CITY OF AUBURN WASHINGTON

PERMIT CENTER

HANDOUT ON ACCESSING CITY STREETS

Informational Brochure

March 2010

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The intent of this handout is to provide an informative summary of selected sections of the City of Auburn's Design Standards dealing with site access. This handout is intended to aid in understanding the City's Design Standards manual, not replace or supercede any portion of the Manual or good engineering practices.

Driveway Locations

While no property will be denied access to the City streets, direct street access is not guaranteed. Properties may be required to access the street via an alley, or two or more contiguous properties may be required to share a single driveway. When a property has frontage on two or more streets, the driveway shall be located on the street with the lowest classification unless safety considerations dictate otherwise. Multiple access points to a property will be allowed only after City review and approval.

Properties located on arterials where no alternate access is available may be restricted to a right-in right-out driveway. Additionally, these properties may be required to construct street improvements, including but not limited to C-curb, to preclude left turning traffic.

The redevelopment of a property will not guarantee that the existing driveways be retained. The City may eliminate or require modification to any existing driveway not in conformance with City standards.

The spacing of driveways and their separation from intersections is critical to maintain traffic flow while providing safe ingress and egress. For all streets except local residential streets, the "Functional Intersection Boundary" rules apply.

Functional Intersection Boundary — See Table 10-4 & Figure 10-3

A functional intersection boundary is the portion of the street leading up to the intersection required to allow vehicle movements and storage. This is the area within which drivers identify the situation, change lanes, come to a stop, and wait before proceeding through the intersection. The minimum maneuvering distance assumes the driver is in the proper lane and only needs to change lanes for a right or left turn pocket. The functional length of an intersection is measured from the stop bar or point of curvature/point of tangency (PC/PT) of the curb return. Parameters that must be evaluated in the determination of the maneuvering distance include the following:

- d_1 : Decision Distance. The distance traveled during the reaction time required by the driver for preparing to brake or to change lanes and brake.
- d_2 : Lane Change Distance. Braking while moving laterally is a more complex maneuver than braking alone.
- d_3 : Braking distance traveled during full deceleration and coming to a stop or to a speed at which a turn can be comfortably executed.
- d_4 : The storage length of the intersection. This length will depend on the volume of traffic the intersection was designed for.

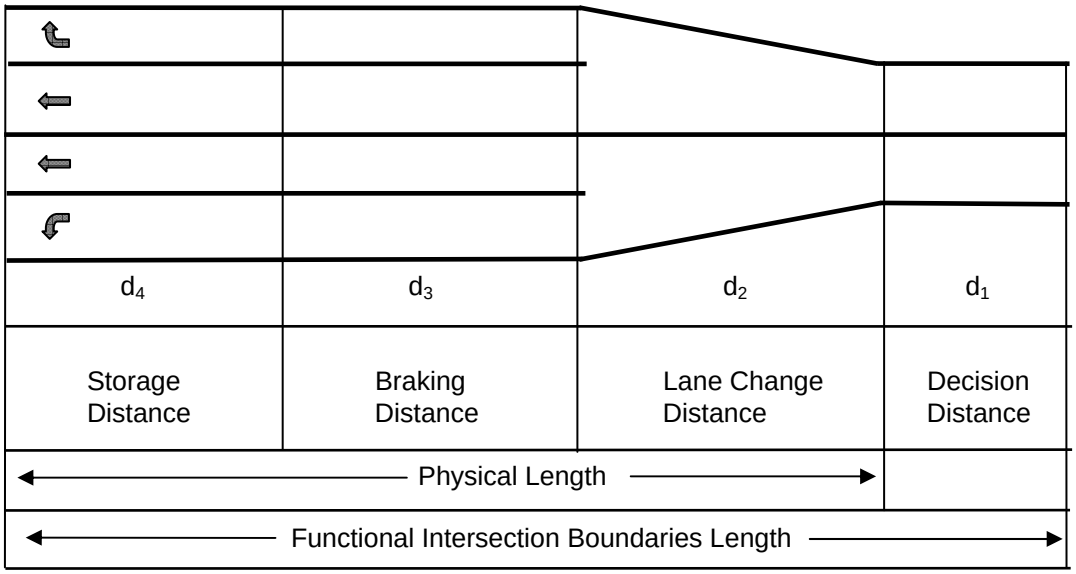
Table 10-4
Distance Requirements for Functional Intersection Boundaries

Speed mph	Speed ft/sec	Reaction Time (sec)	Decision Distance (ft) "d_1"	Lane Change Distance (ft) "d_2"	Braking Distance (ft) "d_3"	Storage Length* (ft) "d_4"	Functional Intersection Boundary Length $d_1+d_2+d_3+d_4$ (ft)
25 mph	37	1	37	25	60	100	222
30 mph	44	1	44	40	86	100	270
35 mph	51	1	51	60	118	100	329
40 mph	59	1	59	85	154	100	398
45 mph	66	1	66	105	194	100	465
50 mph	73	1	73	140	240	100	553

The preceding table lists the minimum distances required. The numbers shown are for the average passenger vehicle. Intersections with exceptionally high volumes of truck traffic will require longer distances in all categories.

* Minimum storage distance has been set at one hundred feet (100'). Intersections that exhibit high volumes of traffic on a consistent basis will be required to design storage distances based on a traffic study.

Figure 10-3
Functional Length Diagram of an Intersection with Right and Left-Turn Lane

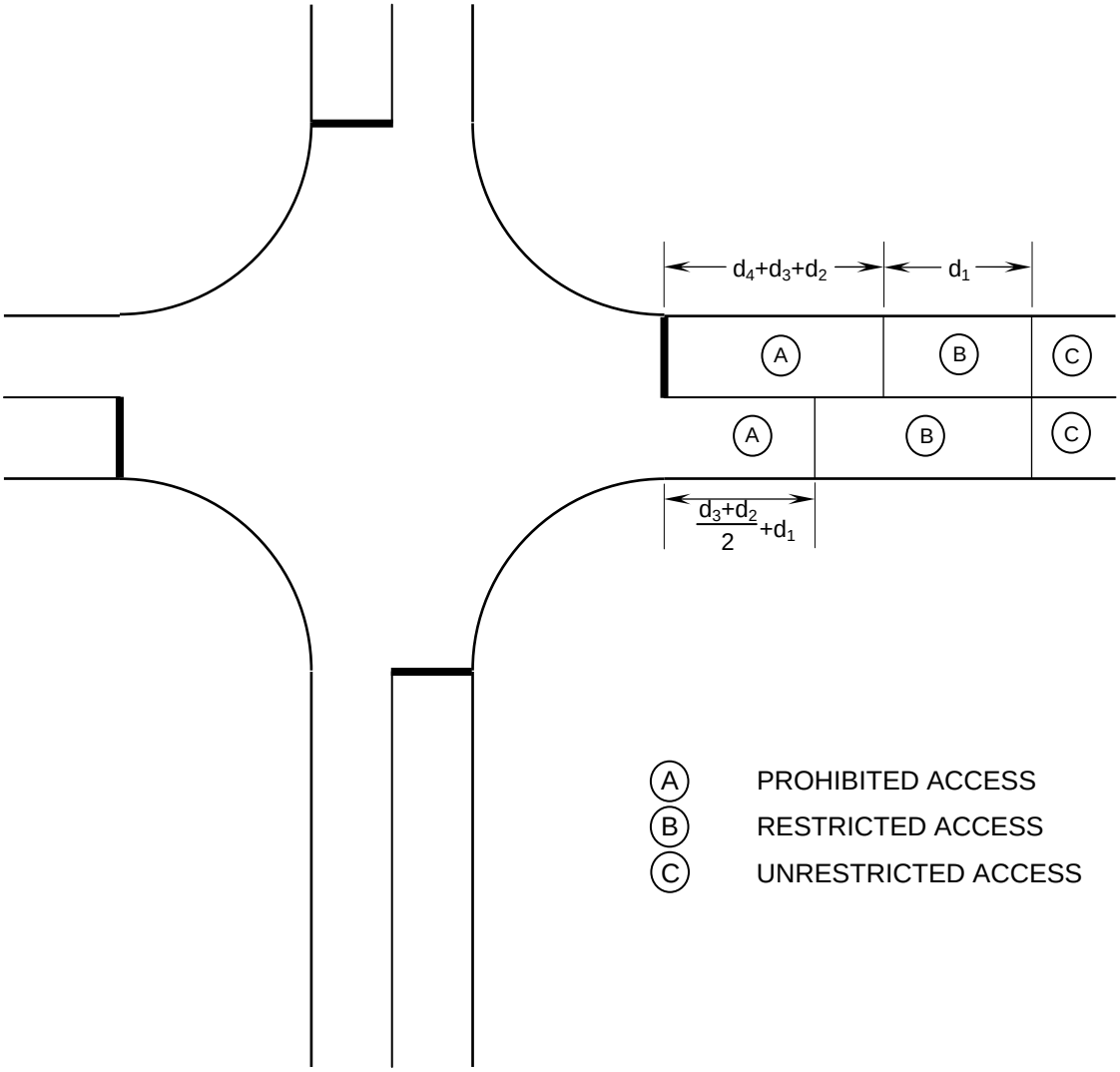


For intersections where left and right turns are not provided with their own turn pockets, the lane change distance (d_2) will become zero (0).

Street intersections will heavily influence driveway locations. Driveways will not be allowed within the physical length ($d_4+d_3+d_2$) portion of the "Functional Intersection Boundary" for the side of the street where traffic is entering the intersection. Restricted access, right-in right-out, may be allowed within the decision distance (d_1) portion of the "Functional Intersection Boundary" along the direction of traffic. For the side of the street where traffic is exiting the intersection, restricted access will be allowed a distance equal to half the stopping distance ($½d_3$) plus the decision distance (d_1) from the intersection. (See Figure 10-4)

Figure 10-4

Functional Intersection Boundary Driveway Restrictions



Driveway Layout

Driveways shall be designed in such a manner as to allow for efficient and safe ingress and egress from the City streets. Driveways and on-site parking, other than that for single-family residences on unclassified roads, shall be designed such that vehicle-backing maneuvers will not occur onto the street. A properly designed driveway shall allow the largest typical vehicle that will use the driveway (i.e. tractor-trailers at large warehouses, beer trucks at mini marts) to enter and exit the site without encroaching into opposing traffic.

Driveways for adjacent properties should be separated by a minimum of ten feet (10') for residential and fifty feet (50') for commercial/industrial. This distance should be measured from the outside edge of the driveway apron. When this separation is not obtainable, a single driveway centered on the property line may be required.

When designing site layout and driveway access, internal circulation shall be such that onsite traffic will not backup the driveway impeding vehicles in the public street. The City may require sites with internal traffic congestion to design driveways with long throat lengths to provide extra storage to avoid impacting City streets.

Driveway Alignment (Horizontal & Vertical)

Driveways should be aligned horizontally to as near perpendicular to the City street as possible. The angle of intersection to the City street may not be less than seventy-five degrees (75°). Right-in-right-out driveways where the entering and exiting lanes are separated by a raised "pork chop" may reduce the angle to forty-five degrees (45°).

The vertical grade behind the driveway shall not exceed twelve percent (12%) and shall be designed in such a way as to preclude vehicles dragging when entering or exiting the site.

Driveway Widths

Residential — See Standard Detail Traffic-07 & -08

Residential driveways shall be used when serving four (4) or fewer living units. Driveway widths shall be a minimum of ten feet (10') and a maximum of twenty-four feet (24'). Residential driveways shall be constructed using a minimum thickness of six inches (6") of non-reinforced concrete.

Commercial/Industrial — See Standard Detail Traffic-09 & 10

Commercial and industrial driveway widths shall be based on the number of lanes used on the driveway and the type of use. Commercial driveways shall be constructed using a minimum thickness of eight inches (8") of reinforced concrete. The three categories described below will be determined based on the vehicles expected to use the site.

A. Light commercial/industrial driveways should be used for sites where the average vehicle use will range from passenger vehicles to small size delivery trucks. Examples include mini marts, strip malls, fast-food restaurants,

triplexes, and small apartment buildings. Driveways will have one entering lane and up to two exiting lanes with the lane widths restricted to a maximum of twelve feet (12').

B. Medium commercial/industrial driveways should be used for sites where the average vehicle use will range from medium to high volumes of passenger vehicles to multiple medium delivery trucks per day and the occasional large tractor/trailer delivery truck. Examples include supermarkets, large outlet stores, shopping malls, large apartment buildings, and busy retail stores located on arterials. Driveways will have one entering lane and up to two exiting lanes with the lane widths restricted to a maximum of fourteen feet (14').

C. Heavy commercial/industrial driveways should be used for sites where high volumes of medium to large tractor/trailer trucks enter and exit every day. Examples include manufacturing and storage warehouses. Driveways will have one entering lane and one exiting lane with the lane widths restricted to a maximum of sixteen feet (16').

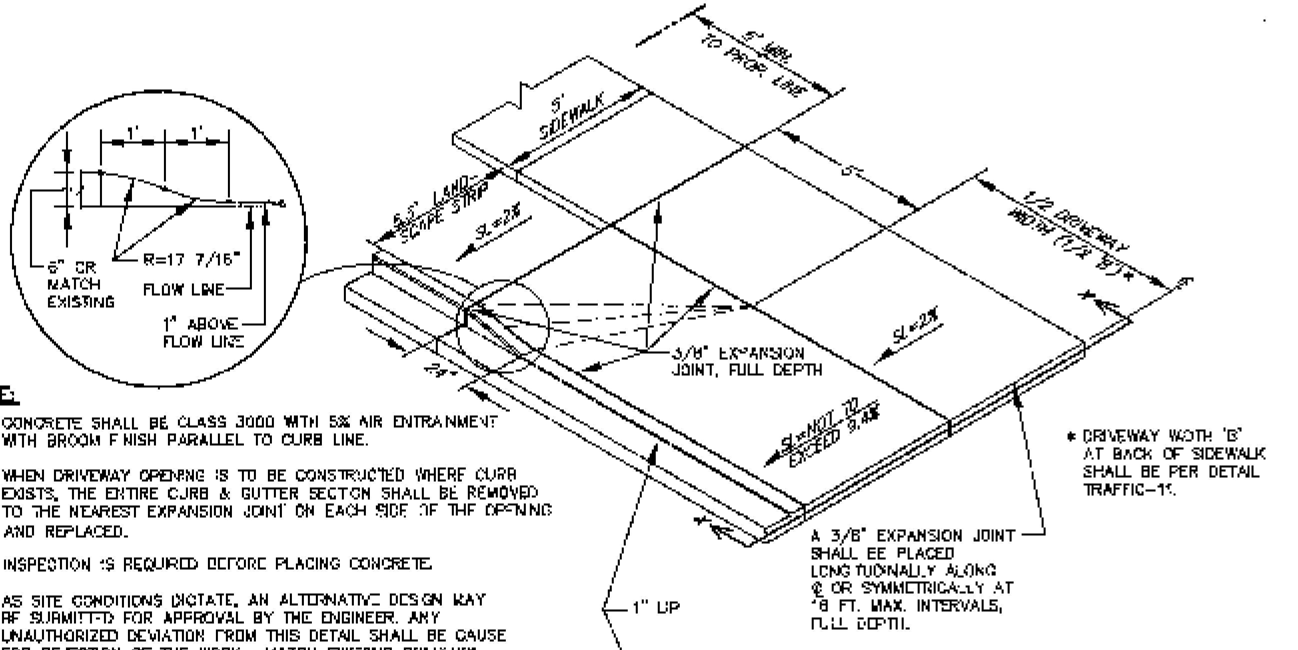
Driveway uses discussed above may be subject to change based on the street classification on which they are located. For example: a site use that may normally fall under the light commercial/industrial classification may be upgraded to a medium commercial/industrial classification if it is located on a principal or minor arterial to facilitate moving vehicles off the right-of-way in a more efficient manor.

Restricted Access Driveways

Restricted Access driveways are typically driveways that do not allow left-hand turns out of or into the driveway. Development or redevelopment of properties where the required setback from an intersection cannot be achieved in any direction and without other ways to access the site will be allowed a restricted access driveway. The installation of the driveway may require the developer to install "C-curb" at the road centerline or at the edge of the center turn lane to prevent left turns. In some cases a raised median may be required.

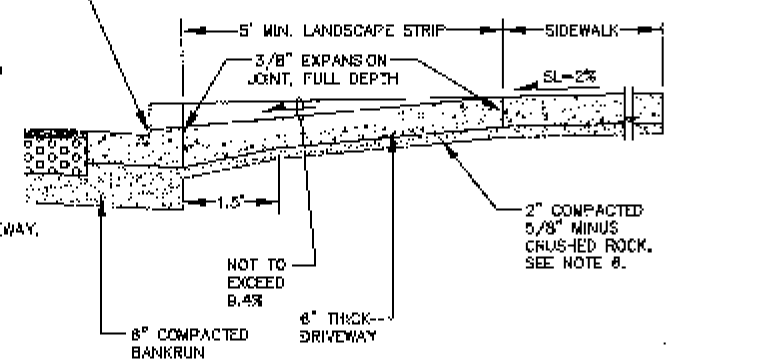
Restricted Access Driveways will only be allowed upon City approval. The existence of other driveways in the vicinity that do not meet the above standards will not be grounds for allowing further substandard driveways.

NOTE: At the present time the City is working on revising the commercial driveway details contained herein. Please contact Costa Philippides at 253-804-5063 for the most current information.



NOTE:

1) CONCRETE SHALL BE CLASS 3000 WITH 5% AIR ENTRAINMENT WITH BROOM FINISH PARALLEL TO CURB LINE.
2) WHEN DRIVEWAY OPENING IS TO BE CONSTRUCTED WHERE CURB EXISTS, THE ENTIRE CURB & GUTTER SECTION SHALL BE REMOVED TO THE NEAREST EXPANSION JOINT ON EACH SIDE OF THE OPENING AND REPLACED.
3) INSPECTION IS REQUIRED BEFORE PLACING CONCRETE.
4) AS SITE CONDITIONS DICTATE, AN ALTERNATIVE DESIGN MAY BE SUBMITTED FOR APPROVAL BY THE ENGINEER. ANY UNAUTHORIZED DEVIATION FROM THIS DETAIL SHALL BE CAUSE FOR REJECTION OF THE WORK. MATCH EXISTING CONDITION WHEN DIRECTED BY THE ENGINEER.
5) ALL WORK SHALL COMPLY WITH THE CITY OF AUBURN STANDARD CONSTRUCTION SPECIFICATIONS.
6) CRUSHED ROCK TO BE PLACED WHERE SUB GRADE IS UNSTABLE AS DIRECTED BY THE ENGINEER.
7) RESIDENTIAL DRIVEWAYS SERVING LESS THAN 4 LIVING UNITS SHALL BE 6" THICK WITH NO REINFORCEMENT REQUIRED. CURB TO BE POURED SEPARATE FROM DRIVEWAY WITH FULL DEPTH EXPANSION JOINT MATERIAL BETWEEN BACK OF CURB AND DRIVEWAY.
8) RESIDENTIAL DRIVEWAY SERVING 4 OR MORE LIVING UNITS SHALL BE CONSTRUCTED AS A COMMERCIAL/INDUSTRIAL DRIVEWAY (TRAFFIC-09).
9) OPTIONAL, IF ADJACENT PROPERTY FINISH GRADE IS LOWER THAN THE BACK OF SIDEWALK GRADE, THEN THIS DETAIL MAY BE SUBSTITUTED BY DETAIL TRAFFIC-08.
10) SEE DETAIL TRAFFIC-11 FOR DRIVEWAY WIDTHS AND LOCATIONS.



SECTION X–X
NOT TO SCALE

APPROVED BY CITY ENGINEER: DATE: 2/26/09

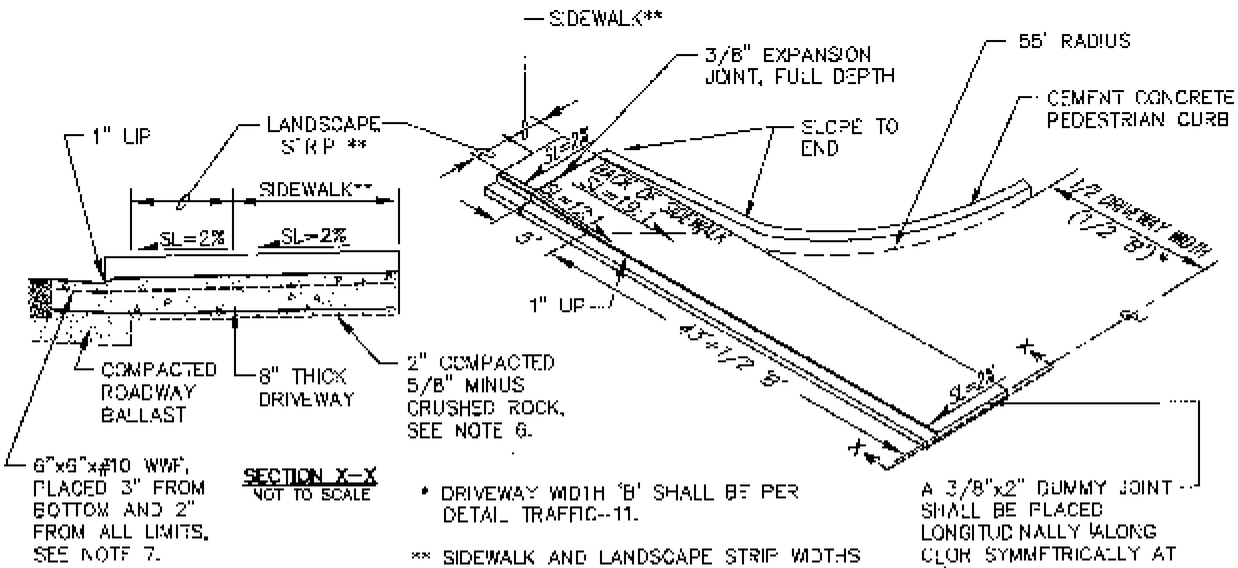
AUBURN WASHINGTON

RESIDENTIAL DRIVEWAY

CITY OF AUBURN, WA. — DEPT. OF PUBLIC WORKS STANDARD DETAIL: **TRAFFIC–07**

APPROVED BY CITY ENGINEER:
DATE: 2/26/09
AUBURN
ALTERNATE RESIDENTIAL DRIVEWAY
CITY OF AUBURN, WA. – DEPT. OF PUBLIC WORKS STANDARD DETAIL: TRAFFIC-08
5' SIDEWALK
5' MIN. TO PROPERTY LINE
PROPERTY LINE
BACK OF SIDEWALK
LANDSCAPE STRIP (0 TO 5.5')
3/8" EXPANSION JOINT, FULL DEPTH
1/2 DRIVEWAY WIDTH (1/2 'B')
3/8" EXPANSION JOINT, FULL DEPTH
1" JP
A 3/8" EXPANSION JOINT SHALL BE PLACED LONGITUDINALLY ALONG @ OR SYMMETRICALLY AT 16 FT. MAX. INTERVALS, FULL DEPTH.
* DRIVEWAY WIDTH 'B' AT BACK OF SIDEWALK SHALL BE PER DETAIL TRAFFIC-11.
1" LIP
COMPACTED ROADWAY BALLAST
1.5'
6" THICK DRIVEWAY
2" COMPACTED 5/8" MINUS CRUSHED ROCK, SEE NOTE 8.
SECTION X-X
NOT TO SCALE
NOTE:
1) CONCRETE SHALL BE CLASS 3000 WITH 5% AIR ENTRAINMENT WITH BROOM FINISH PARALLEL TO CURB LINE.
2) WHEN DRIVEWAY OPENING IS TO BE CONSTRUCTED WHERE CURB EXISTS, THE ENTIRE CURB & GUTTER SECTION SHALL BE REMOVED TO NEAREST EXPANSION JOINT ON EACH SIDE OF THE OPENING AND REPLACED.
3) INSPECTION IS REQUIRED BEFORE PLACING CONCRETE.
4) AS SITE CONDITIONS DICTATE, AN ALTERNATIVE DESIGN MAY BE SUBMITTED FOR APPROVAL BY THE ENGINEER. ANY UNAUTHORIZED DEVIATION FROM THIS DETAIL SHALL BE CAUSE FOR REJECTION OF THE WORK. MATCH EXISTING CONDITION WHEN DIRECTED BY THE ENGINEER.
5) ALL WORK SHALL COMPLY WITH THE CITY OF AUBURN STANDARD CONSTRUCTION SPECIFICATIONS.
6) CRUSHED ROCK TO BE PLACED WHERE SUBGRADE IS UNSUITABLE AS DIRECTED BY THE ENGINEER.
7) RESIDENTIAL DRIVEWAYS, SERVING LESS THAN 4 LIVING UNITS, SHALL BE 6" THICK WITH NO REINFORCEMENT REQUIRED. CURB TO BE POURED SEPARATE FROM DRIVEWAY WITH FULL DEPTH EXPANSION JOINT MATERIAL BETWEEN BACK OF CURB AND DRIVEWAY.
8) DRIVEWAYS SERVING 4 OR MORE LIVING UNITS SHALL BE CONSTRUCTED AS A COMMERCIAL/INDUSTRIAL DRIVEWAYS.
9) SEE DETAIL TRAFFIC-11 FOR DRIVEWAY WIDTHS AND LOCATIONS.

3/8" EXPANSION JOINT, FULL DEPTH
SLOPE TO END
CURB RETURN
R-1'
1/2 DRIVEWAY WIDTH (1/2 B)*
BACK OF SIDEWALK
S=12.1
S=2%
10' SIDEWALK, SEE NOTE 10
1" LIP
COMPACTED ROADWAY BALLAST
2" COMPACTED 5/8" MINUS CRUSHED ROCK, SEE NOTE 6.
8" THICK DRIVEWAY
6"x6"x#10 WWF, PLACED 3" FROM BOTTOM AND 2" FROM ALL LIMITS, SEE NOTE 7.
SECTION X-X
NOT TO SCALE
* DRIVEWAY WIDTH 'B' AT BACK OF SIDEWALK SHALL BE PER DETAIL TRAFFIC-11
A 3/8" x 2" DUMMY JOINT SHALL BE PLACED LONGITUDINALLY ALONG ℄ OR SYMMETRICALLY AT 16 FT. MAX. INTERVALS.
NOTE:
1) CONCRETE SHALL BE CLASS 3000 WITH 5% AR ENTRAINMENT WITH BROOM FINISH PARALLEL TO CURB LINE.
2) WHEN DRIVEWAY OPENING IS TO BE CONSTRUCTED WHERE CURB EXISTS, THE ENTIRE CURB & GUTTER SECTION SHALL BE REMOVED TO THE NEAREST EXPANSION JOINT ON EACH SIDE OF THE OPENING AND REPLACED.
3) INSPECTION IS REQUIRED BEFORE PLACING CONCRETE.
4) AS SITE CONDITIONS DICTATE, AN ALTERNATIVE DESIGN MAY BE SUBMITTED FOR APPROVAL BY THE ENGINEER. ANY UNAUTHORIZED DEVIATION FROM THIS DETAIL SHALL BE CAUSE FOR REJECTION OF THE WORK. MATCH EXISTING CONDITIONS AS DIRECTED BE THE BY THE ENGINEER.
5) ALL WORK SHALL COMPLY WITH THE CITY OF AUBURN STANDARD CONSTRUCTION SPECIFICATIONS.
6) CRUSHED ROCK TO BE PLACED WHERE SUB GRADE IS UNSTABLE AS DIRECTED BY THE ENGINEER.
7) INDUSTRIAL/COMMERCIAL DRIVEWAYS SHALL BE 8" THICK WITH WOVEN WIRE FABRIC REINFORCEMENT AND THE CURB IS POURED WITH DRIVEWAY AS ONE CONTINUOUS SECTION (MONOLITHIC).
8) DRIVEWAYS SHALL ALSO BE REQUIRED TO HAVE CURB RETURNS.
9) SEE DETAIL TRAFFIC-11 FOR DRIVEWAY WIDTHS AND LOCATIONS
10) FOR DRIVEWAY RETROFIT, MATCH EXISTING SIDEWALK AND PLANTER STRIP WIDTHS.
APPROVED BY CITY ENGINEER:
DATE: 11/09/10
AUBURN WASHINGTON
COMMERCIAL/INDUSTRIAL DRIVEWAY
CITY OF AUBURN, WA. – DEPT. OF PUBLIC WORKS STANDARD DETAIL: TRAFFIC-09



SECTION X–X
NOT TO SCALE

* DRIVEWAY WIDTH 'B' SHALL BE PER DETAIL TRAFFIC-11.

** SIDEWALK AND LANDSCAPE STRIP WIDTHS SHALL BE PER STREET CLASIFICATION.

NOTE:

1) CONCRETE SHALL BE CLASS 3000 WITH 5% AIR ENTRAINMENT WITH BROOM FINISH PARALLEL TO CURB LINE.
2) WHEN DRIVEWAY OPENING IS TO BE CONSTRUCTED WHERE CURB EXISTS, THE ENTIRE CURB & GUTTER SECTION SHALL BE REMOVED TO THE NEAREST EXPANSION JOINT ON EACH SIDE OF THE OPENING AND REPLACED.
3) CITY INSPECTION IS REQUIRED BEFORE PLACING CONCRETE.
4) AS SITE CONDITIONS DICTATE, AN ALTERNATIVE DESIGN MAY BE SUBMITTED FOR APPROVAL BY THE CITY ENGINEER. ANY UNAUTHORIZED DEVIATION FROM THIS DETAIL SHALL BE CAUSE FOR REJECTION OF THE WORK. MATCH EXISTING CONDITIONS AS DIRECTED BY THE ENGINEER.
5) ALL WORK SHALL COMPLY WITH THE CITY OF AUBURN CONSTRUCTION STANDARDS.
6) ANY UNSUITABLE AREAS IN THE SUB GRADE SHALL BE REMOVED AND REPLACED WITH CRUSHED ROCK AS DIRECTED BY THE CITY ENGINEER.
7) INDUSTRIAL/COMMERCIAL DRIVEWAYS SHALL BE 8" THICK WITH WOVEN WIRE FABRIC REINFORCEMENT. THE CURB SHALL BE POURED WITH THE DRIVEWAY AS ONE CONTINUOUS SECTION (MONOLITHIC).
8) DRIVEWAYS SHALL BE REQUIRED TO HAVE CURB RETURNS.
9) SEE DETAIL TRAFFIC-11 FOR DRIVEWAY WIDTHS AND LOCATIONS.

APPROVED BY CITY ENGINEER: DATE: 1/08/10

CITY OF AUBURN WASHINGTON

ALTERNATE COMMERCIAL/INDUSTRIAL DRIVEWAY RETROFIT

CITY OF AUBURN, WA. – DEPT. OF PUBLIC WORKS STANDARD DETAIL: TRAFFIC-10