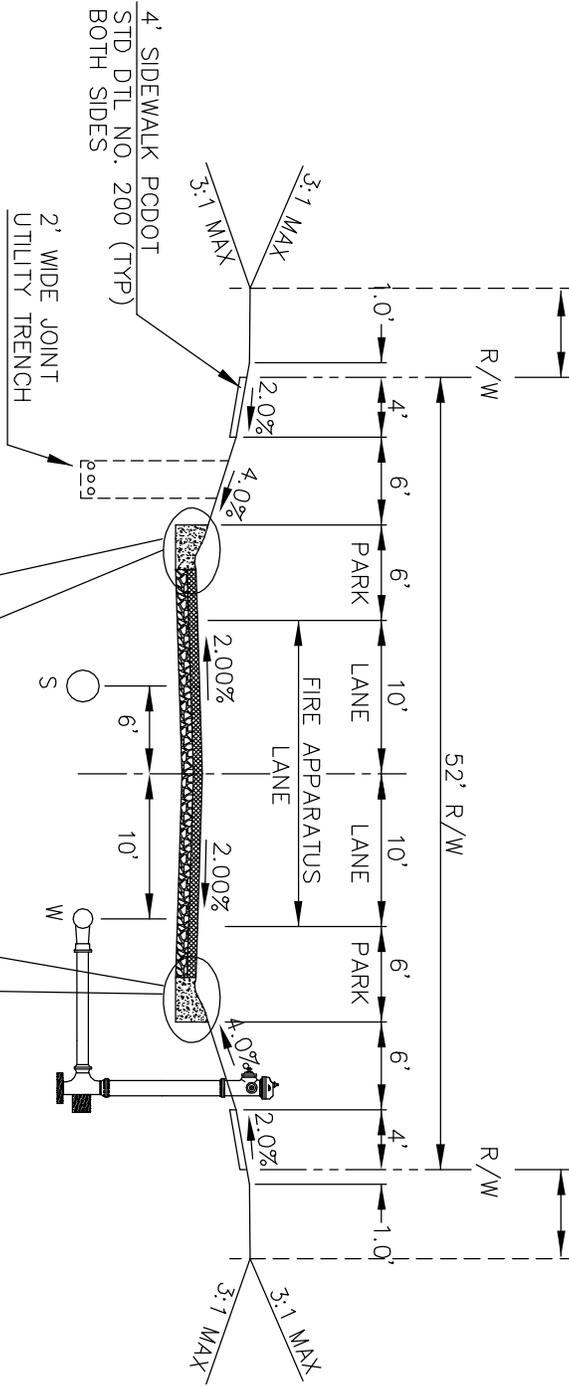




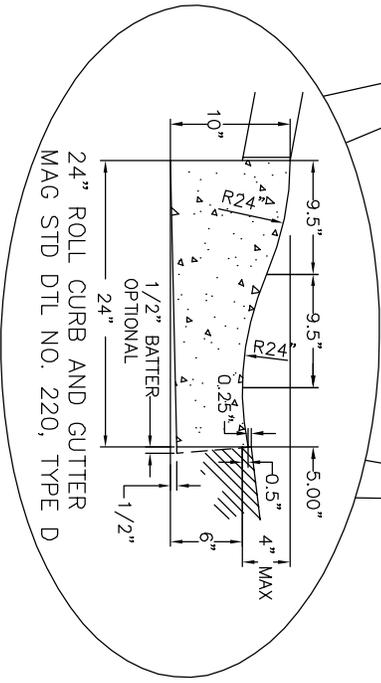


5' PUBLIC  
UTILITY,  
ROADWAY  
MAINTENANCE  
EASEMENT

5' PUBLIC  
UTILITY,  
ROADWAY  
MAINTENANCE  
EASEMENT



1. ROLLED CURB SHALL NOT BE UTILIZED WITHIN FIRE APPARATUS LANE AREA
2. MAG TYPE C ROLLED CURB SHALL BE USED ON THE HIGH SIDE OF SUPERELEVATED SECTIONS



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Town Engineer

EXPIRES 6/30/2019

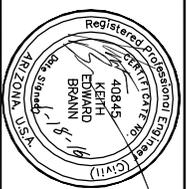
STANDARD DETAIL

NOT TO SCALE

LOCAL STREET WITH CURBWAY

DETAIL NO:

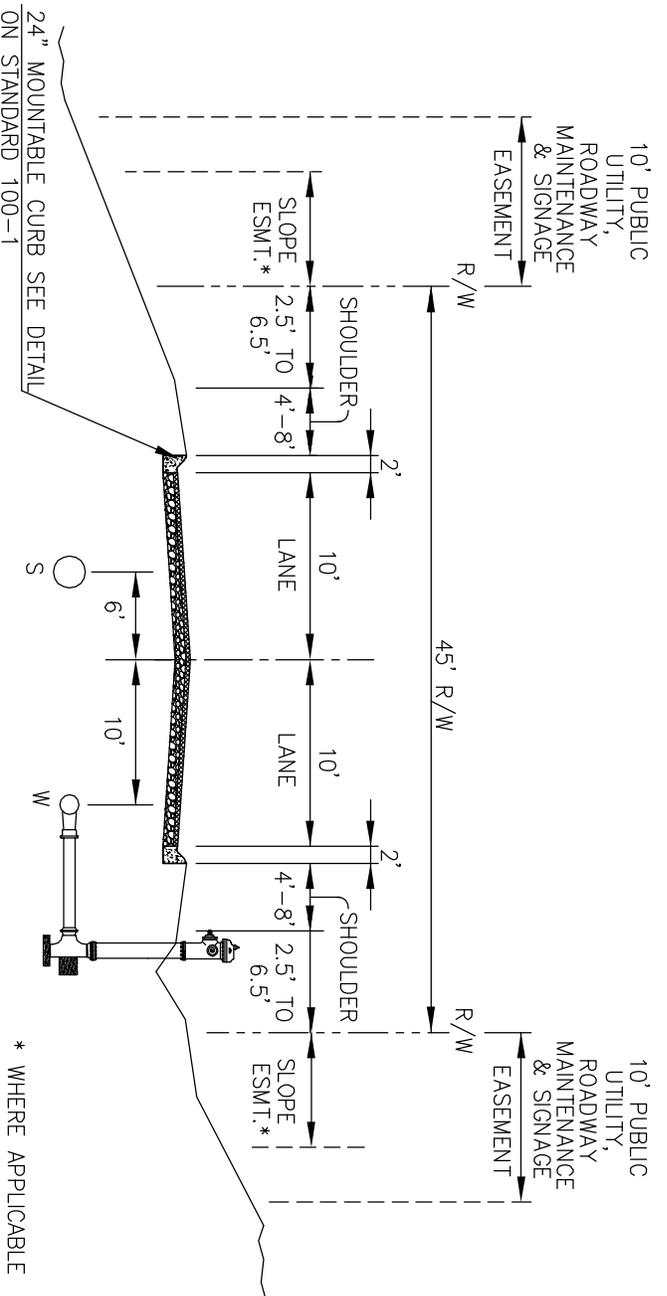
100-1



DATE: 3/4/2005

REVISED: 8/1/2016

SHEET 2 OF 2

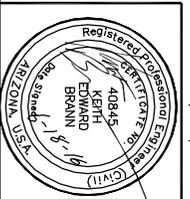


1. THIS DETAIL SUPERSEDES PRIOR SUBDIVISION STREET STANDARDS DETAIL NUMBER 2.
2. DIVIDED ROADWAYS OR ISLANDS ARE NOT PERMITTED. SEE CHAPTER 4.12 OF THE SUBDIVISION STREET STANDARDS MANUAL FOR APPLICATION.
3. 8' SHOULDERS ARE TO BE USED EXCEPT AS NOTED BELOW AND IN CHAPTER 4.12 OF THE SUBDIVISION STREET STANDARDS MANUAL.
4. SHOULDER WIDTH MAY BE VARIED BY THE ENGINEER TO SAVE NATIVE GROWTH. HOWEVER, IT MUST CONFORM TO CHAPTER 6 OF THE SUBDIVISION STREET STANDARDS MANUAL.

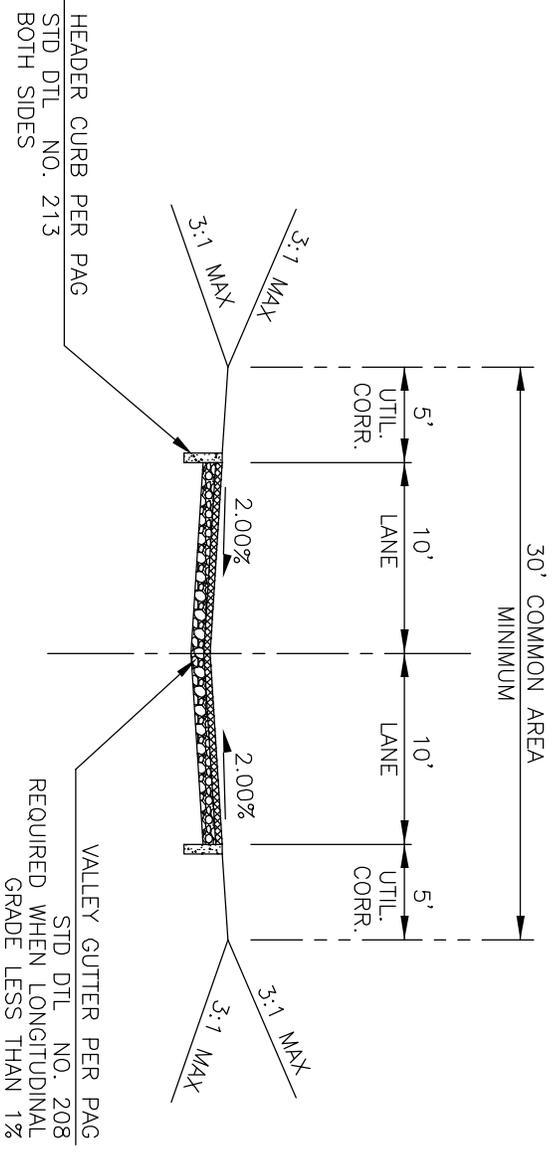
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 Town Engineer

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STANDARD DETAIL		NOT TO SCALE
LOCAL STREET MOUNTAINOUS TERRAIN		DETAIL NO:
DATE: 3/4/2004	REVISED: 8/1/2016	100-2
		SHEET 1 OF 1

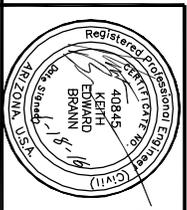


1. FOR COMMUNITIES REQUESTING "NEW URBANISM"/"NEO TRADITIONAL" DESIGN
2. ALLEYS ARE NOT TO BE MAINTAINED BY TOWN OF MARANA

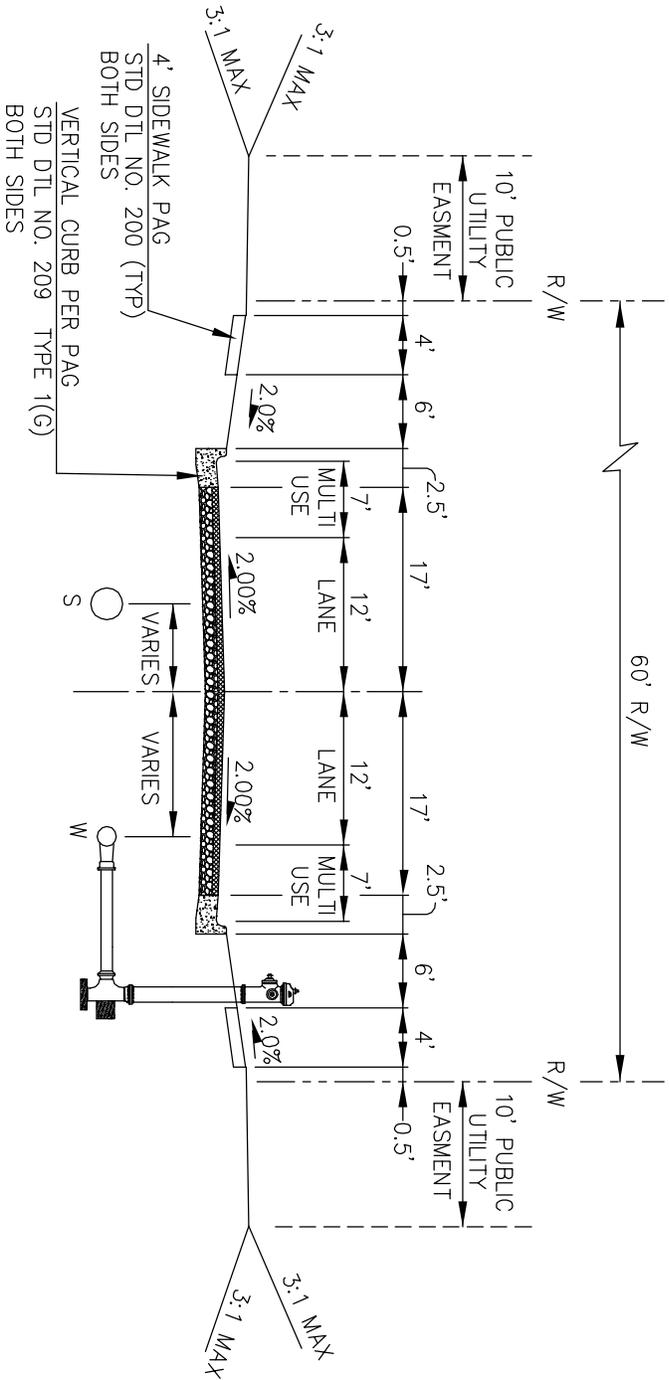
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STANDARD DETAIL		NOT TO SCALE
ALLEY		DETAIL NO: 100-3
DATE: 2/16/2007	REVISED: 8/1/2016	SHEET 1 OF 1

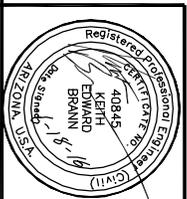


1. THIS DETAIL SUPERSEDES PRIOR SUBDIVISION STREET STANDARDS DETAIL NUMBERS 3 AND 4.
2. NO ON STREET PARKING SUPPORTED.

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 Town Engineer

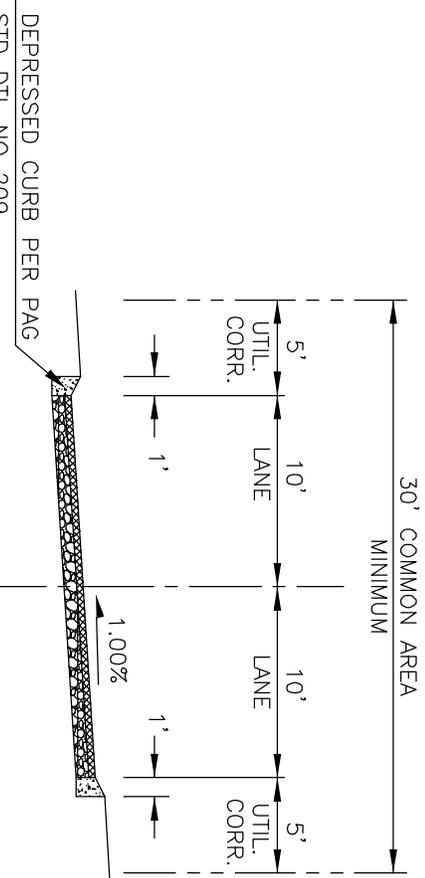
EXPIRES 6/30/2019



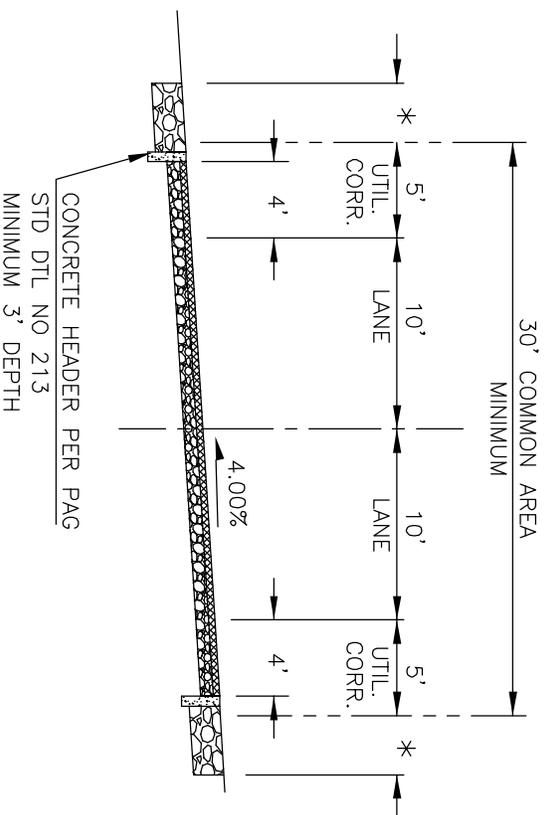
STANDARD DETAIL		DETAIL NO:
MINOR COLLECTOR		100-5
DATE: 3/4/2004	REVISED: 8/1/2016	SHEET 1 OF 1

NOT TO SCALE

NORMAL STREET SECTION



DIP CROSSING/DRAINAGE OUTLET



\* DRAINAGE EASEMENT AND RIP RAP AS APPROPRIATE

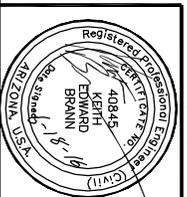
1. FOR SUBDIVISIONS THAT FALL UNDER SMALL SUBDIVISION OF 10 LOTS OR LESS
2. MINIMUM LOT SIZE IN SUBDIVISION MUST BE 36,000 SF
3. STREET CROSS SLOPE TO ALIGN WITH NATURAL FALL OF LAND
4. ALL WEATHER ACCESS TO BE MAINTAINED
5. SECTION DOES NOT SUPPORT ON STREET PARKING

APPROVED FOR DISTRIBUTION:

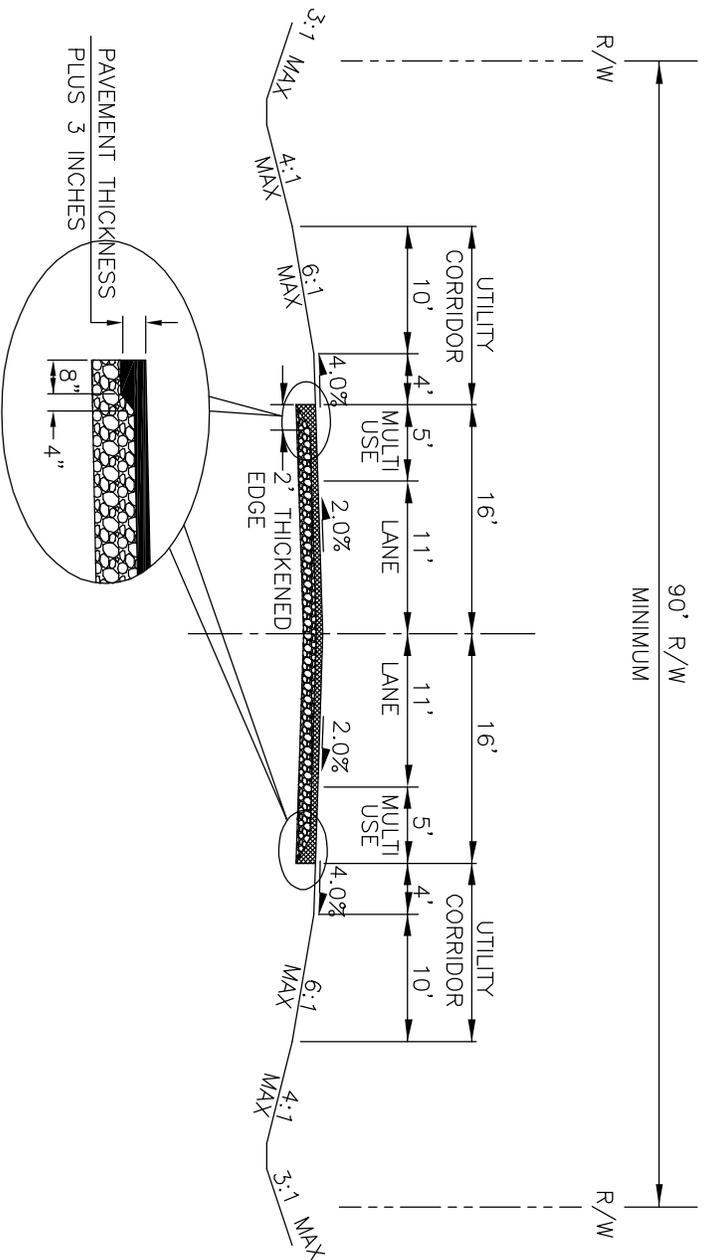
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Keith E. Brann, P.E.,  
Town Engineer

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NOT TO SCALE



STANDARD DETAIL		DETAIL NO:
SMALL RURAL SUBDIVISION STREET		100-6
DATE: 2/16/2007	REVISED: 8/1/2016	SHEET 1 OF 1



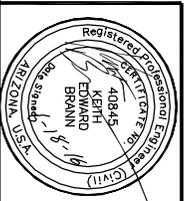
- RIGHT OF WAY WIDTHS FROM THE MAJOR ROUTES RIGHT OF WAY PLAN  
SUPERCEDE RIGHT OF WAY WIDTHS SHOWN ON THIS STANDARD

APPROVED FOR DISTRIBUTION:

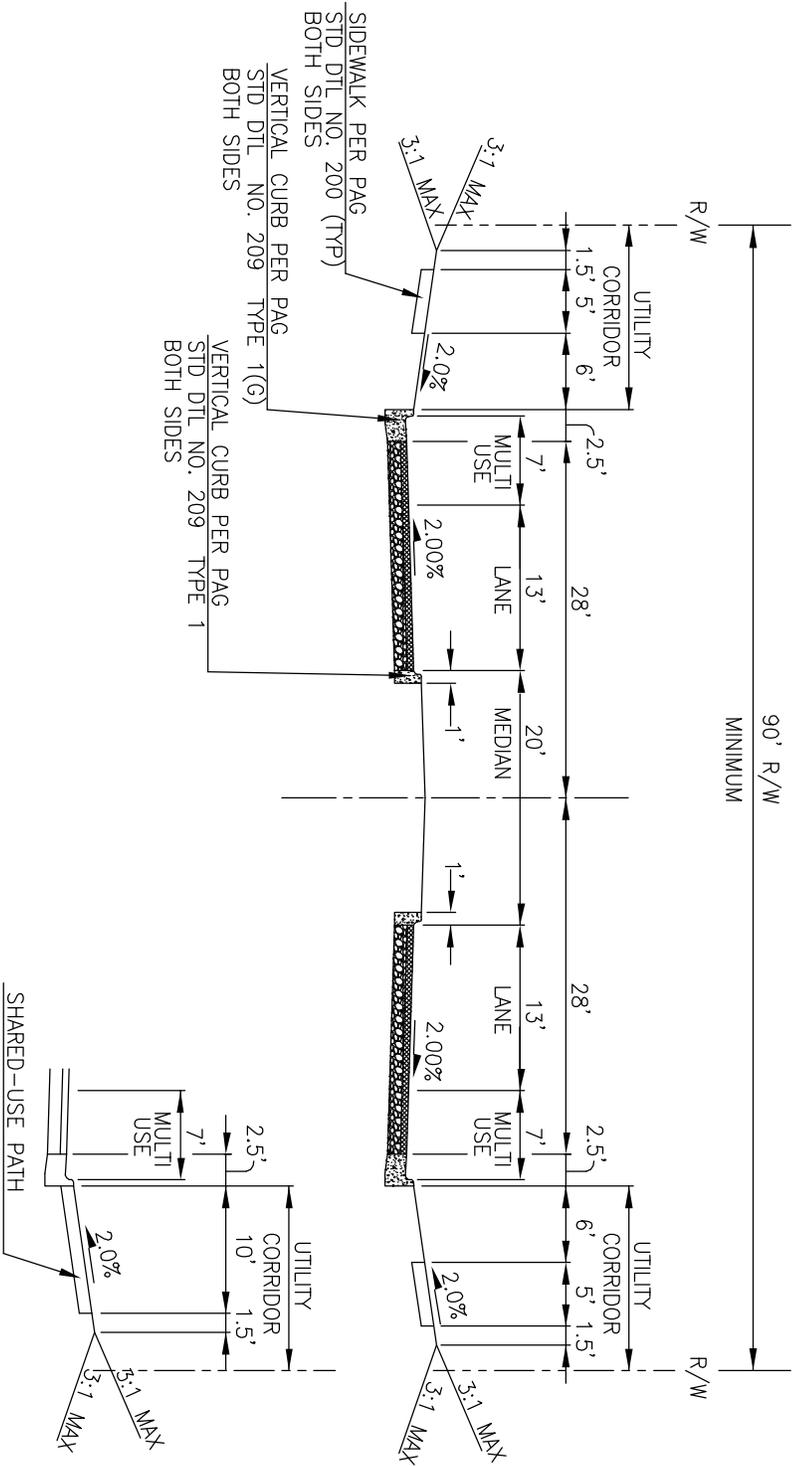
*Keith E. Brann*  
 Keith E. Brann, P.E.,  
 Town Engineer

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NOT TO SCALE



STANDARD DETAIL		DETAIL NO:
2-LANE RURAL COLLECTOR		110-1
DATE: 2/16/2007	REVISED: 8/1/2016	SHEET 1 OF 1



- RIGHT OF WAY WIDTHS FROM THE MAJOR ROUTES RIGHT OF WAY PLAN  
 SUPERCEDE RIGHT OF WAY WIDTHS SHOWN ON THIS STANDARD

ALTERNATE SHARED-USE PATH

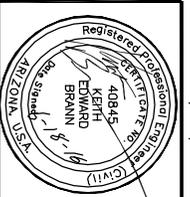
APPROVED FOR DISTRIBUTION:

  
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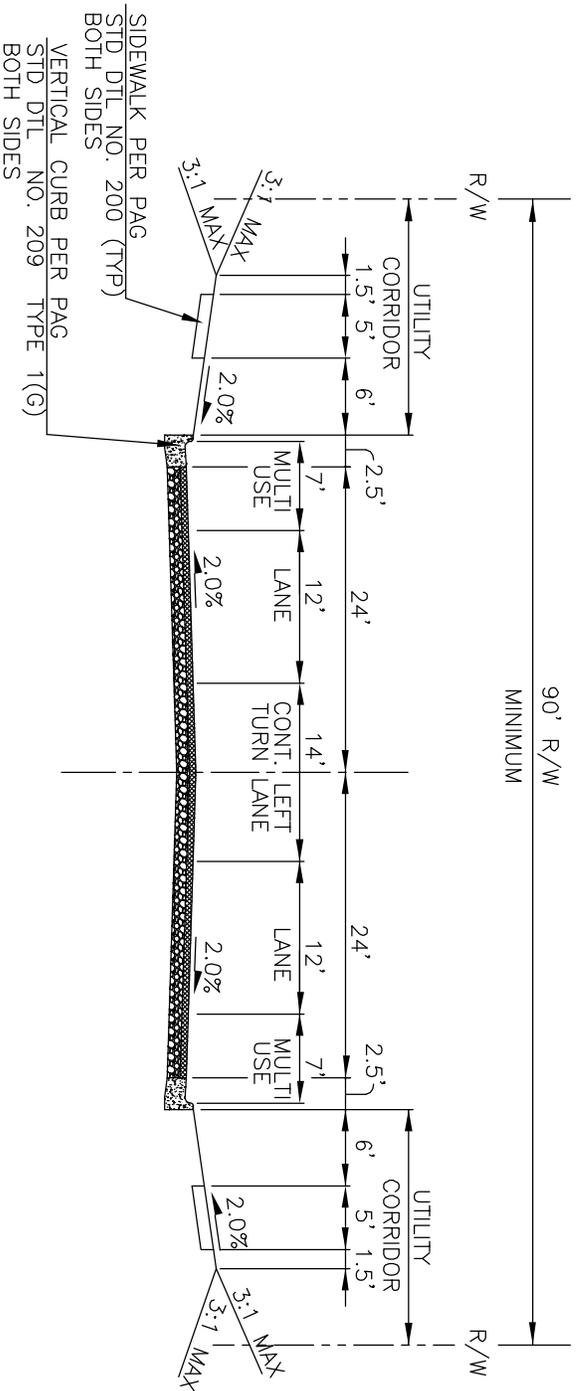
STANDARD DETAIL

NOT TO SCALE  
 DETAIL NO:



2-LANE URBAN COLLECTOR MEDIAN	
DATE: 2/16/2007	REVISED: 8/1/2016

SHEET 1 OF 1

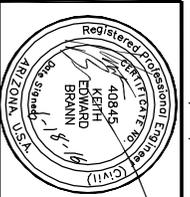


- RIGHT OF WAY WIDTHS FROM THE MAJOR ROUTES RIGHT OF WAY PLAN  
 SUPERCEDE RIGHT OF WAY WIDTHS SHOWN ON THIS STANDARD

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STANDARD DETAIL

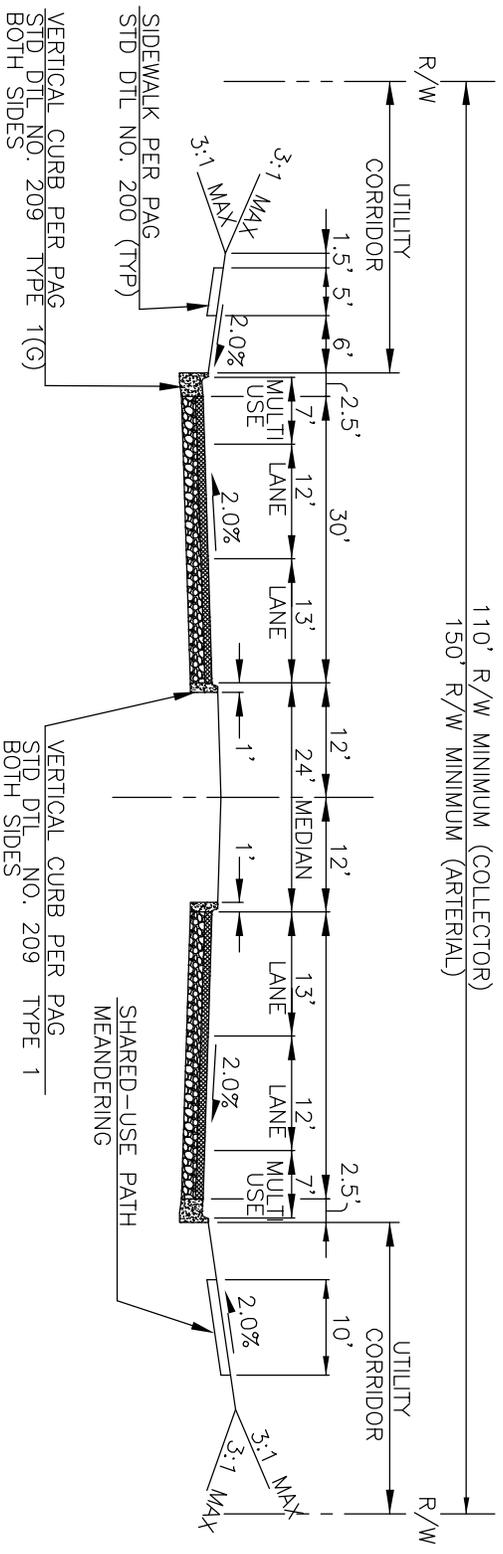
2-LANE URBAN COLLECTOR  
 CONTINUOUS LEFT TURN LANE

DATE: 2/16/2007

REVISED: 8/1/2016

SHEET 1 OF 1

NOT TO SCALE  
 DETAIL NO:  
 110-3

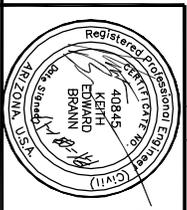


1. RIGHT OF WAY WIDTHS FROM THE MAJOR ROUTES RIGHT OF WAY PLAN SUPERCEDE RIGHT OF WAY WIDTHS SHOWN ON THIS STANDARD
2. ARTERIALS IN URBAN SETTINGS MAY UTILIZE SIDEWALK ON BOTH SIDES OF ROADWAY

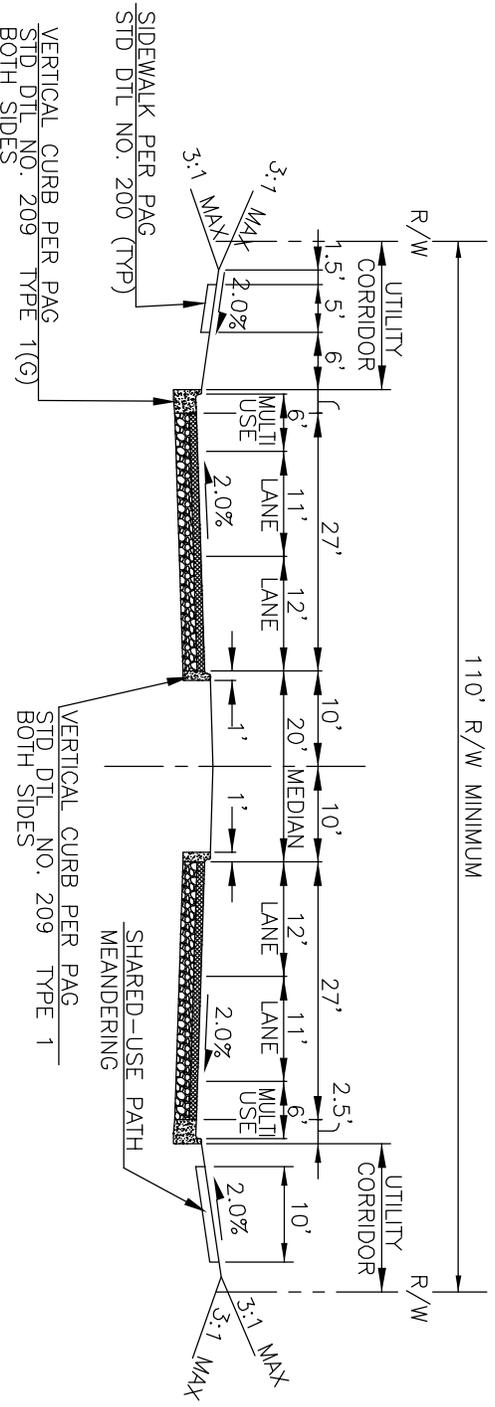
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Town Engineer

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STANDARD DETAIL		NOT TO SCALE
4-LANE COLLECTOR OR ARTERIAL		DETAIL NO:
DATE: 2/16/2007	REVISED: 8/1/2016	120-1
		SHEET 1 OF 2



1. ENVIRONMENTALLY SENSITIVE DESIGN FOR USE AT TOWN OF MARANA DIRECTION ONLY
2. RIGHT OF WAY WIDTH OF 110 FEET MAY SUPPLANT RIGHT OF WAY WIDTH FROM MAJOR ROUTES RIGHT OF WAY PLAN (ROADWAY PORTION)

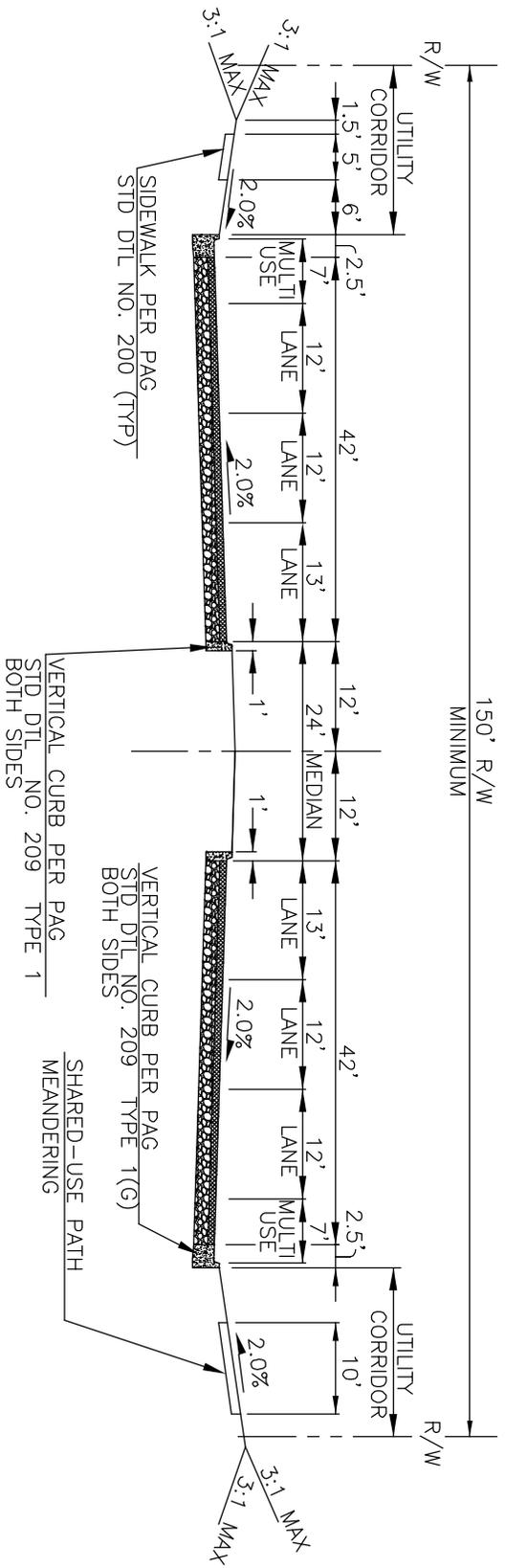
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STANDARD DETAIL		NOT TO SCALE
4-LANE COLLECTOR OR ARTERIAL		DETAIL NO: 120-1
DATE: 2/16/2007	REVISED: 8/1/2016	SHEET 2 OF 2

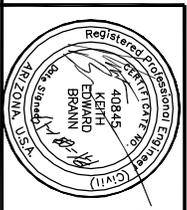


1. RIGHT OF WAY WIDTHS FROM THE MAJOR ROUTES RIGHT OF WAY PLAN SUPERCEDE RIGHT OF WAY WIDTHS SHOWN ON THIS STANDARD
2. ARTERIALS IN URBAN SETTINGS MAY UTILIZE SIDEWALK ON BOTH SIDES OF ROADWAY

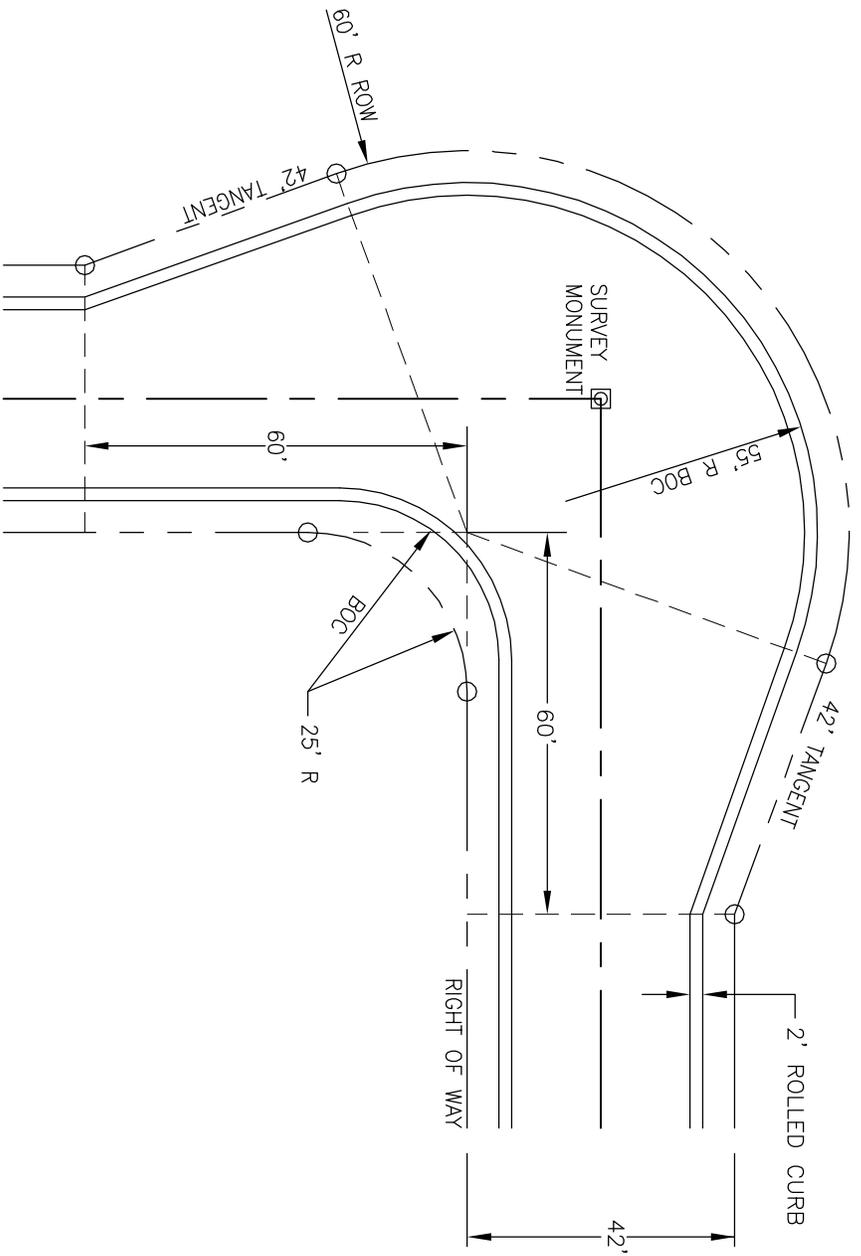
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STANDARD DETAIL		NOT TO SCALE	
6-LANE ARTERIAL		DETAIL NO: 120-2	
DATE: 2/16/2007	REVISED: 8/1/2016	SHEET 1 OF 1	

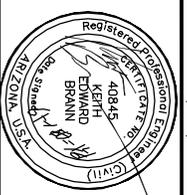


1. THIS DETAIL SUPERSEDES PRIOR SUBDIVISION STREET STANDARDS DETAIL NUMBER 11B
2. DETAIL IS BASED ON STANDARD STREET SECTION 100-1 AND A 90° INTERSECTION, MAY NEED TO BE MODIFIED FOR DIFFERENT SCENARIOS
3. HANDICAP RAMPS ARE NOT TO BE INSTALLED AT EYEBROW KNUCKLE

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 Town Engineer

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STANDARD DETAIL

DETAIL NO:

EYEBROW KNUCKLE

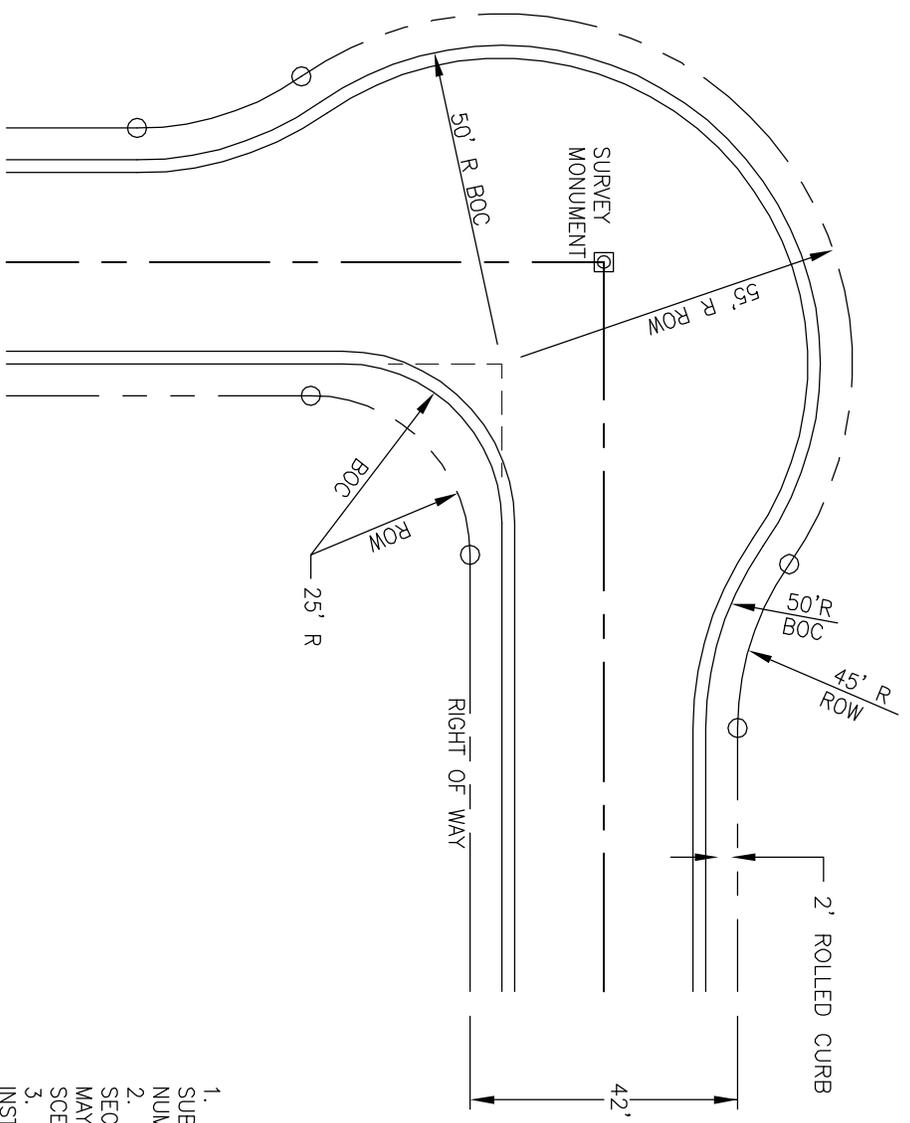
170-1

DATE: 3/4/2004

REVISED: 8/1/2016

SHEET 1 OF 1

NOT TO SCALE

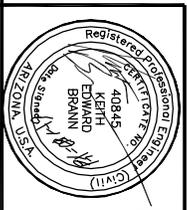


1. THIS DETAIL SUPERSEDES PRIOR SUBDIVISION STREET STANDARDS DETAIL NUMBER 11A
2. DETAIL IS BASED ON STANDARD STREET SECTION 100-1 AND A 90° INTERSECTION, MAY NEED TO BE MODIFIED FOR DIFFERENT SCENARIOS
3. HANDICAP RAMPS ARE NOT TO BE INSTALLED AT EYEBROW CUL-DE-SAC

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 Keith E. Brann, P.E.,  
 Town Engineer

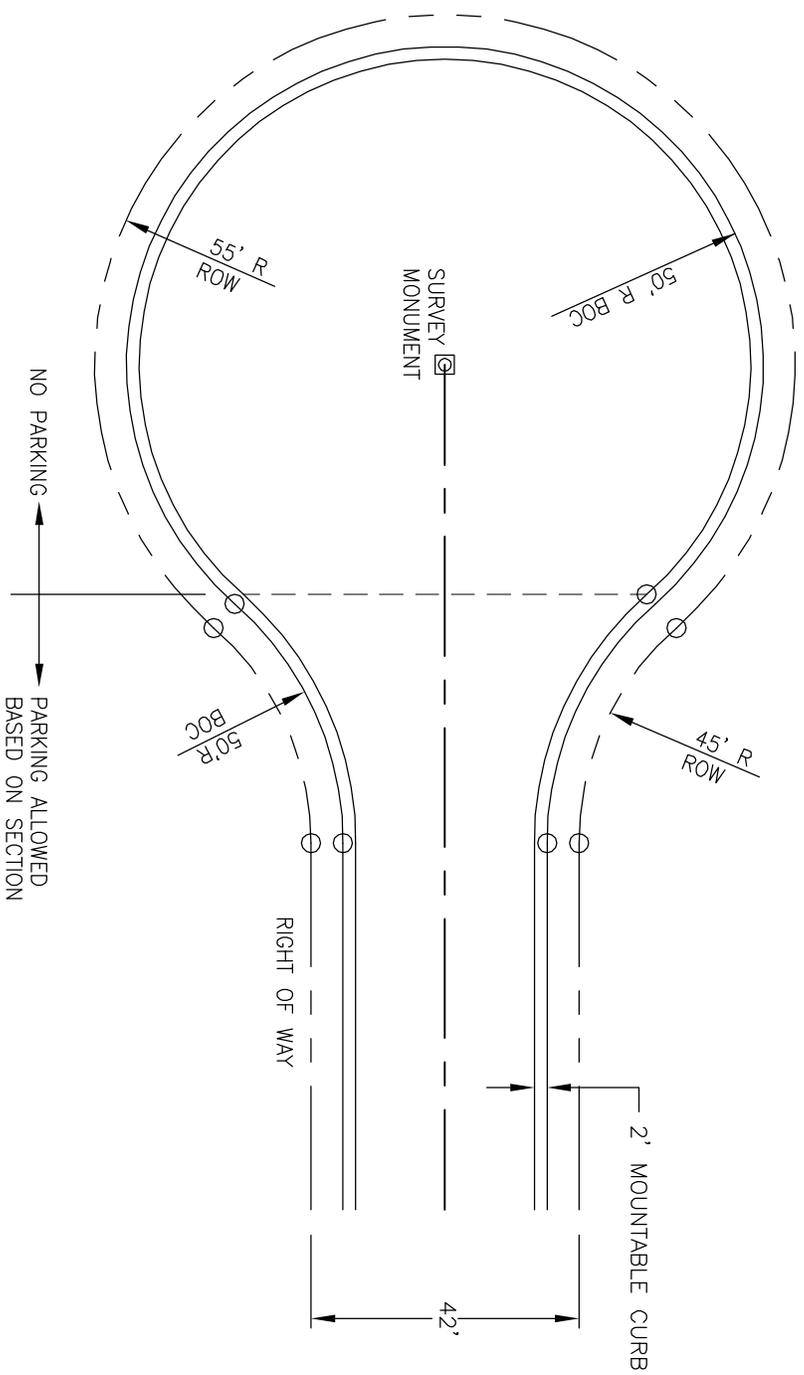
EXPIRES 6/30/2019



STANDARD DETAIL		DETAIL NO:
EYEBROW CUL-DE-SAC		170-2
DATE: 3/4/2004	REVISED: 8/1/2016	SHEET 1 OF 1

NOT TO SCALE

1. THIS DETAIL SUPERSEDES PRIOR SUBDIVISION STREET STANDARDS DETAIL NUMBER 7
2. DETAIL IS BASED ON STANDARD STREET SECTION 100-1, MAY NEED TO BE MODIFIED FOR DIFFERENT STREET SECTIONS



EXPIRES 6/30/2019

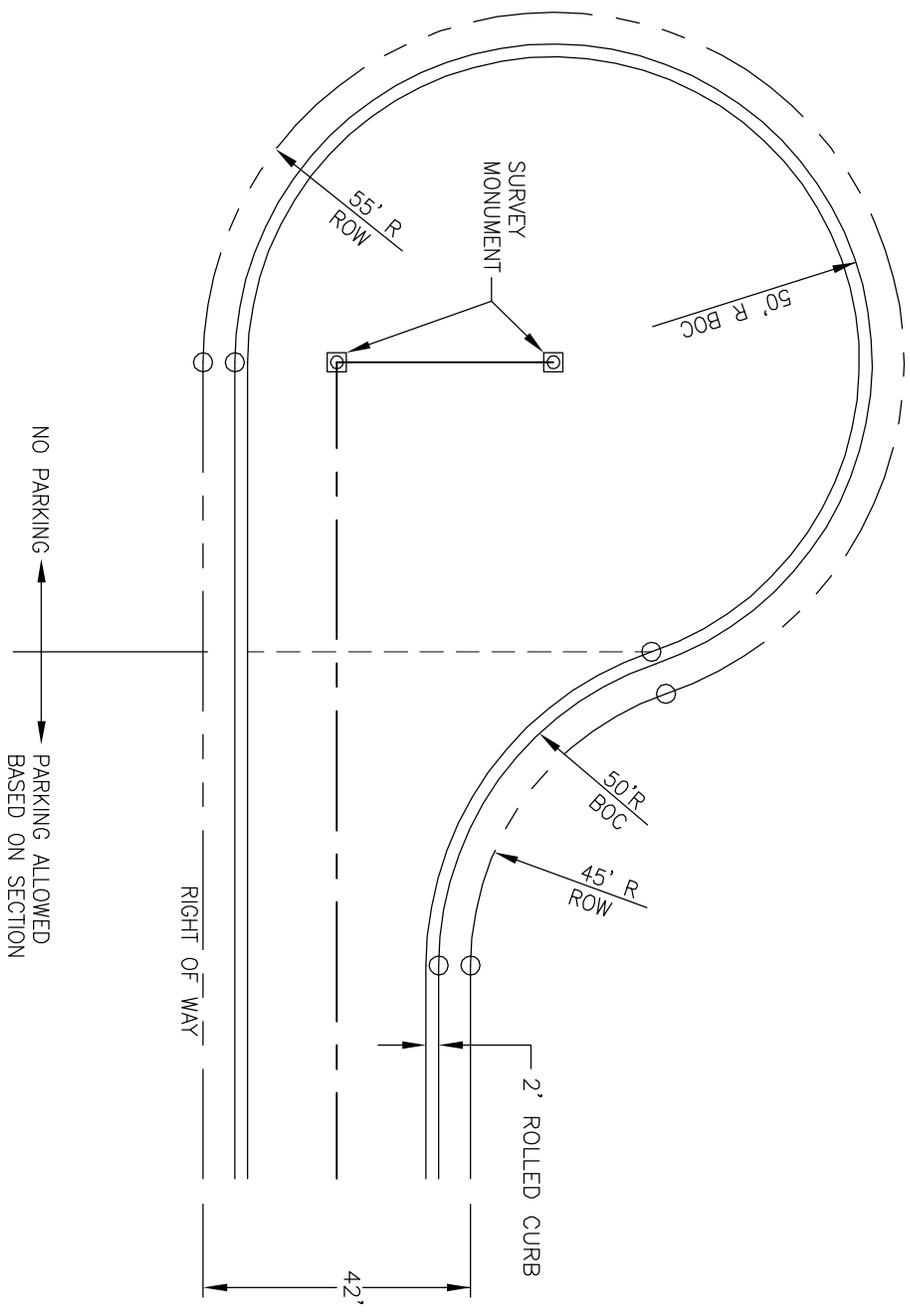
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 Keith E. Brann, P.E.,  
 Town Engineer



STANDARD DETAIL		NOT TO SCALE
STANDARD CUL-DE-SAC		DETAIL NO: 170-3
DATE: 3/4/2004	REVISED: 8/1/2016	SHEET 1 OF 1

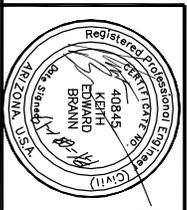
1. THIS DETAIL SUPERSEDES PRIOR SUBDIVISION STREET STANDARDS DETAIL NUMBER 8
2. DETAIL IS BASED ON STANDARD STREET SECTION 100-1, MAY NEED TO BE MODIFIED FOR DIFFERENT STREET SECTIONS



EXPIRES 6/30/2019

APPROVED FOR DISTRIBUTION:

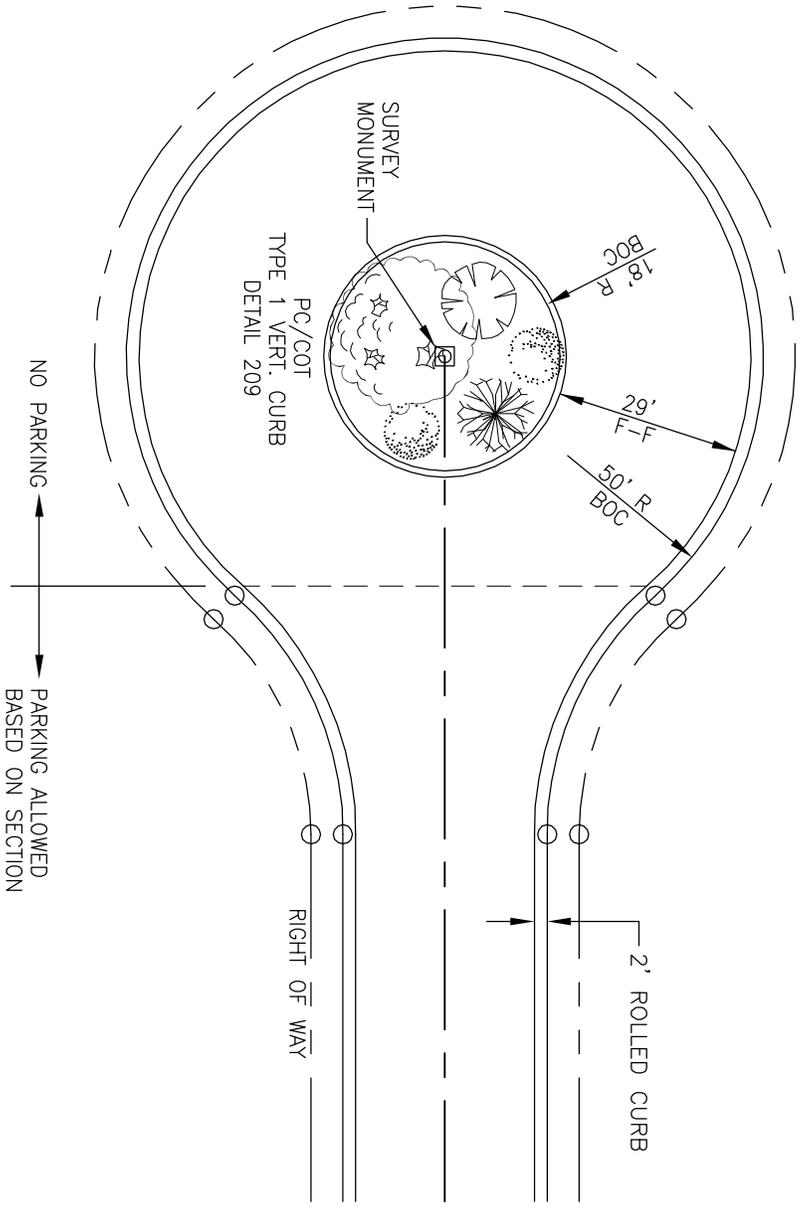
*Keith E. Brann*  
 Keith E. Brann, P.E.,  
 Town Engineer



STANDARD DETAIL	DETAIL NO:
OFFSET CUL-DE-SAC	170-4
DATE: 3/4/2004	REVISED: 8/1/2016
SHEET 1 OF 1	

NOT TO SCALE

1. THIS DETAIL SUPERSEDES PRIOR SUBDIVISION STREET STANDARDS DETAIL NUMBER 9
2. DETAIL IS BASED ON STANDARD STREET SECTION 100-1, MAY NEED TO BE MODIFIED FOR DIFFERENT STREET SECTIONS
3. FOR REMAINING DIMENSIONS REFER TO DETAIL 170-3
4. LANDSCAPE MATERIALS MUST BE SELECTED AND PLACED SO AS NOT TO INTERFERE WITH DRIVERS' VISIBILITY WITHIN THE MEDIAN BY TWO HORIZONTAL LINES LOCATED 30" AND 72" ABOVE FINISHED GRADE OF THE ROADWAY SURFACE
5. LANDSCAPING/VEGETATION INSTALLED BY THE DEVELOPER/HOMEOWNER'S ASSOCIATION SHALL NOT BE MAINTAINED BY THE TOWN OF MARANA. A LICENSE AGREEMENT MUST BE EXECUTED AND APPROVED BY THE TOWN ENGINEER PRIOR TO CONSTRUCTION.

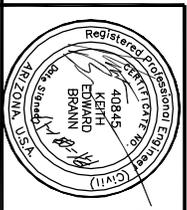


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 Town Engineer

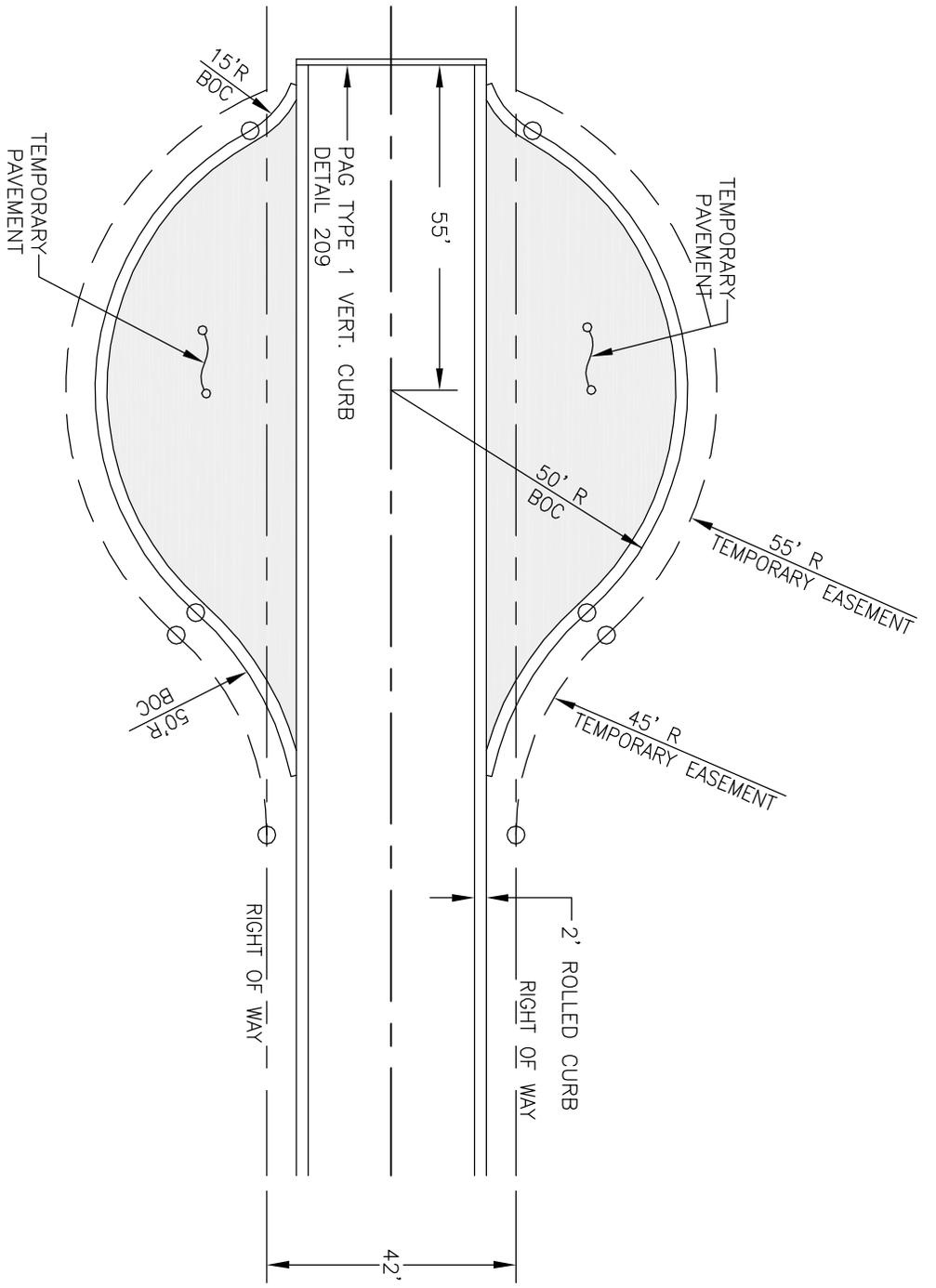
EXPIRES 6/30/2019

NOT TO SCALE



STANDARD DETAIL		DETAIL NO:
LANDSCAPED CUL-DE-SAC		170-5
DATE: 3/4/2004	REVISED: 8/1/2016	SHEET 1 OF 1

1. THIS DETAIL SUPERSEDES PRIOR SUBDIVISION STREET STANDARDS DETAIL NUMBER 7
2. DETAIL IS BASED ON STANDARD STREET SECTION 100-1, MAY NEED TO BE MODIFIED FOR DIFFERENT STREET SECTIONS
3. ULTIMATE CURB AND STREET SECTION TO BE CONSTRUCTED.
4. TEMPORARY PAVEMENT TO BE OF SAME THICKNESS AS PERMANENT PAVEMENT. TEMPORARY CURB MAY BE MOUNTABLE CURB OR HEADER CURB.
5. DEAD END STREET SIGNAGE AND POST BARRICADES PER STREET STANDARDS TO BE INSTALLED.

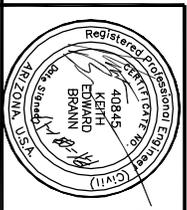


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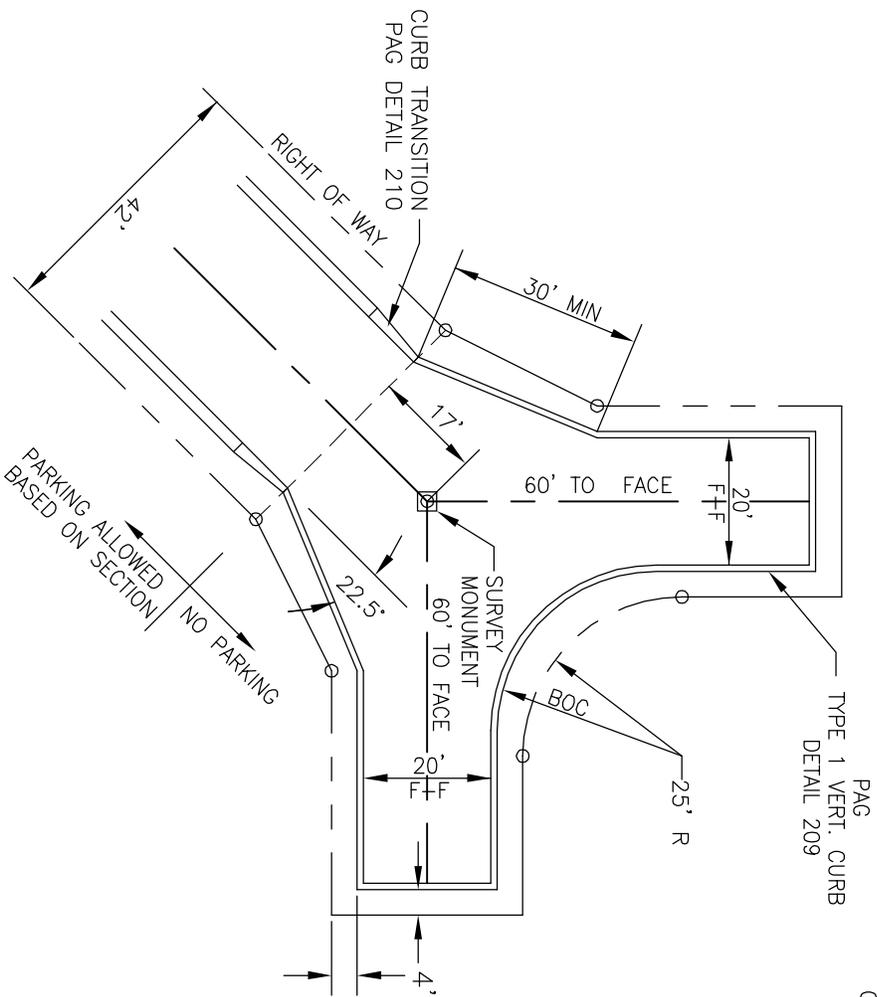
EXPIRES 6/30/2019

NOT TO SCALE

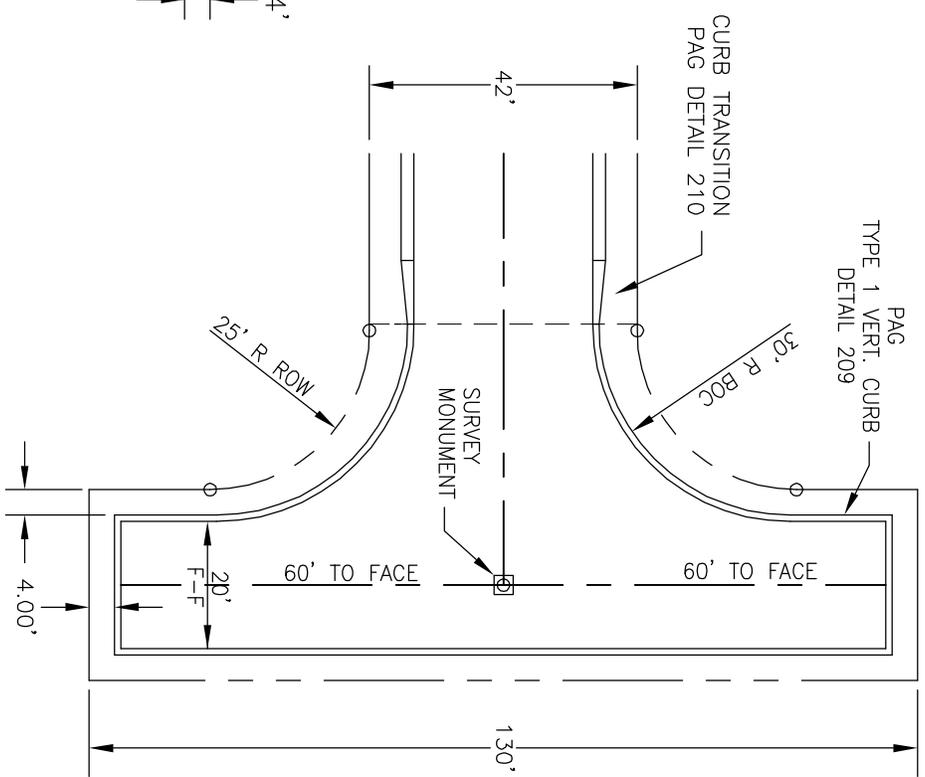


STANDARD DETAIL		DETAIL NO:
TEMPORARY CUL-DE-SAC		170-6
DATE: 3/4/2004	REVISED: 8/1/2016	SHEET 1 OF 1

1. THIS DETAIL SUPERSEDES PRIOR SUBDIVISION STREET STANDARDS DETAIL NUMBER 12
2. DETAIL IS BASED ON STANDARD STREET SECTION 100-1, MAY NEED TO BE MODIFIED FOR DIFFERENT STREET SECTIONS



"Y" TURNAROUND

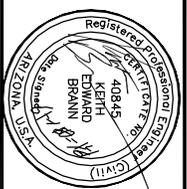


"T" TURNAROUND

APPROVED FOR DISTRIBUTION:

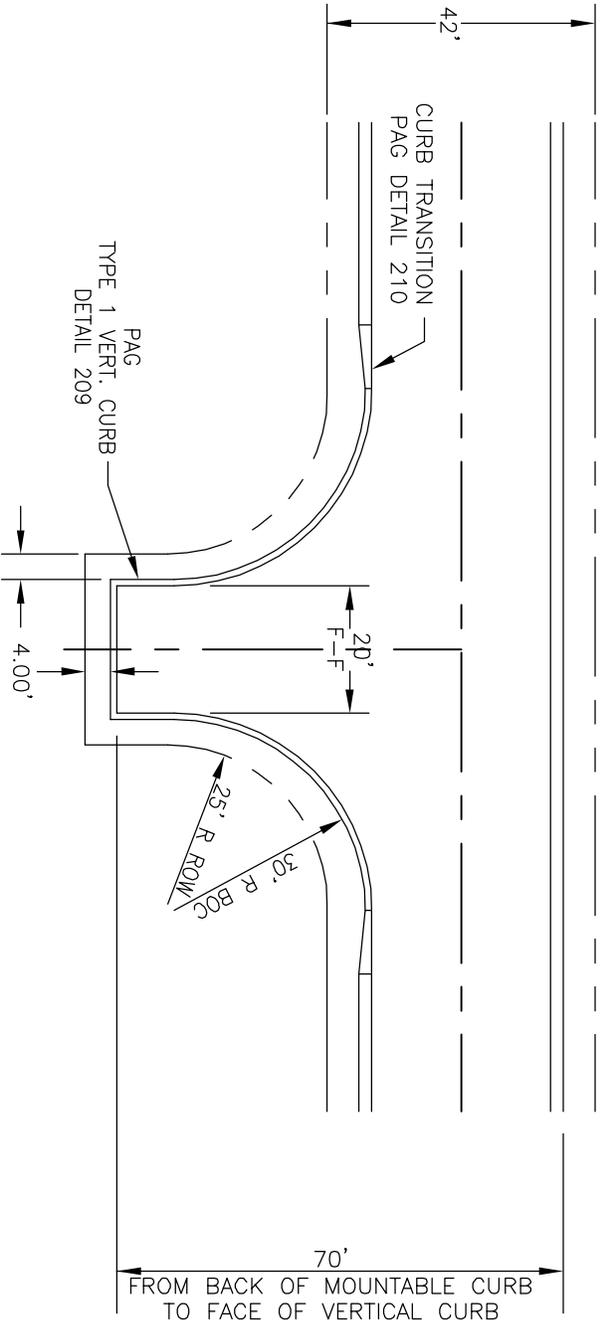
*Keith E. Brann*  
 Keith E. Brann, P.E.,  
 Town Engineer

EXPIRES 6/30/2019



STANDARD DETAIL		NOT TO SCALE
TURNAROUNDS		DETAIL NO: 170-7
DATE: 3/4/2004	REVISED: 8/1/2016	SHEET 1 OF 2

1. DETAIL IS BASED ON STANDARD STREET SECTION 100-1, MAY NEED TO BE MODIFIED FOR DIFFERENT STREET SECTIONS

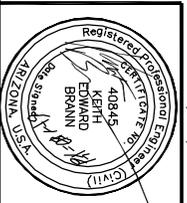


MID-BLOCK TURNAROUND

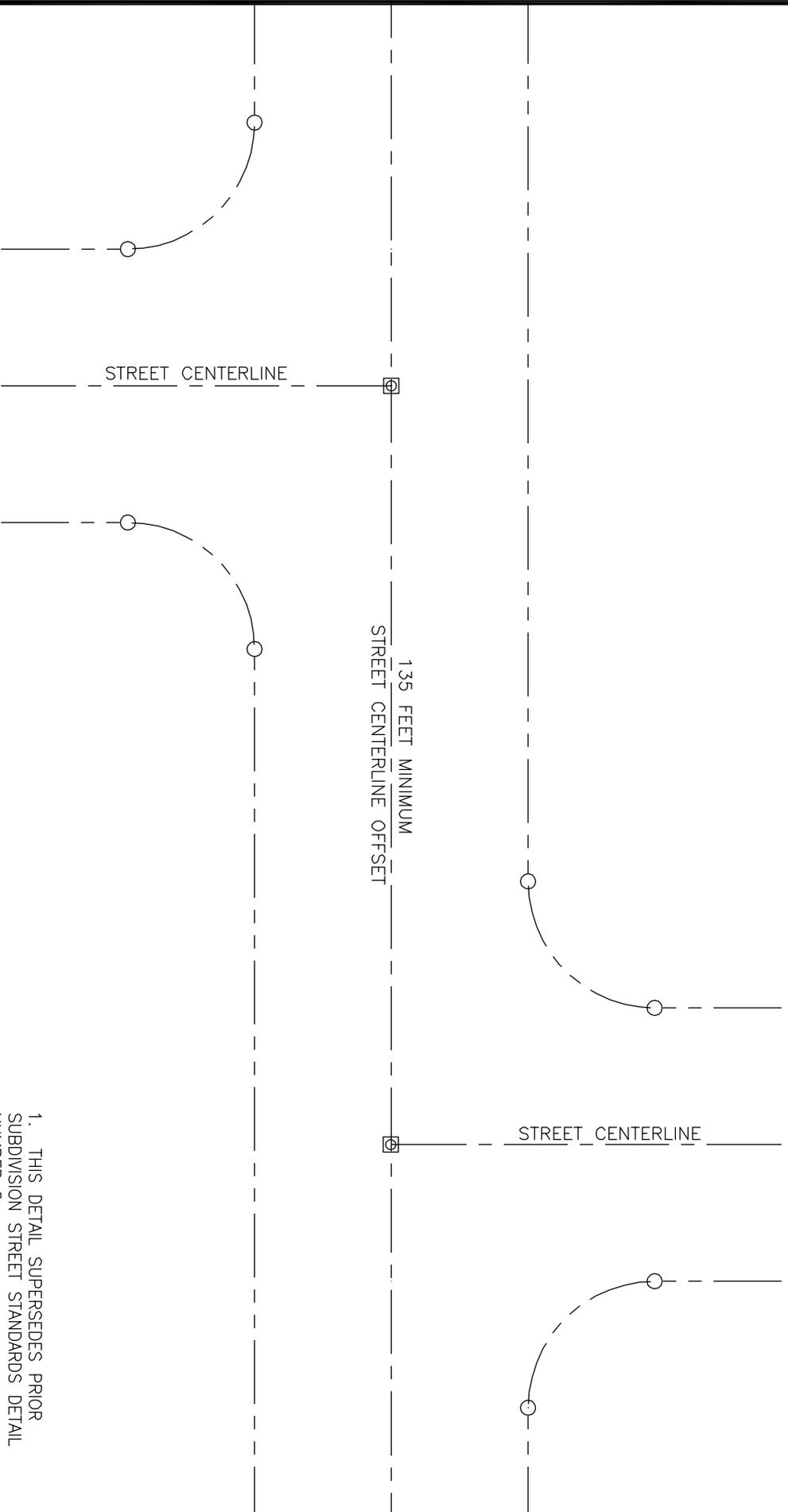
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 Town Engineer

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STANDARD DETAIL		NOT TO SCALE
TURNAROUNDS		DETAIL NO:
DATE: 3/4/2004	REVISED: 8/1/2016	170-7
		SHEET 2 OF 2



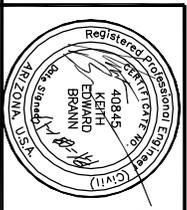
1. THIS DETAIL SUPERSEDES PRIOR  
SUBDIVISION STREET STANDARDS DETAIL  
NUMBER 5

NOT TO SCALE

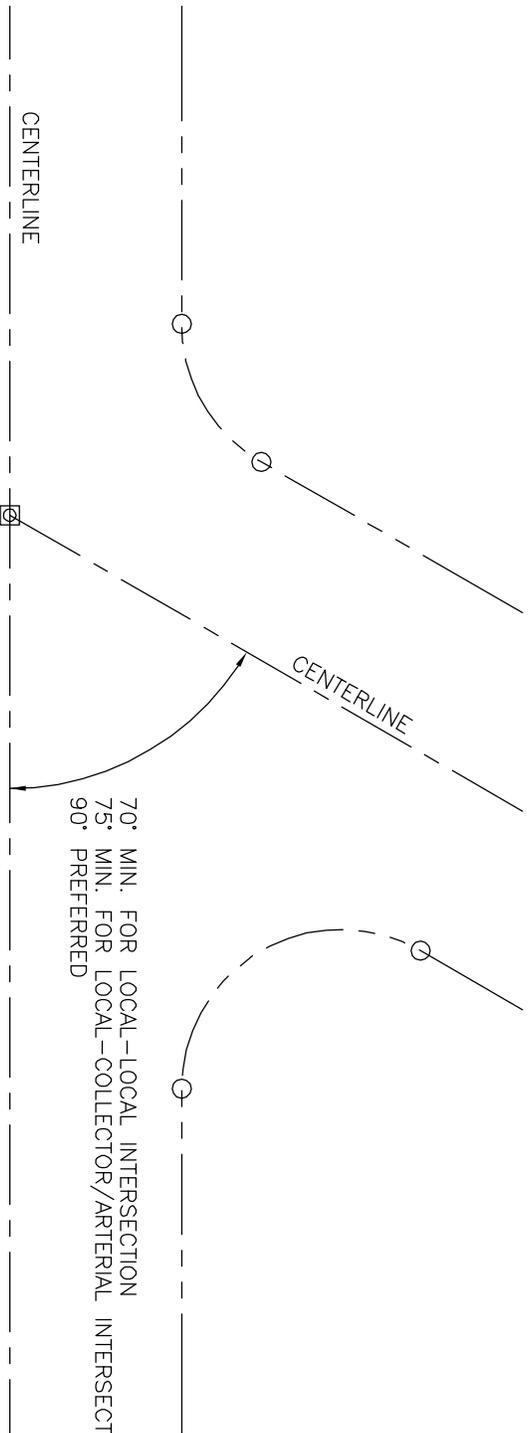
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Keith E. Brann, P.E.,  
Town Engineer

EXPIRES 6/30/2019



STANDARD DETAIL		DETAIL NO:
LOCAL STREET JOGS		190-1
DATE: 3/4/2004	REVISED: 8/1/2016	SHEET 1 OF 1



1. THIS DETAIL SUPERSEDES PRIOR  
SUBDIVISION STREET STANDARDS DETAIL  
NUMBER 6

NOT TO SCALE

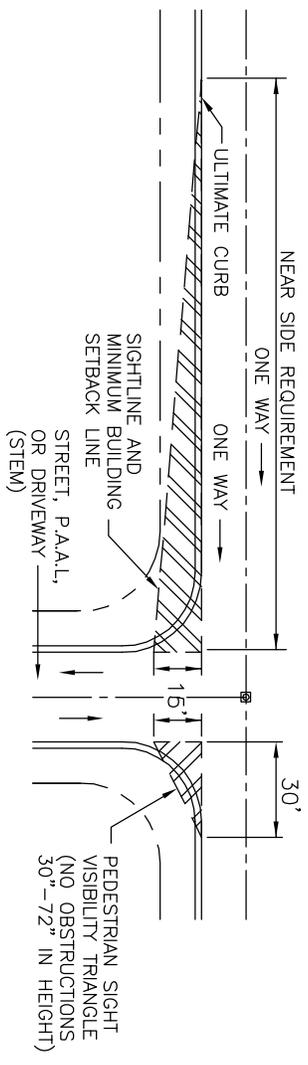
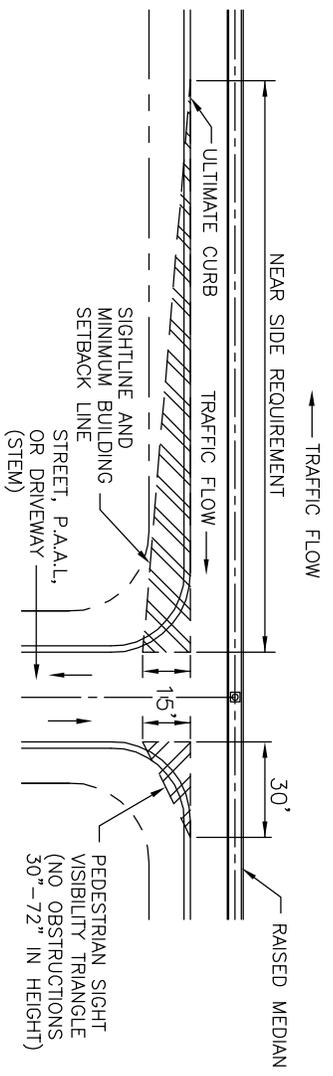
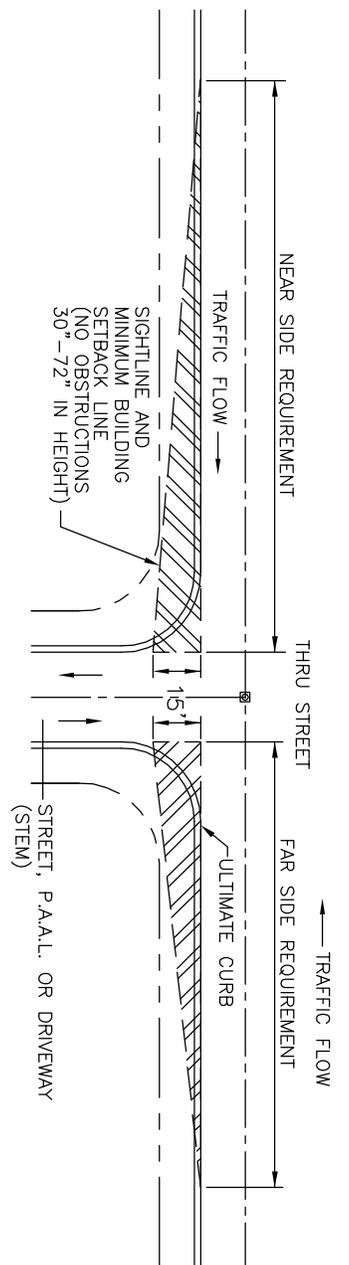
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Keith E. Brann, P.E.,  
Town Engineer

EXPIRES 6/30/2019



STANDARD DETAIL	DETAIL NO:
LOCAL STREET INTERSECTIONS	190-2
DATE: 3/4/2004	REVISED: 8/1/2016
	SHEET 1 OF 1



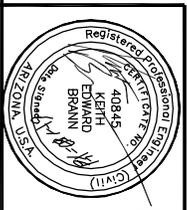
1. THIS DETAIL SUPERSEDES PRIOR SUBDIVISION STREET STANDARDS DETAIL NUMBER 13.

NOT TO SCALE

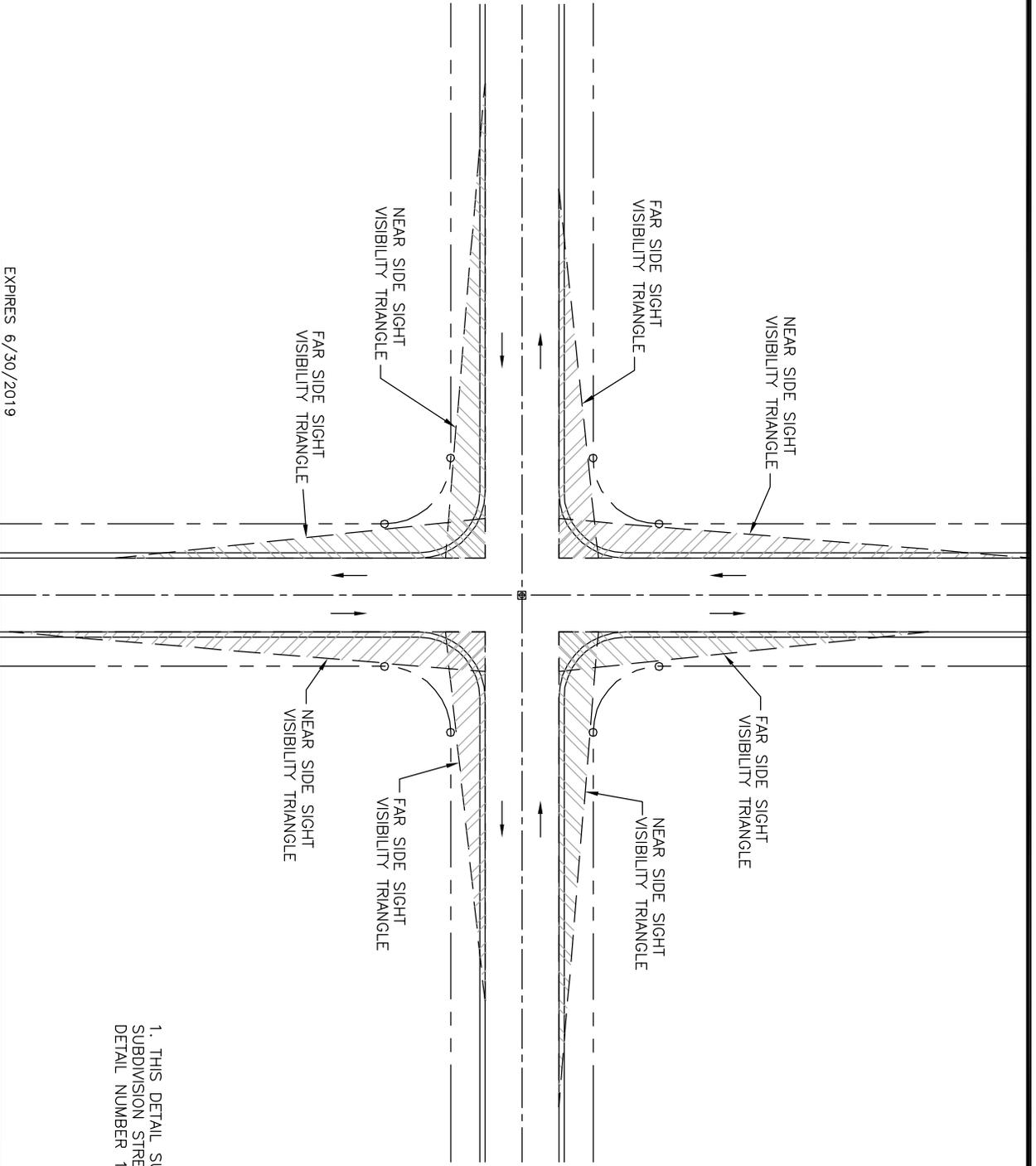
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 Keith E. Brann, P.E.,  
 Town Engineer

EXPIRES 6/30/2019



STANDARD DETAIL		DETAIL NO:
TYPICAL SIGHT VISIBILITY TRIANGLES		190-3
DATE: 3/4/2004	REVISED: 8/1/2016	SHEET 1 OF 3



1. THIS DETAIL SUPERSEDES PRIOR SUBDIVISION STREET STANDARDS DETAIL NUMBER 14.

NOT TO SCALE

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 Keith E. Brann, P.E.,  
 Town Engineer

EXPIRES 6/30/2019



STANDARD DETAIL

DETAIL NO:

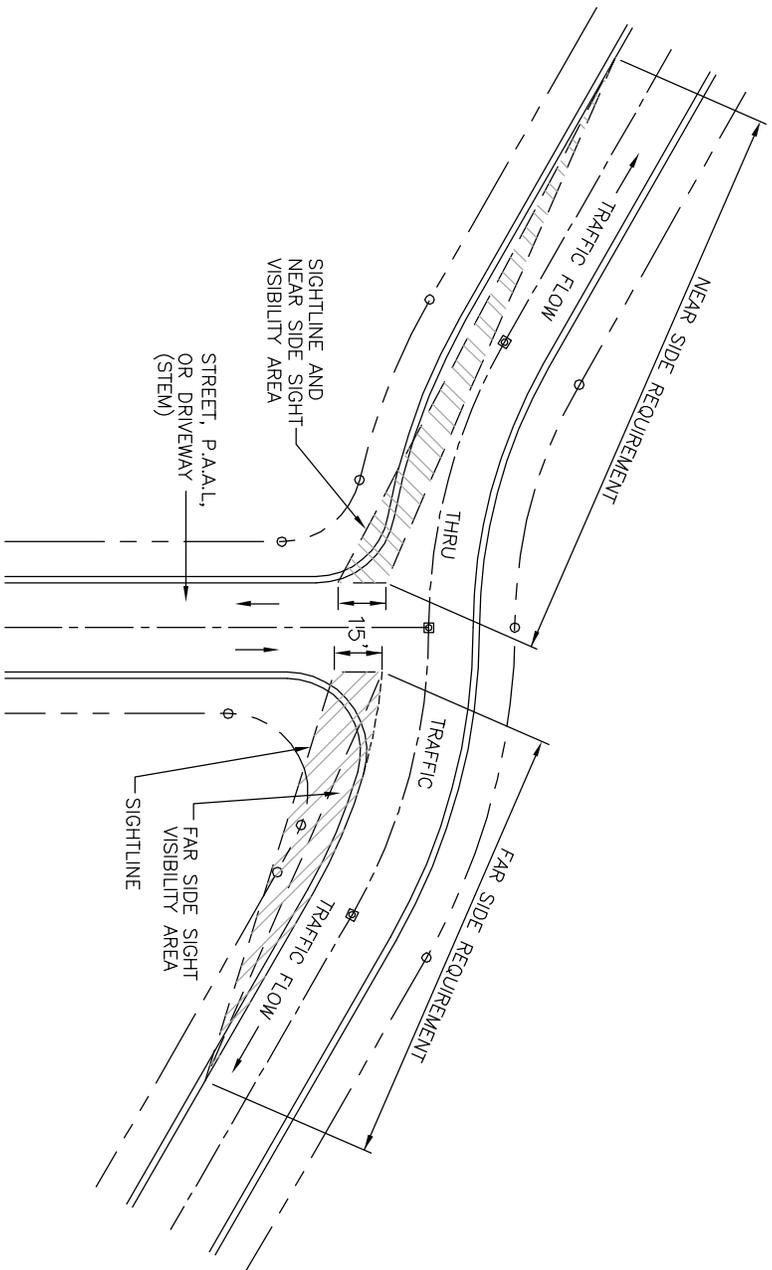
TYPICAL SIGHT VISIBILITY TRIANGLES

190-3

DATE: 3/4/2004

REVISED: 8/1/2016

SHEET 2 OF 3



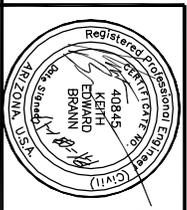
1. THIS DETAIL SUPERSEDES PRIOR SUBDIVISION STREET STANDARDS DETAIL NUMBER 15.

NOT TO SCALE

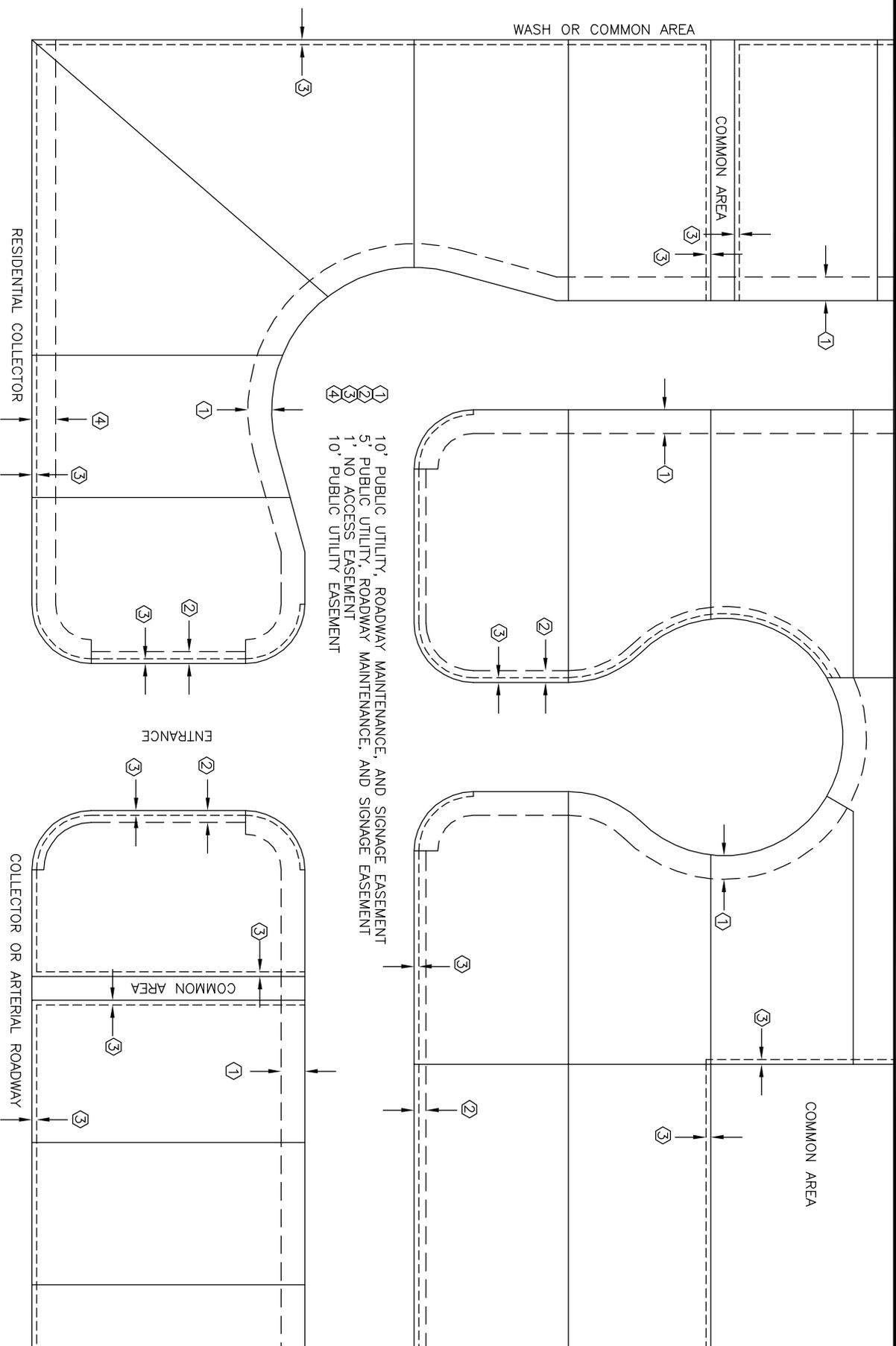
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 Town Engineer

EXPIRES 6/30/2019



STANDARD DETAIL		DETAIL NO:
TYPICAL SIGHT VISIBILITY TRIANGLES		190-3
DATE:	3/4/2004	8/1/2016
		SHEET 3 OF 3



- ① 10' PUBLIC UTILITY, ROADWAY MAINTENANCE, AND SIGNAGE EASEMENT
- ② 5' PUBLIC UTILITY, ROADWAY MAINTENANCE, AND SIGNAGE EASEMENT
- ③ 1' NO ACCESS EASEMENT
- ④ 10' PUBLIC UTILITY EASEMENT

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 Keith E. Brann, P.E.,  
 Town Engineer

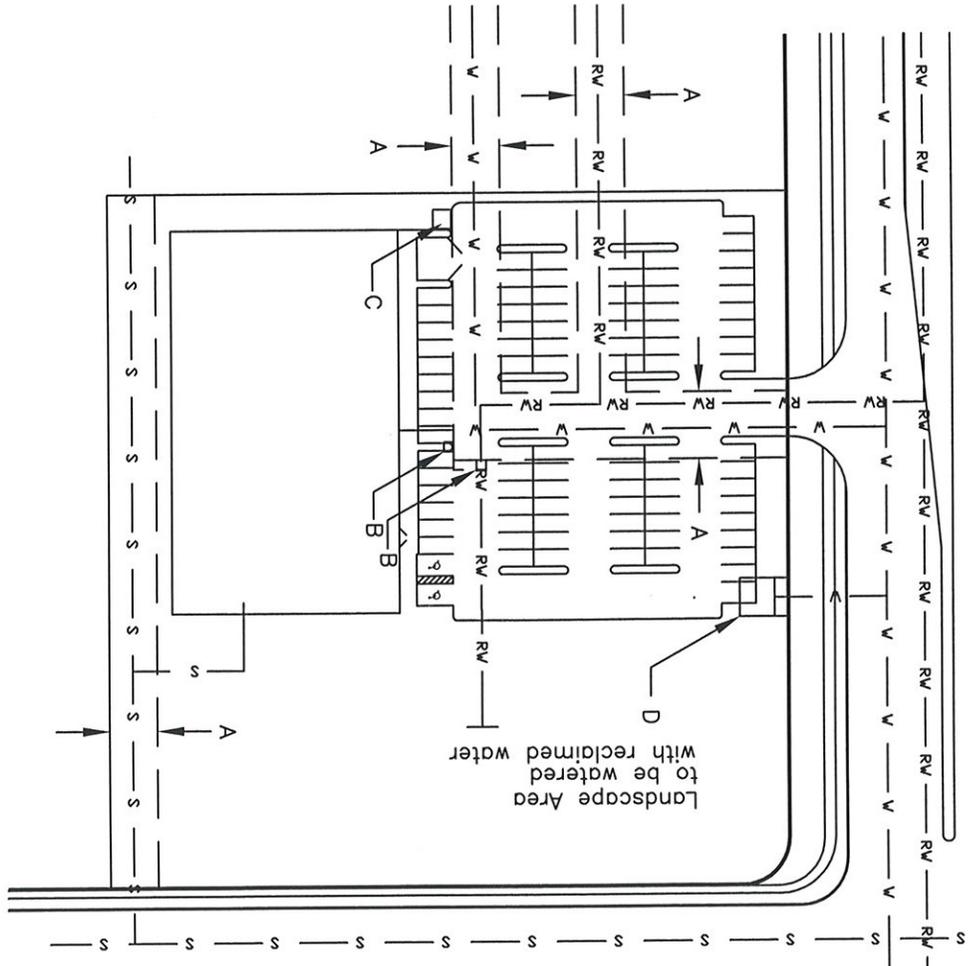
EXPIRES 6/30/2019



STANDARD DETAIL		NOT TO SCALE
TYPICAL STREET EASEMENTS		DETAIL NO:
DATE: 8/1/2016	REVISED:	190-4
		SHEET 1 OF 1

Town of Marana Utility Easement Requirements

- 1) Easements shall be exclusive Town of Marana wet utility easement with maximum 5' encroachment by a PUE.
  - 2) Easement width shall be increased by 5' for every 2' water line is buried below the minimum as required by the May 2009 or subsequent version of the Town of Marana Utility Department General Notes and Standard Details.
  - 3) Easement width shall be increased by 10' for every additional variety of wet utility (potable water, non potable water, sewer). For example, the easement width shall be increased to 35' if two types of wet utilities are located within the easement, and to 45' if all three types of wet utilities are located within the easement.
  - 4) Easement width shall increase by 5' where the easement overlaps a horizontal drop of 3 or more feet where the slope is greater than 3:1 horizontal to vertical. The easement width shall increase by 10' if the slope exceeds 2:1 horizontal to vertical.
  - 5) The maximum wet utility easement, including increases for depth, PUE encroachment, additional wet utilities and slope, shall not be greater than 50'.
  - 6) Wet utility line shall be a minimum of 5' from the edge of the easement.
  - 7) Wet utility line shall be set back an additional 2' from the edge of the easement for every 5' in depth the line is buried below the minimum depth.
  - 8) A 15' x 15' easement area outside of the normal easement width shall be provided for all fire hydrants.
  - 9) A 15' x 15' easement area outside of the normal easement width shall be provided for all meters, valves and fire line stub outs.
  - 10) Where Terrain and/or Geology warrant an exception to these standards, a waiver may be granted by the Town Engineer or his designee in which all of the following apply:
    - a) A showing of good and sufficient cause
    - b) A determination that failure to grant the waiver would result in exceptional hardship to the development.
    - c) The waiver is determined to be the minimum relief necessary.
    - d) Other mitigating design elements are utilized such as ductile iron pipe with restrained joints or other improvements as directed by the utilities engineer.
- Cost shall not be a determining factor in the granting of waivers.



- LEGEND
- v — Potable Water
  - rv — Reclaimed Water
  - s — Sewer
- A — MINIMUM 25 FEET EASEMENT
  - B — 15'X15' EASEMENT FOR METER
  - C — 15'X15' EASEMENT FOR HYDRANT
  - D — 15'X15' EASEMENT FOR FIRE LINE STUBOUT

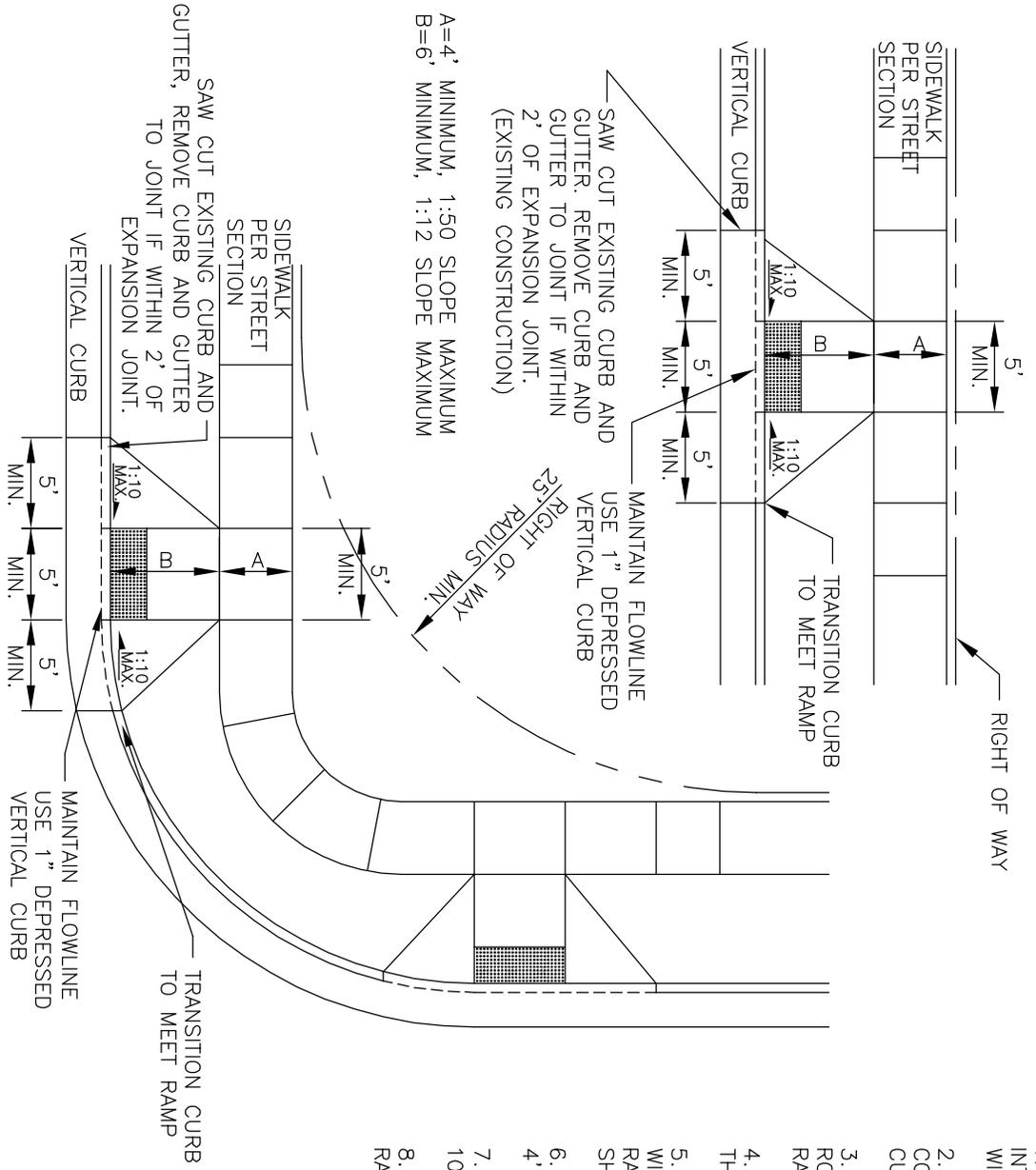
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Keith E. Brann, P.E.,  
Town Engineer



MARANA UTILITY STANDARDS	DETAIL NO:
TYPICAL UTILITY EASEMENTS	500-1
DATE: 8/19/2009	REVISD: 12/24/2009
	SHEET 1 OF 1

NOT TO SCALE



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Town Engineer

EXPIRES 6/30/2019

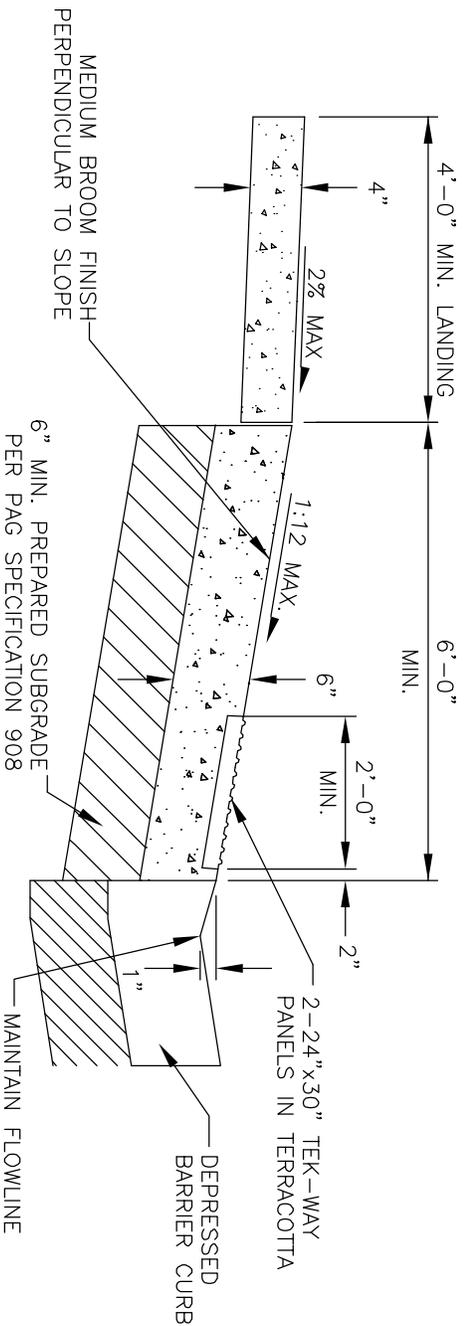


STANDARD DETAIL		DETAIL NO:
TYPE 1 CURB RAMPS		600-1
DATE: 10/2004	REVISED: 8/1/2016	SHEET 1 OF 2

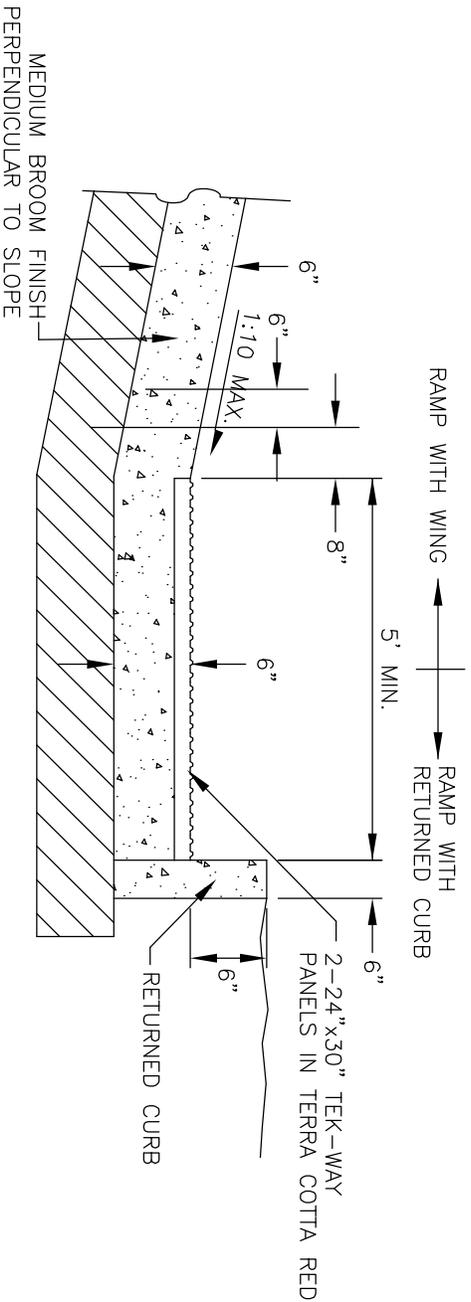
NOT TO SCALE

- NOTES:
1. CURB RAMPS, INCLUDING LANDING AND THE INTERCONNECTING SIDEWALK ARE TO BE CONTAINED WITHIN THE RIGHT-OF-WAY.
  2. DETECTABLE WARNING SURFACE SHALL BE CONSTRUCTED 2 INCHES AWAY FROM DEPRESSED CURB.
  3. CURB RAMPS SHALL BE PERPENDICULAR TO ROADWAY CENTERLINE AND SHALL ALIGN WITH RAMPS ACROSS STREET.
  4. GRADES ON SIDEWALKS LEADING TO OR FROM THE RAMPS SHALL FOLLOW CURB GRADES.
  5. THE INTERCONNECTING SIDEWALK LOCATED WITHIN THE RADIUS AND BETWEEN THE TWO CURB RAMPS IS REQUIRED AND ITS RUNNING SLOPE SHALL NOT EXCEED 1:20.
  6. STOP BARS, IF REQUIRED, SHALL BE LOCATED 4' IN ADVANCE OF ANY CROSSWALK STRIPING.
  7. CURB INLETS SHALL NOT BE LOCATED WITHIN 10' OF A CURB RAMP.
  8. GUTTER SHALL PROVIDE SMOOTH TRANSITION TO RAMPS.

SECTION THROUGH RAMP



FRONT END VIEW



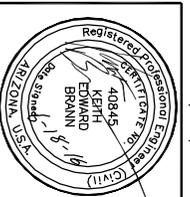
NOTES:

9. DETECTABLE WARNING SURFACE TO CONSIST OF TWO TEK-WAY PANELS OF SIZE 24 INCHES BY 30 INCHES. COLOR OF PANELS TO BE TERRACOTTA.
10. TEK-WAY PANELS TO BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. DETAIL ASSUMES SETTING PANELS IN WET CONCRETE. PROVIDE 1 INCH CAVITY IF SETTING PANELS SEPARATE FROM CONCRETE POUR.
11. PANELS TO BE PROTECTED FROM CONSTRUCTION DEBRIS/DIRT UNTIL OVERALL PROJECT COMPLETE.
12. ALTERNATE SYSTEMS SHALL HAVE DETECTABLE WARNING THAT CONSISTS OF RAISED TRUNCATED DOMES WITH A DIAMETER OF 0.9" AT BOTTOM, 0.4" AT TOP, AND A NOMINAL HEIGHT OF 0.2" AND A NOMINAL CENTER TO CENTER SPACING OF 2.35". COLOR MUST BE OF A DULL RED HUE. ALTERNATE SYSTEMS MUST BE APPROVED BY THE TOWN ENGINEER.
13. DEPRESSED CURB HEIGHT CALCULATED TO ACHIEVE A 1:12 SLOPE FROM THE FLOWLINE TO THE TOP OF DEPRESSED CURB FOR STANDARD BARRIER CURB USED IN THE TOWN OF MARANA AND MAY NOT APPLY TO ALL SITUATIONS. THE CONTROLLING FACTOR OF ALTERNATE DESIGNS SHALL BE A 1:12 MAXIMUM SLOPE FROM FLOWLINE TO TOP OF DEPRESSED CURB.

APPROVED FOR DISTRIBUTION:

*Keith E. Brann*  
 Keith E. Brann, P.E.,  
 Town Engineer

EXPIRES 6/30/2019



STANDARD DETAIL

DETAIL NO:

TYPE 1 CURB RAMPS

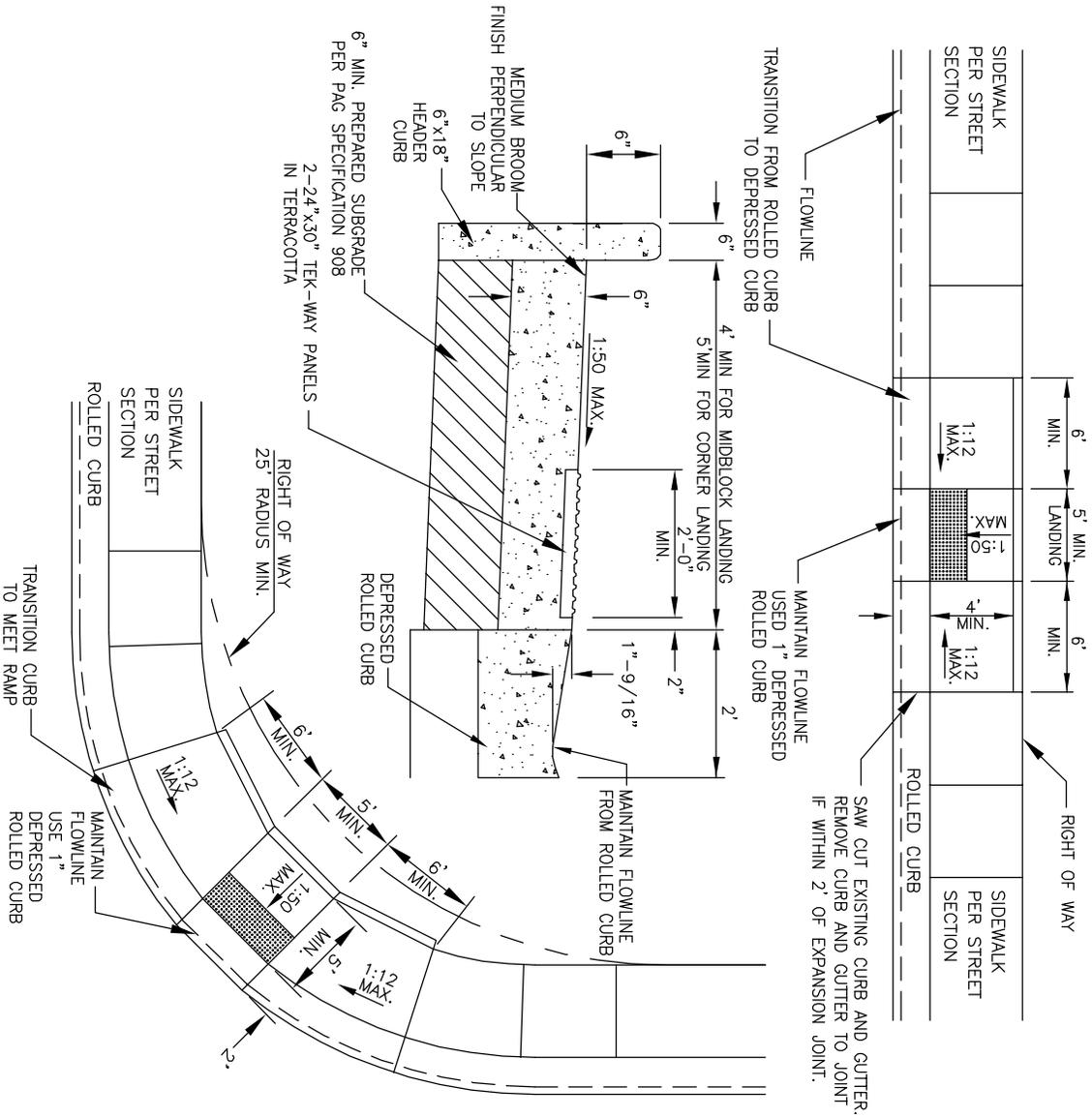
600-1

DATE: 10/2004

REVISED: 8/1/2016

SHEET 2 OF 2

NOT TO SCALE



SAW CUT EXISTING CURB AND GUTTER. REMOVE CURB AND GUTTER TO JOINT IF WITHIN 2' OF EXPANSION JOINT.

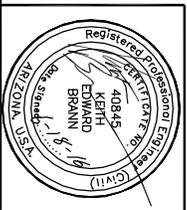
**NOTES:**

1. GRADES ON SIDEWALKS LEADING TO AND FROM THE RAMPS SHALL FOLLOW CURB GRADES.
2. CURB INLETS SHALL NOT BE LOCATED WITHIN 10' OF A CURB RAMP.
3. GUTTER SHALL PROVIDE A SMOOTH TRANSITION THROUGH THE RAMP.
4. DETECTABLE WARNING SURFACE SHALL BE CONSTRUCTED 2 INCHES AWAY FROM DEPRESSED CURB.
5. DETECTABLE WARNING SURFACE TO CONSIST OF TWO TEK-WAY PANELS OF SIZE 24 INCHES BY 30 INCHES. COLOR OF PANELS TO BE TERRACOTTA.
6. TEK-WAY PANELS TO BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS. DETAIL ASSUMES SETTING PANELS IN WET CONCRETE. PROVIDE 1 INCH CAVITY IF SETTING PANELS SEPARATE FROM CONCRETE POUR.
7. PANELS TO BE PROTECTED FROM CONSTRUCTION DEBRIS/DIRT UNTIL OVERALL PROJECT COMPLETE.
8. ALTERNATE SYSTEMS SHALL HAVE DETECTABLE WARNING THAT CONSISTS OF RAISED TRUNCATED DOMES WITH A DIAMETER OF 0.9" AT BOTTOM, 0.4" AT TOP, AND A NOMINAL HEIGHT OF 0.2" AND A NOMINAL CENTER TO CENTER SPACING OF 2.35". COLOR MUST BE OF A DULL RED HUE. ALTERNATE SYSTEMS MUST BE APPROVED BY THE TOWN ENGINEER.
9. DEPRESSED CURB HEIGHT CALCULATED TO ACHIEVE A 1:12 SLOPE FROM THE FLOWLINE TO THE TOP OF DEPRESSED CURB FOR STANDARD ROLLED CURB USED IN THE TOWN OF MARANA AND MAY NOT APPLY TO ALL SITUATIONS. THE CONTROLLING FACTOR OF ALTERNATE DESIGNS SHALL BE A 1:12 MAXIMUM SLOPE FROM FLOWLINE TO TOP OF DEPRESSED CURB.

APPROVED FOR DISTRIBUTION:

*Keith E. Brann, P.E.*  
 Keith E. Brann, P.E.,  
 Town Engineer

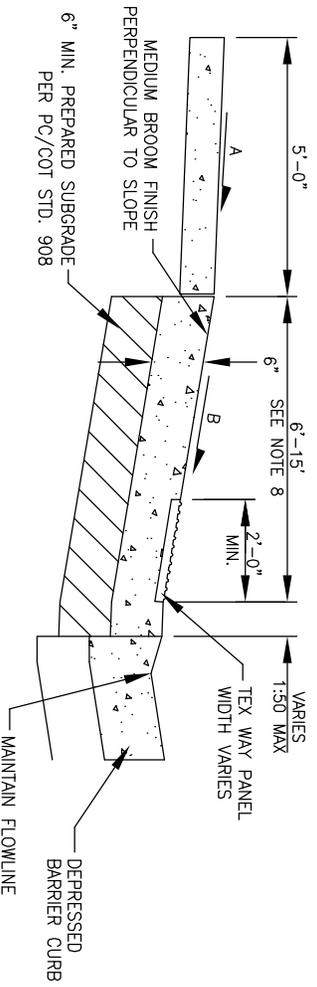
EXPIRES 6/30/2019



STANDARD DETAIL		DETAIL NO:
TYPE 2 CURB RAMPS		600-2
DATE: 10/2004	REVISED: 8/1/2016	SHEET 1 OF 1

NOT TO SCALE





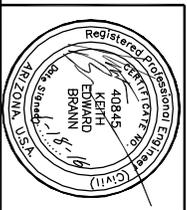
A 1:50 MAXIMUM SLOPE  
 B 1:12 MAXIMUM SLOPE, SEE NOTE 8

1. GRADES ON SIDEWALKS LEADING TO AND FROM THE RAMPS SHALL FOLLOW CURB GRADES.
2. CURB INLETS SHALL NOT BE LOCATED WITHIN 10' OF A CURB RAMP.
3. GUTTER SHALL PROVIDE A SMOOTH TRANSITION THROUGH THE RAMP.
4. DETECTABLE WARNING SURFACE TO CONSIST OF TWO TEK-WAY PANELS OF SIZE 24 INCHES BY 30 INCHES FOR TYPE 3 RAMPS AND SIZE 24 INCHES BY 24 INCHES FOR TYPE 3A AND 3B RAMPS - CUT AS NEEDED. COLOR OF PANELS TO BE TERRACOTTA.
5. TEK-WAY PANELS TO BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS. DETAIL ASSUMES SETTING PANELS IN WET CONCRETE. PROVIDE 1 INCH CAVITY IF SETTING PANELS SEPARATE FROM CONCRETE POUR.
6. ALTERNATE SYSTEMS SHALL HAVE DETECTABLE WARNING THAT CONSISTS OF RAISED TRUNCATED DOMES WITH A DIAMETER OF 0.9" AT BOTTOM, 0.4" AT TOP, AND A NOMINAL HEIGHT OF 0.2" AND A NOMINAL CENTER TO CENTER SPACING OF 2.35". COLOR MUST BE OF A DULL RED HUE. ALTERNATE SYSTEMS MUST BE APPROVED BY THE TOWN ENGINEER.
7. DEPRESSED CURB HEIGHT CALCULATED TO ACHIEVE A 1:12 SLOPE FROM THE FLOWLINE TO THE TOP OF DEPRESSED CURB FOR STANDARD BARRIER CURB USED IN THE TOWN OF MARANA AND MAY NOT APPLY TO ALL SITUATIONS. THE CONTROLLING FACTOR OF ALTERNATE DESIGNS SHALL BE A 1:12 MAXIMUM SLOPE FROM FLOWLINE TO TOP OF DEPRESSED CURB.
8. RAMP LENGTH TO BE A MINIMUM OF 6 FEET. RAMP MUST BE LENGTHENED AS NECESSARY DUE TO ADJACENT STREET SLOPE TO ACHIEVE EITHER A 1:12 MAXIMUM SLOPE UP TO A MAXIMUM LENGTH OF 15 FEET.

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*Keith E. Brann*  
 Keith E. Brann, P.E.,  
 Town Engineer

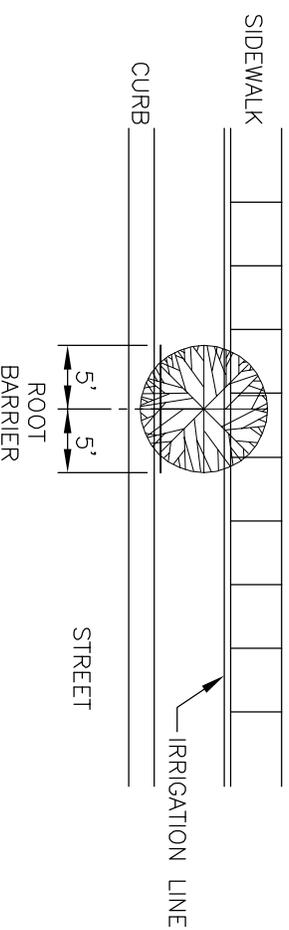
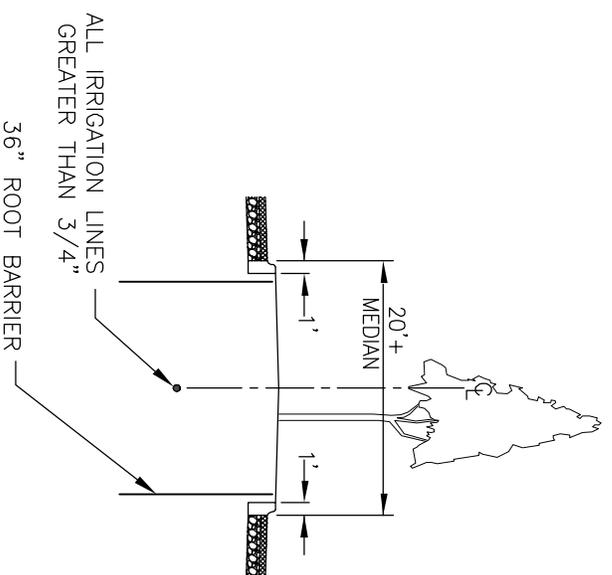
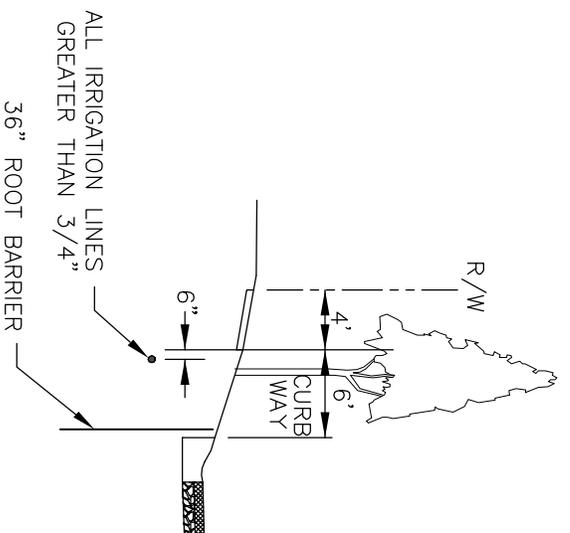
EXPIRES 6/30/2019



STANDARD DETAIL		DETAIL NO:
TYPE 3 CURB RAMPS		600-3
DATE: 10/2004	REVISED: 8/1/2016	SHEET 2 OF 2

NOT TO SCALE

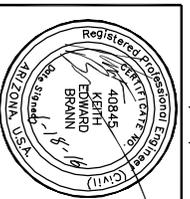
1. ALL IRRIGATION LINES GREATER THAN 3/4" IN DIAMETER SHALL BE PLACED AS SHOWN.
2. TREES SHOULD BE PLACED TO THE REAR OF A CURBWAY OR JUST OFF THE CENTERLINE OF A MEDIAN.
3. DEEP ROOT WATERING SYSTEMS ARE TO BE USED ON ALL LANDSCAPE PALETTES WITH TREES IN CURBWAYS OR MEDIANS.
4. 36" DEEP ROOT BARRIERS REQUIRED FOR ALL TREES WITHIN CURBWAYS.
5. 36" DEEP ROOT BARRIERS REQUIRED FOR MEDIAN TREES CLOSER THAN 6 FEET FROM CURB.
6. WHEN REQUIRED, ROOT BARRIERS SHALL EXTEND 5 FEET TO EITHER SIDE OF TREE MEASURED PERPENDICULAR TO PAVEMENT/CURB. TOP OF ROOT BARRIER EVEN WITH TOP OF FINISHED EARTHWORK/BELOW ROCK MULCH.



EXPIRES 6/30/2019

APPROVED FOR DISTRIBUTION:

  
Keith E. Brann, P.E.,  
Town Engineer

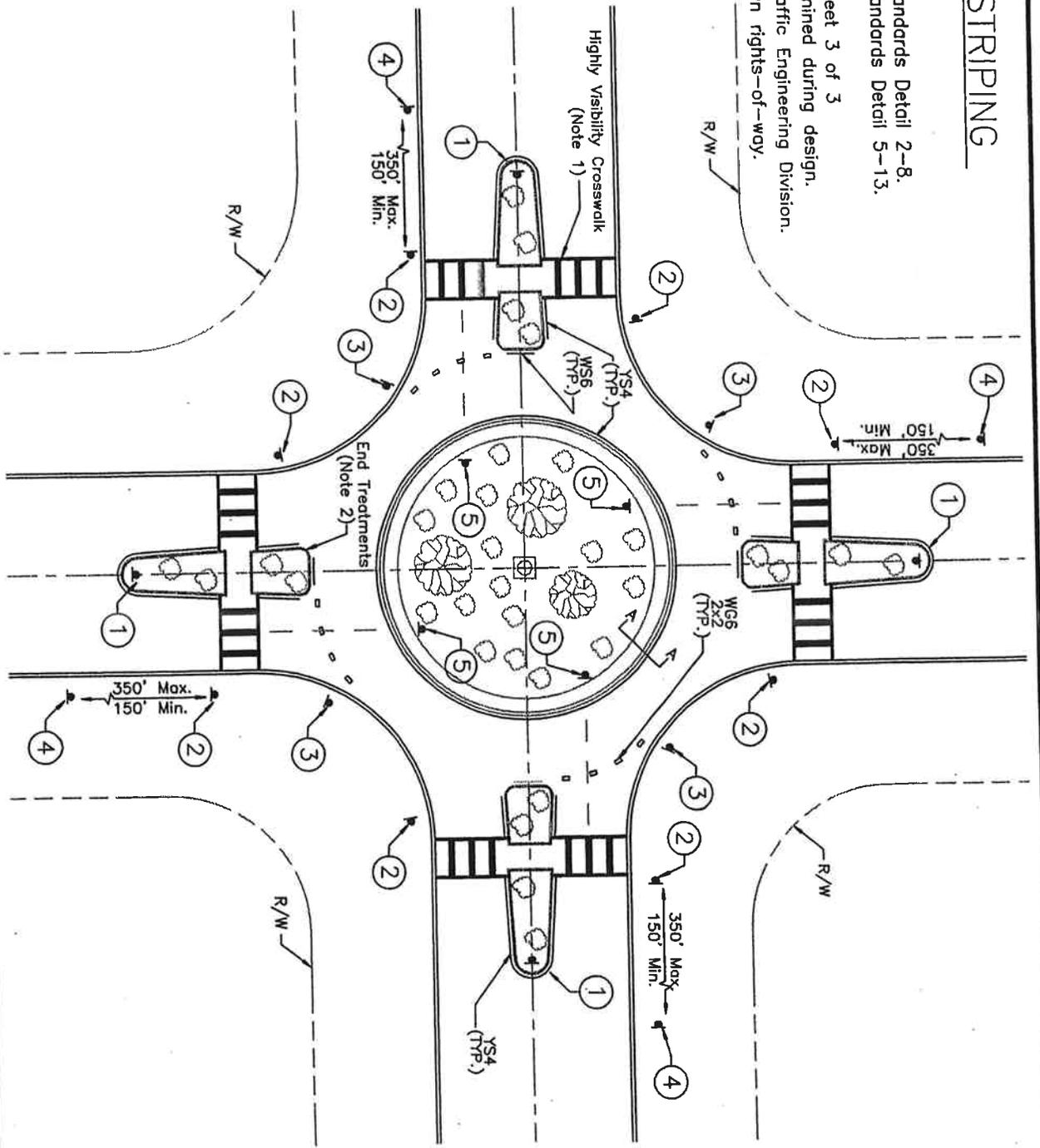


STANDARD DETAIL		NOT TO SCALE
LANDSCAPING PROTECTION		
DATE: 8/1/2016	REVISED:	DETAIL NO: 610-1
		SHEET 1 OF 1

# TYPICAL SIGNING AND STRIPING

**NOTES:**

1. See PCDDOT/COTDOT Pavement Marking Standards Detail 2-8.
2. See PCDDOT/COTDOT Pavement Marking Standards Detail 5-13.
3. See Sheet 2 of 3 for Sign Details
4. Cross Section A-A (Truck Apron), See sheet 3 of 3
5. Size and location of islands to be determined during design.
6. Landscaping shall be approved by the Traffic Engineering Division.
7. All signs shall be installed within the Town rights-of-way.



APPROVED FOR DISTRIBUTION:

*[Signature]*  
 Keith E. Brann, P.E.,  
 Acting Town Engineer



MARANA SUBDIVISION STREET STANDARDS

ROUNDABOUT

DETAIL NO:

700-1

DATE: 9/14/05

REVISED:

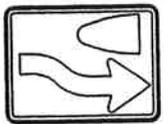
SHEET 1 OF 3

# SIGN DETAILS

**NOTES:**

1. ALL WARNING AND REGULATORY SIGNS SHALL BE TYPE III (HIGH INTENSITY) SHEETING, UNLESS OTHERWISE INDICATED.
2. ALL THE WARNING AND YIELD SIGNS ON COLLECTOR OR ARTERIAL ROADS NEED TO BE 36"
3. ALL THE WARNING AND YIELD SIGNS ON RESIDENTIAL ROADS NEED TO BE 30"
4. SIGNS MAY BE MODIFIED AND LOCATIONS ADJUSTED TO FIT CONDITIONS AS DIRECTED BY THE JURISDICTION TRAFFIC ENGINEER OR DESIGNEE.

1



R4-7  
(24"x30")

2



W11-2  
30" OR 36"  
FLUORESCENT YELLOW-GREEN



W16-7p  
(24"x12") OR (30"x18")  
FLUORESCENT YELLOW-GREEN

4



W2-6  
30" OR 36"  
BLACK ON YELLOW

5



R6-1R  
(36"x12")

3



R1-2  
30" OR 36"



Special  
(24"x18") OR (30"x24")  
BLACK ON WHITE



W16-12P  
(24"x18") OR (30"x24")  
BLACK ON YELLOW

APPROVED FOR DISTRIBUTION:

Keith E. Brann, P.E.,  
Acting Town Engineer



MARANA SUBDIVISION STREET STANDARDS

DETAIL NO:

ROUNDABOUT

700-1

DATE: 9/14/05

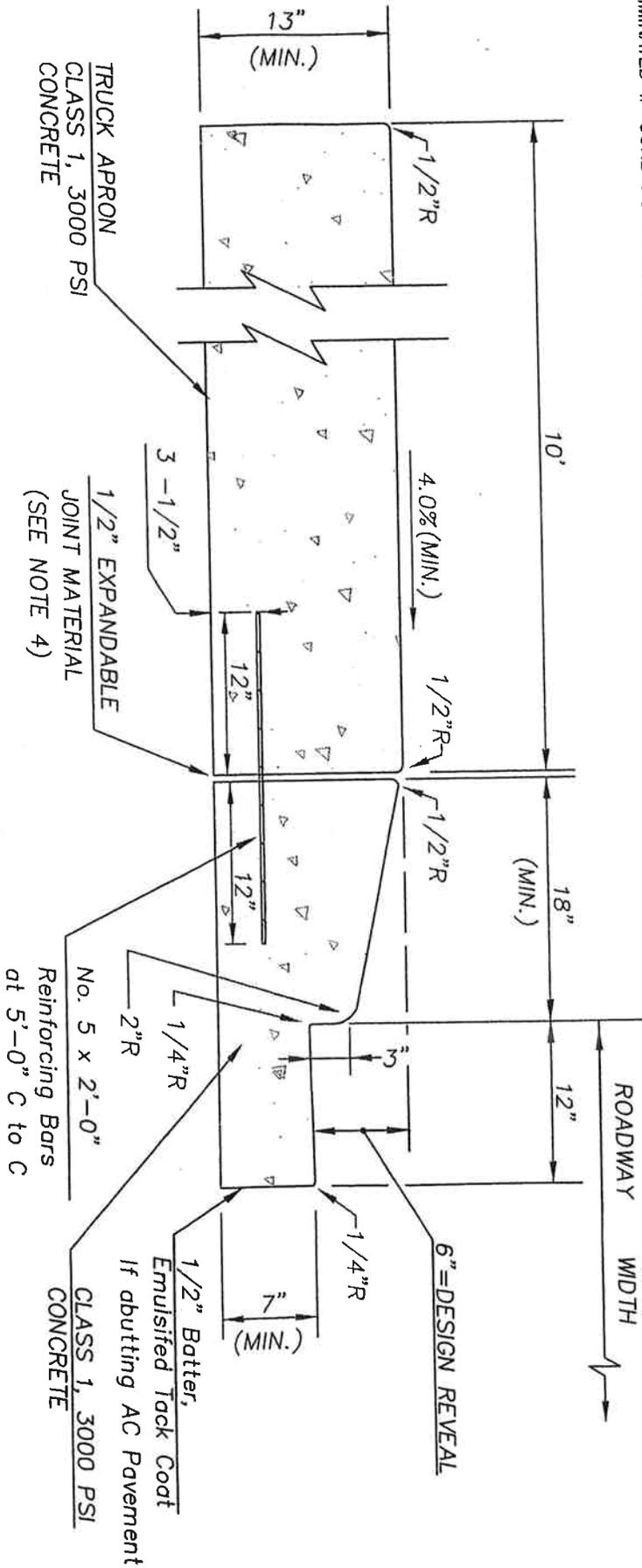
REVISED:

SHEET 2 OF 3

# MOUNTABLE CONCRETE CURB, GUTTER AND TRUCK APRON COMBINATION

**NOTES:**

1. WHEN THE SLOPE OF THE PAVEMENT IS AWAY FROM THE CURB AND GUTTER THE SLOPE OF THE GUTTER SHALL MATCH THE PAVEMENT CROSS SLOPE.
2. TRUCK APRON SHALL BE CLASS 1 CONCRETE, COLORED FULL DEPTH WITH RED PIGMENT AS APPROVED BY THE TOWN ENGINEER OR DESIGNER. (14 LBS. RED PIGMENT PER 94 LB. STOCK OF CEMENT, SCORED IN 12" BLOCKS. ONLY MINOR VARIATIONS IN COLOR WILL BE ACCEPTED.)
3. INSTALL 1/2" EXPANSION JOINT MATERIAL IN CURB AND GUTTER, AND IN TRUCK APRON AT 100' INTERVALS, AT STRUCTURES, AND AT BEGINNING AND END OF CURVES. CONTRACTION JOINTS SHALL BE PLACED AT 10' INTERVALS.
4. THE CONSTRUCTION JOINT AND THE 1/2" EXPANDABLE JOINT MATERIAL CAN BE ELIMINATED IF CURB POURED MONOLITHIC WITH TRUCK APRON.

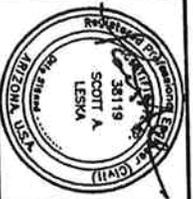


Cross section A-A

APPROVED FOR DISTRIBUTION:

*[Signature]*

Keith E. Brann, P.E.,  
Acting Town Engineer



MARANA SUBDIVISION STREET STANDARDS

ROUNDABOUT

DETAIL NO:

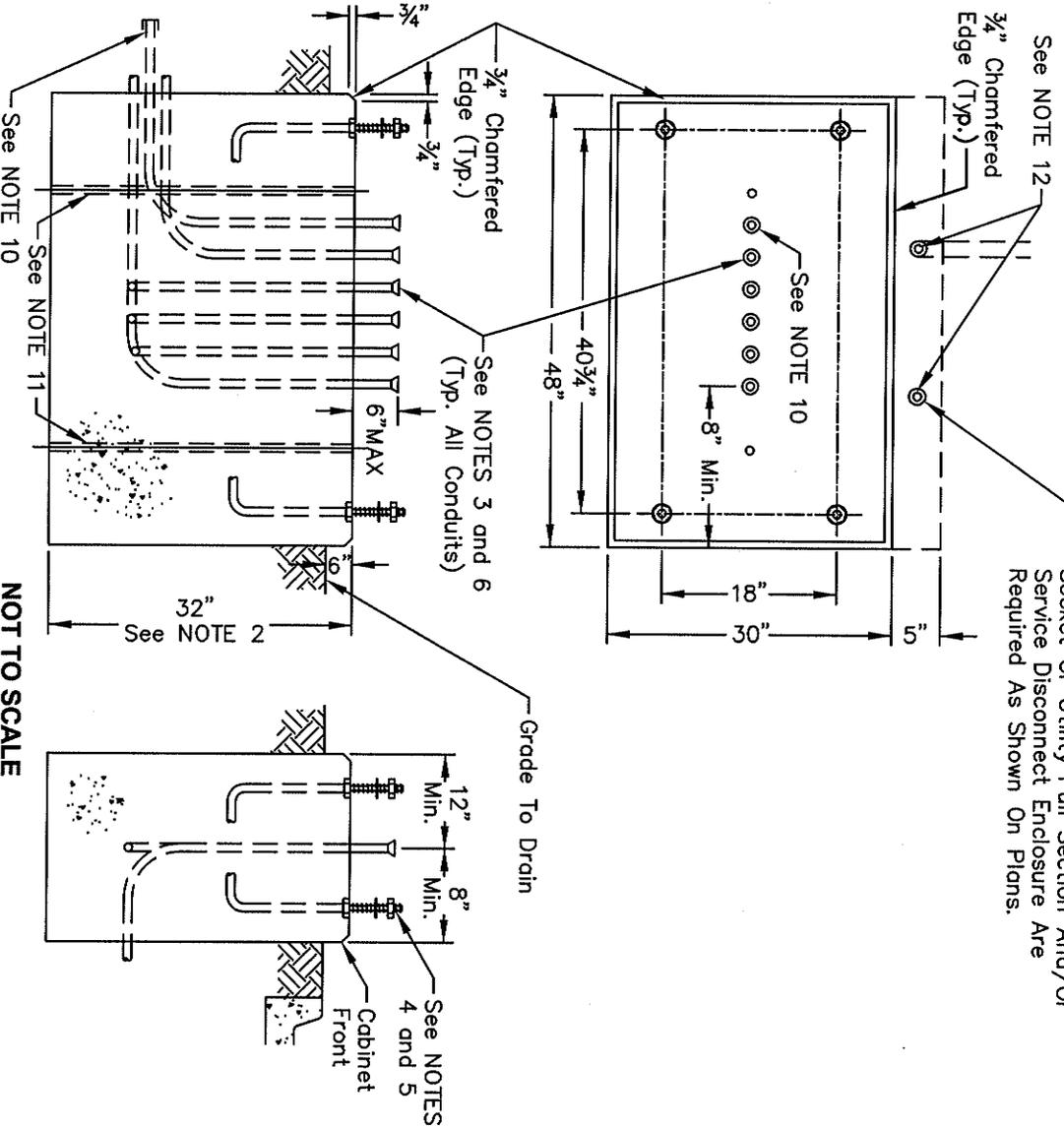
700-1

DATE: 9/14/05

REVISED:

SHEET 3 OF 3

Back Side Of Foundation Shall Be Increased 5" When EUSERC Meter Socket Or Utility Pull Section And/OR Service Disconnect Enclosure Are Required As Shown On Plans.



NOT TO SCALE

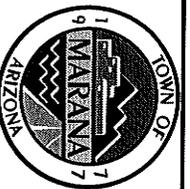
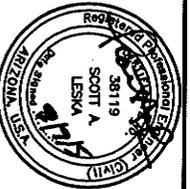
**NOTES:**

1. All materials and construction shall conform to the requirements of the Special Provisions and Standard Specifications.
2. Unstable soil may require deeper foundations. See Special Provisions and Standard Specifications.
3. For conduit size, location, and quantity, see Project Plans.
4. Anchor bolts shall be galvanized 3/4" x 12" x 4" complete with nuts and washers.
5. Anchor bolt's projection above foundation shall be 2" min. 2 1/2" max.
6. Conduit projection above foundation shall be 2 1/2" min. 4" max.
7. Use an approved silicon sealer RTV type gray in color or clear, between cabinet and foundation.
8. In unpaved areas a raised concrete pad foundation (36" x width of cabinet foundation x 4" thick) shall be installed in front of the cabinet (door side). Pad shall be set 2" below the foundation elevation. Slope pad away from cabinet at a 50:1 slope.
9. All cabinet foundations shall have two (2) 3/4" diameter x 10' long bonded copper ground rod with clamp.
10. Install 1-4" conduit for future use, stubbed and capped 24" past the edge of the foundation as directed by the Town Engineer or His/Her Designee.
11. 1" sleeve (for each ground rod) shall be inserted when foundation is poured. Install one (1) 3/4" diameter x 10' long bonded copper ground rod in each sleeve.
12. 4" sleeves for service conduits if an Electrical Utility Service Entrance Requirement Committee (EUSERC) meter socket or EUSERC utility pull section and/or service disconnect enclosure are required.
13. Prior to pouring concrete foundation, final approval of conduit placement from Town Engineer or His/Her Designee shall be obtained.
14. Contractor is responsible to make sure cabinet fits on bolt pattern.

APPROVED FOR DISTRIBUTION:

Keith E. Brann, P.E.,  
Acting Town Engineer

9/9/2005  
Date



STANDARD DETAIL

DETAIL NO:

FOUNDATION FOR TYPE IV, V  
CONTROLLER CABINETS

730-210

DATE: 9/9/05

REVISED:

SHEET 1 OF 1

**GENERAL TRAFFIC SIGNAL RESPONSIBILITIES:**

1. Materials installed as part of this Project shall be furnished and installed in accordance with the requirements of the following table:

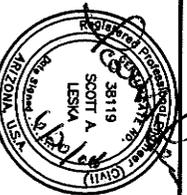
	Contractor Furnished	Contractor Installed/Constructed	Town Furnished	Town Installed
Traffic Signal Poles and Mast Arms	X	X		
Steel Poles and Anchor Bolts (With Nuts and Washers)	X	X		
Concrete Pole Foundation	X	X		
Type IV Traffic Signal Controller Cabinet(s) With Controller(s) and All Auxiliary/Incidental Equipment			X	X
Controller Cabinet Concrete Foundation with Anchor Bolts	X	X		
Electrical Service Pedestal			X	X
Electrical Service Pedestal Concrete Foundation	X	X		
All Wiring and Cabling (Including Bare Bond Wire and Pull Ropes)	X	X		
Concrete Pull Boxes	X	X		
Electrical Conduit	X	X		
Ground Rods and Connectors	X	X		
Traffic Signals and Mounting Assemblies	X	X		
Pedestrian Signals and Mounting Assemblies	X	X		
Pedestrian Push Button Stations with Signs	X	X		
Luminaires and Photocells	X	X		
Vehicle Detection Loops	X	X		
Emergency Vehicle Preemption Equipment		X	X	
Emergency Vehicle Preemption Wiring	X	X		
Video Detection System Equipment		X	X	
Video Detection System Wire and Cable		X	X	
Pan/Tilt/Zoom Color-B/W Video Equipment		X	X	
Pan/Tilt/Zoom Color-B/W Cable & Wire		X	X	
Internally Illuminated Street Name Sign(s) or Street Name Sign(s)	X	X		
Regulatory Signing	X	X		

All other appurtenances necessary for the operation of the traffic signal installation(s), except as modified on the Project Plans or as provided in the Special Provisions.

APPROVED FOR DISTRIBUTION:

6/20/2006

Keith E. Brann, P.E., Date  
Town Engineer



**GENERAL TRAFFIC SIGNAL RESPONSIBILITIES (CONTINUED):**

- The Contractor shall contact the Town of Marana Traffic Signal Maintenance and Operations Supervisor at (520)382-2500 a minimum of two (2) weeks prior to the scheduled installation of the cabinet(s). The Town of Marana will deliver the cabinet(s) to the Project Site on the day scheduled for installation.
- The Town of Marana will place the cabinet(s) onto the foundation(s). The Contractor shall be responsible for ensuring that the anchor bolts are positioned such that the cabinet(s) will align properly onto the foundation(s). Contractor shall secure cabinet(s) to the foundation.
- The Contractor shall be responsible for routing all conductors into the cabinet, and shall identify routing and connections of all cables and conductors as required in the 1994 Pima County/City of Tucson Standard Specifications for Public Improvements. The Town of Marana staff will terminate the conductors in the cabinet(s).
- The Contractor shall carefully disassemble and salvage all existing traffic signal and street lighting equipment that is not to remain or be relocated as shown on the Project Plans or as provided in the Special Provisions. All of the salvaged equipment shall be returned to the Town of Marana Operations Center (MOC), 5100 West Ina Road, Tucson AZ, 85743. The salvaged equipment shall be unloaded by the Contractor, as directed by the Town. Contact the Town of Marana Traffic Signal Maintenance and Operations Supervisor at (520) 382-2500 a minimum of two (2) working days (excluding weekends and Town recognized holidays) prior to delivering the equipment.
- Existing traffic signal operations shall be maintained throughout the duration of the Project as shown on the Project Plans or as called for in the Special Provisions unless approved by the Town Engineer or His/Her Designee.
- The Contractor shall obtain all required permits and shall be responsible for all traffic control related to the Project and the construction zone. The Contractor shall strictly conform and adhere to the approved Project Traffic Control Plan at all times.
- The Contractor shall install/construct all items associated with the Project as called for on the Project Plans or in the Special Provisions.
- The Contractor shall load, transport and unload all items specified on the Project plans supplied by both the Contractor and the Town to the job site, unless specified otherwise by the Engineer. The Contractor shall notify the Town of Marana and its representatives a minimum of two (2) working days (excluding weekends and Town recognized holidays) in advance. Contact the Traffic Signal Maintenance of Operations Supervisor at (520) 382-2500.

**Note:** It is intended that the Notes herein of the Traffic Signal Standard Responsibilities shall be considered part of the Construction Contract Documents. If the Project Plans differ from the notes herein (Town of Marana Standard Detail 730-400) the Project Plans shall note the change on the Project Plan's General Note Sheet and be edited where appropriate to fit the Project.

STANDARD DETAIL

DETAIL NO:

**GENERAL TRAFFIC SIGNAL RESPONSIBILITIES**

730-400

DATE: 9/9/05

REVISED: 06/20/06

SHEET 1 OF 1

**GENERAL TRAFFIC SIGNAL NOTES (CONTINUED):**

34. The Contractor shall coordinate with the telephone utility public improvement coordinator to verify the location of the telephone connection at each intersection.

35. The Contractor shall "pothole" or hand dig all foundations prior to the placement of all cabinets, and traffic signal and/or street light poles.

36. The Contractor shall not make or begin any excavation, digging or any work associated with moving any earth or ground within any public Town rights-of-way, utility easements, and/or any expressed or implied private property without first determining whether any underground facilities (shown and not shown on the Project Plans) will be encountered, and if so where they are located from each and every public utility, municipal corporation or other entity having the right to bury such underground facility within the public right-of-way, private property or easement within the Project limits. The Contractor shall take all necessary measures for the location and control of such facilities in a careful and prudent manner.

37. Any equipment and/or utilities within the project (shown or not shown on the plans) that is damaged or destroyed by the contractor shall be repaired or replaced at the sole expense of the Contractor.

38. The Contractor shall immediately report all conflicts regarding the overhead utilities and the Project signal equipment that is to be installed as indicated on the Project Plans to the Town Engineer and the utility of jurisdiction. If required, the Contractor shall coordinate all utility and/or traffic signal equipment relocation as required with the Town, the Engineer of Record and the Utility Company.

39. The Contractor shall pothole all utilities (shown and not shown on the Project plans) prior to boring, trenching, or directional drilling to verify depths and locations.

**Note:**

It is intended that Notes 1-39 of this Traffic Signal Standard shall be considered as part of the Construction Contract Documents. If the Project Plans differ from the notes herein (Town of Marana Standard Detail 730-401) the Project Plans shall note the change on the Project Plans General Note Sheet and be edited where appropriate to fit the Project.

It is intended that Notes 40-41 of this Traffic Signal Standard be placed on the Project Plans in their entirety and edited where appropriate to fit the Project.

40. The Design Speed for \_\_\_\_\_ is \_\_\_\_\_ mph. The Posted Speed for \_\_\_\_\_ is \_\_\_\_\_ mph.

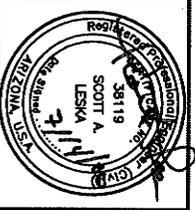
41. The Contractor is advised of the utility contacts as indicated in the following table:

Utility	Contact	Phone No.
Tucson Electric Power Co	Gary Goulin	
QWEST	Steve Johnson	
AT&T Communications	Mike O'Neill	
Comcast Cable Communications	Mike Gin	
Pima County Wastewater Management	Bob Decker	
Southwest Gas Corporation	Robert Daniels	
Sprint Communications	Colin Sword	
Marana Water Department	Brod Despain	
Tucson Water Department	Tony Tineo	
Trico Electric Cooperative	Chuck Wilcox	

(The designer shall coordinate, verify, and list all utility companies and contacts within the Project limits, and provide the correct information in the table above.)

APPROVED FOR DISTRIBUTION:

07/14/2006  
 Keith E. Brann, P.E., Date  
 Town Engineer



STANDARD DETAIL	DETAIL NO:
GENERAL TRAFFIC SIGNAL NOTES	730-401d
DATE: 9/9/05	REVISED: 07/14/2006
	SHEET 3 OF 3

**GENERAL TRAFFIC SIGNAL NOTES (CONTINUED):**

17. IMSA 19-1, 16-conductor solid wire cable shall be installed continuous and unspliced from the controller cabinet to the Type "A" or Type "G" pole on each corner. At locations where there are no Type "A" or Type "G" poles, the 16-conductor cable shall be installed to the No. 7 pull box on that corner for future use with a minimum of 30' slack. See Town of Marana Traffic Signal Cable Schematic Standard Detail and Traffic Signal Wiring Schematic Standard Detail for details.
18. See Town of Marana Typical Traffic Signal Wiring Schematic for wiring details for Vehicular Signal Heads, Pedestrian Signal Heads, Pedestrian Pushbuttons, and EYPE installations.
19. All vehicle detection loop wire shall be #14 AWG, IMSA 51-5-1985 cable. Detector lead-in cables shall be #14 AWG, IMSA 50-2-1984 cable. The detector lead-in cable shall be continuous and unspliced between the controller cabinet and the pull box adjacent to loop. Provide a minimum of five (5) feet of slack as measured from the lip of the pull box opening in the pull box adjacent to the loop detector.
20. All telephone interconnect cable, and detector lead-in cable shall be continuous and unspliced.
21. The video detection cable shall be installed, continuous and unspliced, from the video camera mounting (attached to the luminaire most arm) to the controller cabinet.
22. The emergency vehicle preemption sensor cable shall be 3M-Opticom Detector Cable Model No. 138 or approved equal as specified by the Town Engineer or His/Her Designee.
23. The conductors for the emergency vehicle preemption sensor and beacon shall be routed to the traffic signal head at the most arm tip or as specified on the Project Plans, Special Provisions and/or the Town Engineer or His/Her Designee. Provide lengths as required by the Town Engineer or His/Her Designee.
24. The location of preemption sensors shall be in accordance with Standard Details 730-410 thru 730-417 or as approved by the Town Engineer prior to the installation of the sensors. All vehicle detection loops shall be centered within the pavement of the travel lane or as approved by the Town Engineer.
25. Vehicle Detection Loops shall be installed prior to the final lift of pavement. For loops installed after the final lift, detection loop sawcuts shall be flushed with water under pressure and then dried with air under pressure prior to applying loop sealant.
26. All side by side 6' X 6' loops shall have a separate Detector Loop Lead-in Cable.
27. All signal housings shall be polycarbonate and black. All visors shall be painted black and material approved by the Town Engineer or His/Her Designee prior to ordering and installation.
28. All vehicular signal faces shall be 12 inch and all lenses shall be polycarbonate. All signal indications shall be LED, except the yellow ball and yellow arrow indications mounted overhead on a mast arm, which shall be incandescent. All yellow indications (yellow ball and yellow arrow) within a vehicular signal face, not mounted on an overhead mastarm, shall be LED. All Pedestrian signal faces shall be LED Countdown Style Pedestrian Signal Heads as provided in the MUTCD 2003 ed. (Section 4E.07)
29. There shall be a minimum of two circuits (each with a separate electrical phase) for the intersection safety lighting and internally illuminated Street Name Sign (ISNS) circuit. There shall be a minimum of two circuits provided to each pole's hand hole with solid No. 10 AWG THHW conductors. The luminaires shall be wired such that circuit No. 1 luminaires are on its diagonally opposite counterpart. The other diagonally opposing luminaires shall be wired on circuit No. 2. The ISNS shall be wired using the opposite circuit from the luminaire, on the same pole, that the luminaires are wired. All ISNS shall be installed and wired from the pull box to the ISNS unspliced.
30. Three (3) No. 10 AWG-THHW Conductors shall be installed from each luminaire to the pole's adjacent pull box that the luminaire is mounted on and shall be unspliced, leaving a minimum of five (5) feet of slack as measured from the pull box lip opening. Install a 15-amp in-line fuse for each luminaire in the associated #7 pull box.
31. For each luminaire circuit, three (3) conductors, THHW No. 10 AWG, shall be pulled from the power service cabinet to the poles adjacent pull box unspliced.
32. Prior to construction of pole foundations, grade slope to ensure that top of foundations are not exposed more than 6" above final grade. Grade all pole foundations, cabinet foundations, pull boxes and the ilk such that drainage of water flows away from the equipment being constructed and/or installed.
33. The Contractor shall contact the electrical utility public improvement coordinator to verify the service connection requirements and the location of the electric service connection for the traffic signal at each intersection. The Contractor shall be responsible for excavating and backfilling the trench and installing any necessary sleeves under sidewalks or driveways. The Contractor is responsible for installing the required conduit infrastructure between the service point and the UPS/meter pedestal according to the utility electrical service provider's requirements. The electrical utility will install the electrical cable in the conduit between these two locations or as provided on the Project Plans.

APPROVED FOR DISTRIBUTION:

  
 Keith E. Brann, P.E., Date  
 Town Engineer

07/14/2006



STANDARD DETAIL

DETAIL NO:

GENERAL TRAFFIC SIGNAL NOTES

730-401a

DATE: 9/9/05

REVISED: 07/14/2006

SHEET 2 OF 3

**GENERAL TRAFFIC SIGNAL NOTES:**

1. All equipment/materials and construction shall comply with the requirements contained in the Town of Marana Standard Details (latest edition), the Project's Supplemental Specifications, the Special Provisions, the Project Plans, the 2003 Pima County/City of Tucson "Standard Specifications for Public Improvements", and the Pima County/City of Tucson "Standard Details for Public Improvements".
2. All pedestrian push button assemblies shall comply with current ADA requirements. The pedestrian pushbutton signs shall be the R10-3e as identified in the Manual on Uniform Traffic Control Devices (MUTCD), latest edition.
3. Internally Illuminated Street Name Signs (ISNS) shall be installed such that the sign is mounted directly to the vertical shaft of the pole, located above the signal mast arm and positioned such that the sign is side mounted on the street side of the pole. The Contractor shall submit a sign detail and mounting detail to the Town for review a minimum of three (3) weeks prior to the estimated installation date for Town's approval.
4. The exact location of each new pole foundation, pull box, controller cabinet foundation, and UPS/electric service pedestal foundation shall be approved by the Town Engineer or His/Her Designee prior to final placement, installation, and/or construction.
5. The top of the pole foundation shall be level and six (6) inches above the finished grade. Provide extended bolts for all pole foundations to allow for future elevation adjustments.
6. All Conduit, Cable, Wire, Poles, Signs, Equipment, Materials and Appurtenances supplied for the Project shall be furnished and purchased new and unused. The new equipment, materials and appurtenances shall be ordered and delivered for this specific Project only. The Contractor shall provide a submitted list of all proposed materials along with the material specifications to the Town for all materials to be incorporated in the Project to the Town Engineer for review and approval prior to construction. The Town Engineer shall inspect and approve the said requested equipment, material and/or appurtenances prior to use and/or installation. The said material in no way shall be used without written consent from the Town Engineer. The Town reserves the right to refuse to allow the installation of any and all equipment the Contractor submits for approval if it chooses without cause, justification and/or recourse. If Contractor installs the materials without prior written consent from the Engineer, the Contractor shall remove and replace the equipment with acceptable new equipment and/or material(s) at his/her sole expense.
7. All new conduit as shown on the Project Plans shall be installed a minimum of 30 inches below finished grade. Conduit installed under roadways, driveways, or any open areas subject to vehicles, or conduits with conductors that have voltages over 250 volts, shall be installed a

7. minimum of 36 inches below finished grade unless stated otherwise on (cont.) the Project Plans or in the Special Provisions.

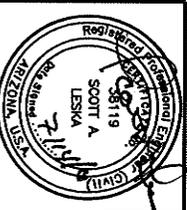
8. Any conduit installed shallower than 30 inches below finished grade shall be encased in concrete per Pima County/City of Tucson "Standard Specifications for Public Improvements", 2003 edition, Subsection 732-3.01 (G).
9. Prior to the Town's acceptance and prior to pulling conductor, cable, wire and/or fiber optic cables, all conduit(s) (new and existing) to be incorporated into the new system as provided for on the Project Plans shall be cleaned and blown out with compressed air in the presence of the Town's inspector. A properly sized conduit piston or mandrel shall be pulled through the entire conduit system in the presence of the Town's inspector prior to conductor, cable or wire installation to ensure that no obstructions or debris exist in the conduit. No water or moisture shall remain in conduit(s) prior to installing conductors.
10. Conduit installed under existing paved driveway(s), sidewalk(s), and pavement that are not scheduled to be reconstructed as part of the Project shall be installed by means of boring or directional drilling.
11. Pull boxes shall not be installed within concrete curb access ramp(s) or sidewalk(s). Any pull boxes installed behind curb(s) shall be installed between the curb and the proposed/future sidewalk or beyond the proposed/future sidewalk in accordance with the Project Plans and Special Provisions. An exception to this requirement is permitted for pull boxes installed within a median or as otherwise called for on the Project Plans, Special Provisions, or by the Town Engineer or His/Her Designee.
12. Any pull boxes installed along an uncurbed roadway shall be installed adjacent to, but not within, the shoulder.
13. A 3/4" diameter x 10' long ground rod (copper) shall be installed in all #7 pull boxes used for the High Voltage conductors. A 3/4" diameter x 10' long ground rod (copper) shall be installed in the home run pull box (No. 7 with extension) adjacent to the controller cabinet. Two ground rod clamps shall be furnished for grounding the ground wire on each ground rod.
14. Two (2) 3/4" diameter x 10' long ground rods (copper) shall be installed in the controller cabinet foundation a minimum of 8 feet apart. See Town of Marana's Controller Cabinet Foundation Standard Detail (730-210) for details.
15. The high voltage cables and conductors shall be separated from the low voltage cables and conductors, and shall be installed/constructed in separate conduit.
16. IMSA 19-1 20-conductor solid wire cable shall be installed continuous and unspliced from the controller cabinet through the No. 7 pull box on each corner to the poles traffic signal head wire splicing compartment.

APPROVED FOR DISTRIBUTION:

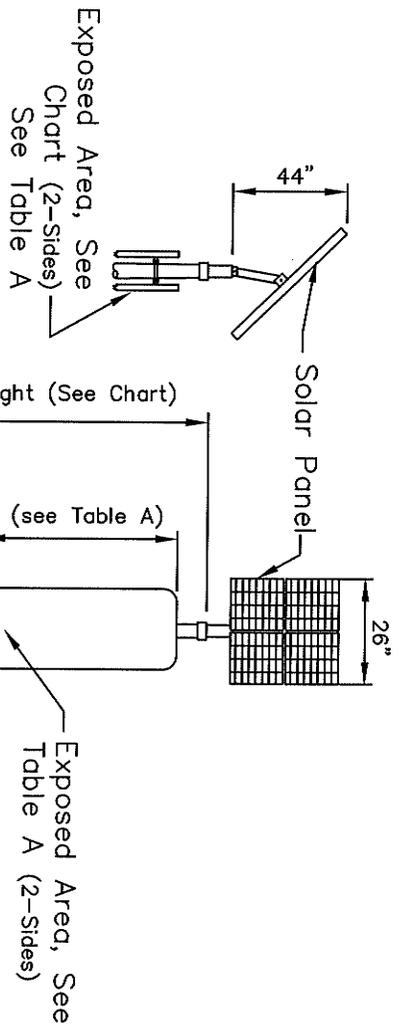
07/14/2006

Keith E. Brann, P.E.,  
Town Engineer

Date



STANDARD DETAIL		DETAIL NO:
GENERAL TRAFFIC SIGNAL NOTES		730-401a
DATE: 9/9/05	REVISED: 07/14/2006	SHEET 1 OF 3



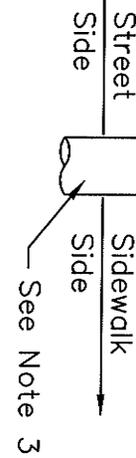
Pole Height	Y	Max. Exposed Area
7'	4.5'	45 sq. ft.
10'	7.5'	40 sq. ft.
12'	9.5'	35 sq. ft.
15'	12.5'	30 sq. ft.

**Table A**

Pole Height	Y	Max. Exposed Area
7'	4.5'	30 sq. ft.
10'	7.5'	25 sq. ft.
12'	9.5'	20 sq. ft.
15'	12.5'	15 sq. ft.

**Table B**

**Type A Pole With Solar Panel**  
Not To Scale



**Type A Pole With Signal Head**  
Not To Scale

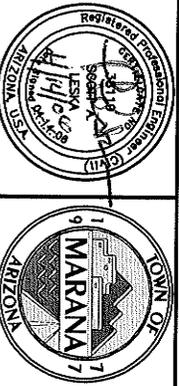
**NOTES:**

1. A maximum of one (1) four-sided signal head (4-Q) shall be installed on the pole as shown.
2. The Designer shall provide additional structural analysis for any deviations from the dimensions shown which will result in increased structural loading.
3. Foundation shall be a minimum of 6' in depth as measured from the top of finished grade and a minimum of 3' in diameter. All other foundation requirements shall adhere to Pima County/City of Tucson's Standard Details for Public Improvements, 2003 Ed.
4. The total exposed area shall be measured by the largest exposed area of a single installed item. Items may include signs, traffic signal heads, controller cabinets, etc.

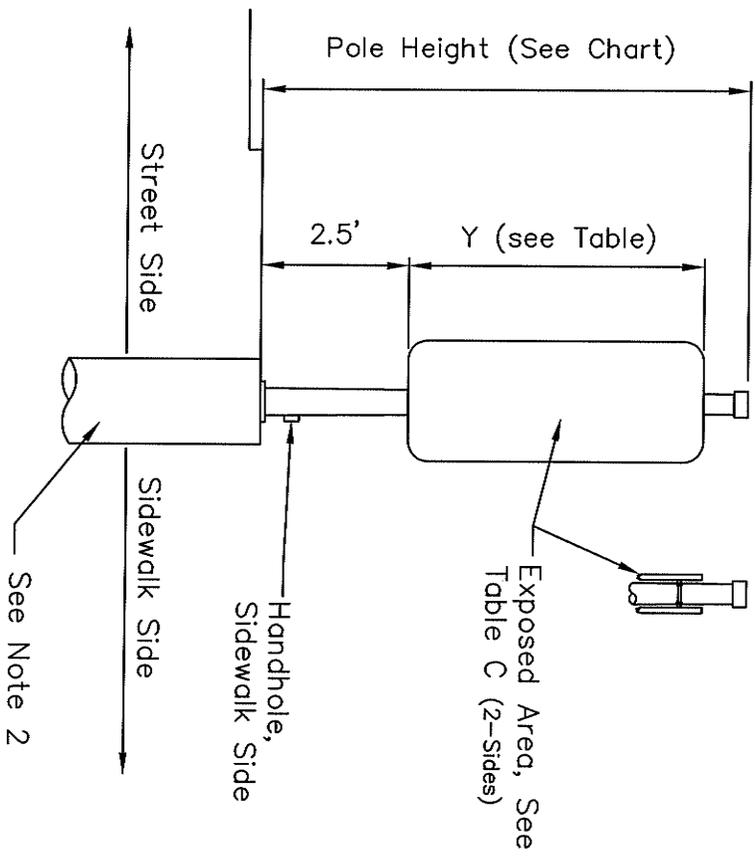
APPROVED FOR DISTRIBUTION:

Keith E. Brann, P.E.,  
Town Engineer

4/14/2006  
Date



STANDARD DETAIL		DETAIL NO.:
POLE LOADING DETAIL		730-408
TYPE A POLE		
DATE: 4/14/06	REVISED:	SHEET 1 OF 2



Type A Pole  
Not To Scale

APPROVED FOR DISTRIBUTION:

Keith E. Brann, P.E.,  
Town Engineer

4/14/2006  
Date

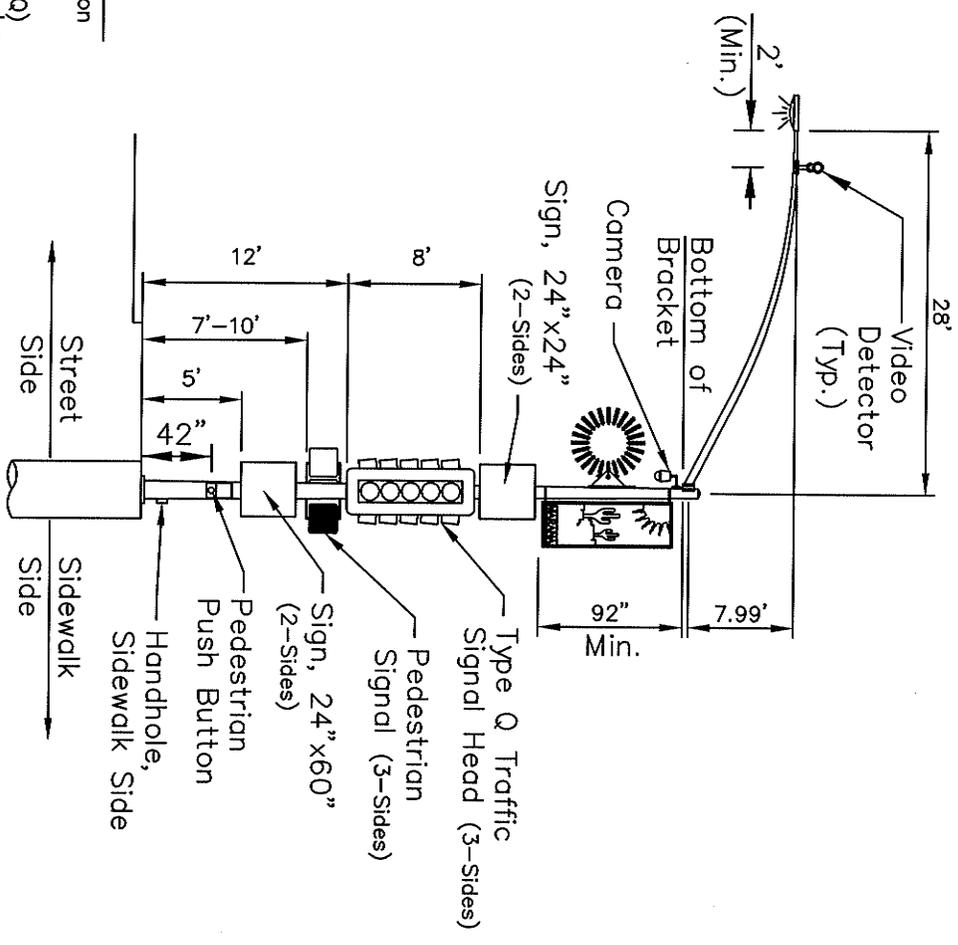


STANDARD DETAIL		DETAIL NO:
POLE LOADING DETAIL		730-408
DATE: 4/14/06	REVISED:	SHEET 2 OF 2

Pole Height	Y	Table C	
		Max. Exposed Area	Max. Exposed Area
7'	4.5'	60 sq. ft.	35 sq. ft.
10'	7.5'	55 sq. ft.	30 sq. ft.
12'	9.5'	50 sq. ft.	25 sq. ft.
15'	12.5'	45 sq. ft.	20 sq. ft.

6ft Drilled Shaft  
3ft Drilled Shaft

- NOTES:**
- The Designer shall provide additional structural analysis for any deviations from the dimensions shown which will result in increased structural loading.
  - Foundation shall have a minimum depth as shown in Table C, and shall be measured from the top of finished grade. The foundation shall have a minimum diameter of 3'. All other foundation requirements shall adhere to Pima County/City of Tucson's Standard Details for Public Improvements, 2003 Ed.
  - The total exposed area shall be measured by the largest exposed area of a single installed item. Items may include signs, traffic signal heads, controller cabinets, etc.



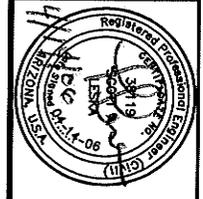
Type Q Pole  
30' Mast Arm  
Not To Scale

- NOTES:**
1. A maximum 20' length mast arm shall be installed on the Type G pole standard.
  2. A maximum of one (1) three-sided signal head (3-Q) and one (1) three-sided pedestrian signal head shall be installed on the pole as shown.
  3. Mast arm dimensions are measured from bracket connection point of upright to tip of mast arm.
  4. The Designer shall provide additional structural analysis for any deviations from the dimensions shown which will result in increased structural loading.

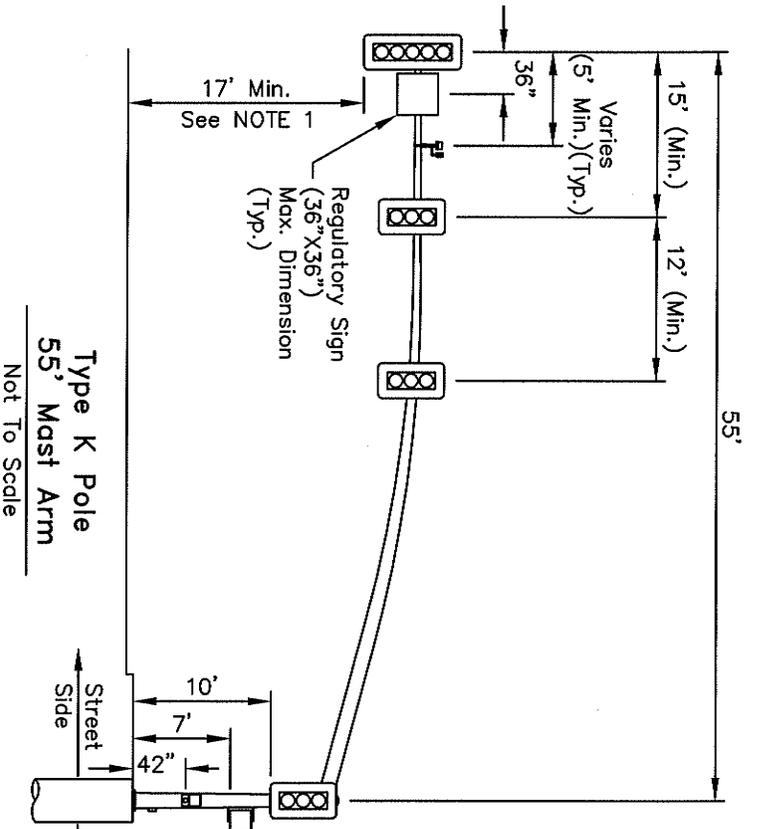
APPROVED FOR DISTRIBUTION:

4/14/2006

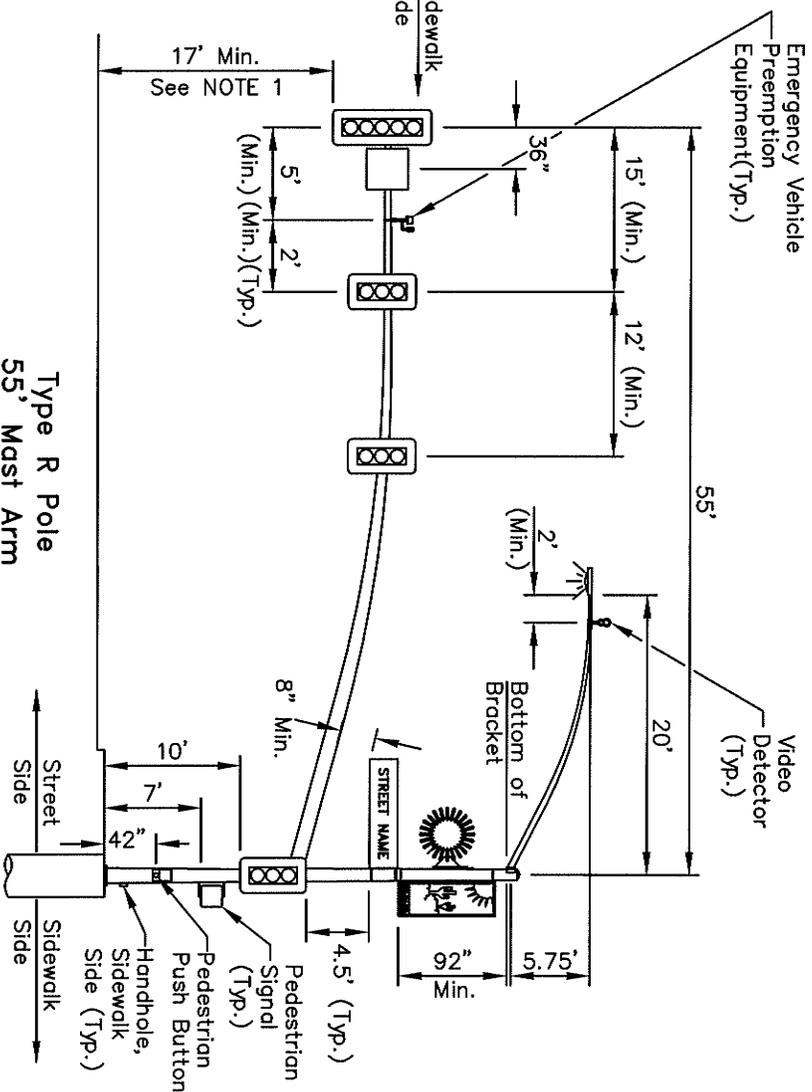
Keith E. Brann, P.E.,  
Town Engineer



STANDARD DETAIL		DETAIL NO:
POLE AND MAST ARM LOADING DETAIL		730-409
TYPE G POLE WITH 20 FT. MAST ARM		
DATE: 4/14/06	REVISED:	SHEET 1 OF 1



**Type K Pole  
55' Mast Arm**  
Not To Scale



**Type R Pole  
55' Mast Arm**  
Not To Scale

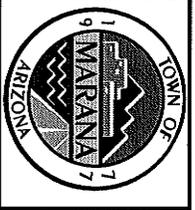
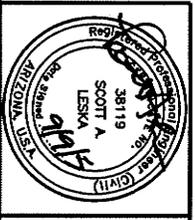
- NOTES:**
1. There shall be a minimum of 17' clearance between the surface of the pavement and the bottom of each signal head back plate mounted on the mast arm.
  2. A maximum of 3 signal heads (1-Q, 2-F) may be installed on the 55' mast arm as shown.
  3. Mast arm dimension measured from center of upright to tip of mast arm.
  4. The Designer shall provide additional structural analysis for any deviations from the dimensions shown which will result in increased structural loading.

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9/9/2005

Keith E. Brann, P.E.,  
Acting Town Engineer

Date



STANDARD DETAIL

DETAIL NO.:

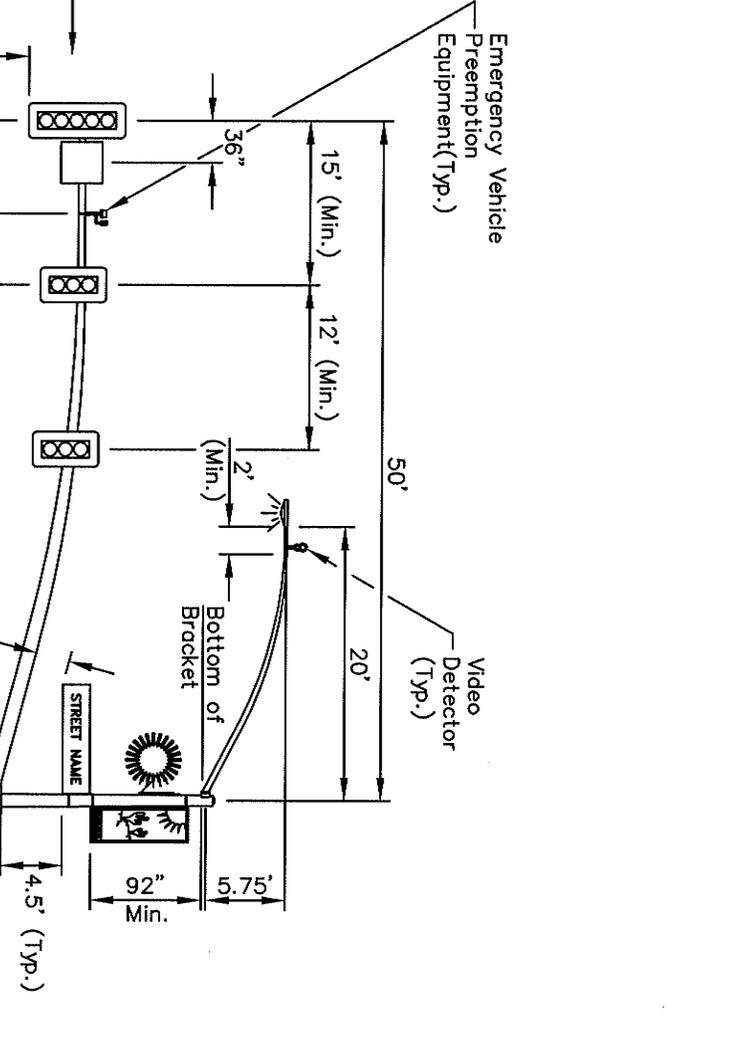
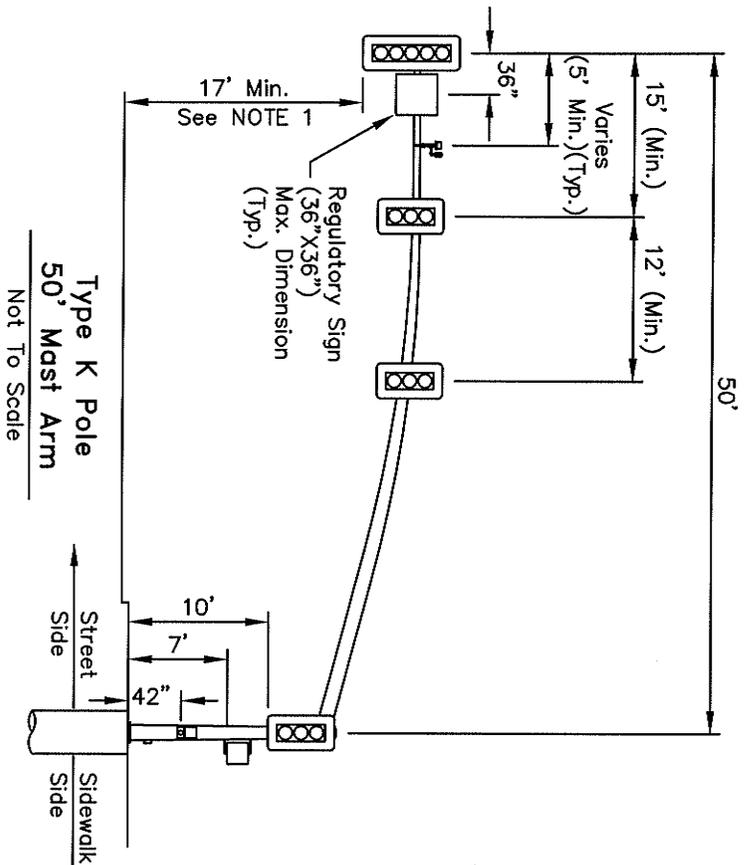
**MAST ARM LOADING DETAIL  
TYPE K AND R POLE WITH 55 FT. MAST ARM**

730-410

DATE: 9/9/05

REVISED:

SHEET 1 OF 1



- NOTES:**
1. There shall be a minimum of 17' clearance between the surface of the pavement and the bottom of each signal head back plate mounted on the mast arm.
  2. A maximum of 3 signal heads (1-Q, 2-F) may be installed on the 50' mast arm as shown.
  3. Mast arm dimension measured from center of upright to tip of mast arm.
  4. The Designer shall provide additional structural analysis for any deviations from the dimensions shown which will result in increased structural loading.

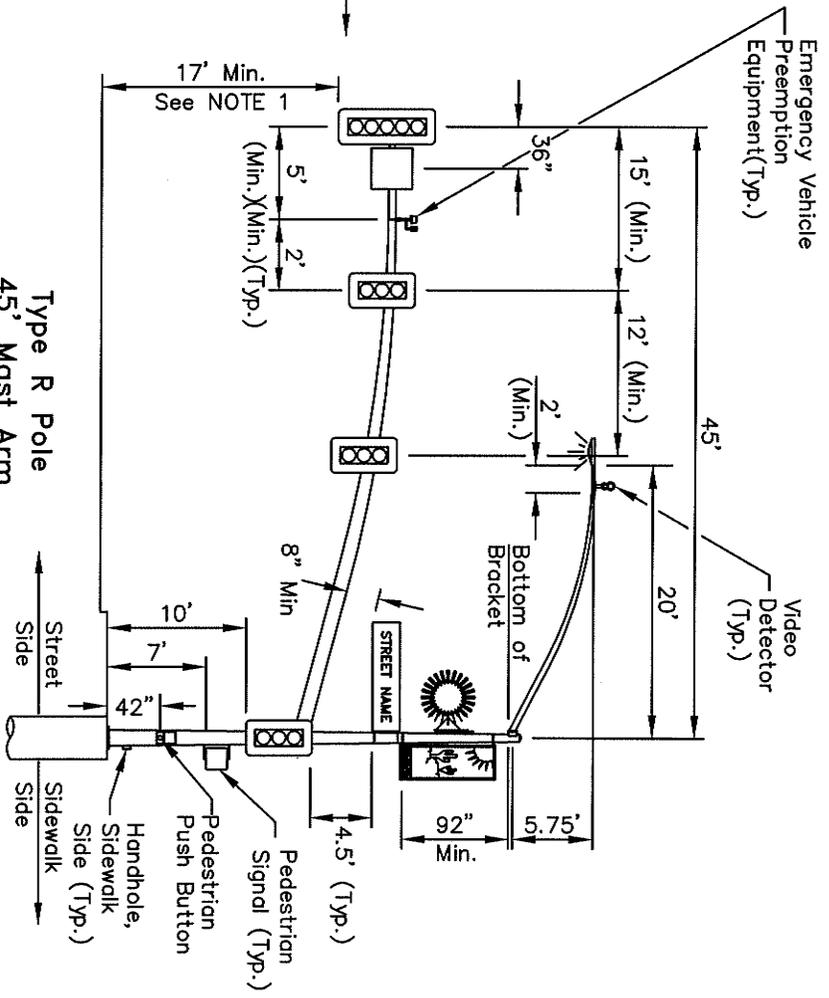
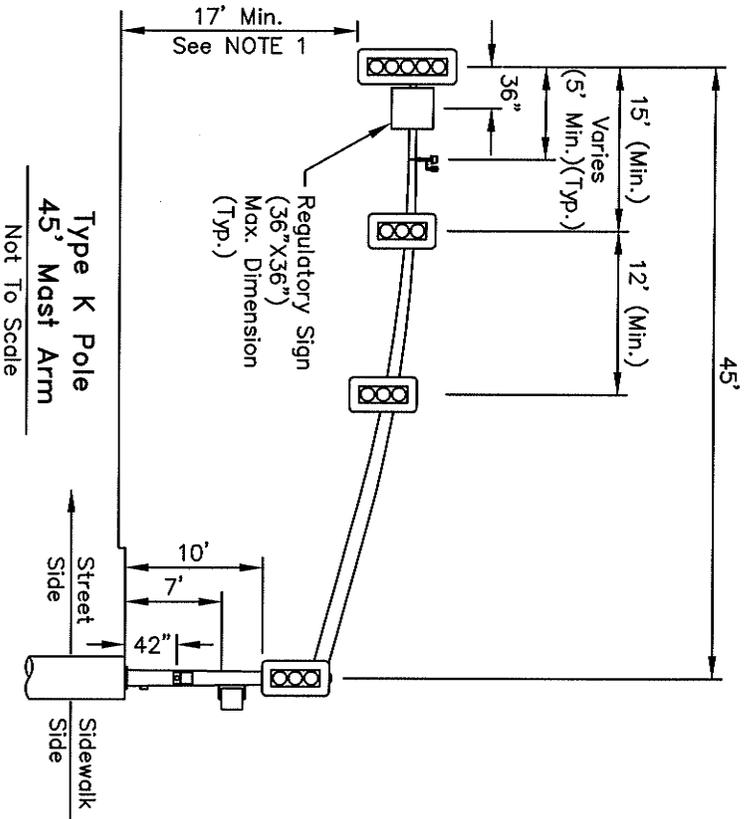
APPROVED FOR DISTRIBUTION:

Keith E. Brann, P.E.,  
Acting Town Engineer

9/9/2005  
Date



STANDARD DETAIL		DETAIL NO.:
MAST ARM LOADING DETAIL		730-411
TYPE K AND R POLE WITH 50 FT. MAST ARM		
DATE: 9/9/05	REVISED:	SHEET 1 OF 1



- NOTES:**
1. There shall be a minimum of 17' clearance between the surface of the pavement and the bottom of each signal head back plate mounted on the mast arm.
  2. A maximum of 3 signal heads (1-Q, 2-F) may be installed on the 45' mast arm as shown.
  3. Mast arm dimension measured from center of upright to tip of mast arm.
  4. The Designer shall provide additional structural analysis for any deviations from the dimensions shown which will result in increased structural loading.

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9/9/2005

Keith E. Brann, P.E.,  
Acting Town Engineer



STANDARD DETAIL

DETAIL NO:

MAST ARM LOADING DETAIL

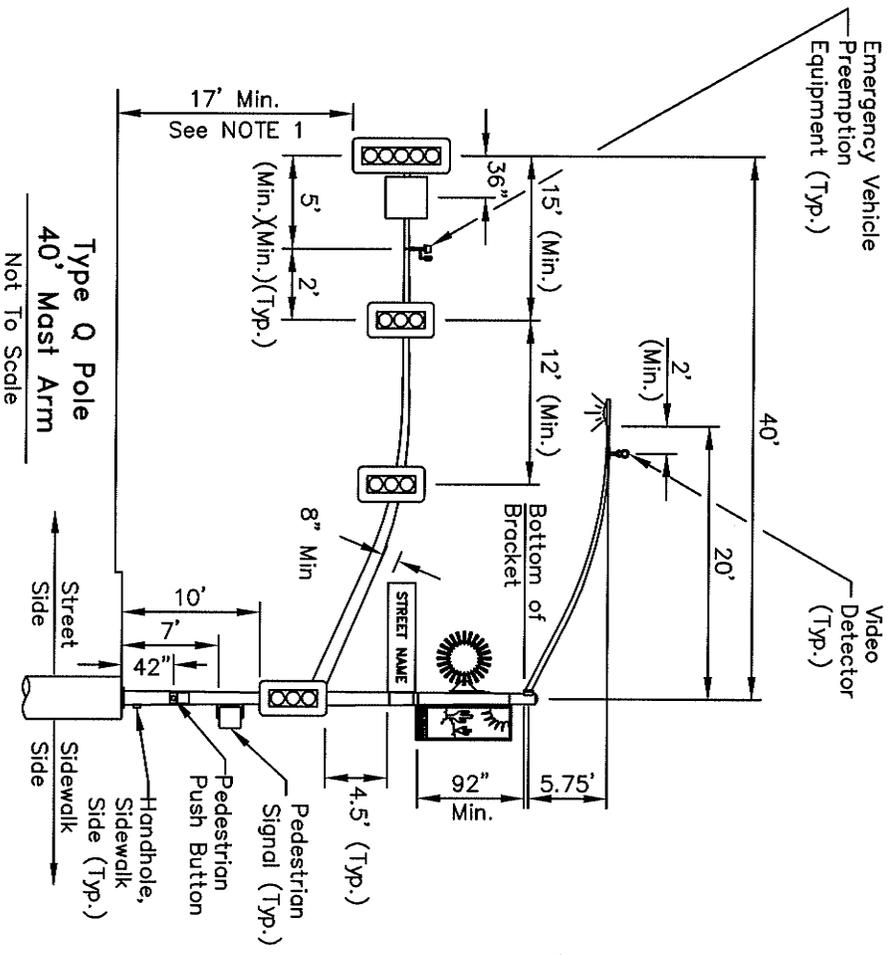
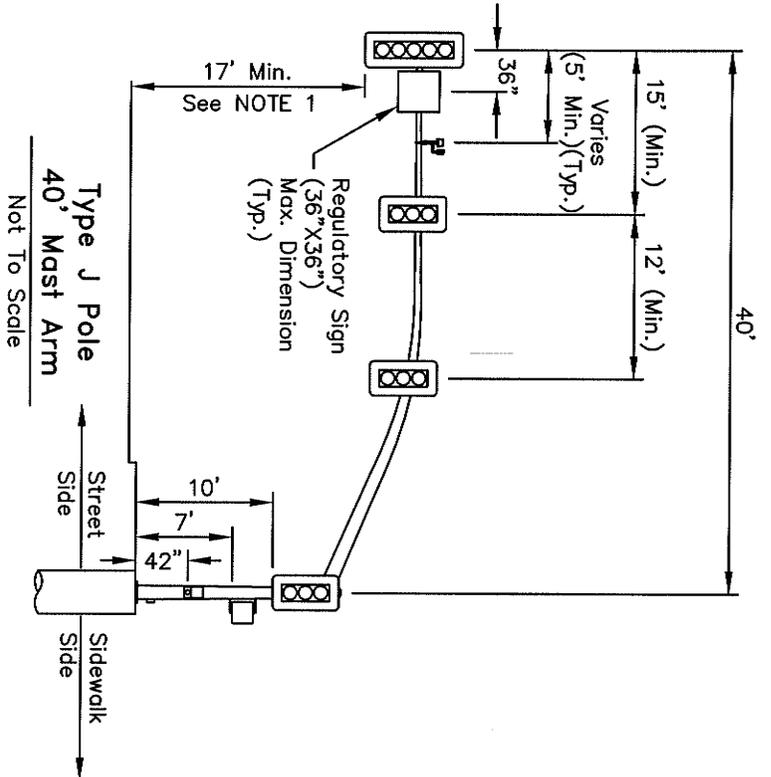
TYPE K AND R POLE WITH 45 FT. MAST ARM

730-412

DATE: 9/9/05

REVISED:

SHEET 1 OF 1



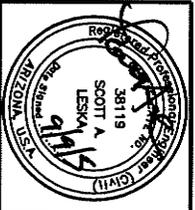
- NOTES:**
1. There shall be a minimum of 17' clearance between the surface of the pavement and the bottom of each signal head back plate mounted on the mast arm.
  2. A maximum of 3 signal heads (1-Q, 2-F) may be installed on the 40' mast arm as shown.
  3. Mast arm dimension measured from center of upright to tip of mast arm.
  4. The Designer shall provide additional structural analysis for any deviations from the dimensions shown which will result in increased structural loading.

APPROVED FOR DISTRIBUTION:

9/9/2005

Keith E. Brann, P.E.,  
Acting Town Engineer

Date



STANDARD DETAIL

DETAIL NO.:

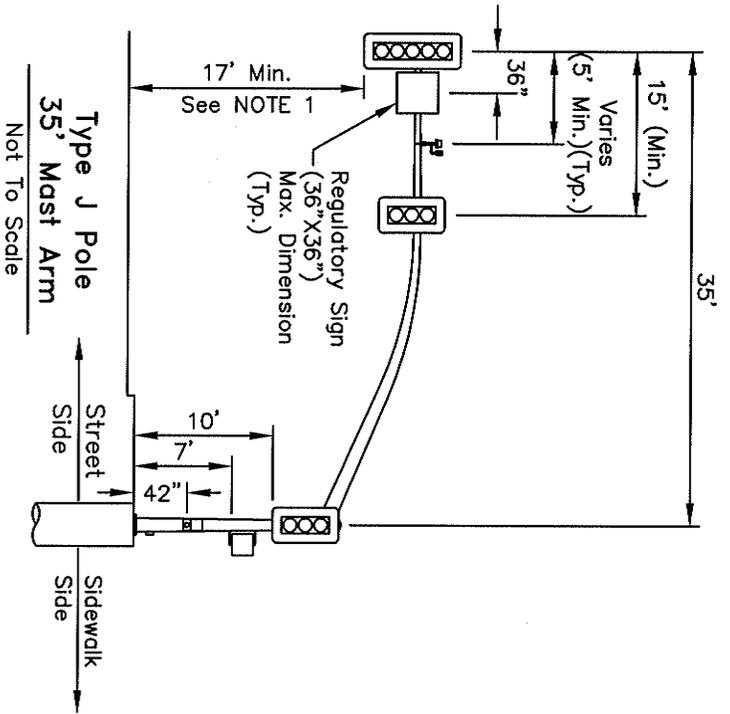
MAST ARM LOADING DETAIL  
TYPE J AND Q POLE WITH 40 FT. MAST ARM

730-413

DATE: 9/9/05

REVISED:

SHEET 1 OF 1

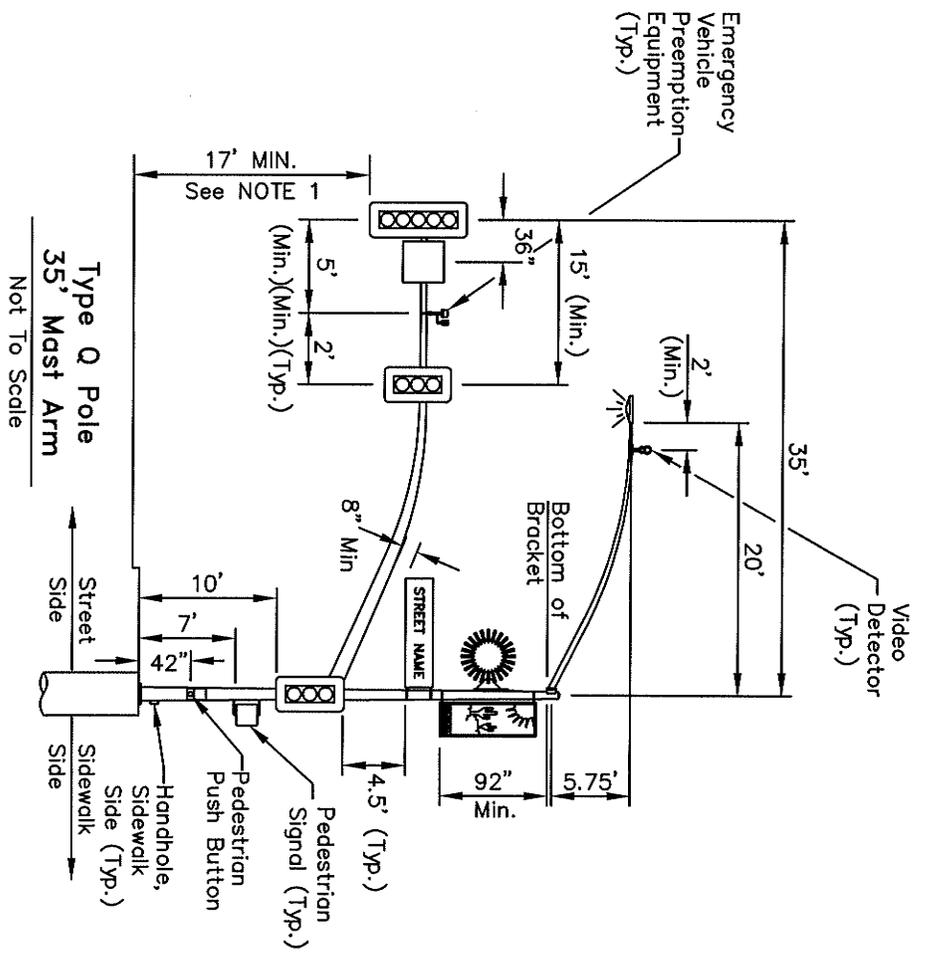


- NOTES:**
1. There shall be a minimum of 17' clearance between the surface of the pavement and the bottom of each signal head back plate mounted on the mast arm.
  2. A maximum of 2 signal heads (1-Q, 1-F) may be installed on the 35' mast arm as shown.
  3. Mast arm dimension measured from center of upright to tip of mast arm.
  4. The Designer shall provide additional structural analysis for any deviations from the dimensions shown which will result in increased structural loading.

APPROVED FOR DISTRIBUTION:

Keith E. Brann, P.E.,  
Acting Town Engineer

9/9/2005 Date



STANDARD DETAIL

DETAIL NO.:

MAST ARM LOADING DETAIL  
TYPE J AND Q POLE WITH 35 FT. MAST ARM

730-414

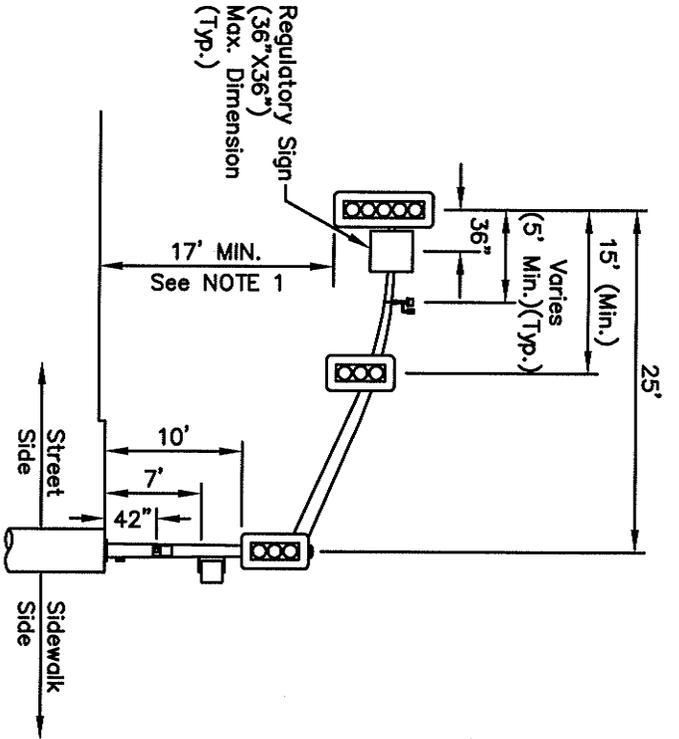
DATE: 9/9/05

REVISED:

SHEET 1 OF 1



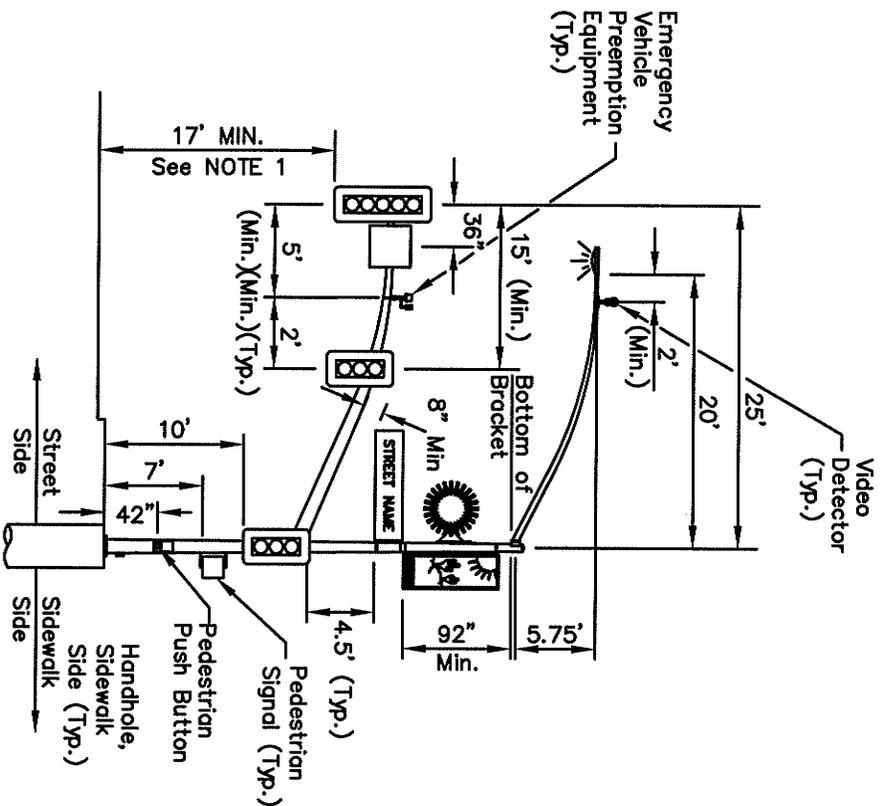




**Type J Pole**  
**25' Mast Arm**  
Not To Scale

**NOTES:**

1. There shall be a minimum of 17' clearance between the surface of the pavement and the bottom of each signal head back plate mounted on the mast arm.
2. A maximum of 2 signal heads (1-Q, 1-F) may be installed on the 25' mast arm as shown.
3. Mast arm dimension measured from center of upright to tip of mast arm.
4. The Designer shall provide additional structural analysis for any deviations from the dimensions shown which will result in increased structural loading.



**Type Q Pole**  
**25' Mast Arm**  
Not To Scale

APPROVED FOR DISTRIBUTION:

Keith E. Brann, P.E.,  
Acting Town Engineer

9/9/2005  
Date



STANDARD DETAIL

DETAIL NO:

MAST ARM LOADING DETAIL

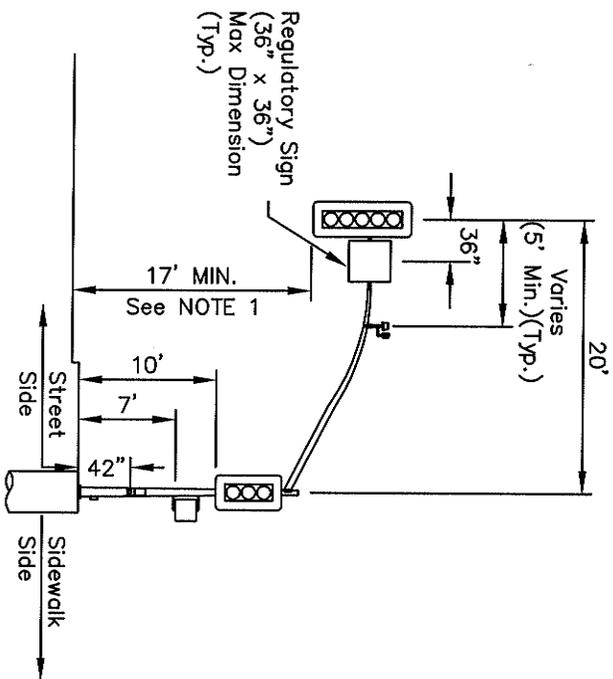
TYPE J AND Q POLE WITH 25 FT. MAST ARM

730-416

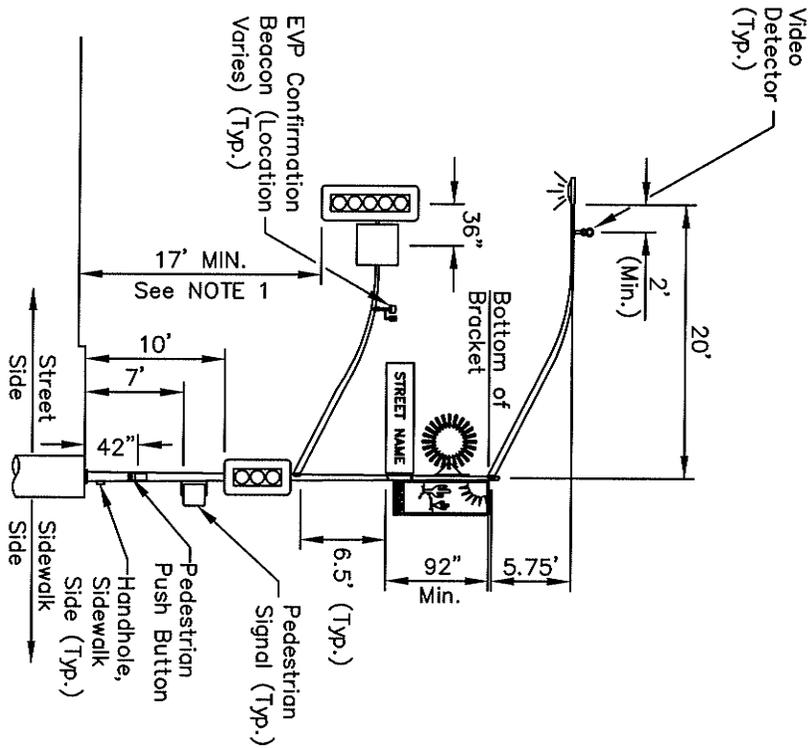
DATE: 9/9/05

REVISED:

SHEET 1 OF 1



**Type E Pole**  
**20' Mast Arm**  
Not To Scale



**Type F Pole**  
**20' Mast Arm**  
Not To Scale

- NOTES:**
1. There shall be a minimum of 17' clearance between the surface of the pavement and the bottom of each signal head back plate mounted on the mast arm.
  2. A maximum of 1 signal head (1-Q or 1-F) may be installed on the 20' mast arm as shown.
  3. Mast arm dimension measured from center of upright to tip of mast arm.
  4. The Designer shall provide additional structural analysis for any deviations from the dimensions shown which will result in increased structural loading.

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*[Signature]*  
Keith E. Brann, P.E.,  
Acting Town Engineer  
9/9/2005  
Date



STANDARD DETAIL

DETAIL NO.:

MAST ARM LOADING DETAIL

TYPE E AND F POLE WITH 20 FT. MAST ARM

730-417

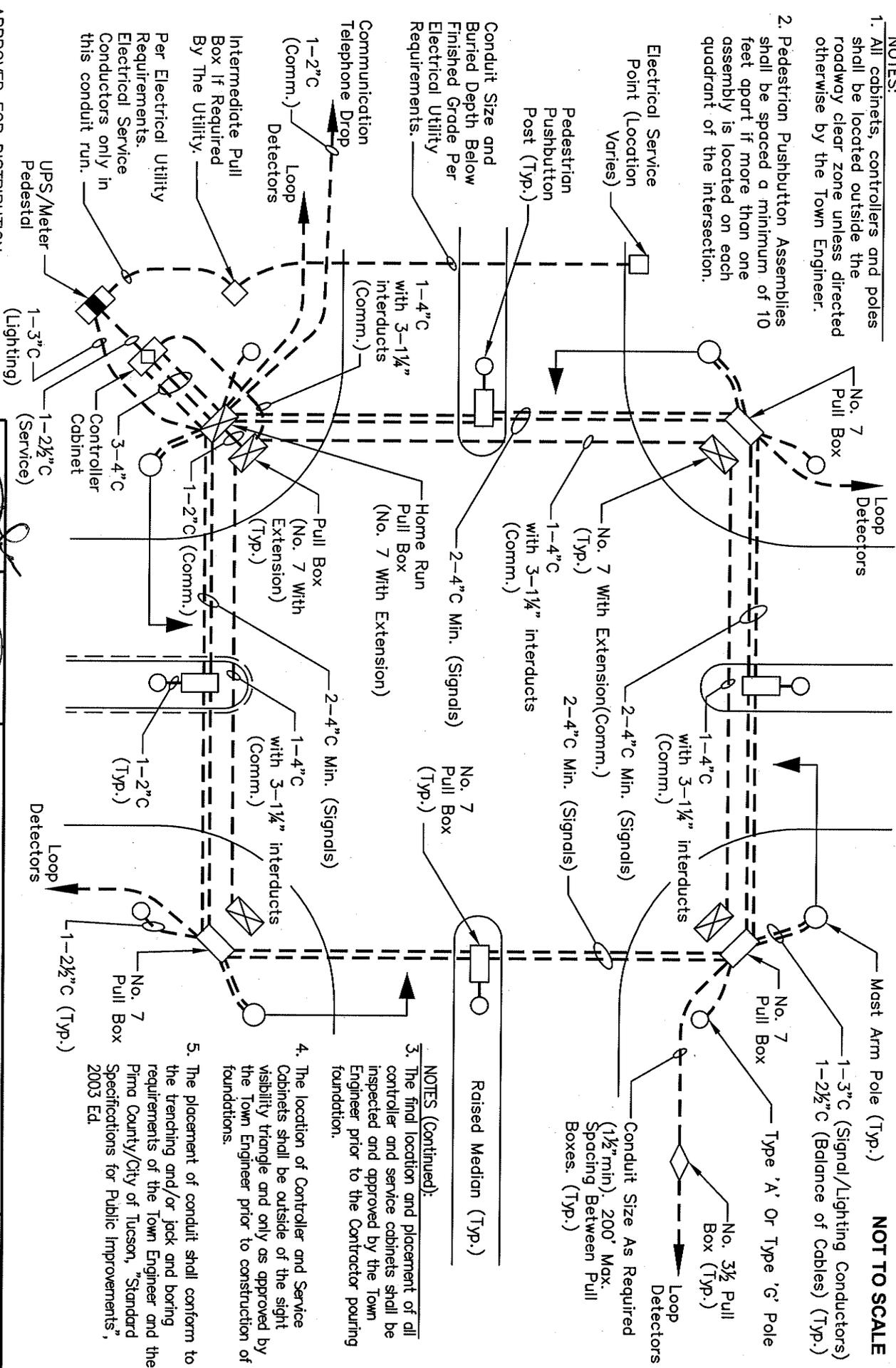
DATE: 9/9/05

REVISED:

SHEET 1 OF 1

**NOTES:**

1. All cabinets, controllers and poles shall be located outside the roadway clear zone unless directed otherwise by the Town Engineer.
2. Pedestrian Pushbutton Assemblies shall be spaced a minimum of 10 feet apart if more than one assembly is located on each quadrant of the intersection.



**NOT TO SCALE**

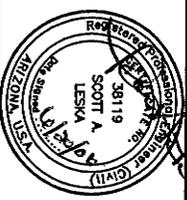
**NOTES (Continued):**

3. The final location and placement of all controller and service cabinets shall be inspected and approved by the Town Engineer prior to the Contractor pouring foundation.
4. The location of Controller and Service Cabinets shall be outside of the sight visibility triangle and only as approved by the Town Engineer prior to construction of foundations.
5. The placement of conduit shall conform to the trenching and/or jack and boring requirements of the Town Engineer and the Pima County/City of Tucson, "Standard Specifications for Public Improvements", 2003 Ed.

APPROVED FOR DISTRIBUTION:

Keith E. Brann, P.E.  
Town Engineer

6/20/2006  
Date



STANDARD DETAIL

TOWN OF MARANA

TYPICAL TRAFFIC SIGNAL CONDUIT SCHEMATIC

DETAIL NO:

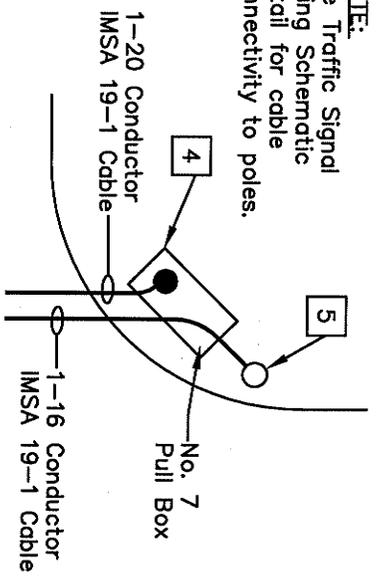
730-701

DATE: 09/09/05

REVISED: 06/20/06

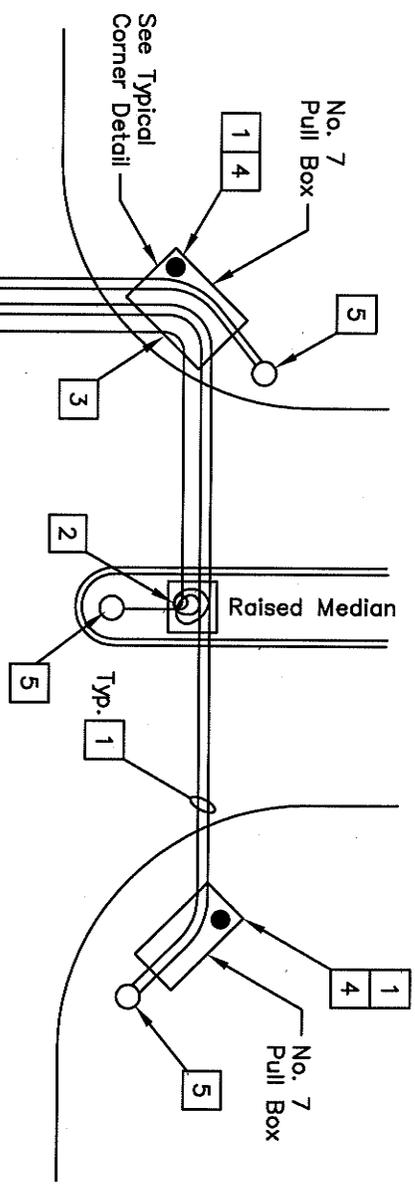
SHEET 1 OF 1

**NOTE:**  
See Traffic Signal Wiring Schematic Detail for cable connectivity to poles.



**NOTES:**

- 1 Splice permitted only at designated splice locations as shown on this plan. Each signal cable as shown shall be continuous and unspliced between the controller cabinet and the corner where it is terminated.
- 2 Provide 1 wrap of slack (5' min.) for each signal cable at intermediate median pull boxes. (Typ.)
- 3 Provide 2 wraps of slack (8' min.) for each signal cable passing through this pull box. (No splices permitted)
- 4 Provide 1 wrap of slack (5' min.) for all signal cables terminating in this pull box.
- 5 Terminate 4, 7, 16, and 20 Conductor IMSA 19-1 cable in VC, on the Ped. Post, Type "A", Type "G", Type "Q", or Type "R" pole on corner. Provide 2 wraps of slack (8' min.) in adjacent pull box.
- 6 Provide 1 wrap of slack (5' min.) for each signal cable passing through the home run pull box (No. 7 with extension).
- 7 Terminate Video Cable (RCS9 Cable, shielded), Data Cable (18AWG, Shielded), and Power Cable (3-12AWG CC) at Video Camera on pole designated by Project Plans or Town Engineer.



NOT TO SCALE

**LEGEND:**  
○ Type "A" or Type "G" Pole (Typ. Location)  
● Splice Location in Pull Box Only  
VC Vertical Termination Compartment

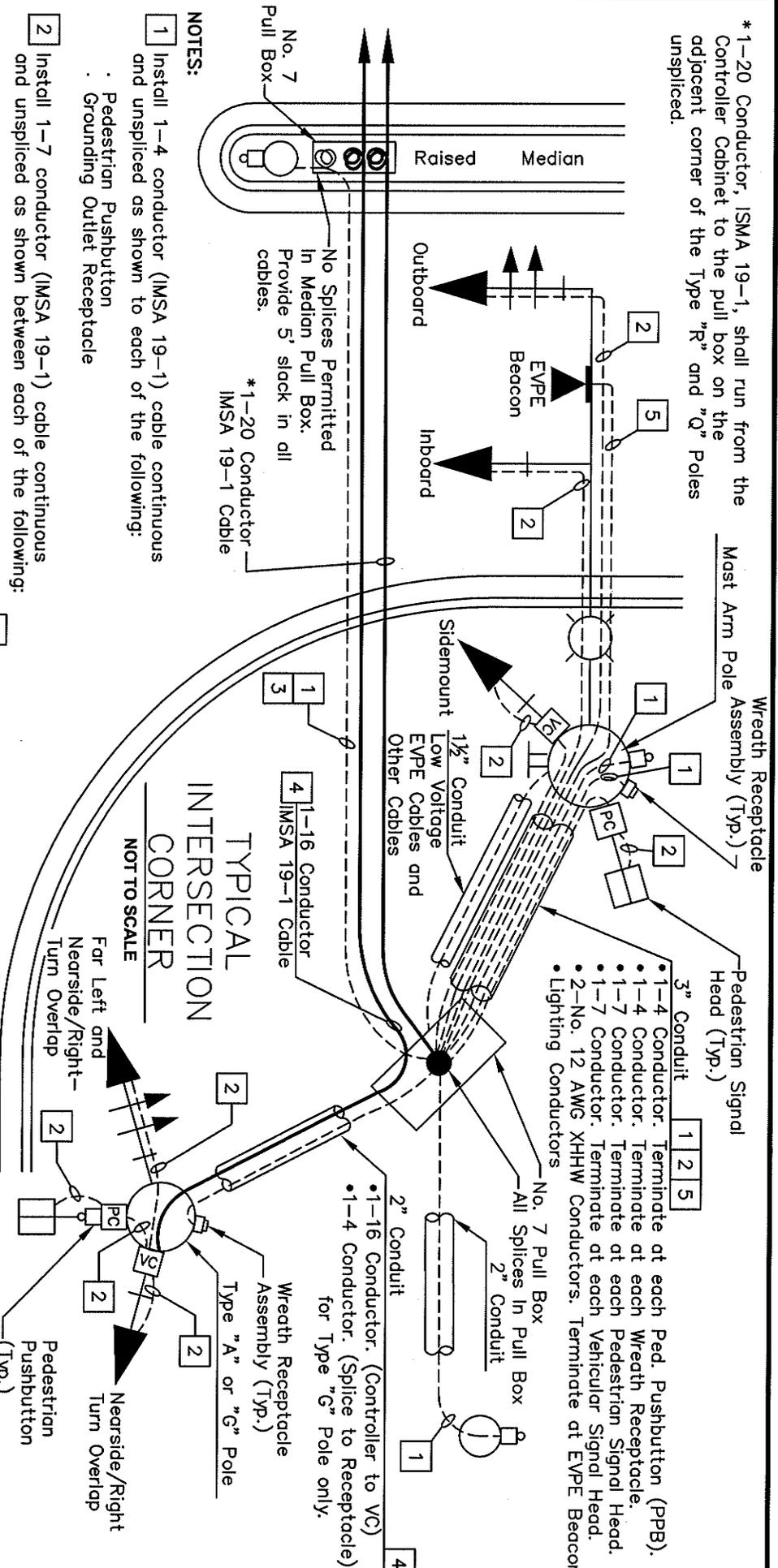
APPROVED FOR DISTRIBUTION:  
  
Keith E. Brann, P.E.,  
Town Engineer  
6/20/2006  
Date



STANDARD DETAIL		DETAIL NO:
TYPICAL TRAFFIC SIGNAL CABLE SCHEMATIC		730-702
DATE: 9/9/05	REVISED: 06/20/06	SHEET 1 OF 1

The Engineer may change these requirements at any time to fit project requirements.

\*1-20 Conductor, ISMA 19-1, shall run from the Controller Cabinet to the pull box on the adjacent corner of the Type "R" and "Q" Poles unspliced.



**NOTES:**

- 1 Install 1-4 conductor (ISMA 19-1) cable continuous and unspliced as shown to each of the following:
  - Pedestrian Pushbutton
  - Grounding Outlet Receptacle
- 2 Install 1-7 conductor (ISMA 19-1) cable continuous and unspliced as shown between each of the following:
  - The No. 7 Pull Box and the Outboard Vehicular Signal.
  - The No. 7 Pull Box and the Inboard Vehicular Signal.
  - The No. 7 Pull Box and the Sidemount Vehicular Signal.
  - The VC and the Far Left Mounted Vehicular Signal.
  - The VC and the Nearside/Right Turn Overlap Vehicular Signal.
  - The No. 7 Pull Box and the Pedestrian Signal Head.
  - The VC and the Pedestrian Signal Head/PPB.
- 3 Conductors to median shall be spliced in the pull box on the adjacent corner in the clockwise direction from the median.
- 4 Install 1-16 conductor (ISMA 19-1) cable continuous and unspliced as shown between VC (at type "A" or "G" pole) direct to controller.
- 5 2-No.12 AWG XHHW stranded white and blue conductors for EVEPE beacon. Route beacon conductors direct to splice at No. 7 pull box.

**LEGEND:**

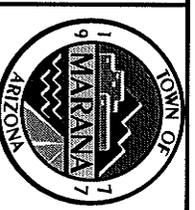
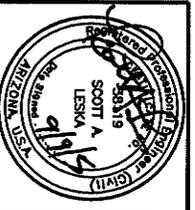
- VC Vehicular Terminal Compartment
- PC Pedestrian Terminal Compartment
- Splice Location in Pull Box

**NOTE:** Quantity of cables may vary based on actual field conditions or as directed by the Town Engineer.

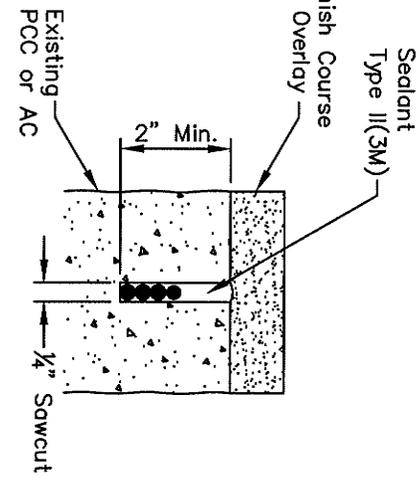
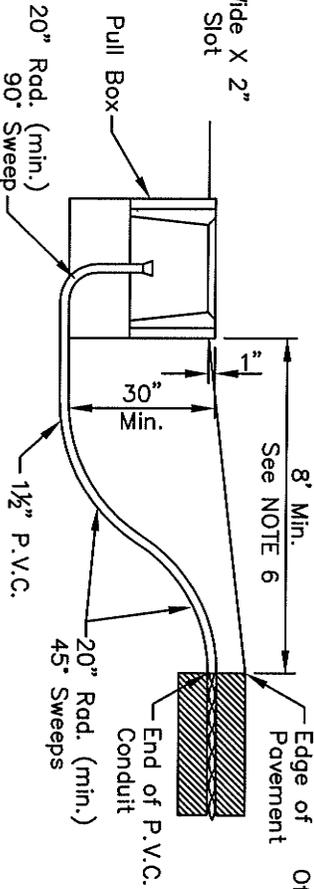
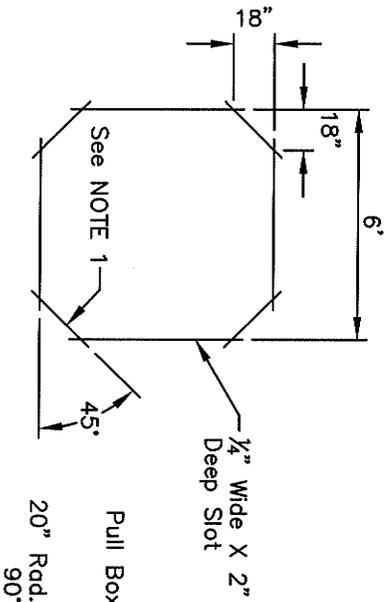
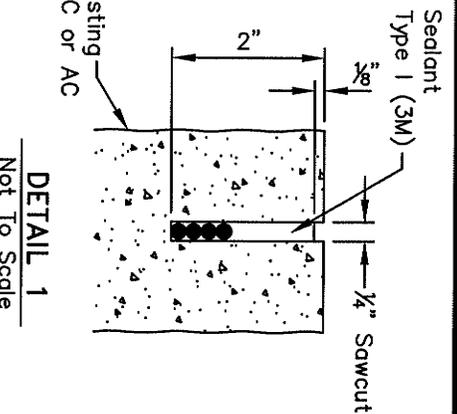
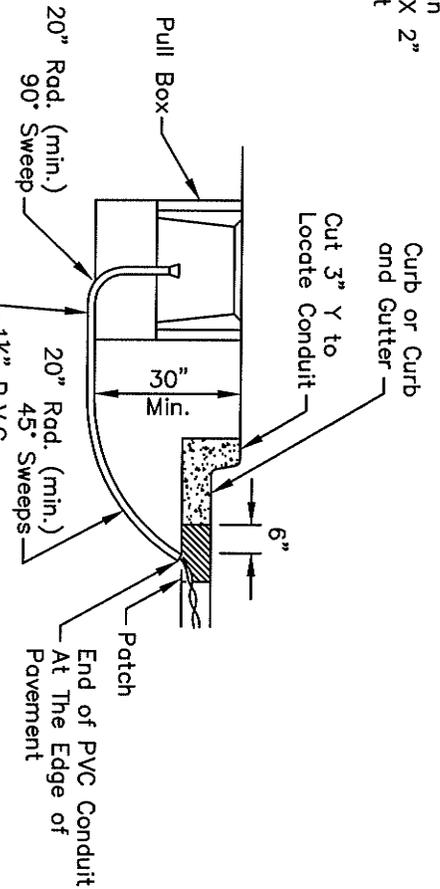
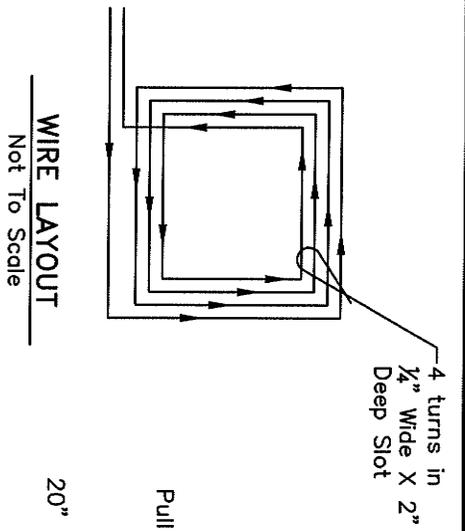
APPROVED FOR DISTRIBUTION:

Keith E. Brann, P.E.,  
Acting Town Engineer

9/9/2005  
Date



STANDARD DETAIL	DETAIL NO:
TOWN OF MARANA	730-703
TRAFFIC SIGNAL WIRING SCHEMATIC	
DATE: 9/9/05	SHEET 1 OF 1
REVISED:	



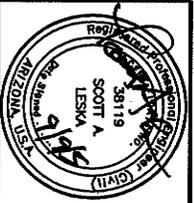
**NOTES:**

- Sawcut across corners at a 45° angle to minimize sharp angles in loop run.
- One loop detector shall be installed per lane and it shall be located in the center of the lane.
- Loops shall be installed in accordance with the requirements of Detail 1 when there is to be no additional surfacing.
- Loops shall be installed in accordance with the requirements of Detail 2 when an overlay or top course is installed/constructed.
- No splices permitted in loop wire.
- Any pull boxes installed along an uncurbed roadway shall be installed adjacent to, but not within, the shoulder.
- All pull boxes shall be located on the Project Plans with Station and Offset call-outs.

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Keith E. Brann, P.E.,  
Acting Town Engineer

9/9/2005  
Date



STANDARD DETAIL

6' X 6' LOOP DETECTOR

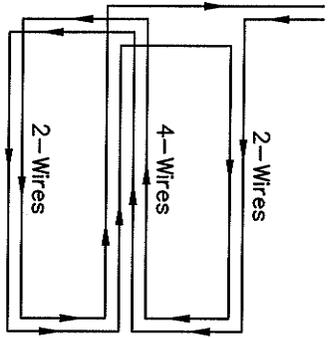
DETAIL NO:

730-710

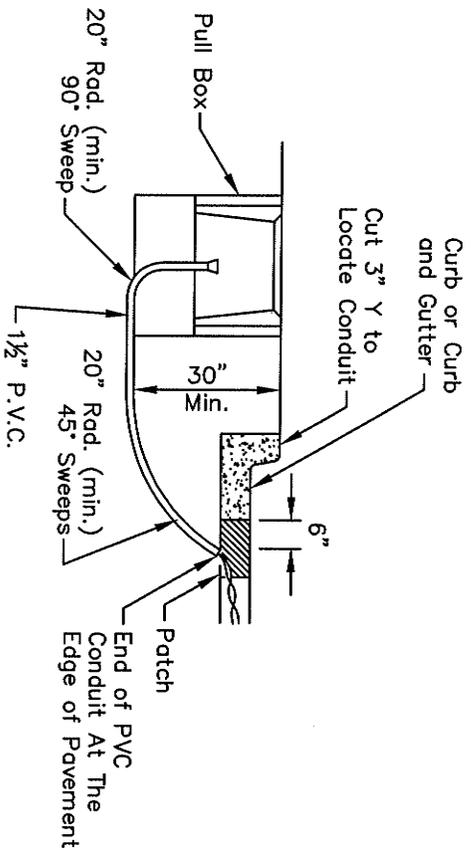
DATE: 9/9/05

REVISED:

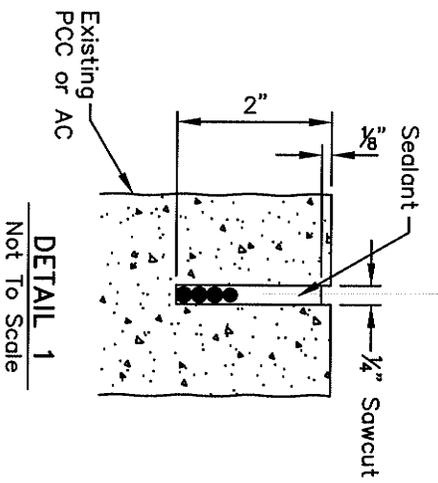
SHEET 1 OF 1



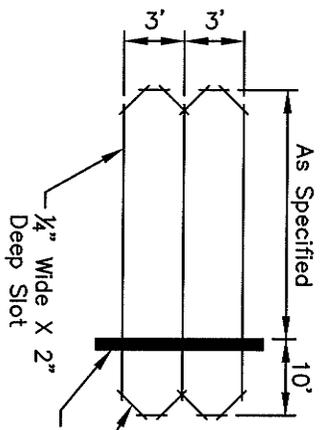
**WIRE LAYOUT**  
Not To Scale



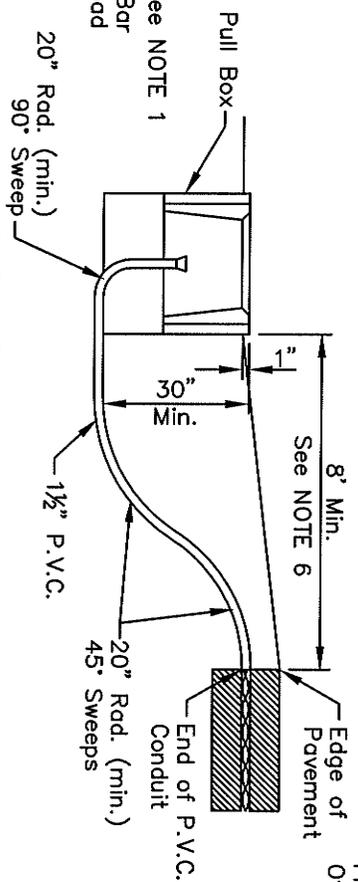
**WITH CURB AND GUTTER**  
Not To Scale



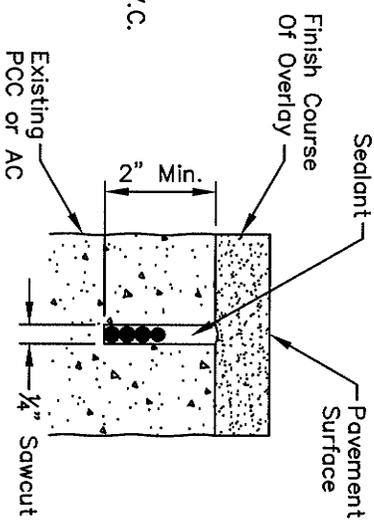
**DETAIL 1**  
Not To Scale



**SAWCUT LAYOUT**  
Not To Scale



**WITHOUT CURB AND GUTTER**  
Not To Scale



**DETAIL 2**  
Not To Scale

**NOTES:**

1. Sawcut across corners at a 45° angle to minimize sharp angles in loop run.
2. One loop detector shall be installed per lane and it shall be located in the center of the lane.
3. Loops shall be installed in accordance with the requirements of Detail 1 when there is to be no additional surfacing.
4. Loops shall be installed in accordance with the requirements of Detail 2 when an overlay or top course is installed/constructed.
5. No splices permitted in loop wire.
6. Any pull boxes installed along an uncurbed roadway shall be installed adjacent to, but not within, the shoulder.
7. All pull boxes shall be located on the Project Plans with Station and Offset call-outs.

APPROVED FOR DISTRIBUTION:

9/9/2005

Keith E. Brann, P.E.,  
Acting Town Engineer

Date



STANDARD DETAIL

PRESENCE LOOP DETECTOR

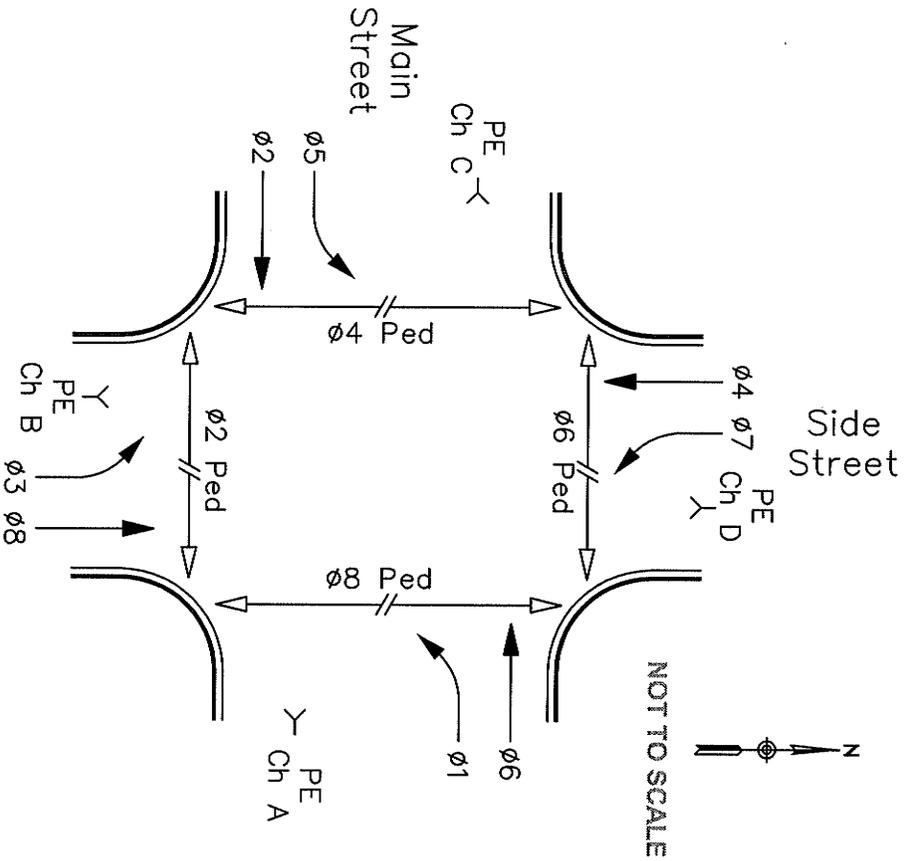
DETAIL NO:

730-712

DATE: 9/9/05

REVISED:

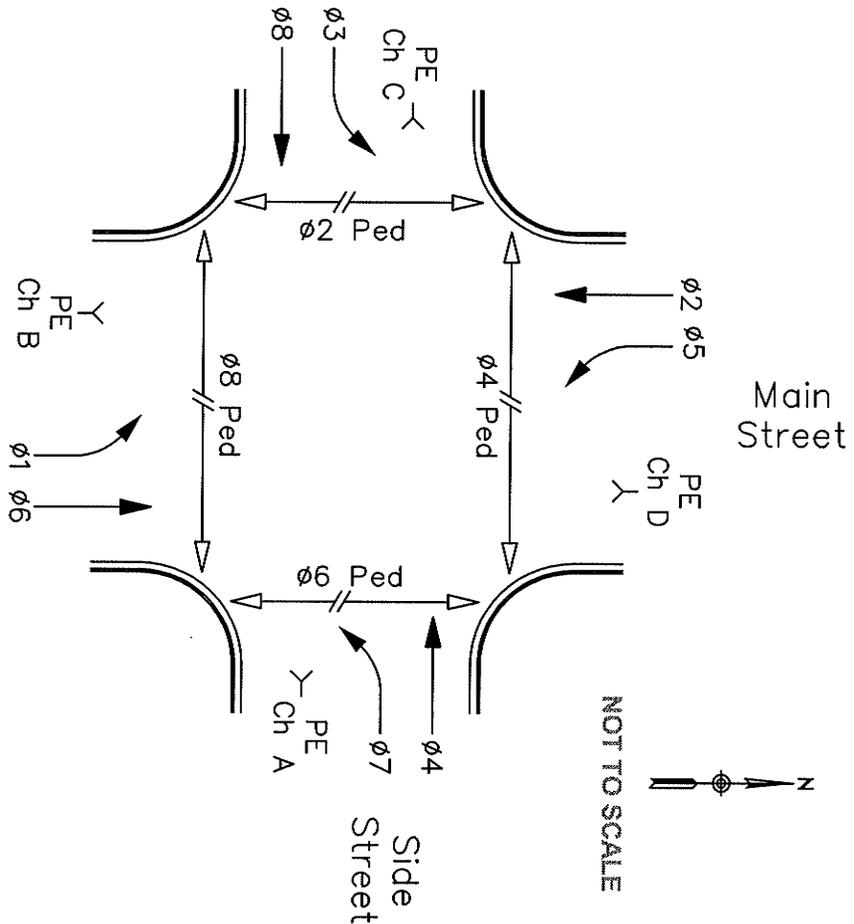
SHEET 1 OF 1



EAST / WEST  
MAIN STREET

PREEMPTION CHANNELS

- PE Channel A = EB Preemptor 1
- PE Channel B = SB Preemptor 2
- PE Channel C = WB Preemptor 3
- PE Channel D = NB Preemptor 4



NORTH / SOUTH  
MAIN STREET

APPROVED FOR DISTRIBUTION:

Keith E. Brann, P.E.,  
Acting Town Engineer

10/14/2005  
Date



STANDARD DETAIL

DETAIL NO:

STANDARD TRAFFIC SIGNAL PHASING

730-800

DATE: 9/9/05

REVISED: 10/14/2005

SHEET 1 OF 1

**TYPE I MOUNT**

**LIST OF MATERIALS**

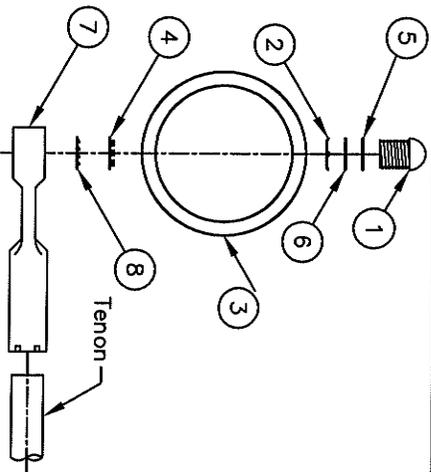
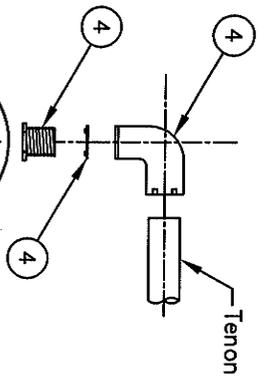
Itm. Qty.	Description
1 1	Mast Arm Plumbizer With Locking Device. (See T.S. 10-2)*
2 1	12" Signal Head. See Plans.
3 1	Conduit Locknut.
4 1	1 1/2" x 1 3/4" Lock Nipple.
5 1	Lock Ring. (See T.S. 10-1-4)*
6 1	Ornamental Cap. (See T.S. 10-1-6)*

**TYPE II MOUNT**

**LIST OF MATERIALS**

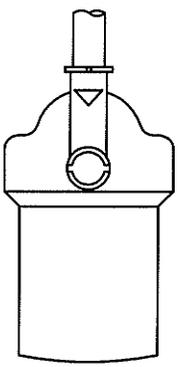
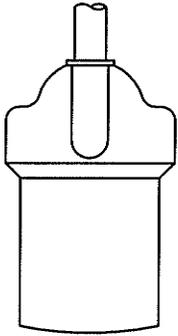
Itm. Qty.	Description
1 2	Ornamental Cap. (See T.S. 10-1-6)*
2 2	Conduit Locknut.
3 1	12" Signal Head. See Plans.
4 2	Attaching Washers W/3-1/4-20 UNC x 3 1/2 Carriage Bolts and Nuts.
5 1	Flat Washer.
6 1	Neoprene Washer.
7 1	Elevator Plumbizer. (See T.S. 10-2)*
8 1	Lock Washer.

\* Standard Details for Public Improvements COT/PC 1994 edition



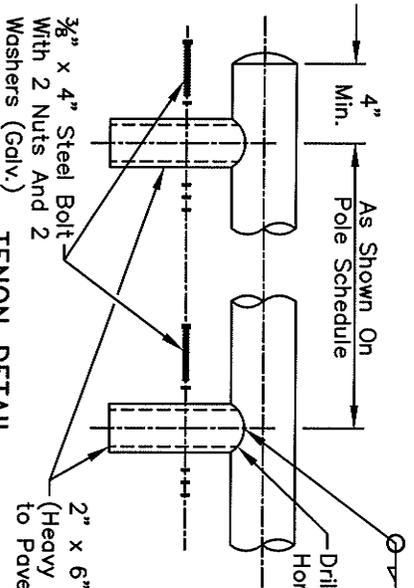
**TYPE I MOUNT**  
Not To Scale

**TYPE II MOUNT**  
Not To Scale



**MOUNTING ORIENTATION PLAN**  
Not To Scale

**MOUNTING ORIENTATION PLAN**  
Not To Scale



**TENON DETAIL**  
Not To Scale

- NOTES:**
- All mounts shall be used with polycarbonate vehicular traffic signal heads only.
  - All materials shall be black.

APPROVED FOR DISTRIBUTION:

Keith E. Brann, P.E.,  
Acting Town Engineer

9/9/2005  
Date



STANDARD DETAIL

DETAIL NO:

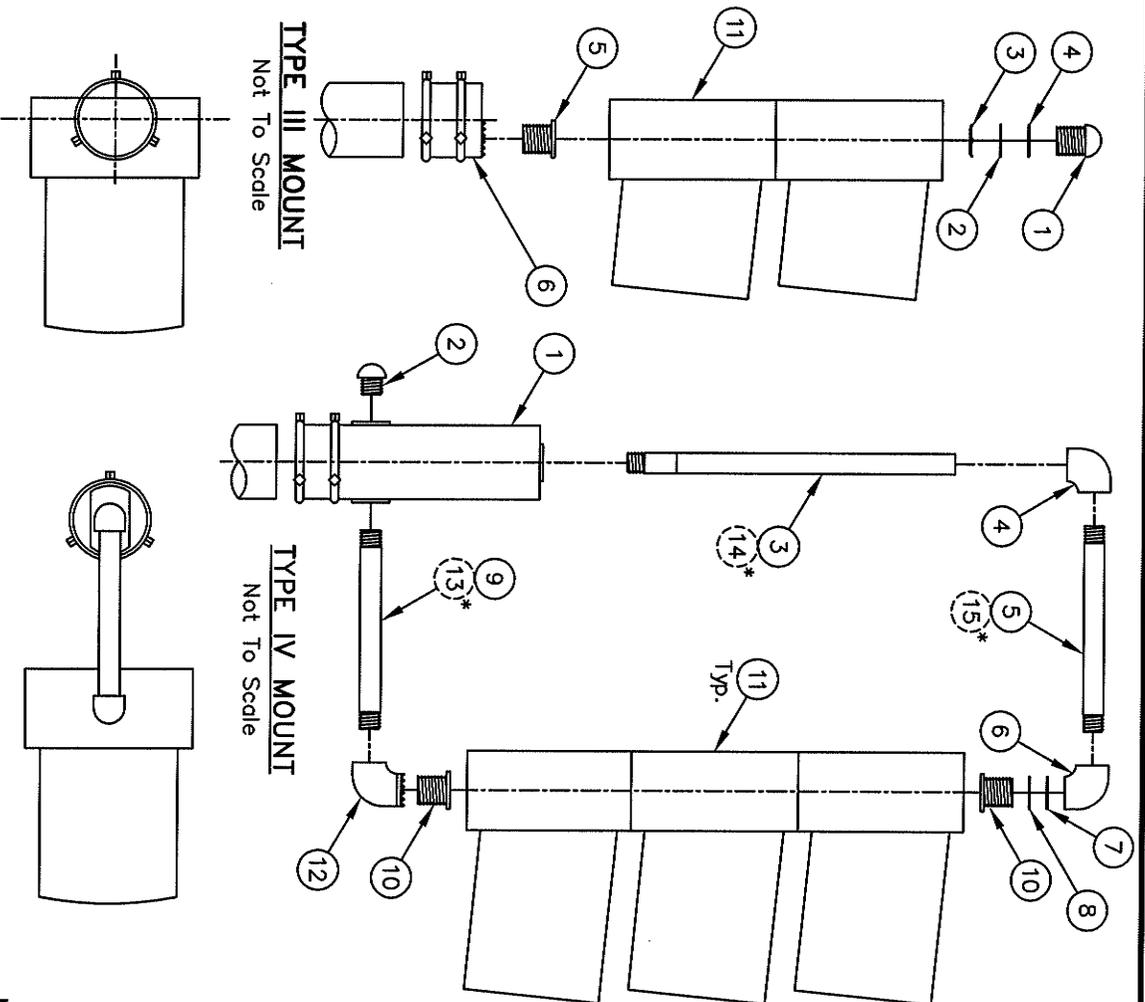
**TYPE I AND II MOUNTING ASSEMBLIES**

**730-901**

DATE: 9/9/05

REVISED:

SHEET 1 OF 1



**TYPE III MOUNT**

**LIST OF MATERIALS**

Item.	Qty.	Description
1	1	Ornamental Cap. (T.S. 10-1-6)**
2	1	Neoprene Washer.
3	1	Conduit Locknut.
4	1	Flat Washer.
5	1	1 1/2" Lock Nipple 1 1/8" Long.
6	1	Pole Top Offset Mount. (T.S. 10-1-3)**
7	1	Signal Head, See Plans.

**TYPE IV MOUNT**

**LIST OF MATERIALS**

Item.	Qty.	Description
1	1	Pole Top Mounted Terminal Compartment. (T.S. 10-4-2)**
2	1	Ornamental Cap. (T.S. 10-1-6)**
3	1	1 1/2" Center Pipe ***
4	1	90° Elbow, Drill & Tap for Setscrew.
5	1	1 1/2" Pipe Nipple, 12 1/2" Long For Pedestrian & Signal Heads.
6	1	90° Elbow.
7	1	Flat Washer.
8	1	Neoprene Washer.
9	1	1 1/2" Pipe Nipple, 12" Long.
10	2	1 1/2" Lock Nipple See Note 1.
11	1	12" Signal Head. See Plans.
12	1	90° Elbow With Locking Device. (TS 10-1-2)**
13*	1	1 1/2" Pipe Nipple, 12" Long.
14*	1	1 1/2" Pipe Nipple, 9 1/2" Long for Ped. Signal, For Illuminated Message Units Use 23 5/8" x 1 1/2" Pipe.
15*	1	1 1/2" Pipe Nipple, 12 1/2" Long.

\*\* Standard Details for Public Improvements COT/PC 1994 edition.  
 \*\*\* Nipple length shall be determined by Contractor to ensure a correct fit for the type of vehicular traffic signal head being installed.

- NOTES:**
- Lock nipple length shall be 1 3/4" for 12" heads.

2. All materials shall be black.

**MOUNTING ORIENTATION PLAN**  
 Not To Scale

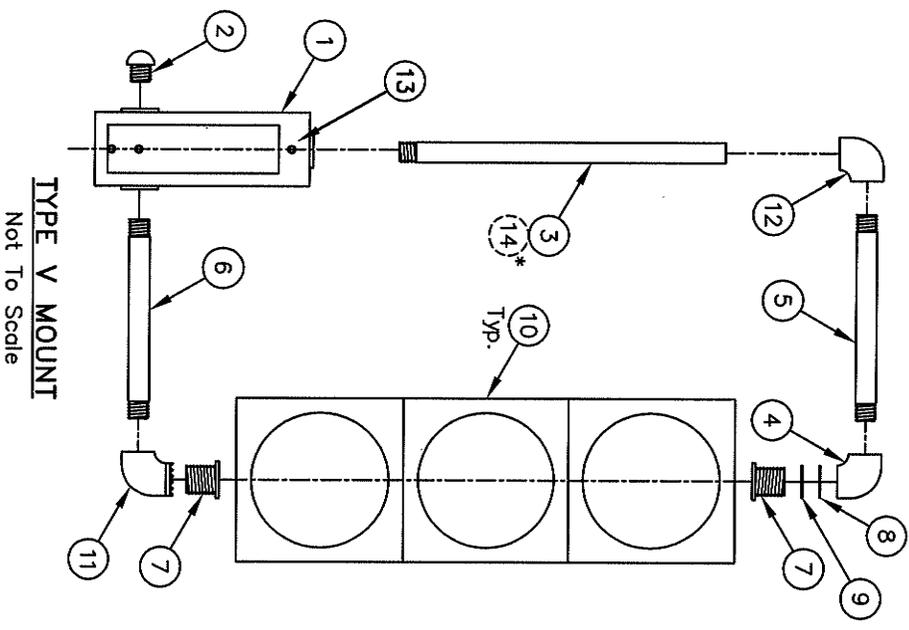
**MOUNTING ORIENTATION PLAN**  
 Not To Scale

APPROVED FOR DISTRIBUTION:

Keith E. Brann, P.E.,  
 Acting Town Engineer  
 Date 9/9/2005



STANDARD DETAIL		DETAIL NO:
TYPE III AND IV MOUNTING ASSEMBLIES		730-902
DATE: 9/9/05	REVISED:	SHEET 1 OF 1



- NOTES:
1. Lock nipple length shall be 1 3/4" for 12" heads.
  2. All materials shall be black.

APPROVED FOR DISTRIBUTION:

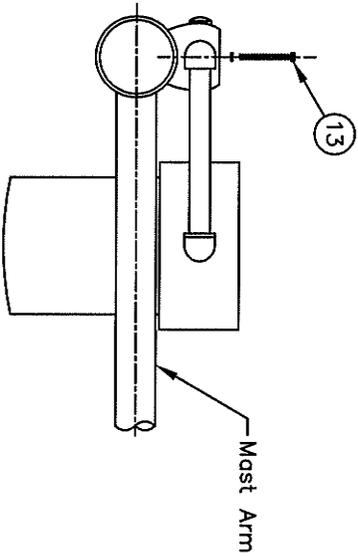
Keith E. Brann, P.E.,  
Acting Town Engineer

9/9/2005  
Date



LIST OF MATERIALS		
Item.	Qty.	Description
1	1	Terminal Compartment For Side Mtg. (See T.S. 10-4-1)**
2	1	Ornamental Cap. (See T.S. 10-1-6)**
3	1	1 1/2" I.D. Pipe ***
4	1	1 1/2" I.D. Pipe, 90° Elbow.
5	1	1 1/2" I.D. Pipe Nipple, 24 1/2" Long.
6	1	1 1/2" I.D. Pipe Nipple, 24" Long
7	1	1 1/2" Lock Nipple, See Note No. 1.
8	1	Flat Washer.
9	1	Neoprene Washer.
10	1	12" Signal Head. See Plans.
11	1	90° Ell With Locking Device. (T.S. 10-1-2)**
12	1	1 1/2" I.D. Pipe 90° Elbow, Drill & Tap For Setscrew.
13	2	1/2" x 2" Galvanized Steel Bolt 13-UNC With Flat Washer and Lock Washer.
14*	1	1 1/2" Pipe Nipple 9 1/2"-For Pedestrian Signal Units Only. (For Illuminated Message, Use 25 3/8" Pipe)

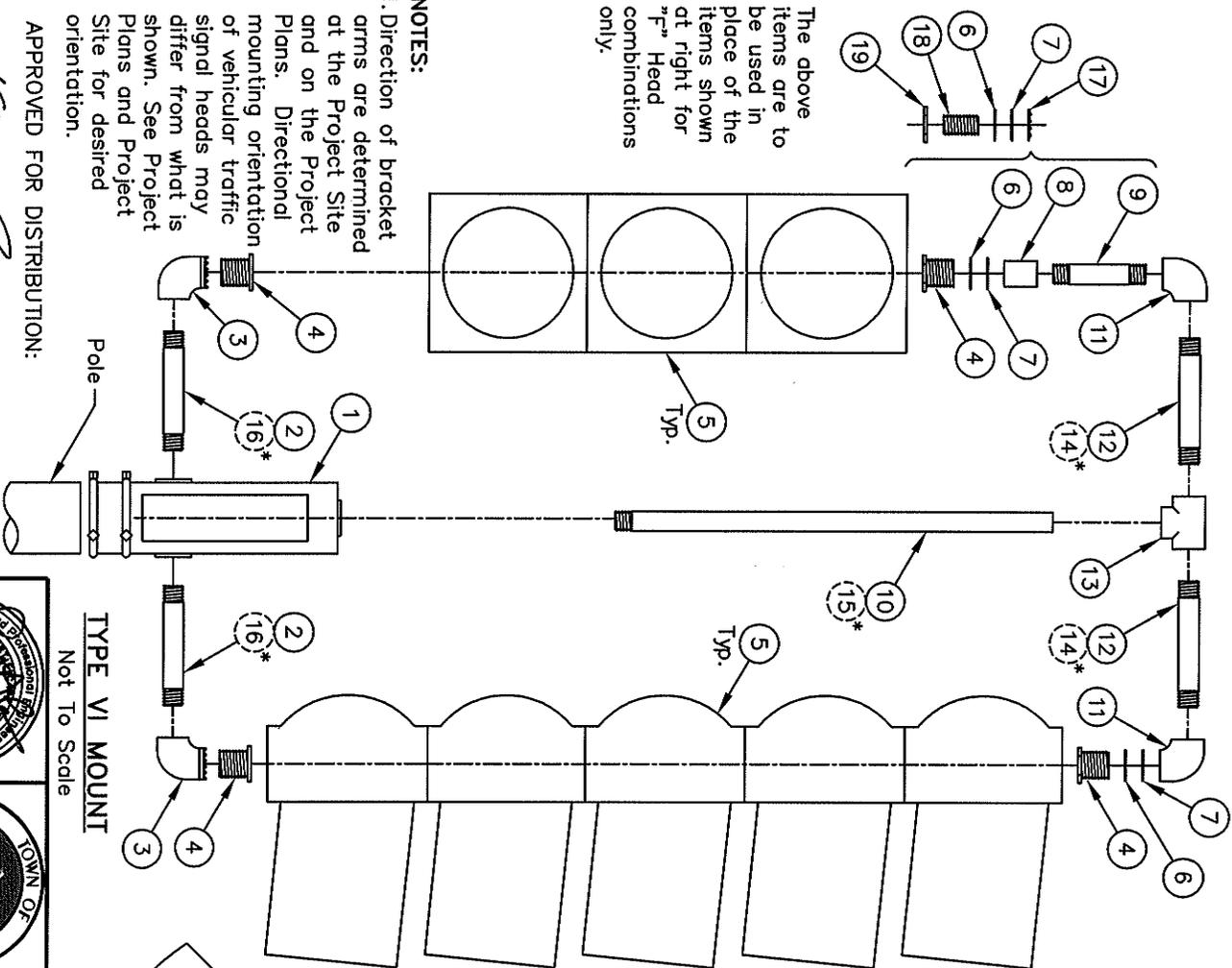
\*\* Standard Details for Public Improvements COT/PC 1994 edition.  
\*\*\* Nipple length shall be determined by Contractor to ensure a correct fit for the type of vehicular traffic signal head being installed.



**MOUNTING ORIENTATION PLAN**  
Not To Scale

STANDARD DETAIL	DETAIL NO:
TYPE V MOUNTING ASSEMBLY	730-903
DATE: 9/9/05	REvised:
	SHEET 1 OF 1

The above items are to be used in place of the items shown at right for "F" Head combinations only.



NOTES:  
1. Direction of bracket arms are determined at the Project Site and on the Project Plans. Directional mounting orientation of vehicular traffic signal heads may differ from what is shown. See Project Site and Project orientation.

APPROVED FOR DISTRIBUTION:

Keith E. Brann, P.E.,  
Acting Town Engineer

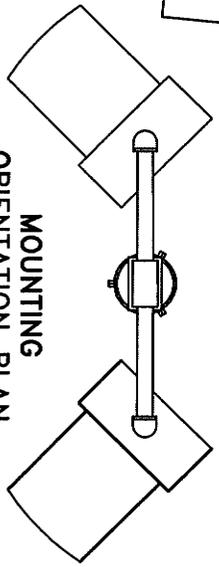
9/9/2005  
Date



**LIST OF MATERIALS**

Item.	Qty.	Description
1	1	Terminal Compartment Pole Top Mtg. (See T.S. 10-4-1)**
2	2	1 1/2" I.D. Pipe Nipple, 12" Long.
3	2	90° Ell With Locking Device. (See T.S. 10-1-2)**
4	4	1 1/2" Lock Nipple, See NOTE No. 1.
5	2	12" Signal Head. See Plans.
6	2	Neoprene Washer.
7	2	Flat Washer.
8	1	1 1/2" Pipe Coupling, As Required.
9	1	1 1/2" Pipe Nipple ***
10	1	1 1/2" Center Pipe ***
11	2	90° Elbow, 1 1/2".
12	2	1 1/2" Pipe Nipple, 12 1/2" Long.
13	1	Pipe Tee, Drill & Tap for Setscrew.
14*	2	1 1/2" Pipe Nipple, 12 1/2" Long For Ped. Signal Heads.
15*	1	1 1/2" Pipe Nipple, 9 1/2" Long For Ped. Signal Heads.
16*	2	1 1/2" Pipe Nipple, 12" Long For Ped. Signal Heads.
17	1	Conduit Lock Nut. (For 'F' & 'R' Combination Only)
18	1	1 1/2" Pipe Nipple, 3" Long. (For 'F' & 'R' Combination Only)
19	1	Malleable Hex Nut. (For 'F' & 'R' Combination Only)

\*\* Standard Details for Public Improvements COT/PC 1994 edition.  
\*\*\* Nipple length shall be determined by Contractor to ensure a correct fit for the type of vehicular traffic signal head being installed.



Not To Scale

**MOUNTING ORIENTATION PLAN**

STANDARD DETAIL

**TYPE VI MOUNTING ASSEMBLY**

DATE: 9/9/05

REVISED:

DETAIL NO:

730-904

SHEET 1 OF 1

**LIST OF MATERIALS**

Item	Qty.	Description
1	1	Terminal Compartment Pole Top Mfg. (See T.S. 10-4-1)**
2*	2	1½" Pipe Nipple, 11½" Long. (For Ped. Signal Heads)
3	2	90° Elbow With Locking Device. (See T.S. 10-1-2)**
4	4	1½" Lock Nipple, See NOTE 1.
5	2	12" Signal Head. See Plans.
6	1	Center Pipe ***
7	1	Tee, Drill & Tap For Setscrew.
8	2	Neoprene Washer.
9	2	Flat Washer.
10	1	1½" Pipe Coupling, As Required.
11	1	1½" Pipe Nipple ***
12	2	90° Elbow.
13*	2	1½" Pipe Nipple, 12" Long. (For Ped. Signal Heads)
14*	1	1½" Pipe Nipple, 9½" Long. (For Ped. Signal Heads)
15	2	½"x2" Galvanized Steel Bolt 13 UNC With Flat Washer And Lock Washer.
16	2	1½" Pipe Nipple, 24½" Long.
17	2	1½" Pipe Nipple, 24" Long.
18	1	Conduit Lock Nut. (For 'F' & 'R' Combination Only)
19	1	1½" Pipe Nipple, 3" Long. (For 'F' & 'R' Combination Only)
20	1	Malleable Hex Nut. (For 'F' & 'R' Combination Only)

\*\* Standard Details for Public Improvements COT/PC 1994 edition.

\*\*\* Nipple length shall be determined by Contractor to ensure a correct fit for the type of vehicular traffic signal head being installed.

**NOTES (cont.):**

2. Lock nipple length shall be and 1¾" for 12" heads.
3. All materials shall be block.
4. Mounting orientation may differ from what is shown. See Project Plans and Project Site for desired orientation.

**MOUNTING ORIENTATION PLAN**

Not To Scale

STANDARD DETAIL

DETAIL NO:

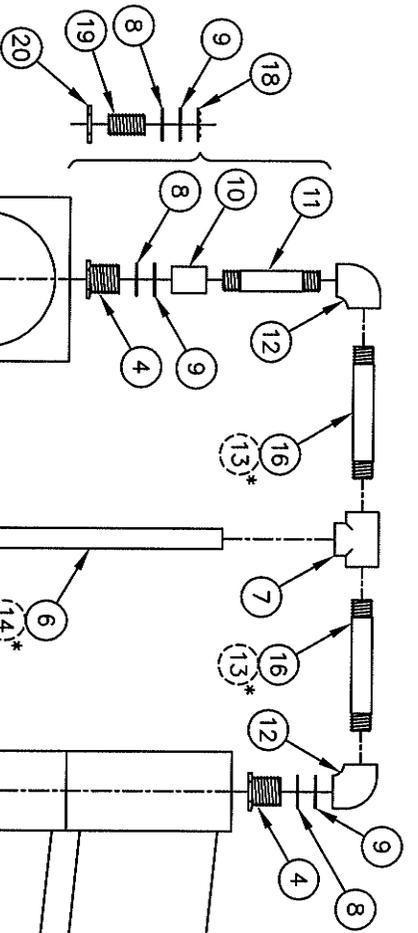
**TYPE VII MOUNTING ASSEMBLY**

730-905

DATE: 9/9/05

REVISED:

SHEET 1 OF 1



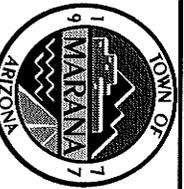
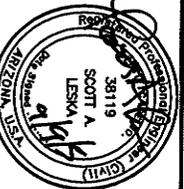
The above items are to be used in place of the items shown at right for "F" Head combinations only.

- NOTES:**
1. Direction of bracket arms are determined at the Project Site and on the Project Plans. Directional mounting orientation of vehicular traffic signal heads may differ from what is shown. See Project Plans and Project Site for desired orientation.

**TYPE VII MOUNT**  
Not To Scale

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9/9/2005  
Date  
Keith E. Brann, P.E.,  
Acting Town Engineer

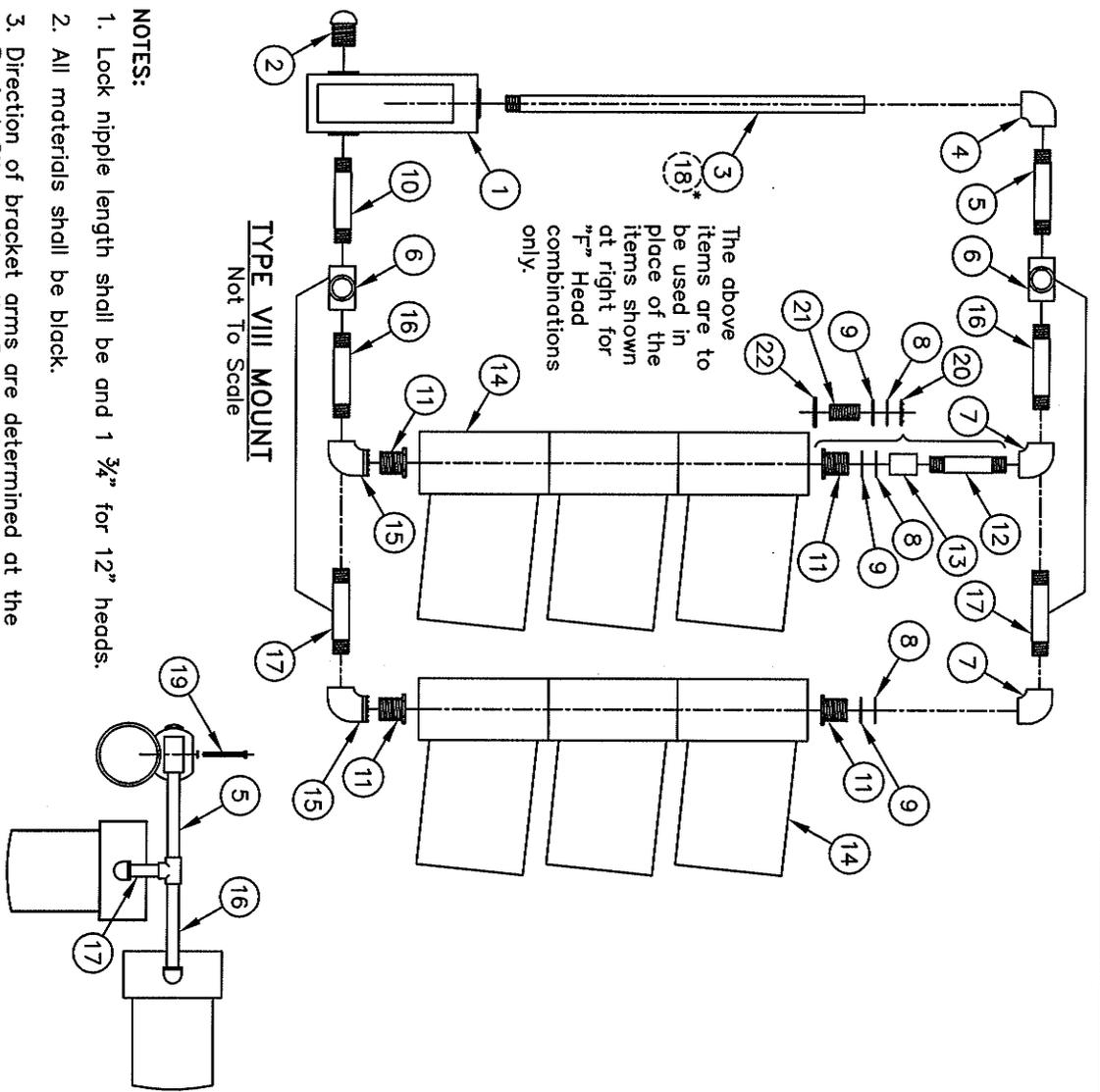


**LIST OF MATERIALS**

Item.	Qty.	Description
1	1	Terminal Compartment Pole Top Mtg. (See T.S. 10-4-1)**
2	1	Ornamental Cap. (See T.S. 10-1-6)**
3	1	1 1/2" Pipe ***
4	1	1 1/2" 90° Elbow, Drill & Tap For Setscrew.
5	11	1 1/2" I.D. Pipe Nipple, 12 1/2" Long.
6	2	1 1/2" Pipe Tee.
7	2	90° Elbow.
8	2	Flat Washer.
9	1	Neoprene Washer.
10	4	1 1/2" I.D. Pipe Nipple, 12" Long.
11	1	1 1/2" Lock Nipple, See NOTE 1.
12	1	1 1/2" I.D. Pipe Nipple ***
13	2	1 1/2" Coupling, As Required.
14	2	12" Signal Head. See Plans.
15	2	90° Elbow With Locking Device. (See T.S. 10-1-2)**
16	2	1 1/2" I.D. Pipe Nipple, 12" Long.
17	1	1 1/2" I.D. Pipe Nipple, 12" Long.
18*	2	1 1/2" I.D. Pipe Nipple, 9 1/2" Long. For Ped Signal Only.
19	1	1/2" x 2" Galvanized Steel Bolt 13-UNC With Flat Washer And Lock Washer.
20	1	Conduit Lock Nut. (For 'F' & 'R' Combination Only)
21	1	1 1/2" I.D. Pipe Nipple, 3" Long. (For 'F' And 'R' Combination Only)
22	1	Malleable Hex Nut. (For 'F' & 'R' Combination Only)

\*\* Standard Details for Public Improvements COT/PC 1994 edition.  
 \*\*\* Nipple length shall be determined by Contractor to ensure a correct fit for the type of vehicular traffic signal head being installed.

The above items are to be used in place of the items shown at right for "F" Head combinations only.



- NOTES:**
1. Lock nipple length shall be and 1 3/4" for 12" heads.
  2. All materials shall be black.
  3. Direction of bracket arms are determined at the Project Site and on the Project Plans. Directional mounting orientation of vehicular traffic signal heads may differ from what is shown. See Project Plans and Project Site for desired orientation.

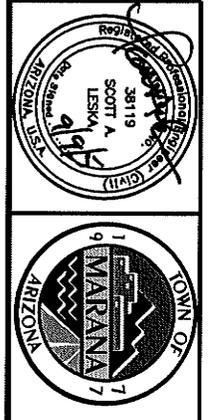
**MOUNTING ORIENTATION PLAN**  
 Not To Scale

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STANDARD DETAIL

DETAIL NO:

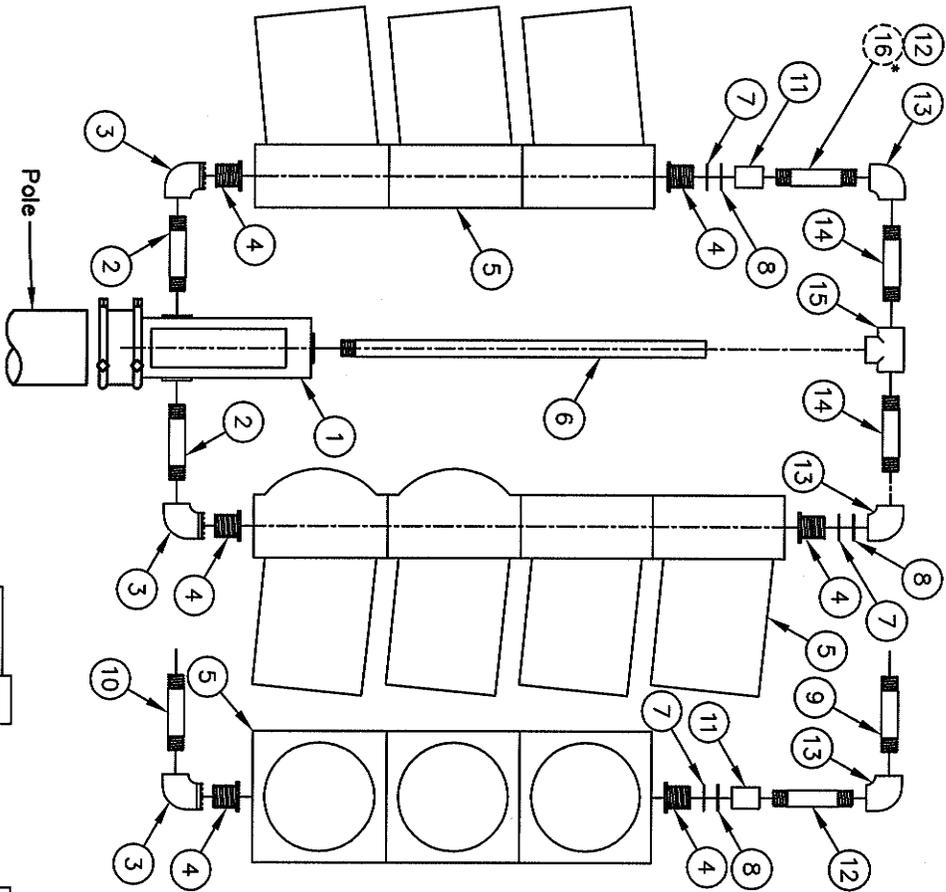
TYPE VIII MOUNTING ASSEMBLY

730-906

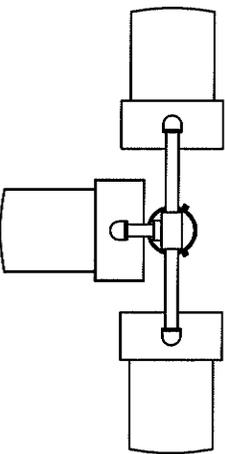
DATE: 9/9/05

REVISED:

SHEET 1 OF 1



**TYPE IX MOUNT**  
Not To Scale



**MOUNTING ORIENTATION PLAN**  
Not To Scale

LIST OF MATERIALS	
Item	Qty. Description
1	1 Pole Top Mtd. Terminal Compartment. (T.S. 10-4-2)**
2	2 1 1/2" Pipe Nipple, 6" Long.
3	3 90° Elbow With Locking Device. (See T.S. 10-1-2)**
4	6 1 1/2" Lock Nipple, See NOTES 1 & 3.
5	3 12" Signal Head. See Plans.
6	1 1 1/2" Pipe ***
7	3 Neoprene Washer.
8	3 Flat Washer.
9	1 1 1/2" Pipe Nipple, 12 1/2" Long.
10	1 1 1/2" Pipe Nipple, 12" Long.
11	2 1 1/2" Coupling, As Required.
12	2 1 1/2" Pipe Nipple ***
13	3 90° Elbow.
14	2 1 1/2" Pipe Nipple, 6 1/2" Long.
15	1 Tee With Side Outlet, Drill & Tap For Setscrew.
16	1 1 1/2" I.D. Pipe Nipple, 49" Long For Pedestrian Signal.

\*\* Standard Details for Public Improvements COT/PC 1994 edition.

\*\*\* Nipple length shall be determined by Contractor to ensure a correct fit for the type of vehicular traffic signal head being installed.

**NOTES:**

1. Lock nipple length shall be and 1 3/4" for 12" heads.
2. All materials shall be black.
3. Lock Nut is required in place of Lock Nipple when "F" face face or "R" face are hung on same frame.
4. Direction of bracket arms are determined at the Project Site and on the Project Plans. Directional mounting orientation of vehicular traffic signal heads may differ from what is shown. See Project Plans and Project Site for desired orientation.

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9/9/2005

Date



STANDARD DETAIL

DETAIL NO:

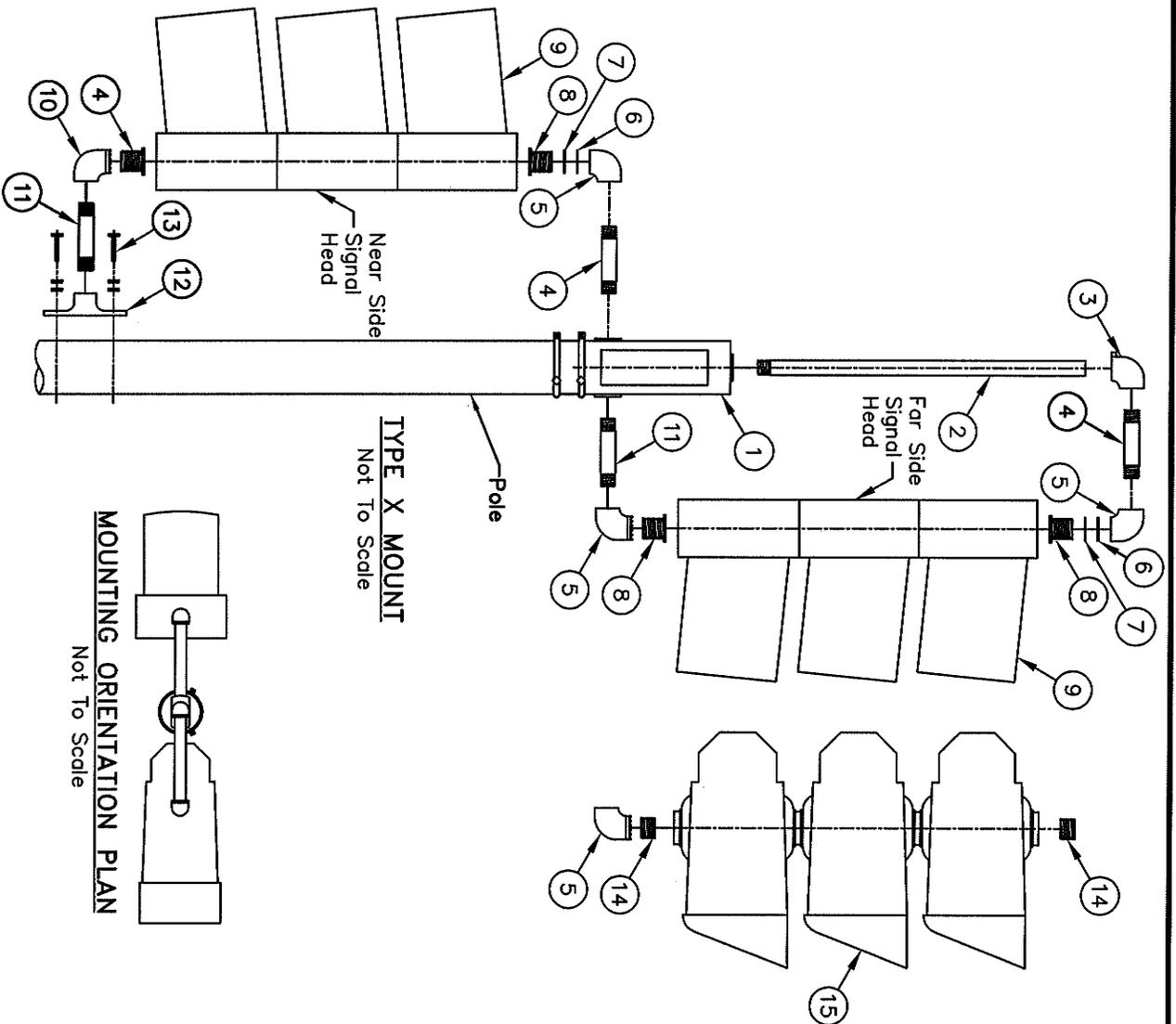
TYPE IX MOUNTING ASSEMBLY

730-907

DATE: 9/9/05

REVISED:

SHEET 1 OF 1



**LIST OF MATERIALS**

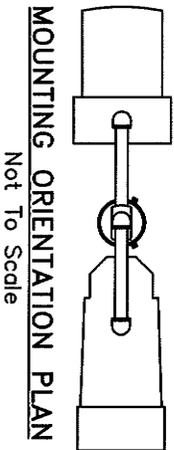
Item	Qty.	Description
1	1	Pole Top Mtd. Terminal Compartment. (T.S. 10-4-2)*
2	1	1/2" Pipe ***
3	1	Elbow, 1 1/2", 90°, Reamed, Drilled, and Tapped For Screw.
4	2	Nipple, 1 1/2" x 1 1/2".
5	2	Elbow, 1 1/2", 90° (3 Required When Optical Signal is Used.)
6	2	Flat Washer.
7	2	Neoprene Washer.
8	4	1 1/2" Lock Nipple, See NOTE 1.
9	2	12" Signal Head. See NOTE 1.
10	2	Elbow, 1 1/2", 90°, With Locking Device.
11	2	Nipple, 1 1/2" x 1 1/2"
12	1	Pole Plate. (T.S. 10-3-2)*
13	2	1/2" x 2" Galvanized Steel Bolt 13-UNC With Flat Washer and Lock Washer.
14	2	Close Nipple, 1 1/2" x 1 3/4".
15	1	Programmed Visibility Signal Assembly.

\*\* Standard Details for Public Improvements COT/PC 1994 edition.

\*\*\* Pipe nipple length shall be determined by Contractor to ensure a correct fit for the type of vehicular traffic signal head being installed.

**NOTES:**

1. Lock nipple length shall be and 1 3/4" for 12" heads.
2. All materials shall be black.
3. Direction of Bracket arms are determined at the Project Site and on the Project Plans. Directional mounting orientation of vehicular traffic signal heads may differ from what is shown. See Project Plans and Project Site for desired orientation.



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STANDARD DETAIL

DETAIL NO:

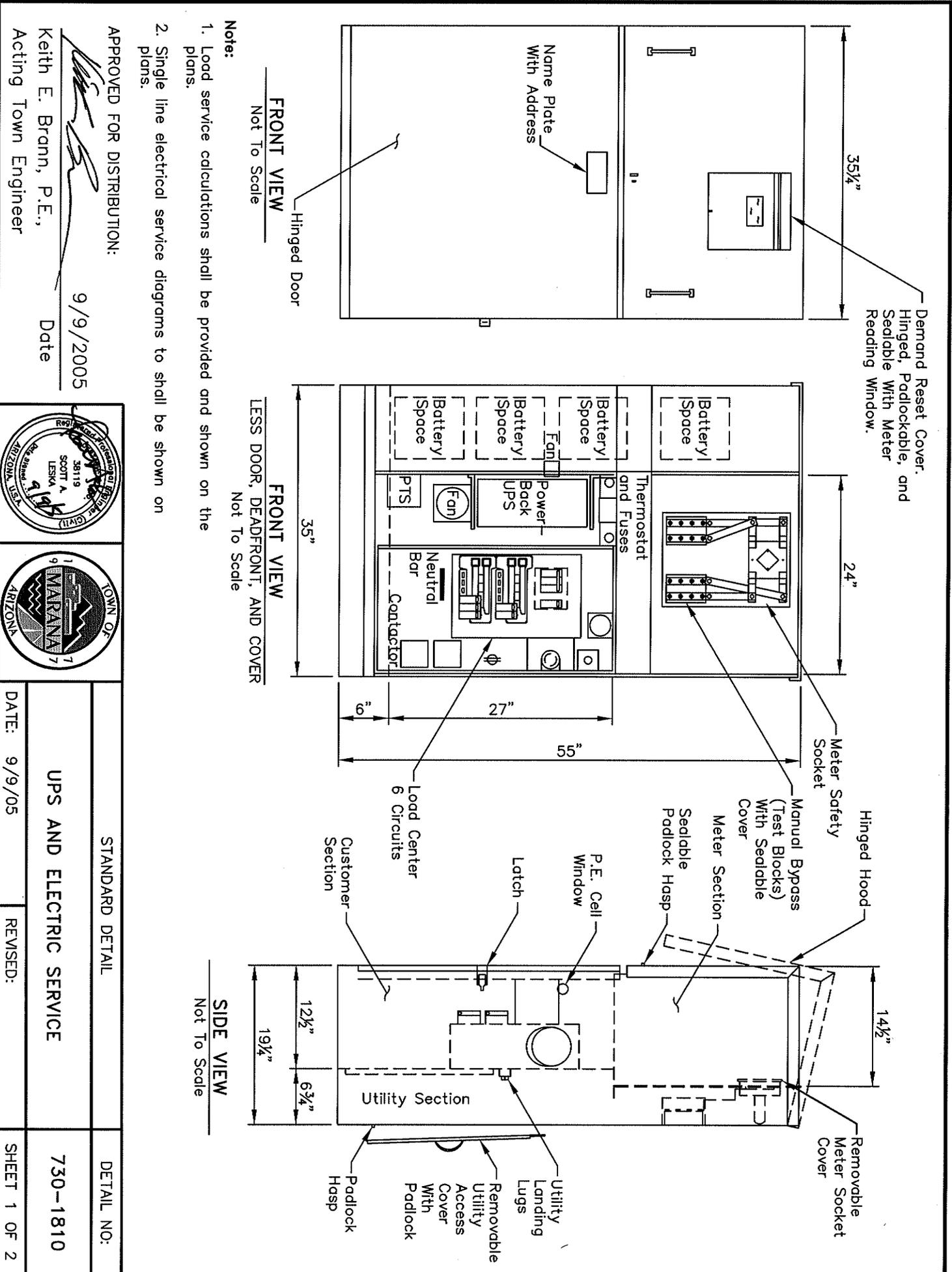
TYPE X MOUNTING ASSEMBLY

730-908

DATE: 9/9/05

REVISED:

SHEET 1 OF 1



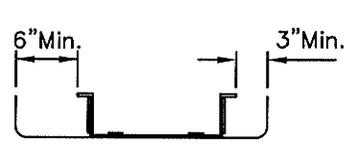
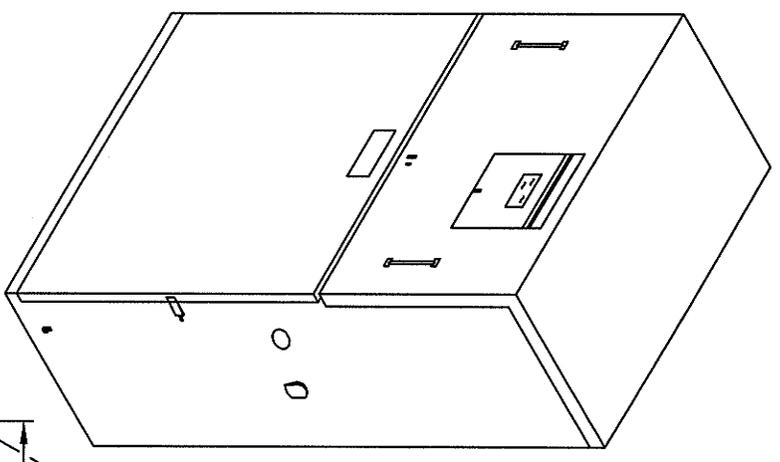
**Note:**  
 1. Load service calculations shall be provided and shown on the plans.  
 2. Single line electrical service diagrams to shall be shown on plans.

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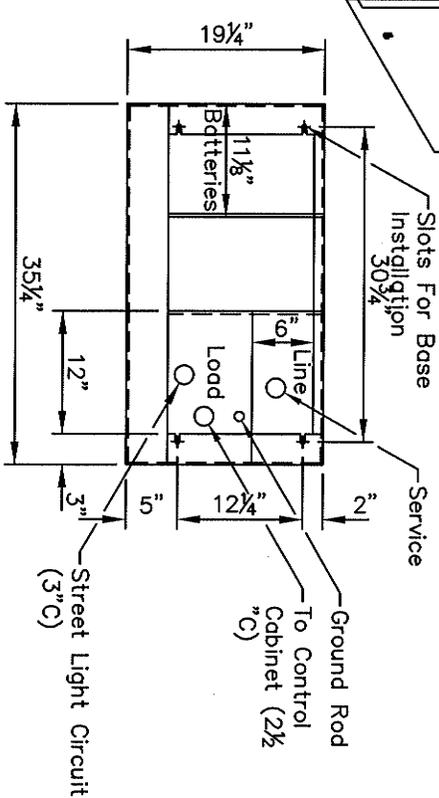
Keith E. Brann, P.E.,  
 Acting Town Engineer  
 Date 9/9/2005



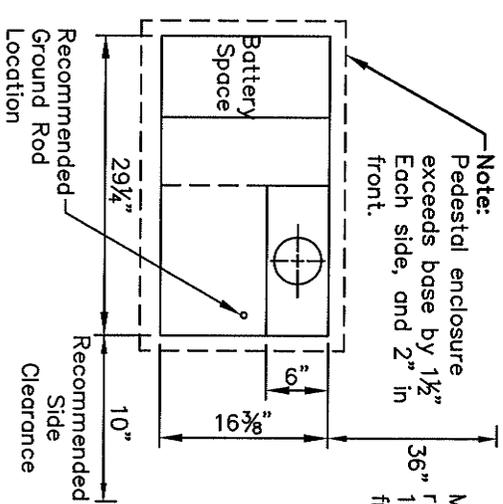
STANDARD DETAIL	DETAIL NO.:
UPS AND ELECTRIC SERVICE	730-1810
DATE: 9/9/05	SHEET 1 OF 2
REVISED:	



**SIDE VIEW**  
Not To Scale

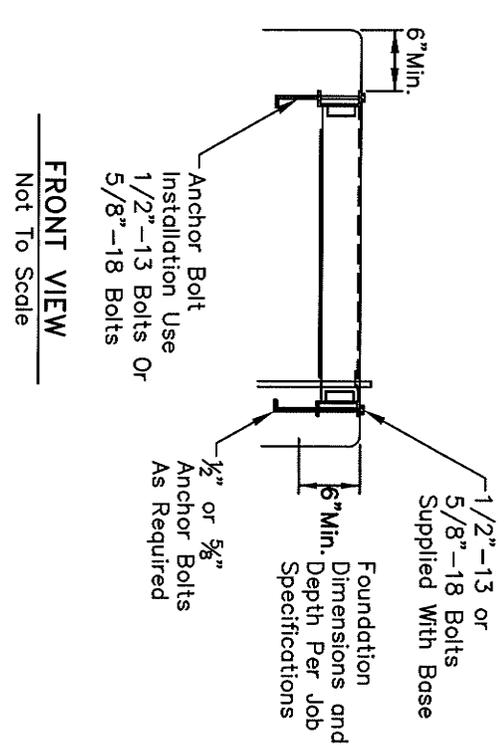


**PEDESTAL PLAN VIEW**  
**MOUNTING SLOT DETAIL**  
Not To Scale



**PLAN VIEW**  
Not To Scale

**Note:** Pedestal enclosure exceeds base by 1 1/2 inch Each side, and 2 inch front.  
Minimum clearance reqd. per NEC 110-16, typical front and back.



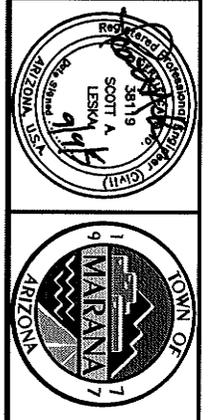
**FRONT VIEW**  
Not To Scale

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9/9/2005

Date



STANDARD DETAIL

UPS AND ELECTRIC SERVICE

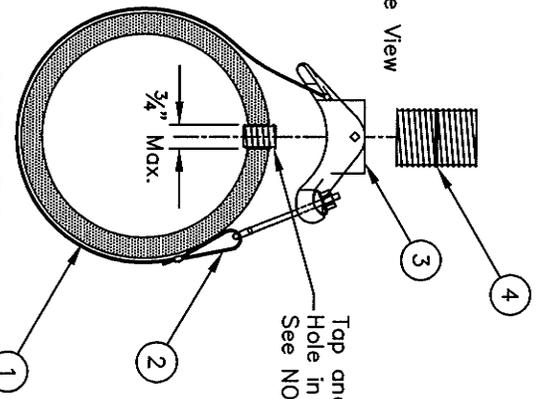
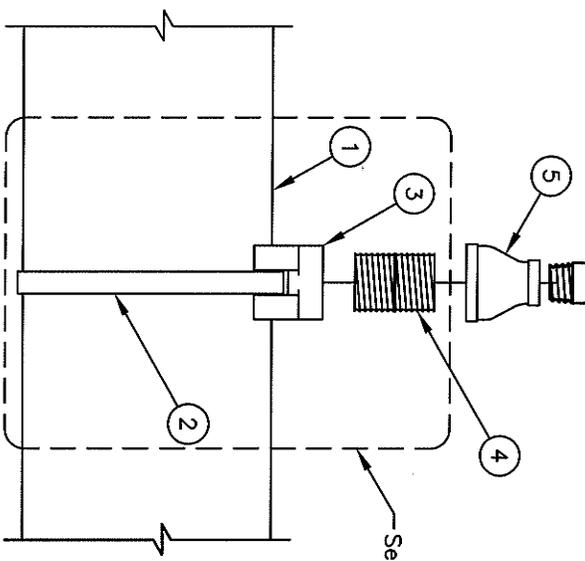
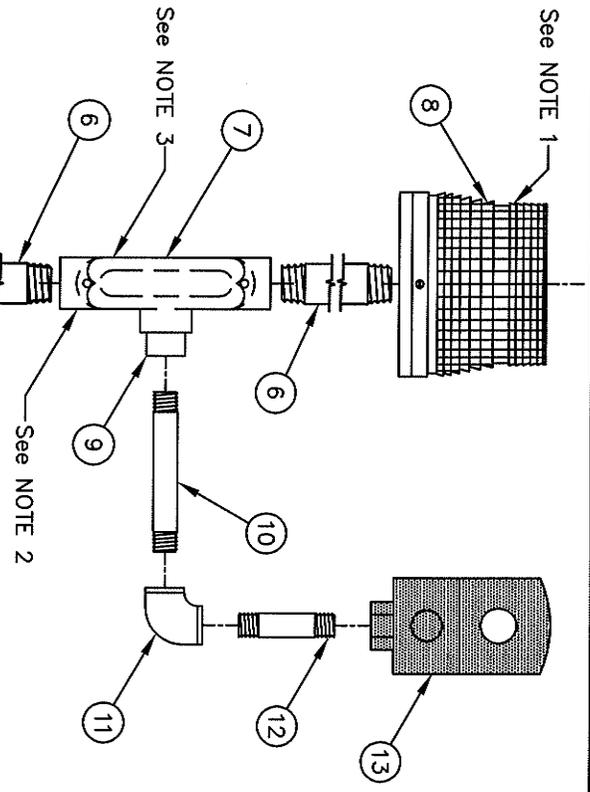
DETAIL NO:

730-1810

DATE: 9/9/05

REVISED:

SHEET 2 OF 2



LIST OF MATERIALS	
Item	Description
1	Signal Mast Arm (See Plans)
2	5/8" Banding
3	Pelco Astro Mini-Brac Band Mount AB-0121-42-NPT Or Approved Equal
4	1 1/2" Chase Nipple (Black Pipe)
5	1 1/2"-1" Reducer (Black Pipe, Painted Black)
6	12" Chase Nipple (Black Pipe)
7	1" Conduit Body C Style
8	Flashing Beacon, See Note 1
9	1"-3/4" Reducer
10	3/4" Pipe Nipple, 5" Long
11	3/4" 90° Elbow
12	3/4" Pipe Nipple, 3" Long
13	Optical Detector

**NOTES:**

1. North/South pre-emption: Use clear beacon. East/West pre-emption: Use blue beacon. Whelen part No. IS32201 or approved equal.
2. Face plate shall face away from approaching traffic.
3. Conduit body shall be primed and then painted black.
4. 2' minimum spacing from any other penetration into mast arm.

FRONT VIEW

Not To Scale

SIDE VIEW

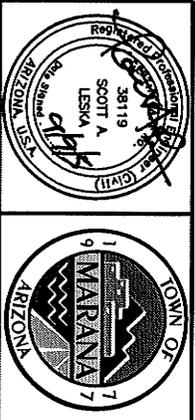
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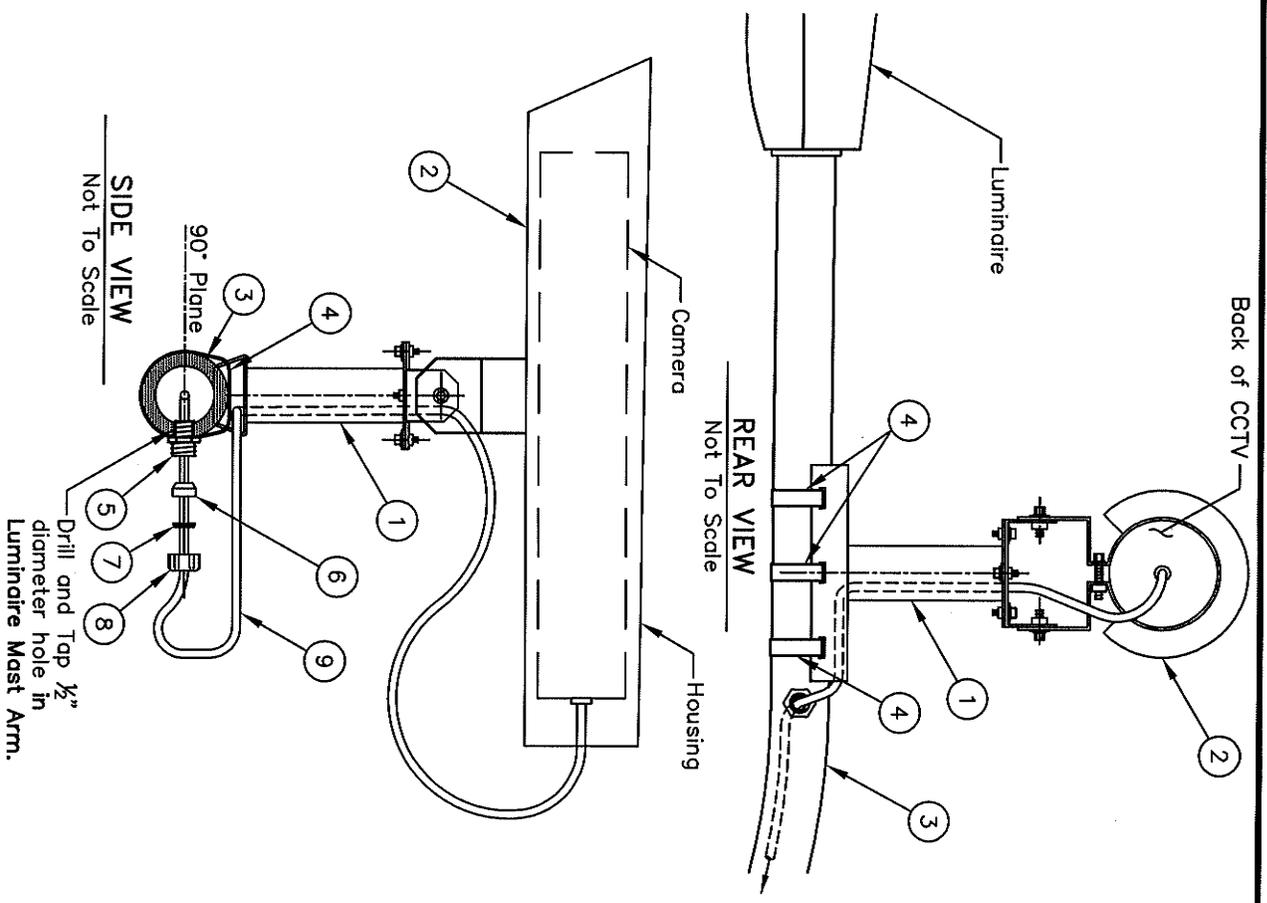
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Acting Town Engineer

9/9/2005

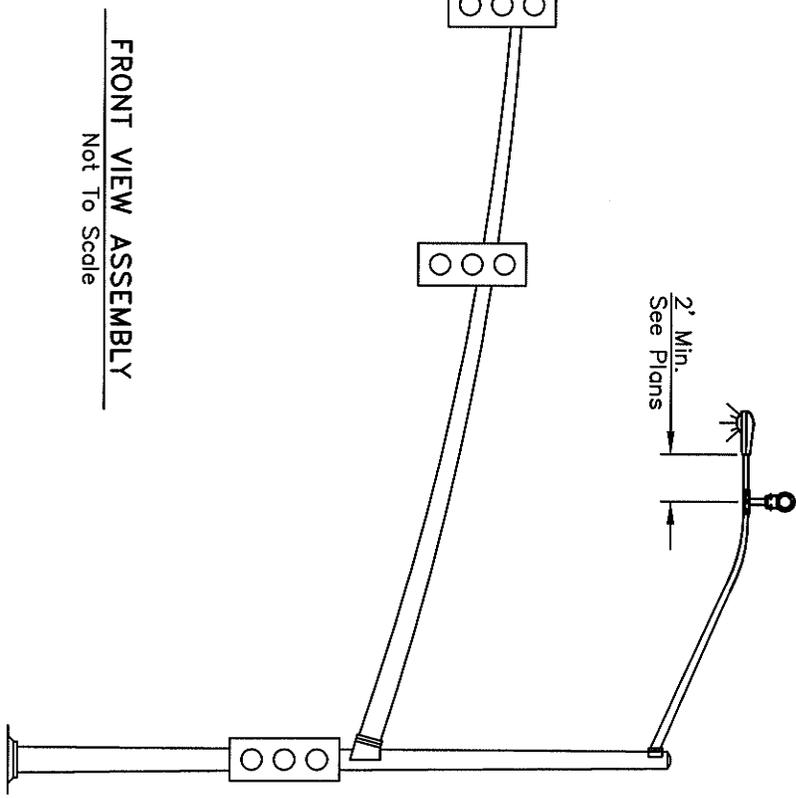
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STANDARD DETAIL		DETAIL NO:
PRE-EMPTION MOUNTING DETAIL		730-1910
DATE: 9/9/05	REVISED:	SHEET 1 OF 1



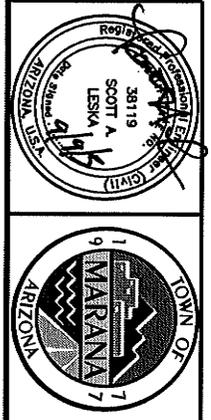
LIST OF MATERIALS	
Item.	Qty.
Camera Mount	1
Camera	1
Luminaire Mast Arm	1
Banding	3
Chase Nipple (Black Pipe)	1
Gasket	1
Plastic Washer	1
Bolt	1
CCTV Cable Per Manufacturer Requirements	1



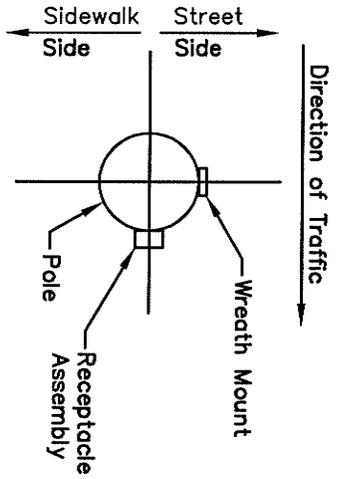
**FRONT VIEW ASSEMBLY**  
Not To Scale

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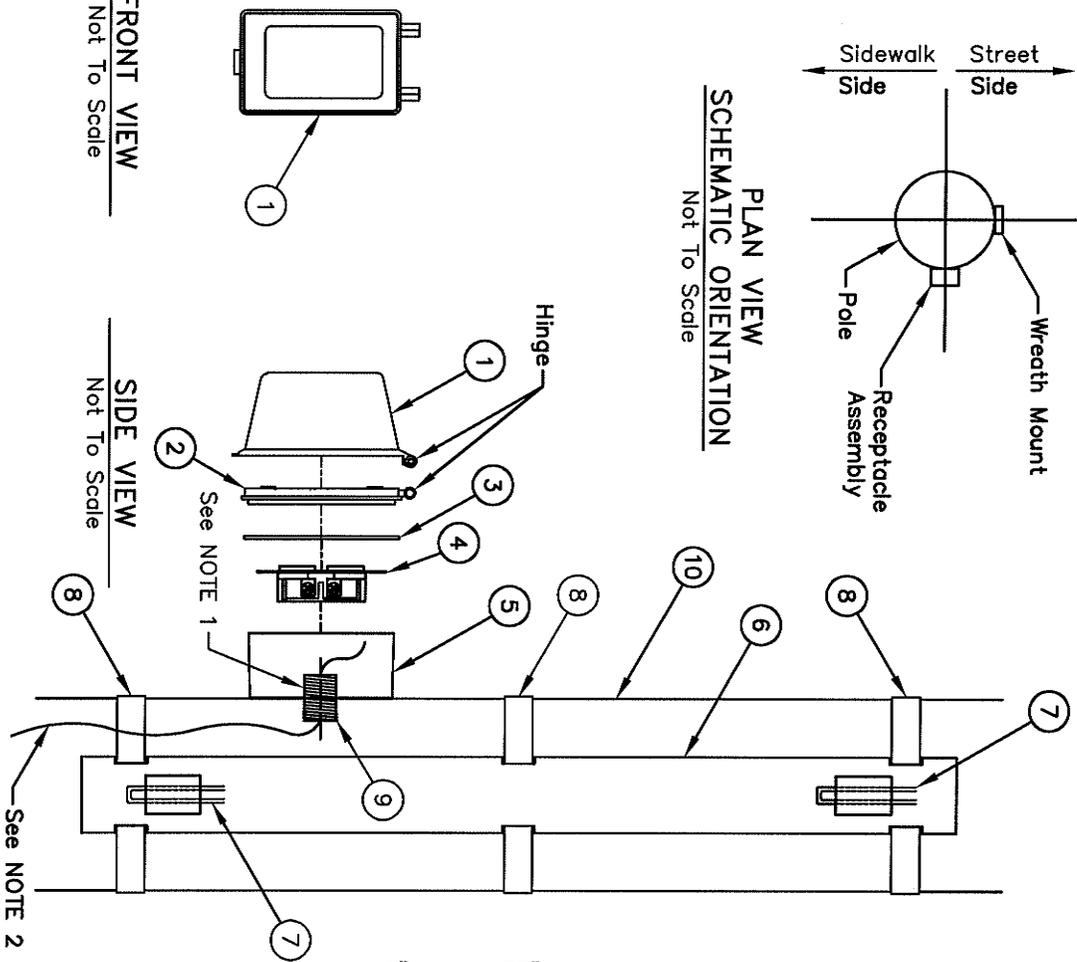
Keith E. Brann, P.E.,  
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Date 9/9/2005



STANDARD DETAIL	DETAIL NO:
CAMERA AND MOUNT ASSEMBLY	730-1911
DATE: 9/9/05	REVISIONS:
	SHEET 1 OF 1



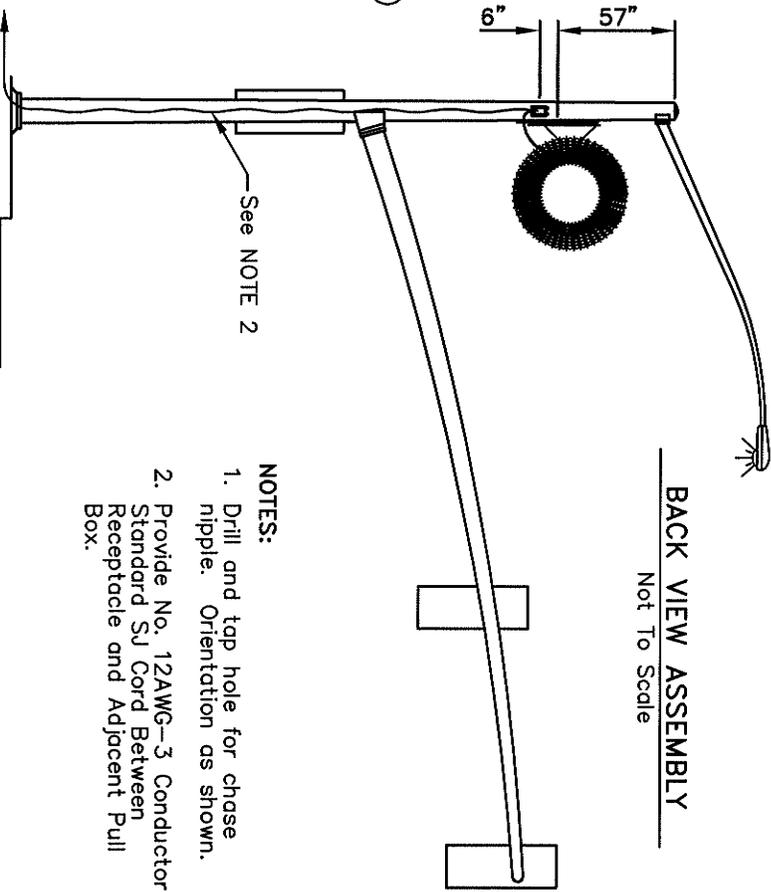
**PLAN VIEW**  
**SCHEMATIC ORIENTATION**  
Not To Scale



**FRONT VIEW**  
Not To Scale

**SIDE VIEW**  
Not To Scale

LIST OF MATERIALS	
Item. Qty.	Description
1	Steel Receptacle Cover
2	Steel Receptacle Base
3	Gasket
4	Grounding Outlet, 2-Pole, 3-Wire 15 Amp-125 Volt Rated Capacity
5	Outlet Box, Red Dot 14252 Or Approved Equal
6	Wreath Mount
7	Wreath
8	Banding
9	1" Chase Nipple (Black Pipe)
10	Pole (See Plans)



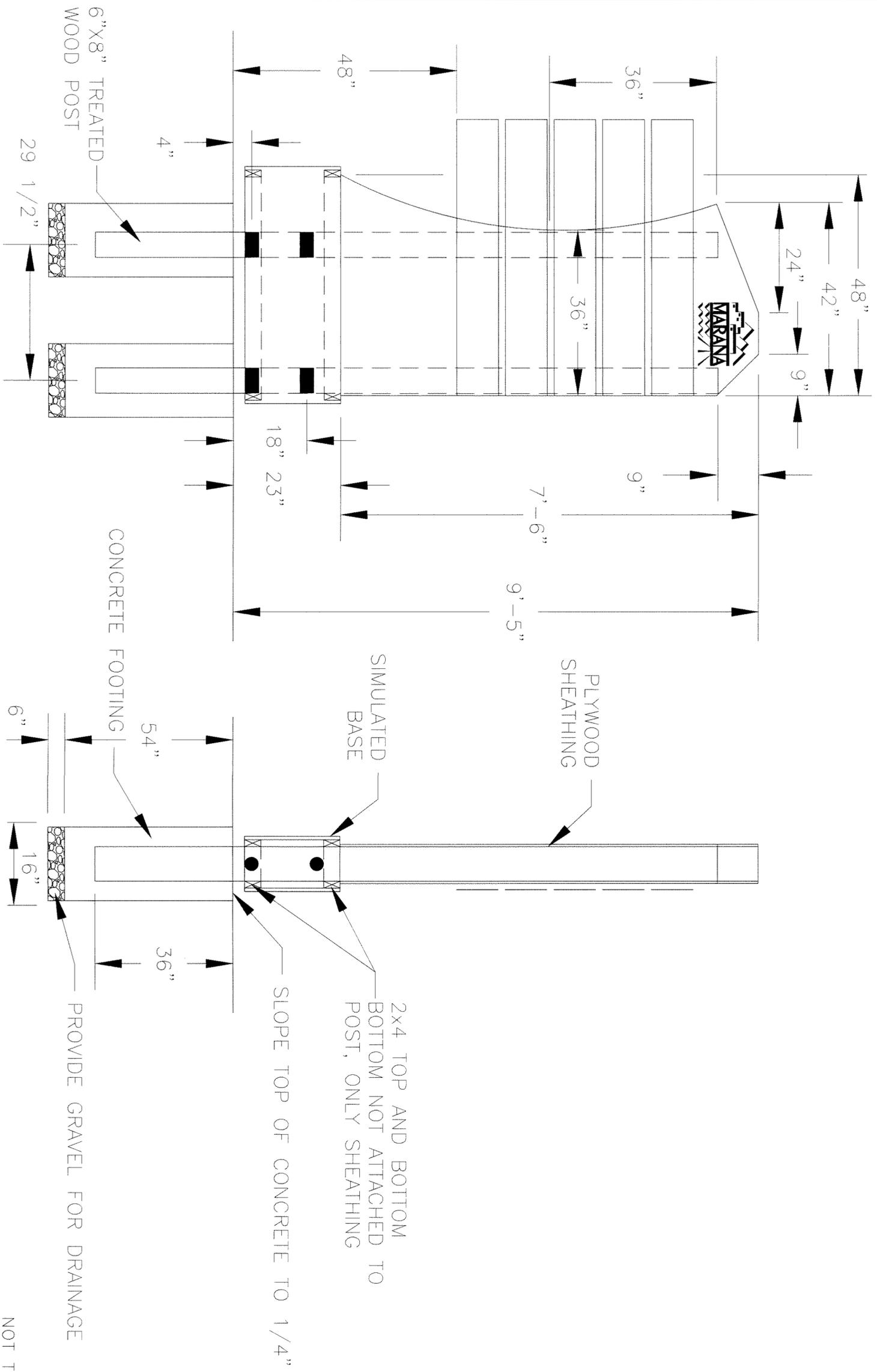
**BACK VIEW ASSEMBLY**  
Not To Scale

- NOTES:**
1. Drill and tap hole for chase nipple. Orientation as shown.
  2. Provide No. 12AWG-3 Conductor Standard SJ Cord Between Receptacle and Adjacent Pull Box.

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 9/9/2005  
 Date



STANDARD DETAIL	DETAIL NO.:
RECEPTACLE AND WREATH MOUNT	730-1912
DATE: 9/9/05	SHEET 1 OF 1



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MARANA STREET STANDARDS  
WAYFINDING SIGN

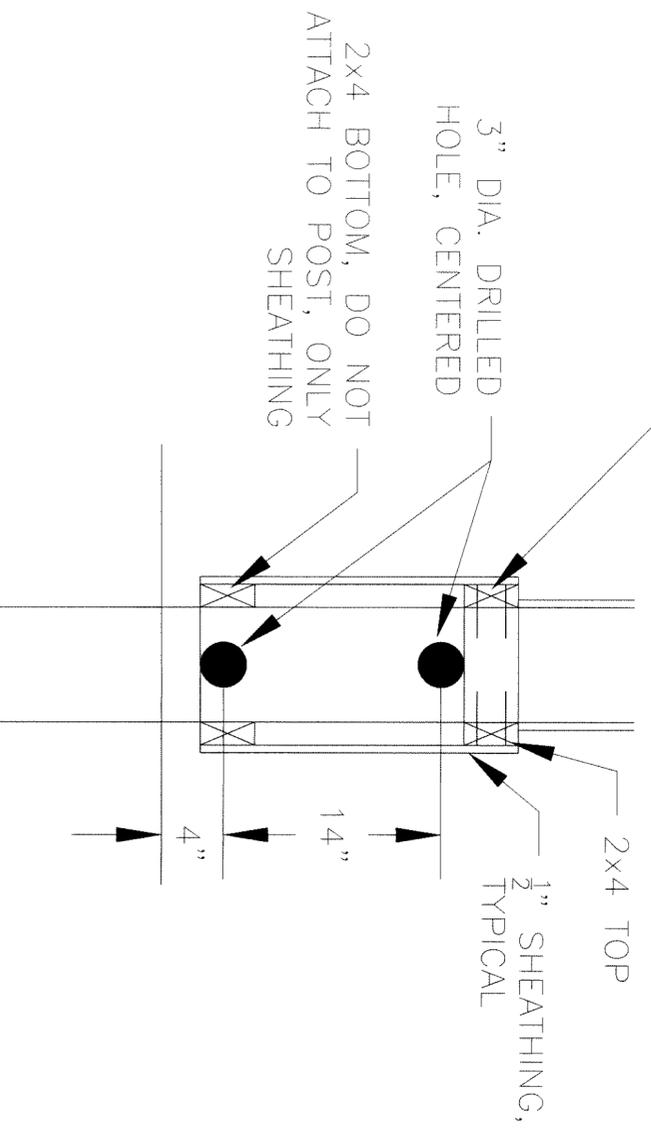
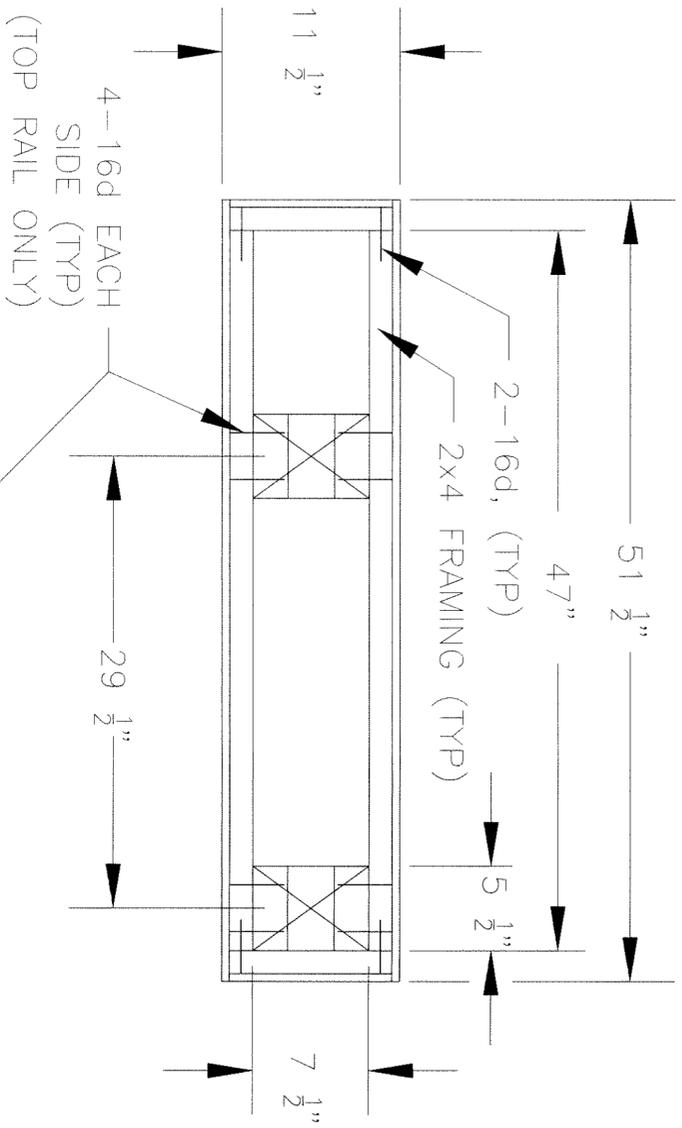
DATE: 3/28/2011  
REVISED:  
SHEET 1 OF 2

DETAIL NO:

740-1

DESIGN NOTES

1. SHEATHING TO BE  $\frac{1}{2}$ " EXTERIOR GRADE PLYWOOD
2. POSTS ARE 6"x8" D.F. NO 1 PRESSURE TREATED.
3. THREE INCH DIAMETER HOLES TO BE DRILLED PARALLEL TO SIX INCH SIDE OF POSTS PER DETAILS
4. SIGN PLATES ARE ALUMINUM SHEETING, RETROREFLECTIVE WITH MUTCD TYPE 6B LETTERING
5. SIMULATED BASE SHALL NOT HAVE ANY FIXED MOUNTING AT OR BELOW BREAK-AWAY HOLES
6. FRAMING FOR SIMULATED BASE SHALL BE 2x4 D.F. NO 2 PRESSURE TREATED LUMBER
7. CONCRETE STRENGTH,  $F'_c=2500\text{psi}$  (SPECIAL INSPECTION NOT REQUIRED)
8. SOIL BEARING PRESSURE=1500psf, SOIL LATERAL BEARING PRESSURE=100psf PER 2006 IBC TABLE 1804.2
9. THE SITE DESIGN IS NOT CONSIDERED SUBJECT TO WIND SPEED-UP EFFECT,  $K_z < 1.0$  AS DEFINED IN SECTION 6.5.7.2 OF ASCE 7-05. ANY SIGN LOCATED WITHIN 125 FEET OF A 25 FOOT OR HIGHER HILL OR ESCARPMENT MAY BE SUBJECT TO SUCH EFFECTS AND SIGN REDESIGN WOULD BE REQUIRED. CONTACT ENGINEER OF RECORD IF SUCH EFFECTS ARE PRESENT.
10. PROVIDE GRADE SLOPE AWAY FROM BASE OF POLES.
11. IT IS RECOMMENDED TO REPLACE WOOD POSTS EVERY FIVE YEARS DUE TO NORMAL CLIMATE EXPOSURE
12. ALL NAILING SHALL BE PER THE 2006 IBC TABLE 2304.9.1
13. SIMULATED BASE SHALL NOT HAVE ANY FIXED MOUNTING AT OR BELOW BREAK-AWAY HOLES.



1 WIND FACTOR CLARIFICATION 03.28.11

NOT TO SCALE

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Town Engineer



MARANA STREET STANDARDS	DETAIL NO:
WAYFINDING SIGN	740-1
DATE: 3/28/2011	REVISID:
	SHEET 2 OF 2