ROADWAYS

DIVISION 300
PRINCIPAL ARTERIAL - The principal arterial system should serve the major centers of activity of a metropolitan area, the highest traffic volume corridors, and the longest trips. The principal arterial system should carry a high proportion of the total urban area travel on a minimum of mileage.

MINOR ARTERIAL - The minor arterial street system contains facilities that place more emphasis on land access than the principal arterial system and offer a lower level of traffic mobility. Such facilities may carry local bus routes and provide intracommunity continuity, but ideally should not penetrate identifiable neighborhoods.

COLLECTOR STREET - The collector street system penetrates neighborhoods distributing trips from the arterials through the area to the ultimate destination which may be on a local or collector street. Conversely, the collector street also collects traffic from local streets in the neighborhood and channels it into the arterial system.

LOCAL STREET - The local street system comprises all facilities not on one of the higher systems. It serves primarily to provide direct access to abutting land and access to the higher order systems. Service to through traffic movement usually is deliberately discouraged.

AVERAGE DAILY TRAFFIC GUIDELINES

<table>
<thead>
<tr>
<th>VOLUME LEVELS</th>
<th>PRINCIPAL ARTERIAL</th>
<th>MINOR ARTERIAL</th>
<th>COLLECTOR STREET</th>
<th>LOCAL STREET</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOLUME LEVELS</td>
<td>4 LANES 225,000</td>
<td>15,000</td>
<td>5,000-</td>
<td>LOW &lt;2000</td>
</tr>
<tr>
<td>6 LANES 230,000</td>
<td>25,000</td>
<td></td>
<td>LOW 10,000</td>
<td></td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>MED 10,000</td>
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<td></td>
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<td></td>
<td>HIGH 20,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10,000-</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>COMM/IND 20,000</td>
<td></td>
</tr>
</tbody>
</table>

*All volumes include traffic from both directions.
### RECOMMENDED STANDARD STREET DIMENSIONS

<table>
<thead>
<tr>
<th>STREET FUNCTIONAL CLASSIFICATION **</th>
<th>Minimum Lane Width</th>
<th>Parking</th>
<th>Minimum Sidewalk Width *</th>
<th>Bikeway</th>
<th>Buffer</th>
<th>Median Including Left Bay</th>
<th>Back/Bac k Curb</th>
<th>Subtotal</th>
<th>Row Minimum Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOCAL (Low Volume)</td>
<td>2 of 10 20</td>
<td>2 of 7 14</td>
<td>2 of 4 8</td>
<td>(1)</td>
<td>2 of 3.5 7</td>
<td>NONE</td>
<td>35</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>LOCAL (High Volume)</td>
<td>2 of 11 22</td>
<td>2 of 9 18</td>
<td>2 of 5 10</td>
<td>(1)</td>
<td>2 of 4.5 9</td>
<td>NONE</td>
<td>41</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>COLLECTOR (Low Volume)</td>
<td>2 of 11 22</td>
<td>2 of 9 18</td>
<td>2 of 5 10</td>
<td>(2)</td>
<td>2 of 7.5 15</td>
<td>NONE</td>
<td>41</td>
<td>66</td>
<td>66</td>
</tr>
<tr>
<td>COLLECTOR (Medium Volume)</td>
<td>4 of 11 44</td>
<td>NONE</td>
<td>2 of 5 10</td>
<td>(2)</td>
<td>2 of 7.5 15</td>
<td>10 Min. Painted</td>
<td>45</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td>COLLECTOR (High Volume)</td>
<td>4 of 11 44</td>
<td>NONE</td>
<td>2 of 5 10</td>
<td>(2)</td>
<td>2 of 7.5 15</td>
<td>14 Min. 16 Max.</td>
<td>55</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>COLLECTOR (Industrial/Commercial)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MINOR ARTERIAL</td>
<td>4 of 12 48</td>
<td>NONE</td>
<td>2 of 5 10</td>
<td>(3)</td>
<td>2 of 7.5 15</td>
<td>14 Min. 18 Max.</td>
<td>65</td>
<td>90</td>
<td>90</td>
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<tr>
<td>PRINCIPAL ARTERIAL (Low Volume – 4 Lanes)</td>
<td>4 of 12 48</td>
<td>NONE</td>
<td>2 of 5 10</td>
<td>(3)</td>
<td>2 of 7 14</td>
<td>14 Min. 18 Max.</td>
<td>2 of 26 52</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>PRINCIPAL ARTERIAL (High Volume – 6 Lanes)</td>
<td>6 of 12 72</td>
<td>NONE</td>
<td>2 of 5 10</td>
<td>(3)</td>
<td>2 of 10 20</td>
<td>14 Min. 20 Max.</td>
<td>2 of 38 76</td>
<td>120</td>
<td>120</td>
</tr>
</tbody>
</table>

* - PARKING AND SIDEWALKS ON BOTH SIDES. PARKING AND BIKEWAYS CAN BE INTERCHANGEABLE.

- (1) CLASS 3 – SHARE ROADWAY WITH AUTOMOBILE
- (2) CLASS 2 – IN BUFFERZONE OR ON PAVEMENT ADJACENT TO ROADWAY.
- (3) CLASS 1 – EXCLUSIVE FACILITY; PARALLEL TO ROADWAY.

** THE RECOMMENDED STANDARD STREET DIMENSIONS ARE ESTABLISHED FOR TWO-WAY MOVEMENT.
PRINCIPAL ARTERIAL STREET TYPICAL SECTION
ASPHALT CONCRETE PAVEMENT
AGGREGATE BASE

ITEM 404 - 2" ASPHALT CONCRETE SURFACE COURSE
ITEM 402 - 3" ASPHALT CONCRETE LEVELING COURSE
ITEM 408 - PRIME COAT
ITEM 304 - 12" AGGREGATE BASE (2-6" COURSES)
ITEM 201 - COMPACTED SUBGRADE
ITEM 609 - MEDIAN CURB

<table>
<thead>
<tr>
<th>4 LANES</th>
<th>6 LANES</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90'</td>
</tr>
<tr>
<td>B</td>
<td>2 6'</td>
</tr>
<tr>
<td>C</td>
<td>5'</td>
</tr>
<tr>
<td>D</td>
<td>7' - 9'</td>
</tr>
<tr>
<td>E</td>
<td>14' - 18'</td>
</tr>
<tr>
<td>D+C</td>
<td>12' - 14'</td>
</tr>
</tbody>
</table>

RECOMMENDED STANDARD DIMENSION
MINOR ARTERIAL STREET TYPICAL SECTION

ASPHALT CONCRETE PAVEMENT

AGGREGATE BASE

ITEM 404 - 2" ASPHALT CONCRETE SURFACE COURSE
ITEM 402 - 3" ASPHALT CONCRETE LEVELING COURSE
ITEM 408 - PRIME COAT
ITEM 304 - 12" AGGREGATE BASE (2-6" COURSES)
ITEM 201 - COMPACTED SUBGRADE

HIGH COMM / INDUS #
A 9 0’ 8 0’
B 6.5’ 6.5’
C 5’ 5’
D 7.5’ 7.5’
D+C 12.5’ 12.5’

RECOMMENDED STANDARD DIMENSION

# PROVIDE A MIN. THICKNESS OF
2" OF ITEM 404, 3" OF ITEM 403,
AND 12" OF ITEM 304 FOR COMMERCIAL
AND INDUSTRIAL PAVEMENTS
COLLECTOR STREET TYPICAL SECTION
ASPHALT CONCRETE PAVEMENT
AGGREGATE BASE

ITEM 404 - 1 1/2" ASPHALT CONCRETE SURFACE COURSE
ITEM 402 - 2" ASPHALT CONCRETE LEVELING COURSE
ITEM 408 - PRIME COAT
ITEM 304 - 12" AGGREGATE BASE (2-6" COURSES)
ITEM 201 - COMPACTED SUBGRADE

LOW     MED.     HIGH     COMM / INDUS #
A       60'      66'      70'      8 0'
B       41'      41'      45'      5 5'
C       5'       5'       5'       5'
D       4.5'     7.5'     7.5'     7.5'
D+C     9.5'     12.5'    12.5'    12.5'

RECOMMENDED STANDARD DIMENSION

# PROVIDE A MIN. THICKNESS OF
2" OF ITEM 404, 3" OF ITEM 403,
AND 12" OF ITEM 304 FOR COMMERCIAL
AND INDUSTRIAL PAVEMENTS
PRINCIPAL ARTERIAL STREET TYPICAL SECTION

ASPHALT CONCRETE PAVEMENT

ASPHALTIC CONCRETE BASE

ITEM 609 - 4" CONCRETE WALK
SLOPE 1/2" PER 1'-0"

<table>
<thead>
<tr>
<th></th>
<th>4 LANES</th>
<th>6 LANES</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90'</td>
<td>120'</td>
</tr>
<tr>
<td>B</td>
<td>26'</td>
<td>30'</td>
</tr>
<tr>
<td>C</td>
<td>5'</td>
<td>5'</td>
</tr>
<tr>
<td>D</td>
<td>7'-9'</td>
<td>7'-10'</td>
</tr>
<tr>
<td>E</td>
<td>14'-18'</td>
<td>14'-20'</td>
</tr>
<tr>
<td>D+C</td>
<td>12'-14'</td>
<td>12'-15'</td>
</tr>
</tbody>
</table>

ITEM 604 - 2" ASPHALT CONCRETE SURFACE COURSE
ITEM 407 - TACK COAT
ITEM 301 - 6" ASPHALTIC CONCRETE BASE (2-3" COARSE)
ITEM 201 - COMPACTED SUBGRADE
MINOR ARTERIAL STREET TYPICAL SECTION

ASPHALT CONCRETE PAVEMENT

ASPHALTIC CONCRETE BASE

ITEM 501 – 6" ASPHALTIC CONCRETE BASE (2-3” COURSES)
ITEM 201 – COMPACTED SUBGRADE

ITEM 404 – 2" ASPHALT CONCRETE SURFACE COURSE
ITEM 402 – 3" ASPHALT CONCRETE LEVELING COURSE
ITEM 407 – TACK COAT

ITEM 609 – 4” CONCRETE COMBINED CURB AND GUTTER

ITEM 608 – 4” CONCRETE WALK
SLOPE 1/4” PER 1’-0”

PROVIDE 4” MIN. TOP-SOIL SEED & MULCH ON SOIL

RIGHT OF WAY

GOLD 1/2” PER 1’-0”

SLOPE TYPICAL

HIGH COMM/INDUS #

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>9.0’</td>
</tr>
<tr>
<td>B</td>
<td>6.5’</td>
</tr>
<tr>
<td>C</td>
<td>5’</td>
</tr>
<tr>
<td>D</td>
<td>7.5’</td>
</tr>
<tr>
<td>D+C</td>
<td>12.5’</td>
</tr>
</tbody>
</table>

RECOMMENDED STANDARD DIMENSIONS

# PROVIDE A MIN. THICKNESS OF 2” OF ITEM 404, 3” OF ITEM 402, AND 6” OF ITEM 301 FOR COMMERCIAL AND INDUSTRIAL PAVEMENTS.
COLLECTOR STREET TYPICAL SECTION

ASPHALT CONCRETE PAVEMENT

ASPHALTIC CONCRETE BASE

---

ITEM 404 - 1 1/2" ASPHALT CONCRETE SURFACE COURSE
ITEM 402 - 2" ASPHALT CONCRETE LEVELING COURSE
ITEM 407 - TACK COAT
ITEM 301 - 6" ASPHALTIC CONCRETE BASE (2-3" COURSES)
ITEM 201 - COMPACTED SUBGRADE

<table>
<thead>
<tr>
<th>LOW</th>
<th>MED.</th>
<th>HIGH</th>
<th>COMM/INDUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>6'</td>
<td>6'</td>
<td>7'</td>
</tr>
<tr>
<td>B</td>
<td>4'1&quot;</td>
<td>4'1&quot;</td>
<td>4'5&quot;</td>
</tr>
<tr>
<td>C</td>
<td>5'</td>
<td>5'</td>
<td>5'</td>
</tr>
<tr>
<td>D</td>
<td>4'5&quot;</td>
<td>7'5&quot;</td>
<td>7'5&quot;</td>
</tr>
<tr>
<td>D+C</td>
<td>9'5&quot;</td>
<td>12'5&quot;</td>
<td>12'5&quot;</td>
</tr>
</tbody>
</table>

RECOMMENDED STANDARD DIMENSIONS

# PROVIDE A MIN. THICKNESS OF
2" OF ITEM 404, 3" OF ITEM 402,
AND 6" OF ITEM 301 FOR COMMERCIAL AND INDUSTRIAL PAVEMENTS.
LOCAL STREET TYPICAL SECTION
ASPHALT CONCRETE PAVEMENT
ASPHALTIC CONCRETE BASE

ITEM 404 – 1 1/2" ASPHALT CONCRETE SURFACE COURSE
ITEM 402 – 1 1/2" ASPHALT CONCRETE LEVELING COURSE
ITEM 407 – TACK COAT
ITEM 301 – 5" ASPHALTIC CONCRETE BASE (2-2 1/2" COURSES)
ITEM 201 – COMPACTED SUBGRADE

ITEM 609 – 4" CONCRETE, WALK SLOPE 1/4" PER 1'-0"
ITEM 609 – CONCRETE CURB AND GUTTER

PROVIDE DEEQ B 4" MIN. TOPSOIL MULCH ON 600.

LOW  HIGH
A  5'    6'
B  3.5'  4.1'
C  4'    5'
D  3.5'  4.5'
D+C 7.5'  9.5

RECOMMENDED
STANDARD DIMENSIONS
PRINCIPAL ARTERIAL STREET TYPICAL SECTION
CONCRETE PAVEMENT

RIGHT OF WAY

C
D
B
E
B
D+C

SLOPE 1/4" PER FT. 9"
SLOPE 1/2" PER FT. 0"

ITEM 201 - COMPACTED SUBGRADE

ITEM 460 - 10" CONCRETE

ITEM 608 - 4" CONCRETE WALK
SLOPE 1/4" PER FT. 0"

PROVIDE 4" MIN. TOPSOIL -
MULCH OR SOD.

ITEM 609 - INTEGRAL CURB & GUTTER

4 LANES | 6 LANES

<table>
<thead>
<tr>
<th></th>
<th>90'</th>
<th>120'</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>26'</td>
<td>41'</td>
</tr>
<tr>
<td>B</td>
<td>5'</td>
<td>5'</td>
</tr>
<tr>
<td>C</td>
<td>7' - 9'</td>
<td>7' - 10'</td>
</tr>
<tr>
<td>D</td>
<td>14' - 18'</td>
<td>14' - 20'</td>
</tr>
<tr>
<td>E</td>
<td>12' - 14'</td>
<td>12' - 15'</td>
</tr>
</tbody>
</table>

RECOMMENDED STANDARD DIMENSIONS
MINOR ARTERIAL STREET TYPICAL SECTION
CONCRETE PAVEMENT

RIGHT OF WAY

"A"  SLOPE 1/4" PER 1'-0"

"C"  PROVIDE 4" MIN. TOPSOIL
"D"  SEED & MULCH OR SOD.

ITEM 609 - INTEGRAL CURB & GUTTER

ITEM 609 - 1" CONCRETE WALK
SLOPE 1/4" PER 1'-0"

ITEM 201 - COMPACTED SUBGRADE

ITEM 450 - 10" CONCRETE

HIGH

<table>
<thead>
<tr>
<th></th>
<th>COMM / INDUS.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90'</td>
</tr>
<tr>
<td>B</td>
<td>6.5'</td>
</tr>
<tr>
<td>C</td>
<td>5'</td>
</tr>
<tr>
<td>D</td>
<td>7.5'</td>
</tr>
<tr>
<td>D+C</td>
<td>12.5'</td>
</tr>
</tbody>
</table>

RECOMMENDED
STANDARD DIMENSIONS

# PROVIDE A MIN. "B" CONCRETE PAVEMENT ITEM 450 FOR COMMERCIAL AND INDUSTRIAL PAVEMENTS.
COLLECTOR STREET TYPICAL SECTION
CONCRETE PAVEMENT

RIGHT OF WAY

1'-0"

"A"
SLOPE 1/4" PER 1'-0"

"B"
SLOPE 1/2" PER 1'-0"

"C"
ITEM 201 - COMPACTED SUBGRADE

"D"
ITEM 450 - 8" CONCRETE

ITEM 608 - 4" CONCRETE WALK
SLOPE 1/4" PER 1'-0"

ITEM 608 - INTEGRAL CURB & GUTTER

PROVIDE SEED & MULCH OR GOD.

LOW      MED      HIGH   COMM / INDUS. #

<table>
<thead>
<tr>
<th>A</th>
<th>60'</th>
<th>66'</th>
<th>70'</th>
<th>90'</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>4'</td>
<td>41'</td>
<td>45'</td>
<td>55'</td>
</tr>
<tr>
<td>C</td>
<td>5'</td>
<td>5'</td>
<td>5'</td>
<td>5'</td>
</tr>
<tr>
<td>D</td>
<td>4.5'</td>
<td>7.5'</td>
<td>7.5'</td>
<td>7.5'</td>
</tr>
<tr>
<td>D+C</td>
<td>9.5'</td>
<td>12.5'</td>
<td>12.5'</td>
<td>12.5'</td>
</tr>
</tbody>
</table>

RECOMMENDED STANDARD DIMENSIONS

# PROVIDE A MIN. "B" CONCRETE PAVEMENT ITEM 450 FOR COMMERCIAL AND INDUSTRIAL PAVEMENTS.
**TYPE "B"**
COMBINED CURB & GUTTER

**NOTE:**
1. USE WITH ALL ASPHALT PAVEMENTS.
2. 1/4" PREMOLDED EXPANSION JOINTS SHALL BE CONSTRUCTED EACH SIDE OF DRIVEWAY APPROACH SECTIONS AND AT P.C. POINTS AT INTERSECTIONS. BUT THE MAXIMUM SPACING SHALL NOT EXCEED 100′.

---

**TYPE "C"**
INTEGRAL CURB & GUTTER

**NOTE:**
1. USE IN BUSINESS AND INDUSTRIAL AREAS.
2. TRANSVERSE JOINTS SHALL BE EXTENDED THRU THE CURB.

---

**TYPE "D"**
MEDIAN CURB

**NOTE:**
1. USE AROUND ALL MEDIAN SECTIONS.
2. WHEN USED WITH CONCRETE PAVEMENTS, CURB SHALL BE KEYED AND NOT BE INTEGRALLY POURED.

---

**GENERAL NOTES:**

1. CONCRETE SHALL MEET THE REQUIREMENTS SET FORTH IN ITEM 609-CURBING.
2. WHEN USED WITH ASPHALT PAVEMENTS, TYPE "B, D & E" CURBING SHALL HAVE CONTRACTION JOINTS EVERY 10′.
3. WHEN TYPE "D" CURBING IS USED WITH CONCRETE PAVEMENTS, CONTRACTION JOINTS SHALL BE PLACED OPPOSITE CONTRACTION JOINTS IN THE PAVEMENT.
4. SIX (6) INCHES OF 304 SHALL BE PLACED UNDER TYPE "B, D & E" CURBING WHEN IN A FILL AREA OR AS DIRECTED BY THE ENGINEER.
5. CURBING SHALL BE BACKFILLED IMMEDIATELY AFTER FORMS ARE REMOVED.
6. IN ONE FOOT OR MORE OF FILL PROVIDE REINFORCING STEEL IN CURB SECTION 3 - 04 BARS @ 8″ O.C.
7. PROVIDE BROOM FINISH AND EDGING TO ALL EXPOSED SURFACES.

**CONCRETE CURB DETAILS**
TYPICAL CURB DRAIN DETAIL

GENERAL NOTES:
1. DOWNSPOUTS AND FOUNDATION DRAINS ARE TO BE CONNECTED TO CURB UNDERDRAIN, UNLESS OTHER DRAINAGE METHODS ARE APPROVED BY THE ENGINEER.
2. DRAINAGE THROUGH THE CURB IS PROHIBITED.
3. UNDERDRAIN SHALL BE CONNECTED TO A CATCH BASIN OR TO A NATURAL DRAINAGE-WAY IN MANNER APPROVED BY THE ENGINEER.

COMBINED CURB & GUTTER (TYP.)

ITEM 304 6" AGGREGATE BASE, AS DIRECTED BY THE ENGINEER.

6" PERFORATED PLASTIC CURB UNDERDRAIN BEDDED IN #57 AGGREGATE
**SECTIONS**

**GENERAL NOTES:**

1. DRIVE APPROACHES SHALL MEET THE REQUIREMENTS OF ITEM 500 - CAST IN PLACE CONCRETE.
2. ROLL CURBS SHALL NOT BE DEPRESSSED EXCEPT FOR HIGH TRAFFIC VOLUME DRIVE APPROACHES.
3. DRIVE APPROACHES SHALL NOT BE POURED MONOLITHICALLY WITH TYPE "B" CURB.
4. MAXIMUM JOINT SPACING SHALL BE 12' LONGITUDINALLY AND TRANSVERSELY.
5. DRIVE APPROACHES SHALL BE KEYED AT ALL CONSTRUCTION JOINTS.
6. EXPANSION MATERIAL SHALL BE 1/4" PREMOLDED.
7. 6" OF GRAVEL SHALL BE PLACED UNDER DRIVE APPROACHES IF DETERMINED NECESSARY BY THE ENGINEER.
8. PROVIDE BROOM FINISH AND EDGING TO ALL EXPOSED SURFACES.
9. CONCRETE SHALL BE 4000 PSI MIX.

---

**NOTES**

1. WHERE TYPE "C" CURB HAS NOT PREVIOUSLY BEEN DROPPED AT DRIVE APPROACHES, REMOVE AND REPLACE AS SHOWN IN SECTION.
2. WHERE TYPE "B" CURB HAS NOT BEEN DROPPED AT DRIVE APPROACHES, IT SHALL BE ENTIRELY REMOVED AND REPLACED AS SHOWN IN SECTION.
3. WHERE ASPHALTIC CONCRETE PAVEMENT IS DISTURBED, THE ASPHALT SHALL BE REPLACED AS DIRECTED BY THE ENGINEER.

---

**RESIDENTIAL & COMMERCIAL DRIVEWAY APPROACHES**
CONCRETE PAVEMENT JOINT DETAILS

TYPE "A"
EXPANSION JOINT

FILL WITH JOINT SEALER
EXPANSION FILLER
3/4" SMOOTH DOWEL 15" LG.
0.12" CTR.
LUBE THIS END

TYPE "A"
ALTERNATE EXPANSION JOINT

T/4
1/8" R

1/8" R

1/4" KEYWAY FORMED BY FASTENING METAL KEY TO FORM

TYPE "B"
LONGITUDINAL CONSTRUCTION JOINT

T/4
1/4" KEYWAY FORMED BY FASTENING METAL KEY TO FORM

TYPE "C"
SAWED OR PREMOLDED STRIP

FLUSH WITH SURFACE
PREMOLDED STRIP

TYPE "D"
TRANSVERSE CONSTRUCTION JOINT

1/8" R

1/8" R

1/8" R

3/4" SMOOTH DOWEL 15" LG.
0.12" CTR.
LUBE ONE END

TYPE "E"
TIED TRANSVERSE CONSTRUCTION JOINT

DEFORMED TIE BARS
3/8" 18° 24° CTR.

NOTE:
- THESE DOWELLED JOINTS MUST BE CONSTRUCTED PERPENDICULAR TO THE CENTERLINE OF PAVEMENT.
CONCRETE PAVEMENT CONSTRUCTION JOINTS

PLAN OF JOINT LOCATION

END OF DAYS WORK

NOTE: SEE STD. DRAWING FOR CONCRETE PAVEMENT JOINT DETAILS.

CUL DE SAC OPEN CENTER
CUL DE SAC FULLY PAVED
COMMERCIAL SERVICE DRIVE APPROACH

NOTE: WHERE DISTANCE FROM FACE OF CURB TO FRONT FACE OF SIDEWALK EXCEEDS 16', A 2" TRANSVERSE DUMMY JOINT SHALL BE PLACED AT RADIUS POINT OR AS DIRECTED BY THE ENGINEER.

END OF THE TRANSITIONAL CURB

3/8" EXPANSION JOINT

MIN. 1" LIP OR AS DIRECTED BY THE ENGINEER

3/8" EXPANSION JOINT

CURB AND GUTTER EXPANSION JOINT (CURB ONLY WITH CONCRETE PAVEMENT)

NOTE: MINIMUM WIDTH FOR ONE-WAY TRAFFIC IS 16'-0".
MINIMUM WIDTH FOR TWO-WAY TRAFFIC IS 23'-0".
MAXIMUM WIDTH IS 30'-0" UNLESS OTHERWISE APPROVED BY THE ENGINEER.

DRIVE VOLUME VPH (ONE DIRECTION)

<table>
<thead>
<tr>
<th>Curb Radius</th>
<th>&lt;100</th>
<th>100-400</th>
<th>&gt;400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low V</td>
<td>10</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>High V</td>
<td>5</td>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>

CURB RADIUS = R

PERSPECTIVE VIEW

NOTE: SEE TABLE FOR CURB RADIUS

NOTE: CONCRETE GUTTER MAY BE OMITTED AT THE DIRECTION OF THE ENGINEER FOR ASPHALTIC CONCRETE PAVEMENT.

SECTION A - A

NOTE: SEE NOTE CONCERNING WIDTH

3/8" EXPANSION JOINTS WITH CONCRETE PAVEMENT ONLY OR AS DIRECTED BY THE ENGINEER

1/2" DIA DEFORMED BAR TWO 1/2" DIA DEFORMED BARS 3'-0" IN LENGTH PLACED AS SHOWN EACH SIDE.

PLAN VIEW

GENERAL NOTES

Joints shall be cleaned and edged by a 1/4" radius edger. Longitudinal joints shall be as directed by the engineer. Expansion joints shall be of such dimensions as shown on standard drawings for construction joints. Material shall meet the requirements of these specifications.

Driveway approach radius shall be determined by Director of Public Works or a designated assignee.

5'-0" WALK AREA

TRANSITIONAL CURB (VARIABLE)

8" OF 4000 PSI CONCRETE ON 15" COMPACTED 8411 STONE.
Pavement thickness shall be consistent with the adjacent street or as directed by engineer.

3/8" EXPANSION JOINT WITH CONCRETE PAVEMENT ONLY OR AS DIRECTED BY THE ENGINEER
1. All sidewalks & ramps to be concrete 4000 PSI compressive strength at 28 days. No asphalt to be used.

2. All concrete to have 5% to 6% air to supplier.
   (A) If ready-mix, specify 5% to 6% air to supplier.
   (B) If job mix, use bags of air-entainment type cement.

3. All concrete to be kept wet for 4 or 5 days after replacement.

4. Recommend use of mesh reinforcement. 6x6 10/10 g21 lb. mesh.

5. All subgrade to be well-compacted. Recommend addition of 2-inch thick (minimum) granular base, compacted.

6. Provide broom finish to all exposed surfaces. Keep working of surfaces to absolute minimum.

7. Provide a minimum of 2 inches edging around all exposed surfaces.

GENERAL NOTES

1. Drive approaches shall meet the requirements of concrete notes on this sheet.

2. Drive approaches shall not be poured monolithically with type "B" curb.

3. Maximum joint spacing shall be 12 feet both ways.

4. Drive approaches shall be keyed at all construction joints.

5. Expansion material shall be 1/4 inch pre-molded.

6. 3 inches of gravel shall be placed under drive approaches if determined necessary by the engineer.

7. Where type "B" curb has not been dropped at drive approaches, it shall be entirely removed and replaced as shown in section.

8. Where asphaltic concrete pavement is disturbed, the asphalt shall be replaced as directed by the engineer.

*SEE TYPICAL ROADWAY SECTIONS FOR STANDARD VALUES.

RESIDENTIAL DRIVEWAY APPROACH
NOTES
POSTS MAY BE ROUND (SINGLE RAIL ONLY) OR 6" X 6" SQUARE SAWSDRESSED PRESSURE-TREATED WOOD OR W6 x 85 GALVANIZED STEEL. THE SAME TYPE POST SHALL BE USED THROUGHOUT THE LENGTH OF PROJECT UNLESS OTHERWISE REQUIRED BY THE PLANS OR PERMITTED BY THE ENGINEER. ROUND POST SHALL BE 3" PLUS OR MINUS 1" IN DIAMETER AT THE TOP AND NOT MORE THAN 11" AT THE BUTT WITH UNIFORM TAPER FROM TOP TO BUTT.

PLACE A 12" LONG SECTION OF RAIL BETWEEN THE GUARDRAIL AND POST AT EACH POST WHERE A RAIL SPLICE DOES NOT OCCUR.

BARRIER
STANDARD

6" X 6" WOOD BLOCK

SPlice BOLTS
5/8" POST BOLTS

6" X 8" STEEL

5/8" HEX HEAD BOLTS & NUTS (2 PER SIDE OF POST)

W6 x 10 STEEL

5/8" X 1/2" STEEL PLATE WASHER

SECTION A-A

INLET MOUNTED POST

ROUND WOOD POST

METHOD 1

METHOD 2

NOTE: ALTERNATE METHODS OF PLACING THE SPACER BLOCKS ON THE ROUND POSTS MAY BE SUBMITTED FOR CONSIDERATION AND APPROVAL BY THE ENGINEER.

NOTE: PLACE ONE RECTANGULAR WASHER BETWEEN BOLT HEAD OR NUT AND THE FACE OF RAIL. ALL OTHER WASHERS ARE STAFFED.
GUARDRAIL ANCHOR ASSEMBLY

**SINGLE RAIL - PLAN VIEW**

- Type 5 or Type 7 Guardrail
- Anchor Assembly
- Post "A" Post "B" Post "C"
- Normal face of rail
- 36" Dia. Concrete Anchor
- No 3 bars

**BARRIER RAIL - PLAN VIEW**

- Type 5 Guardrail
- Anchor Assembly
- Post "A" Post "B" Post "C"
- No 3 bars

**SPECIAL END SHOE**

- 0.187" Steel
- 25.0" Rail Section
- 6.0" Post Bolt Slot
- 1" Formed Chamfer

**CONCRETE ANCHOR**

- 7/8" Dia. 1/2" Galv. Bolts or Self-Drilling Anchor Shields with 7/8" Dia. 1/2" Hex Head Bolts & Standard Galv. Washers

**SINGLE & BARRIER RAIL - ELEVATION VIEW**

- See Plan View
- 6'-3" 6'-3" 12'-6" C/C Post Bolt Holes
- A 25'-0" Rail Shall be Twisted 90° with Care Leaving No Kings in the Curve.
- W6+85'5'-9" W6+85'5'-9" W6+85'
- Class "A" Concrete
- No 3 bars (2' Concrete Cover on All Bars)

**NOTES**

- Anchor Assembly Shall be Used at Each Free End of Type 5 Guard or Barrier Rail
- Form Top 4" of Anchor and Slope the Top to Conform to Slope of the Adjacent Ground. The 36" Dia. Anchor May be Replaced by a 21/2" Square Anchor at the Contractor's Option
- Spacers for Posts B and C Shall be Made of 3/16" Steel Plate or Two Sections of W6+85'5'-9" or W6+85'5'-9" Cut in the Web (See Dashed Line) and Welded Together on Both Sides
- All Steel Spacers and Posts May be Provided with Additional Bolt Hole So That These Items Will Not Be Required to Be Made Right and Left Handed
- Spacer Shall be Fastened to Their Posts with Two 5/8" Hex-Head Bolts and Nuts with Standard Washers on Both Sides
- Place One Rectangular Washer Between Post Bolt Head or Nut and the Face of Rail
- All Other Washers Indicated on This Drawing Are Standard Galvanized Steel of the Appropriate Size
- Concrete: All Concrete Shall be Class A
- Minimum Post Encasement Shall be 4"
1. All sidewalks & ramps to be concrete, 4000 psi compressive strength at 28 days. No asphalt to be used.
2. Residential sidewalks to be minimum of 4' width. Commercial and downtown sidewalks to be a minimum of 6' width.
3. All concrete to have 5% to 6% air entrainment, provided by:
   (A) If ready-mix, specify 5% to 6% air to supplier
   (B) If job mix, use bags of air-entrainment type cement
4. All concrete to be kept wet for 4 or 5 days after placement.
5. Recommend use of mesh reinforcement, 6x6 = 10/10 (21 lb. mesh).
6. All subgrade to be well-compacted. Recommend addition 4-inch thick (minimum) granular base, compacted.
7. Provide broom finish to all exposed surfaces. Keep working of surfaces to absolute minimum.
8. Provide a minimum of 2-inches edging around all exposed surfaces.
SIDEWALK SPECIFICATIONS

NOTES

1. ALL SIDEWALKS & RAMPS TO BE CONCRETE, 4000 PSI COMPRESSIVE STRENGTH AT 28 DAYS. NO ASPHALT TO BE USED.
2. RESIDENTIAL SIDEWALKS TO BE MINIMUM OF 4’ WIDTH. COMMERCIAL AND DOWNTOWN SIDEWALKS TO BE A MINIMUM OF 6’ WIDTH.
3. ALL CONCRETE TO HAVE 5% TO 6% AIR ENTRAINMENT, PROVIDED BY,
   (A) IF READY-MIX, SPECIFY 5% TO 6% AIR TO SUPPLIER
   (B) IF JOB MIX, USE BAGS OF AIR-ENTRAINMENT TYPE CEMENT
4. ALL CONCRETE TO BE KEPT WET FOR 4 OR 5 DAYS AFTER PLACEMENT.
5. RECOMMEND USE OF MESH REINFORCEMENT, 6x6 = 10/10 (21 LB.MESH).
6. ALL SUBGRADE TO BE WELL-COMPACTED. RECOMMEND ADDITION 4-INCH THICK (MINIMUM) GRANULAR BASE, COMPACTED.
7. PROVIDE BROOM FINISH TO ALL EXPOSED SURFACES. KEEP WORKING OF SURFACES TO ABSOLUTE MINIMUM.
8. PROVIDE A MINIMUM OF 2-INCHES EDGING AROUND ALL EXPOSED SURFACES.
1. BRICKS MUST BE SOLID – PERFORATED BRICK SHALL NOT BE USED.
2. PLAN VIEW: BRICKS MAY BE PLACED IN ARCHITECTURAL PATTERNS AS DESIRED
3. CONCRETE SLAB SHOULD NOT USE EXPANSION JOINTS.
4. ALL DIMENSIONS SUCH AS WIDTH, SLOPE AND DISTANCE FROM CURB SHALL BE TO CITY STANDARDS.
5. DOWNTOWN SIDEWALKS SHALL BE 6’ MINIMUM WIDTH.
6. BRICKS MUST BE EVENLY PLACED TO GRADE TO PRESENT A GOOD WALKING SURFACE, AND MORTAR MUST NOT EXTEND HIGHER THAN WALKING SURFACE.

NOTES
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7. PROVIDE BROOM FINISH TO ALL EXPOSED SURFACES. KEEP WORKING OF SURFACES TO ABSOLUTE MINIMUM.
8. PROVIDE A MINIMUM OF 2-INCHES EDGEING AROUND ALL EXPOSED SURFACES.

SIDEWALK SPECIFICATIONS
(OPTIONAL BRICK)
DOWNTOWN AREAS
Curb Ramps

Any combination of side slopes on opposite sides of a ramp may be used to best fit the site conditions.

The minimum ramp length is 5' from back of a 6' curb and may be increased where feasible to obtain a walk configuration.

Walk thickness in the ramp shall be 4" minimum or thicker as necessary.

Surface texture shall be obtained by coarse brooming transverse to the ramp slopes and shall be rougher than adjacent walk.

A 1/2" expansion joint filler should be provided at the edge of ramps built in existing concrete walk.

Normal 5'-0" 4'-0" 3'-0" 2'-0" 1'-0"

Depressed curb

5'-0" 4'-0" 3'-0" 2'-0" 1'-0"
BIKEWAY CLASSIFICATION

CLASS I - BIKE PATH - A COMPLETELY SEPARATED RIGHT-OF-WAY DESIGNATED FOR THE EXCLUSIVE USE OF BICYCLES. CROSS-FLOWS BY PEDESTRIANS AND MOTORISTS ARE MINIMIZED.

CLASS II - BIKE LANE - A RESTRICTED RIGHT-OF-WAY DESIGNATED FOR THE EXCLUSIVE USE OF BICYCLES. THROUGH TRAVEL BY MOTOR VEHICLES OR PEDESTRIANS IS NOT ALLOWED. HOWEVER, VEHICLE PARKING MAY BE ALLOWED. CROSS FLOWS BY MOTORISTS, FOR EXAMPLE, TO GAIN ACCESS TO DRIVeways OR PARKING FACILITIES, IS ALLOWED. PEDESTRIANS CROSS FLOWS, FOR EXAMPLE, TO GAIN ACCESS TO PARKED VEHICLES OR BUS STOPS OR ASSOCIATED LAND USE, IS ALLOWED.

CLASS III - BIKE ROUTE - A SHARED RIGHT-OF-WAY DESIGNATED AS SUCH BY SIGNS PLACED ON VERTICAL POSTS OR STENCILLED ON THE PAVEMENT. ANY BIKEWAY WHICH SHARES ITS THOUGH-TRAFFIC RIGHT-OF-WAY WITH EITHER MOVING MOTOR VEHICLES OR PEDESTRIANS IS CONSIDERED A CLASS III BIKEWAY.

NOTES:
WHERE BIKEWAY IS ON EXISTING PAVEMENT THE EXISTING PAVEMENT THICKNESS IS SUFFICIENT.
FOR INDEPENDENT BIKE PATHS SEE STANDARD DRAWINGS FOR TYPICAL CROSS SECTIONS.
MIN OVERHEAD CLEARANCE IS 8'.
TYPICAL CROSS SECTIONS—INDEPENDENT BIKEWAYS

MIN. SLOPE 1/4" PER 1'-0"

ITEM 450 - 4" CONCRETE
ITEM 201 - COMPACTED SUBGRADE

CONCRETE PAVEMENT

MIN. SLOPE 1/4" PER 1'-0"

ITEM 408 - PRIME COAT
ITEM 301 - 4" BITUMINOUS AGGREGATE BASE
ITEM 201 - COMPACTED SUBGRADE

NOTE: WHERE BIKEWAY IS ON EXISTING PAVEMENT, THE EXISTING PAVEMENT THICKNESS IS SUFFICIENT.

ASPHALT PAVEMENT WITH BITUMINOUS AGGREGATE BASE

MIN. SLOPE 1/4" PER 1'-0"

ITEM 404 - 4" ASPHALT CONCRETE SURFACE COURSE
ITEM 201 - COMPACTED SUBGRADE

RECOMMENDED BIKEWAY WIDTHS ARE 6' MIN. AND 8' DESIRABLE.

ASPHALT PAVEMENT ON COMPACTED SUBGRADE