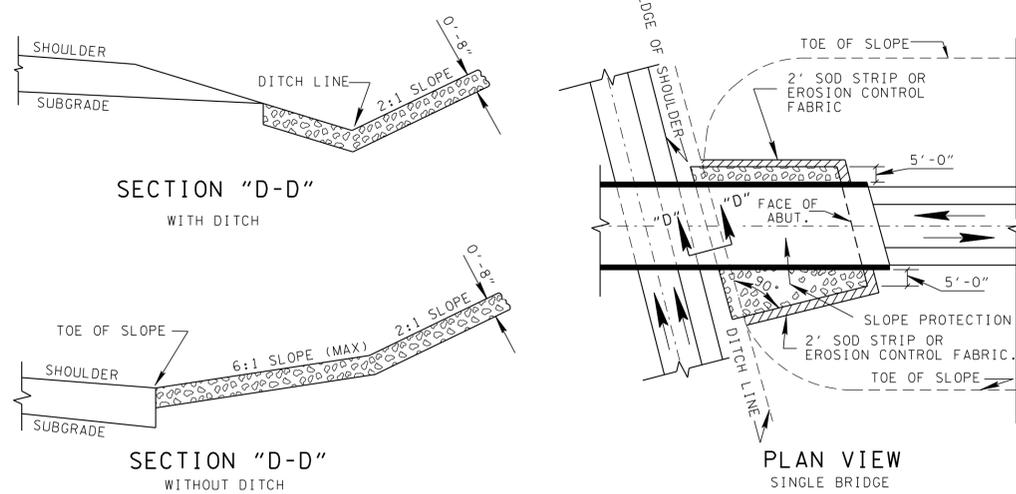
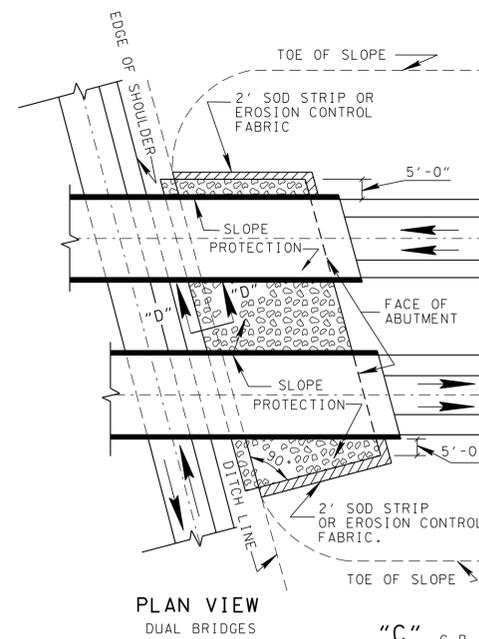


# DUMPED RIP-RAP



NOTE: PLAN VIEWS ARE SHOWN WITH DITCH. FOR VIEW WITHOUT DITCH, SEE GRADING DESIGN LAYOUT ON THIS SHEET.

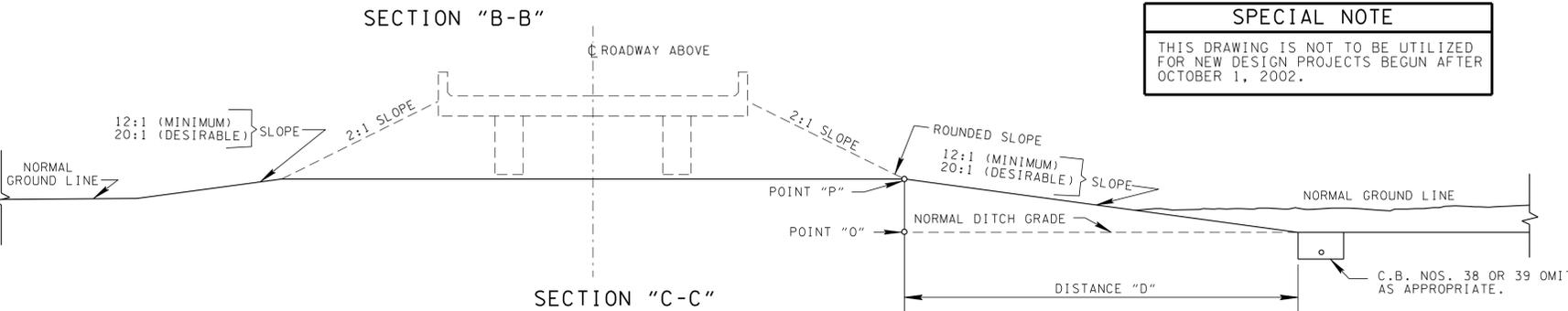
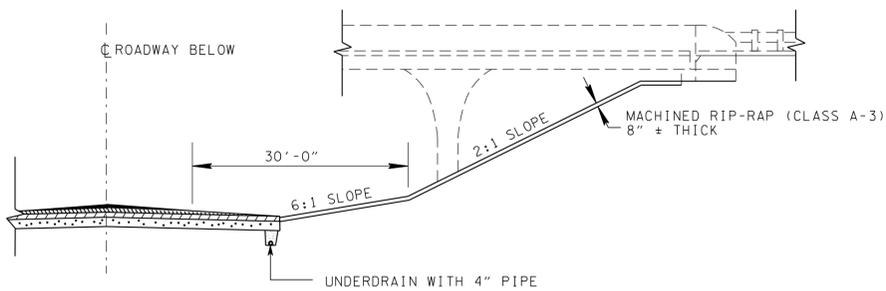
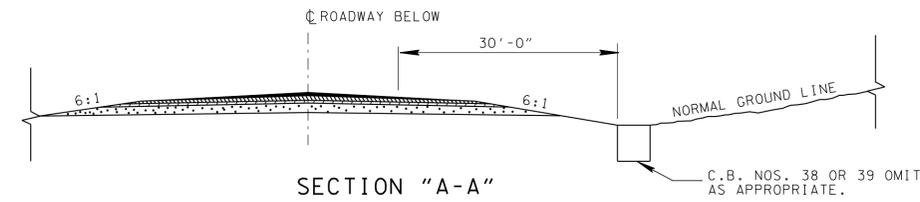
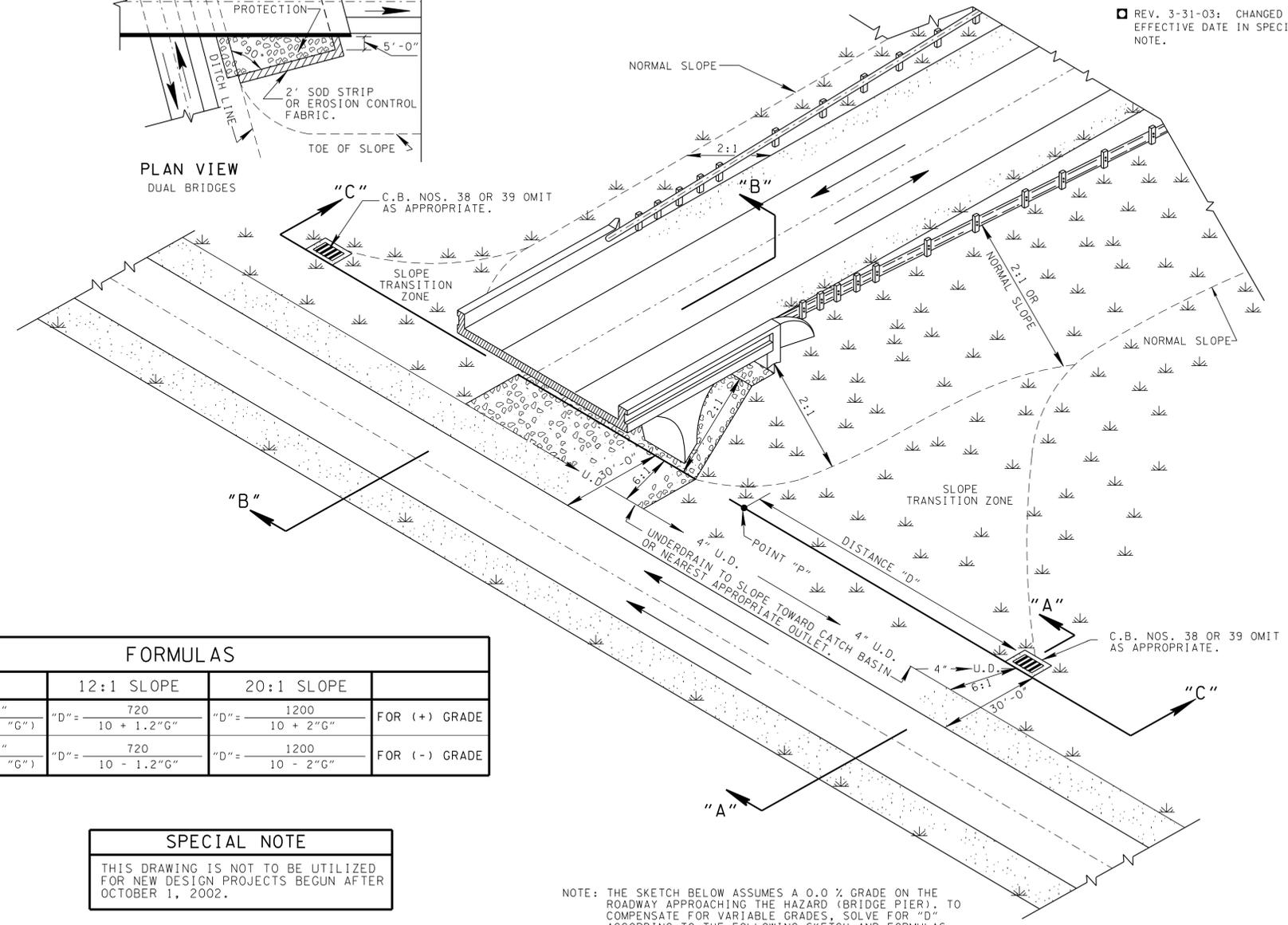


- ### GENERAL NOTES
- (A) ALL WORK INDICATED ON THIS DRAWING SHALL BE PERFORMED IN ACCORDANCE WITH THE CURRENT EDITION OF TENNESSEE DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION."
  - (B) PAYMENT FOR ALL ITEMS DIRECTLY INDICATED OR INFERRED ON THIS DRAWING WILL BE MADE UNDER APPROPRIATE ITEM NUMBER(S) AND DESCRIPTION(S) RECORDED ELSEWHERE IN THE PLANS.
  - NOTES TO DESIGNERS:
  - (C) WHEN EXISTING PHYSICAL CONDITIONS OF THE APPROACH AND TRANSITION ZONE ARE SO UNIQUE AS TO WARRANT INDIVIDUAL DESIGN, A CONTOUR PLAN SHALL BE PREPARED TO PROVIDE THE CONSTRUCTION ENGINEER WITH DATA FOR CONSTRUCTION TO THE INTENDED LINES AND GRADES.
  - (D) IN RARE CASES WHEN A STEEP (2:1) FILL SLOPE IS UNAVOIDABLE WITHIN THE SAFETY APPROACH ZONE, A GUARDRAIL BARRIER WILL BE INDICATED ON PLANS IN ACCORDANCE WITH DESIGN POLICY SET OUT IN THE "S-CR-" SERIES OF STANDARD DRAWINGS.

- REV. 1-11-82: CHANGED GRADING DESIGN OF THE APPROACH SLOPES TO THE UNDERPASS AND ADDED SLOPE PROTECTION DETAILS.
- REV. 1-31-84: CHANGED SIZE AND DEPTH OF DUMPED RIP-RAP FOR SLOPE PROTECTION UNDER BRIDGES.
- REV. 4-29-88: CHANGED DRIP LINE FROM 1' TO 5'.
- REV. 5-27-96: REDREW DRAWING. MADE MINOR REVISIONS AS NEEDED.
- REV. 5-27-98: CHANGED NOTE 1 UNDER DUMPED RIP-RAP SLOPE PROTECTION NOTES. CHANGED REFERENCE THROUGHOUT DRAWING OF NOS. 36 AND 37 CATCH BASINS TO NOS. 38 AND 39 CATCH BASINS.
- REV. 3-20-02: ADDED SPECIAL NOTE.
- REV. 3-31-03: CHANGED EFFECTIVE DATE IN SPECIAL NOTE.

### MACHINED RIP-RAP SLOPE PROTECTION NOTES

- 1 MACHINED RIP-RAP FOR SLOPE PROTECTION SHALL BE 2" TO 6" IN SIZE, UNIFORMLY GRADED AND MEET THE REQUIREMENTS OF SUBSECTION 709 OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. IT IS TO BE PAID FOR UNDER ITEM NO. 709-05.05, MACHINED RIP-RAP (CLASS A-3) PER TON.
- 2 AGGREGATE SHALL BE PLACED TO A DEPTH OF EIGHT (8) INCHES MEASURED PERPENDICULAR TO THE SLOPE FLUSH WITH THE EMBANKMENT SLOPE UNDER THE BRIDGE, SHALL EXTEND FROM THE FACE OF THE ABUTMENTS OR END BENTS ACROSS THE BERM AND DOWN THE SLOPE TO A POINT AS SHOWN IN SECTION "D-D" ABOVE AND SHALL EXTEND LATERALLY TO FIVE (5) FEET BEYOND THE OUTER EDGES OF THE SUPERSTRUCTURE.
- 3 THE CRUSHED AGGREGATE MAY BE DUMPED IN PLACE. PLACING SHALL BE CONDUCTED IN A MANNER TO PRODUCE A UNIFORM SURFACE VARYING NO MORE THAN TWO (2) INCHES IN FOUR (4) FEET FROM A TRUE PLANE. HAND PLACINGS MAY BE REQUIRED AS NECESSARY TO CORRECT IRREGULARITIES EXCEEDING THE SPECIFIED TOLERANCES.
- 4 WHERE THE MEDIAN IS OVER 60', THE SLOPE PROTECTION SHALL EXTEND TO THE WIDTH REQUIRED FOR EACH SEPARATE STRUCTURE AND THE AREA BETWEEN THE SLOPE PROTECTION OF EACH STRUCTURE SHALL BE SODDED.
- 5 WHERE THE MEDIAN IS 60' OR LESS, THE SLOPE PROTECTION SHALL EXTEND AS SHOWN IN THE PLAN VIEW ABOVE.

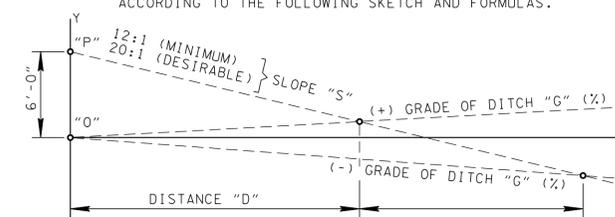


### FORMULAS

GENERAL	12:1 SLOPE	20:1 SLOPE	
$D = \frac{600 \times "S"}{100 + ("S" \times "G")}$	$D = \frac{720}{10 + 1.2"G"}$	$D = \frac{1200}{10 + 2"G"}$	FOR (+) GRADE
$D = \frac{600 \times "S"}{100 - ("S" \times "G")}$	$D = \frac{720}{10 - 1.2"G"}$	$D = \frac{1200}{10 - 2"G"}$	FOR (-) GRADE

**SPECIAL NOTE**  
THIS DRAWING IS NOT TO BE UTILIZED FOR NEW DESIGN PROJECTS BEGUN AFTER OCTOBER 1, 2002.

NOTE: THE SKETCH BELOW ASSUMES A 0.0% GRADE ON THE ROADWAY APPROACHING THE HAZARD (BRIDGE PIER), TO COMPENSATE FOR VARIABLE GRADES, SOLVE FOR "D" ACCORDING TO THE FOLLOWING SKETCH AND FORMULAS.



MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.