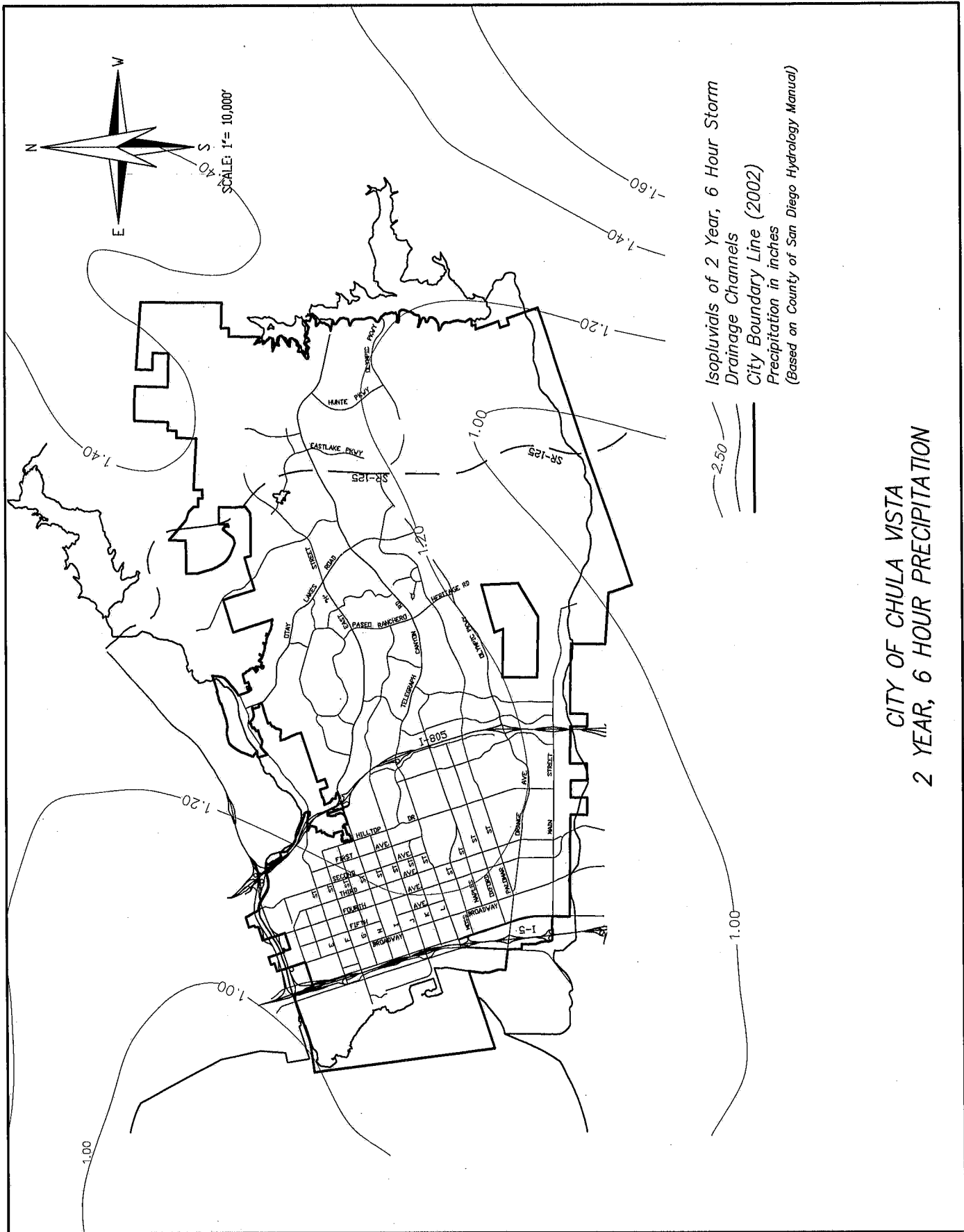


DRAINAGE

(DRN)



**DESIGN AND
CONSTRUCTION
STANDARD DRAWINGS
2017**



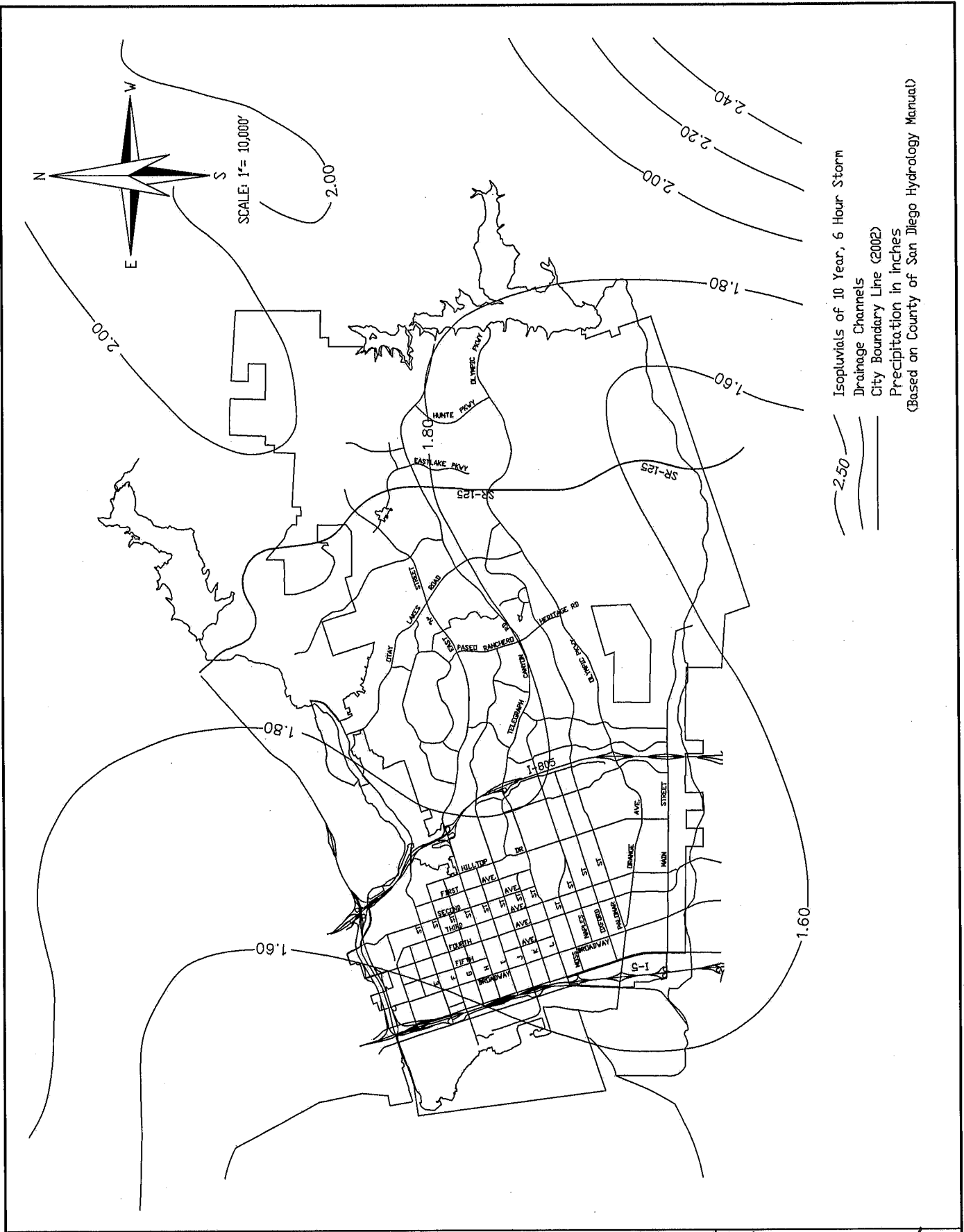
Isopleths of 2 Year, 6 Hour Storm
 Drainage Channels
 City Boundary Line (2002)
 Precipitation in inches
 (Based on County of San Diego Hydrology Manual)

CITY OF CHULA VISTA
 2 YEAR, 6 HOUR PRECIPITATION

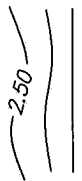
REVISION	BY	APPROVED	DATE
ORIGINAL	CVM		01/02
REVISION	CVM	C. SWANSON	11/02
REVISION	DPH	W. VALLE	11/17

CITY OF CHULA VISTA
 ENGINEERING & CAPITAL PROJECTS
 STANDARD DRAWING
 2-YEAR, 6-HOUR PRECIPITATION

William S. Valle
 WILLIAM S. VALLE 11/21/2017
 CITY ENGINEER
 DRN-01



Isopleths of 10 Year, 6 Hour Storm
 Drainage Channels
 City Boundary Line (2002)
 Precipitation in inches
 (Based on County of San Diego Hydrology Manual)



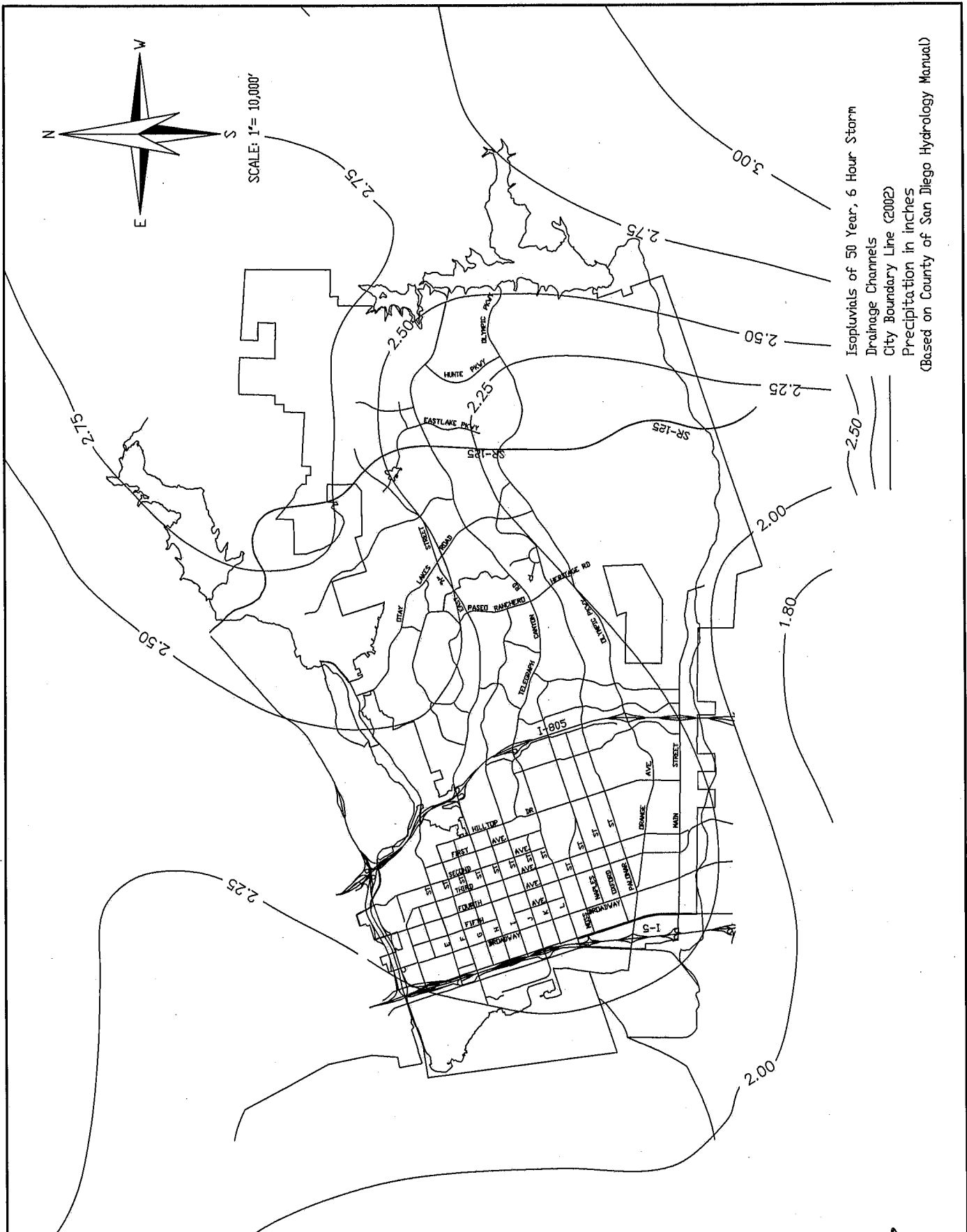
REVISION	BY	APPROVED	DATE
ORIGINAL	CVM		01/02
REVISION	CVM	C. SWANSON	11/02
REVISION	DPH	W. VALLE	11/17

CITY OF CHULA VISTA
 ENGINEERING & CAPITAL PROJECTS
 STANDARD DRAWING

10-YEAR, 6-HOUR PRECIPITATION

William S. Valle
 WILLIAM S. VALLE 11/21/2017
 CITY ENGINEER

DRN-02

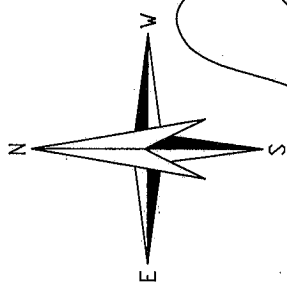


Isopluvials of 50 Year, 6 Hour Storm
 Drainage Channels
 City Boundary Line (2002)
 Precipitation in inches
 (Based on County of San Diego Hydrology Manual)

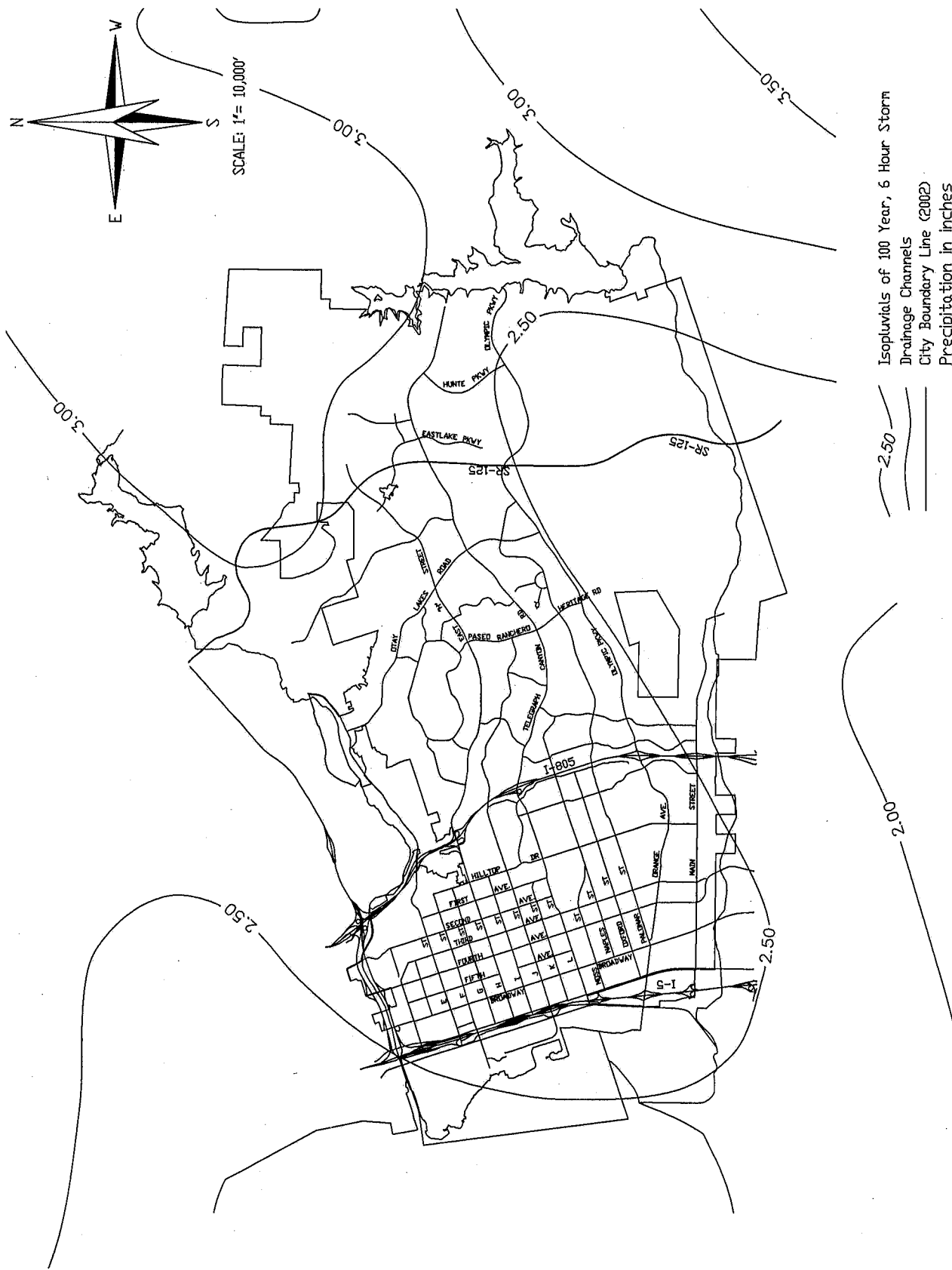
REVISION	BY	APPROVED	DATE
ORIGINAL			01/02
REVISION	CVM	C. SWANSON	11/02
REVISION	DPH	W. VALLE	11/17

CITY OF CHULA VISTA
 ENGINEERING & CAPITAL PROJECTS
 STANDARD DRAWING
 50-YEAR, 6-HOUR PRECIPITATION

William S. Valle
 WILLIAM S. VALLE 11/21/2017
 CITY ENGINEER
 DRN-03



SCALE: 1" = 10,000'



Isopleths of 100 Year, 6 Hour Storm
 Drainage Channels
 City Boundary Line (2002)
 Precipitation in inches
 (Based on County of San Diego Hydrology Manual)

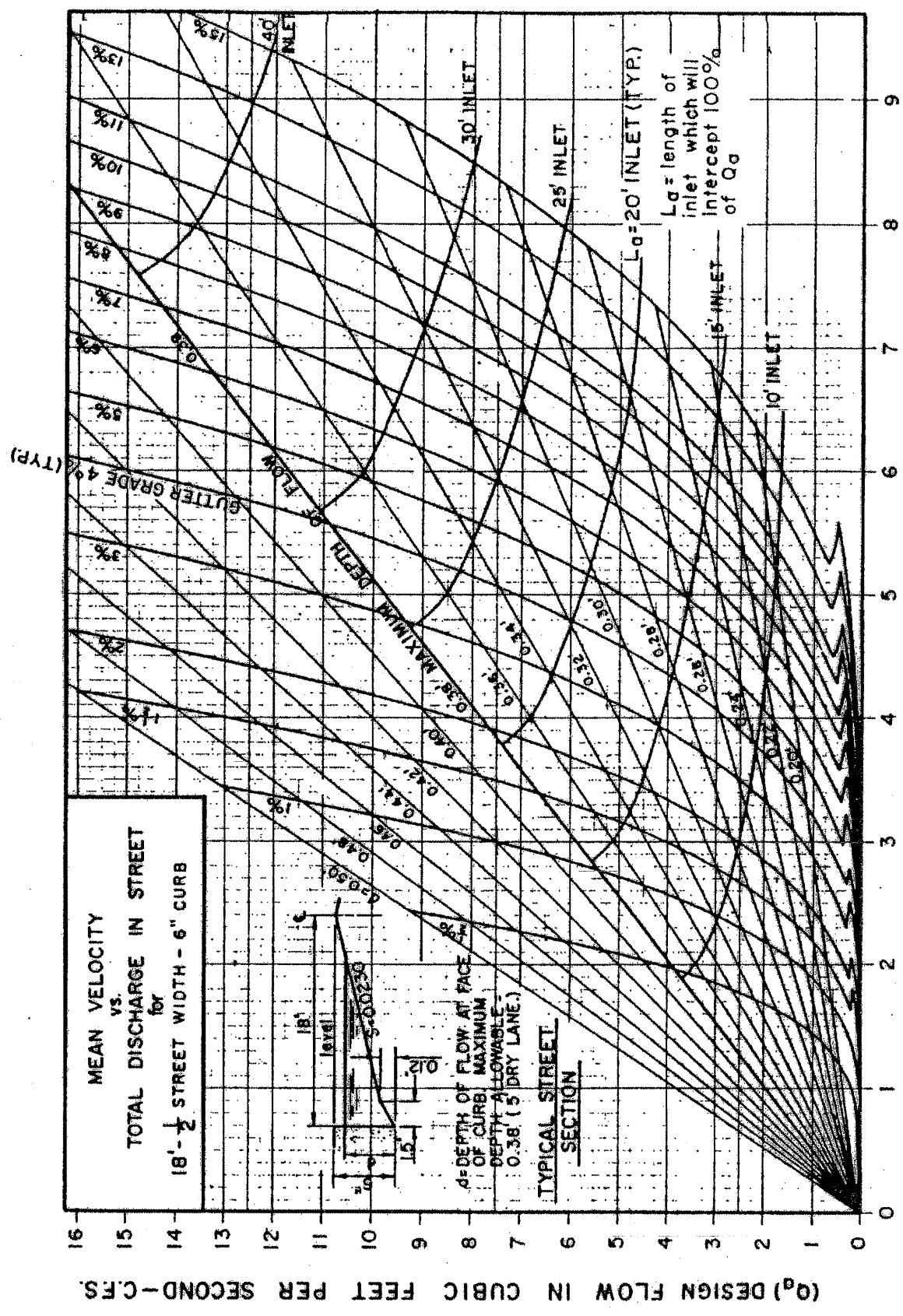
REVISION	BY	APPROVED	DATE
ORIGINAL			01/02
REVISION	CVM	C. SWANSON	11/02
REVISION	DPH	W. VALLE	11/17

CITY OF CHULA VISTA
 ENGINEERING & CAPITAL PROJECTS
 STANDARD DRAWING

100-YEAR, 6-HOUR PRECIPITATION

William S. Valle
 WILLIAM S. VALLE 11/21/2017
 CITY ENGINEER

DRN-04



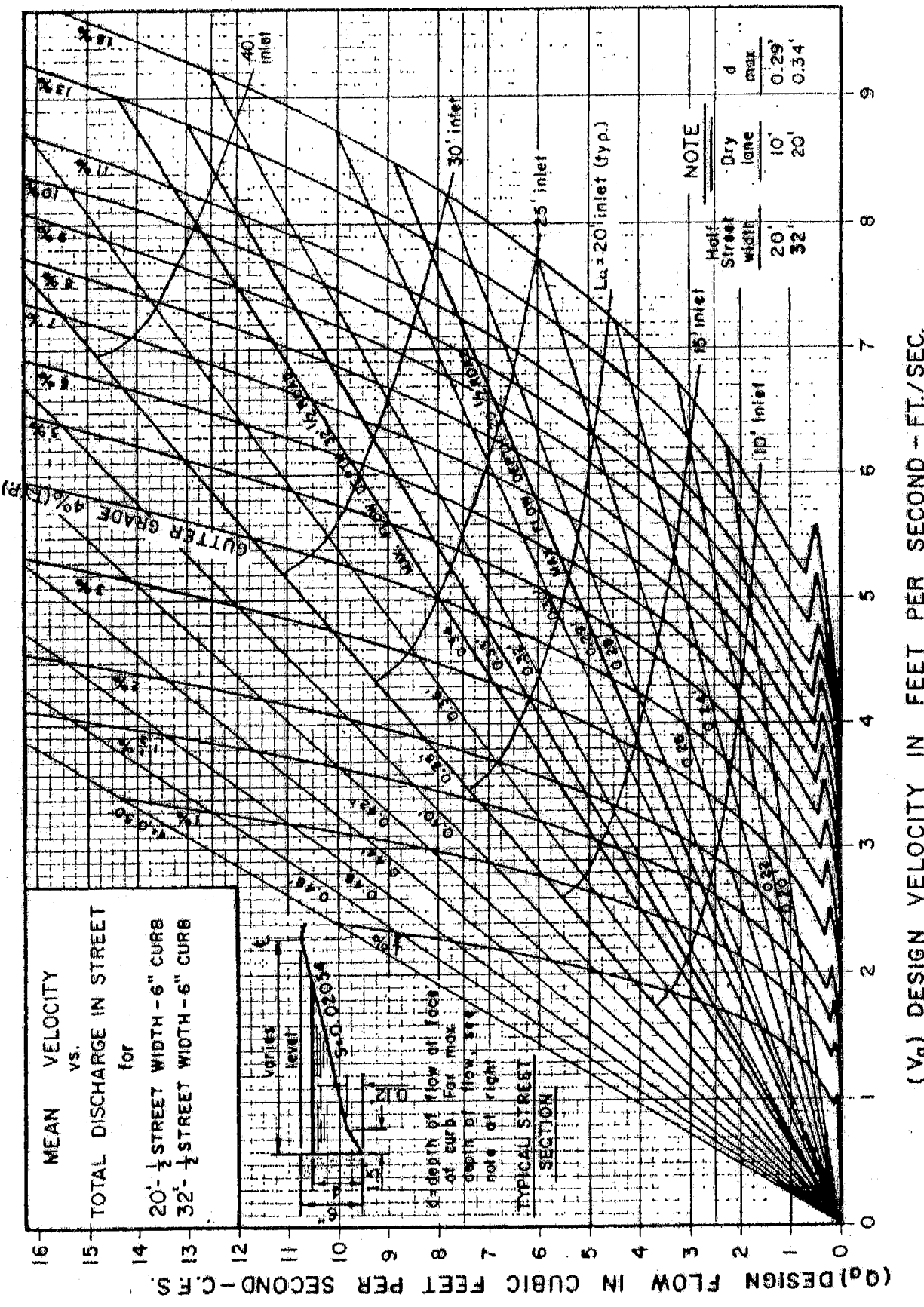
REVISION	BY	APPROVED	DATE
ORIGINAL	JWH		10/72
		C. SWANSON	11/02
REVISION	DPH	W. VALLE	11/17
REVISION	RAR	W. VALLE	04/19

CITY OF CHULA VISTA
 ENGINEERING & CAPITAL PROJECTS
 STANDARD DRAWING

STREET DRAINAGE 36'-WIDE
 STREETS

William S. Valle
 WILLIAM S. VALLE 04/09/2019
 CITY ENGINEER

DRN-05



REVISION	BY	APPROVED	DATE
ORIGINAL	JWH	C. SWANSON	10/72
		W. VALLE	11/02
REVISION	DPH	W. VALLE	11/17

CITY OF CHULA VISTA
 ENGINEERING & CAPITAL PROJECTS
 STANDARD DRAWING

STREET DRAINAGE - 40' & 64'
 WIDE STREETS

William S. Valle
 WILLIAM S. VALLE 11/21/2017
 CITY ENGINEER

DRN-06

TO DETERMINE LENGTH OF INLET TO INTERCEPT 100% OF GUTTER FLOW

ITEM	UNITS	DESCRIPTION	HOW DETERMINED
Q_d	c.f.s.	AMOUNT OF FLOW IN GUTTER ON ONE SIDE OF STREET.	HYDROLOGY STUDY OF AREA.
d	ft.	DEPTH OF FLOW AT FACE OF CURB.(NOT CONSIDERING INLET DEPRESSION)	SEE CVD-DR06 OR CVD-DR07 (INTERSECTION OF Q_d LINE AND GUTTER GRADE LINE WILL FALL BETWEEN d LINES. INTERPOLATE FOR VALUES.)
L_d	ft.	LENGTH OF INLET WHICH WILL INTERCEPT 100% OF Q_d AT GIVEN GUTTER GRADE.	CVD-DR06 AND CVD-DR07 (INTERSECTION OF Q_d LINE AND GUTTER GRADE LINE WILL FALL BETWEEN d LINES. INTERPOLATE FOR VALUES.)

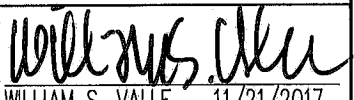
TO DETERMINE LENGTH OF INLET TO INTERCEPT A PORTION OF GUTTER FLOW

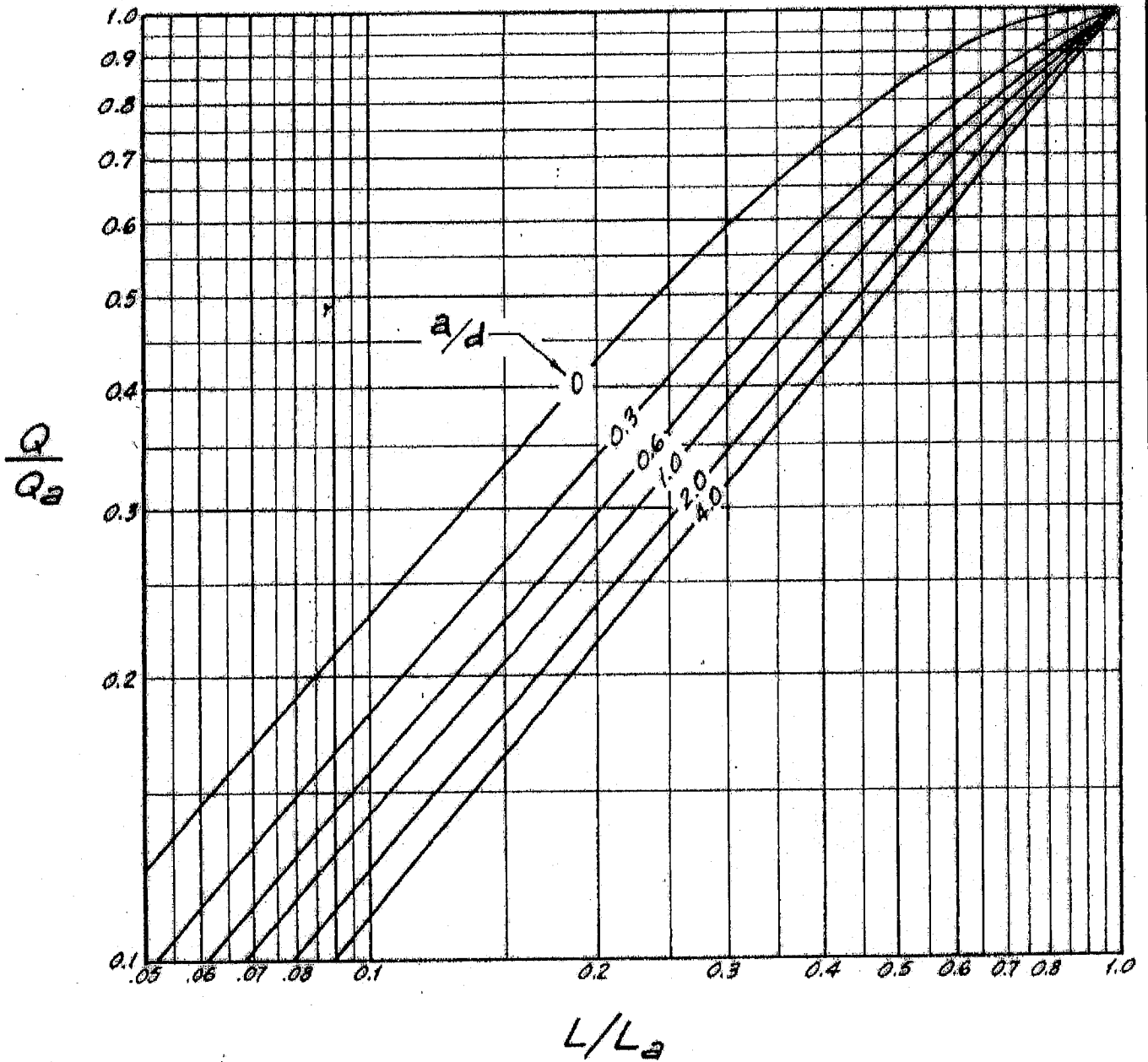
(THIS METHOD TRIES DIFFERENT LENGTHS OF INLETS TO DETERMINE HOW MUCH FLOW WILL BE INTERCEPTED BY EACH LENGTH INLET AND HOW MUCH FLOW WILL CONTINUE PAST INLET. FIRST DETERMINE Q_d , d AND L_d AS ABOVE.)

ITEM	UNITS	DESCRIPTION	HOW DETERMINED
L	ft.	LENGTH OF PROPOSED INLET	SELECT TRIAL LENGTH
L/L_d		RATIO OF L TO L_d	DIVIDE L BY L_d
a	ft.	AMOUNT FLOW LINE OF GUTTER IS DEPRESSED AT INLET.	STD. DWG. OF INLET BEING CONSIDERED FOR USE.
a/d		RATIO OF a TO d	DIVIDE a BY d
Q	c.f.s.	FLOW INTERCEPTED BY INLET OF LENGTH L .	CVD-DR05 (INTERSECTION OF L/L_d LINE AND a/d LINE WILL FALL BETWEEN Q/Q_d LINE. INTERPOLATE FOR VALUES $Q = Q_d \times Q/Q_d$)
$Q_d - Q$	c.f.s.	FLOW CONTINUING PAST INLET.	SUBTRACT Q FROM Q_d

NOTE:

DRN-07 OR DRN-08 MAY ALSO BE USED BEGINNING WITH A SELECTED Q TO DETERMINE L .

REVISION	BY	APPROVED	DATE	CITY OF CHULA VISTA ENGINEERING & CAPITAL PROJECTS STANDARD DRAWING	 WILLIAM S. VALLE CITY ENGINEER
ORIGINAL			08/78		
REVISION	CM	C. SWANSON	11/02		
REVISION	DPH	W. VALLE	11/17	INLET DESIGN - LENGTH OF INLET	11/21/2017
					DRN-07



NOTE: SEE VIII FOR IDENTIFICATION OF SYMBOLS

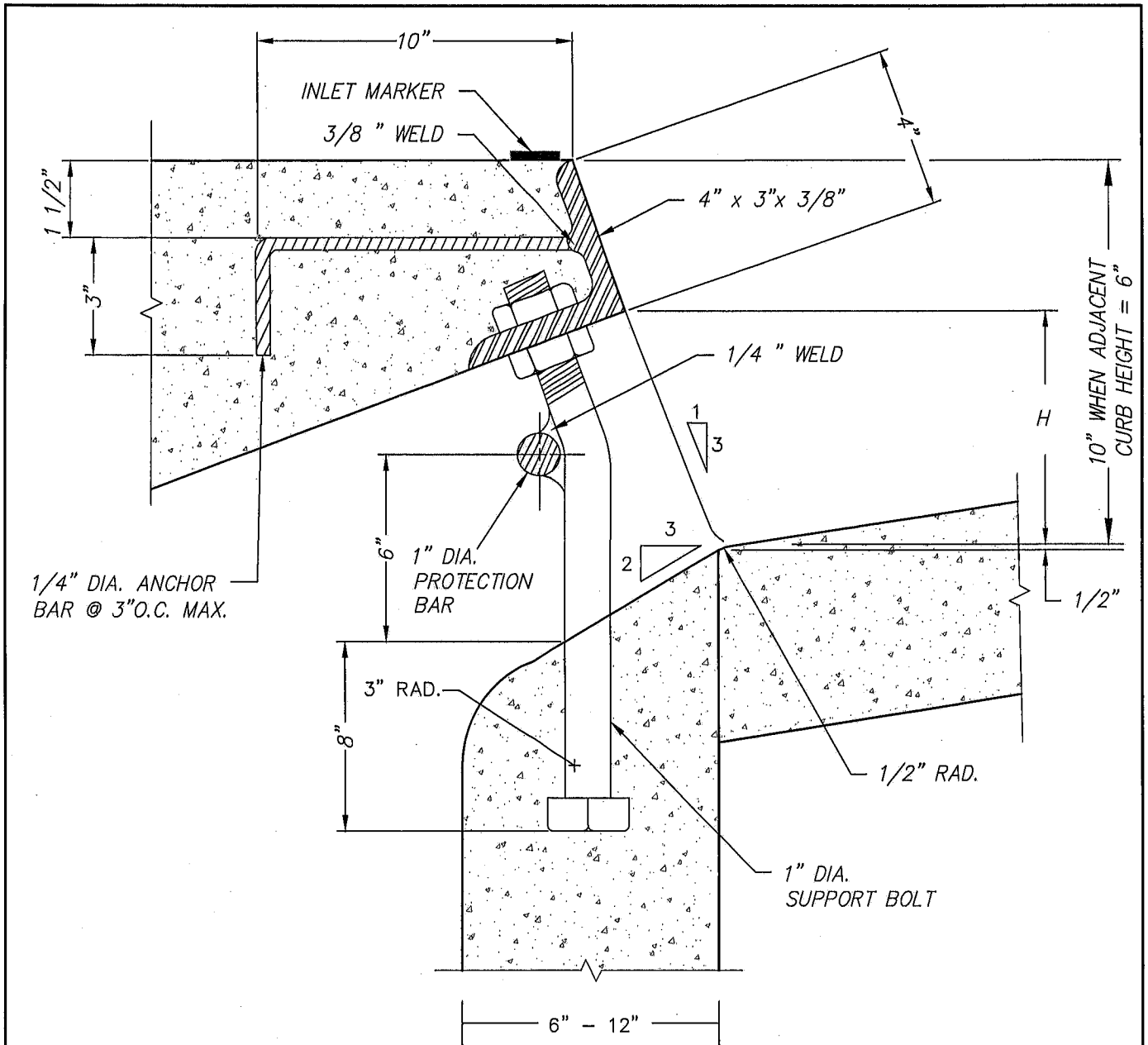
REVISION	BY	APPROVED	DATE
ORIGINAL	JWH		11/72
		C. SWANSON	11/02
REVISION	DPH	W. VALLE	11/17

CITY OF CHULA VISTA
 ENGINEERING & CAPITAL PROJECTS
 STANDARD DRAWING

INLET DESIGN - PARTIAL
 INTERCEPTION OF GUTTER FLOW

William S. Valle
 WILLIAM S. VALLE 11/21/2017
 CITY ENGINEER

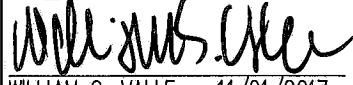
DRN-08

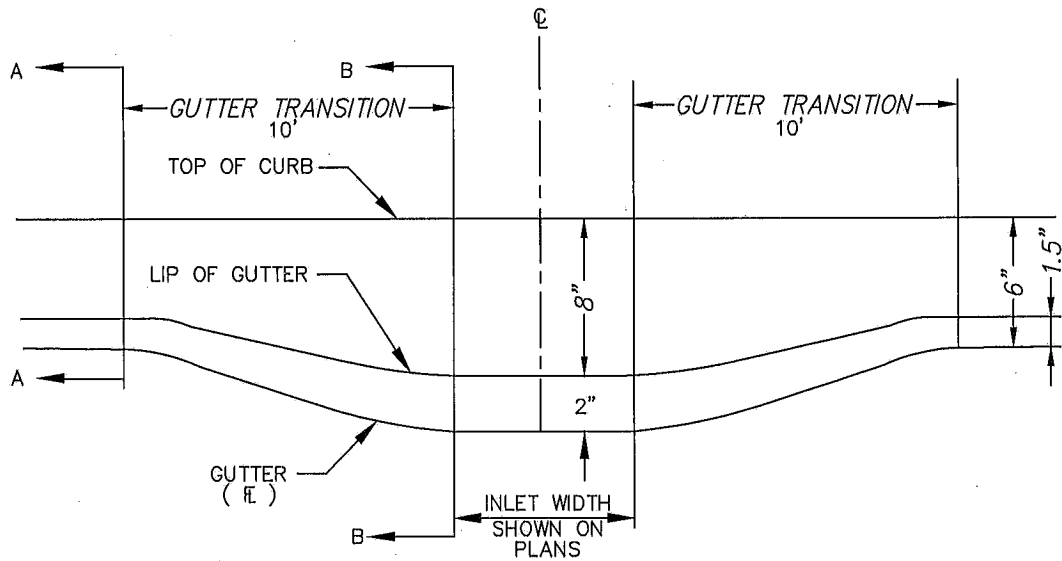
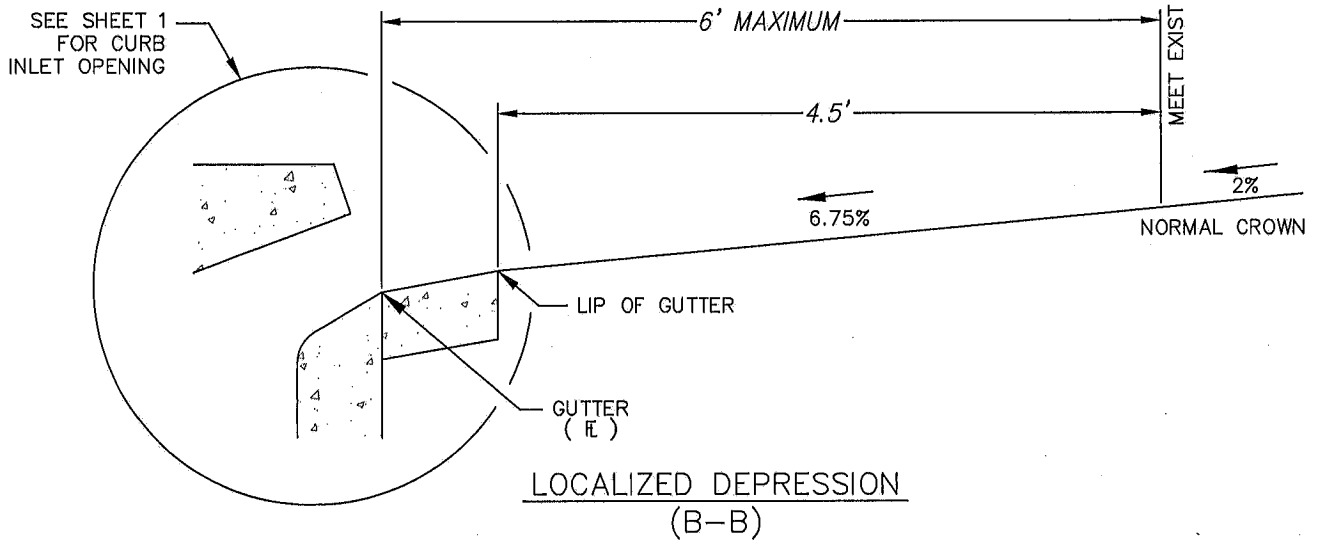
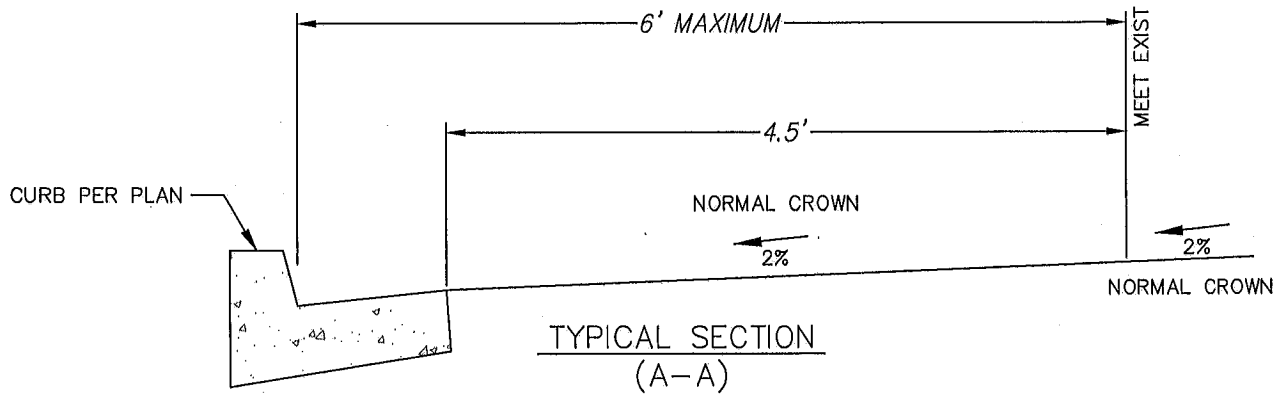


NOTES:

1. FACE ANGLE SHALL BE CAST INTO STRUCTURE CONTINUOUS FOR THE FULL LENGTH "L".
2. EXPOSED METAL PARTS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION.
3. WHEN CURB INLET OPENING HEIGHT (H) EXCEEDS 8", INSTALL 1" DIA. STEEL PROTECTION BAR. STEEL PROTECTION BAR SHALL BE EMBEDDED 8" INTO CURB INLET.
4. INSTALL ADDITIONAL BARS AT 3 1/2" CLEAR SPACING ABOVE FIRST BAR WHEN OPENING EXCEEDS 16".
5. WHEN CURB INLET OPENING LENGTH EXCEEDS 8', INSTALL 1" DIA. STEEL SUPPORT BOLTS, SPACED AT NOT MORE THAN 5' OC.

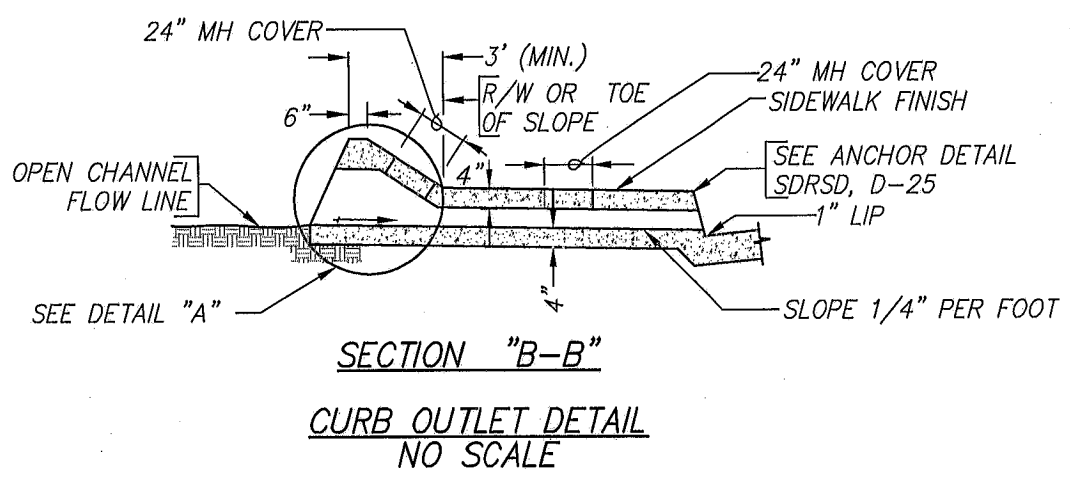
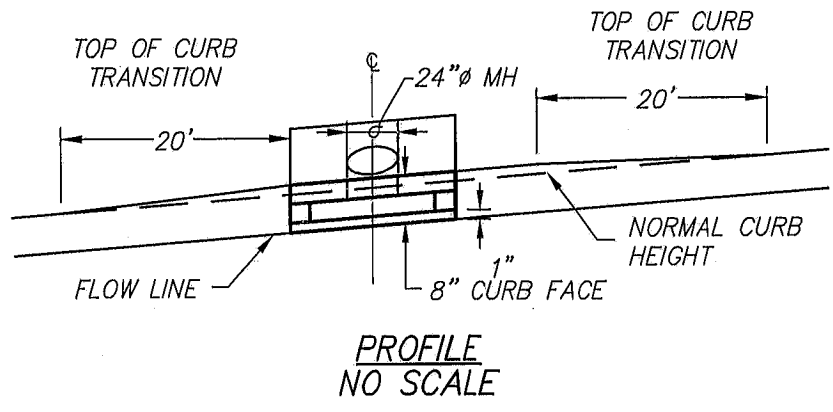
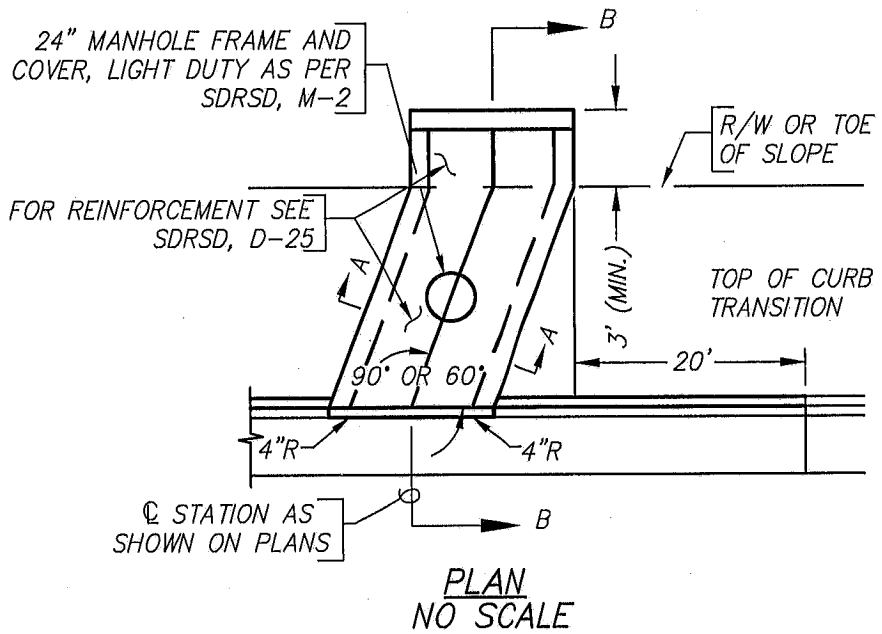
SHEET 1 OF 2

REVISION	BY	APPROVED	DATE	CITY OF CHULA VISTA ENGINEERING & CAPITAL PROJECTS STANDARD DRAWING	 WILLIAM S. VALLE CITY ENGINEER
ORIGINAL	DPH	W. VALLE	11/17		
				CURB INLET OPENING	DRN-09



SHEET 2 OF 2

REVISION	BY	APPROVED	DATE	CITY OF CHULA VISTA ENGINEERING & CAPITAL PROJECTS STANDARD DRAWING	 WILLIAM S. VALLE CITY ENGINEER
ORIGINAL	DPH	W. VALLE	11/17		
				CURB INLET CURB HEIGHT AND PAVEMENT TRANSITION	DRN-09



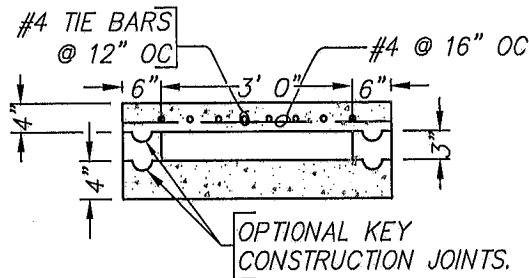
REVISION	BY	APPROVED	DATE
ORIGINAL			12/90
REVISION	CVM	C. SWANSON	11/02
REVISION	DPH	W. VALLE	11/17

CITY OF CHULA VISTA
ENGINEERING & CAPITAL PROJECTS
STANDARD DRAWING

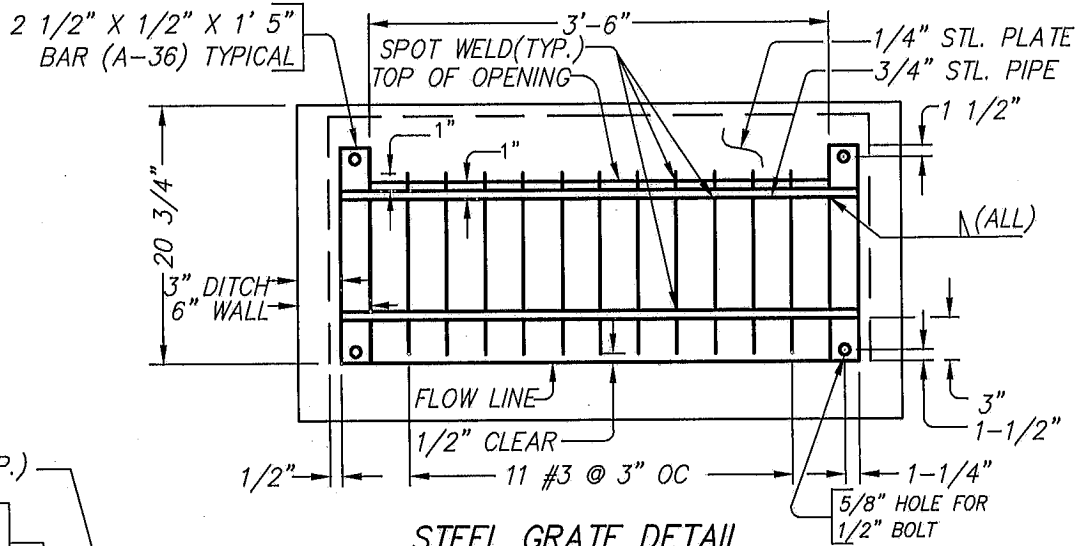
SIDEWALK UNDERDRAIN CURB
OUTLET DETAIL

William S. Valle
WILLIAM S. VALLE 11/21/2017
CITY ENGINEER

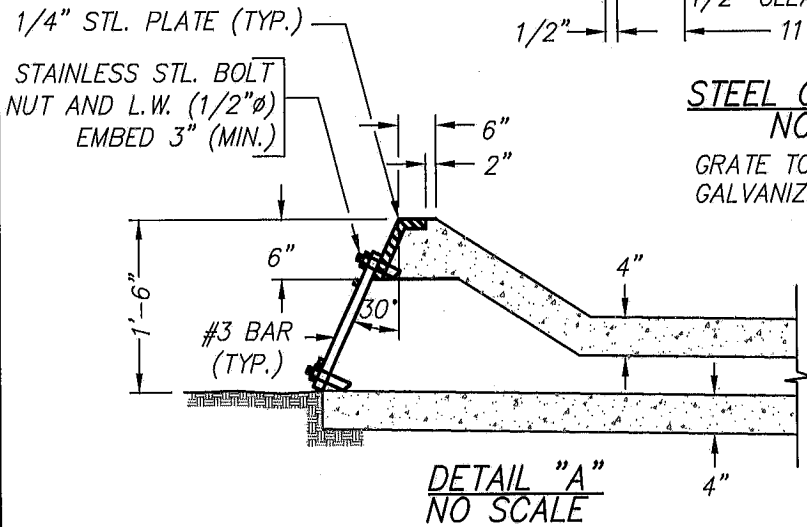
DRN-10



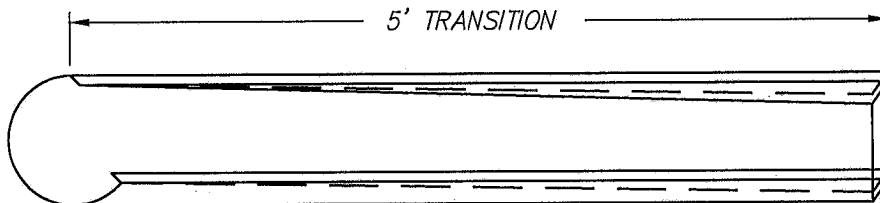
SECTION "A-A"
NO SCALE




STEEL GRATE DETAIL
NO SCALE
GRATE TO BE HOT DIPPED GALVANIZED AFTER FABRICATION

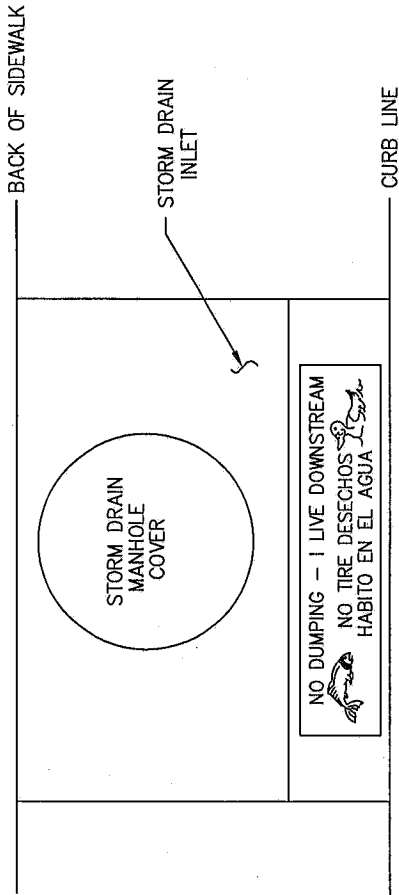


DETAIL "A"
NO SCALE



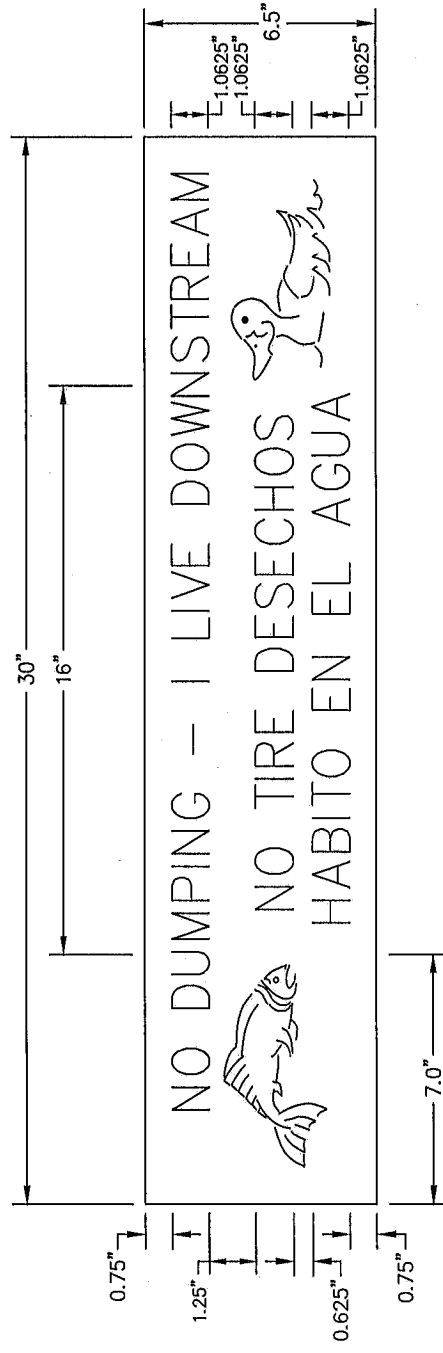
BROW DITCH TRANSITION DETAIL
NO SCALE

REVISION	BY	APPROVED	DATE	CITY OF CHULA VISTA ENGINEERING & CAPITAL PROJECTS STANDARD DRAWING SIDEWALK UNDERDRAIN BROW DITCH TRANSITION DETAIL	 WILLIAM S. VALLE CITY ENGINEER
ORIGINAL			12/90		
REVISION	CVM	C. SWANSON	11/02		
REVISION	DPH	W. VALLE	11/17		
DRN-10					



PLAN VIEW

STENCIL LOCATION
NO SCALE



DETAIL: STENCIL

NO SCALE

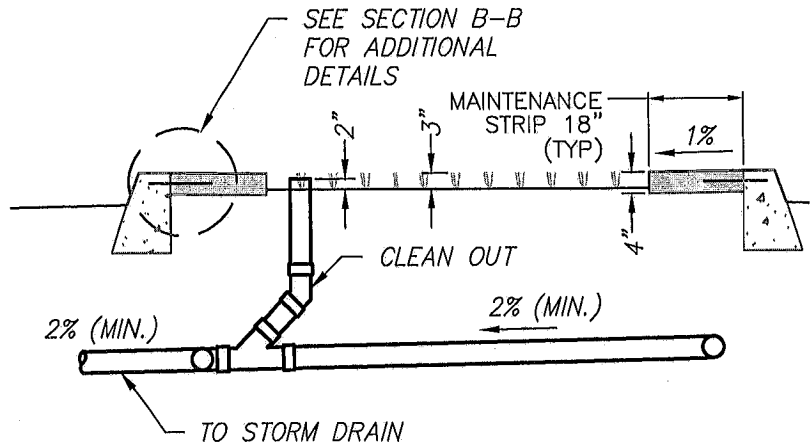
NOTES:

1. DEPTH OF IMPRINT SHALL BE 0.25 INCH, MINIMUM.
2. STAMP SHALL BE RIGID AND FABRICATED FROM METAL, HARD RUBBER, OR APPROVED EQUAL.

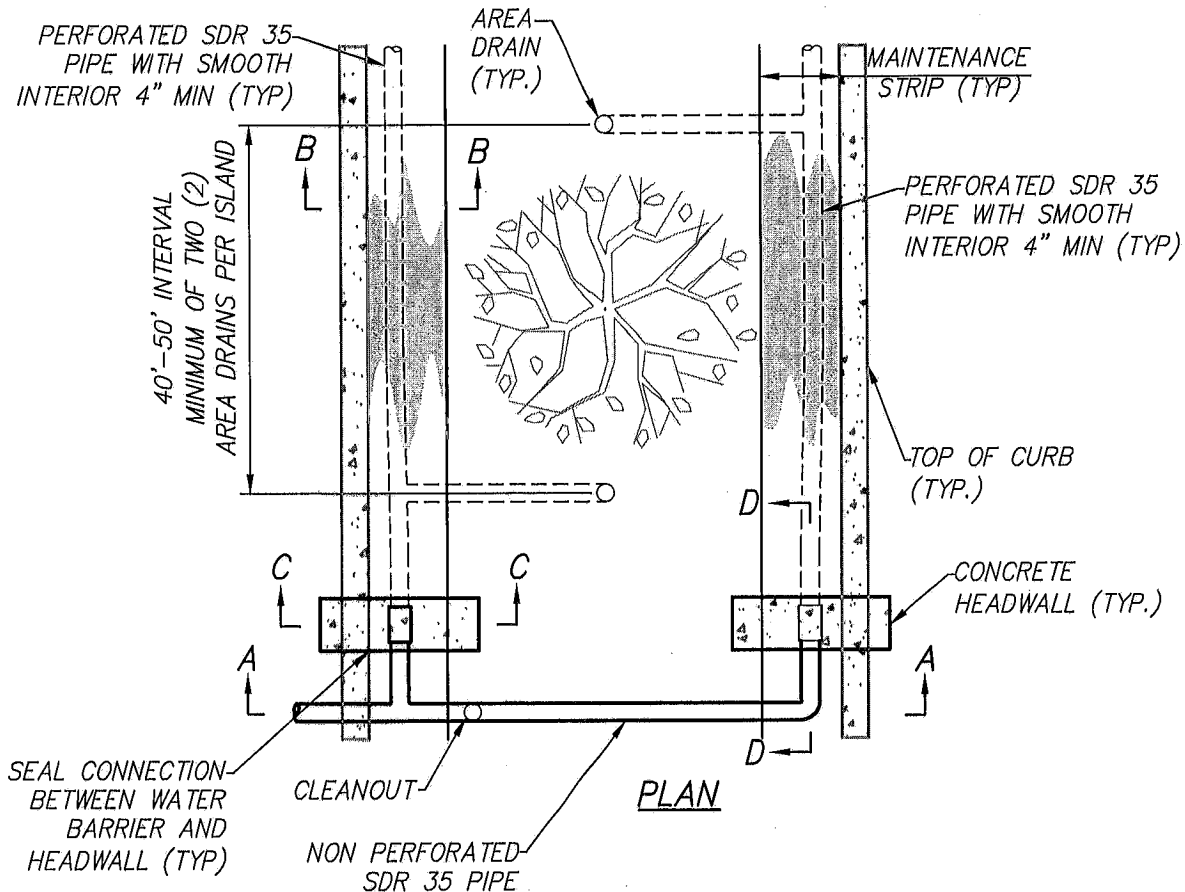
REVISION	BY	APPROVED	DATE	CITY OF CHULA VISTA ENGINEERING & CAPITAL PROJECTS STANDARD DRAWING	<i>William S. Valle</i> WILLIAM S. VALLE CITY ENGINEER
ORIGINAL	CVM	C. SWANSON	11/02		
REVISION	DPH	W. VALLE	11/17		
STORM DRAIN STENCIL				DRN-11	

NOTES:

- 1: CITY ENGINEER MAY APPROVE ALTERNATE DESIGNS AND PRODUCTS
- 2: PIPE PRODUCTS, FABRICS, ETC. SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND/OR THE STANDARD SPECIFICATIONS.
- 3: PLACE HEADWALL APPROX. 10 FEET FROM STORM DRAIN TIE IN.
- 4: COORDINATE AREA DRAIN LOCATIONS WITH PROPOSED TREE LOCATIONS.
- 5: SOLID PIPE FITTINGS USE SAN SEWER ANGLE & WYE CONNECTIONS.



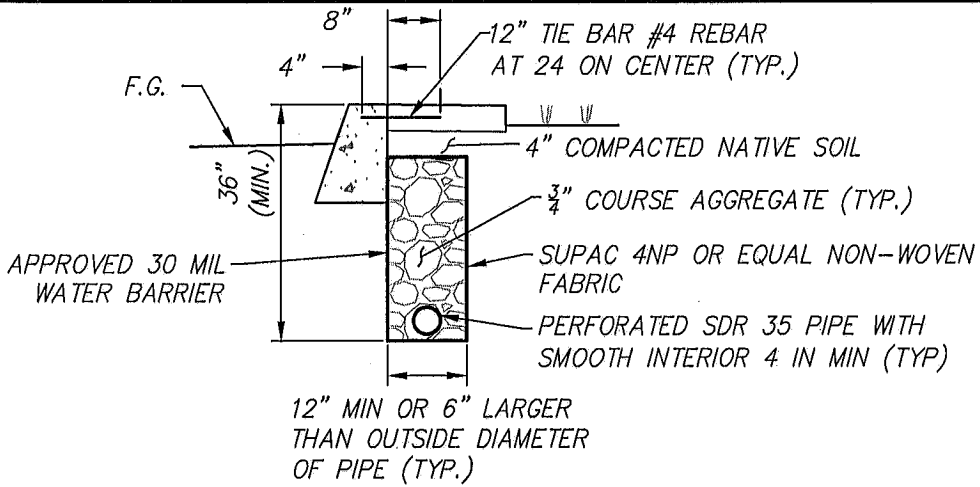
SECTION A-A



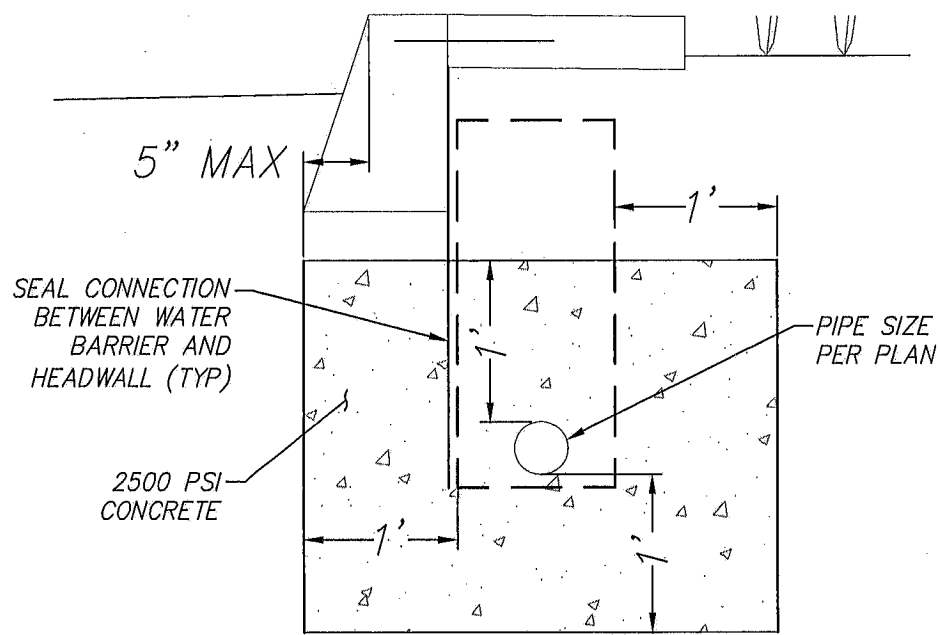
PLAN

SHEET 1 OF 2

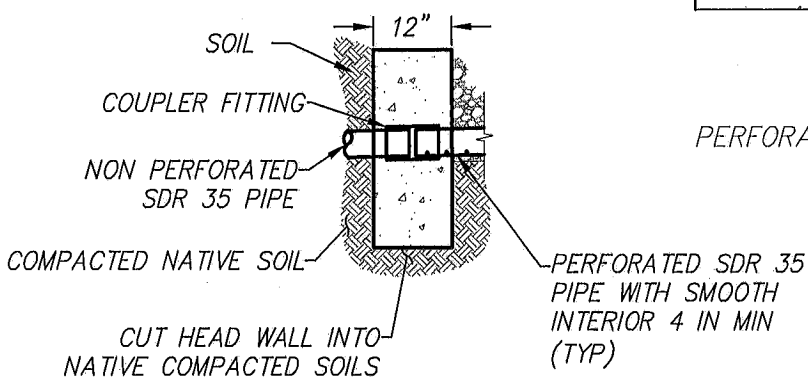
REVISION	BY	APPROVED	DATE	CITY OF CHULA VISTA ENGINEERING & CAPITAL PROJECTS STANDARD DRAWING	<i>William S. Valle</i> WILLIAM S. VALLE CITY ENGINEER
ORIGINAL			07/75		
REVISION	CVM	C. SWANSON	11/02		
REVISION	DPH	W. VALLE	11/17	LANDSCAPE MEDIAN DRAIN	11/21/2017
					DRN-12



SECTION B-B
PERFORATED PIPE ALONG MEDIAN CURB

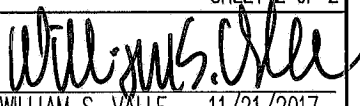


SECTION C-C:
PERFORATED PIPE CONNECTION AT HEADWALL



SECTION D-D
PERFORATED PIPE COUPLING AT HEADWALL

SHEET 2 OF 2

REVISION	BY	APPROVED	DATE	CITY OF CHULA VISTA ENGINEERING & CAPITAL PROJECTS STANDARD DRAWING	 WILLIAM S. VALLE CITY ENGINEER
ORIGINAL			07/75		
REVISION	CVM	C. SWANSON	11/02		
REVISION	DPH	W. VALLE	11/17	LANDSCAPE MEDIAN DRAIN SECTIONS	11/21/2017
					DRN-12