CITY OF ATWATER
IMPROVEMENT STANDARDS AND SPECIFICATIONS

AMENDED AUGUST 24, 1998

KENNETH N. DEVOE
MAYOR

ANDY KROTIK
MAYOR PRO-TEM

ED ABERCROMBIE
COUNCIL MEMBER

DENNIS ANDERSON
COUNCIL MEMBER

EILEEN DUDDY
COUNCIL MEMBER

JOHN E. MEDINA
INTERIM CITY ENGINEER

SET NO. ___

CITY COUNCIL
OF THE
CITY OF ATWATER

RESOLUTION NO. 1435-98

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ATWATER AMENDING THE CITY OF ATWATER IMPROVEMENT STANDARDS AND SPECIFICATIONS AS CURRENTLY REVISED

WHEREAS, the City of Atwater found it desirous and necessary to establish a set of Public Improvement Standards and adopted them on June 28, 1982; and

WHEREAS, the City finds it necessary to amend the Public Improvement Standards and incorporate the amendments into the Standards.

NOW THEREFORE BE IT RESOLVED that the City Council of the City of Atwater does hereby adopt the attached amendments (Exhibit "A") to the City of Atwater Improvement Standards and Specifications as the City's improvement construction standards.

The foregoing resolution is hereby adopted this 24th day of August, 1998.

AYES: Abercrombie, Anderson, Duddy, Krotik, DeVoe
NOES: None
ABSENT: None

APPROVED:

Kenneth N. DeVoe
KENNETH N. DEVOE, MAYOR

ATTEST:

Frances M. Barrett
FRANCES M. BARRETT, CITY CLERK

EXHIBIT "A"

CITY OF ATWATER

IMPROVEMENT STANDARDS AND SPECIFICATIONS

SUMMARY OF CHANGES

	Title	Date	Description of Change
1.	Residential Driveway Approach	11/1/94	ADA slope requirements
2.	Commercial Driveway Approach	11/1/94	ADA slope requirements
3.	Street Name Standard	12/81	Std. brand or approv. equal
4.	Monument Box	12/94	Deleted conc. embedment
5.	Retaining Wall - 12" or less	11/13/97	Upgraded structural rqmnt.
6.	Sanitary Sewer Manhole Details	2/22/96	1) Lowered conc. collar, covering w/AC 2) Updated specs.
7.	Sewer Cleanout	2/92	Lowered conc. collar, covering w/AC
8.	Wheelchair Ramp	4/17/95	ADA slope requirements
9.	Storm Drain M.H. for 24"-48" Pipe	2/22/96	Lowered conc. collar, covering w/AC
10.	Storm Drain M.H. for 54"-120" C.I.P.P.	2/22/96	Lowered conc. collar, covering w/AC
11.	Drainage Inlet/Type G.O.		Added to std.
12.	Type G.O. Inlet in Grade SAG		Added depression to increase drainage flow.
13.	Street Lighting Standard/SL 1, 2, 3 & 4	11/81	Never formally adopted, used as guide
14.	3/4" & 1" Water Service	12/15/93	Added meter and idler arm, Standardized equipment, & Updated installation stds.

EXHIBIT "A"

CITY OF ATWATER

IMPROVEMENT STANDARDS AND SPECIFICATIONS

SUMMARY OF CHANGES

Title		Date	Description of Change
15.	Fire Hydrant	2/92	1) Lowered conc. collar, covering w/AC around valve, 2) Added spec. for valve 3) Added types of hydrants or equal
16.	Fire Hydrant Specifications	4/28/95	Changed color of hydrant
17.	Well Destruction	3/22/91	Conform with Ordinance
18.	Detection Check Meter	1/16/96	Assist in determining unauthorized water use & prevent system contamination
19.	Reduced Pressure Principle Backflow Preventer	1/16/96	State requirement

CITY OF ATWATER
IMPROVEMENT STANDARDS AND SPECIFICATIONS
AMENDED AUGUST 24, 1998

TABLE OF CONTENTS

Incorporated herein are the designs for common engineering structures frequently installed as part of the improvements required in subdivision or other development work within the City of Atwater.

Publishing this book and adopting it as official standards saves endless repetition in the drafting of construction details on different projects. By simple referral, these standards become a part of the plans for any project. Complete sets and individual sheets are available for distribution.

These designs are the result of much seasoning and refinement. In many cases, the structure developed into its present state by continued use and modification over a period of many years. From time to time, we hope to add new standards to these now available, as the need becomes apparent, and we may revise those already in existance, as necessary.

Whenever a material, article or piece of equipment is identified on the plans or in the specifications by reference to manufacturers' or vendors' standard; and material, article or equipment of other manufacturers and vendors which will perform adequately the duties imposed by the general design will be considered equally acceptable provided the material, article or equipment so proposed is, in the opinion of the City Engineer, of equal substance and function. It shall not be purchased or installed. by the contractor without the City Engineer's written approval.

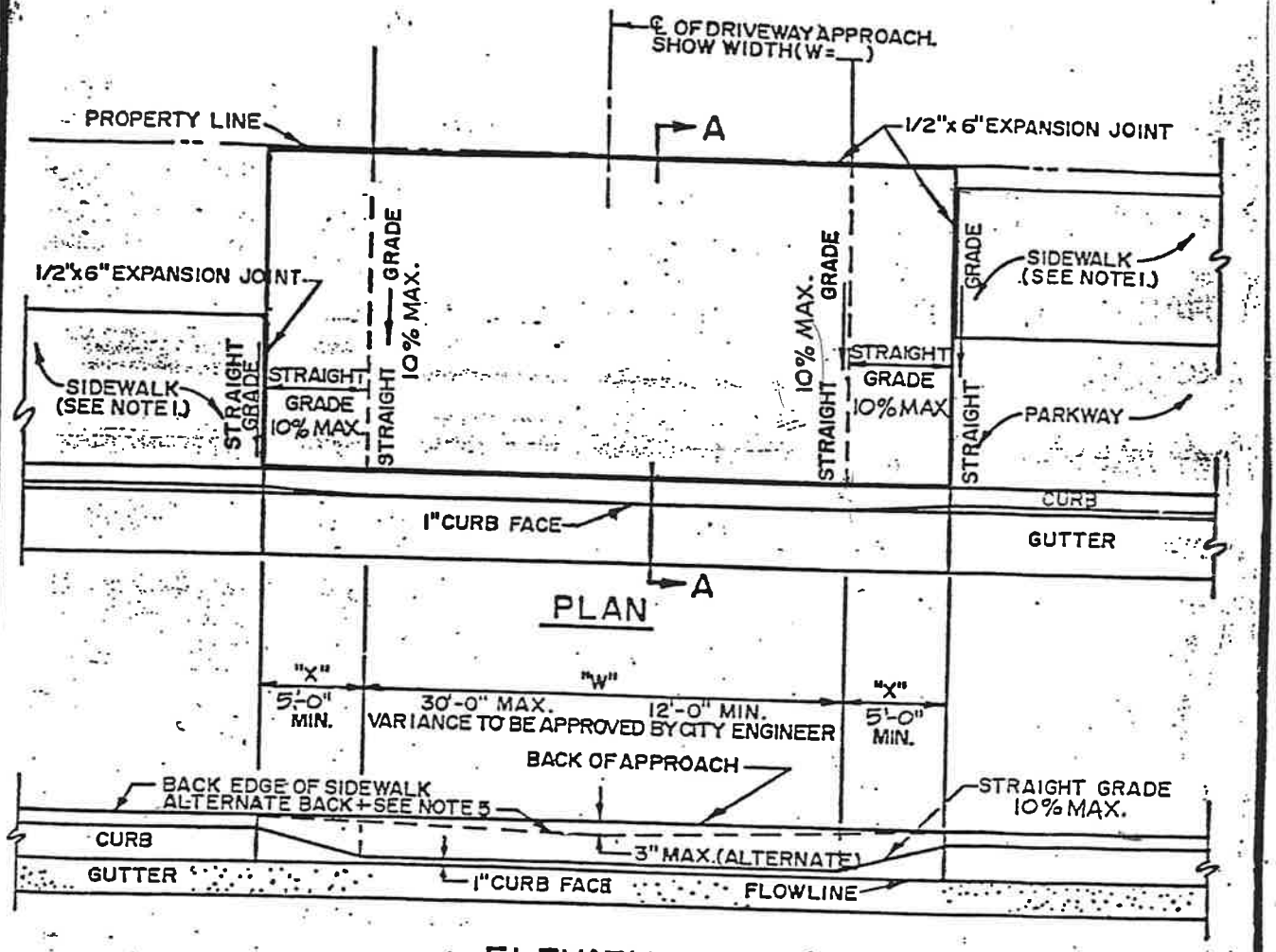
Where certain equipment or articles of a particular brand or manufacturer have been previously installed or established as a standard item within a local area and this area is to be extended or enlarged upon, identical equipment shall be installed as a continuation of the established item.

The "Standard Specifications" of the State of California, Department of Transportation, latest edition, is the basic reference. All work shall conform ~~to~~ the Standard Specifications, as augmented by City of Atwater Improvement Standards and Specifications.

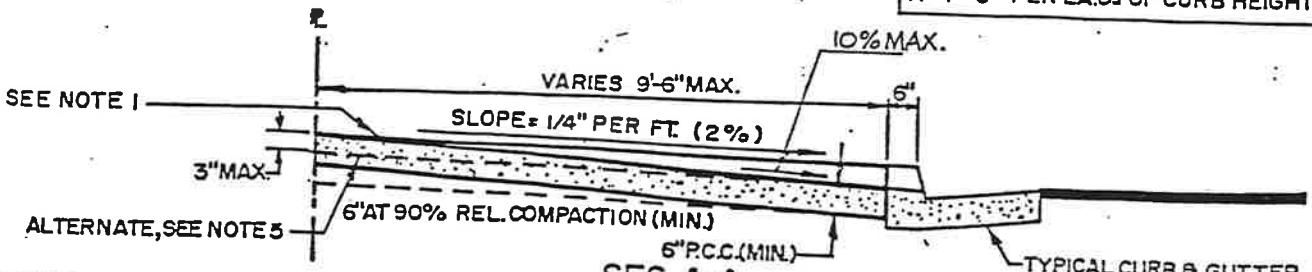
All public works and any work in the public right-of-way must be accomplished under a permit issued and inspected by the City Engineer or his designee. Any portion of the work not inspected may be rejected. Contact the City of Atwater Engineering Division a minimum of 24 hours (including one full working day) in advance of each required inspection to place an inspection request,(209) 358-5606, ext. 225.

NOTE: The right is reserved by the City Engineer to modify the attached standards to fit individual situations. Such modifications will be in writing if requested.

ENGINEERING DIVISION	CITY OF ATWATER, CALIF.	STANDARD PLAN
IMPROVEMENT STANDARDS AND SPECIFICATIONS		
DRN.	APPROVED BY:	DATE: 6-15-82
DATE		I-1
REV.		



X = 5.00', TYPE A2-6 CURB
X = 6.70', TYPE A2-8 CURB
X = 1'-0" PER EA. 1" OF CURB HEIGHT



SEC. A-A

NOTES:

1. SAWCUT EXIST. SIDEWALK, INSTALL EXPANSION JOINTS EACH SIDE, MATCH EXIST. SIDEWALK.
2. CONCRETE SHALL BE CLASS "B" (5 SACK), MAX. 4" SLUMP. 3/4" MAX. ROCK
3. A PIGMENTED CURING COMPOUND SHALL BE ADEQUATELY APPLIED.
4. AN APPROVED SOIL STERILANT SHALL BE APPLIED TO SUB-GRADE PRIOR TO CONSTRUCTION.
5. ALTERNATE (INVERTED) BACK OF APPROACH MAY BE USED WHEN A VALLEY GUTTER IS USED FOR ON-SITE DRAINAGE. THE ALTERNATE MUST BE APPROVED BY THE CITY ENGINEER PRIOR TO CONSTRUCTION.

ENGINEERING DIVISION — CITY OF ATWATER, CALIF.

TITLE: COMMERCIAL DRIVEWAY APPROACH

STANDARD PLAN: D-2 MODIFIED

DRN. H.E.D.
DATE 7/81
REV. 11/94

APPROVED BY: John A Haney, CITY ENGINEER — DATE: 11-1-94

1. DRIVEWAY APPROACHES - RESIDENTIAL

a. No more than 26 feet of any 6" curb (or 28 feet of any 8" curb) shall be removed or left open for the purpose of providing a driveway approach for any residence, unless otherwise approved by the City Engineer.

b. On corner lots in residential subdivisions, a second driveway approach may be allowed at the backyard location off the side yard street.

c. Driveway approaches shall be constructed in accordance with "Residential Driveway Approach" standard plans and to the width(s) shown on the improvement plans.

2. DRIVEWAY APPROACHES - COMMERCIAL

a. No more than 36 feet of any 6" curb (or 38 feet of any 8" curb) shall be removed or left open for any single commercial driveway approach, and the total combined length of curb left open for all driveways shall not exceed 50% of the frontage of the property occupied by the business, unless otherwise approved by the City Engineer.

b. On a corner lot, the amount of curb left open for driveway purposes alon g one street frontage shall not exceed 50% of the frontage along the street.

c. A "Commercial" driveway approach will be required if the driveway serves more than three dwelling units. When used for ingress and egress, the minimum width shall be a minimum of 24 feet, unless otherwise approved by the City Engineer.

d. A "Commercial"driveway approach will be required for any driveway in an industrial zone, the width shall be determined and/or approved by the City Engineer.

e. Commercial driveway approaches shall be constructed in accordance with the "Commercial Driveway Approach" standard plan, and to the width(s) shown on the improvement plans.

3. DRIVEWAY APPROACHES - GENERAL

a. Driveway approaches shall not be located closer than 27 feet from the end of curb returns.

b. When a driveway depression is provided during the construction of curb and gutter, a driveway approach shall be constructed.

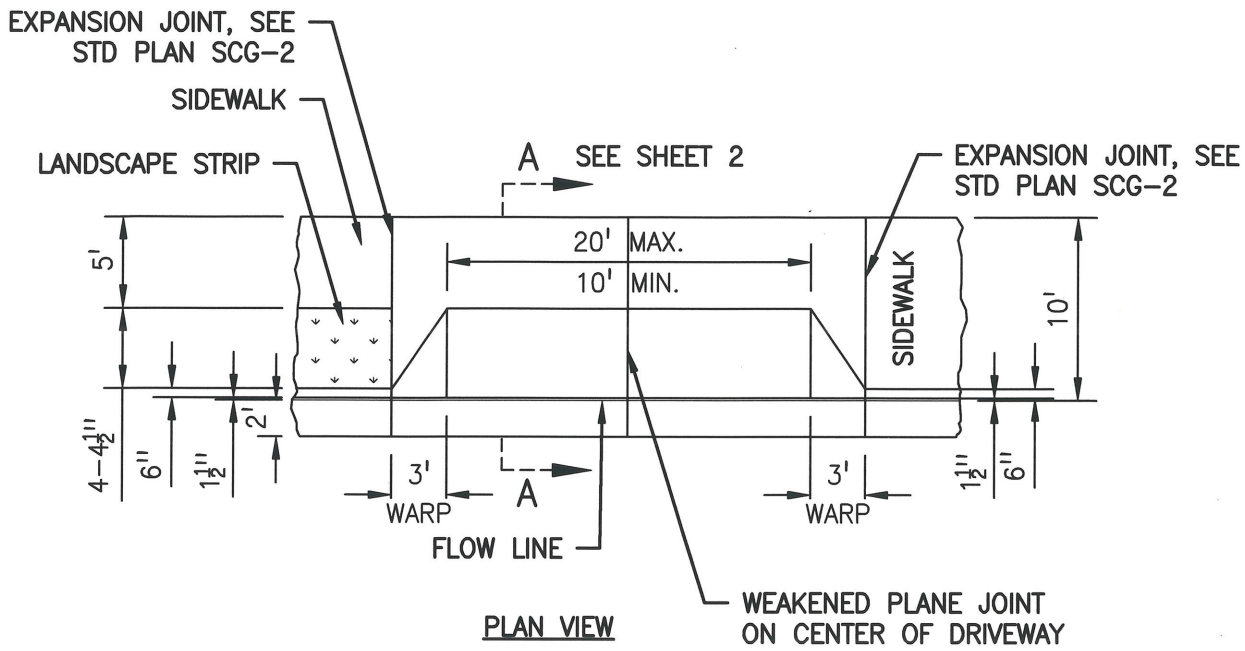
c. When developments abandon driveway approaches and create new approaches, the abandoned driveway appraoches shall be replaced by standard curb, gutter and sidewalk.

ENGINEERING DIVISION		CITY OF ATWATER, CALIF.	
TITLE	GENERAL REQUIREMENTS -DRIVEWAY APPROACHES		STANDARD PLAN
DRN.	APPROVED BY: Win Westfall	DATE: 5-18-82	D-3
DATE			
REV.	WIN WESTFALL, CITY ENGINEER		

way approaches for adjacent properties will not be allowed, unless permission in writing is obtained from both property owners, and is approved by the City Engineer.

e. The City Engineer may deny the permit for removal of curb within the curb return, within 5 feet of any fire hydrant, within 2 feet of any catch basin or drainage structure or in any other locations where the construction of the driveway approach conflicts with the use of the street right-of-way (or easement).

	ENGINEERING DIVISION	CITY OF ATWATER, CALIF.	
	TITLE: GENERAL REQUIREMENTS - DRIVEWAY APPROACHES		STANDARD PLAN
	DRN.	APPROVED BY: Win Westfall DATE: 5-18-82	D-4
	DATE		
	REV.	WIN WESTFALL, CITY ENGINEER	



PLAN VIEW

NOTES:

1. DRIVEWAY TO CONFORM WITH EXISTING SIDEWALK. ALL CONCRETE TO BE MINOR CONCRETE PER SECTION 90, CALTRANS STANDARD SPECIFICATIONS.
2. IF SIDEWALK IN BACK EXISTS WHERE NEW RAMP IS TO BE PLACED, IT SHALL BE REMOVED AND REPLACED WITH 6" THICK PORTLAND CEMENT CONCRETE.
3. DRIVEWAY RAMP SHALL BE AS WIDE AS EXISTING DRIVEWAY INTO YARD, ROUNDED UP TO NEXT EVEN FOOT (10'-0" MINIMUM).
4. IN EVENT OF OBSTRUCTIONS (E.G., POWER POLES, ETC.) WIDTH MAY BE MODIFIED TO MEET EXISTING CONDITIONS AS APPROVED BY THE CITY ENGINEER.
5. WHEN IT IS NOT POSSIBLE TO PROVIDE 2'-0" OF FULL HEIGHT CURB WITH STANDARD 3'-0" WARPS ON EITHER SIDE BETWEEN ADJACENT DRIVEWAYS, A COMMON DRIVEWAY MAY BE INSTALLED WITH APPROVAL OF THE CITY ENGINEER.
6. FINE HAIR LIGHT BROOM FINISH.
7. A VARIANCE TO MINIMUM OR MAXIMUM WIDTH REQUIRES CITY ENGINEER APPROVAL.
8. SEE STANDARD PLAN SCG-4 FOR CONSTRUCTION NOTES.

REV.		BY

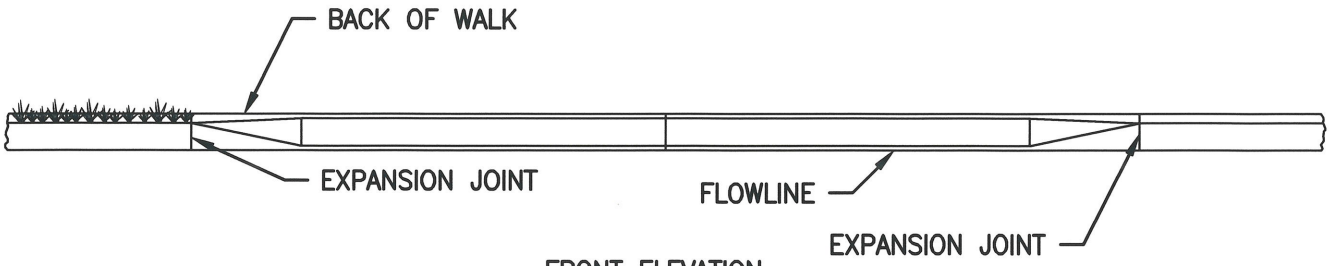
RESIDENTIAL APPROACH DRIVEWAY

APPROVED

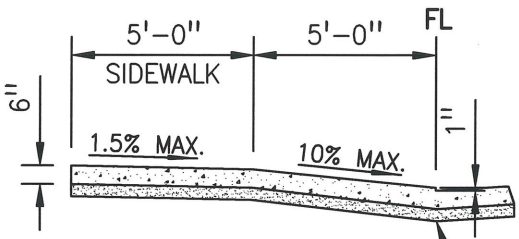
COMMUNITY DEVELOPMENT DEPARTMENT

CITY OF ATWATER
STANDARD DETAIL

DRAWN:	J.V.P	NO.
DATE:	09.18.24	DR-1
SCALE:	N.T.S	



FRONT ELEVATION



SECTION A-A

4" CLASS II AB UNDER DRIVEWAY, CURB, AND GUTTER, COMPACTED AT A MIN. RELATIVE COMPACTION OF 95%. SUBGRADE SHALL BE SCARIFIED AND COMPACTED TO A MIN. RELATIVE COMPACTION OF 95% FOR A DEPTH OF 6"

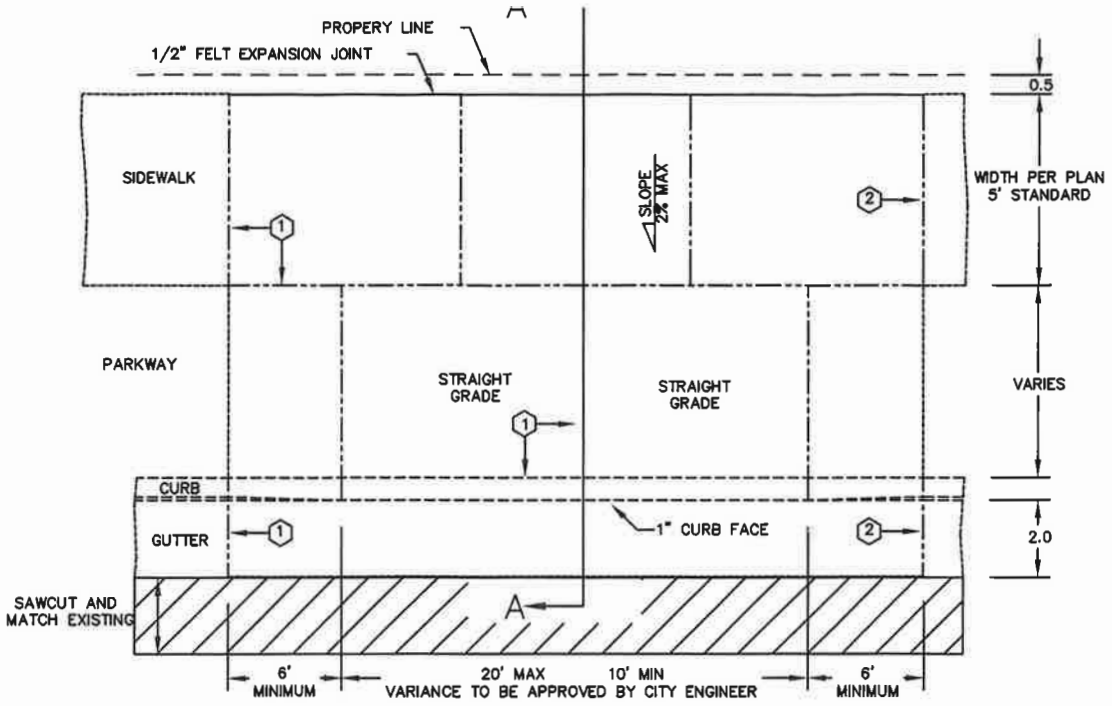
REV.		BY

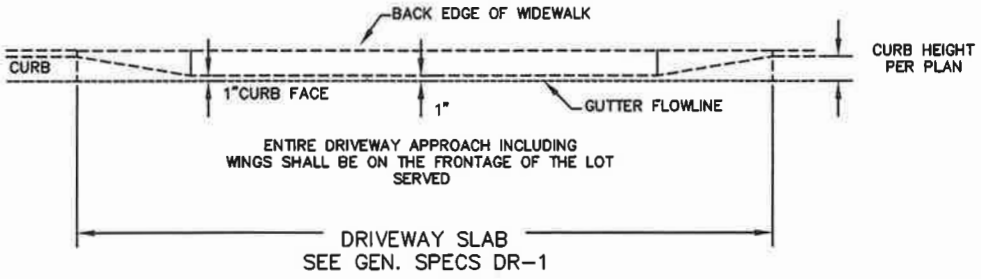
RESIDENTIAL APPROACH DRIVEWAY

APPROVED _____
COMMUNITY DEVELOPMENT DEPARTMENT

CITY OF ATWATER
STANDARD DETAIL

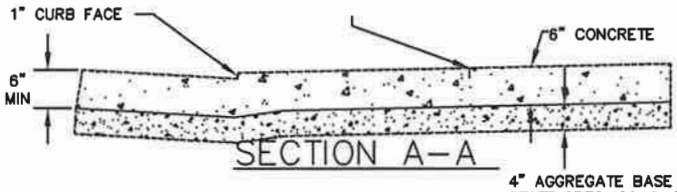
DRAWN:	J.V.P	NO.
DATE:	09.18.24	DR-1
SCALE:	N.T.S	





ELEVATION

WHEN WIDTH OF PARKWAY EXCEEDS 5'PROVIDE AN ADDITIOAL 1½"
DEEP CONTROL JOINT ACCROSS APPROACH AT FRONT EDGE OF SIDEWALK.



4" AGGREGATE BASE ROCK
STATE SPEC. 26-1.02A CLASS 2.
(ALTERNATE)
6" AGGREGATE SUBBASE STATE SPEC. 25-1.02A CLASS 3

NOTES:

1. IN NEW CONSTRUCTION, PLACE 1½" DEEP CONTROL JOINT EACH SIDE OF DRIVEWAY AT BACK OF CURB LINE AND AT CONTERLINE OF APPROACH.
2. IN EXISTING CURB, GUTTER AND SIDEWALK SAWCUT JOINTS AT EACH SIDE
3. CONCRETE SHALL BE OF CLASS 250-C-2500
4. INSTALL EXPANSION JOINTS ON EACH SIDE, MATCH EXISTING SIDEWALK

Z:\CADFILES\PDF\OTHER STANDARDS\ATWATER STANDARDS\DRIVE WAY\DR-2.dwg

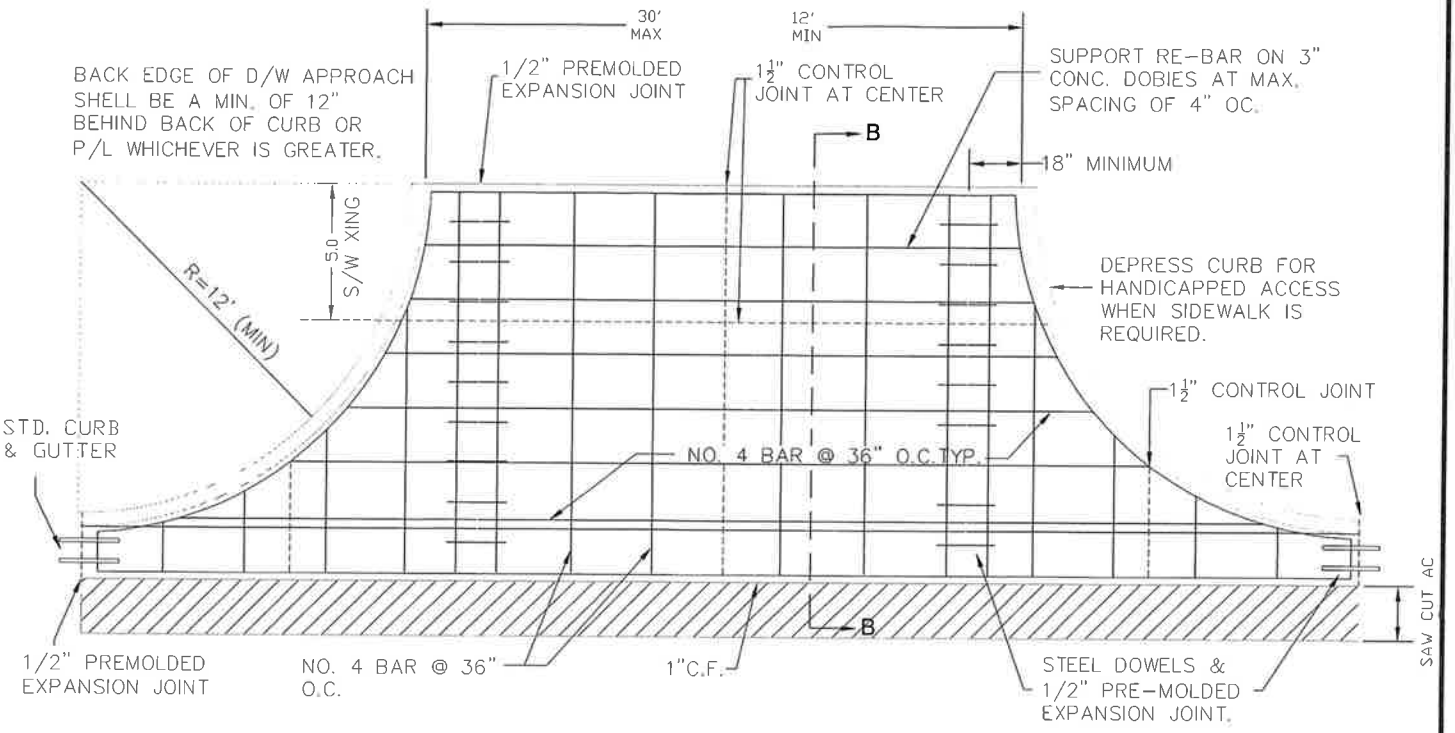
REV.		BY

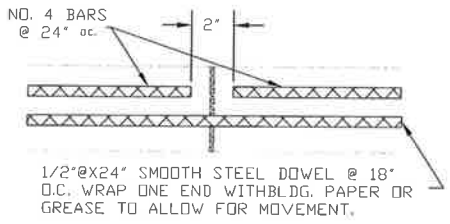
RESIDENTIAL DRIVEWAY APPROACH

APPROVED
COMMUNITY DEVELOPMENT DEPARTMENT

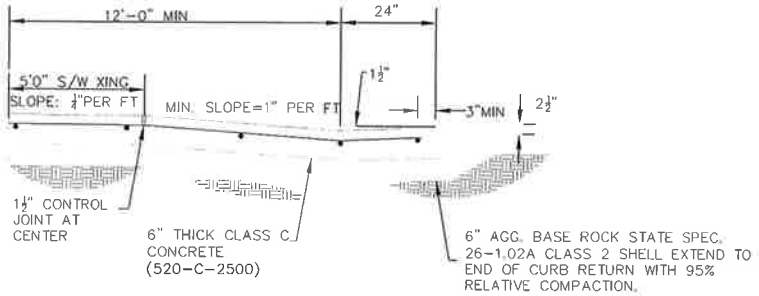
CITY OF ATWATER
STANDARD DETAIL

DRAWN:	R.GARCIA	NO.
DATE:	12/04/2013	DR-2
SCALE:		





SECTION A-A



SECTION B-B

NOTES:

1. MULTI FAMILY UNITS SHALL ALSO USE THIS APPROACH.
2. WHERE A NEW DRIVEWAY IS BEING INSTALLED IN EXISTING CURB, USE EPOXED DOWELS.
3. CONCRETE SHALL BE OF CLASS 250-C-2500
4. SAWCUT EXIST. SIDEWALK, INSTALL EXPANSION JOINTS ON EACH SIDE, MATCH EXIST. SIDEWALK.

REV.	DATE	BY

COMMERCIAL / INDUSTRIAL DRIVEWAY

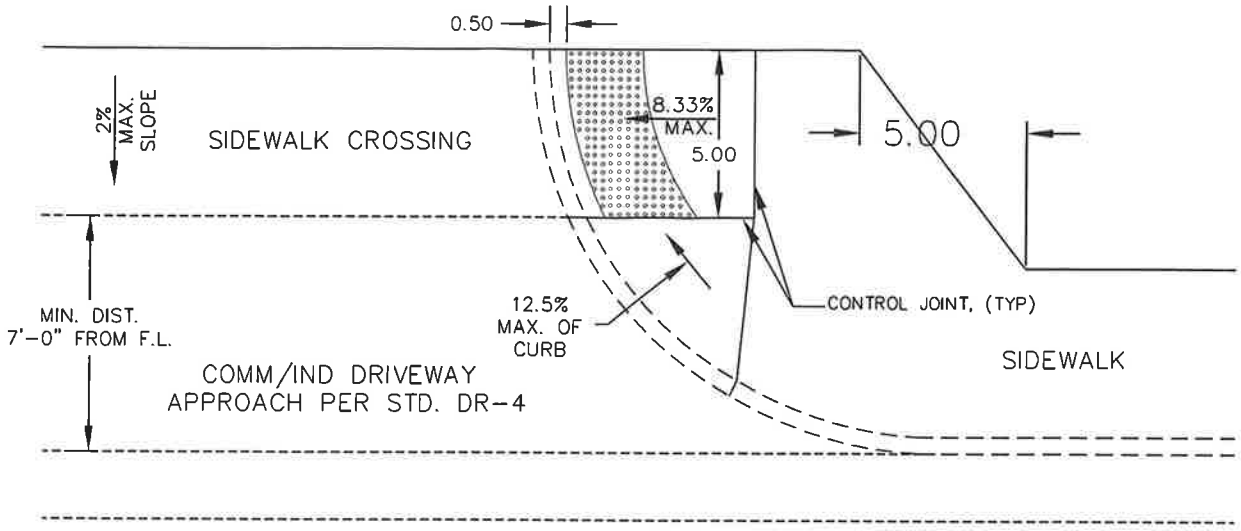
APPROVED

COMMUNITY DEVELOPMENT DEPARTMENT

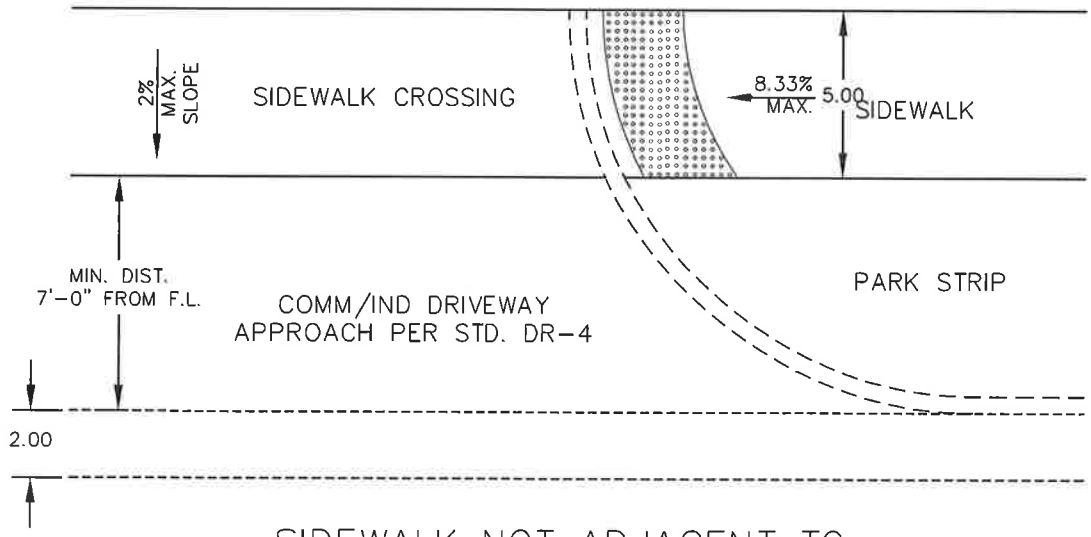
CITY OF ATWATER

STANDARD DETAIL

DRAWN:	R.GARCIA	NO.
DATE:	09/19/2011	DR-4
SCALE:	N.T.S	



SIDEWALK ADJACENT TO CURB



SIDEWALK NOT ADJACENT TO CURB

			COMMERCIAL HANDICAPPED ACCESS AT DRIVEWAY	CITY OF ATWATER STANDARD DETAIL	
				DRAWN: R. GARCIA	NO.
			APPROVED _____ COMMUNITY DEVELOPMENT DEPARTMENT	DATE: 12/04/13	DR-4A
REV.	1:5	BY		SCALE: 1:5	

Chain Link Fence Fabric

Fabric shall be continuous chain link fence, ASTM 392 and wire spec A817 Galvanized after weaving (GAW) or Galvanized before weaving (GBW).

or
- 1.2 oz. sq. ft. (366 g/m2) Class 1
- 2 oz. sq. ft. (610 g/m2) Class 2

Line Posts

Line posts shall be hot dipped galvanized 2–3/8" O.D. hot dipped galvanized pipe, weighing 3.65 lbs per lineal foot. Line post shall be spaced not further than 10' centers.

Terminal Posts

End, corner and pull posts shall be hot dipped galvanized pipe 2–7/8" O.D. and weighing not less than 5.79 lbs. per lineal foot.

Steel Fence Frame Members

A– Type A steel pipe (Schedule 40) per ASTM F 1083 having a minimum yield strength 30,000 psi (205 MPa) and minimum tensile strength 48,000 psi (330 MPa). Pipe zinc coated inside and outside by hot galvanized dipped methods. Minimum 1.8 oz/ft2 (55 g/m2) of surface.

B– Type B steel pipe produced in accordance with commercial standards. Minimum yield strength of 50,000 psi (344 MPa). Cold formed and welded per ASTM F 1043. Zinc overcoat, minimum 0.9 oz/ft2 (0.27 kg/m2) with a conversion coating and verifiable polymer film.

Fittings

A. Chain link fence fittings per ASTM F626. All ferrous metal fittings to be galvanized.

B. Post Caps: Steel, cast iron or aluminum alloy; must be weatherproof to prevent moisture intrusion into post. Top with arm to be provided when barbed wire is specified. Intermediate or line post tops to have loop for top rail when specified.

C. Rail Ends: Formed steel or iron, designed to provide secure connection of top rails to terminal post and brace or other rails to terminal and intermediate posts.

D. Sleeves: Lengths of top rails to be connected using 6" (152mm) sleeves that allow for expansion or contraction of the rail.

E. Tie Wire: 9 gauge [0.148" (3.76mm)] galvanized steel or aluminum for attachment of chain link fabric to rails. Hog rings attaching fabric to tension wire to be 9 gauge [0.148" (3.76mm)].

F. Fabric bands and brace bands to be pressed steel.

G. Tension (stretcher) bars made of one continuous piece of steel or aluminum, 3/16"x3/4" (4.76mm x 19mm). Provide one bar per end or gate post and two bars per corner or pull post.

H. Tension Wire: Galvanized steel wire, 7 gauge, [0.177" (4.5mm)], having a tensile strength of 75,000 psi (517 MPa).

I. Truss rods & tightener: rod minimum diameter 5/16" (7.9mm).

J. Fasteners: All nuts and bolts to be galvanized.

K. Barbed Wire: Galvanized coated, per ASTM A–121 Type Z–zinc coated wire.Design #12–4–5–14R, double strand, 12–1/2 gauge, twisted line wire with 4 point barbs, spaced approximately 5" on center.

L. Barbed Wire Supporting Arms: Pressed steel arms with provisions for attaching 3 rows of barbed wire. Arms shall withstand 250 lb. (113.5kg) downward pull at outermost end of arm without failure.

REV.		BY	CHAINLINK FENCE SPECIFICATIONS	CITY OF ATWATER STANDARD DETAIL		
				DRAWN:		NO.
			APPROVED COMMUNITY DEVELOPMENT DEPARTMENT	DATE:	11/29/2016	F–1
				SCALE:		

Gates

Gate frames to be made of heavy galvanized 1-7/8" O.D. pipe, weighing 2.72 lbs. per lineal ft. Corner fittings, ball and socket hinges, catch, stops and center rest to be heavy galvanized malleable iron. Hinges 90 degrees and 180 degrees.

Gate Posts

Posts shall be hot dipped galvanized pipe in accordance with the following tabulation:

Gate Frame	Gate Opening	Gate Post	Weight per Lineal Ft.
1-7/8" O.D.	Single to 6' Double to 12' inclusive	2-7/8" O.D.	5.79
1-7/8" O.D.	Single over 6' to 13' or Double over 12' to 26' inclusive	4" O.D.	9.11
1-7/8" O.D.	Single over 13' to 18' or Double over 26' to 36' incl.	6-5/8" O.D.	18.97
1-7/8" O.D.	Single over 18' or Double over 36'	8-5/8" O.D.	24.70

Setting Materials

A. Concrete: Minimum 28 day compressive strength of 2,800 psi.

Chain Link Fence Framing Installation

A. Install chain link fence in accordance with ASTM F567.

B. Space line posts at equal distance of 10' (3.05mm) maximum center to center of posts.

C. Set terminal posts at beginning and end of each continuous length of fence and where abrupt changes in grade or direction of fence occur (30° or more).

D. Set posts in concrete. Dig holes having a diameter 4 times the diameter of post, and 6" [152mm] deeper than the bottom of post. Forms are not necessary or recommended. Crown concrete at top to shed water (except for tennis courts).

E. Check each post for vertical and top alignment.

F. Securely attach brace rail and truss rod at midpoint of all fences 6' high and over, or any fence without top rail. Adjust rod to insure posts remain vertically plumb after fabric is stretched. One brace per end or gate post. Two braces per corner or pull post.

G. Tension Wire: Install tension wire at bottom of fabric (and at top, if top rail in not specified). Install tension wire before stretching fabric and attach to each post with ties. Secure tension wire to fabric with 9 gauge [0.148" (3.76mm)] hog rings 24" (610mm) o.c. tension wire is optional).

H. Top Rail: Install lengths, 21' (6400mm). Connect joints with sleeves for rigid connections for expansion/contraction.

I. Center rails are to be installed when fence fabric is 12' (3658mm) or higher, or when shown on drawings.

J. Bottom rails (optional) to be installed when shown on drawings.

Chain Link Fence Fabric Installation

A. Fabric: Install fabric on security side and attach so that fabric remains in tension after pulling force is released. Leave approximately 2" (50mm) between finish grade and bottom selvage. Attach fabric with wire ties to line posts at 15" (381mm) on center and to rails, braces and tension wire at 24" (600mm) on center.

B. Stretcher Bars: Thread tension bar through fabric and attach to terminal posts with bands spaced at 15" (381mm) maximum on center.

REV.	NTS	BY

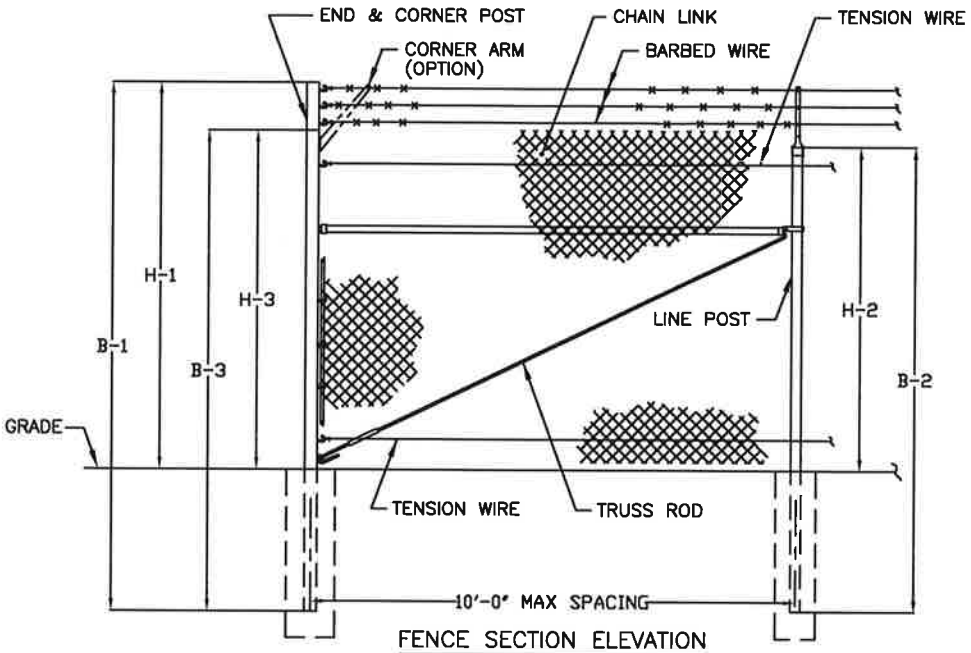
CHAINLINK FENCE SPECIFICATIONS

APPROVED

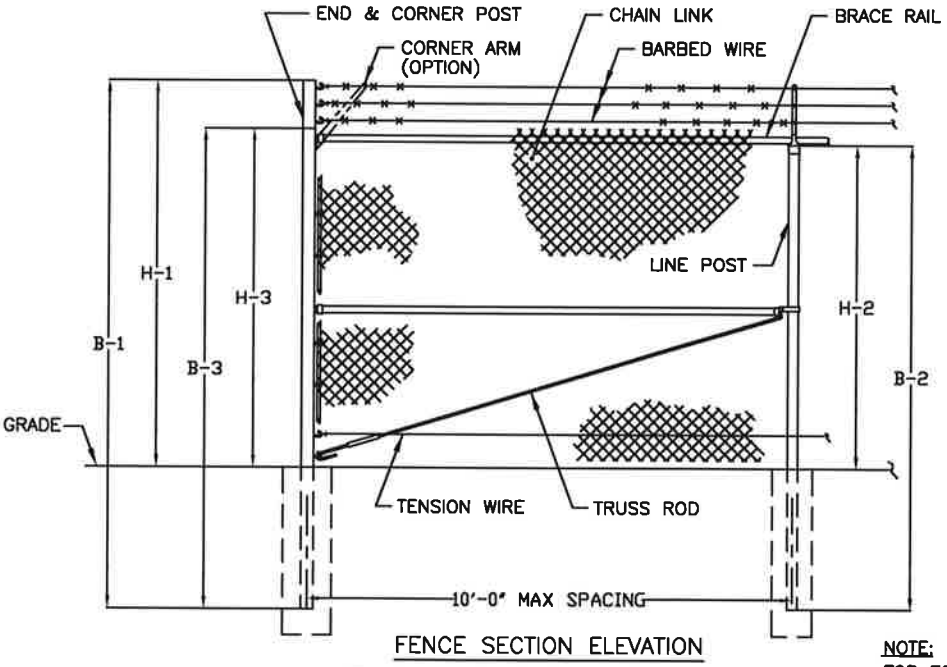
COMMUNITY DEVELOPMENT DEPARTMENT

CITY OF ATWATER
STANDARD DETAIL

DRAWN:		NO.
DATE:	11/30/2016	F-2
SCALE:		



FENCE SECTION ELEVATION
WITHOUT TOP RAIL & WITH BARBED WIRE



FENCE SECTION ELEVATION
WITH TOP RAIL & WITH BARBED WIRE

NOTE:
FOR FOOTING SEE SPECIFICATIONS SHEET F-3

FENCE HEIGHT	UPRIGHT END & CORNER POSTS		LINE POSTS		CORNER POSTS WITH CORNER ARM	
NOM HT INCLUDING BARBED WIRE	B-1 BAR LENGTH	H-1 HEIGHT ABOVE GRADE	B-2 BAR LENGTH	H-2 HEIGHT ABOVE GRADE	B-3 BAR LENGTH	H-3 HEIGHT ABOVE GRADE
7'-0"	10'-0"	7'-0 5/8"	8'-8"	5'-8 7/8"	9'-0"	6'-0 5/8"
8'-0"	11'-0"	8'-0 5/8"	9'-8"	6'-8 7/8"	10'-0"	7'-0 5/8"
9'-0"	12'-0"	9'-0 5/8"	10'-8"	7'-8 7/8"	11'-0"	8'-0 5/8"
10'-0"	13'-0"	10'-0 5/8"	11'-8"	8'-8 7/8"	12'-0"	9'-0 5/8"
11'-0"	14'-0"	11'-0 5/8"	12'-8"	9'-8 7/8"	13'-0"	10'-0 5/8"
12'-0"	15'-0"	12'-0 5/8"	13'-8"	10'-8 7/8"	14'-0"	11'-0 5/8"

TYPICAL CHAINLINK FENCE WITH BARBED WIRE

CITY OF ATWATER
STANDARD DETAIL

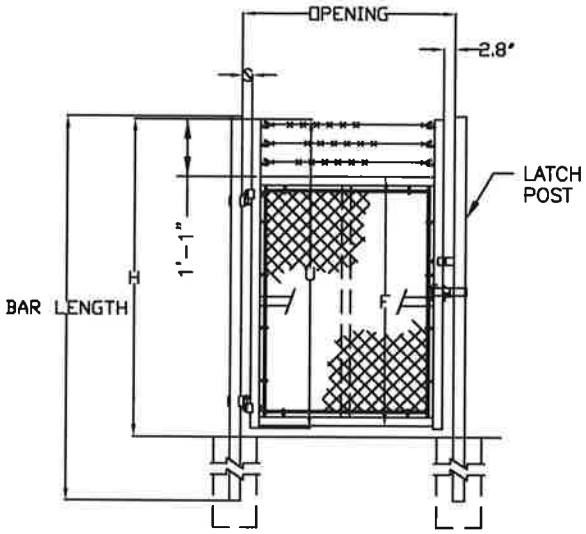
REV.	NTS	BY

APPROVED
COMMUNITY DEVELOPMENT DEPARTMENT

DRAWN:		NO.
DATE:	11/30/2016	F-3
SCALE:		

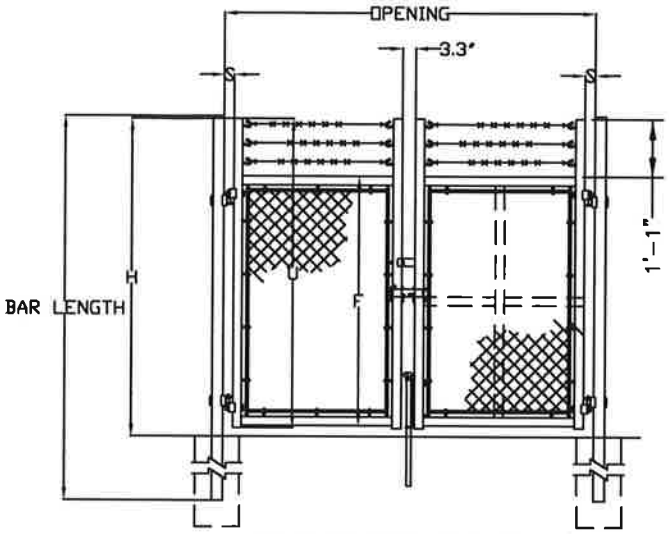
GATE PLAN

GATE PLAN



SINGLE GATE ELEVATION

NOTE:
FOR FOOTING SEE SPECIFICATIONS SHEET F-3



DOUBLE GATE ELEVATION

SINGLE OR DOUBLE LEAF GATES		
NOM HEIGHT (H)	UPRIGHT HT (U)	FRAME HT (F)
NOM HT INCLUDING BARBED WIRE	ACTUAL DIM	ACTUAL DIM
7'-0"	6'-10"	5'-8 1/2"
8'-0"	7'-10"	6'-8 1/2"
9'-0"	8'-10"	7'-8 1/2"
10'-0"	9'-10"	8'-8 1/2"
11'-0"	10'-10"	9'-8 1/2"
12'-0"	11'-10"	10'-8 1/2"
13'-0"	12'-10"	11'-8 1/2"

SINGLE LEAF GATES		
OPENING	GATE POSTS	HINGE SPACE (S)
FACE TO FACE	SQ & RND SIZES	POST TO UPRIGHT
3'-0" THROUGH 6'-0"	2 1/2" SQ OR 2.875" OD	FOR SQUARE & ROUND GATE POSTS: 2 1/4"
7'-0" THROUGH 10'-0"	3" SQ OR 4" OD	FOR SQUARE & ROUND GATE POSTS: 2 1/4"
11'-0" THROUGH 12'-0"	4" SQ OR 4" OD	FOR SQUARE & ROUND GATE POSTS: 2 1/4"
13'-0" THROUGH 18'-0"	6" SQ OR 6.625" OD	FOR GATE POSTS: SQ-2 1/4" RND-3 1/2"
19'-0" THROUGH 20'-0"	8" SQ OR 8.625" OD	FOR GATE POSTS: SQ-2 1/4" RND-3 1/2"

DOUBLE LEAF GATES		
OPENING	GATE POSTS	HINGE SPACE (S)
FACE TO FACE	SQ & RND SIZES	POST TO UPRIGHT
8'-0" THROUGH 12'-0"	2 1/2" SQ OR 2.875" OD	FOR SQUARE & ROUND GATE POSTS: 2 1/4"
14'-0" THROUGH 24'-0"	3" SQ OR 4" OD	FOR SQUARE & ROUND GATE POSTS: 2 1/4"
26'-0" THROUGH 36'-0"	6" SQ OR 6.625" OD	FOR GATE POSTS: SQ-2 1/4" RND-3 1/2"
38'-0" THROUGH 40'-0"	8" SQ OR 8.625" OD	FOR GATE POSTS: SQ-2 1/4" RND-3 1/2"

NOTE:
CENTER UPRIGHT REQUIRED ON GATE LEAVES 8'-0" & WIDER. CENTER RAIL REQUIRED ON GATE LEAVES 10'-0" & HIGHER.

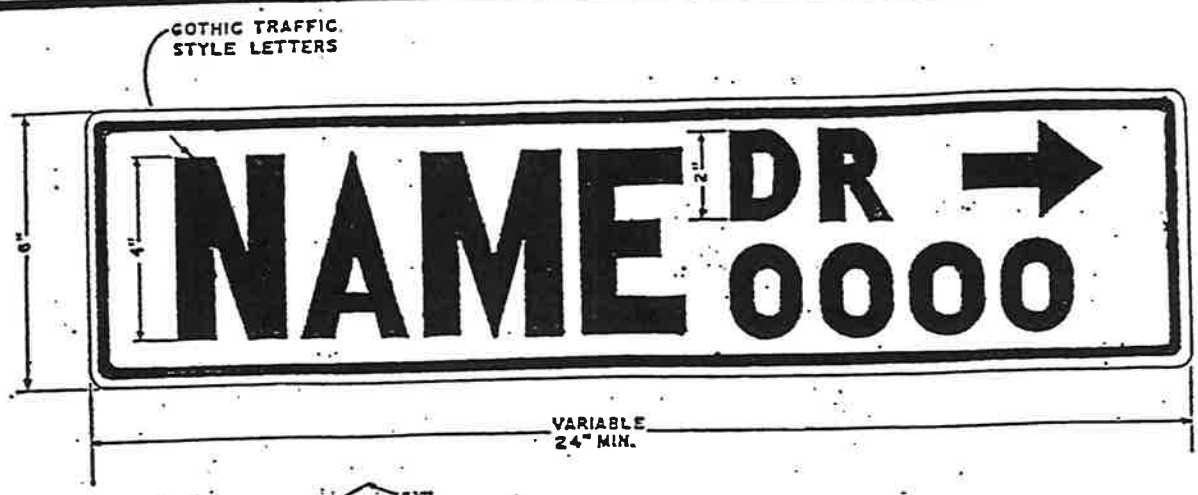
REV.		BY

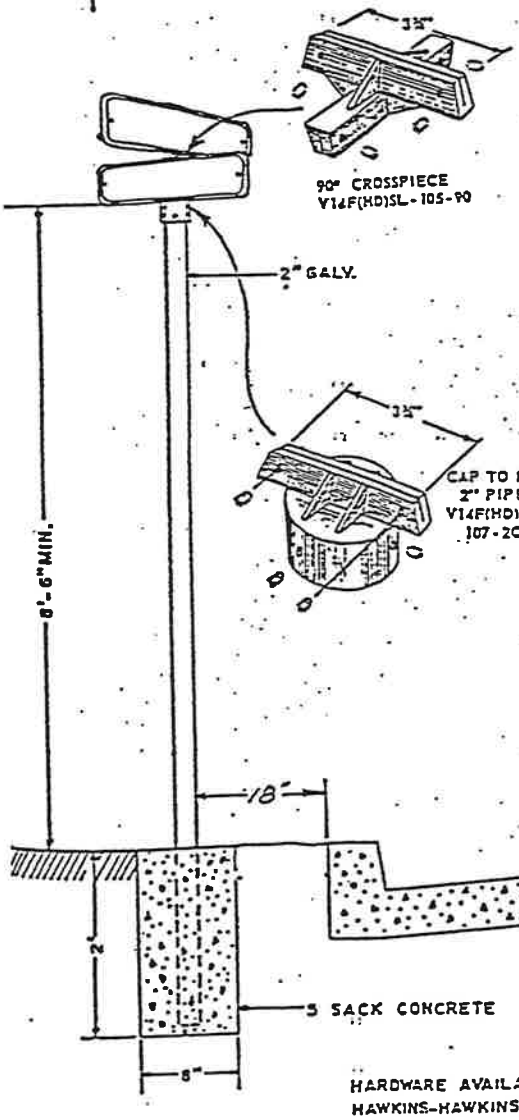
TYPICAL CHAINLINK FINCE SWING GATES WITH BARBED WIRE

APPROVED Michael R. Mayo
COMMUNITY DEVELOPMENT DEPARTMENT

CITY OF ATWATER
STANDARD DETAIL

DRAWN:		NO.
DATE:	11/30/2016	F-4
SCALE:		



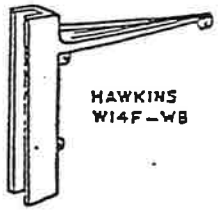


GENERAL SPECIFICATIONS

1. SIGN BLANKS SHALL BE 0.125" ALUMINUM.
2. LETTERS SHALL BE WHITE ON GREEN BACKGROUND, BOTH OF SCOTCHLITE ENGINEER GRADE REFLECTIVE SHEETING.
3. DIRECTIONAL ARROW SHALL BE REVERSED ON BACK SIDE OF SIGN. SIGNS SHALL BE DOUBLE FACED.
4. STREET SIGNS SHALL BE MOUNTED PARALLEL WITH STREET AND SHALL BE LOCATED AT THE S/E AND N/W CORNERS OF THE INTERSECTIONS.
5. SIGNS SHALL BE MOUNTED ON 2" I.D. HOT DIP-GALVANIZED POSTS WITH THE THREADED END UP.
6. STREET NAME SIGNS MAY BE INSTALLED ON THE SAME POST AS STOP SIGNS. STREET NAME SIGNS MAY BE INSTALLED ON CITY STREET LIGHT POLES WITH THE APPROVAL OF THE CITY ENGINEER. SIGNS MAY BE INSTALLED ON P.G.&E. OWNED STREET LIGHT POLES WITH P.G.&E.'S WRITTEN PERMISSION.
7. STREET SIGNS MOUNTED ON LIGHT POLES SHALL USE HAWKINS-HAWKINS WING BRACKET V14F-WB AND IT SHALL BE STRAPPED TO THE POLE USING 3/4" STAINLESS STEEL STRAPPING MATERIAL.
8. STREET NAME SIGN MOUNTING HARDWARE SHALL BE HAWKINS HARDWARE ASSEMBLY CAT. NO. V14F(HD)SL AND INCLUDES ALL PARTS AND HARDWARE NECESSARY FOR ATTACHMENT.
9. ALL SIGN POSTS NOT HAVING STREET NAME SIGNS SHALL BE CAPPED WITH A 2" POST CAP, HAWKINS M2G-2POC, OR APPROVED EQUAL.
10. ALL REGULATORY, WARNING OR GUIDE SIGNS OVER 24" IN WIDTH SHALL BE MOUNTED ON POSTS USING CLAMP-ON U-BRACKETS, HAWKINS M2G-C2B OR APPROVED EQUAL. SEE STANDARD M-3.

HARDWARE AVAILABLE AT:
HAWKINS-HAWKINS CO., INC.
1253 EASTSHORE HIGHWAY
BERKELEY, CA. 94710

ALUMINUM
WING BRACKET



Use wing brackets on street light poles.

ENGINEERING DIVISION — CITY OF ATWATER, CALIF.

TITLE: STREET NAME SIGN STANDARD

STANDARD PLAN: M-1 (MODIFIED)

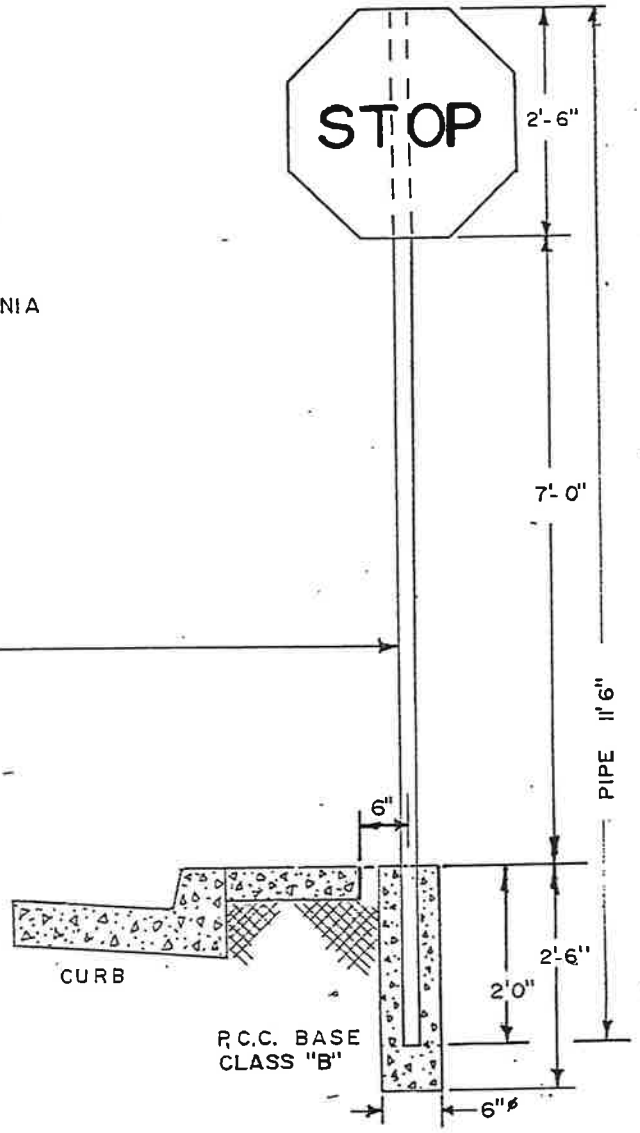
DRN.
DATE
REV.

APPROVED BY: JOHN E. MEDINA, CITY ENGINEER — DATE: 8/24/98

SCALE 1" = 2'-0"

SIGN ORDERING DATA

SIGN — STATE CODE R-1
BLANK — ALUMINUM .080 GAUGE
6061-T6 ALLOY.
PROCESS — ALODINE 1200 TREATMENT
FACE MATERIAL — WIDE ANGLE REFLECTIVE SHEETING 3-M SCOTCHLITE OF ENGINEERING GRADE OR EQUAL.
ALL SIGNS MUST MEET CALIFORNIA DIVISION OF HIGHWAYS SIGN SPECIFICATIONS.
30" R-1 SIGNS, MINIMUM



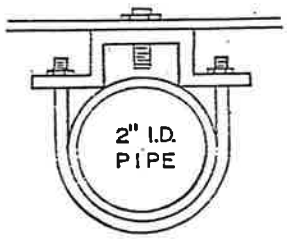
HOT DIPPED (GALVANIZED) STEEL PIPE 2" I.D. 11'-6" LONG.

POST TO BE LOCATED 18" BACK OF CURB FOR TYPES I B, II B, III B AND IV SIDEWALKS, OR AS DIRECTED.

STEEL PIPE MOUNTING SET
(HOT DIPPED GALVANIZED FINISH)

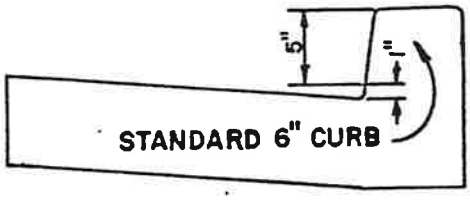
CLAMP ON U-BRACKETS (TWO MINIMUM)
(NO SCALE)

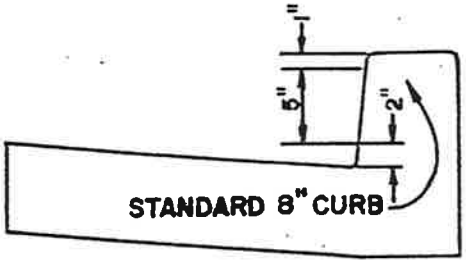
HEX BOLT: 5/16-18 x 1/2 SECURING BOLT AND NEOPRENE WASHER, USED TO MOUNT SIGN.



NO SCALE

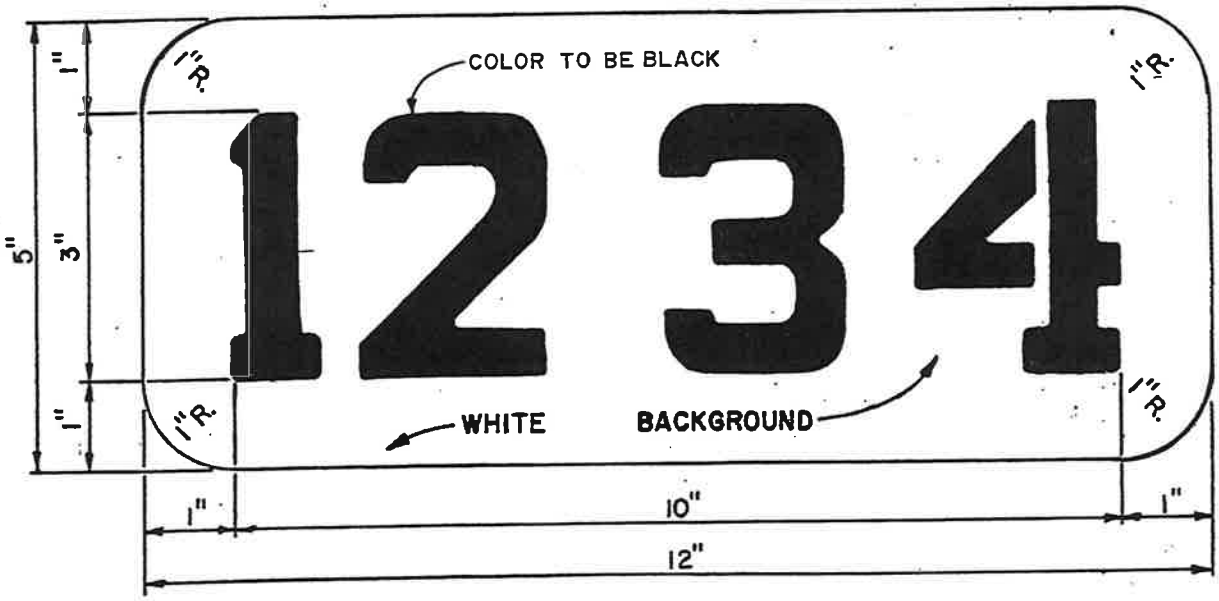
ENGINEERING DIVISION		CITY OF ATWATER, CALIF.
TITLE STOP SIGN		STANDARD PLAN M-3
DRN. PVT	APPROVED BY: Win Westfall	DATE: 5-18-82
DATE	WIN WESTFALL, CITY ENGINEER	
REV.		





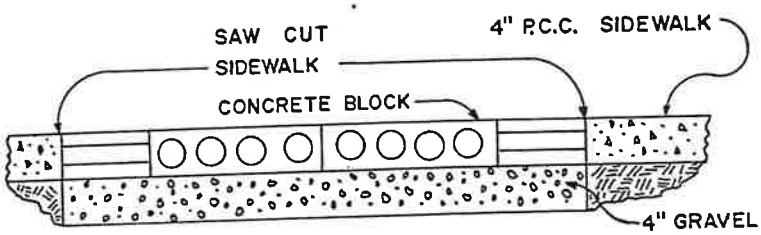
LOCATION

NOTE: STANDARD DESIGN AS SHOWN BELOW TO BE INSTALLED FLUSH WITH TOP OF 6" CURB & 1" BELOW TOP ON 8" CURB.

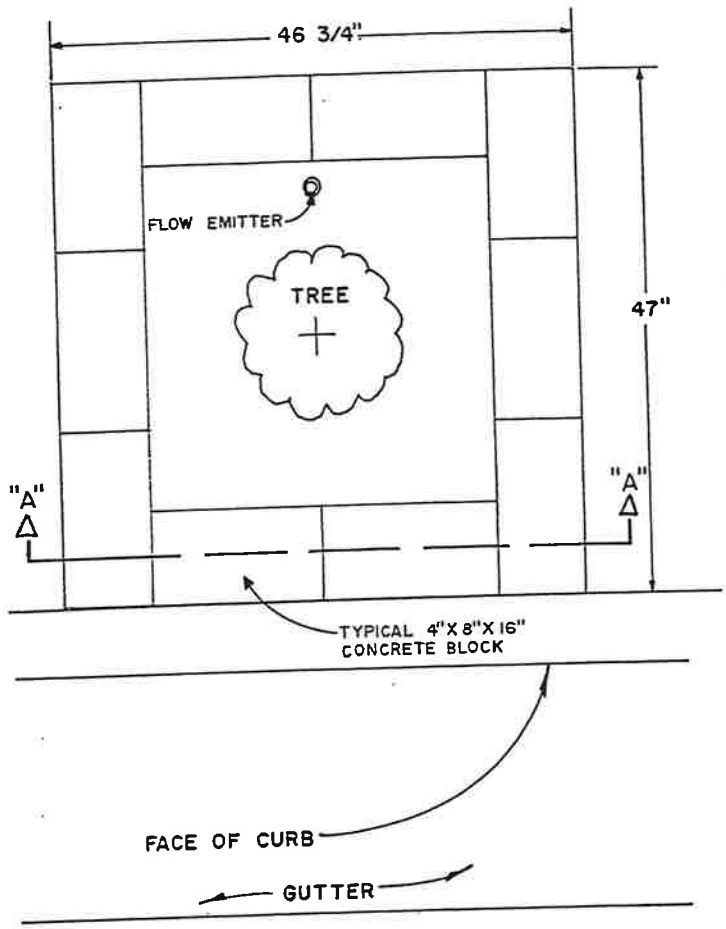


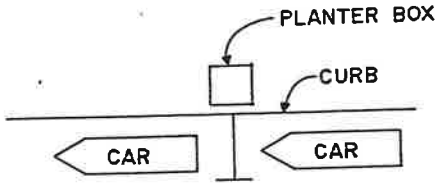
TYPICAL DESIGN

ENGINEERING DIVISION		CITY OF ATWATER, CALIF.	
TITLE	CURB HOUSE NUMBERS		STANDARD PLAN
DRN. RWS	APPROVED BY: Win Westfall	DATE: 5-18-82	M-4
DATE 11/81	WIN WESTFALL, CITY ENGINEER		
REV.			



SECTION A–A





LOCATE PLANTER AS SHOWN AND PER NOTE 5.

NOTES:

(1) WHEN NEW SIDEWALK IS POURED NO CONCRETE SHALL BE ALLOWED TO SEEP UNDER 2X4 FORMS.

(2) THIS PLANTER BOX IS DESIGNED FOR 4 X8X16 INCH CONCRETE BLOCKS.

(3) MEASUREMENTS OF PLANTER BOX HOLE FORMED IN SIDEWALK SHALL BE EXACT, AND SIDES OF FORMS USED MUST BE SQUARE, SIDES MUST BE PERPENDICULAR TO THE SURFACE OF THE SIDEWALK.

(4) NUMBER OF BOXES TO BE AS SHOWN ON IMPROVEMENT PLANS.

(5) TREES SHALL BE:
- A. 20' FROM STREET LIGHTS;
- B. 10' FROM DRIVEWAYS AND FIRE HYDRANTS;
- C. 35' FROM CURB RETURNS ON CORNER LOTS;
- D. MINIMUM 6' FROM SEWER OR WATER LINE & UTILITY BOXES.

(6) TREE PLANTER BOXES TO BE USED ONLY WITH TYPE IV SIDEWALK OR WHEN OTHERWISE APPROVED BY THE CITY ENGINEER.

(7) FLOW EMITTER(S) TO BE INSTALLED IN EACH PLANTER BOX. TYPE AND NUMBER AS REQUIRED BY CITY PARKS DIRECTOR. EMITTER(S) SHALL BE SERVICED BY A 3/4" SCH. 40 PVC LINE FROM THE PLACE OF BUSINESS AND PROVIDED WITH A READILY ASSESSABLE WATER SHUTOFF VALVE AND APPROVED BACK-FLOW PREVENTION DEVICE.

FOR NUMBER OF TREES AND SPACING, SEE SECTION 16.32.085, A.M.C.

NO SCALE

ENGINEERING DIVISION — CITY OF ATWATER, CALIF.

TITLE: TREE PLANTER BOX STANDARD

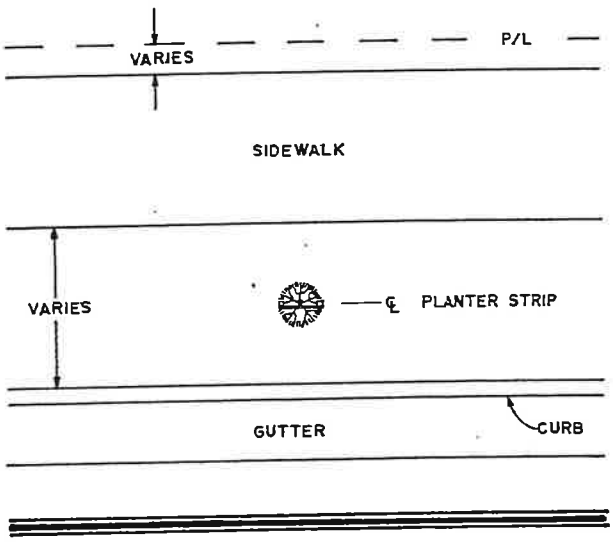
STANDARD PLAN: M-5

DRN. RWS | DATE 12/81 | REV.

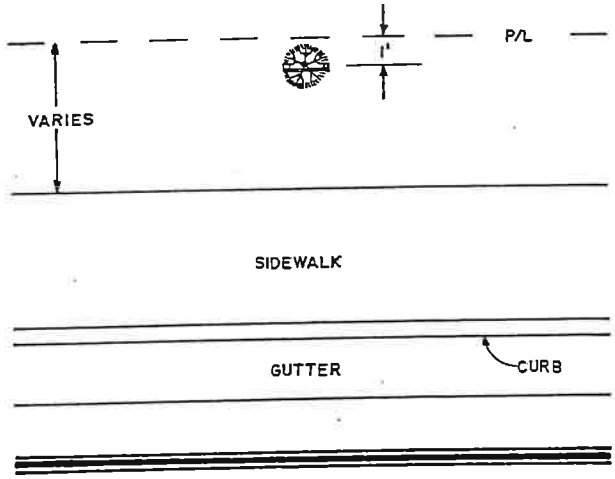
APPROVED BY: Win Westfall — WIN WESTFALL, CITY ENGINEER

DATE: 5-18-82

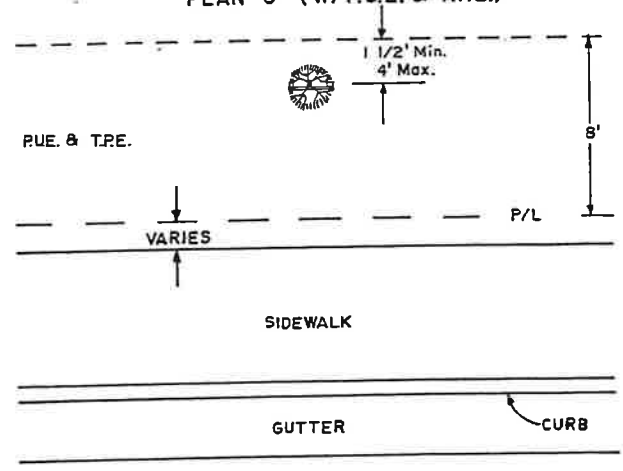
PLAN A (Planter Strip)



PLAN B (No T.P.E)

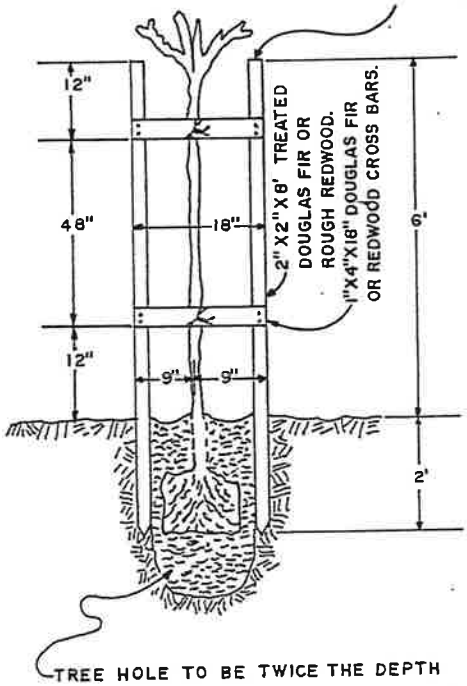


PLAN C (W/P.U.E. & T.P.E.)



TREE TIE

TREE PLANTING AND STAKING



TREE HOLE TO BE TWICE THE DEPTH AS ROOT BALL AND A FORM OF SLOW RELEASE FERTILIZER INSTALLED.

1. TYPE OF TREE TO BE DETERMINED BY PARKS & RECREATION DIRECTOR.
2. TREES SHALL BE:
   A. 20' FROM STREET LIGHTS;
   B. 10' FROM DRIVEWAYS AND FIRE HYDRANTS;
   C. MINIMUM 6' FROM SEWER OR WATER LINES & UTILITY BOXES;
   D. 35' FROM CURB RETURNS ON CORNER LOTS.

FOR NUMBER OF TREES AND SPACING, SEE SECTION 16.32.085, A.M.C.

NO SCALE

ENGINEERING DIVISION — CITY OF ATWATER, CALIF.

TITLE: TREE PLANTING STANDARD

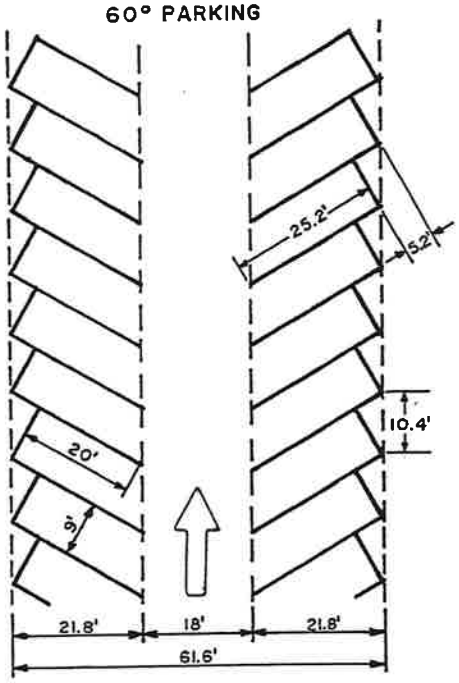
STANDARD PLAN: M-6

DRN. RWS | DATE 12/81 | REV.

APPROVED BY: Win Westfall — DATE: 5-18-82

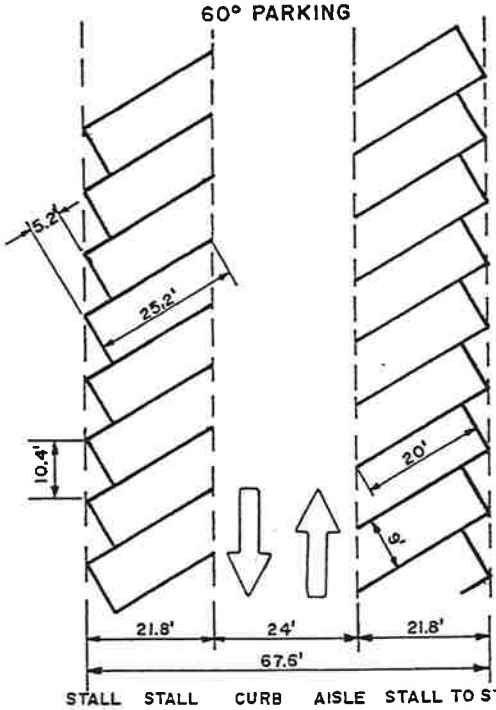
WIN WESTFALL, CITY ENGINEER

ONE-WAY TRAFFIC
60° PARKING



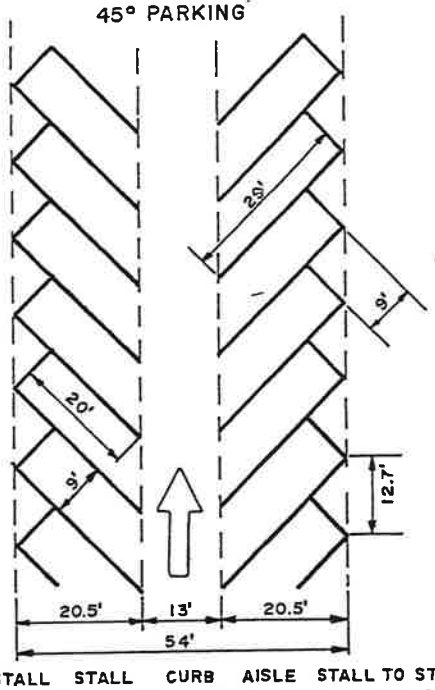
ANGLE	STALL WIDTH	STALL LENGTH	CURB LENGTH	AISLE WIDTH	STALL TO STALL WITH AISLE
60°	9'	20'	10.4'	18'	61.6'

TWO-WAY TRAFFIC
60° PARKING



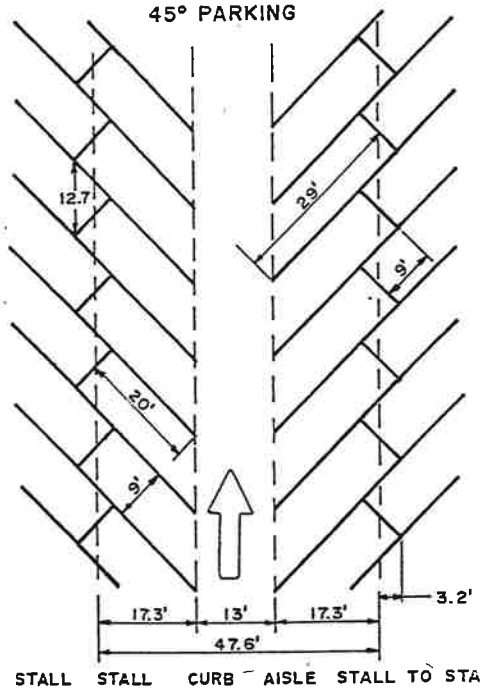
ANGLE	STALL WIDTH	STALL LENGTH	CURB LENGTH	AISLE WIDTH	STALL TO STALL WITH AISLE
60°	9'	20'	10.4'	24'	67.6'

ONE-WAY TRAFFIC
45° PARKING



ANGLE	STALL WIDTH	STALL LENGTH	CURB LENGTH	AISLE WIDTH	STALL TO STALL WITH AISLE
45°	9'	20'	12.7'	13'	54'

ONE-WAY TRAFFIC
45° PARKING



ANGLE	STALL WIDTH	STALL LENGTH	CURB LENGTH	AISLE WIDTH	STALL TO STALL WITH AISLE
45°	9'	20'	12.7'	13'	47.6'

NO SCALE

ENGINEERING DIVISION — CITY OF ATWATER, CALIF.

TITLE **PARKING LOT**

STANDARD PLAN **M-7**

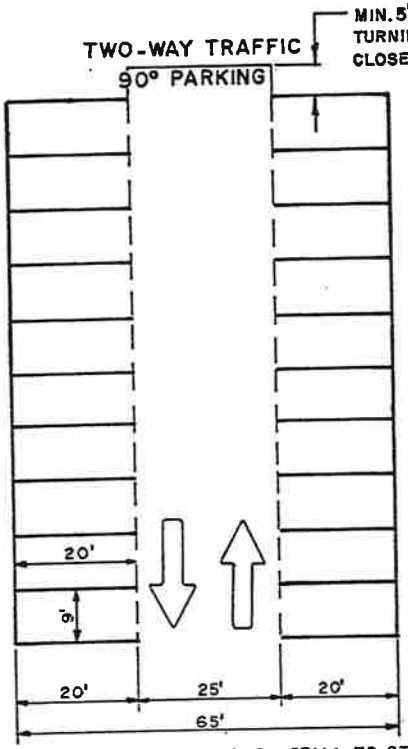
DRN. RWS

DATE 12/81

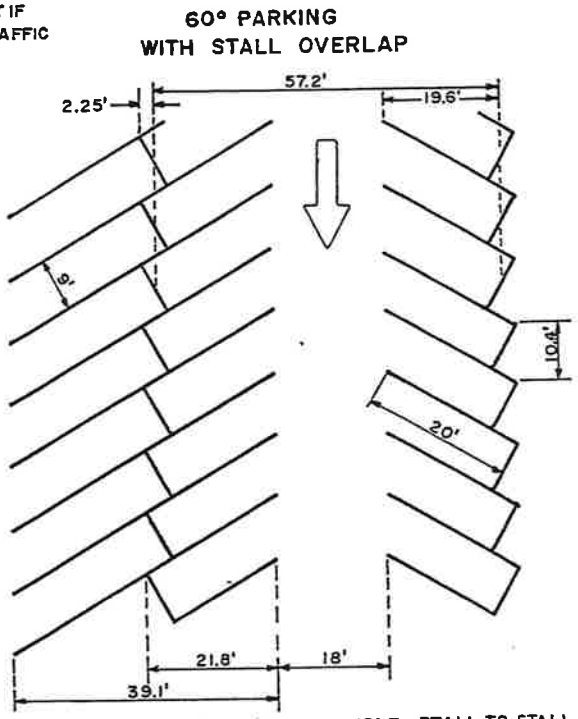
REV.

APPROVED BY: Win Westfall — DATE: 5-18-82

WIN WESTFALL, CITY ENGINEER

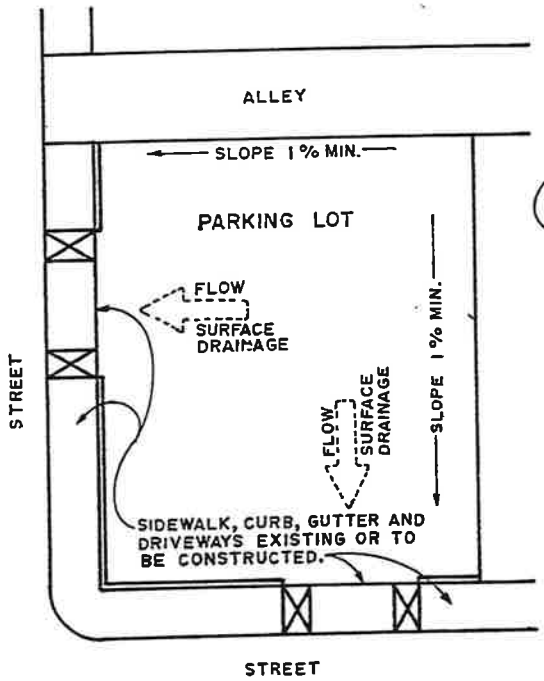


ANGLE	STALL WIDTH	STALL LENGTH	AISLE WIDTH	STALL TO STALL WITH AISLE
90°	9'	20'	25'	65'



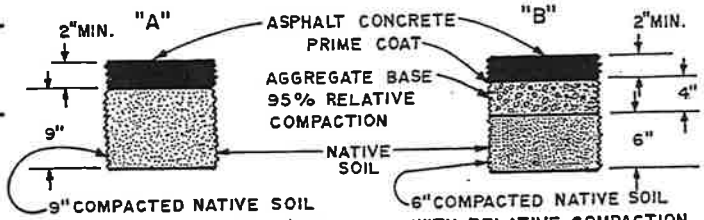
ANGLE	STALL WIDTH	STALL LENGTH	CURB LENGTH	AISLE WIDTH	STALL TO STALL WITH AISLE
60°	9'	20'	10.4'	18'	57.2'

TWO-SIDED BAY WITH OVERLAP—39.1'



DRIVEWAY LOCATIONS TO BE APPROVED BY THE CITY ENGINEER.

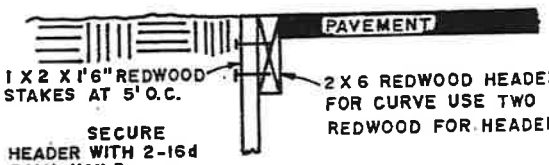
TYPICAL CROSS SECTIONS



9" COMPACTED NATIVE SOIL WITH RELATIVE COMPACTION OF 95%-TEST METHOD NO. CALIF. 216

6" COMPACTED NATIVE SOIL WITH RELATIVE COMPACTION OF 90%-TEST METHOD NO. CALIF. 216

NOTES:
1. MINIMUM BACKUP SPACE REQUIRED FOR ONE ROW PARKING WITH TWO-WAY TRAFFIC IS 25'.
2. HANDICAP STALL WIDTH-12' MINIMUM.
3. PARKING BUMPERS TO BE PLACED SO THAT PARKED CARS WILL NOT OVERHANG ON SIDEWALKS OR PARKWAYS.
4. SURFACE DRAINAGE SHALL BE TO THE STREET.
5. SURFACE DRAINAGE TO ALLEY ONLY BY WRITTEN APPROVAL OF THE CITY ENGINEER.
6. REDWOOD HEADER TO BE USED WHEN PAVEMENT BORDERS SOIL (SEE DRAWING BELOW).



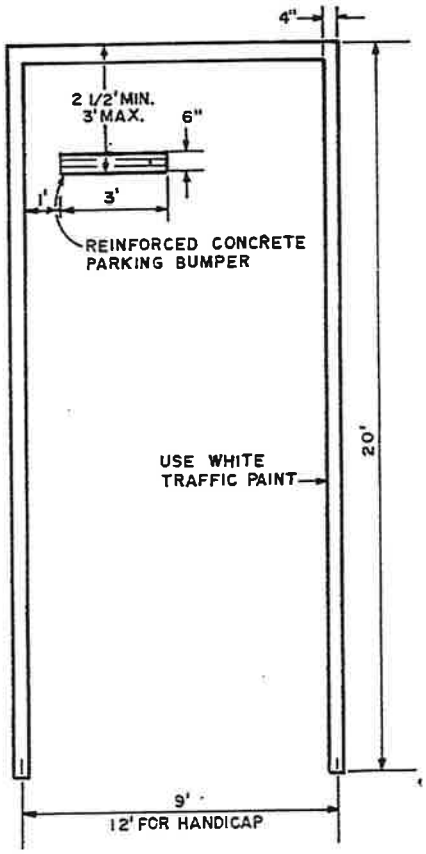
NO SCALE

ENGINEERING DIVISION — CITY OF ATWATER, CALIF.

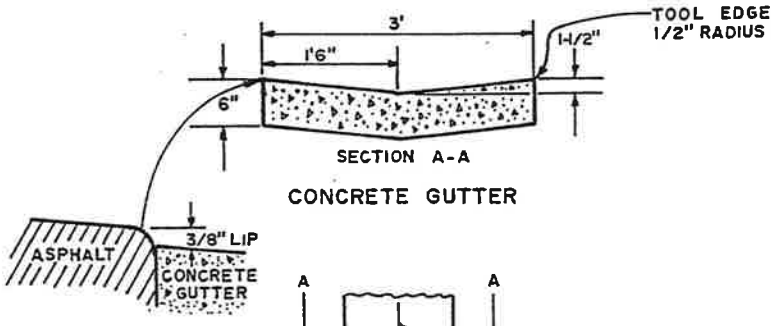
TITLE: PARKING LOT

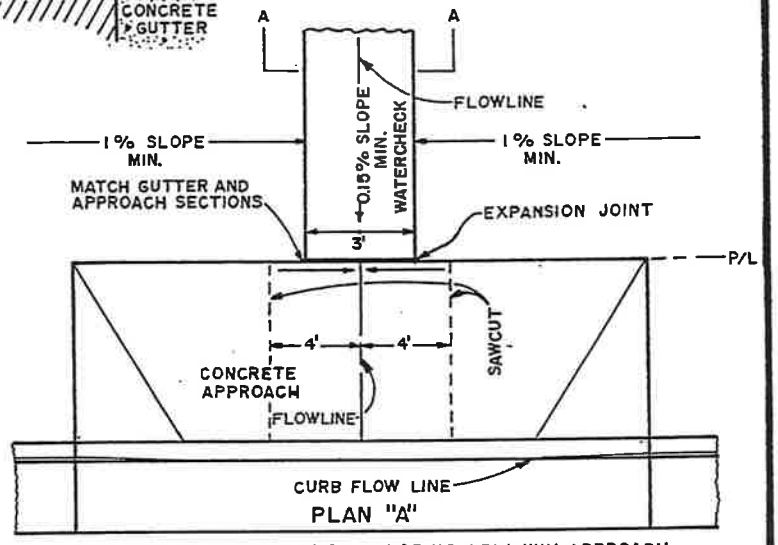
STANDARD PLAN: M-8

DRN. RWS	APPROVED BY: Win Westfall	DATE: 5-18-82
DATE 12/81	WIN WESTFALL, CITY ENGINEER	
REV. 6/82		



PARKING STALL

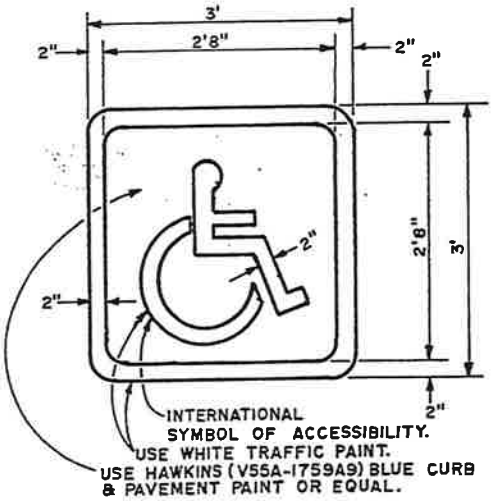




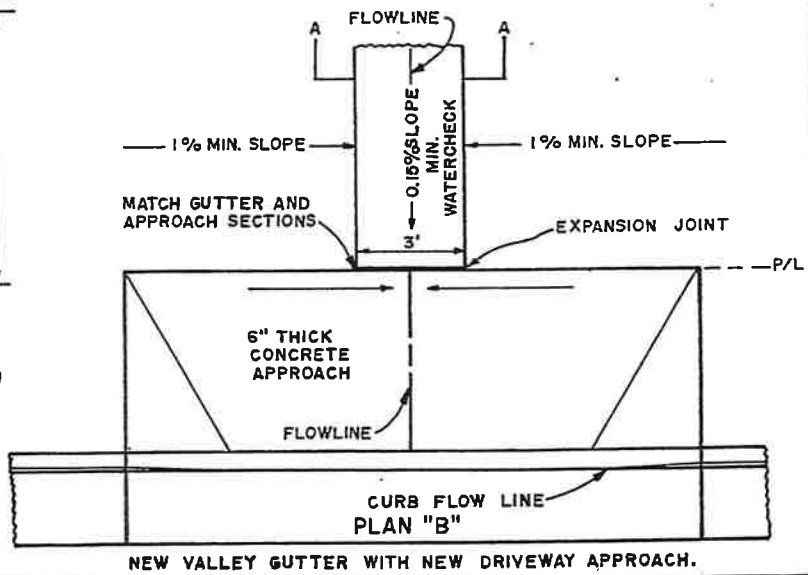
NEW VALLEY GUTTER WITH EXISTING DRIVEWAY APPROACH.

NOTES:

1. CONCRETE SHALL BE CLASS "B" (5 SACK) CONCRETE.
2. SUBGRADE SOIL SHALL BE COMPACTED TO 95% RELATIVE COMPACTION.
3. CONCRETE SHALL BE BROOM FINISHED.
4. EXPANSION JOINTS SHALL BE INSTALLED AT 36' INTERVALS AND WEAKENED PLANE JOINTS EVERY 12'.
5. CONCRETE SHALL BE CURED BY AN IMMEDIATE APPLICATION OF A CURING COMPOUND.



HANDICAP PARKING
EMBLEM



NEW VALLEY GUTTER WITH NEW DRIVEWAY APPROACH.

NO SCALE

ENGINEERING DIVISION — CITY OF ATWATER, CALIF.

TITLE: PARKING LOT

STANDARD PLAN: M-9

DRN. RWS | DATE 12/81 | REV.

APPROVED BY: Win Westfall — WIN WESTFALL, CITY ENGINEER

DATE: 5-19-82

LOT LINE MONUMENTATION

Survey monuments shall be set at all corners, angle points, and curve points of all lots. Monuments shall be 1-inch O.D. (3/4 inch I.D.) galvanized iron pipe, 24 inches in length, set 12 inches below finish grade, and shall be visibly tagged or stamped with the certificate number of the surveyor or engineer setting it.

SUBDIVISION BOUNDARY MONUMENTATION

Subdivision boundary monuments, except those in street pavement, shall be 1-1/2 inches O.D. (1-1/4 inch I.D.) galvanized iron pipe, 24 inches in length, set 12 inches below finish grade, capped and tagged. Subdivision boundary monuments in street pavement shall be 1-inch O.D. (3/4-inch I.D.) galvanized iron pipe, 18 inches in length, top of pipe shall be set 1/2 inch below the pavement surface.

STREET CENTERLINE MONUMENTATION

Survey monuments shall be set at all street centerline intersections. Number and location of monuments within a subdivision is subject to the approval of the City Engineer.
Centerline and street intersection monuments shall be 1-inch O.D. (3/4-inch I.D.) galvanized iron pipe, and not less than 18 inches in length. Top of the pipe shall be 1/2-inch below pavement surface.

SECTION AND QUARTER CORNER MONUMENTS

Permanent survey monuments shall be placed at all section and quarter corners within the improvement. The section corner monuments shall be Class "B" concrete, poured in place, with minimum dimensions of 6" diameter by 24 inches. Plates shall be placed before the concrete has acquired its initial set and shall be firmly embedded in the concrete. Monuments shall be visibly tagged or stamped with the certificate number of the surveyor or engineer setting it. In paved areas, a monument box is required, with lettering "MONUMENT" on cover. Frame to be set in 5 sack concrete mix (Class "B" per State specifications) 24 inches square by 6 inches deep, matching pavement grades. Use Brooks 4-TT or Christy G5 concrete boxes with traffic lids, or an approved equal.

ENGINEERING DIVISION		CITY OF ATWATER, CALIF.
TITLE: SURVEY MONUMENTATION		STANDARD PLAN
DRN.	APPROVED BY: Win Westfall	DATE: 5-18-82
DATE	WIN WESTFALL, CITY ENGINEER	M-10
REV. 4/83		

RESTORING MONUMENTS

If any monument is found in a perishable condition, it shall be replaced with a permanent monument and be so noted on the final map. The instructions as set forth in the 1973 "Manual of Instructions for the Survey of Public Lands of the United States" published by the Bureau of Land Management, Department of the Interior, Washington, D.C. shall be followed for the subdivision of public lands and privately owned lands, in the restoration of lost or obliterated corners, and the retracement of section lines.

RELATION TO ADJACENT AREA

The surveyor shall clearly show on the final map the character, description and positions of all stakes, monuments, or other evidences found on the ground and used to determine the boundaries of the tract. If necessary, a Record of Survey map shall be separately recorded.

The final map shall show corners of all adjoining subdivisions, or portions thereof, by lot or block number, tract name and/or number, and place of record. The relation of the tract to adjoining subdivisions shall be shown by ties.

Whenever the City Engineer or County Surveyor has established the centerline of a street or alley, the data shall be shown on the final map, indicating all monuments found and making reference to a field book or map. If the points were reset by ties, the fact shall be stated.

The final map shall show all city boundary lines crossing or adjoining the subdivisio clearly designated and tied in.

The final map shall show suitable primary survey control points, including section corners, and monuments existing outside of the proposed subdivision, as required.

BOUNDARY LINES

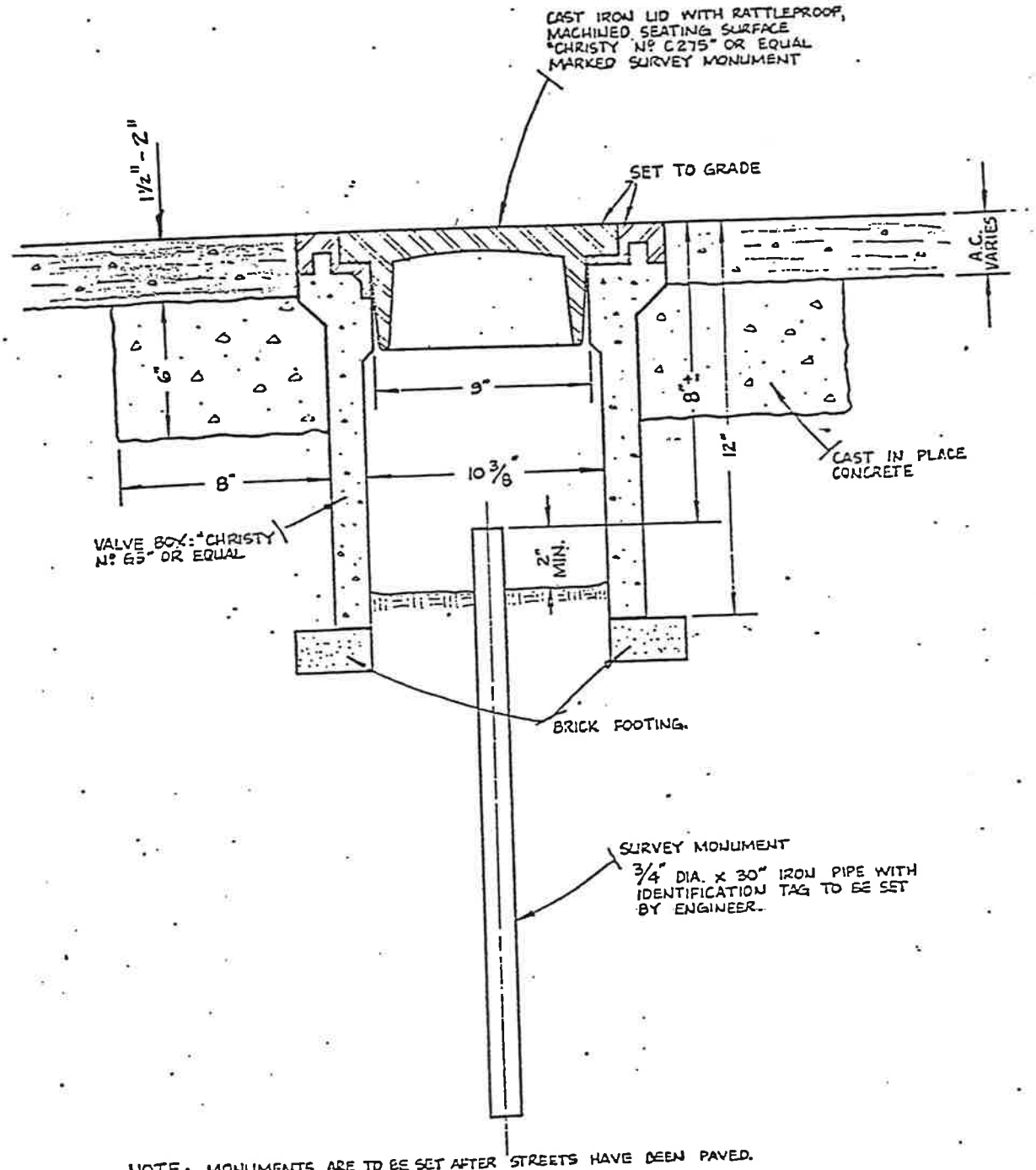
City boundaries, and lines between registered (Torrens Title) and unregistered land, and between a separate ownership of registered land, shall be lot lines; that is, such a line shall not cut a lot, but shall be made a line of a lot, except where permitted by the City Engineer.

ENGINEERING DIVISION		CITY OF ATWATER, CALIF.
TITLE: SURVEY MONUMENTATION		STANDARD PLAN
DRN.	APPROVED BY: Wm Westfall, CITY ENGINEER	DATE: 5-18-82
DATE		M-11
REV.		

NOTATION OF MONUMENT ON THE FINAL MAP

The character, type and positions of all monuments and encasements shall be noted on the final map. If any shortage or excess of distance is found on the ground between existing monuments, compared with the original record, any division of the total must bear its proportion of such shortage or excess. If a monument is replaced, indicate type and condition of monument found, and the date of replacement.

ENGINEERING DIVISION		CITY OF ATWATER, CALIF.	STANDARD PLAN
TITLE	SURVEY MONUMENTATION		M-12
DRN.	APPROVED BY: Wm Westfall, CITY ENGINEER	DATE: 5-18-82	
DATE			
REV.			



NOTE: MONUMENTS ARE TO BE SET AFTER STREETS HAVE BEEN PAVED.

CITY OF ATWATER, CALIF.

ENGINEERING DIVISION

TITLE **MONUMENT BOX**

STANDARD PLAN **M-13** (Modified)

DRN.

DATE

REV. 12/94

APPROVED BY: JOHN E. MEDINA, CITY ENGINEER

DATE: 8/24/98

PUBLIC IMPROVEMENTS

All streets, alleys pedestrian walkways, etc, shall be improved and shall conform to the City of Atwater construction standards and specifications, or modifications thereof to be approved by the City Engineer.

Lot grades shall be at elevations above level of possible inundation by storm or flood waters. The location, type and character of said improvements and grades for all work shall be subject to the approval of the City Engineer prior to submittal to the City Council.

PLANS AND PROFILE REQUIREMENTS

All plans and proposals for improvements of curbs, gutters, sidewalks, paving, sewer, storm drain and water mains and laterals in any street, proposed street or alley shall be accompanied by a set of drawings showing the plan and profile of the street to be improved and of the improvements to be made, and shall be approved by the City Engineer before being submitted to, or approved by the City Council. Said plans and profiles shall show the following:

A. STREET DESIGN PLANS:

Plans - Plan view shall show the street layout, property lines, stationing along centerline, width of streets and parkways, location of curbs, gutters sidewalks, cross gutters and any other drainage provisions. Stations at points of curves and curve data, curb return stations, curb return radii. Other dimensions and limits of work as may be pertinent to the planned layout, and proposed type and thickness of structural sections for all surfaces to be paved or otherwise improved, locations of all proposed signs, street lights, and any other improvements or structures. Said structural sections shall be shown on the plans in a cross-section form.

Profiles-Profiles shall show stationing, elevations and gradients of all proposed centerline profiles and original ground profiles. Elevations shall be shown at beginning and end of horizontal and vertical curves together with all vertical curve data. Vertical curves are required when the difference in grades equals or exceeds 1%. The curve shall be designed to provide a length of 20 feet for each percent of grade differential however, the minimum length shall not be less than 40 feet for any curve. Elevations at points of curb returns, cross gutter P.I's and elevation(s) and location(s) of reference datum. Benchmark data shall be shown in a boxed area at the upper right hand corner of the title sheet.

B. SEWER, STORM DRAIN AND WATER DESIGN PLANS:

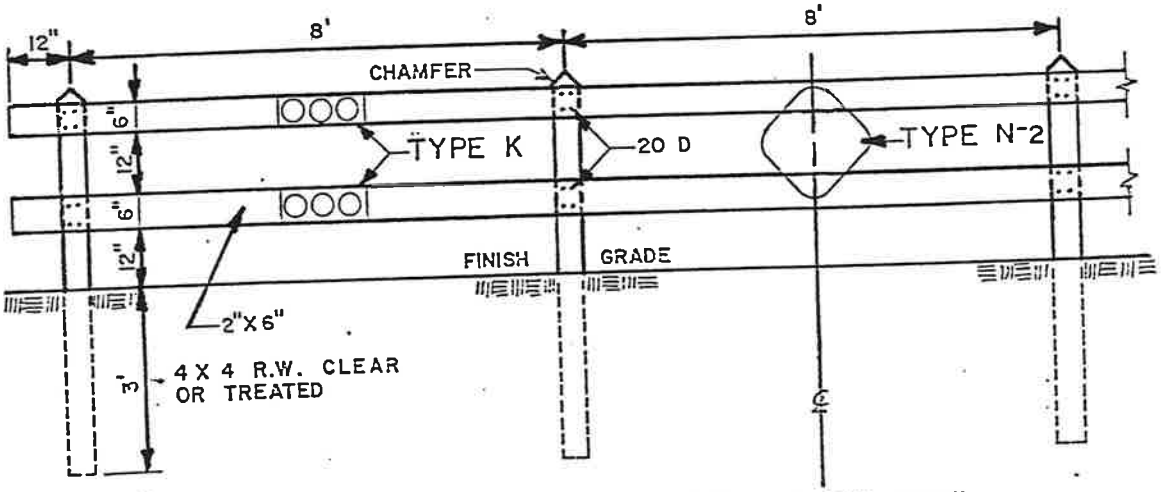
Plans- Plans may be separate from street design plans if necessary for clarity and shall show the proposed location of sewer, storm drain and water lines with reference to property lines or centerlines, stationing of proposed manholes, cleanouts, catch basins and laterals. Proposed pipe sizes, lateral sizes , and manhole sizes shall be shown. Type of pipe, length to be constructed, sewer lateral locations shall be shown. Existing elevation of manholes shall be shown for connection point. Stationing shall be shown on the "As Built" plans.

ENGINEERING DIVISION		CITY OF ATWATER, CALIF.
TITLE: PLAN AND PROFILE REQUIREMENTS		STANDARD PLAN
DRN.	APPROVED BY: Win Westfall	DATE: 5-18-82
DATE	WIN WESTFALL, CITY ENGINEER	M-14
REV.		

Water lines shall include size and type of existing lines to be tied into, locations, length, size and type of proposed water lines and services, location of existing and proposed valves, fire hydrants, plugged tees or crosses for future connections, flushing valves, and other proposed appurtenance.

Profiles -- Profiles shall show stationing, elevations, length, type and size of all sewer, storm drain and water pipes, gradients, locations of existing and proposed manholes and cleanouts, invert grades at manholes. All pipes shall be drawn to show both inverts and soffits.

ENGINEERING DIVISION		CITY OF ATWATER, CALI	STANDARD PLA
TITLE	PLAN AND PROFILE REQUIREMENTS		M-15
DRN.	APPROVED BY: Win Westfall	DATE: 5-18-82	
DATE	WIN WESTFALL, CITY ENGINEER		
REV.			



TYPICAL SIDE PANEL

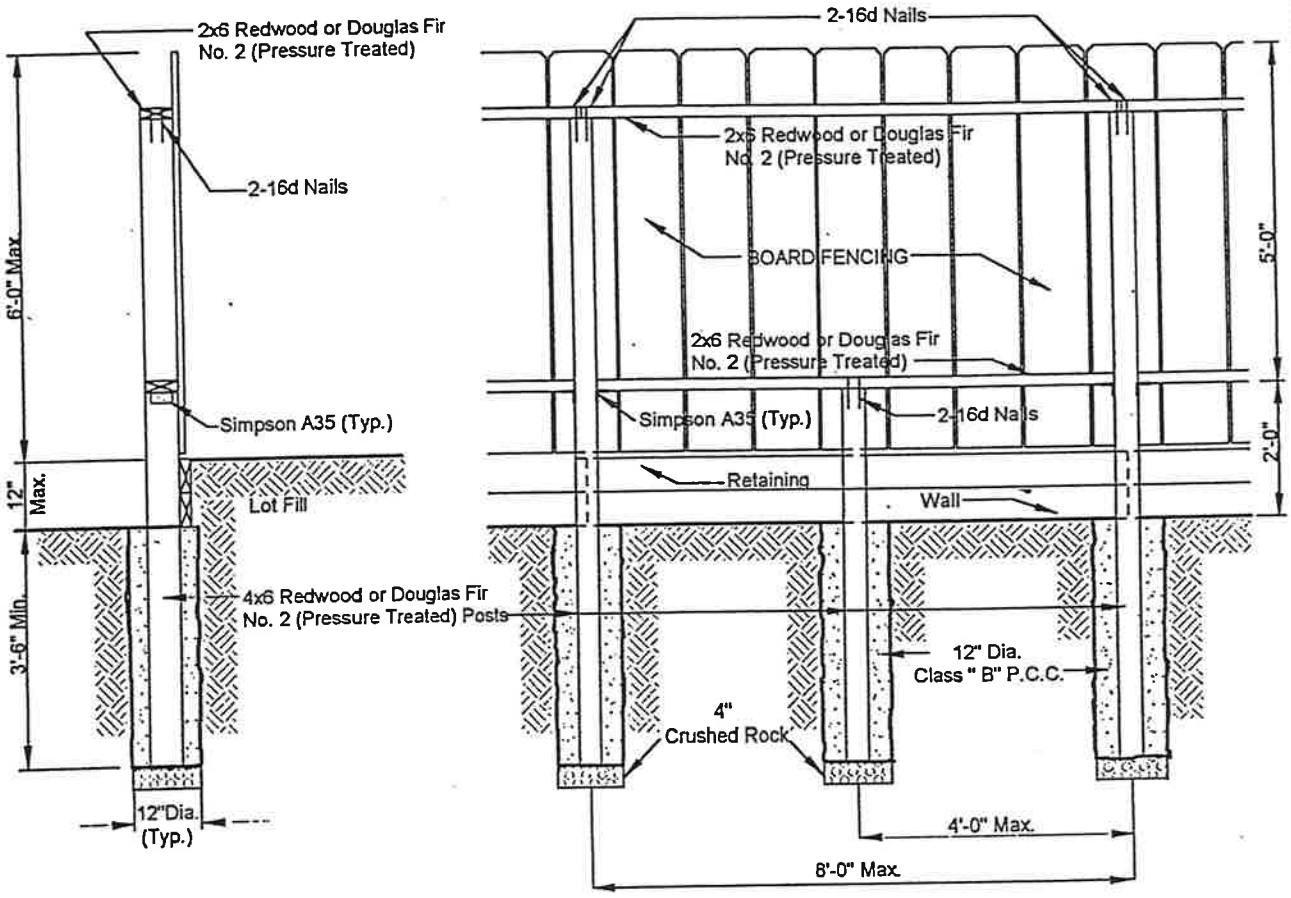
TYPICAL CENTER PANEL

ROADWAY WIDTH	NO. OF PANELS	TOTAL LENGTH
10'	1	10'
18'-20'	2	18'
32'	3	26'
36'-40'	4	34'
64'	7	58'

Notes:

1. Assembly shall be painted with two coats of white exterior prime paint, one coat to be applied after fabrication.
2. N-2 reflector sign is to be bolted to center of barricade.
3. Nuts, bolts, and nails shall be galvanized steel.

ENGINEERING DIVISION		CITY OF ATWATER, CALIF.
TITLE	TYPICAL BARRICADES	STANDARD PLAN M-16
DRN.	APPROVED BY: Win Westfall	DATE: 5-18-82
DATE	Win Westfall, City Engineer	
REV.		



NOTES:

1. REDWOOD FENCING IS NOT A REQUIREMENT BUT MAY BE PUT ON THIS WALL.
2. REDWOOD OR DOUGLAS FIR NO. 2 (PRESSURE TREATED) 2x6 BOARDS ARE TO BE USED FOR THE RETAINING WALL PORTION.
3. POST EMBEDMENT SHALL BE IN CONFORMANCE WITH UNIFORM BUILDING CODE SECTION 1806.7.2.
4. TREATED WOOD SHALL BE GRADED IN ACCORDANCE WITH U.B.C. STANDARDS.
5. NO SURCHARGE IS PERMITTED ON THIS RETAINING WALL.

ENGINEERING DIVISION — CITY OF ATWATER, CALIF.

TITLE: **RETAINING WALL-12" OR LESS**

STANDARD PLAN: **M-17 REVISED**

DRN. HED

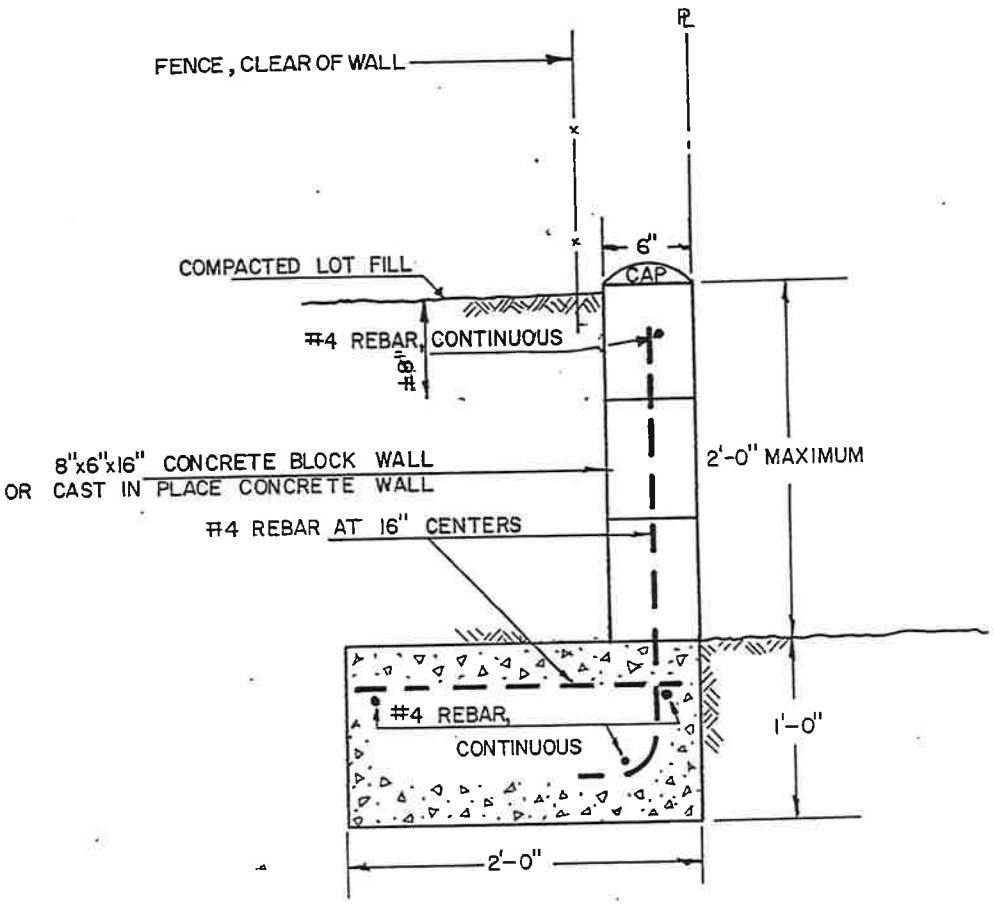
DATE 10/97

REV.

APPROVED BY: John A. Haug — DATE: 11-13-97

JOHN A. HAUG, CITY ENGINEER

NOT TO SCALE



NOTE: ALL REBAR TO BE 3" CLEAR.
NO SURCHARGE FROM LOT FILL IS ALLOWED ON THIS WALL.
A FENCE UP TO 6'-0" HIGH MAY BE BUILT WITH THIS WALL.

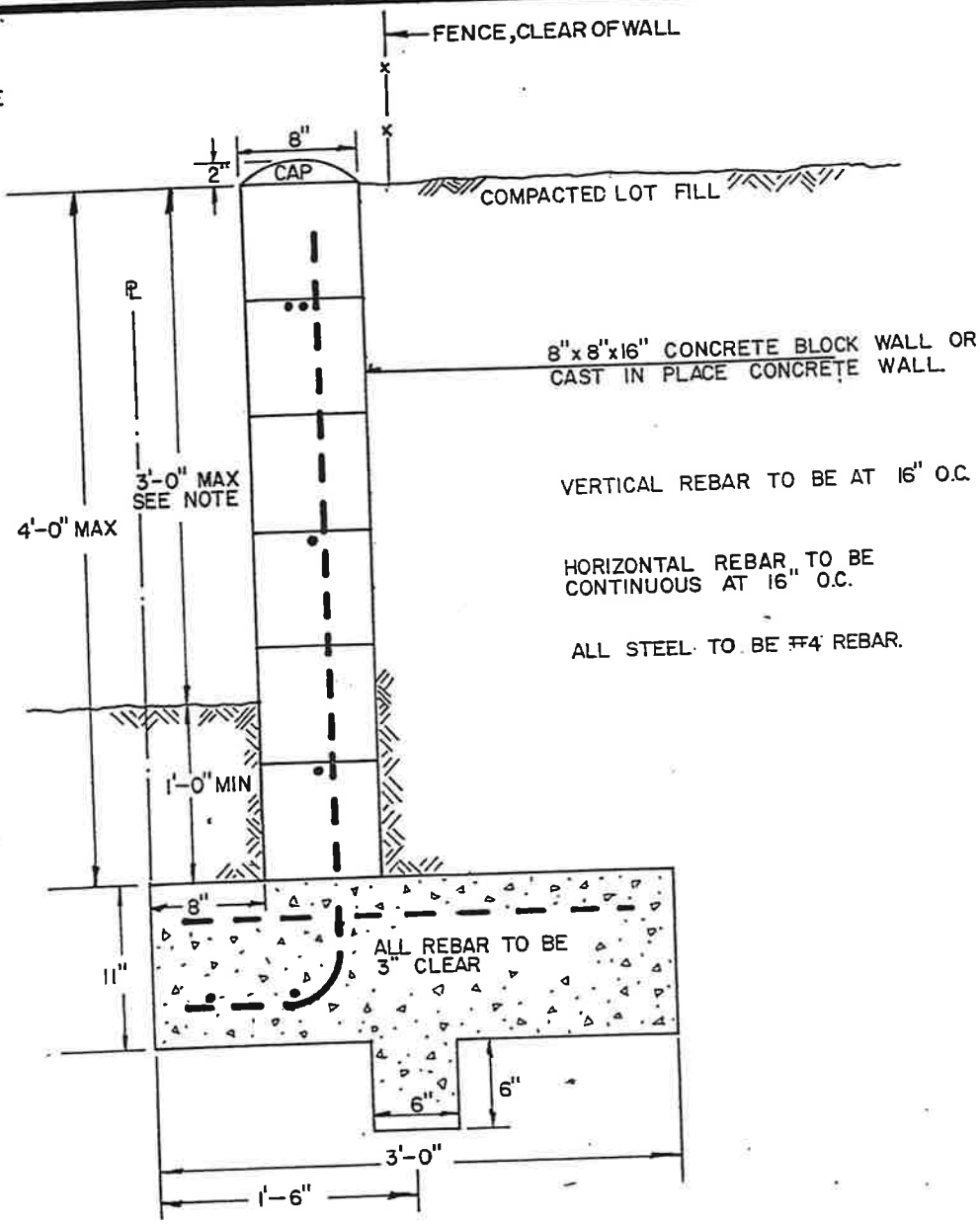
ALL CELLS SHALL BE SOLID GROUTED ON BLOCK WALLS.

NO BACKFILL FOR 7 DAYS AFTER CONSTRUCTION.

EXPANSION JOINTS ARE TO BE USED IF THE WALL EXCEEDS 50'-0" IN LENGTH. JOINTS TO BE AT INTERVALS OF 20'-30' AND SHALL EXTEND FROM TOP OF WALL TO THE FOOTING. REBAR SHALL BE INTERRUPTED AT THE JOINT. EXPANSION JOINT AND EXPANSION MATERIAL TO BE APPROVED BY THE CITY ENGINEER.

ENGINEERING DIVISION		CITY OF ATWATER, CALIF.
TITLE RETAINING WALL— 1' TO 2' HIGH		STANDARD PLAN
DRN. PVT	APPROVED BY: Win Westfall	DATE: 5-19-82
DATE 2-82	WIN WESTFALL, CITY ENGINEER	M-18
REV.		

NOT TO SCALE



NOTE: ANY FILL OVER 3'-0" REQUIRES AN ENGINEERED WALL TO BE DESIGNED BY A LICENSED ENGINEER AND APPROVED BY THE CITY ENGINEER.

NO SURCHARGE FROM LOT FILL IS ALLOWED ON THIS WALL.

A FENCE UP TO 6'-0" HIGH MAY BE BUILT WITH THIS WALL

ALL CELLS SHALL BE SOLID GROUTED ON BLOCK WALLS.

NO BACKFILL FOR 7 DAYS AFTER CONSTRUCTION.

EXPANSION JOINTS TO BE CONSTRUCTED AS PER STANDARD PLAN M-18.

ENGINEERING DIVISION — CITY OF ATWATER, CALIF.

TITLE: RETAINING WALL – 3' AND LESS

STANDARD PLAN: M-19

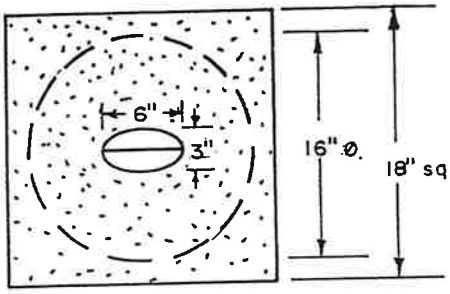
DRN. PVT

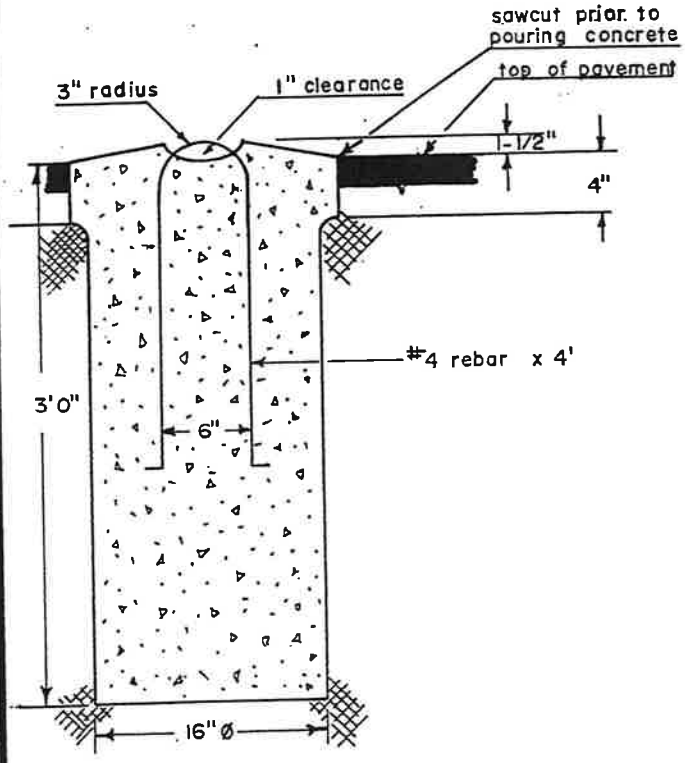
DATE 2-19-82

REV.

APPROVED BY: Win Westfall — DATE: 5-18-82

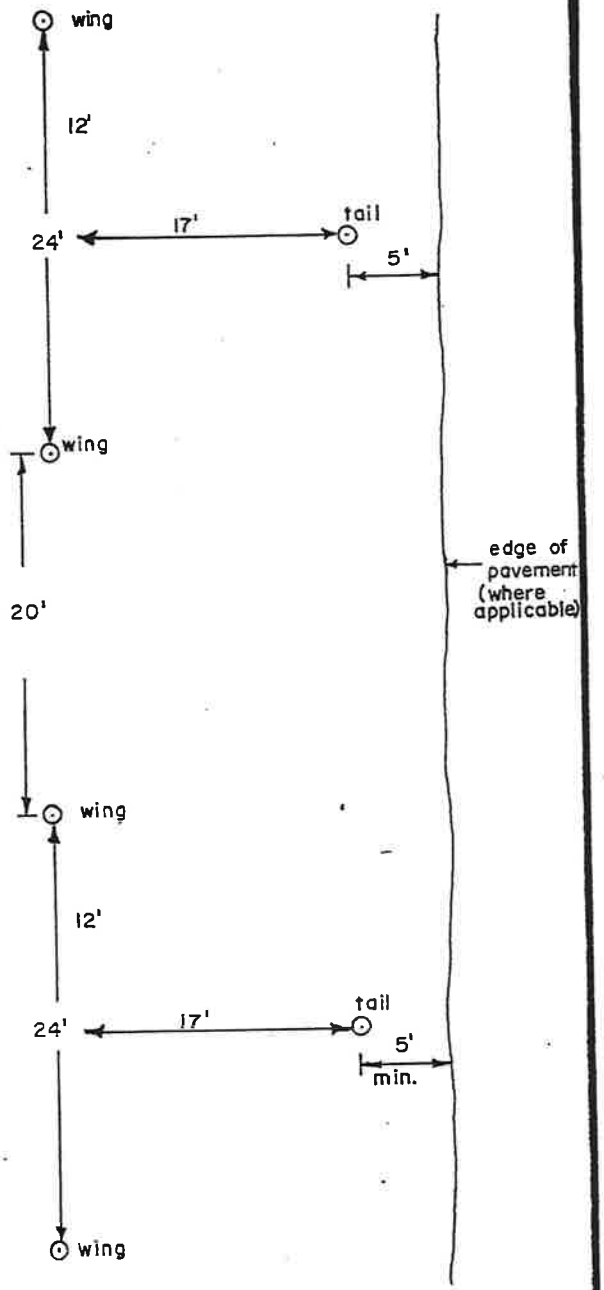
WIN WESTFALL, CITY ENGINEER





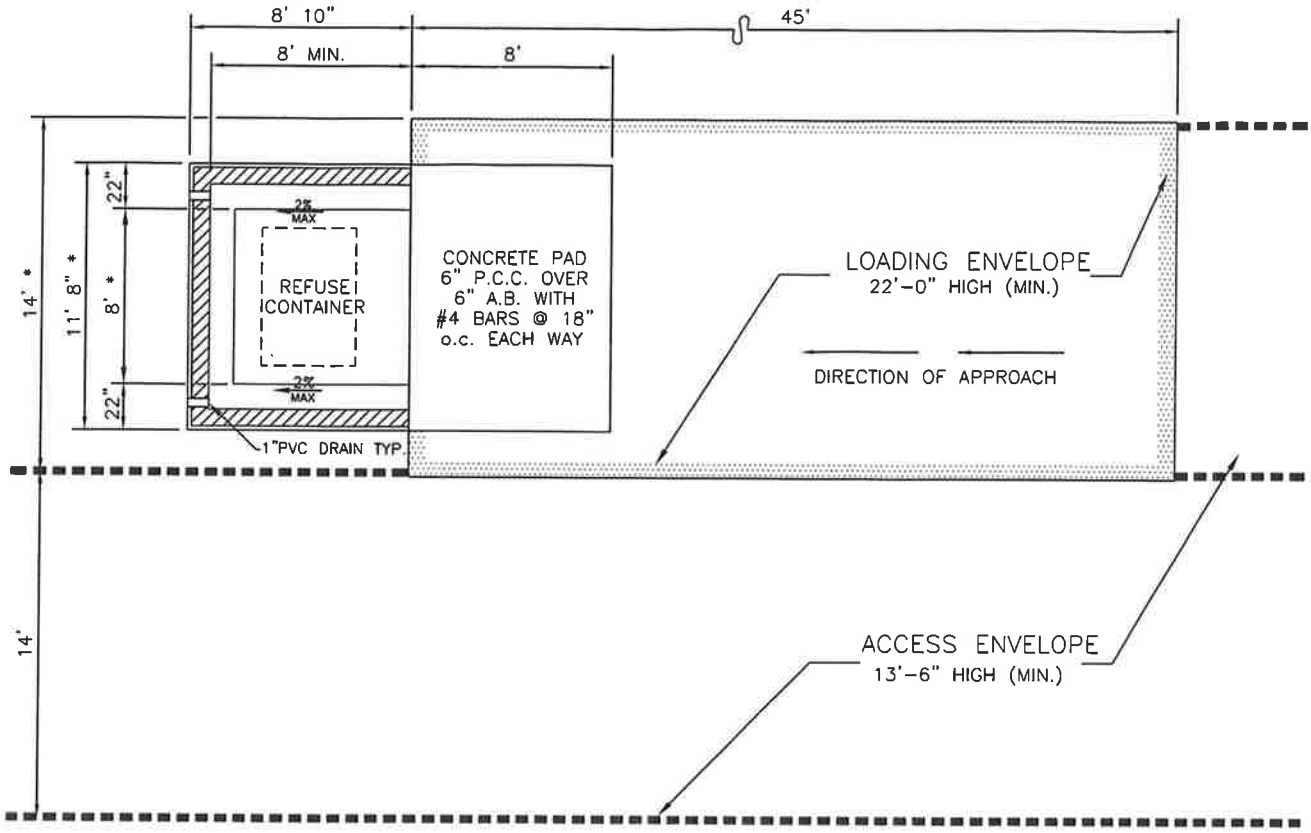
TIEDOWN DETAIL (NTS)

NOTE: 4.54 cu ft Portland Cement Concrete Class "B"



TIEDOWN LOCATIONS (NTS)

ENGINEERING DIVISION			CITY OF ATWATER, CALIF.
TITLE TIEDOWN DETAILS AND LOCATIONS			STANDARD PLAN
DRN. PVT	APPROVED BY: Win Westfall	DATE: 5-18-82	M-20
DATE 12-81	WIN WESTFALL, CITY ENGINEER		
REV.			



NOTES:

1. SERVICE IS NORMALLY PROVIDED MONDAY THROUGH SATURDAY, 11:00 P.M. TO 2:30 P.M. REGULAR SCHEDULED SERVICE IS GIVEN PRIORITY OVER ON-CALL SERVICE. THE CITY WILL SUPPLY AND MAINTAIN 3, 6, AND 8-CUBIC YARD CONTAINERS. CONTAINERS ARE EMPTIED AT THE SITE.
2. SERVICE ENVELOPES SHALL NOT BE IMPAIRED IN ANY WAY. DIMENSIONS ARE THE MINIMUM (CLEAR) VALUES REQUIRED FOR PROPER SERVICE.
3. CONTAINER ACCESS SHALL BE AT LEAST 14 FEET WIDE AND 13 FEET 6 INCHES HIGH. REFUSE VEHICLE TURN RADIUS DESIGN SHALL COMPLY WITH THE STATE HIGHWAY DESIGN MANUAL (LATEST EDITION), AND THE "BUS" TURNING TEMPLATE SHALL BE USED AS A MINIMUM. INSIDE TURN RADIUS SHALL NOT BE WITHIN THE LOADING ENVELOPE. DRIVE-THROUGH ACCESS MUST BE PROVIDED. MINIMUM HEIGHT OVER LOADING AREA IS 22 FEET 0 INCHES.
4. ENCLOSURE OPTIONAL UNLESS REQUIRED BY DEVELOPEMENT APPROVAL. GATES, IF ANY, SHALL BE OPENED BY CUSTOMER PRIOR TO SERVICE COLLECTION AND SHALL BE POSITIONED TO AVOID INTERFERENCE WITH SERVICE. ENCLOSURE LOCATION IS SUBJECT TO APPROVAL BY THE SOLID WASTE MANAGER.
5. DURING CONTAINER LOADING, FRONT WHEEL AND AXLE LOADS MAY EXCEED STREET AND HIGHWAY LIMITS. THE CITY IS NOT RESPONSIBLE FOR INADEQUATELY DESIGNED OR CONSTRUCTED PAVEMENT ON THE SITE.
6. ENTRANCE SHALL NOT BE RESTRICTED BY HINGES, GATES, ETC.
7. REFUSE DIVISION WILL CONDUCT AN ONSITE INSPECTION OF ENCLOSURE FORMS PRIOR TO CONCRETE BEING POURED.

* ADD 8 FEET FOR EACH ADDITIONAL REFUSE CONTAINER.

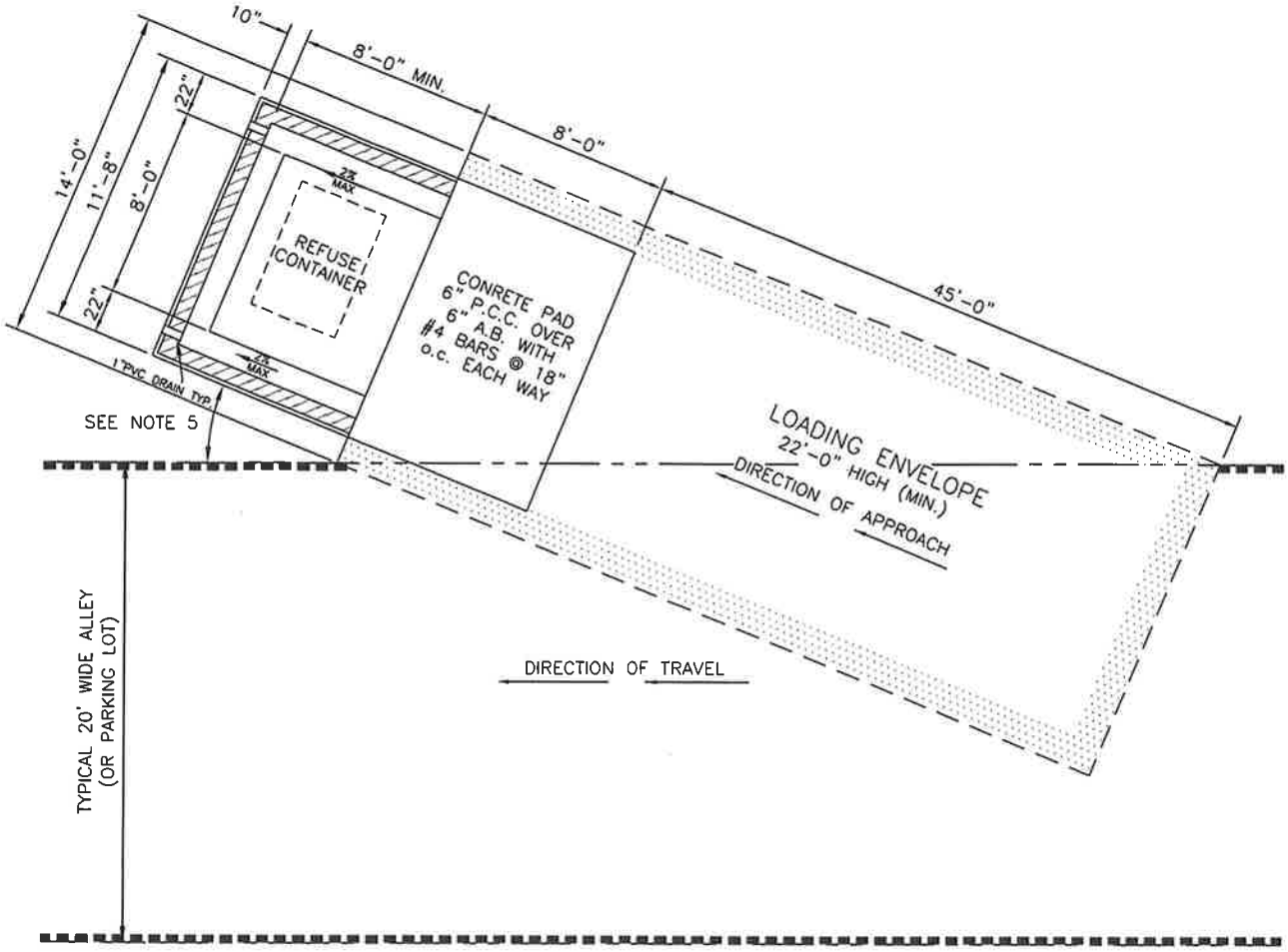
REV.		BY

FRONT END LOADER SERVICE

APPROVED _____
COMMUNITY DEVELOPMENT DEPARTMENT

CITY OF ATWATER
STANDARD DETAIL

DRAWN:		NO.
DATE:	12/04/12	R-2
SCALE:	N.T.S	



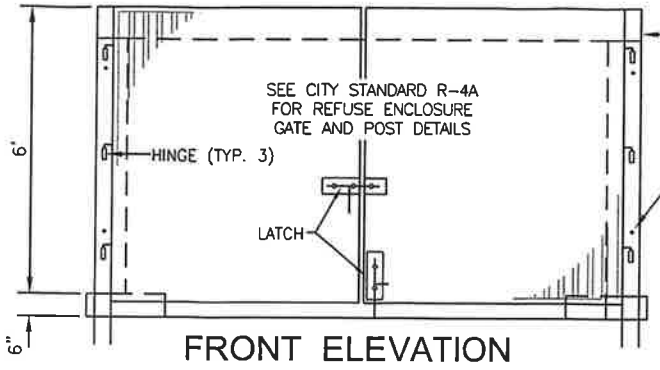
PLAN

NO SCALE

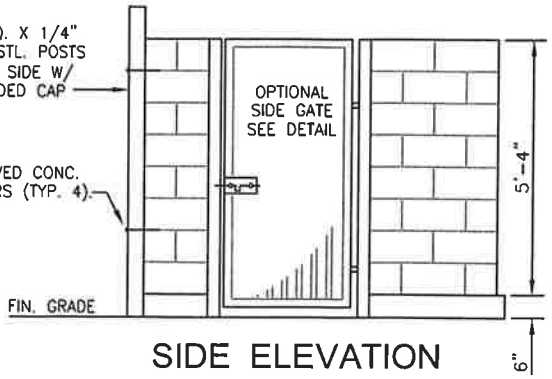
NOTES:

1. SEE CITY STANDARD R-2 FOR ADDITIONAL REQUIREMENTS.
2. MIRROR PLAN WHERE APPLICABLE.
3. ADDITIONAL REFUSE CONTAINER REQUIRED BY PLAN CHECK SHALL HAVE SEPARATE ENCLOSURES.
4. SEE CITY STANDARD R-4 FOR REFUSE ENCLOSURE DETAIL.
5. ANGLE OF ENCLOSURE VARIES. FOUNDATION SHALL NOT BE POURED UNTIL FIELD VERIFICATION OF ENCLOSURE ANGLE IS MADE BY REFUSE DIVISION PERSONNEL.

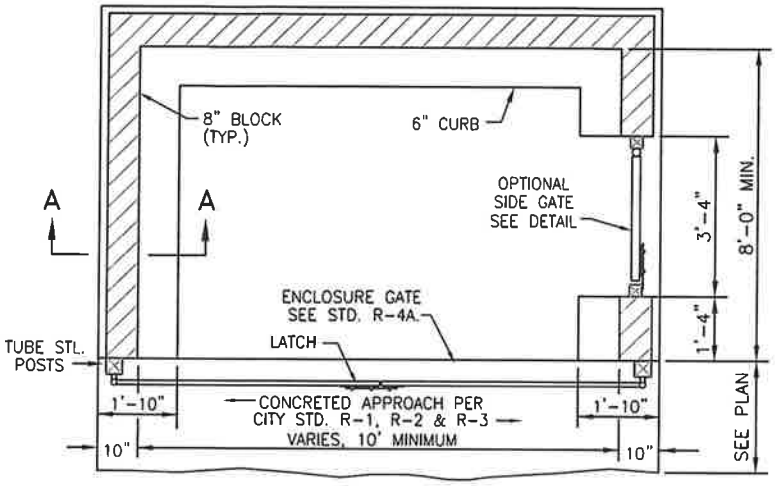
REV.		BY	FRONT END LOADER - ANGLED SERVICE	CITY OF ATWATER STANDARD DETAIL		NO.
			APPROVED COMMUNITY DEVELOPMENT DEPARTMENT	DRAWN:		R-2A
				DATE:	12/04/12	
				SCALE:	N.T.S	



FRONT ELEVATION



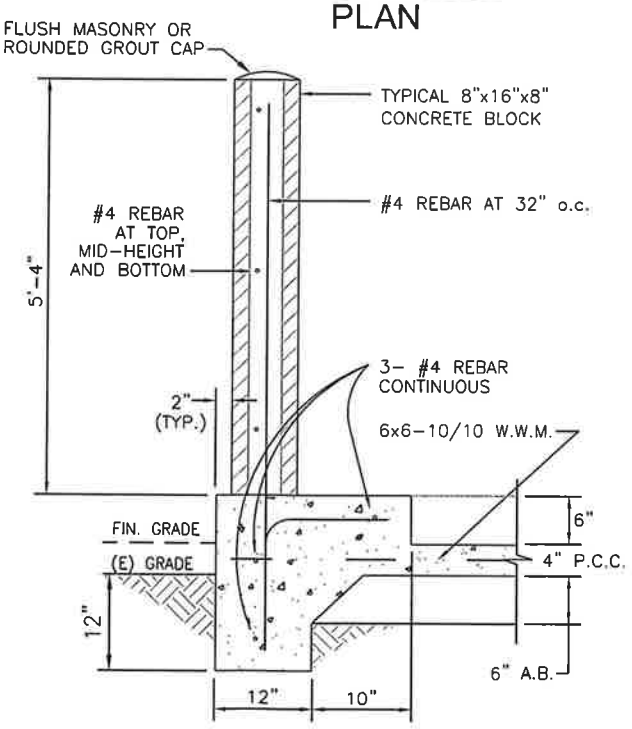
SIDE ELEVATION



PLAN

NOTE:

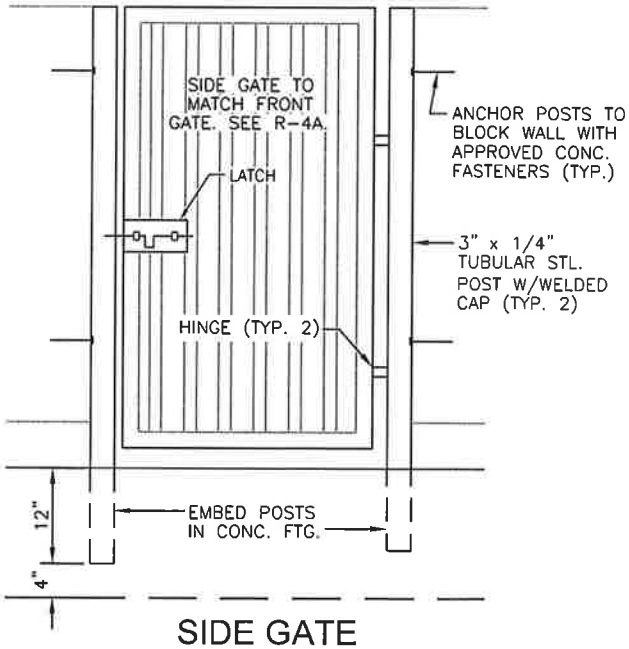
1. GATES, HINGES, ETC., SHALL NOT ENCROACH INTO THE LOADING ENVELOPE. GATE SHALL HAVE A MINIMUM 110° TRAVEL.
2. REFUSE ENCLOSURE SHALL HAVE A 10-FOOT MINIMUM OPENING. NO GATE HARDWARE SHALL EXTEND INTO THE ENCLOSURE OPENING.
3. ENCLOSURE SHALL BE USED FOR REFUSE COLLECTION ONLY. ENCLOSURE SHALL NOT BE USED FOR STORAGE.
4. EACH SWING GATE SHALL HAVE A SWING DOWN DOOR STOP ATTACHED AT THE BOTTOM.
5. EACH GATE SHALL HAVE A STURDY AND SECURE LATCH TO SECURE GATES IN BOTH THE OPEN AND CLOSED POSITIONS.
6. REFUSE DIVISION WILL CONDUCT ONSITE INSPECTION OF ENCLOSURE FORMS PRIOR TO CONCRETE BEING POURED.



SECTION A-A

TYPICAL REFUSE ENCLOSURE- WALL DETAIL

NOT TO SCALE



SIDE GATE

SIDE GATE SHALL BE OPTIONAL UNLESS REQ'D. BY CITY ENGINEER.

REV.		BY

REFUSE ENCLOSURE DETAIL

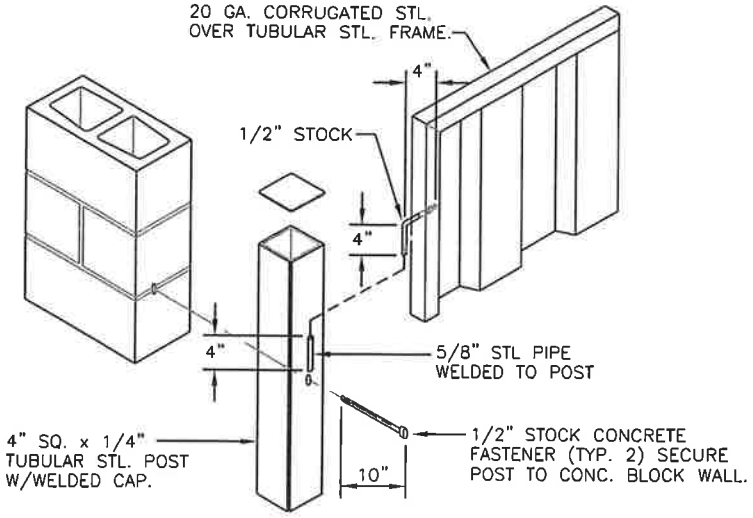
APPROVED

COMMUNITY DEVELOPMENT DEPARTMENT

CITY OF ATWATER

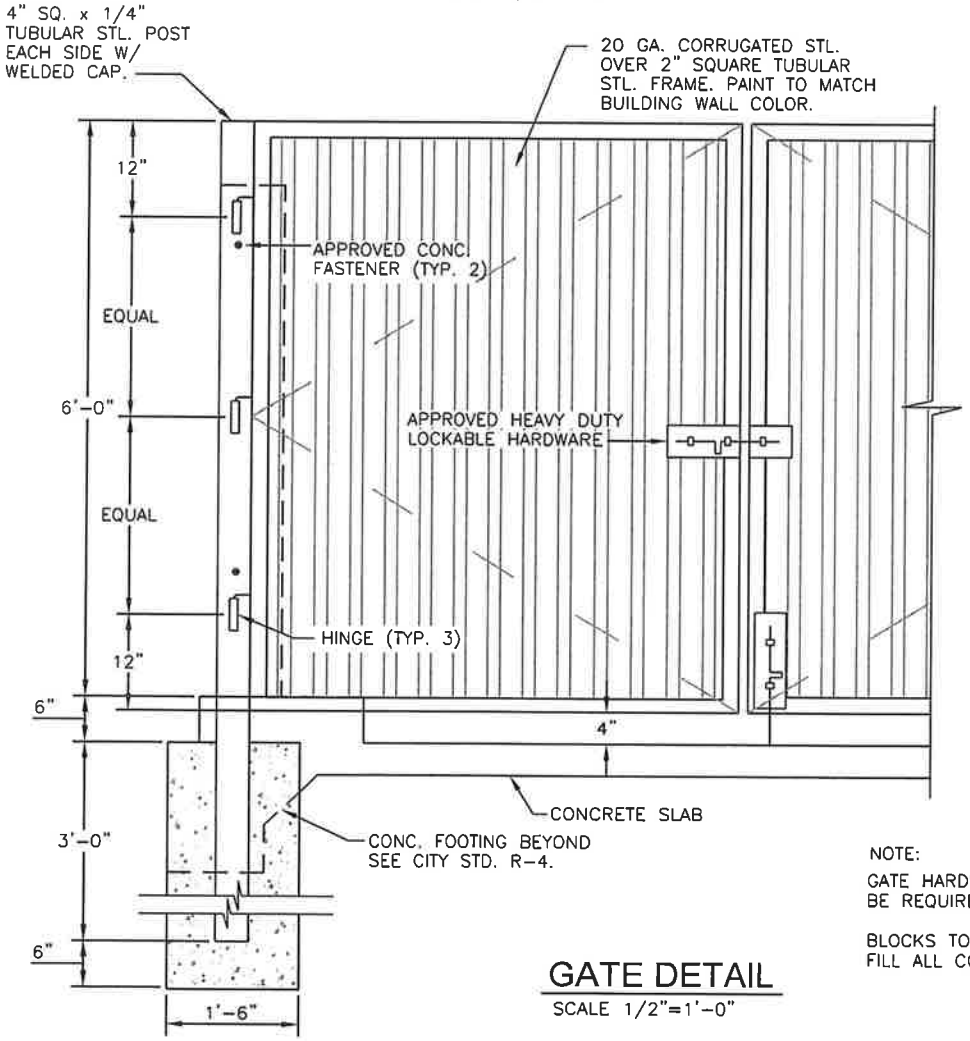
STANDARD DETAIL

DRAWN:		NO.
DATE:	12/04/12	R-4
SCALE:	N.T.S	



GATE POST DETAIL

SCALE 1/4"=1'-0"



NOTE:

GATE HARDWARE SUBMITTALS SHALL BE REQUIRED FOR APPROVAL.

BLOCKS TO INCLUDE REINFORCING, FILL ALL CORES AND CAP AT TOP.

GATE DETAIL

SCALE 1/2"=1'-0"

REV.		BY

REFUSE ENCLOSURE GATE

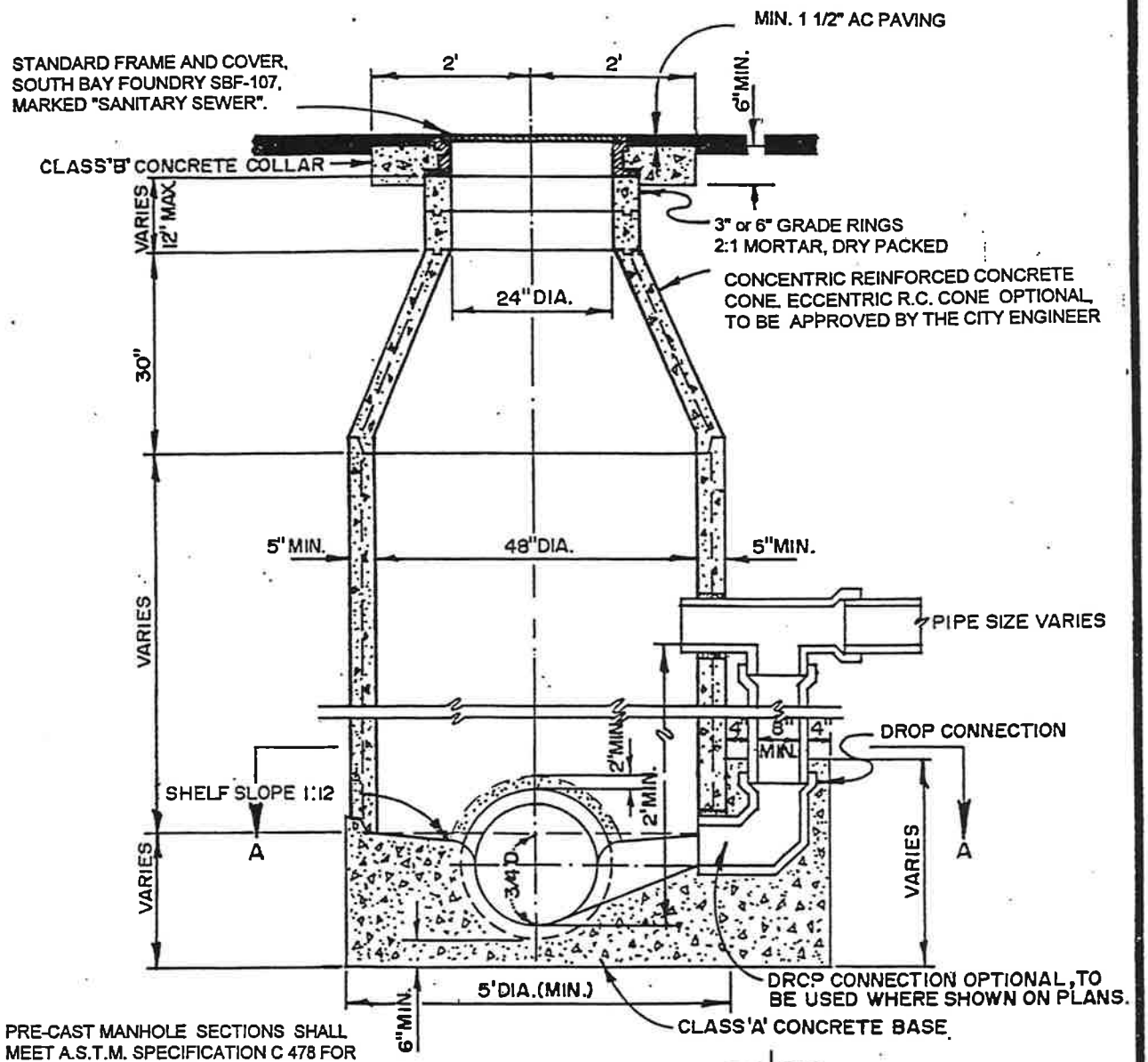
APPROVED

COMMUNITY DEVELOPMENT DEPARTMENT

CITY OF ATWATER

STANDARD DETAIL

DRAWN:		NO.
DATE:	12/04/12	R-4A
SCALE:	N.T.S.	

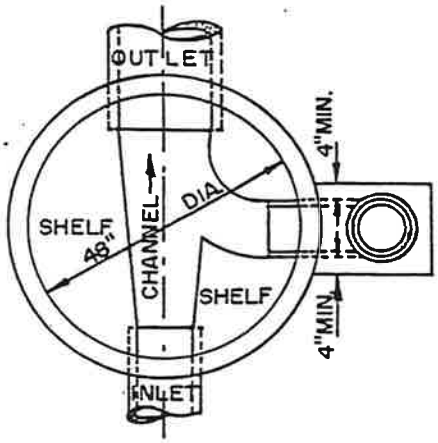


PRE-CAST MANHOLE SECTIONS SHALL MEET A.S.T.M. SPECIFICATION C 478 FOR CL. III REINFORCED CONCRETE PIPE. LENGTHS OF ONE, TWO OR THREE FEET ARE OPTIONAL. ALL JOINTS SHALL BE GROUTED SMOOTH, INSIDE AND OUT AND SHALL BE WATERTIGHT.

PIPE SHALL BE LAID THROUGH THE MANHOLE, THEN SMOOTHLY BROKEN OUT AFTER BASE CONCRETE HAS SET. CONCRETE SHALL HAVE A SMOOTH, UNIFORM, STEEL TROWEL FINISH. AFTER PIPE IS BROKEN OUT, ADDITIONAL GROUT SHALL BE APPLIED AND BRUSHED SMOOTH.

WHERE INCOMING AND OUTGOING SEWER PIPES IN MANHOLE VARY IN SIZE, EXTEND LOWER HALVES OF SEWER PIPES 8" BEYOND INSIDE OF WALL AND SHAPE A SMOOTH, EVEN TRANSITION CHANNEL BETWEEN PIPES.

MATCH SOFFITS OF PIPE AT MANHOLES, JOINING DIFFERENT SIZED PIPES, IF LARGER IS DOWNSTREAM.



SECTION A-A

ENGINEERING DIVISION — CITY OF ATWATER, CALIF.

TITLE: SANITARY SEWER MANHOLE DETAILS SHOWING A DROP CONNECTION

STANDARD PLAN: S-1

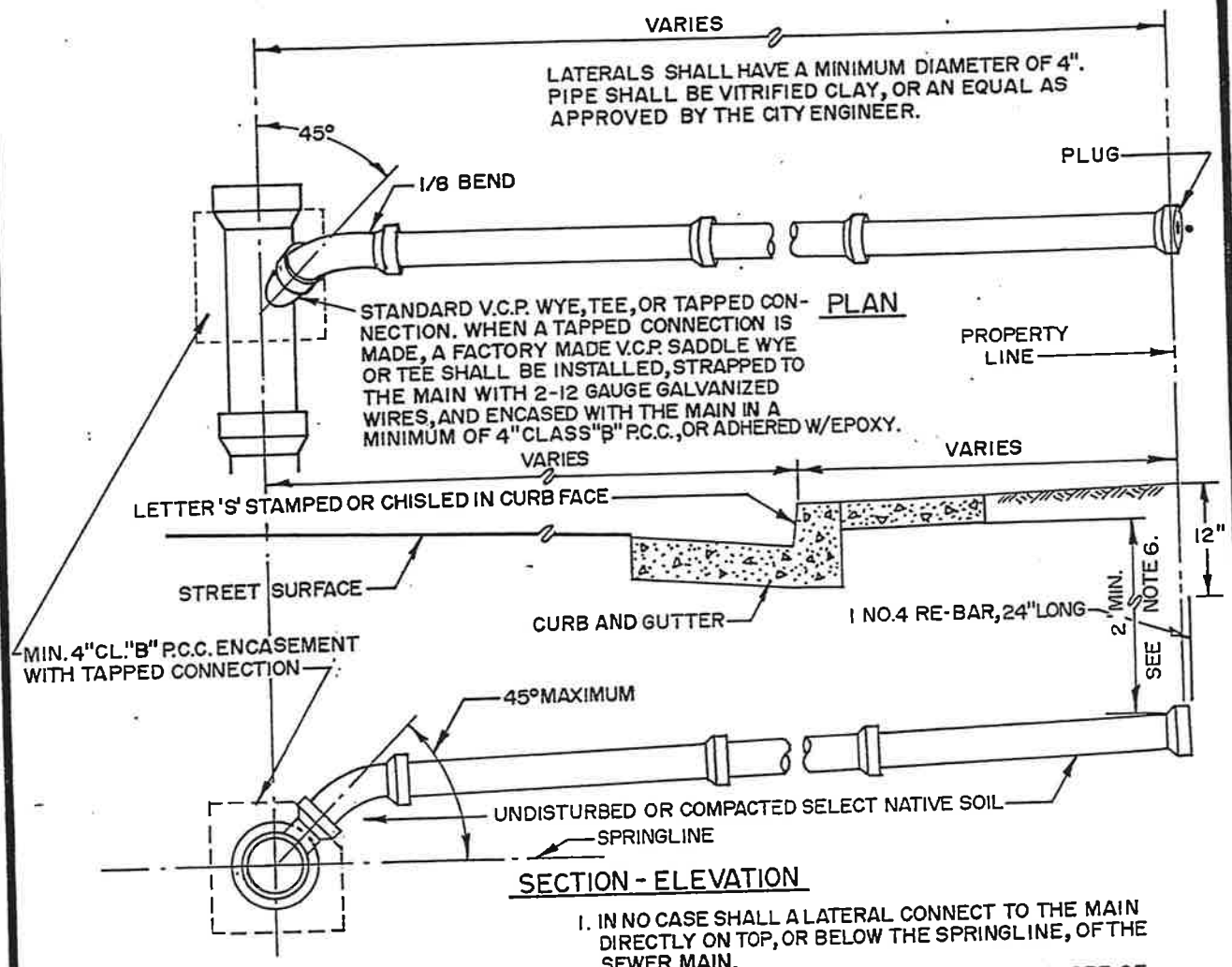
DRN. H.E.D.

DATE 9/81

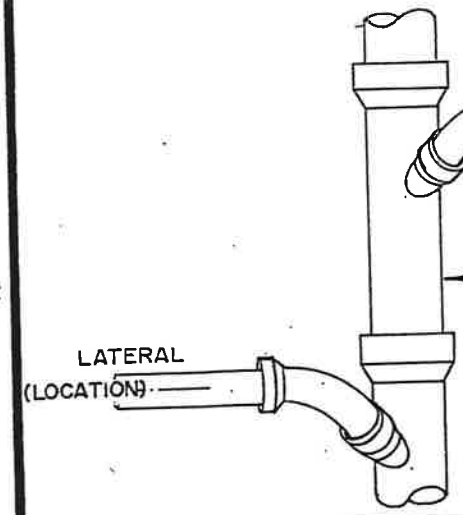
REV. 2/96

APPROVED BY: _____ CITY ENGINEER

DATE: 2-22-96



1. IN NO CASE SHALL A LATERAL CONNECT TO THE MAIN DIRECTLY ON TOP, OR BELOW THE SPRINGLINE, OF THE SEWER MAIN.
2. SEWER LATERALS SHALL HAVE A MINIMUM SLOPE OF 2% (1/4" PER FOOT)(1/8" PER FT. W/APP'L OF CITY ENGINEER).
3. ALL JOINTS FOR SEWER LATERAL PIPE SHALL BE COMPRESSION TYPE, UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER, PER A.S.T.M. C 425.
4. A MANHOLE SHALL BE INSTALLED WHEN ANY LATERAL CONNECTION EXCEEDS 6" IN DIAMETER.
5. COMPACT PER REQT'S STANDARD PLAN T-1. THRU T-3.



6. WHEN THE LATERAL SEWER DEPTH IS SUCH THAT 2' COVER CANNOT BE MET, THE LATERAL MUST BE ENCASED IN CONCRETE IN THE TRAVELED R/W OR USE DUCTILE IRON PIPE, CLASS 50.

DETAIL SHOWING THE MANNER OF CONNECTING OPPOSITE LATERALS TO A SEWER MAIN. IN NO CASE SHALL TWO (2) CONNECTIONS BE MADE IN THE SAME LENGTH OF PIPE, EXCEPT AT A MANHOLE.

IMPROVEMENT PLANS SHALL SHOW LOCATIONS FOR EACH LATERAL AND MANHOLE. PLANS SHALL ALSO SHOW SIZE AND TYPE OF PIPE, TOGETHER WITH APPLICABLE DETAILS. CONTRACTOR SHALL SUPPLY THE CITY ENGINEER WITH "AS-BUILT" LOCATIONS FOR MANHOLES, WYES (OR TEES), CLEAN-OUTS, AND LATERALS AT PROPERTY LINE.

ENGINEERING DIVISION — CITY OF ATWATER, CALIF.

TITLE: TYPICAL SEWER LATERALS

STANDARD PLAN S-2

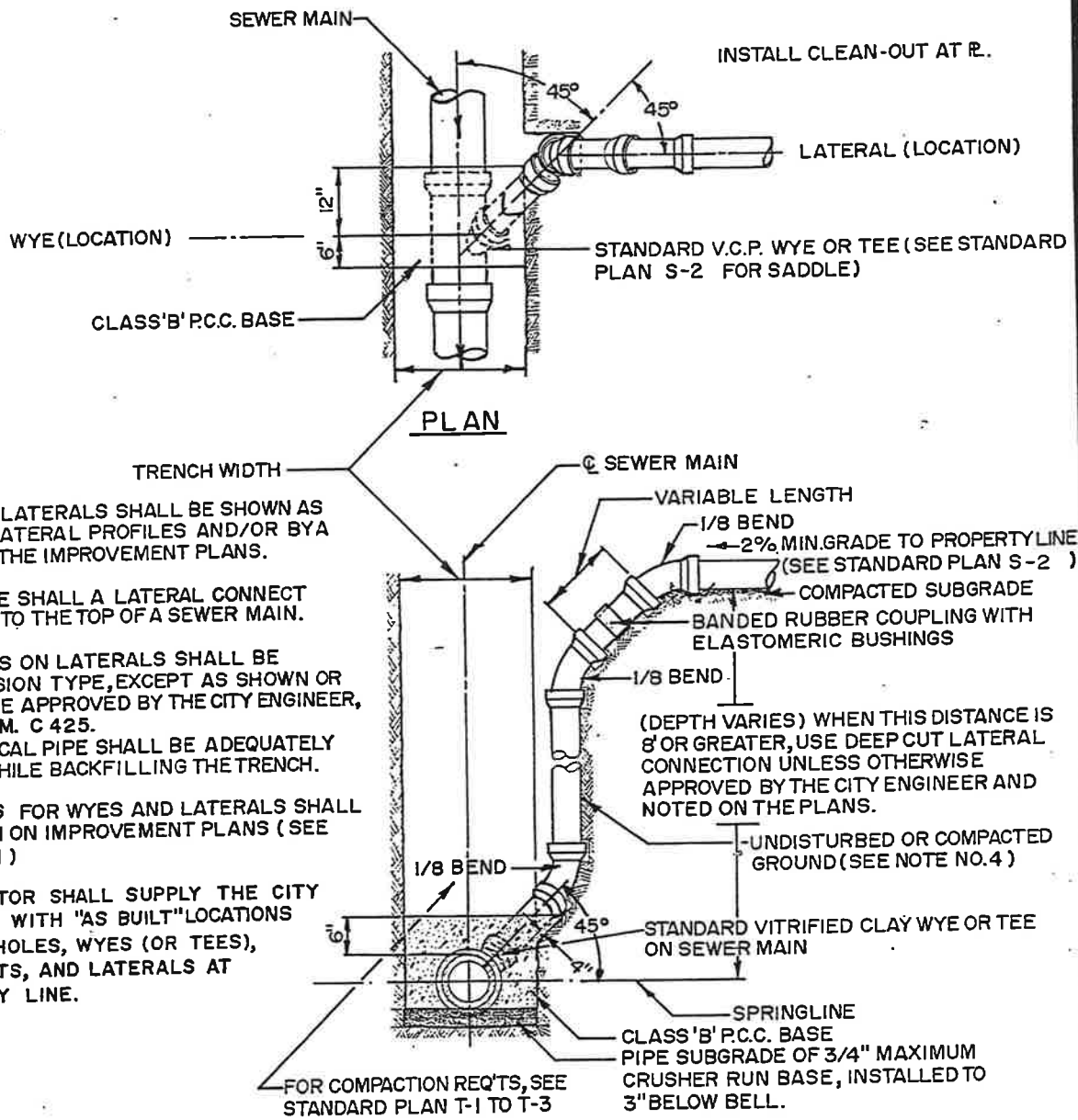
DRN. HED

DATE 11/81

REV. 6/82

APPROVED BY: Win Westfall — WIN WESTFALL, CITY ENGINEER

DATE: 5-18-82



NOTES:

1. DEEP CUT LATERALS SHALL BE SHOWN AS SUCH ON LATERAL PROFILES AND/OR BY A TABLE ON THE IMPROVEMENT PLANS.
2. IN NO CASE SHALL A LATERAL CONNECT DIRECTLY TO THE TOP OF A SEWER MAIN.
3. ALL JOINTS ON LATERALS SHALL BE COMPRESSION TYPE, EXCEPT AS SHOWN OR OTHERWISE APPROVED BY THE CITY ENGINEER, PER A.S.T.M. C 425.
4. THE VERTICAL PIPE SHALL BE ADEQUATELY BRACED WHILE BACKFILLING THE TRENCH.
5. LOCATIONS FOR WYES AND LATERALS SHALL BE SHOWN ON IMPROVEMENT PLANS (SEE NOTE NO. 1)
6. CONTRACTOR SHALL SUPPLY THE CITY ENGINEER WITH "AS BUILT" LOCATIONS FOR MANHOLES, WYES (OR TEES), CLEANOUTS, AND LATERALS AT PROPERTY LINE.

ENGINEERING DIVISION — CITY OF ATWATER, CALIF.

TITLE: DEEP CUT SEWER LATERAL

STANDARD PLAN: S-3

DRN. HED

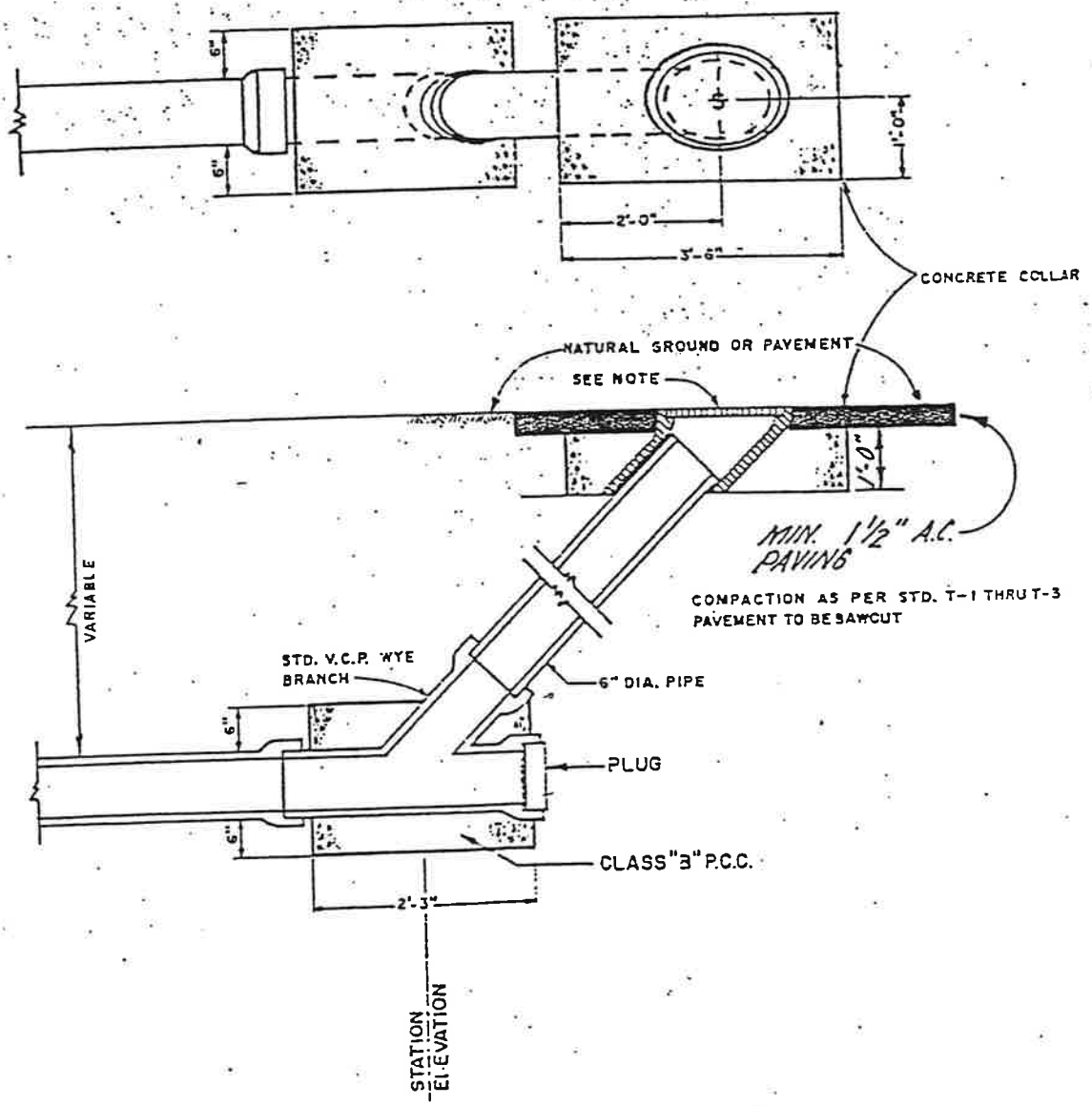
DATE 11/81

REV.

APPROVED BY: Win Westfall — WIN WESTFALL, CITY ENGINEER

DATE: 5-18-82

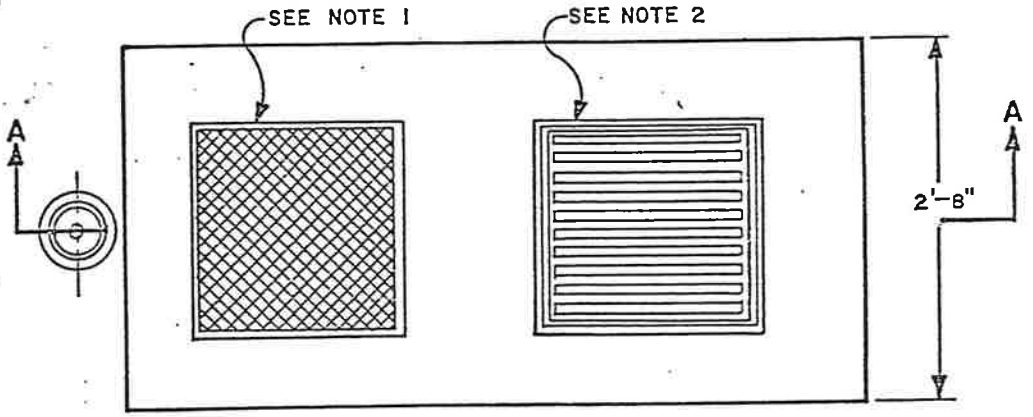
NOTE:
(1) CASTING – FRAME AND COVER – PINKERTON FOUNDRY No. A-490 – PHOENIX IRON WORKS No. PF 1012-L – OR APPROVED EQUAL.

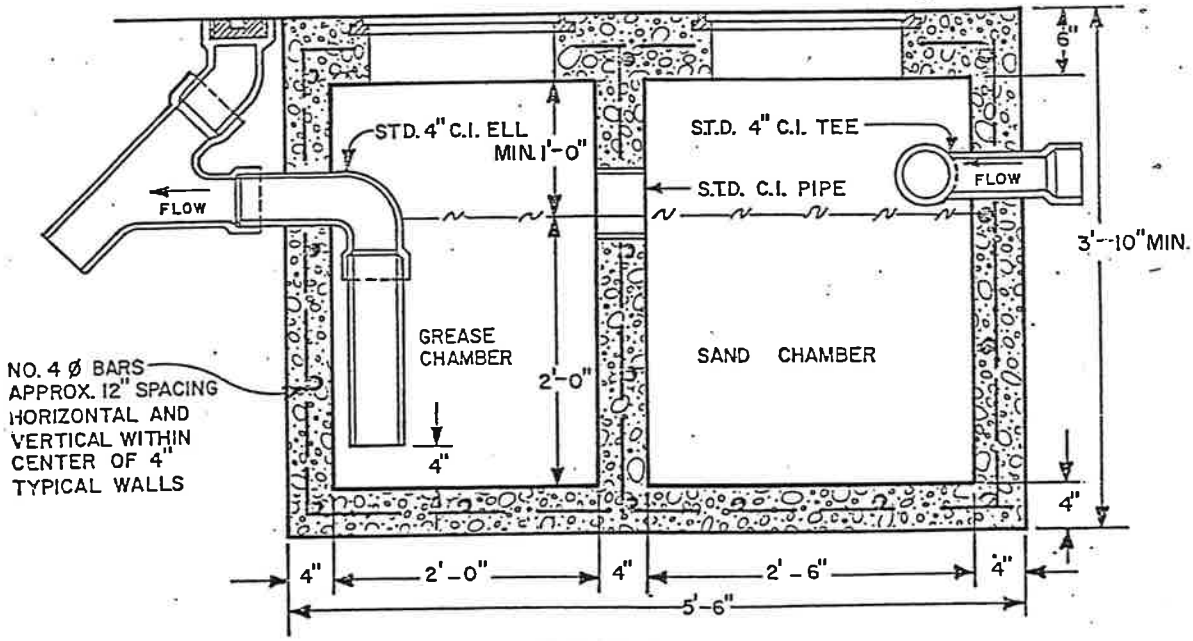


ENGINEERING DIVISION		CITY OF ATWATER, CALIF.
TITLE	**CLEANOUT**	STANDARD PLAN **S-4** (MODIFIED)
DRN.	APPROVED BY: JOHN E. MEDINA, CITY ENGINEER	DATE: 8/24/98
DATE		
REV.		

NOTES:

1. ALHAMBRA FDRY COVER & FRAME. 18" X 18" NO. A2015 STD. COVER. NO. A2017 TRAFFIC COVER.
2. ALHAMBRA FDRY. GRATING & FRAME. 18" X 18". NO. A2010 - STD. GRATING. NO. A2012 TRAFFIC GRATING.





SECTION A-A

ENGINEERING DIVISION	CITY OF ATWATER, CALIF	
TITLE SAND AND GREASE INTERCEPTOR		STANDARD PLAN S-5
DRN. H.E.D.	APPROVED BY Win Westfall	DATE 5-18-82
DATE 6/81	WIN WESTFALL, CITY ENGINEER	
REV.		

TESTING

Upon completion of the backfill operation and after satisfactory compaction results have been obtained, all sewer lines shall be tested. The contractor must assume the responsibility of correcting any defects in workmanship or materials revealed by the tests. When leakage or infiltration exceeds the amount allowed, the contractor shall locate the leaks and make all necessary repairs or replacements required to reduce the leakage or infiltration to the allowable limits. Any individually detectable leaks shall be repaired, regardless of the test results.

Leakage tests shall be made on completed pipelines as follows:

1. Gravity Sanitary Sewers - Water exfiltration test or water infiltration test as described herein.
2. Pressure Sanitary Sewers(force mains) - Water pressure test at 150% of maximum operating pressure.

The City Engineer may, upon written request of the contractor, allow substitution of an air pressure test as described herein, due to special circumstances, as specifically delineated by the contractor in his request.

EXFILTRATION TEST

Each section of sewer shall be tested between successive manholes by closing the lower end of the sewer to be tested and the main inlet(s) of the upper manhole with stoppers. The pipe and manhole shall be filled with water to a point 4 feet above the invert of the sewer at the center of the upper manhole; or, if ground water is present, 4 feet above the average adjacent ground water level.

The allowable leakage will be computed by the following formula:

$$E = 0.0024\ LD\sqrt{H}$$

Where:

L is length of sewer main and house connections tested, in feet.
E is the allowable leakage in gallons.
D is the internal diameter of the pipe in inches.
H is the difference in elevation between the water surface in the upper manhole and the invert of the pipe at the lower manhole; or, if ground water is present above the invert of the pipe in the lower manhole, the difference in elevation between the water surface in the upper manhole and the ground water in the lower manhole.

The contractor shall, at his expense, furnish all water, materials, equipment, and labor for the required testing. All tests shall be made in the presence of the Engineer. The section of line to be tested shall be filled approximately 4 hours prior to testing. The line shall be tested for 2 hours, maintaining the head specified by accurately measured additions of water. The sum of the additions of water added shall be the amount of leakage for the test period.

When the amount of leakage, in a section tested, exceeds the allowable, the contractor shall locate the source of the leak(s) and correct the same to the satisfaction of the Engineer. After the corrections are made, and the trench again backfilled and compacted, the section of line shall then be retested to compliance.

ENGINEERING DIVISION		CITY OF ATWATER, CALIF.
TITLE	SANITARY SEWERS - TESTING REQUIREMENTS	STANDARD PLAN
DRN.	APPROVED BY: Win Westfall DATE: 5-18-82	S – 6
DATE	WIN WESTFALL, CITY ENGINEER	
REV.		

INFILTRATION TEST

If, in the opinion of the Engineer, excessive ground water is encountered during construction of a section of the sewer, the exfiltration test for leakage shall not be used.

The end of the sewer at the upper manhole shall be closed sufficiently to prevent the entrance of water, and pumping of ground water shall be discontinued for a minimum of 3 days, after which the section shall be tested for infiltration.

The infiltration into each individual reach of sewer between successive manholes shall not exceed that amount allowed by the formula used for the exfiltration test, where H is the difference in elevation between the ground water surface and the invert of the sewer at the downstream manhole.

Infiltration shall be accurately measured by the contractor only in the presence of the Engineer using measuring devices and methods supplied by the contractor, but subject to approval of the Engineer.

AIR PRESSURE TEST

The contractor shall furnish all materials, equipment, and labor for making an air test. Air test and equipment shall be approved by the Engineer prior to making the test.

The contractor may conduct an initial air test of the sewer main line after densification of the backfill but prior to installation of the house connection laterals. Such tests will be considered to be for the contractor's convenience only, and need not be performed in the presence of the Engineer.

Each section of sewer shall be tested between successive manholes by plugging and bracing all openings in the main sewer line and the upper ends of all house connection laterals. Prior to any air pressure testing, all pipe plugs shall be checked with a soap solution to detect any air leakage. If any leaks are found, the air pressure shall be released, the leaks eliminated, and the test procedure started over again.

The final leakage test of the sewer main line and branching house connection sewers, shall be conducted in the presence of the Engineer in the following manner :

Air shall be introduced into the pipeline until 3.0 psi gauge pressure has been reached, at which time the flow of air shall be reduced and the internal air pressure shall be maintained between 2.5 and 3.5 psi (gauge) for at least 2 minutes to allow the air temperature to come to equilibrium with the temperature of the pipe walls. Pressure in the pipeline shall be constantly monitored by a gauge and hose arrangement separate from hose used to introduce air into the line. Pressure in the pipeline shall not be allowed to exceed 5 psi. After the temperature has stabilized and no air leaks at the plugs have been found, the air pressure shall be permitted to drop and, when the internal pressure has reached 2.5 psi (gauge), a stop watch or sweep-second-hand watch shall be used to determine the time lapse required for the air pressure to drop to 1.5 psi (gauge).

If the time lapse (in seconds) required for the air pressure to decrease from 2.5 to 1.5 psi (gauge) exceeds that shown in the "LOW PRESSURE AIR TEST TABLE"

included in these standards, the pipe shall be presumed to be within acceptable limits for leakage.

If the time lapse is less than that shown in the table, the contractor shall make the necessary corrections to reduce the leakage to acceptable limits, prior to acceptance by the Engineer.

T.V. INSPECTION

In the event the above testing cannot be obtained, the Engineer may inspect (or require inspection of) the inside of any or all sewer mains by means of a television camera. The contractor , when required to do so, shall furnish, at his sole expense, a television unit and experienced crew acceptable to the City Engineer. Complete tapes and reports of all televised lines shall be furnished to the City Engineer. The contractor shall expose all manholes and flushing inlets to facilitate this operation. All T.V. inspection shall be done in the presence of the Engineer or his representative, and all work done shall be during regular working hours for City personnel.

REPAIR AND RETESTING

Sections failing any required tests shall be promptly repaired by means acceptable to the Engineer. Retesting shall be required before final acceptance of the sewers by the Engineer.

ENGINEERING DIVISION		CITY OF ATWATER, CALIF
TITLE	SANITARY SEWERS - TESTING REQUIREMENTS	STANDARD PLAN
DRN.	APPROVED BY: Win Westfall DATE: 5-18-82	S-8
DATE	WIN WESTFALL, CITY ENGINEER	
REV.		

LOW PRESSURE AIR TEST FOR SEWERS

TIME (T) In Seconds

Main Line		4" House Connection					Main Line		6" House Connection				
		House Connection Length (ft.)							House Connection Length (ft.)				
Dia. (in.)	Length (ft.)	0	100	200	300	400	Dia. (in.)	Length (ft.)	0	100	200	300	400
8"	0	0	20	40	50	70	8"	0	0	40	80	100	100
	50	40	50	70	90	80		50	40	70	110	110	110
	100	70	90	100	100	90		100	70	110	120	110	110
	150	110	120	110	100	100		150	110	120	120	120	110
	200	140	120	110	110	100		200	140	130	120	120	120
	300	140	130	120	110	110		300	140	130	120	120	120
	400	140	130	120	120	110		400	140	130	130	120	120
10"	50	50	70	90	100	90	10"	50	50	90	120	120	110
	100	110	130	120	110	110		100	110	140	130	130	120
	200	170	150	140	130	120		200	170	150	140	140	130
	300	170	160	150	140	130		300	170	160	150	140	140
	400	170	160	150	150	140		400	170	160	150	150	140
12"	50	80	100	110	110	110	12"	50	80	120	140	130	120
	100	160	170	150	140	130		100	160	170	150	140	140
	200	200	180	170	160	150		200	200	180	170	160	150
	300	200	190	180	170	160		300	200	190	180	170	160
	400	200	190	180	180	170		400	200	190	180	180	170
15"	50	120	140	160	140	130	15"	50	120	160	160	150	140
	100	250	220	190	170	160		100	250	210	190	170	160
	200	260	230	220	200	190		200	260	230	210	200	190
	300	260	240	230	220	210		300	260	240	220	210	200
	400	260	240	230	220	220		400	260	240	230	220	210
18"	50	180	200	190	170	150	18"	50	180	220	190	170	160
	100	310	260	230	210	190		100	310	260	220	200	190
	200	310	280	260	250	230		200	310	280	260	240	220
	300	310	290	280	260	250		300	310	290	270	260	240
	400	310	290	280	270	260		400	310	290	280	270	260
21"	50	240	260	230	200	180	21"	50	240	260	220	200	180
	100	360	310	280	250	230		100	360	300	260	240	220
	200	360	330	310	290	280		200	360	330	300	280	260
	300	360	340	320	310	300		300	360	330	320	300	290
	400	360	340	330	320	310		400	360	340	330	310	300
24"	50	320	320	270	240	210	24"	50	320	310	260	220	200
	100	410	350	320	290	270		100	410	350	310	280	260
	200	410	380	360	340	320		200	410	370	350	320	310
	300	410	390	370	360	350		300	410	380	360	350	330
	400	410	390	380	370	360		400	410	390	370	360	350
27"	50	400	370	310	280	250	27"	50	400	350	290	260	230
	100	460	410	370	340	310		100	460	390	350	320	290
	200	460	430	410	390	370		200	460	420	390	370	350
	300	460	440	420	410	390		300	460	430	410	390	380
	400	460	450	430	420	410		400	460	440	420	410	390
30"	50	490	420	360	310	280	30"	50	480	390	330	290	260
	100	510	460	420	380	360		100	510	440	390	360	330
	200	510	480	460	440	420		200	510	470	440	420	390
	300	510	490	470	460	440		300	510	480	460	440	420
	400	510	500	480	470	460		400	510	490	470	460	440
33"	50	560	460	400	350	320	33"	50	560	440	370	320	290
	100	560	510	460	430	400		100	560	490	440	400	370
	200	560	530	510	490	460		200	560	520	490	460	440
	300	560	540	520	510	490		300	560	530	510	490	470
	400	560	550	530	520	510		400	560	540	520	510	490
36"	50	610	510	440	390	360	36"	50	610	480	410	360	320
	100	610	560	510	480	440		100	610	540	480	440	410
	200	610	580	560	530	510		200	610	570	540	510	480
	300	610	590	570	560	540		300	610	590	560	540	520
	400	610	600	580	570	560		400	610	590	570	560	540
39"	50	660	560	490	440	390	39"	50	660	530	450	390	350
	100	660	610	560	520	490		100	660	590	530	480	450
	200	660	630	610	580	560		200	660	620	590	560	530
	300	660	640	620	610	590		300	660	640	610	590	570
	400	660	650	630	620	610		400	660	640	620	610	590
42"	50	710	610	540	480	430	42"	50	710	580	490	430	390
	100	710	660	610	570	540		100	710	640	580	530	490
	200	710	680	660	630	610		200	710	670	640	610	580
	300	710	690	680	660	640		300	710	690	660	640	620
	400	710	700	680	670	660		400	710	690	670	650	640

ENGINEERING DIVISION — CITY OF ATWATER, CALIF.

TITLE: LOW PRESSURE AIR TEST TABLE

STANDARD PLAN: S-9

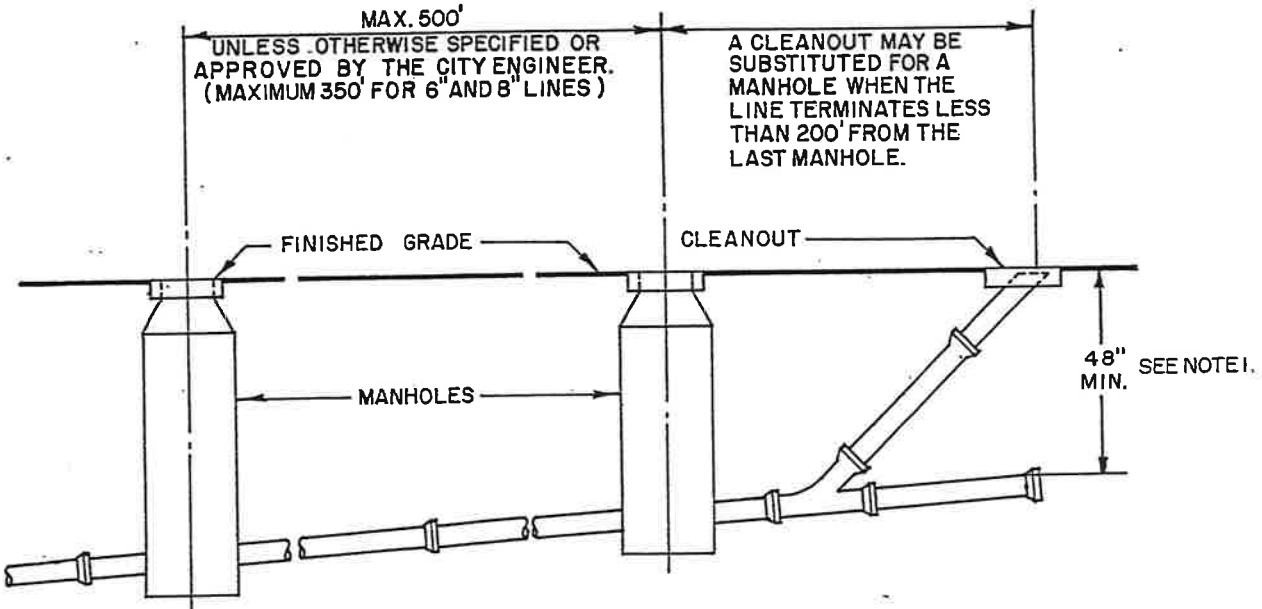
DRN.

DATE

REV.

APPROVED BY: Win Westfall — DATE: 5-18-82

WIN WESTFALL, CITY ENGINEER



Sanitary sewer pipe shall be vitrified clay, conforming to A.S.T.M specification C-700 with bell and spigot joints conforming to A.S.T.M specification C-425 for "Compression Joints for Vitrified Clay Pipe and Fittings", or A.S.T.M specification C-594 for sewer repair couplings with external stainless steel shear rings (see notes 4 and 8 below), unless otherwise approved by the City Engineer.

PIPE SIZE (DIA.)	MANNING 'N' (FOR V.C.P.)	MIN. SLOPE (S= FEET PER FOOT)
6"	0.013	.0052
8"	0.013	.0036
10"	0.013	.0024
12"	0.013	.0020
15"	0.013	.0016
18"	0.013	.0012

Notes:

1. All pipe with less than 36" of cover shall be Class 50 Ductile Iron Pipe.
2. Minimum cover shall be 48" unless otherwise approved by the City Engineer.
3. Manholes shall be installed at ends of all lines and at all intersecting streets.
4. All connections to sewers shall be at existing "wyes" unless otherwise approved by the City Engineer.
5. The City Engineer shall be supplied with "As Built" plans showing all lateral locations and invert elevations of all manholes.
6. No connection into any trunk sewer line (18" diameter or greater) shall be made without the installation of a manhole.
7. All slopes less than as shown above must be approved by the City Engineer.
8. Where approved, tap to existing main line. A gasketed saddle retained with a stainless steel, brass, or bronze strap shall be used. All taps shall be made with an appropriate tapping machine. A cut-in "wye" retained by sewer repair couplings with external stainless steel shear rings may be used in lieu of a saddle tap.

ENGINEERING DIVISION	CITY OF ATWATER, CALIF.
TITLE: SANITARY SEWER DATA	STANDARD PLAN S-10
DRN. H.E.D. / DATE 2/82 / REV.	APPROVED BY: Win Westfall, WIN WESTFALL, CITY ENGINEER — DATE: 5-18-82

SANITARY SEWER DESIGN

DESIGN CRITERIA-- These criteria shall apply to the engineering design of any sanitary sewer system to be maintained by the City of Atwater or, with those exceptions as noted, to that within a planned unit development.

AVERAGE FLOW DETERMINATION-- Flow determination shall be based upon the most recent zoning. The minimum population density used shall be equivalent to that of single family zoning, The area shall be examined for trends toward population concentration greater than present zoning allows and/or more than four and one-half lots per acre and, if found, an estimate should be made of the probable extent of such concentration. This estimate shall be used as the basis for determining flow:

A. Single Family, Detached Units-- Flow shall be based on 100 gallons per person per day, 3.2 persons per lot, and a minimum of 4.5 lots per acre. However, if the number of lots per acre is known, and is greater than 4.5, the actual number shall be used.

B. Multifamily and Planned Unit Developments-- Flow shall be based on 100 gallons per person per day, 3.1 person per unit and the actual number of units per acre shall be considered. However, in the absence of known data,the density shall be assumed to be 10 units per acre.

C. Schools-- The larger flow, as determined from one of the two following methods, shall be used:

   1. The entire school area shall be assumed to contribute an average flow equivalent to that of an equal area of single family, detached residential units, ie: 1440 gallons per acre per day.

   2. Average daily flow per school shall be based on individual proposed cases , as proposed by the school district.

D. Industrial and Commercial -- Every attempt should be made to base flows on specific, known industrial development. In the absence of specific knowledge of type of development proposed, the flow shall be determined from the sewage flow curves shown on Standard Plan S-23.

ENGINEERING DIVISION		CITY OF ATWATER, CALIF.
TITLE: SANITARY SEWER DESIGN REQUIREMENTS		STANDARD PLAN
DRN.	APPROVED BY: Win Westfall	DATE: 5-18-82
DATE	WIN WESTFALL, CITY ENGINEER	S-11
REV.		

DESIGN FLOW-- Design flow shall be calculated by multiplying the average flow for the upstream service area, as determined above by the peaking factor obtained from the curve on Standard Plan S-24.

PIPE CAPACITY, SLOPE, VELOCITY, SIZE, DEPTH, AND MATERIAL--Design criteria for the pipe are as follows:

A. Size-- The minimum size of mains which serve single family developments shall be six inches in diameter. Schools, commercial, industrial and multiple residential shall be served by mains a minimum of eight inches in diameter. However, single commercial buildings which contribute negligible flow, when located among single family development may be served by a main six inches in diameter, subject to the approval of the City Engineer.

B. Slope and Velocity-- Manning's formula shall be used to determine the relation of slope, design flow, velocity, diameter and "n" value. The "n" value shall be 0.013 for all permissible pipe materials.

1. Following is a table of slopes and design flow capacities for various pipe diameters. Pipe slopes less than those listed in this table shall not be used without the approval of the City Engineer. The slopes indicated are based on a velocity of two (2) feet per second, or greater, flowing full.

Pipe Diameter (in inches)	Slope (foot per foot)	Capacity at 0.8 depth in MGD
6	0.0052	0.25
8	0.0036	0.45
10	0.0024	0.67
12	0.0020	1.0
15	0.0016	1.6
18	0.0012	2.3

2. The maximum depth of flow at design conditions in any main or trunk shall be 0.8 diameter.

Flatter slopes than shown may be considered under certain special circumstances. These proposals must be submitted in writing to, and be approved by the City Engineer.

ENGINEERING DIVISION		CITY OF ATWATER, CALIF.
TITLE	SANITARY SEWER DESIGN REQUIREMENTS	STANDARD PLAN
DRN.	APPROVED BY: Win Westfall	DATE: 5-18-82
DATE	WIN WESTFALL, CITY ENGINEER	S-12
REV.		

C. Capacity-- Pipe capacity, in all cases, shall be adequate to carry the design flow from the entire tributary area, even though said area is not within the project boundaries.

D. Depth-- In the design of a system, one of the controlling conditions shall be that the lateral system is to be at sufficient depth to provide a minimum slope for the service sewer of 1/4 inch per foot, at the same time maintaining a minimum cover of 12 inches at any buildable location within the properties to be served.

E. Pipe material shall be as approved by the City Engineer, and shall conform to the requirements of the City Standard Drawings. Material other than that included in the City Standard Drawings and City Standard Specifications may be used if approved by the City Engineer.

SEWER LOCATION AND ALIGNMENT REQUIREMENTS-- Location and aligment of sanitary sewers are as follows:

A. General-- All sanitary sewers shall be placed within rights-of-way dedicated for public streets unless the use of easements is specifically approved by the City Engineer. There shall be a minimum of horizontal clearance of ten feet between parallel water and sanitary sewer lines and the water main shall be higher than the sewer. On crossings, the water line shall be at least twelve (12) inches above the sewer line or meet the requirements of W-13. If a sanitary sewer force main must cross a water main, the requirements of the State Health Board shall apply.

B. Location in New Subdivisions--In new subdivisions, sewers shall preferrably be located 6 feet south or east of street centerlines.

C. Location in Existing Streets-- When sanitary sewers are to be installed in existing streets, factors such as curbs, gutters, sidewalks, traffic conditions, traffic lane conditions, pavement conditions, future street improvement plans, and existing utilities shall all be considered. The approval of the City shall be obtained in every instance.

ENGINEERING DIVISION		CITY OF ATWATER, CALIF.
TITLE SANITARY SEWER DESIGN REQUIREMENTS		STANDARD PLAN
DRN.	APPROVED BY: Win Westfall DATE: 5-19-82	S-13
DATE		
REV.	WIN WESTFALL, CITY ENGINEER	

D. Easements-- The minimum width of easements shall ten feet. Temporary working easements of adequate dimensions shall be provided to allow the construction within the permanent easement to be completed in a safe and reasonable manner. Easements shall be granted to the the City of Atwater,

E. Water Well Clearance-- No sanitary sewer trunk line, lateral,or service shall be placed nearer than 100 feet to any existing,or proposed water well, unless the well has been capped in full accord with State Health Department standards, or the location otherwise approved, in writing, by the appropriate health agencies. If a clearance of less than 100 feet is approved, all pipe within that distance from the well shall be of ductile iron or of other material approved by the City Engineer.

F. Horizontal alignment shall be parallel to the street centerline wherever possible. Minimum radius for sanitary sewers 6 inches through 8 inches in diameter shall be 194 feet. A larger radius shall be used wherever practicable or where necessary to avoid joint deflection in excess of the pipe manufacturer's recommended maximum. For pipe 27 inches in diameter or larger, mitered joints, fittings, or other methods as specified in the Standard Specifications may be utilized to accomplish alignment changes.

G. Vertical alignment shall provide a constant slope between manholes. If a change in grade is necessary, construction of a manhole shall be required unless the use of a vertical curve is approved the City Engineer. In such case, elevations shall be shown at ten-foot intervals throughoutthe length of the vertical curve. This maximum deflection shall be two percent at each ten foot interval.

TRENCH LOADING CONDITIONS AND PIPE DESIGN-- The loading condition and pipe design criteria for conduits are as follows:

A. Rigid Conduit Loading-- On rigid conduits, Marston's formula shall be used to determine the load placed in the pipe by the backfill. The procedure for rigid pipe is described in the ASCE Manual of Engineering Practice No. 37, the Clay Pipe Engineering Manual, and in similar handbooks. In the absence of specific soils data, as determined by a registered engineer specializing in soil mechanics, a soil weight of 130 p.c.f. and a Ku factor of 0.110 shall be used.

B. Flexible Conduit Loading-- On flexible conduits, Marston's formula for flexible conduits as shown in ASCE Manual of Engineering Practice No. 37, and in other similar handbooks shall be used to determine the load placed on the pipe by the backfill. The maximum load allowable shall be determined by pipe deflection computed by the Iowa Deflection Formula (or Spangler's Formula). In the absence of specific soils data, as determined by a registered engineer specializing in soil mechanics a soil weight of 130 p.c.f., and Ku factor of 0.11, and a bedding constant of 0.11 shall be used. The minimum soils reaction modulus (E') used in the deflection calculation shall be 700' psi and shall correspond to that for Type II bedding utilizing imported material to six inches above the top of the pipe. The deflection lag factor shall be 1.5 . Flexible conduit shall have special approval from the City Engineer.

C. Safety Factor-On Rigid Conduits-- A safety Factor of 1.25 shall be used for reinforced concrete pipe and 1.5 for all other pipe. Only the three edge bearing strength of the pipe shall be used in the computations for rigid pipe.

D. Allowable Deflection--On flexible conduits, a maximum deflection of 3 percent of the nominal pipe diameter is allowable under installation conditions. Computations shall be submitted showing the ability of the conduit to withstand load buckling.

E. Bedding and Intitial Backfill-- Bedding types and factors shall be as per Standard Plan No.T-5. Bedding and initial backfill type shall be as necessitated by height of cover over the pipe, trench width pipe strength and other factors used to determine safe pipe loading. Special attention shall be given to backfill requirements for pipe located in street rights-of-way and for pipe placed in areas where trench width is excessive, such as in the vicinity of bore pits. See "Boring and Jacking". Unless otherwise noted on the plans, bedding and initial backfill shall be Type I with an unlimited trench width for construction purposes as set forth herein. The minimum trench width shall be pipe O.D. plus 12 inches.

Type III and IV bedding and initial backfill are intended primarily for emergency field conditions and their use shall normally not be specified on the plans. Type IV shall require specific written approval of the City Engineer before use.

F. Special Pipe Strength Requirements-- Cast iron, ductile iron,asbestos -cement, or other high-strength pipe approved by the City Engineer shall be used whenever cover is less than three feet, or insufficient clearance exists between the sewer pipe and rigid or load transmitting structures.

G. Design Guide-- A table which relates cover, pipe diameter, trench width, and bedding and initial backfill type for vitrified clay pipe, according to Marston's formula, is provided on Standard Plan No.T-4.

MANHOLE CRITERIA-- THe design criteria for manholes are as follows:

A. General--Manholes shall be placed at the intersections of all sanitary sewer lines, at the end of any line terminating in a cul-de-sac, at the end of all permanent lines 201 feet or more in length and at the end of any temporary line more than 200 feet in length. All manholes from which sewer line extensions are anticipated shall have a pipe stub installed at the grade in the direction of the anticipated extension.

B. Spacing-- Maximum spacing of manholes shall be as shown on Standard Plan S-10 for all straight lines. A line with a radius greater than 400 feet shall be considered as straight for the purposes of this section. Manhole spacing on lines which are on a continuous curve of 194 foot radius (min. allowable) shall be 200 feet. Manhole spacing on curved lines of radius between 200 and 400 feet, or where only a portion of the line is curved, shall be adjusted proportionately. Reverse curves require a manhole at the point of tangency between the curves (P.R.C.). A manhole shall be required at any change in vertical alignment, unless use of a vertical curve is approved by the City Engineer. A manhole shall also be placed at any abrupt change in horizontal alignment.

C. Elevation Criteria-- When two lines of the same size enter a manhole such that the flow of one must change direction by more than 20 degrees of if the flow in a single line must change direction more than that amount, the invert grade at the exit must be at least 0.10 feet below that of the entrance pipe or, as a maximum, the crown of the exit pipe shall match the invert of the entrance pipe. If the intersecting pipes are not of the same size, the maximum invert elevation differential shall be based on the invert of the entering pipe matching the crown of the exit pipe. Drop connections are not governed by the above elevation requirements. Manholes on straight grade sections may be set on the pipeline grade.

D. Construction Requirements-- Manhole construction shall conform with the provisions of Standard Plan S-1. Lock type or pressure-type manhole covers shall be used on manholes located in areas subject to flooding. Where the manhole depth is less than four feet, an 18 inch high cone may be used. The plans should note that the frame on manholes located in unimproved areas shall be set 12 inches above existing ground level

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DROP CONNECTION CRITERIA-- A drop connection shall be required whenever a pipe enters a manhole higher than as specified in Standard Plan No. S-1. Outside drop type connections shall be used for all connections. If an elevation difference of at least two feet is not available, the slope of the incoming line shall be increased to eliminate the need for the drop, and the entering pipe brought in at the crown match of the outflow line.

FLUSHING BRANCH CRITERIA, (CLEANOUT)-- A cleanout may be used in lieu of a manhole at the end of any line less than 200 feet in length. A cleanout may also be used at the end of a line less than 200 feet in length if the line extends to a subdivision boundary and if there are definite plans for its extension.

SEWER LATERAL DESIGN --The design criteria for sewer laterals are as follows:

A. General-- Sewer Laterals shall conform to Standard Drawing S-2 and S-3, and shall be constructed normal to the main unless otherwise approved by the City Engineer. The sewer lateral shall extend from the main sewer to the edge of public right-of-way or edge of easement. Sewer Laterals shall extend one foot beyond edge of pavement of any private road and easements of adequate width to accommodate the laterals shall be obtained. A plan and profile of any sewer lateral shall be supplied to the City Engineer upon request.

B. Sizing-- Normal sewer lateral is four inches. Schools and other developments expected to contribute high sewage flows shall be served by six-inch or larger sewer laterals. In addition, sewer laterals shall be sized according to requirements of the Uniform Plumbing Code and determinations of the Project Engineer. If the sewer lateral and main are of the same size , a manhole must be constructed unless the lines are constructed concurrently.

BORING AND JACKING REQUIREMENTS All pipe, except R.C.P. and sewer lateral pipe, which is bored and jacked, shall be placed in welded steel, C.S.P. or R.C.P. conductor pipe of sufficient diameter to allow the pipe to be jacked into place using suitable supports between the carrier and and the conductor to allow adjustment of the carrier pipe to grade. Normally, an inside diameter six inches greater than the outside diameter of the couplings of the carrier pipe to grade is sufficient. R.C.P.and service sewer pipe may be bored directly, placed in a conductor,or placed in tunnel liner. The method used shall be specifically approved by the City Engineer, and approved by the agency requiring the bore (CalTrans, Railroad, etc.).

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Welded steel conductor pipe shall have a minimum wall thickness of $\frac{1}{4}$ inch for sizes up to and including 24 inches in diameter, and 5/16 inch for sizes 27 inches to 36 inches, and no. 8 guage for diameters to 60 inches R.C.P. conductor must be designed for the loading condition and, if jacked, the additional loading imposed by the jacking operation. Backfill in bore pits shall be given special attention with respect to preventing structural failure of the pipe entering or exiting the conductor, and adequate bedding and initial backfill shall be specified.

PUMP STATION AND FORCE MAIN REQUIREMENTS-- Every phase of pump station design, including force mains, shall be closely coordinated with and shall be subject to the approval of the City Engineer.

SEWER IMPROVEMENT PLAN REQUIREMENTS-- Plans for the construction of sanitary sewers, whether in conjunction with other improvements, or for a sewer project only, shall conform to the following standards,as well as other standards contained in these improvement Standards.

A. Study Map-- A study map may be required prior to review of the sewer design if there is a possibliity that upstream or adjacent areas might require service through the subject property. The map should show the entire service area including upstream tributary and adjacent areas, and all other data necessary to determine anticipated sewage flows. The method of sewering the entire service area, including pipe sizes and slopes shall be shown to the extent necessary to determine the requirements within the subject property.

B. Connection Limitations--Lateral Sewers shall not directly connect to 12 inch diameter or larger pipe or to mains more than 15 feet in depth without the approval of the City Engineer,unless a drop manhole is included.

C. Material-- If the service has less than three feet of cover measured from the gutter flow line, cast iron or ductile iron pipe, or other high strength pipe approved by the City Engineer, shall be used. In all other cases, the service shall be of the same as the lateral to which it connects.

E. Location-- When sanitary sewers are constructed as part of new subdivision improvements, a sewer lateral shall be constructed to each lot. On new subdivisions or developed areas, unless specifically requested otherwise in writing by the property owner or Project Engineer, sewer laterals shall be placed on the low side of any typical subdivision lot or similar parcel with two percent or greater slope across the front,or shall be placed in the center of lots of lesser slope. Consideration shall be given to trees, improvements, etc. so as to minimize interference when the sewer lateral is extended to serve the house.

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If the property is located such that service is available both to a line located in an easement and in right-of-way, service shall be to the latter location unless otherwise approved by the City Engineer. No sewer lateral shall be located in such proximity to a water well or water main or service that applicable health standards will be violated.

F. Depth--The Project Engineer shall verify the adequacy of the normal sewer lateral depth at the edge of easement or rightof-way to serve the intended parcel. The depth as shown on Standard Plan S-2 to top of pipe measured from proposed ground surface or edge of adjacent roadway, whichever is lower, shall be considered normal sewer service depth. Whenever greater depth is required,the Project Engineer shall labelthe invert elevation of the sewer lateral at the edge of the right-of-way or easement on the construction plans. It shall be the responsibility of the Project Engineer to arrange for coordination of the grade of utilities located in the joint trench and the sewer laterals.

G. General Requirements-- Plans for sewer improvement project should include a layout sheet, plan and profile of each sewer line, and any necessary detail drawings. The plans must be clearly legible and conform to accepted practice with respect to drafting standards. All information which, in the opinion of the City Engineer is necessary for the satisfactory design, review, construction, and maintenance of a project shall be provided and, where applicable shall be shown on the plans.

H. Layout Sheet-- All sewer improvement plans shall include an overall map which shows the project boundaries, sewer lines, manholes, cleanouts and other important items of the work. Where pavement is to be cut in several locations, the pavement replacement requirements shall be shown on the layout sheet. A parcel or area which benefits from and financially participates in a sewer construction project, but is not included within the project boundaries shall have a note to this effect placed on the layout map and on the plan and profile sheet if the parcel appears thereon.

Plan and Profile Sheets-- Sewers which are to be maintained by the City shall be shown by both plan and profile views on approved plan and profile paper. The following standards, with respect to drafting and the information to be included on the plan and profile sheets, generally apply to projects in developed areas. In new subdivisions, only the requirements which are applicable shall apply.

1. Sewer lines to be constructed shall be indicated on the profile by parallel lines spaced the pipe diameter. Manholes shall also be indicated by parallel lines spaced according to scale.

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Slope shall be printed 1/8 inch above, and preferrably parallel to, the pipe line, or between the parallel lines. The length, size and type of pipe between each manhole shall be printed parallel to the horizontal grid lines and approximately halfway between the ground surface and pipe line. All pipe inverts at manholes and other structures shall be indicated on the profile. The invert elevations shall be printed parallel to the horizontal grid lines and shall be underscored by a line which then turns at a 45° angle to the correspnding pipe invert. When manholes, manholes with drop connections, cleanouts or other appurtennces are to be constructed, the profile shall be so noted. Existing facilities shown on the profile shall be shown by dashed lines. Manhole identification on the plan view may be oblique. Stationing shall appear at the lower edge of the profile grid directly under the manhole. No negative stationing shall be used. The existing ground level and, where applicable, proposed grade over the pipe shall be shown.

2. In improved areas, the location of each sewer lateral proposed to be constructed shall be indicated on the plans by stationing or by reference to a permanent, well-defined structure, if available. In new subdivisions, the services shall be located by stationing or by dimensions from lot lines. The invert elevation of the service sewer at the property line shall be indicated on the plans whenever the standard depth is inadequate to serve the property.

3. Both permanent and working easements shall be shown to scale on the plans. Easement dimensions shall be given and each easement shall be identified by a box or table, on the same plan sheet which gives the property owner's name and the book and page number in which the easement is recorded. The Project Engineer shall provide the book and page number.

4. Indicate the limiting maximum trench width, as measured at the top of the pipe, on the plans between well-defined points of application, the pipe material and class, if more than one class is available; and the bedding-backfill type. Type I bedding when used, and unlimited trench width, when allowed, need not be shown on the plans. If more than one combination of pipe class, maximum limiting trench width, or bedding type is available, a practical range of such combinations shall be shown on the plans.

5. Proposed sewer line shall be adequately dimensioned from street centerline. If sewer is to be located in an easement, sufficient dimensions and topographic details to locate the line in the field shall be shown on the plans.

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6. Gas, water, storm sewers, and all other main utility lines above or below ground shall be determined and shown on the plans with accuracy as great as practicable. The location of any utility line which is parallel to and within five feet of the sewer line or which crosses the sewer line at an angle of 30 degrees or less shall be determined with a reasonable accuracy, and the clearance shown on the plans.

7. Trees and other objects within 10 feet of construction centerline shall have their correct location shown on the plans and the clearance from construction centerline shown. The diameter of tree trunks and interfering heavy tree branches shall be noted. Removal of a tree or object, or any other special handling shall be noted on the plans. The Project Engineer shall assume full responsibility for such notes as it is assumed that he has made all necessary arrangements with the owner of the object to be handled. Written documentation of any special arrangemeents regarding preservation of property made between property owners and the Project Engineer shall be supplied to the City Engineer if no easement document is involved. If an easement is negotiated, all special arrangements are to be included in the easement document. Tree removal within public rights-of-way or easements must be approved by the Director of Parks and Recreation, together with provisions for replacement if required.

8. Culverts shall be shown on both plan and profile when crossed by the construction or when parallel and within 20 feet of the construction line. The size and type of all such culverts shall be indicated and when the culvert crosses or is perpendicular or nearly so and within 20 feet of the construction line, the invert of the culvert end nearest the construction line shall be shown.

9. Addresses of existing buildings shall be shown on the plan view, within the outline of the building. Only the front line and indication of side lines of buildings need be shown.

D. Detail Drawings--Items of a special nature should be shown with detail drawings, either on the plan sheets, or on a separate detail sheet, and shall be referenced on the construction drawing.

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PLANNED UNIT DEVELOPMENT DESIGN-- The following design exceptions shall apply to that portion of the sanitary sewer system within a planned unit development, that is "on-site" and is not an outfall sewer for an upstream area, thereby being considered a private system and not subject to maintenance by City forces.

A. Manhole Spacing-- Maximum spacing of manholes on mains shall be 300 feet for all straight lines. Manhole rings and covers shall be of City Standard type, as shown on Plan S-1.

B. Wyes-- Wyes shall be used for all sewer laterals connecting to the on-site laterals instead of being optional.

C. Asbestos-Cement Pipe-- Class 1500 or Class 200 R asbestos-cement pipe may be used as the minimum pipe class instead of Class 2400 as required by the Standard Specifications.

D. Minimum Depth-- All lines located within vehicular traffic areas shall have a minimum cover of 3 feet.

E. Plan- and Profile Sheets-- On-site improvement plans may be prepared without the profile that is normally required, unless otherwise directed.

F. Location-- Whenever possible, mains shall be located in areas to be paved.

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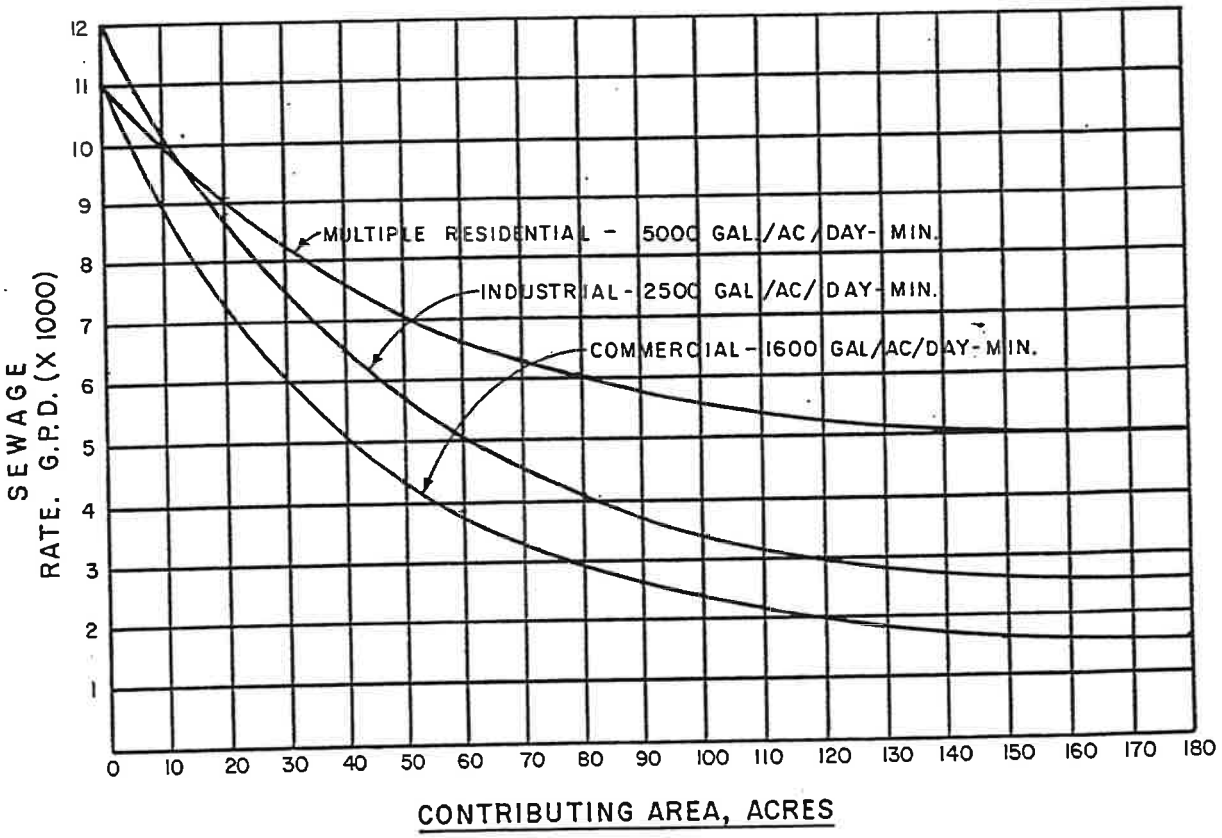
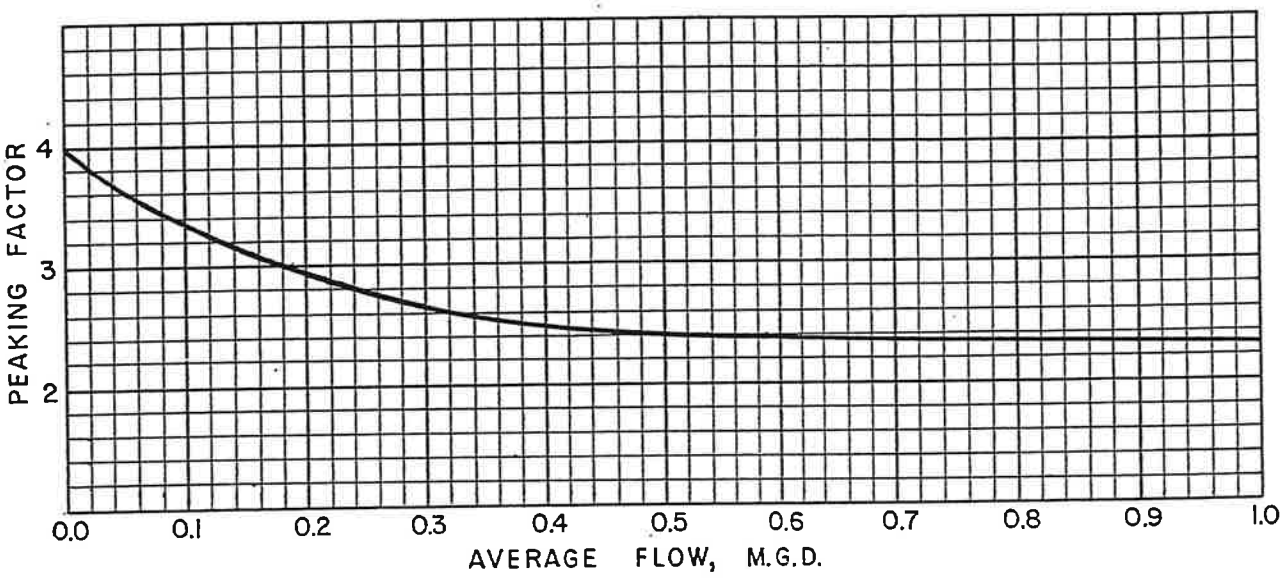


	ENGINEERING DIVISION	CITY OF ATWATER, CALIF.
	TITLE ESTIMATED AVERAGE SEWAGE FLOW - COMMERCIAL, INDUSTRIAL AND MULTIPLE RESIDENTIAL ZONED AREAS	STANDARD PLAN S-23
DRN.	APPROVED BY: Win Westfall DATE: 5-18-82	
DATE		
REV.	WIN WESTFALL, CITY ENGINEER	



ENGINEERING DIVISION — CITY OF ATWATER, CALIF.

TITLE SANITARY SEWER PEAKING FACTORS

STANDARD PLAN S-24

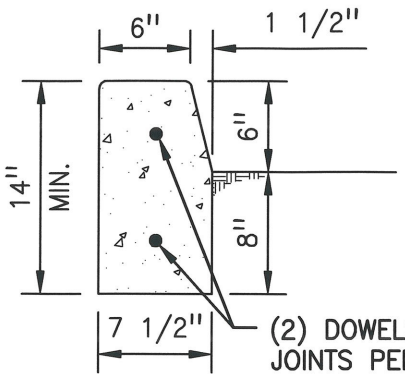
DRN.

DATE

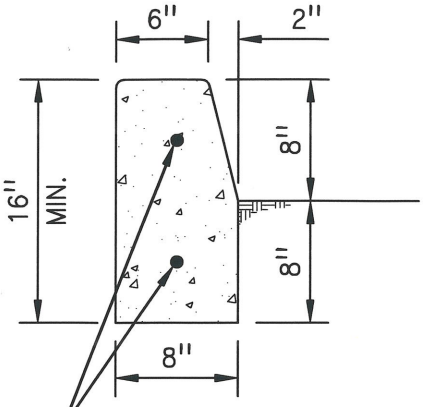
REV.

APPROVED BY: Win Westfall — DATE: 5-18-82

WIN WESTFALL, CITY ENGINEER

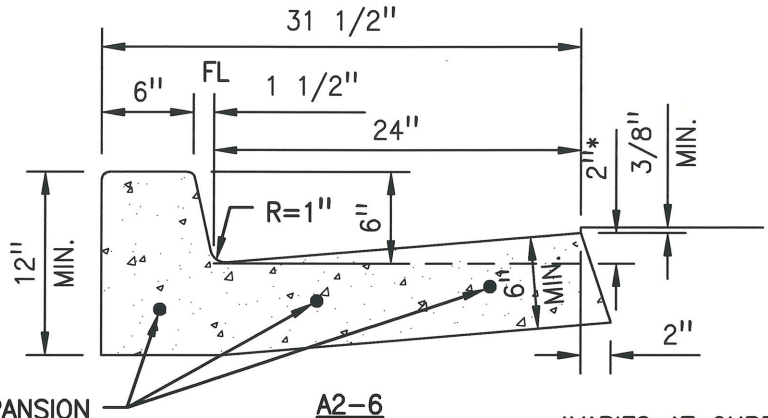


A1-6
VERTICAL CURB



(2) DOWELS AT EXPANSION JOINTS PER NOTE 6, SCG-4

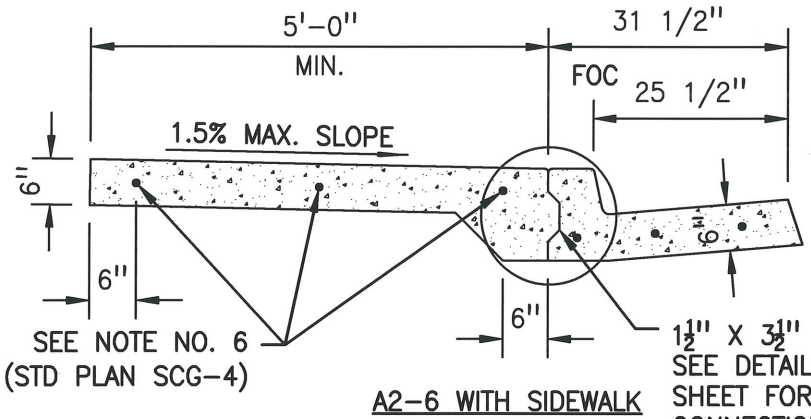
A1-8
MEDIAN CURB



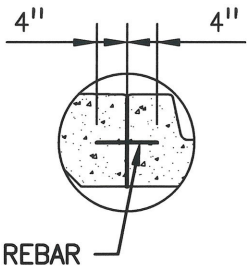
(3) DOWELS AT EXPANSION JOINTS PER NOTE 6, SCG-4

A2-6
VERTICAL CURB & GUTTER

*VARIES AT CURB RAMPS



A2-6 WITH SIDEWALK



ALTERNATE CONNECTION

NOTES:

1. SEE STANDARD PLAN SCG-4 FOR CURB, GUTTER, AND SIDEWALK CONSTRUCTION NOTES.
2. NEITHER KEY NOR CONNECTING REBAR IS NECESSARY IF CURB & GUTTER ARE POURED MONOLITHICALY WITH SIDEWALK.

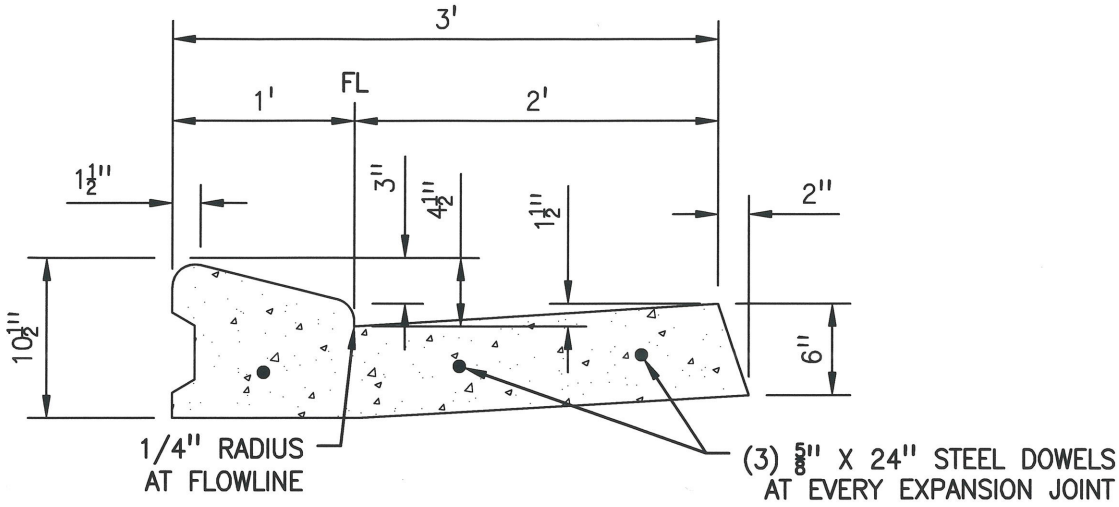
REV.		BY

VERTICAL CURB, GUTTER & SIDEWALK

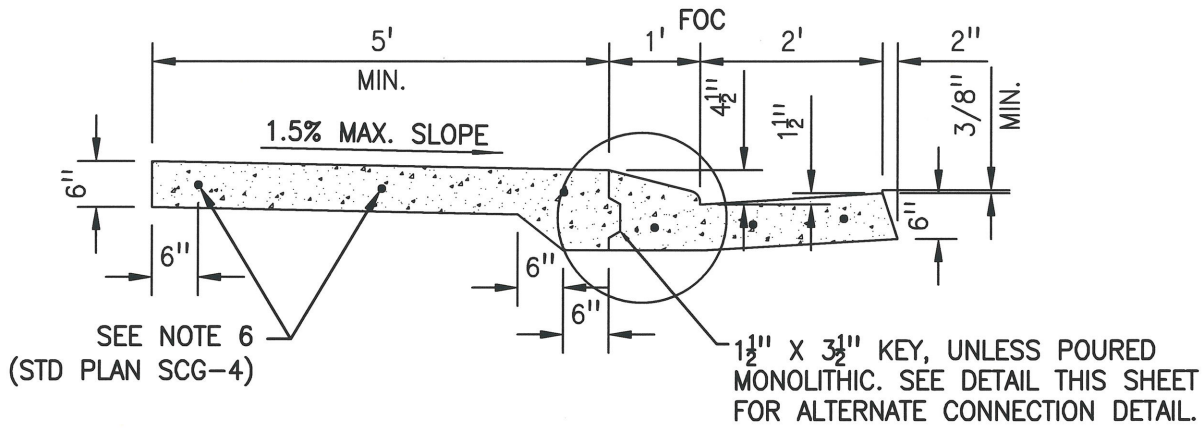
APPROVED
COMMUNITY DEVELOPMENT DEPARTMENT

CITY OF ATWATER
STANDARD DETAIL

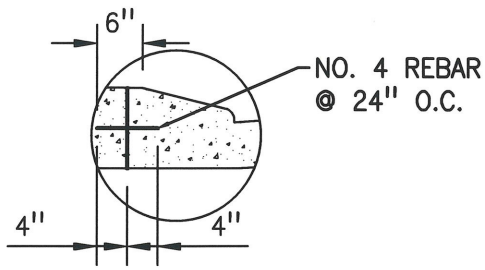
DRAWN:	J.V.P	NO.
DATE:	09.17.24	SCG-1
SCALE:	N.T.S	



ROLL CURB & GUTTER



ROLL CURB, GUTTER & SIDEWALK



ALTERNATE CONNECTION

NOTES:

1. SEE STANDARD PLAN SCG-4 FOR CURB, GUTTER, AND SIDEWALK CONSTRUCTION NOTES.
2. NEITHER KEY NOR CONNECTING REBAR IS NECESSARY IF CURB & GUTTER ARE POURED MONOLITHICALY WITH SIDEWALK.

REV.		BY

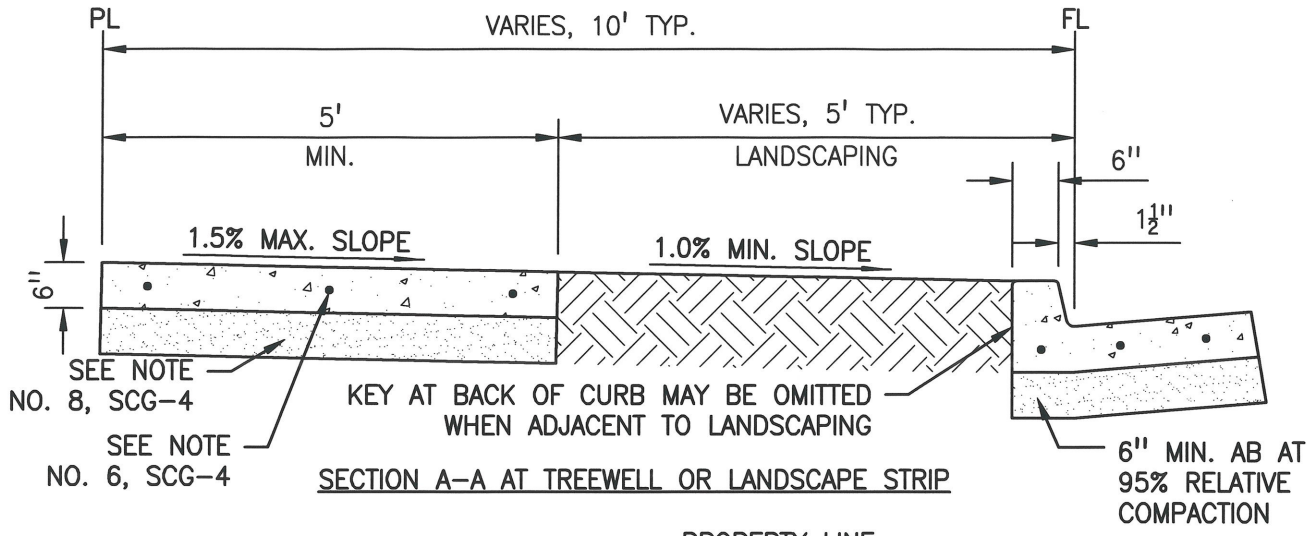
ROLL CURB, GUTTER & SIDEWALK

APPROVED

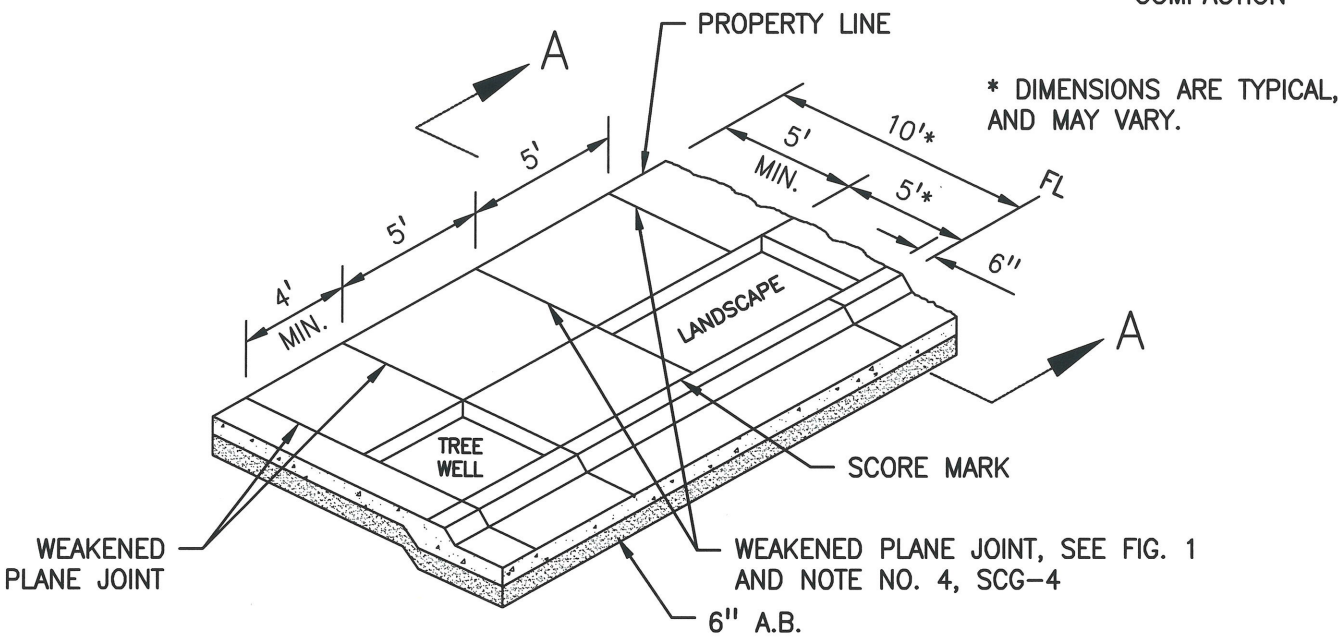
COMMUNITY DEVELOPMENT DEPARTMENT

CITY OF ATWATER
STANDARD DETAIL

DRAWN:	J.V.P	NO.
DATE:	09.17.24	SCG-1
SCALE:	N.T.S	



SECTION A-A AT TREEWELL OR LANDSCAPE STRIP



VERTICAL CURB, GUTTER & SIDEWALK WITH TREE WELLS OR LANDSCAPING

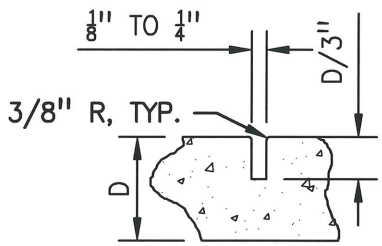


FIGURE 1
WEAKENED PLANE JOINT

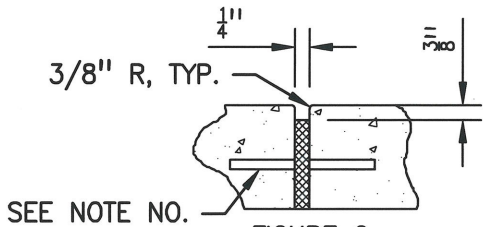


FIGURE 2
EXPANSION JOINT

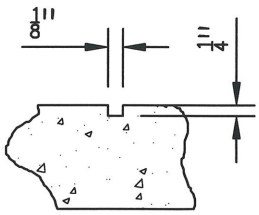
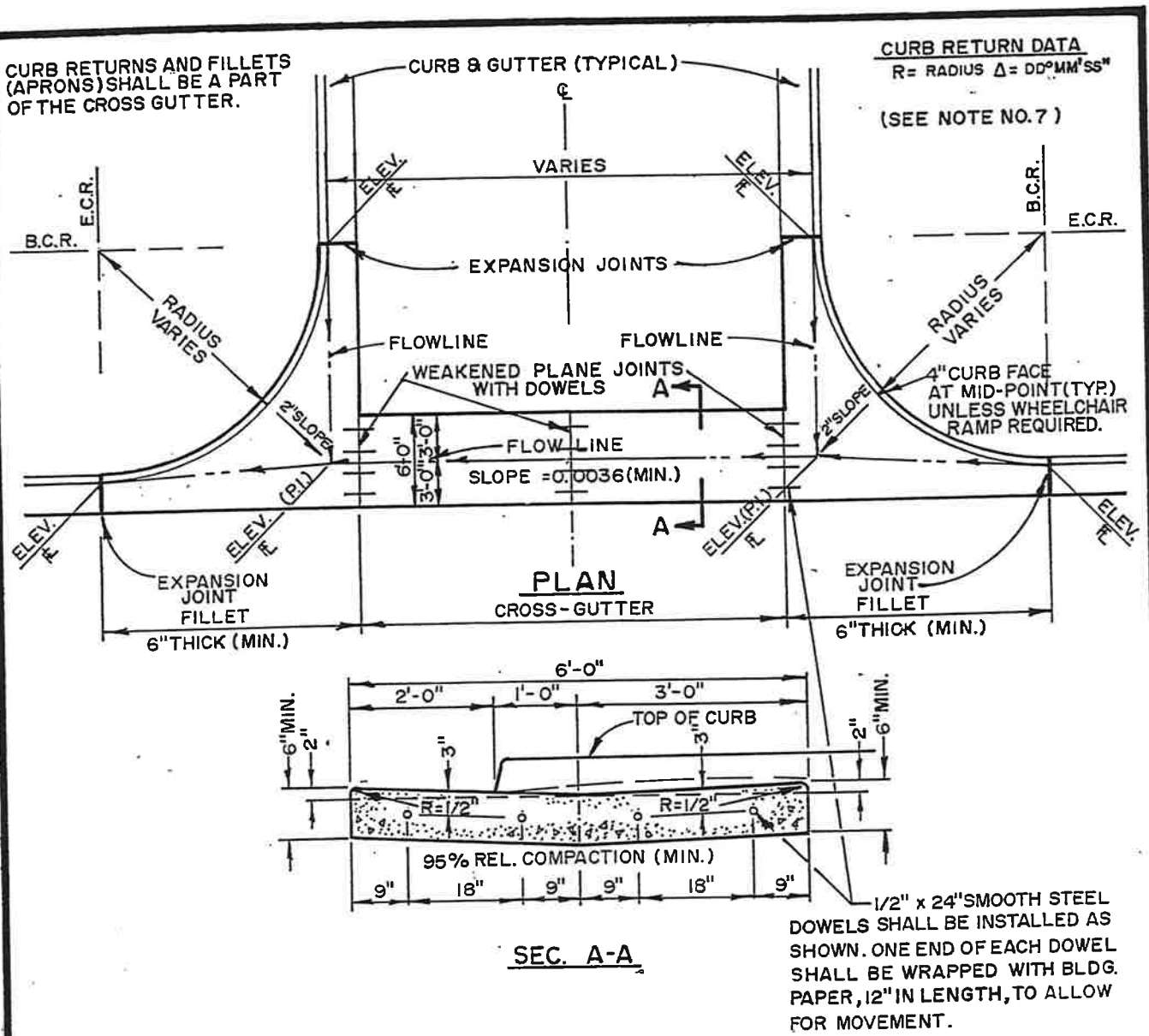


FIGURE 3
SCORE MARK

			SIDEWALK DETAILS	CITY OF ATWATER STANDARD DETAIL	
				DRAWN: J.V.P	NO.
			APPROVED	DATE: 09.17.24	SCG-2
REV.		BY	COMMUNITY DEVELOPMENT DEPARTMENT	SCALE: N.T.S	



SEC. A-A

NOTES:

1. CONCRETE SHALL BE CLASS "B" (5 SACK), MAX. 4" SLUMP.
2. A WHITE PIGMENTED CURING COMPOUND SHALL BE ADEQUATELY APPLIED.
3. AN APPROVED SOIL STERILANT SHALL BE APPLIED TO SUB-GRADE PRIOR TO CONSTRUCTION.
4. I 1/2" DEEP WEAKENED PLANE JOINTS SHALL BE INSTALLED AT SHOWN LOCATIONS.
5. INSTALL PREFORMED EXPANSION JOINTS, 1/2" WIDE, AT ALL CURB RETURNS.
6. GUTTER FLOWLINES SHALL BE TROWEL FINISHED SMOOTH.
7. CURB RETURN DATA AND STATIONING OF RETURNS SHALL BE SHOWN ON ALL IMPROVEMENT PLANS, EXCEPT FOR RIGHT ANGLE (90°) INTERSECTIONS.

ENGINEERING DIVISION — CITY OF ATWATER, CALIF.

TITLE: CROSS GUTTER AND FILLETS

STANDARD PLAN: SCG-3

DRN. H.E.D. | DATE 5/81 | REV. 6/82

APPROVED BY: Win Westfall, CITY ENGINEER — DATE 5-18-82

NOTES:

1. CURB, GUTTER, SIDEWALK, AND ALL P.C.C. FLATWORK SHALL HAVE A FINE HAIR LIGHT BROOM FINISH; CURB AND GUTTER PARALLEL TO THE FLOW LINE.
2. CONSTRUCT EXPANSION JOINTS 60' ON CENTER MAXIMUM, AND AT RETURNS, LIGHT POLES, HYDRANTS, CATCH BASINS, BOTH SIDES OF DRIVEWAYS, AND OTHER FIXED OBJECTS. USE 1/4" PREFORMED JOINT FILLER PER CALTRANS STANDARD SPECIFICATIONS.
3. CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF THE CURRENT CALTRANS STANDARD SPECIFICATIONS.
4. WEAKENED PLANE JOINTS, CONTRACTION JOINTS, AND EXPANSION JOINTS SHALL BE TOOLED OR FORMED, SAW CUTTING IS NOT ALLOWED.
5. INSTALL EXPANSION JOINTS, WEAKENED PLANE JOINTS AND SCORE MARKS AS INDICATED IN THE PLANS OR STANDARD DETAILS. SEE STANDARD PLAN SCG-2 FOR JOINT DETAILS.
6. PLACE 5/8" X 24" LONG STEEL DOWELS PER STANDARD DETAILS THROUGH EVERY EXPANSION JOINT, GREASED AND WRAPPED ON ONE SIDE.

   SIDEWALKS: INSTALL DOWELS EVENLY SPACED AT 16" MAX., ON CENTER. OFFSET DOWELS A MINIMUM OF 6" FROM SIDEWALK EDGES. INSTALL A MINIMUM OF THREE DOWELS IN A 5-FOOT SIDEWALK, AND A MINIMUM OF 5 DOWELS IN AN 8-FOOT SIDEWALK.

   VERTICAL CURB AND CURB & GUTTER: INSTALL DOWELS EVENLY SPACED AND CENTERED IN CONCRETE SECTION, WITH A MIN. CLEARANCE OF 3" FROM EDGES OF CONCRETE.

7. SIDEWALK CONSTRUCTION SHALL CONFORM TO SECTION 73, CALTRANS STANDARD SPECIFICATIONS, EXCEPT AS MODIFIED HEREIN.
8. FOR SIDEWALK CONSTRUCTION, PLACE 4" MINIMUM OF CLASS II AGGREGATE BASE UNDER THE CONCRETE AND COMPACT TO A MINIMUM OF 90%. SUBGRADE BENEATH AGGREGATE BASE SHALL BE SCARIFIED AND COMPACTED TO A MINIMUM OF 90% FOR A DEPTH OF 6".
9. SUB-GRADE BENEATH COMPACTED AGGREGATE BASE FOR CURB, GUTTER, AND DRIVEWAYS SHALL BE SCARIFIED AND COMPACTED TO A MINIMUM RELATIVE COMPACTION OF 95% TO A DEPTH OF 6".
10. ALL EDGES SHALL BE ROUNDED TO A 1/2" RADIUS UNLESS OTHERWISE NOTED.
11. CONCRETE AND OTHER CURB, GUTTER, SIDEWALK, DRIVEWAY, AND CURB RAMP MATERIALS SHALL COMPLY WITH SECTION 73-1.02 OF THE CALTRANS STANDARD SPECIFICATIONS. CONCRETE SHALL BE MINOR CONCRETE COMPLYING WITH SECTION 90 AND 73-1.02 OF THE CALTRANS STANDARD SPECIFICATIONS.
12. DEPRESS A 2" HIGH LETTER 'W', 'S', OR 'I' FOR WATER LATERAL, SEWER LATERAL, OR IRRIGATION SLEEVE LOCATION, 1/4" DEEP INTO THE FACE OF CURB TO IDENTIFY SERVICE LOCATIONS.
13. WATER SHALL BE USED TO ENSURE PROPER DRAINAGE OF GUTTERS AT BOTH THE FINAL WALK-THROUGH AND PRIOR TO THE EXPIRATION OF THE ONE-YEAR WARRANTY.
14. IN AN EXISTING STREET, WHENEVER THE CURB AND GUTTER ARE REMOVED, SAWCUT EXISTING STREET 2' OUT FROM LIP OF GUTTER MIN. & REPLACE WITH 8" DEEPLIFT OF ASPHALT CONCRETE, MIN., OR MATCHING EXISTING SECTION IF THICKER. STREET CUT SHALL EXTEND 1' MIN. BEYOND SAWCUT IN CURB AND GUTTER.
15. AN APPROVED SOIL STERILANT SHALL BE APPLIED TO ALL SUB-GRADE PRIOR TO CONSTRUCTION.
16. CURB RETURNS SHALL HAVE A 25' RADIUS UNLESS OTHERWISE DIRECTED OR APPROVED ON THE PLANS.
17. CURB, GUTTER AND SIDEWALK SHALL BE CONSTRUCTED AFTER ALL UNDERGROUND UTILITIES ARE IN PLACE IN NEW SUBDIVISIONS.
18. CONCRETE CURING SHALL BE PER SECTION 90 OF THE CALTRANS STANDARD SPECIFICATIONS. ALL CONCRETE SHALL BE TREATED WITH AN APPROVED WHITE-PIGMENTED CURING COMPOUND.

REV.		BY

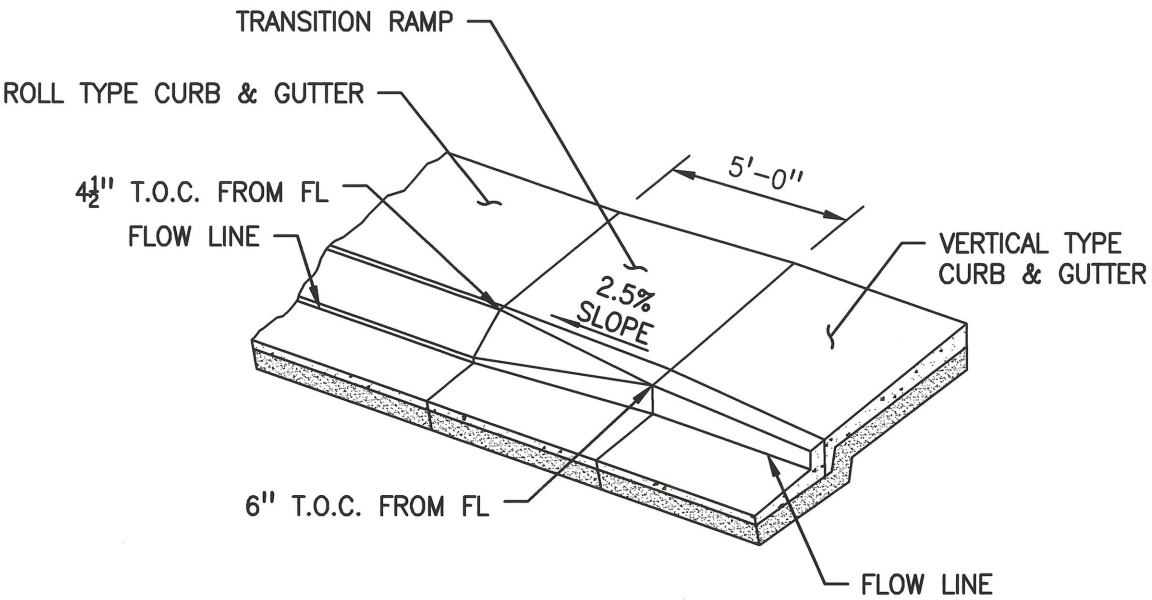
CONCRETE CURB, GUTTER & SIDEWALK CONSTRUCTION STANDARDS

APPROVED

COMMUNITY DEVELOPMENT DEPARTMENT

CITY OF ATWATER
STANDARD DETAIL

DRAWN:	J.V.P	NO.
DATE:	09.17.24	SCG-4
SCALE:	N.T.S	



3-D VIEW

NOTES:

1. MINIMUM TRANSITION LENGTH IS 5'-0". IF LESS THAN 5'-0", CITY ENGINEER MUST APPROVE TRANSITION LENGTH.
2. TYPICAL LONGITUDINAL TRANSITION SLOPE IS 2.5%±. (MAXIMUM SHALL NOT EXCEED 5.0%)

REV.		BY

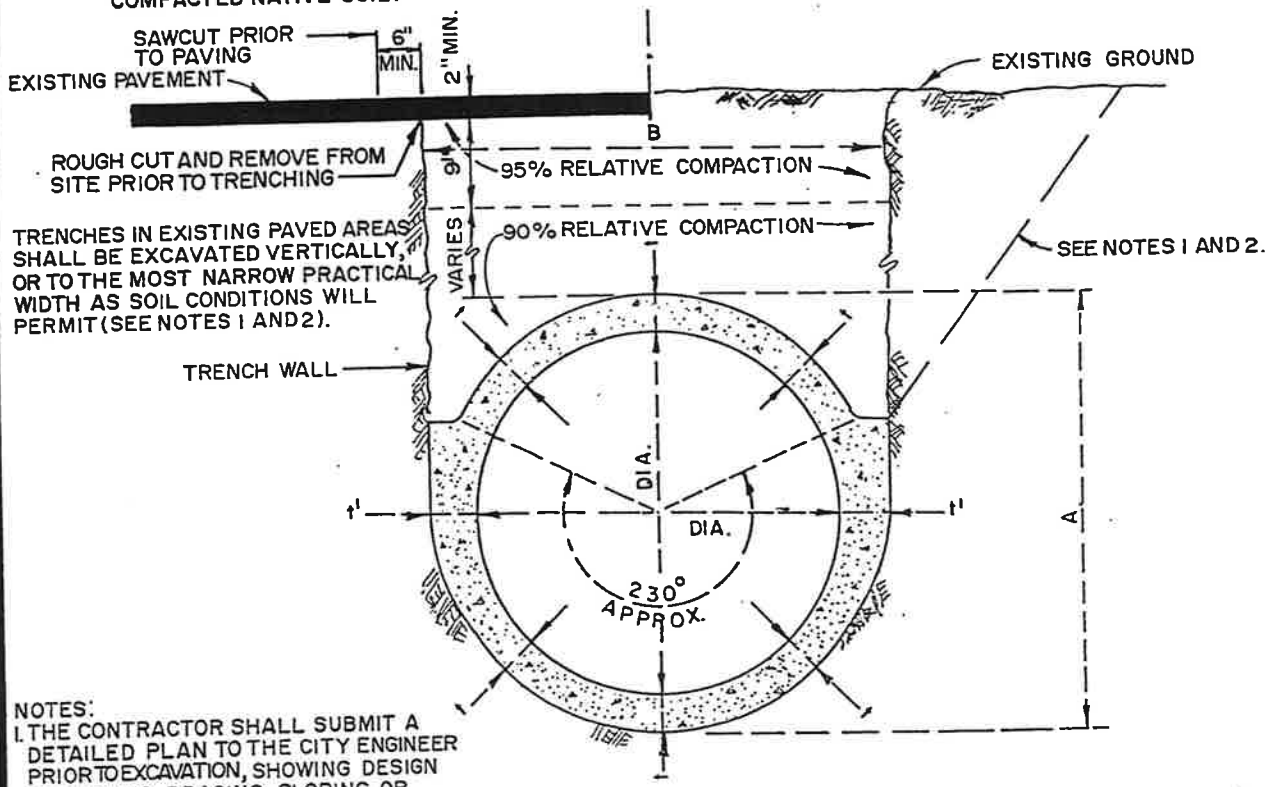
ROLL CURB TO VERTICAL CURB TRANSITION

APPROVED _____
COMMUNITY DEVELOPMENT DEPARTMENT

CITY OF ATWATER
STANDARD DETAIL

DRAWN:	J.V.P	NO.
DATE:	09.18.24	SCG-5
SCALE:	N.T.S	

SAWCUT EXISTING PAVEMENT. SAWCUTS SHALL BE PARALLEL WITH, OR AT RIGHT ANGLES TO, THE CENTERLINE OF PIPE. REPLACE EXISTING PAVEMENT WITH A MINIMUM OF 2"A.C., CLASS 'B', OVER COMPACTED NATIVE SOIL.



NOTES:

1. THE CONTRACTOR SHALL SUBMIT A DETAILED PLAN TO THE CITY ENGINEER PRIOR TO EXCAVATION, SHOWING DESIGN OF SHORING, BRACING, SLOPING, OR OTHER PROVISIONS TO BE MADE FOR WORKER PROTECTION, IN ACCORDANCE WITH SECTION 6422 OF THE LABOR CODE OF THE STATE OF CALIFORNIA.

2. THE MINIMUM REQUIRED WORKER PROTECTION SHALL BE AS DESCRIBED IN THE CONSTRUCTION SAFETY ORDERS OF THE DIVISION OF INDUSTRIAL SAFETY. VARIANCES THEREFROM SHALL BE PREPARED AND SIGNED BY A REGISTERED CIVIL ENGINEER OF THE STATE OF CALIFORNIA.

3. CLASS "A" (6 SACK) PORTLAND CEMENT CONCRETE, CONFORMING TO SECTION 90 STANDARD SPECIFICATIONS, STATE OF CALIFORNIA, LATEST EDITION, SHALL BE USED FOR CAST-IN-PLACE PIPE. MIX DESIGNS FOR THIS, OR PROPOSED ALTERNATES, SHALL BE SUBMITTED TO THE CITY ENGINEER FOR APPROVAL.

DIA.	A	MIN. B	t	MIN. t'
24"	30"	30½	3"	3"
27"	33"	33½"	3"	3"
30"	36"	36½"	3"	3"
36"	43"	43½"	3½"	3½"
42"	50"	50½"	4"	4"
48"	58"	58½"	5"	5"
54"	65"	66"	5½"	5½"
60"	72"	73"	6"	6"
66"	79"	80"	6½"	6½"
72"	86"	87"	7"	7"
84"	100"	101"	8"	8"
96"	114"	115"	9"	9"
120"	144"	145"	12"	12"

TYPICAL PIPE SECTION 24" THRU 120"

ENGINEERING DIVISION — CITY OF ATWATER, CALIF.

TITLE C.I.P.P. STORM DRAIN & TRENCH, 24"-120"

STANDARD PLAN SD-1

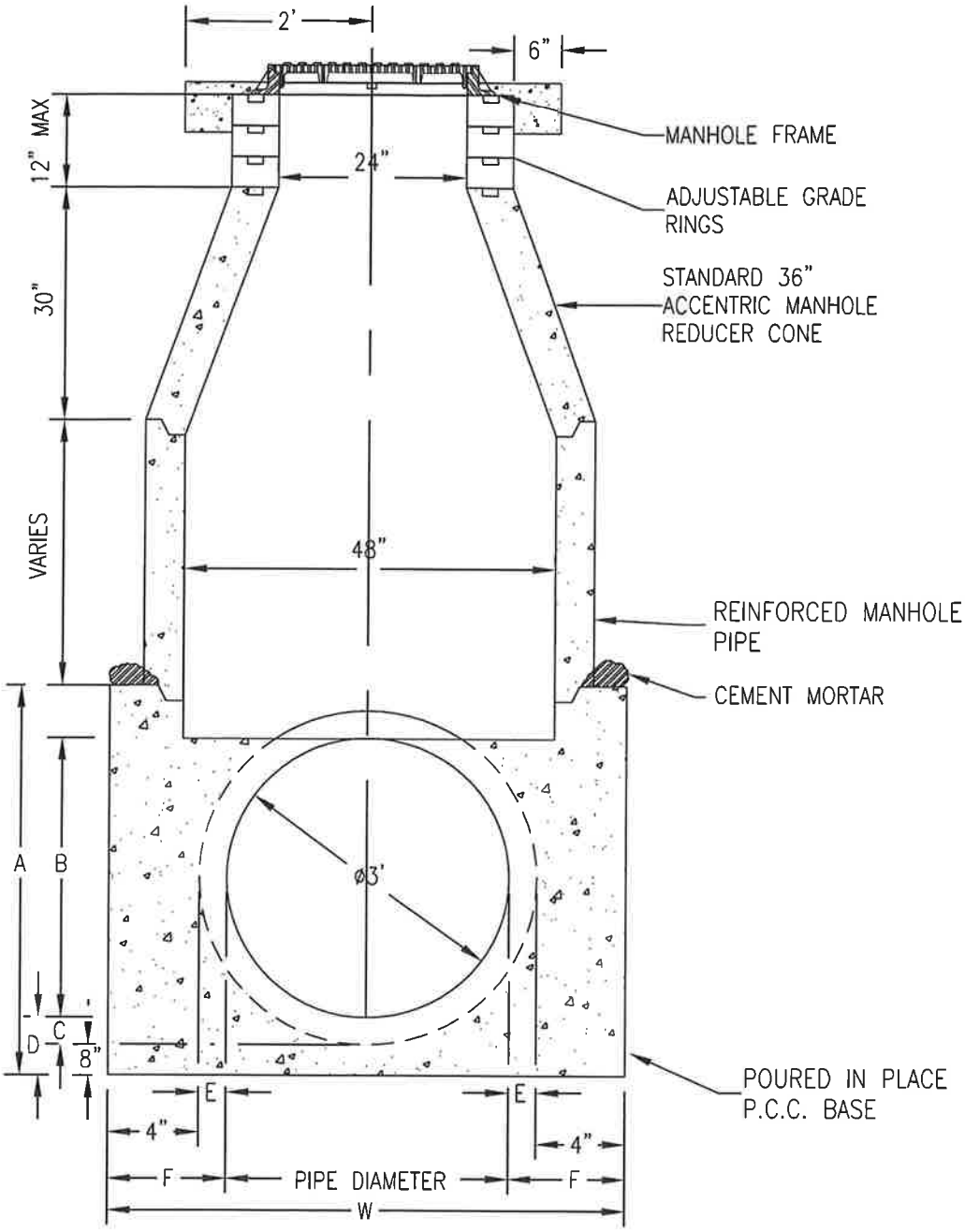
DRN. H.E.D.

DATE 8/81

REV.

APPROVED BY: Win Westfall — WIN WESTFALL, CITY ENGINEER

DATE: 5-18-82



PIPE DIA	A	B	C	D	E	F	W
36	53-1/2	36	3-1/2	11-1/2	4-1/2	8-1/2	56
42	60	42	4	12	5	9	60
48	67	48	5	13	6	10	68
54	70-1/2	54	5-1/2	13-1/2	6-1/2	10-1/2	75
60	81	60	6	14	7	11	82
66	87	66	6-1/2	14-1/2	7-1/2	11-1/2	89
72	94	72	7	15	8	12	96

MANHOLE PIPE STANDARD

APPROVED

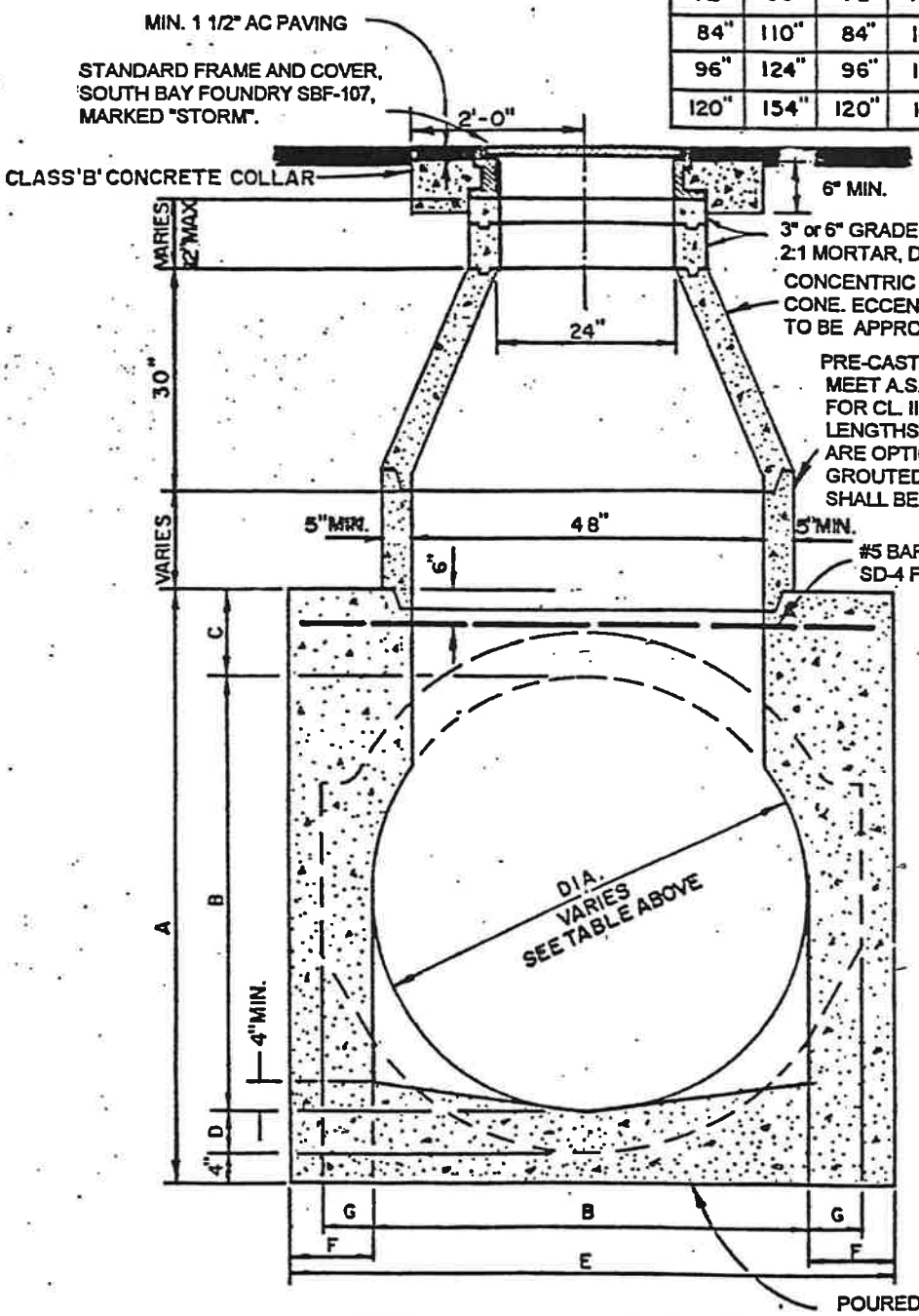
COMMUNITY DEVELOPMENT DEPARTMENT

REV. | BY

CITY OF ATWATER
STANDARD DETAIL

DRAWN:	R.GARCIA	NO.
DATE:	12/09/13	SD-02
SCALE:	N.T.S	

DIA.	A	B	C	D	E	F	MIN G
54"	75"	54"	11½"	5½"	75"	10½"	5½"
60"	82"	60"	12"	6"	82"	11"	6"
66"	89"	66"	12½"	6½"	89"	11½"	6½"
72"	96"	72"	13"	7"	96"	12"	7"
84"	110"	84"	14"	8"	110"	13"	8"
96"	124"	96"	15"	9"	124"	14"	9"
120"	154"	120"	18"	12"	154"	17"	12"



TYPICAL CONCENTRIC MANHOLE 54" THRU 120"

CLASS 'A' P.C.C. CONFORMINGTO SECTION 90, STANDARD SPECIFICATIONS, STATE OF CALIFORNIA, 1992 EDITION OR AN APPROVED EQUAL, SHALL BE USED FOR M.H. BASES AND C.I.P.P.

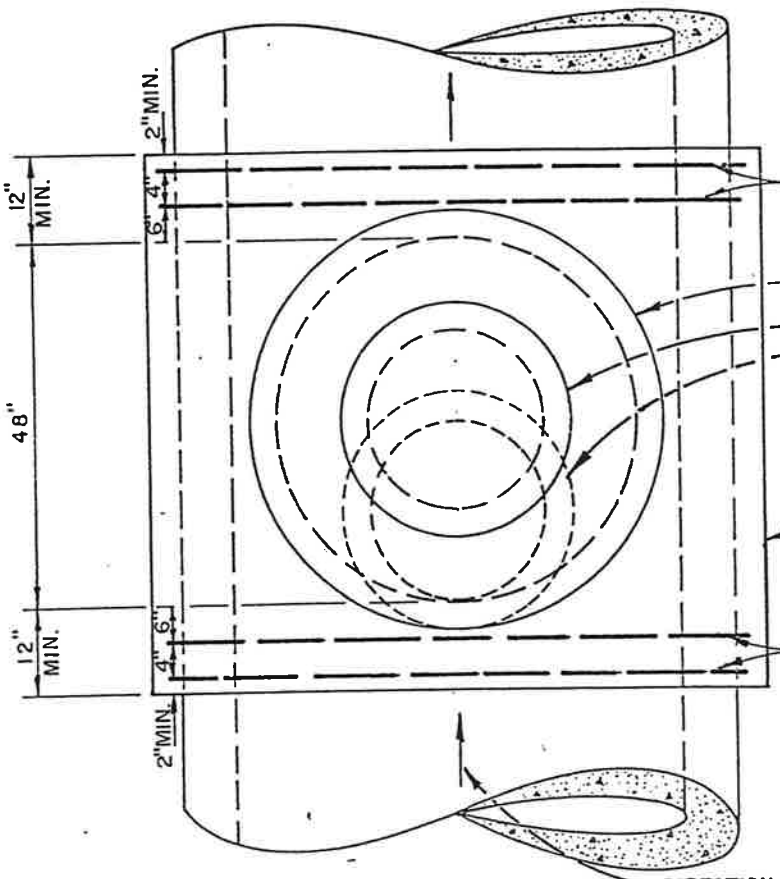
ENGINEERING DIVISION — CITY OF ATWATER, CALIF.

TITLE: STORM DRAIN M.H. FOR 54"-120" C.I.P.P.

STANDARD PLAN: SD-3

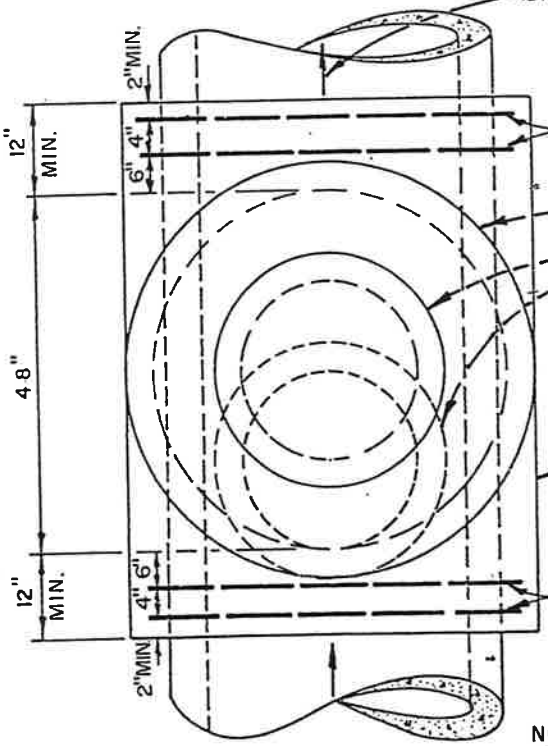
DRN. H.E.D.
DATE 8/81
REV. 2/96

APPROVED BY: John A Haines, CITY ENGINEER — DATE: 2-22-96



TYPICAL MANHOLE 54" THRU 120"

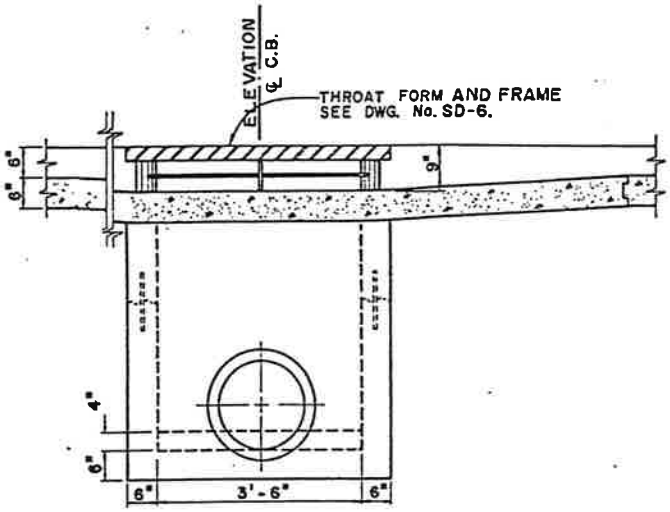
DIRECTION OF FLOW(TYPICAL)



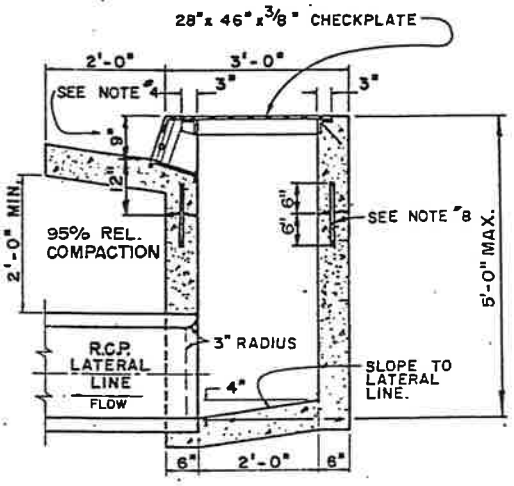
TYPICAL MANHOLE 24" THRU 48"

NOTE:
SEE STANDARD PLAN

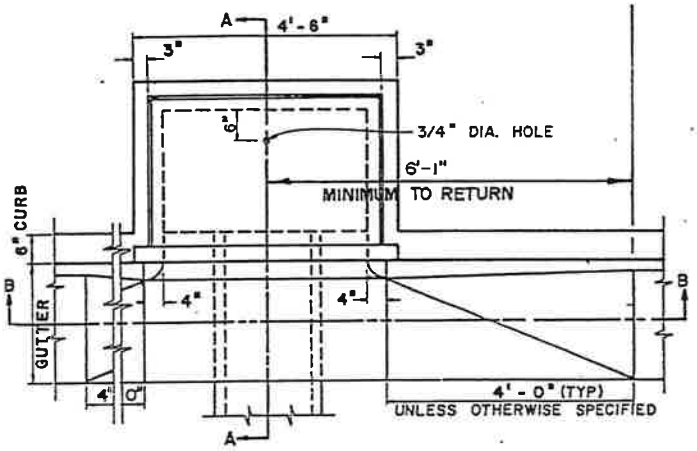
ENGINEERING DIVISION		CITY OF ATWATER, CALIF.	
TITLE	STORM DRAIN M.H.'S, PLAN VIEW		STANDARD PLAN
DRN. H.E.D.	APPROVED BY: Win Westfall	DATE: 5-18-82	SD-4
DATE 8/81	WIN WESTFALL, CITY ENGINEER		
REV.			



SECTION "BB"
SCALE 1" = 3'-0"

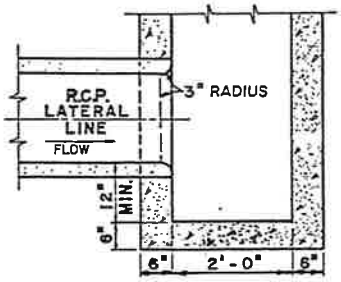


SECTION "AA"
SCALE 1" = 3'-0"



PLAN
SCALE 1" = 3'-0"

FLOOR OF CATCH BASIN SHALL BE POURED ON UNDISTURBED SOIL (OR COMPACTED TO 95% RELATIVE COMPACTION).



OUTLET DETAIL
(SEE NOTE "4)
SCALE 1" = 3'-0"

NOTE:
FOR CAPACITY, USE STD. PLAN SD-8, AS APPLICABLE.

NOTES:

1. THE INLET MAY BE MODIFIED SLIGHTLY TO MATCH EXISTING IMPROVEMENTS, AS DIRECTED BY THE ENGINEER.
2. STRUCTURE SHALL BE CLASS "A" CONCRETE. EXPOSED SURFACES SHALL BE FINISHED AS PER CURB SPECIFICATIONS.
3. COST OF FRAME AND GRATE AND THROAT FORM SHALL BE INCLUDED IN PRICE OF INLET OR OUTLET.
4. WHEN EMPLOYED AS OUTLET, PLACE GUTTER 6" BELOW TOP OF CURB GRADE AND ELIMINATE 1/2" IRON ROD FROM THROAT FORM.
5. CURB & GUTTER SHALL BE CONSTRUCTED OR RECONSTRUCTED ON EACH SIDE OF BOX AS INDICATED ON THE PLANS AND COST THEREOF SHALL BE INCLUDED IN PRICE OF INLET OR OUTLET.
6. FLOOR OF THE INLET SHALL SLOPE FROM ALL WALLS TO THE LATERAL LINE AND SHALL BE GIVEN A STEEL-TROWELED FINISH.
7. AT THE CONTACT POINT BETWEEN THE LATERAL LINE AND THE INLET WALL A SMOOTH 3" RADIUS CURVE SHALL BE CONSTRUCTED.
8. IF INLET IS CONSTRUCTED IN A TWO STAGE POUR, PROVIDE A ROUGHENED CONSTRUCTION JOINT AND PLACE ONE No. 4 BAR 12" LONG IN EACH OF THE FOUR WALLS, AS SHOWN.

INLET & OUTLET

ENGINEERING DIVISION — CITY OF ATWATER, CALIF

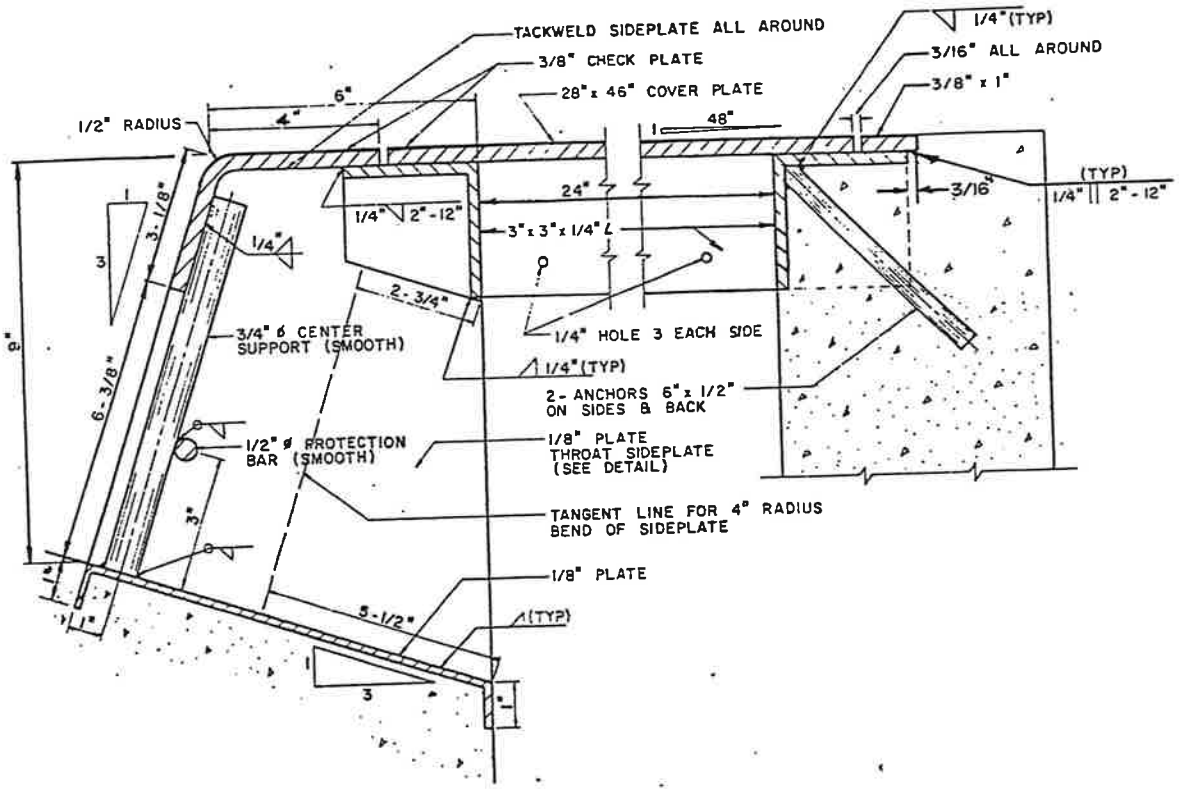
TITLE: TYPE "A" CATCH BASIN

STANDARD PLAN: SD-5

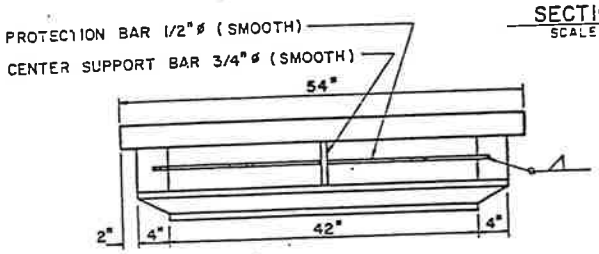
DRN. H.E.D.
DATE 6/81
REV. 6/82

APPROVED BY: Win Westfall
WIN WESTFALL, CITY ENGINEER

DATE: 5-18-82



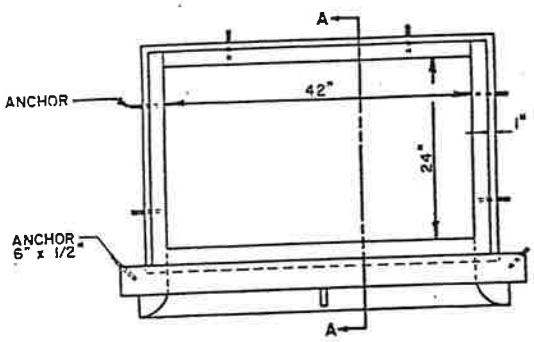
SECTION "AA"
SCALE 1" = 4"



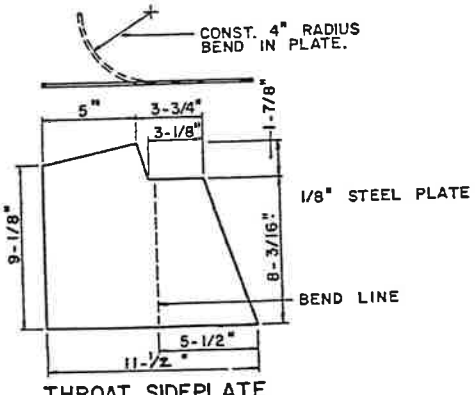
FRONT
SCALE 1" = 2'-0"

NOTES:

1. ALL DIMENSIONS ARE FINISHED DIMENSIONS.
2. ALL PARTS SHALL BE STRUCTURAL GRADE STEEL.
3. ALL EXPOSED METAL PARTS SHALL BE GALVANIZED AFTER FABRICATION.



PLAN
SCALE 1" = 2'-0"

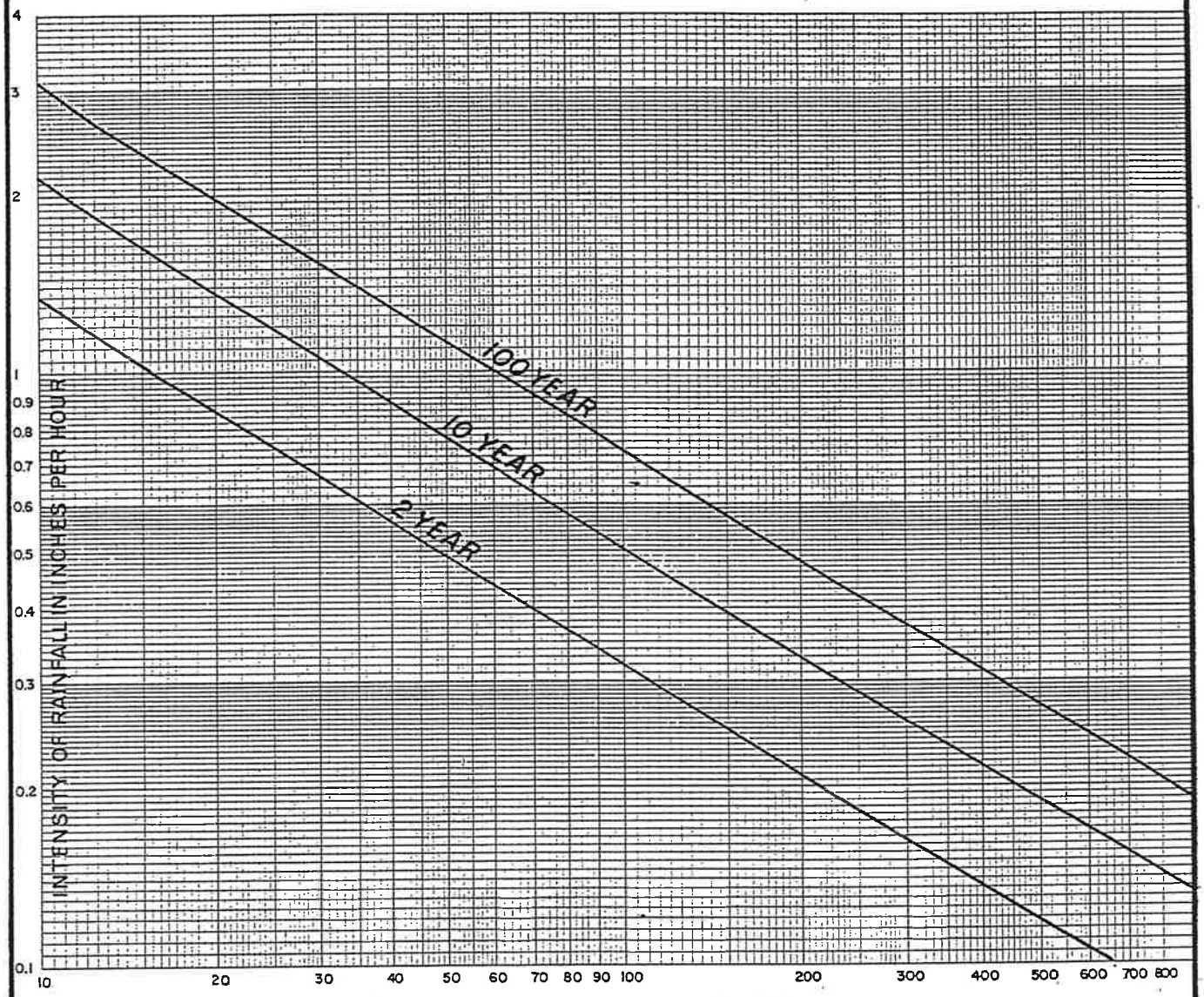


THROAT SIDEPLATE
SCALE 1" = 10"

THROAT FORM & FRAME

CITY OF ATWATER, CALIF

ENGINEERING DIVISION	TITLE: TYPE "A" CATCH BASIN	STANDARD PLAN SD-6
DRN. H.E.D.	APPROVED BY: Win Westfall	DATE: 5-18-82
DATE 6/81	WIN WESTFALL, CITY ENGINEER	
REV.		



1. Runoff coefficient = 0.5 (single family residential)
2. Roof to gutter time = 20 minutes
3. Design intensity = 10 Year storm
4. Pipeline water surface = 1 foot below gutter flow line
5. Maximum gutter water depth = 0.4 feet

ENGINEERING DIVISION — CITY OF ATWATER, CALIF.

TITLE: INTENSITY DURATION CURVES

STANDARD PLAN: SD-7

DRN.

DATE

REV.

APPROVED BY: Win Westfall — DATE: 5-18-82

WIN WESTFALL, CITY ENGINEER

CAPACITIES OF CURB OPENING INLETS

Using a gutter depression and intercepting the entire flow

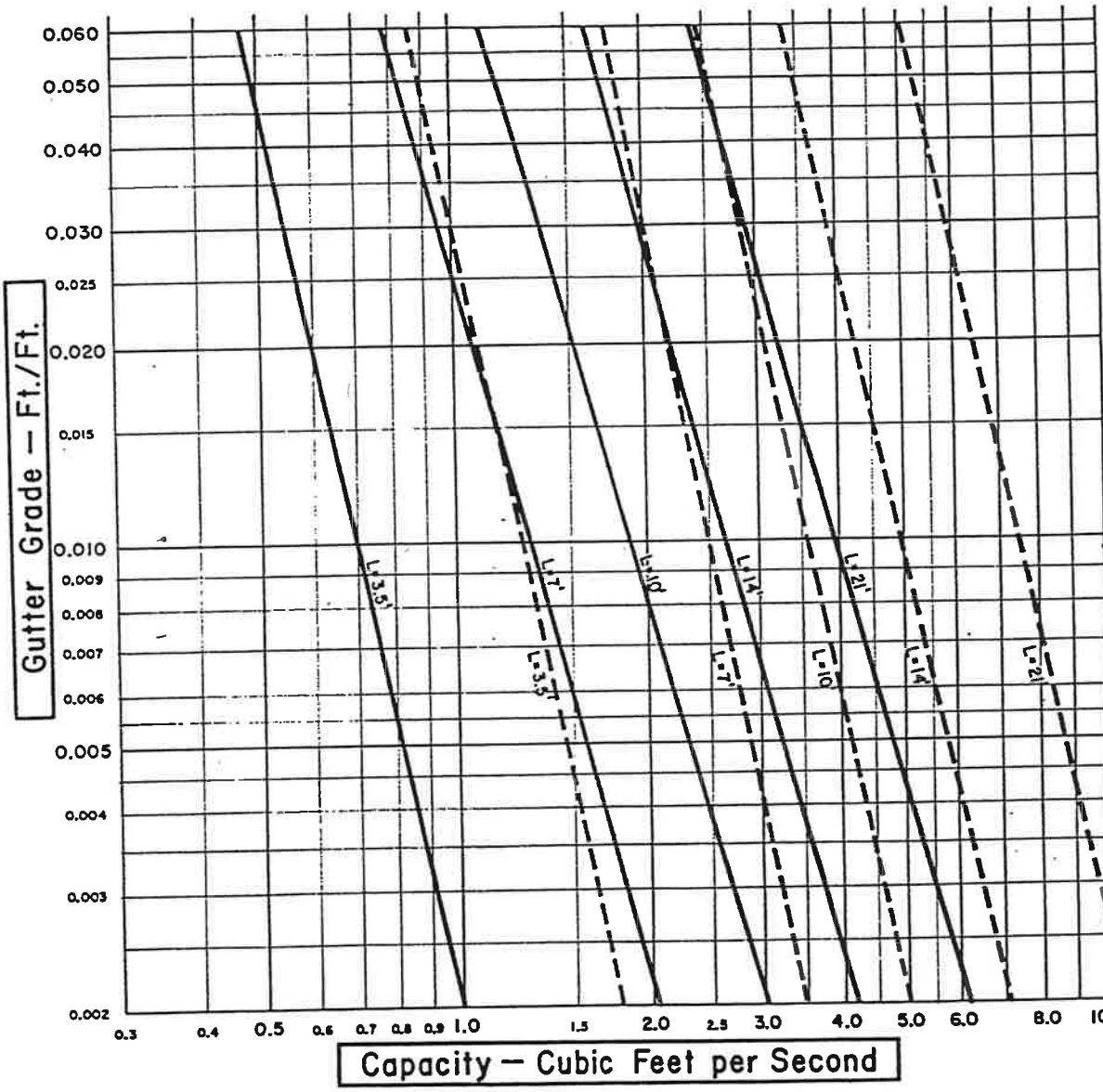
NOTES

1 LEGEND

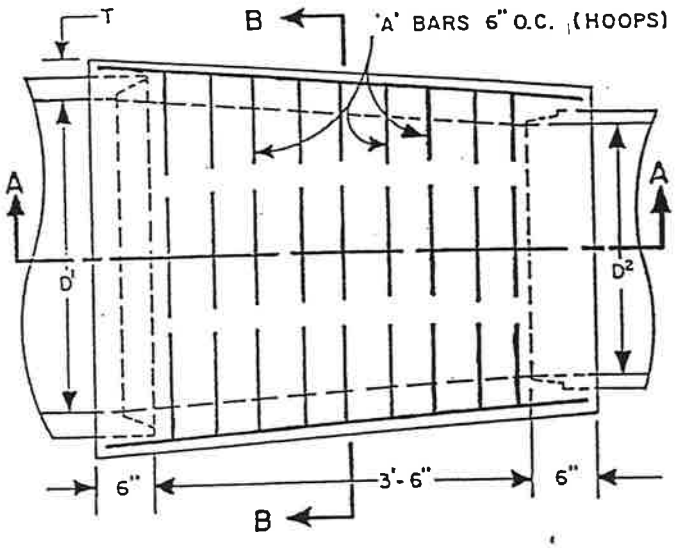
Solid Lines ——— = 0.10' gutter depression
Dash Lines — — = 0.25' gutter depression
L = Length of Opening

2 CAUTION

This chart applies only to side openings paralleling the direction of the intercepted flow. It is based on 2 percent pavement cross slope and the gutter depression cross slope as shown on Standard Plans.

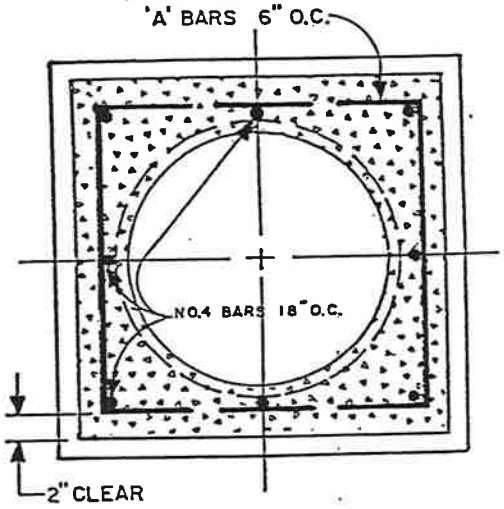


ENGINEERING DIVISION		CITY OF ATWATER, CALIF.	
TITLE	CAPACITIES OF CURB OPENING INLETS		STANDARD PLAN
DRN. H.E.D.	APPROVED BY: Win Westfall	DATE: 5-18-82	SD-8
DATE 2/82	WIN WESTFALL, CITY ENGINEER		
REV.			



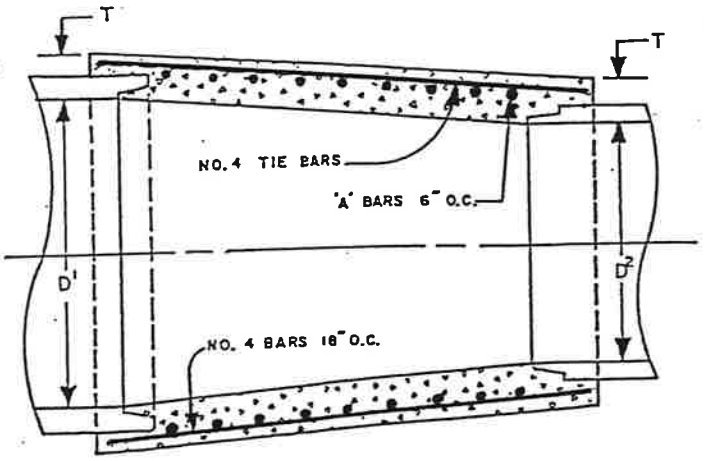
PLAN

DIMENSIONS SHOWN ARE MINIMUM DIMENSIONS. STRUCTURE MAY BE LONGER AT CONTRACTOR'S OPTION USING REINF. BARS AS SHOWN.



SECTION B-B

NOTE: STRUCTURE MAY BE POURED TO TRENCH WALL AT CONTRACTOR'S OPTION. IF DRAINAGE LEG ENTERS STRUCTURE, POUR TO TRENCH WALL AND ADD NO. 4 HOOPS AS DIRECTED.



SECTION A-A

TABLE OF DIMENSIONS AND BAR SIZES

D'	T	'A' BARS
18"	4 1/2"	NO. 4 BARS
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"	NO. 5 BARS

NOT TO SCALE

ENGINEERING DIVISION — CITY OF ATWATER, CALIF.

TITLE: STANDARD TRANSITION STRUCTURE

STANDARD PLAN SD-9

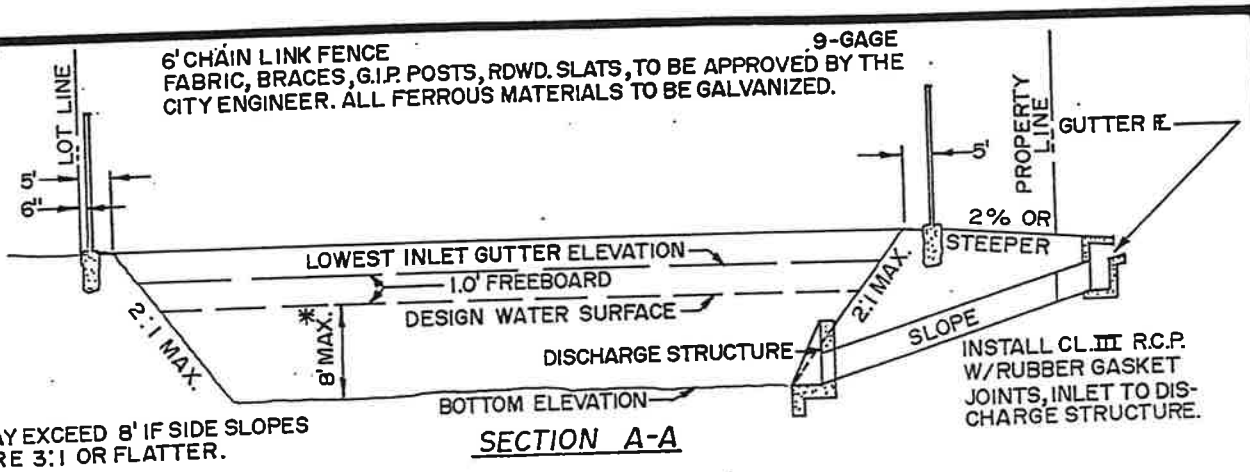
DRN. RWS

DATE 2/82

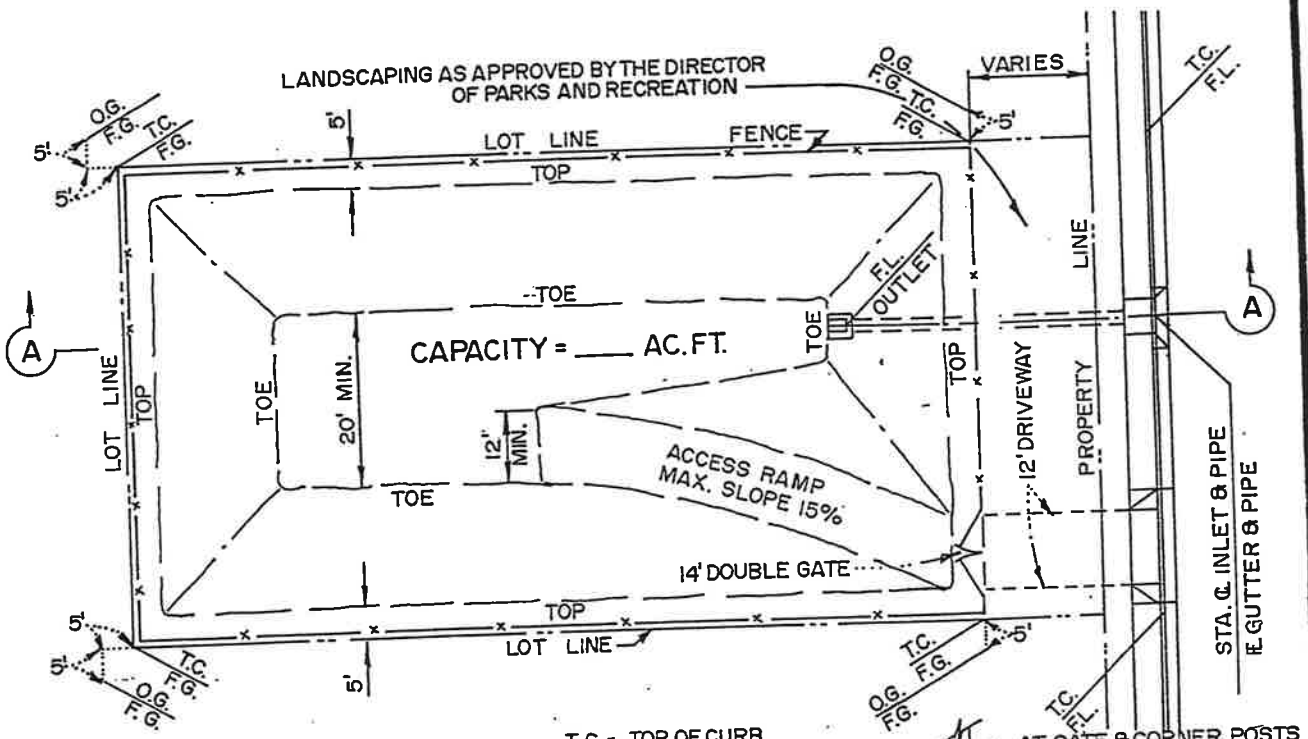
REV.

APPROVED BY: Win Westfall — WIN WESTFALL, CITY ENGINEER

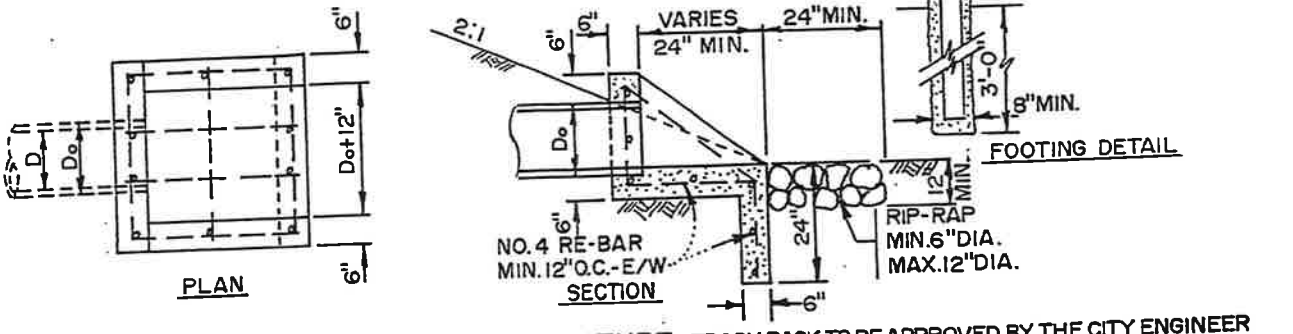
DATE: 5-18-82



SECTION A-A



T.C. = TOP OF CURB
F.L. = FLOWLINE
F.G. = FINISH GRADE
O.G. = ORIGINAL GROUND (ELEV.)



DISCHARGE STRUCTURE – TRASH RACK TO BE APPROVED BY THE CITY ENGINEER

CITY OF ATWATER, CALIF.

ENGINEERING DIVISION

TITLE: RETARDING BASIN DETAILS

STANDARD PLAN: SD-10

DRN. H.E.D.

DATE 2/82

REV. 6/82

APPROVED BY: Win Westfall, CITY ENGINEER

DATE: 5-18-82

BASINS

Definition

Retarding Basin - Any drainage facility which is used to retard the flow and which has a downstream outlet shall be classified as a retarding basin.

Capacity Requirement Computations

Retarding Basins

Retarding basins and structures require special design consideration. The engineer is to have the design method approved by the City Engineer prior to designing the facilities.

FENCING REQUIREMENTS

All water retention facilities within the City Limits, or connected with developments or improvements within the City Limits, shall be provided with a six (6) foot chain-link fence with vertical redwood slats, if required by the Planning Commission, or an approved equal. A 14-foot wide lockable chain-link drive gate shall be provided for access. All fence construction shall be in accordance with State of California, Department of Transportation Standard Specifications latest edition, or as modified and approved by the City Engineer. If redwood slats or other changes to standard fence are required by conditions of approval, design calculations shall be submitted for fencing.

RIGHT-OF-WAY

The top of the bank shall be located a minimum of five (5) feet inside the right-of-way or lot line, or such greater distance as dictated by set-back requirements. The fence shall be located six (6) inches inside the right-of-way or lot line, and the set-back line.

The right-of-way (or subdivision lot) required for the retarding basin is to be deeded in fee to the City of Atwater, unless it is to be for private use only. Reversionary clauses will not be permitted. If a part of a subdivision, a lot number and designation (retarding basin) shall be shown on the map to be recorded, and dedication thereof shall be on the map.

ENGINEERING DIVISION	CITY OF ATWATER, CALIF.	
TITLE: BASINS - GENERAL REQUIREMENTS		STANDARD PLAN
DRN.	APPROVED BY: Win Westfall	DATE: 5-18-82
DATE	WIN WESTFALL, CITY ENGINEER	SD - 11
REV. 6/82		

DRAINAGE DESIGN

DRAINAGE CLASSIFICATION- Drainage systems shall be defined as follows:

A. Lateral-- Drainage conduits receiving drainage from areas of less than 30 acres shall be called a lateral system.

B. Trunk-- Drainage conduits receiving drainage from areas of 30 acres or more shall be called a trunk system.

C. On-site Drainage-- Drainage facilities required to carry storm runoff within the development, excluding trunk drainage conduits, facilities draining public streets, and facilities draining concentrated flow from other properties.

DRAINAGE CAPACITY DESIGN-- Special provisions must be made within the drainage system to insure that the inlet invert elevations and the capacity of the drainage system will accommodate the ultimate development of the watershed.- This shall include the entire upstream watershed, regardless of the existing conditions.

DRAINAGE ALIGNMENT DESIGN-- The diversion of natural drainage will be allowed only within the limits of the proposed improvement. All natural drainage must enter and leave the improved area at its original horizontal and vertical alignment unless an agreement approved by the City Engineer has been executed with the adjoining property owners.

DRAINAGE PROFILES-- A plan and profile shall be shown for all drainage systems which carry natural drainage that originates upstream of the limits of the development. Plan and profile shall show pipe soffits and inverts and existing ground covering the pipe. On-site drainage may be shown in plan view only, unless profiles are requested by the City Engineer. Profiles, where necessary shall be extended off-site.

PIPE RADII CRITERIA -- All pipe placed on curves shall meet manufacturer's recommendations for curved alignment. All curves, radii, length of pipe joints, and types of pipe shall be shown on the plans.

PIPELINE ALIGNMENT REQUIREMENTS -- Drainage pipelines shall be located in the streets whenever possible. The location of storm drainage pipelines in new streets shall be 6 feet off the face of curb ,or as approved by the City Engineer. Pipelines may be under curb and gutter. When pipelines are placed under curb and gutter, the minimum clearance shall be three (3) inches between the bottom of gutter section and top of pipe. All new pipes and channels shall be placed a minimum of one hundred (100) feet from existing and proposed water wells. Meandering and unnecessary angular changes of pipelines shall be avoided. Angular changes when necessary shall not exceed 90 degrees.

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DRN.	APPROVED BY: Win Westfall	DATE: 5-18-82
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DRAINAGE EASEMENTS-- Drainage easement requirements are as follows:

A. Dedications-- Drainage conduits and channels not located in a public street, road or alley, or within an existing public drainage easement, shall be located in a dedicated public easement over private property.

Necessary dedication of easement for construction on private property shall be completed and submitted to the City Engineer before the improvement plans will be approved for construction. Where a minor improvement of a drainage channel falls on adjacent property, such as daylighting a ditch profile, a right of entry and easement shall be obtained from the adjacent property owners for such construction, and a signed copy from the adjacent property owners shall be submitted to the City Engineer prior to approval of the improvement plans. Easements shall be on forms approved by the City Engineer, and shall be a minimum of 10 feet in width.

DESIGN RUNOFF--Design criteria for drainage runoff shall be as follows:

Design Q in channel Q_{10} with 1 foot freeboard (vertical) or retardation basin.

Design Q in closed conduit = Q_{10}

Minimum foundation elevation = High top of curb elevation + 14".

ENGINEERING DIVISION		CITY OF ATWATER, CALIF.
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HYDRAULIC DESIGN CRITERIA -- In order to provide a uniform drainage system in the City of Atwater, the following criteria shall be followed in all hydraulic computations unless specific approval otherwise is received in writing from the City Engineer.

Flow Computations -- All hydraulic computations shall be in accordance with the following: Manning's equation "n" factor:

Precast Pipe	0.015
Concrete Cast-In-Place Pipe	0.015
Vitrified Clay Pipe	0.013
Asbestos Cement Pipe	0.013
Corrugated Steel Pipe(C.S.P.) Plain Unlined	0.024
Corrugated Steel Pipe(C.S.P.) 3"x1" corrugation	0.026
Asphalt Lined C.M.P.A.	0.017
Multi-Plate Arch Pipe	0.031
Open Channel, Fully Lined	0.015
Earth Channel, Clean, Uniform Sides	0.030
Open Channel with Lined Bottom, Clean Sides	0.050
Natural Channel	0.050

The "n" value for partially improved channels shall be determined by the Project Engineer and then approved by the City Engineer.

B. Pipe Criteria-- Pipe criteria shall be as follows:

Minimum pipe diameter allowable on any storm drain shall be 10 inches except for on-site drainage where the minimum size shall be as approved by the City Engineer.

C. Rational Formula Criteria for Various Zoning-- Rational Formula Criteria:

Zone:
Single Family

$C = 0.5$
$i = Q_{10}$

Roof-to-Gutter Time = 20 Minutes
Pipeline H.G.L. 1' below gutter or Flowline
Maximum gutter water level - 0.4'

ENGINEERING DIVISION		CITY OF ATWATER, CALIF.	STANDARD PLAN
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Zone: Multi-Family	C = 0.6
Commercial & Industrial	C = 0.7 to 0.9, as approved by City Engineer
	$i = Q_{10}$
	Roof-to-Gutter - To be furnished by Project Engineer
	Pipeline H.G.L. - 1' below gutter or Flowline.
	Maximum gutter water depth 0.4'

DESIGN COMPUTATION- The design computation for drainage shall include the following information which shall be submitted before the plans will be accepted for checking:

1. Watershed map
2. Drainage area in acres.
3. C.F.S. in each pipe or channel reach.
4. Invert elevations of each pipe or channel reach.
5. Top of structure elevation or top of channel lining elevation.
6. Hydraulic grade line elevation.
7. Hydraulic gradient.
8. Pipe, size, class, length and gradient. Items 6 and 7 are not required when design is based on hydraulic grade line inside conduit.
9. Channel dimensions and water surface profile computations, where applicable.

DRAINAGE STRUCTURES -- Drainage structure criteria shall be as follows:

A. Closed Conduits -- The requirements for closed conduits are as follows:

1. Closed conduits shall be either cast-in-place concrete pipe, precast reinforced concrete pipe, non-reinforced concrete pipe, asbestos cement pipe, vitrified clay pipe, corrugated steel pipe, or asphalt lined corrugated steel pipe. Said type to be approved by the City Engineer.

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2. The specific type of pipe or approved alternate pipes to be used in the development shall be shown on the plans. If the developer proposes to use any type of pipe not shown on the approved plans, the plans shall be submitted by the Project Engineer, together with calculations, to the City Engineer for approval.

   All pipe alternates shall be shown on Assessment District plans to be constructed under the Improvement Act of 1911 or 1913, and plans for pipe to be constructed with City of Atwater contribution.

3. Cover requirements are shown on Standard Drawings SD-2 and SD-3. At locations where the minimum cover requirements cannot feasibly be obtained, the conduit will be either encased in concrete or provided with a concrete cover or other method of pipe protection as specified by the City Engineer.

B. Manholes & Inlets-- The requirements for manholes and inlets are as follows:

1. Shall be constructed as shown in appropriate Standard Drawings.

2. Manholes shall be located at junction points, changes in gradient, and changes in conduit size. On curved pipes with radii of 200 feet to 400 feet, manholes shall be placed at the B.C. or E.C. and on 400 feet maximum intervals along the curve for pipes 24 inches and less in diameter and 500 feet maximum intervals along the curve for pipes greater than 24 inches in diameter. Manhole spacing on curves with radii less than 200 feet will be determined on an individual basis, by the City Engineer.

3. Spacing of manholes, junction boxes or inlets of such size as to be enterable for maintenance shall not exceed 500 feet for drains 24 inches and smaller in diameter and 600 feet for pipes greater than 24 inches in diameter, except under special approved conditions. The spacing of manholes shall be nearly equal whenever possible.

4. All manholes and junction boxes other than inlets shall have standard manhole covers as shown in the standard drawings. Manholes will not be allowed in the gutter flow line except as approved by the City Engineer.

5. Drop inlets in streets shall be placed at lot lines in residential subdivisions, except at intersections. Where they shall be placed adjacent to the curb returns.

6. Inlets may be modified to use without curb section for on-site drainage.

7. Drop inlets draining public streets may be connected directly to a collector or trunk line 36 inches in diameter or larger by means of a lateral not exceeding 15 inches in diameter and 35 feet in length and having a slope not exceeding .30 percent.

8. Single on-site drop inlets may be connected directly to a trunk line 36 inches or greater in diameter, provided that the connector pipe is not longer than 80 feet and that blockage of the inlet could not cause flooding on adjacent properties.

C. Headwalls, Wingwalls, Endwalls, Trash Racks and Railings-- The requirements for these facilities are as follows:

1. All headwalls, wingwalls, and endwalls shall be considered individually and shall be, in general, designed in accordance with the Standards and Specifications of the California Department of Transportation, current edition.

2. Trash racks will be provided where, in the opinion of the City Engineer, they are necessary to prevent clogging of culverts and storm drains and eliminate hazards. The trash racks shall be designed as approved by the City Engineer. Temporary trash racks will be allowed where pipe will be extended in the near future.

3. Metal beam guard rail or chain link fencing may be required by the City Engineer at culverts, headwalls and box culverts and on steep side slopes. When so required, the railing shall be installed in accordance with the State Standard Construction Specifications.

D. Drainage Pumps-- The requirements for drainage pumps are as follows:

1. The use of drainage pumps shall be avoided whenever possible, and used only with the specific approval of the City Engineer.

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	TITLE DRAINAGE DESIGN		STANDARD PLAN
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	REV.		

2. If the use of drainage pumps is permitted, the drainage system shall be so designed as to provide for gravity outfall during the summer months and other periods of low water stages. If a low stage gravity outfall is impossible or impractical, an alternate pump of smaller capacity for low stage flow shall be provided when specified by the City Engineer.

3. Pumping installations shall be so designed to accomodate a design flow as approved by the City Engineer. When a station contains gravity discharge, outlet capacity must be equal to the design discharge. When the station does not have gravity discharge, pumping units must be designed to furnish 100% capacity with any one pump out. Any deviation from this criteria must receive the specific approval of the City Engineer.

4. Pumping stations shall be designed so that gravity inflow flow does not pass through the pump pit.

5. No motor overload condition shall exist at any sump or flow condition. This does not preclude high sump design if low sump condition does not create an overload.

6. Each pumping installation shall require approval for each of the following items: electrical system, piping system, pumps, housing installation, and other miscellaneous design features.

7. Adequate access shall be provided for cleaning the pump sump.

8. Trash racks shall be provided upstream from the pumping plant. Provisions shall be made for easy cleaning of the trash racks.

9. Hatch covers, where used, shall be of raised pattern aluminum floor plate, or other approved lightweight cover. Dissimilar metals shall be insulated from each other when necessary.

10. Ladder rungs, where used, shall be of a non-slip variety.

11. All drainage pumping plant sites shall be fenced with slatted 6' chain link fence.

12. All safety items shall conform to CAL-OSHA specifications.

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TITLE DRAINAGE DESIGN			STANDARD PLAN
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DATE			
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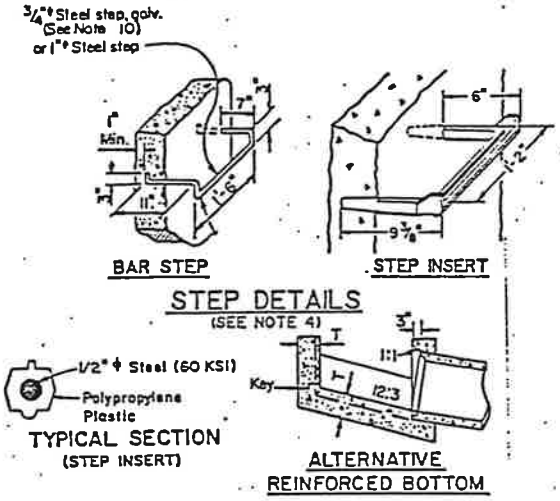
FENCING REQUIREMENTS-- The requirements for fencing shall be as follows:

A. Improved channels in developed areas exceeding three (3) feet in depth and with side slopes steeper than 3.1 shall be fenced with six (6) foot chain link fence with redwood slatting.

B. Drive gates shall be minimum 14 feet wide, and walk gates shall be 4' wide minimum, with locking facilities provided for each.

C. The fence shall be located 6 inches within the required drainage easement lines (See also Standard Plans SD-10 and SD-11).

ENGINEERING DIVISION		CITY OF ATWATER, CALIF.
TITLE DRAINAGE DESIGN		STANDARD PLAN
DRN.	APPROVED BY:	DATE: 6-15-82
DATE		SD-19
REV. 6/82	WIN WESTFALL, CITY ENGINEER	



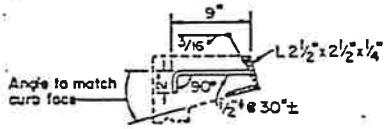
GENERAL NOTES

1. "H" is the difference in elevation between the outlet pipe flow line and the normal gutter grade line undepressed.
2. For "t" wall thickness, see table below.
3. Wall reinforcing not required when H = 8' or less and the unsupported width or length = 7' or less. Walls exceeding these limits shall be reinforced with # 4 bars @ 18" centers placed 1½" clear to inside of box unless otherwise shown.
4. Steps - None required where "H" is less than 30 inches. Where "H" is 30 inches or more, install steps with lowest rung 12 inches above the floor and highest rung not more than 6 inches below top of inlet. The distance between steps shall not exceed 12 inches and shall be uniform throughout the length of the wall. Place steps in the wall without an opening. Step inserts may be substituted for the Bar Step. Step inserts shall comply with State Industrial Safety requirements.
5. When shown on the project plans, Place a # 6 protection bar horizontally across the length of the opening and bend back 4" into the inlet wall on each side.
6. Curb supports shall be evenly spaced and minimal in number such that maximum span of unsupported curb is 7'.
7. Pipe(s) can be placed in any wall.
8. Curb section shall match adjacent curb.
9. Basin floors shall have wood trowel finish and a minimum slope of 12:3 from all directions toward outlet pipe.
10. Galvanizing - required
11. W = 2'-11 3/8" for one grate. Add 3'-5 3/8" for additional grates in tandem.
12. See "Standard Grate Details" D77-A & D77-B for Grate and Frame Details and Weights of Miscellaneous Iron & Steel.
13. See Standard Plan D78-A for Depression Details.
14. Full penetration butt welds may be substituted for the fillet welds on all anchors.
15. Standard square, hexagon, round or equivalent headed anchors may be substituted for the right angle hooks on the anchors shown on this plan.
16. Cast-in-place or Precast alternative is optional with contractor See Standard Specifications.

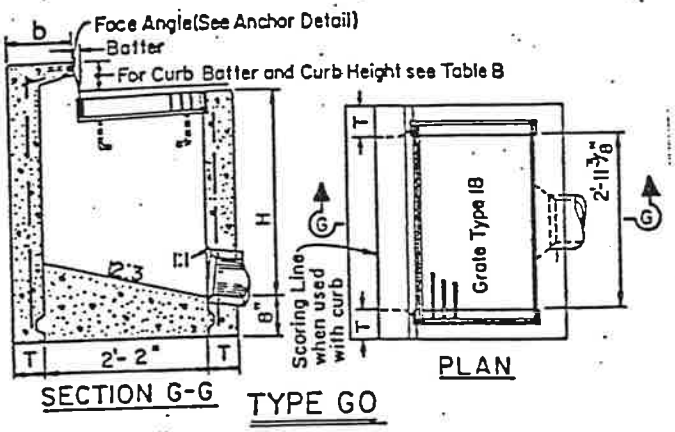
H = 3'-0" to 8'-0" (T = 6")	H = 8'-1" to 20'-0" (T = 8")

TABLE B

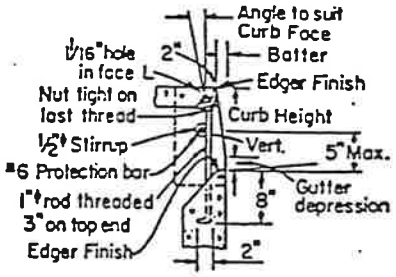
Curb Type	Normal Curb Height	Curb Batter	b
A-6	6"	1½"	12½"
A-8	8"	2"	12
B	6"	4"	10
Dike	6"	3"	



FACE ANGLE ANCHOR DETAIL



TYPE GO



PROTECTION BAR DETAIL
(See Note 6)

ENGINEERING DIVISION — CITY OF ATWATER, CALIF.

TITLE **TYPE GO DRAINAGE INLET**

STANDARD PLAN **SD-20**

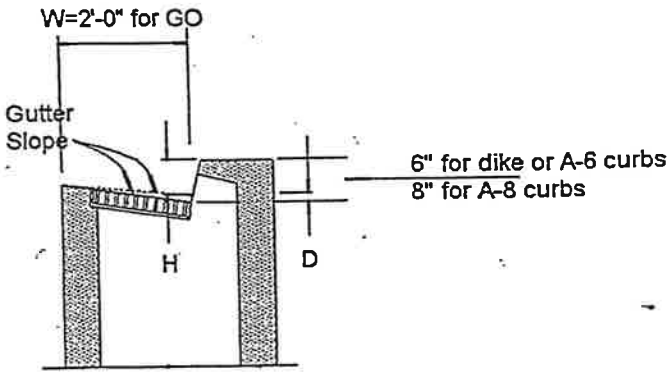
DRN.

DATE

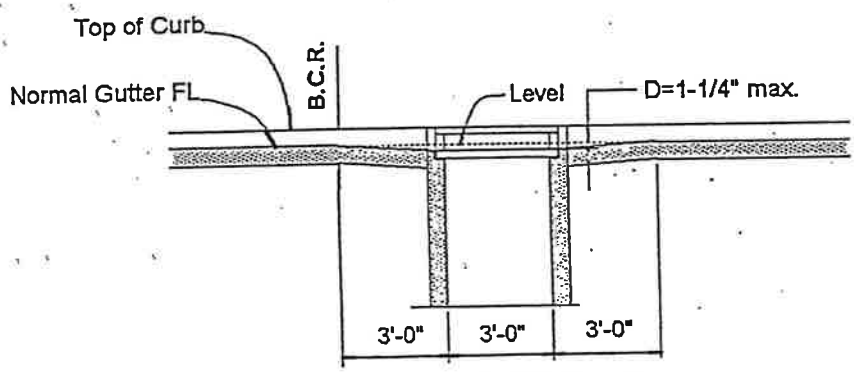
REV.

APPROVED BY: _____ DATE: 8/24/98

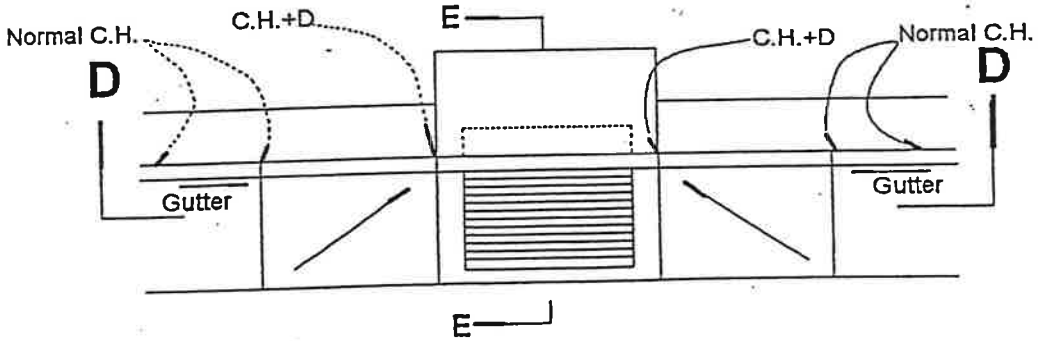
JOHN E. MEDINA, CITY ENGINEER



SECTION E - E

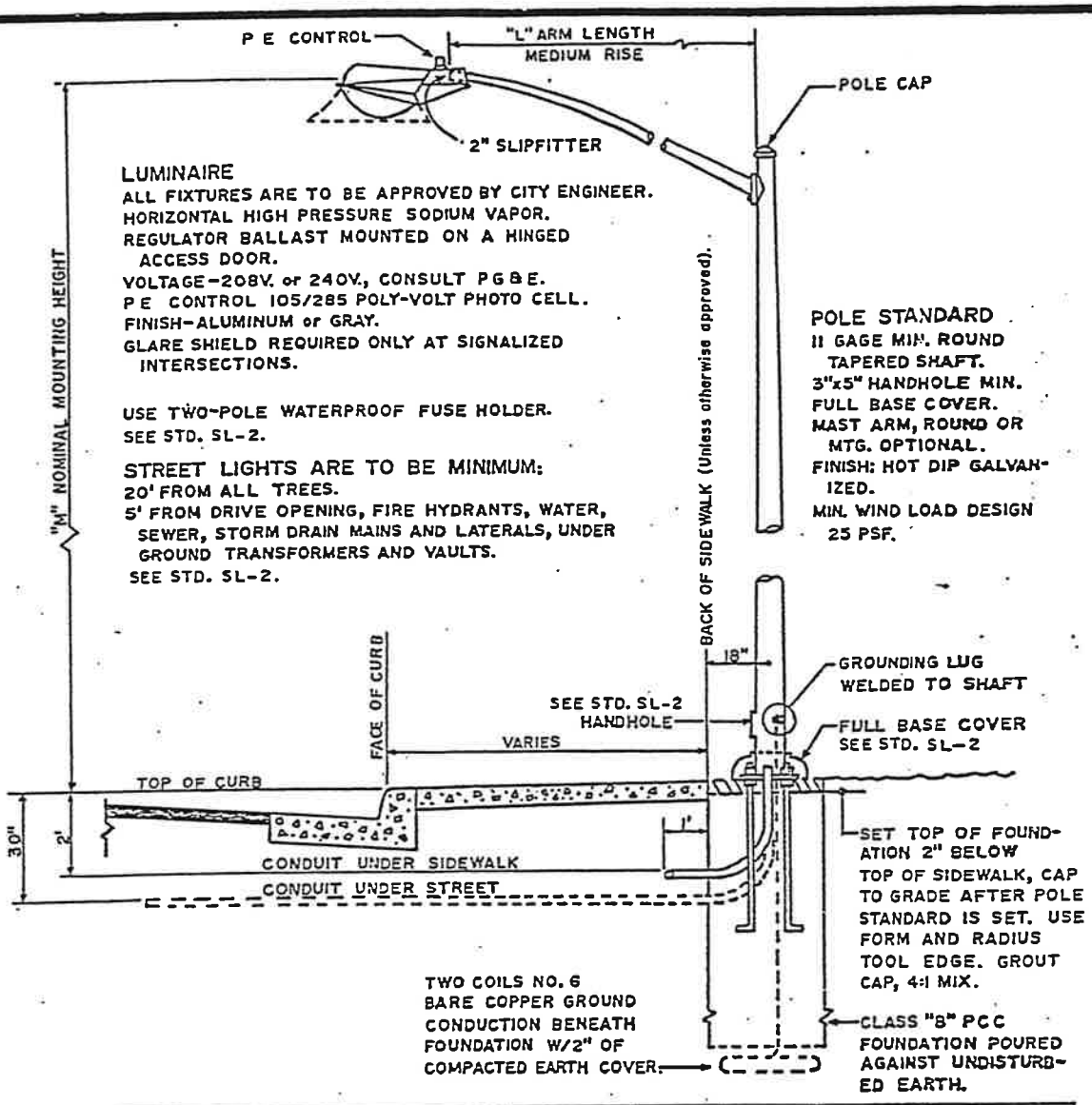


SECTION D - D



PLAN

ENGINEERING DIVISION		CITY OF ATWATER, CALIF.	
TITLE	TYPE GO INLET IN GRADE SAG		STANDARD PLAN
DRN.	APPROVED BY:	DATE: 8/24/98	SD-21
DATE	JOHN E. MEDINA, CITY ENGINEER		
REV.			



CODE LETTER	STREET WIDTH CURB TO CURB	STREET CLASSIFICATION	LUMINAIRE	MAXIMUM SPACING	ARM LENGTH "L"	MOUNTING HEIGHT "M"	FOUNDATION SIZE
A	40' - 44'	LOCAL STREET (.3 F C)	70 watt HPS TYPE II-LS Distribution	205'	8'*	26'	2' Ø or □ 4' Deep
B	36' - 40'	LOCAL CUL-DE-SAC (.2 F C)	70watt HPS TYPE II-L-S Distribution	195'	8'*	25'	2' Ø or □ 4' Deep
D	40' - 50'	COLLECTOR, INDUSTRIAL, AND COMMERCIAL (.5 F C)	150 watt HPS TYPE IV-M-S Distribution	185'	8'*	28'	2' Ø or □ 4'6" Deep
F	50' - 68'	ARTERIAL (.6 F C)	150watt HPS TYPE IV-M-S Distribution	155'	8'*	32'	2'6" Ø or □ 5' Deep
F	68' - 80'	DIVIDED ARTERIAL (.8 F C)	150watt HPS TYPE IV-M-S Distribution	195'	8'*	32'	2'6" Ø or □ 5' Deep

* DECREASE TO 6' IF STREET LIGHT IS LOCATED IN PARKWAY OR INDUSTRIAL AREA.

"NO SCALE"

ENGINEERING DIVISION — CITY OF ATWATER, CALIF.

TITLE STREET LIGHTING STANDARD

STANDARD PLAN SL-1

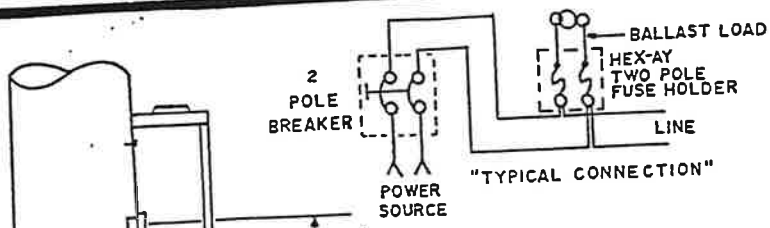
DRN. RWS

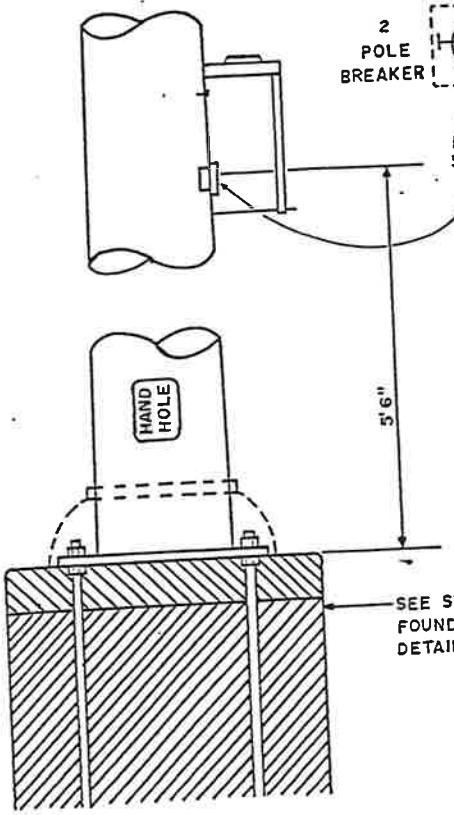
DATE 11/81

REV.

APPROVED BY: JOHN E. MEDINA, CITY ENGINEER

DATE: 8/24/98





DRILL & TAP FOR 1 1/4" CHASE NIPPLE. MOUNT BREAKER BOX WITH SELF TAPPING SCREWS.

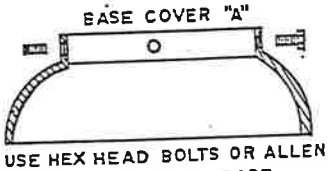
CIRCUIT BREAKER ENCLOSURE: RAINTIGHT SQUARE D TYPE 00 LOAD CENTER OR APPROVED EQUAL.

CIRCUIT BREAKER SIZE TO BE DETERMINED BY AMPACITY OF THE CONDUCTOR OR AS INDICATED ON THE PLAN.

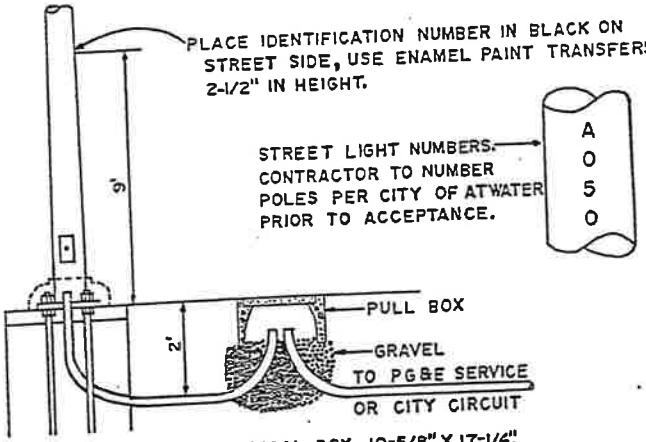
CIRCUIT BREAKER REQUIRED ON CIRCUITS HAVING THREE OR MORE LIGHTS.

SEE STANDARD SL-1 FOR FOUNDATION & CONDUIT DETAILS.

BASE COVER "A"

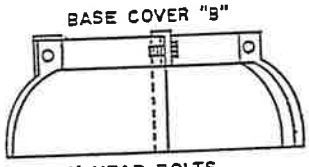


USE HEX HEAD BOLTS OR ALLEN SCREWS TO SECURE BASE COVER TO POLE.
MUST BE GALVANIZED STEEL OF A MIN. THICKNESS OF U.S. STANDARD 14 Ga.



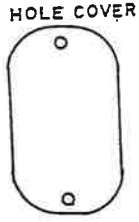
USE CHRISTY N9 ELECTRICAL BOX, 10-5/8" X 17-1/4".
USE CHRISTY J16 LID IN ALL TRAFFIC AREAS.
USE CHRISTY T16 LID IN NON-TRAFFIC AREAS.
SPLICES AND INSULATING METHODS SHALL CONFORM TO CALTRANS STANDARD ES-13.
ALL PULL BOXES ARE TO BE SET IN AT LEAST 12" OF GRAVEL TO PROVIDE DRAINAGE.
ALL PULL BOXES ARE TO BE SET TO GRADE.

BASE COVER "B"

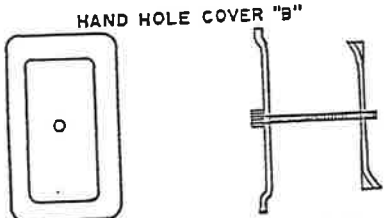


USE HEX HEAD BOLTS.
4 PIECE CAST ALUMINUM.
MUST TIGHTEN SECURLY TO POLE.

HAND HOLE COVER "A"



HAND HOLE COVER "B"



USE HEX HEAD BOLTS OR ALLEN SCREWS.
GALVANIZED STEEL, 14 Ga. Min. THICKNESS.

ES-8
Note #9
±5' from pole

JGINEERING DIVISION — CITY OF ATWATER, CALIF.

LE STREET LIGHTING STANDARD

STANDARD PLAN SL-2

DRN. RWS
DATE 11/81
REV.

APPROVED BY: JOHN E. MEDINA, CITY ENGINEER
DATE: 8/24/98

GENERAL REQUIREMENTS

1. All circuits shall be underground using # 8 copper THN-TW conductors in a 1 - inch minimum schedule 40 PVC conduit to secondary splice box as specified by PG&E Company. ~~Conduits in street section~~ shall be 1-1/2 inch rigid conduit. P.V.C. or GAL. STEEL 2" schd.
2. Conduits between streetlight poles and PG&E secondary splice box shall enter splice box at knockout openings having existing cables or conduits installed by PG&E. No separate entrances or knockouts will be allowed to be made by the contractor.
3. Conductors for extended circuits shall be sized to reduce voltage drop to a maximum of 5 percent from normal.
4. Feeder conductors in pole base shall have a minimum of 2 feet of slack between fuse holder and conduit.
5. Conductors from fuse holder to lamp ballast shall be # 12 stranded with copper minimum with 2 feet of slack.
6. Fuse holder shall be accessible from handhole and shall be two pole, waterproof in the line type.
7. Splicing and insulation shall conform to Method "B", Sheet ES-13 of the current State Standard Plans.
8. Pull Box - Where required shall conform to Sheet ES-8 of the current State Standard Plans.
9. Minimum cover for conduit under or behind sidewalk, curb or in parkway shall be 2 feet, conduit in side or back lot property easements 3 feet, conduit in street section 2 feet 6 inches.
10. The contractor shall furnish the City a marked up drawing showing as-built conduit runs and splice box locations.

ENGINEERING DIVISION		CITY OF ATWATER, CALIF.
TITLE STREET LIGHTING STANDARD		STANDARD PLAN
DRN. RWS	APPROVED BY: JOHN E. MEDINA, CITY ENGINEER	DATE: 8/04/98
DATE 11/81		SL-3
REV.		

CITY POLICIES

1. Temporary Lighting - Where vandalism may be prevalent during construction work, the developer may arrange to pay the energy charges for short-term lighting service on a flat rate per month per luminaire basis. Arrangements may be made through the City Engineer's office.

2. Partially completed street lighting systems within a subdivision will not be accepted by the City for maintenance until full improvements have been completed. The developer will be responsible to maintain the lighting systems until acceptance by the City.

3. The City will assume energy cost for lighting only after residences or buildings have been green tagged and are ready for occupancy, or as may be determined by the City Engineer as being in the best interest of the general public.

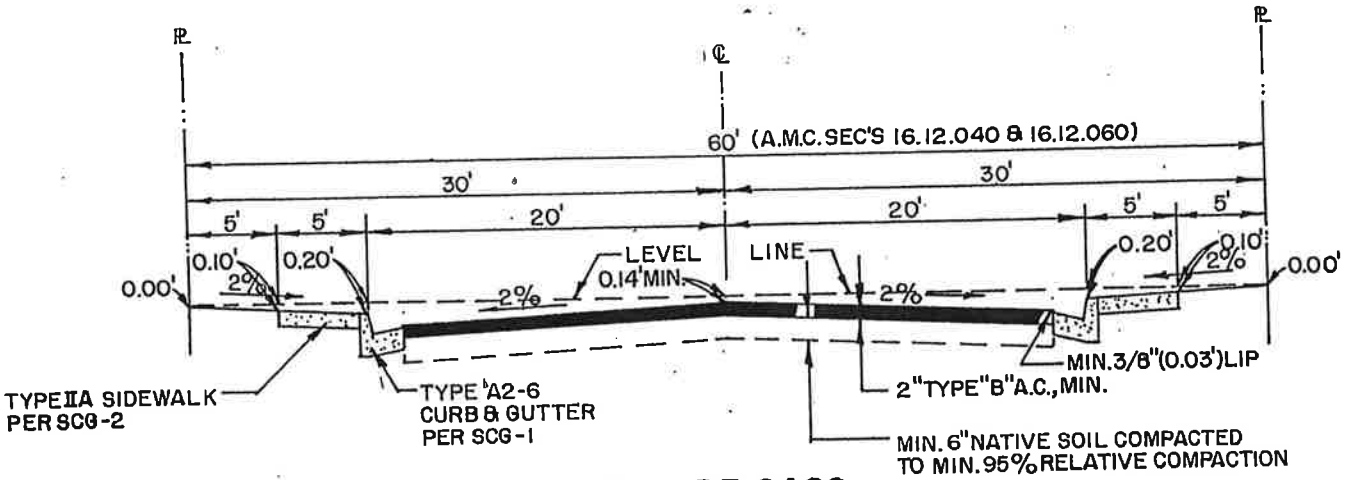
4. Equipment Submittals - Submittals will be required for all street lighting on public property. No construction will be permitted until submittals have been approved by the City Engineering Department.

5. Special Lighting Applications - Lighting applications in unclassified areas or the use of mixed standards shall have prior concept approval. Consult the City Engineering Department.

6. Developer's Responsibility - It shall be the developer's responsibility to fully comply with PG&E Company's requirements and to pay all connection fees and service charges imposed and to extend all street lighting service conductors to service points as will be indicated by PG&E Company on their electrical distribution drawings. PG&E Company must receive final copies of the improvement plans bearing the signature of the City Engineer before they can finalize their distribution drawings.

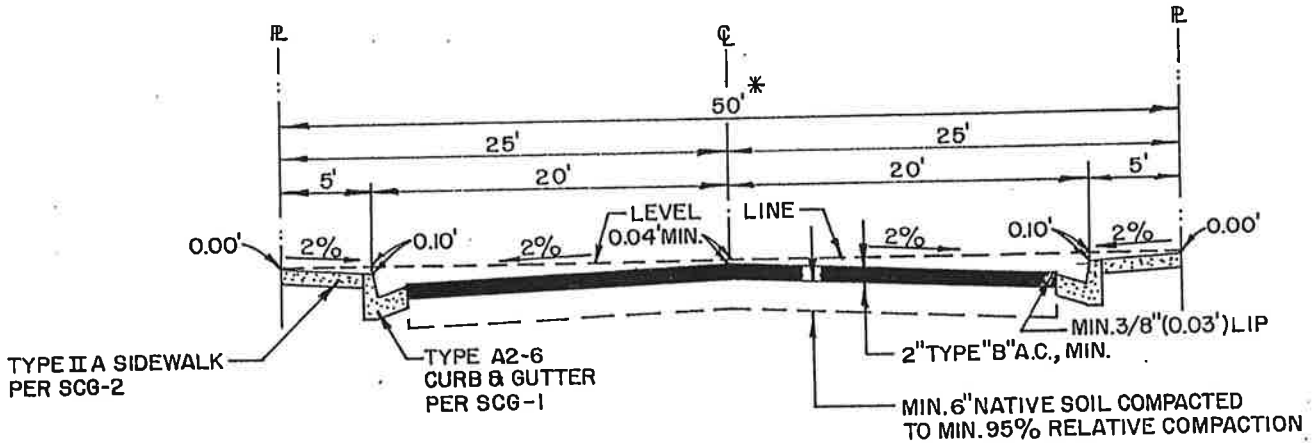
7. Any circuit or equipment found to be malfunctioning after being energized shall be corrected by the contractor within 10 working days after receiving written notice from the City. This order shall remain in force until final acceptance by the City.

ENGINEERING DIVISION		CITY OF ATWATER, CALIF.
TITLE STREET LIGHTING STANDARD		STANDARD PLAN
DRN. RWS	APPROVED BY: JOHN E. MEDINA, CITY ENGINEER	DATE: 8/24/98
DATE 11/81		SL-4
REV.		



CUL-DE-SACS AND LOCAL STREETS

NOTE: STRUCTURAL SECTIONS SHALL BE DESIGNED AS PER STANDARD PLANS ST-4, ST-5 & ST-6.



SHORT MINOR STREETS*

*A.M.C. SEC. 16.12.050

CITY OF ATWATER, CALIF.
STANDARD PLAN

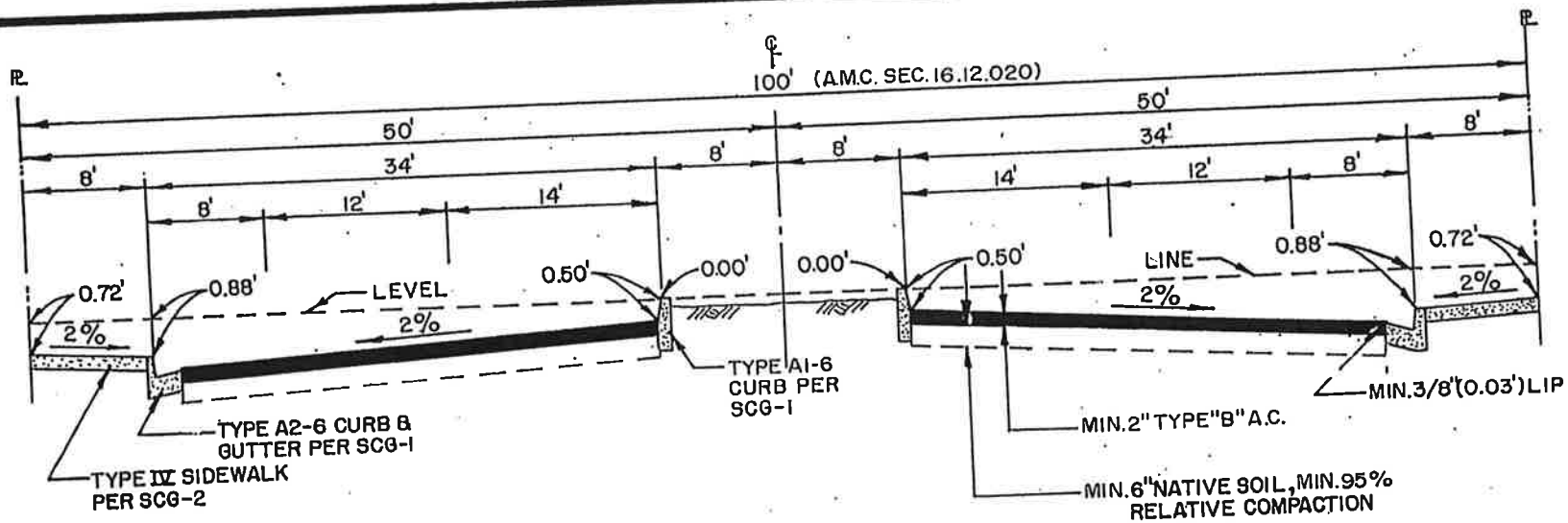
ENGINEERING DIVISION

TITLE LOCAL & MINOR ST'S & CUL-DE-SACS

DRN. H.E.D.
DATE 3/82
REV.

APPROVED BY: Wm Westfall
WM WESTFALL, CITY ENGINEER
DATE: 5-18-82

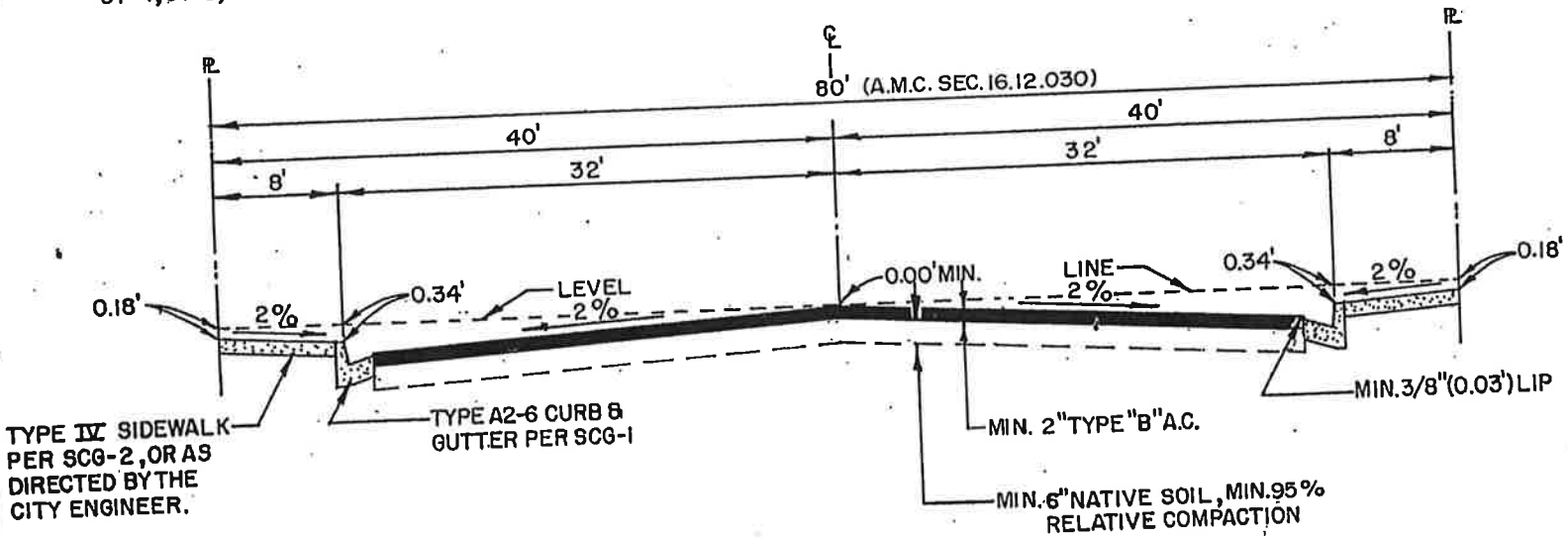
ST-1



MAJOR STREETS

MIN. ℄ RADIUS = 500'
A.M.C. SEC. 16.12.090

NOTE: STRUCTURAL SECTIONS SHALL BE DESIGNED AS PER STANDARD PLANS ST-4, ST-5, & ST-6.



SECONDARY STREETS

CITY OF ATWATER, CALIF.
STANDARD PLAN

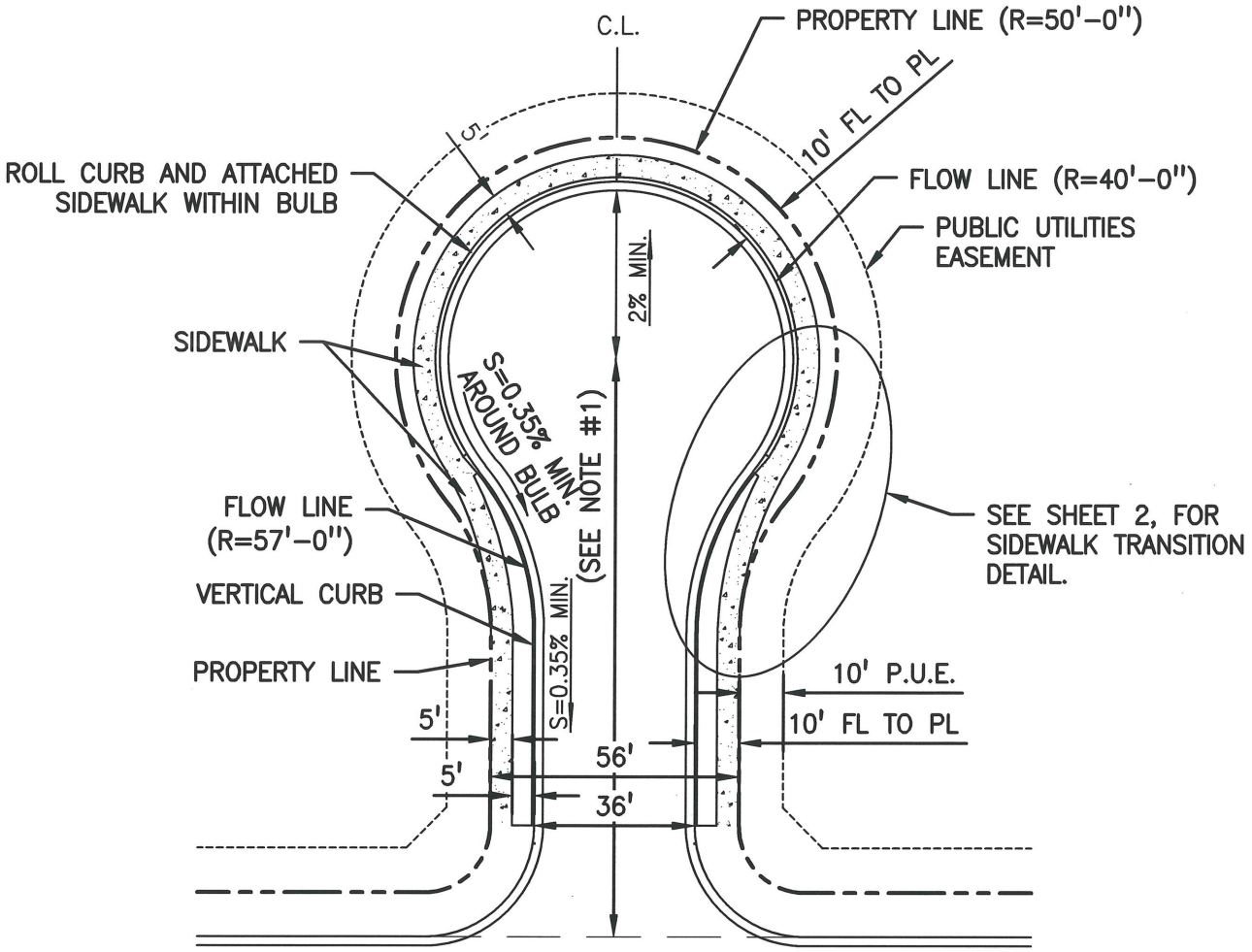
ENGINEERING DIVISION

TITLE MAJOR AND SECONDARY STREETS

DRN. H.E.D.
DATE 3/82
REV.

APPROVED BY: Wm Westfall
WM WESTFALL, CITY ENGINEER
DATE: 5-18-82

ST-2



NOTES:

1. THE MAXIMUM LENGTH OF CUL-DE-SACS SHALL BE 500'-0" FROM FACE OF CURB TO THE CENTER OF BULB. ONLY IN INDUSTRIALLY ZONED AREAS MAY THE LENGTH BE INCREASED TO A MAXIMUM OF 1000'-0", PROVIDED THE FOLLOWING CRITERIA ARE MET:
   A. STREET RIGHT-OF-WAY OF 60'-0" WITH 40'-0" BETWEEN CURBS.
   B. TURN-AROUND CURB RADIUS OF 53'-0".
   C. EMERGENCY ACCESS TO ANOTHER PUBLIC STREET MAY BE REQUIRED BY THE FIRE MARSHAL.
2. GUTTER SLOPE AROUND BULBS SHALL BE 0.35% MINIMUM.
3. BULBS MAY BE OFFSET TO EITHER SIDE.
4. A 10'-0" EASEMENT IS REQUIRED FOR PUBLIC UTILITIES AND STREET TREE PLANTING.
5. WATER MAINS MAY BE REQUIRED TO BE "LOOPED" BY THE CITY ENGINEER.

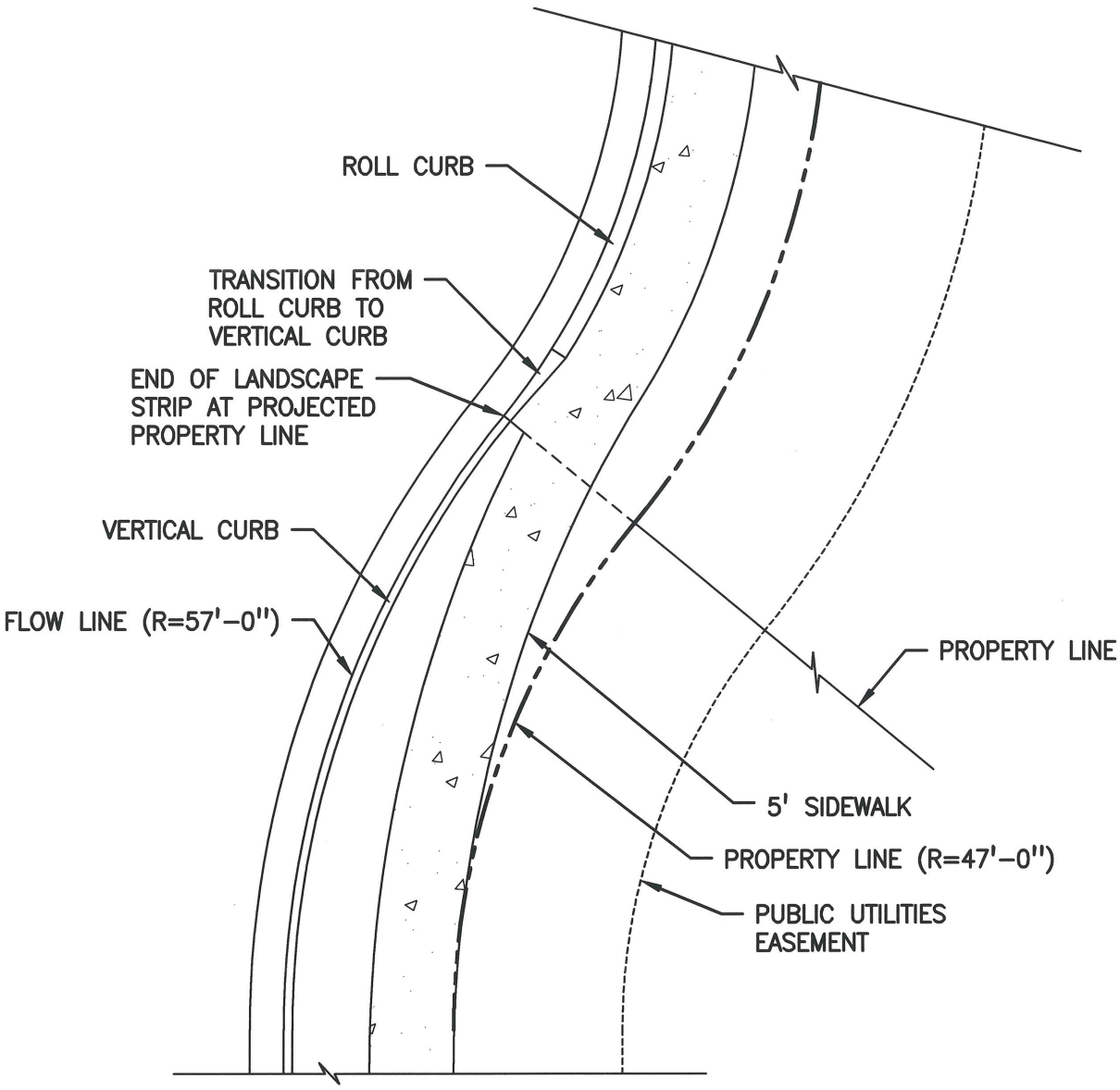
REV.		BY

MINIMUM STANDARD CUL-DE-SAC - 56' R/W

APPROVED
COMMUNITY DEVELOPMENT DEPARTMENT

CITY OF ATWATER
STANDARD DETAIL

DRAWN:	J.V.P	NO.
DATE:	09.20.24	ST-3
SCALE:	N.T.S	



SIDEWALK TRANSITION DETAIL

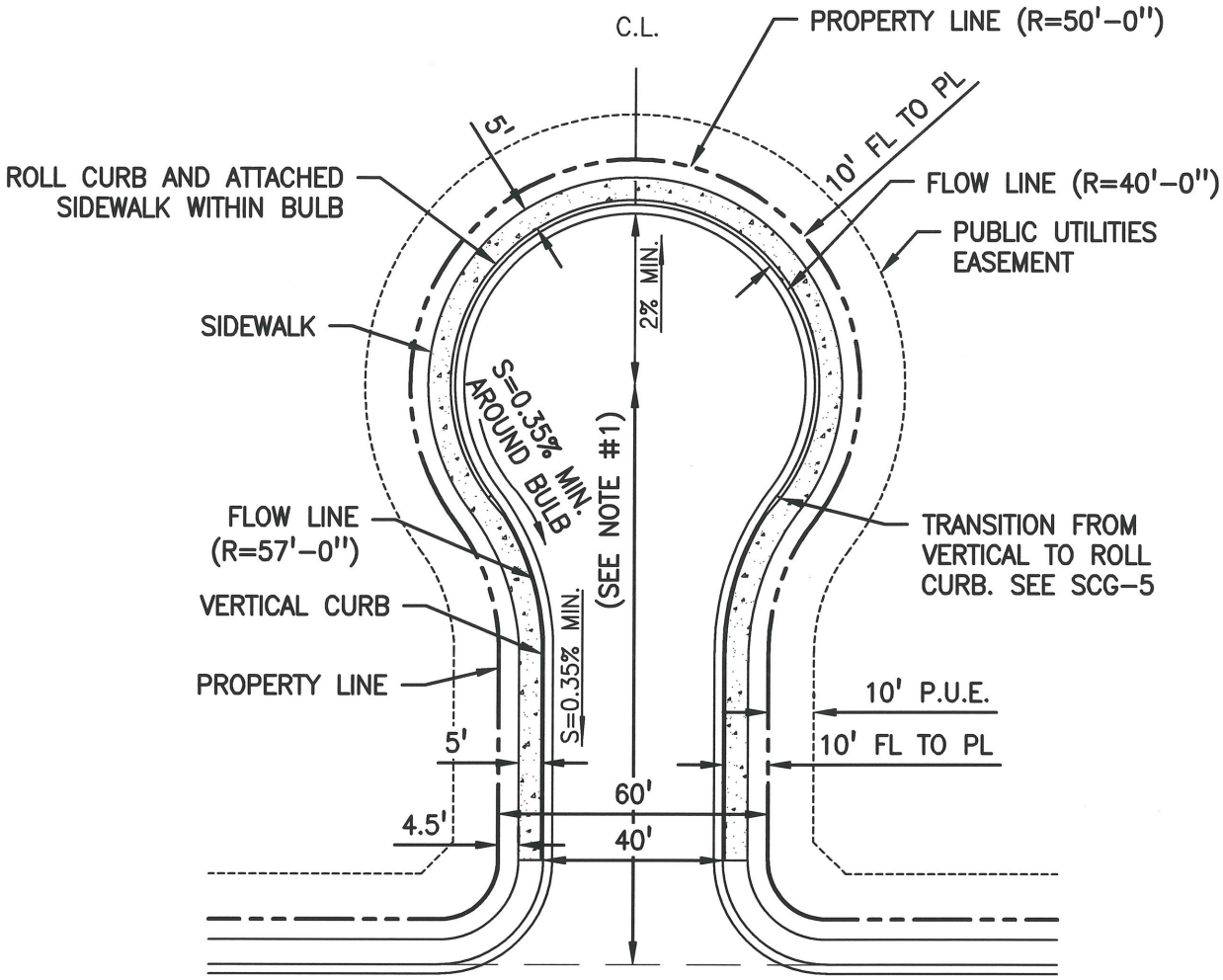
REV.		BY

MINIMUM STANDARD
CUL-DE-SAC

APPROVED
COMMUNITY DEVELOPMENT DEPARTMENT

CITY OF ATWATER
STANDARD DETAIL

DRAWN:	J.V.P	NO.
DATE:	09.20.24	ST-3
SCALE:	N.T.S	



NOTES:

1. THE MAXIMUM LENGTH OF CUL-DE-SACS SHALL BE 500'-0" FROM FACE OF CURB TO THE CENTER OF BULB. ONLY IN INDUSTRIALLY ZONED AREAS MAY THE LENGTH BE INCREASED TO A MAXIMUM OF 1000'-0", PROVIDED THE FOLLOWING CRITERIA ARE MET:
   A. STREET RIGHT-OF-WAY OF 60'-0" WITH 40'-0" BETWEEN CURBS.
   B. TURN-AROUND CURB RADIUS OF 53'-0".
   C. EMERGENCY ACCESS TO ANOTHER PUBLIC STREET MAY BE REQUIRED BY THE FIRE MARSHAL.
2. GUTTER SLOPE AROUND BULBS SHALL BE 0.35% MINIMUM.
3. BULBS MAY BE OFFSET TO EITHER SIDE.
4. A 10'-0" EASEMENT IS REQUIRED FOR PUBLIC UTILITIES AND STREET TREE PLANTING.
5. WATER MAINS MAY BE REQUIRED TO BE "LOOPED" BY THE CITY ENGINEER.

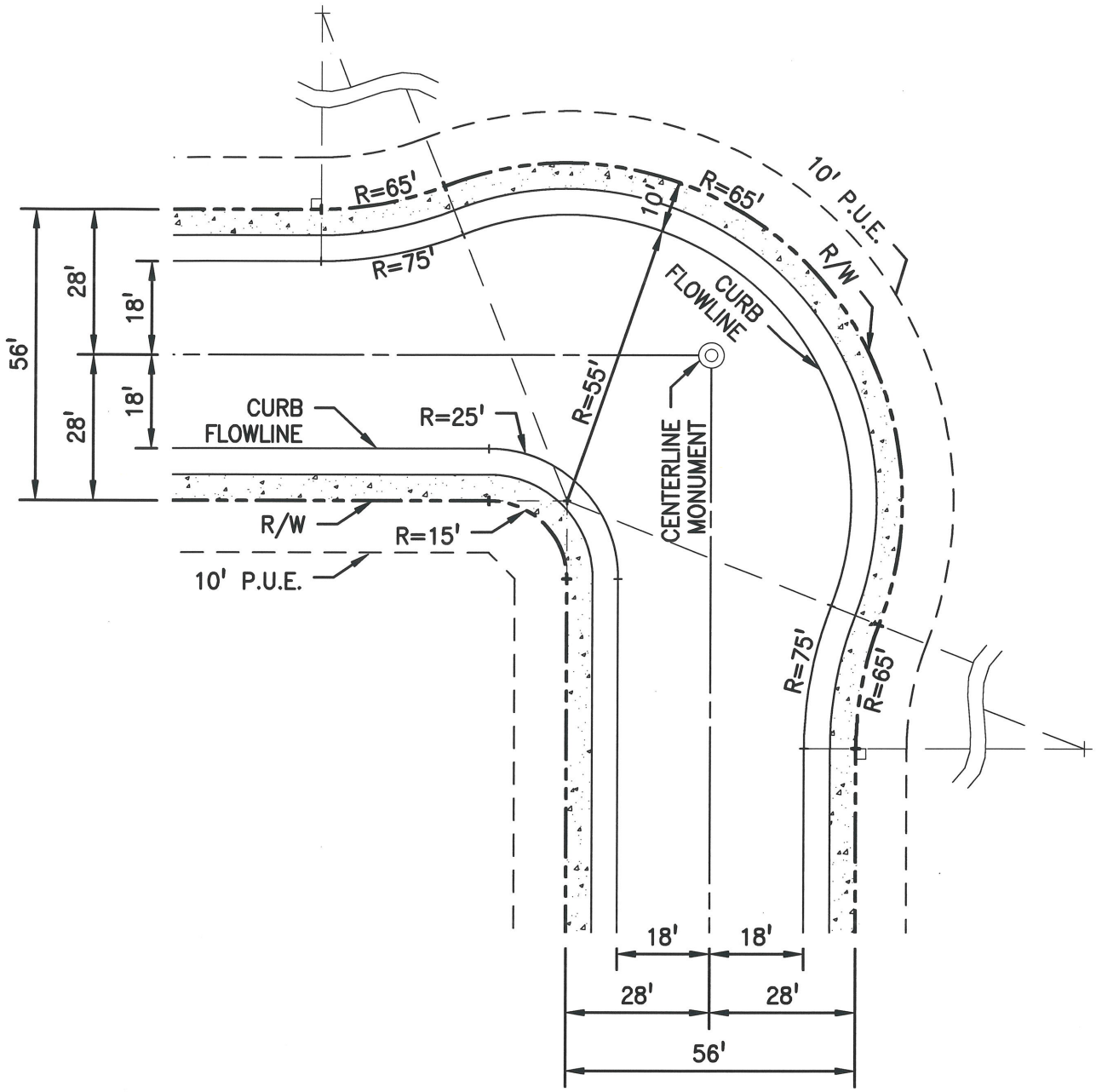
REV.		BY

MINIMUM STANDARD CUL-DE-SAC - 60' R/W

APPROVED _____
COMMUNITY DEVELOPMENT DEPARTMENT

CITY OF ATWATER
STANDARD DETAIL

DRAWN:	J.V.P	NO.
DATE:	09.20.24	ST-3
SCALE:	N.T.S	



NOTES:

1. SUBMIT SPECIFIC DESIGN FOR R/W WIDTHS OTHER THAN 56'.
2. GUTTER SLOPE AROUND OUTER KNUCKLE FLOWLINE BULB AND REVERSE CURVES SHALL BE 0.35% MINIMUM.

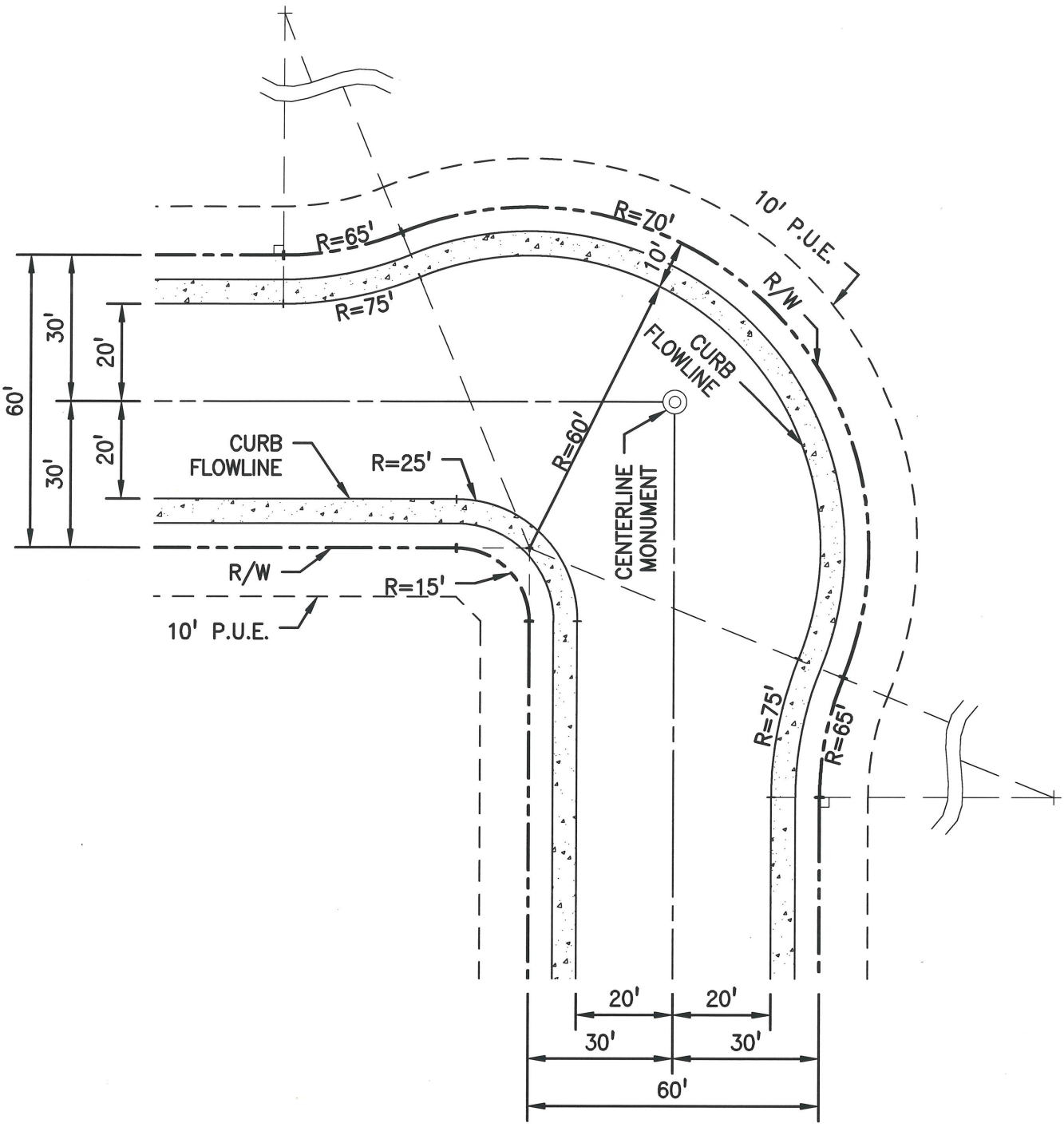
REV.		BY

KNUCKLE INTERSECTION – 56' R/W

APPROVED _____
COMMUNITY DEVELOPMENT DEPARTMENT

CITY OF ATWATER
STANDARD DETAIL

DRAWN:	J.V.P	NO.
DATE:	09.20.24	ST–3
SCALE:	N.T.S	



NOTES:

1. SUBMIT SPECIFIC DESIGN FOR R/W WIDTHS OTHER THAN 56' OR 60'.
2. GUTTER SLOPE AROUND OUTER KNUCKLE FLOWLINE BULB AND REVERSE CURVES SHALL BE 0.35% MINIMUM.

REV.		BY

KNUCKLE INTERSECTION – 60' R/W

APPROVED _____
COMMUNITY DEVELOPMENT DEPARTMENT

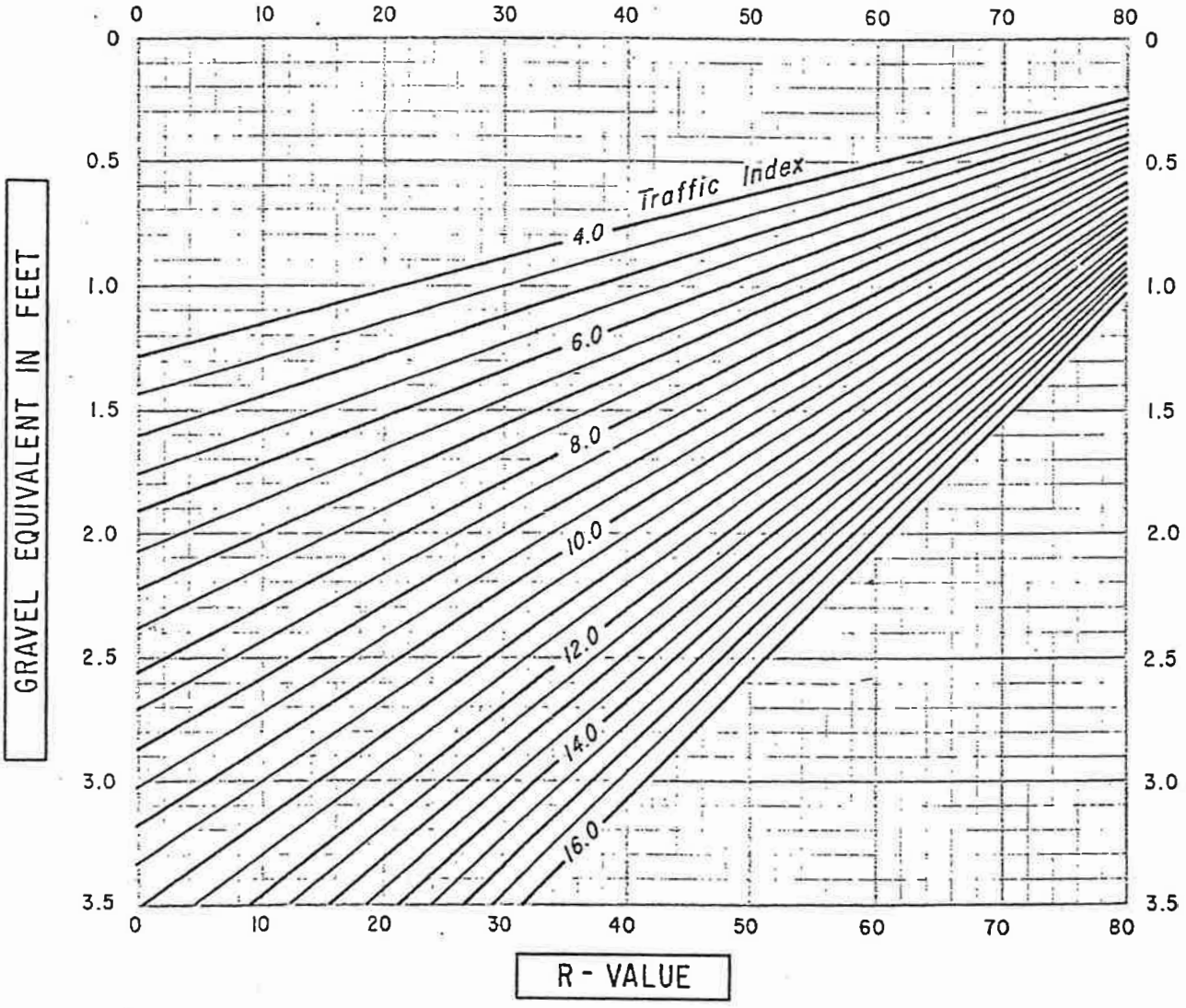
CITY OF ATWATER
STANDARD DETAIL

DRAWN:	J.V.P	NO.
DATE:	09.20.24	ST–3
SCALE:	N.T.S	

EQUATION

$GE = 0.0032\ (TI)(100-R)$

GE = Gravel Equivalent
TI = Traffic Index
R = Resistance Value



ENGINEERING DIVISION			CITY OF ATWATER, CALIF.
TITLE: STRUCTURAL DESIGN CHART FOR FLEXIBLE PAVEMENTS			STANDARD PLAN
DRN.	APPROVED BY: Win Westfall	DATE: 5-13-82	ST-4
DATE			
REV.	WIN WESTFALL, CITY ENGINEER		

Gravel Equivalents of Structural Layers in Feet

Actual Thickness of Layer (Feet)	ASPHALT CONCRETE											Class B CTB, BTB, LTB, CS	Class A CTB	Aggregate base	Aggregate sub-base
	Traffic Index (TI)														
	5 and below	5.5 6.0	6.5 7.0	7.5 8.0	8.5 9.0	9.5 10.0	10.5 11.0	11.5 12.0	12.5 13.0	13.5 14.0	14.5 15.0 & up				
	Gravel Equivalent Factor (G_f)											G_f	G_f	G_f	G_f
	2.50	2.32	2.14	2.01	1.89	1.79	1.71	1.64	1.57	1.52	1.50	1.2	1.7	1.1	1.0
0.10	0.25	0.23	0.21	0.20	0.19	0.18	0.17	0.16	0.16	0.15	0.15	----	----	----	----
0.15	0.38	0.35	0.32	0.30	0.28	0.27	0.26	0.25	0.24	0.23	0.22	----	----	----	----
0.20	0.50	0.46	0.43	0.40	0.38	0.36	0.34	0.33	0.31	0.30	0.30	----	----	----	----
0.25	0.63	0.58	0.54	0.50	0.47	0.45	0.43	0.41	0.39	0.38	0.37	----	----	----	----
0.30	0.75	0.70	0.64	0.60	0.57	0.54	0.51	0.49	0.47	0.46	0.45	----	----	----	----
0.35	0.88	0.81	0.75	0.70	0.66	0.63	0.60	0.57	0.55	0.53	0.52	0.42	0.60	0.39	0.35
0.40	1.00	0.93	0.86	0.80	0.76	0.72	0.68	0.66	0.63	0.61	0.60	0.48	0.68	0.44	0.40
0.45	----	1.04	0.96	0.90	0.85	0.81	0.77	0.74	0.71	0.68	0.67	0.54	0.77	0.50	0.45
0.50	----	1.16	1.07	1.01	0.95	0.90	0.86	0.82	0.79	0.76	0.75	0.60	0.85	0.55	0.50
0.55	----	----	1.18	1.11	1.04	0.98	0.94	0.90	0.86	0.84	0.82	0.66	0.94	0.61	0.55
0.60	----	----	----	1.21	1.13	1.07	1.03	0.98	0.94	0.91	0.90	0.72	1.02	0.66	0.60
0.65	----	----	----	1.31	1.23	1.16	1.11	1.07	1.02	0.99	0.97	0.78	1.11	0.72	0.65
0.70	----	----	----	----	1.32	1.25	1.20	1.15	1.10	1.06	1.05	0.84	1.19	0.77	0.70
0.75	----	----	----	----	----	1.34	1.28	1.23	1.18	1.14	1.12	0.90	1.28	0.83	0.75
0.80	----	----	----	----	----	1.43	1.37	1.31	1.26	1.22	1.20	0.96	1.36	0.88	0.80
0.85	----	----	----	----	----	1.52	1.45	1.39	1.33	1.29	1.27	1.02	1.45	0.94	0.85
0.90	----	----	----	----	----	----	1.54	1.48	1.41	1.37	1.35	1.08	1.53	0.99	0.90
0.95	----	----	----	----	----	----	----	1.56	1.49	1.44	1.42	1.14	1.62	1.05	0.95
1.00	----	----	----	----	----	----	----	1.64	1.57	1.52	1.50	1.20	1.70	1.10	1.00
1.05	----	----	----	----	----	----	----	----	1.65	1.60	1.57	1.20	1.79	1.16	1.05

NOTES: CTB is cement treated base.
BTB is bituminous treated base.
LTB is lime treated base.
CS is soil cement.
For the design of road mixed asphalt surfacing, use 0.8 of the gravel equivalent factors (G_f) shown above for asphalt concrete.

ENGINEERING DIVISION — CITY OF ATWATER, CALIF.

TITLE: GRAVEL EQUIVALENTS — STANDARD PLAN

DRN.

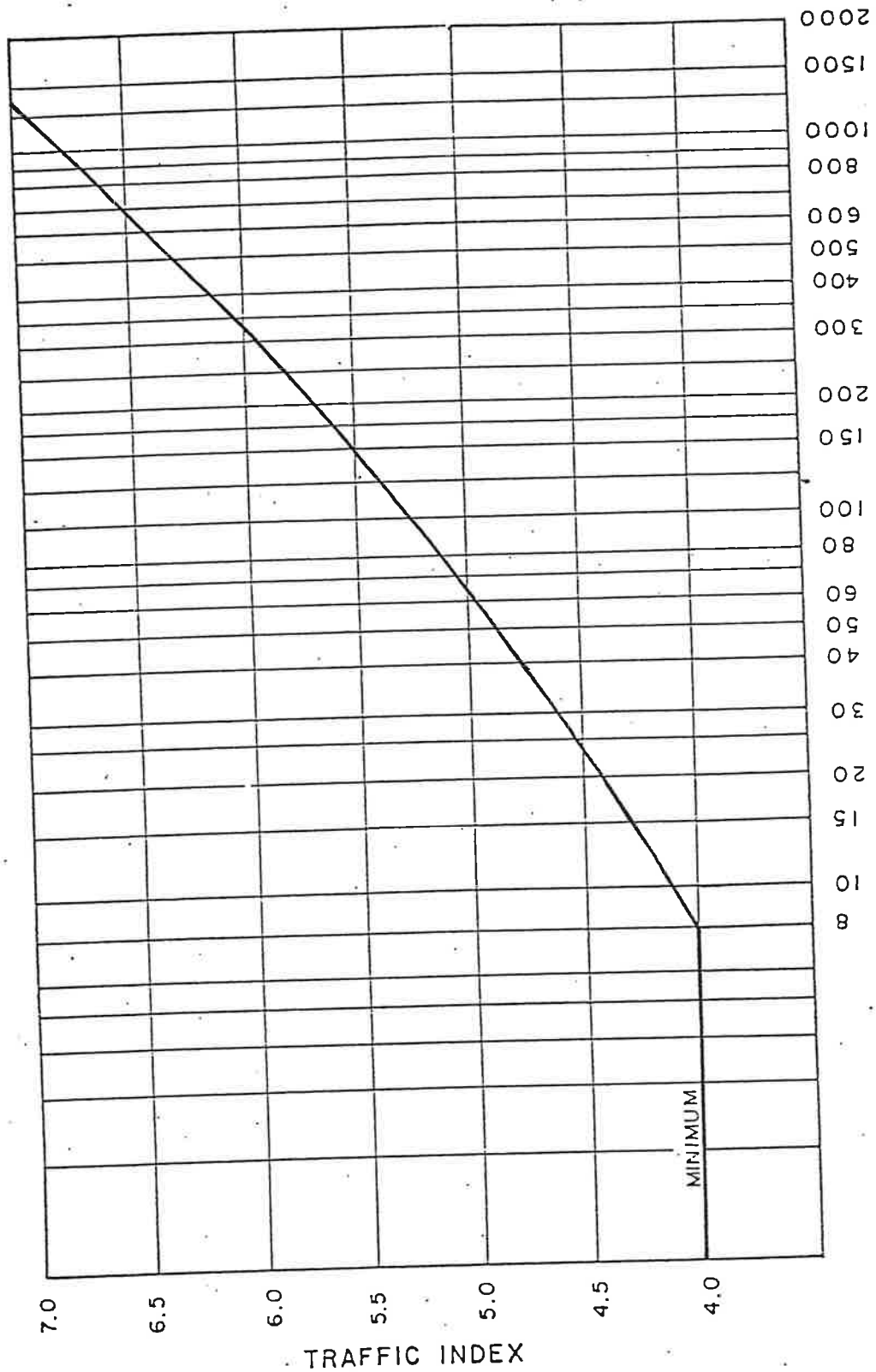
DATE

REV.

APPROVED BY: Win Westfall — DATE: 5-18-82

WIN WESTFALL, CITY ENGINEER

ST-5



ENGINEERING DIVISION — CITY OF ATWATER, CALIF.

TITLE: STREET DESIGN TRAFFIC INDEX CHART

STANDARD PLAN: ST-6

DRN.

DATE

REV.

APPROVED BY: Win Westfall — WIN WESTFALL, CITY ENGINEER

DATE: 5-18-82

POLICY STATEMENT FOR THE INSTALLATION OF FOG SEALS AND STRIPING WITHIN CITY OF ATWATER SUBDIVISIONS

In residential subdivisions, constructed under the City of Atwater Improvement Standards and Specifications, the following shall apply to asphalt concrete pavement:

1. Fog seal on pavement shall be installed one (1) year after paving within the individual subdivision, or unit thereof. Fog seals shall be in accordance with Section 37-1, Seal Coats, of the State of California Department of Transportation Standard Specifications, latest addition.
2. All striping, stop bars and legends shall be installed within ten days after paving, but shall consist of paint only, except for Location Markers at fire hydrants or emergency reflective markers.
3. After the fog seal has been installed, the subdivider shall then install all required striping, stop bars and legends. These shall consist of thermoplastic traffic stripes and pavement markings, in accordance with Section 84-2 Thermoplastic Traffic Stripes and Pavement Markings, of the State of California Department of Transportation Standard Specifications, latest addition.
4. After the fog seal has been installed, all reflective pavement markers shall be installed. Reflective pavement markers that have been damaged after paving or by the fog seal installation shall be removed and replaced. Pavement markers shall be in accordance with Section 85: Pavement Markers, of the State of California Department of Transportation Standard Specifications, latest addition.

PER CONDITIONS OF APPROVAL

City of Atwater Public Works Department, Engineering Division
750 Bellevue Road, Atwater, CA 95301

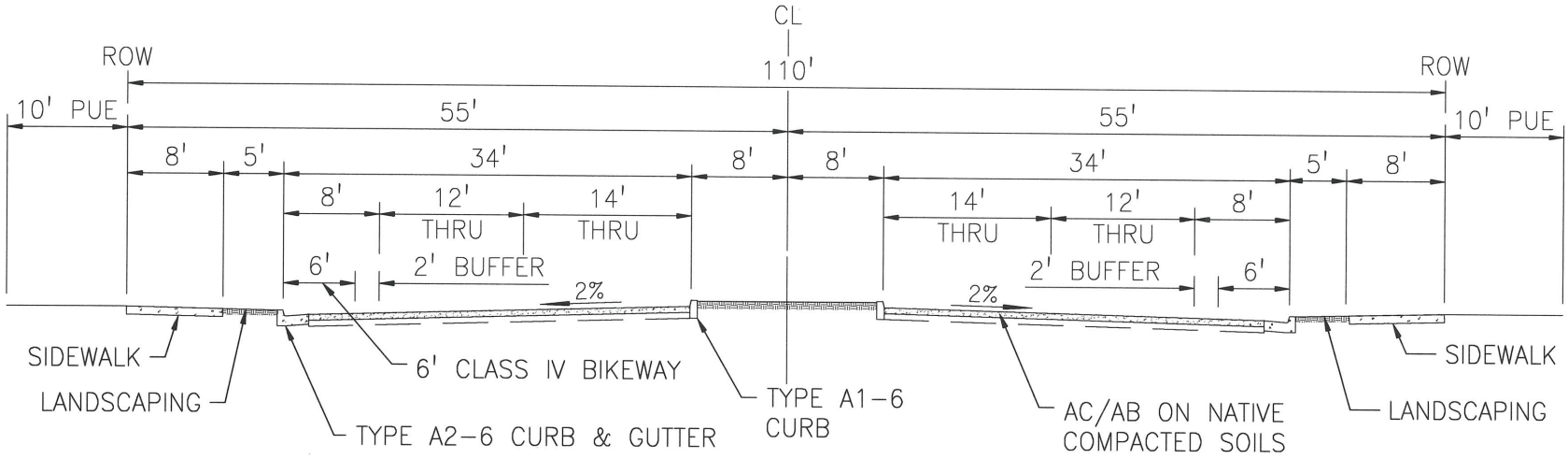
April 26, 2001

REV.							
BY							

APPROVED

COMMUNITY DEVELOPMENT DEPARTMENT

BELLEVUE ROAD REALIGNMENT



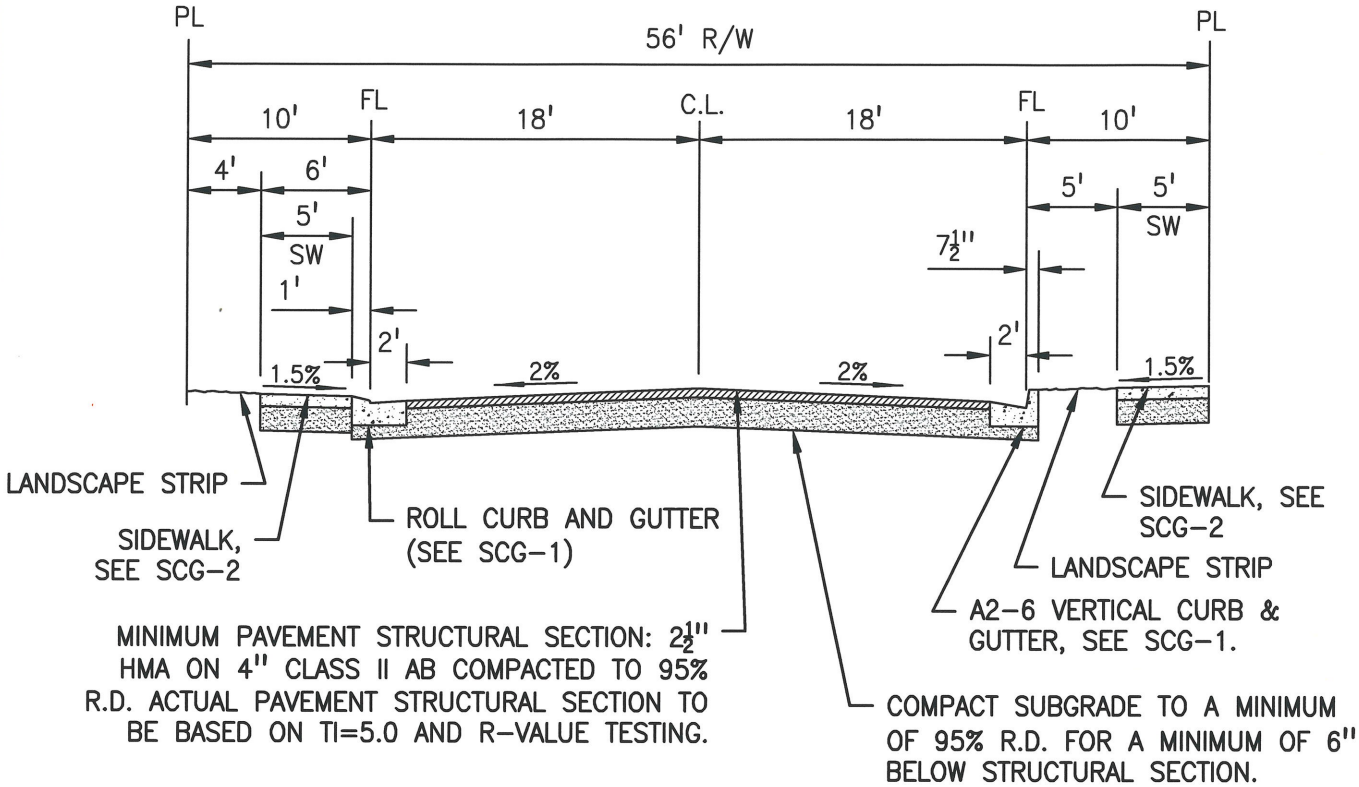
BELLEVUE ROAD REALIGNMENT

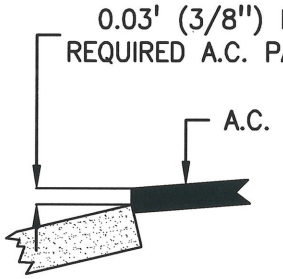
CITY OF ATWATER

STANDARD DETAIL

DRAWN:	J.V.P
DATE:	03.09.2023
SCALE:	N.T.S

NO. ST-7





PAVING DETAIL AT LIP OF GUTTER

NOTES:

1. LOCAL RESIDENTIAL STREETS MAY BE CONSTRUCTED WITH EITHER ROLL CURB AND GUTTER OR VERTICAL CURB AND GUTTER.
2. CURB RETURNS, CURB RAMPS, AND CATCH BASINS SHALL BE CONSTRUCTED WITH VERTICAL CURB.

REV.		BY

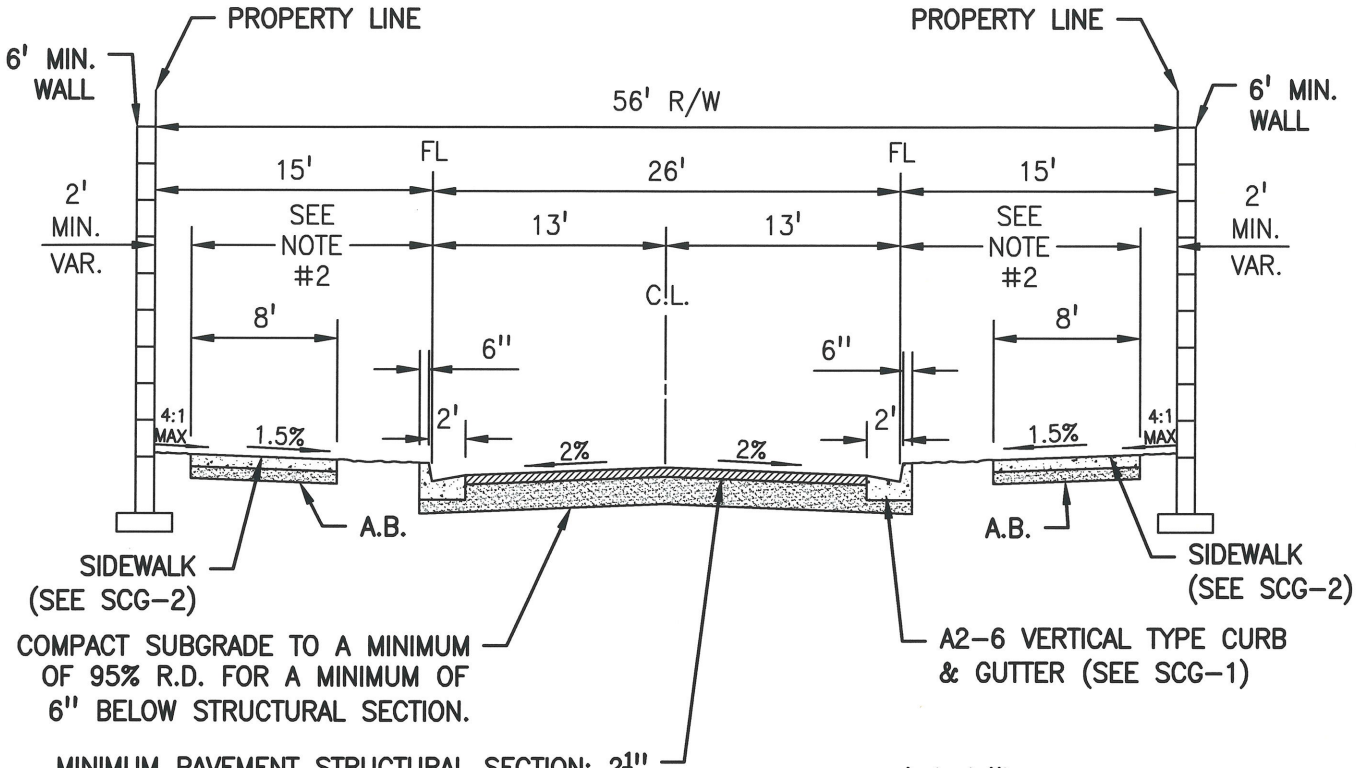
LOCAL STREETS RESIDENTIAL AND CUL-DE-SACS

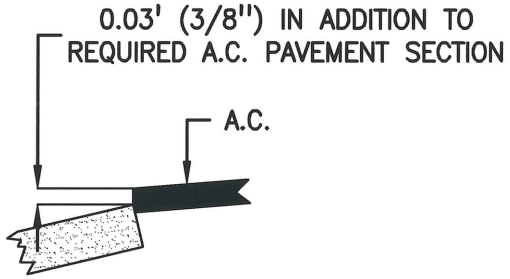
APPROVED

COMMUNITY DEVELOPMENT DEPARTMENT

CITY OF ATWATER
STANDARD DETAIL

DRAWN:	J.V.P	NO.
DATE:	09.18.24	ST-8
SCALE:	N.T.S	





PAVING DETAIL AT LIP OF GUTTER

NOTES:

1. ON-STREET PARKING IS PROHIBITED FOR THIS STREET TYPE.
2. MEANDERING SIDEWALK TO MAINTAIN 2'-0" MINIMUM FROM PROPERTY LINE.
3. IF HOUSES ARE ALLOWED TO FACE ONE SIDE OF BACK-UP RESIDENTIAL COLLECTOR, THAT HALF OF STREET SECTION SHALL MATCH LOCAL RESIDENTIAL STREET DESIGN AND THE STREET SEDCTION SHALL BE CLEARLY ILLUSTRATED ON THE TENTATIVE SUBDIVISION MAP.

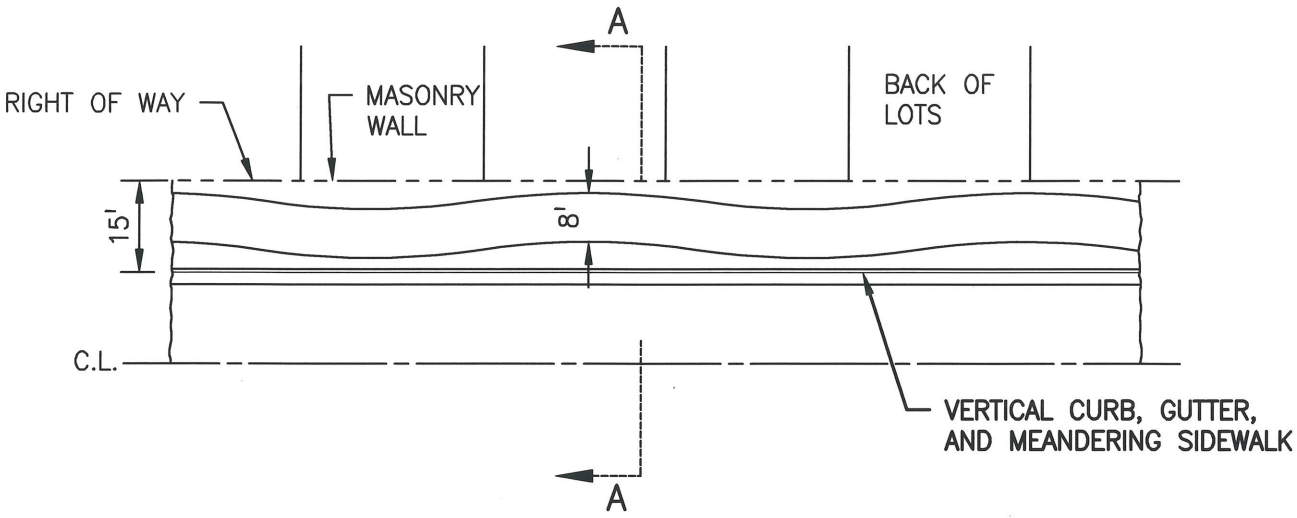
REV.		BY

COLLECTOR STREET BACK-UP RESIDENTIAL

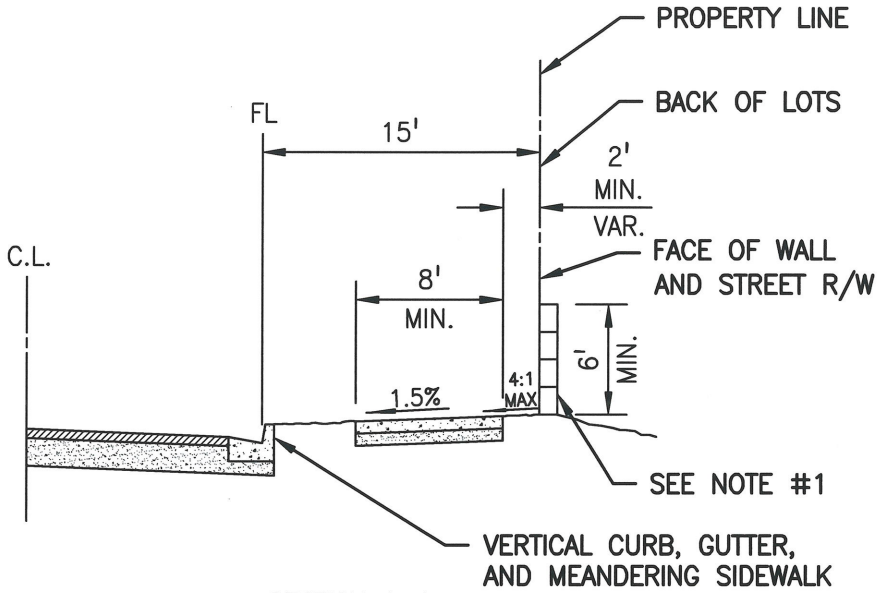
APPROVED _____
COMMUNITY DEVELOPMENT DEPARTMENT

CITY OF ATWATER
STANDARD DETAIL

DRAWN:	J.V.P	NO.
DATE:	09.18.24	ST-9
SCALE:	N.T.S	



PLAN



SECTION A–A

NOTES:

1. MASONRY WALL TO RESTRICT ACCESS TO LOTS ADJACENT TO STREET RIGHT–OF–WAY AND PUBLIC OPEN SPACE SHALL BE CONSTRUCTED BY DEVELOPER/OWNER IN ACCORDANCE WITH CITY REQUIREMENTS AND SUBJECT TO THE APPROVAL OF THE CITY ENGINEER. PLANS TO PROVIDE ELEVATION AT BOTTOM OF WALL AND BACK OF WALK.

REV.		BY

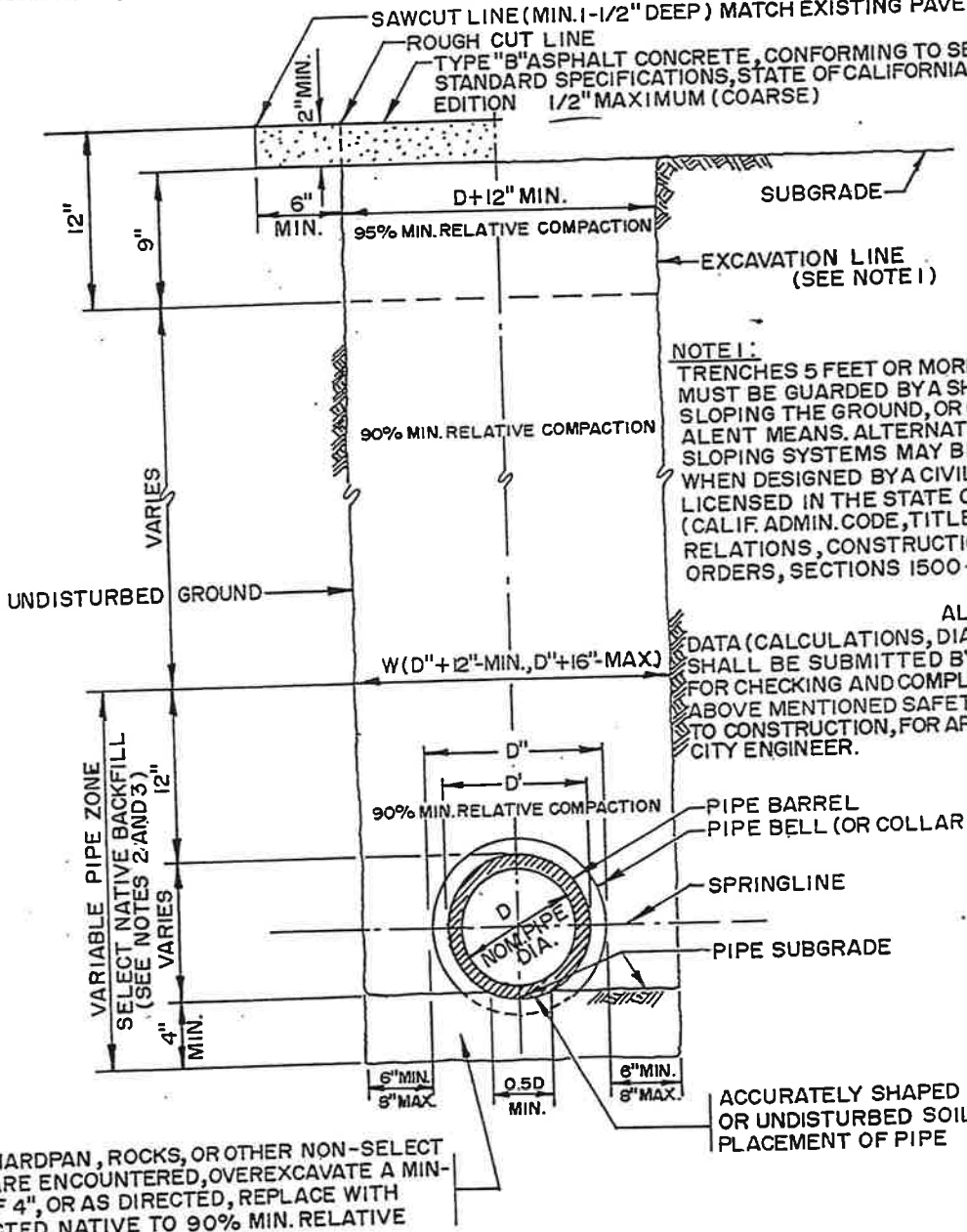
IMPROVEMENTS FOR COLLECTOR STREET BACK–UP RESIDENTIAL

APPROVED _____
COMMUNITY DEVELOPMENT DEPARTMENT

CITY OF ATWATER
STANDARD DETAIL

DRAWN:	J.V.P	NO.
DATE:	09.18.24	ST–9
SCALE:	N.T.S	

PAVEMENT SHALL BE ROUGH CUT AND REMOVED FROM SITE PRIOR TO EXCAVATION. UPON COMPLETED BACKFILL AND COMPACTION, AND IMMEDIATELY PRIOR TO PAVING, PAVEMENT SHALL BE SAWCUT PARALLEL WITH, OR AT RIGHT ANGLES TO, THE TRUE CENTERLINE OF THE TRENCH. SAWCUTS SHALL BE DONE TO EXACT LINES SNAPPED WITH A CHALK LINE. EXCESS PAVEMENT REMOVED BEYOND THE MINIMUM ESTABLISHED LINES SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE. IMMEDIATELY PRIOR TO PAVING, A TACK COAT SHALL BE EVENLY APPLIED TO ALL VERTICAL FACES. NEW PAVEMENT SHALL BE LAID BY A SELF-PROPELLED PAVER, UNLESS APPROVED OTHERWISE BY THE CITY ENGINEER.



NOTE 1:
TRENCHES 5 FEET OR MORE IN DEPTH MUST BE GUARDED BY A SHORING SYSTEM, SLOPING THE GROUND, OR OTHER EQUIVALENT MEANS. ALTERNATIVE SHORING OR SLOPING SYSTEMS MAY BE USED ONLY WHEN DESIGNED BY A CIVIL ENGINEER LICENSED IN THE STATE OF CALIFORNIA. (CALIF. ADMIN. CODE, TITLE 8, INDUSTRIAL RELATIONS, CONSTRUCTION SAFETY ORDERS, SECTIONS 1500-1937).

ALL PERTINENT DATA (CALCULATIONS, DIAGRAMS, ETC.) SHALL BE SUBMITTED BY THE CONTRACTOR FOR CHECKING AND COMPLIANCE WITH THE ABOVE MENTIONED SAFETY ORDERS, PRIOR TO CONSTRUCTION, FOR APPROVAL BY THE CITY ENGINEER.

NOTE 2:
WHEN HARDPAN, ROCKS, OR OTHER NON-SELECT SOILS ARE ENCOUNTERED, OVEREXCAVATE A MINIMUM OF 4", OR AS DIRECTED, REPLACE WITH COMPACTED NATIVE TO 90% MIN. RELATIVE COMPACTION, TO PIPE SUBGRADE.

NOTE 3:
WHEN GROUNDWATER IS ENCOUNTERED, CRUSHED ROCK (1/4" MIN., 3/4" MAX.) SHALL BE USED IN THE PIPE ZONE. THE SAME PERTAINS TO ANY UNSTABLE SOIL CONDITIONS.

MAXIMUM LIFT THICKNESS FOR BEDDING AND BACKFILL SHALL BE 8" (0.67') BEFORE COMPACTION. NO PONDING OR JETTING WILL BE ALLOWED WITHOUT THE APPROVAL OF THE CITY ENGINEER.

CITY OF ATWATER, CALIF.

ENGINEERING DIVISION

STANDARD PLAN T-1

TITLE: TRENCH EXCAVATION AND BACKFILL

DRN. HED

DATE 10/81

REV.

APPROVED BY: Win Westfall DATE: 5-18-82

WIN WESTFALL, CITY ENGINEER

Trenching: All excavations shall be made in accordance with the Trench Construction Safety Orders issued by the Division of Industrial Safety of the Department of Industrial Relations of the State of California. Adequate provision shall be made for protection of the traveling public on all public roads affected by said excavations.

The Contractor shall perform all excavations necessary or required to construct all manholes and all pipelines as specified by the City Engineer and as approved on the plans. Excavation shall include the removal of all materials of whatever nature encountered. Excavation shall be by open trench unless otherwise specified, following neat, parallel lines equi-distant from the centerline. The maximum width of trench at the level of the springline of the pipe to be laid therein shall not exceed the width of the outside diameter of the barrel of the pipe plus 16 inches. Such width of trench shall be kept as small as practical while providing sufficient working space for joining the pipe and for placing backfill material.

Where trenching necessitates removing portions of paved streets, the pavement at the edge of the proposed trench shall be rough cut in a neat straight line, prior to paving, sawcuts to be 1-1/2 inch minimum depth and 6 inches wider than each side of the trench walls (City Std. Dwg. T-1).

Sawcuts shall be done with a saw capable of cutting a minimum of 1-1/2 inches in depth. The sawing shall be done to the exact lines snapped with a chalk line. (Should the saw line be broken or damaged in any way after the required cut, any additional sawing required shall be done at the contractor's sole expense).

After pipe has been properly laid and inspected, select native backfill material shall be placed around pipe at a depth of 12 inches above top of pipe and shall be thoroughly compacted to final density of at least 90 percent maximum density, in such a manner as not to injure or disturb pipe, before any further backfill will be allowed. When unstable soils or goundwater is encountered, the pipe zone shall be backfilled with crushed rock (1/4" minimum, 3/4" maximum). All excavation within the existing street roadbed shall be backfilled and compacted until the relative compaction is not less than 95 percent within the top 12 inches and 90 percent below the top 12 inches. Backfill material shall be placed in layers not to exceed 8 inches in depth and moistened as necessary before compaction. Each layer shall be thoroughly tamped, rolled, or otherwise compacted and brought to grade. Backfill in trenches between back of curb and property line shall be thoroughly consolidated to final density of at least 90 percent of maximum density. Compaction of backfill material by ponding or jetting will not be permitted. Field density may be determined by any method accepted by the City Engineer.

Excessive native material and broken pavement shall become the property of the contractor and shall be disposed of off limits of the work at a location to be provided by the contractor and approved by the Engineer.

ENGINEERING DIVISION		CITY OF ATWATER, CALIF.
TITLE	TRENCHING AND BACKFILL REQUIREMENTS	STANDARD PLAN
DRN.	APPROVED BY:	DATE: 6-15-82
DATE	WIN WESTFALL, CITY ENGINEER	T-2
REV. 6/82		

Trenching (cont'd)

The cost of compaction retests shall be the responsibility of the contractor.

All work of excavation or backfilling in a public street or alley shall be done as quickly as possible. Not more than 600 linear feet of trench shall be open ahead of any sewer, pipeline or conduit in any street or alley, except that upon written permission of the City Engineer such trenches may be opened for a distance of not more than 1,200 linear feet where public traffic will not be seriously inconvenienced. No excavation or trench shall be opened and left open more than 24 hours before the installation of the sewer, pipeline or conduit which is to be placed in said excavation or trench; and the backfilling of said excavation or trench shall be completed within 24 hours after the installation of the facility for which the excavation was made, excepting that portion of the trench or excavation to be used for connecting the extension of the installation, provided said portion is adequately barricaded, protected, and backfilled the following working day. Excavations or trenches for poured-in-place concrete pipe may remain open for a period not to exceed 7 days, providing said excavations or trenches are adequately barricaded, and access is provided for abutting property owners and at all street intersections.

Where an excavation or trench crosses a street or alley intersection, the excavation and backfilling shall be completed prior to the end of the working day, or bridging capable of supporting vehicular traffic shall be provided for access across said excavation or trench.

An excavation within a street or alley for the purpose of boring or jacking pits or for the installation of structures shall be properly barricaded and protected and may be left open for a period of 7 days and then must be backfilled, unless an extension of time is approved by the City Engineer in writing.

Within 24 hours after the trench has been backfilled, all street crossings shall be surfaced with temporary surfacing of 1-1/2 inches of cold mix surfacing mixed in a central plant. Such surfacing shall remain in place and be maintained until the permanent surfacing is placed.

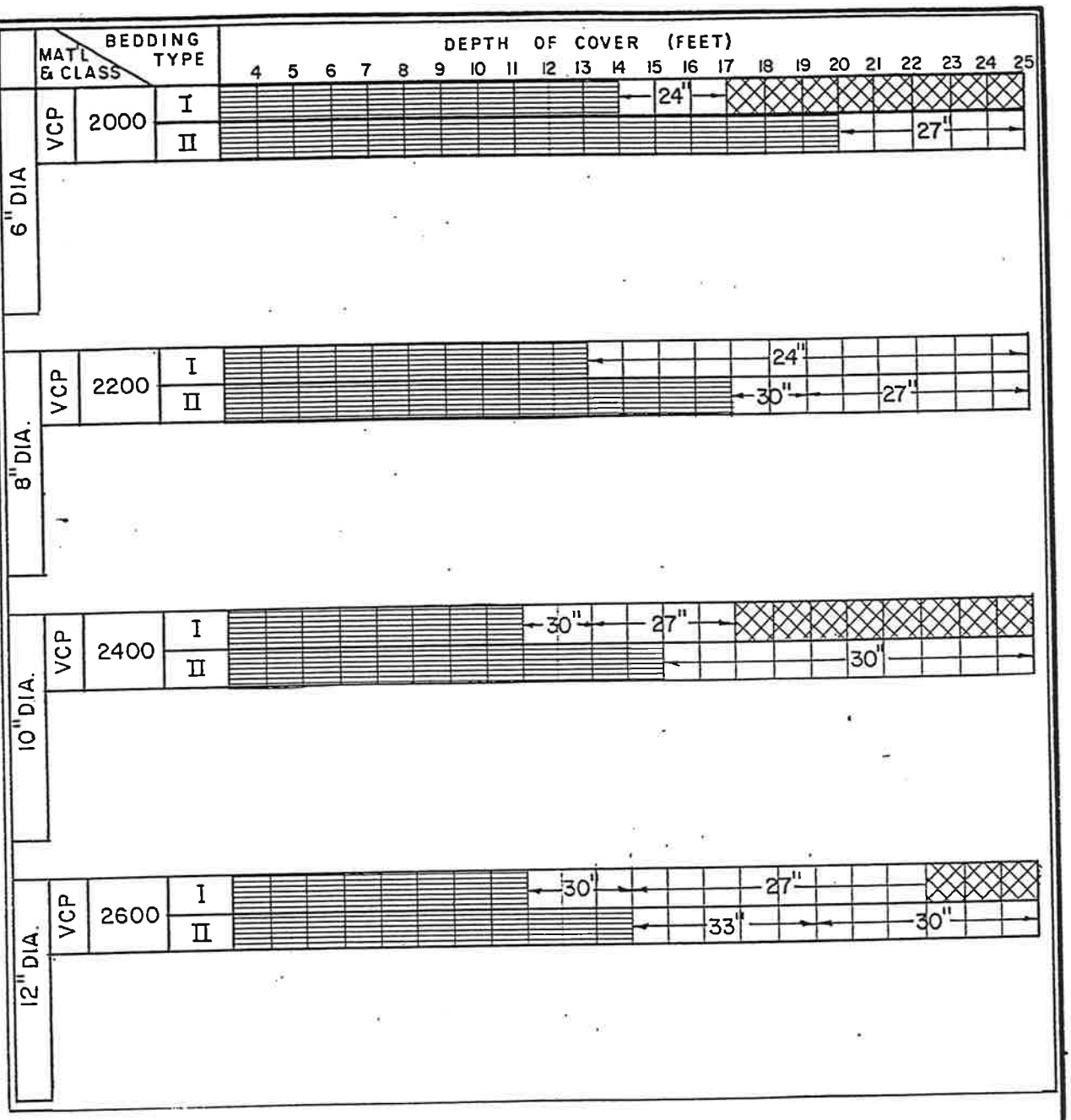
Permanent pavement shall be placed within 45 days of placement of temporary pavement or prior to expiration of permit, whichever comes first.

Surface shall consist of Type B asphalt concrete 1/2 inch maximum (coarse), with a compacted thickness of not less than 3 inches, or the thickness shown on the standard street section, whichever is greater. Street section shall conform to existing pavement unless otherwise specified.

These standards must be used for all types of utility trenches in streets and curb sections.

No street or alley closure will be permitted without prior written approval of the City Engineer.

ENGINEERING DIVISION		CITY OF ATWATER, CALIF.
TITLE	TRENCHING AND BACKFILL REQUIREMENTS	STANDARD PLAN
DRN.	APPROVED BY: Win Westfall DATE: 5-18-82	T-3
DATE		
REV.	WIN WESTFALL, CITY ENGINEER	



27" Maximum trench width measured at top of pipe.

No limit on trench width.

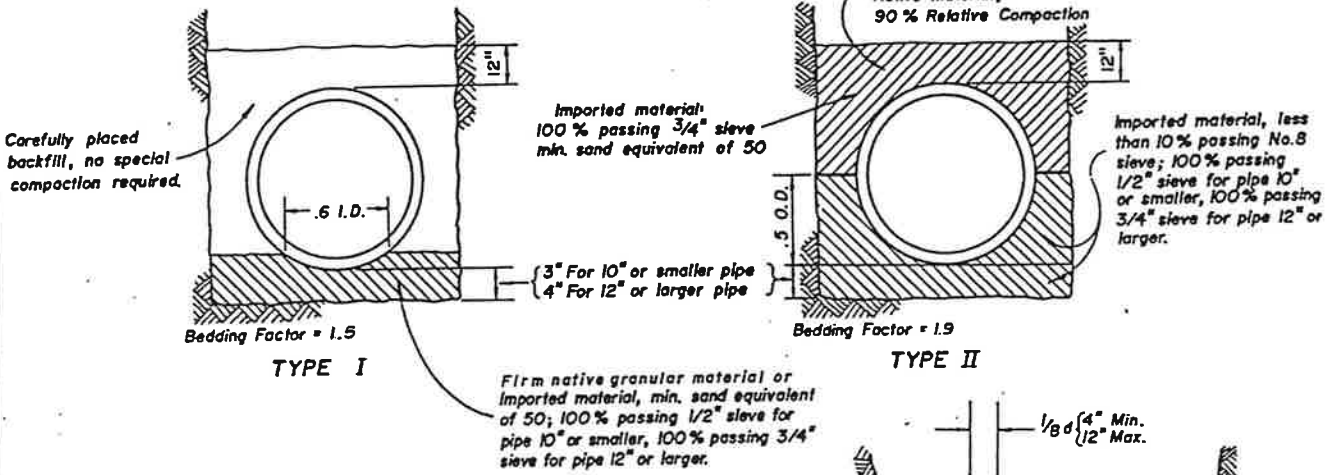
Pipe class, bedding type, and depth of cover not acceptable.

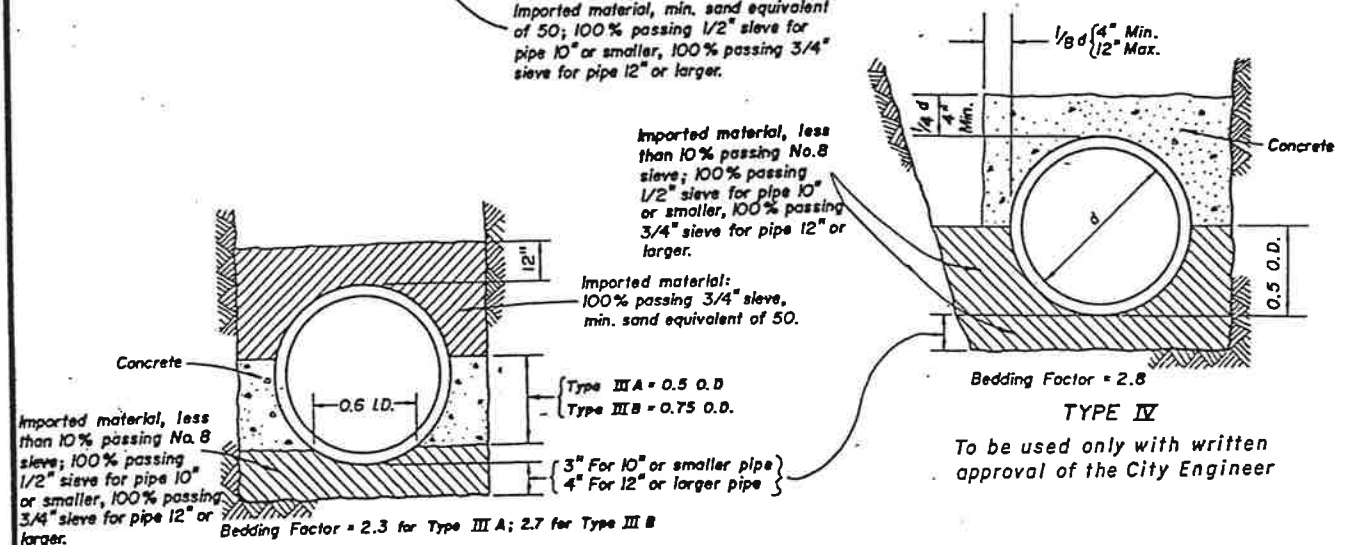
NOTES

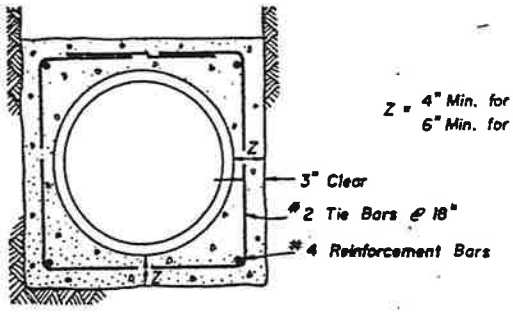
For depths less than 3 feet or more than 25 feet, provide calculations.

Calculations based on soil wt. 130 lb/ft.^{3} saturated clay. ($K\mu$=0.110)

ENGINEERING DIVISION		CITY OF ATWATER, CALIF.	
TITLE	MAXIMUM TRENCH WIDTH		STANDARD PLAN
DRN.	APPROVED BY: Win Westfall	DATE: 5-18-82	T-4
DATE			
REV.	WIN WESTFALL, CITY ENGINEER		



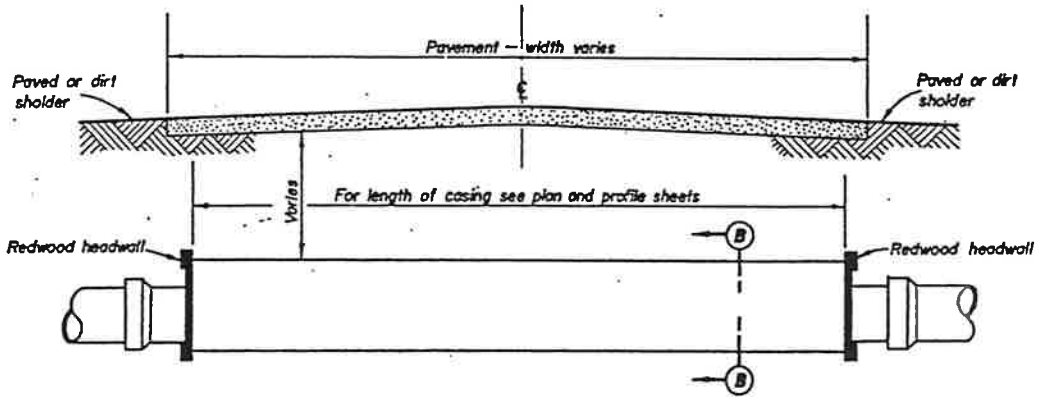




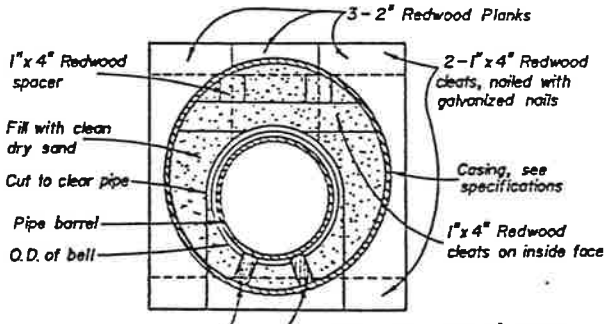
COMPLETE ENCASEMENT DETAIL

To be used only with written approval of the City Engineer

ENGINEERING DIVISION	CITY OF ATWATER, CALIF.	
TITLE PIPE BEDDING & INITIAL BACKFILL		STANDARD PLAN T-5
DRN.	APPROVED BY: Win Westfall DATE: 5-18-82	
DATE	WIN WESTFALL, CITY ENGINEER	
REV. 6/82		



PROFILE



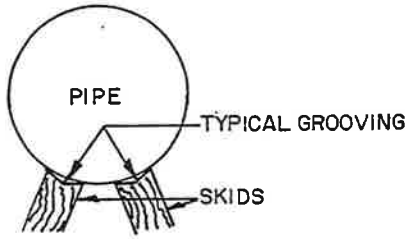
Note: In lieu of 3 - 2" redwood planks, headwall may be of redwood plywood of thickness approved by the Engineer.

Provide 2 redwood skids, 24 to 30 inches in length, near the center of each section of conducted V.C. sewer pipe

Conducted water pipe or A.C. sewer pipe shall have two pairs of skids, each 24 to 30 inches in length, centered approximately one - fifth the pipe length from each end.

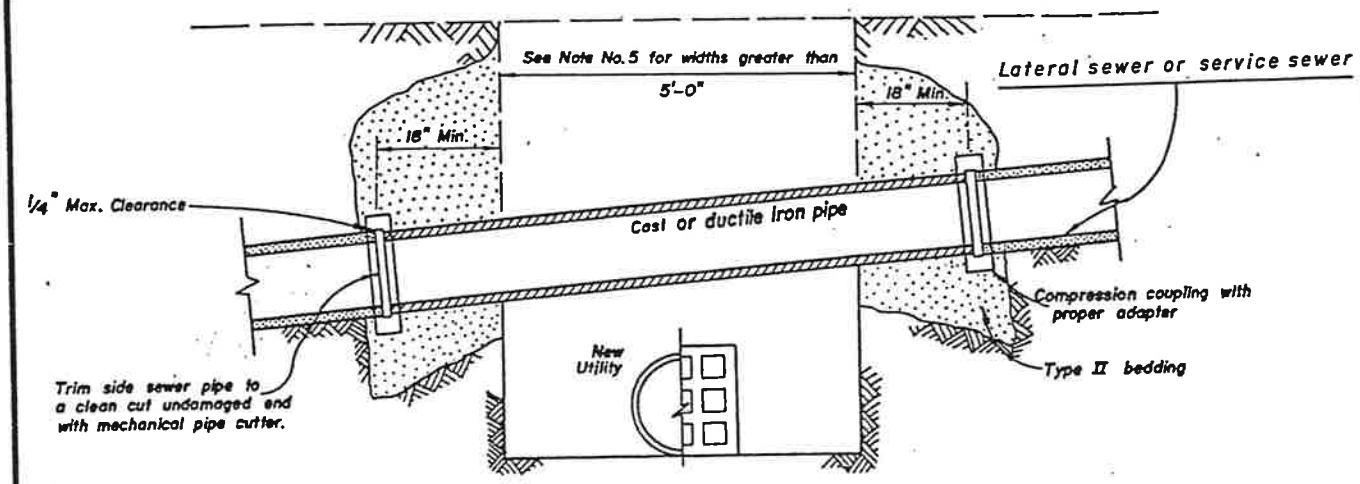
Skids to be of size such that bell clears conductor. Skid height not to be more than 50% more than width. Skids are to be secured to pipe by straps, one at each end. Groove skids for strap clearance, and for pipe clearance (See Detail "A").

SECTION B - B



DETAIL "A"

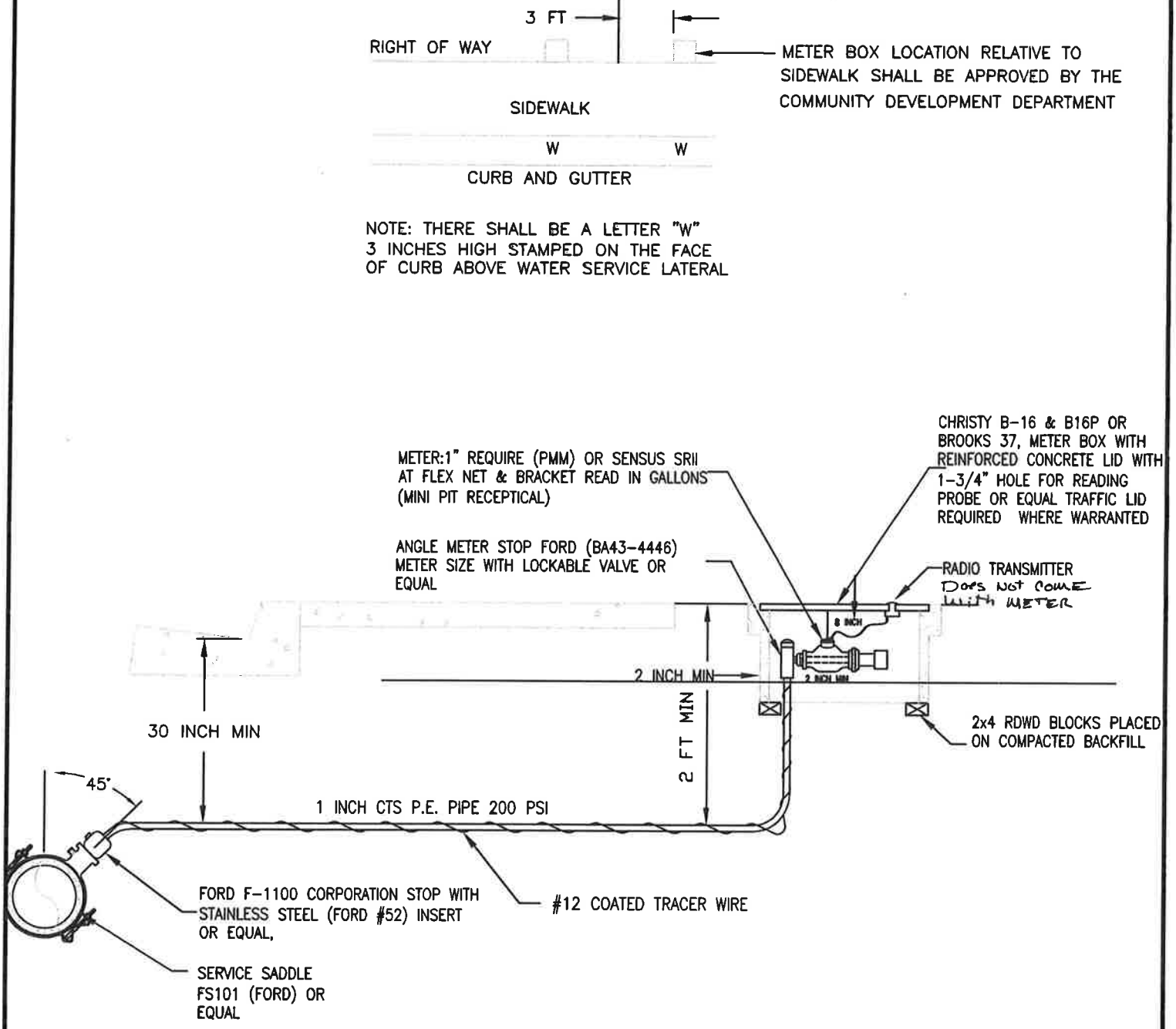
ENGINEERING DIVISION	CITY OF ATWATER, CALIF.	
TITLE: CONDUCTOR CASING DETAIL		STANDARD PLAN T-6
DRN.	APPROVED BY: Wm Westfall	DATE: 5-18-82
DATE	WM WESTFALL, CITY ENGINEER	
REV.		



NOTES

1. Inside diameter of cast or ductile iron pipe to be the same as the pipe to which it connects.
2. Cast or ductile iron pipe is to be used as per this detail whenever the lateral or service sewer is cut or damaged.
3. Cast or ductile iron pipe is to be used as per this detail whenever construction passes beneath the lateral or service sewer.
4. Alteration of sewer grades will be permitted only after written permission has been received from the City Engineer.
5. Whenever the span, whether caused by trench width or crossing angle, of the cast or ductile iron pipe exceeds 5'-0", place Type II bedding to 6" above the pipe and 18" each side of its centerline.

ENGINEERING DIVISION	CITY OF ATWATER, CALIF.	
TITLE UTILITY CROSSING		STANDARD PLAN T-7
DRN.	APPROVED BY: Win Westfall	DATE: 5-18-82
DATE		
REV.	WIN WESTFALL, CITY ENGINEER	



NOTE:
METER TO HAVE RADIO READ CAPABILITIES AND WORK WITH SENSUS FLEX NET SYSTEM

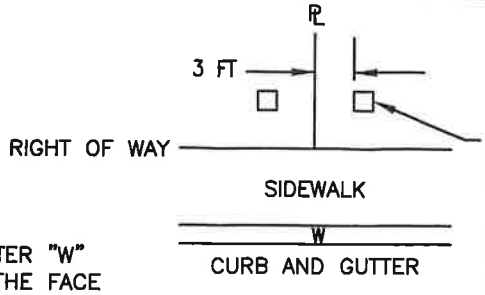
REV.		BY

WATER SERVICE ONE INCH DIAMETER

APPROVED
COMMUNITY DEVELOPMENT DEPARTMENT

CITY OF ATWATER
STANDARD DETAIL

DRAWN:	R. GARCIA	NO.
DATE:	06/05/2012	WA-01
SCALE:	NTS	



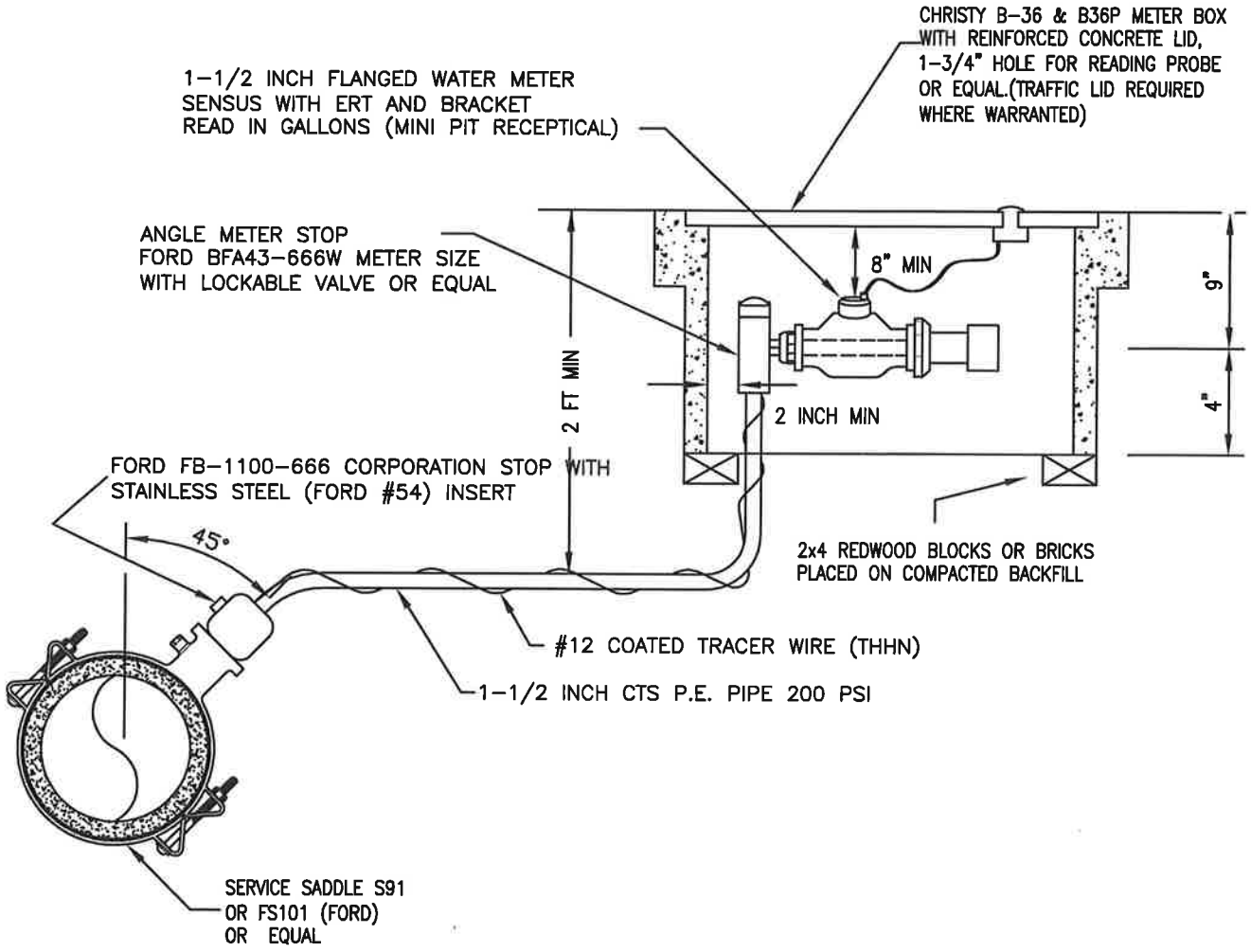
METER BOX LOCATION RELATIVE TO SIDEWALK SHALL BE APPROVED BY THE COMMUNITY DEVELOPMENT DEPARTMENT

METER BOX WILL BE RAISED TO THE SAME ELEVATION AS THE TOP OF THE CURB BY THE DEVELOPER.

CONTRACTOR IS RESPONSIBLE FOR CONNECTING SERVICE TO THE CUSTOMER SIDE.

NOTE: THERE SHALL BE A LETTER "W" 3 INCHES HIGH STAMPED ON THE FACE OF CURB ABOVE WATER SERVICE LATERAL

METER BOX LOCATION



NOTES:
METER TO HAVE RADIO READ CAPABILITIES AND WORK WITH SENSUS FLEX NET SYSTEM.

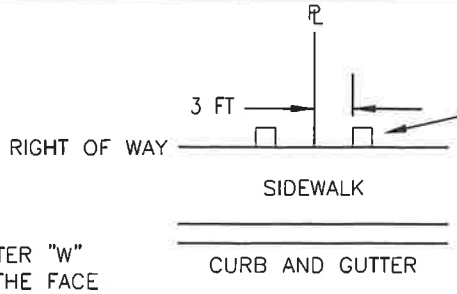
REV.		BY

WATER SERVICE 1-1/2 INCH DIAMETER

APPROVED _____ COMMUNITY DEVELOPMENT DEPARTMENT

CITY OF ATWATER
STANDARD DETAIL

DRAWN:	R. GARCIA	NO.
DATE:	06/15/2010	WA-03
SCALE:	NTS	



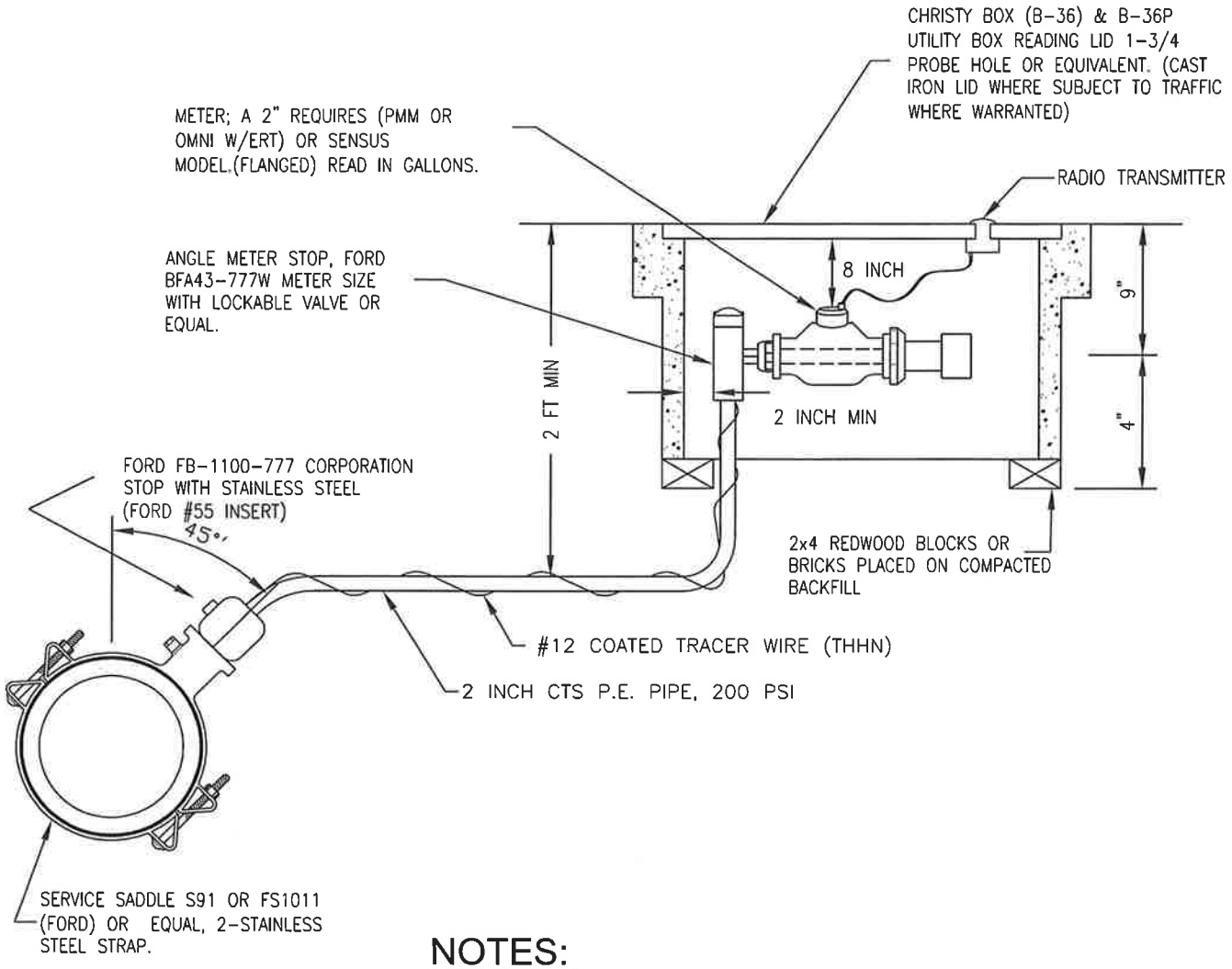
METER BOX LOCATION RELATIVE TO SIDEWALK SHALL BE APPROVED BY THE COMMUNITY DEVELOPMENT DEPARTMENT

METER BOX WILL BE RAISED TO THE SAME ELEVATION AS THE TOP OF THE CURB BY THE DEVELOPER.

CONTRACTOR IS RESPONSIBLE FOR CONNECTING SERVICE TO THE CUSTOMER SIDE.

NOTE: THERE SHALL BE A LETTER "W" 3 INCHES HIGH STAMPED ON THE FACE OF CURB ABOVE WATER SERVICE LATERAL

METER BOX LOCATION



NOTES:

METER TO HAVE RADIO READ CAPABILITIES AND WORK WITH SENSUS FLEX NET SYSTEM.

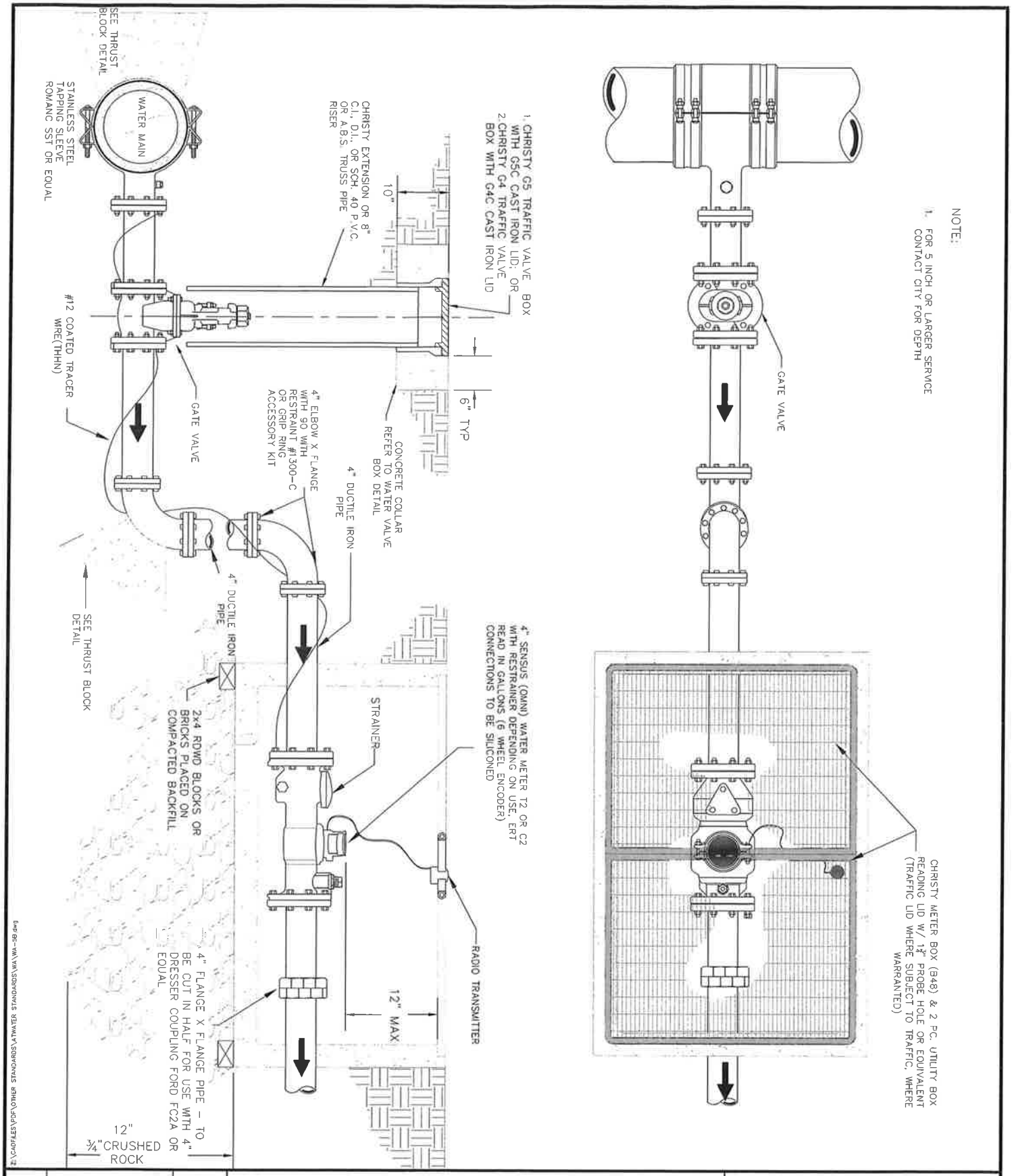
REV.		BY

WATER SERVICE 2 INCH DIAMETER

APPROVED
COMMUNITY DEVELOPMENT DEPARTMENT

CITY OF ATWATER
STANDARD DETAIL

DRAWN:	R.GARCIA	NO.
DATE:	06/05/2012	WA-04
SCALE:	NTS	



WATER METER INSULATION
3 INCH AND 4 INCH

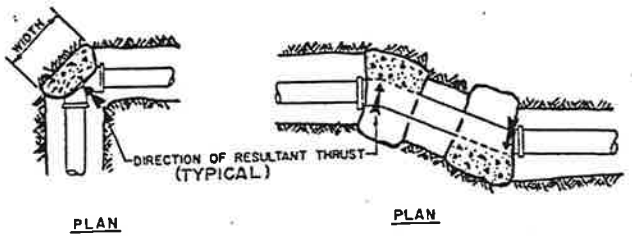
APPROVED

COMMUNITY DEVELOPMENT DEPARTMENT

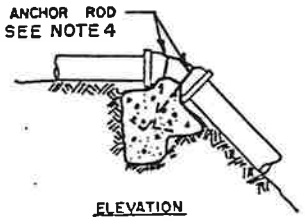
REV.	N.T.S	BY

CITY OF ATWATER
STANDARD DETAIL

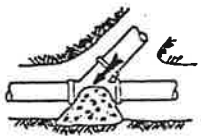
DRAWN:	R.GARCIA	NO.
DATE:	06/13/2012	WA-05
SCALE:	N.T.S.	



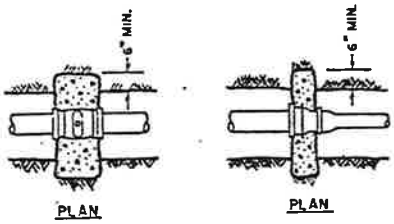
BENDS

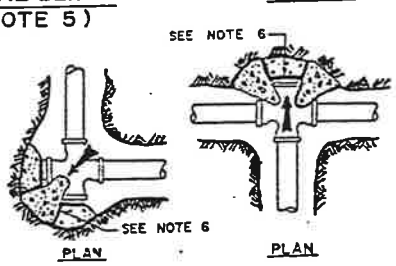


VERTICAL BEND
(SEE NOTE 5)

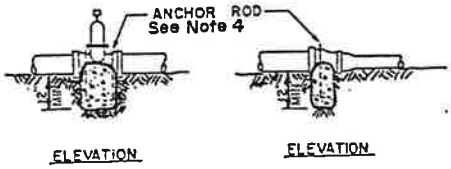


WYE





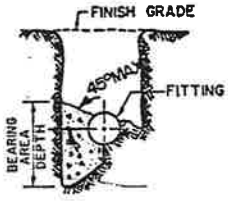
CROSSES



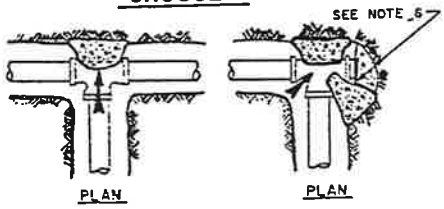
VALVES

REDUCERS

WHERE REQUIRED ON PLANS



TYPICAL FITTING SECTION



TEES

TABLE

MINIMUM BEARING AREAS IN SQ. FT. *				
MAIN SIZE	TEE**	90° BEND	45° BEND	22½° BEND
6"	6	12	8	4
8"	8	16	10	6
10"	12	20	12	7
12"	17	24	14	8
14"	23	36	16	10
16"	30	42	23	12

* BASED ON 200 PSI W.W.P. PRESSURE & SOIL BEARING LOADS OF 1000 PSF. THE RATIO OF WIDTH TO HEIGHT SHALL NOT EXCEED 1 1/2 TO 1.

** TEES, PLUGS, CAPS

GENERAL NOTES:

1. ALL ANCHOR AND THRUST BLOCKS SHALL BEAR AGAINST UNDISTURBED SOIL.
2. MINIMUM ALLOWABLE WATER PRESSURE FOR THRUST BLOCK DESIGN IS 150 P.S.I. BEARING AREA INCREASES DIRECTLY WITH INCREASE IN PRESSURE.
3. CONCRETE, USED IN THRUST BLOCKS SHALL BE CLASS "A" PORTLAND CEMENT CONCRETE, IN CONFORMANCE WITH SECTION 90 STANDARD SPECIFICATIONS, STATE OF CALIFORNIA, LATEST EDITION, AND SHALL ATTAIN 2000 P.S.I. STRENGTH.
4. ALL ANCHOR RODS SHALL BE REINFORCING STEEL AND A MINIMUM OF 1/2 INCH IN DIAMETER. ENCASE RODS IN 2000 P.S.I. CONCRETE.
5. USE ANCHOR BLOCKS AT VERTICAL BENDS WHEN PIPE IS ABOVE OR BELOW GROUND. SIZE OF BLOCK AND RODS SHALL BE SHOWN ON THE PLANS.
6. USE 30 POUND FELT TO INSURE A COLD JOINT.

ENGINEERING DIVISION — CITY OF ATWATER, CALIF.

TITLE: TYPICAL THRUST BLOCK DETAILS

STANDARD PLAN: W-4

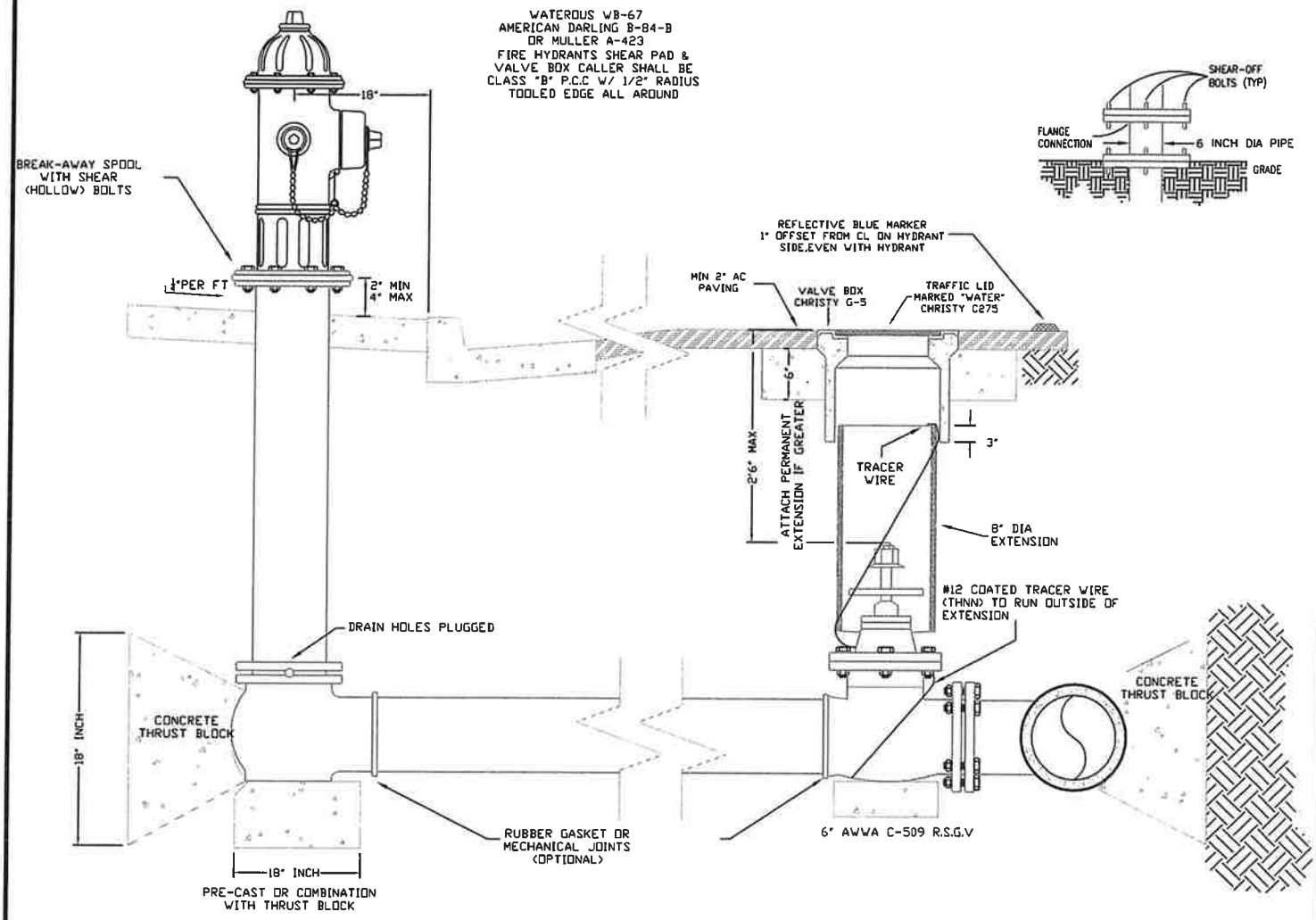
DRN. HED

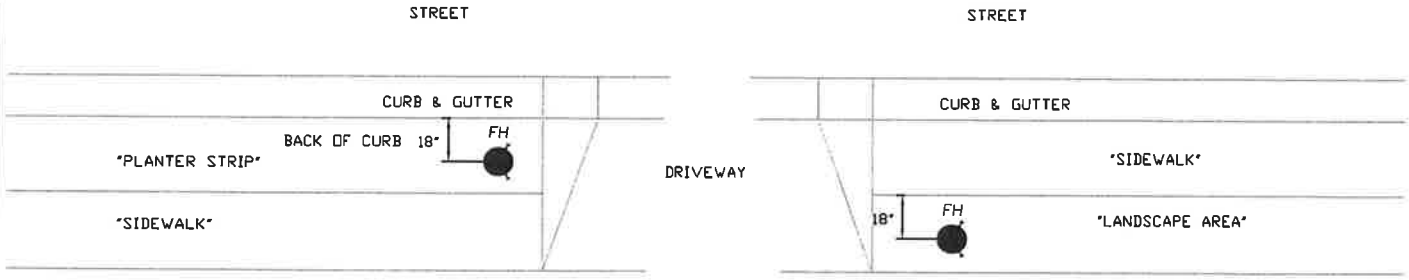
DATE 10/81

REV.

APPROVED BY: Win Westfall — DATE: 5-18-82

WIN WESTFALL, CITY ENGINEER





TYPICAL LOCATIONS

FIRE HYDRANTS SHALL BE PLACED AS DIRECTED BY THE CITY ENGINEER. A MIN OF 5' DISTANCE FROM DRIVEWAYS, 10' FROM SEWER, VAULTS, PULL BOXES, U/G TRANSFORMERS MANHOLES. 20' FROM POWER POLES, STREET LIGHTS & TREES.

REV.		BY

FIRE HYDRANT INSTALLATION DETAILS

APPROVED

COMMUNITY DEVELOPMENT DEPARTMENT

CITY OF ATWATER

STANDARD DETAIL

DRAWN:		NO.
DATE:	11/10/10	WA-08
SCALE:		

Fire hydrants shall be Waterous Pacer WB-67, American- Darling B-84-B or Mueller A423 traffic type, furnished as follows:

Dry barrel type, furnished without drains.
5" minimum internal valve opening.
Operating nut shall be counter clockwise opening.
Operating nut and cap nut nuts shall be 1-1/2", point to flat, penta nuts, slightly tapered from base to top.
With two (2) 2-1/2" (NST) hose nozzles and one (1) 4-1/2" (NST) steamer nozzle, with caps and chains.
With rubber gasket or mechanical joint lateral connection.
Primed and painted "Safety Yellow".
Installed in accordance with Standard Plan No. W-5, or as modified by the City of Atwater.

ENGINEERING DIVISION		CITY OF ATWATER, CALIF.
TITLE	FIRE HYDRANT SPECIFICATIONS	STANDARD PLAN
DRN.	APPROVED BY: DPW/CE	DATE: 1-28-95
DATE		W-6
REV.		

TESTING

The contractor shall provide all necessary materials and equipment and shall perform all work required in connection with the testing and sterilization of all water lines.

All tests shall be made after trenches have been backfilled, compacted and approved by the City Engineer for testing.

HYDROSTATIC AND LEAKAGE TESTS

All pipe work, including all joints, connections and fittings, shall be subjected by the contractor, under the direction of the Engineer, to a hydrostatic pressure test.

Preparatory to testing, the section of the pipeline to be tested shall be filled with water and placed under a slight pressure for a minimum of 48 hours. The pipeline shall then be brought up to 200 p.s.i., for Class 150 pipe, and maintained on the section under test for a period of not less than one (1) hour. During the test the pressure shall not be permitted to fall below 150 p.s.i.

Accurate means shall be provided for measuring the quantity of water required to maintain full pressure on the line for the test period, which volume shall not exceed:

$$L = \frac{CN\,D\sqrt{P}}{1850}$$

Where:

L = Maximum allowable leakage in gallons per hour for the section of pipeline tested.
N = Number of joints in length tested.
D = Diameter of pipe in inches.
C = 0.50 for cast iron pipe with mechanical or rubber gasket joints and asbestos cement pipe.
C = 1.0 for other type of cast iron joints (caulked) and other types of pipe.
P = Test pressure in psi,
No leakage is allowed for welded steel pipe with welded joints.

Any leaks, failures, or imperfect construction or fittings revealed by such test shall be promptly corrected by the contractor at his sole expense, and retested until all leakage has been stopped.

Pressure tests shall not be made until the pipe shall have been backfilled as indicated in the preceding sections. Tests shall not be made until at least 36 hours after the last concrete thrust or reaction backing shall have been cast with high early strength cement or at least 7 days after the last concrete thrust or reaction backing shall have been cast with standard cement.

ENGINEERING DIVISION	CITY OF ATWATER, CALIF.	STANDARD PLAN
TITLE: WATER SYSTEM - TESTING SPECIFICATIONS		W - 7
DRN.	APPROVED BY: Win Westfall DATE: 5-18-82	
DATE	WIN WESTFALL, CITY ENGINEER	
REV.		

STERILIZATION

All lines shall be disinfected in accordance with AWWA Standard C 601-68 with the following modifications:

1. A chlorine concentration of approximately 100 parts of chlorine per million parts of water is introduced into the water mains to produce a residual chlorine concentration of not less than 25 PPM after 24 hours.*

2. Twenty-four to forty-eight hours after introduction of chlorinated water, treated water is completely flushed from the water mains and services.*

3. Forty-eight hours after flushing the system, water samples are taken by City agents for bacteriological tests.* Any water use from the new system during this period will invalidate the tests, resulting in restarting test procedures at Step 2.

4. Forty-eight hours after samples are taken, preliminary results are available.*

5. Forty-eight hours later, after preliminary results are obtained, confirmed results are available.

6. If the bacteriological tests show a coliform M.P.N./100 ML water less than 2.2 on all samples, the water mains are considered clear. In the event the coliform number is above 2.2, sterilization procedure is commenced again within 24 hours.

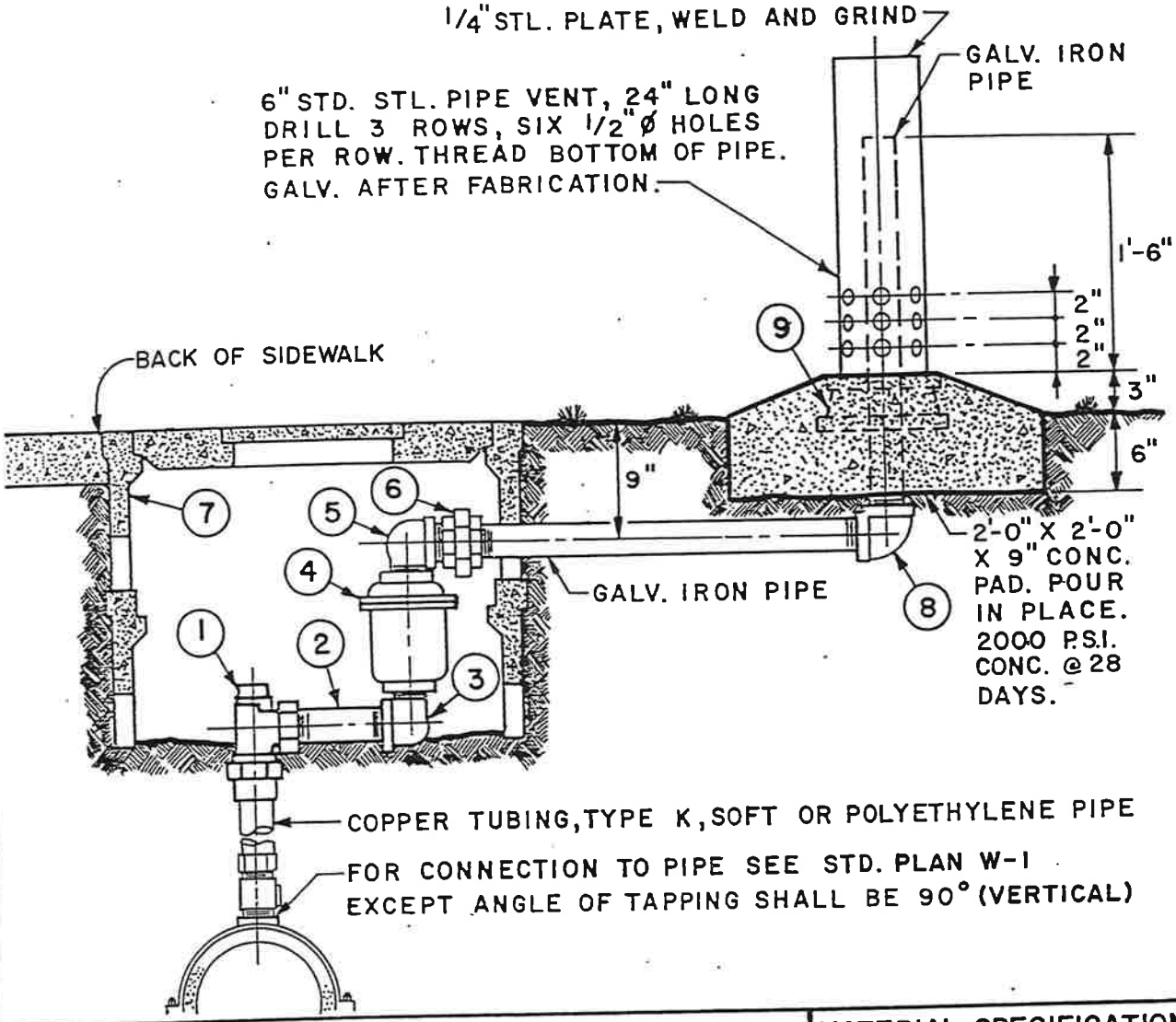
* Should the end of any of the foregoing periods fall on a City non-working day, the order of procedure will be continued to the next regular City working day.

NOTES:

1. Bacteriological samples may be obtained from any fire hydrant, blow-off or service connection.

2. Until such time as the water in the new system has been determined by the City Engineer to be clear, only <u>one</u> connection between the existing City system and the new system will be permitted.

ENGINEERING DIVISION	CITY OF ATWATER, CALIF.	STANDARD PLAN
TITLE: WATER SYSTEM-TESTING SPECIFICATIONS		
DRN.	APPROVED BY: Win Westfall DATE: 5-18-82	W-8
DATE	WIN WESTFALL, CITY ENGINEER	
REV.		



ITEM	NO.	SIZE AND DESCRIPTION	MATERIAL SPECIFICATION
1	1	1" X 3/4" ANGLE METER STOP WITH LOCKWING	JONES J-4201
2	1	1" RED BRASS NIPPLE, NPT	
3	1	1" 90° BRONZE STREET ELBOW	
4	1	AIR RELEASE VALVE, 1"	APCO 200-A
5	1	1/2" 90° GALV. IRON STREET ELBOW	
6	1	1/2" GALV. IRON UNION, MALE-FEMALE, NPT	
7	1	CONCRETE METER BOX	BROOKS 65-S
8	1	1/2" 90° GALV. IRON ELBOW	
9	1	6" CAST IRON COMPANION FLANGE	

ENGINEERING DIVISION — CITY OF ATWATER, CALIF.

TITLE: 1-INCH AIR RELEASE VALVE ASSEMBLY

STANDARD PLAN: W-9

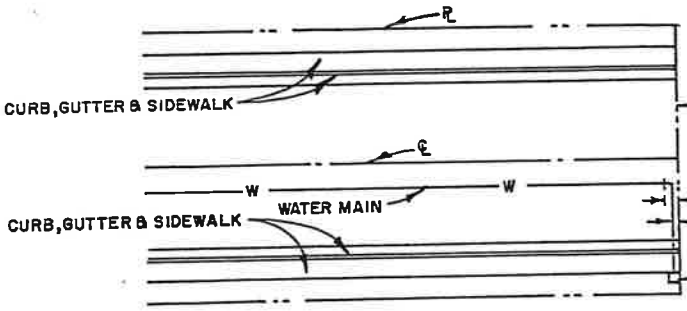
DRN. RWS

DATE 2/82

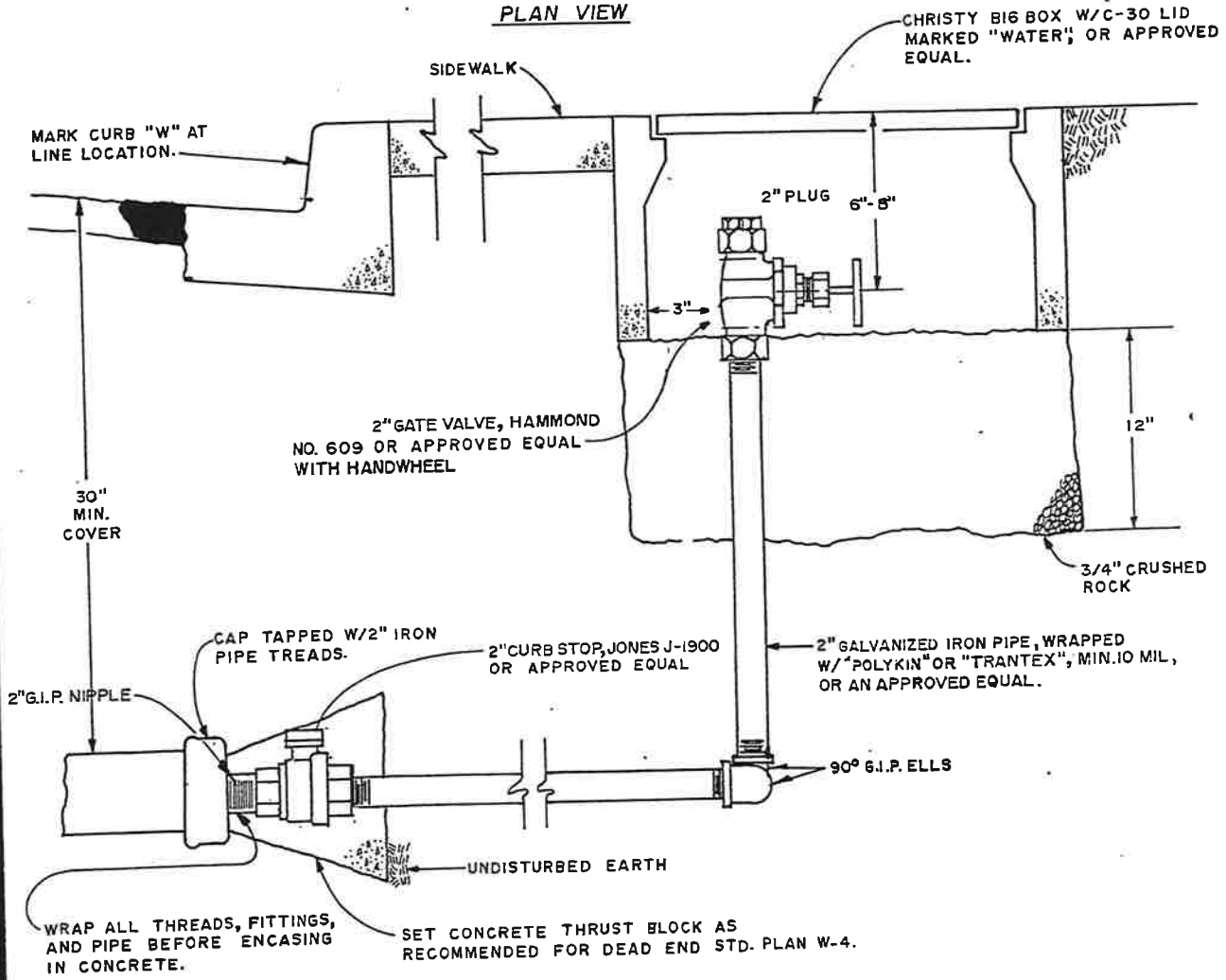
REV.

APPROVED BY: Win Westfall — DATE: 5-18-82

WIN WESTFALL, CITY ENGINEER



PLAN VIEW



NO SCALE

ENGINEERING DIVISION — CITY OF ATWATER, CALIF.

TITLE: BLOWOFF VALVE - 2"

STANDARD PLAN: W-10

DRN. RWS

DATE 2/82

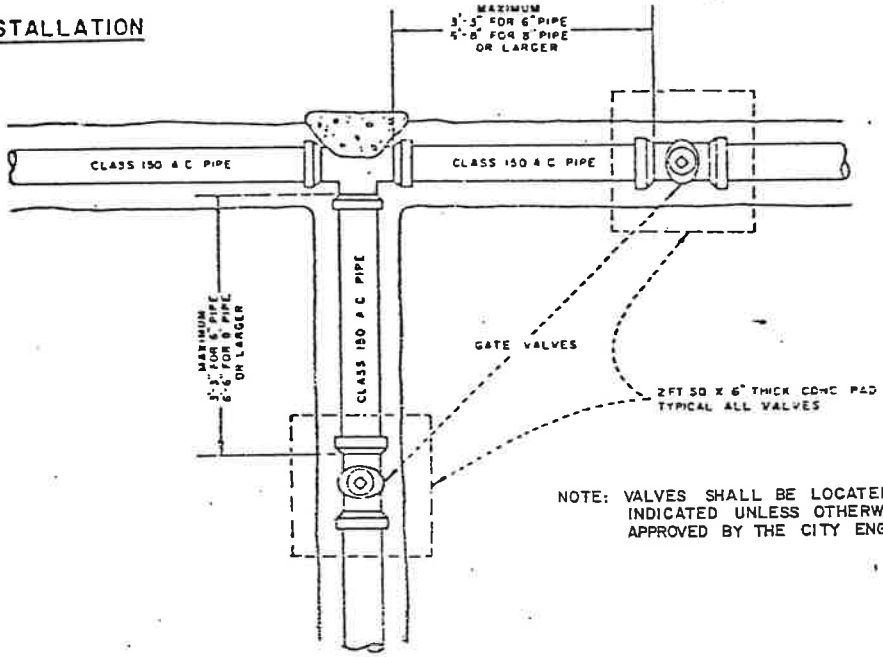
REV.

APPROVED BY: Win Westfall — DATE: 5-18-82

WIN WESTFALL, CITY ENGINEER

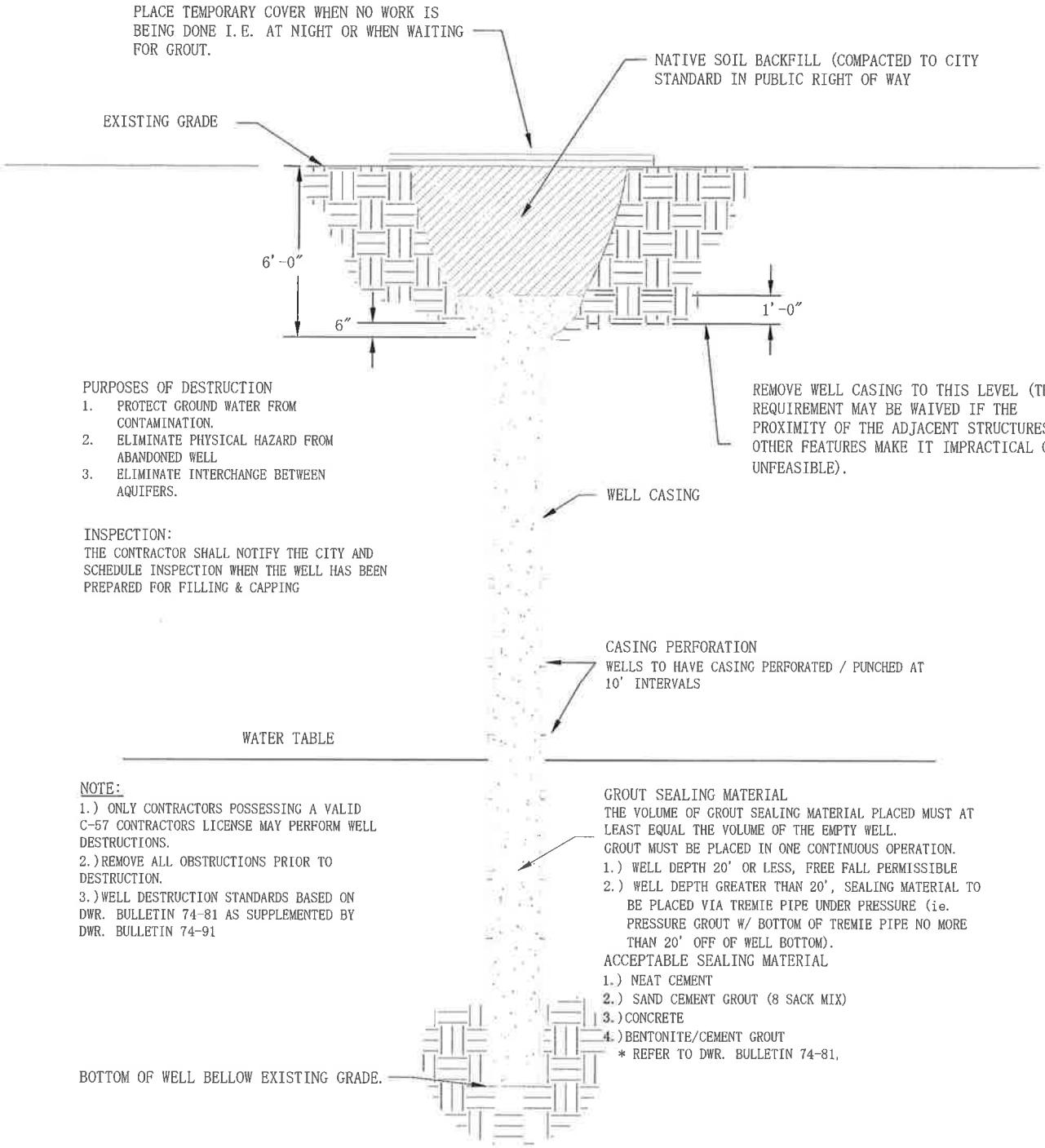
NO SCALE

VALVE INSTALLATION



NOTE: VALVES SHALL BE LOCATED AS INDICATED UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER

ENGINEERING DIVISION		CITY OF ATWATER, CALIF
TITLE: TYPICAL WATER VALVE LOCATIONS		STANDARD PLAN
DRN. PVT	APPROVED BY: Win Westfall DATE: 5-18-82	W-11
DATE		
REV.	WIN WESTFALL, CITY ENGINEER	



REV.		BY

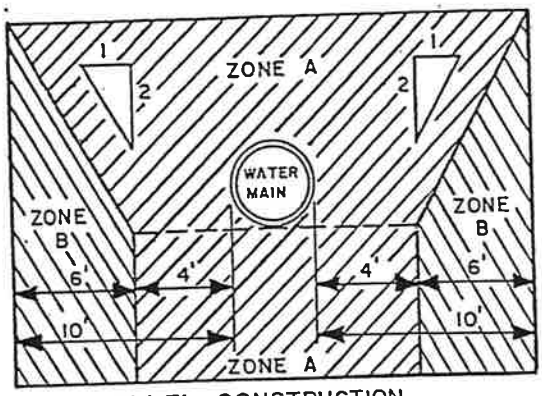
WELL DESTRUCTION

APPROVED

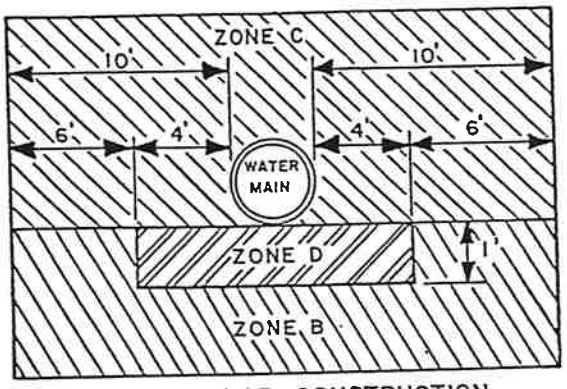
COMMUNITY DEVELOPMENT DEPARTMENT

CITY OF ATWATER
STANDARD DETAIL

DRAWN:	R. GARCIA	NO.
DATE:	06/05/2012	WA-16
SCALE:	N. T. S.	



PARALLEL CONSTRUCTION



PERPENDICULAR CONSTRUCTION

NOTE: DIMENSIONS ARE FROM OUTSIDE OF WATER MAIN TO OUTSIDE OF SEWER. ALL CROSSINGS SHALL BE AT 90° WHERE POSSIBLE.

CASE I-NEW SEWER – EXISTING WATER MAIN.

ZONE A. SEWER LINES WILL NOT BE PERMITTED IN THIS ZONE WITHOUT SPECIAL PERMISSION FROM DEPARTMENT OF HEALTH.

B. EXTRA – STRENGTH VITRIFIED CLAY PIPE WITH COMPRESSION JOINTS; OR RUBBER GASKETED A.C.P; OR CAST IRON PIPE WITH COMPRESSION JOINTS.

C OR D CLASS 50 OR HEAVIER DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING AND OR APPROVED MECHANICAL JOINTS; OR APPROVED SEWER PIPE WITHIN A CONTINUOUS STEEL CASING, WHICH CASING SHALL HAVE A THICKNESS OF NOT LESS THAN ONE-FOURTH INCH AND WITH ALL VOIDS BETWEEN SEWER PIPE AND CASING PRESSURE-GROUTED WITH SAND CEMENT GROUT.

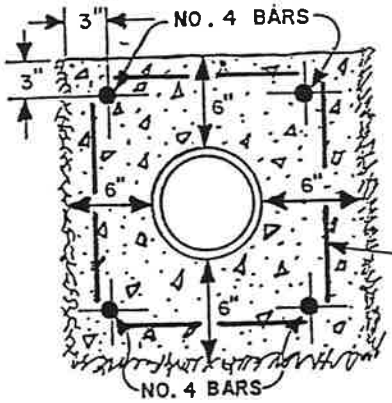
CASE II – NEW WATER MAIN-EXISTING SEWER

ZONE A. NO WATER MAINS SHALL BE CONSTRUCTED WITHOUT SPECIAL PERMISSION FROM THE DEPARTMENT OF HEALTH.

B. IF THE SEWER DOES NOT MEET THE ZONE 'B' REQUIREMENTS GIVEN ABOVE THE WATER MAIN SHALL BE OF CLASS 200 PIPE OR EQUIVALENT.

C. NO WATER MAINS SHALL BE CONSTRUCTED WITHOUT SPECIAL PERMISSION FROM THE DEPARTMENT OF HEALTH. IF PERMISSION IS GRANTED, THE SEWER SHALL BE ENCASED WITH REINFORCE CONCRETE AND THE MAIN SHALL BE CLASS 200 PIPE OR EQUIVALENT.

D. THE SEWER SHALL BE ENCASED WITH REINFORCED CONCRETE.



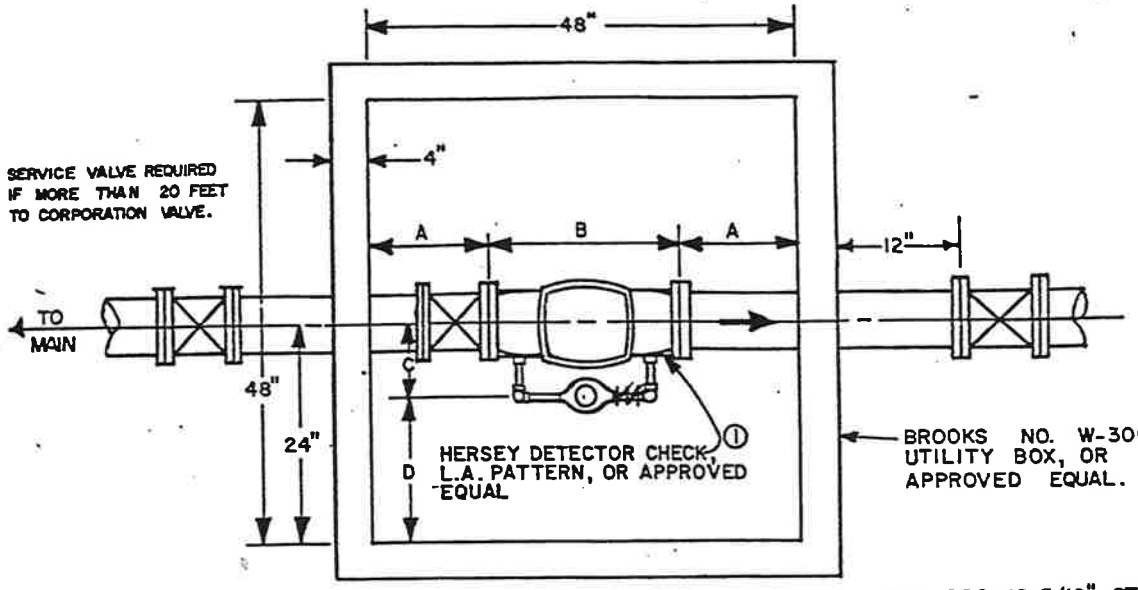
ACCEPTABLE REINFORCED CONCRETE ENCASEMENT DETAIL (CLASS B P.C.C.)

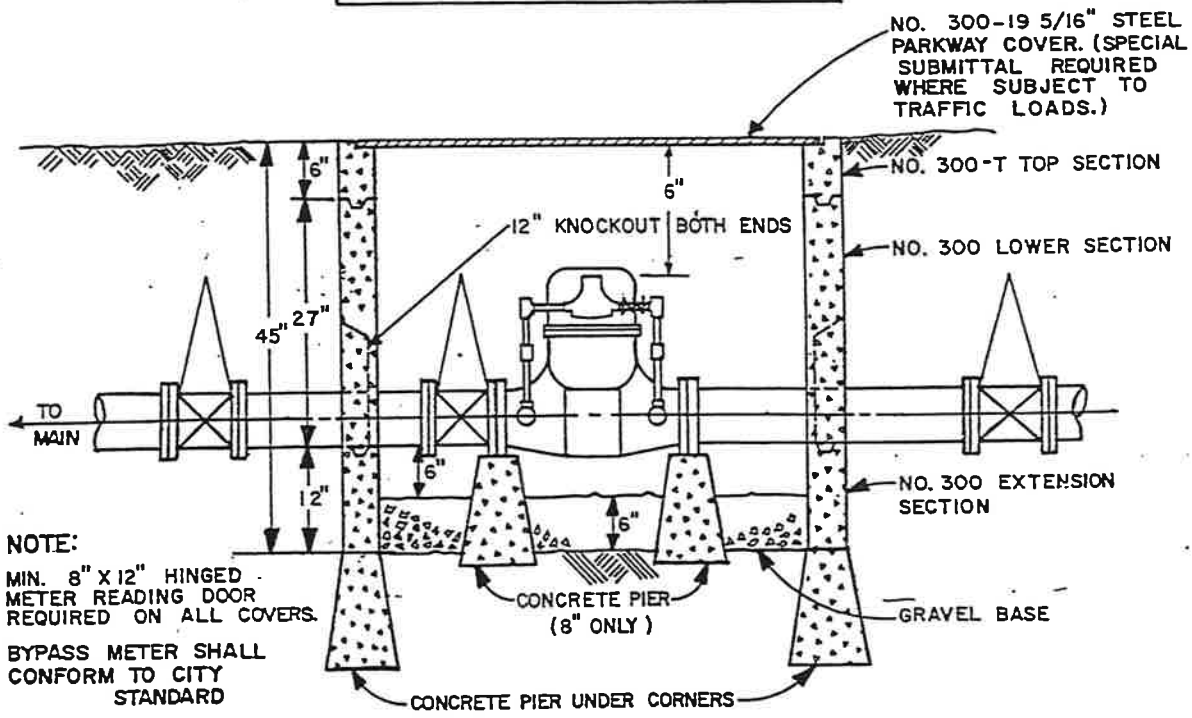
NOTE:

SEWERS LARGER THAN 24" DIAMETER, HOUSE LATERALS ABOVE PRESSURE WATER MAINS, SEWERS, WITHIN 25' OF LOW HEAD WATER MAINS, SHALL BE REVIEWED AND APPROVED BY THE HEALTH DEPARTMENT.

MINIMUM SEPARATION SHALL BE 10' HORIZONTAL, 1' VERTICAL. IN EXCEPTIONAL SITUATIONS WHERE SEPARATION IS NOT FEASIBLE, ABOVE. SPECIAL CONSTRUCTION PROVISIONS SHALL BE MADE.

ENGINEERING DIVISION		CITY OF ATWATER, CALIF.
TITLE: PROTECTION OF UTILITY WATER LINES FROM SANITARY SEWERS		STANDARD PLAN
DRN. RWS	APPROVED BY: Win Westfall	DATE: 5-18-82
DATE 2/82	WIN WESTFALL, CITY ENGINEER.	W-13
REV.		





NOTE:

MIN. 8" X 12" HINGED METER READING DOOR REQUIRED ON ALL COVERS.

BYPASS METER SHALL CONFORM TO CITY STANDARD

SIZE	A	B	C	D
4"	15 3/4"	16 1/2"	8 7/8"	15 1/8"
6"	12 3/4"	22 1/2"	10 3/8"	13 5/8"
8"	10 3/4"	26 1/2"	12 1/4"	11 3/4"

② REQUIRED FOR ALL FIRE SPRINKLER SYSTEMS WITH HOSE RACKS OR HYDRANTS.

NOTES:

4" & 6" METERS - INSTALL CONCRETE PIER UNDER BODY OF METER. 8" METER AS SHOWN. CUSTOMER VALVES ARE NOT ALLOWED IN DETECTOR CHECK UTILITY BOX.

① DETECTOR CHECK MAY BE FURNISHED BY THE CONTRACTOR, (SUBMITTAL REQUIRED PRIOR TO ORDERING AND MUST BE ACCOMPANIED BY A CERTIFICATE OF COMPLIANCE WITH THIS STANDARD DRAWING. BYPASS METER TO CONFORM TO CITY STANDARDS FOR DOMESTIC METERS.

ENGINEERING DIVISION — CITY OF ATWATER, CALIF.

TITLE: DETECTOR CHECK METER

STANDARD PLAN: W-14

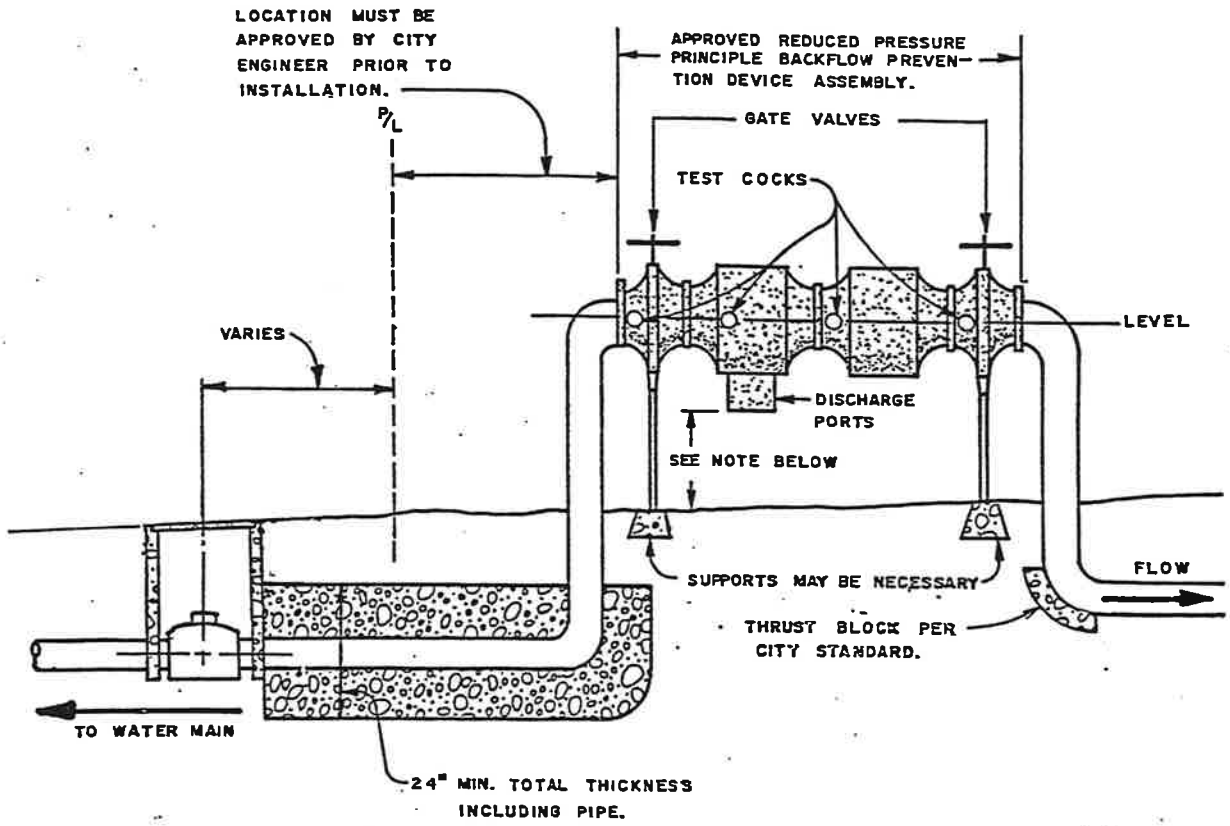
DRN.

DATE

REV.

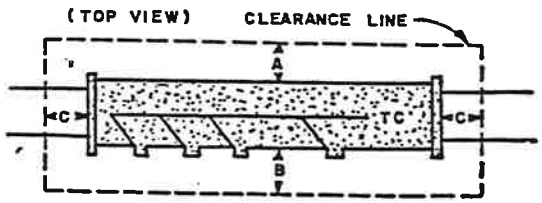
APPROVED BY: _____ CITY ENGINEER

DATE: 1-16-96



NOTE: DISCHARGE PORT MUST BE ABOVE FLOOD LEVEL. GROUND CLEARANCE SHALL BE A MINIMUM OF 18" AND A MAXIMUM OF 30".

MIN. CLEARANCE			
SIZE / DC	A	B	C
1" – 3"	12"	18"	12"
4" & UP	24"	24"	12"



ENGINEERING DIVISION — CITY OF ATWATER, CALIF.

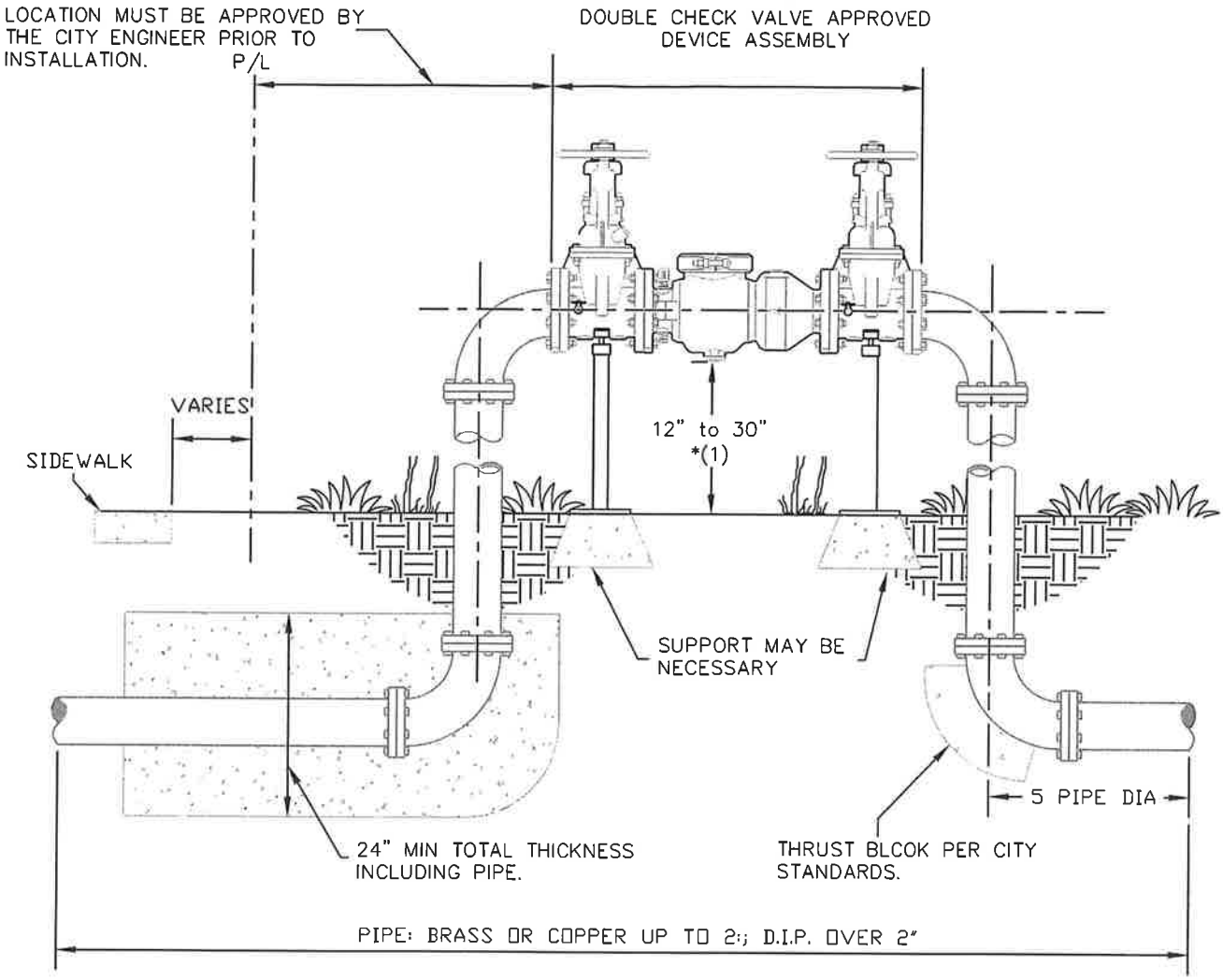
TITLE: REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER

STANDARD PLAN W-15

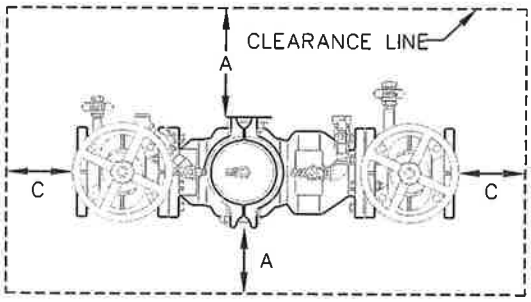
DRN.
DATE
REV.

APPROVED BY: _____ CITY ENGINEER

DATE: 1-16-96



MINIMUM CLEARANCE			
SIZE / DC	A	B	C
1"–3"	12"	18"	12"
4" & UP	24"	24"	12"



TOP VIEW

*(1) – MUST BE ABOVE 100–YEAR FLOOD ELEVATION ESTABLUSHED BY FEMA.

REV.	DATE	BY

DOUBLE CHECK VALVE BACKFLOW

APPROVED
COMMUNITY DEVELOPMENT DEPARTMENT

CITY OF ATWATER
STANDARD DETAIL

DRAWN:	R.GARCIA	NO.
DATE:	06/05/2012	WA-19
SCALE:	N.T.S	