TRANSPORTATION

Section 6-5

SIGNING AND MARKING

The Town Of *Buckeye* Arizona

Engineering Design Standards

Section 6-5

Adopted December 2012

TABLE OF CONTENTS

TABLE OF FIGURES

TABLE OF TABLES

STANDARD DETAILS

Section 6-5 – Signing and Marking

This section provides policy and standards establishing design criteria for constructing and modifying the signing and marking on public and private streets. This standard provides guidance on the design of signing and marking, and final plans preparation.

The requirements of this section may be modified at any time by the Town Engineer.

The Town Engineer may approve variances to the requirements of this design standard. Variance requests must be submitted in writing and include a justification for the variance requested. A copy of the Town approved variance shall be included with the submittal of any plans or design reports to the Town that incorporate the variance.

The Town Engineer is required, pursuant to Chapter 23, Article 23-2, of the Town Code, to develop standards and detail regarding public improvements to be constructed within the Town. The standards, design criteria, and policy set forth in this section were developed and recommended by the Town Engineer pursuant to Chapter 23, Article 23-2 and adopted by Town Council in Resolution No. 137-12.

6-5 Signing and Marking

6-5.000 General Information:

6-5.001 Signing and Marking Requirements:

A. This section is to aid the engineer in developing street signing and marking plans to meet the Town minimum standards.

B. Developers/Landowners are required, pursuant to the Town Code, including the Town Development Code, to design and install all signing and marking on all streets within, and adjacent to, their sites.

C. Developers/Landowners shall install, at their expense, all on-site and off-site signing and marking necessary to serve their developments.

D. The Town signing and marking plans are to be in accordance with the Manual on Uniform Traffic Control Devices (MUTCD), the Arizona Supplement to the MUTCD, U.S. Department of Transportation, and Federal Highway Administration as supplemented by the Arizona Department of Transportation (ADOT).

6-5.002 Definitions and Abbreviations:

A. AASHTO - American Association of State Highway and Transportation Officials

B. ADA - Americans with Disabilities Act

C. ADOT - Arizona Department of Transportation

D. A.R.S. - Arizona Revised Statutes

E. ASTM - American Society for Testing and Materials

F. CMP - Community Master Plan

G. Developer - Shall mean the individual or entity causing Development of land in the Town, including Development companies authorized to act on behalf of the Developer and the term Developer shall also mean a contractor ("Contractor") authorized to act on behalf of the Landowner or Developer. Developer shall also be interpreted to mean Landowner.

H. Development or development - Shall have the same meaning as defined in the Town Development Code.

I. Engineer or engineer - An engineer registered professionally in the State of Arizona pursuant to the provisions of A.R.S. §32-101; §§32-121-131; §§32-141-152, as amended.

J. ITE - Institute of Transportation Engineers

K. Landowner - Shall mean the owner of the land in the Town on which Development occurs. "Landowner" shall also be interpreted to mean Contractor and/or Developer, including Development companies authorized to act on behalf of the Developer/Landowner.

L. LPPUE - Limited Purpose Public Utilities Easement

M. MAG - Refers to the Maricopa Association of Governments Uniform Standard Specifications and Details for Public Works Construction current edition.

N. MCDOT - Maricopa County Department of Transportation

O. Median - A raised landscaped area down the middle of a roadway that adds aesthetics and prevents left-turns at unauthorized locations.

P. MUTCD - Manual on Uniform Traffic Control Devices, as revised by the State of Arizona,

Q. Plan(s) or plan(s) - Design drawings that are 100% complete and sealed by a registered professional Engineer as defined above.

R. PUE - Public Utility Easement

S. RPMs – Raised/Reflective Pavement Markers

T. ROW - Rights-of-Way

U. TOB - Town of Buckeye

V. Town - Town of Buckeye

W. Town Engineer - Town of Buckeye Town Engineer or designee

X. TRB - Transportation Research Board

Y. Type D - Yellow, two-way RPM

Z. Type G - Clear, one-way RPM

AA. White RPMs - Also known as clear RPMs

6-5.003 Design Policy:

A. Developers/Landowners shall adhere to the Town's requirements for signing and marking within the Town of Buckeye limits.

B. The signing and marking design shall be submitted to the Town for review and approval.

C. Town approval of plans and associated designs are valid for one (1) year from the date of the Town Engineer's signature.

D. All construction documents shall be prepared by a registered Professional Civil Engineer licensed and practicing in the State of Arizona pursuant to the provisions of A.R.S. §§32-101, 32-121 to 131; 32-141 to 152. Each sheet of the plans shall include the appropriate professional State of Arizona seal, signature, date and date of expiration below seal. The Town does not require original seals and or signatures (wet seal) on design documents during the review cycle.

E. Developers shall install, at their expense, all signing and marking on all on-site and off-site street improvements necessary to serve their developments.

6-5.004 Diligence:

A. Developers and Landowners shall verify the need and requirements for signing and marking improvements that are required to provide service to a site. It is the Developer's responsibility to become familiar with all of the existing site conditions. Available resources in which to find this information:

1. Town's website – http://www.buckeyeaz.gov.
2. Contact the Town Engineer to confirm the need for any required conditions.

6-5.005 Implementation:

A. The implementation and enforcement of the design standards set forth in this section shall be effective the date of Town Council's adoption of the resolution approving the standards and requirements of this section and shall apply to the following:

1. All new plans and reports submitted to the Town following the effective date of Town Council's adoption of the resolution approving the standards and requirements of this section.
2. All plans seeking a new Town Engineer's signature or a re-approval from the Town Engineer.
3. All expired plans shall be brought into conformance with the design standards of this section.
4. All plans produced under an approved CMP shall follow or be brought into conformance with the design standards of this section.
5. All current approved plans that have not been permitted shall comply with the requirements of this section. Prior to the issuance of the construction permit, the design engineer shall submit a written letter to the Town Engineer acknowledging the construction and materials shall be performed and supplied pursuant to the requirements of this section.
6. All expired or abandoned plans as defined below.
   a. The Town will not hold or store plans. Any plan set that has not been picked up from the Town within 90 days of the Towns first notification to the applicant that the plans are ready to be picked up will be deemed abandoned. The Developer/Landowner will be notified that the expired plan set will no longer be considered by the Town. If a plan is abandoned, the Developer/Landowner will be required to resubmit the abandoned plan and pay the Town all associated fees.
   b. If a construction permit for the plans has not been issued within 1 year from the date of approval noted on the cover sheet, the plans will be required to be resubmitted to the Town for review and re-approval.
      i. In order to resubmit plans, the design engineer shall bring the plans into conformance of the Town's current standards and requirements.
      ii. All revised plans will be subject to the Town's current fee schedule.
      iii. This resubmittal is required to go through a comprehensive review of all plan sheets.
   c. If plans have not been resubmitted to the Town for review or permitting within 2 years from the date of the last Town action the plans shall be considered expired. Once a plan has expired, the plan shall be resubmitted for first review and all associated fees shall be paid to the Town.
      i. In order to resubmit plans, the design engineer shall bring the plans into conformance of the Town's current standards and requirements.
      ii. All expired plans being resubmitted will be subject to the Town's current fee schedule.
      iii. This new submittal is required to go through a comprehensive review of all plan sheets.

6-5.006 Private Streets:

A. All private streets shall be constructed, and have the same signage and marking as the public street standards.

B. No internal private streets shall be incorporated into the Town's public street system at a future date unless they are constructed, signed and marked, inspected, maintained, and approved in conformance with the Town's street standards and approved by the Town Council.

C. Before issuance of any certificate of occupancy for the site, the Developer shall post access points to private streets to identify that vehicles are entering a private street system.

6-5.007 Standards:

A. The following is a list of national, regional and local resources (the latest editions unless otherwise stated), which are referenced and used for the design of streets within the Town of Buckeye.

1. Resources, Standards and References:

   a. *A Policy on Geometric Design for Highways and Streets*, AASHTO

   b. *Access Management Manual*, TRB

   c. ADOT Traffic Standards; http://www.azdot.gov/Highways/traffic/Standards.asp

   d. American Public Works Association, www.apwa.net

   e. American Society for Testing and Materials, ASTM

   f. *Designing Sidewalks and Trails for Access* – Part 1 and 2, U.S. Department of Transportation

   g. *Design Guideline Recommendations for the Arizona Parkway*, MCDOT

   h. Federal Americans with Disabilities Act, ADA

   i. *Freeway and Interchange Geometric Design Handbook*, ITE

   j. *Guide for the Development of Bicycle Facilities*, AASHTO

   k. *Guide for the Planning, Design, and Operation of Pedestrian Facilities*, AASHTO

   l. *Guidelines For Driveway Location & Design*, ITE

   m. *Highway Capacity Manual*, TRB

   n. *Highway Safety Manual*, All Volumes, AASHTO

   o. *Intersection Design Guidelines*, FHWA

   p. *Manual of Transportation Engineering Studies*, ITE

   q. *MUTCD*, U.S. Department of Transportation, as revised by the State of Arizona

   r. Revisions to the MUTCD, U.S. Department of Transportation, by the State of Arizona; *Arizona supplement to the Manual on Uniform Traffic Control Devices*; **http://www.azdot.gov/Highways/traffic/standards/mutcd/MUTCD2009wAZSupp.pdf**

   s. *Roadside Design Guidelines*, AASHTO

   t. *Signal Timing Manual*, FHWA

   u. *Signalized Intersections: Informational Guide*, FHWA

   v. *Standard Highway Signs*, FHWA

   w. *Traffic Barricade Manual*, City Of Phoenix

x. *Traffic Control Devices Handbook*, ITE

y. *Traffic Engineering Handbook*, ITE

z. *Transportation and Land Development*, ITE

aa. *Transportation Impact Analysis for Site Development*, ITE

bb. *Transportation Planning Handbook*, ITE

cc. *Trip Generation, Volumes 1 through 3*, ITE

dd. *Uniform Standard Details for Public Works Construction*, MAG

ee. *Uniform Standard Specifications for Public Works Construction*, MAG

6-5.008 Standards to be Used as Modified:

A. The Town's marking requirements shall be pursuant to the MCDOT Pavement and Marking Manual except as modified herein.

B. If the MCDOT standards do not cover a situation or where the work is in or near ADOT jurisdiction the design shall be pursuant to the ADOT Traffic Control Design Guidelines, the ADOT Manual of Approved Signs (MOAS), ADOT Traffic Engineering Policies, Guidelines and Procedures and standard drawings, details except as modified herein.

C. All material shall meet ADOT's Standard Specifications for Road and Bridge Construction unless modified herein.

D. Sign requirements, guidelines and warrants shall be in accordance with the most current edition of MUTCD as revised by ADOT.

E. Temporary traffic control shall conform to the City of Phoenix "Traffic Barricade Manual", Chapter 6 of the MUTCD and/or as directed by the Town.

6-5.100 Signing and Marking Design Criteria:

6-5.101 General Requirements:

A. Pavement markings are used to convey traffic control information to a driver.

B. Pavement markings may be used alone or to supplement other traffic control devices, such as signs and traffic signals. Be sure that the appropriate signs and signal controls are used in conjunction with markings where intended.

C. All pavement markings must be visible at night.

D. Any markings that are no longer applicable shall be removed to reduce confusion.

E. Design is to be in accordance with the MUTCD unless modified by the Town as noted. The requirements of the MUTCD apply to privately owned facilities where the public is able to travel without restrictions.

F. Appropriate blue RPMs are required adjacent to all fire hydrants on all public and private streets (as well as parking lots and other private paved surfaces).

G. All collectors and arterials shall be striped and marked with bike lanes in accordance with Chapter 9 of the MUTCD. Signing and marking details do not show bike lanes and are for general guidance only.

H. All multi-use paths, including NEV paths and separated bike paths shall also be signed and marked in accordance with the MUTCD, with emphasis on intersections with vehicular lanes or traffic.

6-5.102 Signing:

A. Street Name Signs:

1. All signs shall be 0.125" thick with ¾ inch radius corners, by proper length and width. Clamps shall not cover any letters or numbers.
2. All sign lettering shall use the font, Clearview 2w.
3. Upper case letters shall be 9 inches tall, lower case letters shall be 6 ¾ inches tall, and block numbers shall be 2 inches tall.
4. Signs shall be green with white lettering, all material pursuant to the design standards in this section.
5. Signs shall include the street name, block numbers, heading (N, S, E, or W) and an arrow pointing in the direction (N, S, E, or W) that the street is heading.
6. Street name signs shall be located at all local, collector and arterial intersections.
7. Block numbers shall be pursuant to the address map as approved by the Town. If an address map does not exist then they will be assigned by the Town's Building Department.
8. Street name signs in subdivisions must conform to the TOB Detail 65130.
9. Advance street name signs are to be installed at a height of 4 feet to the bottom of sign and placed so they are not obstructed by vegetation. Signs are to be installed in medians whenever possible.

B. Traffic Control Signs:

1. All traffic control sign faces shall be manufactured of 3M Diamond Grade Cubic (DG^3 4000 series) sheeting material, or equivalent. All DG Cubed Sheeting shall use Acrylic EC Film.

C. School Warning Signs:

1. School warning signs and accompanying placards must be ASTM proposed Type XI fluorescent yellow green sheeting.
2. Height requirements pursuant to MUTCD.

D. "No Parking" signs shall only be used when the following site conditions exist:

1. When any right hand lane (curb lane) is 16 feet or wider, or if a paved shoulder area is present.
2. Where on-street parking could be expected to occur, such as commercial areas where businesses have direct frontage on the street.
   a. When the above criteria exists, "No Parking" signs (R8-3a 18 inch x 24 inch) with an arrow (single direction or bi-directional) below the "P" symbol on the sign to designate the direction of the restriction shall be installed approximately every 350-400 feet along the length of the project.
3. No parking signs shall be installed approximately 5 feet from the back of curb at a 45 degree angle to the curb.

E. Speed limit signs (R2-1) are to be installed at 4 per side per mile, sized according to MUTCD (single-use, multi-lane, etc).

F. Stop signs (R1-1) shall be 30 inch by 30 inch minimum size.

G. All signs shall have a minimum clearance from edge of sign to the back of the curb of at least 2 feet; or if no curb exists, it shall be at least 4 feet from the edge of the pavement. All signs shall be placed so as to not interfere with pedestrian movement.

H. All sign faces shall be mounted to rigid (Non Flexible) aluminum composite sign panel material (as the preferred option) of 0.080 minimum thickness or greater. This specification shall also account for anodized aluminum sign panel material at 0.091 minimum thickness if a composite is not used.

1. Plastic washers for sign panels will not be allowed.

2. Two – 2 inch square end cap brackets and 90 degree cross brackets for extruded blades with 12" slots are to be used when installing street name signs.

I. All signs, with the exception of Street Name Signs, shall have a final layer of Protective Overlay (3M or equivalent) and need to be matched components (mixing materials from different companies will not be allowed).

J. Street light poles should be used for sign mounting when a light pole is within 50 feet of the proposed sign location. Permission from APS may be required prior to installing sign on light pole.

K. All sign posts are to be telespar or Town approved equal pre-punched two (2) inch square galvanized steel tubing pursuant to TOB Detail 65120.

1. U-Channel or round post will not be allowed unless used for temporary signs.

2. All posts need to be concreted into the ground. Steps must be taken to prevent the concrete from seeping into the anchor and sleeve.

L. Median nose signing is to be installed pursuant to TOB Detail 63220 as follows:

1. Type "A" is to be installed at signalized intersections and the first median nose in a succession of medians, or where the gap between medians exceeds 250 feet.

2. Type "B" is to be used at all other median nose locations.

6-5.103 Striping:

A. All concrete median curb noses shall be painted with yellow reflectorized traffic paint from the front of the bullnose back 10 feet and have Type D RPMs installed pursuant to the TOB Detail 63220.

B. The Developer/Landowner shall remove all existing pavement striping in conflict with the final striping plan shall be removed by ultra high pressure water (36,000 psi) or by sandblasting. All removal methods shall be done in conformance with EPA requirements. Pavement scarring shall be subsequently repaired with an appropriate asphalt emulsion, slurry seal or micro paving approved by the Town Engineer.

C. All permanent longitudinal pavement striping (centerlines, lane lines, bay lines) shall be 60 mil sprayed thermoplastic.

D. Reflective beads shall be applied in accordance with section 704 of ADOT's Standard Specifications for Road and Bridge Construction on all striping.

E. All stop bars, crosswalks, (lines and rails), holding bars, ladder lines, and channelization lines shall be 90 mil extruded thermoplastic. Reflective beads shall be applied as pursuant to ADOT's Standard Specifications for Road and Bridge Construction, Section 704.

F. Legends and symbols shall be cold tape applied, 3M L270ES or 3M L380IES or Town approved equal.

G. All temporary pavement markings shall be the same as the permanent.

H. All stop bars shall be a minimum of 24 inches wide.

I. All striping shall have RPMs.

J. Minimum lane width is 12 feet.

1. If severe constraints make it near impossible to provide the standard lane width, then the "minimum" value of 11 feet for through lanes and 10 feet for turn lanes may be used with prior approval from the Town Engineer.

K. Minimum left turn lane shall be 14 feet and shall be transitioned from 14 feet at the beginning of the holding bar, to 10 feet at the stop bar, creating a 4 foot “carrot” or “gore.”

6-5.200 Striping Types:

6-5.201 Skip Dash:

A. Striping: 4 inch wide lines, 10 feet long with 30 foot gaps.

B. All skip dash shall have RPMs located in the center of the gap.

Figure 1 Skip Dash

6-5.202 Guide Lines:

A. Striping: 4 inch wide lines, 2 feet long with 6 foot gaps

Figure 2 Guide Lines

6-5.203 Lane Drop Lines:

A. Striping: 8 inch wide lines, 2 feet long with 4 foot gaps.

Figure 3 Lane Drop Lines

6-5.204 Edge Lines:

A. 4 inch wide White off the edge of pavement where curbs are omitted.

1. All edge lines shall be located no closer than 2 feet to the edge of pavement.

B. 8 inch wide White between travel lane and bike lane

C. 8 inch wide White where asphalt tapers for a lane drop, etc.

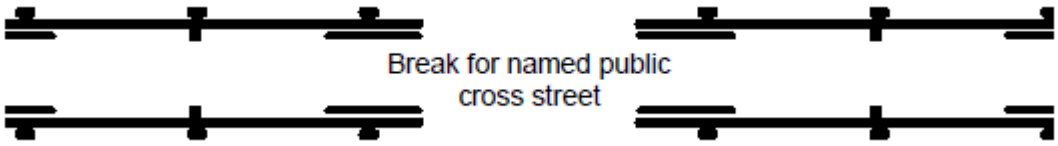
Figure 4 Edge lines

6-5.205 Two-Way Left Turn Lanes:

A. All lines 4 inch wide Yellow, skip lines to follow typical 10 feet long, 30 foot gap skip dimensions.

B. Include RPMs centered within gaps: Yellow Type D 2-way reflective.

Figure 5 Two-Way Left Turn Lanes



6-5.206 Left Turn Bay:

A. Used at signalized intersections and major cross streets.

B. Arrow and "ONLY" to be painted in left turn bays which do not align with opposing left turn bays.

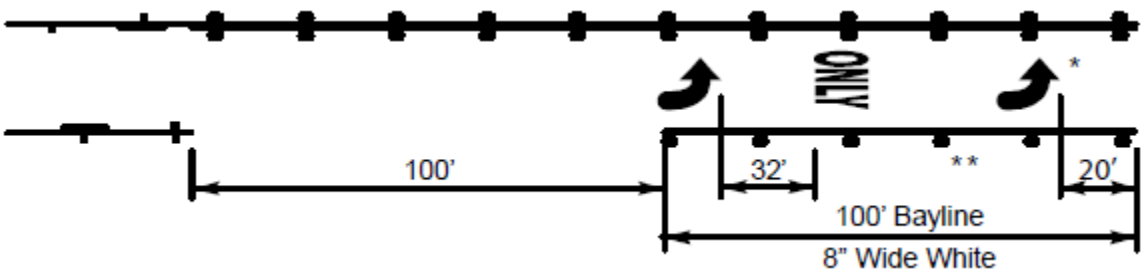
C. If bay line is longer than 150 feet, then a second arrow is placed at the top of the bay. *

D. Bay dimension shall be set by the traffic impact analysis. However the Town minimum is 100 feet.

E. Use White RPMs Type G 1-way reflective. **

F. On major collectors, arterials and major arterials the left turn lane shall be 14 feet and striped pursuant to MCDOT standard detail 4-21. This includes the 4 foot "carrot" creating driver offset for visibility.

Figure 6 Left Turn Bay



6-5.207 Right Turn Bay:

A. 150 feet bay line, 8 inch wide White lines.

B. Minimum one R3-5(R), 30 inch x 36 inch.

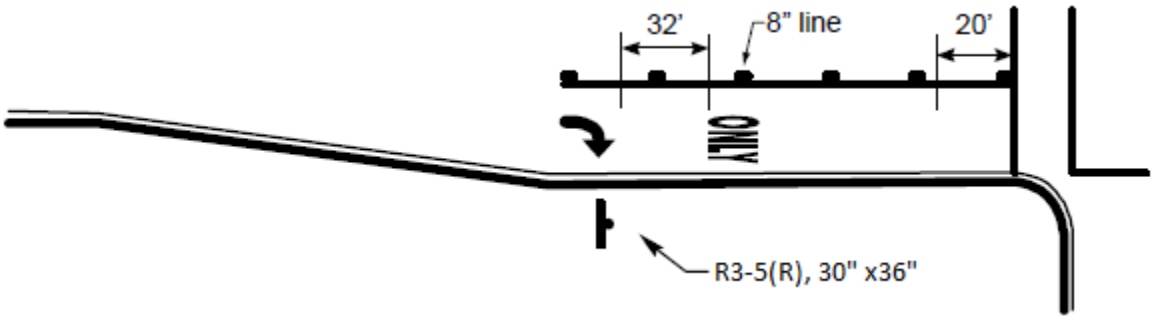
C. One arrow, "ONLY" marking at beginning of bay.

D. If bay is 150 feet or more, second arrow to be installed at end of bay.

E. For turn bays at stop sign, R3-5(R) not to obstruct stop sign.

F. When bike lanes are located between a through lane and a right turn bays, the bike lane shall be 5 foot minimum.

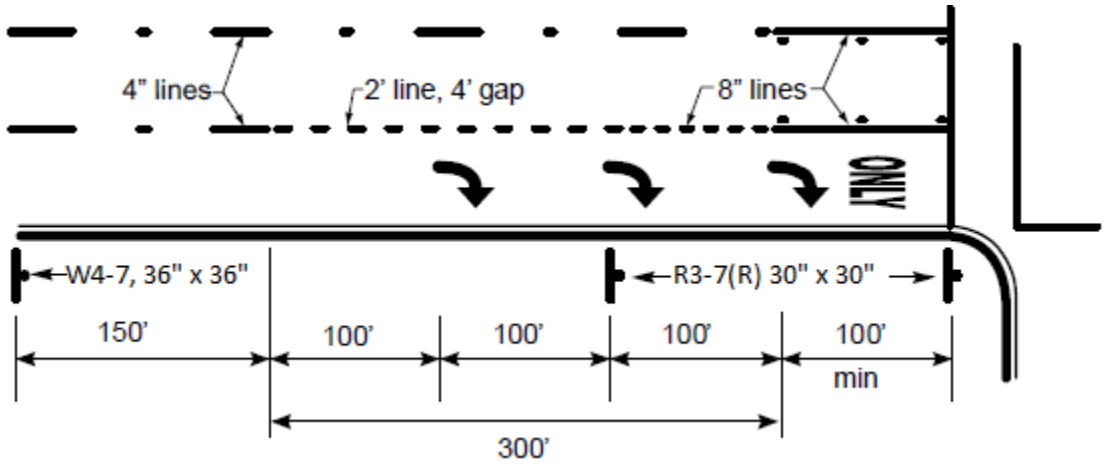
Figure 7 Right Turn Bay



6-5.208 Trap Lanes:

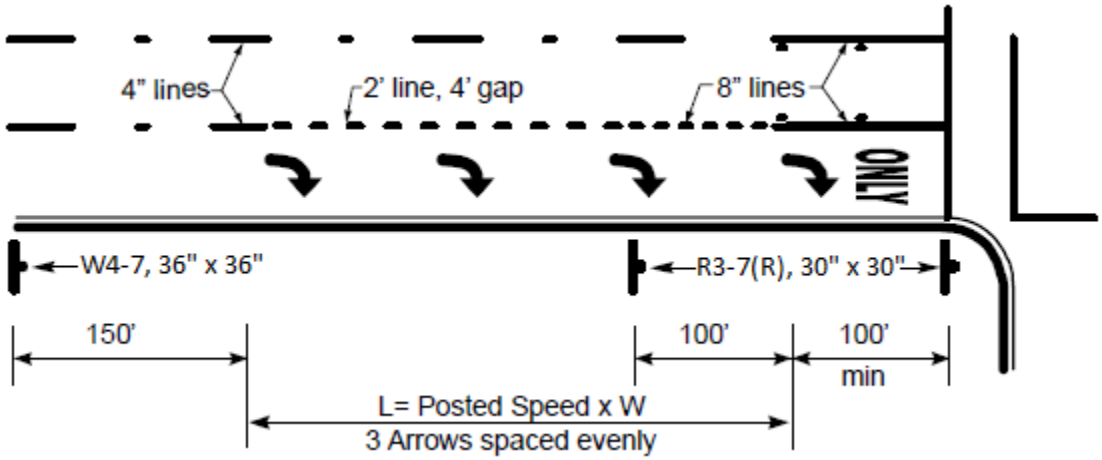
A. 40 mph or less.

Figure 8 Trap Lane – 40 mph or Less



B. 45 mph or greater.

Figure 9 Trap Lane – 45 mph or Greater



6-5.209 Crosswalks:

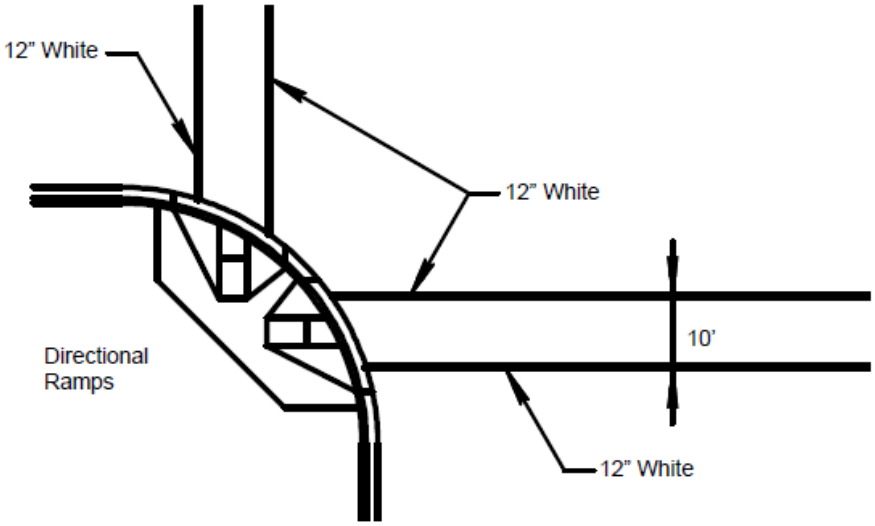
A. Crosswalks are to be used at signalized and stop-controlled intersections only, unless otherwise approved by the Town Engineer.

B. For a typical intersection crosswalk configuration without curb returns or ramps see MCDOT Detail 4-10. This detail also shows the location of the stop bar.

C. For a typical intersection with a single curb ramp see MCDOT Detail 4-12. This detail also shows the location of the stop bar.

D. MCDOT Detail 4-11 shows a typical "High Visibility" striping for crosswalks as well as crosswalk striping for dual ramps. Refer to the MCDOT Detail of Figure 10 for a crosswalk detail for dual ramps. The MCDOT Detail locates the stop bar.

Figure 10 Dual Ramp

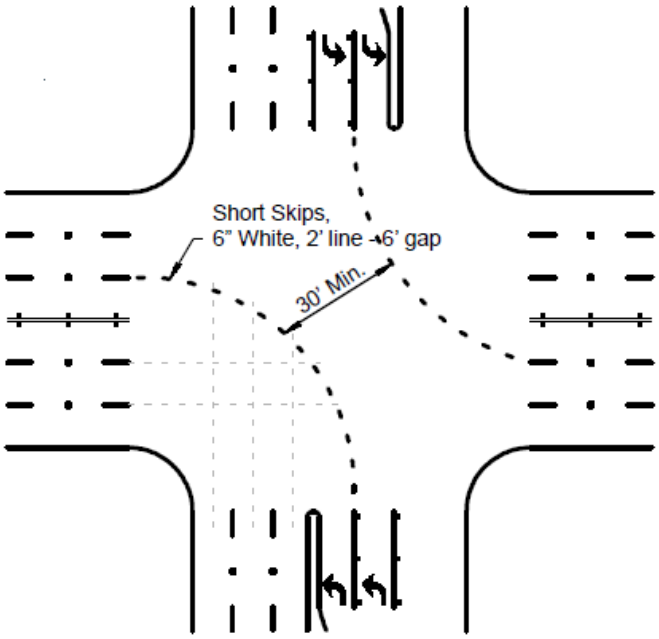


6-5.210 Dual Left Turn Movement:

A. Paint short skips through intersection.

B. Space RPMs to align with lane lines or centered in lanes (as shown).

Figure 11 Dual Left Turn Movement



6-5.300 Plan Preparation:

6-5.301 General Requirements:

A. All plans shall comply with "Design Standards - Section 1-2 Plan Submittal Requirements" General Construction Notes and Standard Sheets for Infrastructure Plan Submittals.

6-5.302 Design Plan Requirements:

A. All plans shall be neat and legible.

B. All plans shall be drawn to scale.

1. Horizontal scale shall not be smaller than 1:40 feet on plan views.

C. A Summary of Quantities is required on the cover sheet. Do not list paving quantities if they are shown on the Paving Plan cover sheet. The minimum items listed are as follows:

Table 1 Summary of Quantities

Description	Unit	Public Quantity	Private Quantity
Slurry and Micro Seal (For obliteration areas)	Square Yard (SY)		
Street Sign	Each (EA)		
Barricade / Guardrail	Linear Feet (LF)		
Provide separate Summary of Quantities tables for TOB street construction quantities and private street construction quantities.			

D. Signing and marking design is the only design allowed on the signing and marking plans, no other utility designs are allowed.

E. Separate sheets in the plan are required for obliteration. Obliteration and new construction cannot be on the same sheet. Obliteration sheets shall be titled accordingly.

F. Plans shall not be phased. All design shown shall be constructed under one permit and construction sequence.

G. Station signing and marking along the monument/centerline of the street shall have the same stationing as the paving plans.

H. Signing and pavement marking design should be shown in the same plan view on the same plan sheet if practical.

I. Entire length of project is to be shown in plan view. Typical sections representative of signing and/or marking will not be accepted.

J. Signing and pavement marking plans need to include all existing signing and pavement markings for a minimum of 500 feet past the limits of construction (except those devices that are to be removed), and include adequate transitions and tapers to existing pavement markings to maintain traffic at the design speed.

K. ROW lines are to be clearly identified.

L. All items shall be shown dimensionally, geometrically and spatially correct.

M. The Town sign table is required for all signing that is to be constructed, complete with MUTCD sign designation. See TOB Detail 65110.

N. All subdivisions require signing and marking plans for the construction of all signs within the subdivision. The subdivision signage cannot be done on the paving plans.

O. Signing:

1. All signs shall be graphically depicted to match MUTCD.
2. All signs should be graphically depicted in the direction of travel.
3. All signs shall be stationed and referenced to the appropriate MUTCD sign designation with size noted.
4. New and existing signs shall be visible to traffic for a value equal to 4 times (4x) the existing or proposed posted speed limit to provide adequate approach visibility.
5. Existing or proposed speed limit should be posted to provide adequate approach visibility. Existing or proposed roadway improvements, vegetation or structures shall not block traffic sign visibility.
6. All existing signs shall be identified to remain, be removed, or be relocated and shall be stationed and referenced to the appropriate MUTCD sign designation.
7. All existing advance or approach signing applicable to the project shall be field verified and referenced signs on the plan sheets, including location and/or station and proposed status of sign.

P. Marking:

1. All existing marking that is to remain shall be fully shown (as screened lines or lightly inked pen lines), identified by type and width, and completely dimensioned across roadway.
2. Raised pavement markers shall be graphically shown in plan view and referenced by construction notation.
3. All new marking shall be clearly identified noting color, line width, beginning station, ending station and intermediate stations at all directional changes. See TOB Detail 65210. For additional information see typical MCDOT or ADOT legends for standard callouts.
4. Marking to be removed needs to be identified as such on the plans.
5. All marking shall be fully dimensioned across roadway and tied to a construction centerline or monument line at each side of an intersection.
6. All pavement arrows, legends and crosswalks, etc., shall be located by station or dimension lines.

6-5.303 Submittal Requirements:

A. Plan Review Submittals:

1. Street lights, traffic signals, and other construction shall be shown on their respective plan sets; signing and striping construction is all that is allowed in the street plans. Signing and striping is required to be on separate construction and obliteration sheets.
2. Signing and marking sheets shall be part of the paving plans.
3. Any paving plan that requires signing and striping will be considered incomplete without the appropriate signing and marking sheets.

B. In addition to bond copies, a CD with the following items is required to accompany the plans submitted for signature to the Town:

1. Base map for the area on the plans seeking approval including all property lines, ROW, PUEs, easements, etc.
2. All signing and marking features, sign locations and monuments, etc.
3. All the information shall be shown on a single map, not cut sheets like the plans and located on reasonable layers in CAD.

C. Plan Revisions or Re-Approvals:

1. Town approval of plans and associated design reports are valid for one (1) year from the date of the Town Engineer's signature.

6-5.304 Town of Buckeye Permit:

A. The Developer/Landowner shall secure a permit from the Town for constructing all signing and marking on the approved signing and marking plans.

B. If a revised plan set is submitted, approved, and signed then the Developer/Landowner is responsible for securing a revised permit from the Town.

6-5.305 Materials:

A. Submittals:

1. All materials used on the project or incorporated into the construction are subject to approval or rejection by the Town Engineer.
2. Town-approved technical material/manufacturer data is required for all materials and appurtenances used on the project before work commences.
3. All delivered materials shall match the approved technical data or it will be rejected.
4. The contractor shall submit four (4) copies of the submittals to the Town Engineer.
5. All work installed prior to approval of submittals is subject to rejection by the Town.
6. A copy of the approved material submittals shall be on the jobsite at all times.
7. Each of the submittals shall clearly show the manufacturer and have comprehensive technical data for the proposed product.
8. All material submittals shall be submitted at or before the pre-construction meeting for review and approval by the Town Engineer.

B. Materials:

1. Sign Sheeting:
   a. 3M Diamond Grade Cubic (DG^3) or approved equal.
   b. Sheet blade panels shall be 0.125 min thickness – aluminum.
2. Sign Panel:
   a. Rigid aluminum (non-flexible) composite sign panel material; 0.080 minimum thickness or greater, 0.091 thickness if anodized aluminum panel.
3. Sign Post:
   a. Telespar or Town approved equal, pre-punched two (2) inch square galvanized steel tubing pursuant to TOB Detail 65120.

4. Concrete:
    a. Type C, pursuant to MAG specification 725.
5. Thermo Plastic:
    a. According to ADOT Standards.
6. RPMs:
    a. According to ADOT Standards and Details.
    b. Type D (yellow, two-way) and Type G (clear, one-way).
7. RPM Adhesive:
    a. According to ADOT and manufacturer specifications and details.
8. Glass Beads:
    a. According to ADOT Standards and Details.

6-5.400 As-Built Drawings:

6-5.401 General Requirements:

A. All As-Built drawings shall comply with "Design Standards - Section 1-2 Plan Submittal Requirements."

B. Final As-Built drawings (only Final As-Builts are required):
    1. Final as-built drawings required for submittal.
    2. All information in the sign table.
    3. All lane dimensions.
    4. All stationing of changes in marking.
    5. All markings.
    6. Station and offsets on all signs.

C. A separate excel table is required with the final As-Builts containing the following information:
    1. Sign
    2. Description
    3. MUTCD Designation
    4. Northing
    5. Easting
    6. Public Street (Y/N)
    7. Remarks

6-5.402 Tolerances and Corrections:

A. All striping not in conformance with the plans shall be removed and replaced at the Developer's expense.

B. All signs that are not within 2 feet of the design locations shall be moved at the Developer's expense.

C. All signs installed that are not faced with 3M Diamond Grade Cubic (DG^3 4000 Series) or have a graffiti coating shall be removed and replaced with the Town approved material at the Developer's expense.

[END OF SECTION]

Appendix 1 Standard Details

65100-1	Signing and Marking Notes Page 1 of 2
65100-2	Signing and Marking Notes Page 2 of 2
65110	Sign Table
65120	Typical Sign Post
65130	Street Sign Detail with Block Number
65150	Median Nose Object Marker
65210	Standard Striping Plan Symbols

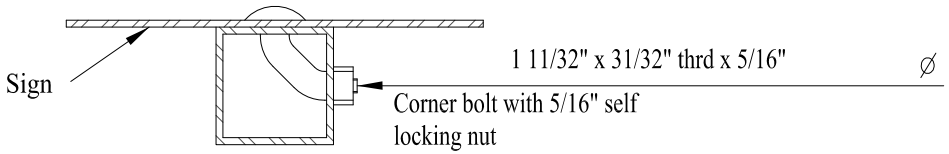
SIGNING & STRIPING NOTES

1. The town engineer's office shall be notified 48 hours prior to starting any signing or striping work. (623)547-4661 attention Brett Huskey.
2. Permanent thermoplastic striping shall not be placed any earlier than 30 days after the permanent pavement has been placed. A temporary paint shall be used as an interim striping. If temporary paint is used, it shall be the contractor's responsibility to maintain the temporary striping until the permanent thermoplastic has been placed.
3. Unless otherwise specified, all pavement marking and traffic control signing installations and removals shall conform to the requirements of the town of buckeye and as set forth in the Arizona department of transportation (ADOT) standard drawings, details and specifications or the "manual on uniform traffic control devices" (MUTCD) latest edition, or AASHTO requirements, as applicable. Sign requirements, guidelines and warrants shall be in accordance with the MUTCD most current edition.
4. prior to pavement marking installation the contractor shall submit material certifications with material submittals for all marking materials certifying through supplier lab analysis that all paint and thermoplastics are free from any lead based materials/components.
5. The contractor shall be responsible for the layout and installation of the permanent pavement markings following control points that have been set no more than 50 feet apart along the lines to be striped. Pavement marking dimensions are to center of the stripe for single line striping, and to the center of the space between the two lines for double line striping. Where curb and gutter is present, dimensions are to back of curb.
6. The contractor shall notify the town engineer's office for field review of layout prior to any striping or markings of any kind. Any striping complete prior to town engineer's office review may be subject to removal, re-layout and restriping at the contractors expense.
7. The pavement marking drawings are schematic only and not to scale. The contractor shall follow all dimensions, notes, details and standards when installing pavement striping, markings and markers.
8. Temporary traffic control shall conform to the city of phoenix "traffic barricade manual", the MUTCD and/or as directed by the town.
9. Unless otherwise directed, all final location lane striping including crosswalks and stop bars shall be thermoplastic material applied at a minimum thickness of 60 mils for lane striping and 90 mils for crosswalks and stop bars. All pavement symbols, arrows, and lettering shall be thermoplastic, type 1 (permanent) preformed pavement markings. Cold tape may be allowed subject to written request by the contractor and approval by the town engineer. Temporary pavement markings shall be reflectorized traffic paint. Temporary striping or half-street roadway striping shall be paint.
10. All signs shall conform to the MUTCD and shall be made from 0.080 inch thick aluminum. Sign posts and extensions shall be galvanized square preformed steel tubing per town standards. Height requirements per the MUTCD.
11. All traffic control sign faces shall be constructed to the town of buckeye performance specifications.
12. All signs shall have a minimum clearance from the edge of sign to the face of the curb of at least two (2) feet; or if no curb exists, it shall be at least twelve (12) feet from the edge of the pavement. All signs shall be placed so as not to interfere with pedestrian movement.
13. Any traffic control signage, including street name signs, which may be located within 10 feet of an existing street light pole, may be mounted to the pole by stainless steel banding with approval from the town. Sign locations and offsets may be adjusted by the town to improve visibility.
14. All concrete medial curb noses shall be painted with yellow reflective safety paint from the front of the bull nose back 10 feet with yellow or (where applicable) white type g raised pavement markers on bull nose curb heads subject to field review and final acceptance for markers.
15. All raised pavement markers shall be installed in accordance with ADOT standard drawings 4-m02.02, 4-m02.03.1, 4-m-2.03.2 and 4-m-2.04. Two-way type m raised pavement markers shall be installed adjacent to fire hydrants per town standards.

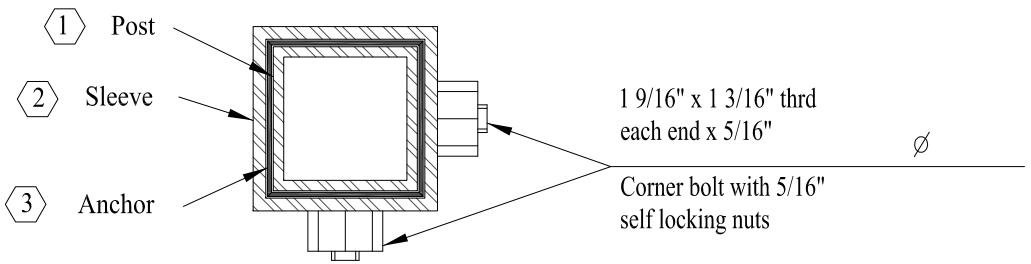
SIGNING & STRIPING NOTES

16. Any existing signal that is required to be relocated by the contractor shall be removed, protected and stored for reinstallation by the contractor. Damaged signage shall be replaced at the contractor's expense. Any existing signs required to be permanently removed by the contractor shall be salvaged for return to the town.
17. The contractor shall remove all existing pavement markings and striping in conflict with the final striping plan by ultra high pressure water (36,000psi) or by sand blasting. All removal methods shall be done in conformance with EPA requirements. If the removal of striping causes a depression of 1/8 inch or greater in the pavement surface the contractor shall fill and slurry seal the area per MAG specifications 713 and 715, type ii. Blackout paint will not be accepted. No exceptions.
18. The contractor shall clean the roadway surface to the satisfaction of the town by power broom, street sweeping, air jet blowing and/ or water jet/truck prior to placement of all pavement markings. The road pavement surface shall be absolutely dry. The air and pavement temperatures shall not be less than 55 degrees f and 61 degrees f for the placement of thermoplastic marking type I marking tape, respectively. Temperature values shall be considered rising and taken within the shade.
19. Street name signs located at all collector and arterial intersections shall have block numbers. Block numbers shall be assigned by the towns building department. Block numbers shall be installed per town requirements. The contractor shall provide material cut sheets of the sign panels for review by the town engineer's office prior to installation.

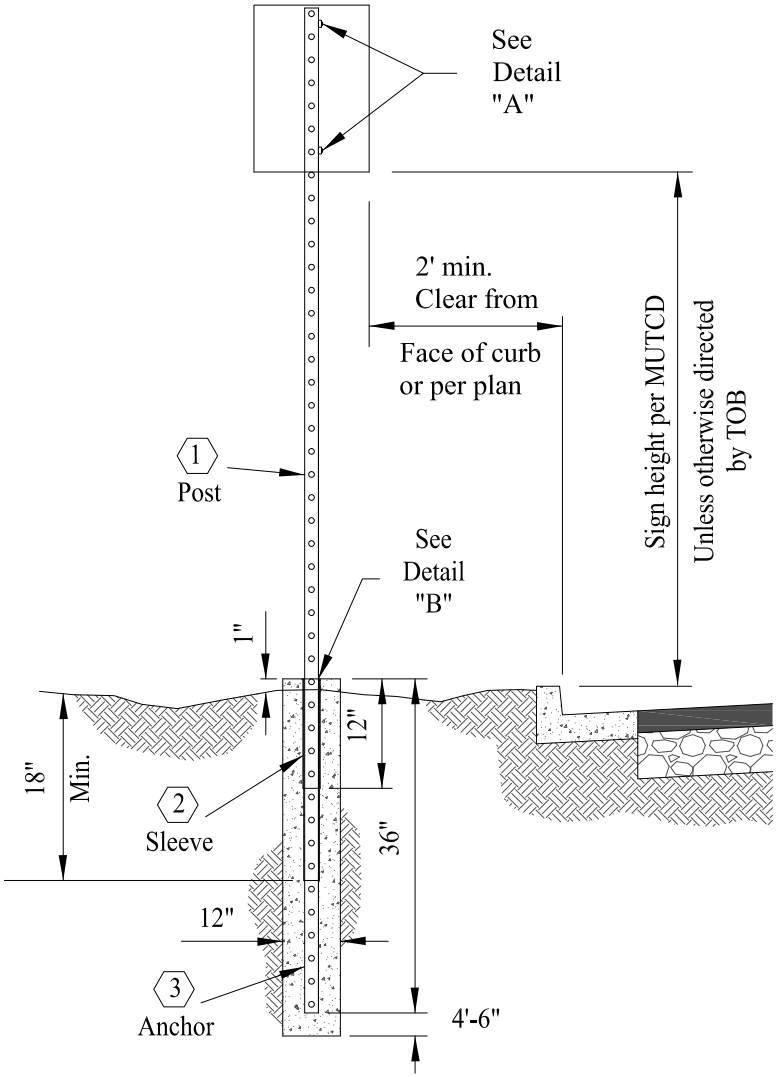
PROJECT NAME																		
		WORK			OFFSET		PLAN					GROUND MOUNT						REMARKS
		EXISTING			FROM EOP		LEGEND	SIGN SIZE		SHEETING TYPE AREA (SQ. FT.)		POSTS						
													TYPE LENGTH			FOUNDATIONS		
SIGN CODE	NEW	RELOCATE	REMOVE & SALVAGE	SEE REMARKS	LT (FT)	RT (FT)		WIDTH (in)	LENGTH (in)	H	D	NO. POSTS	P (FT)	U (FT)	TOTAL LENGTH	P (EA)	U (EA)	
										TOTALS	0	0			0	0		



Detail "A" Sign Mounting

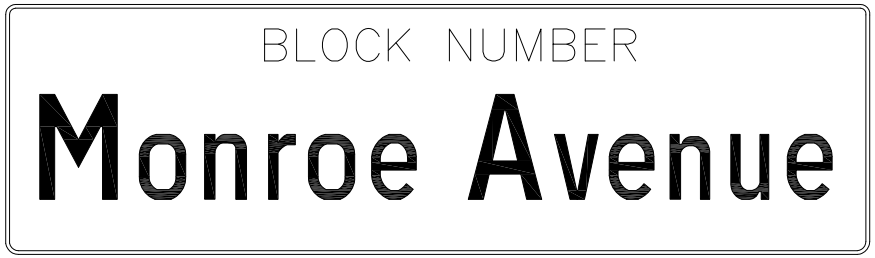


Detail "B" Anchor Assembly



1. Post- 1-3/4" x 1-3/4" square perforated 0.105" galvanized steel tubing
2. Sleeve- 2-1/4" x 2-1/4" x 12", square perforated 0.105 galvanized steel tubing
3. Anchor- 2" x 2" x 36", square perforated 0.105" galvanized steel tubing

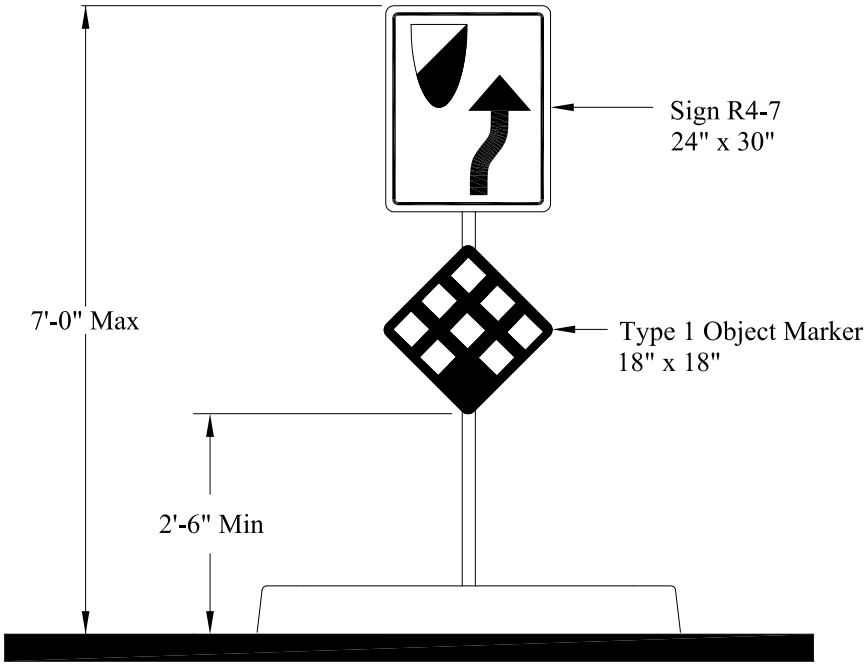
65120	Town of Buckeye Standard Details	**TYPICAL SIGN POST**	Revised: 12-31-12	Date: 65120



NOT TO SCALE

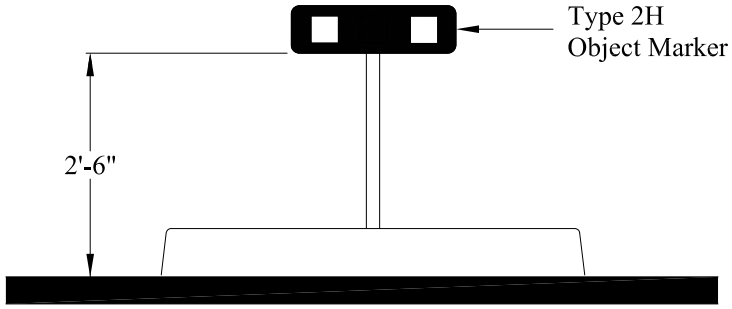
FONT TYPE:	CLEARVIEW FONT
UPPER CASE LETTER:	9 INCHES
LOWER CASE LETTERS:	6 ¾ INCHES
BLOCK NUMBERS:	2 INCHES
THICKNESS:	0.125 ALUMINUM
SHEETING:	GREEN (3M EG ACRYLIC) ON WHITE (DG) SHEETING (3M)

Note:
Sign imaging, legends and layout are concept only. Final layout subject to Town Engineer review and approval of copy proofs submitted at material submittal time of contract.



TYPE "A"

(At signalized intersections or as shown on plans and first & last nose on a string of medians)



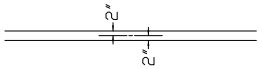
TYPE "B"

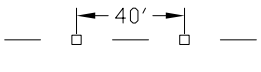
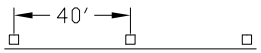
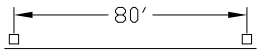
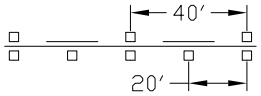
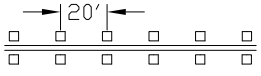
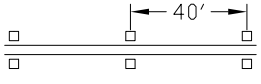
(All other medians)

GENERAL NOTES:

1. See TOB Std Det 65xxx Or 65xxx For Typical Location.
2. Sign Posts Per TOB Std Det 65xxx.

65150	Town of Buckeye Standard Details	MEDIAN NOSE OBJECT MARKER	Revised: 12-31-12	Detail No. 65150

4BY		4" Broken yellow line with a 10' line segment and a 30' gap
4SY		4" Solid yellow line
4SBY		4" Double yellow line, one solid, one broken with a 10' line segment and a 30' gap
4DY		4" Solid double yellow line
4DTY		4" Dashed yellow line with a 2' line segment and a 4' gap
12SY		12" Solid yellow line
18SY		18" Solid yellow line
24SY		24" Solid yellow line

4BY40		4" Broken yellow line with a 10' line segment and a 30' gap with type 'D' RPMs @ 40' spacing
4SY40		4" Solid yellow line with type 'D' RPMs @ 40' spacing (for curved and tapered sections of roadway)
4SY80		4" Solid yellow line with type 'D' RPMs @80' spacing (for straight sections of roadway)
4SBYM		4" Double yellow line, one solid, one broken with a 10' line segment and a 30' gap with type 'H' RPMs @ 20' spacing (solid), type 'D' RPMs @ 40' spacing (broken)
4SY20		4" Solid double yellow line with type 'D' RPMs @20' spacing
4DY40		4" Solid double yellow line with type 'D' RPMs @40' spacing

* For White Lines replace the "Y" with a "W"