

- \* LONGITUDINAL JOINT FOR FINISH COURSE AC.
- \*\* ADDITIONAL RIGHT OF WAY MAY BE REQUIRED WHEN A PRINCIPAL HIGHWAY COINCIDES WITH AN ADOPTED ROUTE FOR AN ADDITIONAL PUBLIC FACILITY (I.E., PEDESTRIAN, BICYCLE, OR EQUESTRIAN TRAIL), OR FOR A SCENIC HIGHWAY.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

Revision: August 2018

STD. PLAN

1100

PRINCIPAL HIGHWAY TYPICAL SECTIONS

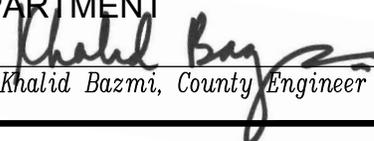
SHT. 1 OF 4

TYPICAL ROADWAY SECTION NOTES:

1. THE STANDARD SECTION SHALL BE USED EXCEPT AS NOTED BELOW. THE CURBED MEDIAN ALTERNATE MAY BE ACCEPTABLE UNDER ANY OF THE FOLLOWING CONDITIONS AND SUBJECT TO APPROVAL OF THE ENGINEER:
  - A. WHEN IT FILLS A GAP ON A STRETCH OF ROADWAY ALREADY BUILT IN ADJACENT AREAS WITH CURBED MEDIAN.
  - B. WHEN IT IS A SHORT SECTION NEAR INTERSECTION FOR DELINEATION AND/OR PLACING TRAFFIC CONTROL DEVICES.
  - C. WHEN NECESSARY TO CONTROL TURN MOVEMENTS AND ACCESS ON HEAVILY TRAVELED ARTERIALS WITH COMMERCIAL FRONTAGE AND MULTIPLE DRIVEWAYS.
  - D. WHEN IT IS TO BE LANDSCAPED.
2. IF THE CURBED MEDIAN ALTERNATE IS USED, THE FOLLOWING SHALL APPLY:
  - A. SEE STANDARD PLAN 1114 FOR LANDSCAPED MEDIAN DETAIL.
  - B. SEE STANDARD PLAN 120-2-OC FOR CURB TYPE.
  - C. TO BE PAVED WITH 2 INCH AC/APPROVED SOIL STERILANT, UNLESS LANDSCAPING OR OTHER PAVING IS APPROVED BY THE ENGINEER.
  - D. LANDSCAPED MEDIANS SHALL NOT BE MAINTAINED WITH ROAD FUNDS; A METHOD OF FUNDING MAINTENANCE SHALL BE ESTABLISHED PRIOR TO APPROVAL OF STREET IMPROVEMENT PLANS.
3. THICKNESS OF PAVEMENT AND BASE TO BE DETERMINED BY THE ENGINEER.
4. SEE STANDARD PLAN 120-2-OC FOR CURB TYPE.
5. SEE STANDARD PLAN 1205 FOR SIDEWALK DETAILS.
6. DISTANCE SHOWN IS MINIMUM FROM RIGHT OF WAY TO HINGE POINT.
7. MINIMUM STREET FLOW LINE GRADE SHALL BE ONE PERCENT, REVERSE GRADE VERTICAL CURVES EXCEPTED.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

  
Khalid Bazmi, County Engineer

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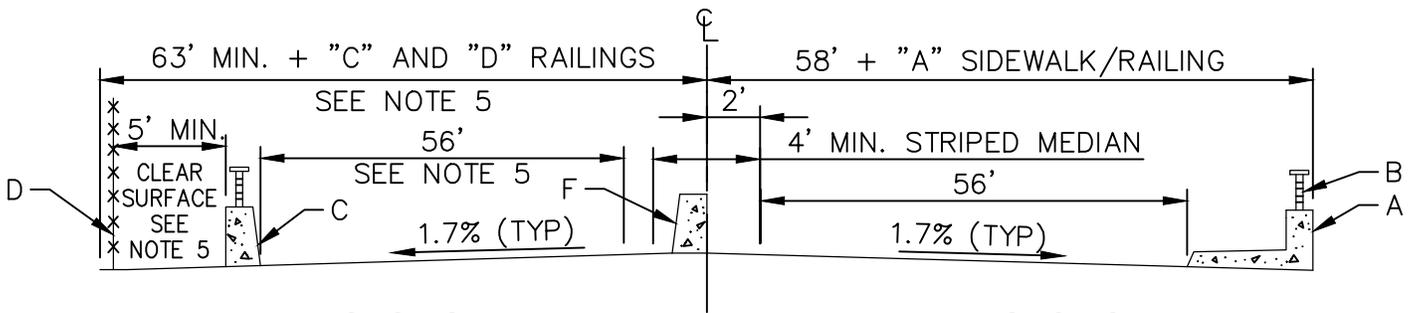
STD. PLAN

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PRINCIPAL HIGHWAY TYPICAL SECTIONS

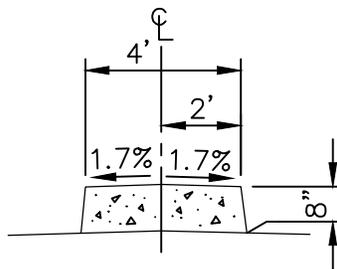
SHT. 2 OF 4

# TYPICAL BRIDGE SECTIONS

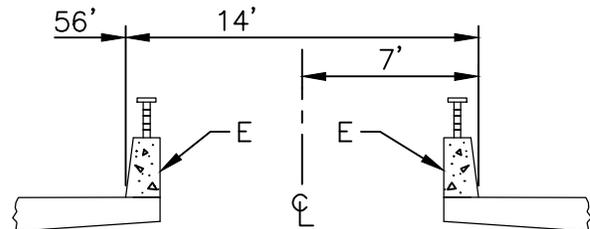


**HALF SECTION**  
**POSTED SPEED > 45 MPH**

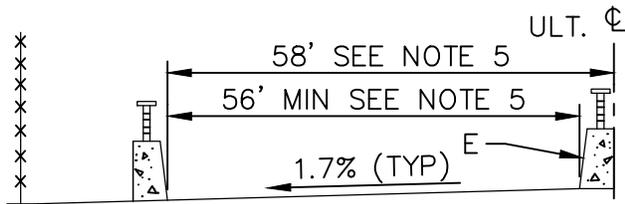
**HALF SECTION**  
**POSTED SPEED ≤ 45 MPH**  
FOR POSTED SPEEDS > 40 MPH  
CONSULT THE ENGINEER



**CURBED MEDIAN ALTERNATE**  
**POSTED SPEED ≤ 45 MPH**

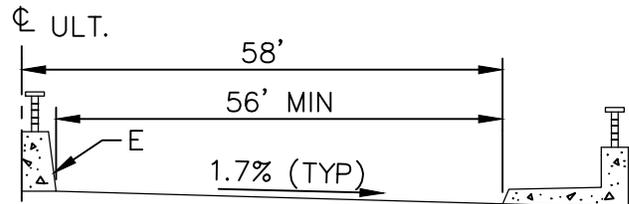


**OPEN MEDIAN ALTERNATE**



**INITIAL PHASE HALF SECTION**  
**POSTED SPEED > 45 MPH**

SAME AS STANDARD SECTION  
ON SHT. 1 EXCEPT AS NOTED



**INITIAL PHASE HALF SECTION**  
**POSTED SPEED ≤ 45 MPH**

SAME AS STANDARD SECTION  
ON SHT. 1 EXCEPT AS NOTED

SEE SHT. 4 FOR LETTERS A, B, C, D, E, & F.

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PRINCIPAL HIGHWAY TYPICAL SECTIONS

SHT. 3 OF 4

**TYPICAL BRIDGE SECTION NOTES:**

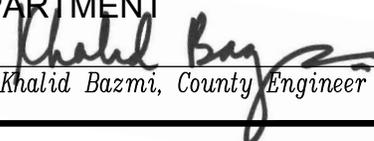
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2. BRIDGE TYPE TO BE APPROVED BY THE ENGINEER.
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4. CURBED MEDIAN OR OPEN MEDIAN ALTERNATE TO BE USED ONLY WHEN APPROACHING HIGHWAY ALSO HAS A RAISED MEDIAN.
5. FOR EQUESTRIAN TRAILS, SEE CALIFORNIA START PARKS ACCESSIBILITY GUIDELINES.
6. WEATHERING STEEL MAY BE USED FOR ANY RAILING WITH APPROVAL OF THE ENGINEER.
7. THICKNESS OF PAVEMENT AND BASE TO BE DETERMINED BY THE ENGINEER.

**BRIDGE RAILING TYPES:**

- "A" ANY TRAFFIC/PEDESTRIAN COMBINATION RAILING & RAISED SIDEWALK FROM CALTRANS STD. PLANS OR ALTERNATE TYPE APPROVED BY THE ENGINEER. RAILING HEIGHT SHALL EXTEND 3 FEET-6 INCHES (3'-6") MIN. ABOVE ADJACENT SURFACE.
- "B" CALTRANS STANDARD TYPE 7 CHAIN LINK RAILING REQUIRED IN LIEU OF TUBULAR HAND RAILING WHEN STRUCTURE SPANS OVER A PUBLIC ROADWAY OR OTHER TRANSIT WAY.
- "C" ANY TRAFFIC/PEDESTRIAN COMBINATION RAILING FROM CALTRANS STD. PLANS OR ALTERNATE TYPE APPROVED BY THE ENGINEER. RAILING HEIGHT SHALL EXTEND 3 FEET-6 INCHES (3'-6") MIN. ABOVE ADJACENT SURFACE. SEE NOTE 5.
- "D" ANY CALTRANS PEDESTRIAN OR BICYCLE RAILING OR ALTERNATE TYPE APPROVED BY THE ENGINEER. RAILING HEIGHT SHALL EXTEND 3 FEET-6 INCHES (3'-6") MIN. ABOVE ADJACENT SURFACE. SEE NOTE 5.
- "E" ANY TRAFFIC/BICYCLE COMBINATION RAILING FROM CALTRANS STD. PLANS OR ALTERNATE TYPE APPROVED BY THE ENGINEER. RAILING HEIGHT SHALL EXTEND 3 FEET-6 INCHES (3'-6") MIN. ABOVE ADJACENT SURFACE.
- "F" TYPE 60 BARRIER, HALF-SECTION SHOWN

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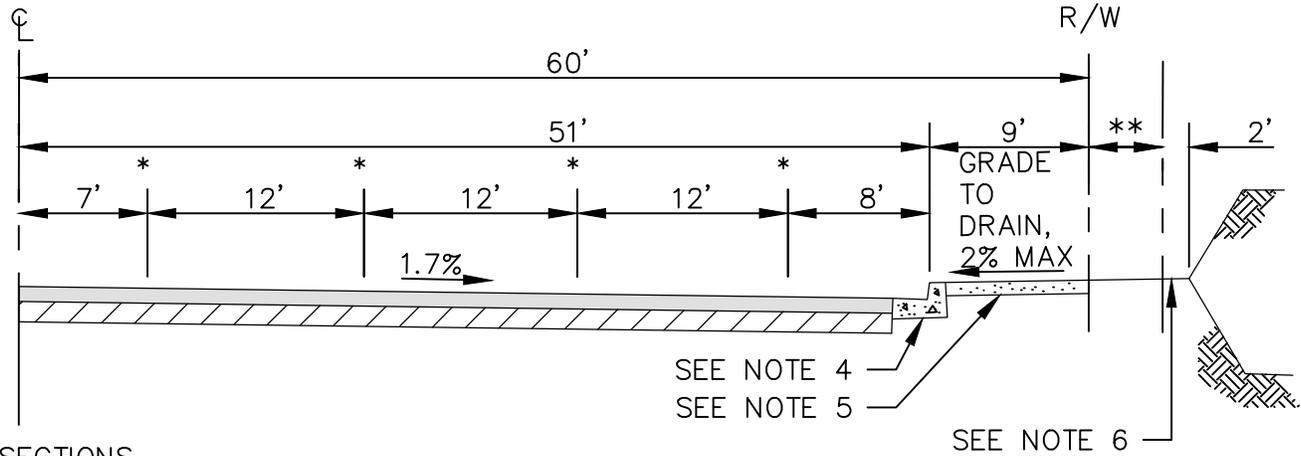
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STD. PLAN

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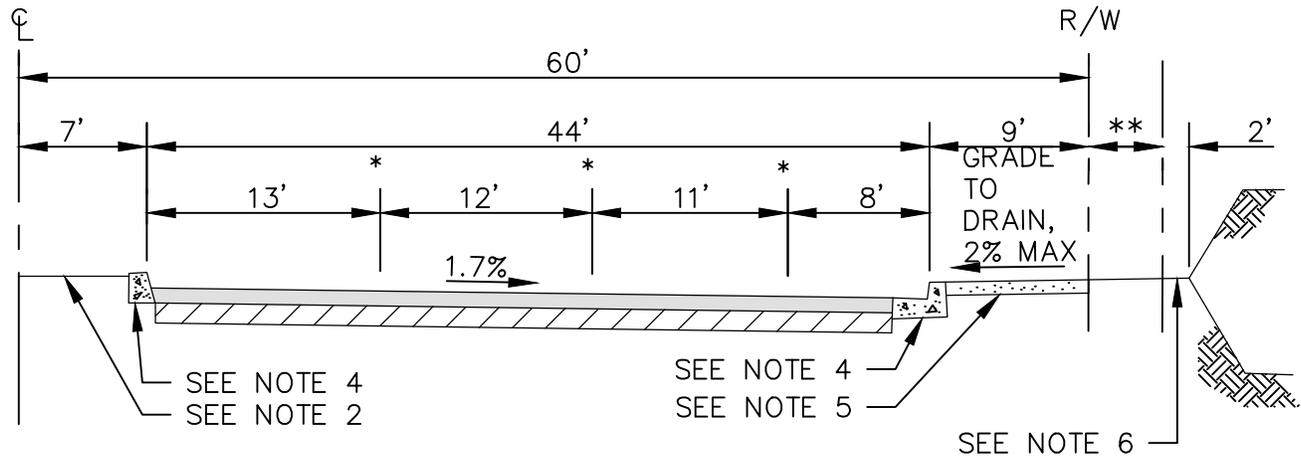
PRINCIPAL HIGHWAY TYPICAL SECTIONS

SHT. 4 OF 4



SECTIONS  
SYMMETRICAL  
ABOUT CL

STANDARD SECTION



CURBED MEDIAN ALTERNATE

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Khalid Bazmi, County Engineer

Revision: August 2018

STD. PLAN

1101

MAJOR HIGHWAY TYPICAL SECTIONS

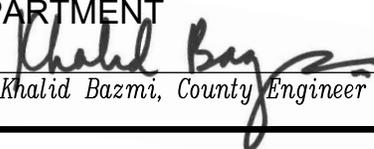
SHT. 1 OF 2

GENERAL NOTES:

1. THE STANDARD SECTION SHALL BE USED EXCEPT AS NOTED BELOW. THE CURBED MEDIAN ALTERNATE MAY BE ACCEPTABLE UNDER ANY OF THE FOLLOWING CONDITIONS AND SUBJECT TO APPROVAL OF THE ENGINEER:
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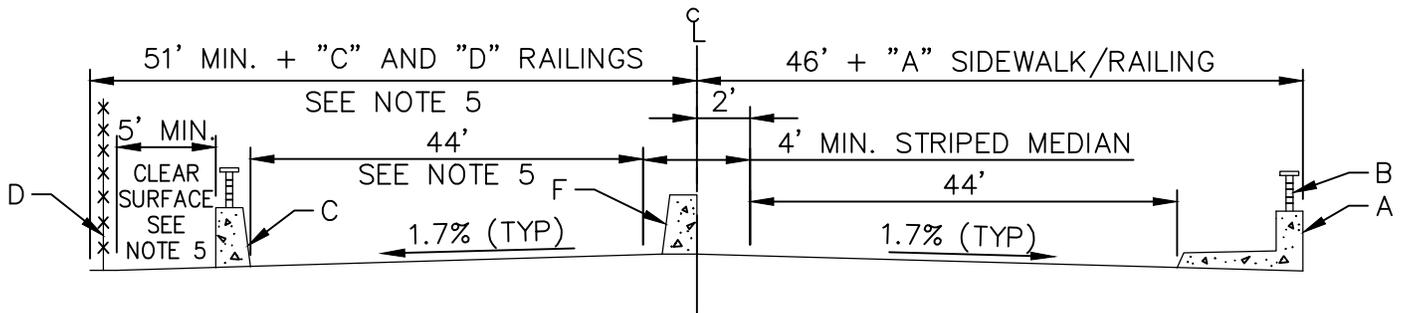
STD. PLAN

1101

MAJOR HIGHWAY TYPICAL SECTIONS

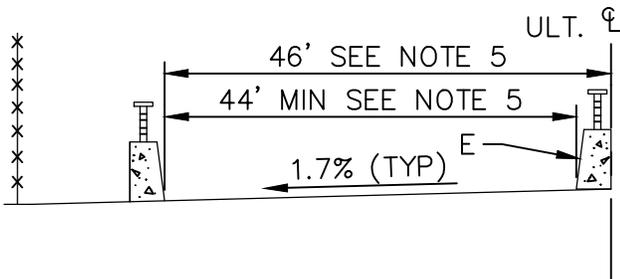
SHT. 2 OF 2

# TYPICAL BRIDGE SECTIONS



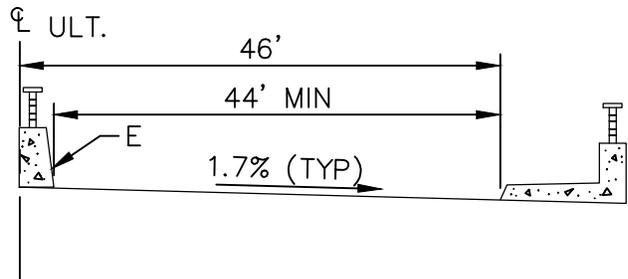
**HALF SECTION  
POSTED SPEED > 45 MPH**

**HALF SECTION  
POSTED SPEED ≤ 45 MPH  
FOR POSTED SPEEDS > 40 MPH  
CONSULT THE ENGINEER**



**INITIAL PHASE HALF SECTION  
POSTED SPEED > 45 MPH**

SAME AS STANDARD SECTION  
SHOWN ON STANDARD PLAN  
1101 EXCEPT AS NOTED



**INITIAL PHASE HALF SECTION  
POSTED SPEED ≤ 45 MPH**

SAME AS STANDARD SECTION  
SHOWN ON STANDARD PLAN  
1101 EXCEPT AS NOTED

SEE SHT. 2 FOR LETTERS A, B, C, D, E, & F.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

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Khalid Bazmi, County Engineer

Revision: August 2018

STD. PLAN

1102

MAJOR HIGHWAY BRIDGE SECTIONS

SHT. 1 OF 2

TYPICAL BRIDGE SECTION NOTES:

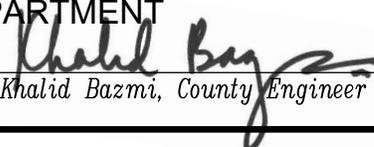
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6. WEATHERING STEEL MAY BE USED FOR ANY RAILING WITH APPROVAL OF THE ENGINEER.
7. THICKNESS OF PAVEMENT AND BASE TO BE DETERMINED BY THE ENGINEER.
8. FOR CURBED MEDIAN ALTERNATIVE DETAILS, SEE STANDARD PLAN 1100.

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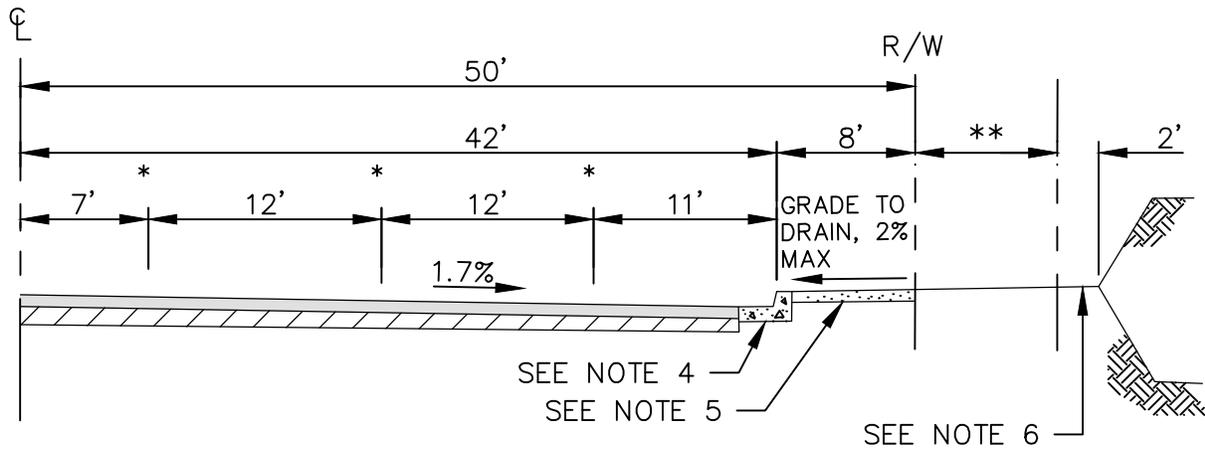
Revision: August 2018

STD. PLAN

1102

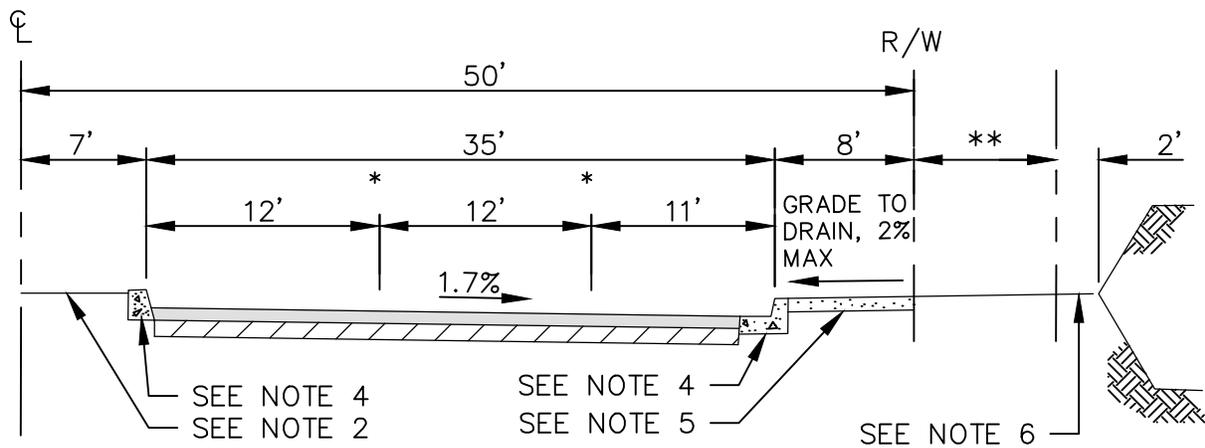
MAJOR HIGHWAY BRIDGE SECTIONS

SHT. 2 OF 2



SECTIONS  
SYMMETRICAL  
ABOUT ℄

STANDARD SECTION



CURBED MEDIAN ALTERNATE

- \* LONGITUDINAL JOINT FOR FINISH COURSE AC.
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Approved

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Khalid Bazmi, County Engineer

Revision: August 2018

STD. PLAN

1103

PRIMARY HIGHWAY TYPICAL SECTIONS

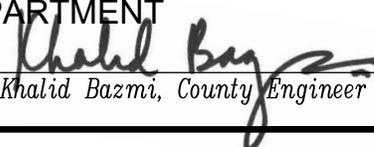
SHT. 1 OF 2

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7. MINIMUM STREET FLOW LINE GRADE SHALL BE ONE PERCENT, REVERSE GRADE VERTICAL CURVES EXCEPTED.

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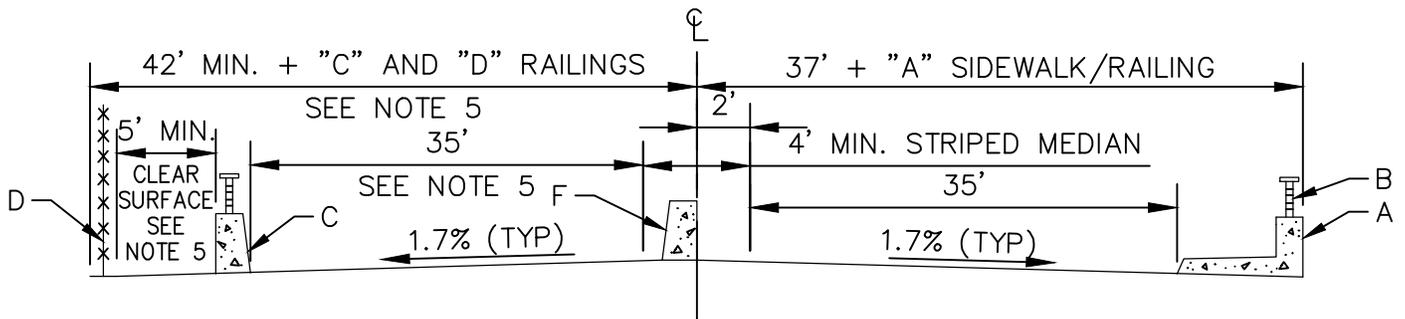
STD. PLAN

1103

PRIMARY HIGHWAY TYPICAL SECTIONS

SHT. 2 OF 2

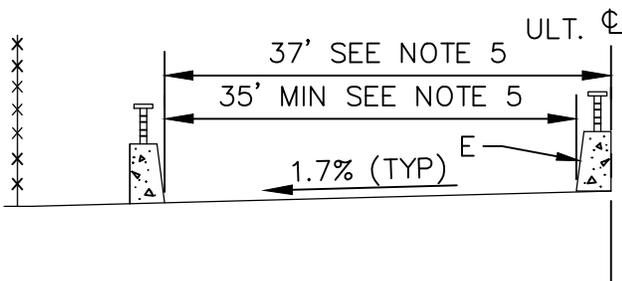
# TYPICAL BRIDGE SECTIONS



**HALF SECTION  
POSTED SPEED > 45 MPH**

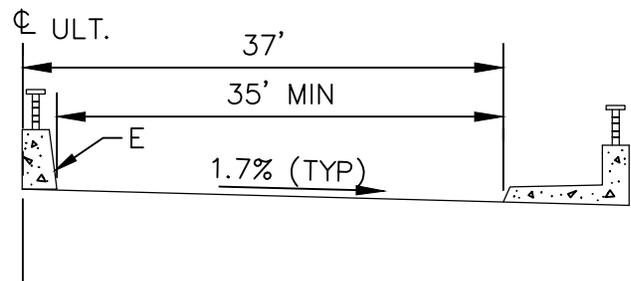
**HALF SECTION  
POSTED SPEED ≤ 45 MPH**

FOR POSTED SPEEDS > 40 MPH  
CONSULT THE ENGINEER



**INITIAL PHASE HALF SECTION  
POSTED SPEED > 45 MPH**

SAME AS STANDARD SECTION  
SHOWN ON STANDARD PLAN  
1103 EXCEPT AS NOTED



**INITIAL PHASE HALF SECTION  
POSTED SPEED ≤ 45 MPH**

SAME AS STANDARD SECTION  
SHOWN ON STANDARD PLAN  
1103 EXCEPT AS NOTED

SEE SHT. 2 FOR LETTERS A, B, C, D, E, & F.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

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STD. PLAN

1104

PRIMARY HIGHWAY BRIDGE SECTIONS

SHT. 1 OF 2

**TYPICAL BRIDGE SECTION NOTES:**

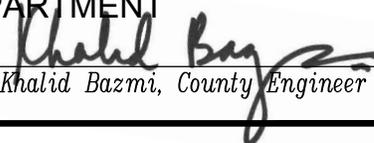
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7. THICKNESS OF PAVEMENT AND BASE TO BE DETERMINED BY THE ENGINEER.
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**BRIDGE RAILING TYPES:**

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- "F" TYPE 60 BARRIER, HALF-SECTION SHOWN

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

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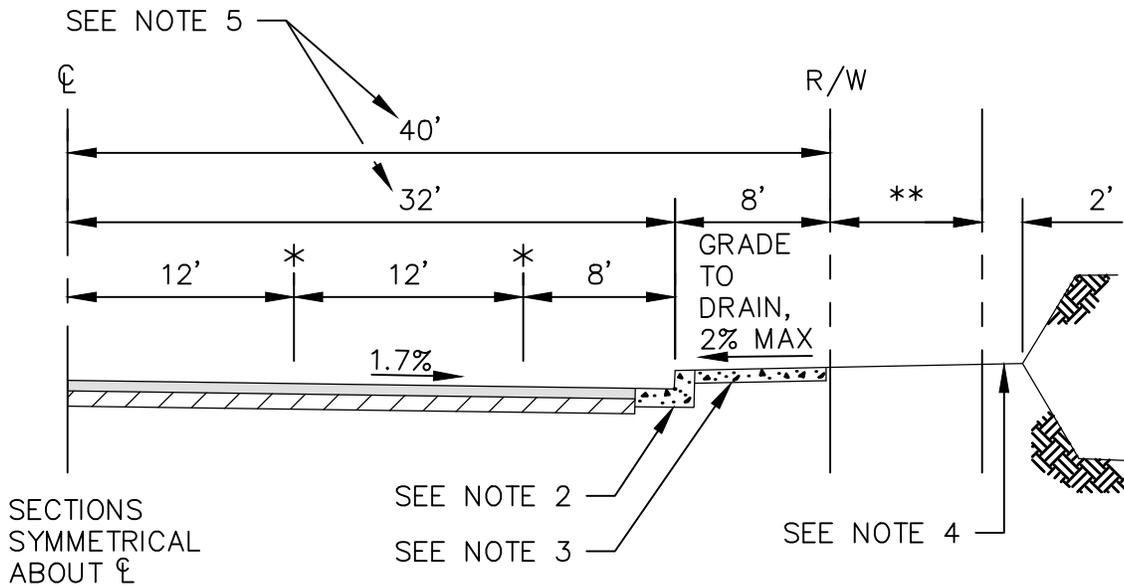
Revision: August 2018

STD. PLAN

1104

PRIMARY HIGHWAY BRIDGE SECTIONS

SHT. 2 OF 2



GENERAL NOTES:

1. THICKNESS OF PAVEMENT AND BASE TO BE DETERMINED BY THE ENGINEER.
2. SEE STD. PLAN 120-2-OC FOR CURB TYPE.
3. SEE STD. PLAN 1205 FOR SIDEWALK DETAILS.
4. DISTANCE SHOWN IS MINIMUM FROM R/W TO HINGE POINT.
5. ADD FIVE (5) FEET TO EACH SIDE OF CENTERLINE TO PROVIDE FOR A TEN (10) FOOT LEFT TURN POCKET WITHIN 400 FEET OF ANY INTERSECTION WITH AN ARTERIAL HIGHWAY OR HIGH-VOLUME (GREATER THAN 4,000 ADT) COLLECTOR, UNLESS OTHERWISE APPROVED BY THE ENGINEER.
6. MINIMUM STREET FLOW LINE GRADE SHALL BE 1 PERCENT, REVERSE GRADE VERTICAL CURVES EXCEPTED.

\* LONGITUDINAL JOINT FOR FINISH COURSE AC.

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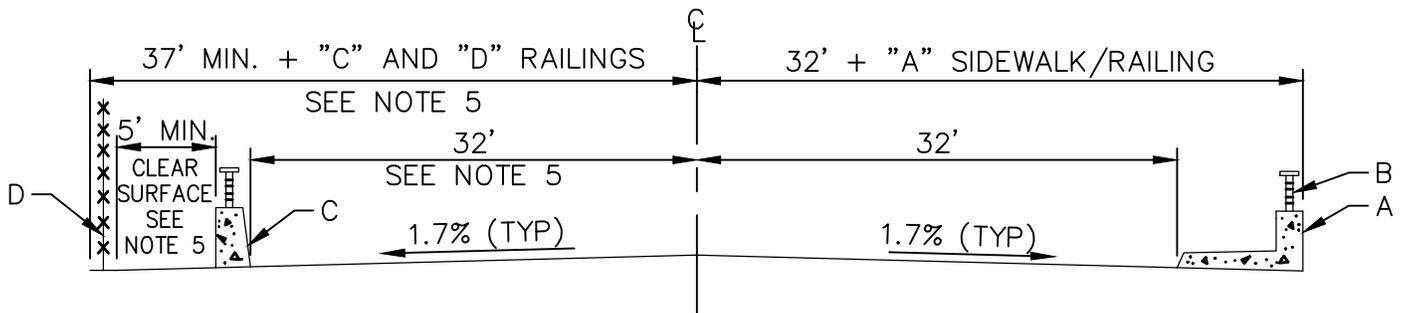
1105

SECONDARY HIGHWAY TYPICAL SECTIONS

SHT. 1 OF 1



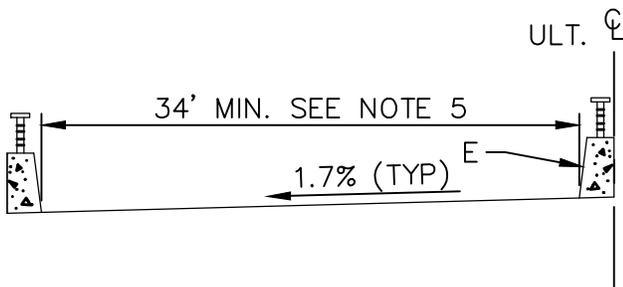
# TYPICAL BRIDGE SECTIONS



**HALF SECTION**  
**POSTED SPEED > 45 MPH**

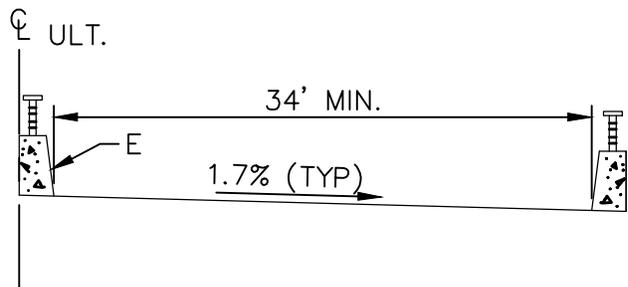
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FOR POSTED SPEEDS > 40 MPH  
CONSULT THE ENGINEER



**INITIAL PHASE HALF SECTION**  
**POSTED SPEED > 45 MPH**

SAME AS STANDARD SECTION  
SHOWN ON STANDARD PLAN  
1105 EXCEPT AS NOTED



**INITIAL PHASE HALF SECTION**  
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SAME AS STANDARD SECTION  
SHOWN ON STANDARD PLAN  
1105 EXCEPT AS NOTED

SEE SHT. 2 FOR LETTERS A, B, C, D, & E.

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STD. PLAN

1106

SECONDARY HIGHWAY BRIDGE SECTIONS

SHT. 1 OF 2

**TYPICAL BRIDGE SECTION NOTES:**

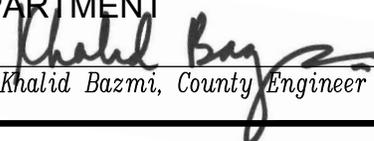
1. ULTIMATE BRIDGE TYPICAL SECTIONS TO BE APPROVED BY THE ENGINEER.
2. BRIDGE TYPE TO BE APPROVED BY THE ENGINEER.
3. FOR EQUESTRIAN TRAILS, SEE CALIFORNIA STATE PARKS ACCESSIBILITY GUIDELINES.
4. WEATHERING STEEL MAY BE USED FOR ANY RAILING WITH APPROVAL OF THE ENGINEER.
5. THICKNESS OF PAVEMENT AND BASE TO BE DETERMINED BY THE ENGINEER.

**BRIDGE RAILING TYPES:**

- "A" ANY TRAFFIC/PEDESTRIAN COMBINATION RAILING & RAISED SIDEWALK FROM CALTRANS STD. PLANS OR ALTERNATE TYPE APPROVED BY THE ENGINEER. RAILING HEIGHT SHALL EXTEND 3 FEET-6 INCHES (3'-6") MIN. ABOVE ADJACENT SURFACE.
- "B" CALTRANS STANDARD TYPE 7 CHAIN LINK RAILING REQUIRED IN LIEU OF TUBULAR HAND RAILING WHEN STRUCTURE SPANS OVER A PUBLIC ROADWAY OR OTHER TRANSIT WAY.
- "C" ANY TRAFFIC/PEDESTRIAN COMBINATION RAILING FROM CALTRANS STD. PLANS OR ALTERNATE TYPE APPROVED BY THE ENGINEER. RAILING HEIGHT SHALL EXTEND 3 FEET-6 INCHES (3'-6") MIN. ABOVE ADJACENT SURFACE. SEE NOTE 3.
- "D" ANY CALTRANS PEDESTRIAN OR BICYCLE RAILING OR ALTERNATE TYPE APPROVED BY THE ENGINEER. RAILING HEIGHT SHALL EXTEND 3 FEET-6 INCHES (3'-6") MIN. ABOVE ADJACENT SURFACE. SEE NOTE 3.
- "E" ANY TRAFFIC/BICYCLE COMBINATION RAILING FROM CALTRANS STD. PLANS OR ALTERNATE TYPE APPROVED BY THE ENGINEER. RAILING HEIGHT SHALL EXTEND 3 FEET-6 INCHES (3'-6") MIN. ABOVE ADJACENT SURFACE.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

  
Khalid Bazmi, County Engineer

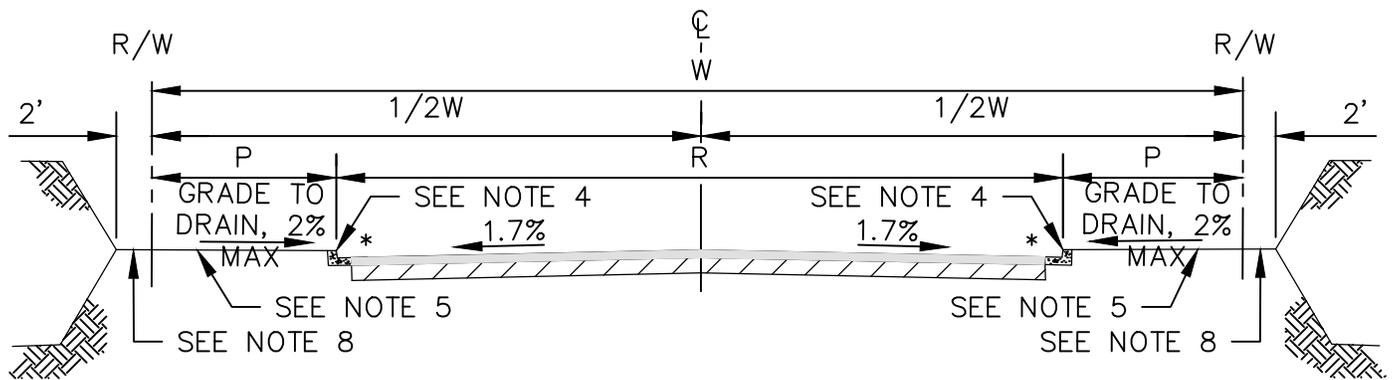
Revision: August 2018

STD. PLAN

1106

SECONDARY HIGHWAY BRIDGE SECTIONS

SHT. 2 OF 2



**TYPICAL SECTION**

\*CURBS SHALL BE TYPE A2-150(6). SPECIAL CONDITIONS MAY REQUIRE OTHER TYPES.

LEGEND	
W	= WIDTH OF RIGHT OF WAY IN FEET
R	= WIDTH OF ROADWAY IN FEET
P	= WIDTH OF PARKWAY IN FEET (INCL. SIDEWALK)

AVERAGE DAILY TRAFFIC	CLASSIFICATION	TYPICAL ACCESS BY:	RESIDENTIAL FRONTAGE ALLOWED	MINIMUM DESIGN SPEED (MPH)	W	R	SIDEWALK
4,000-10,000	INDUSTRIAL COLLECTOR	INDUST. LOCAL STREET DRIVEWAY BOTH SIDES	N/A	35	80	64	BOTH SIDES
<4,000	INDUSTRIAL LOCAL-A	INDUST. LOCAL STREET DRIVEWAY BOTH SIDES	N/A	25	60	44	BOTH SIDES
4,000-10,000	COMMUTER	LOCAL STREETS	NONE	35-45	56	40	BOTH SIDES
1,200-6,000	COLLECTOR	LOCAL STREETS	NONE	35	56	40	BOTH SIDES
500-1,200	LOCAL-B	LOCAL STREETS DRIVEWAY BOTH SIDES	ONE SIDE	25	48	34	ONE SIDE
500-1,200	LOCAL	LOCAL STREETS DRIVEWAY BOTH SIDES	BOTH SIDES	25	56	40	BOTH SIDES
<500	LOCAL	DRIVEWAY BOTH SIDES	BOTH SIDES	25	52	36	BOTH SIDES
200-500	LOCAL-B	DRIVEWAY ONE SIDE	ONE SIDE	25	44	30	ONE SIDE
<200	LOCAL-C	DRIVEWAY ONE SIDE	ONE SIDE	25	40	28	ONE SIDE

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

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STD. PLAN

1107

OTHER STREET IMPROVEMENTS

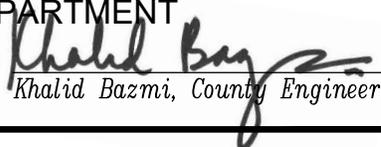
SHT. 1 OF 5

TYPICAL ROADWAY SECTION NOTES:

1. SIDEWALKS, IN ADDITION TO THOSE INDICATED ABOVE, MAY BE REQUIRED TO PROVIDE CONTINUOUS PEDESTRIAN ROUTES.
2. REQUIRED PAVEMENT STRUCTURAL SECTION TO BE DETERMINED BY THE ENGINEER.
3. CURB SHALL BE TYPE A2-150(6) EXCEPT FOR INDUSTRIAL COLLECTOR STREETS.
4. SEE STD. PLAN 120-2-0C FOR CURB TYPE.
5. SEE STD. PLAN 1205 FOR SIDEWALK DETAILS.
6. BASIC CRITERIA: 12 FEET TRAVEL LANES FOR VOLUMES GREATER THAN 500 ADT AND 11 FEET TRAVEL LANES FOR VOLUMES LESS THAN 500 ADT.
  - A. ROADWAY, R, SHALL BE 50 FEET AND PARKWAY, P, MAY BE REDUCED TO 5 FEET WITHIN 100 FEET OF CURB RETURN OF AN INTERSECTION WITH A HIGHER CLASSIFICATION HIGHWAY. CURB & GUTTER TRANSITION SHALL BE CONSTRUCTED BETWEEN 100 FEET & 140 FEET FROM CURB RETURN.
  - B. 8 FEET PARKWAY ON DRIVEWAY SIDE. 6 FEET PARKWAY WITHOUT ACCESS. PAVEMENT CROWNLINER SHALL BE CENTERED BETWEEN CURBS.
  - C. 8 FEET PARKWAY ON DRIVEWAY SIDE. 5 FEET PARKWAY WITHOUT ACCESS. PAVEMENT CROWNLINER SHALL BE CENTERED BETWEEN CURBS.
7. MIN. STREET FLOW LINE GRADE SHALL BE 1 PERCENT, REVERSE GRADE VERTICAL CURVES EXCEPTED.
8. DISTANCE SHOWN IS MIN. FROM R/W TO HINGE POINT, WHEN SIDEWALK IS ADJACENT TO R/W AND/OR HINGE POINT IS FOR A DOWN SLOPE. WHEN HINGE POINT IS FOR AN UP SLOPE AND WHEN SIDEWALK IS ADJACENT TO CURB, HINGE POINT SHALL BE LOCATED AT R/W OR A MIN. OF 2 FEET BEHIND SIDEWALK, WHICHEVER IS THE GREATER DISTANCE FROM CURB FACE.
9. FOR RAILING DETAILS AT BRIDGES, SEE STANDARD PLAN 1100, 1102, 1104, AND 1106.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

  
Khalid Bazmi, County Engineer

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OTHER STREET IMPROVEMENTS

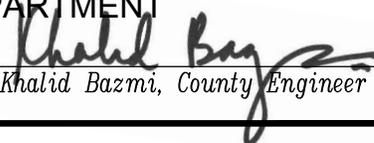
SHT. 2 OF 5

GENERAL NOTES:

1. ALL LOCAL STREETS, PRIVATE AND PUBLIC, SHALL BE DESIGNED AND CONSTRUCTED IN COMPLIANCE WITH THE REQUIREMENTS OF THIS AND ALL OTHER APPLICABLE OCPW STANDARD PLANS, UNLESS OTHERWISE APPROVED BY THE ENGINEER.
2. DESIGN SPEED FOR LOCAL STREETS WITH RESIDENTIAL FRONTAGE SHALL BE 25 MILES PER HOUR, AND MAXIMUM GRADE SHALL BE 10 PERCENT. DESIGN SPEED FOR STREETS WITHOUT RESIDENTIAL FRONTAGE SHALL BE 35 MILES PER HOUR. STREET ALIGNMENT AND PROFILE SHALL COMPLY WITH THE CRITERIA FOR SAFE STOPPING SIGHT DISTANCE IN CONFORMANCE WITH THE LATEST EDITION OF CALTRANS HIGHWAY DESIGN MANUAL FOR THESE DESIGN SPEEDS.
3. STREET SYSTEMS SHOULD BE LAID OUT TO DISCOURAGE TRAVEL AT HIGHER THAN DESIGN SPEEDS BY INCORPORATING CURVES, KNUCKLES AND "T" INTERSECTIONS AT NO MORE THAN 1,000 FOOT INTERVALS, DEPENDING ON TERRAIN. CONTINUOUS STRAIGHT STREETS CONNECTING TWO ARTERIAL HIGHWAYS, WHICH WOULD ACT AS A "SHORTCUT" THROUGH A RESIDENTIAL AREA, SHALL BE AVOIDED.
4. STREETS SHALL INTERSECT AT RIGHT ANGLES WHEREVER POSSIBLE. STREETS SHALL NOT INTERSECT AT GREATER THAN 15 DEGREES SKEW TO RIGHT ANGLE. FOUR-LEGGED INTERSECTIONS SHALL BE AVOIDED EXCEPT AT SIGNALIZED LOCATIONS. INTERSECTIONS SHALL HAVE ADEQUATE SIGHT DISTANCE IN CONFORMANCE WITH STD. PLAN 1117. INTERSECTIONS ON CREST VERTICAL CURVES OR ON THE INSIDE OF HORIZONTAL CURVES SHALL BE AVOIDED. THE MINIMUM DISTANCE BETWEEN INTERSECTIONS SHALL BE 150 FEET MEASURED FROM THEIR CENTERLINES.
5. THE LOCATION OF ANY INTERSECTION OF A LOCAL STREET AND AN ARTERIAL HIGHWAY SHALL BE REVIEWED BY THE ENGINEER TO DETERMINE SAFETY AND COMPATIBILITY FOR SIGNAL PROGRESSION. TRAFFIC AT ANY INTERSECTION MAY BE ULTIMATELY RESTRICTED TO RIGHT TURN IN AND OUT ONLY.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

  
Khalid Bazmi, County Engineer

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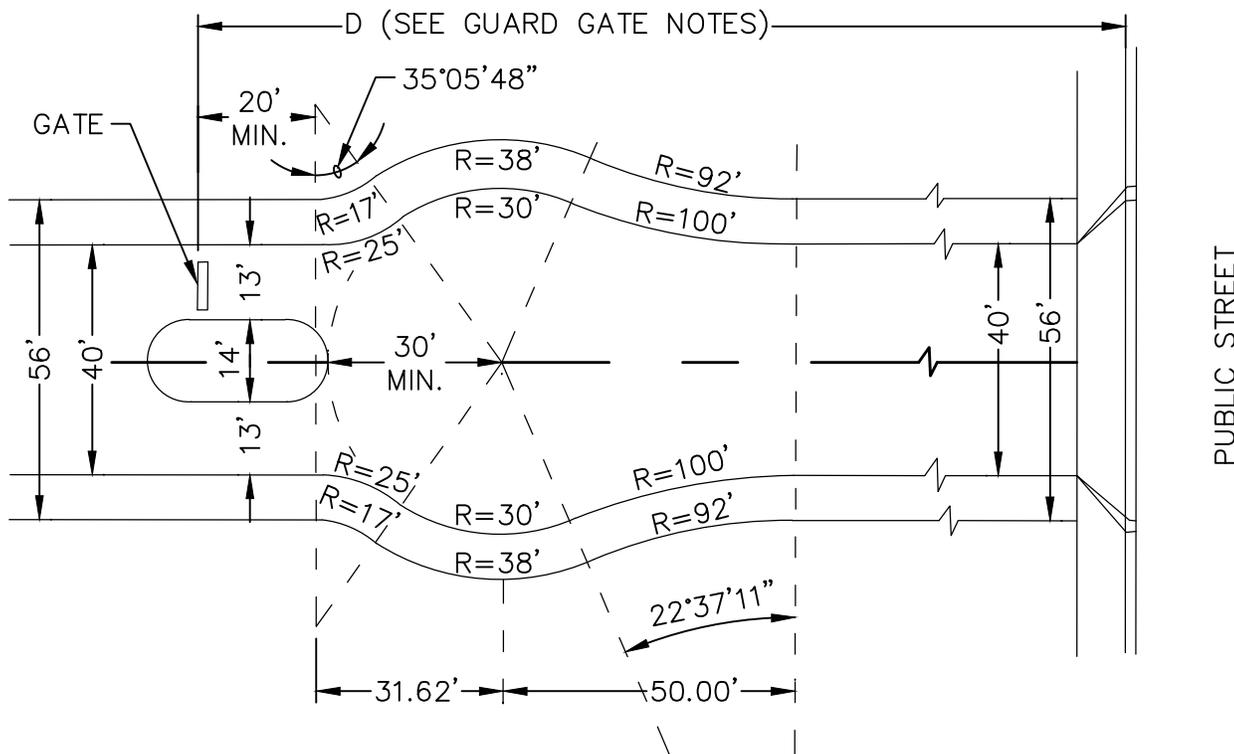
1107

OTHER STREET IMPROVEMENTS

SHT. 3 OF 5

**PRIVATE STREET STANDARDS NOTES:**

1. PRIVATE STREETS SHALL BE PERMITTED ONLY AS DESCRIBED IN THE ORANGE COUNTY SUBDIVISION CODE, SUBJECT TO REVIEW AND APPROVAL BY THE ENGINEER, AND THE SPECIAL PROJECTS DIVISION.
2. PRIVATE STREETS SHALL PROVIDE A PAVED TRAVEL WAY IN CONFORMANCE WITH STD. PLAN 1107. WALKWAYS SHALL BE PROVIDED ON ALL PRIVATE STREETS IN CONFORMANCE WITH STD. PLANS 1107 AND 1205 UNLESS AN ALTERNATE PEDESTRIAN CIRCULATION SYSTEM IS PROVIDED MEETING THE APPROVAL OF THE ENGINEER.
3. REQUIRED PAVEMENT STRUCTURAL SECTION SHALL BE DETERMINED BY THE ENGINEER.
4. ENTRYWAYS TO PRIVATE TRACTS SHALL BE DESIGNED TO EMPHASIZE THEIR PRIVATE STATUS. TEXTURED CONCRETE OR WIDE FLARE DRIVEWAYS, GUARD GATES OR OTHER ACCESS CONTROLS SHALL BE REQUIRED FOR PRIVATE TRACTS. ENTRY GATES SHALL BE SET BACK FROM THE NEAR CURB LINE OF ANY PUBLIC STREET TO PROVIDE A MINIMUM 100 FEET OF STORAGE FOR ENTERING VEHICLES TO STACK WITHOUT INTERFERING WITH THROUGH TRAFFIC. MINIMUM DESIGN CRITERIA AND REQUIRED FEATURES FOR GUARD GATES ARE SHOWN BELOW:



**GUARD GATE NOTES:**

1. D = 1 FOOT PER DWELLING UNIT SERVED, 100 FEET MINIMUM (MULTIPLE LANES MAY BE USED TO SATISFY STORAGE DISTANCE REQUIREMENT).

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

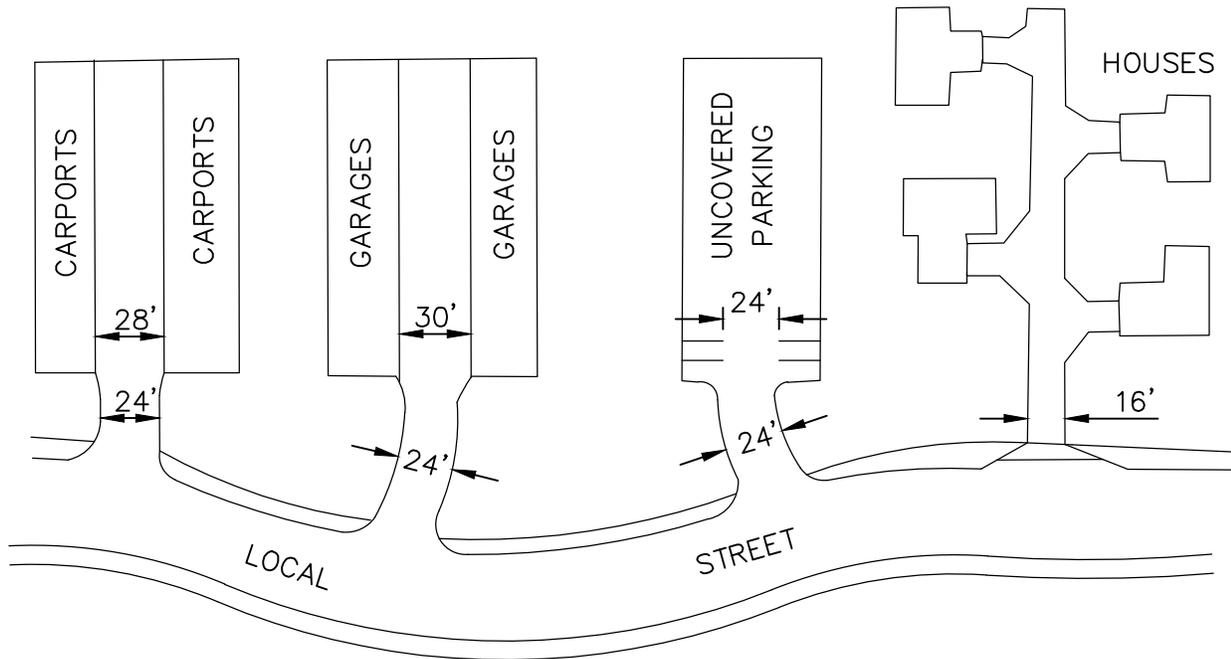
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STD. PLAN

1107

OTHER STREET IMPROVEMENTS

SHT. 4 OF 5



**PARKING AISLES AND DRIVEWAYS NOTES:**

1. THE NUMBER AND SIZE OF PARKING SPACES PROVIDED FOR ANY DEVELOPMENT SHALL CONFORM WITH THE REQUIREMENTS OF THE ORANGE COUNTY ZONING CODE, SECTIONS 7-9-145.3-5.
2. PARKING, OTHER THAN PARALLEL ON-STREET, SHALL BE PROVIDED WITHIN PARKING LOTS AND PARKING BAYS. DIAGONAL AND PERPENDICULAR PARKING AREAS CANNOT FACE STREETS DIRECTLY, EXCEPT WITH THE APPROVAL OF THE ENGINEER.
3. ACCESS DRIVES AND DRIVEWAYS SERVING PARKING LOTS SHALL PROVIDE A MINIMUM 24 FOOT TRAVEL WAY. MORE WIDTH WILL BE REQUIRED IF PARALLEL PARKING IS PROPOSED ON THE DRIVEWAY.
4. AISLES BETWEEN ROWS OF BACK-OUT PERPENDICULAR PARKING SHALL PROVIDE A MINIMUM 24 FOOT-WIDE TRAVEL WAY. AISLES BETWEEN ROWS OF COVERED BACK-OUT PARKING SHALL PROVIDE A MINIMUM 28 FOOT-WIDE TRAVEL WAY. AISLES BETWEEN ROWS OF GARAGES SHALL PROVIDE A MINIMUM 30 FEET BETWEEN FACING GARAGES.
5. JOINTLY-USED PRIVATE DRIVEWAYS SERVING FOUR (4) OR LESS RESIDENTIAL DWELLING UNITS SHALL BE PAVED TO A MINIMUM WIDTH OF 16 FEET. IF MORE THAN FOUR (4) RESIDENTIAL DWELLING UNITS ARE ULTIMATELY SERVED BY A PRIVATE DRIVEWAY AND NO OTHER ACCESS IS PROVIDED, THE DRIVEWAY SHALL BE PAVED TO A MINIMUM WIDTH OF 24 FEET.
6. MINIMUM PRIVATE DRIVEWAY GRADES SHALL BE 0.5 PERCENT, REVERSE GRADE VERTICAL CURVES EXCEPTED.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
 Khalid Bazmi, County Engineer

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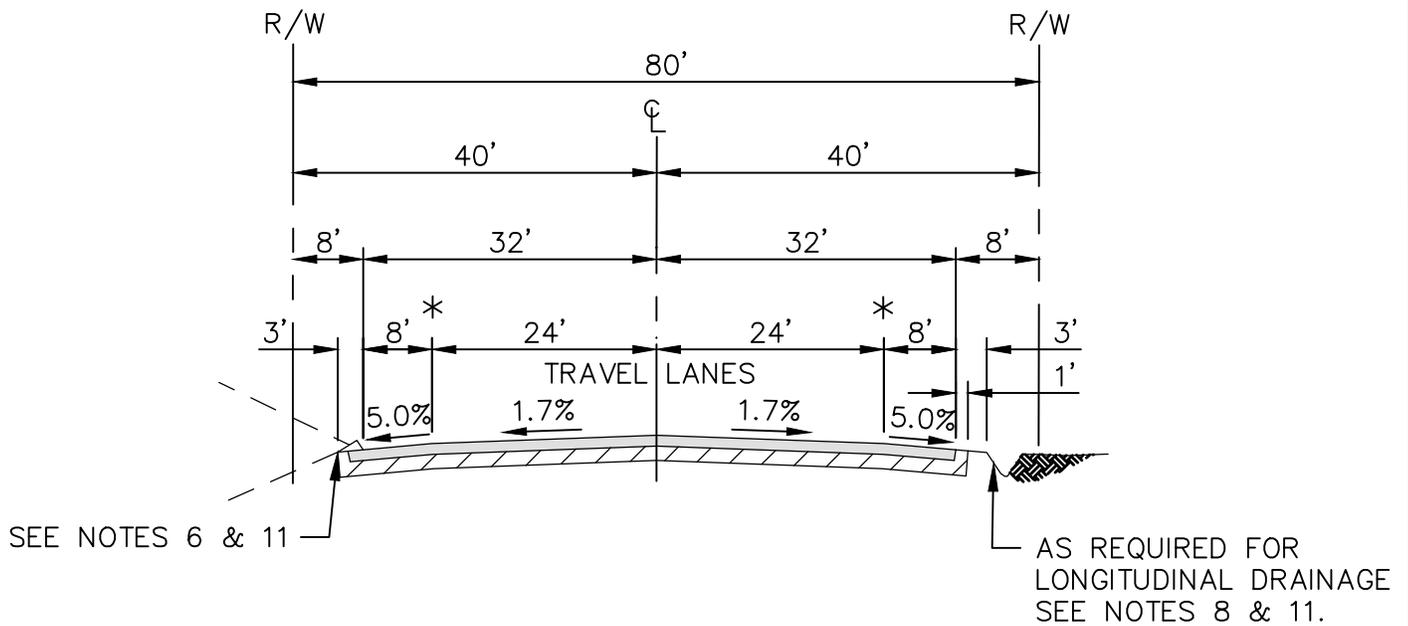
STD. PLAN

1107

OTHER STREET IMPROVEMENTS

SHT. 5 OF 5





### TYPICAL SECTION

\* LONGITUDINAL JOINT FOR FINISH COURSE AC

#### TYPICAL ROADWAY SECTION NOTES:

1. STD. PLAN 1108 SHALL ONLY APPLY TO AREAS APPROVED BY THE ENGINEER.
2. LOCATION OF IMPROVEMENTS WITHIN THE R/W MAY VARY DUE TO PHYSICAL CONSTRAINTS (TREES, DRAINAGE), TO PROVIDE TRAILS, ETC.
3. ADDITIONAL R/W MAY BE REQUIRED WHERE TRAIL IS ADOPTED OR ESTABLISHED.
4. PAVED SHOULDERS TO BE USED FOR EMERGENCY PARKING, PEDESTRIANS & BICYCLES.
5. LEFT TURN POCKETS WILL BE PROVIDED WHEN REQUIRED.
6. WHERE ROADSIDE CONDITIONS DICTATE, AC DIKES PER STANDARD PLAN 120-2-0C MAY BE REQUIRED TO CONTROL DRAINAGE.
7. REQUIRED PAVEMENT STRUCTURAL SECTION TO BE DETERMINED BY THE ENGINEER.
8. A STORM DRAIN SHALL BE CONSTRUCTED WHEN LONGITUDINAL FLOW EXCEEDS CAPACITY OF THE MAXIMUM SIZE DITCH WHICH CAN BE CONSTRUCTED WHOLLY WITHIN THE STREET RIGHT-OF-WAY.
9. MINIMUM STREET FLOW LINE GRADE SHALL BE 1 PERCENT, REVERSE GRADE VERTICAL CURVES EXCEPTED.
10. FOR RAILING DETAILS AT BRIDGES, SEE STANDARD PLAN 1100, 1102, 1104, AND 1106.
11. WHERE ROADSIDE CONDITIONS DICTATE, ROADSIDE BARRIERS MAY BE REQUIRED. REFER TO LATEST EDITION OF CALTRANS HIGHWAY DESIGN MANUAL AND AASHTO ROADSIDE DESIGN GUIDE.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

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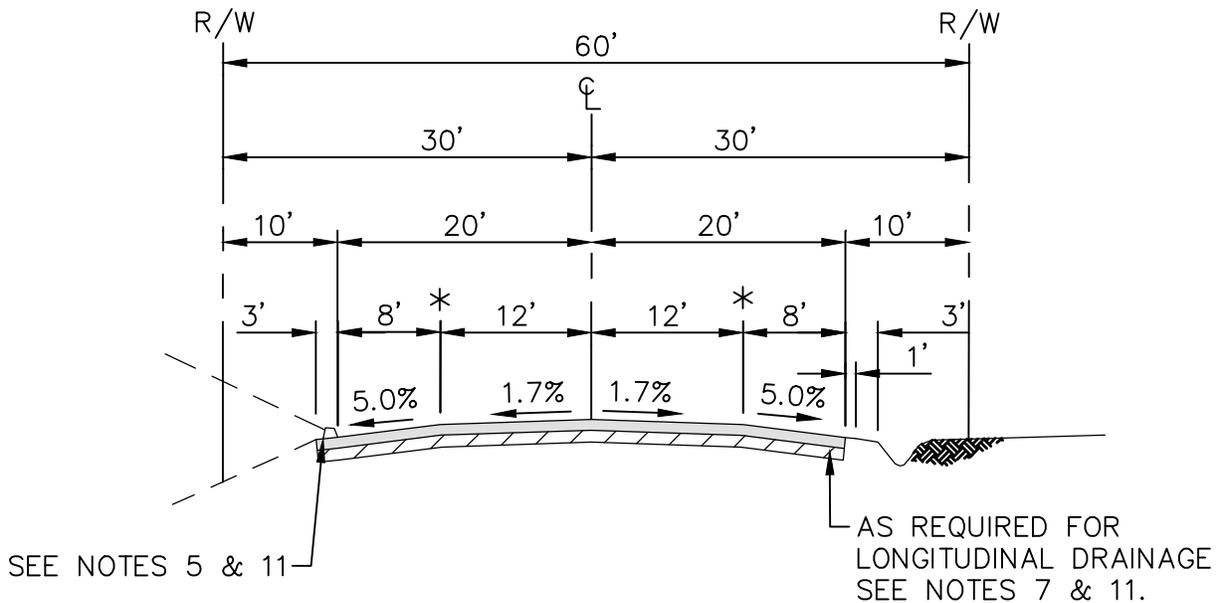
STD. PLAN

1108

RURAL SECONDARY HIGHWAY TYPICAL SECTION

SHT. 1 OF 1





\* LONGITUDINAL JOINT FOR FINISH COURSE AC

TYPICAL SECTION

TYPICAL ROADWAY SECTION NOTES:

1. STD. PLAN 1109 SHALL ONLY APPLY TO AREAS APPROVED BY THE ENGINEER.
2. LOCATION OF IMPROVEMENTS WITHIN THE R/W MAY VARY DUE TO PHYSICAL CONSTRAINTS (TREES, DRAINAGE), TO PROVIDE TRAILS, ETC.
3. ADDITIONAL R/W MAY BE REQUIRED WHERE TRAIL IS ADOPTED OR ESTABLISHED.
4. PAVED SHOULDERS TO BE USED FOR EMERGENCY PARKING, PEDESTRIANS & BICYCLES.
5. LEFT TURN POCKETS WILL BE PROVIDED WHEN REQUIRED.
6. WHERE ROADSIDE CONDITIONS DICTATE, AC DIKES PER STANDARD PLAN 120-2-OC MAY BE REQUIRED TO CONTROL DRAINAGE.
7. REQUIRED PAVEMENT STRUCTURAL SECTION TO BE DETERMINED BY THE ENGINEER.
8. A STORM DRAIN SHALL BE CONSTRUCTED WHEN LONGITUDINAL FLOW EXCEEDS CAPACITY OF THE MAXIMUM SIZE DITCH WHICH CAN BE CONSTRUCTED WHOLLY WITHIN THE STREET RIGHT-OF-WAY.
9. MINIMUM STREET FLOW LINE GRADE SHALL BE 1 PERCENT, REVERSE GRADE VERTICAL CURVES EXCEPTED.
10. FOR RAILING DETAILS AT BRIDGES, SEE STANDARD PLAN 1100, 1102, 1104, AND 1106.
11. WHERE ROADSIDE CONDITIONS DICTATE, ROADSIDE BARRIERS MAY BE REQUIRED. REFER TO LATEST EDITION OF CALTRANS HIGHWAY DESIGN MANUAL AND AASHTO ROADSIDE DESIGN GUIDE.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

Revision: August 2018

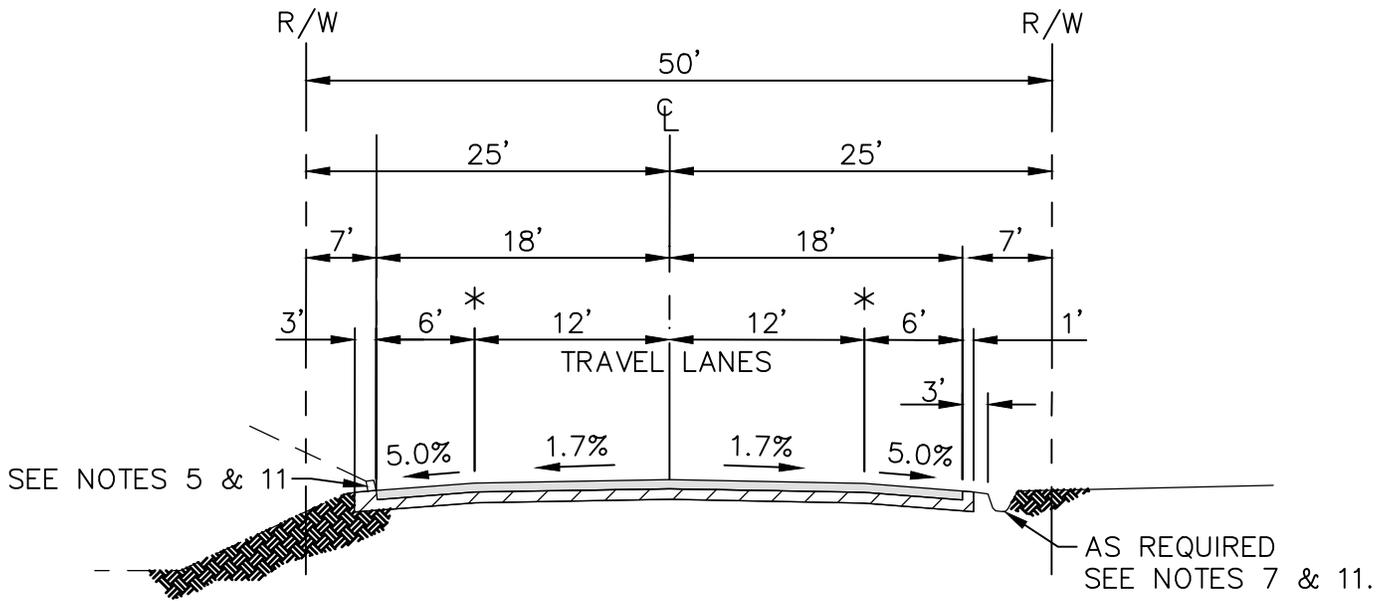
STD. PLAN

1109

RURAL LOCAL STREET TYPICAL SECTION

SHT. 1 OF 1





\* LONGITUDINAL JOINT FOR FINISH COURSE AC

### TYPICAL SECTION

#### TYPICAL ROADWAY SECTION NOTES:

1. STD. PLAN 1110 SHALL ONLY APPLY TO AREAS APPROVED BY THE ENGINEER.
2. LOCATION OF IMPROVEMENTS WITHIN THE R/W MAY VARY DUE TO PHYSICAL CONSTRAINTS (TREES, DRAINAGE), TO PROVIDE TRAILS, ETC.
3. ADDITIONAL R/W MAY BE REQUIRED WHERE TRAIL IS ADOPTED OR ESTABLISHED.
4. PAVED SHOULDERS TO BE USED FOR EMERGENCY PARKING, PEDESTRIANS & BICYCLES.
5. LEFT TURN POCKETS WILL BE PROVIDED WHEN REQUIRED.
6. WHERE ROADSIDE CONDITIONS DICTATE, AC DIKES PER STANDARD PLAN 120-2-0C MAY BE REQUIRED TO CONTROL DRAINAGE.
7. REQUIRED PAVEMENT STRUCTURAL SECTION TO BE DETERMINED BY THE ENGINEER.
8. A STORM DRAIN SHALL BE CONSTRUCTED WHEN LONGITUDINAL FLOW EXCEEDS CAPACITY OF THE MAXIMUM SIZE DITCH WHICH CAN BE CONSTRUCTED WHOLLY WITHIN THE STREET RIGHT-OF-WAY.
9. MINIMUM STREET FLOW LINE GRADE SHALL BE 1 PERCENT, REVERSE GRADE VERTICAL CURVES EXCEPTED.
10. FOR RAILING DETAILS AT BRIDGES, SEE STANDARD PLAN 1100, 1102, 1104, AND 1106.
11. WHERE ROADSIDE CONDITIONS, DICTATE ROADSIDE BARRIERS MAY BE REQUIRED. REFER TO LATEST EDITION OF CALTRANS HIGHWAY DESIGN MANUAL AND AASHTO ROADSIDE DESIGN GUIDE.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

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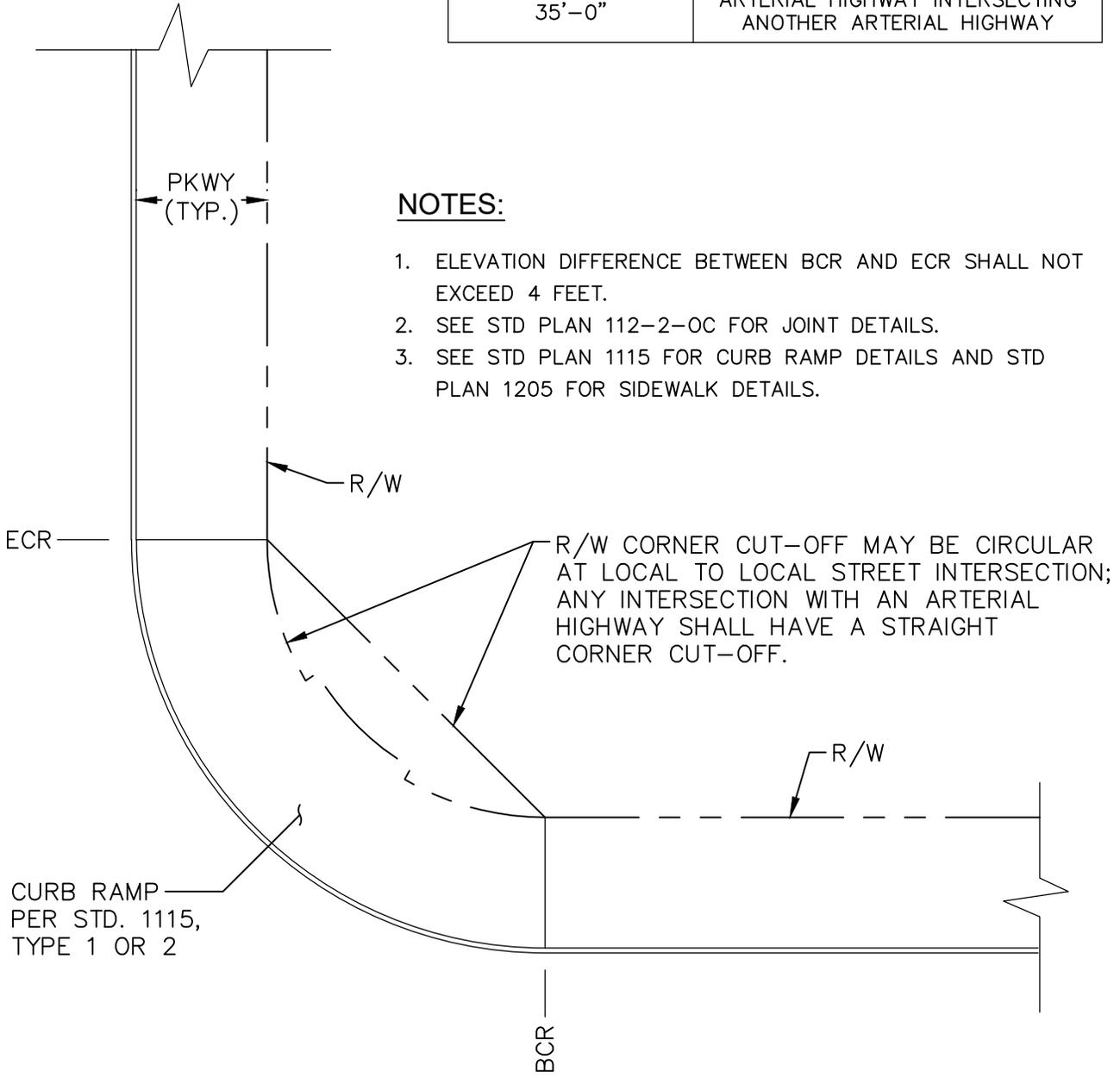
1110

RURAL LOCAL STREET TYPICAL SECTION

SHT. 1 OF 1



CURB RETURN RADIUS	APPLICATION
25'-0"	RESIDENTIAL STREET INTERSECTING ANOTHER RESIDENTIAL STREET OR ARTERIAL HIGHWAY INTERSECTING A RESIDENTIAL STREET
35'-0"	ARTERIAL HIGHWAY INTERSECTING ANOTHER ARTERIAL HIGHWAY



**NOTES:**

1. ELEVATION DIFFERENCE BETWEEN BCR AND ECR SHALL NOT EXCEED 4 FEET.
2. SEE STD PLAN 112-2-OC FOR JOINT DETAILS.
3. SEE STD PLAN 1115 FOR CURB RAMP DETAILS AND STD PLAN 1205 FOR SIDEWALK DETAILS.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved *Khalid Bazmi*  
*Khalid Bazmi, County Engineer*

Revision: August 2018

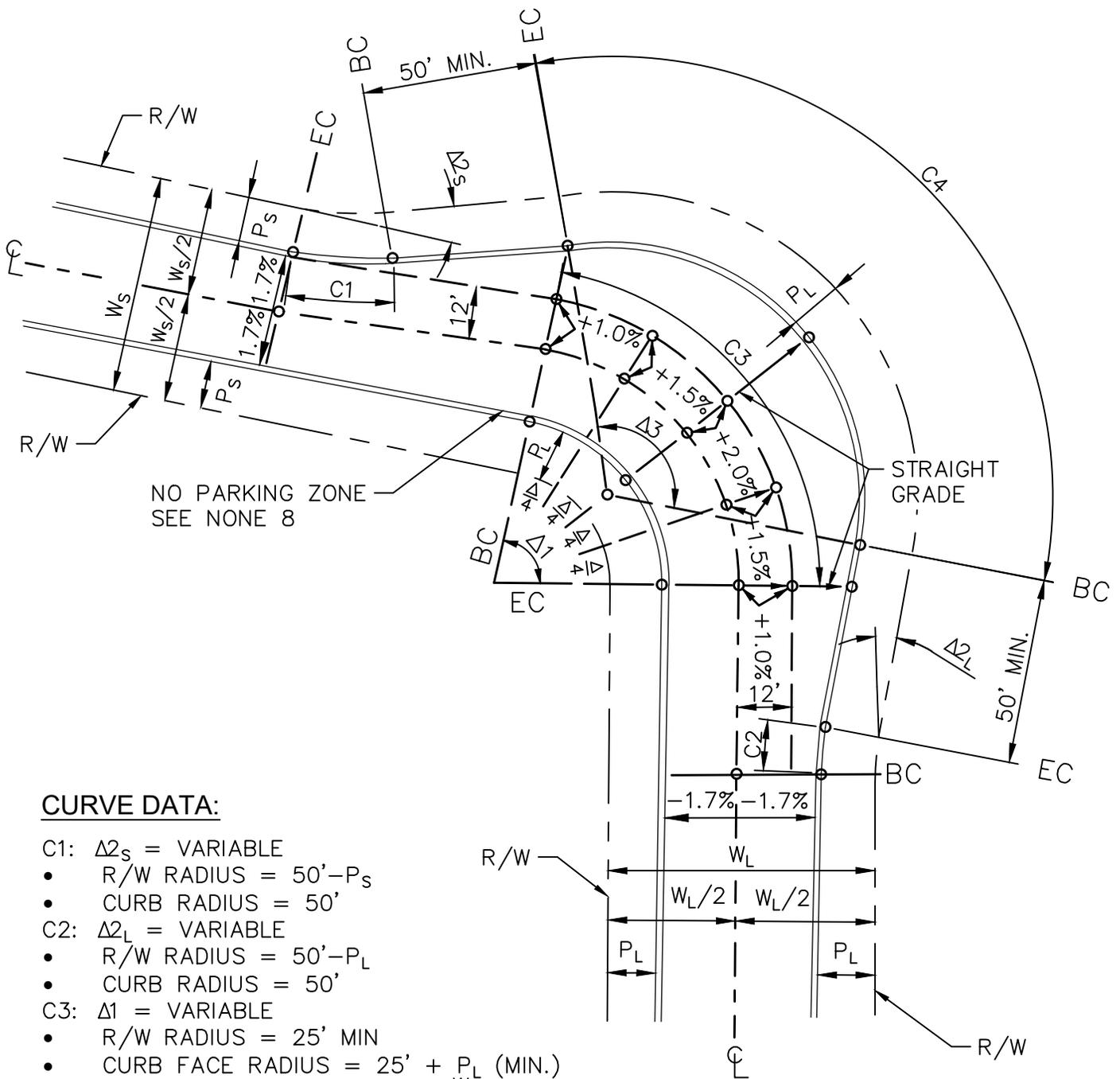
STD. PLAN

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**CURB RETURN RADIUS AND CORNER CUT-OFF**

SHT. 1 OF 1





**CURVE DATA:**

- C1:  $\Delta 2_s = \text{VARIABLE}$ 
  - R/W RADIUS =  $50' - P_s$
  - CURB RADIUS =  $50'$
- C2:  $\Delta 2_L = \text{VARIABLE}$ 
  - R/W RADIUS =  $50' - P_L$
  - CURB RADIUS =  $50'$
- C3:  $\Delta 1 = \text{VARIABLE}$ 
  - R/W RADIUS =  $25' \text{ MIN}$
  - CURB FACE RADIUS =  $25' + P_L \text{ (MIN.)}$
  - CENTERLINE RADIUS =  $25' + \frac{W_L}{2}$
- C4:  $\Delta 3 = \Delta 1 + \Delta 2_s + \Delta 2_L$ 
  - R/W RADIUS =  $W_L + 10'$
  - CURB FACE RADIUS =  $W_L + 10' - P_L$

$W_{(L \text{ OR } S)}$  = ROAD WIDTH (R/W TO R/W)  
 $P_{(L \text{ OR } S)}$  = PARKWAY WIDTH (R/W TO R/W)

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved *Khalid Bazmi*  
 Khalid Bazmi, County Engineer

STD. PLAN

1112

Revision: August 2018

STANDARD KNUCKLE

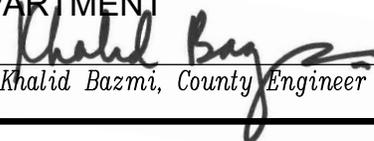
SHT. 1 OF 2

GENERAL NOTES:

1. USE NORMAL SECTION FROM INNER CURB TO CENTERLINE.
2. FROM CROWN LINE TO OUTER CURB, THE MAXIMUM SLOPE IS 1 INCH PER FOOT.
3. SUBSCRIPTS "S" AND "L" DENOTE SMALLER AND LARGER STREETS RESPECTIVELY.
4. SUPERELEVATIONS PERCENTAGES SHOWN ARE A STRAIGHT GRADE FROM CENTER LINE TO CROWN LINE.
5. ELEVATIONS ARE REQUIRED WHERE CIRCLED °.
6. WHEN STREETS HAVE TILT-TYPE SECTION, THE CROWN LINE WILL NOT NECESSARILY TERMINATE ON CENTER LINE AT ANGLE POINT OF CURB.
7. MINIMUM STREET FLOW LINE GRADE SHALL BE 1 PERCENT, REVERSE GRADE VERTICAL CURVES EXCEPTED.
8. WHEN  $\Delta 1$  IS  $\leq 120$  DEGREES, PARKING SHALL BE RESTRICTED 25 FEET PRIOR TO BC AND 25 FEET PAST EC.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

  
Khalid Bazmi, County Engineer

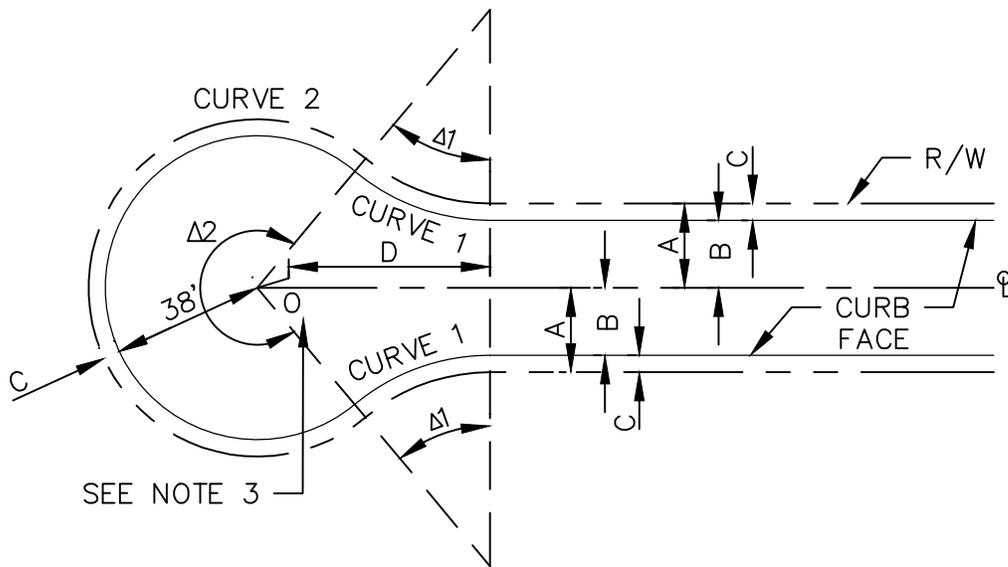
Revision: August 2018

STD. PLAN

1112

STANDARD KNUCKLE

SHT. 2 OF 2



**SYMMETRICAL CUL-DE-SAC**

CURVE 1											
R/W	A	B	C	D	Δ1	CURB			RIGHT-OF-WAY		
						R	R	T	R	L	T
80'	40'	32'	8'	40.25'	16°57'27"	100'	29.60'	14.91'	92'	27.23'	13.71'
60'	30'	22'	8'	64.50'	27°51'51"	100'	48.63'	24.81'	92'	44.74'	22.82'
56'	28'	20'	8'	68.15'	29°35'31"	100'	51.65'	26.41'	92'	47.54'	24.30'
52'	26'	18'	8'	71.55'	31°13'56"	100'	54.51'	27.95'	92'	50.15'	25.71'

CURVE 2										
R/W	A	B	C	D	Δ2	CURB		RIGHT-OF-WAY		
						R	L	R	L	
80'	40'	32'	8'	40.25'	213°54'53"	38'	141.87'	46'	171.74'	
60'	30'	22'	8'	64.50'	235°43'42"	38'	156.34'	46'	189.25'	
56'	28'	20'	8'	68.15'	239°11'01"	38'	158.63'	46'	192.11'	
52'	26'	18'	8'	71.55'	242°27'52"	38'	160.81'	46'	194.66'	

**SYMMETRICAL CUL-DE-SAC NOTES:**

1. MINIMUM STREET FLOW LINE GRADE SHALL BE 1 PERCENT
2. REVERSE GRADE VERTICAL CURVES EXCEPTED.
3. POINT "O" SHALL BE 0.30 FOOT MIN. ABOVE THE HIGHEST TOP OF CURVE ELEVATION WITHIN CUL-DE-SAC.
4. SEE SHEET 2 FOR ASYMMETRICAL CUL DE SAC DETAILS.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

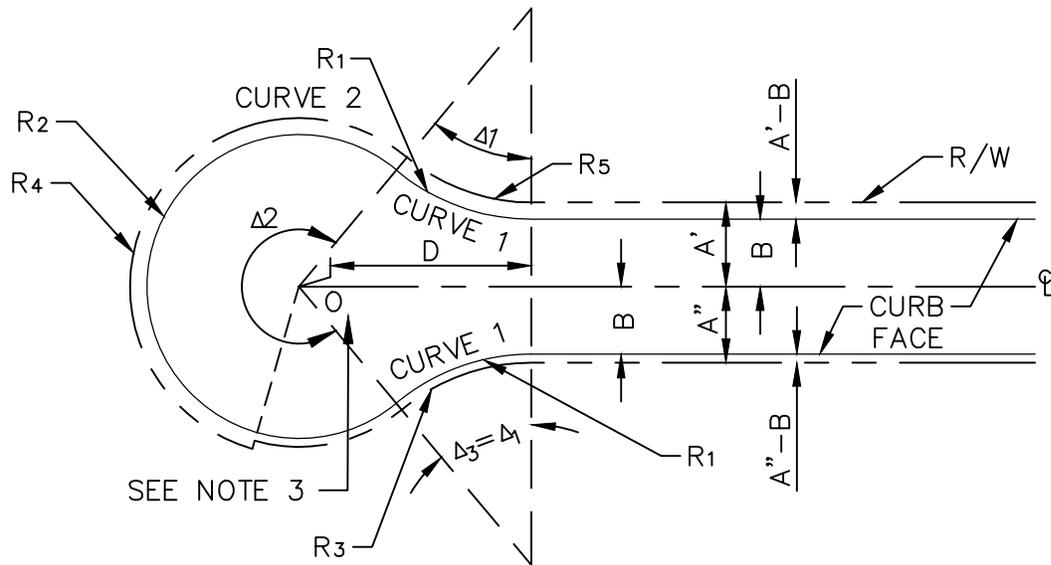
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STD. PLAN

**1113**

**STANDARD CUL-DE-SAC**

SHT. 1 OF 4



**ASYMMETRICAL CUL-DE-SAC**

CURB FACE CURVE DATA											
R/W	A'	A''	B	D	$\Delta_1$	R <sub>1</sub>	L <sub>1</sub>	T <sub>1</sub>	$\Delta_2$	R <sub>2</sub>	L <sub>2</sub>
48'	25'	23'	17'	73.18'	32°01'26"	100'	55.89'	28.70'	244°02'53"	38'	161.86'
44'	23'	21'	15'	76.28'	33°33'26"	100'	58.57'	30.15'	247°06'53"	38'	163.89'
40'	22'	18'	14'	77.77'	34°18'04"	100'	59.87'	30.86'	248°36'08"	38'	164.88'

RIGHT-OF-WAY CURVE DATA												
R/W	A'	A''	B	D	$\Delta_1$	R <sub>5</sub>	L <sub>5</sub>	T <sub>5</sub>	R <sub>3</sub>	L <sub>3</sub>	T <sub>3</sub>	R <sub>4</sub>
48'	25'	23'	17'	73.18'	32°01'26"	92'	51.42'	26.40'	94	52.54	27.55	46'
44'	23'	21'	15'	76.28'	33°33'26"	92'	53.88'	27.74'	94	52.54	27.55	46'
40'	22'	18'	14'	77.77'	34°18'04"	92'	55.08'	28.39'	94	53.66	29.63	46'

**ASYMMETRICAL CUL-DE-SAC NOTES:**

1. MINIMUM STREET FLOW LINE GRADE SHALL BE 1 PERCENT
2. REVERSE GRADE VERTICAL CURVES EXCEPTED.
3. POINT "O" SHALL BE 0.30 FOOT MIN. ABOVE THE HIGHEST TOP OF CURVE ELEVATION WITHIN CUL-DE-SAC.
4. REDUCTION IN PARKWAY WIDTH SHALL OCCUR AT THE PROPERTY LINE OF THE LAST LOT TAKING ACCESS FROM THE CUL-DE-SAC.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

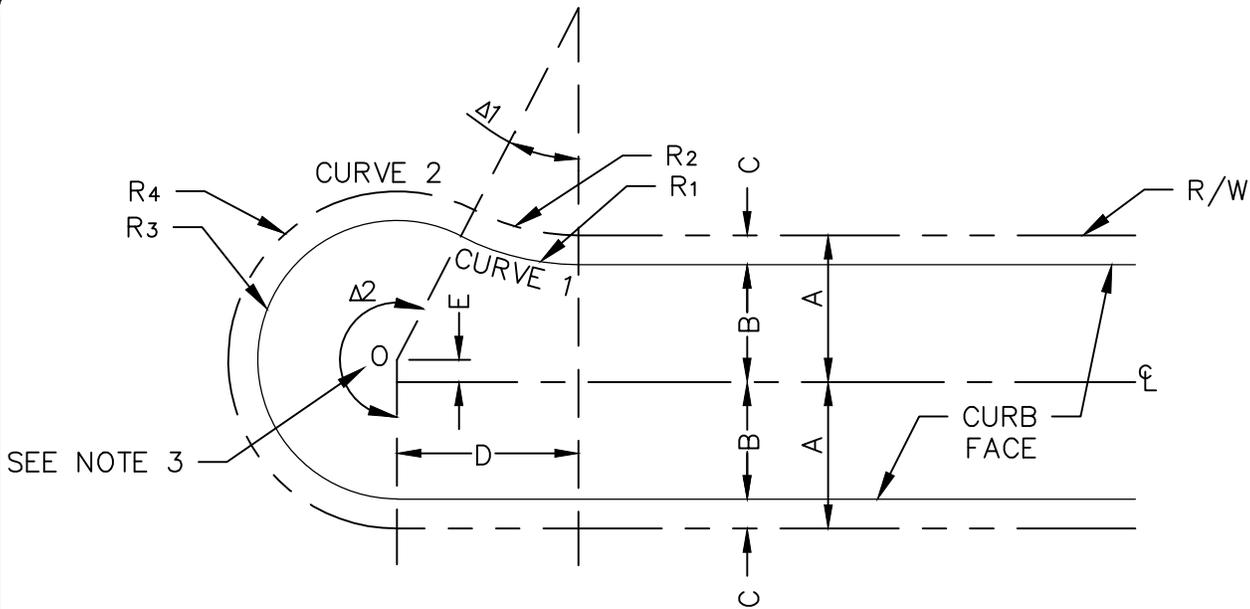
STD. PLAN

Revision: August 2018

1113

STANDARD CUL-DE-SAC

SHT. 2 OF 4



**OFFSET CUL-DE-SAC**

CURVE 1												
R/W	A	B	C	D	E	$\Delta_1$	CURB			RIGHT-OF-WAY		
							R1	L1	T1	R2	L2	T2
80'	40'	32'	8'	49.42'	6'	27°15'58"	70'	33.31'	16.98'	62'	29.50'	15.04'
60'	30'	22'	8'	76.73'	16'	45°16'31"	70'	55.31'	29.19'	62'	48.99'	25.86'
56'	30'	20'	8'	80.50'	18'	48°11'23"	70'	58.87'	31.30'	62'	52.15'	27.73'
52'	26'	18'	8'	83.90'	20'	50°58'38"	70'	62.28'	33.37'	62'	55.16'	29.56'

CURVE 2										
R/W	A	B	C	D	E	$\Delta_2$	CURB		RIGHT-OF-WAY	
							R3	L	R4	L
80'	40'	32'	8'	49.42'	6'	207°15'58"	38'	137.46'	46'	166.40'
60'	30'	22'	8'	76.73'	16'	225°16'31"	38'	149.41'	46'	180.86'
56'	30'	20'	8'	80.50'	18'	228°11'23"	38'	151.34'	46'	183.20
52'	26'	18'	8'	83.90'	20'	228°11'23"	38'	153.19'	46'	185.44'

**OFFSET CUL-DE-SAC NOTES:**

1. MINIMUM STREET FLOW LINE GRADE SHALL BE 1 PERCENT
2. REVERSE GRADE VERTICAL CURVES EXCEPTED.
3. POINT "O" SHALL BE 0.30 FOOT MIN. ABOVE THE HIGHEST TOP OF CURVE ELEVATION WITHIN CUL-DE-SAC.
4. RADIAL POINT MAY BE OFFSET EITHER RIGHT OR LEFT OF CENTERLINE.
5. SEE SHEET 4 FOR ASYMMETRICAL CUL DE SAC DETAILS.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

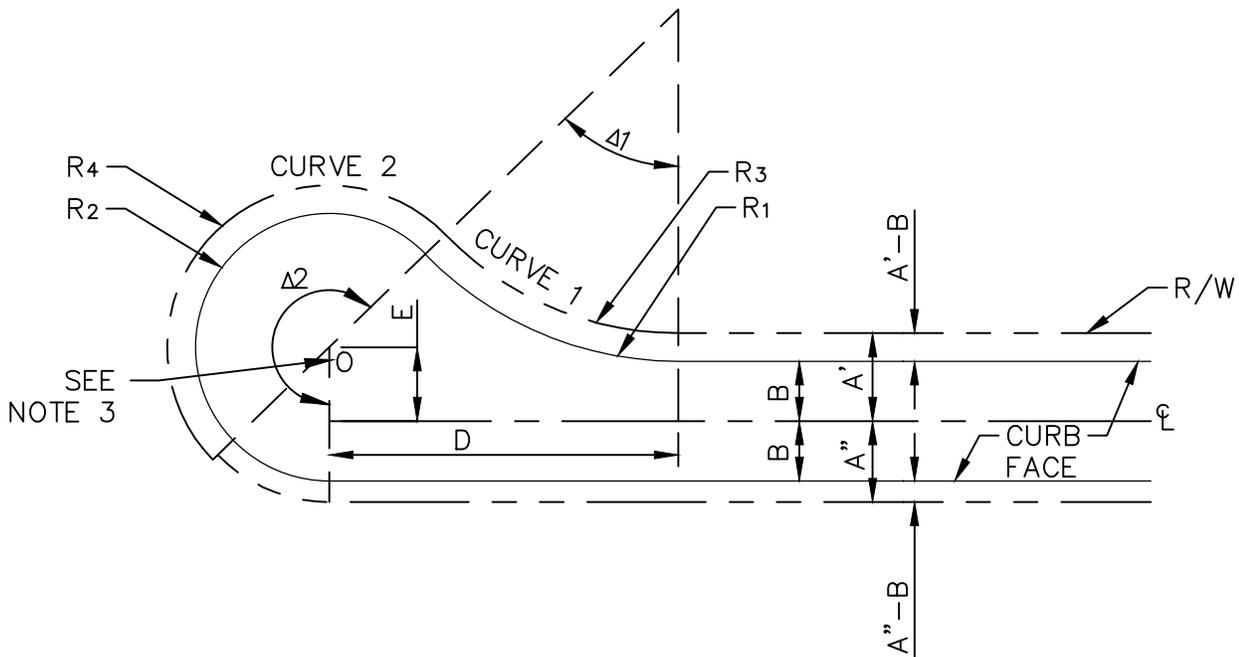
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STANDARD CUL-DE-SAC

SHT. 3 OF 4



**OFFSET ASYMMETRICAL CUL-DE-SAC**

CURB FACE CURVE DATA												
R/W	A'	A''	B	D	E	Δ <sub>1</sub>	R <sub>1</sub>	L <sub>1</sub>	T <sub>1</sub>	Δ <sub>2</sub>	R <sub>2</sub>	L <sub>2</sub>
48'	25'	23'	17'	99.14'	21'	45°55'15"	100'	80.15'	42.37'	225°55'15"	38'	149.84'
44'	23'	21'	15'	102.86'	23'	48°11'23"	100'	84.11'	44.72'	228°11'23"	38'	151.34'
40'	22'	18'	14'	104.61'	24'	49°17'39"	100'	86.03'	45.88'	229°17'39"	38'	152.07'

RIGHT-OF-WAY CURVE DATA										
R/W	A'	A''	B	D	E	Δ <sub>1</sub>	R <sub>3</sub>	L <sub>1</sub>	T <sub>1</sub>	R <sub>4</sub>
48'	25'	23'	17'	99.14'	21'	45°55'15"	92'	73.74'	38.98'	46'
44'	23'	21'	15'	102.86'	23'	48°11'23"	92'	77.38'	41.14'	46'
40'	22'	18'	14'	104.61'	24'	49°17'39"	92'	79.15'	42.21'	46'

**OFFSET ASYMMETRICAL CUL-DE-SAC NOTES:**

1. MINIMUM STREET FLOW LINE GRADE SHALL BE 1 PERCENT
2. REVERSE GRADE VERTICAL CURVES EXCEPTED.
3. POINT "O" SHALL BE 0.30 FOOT MIN. ABOVE THE HIGHEST TOP OF CURVE ELEVATION WITHIN CUL-DE-SAC.
4. REDUCTION IN PARKWAY WIDTH SHALL OCCUR AT THE PROPERTY LINE OF THE LAST LOT TAKING ACCESS FROM THE CUL-DE-SAC.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

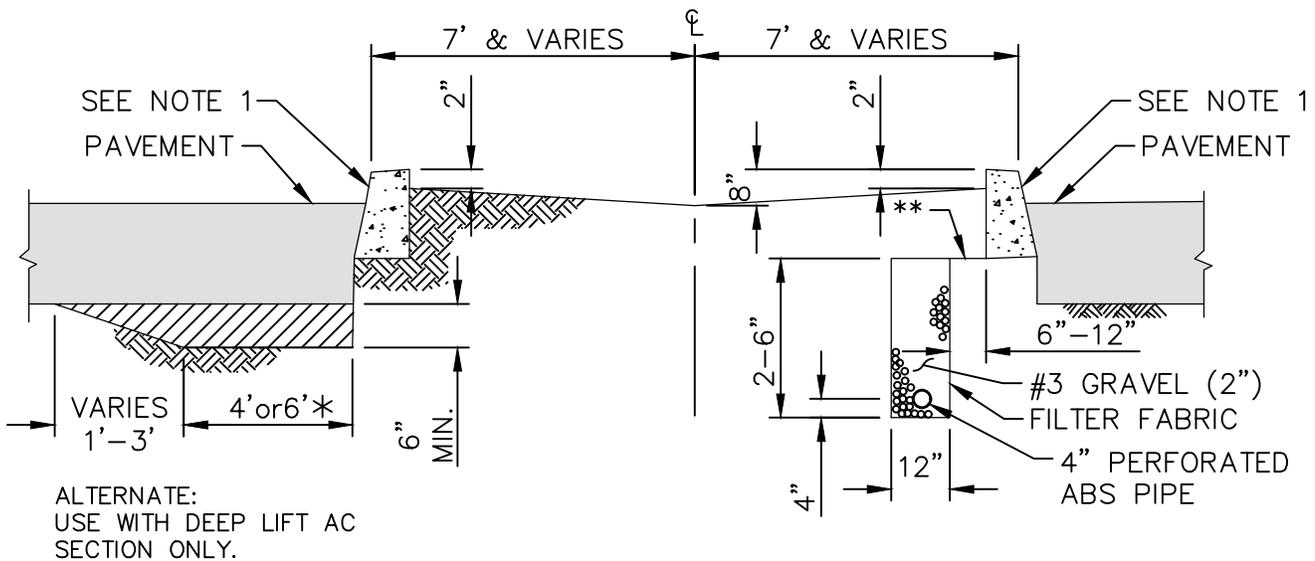
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STANDARD CUL-DE-SAC

SHT. 4 OF 4



**ALTERNATE I**

TYPICAL BOTH SIDES OF CL

- \* 6 FEET: 9 INCHES AC OR LESS IN THICKNESS
- 4 FEET: OVER 9 INCHES OF AC THICKNESS

**ALTERNATE II**

TYPICAL BOTH SIDES OF CL

- \*\* INTERMEDIATE LINE TO SHOW LEVEL BETWEEN BOTTOM OF CURB AND TOP OF DRAIN

**GENERAL NOTES:**

1. SEE STD. PLAN 120-2-0C FOR CURB TYPE.
2. DRAINAGE RUNOFF SHALL FLOW LONGITUDINALLY.
3. MEDIAN DRAINAGE STRUCTURES SHALL BE PROVIDED TO PREVENT ANY WATER FROM OVERFLOWING CURBS.
4. MEDIAN DRAINAGE STRUCTURES AND UNDERDRAINS SHALL DRAIN TO A POINT OF DISPOSAL, AS APPROVED BY THE ENGINEER.
5. PLACEMENT OF PLANTS SHALL NOT OBSTRUCT THE FLOW OF WATER TO THE EXTENT THAT IT WILL OVERFLOW CURBS.
6. MEDIAN AREAS LESS THAN 6 FEET IN WIDTH SHALL BE PAVED PER STD. PLAN 1807, UNLESS OTHERWISE APPROVED BY THE ENGINEER.
7. ALL LANDSCAPING, IRRIGATING AND DRAINAGE DEVICES SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
8. UNDERDRAIN SHALL BE INSTALLED 200 FEET EACH WAY FROM PROFILE SUMP LOCATIONS AND 50 FEET UP GRADE FROM STREET INLET STRUCTURE LOCATIONS.
9. NON-WOVEN FILTER FABRIC SHALL COMPLY WITH STD. PLAN 1808.
10. LANDSCAPE PLANS SHALL BE PREPARED, STAMPED, AND SIGNED BY A LICENSED LANDSCAPE ARCHITECT.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

Revision: August 2018

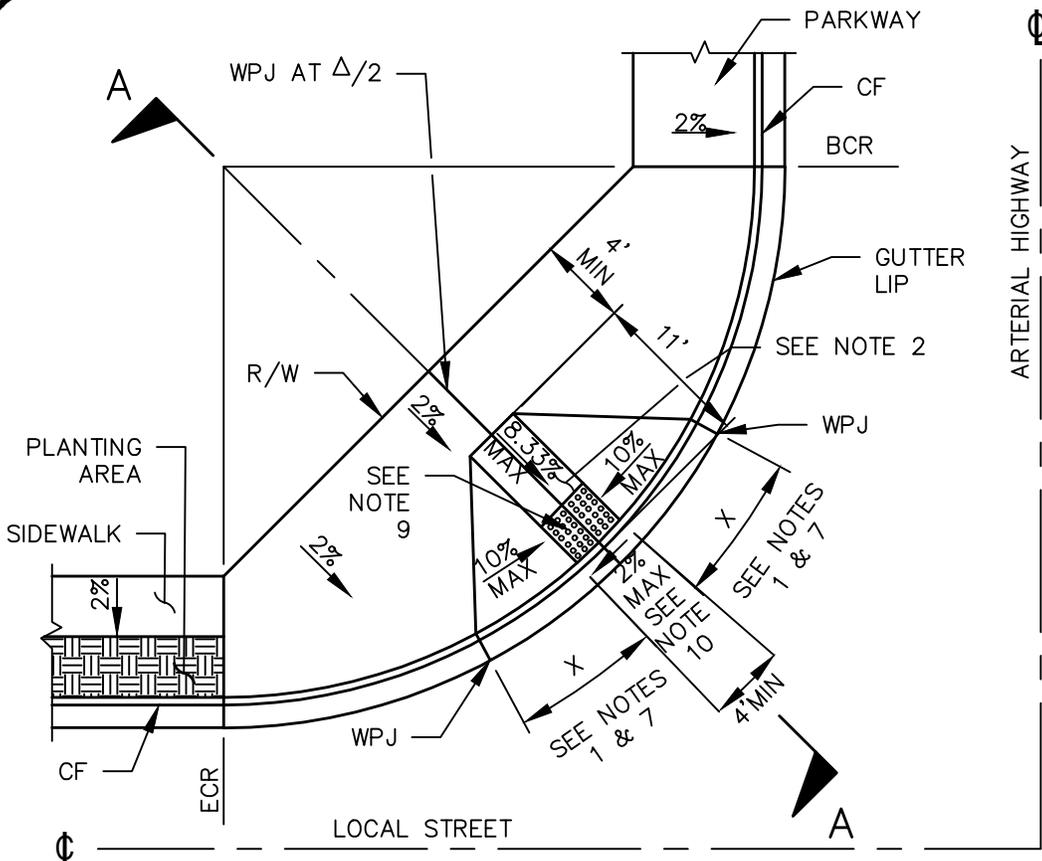
STD. PLAN

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LANDSCAPED MEDIAN TYPICAL SECTION

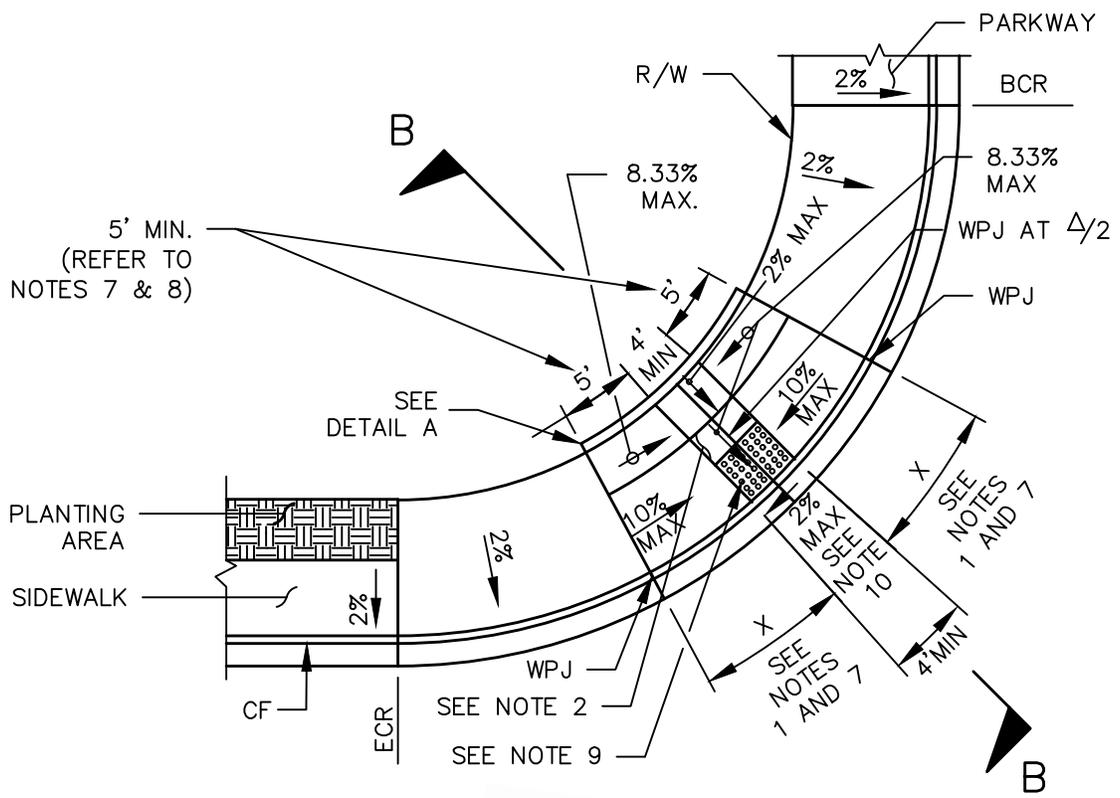
SHT. 1 OF 1





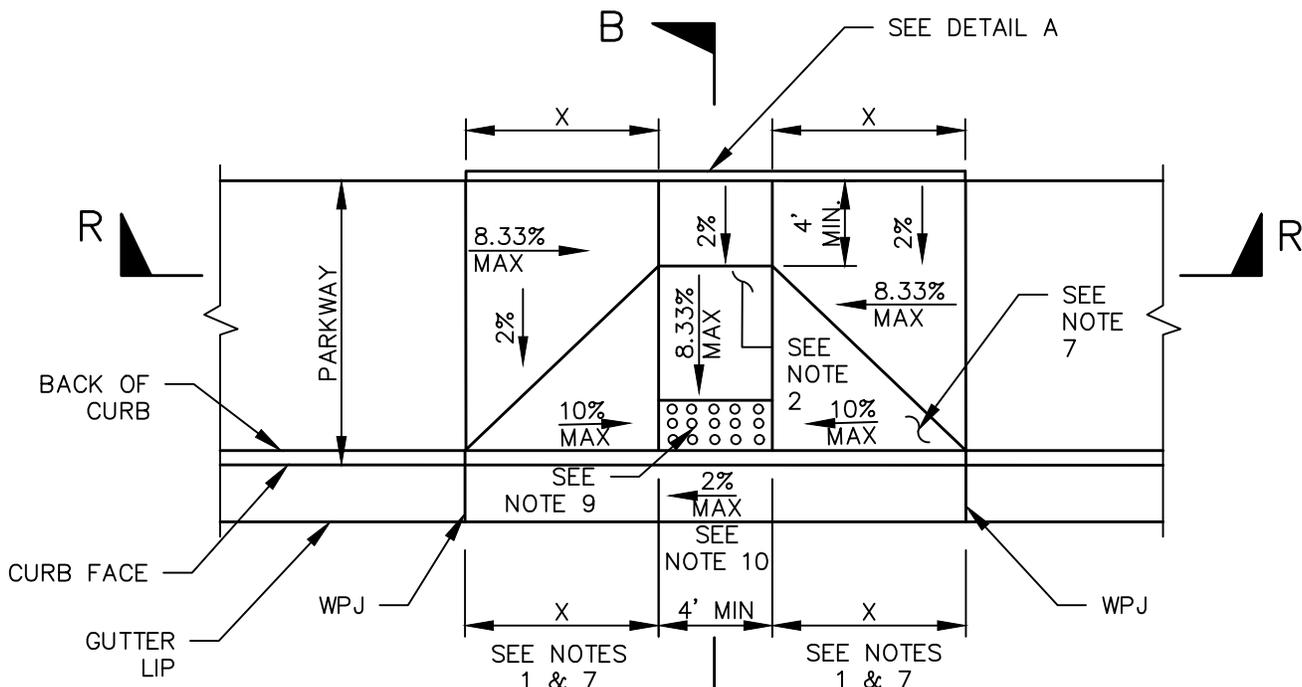
**TYPE 1**

**NOTE:**  
 ALL SIDEWALK  
 CROSS-SLOPES SHALL  
 BE 2% MAX, 1% MIN.



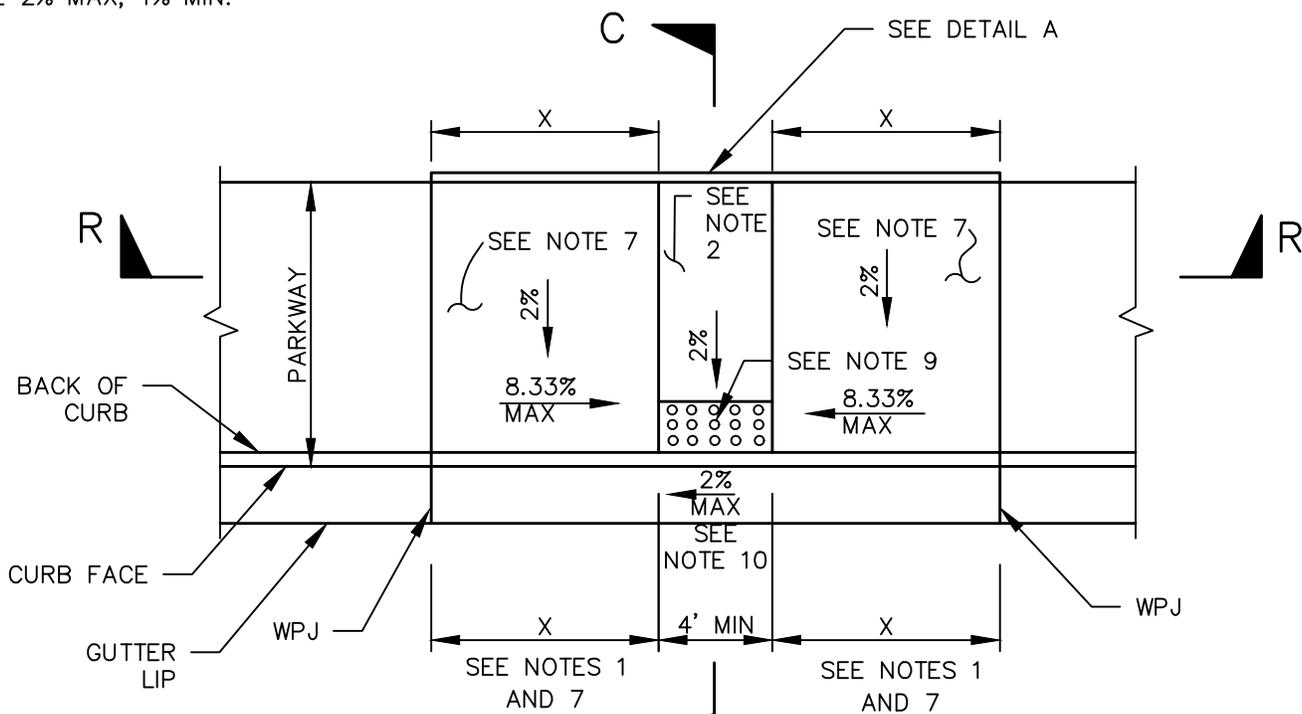
**TYPE 2**

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT Approved <i>Khalid Bazmi</i> Khalid Bazmi, County Engineer		STD. PLAN <b>1115</b> SHT. 1 OF 10
Revision: August 2018 <b>CURB RAMP</b>		



**NOTE:**  
 ALL SIDEWALK  
 CROSS-SLOPES SHALL  
 BE 2% MAX, 1% MIN.

**B**  
**TYPE 3**



**C**  
**TYPE 4**

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved *Khalid Bazmi*  
 Khalid Bazmi, County Engineer

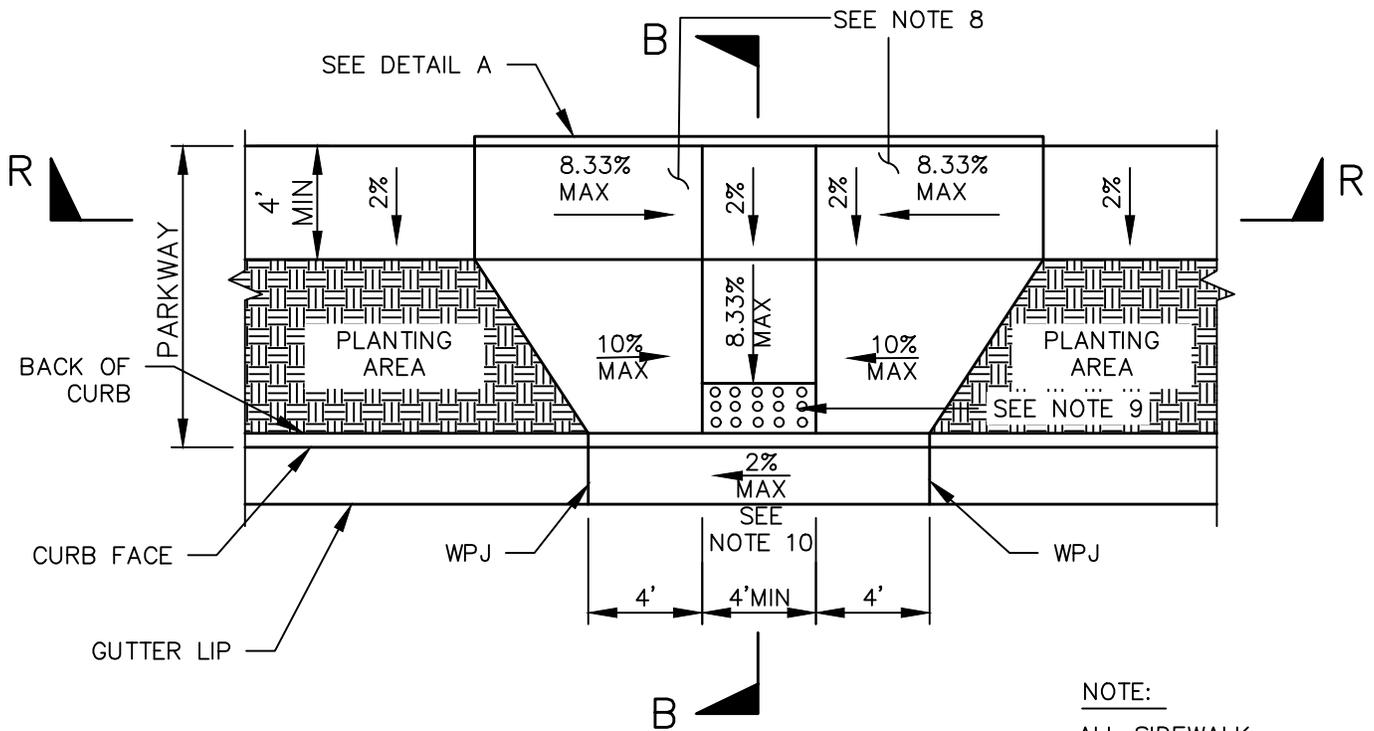
Revision: August 2018

STD. PLAN

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**CURB RAMP**

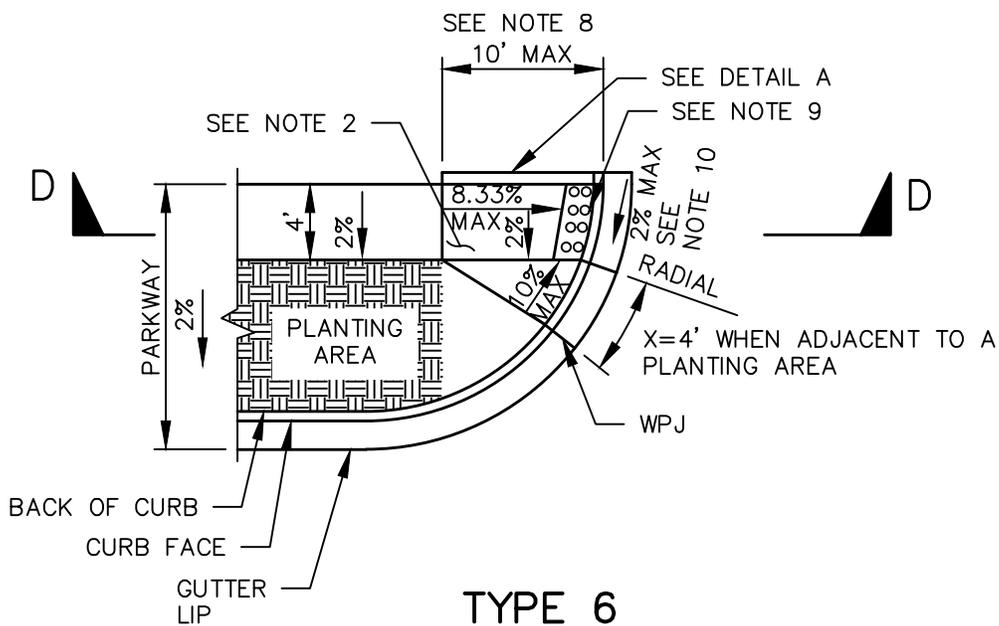
SHT. 2 OF 10



**TYPE 5**

**NOTE:**

ALL SIDEWALK CROSS-SLOPES SHALL BE 2% MAX, 1% MIN.



**TYPE 6**

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

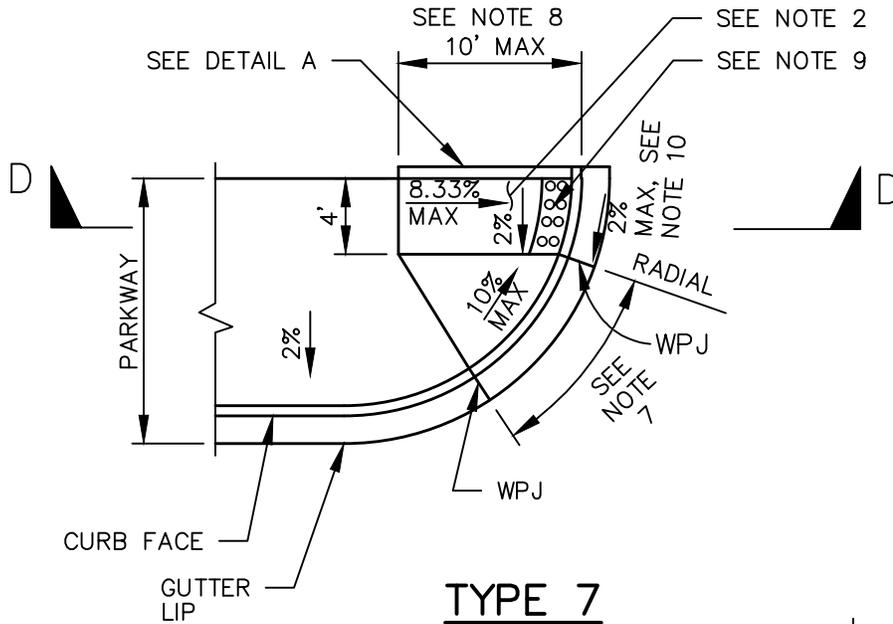
STD. PLAN

Revision: August 2018

1115

CURB RAMP

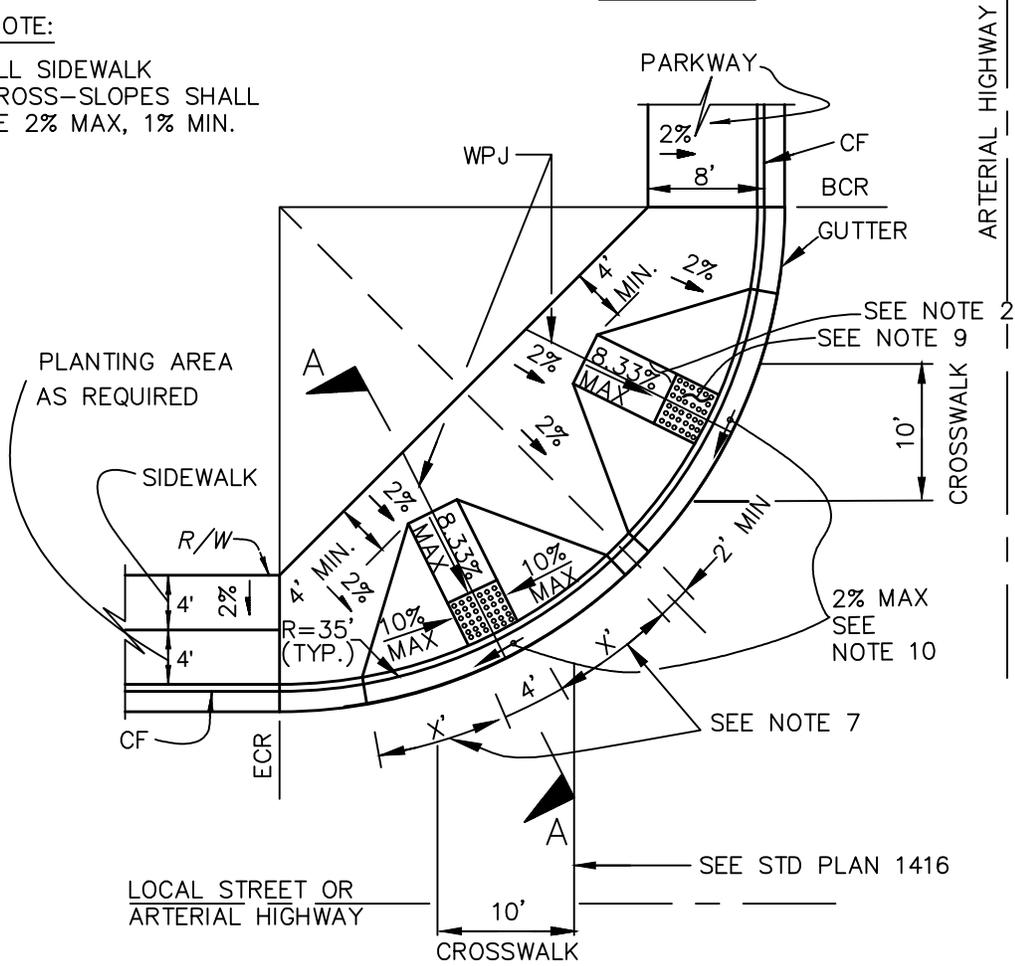
SHT. 3 OF 10



**TYPE 7**

**NOTE:**

ALL SIDEWALK CROSS-SLOPES SHALL BE 2% MAX, 1% MIN.



**TYPE 8**

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

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Khalid Bazmi, County Engineer

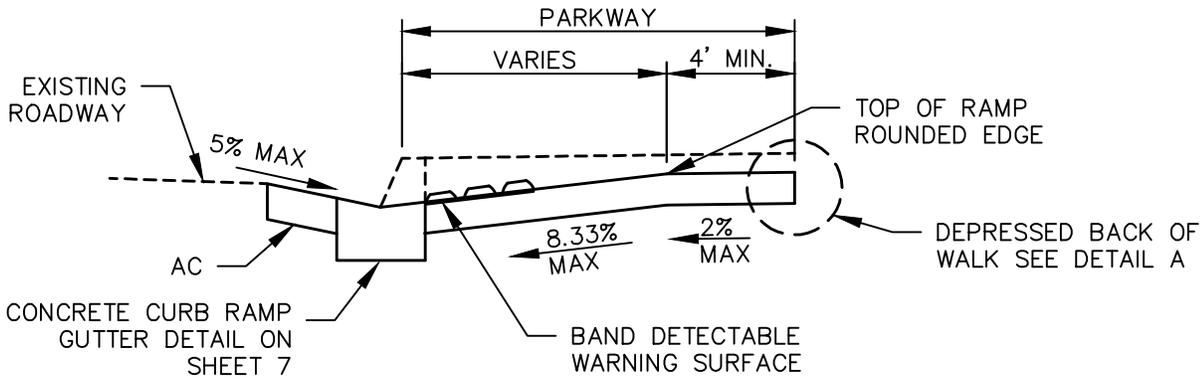
Revision: August 2018

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**CURB RAMP**

SHT. 4 OF 10



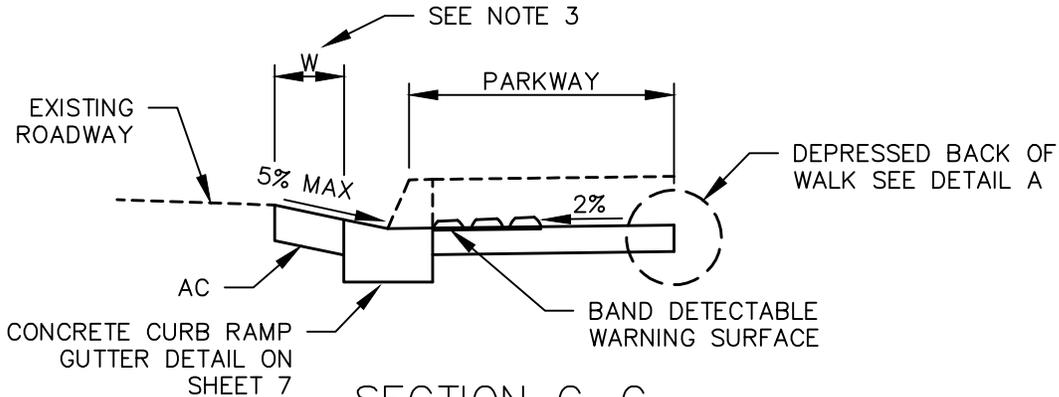


**SECTION B-B**

SEE CURB RAMP TYPE 2 ON SHEET 1,  
TYPE 3 ON SHEET 2, AND TYPE 5 ON  
SHEET 3

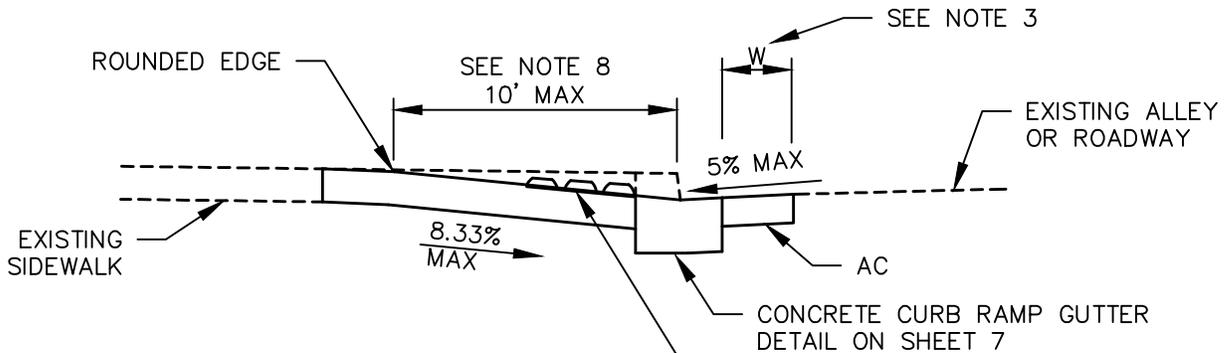
**NOTE:**

ALL SIDEWALK  
CROSS-SLOPES SHALL  
BE 2% MAX, 1% MIN.



**SECTION C-C**

SEE CURB RAMP TYPE 4 ON SHEET 2,  
AND TYPE 9 ON SHEET 5



**SECTION D-D**

SEE CURB RAMP TYPE 6 ON SHEET 3  
AND TYPE 7 ON SHEET 4

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

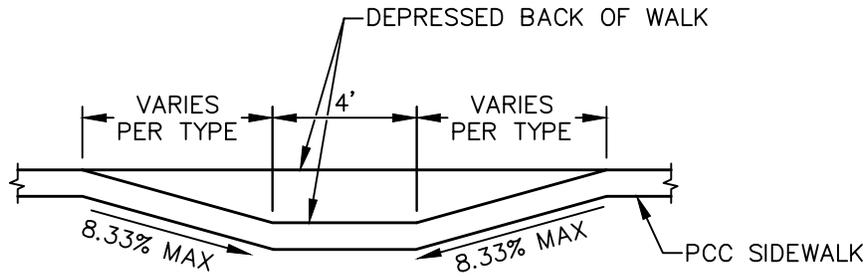
STD. PLAN

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Revision: August 2018

CURB RAMP

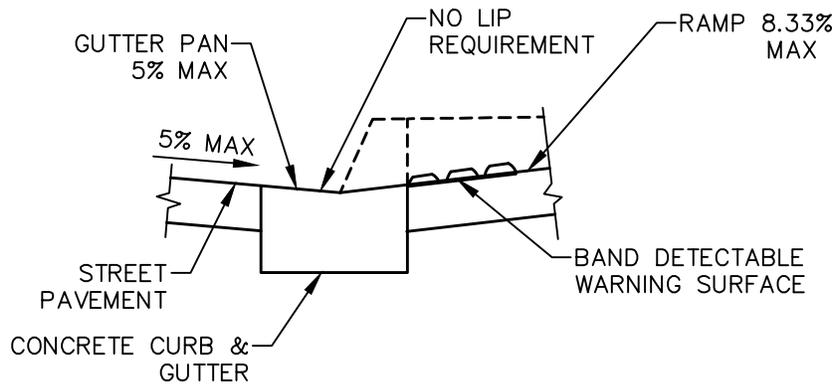
SHT. 6 OF 10



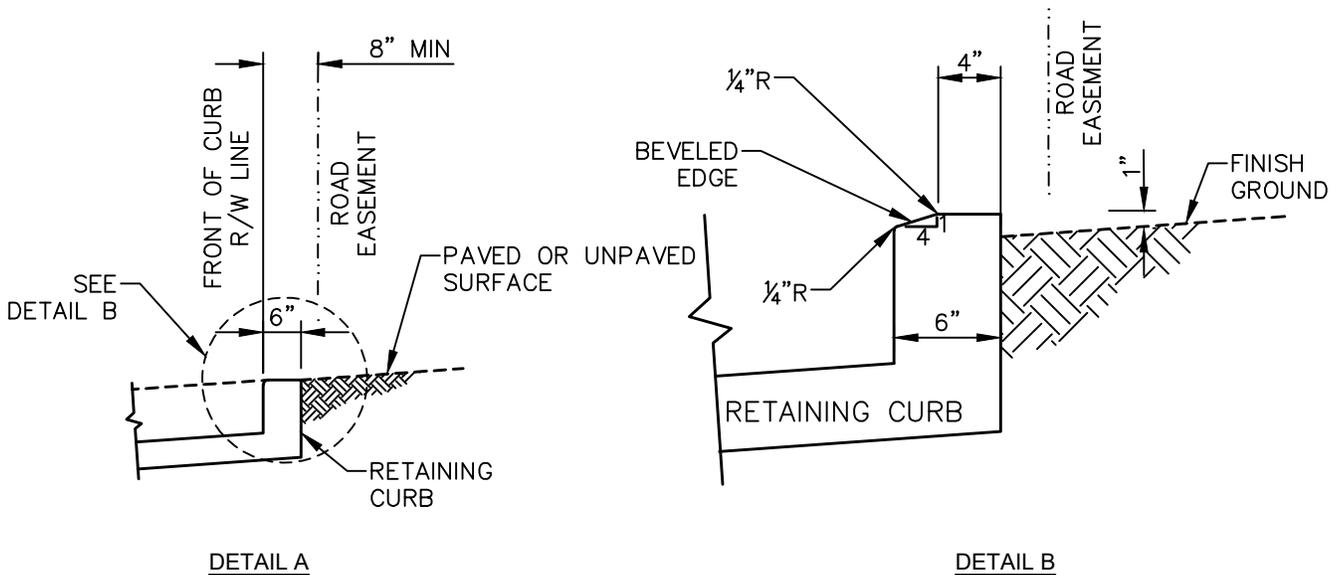
**SECTION R-R**

**NOTE:**

ALL SIDEWALK  
CROSS-SLOPES SHALL  
BE 2% MAX, 1% MIN.



**CURB RAMP GUTTER DETAIL**



**DETAIL A**

**DETAIL B**

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

Revision: August 2018

STD. PLAN

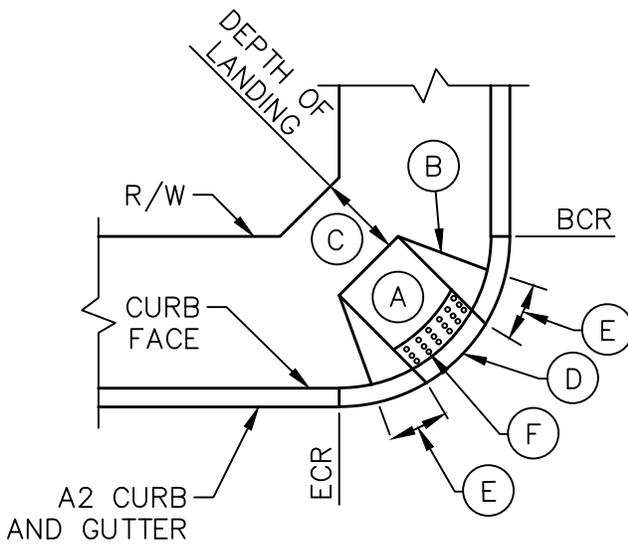
1115

**CURB RAMP**

SHT. 7 OF 10

**GENERAL NOTES :**

1. X=8' MINIMUM ON CURB WITH 8 INCH CURB FACE HEIGHT.  
X=6' MINIMUM ON CURB WITH 6 INCH CURB FACE HEIGHT.
2. THE RAMP SURFACE SHALL HAVE A TRANSVERSE BROOMED SURFACE TEXTURE.
3. W=3.5 FEET TO RETROFIT EXISTING STREET PAVEMENT. NEW CONSTRUCTION SHALL MAINTAIN THE STANDARD STREET CROSSFALL.
4. A 10-FOOT MAXIMUM GUTTER PAN TRANSITION IS REQUIRED BETWEEN THE A2 GUTTER PER STD PLAN 120-2-0C (8.33% MAX) AND THE CURB RAMP GUTTER (5% MAX), AS SHOWN ON PAGE 7, CURB RAMP GUTTER DETAIL). LENGTH OF GUTTER PAN TRANSITION SHALL EQUAL DIMENSION 'X'.



- (A) CURB RAMP
- (B) FLARED SIDE SLOPES
- (C) LANDING AREA
- (D) CURB RAMP GUTTER LIP
- (E) GUTTER PAN TRANSITION
- (F) DETECTABLE WARNING SURFACE

5. FOR CONSTRUCTION OF CURB RAMP ON AN EXISTING WALKWAY AREA WHERE SPACE LIMITATION PROHIBITS THE USE OF 8.33% SLOPE, A STEEPER SLOPE MAY BE ALLOWED PENDING REQUIREMENTS OUTLINED IN GENERAL NOTE #10 OF THIS STANDARD PLAN.
6. CURB RAMP TYPES 3, 4, 5, 6, AND 7 SHALL NOT BE USED AT LOCATIONS WHERE MARKED CROSSWALK EXISTS IN BOTH DIRECTIONS.
7. FOR EXISTING WALKWAYS, IF DEPTH OF LANDING IS LESS THAN 4 FEET, THE FLARED SIDE SLOPES SHALL NOT EXCEED 8.33%.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

Revision: August 2018

STD. PLAN

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**CURB RAMP**

SHT. 8 OF 10

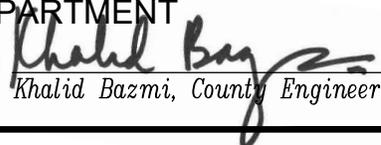
8. AT HILLSIDE DEVELOPMENTS, STREET GRADES CAN EXCEED THE STANDARD 6% FOR ARTERIAL HIGHWAYS AND 10% FOR LOCAL AND COLLECTOR STREETS. WHERE SITE CONDITIONS MAKE IT TECHNICALLY INFEASIBLE OR STRUCTURALLY IMPRACTICABLE TO FULLY COMPLY WITH ADA STANDARDS, ACCESSIBILITY SHALL BE PROVIDED TO THE MAXIMUM EXTENT FEASIBLE OR TO THE EXTENT THAT IS NOT STRUCTURALLY IMPRACTICABLE. [ADAAG 4.1.6(1)(j) & 4.1.1(5)(a)] DEVIATIONS MAY BE CONSIDERED PENDING REQUIREMENTS OUTLINED IN GENERAL NOTE #10 OF THIS STANDARD PLAN.
9. CURB RAMPS SHALL HAVE A DETECTABLE WARNING SURFACE THAT EXTENDS THE FULL WIDTH AND 3 FEET DEPTH OF THE CURB RAMP. THE DETECTABLE WARNING SURFACE SHALL BE LOCATED SO THAT THE EDGE NEAREST THE STREET SHALL BE BETWEEN 6 INCHES AND 8 INCHES FROM THE GUTTER FLOW LINE. CURB RAMP DETECTABLE WARNING SURFACE SHALL CONSIST OF A PREFABRICATED SURFACE APPLIED TACTILE MAT INCORPORATING TRUNCATED DOMES. THE TACTILE MAT SHALL MEET THE FOLLOWING STANDARDS:

PROPERTY	ASTM TEST METHOD	NOMINAL VALUE
SALT SPRAY (200 HOURS)	B117	NO CHANGE
SLIP RESISTANCE	C1028	COEFFICIENT OF FRICTION: 0.80 (WET OR DRY)
WEAR RESISTANCE	C501	500 MIN.
WATER ABSORPTION	D570	0.35% MAX.
TENSILE STRENGTH	D638	10,000 PSI MIN.
COMPRESSIVE STRENGTH	D695	20,000 PSI MIN.
FLEXURAL STRENGTH	D790	25,000 PSI MIN.
FLAME SPREAD	E84	FSI: 25 MAX.
ACCELERATED WEATHERING (2,000 HOURS)	G155	DELTA E: 5.0 MAX.
CHEMICAL RESISTANCE	D543 OR D1308	NO-REACTION OR NO-STAIN DETERIORATION

PREFABRICATED WARNING SURFACES SHALL BE IN CONFORMANCE WITH THE REQUIREMENTS ESTABLISHED BY THE DEPARTMENT OF GENERAL SERVICES, DIVISION OF STATE ARCHITECTURE AND BE ATTACHED IN CONFORMANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, BUT IN NO CASE SHALL THE CONCRETE CURE PERIOD FOR RAMPS BE LESS THAN FOURTEEN (14) DAYS. INSTALLATION SHALL BE ACCOMPANIED WITH A WRITTEN 5-YEAR WARRANTY FROM THE MANUFACTURER, GUARANTEEING REPLACEMENT WHEN THERE IS DEFECT IN THE DOME SHAPE, COLOR FASTNESS, SOUND-ON-CANE ACOUSTIC QUALITY, RESILIENCE OR ATTACHMENT.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

  
Khalid Bazmi, County Engineer

Revision: August 2018

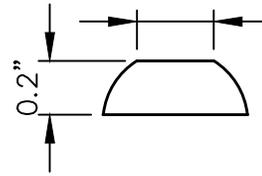
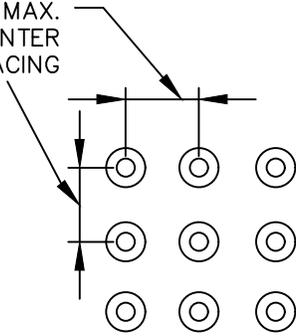
STD. PLAN

1115

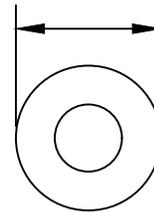
CURB RAMP

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2.3" MIN.-2.4" MAX.  
CENTER TO CENTER  
SPACING



TOP DIA.  
(0.45" MIN., 0.47"  
MAX)



BASE DIA.  
(0.90" MIN., 0.92 MAX)

**RAISED TRUNCATED DOME IN  
PATTERN (IN-LINE)**

**RAISED TRUNCATED DOME**

**NOTE:**

THE COLOR OF THE DETECTABLE WARNING SURFACE SHALL BE YELLOW CONFORMING TO FEDERAL STANDARD 595 B, COLOR NO. 33538, OR AS APPROVED BY COUNTY, IN COMPLIANCE WITH THE 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN.

10. ANY DEVIATIONS FROM THE 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN MUST COMPLY WITH THE THE FOLLOWING REQUIREMENTS:
- (A) THE CURB RAMP DESIGN HAS BEEN PREPARED BY A CIVIL ENGINEER LICENSED IN THE STATE OF CALIFORNIA.
  - (B) THE CURB RAMP DESIGN HAS BEEN REVIEWED BY A CERTIFIED ACCESS SPECIALIST (CASp) AND DETERMINED THAT THE PROPOSED MODIFICATIONS MEET THE INTENT OF THE ACCESSIBILITY STANDARDS.
  - (C) THE ENGINEER OF RECORD COMPLETES AND SUBMITS A "DESIGN MEMORANDUM" TO THE COUNTY.
  - (D) THE DESIGN HAS BEEN APPROVED BY THE COUNTY BUILDING OFFICIAL FOR IMPROVEMENTS ON PRIVATE RIGHT-OF-WAY, OR THE COUNTY ENGINEER (OR DESIGNEE) WITHIN PUBLIC RIGHT-OF-WAY.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

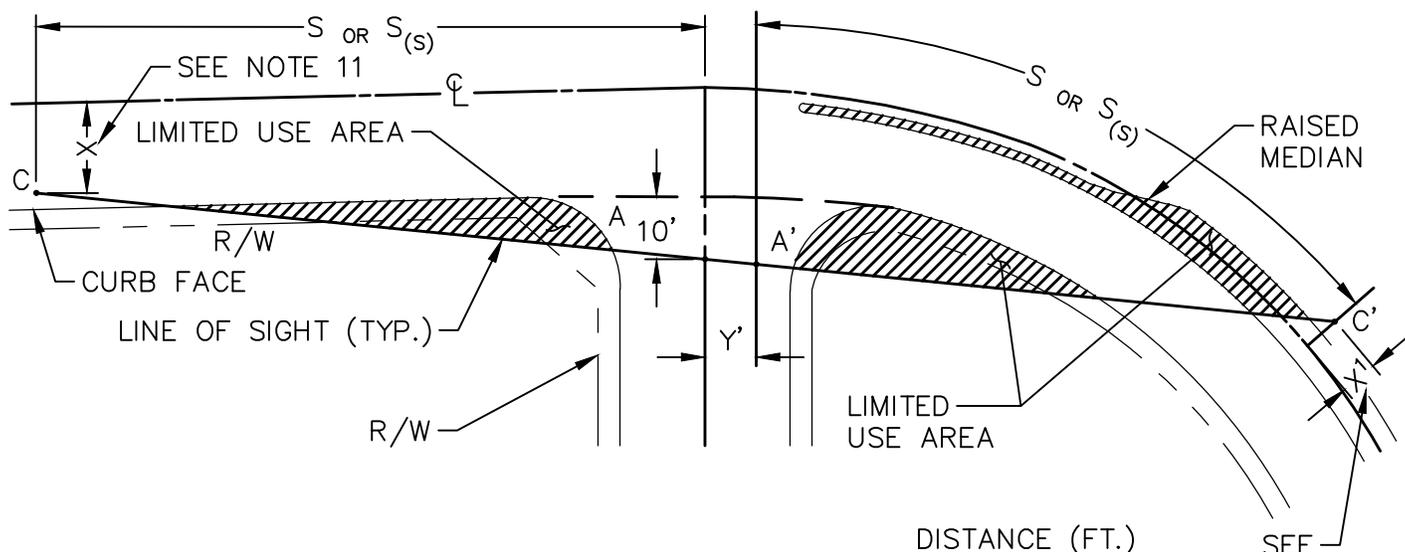
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CURB RAMP

SHT. 10 OF 10

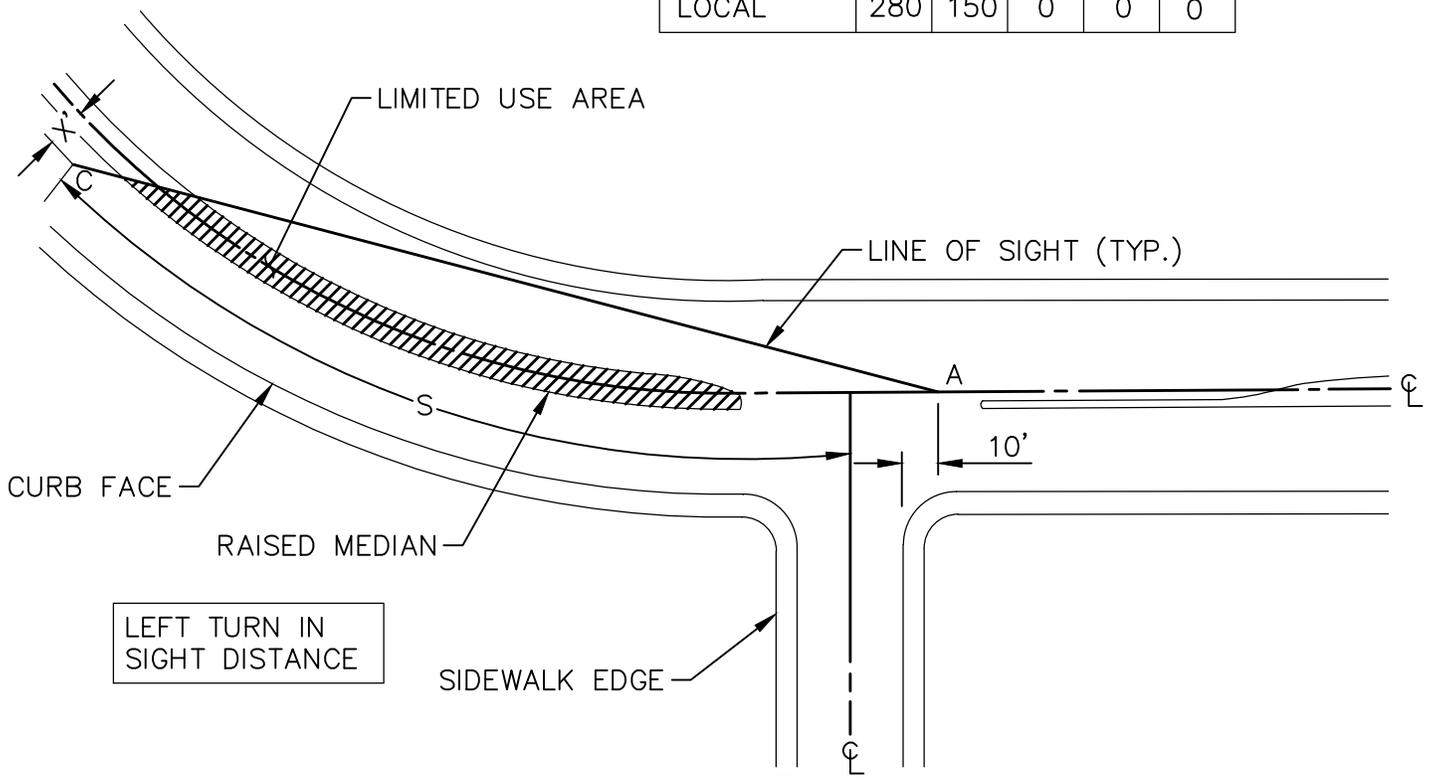


LEFT AND RIGHT TURN OUT AND CROSS TRAFFIC SIGHT DISTANCE

DISTANCE (FT.)

	S	S <sub>(s)</sub>	Y'	X	X'
MAJOR	660	580	37	37	13
PRIMARY	610	500	25	25	13
SECONDARY	550	430	18	18	6
COMMUTER	500	360	0	0	0
COLLECTOR	390	250	0	0	0
LOCAL	280	150	0	0	0

SEE NOTE 11



LEFT TURN IN SIGHT DISTANCE

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved *Khalid Bazmi*  
*Khalid Bazmi, County Engineer*

Revision: August 2018

STD. PLAN

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INTERSECTION SIGHT DISTANCE

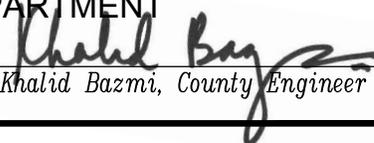
SHT. 1 OF 3

**NOTES:**

1. THE DISTANCE S REPRESENTS THE INTERSECTION SIGHT DISTANCE MEASURED ALONG THE CENTERLINE OF THE ROAD. THE INTERSECTION SIGHT DISTANCE IS THE DISTANCE REQUIRED TO ALLOW  $7\frac{1}{2}$  SECONDS FOR THE DRIVER ON THE CROSS ROAD (OR LEFT TURN POCKET) TO SAFELY CROSS THE MAIN ROADWAY OR TURN LEFT WHILE THE APPROACH VEHICLE TRAVELS AT THE ASSUMED DESIGN SPEED OF THE MAIN ROADWAY.
2. THE DISTANCE S SHOULD BE INCREASED BY 20 PERCENT FROM THE AMOUNT SHOWN ON THE TABLE ON SUSTAINED DOWNGRADES STEEPER THAN 3 PERCENT AND LONGER THAN ONE MILE.
3. POINTS A AND A' ARE THE LOCATIONS OF A DRIVER'S LINE OF SIGHT (3.5 FOOT EYE HEIGHT) TO ONCOMING VEHICLES (4.25 FOOT OBJECT HEIGHT) LOCATED AT POINTS C AND C' WHILE IN A VEHICLE AT AN INTERSECTION 10 FEET BACK FROM THE PROJECTION OF THE CURB LINE. IN NO CASE SHALL POINTS A OR A' BE LESS THAN FIFTEEN (15) FEET FROM THE EDGE OF THE TRAVELED WAY.
4. THE DISTANCE Y' IS THE DISTANCE MEASURED FROM THE CENTERLINE OF THE MAIN ROAD TO THE FAR RIGHT THROUGH TRAVEL LANE. THE DISTANCE Y' IS EQUAL TO ZERO FOR T-INTERSECTIONS. THE DISTANCE X IS THE DISTANCE MEASURED FROM THE CENTERLINE OF THE MAIN ROAD TO THE CENTER OF THE FAR RIGHT THROUGH TRAVEL LANE. THE DISTANCE X' IS THE DISTANCE MEASURED FROM THE CENTERLINE OF THE MAIN ROAD TO THE CENTER OF THE TRAVEL LANE NEAREST THE CENTERLINE OF THE ROAD.
5. THE LIMITED USE AREA IS DETERMINED BY THE GRAPHICAL METHOD USING THE APPROPRIATE DISTANCES GIVEN IN THE ABOVE TABLE. IT SHALL BE USED FOR THE PURPOSE OF PROHIBITING OR CLEARING OBSTRUCTIONS IN ORDER TO MAINTAIN ADEQUATE SIGHT DISTANCE AT INTERSECTIONS.
6. THE LINE OF SIGHT LINE SHALL BE SHOWN AT INTERSECTIONS ON ALL LANDSCAPING PLANS, GRADING PLANS AND TENTATIVE TRACT PLANS WHERE SAFE SIGHT DISTANCE IS QUESTIONABLE. IN CASES WHERE AN INTERSECTION IS LOCATED ON A VERTICAL CURVE, A PROFILE AT THE LINE OF SIGHT MAY BE REQUIRED.
7. OBSTRUCTIONS SUCH AS BUS SHELTERS, WALLS OR LANDSCAPING WITHIN THE LIMITED USE AREA WHICH COULD RESTRICT THE LINE OF SIGHT SHALL NOT BE PERMITTED.
  - A. PLANTS AND SHRUBS WITHIN THE LIMITED USE AREA SHALL BE OF THE TYPE THAT WILL GROW NO HIGHER THAN 12 INCHES ABOVE THE GROUND AND SHALL BE MAINTAINED AT A MAXIMUM HEIGHT OF 12 INCHES ABOVE THE GROUND. MAINTENANCE AT A LOWER HEIGHT MAY BE REQUIRED ON CREST VERTICAL CURVES PER NOTE 6 ABOVE.
  - B. A PROFILE OF THE LINE OF SIGHT MAY BE REQUIRED TO VERIFY 12 INCHES MINIMUM VERTICAL CLEARANCE ABOVE VARIABLE HEIGHT OBSTRUCTIONS SUCH AS SLOPE LANDSCAPING, PLANTS AND SHRUBS.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

  
Khalid Bazmi, County Engineer

Revision: August 2018

STD. PLAN

1117

INTERSECTION SIGHT DISTANCE

SHT. 2 OF 3

- C. THE TOE OF SLOPE MAY ENCROACH INTO THE LIMITED USE AREA PROVIDED THAT THE REQUIREMENTS OF (B) ABOVE ARE SATISFIED.
- D. IN LIEU OF PROVIDING A PROFILE OF THE LINE OF SIGHT, THE TOE OF SLOPE SHALL NOT ENCROACH INTO THE LIMITED USE AREA, AND THE LIMITED USE AREA SHALL SLOPE AT 2 PERCENT MAXIMUM TO THE ROADWAY.
- 8. TREES SHALL NOT BE PERMITTED WITHIN ANY PORTION OF THE LIMITED USE AREA.
- 9. MEDIAN AREAS LESS THAN SIX (6) FEET IN WIDTH SHALL BE PAVED WITH CONCRETE PER STANDARD PLAN 1807, UNLESS OTHERWISE APPROVED BY THE ENGINEER.
- 10. RESIDENTIAL DRIVEWAYS SERVING FOUR OR MORE UNITS AND COMMERCIAL DRIVEWAYS SHALL BE TREATED AS A LOCAL STREET INTERSECTION.
- 11. X AND X<sup>1</sup> ARE BASED UPON A STANDARD 14' MEDIAN FOR MAJOR AND PRIMARY HIGHWAYS USE S VALUES FOR UNSIGNALIZED INTERSECTIONS AND S<sub>(s)</sub> VALUES FOR SIGNALIZED INTERSECTIONS.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
 Khalid Bazmi, County Engineer

Revision: August 2018

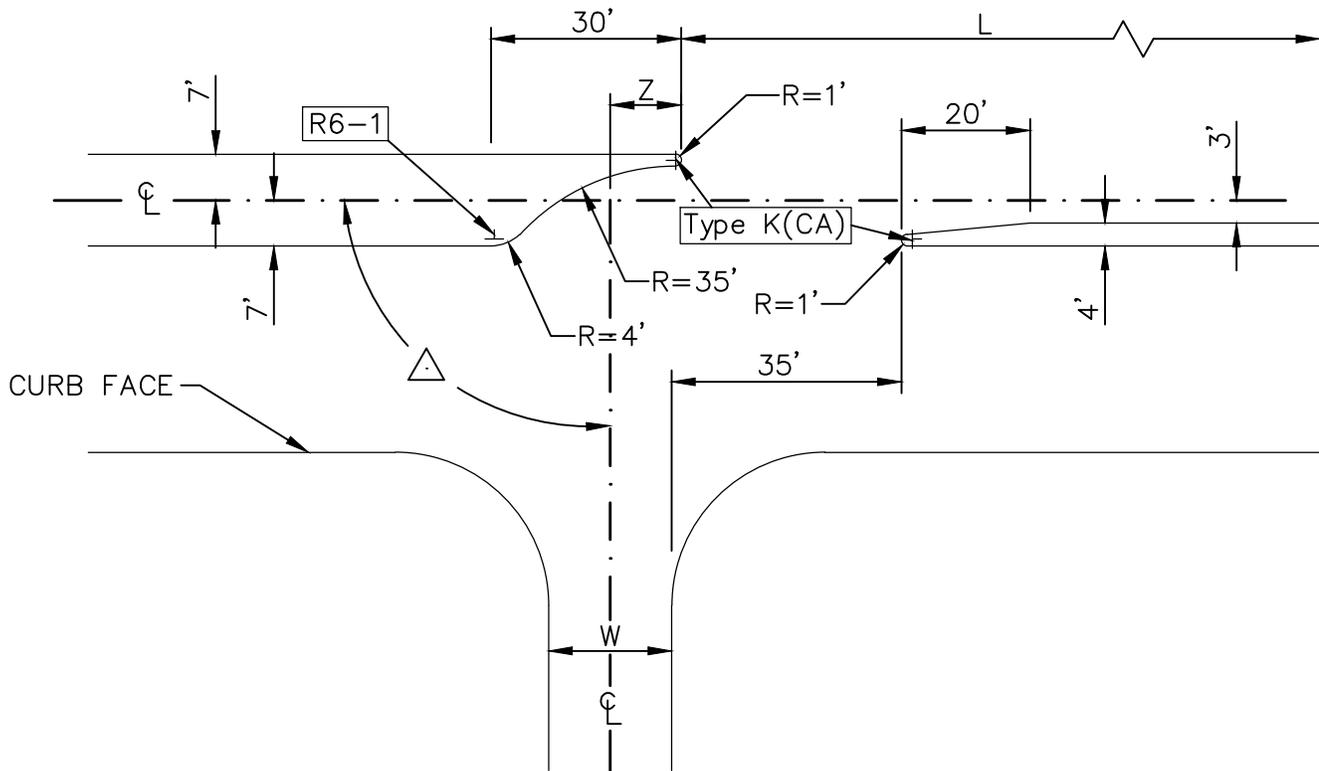
STD. PLAN

1117

INTERSECTION SIGHT DISTANCE

SHT. 3 OF 3





**NOTES:**

$Z = W/2$

W = INTERSECTING STREET OR DRIVEWAY WIDTH  
(CURB TO CURB)

$\triangle$  = ANGLE OF INTERSECTION

L = POCKET LENGTH AS SHOWN PER PLANS

R = CURB RETURN RADIUS

$\vdash$  = TRAFFIC SIGN INSTALLED ON RAISED MEDIAN

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

Revision: August 2018

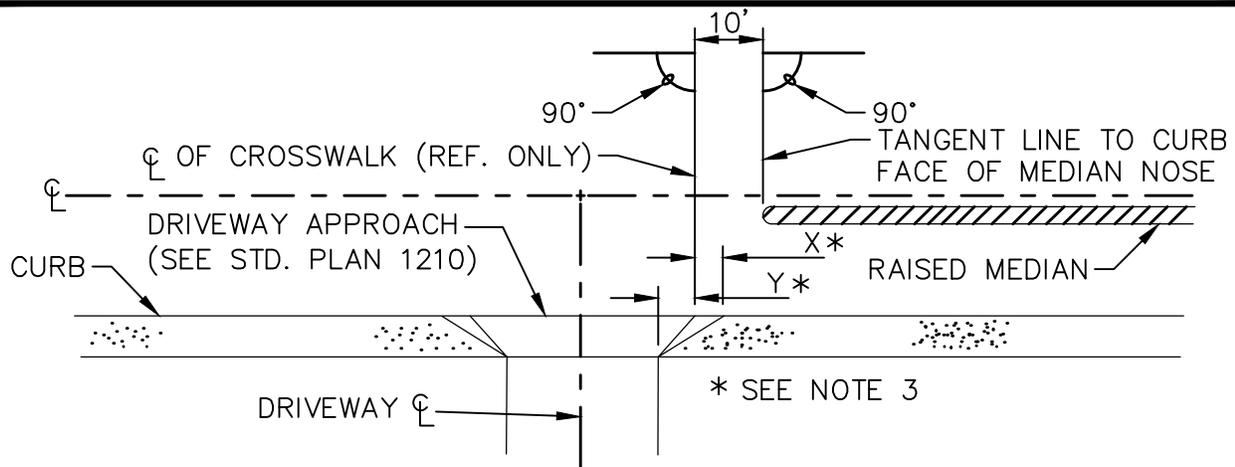
STD. PLAN

1118

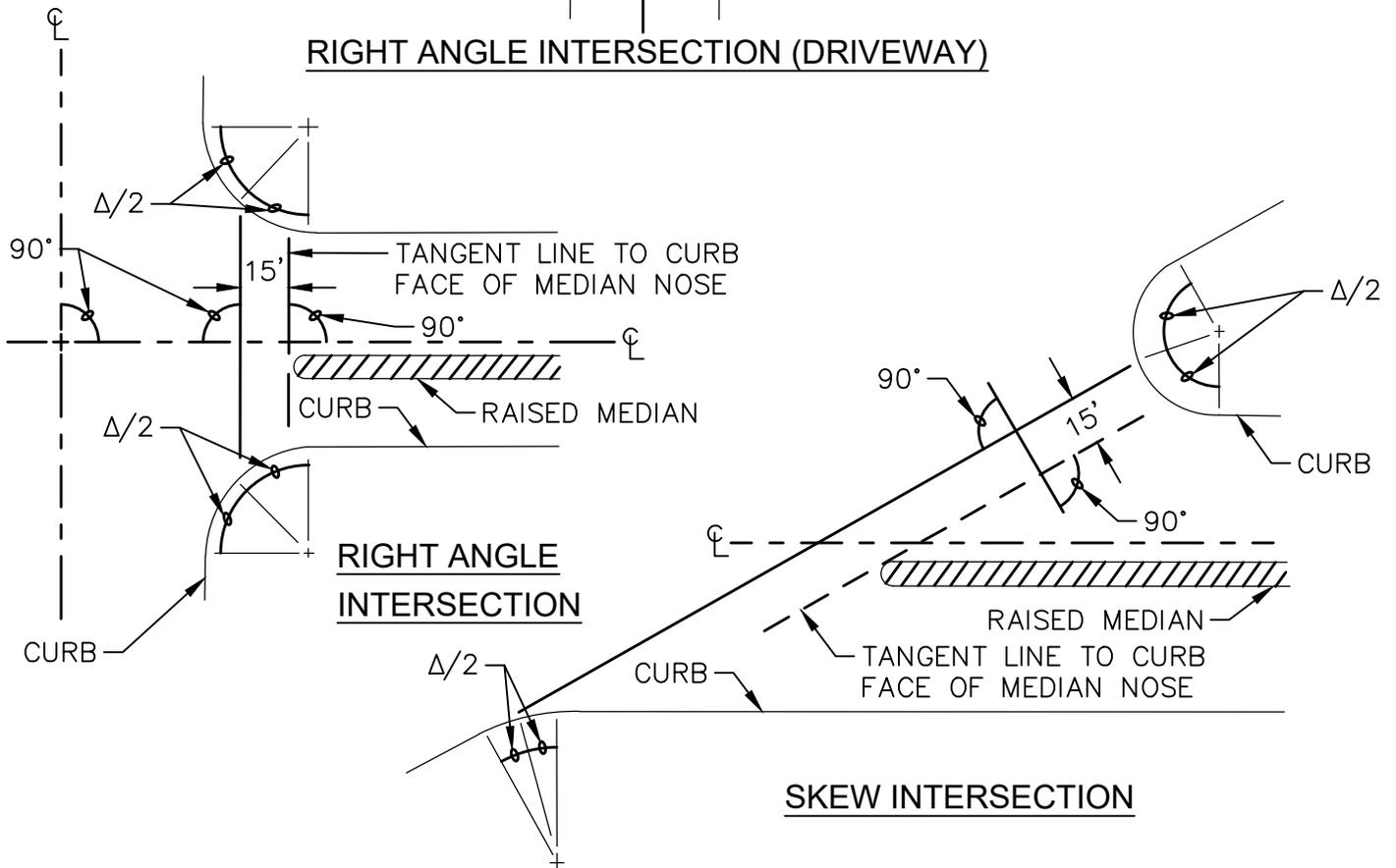
LEFT-TURN-IN-ONLY MEDIAN OPENING

SHT. 1 OF 1





**RIGHT ANGLE INTERSECTION (DRIVEWAY)**



**NOTES:**

1. EXTEND DOUBLE YELLOW STRIPING FROM MEDIAN NOSE TO CROSSWALK OR TO  $\Delta/2$  IF THERE IS NO CROSSWALK.
2. SEE STANDARD PLAN 1416 FOR CROSSWALK DETAIL.
3. SEE STANDARD PLAN 1210 FOR DRIVEWAY FLARE DIMENSIONS 'X' AND 'Y'.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
 Khalid Bazmi, County Engineer

STD. PLAN

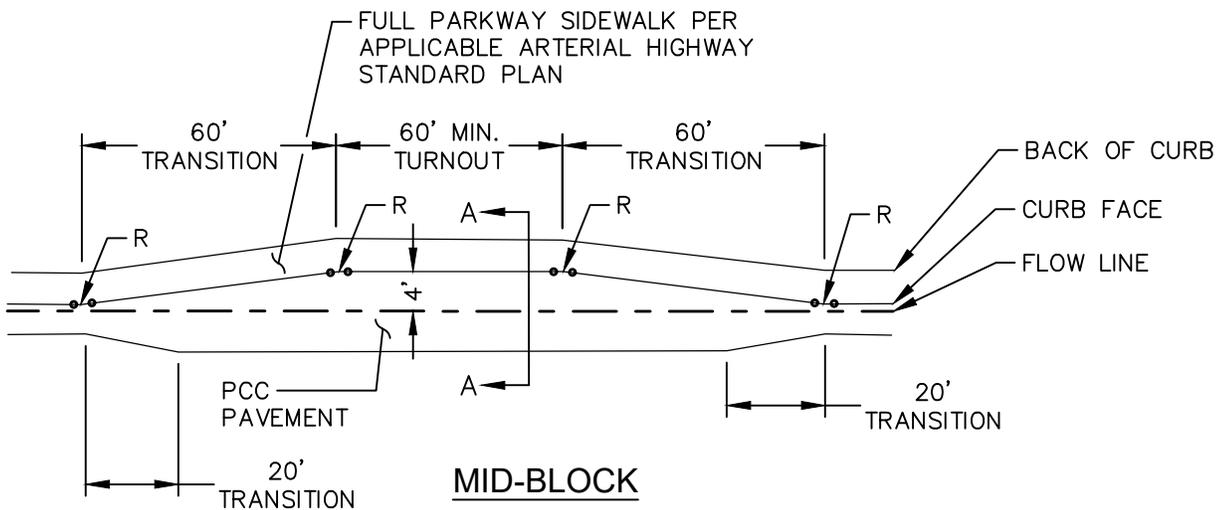
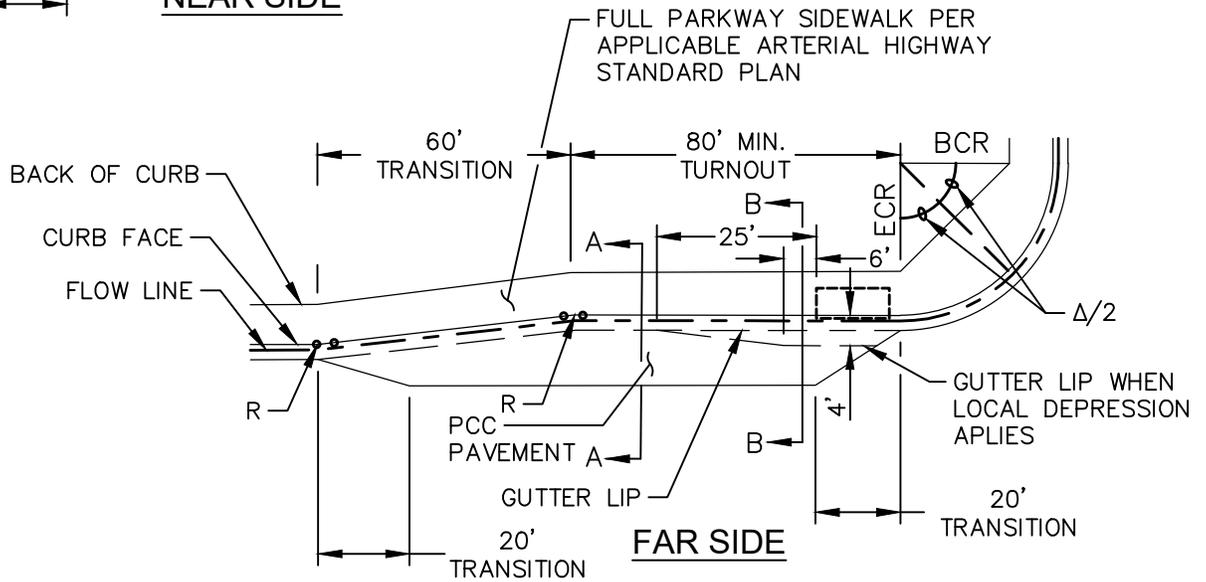
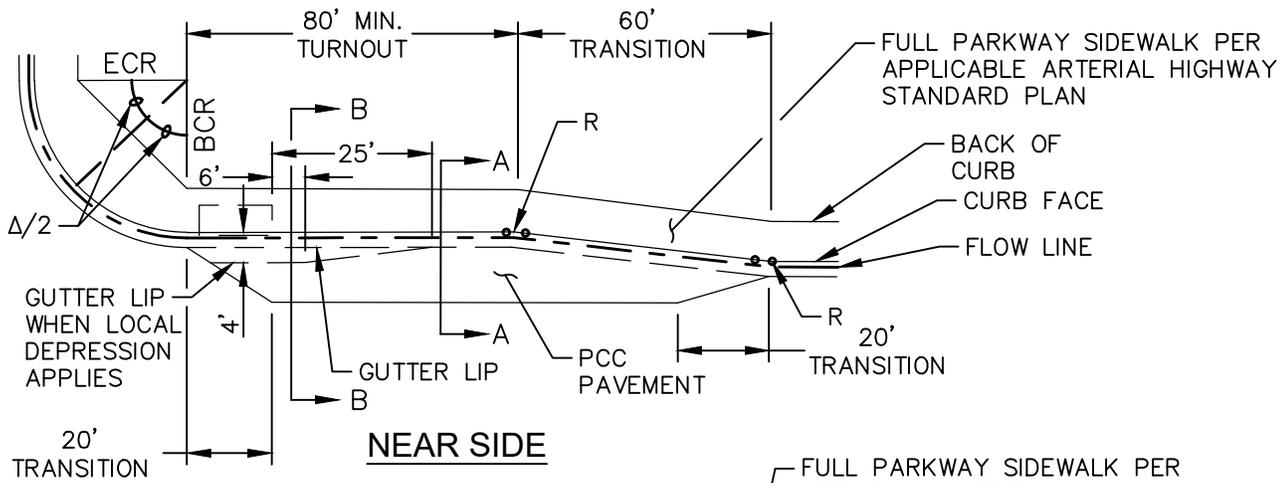
1119

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**RAISED MEDIAN NOSE LOCATION**

SHT. 1 OF 1





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 Khalid Bazmi, County Engineer

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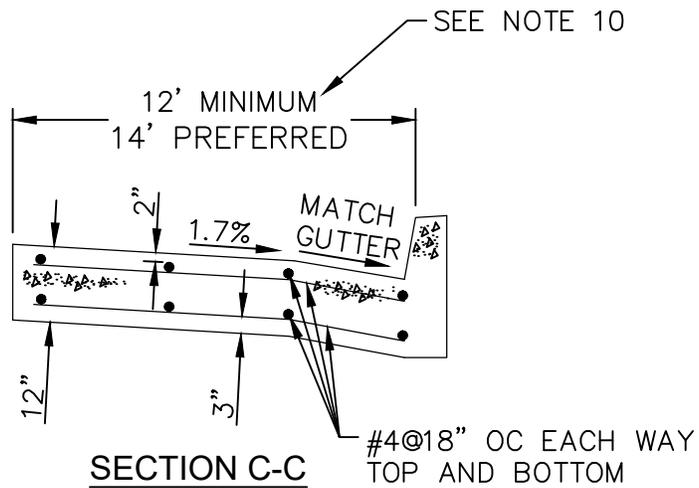
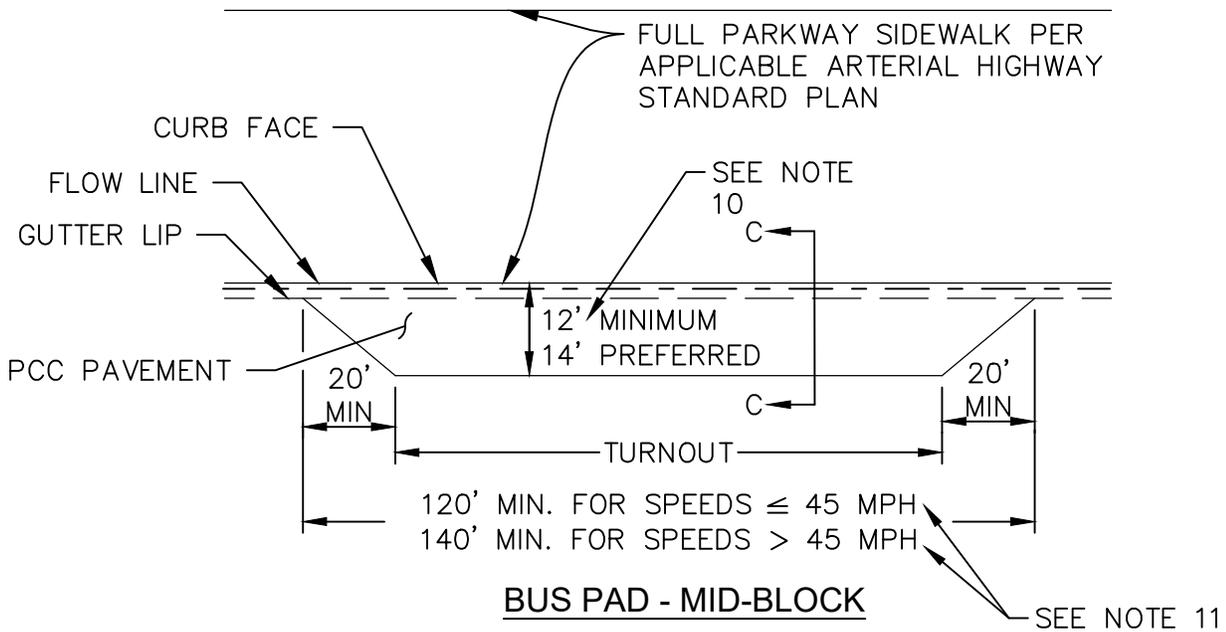
Revision: August 2018

1120

BUS TURNOUTS AND PADS

SHT. 1 OF 4





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*Khalid Bazmi*  
Khalid Bazmi, County Engineer

Revision: August 2018

STD. PLAN

1120

BUS TURNOUTS AND PADS

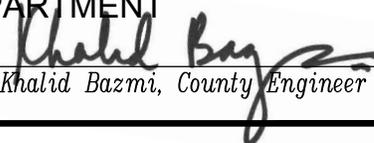
SHT. 3 OF 4

NOTES:

1. R=50 FEET.
2. PCC PAVEMENT THICKNESS SHALL BE 12 INCHES.
3. BUS SHELTERS SHALL BE SET BACK FROM THE FACE OF THE CURB A MINIMUM CLEAR DISTANCE OF FOUR (4) FEET FOR PEDESTRIAN TRAVELWAY.
4. CURB AND GUTTER SHALL BE POURED MONOLITHIC WITH PCC PAVEMENT.
5. MODIFICATIONS OF THIS STANDARD SHALL BE REVIEWED FOR ACCEPTABILITY BY OCPW TRAFFIC ENGINEERING DIVISION.
6. CONSTRUCT CONTROL JOINTS AT 10-FOOT INTERVALS.
7. INLETS SHOULD NOT BE LOCATED IN BUS TURNOUTS.
8. DRIVEWAYS SHOULD NOT BE LOCATED IN BUS TURNOUTS.
9. 4' WHEN LOCAL DEPRESSION FOR INLET APPLIES. SEE LOCAL DEPRESSION PER STD. PLAN 1308, INCLUDING D DIMENSION.
10. WITH INTENT TO MATCH LANE LINE.
11. CONSULT WITH OCTA FOR REQUIRED TURNOUT LENGTH.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

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Khalid Bazmi, County Engineer

Revision: August 2018

STD. PLAN

1120

BUS TURNOUTS AND PADS

SHT. 4 OF 4

TABLE 1

TAPER LENGTH CRITERIA AND CHANNELIZING DEVICE SPACING

SPEED (S)	MINIMUM TAPER LENGTH * FOR WIDTH OF OFFSET 12 FEET (W)				MAXIMUM CHANNELIZING DEVICE SPACING		
					X	Y	Z **
	TANGENT 2L	MERGING L	SHIFTING L/2	SHOULDER L/3	TAPER	TANGENT	CONFLICT
mph	ft	ft	ft	ft	ft	ft	ft
20	160	80	40	27	20	40	10
25	250	125	63	42	25	50	12
30	360	180	90	60	30	60	15
35	490	245	123	82	35	70	17
40	640	320	160	107	40	80	20
45	1080	540	270	180	45	90	22
50	1200	600	300	200	50	100	25
55	1320	660	330	220	55	110	27
60	1440	720	360	240	60	120	30
65	1560	780	390	260	65	130	32
70	1680	840	420	280	70	140	35

\* – FOR OTHER OFFSETS, USE THE FOLLOWING MERGING TAPER LENGTH FORMULA FOR L:  
 FOR SPEED OF 40 MPH OR LESS,  $L = WS^2/60$   
 FOR SPEED OF 45 MPH OR MORE,  $L = WS$

WHERE: L = TAPER LENGTH IN FEET  
 W = WIDTH OF OFFSET IN FEET  
 S = POSTED SPEED LIMIT, OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR  
 THE ANTICIPATED OPERATING SPEED IN MPH.

\*\* – USE FOR TAPER AND TANGENT SECTIONS WHERE THERE ARE NO PAVEMENT MARKINGS OR WHERE  
 THERE IS A CONFLICT BETWEEN EXISTING PAVEMENT MARKINGS AND CHANNELIZERS.

NOTE:

TABLES ARE TO BE USED WITH STD. PLANS 1151-1159.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
 Khalid Bazmi, County Engineer

Revision: August 2018

STD. PLAN

1150

TRAFFIC CONTROL: SPACING FOR LANE AND SHOULDER CLOSURES

SHT. 1 OF 3

TABLE 2

LONGITUDINAL BUFFER SPACE AND FLAGGER STATION SPACING				
SPEED *	Min D **	DOWNGRADE Min D ***		
		-3%	-6%	-9%
mph	ft	ft	ft	ft
20	115	116	120	126
25	155	158	165	173
30	200	205	215	227
35	250	257	271	287
40	305	315	333	354
45	360	378	400	427
50	425	446	474	507
55	495	520	553	593
60	570	598	638	686
65	645	682	728	785
70	730	771	825	891

- \* - SPEED IS POSTED SPEED LIMIT, OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED IN MPH
- \*\* - LONGITUDINAL BUFFER SPACE OR FLAGGER STATION SPACING
- \*\*\* - USE ON SUSTAINED DOWNGRADE STEEPER THAN -3 PERCENT AND LONGER THAN 1 MILE.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

Revision: August 2018

STD. PLAN

1150

TRAFFIC CONTROL: SPACING FOR LANE AND SHOULDER CLOSURES

SHT. 2 OF 3

TABLE 3

ADVANCE WARNING SIGN SPACING			
ROAD TYPE	DISTANCE BETWEEN SIGNS *		
	A	B	C
	ft	ft	ft
URBAN – 25 mph OR LESS	100	100	100
URBAN – MORE THAN 25 mph TO 40 mph	250	250	250
URBAN – MORE THAN 40 mph	350	350	350
RURAL	500	500	500
EXPRESSWAY	1000	1500	2640

\* – THE DISTANCES ARE APPROXIMATE, ARE INTENDED FOR GUIDANCE PURPOSES ONLY, AND SHOULD BE APPLIED WITH ENGINEERING JUDGMENT. THESE DISTANCES SHOULD BE ADJUSTED BY THE ENGINEER FOR FIELD CONDITIONS, IF NECESSARY, BY INCREASING OR DECREASING THE RECOMMENDED DISTANCES.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
 Khalid Bazmi, County Engineer

Revision: August 2018

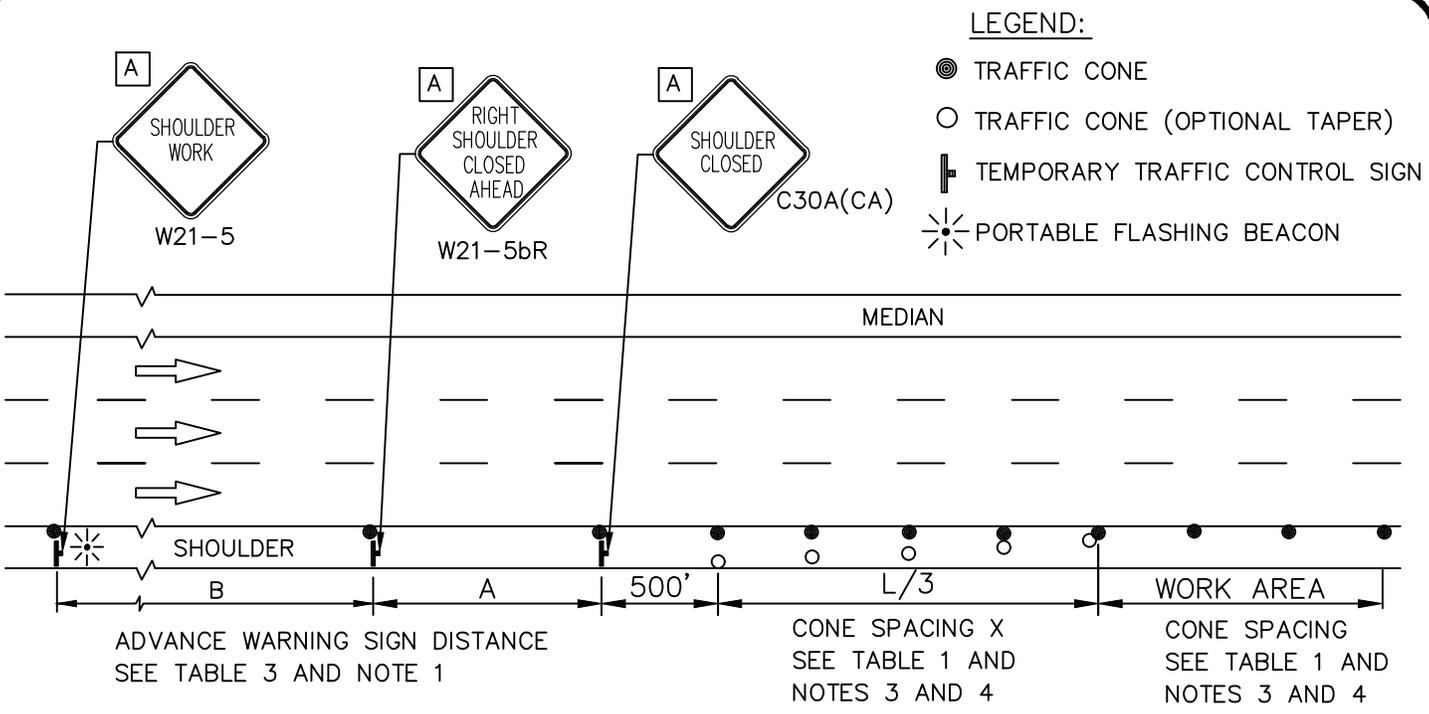
STD. PLAN

1150

TRAFFIC CONTROL: SPACING FOR LANE AND SHOULDER CLOSURES

SHT. 3 OF 3





SIGN PANEL SIZE (MIN)

A 36" x 36"

**NOTES:**

1. EACH ADVANCE WARNING SIGN SHALL BE EQUIPPED WITH AT LEAST TWO FLAGS FOR DAYTIME CLOSURE. EACH FLAG SHALL BE AT LEAST 16" X 16" IN SIZE AND SHALL BE ORANGE OR FLUORESCENT RED-ORANGE IN COLOR. FLASHING BEACONS SHALL BE PLACED AT THE LOCATIONS INDICATED FOR LANE CLOSURE DURING HOURS OF DARKNESS.
2. LANE CLOSURES SHALL NOT BEGIN AT TOP OF CREST VERTICAL CURVE OR ON A HORIZONTAL CURVE.
3. ALL CONES USED FOR LANE CLOSURES DURING THE HOURS OF DARKNESS SHALL BE FITTED WITH RETRO-REFLECTIVE BANDS (OR SLEEVES).
4. PORTABLE DELINEATORS, PLACED AT ONE-HALF THE SPACING INDICATED FOR TRAFFIC CONES MAY BE USED INSTEAD OF CONES FOR DAYTIME CLOSURES ONLY.
5. SEE STANDARD PLAN 1150 FOR TABLES.
6. USE CONE SPACING X FOR TAPER SEGMENT, Y FOR TANGENT SEGMENT OR Z FOR CONFLICT SITUATIONS, AS APPROPRIATE, PER TABLE 1, UNLESS X, Y, OR Z CONE SPACING IS SHOWN ON THIS SHEET.
7. ALL TEMPORARY WARNING SIGNS SHALL HAVE BLACK LEGEND ON FLUORESCENT ORANGE BACKGROUND.
8. CALIFORNIA CODES ARE DESIGNATED BY (CA). OTHERWISE, FEDERAL (MUTCD) CODES ARE SHOWN.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved *Khalid Bazmi*  
 Khalid Bazmi, County Engineer

Revision: August 2018

STD. PLAN

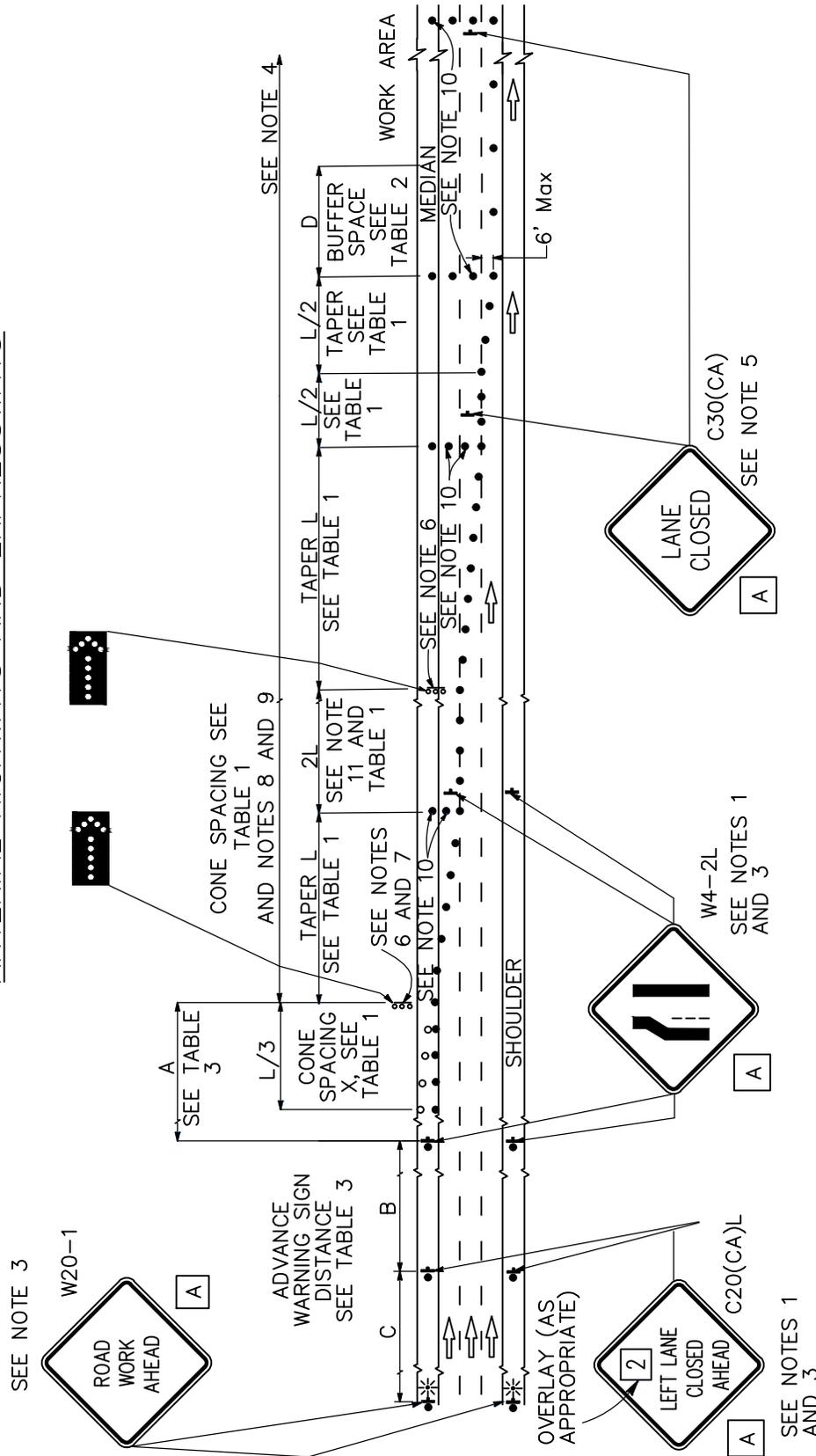
1151

TRAFFIC CONTROL: SHOULDER CLOSURE ON ARTERIAL HIGHWAYS

SHT. 1 OF 1



FOR LANE CLOSURES ON PRINCIPAL, MAJOR, AND PRIMARY ARTERIAL HIGHWAYS AND EXPRESSWAYS



SIGN PANEL SIZE (MIN)

A 48" x 48"

LEGEND:

- TRAFFIC CONE
- TRAFFIC CONE (OPTIONAL TAPER)
- ▬ TEMPORARY TRAFFIC CONTROL SIGN
- ◑ FLASHING ARROW SIGN (FAS)
- ◑◑◑ FAS SUPPORT OR TRAILER
- ⚡ PORTABLE FLASHING BEACON

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved *Khalid Bazmi*  
Khalid Bazmi, County Engineer

Revision: August 2018

STD. PLAN

1152

TRAFFIC CONTROL: LANE CLOSURE WITH PARTIAL SHOULDER USE

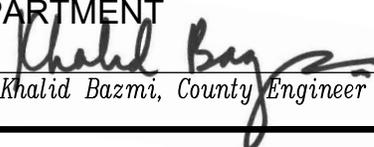
SHT. 1 OF 2

NOTES:

1. LANE CLOSURES ON THE RIGHT SIDE USING PARTIAL MEDIAN SHOULDER AS A TRAFFIC LANE SHALL CONFORM TO THE DETAILS SHOWN EXCEPT THAT C20(CA)R AND W4-2R SIGNS SHALL BE USED.
2. AT LEAST ONE PERSON SHALL BE ASSIGNED TO PROVIDE FULL TIME MAINTENANCE OF TRAFFIC CONTROL DEVICES FOR LANE CLOSURES.
3. EACH ADVANCE WARNING SIGN ON EACH SIDE OF THE ROADWAY SHALL BE EQUIPPED WITH AT LEAST TWO FLAGS FOR DAYTIME CLOSURE. EACH FLAG SHALL BE AT LEAST 16" X 16" IN SIZE AND SHALL BE ORANGE OR FLUORESCENT RED-ORANGE IN COLOR. FLASHING BEACONS SHALL BE PLACED AT THE LOCATIONS INDICATED FOR LANE CLOSURE DURING HOURS OF DARKNESS.
4. A G20-2 "END ROAD WORK" SIGN, WITH MINIMUM SIZE OF 48" X 24" AS APPROPRIATE, SHALL BE PLACED AT THE END OF THE LANE CLOSURE UNLESS THE END OF WORK AREA IS OBVIOUS OR ENDS WITHIN A LARGER PROJECT'S LIMITS.
5. PLACE A C30(CA) SIGN EVERY 2000' THROUGHOUT LENGTH OF LANE CLOSURE.
6. USE ONE FLASHING ARROW SIGN FOR EACH LANE CLOSED. THE FLASHING ARROW SIGNS SHALL BE TYPE I.
7. FOR EXPRESSWAYS, A MINIMUM 1500' OF SIGHT DISTANCE SHALL BE PROVIDED WHERE POSSIBLE FOR VEHICLES APPROACHING THE FIRST FLASHING ARROW SIGN. LANE CLOSURES SHALL NOT BEGIN AT THE TOP OF CREST VERTICAL CURVE OR ON A HORIZONTAL CURVE.
8. ALL CONES USED FOR LANE CLOSURES DURING THE HOURS OF DARKNESS SHALL BE FITTED WITH RETROREFLECTIVE BANDS (OR SLEEVES).
9. PORTABLE DELINEATORS, PLACED AT ONE-HALF THE SPACING INDICATED FOR TRAFFIC CONES, MAY BE USED INSTEAD OF CONES FOR DAYTIME CLOSURES ONLY.
10. A MINIMUM OF 3 CONES SHALL BE PLACED TRANSVERSELY ACROSS EACH CLOSED LANE AND SHOULDER AT EACH LOCATION WHERE A TAPER ACROSS A TRAFFIC LANE ENDS AND EVERY 2000' AS SHOWN ON THE "LANE CLOSURE WITH PARTIAL SHOULDER USE" DETAIL. TWO TYPE II BARRICADES MAY BE USED INSTEAD OF THE 3 CONES. THE TRANSVERSE ALIGNMENT OF THE CONES OR BARRICADES ON THE CLOSED SHOULDER MAY BE SHIFTED FROM THE TRANSVERSE ALIGNMENT TO PROVIDE ACCESS TO THE WORK.
11. THE 2L TANGENT SHOWN ALONG LANE LINES SHALL BE USED BETWEEN THE L TAPERS REQUIRED FOR EACH CLOSED TRAFFIC LANE.
12. A MINIMUM OF TWO TYPE 2 OR TYPE 3 BARRICADES SHALL BE PLACED ACROSS EACH CLOSED LANE AND SHOULDER AT THE LOCATION SHOWN AND EVERY 2000' WITHIN THE COMPLETE CLOSURE AREA, THE TRANSVERSE ALIGNMENT OF THE BARRICADES ON THE CLOSED SHOULDER MAY BE SHIFTED FROM THE TRANSVERSE ALIGNMENT TO PROVIDE ACCESS TO THE WORK.
13. SEE STANDARD PLAN 1150 FOR TABLES.
14. USE CONE SPACING X FOR TAPER SEGMENT, Y FOR TANGENT SEGMENT OR Z FOR CONFLICT SITUATIONS, AS APPROPRIATE, PER TABLE 1, UNLESS X, Y, OR Z CONE SPACING IS SHOWN ON THIS SHEET.
15. ALL TEMPORARY WARNING SIGNS SHALL HAVE BLACK LEGEND ON FLUORESCENT ORANGE BACKGROUND.
16. CALIFORNIA CODES ARE DESIGNATED BY (CA). OTHERWISE, FEDERAL (MUTCD) CODES ARE SHOWN.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

  
Khalid Bazmi, County Engineer

Revision: August 2018

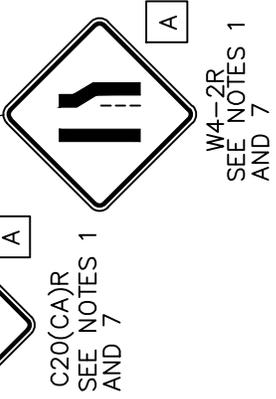
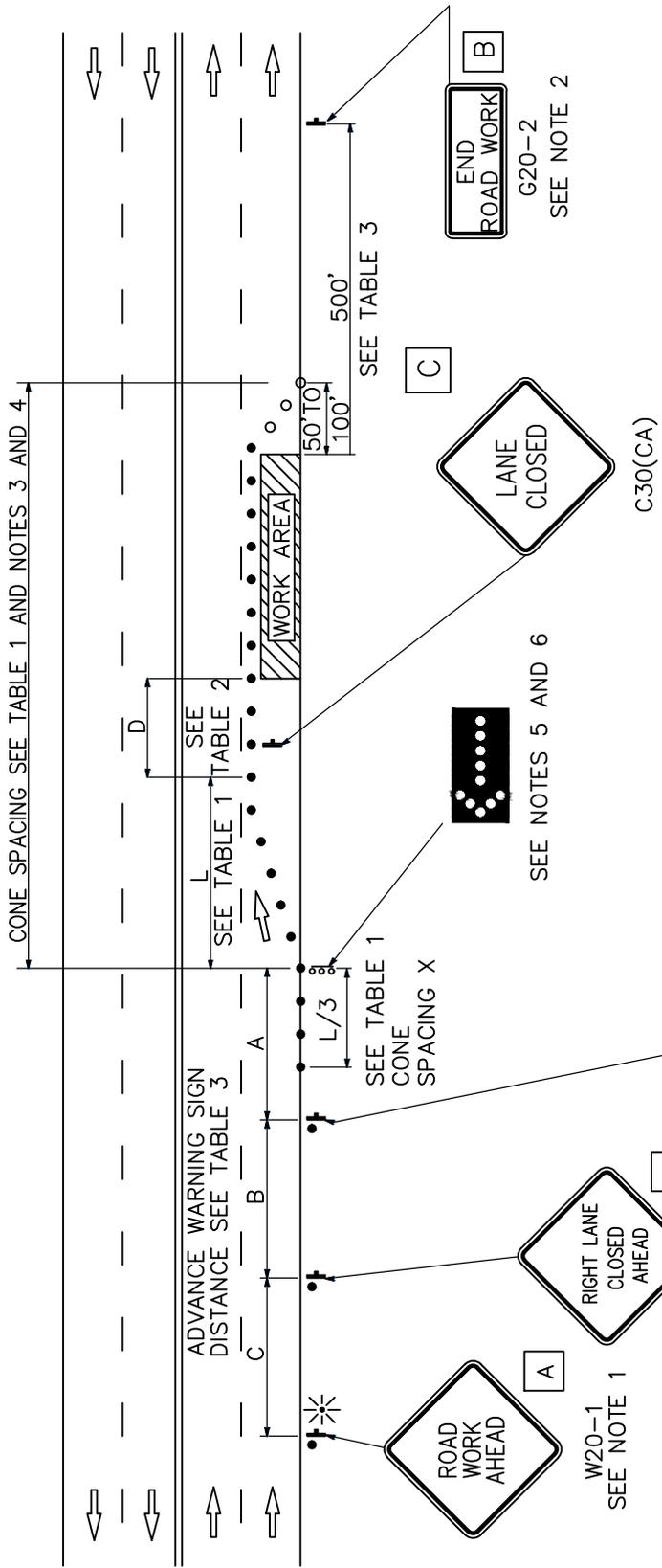
STD. PLAN

1152

TRAFFIC CONTROL: LANE CLOSURE WITH PARTIAL SHOULDER USE

SHT. 2 OF 2

TYPICAL LANE CLOSURE ON SECONDARY ARTERIAL HIGHWAYS



LEGEND:

● TRAFFIC CONE

○ TRAFFIC CONE (OPTIONAL TAPER)

⌵ TEMPORARY TRAFFIC CONTROL SIGN

■ FLASHING ARROW SIGN (FAS)

○○○ FAS SUPPORT OR TRAILER

⊛ PORTABLE FLASHING BEACON

SIGN PANEL SIZE (MIN)

A 36" x 36"

B 36" x 18"

C 30" x 30"

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved *Khalid Bazmi*  
Khalid Bazmi, County Engineer

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STD. PLAN

1153

SHT. 1 OF 2

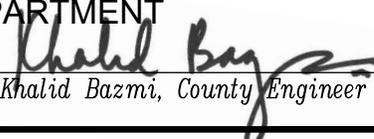
TRAFFIC CONTROL: TYPICAL LANE CLOSURE

NOTES:

1. EACH ADVANCE WARNING SIGN SHALL BE EQUIPPED WITH AT LEAST TWO FLAGS FOR DAYTIME CLOSURE. EACH FLAG SHALL BE AT LEAST 16" X 16" IN SIZE AND SHALL BE ORANGE OR FLUORESCENT RED-ORANGE IN COLOR. FLASHING BEACONS SHALL BE PLACED AT THE LOCATIONS INDICATED FOR LANE CLOSURE DURING HOURS OF DARKNESS.
2. A G20-2 "END ROAD WORK" SIGN, AS APPROPRIATE, SHALL BE PLACED AT THE END OF THE LANE CLOSURE UNLESS THE END OF WORK AREA IS OBVIOUS, OR ENDS WITHIN A LARGER PROJECT'S LIMITS.
3. ALL CONES USED FOR LANE CLOSURES DURING THE HOURS OF DARKNESS SHALL BE FITTED WITH RETROREFLECTIVE BANDS (OR SLEEVES).
4. PORTABLE DELINEATORS, PLACED AT ONE-HALF THE SPACING INDICATED FOR TRAFFIC CONES, MAY BE USED INSTEAD OF CONES FOR DAYTIME CLOSURES ONLY.
5. FLASHING ARROW SIGN SHALL BE EITHER TYPE I OR TYPE II.
6. LANE CLOSURES SHALL NOT BEGIN AT THE TOP OF CREST VERTICAL CURVE OR ON A HORIZONTAL CURVE.
7. MEDIAN LANE CLOSURES SHALL CONFORM TO THE DETAILS SHOWN EXCEPT THAT C20(CA)L AND W4-2L SIGNS SHALL BE USED.
8. AT LEAST ONE PERSON SHALL BE ASSIGNED TO PROVIDE FULL TIME MAINTENANCE OF TRAFFIC CONTROL DEVICES FOR LANE CLOSURE UNLESS, OTHERWISE DIRECTED BY THE ENGINEER.
9. SEE STANDARD PLAN 1150 FOR TABLES.
10. USE CONE SPACING X FOR TAPER SEGMENT, Y FOR TANGENT SEGMENT OR Z FOR CONFLICT SITUATIONS, AS APPROPRIATE, PER TABLE 1, UNLESS X, Y, OR Z CONE SPACING IS SHOWN ON THIS SHEET.
11. ALL TEMPORARY WARNING SIGNS SHALL HAVE BLACK LEGEND ON FLUORESCENT ORANGE BACKGROUND.
12. CALIFORNIA CODES ARE DESIGNATED BY (CA). OTHERWISE, FEDERAL (MUTCD) CODES ARE SHOWN.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

  
Khalid Bazmi, County Engineer

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STD. PLAN

1153

TRAFFIC CONTROL: TYPICAL LANE CLOSURE

SHT. 2 OF 2

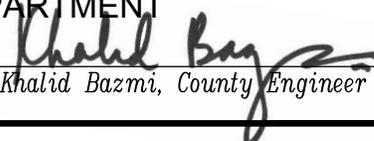


NOTES:

1. AT LEAST ONE PERSON SHALL BE ASSIGNED TO PROVIDE FULL TIME MAINTENANCE OF TRAFFIC CONTROL DEVICES FOR LANE CLOSURE UNLESS, OTHERWISE DIRECTED BY THE ENGINEER.
2. EACH ADVANCE WARNING SIGN IN EACH DIRECTION OF TRAVEL SHALL BE EQUIPPED WITH AT LEAST TWO FLAGS FOR DAYTIME CLOSURE. EACH FLAG SHALL BE AT LEAST 16" X 16" IN SIZE AND SHALL BE ORANGE OR FLUORESCENT RED-ORANGE IN COLOR. FLASHING BEACONS SHALL BE PLACED AT THE LOCATIONS INDICATED FOR LANE CLOSURE DURING HOURS OF DARKNESS.
3. A G20-2 "END ROAD WORK" SIGN, AS APPROPRIATE, SHALL BE PLACED AT THE END OF THE LANE CLOSURE UNLESS THE END OF WORK AREA IS OBVIOUS, OR ENDS WITHIN A LARGER PROJECT'S LIMITS.
4. ALL CONES USED FOR LANE CLOSURES DURING THE HOURS OF DARKNESS SHALL BE FITTED WITH RETROREFLECTIVE BANDS (OR SLEEVES).
5. PORTABLE DELINEATORS, PLACED AT ONE-HALF THE SPACING INDICATED FOR TRAFFIC CONES, MAY BE USED INSTEAD OF CONES FOR DAYTIME CLOSURES ONLY.
6. FLASHING ARROW SIGNS SHALL BE EITHER TYPE I OR TYPE II.
7. ADVISORY SPEED WILL BE DETERMINED BY THE ENGINEER. THE W13-1P PLAQUE WILL NOT BE REQUIRED WHEN ADVISORY SPEED IS MORE THAN THE POSTED OR MAXIMUM SPEED LIMIT.
8. THE TANGENT (L/2) SHALL BE USED.
9. LANE CLOSURES SHALL NOT BEGIN AT THE TOP OF CREST VERTICAL CURVE OR ON A HORIZONTAL CURVE.
10. SEE STANDARD PLAN 1150 FOR TABLES.
11. USE CONE SPACING X FOR TAPER SEGMENT, Y FOR TANGENT SEGMENT OR Z FOR CONFLICT SITUATIONS, AS APPROPRIATE, PER TABLE 1, UNLESS X, Y, OR Z CONE SPACING IS SHOWN ON THIS SHEET.
12. ALL TEMPORARY WARNING SIGNS SHALL HAVE BLACK LEGEND ON FLUORESCENT ORANGE BACKGROUND.
13. CALIFORNIA CODES ARE DESIGNATED BY (CA). OTHERWISE, FEDERAL (MUTCD) CODES ARE SHOWN.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

  
Khalid Bazmi, County Engineer

Revision: August 2018

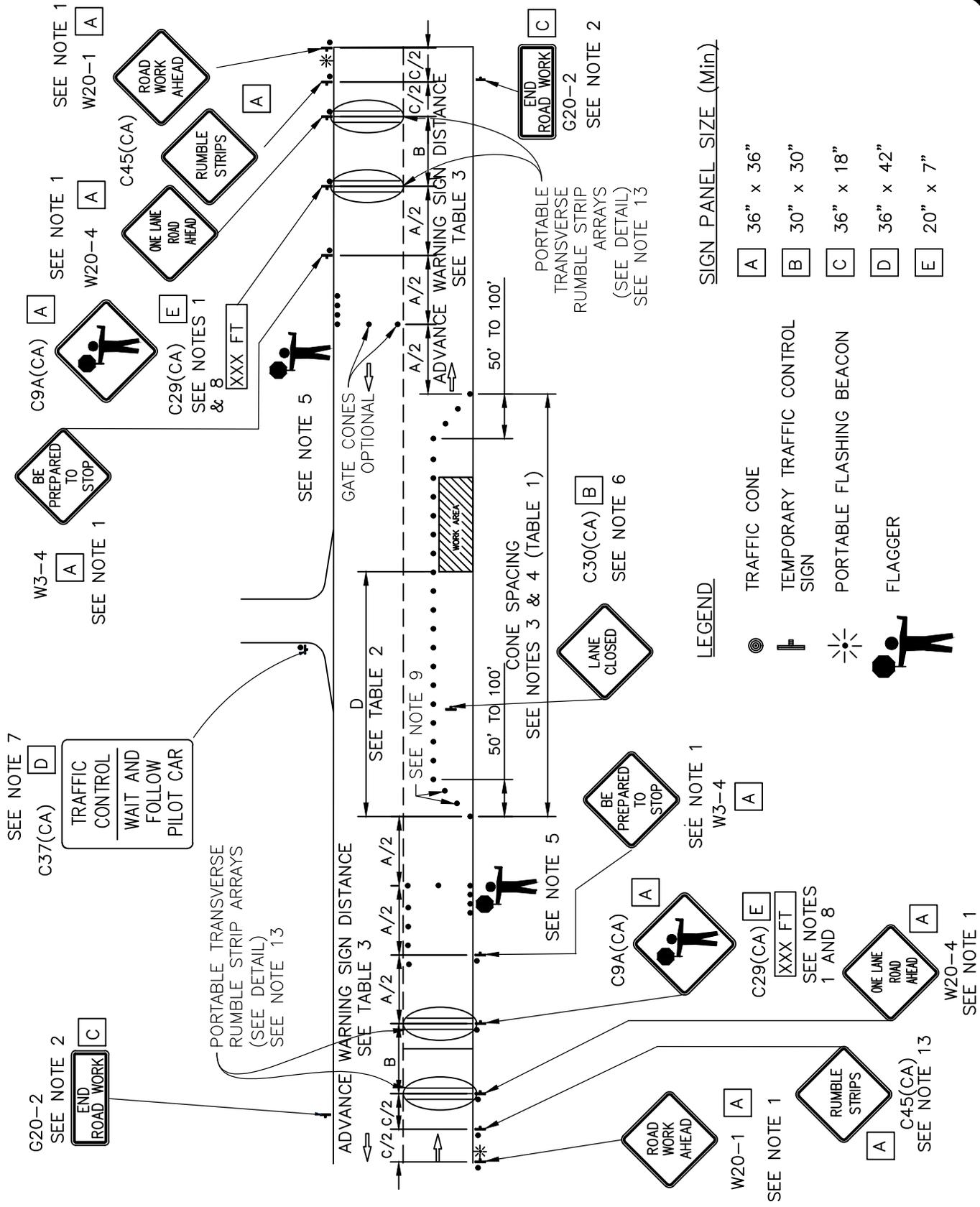
STD. PLAN

1154

TRAFFIC CONTROL: TYPICAL HALF ROAD CLOSURE

SHT. 2 OF 2

TYPICAL LANE CLOSURE WITH REVERSIBLE CONTROL ON COLLECTOR ROADS



**SIGN PANEL SIZE (Min)**

A	36" x 36"
B	30" x 30"
C	36" x 18"
D	36" x 42"
E	20" x 7"

- LEGEND**
- TRAFFIC CONE
  - TEMPORARY TRAFFIC CONTROL SIGN
  - PORTABLE FLASHING BEACON
  - FLAGGER

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

STD. PLAN

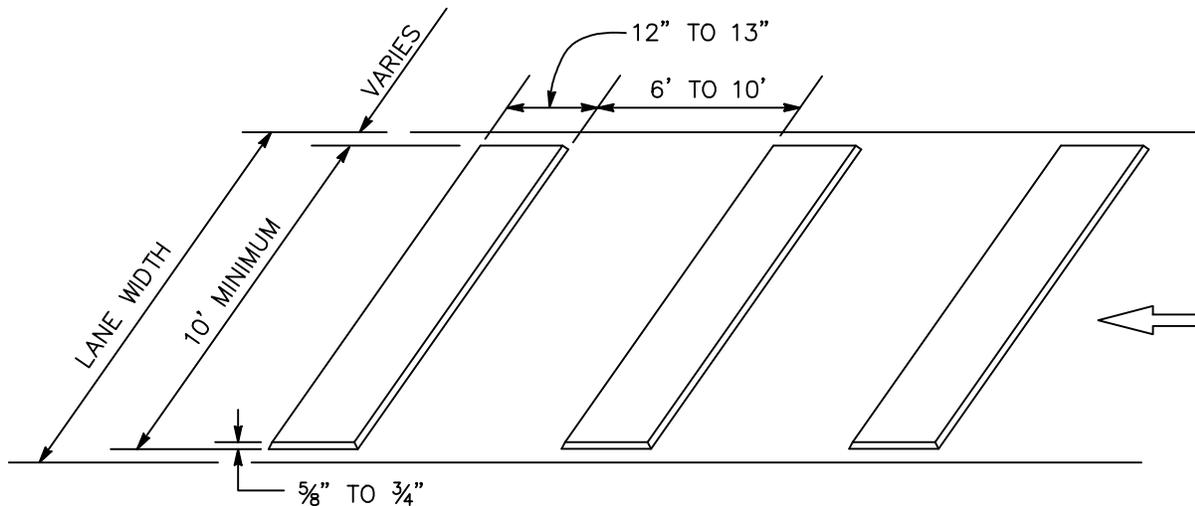
Approved Khalid Bazmi, County Engineer

Revision: August 2018

1155

TRAFFIC CONTROL: LANE CLOSURE WITH REVERSIBLE CONTROL

SHT. 1 OF 3



PORTABLE TRANSVERSE RUMBLE STRIP ARRAY DETAIL

GENERAL NOTES:

1. EACH ADVANCE WARNING SIGN IN EACH DIRECTION OF TRAVEL SHALL BE EQUIPPED WITH AT LEAST TWO FLAGS FOR DAYTIME CLOSURE. EACH FLAG SHALL BE AT LEAST 16" X 16" IN SIZE AND SHALL BE ORANGE OR FLUORESCENT RED-ORANGE IN COLOR. FLASHING BEACONS SHALL BE PLACED AT THE LOCATIONS INDICATED FOR LANE CLOSURE DURING HOURS OF DARKNESS.
2. A G20-2 "END ROAD WORK" SIGN, AS APPROPRIATE, SHALL BE PLACED AT THE END OF THE LANE CONTROL UNLESS THE END OF WORK AREA IS OBVIOUS, OR ENDS WITHIN A LARGER PROJECT'S LIMITS.
3. ALL CONES USED FOR LANE CLOSURES DURING THE HOURS OF DARKNESS SHALL BE FITTED WITH RETROREFLECTIVE BANDS (OR SLEEVES).
4. PORTABLE DELINEATORS, PLACED AT ONE-HALF THE SPACING INDICATED FOR TRAFFIC CONES, MAY BE USED INSTEAD OF CONES FOR DAYTIME CLOSURES ONLY.
5. ADDITIONAL ADVANCE FLAGGERS MAY BE REQUIRED. FLAGGER SHOULD STAND IN A CONSPICUOUS PLACE, BE VISIBLE TO APPROACHING TRAFFIC AS WELL AS APPROACHING VEHICLES AFTER THE FIRST VEHICLE HAS STOPPED. DURING THE HOURS OF DARKNESS, THE FLAGGING-STATION AND FLAGGER SHALL BE ILLUMINATED AND CLEARLY VISIBLE TO APPROACHING TRAFFIC. THE ILLUMINATION FOOTPRINT OF THE LIGHTING ON THE GROUND SHALL BE AT LEAST 20' IN DIAMETER. PLACE A MINIMUM OF FOUR CONES AT 50' INTERVALS IN ADVANCE OF FLAGGER STATION AS SHOWN.
6. PLACE C30(CA) "LANE CLOSED" SIGN AT 500' TO 1000' INTERVALS THROUGHOUT EXTENDED WORK AREAS. THEY ARE OPTIONAL IF THE WORK AREA IS VISIBLE FROM THE FLAGGER STATION.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

Revision: August 2018

STD. PLAN

1155

TRAFFIC CONTROL: LANE CLOSURE WITH REVERSIBLE CONTROL

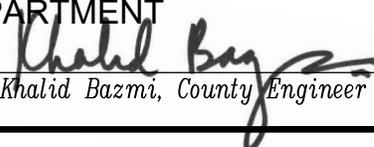
SHT. 2 OF 3

GENERAL NOTES: (CONTINUED)

7. WHEN A PILOT CAR IS USED, PLACE A C37(CA) "TRAFFIC CONTROL-WAIT AND FOLLOW PILOT CAR" SIGN WITH BLACK LEGEND ON WHITE BACKGROUND AT ALL INTERSECTIONS, DRIVEWAYS AND ALLEYS WITHOUT A FLAGGER WITHIN TRAFFIC CONTROL AREA. SIGNS SHALL BE CLEAN AND VISIBLE AT ALL TIMES. WHERE TRAFFIC CAN NOT BE EFFECTIVELY SELF-REGULATED, AT LEAST ONE FLAGGER SHALL BE USED AT EACH INTERSECTION WITHIN TRAFFIC CONTROL AREA.
8. AN OPTIONAL C29(CA) SIGN MAY BE PLACED BELOW THE C9A(CA) SIGN.
9. EITHER TRAFFIC CONES OR BARRICADES SHALL BE PLACED ON THE TAPER. BARRICADES SHALL BE TYPE I, II, OR III.
10. THE COLOR OF THE PORTABLE TRANSVERSE RUMBLE STRIPS SHALL BE BLACK OR ORANGE. USE 2 ARRAYS, EACH ARRAY SHALL CONSIST OF 3 RUMBLE STRIPS.
11. PORTABLE TRANSVERSE RUMBLE STRIPS SHALL NOT BE PLACED ON SHARP HORIZONTAL OR VERTICAL CURVES NOR SHALL THEY BE PLACED THROUGH PEDESTRIAN CROSSINGS.
12. IF THE PORTABLE TRANSVERSE RUMBLE STRIPS BECOME OUT OF ALIGNMENT (SKEWED) BY MORE THAN 6 INCHES, MEASURED FROM ONE END TO THE OTHER, THEY SHALL BE READJUSTED TO BRING THE PLACEMENT BACK TO THE ORIGINAL LOCATION.
13. PORTABLE TRANSVERSE RUMBLE STRIPS ARE NOT REQUIRED IF ANY ONE OF THE FOLLOWING CONDITIONS IS SATISFIED:
  - A. WORK DURATION OCCUPIES A LOCATION FOR FOUR HOURS OR LESS
  - B. POSTED SPEED LIMIT IS BELOW 45 MPH
  - C. WORK IS OF EMERGENCY NATURE
  - D. WORK ZONE IS IN SNOW OR ICY WEATHER CONDITIONS
14. SEE STANDARD PLAN 1150 FOR TABLES.
15. USE CONE SPACING X FOR TAPER SEGMENT, Y FOR TANGENT SEGMENT OR Z FOR CONFLICT SITUATIONS, AS APPROPRIATE, PER TABLE 1, UNLESS X, Y, OR Z CONE SPACING IS SHOWN ON THIS SHEET.
16. ALL TEMPORARY WARNING SIGNS SHALL HAVE BLACK LEGEND ON FLUORESCENT ORANGE BACKGROUND.
17. CALIFORNIA CODES ARE DESIGNATED BY (CA). OTHERWISE, FEDERAL (MUTCD) CODES ARE SHOWN.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

  
Khalid Bazmi, County Engineer

Revision: August 2018

STD. PLAN

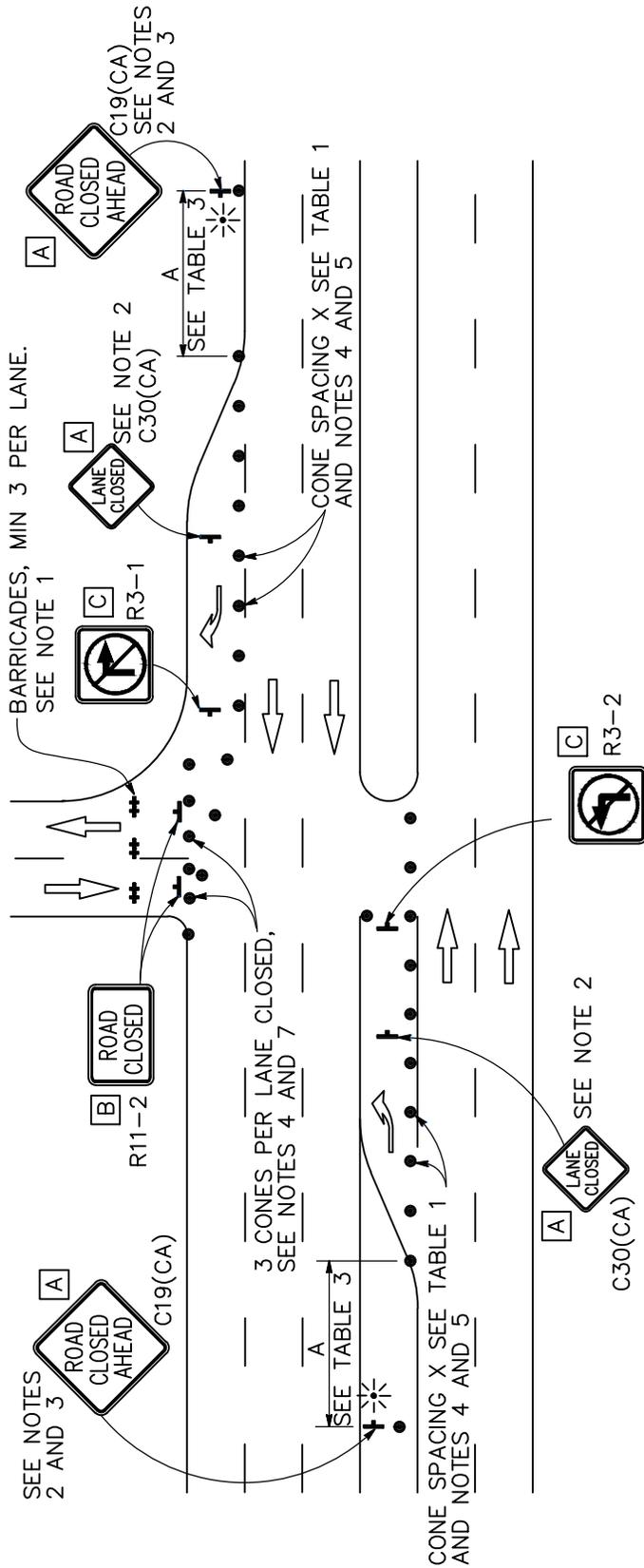
1155

TRAFFIC CONTROL: LANE CLOSURE WITH REVERSIBLE CONTROL

SHT. 3 OF 3



FOR SECONDARY ARTERIAL T-INTERSECTIONS WITHOUT TURNING POCKETS



LEGEND

- TRAFFIC CONE
- ⌚ TEMPORARY TRAFFIC CONTROL SIGN
- ⚡ PORTABLE FLASHING BEACON
- ⦶ BARRICADES

SIGN PANEL SIZE (Min)

- A 36" x 36"
- B 48" x 30"
- B 36" x 36"

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

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STD. PLAN

1156

TRAFFIC CONTROL: T-INTERSECTION

SHT. 1 OF 3

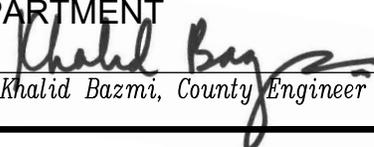


GENERAL NOTES:

1. SEE STANDARD PLAN 1150 FOR TABLES.
2. BARRICADES SHALL BE TYPE I, II, OR III FOR CLOSURES LASTING ONE WEEK OR LESS AND TYPE III FOR CLOSURES LASTING LONGER THAN ONE WEEK.
3. IN ADDITION TO PLACING THE C19(CA) "ROAD CLOSED AHEAD" AND C30(CA) "LANE CLOSED" SIGNS, BLACK ON ORANGE OVERLAY PLATES WITH THE WORD "CLOSED" MAY BE MOUNTED, AS DIRECTED BY THE ENGINEER, ON ALL GUIDE SIGNS THAT REFER TO THE CLOSED ROAD. THE LETTER SIZE ON THE OVERLAY SHALL BE THE SAME AS THE GUIDE SIGN.
4. EACH ADVANCE C19(CA) "ROAD CLOSED AHEAD" SIGN SHALL BE EQUIPPED WITH AT LEAST TWO FLAGS FOR DAYTIME CLOSURE. EACH FLAG SHALL BE AT LEAST 16" X 16" IN SIZE AND SHALL BE ORANGE OR FLUORESCENT RED-ORANGE IN COLOR. A FLASHING BEACON SHALL BE PLACED ON TOP OF THE FIRST C19(CA) SIGN DURING HOURS OF DARKNESS.
5. ALL CONES USED FOR ROAD CLOSURES DURING THE HOURS OF DARKNESS SHALL BE FITTED WITH RETROREFLECTIVE BANDS (OR SLEEVES) AS SPECIFIED IN THE SPECIFICATIONS.
6. PORTABLE DELINEATORS, PLACED AT ONE-HALF THE SPACING INDICATED FOR TRAFFIC CONES, MAY BE USED INSTEAD OF CONES FOR DAYTIME RAMP CLOSURES ONLY.
7. AT LEAST ONE PERSON SHALL BE ASSIGNED TO PROVIDE FULL TIME MAINTENANCE OF TRAFFIC CONTROL DEVICES, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
8. A MINIMUM OF 3 CONES SHALL BE PLACED TRANSVERSELY ACROSS EACH CLOSED LANE AND SHOULDER.
9. USE CONE SPACING X FOR TAPER SEGMENT, Y FOR TANGENT SEGMENT OR Z FOR CONFLICT SITUATIONS, AS APPROPRIATE, PER TABLE 1, UNLESS X, Y, OR Z CONE SPACING IS SHOWN ON THIS SHEET.
10. ALL TEMPORARY WARNING SIGNS SHALL HAVE BLACK LEGEND ON FLUORESCENT ORANGE BACKGROUND.
11. CALIFORNIA CODES ARE DESIGNATED BY (CA). OTHERWISE, FEDERAL (MUTCD) CODES ARE SHOWN.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

  
Khalid Bazmi, County Engineer

Revision: August 2018

STD. PLAN

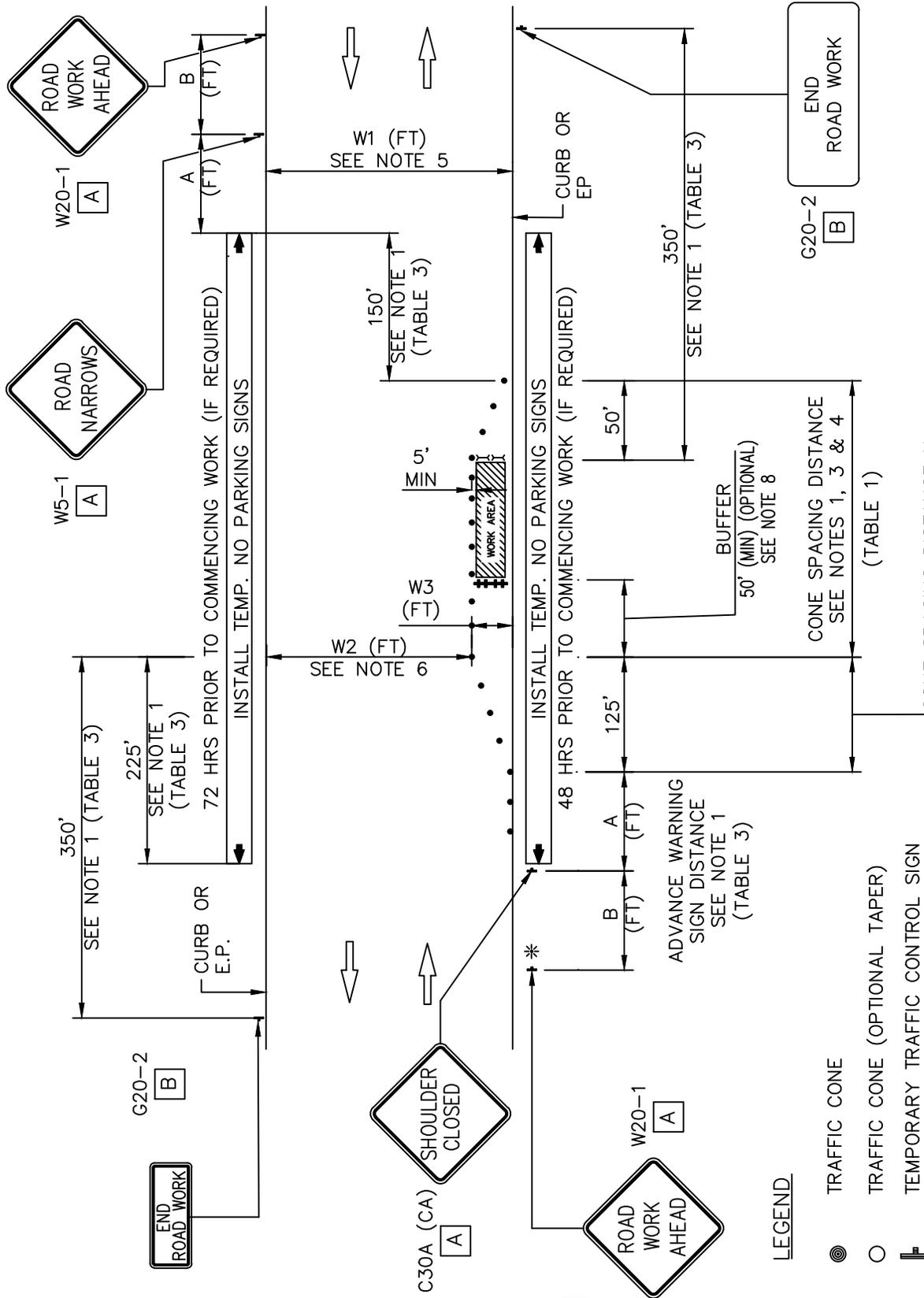
1156

TRAFFIC CONTROL: T-INTERSECTION

SHT. 3 OF 3



FOR MINOR STREET WORK ON (25 MPH) RESIDENTIAL STREETS WITH NO CENTERLINE



SIGN PANEL SIZE (Min.)  
 A 36" x 36"  
 B 36" x 18"

CONE SPACING DISTANCE X  
 SEE NOTES 1, 3 & 4 (TABLE 1)

- LEGEND
- TRAFFIC CONE
  - TRAFFIC CONE (OPTIONAL TAPER)
  - ▬ TEMPORARY TRAFFIC CONTROL SIGN
  - BARRICADE
  - ▬ FAS SUPPORT OR TRAILER
  - ⊛ PORTABLE FLASHING BEACON

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved *Khalid Bazmi*  
 Khalid Bazmi, County Engineer

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STD. PLAN

1157

TRAFFIC CONTROL: MINOR RESIDENTIAL STREET WORK

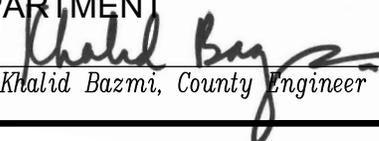
SHT. 1 OF 2

GENERAL NOTES:

1. SEE STANDARD PLAN 1150 FOR TABLES.
2. LANE CLOSURES ON THE RIGHT SIDE USING PARTIAL MEDIAN SHOULDER AS A TRAFFIC LANE SHALL CONFORM TO THE DETAILS SHOWN EXCEPT THAT C20(CA)R AND W4-2R SIGNS SHALL BE USED.
3. EACH ADVANCE WARNING SIGN ON EACH SIDE OF THE ROADWAY SHALL BE EQUIPPED WITH AT LEAST TWO FLAGS FOR DAYTIME CLOSURE. EACH FLAG SHALL BE AT LEAST 16" X 16" IN SIZE AND SHALL BE ORANGE OR FLUORESCENT RED-ORANGE IN COLOR. FLASHING BEACONS SHALL BE PLACED AT THE LOCATIONS INDICATED FOR LANE CLOSURE DURING HOURS OF DARKNESS.
4. A G20-2 "END ROAD WORK" SIGN, WITH MINIMUM SIZE OF 48" X 24" AS APPROPRIATE, SHALL BE PLACED AT THE END OF THE LANE CLOSURE UNLESS THE END OF WORK AREA IS OBVIOUS OR ENDS WITHIN A LARGER PROJECT'S LIMITS.
5. FOR W1 DIMENSION OF 28' (MIN) TO 44' (MAX).
6. W2 SHALL NOT BE LESS THAN 20'.
7. FLAGGERS SHALL BE USED FOR W2 LESS THAN 20'. (SEE FIG. 6H-10 OF 2014 CA MUTCD)
8. BUFFER NOT OPTIONAL FOR EXCAVATION WORK.
9. IDENTIFY ALL DRIVEWAYS AND EXISTING ROADSIDE SIGNS WITHIN TRAFFIC CONTROL ZONE IF PRESENT AND USE CONE SPACING Z, TABLE 1.
10. USE CONE SPACING X FOR TAPER SEGMENT, Y FOR TANGENT SEGMENT OR Z FOR CONFLICT SITUATIONS, AS APPROPRIATE, PER TABLE 1, UNLESS X, Y, OR Z CONE SPACING IS SHOWN ON THIS SHEET.
11. ALL TEMPORARY WARNING SIGNS SHALL HAVE BLACK LEGEND ON FLUORESCENT ORANGE BACKGROUND.
12. CALIFORNIA CODES ARE DESIGNATED BY (CA). OTHERWISE, FEDERAL (MUTCD) CODES ARE SHOWN.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

  
Khalid Bazmi, County Engineer

Revision: August 2018

STD. PLAN

1157

TRAFFIC CONTROL: MINOR RESIDENTIAL STREET WORK

SHT. 2 OF 2

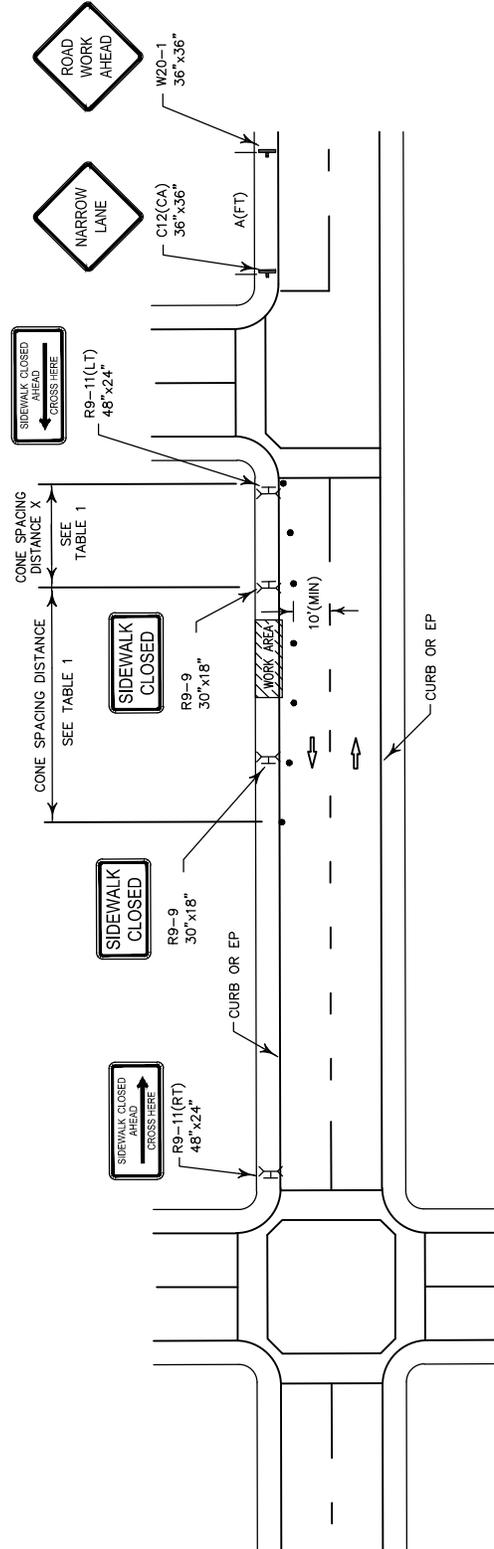
GENERAL NOTES

1. EACH ADVANCE WARNING SIGN ON EACH SIDE OF THE ROADWAY SHALL BE EQUIPPED WITH AT LEAST TWO FLAGS FOR DAYTIME CLOSURE. EACH FLAG SHALL BE AS LEAST 16"x16" IN SIZE AND SHALL BE ORANGE OR FLUORESCENT RED-ORANGE IN COLOR. FLASHING BEACONS SHALL BE PLACED AT THE LOCATIONS INDICATED FOR LANE CLOSURE DURING HOURS OF DARKNESS.
2. BUFFER NOT OPTIONAL FOR EXCAVATION WORK.
3. IDENTIFY ALL DRIVEWAYS AND EXISTING ROADSIDE SIGNS WITHIN TRAFFIC CONTROL ZONE IF PRESENT AND USE CONE SPACING Z, TABLE 1.
4. ALL SIGNS SHALL BE REFLECTORIZED AND OF STANDARD SIZE.
5. TYPE I AND II BARRICADES MAY BE USED, IN LIEU OF OR IN ADDITION TO THE RUBBER GUIDE POSTS, AT THE DISCRETION OF THE CONTRACTOR, WHEN THEY ARE INTENDED TO PROVIDE ADDITIONAL EMPHASIS IN AREAS WHERE WORKERS ARE PRESENT.
6. CONSTRUCTION OPERATIONS SHALL BE CONDUCTED IN SUCH A MANNER AS TO CAUSE AS LITTLE INCONVENIENCE AS POSSIBLE TO ABUTTING PROPERTY OWNERS.
7. THE CONTRACTOR SHALL MAINTAIN, ON A 24-HOUR BASIS, ALL SIGNS, DELINEATORS, BARRICADES, ETC. TO INSURE PROPER FLOW AND SAFETY OF TRAFFIC.
8. THESE PLANS INDICATE VEHICULAR TRAFFIC CONTROL IN THE WORK AREA DURING CONSTRUCTION ACTIVITY. ADDITIONAL TRAFFIC CONTROLS, TRAFFIC SIGNS, OR BARRICADES MAY BE REQUIRED IN THE FIELD. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PLACEMENT OF ANY ADDITIONAL DEVICES NECESSARY TO ASSURE SAFETY TO THE PUBLIC AT ALL TIMES DURING CONSTRUCTION.

9. THE COUNTY ENGINEER RESERVES THE RIGHT TO MAKE ANY CHANGES NECESSARY AS FIELD CONDITIONS WARRANT. ANY CHANGES SHALL SUPERSEDE THESE PLANS AND BE DONE SOLELY AT THE CONTRACTOR'S EXPENSE.
10. THE CONTRACTOR SHALL POST TEMPORARY NO PARKING SIGNING 48 HOURS PRIOR TO COMMENCING WORK.
11. SEE STANDARD PLAN 1150 FOR TABLES.
12. USE CONE SPACING X FOR TAPER SEGMENT, Y FOR TANGENT SEGMENT OR Z FOR CONFLICTING SITUATIONS, AS APPROPRIATE, PER TABLE 1, UNLESS X, Y, OR Z CONE SPACING IS SHOWN ON THIS SHEET.
13. ALL TEMPORARY WARNING SIGNS SHALL HAVE BLACK LEGEND ON FLUORESCENT ORANGE BACKGROUND.
14. CALIFORNIA CODES ARE DESIGNATED BY (CA). OTHERWISE, FEDERAL (MUTCD) CODES ARE SHOWN.

LEGEND

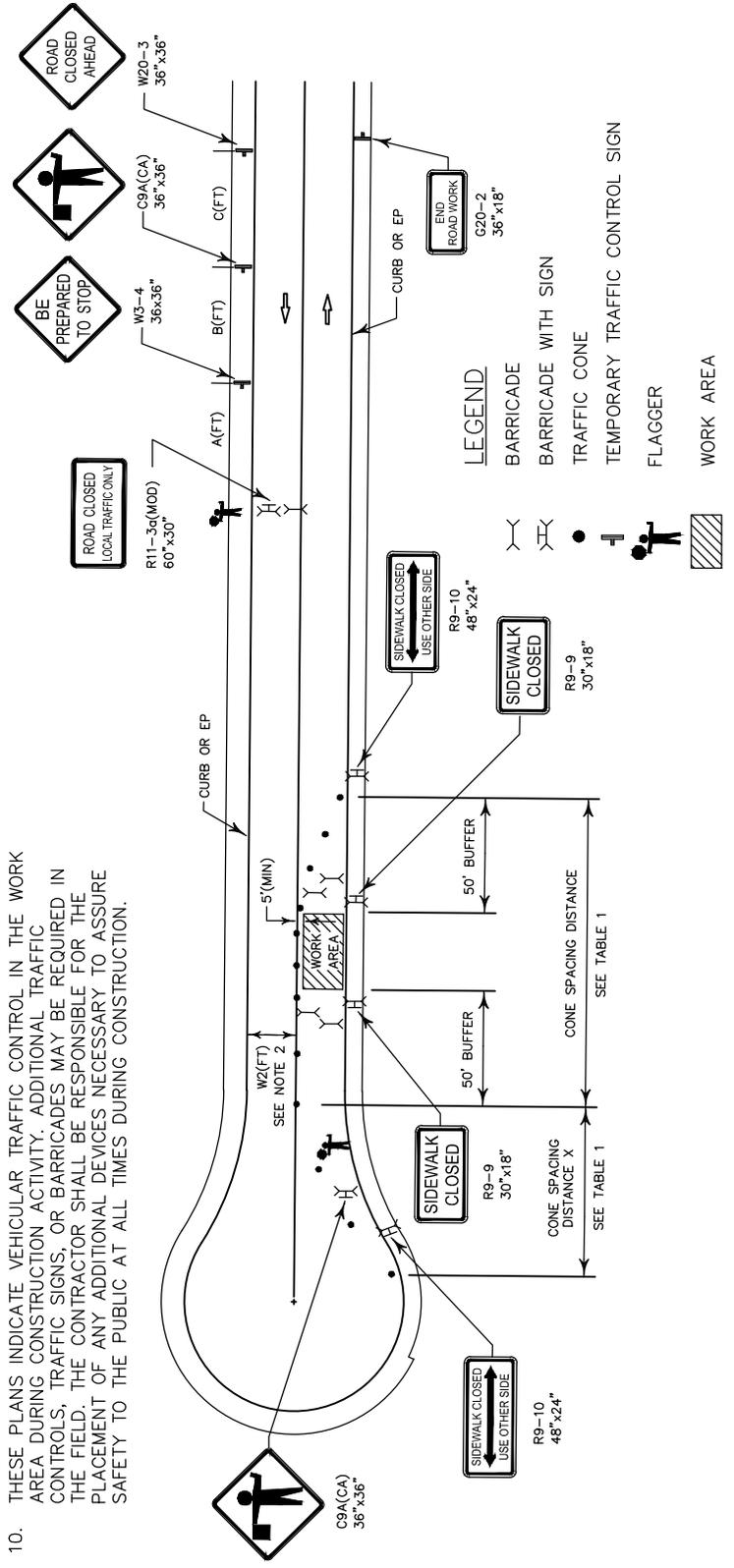
- X— BARRICADE
- Y— BARRICADE WITH SIGN
- TRAFFIC CONE
- ⊥ TEMPORARY TRAFFIC CONTROL SIGN
- ▨ WORK AREA





**GENERAL NOTES**

- EACH ADVANCE WARNING SIGN ON EACH SIDE OF THE ROADWAY SHALL BE EQUIPPED WITH AT LEAST TWO FLAGS FOR DAYTIME CLOSURE. EACH FLAG SHALL BE AS LEAST 16"x16" IN SIZE AND SHALL BE ORANGE OR FLUORESCENT RED-ORANGE IN COLOR. FLASHING BEACONS SHALL BE PLACED AT THE LOCATIONS INDICATED FOR LANE CLOSURE DURING HOURS OF DARKNESS.
- W2 SHALL NOT BE LESS THAN 20'.
- FLAGGERS SHALL BE USED FOR W2 LESS THAN 20' (SEE FIG. 6H-10 OF 2014 CA MUTCD.)
- BUFFER NOT OPTIONAL FOR EXCAVATION WORK.
- IDENTIFY ALL DRIVEWAYS AND EXISTING ROADSIDE SIGNS WITHIN TRAFFIC CONTROL ZONE IF PRESENT AND USE CONE SPACING Z, TABLE 1.
- ALL SIGNS SHALL BE REFLECTORIZED AND OF STANDARD SIZE.
- TYPE I AND II BARRICADES MAY BE USED, IN LIEU OF OR IN ADDITION TO THE RUBBER GUIDE POSTS, AT THE DISCRETION OF THE CONTRACTOR, WHEN THEY ARE INTENDED TO PROVIDE ADDITIONAL EMPHASIS IN AREAS WHERE WORKERS ARE PRESENT.
- CONSTRUCTION OPERATIONS SHALL BE CONDUCTED IN SUCH A MANNER AS TO CAUSE AS LITTLE INCONVENIENCE AS POSSIBLE TO ABUTTING PROPERTY OWNERS.
- THE CONTRACTOR SHALL MAINTAIN, ON A 24-HOUR BASIS, ALL SIGNS, DELINEATORS, BARRICADES, ETC. TO INSURE PROPER FLOW AND SAFETY OF TRAFFIC.
- THESE PLANS INDICATE VEHICULAR TRAFFIC CONTROL IN THE WORK AREA DURING CONSTRUCTION ACTIVITY. ADDITIONAL TRAFFIC CONTROLS, TRAFFIC SIGNS, OR BARRICADES MAY BE REQUIRED IN THE FIELD. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PLACEMENT OF ANY ADDITIONAL DEVICES NECESSARY TO ASSURE SAFETY TO THE PUBLIC AT ALL TIMES DURING CONSTRUCTION.
- THE COUNTY ENGINEER RESERVES THE RIGHT TO MAKE ANY CHANGES NECESSARY AS FIELD CONDITIONS WARRANT. ANY CHANGES SHALL SUPERSEDE THESE PLANS AND BE DONE SOLELY AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL POST TEMPORARY NO PARKING SIGNING 48 HOURS PRIOR TO COMMENCING WORK.
- FULL CLOSURES ONLY WHEN TOTAL NUMBER OF HOMES IS LESS THAN OR EQUAL TO SIX.
- INCLUDE FULL-TIME FLAGGER TO SAFELY ASSIST RESIDENTS ACCESS OR EXIT PASSED THE STREET CLOSURE AND TO ENSURE PASSAGE OF EMERGENCY VEHICLES.
- SEE STANDARD PLAN 1150 FOR TABLES.
- USE CONE SPACING X FOR TAPER SEGMENT, Y FOR TANGENT SEGMENT OR Z FOR CONFLICTING SITUATIONS, AS APPROPRIATE, PER TABLE 1, UNLESS X, Y, OR Z CONE SPACING IS SHOWN ON THIS SHEET.
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- CALIFORNIA CODES ARE DESIGNATED BY (CA). OTHERWISE, FEDERAL (MUTCD) CODES ARE SHOWN.



COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved *Khalid Bazmi*  
 Khalid Bazmi, County Engineer

STD. PLAN

1159

TRAFFIC CONTROL: CUL-DE-SAC

SHT. 1 OF 1

Revision: August 2018

