**HANDRAIL DETAIL**

R = 6" (min.)

**TOP RAIL CORNER DETAIL**

**NOTES:**

1. The sidewalk width shall be increased by a minimum of 6" whenever handrail is used.
2. If a sidewalk is more than 30" above the adjacent grade, the handrail shall be used.
3. Open clearance between intermediate rails must be 4" or less.
4. Finish shall be either galvanized or semi-gloss enamel over a shop coat of metal primer.
5. When the slope behind the sidewalk is steeper than 4:1, the handrail must be used.
6. When slope behind sidewalk is equal to or less than 4:1 for a minimum distance of 10', a handrail is not required.
Elevation of Traffic Rail

Section

<table>
<thead>
<tr>
<th>Rail Height (in.)</th>
<th>29</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Vehicle (lb.)</td>
<td>1980# - Car</td>
</tr>
<tr>
<td>Impact Speed (mph)</td>
<td>59</td>
</tr>
<tr>
<td>Impact Angle (degrees)</td>
<td>18.9</td>
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</table>

FROM AASHTO ROADWAY GUIDELINE

NOTE: This drawing has been converted from metric to English units.
LOVELAND ONLY

SECTION

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
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<tbody>
<tr>
<td>Rail Height (in.)</td>
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</tr>
<tr>
<td>Test Vehicle (lb.)</td>
<td>80,150</td>
</tr>
<tr>
<td>Impact Speed (mph)</td>
<td>48</td>
</tr>
<tr>
<td>Impact Angle (degrees)</td>
<td>14.5</td>
</tr>
</tbody>
</table>

FROM AASHTO ROADWAY GUIDELINE

NOTE: This drawing has been converted from metric to English units.
LOVELAND ONLY

SECTION

<table>
<thead>
<tr>
<th>Rail Height (in.)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Test Vehicle (lb.)</td>
<td>1900- Car</td>
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<td>Impact Speed (mph)</td>
<td>61</td>
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<tr>
<td>Impact Angle (degrees)</td>
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FROM AASHTO ROADWAY GUIDELINE

NOTE: This drawing has been converted from metric to English units.

NEVADA CONCRETE SAFETY SHAPE

<table>
<thead>
<tr>
<th>LARIMER COUNTY URBAN AREA STREET STANDARDS</th>
<th>CONSTRUCTION DRAWINGS</th>
<th>REVISION NO:</th>
<th>DRAWING</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATE: 08/07/00</td>
<td>1104L</td>
<td></td>
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LOVELAND ONLY

SECTION

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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<tbody>
<tr>
<td>Rail Height (in.)</td>
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</tr>
<tr>
<td>Test Vehicle (lb.)</td>
<td>80,150- Truck</td>
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<tr>
<td>Impact Speed (mph)</td>
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<tr>
<td>Impact Angle (degrees)</td>
<td>14.5</td>
</tr>
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FROM AASHTO ROADWAY GUIDELINE

NOTE: This drawing has been converted from metric to English units.

TEXAS TYPE HT

LARIMER COUNTY
URBAN AREA
STREET STANDARDS

CONSTRUCTION DRAWINGS

REVISION NO:

DATE: 08/07/00

DRAWING 1105L
LOVELAND ONLY

FROM AASHTO ROADWAY GUIDELINE

NOTE: This drawing has been converted from metric to English units.

| Rail Height (in.) | 98 |
| Test Vehicle (lb.) | 80,190 - Tank Type Tractor-Trailer |
| Impact Speed (mph) | 52 |
| Impact Angle (degrees) | 15.0 |

TEXAS TYPE TT

LARIMER COUNTY URBAN AREA STREET STANDARDS CONSTRUCTION DRAWINGS

REVISION NO:
DATE: 08/07/00
DRAWING 1106L
Section Through Parapet & Rail

<table>
<thead>
<tr>
<th>Rail Height (in.)</th>
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<tbody>
<tr>
<td>Test Vehicle (lb.)</td>
<td>1990- Car</td>
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<tr>
<td>Impact Speed (mph)</td>
<td>60</td>
</tr>
<tr>
<td>Impact Angle (degrees)</td>
<td>18.8</td>
</tr>
</tbody>
</table>

FROM AASHTO ROADWAY GUIDELINE
HEADWALL NOTES:
1. PROVIDE MASONRY TIES FOR EACH BRICK COURSE.
2. ALL EXPOSED CONCRETE SHALL HAVE A RUBBED FINISH.

NOTES:
1. STRUCTURAL DESIGN SHALL BE DONE IN ACCORDANCE WITH THESE STANDARDS.
2. HANDRAIL DESIGN SHALL BE COMPATABLE WITH THE DESIGN OF THE BRIDGE PARAPET WALL.

SLEEVES FOR UTILITIES (IF NEEDED)
NOTE:
1. Grout shall be a mixture of 100 lbs Grout mix, 26 lbs water (3.12 Gals), and 100 lbs of sand conforming to ASTM C-35.
2. Manholes shall not be located in crossspans, gutters, or wheel path.
3. Shim and grout to make ring and cover flush with the finished pavement surface.
NOTES:
1. Match location of sleeves on curb head.
2. Depth of sleeve shall be no less than 3'以下 below street grade.
3. Bundles of sleeves are permitted.
4. Sleeves shall be installed with "Pull Wires".

DETAIL

Score concrete curb head with "X" to mark location of sleeves.

SLEEVE LOCATIONS

LARIMER COUNTY
URBAN AREA
STREET STANDARDS

CONSTRUCTION DRAWINGS

REVISION NO: 1

DATE: 04/01/07

DRAWING 1202
2 EACH 6" BLADES MOUNTED TO POST WITH 4 EACH DRIVE RIVETS WITH NYLON WASHERS

R1-1 "STOP" SIGN 30" HIGH DENSITY DIAMOND GRADE. SIGN MOUNTED TO POST WITH 1 EACH DRIVE RIVET WITH NYLON WASHER AGAINST SIGN FACE (ON TOP OF THE SIGN). THE BOTTOM OF THE SIGN SHALL BE MOUNTED WITH 1 EACH 5/16" x 2-1/2" HEW BOLT WITH METAL AND FROM NYLON WASHERS (NYLON WASHER AGAINST SIGN FACE) AND SECURED WITH 1 EACH 5/16" HEX NUT ON THE BACK SIDE OF POST.

2" x 2" x 10' OR 12'
12 GAUGE TELESPAR POST

<table>
<thead>
<tr>
<th>CRITERIA FOR SINGLE POST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Sign Panel</td>
</tr>
<tr>
<td>-----------------</td>
</tr>
<tr>
<td>32&quot; x 36&quot;</td>
</tr>
</tbody>
</table>

* 12 Gauge

NOTES:
1. Attach the sign panels tightly to the post and use oversized washers to keep the sign from breaking loose from the post when hit by a vehicle.
2. Sign panels should be mounted a minimum of 7 feet above the pavement or ground.
3. Signs larger than 36 inches in length or width require wind bracing and special post design.
4. Anchor Stub and post are square steel tube (perforated).
5. All "No Parking" signs shall be installed at 45" from Flow Line.
CROSSWALK MARKINGS:
An Engineering study should be required before crosswalk markings are installed in locations away from traffic signals or stop signs. Continual crosswalk bars (1.25 x 9 ft.) shall be placed adjacent to the projected flowline or existing collision. A bar shall be placed centered on each lane line and in the center of each lane. Lanes 5' wide or less shall not receive a bar centered in the lane. It is important that the markings are in alignment with the access ramps/rideways.

STRENGTH:
All longitudinal delineating shall terminate at the continental crosswalk bars - except the downstream bill board line which shall terminate at the curb return. If a stop line is in place - upstream piping shall terminate at the stop line.

PREFERRED LANE SYMBOLS:
P.L.S. shall be used for designated bike lanes. Intersection placement - the symbol shall be placed downstream to convey to turning traffic that the bike lane exists. It shall be placed 4' down from the PCR & centered on the bike lane. Frequency of placement between biologists is a matter for Engineering Judgement.

MANDATORY MOVEMENT:
Mandatory movement lanes shall use a lane-use arrow marking, the word marking fortify, another line-use arrow marking, accompanied by signage. Symbols & words are 6" or more in height -- use COTR specification sizes.

STANDARD PAVEMENT MARKINGS W/TURN LANE
LARIMER COUNTY URBAN AREA STREET STANDARDS
CONSTRUCTION DRAWINGS
REVISION NO: 1
DRAWING 1404
DATE: 03/02/01
Continental crosswalk bars (1.5x9' Typical) shall be placed centered on each lane line and in the center of each lane. Lanes 5' wide or less shall not receive a bar centered in the lane.

NOTE: All continental crosswalk bars are to be constructed of white preformed thermoplastic pavement markings by Premark or approved equal.

This detail may be used for bike crossing or mid-block crosswalks.

Warning signs are required. Refer to CONST. DWG. 1417L.

"CONTINENTAL CROSSWALK BARS"
BIKE CROSSING PAVEMENT MARKINGS
A "universal" parking space design may be used. This design is used to accommodate car & van accessible parking spaces, which eliminates the need for two sign types.
LOVELAND ONLY

The bike and parking only sign may be used in two separate applications:

*1. Where there is enough lane width for the painted line with a five foot wide bicycle lane and seven feet of undesignated parking lane.

*2. Where the bicycle lane is designated by two painted lines and eight feet of parking lane.

R3-17a Modified
12' x 18'
(Black on White)

See CONST. DWG. 1409L for detail.

Curb

R3-17a Modified
12' x 18'
(Black on White)

5' 7'
R 3-17a Modified
12" x 18"
(Black on White)
BICYCLE LANE APPROACHING VEHICLE RIGHT TURN LANE

LARIMER COUNTY URBAN AREA STREET STANDARDS

CONSTRUCTION DRAWINGS

REVISION NO: 1410

DATE: 08/07/00
NOTES:

1. Street name must be 6" (min.) capital white letters, FHWA Series "B".
2. Prefix must be 2" letters, FHWA Series "B" and placed on the upper left.
3. Suffix must be 2" (min.) letters and block number must be 2" (min.) numbers, FHWA Series "B".
4. Overall sign length dimension varies according to length of street name.
5. All sign lettering and green background material must be at least Diamond Grade sheeting per FHWA; No silk screened signs will be permitted.
6. Street numbers shall always point to higher block number.
7. Aluminum sign blank shall be 0.10 thickness with 3/4" radius corners.
8. Loveland only, signalized intersection signs shall be 18" (min.) in height.
9. All street name signs shall be retroreflective.
See the FHWA Roundabout Guidelines for additional signing details.
NOTES:
1. Rails shall be nominal lumber dimension.
2. Posts shall be 6" x 6" pressure treated, rot-resistant lumber.
3. Use 6" wide reflectorized orange stripes on reflectorized white background, front side only, paint back and edges white.
4. Other options may be used as approved by Local Entity Engineer.

These signs and barricades must be installed by the Developer at the end of all new streets that dead end on a temporary basis, and must be maintained by the Developer until the street is extended by future development.
NOTE:
1. Standard drilling (5/16" x 1 1/8" x 1/2" set screw).
2. Bolt Thru drilling (1/4" x 2 1/2" x 1/2" socket head bolt).
3. BAND-IT is a unit of the IDEX Corporation.
**NOTES:**

**DELINEATORS ARE ROUND** W/ YELLOW OR WHITE REFLECTIVE MATERIAL WRAPPED AROUND WITH THE **SAME COLOR REFLECTIVE MATERIAL (BAND)** AS THE POST (YELLOW OR WHITE). THE REFLECTIVE MATERIAL IS WRAPPED ALL THE WAY AROUND THE DELINEATORS SO THAT THEY ARE VISIBLE FROM ALL DIRECTIONS.

THE NUMBER OF REFLECTIVE BANDS ON THE DELINEATOR SHALL BE THREE.

**IF ANCHOR IS LOCATED IN AN ISLAND OR PAVED MEDIAN, A 4" DIA. PVC SLEEVE SHALL BE EXTENDED THROUGH THE PAVEMENT FOR POST ANCHOR (STUB).**
1. Graduated bars, chevron and "Bump" markings are centered in the travel lanes.

2. All pavement markings (except the centerline striping) are to be pre-formed thermoplastic (PREMARK by Flint Trading, or equal)
LOVELAND ONLY

PLAN VIEW

Leading Edge of Speed Hump

12" White Pavement Markings

GRADUATED BAR DETAIL

NOTES:

1. Graduated bars, chevron and "PED XING" markings are centered in the travel lanes.

2. All pavement markings (except the centerline striping) are to be pre-formed thermoplastic (PREMARK by Flint Trading, or equal).

CHEVRON DETAIL

SIGNS & PAVEMENT MARKINGS FOR RAISED CROSSINGS

LARIMER COUNTY URBAN AREA STREET STANDARDS

CONSTRUCTION DRAWINGS

REVISION NO: 2

DRAWING DATE: 04/01/07

1417L
NOTES:

1. THE SIGN PLATE SHALL BE A MINIMUM OF 12"X18" WITH A THICKNESS OF .080 ALUMINUM CONSTRUCTION.

2. THE SIGN FACE SHALL HAVE A WHITE REFLECTIVE BACKGROUND WITH A RED LEGEND. USE THE STANDARD 3M SCOTCHLITE SIGN FACE NUMBER R7-32 OR EQUIVALENT, WITH RED LETTERING AS SHOWN ABOVE.

3. ARROWS MAY BE NEEDED (LEFT, RIGHT OR DOUBLE), TO DESIGNATE BEGIN AND END OF NO PARKING AREA.
STANDARD DETAIL 1
(WITH STENCIL)
ACCESS OFFICER MUST
PRE-APPROVE THIS
APPLICATION

STENCIL MUST BE CENTERED BETWEEN SIGNS ON CURB FACE

1. APPROVED FIRE LANE SIGNS SHALL BE INSTALLED 12" TO 18"
   FROM BACK OF CURB OR BACK OF SIDEWALK.

2. SIGN MUST FACE THE ONCOMING TRAFFIC.

3. STENCILS SHALL BE IN WHITE LETTERING (3" HT, 1/2"
   STROKE) ON RED PAINTED CURB.

4. STENCIL SHALL READ "FIRE LANE NO PARKING"

FIRE APPARATUS ACCESS ROAD STENCILING & FIRE LANE SIGN INSTALLATION

LARIMER COUNTY
URBAN AREA
STREET STANDARDS

CONSTRUCTION
DRAWINGS

REVISION NO: 1

DATE: 02/27/02

DRAWING 1419