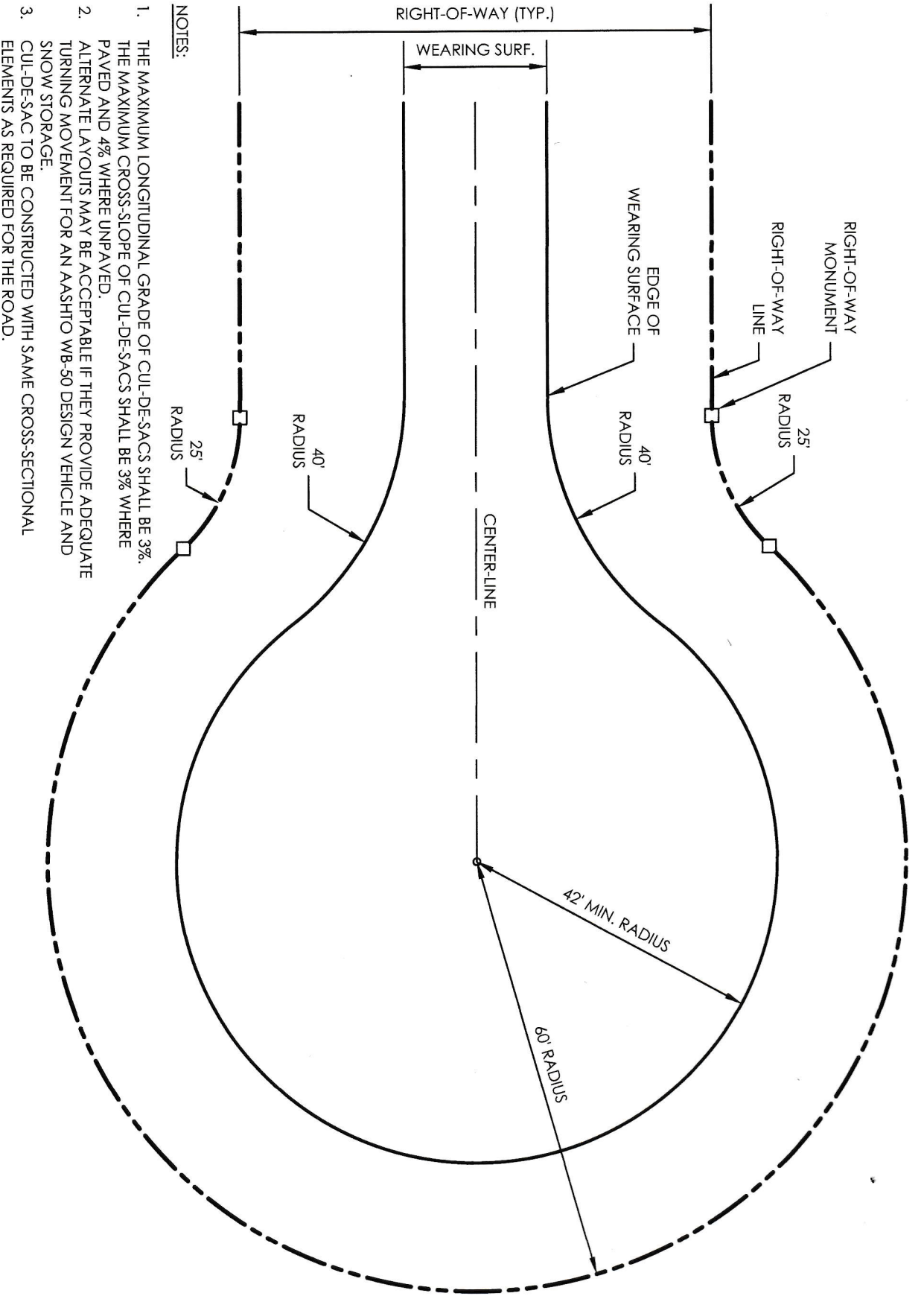


- NOTES:
1. THE MAXIMUM GRADE OF CUL-DE-SACS IN ALL DIRECTION SHALL BE SHALL BE 3%.
 2. ALTERNATE LAYOUTS MAY BE ACCEPTABLE IF THEY PROVIDE ADEQUATE TURNING MOVEMENT FOR AN AASHTO SU-DESIGN VEHICLE AND SNOW STORAGE.
 3. CUL-DE-SAC SHALL BE CONSTRUCTED WITH SAME CROSS-SECTIONAL ELEMENTS AS REQUIRED FOR THE ROAD.

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EXHIBIT A1
TYPICAL HAMMER-HEAD CUL-DE-SAC

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NOTES:

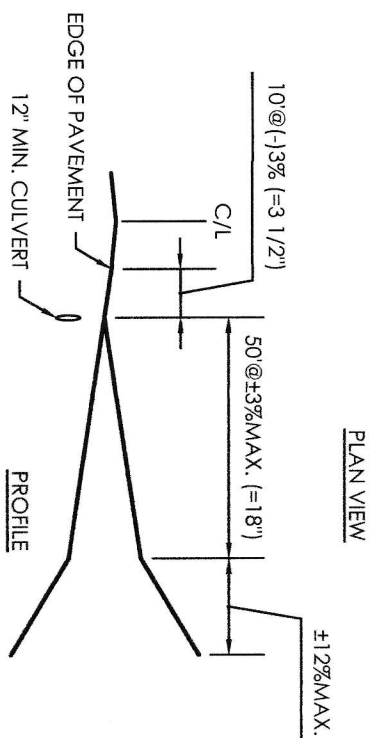
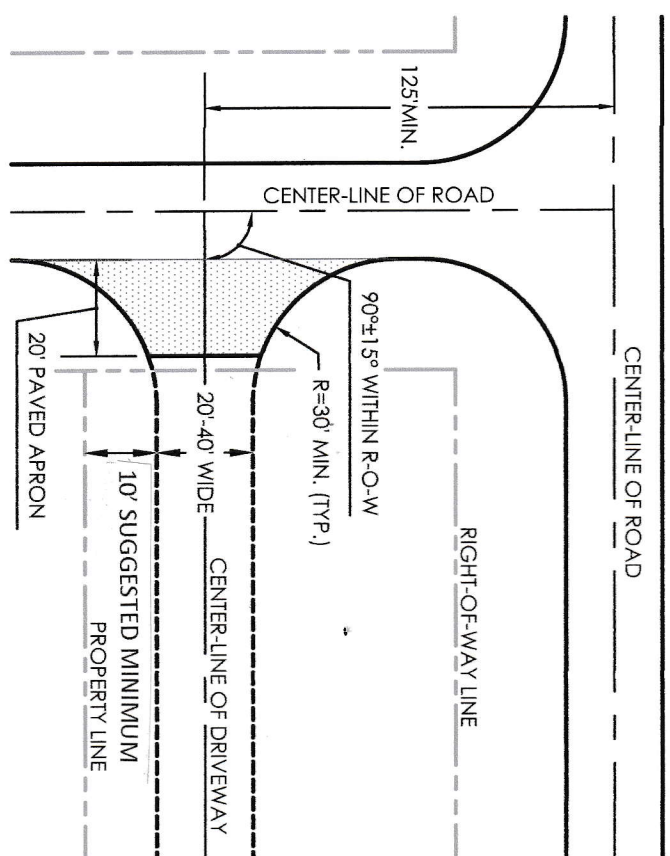
1. THE MAXIMUM LONGITUDINAL GRADE OF CUL-DE-SACS SHALL BE 3%.
2. THE MAXIMUM CROSS-SLOPE OF CUL-DE-SACS SHALL BE 3% WHERE PAVED AND 4% WHERE UNPAVED.
3. ALTERNATE LAYOUTS MAY BE ACCEPTABLE IF THEY PROVIDE ADEQUATE TURNING MOVEMENT FOR AN AASHTO WB-50 DESIGN VEHICLE AND SNOW STORAGE.
4. CUL-DE-SAC TO BE CONSTRUCTED WITH SAME CROSS-SECTIONAL ELEMENTS AS REQUIRED FOR THE ROAD.

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EXHIBIT A2
TYPICAL CIRCULAR CUL-DE-SAC

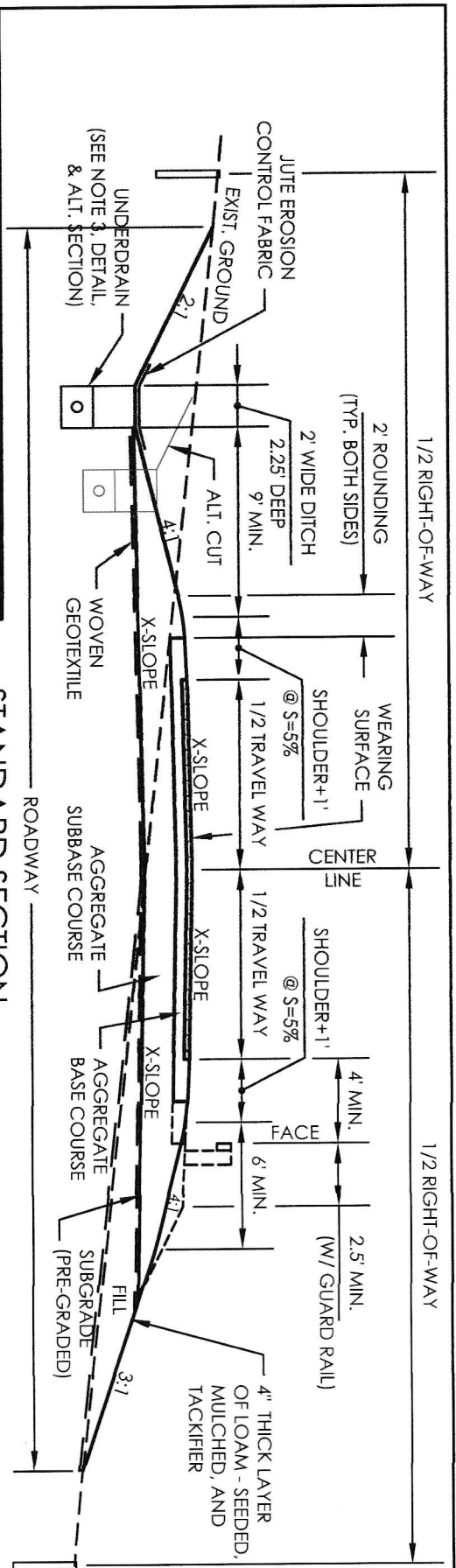
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COMMERCIAL



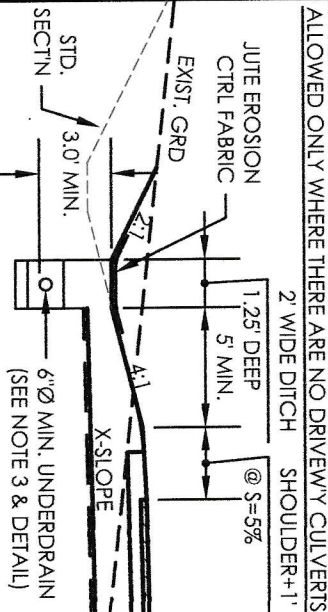
- NOTES:**
1. BOTH RESIDENTIAL AND COMMERCIAL DRIVEWAYS SHALL COMPLY WITH THE SAME SIGHT-DISTANCE REQUIREMENTS AS SPECIFIED FOR INTERSECTIONS (SEE NARRATIVE).
 2. THE ALGEBRAIC DIFFERENCE BETWEEN ANY TWO ADJACENT GRADES IN A DRIVEWAY SHALL NOT EXCEED 9 PERCENT.
 3. FOR RESIDENTIAL DRIVEWAYS IN EXCESS OF 500' LONG, 20' WIDE BY 100' LONG SECTIONS SHALL BE SPACED NO MORE THAN 500' APART TO ALLOW EMERGENCY VEHICLES TO PASS.
 4. FOR ALL DRIVEWAYS IN EXCESS OF 500 FEET LONG, A TURN-AROUND SHALL BE PROVIDED AT THE DEAD-END TO ACCOMMODATE EMERGENCY VEHICLES (AASHTO SU Design Vehicle).

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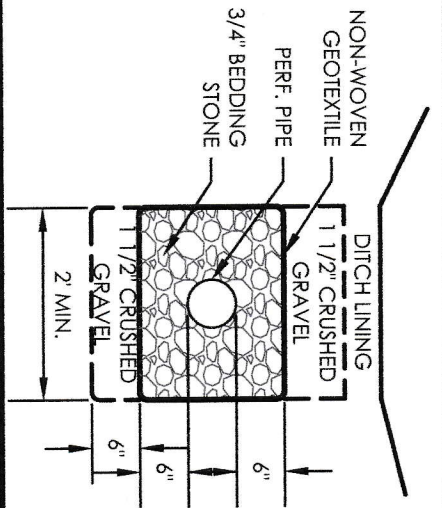


STANDARD SECTION

ALT. CUT



UNDERDRAIN DETAIL



AVERAGE DAILY TRAFFIC (ADT)		<50	50-400	400-1,500***	1,500 - 2,000***
TRAVELED WAY	WIDTH	18'	20'	20'	22'
	TYPE	HOT BIT. PAVT**	HOT BIT. PAVT	HOT BIT. PAVT	HOT BIT. PAVT
SHOULDER	WIDTH	1'	2'	4'	6'
	TYPE	GRAVEL	GRAVEL	GRAVEL	GRAVEL
WEARING SURFACE	WEAR COURSE	2" THICK	1" THICK	1" THICK	1.5" THICK
	BASE COURSE	SINGLE-COURSE	2" THICK	2.25" THICK	2.5" THICK
AGGREGATE COURSES	BASE	6" THICK	6" THICK	6" THICK	6" THICK
	SUBBASE	18" THICK*	12" THICK*	18" THICK	18" THICK
X-SLOPE		3%*	2%	2%	2%

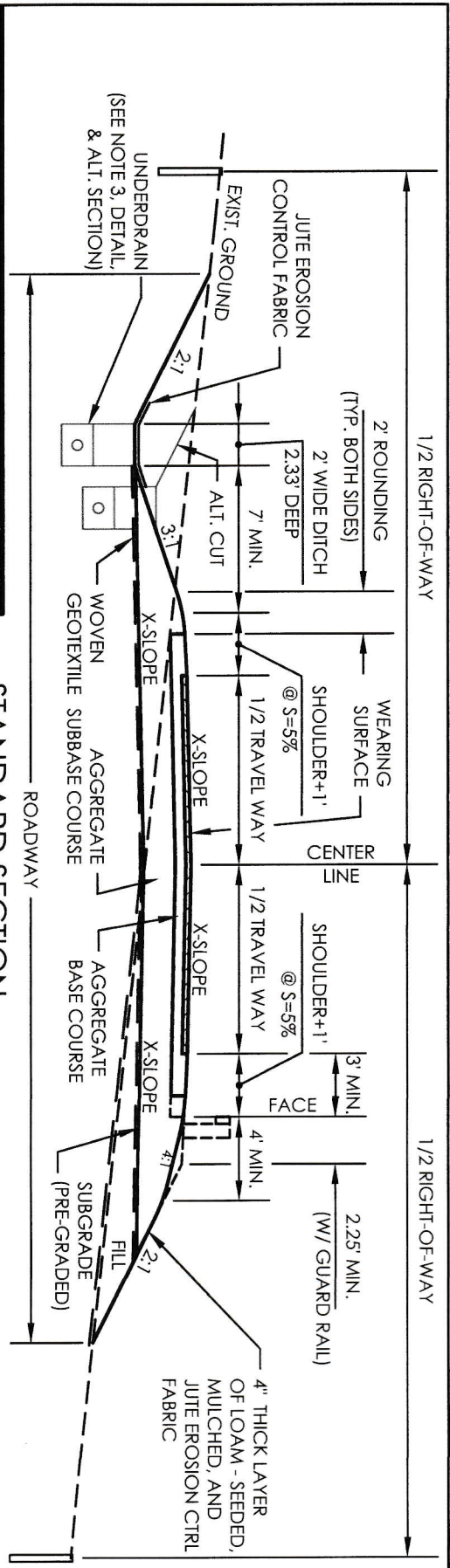
- NOTES:
1. THE AGGREGATE SUBBASE DEPTH MAY BE REDUCED BY 6 INCHES AND THE GEOTEXTILE OMITTED WHERE THE SOIL CONSISTS OF GLACIAL OUTWASH SAND AND GRAVELS TO A DEPTH OF 4 FT BELOW FINISHED GRADE.
 2. EXCEPT FOR THE ALTERNATE SECTION (UNDERDRAIN), THE AGGREGATE BASE AND SUBBASE COURSES SHALL EXTEND TO DAYLIGHT, EITHER BY ELEVATING THE ROAD OR BY CONSTRUCTING DITCHES WITH FREE-DRAINING OUTLETS.
 3. UNDERDRAINS SHALL BE CONSTRUCTED (WITH FREE-DRAINING OUTLETS) UNDER ALL DITCHES WHERE THE SEASONAL HIGH GROUNDWATER TABLE IS LESS THAN 1.5 FT BELOW THE DITCH INVERT SHOWN IN THE STANDARD SECTION.
 4. CUT AND FILL SLOPES MAY BE FLATTER THAN SHOWN.
 5. FOR ROADS WITH AN ADT FROM 0 TO 50, THE HOT BITUMINOUS PAVING MAY BE REPLACED WITH A 3-INCH THICK GRAVEL WEARING SURFACE. IF THE GRADE OF SUCH ROAD EXCEEDS 6%, AN ASPHALT SURFACE TREATMENT SHALL BE APPLIED TO THE GRAVEL WEARING SURFACE. HOWEVER, BEFORE SUCH ROAD MAY BE ACCEPTED AS A TOWN ROAD, IT SHALL BE PAVED (HOT BIT.) COMPLYING WITH THE TOWN ROAD STANDARDS IN EFFECT AT THE TIME.
 6. REFER TO THE NARRATIVE OF THESE ROAD STANDARDS FOR ADDITIONAL SPECIFICATIONS/REQUIREMENTS.
 7. FOR ADT <400, ALSO MUST COMPLY WITH "ROADSIDE DESIGN GUIDE" BY AASHTO, LATEST EDITION.

* SEE NOTE 1, ** SEE NOTE 5, *** SEE NOTE 7

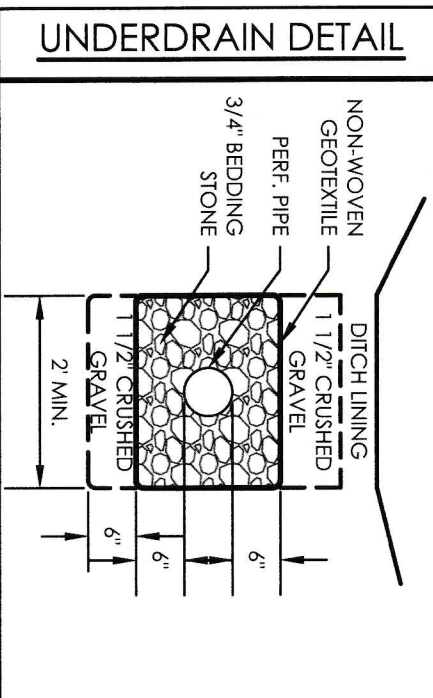
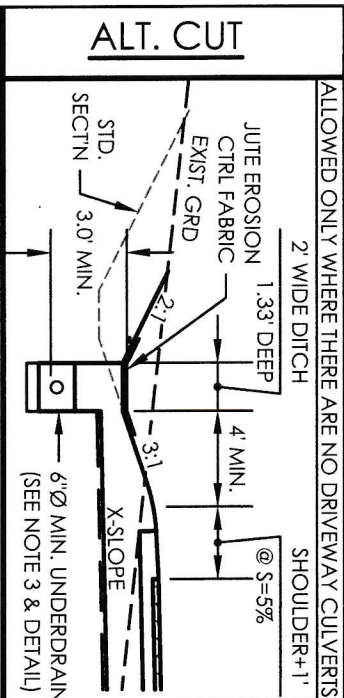
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EXHIBIT C1
STANDARD ROAD CROSS-SECTION

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STANDARD SECTION



AVERAGE DAILY TRAFFIC (ADT)		<50	50-400
TRAVELED WAY	WIDTH	18'	20'
	TYPE	HOT BIT. PAVT**	HOT BIT. PAVT
SHOULDER	WIDTH	1'	2'
	TYPE	GRAVEL	GRAVEL
WEARING SURFACE	WEAR COURSE	2" THICK	1" THICK
	BASE COURSE	SINGLE-COURSE	2" THICK
AGGREGATE COURSES	BASE	6" THICK	6" THICK
	SUBBASE	18" THICK*	18" THICK*
X-SLOPE		3%*	3%

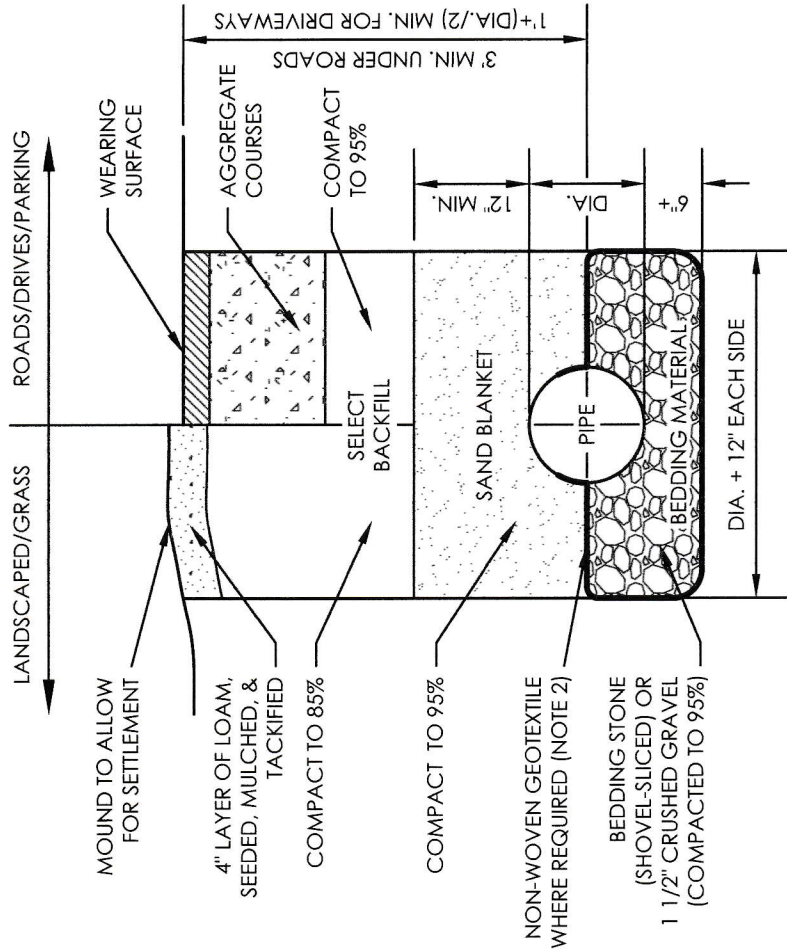
* SEE NOTE 1, ** SEE NOTE 5.

- NOTES:
1. THE AGGREGATE SUBBASE DEPTH MAY BE REDUCED BY 6 INCHES AND THE GEOTEXTILE OMITTED WHERE THE SOIL CONSISTS OF GLACIAL OUTWASH SAND AND GRAVELS TO A DEPTH OF 4 FT BELOW FINISHED GRADE.
 2. EXCEPT FOR THE ALTERNATE SECTION (UNDERDRAIN), THE AGGREGATE BASE AND SUBBASE COURSES SHALL EXTEND TO DAYLIGHT, EITHER BY ELEVATING THE ROAD OR BY CONSTRUCTING DITCHES WITH FREE-DRAINING OUTLETS.
 3. UNDERDRAINS SHALL BE CONSTRUCTED (WITH FREE-DRAINING OUTLETS) UNDER ALL DITCHES WHERE THE SEASONAL HIGH GROUNDWATER TABLE IS LESS THAN 1.5 FT BELOW THE DITCH INVERT SHOWN IN THE STANDARD SECTION.
 4. CUT AND FILL SLOPES MAY BE FLATTER THAN SHOWN.
 5. FOR ROADS WITH AN ADT FROM 0 TO 50, THE HOT BITUMINOUS PAVING MAY BE REPLACED WITH A 3-INCH THICK GRAVEL WEARING SURFACE. IF THE GRADE OF SUCH ROAD EXCEEDS 6%, AN ASPHALT SURFACE TREATMENT SHALL BE APPLIED TO THE GRAVEL WEARING SURFACE. HOWEVER, BEFORE SUCH ROAD MAY BE ACCEPTED AS A TOWN ROAD, IT SHALL BE PAVED (HOT BIT.) COMPLYING WITH THE TOWN ROAD STANDARDS IN EFFECT AT THE TIME.
 6. REFER TO THE NARRATIVE OF THESE ROAD STANDARDS FOR ADDITIONAL SPECIFICATIONS/REQUIREMENTS.

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EXHIBIT C2
HILLSIDE TERRAIN CROSS-SECTION
 (MAY BE USED WHERE THE NATURAL GROUND SLOPE GENERALLY EXCEEDS 8%, PROVIDED THE ADT IS LESS THAN 400 AND THE DESIGN SPEED IS NO GREATER THAN 30 MPH)

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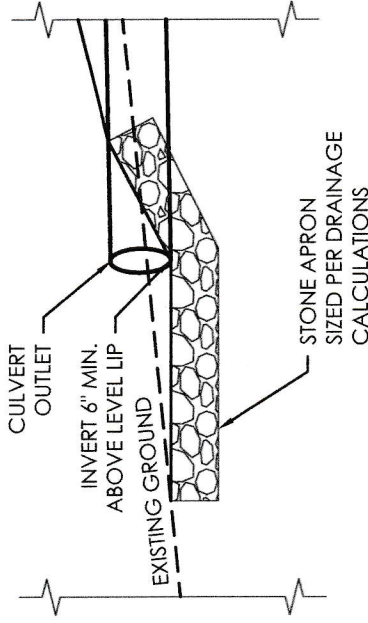
NOTES:

1. SELECT BACKFILL IS MATERIAL REMOVED FROM THE EXCAVATION (OR IMPORTED) THAT CONTAINS LESS THAN 30% FINES (#200 SIEVE), IS SCREENED TO REMOVE STONES GREATER THAN 6", AND IS FREE OF MUCK, ORGANICS, AND OTHER DELETERIOUS MATERIALS.
2. NON-WOVEN GEOTEXTILE REQUIRED WHEN BEDDING STONE IS USED FOR BEDDING MATERIAL AND THE SEASONAL HIGH WATER TABLE IS ABOVE THE BOTTOM OF THE BEDDING.
3. REFER TO THE NARRATIVE OF THESE STREET DESIGN AND CONSTRUCTION STANDARDS FOR ADDITIONAL REQUIREMENTS.

CULVERT TRENCH

(X-SECTION)

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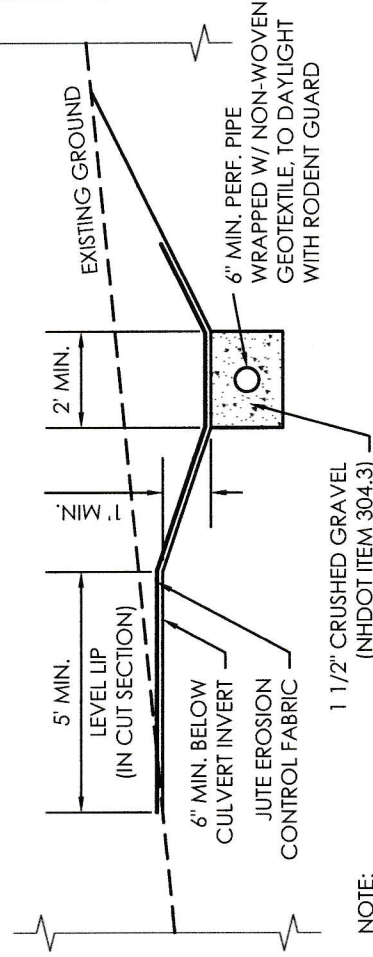


NOTE:

1. REFER TO THE NARRATIVE OF THE STREET DESIGN AND CONSTRUCTION STANDARDS FOR SIZING REQUIREMENTS AND OTHER ADDITIONAL REQUIREMENTS.

CULVERT OUTLET

(X-SECTION)



NOTE:

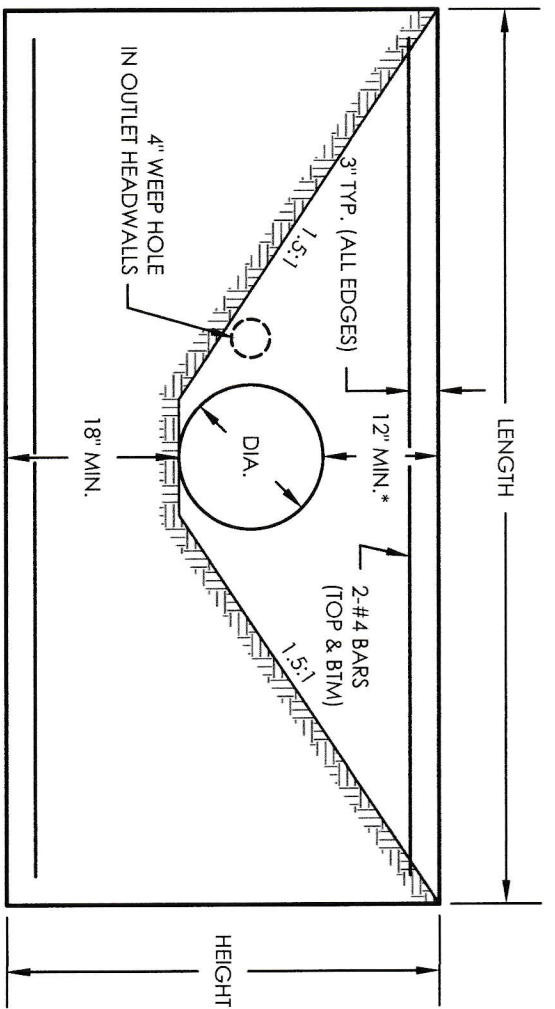
1. REFER TO THE NARRATIVE OF STREET DESIGN AND CONSTRUCTION STANDARDS FOR SIZING REQUIREMENTS AND OTHER ADDITIONAL REQUIREMENTS.

LEVEL SPREADER

(X-SECTION)

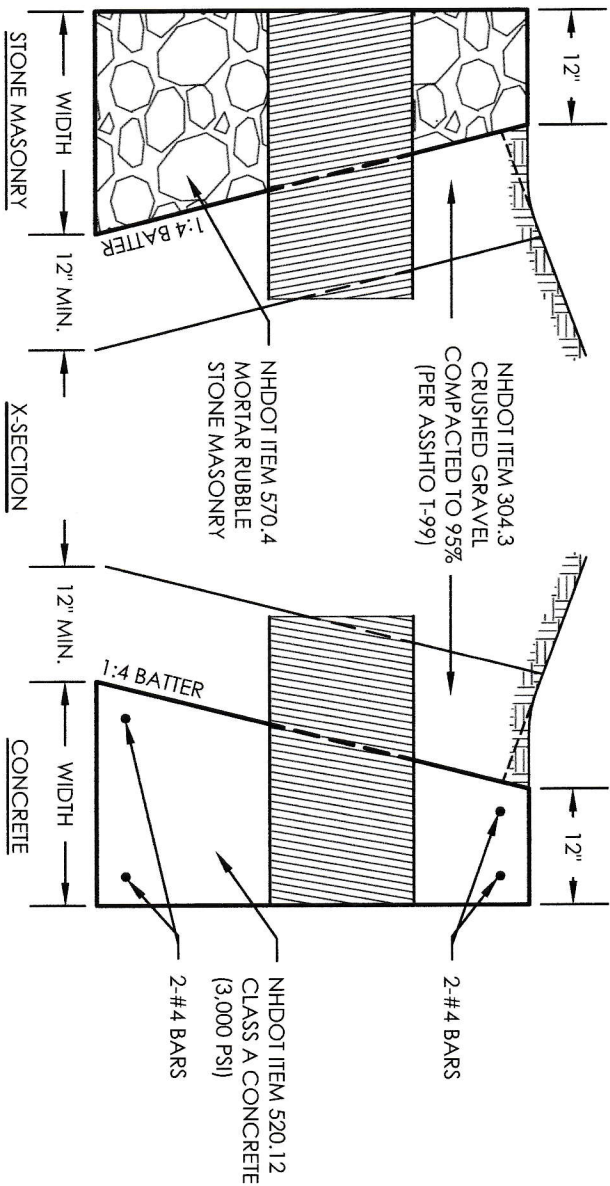
EXHIBIT D: CULVERT TRENCH
EXHIBIT E: CULVERT OUTLET
EXHIBIT F: LEVEL SPREADER

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* SEE NOTE #1

ELEVATION



PIPE DIA.	LENGTH	HEIGHT	WIDTH
15"	8'-0"	3'-9"	1'-11"
18"	9'-0"	4'-0"	2'-0"
24"	11'-0"	4'-6"	2'-2"
30"	13'-0"	5'-0"	2'-3"
36"	15'-0"	5'-6"	2'-5"
48"	19'-0"	6'-6"	2'-8"

NOTES:

1. IF THE HEIGHT ABOVE THE CULVERT IS INCREASED, THE HEADWALL LENGTH SHALL BE INCREASED AS REQUIRED TO MAINTAIN THE 1.5:1 EARTH SLOPE.
2. EARTH SLOPES TO BE STABILIZED WITH EROSION CONTROL FABRIC OR STONE/RIPRAP AS REQUIRED TO PREVENT SCOUR/EROSION.

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EXHIBIT G: CULVERT HEADWALL

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