

# STANDARD DETAILS INDEX SHEET

DATE: APRIL, 2016

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**DETAIL #      DRAWING DESCRIPTION**

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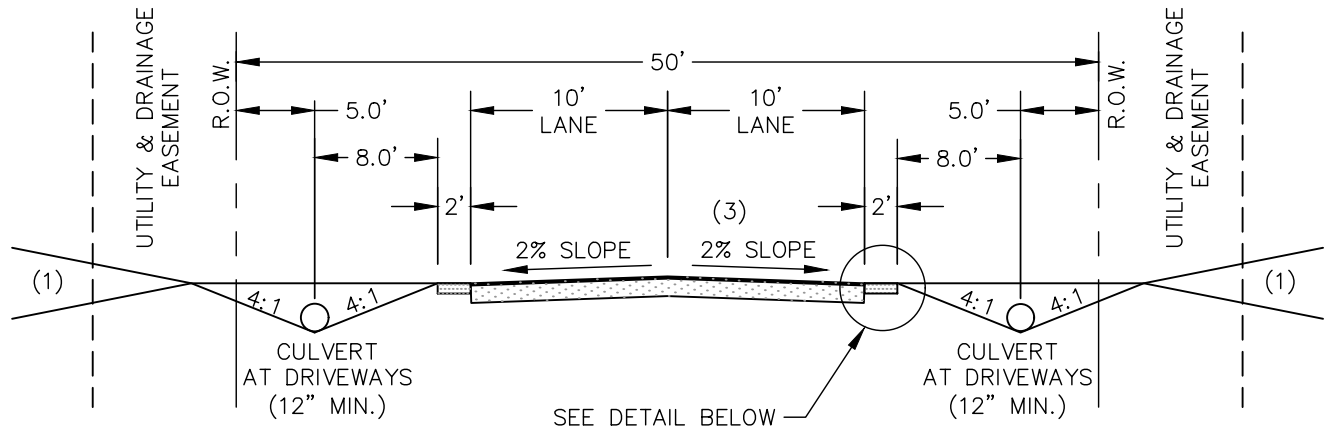
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          (3 SHEETS)
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          (2 SHEETS)

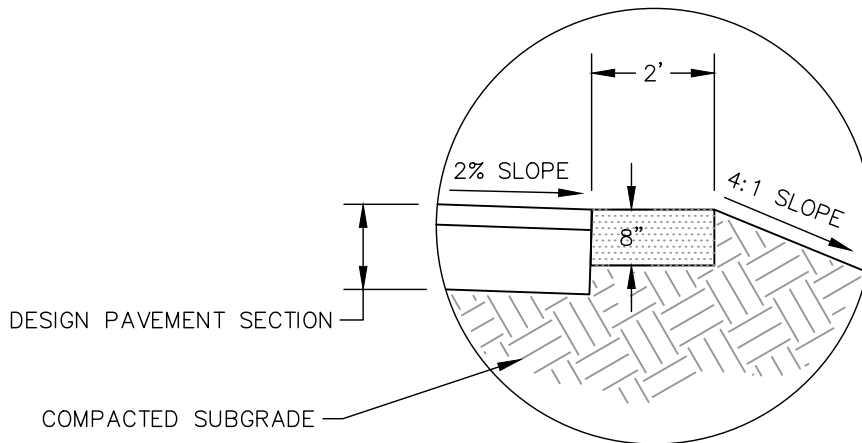
UTILITY NOTIFICATION NOTE  
PUBLIC WORKS SIGNATURE BLOCK





## LOCAL-LOW VOLUME

SINGLE FAMILY (LARGE LOT  $\geq$  2.0 ACRES)  
RESIDENTIAL



## 2' CONCRETE SHOULDER DETAIL

N.T.S.

### NOTES:

1. CUT AND FILL SLOPES SHALL BE A MAXIMUM OF 4:1.
2. RIGHT-OF-WAY AND EASEMENT AREAS SHALL BE GRADED (CUT AND FILL) TO SUBGRADE (+/-0.5') PRIOR TO AND AFTER UTILITY INSTALLATION.
3. NORMAL CROWN SLOPE IS 2%. WITH SPECIAL DESIGN REVIEW, 1% TO 5% IS ALLOWABLE AT TRANSITION AND OTHER NON-NORMAL SECTIONS.
4. OFF STREET PARKING IS REQUIRED WHEN USING THIS ROADWAY SECTION.
5. THE MAXIMUM ADT FOR THIS SECTION IS 500.

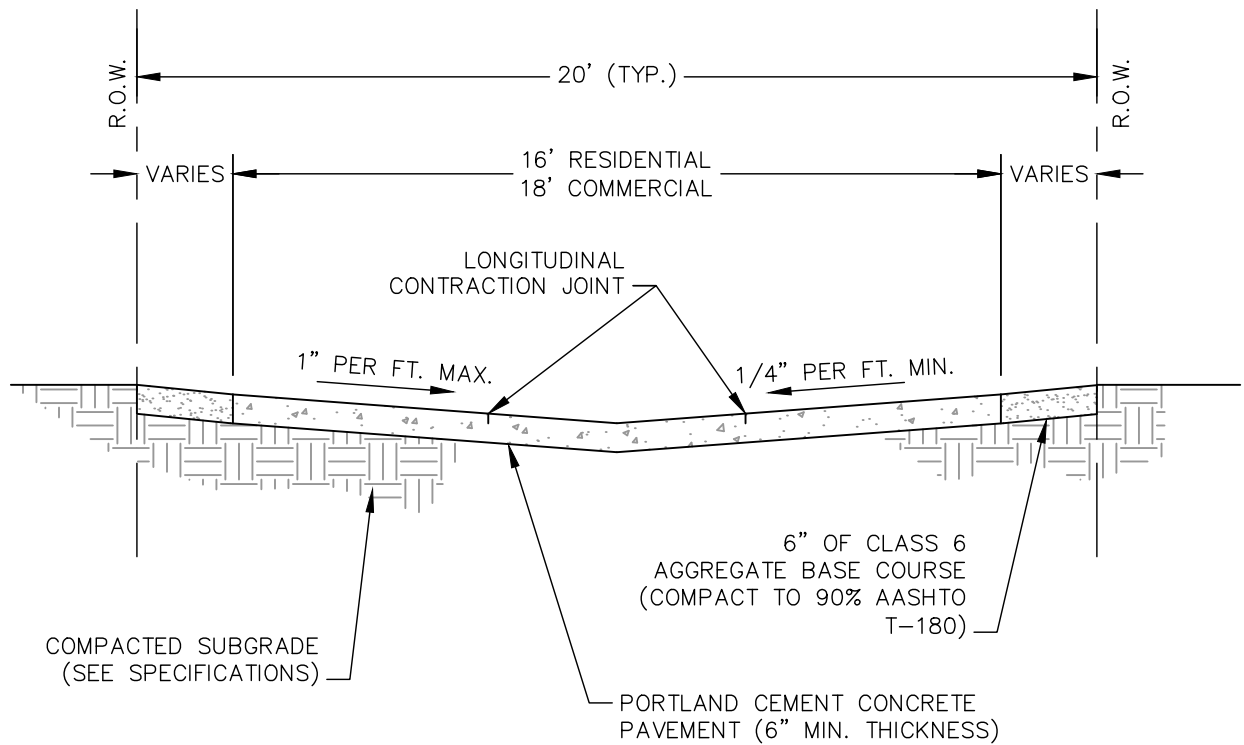


## STANDARD ROADWAY SECTION LOCAL-LOW VOLUME

DETAIL NO. S-1

DATE: JULY, 2015

SCALE: N.T.S.



NOTES:

1. SAWCUT LONGITUDINAL CONTRACTION JOINTS SPACED AT 1/3 PAVEMENT WIDTH.
2. SAWCUT TRANSVERSE CONTRACTION JOINTS AT 10' SPACING.
3. ALL EXPANSION AND CONTRACTION JOINTS SHALL BE SEALED.

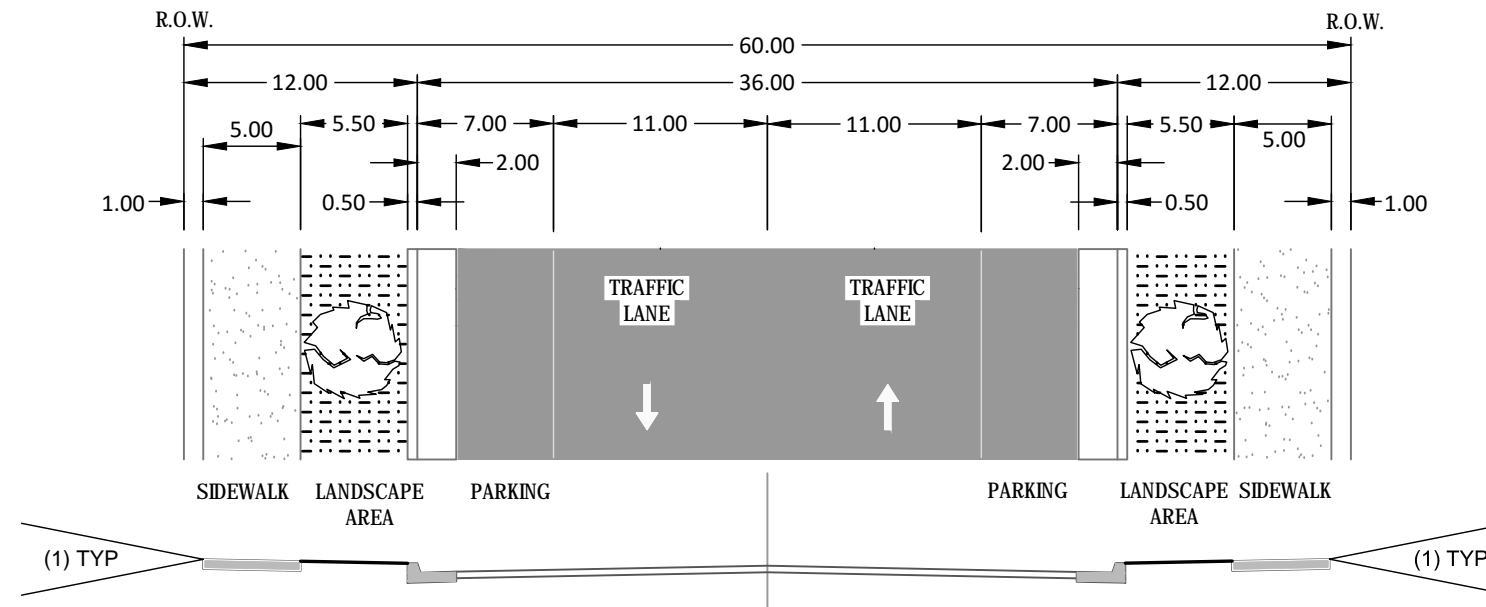


STANDARD ROADWAY SECTION  
ALLEY

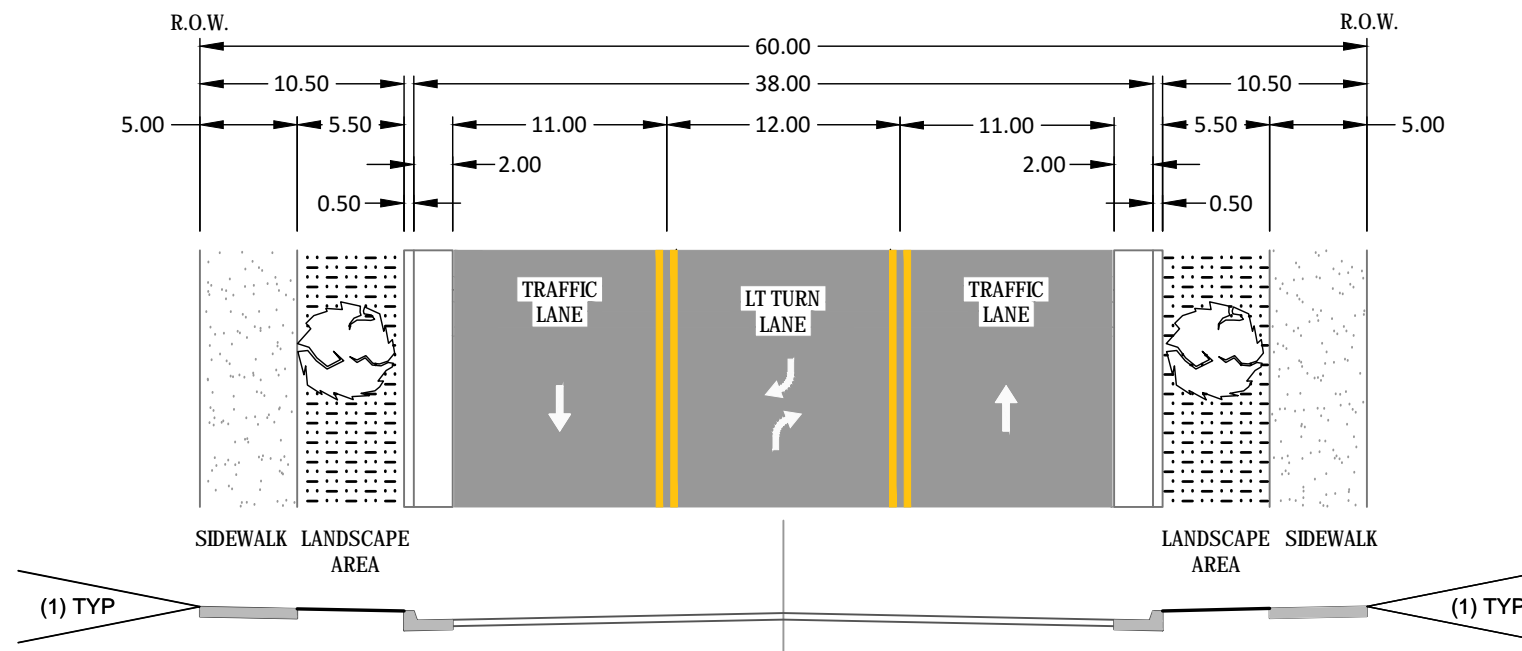
DETAIL NO. S-1-1

DATE: JULY, 2015

SCALE: N.T.S.



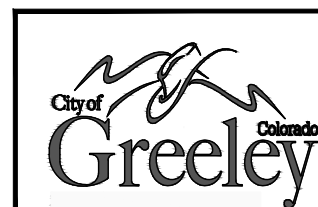
**Local Commercial 2-Lane**  
R.O.W. IMPROVEMENT



**Local Industrial 2-Lane with Left Turn**  
R.O.W. IMPROVEMENT

NOTES:

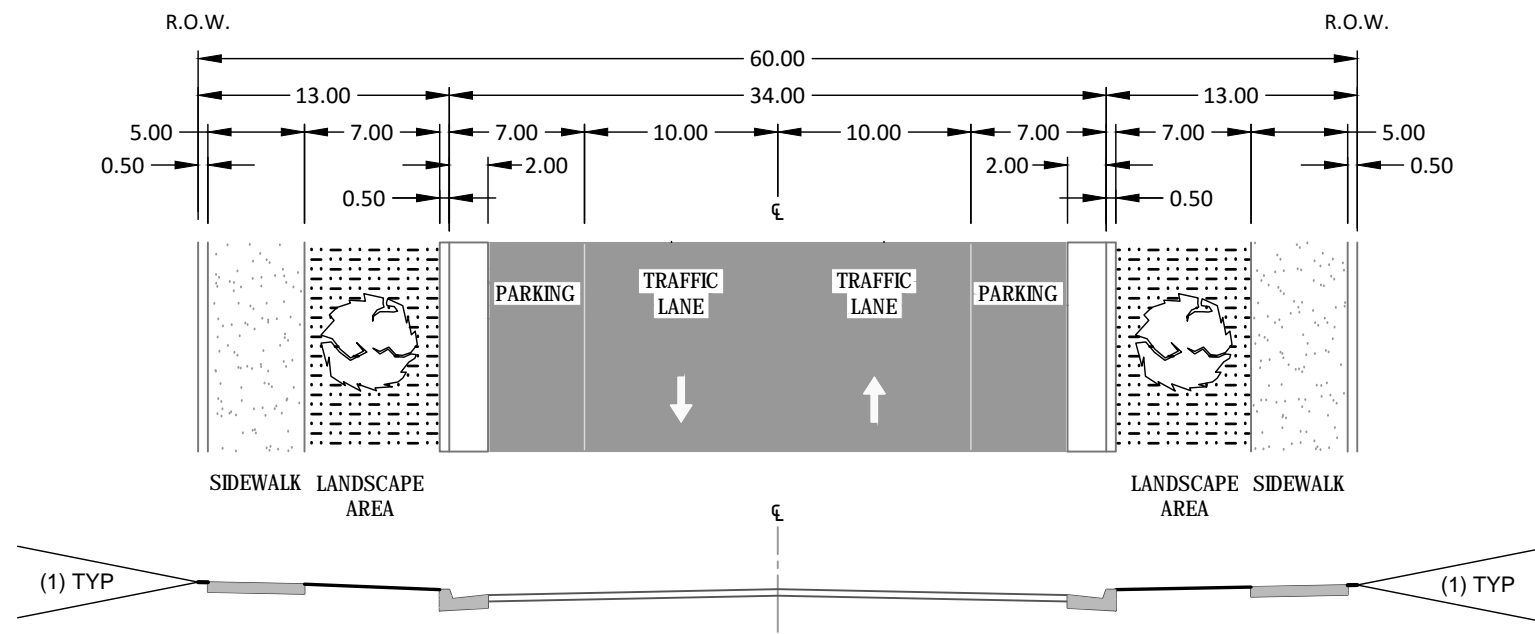
1. CUT AND FILL SLOPES SHALL BE A MAXIMUM OF 4:1.
2. RIGHT-OF-WAY AND EASEMENT AREAS SHALL BE GRADED (CUT AND FILL) TO SUBGRADE (+/-0.5') PRIOR TO AND AFTER UTILITY INSTALLATION.
3. NORMAL CROWN SLOPE IS 2%. WITH SPECIAL DESIGN REVIEW, 1% TO 5% IS ALLOWABLE AT TRANSITION AND OTHER NON-NORMAL SECTIONS.
4. VERTICAL FACE CURB AND GUTTER REQUIRED WHEN USING THIS STANDARD SECTION.



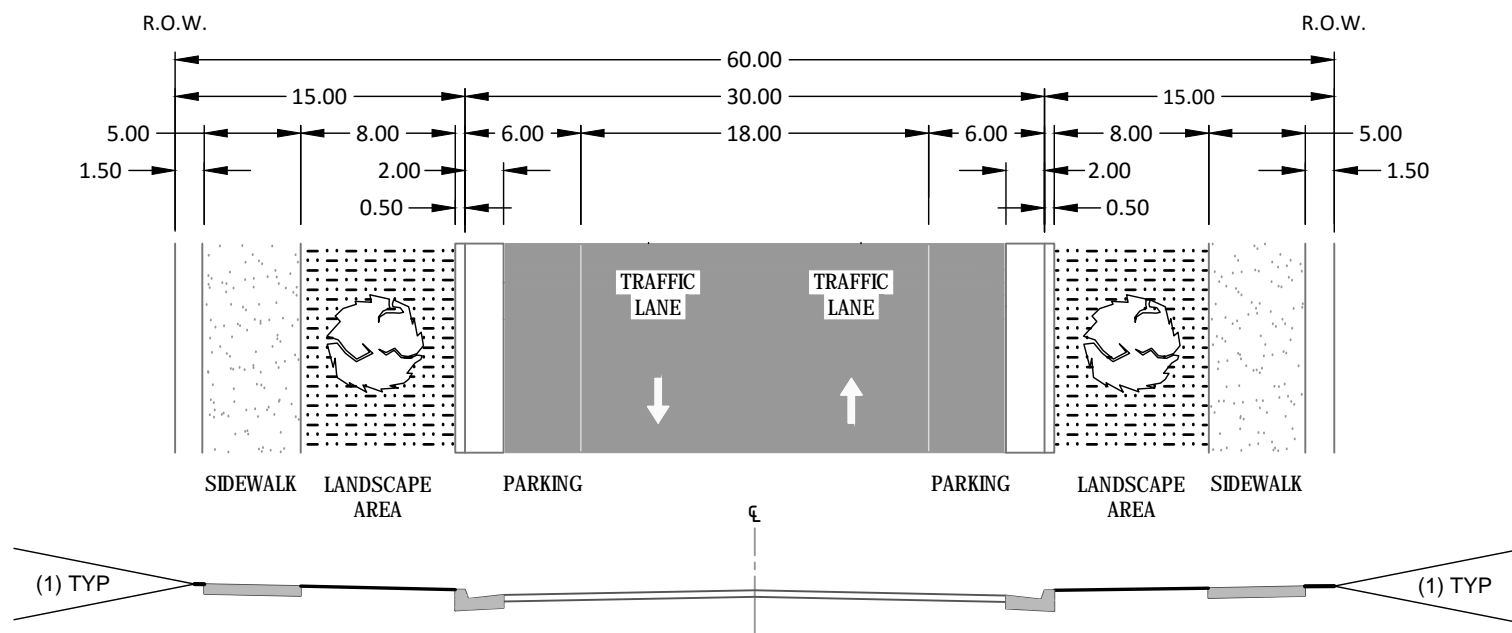
STANDARD ROADWAY CORRIDOR  
LOCAL COMMERCIAL/INDUSTRIAL 2-LANE  
DETAIL NO. S-2 (Revised)

DATE: APRIL, 2016

SCALE: N.T.S.



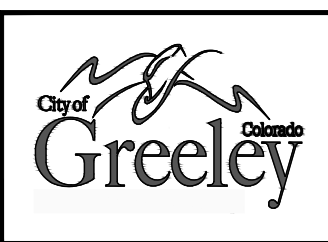
**Local Residential - Up to 1,500 Vehicles Per Day**  
R.O.W. IMPROVEMENT



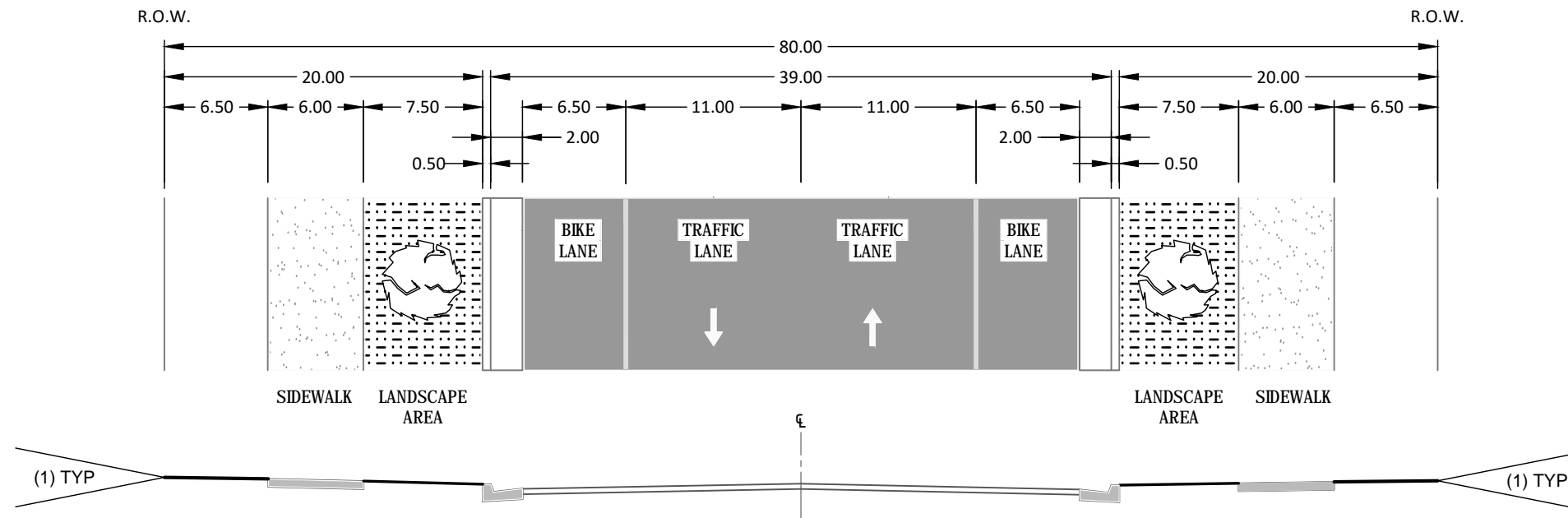
**Local Residential - Up to 750 Vehicles Per Day**  
R.O.W. IMPROVEMENT

NOTES:

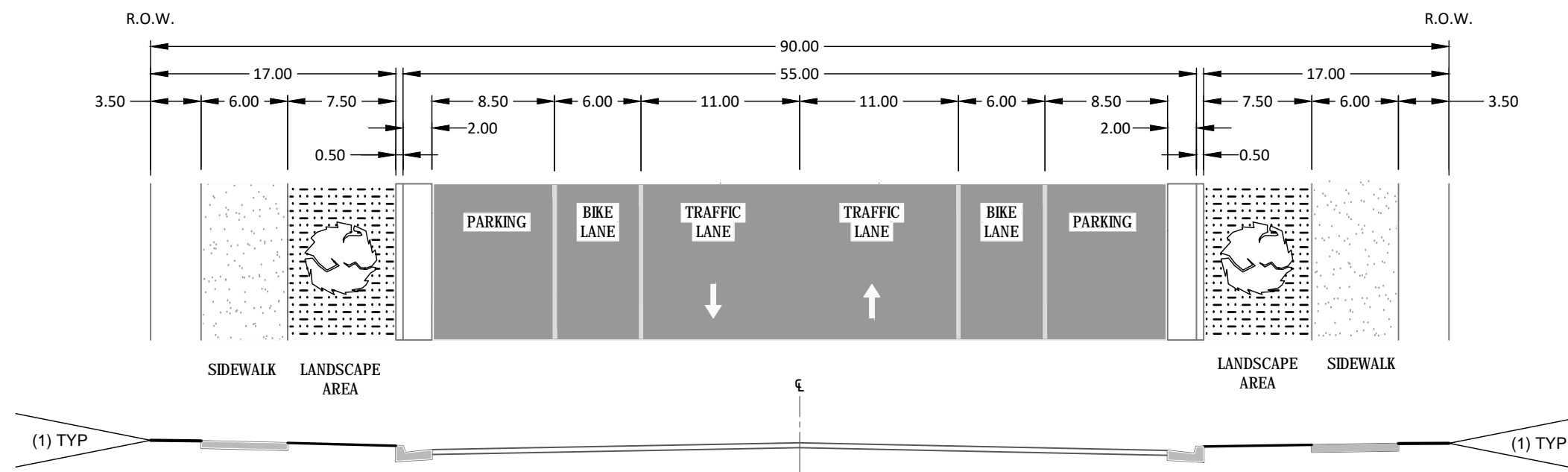
1. CUT AND FILL SLOPES SHALL BE A MAXIMUM OF 4:1.
2. RIGHT-OF-WAY AND EASEMENT AREAS SHALL BE GRADED (CUT AND FILL) TO SUBGRADE (+/-0.5') PRIOR TO AND AFTER UTILITY INSTALLATION.
3. NORMAL CROWN SLOPE IS 2%. WITH SPECIAL DESIGN REVIEW, 1% TO 5% IS ALLOWABLE AT TRANSITION AND OTHER NON-NORMAL SECTIONS.
4. VERTICAL FACE CURB AND GUTTER IS REQUIRED ON ALL NEW LOCAL STREETS IN NEW SUBDIVISIONS.



|   |               |
|---|---------------|
| STANDARD ROADWAY CORRIDOR<br>LOCAL RESIDENTIAL 2-LANE<br>DETAIL NO. S-2-R (Revised) |               |
| DATE: JULY, 2015  | SCALE: N.T.S. |



**Collector 2-Lane Without Parking**  
R.O.W. IMPROVEMENT



**Collector 2-Lane With Parking**  
R.O.W. IMPROVEMENT

**NOTES:**

1. CUT AND FILL SLOPES SHALL BE A MAXIMUM OF 4:1.
2. RIGHT-OF-WAY AND EASEMENT AREAS SHALL BE GRADED (CUT AND FILL) TO SUBGRADE (+/-0.5') PRIOR TO AND AFTER UTILITY INSTALLATION.
3. NORMAL CROWN SLOPE IS 2%. WITH SPECIAL DESIGN REVIEW, 1% TO 5% IS ALLOWABLE AT TRANSITION AND OTHER NON-NORMAL SECTIONS.



STANDARD ROADWAY CORRIDOR  
COLLECTOR 2-LANE  
DETAIL NO. S-3 (Revised)

DATE: APRIL, 2016

SCALE: N.T.S.

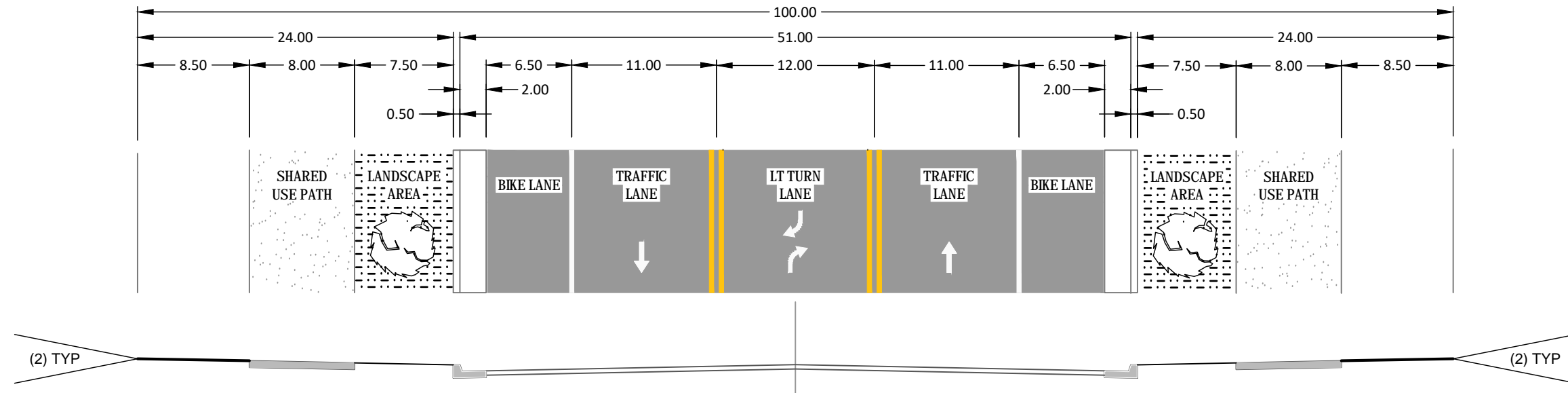
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RESERVED FOR FUTURE USE.



STANDARD ROADWAY CORRIDOR  
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DETAIL NO. S-4

DATE: JULY, 2015

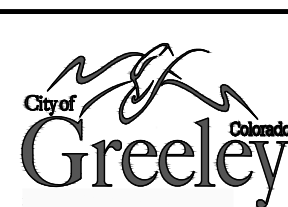
SCALE: N.T.S.



**Minor Arterial 2-Lane With Continuous Left Turn**  
R.O.W. IMPROVEMENT

**NOTES:**

1. CUT AND FILL SLOPES SHALL BE A MAXIMUM OF 4:1.
2. RIGHT-OF-WAY AND EASEMENT AREAS SHALL BE GRADED (CUT AND FILL) TO SUBGRADE (+/-0.5') PRIOR TO AND AFTER UTILITY INSTALLATION.
3. NORMAL CROWN SLOPE IS 2%. WITH SPECIAL DESIGN REVIEW, 1% TO 5% IS ALLOWABLE AT TRANSITION AND OTHER NON-NORMAL SECTIONS.
4. ADDITIONAL RIGHT-OF-WAY WILL BE NEEDED FOR RIGHT TURN LANES WHERE WARRANTED.

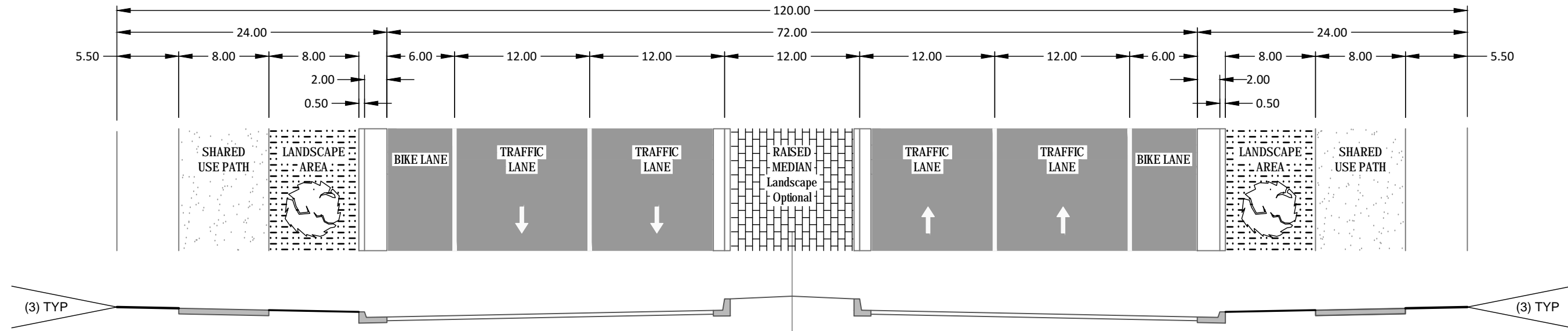


STANDARD ROADWAY CORRIDOR  
MINOR ARTERIAL 2-LANE  
DETAIL NO. S-5 (Revised)

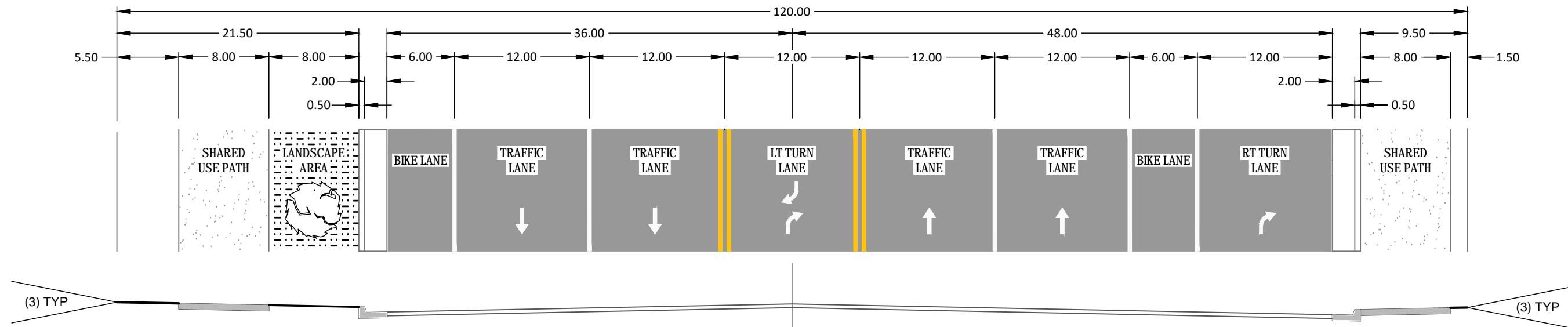
DATE: APRIL, 2016

SCALE: N.T.S.





**Minor Arterial 4-Lane with Raised Median**  
R.O.W. IMPROVEMENT



**Minor Arterial 4-Lane at Intersections with Right-Turn Lane**  
R.O.W. IMPROVEMENT

**NOTES:**

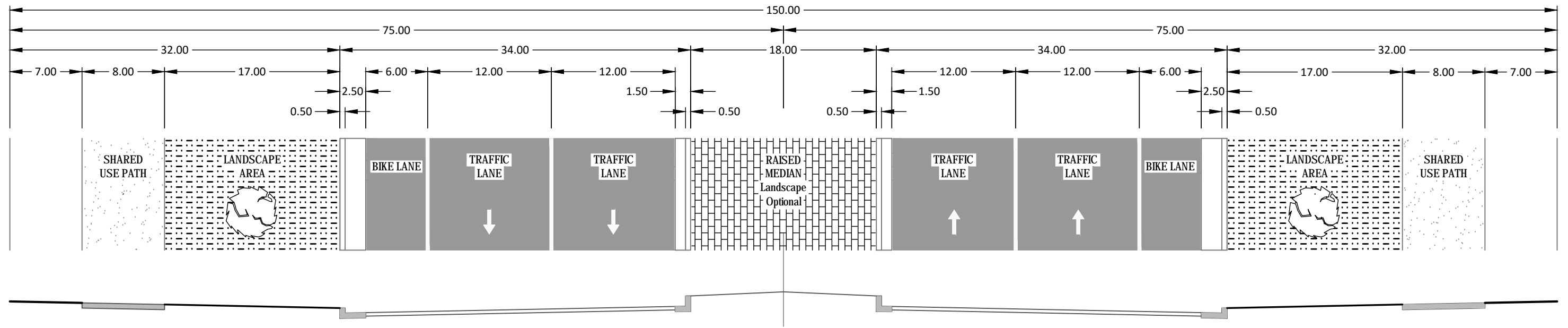
1. ADDITIONAL RIGHT-OF-WAY NEEDED IF MEDIAN WIDTH IS INCREASED.
2. MEDIAN SHALL HAVE A BREAK EVERY 500 FEET FOR VEHICULAR TRAFFIC.
3. CUT AND FILL SLOPES SHALL BE A MAXIMUM OF 4:1.
4. RIGHT-OF-WAY AND EASEMENT AREAS SHALL BE GRADED (CUT AND FILL) TO SUBGRADE (+/-0.5') PRIOR TO AND AFTER UTILITY INSTALLATION.
5. NORMAL CROWN SLOPE IS 2%. WITH SPECIAL DESIGN REVIEW, 1% TO 5% IS ALLOWABLE AT TRANSITION AND OTHER NON-NORMAL SECTIONS.
6. ADDITIONAL RIGHT-OF-WAY WILL BE NEEDED FOR RIGHT TURN LANES WHERE WARRANTED.



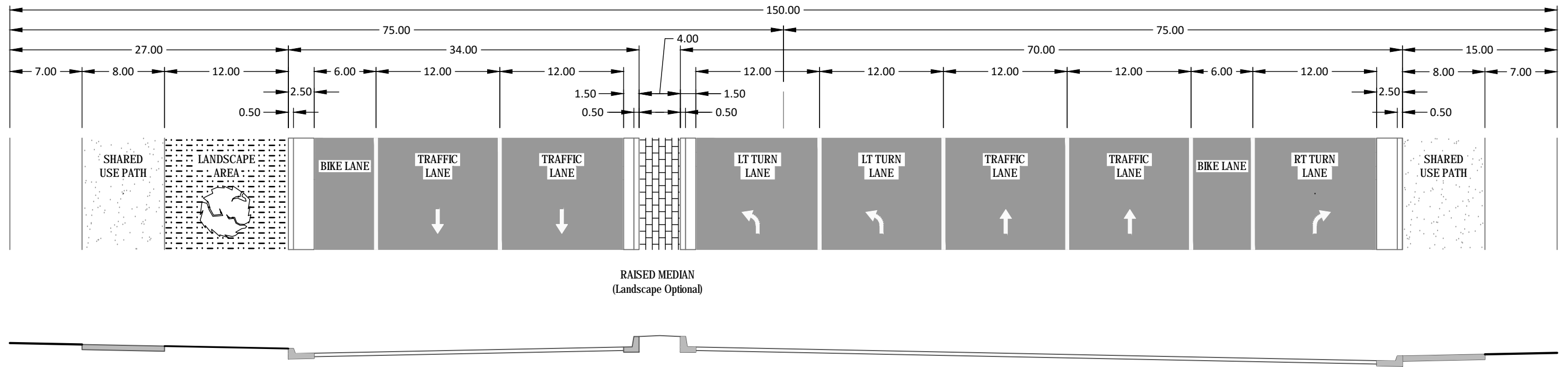
STANDARD ROADWAY CORRIDOR  
MINOR ARTERIAL 4-LANE  
DETAIL NO. S-5A (Revised)

DATE: JULY, 2015

SCALE: N.T.S.



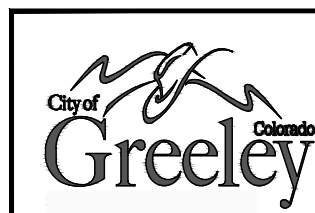
**Major Arterial 4-Lane with Raised Median**  
R.O.W. IMPROVEMENT



**Major Arterial 4-Lane @ Intersection with Raised Median**  
R.O.W. IMPROVEMENT

**NOTES:**

1. CUT AND FILL SLOPES SHALL BE A MAXIMUM OF 4:1.
2. RIGHT-OF-WAY WIDTHS ARE PROVIDED TO ACCOMMODATE POSSIBLE FUTURE THROUGH LANES.
3. RIGHT-OF-WAY AND EASEMENT AREAS SHALL BE GRADED (CUT AND FILL) TO SUBGRADE (+/-0.5') PRIOR TO AND AFTER UTILITY INSTALLATION.
4. RIGHT-OF-WAY CAN ACCOMMODATE A SIX LANE SECTION.
5. NORMAL CROWN SLOPE IS 2%. WITH SPECIAL DESIGN REVIEW, 1% TO 5% IS ALLOWABLE AT TRANSITION AND OTHER NON-NORMAL SECTIONS.
6. SIDEWALKS SHALL BE CONSTRUCTED PER BIKEWAY DETAIL (S-29), 8' WIDE.
7. PARKWAY ARTERIAL TO UTILIZE MAJOR ARTERIAL 4-LANE ROADWAY SECTION WITH HIGHER SPEED DESIGN CRITERIA.

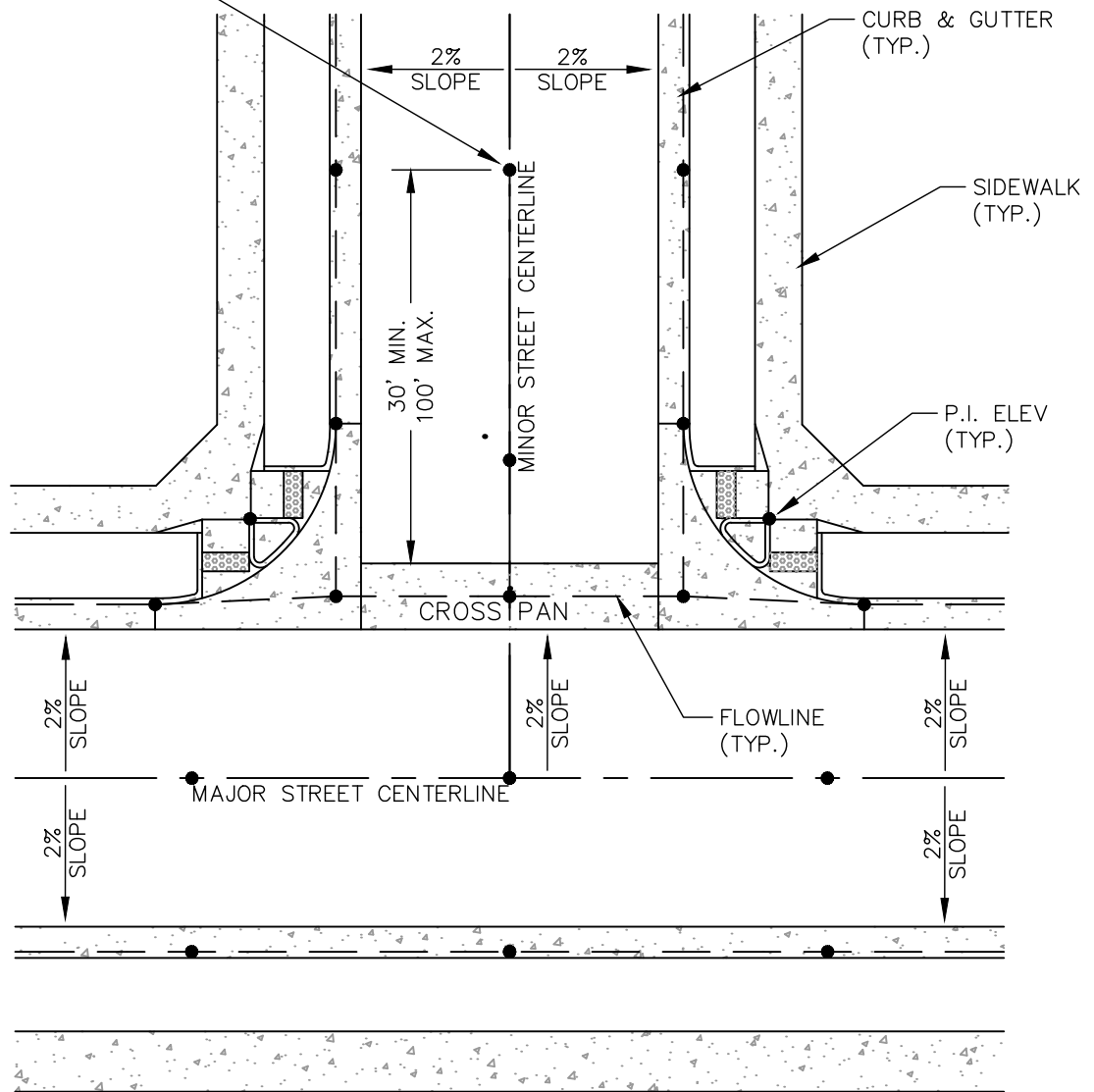


STANDARD ROADWAY CORRIDOR  
MAJOR ARTERIAL 4-LANE  
DETAIL NO. S-6 (Revised)

DATE: APRIL, 2016

SCALE: N.T.S

DESIGN ENGINEER—  
 LABEL STATION OF  
 BEGIN TRANSITION TO  
 REMOVE CROWN FROM  
 LOCAL STREET



NOTES:

1. DESIGN ENGINEER SHALL PROVIDE ELEVATIONS AT THESE POINTS (●) ON THE CONSTRUCTION DRAWINGS.
2. ALL ELEVATION POINTS SHALL BE STAKED FOR CONSTRUCTION.
3. ALL FLOWLINE GRADES THAT ARE NOT PARALLEL TO CENTERLINE SHALL BE LABELED ON INTERSECTION DETAILS OR A PROFILE DRAWING SHALL BE PROVIDED.



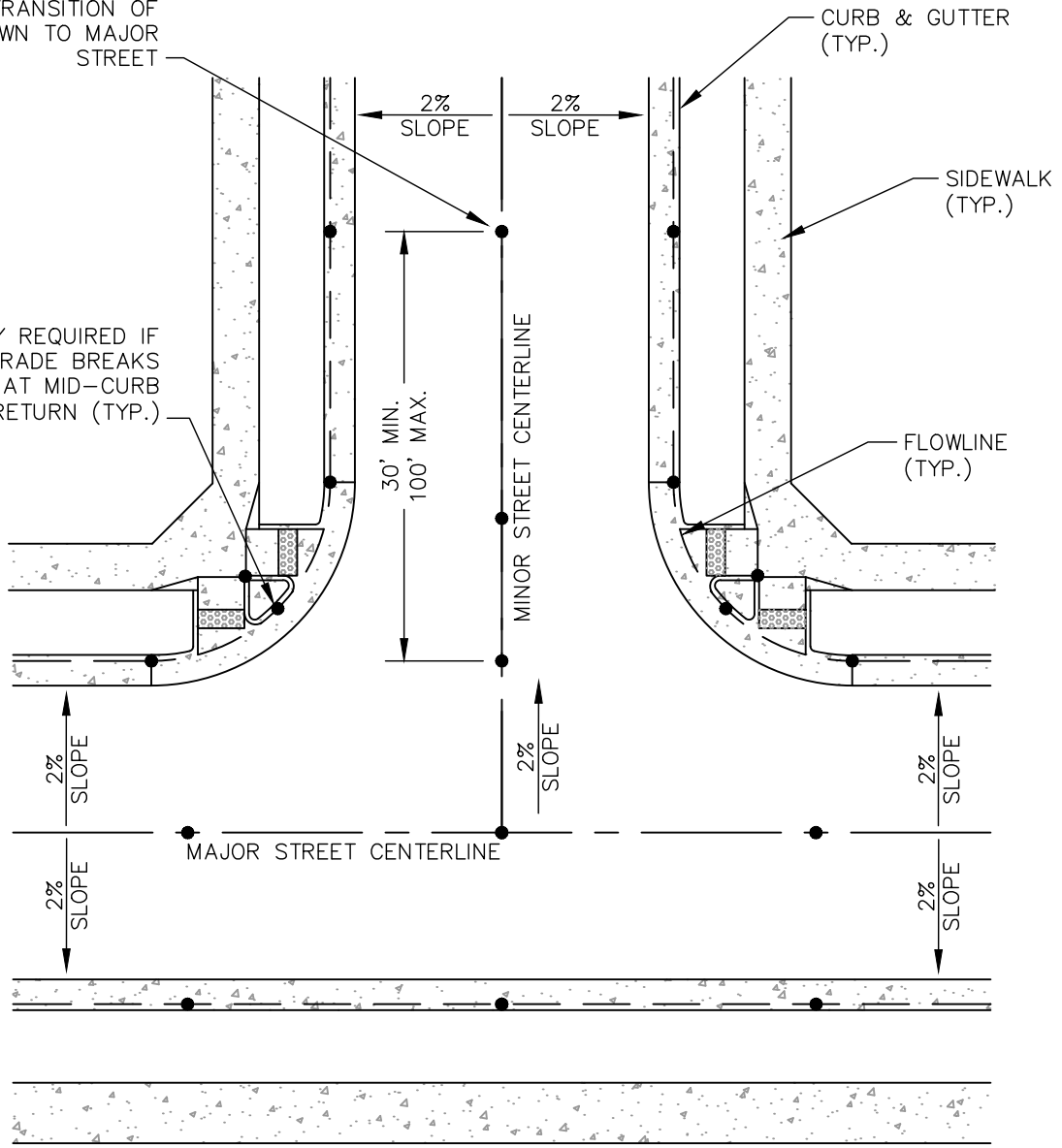
STREET INTERSECTION  
 CROSS PAN APPROACH DETAIL  
 DETAIL NO. S-7

DATE: JULY, 2015

SCALE: N.T.S.

DESIGN ENGINEER—  
 LABEL STATION OF  
 BEGIN TRANSITION OF  
 CROWN TO MAJOR  
 STREET

ONLY REQUIRED IF  
 GRADE BREAKS  
 AT MID-CURB  
 RETURN (TYP.)



NOTES:

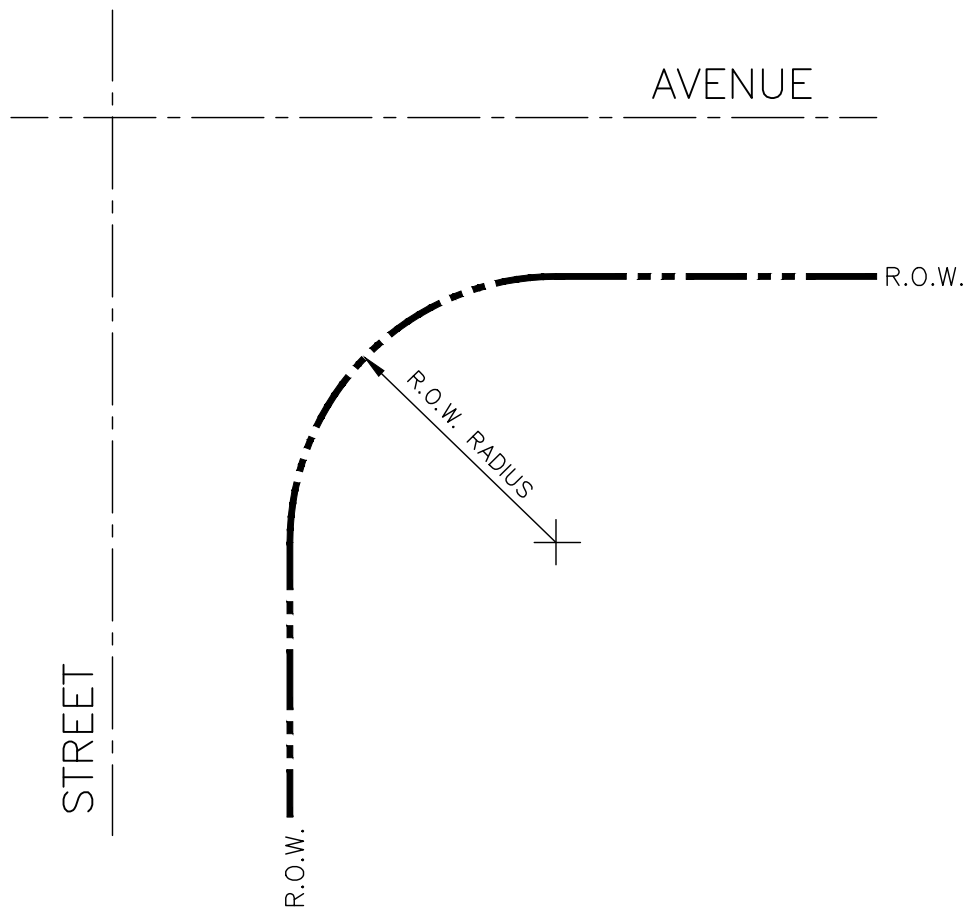
1. DESIGN ENGINEER SHALL PROVIDE ELEVATIONS AT THESE POINTS (●) ON THE CONSTRUCTION DRAWINGS.
2. ALL ELEVATION POINTS SHALL BE STAKED FOR CONSTRUCTION.
3. ALL FLOWLINE GRADES THAT ARE NOT PARALLEL TO CENTERLINE SHALL BE LABELED ON INTERSECTION DETAILS OR A PROFILE DRAWING SHALL BE PROVIDED.



STREET INTERSECTION  
 APPROACH DETAIL  
 DETAIL NO. S-8

DATE: JULY, 2015

SCALE: N.T.S.



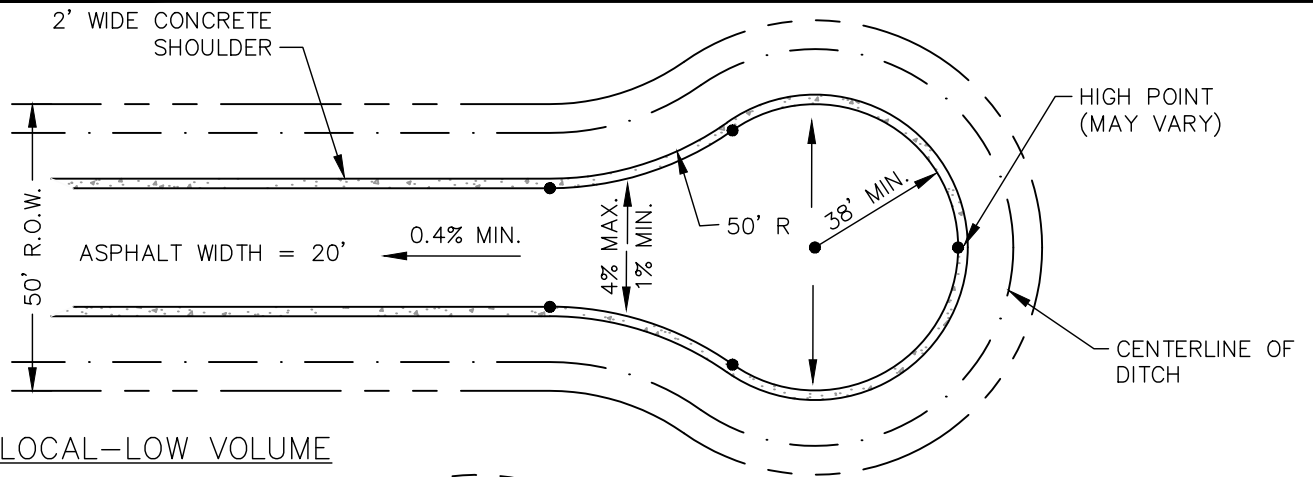
| <u>ROADWAY CLASSIFICATION</u> | <u>RIGHT-OF-WAY MINIMUM WIDTH AT INTERSECTION</u> | <u>R.O.W. RADIUS</u> |
|-------------------------------|---|----------------------|
| LOCAL-COM/IND                 | 60'   | 20'                  |
| LOCAL-RESID.                  | 60'   | 20'                  |
| COLLECTOR WITHOUT PARKING     | 80'   | 20'                  |
| COLLECTOR WITH PARKING        | 90'   | 30'                  |
| MINOR ARTERIAL (2-LANE)       | 100'  | 30'                  |
| MINOR ARTERIAL (4-LANE)       | 120'  | 30'                  |
| MAJOR/PARKWAY ARTERIAL        | 150'  | 30'                  |



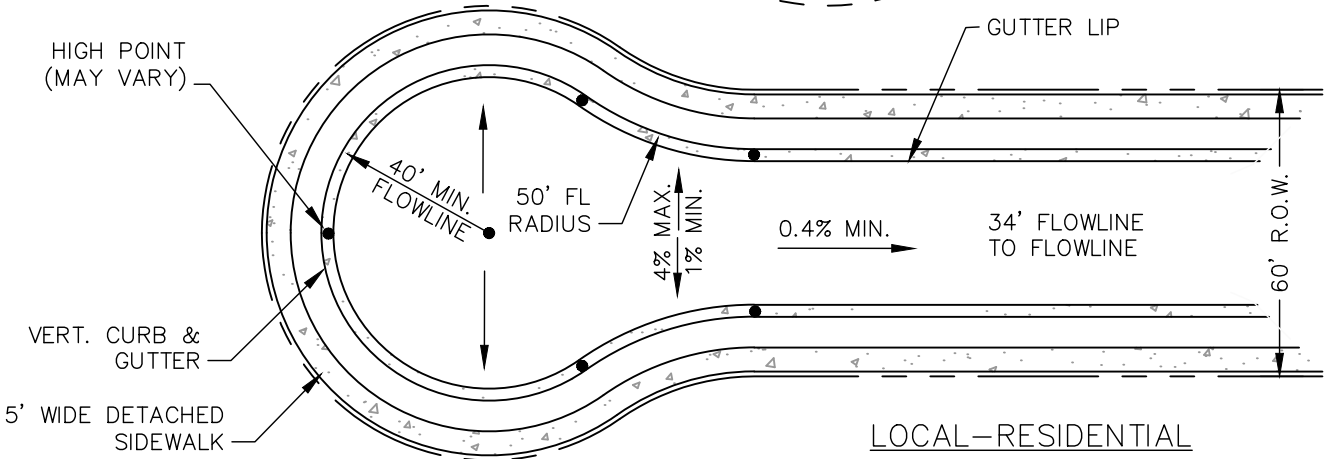
INTERSECTION RIGHT-OF-WAY  
 DETAIL NO. S-9

DATE: APRIL, 2016

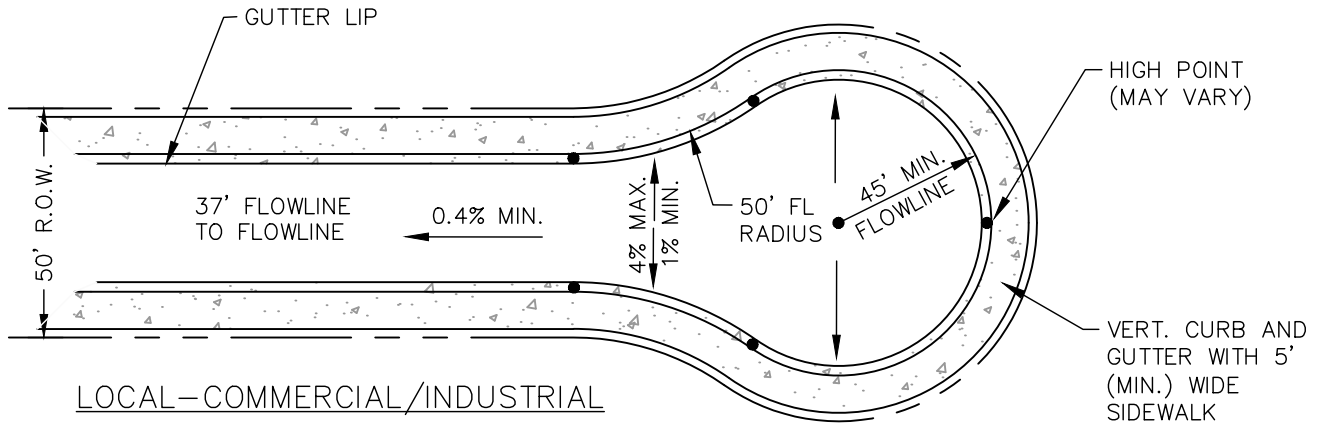
SCALE: N.T.S.



LOCAL-LOW VOLUME



LOCAL-RESIDENTIAL



LOCAL-COMMERCIAL/INDUSTRIAL

NOTES:

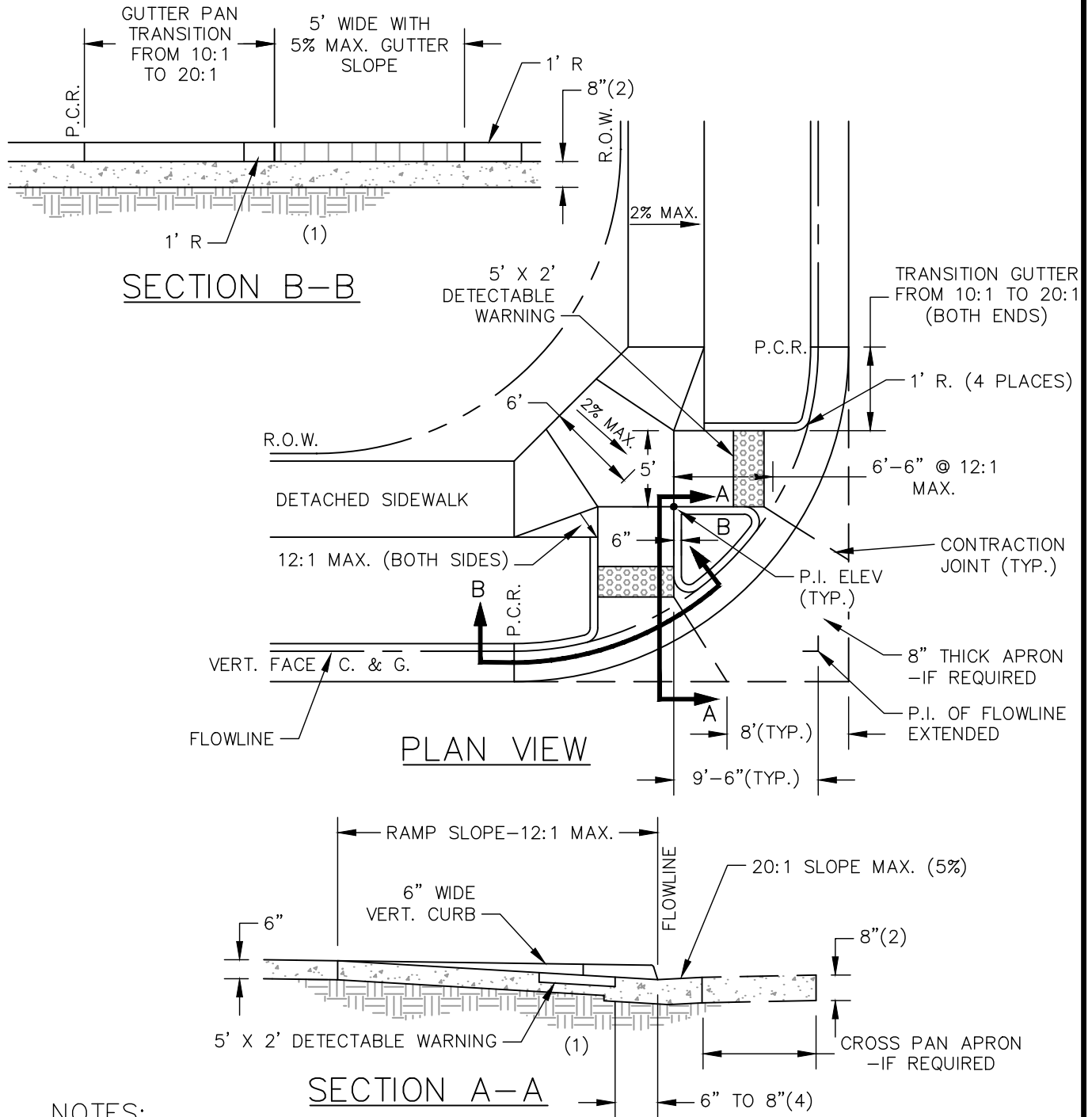
1. DESIGN ENGINEER SHALL PROVIDE ELEVATIONS AT THESE POINTS (●) ON THE CONSTRUCTION DRAWINGS.
2. ALL ELEVATION POINTS SHALL BE STAKED FOR CONSTRUCTION.
3. MINIMUM FLOWLINE SLOPE WITHIN CUL-DE-SAC SHALL BE 0.60%.
4. CUL-DE-SAC SHALL HAVE A MAXIMUM LENGTH OF 500' MEASURED FROM THE INTERSECTION CENTERLINE TO RADIUS POINT.



CUL-DE-SAC  
DETAILS  
DETAIL NO. S-10

DATE: JULY, 2015

SCALE: N.T.S.



NOTES:

1. COMPACTED SUBGRADE (SEE SPECIFICATIONS).
2. 8" CONCRETE THICKNESS APPLIES TO CURB RETURN CURB AND GUTTER AND CROSS PAN APRON.
3. CONSTRUCT CURB RAMPS AT ALL INTERSECTIONS.
4. ADA DETECTABLE WARNINGS SHALL BE INSTALLED 6" TO 8" FROM THE CLOSEST POINT OF THE FLOWLINE. SEE ADA DETECTABLE WARNING DETAIL.
5. EXTEND 20:1 GUTTER PAN SLOPE THROUGH THE CURB AND GUTTER BETWEEN RAMPS.
6. DIMENSIONS ARE BASED UPON THE USE OF DETACHED SIDEWALK AND A 90° CURB RETURN DELTA. USE OF A DIFFERENT RADIUS OR A SIGNIFICANT DELTA DIFFERENCE WILL ALTER SOME DIMENSIONS.

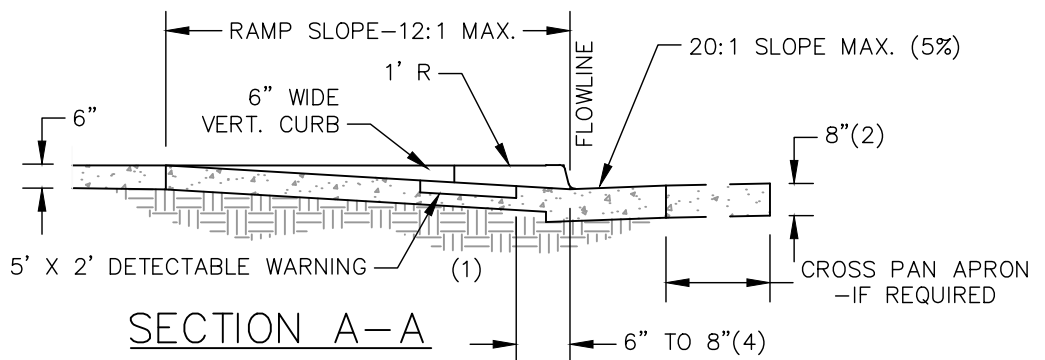
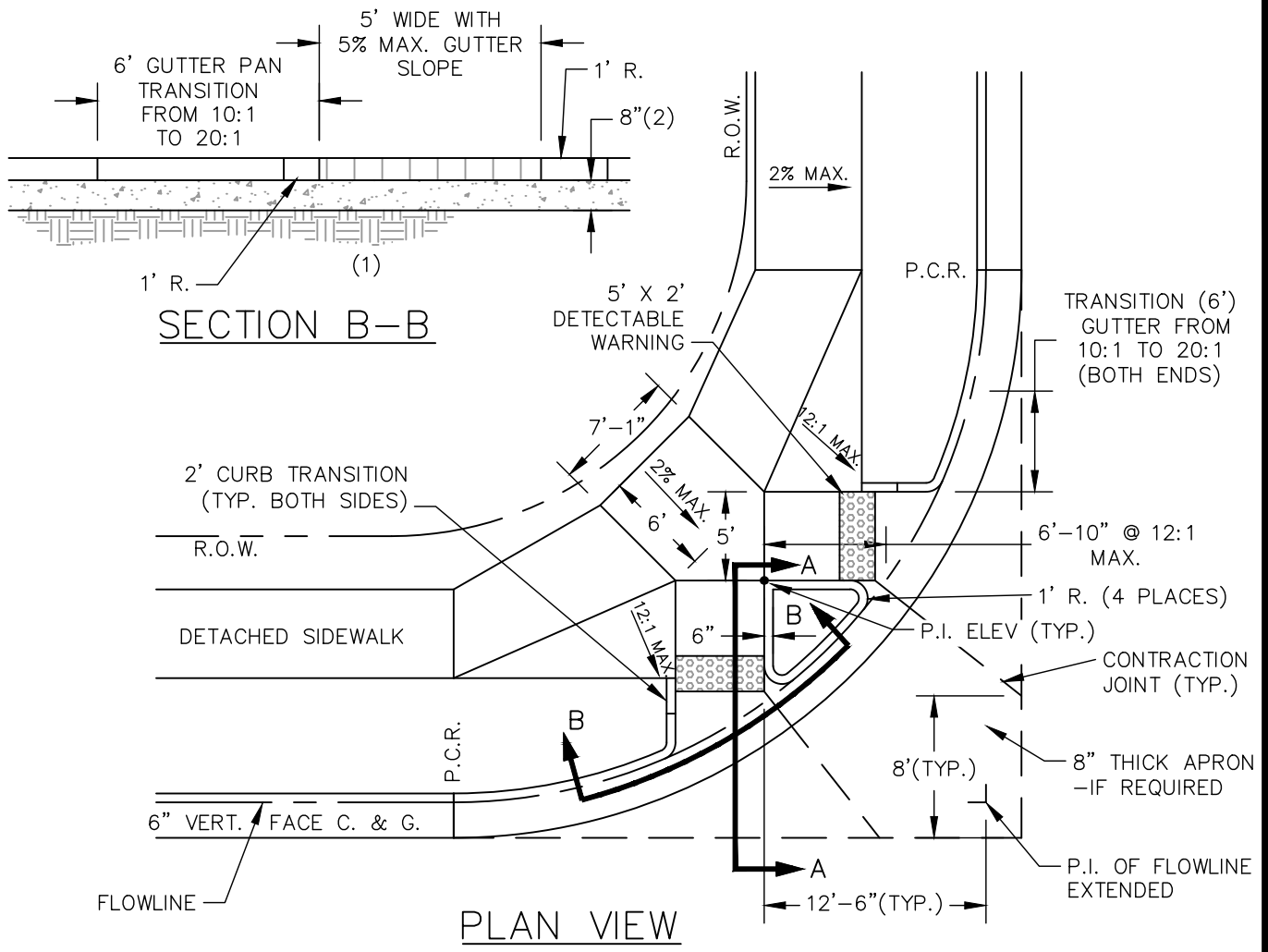


CORNER CURB RAMP DETAIL – 20' RADIUS

DETAIL NO. S-11

DATE: JULY, 2015

SCALE: N.T.S.



NOTES:

1. COMPACTED SUBGRADE (SEE SPECIFICATIONS).
2. 8" CONCRETE THICKNESS APPLIES TO CURB RETURN CURB AND GUTTER AND CROSS PAN APRON.
3. CONSTRUCT CURB RAMPS AT ALL INTERSECTIONS.
4. ADA DETECTABLE WARNINGS SHALL BE INSTALLED 6" TO 8" FROM THE CLOSEST POINT OF THE FLOWLINE. SEE ADA DETECTABLE WARNING DETAIL.
5. EXTEND 20:1 GUTTER PAN SLOPE THROUGH THE CURB AND GUTTER BETWEEN RAMPS.
6. DIMENSIONS ARE BASED UPON THE USE OF DETACHED SIDEWALKS AND A 90° CURB RETURN DELTA. USE OF A DIFFERENT RADIUS OR A SIGNIFICANT DELTA DIFFERENCE WILL ALTER SOME DIMENSIONS.



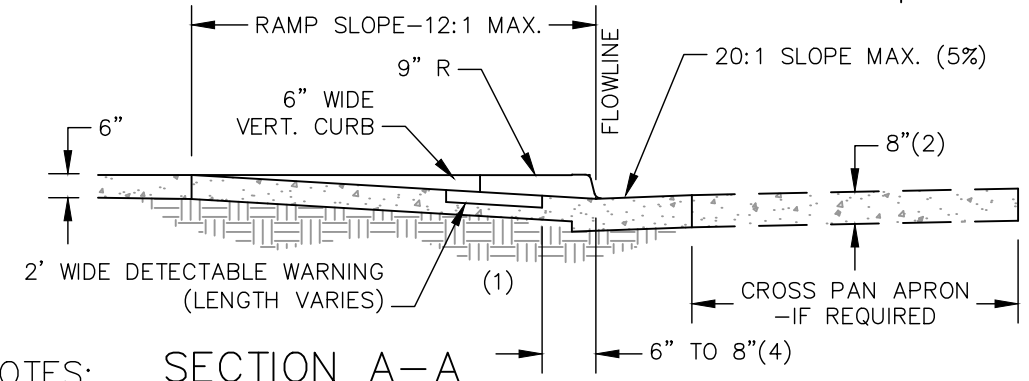
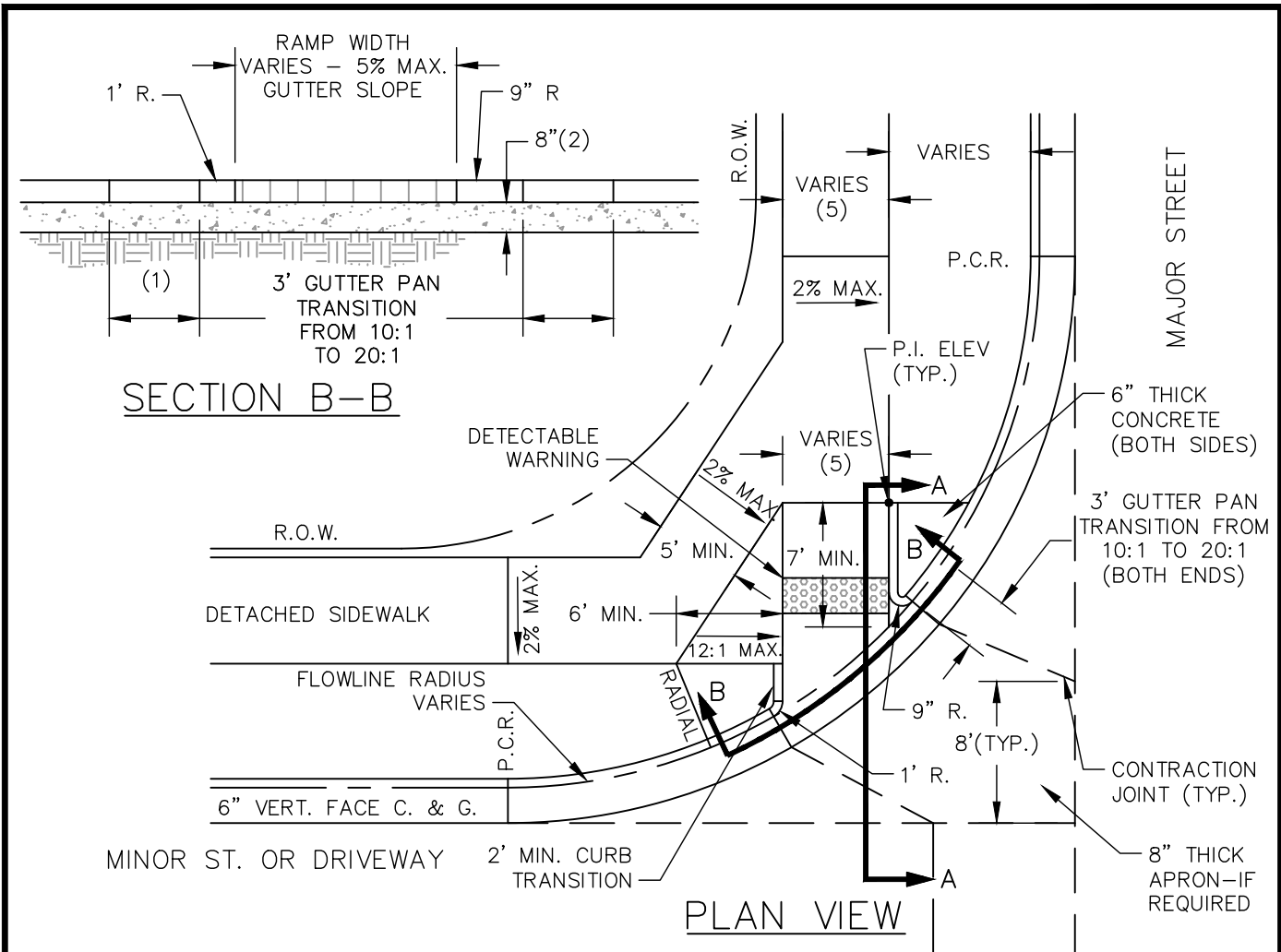
CORNER CURB RAMP DETAIL - 30' RADIUS

DETAIL NO. S-12

DATE: JULY, 2015

SCALE: N.T.S.





NOTES:

SECTION A-A

1. COMPACTED SUBGRADE (SEE SPECIFICATIONS).
2. 8" CONCRETE THICKNESS APPLIES TO CURB RETURN CURB AND GUTTER AND CROSS PAN APRON.
3. CONSTRUCT CURB RAMPS AT ALL INTERSECTIONS.
4. ADA DETECTABLE WARNINGS SHALL BE INSTALLED 6" TO 8" FROM THE CLOSEST POINT OF THE FLOWLINE. SEE ADA DETECTABLE WARNING DETAIL.
5. THIS DETAIL IS INTENDED FOR USE ALONG STREETS WHEN AT "T" INTERSECTIONS OR DRIVEWAYS WITH CURB RETURNS. THE RAMP SHOULD ONLY BE USED WHERE THE MAJOR STREET PEDESTRIAN CROSSING IS NOT RECOMMENDED. THE RAMP OPENING SHALL BE LOCATED AT THE EXTENSION OF THE SIDEWALK AND BE AS WIDE AS THE SIDEWALK ALONG THE MAJOR STREET.



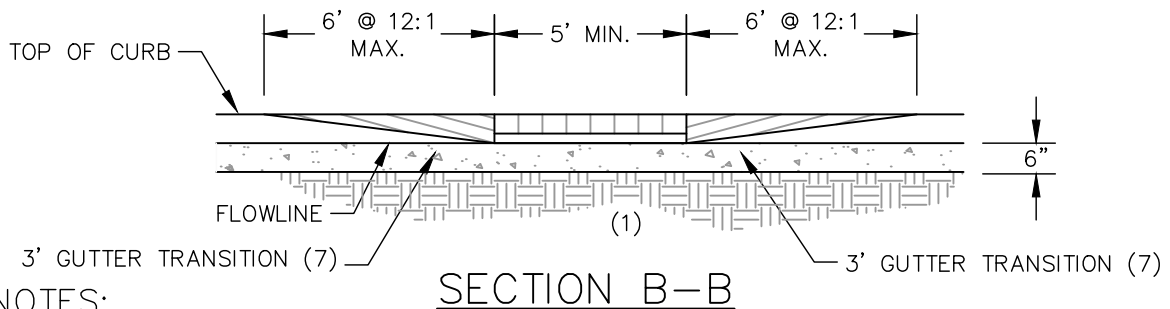
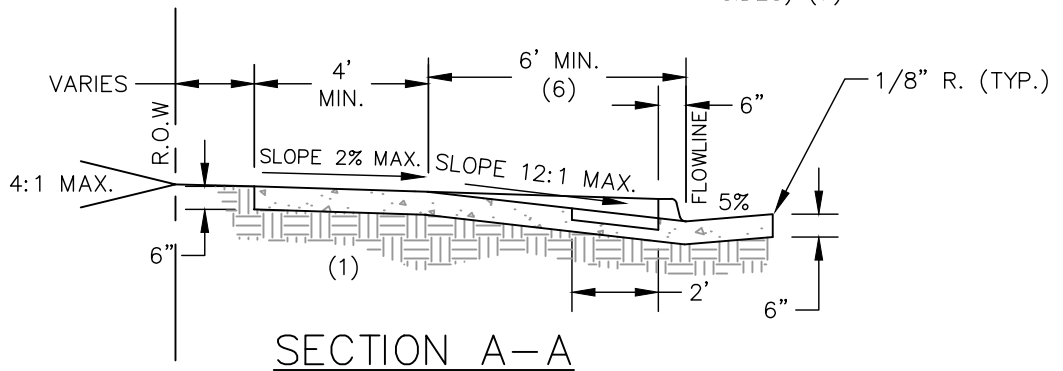
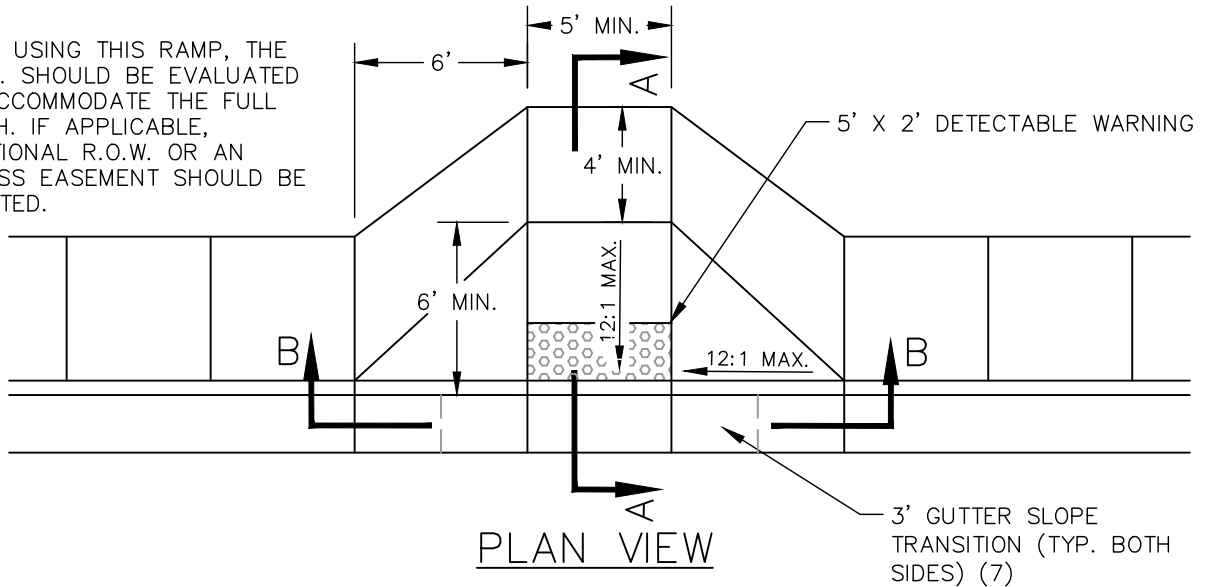
DIRECTIONAL CORNER CURB RAMP DETAIL

DETAIL NO. S-12-4

DATE: JULY, 2015

SCALE: N.T.S.

NOTE:  
WHEN USING THIS RAMP, THE R.O.W. SHOULD BE EVALUATED TO ACCOMMODATE THE FULL DEPTH. IF APPLICABLE, ADDITIONAL R.O.W. OR AN ACCESS EASEMENT SHOULD BE GRANTED.



NOTES:

1. COMPACTED SUBGRADE (SEE SPECIFICATIONS).
2. SIX INCH (6") CONCRETE THICKNESS APPLIES TO RAMP, SIDE SLOPES AND WALK AREA.
3. CONSTRUCT A MIN. OF ONE MID-BLOCK CURB RAMP AT "T" INTERSECTIONS, WHERE PEDESTRIAN CROSSING IS DESIRED.
4. ADA DETECTABLE WARNINGS SHALL BE INSTALLED 6" TO 8" FROM FLOWLINE. SEE ADA DETECTABLE WARNING DETAIL.
5. CONCRETE SHOWN (EXCEPT FOR RAMPS AND WALKS) SHALL BE POURED MONOLITHICALLY.
6. THIS DETAIL SHALL ONLY BE USED WHEN IN ASSOCIATION WITH ATTACHED SIDEWALKS OR IN RETROFIT SITUATIONS.
7. PROVIDE A 3' GUTTER SLOPE TRANSITION ON EACH SIDE OF THE BOTTOM OF THE RAMP OPENING. REDUCE SLOPE FROM 12:1 (10:1 ON DRIVE OVER) TO 20:1 AT RAMP OPENING.

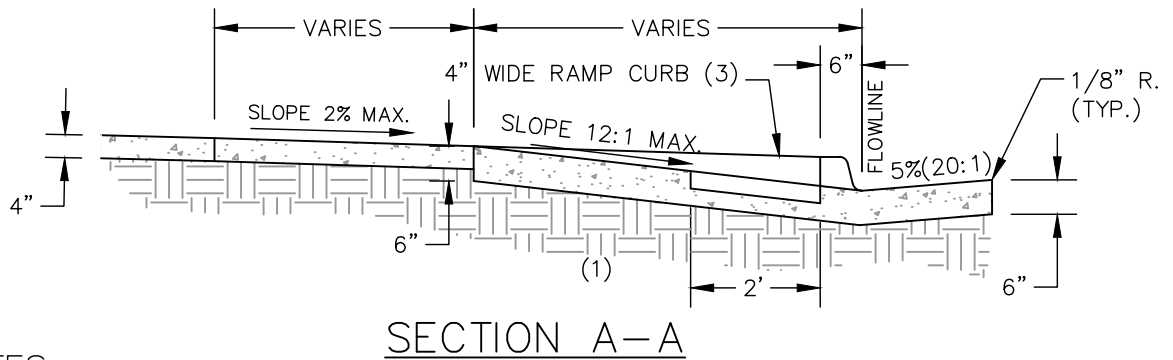
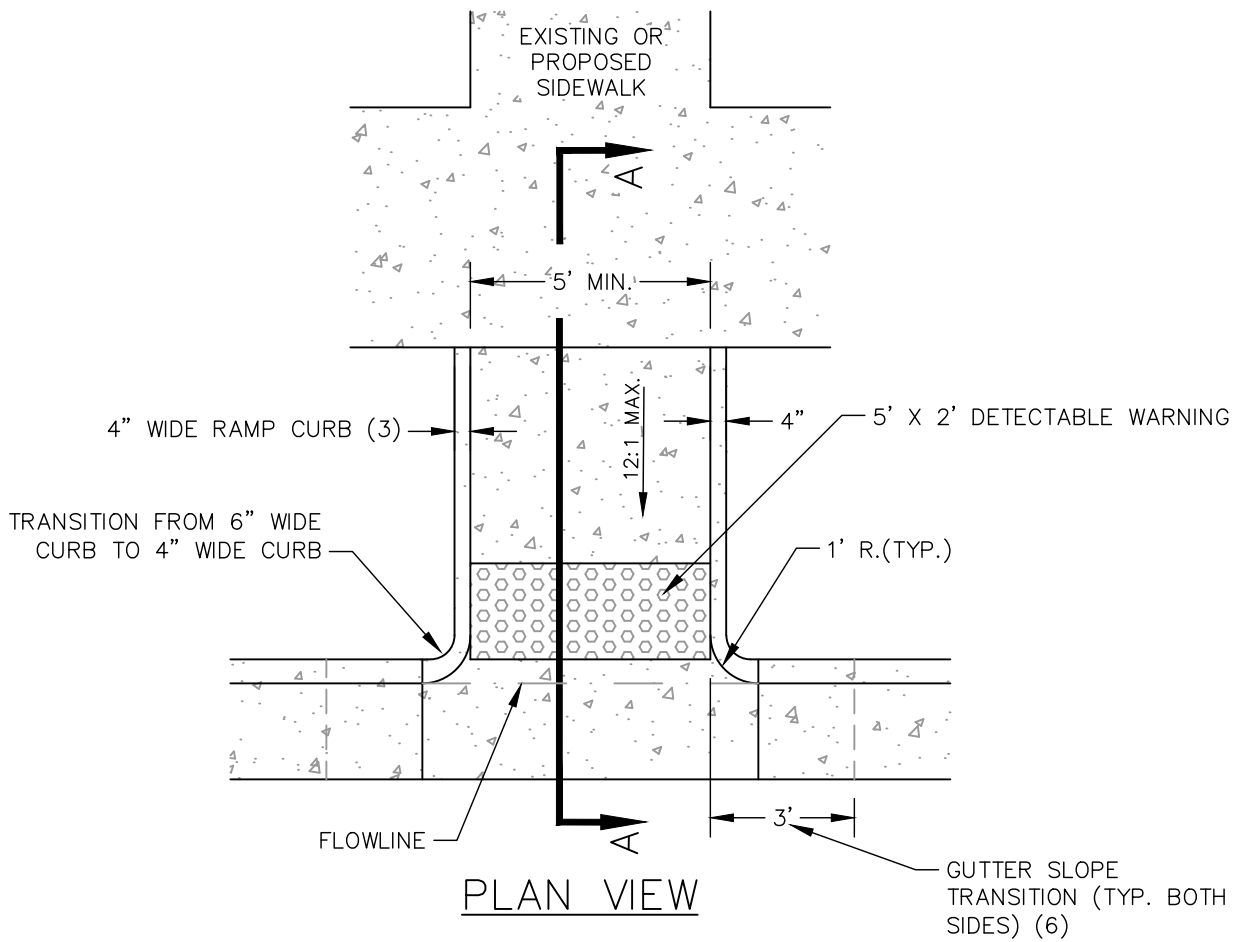


## MIDBLOCK CURB RAMP DETAIL

DETAIL NO. S-13

DATE: JULY, 2015

SCALE: N.T.S.



NOTES:

1. COMPACTED SUBGRADE (SEE SPECIFICATIONS).
2. SIX INCH (6") CONCRETE THICKNESS APPLIES TO RAMP AREA.
3. RAMP CURB MAY BE OMITTED AT THE DIRECTION OF THE CITY.
4. ADA DETECTABLE WARNINGS SHALL BE INSTALLED 6" TO 8" FROM FLOWLINE. SEE ADA DETECTABLE WARNING DETAIL.
5. CONCRETE SHOWN (EXCEPT FOR RAMPS AND WALKS) SHALL BE POURED MONOLITHICALLY.
6. PROVIDE A 3' GUTTER SLOPE TRANSITION ON EACH SIDE OF THE BOTTOM OF THE RAMP OPENING. REDUCE SLOPE FROM 12:1 TO 20:1 AT RAMP OPENING.
7. CONSTRUCT A MIN. OF ONE MID-BLOCK CURB RAMP AT "T" INTERSECTIONS, WHERE PEDESTRIAN CROSSING IS DESIRED.

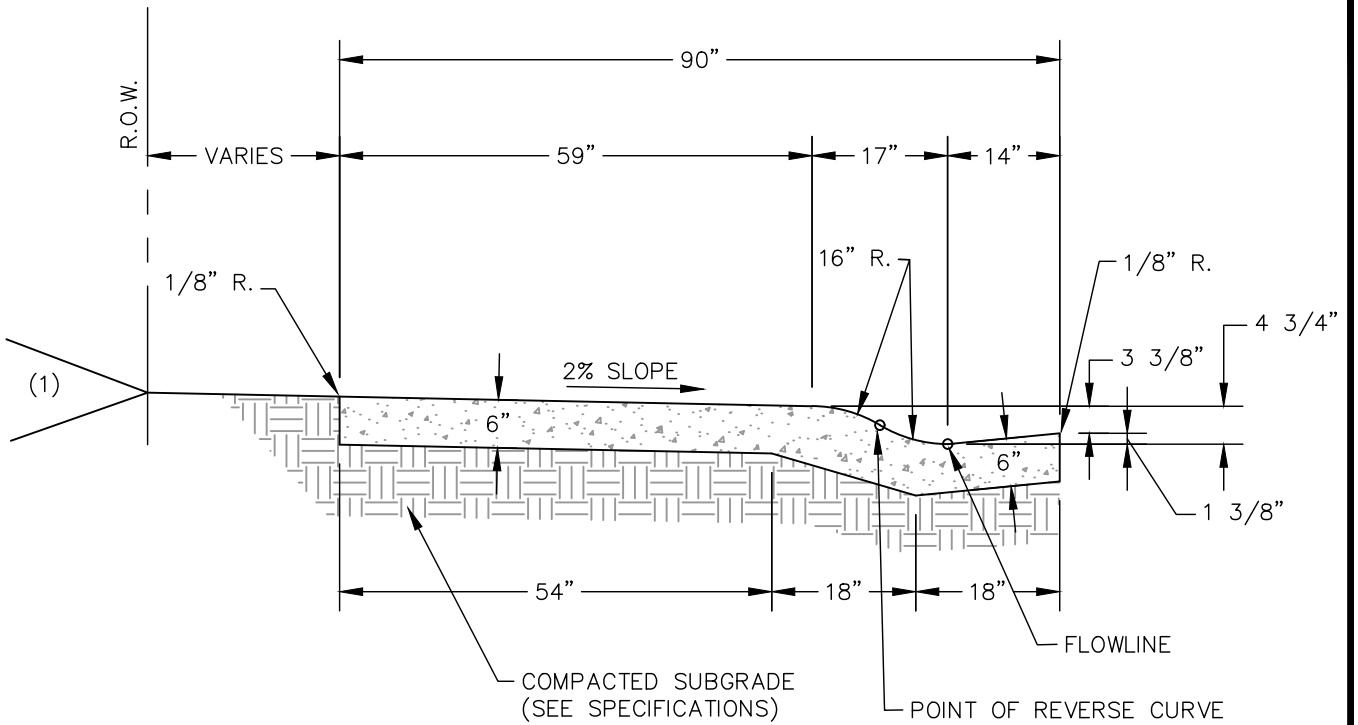


CURB RAMP DETAIL FOR DETACHED SIDEWALK

DETAIL NO. S-14

DATE: JULY, 2015

SCALE: N.T.S.



NOTES:

1. CUT AND FILL SLOPES SHALL BE A MAXIMUM OF 4:1.
2. THIS DETAIL SHALL BE USED ONLY IN THOSE SITUATIONS APPROVED BY THE CITY OR IN RETROFIT LOCATIONS. DETACHED SIDEWALKS AND VERTICAL FACE CURB AND GUTTER IS REQUIRED ON ALL NEW STREETS IN NEW RESIDENTIAL SUBDIVISIONS.
3. MAXIMUM SPACING OF CONTRACTION JOINTS – TEN (10) FEET.
4. EXPANSION JOINTS ARE REQUIRED, SEE JOINT DETAILS.
5. CONCRETE SURFACES TO RECEIVE A LIGHT BROOM FINISH.

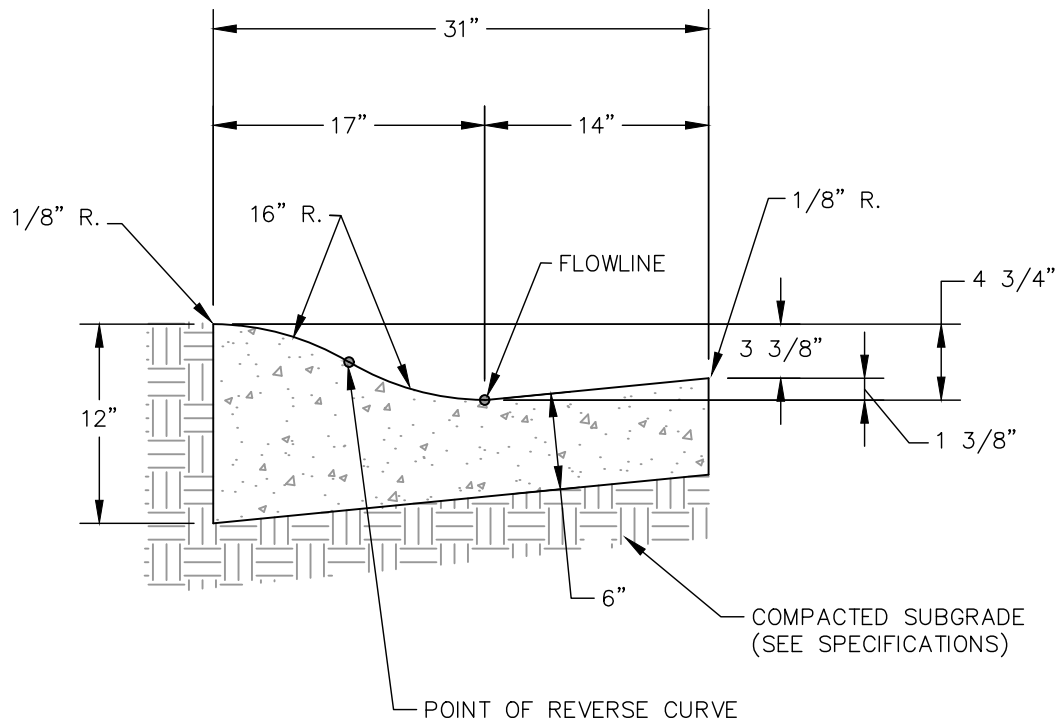


DRIVE OVER CURB, GUTTER & SIDEWALK

DETAIL NO. S-15

DATE: JULY, 2015

SCALE: N.T.S.



NOTES:

1. DRIVE OVER CURB SHALL NOT BE USED ADJACENT TO TRAVEL LANE.
2. DETACHED SIDEWALK WHEN USED WITH THIS SECTION SHALL BE 6" MINIMUM THICKNESS.
3. MAXIMUM SPACING OF CONTRACTION JOINTS – TEN (10) FEET.
4. EXPANSION JOINTS ARE REQUIRED, SEE JOINT DETAILS.
5. CONCRETE SURFACES TO RECEIVE A LIGHT BROOM FINISH.
6. THIS DETAIL SHALL BE USED ONLY IN THOSE SITUATIONS APPROVED BY THE CITY OR IN RETROFIT SITUATIONS. DETACHED SIDEWALKS AND VERTICAL FACE CURB AND GUTTER IS REQUIRED ON ALL NEW STREETS IN NEW RESIDENTIAL SUBDIVISIONS.

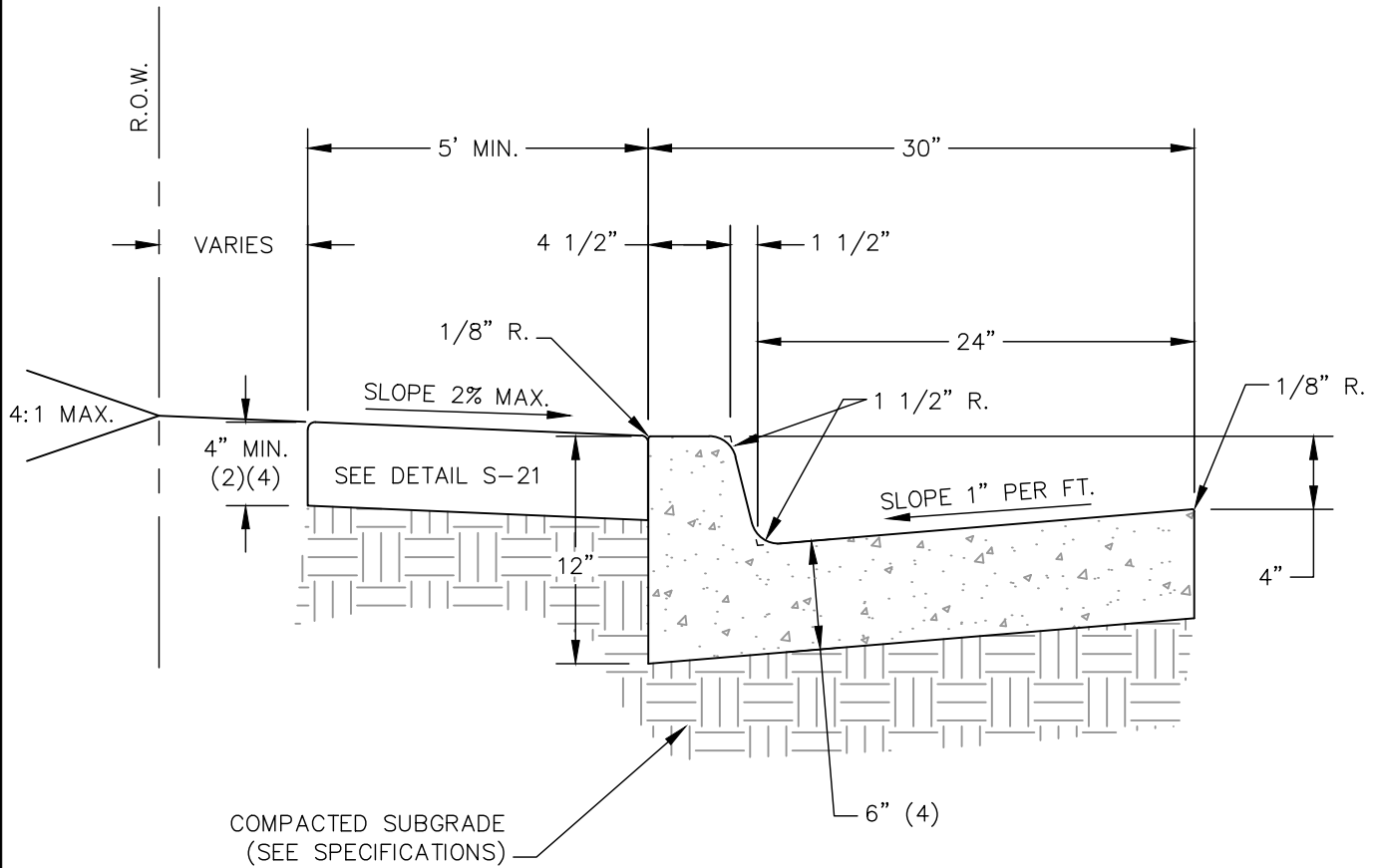


DRIVE OVER CURB AND GUTTER

DETAIL NO. S-15A

DATE: JULY, 2015

SCALE: N.T.S.



NOTES:

1. WHEN CONSTRUCTING ATTACHED SIDEWALK, CONTRACTION JOINTS FOR SIDEWALKS SHALL MATCH CURB AND GUTTER, MAXIMUM SPACING OF TEN (10) FEET.
2. AT RESIDENTIAL DRIVEWAYS, THE SIDEWALK THICKNESS SHALL BE INCREASED TO SIX (6) INCHES.
3. EXPANSION JOINTS REQUIRED AT 400 FOOT MAXIMUM SPACING. ADDITIONAL JOINTS MAY BE REQUIRED AT THE DISCRETION OF THE ENGINEER. SEE JOINT DETAILS.
4. AT ALLEYS AND COMMERCIAL DRIVEWAYS, THE CURB AND SIDEWALK THICKNESS SHALL BE INCREASED TO EIGHT (8) INCHES.
5. CONCRETE SURFACES TO RECEIVE A LIGHT BROOM FINISH.

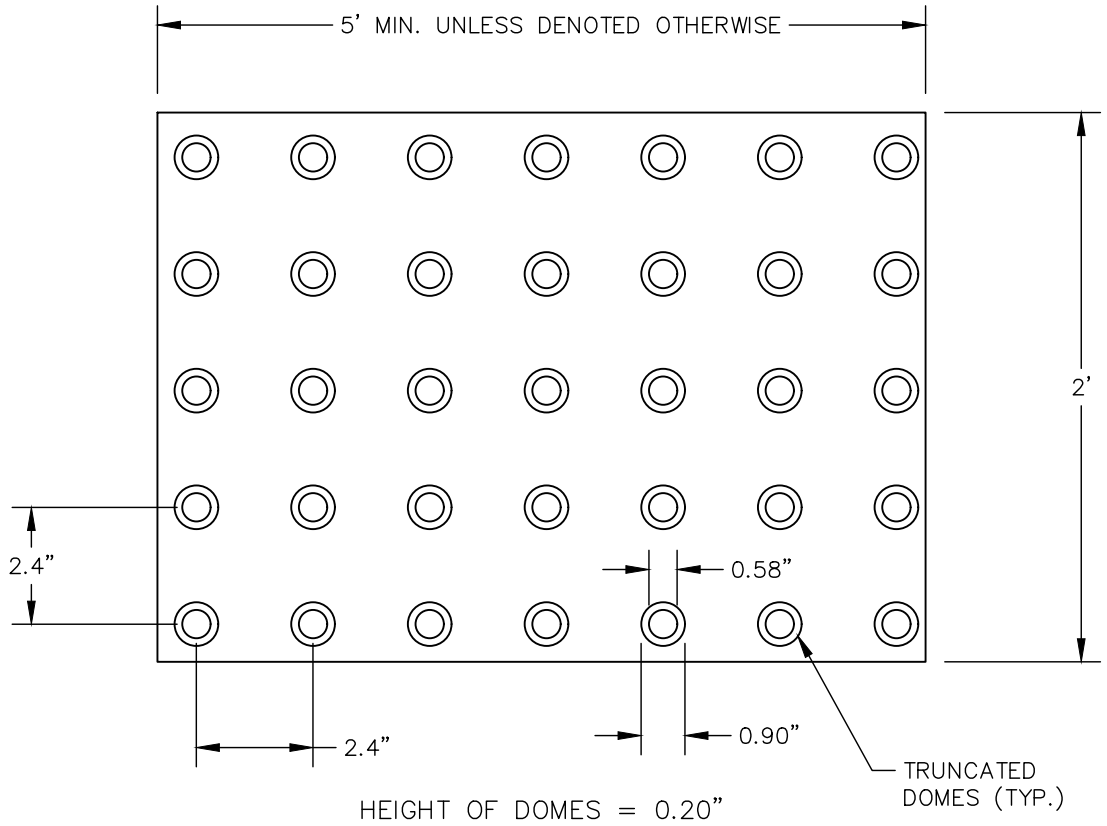


VERTICAL FACE CURB AND GUTTER

DETAIL NO. S-16

DATE: JULY, 2015

SCALE: N.T.S.



NOTES:

1. COLOR SHALL BE APPROVED BY THE CITY BUT IN ALL CASES THE COLOR SHALL CONTRAST WITH ADJOINING SURFACES, EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT.
2. ADA DETECTABLE WARNINGS SHALL BE INSTALLED 6" TO 8" FROM FLOWLINE USING APPROVED MATERIAL.

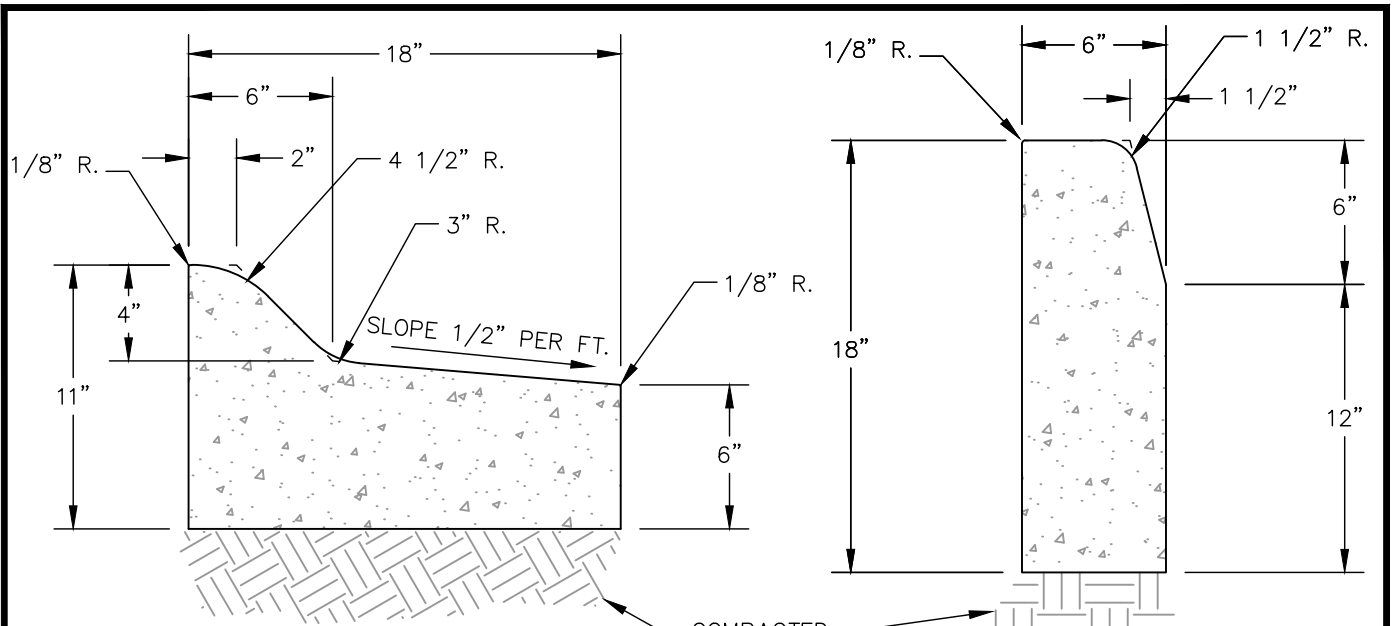


ADA DETECTABLE WARNING DETAIL

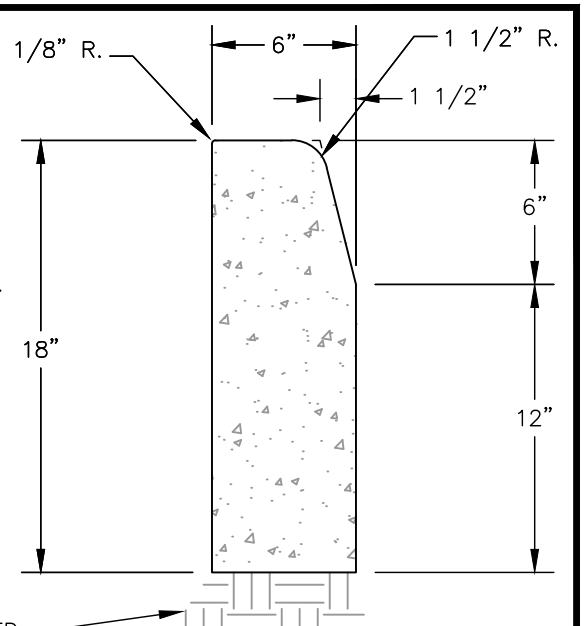
DETAIL NO. S-17

DATE: JULY, 2015

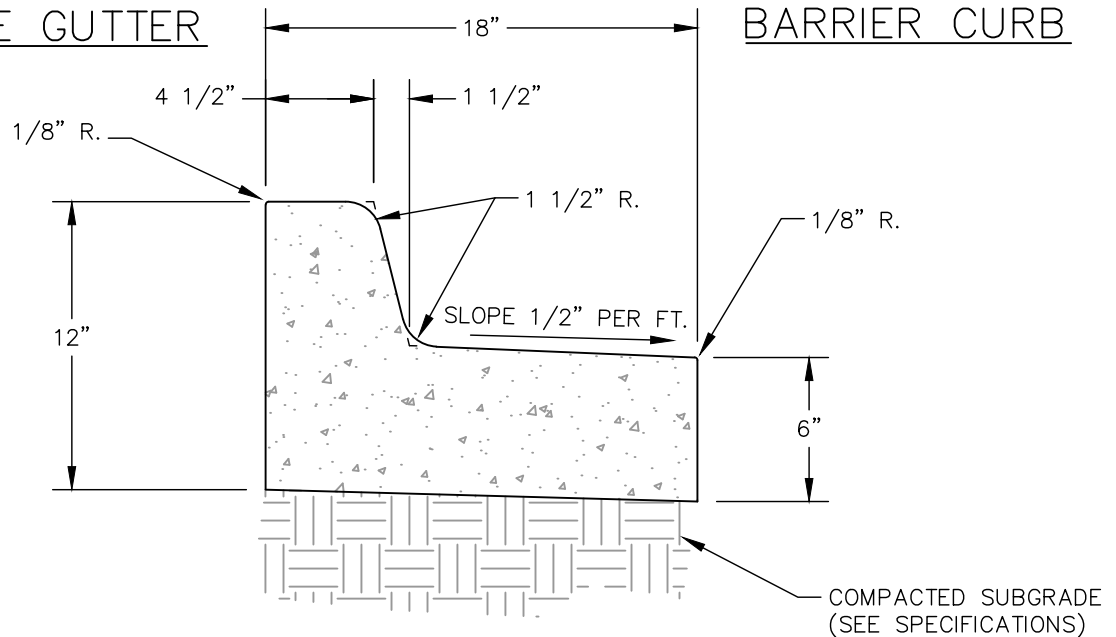
SCALE: N.T.S.



DRIVE OVER CURB  
WITH REVERSE  
SLOPE GUTTER



6" VERTICAL FACE  
BARRIER CURB



6" VERTICAL FACE CURB WITH REVERSE SLOPE GUTTER

NOTES:

1. CONTRACTION JOINTS FOR CONCRETE MEDIAN COVER SHALL MATCH CURB AND GUTTER, MAXIMUM SPACING OF TEN (10) FEET.
2. EXPANSION JOINTS REQUIRED AT 400 FOOT MAXIMUM SPACING. ADDITIONAL JOINTS MAY BE REQUIRED AT THE DISCRETION OF THE ENGINEER. SEE JOINT DETAILS.
3. CONCRETE SURFACES TO RECEIVE A LIGHT BROOM FINISH.



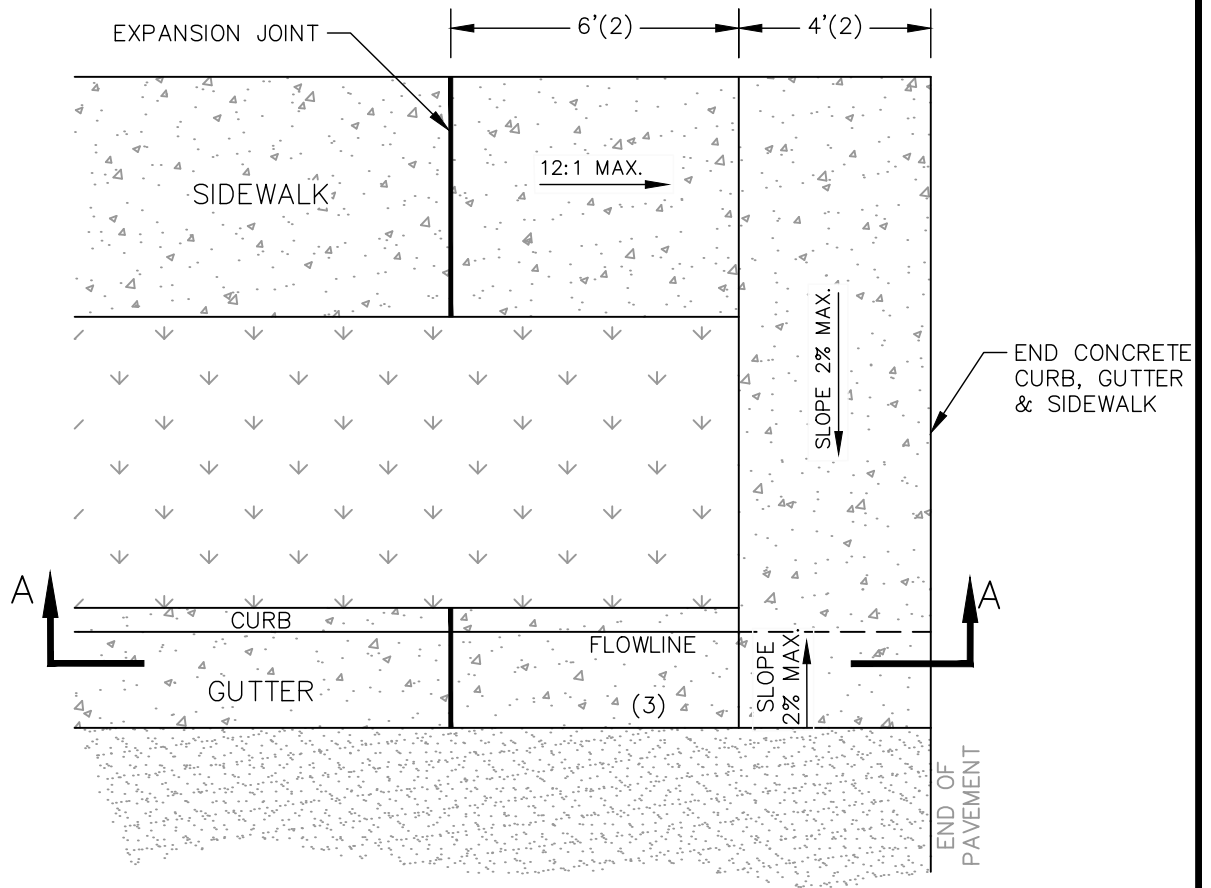
MEDIAN CURBS

DETAIL NO. S-18

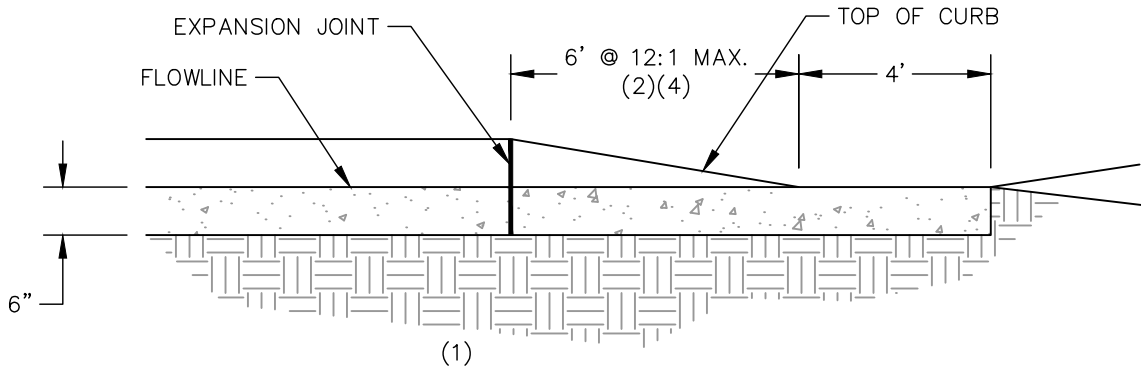
DATE: JULY, 2015

SCALE: N.T.S.





PLAN VIEW



NOTES:

SECTION A-A

1. COMPACTED SUBGRADE (SEE SPECIFICATIONS).
2. TEN FOOT (10') TEMPORARY END SECTION TO BE REMOVED TO CONTINUE CURB, GUTTER AND SIDEWALK.
3. PROVIDE A 6' GUTTER SLOPE TRANSITION AT THE TEMPORARY END SECTION. REDUCE SLOPE FROM 12:1 AT EXPANSION JOINT TO 50:1 AT FINAL 4'.
4. CONCRETE SURFACES TO RECEIVE A LIGHT BROOM FINISH.

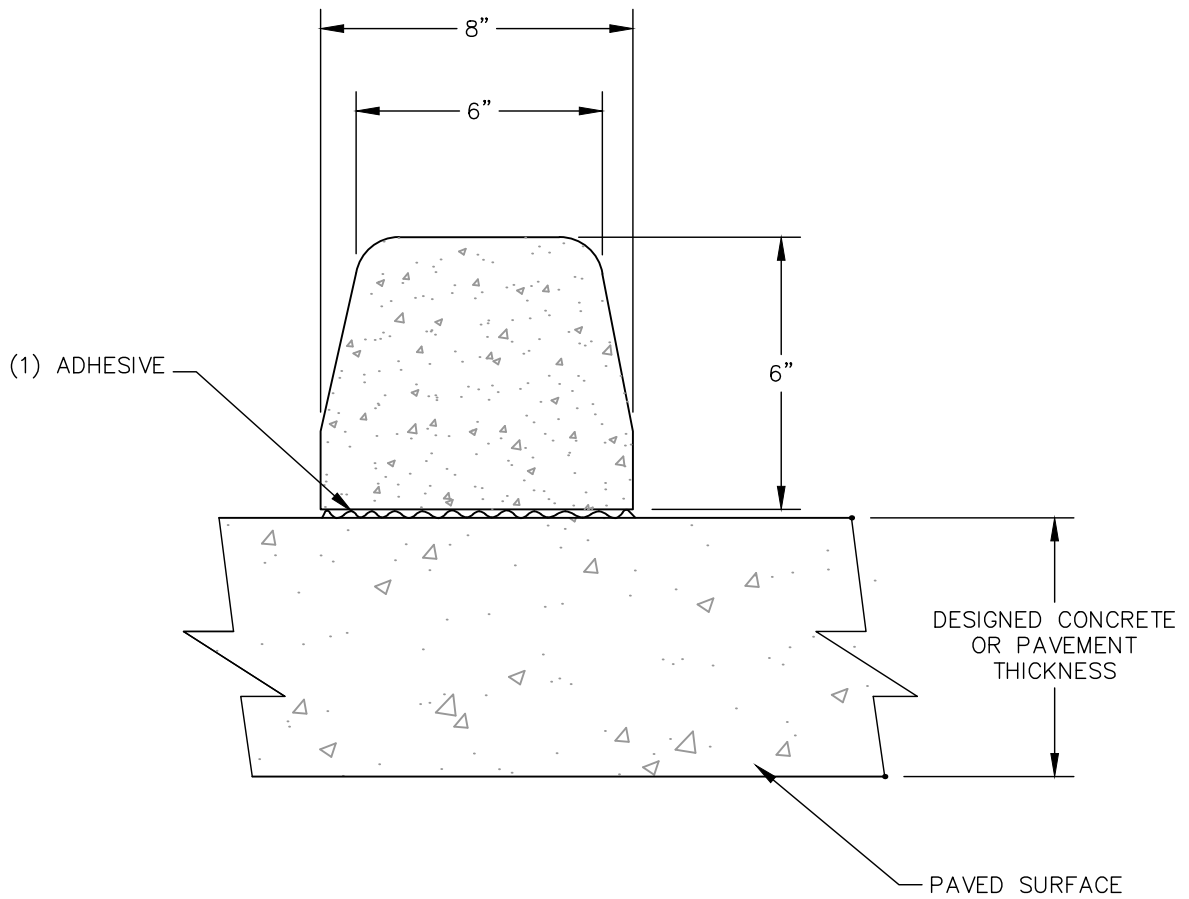


CURB, GUTTER & SIDEWALK  
TEMPORARY END SECTION

DETAIL NO. S-19

DATE: JULY, 2015

SCALE: N.T.S.



## EXTRUDED CURB

### NOTES:

1. ADHESIVE USED IN BONDING CURBHEAD TO SURFACE SHALL BE SPREAD ON A CLEAN SURFACE.
2. ADHESIVE SHALL BE APPROVED BY THE CITY PRIOR TO CONSTRUCTION.
3. CONSTRUCT CURBS OF CONCRETE OR ASPHALT AS APPROVED BY THE CITY.
4. CONCRETE SURFACES TO RECEIVE A LIGHT BROOM FINISH.

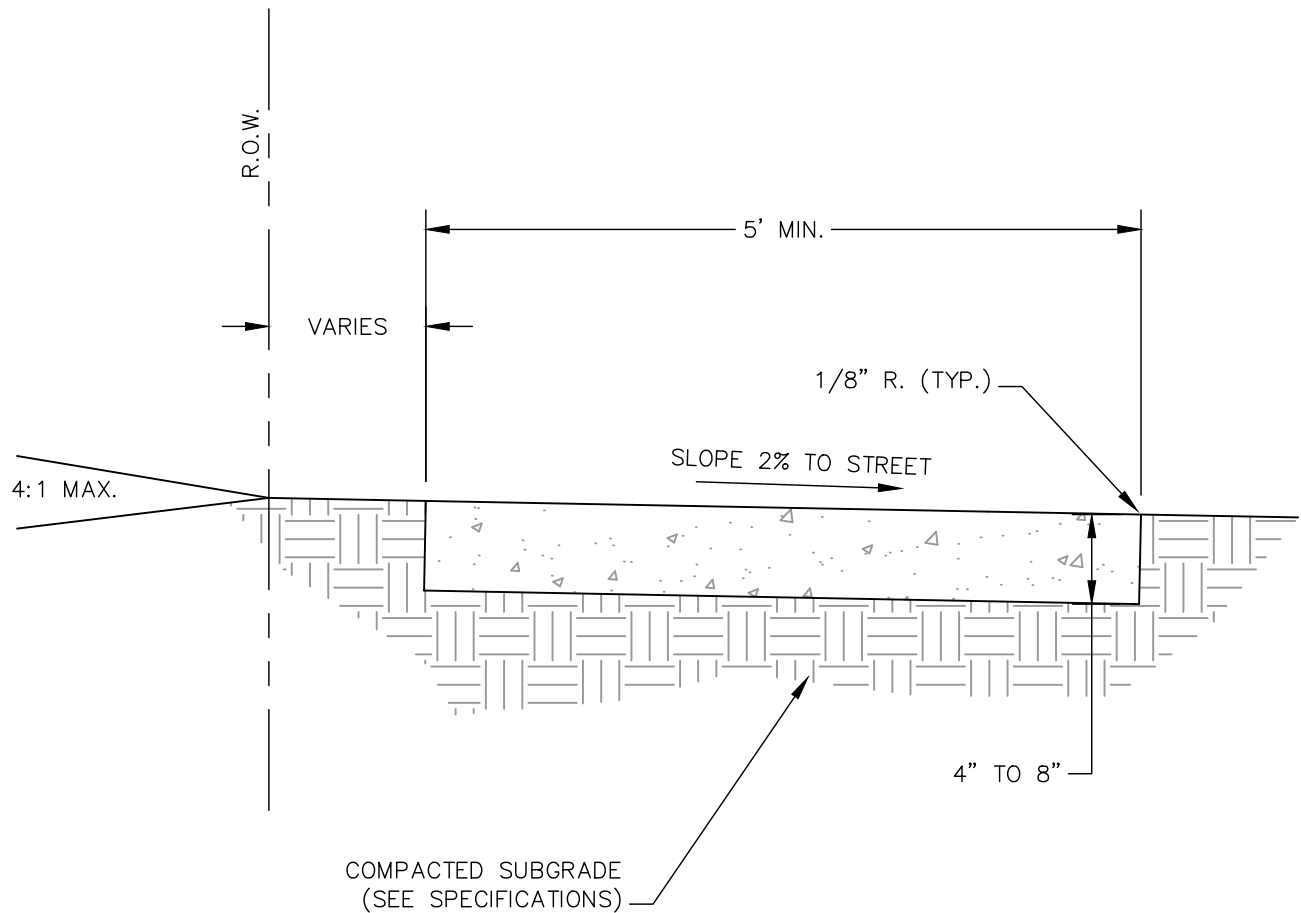


CURBHEAD DETAIL

DETAIL NO. S-20

DATE: JULY, 2015

SCALE: N.T.S.



NOTES:

1. MAXIMUM SPACING OF CONTRACTION JOINTS IS TEN (10) FEET.
2. AT RESIDENTIAL DRIVEWAYS, THE SIDEWALK THICKNESS SHALL BE INCREASED TO SIX (6) INCHES.
3. EXPANSION JOINTS REQUIRED AT 400 FOOT MAXIMUM SPACING. ADDITIONAL JOINTS MAY BE REQUIRED AT THE DISCRETION OF THE ENGINEER. SEE JOINT DETAILS.
4. AT ALLEYS AND COMMERCIAL DRIVEWAYS, THE SIDEWALK THICKNESS SHALL BE INCREASED TO EIGHT (8) INCHES.
5. CONCRETE SURFACES TO RECEIVE A LIGHT BROOM FINISH.

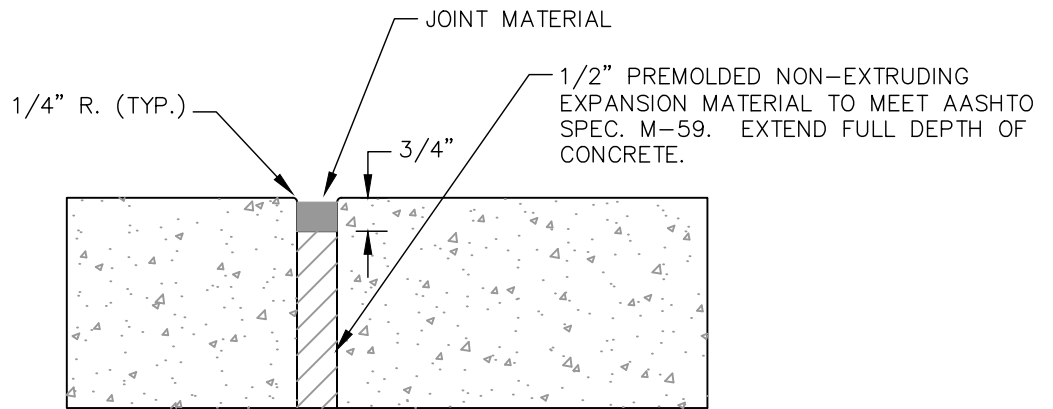


DETACHED SIDEWALK DETAIL

DETAIL NO. S-21

DATE: JULY, 2015

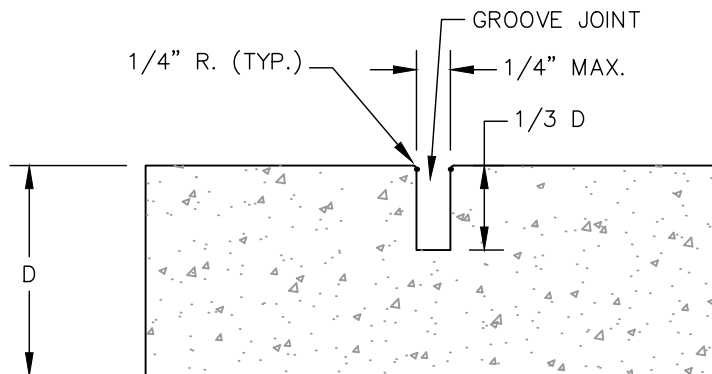
SCALE: N.T.S.



## EXPANSION JOINT

### NOTE FOR EXPANSION JOINTS:

EXPANSION JOINTS REQUIRED AT 400 FOOT MAXIMUM SPACING. ADDITIONAL JOINTS MAY BE REQUIRED AT THE DISCRETION OF THE ENGINEER.



## CONTRACTION JOINT

### NOTES FOR CONTRACTION JOINTS:

1. FORM WITH TOOL TEMPLATE OR SAWCUT JOINTS.
2. SAWCUT JOINTS, IF USED, SHALL BEGIN AS SOON AS CONCRETE IS HARDENED SUFFICIENTLY TO PERMIT SAWING WITHOUT EXCESSIVE RAVELING AND BEFORE UNCONTROLLED CRACKING OCCURS.
3. MAXIMUM DISTANCE BETWEEN JOINTS IS TEN (10) FEET AND MINIMUM DISTANCE IS FIVE (5) FEET.

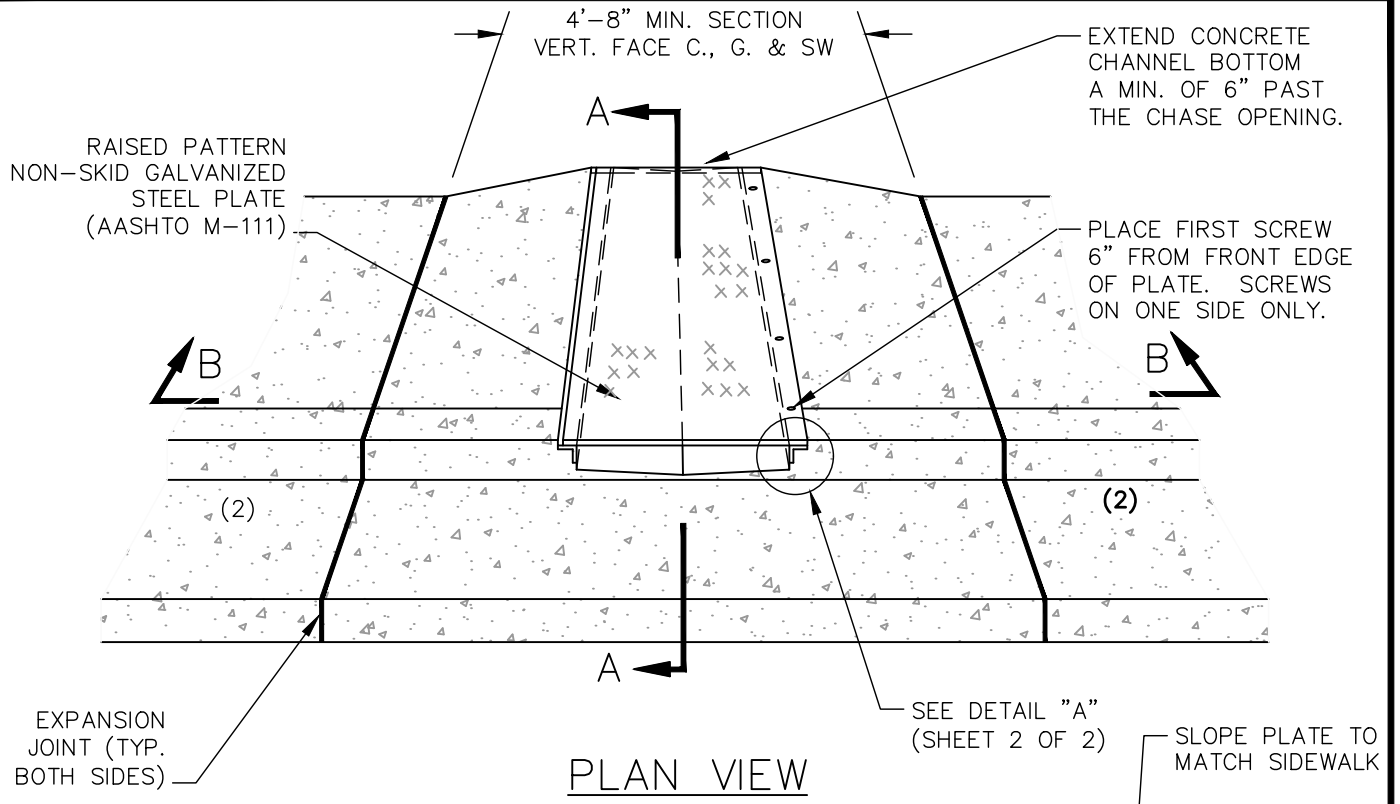


## CONCRETE JOINT DETAILS FOR SIDEWALKS, CURBS, GUTTERS AND CROSS PANS

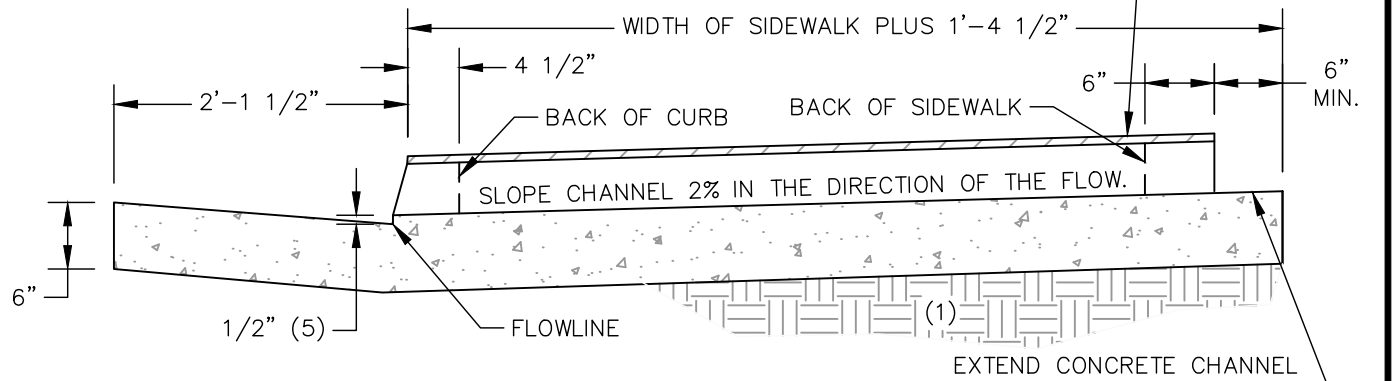
DETAIL NO. S-22

DATE: JULY, 2015

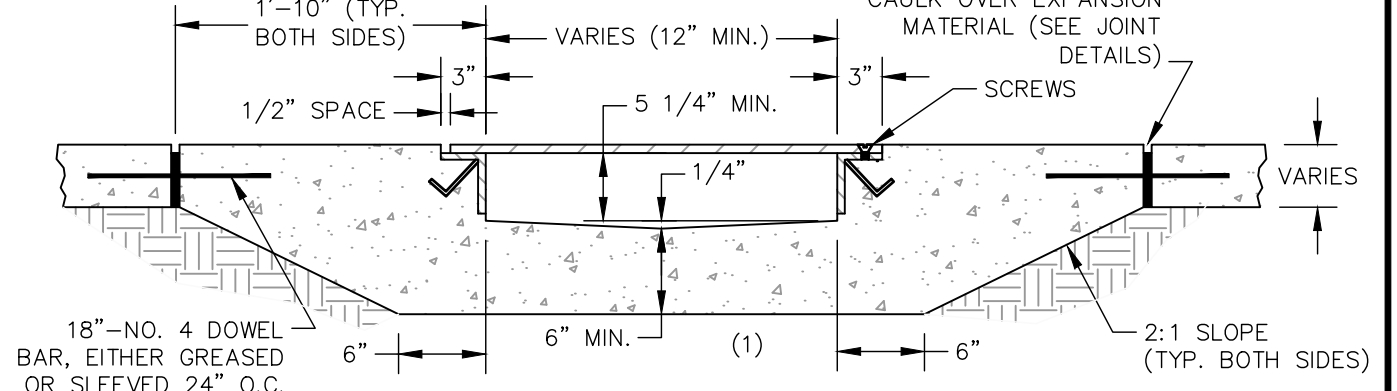
SCALE: N.T.S.



**PLAN VIEW**



**SECTION A-A**



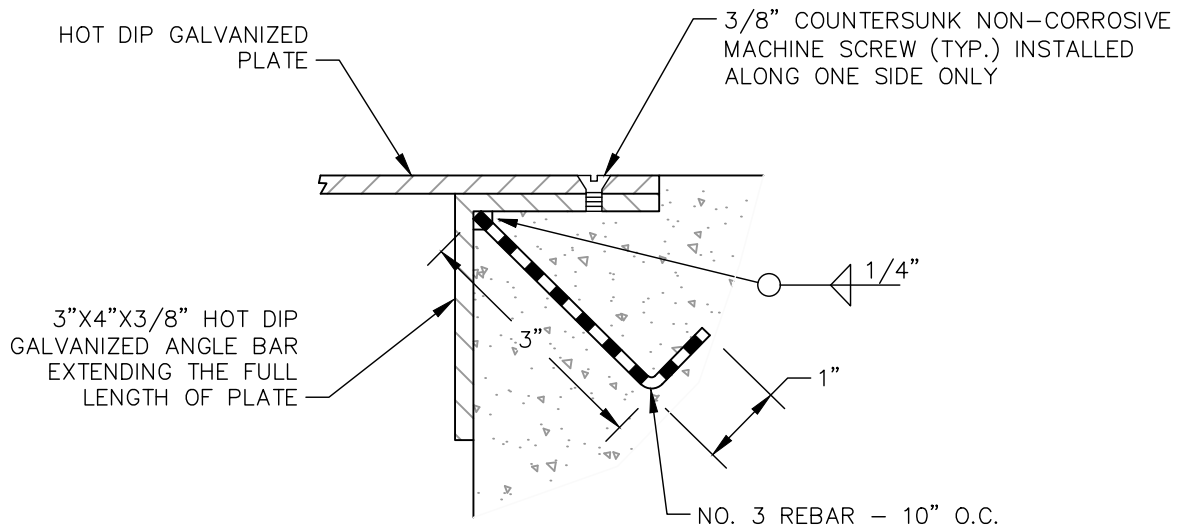
**SECTION B-B**



SIDEWALK CHASE FOR ATTACHED SIDEWALK  
 SHEET 1 OF 2  
 DETAIL NO. S-23-A

DATE: JULY, 2015

SCALE: N.T.S.



DETAIL "A"

| WIDTH OF OPENING | THREADPLATE THICKNESS |
|------------------|-----------------------|
| 12"–18"          | 9/16"                 |
| >18"–24"         | 5/8"                  |
| >24"             | SPECIAL DESIGN        |

NOTES:

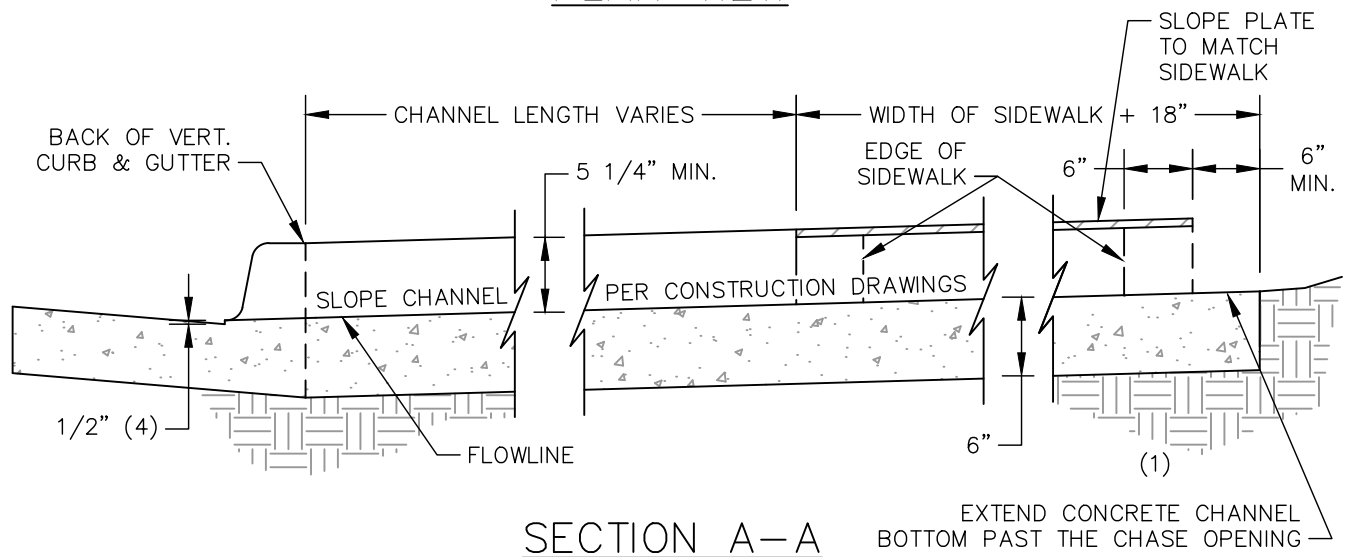
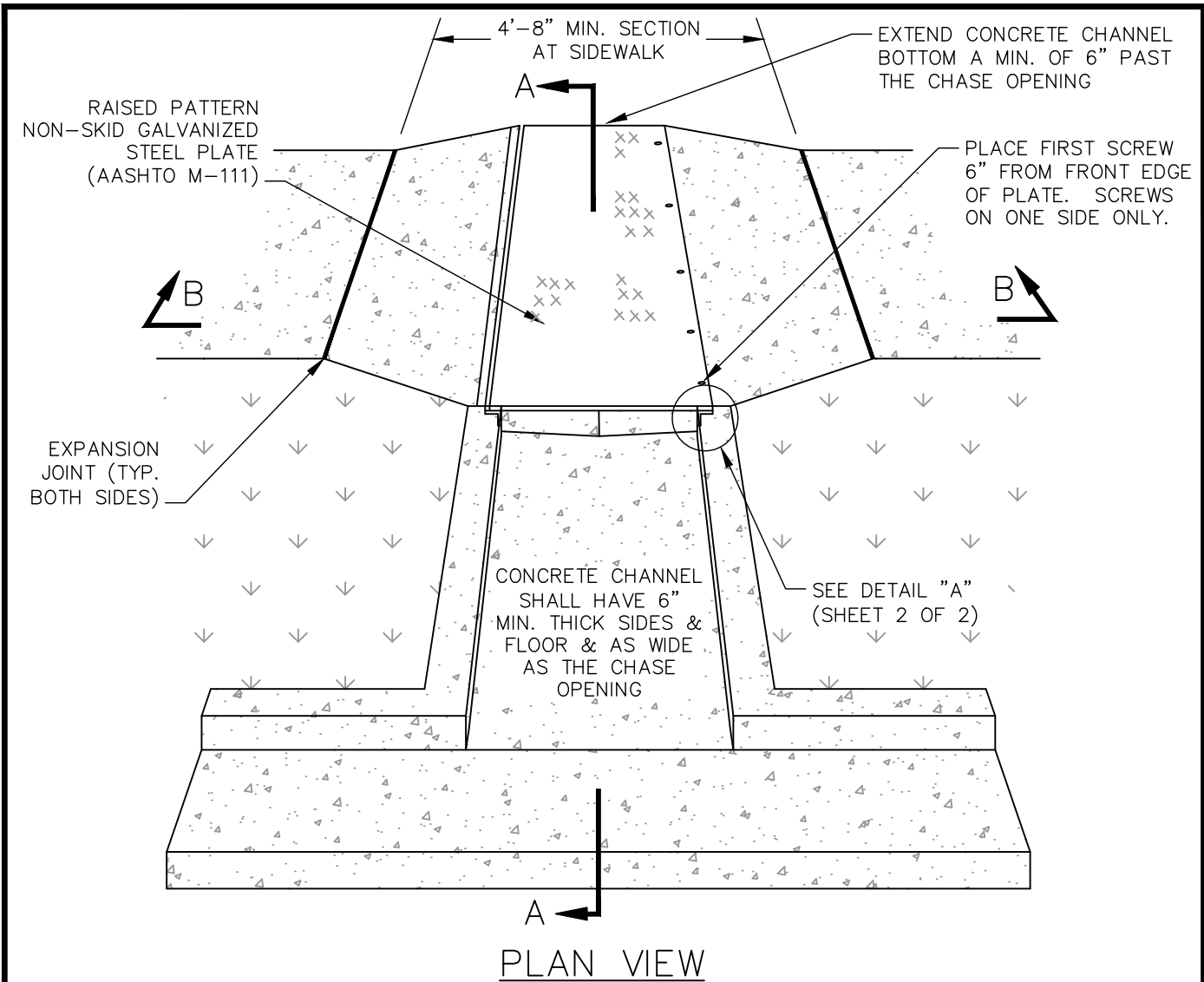
1. COMPACTED SUBGRADE (SEE SPECIFICATIONS).
2. FOR DRIVE OVER CURB, GUTTER AND SIDEWALK, TRANSITION (3' MIN.) TO A VERTICAL FACE CURB AND GUTTER FOR CHASE CONSTRUCTION. KEEP GUTTER WIDTH FOR DRIVE OVER.
3. NEENAH R-4999 SERIES BOLTED TRANSVERSE DRAINAGE STRUCTURE, SOLID CHECKERED TYPE D GRATE MAY BE SUBSTITUTED.
4. CONCRETE SURFACES TO RECEIVE A LIGHT BROOM FINISH.
5. ELIMINATE 1/2" FLOWLINE LIP WHEN STORMWATER DRAINS AWAY FROM THE GUTTER.



SIDEWALK CHASE FOR ATTACHED SIDEWALK  
SHEET 2 OF 2  
DETAIL NO. 2-23-A

DATE: JULY, 2015

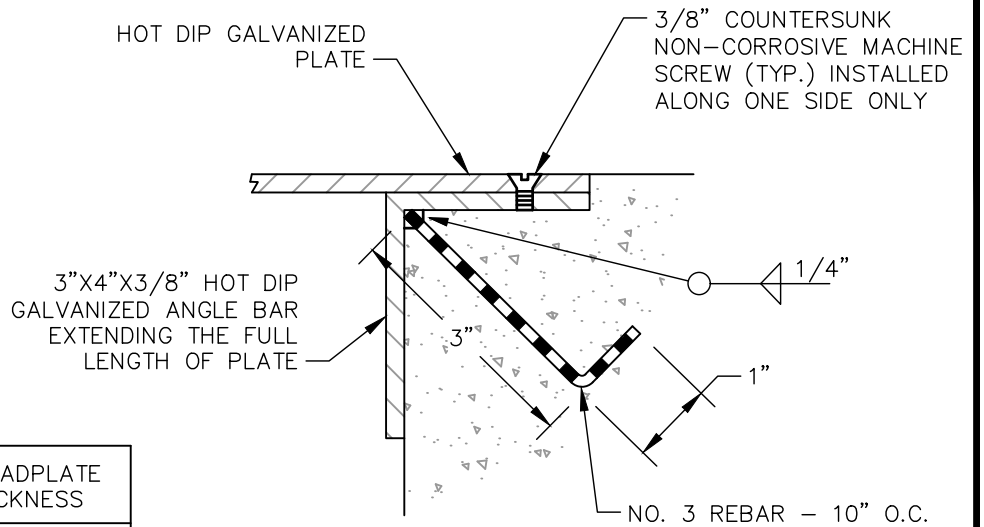
SCALE: N.T.S.



SIDEWALK CHASE FOR DETACHED SIDEWALK  
 SHEET 1 OF 2  
 DETAIL NO. S-23-D

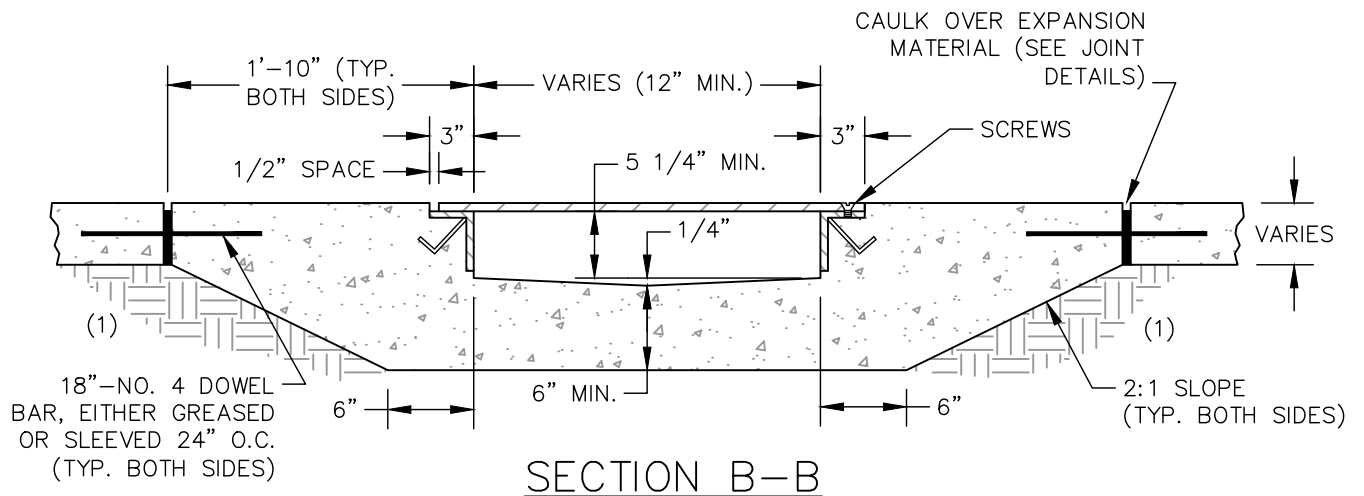
DATE: JULY, 2015

SCALE: N.T.S.



| WIDTH OF OPENING | THREADPLATE THICKNESS |
|------------------|-----------------------|
| 12"-18"          | 9/16"                 |
| >18"-24"         | 5/8"                  |
| >24"             | SPECIAL DESIGN        |

DETAIL "A"



SECTION B-B

NOTES:

1. COMPACTED SUBGRADE (SEE SPECIFICATIONS).
2. NEENAH R-4999 SERIES BOLTED TRANSVERSE DRAINAGE STRUCTURE, SOLID CHECKERED TYPE D GRATE MAY BE SUBSTITUTED.
3. CONCRETE SURFACES TO RECEIVE A LIGHT BROOM FINISH.
4. ELIMINATE 1/2" FLOWLINE LIP WHEN STORMWATER DRAINS AWAY FROM THE GUTTER.

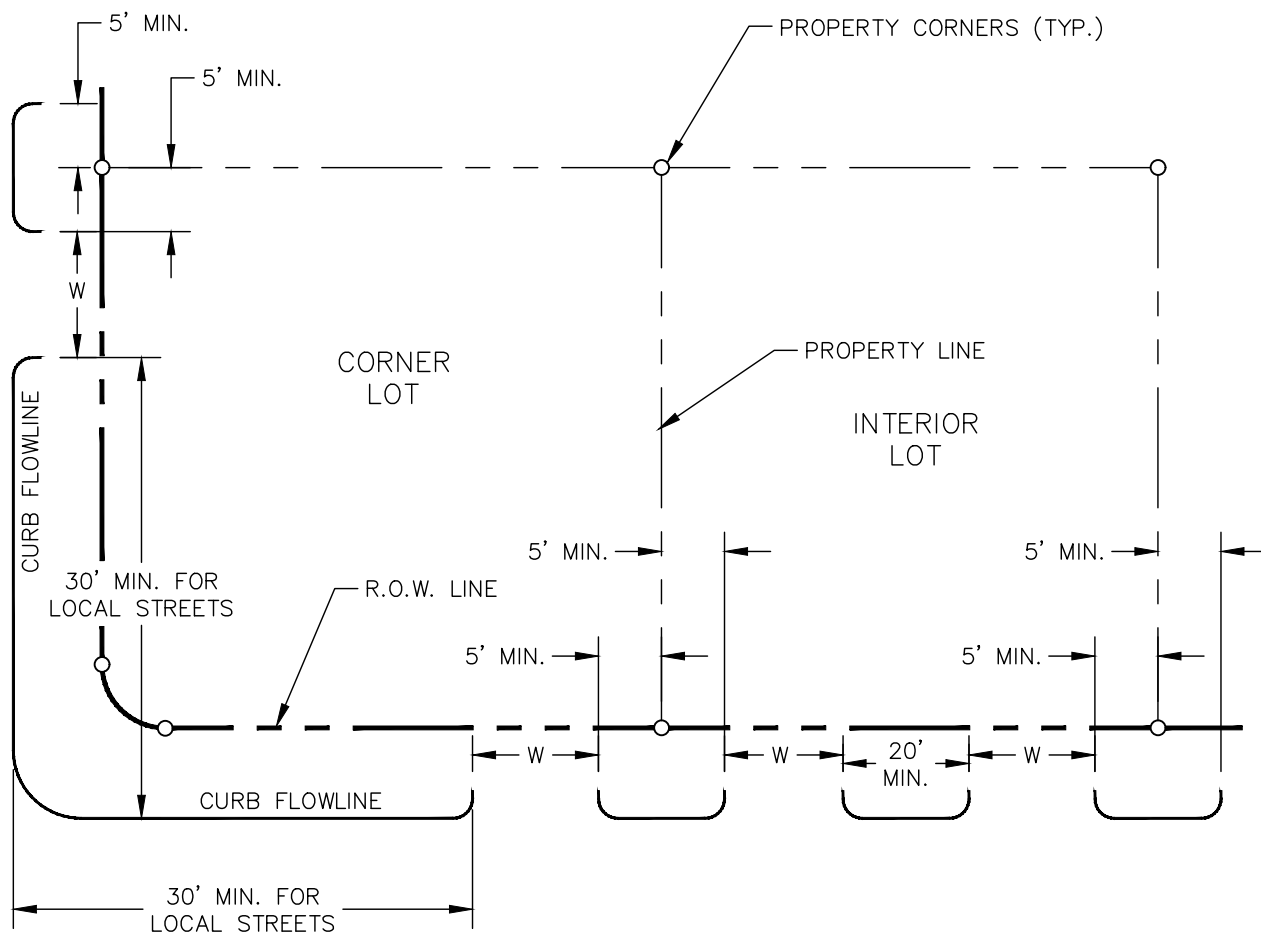


SIDEWALK CHASE FOR DETACHED SIDEWALK  
SHEET 2 OF 2  
DETAIL NO. S-23-D

DATE: JULY, 2015

SCALE: N.T.S.





NOTES:

1. FRONTAGES ON CUL-DE-SACS AND ODD SHAPED LOTS NEED SPECIAL REVIEW.
2. LOCATION OF CURB CUTS ADJACENT TO MINOR ARTERIALS AND MAJOR COLLECTORS WILL BE EVALUATED ON AN INDIVIDUAL BASIS BY THE ENGINEER.
3. DRIVEWAY WIDTHS (W) SHALL BE:  
 12' MINIMUM  
 36' MAXIMUM
4. THERE SHALL BE A MINIMUM OF TWENTY (20) FEET CLEAR SEPARATION BETWEEN DRIVEWAYS ON A SINGLE LOT.

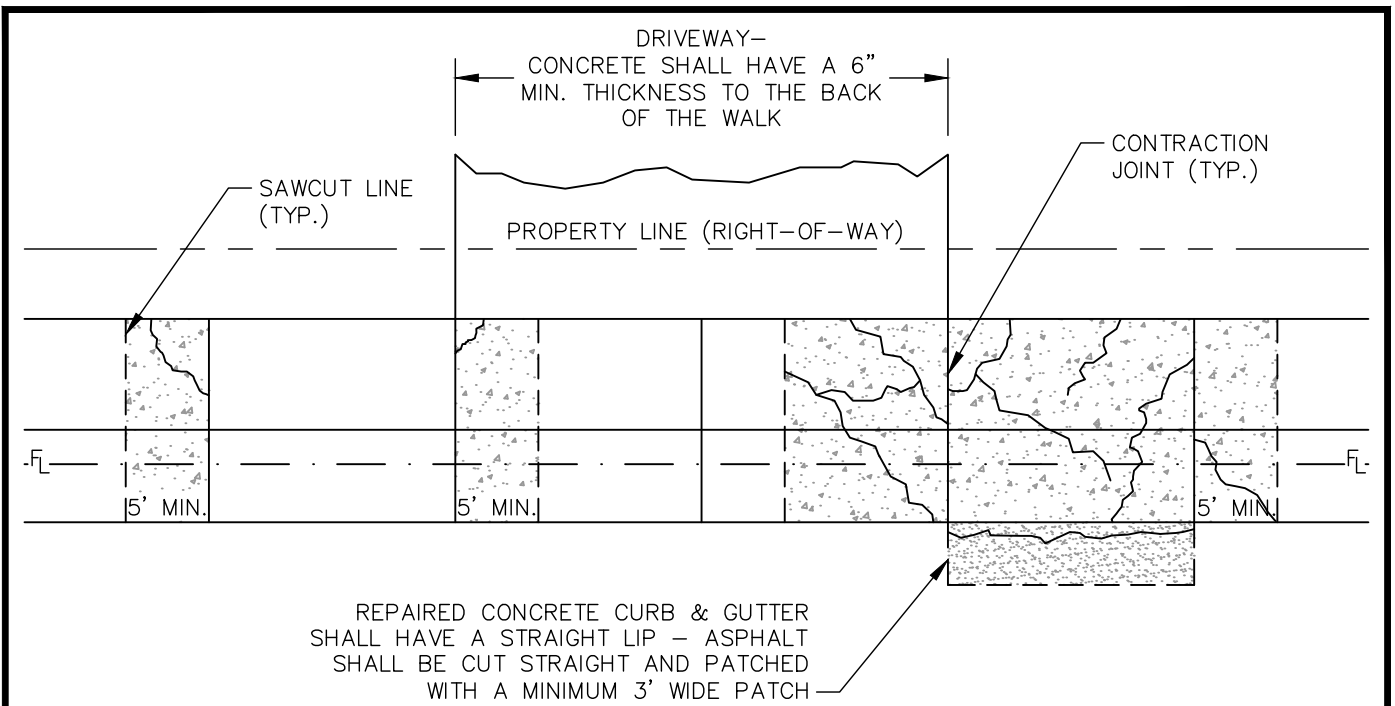


RESIDENTIAL CURB CUT LOCATION STANDARDS

DETAIL NO. S-24

DATE: JULY, 2015

SCALE: N.T.S.



#### NOTES:

1. THE FOLLOWING AREAS IN THE PUBLIC RIGHT-OF-WAY SHALL BE CONSIDERED FOR REPAIR:
  - SIDEWALK, CURB, AND/OR GUTTER ADJACENT TO ANY PUBLIC STREET.
  - DETACHED SIDEWALK ALONG ANY PUBLIC STREET.
  - SIDEWALK (CARRIAGE WALKS) BETWEEN THE DETACHED SIDEWALK AND ANY PUBLIC STREET.
  - DRIVEWAY APPROACHES BETWEEN THE DETACHED SIDEWALK AND ANY PUBLIC STREET.
2. FOR DRIVE OVER CURB, GUTTER & SIDEWALK, REPAIRS SHALL BE SAWCUT FROM THE BACK OF THE WALK TO THE LIP OF THE GUTTER AND NO LESS THAN 5' WIDE, AS SHOWN.
3. IN DRIVEWAYS, ALL BROKEN SECTIONS (WHICH MEET THE FOLLOWING CRITERIA FOR REPAIR) SHALL BE REPAIRED AS SHOWN WITH A MINIMUM 6" CONCRETE DEPTH.

#### CRITERIA FOR REPAIR OF CURB, GUTTER, SIDEWALK & DRIVE- WAY APPROACHES IN THE PUBLIC RIGHT-OF-WAY:

- A. TWO SECTIONS HAVING AN ELEVATION DIFFERENCE OF  $\frac{3}{4}$ ", OR GREATER, AT ANY LOCATION ALONG THE TOOLED JOINT OR CRACK.
- B. ANY SECTION WITH CRACKS  $\frac{1}{2}$ " IN WIDTH, OR GREATER.
- C. SPALLING (CRUMBLING OF CONCRETE SURFACE) OF DEPTHS GREATER THAN  $\frac{3}{4}$ ", OR ENCOMPASSING MORE THAN 50% OF THE CONCRETE SECTION.
- D. ANY PORTION OF A CONCRETE SECTION MISSING.
- E. SECTIONS DISPLACED FROM ORIGINAL GRADE AT MORE THAN A 12:1 SLOPE.

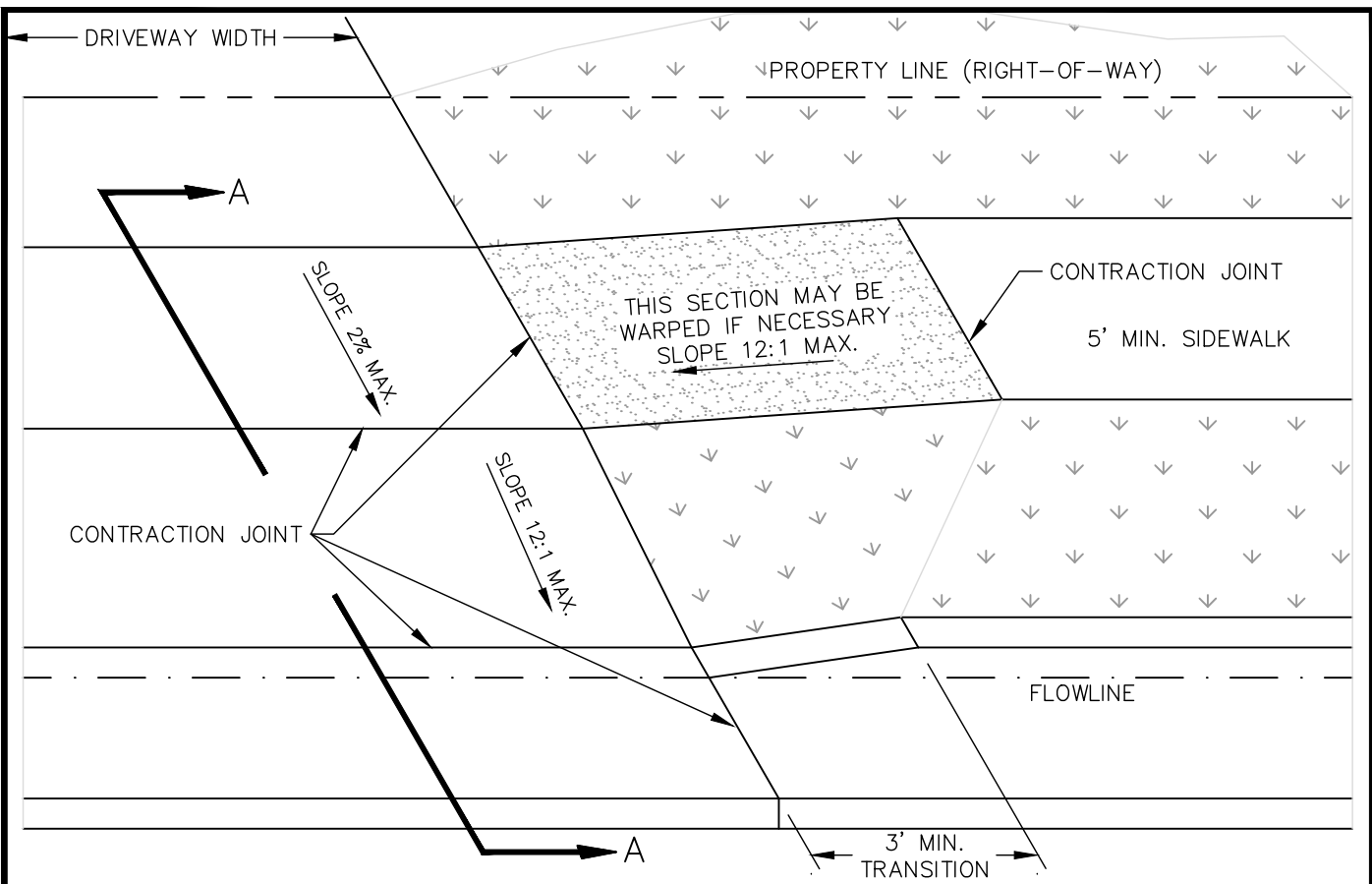


## CURB, GUTTER & SIDEWALK REPAIR DETAIL

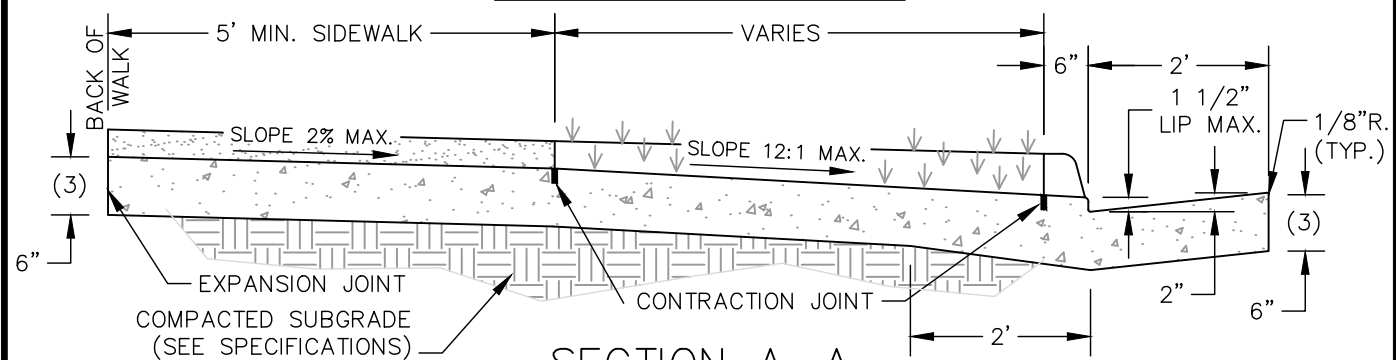
DETAIL NO. S-25

DATE: JULY, 2015

SCALE: N.T.S.



PERSPECTIVE VIEW



SECTION A-A

NOTES:

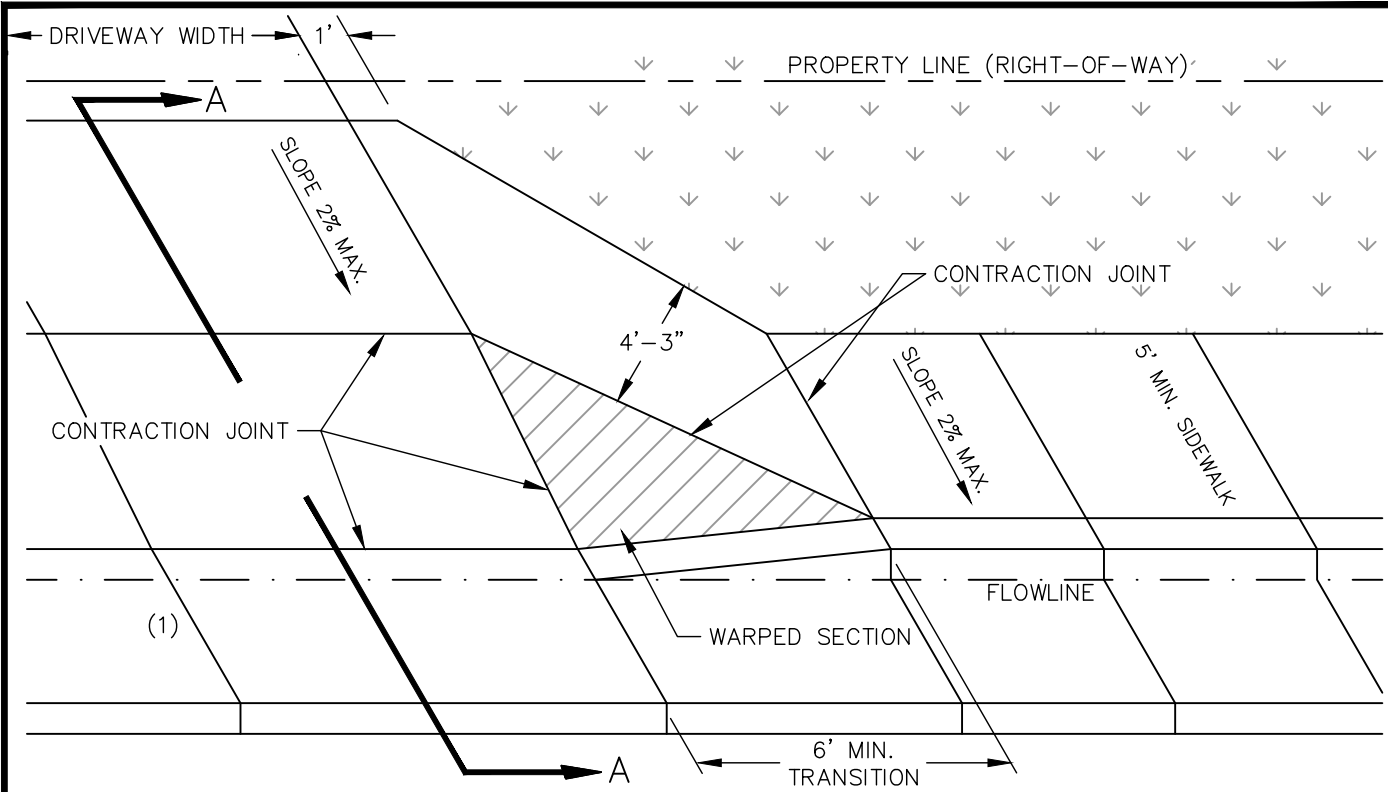
1. CONTRACTION JOINTS ARE REQUIRED AT EACH END OF WARPED SECTION AND SHOULD BE EVENLY SPACED A MAXIMUM OF 10' IN EITHER DIRECTION ALONG THE DRIVEWAY.
2. APPLY LIGHT BROOM FINISH TO SURFACES.
3. DRIVEWAY SECTION SHALL BE 6" THICK ON ALL RESIDENTIAL, MULTIFAMILY RESIDENTIAL, AND 8" THICK ON ALL COMMERCIAL, INDUSTRIAL AND ALLEY DRIVEWAYS.
4. DRIVEWAY WIDTHS: 12' MIN TO 36' MAX.
5. DRIVEWAY WIDTHS FOR COMMERCIAL/INDUSTRIAL AREAS SHALL BE APPROVED BY THE CITY.
6. SHOW DIMENSIONS AND LOCATIONS OF DRIVEWAY ON CONSTRUCTION PLANS.
7. CONSTRUCTION SHALL CONFORM TO ALL ADA STANDARDS FOR SIDEWALKS.
8. RETROFIT DRIVE APPROACHES SHALL MATCH EXISTING CONDITIONS EXCEPT CONCRETE THICKNESSES SHALL CONFORM TO THIS DETAIL. EXPANSION JOINT LOCATIONS SHALL BE APPROVED BY THE CITY.



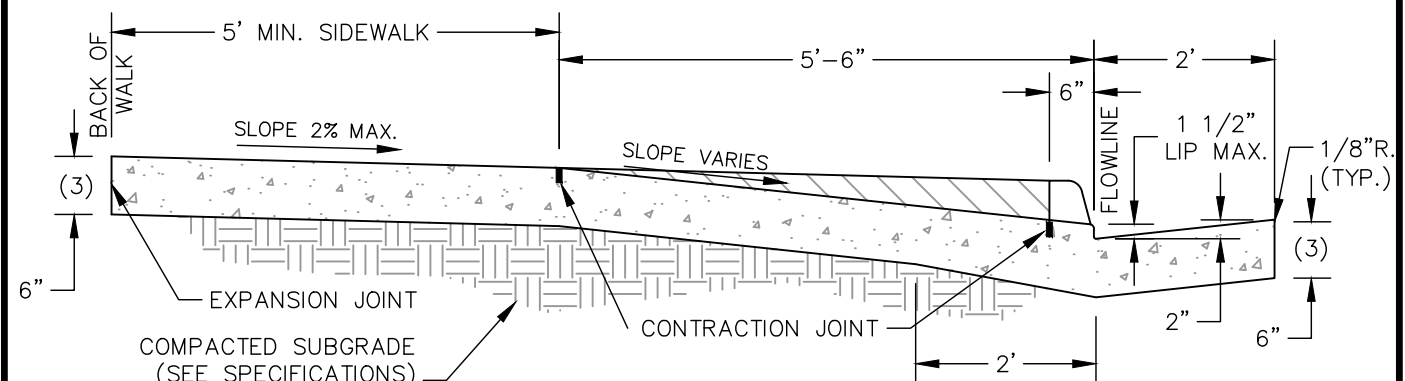
CONCRETE DRIVEWAY APPROACH FOR VERTICAL FACE CURB & GUTTER W/DETACHED SIDEWALK  
 DETAIL NO. S-26

DATE: JULY, 2015

SCALE: N.T.S.



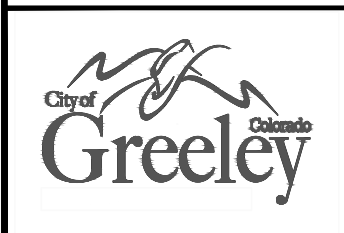
PERSPECTIVE VIEW



SECTION A-A

NOTES:

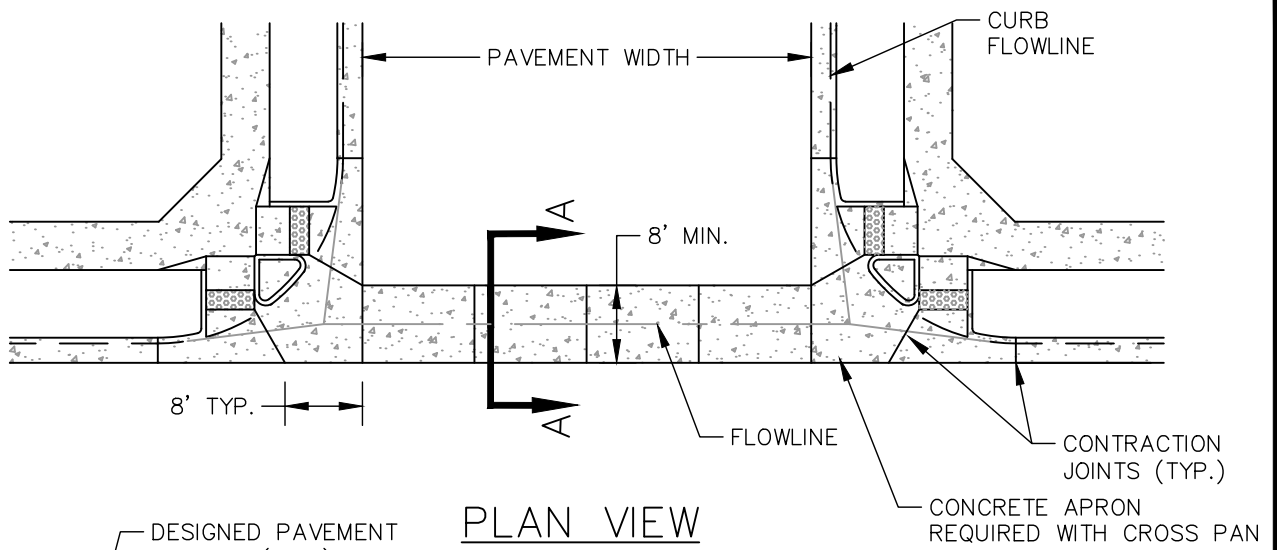
1. CONTRACTION JOINTS ARE REQUIRED AT EACH END OF WARPED SECTION AND SHOULD BE EVENLY SPACED A MAXIMUM OF 10' IN EITHER DIRECTION ALONG THE DRIVEWAY.
2. APPLY LIGHT BROOM FINISH TO SURFACES.
3. DRIVEWAY SECTION SHALL BE 6" THICK ON ALL RESIDENTIAL, MULTIFAMILY RESIDENTIAL, AND 8" THICK ON ALL COMMERCIAL, INDUSTRIAL AND ALLEY DRIVEWAYS.
4. DRIVEWAY WIDTHS: 12' MIN TO 36' MAX.
5. DRIVEWAY WIDTHS FOR COMMERCIAL/INDUSTRIAL AREAS SHALL BE APPROVED BY THE CITY.
6. SHOW DIMENSIONS AND LOCATIONS OF DRIVEWAY ON CONSTRUCTION PLANS.
7. CONSTRUCTION SHALL CONFORM TO ALL ADA STANDARDS FOR SIDEWALKS.
8. RETROFIT DRIVE APPROACHES SHALL MATCH EXISTING CONDITIONS EXCEPT CONCRETE THICKNESSES SHALL CONFORM TO THIS DETAIL. EXPANSION JOINT LOCATIONS SHALL BE APPROVED BY THE CITY.



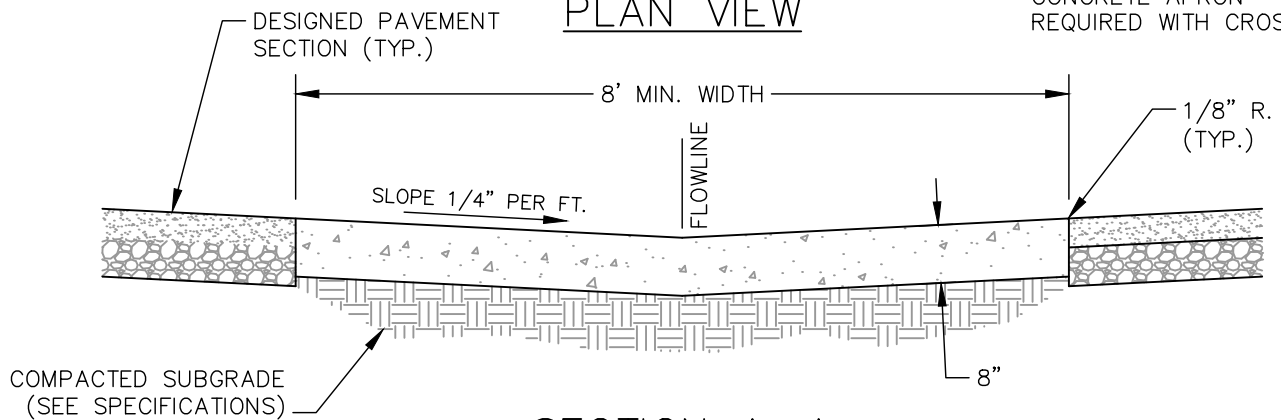
CONCRETE DRIVEWAY APPROACH FOR VERTICAL FACE CURB & GUTTER W/ATTACHED SIDEWALK  
 DETAIL NO. S-27

DATE: JULY, 2015

SCALE: N.T.S.



PLAN VIEW



SECTION A-A

NOTES:

1. MINIMUM OF 0.6% LONGITUDINAL SLOPE FOR CROSS PANS.
2. MAXIMUM SPACING OF CONTRACTION JOINTS – TEN (10) FEET.
3. CONCRETE APRON SHALL BE Poured MONOLITHICALLY WITH CURB AND SHALL BE 8" THICK (SEE CURB RAMP DETAILS).
4. CROSS PAN AND APRON MAY BE Poured MONOLITHICALLY OR IF Poured SEPARATELY SHALL BE DOWELLED TOGETHER.
5. SEE STREET DESIGN STANDARDS FOR PERMISSIBLE LOCATIONS OF CROSS PANS.
6. MID-BLOCK CROSS PANS SHALL BE A MINIMUM OF TEN (10) FEET WIDE.
7. LARGER WIDTHS MAY BE REQUIRED BY THE CITY.
8. DOWELING MAY BE REQUIRED AT CERTAIN COLD JOINTS AT THE CITY'S DIRECTION, BASED ON SPECIAL SUBGRADE CIRCUMSTANCES.
9. CONCRETE SURFACES TO RECEIVE A LIGHT BROOM FINISH.

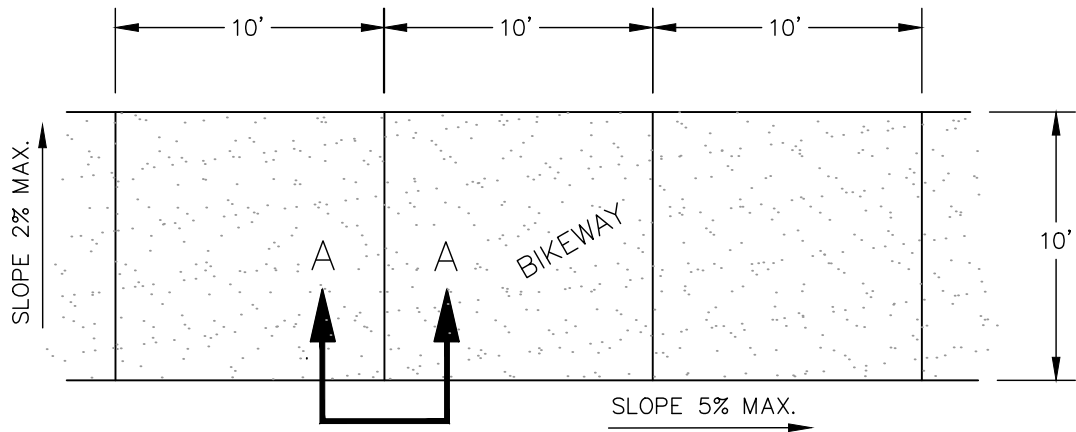


CONCRETE CROSS PAN DETAIL

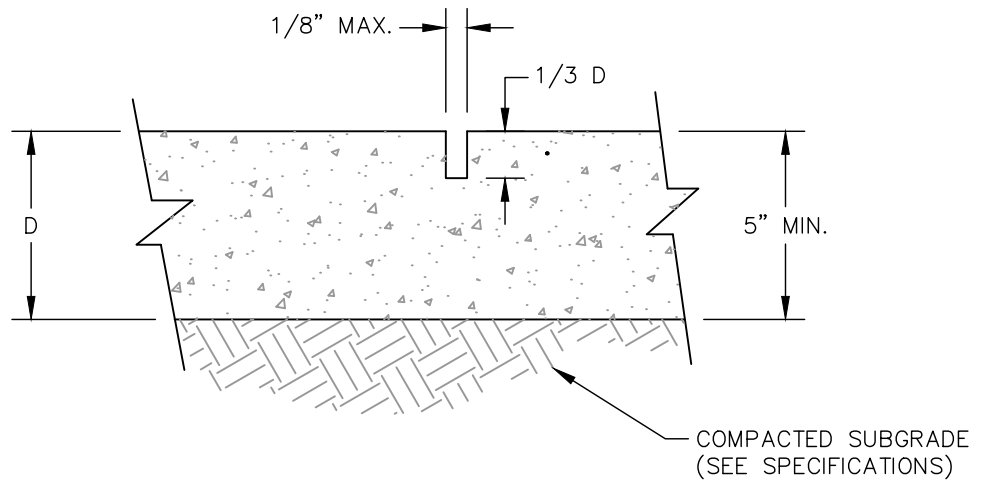
DETAIL NO. S-28

DATE: JULY, 2015

SCALE: N.T.S.



PLAN VIEW



SECTION A-A

NOTES:

1. SAWCUT, REMOVABLE PLASTIC DUMMY JOINT STRIPS OR OTHER APPROVED JOINTS AT 10' O.C.
2. EXPANSION JOINTS REQUIRED AT 200 FOOT SPACING AND ADDITIONAL JOINTS MAY BE REQUIRED AT THE DISCRETION OF THE CITY. SEE JOINT DETAILS.
3. CONCRETE SHALL BE FIBER REINFORCED AS APPROVED BY THE CITY.
4. BIKE PATHS WITH GREATER THAN 5% SLOPE SHALL REQUIRE A SPECIAL DESIGN AND MUST COMPLY WITH ALL ADA REQUIREMENTS.
5. CONCRETE SURFACES TO RECEIVE A LIGHT BROOM FINISH.

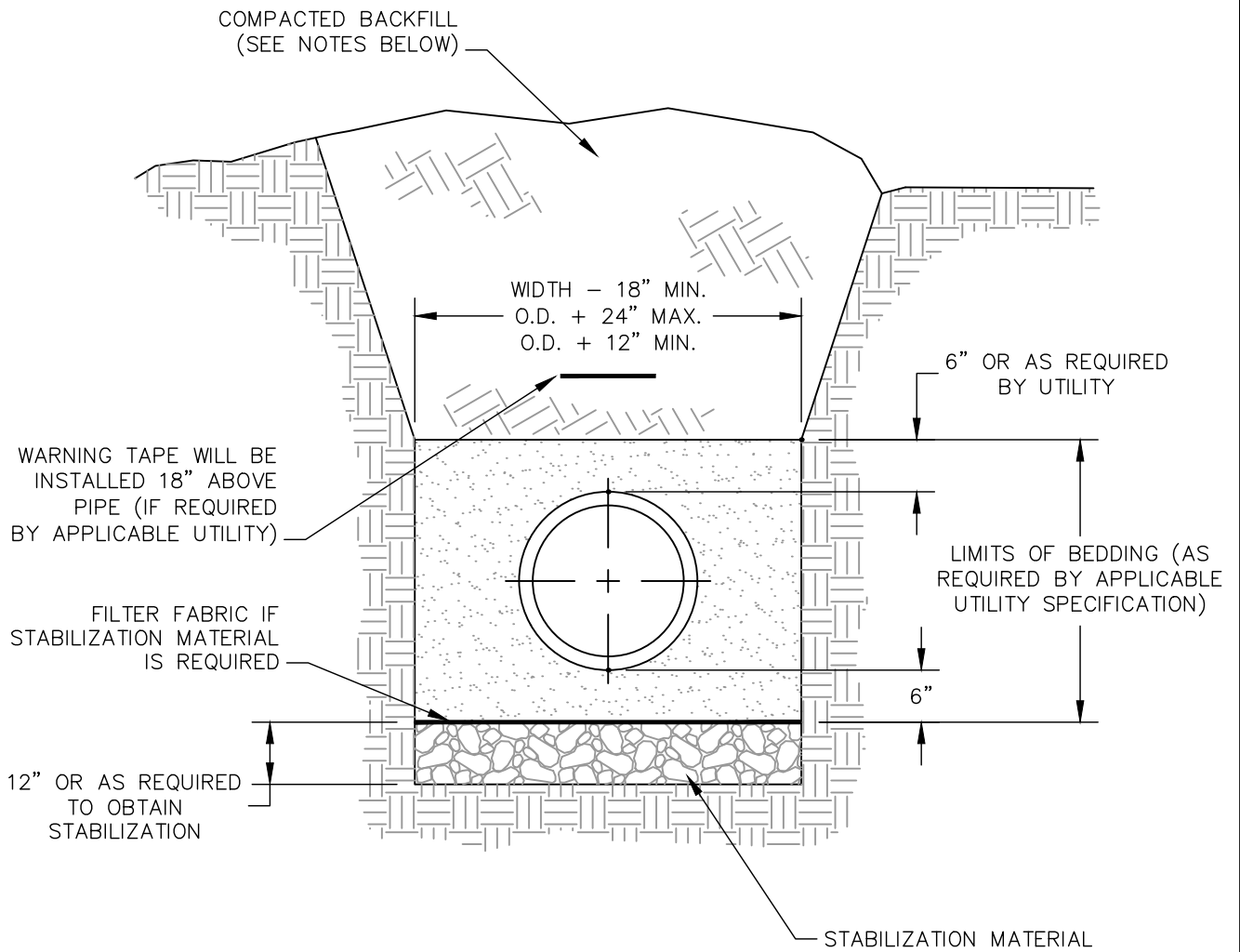


BIKEWAY DETAIL

DETAIL NO. S-29

DATE: JULY, 2015

SCALE: N.T.S.



NOTES:

1. RIGHT-OF-WAY AND EASEMENT AREAS SHALL BE GRADED (CUT AND FILL) TO SUBGRADE (+/-0.5') PRIOR TO AND AFTER UTILITY INSTALLATION.
2. BACKFILL WITHIN PUBLIC RIGHT-OF-WAY AND IN EASEMENTS WITHIN 20 FEET OF RIGHT-OF-WAY SHALL BE COMPACTED TO 95% WITHIN +/- 2% OF OPTIMUM MOISTURE CONTENT AS DETERMINED BY AASHTO T99 DENSITY. TRENCHES IN EASEMENTS BEYOND 20 FEET OF RIGHT-OF-WAY SHALL BE COMPACTED TO 90%. ALL TRENCHES SHALL BE COMPACTED BY A METHOD APPROVED BY THE CITY.
3. TRENCH EXCAVATION SHALL COMPLY TO ALL OSHA STANDARDS.
4. FILTER FABRIC IS REQUIRED IF STABILIZATION MATERIAL IS USED. THE FABRIC SHALL BE INSTALLED AS SHOWN IN THE DETAIL.
5. IF NOT SPECIFIED BY APPLICABLE UTILITY, AN APPROVED GRADE OF SAND BEDDING SHALL BE INSTALLED TO SPRINGLINE.



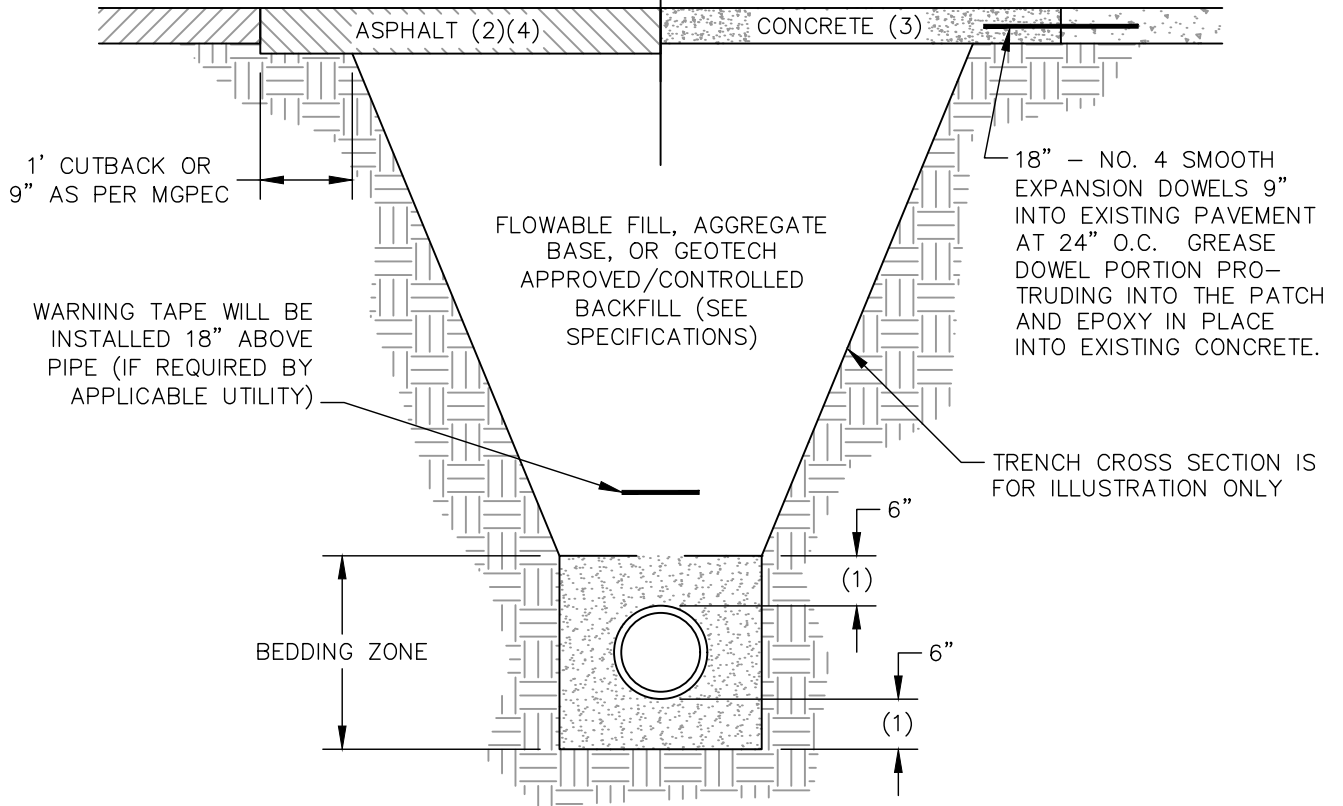
NEW DEVELOPMENT TRENCH EXCAVATION  
& BACKFILL DETAIL  
DETAIL NO. S-30

DATE: JULY, 2015

SCALE: N.T.S.

## TRENCH PATCH FOR ASPHALT PAVEMENT

## TRENCH PATCH FOR CONCRETE PAVEMENT



|                        | LOCAL STANDARD & LOCAL LOW VOLUME |              |             | MAJOR LOCAL, COMMERCIAL & INDUSTRIAL | COLLECTOR | ARTERIAL |
|------------------------|-----------------------------------|--------------|-------------|--------------------------------------|-----------|----------|
|                        | ALLEY                             | EMER. ACCESS | RESIDENTIAL |                                      |           |          |
| FULL DEPTH ASPHALT (4) | 5 1/2"                            | 5 1/2"       | 5 1/2"      | 7"                                   | 7"        | 7"       |

### NOTES:

1. USE THE LIMITS OF BEDDING SHOWN IF NOT SPECIFIED BY THE APPLICABLE UTILITY.
2. HOT MIX ASPHALT SHALL BE USED TO PATCH ASPHALT AND SHALL BE GRADE S OR SX. TACK COAT REQUIRED.
3. CONCRETE SHALL BE USED TO PATCH CONCRETE. MATCH EXISTING THICKNESS.
4. FULL DEPTH ASPHALT SHALL BE THICKNESSES AS SHOWN ABOVE OR ONE (1) INCH GREATER THAN THE EXISTING PAVEMENT THICKNESS, WHICHEVER IS GREATER.
5. PATCH MAY NOT END WITHIN THE WHEEL TRACK OF TRAVEL LANES. UP TO THREE (3) FEET OF ADDITIONAL ASPHALT PATCH WILL BE REQUIRED TO KEEP THE JOINT OUT OF THE WHEEL TRACK.
6. MINIMUM SIZE OF PATCH SHALL BE 3' X 3'.



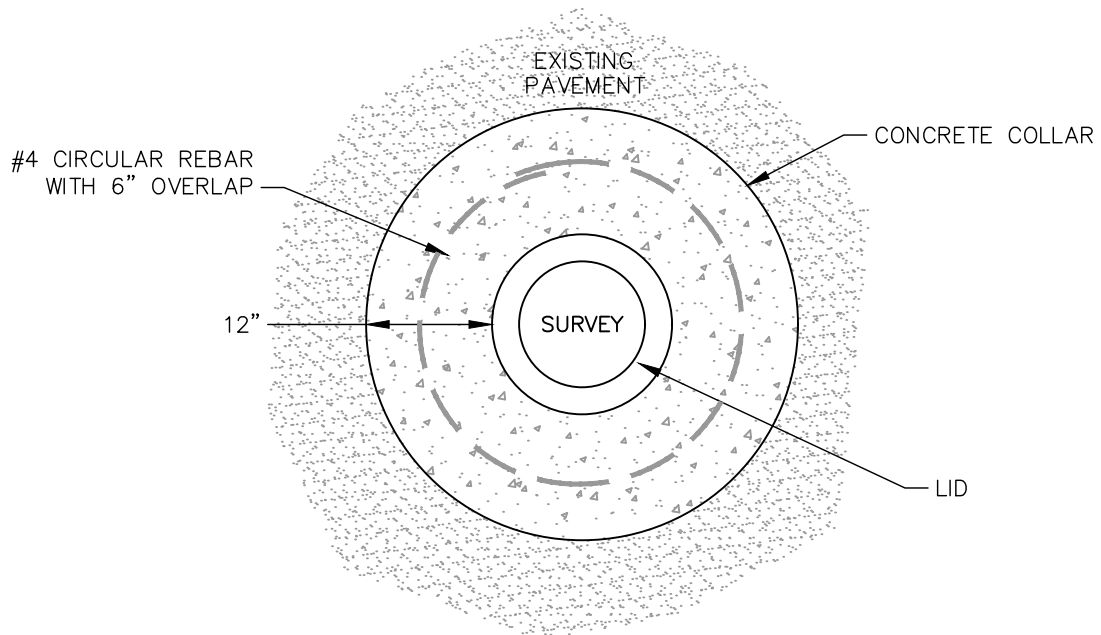
## EXISTING STREET PAVEMENT PATCH DETAIL FOR ASPHALT & CONCRETE

DETAIL NO. S-31

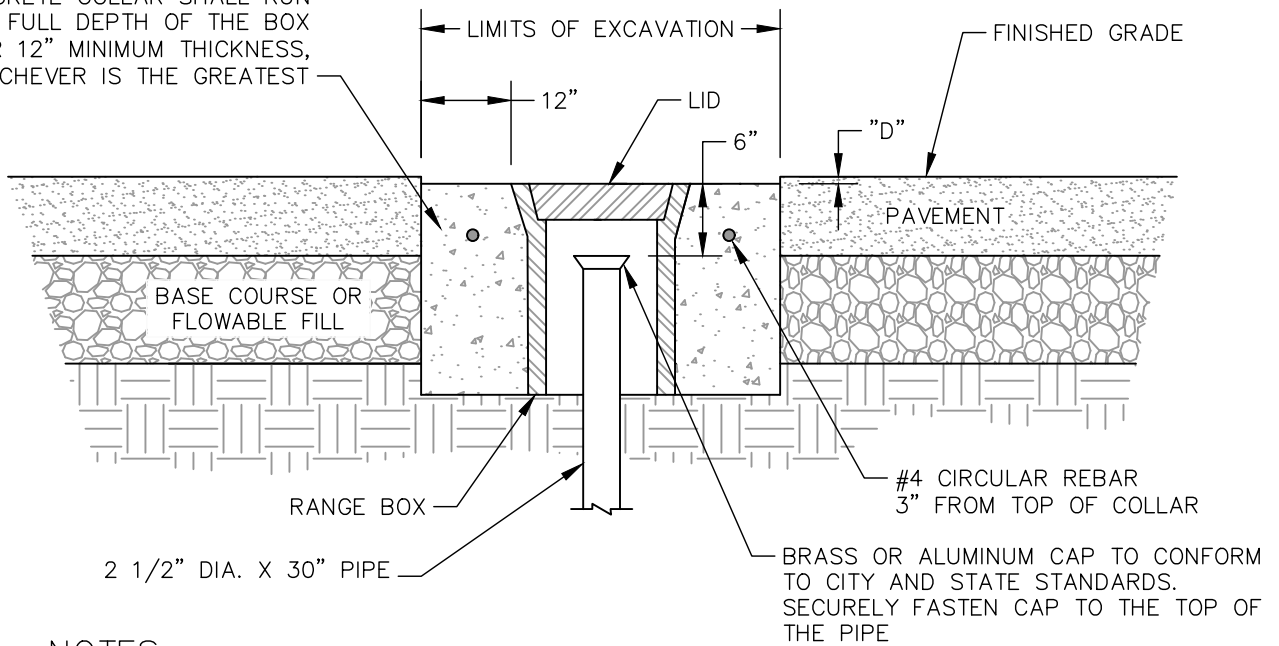
DATE: JULY, 2015

SCALE: N.T.S.





CONCRETE COLLAR SHALL RUN THE FULL DEPTH OF THE BOX OR 12" MINIMUM THICKNESS, WHICHEVER IS THE GREATEST



NOTES:

1. "D" = 1/2" FOR HOT MIX ASPHALT PAVEMENT OVERLAYS, SURFACE TREATMENTS, PAVEMENT RECONSTRUCTION OR NEW CONSTRUCTION.
2. "D" = 1/4" FOR CONCRETE STREETS.
3. THIS MONUMENT TO BE INSTALLED AT ALL ALIQUOT CORNERS.
4. SURVEY MONUMENTS SHALL CONFORM TO ALL LAND SURVEYING REQUIREMENTS AS DETERMINED BY CITY AND STATE STANDARDS.
5. RANGE BOX, CAP AND MONUMENT PIPE TO BE PURCHASED FROM THE CITY OF GREELEY.

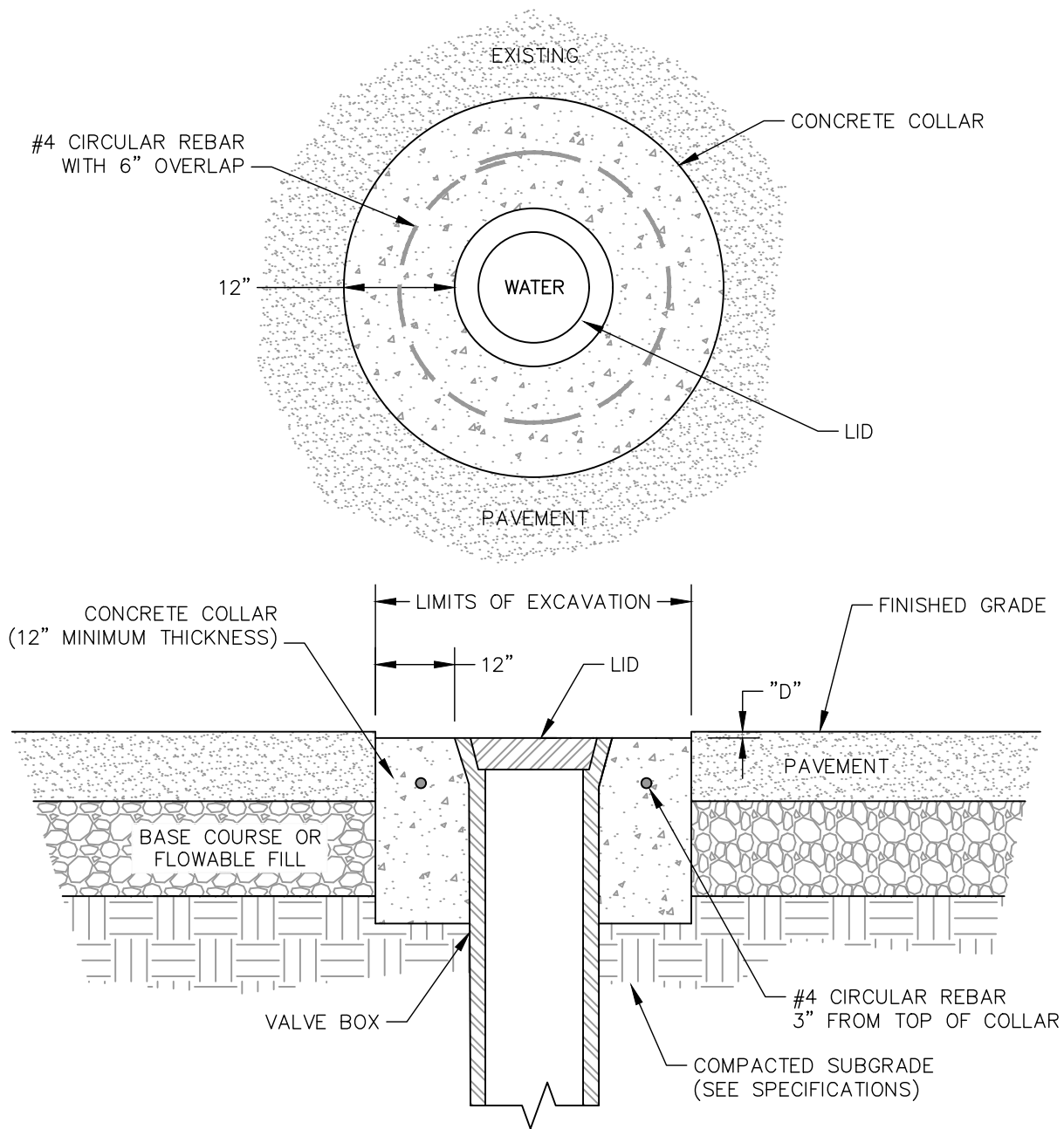


SURVEY MONUMENT IN PAVEMENT

DETAIL NO. S-32

DATE: JULY, 2015

SCALE: N.T.S.



NOTES:

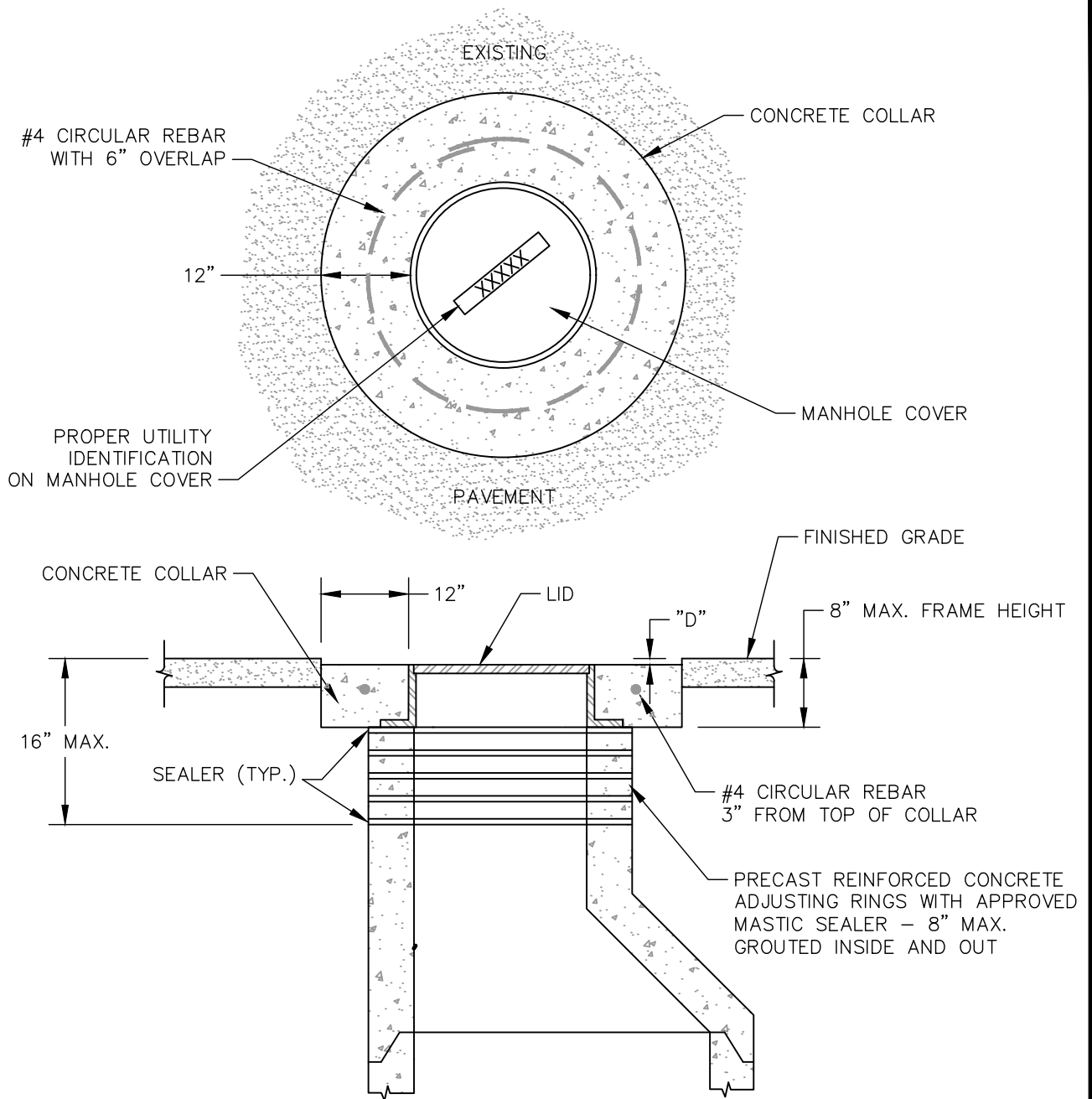
1. "D" = 1/4" FOR HOT MIX ASPHALT PAVEMENT OVERLAYS, SURFACE TREATMENTS, PAVEMENT RECONSTRUCTION OR NEW CONSTRUCTION.
2. "D" = 1/4" FOR CONCRETE STREETS.
3. VALVE BOX MUST BE PLUMB AND CENTERED OVER THE VALVE NUT.
4. THIS DETAIL APPLIES TO BOTH ASPHALT AND CONCRETE STREETS.



WATER VALVE DETAIL  
FOR RAISING TO FINISHED GRADE  
DETAIL NO. S-33

DATE: JULY, 2015

SCALE: N.T.S.



NOTES:

1. "D" = 1/4" FOR HOT MIX ASPHALT PAVEMENT OVERLAYS, SURFACE TREATMENTS, PAVEMENT RECONSTRUCTION OR NEW CONSTRUCTION.
2. "D" = 1/4" FOR CONCRETE STREETS.
3. A SEALER SHALL BE USED BETWEEN ALL ADJUSTING RINGS AS REQUIRED.
4. DROP-IN RISER RINGS NOT ALLOWED.
5. SET AND TILT RING AND COVER TO MATCH SLOPE OF FINISHED STREET.



MANHOLE RAISING DETAIL

DETAIL NO. S-34

DATE: JULY, 2015

SCALE: N.T.S.

6th St 4000 →

← 4000 6th St

26th Ave 2000 →

← 2000 26th Ave

40th Ave Ct 2000 →

← 2000 40th Ave Ct

Buena Vista Rd 2000 →

← 2000 Buena Vista Rd

NOTES:

1. HIGHWAY FONT SERIES D OR APPROVED EQUIVALENT SHALL BE USED FOR NUMERALS.
2. HIGHWAY FONT SERIES C OR APPROVED EQUIVALENT SHALL BE USED FOR LETTERING. IN SOME CASES THE LETTER SERIES MAY VARY DEPENDING ON NUMBER OF LETTERS OR NUMBERS IN THE STREET NAME.
3. STROKE WIDTH OF LETTERS SHOWN ON THIS DRAWING IS FOR ILLUSTRATIVE PURPOSE ONLY AND IS NOT INTENDED TO REPRESENT CORRECT STROKE WIDTH FOR SPECIFIED LETTER SERIES OR LETTER TO LETTER SPACING.



STREET NAME SIGN LAYOUT  
D3

DETAIL NO. S-35

DATE: JULY, 2015

SCALE: N.T.S.

FRONT VIEW



REAR VIEW



NOTES:

1. HIGHWAY FONT SERIES D OR APPROVED EQUIVALENT SHALL BE USED FOR NUMERALS.
2. HIGHWAY FONT SERIES C OR APPROVED EQUIVALENT SHALL BE USED FOR LETTERING. IN SOME CASES THE LETTER SERIES MAY VARY DEPENDING ON NUMBER OF LETTERS OR NUMBERS IN THE STREET NAME.
3. STROKE WIDTH OF LETTERS SHOWN ON THIS DRAWING IS FOR ILLUSTRATIVE PURPOSE ONLY AND IS NOT INTENDED TO REPRESENT CORRECT STROKE WIDTH FOR SPECIFIED LETTER SERIES OR LETTER TO LETTER SPACING.

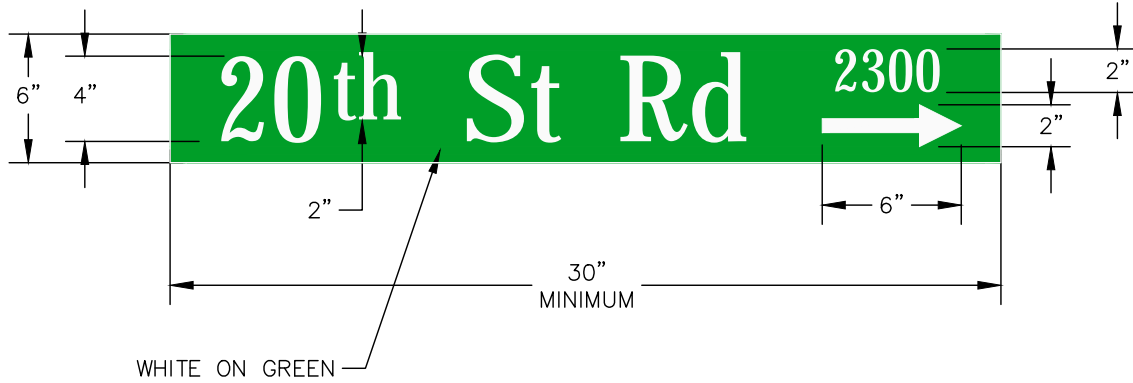


COMBINATION STREET NAME/NO OUTLET SIGN  
 W14-1P/D3 SPECIAL  
 DETAIL NO. S-36

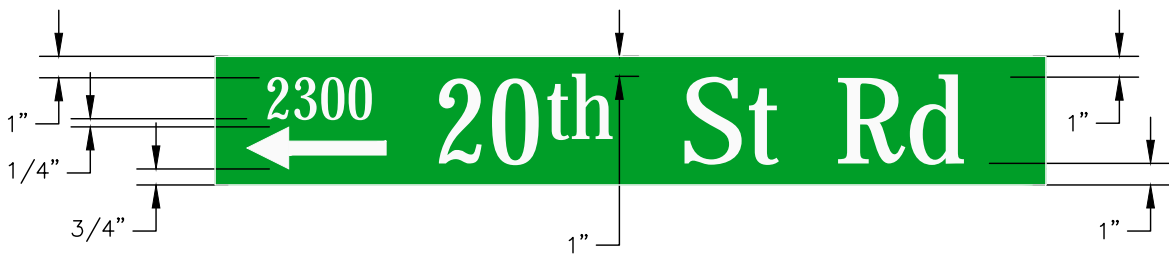
DATE: JULY, 2015

SCALE: N.T.S.

FRONT VIEW



REAR VIEW



NOTES:

1. HIGHWAY FONT SERIES D OR APPROVED EQUIVALENT SHALL BE USED FOR NUMERALS.
2. HIGHWAY FONT SERIES C OR APPROVED EQUIVALENT SHALL BE USED FOR LETTERING. IN SOME CASES THE LETTER SERIES MAY VARY DEPENDING ON NUMBER OF LETTERS OR NUMBERS IN THE STREET NAME.
3. STROKE WIDTH OF LETTERS SHOWN ON THIS DRAWING IS FOR ILLUSTRATIVE PURPOSE ONLY AND IS NOT INTENDED TO REPRESENT CORRECT STROKE WIDTH FOR SPECIFIED LETTER SERIES OR LETTER TO LETTER SPACING.



STREET NAME SIGN

D3

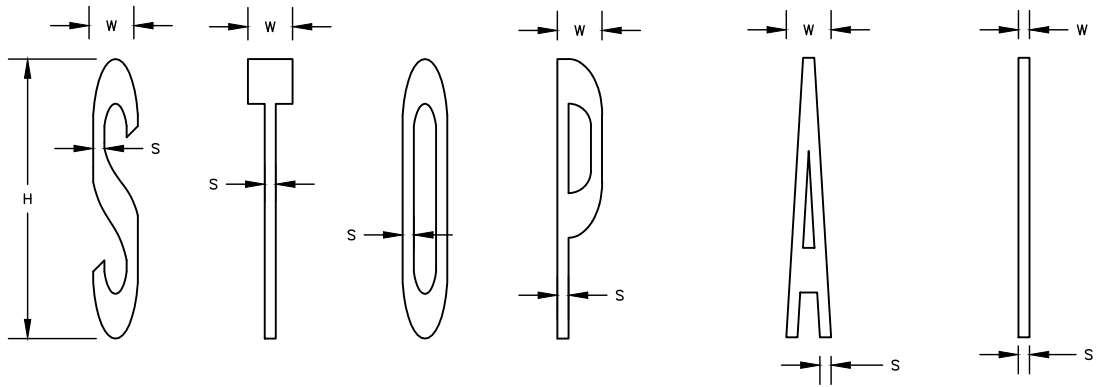
DETAIL NO. S-37

DATE: JULY, 2015

SCALE: N.T.S.

# PAVEMENT MARKING WORDS

## TYPICAL LETTER MEASUREMENTS



W = S  
FOR THE  
LETTER I  
ONLY

H = HEIGHT

H = 10'

H = 8'

H = 4'

W = WIDTH

W = 1'-7.3" TO 20'

W = 1'-3.4" TO 1'-4"

W = 7.7" TO 8"

S = STROKE

S = 4.8' TO 5'

S = 3.8" TO 4"

S = 1.9" TO 2"

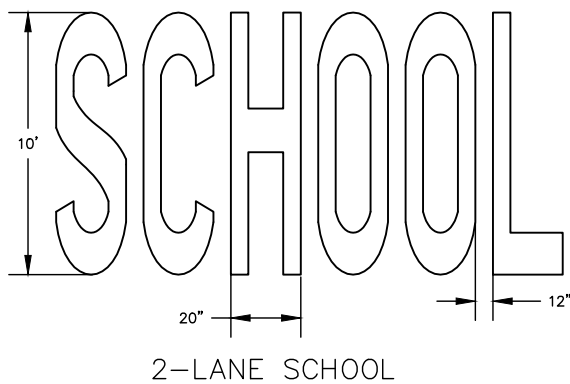
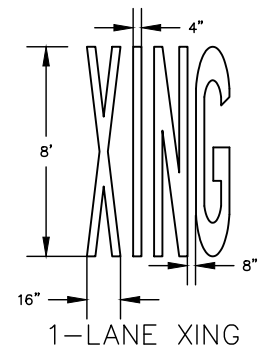
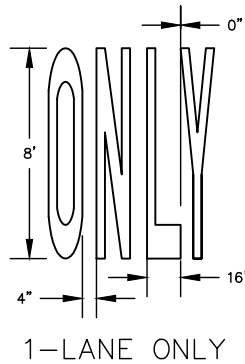
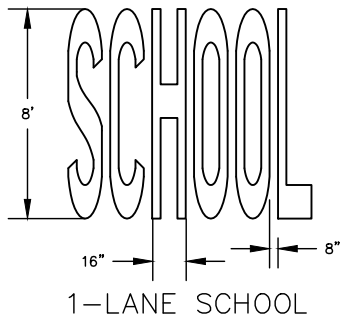
GENERAL  
GUIDELINES FOR  
LETTER SIZE:

UTILIZE 10'  
LETTERS WHEN  
MARKING ACROSS  
2 TRAFFIC LANES

UTILIZE 8'  
LETTERS  
WHEN MARKING  
ACROSS 1 TRAFFIC  
LANE

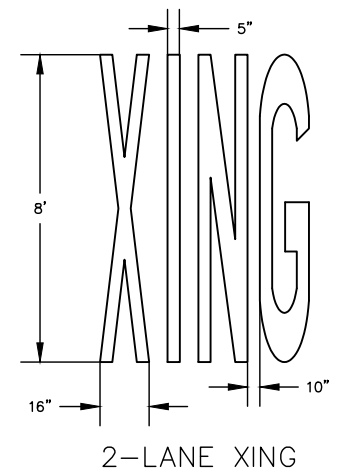
UTILIZE 4'  
LETTERS  
WHEN MARKING  
ACROSS SIDEWALK  
OR BIKE LANE

## TYPICAL LETTER SPACING



LETTER SPACING MAY BE  
INCREASED OR REDUCED  
ACCORDING TO WIDTH OF  
LANES

WORDS SHOULD BE  
CENTERED WITH  
CONSISTENT LETTER  
SPACING.



## TYPICAL PAVEMENT MARKINGS

SHEET 1 OF 3

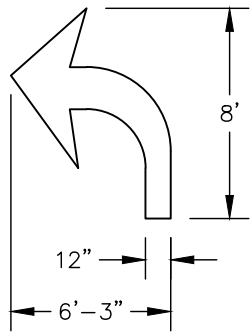
DETAIL NO. S-38

DATE: JULY, 2015

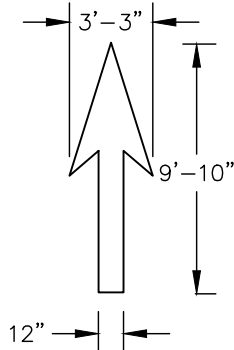
SCALE: N.T.S.

# PAVEMENT MARKING SYMBOLS

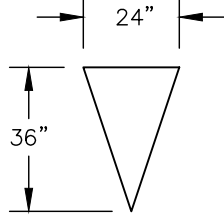
## TURN ARROW



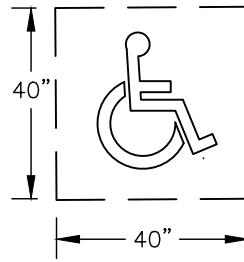
## STRAIGHT ARROW



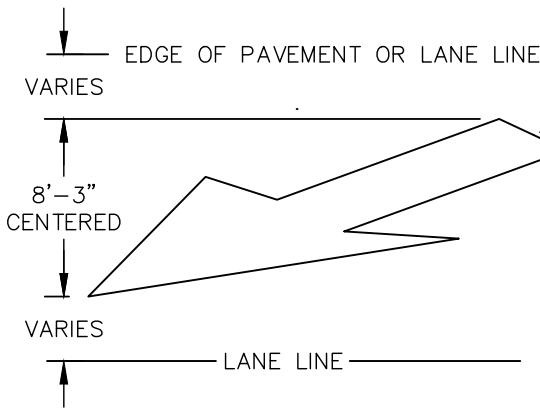
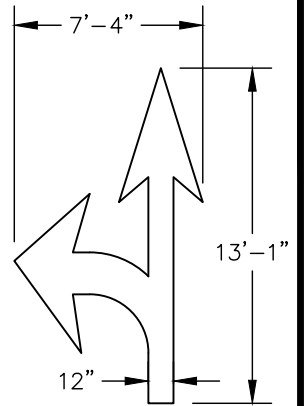
## SHARKS TOOTH



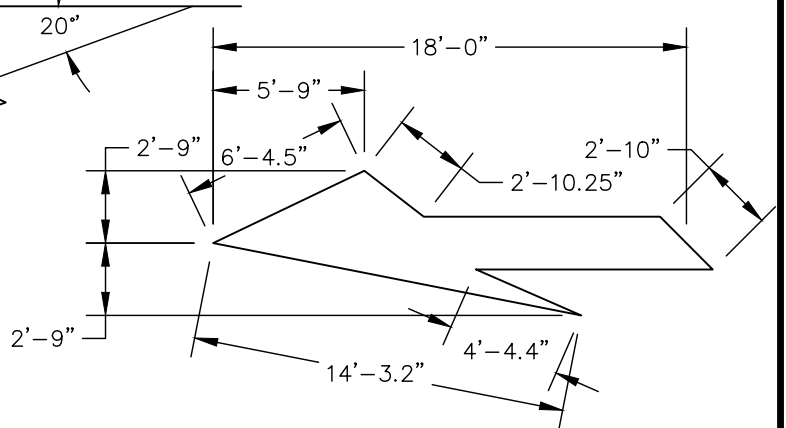
## HANDICAP



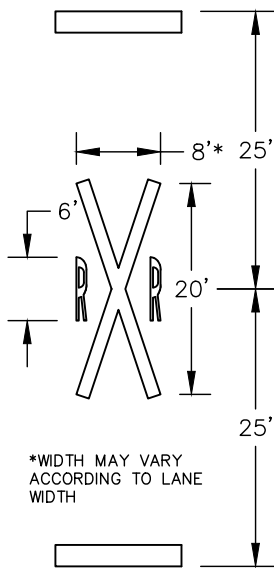
## COMBI-ARROW



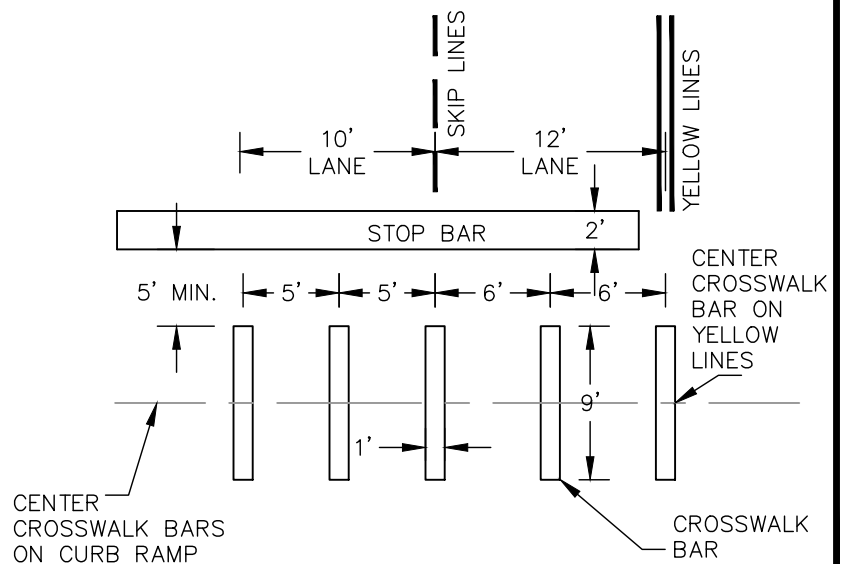
## LANE-REDUCTION ARROW



## RAILROAD MARKINGS



## STOP AND CROSSWALK BARS



## TYPICAL PAVEMENT MARKINGS

SHEET 2 OF 3

DETAIL NO. S-38

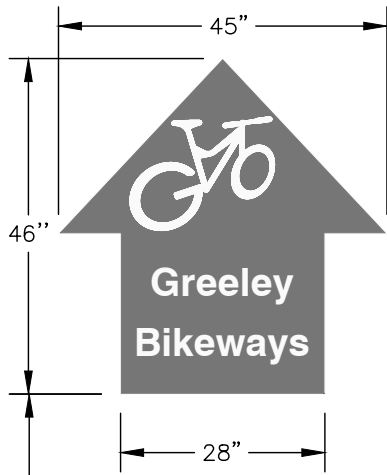
DATE: JULY, 2015

SCALE: N.T.S.

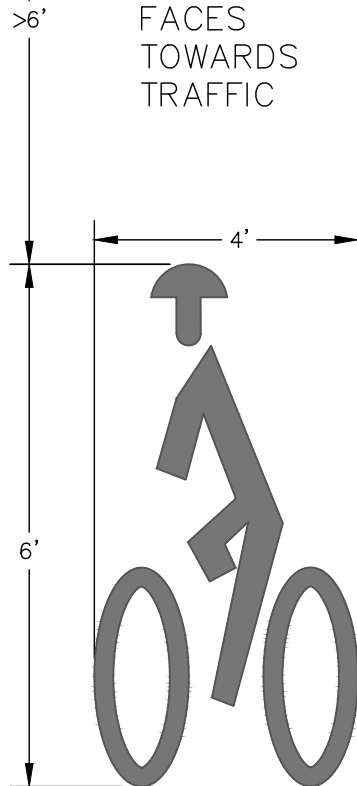


# BICYCLE PAVEMENT MARKINGS

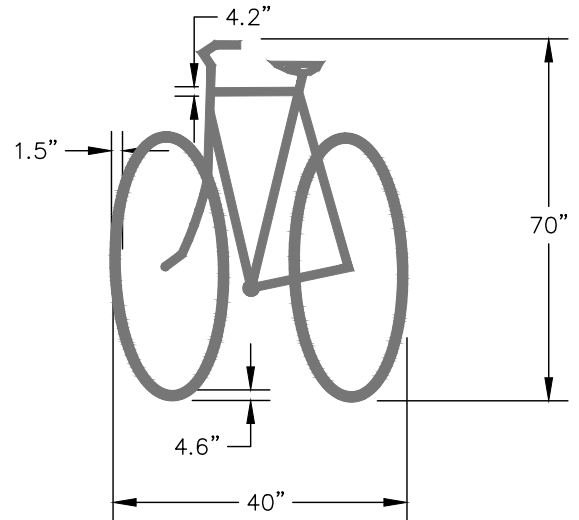
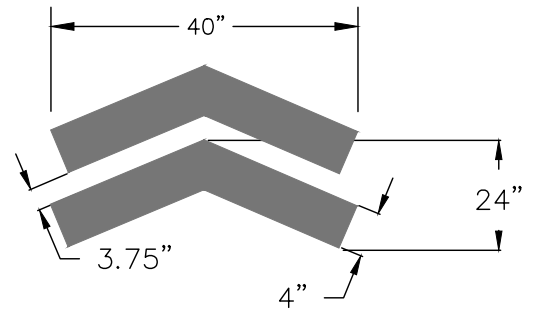
## BIKE LANE



BIKE RIDER  
FACES  
TOWARDS  
TRAFFIC



## SHARE THE LANE



TYPICAL PAVEMENT MARKINGS

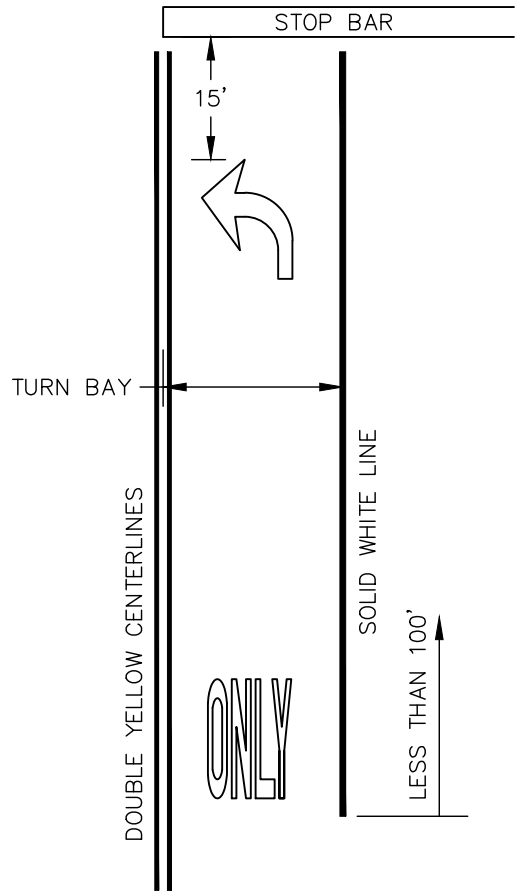
SHEET 3 OF 3

DETAIL NO. S-38

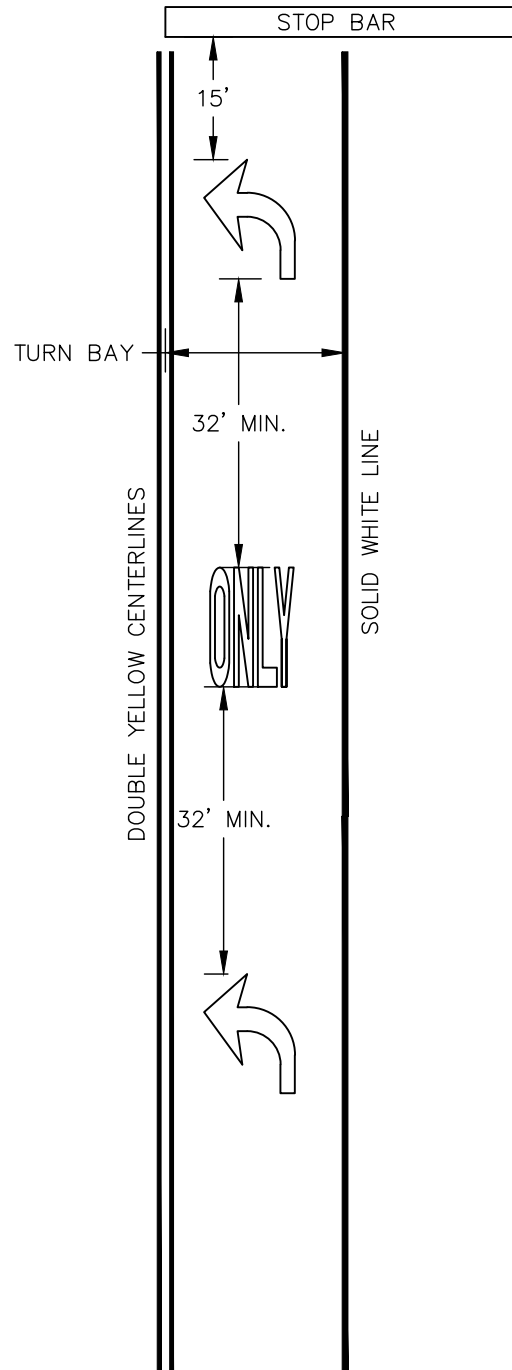
DATE: JULY, 2015

SCALE: N.T.S.

# PAVEMENT MARKING WORDS AND SYMBOLS



LEFT TURN BAY  
STACKING LENGTH LESS THAN 100'



LEFT TURN BAY  
STACKING LENGTH OVER 100'

## NOTE

PAVEMENT WORK AND SYMBOL MARKINGS, TRANSVERSE AND LONGITUDINAL (CONTINENTAL) CROSSWALK LINES, AND STOP LINES WILL BE PAID FOR IN SQUARE FEET USING THEIR SPECIFIC BID ITEMS.

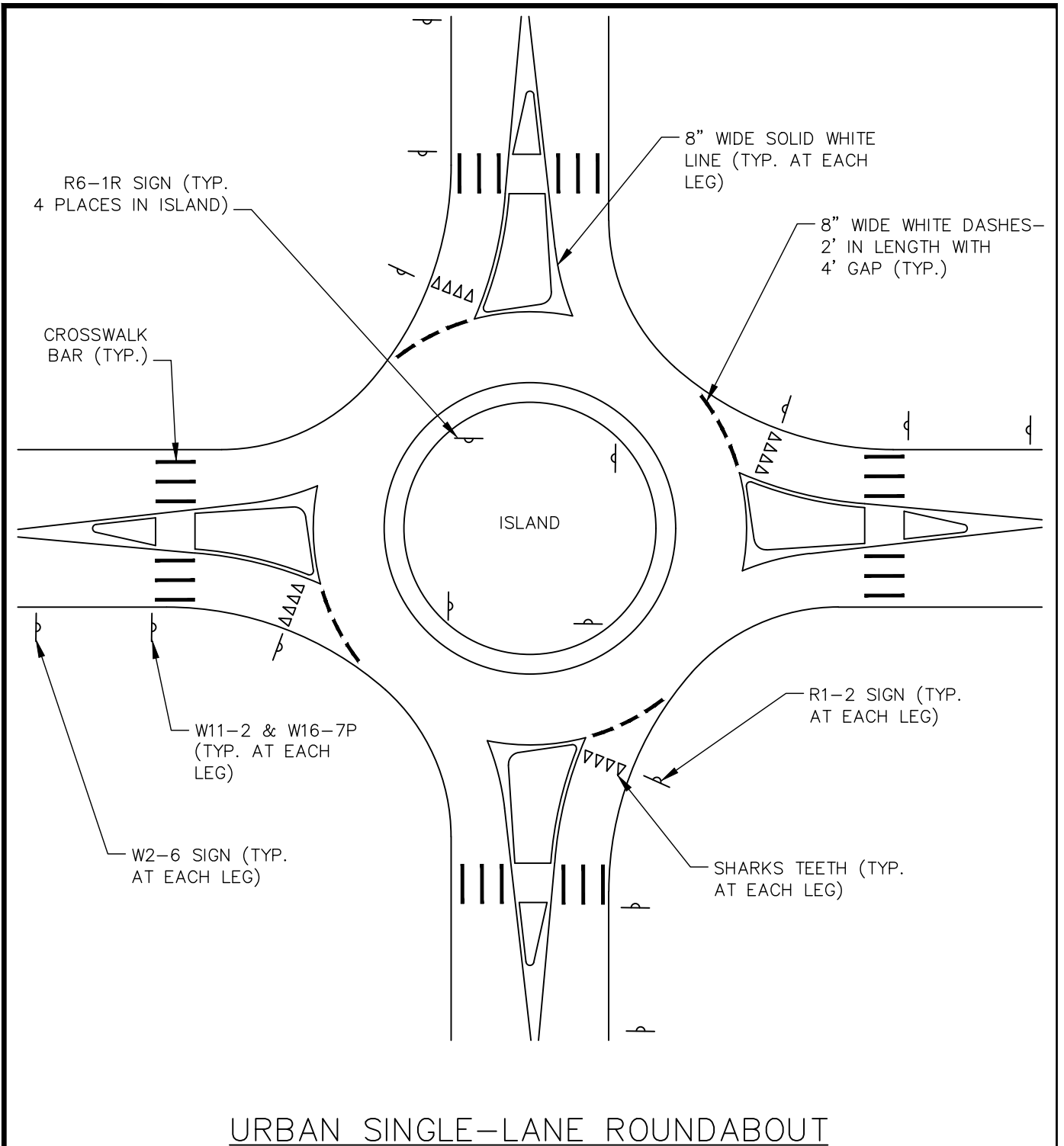


## LEFT TURN BAY PAVEMENT MARKINGS

DETAIL NO. S-39

DATE: JULY, 2015

SCALE: N.T.S.

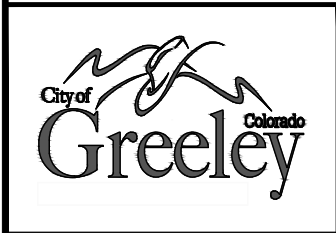
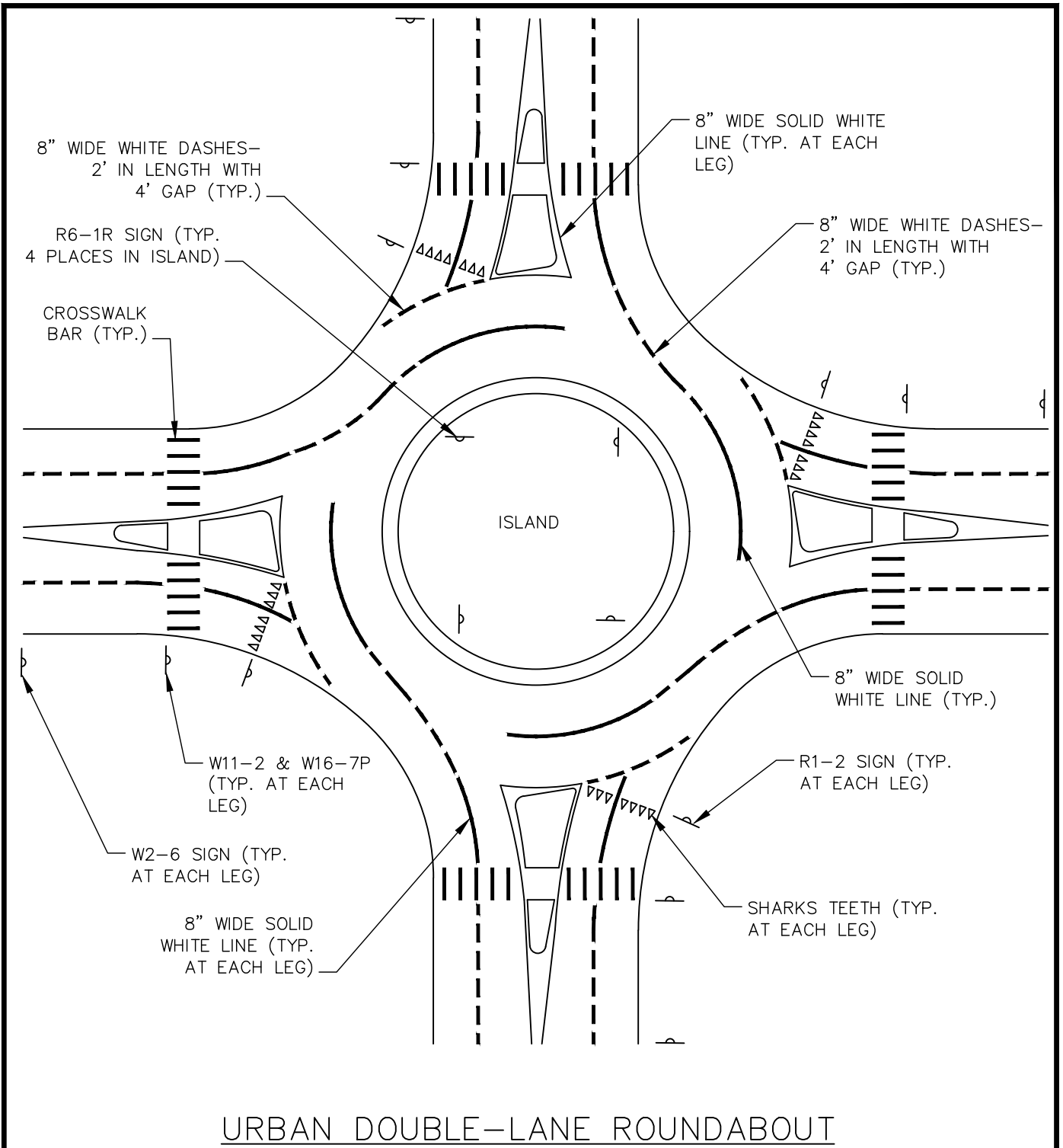


ROUNDABOUT SIGNAGE & PAVEMENT MARKINGS  
SHEET 1 OF 2

DETAIL NO. S-40

DATE: JULY, 2015

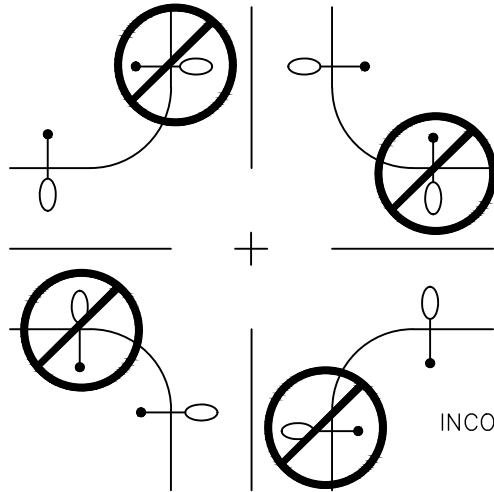
SCALE: N.T.S.



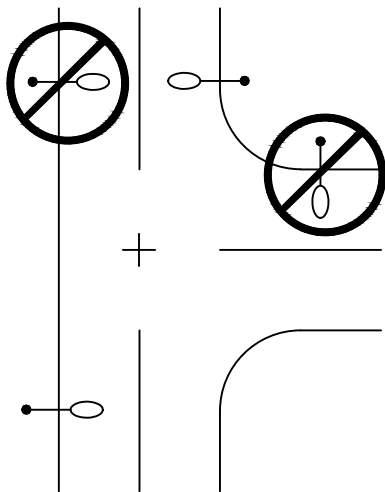
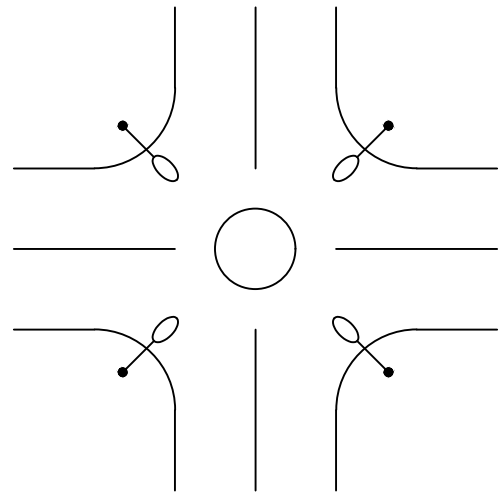
ROUNDABOUT SIGNAGE & PAVEMENT MARKINGS  
SHEET 2 OF 2  
DETAIL NO. S-40

DATE: JULY, 2015

SCALE: N.T.S.



INCORRECT STREET LIGHT PLACEMENT



STREET LIGHTS SHALL BE PLACED ON THE DOWNSTREAM SIDE OF INTERSECTION, AS VIEWED BY A MOTORIST IN THE LANE BENEATH THE LUMINAIRE.

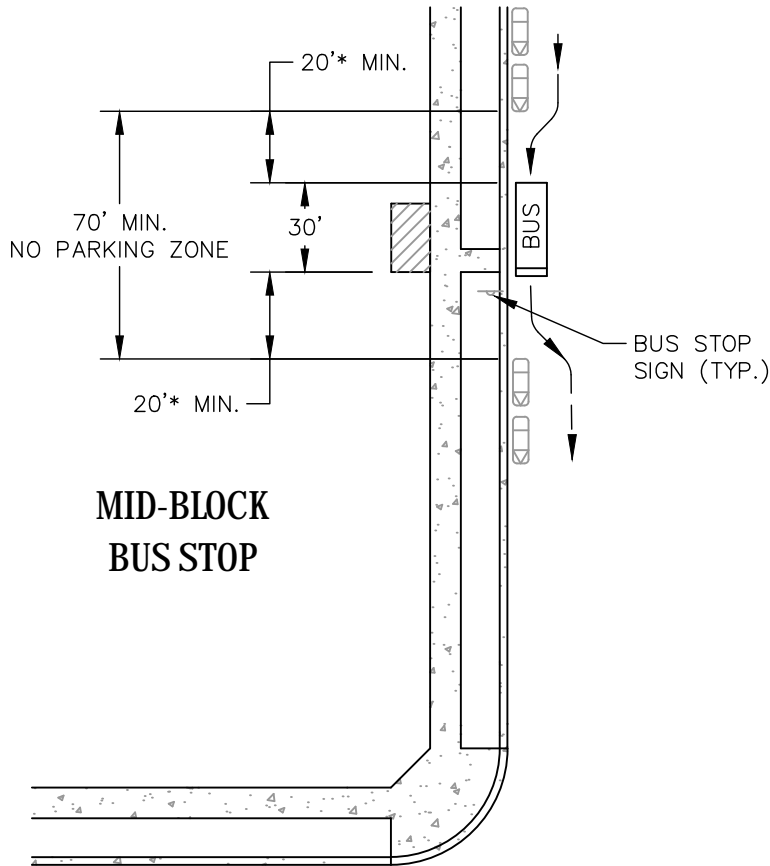


STREET LIGHT PLACEMENT AT INTERSECTIONS

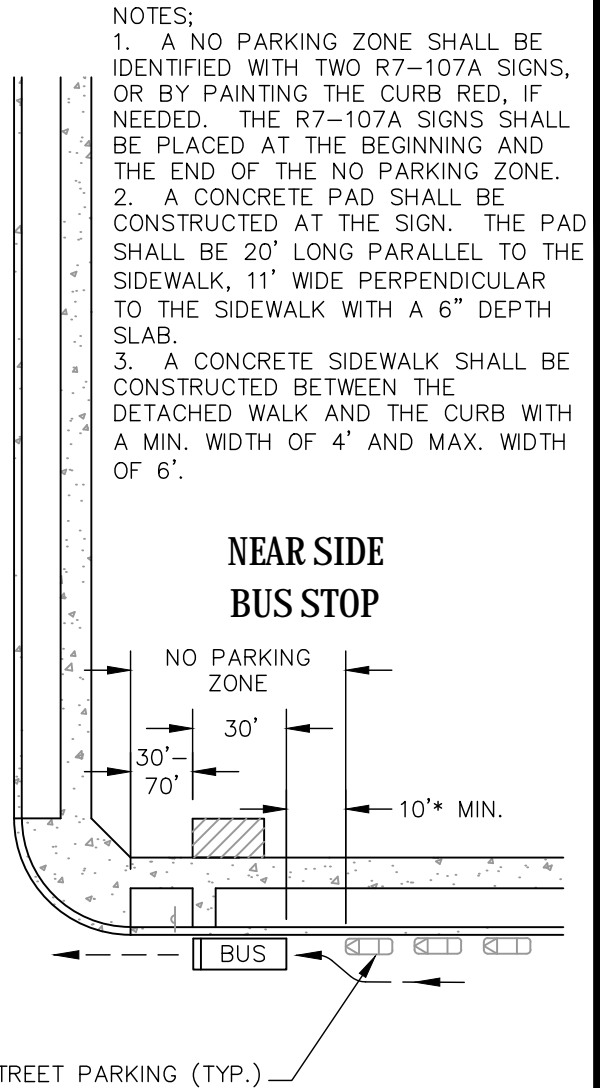
DETAIL NO. S-41

DATE: JULY, 2015

SCALE: N.T.S.



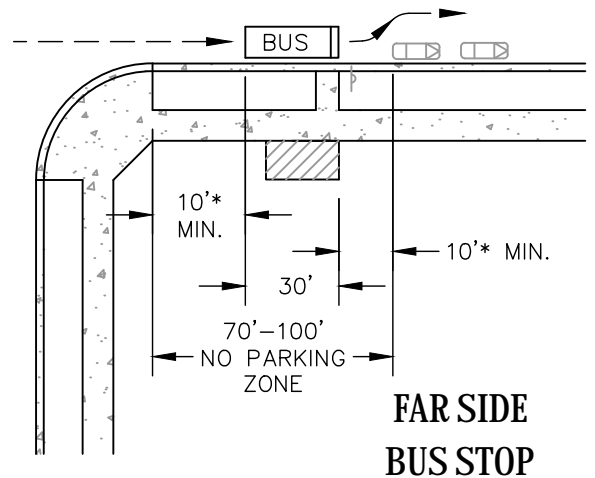
**MID-BLOCK  
BUS STOP**



**NEAR SIDE  
BUS STOP**



\* IF THERE IS ON-STREET PARKING



**FAR SIDE  
BUS STOP**

NOTES;

1. A NO PARKING ZONE SHALL BE IDENTIFIED WITH TWO R7-107A SIGNS, OR BY PAINTING THE CURB RED, IF NEEDED. THE R7-107A SIGNS SHALL BE PLACED AT THE BEGINNING AND THE END OF THE NO PARKING ZONE.
2. A CONCRETE PAD SHALL BE CONSTRUCTED AT THE SIGN. THE PAD SHALL BE 20' LONG PARALLEL TO THE SIDEWALK, 11' WIDE PERPENDICULAR TO THE SIDEWALK WITH A 6" DEPTH SLAB.
3. A CONCRETE SIDEWALK SHALL BE CONSTRUCTED BETWEEN THE DETACHED WALK AND THE CURB WITH A MIN. WIDTH OF 4' AND MAX. WIDTH OF 6'.

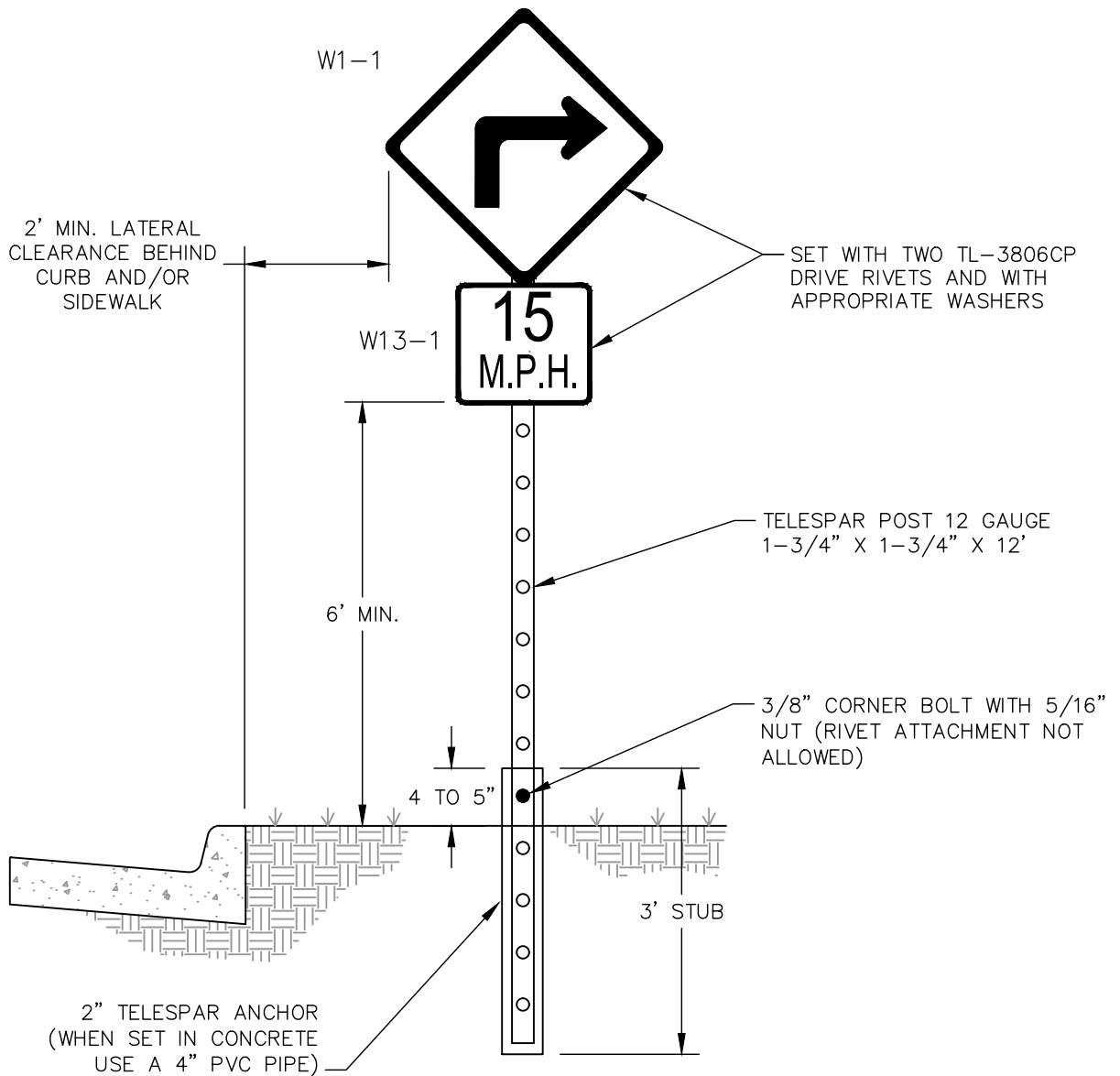


STANDARD BUS STOP LOCATIONS

DETAIL NO. S-42

DATE: JULY, 2015

SCALE: N.T.S.



NOTES:

1. SIGN SHOULD BE SET AT AN ANGLE OF 90° AND VISIBLE TO APPROACHING TRAFFIC.
2. ALL SIGNS SHALL MEET THE MOST CURRENT MUTCD STANDARDS.

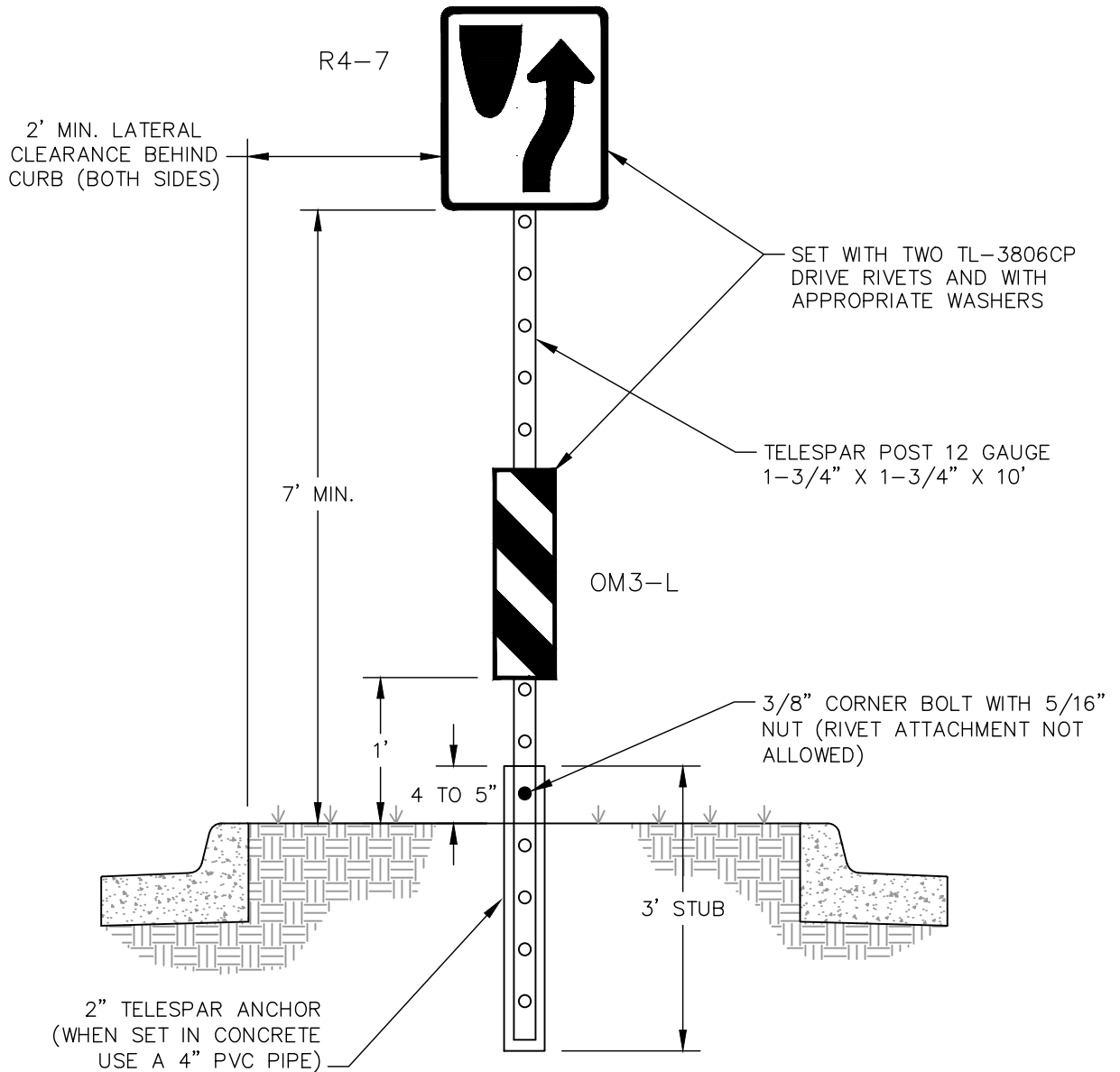


TYPICAL DIAMOND SIGN INSTALLATION

DETAIL NO. S-43

DATE: JULY, 2015

SCALE: N.T.S.



NOTES:

1. SIGN SHOULD BE SET AT AN ANGLE OF 90° INSIDE NOSE OF ISLAND AND VISIBLE TO APPROACHING TRAFFIC.
2. ALL SIGNS SHALL MEET THE MOST CURRENT MUTCD STANDARDS.



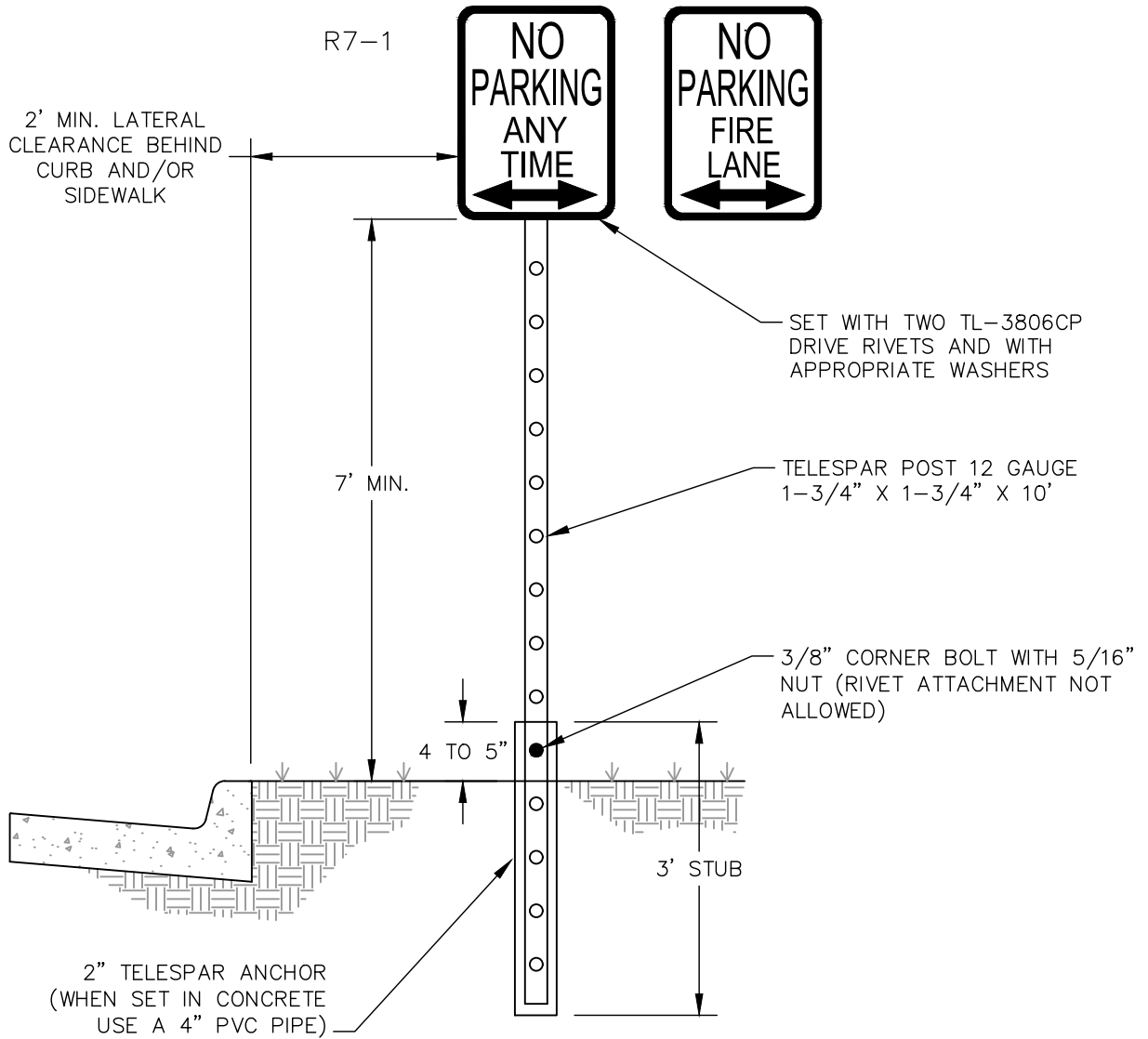
TYPICAL ISLAND SIGN INSTALLATION

DETAIL NO. S-44

DATE: JULY, 2015

SCALE: N.T.S.





NOTES:

1. SIGN SHOULD BE SET AT AN ANGLE OF NOT LESS THAN 30° OR MORE THAN 45°, WITH THE LINE OF TRAFFIC FLOW TO BE VISIBLE TO APPROACHING TRAFFIC.
2. ALL SIGNS SHALL MEET THE MOST CURRENT MUTCD STANDARDS.

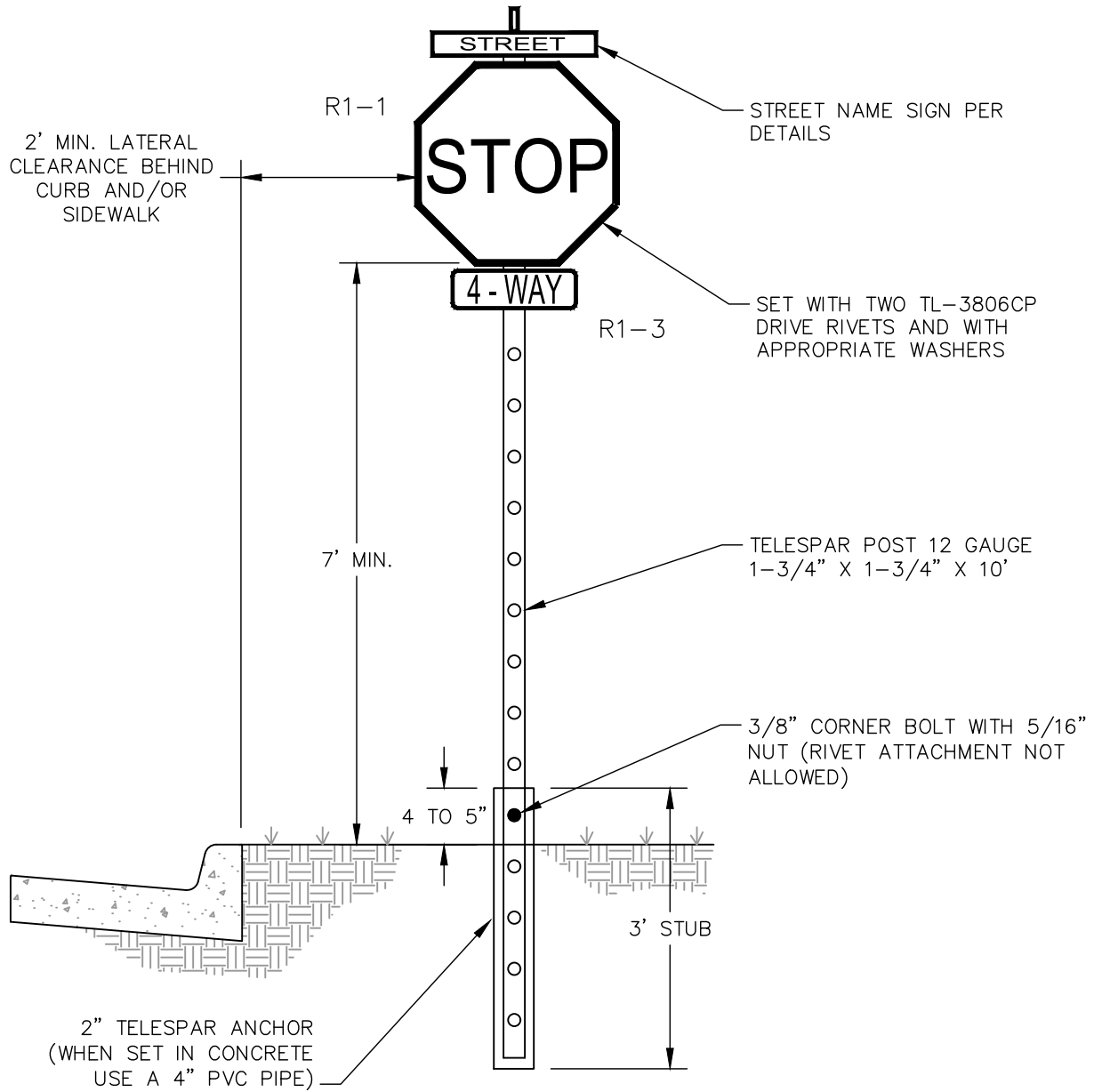


TYPICAL NO PARKING SIGN INSTALLATION

DETAIL NO. S-45

DATE: JULY, 2015

SCALE: N.T.S.



NOTES:

1. SIGN SHOULD BE SET AT AN ANGLE OF 90° AND BE VISIBLE TO APPROACHING TRAFFIC.
2. ALL SIGNS SHALL MEET THE MOST CURRENT MUTCD STANDARDS.

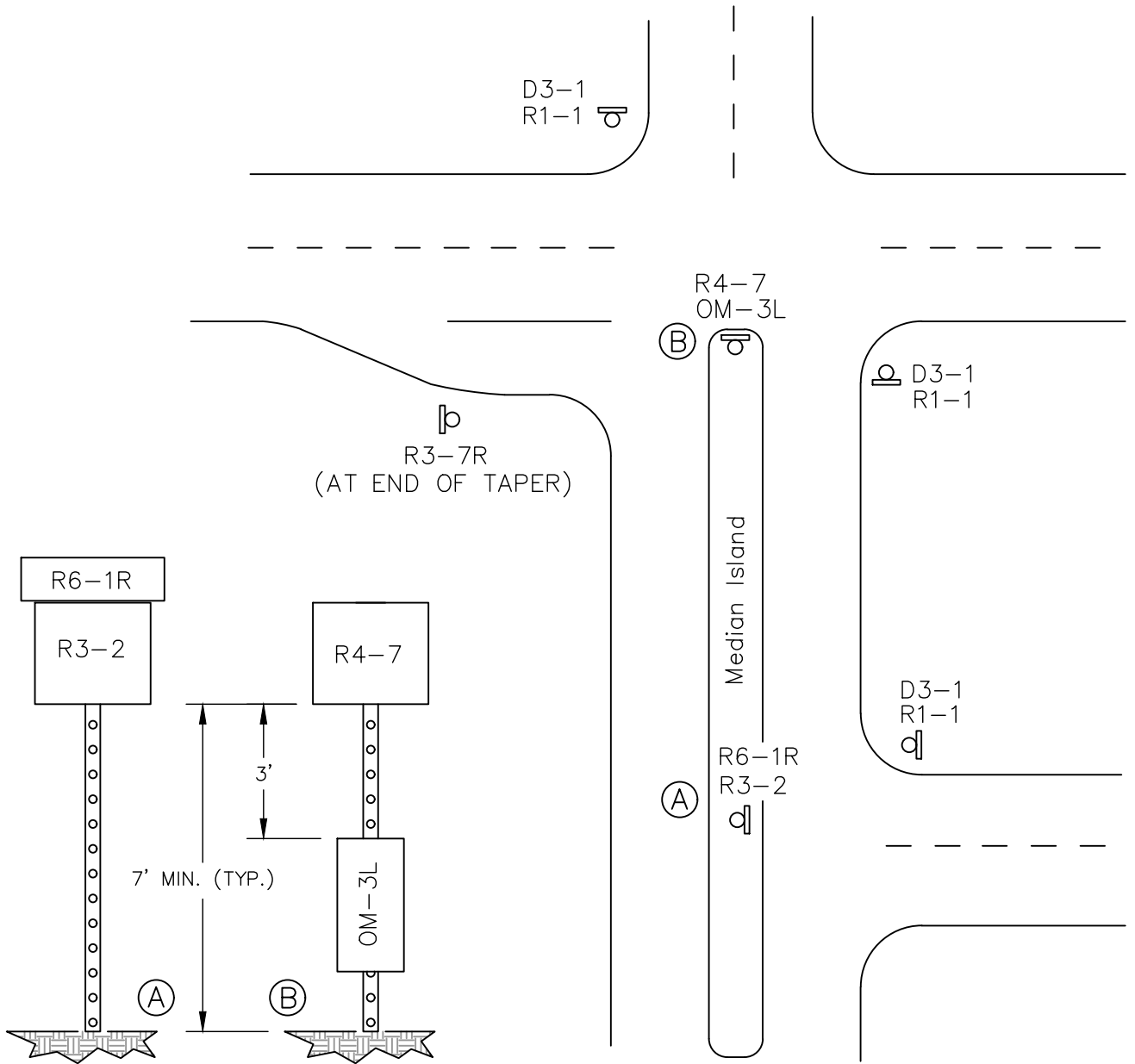


TYPICAL STOP SIGN INSTALLATION

DETAIL NO. S-46

DATE: JULY, 2015

SCALE: N.T.S.



EXAMPLES

LEGEND:

- R1-1 STOP SIGN
- R3-2 NO LEFT TURN SYMBOL
- R6-1R ONE-WAY ARROW RIGHT
- OM-3L RIGHT BRIDGEBOARD
- D3-1 STREET/AVENUE SIGN
- R3-7R RIGHT LANE MUST TURN RIGHT
- R4-7 KEEP RIGHT OF ISLAND SYMBOL

NOTE:

THIS IS A GENERAL LAYOUT. SIGNS SHALL BE INSTALLED AT EXACT LOCATIONS PER PLANS AND WITH MATERIALS PER STANDARD SPECIFICATIONS..

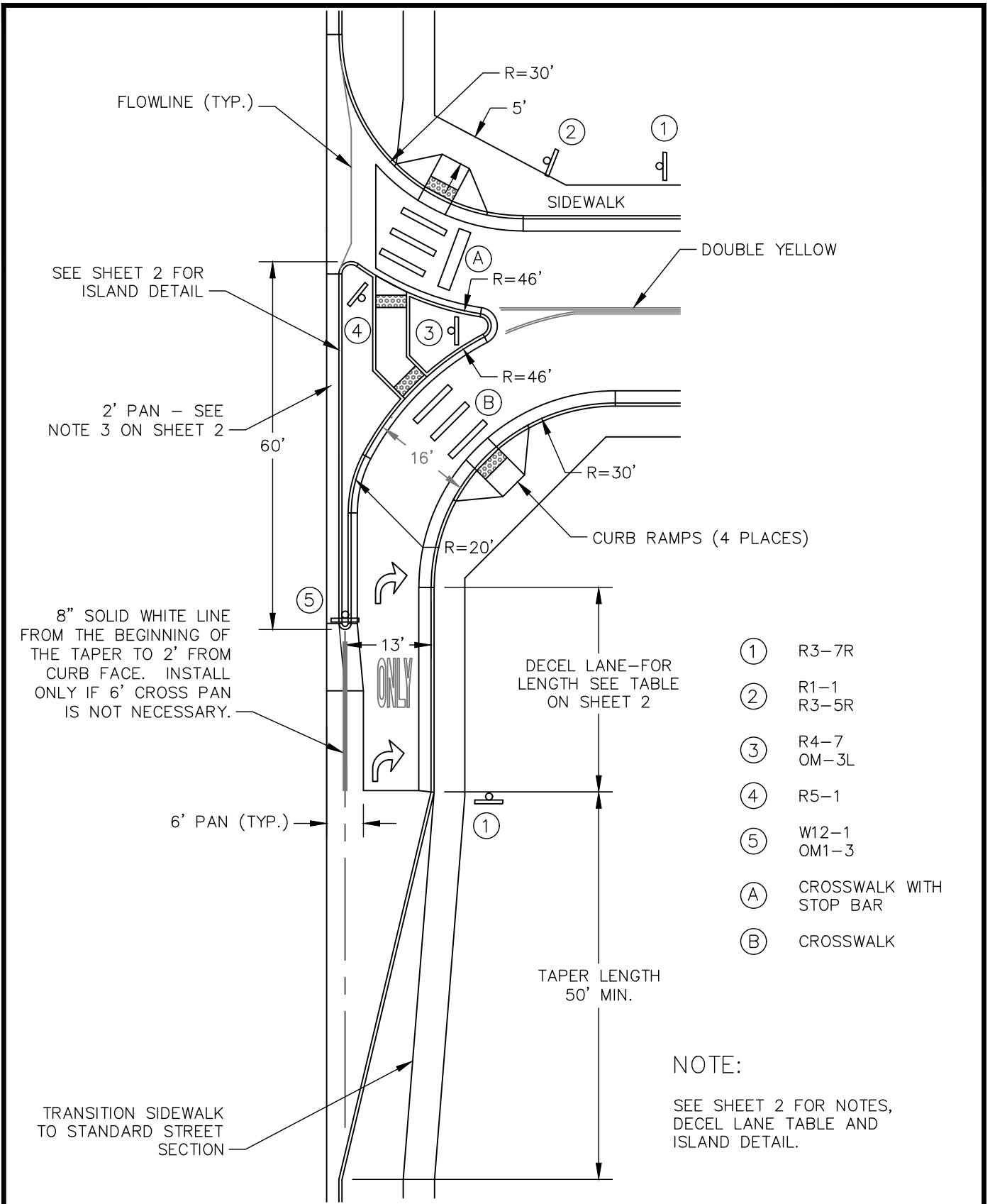


TYPICAL STREET SIGN PLACEMENT

DETAIL NO. S-47

DATE: JULY, 2015

SCALE: N.T.S.

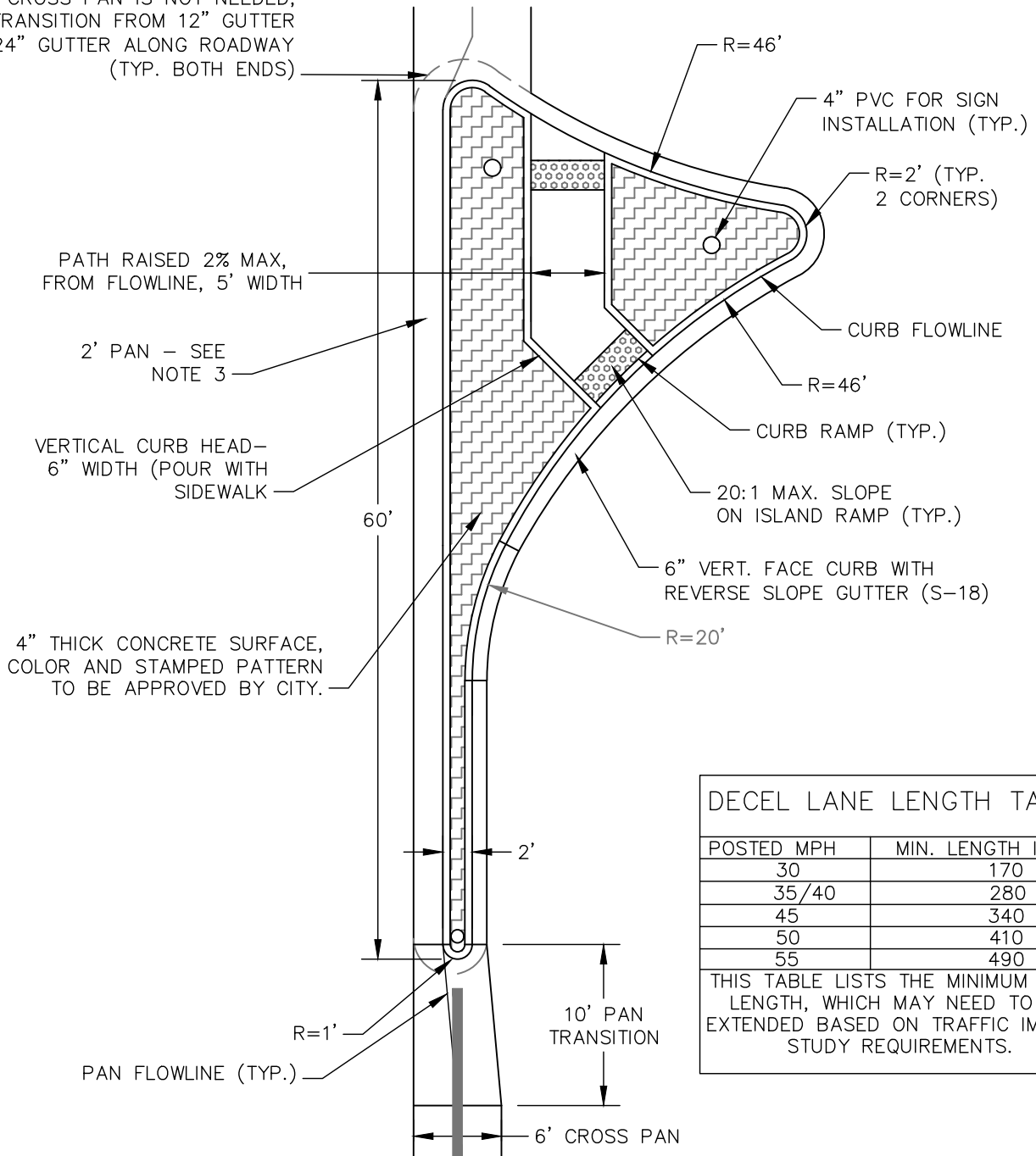


RIGHT IN/RIGHT OUT LAYOUT  
SHEET 1 OF 2  
DETAIL NO. S-48

DATE: JULY, 2015

SCALE: N.T.S.

IF CROSS PAN IS NOT NEEDED,  
TRANSITION FROM 12" GUTTER  
TO 24" GUTTER ALONG ROADWAY  
(TYP. BOTH ENDS)



DECEL LANE LENGTH TABLE

| POSTED MPH | MIN. LENGTH IN FT. |
|------------|--------------------|
| 30         | 170                |
| 35/40      | 280                |
| 45         | 340                |
| 50         | 410                |
| 55         | 490                |

THIS TABLE LISTS THE MINIMUM LANE LENGTH, WHICH MAY NEED TO BE EXTENDED BASED ON TRAFFIC IMPACT STUDY REQUIREMENTS.

NOTES:

1. THIS IS A GENERAL LAYOUT. SIGNS SHALL BE INSTALLED AT EXACT LOCATIONS PER PLANS AND WITH MATERIALS PER STANDARD SPECIFICATIONS.
2. MEDIAN ISLAND CURB AND GUTTER TO BE CITY STANDARD 6" VERT. FACE CURB WITH REVERSE SLOPE GUTTER. THE CONTRACTOR SHALL WIDEN THE GUTTER TO 24 INCHES AND CONVERT TO IN-FLOW GUTTER ALONG MAIN ROADWAY.
3. ALL RADII ARE FLOWLINE OR FACE OF CURB.



RIGHT IN/RIGHT OUT LAYOUT  
SHEET 2 OF 2  
DETAIL NO. S-48

DATE: APRIL, 2016

SCALE: N.T.S.

### STANDARD VEHICLE

Dimension in feet

| A   | B <sup>①</sup> | C <sup>②</sup> | D    | E    | F* | G* |
|-----|----------------|----------------|------|------|----|----|
| 0°  | 8              | 23             | 8    | 23   | 20 | 12 |
| 30° | 8.5            | 20             | 17.4 | 17   | 20 | 15 |
| 45° | 8.5            | 20             | 20.2 | 12   | 20 | 15 |
| 60° | 9              | 19             | 21   | 10.4 | 24 | 20 |
| 90° | 9              | 19             | 19   | 9    | 24 | NA |

### COMPACT VEHICLE

Dimension in feet

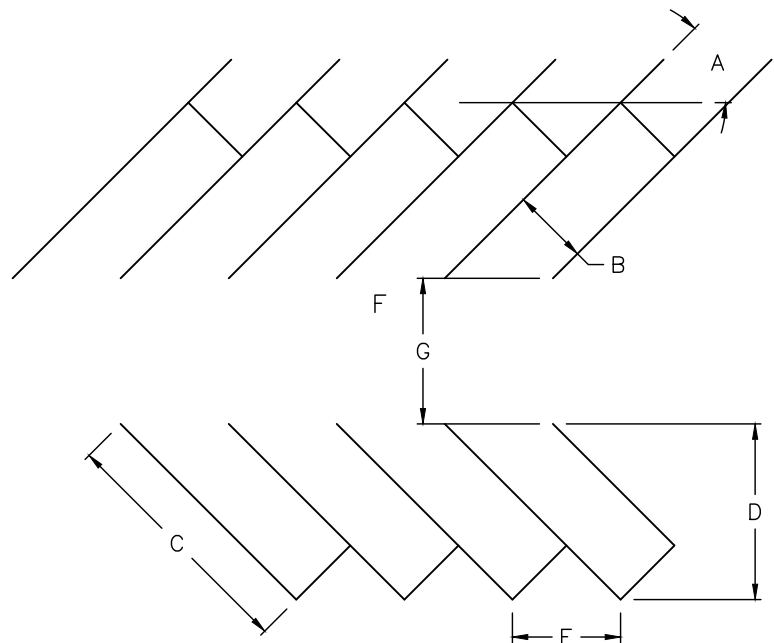
| A   | B   | C    | D    | E    | F* | G* |
|-----|-----|------|------|------|----|----|
| 0°  | 7.5 | 19   | 7.5  | 19   | 20 | 12 |
| 30° | 7.5 | 16.5 | 14.8 | 15   | 20 | 15 |
| 45° | 7.5 | 16.5 | 17   | 10.6 | 20 | 15 |
| 60° | 8   | 16   | 17.9 | 9.2  | 24 | 20 |
| 90° | 8   | 15   | 15   | 8    | 24 | NA |

\* UNDER SPECIAL CONDITIONS, THESE DIMENSIONS COULD BE VARIED WITH THE LOCAL ENTITY'S APPROVAL.

① STALL LENGTH (ONLY) CAN BE REDUCED BY 2 FT. WHEN OVERHANGING IS PROVIDED.

② FOR HANDICAP SPACES, WIDTH SHALL BE 13 FT. WITH RAMP ACCESS TO WALKS.

- A – ANGEL OF PARKING
- B – STALL WIDTH
- C – STALL LENGTH
- D – STALL DEPTH
- E – CURB LENGTH
- F – TOW-WAY DRIVE WIDTH OR DOUBLE LOADED DRIVE WIDTH
- G – ONE-WAY DRIVE WIDTH OR SINGLE LOADED DRIVE WIDTH



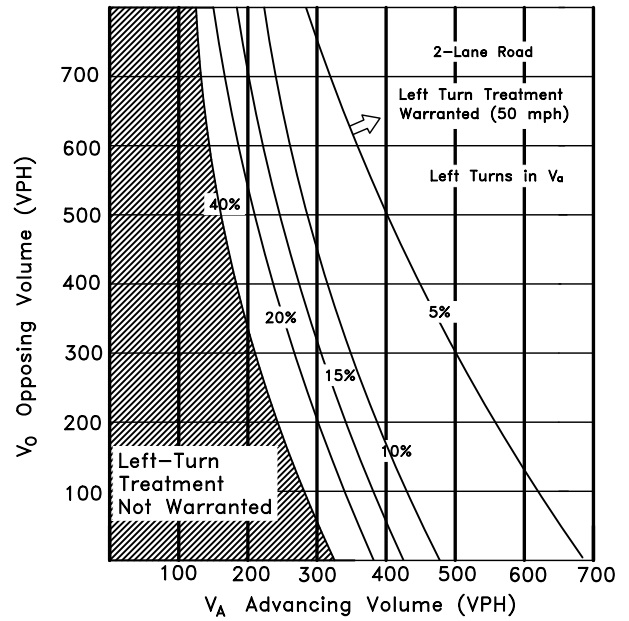
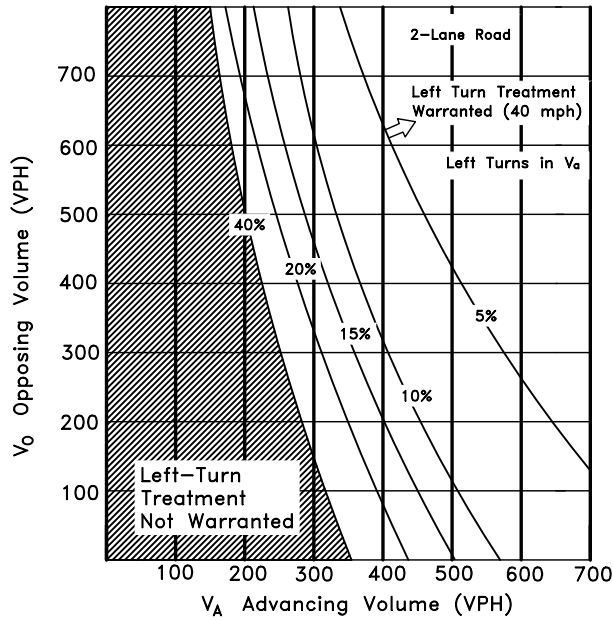
## PARKING AREA DIMENSIONS

DETAIL NO. S-49

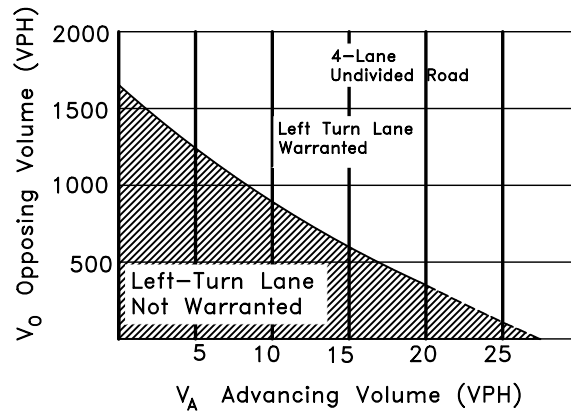
DATE: JULY, 2015

SCALE: N.T.S.

# VOLUME WARRANTS FOR LEFT TURN LANES



NOTE: When  $V_0 < 400$  VPH (dashed line), a Left-Turn Lane is not normally warranted unless the advancing volume ( $V_A$ ) in the same direction as the Left-turning traffic exceeds 400 VPH ( $V_A > 400$  VPH).



NOTE:

1. Left turn lanes are required at all intersections and all-movement accesses on arterial roadways except where roundabouts are provided.



$L_{d/b}$  - Length of Taper and Lane for Deceleration and Braking (ft)

**Functional Basis:** To provide sufficient length for a vehicle to decelerate and brake entirely outside the through traffic lanes.

**Desirable Design:** Deceleration in gear for 3 seconds (occurs over bay taper) followed by comfortable braking to a stopped position.

Design Values for  $L_{d/b}$

| S--<br>Speed<br>(mph) | Length<br>(ft) |      |           |
|-----------------------|----------------|------|-----------|
|                       | Total          | Lane | Bay Taper |
| 30                    | 235            | 115  | (120)     |
| 40                    | 315            | 155  | (160)     |
| 50                    | 435            | 235  | (200)     |
| 60                    | 530            | 290  | (240)     |

**Minimum Design:** Braking begins at 2/3 full lane width, with minimum 50-foot storage. For low speeds only, the following values apply:

Design Values for  $L_{d/b}$

| S--<br>Speed<br>(mph) | Length<br>(ft) |      |           |
|-----------------------|----------------|------|-----------|
|                       | Total          | Lane | Bay Taper |
| 30                    | 230            | 50   | (180)     |
| 35                    | 250            | 70   | (180)     |
| 40                    | 280            | 100  | (180)     |
| 45                    | 320            | 140  | (180)     |

$L_s$  - Length of Lane for Storage (Full Width Lane)

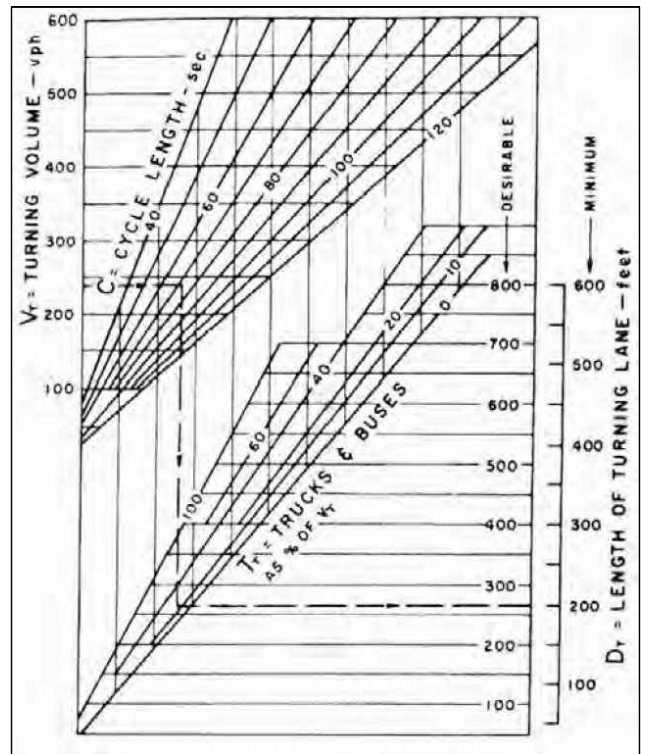
**Functional Basis:** To provide sufficient length for a reasonable number of vehicles to queue within the lane without affecting other lanes.

**Desirable Design:** Based on twice the mean arrival rate (per cycle for signals, per 2-minute period for stop control) during the peak hour of traffic.

**Minimum Design:** Based on the mean arrival rate, with minimum storage for one vehicle.

$L_s$  for Stop Control

| DHV<br>(vph) | $L_s$<br>(ft) |
|--------------|---------------|
| $\leq 60$    | 50-75         |
| 61-120       | 100           |
| 121-180      | 150           |
| >180         | 200 or more   |



LEFT TURN LANE DESIGN GUIDELINES  
SHEET 2 OF 3  
DETAIL NO. S-50

DATE: JULY, 2015

SCALE: N.T.S.



**T<sub>a</sub>- Approach Taper Design (ft) (Redirect Taper)**

Functional Basis: To provide a smooth lateral transition for all vehicles approaching the intersection.

Form of Alignment: Tangent

Low Speed Design: (<45) Provide a fully shadowed lane.

$$T_a = \frac{WS^2}{60}$$

W = Width of offset (ft)

S = Speed (mph)

Typical Values for T<sub>a</sub>\*

| S—<br>Speed<br>(mph) | W—Width of Offset (ft) |      |     |
|----------------------|------------------------|------|-----|
|                      | 11                     | 11.5 | 12  |
| 25                   | 115                    | 120  | 125 |
| 30                   | 165                    | 170  | 180 |
| 35                   | 225                    | 235  | 245 |
| 40                   | 295                    | 305  | 320 |

\*Rounded to nearest 5 ft.

High Speed Design: (≥45mph) Provide a fully shadowed lane. Design as follows:

$$T_a = WS$$

W = Width of offset (ft)

S = Speed (mph)

| S—<br>Speed<br>(mph) | W—Width of Offset (ft) |      |     |
|----------------------|------------------------|------|-----|
|                      | 11                     | 11.5 | 12  |
| 45                   | 495                    | 520  | 540 |
| 50                   | 550                    | 575  | 600 |

\*Rounded to nearest 5 ft.

**T<sub>b</sub>- Taper Bay Design (ft)**

Functional Basis: To direct left-turning vehicles into the turn lane

Form of Alignment: Tangent; or reverse curves with 1/3 of the total length comprised of a central tangent.

Desirable Design: For fully shadowed left turn lane.

$$T_b = \frac{W_1S}{3}$$

W<sub>1</sub> = Width of lane (ft)

S = Speed (mph)

Typical Values for T<sub>b</sub>\*

| S—<br>Speed<br>(mph) | W—Width of<br>Offset (ft) |     |
|----------------------|---------------------------|-----|
|                      | 11                        | 12  |
| 30                   | 110                       | 120 |
| 40                   | 145                       | 160 |
| 50                   | 185                       | 200 |

\*Rounded to nearest 5 ft.

Minimum Design: Taper ratios of 8:1 can be used for tangent bay tapers in constrained locations.

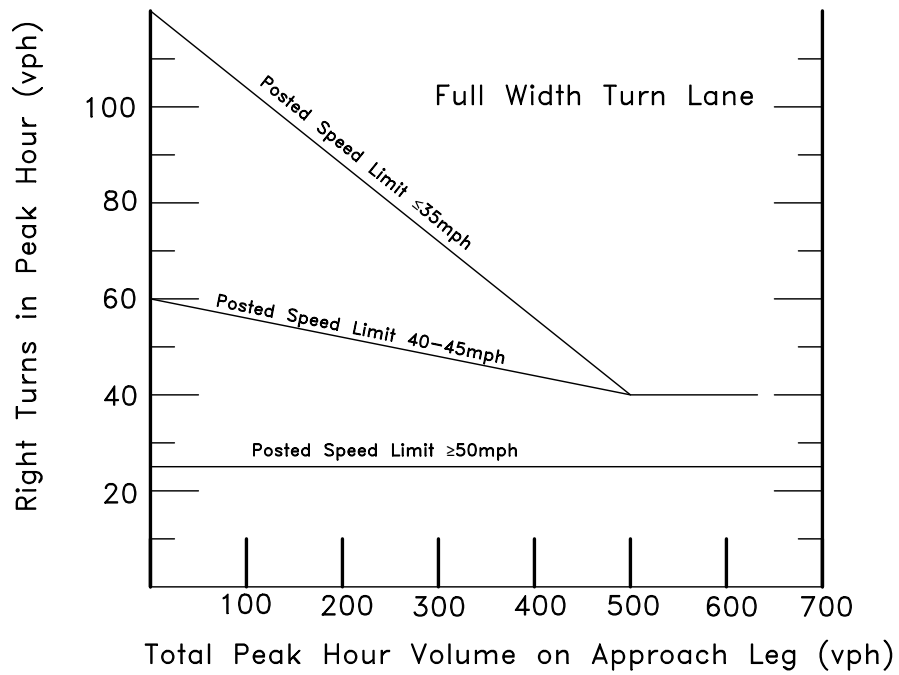


LEFT TURN LANE DESIGN GUIDELINES  
SHEET 3 OF 3  
DETAIL NO. S-50

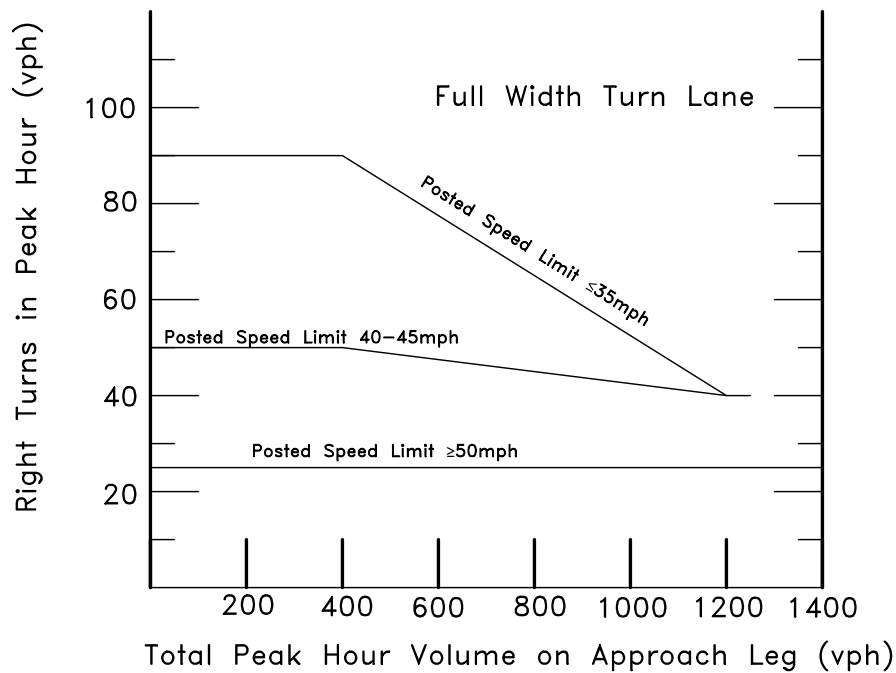
DATE: JULY, 2015

SCALE: N.T.S.

## 2-Lane Collectors or Arterials



## 4-Lane Arterials



NOTE:

1. Right turn lanes are required on 6-lane arterial when the right turn volume exceeds 200 vph.



RIGHT TURN LANE DESIGN GUIDELINES

SHEET 1 OF 2

DETAIL NO. S-51

DATE: JULY, 2015

SCALE: N.T.S.

$L_d/b$  - Length of Taper and Lane for Deceleration and Braking (ft)

**Functional Basis:** To provide sufficient length for a vehicle to decelerate and brake entirely outside the through traffic lanes.

**Desirable Design:** Deceleration in gear for 3 seconds (occurs over bay taper) followed by comfortable braking to a stopped position or to the design speed of the corner radius.

$$\text{Bay Taper Length} = \frac{WS}{3}$$

$$T_b = \frac{W_1 S}{3}$$

Design Values for  $L_d/b$

| Highway Design Speed, V (mph) | *Stop Condition | Design Speed of Corner Radius (mph) |     |     |     |
|-------------------------------|-----------------|-------------------------------------|-----|-----|-----|
|                               |                 | 15                                  | 20  | 25  | 30  |
| 30                            | 235             | 185                                 | 160 | 140 | —   |
| 35                            | 275             | 240                                 | 213 | 188 | 93  |
| 40                            | 315             | 295                                 | 265 | 235 | 185 |
| 45                            | 375             | 350                                 | 325 | 295 | 250 |
| 50                            | 435             | 405                                 | 385 | 355 | 315 |

\*Appropriate for right turn lanes in approaches to stop signs and traffic signals.

$T_b$ - Bay Taper Design

**Functional Basis:** To direct right-turning vehicles into the turn lane.

**Form of Alignment:** Tangent; or reverse curves with 1/3 of the total length comprised of a central tangent.

**Desirable Design:** For fully shadowed right turn lane.

$$T_b = \frac{W_1 S}{3}$$

$W_1$  = Width of Lane

$S$  = Speed (mph)

Typical Values for  $T_b$ \*

| S— Speed (mph) | W—Width of Offset (ft) |     |
|----------------|------------------------|-----|
|                | 11                     | 12  |
| 30             | 110                    | 120 |
| 40             | 145                    | 160 |
| 50             | 185                    | 200 |

\*Rounded to nearest 5 ft.

**Minimum Design:** Taper ratios of 8:1 can be used for tangent bay tapers in constrained locations.

$L_s$  - Length of lane for Storage (Full Lane Width ) (ft)

**Functional Basis:** To provide sufficient length for a reasonable number of vehicles to queue within the lane without affecting other lanes.

**Desirable Design:** Based on twice the mean arrival rate (per cycle for signals, per 2-minute period for stop control) during the peak hour of traffic.

**Minimum Design:** Based upon the mean arrival rate, with minimum storage for one vehicle.

$L_s$  for Stop Control

| DHV (vph) | $L_s$ (ft)  |
|-----------|-------------|
| ≤60       | 50–75       |
| 61–120    | 100         |
| 121–180   | 150         |
| >180      | 200 or more |

Reference NCHRP 279



RIGHT TURN LANE DESIGN GUIDELINES  
SHEET 2 OF 2

DETAIL NO. S-51

DATE: JULY, 2015

SCALE: N.T.S.



CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU  
DIG, GRADE, OR EXCAVATE FOR MARKING OF  
UNDERGROUND MEMBER UTILITIES.



UTILITY NOTIFICATION NOTE

DATE: JULY, 2015

SCALE: N.T.S.

Construction must be in accordance with applicable City of Greeley Construction Standards. The City's acceptance allows for plan distribution and permit application. The City's acceptance shall not relieve the design engineer's responsibility for errors, omissions, or design deficiencies for which the City is held harmless.

Accepted by: \_\_\_\_\_ Date \_\_\_\_\_  
City Engineer

Accepted by: \_\_\_\_\_ Date \_\_\_\_\_  
Water/Sewer Director

Accepted by: \_\_\_\_\_ Date \_\_\_\_\_  
Greeley Fire Chief



SIGNATURE BLOCK

DATE: JULY, 2015

SCALE: N.T.S.