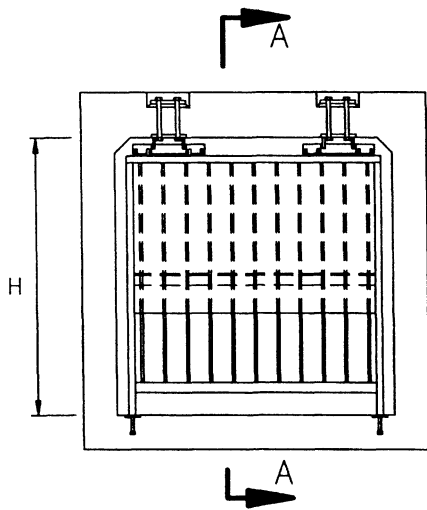
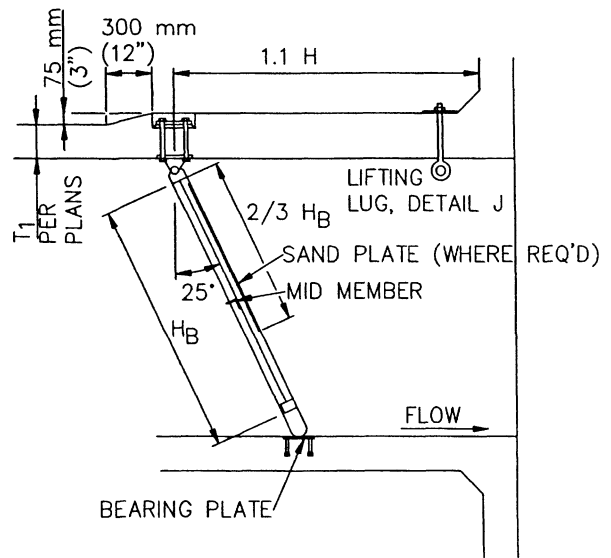


THREE-HINGED INLET/OUTLET BARRIER
FOR RCB



TWO-HINGED
INLET/OUTLET BARRIER
FOR RCB



SECTION A-A

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

PROMULGATED BY THE
PUBLIC WORKS STANDARDS INC.
GREENBOOK COMMITTEE
1993
REV. 2005

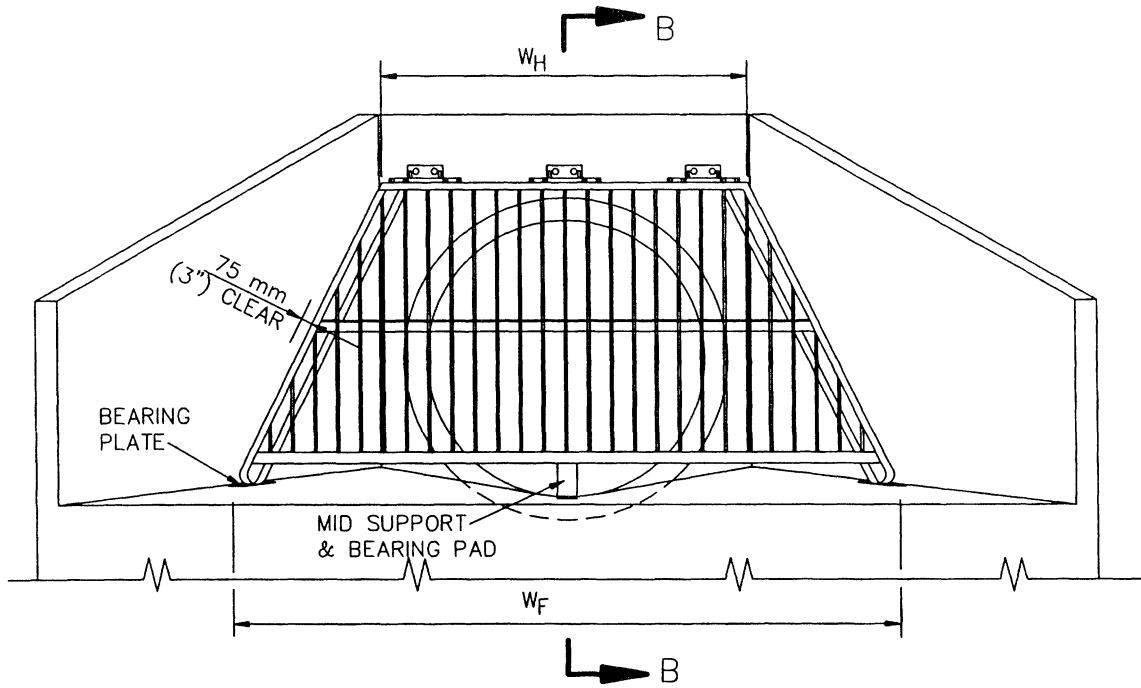
SLOPED PROTECTION BARRIER

STANDARD PLAN
METRIC

360-1

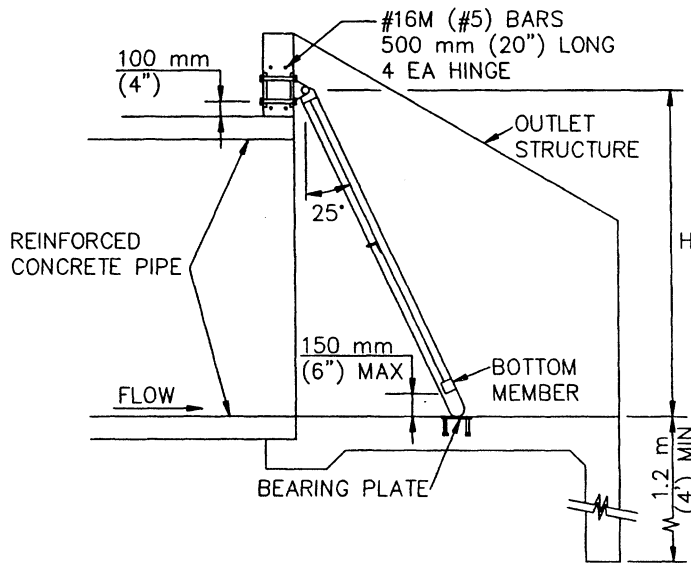
USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

SHEET 1 OF 8



**TRAPEZOIDAL OUTLET BARRIER
FOR RCP**

FOR TRAPEZOIDAL OUTLET BARRIERS, USE W_H TO DETERMINE NUMBER AND SIZE OF HINGES
AND USE W_F TO DETERMINE REQUIRED FRAME MEMBER SIZES.



SECTION B-B

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

SLOPED PROTECTION BARRIER

STANDARD PLAN
METRIC

360-1

SHEET 2 OF 8

TABLE 1 - STANDARD INLET / OUTLET

| BOX SIZE, W x H | VERTICAL BARS, mm | TOP MEMBER | SIDE MEMBERS | BOTTOM MEMBER |
|-----------------------|------------------------|--------------------------|--------------------------|-------------------------------------|
| 1.2 x 1.2 m (4'x4') | 25 x 13 (1"x1/2") | C 102 x 10.8 (C 4x7.25) | C 102 x 10.8 (C 4x7.25) | TS 51 x 51 x 6 (TS 2x2x0.250) |
| 1.2 x 1.8 (4'x6') | 51 x 13 (2"x1/2") | C 102 x 10.8 (C 4x7.25) | C 102 x 10.8 (C 4x7.25) | TS 51 x 51 x 6 (TS 2x2x0.250) |
| 1.2 x 2.4 (4'x8') | 76 x 13 (3"x1/2") | C 127 x 13.4 (C 5x9) | C 127 x 13.4 (C 5x9) | TS 76 x 76 x 6 (TS 3x3x0.250) |
| 1.8 x 1.2 (6'x4') | 25 x 13 (1"x1/2") | C 102 x 10.8 (C 4x7.25) | C 102 x 10.8 (C 4x7.25) | TS 51 x 51 x 6 (TS 2x2x0.250) |
| 1.8 x 1.8 (6'x6') | 51 x 13 (2"x1/2") | C 102 x 10.8 (C 4x7.25) | C 102 x 10.8 (C 4x7.25) | TS 64 x 64 x 6 (TS 2.5x2.5x0.250) |
| 1.8 x 2.4 (6'x8') | 76 x 13 (3"x1/2") | C 127 x 13.4 (C 5x9) | C 127 x 13.4 (C 5x9) | TS 89 x 89 x 6 (TS 3.5x3.5x0.250) |
| 2.4 x 1.2 (8'x4') | 114 x 13 (4 1/2"x1/2") | C 152 x 15.6 (C 6x10.5) | C 152 x 15.6 (C 6x10.5) | TS 114 x 114 x 6 (TS 4.5x4.5x0.250) |
| 2.4 x 1.8 (8'x6') | 25 x 13 (1"x1/2") | C 102 x 10.8 (C 4x7.25) | C 102 x 10.8 (C 4x7.25) | TS 51 x 51 x 6 (TS 2x2x0.250) |
| 2.4 x 2.4 (8'x8') | 51 x 13 (2"x1/2") | C 102 x 10.8 (C 4x7.25) | C 102 x 10.8 (C 4x7.25) | TS 64 x 64 x 6 (TS 2.5x2.5x0.250) |
| 2.4 x 3.0 (8'x10') | 76 x 13 (3"x1/2") | C 127 x 13.4 (C 5x9) | C 127 x 13.4 (C 5x9) | TS 76 x 76 x 6 (TS 3x3x0.250) |
| 3.0 x 1.8 (10'x6') | 114 x 13 (4 1/2"x1/2") | C 152 x 15.6 (C 6x10.5) | C 152 x 15.6 (C 6x10.5) | TS 114 x 114 x 6 (TS 4.5x4.5x0.250) |
| 3.0 x 2.4 (10'x8') | 51 x 13 (2"x1/2") | C 102 x 10.8 (C 4x7.25) | C 102 x 10.8 (C 4x7.25) | TS 64 x 64 x 6 (TS 2.5x2.5x0.250) |
| 3.0 x 3.0 (10'x10') | 76 x 13 (3"x1/2") | C 127 x 13.4 (C 5x9) | C 127 x 13.4 (C 5x9) | TS 89 x 89 x 6 (TS 3.5x3.5x0.250) |
| 3.6 x 1.8 (12'x6') | 114 x 13 (4 1/2"x1/2") | C 152 x 15.6 (C 6x10.5) | C 152 x 15.6 (C 6x10.5) | TS 114 x 114 x 6 (TS 4.5x4.5x0.250) |
| 3.6 x 2.4 (12'x8') | 51 x 13 (2"x1/2") | C 102 x 10.8 (C 4x7.25) | C 102 x 10.8 (C 4x7.25) | TS 76 x 76 x 6 (TS 3x3x0.250) |
| 3.6 x 3.0 (12'x10') | 76 x 13 (3"x1/2") | C 127 x 13.4 (C 5x9) | C 127 x 13.4 (C 5x9) | TS 89 x 89 x 6 (TS 3.5x3.5x0.250) |
| 4.2 x 1.8 (14'x6') | 114 x 13 (4 1/2"x1/2") | C 152 x 15.6 (C 6x10.5) | C 152 x 15.6 (C 6x10.5) | TS 114 x 114 x 6 (TS 4.5x4.5x0.250) |
| 4.2 x 2.4 (14'x8') | 51 x 13 (2"x1/2") | C 102 x 10.8 (C 4x7.25) | C 102 x 10.8 (C 4x7.25) | TS 76 x 76 x 6 (TS 3x3x0.250) |
| 4.2 x 3.0 m (14'x10') | 76 x 13 (3"x1/2") | C 127 x 13.4 (C 5x9) | C 127 x 13.4 (C 5x9) | TS 89 x 89 x 6 (TS 3.5x3.5x0.250) |
| | 114 x 13 (4 1/2"x1/2") | C 178 x 18.2 (C 7x12.25) | C 178 x 18.2 (C 7x12.25) | TS 127 x 127 x 6 (TS 5x5x0.250) |

TABLE 2 - OCEAN OUTLET

| BOX SIZE, W x H | VERTICAL BARS, mm | TOP MEMBER | SIDE MEMBERS | BOTTOM MEMBER |
|-----------------------|------------------------|--------------------------|-------------------------|----------------------------------|
| 1.2 x 1.2 m (4'x4') | 64 x 16 (2 1/2"x5/8") | C 127 x 13.4 (C 5x9) | C 127 x 13.4 (C 5x9) | TS 76 x 76 x 6 (TS 3x3x0.250) |
| 1.2 x 1.8 (4'x6') | 95 x 16 (3 3/4"x5/8") | C 152 x 19.3 (C 6x13) | C 152 x 15.2 (C 6x8.2) | TS 102 x 51 x 8 (TS 4x2x0.313) |
| 1.2 x 2.4 (4'x8') | 133 x 16 (5 1/4"x5/8") | C 203 x 27.9 (C 8x18.75) | C 203 x 17.1 (C 8x11.5) | TS 152 x 51 x 6 (TS 6x2x0.250) |
| 1.8 x 1.2 (6'x4') | 64 x 16 (2 1/2"x5/8") | C 127 x 13.4 (C 5x9) | C 152 x 15.2 (C 6x8.2) | TS 102 x 76 x 8 (TS 4x3x0.313) |
| 1.8 x 1.8 (6'x6') | 95 x 16 (3 3/4"x5/8") | C 152 x 19.3 (C 6x13) | C 152 x 15.2 (C 6x8.2) | TS 102 x 102 x 13 (TS 4x4x0.500) |
| 1.8 x 2.4 (6'x8') | 133 x 16 (5 1/4"x5/8") | C 203 x 27.9 (C 8x18.75) | C 203 x 17.1 (C 8x11.5) | TS 152 x 102 x 10 (TS 6x4x0.375) |
| 1.8 x 3.0 (6'x10') | 165 x 16 (6 1/2"x5/8") | C 229 x 29.8 (C 9x20) | C 229 x 19.9 (C 9x13.4) | TS 178 x 102 x 10 (TS 7x4x0.375) |
| 2.4 x 1.2 (8'x4') | 64 x 16 (2 1/2"x5/8") | C 127 x 13.4 (C 5x9) | C 127 x 13.4 (C 5x9) | TS 76 x 76 x 6 (TS 3x3x0.250) |
| 2.4 x 1.8 (8'x6') | 95 x 16 (3 3/4"x5/8") | C 152 x 19.3 (C 6x13) | C 152 x 15.2 (C 6x8.2) | TS 102 x 76 x 6 (TS 4x3x0.250) |
| 2.4 x 2.4 (8'x8') | 133 x 16 (5 1/4"x5/8") | C 203 x 27.9 (C 8x18.75) | C 203 x 17.1 (C 8x11.5) | TS 152 x 51 x 6 (TS 6x2x0.250) |
| 2.4 x 3.0 (8'x10') | 165 x 16 (6 1/2"x5/8") | C 229 x 29.8 (C 9x20) | C 229 x 19.9 (C 9x13.4) | TS 178 x 76 x 6 (TS 7x3x0.250) |
| 3.0 x 1.8 (10'x6') | 95 x 16 (3 3/4"x5/8") | C 152 x 19.3 (C 6x13) | C 152 x 15.2 (C 6x8.2) | TS 102 x 102 x 8 (TS 4x4x0.313) |
| 3.0 x 2.4 (10'x8') | 133 x 16 (5 1/4"x5/8") | C 203 x 27.9 (C 8x18.75) | C 203 x 17.1 (C 8x11.5) | TS 152 x 102 x 8 (TS 6x4x0.313) |
| 3.0 x 3.0 (10'x10') | 165 x 16 (6 1/2"x5/8") | C 229 x 29.8 (C 9x20) | C 229 x 19.9 (C 9x13.4) | TS 178 x 76 x 8 (TS 7x3x0.313) |
| 3.6 x 1.8 (12'x6') | 95 x 16 (3 3/4"x5/8") | C 152 x 19.3 (C 6x13) | C 178 x 14.6 (C 7x9.8) | TS 127 x 102 x 8 (TS 5x4x0.313) |
| 3.6 x 2.4 (12'x8') | 133 x 16 (5 1/4"x5/8") | C 203 x 27.9 (C 8x18.75) | C 203 x 17.1 (C 8x11.5) | TS 152 x 102 x 10 (TS 6x4x0.375) |
| 3.6 x 3.0 (12'x10') | 165 x 16 (6 1/2"x5/8") | C 229 x 29.8 (C 9x20) | C 229 x 19.9 (C 9x13.4) | TS 178 x 102 x 10 (TS 7x4x0.375) |
| 4.2 x 1.8 (14'x6') | 95 x 16 (3 3/4"x5/8") | C 152 x 19.3 (C 6x13) | C 203 x 17.1 (C 8x11.5) | TS 152 x 102 x 10 (TS 6x4x0.375) |
| 4.2 x 2.4 (14'x8') | 133 x 16 (5 1/4"x5/8") | C 203 x 27.9 (C 8x18.75) | C 203 x 17.1 (C 8x11.5) | TS 152 x 512 x 10 (TS 6x6x0.375) |
| 4.2 x 3.0 m (14'x10') | 165 x 16 (6 1/2"x5/8") | C 229 x 29.8 (C 9x20) | C 229 x 19.9 (C 9x13.4) | TS 178 x 127 x 13 (TS 7x5x0.500) |

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

SLOPED PROTECTION BARRIER

STANDARD PLAN METRIC

360-1

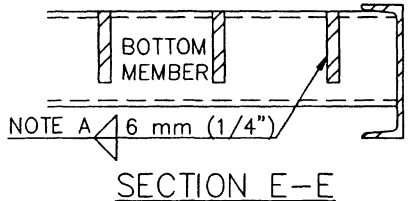
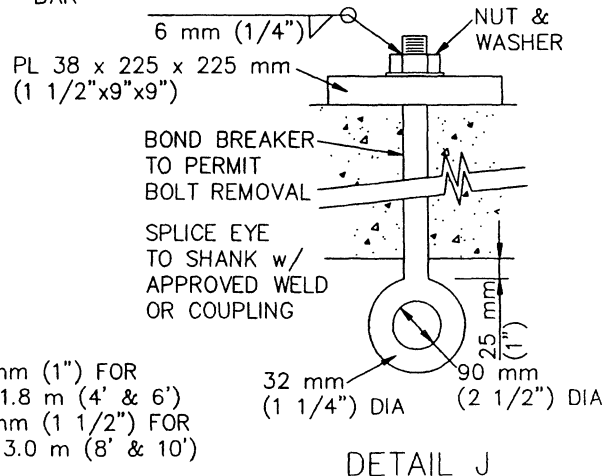
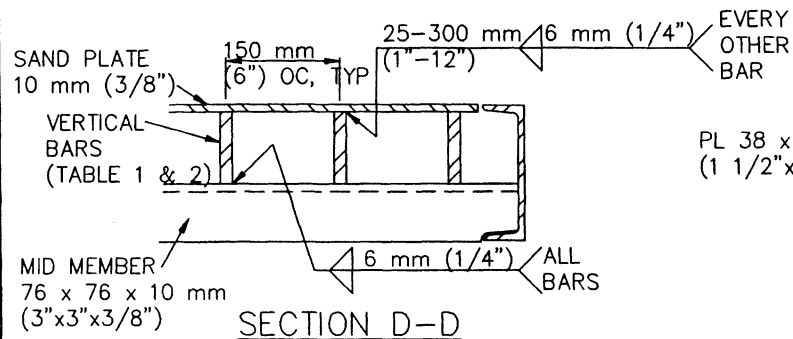
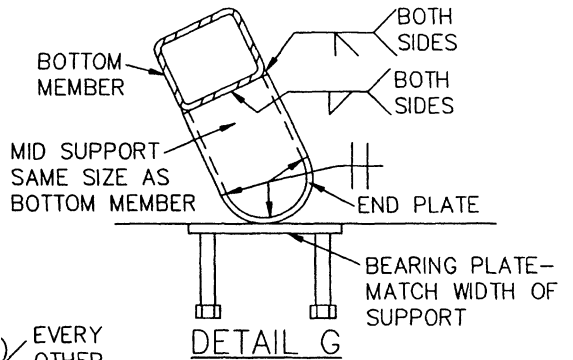
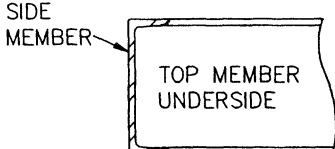
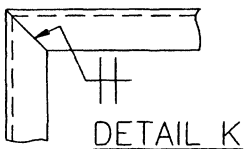
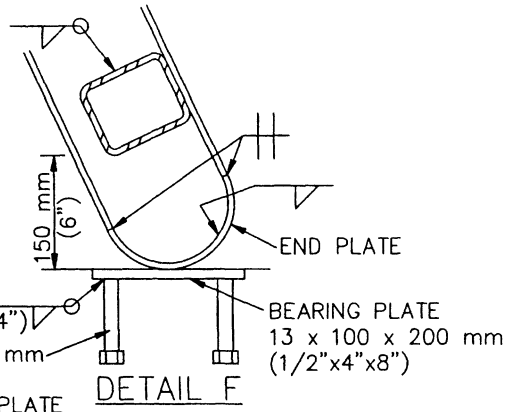
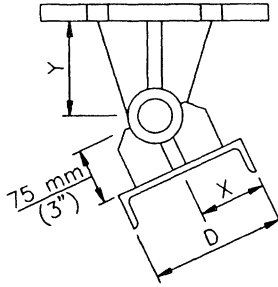
SHEET 3 OF 8

TABLE 3 - HINGES

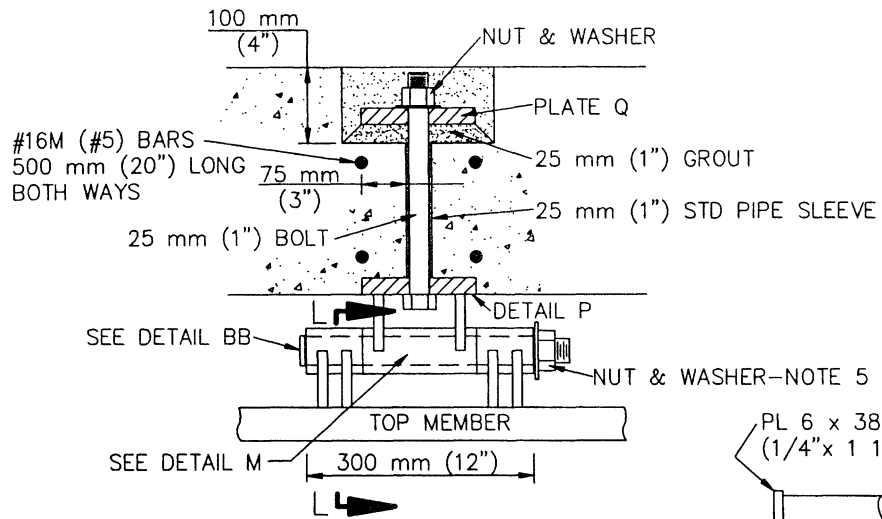
| BOX SIZE, W x H | NO. OF HINGES | HINGE SIZE |
|-----------------------|---------------|------------|
| 1.2 x 1.2 m (4'x4') | 2 | 300 (12") |
| 1.2 x 1.8 (4'x6') | 2 | 300 (12") |
| 1.2 x 2.4 (4'x8') | 2 | 300 (12") |
| 1.8 x 1.2 (6'x4') | 2 | 450 (18") |
| 1.8 x 1.8 (6'x6') | 2 | 450 (18") |
| 1.8 x 2.4 (6'x8') | 2 | 450 (18") |
| 1.8 x 3.0 (6'x10') | 2 | 450 (18") |
| 2.4 x 1.2 (8'x4') | 3 | 300 (12") |
| 2.4 x 1.8 (8'x6') | 3 | 300 (12") |
| 2.4 x 2.4 (8'x8') | 3 | 300 (12") |
| 2.4 x 3.0 (8'x10') | 3 | 300 (12") |
| 3.0 x 1.8 (10'x6') | 3 | 450 (18") |
| 3.0 x 2.4 (10'x8') | 3 | 450 (18") |
| 3.0 x 3.0 (10'x10') | 3 | 450 (18") |
| 3.6 x 1.8 (12'x6') | 3 | 600 (24") |
| 3.6 x 2.4 (12'x8') | 3 | 600 (24") |
| 3.6 x 3.0 (12'x10') | 3 | 600 (24") |
| 4.2 x 1.8 (14'x6') | 3 | 600 (24") |
| 4.2 x 2.4 (14'x8') | 3 | 600 (24") |
| 4.2 x 3.0 m (14'x10') | 3 | 600 (24") |

TABLE 4 - HINGE CLEARANCES

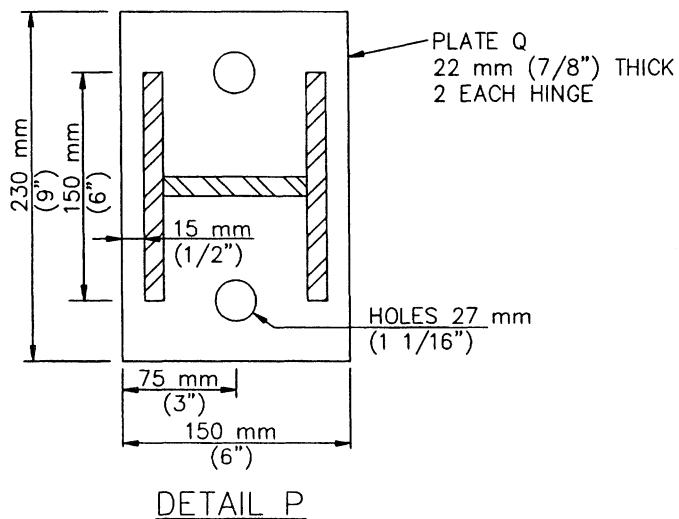
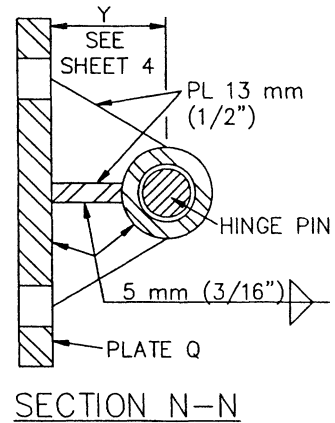
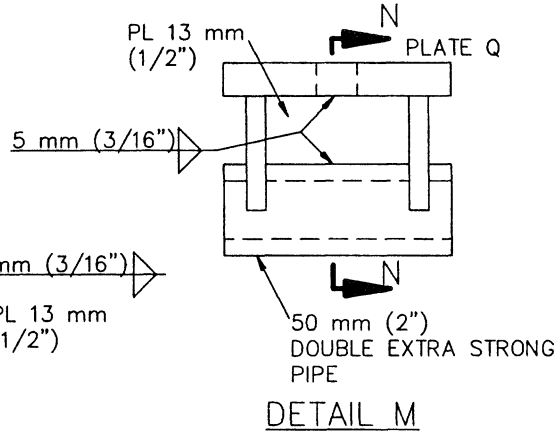
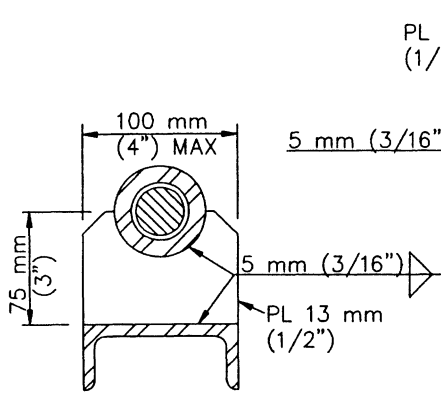
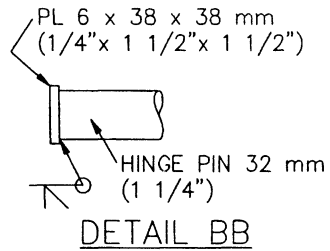
| D | X | Y |
|----------|-------------|--------------|
| 102 (4") | 50 (2") | 75 (3") |
| 127 (5") | 65 (2 1/2") | 90 (3 1/2") |
| 152 (6") | 75 (3") | 100 (4") |
| 178 (7") | 90 (3 1/2") | 115 (4 1/2") |
| 203 (8") | 100 (4") | 125 (5") |
| 229 (9") | 100 (4") | 125 (5") |

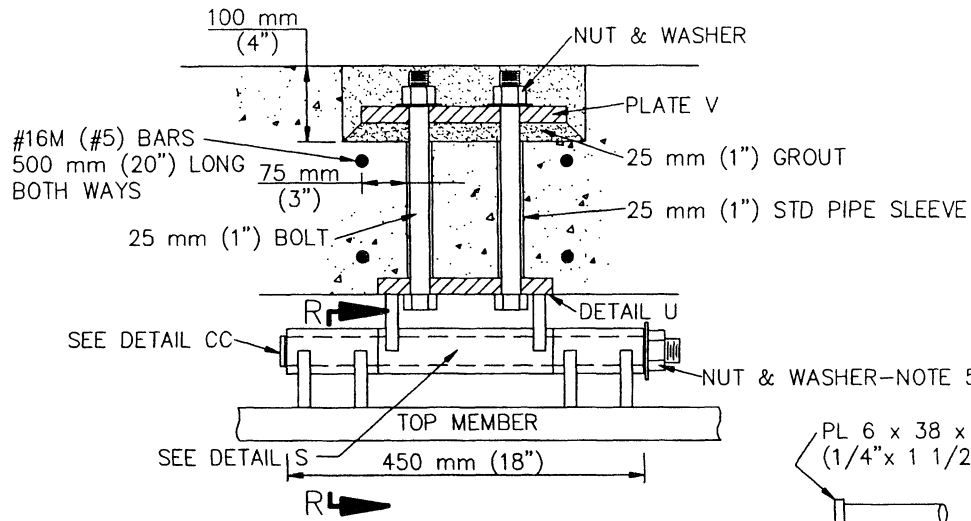


NOTE A:
 WELDS 25 mm (1") FOR
 H = 1.2 & 1.8 m (4' & 6')
 WELDS 40 mm (1 1/2") FOR
 H = 2.4 & 3.0 m (8' & 10')

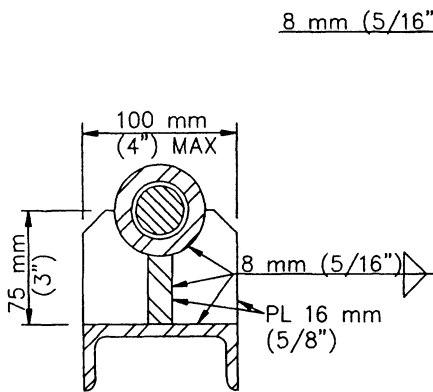
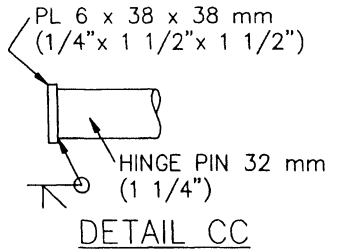


300 mm (12") HINGE

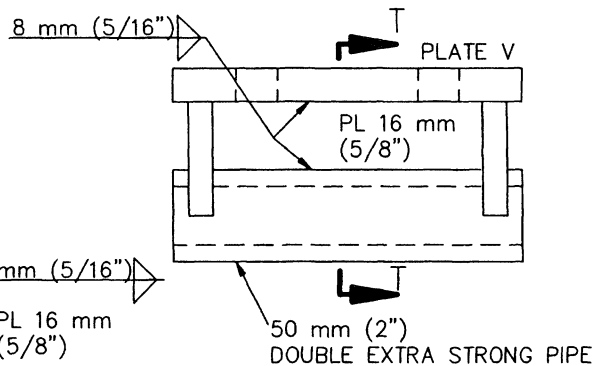




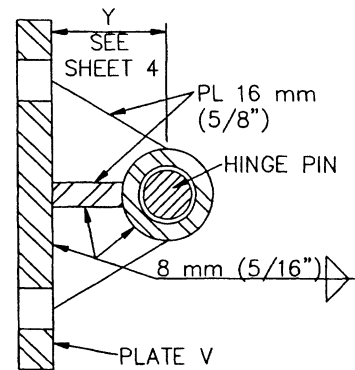
450 mm (18") HINGE



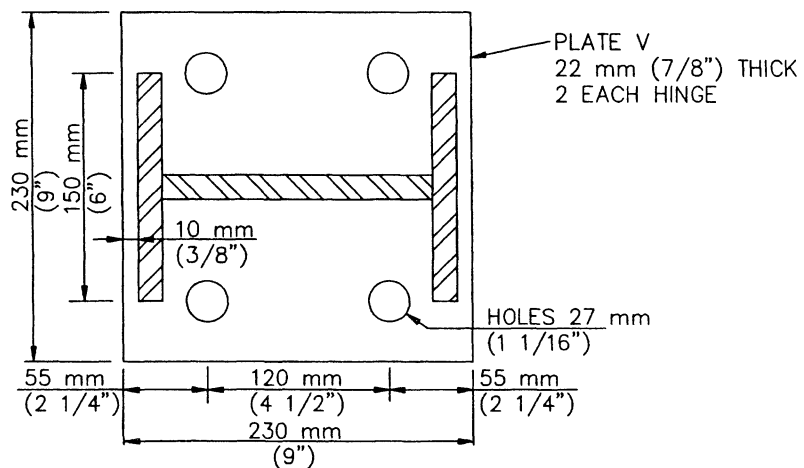
SECTION R-R



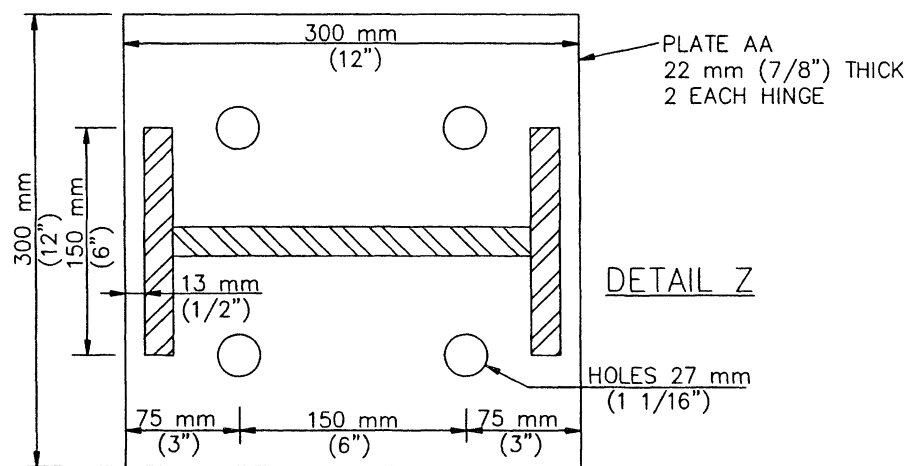
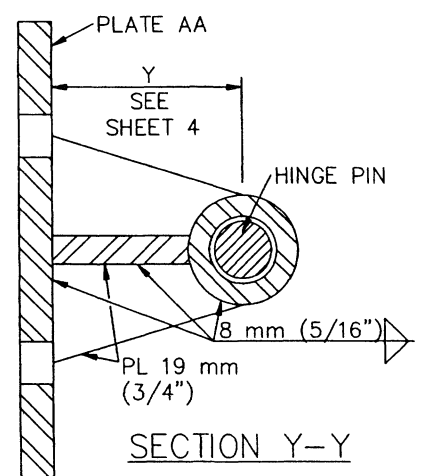
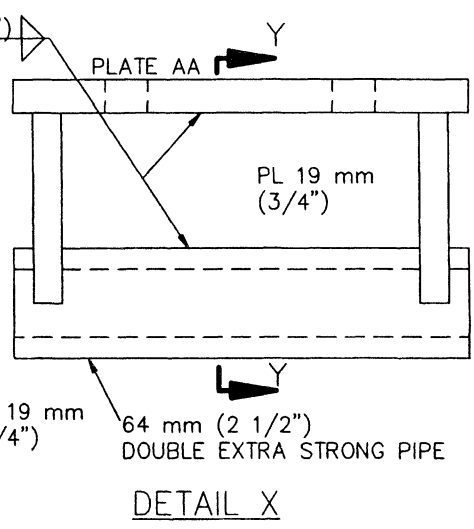
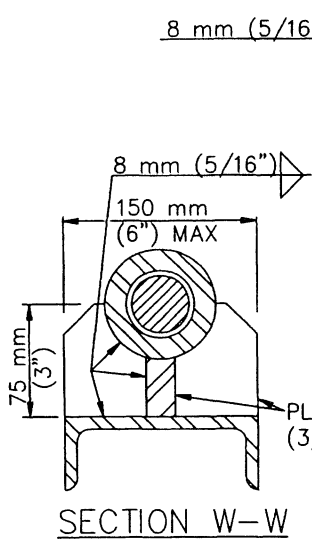
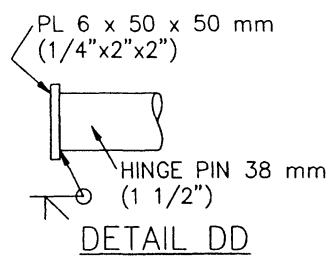
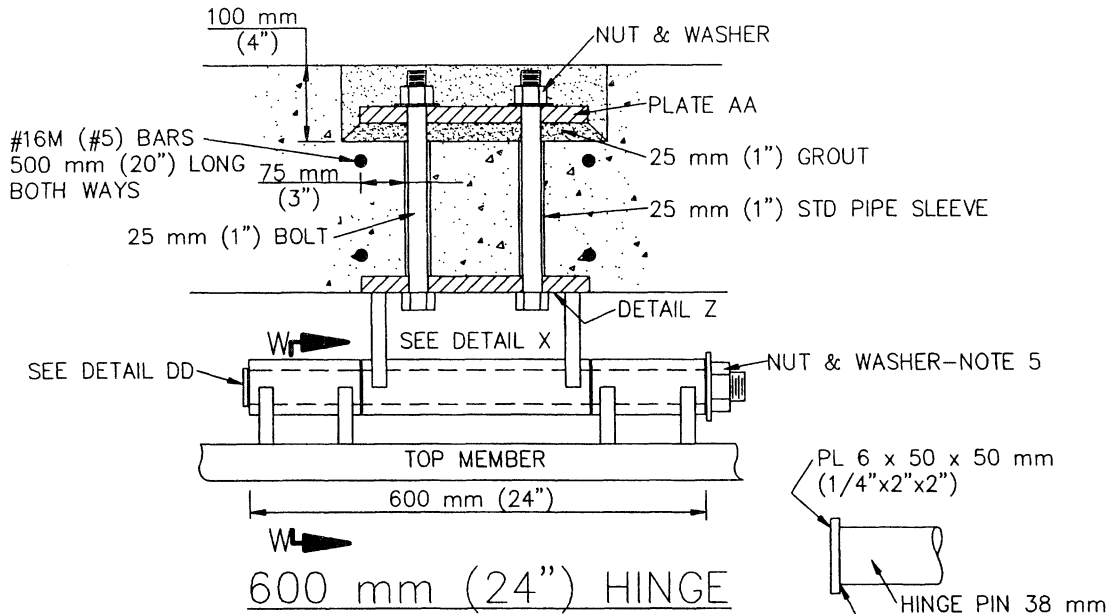
DETAIL S



SECTION T-T

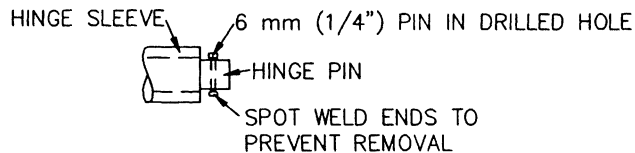


DETAIL U



NOTES:

1. SUBMIT FABRICATION ("SHOP") DRAWINGS FOR APPROVAL PER SSPWC 2-5.3.3.
2. WHENEVER THE REINFORCED CONCRETE BOX SIZE FALLS BETWEEN SIZES SHOWN IN THE TABLES, USE THE HINGE AND MEMBER SIZING FOR THE LARGER BOX SIZE SHOWN.
3. FRAME MEMBERS SHALL BE ASTM A 36 STEEL OR BETTER.
4. HINGE ASSEMBLIES AND BEARING PADS SHALL BE STAINLESS STEEL.
5. MAKE NECESSARY MODIFICATIONS TO ALLOW THE SIMPLE REMOVAL OR INSERTION OF HINGE PINS FOR INSTALLATION OR REMOVAL OF THE PROTECTION BARRIER. THREAD THE END OF HINGE PINS SO THAT NUTS AND LOCK WASHERS ARE FLUSH WITH THE HINGE SLEEVE PIPE. DAMAGE THE THREADS BEYOND THE NUT FACE TO PREVENT LOOSENING. SEE ALSO ALTERNATE DETAIL BELOW.
6. GALVANIZE FRAME MEMBERS AFTER FABRICATION.
7. MINIMIZE OR ELIMINATE WELDING AFTER GALVANIZING. REPAIR POST-FABRICATION WELDS IN ACCORDANCE WITH SSPWC 210-3.5.
8. INSTALL A MID SUPPORT FOR BARRIERS WITH THREE HINGES.
9. INSTALL SAND PLATES AT OCEAN OUTLETS.
10. DESIGN LOADS:
 - A. INLET/OUTLET BARRIER: BULKED EQUIVALENT FLUID DENSITY = 85 PCF
 - B. OCEAN OUTLET:
 1. 86 kPa (1,800 PSF) OVER SAND PLATE AREA
 2. 29 kPa (600 PSF) OVER LOWER OPEN AREA



ALTERNATE HINGE PIN ATTACHMENT

USE ONLY WHERE APPROVED

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

SLOPED PROTECTION BARRIER

STANDARD PLAN
METRIC

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SHEET 8 OF 8