# TOEWALL FOR CORRUGATED METAL PIPE

| PROJECT NO. | SHEET |
|---|---|
| | |

| | | | 90° CROSSING | | | | | | | 75° CROSSING | | | | | | | 60° CROSSING | | | | | | | 45° CROSSING | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Diameter D | H | No. Of Pipes | S | L | M | Concrete Toewall Concrete (Cu.Yds.) | Steel (lbs.) | Flexible △ Revetment (Sq.Yds.) | Sack ø Toewall (Sq.Yds.) | S | L | M | Concrete Toewall Concrete (Cu.Yds.) | Steel (lbs.) | Flexible △ Revetment (Sq.Yds.) | Sack ø Toewall (Sq.Yds.) | S | L | M | Concrete Toewall Concrete (Cu.Yds.) | Steel (lbs.) | Flexible △ Revetment (Sq.Yds.) | Sack ø Toewall (Sq.Yds.) | S | L | M | Concrete Toewall Concrete (Cu.Yds.) | Steel (lbs.) | Flexible △ Revetment (Sq.Yds.) | Sack ø Toewall (Sq.Yds.) |
| 54" | 2'–3" | 1 | – | 4'–6" | 13'–6" | 0.92 | 49 | 14 | 5 | | 4'–8" | 14'–0" | 0.95 | 50 | 14 | 6 | | 5'–2" | 15'–6" | 1.05 | 54 | 16 | 6 | | 6'–4" | 19'–0" | 1.29 | 67 | 19 | 8 |
| | | 2 | 1'–9" | 4'–6" | 19'–9" | 1.26 | 64 | 20 | 8 | 1'–10" | 4'–8" | 20'–6" | 1.31 | 66 | 21 | 8 | 2'–0" | 5'–2" | 22'–9" | 1.45 | 71 | 23 | 9 | 2'–6" | 6'–4" | 27'–11" | 1.78 | 87 | 28 | 11 |
| | | 3 | 1'–9" | 4'–6" | 26'–0" | 1.60 | 80 | 26 | 10 | 1'–10" | 4'–8" | 27'–0" | 1.67 | 82 | 27 | 10 | 2'–0" | 5'–2" | 29'–11" | 1.84 | 87 | 30 | 11 | 2'–6" | 6'–4" | 36'–9" | 2.27 | 106 | 37 | 14 |
| | | 4 | 1'–9" | 4'–6" | 32'–3" | 1.95 | 95 | 32 | 12 | 1'–10" | 4'–8" | 33'–6" | 2.03 | 97 | 34 | 12 | 2'–0" | 5'–2" | 37'–1" | 2.24 | 104 | 37 | 13 | 2'–6" | 6'–4" | 45'–7" | 2.75 | 126 | 46 | 17 |
| | | 5 | 1'–9" | 4'–6" | 38'–6" | 2.29 | 110 | 39 | 14 | 1'–10" | 4'–8" | 40'–0" | 2.39 | 113 | 40 | 14 | 2'–0" | 5'–2" | 44'–4" | 2.64 | 121 | 44 | 16 | 2'–6" | 6'–4" | 54'–6" | 3.25 | 146 | 55 | 19 |
| 60" | 2'–6" | 1 | – | 5'–0" | 15'–0" | 1.07 | 60 | 17 | 6 | | 5'–2" | 15'–6" | 1.10 | 61 | 17 | 7 | | 5'–9" | 17'–3" | 1.23 | 72 | 19 | 7 | | 7'–1" | 21'–3" | 1.51 | 82 | 24 | 9 |
| | | 2 | 1'–11" | 5'–0" | 21'–11" | 1.46 | 78 | 24 | 9 | 2'–0" | 5'–2" | 22'–8" | 1.51 | 79 | 25 | 9 | 2'–3" | 5'–9" | 25'–4" | 1.69 | 91 | 28 | 10 | 2'–9" | 7'–1" | 31'–1" | 2.08 | 108 | 35 | 12 |
| | | 3 | 1'–11" | 5'–0" | 28'–10" | 1.86 | 95 | 32 | 11 | 2'–0" | 5'–2" | 29'–10" | 1.92 | 98 | 33 | 12 | 2'–3" | 5'–9" | 33'–4" | 2.15 | 111 | 37 | 13 | 2'–9" | 7'–1" | 40'–11" | 2.64 | 134 | 45 | 16 |
| | | 4 | 1'–11" | 5'–0" | 35'–8" | 2.25 | 113 | 40 | 14 | 2'–0" | 5'–2" | 37'–0" | 2.33 | 116 | 41 | 14 | 2'–3" | 5'–9" | 41'–4" | 2.61 | 131 | 46 | 16 | 2'–9" | 7'–1" | 50'–8" | 3.19 | 160 | 56 | 19 |
| | | 5 | 1'–11" | 5'–0" | 42'–8" | 2.65 | 131 | 47 | 16 | 2'–0" | 5'–2" | 44'–3" | 2.75 | 134 | 49 | 16 | 2'–3" | 5'–9" | 49'–4" | 3.06 | 151 | 55 | 18 | 2'–9" | 7'–1" | 60'–6" | 3.76 | 186 | 67 | 23 |
| 72" | 3'–0" | 1 | | 6'–0" | 18'–0" | 1.40 | 77 | 24 | 8 | | 6'–3" | 18'–9" | 1.47 | 79 | 25 | 9 | | 6'–11" | 20'–9" | 1.62 | 84 | 28 | 10 | | 8'–6" | 25'–6" | 1.99 | 103 | 34 | 12 |
| | | 2 | 2'–0" | 6'–0" | 26'–0" | 1.88 | 97 | 32 | 11 | 2'–1" | 6'–3" | 27'–0" | 1.96 | 99 | 36 | 12 | 2'–4" | 6'–11" | 30'–0" | 2.17 | 106 | 40 | 13 | 2'–10" | 8'–6" | 36'–10" | 2.67 | 132 | 49 | 16 |
| | | 3 | 2'–0" | 6'–0" | 34'–0" | 2.36 | 117 | 45 | 14 | 2'–1" | 6'–3" | 35'–4" | 2.46 | 120 | 47 | 15 | 2'–4" | 6'–11" | 39'–3" | 2.73 | 129 | 52 | 16 | 2'–10" | 8'–6" | 48'–1" | 3.34 | 161 | 64 | 20 |
| | | 4 | 2'–0" | 6'–0" | 42'–0" | 2.84 | 137 | 56 | 17 | 2'–1" | 6'–3" | 43'–7" | 2.95 | 140 | 58 | 18 | 2'–4" | 6'–11" | 48'–7" | 3.29 | 151 | 65 | 20 | 2'–10" | 8'–6" | 59'–5" | 4.02 | 191 | 79 | 24 |
| | | 5 | 2'–0" | 6'–0" | 50'–0" | 3.32 | 157 | 67 | 20 | 2'–1" | 6'–3" | 51'–11" | 3.45 | 161 | 69 | 21 | 2'–4" | 6'–11" | 57'–10" | 3.84 | 173 | 77 | 23 | 2'–10" | 8'–6" | 70'–9" | 4.70 | 220 | 94 | 28 |
| 84" | 3'–6" | 1 | | 7'–0" | 21'–0" | 1.78 | 88 | 33 | 11 | | 7'–3" | 21'–9" | 1.85 | 97 | 34 | 11 | | 8'–1" | 24'–3" | 2.06 | 104 | 38 | 12 | | 9'–11" | 29'–9" | 2.53 | 125 | 46 | 15 |
| | | 2 | 3'–0" | 7'–0" | 31'–0" | 2.45 | 117 | 48 | 15 | 3'–1" | 7'–3" | 32'–1" | 2.53 | 126 | 50 | 15 | 3'–6" | 8'–1" | 35'–10" | 2.83 | 136 | 56 | 17 | 4'–3" | 9'–11" | 43'–11" | 3.47 | 166 | 68 | 21 |
| | | 3 | 3'–0" | 7'–0" | 41'–0" | 3.11 | 146 | 64 | 19 | 3'–1" | 7'–3" | 42'–5" | 3.21 | 156 | 66 | 19 | 3'–6" | 8'–1" | 47'–5" | 3.60 | 167 | 74 | 22 | 4'–3" | 9'–11" | 58'–0" | 4.40 | 206 | 90 | 26 |
| | | 4 | 3'–0" | 7'–0" | 51'–0" | 3.77 | 174 | 79 | 23 | 3'–1" | 7'–3" | 52'–9" | 3.90 | 185 | 82 | 23 | 3'–6" | 8'–1" | 59'–0" | 4.36 | 199 | 92 | 26 | 4'–3" | 9'–11" | 72'–2" | 5.34 | 246 | 112 | 32 |
| | | 5 | 3'–0" | 7'–0" | 61'–0" | 4.43 | 203 | 95 | 27 | 3'–1" | 7'–3" | 63'–1" | 4.58 | 214 | 98 | 27 | 3'–6" | 8'–1" | 70'–7" | 5.13 | 231 | 110 | 31 | 4'–3" | 9'–11" | 86'–4" | 6.27 | 286 | 134 | 38 |
| 96" | 4'–0" | 1 | | 8'–0" | 24'–0" | 2.20 | 117 | 43 | 13 | | 8'–3" | 24'–9" | 2.27 | 119 | 44 | 14 | | 9'–3" | 27'–9" | 2.55 | 136 | 49 | 15 | | 11'–4" | 34'–0" | 3.12 | 163 | 60 | 19 |
| | | 2 | 3'–0" | 8'–0" | 35'–0" | 2.96 | 150 | 62 | 18 | 3'–1" | 8'–3" | 36'–2" | 3.06 | 163 | 64 | 18 | 3'–6" | 9'–3" | 40'–6" | 3.43 | 173 | 72 | 21 | 4'–3" | 11'–4" | 49'–7" | 4.19 | 209 | 88 | 25 |
| | | 3 | 3'–0" | 8'–0" | 46'–0" | 3.72 | 183 | 82 | 22 | 3'–1" | 8'–3" | 47'–6" | 3.83 | 186 | 84 | 23 | 3'–6" | 9'–3" | 53'–3" | 4.31 | 209 | 95 | 26 | 4'–3" | 11'–4" | 65'–1" | 5.26 | 255 | 116 | 32 |
| | | 4 | 3'–0" | 8'–0" | 57'–0" | 4.47 | 215 | 101 | 27 | 3'–1" | 8'–3" | 58'–11" | 4.62 | 220 | 105 | 28 | 3'–6" | 9'–3" | 65'–11" | 5.18 | 246 | 117 | 31 | 4'–3" | 11'–4" | 80'–8" | 6.33 | 301 | 143 | 38 |
| | | 5 | 3'–0" | 8'–0" | 68'–0" | 5.23 | 248 | 121 | 31 | 3'–1" | 8'–3" | 70'–3" | 5.40 | 253 | 125 | 32 | 3'–6" | 9'–3" | 78'–8" | 6.05 | 282 | 140 | 36 | 4'–3" | 11'–4" | 96'–3" | 7.40 | 347 | 171 | 44 |
| 108" | 4'–6" | 1 | | 9'–0" | 27'–0" | 2.66 | 139 | 54 | 16 | | 9'–4" | 28'–0" | 2.76 | 142 | 56 | 17 | | 10'–5" | 31'–3" | 3.08 | 160 | 63 | 18 | | 12'–9" | 38'–3" | 3.77 | 190 | 77 | 23 |
| | | 2 | 3'–0" | 9'–0" | 39'–0" | 3.52 | 174 | 78 | 21 | 3'–1" | 9'–4" | 40'–5" | 3.65 | 178 | 81 | 22 | 3'–6" | 10'–5" | 45'–4" | 4.07 | 199 | 90 | 24 | 4'–3" | 12'–9" | 55'–2" | 4.98 | 239 | 110 | 30 |
| | | 3 | 3'–0" | 9'–0" | 51'–0" | 4.37 | 209 | 102 | 26 | 3'–1" | 9'–4" | 52'–9" | 4.52 | 213 | 106 | 27 | 3'–6" | 10'–5" | 59'–5" | 5.05 | 238 | 118 | 30 | 4'–3" | 12'–9" | 72'–2" | 6.19 | 289 | 144 | 37 |
| | | 4 | 3'–0" | 9'–0" | 63'–0" | 5.23 | 244 | 126 | 31 | 3'–1" | 9'–4" | 65'–2" | 5.41 | 249 | 130 | 32 | 3'–6" | 10'–5" | 72'–11" | 6.06 | 277 | 146 | 36 | 4'–3" | 12'–9" | 89'–2" | 7.40 | 338 | 178 | 44 |
| | | 5 | 3'–0" | 9'–0" | 75'–0" | 6.08 | 279 | 150 | 37 | 3'–1" | 9'–4" | 77'–7" | 6.29 | 285 | 155 | 38 | 3'–6" | 10'–5" | 86'–10" | 7.05 | 316 | 174 | 42 | 4'–3" | 12'–9" | 106'–2" | 8.62 | 387 | 212 | 52 |
| 120" | 5'–0" | 1 | | 10'–0" | 30'–0" | 3.16 | 153 | 67 | 19 | | 10'–4" | 31'–0" | 3.27 | 165 | 69 | 20 | | 11'–7" | 34'–9" | 3.67 | 177 | 77 | 22 | | 14'–2" | 42'–6" | 4.48 | 218 | 94 | 27 |
| | | 2 | 3'–0" | 10'–0" | 43'–0" | 4.12 | 190 | 96 | 25 | 3'–1" | 10'–4" | 44'–5" | 4.25 | 203 | 99 | 26 | 3'–6" | 11'–7" | 49'–9" | 4.77 | 218 | 114 | 29 | 4'–3" | 14'–2" | 60'–10" | 5.83 | 271 | 135 | 35 |
| | | 3 | 3'–0" | 10'–0" | 56'–0" | 5.08 | 228 | 124 | 30 | 3'–1" | 10'–4" | 57'–11" | 5.25 | 241 | 129 | 32 | 3'–6" | 11'–7" | 64'–10" | 5.89 | 259 | 144 | 35 | 4'–3" | 14'–2" | 79'–3" | 7.19 | 323 | 176 | 43 |
| | | 4 | 3'–0" | 10'–0" | 69'–0" | 6.04 | 265 | 153 | 36 | 3'–1" | 10'–4" | 71'–4" | 6.24 | 280 | 159 | 37 | 3'–6" | 11'–7" | 79'–10" | 6.99 | 301 | 177 | 42 | 4'–3" | 14'–2" | 97'–8" | 8.55 | 376 | 217 | 51 |
| | | 5 | 3'–0" | 10'–0" | 82'–0" | 7.00 | 302 | 182 | 42 | 3'–1" | 10'–4" | 84'–9" | 7.22 | 318 | 188 | 43 | 3'–6" | 11'–7" | 94'–11" | 8.11 | 342 | 211 | 49 | 4'–3" | 14'–2" | 116'–1" | 9.91 | 428 | 258 | 59 |

## GENERAL NOTE:

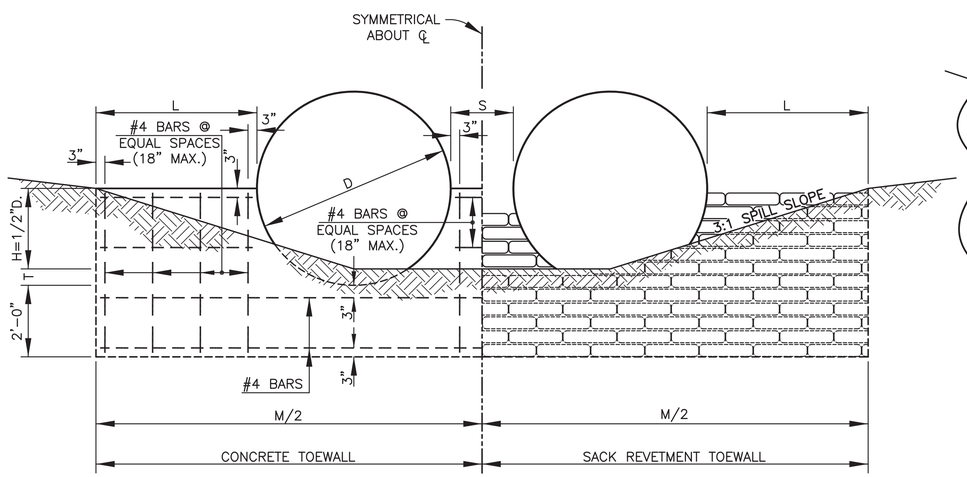
1. CONSTRUCTION SPECIFICATIONS SHALL BE THE LATEST CITY PARISH SPECIFICATIONS.
2. ALL CONCRETE TO BE 4A2000.
3. DIMENSIONS RELATING TO REINFORCING STEEL ARE TO BAR CENTERS.
4. REINFORCEMENT SHALL BE AS PER CITY PARISH SPECIFICATIONS.
5. QUANTITIES GIVEN ARE FOR ONE TOEWALL.
6. TOEWALL REQUIRED ON UPSTREAM AND DOWNSTREAM END OF PIPES UNLESS OTHERWISE NOTED ON PLANS.

* REFERS TO CLASS III PIPE, WALL B.

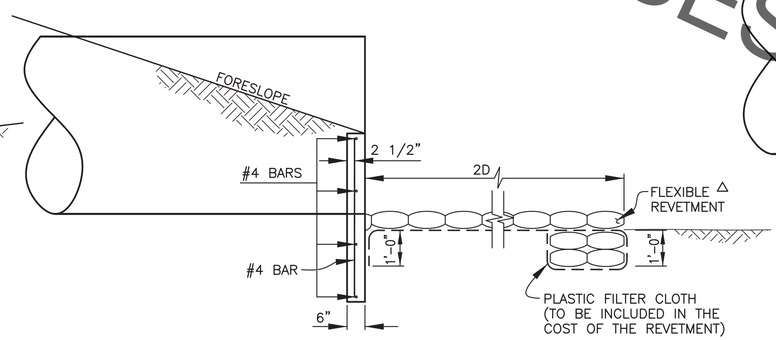
△ STONE ALTERNATE TO BE 10" THICK. SEE STD. SPECIFICATIONS, SECTION 1001–11 FOR GRADATION OF STONE.

Ø QUANTITY BASED ON SURFACE AREA OF TOEWALL FACE.

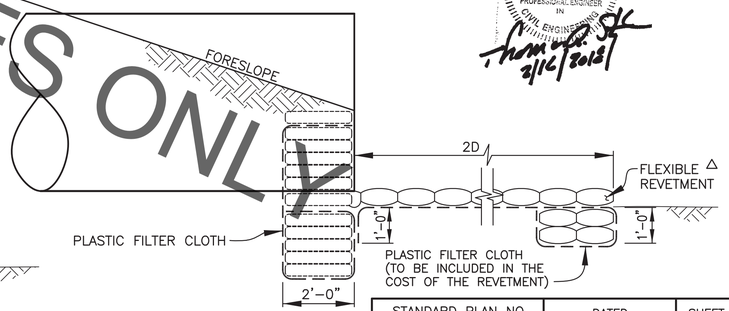
FOR INFORMATIONAL PURPOSES ONLY




ELEVATION VIEW
Scale: 1/2"=1'–0"




PROFILE VIEW
SHOWING CONCRETE TOEWALL
Scale: 1/2"=1'–0"




PROFILE VIEW
SHOWING SACK REVETMENT TOEWALL
Scale: 1/2"=1'–0"

STATE OF LOUISIANA
THOMAS A. STEPHENS
LICENSE NO. 19437
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
2/12/2018

| DATE | DESCRIPTION REVISIONS | BY |
|---|---|---|
| | | |

| STANDARD PLAN NO. | DATED | SHEET NO. |
|---|---|---|
| 704–04 | FEBRUARY 4, 2008 | 1 OF 1 |

SACKED CONCRETE TOEWALL
(CORRUGATED METAL PIPE)
TOE WALL FOR 54" THRU 120" CMP

ENGINEERING DIVISION
DEPARTMENT OF PUBLIC WORKS
CITY OF BATON ROUGE & PARISH OF EAST BATON ROUGE

| DESIGNED | DRAWN | CHECKED | APPROVED |
|---|---|---|---|
| R. ELLIS | G. VANNICE | R. ELLIS | T. STEPHENS |