

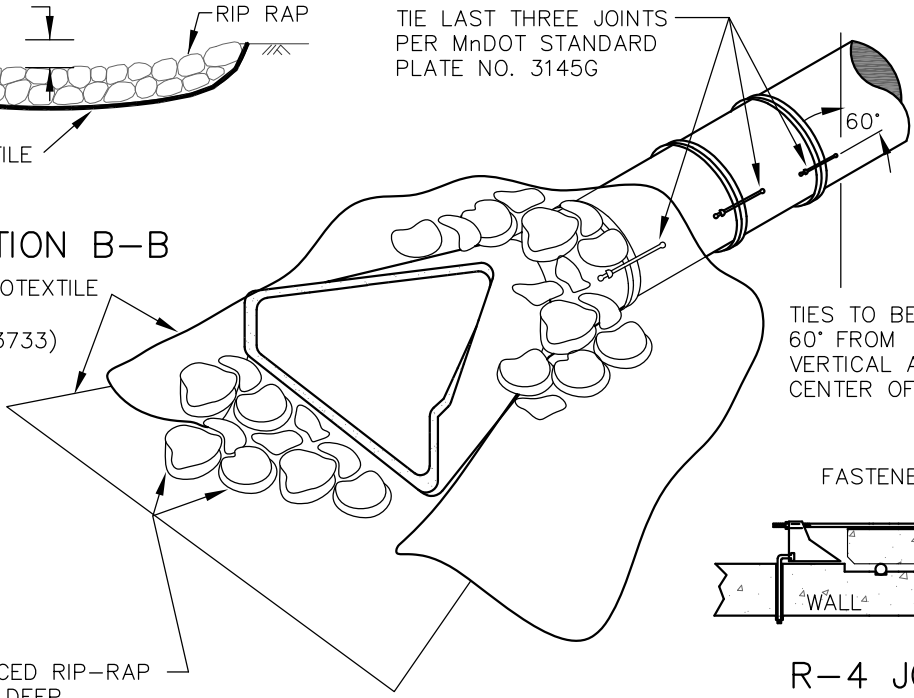
NON-WOVEN GEOTEXTILE FILTER FABRIC (MnDOT SPEC. 3733)

SECTION B-B

NON-WOVEN GEOTEXTILE FILTER FABRIC (MnDOT SPEC. 3733)

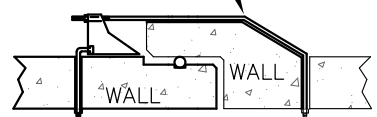
HAND PLACED RIP-RAP ONE FOOT DEEP

TIE LAST THREE JOINTS PER MnDOT STANDARD PLATE NO. 3145G



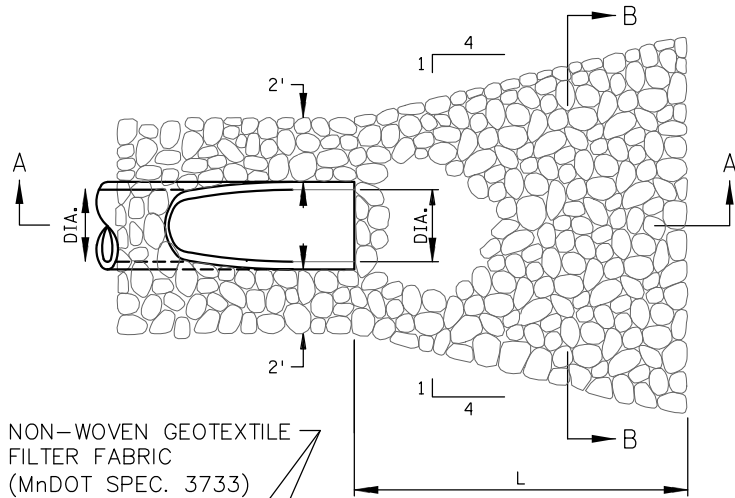
TIES TO BE LOCATED 60° FROM VERTICAL AXIS CENTER OF PIPE

FASTENER



R-4 JOINT

TIE BOLT & FASTENER ASSEMBLY



NON-WOVEN GEOTEXTILE FILTER FABRIC (MnDOT SPEC. 3733)

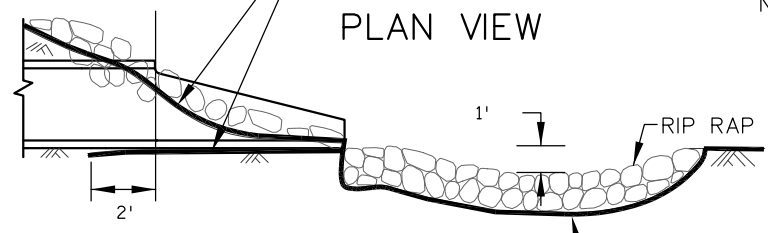
PLAN VIEW

MINIMUM RIPRAP REQUIRED

| PIPE DIA. (IN.) | LENGTH (FT.) | QUANTITY (CY.) | CLASS | TIE BOLT DIA. (MIN) |
|-----------------|--------------|----------------|-------|---------------------|
| 12 | 8 | 5 | 3 | 3/4" |
| 15 | 8 | 5 | 3 | 3/4" |
| 18 | 10 | 6 | 3 | 3/4" |
| 24 | 12 | 8 | 3 | 3/4" |
| 30 | 14 | 12 | 3 | 1" |
| 36 | 16 | 14 | 3 | 1" |
| 42 | 18 | 22 | 4 | 1" |
| 48 | 20 | 26 | 4 | 1" |
| 60 | 22-28 | 30-40 | 4 | 1" |
| 72 > | 22-28 | 40-50 | 4 | 1-1/4" |

NOTES:

1. INSTALLATION OF TIE BOLTS SHALL BE INCIDENTAL TO THE INSTALLATION OF FLARED END SECTIONS. INSTALLATION PER MnDOT STANDARD PLATE NO. 3145G.
2. NON-WOVEN GEOTEXTILE FABRIC BELOW F.E.S. AND ABOVE F.E.S. SHALL EACH BE OF A SINGLE CONTINUOUS PIECE WITHOUT SEAMS HOLES OR OTHER DAMAGE AND SHALL BE INCIDENTAL TO THE INSTALLATION OF F.E.S.
3. ALL GRANULAR BEDDING MATERIAL NECESSARY FOR THE INSTALLATION OF THE F.E.S. SHALL BE INCIDENTAL TO THE INSTALLATION OF THE F.E.S.



NON-WOVEN GEOTEXTILE FILTER FABRIC (MnDOT SPEC. 3733)

SECTION A-A

4. RIP RAP SHALL BE HAND PLACED TO PREVENT DAMAGE TO NON-WOVEN FILTER FABRIC. DAMAGED FILTER FABRIC SHALL BE REMOVED AND REPLACED
5. EXCESS NON-WOVEN GEOTEXTILE FABRIC SHALL BE TRIMED TO MATCH PERIMETER OF PLACED RIP RAP.

| | | | |
|--|-------------------|----------------------------------|--------------------------|
| | <p>FLARED END</p> | <p>PUBLISH DATE 12/16/21</p> | <p>PLATE NO. S-4</p> |
|--|-------------------|----------------------------------|--------------------------|