STATE OF NEVADA

STANDARD PLANS

FOR

ROAD AND BRIDGE

CONSTRUCTION

OCTOBER 1997

DEPARTMENT OF TRANSPORTATION
FORWARD TO METRIC STANDARD PLANS

These Standard Plans were revised to be nearly identical to the 1997 English Standard Plans. Included with this edition is a list of drawings that were changed. Simple house cleaning items are not included in this list.

A few game rules have changed. One noticeable change will be the slope ratio. We used to say 4:1, 1 1/2:1, 1:1, 1/2:1 (H:V); now it will be 1:4, 1:1.5, 1:1, 2:1 (V:H). Fractions are not allowed in metrics. Another change is in the rebar. The soft conversion suggested by the Concrete Reinforcing Steel Institute (CRSI) will be used. For example a NO. 4 rebar becomes NO. 13 and a NO. 5 becomes NO. 16.

A lot of manufactured products will just undergo a name change and not a physical change. For example a 24" CMP becomes a 600 mm CMP. Gauges for CMP, wires and plates have been eliminated and replaced with actual thickness to nearest 0.1 mm. Pipe sizes, excluding culvert pipes, will be nominal pipe sizes (NPS). For example, 2" pipe becomes NPS 2 per ASTM A53.

We strongly encourage the use of metric products. However, if a metric product is not economically available then the English equivalent may be substituted.

ASTM, AASHTO, AGC, ARTBA, APWA and other organization’s documents are available to provide their metric information. MUTCD had not yet put out their metric version at the time this document was being published.

There are several new sheets in the standard plans, several sheets were eliminated and several sheets split into two sheets for clarity.

A metric conversion manual is available from Richard Oxoby at Operational Analysis Division, 1263 S. Steward Street, Carson City, Nevada 89712.

If you find an error or want to make a comment, make a copy of that sheet with your comments and forward them to Gene Bails, Standards and Manuals, 1263 S. Stewart Street, Carson City, Nevada 89712.

Additional copies of the Standard Plans can be obtained from Administrative Services, 1263 S. Stewart Street, Carson City, Nevada 89712. Their phone number is (702) 888-7070.

METRIC
NDOT
Changes Included in 1997 Metric Standard Plans

Note: Minor changes and spelling changes are not listed below. On some of the drawings the note "Concrete shall be Class A or AA" was added to be consistent with rest of drawings.

Drawing No.   Description of Changes

R-1.1.1 to R-1.1.5  Standardized hatching and adjust spacing of lines to enhanced reproduction.
R-1.1.5    Deleted General Note 9.
R-2.1.3    Deleted extraneous note (600 mm dia. will not support normal highway loads) in 1996 Standard Plans at end of General notes.
R-2.3.1.1 Detail F Elevation View: Section C-C change to Section E-E
R-2.6.1    Added text to headings on first table for CMAP.
R-2.8.2    Added second line to "Two piece integral Flange" under pipe size and "*W or A".
R-3.1.2    Deleted 102 from vertical dimension in section B-B.
R-3.1.3    Deleted 102 from vertical dimension in section A-A.
R-4.3.1    In Section A-A No. 5 bars changed to No. 16 bars.
R-4.6.1.2 Labeled verticle pipe as 600 mm RCP
R-4.7.1    Deleted the Typical Traffic-Strength Manhole Frame & Cover, and the Typical Method of Adjusting Manholes & Valves details. All manhole lid details moved to new drawing R-4.7.3. Added the note (T=thickness) to the general details.
R-4.7.2    Deleted the Typical Traffic-Strength Manhole Frame & Cover. Manhole lid details to new drawing R-4.7.3.
R-4.7.3    New Drawing. Generic version of details from R-4.7.1 and R-4.7.2. New concrete collar detail with extra rebars.
R-5.1.1.1 Labeled Stop Bar. Change Table 1 to Table 1-10 at four locations. General Note 9: Changed Appendix B to Appendix C
R-5.1.1.2 Change Table 1 to Table 1-12 at five locations. Added definitions for Alternates 1, 2 and 3. General Note 9: Changed Appendix B to Appendix C.
R-5.1.1.3  Deleted 1.5 m min. on plan view and replace with “A” and “B” and referred to Table 1-10. Added pay limits for driveway to include wings. Added General Note 6 and 7. General Note 5: Changed Appendix B to Appendix C.

R-5.1.1.4  In the Industrial, Commercial, and Multi-Family Driveway Geometrics portion of the drawing R2+6’ min changed to R2+1.8 m min.

R-5.1.1.5  In Plan view deleted 1.8 m min. for 1:12 and replace with note to refer to Table 1-12. Added General Note 7 and 8. Deleted Top of Optional Curb and replace with Retaining Curb as needed in section A-A and plan view.

R-5.1.1.6  Section C-C and Plan view: deleted 915 mm and replace with 1.2 m.

R-6.1.2  Deleted barbed on bottom strand of wire on six drawings. Revised General Note 5.

R-6.1.2.1  Deleted barbed on bottom strand of wire on four drawings.

R-7.1.9  Revised General Note No. 1 and revised General Note 5.

R-8.1.4  Title changed from “Typical Installation - Guardrail Flares” to “Typical Guardrail Installation”. Deleted “Typical Down Stream MELT Treatment”. Replace drawing with two alternate drawings. Ties drawings to AASHTO Roadside Design Guide. Section A-A, added 0.6 m min. distance to back side of post. General Notes completely revised.

R-8.1.5  Change guardrail deflection distance from face of rail to backside of post per 1997 AASHTO Roadside Design Guide. Deleted “Guardrail Post Plate Detail” with elevation view.

R-8.1.5.1  Added Tangent End Treatment for guardrail installations. This is now paid as Guardrail End Treatment (Tangential). The flared end treatments are paid as Guardrail End Treatment (Flared).

R-8.1.6.1  Deleted bid item “W” Beam and combined with Bid item for Guardrail Terminal (Flared) Each. Increase length of 3:1 fill slope behind MELT.

R-8.1.6.4  Deleted incorrect guardrail splice at second post on plan and elevation views. Added play length to include first panel, cable, and concrete anchor.

R-8.1.7  Deleted post in Rail Splice detail. Deleted rectangular blockouts and replaced with modified blockouts with notch in “Steel Post Bolt Hardware and Blockout Detail”. The old steel blockout failed the “350” test. Same detail revised 16 mm Hex Head Bolt to 2-16 mm Hex Bolt - one each side diagonal.
R-8.2.2  Deleted post in rail splice detail. Deleted metal post with metal blockout details and replace with steel post with notched wood blockout. Revised “Plan” view.

R-8.2.4  Changed dimensions in the Spacer Block Table to fit the face of the concrete barrier rail. Change plan view to include new deeper blockout without notch. Notched blockouts are used at left limits of this drawing. Detail “B” added 150 mm for beveling face of barrier rail.

R-8.2.4.1 Changed dimensions in the Spacer Block Table to fit the face of the concrete barrier rail. Change plan view to include new deeper blockout without notch. Notched blockouts are used at left limits of this drawing (See R-8.1.7).

R-8.3.1  Deleted Transition Details and End of Barrier Transition drawings. Added 5 mm scored joints at 4.5 m intervals. Revised General notes to include scored joints.

R-8.3.2  New drawing covering 1070 mm F-Shaped Median Concrete Barrier Rail.

R-8.3.3  Added General Note No. 9. Deleted Terminal Panel Details, Section B-B, Section C-C, Section D-D, and revised note 7. Added reflector to section H-H per specifications.

R-9.1.1  Notes on spacing of guide posts were consolidated and clarified under “Guide Post Spacing”. Guide post spacing and use remains the same as it was in the 1996 Standard Plans. Thickness of guide post was changed.

R-9.2.1  Deleted Survey Monuments, Reference Monument and Marker Post details. Moved revised information to new drawing R-9.3.

R-9.2.2  Added detail showing acceptable locations for guide post in relation to the guardrail post. Revised “Typical Guardrail-Guide Post Installation” detail.

R-9.3   New drawing. Revised information previously on R-9.2.1. Deleted welded cover detail and steel detail.

R-10.1.1 Added asphalt pavement detail to Pavement End Anchor Detail. In title block, “Plane” wash changed to “Plain”.

R-10.1.2 Section C-C changes to Transverse Weaken Plane Joint. Added 325 mm pavement depth to Table.

T-30.1.2 Added note 9 to Trenching Detail.

T-30.1.3 Added (M-2 Mount) to Mast Arm Mount.
T-30.1.4.1  Deleted AVC Detector Loop and moved to new drawing T-30.1.4.2. Added Special Detail for No. 5 Pull Box showing location of 50 mm conduit. Added General Notes 1 and 2. Added Pavement Joint Crossing Details.

T-30.1.4.2  New drawing for AVC Detector Loop. Revised information from T-30.1.4.1.

T-30.1.4.3  New drawing for ATR Detector Loop.

T-30.1.5  Added "See Note 3" to 1.5 m copper wire in R, M, & M1, G Cabinets. Circle 12 note deleted and replace with "not used".

T-30.1.7.1  Section A-A 1.5 m changed to 1.52 m. Section A-A 600 mm changed to 610 mm. Section B-B changed from 1.3 m to 1.27 m. Section B-B 500 changed to 485 mm.

T-30.1.8  In the "Section" drawing, raised fill slope to top of pavement and top of foundation.

T-30.1.10  Safety Bases Note No. 1: T-30.1.8 changed to T-30.1.9. Deleted light lenses Type 7 and 14 Poles.

T-30.1.12  Top of drawing of Detail C: added 13 mm grounding lug and 3 mm min. weld.

T-30.1.13  Deleted light lens from Type 35 and 35-A poles.

T-30.1.18  Added General Note 4. Deleted 32 mm min. From frame base. Added 50 mm drain hole to Special No. 5 Pull Box.

T-31.1.1  General Note 7 was revised. The note under the left sign for the Typical Single Sign Support was revised.

T-31.1.2  General Note 13 was revised and added not 14. All bolts in a sign panel shall be carriage bolts and not hex headed bolts as shown in the 1996 Standard Plans (for all drawings in the T-31 series).

T-31.1.3  Multi-Directional Slip base front detail: Revised bolt, washer and nut note and added NPS 2 base and sign post. Added 16 mm hole to base plate shown as top view.

T-31.1.3.1  Detail B: added NPS 1 pipe data to table.

T-31.1.4  Clarified Details D, E and H in regards to the anchor bolts.
T-31.1.5  In the Minimum Mounting Height Table, deleted and replaced notes in the 4th row. General note 4 is deleted and rest of notes renumbered. New note 7 revised. Notes under “Sign Island” are revised.

T-31.1.6  Deleted Panel Joint Closure Strip. Refer to drawing T-31.1.3.1 for details. Detail B: deleted top left note going to sign panel nut.

T-31.1.7  Minimum Mounting Height Table was revised. General Notes 4 and 6 were revised. Carriage bolts replace hex headed bolts for those bolts in the sign panel.

T-31.1.9  Carriage bolts replace hex headed bolts for those bolts in the sign panel (three locations). On Wood Post Supports detail, See Detail T-31.1.3.1 was added to Panel Joint.

T-35.1.1  The following signs were added to each end of the traffic control layout: NWZ-3, NWZ-1, R2-5A, R2-1, and NWZ-2. General Note 6 added. Revised Legend. Deleted Type B Warning Lights on top of signs.

T-35.1.1.1  The following signs were added to each end of the traffic control layout: NWZ-3, NWZ-1, R2-5A, R2-1, and NWZ-2. General Notes 7 and 8 added. Revised Legend. Deleted Type B Warning Lights on top of signs.

T-35.1.2  The following signs were added to each end of the traffic control layout: NWZ-3, NWZ-1, R2-5A, R2-1, and NWZ-2. General Note 4 added. Revised Legend. NPS-1 and W20-7a were reversed. Deleted Type B Warning Lights on top of signs.

T-35.1.2.1  The following signs were added to each end of the traffic control layout: NWZ-3, NWZ-1, R2-5A, R2-1, and NWZ-2. General Note 4 added. Revised Legend. NPS-1 and W20-7a were reversed. Deleted Type B Warning Lights on top of signs. W13-1 added to Multilane detail.

T-35.1.3  Deleted Type B Warning Lights on top of signs.

T-35.1.4  Title was changed. The following signs were added to each end of the traffic control layout: NWZ-3, NWZ-1, R2-5A, R2-1, and NWZ-2. General Notes 7 and 8 added. Revised Legend. TMA traffic control layout deleted and moved to T-35.1.6.2. Deleted Type B Warning Lights on top of signs.

T-35.1.5  Deleted Solid White Edge Line. Added General Notes 1, 2 and 3. Deleted Type B Warning Lights on top of signs.

T-35.1.6  Title changed. Reversed order of NPS-1 and W20-7a. Deleted Type B Warning Lights on top of signs.
T-35.1.6.1 In the Typical Traffic Control for Haul Roads signs NPS-1 and W20-7a were reversed. Deleted Type B Warning Lights on top of signs.

T-35.1.6.2 Deleted Multi-Lane Turn Lanes. Added TMA layout (Multi-lane Closure) from T-35.1.4. Added General Notes 1, 2, 3, 4 and 5. Revised Legend.

T-35.1.1.1 Detail B, Section A-A: Deleted * and moved +/- 2 mm to 38 mm.


T-35.2 Deleted W10-1 Sign Installation. Moved Special Guardrail Terminal End to T-35.2.1.

T-35.2.1 New Drawing. Revised details from T-35.2. The SPTCO lateral distance to signal base was deleted on the Special Guardrail Terminal End Section. Also, deleted extra guard rail posts and decrease the size of guardrail posts to standard size. Added Note 7 for lateral distance to signal base less than 7 feet. Added notes to refer to MUTCD for details not shown.

T-36.1.11 Plan view - Two Post Hinge: Added 38 mm to match English drawing.

T-36.1.14 Double Beam or Arm Series: Added See T-36.1.15 and 235 mm to match English Drawing.

T-38.1.1 Center Lane and Lane Lines: Added symbol for less than or equal to 3 000 m.

B-20.1.8 Hatching for Roadway Embankment change to match standard hatching for this item.

B-23.1.1 General Note 3 revised

B-25.1.3 Added tolerance of +1.6 mm to-0 mm to 6.3 mm on Railing Details right drawing.

B-25.1.4 Type M (modified): Bottom right note, deleted R-8.3.1 and replace with “of Bridge Plans”.

B-25.1.5 Top Post Plate Details: To top rail inserted NPS 1½.

B-29.1.1 Section B-B, deleted “Preformed Permeable Liner (See Drainage Details Sht. B-29.2).
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**GENERAL NOTES:**

1. Trenches more than 1.2 m deep shall be shored, and Excav. 1.2 m or less, the angle of repose for **Structure Excavation** in these types of protection shall be provided.

2. If hazardous field conditions indicate ground support required only by special inspection, the risk may be taken that the excavation shall be protected as indicated in note 1.

3. For the purpose of payment, structure excavation and backfill quantities are based on these standards. Variations from these standards and no additional payment will be made for changes.

4. If piping is used, payment will be made for structure excavation and backfill based on these standards. Variations from these standards and no additional payment will be made for changes.

5. Trench excavation during ballasting to OSMTA regulations, Support III, appendix C.

6. The quantity of structure excavation and backfill measured for payment shall be the number of cubic meters excavated minus the duplication of limits with overlap.

7. Gravel backfill to be placed for a depth of 150 mm above the toe of the gabion wall on the width of the trench.

8. The limits of structure excavation and backfill shown herein shall be used for the drafting of contract documents and payment only. There shall be no additional compensation for any additional excavation or backfill required for excavations to meet OSMTA regulations.

**LEGEND:**

- Structure Excavation
- Gravel Backfill
- Rockbye Excavation

**DIMENSIONS:**

**DIAMETER IS 1800 mm OR LESS**

**DIAMETER IS GREATER THAN 1800 mm**
CLASS A BEDDING

PAYMENT FOR EXCAVATION AREA BELOW THE BOTTOM OF THE PIPE SHALL BE AT THE RATE UP TO 150 LBM. PER UNIT METER OF CONCRETE.

CLASS B BEDDING

BEDDING SHALL BE CAREFULLY SHAPED TO FIT THE PIPE PRIOR TO INSTALLATION. NO DIRECT PAYMENT FOR SHAPING THE TRENCH.

CLASS C BEDDING

GENERAL NOTES:
1. MAXIMUM DOWNSHOT AS DESCRIBED IN REINFORCED CONCRETE PIPE FILLER MATERIALS.
2. EXCAVATION FOR MULTIPLE PIPE OR PIPE IN CONCRETE TRENCH.
3. CONCRETE TRENCH IS SHAPED PRIOR TO INSTALLATION.

BEDDING FOR CONCRETE CULVERT

ALLOWABLE FILL HEIGHT IN METERS FOR REINFORCED CONCRETE PIPE 600 MM TO 2100 MM

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CLASS B BEDDING

BEDDING SHALL BE CAREFULLY SHAPED TO FIT THE PIPE PRIOR TO INSTALLATION. NO DIRECT PAYMENT FOR SHAPING THE TRENCH.

BEDDING FOR C.M.P. OR C.M.A.P.
### Metric

<table>
<thead>
<tr>
<th>I.D.</th>
<th>Material</th>
<th>Width</th>
<th>Height</th>
<th>Clear</th>
<th>Wall</th>
<th>Cover</th>
<th>Type</th>
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<td>75</td>
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<td>30</td>
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**NOTE:**
- Contact Hydraulic Engineer for materials or sizes not listed.
- All dimensions in millimeters (mm).
- Metric units used for all dimensions.

---

### Allowable Fill Heights

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<tr>
<th>Fill Height</th>
<th>Depth</th>
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<td>4.5</td>
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<tr>
<td>5.0</td>
<td>180</td>
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</tbody>
</table>

**Maximum Fill Height:**
- 5.0 meters for steel, 6.0 meters for concrete.

---

### Structural Consequence

- **Concrete:**
  - 3.0 meters for steel, 4.0 meters for concrete.
- **Cast Iron:**
  - 2.0 meters for steel, 3.0 meters for concrete.

**NOTE:**
- Concrete fill for 3.0 meters of fill height up to 6.0 meters of fill height.
### Table: Steel Culvert Design Specifications

<table>
<thead>
<tr>
<th>Diameter (mm)</th>
<th>Wall Thickness (mm)</th>
<th>Material Grade</th>
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<tr>
<td>750</td>
<td>12</td>
<td>S355</td>
</tr>
</tbody>
</table>

*Note: Contact manufacturer for details on materials or sizes not listed.*

---

### Diagram: Steel Culvert Installation Method

1. **Excavation:** Digging to the required depth and width.
2. **Foundations:** Setting the culvert on a stable foundation.
3. **Backfilling:** Compacting backfill material around the culvert.

---

### Metric NDOT Guidelines

- **Allowable Fill Heights:**
  - Maximum fill height for steel culverts is 3.5 m (11.5 ft).
  - Fill heights over 3.5 m (11.5 ft) may require additional support.

- **Structural Steel:**
  - Use only with proper design and construction techniques.

---

**Contact Information:**

- T: 123-456-7890
- E: info@metricndot.com

---

**Warning:**

- Always ensure proper installation and structural integrity before use.
- Use at your own risk.

---

**Note:**

- All drawings and specifications are subject to change.
- Consult professional engineers for specific requirements.
WITH CONCRETE HEADWALL

- Length of culvert shall be increased as follows:
  - Consider each side separately.
  - Measure pipe from roadway centerline to the intersection of pipe fill line and fillslope. To this dimension add 0.6 m when cover at shoulder is 0.3 m to 3.0 m and an additional 150 mm for each succeeding 1.5 m of cover or portion thereof.

- Precast concrete end section
  - Length of culvert shall be increased as follows:
    - Consider each side separately.
    - Measure pipe from roadway centerline to the intersection of the top of pipe and fillslope. To this dimension add 0.3 m when cover at shoulder is 0.3 m to 3.0 m and an additional 150 mm for each succeeding 1.5 m of cover or portion thereof.

MINIMUM CULVERT INSTALLATION

- Use 650 mm min. where possible. If minimum cover is restrictive, compensate by utilizing higher class pipe or selective bedding as recommended by the hydraulics section.
- Aluminum culverts: See standard sheet 1-1.5.1.1.
- Steel culverts: See standard sheet 1-1.6.1.2.

** For informational purposes only

- Contour this area to provide the minimum amount of obstruction exposure.

SECTION A-A

SAFETY CULVERT INSTALLATION

(TO PROVIDE OBSTRUCTION CLEARANCE)

NOTE 1

1. After extending the culvert and/or wrapping the fillslope for safety and/or aesthetics, the extension does not fulfill the requirements for a clear roadside recovery area. Then vehicular traffic may be protected by a safety grate or by some other means, such as guardrail, barrier rail, or another acceptable safety feature.

2. Normal structure excavation and backfill limits.

METRIC NDOT

INSTALLATION

STATE OF NEVADA

DEPARTMENT OF TRANSPORTATION

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED

CHECK NDS SHEET DRAWN
ADAPTED 7/96 REVISION
GENERAL NOTES:

1. CLASS AND TYPE OF CONCRETE SHALL BE AS SPECIFIED FOR REINFORCED CONCRETE PIPE.

2. STRUCTURAL DESIGN OF END SECTION SHALL CONFORM TO THAT OF STANDARD REINFORCED CONCRETE CULVERT PIPE.

3. LENGTH OF PIPE SHOWN ON THE DESIGN PLANS DOES NOT INCLUDE CONNECTOR SECTION LENGTH.

4. CONTACT HYDRAULICS ENGINEER FOR SIZES NOT LISTED.

* For reference only

---

CROSS SECTION VIEW
450 mm RCP TO 1350 mm RCP
GENERAL NOTES:

1. CONCRETE SHALL BE CLASS A 30 PA.
2. REINFORCING STEEL SHALL BE DETACHED BARS WITH MINIMUM SPACING OF 500 MM SET 63 MM CLEAR OF SURFACE OF CONCRETE EXCEPT AS NOTED. BAR ENDS SHALL BE CUT 45 DEG CLEAR OF SURFACE OF CONCRETE. REINFORCING BARS MAY BE CUT AND BENT IN FIELD.
3. FOOTINGS SHOWN ARE OF MINIMUM DEPTH AND SHALL BE EXTENDED IF SOIL IS UNSUITABLE OR LIABLE TO SLOPE.
4. CULVERT PIPES TO BE SET ON A SKIRM SHALL BE NERETED WHEN HEADWALLS ARE CONSTRUCTED. WHEN HEADWALLS ARE NOT CONSTRUCTED THE PIPES SHALL NOT BE NERETED EXCEPT IN OVERHEAD SECTION.
5. FOR ESTIMATING HEADWALL QUANTITIES ON SKEWED CULVERTS:
   0° TO 10° USE QUANTITIES FOR 0° SKWAY,
   11° TO 25° USE QUANTITIES FOR 15° SKWAY,
   26° TO 45° USE QUANTITIES FOR 45° SKWAY.
   46° TO 90° USE QUANTITIES FOR 90° SKWAY.

CULVERTS SHOULD BE INSTALLED ON 0° INCLINES WHERE IT IS FEASIBLE.

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION
CULVERT HEADWALLS
300 mm CMP TO 1050 mm CMP

METRIC
NDOT

[Diagram showing single and double CMP headwalls with skew angles and elevations]
LENGTH OF REINFORCING BARS

SINGLE CMP

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<tr>
<th>DIA.</th>
<th>0° SWK</th>
<th>15° SWK</th>
<th>30° SWK</th>
<th>45° SWK</th>
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<tbody>
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DOUBLE CMP

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QUANTITIES SHOWN BELOW ARE FOR TWO HEADWALLS:

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TYPICAL SECTION

1200 mm

GENERAL NOTES:

1. CONCRETE SHALL BE CLASS 4 OR 5 A.
2. REINFORCING STEEL SHALL BE DESIGNATED BARS WITH MAXIMUM SPACING OF 600 mm SET 15 mm MINIMUM APART AS NOTED. STEEL SHALL BE KEPT 45 mm CLEAR OF SURFACES OF CONCRETE. REINFORCING BARS MAY BE CUT AND BENT IN FIELD.
3. FOOTINGS SHOWN ARE OF MINIMUM DEPTH AND SHALL BE EXTENDED IF NECESSARY OR LIABLE TO ERODE.
4. CULVERT PIPES TO BE SET ON A SKEW SHALL BE WITHEED WHEN HEADWALLS ARE CONSTRUCTED. WHEN HEADWALLS ARE NOT CONSTRUCTED, THE PIPES SHALL NOT BE WITHEED EXCEPT IN OVERFLOW SECTIONS.
5. FOR ESTIMATING HEADWALL QUANTITIES ON SKewed COLLECTORS 0° TO 10° USE QUANTITIES FOR 0° SWK. 11° TO 25° USE QUANTITIES FOR 15° SWK. 26° TO 40° USE QUANTITIES FOR 30° SWK. 41° TO 55° USE QUANTITIES FOR 45° SWK. OVER 55° CALCULATE QUANTITIES REQUIRED COLLECTORS SHALL BE INSTALLED ON 5° INCREMENTS WHERE IT IS FEASIBLE.
6. NO DIRECT PAYMENT FOR ANCHOR BOLTS.

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION
CULVERT HEADWALLS
1200 mm CMP TO 1800 mm CMP

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED

METRIC

NDOT
### Quantities Shown Below are for Two Headwalls

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### Quantities Shown Below are for One Headwall

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<td>0.14</td>
</tr>
<tr>
<td>T1000</td>
<td>0.14</td>
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### General Notes:
1. Concrete shall be Class C or D.4.
2. Rebar shall be deformed bars with maximum spacing of 40 mm set 60 mm clear of surface of concrete (except as noted). Bar ends shall be kept 40 mm clear of surface of concrete. Reinforcing bars may be cut and bent in field.
3. Posttensioning sheave are of minimum 60 mm and shall be extended 100 mm to allow for 90° bend.
4. Culvert pipes to be set on a skew angle seen in Fig. 1. When headwalls are constructed, skew angles are not to be used. Culvert pipes shall not be extended except in special conditions.
5. For estimating headwall quantities on inclined culverts:
   - 30° to 60° - use quantities for 45° skew.
   - 45° to 90° - use quantities for 45° skew.
   - 90° to 135° - use quantities for 135° skew.
   - Over 135° - calculate quantities required.
   - Culverts shall be installed on 5° increments where it is feasible.
6. Dimensions X, Y, L, and T are remain constant regardless of minor variations in wall thickness due to oval pipe used.
**GENERAL NOTES:**

1. CEMENT SHALL BE CLARGE & OR G.
2. REINFORCING STEEL SHALL BE DEFLECTED DOWN WITH MAXIMUM SPACING OF 6.5 MM CLEAR OF SURFACE OF CONCRETE, EXCEPT AS NOTED. BAR ENDS SHALL BE KEPT 40 MM CLEAR OF SURFACE OF CONCRETE. REINFORCING BARS MAY BE CUT OR BENT IN FIELD.
3. FOOTING FORMS ARE OF MINIMUM DEPTH AND SHALL BE EXTENDED IF CEMENT IS UNSATURABLE OR LIKELY TO SORIFER.
4. CULVERT PIPE TO BE SET ON A SKEW SHALL BE METERED WHEN HEALWALLS ARE CONSTRUCTED. WHEN HEALWALLS ARE NOT CONSTRUCTED THE FILLES SHALL NOT BE METERED EXCEPT FOR IN THE VOLUME SECTION.
5. DIMENSIONS XL IN ALL PLAN THICKNESS MAY BE KEPT CONSTANT REGARDLESS OF SKI.
6. FOR ESTIMATING HEALWALL QUANTITIES IN SKEWED CULVERTS:
   - For A 10° TO 25° USE QUANTITIES FOR 10° SKEW.
   - For A 25° TO 45° USE QUANTITIES FOR 25° SKEW.
   - For A 45° TO 8° USE QUANTITIES FOR 45° SKEW.
   - OVER 8° - CALCULATE QUANTITIES REQUIRED.
   - CULVERTS SHOULD BE ENGINEERED ON 5° INCREMENTS WHERE IT IS FEASIBLE.

**PLAN**

**ELEVATION**

**SECTION** (FOR ALL HEALWALLS)

**NOTE:** For Details of Other Reinforcing Bars, See Single Culvert Headwalls.

**ELEVATION**

**DOUBLE OVAL RCP**

**0° TO 45° SKEW**

Add 3°-0 Bars & 2°-K Bars for 2275 x 1450

**SINGLE OVAL RCP**

0° TO 45° SKEW

Add 3°-0 Bars & 1°-T Bars for 1700 mm x 1075 mm & 1900 mm x 1200 mm

**STATE OF NEVADA**

**DEPARTMENT OF TRANSPORTATION**

**CULVERT HEADWALLS**

1700 mm x 1075 mm OVAL RCP TO 2275 mm x 1450 mm OVAL RCP
### GENERAL NOTES:

1. ALL COUPLING BAND CONNECTION HARDWARE SHALL BE 8250 GRADE STEEL PLATED IN ACCORDANCE WITH STANDARD SPECIFICATIONS.

2. FOR PIPE ARCHES USE SAME WIDTH BAND AS FOR ROUND PIPE OF EQUAL DIAMETER.

3. TWO PIECE BAND IS REQUIRED FOR PIPE GREATER THAN 600 mm DIAMETER.

4. TENSION STRAP MAY BE CONNECTED TO BAND OR SHEET WITH EITHER SPOT WELDS OR FILET WELDS THAT DEVELOP MINIMUM REQUIRED STRENGTH OF STRAP.

5. USE 75 mm GAGE LINE DIMENSIONS ON ATTACHED ANGLE LEGS FOR RIVETS AND SPOT WELDS.

6. BAND THICKNESS SHALL NOT BE LESS THAN 3 STANDARD THICKNESSES LIGHTER THAN THE THICKNESS OF THE PPC.

7. DIMENSIONS AND THICKNESSES SHOWN ARE MINIMUM.

8. ANGLE 50 mm LONG WITH 16 mm x 50 mm STRAP.

9. FILET WELDS OF EQUIVALENT STRENGTH MAY BE SUBSTITUTED FOR SPOT WELDS RIVETS.

### CHANNEL COUPLING BAND

**FOR USE ON FLANGED END CMP**

(Channel coupling band shall be two pieces)
GENERAL NOTES:
1. All concrete shall be class A or AA.
2. Forming of the base will not be required.

PLAN VIEW

VIEW C-C

SECTION B-B

WEDGE LOCK HOLD DOWN

SECTION A-A
**GENERAL NOTES:**

1. FOR CAST IN PLACE CONCRETE BASE, ALL REINFORCING STEEL TO BE NO. 13 BARS AT 450 MM CENTERS TIGHTLY MOUND AT ALL INTERSECTIONS AND EMBEDDED IN CONCRETE AT LEAST 50 MM AND BAR ENDS MUST CLEAR CONCRETE SURFACES BY 10 MM.

2. ALL CONCRETE SHALL BE CLASS A OR AA.

3. MANHOLE WITH MORE THAN ONE PIPE-INFLOW PIPE INVERT ELEVATION SHALL BE 2-30 MM ABOVE OUTFLOW PIPE ELEVATION.

4. FOR VALUES OF "H" SEE STORM DRAIN SCHEDULE OR STRUCTURE LIST. "H" IS THE DIFFERENCE IN ELEVATION BETWEEN THE OUTFLOW PIPE INVERT ELEVATION AND THE TOP OF MANHOLE ELEVATION AT STREET CREST.

5. DO NOT PLACE PIPES IN TAPERED SECTION.

6. MANHOLE COVER SHALL BEAR ENTIRE IDENTIFICATION AND SYSTEM NUMBER IF APPLICABLE.

7. MANHOLE STEPS SHALL CONFORM TO ASTM STANDARD SPECIFICATION C-478 WITH MAXIMUM SPACING OF 400 MM AND 100 MM CLEAR DISTANCE FROM THE WALL OF RISER OR CONE SECTION. THE STEP MUST HAVE A 200 MM MINIMUM WIDTH.

8. SHAPE FLOWLINE IN MANHOLE TO OUTLET PIPE AND PROVIDE A 1:10 MINIMUM SLOPE FROM ALL DIRECTIONS TOWARDS FLOWLINE.

9. COMMERCIAL PREFABRICATED ADJUSTMENT RINGS FOR MANHOLES MAY BE USED WHEN APPROVED BY THE ENGINEER.

**T = THICKNESS PIPE WALL**
GENERAL NOTES:
1. ALL CONCRETE SHALL BE CLASS A OR CLASS AA.
2. MANHOLES WITH MORE THAN ONE PIPE: THE INFLOW PIPE INSERT ELEVATION SHALL BE GREATER THAN OR EQUAL TO 20 MM ABOVE THE OUTFLOW PIPE INSERT ELEVATION.
3. FOR VALUES OF "A", SEE STORM DRAIN SCHEDULE OR STRUCTURE LIST IN CONTRACT PLANS. THIS IS THE DIFFERENCE IN ELEVATION BETWEEN THE OUTFLOW PIPE INSERT ELEVATION AND THE TOP OF MANHOLE ELEVATION AT STREET GIRD.
4. MANHOLE STEPS SHALL CONFORM TO STH STANDARDS SPECIFICATION C-128 WITH MAXIMUM SPACING OF 400 MM AND 150 MM CLEAR DISTANCE FROM THE MANHOLE WALL. THE STEP HEIGHT MUST BE A 250 MM MINIMUM.
5. MANHOLE COVER SHALL BE A BEAR ENTITY IDENTIFICATION AND SYSTEM FUNCTION IF APPLICABLE.
6. SHAPE FLOW LINE FOR MANHOLE TO OUTLET PIPE, AND PROVIDE A 1:10 MINIMUM SLOPE FROM ALL DIRECTIONS TOWARD FLOWLINE.

METRIC NDOT
TYPE 4 MANHOLE

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED
4 LINES ON TOP OF CONCRETE COLLAR SCORED 15 mm DEEP. TWO PARALLEL AND TWO PERPENDICULAR TO CENTERLINE OF ROADWAY

MIN. 300 mm OVERLAP

No. 13 BARS (8 @ 100 mm long)

EDGE OF CONCRETE COLLAR 5 mm RADIUS ALL AROUND

CONCRETE COLLAR PLAN

SEE NOTE 10

PLAN

SECTION B-B
TRAFFIC-STRENGTH MANHOLE FRAME & COVER

FINISHED ROADWAY SURFACE

MIN. 50 mm

VARIIES

PLACE COLLAR 5 mm BELOW FINISHED ROADWAY SURFACE

300 mm (Typ.)

EDGE OF CONCRETE COLLAR

300 mm (Typ.)

GRADE RINGS AS REQUIRED

MIN. 75 mm CLEARANCE WHEN COLLAR IS IN CONTACT WITH DIRT & MIN. 50 mm CLEARANCE WHEN COLLAR IS IN CONTACT WITH MANHOLE STRUCTURE

600 MIN.

SECTION A-A
(SEE NOTE 10)

GENERAL NOTES:
1. THE WEIGHT OF FRAME SHALL BE 65 KG. MINIMUM AND THE WEIGHT OF COVER SHALL BE 58 KG. MINIMUM. TRAFFIC-STRENGTH MANHOLE FRAME & COVER SHALL COMPLY WITH APPENDIX I B 16.1KG. EQUIVALENT MANHOLE FRAME & COVER ShOWN MAY BE USED UPON APPROVAL OF THE ENGINEER.
2. THE FRAME SEAT AND COVER EDGE SHALL BE MACHINED TO A TRUE BEARING SURFACE ALL AROUND. THE FRAME & COVER SHALL BE COMPATIBLE TO THE MANUFACTURER'S SPECIFICATIONS.
3. THE SURFACE SHOWN IS FOR ILLUSTRATION ONLY. ANY SURFACE DESIGN, OTHER THAN SMOOTH, MAY BE USED UPON APPROVAL.
4. FRAMES & COVERS SHALL CONFORM TO ASTM A48A. CLASS 275 FOR GRAY IRON CASTINGS.
5. A CAST-IN-PLACE CONCRETE COLLAR SHALL BE PLACED AROUND MANHOLE FRAME UNLESS OTHERWISE DIRECTED.
6. MANHOLE COVER SHALL BEAR NAME OF ENTITY & SYSTEM FUNCTION (IF APPLICABLE).
7. ALL CONCRETE SHALL BE CLASS A OR B.
8. CONCRETE COLLARS MAY BE REQUIRED ROUND, OR ANY OTHER APPROPRIATE SHAPE WHEN APPROVED BY THE ENGINEER.
9. COMMERCIAL PREFABRICATED GRADE RINGS FOR MANHOLE MAY BE USED WHEN APPROVED BY THE ENGINEER.
10. MANHOLE COVER & FRAME SHOWN. OTHER SHAPES MAY APPLY TO UTILITY AND VALVE COVERS AND FRAMES
**Curb Ramps**

**TYPE C**

**SECTION B-B**

- Existing Sidewalk
- Gutter Line
- Projection of Curb Line
- Curb Ramp

**SECTION B-B WITH BACK CURB**

- Existing Sidewalk
- Gutter Line
- Projection of Curb Line
- Curb Ramp

**SECTION A-A**

- Existing Sidewalk
- 100 mm Aggregate Base

**SECTION C-C WITHOUT BACK CURB**

- Back of Curb Line
- Gutter Line
- 100 mm Aggregate Base

**SECTION C-C WITH BACK CURB**

- Back of Curb Line
- Gutter Line
- 100 mm Aggregate Base

**SECTION D-D**

- Existing Sidewalk
- 100 mm Aggregate Base

**TABLE 1-12 FOR "A" AND "B" LENGTHS**

<table>
<thead>
<tr>
<th>Grade (%)</th>
<th>&quot;B&quot; to &quot;A&quot;</th>
<th>&quot;A&quot; (m)</th>
<th>&quot;B&quot; (m)</th>
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<td>2.79</td>
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</table>

**GENERAL NOTES:**

1. IF RIGHT OF WAY IS AVAILABLE, USE TYPE A CURB RAMP.
2. SEE STRUCTURE LIST AND PLAN SHEETS FOR TYPES "A" AND "B".
3. GRATING OR SIMILAR ACCESSORIES SHALL NOT BE LOCATED AT THE BASE OF THE CURB RAMP IN LANDING AREA.
4. NO LIP SHALL BE PERMITTED AT THE CURB RAMP SLOPE TO GUTTER LINE.
5. PLANTING PLANTS DESIGN SPECIFICALLY ON TOP OF CURB RAMP AND TREES SHALL PROVIDE A VISUAL CONTRAST TO THE CURB RAMP.
6. ALL RAMP SHALL BE 1/12 OR FLATTER.
7. ALL SLOPE RATES ARE RELATIVE TO LEVEL.
8. IF THERE ARE R/W RESTRICTIONS, SIDEWALK WIDTHS CAN BE REDUCED TO 1.22 m WITH PRIOR APPROVAL FROM ASSISTANT CHIEF ROAD ENGINEER, A 1.52 m x 1.52 m PASSING ZONE IS RECOMMENDED.
9. CONCRETE SHALL BE CLASS A OR AA.
GENERAL NOTES:

1. INDUSTRIAL AND MULTI-FAMILY DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD DRAWING NUMBERS R-5.1.1.3.

2. THE TOTAL WIDTH "W" OF DRIVEWAY CURB OPENINGS SHALL NOT EXCEED 80% OF FRONT FOOTAGE.

3. NO DRIVEWAY SHALL BE LOCATED WITHIN 1.8 m OF A LIGHT POLE, FIRE HYDRANT, MAIL BOX, ABOVE-GROUND ELECTRICAL TRANSFER BOX, OR BLOCK WALL HIGHER THAN 0.8 m.

4. THE CENTERLINES OF DRIVEWAYS ON OPPOSITE SIDES OF THE STREET AT A MEDIUM OPENING SHOULD BE 3.0 m FROM EACH OTHER WHEN A PROPERTY LINE FALLS IN A MEDIUM OPENING. A JOINT DRIVEWAY AGREEMENT SHALL BE REQUIRED OR NO DRIVEWAY WILL BE ALLOWED.

5. HANDICAPPED ACCESSIBLE SIDEWALKS SHALL BE PROVIDED. SEE STANDARD DRAWINGS R-5.1.1.11 TO R-5.1.1.3.

6. FOR ACTUAL DIMENSIONS SEE STRUCTURE LIST.

RESIDENTIAL DRIVEWAY GEOMETRICS

INDUSTRIAL, COMMERCIAL, AND MULTI-FAMILY DRIVEWAY GEOMETRICS

UTILITY FEATURES

SEE NOTE 3

W + WIDTH OF DRIVEWAY + 3.6 m MIN.
4.8 m MAX FOR 1 OR 2 CAR GARAGE, OR
8.4 m MAX FOR 3 GARAGE

GENERAL NOTES:

1. ALL RESIDENTIAL PROPERTIES MAY HAVE ONLY ONE CURB CUT EXCEPT CIRCULAR DRIVEWAYS AS SHOWN.

2. NO DRIVEWAY SHALL BE LOCATED WHOLLY OR PARTIALLY, ON OR OVER A UTILITY EASEMENT WHICH RUNS PERPENDICULAR TO THE CURB LINE.

3. NO DRIVEWAY SHALL BE LOCATED WITHIN 1.8 m OF A LIGHT POLE, FIRE HYDRANT, MAIL BOX, ABOVE-GROUND ELECTRICAL TRANSFER BOX, OR BLOCK WALL HIGHER THAN 0.8 m.

4. COMMON DRIVEWAY CONSTRUCTION MAY BE PERMITTED AT ANY TWO RESIDENTIAL PROPERTIES OF 18 m IN WIDTH OR LESS. THE WIDTH OF THE JOINT DRIVEWAY SHALL BE A MAXIMUM OF 7.2 m. A JOINT DRIVEWAY AGREEMENT SHALL BE REQUIRED.

5. MULTI-FAMILY RESIDENTIAL AND ALL NON-RESIDENTIAL DRIVEWAYS SHALL CONFORM TO THE COMMERCIAL DRIVEWAY STANDARDS.

6. ALL DRIVEWAY LOCATIONS SHALL BE subject TO REVIEW AND APPROVAL BY THE ENGINEER.

7. FOR CURB RAMPS AND DRIVEWAY APRON DETAIL, SEE STANDARD DRAWINGS R-5.1.1.11 TO R-5.1.1.3.
GENERAL NOTES:
1. SPACING OF NO. 13 BARS LESS THAN 450 mm TO MEET LOCAL CODES SHALL BE NOTED IN THE STRUCTURE LIST.
2. WHEN CONSTRUCTING DRIVEWAYS WHERE CURB AND GUTTER EXISTS COMPLETELY REMOVE EXISTING SECTIONS. DRIVEWAY MAY BE Poured MONOLITHIC TO A.C. LINE, IN WHICH CASE THE BARS SHALL BE CONTINUOUS IF OPTIONAL SECTIONAL POUR IS USED. EXPANSION JOINTS AND REBAR END CLEARANCE SHALL APPLY AS SHOWN.
3. CONCRETE SHALL BE CLASS A OR AA.
4. CURB RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD DRAWINGS R-5.1.1.1 TO R-5.1.1.5.
5. FOR GRADE CHANGES GREATER THAN 3%, VERTICAL CURVES OF AT LEAST 3.0 m MUST BE USED.
6. DRIVEWAY GEOMETRICS SHALL GO TO THE P.C.
7. FOR ACTUAL DIMENSIONS SEE STRUCTURE LIST.
8. SEE TABLE 1-12, DRAWING R-5.3.1.2, FOR "A" AND "B".
GENERAL NOTES:
1. ALL CURB RAMPS SHALL BE 1:12 OR FLATTER.
2. SEE PLAN SHEETS FOR FIG.
3. GRATING OR SIMILAR ACCESSORIES SHALL NOT BE LOCATED IN AREA AT THE BASE OF THE CURB RAMPS OR LANDING AREA.
4. NO LIP SHALL BE PERMITTED AT THE CURB RAMPS TO GUTTER PANS.
5. PLANTING BITUMINOUS OPEN- GRADED SURFACE SHALL BE FLUSH WITH THE EDGE OF THE GUTTER PAN IN THE AREA OF THE CURB RAMPS.
6. RUGGED BROKEN TEXTURE ON CURB RAMPS AND WING PANS TO PROVIDE A VISUAL CONTRAST TO THE MEDIAN ISLAND.
7. CONCRETE SHALL BE CLASS A OR RA.
GENERAL NOTES:
1. MINIMUM 900 mm COVER OVER TOP OF CONDUIT AT SHOULDER LINE.
2. 2-8 mm BARE COPPER DETECTION WIRE TO LAY IN TRENCH ADJACENT TO CONDUIT AND ATTACH TO LOCATION MARKER AT EACH END.
3. LOCATION MARKER SHALL BE 50 mm P.V.C. OR 1.5 m STEEL FENCE POSTS.
GENERAL NOTES:
1. STRESS PANELS SHALL BE PLACED EVERY 400 m ON TANGENTS.
2. STRESS PANELS SHALL BE PLACED EVERY 500 m ON CURVES.
3. END PANELS SHALL BE USED WHEREVER A BREAK IN THE FENCE OCCURS.
   I.E. GATES, CATELEGERSY AND AT THE BEGINNING AND ENDING OF ALL CURVES.
4. SEE TABLE A FOR WOOD POST SPACING ON CURVES.
5. BARBED WIRE SHALL BE USED FOR BOTTOM STRANDS WHEN REQUIRED
   BY NEW DEPT. OF WILDLIFE OR BUREAU OF LAND MANAGEMENT.
6. WIRE TO BE TIED OFF AT STRETCH POINTS WRAP AND SPACE
   TO SELF WITH AT LEAST 6 INCHES AT OPPOSITE END OF PANELS.
7. WOOD POSTS SHALL BE 100 M MINIMUM DIAMETER.
8. ADDITIONAL STRAND OF BARBED WIRE TO BE BARBED WIRE TO BE
   USED AS ROCK DEADMAN WHERE MORE THAN 25 KG
   WHEN SPACE BETWEEN BOTTOM WIRE AND GROUND EXCEEDS 500 mm

STEEL POST DEADMAN DRIVEN APPROXIMATELY 1 m INTO GROUND MAY BE USED
IN LIEU OF ROCK DEADMAN.

STRESS PANEL

PANEL AT MINOR DEPRESSION

END PANEL

MORTISE DETAIL

3- POST CORNER PANEL

4- POST CORNER PANEL

5- POST CORNER PANEL

TABLE 1: WIRE POST SPACING ON CURVED FENCE LINES

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<th>RADIUS (M)</th>
<th>SPACING (M)</th>
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</tr>
<tr>
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</tr>
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</table>

STEEL POSTS USED BETWEEN STRESS PANELS AT 10.0 METER CURVE AS TANGER

DRAINAGE CROSSING

METRIC

NDOT

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

NEVADA 4-WIRE FENCE PANEL DETAILS

TYPE C-NV-4B

ALL DIMENSIONS ARE IN MILLIMETERS

UNLESS OTHERWISE NOTED

STATE ROAD DESIGNER

REVISION

9/93
GENERAL NOTES:
1. Spacing between wires on Missouri Gate shall be the same as wires on adjacent fence.
2. Gate latch shall be lag bolted firmly to the gate post.
3. King post, latch posts, and cattle guard wing attachment posts shall be 3.4 m length and shall be buried 1 m in ground.
4. For end panel details, see sheet R-612.
5. Wire may be used in lieu of metal strap for connection of cattle guard wing to fence post.
BENCH FENCE NOTES:

1. All posts and braces shall be 22 kg crane rail or
   3.6 m wide flange, 2.7 m long.
2. Install the braces and posts at intervals not exceeding 8.1 m.
3. All ties shall be at 5.5 m centers.
4. Posts and braces to be set in concrete as shown, except in rock, they may be grouted in drill hole.
5. 3 galvanized crossties with equal and 3 galvanized wire.
6. Cut groove in flange of braces for wire rope and eye bar.
7. Secure mesh to line posts with 7 wire ties per post, and to each wire rope with wire tie per 10 m meter.
8. Concrete shall be Class A or AA.

SECTION A - A

SECTION B - B

SECTION C - C

SECTION D - D

NOTE:

All dimensions are in millimeters unless otherwise noted.

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION
BENCH FENCE AND CATTLE PASS FENCING
METRIC

DETAIL A

DETAIL B

DETAIL C

METHOD OF ATTACHING FENCE TO WIND WALL (OPTIONAL)
**STRUCTURAL STEEL**

**REINFORCING**

**BILL OF MATERIALS**

**STATE OF NEVADA**

**STEEL CATTLE GUARD**

**7.8 m to 12.0 m ROADBED**
This design is not for use on mainlines, ramps, or crossroads.

note: A welded or rolled unit of equivalent design loading capacity may be submitted to the engineer for approval, in place of a 75 mm x 75 mm flat bar.
GENERAL NOTES
1. MELT: SEE STANDARD DRAWINGS R-8.1.6.1 THRU R-8.1.6.3 FOR OTHER END TREATMENTS
   NOT SHOWN, REFER TO MANUFACTURER'S DRAWINGS.
2. THESE AREAS MAY REQUIRE PAYING IF SHOULDER
   DRAINS AND/OR DRAIN DRAINS ARE USED.
3. TRAILING END ANCHOR: SEE STANDARD DRAWING
   R-8.1.6.4.
4. GALVANIZED GUARDRAIL (TRIPLE CORRUGATIONS):
   SEE STANDARD DRAWINGS R-8.1.7.
5. CRASH CUSHION OR TANGENT END TREATMENT
   (DI-DIRECTIONAL) CAN BE FLARED AT 1:50 TAPER.
6. RECOVERABLE SLOPES REQUIRED BEHIND GATING
   PORTION OF END TREATMENT OR CRASH CUSHION.
7. ON RETROFIT INSTALLATIONS WHEN DISTANCE
   BETWEEN BACK OF POST AND HINGE POINT IS LESS
   THAN 0.6 m, THE POST SHALL BE LENGTHENED
   0.3 m MIN.
8. GUARDRAIL HEIGHTS ON STAGE CONSTRUCTION
   PROJECTS SHALL BE GOVERNED BY FINAL
   SURFACING HEIGHT.
9. REFERENCE: AASHTO ROADSIDE DESIGN GUIDE-
   1996 EDITION.
10. CLEAR ZONE SHOULD BE BASED ON 20 YEAR
    TRAFFIC DESIGN.
11. RECOVERABLE SLOPES ARE 1:4 OR FLATTER.

LEGEND
- PAVED AREAS

METRIC
NDTOT

TYPICAL GUARDRAIL
INSTALLATION

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED.
GENERAL NOTES:
1. USE HANNED TIMBER BEAM, SEE DETAIL "M" STANDARD PLAN SHEET R-8.1.5.1
2. A QUADRANT ENERGY ABSORBING TERMINAL SHOULD BE USED IF THE
   ONE WAY FACILITY IS TO BE USED AS A TWO WAY DETOUR THE
   TERMINAL SHOULD BE LEFT IN PLACE ONCE THE DETOUR IS REMOVED.
3. FOR DETAILS NOT SHOWN SEE STANDARD DRAWING R-8.1.7
4. REFER TO AASHO ROADSIDE DESIGN GUIDE, 1966 EDITION, SECTION 5.8.1
   FOR DESIGN INFORMATION NOT SHOWN.
5. SEE STANDARD DRAWING R-8.1.5.2 FOR OPTIONAL GUARDRAIL INSTALLATION.
6. INCREASE 0.5 m SHY DISTANCE TO PLACE SPACER BLOCKS ON OBSTRUCTION.
7. IF GUARDRAIL SYSTEM IS NOT SATISFACTORY, USE CONCRETE BARRIER RAIL.

METHOD 1

METHOD 2

METHOD 3

METHOD 4

NOTE: SPACER MATERIAL MAY BE "I" BEAM, WOOD BLOCK OR FORGED STRUCTURAL
TUBING BY PRIOR APPROVAL OF THE ENGINEER. FOR DETAILS SEE
STANDARD SHEET R-8.1.7
GENERAL NOTES:

1. THESE DETAILS ARE TO BE USED ONLY WHEN GUARDRAIL POST CANNOT BE INSTALLED TO AVOID UNDERGROUND OBSTRUCTIONS WITH GUARDRAIL POSTS.
2. SEE SHEET R-8.17 FOR DETAILS ON GALVANIZED GUARDRAIL (TRIPLE CORRUGATION) NOT SHOWN.
3. GUARDRAIL LENGTHS OF NEED SHALL BE BASED ON DESIGN YEAR TRAFFIC VOLUMES. SEE ASPHALT WIDEZONE DESIGN GUIDE FOR DETAILS.
4. CHECK FEASIBILITY OF REMOVING HAZARD OR EXTENDING CULVERT OUTSIDE CLEAR ZONE VERSUS COST OF GUARDRAIL.
5. IF THE GUARDRAIL SPACE OCCURS ON THE POSTS WHICH ARE ALIGNED TO THE MIDDLE POST THEN THREE CONTINUOUS SECTIONS (114.3 m) OF NESTED GUARDRAIL ARE REQUIRED WITH THE MIDDLE SECTION BEING CENTORED AT THE LOCATION OF THE MISSING POST.
METAL BEAM GUARDRAIL WITH W 150 x 13.5 STEEL POST AND WOOD BLOCK

PLAN

150 mm x 200 mm Wood Post & Block
2-20d Spikes

GENERAL NOTES:
1. ALL HOLES 20 mm DIA.
2. RAIL MOUNTS TO BLOCK WITH BOLT ON APPROACHING TRAFFIC SIDE OF BLOCK AND POST WEB.
3. BLOCK MOUNTS TO POST WITH 2 BOLTS STAGGERED. LOWER BOLT ON APPROACHING TRAFFIC SIDE OF BLOCK AND POST WEB. (FOR METAL BLOCKS ONLY).
4. ON RETROFIT INSTALLATIONS WHERE DISTANCE BETWEEN BACK OF GUARDRAIL POST AND HINGE POINT IS LESS THAN 600 mm, THE POST SHALL BE LENGTHENED 300 mm MIN.
5. GUARDRAIL HEIGHTS ON STAGE CONSTRUCTIONS PROJECTS SHALL BE GOVERNED BY FINAL SURFACING ELEVATIONS.

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION
GALVANIZED GUARDRAIL

150 mm x 260 mm Wood Post & Block

1.05
GENERAL NOTES:
1. CONCRETE SHALL BE CLASS A OR AA.
2. MEDIAN BARRIER RAIL SHALL BE SCORED 5 mm DEEP EVERY 4.5 m.
3. ALL CONTACT JOINTS SHALL BE AT PLANNED SCORED JOINT LOCATIONS.
4. ALL JOINTS AND OTHER LOCATIONS NEEDING SEALING SHALL FOLLOW REQUIREMENT SET IN DRAWING R-8.3.1.
5. FOR IMPACT ATTENUATOR ATTACHMENT DETAILS, SEE MANUFACTURER'S DRAWINGS. MEDIAN END TREATMENTS SHALL BE BIDIRECTIONAL.
6. REFER TO THE 1996 ROADSIDE DESIGN GUIDE FOR FURTHER DESIGN INFORMATION NOT SHOWN HERE.
7. EXPANSION JOINTS AT ALL STRUCTURES. JOINTS IN BARRIER RAIL OVER A STRUCTURE SHALL BE AT THE SAME LOCATION AND OF THE SAME DIMENSIONS AS THOSE IN THE STRUCTURE. JOINT FILLER NOT REQUIRED IN EXPANSION JOINT IN BARRIER RAIL.
8. SEE CONTRACT PLANS FOR EXACT DIMENSIONS.
9. THESE 1070 mm BARRIER RAILS ARE CONSIDERED INNOVATIVE.
10. DEPTH OF 150 mm BASE SHALL BE CHECKED AND INCREASED AS NEEDED FOR FOUNDATION STABILITY. WHEN BARRIER RAIL IS PLACED ON CONCRETE PAVEMENT, THE BASE CAN BE ELIMINATED. BARRIER RAIL END ANCHORS MAY BE REQUIRED. SEE DRAWING R-8.3.1.
11. THE 1070 mm TYPE FA BARRIER RAIL MAY ALSO BE CONSIDERED ON THE OUTSIDE CURVES NEXT TO SENSITIVE AREAS SUCH AS SCHOOLS, HOUSING DEVELOPMENTS, AND PROBLEM AREAS THAT NEED EXTRA PROTECTION.
12. FOR DETAILS NOT SHOWN SEE TYPE FA.
13. NTS = NOT TO SCALE.
**GENERAL NOTES:**

1. **PORTABLE PRECAST CONCRETE BARRIER RAIL**
2. **DESIGN SPEED**
3. **FLARE RATE**

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<th>Design Speed</th>
<th>Flare Rate</th>
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**CONCRETE BARRIER RAIL**

**FLARE RATES**

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<th>Flare Rate</th>
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<tr>
<td>50 km/h</td>
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**ELEVATION**

**TYPICAL INTERMEDIATE PANEL**

Concrete: 1.48 m³ Per Panel
Reinforcing: 77 kg Per Panel
Mass: 3538 kg Per Panel

**NOTE:** No. 13/450
May Be Replaced by Welded Wire Fabric of Equivalent Cross-Sectional Area

9 mm Steel Rod
or No. 12 Bar

**CONNECTION DETAIL**

**WELDED**

**FORGED**

**SECTION G-G**

**ALTERNATIVE HEAD DETAIL**

**SECTION A-A**

**SECTION E-E**

**SECTION F-F**

**SECTION H-H**

**SECTION G-G**

**CURVED LAYOUT**

**PORTABLE PRECAST CONCRETE BARRIER RAIL**

**METRIC**

**STATE OF NEVADA**

**DEPARTMENT OF TRANSPORTATION**

**PORTABLE PRECAST CONCRETE BARRIER RAIL**

**ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED**

**NOTE 1:** No. 13 TIE BAR 450 mm Per Intermediate Panel

**NOTE 2:** CONCRETE SHALL BE EQUALLY SPACED FROM THE VERTICES OF THE DIAMETER SHOWN. ONE End BAR SHALL BE TIGHTLY WRAPPED TO THE SUMMIT BARS AND THE OTHER END BAR SHALL BE EACH FITTED TO THE SUMMIT SHIELD. EACH PROCESS SHALL BE CONTINUOUS FOR EACH NO. 19 BARRIER.

**NOTE 3:** CONCRETE SHALL BE 400 mm X 400 mm X 400 mm X 400 mm.

**NOTE 4:** WELDING HOLES NOT REQUIRED.
GENERAL NOTES:
1. STRAIGHT HOLES 18 mm Ø OF THE DEPTH SHOWN MAY BE USED IN LIEU OF THE TAPERED HOLES.
2. USE PIPE TYPE ANCHORAGE DEVICES AND SETA-
   SANCED FLOWING WASHERS INCASE OF THREADS.
3. PLACE SCREEN ON WORK AREA SIDE OF TEMPORARY
   RAILING WHERE TRAFFIC WILL NOT BE ON OT
   SIDE OF THE RAILING, WHEN TRAFFIC WILL
   BE ON OTHER SIDE OF THE RAILING, THE SCREEN
   MAY BE PLACED ON EITHER SIDE OF THE PIPE SUPPORT.
4. CLADERS IN BOX MUST BE SUBSTITUTED FOR
   SCREEN MUST BE CROSSED ON THE
   WORK AREA SIDE OF THE SCREEN WHERE TRAFFIC
   WILL NOT BE ON THE OTHER SIDE OF THE WORK
   AREA.
5. D.6mm BOLTS CAN BE SUBSTITUTED
   FOR 6.5mm BOLTS.
6. OPENINGS IN THE SCREEN AREA OF 1m X 1m
   SHALL BE PROVIDED AT 6m X 6m INTERVALS.
7. PIPE N - PIPE SIZE DESIGNATOR, SEE DRAWING.

SECTION A-A

ELEVATION

SCREEN ANCHORAGE DETAIL

ALTERNATIVE 'A'

PLAN

14 mm Ø HOLE IN P/L
100 mm x 250 mm x 6.4 mm P/L

SCREEN ANCHORAGE DETAIL

ALTERNATIVE 'A'

ANCHOR PLATE DETAIL

ALTERNATIVE 'A'

SCREEN ANCHORAGE DETAIL

ALTERNATIVE 'B'

ELEVATION

SECTION B-B

ELEVATION

METRIC

TEMPORARY TRAFFIC
SCREEN

STATE OF AMERICA
DEPARTMENT OF TRANSPORTATION

METRIC

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

METRIC

R-9.2.2

NOTE: ALL SCHEDULES ARE IN MILLIMETERS
UNLESS OTHERWISE NOTED.
GENERAL NOTES:
1. ALL REFLECTORS SHALL BE SELECTED & INSTALLED PURSUANT TO THE PROJECT PLANS & SPECIFICATIONS OR AT THE DIRECTIONS OF THE ENGINEER. THE DEPICTED REFLECTORS ARE FOR MOUNTING LOCATION INFORMATION ONLY.
2. SPACING SEE "REFLECTOR PLACEMENT ON GUARDRAIL" NOTES AND TABLE "A" OF THIS SHEET.
3. REFLECTORS SHALL BE MOUNTED AS SPECIFIED BY THE MANUFACTURER OR AS DIRECTED BY THE ENGINEER.
4. COLOR SHALL COMPLY WITH THE GUIDELINES ESTABLISHED BY THE M.I.T.C.D., 1988 EDITION AND REVISIONS THERETO.

REFLECTOR PLACEMENT SPACING ON GUARDRAIL/BARRIER RAIL

SPACING SHALL BE:
(a) 15 METER ON TANGENTS AND ON CURVES OF 90 METER RADIUS OR GREATER. IF LESS THAN 90 METER RADIUS SEE TABLE "A".
(b) REFLECTORS SHALL BE OMITTED ON THE FLARED SECTIONS OF GUARDRAIL.
(c) NO DIRECT PAYMENT FOR REFLECTORS REGARDLESS OF TYPE OF INSTALLATION.

TABLE "A"

<table>
<thead>
<tr>
<th>Radius of Curve (in Meters)</th>
<th>Reflector Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>6 m</td>
</tr>
<tr>
<td>45</td>
<td>9 m</td>
</tr>
<tr>
<td>60</td>
<td>11 m</td>
</tr>
<tr>
<td>75</td>
<td>12 m</td>
</tr>
<tr>
<td>≥ 90</td>
<td>15 m</td>
</tr>
</tbody>
</table>

TYPICAL GUARDRAIL-GUIDE POST INSTALLATION

FOR DETAILS NOT SHOWN SEE SHEET R-9.1.1

CONTRACT MAY SPECIFY EITHER FLEXIBLE OR RIGID POST
GENERAL NOTES:
1. CONCRETE SHALL BE CLASS A OR AA.
2. MONUMENTS SHALL BE SET TO ASSIST IN REESTABLISHMENT OF THE CENTERLINE FOR FUTURE USE AND SHALL BE SET AT THE BEGINNING AND END OF EACH PROJECT, AT BEGINNING AND END OF EACH CURVE, AT ALL ANGLE POINTS AND APPROXIMATELY 500 METERS APART ON LONG TANGENTS.
3. MONUMENTS MAY BE POUR SQUARE OR ROUND
4. MONUMENT STAMPING SHALL INCLUDE DESCRIPTION, ANGLE AND OFFSET.

REFERENCE MONUMENT AND MARKER POST

SURVEY COVER & RING
(CAST IRON)

ALTERNATE PLACEMENT
(CAST IRON)

SURVEY MONUMENTS
**GENERAL NOTES:**

1. ALL WEAKED PLANE JOINTS SHALL BE SAWED DIAGONALLY AS SHOWN EXCEPT WHERE INDICATED IN THE END ANCHOR AND STRUCTURE APPROACH DETAIL. WHEN ONLY ONE LINE IS BEING CONSTRUCTED ALONGSIDE EXISTING LANE JOINTS SHALL BE SAWED DiAGONALLY OR AS DIRECTED BY THE ENGINEER. OFFSET IS 1 FT 6 IN AND SAWED COUNTERCLOCKWISE.

2. SPACING OF WEAKENED PLANE JOINTS SHALL BE SUCCESSIVELY 4.5 M, 1.9 M, 2.6 M, 3.6 M, AND 4.6 M, AND REPEAT, EXCEPT FOR THE FIRST JOINT AT PAVEMENT END ANCHORS AND AT REFERENCED STRUCTURE APPROACHES.

3. TRANSVERSE CONTACT JOINTS SHALL BE CONSTRUCTED AT LEAST 1.8 M FROM ANY TRANSVERSE WEAKENED PLANE JOINT.

4. LONGITUDINAL WEAKENED PLANE JOINTS SHALL BE CUT AT ALL LANE AND SHOULDER LINES EXCEPT WHERE LANE PLUS ADJACENT SHOULDER WIDTH IS LESS THAN OR EQUAL TO 4.5 M.

5. ALL TRANSVERSE CONTACT JOINTS SHALL BE SAWED AND JOINT SEALER USED ON RESPECTIVE TRANSVERSE CONTACT JOINT DETAIL THIS SHEET.

6. ALL TIE BARS TO BE EPOXY COATED EXCEPT IN CEMENT CO. TIE BARS TO BE PLACED IN MIDDLE 1/3 OF SLAB THICKNESS.

7. TRANSVERSE CONTACT JOINTS WITH DOWEL BARS SHALL BE USED AT ALL CONSTRUCTION JOINTS AND ELSEWHERE IF ORDERED BY THE ENGINEER.

8. PAINT END ANCHORS CAN BE CONSTRUCTED AS THE TERMINAL PANELS OF ALL PAVEMENT NOT ABBREVIATING EXISTING CONCRETE PAVEMENTS OR STRUCTURES, AND ELSEWHERE IF ORDERED BY THE ENGINEER.

9. TIE BARS 3 MM WEAKENED PLANE JOINT SAW CUT TO BE DONE WITHIN SPECIFIED TIME LIMIT. RESERVOIR CUT SHALL BE DONE AT LATER TIME.

10. RATIO OF DEPTH TO WIDTH OF JOINT SEALANT SHALL BE 1:1.

11. DOWEL BARS SHALL BE LOCATED WITHIN 25 MM OF THE PLANNED TRANSVERSE AND DEPTH LOCATION AND WITHIN 50 MM OF THE PLANNED LONGITUDINAL LOCATION.

12. THE DOWEL BARS SHALL BE PARALLEL TO THE PAVEMENT SURFACE AND CENTERLINE WITHIN A TOLERANCE OF ± 10 MM IN 450 MM.

13. DOWEL BARS SHALL NOT BE PLACED WITHIN 200 MM OF LONGITUDINAL JOINTS.

14. D = SLAB THICKNESS.

**METRIC**

**DEPARTMENT OF TRANSPORTATION**

**PLAIN JOINTED CONCRETE PAVEMENT DETAILS**

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
RUMBLE STRIPS ON CONCRETE SHOULDERS
(RUMBLE STRIPS SHALL NOT BE USED IN URBAN AREAS)

DOWELED CONCRETE PAVEMENT SEE SHEET R-10.1.2

TRANVERSE WEAKENED PLANE JOINTS TYPE

See Note 4

RUMBLE STRIPS ON ASPHALT SHOULDERS
(RUMBLE STRIPS SHALL NOT BE USED IN URBAN AREAS)

SECTION B-B

RUMBLE STRIPS SHALL BE CONTINUOUS AS SHOWN ON PLANS TO BE USED ON ROADS WITH SHOULDER W 12 in AND OVER.

SECTION A-A

GENERAL NOTES:
1. DO NOT SCORE THRU DECELERATION AND ACCELERATION AREAS OF RAMPS AND TWISTED APPROACHES DO NOT SCORE ACROSS WINDER APPROACHES.
2. SHOULDER TRANSVERSE JOINTS SHALL BE THE SAME PATTERN AS MAIN SCHEMATIC.
3. 1.8 in. RUMBLE STRIPS SHALL BE SCORED BETWEEN THE 4.3 in. DWONFLY SHOWN TRANSVERSE JOINTS.
4. SEE TYPICAL SECTION FOR WIDTH OF SHOULDER AND LONGITUDINAL WEAKENED PLANE JOINT LOCATION.
5. WHEN SHOULDER WIDTH IS 12 in. OR WIDER INCREASE 0.45 m TO 0.6 m.
6. THE HIGHEST PORTION OF THE RUMBLE STRIP SHALL NOT BE ABOVE THE ROADWAY SURFACE.

RUMBLE STRIPS ON CONCRETE SHOULDERS
(RUMBLE STRIPS SHALL NOT BE USED IN URBAN AREAS)

PLAIN JOINTED CONCRETE PAVEMENT SEE SHEET R-10.1.1

TRANVERSE WEAKENED PLANE JOINTS TYPE

See Note 4

METRIC
NDOT

STATE OF MICHIGAN
DEPARTMENT OF TRANSPORTATION

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED
MAILBOX TURNOUT

SUGGESTED GUIDELINES FOR LATERAL PLACEMENT OF MAILBOXES

TABLE 1

<table>
<thead>
<tr>
<th>HIGHWAY TYPE AND TRAFFIC CONDITIONS</th>
<th>WIDTH (m) OF ALL-WEATHER SURFACE OF TURNOUT ON AVAILABLE SHOULDER AT MAILBOX</th>
<th>DISTANCE (m) ROADSIDE FACE OF MAILBOX IS TO BE OFFSET BEHIND EDGE OR TURN OUT OR USABLE SHOULDER</th>
<th>PREFERRED (m)</th>
<th>MINIMUM (m)</th>
<th>PREFERRED (m)</th>
<th>MINIMUM (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RURAL HIGHWAY ADT OVER 10000 vpd</td>
<td>&gt; 3.6</td>
<td>3.0</td>
<td>200 to 300</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RURAL HIGHWAY ADT 11500 TO 16000 vpd</td>
<td>3.6</td>
<td>2.4</td>
<td>200 to 300</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RURAL HIGHWAY ADT 1000 TO 7500 vpd</td>
<td>3.0</td>
<td>2.4</td>
<td>200 to 300</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RURAL ROAD ADT UNDER 1000 vpd</td>
<td>2.4</td>
<td>1.8</td>
<td>200 to 300</td>
<td>200#</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RESIDENT STREET WITHOUT CURB OR ALL WEATHER SHOULDER</td>
<td>1.6</td>
<td>0</td>
<td>200 to 300</td>
<td>200#</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CURVED RESIDENTIAL STREET</td>
<td>N/A</td>
<td>N/A</td>
<td>200 to 300</td>
<td>200#</td>
<td>150</td>
<td></td>
</tr>
</tbody>
</table>

ADT = AVERAGE DAILY TRAFFIC
vpd = VEHICLES PER DAY
* IF TURNOUT IS PROVIDED, THIS MAY BE REDUCED TO ZERO.

MINIMUM CLEARANCE DISTANCES TO NEAREST MAILBOX IN MAIL STOPS AT INTERSECTIONS

GENERAL NOTES:
2. Mailboxes Within the Clear Zone Shall Be The Types Shown In Sheets R-12-1.2 and R-12-1.3 Or An Approved Equal.

STATE OF North Dakota DEPARTMENT OF TRANSPORTATION
MAILBOX TURNOUTS

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED

R-12-1.1 12/84

COMMENDED TYPE 2003
GENERAL NOTES:

1. FOR FURTHER INFORMATION ON MAILBOXES SEE AGENTS "A GUIDE FOR ERECTING MAIL BOXES ON HIGHWAYS", WPSA EDITION.

2. INSTALLATION OF TYPE C MAILBOX ASSEMBLIES SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

3. THE DIRECTION OF THE MAILBOX DRAWING IN RELATION TO THE TRAVEL LINES SHALL BE SET BY THE UNITED STATES POSTAL SERVICE.

4. 75 mm x 200 mm WHITE REFLECTORIZED SHEETING SHALL BE PLACED FACING TRAFFIC 900 MM +/- 15 MM FROM CURBING ON ALL MAILBOX SUPPORT STRUCTURES.

NOTE: OPOSITE ORIENTATION WITH WEDGE ON TRAFFIC APPROACH SIDE OF POST IS ALLOWABLE BUT NOT PREFERRED.

SUPPORT FRAME AND FOUNDATION ARE PROPRIETARY PRODUCTS COMMERCIALY AVAILABLE.
TYPE 1-A  SIGNAL STANDARDS

1. For Pedestrian Signal and Sign see Sheet T-30.1-3
2. For Foundation details see Sheet T-50.1-13
3. Mounting Heights of Signal and Pedestrian Heads
   and Pedestrian Push Button Shall be Applicable to Installations on Poles Types 39, 59 & 55.

TYPE 1-B

- 100 mm O.D. Min., Pedestrian Push Button
- 3.15 mm T or Heavier Tapered Metal Pole
- Pedestrian Sign (when Specified)
- Pedestrian Push Button (when Specified)
- 80 mm x 150 mm Hard Top and cover
- 150 mm Dia. Min. at Base
- See DETAIL "F"

SECTION B-B WITH PIPE

DETAIL "F"

TRENCHING DETAIL
1. Remove and Replace Existing Surface, New Surface
   Material Shall Be from a Approved Commercial Source.
2. Seal and Sand New Surface. (As Directed by the Engineer)
3. Two Sack Slurry Mix Cement.
4. Recompress Existing Base.
5. All New Surface and Correlated Material Shall Be Approved
   By Engineer.
6. New Material and Trenching Shall Not be Paid For Directly
   But Included in the Price For the Consultant.
7. Send Reclining.
8. 2 Consult Diameters Min.
9. Sow Cut as Directed By Engineer.

END DETAIL UNIT

MOUNTING DETAIL OPTICAL DETECTOR

FRONT VIEW SIDE VIEW

POST TOP MOUNTED   SIDE BRACKET MOUNTED
TERMINAL COMPARTMENTS

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

TYPE 1A AND 1B POLES,
OPTICAL MOUNT AND
TERMINAL COMPARTMENTS

JOEL R. FARMER, P.E.
Chief Traffic Engineer
CONDUIT INSTALLATION

NOTE:
- At不准 locations where there is
  a separation of the newly installed
  conduits to 300 mm, the cross
  sectional area of the conduit shall

WINDING DETAIL SAW SLOT DETAIL
(TWO TURNS)

QUADRAPOLE LOOP DETECTOR

LOOP INSTALLATION PROCEDURE:

1. LOOP DETECTORS ARE CONDUCTORS OR FLAT DETECTORS AS SHOWN IN DETAIL.
2. LOOP DETECTORS SHALL BE LOCATED IN BAYS (SEE ALSO DETAIL NO. 1) OR BE FIXED IN PLACE.
3. LOOP DETECTORS SHALL BE INSTALLED IN ACCORDANCE WITH LOCAL BUILDING CODES.
4. LOOP DETECTORS SHALL BE INSTALLED IN ACCORDANCE WITH THE PROPER ELECTRICAL CODES.
5. LOOP DETECTORS SHALL BE INSTALLED IN ACCORDANCE WITH THE PROPER ELECTRICAL CODES.
6. LOOP DETECTORS SHALL BE INSTALLMENT AS SHOWN IN DETAIL.
7. LOOP DETECTORS SHALL BE INSTALLED IN ACCORDANCE WITH THE PROPER ELECTRICAL CODES.
8. LOOP DETECTORS SHALL BE INSTALLED IN ACCORDANCE WITH THE PROPER ELECTRICAL CODES.
9. LOOP DETECTORS SHALL BE INSTALLED IN ACCORDANCE WITH THE PROPER ELECTRICAL CODES.
10. LOOP DETECTORS SHALL BE INSTALLED IN ACCORDANCE WITH THE PROPER ELECTRICAL CODES.
11. LOOP DETECTORS SHALL BE INSTALLED IN ACCORDANCE WITH THE PROPER ELECTRICAL CODES.
12. LOOP DETECTORS SHALL BE INSTALLED IN ACCORDANCE WITH THE PROPER ELECTRICAL CODES.

PLAN VIEW OF DIAGONAL SLOT AT CORNERS

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

LOOP DETECTORS

METRIC
NDOT

1201 DESERT ReE
LAS VEGAS, NV 89144

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS STATED OTHERWISE.
INSTALLATION NOTES

1. EACH LOOP SHALL BE 1.8 m X 1.8 m WITH 4 LOOPS.
2. DEPTH OF GROOVE SHALL BE 50 mm MIN. TO 75 mm MAX.
3. LOOPS SHALL BE CENTERED IN ALL TRAFFIC LANE.
4. LOOP WIRE SHALL BE STRAIGHT AND UNBEND.
5. EACH INDIVIDUAL LOOP WIRE SHALL BE CONTINUOUS (NOT WELDED OR SPLICED) AND SHALL BE LABELED AT EACH END WITH THE LOOP ASSIGNMENT.

6. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO ASSESS THAT THE INSTALLATION IS IN CONFORMITY WITH OTHER ITEMS OF WORK.
7. PRIOR TO INSTALLATION OF LOOP DETECTORS THE INSTALLATION CONTRACTOR SHALL NOTIFY THE STATE HIGHWAY DEPARTMENT OF THE INSTALLATION PROVISION (56-30-4) FOR ASSISTANCE OR DETERMINING THE EXACT LOCATION.
8. DETECTORS SHALL BE INSTALLED AFTER DENSE GRADE PAYING OR PROFILE GRADING IS ESTABLISHED.
9. LOOP LOCATION SHALL BE HEADED ON THE DRAWING BY ELABORATING THE WORD "LOOP" IN WHITE.
10. FOR DIAGONAL SLOT AT CORNERS DETAIL SEE STANDARD SHEET T-30.1.4.

GENERAL NOTES:
1. ALL PULL BOXES SHALL BE NO. 5
   SEE SHEET T-30.1.8 FOR DETAILS NOT SHOWN
2. PAVEMENT SHALL BE MADE UNDER THE FOLLOWING ITEMS:
   56 mm DIAMETER CONDUIT
   NO. 5 PULL BOX
   18 m X 18 m DETECTOR LOOPS

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

METRIC
NDOT

TRAFFIC DETECTOR LOOP

ALL DIMENSIONS ARE IN METERS
UNLESS OTHERWISE NOTED

SIGNED:

CHIEF TRAFFIC ENGR. ADAPTED 3/97 REVISION

T-30.1.4.1

19 mm (No.) Flexible Tubing
32 mm Swg
8 mm Swg

Loop Wire
Loop Sealing
Concrete or Paved Mix
Concrete

ELEVATION

PAVEMENT JOINT CROSSING DETAILS
(NO DIRECT PAYMENT)

PLAN

Conduit Against Side

NO.5 PULL BOX
CONDUIT LOCATION (SEE GENERAL NOTES 1 AND 2)
**GENERAL NOTES:**

1. The Ultimate Concrete Compressive Strength Shall Be 70 ± 5 MPA.

2. All Reinforcing Steel Shall Be ASTM A615 Grade 60, All Reinforcing Steel Shall Be ASTM A706 Grade 60, and All Reinforcing Steel Shall Be ASTM A706 Grade 60. Adjust the Reinforcing Steel if there is a conflict between the Anchor Bolt and the Reinforcing Steel.

3. Anchor Bolt Sheave Shall Be ASTM A307 Grade C.

- Dimensions are in millimeters unless otherwise noted.

**STATE OF NEVADA**
**DEPARTMENT OF TRANSPORTATION**

**TYPE 3R**
**LIGHTING CABINET FOUNDATION PLAN**

**METRIC**
**NDOT**

**SIGNED:** 1-350.1.7.2 14579

**STATE OF NEVADA**
**DEPARTMENT OF TRANSPORTATION**

**TYPE 3R**
**LIGHTING CABINET FOUNDATION PLAN**

**METRIC**
**NDOT**

**SIGNED:** 1-350.1.7.2 14579

**STATE OF NEVADA**
**DEPARTMENT OF TRANSPORTATION**

**TYPE 3R**
**LIGHTING CABINET FOUNDATION PLAN**

**METRIC**
**NDOT**

**SIGNED:** 1-350.1.7.2 14579
7.5 m AND SMALLER RADIUS CURB RETURN AND MEDIAN LOCATION

>7.5 m AND LARGER RADIUS CURB RETURN AND MEDIAN LOCATION

GENERAL NOTES:
1. ISLANDS SHALL BE PLACED ONLY ON SLOPES GREATER THAN 7%.8.
2. WHEN USING SAFETY BARS, THE TOP OF THE FOUNDATION SHALL BE PLACED FLUSH WITH THE TOP OF THE FOUNDATION ISLAND.
3. CONCRETE SHALL BE CLASS A OR AA.

SECTION

FOUNDATION ISLAND

PLAN

METRIC

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

SIGNAL POLE AND LOOP DETECTOR LOCATIONS

FOUNDATION ISLAND

A. DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED

NDOT
GENERAL NOTES:
1. PLACE BOTTOM PLATE WITH SPACER PLATE ON LEVELING RAILS ON ANCHOR BOLTS AND EMBED IN PLACE.
2. TOP PLATE SHALL BE PLANE WITH LIGHT POLE ELEVATION AT LOWEST POLE ELEVATION AS SHOWN IN TYP. VIEW.
3. ALL STEEL PLATE ASSEMBLIES SHALL BE HOT DIP GALVANIZED AFTER EMBOD. AS SHOWN.
4. ALL HARDWARE NUTS AND WASHERS SHALL BE ELECTROPLATED CADDY ACCORDING TO ASME B18.2.1.
5. ALL CONTACT AREAS OF ANCHOR BOLTS SHALL BE FREE OF RUST AND CORROSION.
6. SAFETY BASES SHALL BE SPACED ON ALL STEEL LIGHT POLES EXCEPT ON STRUCTURES OR IF PLACED BEHIND DRAIN PULL OR DRAINAGE CIVIL ENGINEER.

SLIP BOLT GASKET
(0.47 mm T)

SLIP BASE & SPACER PLATE PLAN

PLAN
PLATE WASHER

SECTION A-A

SAFETY BASE

8 1/2" x 11" Printed on 20#T1148 03/16

Drawn By:*
Checked By:*
Approved By:

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

*DESIGN ENGINEER
*STATE CIVIL ENGINEER
*SURVEY ENGINEER

GENERAL NOTES:
1. PLACE BOTTOM PLATE WITH SPACER PLATE ON LEVELING RAILS ON ANCHOR BOLTS AND EMBED IN PLACE.
2. TOP PLATE SHALL BE PLANE WITH LIGHT POLE ELEVATION AT LOWEST POLE ELEVATION AS SHOWN IN TYP. VIEW.
3. ALL STEEL PLATE ASSEMBLIES SHALL BE HOT DIP GALVANIZED AFTER EMBOD. AS SHOWN.
4. ALL HARDWARE NUTS AND WASHERS SHALL BE ELECTROPLATED CADDY ACCORDING TO ASME B18.2.1.
5. ALL CONTACT AREAS OF ANCHOR BOLTS SHALL BE FREE OF RUST AND CORROSION.
6. SAFETY BASES SHALL BE SPACED ON ALL STEEL LIGHT POLES EXCEPT ON STRUCTURES OR IF PLACED BEHIND DRAIN PULL OR DRAINAGE CIVIL ENGINEER.
TYPE 30 & 35

NOTE: TYPE 30-A & 35-A PALLETS SHALL ALSO SUPPORT OTHER LOADINGS SHOWN ABOVE.

TYPE 30-A & 35-A
**TYPE "A" UNDERPASS LUMINAIRE**

- 57 kg Standard Companion
- Flange x Flange Iron Pipe
- Pipe Threads
- Flange to Under Side of Deck
- Three 1" O.D. Expandable Bicolor White Belt Separated by 120° Apart
- Copper Bonding Conductor
- Poly-Carbonate Lens or Glass Lens with Poly-Carbonate Shield

**TYPE "C" UNDERPASS LUMINAIRE**

- 57 kg Standard Companion
- Flange x Flange Iron Pipe
- Pipe Threads
- Flange to Under Side of Deck
- Three 1" O.D. Expansion Belts Separated by 120° Apart
- Copper Bonding Conductor
- Poly-Carbonate Lens or Glass Lens with Poly-Carbonate Shield

**TYPE "B" UNDERPASS LUMINAIRE**

- Secure Luminaire With Three 10 mm. Iron Expansion Belts, Two (2) At Top & One (1) At Bottom
- Copper Bonding Conductor
- Poly-Carbonate Lens or Glass Lens with Poly-Carbonate Shield

**PENDANT INSTALLATION**

(TYPE "C" UNDERPASS LUMINAIRE)

- Between Girders
- Between Girders
- Between Girders

**JUNCTION BOX DETAIL**

1. Junction Box and Cover shall be 1/6 in. T steel.
2. Compatible assembled after fabrication.
3. Box shall be flush with bottom of structure.
4. Fastened by 4\ 1/2 in. and 1 1/4 in. with 4/0-2\ 1/2 in. high T head coach screws.
5. Cover shall be 1/8 in. high T head coach screws.
6. An equivalent approved will run may be used in lieu of detail (g) Junction Box.
7. Junction Box Cover shall be 10 in. high x 12 in. high x 12 in. high with a 90° radius. Cover to clear structural steel.

**METRIC ENDOT**

**STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION**

**UNDERPASS LUMINAIRES & JUNCTION BOX**

**DETAIL "B"**

- Under Side of Structure
- Junction Box Cover Shall Be Flush With underside Of Structure
- 25 mm. Conduit stubbed off for under pass luminaires

**PENDANT INSTALLATION**

(UNDOUBTED LUMINAIRE)

- Between Girders
- Between Girders
- Between Girders

**JUNCTION BOX DETAIL**

1. Junction Box and Cover shall be 1/6 in. T steel.
2. Compatible assembled after fabrication.
3. Box shall be flush with bottom of structure.
4. Fastened by 4\ 1/2 in. and 1 1/4 in. with 4/0-2\ 1/2 in. high T head coach screws.
5. Cover shall be 1/8 in. high T head coach screws.
6. An equivalent approved will run may be used in lieu of detail (g) Junction Box.
7. Junction Box Cover shall be 10 in. high x 12 in. high x 12 in. high with a 90° radius. Cover to clear structural steel.
STEEL PIPE POST SUPPORTS

6 mm Dia. x 64 mm Round Head Bolts
Ø 150 mm o.c. with Fiber Insert
Hex Nuts and Flat Washers.

See Detail "A"

10 mm Dia. x 90 mm Carriage Bolts
with Fiber Insert Hex Nuts and Flat Washers.

4.8 mm Thick Steel Tubing
(See Table-2)

Steel Pipe Support
Sign Panel

DETAIL "A"
ALTERNATE MOUNTING (STEEL POSTS)

WOOD POST SUPPORTS

8 mm Dia. x 64 mm Round Head Bolts
Ø 300 mm o.c. with Fiber Insert
Hex Nuts and Flat Washers.

Panel Joint (See Detail T-31.1.3.1)

See Detail "B"

WOOD POST MOUNTING

75 mm x 50 mm x 4.8 mm Steel Tubing

10 mm Dia. Carriage Bolts
with Fiber Inserts and
Flat Washers (See Table 3)

TABLE - 1
(Clamp Sizes)
(mm)

<table>
<thead>
<tr>
<th>PIPE DIA</th>
<th>O.D.</th>
<th>A</th>
<th>B</th>
<th>CLAMPSTOCK</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPS 2</td>
<td>60</td>
<td>10.3</td>
<td>144</td>
<td>6 x 38</td>
</tr>
<tr>
<td>NPS 3</td>
<td>80</td>
<td>12.5</td>
<td>172</td>
<td>6 x 38</td>
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</tbody>
</table>

TABLE - 2
(Tubing Sizes)

<table>
<thead>
<tr>
<th>SRK WIDTH</th>
<th>TUBING SIZE (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.2 m or Less</td>
<td>75 x 50 x 4.8</td>
</tr>
<tr>
<td>7.2 m to 8.4 m</td>
<td>100 x 50 x 4.8</td>
</tr>
</tbody>
</table>

TABLE - 3

<table>
<thead>
<tr>
<th>POST SIZE</th>
<th>&quot;D&quot;</th>
<th>BOLT SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 x 100</td>
<td>90</td>
<td>10 Dia. x 160</td>
</tr>
<tr>
<td>100 x 150</td>
<td>140</td>
<td>10 Dia. x 150</td>
</tr>
<tr>
<td>150 x 150</td>
<td>140</td>
<td>10 Dia. x 210</td>
</tr>
<tr>
<td>150 x 200</td>
<td>190</td>
<td>10 Dia. x 260</td>
</tr>
</tbody>
</table>

GENERAL NOTES:
1. FOR MOUNTING DETAILS NOT SHOWN SEE SHEETS T-31.11
   THROUGH T-31.14 FOR ROUND METAL SUPPORTS AND SHEETS
   T-31.15 AND T-31.16 FOR TIMBER SUPPORTS.
2. NPS - NOMINAL PIPE SIZE DESIGNATOR. SEE ASTM A 53.

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

ALTERNATE MOUNTING DETAIL

METRIC
NDOT

ALL DIMENSIONS ARE IN MILLIMETERS
UNLESS OTHERWISE NOTED
GENERAL NOTES:
1. ALL WARNING SIGNS OF SERIES SHALL BE BLACK ON REFLECTING ORANGE.
2. TRAFFIC CONTROL DEVICES, VERTICAL PANELS, OR TYPE B BARRIERS SHALL BE PLACED IN ACCORDANCE WITH THE SPACING AS SHOWN ON TABLE OR TAPER LENGTHS. TYPE OF TAPERING DEVICES USED SHALL BE AS DIRECTED BY THE ENGINEER.

RAMP WORK

TABLE OF TAPER LENGTHS AND CHANNELIZING DEVICE SPACING

<table>
<thead>
<tr>
<th>SPEED</th>
<th>MINIMUM TAPER LENGTH FOR LINE WIDTH (L)</th>
<th>DEVICE SPACING IN END</th>
</tr>
</thead>
<tbody>
<tr>
<td>km/h</td>
<td>0.8 m</td>
<td>3.0 m</td>
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<td>80</td>
<td>200</td>
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<td>49</td>
<td>154</td>
</tr>
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<td>65</td>
<td>79</td>
<td>209</td>
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<td>79</td>
<td>133</td>
<td>239</td>
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<tr>
<td>90</td>
<td>162</td>
<td>168</td>
</tr>
<tr>
<td>100</td>
<td>170</td>
<td>157</td>
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<tr>
<td>110</td>
<td>180</td>
<td>238</td>
</tr>
<tr>
<td>120</td>
<td>210</td>
<td>239</td>
</tr>
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</table>

TABLE FOR SPACING OF ADVANCE WARNING SIGNS

<table>
<thead>
<tr>
<th>SPEED</th>
<th>85TH PERCENTILE</th>
<th>DISTANCE BETWEEN SIGNS (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>km/h</td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>0-50</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>60-50</td>
<td>90</td>
<td>90</td>
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<td>50-65</td>
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<td>180</td>
<td>180</td>
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<tr>
<td>80-100</td>
<td>200</td>
<td>250</td>
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</table>

SHOULDER WORK

METRIC NDOT

STATE OF NEVADA
department of transportation

TYPICAL EXIT RAMP & SHOULDER WORK

ALL DISTANCES ARE IN MILLISECONDS UNLESS OTHERWISE NOTED

JUNE 28, 1992

CHIEF TRAFFIC ENGR.

REVISION: 9/27
GENERAL NOTES:

1. ALL WARNING SIGNS (W SERIES) SHALL BE BLACK ON REFLECTIVE ORANGE.

2. CHANNELIZING DEVICES OR TYPE IIII BARRETTES SHALL BE PLACED IN ACCORDANCE WITH THE SPACING AS SHOWN ON TABLE OF TAPER LENGTHS AND CHANNELIZING DEVICE SPACING. TYPE OF DELINEATION DEVICE USED SHALL BE AS DIRECTED BY THE ENGINEER.

3. END ROAD WORK SIGN 1522-2w WHEN NECESSARY SHALL BE INSTALLED AT EACH END OF THE PROJECT IN ACCORDANCE WITH THE TABLE FOR SPACING OF ADVANCE WARNING SIGNS.

---

TABLE FOR SPACING OF ADVANCE WARNING SIGNS

<table>
<thead>
<tr>
<th>SPEED</th>
<th>50TH PERCENTILE</th>
<th>85TH PERCENTILE</th>
</tr>
</thead>
<tbody>
<tr>
<td>km/h</td>
<td>DISTANCE BETWEEN SIGNS (m)</td>
<td>DISTANCE BETWEEN SIGNS (m)</td>
</tr>
<tr>
<td>0-30</td>
<td>60</td>
<td>60</td>
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<tr>
<td>&gt; 30-50</td>
<td>90</td>
<td>90</td>
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<tr>
<td>&gt; 50-65</td>
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<td>180</td>
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<tr>
<td>&gt; 80</td>
<td>300</td>
<td>450</td>
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SPEED CONVERSION TABLE

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TABLE OF TAPER LENGTHS AND CHANNELIZING DEVICE SPACING

<table>
<thead>
<tr>
<th>SPEED</th>
<th>MINIMUM TAPER LENGTH FOR LANE WIDTH (ft)</th>
<th>SPACING (m)</th>
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<tr>
<td>30</td>
<td>8.5</td>
<td>6</td>
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<td>90</td>
<td>25.2</td>
<td>24</td>
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LEGEND

- SAFETY ZONE AREA
- CHANNELIZING DEVICES
- FLASHER (LOCATIONS TO BE DETERMINED BY THE FIELD ENGINEER)
- ARROW BOARD

METRIC NDOT

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED

STATE OF MICHIGAN
DEPARTMENT OF TRANSPORTATION
TYPICAL TRAFFIC CONTROL FOR HAUL ROAD (MULTILANE)

1522 - TYPICAL TRAFFIC CONTROL FOR HAUL ROAD (MULTILANE)

COPYRIGHT 2018

REVISION 8-01
NOTE: TYPE III B BARRICADES USED FOR TEMPORARY SIGN SUPPORTS, SIGNS SHALL BE MOUNTED 300 mm MIN. FROM GROUND.

**BARRICADE CHARACTERISTICS**

<table>
<thead>
<tr>
<th></th>
<th>TYPE I BARRICADE</th>
<th>TYPE II BARRICADE</th>
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<tbody>
<tr>
<td>W - Width of Roll</td>
<td>200 mm Min. - 275 mm Max.</td>
<td>200 mm Min. - 300 mm Max.</td>
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<td>L - Length of Roll</td>
<td>0.6 m Min.</td>
<td>0.6 m Min.</td>
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<tr>
<td>Width of Stripes</td>
<td>Roll Length &lt; 0.9 m x 100 mm</td>
<td>Roll Length &lt; 0.9 m x 100 mm</td>
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<tr>
<td></td>
<td>Roll Length 20.3 m x 150 mm</td>
<td>Roll Length 30.9 m x 150 mm</td>
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<td>H - Height</td>
<td>0.9 m Min.</td>
<td>0.9 m Min.</td>
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<tr>
<td>Number of Reflectors</td>
<td>2 (One each Direction)</td>
<td>4 (Two each Direction)</td>
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MARKINGS FOR BARRIER RAILS AND VERTICAL PANELS SHALL BE ALTERNATE REFLECTORIZED ORANGE AND REFLECTORIZED WHITE STRIPES SLOPING DOWNWARD AT AN ANGLE OF 45 DEGREES IN THE DIRECTION OF TRAFFIC.

**SECTION A-A**

**TYPE III B BARRICADE**
(BARRICADE TO BE WEIGHTED DOWN WITH SANDBAGS.)
1. CONES TO BE PREDOMINATELY ORANGE.
2. CONES TO BE USED DURING HOURS OF DARKNESS.
   SHALL BE RETROREFLECTIVE AS SHOWN ABOVE.
3. CONES SHALL HAVE WEIGHTED BASES.

TRAFFIC CONES

450 MM.

TRAFFIC DRUMS

1. 50 mm MAX. NON RETROREFLECTIVE MATERIAL
2. 100 mm MIN. - 150 mm MAX. RETROREFLECTIVE MATERIAL

NOTE DRUMS/Barrels SHALL HAVE A MIN. OF 2 WHITE AND
2 ORANGE RETROREFLECTIVE BANDS AND 450 mm WIDTH
REGARDLESS OF ORIENTATION.
GENERAL NOTES:
1. (X) INDICATES THE MASS IN KILOGRAMS OF THAT SAND FILLED MODULE. WATERS ARE NOMINAL.
2. SHAPES OF THE SAND FILLED MODULES ARE USED FOR ILLUSTRATION PURPOSES ONLY.
3. AT LOCATIONS WHERE VIBRATIONS AND/OR SURFACE SLOPES MAY CAUSE MODULES TO SHIFT, MODULES SHALL BE ANCHORED TO PREVENT MOVEMENT ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS AND AS APPROVED BY THE ENGINEER.
4. IN COOLER CLIMATES, SAND HAVING A MOISTURE CONTENT OF 5% OR MORE SHALL BE MIXED WITH 5% ROCK SALT.
5. PCCRB = PORTABLE PRECAST CONCRETE BARRIER RAIL.
6. (Y) = DESIGN VELOCITY.
7. FOR OTHER SAND MODULE LAYOUTS NOT SHOWN, SEE STANDARD AND MANUALS ENGINEER.
8. THE LEADING MODULE OF EACH ATTENUATOR SHALL BE DELINEATED AS SHOWN. THE OBJECT MARKER PANEL SHALL BE 1 MM THICK ALUMINUM SHEETING APPROXIMATELY 750 MM SQUARE. THE PANEL IS COVERED WITH YELLOW REFLECTIVE SHEETING WITH BLACK STRIPES 125 MM WIDE.
9. BLACK STRIPES SHALL BE AT 45 DEGREES WITH 100 MM SPACE BETWEEN STRIPES.
10. THE MAXIMUM LATERAL AND LONGITUDINAL SLOPE THAT SAND MODULES MAY BE INSTALLED ON SHALL NOT EXCEED 5%.
11. IF SPACE PERMITS ANGLE CENTERLINE OF SAND BARREL ARRAY TOWARDS ON-COMING TRAFFIC 0 TO 5 DEGREES TO SUIT MOST PROBABLE VEHICLE DEPARTURE BASED ON CONDITIONS AT EACH LOCATION.
12. THE ALTERNATING BLACK AND REFLECTORIZED YELLOW STRIPE SHALL BE SLOPED DOWN TOWARDS THE SIDE WHICH TRAFFIC WILL PASS.

DELINEATION FOR LEADING MODULE
(USE CORRECT PANEL)
(See Note 10)

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION
TYPICAL TRAFFIC CONTROL
TEMPORARY IMPACT
ATTENUATORS
SAND FILLED MODULES

TYPICAL LAYOUTS

(Typed Content)
GENERAL NOTES

1. RAILROAD PAVEMENT MARKING SYMBOL INCLUDES THE TWO TRANSVERSE BANDS PLUS THE RAILROAD CROSSING KIT.

2. THE FIRST TRANSVERSE BAND OF THE RAILROAD PAVEMENT SYMBOL SHOULD BE DIRECTLY OPPOSITE THE ADVANCE WARNING SIGN (W10-1). IF NEEDED, SUPPLEMENTAL RAILROAD PAVEMENT MARKING SYMBOL(S) MAY BE PLACED BETWEEN THE FIRST RAILROAD PAVEMENT MARKING SYMBOL AND THE RAILROAD CROSSING, BUT SHOULD BE AT LEAST 15 M FROM THE STOP BAR.

3. A THREE-LANE ROADWAY SHOULD BE MARKED WITH A CENTERLINE FOR TWO-LANE APPROACH OPERATION ON THE APPROACH TO A RAILROAD CROSSING.

4. ON MULTI-LANE ROADS, THE TRANSVERSE BANDS SHOULD EXTEND ACROSS ALL APPROACH TRAVEL LINES, AND INDIVIDUAL RHR SYMBOLS SHOULD BE USED IN EACH APPROACH TRAVEL LANE.

5. PAVEMENT MARKINGS FOR STOP BARS, TRANSVERSE BANDS AND CENTER LINES ARE REQUIRED IN ADDITION TO PAVEMENT MARKINGS AS SHOWN IN DETAIL A.

6. ADDITIONAL INFORMATION ON RAILROAD GRADE CROSSINGS CAN BE FOUND IN MUTCD, PART VIII.

7. STOP BARS SHALL BE PERPENDICULAR TO ROADWAY AND SHALL BE WHITE.


9. REFER TO METRIC ALPHABET FOR HIGHWAY SIGNS AND MARKINGS FOR RHR SYMBOL DETAILS.

10. THE DISTANCE X SHALL BE NOTED IN THE PLANS AND/OR STRUCTURE LIST.
GENERAL NOTES:

1. Ring type guardrail may be installed to provide protection for the signal assembly in industrial or other areas involving only low-speed highway traffic and where signals are vulnerable to damage by turning truck traffic. Use of ring type guardrail requires approval by the chief safety engineer or the chief roadway design engineer.

2. For additional information regarding traffic control systems for railroad-highway grade crossings refer to standard plan drawing T-35.2 and the MUTCD, Part VIII.

3. For "W" beam guardrail details see standard plan drawing R-8.2.2.

4. For triple corrugation guardrail details see standard plan drawing R-8.1.1.

5. Special guardrail terminal end to be installed on guardrail end nearest to railroad.

6. No post holes shall be drilled next to the signal apparatus without first notifying the railroad inspector.

7. For signals with less than 2.1 meters refer to drawing R-8.1.2 and 1996 AASHTO ROADSIDE DESIGN GUIDE Table 5.3 for alternate post spacing.

8. For triple corrugation details not shown refer to standardized highway barrier hardware by AASHTO-ACC-ARTEA report May 1995.
**WELDED CHORD SPlice**

1. Prepare Edges By Beveling To Angle Shown.
2. Field To 100% Full Penetration.
3. Grind Filler With Base Metal.

**SECTION T-T**

**TYPICAL SECTION J-J**

Note: Diagonals za in Plane of Truss, Not Shown Bracing Shown to All Verticals Of Truss.

**BOLTED CHORD SPlice**

<table>
<thead>
<tr>
<th>CHORD</th>
<th>NOMINAL BOLT DIAM.</th>
</tr>
</thead>
<tbody>
<tr>
<td>17x17</td>
<td>M12</td>
</tr>
<tr>
<td>20x20</td>
<td>M16</td>
</tr>
<tr>
<td>26x26</td>
<td>M20</td>
</tr>
<tr>
<td>32x32</td>
<td>M24</td>
</tr>
</tbody>
</table>

**OPTIONAL BOLTED CHORD SPlice**

<table>
<thead>
<tr>
<th>CHORD</th>
<th>NOMINAL BOLT DIAM.</th>
</tr>
</thead>
<tbody>
<tr>
<td>17x17</td>
<td>M12</td>
</tr>
<tr>
<td>20x20</td>
<td>M16</td>
</tr>
<tr>
<td>26x26</td>
<td>M20</td>
</tr>
<tr>
<td>32x32</td>
<td>M24</td>
</tr>
</tbody>
</table>

**SPLICc NOTES:**

Specifications:
The Bolted Splice Shall Conform To Current "Specifications For Structural Steel Using ASTM A325 Bolts".

Location of Splices:
The Splice Shall Be Located So As Not To Interfere With Mounting The Warning, Bracket Or The Cup Angle For The End-Plate Or The Bottom Portion Of The Column. The Bolted Chord Splice Shall Be Bolted To The Chord Angles With 3 x 10 mm Unthreaded Bolt, With Nut, Washer And Lock Washers.

Bolts:
The Bolts Shall Be 3 x 10 mm Unthreaded Bolt, With Nut, Washer And Lock Washers.

Filter:
The Plates Welded To The Angle Legs On The Inside Shall Be Welded Before Punching The Bolt Holes, They Shall Be The Same Length As The Cover Plates. The Plates Are Not Necessary On The Single Post Signs. If The Splice Is Located Over 5% Of The Continuous Length From The Next Alternative Splice Details May Be Used If Approved By The Engineer.
SECTION "C" - "C"
ALTERNATIVE CONNECTIONS AT TOP CHORD

SECTION "D" - "D"

NOTES:
1. For Steel Removable Sign Panel Frame Details, See Standard Plans 1-36.1-B.
2. Maximum Fillet weld size 3 mm. For Clip Angles Welded To Chord Member Of Truss.
3. Minimum Spacing Of Bolt. Clap Angle Is 15.75 mm.
4. Top Clip Required For Each Vertical Member Or Removable Sign Panel Frame.

STEEL REMOVABLE SIGN PANEL FRAMES

ELEVATION VIEW

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS
REMOVABLE SIGN PANEL FRAMES
2795 mm AND 3050 mm SIGN PANELS

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

ADOPTEO 7/16 REV. 2017
WALKWAY PLAN

DETAIL 13
TYPICAL CONNECTION

DETAIL 14
CONNECTION AT SPUDGE

SECTION V-V

DETAIL 12

NOTES:
1. Webbed-Type Grating Shell Have 32 mm x 3 mm Branding Bars & 15 mm Centers. See Plate 10.2 for Webbed Grating Information. For Widths Greater Than the Webbed-Type, Alternative Gratings May Be Submitted for Approval.
2. For Spacing of Lighting Fixtures, See Table of Spacings on 'Floor and Sign Lighting Equipment' Sheet.
3. Walkway Grating and Light Fixture Mounting Channels to Be Continuous with System. Over 120 mm Caterpillar, Provide a Continuous Grating with Fabrication, Ease of Handling and Assembling.

METRIC
NDOT

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION
OVERHEAD SIGNS
WALKWAY DETAILS NO. 1

J. A. SAUER
1/6/85
1/1985
1/1985

DEPARTMENT OF TRANSPORTATION
OVERHEAD SIGNS
WALKWAY DETAILS NO. 1

J. A. SAUER
1/6/85
1/1985
1/1985

DEPARTMENT OF TRANSPORTATION
OVERHEAD SIGNS
WALKWAY DETAILS NO. 1

J. A. SAUER
1/6/85
1/1985
1/1985
**LIGHT FIXTURE MOUNTING DETAIL**

**Note:** NPS = Nominal Pipe Size Designator. See ASTM A53.

**DETAIL "A"**

- **Light Fixture Mounting Channel:** 41 mm x 41 mm x 2.8 mm, 7 mm Flange, 4590 mm Length
- **Hanger Plate:** 50 mm x 50 mm x 10 mm
- **Brass C For Mounting Screws:** Provide 10 mm x 20 mm Self-Drilling Screws and Lock Washers
- **4 mm x 8-20 Threaded 25 mm Stainless Steel Nut:** 2 mm Stainless Steel Washer
- **16 mm x 25 mm Flange Round Head Machine Screw:** Max. Nut, Flat Washer, Bevel Washers & Lock Washers
- **Gaskets:** 25 mm Diameter, 5 mm Thick

**PHOTOELECTRIC CONTROL UNIT**

**SIDES VIEW - SINGLE FACED SIGN TYPES C**

**FRONT VIEW**

**CENTER MOUNT:** Required for Signs 4590 mm thru 7430 mm

**Photoelectric Control Unit:** 3-Prong DC-Relay, Corded Twist Bolt Plug Acceptable

**Top Of Sign Panel:** 3/8" NPS Std. Pipe OD; 4" O.D. Forged

**Bottom Of Sign Panel:** 50 mm Diameter Hole
NOTES:
1. Backfill Shall Be In Place Prior To Erection Of Post.
2. Slope Protection Required When Erodible On The Plane.
4. NPS = Nominal Pipe Size Designator—See e5M a55.
LEGENDS
XING ONLY

NOTE: THESE LEGENDS ARE FOR BIKE LANE USE.

DETAIL "B" (> 28.8 m)
(2.15 m²)

DETAIL "B" (16.8 m to 28.8 m)
(2.15 m²)

DETAIL "B" (< 16.8 m)
(2.15 m²)

STRAIGHT ARROW
(1.11 m²)

LEFT/STRAIGHT ARROW
(2.51 m²)

LEFT/STRAIGHT/RIGHT ARROW
(3.35 m²)

PERMANENT PAVEMENT MARKING FILM

METRIC NDOT

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

PERMANENT PAVEMENT MARKING FILM

BIKE LANE

TYPICAL INTERSECTION CROSSWALKS & STOP BARS
NOTED INSTALLATION OF GRAY FILM SHALL BE
PERFORMED BY THE CONTRACTOR UNLESS
OTHERWISE NOTED. FOR FINAL LOCATIONS, SEE
STRIPING DETAILS.

BICYCLE PAVEMENT MARKINGS

NOTE: BICYCLE BOX DENOTES
BIKE LANES FOR BIKE USE.

NOTE: BICYCLE ARROWS
WHERE APPLICABLE.

NOTE: ALL STOP BARS AND CROSSWALK LINES SHOWN
BE 300 mm Wide Unless Otherwise Noted.
For Exposed Top, Provide No.13 Bars @ 450 mm Each Way 1600 mm Lap With "c" Bars And Adjust Quantities.
NOTES:

1. CONCRETE FOR THIS PORTION IS INCLUDED IN QUANTITIES OF ADJOINING CELLS.
2. REINFORCING STEEL INCLUDED IN PREVIOUS CELLS QUANTITIES.

TYPICAL SECTION - SPANS 1.2 m THRU 2.4 m

- 20 mm Min. Steel
- 600 Max.
- 65 Cl.

TYPICAL SECTION - SPANS 3.0 m THRU 4.3 m

- 1000 mm
- 300 mm
- 7" BAR SPlice DETAIL

FOR DIMENSIONS, BAR SIZES, BAR SPACING, AND BEAD SECTION SPACING DETAIL, SEE SHEET B-20.1.3. FOR GENERAL NOTES, SEE SHEET B-20.1.1.
No. 3 Bars @ 300 mm, Both Sides
G Bars F.F. (See Table) (Typ. Both Sides)
Extend 2 × No. 3 Bars 300 mm Into Coping

ELEVATION

F Bars (See Table)
40 to 150

WING B

150H + 460/ Cos Skew Angle

PLAN

A

SHELL ANGLE

Roadway

When Tip of King Footing at Bridge Bottom, G Bars May Be Filled With Concrete

WING A

1.5(H + 480) mm

SECTION A-A

SAME SIZE AS F BARS

HEIGHT H

300 mm

FOR H = LESS THAN 3700 mm

6450 mm

SECTION B-B

No. 3 Bars @ 300

T

H

G Bars

656 mm

FOR H = 3700 mm

6450 mm

NATURAL TEXT NOTATION

1. FOR GENERAL NOTES SEE SHEET B-20.1.1
2. FOR QUANTITIES SEE SHEET B-20.1.4.1

NOTES:

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION
RCB CULVERTS
TYPE II HEADWALLS

METRIC
NDOT

All dimensions are in millimeters unless otherwise noted.

Sheet 1 of 2

J.W. Mayer
Chief Bridge Design Engineer

MODIFIED: 10/6/2003
VERSION: 00004
- Quantities shown are for headwalls at the inlet and outlet.

<table>
<thead>
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<th>Span (m)</th>
<th>0° Skew</th>
<th>15° Skew</th>
<th>30° Skew</th>
<th>45° Skew</th>
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Quantities for additional cells:
- Concrete for two type II headwalls for each additional cell (in cubic meters): add this quantity to the quantity for a double box.
  - For height (m) less than 3.7 meters: 0.85 (span/2) + 0.21/cos skew angle
  - For height (m) equal to or greater than 3.7 meters: 0.91 (span/2) + 0.21/cos skew angle

Reinforcing for two type II headwalls for each additional cell (in kilograms):
- Add this quantity to the quantity for a double box.
  - For height (m) less than or equal to 2.1 meters: 26.11 (span/2) + 0.21/cos skew angle
  - For height (m) equal to 2.4 or 2.7 meters: 30.67 (span/2) - 0.21/cos skew angle
  - For height (m) equal to or greater than 3.0 meters: 63.79 (span/2) - 0.21/cos skew angle
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**CUBIC METERS OF CONCRETE AND KILOGRAMS OF REINFORCING FOR TWO TYPE I HEADWALLS**

1) Quantities shown are for two headwalls, one at the inlet and one at the outlet.
NOTES:
1. FOR GENERAL NOTES SEE SHEET B-20.11.
2. DOWELLING: DOWEL HOLES SHALL BE DRILLED 300 mm INTO EXISTING CONCRETE. DIAMETER OF HOLE SHALL BE 6 mm LARGER THAN DIAMETER OF BAR. HOLE MAY BE INCLINED NO MORE THAN 5° OFF THE HORIZONTAL. DOWELs SHALL BE EPOXYED INTO CLEAN HOLES. EPOXY SHALL CONFORM TO THE REQUIREMENT OF SECTION 728 OF THE STANDARD SPECIFICATIONS.

* Place Bars in Center Of Walls And Slabs

NOTE:
Old Headwalls To Remain In Place, Unless Otherwise Noted.

PART LONGITUDINAL SECTION

ELEVATION

PLAN

R.C.B. CULVERT EXTENSION

* Place Bars in Center Of Walls And Slabs

SECTION

METHOD OF PLUGGING R.C.B.
NOTE: Width And Height Varies.
GENERAL NOTES:

1. CONCRETE: ALL CONCRETE IN PRECAST PRESTRESSED PILES SHALL BE 5500 PSI CONCRETE. CEMENT Content SHALL be NO LESS THAN 10.5 SACKS OF CEMENT PER CUBIC METER. AIR ENTRAINMENT SHALL BE 0.5 TO 2%. MINIMUM ULTIMATE COMpressive STRENGTH SHALL BE:
   F'cu AT TRANSFER = 40 MPa
   F'cu AT 28 DAYS = 65 MPa

2. FINAL FORCE: THE FORCES REMAINING IN THE PILES AFTER ALL LOADS IN THE PRESTRESSING STEEL SHALL BE NO LESS THAN 40 kN = 4.5 MPa.


4. REINFORCING STEEL: ALL REINFORCING STEEL SHALL BE ASHDOT O1000 WIRE, TO BE USED IN CONJUNCTION WITH THE PRESTRESSING STEEL, CONFORMING TO ASHDOT O1000.

CONSTRUCTION NOTES:

1. LAPPED SPLICES IN SPIRAL REINFORCEMENT SHALL BE 60 INCHES MINIMUM. ALL SPLICE REINFORCEMENT AT SPLICES AND AT EACH END OF THE PILES SHALL BE TERMINATED BY A 125 TANGENT WITH 120 INCH TAIL, HOODED AROUND A LONGITUDINAL BAR OR STRAND.

2. LOCATION AND TYPE OF LIFTING DEVICES SHALL BE APPROVED BY THE ENGINEER.

3. MAXIMUM CUT-OFF LENGTH AT THE TOP OF PILE IS 3000 MM.

4. PRECAST PRESTRESSED CONCRETE PILES SHALL BE SUPPLIED FULL LENGTH. SPLICES SHALL NOT BE ALLOWED.

TYPICAL PRECAST PRESTRESSED PILE

C293460
NOTES:
1. SPLICES IN LONGITUDINAL REINFORCEMENT MUST BE AT LEAST 150 mm (6") CENTER TO CENTER. MINIMUM LAP SPlice FOR 29 mm (1") BARS IS 150 mm (6").
2. LONGITUDINAL REINFORCEMENT EXTENDING INTO THE FOOTING SHALL PROVIDE 75 MILLIMETERS OF CLEARANCE TO THE TOP OF FOOTING. A STANDARD 90° HOOK MAY BE USED IN LIEU OF THE 60° HOOK.
3. LAPPED SPLICES IN SPIRAL REINFORCEMENT SHALL BE LAPPED 60 mm (2.5") DIAMETER MINIMUM. ALL SPIRAL REINFORCEMENT AT SPLICES AND AT THEIR ENDS SHALL BE TERMINATED BY A 150° HOOK WITH 200 MILLIMETERS TAIL HOOKED AROUND A LONGITUDINAL BAR.
HP PILE POINT ATTACHMENT NOTES:
1. HP PILE POINT ATTACHMENTS ARE REQUIRED ONLY WHEN SHOWN ON THE PLANS OR IN THE SPECIAL PROVISIONS.
2. THE PILE POINT CONFIGURATION SHALL BE AS SHOWN ON PLANS.
3. PILE POINT ATTACHMENTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A572 GRADE 42/50/240 UNLESS NOTED OTHERWISE.
4. WELDS FOR ATTACHMENTS SHALL BE AS RECOMMENDED BY THE MANUFACTURER.

TYPICAL HP PILE POINT DETAIL

HP PILE ANCHORAGE DETAIL

SINGLE VEE-GROOVE BUTT WELD
PERMITTED FOR ALL POSITIONS

SINGLE BEVEL-GROOVE BUTT WELD
PERMITTED IN HORIZONTAL POSITION ONLY

PILE SPLICE WELDING DETAILS

HP PILE SPLICE DETAIL

METRIC NDOT
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

"HP" PILE DETAILS
PART PLAN
150 mm L.R. 30° El Cap End
3 mm Plate, Weld and Grind Smooth.
Shim Post As Required (Typ.)

PART ELEVATION

SLIP JOINT DETAIL
10 mm Min. x 460 mm Long Sleeve

ANCHOR PLATE DETAIL
4-25 mm Dia. Holes

SHIM DETAIL

GENERAL NOTES:
1. RAILING TO CONFORM TO VERTICAL AND HORIZONTAL ALIGNMENT.
2. JOINTS TO BE SPACED 12000 mm CENTER TO CENTER, MAXIMUM.
3. SLIP JOINTS TO BE PLACED IN PANELS TO MATCH EXPANSION JOINTS IN DECK. THE 6 MM PER MOVEMENT WILL BE CHANGED TO MATCH ALLOWANCE FOR MOVEMENT IN THE DECK AND CURB.
4. DESIGN WEIGHTS: 25.3 KG. PER METER.
5. RAILING ASSEMBLY SHALL BE GALVANIZED AFTER FABRICATION.
6. ALL EXPOSED SURFACES OF RAILING ASSEMBLY SHALL BE PAINTED WHITE.

METRIC
STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

STEEL BRIDGE RAIL
TYPE "H"

50 mm Radius
18 mm R.

20 mm Dia. x 300 mm ASTM A-325M
Steel Anchor Bolts With Washers & Hex Nuts.
(Galvanized)

RACING DETAIL

TYPICAL PLAN (NORMAL)  
CONCRETE PAVING

TYPICAL PLAN (SKEWED)  
CONCRETE PAVING

SECTION B-B
A - WHEN THE APPROACH SLAB EXTENDS BEYOND THE側 WALLS, EXTEND THE EXPANDED POLYSTYRENE 50 mm BEYOND THE MIDDLE ELS, ADJUST THE APPROACH SLAB TO ITS FULL DEPTH, AND ELIMINATE THE 16K10 WALL.

SECTION A-A
(SEE DETAIL "C" FOR PLANTMIX BITUMINOUS PAVING)

DETAIL "C"  
(PLANTMIX BITUMINOUS PAVING)
NOTE FOR INFORMATION & DIMENSIONS NOT SHOWN SEE SECTION A-A

GENERAL NOTES:
1. THE CONCRETE SHALL BE "CA"- "D" CONCRETE, OR "CA"- "D" CONCRETE AS DETERMINED BY THE ENGINEER. WHEN "CA" CONCRETE IS REQUIRED, THE REINFORCING STEEL SHALL HAVE AN EPOXY COATING.
2. ALL CONTACT JOINTS BETWEEN THE CONCRETE PAVEMENT AND THE APPROACH SLAB SHALL BE PARALLEL. THE BACK FACE OF THE STRUCTURE FOR SHOES OF 20 DEGREES OR LESS. FOR SHOES GREATER THAN 20 DEGREES THE CONTACT JOINT SHALL BE NORMAL TO THE MIDWAY ALIGNMENT, CONCLIVE. JOINTS SHALL BE STANDARDS ON LINES FOR SHOES OF STRUCTURE. STANDARDS LINES SHALE BE AT EACH LANE HIGH FOR SHEARS OF 45 DEGREES OR MORE.
3. THE ACCORDING JOINT BETWEEN ALLIANCE PAVEMENT AND APPROACH SLAB SHALL BE PARALLEL TO THE BACK FACE OF THE STRUCTURE.
4. FOR SHOES GREATER THAN 20 DEGREES THE DISTANCE MEASURED NORMAL TO AND FROM THE BACK FACE OF THE STRUCTURE, TO THE END OF THE APPROACH SLAB SHALL BE A MINIMUM OF 4500 mm.
5. LONGITUDINAL CONSTRUCTION JOINTS IN THE APPROACH SLAB MAY BE LOCATED ON LANE HIGH WHEN PERMITTED BY THE ENGINEER.
7. WHERE THE LENGTH OF THE STEPS MUST BE 3000 mm MINIMUM TO 4500 mm MAXIMUM OR INCREMENTS I 1500 mm MINIMUM TO 9000 mm MAXIMUM SPACING MUST BE DETERMINED TO 4500 mm MAXIMUM SPACING OF THE %[MATERIAL] DISTANCE MEASURED FROM THE STRUCTURE AND THE JOINT SEALER IDENTICAL TO "THE LONGITUDINAL WEAKENED PLANE JOINT" IN SHEET 9-7 OF THE STANDARD PLANS.
8. WHERE CALLED FOR ON THE PLANS, FULL MATERIAL UNDER APPROACH SLAB SHALL BE COMPACTED TO A DENSITY OF MINIMUM OF THE MAXIMUM DENSITY. WHERE CALLED FOR ON THE PLANS, FULL MATERIAL UNDER APPROACH SLAB SHALL BE COMPACTED TO A DENSITY OF MINIMUM OF THE MAXIMUM DENSITY.
9. SEE PLANS FOR EXPANSION JOINT DETAILS.

METRIC NDOT
DEPARTMENT OF TRANSPORTATION

STATE OF NEVADA
APPROACH SLAB

NOTE: MATERIAL AND DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED.