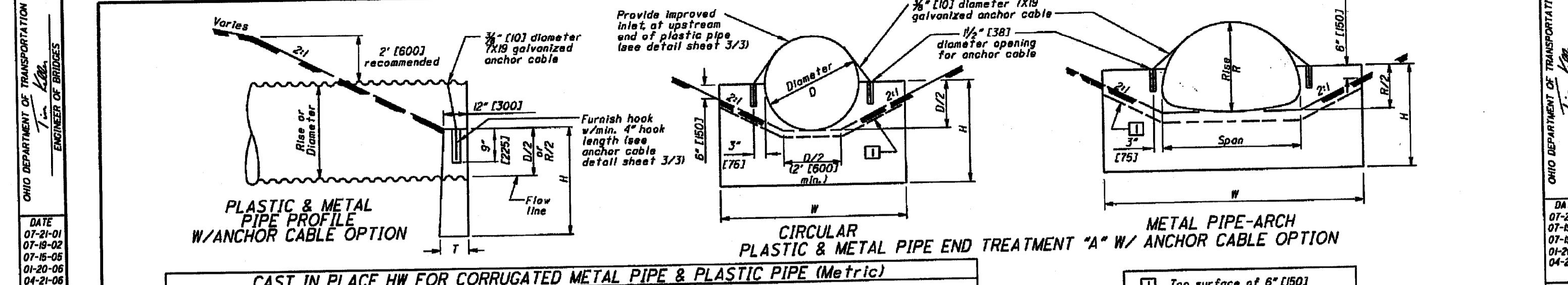


CAST IN PLACE HW FOR CORRUGATED METAL PIPE & PLASTIC PIPE (English)

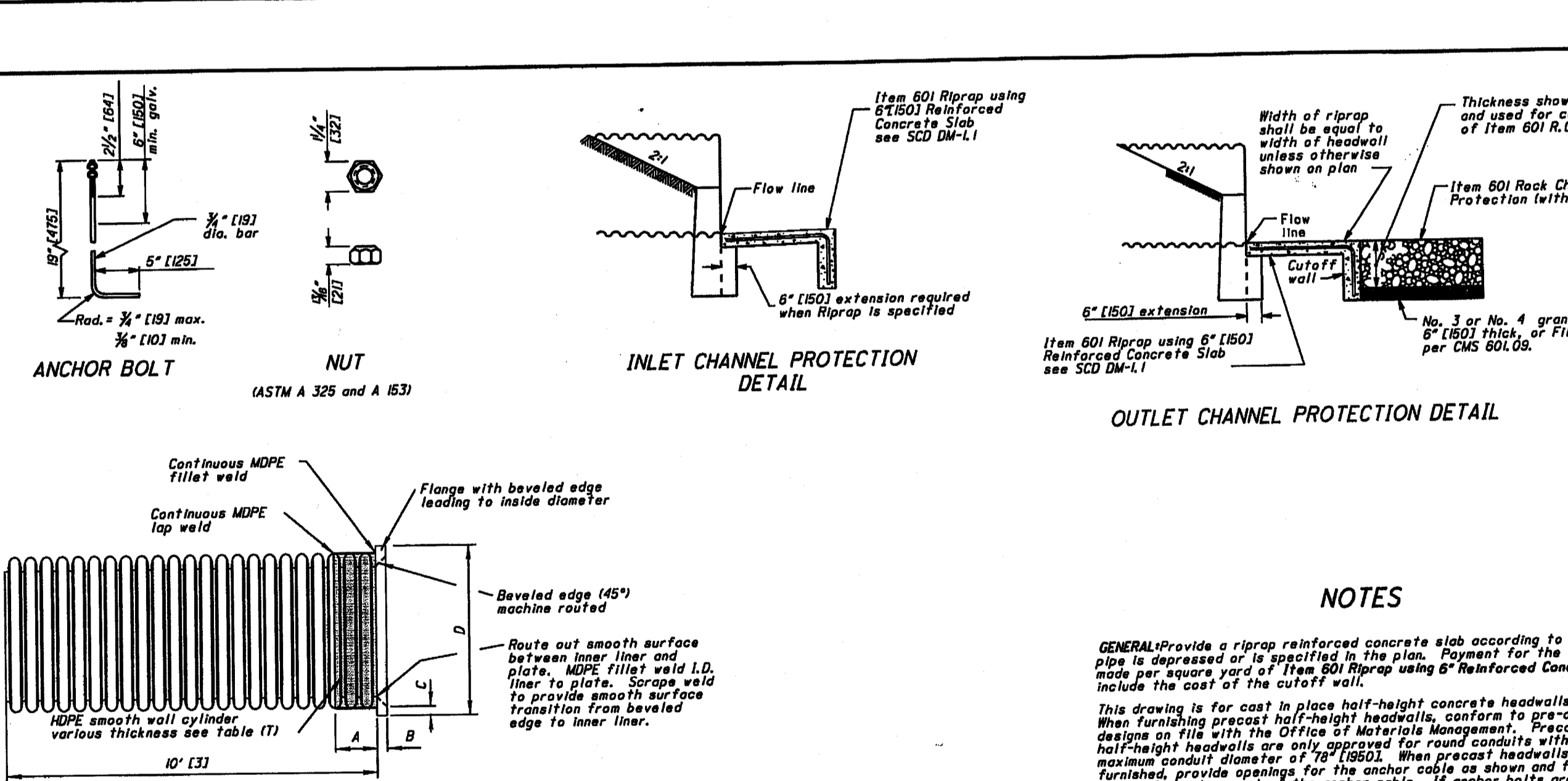
| CIRCULAR |       |       |                | PIPE ARCH |       |       |       | PIPE ARCH |                |      |      | PIPE ARCH |       |     |                |      |       |       |       |     |                |    |    |        |       |     |      |
|----------|-------|-------|----------------|-----------|-------|-------|-------|-----------|----------------|------|------|-----------|-------|-----|----------------|------|-------|-------|-------|-----|----------------|----|----|--------|-------|-----|------|
| D        | H     | T     | CONC. cu. yds. | SPAN      | RISE  | W     | H     | T         | CONC. cu. yds. | SPAN | RISE | W         | H     | T   | CONC. cu. yds. | SPAN | RISE  | W     | H     | T   | CONC. cu. yds. |    |    |        |       |     |      |
| 12"      | 2'-0" | 3'-0" | 0.21           | 17'       | 1'-0" | 2'-0" | 2'-0" | 12"       | 0.31           | 8'   | 6"   | 12'-4"    | 5'-5" | 15" | 2.14           | 17'  | 1'-0" | 2'-0" | 2'-0" | 12" | 0.31           | 8' | 6" | 12'-4" | 5'-5" | 15" | 2.14 |

Channel configuration for pipe sizes between end treatment "A" and end treatment "B" is determined by 2:1 slopes passing through a point 6" (150) below the top and at each side of the headwall. For end treatment "B", 2:1 slopes are tangent to pipe.



CAST IN PLACE HW FOR CORRUGATED METAL PIPE & PLASTIC PIPE (Metric)

| CIRCULAR |     |     |                      | PIPE ARCH |      |     |     | PIPE ARCH |                      |      |      | PIPE ARCH |     |    |                      |      |      |     |     |    |                      |   |     |      |     |    |      |
|----------|-----|-----|----------------------|-----------|------|-----|-----|-----------|----------------------|------|------|-----------|-----|----|----------------------|------|------|-----|-----|----|----------------------|---|-----|------|-----|----|------|
| D        | H   | T   | CONC. m <sup>3</sup> | SPAN      | RISE | W   | H   | T         | CONC. m <sup>3</sup> | SPAN | RISE | W         | H   | T  | CONC. m <sup>3</sup> | SPAN | RISE | W   | H   | T  | CONC. m <sup>3</sup> |   |     |      |     |    |      |
| 300      | 600 | 900 | 0.21                 | 17        | 1.0  | 2.0 | 2.0 | 12        | 0.31                 | 8    | 0.6  | 12.4      | 5.5 | 15 | 2.14                 | 17   | 1.0  | 2.0 | 2.0 | 12 | 0.31                 | 8 | 0.6 | 12.4 | 5.5 | 15 | 2.14 |



HOPE IMPROVED INLET

| PIPE SIZE | A         | B        | C        | D         | T        |
|-----------|-----------|----------|----------|-----------|----------|
| 12 in.    | 6.00 in.  | 0.50 in. | 1.00 in. | 15.15 in. | 0.13 in. |
| 15 in.    | 6.00 in.  | 0.63 in. | 1.26 in. | 18.73 in. | 0.19 in. |
| 18 in.    | 6.00 in.  | 0.75 in. | 1.50 in. | 22.57 in. | 0.25 in. |
| 24 in.    | 8.00 in.  | 1.00 in. | 2.00 in. | 30.08 in. | 0.25 in. |
| 30 in.    | 8.00 in.  | 1.25 in. | 2.50 in. | 37.50 in. | 0.38 in. |
| 36 in.    | 10.00 in. | 1.50 in. | 3.00 in. | 45.00 in. | 0.38 in. |
| 42 in.    | 10.00 in. | 1.75 in. | 3.50 in. | 51.90 in. | 0.38 in. |
| 48 in.    | 10.00 in. | 2.00 in. | 4.00 in. | 59.60 in. | 0.38 in. |
| 60 in.    | 12.00 in. | 2.50 in. | 5.00 in. | 74.50 in. | 0.38 in. |

ANCHOR CABLE DETAIL

GENERAL: Provide a riprap reinforced concrete slab according to SCD DM-11 if the pipe is depressed or is specified in the plan.

ANCHOR BOLTS: Bolts as detailed for anchoring both ends of metal pipe shall meet ASTM A 307. The top 6" (150) min. of bolt shall be galvanized according to ASTM A 653. Cost of anchors shall be included in the unit price bid per Foot (Meter) of Item 603.

HEADWALLS: Headwall concrete shall be Class C. Concrete quantities are based on headwall without the 6" (150) extension under the channel protection.

ANCHOR CABLES: Anchor cable as detailed for anchoring both ends of metal or plastic pipe shall meet ASTM A 603. Wire rope clip shall be galvanized according to ASTM A 653. Cost of anchor cable and wire rope clip shall be included in the unit price bid per Foot (Meter) of Item 603.

IMPROVED INLET FOR HDPE PIPE: Furnish improved inlet at upstream end of culverts using plastic pipe.



OHIO DEPARTMENT OF TRANSPORTATION  
ENGINEER OF BRIDGES

DATE: 07-21-04  
07-29-05  
07-18-05  
08-20-06  
04-29-08

OFFICE OF ENGINEERING

STANDARD HYDRAULIC CONSTRUCTION DRAWING  
HALF-HEIGHT HEADWALLS FOR CORRUGATED METAL PIPE & PLASTIC PIPE

NUMBER: HW-2.1

1 / 3

OHIO DEPARTMENT OF TRANSPORTATION  
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STANDARD HYDRAULIC CONSTRUCTION DRAWING  
HALF-HEIGHT HEADWALLS FOR CORRUGATED METAL PIPE & PLASTIC PIPE

NUMBER: HW-2.1

2 / 3

PULTE HOMES OF OHIO, LLC  
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MEDINA, OH 44256  
REP.: STAN KATIANIC

BENTLEY RESERVE  
465 S. HAMELTOWN RD.  
COPLEY TOWNSHIP, OHIO

DRAWN BY: T.G.W.

DATE: JAN. 4, 2011

PROJECT NO. 36048D

DRAWING NO. SD-20B

GBC DESIGN, INC.  
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