Three-thousand (3,000) psi concrete shall be used in structures within channel right of way.
8. After completion of construction, the area within the channel right of way shall be cleared of debris and restored to a condition equal to that existing prior to construction.
9. All work within the channel right of way, involving removal and restoration of the channel structure, excavation and backfill, shall be accomplished during the period April 15 to October 15.

RECOMMENDED
FOR
APPROVAL

	TRAFFIC ENGR. (DATE) 4/15/70	2			
CITY ENGR. CIVIL ENGR. NO. 11260 (DATE)	4/28/70	1	Rev. No.	Date	By/App.
CITY OF ALHAMBRA DEPARTMENT OF PUBLIC WORKS					
DR. OF PUBLIC WORKS CIVIL ENGR. No. 1190					DATE: 4/28/70
DESIGN BY DATE REFERENCES:					SCALE:
DRAWN 32 4/28/70					DRWG. No.
CHECKED					SD-17.1

SPECIFIC PROVISIONS FOR CONNECTING
DRAINS TO CHANNEL WALL