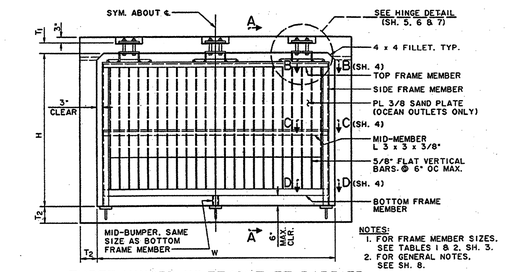
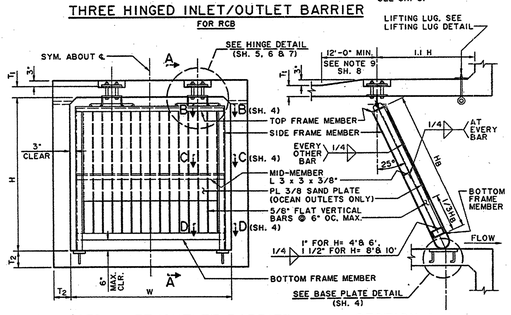


NOTES:
1. FOR FRAME MEMBER SIZES, SEE TABLES 1 & 2, SH. 3.
2. FOR GENERAL NOTES, SEE SH. 8.

THREE HINGED INLET/OUTLET BARRIER
FOR RCB

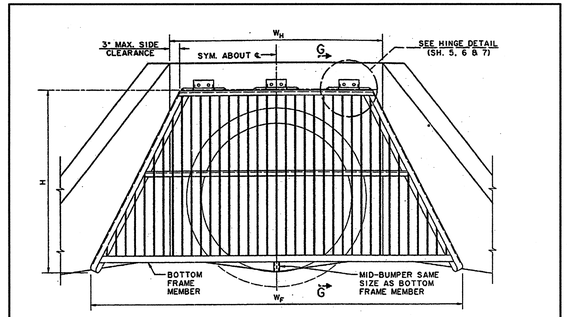


TWO HINGED INLET/OUTLET BARRIER
FOR RCB

NOTE:
FOR FRAME MEMBER SIZES, SEE TABLES 1 & 2, SH. 3.
FOR CONNECTION DETAILS, SEE SH. 4.

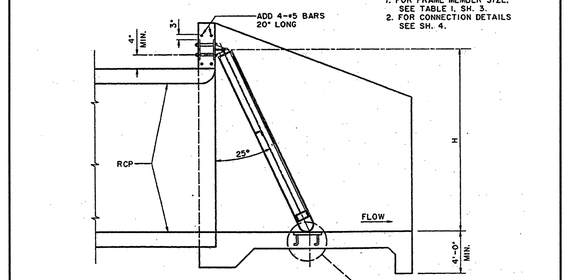
SECTION A-A

AMERICAN PUBLIC WORKS ASSOCIATION – SOUTHERN CALIFORNIA CHAPTER		
PROMULGATED BY THE PUBLIC WORKS STANDARDS INC., GREENBOOK COMMITTEE. 1963	SLOPED PROTECTION BARRIER USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION	STANDARD PLAN 360–0 SHEET 1 OF 8



FRONT ELEVATION

NOTES:
1. FOR FRAME MEMBER SIZE, SEE TABLE 1, SH. 3.
2. FOR CONNECTION DETAILS SEE SH. 4.



SECTION G-G
RCP OUTLET PROTECTION BARRIER

AMERICAN PUBLIC WORKS ASSOCIATION – SOUTHERN CALIFORNIA CHAPTER	
SLOPED PROTECTION BARRIER	STANDARD PLAN 360–0 SHEET 2 OF 8

TABLE 1: STANDARD INLET/OUTLET, BOX OR PIPE, RECTANGULAR OR TRAPEZOIDAL SHAPED PROTECTION BARRIERS.
NOTE 1: FOR TRAPEZOIDAL SHAPED PROTECTION BARRIERS, USE W_H TO DETERMINE REQUIRED TOP FRAME MEMBER SIZES AND USE W_F TO DETERMINE REQUIRED FRAME MEMBER SIZES. (FOR W_H AND W_F, SEE SH. 2)

TABLE 1: INLET/OUTLET SLOPED PROTECTION BARRIER

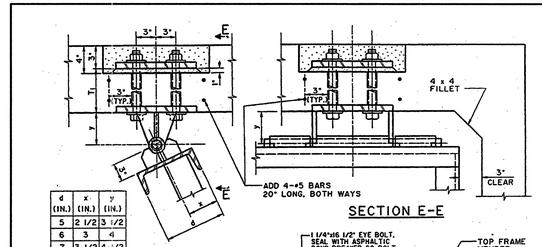
BOX SIZE W x H (FT.)	NO. OF HINGES	HINGE SIZE	VERTICAL BAR SIZE (INCHES)	TOP FRAME MEMBER SIZE	SIDE FRAME MEMBER SIZE	BOTTOM FRAME MEMBER SIZE
4x4	2	12"	1x1/2	C 4x7.25	C 4x7.25	TS 2x2x.250
4x6	2	12"	2x1/2	C 4x7.25	C 4x7.25	TS 2x2x.250
4x8	2	12"	3x1/2	C 5x9	C 5x9	TS 3x3x.250
6x4	2	18"	1x1/2	C 4x7.25	C 4x7.25	TS 2x2x.250
6x6	2	18"	2x1/2	C 4x7.25	C 4x7.25	TS 2.5x2.5x.250
6x8	2	18"	3x1/2	C 5x9	C 5x9	TS 3.5x3.5x.250
6x10	2	18"	4 1/2x1/2	C 6x10.5	C 6x10.5	TS 4.5x4.5x.250
8x4	3	12"	1x1/2	C 4x7.25	C 4x7.25	TS 2x2x.250
8x6	3	12"	2x1/2	C 4x7.25	C 4x7.25	TS 2.5x2.5x.250
8x8	3	12"	3x1/2	C 5x9	C 5x9	TS 3x3x.250
8x10	3	12"	4 1/2x1/2	C 6x10.5	C 6x10.5	TS 4.5x4.5x.250
10x6	3	18"	2x1/2	C 4x7.25	C 4x7.25	TS 2.5x2.5x.250
10x8	3	18"	3x1/2	C 5x9	C 5x9	TS 3.5x3.5x.250
10x10	3	18"	4 1/2x1/2	C 6x10.5	C 6x10.5	TS 4.5x4.5x.250
12x6	3	24"	2x1/2	C 5x9	C 5x9	TS 3x3x.250
12x8	3	24"	3x1/2	C 5x9	C 5x9	TS 3.5x3.5x.250
12x10	3	24"	4 1/2x1/2	C 6x10.5	C 6x10.5	TS 4.5x4.5x.250
14x6	3	24"	2x1/2	C 5x9	C 5x9	TS 3x3x.250
14x8	3	24"	3x1/2	C 6x10.5	C 6x10.5	TS 4x4x.250
14x10	3	24"	4 1/2x1/2	C 7x12.25	C 7x12.25	TS 5x5x.250

TABLE 2: BOX OCEAN OUTLET PROTECTION BARRIERS WITH OR WITHOUT SAND BARRIER PLATE.

TABLE 2: OCEAN OUTLET SLOPED PROTECTION BARRIER

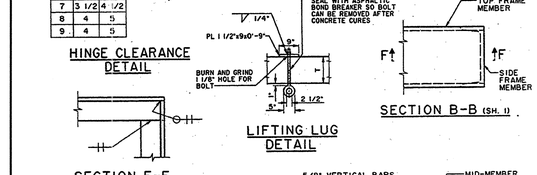
BOX SIZE W x H (FT.)	NO. OF HINGES	HINGE SIZE	VERTICAL BAR SIZE (INCHES)	TOP FRAME MEMBER SIZE	SIDE FRAME MEMBER SIZE	BOTTOM FRAME MEMBER SIZE
4x4	2	12"	2 1/2x5/8	C 5x9	C 5x9	TS 3x3x.250
4x6	2	12"	3 3/4x5/8	C 6x13	C 6x8.2	TS 4x2.313
4x8	2	12"	5 1/4x5/8	C 8x18.75	C 8x11.5	TS 6x2x.250
6x4	2	18"	2 1/2x5/8	C 6x13	C 6x8.2	TS 4x3x.313
6x6	2	18"	3 3/4x5/8	C 6x13	C 6x8.2	TS 4x4x.500
6x8	2	18"	5 1/4x5/8	C 8x18.75	C 8x11.5	TS 6x4x.375
6x10	2	18"	6 1/2x5/8	C 9x20	C 9x13.4	TS 7x4x.375
8x4	3	12"	2 1/2x5/8	C 5x9	C 5x9	TS 3x3x.250
8x6	3	12"	3 3/4x5/8	C 6x13	C 6x8.2	TS 4x3x.250
8x8	3	12"	5 1/4x5/8	C 8x18.75	C 8x11.5	TS 6x2x.250
8x10	3	12"	6 1/2x5/8	C 9x20	C 9x13.4	TS 7x3x.250
10x6	3	18"	3 3/4x5/8	C 6x13	C 6x8.2	TS 4x4x.313
10x8	3	18"	5 1/4x5/8	C 8x18.75	C 8x11.5	TS 6x4x.313
10x10	3	18"	6 1/2x5/8	C 9x20	C 9x13.4	TS 7x3x.313
12x6	3	24"	3 3/4x5/8	C 7x14.75	C 7x9.8	TS 5x4x.313
12x8	3	24"	5 1/4x5/8	C 8x18.75	C 8x11.5	TS 6x4x.375
12x10	3	24"	6 1/2x5/8	C 9x20	C 9x13.4	TS 7x4x.375
14x6	3	24"	3 3/4x5/8	C 8x18.75	C 8x11.5	TS 6x4x.375
14x8	3	24"	5 1/4x5/8	C 8x18.75	C 8x11.5	TS 6x6x.375
14x10	3	24"	6 1/2x5/8	C 9x20	C 9x13.4	TS 7x5x.500

AMERICAN PUBLIC WORKS ASSOCIATION – SOUTHERN CALIFORNIA CHAPTER	
SLOPED PROTECTION BARRIER	STANDARD PLAN 360–0 SHEET 3 OF 8



SECTION E-E

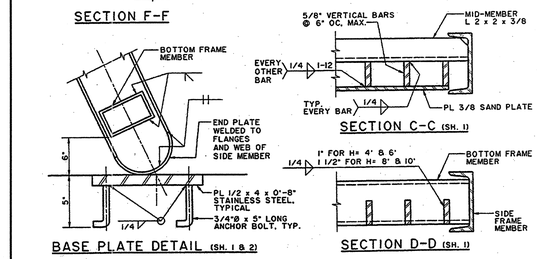
d (INC.)	x (IN.)	y (IN.)
5	2 1/2	3 1/2
6	3	4
7	3 1/2	4 1/2
8	4	5
9	4	5



HINGE CLEARANCE DETAIL

LIFTING LUG DETAIL

SECTION B-B (SH. 1)



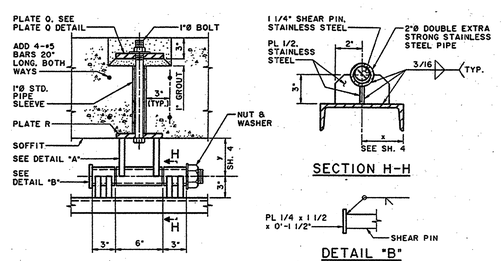
SECTION F-F

SECTION C-C (SH. 1)

BASE PLATE DETAIL (SH. 1 & 2)

SECTION D-D (SH. 1)

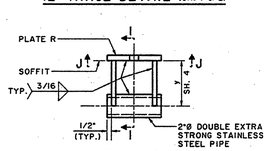
AMERICAN PUBLIC WORKS ASSOCIATION – SOUTHERN CALIFORNIA CHAPTER	
SLOPED PROTECTION BARRIER	STANDARD PLAN 360–0 SHEET 4 OF 8



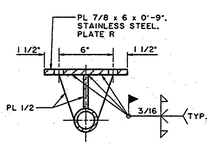
12" HINGE DETAIL (SH. 1 & 2)

SECTION H-H

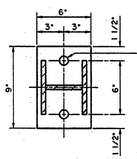
DETAIL "B"



DETAIL "A"



SECTION I-I



SECTION J-J

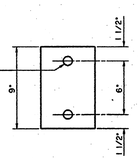
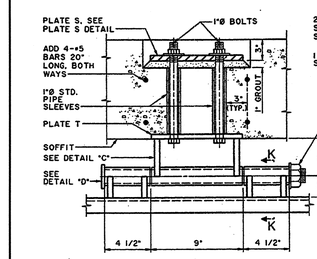
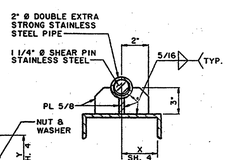


PLATE Q DETAIL

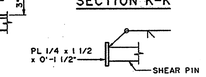
AMERICAN PUBLIC WORKS ASSOCIATION – SOUTHERN CALIFORNIA CHAPTER	
SLOPED PROTECTION BARRIER	STANDARD PLAN 360–0 SHEET 5 OF 8



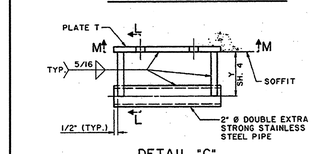
18" HINGE DETAIL (SH. 1 & 2)



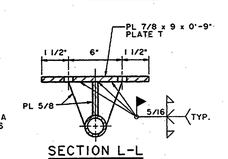
SECTION K-K



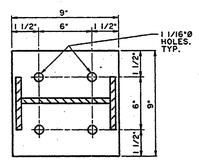
DETAIL "D"



DETAIL "C"



SECTION L-L



SECTION M-M

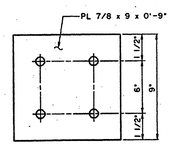
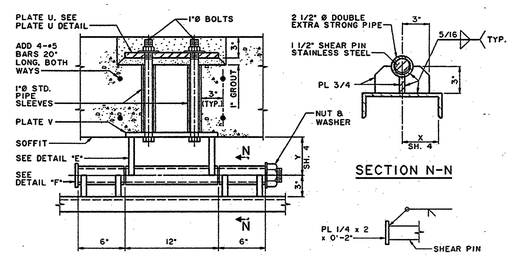


PLATE S DETAIL

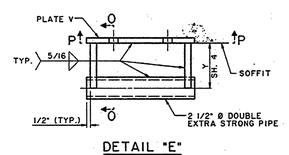
AMERICAN PUBLIC WORKS ASSOCIATION – SOUTHERN CALIFORNIA CHAPTER	
SLOPED PROTECTION BARRIER	STANDARD PLAN 360–0 SHEET 6 OF 8



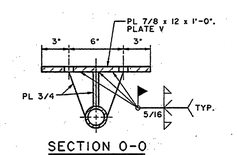
24" HINGE DETAIL (SH. 1 & 2)

SECTION N-N

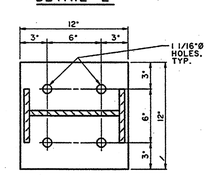
DETAIL "F"



DETAIL "E"



SECTION O-O



SECTION P-P

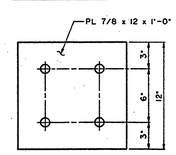


PLATE V DETAIL

AMERICAN PUBLIC WORKS ASSOCIATION – SOUTHERN CALIFORNIA CHAPTER	
SLOPED PROTECTION BARRIER	STANDARD PLAN 360–0 SHEET 7 OF 8

NOTES

1. WHENEVER RCB SIZE FALLS BETWEEN SIZES SHOWN ON THE TABLE, THE NEXT LARGER SIZE SHALL BE USED.
2. ALL FRAME MEMBERS SHALL BE ASTM A 36 STEEL OR BETTER.
3. ALL HINGE ASSEMBLIES AND BASE PLATES SHALL BE STAINLESS STEEL.
4. THE CONTRACTOR SHALL MAKE ANY NECESSARY MODIFICATIONS TO ALLOW FOR THE SIMPLE REMOVAL OR INSERTION OF HINGE PINS IN ORDER TO INSTALL OR REMOVE THE PROTECTION BARRIER. ENDS OF HINGE PINS SHALL BE THREADED IN ORDER THAT NUTS AND LOCK WASHERS WILL BE FLUSH WITH THE HINGE PIPE. THREADS BEYOND THE NUT FACE SHALL BE DAMAGED TO PREVENT REMOVAL.
5. ALL FRAME MEMBERS SHALL BE GALVANIZED AFTER FABRICATION.
6. IF FIELD WELDS ARE NECESSARY, GALVICON, GALVALLOY OR AGENCY APPROVED EQUAL SHALL BE USED FOR COATING.
7. MID-BUMPER SHALL BE USED FOR 3 HINGED BARRIERS.
8. ANY DEVIATIONS OR MODIFICATIONS TO THIS STANDARD SHALL BE APPROVED BY THE AGENCY.
9. AT OCEAN OUTLETS OR WHEREVER THE TOP SLAB SERVES AS A PUBLIC WALKWAY, THE TOP SLAB THICKNESS SHALL BE INCREASED BY 3" IN ORDER TO PROVIDE A RECESS FOR THE HINGE TOP PLATE. THE RECESS SHALL BE BACKFILLED WITH GROUT AND SMOOTHED AS SHOWN.
10. PROTECTION BARRIERS FOR RCB CONDUITS SHALL BE SLOPED TO SWING OPEN IN THE DIRECTION OF FLOW.
11. MEMBERS SHALL BE SELECTED FROM TABLE 1 UNLESS OTHERWISE NOTED.
12. DESIGN LOADS:
    A. INLET/OUTLET: BULKED EFD = 85 PCF
    B. OCEAN OUTLETS:
        1. 1800 PSF @ SAND PLATE AREA
        2. 600 PSF @ LOWER OPEN AREA

AMERICAN PUBLIC WORKS ASSOCIATION – SOUTHERN CALIFORNIA CHAPTER	
SLOPED PROTECTION BARRIER	STANDARD PLAN 360–0 SHEET 8 OF 8

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

FONTANA–RIALTO DRAINAGE SYSTEM

CACTUS BASINS NO. 3

SLOPE PROTECTION BARRIER
APWA STANDARD PLAN 360–0

DATE	DEC. ,2007
SCALE	AS SHOWN
FILE NO.	2-104-
SHEET NO.	S-10