

San Luis Obispo County

Department of Public Works & Transportation



2014 Standard Construction Drawings

Available Online at:

<http://www.slocounty.ca.gov/PW/DevServ/PublicImprovementStandards.htm>

Standard Construction Drawings

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Revisions

Description	Approved	Date	Description	Approved	Date
NOTE 2	REM	NOV 07			

CRITERIA	ADT <250	ADT 250-400	ADT 401-1000	ADT 1001-3000	ADT 3001-10000
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DESIGN SPEED, MILES PER HOUR, (MINIMUM)

FLAT	40	50	50	55	55
ROLLING	30	40	40	40	45
MOUNTAINOUS	20	20	30	30	35

CURVE RADIUS, FT. (MINIMUM)

FLAT	510	830	830	1050	1050
ROLLING	275	510	510	510	670
MOUNTAINOUS	110	115	250	275	350

GRADE, PERCENT (MAXIMUM)

FLAT	7	6	6	6	6
ROLLING	9	8	8	8	8
MOUNTAINOUS	12	12	10	10	10

NOTES:

1. ADT IS BASED UPON A 20-YEAR PROJECTION.
2. ADT IN EXCESS OF 5,000 WILL REQUIRE SPECIAL DESIGN REQUIREMENTS BY THE DEPARTMENT.
3. SUPERELEVATION MAY BE REQUIRED, SEE STANDARD DRAWING A-4b.
4. THE STRUCTURAL SECTION SHALL BE BASED ON THE TRAFFIC INDEX AS PROVIDED BY THE DEPARTMENT.
5. RIGHT OF WAY SHALL BE THE MINIMUM REQUIRED BY THE DESIGN STANDARDS.
6. FOR ADT <250 GRADES MAY BE INCREASED BY 150% FOR RELATIVELY SHORT LENGTHS.

FLAT ROADWAYS ARE THOSE SECTIONS OF ROADWAY IN WHICH THERE ARE LITTLE OR NO TOPOGRAPHIC RESTRAINTS ON VERTICAL AND HORIZONTAL SIGHT DISTANCE AND WHICH COULD BE CONSTRUCTED WITH MINOR CUTS AND FILLS.

ROLLING ROADWAYS ARE THOSE SECTIONS OF ROADWAY IN WHICH THERE ARE TOPOGRAPHIC RESTRAINTS ON VERTICAL AND HORIZONTAL SIGHT DISTANCE WHICH REQUIRE SOME MODERATE CUTS AND FILL.

MOUNTAINOUS ROADWAYS ARE THOSE SECTIONS OF ROADWAY WHICH REQUIRE MAXIMUM OR NEAR MAXIMUM GRADES AND MINIMUM CURVE RADII IN ORDER TO REDUCE THE CUTS AND FILLS TO PRACTICAL AND VISUALLY ACCEPTABLE HEIGHTS.

THE DETERMINATION OF FLAT, ROLLING, OR MOUNTAINOUS ROADWAYS SHALL BE UNIFORM OVER THE FULL LENGTH OF A ROADWAY EXCEPT WHERE THE DEPARTMENT DETERMINES THAT A SAFE TRANSITION MAY BE MADE.



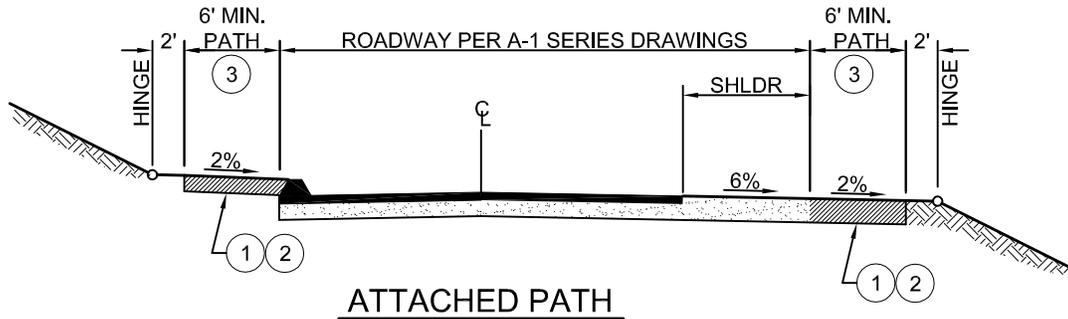
DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

RURAL ROAD DESIGN CRITERIA

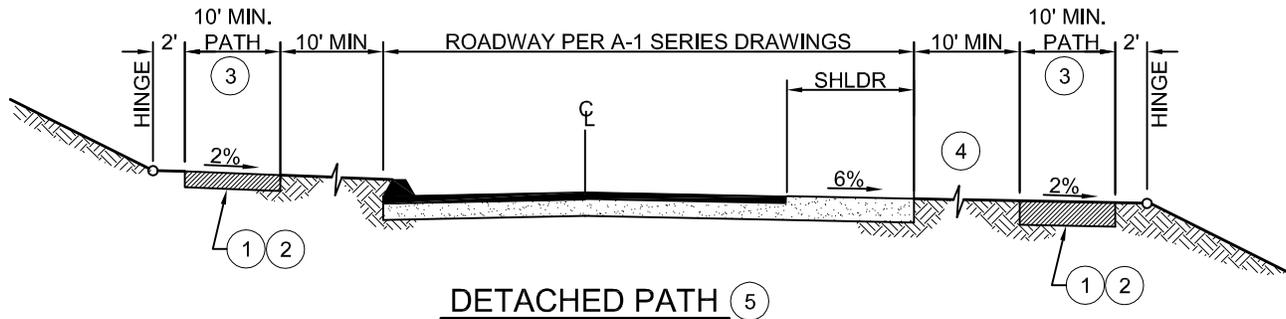
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Revisions

Description	Approved	Date	Description	Approved	Date
NOTES 1 & 8	GDM	JAN 11			
REVISED NOTES 3 THROUGH 7	FH	AUG 14			



ATTACHED PATH



DETACHED PATH (5)

NOTES:

1. THE LONGITUDINAL GRADE ON THE DETACHED PATH SHALL MATCH THE ADJACENT ROADWAY GRADE.
2. PATH MATERIAL SHALL BE: 6-INCHES MINIMUM DEPTH ANGULAR DECOMPOSED GRANITE WITH A MAXIMUM AGGREGATE SIZE OF 3/8-INCH OR LESS AND COMPACTED TO A MINIMUM OF 90%. NATIVE SANDY MATERIAL MAY BE USED IF IT IS CONFINED EITHER BY THE ROADWAY OR BY AN APPROVED ROOT BARRIER INSTALLED ON BOTH SIDES OF PATH, AND CONSTRUCTED TO A MINIMUM DEPTH OF OF 24-INCHES AND COMPACTED TO 90%. THE PATH SHALL BE TOLERANT TO NORMAL USE AND RESISTANT TO EROSION.
3. NO OBSTACLES OR AT-GRADE VAULTS SHALL BE LOCATED WITHIN THE LIMITS OF THE PATH. ADJACENT TO THE PATH THE FOLLOWING MINIMUM LATERAL CLEARANCES TO OBSTACLES SHALL BE MAINTAINED:
 2' MINIMUM LATERAL CLEARANCE ON EACH SIDE OF PATH.
 5' MINIMUM LATERAL CLEARANCE FROM NEW TREES, SHRUBS AND OTHER OBSTRUCTIONS.
 10' MINIMUM LATERAL CLEARANCE FROM UNFENCED DRAINAGE BASINS.
 12' MINIMUM LATERAL CLEARANCE TO OVERHEAD BRANCHES, SIGNS, AND OTHER ABOVE GRADE OBSTACLES.
4. RURAL ROADS WITH PREVAILING SPEEDS OF 45 MPH OR GREATER OR HAVE AN ADT OF 3,000 OR GREATER SHALL REQUIRE A DETACHED PATH.
5. NO PORTION OF THE PATH SHALL BE USED AS PART OF A SURFACE DRAINAGE CONVEYANCE SYSTEM.
6. IF DRAINAGE FACILITIES ARE REQUIRED THEY SHALL BE EITHER STORM DRAIN PIPES WITH A MINIMUM COVER OF 1-FOOT OVER THE PATH OR A CONCRETE DRY CROSSING (DESIGN TO BE APPROVED BY THE DEPARTMENT).
7. PATH SIGNAGE MAY BE REQUIRED AND MUST HAVE PRIOR APPROVAL FROM THE COUNTY PARKS & RECREATION.

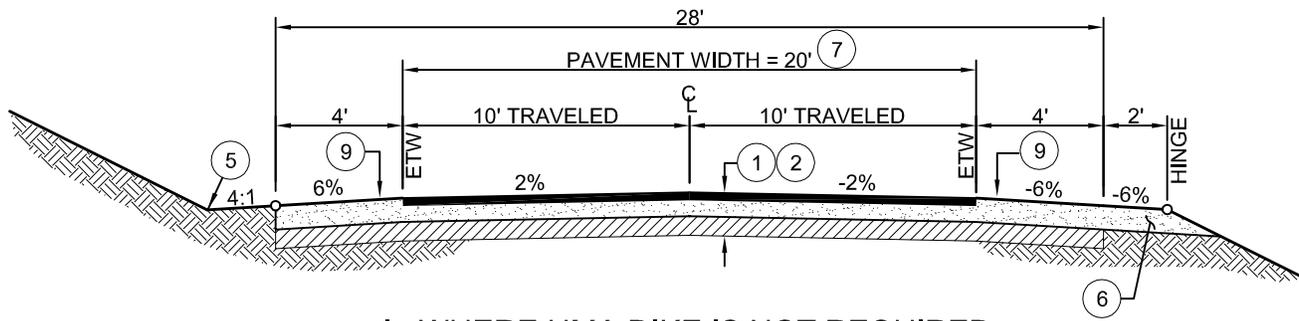


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TYPICAL RURAL ROAD SECTION
 MULTIUSE PATH

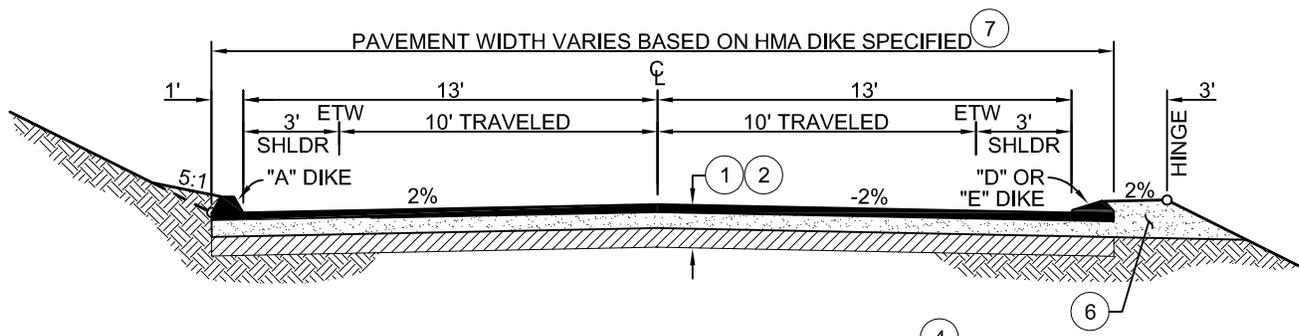
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Revisions

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NOTE 7	REM	NOV 07	NOTE 9		MAY 14
REPLACE AC WITH HMA, NOTE 4	GDM	JAN 11	REVISE NOTES 2, 3 & 6, DELETE NOTES 7, 8 & 9		AUG 14



I: WHERE HMA DIKE IS NOT REQUIRED



II: WHERE HMA DIKE IS REQUIRED

NOTES:

1. THE STRUCTURAL ROAD SECTION SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON THE SUBGRADE R-VALUE AND THE TRAFFIC INDEX (TI) AS PROVIDED BY THE DEPARTMENT, AND IN NO CASE SHALL THE ZONE OF COMPACTION BE LESS THAN 2.5-FEET IN THICKNESS. THE ROAD SECTION SHALL BE APPROVED BY THE DEPARTMENT PRIOR TO CONSTRUCTION.
2. TYPICAL SECTION SHALL BE:
 ■ HOT MIX ASPHALT (HMA), OVER
 ▨ CLASS II AGGREGATE BASE, OVER
 ▩ 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
3. THE AGGREGATE BASE MATERIAL SHALL EXTEND TO THE EDGE OF THE FILL SLOPE (CHOKER) TO ALLOW FOR STRUCTURAL ROAD SECTION DRAINAGE.
4. HMA DIKE REQUIREMENTS PER C-3.
5. THE PROJECT ENGINEER SHALL ACCOMMODATE FOR ROADSIDE DRAINAGE SUCH THAT IT DOES NOT ERODE THE AGGREGATE SHOULDER. DESIGN AND CONSTRUCTION SHALL BE TO THE SATISFACTION OF THE DEPARTMENT.
6. ADDITIONAL WIDTH SHALL BE PROVIDED WHERE TURN AND/OR BICYCLE LANES ARE REQUIRED BY THE DESIGN STANDARDS.

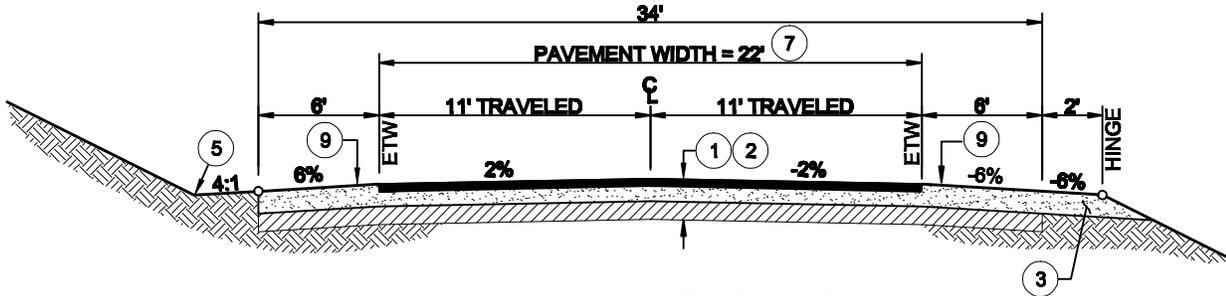


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
TYPICAL RURAL ROAD SECTION
 LESS THAN 400 FUTURE ADT

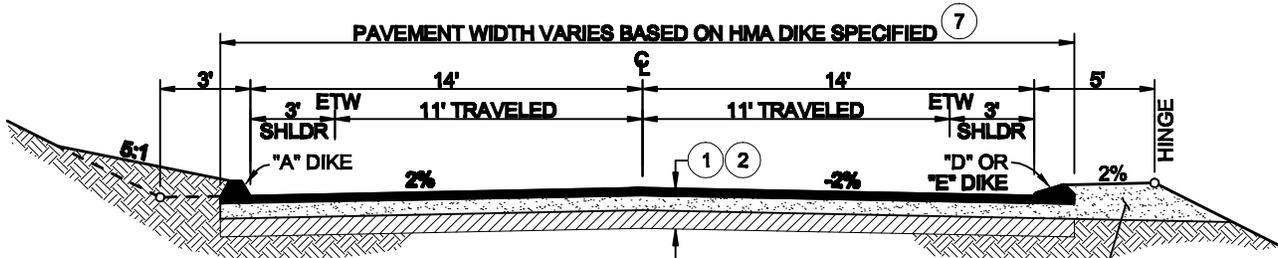
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Revisions

Description	Approved	Date	Description	Approved	Date
NOTE 7	REM	NOV 07	NOTE 9		MAY 14
REPLACE AC WITH HMA, NOTE 4	GDM	JAN 11	REVISE NOTES 2, 3 & 6, DELETE NOTES 7 & 8		AUG 14



I: WHERE HMA DIKE IS NOT REQUIRED



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2. TYPICAL SECTION SHALL BE:
 ■■■■■ HOT MIX ASPHALT (HMA), OVER
 ■■■■■ CLASS II AGGREGATE BASE, OVER
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3. THE AGGREGATE BASE MATERIAL SHALL EXTEND TO THE EDGE OF THE FILL SLOPE (CHOKER) TO ALLOW FOR STRUCTURAL ROAD SECTION DRAINAGE.
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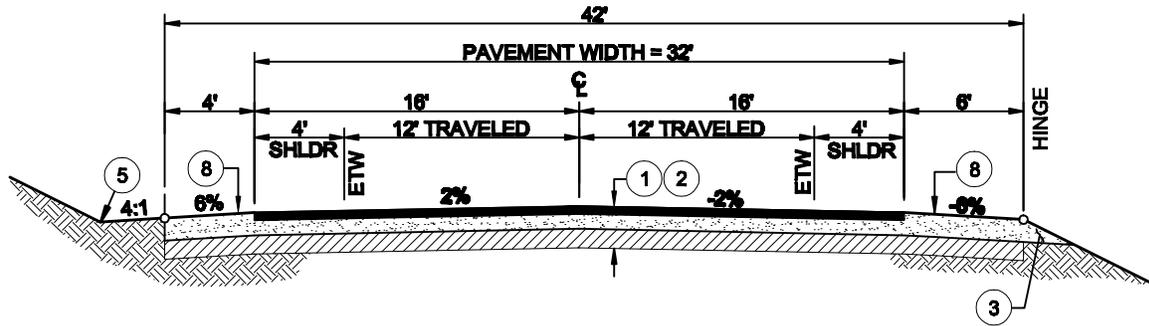


**DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
TYPICAL RURAL ROAD SECTION
401 TO 1000 FUTURE ADT**

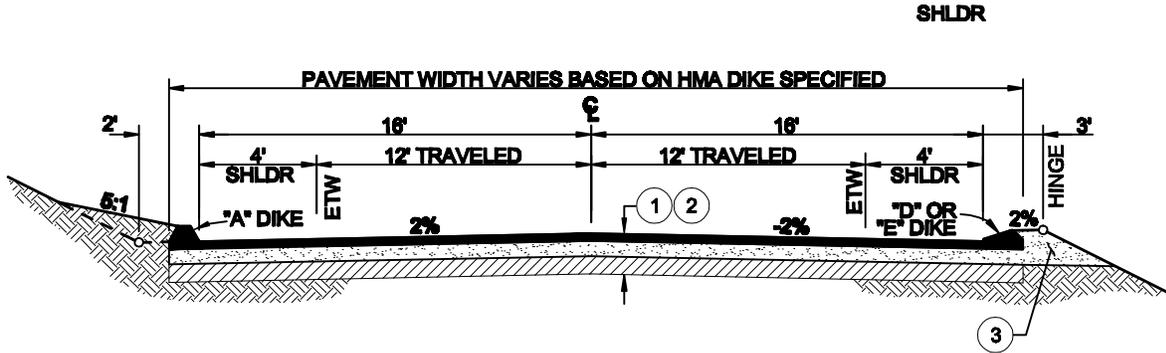
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Revisions

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CHANGE 6,000 TO 5,000 FUTURE ADT	REM	NOV 07	CHANGE FUTURE ADT RANGE, NOTE 9, SHLDR DIMS		MAY 14
REPLACE AC WITH HMA, NOTE 4, 3' MIN. TO HINGE	GDM	JAN 11	REVISE NOTES 2 & 3, DELETE NOTES 6,7,& 8		AUG 14



I: WHERE HMA DIKE IS NOT REQUIRED



II: WHERE HMA DIKE IS REQUIRED

NOTES:

1. THE STRUCTURAL ROAD SECTION SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON THE SUBGRADE R-VALUE AND THE TRAFFIC INDEX (TI) AS PROVIDED BY THE DEPARTMENT, AND IN NO CASE SHALL THE ZONE OF COMPACTION BE LESS THAN 2.5- FEET IN THICKNESS. THE ROAD SECTION SHALL BE APPROVED BY THE DEPARTMENT PRIOR TO CONSTRUCTION.
2. TYPICAL SECTION SHALL BE:
 ■ HOT MIX ASPHALT (HMA), OVER
 ■ CLASS II AGGREGATE BASE, OVER
 ▨ 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
3. THE AGGREGATE BASE MATERIAL SHALL EXTEND TO THE EDGE OF THE FILL SLOPE (CHOKER) TO ALLOW FOR STRUCTURAL ROAD SECTION DRAINAGE.
4. HMA DIKE REQUIREMENTS PER C-3.
5. THE PROJECT ENGINEER SHALL ACCOMMODATE FOR ROADSIDE DRAINAGE SUCH THAT IT DOES NOT ERODE THE AGGREGATE SHOULDER.

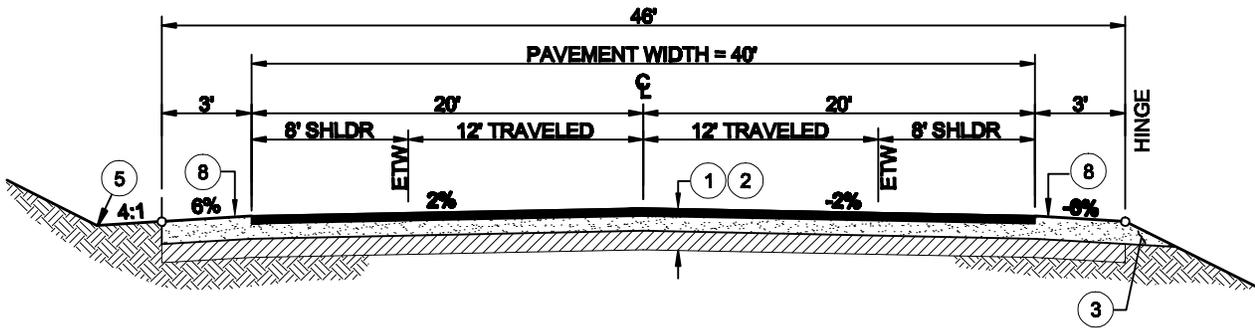


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
TYPICAL RURAL ROAD SECTION
 1001 TO 6000 FUTURE ADT

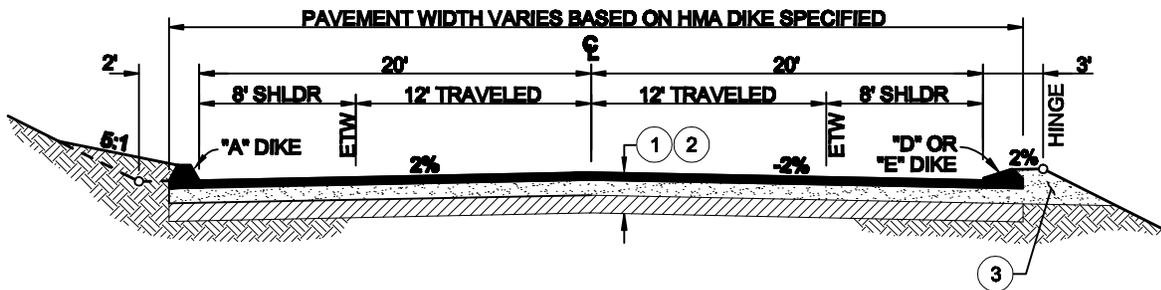
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Revisions

Description	Approved	Date	Description	Approved	Date
CHANGE 6,000 TO 5,000 FUTURE ADT	REM	NOV 07	ADT RANGE, NOTE 8		MAY 14
REPLACE AC WITH HMA, NOTE 4, 3' MIN. TO HINGE	GDM	JAN 11	REVISE NOTES 2 & 3, DELETE NOTES 6, 7 & 8		AUG 14



I: WHERE HMA DIKE IS NOT REQUIRED



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NOTES:

1. THE STRUCTURAL ROAD SECTION SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON THE SUBGRADE R-VALUE AND THE TRAFFIC INDEX (TI) AS PROVIDED BY THE DEPARTMENT, AND IN NO CASE SHALL THE ZONE OF COMPACTION BE LESS THAN 2.5-FEET IN THICKNESS. THE ROAD SECTION SHALL BE APPROVED BY THE DEPARTMENT PRIOR TO CONSTRUCTION.
2. TYPICAL SECTION SHALL BE:
 ■ HOT MIX ASPHALT (HMA), OVER
 ▨ CLASS II AGGREGATE BASE, OVER
 ▩ 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
3. THE AGGREGATE BASE MATERIAL SHALL EXTEND TO THE EDGE OF THE FILL SLOPE (CHOKER) TO ALLOW FOR STRUCTURAL ROAD SECTION DRAINAGE.
4. HMA DIKE REQUIREMENTS PER C-3.
5. THE PROJECT ENGINEER SHALL ACCOMMODATE FOR ROADSIDE DRAINAGE SUCH THAT IT DOES NOT ERODE THE AGGREGATE SHOULDER.

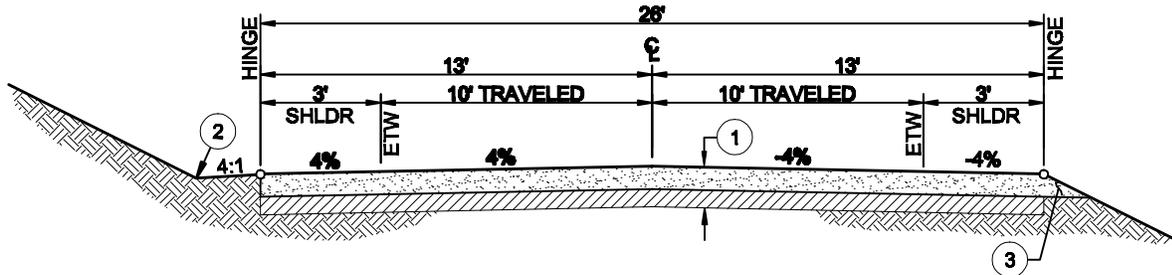


**DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
TYPICAL RURAL ROAD SECTION
OVER 6000 FUTURE ADT**

Scale: NTS	Adopted: 2014
Drawing No: A-1e	
Sheet No: 1 OF 1	

Revisions

Description	Approved	Date	Description	Approved	Date
10' TRAVEL LANE	REM	NOV 07			
REVISE NOTES 2 AND 3	FH	AUG 14			



NOTES:

1. TYPICAL SECTION SHALL BE:

-  4" MINIMUM CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION FOR R ≥40, OR
-  6" MINIMUM CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION FOR R <40, OVER
-  12" MINIMUM SUBGRADE COMPACTED TO 95% RELATIVE COMPACTION

2. THE PROJECT ENGINEER SHALL ACCOMMODATE FOR ROADSIDE DRAINAGE SUCH THAT IT DOES NOT ERODE THE AGGREGATE SHOULDER. THE SIDE SLOPE OF ANY DRAINAGE SWALE DIRECTLY ADJACENT TO THE EDGE OF ROADWAY SHALL NOT EXCEED 4h:1v. DESIGN AND CONSTRUCTION SHALL BE TO THE SATISFACTION OF THE DEPARTMENT.
3. THE AGGREGATE BASE MATERIAL SHALL EXTEND TO THE EDGE OF THE FILL SLOPE (CHOKER) TO ALLOW FOR STRUCTURAL ROAD SECTION DRAINAGE.

DESIGN CRITERIA

	MIN. DESIGN SPEED	MIN. CURVE RADIUS	MAX. GRADE
FLAT	30 mph	275 ft	7%
ROLLING	20 mph	130 ft	12%
MOUNTAIN	15 mph	75 ft	12%

DESIGN CRITERIA NOTES:

1. OPTION FOR USE IN RURAL AND AGRICULTURAL LAND USE CATEGORIES WHERE THE 20 YEAR PROJECTED ADT DOES NOT EXCEED 100.
2. MINIMUM LONGITUDINAL SLOPE SHALL BE 0.50%.
3. GRADES GREATER THAN 12% SHALL REQUIRE PAVED SURFACES PER DRAWING A-1b AND THE FIRE AGENCY STANDARDS.



**DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
TYPICAL RURAL ROAD SECTION
GRAVEL ROAD STANDARD**

Scale:	Adopted:
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Revisions

Description	Approved	Date	Description	Approved	Date

CRITERIA	ADT <500	ADT 500-1500	ADT 1500-5000	ADT >5000
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DESIGN SPEED, MILES PER HOUR, (MINIMUM)

FLAT	25	35	45	45
ROLLING	25	35	40	40
MOUNTAINOUS	20	30	35	35

CURVE RADIUS, FT. (MINIMUM)

FLAT	250	600	1100	1100
ROLLING	250	600	800	800
MOUNTAINOUS	125	400	600	600

GRADE, PERCENT (MAXIMUM)

FLAT	7	6	4	3
ROLLING	12	9	6	5
MOUNTAINOUS	15	13	8	7

NOTES:

1. ADT IS BASED UPON A 20-YEAR PROJECTION.
2. SUPERELEVATION NOT PERMITTED ON URBAN ROADS.
3. THE STRUCTURAL SECTION SHALL BE BASED ON THE TRAFFIC INDEX AS PROVIDED BY THE DEPARTMENT.
4. RIGHT OF WAY SHALL BE THE MINIMUM REQUIRED BY THE DESIGN STANDARDS.

FLAT ROADWAYS ARE THOSE SECTIONS OF ROADWAY IN WHICH THERE ARE LITTLE OR NO TOPOGRAPHIC RESTRAINTS ON VERTICAL AND HORIZONTAL SIGHT DISTANCE AND WHICH COULD BE CONSTRUCTED WITH MINOR CUTS AND FILLS.

ROLLING ROADWAYS ARE THOSE SECTIONS OF ROADWAY IN WHICH THERE ARE TOPOGRAPHIC RESTRAINTS ON VERTICAL AND HORIZONTAL SIGHT DISTANCE WHICH REQUIRE SOME MODERATE CUTS AND FILL.

MOUNTAINOUS ROADWAYS ARE THOSE SECTIONS OF ROADWAY WHICH REQUIRE MAXIMUM OR NEAR MAXIMUM GRADES AND MINIMUM CURVE RADII IN ORDER TO REDUCE THE CUTS AND FILLS TO PRACTICAL AND VISUALLY ACCEPTABLE HEIGHTS.

THE DETERMINATION OF FLAT, ROLLING, OR MOUNTAINOUS ROADWAYS SHALL BE UNIFORM OVER THE FULL LENGTH OF A ROADWAY EXCEPT WHERE THE DEPARTMENT DETERMINES THAT A SAFE TRANSITION MAY BE MADE.

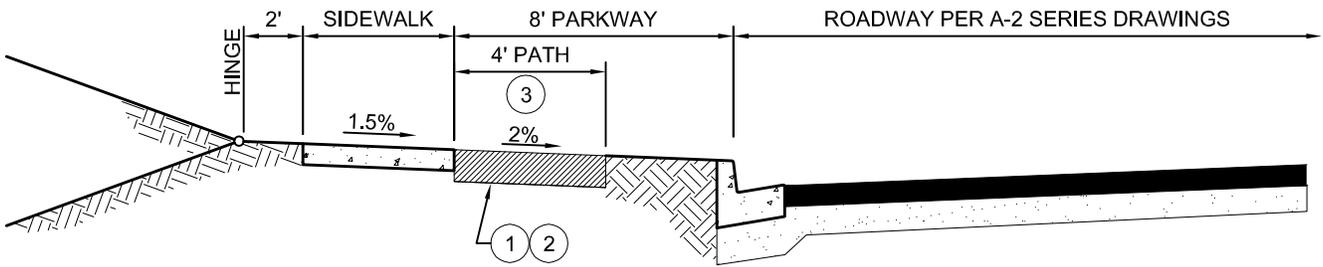


**DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
URBAN STREET DESIGN CRITERIA**

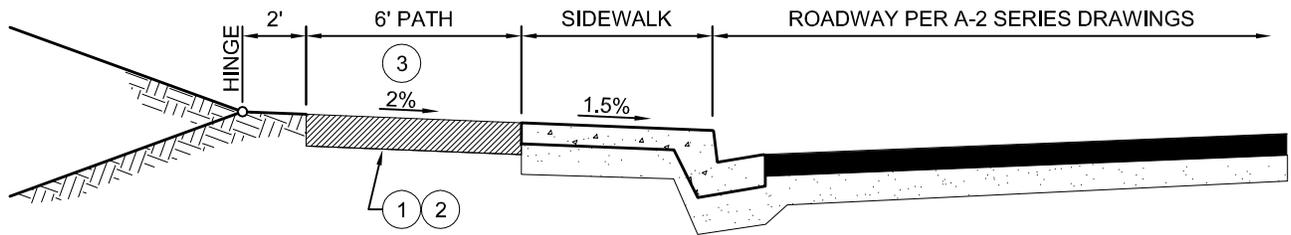
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Revisions

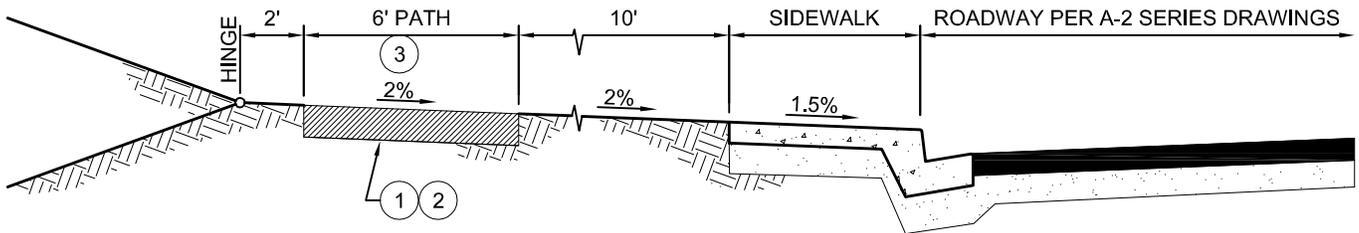
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NOTES 1 & 8	GDM	JAN 11			
REVISE NOTES 4, 5, 6 AND 7	FH	AUG 14			



ATTACHED PATH



ATTACHED PATH W/O PARKWAY



DETACHED PATH - $\geq 45\text{mph}$ & 3,000 ADT ④

NOTES:

1. THE LONGITUDINAL GRADE OF THE DETACHED PATH SHALL MATCH THE ADJACENT ROADWAY GRADE.
2. PATH MATERIAL SHALL BE: 6-INCHES MINIMUM DEPTH ANGULAR DECOMPOSED GRANITE WITH A MAXIMUM AGGREGATE SIZE OF 3/8-INCH OR LESS AND COMPACTED TO A MINIMUM OF 90%. NATIVE SANDY MATERIAL MAY BE USED IF IT IS CONFINED EITHER BY THE ROADWAY OR BY AN APPROVED ROOT BARRIER INSTALLED ON BOTH SIDES OF PATH, AND CONSTRUCTED TO A MINIMUM DEPTH OF 24-INCHES AND COMPACTED TO 90%. THE PATH SHALL BE TOLERANT TO NORMAL USE AND RESISTANT TO EROSION.
3. NO OBSTACLES OR AT-GRADE VAULTS SHALL BE LOCATED WITHIN THE LIMITS OF THE PATH. ADJACENT TO THE PATH THE FOLLOWING MINIMUM CLEARANCES TO OBSTACLES SHALL BE MAINTAINED:
 MINIMUM OF 2' CLEARANCE ON EACH SIDE OF PATH.
 MINIMUM OF 5' CLEARANCE FROM NEW TREES, SHRUBS, AND OTHER OBSTRUCTIONS.
 MINIMUM OF 10' CLEARANCE FROM UNFENCED DRAINAGE BASINS.
 MINIMUM OF 12' CLEARANCE TO OVERHEAD BRANCHES, SIGNS, AND OTHER ABOVE GRADE OBSTACLES.
4. URBAN ROADS WITH PREVAILING SPEEDS OF 45 MPH OR GREATER OR HAVE AN ADT OF 3,000 OR GREATER SHALL LOCATE THE PATH 5-FEET FROM THE BACK OF SIDEWALK.
5. NO PORTION OF THE PATH SHALL BE USED AS PART OF A SURFACE DRAINAGE CONVEYANCE SYSTEM.
6. IF DRAINAGE FACILITIES ARE REQUIRED THEY SHALL BE EITHER STORM DRAIN PIPES WITH A MINIMUM COVER OF 1-FOOT OVER THE PATH OR A CONCRETE DRY CROSSING (DESIGN TO BE APPROVED BY THE DEPARTMENT).
7. PATH SIGNAGE MAY BE REQUIRED AND MUST HAVE PRIOR APPROVAL FROM THE COUNTY PARKS & RECREATION.

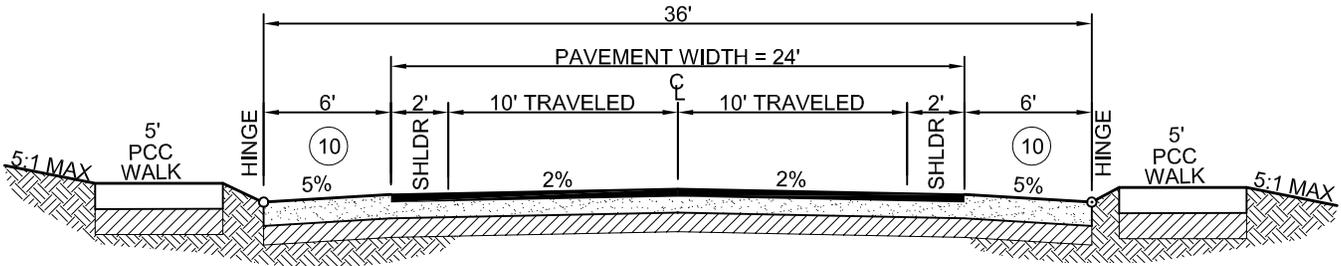


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
TYPICAL URBAN STREET SECTION
 MULTIUSE PATH

Scale: NTS	Adopted: 2014
Drawing No: A-2a	
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
NOTE 7	REM	NOV 07	NOTES 3-10, FIGURE		MAY 14
REPLACE AC WITH HMA, NOTE 4	GDM	JAN 11	REVISE NOTES 2,3,,5 AND 7	FH	AUG 14



NOTES:

1. THE STRUCTURAL ROAD SECTION SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON THE SUBGRADE R-VALUE AND THE TRAFFIC INDEX (TI) AS PROVIDED BY THE DEPARTMENT, AND IN NO CASE SHALL THE ZONE OF COMPACTION BE LESS THAN 2.5- FEET IN THICKNESS. THE ROAD SECTION SHALL BE APPROVED BY THE DEPARTMENT PRIOR TO CONSTRUCTION.
2. TYPICAL SECTION SHALL BE:
 - HOT MIX ASPHALT (HMA), OVER
 - CLASS II AGGREGATE BASE, OVER
 - 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
 SUBGRADE AND AGGREGATE BASE COMPACTION REQUIREMENTS SHALL EXTEND TO THE HINGE POINT.
3. CUT AND FILL SLOPES SHALL NOT EXCEED 5 HORIZONTAL:1 VERTICAL.
4. TRAVELED LANE WIDTH MAY BE INCREASED TO 12' ON ROAD SEGMENTS CLASSIFIED AS A COLLECTOR OR AS A CLASS III BIKE ROUTE
5. ADDITIONAL WIDTH SHALL BE PROVIDED WHERE TURNING LANES AND/OR BICYCLE LANES ARE REQUIRED.
6. OTHER FACILITIES SUCH AS LANDSCAPING, TRANSIT STOP FACILITIES, PEDESTRIAN, EQUESTRIAN, AND BICYCLE FACILITIES MAY BE REQUIRED BY THE DESIGN STANDARDS.
7. LANDSCAPE, IRRIGATION, AND MAINTENANCE OF PARKWAYS SHALL BE ADDRESSED IN THE APPROVED PROJECT PLANS. A LOCAL FUNDING SOURCE MUST BE IDENTIFIED.
8. WHERE APPLICABLE, ALL IMPROVEMENTS SHALL BE CONSISTENT WITH THE RESPECTIVE COMMUNITY DESIGN PLAN AS ADOPTED BY THE BOARD OF SUPERVISORS.
9. A STRIPING AND SIGNAGE PLAN SHALL BE REQUIRED BY THE DEPARTMENT WHEN BIKE LANES, NO PARKING ZONES, SIGNAGE, AND PAVEMENT MARKINGS ARE A REQUIRED COMPONENT OF THE IMPROVEMENTS.
10. ALTERNATIVE: PARKING LANE AND SHOULDER MAY BE SURFACED WITH TURF OR LANDSCAPE PAVERS WHERE PRIVATE MAINTENANCE SOURCE IS APPROVED BY DEPARTMENT.

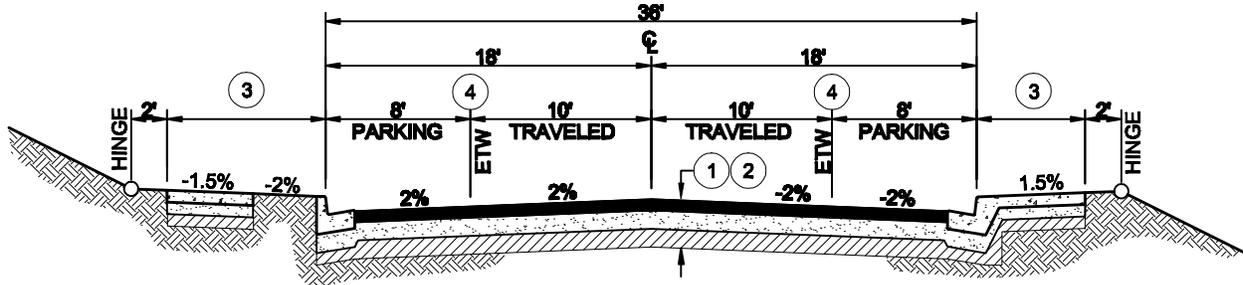


**DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
TYPICAL URBAN STREET SECTION FOR
RESIDENTIAL AREAS WITHOUT CURBS**

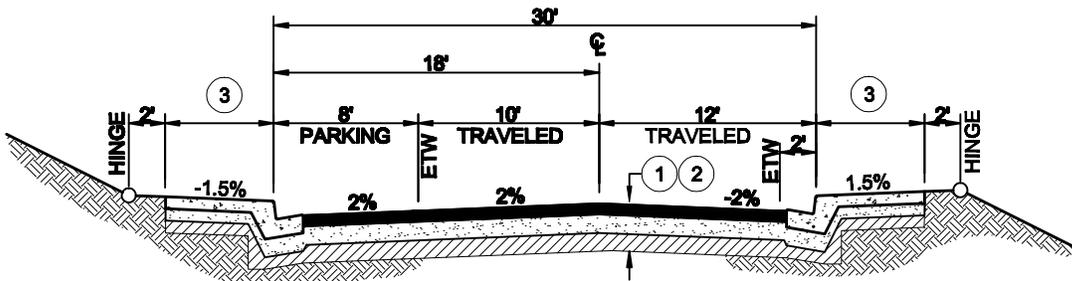
Scale: NTS	Adopted: 2014
Drawing No: A-2b	
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
NOTE 5	REM	NOV 07	FUTURE ADT		MAY 14
REPLACE AC WITH HMA	GDM	JAN 11	REVISE NOTES 2 - 7, DELETE NOTES 8 & 9		AUG 14



I: LESS THAN 500 FUTURE ADT-FLAT & ROLLING



II: LESS THAN 500 FUTURE ADT-MOUNTAINOUS

NOTES:

1. THE STRUCTURAL ROAD SECTION SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON THE SUBGRADE R-VALUE AND THE TRAFFIC INDEX (TI) AS PROVIDED BY THE DEPARTMENT, AND IN NO CASE SHALL THE ZONE OF COMPACTION BE LESS THAN 2.5-FEET IN THICKNESS. THE ROAD SECTION SHALL BE APPROVED BY THE DEPARTMENT PRIOR TO CONSTRUCTION.
2. TYPICAL SECTION SHALL BE:
 - HOT MIX ASPHALT (HMA, OVER
 - ▨ CLASS II AGGREGATE BASE, OVER
 - ▧ 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
 SUBGRADE AND AGGREGATE BASE COMPACTION REQUIREMENTS SHALL EXTEND TO THE BACK OF CURB OR TO THE BACK OF ATTACHED SIDEWALK (WHICHEVER CONDITION IS APPLICABLE).
3. ATTACHED OR DETACHED SIDEWALK TYPE AND WIDTH PER STANDARD DRAWING C-4 OR AS REQUIRED BY THE PROJECT CONDITIONS OF APPROVAL OR AREA SPECIFIC PLAN.
4. ADDITIONAL WIDTH SHALL BE PROVIDED WHERE TURN AND/OR BICYCLE LANES ARE REQUIRED BY THE DESIGN STANDARDS.
5. OTHER FACILITIES SUCH AS LANDSCAPING, TRANSIT STOP FACILITIES, PEDESTRIAN, EQUESTRIAN, AND BICYCLE FACILITIES MAY BE REQUIRED BY THE DESIGN STANDARDS.
6. LANDSCAPE, IRRIGATION, AND MAINTENANCE OF MEDIANS AND PARKWAYS SHALL BE ADDRESSED IN THE APPROVED PROJECT PLANS. A LOCAL FUNDING SOURCE MUST BE IDENTIFIED.
7. WHERE APPLICABLE, ALL IMPROVEMENTS SHALL BE CONSISTENT WITH THE RESPECTIVE COMMUNITY DESIGN PLAN AS ADOPTED BY THE BOARD OF SUPERVISORS.

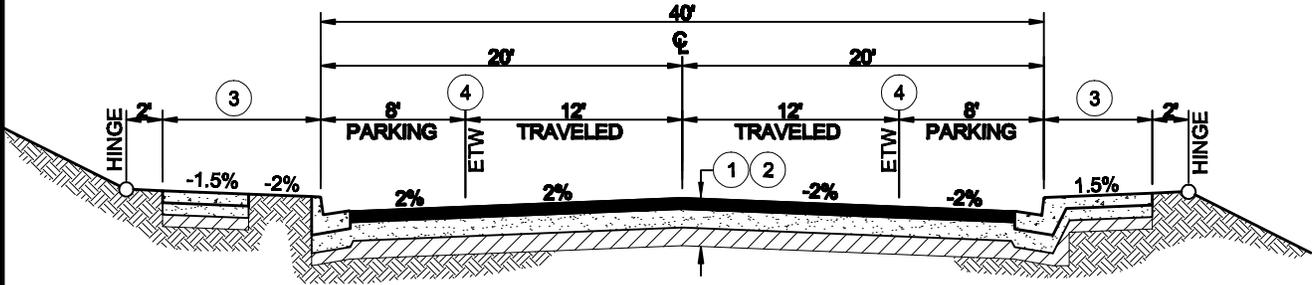


**DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
TYPICAL URBAN STREET SECTION
LESS THAN 500 FUTURE ADT**

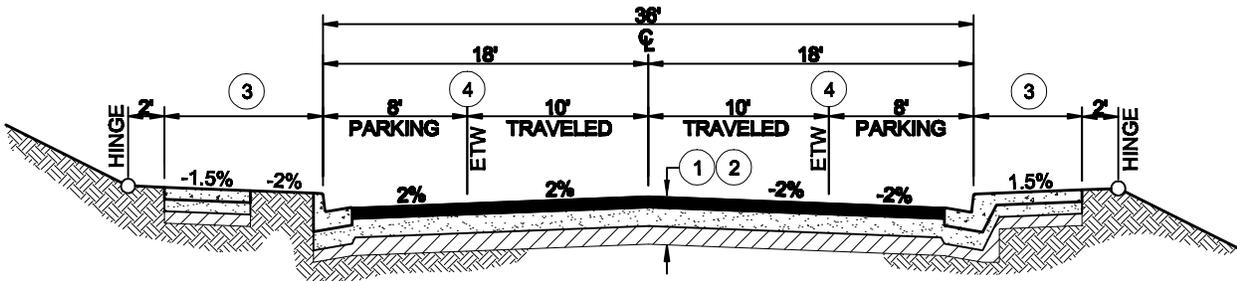
Scale: NTS	Adopted: 2014
Drawing No: A-2c	
Sheet No: 1 OF 1	

Revisions

Description	Approved	Date	Description	Approved	Date
NOTE 5	REM	NOV 07	FUTURE ADT		MAY 14
REPLACE AC WITH HMA	GDM	JAN 11	REVISE NOTES 2 - 7, DELETE NOTES 8 & 9		AUG 14



I: 500 TO 6000 FUTURE ADT-FLAT



II: 500 TO 1500 FUTURE ADT-ROLLING & MOUNTAINOUS

NOTES:

1. THE STRUCTURAL ROAD SECTION SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON THE SUBGRADE R-VALUE AND THE TRAFFIC INDEX (TI) AS PROVIDED BY THE DEPARTMENT, AND IN NO CASE SHALL THE ZONE OF COMPACTION BE LESS THAN 2.5-FEET IN THICKNESS. THE ROAD SECTION SHALL BE APPROVED BY THE DEPARTMENT PRIOR TO CONSTRUCTION.
2. TYPICAL SECTION SHALL BE:
 - HOT MIX ASPHALT (HMA), OVER
 - ▒ CLASS II AGGREGATE BASE, OVER
 - ▨ 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
 SUBGRADE AND AGGREGATE BASE COMPACTION REQUIREMENTS SHALL EXTEND TO THE BACK OF CURB OR TO THE BACK OF ATTACHED SIDEWALK (WHICHEVER CONDITION IS APPLICABLE).
3. ATTACHED OR DETACHED SIDEWALK TYPE AND WIDTH PER STANDARD DRAWING C-4 OR AS REQUIRED BY THE PROJECT CONDITIONS OF APPROVAL OR AREA SPECIFIC PLAN.
4. ADDITIONAL WIDTH SHALL BE PROVIDED WHERE TURN AND/OR BICYCLE LANES ARE REQUIRED BY THE DESIGN STANDARDS.
5. OTHER FACILITIES SUCH AS LANDSCAPING, TRANSIT STOP FACILITIES, PEDESTRIAN, EQUESTRIAN, AND BICYCLE FACILITIES MAY BE REQUIRED BY THE DESIGN STANDARDS.
6. LANDSCAPE, IRRIGATION, AND MAINTENANCE OF MEDIANS AND PARKWAYS SHALL BE ADDRESSED IN THE APPROVED PROJECT PLANS. A LOCAL FUNDING SOURCE MUST BE IDENTIFIED.
7. WHERE APPLICABLE, ALL IMPROVEMENTS SHALL BE CONSISTENT WITH THE RESPECTIVE COMMUNITY DESIGN PLAN AS ADOPTED BY THE BOARD OF SUPERVISORS.

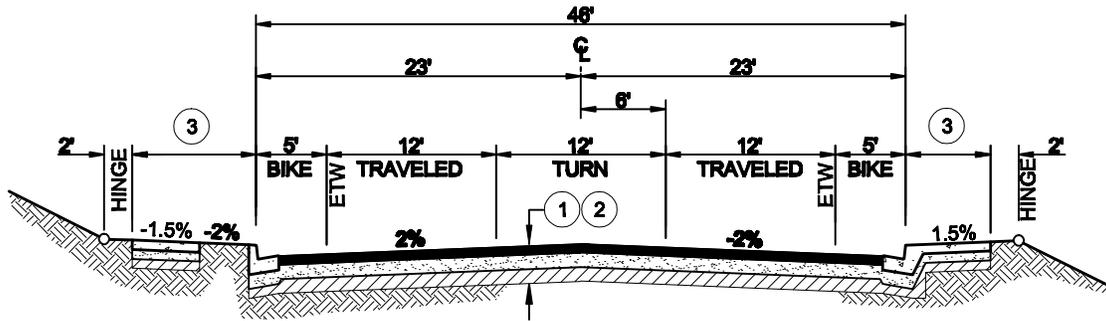


**DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
TYPICAL URBAN STREET SECTION
500 TO 6000 FUTURE ADT**

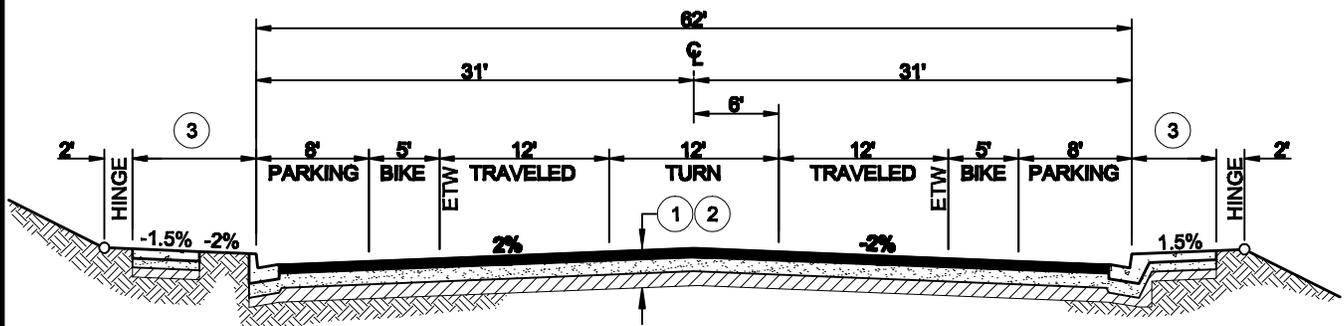
Scale: NTS	Adopted: 2014
Drawing No: A-2d	
Sheet No: 1 OF 1	

Revisions

Description	Approved	Date	Description	Approved	Date
REPLACE AC WITH HMA, NOTE 3	GDM	JAN 11	REVISE NOTES 2 - 6, DELETE NOTES 7 & 8		AUG 14
FUTURE ADT		MAY 14			



I: 6001 TO 16000 FUTURE ADT WITHOUT PARKING



II: 6001 TO 16000 FUTURE ADT WITH PARKING

NOTES:

1. THE STRUCTURAL ROAD SECTION SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON THE SUBGRADE R-VALUE AND THE TRAFFIC INDEX (TI) AS PROVIDED BY THE DEPARTMENT, AND IN NO CASE SHALL THE ZONE OF COMPACTION BE LESS THAN 2.5- FEET IN THICKNESS. THE ROAD SECTION SHALL BE APPROVED BY THE DEPARTMENT PRIOR TO CONSTRUCTION.

2. TYPICAL SECTION SHALL BE:

■ HOT MIX ASPHALT (HMA), OVER

▨ CLASS II AGGREGATE BASE, OVER

▧ 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION

SUBGRADE AND AGGREGATE BASE COMPACTION REQUIREMENTS SHALL EXTEND TO THE BACK OF CURB OR TO THE BACK OF ATTACHED SIDEWALK (WHICHEVER CONDITION IS APPLICABLE).

3. ATTACHED OR DETACHED SIDEWALK TYPE AND WIDTH PER STANDARD DRAWING C-4 OR AS REQUIRED BY THE PROJECT CONDITIONS OF APPROVAL OR AREA SPECIFIC PLAN.

4. OTHER FACILITIES SUCH AS LANDSCAPING, TRANSIT STOP FACILITIES, PEDESTRIAN, EQUESTRIAN, AND BICYCLE FACILITIES MAY BE REQUIRED BY THE DESIGN STANDARDS.

5. LANDSCAPE, IRRIGATION, AND MAINTENANCE OF MEDIANS AND PARKWAYS SHALL BE ADDRESSED IN THE APPROVED PROJECT PLANS. A LOCAL FUNDING SOURCE MUST BE IDENTIFIED.

6. WHERE APPLICABLE, ALL IMPROVEMENTS SHALL BE CONSISTENT WITH THE RESPECTIVE COMMUNITY DESIGN PLAN AS ADOPTED BY THE BOARD OF SUPERVISORS.

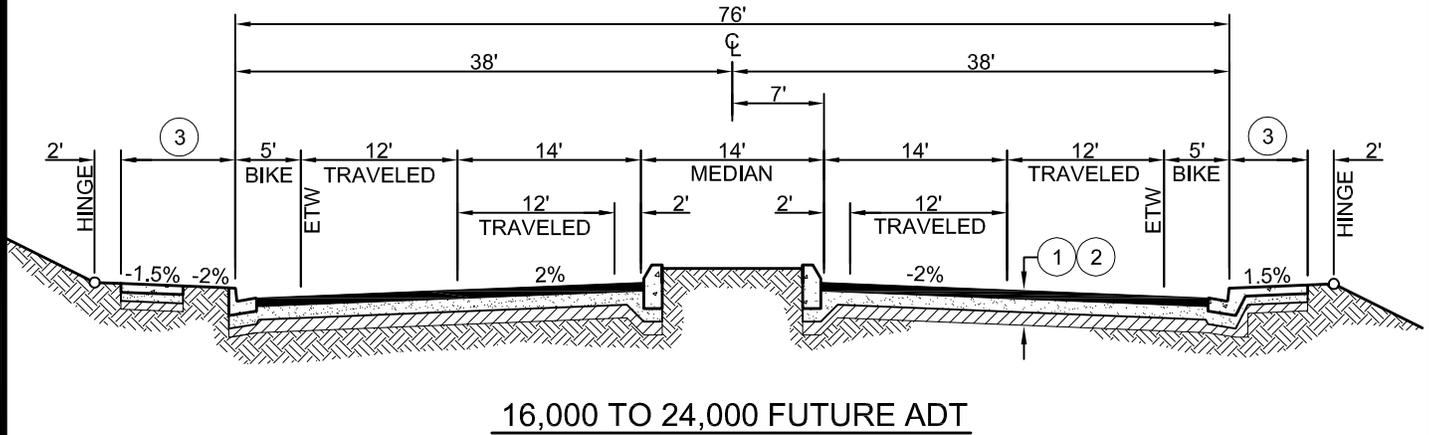


**DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
TYPICAL URBAN STREET SECTION
6,001 to 16,000 FUTURE ADT**

Scale: NTS	Adopted: 2014
Drawing No: A-2e	
Sheet No: 1 OF 1	

Revisions

Description	Approved	Date	Description	Approved	Date
REPLACE AC WITH HMA, NOTE 3	GDM	JAN 11	REVISE NOTES 2 - 7, DELETE NOTES 8 & 9		AUG 14
DRAWING NUMBER		MAY 14			



NOTES:

1. THE STRUCTURAL ROAD SECTION SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON THE SUBGRADE R-VALUE AND THE TRAFFIC INDEX (TI) AS PROVIDED BY THE DEPARTMENT, AND IN NO CASE SHALL THE ZONE OF COMPACTION BE LESS THAN 2.5-FEET IN THICKNESS. THE ROAD SECTION SHALL BE APPROVED BY THE DEPARTMENT PRIOR TO CONSTRUCTION.
2. TYPICAL SECTION SHALL BE:
 - HOT MIX ASPHALT (HMA), OVER
 - ▨ CLASS II AGGREGATE BASE, OVER
 - ▩ 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
 SUBGRADE AND AGGREGATE BASE COMPACTION REQUIREMENTS SHALL EXTEND TO THE BACK OF CURB OR TO THE BACK OF ATTACHED SIDEWALK (WHICHEVER CONDITION IS APPLICABLE).
3. ATTACHED OR DETACHED SIDEWALK TYPE AND WIDTH PER STANDARD DRAWING C-4 OR AS REQUIRED BY THE PROJECT CONDITIONS OF APPROVAL OR AREA SPECIFIC PLAN.
4. WHEN STREET PARKING IS REQUIRED AN ADDITIONAL WIDTH OF 8-FEET MINIMUM SHALL BE PROVIDED.
5. OTHER FACILITIES SUCH AS LANDSCAPING, TRANSIT STOP FACILITIES, PEDESTRIAN, EQUESTRIAN, AND BICYCLE FACILITIES MAY BE REQUIRED BY THE DESIGN STANDARDS.
6. LANDSCAPE, IRRIGATION, AND MAINTENANCE OF MEDIANS AND PARKWAYS SHALL BE ADDRESSED IN THE APPROVED PROJECT PLANS. A LOCAL FUNDING SOURCE MUST BE IDENTIFIED.
7. WHERE APPLICABLE, ALL IMPROVEMENTS SHALL BE CONSISTENT WITH THE RESPECTIVE COMMUNITY DESIGN PLAN AS ADOPTED BY THE BOARD OF SUPERVISORS.



DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
TYPICAL URBAN STREET SECTION
 16,000 to 24,000 FUTURE ADT

Scale: NTS	Adopted: 2014
Drawing No: A-2f	
Sheet No: 1 OF 1	

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Revisions

Description	Approved	Date	Description	Approved	Date

CRITERIA	ADT	ADT	ADT	ADT
	<500	500-1500	1500-5000	>5000

DESIGN SPEED, MILES PER HOUR, (MINIMUM)

FLAT	25	30	35	35
ROLLING	25	30	30	30
MOUNTAINOUS	20	25	25	25

CURVE RADIUS, FT. (MINIMUM)

FLAT	250	400	600	600
ROLLING	250	400	400	400
MOUNTAINOUS	125	250	250	250

GRADE, PERCENT (MAXIMUM)

FLAT	7	6	4	3
ROLLING	10	9	6	5
MOUNTAINOUS	10	9	8	7

NOTES:

1. ADT IS BASED UPON A 20-YEAR PROJECTION.
2. SUPERELEVATION NOT PERMITTED ON COMMERCIAL / INDUSTRIAL ROADS.
3. THE STRUCTURAL SECTION SHALL BE BASED ON THE TRAFFIC INDEX AS PROVIDED BY THE DEPARTMENT.
4. RIGHT OF WAY SHALL BE THE MINIMUM REQUIRED BY THE DESIGN STANDARDS.

FLAT ROADWAYS ARE THOSE SECTIONS OF ROADWAY IN WHICH THERE ARE LITTLE OR NO TOPOGRAPHIC RESTRAINTS ON VERTICAL AND HORIZONTAL SIGHT DISTANCE AND WHICH COULD BE CONSTRUCTED WITH MINOR CUTS AND FILLS.

ROLLING ROADWAYS ARE THOSE SECTIONS OF ROADWAY IN WHICH THERE ARE TOPOGRAPHIC RESTRAINTS ON VERTICAL AND HORIZONTAL SIGHT DISTANCE WHICH REQUIRE SOME MODERATE CUTS AND FILL.

MOUNTAINOUS ROADWAYS ARE THOSE SECTIONS OF ROADWAY WHICH REQUIRE MAXIMUM OR NEAR MAXIMUM GRADES AND MINIMUM CURVE RADII IN ORDER TO REDUCE THE CUTS AND FILLS TO PRACTICAL AND VISUALLY ACCEPTABLE HEIGHTS.

THE DETERMINATION OF FLAT, ROLLING, OR MOUNTAINOUS ROADWAYS SHALL BE UNIFORM OVER THE FULL LENGTH OF A ROADWAY EXCEPT WHERE THE DEPARTMENT DETERMINES THAT A SAFE TRANSITION MAY BE MADE.

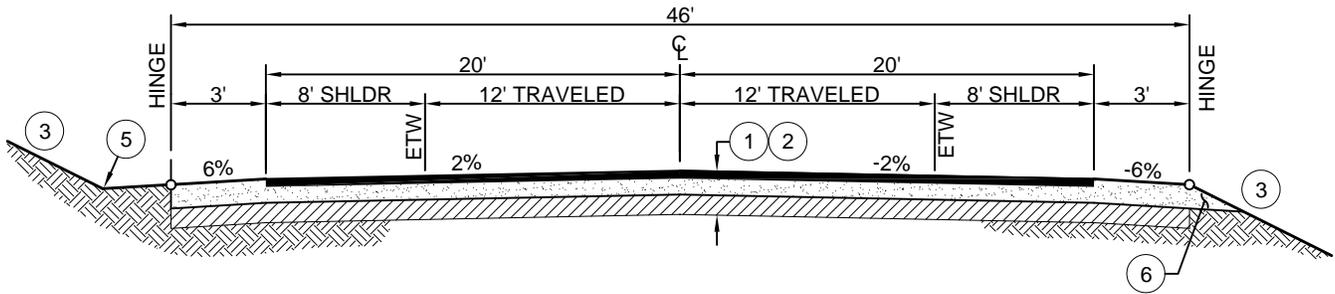


**DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
COMMERCIAL-INDUSTRIAL ROAD
DESIGN CRITERIA**

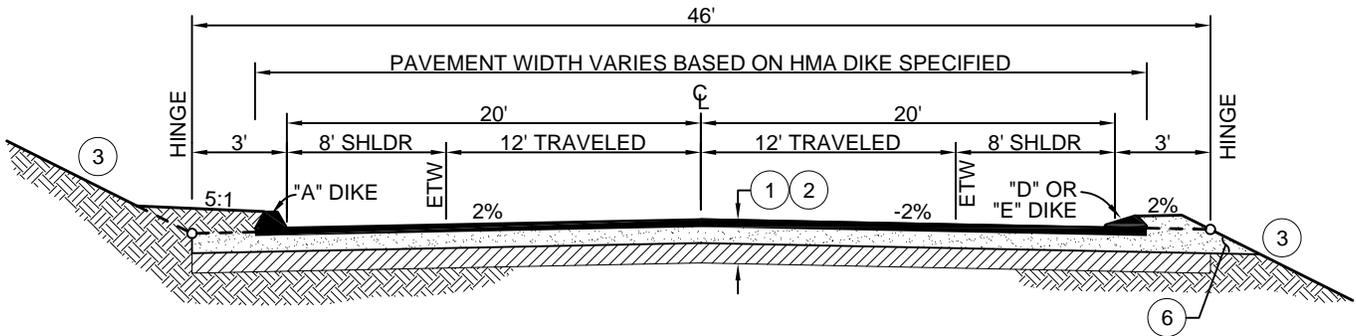
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Drawing No:	A-3
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
REPLACE AC WITH HMA, NOTE 4	GDM	JAN 11			



I: LESS THAN 5000 FUTURE ADT WITHOUT HMA DIKE - OUTSIDE URL



II: LESS THAN 5000 FUTURE ADT WITH HMA DIKE - OUTSIDE URL

NOTES:

1. THE STRUCTURAL ROAD SECTION SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON THE SUBGRADE R-VALUE AND THE TRAFFIC INDEX (TI) AS PROVIDED BY THE DEPARTMENT, AND IN NO CASE SHALL THE ZONE OF COMPACTION BE LESS THAN 2.5-FEET IN THICKNESS. THE ROAD SECTION SHALL BE APPROVED BY THE DEPARTMENT PRIOR TO CONSTRUCTION.
2. TYPICAL SECTION SHALL BE:
 - HOT MIX ASPHALT (HMA) PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER
 - ▨ CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER
 - ▩ 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
3. CUT AND FILL SLOPES SHALL NOT EXCEED 2 HORIZONTAL:1 VERTICAL (OR 3h:1v IN NATIVE SAND) WITHOUT PRIOR APPROVAL BY THE DEPARTMENT.
4. HMA DIKE REQUIREMENTS PER C-3.
5. THE PROJECT ENGINEER SHALL ACCOMMODATE FOR ROADSIDE DRAINAGE SUCH THAT IT DOES NOT ERODE THE AGGREGATE SHOULDER. THE SIDE SLOPE OF ANY DRAINAGE SWALE DIRECTLY ADJACENT TO THE EDGE OF ROADWAY SHALL NOT EXCEED 4h:1v. DESIGN AND CONSTRUCTION SHALL BE TO THE SATISFACTION OF THE DEPARTMENT.
6. THE AGGREGATE BASE MATERIAL SHALL EXTEND TO THE EDGE OF THE FILL SLOPE (CHOKER) TO ALLOW FOR STRUCTURAL ROAD SECTION DRAINAGE.
7. A STRIPING AND SIGNAGE PLAN SHALL BE REQUIRED BY THE DEPARTMENT WHEN BIKE LANES, NO PARKING ZONES, SIGNAGE, AND PAVEMENT MARKINGS ARE A REQUIRED COMPONENT OF THE IMPROVEMENTS.

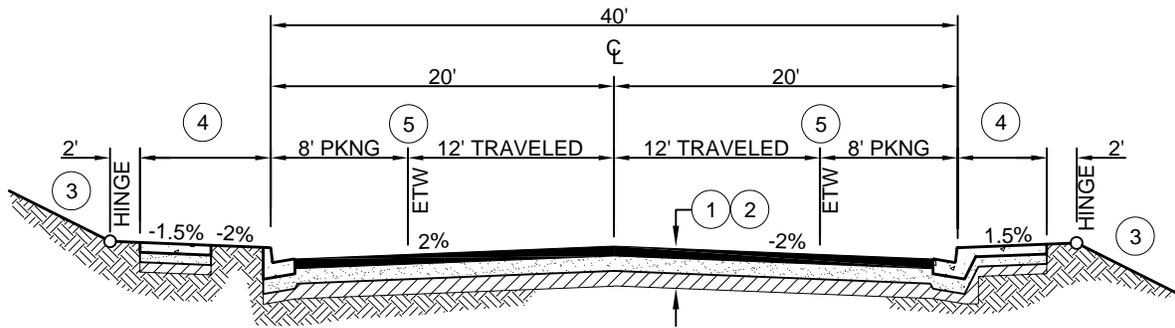


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
TYPICAL COMMERCIAL-INDUSTRIAL
RURAL ROADS OUTSIDE URL
LESS THAN 5,000 FUTURE ADT

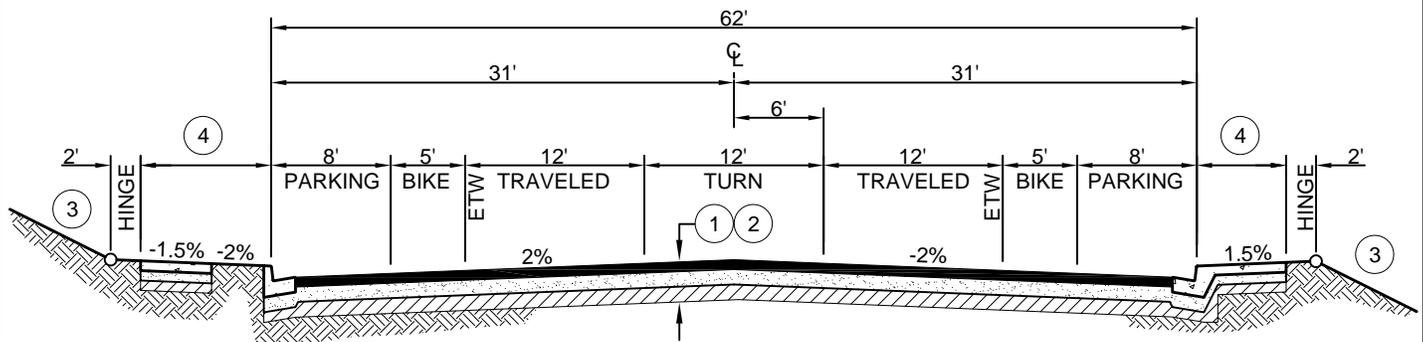
Scale: NTS	Adopted: 2011
Drawing No: A-3a	
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
MODIFY DRAWING TITLE	REM	NOV 07			
REPLACE AC WITH HMA, NOTE 3	GDM	JAN 11			



I: LESS THAN 5,000 FUTURE ADT - WITHIN URL



II: 5,000 TO 16,000 FUTURE ADT - WITHIN URL

NOTES:

1. THE STRUCTURAL ROAD SECTION SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON THE SUBGRADE R-VALUE AND THE TRAFFIC INDEX (TI) AS PROVIDED BY THE DEPARTMENT, AND IN NO CASE SHALL THE ZONE OF COMPACTION BE LESS THAN 2.5-FEET IN THICKNESS. THE ROAD SECTION SHALL BE APPROVED BY THE DEPARTMENT PRIOR TO CONSTRUCTION.
2. TYPICAL SECTION SHALL BE:
 - HOT MIX ASPHALT (HMA) PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER
 - ▨ CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER
 - ▩ 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
 SUBGRADE AND AGGREGATE BASE COMPACTION REQUIREMENTS SHALL EXTEND TO THE BACK OF CURB OR TO THE BACK OF ATTACHED SIDEWALK (WHICHEVER CONDITION IS APPLICABLE).
3. CUT AND FILL SLOPES SHALL NOT EXCEED 4 HORIZONTAL:1 VERTICAL WITHIN THE PUBLIC ROW WITHOUT PRIOR APPROVAL BY THE DEPARTMENT.
4. ATTACHED OR DETACHED SIDEWALK TYPE AND WIDTH PER STANDARD DRAWING C-4 OR AS REQUIRED BY THE PROJECT CONDITIONS OF APPROVAL OR AREA SPECIFIC PLAN.
5. ADDITIONAL 5-FOOT WIDTH SHALL BE PROVIDED WHERE BICYCLE LANES ARE REQUIRED BY THE DESIGN STANDARDS.
6. OTHER FACILITIES SUCH AS LANDSCAPING, TRANSIT STOP FACILITIES, PEDESTRIAN, EQUESTRIAN, AND BICYCLE FACILITIES MAY BE REQUIRED BY THE DESIGN STANDARDS.
7. LANDSCAPE, IRRIGATION, AND MAINTENANCE OF MEDIANS AND PARKWAYS SHALL BE ADDRESSED IN THE APPROVED PROJECT PLANS. A LOCAL FUNDING SOURCE MUST BE IDENTIFIED.
8. WHERE APPLICABLE, ALL IMPROVEMENTS SHALL BE CONSISTENT WITH THE RESPECTIVE COMMUNITY DESIGN PLAN AS ADOPTED BY THE BOARD OF SUPERVISORS.
9. A STRIPING AND SIGNAGE PLAN SHALL BE REQUIRED BY THE DEPARTMENT WHEN BIKE LANES, NO PARKING ZONES, SIGNAGE, AND PAVEMENT MARKINGS ARE A REQUIRED COMPONENT OF THE IMPROVEMENTS.

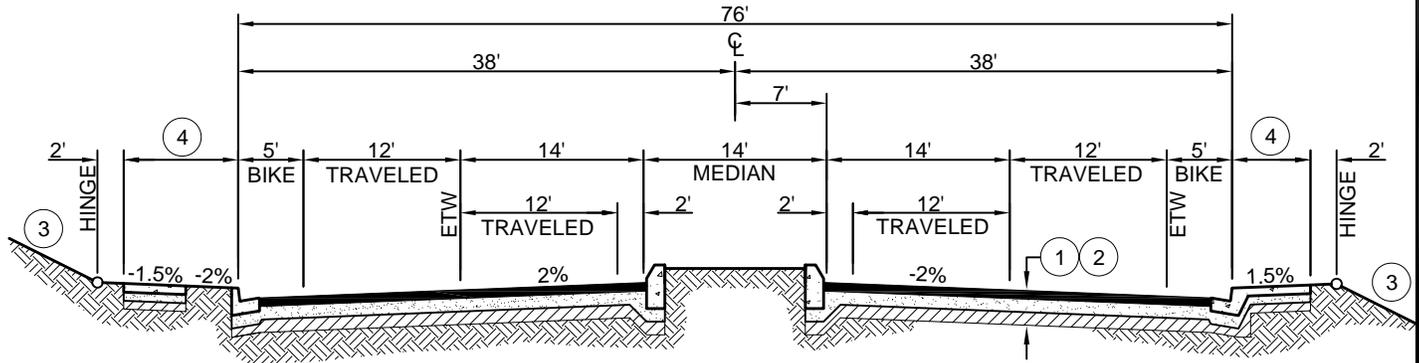


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
TYPICAL COMMERCIAL-INDUSTRIAL
URBAN STREETS WITHIN URL
LESS THAN 5,000 & 5,000 TO 16,000 FUTURE ADT

Scale: NTS	Adopted: 2011
Drawing No: A-3b	
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
REPLACE AC WITH HMA, NOTE 3	GDM	JAN 11			



GREATER THAN 16000 FUTURE ADT - WITHIN URL

NOTES:

1. THE STRUCTURAL ROAD SECTION SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON THE SUBGRADE R-VALUE AND THE TRAFFIC INDEX (TI) AS PROVIDED BY THE DEPARTMENT, AND IN NO CASE SHALL THE ZONE OF COMPACTION BE LESS THAN 2.5-FEET IN THICKNESS. THE ROAD SECTION SHALL BE APPROVED BY THE DEPARTMENT PRIOR TO CONSTRUCTION.
2. TYPICAL SECTION SHALL BE:
 - HOT MIX ASPHALT (HMA) PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER
 - ▨ CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER
 - ▩ 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
 SUBGRADE AND AGGREGATE BASE COMPACTION REQUIREMENTS SHALL EXTEND TO THE BACK OF CURB OR TO THE BACK OF ATTACHED SIDEWALK (WHICHEVER CONDITION IS APPLICABLE).
3. CUT AND FILL SLOPES SHALL NOT EXCEED 4 HORIZONTAL:1 VERTICAL WITHIN THE PUBLIC ROW WITHOUT PRIOR APPROVAL BY THE DEPARTMENT.
4. ATTACHED OR DETACHED SIDEWALK TYPE AND WIDTH PER STANDARD DRAWING C-4 OR AS REQUIRED BY THE PROJECT CONDITIONS OF APPROVAL OR AREA SPECIFIC PLAN.
5. OTHER FACILITIES SUCH AS LANDSCAPING, TRANSIT STOP FACILITIES, PEDESTRIAN, EQUESTRIAN, AND BICYCLE FACILITIES MAY BE REQUIRED BY THE DESIGN STANDARDS.
6. LANDSCAPE, IRRIGATION, AND MAINTENANCE OF MEDIANS AND PARKWAYS SHALL BE ADDRESSED IN THE APPROVED PROJECT PLANS. A LOCAL FUNDING SOURCE MUST BE IDENTIFIED.
7. WHERE APPLICABLE, ALL IMPROVEMENTS SHALL BE CONSISTENT WITH THE RESPECTIVE COMMUNITY DESIGN PLAN AS ADOPTED BY THE BOARD OF SUPERVISORS.
8. A STRIPING AND SIGNAGE PLAN SHALL BE REQUIRED BY THE DEPARTMENT WHEN BIKE LANES, NO PARKING ZONES, SIGNAGE, AND PAVEMENT MARKINGS ARE A REQUIRED COMPONENT OF THE IMPROVEMENTS.

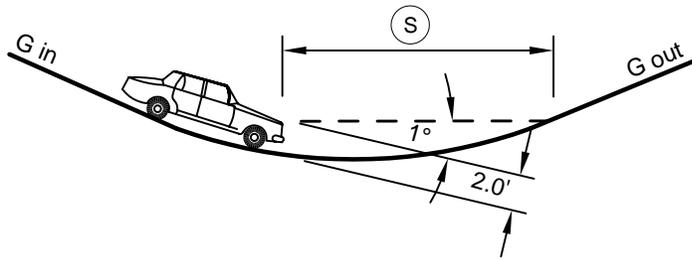


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
TYPICAL COMMERCIAL-INDUSTRIAL
URBAN STREETS WITHIN URL
GREATER THAN 16,000 FUTURE ADT

Scale: NTS	Adopted: 2011
Drawing No: A-3c	
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date



REFERENCE: 1988 STATE HIGHWAY DESIGN MANUAL FIGURE 201.5

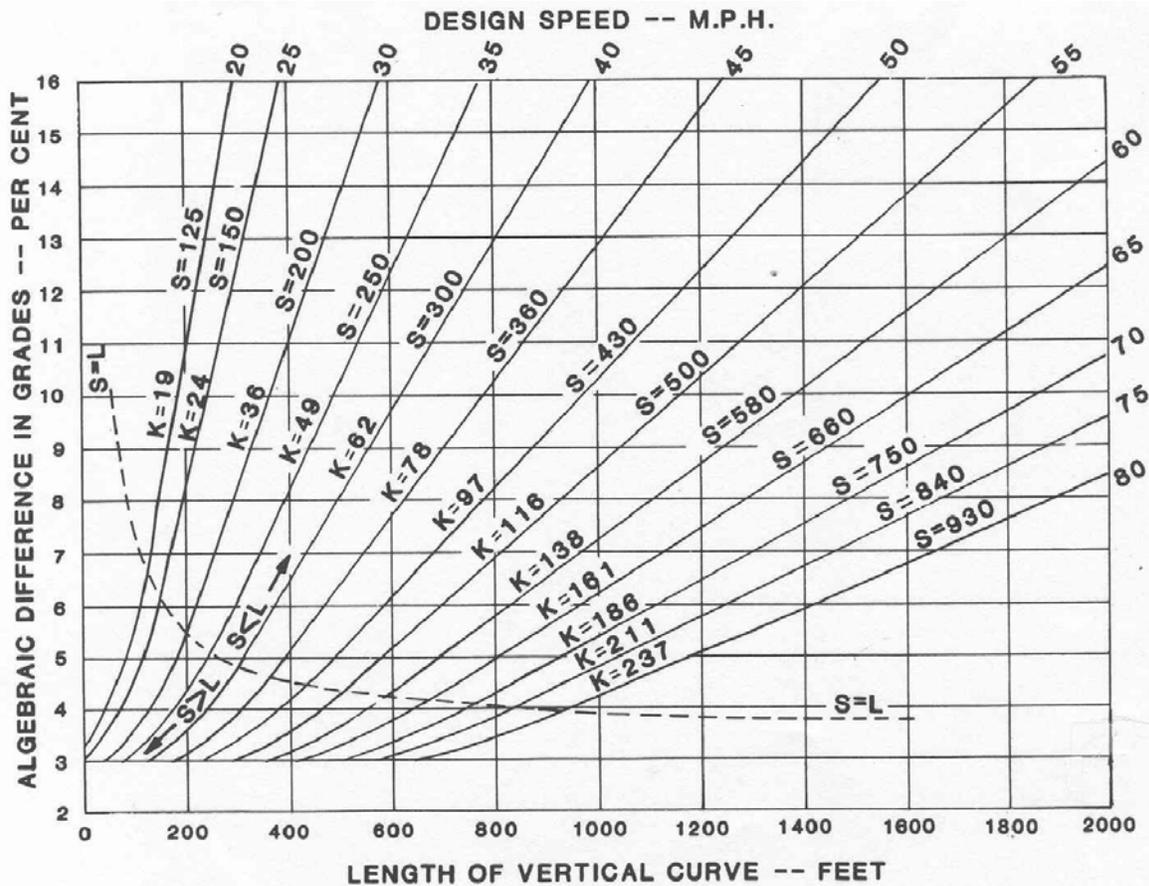
- L = CURVE LENGTH IN FEET
- A = ALGEBRAIC GRADE DIFFERENCE, $G_{out}\% - G_{in}\%$
- S = SIGHT DISTANCE IN FEET
- V = DESIGN SPEED IN M.P.H. FOR "S"
- K = DISTANCE IN FEET REQUIRED TO ACHIEVE A 1% CHANGE IN GRADE.
- K VALUE SHOWN IS VALID WHEN $S < L$

WHEN $S > L$

$$L = 2S - \frac{400 + 3.5S}{A}$$

WHEN $S < L$

$$L = \frac{AS^2}{400 + 3.5S}$$



DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
**STOPPING SIGHT DISTANCE ON
 SAG VERTICAL CURVES**

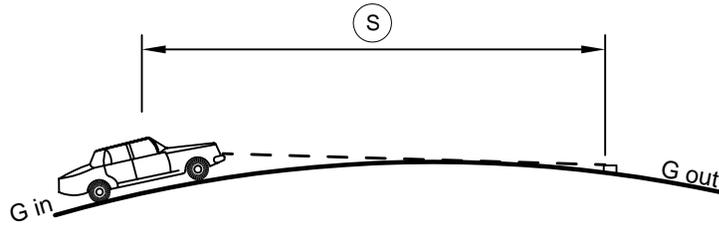
Scale:	Adopted: 2011
Drawing No:	A-4
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date

HEIGHT OF EYE - 3.5 FEET
 HEIGHT OF OBJECT - 0.50 FEET.

REFERENCE: 1988 STATE
 HIGHWAY DESIGN MANUAL
 FIGURE 201.4



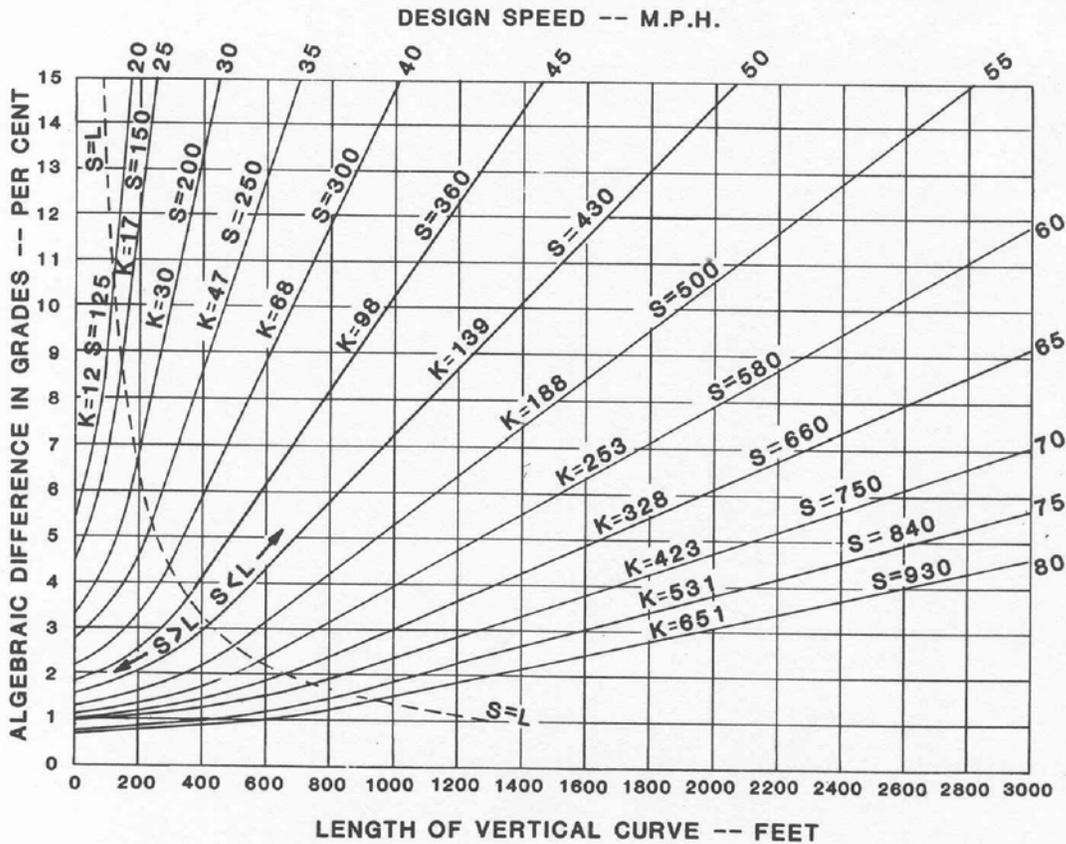
- L = CURVE LENGTH IN FEET
- A = ALGEBRAIC GRADE DIFFERENCE, $G_{out}\% - G_{in}\%$
- S = SIGHT DISTANCE IN FEET
- V = DESIGN SPEED IN M.P.H. FOR "S"
- K = DISTANCE IN FEET REQUIRED TO ACHIEVE A 1% CHANGE IN GRADE.
- K VALUE SHOWN IS VALID WHEN $S < L$

WHEN $S > L$

$$L = 2S - \frac{1329}{A}$$

WHEN $S < L$

$$L = \frac{AS^2}{1329}$$



DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
**STOPPING SIGHT DISTANCE ON
 CREST VERTICAL CURVES**

Scale:	Adopted: 2011
Drawing No:	A-4a
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date

FOR RURAL ROADS - LESS THAN 35 MPH	
CURVE RADIUS - FEET	SUPER-ELEVATION - %
Under 500	+4%
500-1000	+3%
1000-5000	+2%
Over 5000	Standard crown section

FOR RURAL ROADS - 35 MPH to 45 MPH	
CURVE RADIUS - FEET	SUPER-ELEVATION - %
Under 600	+6%
600-1000	+5%
1000-1500	+4%
1500-2000	+3%
2000-7000	+2%
Over 7000	Standard crown section

FOR RURAL ROADS - OVER 45 MPH	
CURVE RADIUS - FEET	SUPER-ELEVATION - %
Under 1100	+10%
1100-1350	+9%
1350-1600	+8%
1600-1900	+7%
1900-2200	+6%
2200-2700	+5%
2700-3500	+4%
3500-4500	+3%
4500-20000	+2%
Over 20000	Standard crown section

NOTES:

1. THIS TABLE CONTAINS THE STANDARD RADII AND SPEEDS FOR THE USE OF SUPERELEVATIONS ON RURAL COUNTY ROADS. SUPER-ELEVATIONS ARE NOT ALLOWED ON URBAN COUNTY STREETS.
2. SUPERELEVATIONS GREATER THAN 10% ARE NOT ALLOWED WITHOUT THE APPROVAL OF THE DEPARTMENT.
3. WHEN USING SUPER-ELEVATIONS, THE DESIGN SHALL BE BASED ON THE CALTRANS HIGHWAY DESIGN MANUAL WHICH PROVIDES INFORMATION ON HORIZONTAL AND VERTICAL ALIGNMENTS, TRANSITIONS, THE AXIS OF ROTATION, DRAINAGE AND OTHER PERTINENT INFORMATION.
4. SUPERELEVATION DIAGRAMS SHALL BE PROVIDED ON THE APPROVED PLANS.



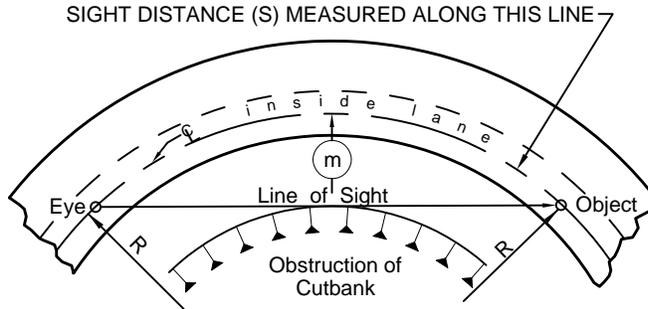
**DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
SUPER-ELEVATION ON
HORIZONTAL CURVES**

Scale:	Adopted: 2011
Drawing No:	A-4b
Sheet No:	1 OF 1

Revisions

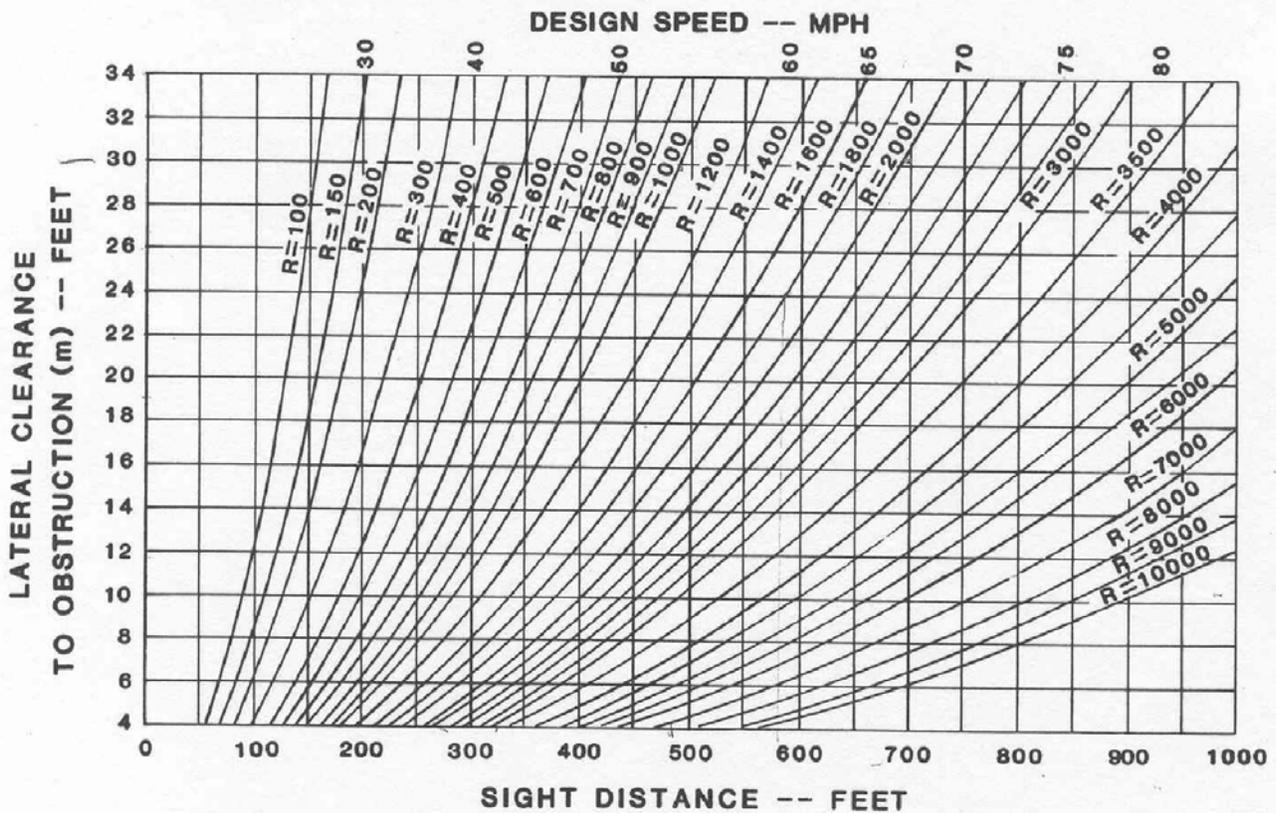
Description	Approved	Date	Description	Approved	Date

REFERENCE: 1988 STATE
HIGHWAY DESIGN MANUAL
FIGURE 201.6



S = SIGHT DISTANCE
R = RADIUS OF CL INSIDE LANE IN FEET
m = DISTANCE FROM CL INSIDE LANE IN FEET
V = DESIGN SPEED FOR "S" IN MPH

HEIGHT OF EYE = 3.50. HEIGHT OF OBJECT = 0.50 FEET
LINE OF SIGHT IS 2.0 FEET ABOVE CL INSIDE
LANE AT POINT OF OBSTRUCTION.



DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
**STOPPING SIGHT DISTANCE ON
HORIZONTAL CURVES**

Scale:	Adopted: 2011
Drawing No:	A-5
Sheet No:	1 OF 1

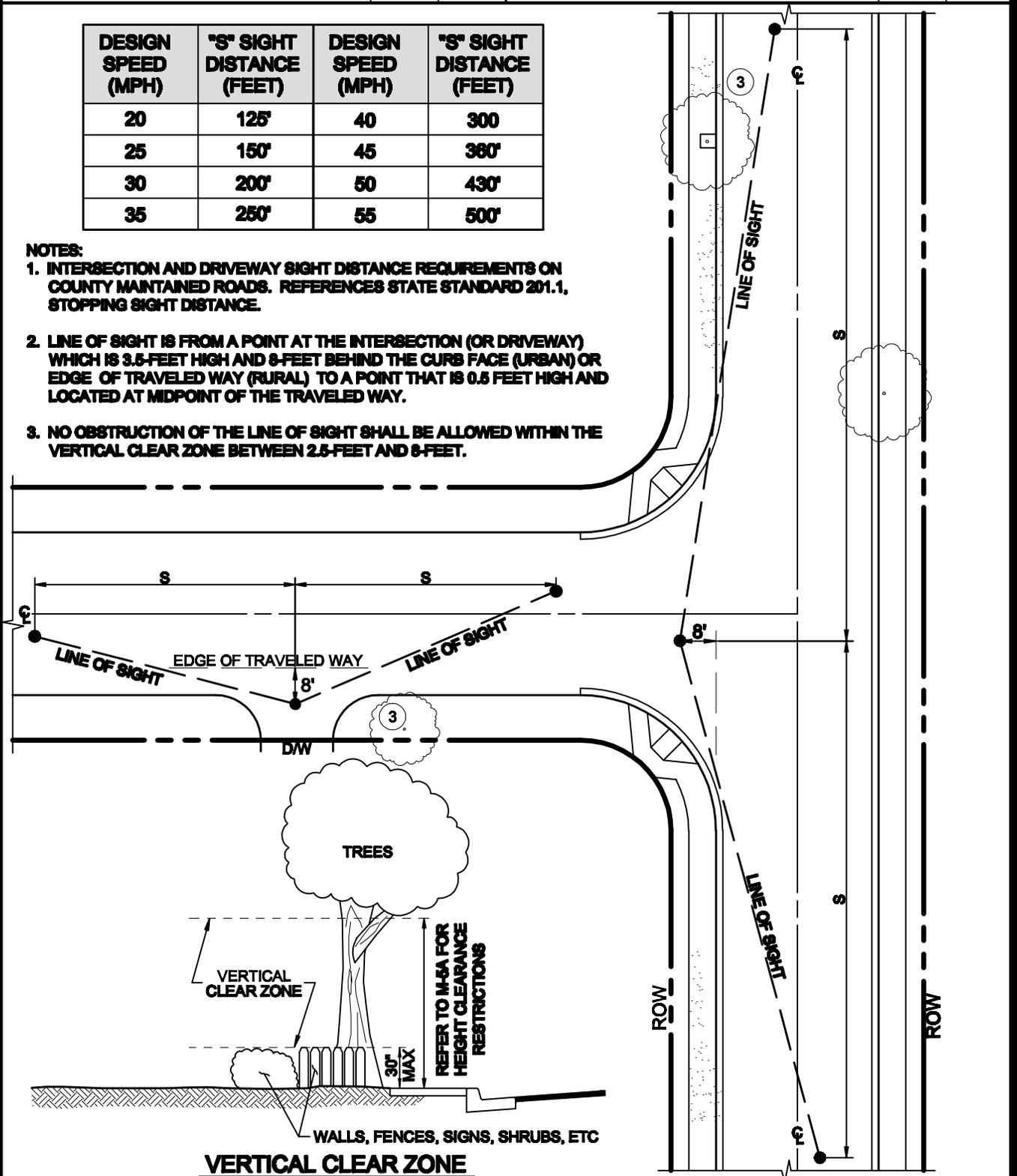
Revisions

Description	Approved	Date	Description	Approved	Date
SIGHT DISTANCE LINES	REM	NOV 07	DW SIGHT DIST. SAME AS INTERSECTION	GDM	JAN 11
SIGHT DISTANCE CHANGED TO CALTRANS STD	GDM	NOV 08	REVISED NOTE 2	FH	AUG 14

DESIGN SPEED (MPH)	"S" SIGHT DISTANCE (FEET)	DESIGN SPEED (MPH)	"S" SIGHT DISTANCE (FEET)
20	125'	40	300
25	150'	45	360'
30	200'	50	430'
35	250'	55	500'

NOTES:

1. INTERSECTION AND DRIVEWAY SIGHT DISTANCE REQUIREMENTS ON COUNTY MAINTAINED ROADS. REFERENCES STATE STANDARD 201.1, STOPPING SIGHT DISTANCE.
2. LINE OF SIGHT IS FROM A POINT AT THE INTERSECTION (OR DRIVEWAY) WHICH IS 3.5- FEET HIGH AND 8- FEET BEHIND THE CURB FACE (URBAN) OR EDGE OF TRAVELED WAY (RURAL) TO A POINT THAT IS 0.5 FEET HIGH AND LOCATED AT MIDPOINT OF THE TRAVELED WAY.
3. NO OBSTRUCTION OF THE LINE OF SIGHT SHALL BE ALLOWED WITHIN THE VERTICAL CLEAR ZONE BETWEEN 2.5- FEET AND 8- FEET.



DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
**INTERSECTION & DRIVEWAY
 SIGHT DISTANCE**

Scale: 1"=30'	Adopted: 2014
Drawing No: A-5a	
Sheet No: 1 OF 1	

Revisions

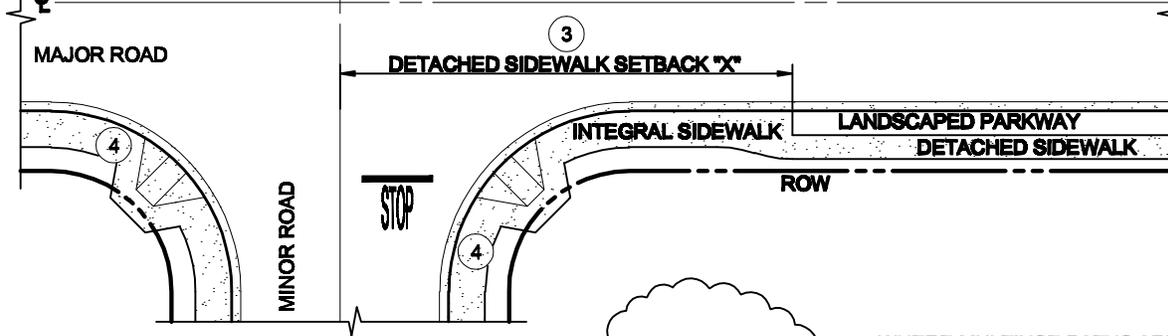
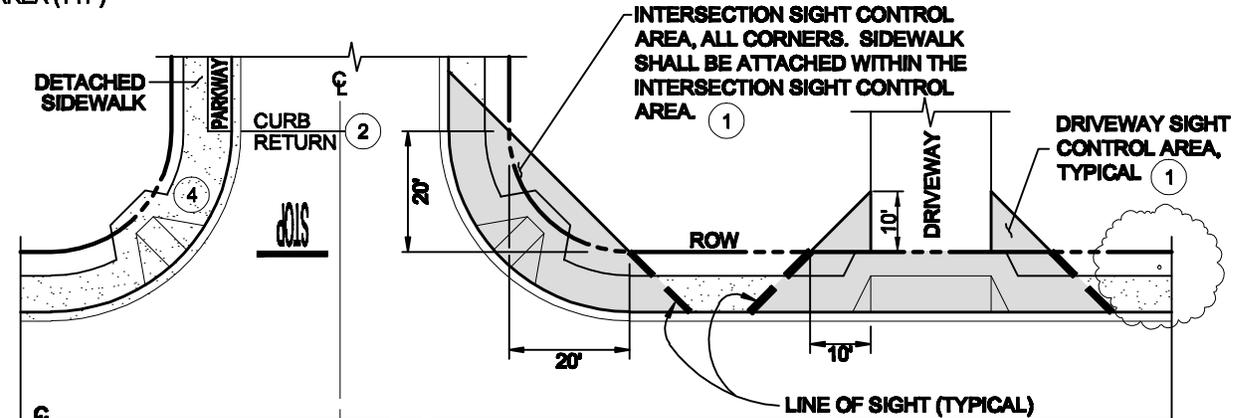
Description	Approved	Date	Description	Approved	Date
UPDATE VERTICAL CLEAR ZONE, TABLE 1	GDM	JAN 11			

NOTES:

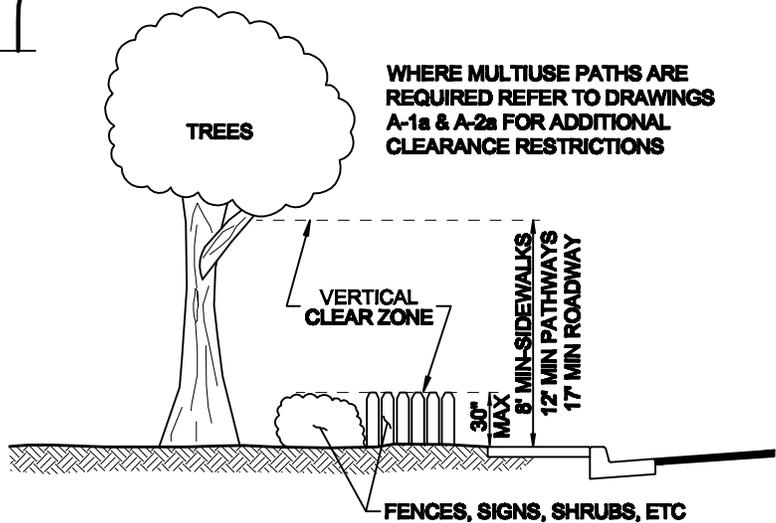
1. OBSTRUCTIONS WITHIN CONTROLLED AREA SHALL NOT EXCEED THE MAXIMUM CLEARANCES IDENTIFIED HEREON.

TO MINIMIZE VEGETATION SIGHT DISTANCE OBSTRUCTIONS AT ROAD INTERSECTIONS:

2. DETACHED SIDEWALKS ON MINOR ROADS SHALL NOT BE ALLOWED WITHIN THE INTERSECTION CURB RETURN AREA.
3. DETACHED SIDEWALKS ON MAJOR ROADS SHALL NOT BE ALLOWED WITHIN THE SETBACK AS PROVIDED IN TABLE 1.
4. WHEN REQUIRED, ONLY INTEGRAL SIDEWALKS SHALL BE ALLOWED WITHIN THE CURB RETURN AREA (TYP)



PREVAILING SPEED OF MAJOR ROAD	SETBACK "X"
20 mph	50 ft
25 mph	55 ft
30 mph	75 ft
35 mph	95 ft
40 mph	115 ft
45 mph	135 ft
50 mph	160 ft
55 mph	190 ft



VERTICAL CLEAR ZONE

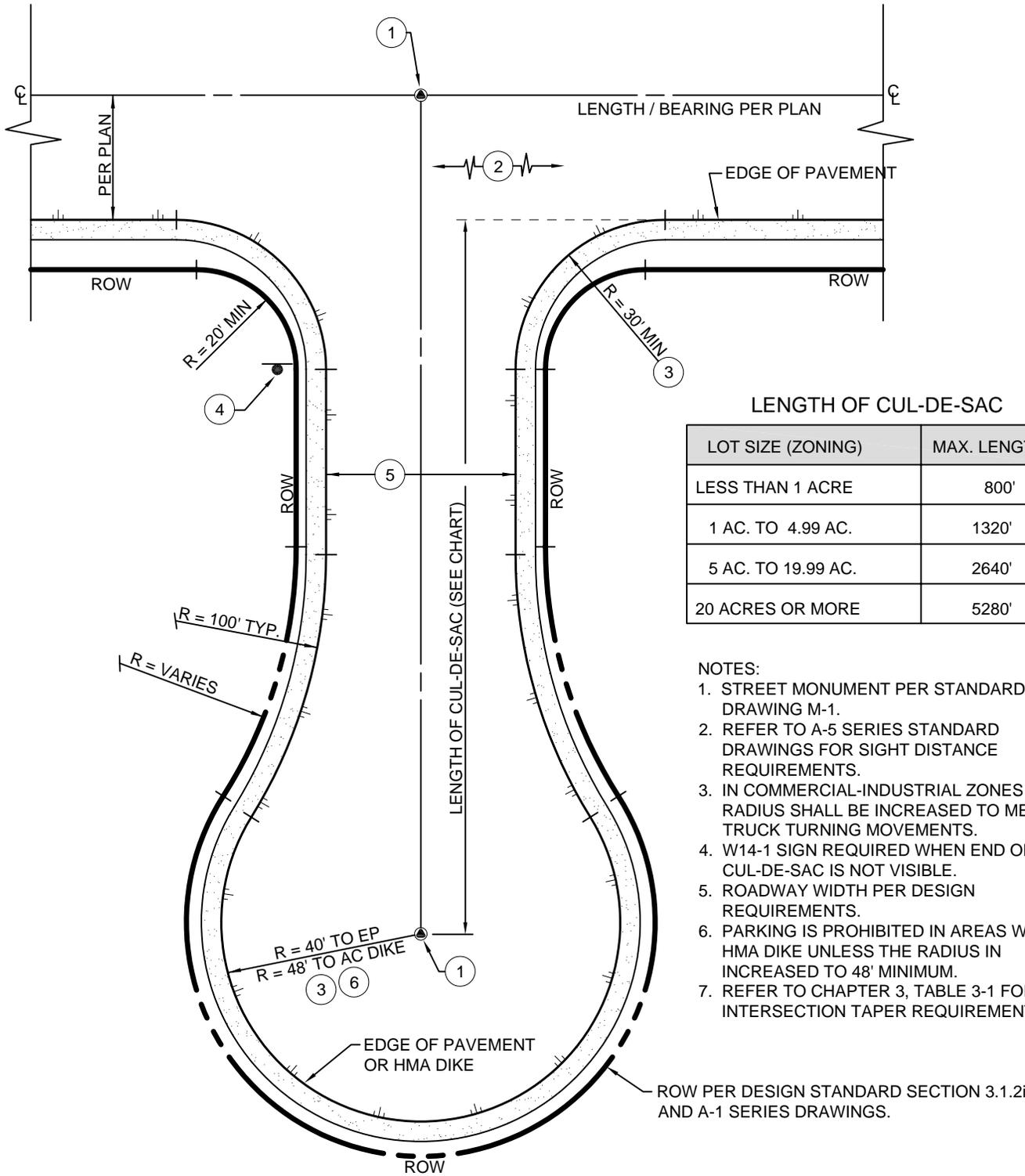


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
SIGHT DISTANCE CONTROL AREAS

Scale: 1"=30'	Adopted: 2014
Drawing No: A-5b	
Sheet No: 1 OF 1	

Revisions

Description	Approved	Date	Description	Approved	Date
ADDED NOTE 7	GDM	NOV 08			
REPLACE AC WITH HMA	GDM	JAN 11			



LENGTH OF CUL-DE-SAC

LOT SIZE (ZONING)	MAX. LENGTH
LESS THAN 1 ACRE	800'
1 AC. TO 4.99 AC.	1320'
5 AC. TO 19.99 AC.	2640'
20 ACRES OR MORE	5280'

NOTES:

1. STREET MONUMENT PER STANDARD DRAWING M-1.
2. REFER TO A-5 SERIES STANDARD DRAWINGS FOR SIGHT DISTANCE REQUIREMENTS.
3. IN COMMERCIAL-INDUSTRIAL ZONES THE RADIUS SHALL BE INCREASED TO MEET TRUCK TURNING MOVEMENTS.
4. W14-1 SIGN REQUIRED WHEN END OF CUL-DE-SAC IS NOT VISIBLE.
5. ROADWAY WIDTH PER DESIGN REQUIREMENTS.
6. PARKING IS PROHIBITED IN AREAS WITH HMA DIKE UNLESS THE RADIUS IS INCREASED TO 48' MINIMUM.
7. REFER TO CHAPTER 3, TABLE 3-1 FOR INTERSECTION TAPER REQUIREMENTS.

ROW PER DESIGN STANDARD SECTION 3.1.2i AND A-1 SERIES DRAWINGS.



DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

RURAL CUL-DE-SAC

Scale: 1"=30'

Adopted: 2011

Drawing No:

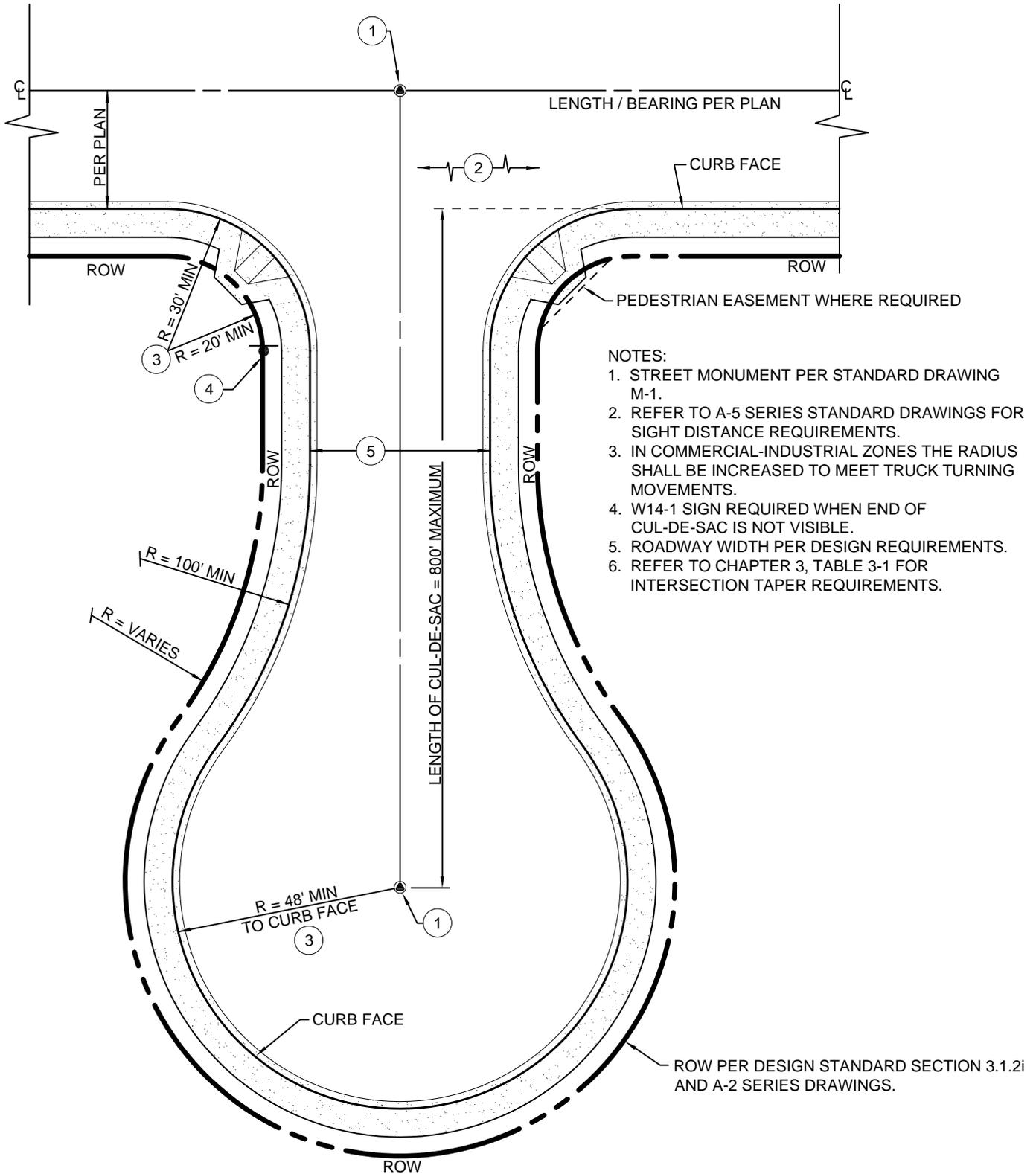
A-6

Sheet No:

1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
ADDED NOTE 6. MODIFIED CDS RADIUS	GDM	NOV 08			



- NOTES:
1. STREET MONUMENT PER STANDARD DRAWING M-1.
 2. REFER TO A-5 SERIES STANDARD DRAWINGS FOR SIGHT DISTANCE REQUIREMENTS.
 3. IN COMMERCIAL-INDUSTRIAL ZONES THE RADIUS SHALL BE INCREASED TO MEET TRUCK TURNING MOVEMENTS.
 4. W14-1 SIGN REQUIRED WHEN END OF CUL-DE-SAC IS NOT VISIBLE.
 5. ROADWAY WIDTH PER DESIGN REQUIREMENTS.
 6. REFER TO CHAPTER 3, TABLE 3-1 FOR INTERSECTION TAPER REQUIREMENTS.



DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

URBAN CUL-DE-SAC

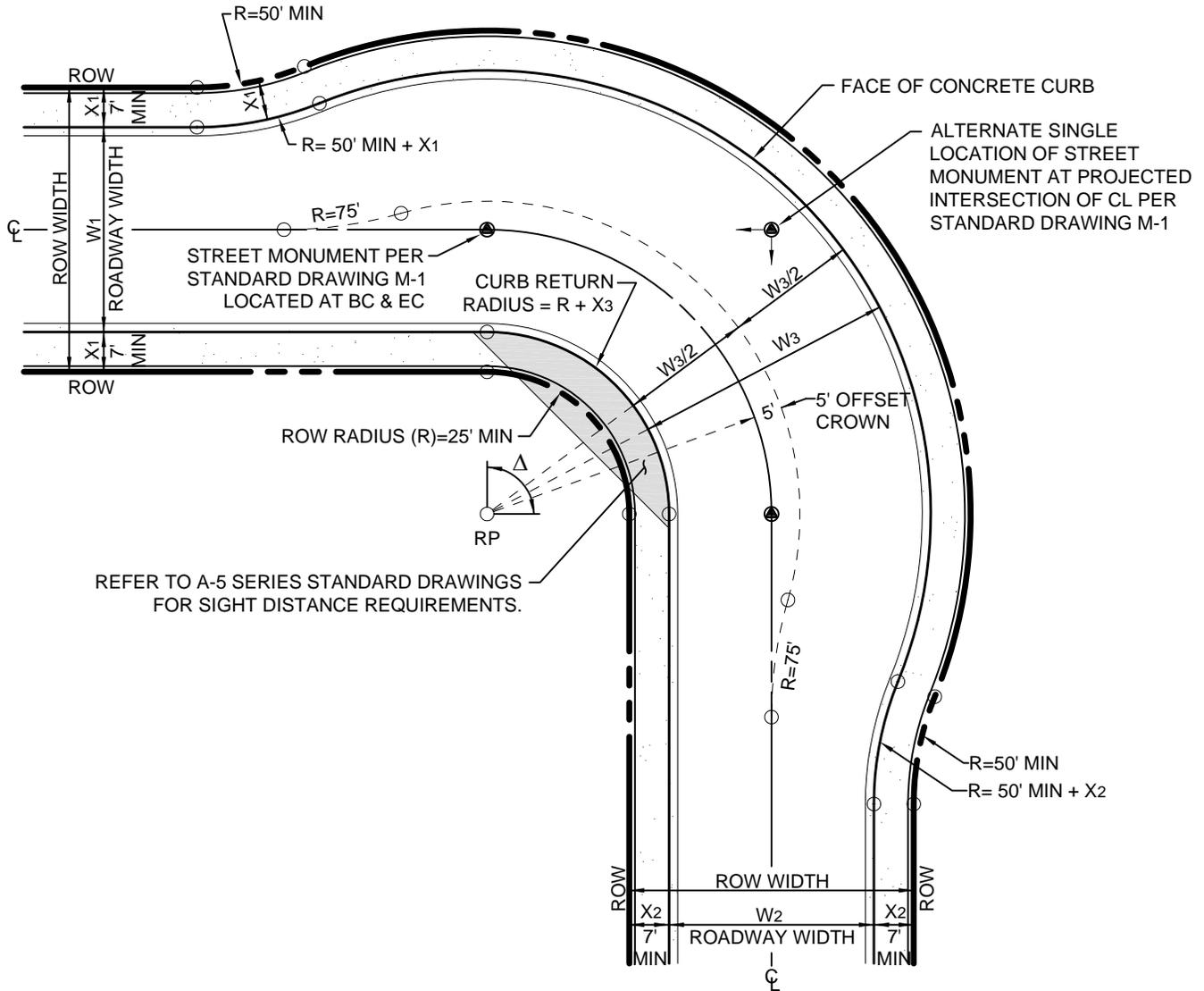
Scale: 1"=30'	Adopted: 2011
Drawing No: A-6a	
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
KNUCKLE CL LINETYPE, LAYOUT NOTES	REM	NOV 07			

NOTES:

1. KNUCKLES SHALL ONLY BE ALLOWED IN URBAN AREAS.
2. KNUCKLE USE IS LIMITED TO ADT<500, DESIGN SPEEDS OF 25 MPH OR LESS, AND WITH PRIOR APPROVAL OF THE DEPARTMENT.
3. UNDER NO CIRCUMSTANCES SHALL Δ BE GREATER THAN 90°.
4. IN COMMERCIAL-INDUSTRIAL ZONES THE DEPARTMENT MAY REQUIRE THAT ALL RADII SHALL BE ADJUSTED BY THE DESIGN ENGINEER TO MEET TRUCK TURNING MOVEMENTS.



LAYOUT NOTES:

- W3 = THE GREATER OF THE ROAD WIDTHS (W1 OR W2) PLUS 10'
- X3 = THE GREATER OF THE WIDTH FROM CURB FACE TO ROW (X1 OR X2)



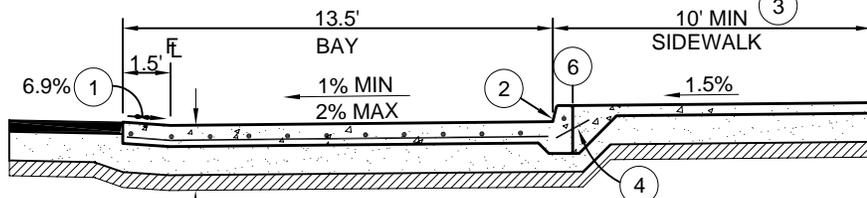
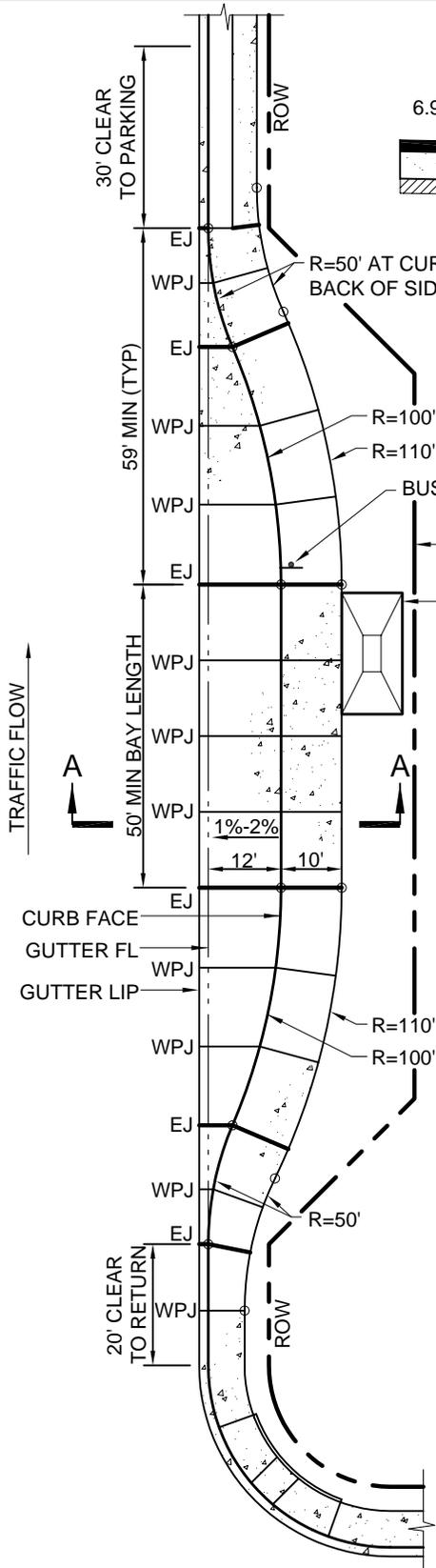
DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

TYPICAL KNUCKLE

Scale: 1"=30'	Adopted: 2011
Drawing No: A-6b	
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
NOTE 10	REM	NOV 07			
NOTE 5	GDM	JAN 11			

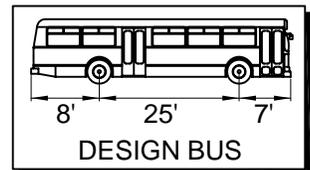


8" MINIMUM PCC WITH #4's AT 24" ON CENTER, EACH WAY, OVER CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION. ACTUAL STRUCTURAL SECTION SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON THE SUBGRADE R-VALUE.

SECTION A-A

NOTES:

- GUTTER SLOPE AT FLOWLINE (FL) SHALL BE PER STANDARD DRAWING C-2 (1-1/4" IN 18", 6.9%).
- 6" TALL MAX TYPE "C" CURB PER STANDARD DRAWING C-2a SHALL BE MONOLITHICALLY POURED WITH THE BAY.
- A MINIMUM 10' WIDE SIDEWALK PER DRAWING C-4 SHALL BE REQUIRED ADJACENT TO THE BAY. APPROACH SIDEWALK WIDTH AND TYPE DETERMINED BY THE DESIGN STANDARDS.
- SIDEWALK SHALL BE DOWELED INTO CURB PER STANDARD DRAWING C-4, OPTIONAL JOINT DETAIL.
- BUS STOP LOCATION AND SCHEDULE INFORMATION SIGN(S) TO BE APPROVED AND LOCATED BY THE REGIONAL TRANSIT AUTHORITY (RTA).
- MINIMUM RIGHT-OF-WAY SHALL BE LOCATED AT BACK OF CURB FACE WITH A PEDESTRIAN ACCESS EASEMENT PROVIDED TO INCORPORATE SIDEWALK, SHELTERS, AND OTHER REQUIRED APPURTENANCES.
- PROVIDE EXPANSION JOINTS (EJ) AND WEAKENED PLANE JOINTS (WPJ) AS SHOWN AND PER STANDARD DRAWING C-1.
- FINAL LOCATION AND DESIGN OF BUS TURNOUT AND LOADING AREA SHALL BE APPROVED BY THE DEPARTMENT AND THE RTA. STANDARD IS FOR HIGH-SPEED AND HIGH-VOLUME STREETS.
- THE PROJECT ENGINEER MAY BE REQUIRED TO PROVIDE A SIGHT DISTANCE EXHIBIT FOR DEPARTMENT APPROVAL.
- FOR RURAL BUS STOPS ASPHALT WIDENING SHALL BE REQUIRED. CONTACT PUBLIC WORKS FOR ADDITIONAL REQUIREMENTS.

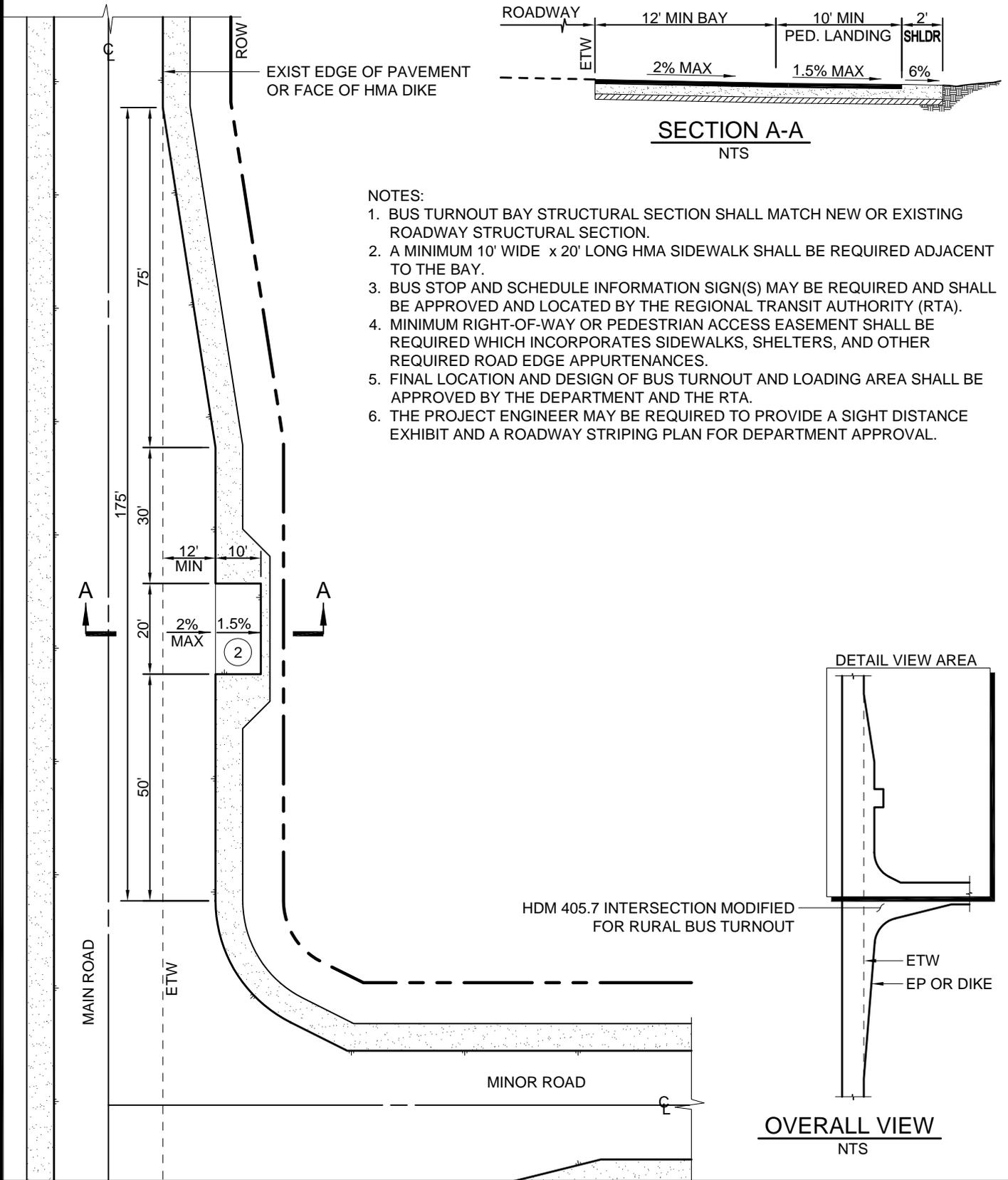


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
URBAN BUS TURNOUT & LOADING AREA

Scale: 1"=30'	Adopted: 2011
Drawing No: A-6c	
Sheet No: 1 OF 1	

Revisions

Description	Approved	Date	Description	Approved	Date
NEW STANDARD	GDM	NOV 08			
REPLACE AC WITH HMA, NOTE 2	GDM	JAN 11			



- NOTES:
1. BUS TURNOUT BAY STRUCTURAL SECTION SHALL MATCH NEW OR EXISTING ROADWAY STRUCTURAL SECTION.
 2. A MINIMUM 10' WIDE x 20' LONG HMA SIDEWALK SHALL BE REQUIRED ADJACENT TO THE BAY.
 3. BUS STOP AND SCHEDULE INFORMATION SIGN(S) MAY BE REQUIRED AND SHALL BE APPROVED AND LOCATED BY THE REGIONAL TRANSIT AUTHORITY (RTA).
 4. MINIMUM RIGHT-OF-WAY OR PEDESTRIAN ACCESS EASEMENT SHALL BE REQUIRED WHICH INCORPORATES SIDEWALKS, SHELTERS, AND OTHER REQUIRED ROAD EDGE APPURTENANCES.
 5. FINAL LOCATION AND DESIGN OF BUS TURNOUT AND LOADING AREA SHALL BE APPROVED BY THE DEPARTMENT AND THE RTA.
 6. THE PROJECT ENGINEER MAY BE REQUIRED TO PROVIDE A SIGHT DISTANCE EXHIBIT AND A ROADWAY STRIPING PLAN FOR DEPARTMENT APPROVAL.

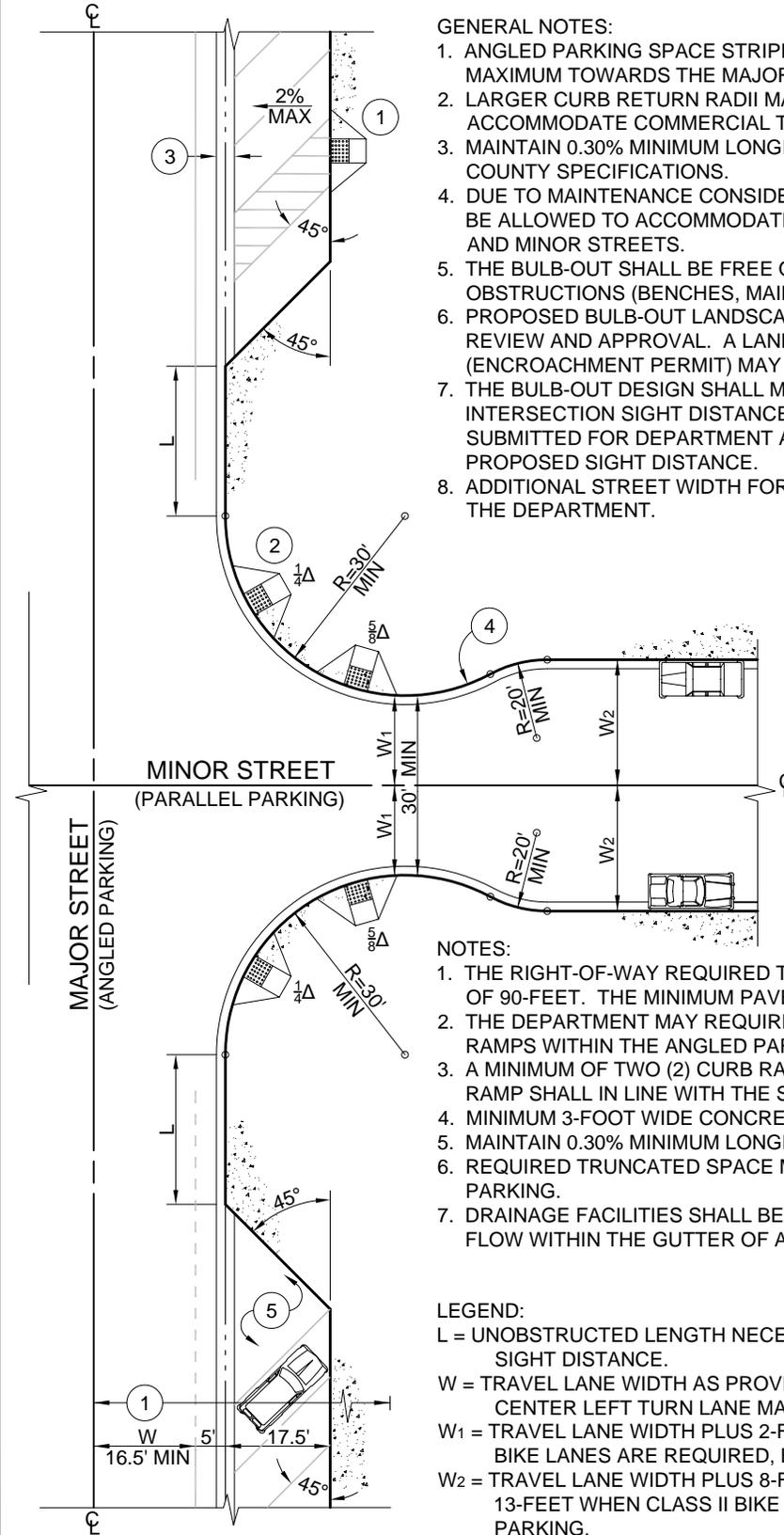


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
RURAL BUS TURNOUT & LOADING AREA

Scale: 1"=30'	Adopted: 2011
Drawing No: A-6c.1	
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
NEW STANDARD DRAWING	REM	NOV 07			
NOTE 1	GDM	JAN 11			



GENERAL NOTES:

1. ANGLED PARKING SPACE STRIPING SHALL BE SET AT 45°, AND SLOPED AT 2% MAXIMUM TOWARDS THE MAJOR ROAD TO ACCOMMODATE FOR DRAINAGE.
2. LARGER CURB RETURN RADII MAY BE REQUIRED BY THE DEPARTMENT TO ACCOMMODATE COMMERCIAL TRUCK MOVEMENTS.
3. MAINTAIN 0.30% MINIMUM LONGITUDINAL CURB AND GUTTER SLOPES PER COUNTY SPECIFICATIONS.
4. DUE TO MAINTENANCE CONSIDERATIONS, SIDEWALK UNDER DRAINS SHALL NOT BE ALLOWED TO ACCOMMODATE FOR BULB-OUT DRAINAGE BETWEEN MAJOR AND MINOR STREETS.
5. THE BULB-OUT SHALL BE FREE OF ALL PEDESTRIAN AND SIGHT DISTANCE OBSTRUCTIONS (BENCHES, MAILBOXES, UTILITY SERVICE CABINETS, ETC)
6. PROPOSED BULB-OUT LANDSCAPING SHALL BE SUBJECT TO DEPARTMENT REVIEW AND APPROVAL. A LANDSCAPING MAINTENANCE AGREEMENT (ENCROACHMENT PERMIT) MAY BE REQUIRED.
7. THE BULB-OUT DESIGN SHALL MEET COUNTY REQUIREMENTS FOR INTERSECTION SIGHT DISTANCE. THE CONSTRUCTION PLANS SHALL SUBMITTED FOR DEPARTMENT APPROVAL SHALL SHOW AND LABEL THE PROPOSED SIGHT DISTANCE.
8. ADDITIONAL STREET WIDTH FOR CLASS II BIKE LANES MAY BE REQUIRED BY THE DEPARTMENT.

NOTES:

1. THE RIGHT-OF-WAY REQUIRED TO PROVIDE ANGLED PARKING SHALL BE A MINIMUM OF 90- FEET. THE MINIMUM PAVED WIDTH SHALL BE 39- FEET FROM CENTERLINE.
2. THE DEPARTMENT MAY REQUIRE "PUBLIC" ADA ACCESSIBLE PARKING SPACES AND RAMPS WITHIN THE ANGLED PARKING AREA.
3. A MINIMUM OF TWO (2) CURB RAMPS SHALL BE INSTALLED IN EACH BULB-OUT. EACH RAMP SHALL IN LINE WITH THE SIDEWALK.
4. MINIMUM 3-FOOT WIDE CONCRETE RIBBON GUTTER SIMILAR TO STANDARD D-5.
5. MAINTAIN 0.30% MINIMUM LONGITUDINAL TOP OF CURB GRADES.
6. REQUIRED TRUNCATED SPACE MAY BE SIGNED AND STRIPED FOR MOTORCYCLE PARKING.
7. DRAINAGE FACILITIES SHALL BE PROVIDED SO THAT NO MORE THAN 0.3 cfs SHALL FLOW WITHIN THE GUTTER OF AN INTERSECTION CURB RETURN.

LEGEND:

- L = UNOBSTRUCTED LENGTH NECESSARY TO ACCOMMODATE FOR INTERSECTION SIGHT DISTANCE.
- W = TRAVEL LANE WIDTH AS PROVIDED BY DEPARTMENT (ADDITIONAL WIDTH FOR A CENTER LEFT TURN LANE MAY BE REQUIRED).
- W₁ = TRAVEL LANE WIDTH PLUS 2- FEET, OR LANE WIDTH PLUS 5- FEET WHEN CLASS II BIKE LANES ARE REQUIRED, BUT SHALL NOT BE LESS THAN 15- FEET.
- W₂ = TRAVEL LANE WIDTH PLUS 8- FEET FOR PARALLEL PARKING, OR LANE WIDTH PLUS 13- FEET WHEN CLASS II BIKE LANES ARE REQUIRED ADJACENT TO PARALLEL PARKING.



DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

STANDARD BULB-OUT
ANGLED PARKING ON MAJOR ROAD

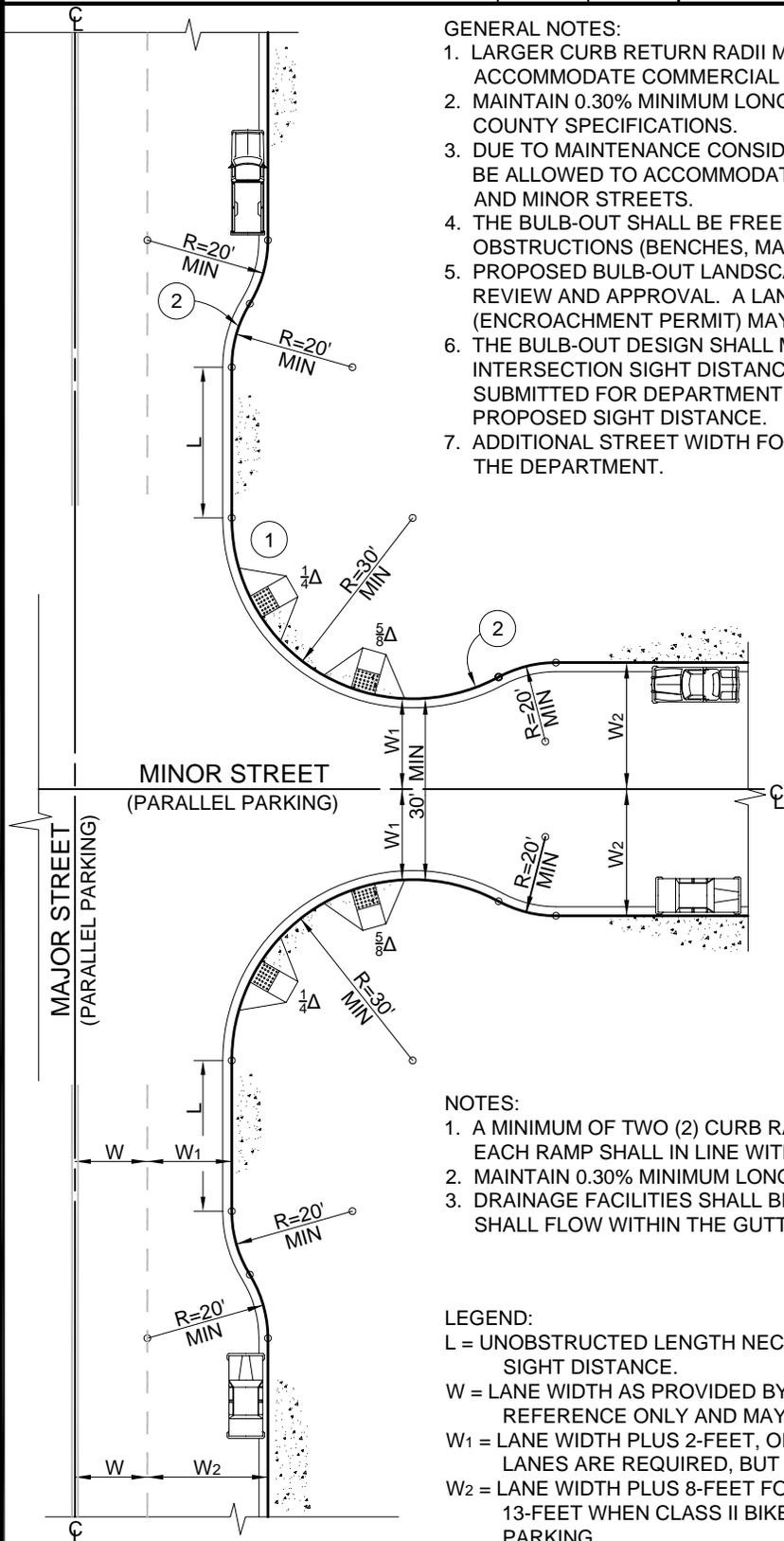
Scale: 1"=30'	Adopted: 2011
Drawing No: A-6d	
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
NEW STANDARD DRAWING	REM	NOV 07			

GENERAL NOTES:

1. LARGER CURB RETURN RADII MAY BE REQUIRED BY THE DEPARTMENT TO ACCOMMODATE COMMERCIAL TRUCK MOVEMENTS.
2. MAINTAIN 0.30% MINIMUM LONGITUDINAL CURB AND GUTTER SLOPES PER COUNTY SPECIFICATIONS.
3. DUE TO MAINTENANCE CONSIDERATIONS, SIDEWALK UNDER DRAINS SHALL NOT BE ALLOWED TO ACCOMMODATE FOR BULB-OUT DRAINAGE BETWEEN MAJOR AND MINOR STREETS.
4. THE BULB-OUT SHALL BE FREE OF ALL PEDESTRIAN AND SIGHT DISTANCE OBSTRUCTIONS (BENCHES, MAILBOXES, UTILITY SERVICE CABINETS, ETC)
5. PROPOSED BULB-OUT LANDSCAPING SHALL BE SUBJECT TO DEPARTMENT REVIEW AND APPROVAL. A LANDSCAPING MAINTENANCE AGREEMENT (ENCROACHMENT PERMIT) MAY BE REQUIRED.
6. THE BULB-OUT DESIGN SHALL MEET COUNTY REQUIREMENTS FOR INTERSECTION SIGHT DISTANCE. THE CONSTRUCTION PLANS SHALL SUBMITTED FOR DEPARTMENT APPROVAL SHALL SHOW AND LABEL THE PROPOSED SIGHT DISTANCE.
7. ADDITIONAL STREET WIDTH FOR CLASS II BIKE LANES MAY BE REQUIRED BY THE DEPARTMENT.



NOTES:

1. A MINIMUM OF TWO (2) CURB RAMPS SHALL BE INSTALLED IN EACH BULB-OUT. EACH RAMP SHALL IN LINE WITH THE SIDEWALK.
2. MAINTAIN 0.30% MINIMUM LONGITUDINAL TOP OF CURB GRADES.
3. DRAINAGE FACILITIES SHALL BE PROVIDED SO THAT NO MORE THAN 0.3 cfs SHALL FLOW WITHIN THE GUTTER OF AN INTERSECTION CURB RETURN.

LEGEND:

- L = UNOBSTRUCTED LENGTH NECESSARY TO ACCOMMODATE FOR INTERSECTION SIGHT DISTANCE.
- W = LANE WIDTH AS PROVIDED BY DEPARTMENT (TWO LANES ARE SHOWN FOR REFERENCE ONLY AND MAY NOT BE REQUIRED BY DEPARTMENT).
- W₁ = LANE WIDTH PLUS 2-FEET, OR LANE WIDTH PLUS 5-FEET WHEN CLASS II BIKE LANES ARE REQUIRED, BUT SHALL NOT BE LESS THAN 15-FEET.
- W₂ = LANE WIDTH PLUS 8-FEET FOR PARALLEL PARKING, OR LANE WIDTH PLUS 13-FEET WHEN CLASS II BIKE LANES ARE REQUIRED ADJACENT TO PARALLEL PARKING.



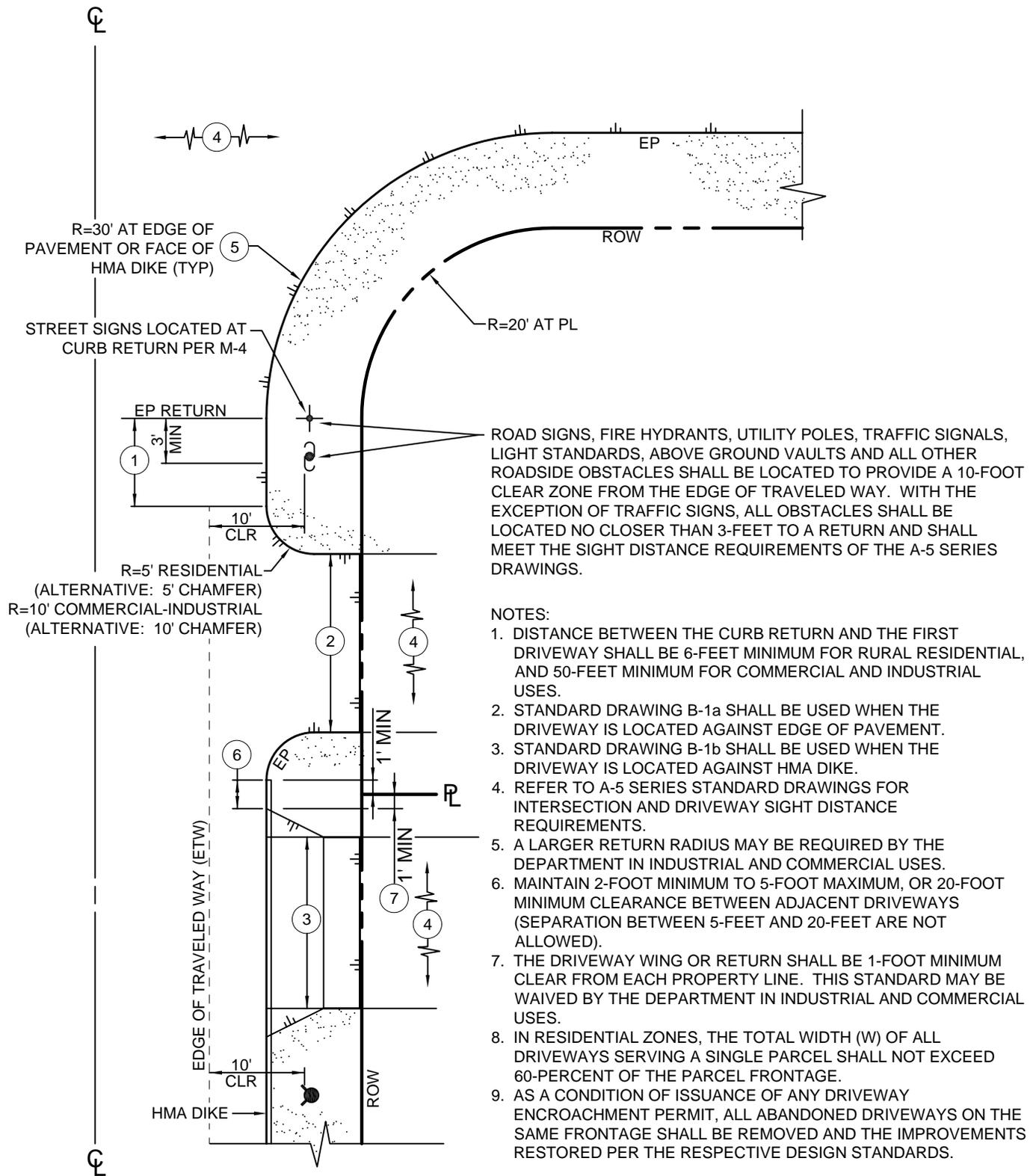
DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

STANDARD BULB-OUT
PARALLEL PARKING ON MAJOR ROAD

Scale: 1"=30'	Adopted: 2011
Drawing No: A-6e	
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
CHANGE "ZONES" TO "USES"	GDM	NOV 08			



NOTES:

1. DISTANCE BETWEEN THE CURB RETURN AND THE FIRST DRIVEWAY SHALL BE 6-FOOT MINIMUM FOR RURAL RESIDENTIAL, AND 50-FOOT MINIMUM FOR COMMERCIAL AND INDUSTRIAL USES.
2. STANDARD DRAWING B-1a SHALL BE USED WHEN THE DRIVEWAY IS LOCATED AGAINST EDGE OF PAVEMENT.
3. STANDARD DRAWING B-1b SHALL BE USED WHEN THE DRIVEWAY IS LOCATED AGAINST HMA DIKE.
4. REFER TO A-5 SERIES STANDARD DRAWINGS FOR INTERSECTION AND DRIVEWAY SIGHT DISTANCE REQUIREMENTS.
5. A LARGER RETURN RADIUS MAY BE REQUIRED BY THE DEPARTMENT IN INDUSTRIAL AND COMMERCIAL USES.
6. MAINTAIN 2-FOOT MINIMUM TO 5-FOOT MAXIMUM, OR 20-FOOT MINIMUM CLEARANCE BETWEEN ADJACENT DRIVEWAYS (SEPARATION BETWEEN 5-FOET AND 20-FOET ARE NOT ALLOWED).
7. THE DRIVEWAY WING OR RETURN SHALL BE 1-FOOT MINIMUM CLEAR FROM EACH PROPERTY LINE. THIS STANDARD MAY BE WAIVED BY THE DEPARTMENT IN INDUSTRIAL AND COMMERCIAL USES.
8. IN RESIDENTIAL ZONES, THE TOTAL WIDTH (W) OF ALL DRIVEWAYS SERVING A SINGLE PARCEL SHALL NOT EXCEED 60-PERCENT OF THE PARCEL FRONTAGE.
9. AS A CONDITION OF ISSUANCE OF ANY DRIVEWAY ENCROACHMENT PERMIT, ALL ABANDONED DRIVEWAYS ON THE SAME FRONTAGE SHALL BE REMOVED AND THE IMPROVEMENTS RESTORED PER THE RESPECTIVE DESIGN STANDARDS.

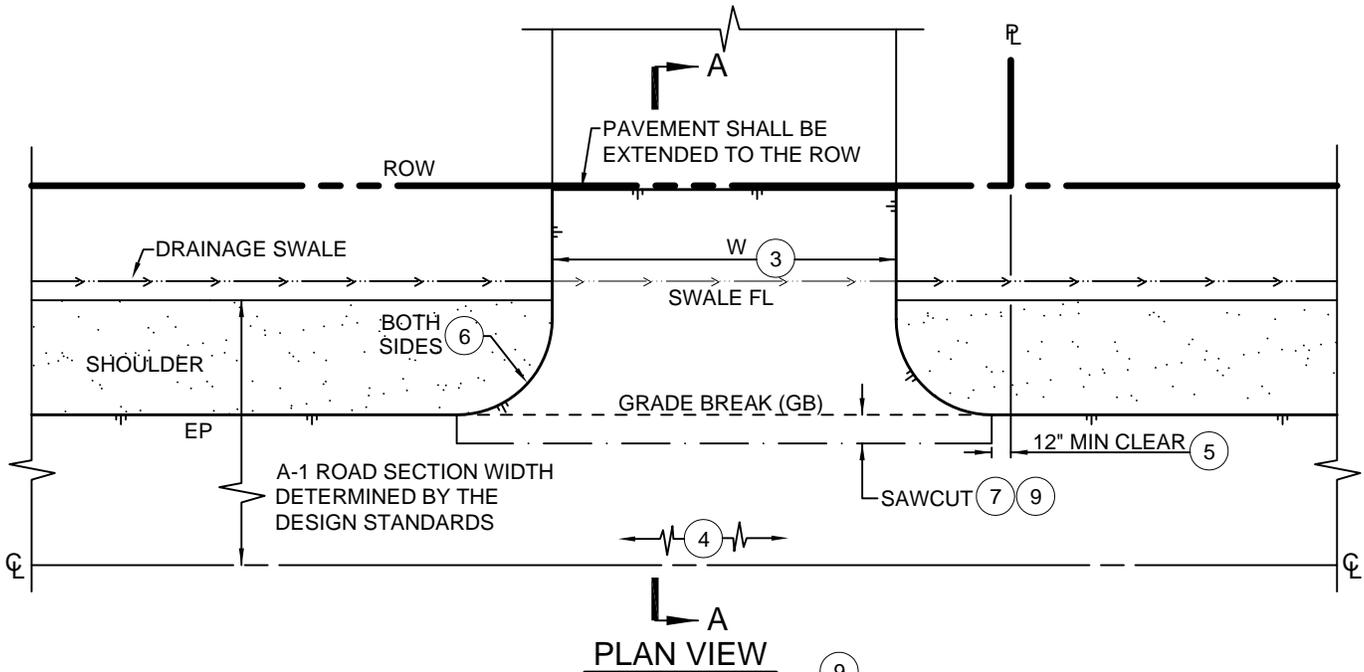


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
RURAL DRIVEWAY
 LAYOUT STANDARDS

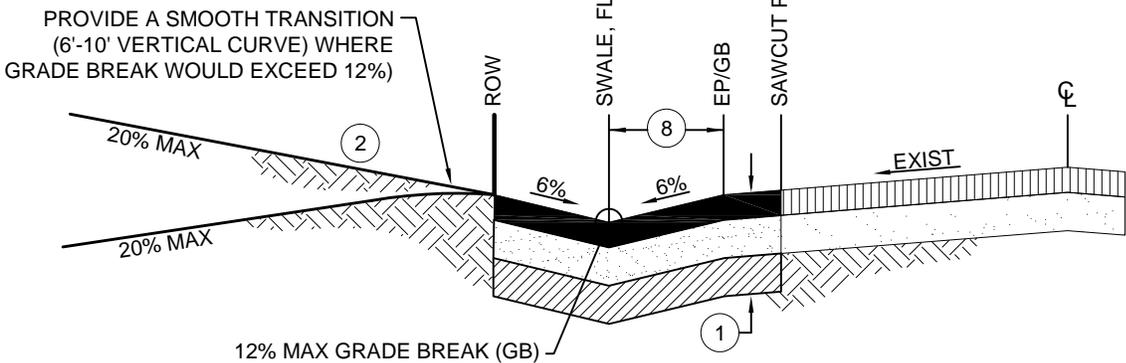
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Drawing No: B-1	
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
NAME CHANGE	GDM	NOV 08			
REPLACE AC WITH HMA	GDM	JAN 11			



PLAN VIEW



SECTION A-A

NOTES:

- WITHIN THE PUBLIC RIGHT-OF-WAY, THE DRIVEWAY SECTION SHALL MATCH THE APPROVED ROAD SECTION, OR SHALL MATCH THE EXISTING ROAD SECTION, AND SHALL MEET THE FOLLOWING REQUIREMENTS:
 ■ HOT MIX ASPHALT (HMA) PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER
 ■ CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER
 ■ 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
- OUTSIDE THE PUBLIC RIGHT-OF-WAY, THE DRIVEWAY STRUCTURAL SECTION SHALL BE DETERMINED BY THE PROJECT DESIGNER AND SHALL BE IN COMPLIANCE WITH CDF/FIRE REGULATIONS.
- RESIDENTIAL DRIVEWAY WIDTH SHALL BE 10' MINIMUM TO 20' MAXIMUM, COMMERCIAL-INDUSTRIAL DRIVEWAY WIDTH SHALL BE 12-FEET MINIMUM TO 35-FEET MAXIMUM. ALL DRIVEWAYS SHALL MEET FIRE AGENCY REGULATIONS.
- REFER TO A-5 SERIES STANDARD DRAWINGS FOR DRIVEWAY SIGHT DISTANCE REQUIREMENTS.
- THE END OF DRIVEWAY RETURN SHALL BE 1-FOOT MINIMUM CLEAR FROM THE PROPERTY LINE.
- THE DRIVEWAY RETURN SHALL HAVE A RADIUS OF 5-FEET FOR RESIDENTIAL (ALTERNATIVE: 5-FOOT CHAMFER), AND A RADIUS OF 10-FEET FOR COMMERCIAL-INDUSTRIAL (ALTERNATIVE: 10-FOOT CHAMFER).
- FOR NEW DRIVEWAY CONSTRUCTION AGAINST EXISTING ROADWAY, SAWCUT TO REMOVE EXISTING ROADWAY AND RECONSTRUCT PER STANDARD DRAWINGS R-1 AND R-2.
- DISTANCE TO MATCH ROADSIDE DRAINAGE SWALE PER SERIES A-1 DRAWING REQUIREMENTS.
- AFTER PAVING, APPLY SS1H OIL (OR APPROVED EQUAL) TO ALL SURFACE SEAMS.

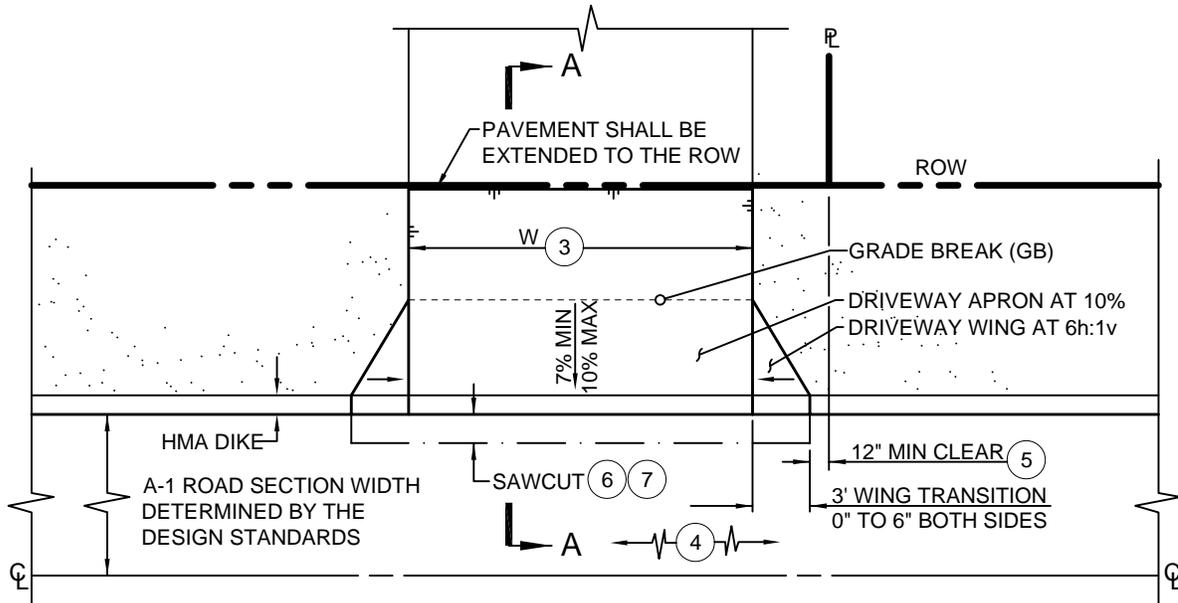


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
RURAL RESIDENTIAL DRIVEWAY
 FOR EDGE OF PAVEMENT (NO DIKE)

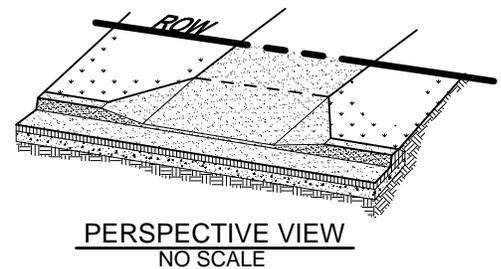
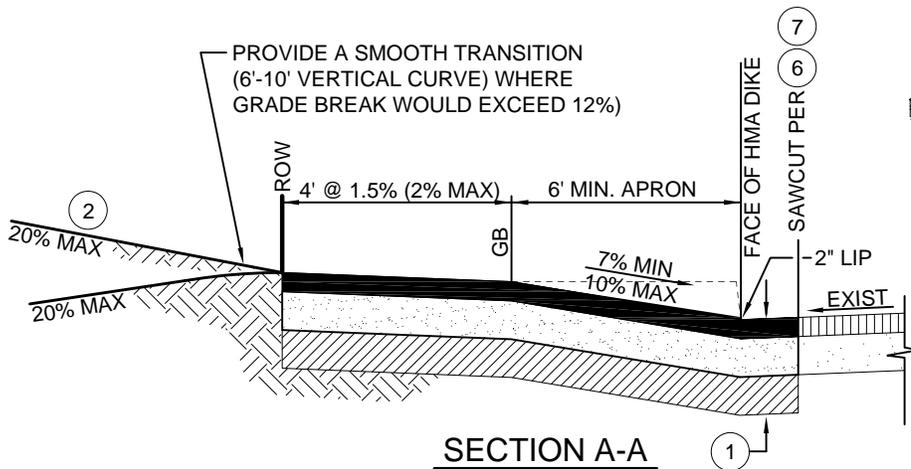
Scale: 1"=10'	Adopted: 2011
Drawing No: B-1a	
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
ADDED 2" AC LIP AT GUTTER	REM	NOV 07	REPLACE AC WITH HMA, D/W SLOPE	GDM	JAN 11
NAME CHANGE	GDM	NOV 08			



PLAN VIEW



NOTES:

- WITHIN THE PUBLIC RIGHT-OF-WAY, THE DRIVEWAY SECTION SHALL MATCH THE APPROVED ROAD SECTION, OR SHALL MATCH THE EXISTING ROAD SECTION, AND SHALL MEET THE FOLLOWING REQUIREMENTS:
 - HOT MIX ASPHALT (HMA) PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER
 - CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER
 - 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
- OUTSIDE THE PUBLIC RIGHT-OF-WAY, THE DRIVEWAY STRUCTURAL SECTION SHALL BE DETERMINED BY THE PROJECT DESIGNER AND SHALL BE IN COMPLIANCE WITH CDF/FIRE REGULATIONS.
- RESIDENTIAL DRIVEWAY WIDTH SHALL BE 10' MINIMUM TO 20' MAXIMUM, COMMERCIAL-INDUSTRIAL DRIVEWAY WIDTH SHALL BE 12-FEET MINIMUM TO 35-FEET MAXIMUM. ALL DRIVEWAYS SHALL MEET FIRE AGENCY REGULATIONS.
- REFER TO A-5 SERIES STANDARD DRAWINGS FOR DRIVEWAY SIGHT DISTANCE REQUIREMENTS.
- THE DRIVEWAY WING SHALL BE 1-FOOT MINIMUM CLEAR FROM THE PROPERTY LINE.
- FOR NEW DRIVEWAY CONSTRUCTION AGAINST EXISTING ROADWAY, SAWCUT TO REMOVE EXISTING ROADWAY AND RECONSTRUCT PER STANDARD DRAWINGS R-1 AND R-2.
- AFTER PAVING, APPLY SS1H OIL (OR APPROVED EQUAL) TO ALL SURFACE SEAMS.

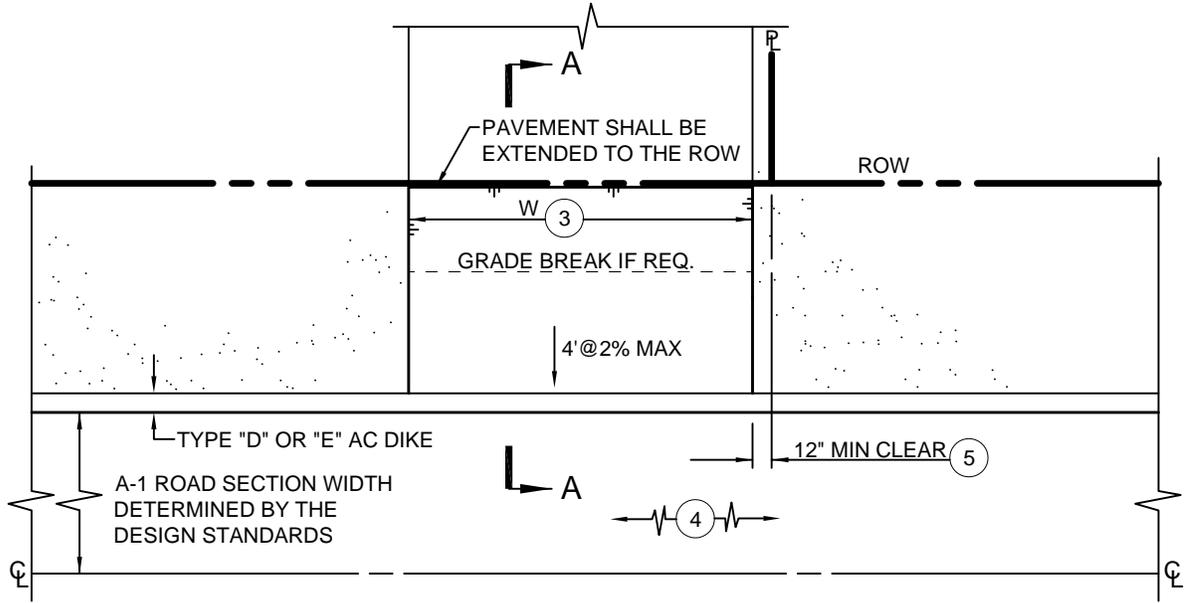


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
RURAL RESIDENTIAL DRIVEWAY
FOR TYPE "A" HMA DIKE

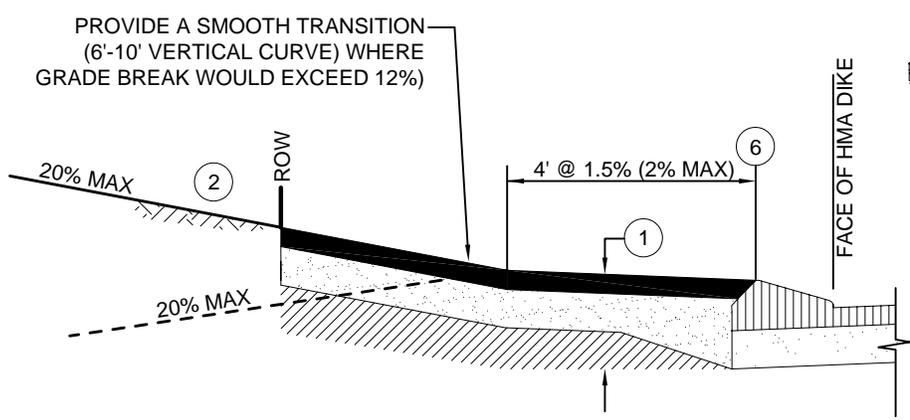
Scale: 1"=10'	Adopted: 2011
Drawing No: B-1b	
Sheet No:	1 OF 1

Revisions

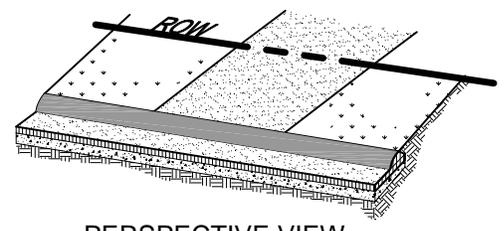
Description	Approved	Date	Description	Approved	Date
NEW STANDARD	GDM	NOV 08			
REPLACE AC WITH HMA	GDM	JAN 11			



PLAN VIEW



SECTION A-A



PERSPECTIVE VIEW
NO SCALE

NOTES:

- WITHIN THE PUBLIC RIGHT-OF-WAY, THE DRIVEWAY SECTION SHALL MATCH THE APPROVED ROAD SECTION, OR SHALL MATCH THE EXISTING ROAD SECTION, AND SHALL MEET THE FOLLOWING REQUIREMENTS:
 ■ HOT MIX ASPHALT PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER
 ■ CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER
 ■ 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
- OUTSIDE THE PUBLIC RIGHT-OF-WAY, THE DRIVEWAY STRUCTURAL SECTION SHALL BE DETERMINED BY THE PROJECT DESIGNER AND SHALL BE IN COMPLIANCE WITH CDF/FIRE REGULATIONS.
- RESIDENTIAL DRIVEWAY WIDTH SHALL BE 10' MINIMUM TO 20' MAXIMUM, COMMERCIAL-INDUSTRIAL DRIVEWAY WIDTH SHALL BE 12-FEET MINIMUM TO 35-FEET MAXIMUM. ALL DRIVEWAYS SHALL MEET FIRE AGENCY REGULATIONS.
- REFER TO A-5 SERIES STANDARD DRAWINGS FOR DRIVEWAY SIGHT DISTANCE REQUIREMENTS.
- THE EDGE OF DRIVEWAY SHALL BE 1-FOOT MINIMUM CLEAR FROM THE PROPERTY LINE.
- NEW DRIVEWAY APRON SHALL CONFORM TO THE BACK OF EXISTING "D" OR "E" DIKE.
- FOR NEW DRIVEWAY CONSTRUCTION AGAINST EXISTING ROADWAY, SAWCUT TO REMOVE EXISTING ROADWAY AND RECONSTRUCT PER STANDARD DRAWINGS R-1 AND R-2.
- AFTER PAVING, APPLY SS1H OIL (OR APPROVED EQUAL) TO ALL SURFACE SEAMS.

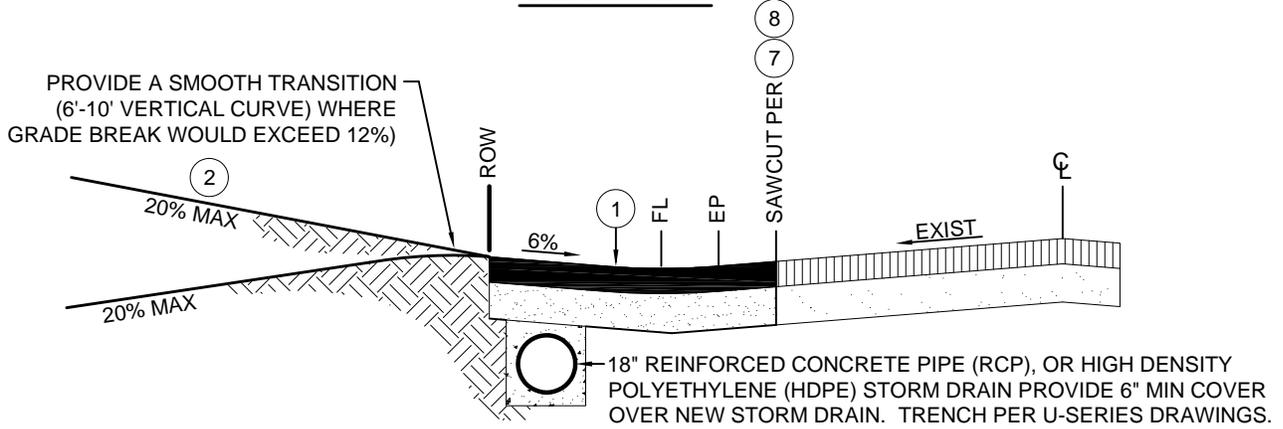
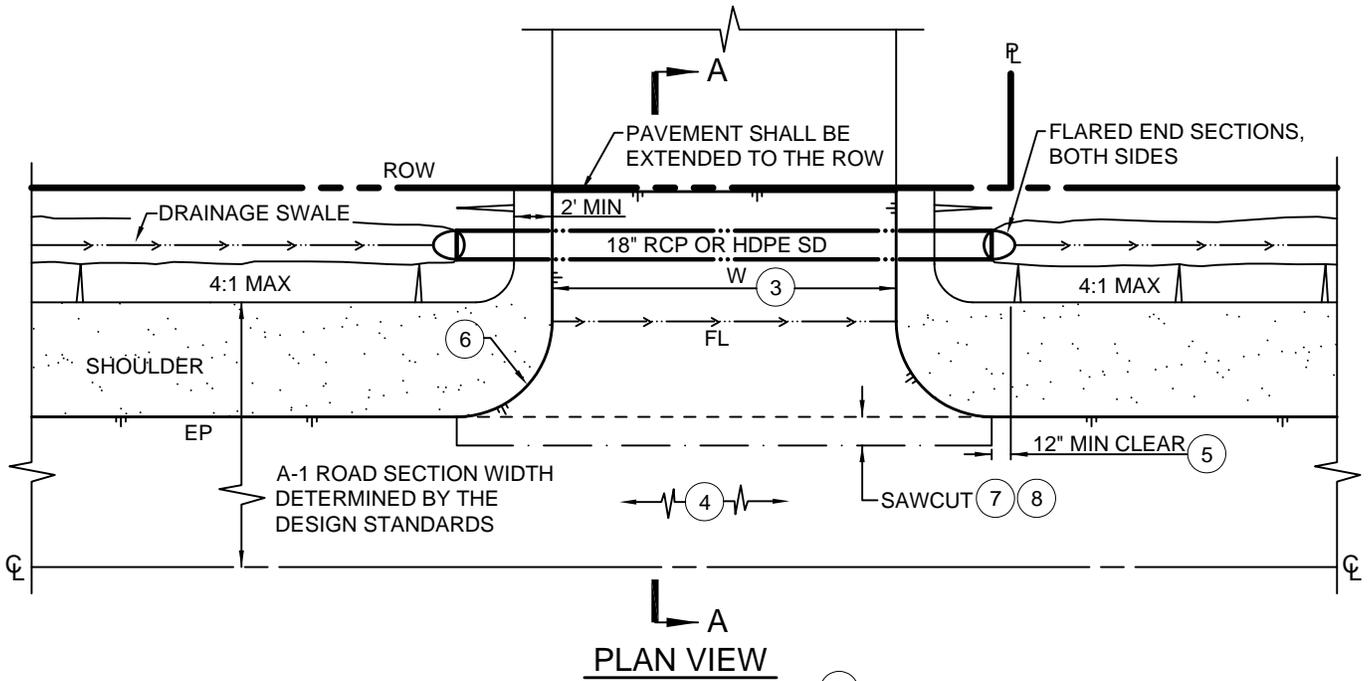


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
RURAL RESIDENTIAL DRIVEWAY
 FOR TYPE "D" & "E" HMA DIKES

Scale: NTS	Adopted: 2011
Drawing No: B-1b.1	
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
NAME CHANGE	GDM	NOV 08			
REPLACE AC WITH HMA	GDM	JAN 11			



SECTION A-A

NOTES:

- WITHIN THE PUBLIC RIGHT-OF-WAY, THE DRIVEWAY SECTION SHALL MATCH THE APPROVED ROAD SECTION, OR SHALL MATCH THE EXISTING ROAD SECTION, AND SHALL MEET THE FOLLOWING REQUIREMENTS:
 ■ HOT MIX ASPHALT (HMA) PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER
 ■ CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER
 ■ 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
- OUTSIDE THE PUBLIC RIGHT-OF-WAY, THE DRIVEWAY STRUCTURAL SECTION SHALL BE DETERMINED BY THE PROJECT DESIGNER AND SHALL BE IN COMPLIANCE WITH CDF/FIRE REGULATIONS.
- RESIDENTIAL DRIVEWAY WIDTH SHALL BE 10' MINIMUM TO 20' MAXIMUM, COMMERCIAL-INDUSTRIAL DRIVEWAY WIDTH SHALL BE 12-FEET MINIMUM TO 35-FEET MAXIMUM. ALL DRIVEWAYS SHALL MEET FIRE AGENCY REGULATIONS.
- REFER TO A-5 SERIES STANDARD DRAWINGS FOR DRIVEWAY SIGHT DISTANCE REQUIREMENTS.
- THE END OF DRIVEWAY RETURN SHALL BE 1-FOOT MINIMUM CLEAR FROM THE PROPERTY LINE.
- THE DRIVEWAY RETURN SHALL HAVE A RADIUS OF 5-FEET FOR RESIDENTIAL (ALTERNATIVE: 5-FOOT CHAMFER), AND A RADIUS OF 10-FEET FOR COMMERCIAL-INDUSTRIAL (ALTERNATIVE: 10-FOOT CHAMFER).
- FOR NEW DRIVEWAY CONSTRUCTION AGAINST EXISTING ROADWAY, SAWCUT TO REMOVE EXISTING ROADWAY AND RECONSTRUCT PER STANDARD DRAWINGS R-1 AND R-2.
- AFTER PAVING, APPLY SS1H OIL (OR APPROVED EQUAL) TO ALL SURFACE SEAMS.

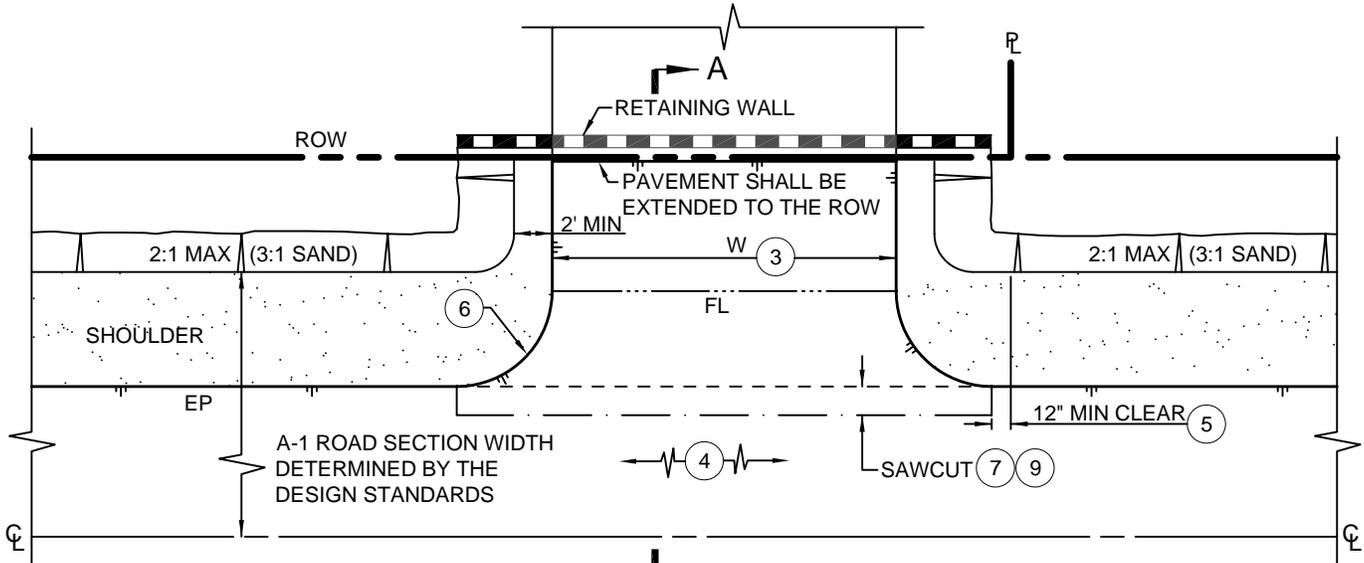


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
RURAL RESIDENTIAL DRIVEWAY
FOR EDGE OF PAVEMENT WITH CULVERT
(PRIOR DEPARTMENT APPROVAL REQUIRED)

Scale: 1"=10'	Adopted: 2011
Drawing No: B-1c	
Sheet No:	1 OF 1

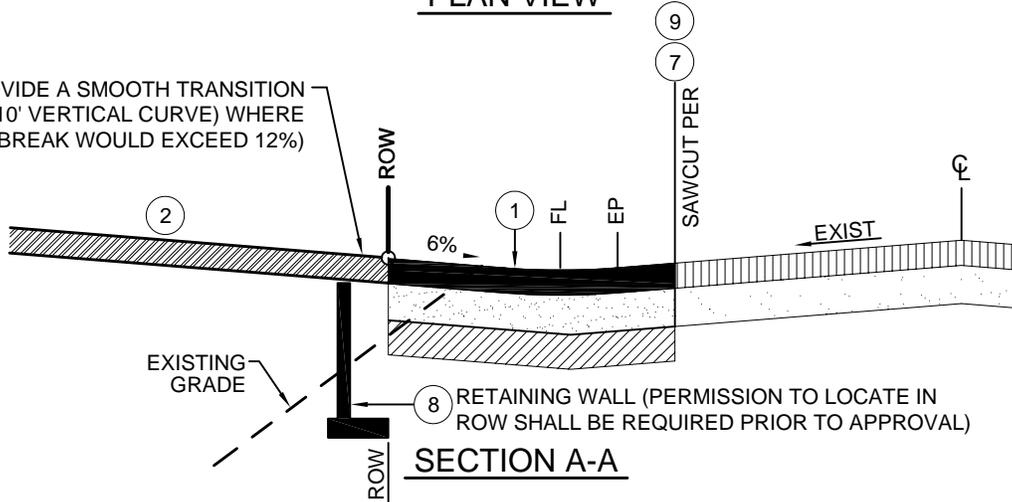
Revisions

Description	Approved	Date	Description	Approved	Date
NAME CHANGE	GDM	NOV 08			
REPLACE AC WITH HMA	GDM	JAN 11			



PLAN VIEW

PROVIDE A SMOOTH TRANSITION (6'-10' VERTICAL CURVE) WHERE GRADE BREAK WOULD EXCEED 12%



SECTION A-A

NOTES:

- WITHIN THE PUBLIC RIGHT-OF-WAY, THE DRIVEWAY SECTION SHALL MATCH THE APPROVED ROAD SECTION, OR SHALL MATCH THE EXISTING ROAD SECTION, AND SHALL MEET THE FOLLOWING REQUIREMENTS:
 - HOT MIX ASPHALT (HMA) PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER
 - CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER
 - 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
- OUTSIDE THE PUBLIC RIGHT-OF-WAY, THE DRIVEWAY STRUCTURAL SECTION SHALL BE DETERMINED BY THE PROJECT DESIGNER AND SHALL BE IN COMPLIANCE WITH FIRE AGENCY REGULATIONS.
- RESIDENTIAL DRIVEWAY WIDTH SHALL BE 10' MINIMUM TO 20' MAXIMUM, COMMERCIAL-INDUSTRIAL DRIVEWAY WIDTH SHALL BE 12-FOOT MINIMUM TO 35-FOOT MAXIMUM. ALL DRIVEWAYS SHALL MEET FIRE AGENCY REGULATIONS.
- REFER TO A-5 SERIES STANDARD DRAWINGS FOR DRIVEWAY SIGHT DISTANCE REQUIREMENTS.
- THE END OF DRIVEWAY RETURN SHALL BE 1-FOOT MINIMUM CLEAR FROM THE PROPERTY LINE.
- THE DRIVEWAY RETURN SHALL HAVE A RADIUS OF 5-FOOT FOR RESIDENTIAL (ALTERNATIVE: 5-FOOT CHAMFER), AND A RADIUS OF 10-FOOT FOR COMMERCIAL-INDUSTRIAL (ALTERNATIVE: 10-FOOT CHAMFER).
- FOR NEW DRIVEWAY CONSTRUCTION AGAINST EXISTING ROADWAY, SAWCUT TO REMOVE EXISTING ROADWAY AND RECONSTRUCT PER STANDARD DRAWINGS R-1 AND R-2.
- IF RETAINING WALL ARE REQUIRED TO BE LOCATED IN THE RIGHT-OF-WAY THE FOLLOWING SHALL APPLY:
 - A. PRIOR APPROVAL SHALL BE GRANTED BY THE DEPARTMENT.
 - B. THE RETAINING WALL SHALL BE ENGINEERED. PLANS AND CALCULATIONS SHALL BE SUBMITTED FOR DEPARTMENT APPROVAL.
- AFTER PAVING, APPLY SS1H OIL (OR APPROVED EQUAL) TO ALL SURFACE SEAMS.

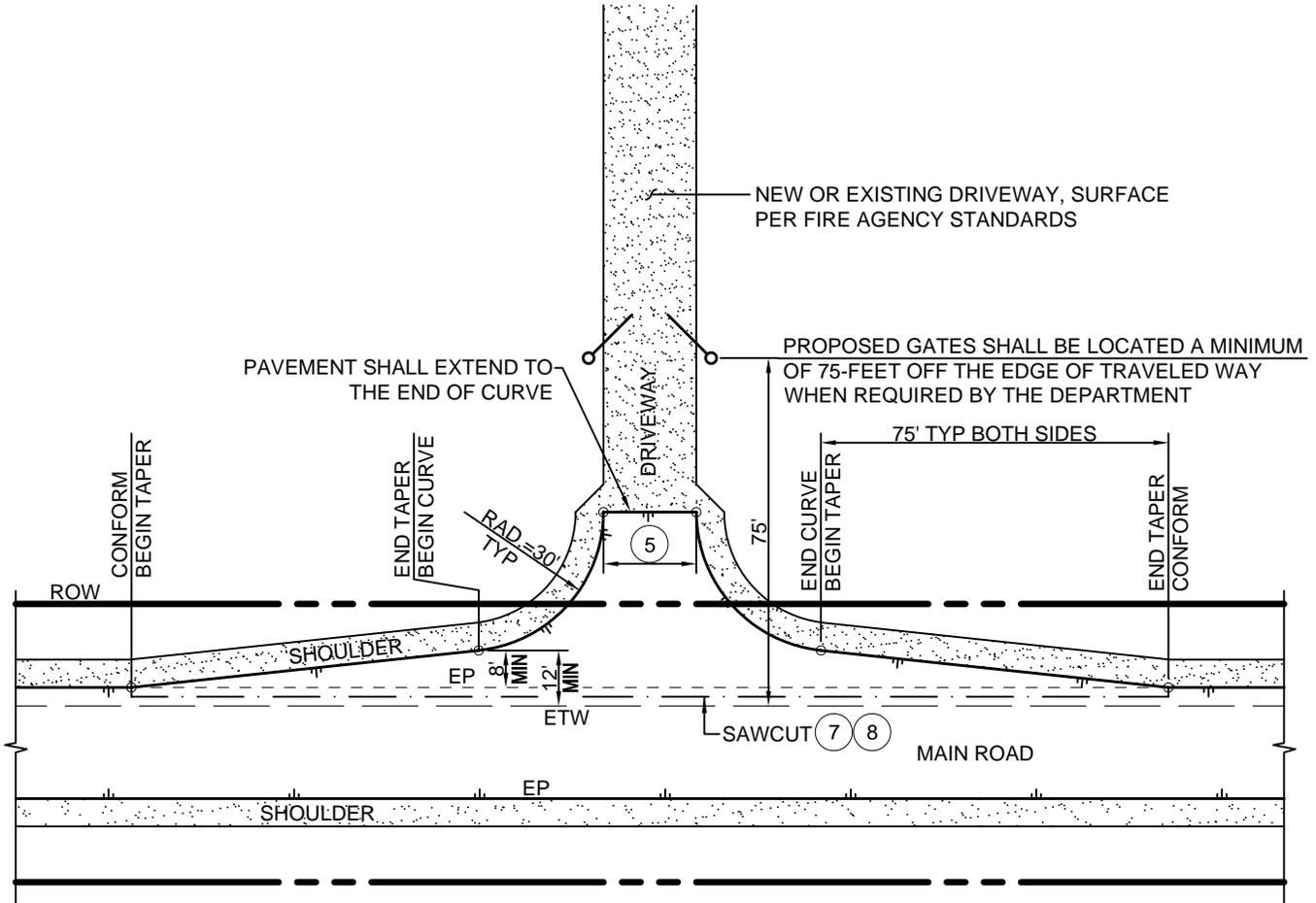


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
RURAL RESIDENTIAL DRIVEWAY
 FOR EDGE OF PAVEMENT W/ RETAINING WALL
 (PRIOR DEPARTMENT APPROVAL REQUIRED)

Scale: 1"=10'	Adopted: 2011
Drawing No: B-1d	
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
NEW STANDARD	GDM	NOV 08			
CHANGE AC TO HMA, UPDATE GATE NOTE	GDM	JAN 11			



NOTES:

1. THE DEPARTMENT MAY REQUIRE THIS STANDARD FOR MODIFYING EXISTING DRIVEWAYS, OR PROPOSING NEW DRIVEWAYS WHICH CONNECT TO COUNTY ROADS HAVING HIGH VEHICLE VOLUMES AND/OR HIGH VEHICLE SPEEDS.
2. ALL ROADSIDE DRAINAGE SHALL BE ACCOMMODATED FOR TO THE SATISFACTION OF THE DEPARTMENT. CONSTRUCTION PLANS AND/OR DRAINAGE CALCULATIONS MAY BE REQUIRED FOR DEPARTMENT APPROVAL PRIOR TO ENCROACHMENT PERMIT ISSUANCE.
3. WITHIN THE PUBLIC RIGHT-OF-WAY THE DRIVEWAY SECTION SHALL MATCH THE EXISTING ROAD SECTION, AND SHALL MEET THE FOLLOWING REQUIREMENTS:
 - HOT MIX ASPHALT (HMA) PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER
 - CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER
 - 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
4. OUTSIDE THE PUBLIC RIGHT-OF-WAY, THE DRIVEWAY STRUCTURAL SECTION SHALL BE DETERMINED BY THE PROJECT DESIGNER AND SHALL BE IN COMPLIANCE WITH FIRE AGENCY REGULATIONS.
5. DRIVEWAY WIDTH SHALL BE 20' MINIMUM TO 35' MAXIMUM. ALL DRIVEWAYS SHALL MEET CALFIRE/FIRE REGULATIONS.
6. REFER TO A-5 SERIES STANDARD DRAWINGS FOR DRIVEWAY SIGHT DISTANCE REQUIREMENTS.
7. FOR NEW DRIVEWAY CONSTRUCTION AGAINST EXISTING ROADWAY, SAWCUT TO REMOVE EXISTING ROADWAY AND RECONSTRUCT PER STANDARD DRAWINGS R-1 AND R-2.
8. AFTER PAVING, APPLY SS1H OIL (OR APPROVED EQUAL) TO ALL SURFACE SEAMS.

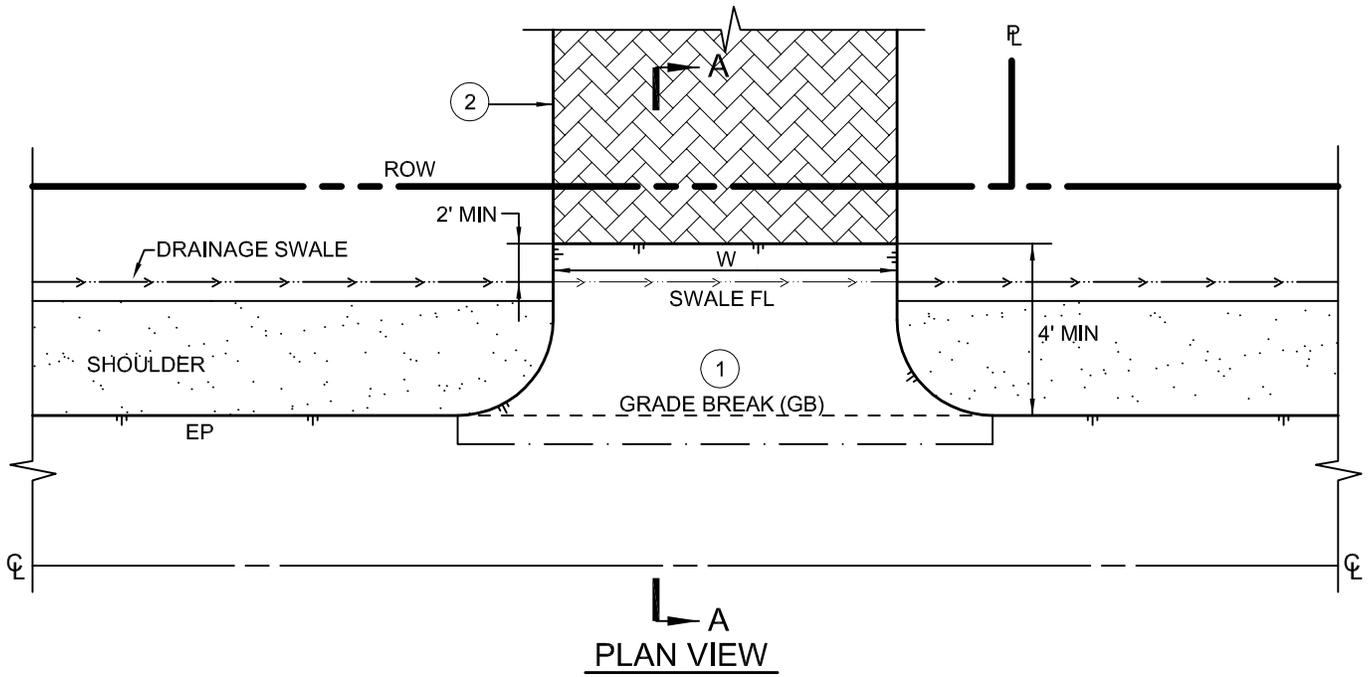


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
RURAL DRIVEWAY APPROACH
 (PRIOR DEPT. APPROVAL REQUIRED FOR USE ON
 HIGH SPEED AND/OR HIGH VOLUME ROADWAYS)

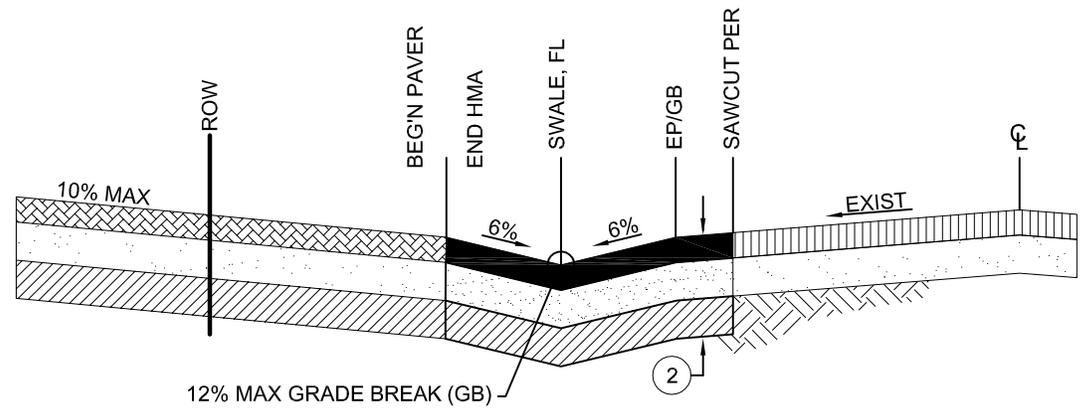
Scale: 1"=40'	Adopted: 2011
Drawing No:	B-1e
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
NAME CHANGE	GDM	NOV 08			
REPLACE AC WITH HMA	GDM	JAN 11			



A
PLAN VIEW



SECTION A-A

NOTES:

1. CONSTRUCT DRIVEWAY PER COUNTY STANDARD B-1a, B-1c, OR B-1d.
2. APPROVED ROAD SECTION SHALL MEET THE FOLLOWING REQUIREMENTS:
 - CONCRETE PAVER, OVER
 - CLASS II AGGREGATE BASE, OVER
 - SCARIFY 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
3. OUTSIDE THE PUBLIC RIGHT-OF-WAY, THE DRIVEWAY STRUCTURAL SECTION SHALL BE DETERMINED BY THE PROJECT DESIGNER AND SHALL BE IN COMPLIANCE WITH CDF/FIRE REGULATIONS.
4. RESIDENTIAL DRIVEWAY WIDTH SHALL BE 10' MINIMUM TO 20' MAXIMUM. ALL DRIVEWAYS SHALL MEET FIRE AGENCY REGULATIONS.

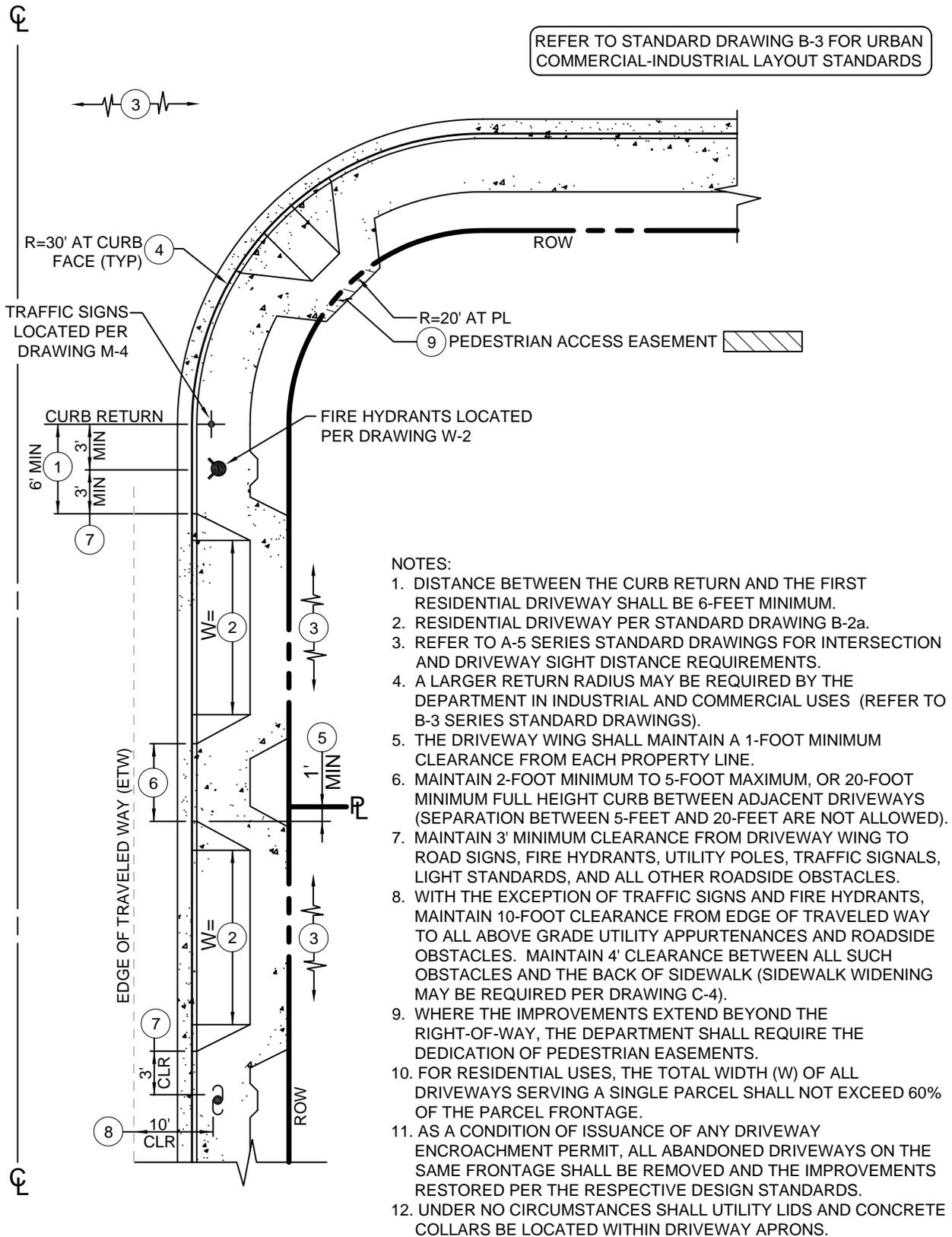


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
RURAL RESIDENTIAL DRIVEWAY
 USE OF PAVERS WITHIN THE RIGHT OF WAY

Scale: 1"=10'	Adopted: 2014
Drawing No: B-1f	
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
REPLACE "ZONES" WITH "USES"	GDM	NOV 08			



NOTES:

- DISTANCE BETWEEN THE CURB RETURN AND THE FIRST RESIDENTIAL DRIVEWAY SHALL BE 6-FOOT MINIMUM.
- RESIDENTIAL DRIVEWAY PER STANDARD DRAWING B-2a.
- REFER TO A-5 SERIES STANDARD DRAWINGS FOR INTERSECTION AND DRIVEWAY SIGHT DISTANCE REQUIREMENTS.
- A LARGER RETURN RADIUS MAY BE REQUIRED BY THE DEPARTMENT IN INDUSTRIAL AND COMMERCIAL USES (REFER TO B-3 SERIES STANDARD DRAWINGS).
- THE DRIVEWAY WING SHALL MAINTAIN A 1-FOOT MINIMUM CLEARANCE FROM EACH PROPERTY LINE.
- MAINTAIN 2-FOOT MINIMUM TO 5-FOOT MAXIMUM, OR 20-FOOT MINIMUM FULL HEIGHT CURB BETWEEN ADJACENT DRIVEWAYS (SEPARATION BETWEEN 5-FEET AND 20-FEET ARE NOT ALLOWED).
- MAINTAIN 3' MINIMUM CLEARANCE FROM DRIVEWAY WING TO ROAD SIGNS, FIRE HYDRANTS, UTILITY POLES, TRAFFIC SIGNALS, LIGHT STANDARDS, AND ALL OTHER ROADSIDE OBSTACLES.
- WITH THE EXCEPTION OF TRAFFIC SIGNS AND FIRE HYDRANTS, MAINTAIN 10-FOOT CLEARANCE FROM EDGE OF TRAVELED WAY TO ALL ABOVE GRADE UTILITY APPURTENANCES AND ROADSIDE OBSTACLES. MAINTAIN 4' CLEARANCE BETWEEN ALL SUCH OBSTACLES AND THE BACK OF SIDEWALK (SIDEWALK WIDENING MAY BE REQUIRED PER DRAWING C-4).
- WHERE THE IMPROVEMENTS EXTEND BEYOND THE RIGHT-OF-WAY, THE DEPARTMENT SHALL REQUIRE THE DEDICATION OF PEDESTRIAN EASEMENTS.
- FOR RESIDENTIAL USES, THE TOTAL WIDTH (W) OF ALL DRIVEWAYS SERVING A SINGLE PARCEL SHALL NOT EXCEED 60% OF THE PARCEL FRONTAGE.
- AS A CONDITION OF ISSUANCE OF ANY DRIVEWAY ENCROACHMENT PERMIT, ALL ABANDONED DRIVEWAYS ON THE SAME FRONTAGE SHALL BE REMOVED AND THE IMPROVEMENTS RESTORED PER THE RESPECTIVE DESIGN STANDARDS.
- UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN DRIVEWAY APRONS.

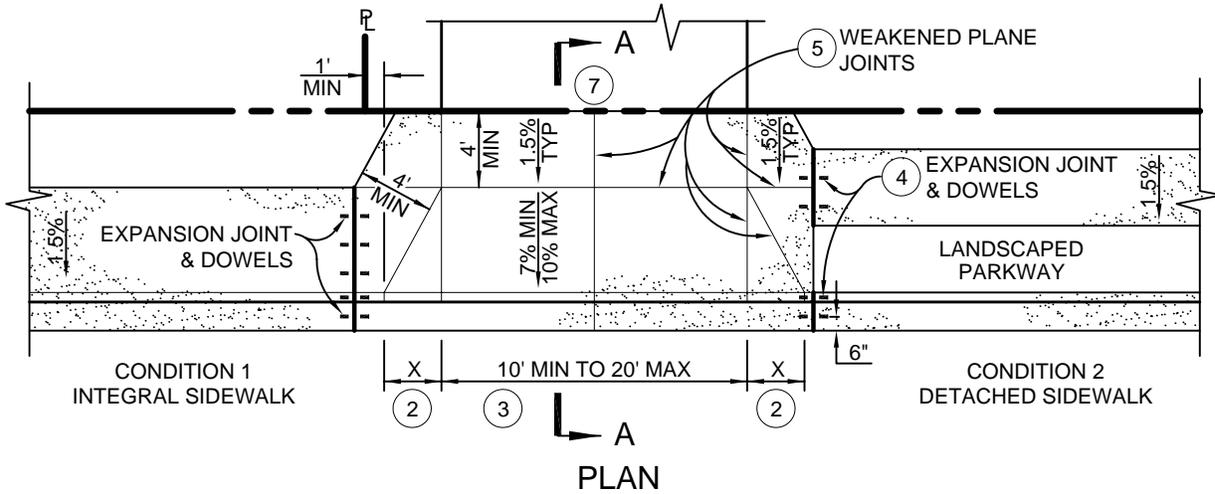


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
URBAN DRIVEWAY
 LAYOUT STANDARDS

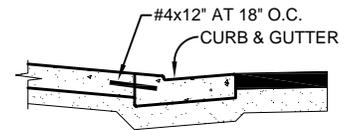
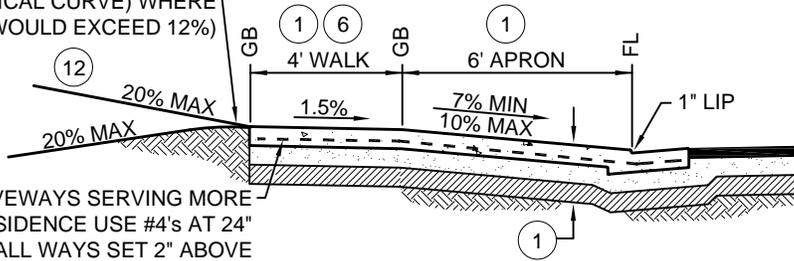
Scale: NTS	Adopted: 2011
Drawing No: B-2	
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
NOTE 3	REM	NOV 07			
NOTE 6 & 12, DRIVEWAY SLOPE & NOTE	GDM	JAN 11			



PROVIDE A SMOOTH TRANSITION (6'-10' VERTICAL CURVE) WHERE GRADE BREAK WOULD EXCEED 12%.



WHEN CURB & GUTTER IS PLACED PRIOR TO DRIVEWAY CONSTRUCTION THEN THE NEW DRIVEWAY SHALL BE DOWELED INTO THE CURB AND GUTTER WITH #4x12" AT 18" OC

FOR DRIVEWAYS SERVING MORE THAN ONE RESIDENCE USE #4's AT 24" ON CENTER, ALL WAYS SET 2" ABOVE AGGREGATE BASE ON DOBIES.

SECTION A-A

COLD JOINT DETAIL

NOTES:

- CONCRETE DRIVEWAY SHALL CONFORM TO STATE STANDARD 90-1.01, 520 LBS/CY CEMENTITIOUS MATERIAL [5-1/2 SACK]. CONCRETE CURING SHALL BE BY PIGMENTED CURING COMPOUND METHOD USING WHITE PIGMENT TYPE. TYPICAL SECTION SHALL BE:
 - 6-INCH MIN PORTLAND CEMENT CONCRETE, OVER
 - 6" MIN CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER
 - 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
 IF THE R-VALUE OF THE NATIVE MATERIAL IS 55 OR GREATER THEN THE 6" OF AGGREGATE BASE MAY BE SUBSTITUTED WITH COMPACTED NATIVE MATERIAL.
 A COURSE BROOM FINISH TRANSVERSE TO THE LINE OF TRAFFIC SHALL BE USED ON THE APRON AND WINGS. THE 4-FOOT WIDE SIDEWALK SHALL HAVE A LIGHT BROOM FINISH PARALLEL TO THE LINE OF TRAFFIC.
- X = 3-FEET (6h:1v) EXCEPT FOR CURB HEIGHTS OVER 8-INCHES WHERE 4h:1v SLOPES SHALL BE USED ON CURB SLOPE.
- DRIVEWAY WIDTH (W) SHALL BE 10-FEET MIN AND 20-FEET MAX FOR RESIDENTIAL ACCESS. FOR DRIVEWAYS SERVING MORE THAN ONE RESIDENCE W EQUALS THE INTERIOR ROAD WIDTH AS GOVERNED BY THE LOCAL FIRE AGENCY STANDARDS.
- EXPANSION JOINTS (EJ) SHALL BE CONSTRUCTED AS SHOWN. 1/2"Øx18" SMOOTH, GREASED DOWELS SHALL BE PLACED IN THE EJ, ONE IN CURB FACE, ONE IN GUTTER, AND AT 18-INCHES ON CENTER IN SIDEWALKS PER STANDARD DRAWING C-1.
- WEAKENED PLANE JOINTS (WPJ) SHALL BE CONSTRUCTED AS SHOWN AND PER STANDARD DRAWING C-1.
- THE CROSS SLOPE OF THE 4-FOOT WIDE SIDEWALK SHALL BE 1.5% (3/16-INCH PER FOOT), BUT NOT EXCEED 2% (1/4-INCH PER FOOT). MINIMUM SIDEWALK WIDTH FOR CLEAR PASSAGE SHALL BE MAINTAINED (NO OBSTACLES LOCATED WITHIN).
- WHERE THE IMPROVEMENTS EXTEND BEYOND THE RIGHT-OF-WAY, AN OFFER OF DEDICATION FOR PEDESTRIAN EASEMENT/S SHALL BE REQUIRED BY THE DEPARTMENT.
- REFER TO A-5 SERIES STANDARD DRAWINGS FOR DRIVEWAY SIGHT DISTANCE REQUIREMENTS.
- FOR NEW DRIVEWAY CONSTRUCTION AGAINST EXISTING ROADWAY, SAWCUT TO REMOVE EXISTING ROADWAY AND RECONSTRUCT PER STANDARD DRAWINGS R-1 AND R-3.
- THE HIGH VOLUME DRIVEWAY STANDARD B-3b SHALL BE USED AT ENTRANCES TO RESIDENTIAL DRIVEWAYS THAT EXCEED 200 VEHICLES PER PM PEAK HOUR AND EXIT ONTO A COLLECTOR OR ARTERIAL ROAD. THE DEPARTMENT RESERVES THE RIGHT TO REQUIRE THE USE OF A HIGH VOLUME DRIVEWAY BASED ON OTHER EXTENUATING CONDITIONS.
- UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN DRIVEWAY APRONS.
- OUTSIDE THE PUBLIC RIGHT-OF-WAY, THE DRIVEWAY STRUCTURAL SECTION SHALL BE DETERMINED BY THE PROJECT DESIGNER AND SHALL BE IN COMPLIANCE WITH CDF/FIRE REGULATIONS.



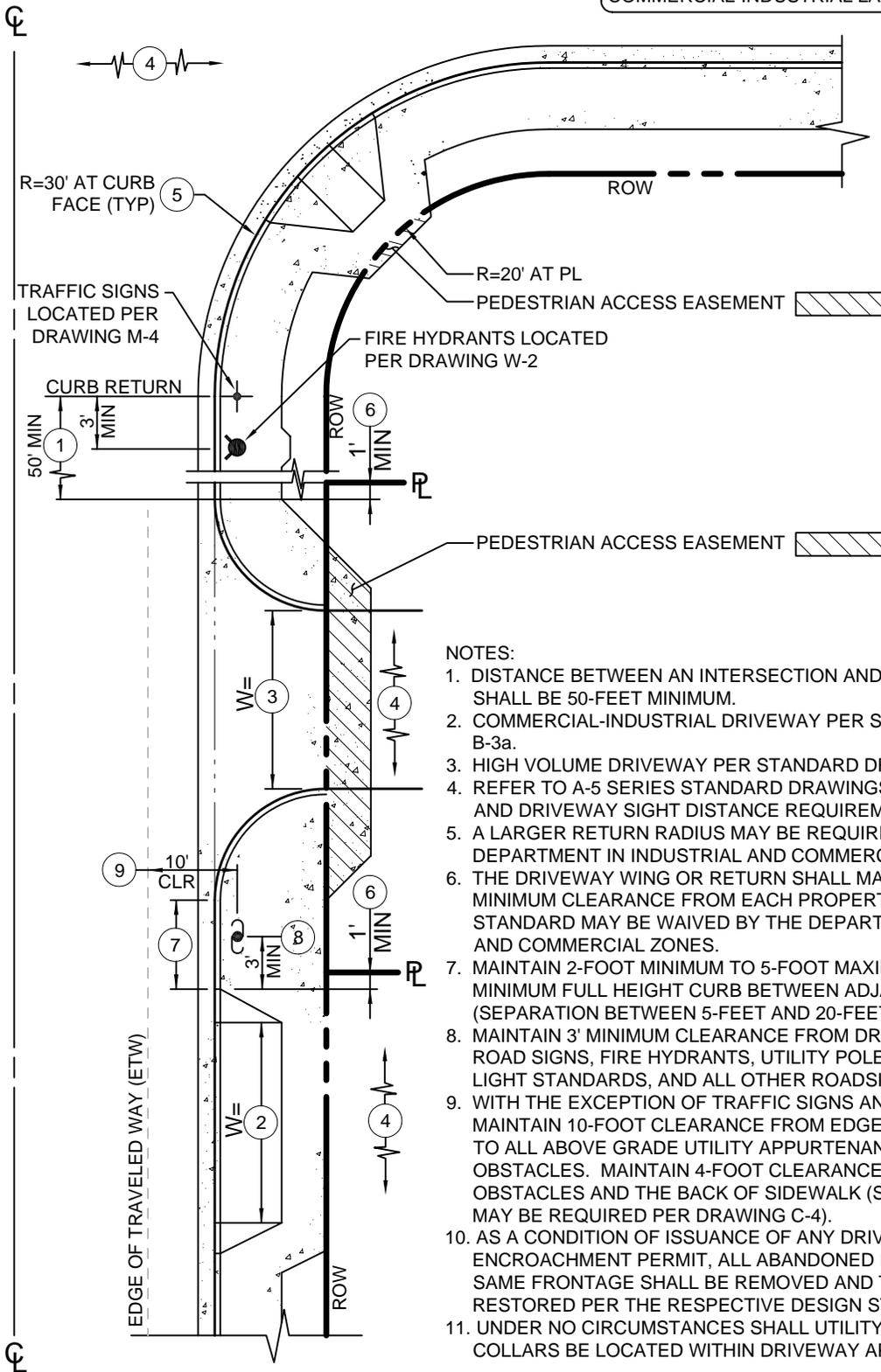
DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
URBAN DRIVEWAY
 RESIDENTIAL DRIVEWAY

Scale: 1"=10'	Adopted: 2011
Drawing No: B-2a	
Sheet No: 1 OF 1	

Revisions

Description	Approved	Date	Description	Approved	Date

REFER TO STANDARD DRAWING B-1 FOR RURAL COMMERCIAL-INDUSTRIAL LAYOUT STANDARDS



NOTES:

1. DISTANCE BETWEEN AN INTERSECTION AND THE FIRST DRIVEWAY SHALL BE 50-FOOT MINIMUM.
2. COMMERCIAL-INDUSTRIAL DRIVEWAY PER STANDARD DRAWING B-3a.
3. HIGH VOLUME DRIVEWAY PER STANDARD DRAWING B-3b.
4. REFER TO A-5 SERIES STANDARD DRAWINGS FOR INTERSECTION AND DRIVEWAY SIGHT DISTANCE REQUIREMENTS.
5. A LARGER RETURN RADIUS MAY BE REQUIRED BY THE DEPARTMENT IN INDUSTRIAL AND COMMERCIAL ZONES.
6. THE DRIVEWAY WING OR RETURN SHALL MAINTAIN A 1-FOOT MINIMUM CLEARANCE FROM EACH PROPERTY LINE. THIS STANDARD MAY BE WAIVED BY THE DEPARTMENT IN INDUSTRIAL AND COMMERCIAL ZONES.
7. MAINTAIN 2-FOOT MINIMUM TO 5-FOOT MAXIMUM, OR 20-FOOT MINIMUM FULL HEIGHT CURB BETWEEN ADJACENT DRIVEWAYS (SEPARATION BETWEEN 5-FOET AND 20-FOET ARE NOT ALLOWED).
8. MAINTAIN 3' MINIMUM CLEARANCE FROM DRIVEWAY WING TO ROAD SIGNS, FIRE HYDRANTS, UTILITY POLES, TRAFFIC SIGNALS, LIGHT STANDARDS, AND ALL OTHER ROADSIDE OBSTACLES.
9. WITH THE EXCEPTION OF TRAFFIC SIGNS AND FIRE HYDRANTS, MAINTAIN 10-FOOT CLEARANCE FROM EDGE OF TRAVELED WAY TO ALL ABOVE GRADE UTILITY APPURTENANCES AND ROADSIDE OBSTACLES. MAINTAIN 4-FOOT CLEARANCE BETWEEN ALL SUCH OBSTACLES AND THE BACK OF SIDEWALK (SIDEWALK WIDENING MAY BE REQUIRED PER DRAWING C-4).
10. AS A CONDITION OF ISSUANCE OF ANY DRIVEWAY ENCROACHMENT PERMIT, ALL ABANDONED DRIVEWAYS ON THE SAME FRONTAGE SHALL BE REMOVED AND THE IMPROVEMENTS RESTORED PER THE RESPECTIVE DESIGN STANDARDS.
11. UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN DRIVEWAY APRONS.

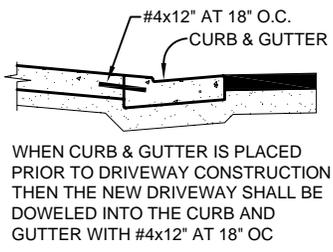
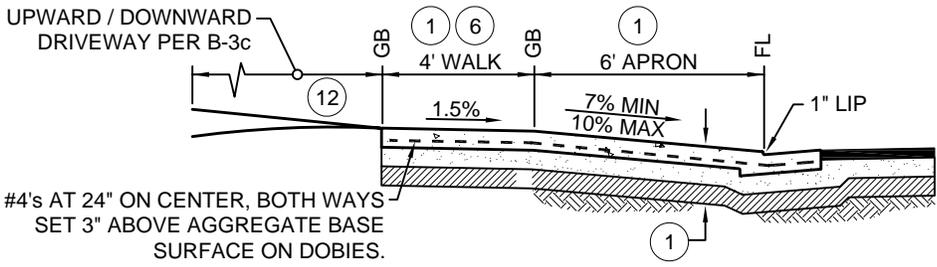
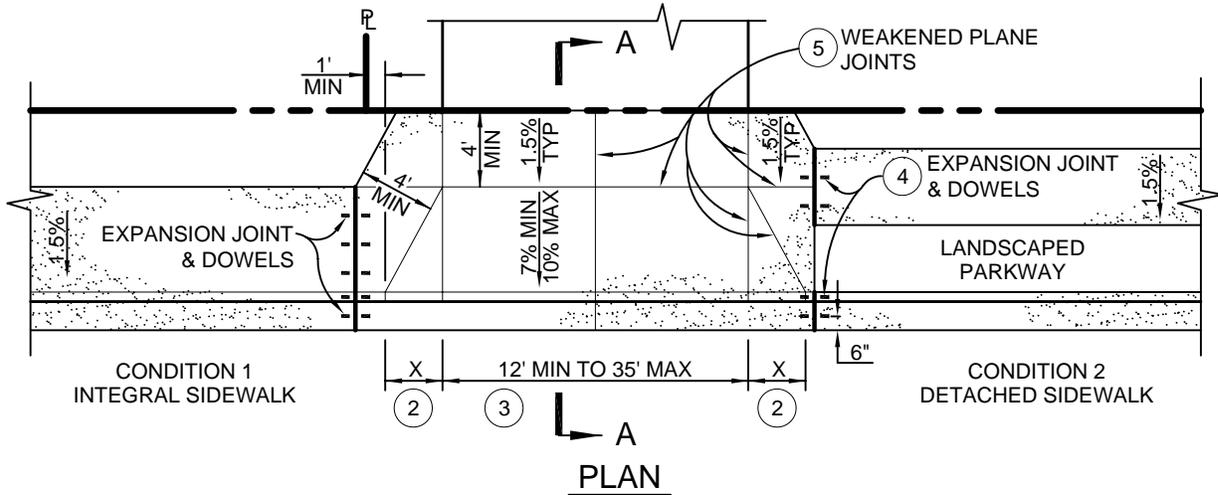


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
COMMERCIAL-INDUSTRIAL DRIVEWAY
 LAYOUT STANDARDS

Scale: NTS	Adopted: 2011
Drawing No: B-3	
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date



SECTION A-A

COLD JOINT DETAIL

NOTES:

- CONCRETE DRIVEWAY SHALL CONFORM TO STATE STANDARD 90-1.01, 520 LBS/CY CEMENTITIOUS MATERIAL [5-1/2 SACK]. CONCRETE CURING SHALL BE BY PIGMENTED CURING COMPOUND METHOD USING WHITE PIGMENT TYPE. TYPICAL SECTION SHALL BE:
 - 8-INCH MINIMUM PORTLAND CEMENT CONCRETE REINFORCED WITH #4's AT 24" OC BOTH WAYS, OVER
 - 6" MIN CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER
 - 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
 IF THE R-VALUE OF THE NATIVE MATERIAL IS 55 OR GREATER THEN THE 6-INCHES OF AGGREGATE BASE MAY BE SUBSTITUTED WITH COMPACTED NATIVE MATERIAL.
- A COURSE BROOM FINISH TRANSVERSE TO THE LINE OF TRAFFIC SHALL BE USED ON THE APRON AND WINGS. THE 4-FOOT WIDE SIDEWALK SHALL HAVE A LIGHT BROOM FINISH PARALLEL TO THE LINE OF TRAFFIC.
- X = 3- FEET (6h:1v) EXCEPT FOR CURB HEIGHTS OVER 8-INCHES WHERE 4h:1v SLOPES SHALL BE USED ON CURB SLOPE.
- W = DRIVEWAY WIDTH SHALL BE 12- FEET MINIMUM AND 35- FEET MAXIMUM FOR COMMERCIAL-INDUSTRIAL ACCESS.
- EXPANSION JOINTS (EJ) SHALL BE CONSTRUCTED AS SHOWN. 1/2"Øx18" SMOOTH, GREASED DOWELS SHALL BE PLACED IN THE EJ, ONE IN CURB FACE, ONE IN GUTTER, AND AT 18-INCHES ON CENTER IN SIDEWALKS PER STANDARD DRAWING C-1.
- WEAKENED PLANE JOINTS (WPJ) SHALL BE CONSTRUCTED AS SHOWN AND PER STANDARD DRAWING C-1.
- THE CROSS SLOPE OF THE 4-FOOT WIDE SIDEWALK SHALL BE 1.5% (3/16-INCH PER FOOT), BUT NOT EXCEED 2% (1/4-INCH PER FOOT). MINIMUM SIDEWALK WIDTH FOR CLEAR PASSAGE SHALL BE MAINTAINED (NO OBSTACLES LOCATED WITHIN).
- WHERE THE IMPROVEMENTS EXTEND BEYOND THE RIGHT-OF-WAY, THE ACQUISITION OF PEDESTRIAN EASEMENTS SHALL BE REQUIRED BY THE DEPARTMENT.
- REFER TO A-5 SERIES STANDARD DRAWINGS FOR DRIVEWAY SIGHT DISTANCE REQUIREMENTS.
- FOR NEW DRIVEWAY CONSTRUCTION AGAINST EXISTING ROADWAY, SAWCUT TO REMOVE EXISTING ROADWAY AND RECONSTRUCT PER STANDARD DRAWINGS R-1 AND R-3.
- THE HIGH VOLUME DRIVEWAY STANDARD B-3b SHALL BE USED AT ENTRANCES THAT EXCEED 200 VEHICLES PER PM PEAK HOUR AND EXIT ONTO AN ARTERIAL ROAD. THE DEPARTMENT RESERVES THE RIGHT TO REQUIRE THE USE OF A HIGH VOLUME DRIVEWAY BASED ON OTHER EXTENUATING CONDITIONS.
- UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN DRIVEWAY APRONS.
- OUTSIDE THE PUBLIC RIGHT-OF-WAY, THE DRIVEWAY STRUCTURAL SECTION SHALL BE DETERMINED BY THE PROJECT DESIGNER AND SHALL BE IN COMPLIANCE WITH CDF/FIRE REGULATIONS.

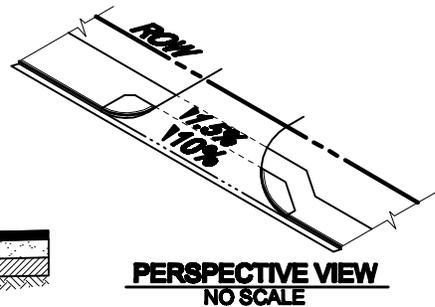
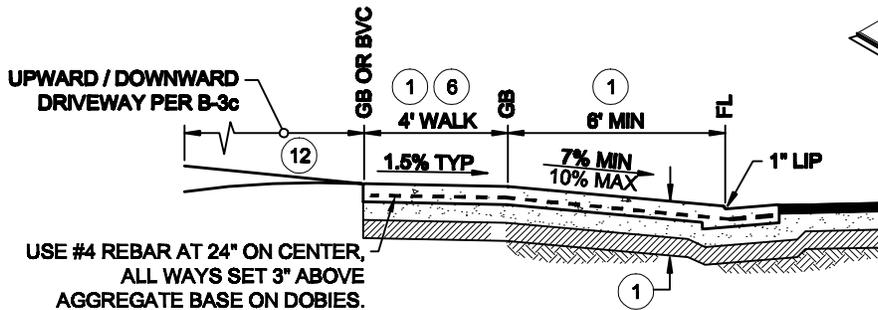
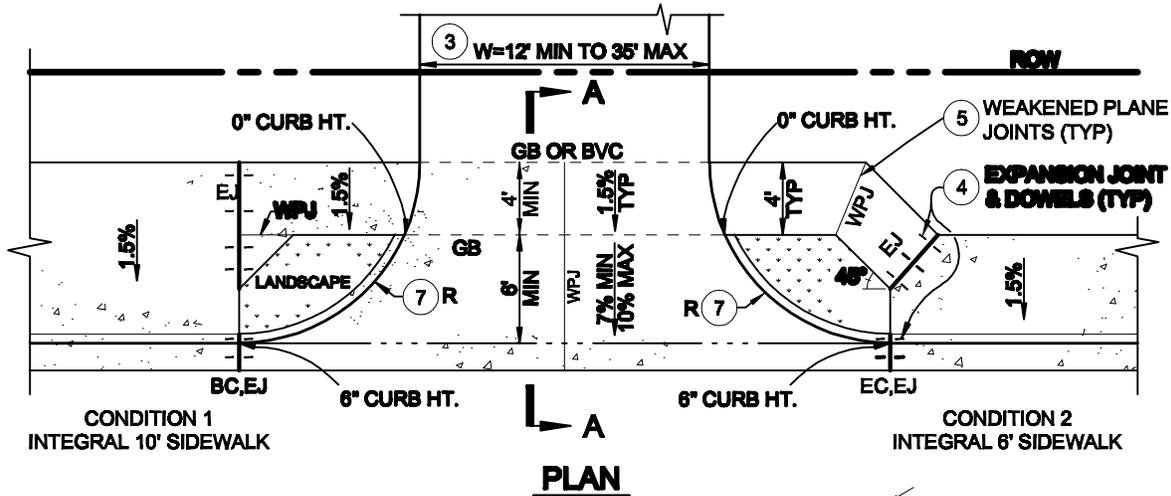


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
COMMERCIAL-INDUSTRIAL DRIVEWAY
 STANDARD DRIVEWAY

Scale: 1"=10'	Adopted: 2011
Drawing No: B-3a	
Sheet No: 1 OF 1	

Revisions

Description	Approved	Date	Description	Approved	Date
NOTE 7	REM	NOV 07	REVISE NOTE 1	FH	AUG 14
NOTE 1 AND 7		MAY 14			



SECTION A-A

NOTES:

- CONCRETE DRIVEWAY SHALL CONFORM TO STATE STANDARD 90-1.01, 520 LBS/CY CEMENTITIOUS MATERIAL [5-1/2 SACK]. CONCRETE CURING SHALL BE BY PIGMENTED CURING COMPOUND METHOD USING WHITE PIGMENT TYPE. TYPICAL SECTION SHALL BE:
 - 8-INCH MINIMUM PORTLAND CEMENT CONCRETE REINFORCED WITH #4's AT 24" OC BOTH WAYS, OVER
 - 6" MIN CLASS II AGGREGATE BASE, OVER
 - 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
 A COURSE BROOM FINISH TRANSVERSE TO THE LINE OF TRAFFIC SHALL BE USED ON THE APRON AND WINGS.
- DIMENSIONS "W" & "R" AND PARKWAY WIDTH SHALL BE SHOWN ON PLANS.
- W = DRIVEWAY WIDTH SHALL BE 12-FOOT MINIMUM AND 35-FOOT MAXIMUM FOR COMMERCIAL-INDUSTRIAL ACCESS.
- EXPANSION JOINTS (EJ) SHALL BE CONSTRUCTED AS SHOWN. 1/2"Øx18" SMOOTH, GREASED DOWELS SHALL BE PLACED IN THE EJ, ONE IN CURB FACE, ONE IN GUTTER, AND AT 18-INCHES ON CENTER IN SIDEWALKS PER STANDARD DRAWING C-1.
- WEAKENED PLANE JOINTS (WPJ) SHALL BE CONSTRUCTED AS SHOWN AND PER STANDARD DRAWING C-1.
- THE CROSS SLOPE OF THE 4-FOOT WIDE SIDEWALK SHALL BE 1.5% (3/16-INCH PER FOOT), BUT NOT EXCEED 2% (1/4-INCH PER FOOT). MINIMUM SIDEWALK WIDTH FOR CLEAR PASSAGE SHALL BE MAINTAINED (NO OBSTACLES LOCATED WITHIN).
- RADIUS (R) SHALL BE 10 FEET. CURB HEIGHT VARIES FROM 0 TO 6-INCHES
- WHERE THE IMPROVEMENTS EXTEND BEYOND THE RIGHT-OF-WAY, THE ACQUISITION OF PEDESTRIAN EASEMENTS SHALL BE REQUIRED BY THE DEPARTMENT.
- REFER TO A-5 SERIES STANDARD DRAWINGS FOR DRIVEWAY SIGHT DISTANCE REQUIREMENTS.
- FOR NEW DRIVEWAY CONSTRUCTION AGAINST EXISTING ROADWAY, SAWCUT TO REMOVE EXISTING ROADWAY AND RECONSTRUCT PER STANDARD DRAWINGS R-1 AND R-3.
- THIS HIGH VOLUME DRIVEWAY STANDARD SHALL BE USED AT ENTRANCES THAT EXCEED 200 VEHICLES PER PM PEAK HOUR AND EXIT ONTO AN ARTERIAL ROAD, OR WHERE REQUIRED BY THE DEPARTMENT.
- UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN DRIVEWAY APRONS.
- OUTSIDE THE PUBLIC RIGHT-OF-WAY, THE DRIVEWAY STRUCTURAL SECTION SHALL BE DETERMINED BY THE PROJECT DESIGNER AND SHALL BE IN COMPLIANCE WITH CDF/FIRE REGULATIONS.

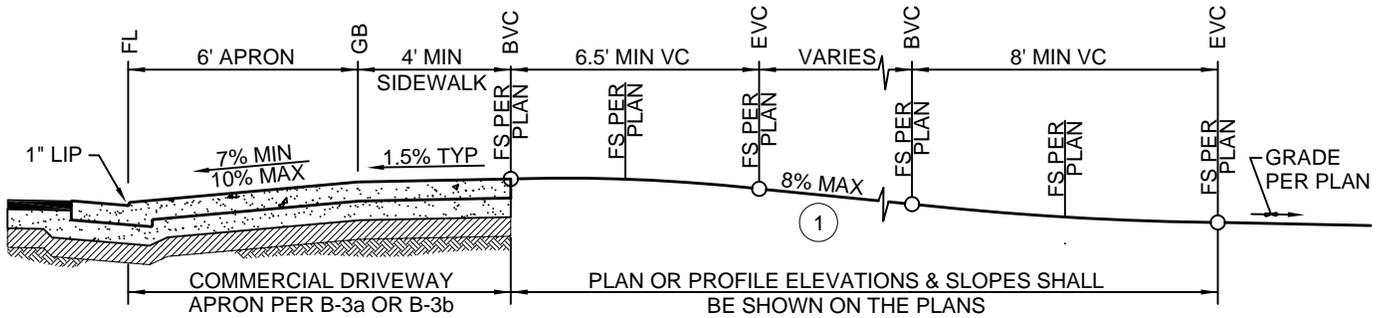


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
COMMERCIAL-INDUSTRIAL DRIVEWAY
HIGH VOLUME DRIVEWAY

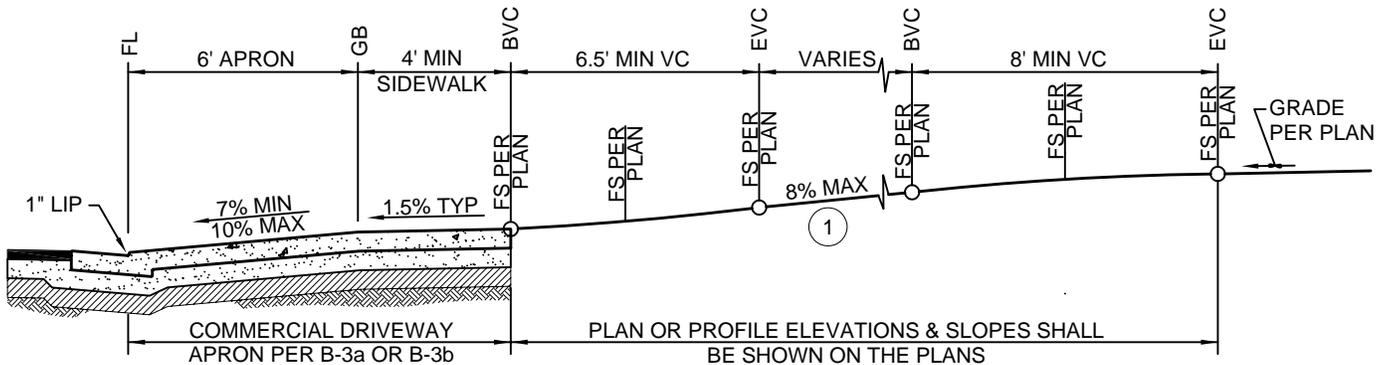
Scale: 1"=10'	Adopted: 2014
Drawing No: B-3b	
Sheet No: 1 OF 1	

Revisions

Description	Approved	Date	Description	Approved	Date



DOWNWARD DRIVEWAY



UPWARD DRIVEWAY

NOTES:

1. THE MAXIMUM SLOPE OF 8% SHALL NOT BE EXCEEDED ALONG ANY LONGITUDINAL PORTION OF THE NEW DRIVEWAY. THE SLOPE MAY BE INCREASED TO 12% WITH SPECIAL CONSTRUCTION TECHNIQUES AND PRIOR DEPARTMENT APPROVAL.
2. THE CROSS SLOPE OF THE 4-FOOT WIDE SIDEWALK SHALL BE 1.5% (3/16-INCH PER FOOT), BUT NOT EXCEED 2% (1/4-INCH PER FOOT). MINIMUM SIDEWALK WIDTH FOR CLEAR PASSAGE SHALL BE MAINTAINED (NO OBSTACLES LOCATED WITHIN).
3. THIS STANDARD IS INTENDED TO BE USED IN CONJUNCTION WITH STANDARD DRAWINGS B-3a AND B-3b.

ABBREVIATIONS:

- BVC BEGIN VERTICAL CURVE
- EVC END VERTICAL CURVE
- FL FLOWLINE
- FS FINISHED SURFACE (ELEVATION)
- GB GRADE BREAK
- VC VERTICAL CURVE



DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
COMMERCIAL-INDUSTRIAL DRIVEWAY
 UPWARD / DOWNWARD DRIVEWAY

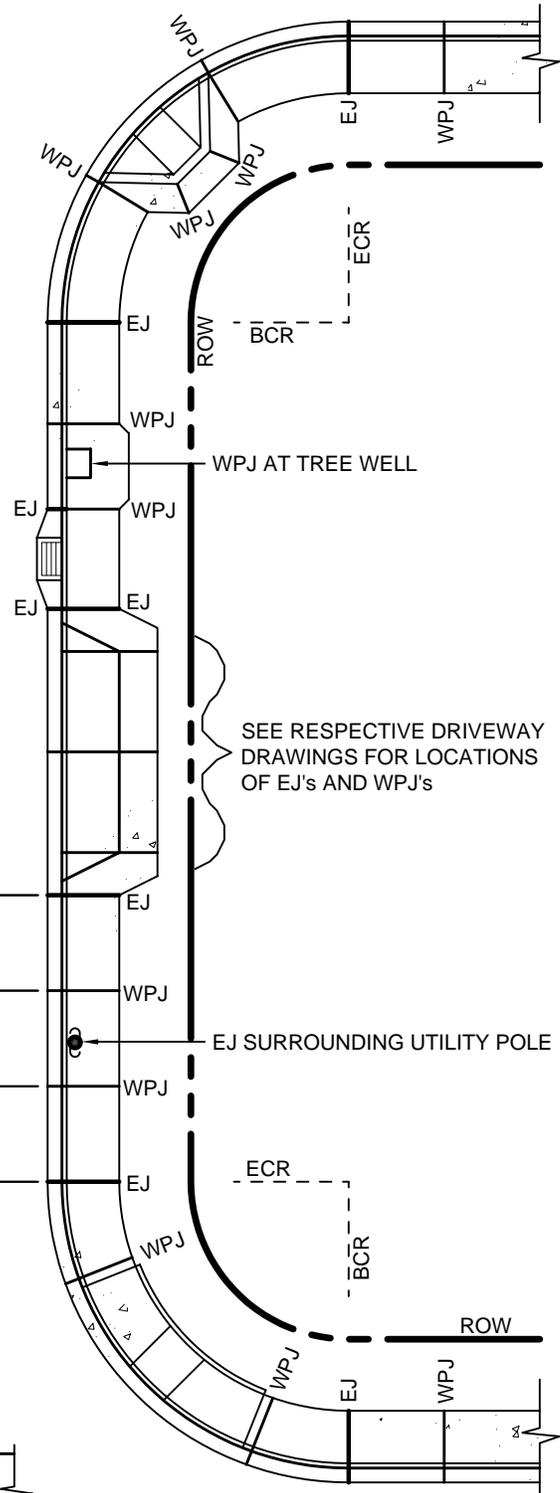
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Sheet No:	1 OF 1

Revisions

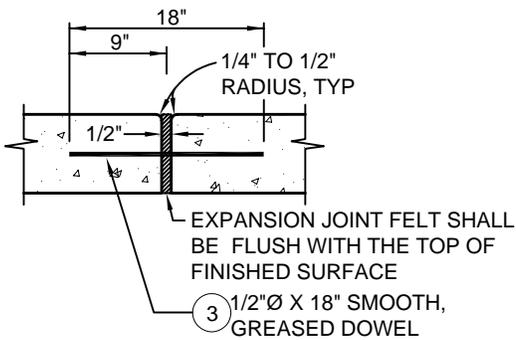
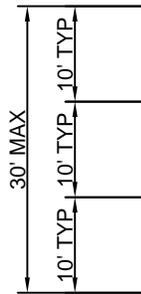
Description	Approved	Date	Description	Approved	Date

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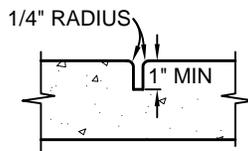
- EXPANSION JOINTS (EJ) SHALL BE PLACED AT CURB RETURNS, DRIVEWAYS, STORM DRAIN CATCH BASINS, AROUND UTILITY POLES, AT LONGITUDINAL CURB GUTTER AND SIDEWALK INTERVALS NOT TO EXCEED 30-FEET, AND AT ALL OTHER LOCATIONS AS DIRECTED BY THE DEPARTMENT. THE INTERVALS BETWEEN EXPANSION JOINTS SHALL VARY TO ALLOW MATCHING OF JOINTS IN ADJACENT EXISTING IMPROVEMENTS AS APPLICABLE.
- WEAKENED PLANE JOINTS (WPJ) SHALL BE A MINIMUM 1-INCH IN DEPTH AND PLACED AT LONGITUDINAL CURB GUTTER AND SIDEWALK INTERVALS NOT EXCEEDING 10-FEET BETWEEN EXPANSION JOINTS. THE INTERVALS BETWEEN WEAKENED PLANE JOINTS SHALL VARY TO ALLOW MATCHING OF JOINTS IN ADJACENT EXISTING IMPROVEMENTS AS APPLICABLE.
- 1/2"Ø x 18" SMOOTH, GREASED DOWELS SHALL BE PLACED AT ALL EXPANSION JOINTS, ONE IN THE NEW CURB FACE, ONE IN THE NEW GUTTER, AND AT 18-INCHES ON CENTER IN NEW SIDEWALK.
- WHEN PLACED IN SIDEWALKS, BOTH EXPANSION JOINTS AND WEAKENED PLANE JOINTS SHALL EXTEND THROUGH THE ADJACENT CURB AND GUTTER.
- REFER TO RESPECTIVE IMPROVEMENT (CURB, GUTTER, SIDEWALK, RAMP, DRIVEWAY, ETC) STANDARD DRAWING FOR ADDITIONAL CONSTRUCTION INFORMATION.



REFER TO DRAWING R-3 FOR REPAIR OF EXISTING SIDEWALKS



EXPANSION JOINT ①



WEAKENED PLANE JOINT ②

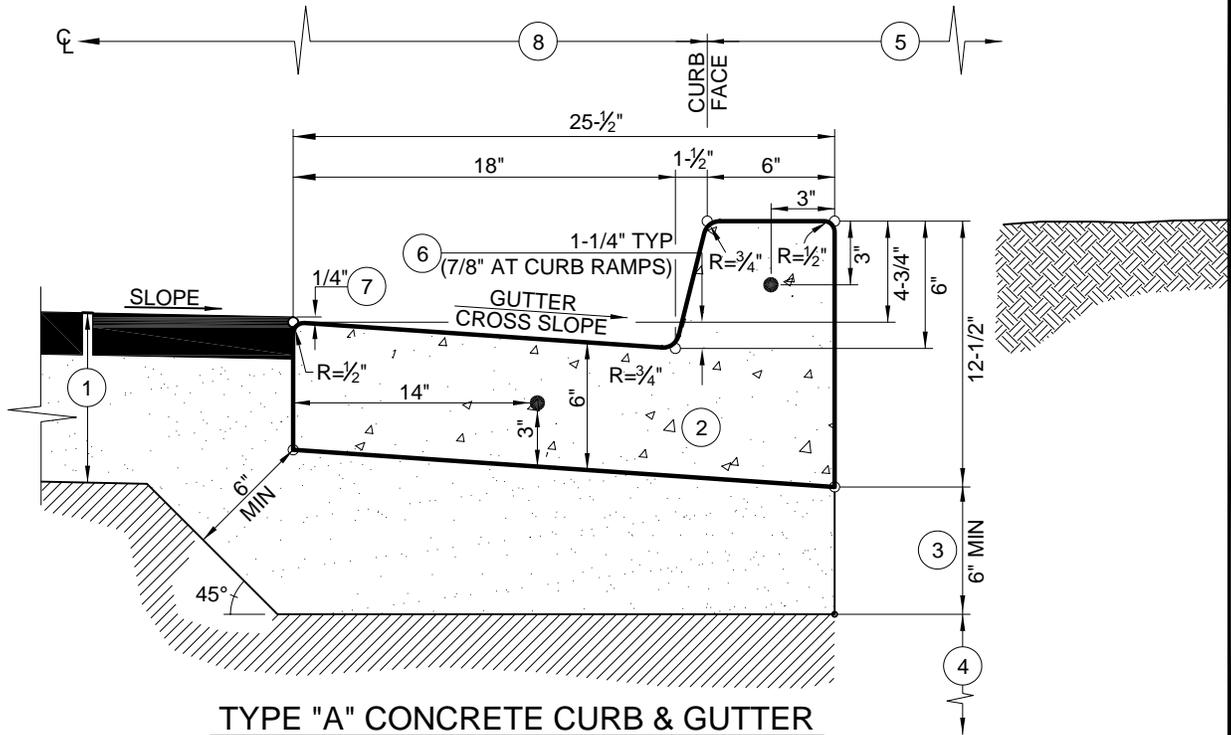


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
**EXPANSION & WEAKENED PLANE
 JOINT REQUIREMENTS**

Scale: 1"=20'	Adopted: 2011
Drawing No:	C-1
Sheet No:	1 OF 1

Revisions

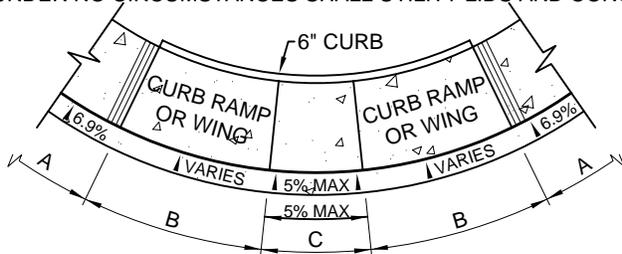
Description	Approved	Date	Description	Approved	Date
NOTE 2	REM	NOV 07			
5% SLOPE IN ROAD AT BOTTOM OF RAMP	GDM	JAN 11			



TYPE "A" CONCRETE CURB & GUTTER

NOTES:

1. ROADWAY STRUCTURAL SECTION PER PLAN OR AS EXISTING.
2. CONCRETE CURB SHALL CONFORM TO STATE STANDARD 90-1.01, 520 LBS CEMENTITIOUS MATERIAL PER CUBIC YARD [5-1/2 SACK]. EXTRUDED CURB SHALL CONFORM TO STATE STANDARD 73-1.01. CONCRETE CURING SHALL BE BY PIGMENTED CURING COMPOUND METHOD USING WHITE PIGMENT TYPE.
3. 6" MINIMUM CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION OR MATCH BASE THICKNESS REQUIREMENT FOR NEW OR EXISTING ROAD SECTION, WHICHEVER IS GREATEST.
4. 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION.
5. SUBGRADE AND AGGREGATE BASE COMPACTION REQUIREMENTS SHALL EXTEND TO THE BACK OF CURB OR TO THE BACK OF ATTACHED SIDEWALK (WHICHEVER CONDITION IS APPLICABLE).
6. GUTTER CROSS SLOPE SHALL NOT EXCEED 5% ACROSS CURB RAMPS PER DETAIL BELOW.
7. THE ROADWAY FINISHED SURFACE SHALL BE 1/4" ABOVE THE GUTTER LIP.
8. PAVEMENT WIDTH MEASURED FROM ROAD CENTERLINE TO THIS POINT.
9. 1/2"Ø x 18" LONG GREASED SMOOTH DOWELS (●) SHALL BE CONSTRUCTED AT ALL EXPANSION JOINTS AND CONSTRUCTION JOINTS, REFER TO STANDARD DRAWING C-1.
10. EXPANSION JOINTS SHALL BE CONSTRUCTED AT 30-FEET MAXIMUM INTERVALS, AT ENDS OF ALL CURB RETURNS, AND EACH SIDE OF DRIVEWAY DEPRESSIONS PER STANDARD DRAWING C-1. THE INTERVALS BETWEEN EXPANSION JOINTS SHALL VARY TO ALLOW MATCHING OF JOINTS ADJACENT EXISTING IMPROVEMENTS WHEN APPLICABLE.
11. WEAKENED PLANE JOINTS SHALL BE CONSTRUCTED AT 10-FEET MAXIMUM INTERVALS PER STANDARD DRAWING C-1. THE INTERVALS BETWEEN EXPANSION JOINTS SHALL VARY TO ALLOW MATCHING OF JOINTS ADJACENT EXISTING IMPROVEMENTS WHEN APPLICABLE.
12. UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN THE CURB & GUTTER.



NOTES:

- A. GUTTER CROSS SLOPE = 1-1/4" IN 18" = 6.9%
- B. GUTTER CROSS SLOPE TRANSITION ZONE (VARIES)
- C. GUTTER CROSS SLOPE = 7/8" IN 18" = 4.9% (5% MAX)
LONGITUDINAL SLOPE = 2% MAX

TYPICAL GUTTER TRANSITION AT CURB RAMP

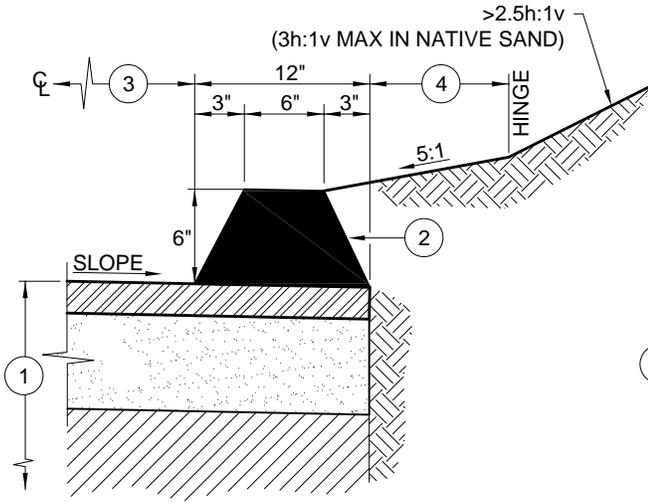


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
TYPE "A" CONCRETE
CURB & GUTTER

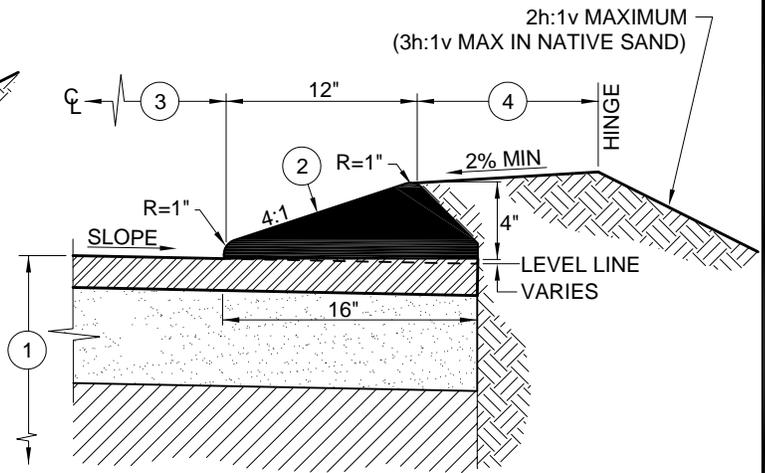
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Sheet No:	1 OF 1

Revisions

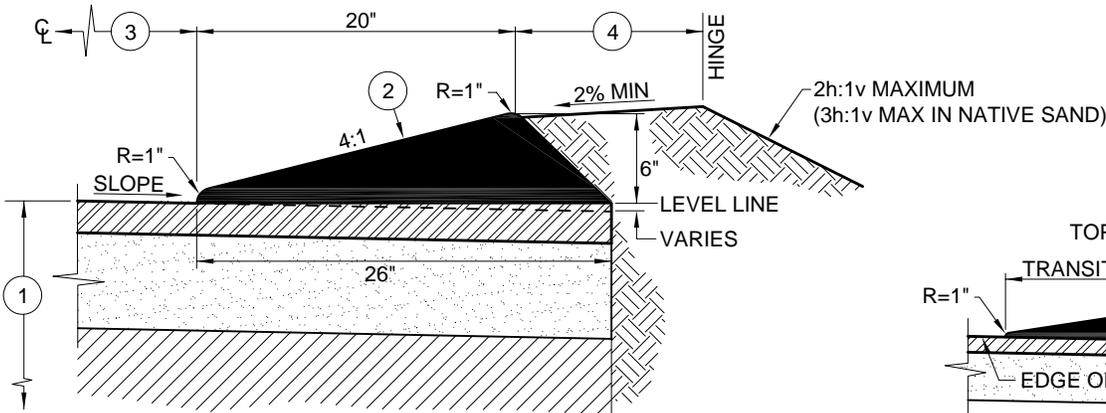
Description	Approved	Date	Description	Approved	Date
NOTE 6, REPLACE AC AND ASPHALT W/ HMA	GDM	JAN 11			



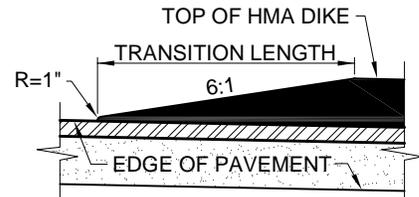
TYPE "A" HMA DIKE
FOR USE IN CUT CONDITIONS > 2.5:1



TYPE "E" MOUNTABLE HMA DIKE
FOR USE IN FLAT & FILL CONDITIONS



TYPE "D" MOUNTABLE HMA DIKE
FOR USE IN FLAT & FILL CONDITIONS (OPTIONAL)



DIKE END TRANSITION 5

NOTES:

- ROADWAY STRUCTURAL SECTION THICKNESS PER PLAN.
- HOT MIX ASPHALT (HMA) DIKE SHALL BE REQUIRED PER THE DESIGN STANDARDS (REFER TO A-1 SERIES STANDARD DRAWINGS). USE PG 70-10 ASPHALT BINDER FOR ALL HMA DIKE.
- ROADWAY TRAVEL PLUS SHOULDER WIDTH MEASURED FROM ROAD CENTERLINE TO THIS POINT.
- REFER TO A-1 SERIES STANDARD DRAWINGS FOR MINIMUM DISTANCES TO HINGE POINT.
- A 6h:1v DIKE HEIGHT TAPER SHALL BE PROVIDED AT EACH TERMINUS OF THE HMA DIKE.
- HMA DIKE MAY BE REQUIRED BY THE DEPARTMENT WHERE NEEDED TO CONTROL DRAINAGE OR EROSION ON ROADWAYS HAVING LONGITUDINAL GRADES OF 3% OR GREATER. TYPE "D" OR "E" HMA DIKE SHALL NORMALLY BE USED IN ALL APPLICATIONS AND SHALL BE REQUIRED IN CONDITIONS WHERE THE ROADWAY IS ABOVE OR LEVEL WITH THE ADJACENT GRADE. TYPE "A" HMA DIKE SHALL BE USED ADJACENT TO CUT SLOPES STEEPER THAN 2.5:1 AND WHEN THE ROADWAY IS BELOW THE ADJACENT GRADE.
- PRIOR TO PROJECT ACCEPTANCE, ALL DAMAGED HMA DIKE SHALL BE REMOVED AND REPLACED AND A FOG SEAL SHALL BE APPLIED TO BOTH THE REPLACED HMA DIKE AND TO THE REMAINING UNDAMAGED HMA DIKE TO THE LIMITS DETERMINED BY THE DEPARTMENT.



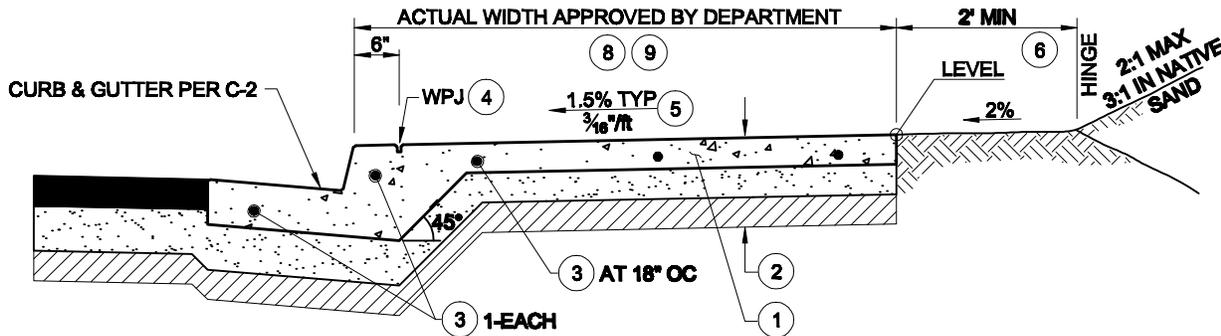
DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

HOT MIX ASPHALT (HMA) DIKES

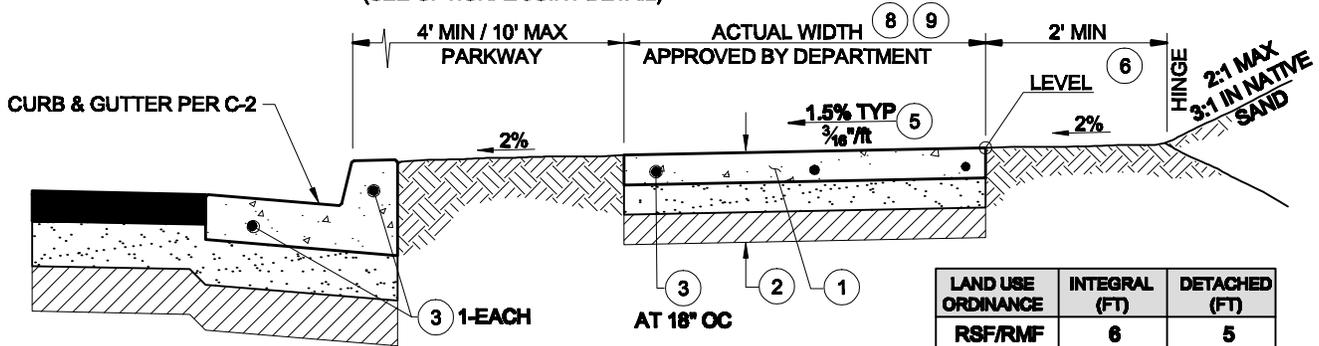
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Drawing No:	C-3
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
NOTE 1, ADD NOTE 11, "TYPICAL" TO JOINT DETAIL, & LABEL "PARKWAY"	REM	NOV 07	REVISE NOTE 2	FH	AUG 14
INCREASED DETACHED SIDEWALK WIDTH	GDM	JAN 11			



INTEGRAL SIDEWALK (MONOLITHIC)
(SEE OPTIONAL JOINT DETAIL)



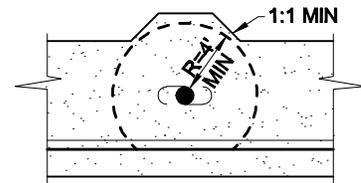
DETACHED OR MEANDERING SIDEWALK

LAND USE ORDINANCE	INTEGRAL (FT)	DETACHED (FT)
RSF/RMF	6	5
CR	10	6
CS	6	5
OP	8	5
IND	6	5

SIDEWALK WIDTH TABLE

NOTES:

- CONCRETE SIDEWALK SHALL CONFORM TO STATE STANDARD 90-1.01, MINOR (520 LBS CEMENTITIOUS MATERIAL PER CUBIC YARD [5-1/2 SACK]). CONCRETE CURING SHALL BE BY PIGMENTED CURING COMPOUND METHOD USING WHITE PIGMENT TYPE.
- TYPICAL SECTION SHALL BE:
 - 4-INCH MIN PCC (6-INCH OR 8-INCH WHEN WITHIN A DRIVEWAY), OVER
 - 4-INCH MIN CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER
 - 12-INCH MIN SUBGRADE TO 95% RELATIVE COMPACTION
 IF THE R-VALUE OF THE NATIVE MATERIAL IS 55 OR GREATER THEN THE 4-INCH OF AGGREGATE BASE UNDER THE SIDEWALK ONLY MAY BE SUBSTITUTED WITH COMPACTED NATIVE MATERIAL.
- EXPANSION JOINTS (EJ) SHALL BE CONSTRUCTED AT LONGITUDINAL INTERVALS NOT EXCEEDING 30-FEET. 1/2" x 18" SMOOTH, GREASED DOWELS SHALL BE PLACED IN THE EJ, ONE IN CURB FACE, ONE IN GUTTER, AND AT 18-INCHES ON CENTER IN SIDEWALKS PER STANDARD DRAWING C-1.
- WEAKENED PLANE JOINTS (WPJ) SHALL BE CONSTRUCTED BETWEEN EXPANSION JOINTS AT LONGITUDINAL INTERVALS NOT EXCEEDING 10-FEET, AND AT 6-INCHES BEHIND THE CURB FACE FOR ATTACHED SIDEWALKS PER STANDARD DRAWING C-1.
- THE CROSS SLOPE OF THE SIDEWALK SHALL NOT EXCEED 2% (1/4-INCH PER 12-INCHES), 1.5% (3/16-INCH PER 12-INCHES) IS RECOMMENDED.
- THE 2-FOOT BENCH IS NOT REQUIRED FOR ADJOINING SLOPES OF 5h:1v OR FLATTER.
- ALTHOUGH THE PROJECT CONDITIONS OF APPROVAL OR THE AREA SPECIFIC PLAN MAY REQUIRE AN ALTERNATIVE SIDEWALK CONFIGURATION, THE CONSTRUCTION SPECIFICATIONS OF THIS STANDARD SHALL APPLY.
- THE SIDEWALK SHALL BE WIDENED WHERE REQUIRED TO ALLOW FOR A 4-FOOT CLEAR PASSAGE AROUND ALL ABOVE GRADE OBSTACLES LOCATED WITHIN THE SIDEWALK.
- WATER PURVEYOR METER BOXES ARE ALLOWED WITHIN THE SIDEWALK PROVIDED THAT ALL LIDS AND LIDS WITH A.M.R. SYSTEMS ARE SET FLUSH WITH THE SIDEWALK.
- ALL UTILITY VAULTS AND LIDS MUST BE LOCATED OUTSIDE OF THE SIDEWALK OR HAVE PRIOR DEPARTMENT APPROVAL FOR LOCATION WITHIN THE SIDEWALK. UTILITY LIDS WITHIN THE SIDEWALK SHALL HAVE A NON-SLIP SURFACE.
- SEE DRAWING M-5 FOR TREE PLANTING REQUIREMENTS WITHIN RIGHT-OF-WAY.



SIDEWALK SHALL BE WIDENED BEHIND ALL ABOVE GRADE OBSTACLES TO PROVIDE A 4-FOOT MINIMUM CLEARANCE.

8 SIDEWALK WIDENING DETAIL
NTS



WHEN EXTRUDED CURB & GUTTER IS USED AND SIDEWALK PORTION IS NOT PLACED WITHIN 1-HOUR THEN REBAR SHALL BE PLACED PER THIS JOINT DETAIL.

TYPICAL JOINT DETAIL
NTS



DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

SIDEWALKS

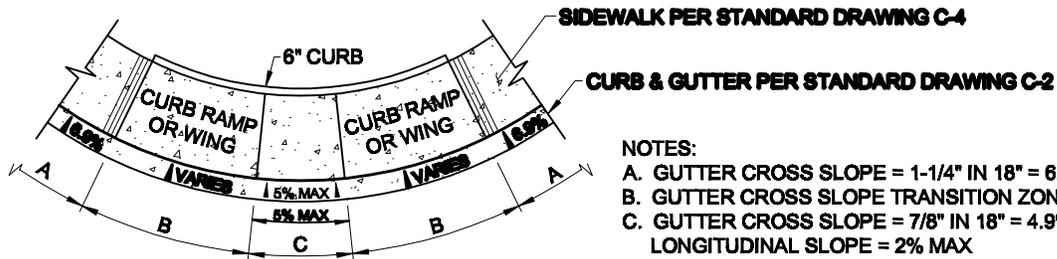
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Sheet No:	1 OF 1		

Revisions

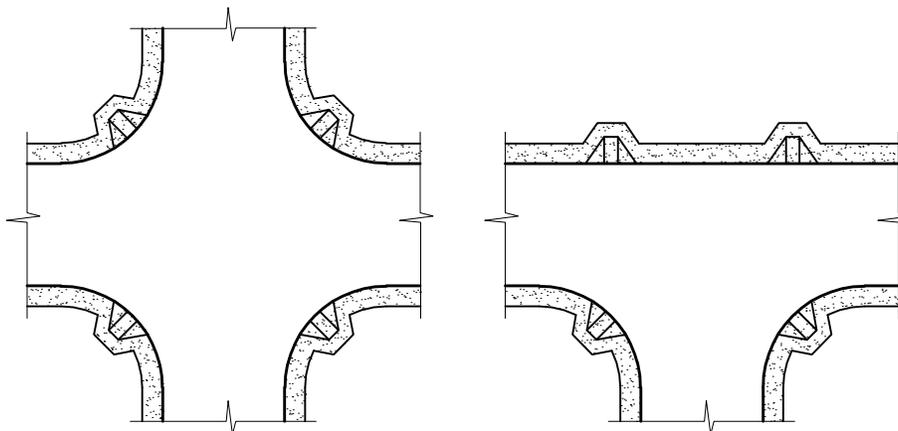
Description	Approved	Date	Description	Approved	Date
ADD NOTE 6	REM	NOV 07	ADDED NOTES 1, 2, 3, & 6; RENUMBER NOTES	GDM	JAN 11
MODIFY NOTE 1, ADD NOTE 7	GDM	NOV 08	REVISE NOTES 1 AND 6	FH	AUG 14

NOTES:

- ALL CURB RAMPS FOR NEW CONSTRUCTION, RETROFIT, AND REPLACEMENT SHALL CONFORM TO STATE STANDARDS A88A & A88B, CASE A, AND STATE SPECIFICATION 90-1.01, MINOR (520 LBS CEMENTITIOUS MATERIAL PER CUBIC YARD [5-1/2 SACK]). CONCRETE CURING SHALL BE BY PIGMENTED CURING COMPOUND METHOD USING WHITE PIGMENT TYPE.
- CURB RAMPS SHALL HAVE A DETECTABLE WARNING SURFACE THAT EXTENDS THE FULL WIDTH AND 3-FOOT DEPTH OF THE RAMP PER NOTE 3 (BELOW) AND SHALL CONFORM TO THE DETAILS OF CALTRANS STANDARD A88A.
- CURB RAMP DETECTABLE WARNING SURFACES SHALL BE:
YELLOW COLOR COMPLYING WITH FEDERAL STANDARD 595B, COLOR No. 33538
PREFABRICATED
RAISED TRUNCATED DOMES
INSTALLED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS
- NEW SIDEWALKS AND PATHS SHALL BE PROVIDED WITH CURB RAMPS AT ALL INTERSECTIONS.
- NO UTILITY APPURTENANCES OR LIDS SHALL BE LOCATED WITHIN THE CURB RAMP AND WINGS.
- MID-BLOCK CURB RAMPS ARE DISCOURAGED AND SHALL REQUIRE PRIOR DEPARTMENT APPROVAL.
- THE PROJECT ENGINEER SHALL DETAIL EACH CURB RAMP ON THE PLANS. MINIMUM DETAIL REQUIREMENTS SHALL INCLUDE DIMENSIONS, SLOPES, AND SPOT ELEVATIONS.
- THE DEPARTMENT MAY GRANT EXCEPTIONS TO THESE STANDARDS PER CHAPTER 1.2. THE DEPARTMENT ADA COORDINATOR SHALL REVIEW AND PROVIDE PRIOR APPROVAL OF ALL EXCEPTIONS.
- MULTIPLE RAMPS SHALL BE REQUIRED AT ALL BULB-OUTS AND SHALL BE ALIGNED WITH APPROACH SIDEWALK, REFER TO STANDARD DRAWINGS A-6e & A-6d.
- INTERNET LINKS TO CALTRANS CURB RAMP STANDARDS (A88A & A88B):
http://www.dot.ca.gov/hq/esc/oe/project_plans/highway_plans/stdplans_US-customary-units_06/viewable_pdf/aps88a.pdf
http://www.dot.ca.gov/hq/esc/oe/project_plans/highway_plans/stdplans_US-customary-units_06/viewable_pdf/a88b.pdf



TYPICAL GUTTER TRANSITION AT CURB RAMP



TYPICAL CURB RAMP PLACEMENT



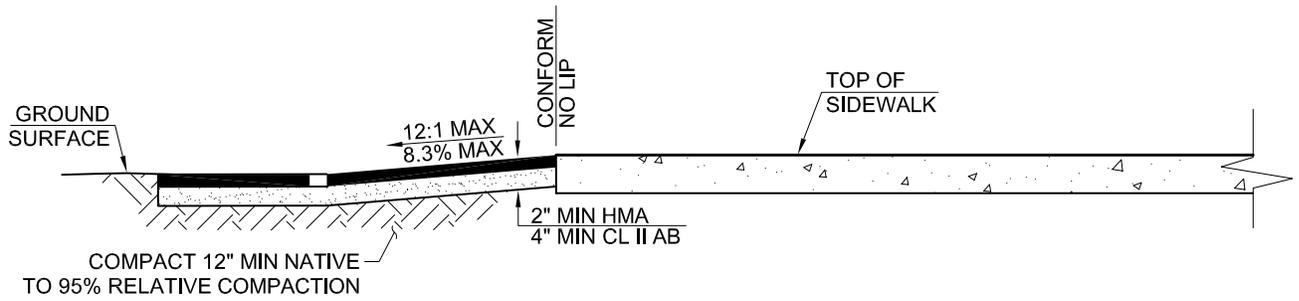
DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

CURB RAMPS

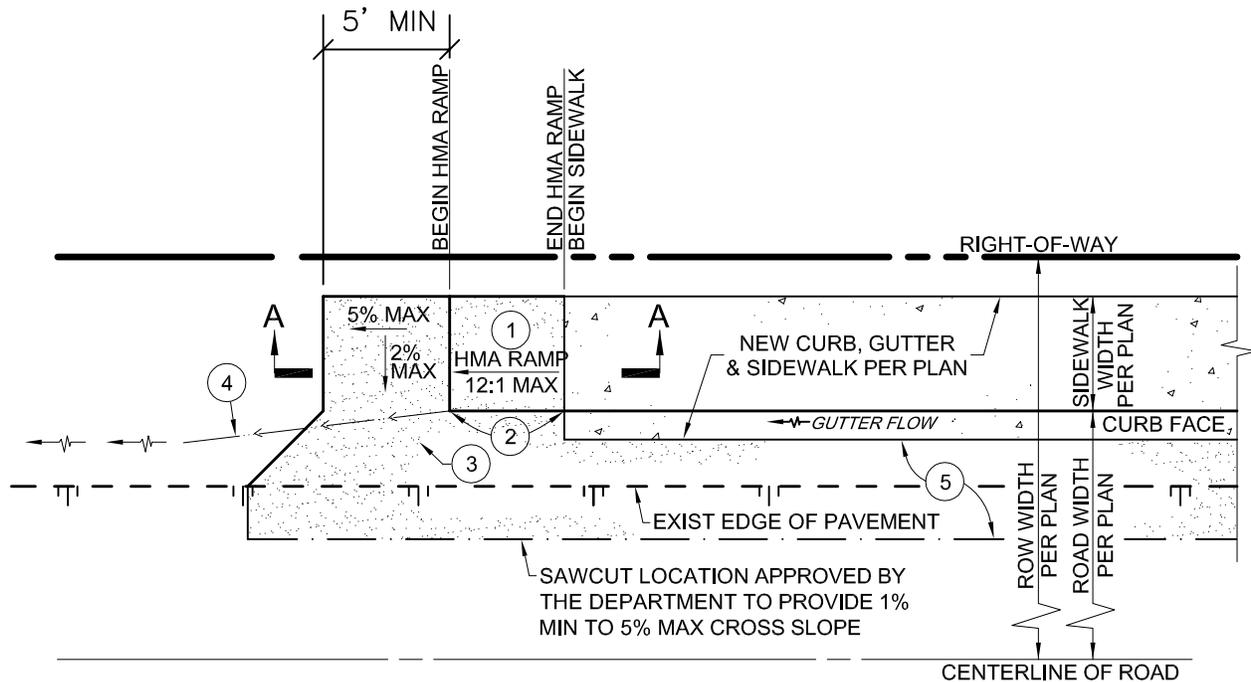
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NTS	2014
Drawing No:	C-5
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
ADD TRANSITION TO HMA RAMP	FH	AUG 14			



SECTION A-A: HMA RAMP



PLAN VIEW

NOTES:

FOR USE AT THE END OF NEW SIDEWALK TO PROVIDE A SMOOTH TRANSITION FROM EDGE OF NEW SIDEWALK TO EXISTING GRADE. IF A SMOOTH TRANSITION CANNOT BE ACHIEVED THEN THE DEPARTMENT MAY REQUIRE A SIDEWALK BARRICADE BE CONSTRUCTED PER DRAWING M-3.

1. CONSTRUCT NEW HOT MIX ASPHALT (HMA) RAMP. RAMP SHALL BE 2-INCHES MINIMUM HMA TO 95% RELATIVE COMPACTION, OVER 4-INCHES MINIMUM CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER COMPACTED NATIVE MATERIAL. SLOPE OF RAMP SHALL NOT EXCEED 12:1 (8.33%), RECOMMENDED SLOPE OF 8% MAXIMUM.
2. TYPE "A" HMA DIKE PER DRAWING C-1 TAPERED FROM 0-INCHES (FLUSH) TO 6-INCHES TALL TO MATCH EDGE OF NEW CONCRETE CURB.
3. CONSTRUCT NEW EDGE OF PAVEMENT TAPER AT 1:1 MINIMUM IN RESIDENTIAL (5:1 MINIMUM IN COMMERCIAL) AREAS TO JOIN EXISTING EDGE OF PAVEMENT (THE DEPARTMENT MAY REQUIRE A LONGER TAPER LENGTH).
4. GRADE AND RECOMPACT EXISTING SHOULDER TO PROVIDE A POSITIVE DRAINAGE CONNECTION BETWEEN NEW GUTTER FLOWLINE TO EXISTING SWALE PATH.
5. NEW ROADWAY WIDENING, STRUCTURAL SECTION PER PLANS.



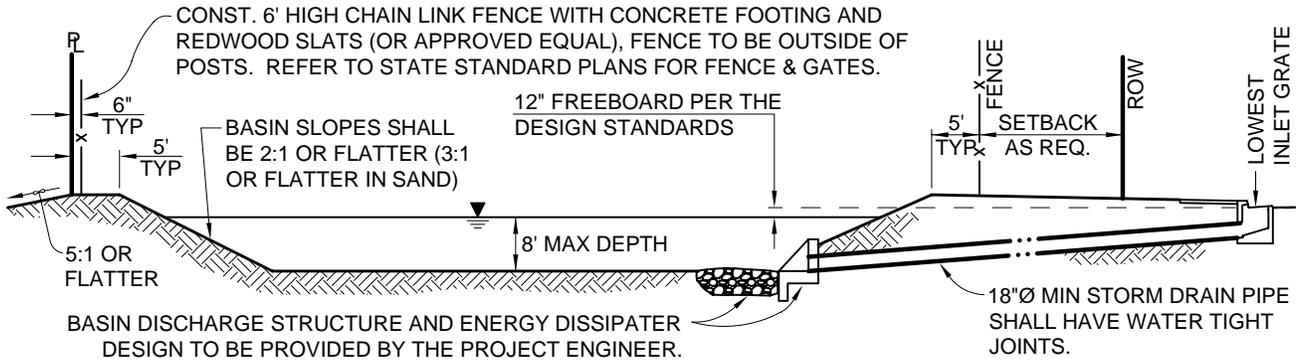
DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

HOT MIX ASPHALT RAMP DETAIL

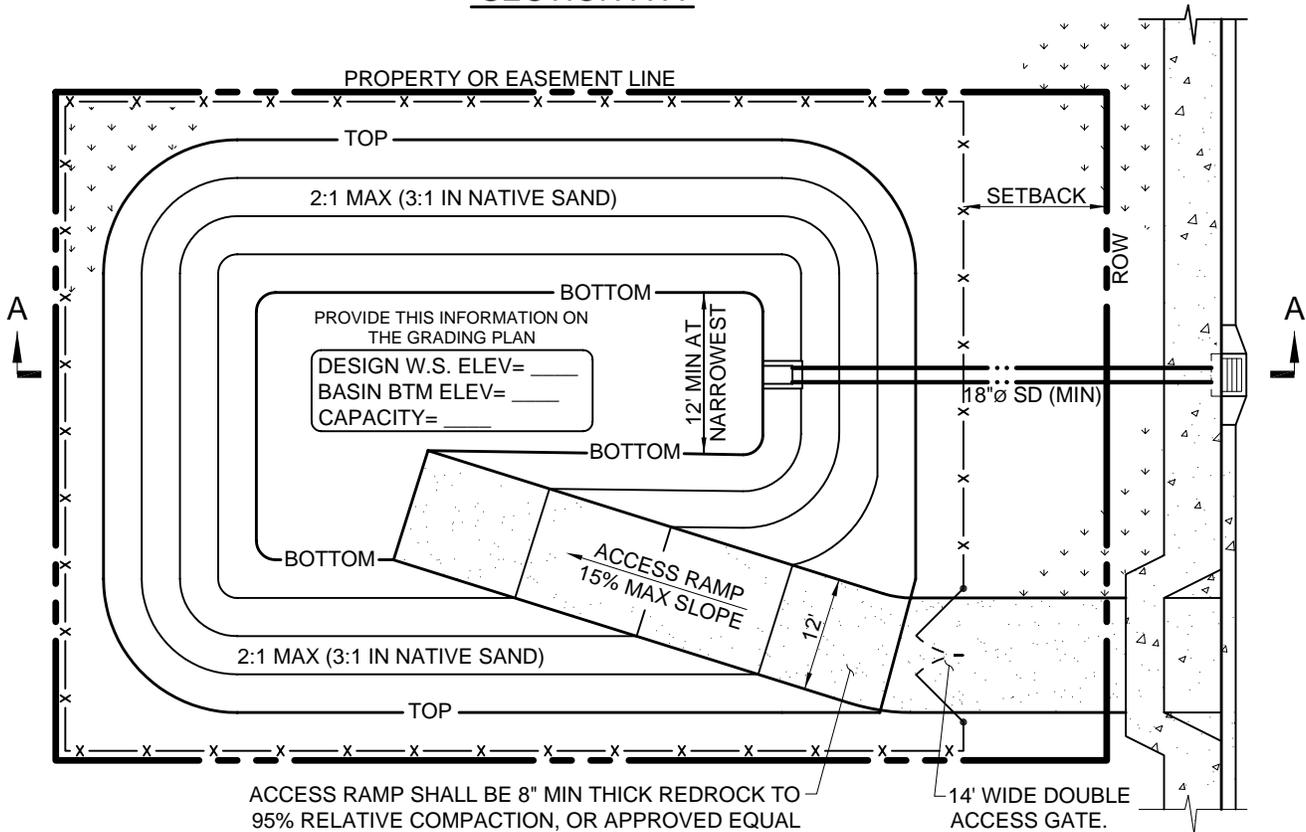
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Drawing No: C-5a	
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
NOTE 1	REM	NOV 07			



SECTION A-A



PLAN VIEW

NOTES:

1. DEEP RETENTION BASIN SHOWN. WHERE DEEP DETENTION BASINS ARE PROPOSED THEY SHALL MEET THE SAME REQUIREMENTS OF THIS STANDARD.
2. BASINS MUST FULLY DRAIN WITHIN 7 DAYS OR A PERCOLATION ENHANCEMENT SYSTEM SHALL BE REQUIRED. THE DEPARTMENT MAY ALSO REQUIRE PERCOLATION TESTS AND CERTIFICATION FROM THE PROJECT ENGINEER.
3. A BASIN OVERFLOW STRUCTURE TO ACCOMMODATE UP TO A 100-YEAR STORM EVENT SHALL BE DESIGNED WHICH DISCHARGES FLOWS TO THE PUBLIC RIGHT-OF-WAY OR A DEFINED WATER COURSE IN A NON-EROSIVE MANNER.
4. THE OVERLAND ESCAPE PATH (NOTE 3) SHALL BE IDENTIFIED ON THE PLANS AND SHOWN TO PROTECT DOWNSTREAM PROPERTIES IN THE EVENT OF BASIN SPILL OR FAILURE.
5. ADDITIONAL BASIN AND BASIN LANDSCAPING REQUIREMENTS MAY BE IMPOSED AS PART OF THE DESIGN STANDARDS.
6. BASIN LANDSCAPING AND EROSION CONTROL SHALL BE SUBSTANTIALLY ESTABLISHED PRIOR TO PROJECT ACCEPTANCE.



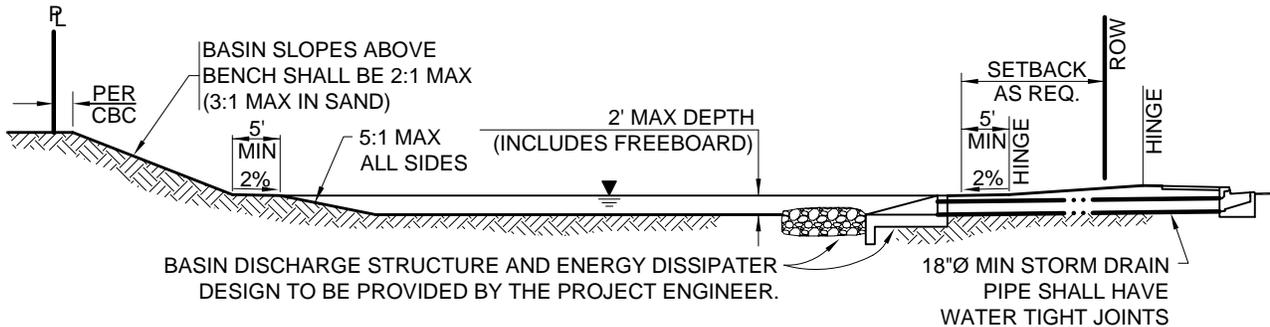
DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

DEEP RETENTION BASIN

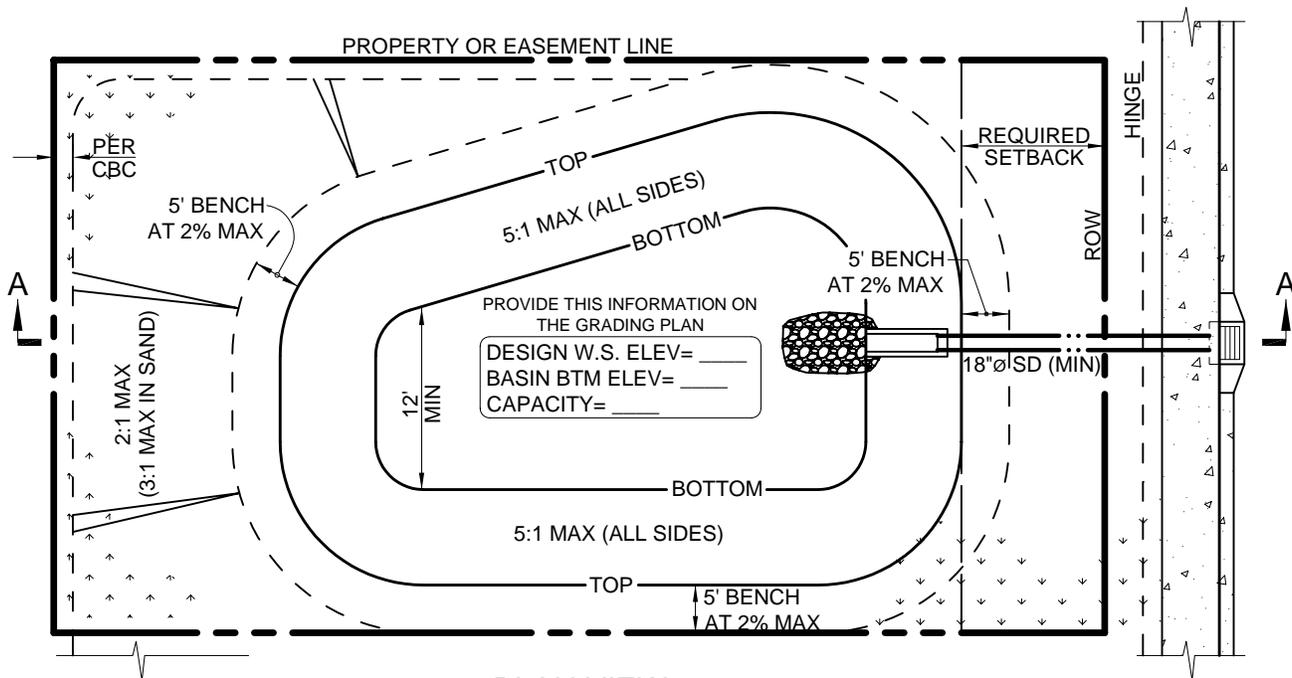
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Drawing No: D-1	
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
NOTES 1 & 3	REM	NOV 07			



SECTION A-A



PLAN VIEW

NOTES:

1. SHALLOW RETENTION BASIN SHOWN. WHERE SHALLOW DETENTION BASINS ARE PROPOSED THEY SHALL MEET THE SAME REQUIREMENTS OF THIS STANDARD.
2. BASINS MUST FULLY DRAIN WITHIN 7 DAYS OR A PERCOLATION ENHANCEMENT SYSTEM SHALL BE REQUIRED. THE DEPARTMENT MAY ALSO REQUIRE PERCOLATION TESTS AND CERTIFICATION FROM THE PROJECT ENGINEER.
3. BASIN OVERFLOW SHALL BE DESIGNED WHICH DISCHARGES FLOWS TO THE PUBLIC RIGHT-OF-WAY OR A DEFINED WATER COURSE IN A NON-EROSIVE MANNER.
4. THE OVERLAND ESCAPE PATH SHALL BE IDENTIFIED ON THE PLANS AND SHOWN TO PROTECT DOWNSTREAM PROPERTIES IN THE EVENT OF BASIN SPILL OR FAILURE.
5. ADDITIONAL BASIN AND BASIN LANDSCAPING REQUIREMENTS MAY BE IMPOSED AS PART OF THE DESIGN STANDARDS.
6. BASIN LANDSCAPING AND EROSION CONTROL SHALL BE SUBSTANTIALLY ESTABLISHED PRIOR TO PROJECT ACCEPTANCE.



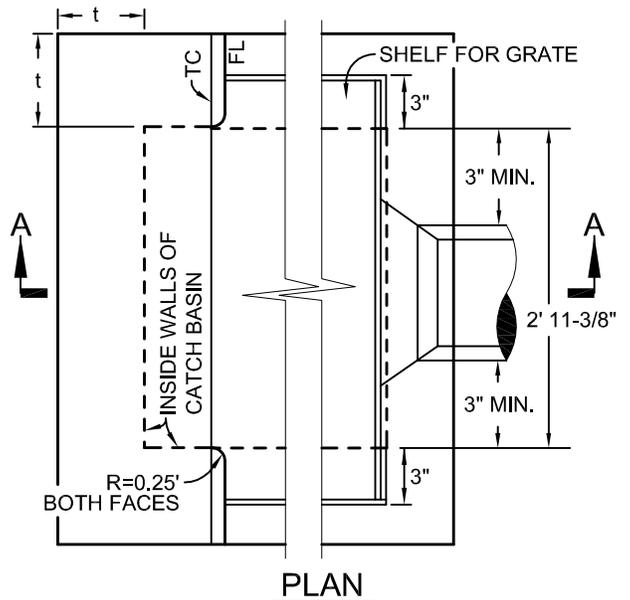
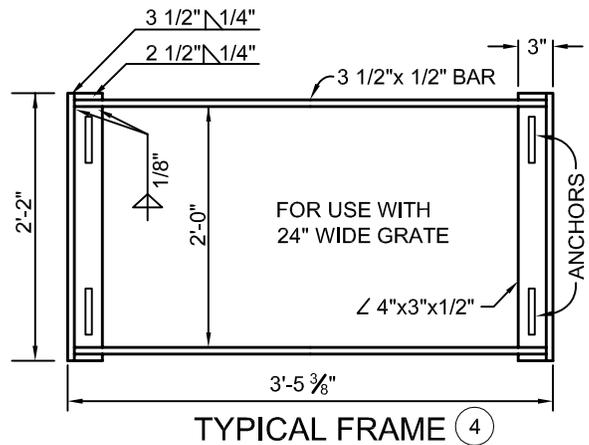
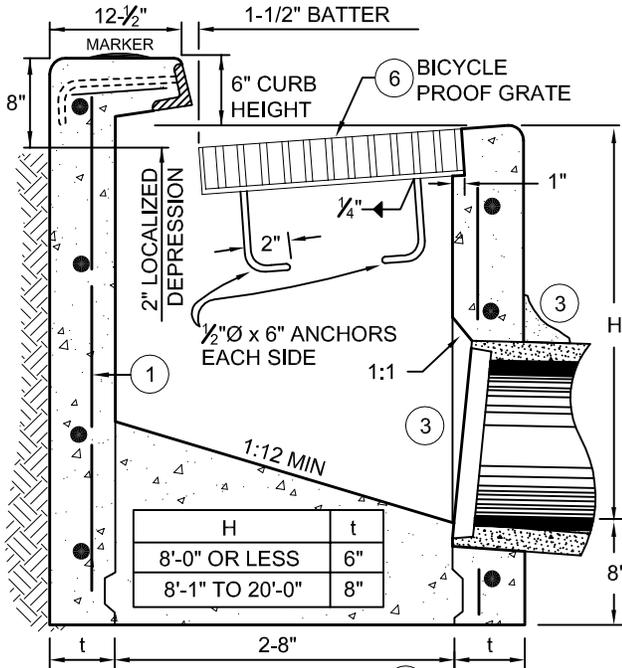
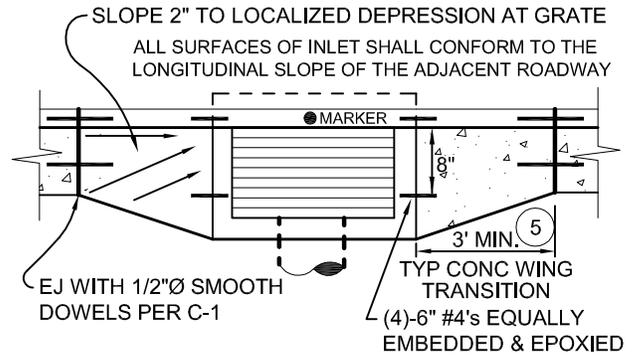
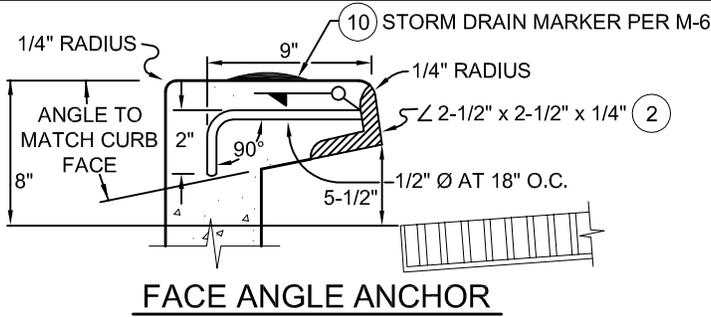
DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

SHALLOW RETENTION BASIN

Scale: NTS	Adopted: 2011
Drawing No: D-1a	
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
NOTE 1	REM	NOV 07	DELETED DRAIN PAC		AUG 14
NOTES 9 & 10	GDM	NOV 08			



NOTES:

1. REINFORCING STEEL SHALL BE #4 BARS AT 18" O.C. PLACED 1-1/2" CLEAR TO INSIDE OF BOX UNLESS OTHERWISE NOTED. BASIN FLOORS SHALL HAVE WOOD FLOAT FINISH AND A MINIMUM SLOPE OF 12h:1v FROM ALL DIRECTIONS TOWARDS OUTLET PIPE. CONCRETE SHALL BE 565 LBS/CY CEMENTITIOUS MATERIAL [6 SACK].
2. FACE ANGLE SHALL EXTEND FULL WIDTH OF BOX.
3. SMOOTH GROUT INSIDE AND OUTSIDE OF PIPE JUNCTION TO FORM A WATERTIGHT SEAL.
4. FRAME SHALL BE DIPPED IN COMMERCIAL QUALITY ASPHALTUM PAINT OR GALVANIZED.
5. IN ALL CASES 3' LONG CONCRETE WINGS SHALL BE CONSTRUCTED EITHER SIDE OF THE INLET. WHERE CATCH BASIN IS PLACED AGAINST AC DIKE A SEPARATE DETAIL SHALL BE PROVIDED ON THE PLANS SHOWING THIS TRANSITION.
6. GRATE SHALL CONFORM TO STATE STANDARD PLAN D77B AND BE BICYCLE PROOF.
7. PROJECT CONDITIONS MAY REQUIRE OIL AND/OR SEDIMENTATION CONTROL AT THE DIRECTION OF THE DEPARTMENT.
8. PRECAST INLETS MAY BE SUBSTITUTED AT THE APPROVAL OF THE DEPARTMENT. PRECAST INLETS SHALL HAVE 2" LOCALIZED DEPRESSION AT THE GRATE, 3' CONCRETE WINGS, EXPANSION JOINTS AS SHOWN, AND NO STEPS.
9. THE CATCH BASIN SHALL BE CONSTRUCTED TO MATCH THE LONGITUDINAL SLOPE OF THE ADJACENT ROADWAY.
10. INSTALL STORM DRAIN MARKER PER M-6.



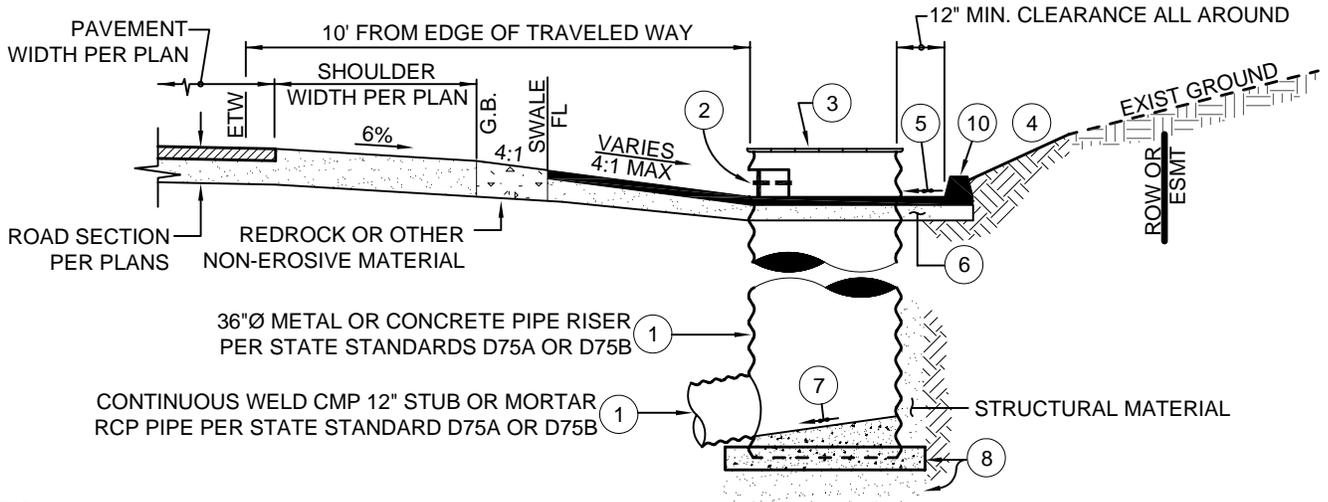
DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

CATCH BASIN

Scale: NTS	Adopted: 2014
Drawing No: D-2	
Sheet No:	1 OF 1

Revisions

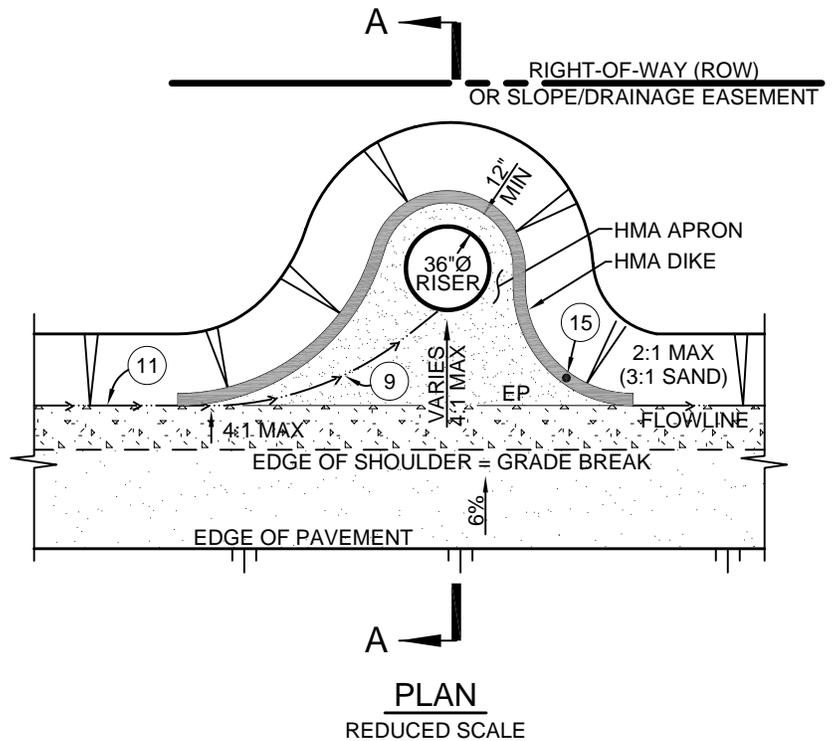
Description	Approved	Date	Description	Approved	Date
NOTE 8	REM	NOV 07	NOTE 2, REMOVE "DrainPac", REPLACE "AC" W/ "HMA"	GDM	JAN 11
NOTE 15	GDM	NOV 08			



SECTION A-A

NOTES:

- REFER TO THE 2006 STATE STANDARD PLANS D75A OR D75B FOR PIPE RISER DETAILS. THE PROJECT ENGINEER SHALL PROVIDE ALL DESIGN SPECIFICATIONS ON THE PLANS (RISER TYPE, COVER, GRATE, PIPE SIZE, ETC).
- CONSTRUCT TRASH RACK PER THE 2006 STATE STANDARD PLAN D75C IF DIRECTED BY THE DEPARTMENT.
- A COVER MAY BE USED WHEN THE RISER NOT LOCATED IN SUMP CONDITIONS, OTHERWISE USE TYPE "GMP" OR "GCP" GRATE. PROJECT ENGINEER SHALL PROVIDE HYDRAULIC CALCULATIONS.
- MINIMUM CUT SLOPE SHALL BE 2 HORIZONTAL:1 VERTICAL (3h:1v IN NATIVE SAND).
- SLOPE TO DRAIN TOWARDS RISER OPENING.
- 2-INCH MINIMUM HOT MIX ASPHALT OVER 6-INCH MINIMUM CLASS II AGGREGATE BASE COMPACTED TO 95%.
- RISER FLOOR SLOPED TO DRAIN AT 4h:1v TOWARDS OUTLET, PROVIDE WOOD FLOAT FINISH.
- CONCRETE SHALL BE 565 LBS/CY CEMENTITIOUS MATERIAL [6 SACK], OVER 6-INCH MINIMUM CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION.
- MODIFY APPROACH GRADING AS REQUIRED TO PROVIDE SMOOTH FLOWLINE TRANSITION TOWARDS INLET.
- TYPE "A" HMA DIKE PER DRAWING C-3.
- REQUIRED ROADSIDE DRAINAGE PER A-1 SERIES DRAWINGS. PROVIDE COMPACTED REDROCK OR OTHER DEPARTMENT APPROVED MATERIAL.
- ALL EXPOSED STEEL SHALL BE COLD GALVANIZED.
- A DRAINAGE EASEMENT SHALL BE OFFERED TO THE PUBLIC WHENEVER THE IMPROVEMENTS EXTEND BEYOND THE RIGHT-OF-WAY.
- MODIFY AS REQUIRED FOR SUMP CONDITIONS.
- INSTALL STORM DRAIN MARKER PER M-6.



PLAN
REDUCED SCALE

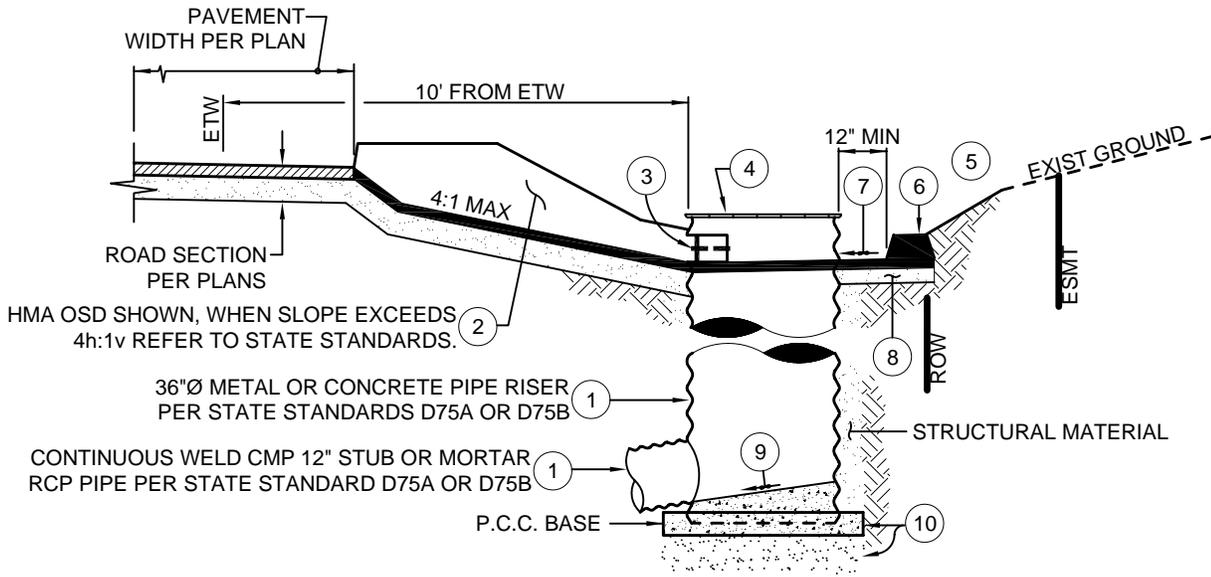


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
RURAL CATCH BASIN
EDGE OF PAVEMENT CONDITION

Scale: 1"=4'	Adopted: 2011
Drawing No: D-2a	
Sheet No:	1 OF 1

Revisions

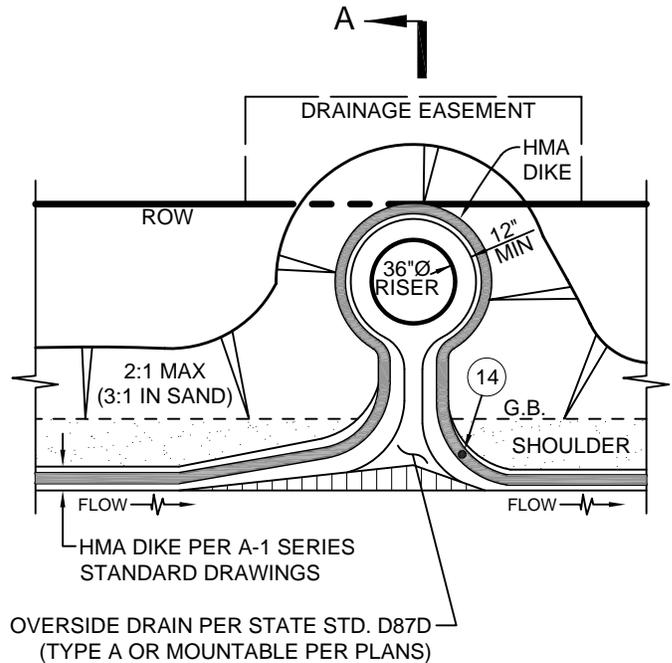
Description	Approved	Date	Description	Approved	Date
NOTE 10	REM	NOV 07	NOTE 3, REMOVE "DrainPac", REPLACE "AC" W/ "HMA"	GDM	JAN 11
NOTE 14	GDM	NOV 08			



SECTION A-A

NOTES:

- REFER TO THE 2006 STATE STANDARD PLANS D75A OR D75B FOR PIPE RISER DETAILS. THE PROJECT ENGINEER SHALL PROVIDE ALL DESIGN SPECIFICATIONS ON THE PLANS (RISER TYPE, LID, GRATE, PIPE SIZE, ETC).
- REFER TO THE 2006 STATE STANDARD D78D FOR HMA OVERSIDE DRAIN DETAILS AND SPECIFICATIONS. THE PROJECT ENGINEER SHALL PROVIDE ALL DESIGN SPECIFICATIONS ON THE PLANS.
- CONSTRUCT TRASH RACK PER THE 2006 STATE STANDARD PLAN D75C IF DIRECTED BY THE DEPARTMENT.
- A LID MAY BE USED WHEN THE RISER NOT LOCATED IN SUMP CONDITIONS, OTHERWISE USE TYPE "GMP" OR "GCP" GRATE. PROJECT ENGINEER SHALL PROVIDE HYDRAULIC CALCULATIONS.
- MINIMUM CUT SLOPE SHALL BE 2 HORIZONTAL:1 VERTICAL (3h:1v IN NATIVE SAND).
- TYPE "A" HMA DIKE PER DRAWING C-3..
- SLOPE TO DRAIN TOWARDS RISER OPENING.
- 2-INCH MINIMUM HOT MIX ASPHALT OVER 6-INCH MINIMUM COMPACTED AGGREGATE BASE.
- RISER FLOOR SLOPED TO DRAIN AT 4h:1v TOWARDS OUTLET, PROVIDE WOOD FLOAT FINISH.
- CONCRETE SHALL BE 565 LBS/CY CEMENTITIOUS MATERIAL [6 SACK]., OVER 6-INCH MINIMUM CLASS II AGGREGATE BASED TO 95% RELATIVE COMPACTION.
- ALL EXPOSED STEEL SHALL BE COLD GALVANIZED.
- A DRAINAGE EASEMENT SHALL BE OFFERED TO THE PUBLIC WHENEVER THE IMPROVEMENTS EXTEND BEYOND THE RIGHT-OF-WAY.
- MODIFY AS REQUIRED FOR SUMP CONDITIONS.
- INSTALL STORM DRAIN MARKER PER M-6.



PLAN
REDUCED SCALE



DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
RURAL CATCH BASIN
HOT MIX ASPHALT DIKE CONDITION

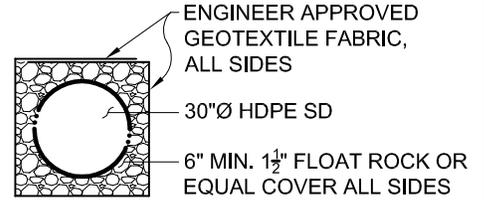
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Drawing No: D-2b	
Sheet No:	1 OF 1

Revisions

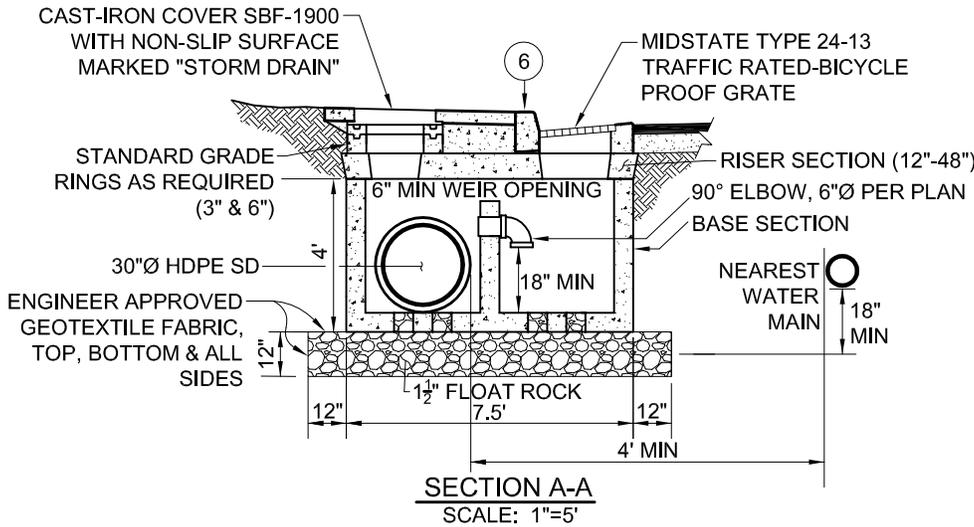
Description	Approved	Date	Description	Approved	Date
NEW STANDARD	REM	NOV 07	WATER MAIN CLEARANCES, DEL DRAIN PAC		MAY 14
NOTE 6	GDM	JAN 11			

NOTES:

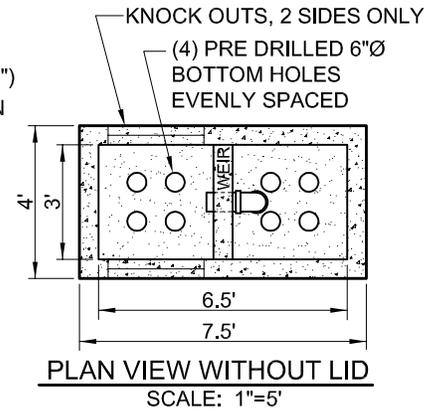
- USE OF THIS STANDARD DRAWING WITHIN THE PUBLIC RIGHT-OF-WAY SHALL REQUIRE PRIOR DEPARTMENT APPROVAL.
- CONCRETE BOX BASE SECTION, TRAFFIC RATED TOP SLAB, GRADE RINGS, CURB TOP, GRATE, FRAME AND COVER SHALL BE "MID-STATE CONCRETE PRODUCTS" SLO COUNTY STANDARD OR APPROVED EQUAL.
- REFER TO SECTION 5.2.2 E FOR ADDITIONAL DESIGN CRITERIA.
- PROVIDE 2-FEET MIN COVER OVER THE PERFORATED STORM DRAIN, AND PROVIDE 12-INCHES MIN CROSSING CLEARANCE BETWEEN UTILITY LATERAL CROSSINGS AND THE PERFORATED STORM DRAIN.
- A 30"Ø HDPE PERFORATED STORM DRAIN SHALL BE REQUIRED BY THE DEPARTMENT.
- INSTALL STORM DRAIN MARKER PER D-6.



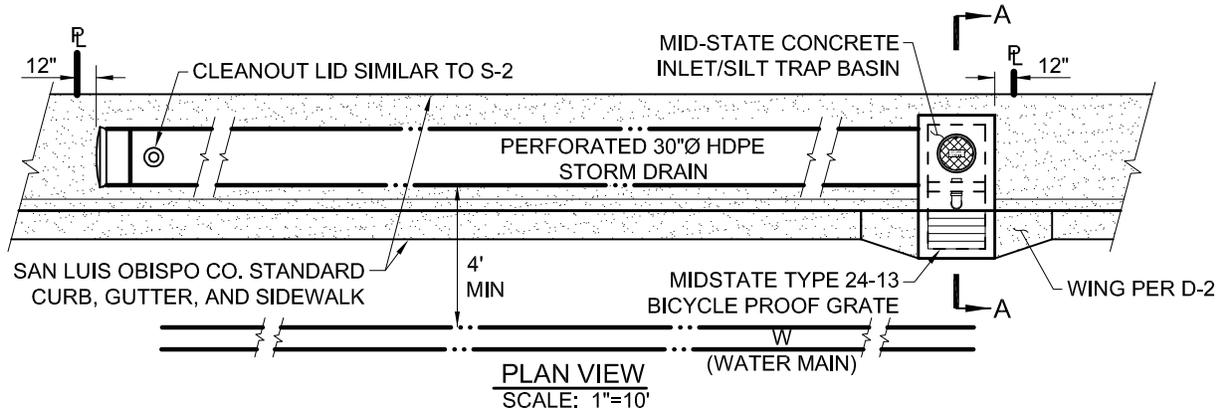
TYPICAL PIPE SECTION
SCALE: 1"=5'



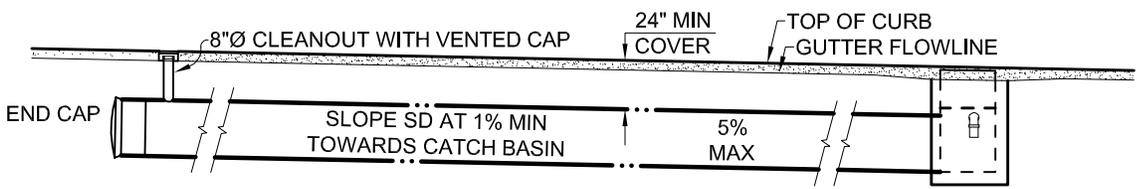
SECTION A-A
SCALE: 1"=5'



PLAN VIEW WITHOUT LID
SCALE: 1"=5'



PLAN VIEW
SCALE: 1"=10'



ELEVATION
SCALE: 1"=10'

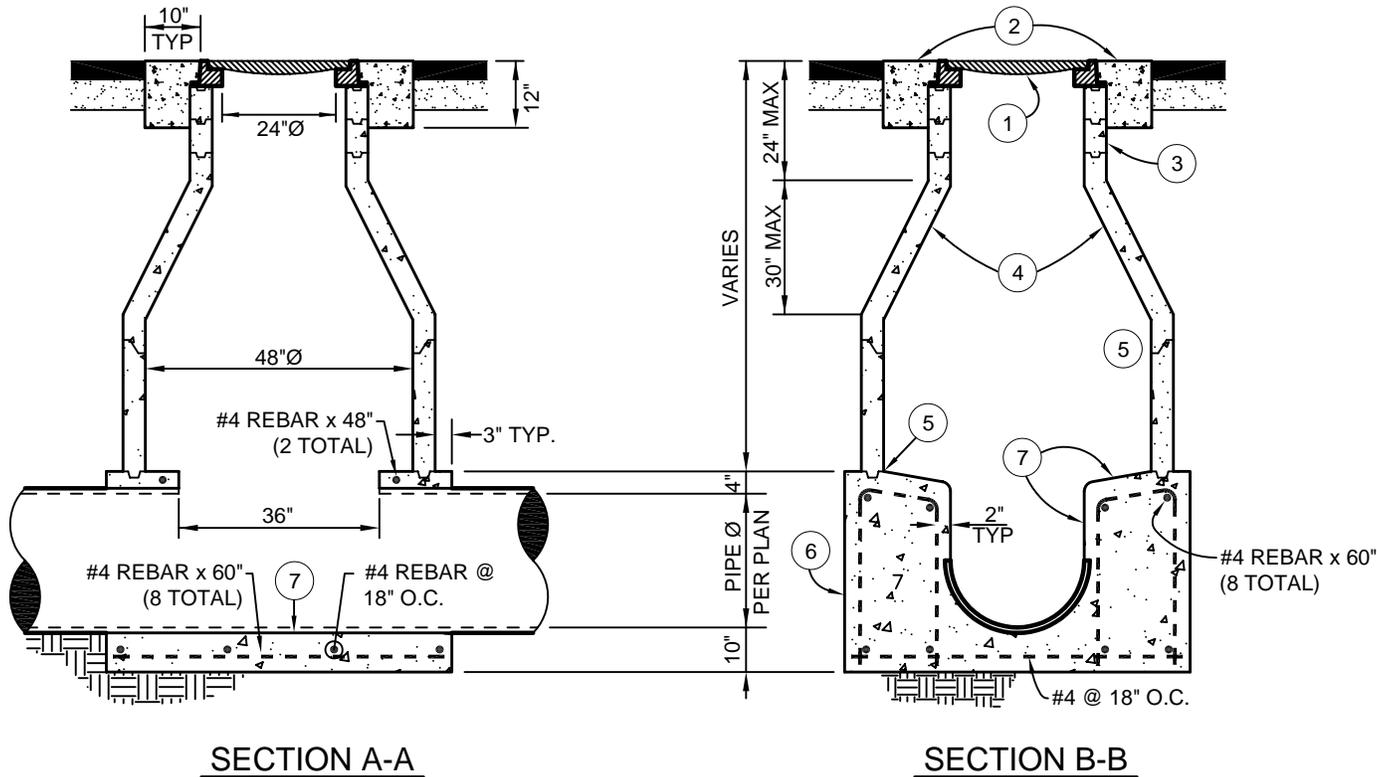


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
ROAD SIDE INFILTRATOR
(R.S.I.)

Scale: NTS	Adopted: 2014
Drawing No: D-2c	
Sheet No:	1 OF 1

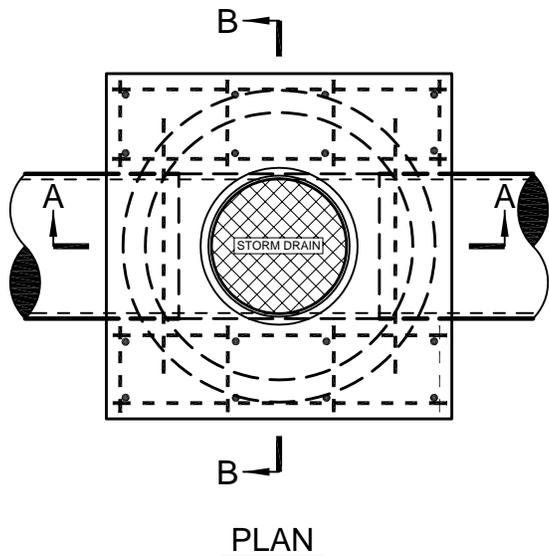
Revisions

Description	Approved	Date	Description	Approved	Date
NOTES 2,3,6 & 10	GDM	JAN 11			



SECTION A-A

SECTION B-B



PLAN

NOTES:

1. MANHOLE COVER AND FRAME SHALL HAVE A MINIMUM 24"Ø OPENING AND CONFORM TO HS-20 TRAFFIC LOADING. LID SHALL HAVE AN OPEN PICKHOLE, AND BE LETTERED "STORM DRAIN".
2. COLLAR SHALL BE PORTLAND CEMENT CONCRETE, TROWELLED TO STREET GRADE, AND ALLOWED TO CURE 48 HOURS PRIOR TO FULL TRAFFIC USE.
3. PROVIDE ADJUSTING RINGS AS NEEDED, GROUTED ON THE INSIDE. PROVIDE HYDRAULIC CEMENT GROUT BETWEEN MANHOLE FRAME AND TOP RING SHALL BE PER APPENDIX C3.
4. PRECAST SHAFT(S) AND CONCENTRIC CONE SHALL MEET ASTM C-478 61T FOR CLASS 2 REINFORCED CONCRETE PIPE, OR AS APPROVED BY THE DEPARTMENT.
5. JOINTS SHALL BE WATERTIGHT, SET WITH BUTYL RUBBER SEALANT (RUB'R-NEK OR EQUAL).
6. CONCRETE MANHOLE BASE SHALL CONFORM TO STATE STANDARD 90-1.01, 565 LBS/CY CEMENTITIOUS MATERIAL [6 SACK], AND REST UPON UNDISTURBED MATERIAL. BOTTOM SHAFT SHALL BE WET-SET OR SET IN FORMED GROOVE. PRECAST BASES MAY BE USED WITH PRIOR APPROVAL OF THE DEPARTMENT AND SHALL MEET ASTM C-478 61T.
7. PIPE SHALL BE LAID THROUGH MANHOLE, AND TOP PORTION REMOVED AFTER BASE IS POURED. TROUGH SHALL HAVE STEEL-TROWEL FINISH, VERTICAL SIDES, ROUNDED CORNERS. TOP SURFACE SHALL HAVE 1-INCH PER 12-INCH SLOPE TOWARD TROUGH.
8. EQUIVALENT PRECAST BASE SHALL BE ALLOWED.
9. UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN CURBS, GUTTERS, SIDEWALKS, DRIVEWAY APRONS, CURB RAMPS, OR CROSS GUTTERS.
10. LOCKING LIDS MAY BE REQUIRED BY THE DEPARTMENT.

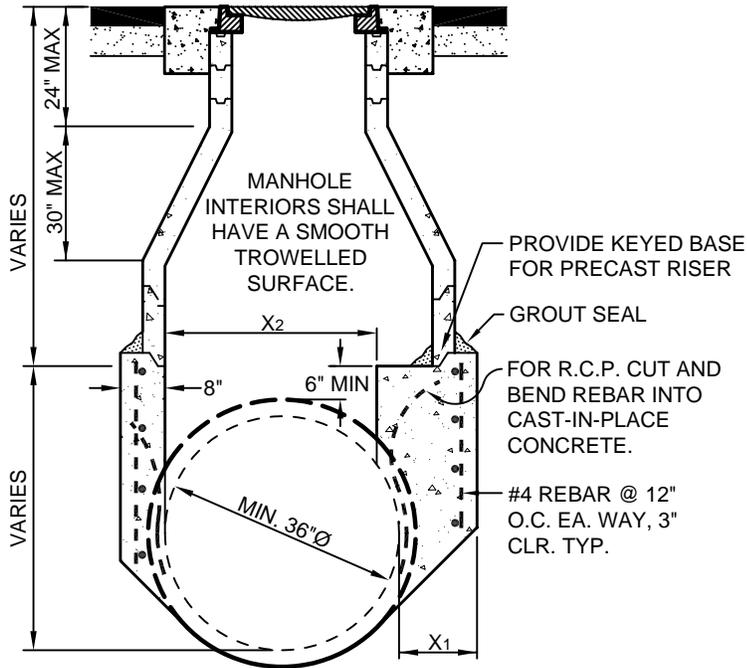


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
STORM DRAIN MANHOLE
 FOR PIPE DIAMETERS FROM 18" TO 36"

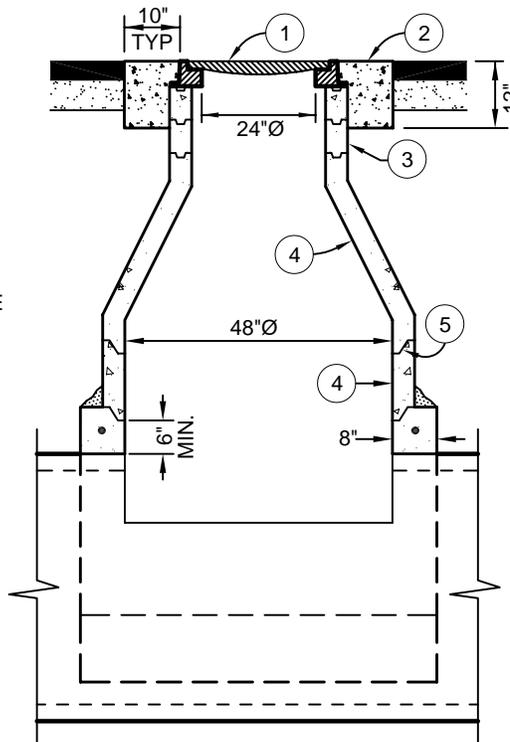
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Drawing No: D-3	
Sheet No:	1 OF 1

Revisions

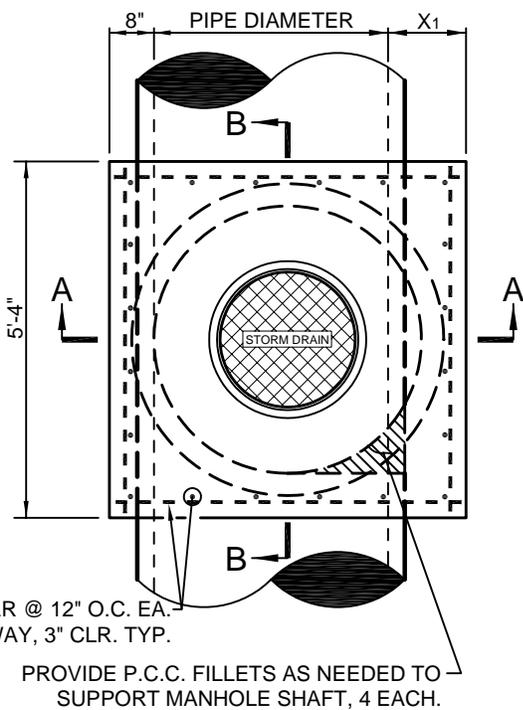
Description	Approved	Date	Description	Approved	Date
NOTES 2,3 & 7	GDM	JAN 11			



SECTION A-A



SECTION B-B



PLAN

DIMENSIONS				
PIPE Ø	36"	42"	48"	54" AND GREATER
X1	20"	14"	8"	EQUALS PIPE WALL THICKNESS
X2	32"	38"	44"	48"

NOTES:

1. MANHOLE COVER AND FRAME SHALL HAVE A MINIMUM 24"Ø OPENING AND CONFORM TO HS-20 TRAFFIC LOADING. LID SHALL HAVE AN OPEN PICKHOLE, AND BE LETTERED "STORM DRAIN".
2. COLLAR SHALL BE PORTLAND CEMENT CONCRETE, TROWELLED TO STREET GRADE, AND ALLOWED TO CURE 48 HOURS PRIOR TO FULL TRAFFIC USE.
3. PROVIDE ADJUSTING RINGS AS NEEDED, GROUTED ON THE INSIDE. PROVIDE HYDRAULIC CEMENT GROUT BETWEEN MANHOLE FRAME AND TOP RING SHALL BE PER APPENDIX C3.
4. PRECAST SHAFT(S) AND CONCENTRIC CONE SHALL MEET ASTM C-478 61T FOR CLASS 2 REINFORCED CONCRETE PIPE, OR AS APPROVED BY THE DEPARTMENT.
5. JOINTS SHALL BE WATERTIGHT, SET WITH BUTYL RUBBER SEALANT (RUB'R-NEK OR EQUAL).
6. UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN CURBS, GUTTERS, SIDEWALKS, DRIVEWAY APRONS, CURB RAMPS, OR CROSS GUTTERS.
7. LOCKING LIDS MAY BE REQUIRED BY THE DEPARTMENT.

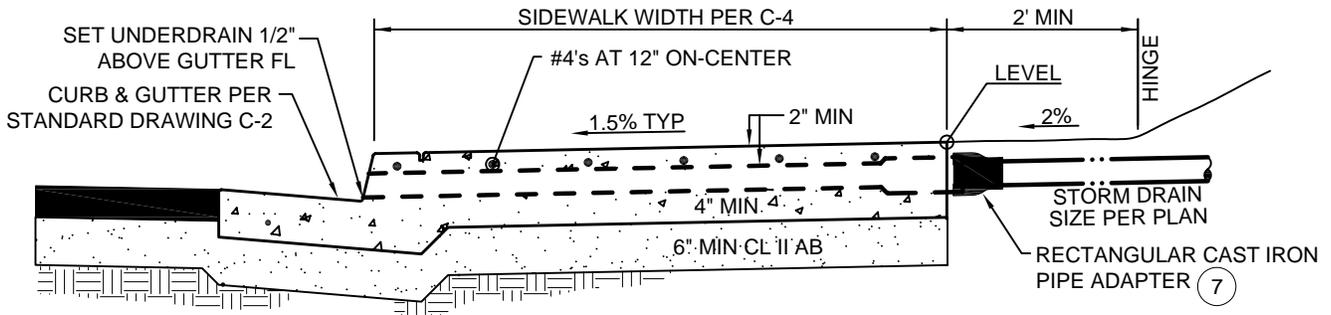


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
STORM DRAIN MANHOLE
 FOR PIPE DIAMETERS GREATER THAN 36"

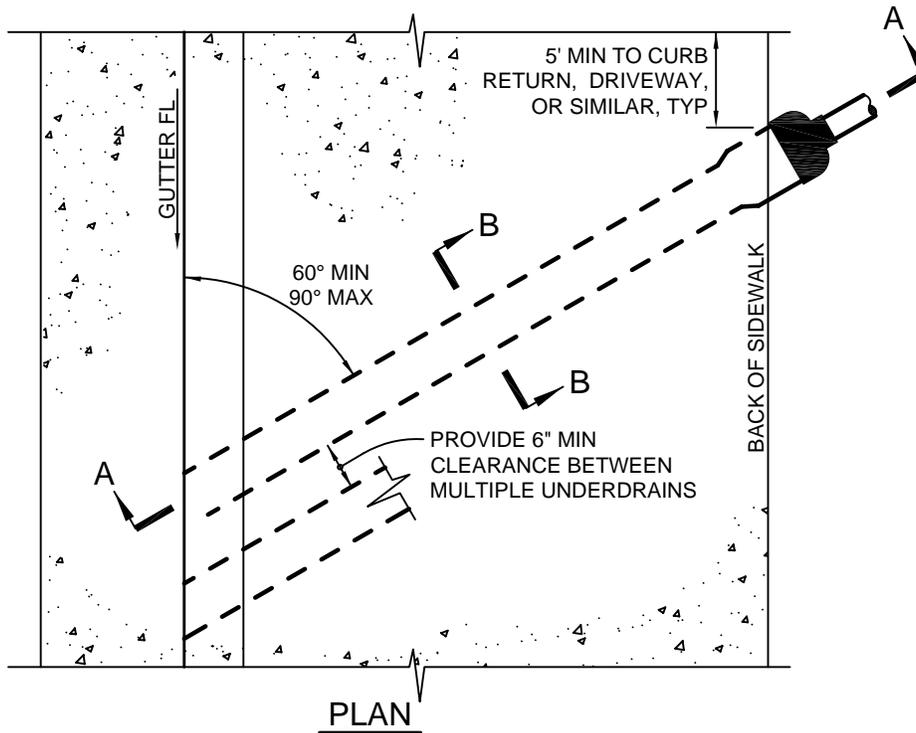
Scale: NTS	Adopted: 2011
Drawing No: D-3a	
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
ADD SCORE LINE NOTE TO SECTION B-B	GDM	NOV 08			
DEFINE ADAPTER	GDM	JAN 11			



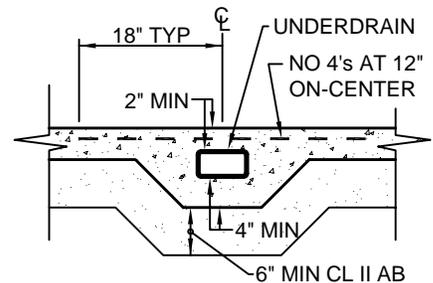
SECTION A-A
SHOWN AT 90°



PLAN

NOTES:

1. THE UNDERDRAIN SHALL BE A 3-INCH TALL BY 5-INCH WIDE (MINIMUM) RECTANGULAR CAST IRON CONDUIT, ALHAMBRA A-470 OR DEPARTMENT APPROVED EQUAL. THE DESIGN WIDTH SHALL BE DETERMINED BY THE PROJECT ENGINEER AND SHOWN ON THE PLANS.
2. THE UNDERDRAIN SHALL BE SET FLUSH WITH THE CURB FACE AND PLACED 1/2" ABOVE THE GUTTER FLOWLINE.
3. THE SLOPE OF THE UNDERDRAIN SHALL MATCH THE SIDEWALK CROSS SLOPE.
4. UNDERDRAIN SHALL NOT BE LOCATED CLOSER THAN 5- FEET TO A DRIVEWAY OR CURB RETURN.
5. MULTIPLE DRAINS SHALL HAVE 6-INCH MINIMUM CLEARANCE WITH MAXIMUM OF 3 DRAINS PER 10- FEET OF SIDEWALK.
6. REVERSE SIDEWALK UNDERDRAINS SHALL BE SET 1-INCH BELOW THE DESIGN GUTTER FLOWLINE, AND 3-FOOT GUTTER TRANSITIONS SHALL BE PROVIDED EITHER SIDE OF THE UNDERDRAIN. THE DESIGN ENGINEER SHALL DETAIL REVERSE UNDERDRAINS ON THE PLANS.
7. RECTANGULAR CAST IRON PIPE ADAPTER SHALL BE ALHAMBRA A-480, OR APPROVED EQUAL, FOR OPTIONAL CONNECTION TO ONSITE DRAIN PIPE.



ADD SCORE LINE IN CONCRETE DIRECTLY ABOVE PIPE EDGES

SECTION B-B

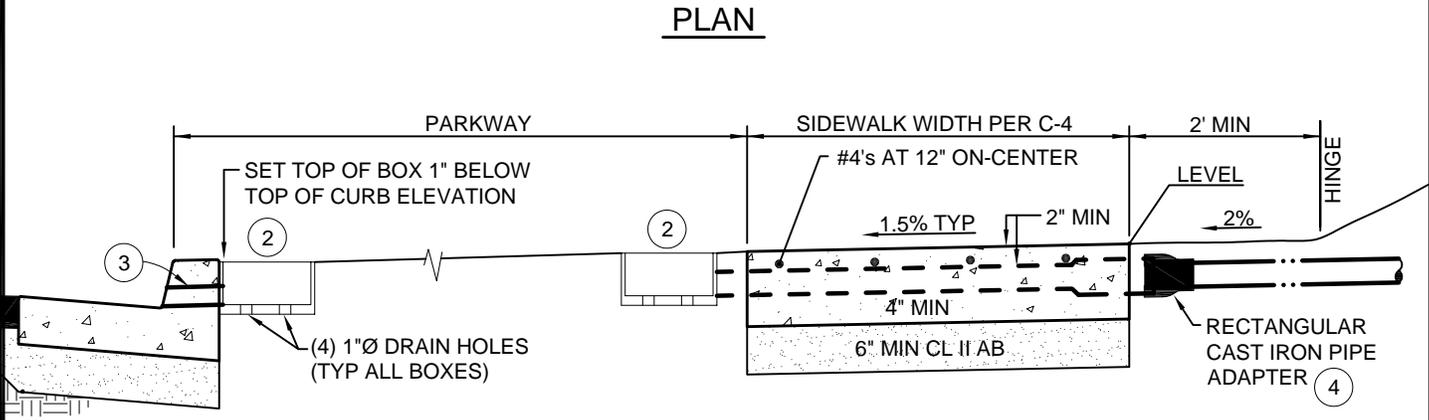
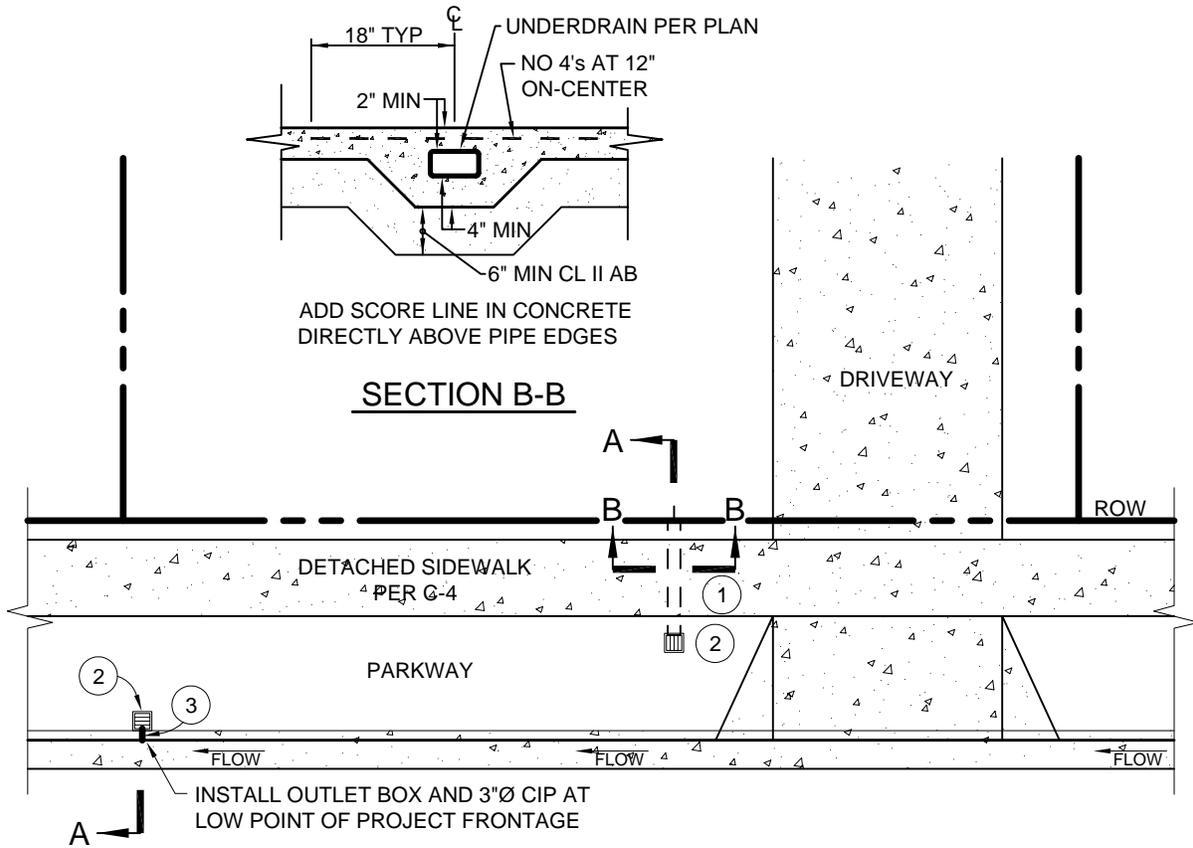


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
SIDEWALK UNDERDRAIN
RESIDENTIAL

Scale: 1"=2'	Adopted: 2011
Drawing No:	D-4
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
NEW STANDARD	GDM	NOV 08			
DEFINE ADAPTER	GDM	JAN 11			



NOTES:

1. THE UNDERDRAIN SHALL BE A 3-INCH TALL BY 5-INCH WIDE (MINIMUM) RECTANGULAR CAST IRON CONDUIT, ALHAMBRA A-470 OR DEPARTMENT APPROVED EQUAL. THE DESIGN WIDTH SHALL BE DETERMINED BY THE PROJECT ENGINEER AND SHOWN ON THE PLANS. INSTALL UNDER SIDEWALK PER SECTION B-B, THIS SHEET.
2. PLASTIC STORM DRAIN BOX (NDS OR EQUAL). PROVIDE A MINIMUM OF 4 1"Ø DRAIN HOLES DRILLED THROUGH THE BOTTOM OF THE BOX.
3. INSTALL 3" CAST IRON PIPE. SET FLUSH WITH CURB FACE AND PLACE 1/2" ABOVE THE GUTTER FLOWLINE.
4. RECTANGULAR CAST IRON PIPE ADAPTER SHALL BE ALHAMBRA A-480, OR APPROVED EQUAL, FOR OPTIONAL CONNECTION TO ONSITE DRAIN PIPE.

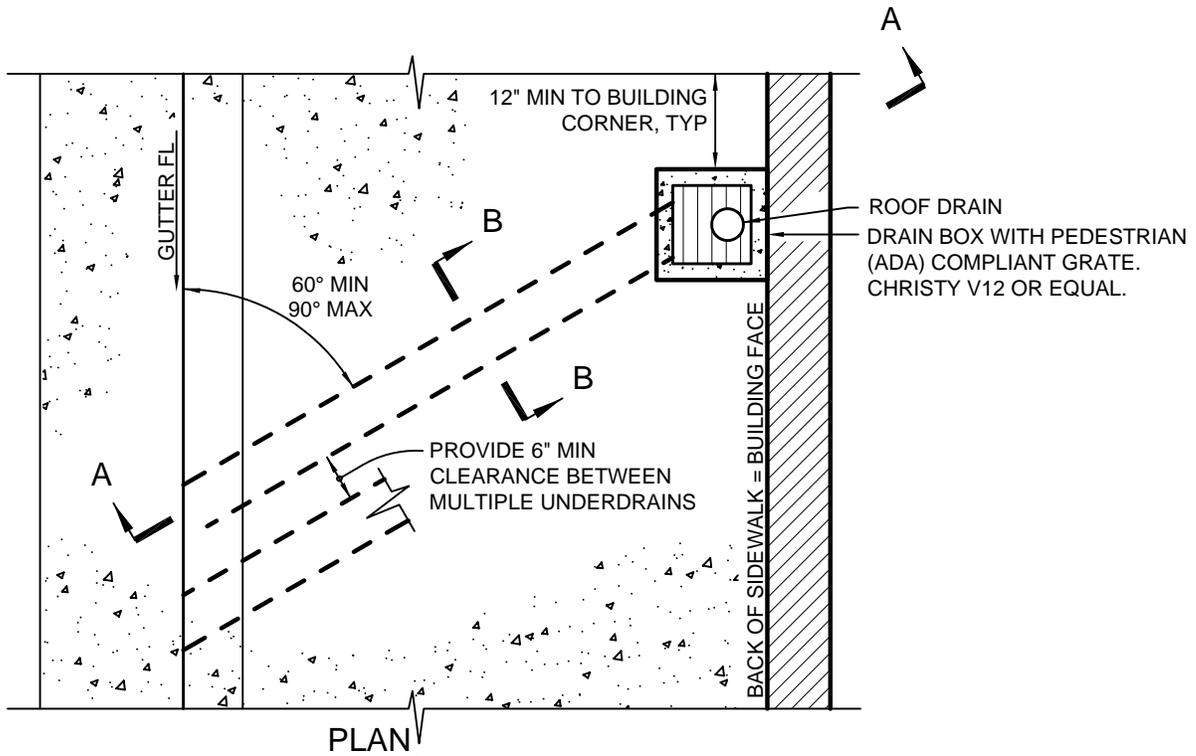
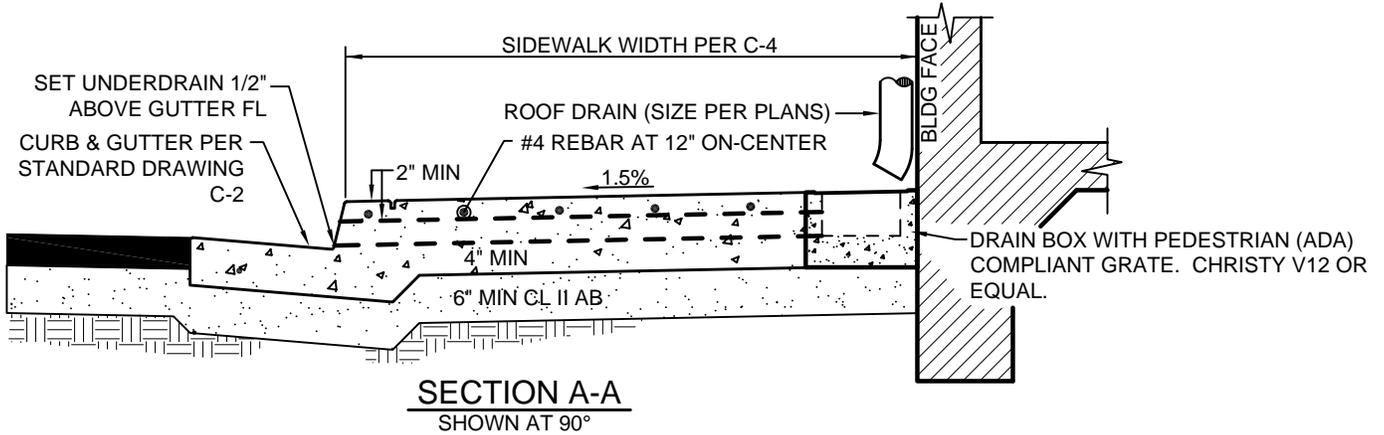


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
SIDEWALK UNDERDRAIN
 RESIDENTIAL WITH PARKWAY
 (LID ALTERNATIVE)

Scale: 1"=10'	Adopted: 2011
Drawing No: D-4a	
Sheet No:	1 OF 1

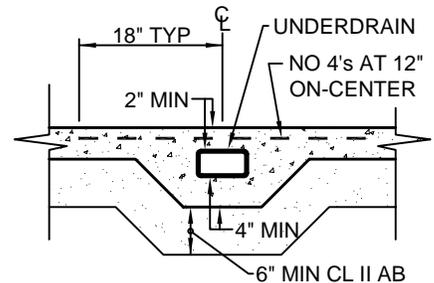
Revisions

Description	Approved	Date	Description	Approved	Date
ADD SCORE LINE NOTE TO SECT. B-B, DRAIN BOX, CHANGE DWG No	GDM	NOV 08			



NOTES:

1. THE UNDERDRAIN SHALL BE A 3-INCH TALL BY 5-INCH WIDE (MINIMUM) RECTANGULAR CAST IRON CONDUIT, ALHAMBRA A-470 OR DEPARTMENT APPROVED EQUAL. THE DESIGN WIDTH SHALL BE DETERMINED BY THE PROJECT ENGINEER AND SHOWN ON THE PLANS.
2. THE UNDERDRAIN SHALL BE SET FLUSH WITH THE CURB FACE AND PLACED 1/2-INCH ABOVE THE GUTTER FLOWLINE.
3. THE SLOPE OF THE UNDERDRAIN SHALL MATCH THE SIDEWALK CROSS SLOPE.
4. UNDERDRAIN SHALL NOT BE LOCATED CLOSER THAN 5-FEET TO A DRIVEWAY OR CURB RETURN.
5. MULTIPLE DRAINS SHALL HAVE 6-INCH MINIMUM CLEARANCE WITH MAXIMUM OF 3 DRAINS PER 10-FEET OF SIDEWALK.
6. ALL JUNCTION BOXES SHALL HAVE A PEDESTRIAN RATED GRATE OR NON-SLIP LID AND BE APPROVED BY THE DEPARTMENT.



ADD SCORE LINE IN CONCRETE DIRECTLY ABOVE PIPE EDGES

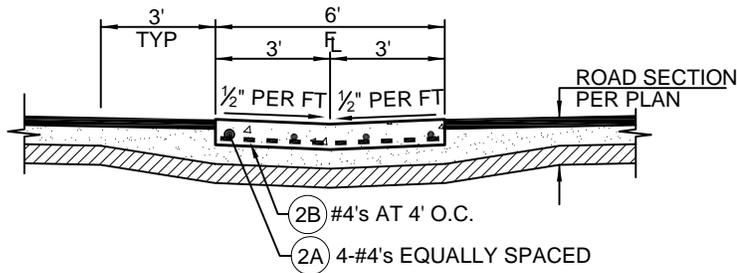
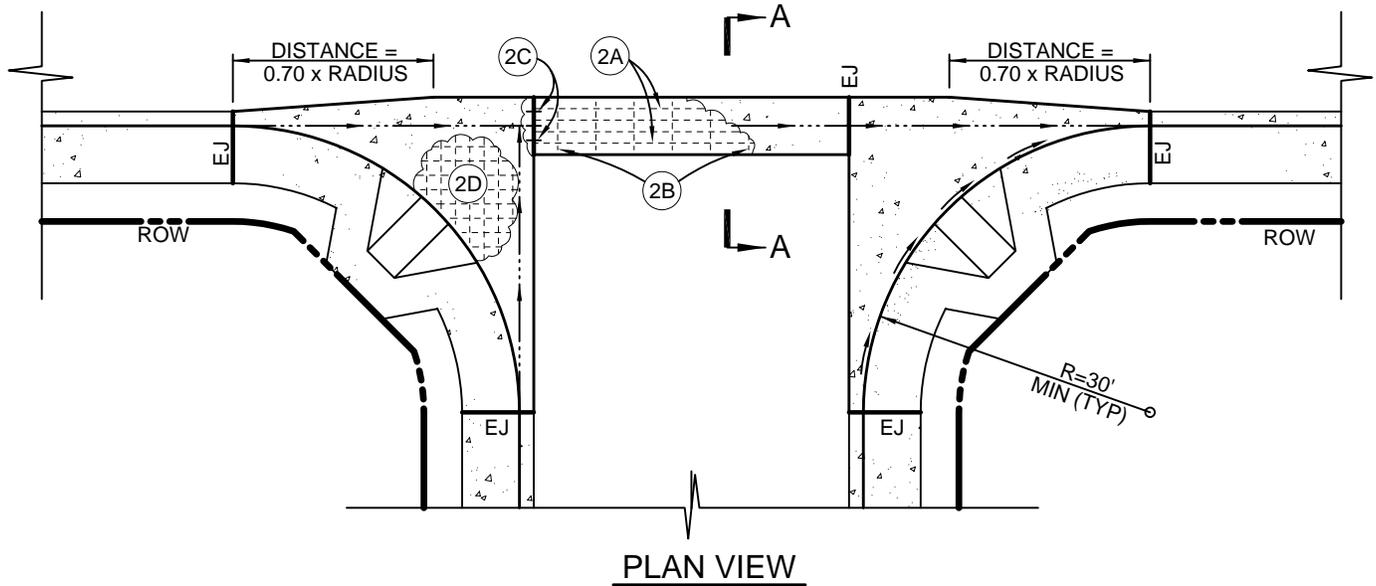


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
SIDEWALK UNDERDRAIN
 COMMERCIAL (ZERO SETBACK)

Scale: 1"=2'	Adopted: 2011
Drawing No: D-4b	
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
NOTE 3	REM	NOV 07			



SECTION A-A

NOTES:

- TYPICAL CROSS GUTTER & SPANDREL SECTION SHALL BE:
 - 8" MINIMUM PORTLAND CEMENT CONCRETE PER THE DESIGN STANDARDS, OVER
 - 6" MINIMUM CLASS II AGGREGATE BASE (OR MATCH ROAD SECTION) TO 95% RELATIVE COMPACTION, OVER
 - 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
- TYPICAL CROSS GUTTER & SPANDREL REINFORCEMENT SHALL BE:
 - 2A. (4) #4 REBAR CONTINUOUS & EQUALLY SPACED
 - 2B. #4 REBAR AT 4' ON CENTER
 - 2C. EXPANSION JOINT WITH (3) 1/2"Ø x 36" SMOOTH GREASED DOWELS (TYP BOTH SIDES)
 - 2D. #4 REBAR AT 18" ON CENTER ALL WAYS (3' CLEAR FROM ALL EDGES, TYPICAL)

IN ALL CASES, DOBIES SET 2-INCHES ABOVE FINISHED AGGREGATE BASE SHALL BE USED TO SUPPORT REINFORCEMENT.
- CONCRETE SHALL CONFORM TO STATE STANDARD 90-1.01, 520 LBS/CY CEMENTITIOUS MATERIAL [5-1/2 SACK]. CONCRETE CURING SHALL BE BY PIGMENTED CURING COMPOUND METHOD USING WHITE PIGMENT TYPE. TYPICAL SECTION SHALL BE:
- CURB RAMPS SHALL BE INSTALLED PER STANDARD DRAWING C-5.
- UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN THE CROSS GUTTER OR SPANDREL.



DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

CROSS GUTTER & SPANDREL

Scale: 1"=20'	Adopted: 2011
Drawing No:	D-5
Sheet No:	1 OF 1

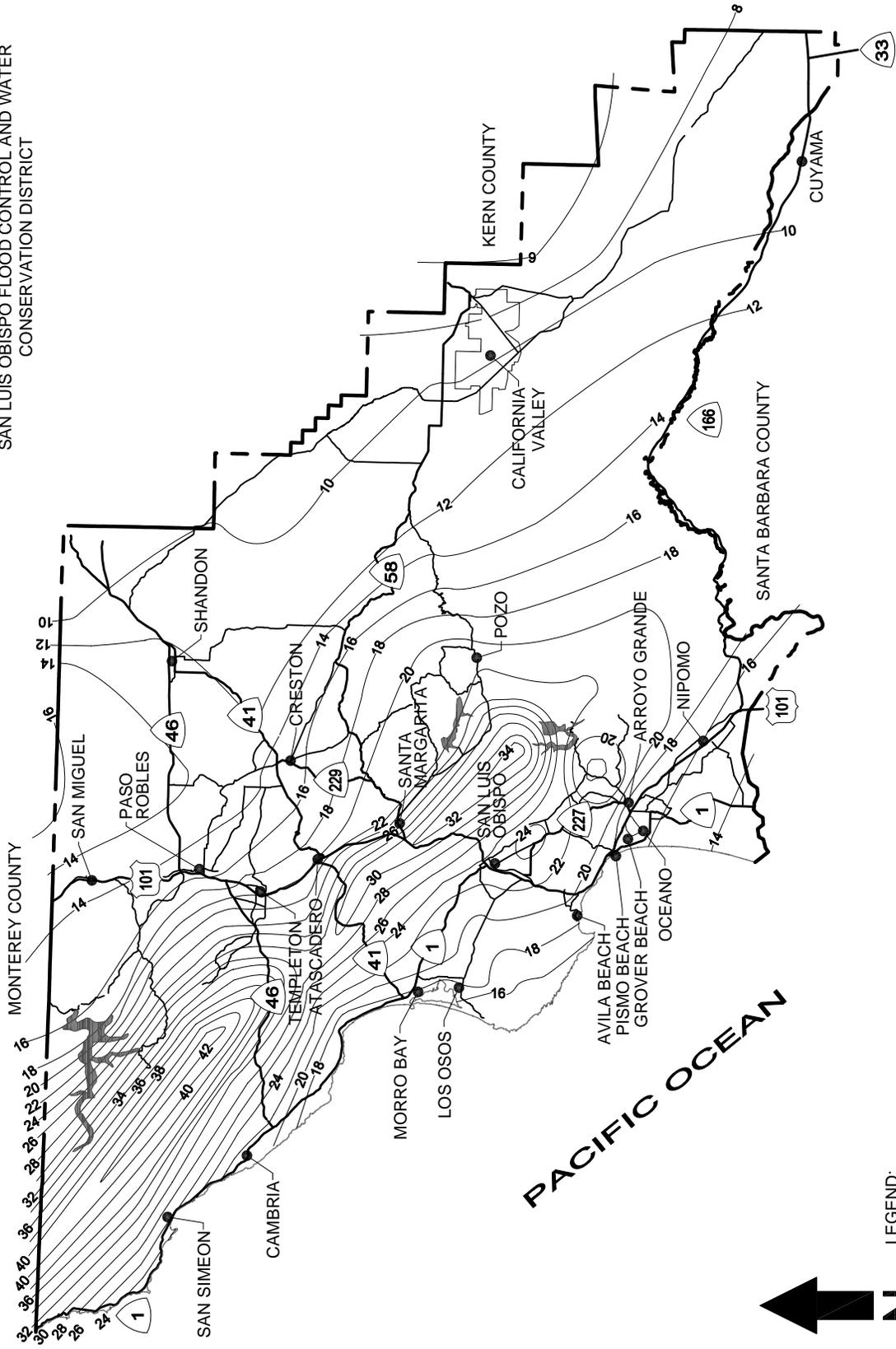
Revisions

Description	Approved	Date	Description	Approved	Date

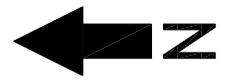
**SAN LUIS OBISPO COUNTY
AVERAGE ANNUAL PRECIPITATION**

(JULY 1 THROUGH JUNE 30) FOR 42 YEAR PERIOD
FROM 1955-56 THROUGH 1997-98)

SAN LUIS OBISPO FLOOD CONTROL AND WATER
CONSERVATION DISTRICT



LEGEND:
22 - AVERAGE ANNUAL PRECIPITATION (INCHES)



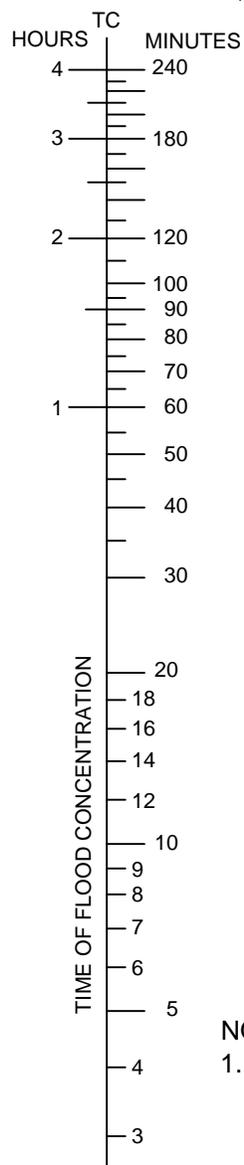
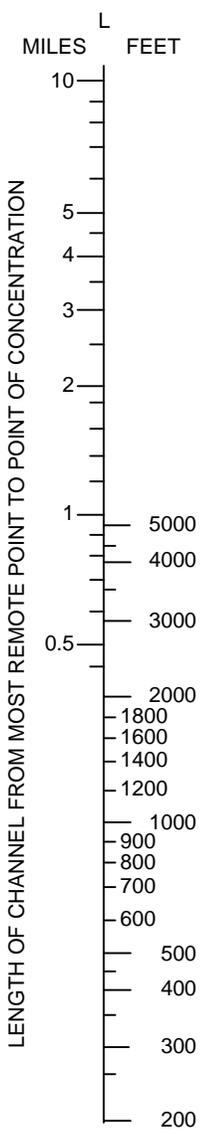
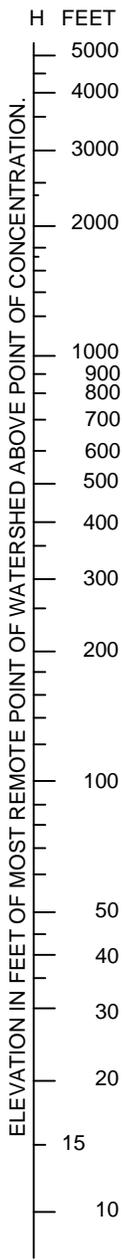
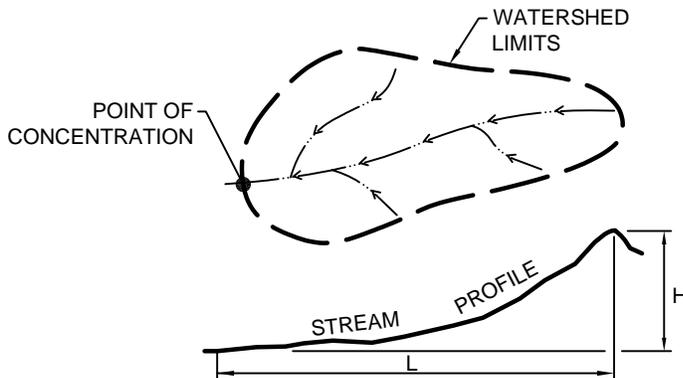
DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

AVERAGE ANNUAL RAINFALL

Scale: NTS	Adopted: 2011
Drawing No:	H-1
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
ADD REF.	GDM	NOV 08			



EQUATIONS FOR ESTIMATED "TIME OF CONCENTRATION"

$$T_c = \left(\frac{11.9L^3}{H} \right)^{0.385}$$

LEGEND:
 T_c = TIME OF CONCENTRATION IN HOURS.
 L = LENGTH OF CHANNEL IN MILES.
 H = DIFFERENCE IN ELEVATION BETWEEN MOST REMOTE POINT AND THE POINT OF CONCENTRATION IN FEET.

NOTES:
 1. THIS NOMOGRAPH IS TO BE LIMITED TO WATERSHED AREAS OF 200 ACRES OR LESS. FOR LARGER WATERSHEDS REFER TO THE DESIGN STANDARDS.



DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
TIME OF CONCENTRATION
 FOR WATERSHEDS LESS THAN 200 ACRES

Scale:	Adopted: 2011
Drawing No:	H-2
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date

TABLE 1: RATIONAL METHOD STANDARD RUNOFF COEFFICIENTS FOR DEVELOPED AREAS

TYPE OF DEVELOPMENT	SOIL TYPE	SLOPE			FOOT NOTE
		<2%	2% to 10%	>10%	
RESIDENTIAL LOTS > 20,000 SF	C	0.35	0.40	0.50	1,2
	S	0.25	0.35	0.40	1,2
RESIDENTIAL LOTS 10,000 SF TO 19,999 SF	C	0.40	0.45	0.55	1,2
"	S	0.30	0.40	0.45	1,2
RESIDENTIAL LOTS 6,000 SF TO 9,999 SF	C	0.45	0.55	0.65	1,2
"	S	0.35	0.40	0.50	1,2
PLANNED DEVELOPMENTS (PUD)	C	0.65	0.70	0.75	1,2
"	S	0.60	0.65	0.70	1,2
APARTMENTS	C	0.50	0.60	0.70	2
"	S	0.40	0.50	0.60	2
INDUSTRIAL	C	0.55	0.65	0.75	2
"	S	0.45	0.55	0.65	2
COMMERCIAL	C	0.75	0.80	0.85	2
"	S	0.70	0.75	0.80	2

FOOT NOTES:

- ESTIMATION OF COMPOSITE "C" VALUE USING ESTIMATED IMPERVIOUS AREAS AND STD. DWG. H-3a (TABLE 2) MAY BE REQUIRED BY THE DEPARTMENT. IMPERVIOUS AND PAVED AREAS SHALL USE C=0.95.
- ALL VALUES SHOWN ARE INTENDED TO BE MINIMUMS. HIGHER VALUES MAY BE REQUIRED BY THE DEPARTMENT.

LEGEND:

- C - CLAY, ADOBE, ROCK, OR IMPERVIOUS MATERIAL
- S - SAND, GRAVEL, LOAM, OR PERVIOUS MATERIAL

NOTES:

- COEFFICIENTS FOR RESIDENTIAL LOTS ASSUME TYPICAL SINGLE FAMILY RESIDENCE WITH ASSOCIATED GARAGE, DRIVEWAY, FLATWORK, AND LANDSCAPING. HIGHER DENSITY RESIDENTIAL DEVELOPMENTS MAY REQUIRE USING COMPOSITE COEFFICIENT EVALUATED BY THE DESIGN ENGINEER AND BASED ON PROPOSED DEVELOPMENT IMPERVIOUS AREAS.
- FOR ALL TYPES OF DEVELOPMENT, COEFFICIENTS ARE INCLUSIVE OF ONLY THE LOT AREA OUTSIDE THE RIGHT-OF-WAY (NET LOT AREA). PAVED SURFACES BETWEEN ROAD CENTERLINE AND RIGHT-OF-WAY SHALL BE EVALUATED SEPARATELY AND INCLUDED TO DETERMINE A COMPOSITE "C" FACTOR.
- ALL IMPERVIOUS AREAS AND PAVED AREAS SHALL USE C = 0.95.



**DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
RUNOFF COEFFICIENTS
FOR DEVELOPED AREAS**

Scale:	Adopted: 2011
Drawing No:	H-3
Sheet No:	1 OF 2

Revisions

Description	Approved	Date	Description	Approved	Date
CORRECT TO MATCH HWY. DES. MAN.	REM	NOV 07			

TABLE 2: RATIONAL METHOD STANDARD RUNOFF COEFFICIENTS FOR UNDEVELOPED AREAS

	EXTREME	HIGH	NORMAL	LOW
RELIEF	0.28 TO 0.35 STEEP, RUGGED TERRAIN WITH AVERAGE SLOPES ABOVE 30%	0.20 TO 0.28 HILLY, WITH AVERAGE SLOPES OF 10% TO 30%	0.14 TO 0.20 ROLLING, WITH AVERAGE SLOPE OF 5% TO 10%	0.08 TO 0.14 RELATIVELY FLAT LAND, WITH AVERAGE SLOPES OF 0% TO 5%
SOIL INFILTRATION	0.12 TO 0.16 NO EFFECTIVE SOIL COVER, EITHER ROCK OR THIN MANTLE OF NEGLIGIBLE INFILTRATION CAPACITY	0.08 TO 0.12 SLOW TO TAKE UP WATER, CLAY OR SHALLOW LOAM SOILS OF LOW INFILTRATION CAPACITY, IMPERFECTLY OR POORLY DRAINED	0.06 TO 0.08 NORMAL; WELL DRAINED LIGHT OR MEDIUM TEXTURED SOILS, SANDY LOAMS, SILT AND SILT LOAMS	0.04 TO 0.06 HIGH; DEEP SAND OR OTHER SOILS THAT TAKES UP WATER READILY, VERY LIGHT WELL DRAINED SOILS
VEGETAL COVER	0.12 TO 0.16 NO EFFECTIVE PLANT COVER, BARE OR VERY SPARSE COVER	0.08 TO 0.12 POOR TO FAIR; CULTIVATION CROPS, OR POOR NATURAL COVER, LESS THAN 20% OF DRAINAGE AREA OVER GOOD COVER	0.06 TO 0.08 FAIR TO GOOD; ABOUT 50% OF AREA IN GOOD GRASSLAND OR WOODLAND, NOT MORE THAN 50% OF AREA IN CULTIVATED CROPS	0.04 TO 0.06 GOOD TO EXCELLENT; ABOUT 90% OF DRAINAGE AREA IN GOOD GRASSLAND, WOODLAND, OR EQUIVALENT COVER
SURFACE STORAGE	0.10 TO 0.12 NEGLIGIBLE SURFACE DEPRESSIONS FEW AND SHALLOW; DRAINAGE WAYS STEEP AND SMALL, NO MARSHES	0.08 TO 0.10 LOW; WELL DEFINED SYSTEM OF SMALL DRAINAGE WAYS, NO PONDS OR MARSHES	0.06 TO 0.08 NORMAL; CONSIDERABLE SURFACE STORAGE, LAKES AND POND MARSHES	0.04 TO 0.06 HIGH; SURFACE STORAGE, HIGH; DRAINAGE SYSTEM NOT SHARPLY DEFINED; LARGE FLOOD PLAIN STORAGE OR LARGE NUMBER OF PONDS OR MARSHES

(REFERENCES FIGURE 819.2A OF HIGHWAY DESIGN MANUAL)

EXAMPLE:

GIVEN: AN UNDEVELOPED WATERSHED CONSISTING OF:

1. ROLLING TERRAIN WITH AVERAGE SLOPES OF 5%
2. CLAY SOILS
3. GOOD GRASSLAND AREA
4. NORMAL SURFACE DEPRESSIONS

FIND: THE RUNOFF COEFFICIENT FOR THE ABOVE WATERSHED

SOLUTION:

1. RELIEF = 0.14
2. SOIL INFILTRATION = 0.08
3. VEGETAL COVER = 0.04
4. SURFACE STORAGE = 0.06

ANSWER: THE RUNOFF COEFFICIENT, C = 0.32



**DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
RUNOFF COEFFICIENTS
FOR UNDEVELOPED AREAS**

Scale:	Adopted: 2011
Drawing No:	H-3a
Sheet No:	2 OF 2

Revisions

Description	Approved	Date	Description	Approved	Date

TABLE 1: ANNUAL RAINFALL < 14":

Recurrence Interval (Years)	Duration							
	10 Min	15 Min	30 Min	1 Hr	2 Hr	3 Hr	6 Hr	10 Hr
2	1.00	0.90	0.60	0.40	0.26	0.22	0.18	0.14
5	1.40	1.20	0.80	0.50	0.37	0.32	0.25	0.20
10	1.70	1.40	1.00	0.60	0.44	0.38	0.30	0.23
25	2.00	1.70	1.10	0.70	0.54	0.47	0.37	0.28
50	2.20	1.90	1.30	0.80	0.60	0.53	0.44	0.34
100	2.40	2.10	1.40	0.90	0.65	0.59	0.48	0.36

TABLE 2: ANNUAL RAINFALL 14" TO 17":

Recurrence Interval (Years)	Duration							
	10 Min	15 Min	30 Min	1 Hr	2 Hr	3 Hr	6 Hr	10 Hr
2	1.30	1.10	0.80	0.50	0.35	0.30	0.23	0.18
5	1.90	1.60	1.10	0.70	0.49	0.42	0.33	0.26
10	2.30	1.90	1.30	0.80	0.60	0.51	0.40	0.30
25	2.60	2.20	1.50	1.00	0.71	0.63	0.50	0.38
50	3.00	2.50	1.70	1.10	0.81	0.74	0.60	0.47
100	3.20	2.70	1.90	1.20	0.90	0.80	0.65	0.49

TABLE 3: ANNUAL RAINFALL 18" TO 21":

Recurrence Interval (Years)	Duration							
	10 Min	15 Min	30 Min	1 Hr	2 Hr	3 Hr	6 Hr	10 Hr
2	1.70	1.40	1.00	0.65	0.44	0.37	0.29	0.22
5	2.30	1.90	1.30	0.85	0.60	0.52	0.41	0.33
10	2.80	2.40	1.60	1.03	0.74	0.64	0.50	0.38
25	3.20	2.70	1.90	1.20	0.92	0.80	0.64	0.50
50	3.70	3.10	2.10	1.40	1.05	0.92	0.74	0.58
100	4.00	3.40	2.30	1.50	1.13	1.00	0.80	0.62

TABLE 4: ANNUAL RAINFALL 22" TO 28":

Recurrence Interval (Years)	Duration							
	10 Min	15 Min	30 Min	1 Hr	2 Hr	3 Hr	6 Hr	10 Hr
2	2.10	1.80	1.20	0.77	0.55	0.47	0.36	0.28
5	2.80	2.50	1.70	1.05	0.76	0.64	0.52	0.42
10	3.60	3.00	2.10	1.30	0.92	0.81	0.64	0.48
25	3.90	3.50	2.40	1.50	1.10	0.98	0.78	0.60
50	4.50	3.90	2.60	1.70	1.28	1.15	0.94	0.72
100	5.00	4.30	2.90	1.85	1.40	1.25	0.98	0.76



DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

RAINFALL INTENSITY DATA

Scale:	Adopted: 2011
Drawing No:	H-4
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
COMBINED H-5 & H-5a, ADDED FES & RSP KEY	GDM	JAN 11			
REVISE NOTE 6.	FH	AUG 14			

W50 STANDARD ROCK WEIGHT. SELECT A W50 GREATER THAN DETERMINED STABLE ROCK WEIGHT (W)	D50 FEET OF STANDARD W50	TRENCH DEPTH (Z) IN FEET, 1.5 TIMES D50 OF STANDARD W50	RSP-CLASS METHOD B PLACEMENT	RSP-FABRIC TYPE NONWOVEN OR WOVEN
25 LBS	0.86	1.0	BACKING No 2	A or B
75 LBS	0.95	1.5	BACKING No 1	A or B
200 LBS	1.32	2.0	LIGHT	B
1/4 TON	1.79	2.7	1/4 TON	B
1/2 TON	2.26	3.4	1/2 TON	B
1 TON	2.85	4.3	1 TON	B

ROCK SIZE RSP CLASS	TRENCH DEPTH RANGE (Z)	TYPE OF RSP FABRIC
BACKING No 2	10"-16"	A or B
BACKING No 1	12"-18"	A or B
LIGHT	18"-24"	B
1/4 TON	30"-36"	B
1/2 TON	36"-42"	B
1 TON	48"-60"	B

DESIGN METHOD:

1. DETERMINE ROCK SIZE BASED ON CULVERT OUTLET VELOCITY:

- a. FIRST TRIAL ROCK SIZE BY N.K. BERRY'S EQUATION (1948), SEE USBR EM-25:

$$d = 0.0120V^2$$

WHERE DIAMETER (d) FEET, VELOCITY (V) FPS, AND SG = 2.65.

- b. COMPARE TO CALTRANS BANK & SHORE EQUATION 1 WITH 1V:1.5H (IF H>1.5 SIZE WILL BE SMALL) AND SG = 2.65

$$\text{STABLE ROCK WEIGHT } W = 0.0000568V^6$$

EQUATION GIVES ROCK SIZE ON BANK USUALLY SMALLER THAN BERRY FOR BEDLOAD MOVEMENT ALONG CHANNEL BOTTOM

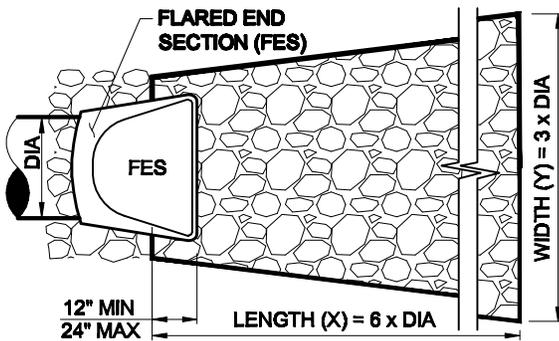
- c. ALSO COMPARE ABOVE ROCK SIZE TO HEC-14 CHART, FIGURE II-C-1, ON PAGE II-9 (1975), ORIGINALLY FROM SEARCY (1967).
- d. SELECT FINAL ROCK SIZE BASED ON ENGINEERING JUDGMENT AND FIELD EXPERIENCE. ADJUST (X) BASED ON SITE SPECIFIC CONSTRAINTS.

2. DETERMINING STABLE ROCK WEIGHT (W), STEP 1 ABOVE.

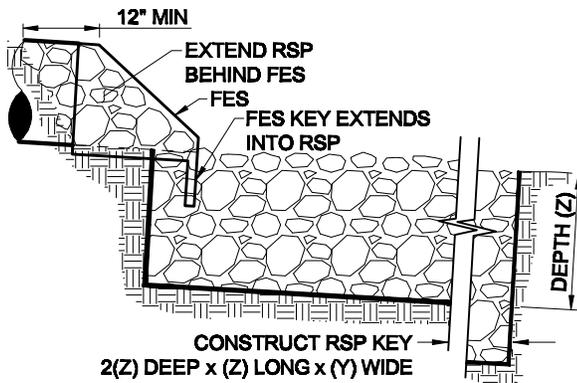
- 3. EXTEND FES 12" TO 24" INTO RSP TO PREVENT HEADCUT.
- 4. TABLE (STANDARD ROCK SIZES, D50, Z, RSP CLASS, RSP FABRIC TYPE).
- 5. RSP FABRIC PER CALTRANS SECTION 88..

CONSTRUCTION NOTES:

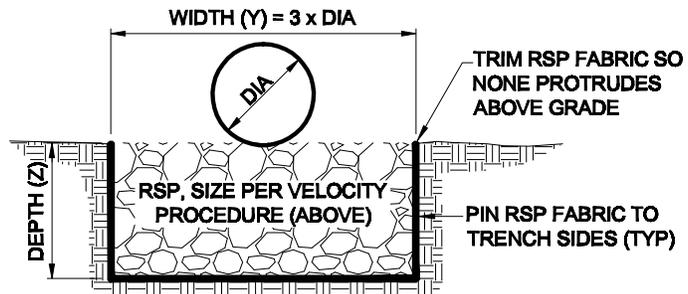
- A. EXCAVATE AND/OR FILL DISSIPATER TRENCH TO DIMENSIONS (X, Y AND Z, SHOW ON PLAN SET (SQUARED EDGES NOT REQUIRED).
- B. INSTALL FLARED END SECTION APPROPRIATELY SIZED FOR CULVERT.
- C. PLACE RSP-FABRIC LOOSELY AND PIN IT TO ALL SIDES AND BOTTOM OF TRENCH.
- D. PLACE RSP-CLASS OF DISSIPATER ROCK IN TRENCH. ROCK SHALL NOT PROTRUDE ABOVE CULVERT FLOWLINE OR ADJACENT GROUND. MATCH DISSIPATER GRADE WITH DOWNSTREAM FLOWLINE AND ADJACENT GROUND.
- E. TRIM RSP FABRIC SO THAT NONE PROTRUDES ABOVE GROUND.



PLAN VIEW



PROFILE VIEW



END VIEW



**DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
ROCK SLOPE PROTECTION SIZING
METHOD AT CULVERT OUTLETS**

Scale: NTS	Adopted: 2014
Drawing No:	H-5
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
ADDED COUNTY POST MILES TO BLOCK 1	REM	NOV 07			
NOTE 2	GDM	JAN 11			

"Engineering Firm's Name, Address, & Phone Number"				
PUBLIC IMPROVEMENT PLANS FOR "Project Identification (Tract No., Parcel No., etc.)"				
"Sheet Title"				
Design/Drawn	County Plan Checker	APPROVED FOR COUNTY REQUIREMENTS		
		Development Services Engineer _____		Date _____
Job No.	County W.O. No. 201R11-XXXX	"Engineer's Name and Registration Number" _____ Date _____		
California Coordinates N XXX E XXXX		County Post Miles XXXX	County Road No. XXXX	Sheet X of XX

NOTES:

1. THE COUNTY TITLE BLOCK SHALL BE LOCATED IN THE LOWER RIGHT CORNER OF EACH SHEET WITHIN THE SET WITH EACH SHEET BEING STAMPED, SIGNED, AND DATED BY THE PROJECT ENGINEER.

BLOCK 1: COUNTY TITLE BLOCK

RECORD DRAWINGS	
"Engineer's Name & Registration No."	DATE
REVISIONS THIS SHEET:	
①	_____
②	_____
③	_____
④	_____
⑤	_____

NOTES:

1. EACH SHEET SHALL HAVE A RECORD DRAWING BLOCK AND BE SIGNED AND DATED BY THE ENGINEER OF WORK.
2. THE ENGINEER OF WORK SHALL WET STAMP AND SIGN EACH RECORD DRAWING SHEET IF THE ENGINEER OF WORK IS DIFFERENT THAN THE PROJECT ENGINEER.
3. REVISION NUMBERS SHALL BE USED ONLY ONCE WITHIN ALL SHEETS OF A SET. EACH ADDITIONAL REVISION SHALL HAVE ITS OWN UNIQUE NUMBER WITHIN THE SET.

BLOCK 2: COUNTY RECORD DRAWING BLOCK



DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
STANDARD COUNTY TITLE BLOCKS

Scale:	Adopted: 2011
Drawing No:	L-1
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
OL, URL, VRL	GDM	JAN 11			

AB - AGGREGATE BASE ABN - ABANDON AC - ASPHALT CONCRETE ACD - ASPHALT CONCRETE DIKE ADJ - ADJUST ADT - AVERAGE DAILY TRAFFIC ANG - ANGLE APROX - APPROXIMATE ASBLY - ASSEMBLY AV - AIR VACUUM AVO - AVOCADO TREE BLDG - BUILDING BM - BENCHMARK BTM - BOTTOM BVC - BEGIN VERTICAL CURVE BW - BACK OF WALK (GRADE) CATV - CABLE TELEVISION (LINE) CB - CATCH BASIN CIP - CAST IRON PIPE CL - CENTERLINE CMU - CONCRETE MASONRY UNIT CNTR - CENTER CO - CLEANOUT COM - COMMUNICATIONS CONC - CONCRETE CSP - CORRUGATED STEEL PIPE D/W - DRIVEWAY DDCV - DOUBLE DETECTOR CHECK VALVE DI - DROP INLET EJ - EXPANSION JOINT ELEC - ELECTRICAL ELEV - ELEVATION EP - EDGE OF PAVEMENT ESMT - EASEMENT ETW - EDGE OF TRAVELED WAY EUC - EUCALYPTUS TREE EVC - END VERTICAL CURVE EXIST OR (E)- EXISTING FG - FINISHED GRADE FH - FIRE HYDRANT FL - FLOWLINE FM - FORCE MAIN FNC - FENCE FS - FINISHED SURFACE FUT - FUTURE G - GAS GB - GRADE BREAK GM - GAS METER GP - GRADING PLAN GR - GRATE GV - GAS VALVE HDPE - HIGH DENSITY POLYETHYLENE HMA - HOT MIX ASPHALT HORZ - HORIZONTAL HP - HIGH POINT HW - HEADWALL ICV - IRRIGATION CONTROL VALVE INV - INVERT IPR - IRRIGATION PRESSURE REDUCER	IRR - IRRIGATION JB - JUNCTION BOX JP - JUNCTION POLE LAT - LATERAL LF - LINEAR FEET LP - LOW POINT LT - LEFT MAX - MAXIMUM MH - MANHOLE MIN - MINIMUM MON - MONUMENT NTS - NOT TO SCALE OAE - OR APPROVED EQUAL OG - ORIGINAL (EXISTING) GROUND OHW - OVERHEAD WIRE OL - OVERLAY (PAVEMENT) OPT - OPTION OS - ORIGINAL SURFACE UG - UNDERGROUND PCC - PORTLAND CEMENT CONCRETE PCCL - POINT OF COMPOUND CURVE LEFT PCCR - POINT OF COMPOUND CURVE RIGHT PCI - PAVEMENT CONDITION INDEX PI - POINT OF INTERSECTION PL - PROPERTY LINE POC - POINT OF CONNECTION PRC - POINT OF REVERSE CURVE PRCL - POINT OF REVERSE CURVE LEFT PRCR - POINT OF REVERSE CURVE RIGHT PVC - POLYVINYL CHLORIDE PVMT - PAVEMENT RAD (R) - RADIUS RCP - REINFORCED CONCRETE PIPE RD - ROAD REF - REFERENCE REQ - REQUIRED ROW (R/W) - RIGHT OF WAY RSP - ROCK SLOPE PROTECTION RT - RIGHT S/W - SIDEWALK SD - STORM DRAIN SHLDR - SHOULDER SHT - SHEET SLOCO - SAN LUIS OBISPO COUNTY SS - SANITARY SEWER STA - STATION STD - STANDARD TB - THRUST BLOCK TBA - TO BE ABANDONED IN PLACE TBM - TEMPORARY BENCHMARK TBR - TO BE REMOVED TBP - TO BE PROTECTED TC - TOP OF CURB TEL - TELEPHONE TEMP - TEMPORARY TF - TOP OF FOOTING TG - TOP OF GRATE TRVLD - TRAVELED (LANE) TYP - TYPICAL	TW - TOP OF WALL UD - UNDER DRAIN UP - UTILITY POLE URL - URBAN RESERVE LINE VERT - VERTICAL VC - VERTICAL CURVE VCP - VITRIFIED CLAY PIPE VLT - VAULT VLV - VALVE VRL - VILLAGE RESERVE LINE WL - WATER LINE WM - WATER METER BOX WPJ - WEAKENED PLANE JOINT WS - WATER SERVICE W.S. - WATER SURFACE WV - WATER VALVE WW - WING WALL WWM - WELDED WIRE MESH ± - APPROXIMATE Ø - DIAMETER
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NOTES:

1. STATE STANDARD ABBREVIATIONS MAY BE USED IN CONJUNCTION OR IN SUBSTITUTION OF THE DEPARTMENT'S STANDARD ABBREVIATIONS. THE PROJECT ENGINEER MAY SUBSTITUTE COUNTY/STATE ABBREVIATIONS WITH THEIR OWN, HOWEVER, AN ABBREVIATION LEGEND SHALL BE PROVIDED ON THE TITLE SHEET OF THE CONSTRUCTION PLANS.



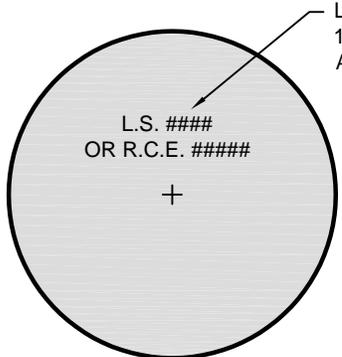
DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

STANDARD ABBREVIATIONS

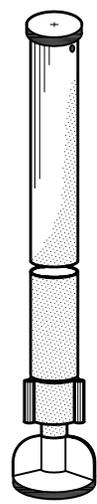
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Sheet No:	1 OF 1

Revisions

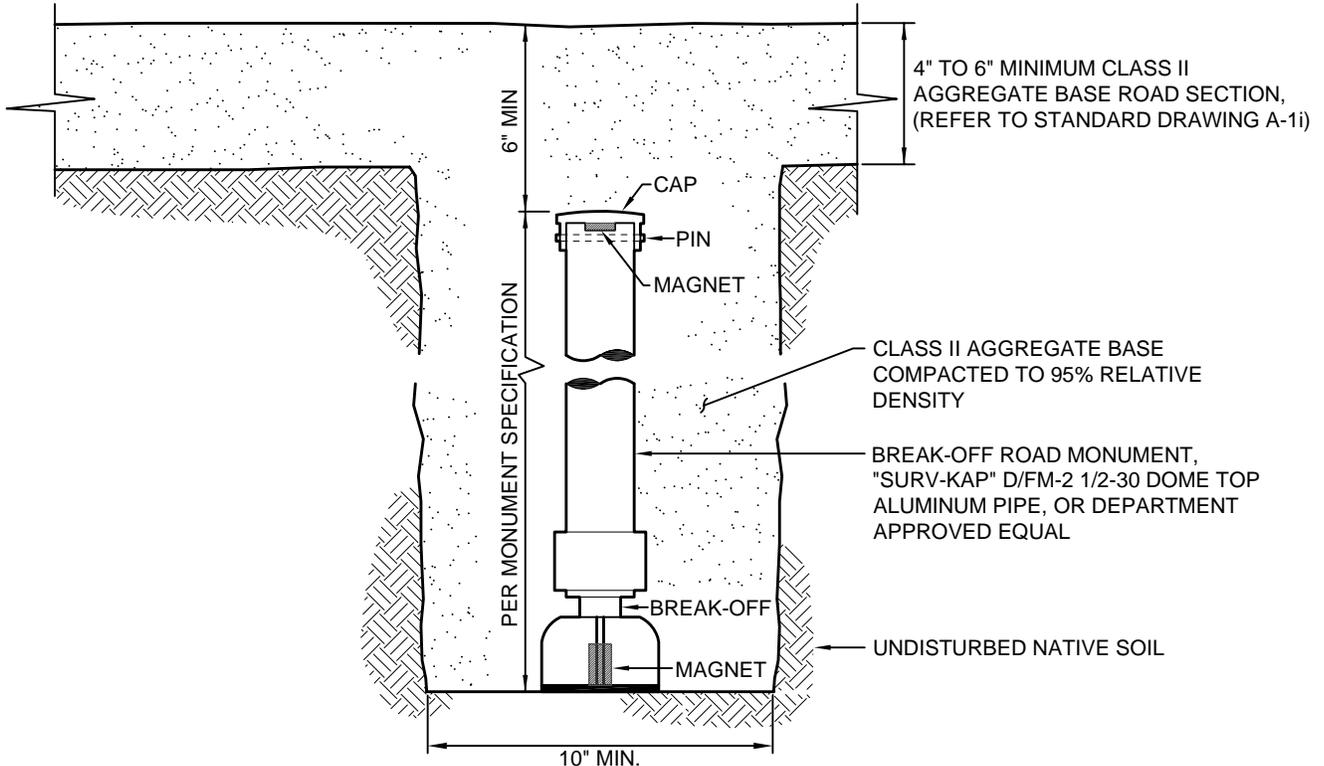
Description	Approved	Date	Description	Approved	Date



CAP PLAN



ISOMETRIC VIEW



NOTES:

1. BREAK-OFF MONUMENTS ARE DESIGNED TO BREAK OFF AT A PRE-DETERMINED POINT, LEAVING A PORTION OF THE BASE CONTAINING THE MAGNET FOR RELOCATING THE ORIGINAL SURVEY POINT.
2. BREAK-OFF MONUMENTS MAY BE SPECIFIED TO MONUMENT CENTERLINE OF COUNTY RURAL GRAVEL ROADS, (REFER TO STANDARD DRAWING A-1i).
3. NOT FOR USE IN PAVED ROADS (REFER TO STANDARD DRAWING M-1).

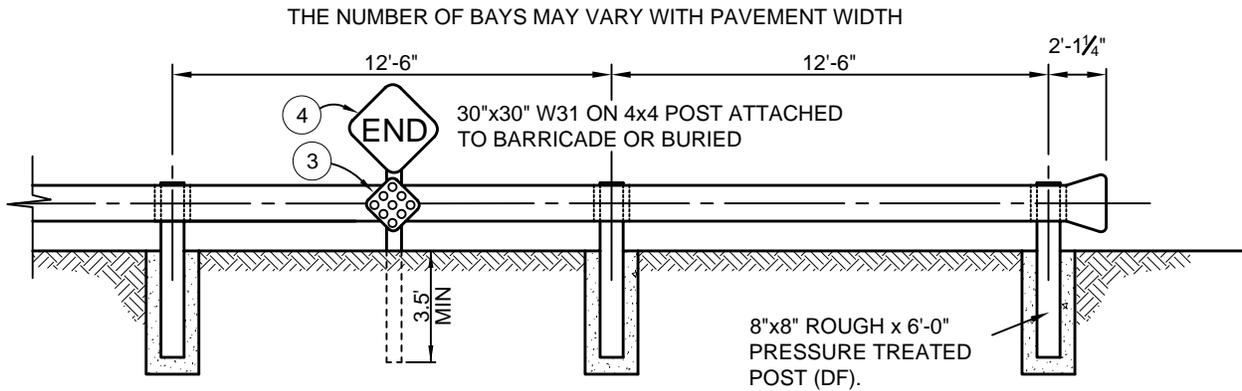


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
STANDARD STREET MONUMENT
 FOR GRAVEL ROADS

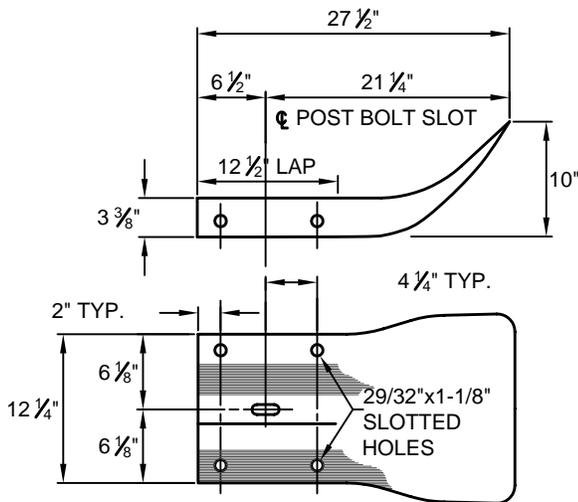
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Drawing No: M-1a	
Sheet No:	1 OF 1

Revisions

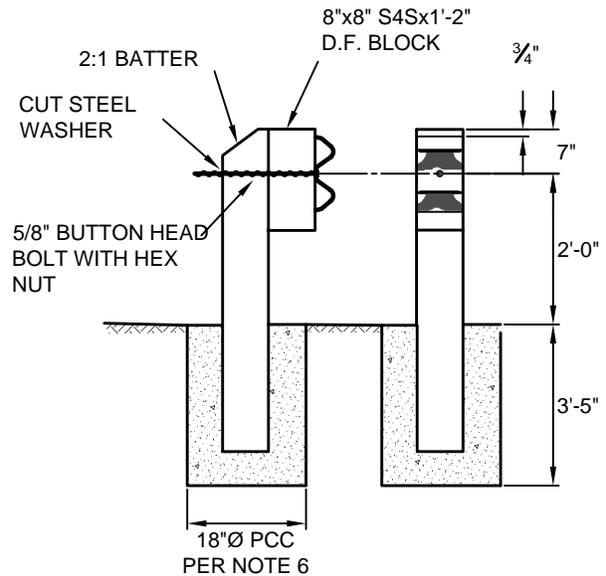
Description	Approved	Date	Description	Approved	Date
ADDED NOTE 6	REM	NOV 07			



METAL BEAM BARRICADE



TERMINAL SECTION



POST DETAIL

NOTES:

1. REFER TO STATE SPECIFICATIONS FOR LATEST GUARDRAIL STANDARDS.
2. USED ONLY WITH APPROVAL BY THE DEPARTMENT.
3. STANDARD "N2-RED RETROREFLECTIVE BACKGROUND WITH BLACK BORDER" MARKER TO BE BOLTED TO GUARD RAILING AS SHOWN.
4. 30"x30" W31 BOLTED TO 4x4 POST AND INSTALLED BEHIND BARRICADE PER STATE STANDARDS.
5. REFER TO STATE STANDARDS FOR SIGN REQUIREMENTS.
6. CONCRETE POST SET SHALL CONFORM TO STATE STANDARD 90-1.01, 520 LBS/CY CEMENTITIOUS MATERIAL [5 1/2 SACK].



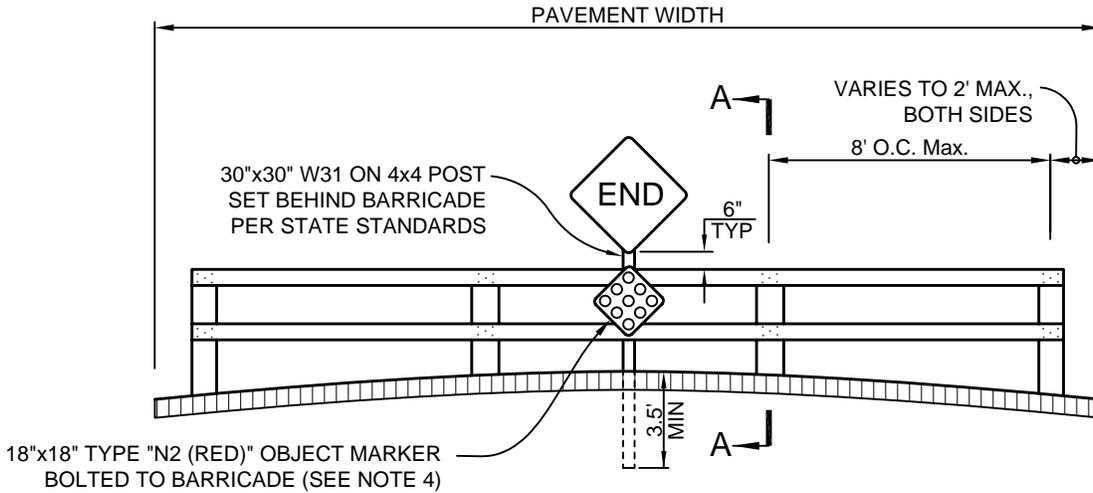
DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

METAL BEAM BARRICADE

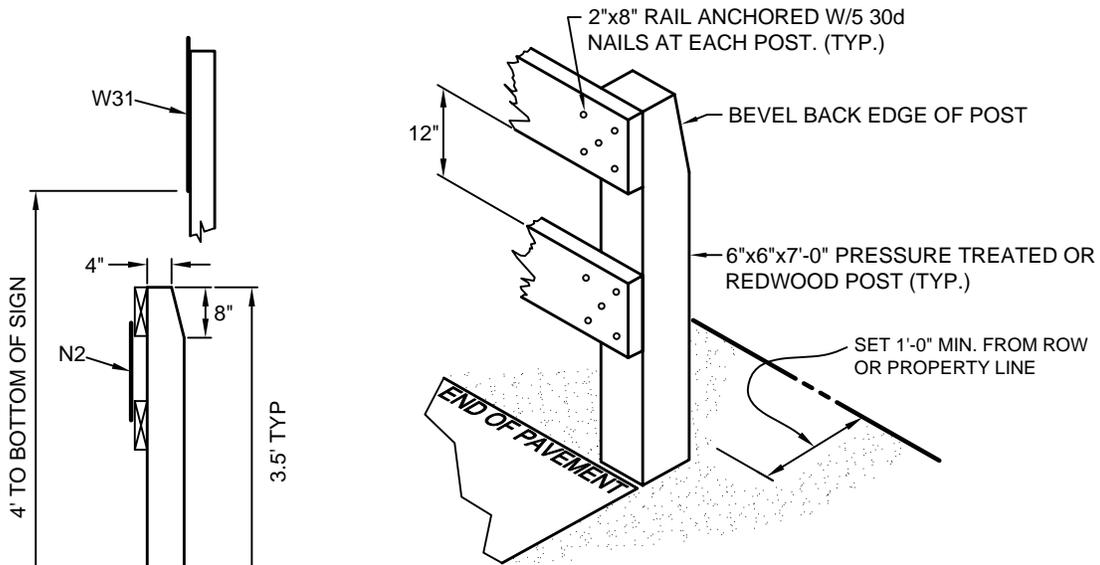
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Drawing No:	M-2
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date



WOOD BEAM BARRICADE



POST DETAIL

SECTION A-A

NOTES:

1. RAILS TO BE 2"x8" CLEAR DOUGLAS FIR S4S AND POSTS TO BE 6"x6"x7'-0" PRESSURE TREATED OR REDWOOD.
2. BUTT ALL RAIL JOINTS TO CENTER OF POST.
3. ALL EXPOSED WOOD SHALL BE PAINTED EXTERIOR WHITE, 2 COATS.
4. STANDARD "N2-RED RETROREFLECTIVE BACKGROUND WITH BLACK BORDER" MARKER TO BE LOCATED AS SHOWN (REFER TO STATE STANDARDS).
5. USED ONLY WITH THE APPROVAL OF THE DEPARTMENT WHERE BARRICADE WILL ONLY BE IN PLACE A MAXIMUM OF FIVE (5) YEARS.
6. REFER TO STATE STANDARDS FOR W-31 SIGN.

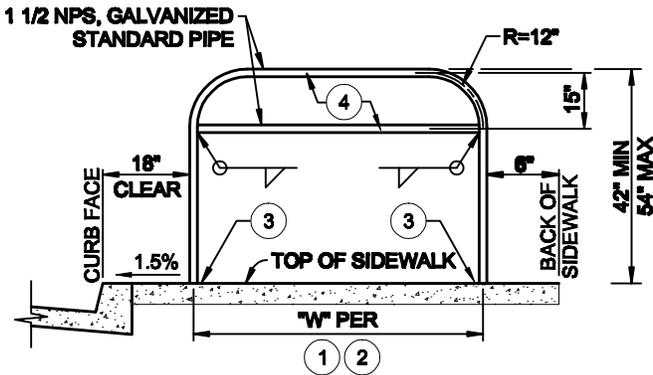


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
**TEMPORARY WOOD
 BEAM BARRICADE**

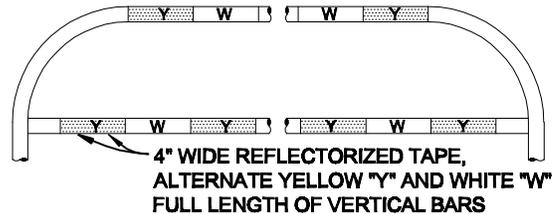
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Drawing No: M-2a	
Sheet No:	1 OF 1

Revisions

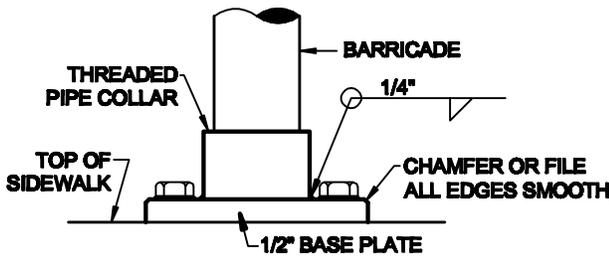
Description	Approved	Date	Description	Approved	Date
ADDED NOTE 6	REM	NOV 07			
ADDED NOTE 7	FH	AUG 14			



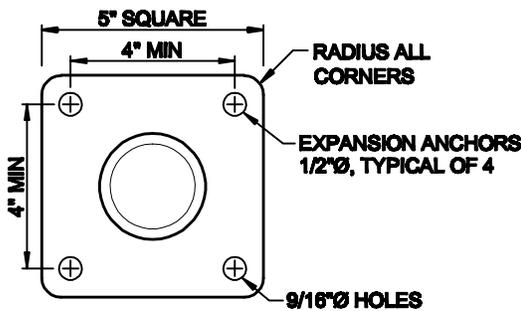
PEDESTRIAN BARRICADE
END OF SIDEWALK EXAMPLE



REFLECTIVE TAPING DETAIL

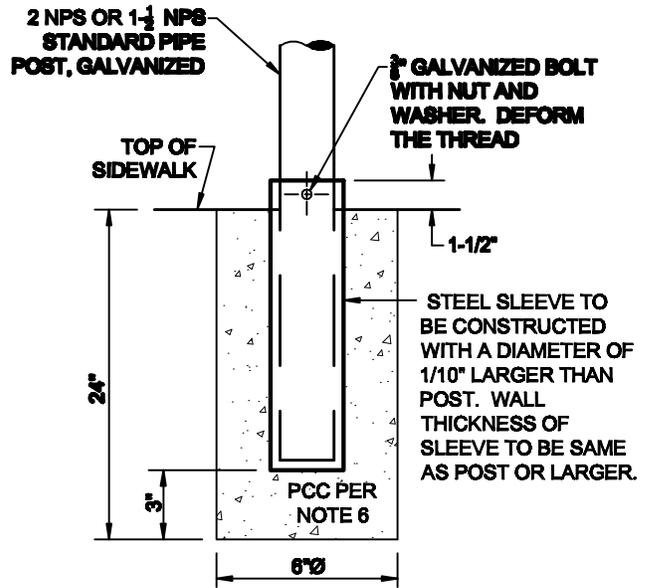


ELEVATION



PLAN

POST ANCHOR DETAIL
FOR TEMPORARY INSTALLATIONS



POST SLEEVE DETAIL
FOR PERMANENT INSTALLATIONS

NOTES:

1. FOR END OF SIDEWALK APPLICATIONS THE PIPE POST SHALL BE 18-INCHES BEHIND FACE OF CURB AND 6-INCH INSIDE BACK OF SIDEWALK. "W" VARIES BASED ON SIDEWALK WIDTH.
2. TO RESTRICT CROSSINGS AT INTERSECTIONS, THE BARRICADE SHALL BE 18-INCHES BEHIND CURB FACE, "W" SHALL BE 6-FEET (UNLESS NOTED OTHERWISE), AND SIGNAGE SHALL BE PROVIDED TO DIRECT PEDESTRIANS.
3. FOR TEMPORARY APPLICATIONS USE THE POST ANCHOR DETAIL FOR MOUNTING THE BARRICADE. FOR PERMANENT APPLICATIONS USE THE POST SLEEVE DETAIL.
4. WRAP BARRICADE RAILS WITH 4-INCH WIDE REFLECTIVE SAFETY TAPE, ALTERNATING YELLOW & WHITE PER DETAIL.
5. FOR MINIMUM PIPE DIAMETERS AND WALL THICKNESS, REFER TO ASTM A6M.
6. CONCRETE POST SET SHALL CONFORM TO STATE STANDARD 90-1.01, 520 LBS/CY CEMENTITIOUS MATERIAL [5 1/2 SACK].
7. DEPARTMENT APPROVAL IS REQUIRED WITHIN THE RIGHT OF WAY.



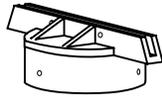
DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

SIDEWALK BARRICADE

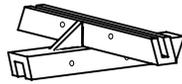
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NTS	2014
Drawing No:	M-3
Sheet No:	

Revisions

Description	Approved	Date	Description	Approved	Date



POST-TO-SIGN

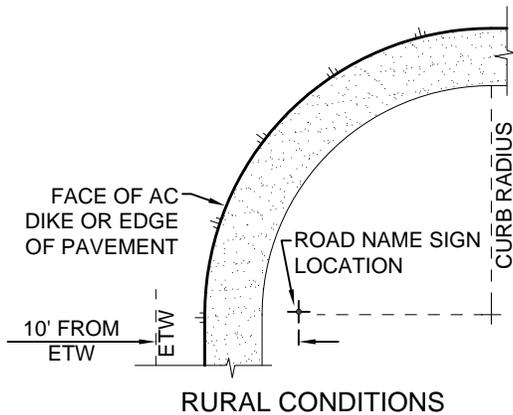


SIGN-TO-SIGN

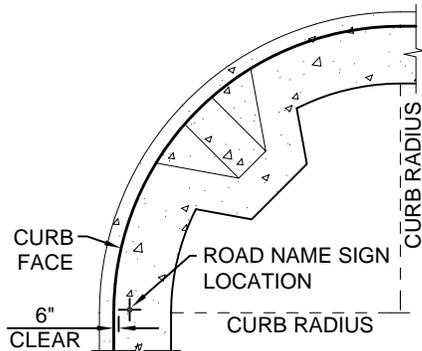
STREET NAME SIGN BRACKET DETAILS



SIGN SADDLE BRACKET DETAIL



RURAL CONDITIONS

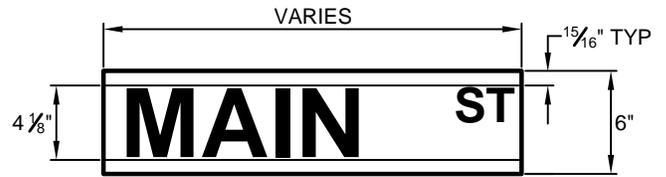


URBAN CONDITIONS

STREET SIGN PLACEMENT DETAIL

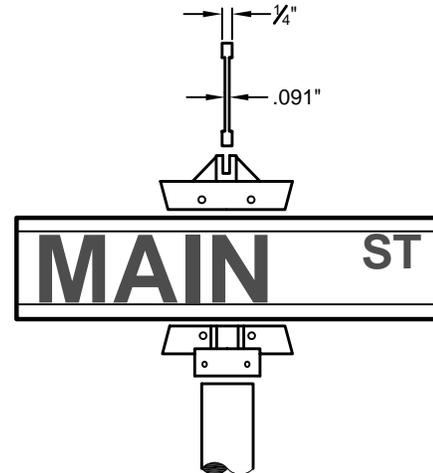
NOTES:

1. STREET NAME SIGN BLADES TO BE EXTRUDED ALUMINUM, 6063-T6 ALLOY, DEGREASED AND ETCHED WITH GREEN SCOTCHLITE APPLIED TO BOTH SURFACES.
2. POST-TO-SIGN BRACKET TO BE DIE-CAST, #360 ALLOY WITH TWO ANGLED GUSSETS EACH SIDE FOR STRENGTH. TO FIT 2-3/8" O.D. GALVANIZED PIPE (2" I.D.). SIGN-TO-SIGN BRACKET TO BE SIMILAR CONSTRUCTION WITH 90° AND 45° SEPARATION.
3. CAPITAL LETTERS TO BE DIE-CUT SILVER SCOTCHLITE, SERIES B.
4. SCREWS FOR SECURING BRACKETS TO BE ZINC PLATED HEX SOCKET HEAD SCREWS 1/4"x1/2".
5. SIGN SADDLE BRACKET TO BE EXTRUDED ALUMINUM, TO FIT 2-3/8" O.D. PIPE, FASTEN WITH A VANDAL PROOF NUT SET (HAWKINS TRAFFIC M2G-S2S, OR APPROVED EQUAL).

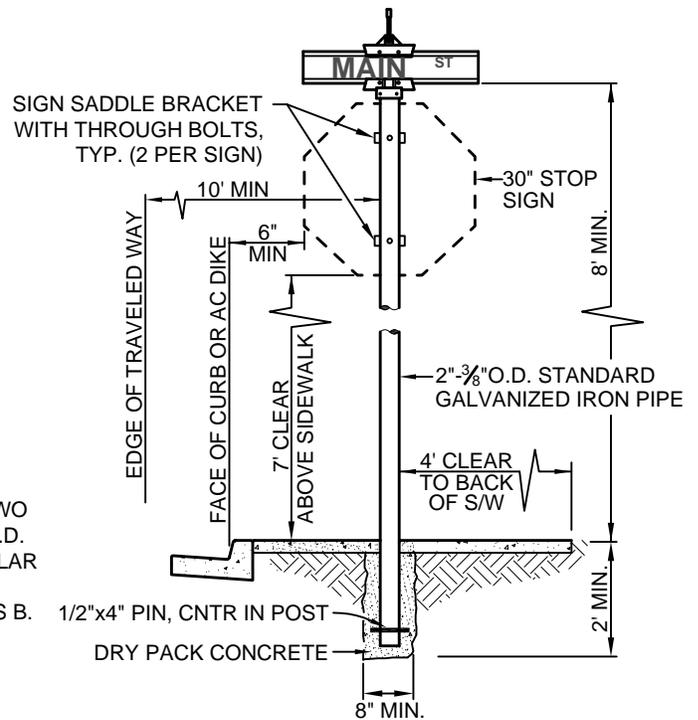


FOR COUNTY MAINTAINED ROADS, SIGN SHALL BE WHITE LETTERS ON A GREEN BACKGROUND. FOR ALL OTHER ROADS THE SIGN SHALL BE GREEN LETTERS ON A WHITE BACKGROUND.

STREET NAME SIGN DETAIL



STREET NAME SIGN ASSEMBLY DETAIL



SIGN INSTALLATION



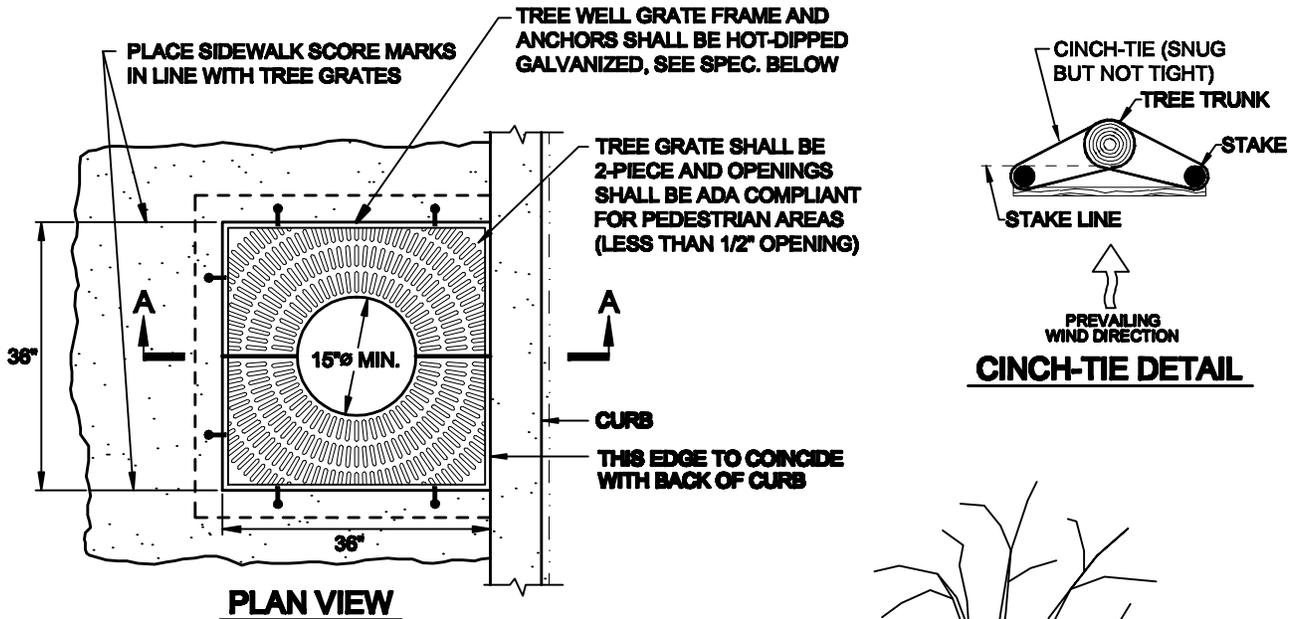
DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

STANDARD STREET SIGN

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Drawing No:	M-4
Sheet No:	1 OF 1

Revisions

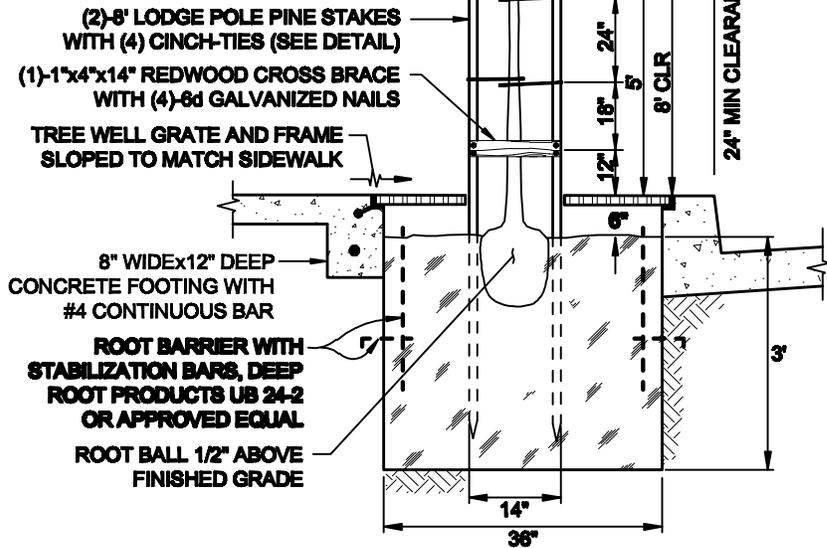
Description	Approved	Date	Description	Approved	Date
REVISED TITLE	REM	NOV 07	MIN CLEARANCE, NOTE 9		MAY 14
ADDED REFERENCE TO TREE LIST	GDM	JAN 11			



NOTES:

1. AN ENCROACHMENT PERMIT SHALL BE REQUIRED FOR ALL PLANTINGS WITHIN THE PUBLIC RIGHT OF WAY. THE PERMIT SHALL DEFINE RESPONSIBILITY FOR MAINTENANCE AND REMOVAL IF REQUIRED.
2. TREES SHALL BE SPACED A MIN. OF 20' FT. APART AS DIRECTED BY ENCROACHMENT PERMIT. TREES SHALL BE AT LEAST 60 FEET FROM CURB RETURNS, ALL TRAFFIC SIGNALS AND SIGNS SHALL REMAIN VISIBLE
3. TREE SIZE TO BE COMPARABLE TO STANDARD 24-INCH BOX TREE, NURSERY STOCK
4. TREES ARE TO BE SELECTED FROM A LIST OF THOSE APPROVED BY THE DEPARTMENT.
5. BACKFILL HOLE WITH 80/20 MIX OF COMMERCIAL PLANTING MIX AND NATIVE SOIL. LOOSEN ROOT BALL, TAMP SOIL TO ELIMINATE AIR SPACES, AND WATER SLOWLY TO PENETRATE ROOT BALL
6. INSTALL DUCTILE CAST IRON TREE WELL GRATES, 36" SQUARE WITH MINIMUM 15" CENTER OPENING.
7. INSTALL PERIMETER ROOT BARRIER WITH A MINIMUM DEPTH OF 24" FROM FINISH GRADE.
8. MAINTENANCE IS THE RESPONSIBILITY OF THE FRONTING PROPERTY OWNER. RESPONSIBILITY MUST BE TRANSFERRED TO SUBSEQUENT OWNERS BY TITLE. THE TREE SHALL BE REMOVED BY PROPERTY OWNER IF DIRECTED BY THE DEPARTMENT.
9. USE IN 10-FOOT OR WIDER SIDEWALKS

REFER TO PUBLIC WORKS APPROVED TREE LIST FOR PLANTING WITHIN THE PUBLIC RIGHT-OF-WAY



SECTION A-A

GRATE AND FRAME SPECIFICATIONS:

1. OLYMPIC FOUNDRY STA 36 w/ CI 8 STYLE GALVANIZED FRAME WITH ANCHORS, OR NEENAH FOUNDRY R8704-A DUCTILE CAST IRON GRATE AND GALVANIZED FRAME WITH ANCHORS, OR DEPARTMENT APPROVED EQUAL.
2. ALL GRATES SHALL BE COMPLIANT WITH THE LATEST ADA RECOMMENDATIONS.

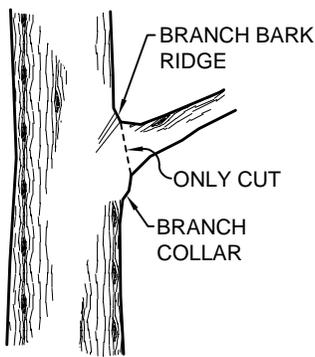


**DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
TREE PLANTING IN
RIGHT-OF-WAY**

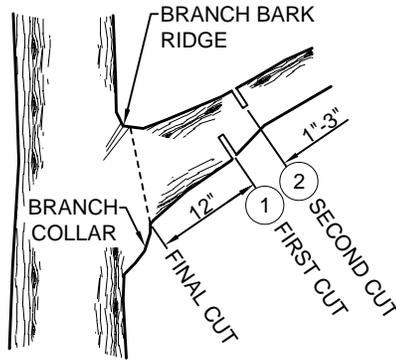
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Drawing No: M-5	
Sheet No: 1 OF 1	

Revisions

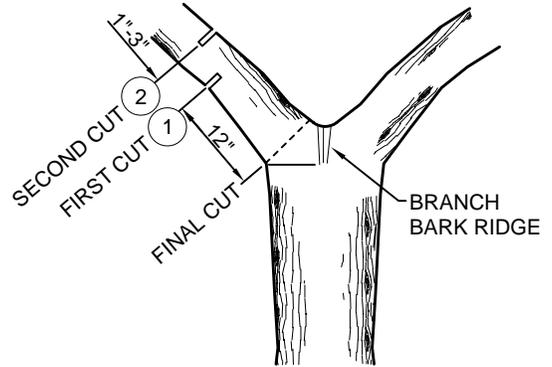
Description	Approved	Date	Description	Approved	Date
ADDED ROADWAY TO TYPICAL CLEARANCES, NOTE 11	GDM	JAN 11			



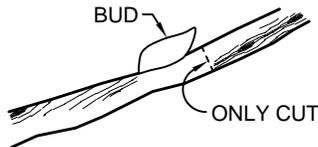
SMALL LIMB



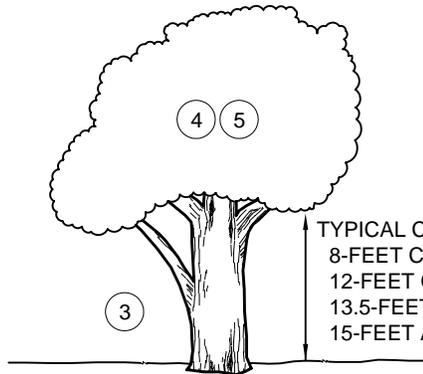
LARGE LIMB



CO-DOMINANT STEM



BRANCHES



TYPICAL CLEARANCES:
 8- FEET CLEAR ABOVE SIDEWALKS
 12- FEET CLEAR ABOVE MULTIUSE TRAILS
 13.5- FEET CLEAR ABOVE ACCESS ROADS (CAL FIRE)
 15- FEET ABOVE COUNTY MAINTAINED ROADS

NOTES:

1. FIRST CUT SHOULD BE TO A DEPTH OF 1/3 THE BRANCH DIAMETER.
2. SECOND CUT, LIMB SHOULD SPLIT AWAY CLEANLY.
3. REMOVAL OF LARGER LOWER BRANCHES SHOULD BE MINIMIZED TO AVOID:
 - A. MAKING THE TREE TOP HEAVY AND MORE SUSCEPTIBLE TO "BLOW OVERS",
 - B. REDUCING THE NUMBER OF LARGE BRANCH CUTS MINIMIZES TREE SUSCEPTIBILITY TO DISEASE.
 - C. PROVIDE WILDLIFE SHELTER.
 - D. RETAIN GROUND SHADE TO MAINTAIN SOIL MOISTURE UNDER THE TREE.
 - E. RETAIN THE NATURAL SHAPE OF THE TREE
4. REMOVAL OF THE CANOPY BRANCHES SHOULD BE DONE IN A SYMMETRICAL MANNER SO AS NOT TO UNBALANCE THE TREE.
5. TO MINIMIZE STRESS TO THE TREE LIMIT THE AMOUNT OF TRIMMING DONE IN ONE SEASON TO:
 - A. 10% OF CANOPY FOR OAK TREES
 - B. 25% OF CANOPY FOR OTHER SPECIES
6. 1/3 RULE:
 - A. NEVER REMOVE MORE THAN 1/3 OF A TREE'S CROWN.
 - B. ENCOURAGE SIDE BRANCHES THAT FORM ANGLES THAT ARE 1/3 OFF THE VERTICAL, THE 10:00 AND 2:00 O'CLOCK POSITIONS
 - C. FOR MOST DECIDUOUS TREES, DON'T PRUNE UP FROM THE BOTTOM ANY MORE THAN 1/3 OF THE TREE'S TOTAL HEIGHT.
7. AFTER PRUNING, IT IS NOT NECESSARY TO USE A WOUND DRESSING. WOUND DRESSINGS HAVE NOT BEEN SHOWN TO IMPROVE THE RECOVERY OF THE TREE, AND IN SOME CASES DO ACTUAL DAMAGE TO THE TREE.
8. TREE TRIMMING SHOULD OCCUR ONLY DURING THE DRY SEASON AND AT THE DIRECTION OF THE PROJECT ARBORIST.
9. ALL WORK SHALL BE DONE IN ACCORDANCE WITH RECOGNIZED STANDARDS OF GOOD ARBORICULTURAL PRACTICES.
10. THOROUGHLY CLEAN EQUIPMENT PRIOR TO COMMENCING WORK AND BETWEEN TRIMMING SEPARATE TREES.
11. TREE TRIMMING: ABUTTING PROPERTY OWNERS MAY SECURE AN ENCROACHMENT PERMIT TO HIRE A LICENSED, BONDED AND INSURED TREE COMPANY TO TRIM TREES WITHIN THE COUNTY RIGHT-OF-WAY, AT THEIR OWN EXPENSE. TREES WILL BE TRIMMED AS APPROVED BY THE PUBLIC WORKS DEPARTMENT ENCROACHMENT PERMIT ENGINEER.



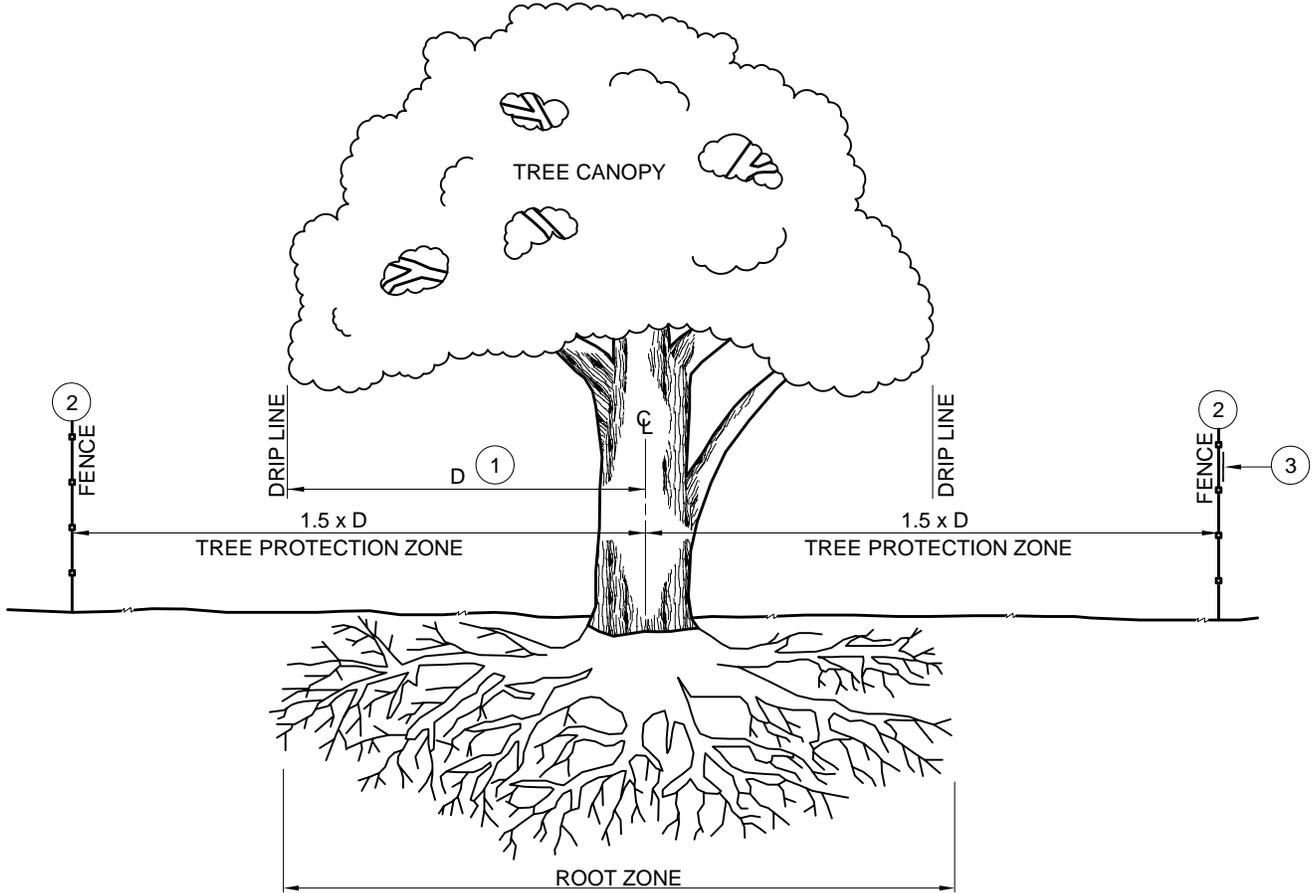
DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

TREE TRIMMING METHODS

Scale: NTS	Adopted: 2011
Drawing No: M-5a	
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date



NOTES:

1. "D" EQUALS THE GREATEST MEASURED DISTANCE FROM THE CENTER OF THE TREE TRUNK TO THE FURTHEST POINT OF THE TREE CANOPY (DRIP LINE).
2. TREE PROTECTION FENCING SHALL BE ORANGE PLASTIC "SNOW FENCE" OR APPROVED EQUAL, A MINIMUM OF 3-FEET HIGH, AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
3. AT LEAST ONE (1) WEATHERPROOF SIGN SHALL BE PLACED ON EACH FENCED AREA AND IN A VISIBLE LOCATION. THE SIGN SHALL READ "TREE PROTECTION AREA - STAY OUT" WITH LETTER SIZE NO LESS THAN 4-INCHES TALL. FOR LARGER FENCED AREAS SIGNS SHALL BE PLACED AT NO FURTHER THAN 50-FEET APART.
4. PRIOR TO COMMENCING WORK, TREE PROTECTION FENCING SHALL BE INSTALLED AT ALL TREES IDENTIFIED TO BE EITHER PROTECTED OR IMPACTED, AND AT ALL TREES WHICH ARE WITHIN 50-FEET OF THE PERMITTED WORK ACTIVITIES.
5. FOR APPROVED CHANGES TO THE LIMITS OF WORK, TREE PROTECTION FENCING SHALL BE MODIFIED PER NOTE 4.
6. WHERE WORK IS PERMITTED WITHIN THE TREE PROTECTION ZONE (IMPACTED TREES) ALL EFFORTS SHALL BE MADE (AND IDENTIFIED ON PLANS) TO MINIMIZE ENCROACHMENT AND IMPACT TO THE ROOT ZONE. THIS MAY REQUIRE THAT ALL WORK BE DONE BY HAND AND UNDER THE DIRECTION OF THE PROJECT ARBORIST.
7. ADDITIONAL TREE PROTECTION REQUIREMENTS MAY BE REQUIRED PER THE DESIGN STANDARDS AND/OR WHEN LOCATED WITHIN THE PUBLIC RIGHT-OF-WAY.



DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

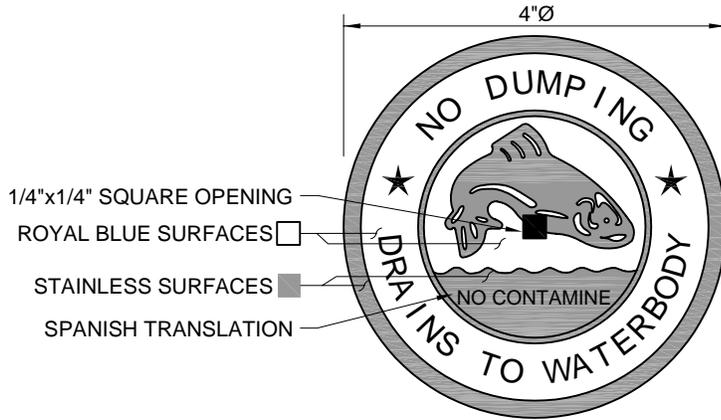
TREE PROTECTION DETAIL

Scale: NTS	Adopted: 2011
Drawing No: M-5b	
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
NEW STANDARD	GDM	NOV 08			

NOTE: STORM DRAIN MARKERS ARE AVAILABLE FOR PURCHASE FROM THE SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS. CALL 781-5252 FOR ADDITIONAL INFORMATION.

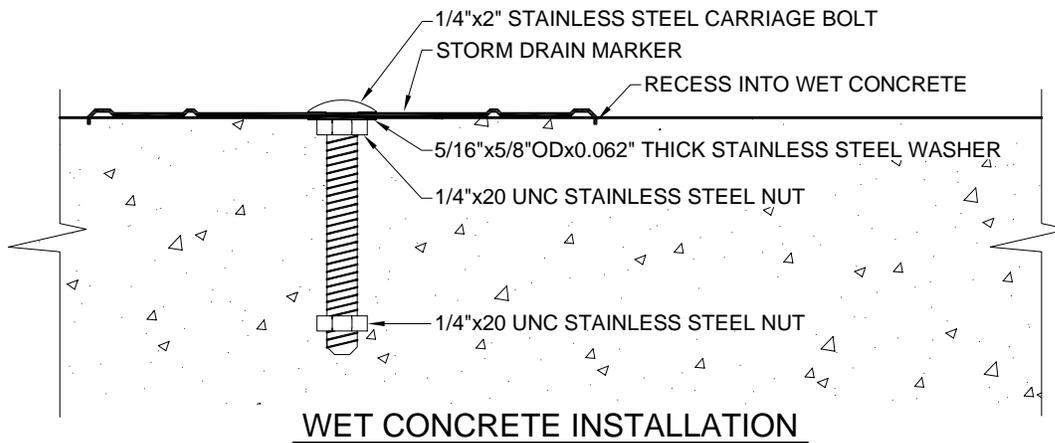
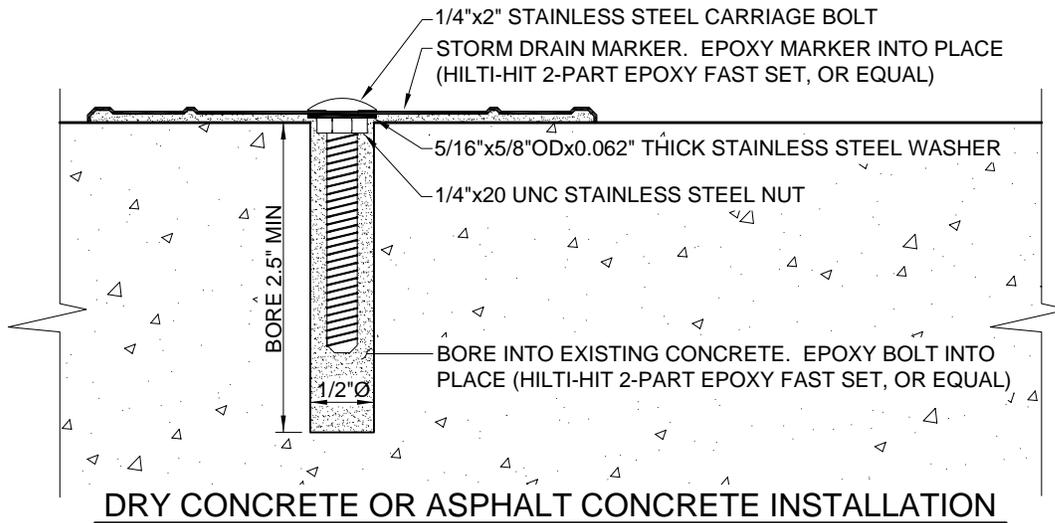


MATERIAL:
300 SERIES ANNEALED STAINLESS STEEL WITH ROLLED DOWN EDGES AND 1/4"x1/4" SQUARE MOUNTING HOLE.
THICKNESS 0.062" / WEIGHT 0.218 LBS.

FINISH:
UV BAKED ENAMEL, ROYAL BLUE DEPRESSED COLOR SAND BLASTED FRONT AND REAR FOR PAINT AND ADHESIVE BONDING.

PLACEMENT:
LOCATE AS SHOWN ON D-2 SERIES DRAWINGS.

MARKER (TOP VIEW)



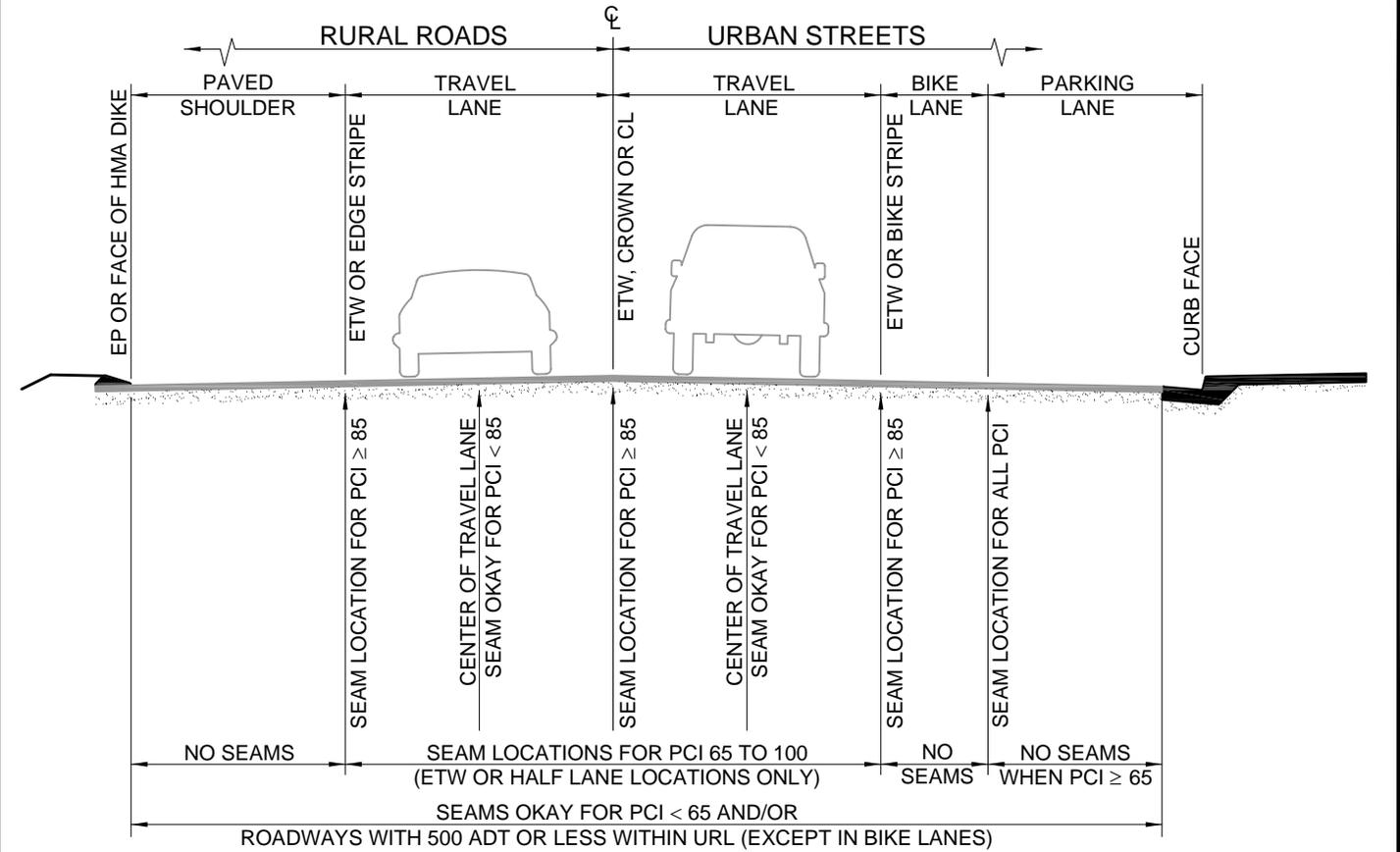
DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
STORM DRAIN MARKER



Scale: NTS	Adopted: 2011
Drawing No: M-6	
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date



SECTION VIEW: ALLOWABLE PAVEMENT SEAM LOCATIONS

BASED ON ROAD PCI & ADT AS PROVIDED BY THE DEPARTMENT

PCI	Roadways with 500 ADT or less and within the URL	
	Full Lane Width Overlay	All Other Roadways
85-100	Full Lane Width Overlay	Full Lane Width Overlay
65-84	12" min. T-Section	Half Lane Width Overlay
<65	12" min. T-Section	12" min. T-Section

MINIMUM PAVEMENT REPAIR LIMITS

ADT = AVERAGE DAILY TRAFFIC, AS PROVIDED BY THE DEPARTMENT
 PCI = PAVEMENT CONDITION INDEX, AS PROVIDED BY THE DEPARTMENT
 ETW - EDGE OF TRAVELED WAY; OL - OVERLAY; URL - URBAN RESERVE LINE

NOTES:

- SEAM LOCATIONS MAY BE ADJUSTED BY THE DEPARTMENT BASED ON FIELD CONDITIONS.
- IN ALL CASES THE EXISTING PAVEMENT SHALL BE SAWCUT ALONG A CLEAN LINE AND SHALL BE EITHER LONGITUDINAL OR TRANSVERSE TO THE TRAVEL LANE. NO LONGITUDINAL SEAMS SHALL BE ALLOWED WITHIN ANY BIKE LANE.
- ALL SAWCUT EDGES SHALL BE VERTICAL, WITH SQUARE CORNERS, AND SHALL BE STRAIGHT AND NEAT IN APPEARANCE.
- ROTMILLING OR GRINDING MAY BE UTILIZED IN PLACE OF SAWCUT WHEN APPROVED IN ADVANCE OF THE WORK BY THE DEPARTMENT.
- SEE R-2 SERIES DRAWING FOR RURAL ROAD AND URBAN STREET WIDENING SAWCUT REQUIREMENTS. SEE R-3 SERIES DRAWINGS FOR UTILITY TRENCHING SAWCUT REQUIREMENTS.
- A TACK COAT SHALL BE APPLIED TO ALL HORIZONTAL AND VERTICAL SAWCUT CONFORM SURFACES PRIOR TO PAVING.
- AFTER PAVING, SS1H OIL (OR APPROVED EQUAL) SHALL BE APPLIED TO ALL HMA SURFACE SEAMS PER MANUFACTURER'S RECOMMENDATIONS.



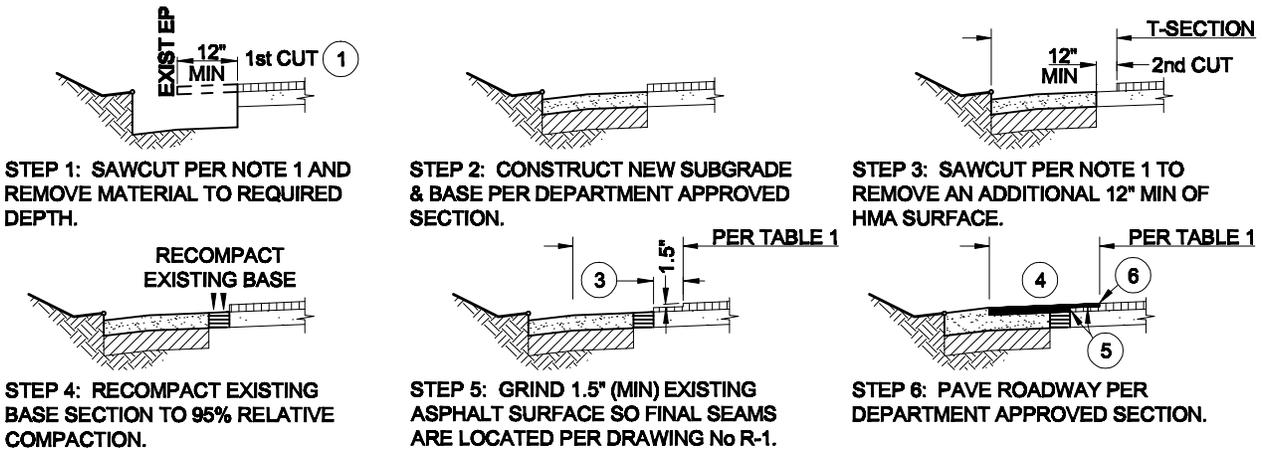
DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

ALLOWABLE PAVEMENT SEAM LOCATIONS

Scale: NTS	Adopted: 2011
Drawing No:	R-1
Sheet No:	1 OF 1

Revisions

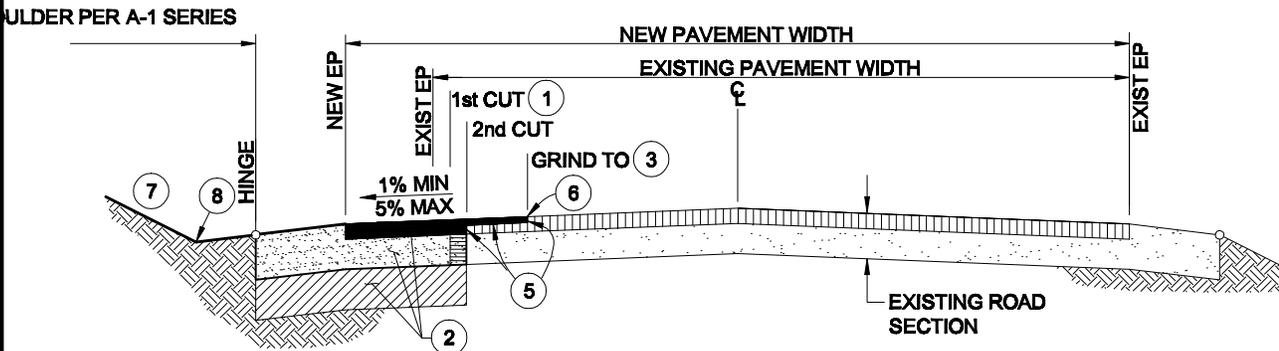
Description	Approved	Date	Description	Approved	Date
NOTE 1	REM	NOV 07	REPLACE AC WITH HMA, NOTES 1, 3 & RENUM	GDM	JAN 11
NOTE 6	GDM	NOV 08			



WIDENING PROCEDURE

Table 1: Minimum Pavement Width Repair Limits (see R-1)

PCI	Roadways with 500 ADT or less and within the URL	All Other Roadways
	85-100	Full Lane Width Overlay
65-84	12" min. T-Section	Half Lane Width Overlay
<65	12" min. T-Section	12" min. T-Section



TYPICAL RURAL ROAD WIDENING SECTION

NOTES:

- SAWCUT TO REMOVE DAMAGED OR FAILED PAVEMENT SECTION ADJACENT TO THE EDGE OF PAVEMENT AS NECESSARY TO PROVIDE A CLEAN JOIN LINE. ALL SAWCUTS SHALL BE PERPENDICULAR OR TRANSVERSE TO THE TRAVEL LANE. CUT EDGES SHALL BE VERTICAL WITH SQUARE CORNERS AND SHALL BE STRAIGHT AND NEAT IN APPEARANCE.
- THE STRUCTURAL ROAD WIDENING SECTION SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON THE SUBGRADE R-VALUE AND THE TRAFFIC INDEX (TI) AS PROVIDED BY THE DEPARTMENT. IF THE EXISTING ROAD STRUCTURAL SECTION IS GREATER THAN THE DETERMINED ROAD STRUCTURAL SECTION, THEN THE EXISTING STRUCTURAL SECTION THICKNESS SHALL BE MATCHED. TYPICAL ROAD WIDENING SECTION SHALL BE:
 ■■■■■ 2" MINIMUM HOT MIX ASPHALT (HMA) PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER
 ■■■■■ 6" MINIMUM CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER
 ■■■■■ 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
- GRIND 1.5-INCHES (MINIMUM) FROM THE EXISTING ADJACENT HMA PAVEMENT SO THAT FINAL HMA SEAMS ARE LOCATED IN ACCORDANCE WITH TABLE 1 & DRAWING R-1, OR AS DIRECTED BY THE DEPARTMENT.
- NEW PAVEMENT SHALL BE PLACED IN LIFTS NOT EXCEEDING 3-INCHES (COMPACTED), WITH A MINIMUM LIFT NOT LESS THAN 1.5-INCHES.
- A TACK COAT SHALL BE APPLIED TO ALL HORIZONTAL AND VERTICAL CONFORM SURFACES PRIOR TO PAVING.
- AFTER PAVING, APPLY SS1H OIL (OR APPROVED EQUAL) TO ALL HMA SURFACE SEAMS PER MANUFACTURER'S RECOMMENDATIONS.
- CUT AND FILL SLOPES BEYOND ROADWAY HINGE POINTS SHALL NOT EXCEED 2 HORIZONTAL:1 VERTICAL (OR 3h:1v IN NATIVE SAND) WITHOUT PRIOR APPROVAL BY THE DEPARTMENT.
- THE PROJECT ENGINEER SHALL ACCOMMODATE FOR ROADSIDE DRAINAGE SUCH THAT IT DOES NOT ERODE THE AGGREGATE SHOULDER. DESIGN AND CONSTRUCTION SHALL BE TO THE SATISFACTION OF THE DEPARTMENT.
- ROAD SECTIONS WITH HMA DIKE (REFER TO DRAWING No C-3) SHALL BE REQUIRED BY THE DEPARTMENT WHERE NEEDED TO CONTROL DRAINAGE OR EROSION AND ON LONGITUDINAL GRADES OF 3% OR GREATER.



DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
RURAL ROAD WIDENING

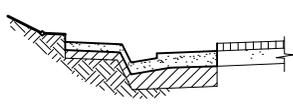
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Drawing No:	R-2
Sheet No:	1 OF 1

Revisions

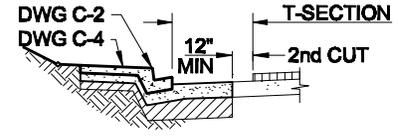
Description	Approved	Date	Description	Approved	Date
NOTE 1	REM	NOV 07	REPLACE AC WITH HMA, NOTED 1,3 & RENUM	GDM	JAN 11
NOTE 5	GDM	NOV 08			



STEP 1: SAWCUT PER NOTE 1 AND REMOVE MATERIAL TO REQUIRED DEPTH.



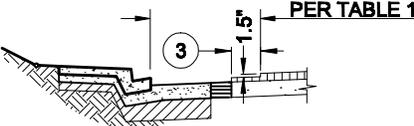
STEP 2: CONSTRUCT NEW SUBGRADE & BASE PER DEPARTMENT APPROVED SECTION.



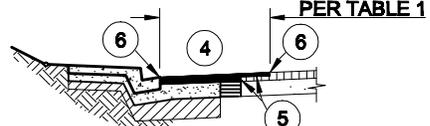
STEP 3: SAWCUT PER NOTE 1 TO REMOVE AN ADDITIONAL 12" MIN OF HMA SURFACE.



STEP 4: RECOMPACT EXISTING BASE SECTION TO 95% RELATIVE COMPACTION.



STEP 5: GRIND 1.5" (MIN) EXISTING ASPHALT SURFACE SO FINAL SEAMS ARE LOCATED PER TABLE 1.

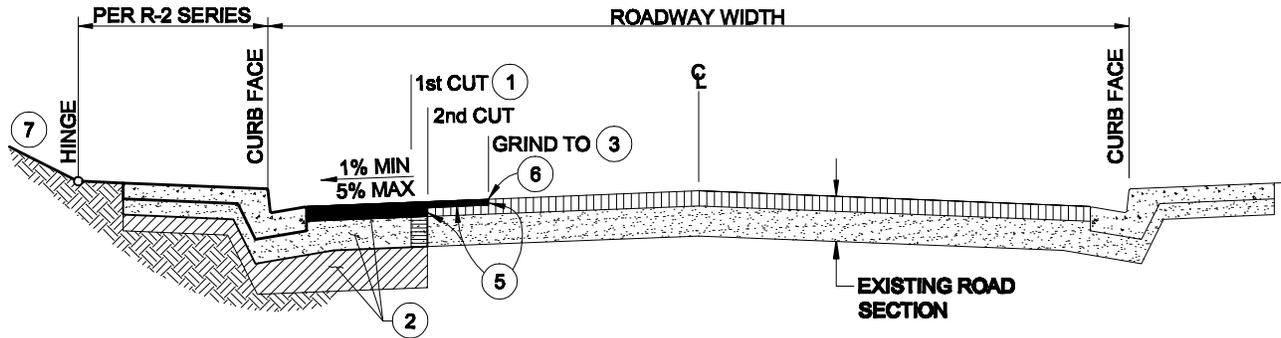


STEP 6: PAVE ROADWAY PER DEPARTMENT APPROVED SECTION.

WIDENING PROCEDURE

Table 1: Minimum Pavement Width Repair Limits (see R-1)

PCI	Roadways with 500 ADT or less and within the URL	All Other Roadways
	85-100	Full Lane Width Overlay
65-84	12" min. T-Section	Half Lane Width Overlay
<65	12" min. T-Section	12" min. T-Section



TYPICAL URBAN STREET WIDENING SECTION

NOTES:

- SAWCUT TO REMOVE DAMAGED OR FAILED PAVEMENT SECTION ADJACENT TO THE EDGE OF PAVEMENT AS NECESSARY TO PROVIDE A CLEAN JOIN LINE. ALL SAWCUTS SHALL BE PERPENDICULAR OR TRANSVERSE TO THE TRAVEL LANE. CUT EDGES SHALL BE VERTICAL WITH SQUARE CORNERS AND SHALL BE STRAIGHT AND NEAT IN APPEARANCE.
- THE STRUCTURAL ROAD WIDENING SECTION SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON THE SUBGRADE R-VALUE AND THE TRAFFIC INDEX (TI) AS PROVIDED BY THE DEPARTMENT. IF THE EXISTING ROAD STRUCTURAL SECTION IS GREATER THAN THE DETERMINED ROAD STRUCTURAL SECTION, THEN THE EXISTING STRUCTURAL SECTION THICKNESS SHALL BE MATCHED. TYPICAL ROAD WIDENING SECTION SHALL BE:
 ■■■■■ 2" MINIMUM HOT MIX ASPHALT (HMA) PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER
 ■■■■■ 6" MINIMUM CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER
 ■■■■■ 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
- GRIND 1.5-INCHES (MINIMUM) FROM THE EXISTING ADJACENT HMA PAVEMENT SO THAT FINAL HMA SEAMS ARE LOCATED IN ACCORDANCE WITH TABLE 1 & DRAWING R-1, OR AS DIRECTED BY THE DEPARTMENT.
- NEW PAVEMENT SHALL BE PLACED IN LIFTS NOT EXCEEDING 3-INCHES (COMPACTED), WITH A MINIMUM LIFT NOT LESS THAN 1.5-INCHES.
- A TACK COAT SHALL BE APPLIED TO ALL HORIZONTAL AND VERTICAL CONFORM SURFACES PRIOR TO PAVING.
- AFTER PAVING, APPLY 881H OIL (OR APPROVED EQUAL) TO ALL HMA SURFACE SEAMS PER MANUFACTURER'S RECOMMENDATIONS.
- CUT AND FILL SLOPES BEYOND ROADWAY HINGE POINTS SHALL NOT EXCEED 2 HORIZONTAL:1 VERTICAL (OR 3h:1v IN NATIVE SAND) WITHOUT PRIOR APPROVAL BY THE DEPARTMENT.

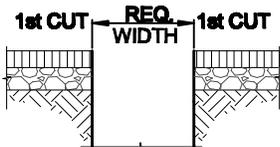


**DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
URBAN STREET WIDENING**

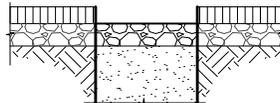
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Revisions

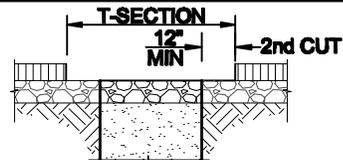
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REVISE NOTES 2 AND 3	FH	AUG 14			



STEP 1: SAWCUT TO CONSTRUCT TRENCH PER U-4.



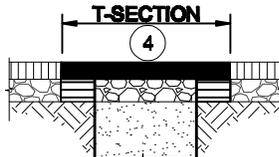
STEP 2: BACKFILL & COMPACT NEW TRENCH TO TOP OF EXISTING BASE SECTION PER U-4.



STEP 3: SAWCUT PER NOTE 1 TO REMOVE AN ADDITIONAL 12" MIN OF ASPHALT SURFACE.



STEP 4: RECOMPACT EXISTING BASE SECTION TO 95% RELATIVE COMPACTION.

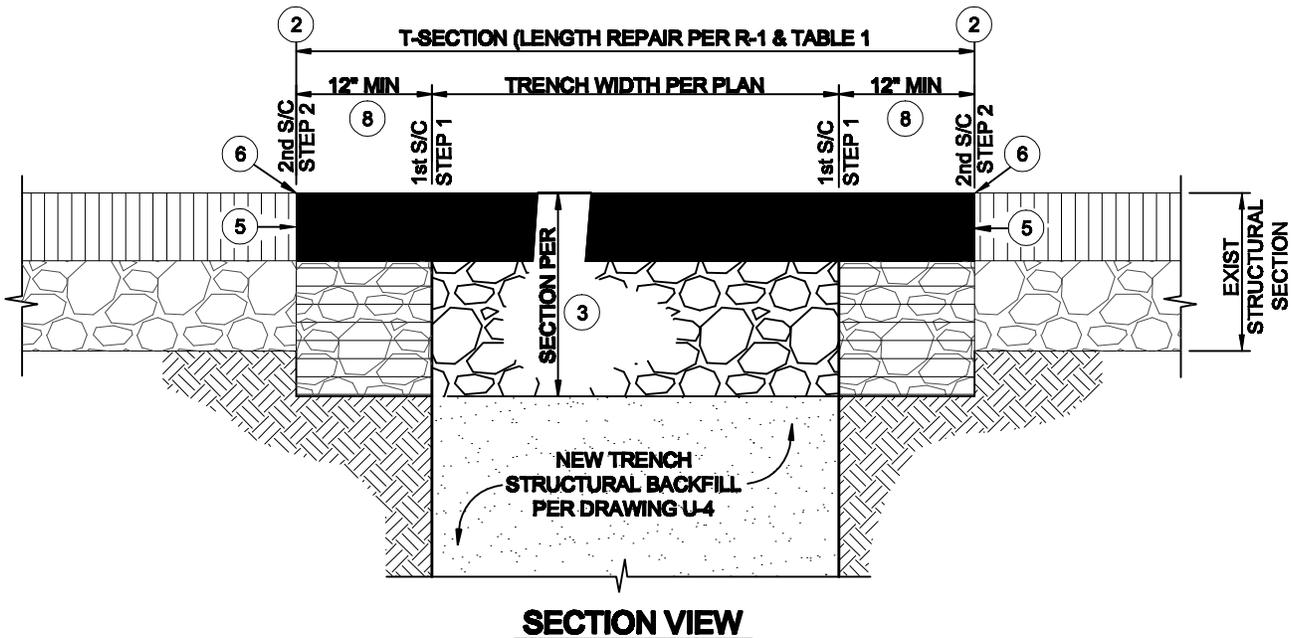


STEP 5: PAVE ROADWAY PER NOTE 3.

Table 1: Min. Trench Length Pavement Repair Limits (see R-1)

PCI	Roadways with 500 ADT or less and within the URL	All Other Roadways
85-100	Overlay To Lane Edge	Overlay To Lane Edge
65-84	12" min. T-Section	Overlay To Lane Center
<65	12" min. T-Section	12" min. T-Section

PAVEMENT REPAIR PROCEDURE



NOTES:

- TRENCHING IN A ROADWAY IS ONLY ALLOWED WHEN BORING IS SHOWN TO THE DEPARTMENT AS BEING INFEASIBLE.
- SAWCUT TO REMOVE DAMAGED OR FAILED PAVEMENT SECTION ADJACENT TO THE EDGE OF TRENCH AS NECESSARY TO PROVIDE A CLEAN JOIN LINE. ALL SAWCUTS SHALL BE PERPENDICULAR OR PARALLEL TO THE TRAVEL LANE. SEAMS SHALL NOT BE ALLOWED WITHIN DESIGNATED BICYCLE LANES. ALL CUT EDGES SHALL BE VERTICAL WITH SQUARE CORNERS AND SHALL BE STRAIGHT AND NEAT IN APPEARANCE. ALL SAWCUTS SHALL BE TO MINIMUM SHOWN OR TO COMPETENT PAVEMENT SECTION.
- THE STRUCTURAL ROAD REPAIR SECTION SHALL MATCH THE EXISTING STRUCTURAL SECTION THICKNESS OR AS REQUIRED BY THE DEPARTMENT. TYPICAL ROAD WIDENING SECTION SHALL BE:
 ■■■■■ 2" MINIMUM HOT MIX ASPHALT (HMA), OVER
 ○○○○ 6" MINIMUM CLASS II AGGREGATE BASE, OVER
 ■■■■■ TRENCH SECTION PER DRAWING U-4 (STRUCTURAL BACKFILL TO 95% MIN RELATIVE COMPACTION)
- NEW PAVEMENT SHALL BE PLACED IN LIFTS NOT EXCEEDING 3-INCHES (COMPACTED).
- A TACK COAT SHALL BE APPLIED TO ALL HORIZONTAL AND VERTICAL CONFORM SURFACES PRIOR TO PAVING.
- AFTER PAVING, APPLY SS1H OIL (OR APPROVED EQUAL) TO ALL HMA SURFACE SEAMS PER MANUFACTURER'S RECOMMENDATIONS.
- THE DEPARTMENT SHALL PROVIDE ADDITIONAL REQUIREMENTS WHEN TRENCHING IN EXISTING ROADS HAVING CONCRETE STRUCTURAL SECTIONS.
- T-SECTION WIDTHS SHALL BE INCREASED AS DIRECTED BY THE DEPARTMENT FOR UTILITY PIPES EXCEEDING 36" IN DIAMETER.

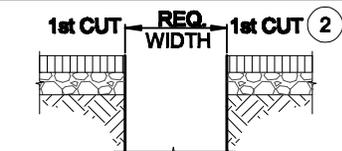


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
TRENCH REPAIR
 TRANSVERSE TRENCHES AND BORE PITS

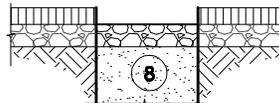
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Drawing No:	R-3
Sheet No:	1 OF 1

Revisions

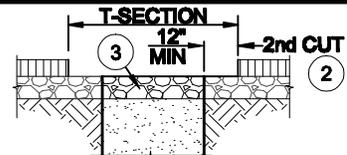
Description	Approved	Date	Description	Approved	Date
NOTES 1, 3 & 4, STEP 6 ALT, GRIND & OVERLAY TRAVEL LANE	GDM	JAN 11			
REVISE NOTES 2 AND 3	FH	AUG 14			



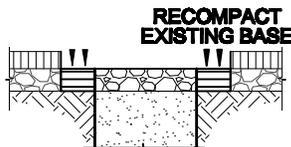
STEP 1: SAWCUT TO CONSTRUCT TRENCH PER U-4.



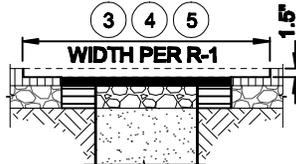
STEP 2: BACKFILL & COMPACT NEW TRENCH SECTION PER U-4.



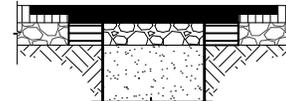
STEP 3: SAWCUT PER NOTE 2 TO REMOVE AN ADDITIONAL 12" MIN OF HMA SURFACE.



STEP 4: RECOMPACT EXISTING BASE SECTION TO 95% RELATIVE COMPACTION.



STEP 5: PAVE T-SECTION THEN GRIND 1.5" EXISTING SURFACE PER TABLE 1.

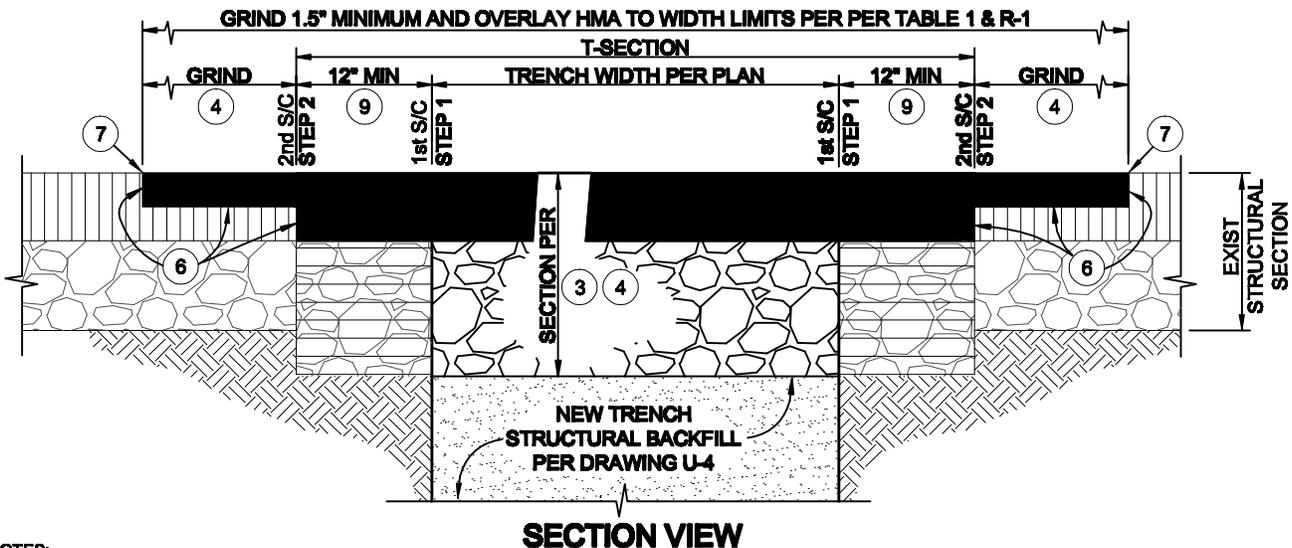


STEP 6: PAVE ROADWAY TO CONFORM TO FINAL GRADE.

PAVEMENT REPAIR PROCEDURE

Table 1: Minimum Lane Width Repair Limits (see R-1)

PCI	Roadways with 500 ADT or less and within the URL	
	All Other Roadways	All Other Roadways
85-100	Full Lane Width Overlay	Full Lane Width Overlay
65-84	12" min. T-Section	Half Lane Width Overlay
<65	12" min. T-Section	12" min. T-Section



NOTES:

- TRENCHING IN A ROADWAY IS ONLY ALLOWED WHEN BORING IS SHOWN TO THE DEPARTMENT AS BEING INFEASIBLE.
- SAWCUT TO REMOVE DAMAGED OR FAILED PAVEMENT SECTION ADJACENT TO THE EDGE OF TRENCH AS NECESSARY TO PROVIDE A CLEAN JOIN LINE. ALL SAWCUTS SHALL BE PERPENDICULAR OR PARALLEL TO THE TRAVEL LANE. CUT EDGES SHALL BE VERTICAL WITH SQUARE CORNERS AND SHALL BE STRAIGHT AND NEAT IN APPEARANCE. ALL SAWCUTS SHALL BE TO MINIMUM SHOWN OR TO COMPETENT PAVEMENT SECTION.
- THE STRUCTURAL ROAD REPAIR SECTION SHALL MATCH THE EXISTING STRUCTURAL SECTION THICKNESS OR AS REQUIRED BY THE DEPARTMENT. THE MINIMUM STRUCTURAL SECTION SHALL BE:
 ■■■■ 2-INCH MINIMUM HOT MIX ASPHALT (HMA), OVER
 ▨▨▨▨ 6-INCH MINIMUM CLASS II AGGREGATE BASE, OVER
 ▩▩▩▩ TRENCH SECTION PER DRAWING U-4 (STRUCTURAL BACKFILL TO 95% MIN RELATIVE COMPACTION)
- LONGITUDINAL: GRIND 1.5-INCHES (MINIMUM) FROM THE EXISTING ADJACENT HMA PAVEMENT SO THAT FINAL HMA SEAMS ARE LOCATED IN ACCORDANCE WITH TABLE 1 & DRAWING R-1, OR AS DIRECTED BY THE DEPARTMENT.
- NEW HMA PAVEMENT SHALL BE PLACED IN LIFTS NOT EXCEEDING 3-INCHES (COMPACTED) AND SHALL BE ALLOWED TO COOL PER STATE SPECIFICATIONS PRIOR TO APPLICATION OF SUBSEQUENT LIFTS.
- A TACK COAT SHALL BE APPLIED TO ALL HORIZONTAL AND VERTICAL CONFORM SURFACES PRIOR TO PAVING.
- AFTER PAVING APPLY SS1H OIL (OR APPROVED EQUAL) TO ALL HMA SURFACE SEAMS PER MANUFACTURER'S RECOMMENDATIONS.
- THE DEPARTMENT SHALL PROVIDE ADDITIONAL REQUIREMENTS WHEN TRENCHING IN EXISTING ROADS HAVING CONCRETE STRUCTURAL SECTIONS.
- T-SECTION WIDTHS SHALL BE INCREASED AS DIRECTED BY THE DEPARTMENT FOR UTILITY PIPES EXCEEDING 36" IN DIAMETER.



DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
TRENCH REPAIR
LONGITUDINAL TRENCHES

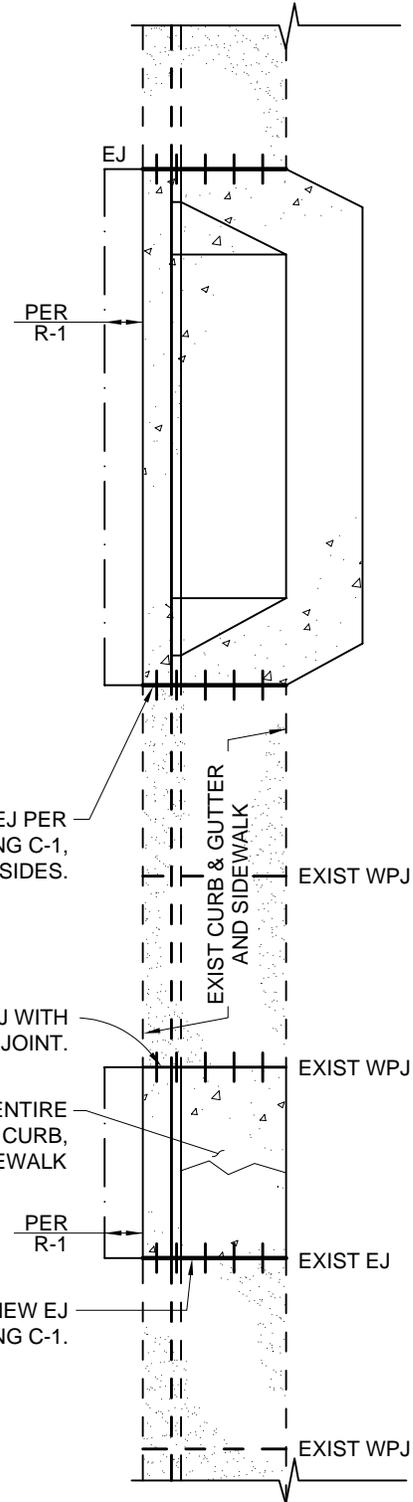
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Drawing No:	R-3a
Sheet No:	1 of 1

Revisions

Description	Approved	Date	Description	Approved	Date
ADDED NOTE 7	REM	NOV 07	NOTE 1	GDM	JAN 11
MODIFY COLD JOINT DETAIL	GDM	NOV 08			

NOTES:

1. WHEN REMOVING AND REPLACING EXISTING CURB & GUTTER, DRIVEWAY, CURB RAMP OR OTHER IMPROVEMENT ABUTTING THE ROADWAY THE PAVEMENT SHALL BE REMOVED AND REPLACED IN ACCORDANCE WITH R-1.
2. ALL SAWCUTTING SHALL BE DONE WITH AN ABRASIVE TYPE CUTTING WHEEL THAT PROVIDES A CLEAN JOIN EDGE. SAWCUTTING SHALL ALWAYS BE PERPENDICULAR OR TRANSVERSE TO THE EXISTING DIRECTION OF TRAVEL.
3. WHEN REPLACING EXISTING CURB & GUTTER AND/OR SIDEWALK, SAWCUTTING SHALL BE DONE AT THE NEAREST EXISTING EXPANSION JOINT OR WEAKENED PLANE JOINT FOR REMOVAL OF ENTIRE PANEL(S). NEW CURB & GUTTER AND SIDEWALK SHALL BE CONSTRUCTED TO THE RESPECTIVE COUNTY STANDARD.
4. WHEN REMOVING EXISTING CURB & GUTTER AND SIDEWALK TO INSTALL NEW DRIVEWAYS, CURB RAMP, OR OTHER IMPROVEMENTS THEN SAWCUTTING SHALL BE DONE AT THE NEAREST EXISTING EXPANSION JOINT OR WEAKENED PLANE JOINT FOR REMOVAL OF ENTIRE PANEL(S). NEW IMPROVEMENTS SHALL BE INSTALLED PER THEIR RESPECTIVE STANDARD DRAWING.
5. THE ROAD STRUCTURAL SECTION ADJACENT TO THE REPAIR OR REPLACEMENT SHALL BE CONSTRUCTED IN CONFORMANCE WITH STANDARD DRAWING R-3.
6. IN ALL CASES, EXPANSION JOINTS SHALL BE REPLACED PER STANDARD DRAWING C-1, AND WEAKENED PLANE JOINTS SHALL BE REPLACED WITH CONSTRUCTION JOINTS.
7. REPAIR OF EXISTING IMPROVEMENTS SHALL BE REQUIRED BY THE DEPARTMENT WHEN THE VERTICAL (LIFT) AND HORIZONTAL (GAP) DIFFERENTIALS BETWEEN EXISTING CONCRETE SECTIONS MEET OR EXCEED THOSE REQUIREMENTS LISTED IN SECTION 4.1.2.D OF THESE STANDARDS.

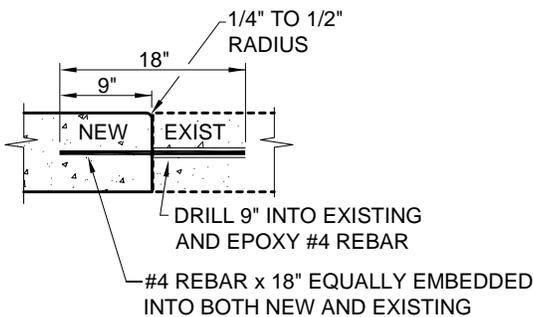


REPLACE WITH NEW EJ PER STANDARD DRAWING C-1, TYPICAL BOTH SIDES.

REPLACE EXISTING WPJ WITH CONSTRUCTION JOINT.

REMOVE TO REPLACE ENTIRE PANEL WHEN REPAIRING CURB, GUTTER, AND/OR SIDEWALK

REPLACE EXISTING EJ WITH NEW EJ PER STANDARD DRAWING C-1.



#4 REBAR, 1 EACH IN GUTTER, 1 EACH IN CURB FACE, AND 1 EVERY 18" ON-CENTER IN SIDEWALK AND OTHER FLATWORK

CONSTRUCTION (COLD) JOINT AT SAWCUT

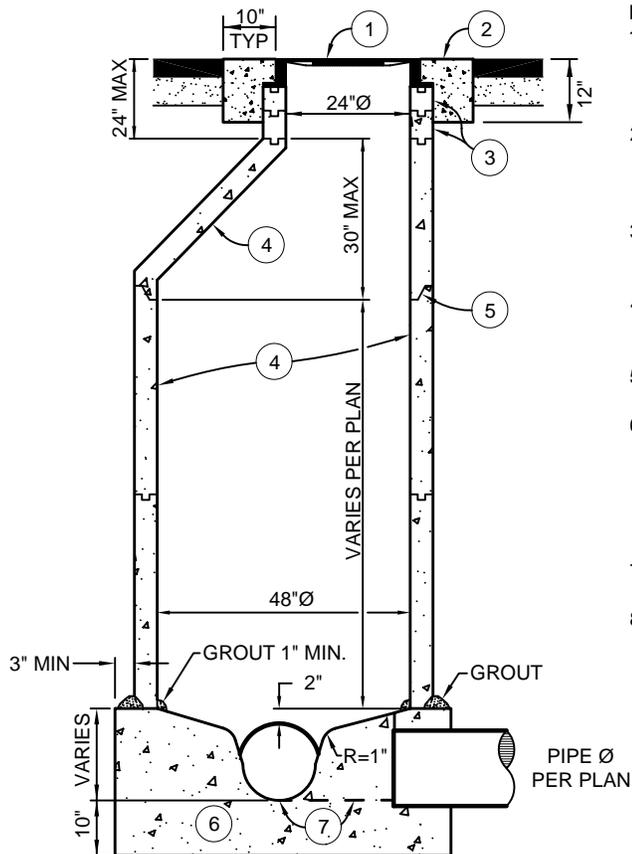


**DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
CURB, GUTTER &
SIDEWALK REPAIR**

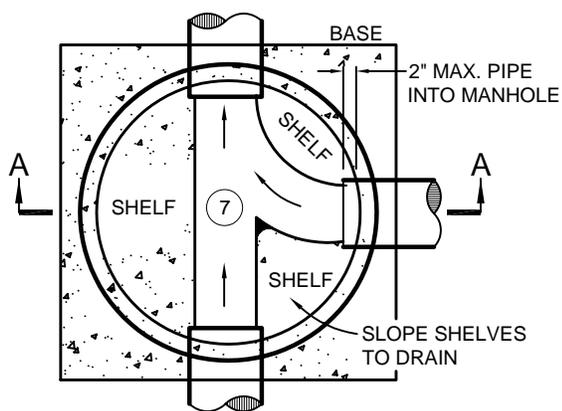
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Drawing No:	R-4
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
NOTES 2 & 6	REM	NOV 07			
NOTES 3	GDM	JAN 11			



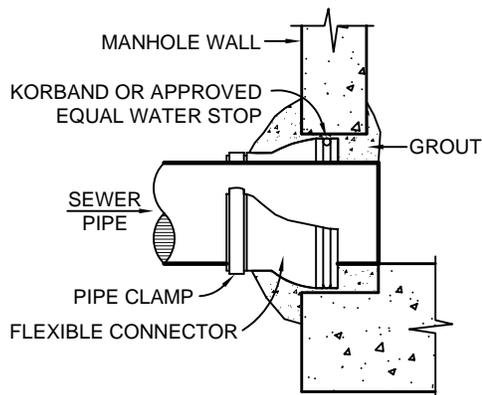
SECTION A-A



PLAN VIEW

NOTES:

1. MANHOLE COVER AND FRAME SHALL HAVE A MINIMUM 24" Ø OPENING AND CONFORM TO HS-20 TRAFFIC LOADING. LID SHALL HAVE A BLIND PICKHOLE, WATERTIGHT GASKET, AND BE LETTERED "SANITARY SEWER".
2. CONCRETE COLLAR SHALL CONFORM TO STATE STANDARD 90-1.01, 565 LBS/CY CEMENTITIOUS MATERIAL [6 SACK], TROWELLED TO STREET GRADE, AND ALLOWED TO CURE 48 HOURS PRIOR TO FULL TRAFFIC USE.
3. PROVIDE 3" OR 6" (9" MAX) ADJUSTING RINGS AS NEEDED, GROUTED ON THE INSIDE. PROVIDE HYDRAULIC CEMENT GROUT BETWEEN MANHOLE FRAME AND TOP RING SHALL BE PER APPENDIX C3.
4. PRECAST SHAFT(S) AND ECCENTRIC CONE SHALL MEET ASTM C-478 61T FOR CLASS 2 REINFORCED CONCRETE PIPE, OR AS APPROVED BY THE DEPARTMENT.
5. JOINTS SHALL BE WATERTIGHT, SET WITH BUTYL RUBBER SEALANT (RUB'R-NEK OR EQUAL).
6. CONCRETE MANHOLE BASE SHALL CONFORM TO STATE STANDARD 90-1.01, 565 LBS/CY CEMENTITIOUS MATERIAL [6 SACK], AND REST UPON UNDISTURBED MATERIAL. BOTTOM SHAFT SHALL BE WET-SET OR SET IN FORMED GROOVE. PRECAST BASES MAY BE USED WITH PRIOR APPROVAL OF THE DEPARTMENT AND SHALL MEET ASTM C-478 61T.
7. CONCRETE CHANNEL SHALL BE STEEL TROWEL FINISH AND SHELF AREAS SHALL BE MONOLITHICALLY PLACED.
8. UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN CURBS, GUTTERS, SIDEWALKS, DRIVEWAY APRONS, CURB RAMPS, OR CROSS GUTTERS.



TYPICAL CONNECTION DETAIL



LID DETAIL

PINKERTON A-640 WITH SKID RESISTANT SURFACE, BLIND PICKHOLE, WATER TIGHT GASKET, AND HS-20 TRAFFIC LOADING, OR APPROVED EQUAL, MARKED "SANITARY SEWER"



DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

SEWER MANHOLE

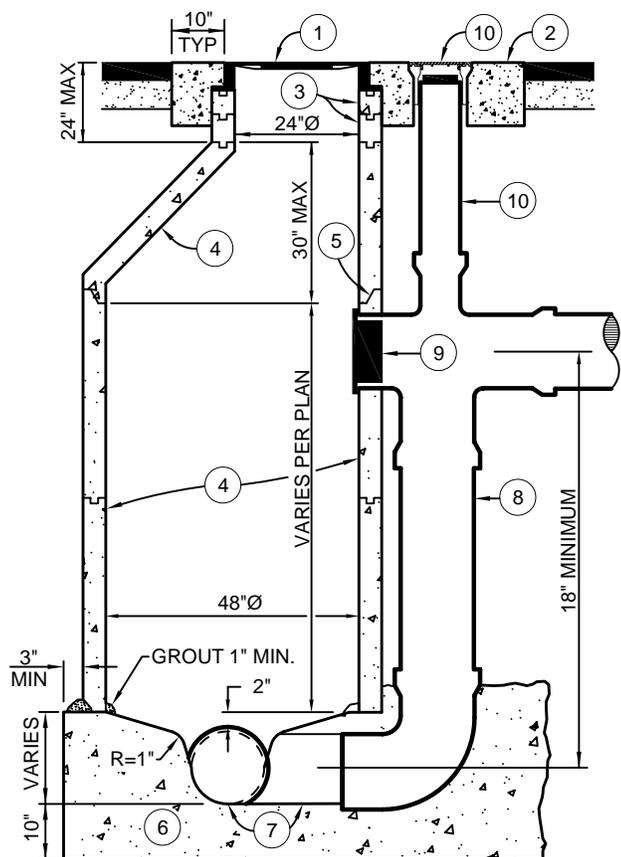
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Drawing No: S-1	
Sheet No: 1 OF 1	

Revisions

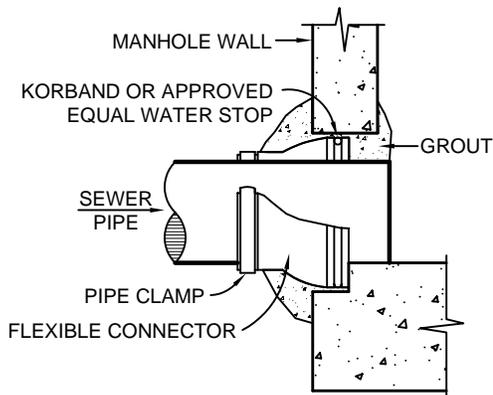
Description	Approved	Date	Description	Approved	Date
NOTES 2 & 6	REM	NOV 07			
NOTES 3	GDM	JAN 11			

NOTES:

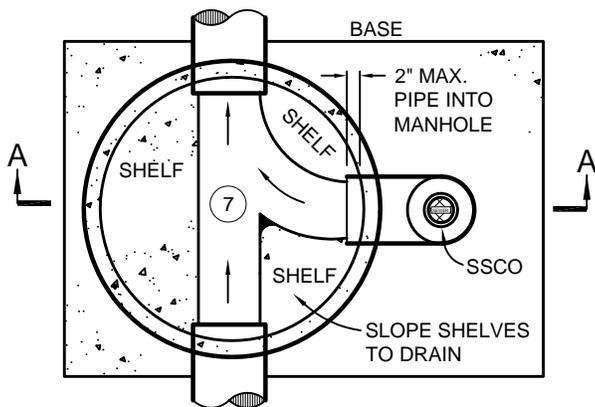
- MANHOLE COVER AND FRAME SHALL HAVE A MINIMUM 24" Ø OPENING AND CONFORM TO HS-20 TRAFFIC LOADING. LID SHALL HAVE A BLIND PICKHOLE, WATERTIGHT GASKET, AND BE LETTERED "SANITARY SEWER".
- CONCRETE COLLAR SHALL CONFORM TO STATE STANDARD 90-1.01, 565 LBS/CY CEMENTITIOUS MATERIAL [6 SACK], TROWELLED TO STREET GRADE, AND ALLOWED TO CURE 48 HOURS PRIOR TO FULL TRAFFIC USE.
- PROVIDE 3" OR 6" (9" MAX) ADJUSTING RINGS AS NEEDED, GROUTED ON THE INSIDE. PROVIDE HYDRAULIC CEMENT GROUT BETWEEN MANHOLE FRAME AND TOP RING SHALL BE PER APPENDIX C3.
- PRECAST SHAFT(S) AND ECCENTRIC CONE SHALL MEET ASTM C-478 61T FOR CLASS 2 REINFORCED CONCRETE PIPE, OR AS APPROVED BY THE DEPARTMENT.
- JOINTS SHALL BE WATERTIGHT, SET WITH BUTYL RUBBER SEALANT (RUB'R-NEK OR EQUAL).
- CONCRETE MANHOLE BASE SHALL CONFORM TO STATE STANDARD 90-1.01, 565 LBS/CY CEMENTITIOUS MATERIAL [6 SACK], AND REST UPON UNDISTURBED MATERIAL. BOTTOM SHAFT SHALL BE WET-SET OR SET IN FORMED GROOVE. PRECAST BASES MAY BE USED WITH PRIOR APPROVAL OF THE DEPARTMENT AND SHALL MEET ASTM C-478 61T.
- CONCRETE CHANNEL SHALL BE STEEL TROWEL FINISH AND SHELF AREAS SHALL BE MONOLITHICALLY PLACED.
- LATERAL CONNECTION OVER 5' TO BE P.V.C. FOR DROP TEE, PIPE, AND 90° BEND.
- INSTALL REMOVABLE PLUG.
- SEWER CLEANOUT BOX PER STANDARD DRAWING S-2.
- UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN CURBS, GUTTERS, SIDEWALKS, DRIVEWAY APRONS, CURB RAMPS, OR CROSS GUTTERS.



SECTION A-A



TYPICAL CONNECTION DETAIL



PLAN VIEW



PINKERTON A-640 WITH SKID RESISTANT SURFACE, BLIND PICKHOLE, WATER TIGHT GASKET, AND HS-20 TRAFFIC LOADING, OR APPROVED EQUAL, MARKED "SANITARY SEWER"

LID DETAIL



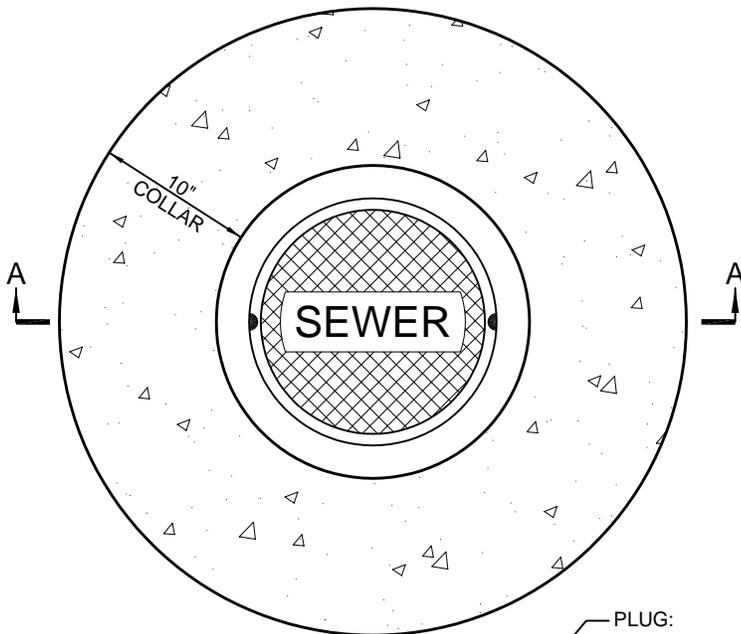
DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

SEWER DROP MANHOLE

Scale: NTS	Adopted: 2011
Drawing No: S-1a	
Sheet No:	1 OF 1

Revisions

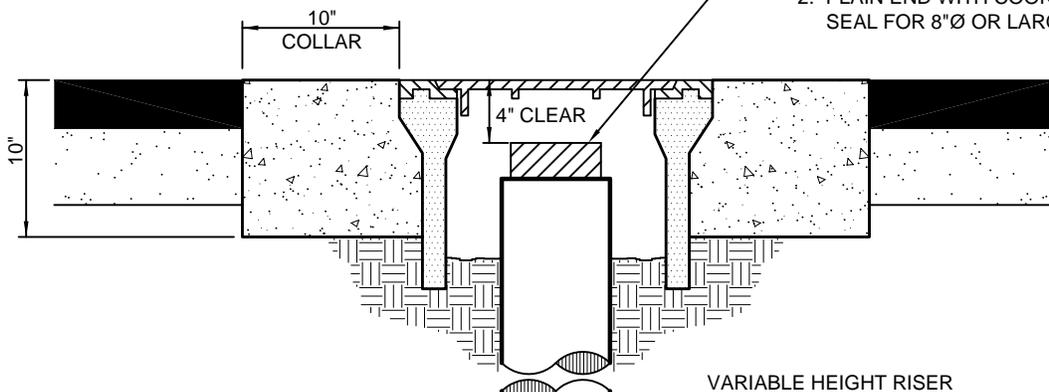
Description	Approved	Date	Description	Approved	Date
NOTE 3	REM	NOV 07			



PLAN

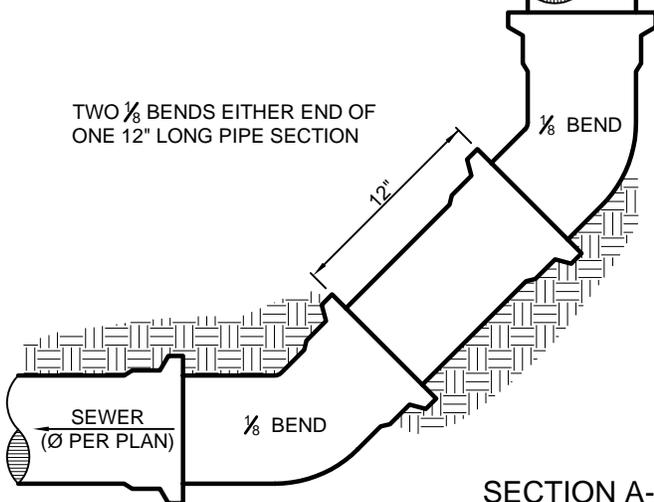
PLUG:

1. EXPANDABLE O-RING PLUG FOR 6" Ø PIPE BELL WITH CAP, OR
2. PLAIN END WITH COOKIE AND BAND SEAL FOR 8" Ø OR LARGER PIPES



VARIABLE HEIGHT RISER

TWO 1/8 BENDS EITHER END OF ONE 12" LONG PIPE SECTION



SECTION A-A

NOTES:

1. NO LATERALS ARE TO BE CONNECTED TO CLEANOUTS.
2. VALVE BOX SHALL BE CHRISTY G-12 TRAFFIC VALVE BOX WITH G-12C LID (OR APPROVED EQUAL). COVER SHALL BE MARKED "SEWER".
3. CONCRETE COLLAR SHALL CONFORM TO STATE STANDARD 90-1.01, 565 LBS/CY CEMENTITIOUS MATERIAL [6 SACK], TROWELLED TO STREET GRADE, AND ALLOWED TO CURE 48 HOURS PRIOR TO FULL TRAFFIC USE.
4. UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN CURBS, GUTTERS, SIDEWALKS, DRIVEWAY APRONS, CURB RAMPS, OR CROSS GUTTERS.



DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

SEWER MAIN CLEANOUT

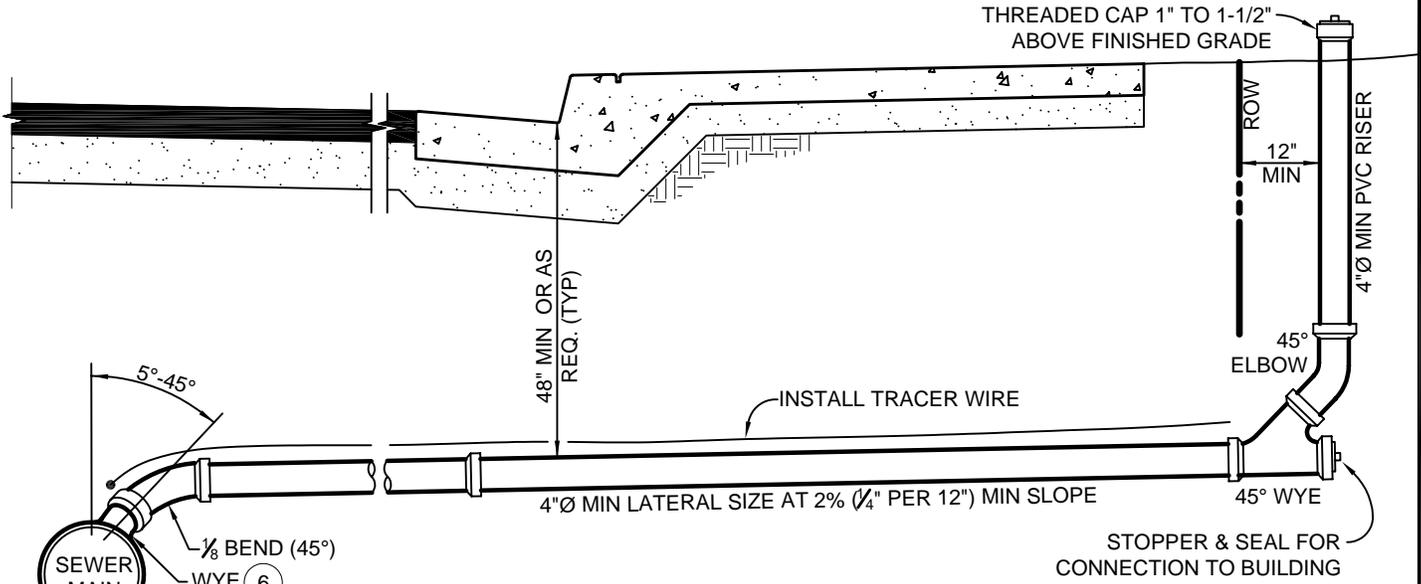
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Drawing No: S-2

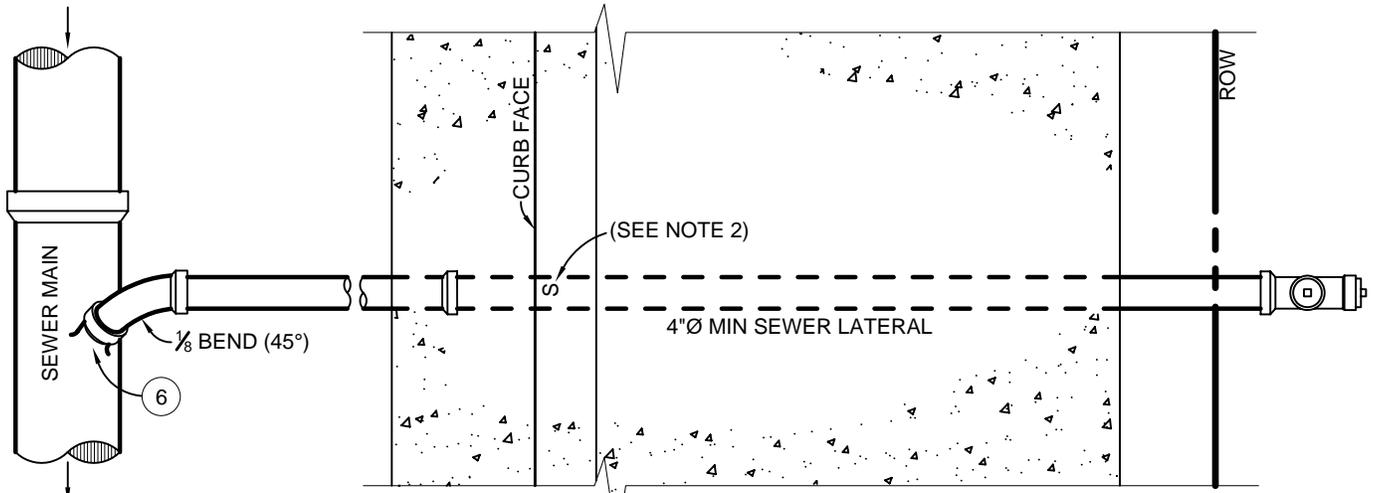
Sheet No: 1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date



ELEVATION



PLAN

NOTES:

1. SEWER LATERAL SHALL BE 4"Ø PVC PIPE AND SHALL MEET ASTM STANDARD D 3034, SDR 35.
2. AN "S" SHALL BE STAMPED OR CHISELED ON THE CURB OVER THE SEWER LATERAL WHEN CURB AND GUTTER IS EITHER CONSTRUCTED OR EXISTING. THE "S" SHALL BE A MINIMUM OF 3" HIGH x 2" WIDE x 3/16" DEEP.
3. MAINTAIN A 5' MINIMUM SEPARATION BETWEEN WATER AND SEWER SERVICE LATERALS.
4. SEWER LATERALS SHALL NOT BE LOCATED UNDER DRIVEWAYS.
5. SADDLE CONNECTIONS ARE NOT PERMITTED ON NEW SEWER MAINS.
6. FACTORY-FABRICATED WYE IN SEWER MAIN WITH 1/8 (45°) BEND. BEND SHALL POINT DOWNSTREAM AND ENTER MAIN AT A VERTICAL ANGLE OF NOT LESS THAN 5° OR MORE THAN 45°. FOR SEWER LATERALS CONNECTING ONTO EXISTING SEWER MAIN A SADDLE TEE-BRANCH MAYBE USED IF APPROVED BY THE DEPARTMENT.
7. UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN CURBS, GUTTERS, SIDEWALKS, DRIVEWAY APRONS, CURB RAMPS, OR CROSS GUTTERS.



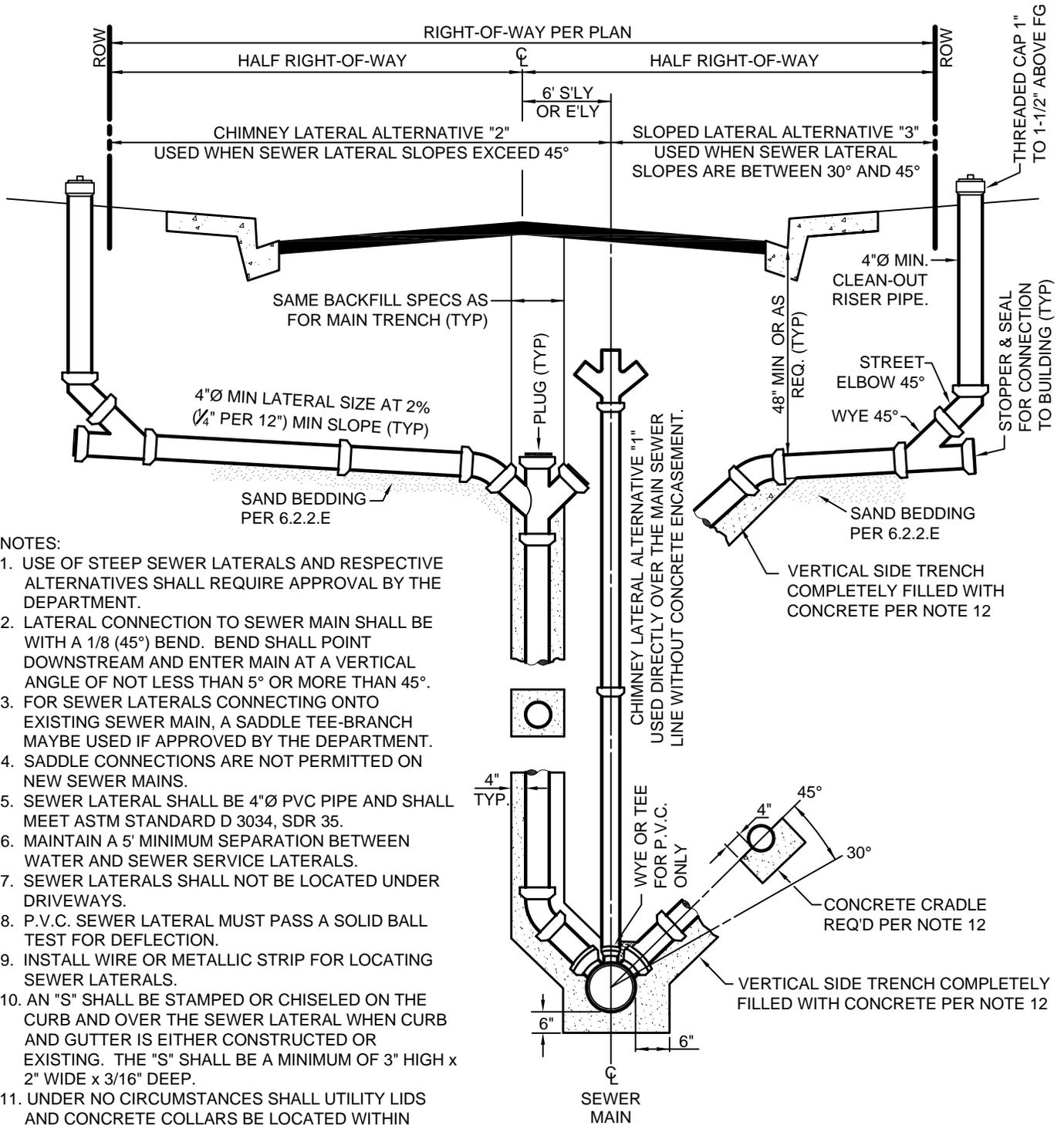
DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

SEWER LATERAL

Scale: NTS	Adopted: 2011
Drawing No:	S-3
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
ADDED NOTE 12	REM	NOV 07			



NOTES:

1. USE OF STEEP SEWER LATERALS AND RESPECTIVE ALTERNATIVES SHALL REQUIRE APPROVAL BY THE DEPARTMENT.
2. LATERAL CONNECTION TO SEWER MAIN SHALL BE WITH A 1/8 (45°) BEND. BEND SHALL POINT DOWNSTREAM AND ENTER MAIN AT A VERTICAL ANGLE OF NOT LESS THAN 5° OR MORE THAN 45°.
3. FOR SEWER LATERALS CONNECTING ONTO EXISTING SEWER MAIN, A SADDLE TEE-BRANCH MAYBE USED IF APPROVED BY THE DEPARTMENT.
4. SADDLE CONNECTIONS ARE NOT PERMITTED ON NEW SEWER MAINS.
5. SEWER LATERAL SHALL BE 4"Ø PVC PIPE AND SHALL MEET ASTM STANDARD D 3034, SDR 35.
6. MAINTAIN A 5' MINIMUM SEPARATION BETWEEN WATER AND SEWER SERVICE LATERALS.
7. SEWER LATERALS SHALL NOT BE LOCATED UNDER DRIVEWAYS.
8. P.V.C. SEWER LATERAL MUST PASS A SOLID BALL TEST FOR DEFLECTION.
9. INSTALL WIRE OR METALLIC STRIP FOR LOCATING SEWER LATERALS.
10. AN "S" SHALL BE STAMPED OR CHISELED ON THE CURB AND OVER THE SEWER LATERAL WHEN CURB AND GUTTER IS EITHER CONSTRUCTED OR EXISTING. THE "S" SHALL BE A MINIMUM OF 3" HIGH x 2" WIDE x 3/16" DEEP.
11. UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN CURBS, GUTTERS, SIDEWALKS, DRIVEWAY APRONS, CURB RAMPS, OR CROSS GUTTERS.
12. CONCRETE THRUST BLOCKS SHALL CONFORM TO STATE STANDARD 90-1.01, 470 LBS/CY CEMENTITIOUS MATERIAL [5 SACK].

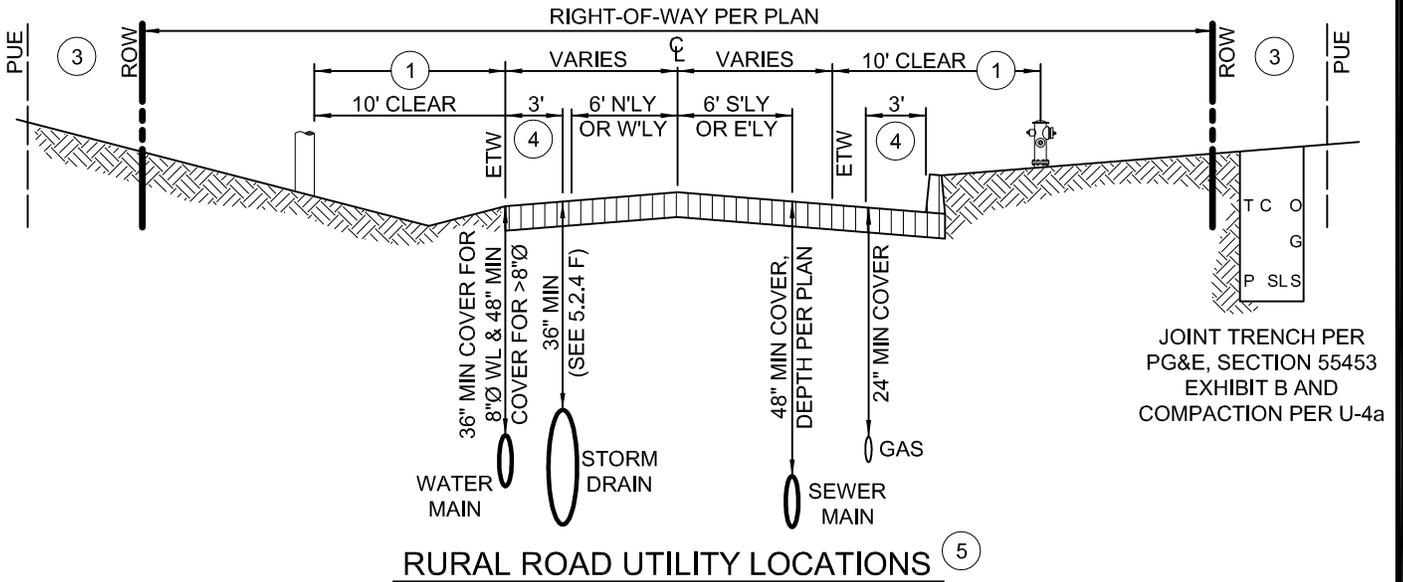
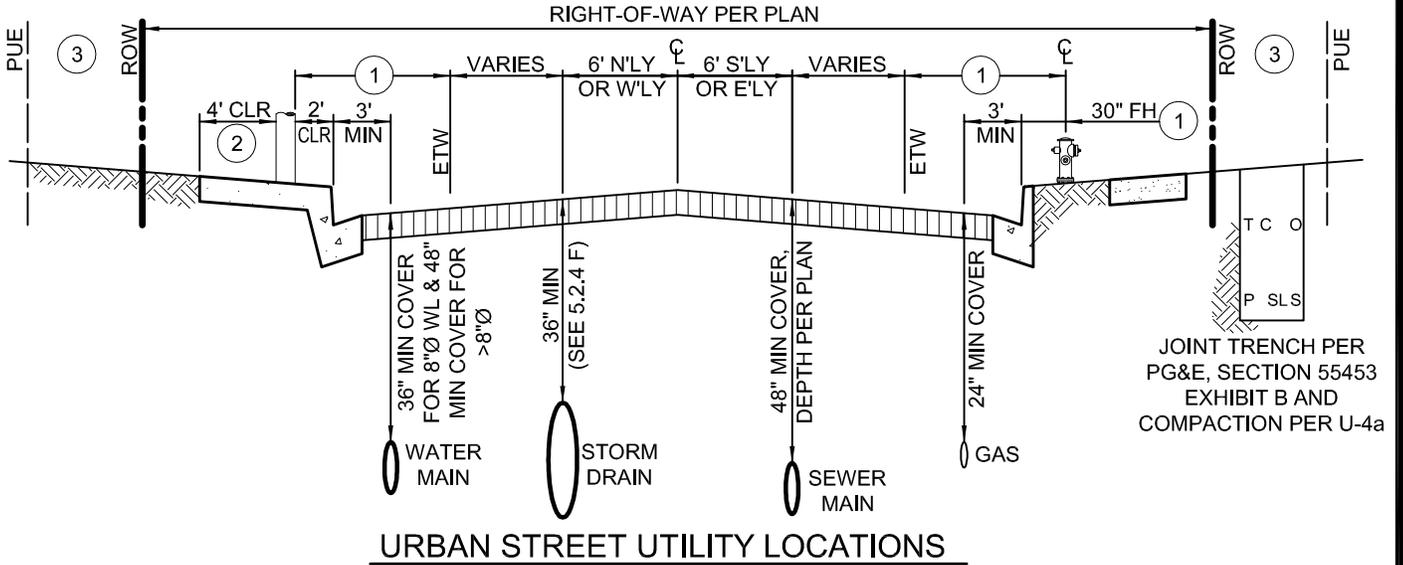


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
SEWER LATERAL
FOR DEEP MAINS

Scale: NTS	Adopted: 2011
Drawing No: S-3a	
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
ADD NOTE 10	REM	NOV 07	REV. NOTE 10. REV. MINIMUM COVER OVER GAS MAIN	FH	AUG 14
MODIFY NOTE 1, MIN SD COVER, JOINT TRENCH NOTE	GDM	JAN 11			



NOTES:

1. ALL ABOVE GRADE FIXED OBJECTS (UTILITY POLES, LIGHT STANDARDS, ETC.) SHALL BE LOCATED AT LEAST 10-FOOT CLEAR FROM THE EDGE OF TRAVELED WAY.
2. PROVIDE 4-FOOT UNOBSTRUCTED CLEARANCE BETWEEN ALL ABOVE GRADE OBSTACLES AND THE BACK OF SIDEWALK (MAY REQUIRE ADDITIONAL SIDEWALK WIDENING).
3. LOCATE UTILITY VAULTS, METER BOXES, PEDESTALS, TRANSFORMERS, ETC. WITHIN PUE AND NOT WITHIN THE SIDEWALK.
4. FOR RURAL ROAD CONDITIONS, GAS AND WATER LINES SHALL BE LOCATED AT 3-FOET OFF FACE OF DIKE OR AT EDGE OF PAVEMENT.
5. THE DEPARTMENT MAY REQUIRE URBAN ROAD UTILITY STANDARD LOCATIONS FOR RURAL ROADS.
6. STREET CROSSINGS OF WIRE AND GAS UTILITIES SHALL REQUIRE A MINIMUM 30" OF COVER AND SHALL BE AT RIGHT ANGLES TO THE ROADWAY CENTERLINE.
7. ABOVE GRADE UTILITY APPURTENANCES SHALL BE LOCATED AS TO MEET DEPARTMENT SIGHT DISTANCE REQUIREMENTS (REFER TO A-5 SERIES DRAWINGS).
8. REFER TO STANDARD DRAWING U-2 FOR LOCATION OF SERVICE LATERALS AND WATER METER BOXES.
9. UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN CURBS, GUTTERS, SIDEWALKS, DRIVEWAY APRONS, CURB RAMPS, OR CROSS GUTTERS.
10. PROVIDE 12-INCH MINIMUM CLEARANCE BETWEEN STORM DRAIN CROSSINGS WITH WATER AND SEWER LINES. MINIMUM 4-FOET CLEARANCE AT JOINTS.



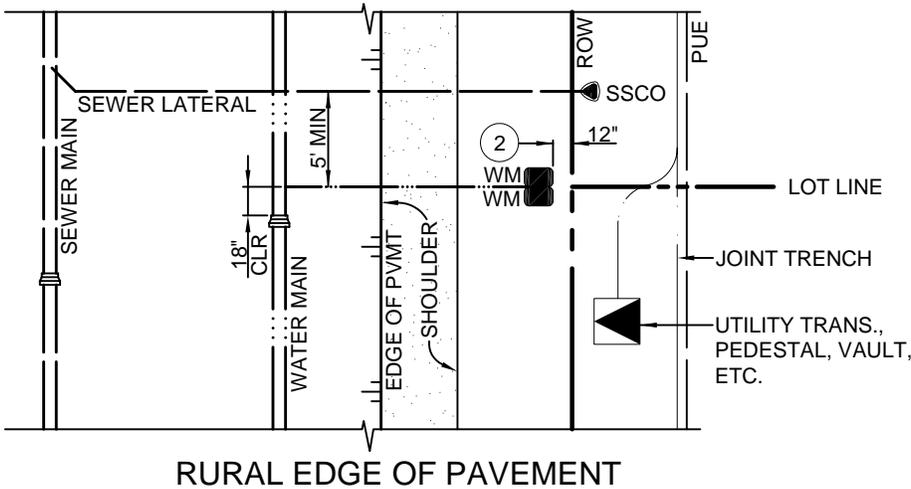
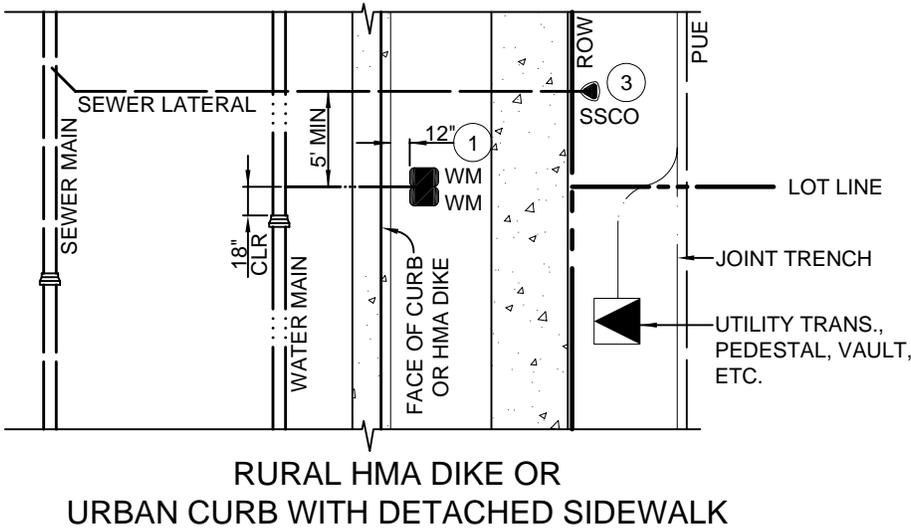
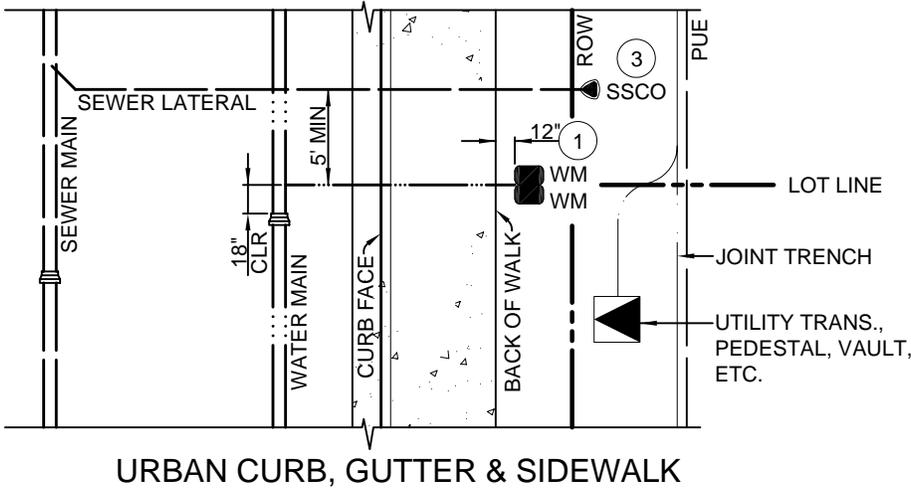
DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

LOCATION OF UTILITIES

Scale: NTS	Adopted: 2014
Drawing No: U-1	
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date



NOTES:

1. LOCATE WATER METER VAULT 12" BEHIND BACK OF CURB OR BACK OF AC DIKE.
2. LOCATE WATER METER VAULT 12" INSIDE RIGHT-OF-WAY.
3. SEWER CLEAN-OUTS SHALL BE LOCATED OUTSIDE OF SIDEWALK AND DRIVEWAY AREAS.
4. ALL WATER METER VAULTS (BOXES) SHALL BE PER STANDARD DRAWINGS.
5. WIRE UTILITY JOINT TRENCH AND APPURTENANCES ARE SHOWN FOR REFERENCE ONLY. REFER TO THE RESPECTIVE UTILITY COMPANY'S HANDOUT PACKAGE FOR ACTUAL ALIGNMENTS AND CONSTRUCTION REQUIREMENTS.
6. WATER AND SEWER SERVICE LATERALS SHALL BE PERPENDICULAR TO THEIR RESPECTIVE MAIN LINES FOR EASE OF LOCATION. ALL WATER LINE TRENCHES SHALL HAVE BOTH TRACE WIRE AND TAPE, REFER TO STANDARD TRENCH DRAWINGS.
7. FOR UNPAVED AREAS, THE WATER METER BOX SHALL BE SET 1" TO 1-1/2" ABOVE FINISHED GRADE.



DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
LOCATION OF SERVICE LATERALS

Scale: NTS	Adopted: 2011
Drawing No: U-2	
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Revisions

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NOTES:

THE "CALIFORNIA WATERWORKS STANDARDS" SETS FORTH THE MINIMUM SEPARATION REQUIREMENTS FOR WATER MAINS AND SEWER LINES AS CONTAINED IN SECTION 64630, TITLE 22, CALIFORNIA ADMINISTRATIVE CODE. THE FOLLOWING IS A SUMMARY OF THOSE REQUIREMENTS:

1. PARALLEL CONSTRUCTION: THE HORIZONTAL DISTANCE BETWEEN PRESSURE WATER MAINS AND SEWER LINES SHALL BE AT LEAST 10-FEET MEASURED FROM THE NEAREST EDGES OF THE FACILITIES.
2. PERPENDICULAR CONSTRUCTION (CROSSING): PRESSURE WATER MAINS SHALL BE AT LEAST 12-INCHES ABOVE SANITARY SEWER LINES WHERE THESE LINES MUST CROSS MEASURED FROM THE NEAREST EDGES OF THE FACILITIES.
3. COMMON TRENCH: WATER MAINS AND SEWER LINES SHALL NOT BE INSTALLED IN THE SAME TRENCH.
4. WHEN ADEQUATE PHYSICAL SEPARATION CANNOT BE ATTAINED, AN INCREASE IN THE FACTOR OF SAFETY SHOULD BE PROVIDED BY INCREASING THE STRUCTURAL INTEGRITY OF BOTH THE PIPE MATERIALS AND JOINTS.
5. LOCAL CONDITIONS MAY CREATE A SITUATION WHERE THERE IS NO ALTERNATIVE BUT TO INSTALL WATER MAINS OR SEWER LINES AT A DISTANCE LESS THAN THAT REQUIRED BY THE BASIC SEPARATION STANDARDS. IN SUCH CASES, ALTERNATIVE CONSTRUCTION CRITERIA AS SPECIFIED IN THIS STANDARD SHALL BE FOLLOWED.
6. DUE TO SPECIAL HAZARDS, INSTALLATIONS OF WATER MAINS AND SEWER LINES 24-INCHES DIAMETER OR LARGER SHALL BE REVIEWED AND APPROVED BY THE HEALTH AGENCY PRIOR TO CONSTRUCTION.
7. THE CONSTRUCTION CRITERIA SHOULD APPLY TO THE HOUSE LATERALS THAT CROSS ABOVE A PRESSURE WATER MAIN BUT NOT TO THOSE HOUSE LATERALS THAT CROSS BELOW A PRESSURE WATER MAIN.

ALTERNATIVE CRITERIA FOR CONSTRUCTION THE CONSTRUCTION CRITERIA FOR SEWER LINES OR WATER MAINS WHERE THE BASIC SEPARATION STANDARDS CANNOT BE ATTAINED ARE SHOWN AS CASE 1 & CASE 2 ON SHEETS 2 AND 3 OF U-3.



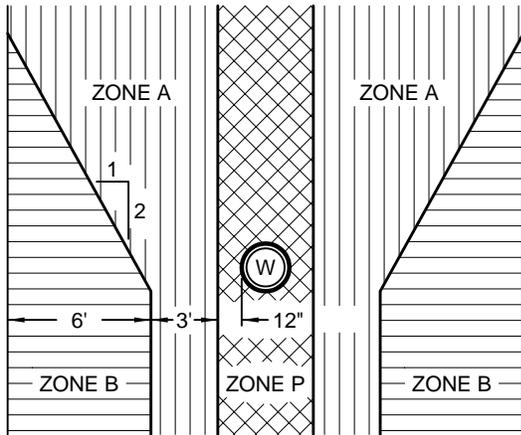
DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

UTILITY SEPARATION CRITERIA

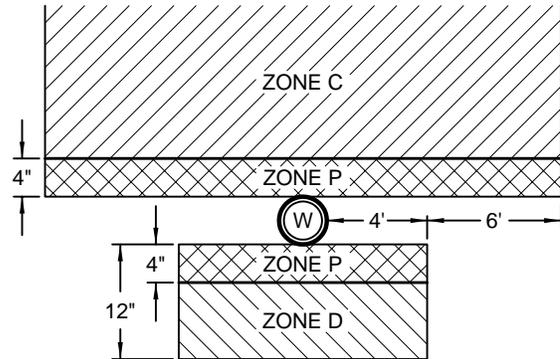
Scale:	Adopted: 2011
Drawing No:	U-3
Sheet No:	1 OF 3

Revisions

Description	Approved	Date	Description	Approved	Date



PARALLEL



CROSSING

ZONE	SPECIAL CONSTRUCTION REQUIRED FOR SEWER:
A	SEWER LINES PARALLEL TO WATER MAINS SHALL NOT BE PERMITTED IN THIS ZONE WITHOUT APPROVAL FROM THE RESPONSIBLE HEALTH AGENCY AND WATER SUPPLIER.
B	A SEWER LINE PLACED <u>PARALLEL</u> TO A WATER LINE SHALL BE CONSTRUCTED OF: 1. CLASS 4000, TYPE II, ASBESTOS-CEMENT PIPE WITH RUBBER GASKET JOINTS. 2. PLASTIC SEWER PIPE WITH RUBBER RING JOINTS (PER ASTM D3034) OR EQUIVALENT. 3. CAST OR DUCTILE IRON PIPE WITH COMPRESSION JOINTS. 4. REINFORCED CONCRETE PRESSURE PIPE WITH COMPRESSION JOINTS (PER AWWA C302-74).
C	A SEWER LINE <u>CROSSING</u> A WATER MAIN SHALL BE CONSTRUCTED OF: 1. DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING AND MECHANICAL JOINTS. 2. A CONTINUOUS SECTION OF CLASS 200 (DR 14 PER AWWA C900) PLASTIC PIPE, OR EQUIVALENT, CENTERED OVER THE PIPE BEING CROSSED. 3. A CONTINUOUS SECTION OF REINFORCED CONCRETE PRESSURE PIPE (PER AWWA C302-74) CENTERED OVER THE PIPE BEING CROSSED. 4. ANY SEWER PIPE WITHIN A CONTINUOUS SLEEVE.
D	A SEWER LINE <u>CROSSING</u> A WATER MAIN SHALL BE CONSTRUCTED OF: 1. A CONTINUOUS SECTION OF DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING. 2. A CONTINUOUS SECTION OF CLASS 200 (DR 14 PER AWWA C900) PLASTIC PIPE OR EQUIVALENT, CENTERED OVER THE PIPE BEING CROSSED. 3. A CONTINUOUS SECTION OF REINFORCED CONCRETE PRESSURE PIPE (PER AWWA C302-74) CENTERED OVER THE PIPE BEING CROSSED. 4. ANY SEWER PIPE WITHIN A CONTINUOUS SLEEVE. 5. ANY SEWER PIPE SEPARATED BY A 10-FOOT BY 10-FOOT, 4-INCH THICK REINFORCED CONCRETE SLAB.
P	ZONE P IS A PROHIBITED ZONE, SECTION 64630(E)(2) CALIFORNIA ADMINISTRATIVE CODE, TITLE 22.

CASE 1: NEW SEWER MAIN

ALTERNATIVE CONSTRUCTION CRITERIA
APPLIES TO NEW SEWER MAINS & NEW OR EXISTING WATER MAINS

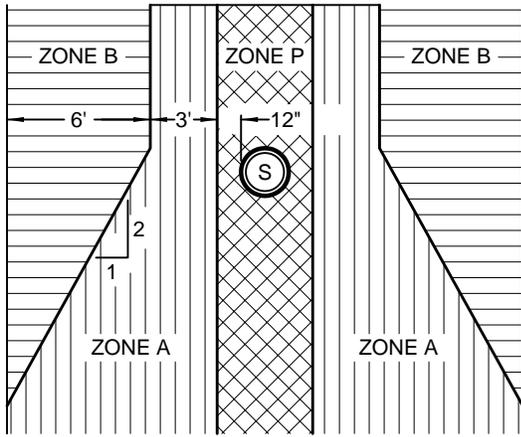


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
UTILITY SEPARATION CRITERIA
CASE 1: NEW SEWER MAINS

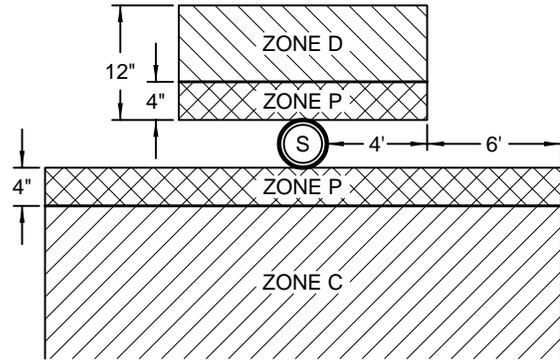
Scale: NTS	Adopted: 2011
Drawing No: U-3a	
Sheet No: 2 OF 3	

Revisions

Description	Approved	Date	Description	Approved	Date



PARALLEL



CROSSING

ZONE	SPECIAL CONSTRUCTION REQUIRED FOR WATER:
A	NO WATER MAINS PARALLEL TO SEWERS SHALL BE CONSTRUCTED WITHOUT APPROVAL FROM THE HEALTH AGENCY.
B	IF THE SEWER PARALLELING THE WATER MAIN DOES NOT MEET THE CASE 1, ZONE B REQUIREMENTS, THE WATER MAIN SHALL BE CONSTRUCTED OF: 1. DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING. 2. CLASS 200 PRESSURE RATED PLASTIC WATER PIPE (DR 14 PER AWWA C900) OR EQUIVALENT.
C	IF THE SEWER CROSSING THE WATER MAIN DOES NOT MEET THE CASE 1, ZONE C REQUIREMENTS, THE WATER MAIN SHALL HAVE NO JOINTS IN ZONE C AND BE CONSTRUCTED OF: 1. DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING. 2. CLASS 200 PRESSURE RATED PLASTIC WATER PIPE (DR 14 PER AWWA C900) OR EQUIVALENT.
D	IF THE SEWER CROSSING THE WATER MAIN DOES NOT MEET THE CASE 1, ZONE D REQUIREMENTS, THE WATER MAIN SHALL HAVE NO JOINTS WITHIN 4-FOET FROM EITHER SIDE OF THE SEWER AND SHALL BE CONSTRUCTED OF: 1. DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING. 2. CLASS 200 PRESSURE RATED PLASTIC WATER PIPE (DR 14 PER AWWA C900) OR EQUIVALENT.
P	ZONE P IS A PROHIBITED ZONE, SECTION 64630(E)(2) CALIFORNIA ADMINISTRATIVE CODE, TITLE 22.

CASE 2: NEW WATER MAIN

ALTERNATIVE CONSTRUCTION CRITERIA
APPLIES TO NEW WATER MAINS OR EXISTING SEWER MAINS



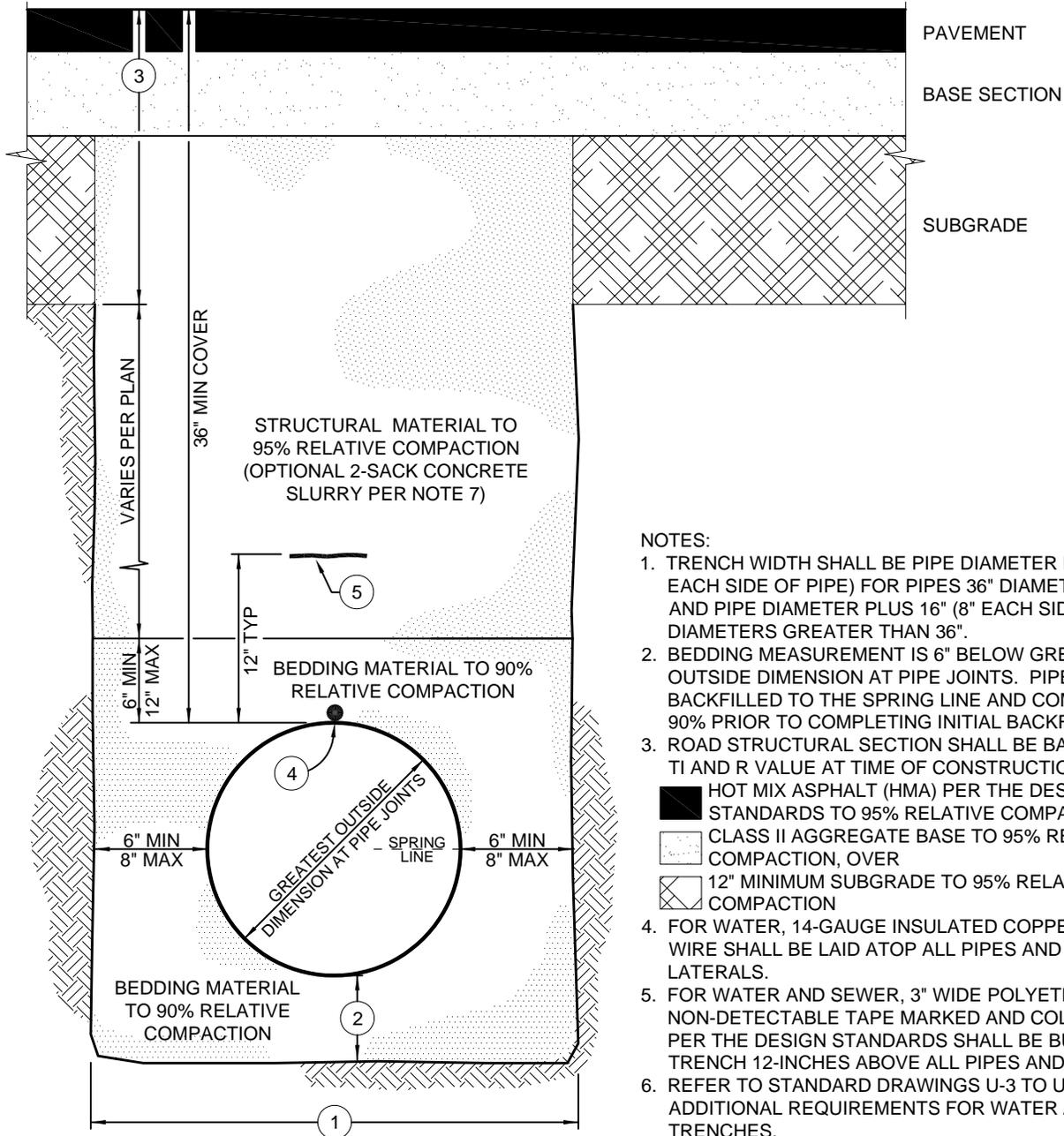
DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
UTILITY SEPARATION CRITERIA
CASE 2: NEW WATER MAINS

Scale: NTS	Adopted: 2011
Drawing No: U-3b	
Sheet No: 3 OF 3	

Revisions

Description	Approved	Date	Description	Approved	Date
LOCATION OF DETECTOR WIRE & TAPE, NOTES 4 & 5	REM	NOV 07	NOTE 7 & REPLACE AC W/ HMA	GDM	JAN 11
MISC CLARIFICATION	GDM	NOV 08			

WHEN TRENCHING INTO EXISTING ROADS ALL WORK SHALL BE DONE IN ACCORDANCE WITH STANDARD DRAWINGS R-1 AND R-4.



NOTES:

- TRENCH WIDTH SHALL BE PIPE DIAMETER PLUS 12" (6" EACH SIDE OF PIPE) FOR PIPES 36" DIAMETER OR LESS, AND PIPE DIAMETER PLUS 16" (8" EACH SIDE) FOR PIPE DIAMETERS GREATER THAN 36".
- BEDDING MEASUREMENT IS 6" BELOW GREATEST OUTSIDE DIMENSION AT PIPE JOINTS. PIPE SHALL BE BACKFILLED TO THE SPRING LINE AND COMPACTED TO 90% PRIOR TO COMPLETING INITIAL BACKFILL.
- ROAD STRUCTURAL SECTION SHALL BE BASED ON THE TI AND R VALUE AT TIME OF CONSTRUCTION:
 - HOT MIX ASPHALT (HMA) PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER
 - CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER
 - 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
- FOR WATER, 14-GAUGE INSULATED COPPER TRACER WIRE SHALL BE LAID ATOP ALL PIPES AND SERVICE LATERALS.
- FOR WATER AND SEWER, 3" WIDE POLYETHYLENE NON-DETECTABLE TAPE MARKED AND COLOR CODED PER THE DESIGN STANDARDS SHALL BE BURIED IN THE TRENCH 12-INCHES ABOVE ALL PIPES AND LATERALS.
- REFER TO STANDARD DRAWINGS U-3 TO U-3b FOR ADDITIONAL REQUIREMENTS FOR WATER AND SEWER TRENCHES.
- CONCRETE SLURRY TRENCH BACKFILL SHALL CONFORM TO STATE STANDARD 90-1.01, 188 LBS/CY CEMENTITIOUS MATERIAL [2 SACK], TO SURFACE OF BASE COURSE SECTION. DO NOT PLACE AGGREGATE BASE ABOVE SLURRY BACKFILL.

BEDDING MATERIAL		STRUCTURAL MATERIAL	
SIEVE SIZES	PERCENT PASSING	SIEVE SIZES	PERCENT PASSING
1"	100%	3"	100%
No. 4	80% - 100%	No. 4	35% - 100%
No. 200	0% - 15%	No. 30	20% - 100%

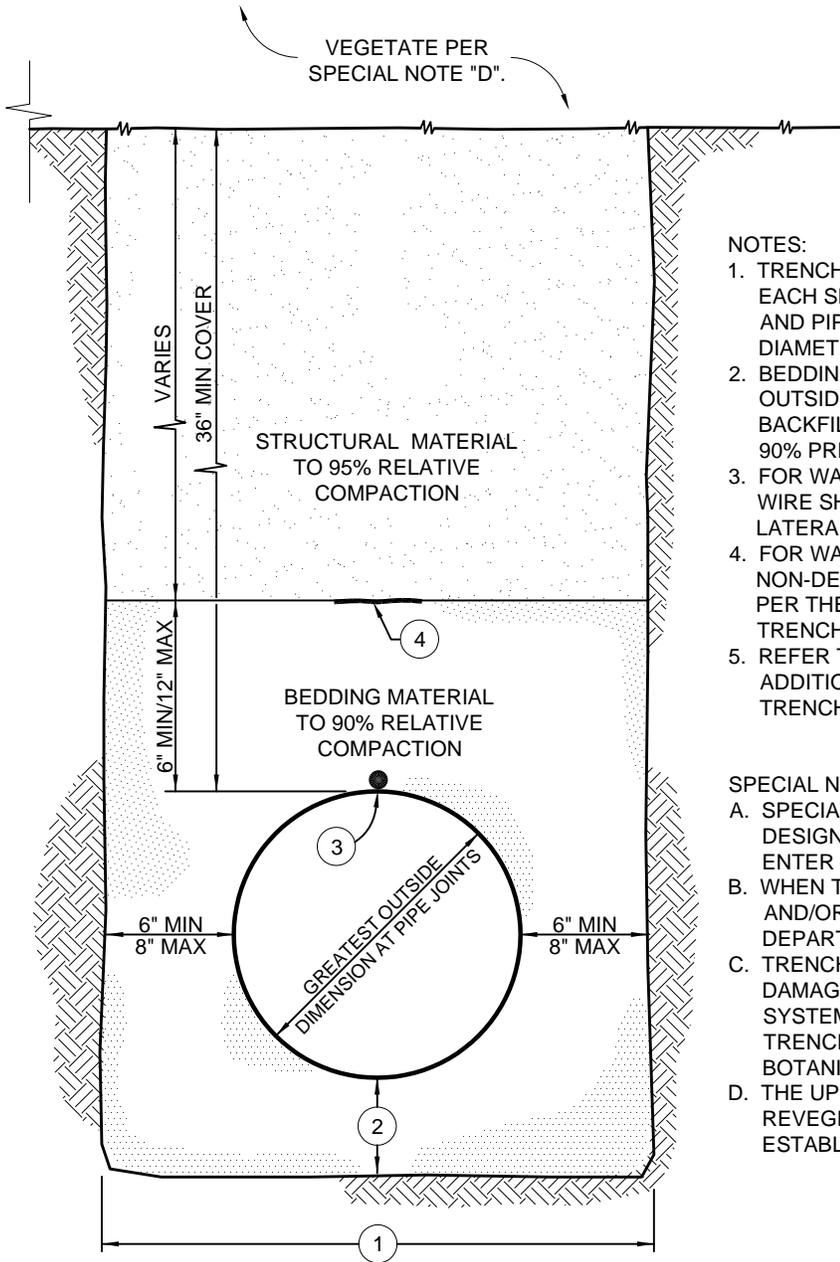


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
TRENCH DETAIL
 PAVED SURFACES

Scale: NTS	Adopted: 2011
Drawing No: U-4	
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
LOCATION OF DETECTOR WIRE & TAPE, NOTES 3 & 4	REM	NOV 07	PIPE COVER	GDM	JAN 11
REMOVE "SEWER" FROM NOTE 3	GDM	NOV 08			



NOTES:

1. TRENCH WIDTH SHALL BE PIPE DIAMETER PLUS 12" (6" EACH SIDE OF PIPE) FOR PIPES 36" DIAMETER OR LESS, AND PIPE DIAMETER PLUS 16" (8" EACH SIDE) FOR PIPE DIAMETERS GREATER THAN 36".
2. BEDDING MEASUREMENT IS 6" BELOW GREATEST OUTSIDE DIMENSION AT PIPE JOINTS. PIPE SHALL BE BACKFILLED TO THE SPRING LINE AND COMPACTED TO 90% PRIOR TO COMPLETING INITIAL BACKFILL.
3. FOR WATER, 14-GAUGE INSULATED COPPER TRACER WIRE SHALL BE LAID ATOP ALL PIPES AND SERVICE LATERALS.
4. FOR WATER AND SEWER, 3" WIDE POLYETHYLENE NON-DETECTABLE TAPE MARKED AND COLOR CODED PER THE DESIGN STANDARDS SHALL BE BURIED IN THE TRENCH 12-INCHES ABOVE ALL PIPES AND LATERALS.
5. REFER TO STANDARD DRAWINGS U-3 TO U-3b FOR ADDITIONAL REQUIREMENTS FOR WATER AND SEWER TRENCHES.

SPECIAL NOTES:

- A. SPECIAL CONSIDERATION SHALL BE TAKEN BY THE DESIGNER TO ENSURE SURFACE DRAINAGE WILL NOT ENTER THE TRENCH.
- B. WHEN TRENCHING ON STEEP SLOPES, CUT-OFF WALLS AND/OR PIPE ANCHORS MAY BE REQUIRED BY THE DEPARTMENT AND SHALL BE DETAILED ON THE PLANS.
- C. TRENCHING ALIGNMENT SHALL BE DESIGNED TO AVOID DAMAGE TO EXISTING TREES AND THEIR ROOT SYSTEMS. WHEN ADJACENT TO TREES THEN THE TRENCHING RECOMMENDATIONS OF THE PROJECT BOTANIST SHALL BE FOLLOWED.
- D. THE UPPER SURFACE SHALL BE SCARIFIED AND REVEGETATED. VEGETATIVE COVER SHALL BE ESTABLISHED PRIOR TO ACCEPTANCE OF WORK.

BEDDING MATERIAL

SIEVE SIZES	PERCENT PASSING
1"	100%
No. 4	80% - 100%
No. 200	0% - 15%

STRUCTURAL MATERIAL

SIEVE SIZES	PERCENT PASSING
3"	100%
No. 4	35% - 100%
No. 30	20% - 100%

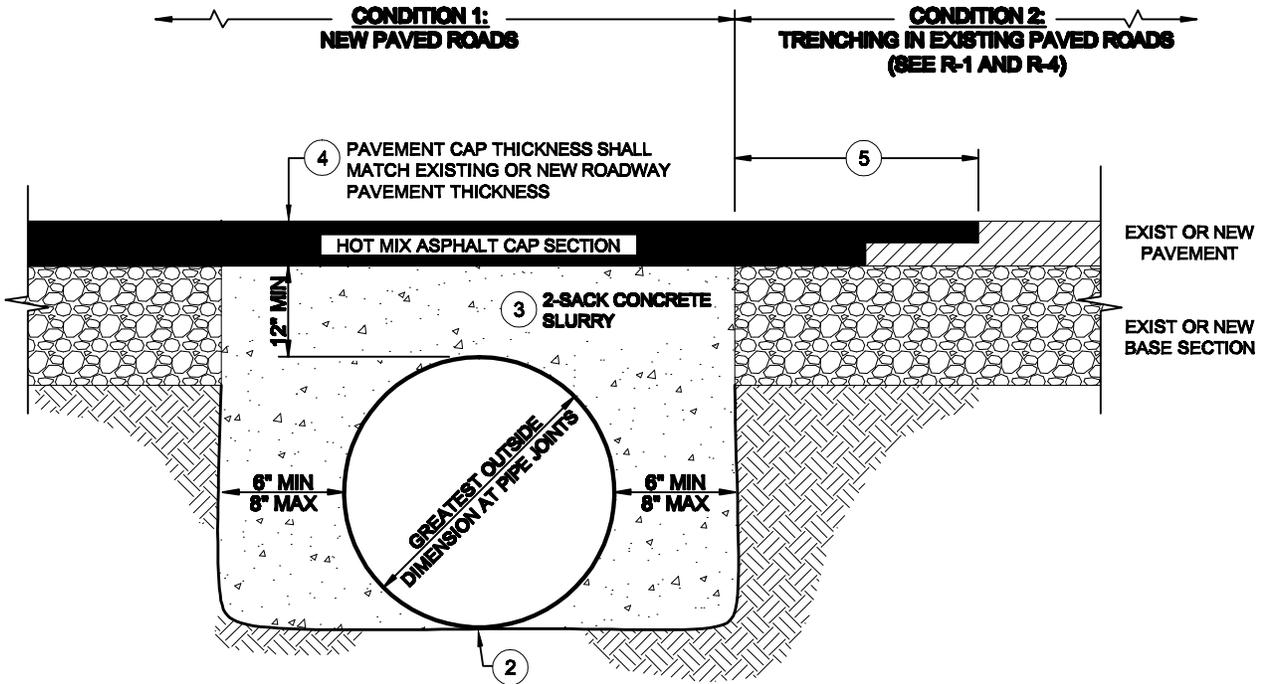


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
TRENCH DETAIL
 OUTSIDE ROADWAY PRISM

Scale: NTS	Adopted: 2011
Drawing No: U-4a	
Sheet No: 1 OF 1	

Revisions

Description	Approved	Date	Description	Approved	Date
NOTE 3	REM	NOV 07	REPLACE AC WITH HMA	GDM	JAN 11
CHANGE 3 BACK TO 2 BACK, MISC CLARIFICATIONS	GDM	NOV 08	REVISE MINIMUM COVER OVER PIPE	FH	AUG 14



NOTES:

1. USE OF THIS STANDARD DRAWING REQUIRES PRIOR DEPARTMENT APPROVAL AND SHALL ONLY BE ALLOWED IF REQUIRED COVER CANNOT BE ATTAINED.
2. PIPE SHALL BE PLACED ON UNDISTURBED NATIVE MATERIAL UNLESS EXISTING SOILS CONDITIONS REQUIRE ADDITIONAL MEASURES.
3. CONCRETE SLURRY TRENCH BACKFILL SHALL CONFORM TO STATE STANDARD 90-1.01, 188 LBS/CY CEMENTITIOUS MATERIAL [2 SACK], TO SURFACE OF BASE COURSE SECTION. DO NOT PLACE AGGREGATE BASE ABOVE SLURRY BACKFILL.
4. HOT MIX ASPHALT (HMA) PAVEMENT THICKNESS TO MATCH EXISTING PAVEMENT SECTION OR MATCH APPROVED PAVEMENT THICKNESS FOR NEW ROADS.
5. WHEN TRENCHING INTO EXISTING STRUCTURAL SECTION PAVEMENT REPAIR SHALL BE IN ACCORDANCE WITH STANDARD DRAWINGS R-1 AND R-4.
6. PIPE SHALL BE SECURED IN PLACE TO KEEP LINE AND GRADE WHILE CONCRETE SLURRY IS PLACED AND UNTIL THE SLURRY HAS SET.
7. THE DEPARTMENT MAY REQUIRE ADDITIONAL WORK WHEN TRENCHING IN EXISTING ROADS HAVING CONCRETE STRUCTURAL SECTIONS.



DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

SHALLOW TRENCH DETAIL

Scale:	Adopted:
NTS	2014
Drawing No:	U-4b
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
ADDED NOTE 3	REM	NOV 07			
TABLES 1 & 2, NOTE 4, SHT 1/2	GDM	JAN 11			

TABLE 1

Pipe Dia (in)	Pipe Class	Nom. I.D. (in)	Area (A) (sq in)	THRUST (T) AT FITTING, lbs				
				TEES	90° BEND	45° BEND	22.5° BEND	11.25° BEND
4"	PVC Class 165 (DR 25)	4.39	15	3,254	4,602	2,491	1,270	638
4"	PVC Class 235 (DR 18)	4.23	14	4,005	5,664	3,065	1,563	785
4"	PVC Class 305 (DR 14)	4.07	13	4,619	6,532	3,535	1,802	905
6"	PVC Class 165 (DR 25)	6.31	31	6,723	9,508	5,146	2,623	1,318
6"	PVC Class 235 (DR 18)	6.09	29	8,302	11,740	6,354	3,239	1,627
6"	PVC Class 305 (DR 14)	5.86	27	9,574	13,540	7,328	3,736	1,877
8"	PVC Class 165 (DR 25)	8.28	54	11,577	16,372	8,861	4,517	2,269
8"	PVC Class 235 (DR 18)	7.98	50	14,254	20,158	10,910	5,562	2,794
8"	PVC Class 305 (DR 14)	7.68	46	16,445	23,257	12,587	6,417	3,224
10"	PVC Class 165 (DR 25)	10.16	81	17,431	24,651	13,341	6,801	3,417
10"	PVC Class 235 (DR 18)	9.79	75	21,454	30,340	16,420	8,371	4,206
10"	PVC Class 305 (DR 14)	9.42	70	24,741	34,989	18,936	9,654	4,850
12"	PVC Class 165 (DR 25)	12.08	115	24,641	34,848	18,860	9,615	4,831
12"	PVC Class 235 (DR 18)	11.65	107	30,380	42,964	23,252	11,854	5,956
12"	PVC Class 305 (DR 14)	11.2	99	34,975	49,462	26,768	13,646	6,856
AWWA PVC C-900 PIPE				BASED ON P = 165 + 50 = 215 psi BASED ON P = 235 + 50 = 285 psi BASED ON P = 305 + 50 = 355 psi				

TABLE 2

HORIZONTAL BEARING STRENGTHS FOR COMMON SOILS	
SOIL TYPE	HORIZONTAL BEARING STRENGTH (S _b), lbs/sf
MUCK	0
SOFT CLAY	500
SAND	1,000
SAND & GRAVEL	1,500
SAND & GRAVEL CEMENTED WITH CLAY	2,000

NOTES:

- ALTHOUGH THE ABOVE BEARING STRENGTH VALUES HAVE BEEN USED SUCCESSFULLY IN THE DESIGN OF THRUST BLOCKS AND ARE CONSIDERED TO BE CONSERVATIVE, THEIR ACCURACY IS TOTALLY DEPENDENT ON ACCURATE SOIL IDENTIFICATION AND EVALUATION. THE ULTIMATE RESPONSIBILITY FOR SELECTING THE PROPER BEARING STRENGTH OF A PARTICULAR SOIL TYPE SHALL BE THE RESPONSIBILITY OF THE PROJECT ENGINEER.
- ALL THRUST BLOCK AREAS SHALL BE PROVIDED ON THE APPROVED PLANS.
- CONCRETE THRUST BLOCKS SHALL CONFORM TO STATE STANDARD 90-1.01, 470 LBS/CY CEMENTITIOUS MATERIAL [5 SACK].
- THRUST RESTRAINT FOR VERTICAL BENDS SHALL USE RESTRAINED JOINT FITTINGS INSTEAD OF THRUST BLOCKS.



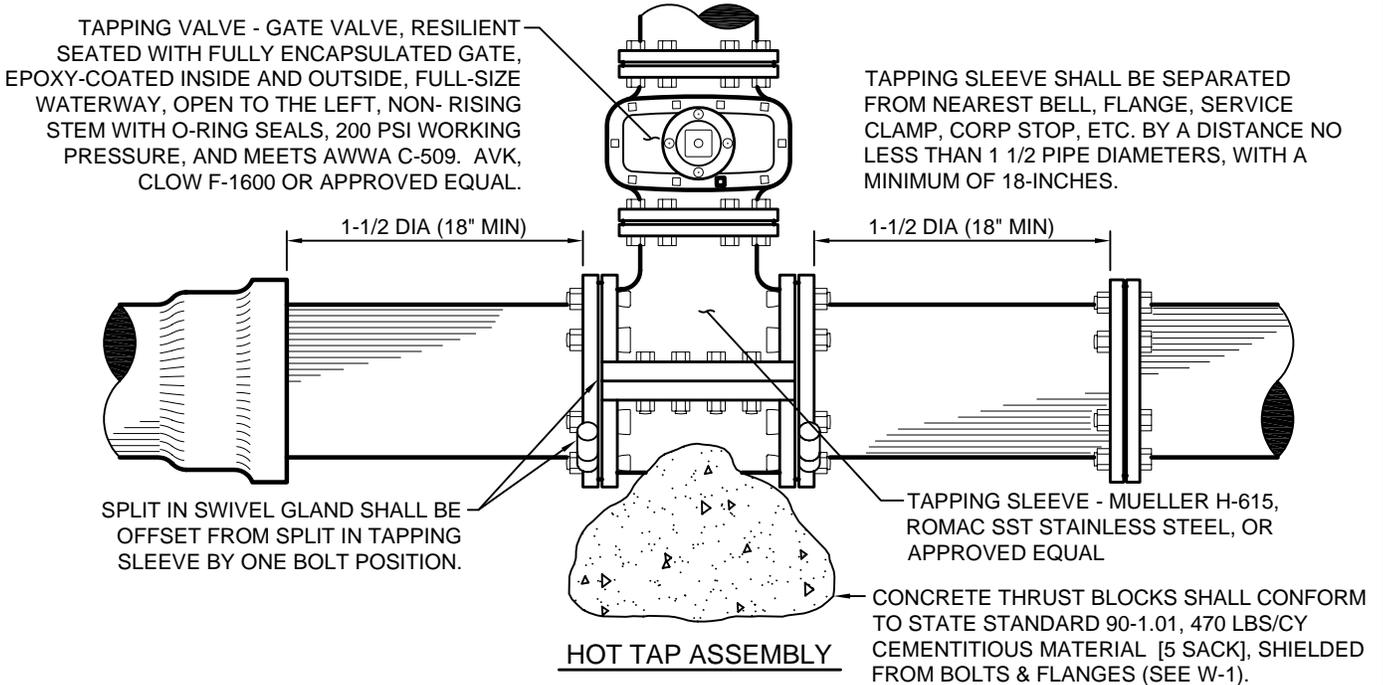
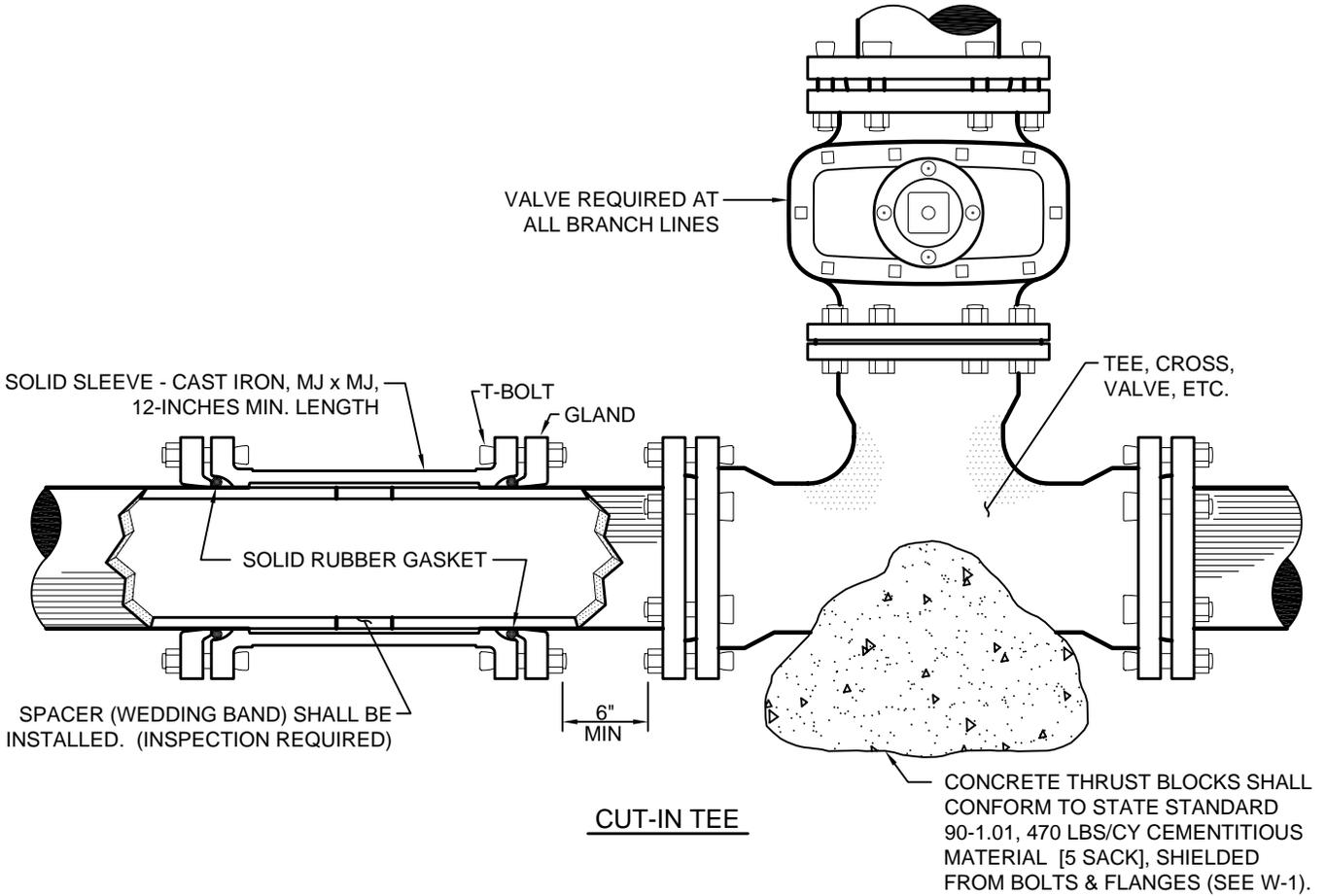
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THRUST BLOCK REQUIREMENTS

Scale:	Adopted: 2011
Drawing No:	W-1
Sheet No:	1 OF 2

Revisions

Description	Approved	Date	Description	Approved	Date
THRUST BLOCK NOTES	REM	NOV 07			

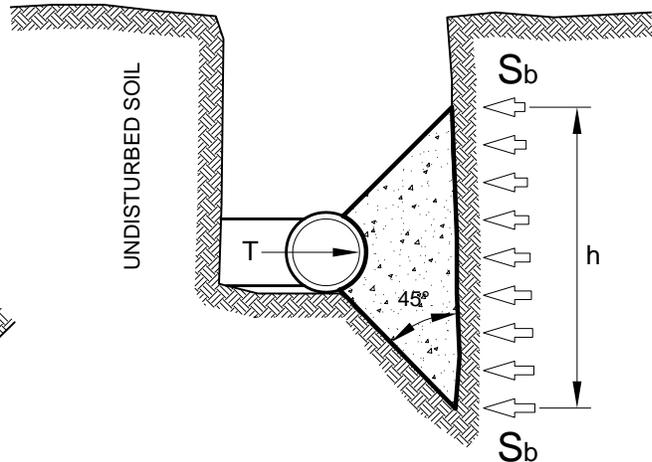
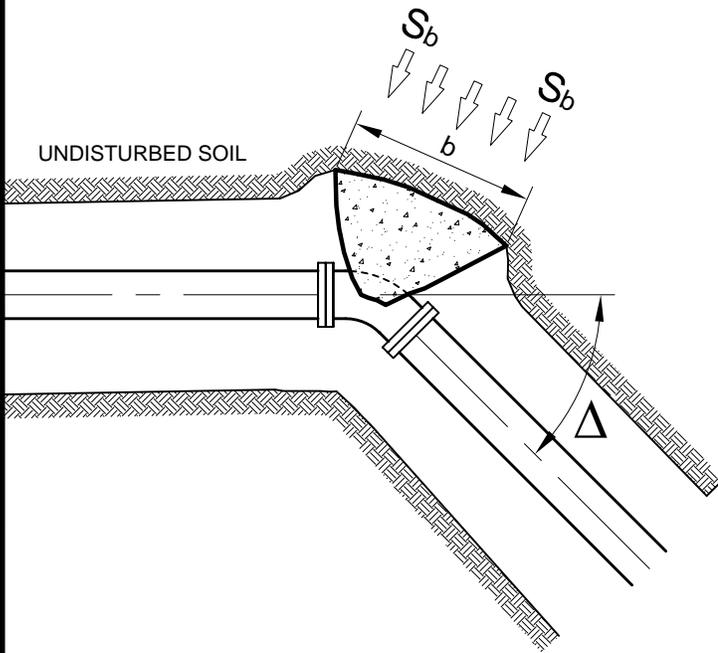


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
**WATERLINE CUT-IN TEE
 & HOT TAP ASSEMBLY**

Scale: NTS	Adopted: 2011
Drawing No: W-10	
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date
LEGEND, EQUATIONS, EXAMPLE, SHT 2/2	GDM	JAN 11			



LEGEND:

- T = THRUST AT FITTING (lbs) [TABLE 1]
- S_b = SOIL BEARING PRESSURE (psf) [TABLE 2]
- A = INTERNAL AREA (sq in) [TABLE 1]
- P = INTERNAL PRESSURE (psi)
- Δ = HORIZONTAL DEFLECTION ANGLE (degrees)
- S_f = FACTOR OF SAFETY [1.5 FOR THRUST BLOCK DESIGN, TYP]
- h = THRUST BLOCK HEIGHT (ft)
- b = THRUST BLOCK WIDTH (ft)
- A_b = MINIMUM THRUST BLOCK AREA (sq ft)

EQUATIONS:

THRUST AT FITTINGS:

[1] $T = (P)(A)$

THRUST AT HORIZONTAL BEND:

[2] $T = 2(P)(A) \sin(\Delta/2)$

MINIMUM BEARING (THRUST) BLOCK AREA:

[3] $A_b = (h)(b) = [(S_f)(T)]/S_b$

EXAMPLE: DETERMINE THE THRUST BLOCK AREA FOR A 90° BEND, 8" CLASS 165 PIPE IN SAND.

(STEP 1): PRESSURE = 165 + 50 (TEST PRESSURE) = 215 psi. CHOOSE T = 16,372 lbs FROM TABLE 1 SHEET 1/2 (USE EQUATION [2] IF PIPE HAS DIFFERENT INSIDE DIAMETER).

(STEP 2): DETERMINE S_b FROM TABLE 2, SHEET 1/2.

(STEP 3): USE INFORMATION TO CALCULATE A_b USING EQUATION [3]

RESULT: $A_b = [S_f(T)]/S_b = [(1.5)(16,372)]/1,000 = 24.6$ sq ft



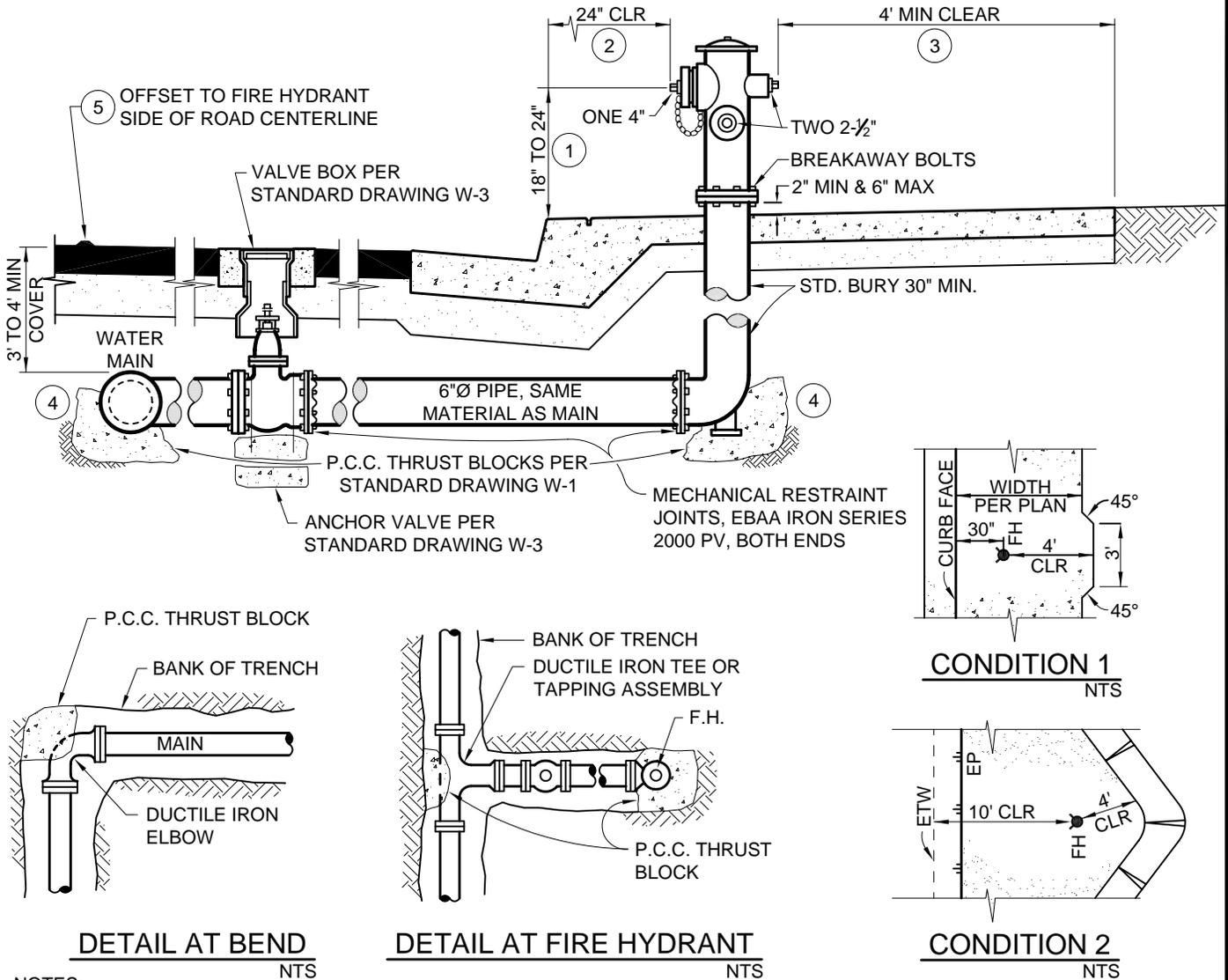
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THRUST BLOCK REQUIREMENTS

Scale: NTS	Adopted: 2011
Drawing No: W-1a	
Sheet No: 2 OF 2	

Revisions

Description	Approved	Date	Description	Approved	Date
NOTE 4	REM	NOV 07	CLARIFIED MJ CONNECTIONS, NOTE 2	GDM	JAN 11
NOTE 8 (FROM CLOW F2060 TO CLOW F960)	GDM	NOV 08			



NOTES:

- HEIGHT SHALL BE MEASURED FROM EDGE OF PAVEMENT WHEN CONCRETE CURB OR ASPHALT DIKE ARE NOT REQUIRED PER THE DESIGN STANDARDS.
- DISTANCE SHALL BE INCREASED TO 10-FOOT CLEAR FROM THE EDGE OF TRAVELED WAY (ETW) ON RURAL ROADS (SEE U-1).
- IN RURAL AREAS A 4' MINIMUM RADIUS CLEAR AND LEVEL ZONE SURROUNDING THE FIRE HYDRANT SHALL BE REQUIRED.
- CONCRETE THRUST BLOCKS SHALL CONFORM TO STATE STANDARD 90-1.01, 470 LBS/CY CEMENTITIOUS MATERIAL [5 SACK], POURED AGAINST UNDISTURBED SOIL AND SHIELDED FROM FLANGES AND BOLTS.
- EACH HYDRANT SHALL BE IDENTIFIED BY A REFLECTORIZED BLUE RAISED PAVEMENT MARKER PER SECTION 10.301c OF THE UNIFORM FIRE CODE.
- THE HYDRANT CAP AND OUTLET NOZZLE SHALL BE PAINTED IN ACCORDANCE WITH TABLE 6.6 OF 6.2.1.D.2.
- THE CONCRETE CURB OR ASPHALT DIKE SHALL BE PAINTED RED 15-FEET EITHER SIDE OF THE FIRE HYDRANT.
- HYDRANT SHALL BE CLOW F960, OR APPROVED EQUAL.
- EACH HYDRANT SHALL HAVE TWO 2-1/2" OUTLETS AND ONE 4" OUTLET WITH EXTERNAL NSF THREAD.
- ALL FITTINGS SHALL BE CEMENT MORTAR LINED IN ACCORDANCE WITH AWWA STANDARD C-104.
- HYDRANT LATERAL SHALL BE OF THE SAME MATERIAL AS THE MAIN.
- 14-GAUGE INSULATED COPPER TRACER WIRE SHALL BE LAID IN THE TRENCH ABOVE THE PIPE, BROUGHT ABOVE GRADE AND SECURED TO THE HYDRANT BOLT FLANGE.
- COLOR CODED BLUE 3" WIDE POLYETHYLENE NON-DETECTABLE TAPE MARKED "CAUTION BURIED WATER LINE BELOW" SHALL BE BURIED IN THE TRENCH AND ABOVE THE PIPE AND TRACER WIRE.



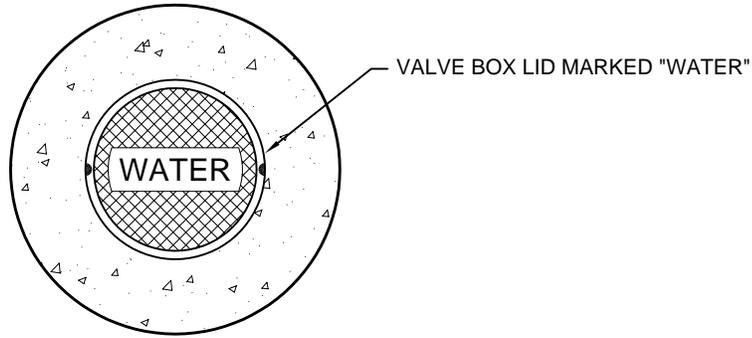
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FIRE HYDRANT INSTALLATION

Scale: 1"=2'	Adopted: 2011
Drawing No: W-2	
Sheet No: 1 OF 1	

Revisions

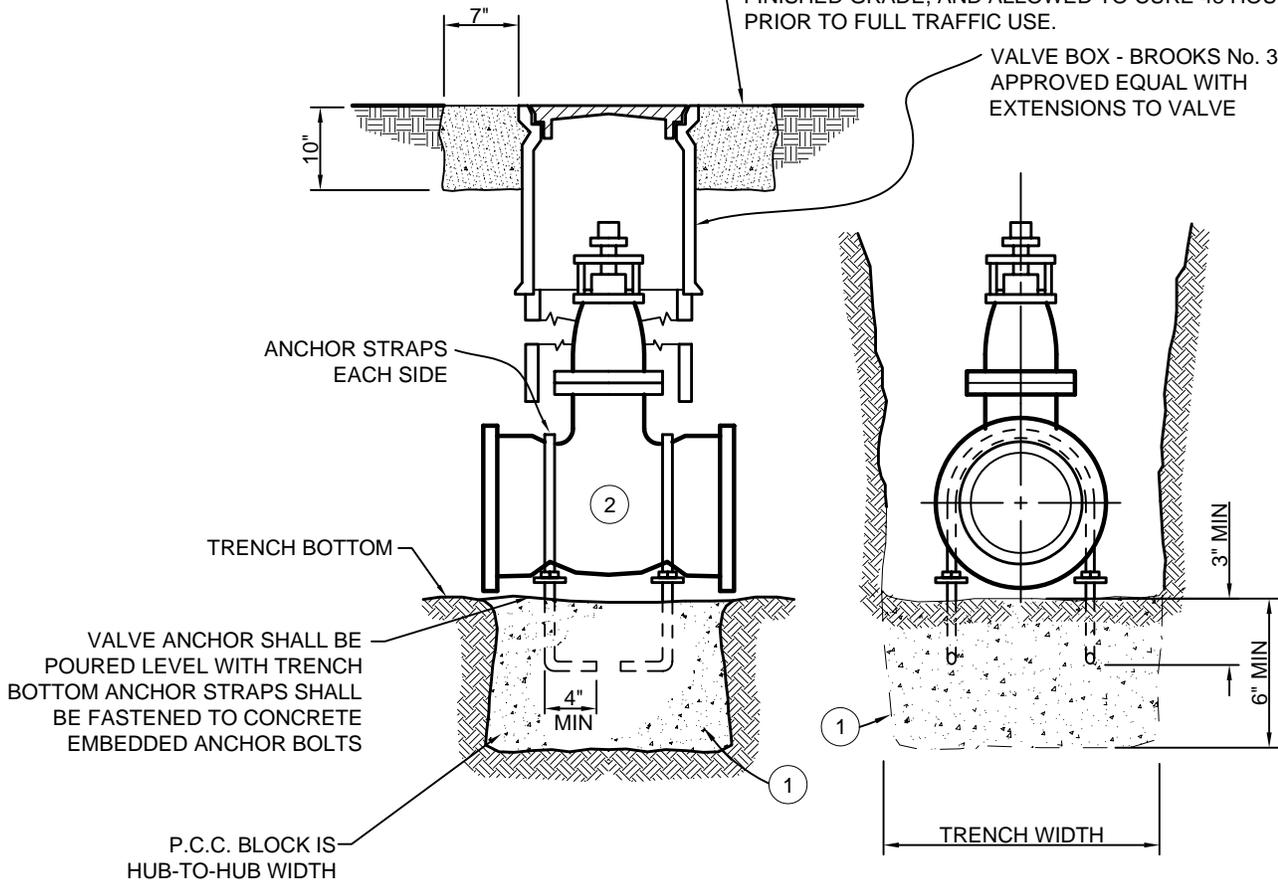
Description	Approved	Date	Description	Approved	Date
NOTE 1, CONCRETE COLLAR NOTE	REM	NOV 07			



LID

10" MIN THICK BEARING CONCRETE COLLAR SHALL CONFORM TO STATE STANDARD 90-1.01, 565 LBS/CY CEMENTITIOUS MATERIAL [6 SACK], TROWELLED TO FINISHED GRADE, AND ALLOWED TO CURE 48 HOURS PRIOR TO FULL TRAFFIC USE.

VALVE BOX - BROOKS No. 3RT OR APPROVED EQUAL WITH EXTENSIONS TO VALVE



NOTES:

1. CONCRETE THRUST BLOCKS SHALL CONFORM TO STATE STANDARD 90-1.01, 470 LBS/CY CEMENTITIOUS MATERIAL [5 SACK], AND POURED AGAINST UNDISTURBED NATIVE SOIL.
2. VALVES SHALL HAVE NON-RISING STEM, RESILIENT WEDGE, RESILIENT SEAT, AND BE EPOXY COATED.
3. ALL MATERIALS AND INSTALLATION SHALL CONFORM WITH THE APPLICABLE SECTIONS OF THE DESIGN STANDARDS.
4. ALL FITTINGS SHALL BE WRAPPED IN POLYETHYLENE SHEET AND ALL FLANGES AND BOLTS SHALL BE SHIELDED FROM CONCRETE PER THE DESIGN STANDARDS.
5. UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN CURBS, GUTTERS, SIDEWALKS, DRIVEWAY APRONS, CURB RAMPS, OR CROSS GUTTERS.



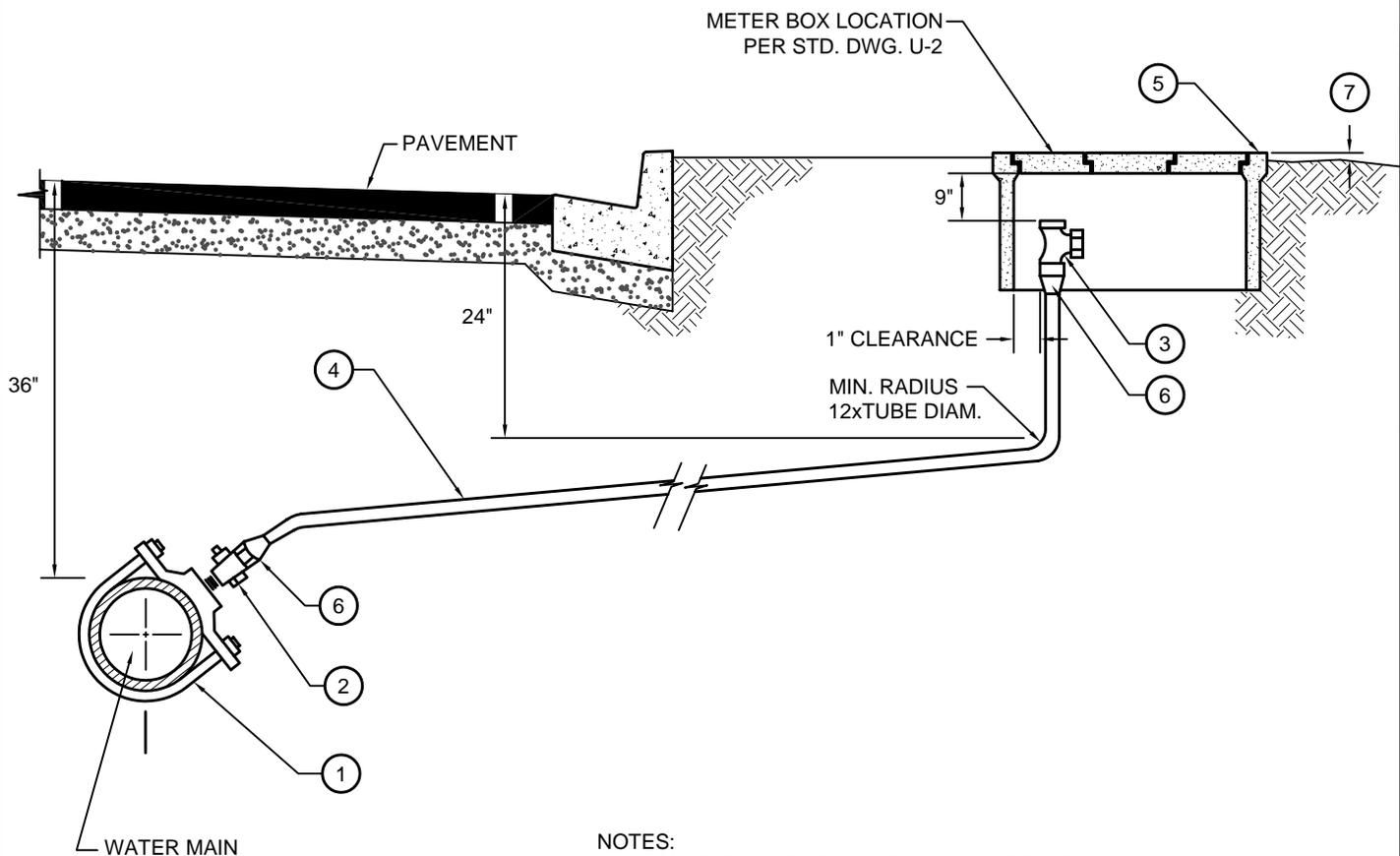
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VALVE ANCHOR & BOX

Scale: NTS	Adopted: 2011
Drawing No:	W-3
Sheet No:	1 OF 1

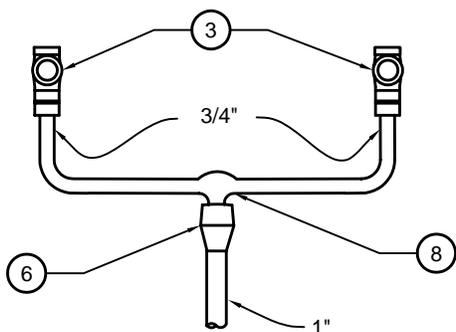
Revisions

Description	Approved	Date	Description	Approved	Date



NOTES:

- BRONZE SERVICE SADDLE, DOUBLE STRAP, MUELLER BR 2B 0899 IP, 075 or 100, O.A.E.
- CORPORATION STOP w/ IP THREADS, MUELLER H-10012, O.A.E.
- ANGLE METER STOP, JONES J-1966W, 3/4" or 1", O.A.E.
- POLYETHYLENE PIPE, 3/4" MIN. I.D. FOR SINGLE SERVICE 1" MIN. I.D. FOR DOUBLE SERVICE.
- METER BOX, BROOKS PRODUCT 37-S, O.A.E.
- MUELLER INSTA-TITE CONNECTION H-15426(male) O.A.E. H-15456 (female).
- IN UNPAVED AREA SET METER BOX 1" to 1-1/2" ABOVE FINISHED GRADE.
- U-BRANCH CONNECTION, MUELLER H-15365, O.A.E.
- O.A.E. = "OR APPROVED EQUAL".
- WATER METER AND CUSTOMER SIDE SHUT OFF VALVE TO BE INSTALLED BY THE WATER PURVEYOR.
- CORPORATION STOPS SHALL NOT BE SPACED CLOSER THAN 12" MEASURED ALONG THE CENTERLINE OF THE PIPE.
- 3/4" SINGLE SERVICE LINE, 1" DOUBLE SERVICE LINES, USE 16" X 21" DUAL METER BOX (BROOKS PRODUCT OR APPROVED EQUAL) FOR DOUBLE SERVICE.
- SERVICES LARGER THAN 1" MAY BE PVC SCHEDULE 80 PIPE.
- 14-GAUGE INSULATED COPPER TRACER WIRE SHALL BE LAID IN THE TRENCH ABOVE THE PIPE AND BROUGHT ABOVE GRADE THROUGH ANY METER OR VALVE BOXES.
- COLOR CODED BLUE 3" WIDE POLYETHYLENE NON-DETECTABLE TAPE MARKED "CAUTION BURIED WATER LINE BELOW" SHALL BE BURIED IN THE TRENCH AND ABOVE THE PIPE AND TRACER WIRE.



DOUBLE SERVICE CONNECTION



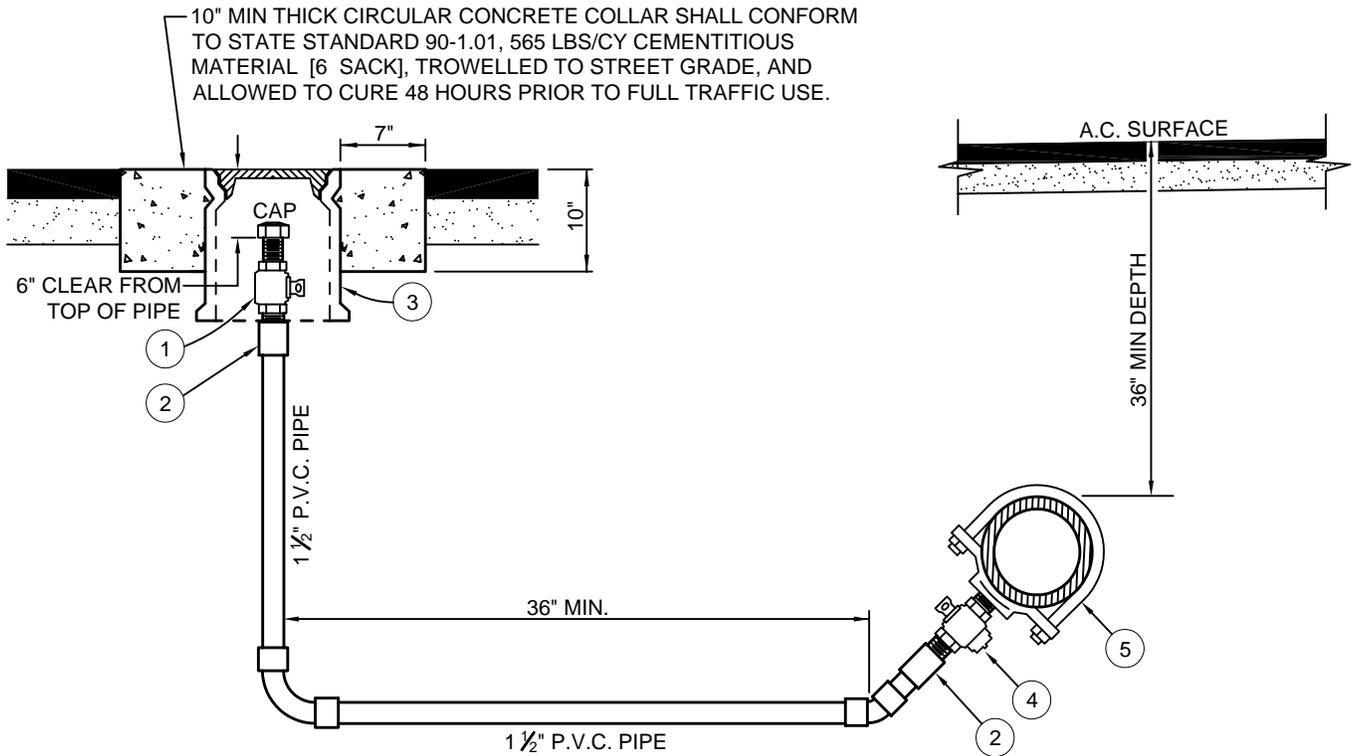
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WATER SERVICE CONNECTION

Scale: NTS	Adopted: 2011
Drawing No: W-4	
Sheet No: 1 OF 1	

Revisions

Description	Approved	Date	Description	Approved	Date
CONCRETE COLLAR NOTE, REMOVE THRUST BLOCK	REM	NOV 07			



ON-RUN CONNECTION OR DEAD END

NOTES:

1. 14-GAUGE INSULATED COPPER TRACER WIRE SHALL BE LAID IN THE TRENCH ABOVE THE PIPE AND BROUGHT ABOVE GRADE THROUGH ANY METER OR VALVE BOXES.
2. COLOR CODED BLUE 3" WIDE POLYETHYLENE NON-DETECTABLE TAPE MARKED "CAUTION BURIED WATER LINE BELOW" SHALL BE BURIED IN THE TRENCH AND ABOVE THE PIPE AND TRACER WIRE.
3. UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN CURBS, GUTTERS, SIDEWALKS, DRIVEWAY APRONS, CURB RAMPS, OR CROSS GUTTERS.

ITEM NO.	NO. REQ'D.	SIZE AND DESCRIPTION	MATERIAL SPECIFICATION
1	1	1-1/2" CURB STOP	JAMES JONES J-182 WITH LOCKWING, MUELLER, OR APPROVED EQUAL
2	2	1-1/2" ADAPTER	I.P. THREAD-P.V.C. SLIP
3	1	VALVE BOX WITH CAST IRON LID	CHRISTY G-8, BROOKS 3-RT, OR APPROVED EQUAL
4	1	1-1/2" CORPORATION STOP	JAMES JONES J-40, MUELLER H-10012, OR APPROVED EQUAL
5	1	SERVICE SADDLE	MUELLER BRONZE DOUBLE STRAP BR 2B 0899 IP 200, O.A.E.



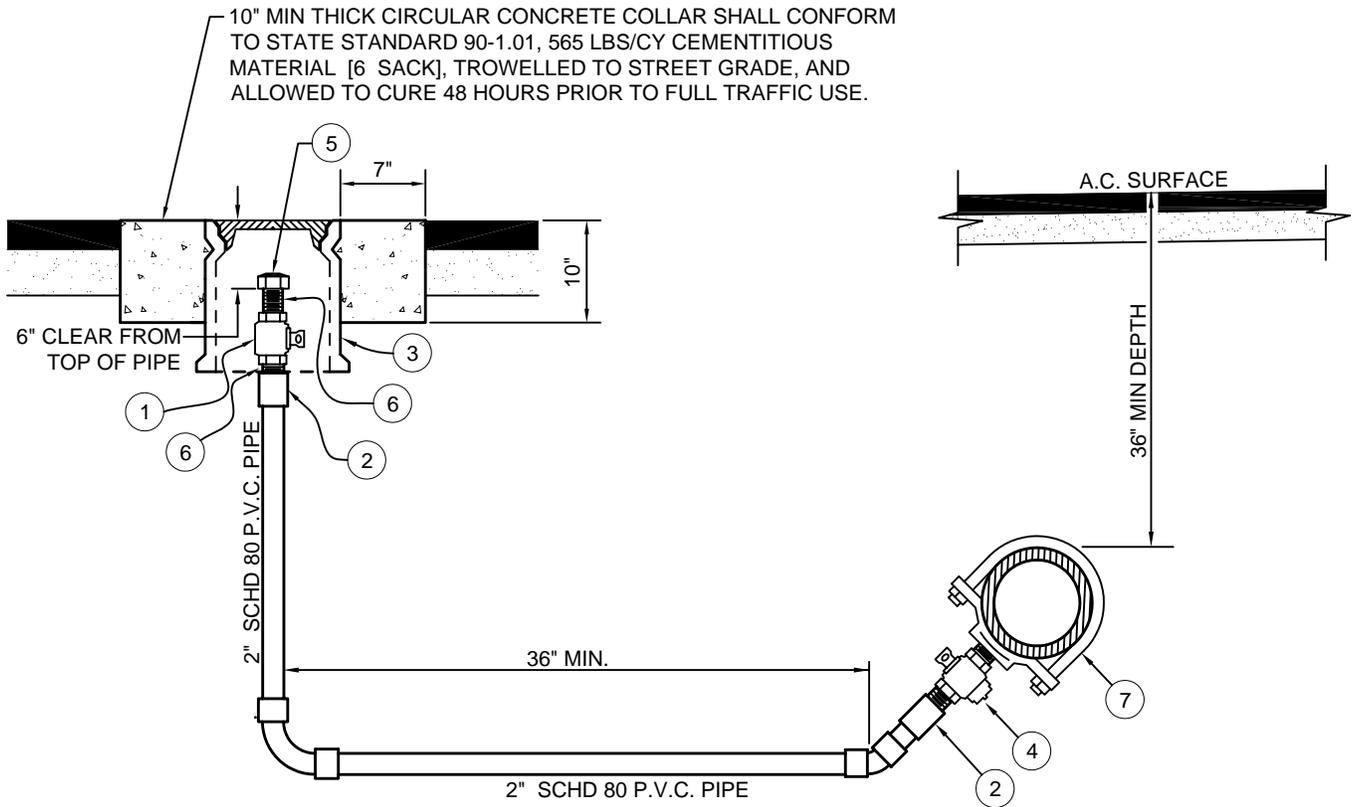
DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

1-1/2" BLOW-OFF ASSEMBLY

Scale: NTS	Adopted: 2011
Drawing No:	W-5
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Revisions

Description	Approved	Date	Description	Approved	Date
CONCRETE COLLAR NOTE, REMOVE THRUST BLOCK	REM	NOV 07			



ON-RUN CONNECTION OR DEAD END

NOTES:

1. 14-GAUGE INSULATED COPPER TRACER WIRE SHALL BE LAID IN THE TRENCH ABOVE THE PIPE AND BROUGHT ABOVE GRADE THROUGH ANY METER OR VALVE BOXES.
2. COLOR CODED BLUE 3" WIDE POLYETHYLENE NON-DETECTABLE TAPE MARKED "CAUTION BURIED WATER LINE BELOW" SHALL BE BURIED IN THE TRENCH AND ABOVE THE PIPE AND TRACER WIRE.
3. UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN CURBS, GUTTERS, SIDEWALKS, DRIVEWAY APRONS, CURB RAMPS, OR CROSS GUTTERS.

ITEM NO.	QTY. REQ'D.	SIZE AND DESCRIPTION	MATERIAL SPECIFICATION
1	1	2" CURB STOP	JAMES JONES J-182 WITH LOCKWING, MUELLER, O.A.E.
2	2	2" ADAPTER	I.P. THREAD x P.V.C. SLIP
3	1	VALVE BOX WITH CAST IRON LID	CHRISTY G-8, BROOKS 3-RT, O.A.E.
4	1	2" CORPORATION STOP	JAMES JONES J-40, MUELLER H-10012, O.A.E.
5	1	2" IP GALV. CAP	
6	2	2" IP GALV. NIPPLE	
7	1	SERVICE SADDLE	MUELLER BRONZE DOUBLE STRAP BR 2B 0899 IP 200, O.A.E.

O.A.E. = "OR APPROVED EQUAL"



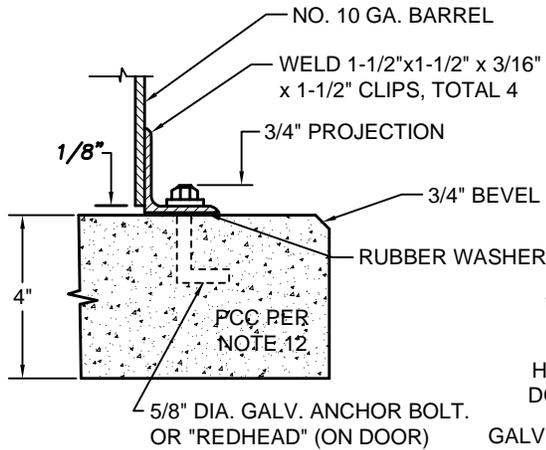
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2" BLOW-OFF ASSEMBLY

Scale: NTS	Adopted: 2011
Drawing No: W-5a	
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Revisions

Description	Approved	Date	Description	Approved	Date
NOTES 1-7, ADDED NOTES 11 & 12, MISC NOTES, & DRAFTING	REM	NOV 07			



DETAIL "A"

SURFACE PREPARATION AND PAINT:

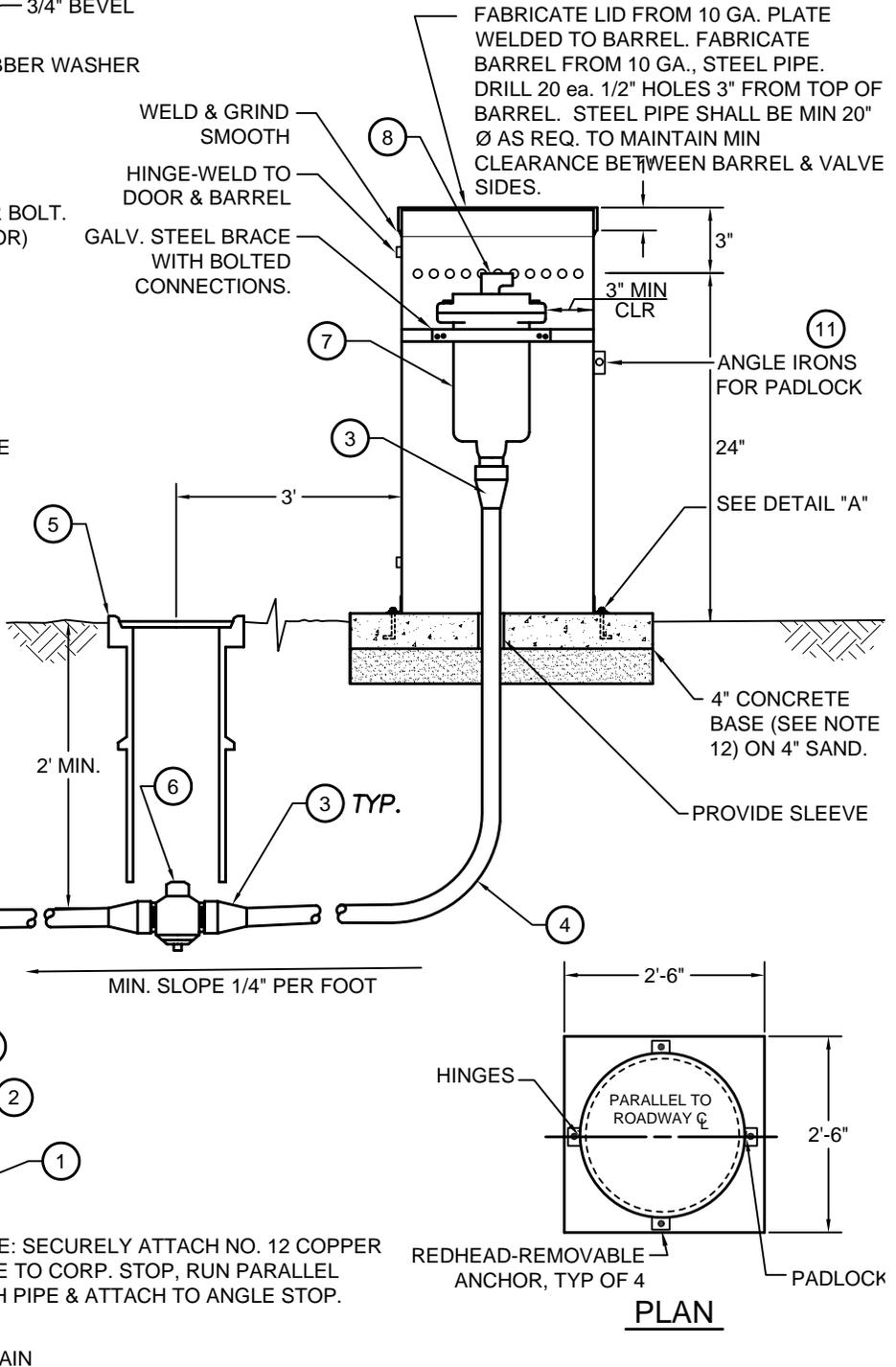
- PREPARE BOTH INSIDE AND OUTSIDE PIPE SURFACES BY WIRE BRUSH CLEANING.
- INSIDE AND OUTSIDE SURFACES SHALL BE PRIMER COATED WITH TWO COATS. PRIMER SHALL BE "RUST-OLEUM CLEAN METAL PRIMER", OR APPROVED EQUAL.
- PAINT SHALL BE RUST-OLEUM INDUSTRIAL ENAMEL COLOR "SAFETY BLUE", OR APPROVED EQUAL, TWO COATS OF PAINT ARE REQUIRED.

FABRICATE LID FROM 10 GA. PLATE WELDED TO BARREL. FABRICATE BARREL FROM 10 GA., STEEL PIPE. DRILL 20 ea. 1/2" HOLES 3" FROM TOP OF BARREL. STEEL PIPE SHALL BE MIN 20" Ø AS REQ. TO MAINTAIN MIN CLEARANCE BETWEEN BARREL & VALVE SIDES.

WELD & GRIND SMOOTH
HINGE-WELD TO DOOR & BARREL
GALV. STEEL BRACE WITH BOLTED CONNECTIONS.

NOTES:

- BRONZE SERVICE SADDLE, DOUBLE STRAP, WITH AWWA I.P. THREADS.
- CORPORATION STOP w/ I.P. THREADS.
- MUELLER INSTA-TITE CONNECTION.
- POLYETHYLENE PIPE, PIPE SIZE SHOULD MATCH AIR & VACUUM RELIEF VALVE SIZE AS SPECIFIED IN TABLE 6-5 OF THESE STANDARDS.
- CAST IRON TRAFFIC COVER & EXTENSIONS AS REQUIRED.
- BALL VALVE.
- AIR & VACUUM RELIEF VALVE w/STAINLESS STEEL TRIM
- SCH. 80 PVC ELBOW
- 14-GAUGE INSULATED COPPER TRACER WIRE SHALL BE LAID IN THE TRENCH ABOVE THE PIPE AND BROUGHT ABOVE GRADE THROUGH ANY METER OR VALVE BOXES.
- COLOR CODED BLUE 3" WIDE POLYETHYLENE NON-DETECTABLE TAPE MARKED "CAUTION BURIED WATER LINE BELOW" SHALL BE BURIED IN THE TRENCH AND ABOVE THE PIPE AND TRACER WIRE.
- ANGLE 1 1/2"x1 1/2"x3/16" LONG. WELD TO BARREL AND DOOR WITH HOLES FOR PADLOCK (2 REQ.).
- CONCRETE BASE SHALL CONFORM TO STATE STANDARD 90-1.01, 565 LBS/CY CEMENTITIOUS MATERIAL [6 SACK].



PLAN

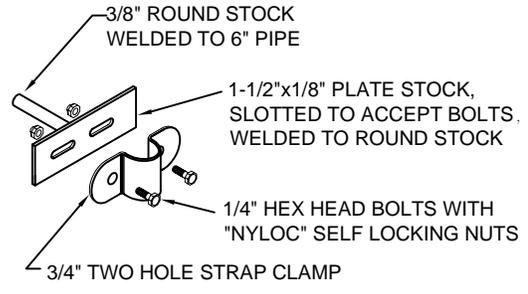
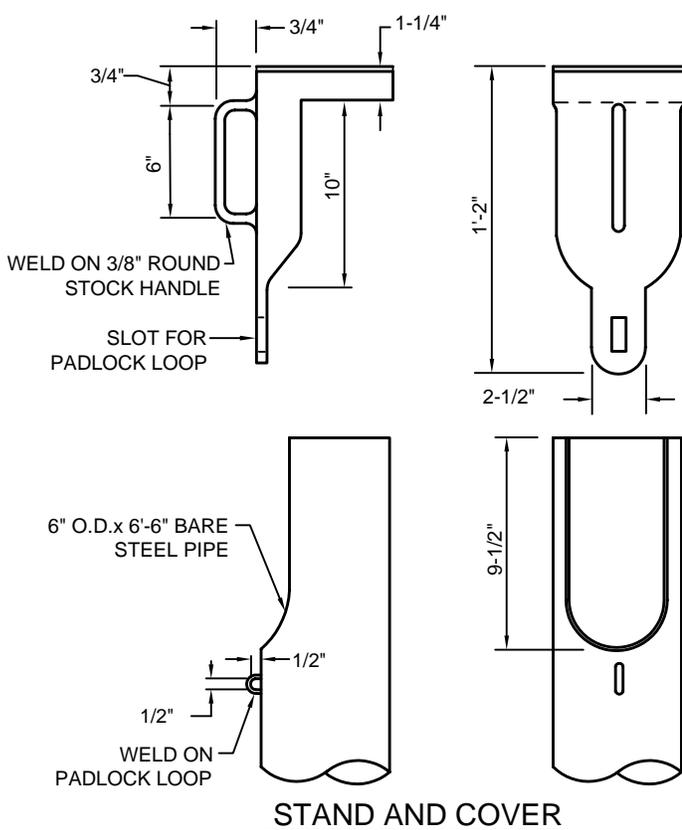


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AIR and VACUUM
RELIEF ASSEMBLY

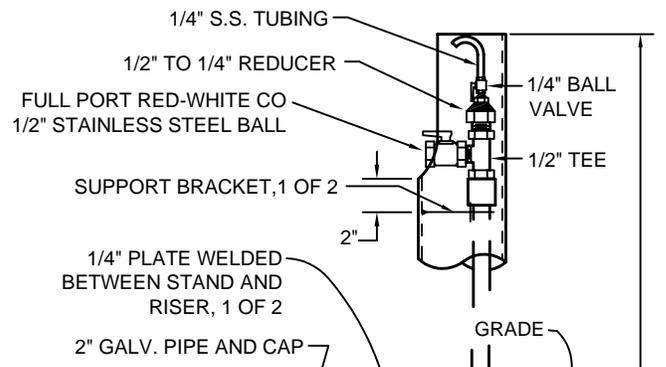
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Drawing No: W-6	
Sheet No: 1 OF 1	

Revisions

Description	Approved	Date	Description	Approved	Date

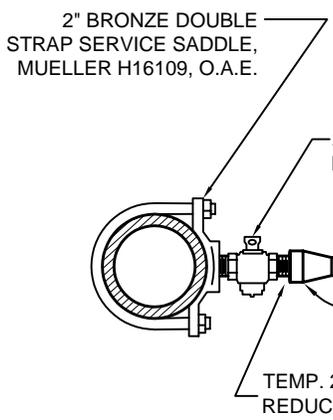


SUPPORT BRACKET



STAND AND COVER

- NOTES:
1. LOCATE SAMPLE STATION PER DIRECTION OF THE DEPARTMENT.
 2. O.A.E. = "OR APPROVED EQUAL"
 3. SAMPLE STATION TO BE PROVIDED BY WATER PURVEYOR.



ASSEMBLY

WELD 1/8" ROUND STOCK TO 2" PIPE (ONE SIDE ONLY) BEND STOCK AROUND VALVE TO RETAIN IN PLACE

- NOTES:
1. SURFACE PREPARATION AND PAINT:
 - a. WELD ALL SUPPORT BRACKETS TO PIPE PRIOR TO PAINTING.
 - b. PREPARE BOTH INSIDE AND OUTSIDE PIPE SURFACES BY WIRE BRUSH CLEANING.
 - c. INSIDE AND OUTSIDE SURFACES SHALL BE PRIMER COATED WITH TWO COATS. PRIMER SHALL BE "RUST-OLEUM CLEAN METAL PRIMER", OR APPROVED EQUAL.
 - d. PAINT SHALL BE RUST-OLEUM INDUSTRIAL ENAMEL COLOR "SAFETY BLUE", OR APPROVED EQUAL, TWO COATS OF PAINT ARE REQUIRED.
 2. 14-GAUGE INSULATED COPPER TRACER WIRE SHALL BE LAID IN THE TRENCH ABOVE THE PIPE AND BROUGHT ABOVE GRADE THROUGH ANY METER OR VALVE BOXES.
 3. COLOR CODED BLUE 3" WIDE POLYETHYLENE NON-DETECTABLE TAPE MARKED "CAUTION BURIED WATER LINE BELOW" SHALL BE BURIED IN THE TRENCH AND ABOVE THE PIPE AND TRACER WIRE.



DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION

WATER SAMPLING STATION

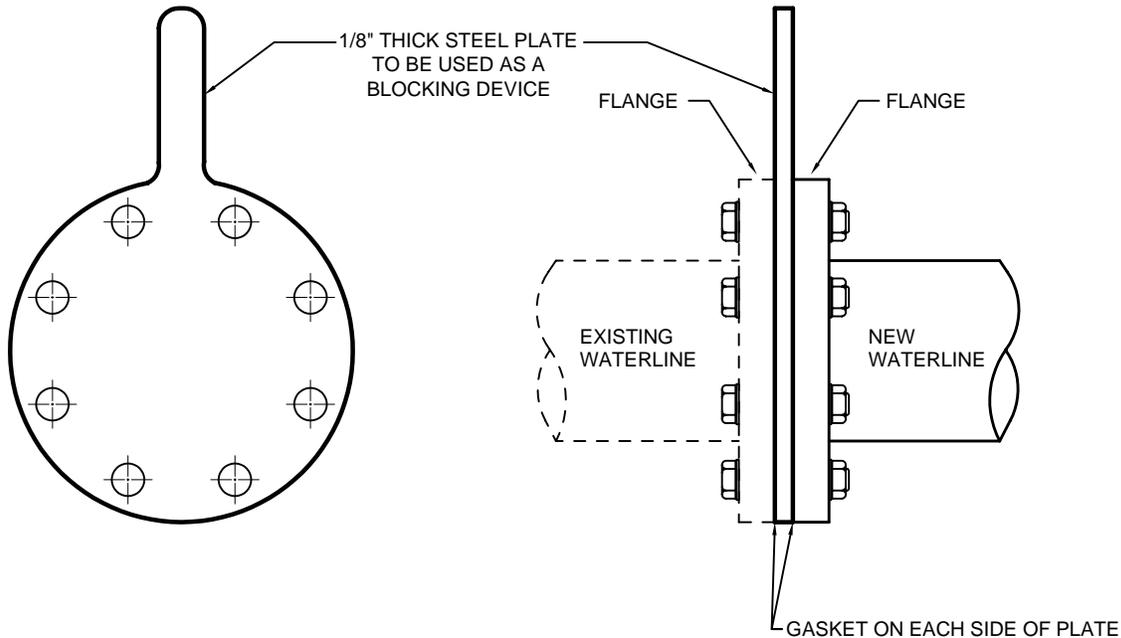
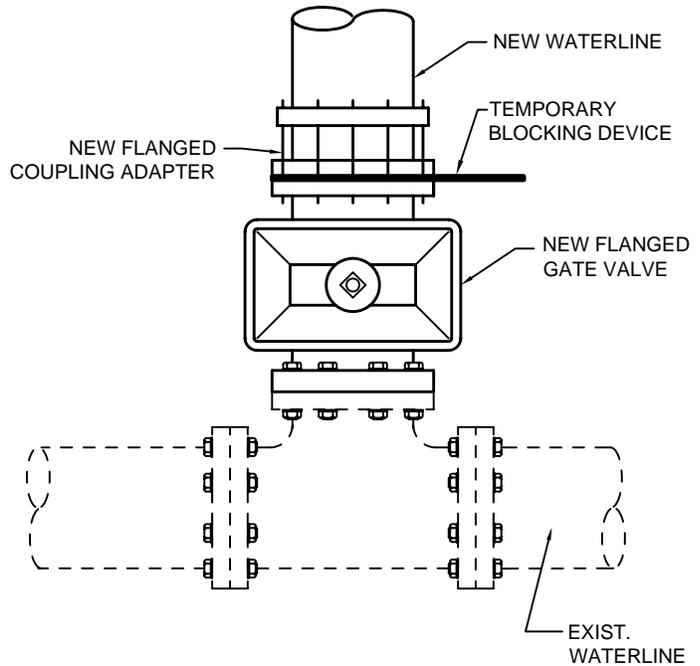
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Drawing No:	W-7
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date

NOTES:

1. DIRECT CONNECTION TO THE EXISTING WATER SYSTEM SHALL NOT BE PERMITTED UNTIL THE NEW INSTALLATION HAS PASSED BACTERIA TESTING AND A PHYSICAL CHECK BY THE WATER QUALITY MANAGER. SEPARATION SHALL BE ACHIEVED BY THE INSTALLATION OF THE TEMPORARY BLOCKING DEVICE AS SHOWN HEREON
2. PRESSURE TESTING AGAINST VALVES SHALL NOT BE ALLOWED. NEW VALVES SHALL BE SWABBED WITH CHLORINE PRIOR TO INSTALLATION.
3. WHEN TEMPORARY BLOCKING DEVICE IS REMOVED, THE CONTRACTOR SHALL ADJUST FITTING TO ELIMINATE 1/8" GAP WITHOUT FORCING THE JOINT TOGETHER.
4. TEST PRESSURE SHALL BE 50 PSI GREATER THAN THE WORKING PRESSURE OF THE PIPE MEASURED AT THE LOWEST ELEVATION OF THE SYSTEM OR 150 PSI, WHICHEVER IS GREATER.



PROCEDURE FOR CONNECTING NEW WATERLINES TO EXISTING SYSTEM (ALTERNATIVE TO THE OLD INDUSTRIAL STANDARD METHOD): AT THE POINT OF CONNECTION TO THE EXISTING SYSTEM, ALL JOINTS BETWEEN FITTINGS AND VALVES SHALL BE FLANGED. ANY CHANGE REQUIRES WRITTEN APPROVAL FROM THE DEPARTMENT. AT THE JOINT THAT CONNECTS THE EXISTING SYSTEM TO THE NEW LINE, A BLOCKING DEVICE SHALL BE INSTALLED. THIS DEVICE SHALL BE CONSTRUCTED OF 1/8" THICK STEEL PLATE. IT SHALL BE INSTALLED BETWEEN THE TWO FLANGES WITH A GASKET ON EACH SIDE. THIS WILL ALLOW ALL FITTINGS, VALVES, AND THE PIPELINE TO BE DISINFECTED AND PRESSURE TESTED AS ONE UNIT. AFTER THE NEW SYSTEM HAS MET ALL REQUIREMENTS, THE DEPARTMENT WILL ALLOW THE CONTRACTOR TO REMOVE THE BLOCKING DEVICE. THE DEVICE AND BOTH GASKETS ARE TO BE REMOVED AND A NEW GASKET SHALL BE INSTALLED BETWEEN THE FLANGES. THE NEW SYSTEM IS THEN IN SERVICE.

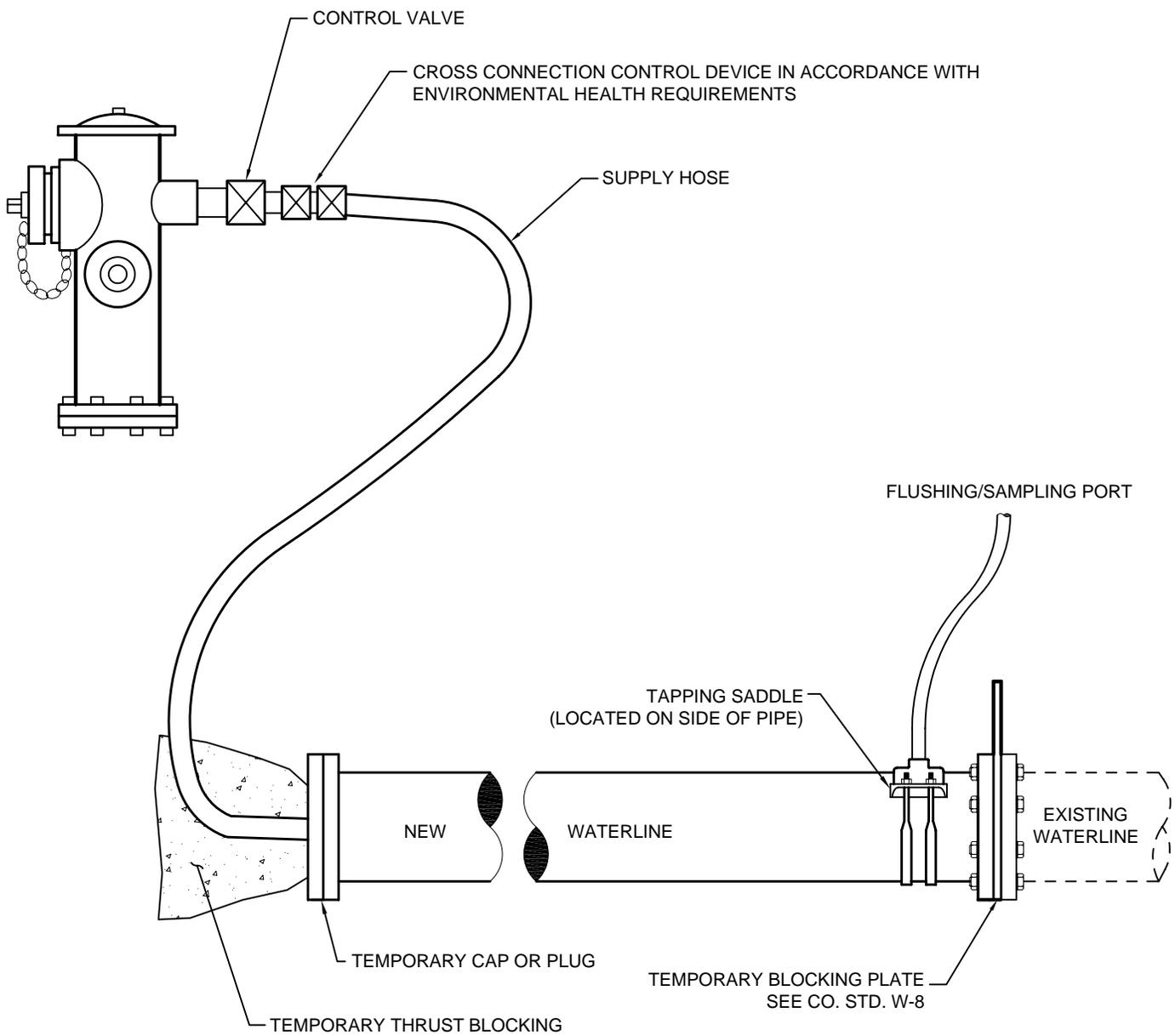


DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
**NEW WATERLINE
 CONNECTION DETAILS**

Scale: NTS	Adopted: 2011
Drawing No: W-8	
Sheet No:	1 OF 1

Revisions

Description	Approved	Date	Description	Approved	Date



NOTES:

1. DIRECT CONNECTION TO THE EXISTING WATER SYSTEM SHALL NOT BE PERMITTED UNTIL THE NEW INSTALLATION HAS PASSED BACTERIA TESTING. MAINTAIN AIR GAP PER AWWA STD. C651



DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
**NEW WATERLINE
 FLUSHING DETAIL**

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