# TABLE NO. 1 ROUND PIPE - CONCRETE - CORRUGATED STEEL - CORRUGATED ALUMINUM

MINIMUM CLASS OF CONCRETE OR MINIMUM THICKNESS OF STEEL AND ALUMINUM

| PIPE DIAMETER (INCHES) | TYPE | MINIMUM COVER (INCHES) | HEIGHT OF FILL IN FEET ABOVE TOP OF PIPE | | | | | | | | | | | | PIPE DIAMETER (INCHES) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 - 10 | 10 - 15 | 15 - 20 | 20 - 25 | 25 - 30 | 30 - 35 | 35 - 40 | 40 - 50 | 50 - 60 | 60 - 70 | 70 - 80 | 80 - 90 | |
| 12 | CONCRETE | 12 | III | III | IV | V | V | V | V | V | V | V | V | | 12 |
| | STEEL 1 | 12 | .064 | .064 | .064 | .064 | .064 | .064 | .064 | .064 | .064 | .064 | .064 | .064 | |
| | ALUM 1 | 12 | .060 | .060 | .060 | .060 | .075 | .075 | .075 | .075 | .075 | .075 | .075 | .075 | |
| 15 | CONCRETE | 12 | III | III | IV | V | V | V | V | V | V | V | V | | 15 |
| | STEEL 1 | 12 | .064 | .064 | .064 | .064 | .064 | .064 | .064 | .064 | .064 | .064 | .064 | .064 | |
| | ALUM 1 | 12 | .060 | .060 | .060 | .060 | .075 | .075 | .075 | .075 | .075 | .075 | .075 | .105 | |
| 18 | CONCRETE | 12 | III | III | IV | V | V | V | V | V | V | V | V | | 18 |
| | STEEL 1 | 12 | .064 | .064 | .064 | .064 | .064 | .064 | .064 | .064 | .064 | .064 | .064 | .064 | |
| | ALUM 1 | 12 | .060 | .060 | .060 | .060 | .075 | .075 | .075 | .075 | .105 | .105 | .105 | .105 | |
| 24 | CONCRETE | 12 | III | III | IV | V | V | V | V | V | V | V | V | | 24 |
| | STEEL 1 | 12 | .064 | .064 | .064 | .064 | .064 | .064 | .064 | .064 | .064 | .064 | .079 | .079 | |
| | ALUM 1 | 12 | .060 | .060 | .060 | .075 | .075 | .075 | .075 | .105 | .105 | .105 | .105 | | |
| 30 | CONCRETE | 12 | III | III | IV | V | V | V | V | V | V | V | V | | 30 |
| | STEEL 1 | 12 | .064 | .064 | .064 | .064 | .064 | .064 | .064 | .064 | .079 | .079 | .109 | .109 | |
| | ALUM 1 | 12 | .075 | .075 | .075 | .075 | .075 | .105 | .105 | .105 | .135 | .135 | | | |
| 36 | CONCRETE | 12 | III | III | IV | V | V | V | V | V | V | V | V | | 36 |
| | STEEL 1 | 12 | .064 | .064 | .064 | .064 | .064 | .064 | .064 | .079 | .079 | .109 | .109 | .138 | |
| | STEEL 2 | 12 | .064 | .064 | .064 | .064 | .064 | .064 | .064 | .064 | .079 | .079 | .109 | .109 | |
| | ALUM 1 | 12 | .075 | .105 | .105 | .105 | .105 | .105 | .135 | .135 | .135 | .135 | | | |
| | ALUM 2 | 12 | .060 | .060 | .060 | .060 | .075 | .075 | .105 | .105 | .105 | .135 | | | |
| 42 | CONCRETE | 12 | III | III | IV | V | V | V | V | V | V | V | V | | 42 |
| | STEEL 1 | 12 | .064 | .064 | .064 | .064 | .064 | .064 | .064 | .079 | .109 | .109 | .138 | .138 | |
| | STEEL 2 | 12 | .064 | .064 | .064 | .064 | .064 | .064 | .064 | .079 | .109 | .109 | .109 | .138 | |
| | ALUM 1 | 12 | .105 | .105 | .135 | .135 | .164 | .164 | | | | | | | |
| | ALUM 2 | 12 | .060 | .060 | .060 | .075 | .075 | .105 | .105 | .105 | .135 | .135 | | | |
| 48 | CONCRETE | 12 | III | III | IV | V | V | V | V | V | V | V | V | | 48 |
| | STEEL 1 | 12 | .064 | .064 | .064 | .064 | .064 | .064 | .079 | .109 | .109 | .138 | .138 | .168 | |
| | STEEL 2 | 12 | .064 | .064 | .064 | .064 | .064 | .064 | .064 | .079 | .109 | .109 | .138 | .138 | |
| | ALUM 1 | 12 | .105 | .105 | .135 | .164 | .164 | .164 | | | | | | | |
| | ALUM 2 | 12 | .060 | .060 | .060 | .075 | .075 | .105 | .105 | .135 | .135 | .164 | .164 | | |
| 54 | CONCRETE | 12 | III | III | IV | V | V | V | V | V | V | V | V | | 54 |
| | STEEL 1 | 12 | .079 | .079 | .079 | .079 | .079 | .079 | .079 | .109 | .138 | .138 | .168 | | |
| | STEEL 2 | 12 | .064 | .064 | .064 | .064 | .064 | .064 | .079 | .109 | .109 | .138 | .138 | .168 | |
| | ALUM 1 | 15 | .105 | .105 | .135 | .164 | .164 | .164 | | | | | | | |
| | ALUM 2 | 15 | .060 | .060 | .060 | .075 | .075 | .105 | .135 | .135 | .164 | .164 | | | |
| 60 | CONCRETE | 12 | III | III | IV | V | V | V | V | V | V | V | V | | 60 |
| | STEEL 1 | 12 | .109 | .109 | .109 | .109 | .109 | .109 | .109 | .109 | .138 | .168 | | | |
| | STEEL 2 | 12 | .064 | .064 | .064 | .064 | .064 | .079 | .079 | .109 | .138 | .138 | .168 | .168 | |
| | ALUM 1 | 15 | .135 | .135 | .164 | .164 | .164 | .164 | | | | | | | |
| | ALUM 2 | 15 | .060 | .060 | .075 | .105 | .105 | .135 | .135 | .164 | .164 | | | | |
| 66 | CONCRETE | 12 | III | III | IV | V | V | V | V | V | V | V | | | 66 |
| | STEEL 1 | 12 | .138 | .138 | .138 | .138 | .138 | .138 | .138 | .138 | .168 | .168 | | | |
| | STEEL 2 | 12 | .064 | .064 | .064 | .064 | .064 | .079 | .109 | .109 | .138 | .168 | .168 | | |
| | ALUM 1 | 18 | .164 | .164 | .164 | .164 | .164 | | | | | | | | |
| | ALUM 2 | 18 | .075 | .075 | .105 | .105 | .135 | .135 | .164 | .164 | | | | | |
| 72 | CONCRETE | 12 | III | III | IV | V | V | V | V | V | V | V | | | 72 |
| | STEEL 1 | 12 | .138 | .138 | .138 | .138 | .138 | .138 | .138 | .138 | .168 | | | | |
| | STEEL 2 | 12 | .064 | .064 | .064 | .064 | .079 | .109 | .109 | .138 | .138 | .168 | | | |
| | ALUM 1 | 18 | .164 | .164 | .164 | .164 | .164 | | | | | | | | |
| | ALUM 2 | 18 | .075 | .075 | .105 | .105 | .135 | .164 | .164 | .164 | | | | | |
| 78 | CONCRETE | 12 | III | III | IV | V | V | V | V | V | V | | | | 78 |
| | STEEL 1 | 15 | .168 | .168 | .168 | .168 | .168 | .168 | .168 | .168 | | | | | |
| | STEEL 2 | 15 | .064 | .064 | .064 | .064 | .079 | .109 | .109 | .138 | .168 | .168 | | | |
| | ALUM 2 | 21 | .075 | .075 | .105 | .105 | .135 | .164 | .164 | | | | | | |
| 84 | CONCRETE | 12 | III | III | IV | V | V | V | V | V | V | | | | 84 |
| | STEEL 1 | 15 | .168 | .168 | .168 | .168 | .168 | .168 | .168 | .168 | | | | | |
| | STEEL 2 | 15 | .064 | .064 | .064 | .079 | .079 | .109 | .109 | .138 | .168 | | | | |
| | ALUM 2 | 21 | .105 | .105 | .105 | .135 | .135 | .164 | .164 | | | | | | |
| 90 | CONCRETE | 12 | III | III | | | | | | | | | | | 90 |
| | STEEL 2 | 18 | .064 | .064 | .064 | .079 | .109 | .109 | .138 | .138 | .168 | | | | |
| | ALUM 2 | 24 | .105 | .105 | .135 | .135 | .164 | | | | | | | | |
| 96 | CONCRETE | 12 | III | III | | | | | | | | | | | 96 |
| | STEEL 2 | 18 | .079 | .079 | .079 | .079 | .109 | .109 | .138 | .168 | | | | | |
| | ALUM 2 | 24 | .105 | .105 | .135 | .135 | .164 | | | | | | | | |
| 102 | CONCRETE | 12 | III | III | | | | | | | | | | | 102 |
| | STEEL 2 | 24 | .079 | .079 | .079 | .109 | .109 | .138 | .138 | .168 | | | | | |
| | ALUM 2 | 24 | .135 | .164 | .164 | | | | | | | | | | |
| 108 | CONCRETE | 12 | III | III | | | | | | | | | | | 108 |
| | STEEL 2 | 24 | .109 | .109 | .109 | .109 | .109 | .138 | .138 | .168 | | | | | |
| | ALUM 2 | 24 | .135 | .164 | | | | | | | | | | | |
| 114 | CONCRETE | | | | | | | | | | | | | | 114 |
| | STEEL 2 | 24 | .109 | .109 | .109 | .109 | .109 | .138 | .168 | | | | | | |
| | ALUM 2 | 24 | .164 | .164 | | | | | | | | | | | |
| 120 | CONCRETE | | | | | | | | | | | | | | 120 |
| | STEEL 2 | 24 | .109 | .109 | .109 | .109 | .138 | .138 | .168 | | | | | | |
| | ALUM 2 | 24 | .164 | .164 | | | | | | | | | | | |

IMPERFECT BACKFILL IS NOT REQUIRED FOR CONDTIONS SHOWN ON THE LEFT SIDE OF THE HEAVY LINE. USE NORMAL BACKFILL.

FOR CONDITIONS TO THE RIGHT OF THE HEAVY LINE, CLASS V CONCRETE PIPE REQUIRES IMPERFECT BACKFILL ACCORDING TO DETAIL "A" OR "B" ON SHEET 1 OF 3.

| TABLE NO.3-(INFORMATION ONLY) | | |
|---|---|---|
| | COR. METAL THICKNESS | EQUIVALENT GAGE |
| STEEL | .064 | 16 |
| | 0.079 | 14 |
| | 0.109 | 12 |
| | 0.138 | 10 |
| | 0.168 | 8 |
| ALUMINUM | 0.060 | 16 |
| | 0.075 | 14 |
| | 0.105 | 12 |
| | 0.135 | 10 |
| | 0.164 | 8 |

STEEL 1 OR ALUM 1 DENOTES CORRUGATION PROFILE 2 2/3" X 1/2"

STEEL 2 OR ALUM 2 DENOTES CORRUGATION PROFILE 3" X 1" (OR 5" X 1" FOR STEEL PIPE ONLY)

ALL STEEL AND ALUMINUM PIPE SHALL BE LOCK-SEAM OR WELDED-SEAM (HELICAL) CONSTRUCTION.

MINIMUM COVER VALUES APPLY TO HS-20 LIVE LOAD. MINIMUM COVER NEEDED FOR CONSTRUCTION VEHICLES MAY BE GREATER AND IS THE RESPONSIBILITY OF THE CONTRACTOR.

TRENCH CONSTRUCTION IS REQUIRED FOR CONDITIONS ON BOTH SIDES OF HEAVY LINE. SEE SHEET 1 OF 3.

FOR CONDITIONS TO RIGHT OF HEAVY LINE, CONCRETE PIPE REQUIRES IMPERFECT BACKFILL ACCORDING TO SPECIFICATIONS AND THIS STANDARD.

TABLE VALUES FOR ALUMINUM CORRUGATED PIPE (OR ALUMINUM SPIRAL RIB PIPE) ARE COMPUTED BASED UPON ALCLAD ALLOY 3004-H34 HAVING MINIMUM YIELD STRENGTH, fy=24,000 PSI. IF ALUMINUM PIPE IS OTHERWISE FURNISHED AS 3004-H32 (fy=20,000 PSI), THE TABLE NO. 1 ALLOWABLE FILL HEIGHTS SHALL BE ADJUSTED AS FOLLOWS:

A. ALL MINIMUM COVER VALUES SHALL BE INCREASED BY 15 PERCENT. (EXAMPLE: 12 INCHES BECOMES 13.8 INCHES)

B. ALL HEIGHT OF FILL VALUES SHALL BE DECREASED BY 15 PERCENT. (EXAMPLE: 35-40 FEET BECOMES 29.7-34.0 FEET)

| BY | REVISION | DATE |
|---|---|---|
| GJP | GEN. REV. NOTES | 9-26-01 |
| GJP | ADDED SEAM CONST. NOTE | 3-9-99 |

DES. ___ DRN. ___ TRA. ___ CHK. ___

NO SCALE

STANDARD

CONCRETE & METAL PIPE CULVERTS

SHEET 2 OF 3

(FILL HEIGHTS FOR CONCRETE & CORRUGATED METAL PIPE)

(SUBMITTED) STATE AIRPORT OPERATIONS ENGR.

(APPROVED) CHIEF ENGINEER

OCTOBER 21, 1998

NUMBER 1030D

DEPARTMENT OF TRANSPORTATION

STATE OF GEORGIA

NUMBER 41-004

| STATE | PROJECT NUMBER | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|
| GA. | P.I. 0010363 | 82 | 90 |