



LH = DISTANCE FROM END OF WINGWALL TO  
END OF HANDRAIL.

- (H) 2'-6" CURB AND GUTTER, STANDARD DETAIL 4.01
- (M) HANDRAIL, STANDARD DETAIL 4.13
- (S) 5'-0" SIDEWALK, MINIMUM STANDARD DETAIL 4.04

| REVISIONS |             |
|-----------|-------------|
| DATE      | DESCRIPTION |
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TOWN OF KNIGHTDALE  
STANDARD DETAILS

CULVERT CROSSING ON RESIDENTIAL  
AND COMMERCIAL STREETS

1 of 2

STD. NO.

5.01

**NOTES:**

1. UNLESS OTHERWISE DETERMINED BY THE TOWN ENGINEER, THE MEASURES ILLUSTRATED SHALL BE USED WHEN CULVERT DIAMETER, D, IS GREATER THAN OR EQUAL TO 24 INCHES AND WHEN THE DIFFERENCE IN ELEVATION BETWEEN THE CULVERT INVERT AND THE TOP OF SLOPE, H, IS GREATER THAN OR EQUAL TO 5 FEET.
2. INSTALLATION OF 2'-6" CURB AND GUTTER MAY NOT BE REQUIRED WHEN AN ADEQUATE CLEAR ZONE IS PROVIDED FOR VEHICLES WITH A MAXIMUM OF 6:1 SLOPE (SEE TABLE 1).
3. INSTALLATION OF HANDRAIL MAY NOT BE REQUIRED WHEN A 10-FOOT PEDESTRIAN CLEAR ZONE IS PROVIDED BEHIND THE SIDEWALK WITH A MAXIMUM OF 6:1 SLOPE. WHERE NO SIDEWALK IS REQUIRED, INSTALLATION OF HANDRAIL MAY NOT BE REQUIRED WHEN A 15-FOOT PEDESTRIAN CLEAR ZONE IS PROVIDED BEHIND THE CURB WITH A MAXIMUM OF 6:1 SLOPE.
4. FOR CULVERT CROSSINGS WITHOUT ENDWALLS, LH SHALL BE MEASURED FROM THE OUTSIDE OF THE NEAREST WALL OF THE CULVERT BARREL.
5. WHEN NECESSARY, AS DETERMINED BY THE TOWN ENGINEER, ADDITIONAL MEASURES MAY BE REQUIRED.
6. INSTALLATION OF HANDRAIL IS REQUIRED ON BOTH SIDES OF STREET IF SIDEWALK IS REQUIRED ON BOTH SIDES.
7. INSTALLATION OF HANDRAIL IS REQUIRED ON BOTH SIDES OF STREET IF NO SIDEWALK IS REQUIRED EXCEPT WHEN A 15-FOOT PEDESTRIAN CLEAR ZONE IS PROVIDED BEHIND THE CURB WITH A MAXIMUM OF 6:1 SLOPE.
8. INSTALLATION OF HANDRAIL IS REQUIRED ON THE SIDEWALK SIDE OF STREET IF SIDEWALK IS ONLY REQUIRED ON ONE SIDE OF STREET.
9. DESIGN ADT IS CALCULATED ASSUMING A TRIP GENERATION OF 13 DAILY TRIPS PER SINGLE FAMILY DWELLING UNIT.

TABLE 1.  
CLEAR ZONE DISTANCES  
LOCAL, COLLECTOR, AND COMMERCIAL STREETS

| DESIGN ADT  | CLEAR ZONE FROM EDGE OF PAVEMENT |                                |
|-------------|----------------------------------|--------------------------------|
|             | TANGENT SECTION                  | CURVE (WITHIN 125' OF CULVERT) |
| UNDER 750   | 10'                              | 15'                            |
| 750 - 1500  | 12'                              | 18'                            |
| 1501 - 6000 | 14'                              | 21'                            |
| OVER 6000   | 16'                              | 24'                            |

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| TOWN OF KNIGHTDALE<br>STANDARD DETAILS | CULVERT CROSSING ON RESIDENTIAL<br>AND COMMERCIAL STREETS | 2 of 2<br>STD. NO.<br>5.01 |
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