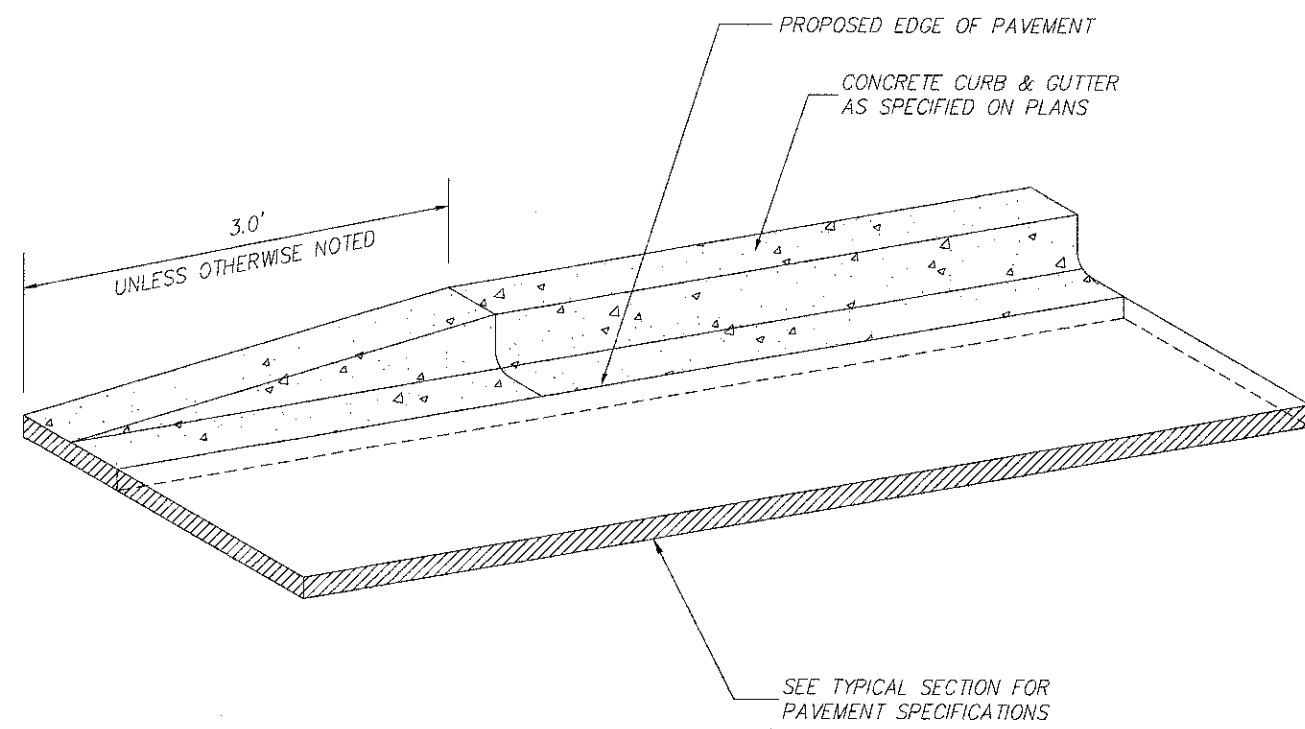
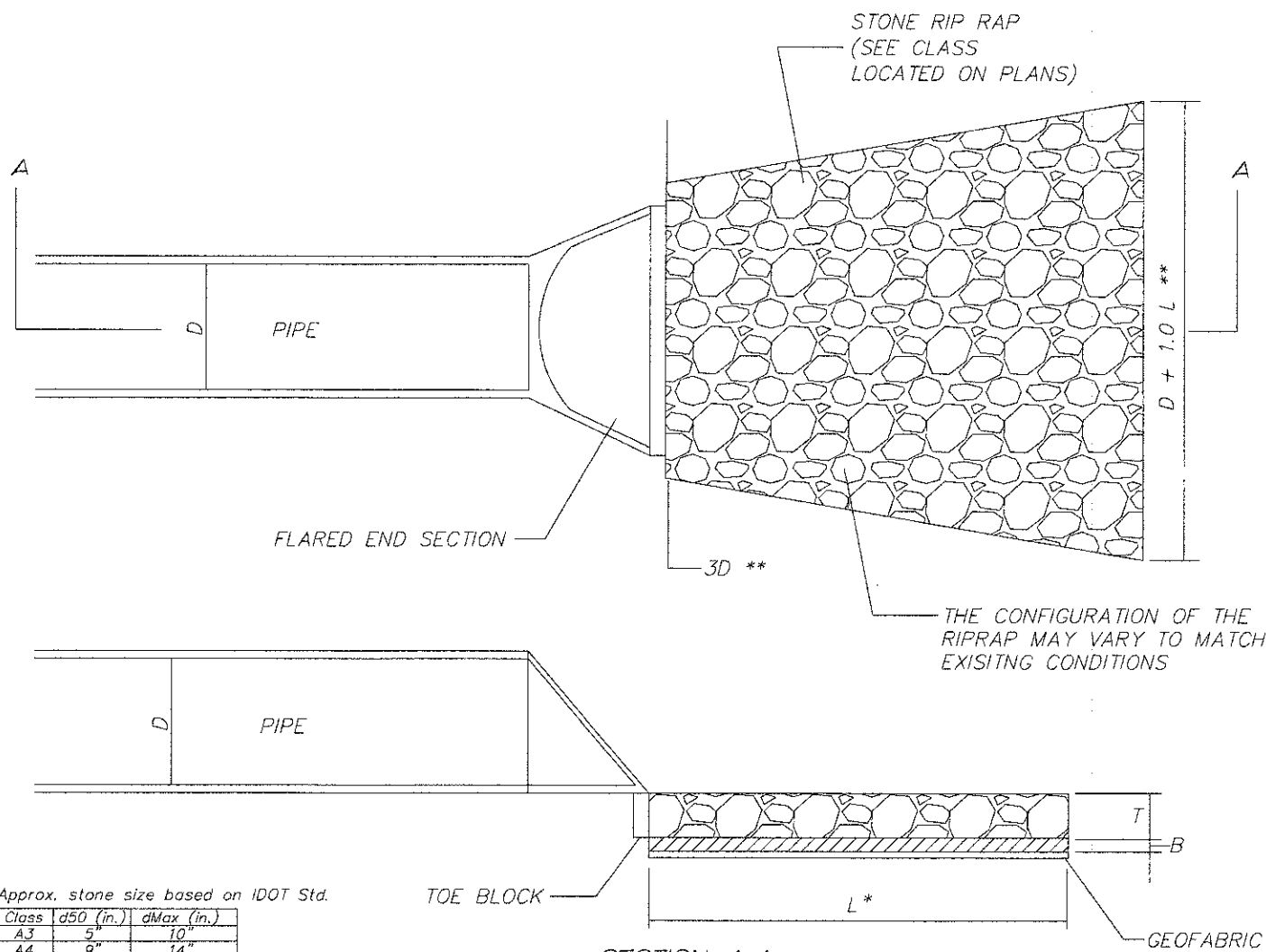


**STONE RIP RAP DETAIL**  
FOR ANY TAILWATER CONDITION

**BULLNOSE CURB DETAIL**



Approx. stone size based on IDOT Std.

| Class | d50 (in.) | dMax (in.) |
|-------|-----------|------------|
| A3    | 5"        | 10"        |
| A4    | 9"        | 14"        |
| A5    | 12"       | 19"        |
| A6    | 15"       | 22"        |

**SECTION A-A**

- \* WHEN "L" EXTENDS BEYOND BACK OF DITCH, RIPRAP SHALL TERMINATE AT BACK EDGE OF THE DITCH, THE PROPOSED QUANTITY SHALL NOT CHANGE.
- \*\* NOTE: WHEN OUTLETING TO A DEFINED CHANNEL, WIDTH AND AREA OF APRON SHALL CONFORM TO TOP OF CHANNEL BANK

| LOW VELOCITY (<5fps) |                             |                 |                           |                 |
|----------------------|-----------------------------|-----------------|---------------------------|-----------------|
| D                    | T                           | L               | B                         | -               |
| Pipe Size in.        | Rock Class (Min. Thickness) | Length of Apron | Bedding Class (Thickness) | Quantity SY. ** |
| 10"                  | A2 (6")                     | 10'             | -                         | 8               |
| 12"                  | A3 (15")                    | 12'             | -                         | 11              |
| 15"                  | A3 (15")                    | 13'             | -                         | 13              |
| 18"                  | A3 (15")                    | 14'             | -                         | 16              |
| 21"                  | A3 (15")                    | 15'             | -                         | 18              |
| 24"                  | A3 (15")                    | 16'             | -                         | 21              |
| 27"                  | A3 (15")                    | 17'             | -                         | 25              |
| 30"                  | A3 (15")                    | 18'             | -                         | 28              |
| 33"                  | A4 (16")                    | 19'             | A1 (6")                   | 32              |
| 36"                  | A4 (16")                    | 20'             | A1 (6")                   | 36              |
| 42"                  | A4 (16")                    | 22'             | A1 (6")                   | 44              |
| 48"                  | A4 (16")                    | 24'             | A1 (6")                   | 53              |

Note See current Illinois Department of Transportation Standard Specification to verify rock size and bedding thickness.

RIPRAP

BULLNOSE

COMPANY NAME: HRGreen  
PROJECT CONTACT: HRGreen.com  
CLIENT: Illinois Professional Design Firm  
DATE PLOTTED: 12/14/2012 6:21:00 PM  
FILE NAME: 080622-001-21.dgn  
PLOT DRIVER: pdfLwNoLevelPlotter  
PEN TABLE: standard-trans.tbl

**HRGreen**  
HRGreen.com  
Illinois Professional Design Firm  
#184-091322

|                               |                 |           |
|-------------------------------|-----------------|-----------|
| USER NAME = sporne1           | DESIGNED -      | REVISED - |
| FILE NAME = 080622-001-21.dgn | DRAWN -         | REVISED - |
| PLOT SCALE =                  | CHECKED -       | REVISED - |
| PLOT DATE = 12/14/2012        | DATE = 12/14/12 | REVISED - |

**MCHENRY COUNTY**  
**DIVISION OF TRANSPORTATION**

**RIPRAP AND BULLNOSE CURB DETAILS**  
SCALE: SHEET NO. 21 OF 22 SHEETS STA. TO STA.

| F.A.U. RTE.                                   | SECTION        | COUNTY  | TOTAL SHEETS       | SHEET NO. |
|-----------------------------------------------|----------------|---------|--------------------|-----------|
| 168                                           | 05-00314-00-WR | MCHENRY | 187                | 149       |
| FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT |                |         | CONTRACT NO. 63515 |           |