

# CITY OF SURPRISE

## SUPPLEMENTAL ENGINEERING DEVELOPMENT STANDARD

### DETAILS FOR PUBLIC WORKS CONSTRUCTION

AUGUST



2016



Expires 12/31/2017

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DATE REVISED: 8/2016



COVER SHEET

## 1 SERIES (NOT USED)

## 2 SERIES: CONSTRUCTION PLANS

2-01	COVER SHEET TYPICAL LAYOUT FOR CIP PROJECTS
2-02	PLAN & PROFILE SHEET TYPICAL LAYOUT
2-03	DETAIL SHEET TYPICAL LAYOUT
2-04	GENERAL ENGINEERING NOTES
2-05	GENERAL GRADING NOTES
2-06	PAVING NOTES
2-07	SANITARY SEWER NOTES
2-08A	GENERAL POTABLE WATER NOTES
2-08B	GENERAL POTABLE WATER AND MATERIAL SPECIFICATION NOTES
2-09A	GENERAL RECLAIMED WATER NOTES
2-09B	RECLAIMED WATER SYSTEM MATERIAL SPECIFICATIONS
2-10A	GENERAL STORMWATER POLLUTION PREVENTION PLAN NOTES
2-10B	SWPPP INSPECTION NOTES
2-10C	EROSION AND SEDIMENT CONTROL NOTES
2-11	GENERAL NOTES FOR DRY UTILITY CONSTRUCTION
2-12	GENERAL TEMPORARY TRAFFIC CONTROL NOTES
2-13	GENERAL TRAFFIC SIGNAL NOTES
2-14	GENERAL SIGNING AND PAVEMENT MARKING NOTES

## 3 SERIES: STREET

3-01	STANDARD STREET CROSS-SECTION AND UTILITY LOCATIONS - PARKWAY
3-02A	STANDARD STREET CROSS-SECTION AND UTILITY LOCATIONS - MAJOR ARTERIAL STREET
3-02B	STANDARD STREET CROSS-SECTION AND UTILITY LOCATIONS - MAJOR ARTERIAL STREET WITH BIKE LANE
3-03	STANDARD STREET CROSS-SECTION AND UTILITY LOCATIONS - MINOR ARTERIAL STREET
3-04	STANDARD STREET CROSS-SECTION AND UTILITY LOCATIONS - HIGH VOLUME COLLECTOR
3-05	STANDARD STREET CROSS-SECTION AND UTILITY LOCATIONS - RESIDENTIAL COLLECTOR STREET
3-06	STANDARD STREET CROSS-SECTION AND UTILITY LOCATIONS - COMMERCIAL COLLECTOR STREET
3-07	STANDARD STREET CROSS-SECTION AND UTILITY LOCATIONS - LOCAL STREET
3-08	DRIVEWAY CRITERIA
3-09	RETURN TYPE DRIVEWAYS WITH ATTACHED SIDEWALK
3-10	RETURN TYPE DRIVEWAYS WITH DETACHED SIDEWALK
3-11	DUAL RAMP
3-12	PORKCHOPS - RIGHT TURN LANE
3-13	PORKCHOPS - NO RIGHT TURN LANE
3-14	INTERSECTION RIGHT-OF-WAY
3-15	CORNER RADII DEDICATIONS
3-16	CUL-DE-SAC AND HAMMERHEADS

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## SHEET INDEX (PAGE 1 OF 3)

DETAIL NO:

i-1

#### **4 SERIES: TRAFFIC**

4-01	SIGHT DISTANCE REQUIREMENTS FOR ARTERIAL & COLLECTOR STREETS
4-02	LOCAL STREET SIGHT VISIBILITY TRIANGLES
4-03	PARKING LOT DIMENSIONS
4-05	STANDARD TRAFFIC SIGNAL PHASING
4-06	TYPICAL TRAFFIC SIGNAL CONDUIT SCHEMATIC
4-07	TYPICAL TRAFFIC SIGNAL CABLE SCHEMATIC
4-08A	TRAFFIC SIGNAL WIRING SCHEMATIC
4-08B	CONDUCTOR COLOR CODING CRITERIA
4-09	POLE PLACEMENT DETAILS
4-10	MAST ARM LOADING DETAIL TYPE Q POLE
4-11	DUAL CABINET FOUNDATION
4-12A	TYPICAL ONE-LINE DIAGRAM DETAIL
4-12B	TYPICAL ONE-LINE DIAGRAM DETAIL WITH UPS
4-14	INTERNALLY ILLUMINATED STREET NAME SIGN FORMAT
4-15A	TYPICAL FIBER PULL BOX INSTALLATION
4-15B	TYPICAL FIBER PULL BOX INSTALLATION NOTES
4-16A	TYPICAL FIBER TRENCH DETAILS
4-16B	TYPICAL FIBER AND STREET LIGHTING JOINT TRENCH DETAIL
4-17A	#9 TYPICAL COMMUNICATIONS VAULT INSTALLATION NOTES
4-17B	#9 TYPICAL COMMUNICATIONS VAULT INSTALLATION
4-17C	CCTV CAMERA WIRING DETAILS
4-17D	CCTV CAMERA AND FIBER TERMINATION PANEL DETAILS
4-17E	CCTV CAMERA POLE MOUNTING DETAIL
4-17F	ITS FIELD SWITCH STATIC PORT ASSIGNMENTS
4-18A	PAVEMENT MARKING PLAN CALL OUTS - WHITE MARKINGS
4-18B	PAVEMENT MARKING PLAN CALL OUTS - YELLOW MARKINGS
4-19	RAISED PAVEMENT MARKING DETAIL

#### **4 SERIES: TRAFFIC (CONTINUED)**

4-20A	SIGNING & MARKING FOR TYPICAL INTERSECTION
4-20B	SIGNING & MARKING FOR TYPICAL INTERSECTION
4-20C	SIGNING & MARKING FOR TYPICAL INTERSECTION INCLUDING CROSSWALK
4-20D	TYPICAL PAVEMENT MARKING
4-20E	TYPICAL SIGNING FOR 660' STOP-CONTROLLED CROSSOVER
4-20F	TYPICAL SIGNING FOR 660' SIGNAL-YIELD CONTROLLED CROSSOVER
4-20G	STANDARD LEFT TURN BAY LAYOUT
4-20H	STANDARD RIGHT TURN DROP LANE LAYOUT
4-20I	TEMPORARY AND FINAL PAVEMENT MARKING PLACEMENT DETAIL
4-21A	7-INCH STREET NAME SIGN DETAIL
4-21B	9-INCH STREET NAME SIGN DETAIL D3 (9S)
4-21C	12-INCH STREET NAME SIGN DETAIL D3 (12S)
4-21D	ORIGINAL TOWN SITE STREET NAME SIGN DETAIL D3 (OTS)
4-21E	ARIZONA PARKWAY ADVANCE GUIDE SIGN
4-21F	ARIZONA PARKWAY GUIDE SIGN
4-21G	ARIZONA PARKWAY GUIDE SIGN
4-21H	ARIZONA PARKWAY GUIDE SIGN
4-21I	FIRE LANE SIGN
4-22	STREET SIGN FOUNDATION DETAIL

#### **5 SERIES: STORM DRAIN**

5-01	STORM DRAIN INLET MARKER
5-02A	STORM DRAIN INLET MARKER ON HEADWALL
5-02B	STORM DRAIN INLET MARKER ON CATCH BASIN SCUPPER
5-03	STORM DRAIN MANHOLE COVER
5-04A	STORM SEWER OUTFALL ACCESS BARRIER
5-04B	STORM SEWER OUTFALL ACCESS BARRIER
5-04C	BARRIER SPECIFICATIONS SCHEDULE

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## **SHEET INDEX (PAGE 2 OF 3)**

DETAIL NO:

i-2

## **6 SERIES: WATER**

6-01	TYPICAL VALVE LOCATIONS
6-02	BLOCKING FOR WATER GATE VALVES
6-03A	MANHOLE FOR BUTTERFLY VALVES
6-03B	BUTTERFLY AND AIR RELEASE VALVES MANHOLE COVER
6-05	WATER SERVICE CONNECTIONS - 2" AND SMALLER
6-07	METER ASSEMBLY - 3" AND LARGER
6-08	LOCATION FOR NEW FIRE HYDRANTS
6-09	METHOD OF SETTING FIRE HYDRANTS
6-10	DOUBLE CHECK VALVE BACKFLOW PREVENTION ASSEMBLIES - 2 1/2" AND SMALLER
6-11	DOUBLE CHECK VALVE BACKFLOW PREVENTION ASSEMBLIES - 3" AND LARGER
6-12	REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLIES - 3" AND LARGER
6-13	REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLIES - 2 1/2" AND SMALLER
6-14	METAL CAGE FOR REDUCED PRESSURE PRINCIPAL BACKFLOW PREVENTION ASSEMBLIES - 2 1/2" OR LESS
6-15	DOUBLE CHECK VALVE BACKFLOW PREVENTION ASSEMBLY VAULT INSTALLATION
6-16	BACKFLOW PREVENTION ASSEMBLIES PROTECTION
6-17A	BACTERIOLOGICAL SAMPLE STATION - 2" PIPE (RECLAIMED WATER ONLY)
6-17B	WATER QUALITY SAMPLING STATION (POTABLE WATER)
6-18	OFF-ROAD MANHOLE AND VALVE MARKERS
6-19A	LARGE RECLAIMED WATER IDENTIFICATION TAG AND DECAL
6-19B	SMALL RECLAIMED WATER IDENTIFICATION TAG
6-20	RECLAIMED WATER SERVICE CONNECTION
6-21	AIR RELEASE VALVE
6-22	UNDERGROUND AIR RELEASE VALVE
6-23	RECLAIMED WATER CURB STOP (BLOW-OFF) WITH FLUSHING PIPE
6-24	RECLAIMED WATER VALVE BOX AND COVER
6-25	RECLAIMED AND POTABLE WATER LINE MARKER BALL AND MARKING TAPE
6-26	PRESSURE VACUUM BREAKER ASSEMBLY

## **7 SERIES: SANITARY SEWER**

7-01	SANITARY SEWER MANHOLE COVER
7-02	CONTROL SAMPLING VAULT
7-03	SEWER LINE MARKER BALL AND MARKING TAPE

## **8 SERIES: LANDSCAPING**

8-01	SINGLE-OUTLET EMITTERS - ALL SHRUBS AND GROUD COVER
8-02	MULTI-OUTLET EMITTERS - FOR TREES ONLY
8-03	IRRIGATION EMITTER LAYOUT
8-04	EMITTER FLUSH CAP ASSEMBLY
8-05	SWING JOINT ASSEMBLY FOR ROTOR AND POP-UP SPRINKLERS
8-06	SHRUB POP-UP SPRINKLER ASSEMBLY
8-07	DRIP FILTER AND PRESSURE REGULATOR
8-08	IRRIGATION THRUST BLOCK
8-09	1-1/2" AND SMALLER MAINLINE BALL VALVE
8-10	2" AND LARGER MAINLINE ISOLATION GATE VALVE
8-12	TREE OR SHRUB PLANTING ON SLOPE - 5 GAL., 15 GAL. AND 24" BOX
8-13	MULCH LAYER AND GROUND COVER PLANTING
8-14	ROOT BARRIER
8-15	SHRUB OR TREE PLANTING

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## **SHEET INDEX (PAGE 3 OF 3)**

DETAIL NO:

i-3



24" X 36"  
SHEET BOUNDARY

22" X 34"  
DRAWING BOUNDARY



# CITY OF SURPRISE

(INSERT DEPARTMENT HERE)

PROJECT NUMBER  
PROJECT NAME 1  
PROJECT NAME 2  
VOLUME X OF X

YEAR

VOLUME 1: BIDDING REQUIREMENTS,  
CONTRACT FORMS, AND  
CONDITIONS OF CONTRACT

VOLUME 2: SPECIFICATIONS  
VOLUME 3: CONSTRUCTION PLANS

### SHEET INDEX

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	LEGEND, INDEX, AND SURVEY CONTROL
3	NOTES
4	OVERALL PROFILE SHEET
5-X	PLAN & PROFILE
X-X	DETAILS

### APPROVALS

**CITY OF SURPRISE SIGNATURE BLOCK**  
THIS SET OF PLANS HAS BEEN REVIEWED FOR COMPLIANCE WITH CITY REQUIREMENTS PRIOR TO ISSUANCE OF PERMITS. THE CITY NEITHER ACCEPTS NOR ASSUMES ANY LIABILITY FOR ERRORS OR OMISSIONS. THIS COMPLIANCE APPROVAL SHALL NOT PREVENT THE CITY ENGINEER FROM REQUIRING CORRECTIONS OF ERRORS OR OMISSIONS IN PLANS FOUND TO BE IN VIOLATION OF LAW OR ORDINANCES.

APPROVED \_\_\_\_\_ DATE \_\_\_\_\_  
CITY OF SURPRISE ENGINEER

APPROVED \_\_\_\_\_ DATE \_\_\_\_\_  
MARICOPA COUNTY ENVIRONMENTAL SERVICES DEPARTMENT

**AS-BUILT CERTIFICATION**  
I CERTIFY THAT THE "AS-BUILT" INFORMATION SHOWN HEREON WAS OBTAINED UNDER MY DIRECT SUPERVISION AND IS CORRECT AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

APPROVED \_\_\_\_\_ DATE \_\_\_\_\_  
ENGINEER OF RECORD

REGISTRATION NO. \_\_\_\_\_



RESERVED FOR CITY USE

NO.	REVISION BY	DATE	DESCRIPTION



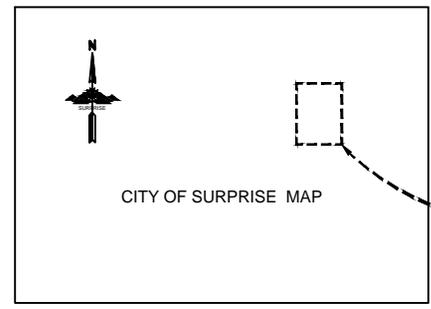
CONSULTANT TITLE BLOCK



COVER SHEET (EXAMPLE)  
PROJECT NUMBER  
DRAWN: XX  
CHECKED: XX  
DESIGNED: XX

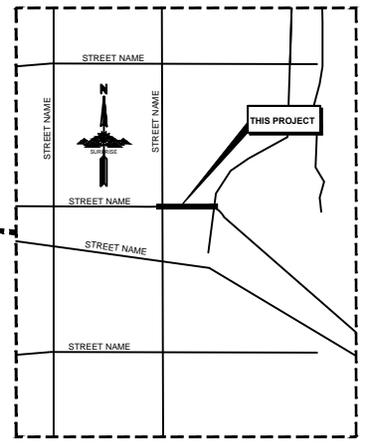
DATE: XX/XX/XXXX  
PROJECT NO.: XXXXXXXX  
SHEET NUMBER  
1 OF XX

24" 1.25"



THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF YOUR CONTRACT WITH THE CITY OF SURPRISE.

IN ACCORDANCE WITH AAC R18-119 ALL MATERIALS INSTALLED AFTER JANUARY 1, 1983, WHICH MAY COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NATIONAL SANITATION FOUNDATION STANDARDS 60 & 61.



36"

0.75"

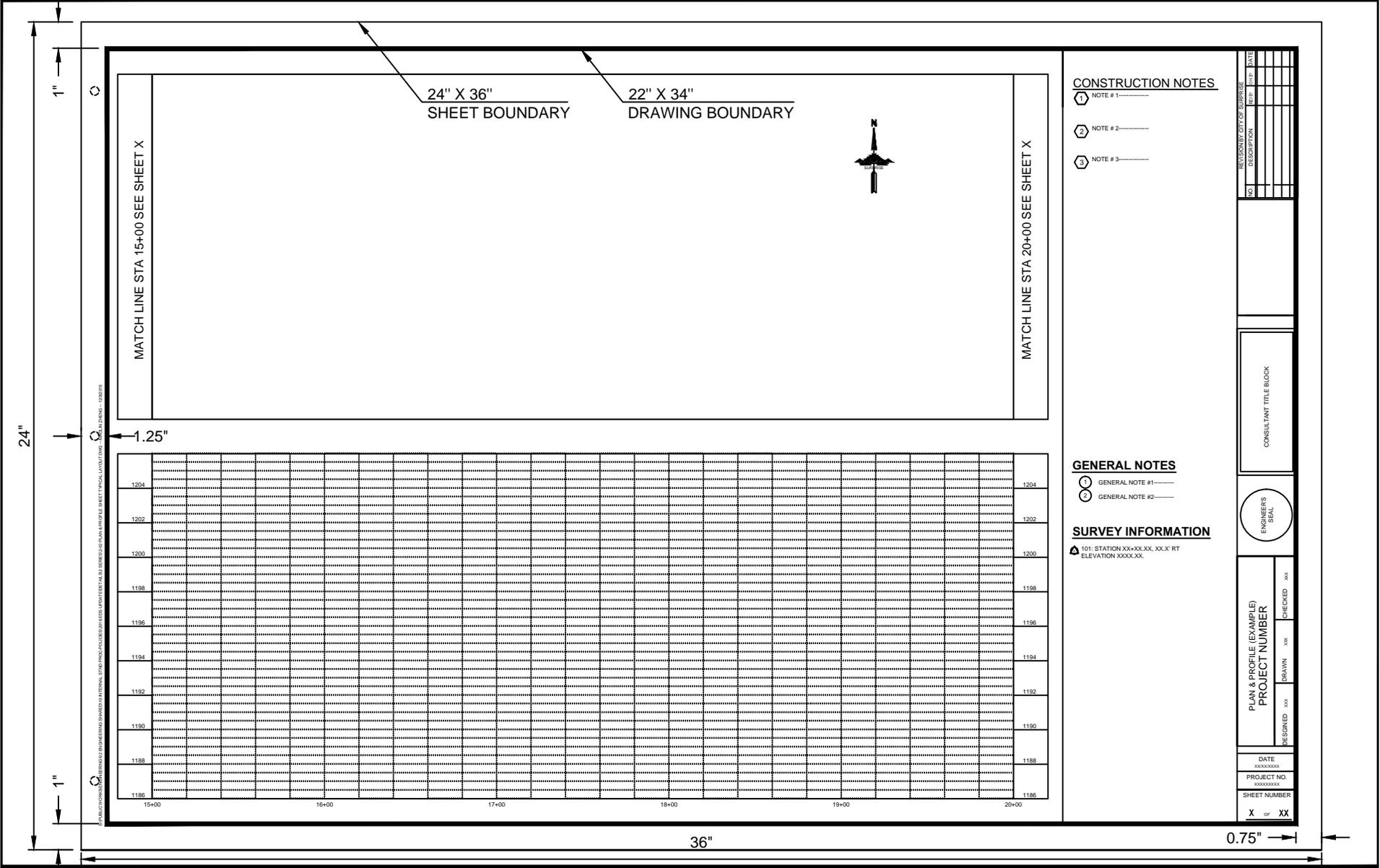
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## COVER SHEET TYPICAL LAYOUT FOR CIP PROJECTS

DETAIL NO:  
**2-01**



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# PLAN & PROFILE SHEET TYPICAL LAYOUT

DETAIL NO:

2-02



## **GENERAL ENGINEERING NOTES:**

1. ALL CONSTRUCTION MUST CONFORM TO MARICOPA ASSOCIATION OF GOVERNMENT (MAG) SPECIFICATIONS AND DETAILS AND LATEST REVISIONS UNLESS OTHERWISE STATED ON PLANS.
2. THE ENGINEER WILL NOT BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, OR PROCEDURES OR FOR SAFETY PRECAUTIONS OR PROGRAMS UTILIZED IN CONNECTION WITH THE WORK, AND THEY WILL NOT BE RESPONSIBLE FOR THE CONTRACTOR'S FAILURE TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING ALL OVERHEAD AND UNDERGROUND UTILITY LOCATIONS WHERE CONSTRUCTION OCCURS. SPECIAL CARE SHALL BE TAKEN TO ENSURE THAT ALL UTILITIES ARE AVOIDED. UTILITY LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND NOT FOR CONSTRUCTION PURPOSES. ANY DAMAGE TO EXISTING UTILITIES SHALL BE REPAIRED AND OR REPLACED AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR SHALL COMPLY WITH ALL CURRENT ARIZONA UNDERGROUND FACILITIES LAWS (ARIZONA REVISED STATUTES TITLE 40, CHAPTER 2, ARTICLE 6.3, SECTION 40-360.21-32). CALL ARIZONA 811 FOR FIELD LOCATION BY DIAL 811.
4. THE CITY OF SURPRISE ENGINEERING SERVICES OF PUBLIC WORKS SHALL BE NOTIFIED FORTY-EIGHT (48) HOURS PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION WORK AT 623-222-6150.
5. THE ENGINEER AND APPLICABLE AGENCY MUST APPROVE, PRIOR TO CONSTRUCTION, ANY ALTERATION OR VARIATION FROM THESE PLANS. ANY VARIATION FROM THESE PLANS SHALL BE PROPOSED AND RESUBMITTED FOR REVIEW AND APPROVAL.
6. THE CONTRACTOR SHALL PROTECT AND MAINTAIN ALL EXISTING UTILITIES ON THE SITE. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN OR NOT ON THE DRAWING, SHALL BE REPAIRED/REPLACED AT THE CONTRACTOR'S EXPENSE. EXISTING SURFACE FEATURES AND FENCING SHALL BE REPLACED IN KIND.
7. ANY INSPECTION BY THE CITY, COUNTY, OR THE ENGINEER, SHALL NOT IN ANY WAY RELIEVE THE CONTRACTOR FROM ANY OBLIGATION TO PERFORM THE WORK IN STRICT COMPLIANCE WITH THE APPLICABLE CODES AND AGENCY REQUIREMENTS.
8. THE CONTRACTOR IS TO LOCATE ALL EXISTING LANDSCAPING, LANDSCAPING IRRIGATION LINES, PROPERTY MONUMENTS, FENCING OR SURFACE FEATURES PRIOR TO CONSTRUCTION. ANYTHING DISTURBED DURING CONSTRUCTION SHALL BE REPLACED IN KIND AT THE CONTRACTOR'S EXPENSE.
9. NOTHING CONTAINED IN THE CONTRACT DOCUMENTS SHALL CREATE, NOR SHALL BE CONSTRUED TO CREATE, ANY CONTRACTUAL RELATIONSHIP BETWEEN THE ENGINEER AND THE CONTRACTOR OR ANY SUBCONTRACTOR.
10. ALL CONSTRUCTION WATER USED WITHIN THE CITY OF SURPRISE WATER SERVICE AREA REQUIRES APPROVAL BY THE CITY OF SURPRISE PUBLIC WORKS DEPARTMENT AND MAY BE SUBJECT TO VOLUME AND TIME RESTRICTIONS. PLEASE SEE THE CITY OF SURPRISE CONSTRUCTION WATER GUIDELINES FOR ADDITIONAL INFORMATION. THE GUIDELINES CAN BE OBTAINED FROM THE PUBLIC WORKS DEPARTMENT AT 623-222-6000.
11. TRAFFIC CONTROL SHALL BE MAINTAINED IN ACCORDANCE WITH MAG SPECIFICATION 401, THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, AND THE "TEMPORARY WORK ZONE TRAFFIC MANAGEMENT POLICY" (LATEST EDITION).
12. PRIOR TO FINAL APPROVAL AND ACCEPTANCE OF THE WORK, THE DEVELOPER/CONTRACTOR WILL BE REQUIRED TO CLEAN AND REPAIR ADJACENT (OFF-PROJECT) ROADWAYS USED OR DAMAGED DURING THE COURSE OF CONSTRUCTION.

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## **GENERAL ENGINEERING NOTES**

DETAIL NO:

**2-04**

SHEET 1 OF 2

## GENERAL ENGINEERING NOTES (CONTINUED):

13. EMERGENCY VEHICLE ACCESS (E.V.A.) MUST BE PROVIDED BY THE DEVELOPER/CONTRACTOR THROUGHOUT THE PROJECT SITE. E.V.A. ROADS AND SIGNAGE SHALL BE MAINTAINED BY THE DEVELOPER/CONTRACTOR AT ALL TIMES. SIGNAGE SHALL BE POSTED AT THE POINT OF ENTRY TO THE SITE AND AT ALL LOCATIONS WHERE A CHANGE IN DIRECTION OCCURS.
14. THE PLANS SHALL COMPLY WITH THE AMERICANS WITH DISABILITIES ACT'S ACCESSIBILITY GUIDELINES, AS PUBLISHED IN THE FEDERAL REGISTER ON SEPTEMBER 15, 2010.

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## GENERAL ENGINEERING NOTES

DETAIL NO:

**2-04**  
SHEET 2 OF 2

## **GENERAL GRADING NOTES:**

1. CONTRACTOR TO FOLLOW RECOMMENDATIONS LISTED IN THE PROJECT SPECIFIC GEOTECHNICAL REPORT. SHOULD ANY CONFLICTS ARISE BETWEEN THE SOILS INVESTIGATION REPORT AND THESE GRADING PLANS, THE CIVIL ENGINEER SHALL BE CONTACTED FOR CLARIFICATION.
  2. THE ENGINEER MAKES NO REPRESENTATION OR GUARANTEE REGARDING EARTHWORK QUANTITIES OR THAT THE EARTHWORK FOR THIS PROJECT WILL BALANCE DUE TO UNFORESEEN FIELD CONDITIONS.
  3. THE ENGINEER WILL PERFORM FIELD SURVEYS FOR PAD ELEVATION CERTIFICATIONS, UPON NOTIFICATION BY THE GRADING CONTRACTOR, THAT THE PADS ARE COMPLETE AND READY FOR CERTIFICATION. IT IS UNDERSTOOD THAT THE CERTIFICATION PROVIDES ONLY A REPRESENTATIVE ELEVATION OF THE AVERAGE GRADE OF EACH LOT, BUILDINGS, OR UNIT PAD, AND SHALL NOT BE CONSTRUED TO INCLUDE YARD AND STREET SUBGRADE CERTIFICATION OR CERTIFICATION THAT THE ENTIRE PAD IS LEVEL, THAT IT WAS CONSTRUCTED IN THE DESIGNED LOCATION OR WAS GRADED TO THE CROSS-SECTION SET FORTH ON THE PLANS OR AS DESIGNATED IN THE SOILS REPORT.
  4. AN APPROVED GRADING AND DRAINAGE PLAN MUST BE ON THE JOB SITE AT ALL TIMES. DEVIATIONS FROM THIS PLAN MUST BE PRECEDED BY AN APPROVED PLAN REVISION.
  5. ALL DRAINAGE FACILITIES SUCH AS SWALES, INTERCEPTOR DITCHES, PIPES, PROTECTIVE BERMS, BARRIER WALLS, CONCRETE CHANNELS, OR OTHER MEASURES DESIGNED TO PROTECT BUILDINGS FROM STORM RUNOFF MUST BE CONSTRUCTED PRIOR TO CONSTRUCTION OF ANY BUILDINGS.
  6. A GRADING PERMIT IS REQUIRED. BEFORE A GRADING PERMIT IS ISSUED BY THE CITY OF SURPRISE ENGINEERING SERVICES, THE CONTRACTOR MUST FIRST OBTAIN A DUST CONTROL PERMIT FROM MARICOPA COUNTY ENVIRONMENTAL SERVICES-AIR QUALITY DIVISION.
  7. HAUL PERMITS, WHEN REQUIRED, MUST BE OBTAINED PRIOR TO OR CONCURRENTLY WITH THE GRADING AND DRAINAGE PERMIT.
  8. A SEPARATE PERMIT IS NECESSARY FOR ANY OFFSITE CONSTRUCTION.
  9. CONTRACTOR SHALL PROVIDE LEVEL BOTTOM IN ALL RETENTION BASINS AT ELEVATIONS AS SHOWN ON THE PLANS. SIDE SLOPES IN ALL RETENTION BASINS SHALL NOT EXCEED 4:1 UNLESS NOTED OTHERWISE ON THE PLANS.
  10. DRYWELLS, WHEN REQUIRED, MUST BE DRILLED A MINIMUM OF TEN (10) FEET INTO PERMEABLE POROUS STRATA OR PERCOLATION TESTS WILL BE REQUIRED. THE CIVIL INSPECTOR MUST BE PRESENT BEFORE BACKFILL OR WELL PIPES ARE PLACED WITHIN ANY DRYWELLS.
- THE OWNER/DEVELOPER SHALL BE RESPONSIBLE FOR REGISTERING THE DRYWELLS SHOWN ON THE PLAN WITH THE ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY (ADEQ).
11. THE OWNER/DEVELOPER SHALL BE RESPONSIBLE FOR MAINTENANCE OF DRYWELLS SHOWN ON THE PLAN.
  12. ACCESS BARRIERS/TRASH RACKS ARE REQUIRED ON THE EXPOSED ENDS OF ALL STORM DRAINS EIGHTEEN (18) INCHES IN DIAMETER AND GREATER. SEE DETAILS 5-06A, 5-06B, AND 5-06C. REFER TO MAG DETAILS 502-1 AND 502-2 FOR PIPES LESS THAN THIRTY (30) INCHES IN DIAMETER.
  13. SOIL COMPACTION TEST RESULTS MUST BE SUBMITTED TO THE CITY OF SURPRISE ENGINEERING SERVICES FOR BUILDING PADS THAT HAVE ONE (1) FOOT OR MORE OF FILL MATERIAL INDICATED.

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## **GENERAL GRADING NOTES**

DETAIL NO:

**2-05**  
SHEET 1 OF 2

**GENERAL GRADING NOTES (CONTINUED):**

- 15. A PAD CERTIFICATION LETTER FOR EACH PHASE OR PARCEL MUST BE SUBMITTED TO THE CITY OF SURPRISE ENGINEERING SERVICES BY THE DEVELOPER STATING THAT EACH PAD HAS BEEN BUILT IN ACCORDANCE WITH THE SOILS INVESTIGATIVE REPORT AND CITY OF SURPRISE REQUIREMENTS .
- 16. APPROVAL OF THESE PLANS SHALL NOT PREVENT THE CITY FROM REQUIRING THE CORRECTION OF ERRORS IN THE PLANS WHERE SUCH ERRORS ARE SUBSEQUENTLY FOUND TO BE IN VIOLATION OF ANY LAW OR ORDINANCE.
- 17. ALL CONSTRUCTION SITES WITH DISTURBED AREAS OF ONE (1) ACRE OR GREATER SHALL HAVE A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND ALL ASSOCIATED DOCUMENTS (SEE ENGINEERING AND PERMITTING APPLICATION PACKET).

**CAUTION REGARDING STORM DRAIN PIPES:** CONTRACTOR IS RESPONSIBLE FOR PROTECTING THE PIPE FROM DAMAGE DURING THE CONSTRUCTION STAGE. THE COVER ON THE DRAINAGE PIPE IS DESIGNED FOR FINAL GRADE; THEREFORE, EXTRA CARE MUST BE EXERCISED DURING THE CONSTRUCTION PHASE TO MAINTAIN COVER OVER PIPES.

**NOTE REGARDING CMU AND RETAINING WALLS:** THE CITY OF SURPRISE REQUIRES ALL WALLS BE APPROVED BY THE COMMUNITY DEVELOPMENT DEPARTMENT (623-222-3000). BUILDING PERMITS AND INSPECTIONS ARE REQUIRED PER THE INTERNATIONAL BUILDING CODE.

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**PAVING NOTES:**

1. THE ACTUAL POINT OF PAVEMENT MATCHING AND/OR TERMINATION, SHALL BE DETERMINED IN THE FIELD BY A CITY OF SURPRISE FIELD INSPECTOR.
2. ALL FRAMES, COVERS, VALVE BOXES, AND MANHOLE COVERS SHALL BE ADJUSTED TO FINISH GRADE AFTER COMPLETION OF PAVING OR RELATED CONSTRUCTION.
3. CONSTRUCTION OF SURFACE IMPROVEMENTS SHALL NOT BEGIN UNTIL CONFLICTING UNDERGROUND UTILITY CONSTRUCTION IS COMPLETED AND SERVICE CONNECTIONS TO ALL PLATTED LOTS HAVE BEEN ADEQUATELY EXTENDED TO THE RIGHT-OF-WAY OR PUBLIC UTILITY EASEMENT.
4. THE PERMITTEE SHALL ARRANGE FOR THE RELOCATION COSTS OF ALL UTILITIES, INCLUDING ANY STREET LIGHTS, AND SUBMIT A UTILITY RELOCATION SCHEDULE PRIOR TO THE ISSUANCE OF A CONSTRUCTION PERMIT.
5. TREES AND SHRUBBERY IN THE RIGHT-OF-WAY THAT CONFLICT WITH PROPOSED IMPROVEMENTS SHALL NOT BE REMOVED WITHOUT APPROVAL FROM THE CITY. THE PERMITTEE SHALL BE RESPONSIBLE FOR OBTAINING AUTHORIZATION FROM CITY OF SURPRISE COMMUNITY DEVELOPMENT AT 623-222-3000 TO REMOVE AND/OR RELOCATE SAID TREES AND SHRUBBERY.
6. DAMAGED AND/OR DISPLACED CONCRETE CURB, GUTTER, SIDEWALK, OR DRIVEWAY SLAB THAT IS WITHIN THE RIGHT-OF-WAY SHALL BE REPAIRED OR REPLACED BEFORE FINAL ACCEPTANCE OF THE WORK.
7. GRADING BETWEEN BACK OF CURB AND PROPERTY LINE SHALL BE LIMITED TO 4:1 SLOPE. PROTECT SLOPES FROM EROSION AND/OR TRANSPORTING SILT ONTO STREETS OR ADJACENT PRIVATE PROPERTY.
8. ALL FIRE HYDRANTS SHALL HAVE A TWO-WAY BLUE REFLECTOR INSTALLED PER MAG STANDARD DETAIL 122.
9. STREET SIGNS SHALL BE FURNISHED AND INSTALLED BY THE DEVELOPER AT THE LOCATIONS SHOWN ON THE SIGNAGE, STRIPING, OR PAVING PLAN. ALL STREET SIGNS SHALL BE INSTALLED PER CITY OF SURPRISE STREET SIGN AND STREET SIGN BASE DETAIL 4-22.
10. ASPHALT MIX DESIGN SHALL BE SUBMITTED TO THE CITY OF SURPRISE ENGINEERING DEVELOPMENT SERVICES DIVISION PRIOR TO THE PLACEMENT OF ANY ASPHALT.

DATE REVISED: 8/2016	 <p><b>SURPRISE</b> ARIZONA</p>	<b>PAVING NOTES</b>	DETAIL NO:
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## **SANITARY SEWER NOTES:**

1. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING REQUIRED PERMITS AND INSPECTIONS FROM APPROPRIATE GOVERNMENTAL AGENCIES FOR ALL WORK IN THE PUBLIC RIGHT-OF-WAY.
2. ANY WORK PERFORMED WITHOUT THE APPROVAL OF THE CITY ENGINEER AND/OR ALL WORK AND MATERIALS NOT IN CONFORMANCE WITH THE SPECIFICATION IS SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE.
3. THE CONTRACTOR SHALL UNCOVER ALL EXISTING LINES BEING TIED TO AND VERIFY THEIR LOCATION PRIOR TO TRENCHING. THE CONTRACTOR SHALL LOCATE OR HAVE LOCATED ALL EXISTING UNDERGROUND PIPELINES, TELEPHONE AND ELECTRICAL CONDUIT AND STRUCTURES IN ADVANCE OF CONSTRUCTION AND SHALL OBSERVE ALL POSSIBLE PRECAUTIONS TO AVOID DAMAGE TO THE SAME. CALL BLUE STAKE AT 602-263-1100 AND NOTIFY ALL INTERESTED UTILITIES.
4. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD BEFORE THE SANITARY SEWER FITTINGS ARE COVERED. FITTINGS SHALL NOT BE COVERED UNTIL SURVEYS HAVE BEEN COMPLETED. THE ENGINEER SHALL MAKE FIELD AS-BUILT MEASUREMENTS OF THE SANITARY SEWER WORK UPON NOTIFICATION BY THE SEWER CONTRACTOR THAT THE PIPE WORK IS COMPLETE AND READY FOR AS-BUILT SURVEY.
5. AS-BUILT PLANS CERTIFIED FOR CORRECTNESS BY A PROFESSIONAL CIVIL ENGINEER OR LAND SURVEYOR IN THE STATE OF ARIZONA ARE REQUIRED PRIOR TO FINAL APPROVAL OF ALL WATER, SEWER, RECLAIMED WATER AND STORM WATER CONSTRUCTION.
6. THE FOLLOWING DETAIL IS SPECIFICALLY NOT APPROVED: MAG STANDARD DETAIL 425 (24-INCH ALUMINUM, MANHOLE FRAME AND COVER).
7. A TWO (2) INCH BY FOUR (4) INCH WOOD OR METAL POST PAINTED GREEN WITH BLACK LOT NUMBERS IS TO BE INSTALLED AT THE END OF ALL SEWER SERVICES.
8. FOR RESIDENTIAL CONSTRUCTION, SEWER SERVICES SHALL BE SIX (6) FEET BELOW FINISH GRADE AT THE PUBLIC UTILITY EASEMENT AND FOUR (4) FEET BELOW THE FINISH GRADE AT FOUR (4) FEET PAST THE PUBLIC UTILITY EASEMENT.
9. ANY MANHOLE IN A GUTTER LINE MUST BE WATERTIGHT PER MAG STANDARD DETAIL 424.
10. THE MANHOLE COVERS SHALL READ "SURPRISE SANITARY SEWER" PER DETAIL 7-01.
11. MANHOLES TEN (10) FEET OR DEEPER SHALL BE A MINIMUM OF FIVE (5) FEET IN DIAMETER.
12. ALL MANHOLE SECTIONS SHALL BE SEALED WITH BOTH MASTIC (RAMNECK OR APPROVED EQUAL) AND GROUT PLACED INSIDE EACH MANHOLE SECTION KEY. THE INSIDE JOINTS SHALL BE GROUT-FINISHED.
13. UPON THE COMPLETION OF THE SEWER, THE TOP EIGHT (8) FEET OF ALL MANHOLES ARE TO BE SPRAYED WITH INSECTICIDE BY A CERTIFIED COMPANY OR INDIVIDUAL FOR ROACH CONTROL. A VERIFICATION LETTER IS TO BE FURNISHED TO THE CITY OF SURPRISE.
14. MARKING TAPE AND MARKER BALLS SHALL BE INSTALLED AT ALL SEWER LINE FITTINGS AND EVERY 200 FEET IF THE DISTANCE BETWEEN FITTINGS IS GREATER THAN 200 FEET PER DETAIL 7-08.
15. SHORT TERM DEFLECTION TESTING SHALL BE PERFORMED ON ALL SEGMENTS OF PLASTIC SEWER PIPE EIGHT (8) INCHES IN DIAMETER AND LARGER AFTER COMPLETION OF BACKFILL AND COMPACTION, BUT PRIOR TO INSTALLATION OF FINISH SURFACE MATERIAL. A SHORT-TERM DEFLECTION IN EXCESS OF FIVE (5) PERCENT SHALL BE CONSIDERED UNSERVICEABLE AND SHALL BE REPAIRED OR REPLACED AND RETESTED.

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## **SANITARY SEWER NOTES**

DETAIL NO:

**2-07**

SHEET 1 OF 2

## **SANITARY SEWER NOTES (CONTINUED):**

16. LOW-PRESSURE AIR TESTING IS REQUIRED FOR ONE HUNDRED (100) PERCENT OF THE LINE INSTALLATION PER MAG SPECIFICATION 615.11.
17. ONE HUNDRED (100) PERCENT OF BRANCH, MAIN, AND TRUNK SEWER LINES ARE TO BE INSPECTED BY VIDEO CAMERA. TWO COPIES OF COMPLETED DVD ALONG WITH OPERATOR NOTES ARE TO BE FURNISHED TO THE CITY OF SURPRISE UPON COMPLETION OF THE FIRST VIDEO. IF THERE ARE NEGATIVE RESULTS THEN THE AFFECTED SEWER LINES WILL BE REPAIRED AND RE-VIDEOED ACCORDINGLY.
18. ALL SEWER MANHOLES SHALL BE TESTED IN ACCORDANCE WITH ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY REQUIREMENTS, USING THE WATER TIGHTNESS OR AIR PRESSURE METHODS AS PUBLISHED IN TITLE 18 ENVIRONMENTAL QUALITY.
19. THE MINIMUM COVER FOR SEWER MAIN PIPES SHALL BE SIX (6) FEET FROM TOP OF PIPE TO FINISHED GRADE. SEWER PIPE BEDDING SHALL BE ONE HUNDRED (100) PERCENT ABC MATERIAL PER MAG SPECIFICATIONS, PLACED AND COMPACTED FROM FOUR (4) INCHES BELOW PIPE TO TWELVE (12) INCHES ABOVE PIPE. FOR SEWER LINE CONSTRUCTION THE PIPE BEDDING SHALL BE PLACED IN TWO LIFTS PER MAG SPECIFICATIONS.
20. PIPE BEDDING, BACKFILLING AND COMPACTION SHALL BE PER MAG STANDARD DETAIL 200-1.
21. SEWER LINES SHALL CONSIST OF POLYVINYL CHLORIDE (PVC) SOLID WALL PLASTIC SEWER PIPE AND SHALL CONFORM TO THE REQUIREMENTS OF ASTM D-3034, SDR-35 OR C900.

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## **SANITARY SEWER NOTES**

DETAIL NO:

**2-07**

SHEET 2 OF 2

## **GENERAL POTABLE WATER NOTES:**

1. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING REQUIRED PERMITS AND INSPECTIONS FROM APPROPRIATE GOVERNMENTAL AGENCIES FOR ALL WORK IN THE PUBLIC RIGHT-OF-WAY.
2. ANY WORK PERFORMED WITHOUT THE APPROVAL OF THE CITY ENGINEER AND/OR ALL WORK AND MATERIALS NOT IN CONFORMANCE WITH SPECIFICATIONS IS SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE.
3. THE CONTRACTOR SHALL UNCOVER ALL EXISTING LINES AT PROPOSED POINTS OF CONNECTION AND VERIFY THEIR LOCATION PRIOR TO TRENCHING. THE CONTRACTOR SHALL LOCATE OR HAVE LOCATED ALL EXISTING UNDERGROUND PIPELINES, TELEPHONE AND ELECTRICAL CONDUIT AND STRUCTURES IN ADVANCE OF CONSTRUCTION AND SHALL OBSERVE ALL POSSIBLE PRECAUTIONS TO AVOID DAMAGE TO THE SAME. CALL BLUE STAKE AT 602-263-1100 AND NOTIFY ALL INTERESTED UTILITIES.
4. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD BEFORE THE WATER FITTINGS ARE COVERED. FITTINGS SHALL NOT BE COVERED UNTIL SURVEYS HAVE BEEN COMPLETED. THE ENGINEER SHALL MAKE FIELD AS-BUILT MEASUREMENTS OF THE WATER WORK UPON NOTIFICATION BY THE WATER CONTRACTOR THAT THE PIPE WORK IS COMPLETE AND READY FOR AS-BUILT SURVEY.
5. AS-BUILT PLANS CERTIFIED FOR CORRECTNESS BY A PROFESSIONAL CIVIL ENGINEER ACTIVELY REGISTERED TO PRACTICE IN THE STATE OF ARIZONA SHALL BE REQUIRED PRIOR TO FINAL APPROVAL OF ALL WATER, SEWER, RECLAIMED WATER AND STORM WATER CONSTRUCTION.
6. ANY CHANGES FROM APPROVED PLANS SHALL BE SUBMITTED TO THE CITY OF SURPRISE FOR WRITTEN APPROVAL PRIOR TO INSTALLATION.
7. THE CITY OF SURPRISE ENGINEERING SERVICES SHALL INSPECT AND APPROVE ALL TRENCHING, BEDDING, PIPE INSTALLATION, BACKFILL, AND COMPACTION. THE CITY OF SURPRISE SHALL INSPECT AND APPROVE ALL PRESSURE TESTING, DISINFECTIONS, AND ALL OPERATIONAL SYSTEMS TESTS. AFTER COMPLETION OF EACH PHASE OF THE WATER SYSTEM, BUT BEFORE ACCEPTANCE BY THE CITY OF SURPRISE INTO THE WARRANTY PERIOD, ALL PUNCH LIST ITEMS MUST BE ONE HUNDRED (100) PERCENT COMPLETED, AS DETERMINED BY THE CITY OF SURPRISE.
8. WATER LINES SHALL BE DISINFECTED AND TESTED IN ACCORDANCE WITH ADEQ BULLETIN #8.
9. WATER SERVICES TWO (2) INCHES OR SMALLER SHALL BE IN ACCORDANCE WITH CITY OF SURPRISE DETAIL 6-05.
10. FIRE HYDRANTS SHALL BE IN ACCORDANCE WITH CITY OF SURPRISE DETAILS 6-08 AND 6-09.
11. IN A WATER PIPE ZONE WHERE CITY OF SURPRISE IS THE PROVIDER, THE BEDDING SHALL BE ONE HUNDRED (100) PERCENT ABC MATERIAL PER MAG SPECIFICATIONS, PLACED AND COMPACTED FROM FOUR (4) INCHES BELOW FOR PIPES THAT ARE TWELVE (12) INCHES AND LARGER OR WHEN ROCK OR UNSTABLE SOIL IS ENCOUNTERED TO TWELVE (12) INCHES ABOVE PIPE. BEDDING FOR PIPES LESS THAN TWELVE (12) INCHES MAY BE UNDISTURBED NATIVE MATERIAL OR BACKFILL COMPACTED TO NINETY-FIVE (95) PERCENT. THE PIPE ZONE FROM BOTTOM OF PIPE TO TWELVE (12) INCHES ABOVE TOP OF PIPE SHALL BE ABC COMPACTED TO NINETY-FIVE (95) PERCENT FOR ALL SIZES. IN A WATER PIPE ZONE WHERE EPCOR IS THE PROVIDER, REFER TO THEIR REQUIREMENTS.
12. SHUTDOWN OF EXISTING FACILITIES SHALL BE SCHEDULED BY CONTRACTOR WITH CITY UTILITIES DIVISION FORTY-EIGHT (48) HOURS IN ADVANCE. VALVES ARE TO BE OPERATED ONLY BY A UTILITIES DIVISION CERTIFIED OPERATOR OR UNDER THE DIRECTION OF A UTILITIES DIVISION CERTIFIED OPERATOR. SHUTDOWN OF THE EXISTING SYSTEM IS LIMITED TO OFF PEAK HOURS ONLY (12:00 AM THROUGH 4:00 AM AND 10:00 AM THROUGH 2:00 PM). NORMAL PRESSURE AND FLOW MUST BE RETURNED BY THE SCHEDULED TIME.
13. A #12 AWG TRACER WIRE SHALL BE PLACED TWELVE (12) INCHES ABOVE TOP OF PRIVATE FIRE LINES.
14. WATER DISTRIBUTION AND TRANSMISSION LINES SHALL BE MARKED WITH MARKING TAPE AND MARKER BALLS PER CITY OF SURPRISE STANDARD DETAIL 6-25.

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## **GENERAL POTABLE WATER NOTES**

DETAIL NO:

**2-08A**

## **POTABLE WATER SYSTEM MATERIAL SPECIFICATION NOTES:**

1. **DISTRIBUTION:** POLYVINYL CHLORIDE (PVC) PRESSURE PIPE IN ACCORDANCE WITH AMERICAN WATER WORKS ASSOCIATION (AWWA) STANDARD C900, PRESSURE CLASS 200, DR=14, ELASTOMERIC - GASKET, BELL - END OR DUCTILE IRON PIPE EQUIVALENT. ALL PIPES TWELVE (12) INCHES OR GREATER IN DIAMETER ARE REQUIRED TO BE DUCTILE IRON PIPE.
2. **DISTRIBUTION FITTINGS:** PUSH-ON OR MECHANICAL JOINT IN ACCORDANCE WITH MAG SECTION 750 OR MAG SECTION 630 AS APPLICABLE.
3. **WATER LINE VALVE:** MUELLER, CLOW, OR WATEROUS RESILIENT WEDGE SEALED GATE VALVE IN ACCORDANCE WITH MAG SECTION 630.3 WITH VALVE BOX AND COVER IN ACCORDANCE WITH MAG DETAIL 391-1, TYPE "C."
4. **WATER SERVICE:** TAPS, PIPES AND FITTINGS FOR WATER SERVICES UP TO A TWO (2) INCH SIZE SHALL BE IN ACCORDANCE WITH CITY OF SURPRISE STANDARD DETAIL 6-05. LARGER SIZES ARE TO BE SUBMITTED FOR APPROVAL.
5. **FIRE HYDRANT:** MUELLER "CENTURION", CLOW "MEDALLION", WATEROUS PACER WB67-250, AND WATERMASTER "5CD250" WITH TYPICAL "T" DESIGN AND TWO (2) EACH OF 2½ INCH NATIONAL STANDARD THREAD (NST) ORIFICES AND ONE (1) EACH OF 4½ INCH NST ORIFICE AND CLOW MODEL 860 WET BARREL WITH TWO (2) 2 1/2" INCH NST ORIFICES AND ONE (1) 4 ½ INCH NST ORIFICE IN ACCORDANCE WITH CITY OF SURPRISE STANDARD DETAILS. BREAK OF CHECK VALVE SHALL BE USED WITH WET BARREL HYDRANT.
6. **ALL OTHER ITEMS:** IN ACCORDANCE WITH MAG SPECIFICATIONS.
7. IN ACCORDANCE WITH AAC R18-4-213 ALL MATERIALS ADDED AFTER JANUARY 1, 1993, WHICH MAY COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NATIONAL SANITATION FOUNDATION STANDARDS 60 AND 61, INCLUDING CHEMICALS USED FOR DISINFECTION.

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## **POTABLE WATER SYSTEM MATERIAL SPECIFICATION NOTES**

DETAIL NO:

2-08B

## **GENERAL RECLAIMED WATER NOTES:**

1. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING REQUIRED PERMITS AND INSPECTIONS FROM APPROPRIATE GOVERNMENTAL AGENCIES FOR ALL WORK IN THE PUBLIC RIGHT-OF-WAY.
2. ANY WORK PERFORMED WITHOUT THE APPROVAL OF THE CITY ENGINEER AND/OR ALL WORK AND MATERIALS NOT IN CONFORMANCE WITH SPECIFICATIONS IS SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE.
3. THE CONTRACTOR SHALL UNCOVER ALL EXISTING LINES BEING TIED TO AND VERIFY THEIR LOCATION PRIOR TO TRENCHING. THE CONTRACTOR SHALL LOCATE OR HAVE LOCATED ALL EXISTING UNDERGROUND PIPELINES, TELEPHONE AND ELECTRICAL CONDUIT AND STRUCTURES IN ADVANCE OF CONSTRUCTION AND SHALL OBSERVE ALL POSSIBLE PRECAUTIONS TO AVOID DAMAGE TO THE SAME. CALL BLUE STAKE AT 602-263-1100 AND NOTIFY ALL INTERESTED UTILITIES.
4. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD BEFORE THE RECLAIMED WATER FITTINGS ARE COVERED. FITTINGS SHALL NOT BE COVERED UNTIL SURVEYS HAVE BEEN COMPLETED. THE ENGINEER SHALL MAKE FIELD AS-BUILT MEASUREMENTS OF THE RECLAIMED WATER WORK UPON NOTIFICATION BY THE RECLAIMED WATER CONTRACTOR THAT THE PIPE WORK IS COMPLETE AND READY FOR AS-BUILT SURVEY.
5. AS-BUILT PLANS CERTIFIED FOR CORRECTNESS BY A PROFESSIONAL CIVIL ENGINEER ACTIVELY REGISTERED TO PRACTICE IN THE STATE OF ARIZONA SHALL BE REQUIRED PRIOR TO FINAL APPROVAL OF ALL WATER, SEWER, RECLAIMED WATER AND STORM WATER CONSTRUCTION.
6. ANY CHANGES FROM APPROVED PLANS SHALL BE SUBMITTED TO THE CITY OF SURPRISE FOR WRITTEN APPROVAL PRIOR TO INSTALLATION.
7. THE CITY OF SURPRISE ENGINEERING DEVELOPMENT SERVICES DIVISION SHALL INSPECT AND APPROVE ALL TRENCHING, BEDDING, PIPE INSTALLATION, BACKFILL AND COMPACTION. THE CITY SHALL INSPECT AND APPROVE ALL PRESSURE TESTING, DISINFECTIONS AND ALL OPERATIONAL SYSTEMS TESTS. AFTER COMPLETION OF EACH PHASE OF THE RECLAIMED WATER SYSTEM, BUT BEFORE ACCEPTANCE BY THE CITY OF SURPRISE AND THE WARRANTY PERIOD, ALL PUNCH LIST ITEMS MUST BE ONE HUNDRED (100) PERCENT COMPLETED, AS DETERMINED BY THE CITY OF SURPRISE.
8. FOR RECLAIMED WATER LINE WHICH IS TWELVE (12) INCHES AND UNDER TRENCH SHALL BE MAG DETAIL 200-1 TYPE 'D'. PIPE SHALL BE LAID WITH SUPPORT UNDER FULL LENGTH OF THE BARREL WITH HAND EXCAVATED HOLES FOR COUPLINGS AND OR BELLS. BEDDING SHALL BE A.B.C. COMPACTED TO NINETY FIVE (95) PERCENT IN ACCORDANCE WITH MAG SPECIFICATIONS. SPECIAL CARE SHALL BE TAKEN DURING PLACEMENT AND COMPACTION OF THE MATERIAL FROM THE BOTTOM OF THE TRENCH TO SPRINGLINE OF THE PIPE. THE CITY OF SURPRISE RESERVES THE RIGHT TO REQUIRE COMPACTION TESTS OF THE BEDDING MATERIAL PRIOR TO THE PLACEMENT OF THE BACKFILL MATERIAL.
9. WHEN A RECLAIMED WATER MAIN IS ADJACENT TO OR CROSSES A POTABLE WATER MAIN, THE RECLAIMED WATER MAIN SHALL BE CONSIDERED A PRESSURE OR FORCE SANITARY SEWER AND COMPLY WITH MAG STANDARD DETAIL 404 FOR SEPARATION AND/OR PROTECTION. WHEN A RECLAIMED WATER MAIN IS ADJACENT TO OR CROSSES A SEWER LINE, THE RECLAIMED WATER MAIN SHALL BE CONSIDERED A POTABLE WATER MAIN AND COMPLY WITH MAG STANDARD DETAIL 404 FOR SEPARATION AND/OR PROTECTION.
10. SHUTDOWN OF EXISTING FACILITIES SHALL BE SCHEDULED BY CONTRACTOR WITH CITY UTILITIES DIVISION FORTY-EIGHT (48) HOURS IN ADVANCE. VALVES ARE TO BE OPERATED ONLY BY A UTILITIES DIVISION CERTIFIED OPERATOR OR UNDER THE DIRECTION OF A UTILITIES DIVISION CERTIFIED OPERATOR. SHUTDOWN OF THE EXISTING SYSTEM IS LIMITED TO OFF PEAK HOURS ONLY (12:00 AM THROUGH 4:00 AM AND 10:00 AM THROUGH 2:00 PM). NORMAL PRESSURE AND FLOW MUST BE RETURNED BY THE SCHEDULED TIME.

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## **GENERAL RECLAIMED WATER NOTES**

DETAIL NO:

**2-09A**  
SHEET 1 OF 2

**GENERAL RECLAIMED WATER NOTES (CONTINUED):**

- 11. APPROVED METALLIC MARKING TAPE AND MARKER BALLS SHALL BE INSTALLED PER CITY OF SURPRISE STANDARD DETAIL 6-25.
- 12. ALL RECLAIMED RESIDENTIAL WATER VALVE COVERS SHALL BE SQUARE AND IDENTIFIED AS 'RECLAIMED' PER CITY OF SURPRISE STANDARD DETAIL 6-24.
- 13. OPERATIONAL TESTING SHALL BE CONDUCTED BY THE CITY OF SURPRISE UTILITIES DIVISION.
- 14. ALL POTABLE WATER CONNECTIONS MUST BE DISCONNECTED PRIOR TO CONSTRUCTION OF THE RECLAIMED WATER SYSTEM.
- 15. RECLAIMED WATER LINES SHALL BE DISINFECTED AND TESTED AS DETAILED IN ADEQ ENGINEERING BULLETIN #8.
- 16. RECLAIMED WATER LINES SHALL BE FLUSHED AND TESTED USING POTABLE WATER AND MUST MAINTAIN AN AIR GAP BETWEEN THE POTABLE WATER AND RECLAIMED WATER AT ALL TIMES, ACCORDING TO AAC R18-4-215(E).
- 17. CROSS CONNECTION TESTING SHALL BE REQUIRED PRIOR TO RECEIVING RECLAIMED WATER.
- 18. ALL PIPE VALVES, AIR RELIEF VALVES, PRESSURE REDUCING VALVES, PUMPS, CONTROL VALVES, METER BOX LIDS, METER BOX INTERIORS, AND ANY OTHER APPURTENANCES OF THE RECLAIMED WATER SYSTEM SHALL BE PAINTED PURPLE (PANTONE NO. 512) OR HAVE PURPLE COLOR INTEGRATED INTO THE MATERIAL.
- 19. ALL FLANGED SIDE OUTLETS, DRAIN VALVE ASSEMBLIES, BLOW OFF VALVE ASSEMBLIES, SAMPLING TAPS, AND AIR OR VACUUM RELEASE VALVES AND BACKFLOW PREVENTION ASSEMBLIES SHALL HAVE AN ATTACHED SIGN OR TAG READING 'RECLAIMED WATER - DO NOT DRINK'.

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**GENERAL RECLAIMED WATER NOTES**

DETAIL NO:

**2-09A**

SHEET 2 OF 2

## **RECLAIMED WATER SYSTEM MATERIAL SPECIFICATION NOTES:**

1. **DISTRIBUTION:** POLYVINYL CHLORIDE (PVC) PRESSURE PIPE IN ACCORDANCE WITH AMERICAN WATER WORKS ASSOCIATION (AWWA) STANDARD C900, PRESSURE CLASS 200, DR=14, ELASTOMERIC - GASKET BELL - END OR DUCTILE IRON PIPE EQUIVALENT. ALL PIPES TWELVE (12) INCHES OR GREATER IN DIAMETER ARE REQUIRED TO BE DUCTILE IRON PIPE. ALL PIPES SHALL BE PAINTED PURPLE (PANTONE NO. 512) OR HAVE PURPLE COLOR INTEGRATED INTO THE MATERIAL.
  
2. **REQUIRED MINIMUM PRESSURE CLASSES FOR DUCTILE IRON PIPE:**
  - 24" = PR CLASS 200
  - 20" = PR CLASS 250
  - 16" = PR CLASS 250
  - 12" = PR CLASS 350
  - 6" = PR CLASS 350
  
3. **DISTRIBUTION FITTINGS:** PUSH-ON OR MECHANICAL JOINT IN ACCORDANCE WITH MAG SECTION 750 OR MAG SECTION 630 AS APPLICABLE.
  
4. **WATER LINE VALVE:** MUELLER, CLOW, OR WATEROUS RESILIENT WEDGE SEATED GATE VALVE IN ACCORDANCE WITH MAG SECTION 630.3 WITH VALVE BOX, COVER AND LOCKING DEBRIS CAP IN ACCORDANCE WITH MAG DETAILS 391-1, TYPE 'C', 392 AND CITY OF SURPRISE DETAIL 6-24.  
  
**RECLAIMED SERVICE:** TAPS, PIPES AND FITTINGS FOR RECLAIMED WATER SERVICE THROUGH A TWO (2) INCH SIZE SHALL BE IN ACCORDANCE WITH CITY OF SURPRISE STANDARD DETAIL 6-20 AND SHALL BE PURPLE PIPE.
  
5. **ALL OTHER ITEMS:** IN ACCORDANCE WITH MAG SPECIFICATIONS. ALL PIPE VALVES, AIR RELIEF VALVES, PRESSURE REDUCING VALVES, PUMPS, CONTROL VALVES, METER BOX LIDS, METER BOX INTERIORS, AND ANY OTHER APPURTENANCES OF THE RECLAIMED WATER SYSTEM SHALL BE PAINTED PURPLE (PANTONE NO. 512) OR HAVE PURPLE COLOR INTEGRATED INTO THE MATERIAL.

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## **RECLAIMED WATER SYSTEM MATERIAL SPECIFICATIONS**

DETAIL NO:

2-09B

## **GENERAL STORM WATER POLLUTION PREVENTION PLAN NOTES:**

1. WEATHER INFORMATION AND STORM PREDICTIONS CAN BE OBTAINED BY CALLING THE NATIONAL WEATHER SERVICE - PHOENIX WEATHER FORECAST OFFICE AT (602) 275-0073 OR BY VISITING THE NATIONAL WEATHER SERVICE WEBSITE AT [HTTP://WWW.WRH.NOAA.GOV/PSR/](http://www.wrh.noaa.gov/psr/)
2. PERMANENT EROSION CONTROL MEASURES SHALL BE INSTALLED AS AREAS ARE DETERMINED TO BE COMPLETE.
3. ALL DRAINAGE INLETS RECEIVING RUNOFF FROM DISTURBED SOIL AREAS SHALL BE PROTECTED WITH AN APPROVED SEDIMENT TRAP INLET PROTECTION MEASURE OR BMP.
4. A COPY OF THE APPROVED GRADING & DRAINAGE PLAN FOR THIS PROJECT, TOGETHER WITH A COPY OF THE NOTICE OF INTENT (NOI) AND THIS STORM WATER POLLUTION PREVENTION PLAN (SWPPP), SHALL BE MAINTAINED ON THE SITE AND AVAILABLE FOR REVIEW AT ALL TIMES. THOSE ELEMENTS OF THE GRADING & DRAINAGE PLAN PERTINENT TO OR REFERENCED ON THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) SHALL BE CONSIDERED A PART OF THE SWPPP.
5. THE NOTICE OF INTENT (NOI) SHALL BE COMPLETED AND SUBMITTED TO THE ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY (ADEQ) AND THE CITY OF SURPRISE AT LEAST FORTY-EIGHT (48) HOURS PRIOR TO ANY CONSTRUCTION ACTIVITY.
6. THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND RELATED RECORDS SHALL BE MADE AVAILABLE UPON REQUEST TO THE ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY (ADEQ) AND THE CITY OF SURPRISE.
7. THE OWNER OR DESIGNATED CONTRACTOR SHALL OBTAIN A DUST CONTROL PERMIT FROM THE MARICOPA COUNTY AIR QUALITY DEPARTMENT. MEASURES SHALL BE PERFORMED AS REQUIRED BY THE PERMIT TO PREVENT EXCESS DUST AS INCORPORATED INTO THIS STORM WATER POLLUTION PREVENTION PLAN (SWPPP).
8. THE OWNER OR DESIGNATED CONTRACTOR SHALL AMEND THIS PLAN AS RAINFALL EVENTS, DESIGN CHANGES AND CONSTRUCTION METHODS DICTATE. ALL MODIFICATIONS TO THIS PLAN SHALL BE SUBMITTED TO THE CITY OF SURPRISE ENGINEERING SERVICES FOR REVIEW AND ACCEPTANCE PRIOR TO IMPLEMENTATION.
9. THE IMPLEMENTATION OF THESE PLANS, AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADES OF THESE FACILITIES IS THE RESPONSIBILITY OF THE OWNER OR DESIGNATED CONTRACTOR UNTIL ALL CONSTRUCTION HAS BEEN APPROVED AND A NOTICE OF TERMINATION (NOT) HAS BEEN SUBMITTED TO THE ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY (ADEQ) AND THE CITY OF SURPRISE.
10. THE FACILITIES SHOWN ON THIS PLAN SHALL BE CONSTRUCTED IN CONJUNCTION WITH ALL CLEARING AND GRADING ACTIVITIES IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT-LADEN WATER DOES NOT LEAVE THE PROJECT SITE, ENTER INTO THE DRAINAGE SYSTEM, OR VIOLATE APPLICABLE WATER QUALITY STANDARDS. ADDITIONALLY, THE FACILITIES SHALL BE INSTALLED AND OPERATIONAL PRIOR TO ANY GRADING OR LAND CLEARING ACTIVITIES.
11. WHEN POSSIBLE, MAINTAIN ANY NATURALLY OCCURRING VEGETATION AS A SILT CONTROL BEST MANAGEMENT PRACTICE (BMP).
12. THE CONTRACTOR TO WHOM THE 'AT-RISK' / FINAL GRADING & DRAINAGE PERMIT WILL BE ISSUED SHALL HAVE THE APPROVED STORM WATER POLLUTION PREVENTION PLAN (SWPPP) ISSUED IN THEIR NAME.

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## **GENERAL STORMWATER POLLUTION PREVENTION PLAN NOTES**

DETAIL NO:

**2-10A**

SHEET 1 OF 2

## **GENERAL STORM WATER POLLUTION PREVENTION PLAN NOTES (CONTINUED):**

13. THE NOTICE OF INTENT (NOI), THE APPROVED STORM WATER POLLUTION PREVENTION PLAN (SWPPP), AND THE MARICOPA COUNTY AIR QUALITY DEPARTMENT DUST CONTROL PERMIT SHALL BE PROVIDED TO THE CITY OF SURPRISE BEFORE THE GRADING & DRAINAGE PERMIT WILL BE ISSUED.
14. THE OWNER OR DESIGNATED CONTRACTOR OF THE PROJECT SHALL ALSO MAINTAIN RECORDS WITH THE FOLLOWING INFORMATION:
  - A) THE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR IN A PARTICULAR AREA.
  - B) THE DATES WHEN CONSTRUCTION ACTIVITIES CEASE IN A PARTICULAR AREA (TEMPORARILY OR PERMANENTLY).
  - C) THE DATES WHEN AN AREA IS STABILIZED (TEMPORARILY OR PERMANENTLY).
  - D) THE DATES OF ANY MAINTENANCE, REPLACEMENT, OR REMOVAL OF REQUIRED BMP'S HAS OCCURRED.
15. ONCE THE CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED AND THE SITE HAS MET THE FINAL STABILIZATION REQUIREMENTS OF THE PERMIT, THE AUTHORIZED SITE REPRESENTATIVE SHALL FILE A NOTICE OF TERMINATION (NOT) WITH THE ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY (ADEQ) AND PROVIDE A COPY TO THE CITY OF SURPRISE.
16. THE PERMITTEE SHALL MAINTAIN ALL RECORDS ON FILE, INCLUDING THE NOTICE OF INTENT (NOI), THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP), THE NOTICE OF TERMINATION (NOT), AND ANY AND ALL INSPECTION REPORTS FOR A MINIMUM OF THREE (3) YEARS FROM THE FILING DATE OF THE NOTICE OF TERMINATION (NOT).
17. THE OUTLETS OF ALL SEDIMENT BASINS, TRAPS, AND LOCATIONS OF ARTIFICIALLY CONCENTRATED FLOW SHALL BE PROVIDED WITH OUTLET PROTECTION TO PREVENT EROSION AND SCOUR.
18. THOSE RESPONSIBLE FOR SWPPP PREPARATION, IMPLEMENTATION AND PERMIT COMPLIANCE SHALL BE PROPERLY TRAINED, AND SHALL ATTEND THE PRE-CONSTRUCTION MEETING.
19. A CONCRETE WASHOUT SHALL BE INSTALLED FOR ALL PROJECTS THAT PROPOSE CONCRETE TO BE MIXED ON SITE OR BE DELIVERED FROM A BATCH PLANT. THE CONCRETE WASHOUT SHALL BE LOCATED A MINIMUM OF FIFTY (50) FEET FROM ANY DRAINAGE INFRASTRUCTURE OR NATURAL DRAINAGE FEATURES OR WATER BODIES AND INCORPORATE AN IMPERMEABLE LINER (6.0 MIL MINIMUM THICKNESS) TO CONTAIN THE REQUIRED VOLUME. ALL DRIED CONCRETE WASTE SHALL BE BROKEN INTO MANAGEABLE PIECES AND DISPOSED OF OFF-SITE AT AN APPROVED DISPOSAL FACILITY.
20. THE CONTRACTOR SHALL HAVE EMERGENCY MATERIALS AND EQUIPMENT ON-SITE FOR UNFORESEEN SITUATIONS, SUCH AS DAMAGE TO UNDERGROUND WATER AND SEWER UTILITIES WHEREBY FLOWS MAY GENERATE EROSION AND SEDIMENT POLLUTION.
21. SEDIMENT AND EROSION CONTROLS MAY BE REMOVED ONLY WHEN CONTRIBUTORY UPSTREAM AREAS BECOME STABILIZED OR ARE MANAGED UPSTREAM AND AS LONG AS SEDIMENT LADEN RUNOFF WILL NOT DISCHARGE FROM THE SITE.
22. THIS PLAN SHALL BE IN EFFECT UNTIL ALL DISTURBED AREAS ARE PERMANENTLY STABILIZED, TRANSFERRED TO NEW OWNERSHIP, OR DEVELOPED UNDER FUTURE PLANS WITH A NEW NOTICE OF INTENT (NOI), SWPPP, AND PERMIT.

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## **GENERAL STORMWATER POLLUTION PREVENTION PLAN NOTES**

DETAIL NO:

**2-10A**

SHEET 2 OF 2

## **SWPPP INSPECTION NOTES:**

1. THE OWNER OR DESIGNATED CONTRACTOR SHALL PERFORM, AT A MINIMUM, A VISUAL INSPECTION OF THE PROJECT SITE ONCE EVERY SEVEN (7) DAYS AND WITHIN TWENTY-FOUR (24) HOURS OF A RAINFALL EVENT GREATER THAN OR EQUAL TO ONE HALF (½) INCH. THE OWNER OR DESIGNATED CONTRACTOR SHALL PREPARE A REPORT DOCUMENTING THE FINDINGS OF THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) CONTROLS AND NOTE ANY EROSION PROBLEM AREAS. THE REPORT IS TO BE SUBMITTED TO THE PUBLIC WORKS DEPARTMENT CONSTRUCTION INSPECTOR FOR REVIEW AND APPROVAL. FACILITIES SHALL BE MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING. IN ADDITION, ALL TEMPORARY SILTATION CONTROLS SHALL BE MAINTAINED IN A SATISFACTORY CONDITION UNTIL SUCH TIME THAT CONSTRUCTION IS COMPLETED, PERMANENT DRAINAGE FACILITIES ARE OPERATIONAL, AND THE POTENTIAL FOR EROSION HAS BEEN ELIMINATED AS DETERMINED BY THE PUBLIC WORKS DIRECTOR OR DESIGNEE.
2. THE INSPECTION BY THE OWNER OR DESIGNATED CONTRACTOR SHALL INCLUDE, AT A MINIMUM, THE FOLLOWING:
  - A) CHECK DISTURBED AREAS AND ANY MATERIAL STORAGE AREAS (IF APPLICABLE TO THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP)) FOR EVIDENCE OF OR THE POTENTIAL FOR DISCHARGE OF POLLUTANTS.
  - B) ENSURE THAT SEDIMENT AND EROSION CONTROL MEASURES ARE FUNCTIONING AND OPERATING CORRECTLY.
  - C) AT ACCESSIBLE DISCHARGE POINTS, DETERMINE WHETHER BMP'S ARE EFFECTIVE IN PREVENTING SIGNIFICANT IMPACTS TO RECEIVING WATERS. WHERE DISCHARGE POINTS ARE INACCESSIBLE OR UNSAFE TO INSPECT, INSPECT DOWNSTREAM AREAS FOR EVIDENCE OF DISCHARGE.
  - D) DOCUMENT SEDIMENT TRACK-OUT AT ALL INGRESS AND EGRESS LOCATIONS FROM THE PROJECT SITE.
  - E) DOCUMENT ANY REVISIONS TO BMP'S ON THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) WITHIN SEVEN (7) DAYS OF INSPECTION AND CORRECTION.
  - F) DOCUMENT ANY INCIDENTS OF NON-COMPLIANCE OR CERTIFY THAT THE SITE IS IN COMPLIANCE WITH THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP).
  - G) DOCUMENT ANY ACTIVITY THAT CREATES A NON-STORM WATER DISCHARGE, INCLUDING DATE AND TIME, LOCATION, REASON FOR DISCHARGE, AMOUNT OF THE DISCHARGE, BMP MEASURES USED TO MEDIATE THE DISCHARGE, AND BMP'S USED TO PREVENT FURTHER NON-STORM WATER DISCHARGES FROM THE ACTIVITY.

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## **SWPPP INSPECTION NOTES**

DETAIL NO:

**2-10B**

## **EROSION AND SEDIMENT CONTROL NOTES:**

1. PRIOR TO OR IMMEDIATELY FOLLOWING CLEARING & GRUBBING, AND AS PART OF THE INITIAL ROUGH GRADING, ALL RETENTION BASINS SHALL BE CUT TO GRADE. THE BASINS SHALL CONSTITUTE THE REQUIRED SEDIMENT BASINS. GRADES SHALL BE CUT (BERMING OR STRAW BALES MAY ALSO BE PROVIDED) PER THIS PLAN TO ASSURE THAT RUNOFF IS CONVEYED TO THE RETENTION BASINS.
2. A STABILIZED CONSTRUCTION ENTRANCE CONSISTING OF A MINIMUM OF SIX (6) INCHES OF COARSE AGGREGATE SHALL BE INSTALLED AS SHOWN. ALL CONSTRUCTION TRAFFIC SHALL ENTER THROUGH THIS ENTRANCE. THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE RE-GRADED OR REPLACED WHEN IT BECOMES SATURATED OR MATTED WITH SITE SOILS OR SEDIMENT. THE PAVED STREET ADJACENT TO THE CONSTRUCTION ENTRANCE SHALL BE SWEEPED ON A REGULAR BASIS TO REMOVE ANY ACCUMULATED MUD OR DIRT TRACKED FROM THE SITE.
3. ANY DISTURBED AREAS WHERE CONSTRUCTION HAS PERMANENTLY OR TEMPORARILY CEASED SHALL BE STABILIZED TO PREVENT EROSION. AN ACCEPTABLE STABILIZATION METHOD IS HYDROSEEDING AND WATERING. AREAS WHICH WILL BE DISTURBED WITHIN TWENTY-ONE (21) DAYS OF CEASING CONSTRUCTION MAY BE STABILIZED BY WATERING.
4. THE CATCH BASIN LOW POINTS SHALL ALSO ACT AS THE REQUIRED SEDIMENT BASINS FOR THE PROJECT. THEY SHALL BE INSPECTED ON A MONTHLY BASIS AND AFTER EVERY RAIN EVENT. SEDIMENT SHALL BE REMOVED FROM THE BASINS AS NECESSARY TO MAINTAIN A MINIMUM OF SEVENTY-FIVE (75) PERCENT OF REQUIRED CAPACITY OF THE BASIN DURING CONSTRUCTION AND ONE-HUNDRED (100) PERCENT OF REQUIRED CAPACITY POST-CONSTRUCTION.
5. THE SWPPP IS USED TO MAINTAIN ALL ON-SITE STORM WATER POLLUTANTS AND SEDIMENT. HOWEVER, IF ANY OFF-SITE ACCUMULATIONS OF SEDIMENT OR POLLUTANTS OCCUR, IMMEDIATE ACTION SHALL BE REQUIRED TO REMOVE THE ACCUMULATION.

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## **EROSION AND SEDIMENT CONTROL NOTES**

DETAIL NO:

**2-10C**

## **GENERAL NOTES FOR DRY UTILITY CONSTRUCTION:**

1. ALL UTILITY CONSTRUCTION SHALL CONFORM TO THE LATEST MARICOPA ASSOCIATION OF GOVERNMENTS (MAG) UNIFORM STANDARD SPECIFICATIONS AND DETAILS FOR PUBLIC WORKS CONSTRUCTION AND TO THE CITY OF SURPRISE SUPPLEMENTS TO MAG.
2. ALL WORK PERFORMED IN THE CITY OF SURPRISE RIGHT-OF-WAY WILL REQUIRE AN APPROVED TRAFFIC CONTROL PERMIT ISSUED TO A BARRICADE COMPANY LICENSED TO WORK IN THE CITY OF SURPRISE.
3. ALL PUBLIC UTILITY COMPANIES' CONTRACTORS AND SUB-CONTRACTORS ARE REQUIRED TO OBTAIN A CITY OF SURPRISE BUSINESS LICENSE PRIOR TO THE PERFORMANCE OF ANY WORK.
4. PLAN APPROVAL BY THE CITY OF SURPRISE FOR COMPLIANCE WITH CITY REQUIREMENTS SHALL NOT PREVENT THE CITY FROM REQUIRING THE CORRECTION OF ERRORS FOUND TO BE IN VIOLATION OF ANY LAW, ORDINANCE, OR CITY OF SURPRISE REQUIREMENT FOR UTILITY CONSTRUCTION IN THE RIGHT-OF-WAY.
5. THE CONTRACTOR OR UTILITY COMPANY MUST HAVE A COPY OF THE APPROVED/STAMPED CONSTRUCTION PLANS AND APPROVED TRAFFIC CONTROL PLAN AT THE PROJECT SITE AT ALL TIMES.
6. ALL UTILITIES CROSSING STREETS OR ROADS MUST BE DIRECTIONAL BORED WHERE POSSIBLE. PERMISSION TO BORE AND TO OPEN CUT EXISTING PAVEMENT REQUIRES SPECIFIC PLAN APPROVAL AND RIGHT-OF-WAY PERMIT FOR THE PROPOSED CONSTRUCTION.
7. PRIOR TO STARTING ANY WORK IN A MAJOR ARTERIAL OR COLLECTOR STREET, THE UTILITY COMPANY OR SUB-CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE CITY OF SURPRISE CIVIL CONSTRUCTION INSPECTION PERSONNEL. SEE PERMIT FOR CONTACT INFORMATION.
8. THE CITY OF SURPRISE DOES NOT WARRANT ANY OF THE QUANTITIES SHOWN ON THESE PLANS.
9. THE UTILITY COMPANY SHALL CONTACT THE CITY OF SURPRISE CIVIL CONSTRUCTION INSPECTION PERSONNEL A MINIMUM OF FORTY-EIGHT (48) HOURS IN ADVANCE OF ANY WORK. THE PERMIT NUMBER AND LOCATION MUST BE PROVIDED IN ORDER TO SCHEDULE INSPECTIONS.
10. ALL WORK REQUIRING ASPHALT REPLACEMENT, CONCRETE REPLACEMENT, OR RESURFACING, IN THE CITY OF SURPRISE RIGHT-OF-WAY, WILL REQUIRE A FINAL INSPECTION WITH THE UTILITY COMPANY REPRESENTATIVE AT THE TIME OF COMPLETION.
11. MAINTAIN THE FOLLOWING MINIMUM SEPARATIONS: SIX (6) FEET HORIZONTAL FROM WATER AND SEWER MAINS, AND TWO (2) FEET HORIZONTAL FROM ALL OTHER UTILITIES. MAINTAIN A MINIMUM OF ONE (1) FOOT VERTICAL SEPARATION FROM ALL UTILITIES. ALL DISTANCES ARE MEASURED FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE.
12. ALL POTHOLES FOR EXISTING UTILITY CROSSINGS OR SOIL BORINGS FOR FUTURE UTILITIES WILL BE REPAIRED PER MAG STANDARD DETAIL #212. THE CITY MAY REQUIRE ADDITIONAL REPAIRS, AS REQUIRED BY THE CIVIL ENGINEERING INSPECTOR.

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## **GENERAL NOTES FOR DRY UTILITY CONSTRUCTION**

DETAIL NO:

**2-11**

SHEET 1 OF 2

## **GENERAL NOTES FOR DRY UTILITY CONSTRUCTION (CONTINUED):**

13. THE FOLLOWING ITEMS SHALL BE APPROVED IN THE FIELD, TO ACCOUNT FOR UNFORESEEN CONDITIONS, BY THE CITY OF SURPRISE CIVIL ENGINEERING INSPECTOR:
- BACKFILL AND COMPACTION
  - CONCRETE REPAIR AND CURING
  - ASPHALT REPAIR AND PAVEMENT MATCHING
14. ALL TRENCHES IN EXISTING AND FUTURE PAVEMENT ARE REQUIRED TO BE BACKFILLED WITH A MINIMUM OF ONE-HALF (½) SACK SLURRY CONTROLLED LOW STRENGTH MATERIAL PER MAG SECTIONS 604 AND 728.
15. ALL TRENCHING WITHIN TWO (2) FEET OF THE BACK OF CURB OR EDGE OF PAVEMENT WILL REQUIRE ABC COMPACTED TO NINETY-FIVE (95) PERCENT OR ONE-HALF (½) SACK SLURRY CONTROLLED LOW-STRENGTH MATERIAL PER MAG SECTIONS 604 AND 728.
16. ALL WORK THAT LIES WITHIN A DESIGNATED FLOODPLAIN AREA WILL REQUIRE A FLOODPLAIN USE PERMIT FROM THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.
17. ANY DAMAGE TO PUBLIC OR PRIVATE PROPERTY SHALL BE REPORTED TO THE CITY OF SURPRISE AND THE OWNER. REPAIR AND/OR REPLACEMENT IN KIND SHALL BE PER THE AGREEMENT WITH THE OWNER AND/OR THE CITY ON A CASE-BY-CASE BASIS.
18. THE MINIMUM DEPTH OF COVER FOR VARIOUS UTILITIES SHALL BE AS SHOWN BELOW. TEMPORARY PAVEMENT REPLACEMENT THAT USES COLD-MIX ASPHALT SHALL BE REPLACED NO LATER THAN SEVEN (7) CALENDAR DAYS AFTER INITIAL PLACEMENT.

<u>TYPE</u>	<u>MINIMUM DEPTH</u>
DIRECT BURIAL CABLE	36"
FIBER OPTIC CABLE	36"
TELEVISION, TELEPHONE, CABLE, AND OTHER	24" TO 36"
GAS	36"

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## **GENERAL NOTES FOR DRY UTILITY CONSTRUCTION**

DETAIL NO:

**2-11**  
SHEET 2 OF 2

## **GENERAL TEMPORARY TRAFFIC CONTROL NOTES:**

1. TEMPORARY TRAFFIC CONTROL SHALL BE PLACED AND MAINTAINED BY A COMPANY CERTIFIED BY THE CITY OF SURPRISE FOR TEMPORARY TRAFFIC CONTROL. ALL TEMPORARY TRAFFIC CONTROL SHALL BE PLACED AND MAINTAINED IN ACCORDANCE WITH THE MOST CURRENT REVISION OF THE CITY OF SURPRISE TEMPORARY WORK ZONE TRAFFIC MANAGEMENT POLICY OR AS DIRECTED BY THE CITY TRAFFIC ENGINEER OR DESIGNEE.
2. WHERE LANES ARE RESTRICTED, RESTRICTION OF THE LANES SHALL BE ACCOMPLISHED BY USING REFLECTIVE VERTICAL PANELS. CONES SHALL NOT BE CONSIDERED ACCEPTABLE DEVICES FOR TRAFFIC DELINIATION ON ARTERIAL OR COLLECTOR STREETS.
3. ALL TRAFFIC CONTROL SIGNS SHALL BE VIP DIAMOND GRADE SHEETING (TYPE IX) OR APPROVED EQUAL WHEN IN USE DURING NIGHTTIME HOURS.
4. ADJUSTMENTS TO THE DETAILS OF THESE TRAFFIC CONTROL PLANS AND REQUIREMENTS MAY BE NECESSARY DUE TO CONSTRUCTION ACTIVITIES. ALL ADJUSTMENTS SHALL BE APPROVED BY THE CITY TRAFFIC ENGINEER OR DESIGNEE PRIOR TO IMPLEMENTATION.
5. THE ROADWAY SURFACE SHALL BE SWEEPED, AND CLEANED BY AIR-JET BLOWING, IMMEDIATELY PRIOR TO PLACEMENT OF TEMPORARY MARKINGS.
6. WHEN TRAFFIC CONTROL DEVICES ARE NOT IN USE, THEY SHALL BE MOVED AT LEAST THIRTY (30) FEET FROM THE EDGE OF TRAVEL WAY AND TURNED AWAY SO THE LEGENDS ARE NOT VISIBLE TO THE TRAVELING MOTORISTS. WHERE A THIRTY (30) FOOT DISTANCE CANNOT BE ACHIEVED, THE DEVICES SHALL BE MOVED AWAY AS FAR AS POSSIBLE WITHOUT INTERFERING WITH THE SIDEWALK, DRIVEWAYS OR OTHER FACILITIES. NO TRAFFIC CONTROL DEVICES SHALL BE LEFT IN THE MEDIAN.
7. SPEED LIMIT REDUCTION SIGNING IS SUBJECT TO REVIEW AND CHANGE BY THE CITY TRAFFIC ENGINEER OR DESIGNEE AS DICTATED BY FIELD CONDITIONS.

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## **GENERAL TEMPORARY TRAFFIC CONTROL NOTES**

DETAIL NO:

2-12

## **GENERAL TRAFFIC SIGNAL NOTES:**

1. ALL MATERIALS AND INSTALLATION SHALL CONFORM TO THE LATEST EDITIONS OF THE CITY OF SURPRISE TRAFFIC ENGINEERING STANDARD; THE ARIZONA DEPARTMENT OF TRANSPORTATION (ADOT) 'STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION'; THE ADOT 'TRAFFIC SIGNALS AND LIGHTING STANDARD DRAWINGS'; THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD); THE SPECIAL PROVISIONS; AND THESE PLANS.
2. ANY RECENTLY COMPLETED IMPROVEMENTS THAT ARE DAMAGED OR DESTROYED BY THE CONTRACTOR SHALL BE REPAIRED OR REPLACED AT THE SOLE EXPENSE OF THE CONTRACTOR.
3. THE CONTRACTOR SHALL MAINTAIN THE MINIMUM REQUIRED CLEARANCE FROM ALL EXISTING UNDERGROUND AND OVERHEAD UTILITIES ENCOUNTERED ON THE PROJECT.
4. THE CONTRACTOR SHALL POTHOLE ALL UTILITIES PRIOR TO BORING, TRENCHING, DIRECTIONAL DRILLING OR INSTALLING FOUNDATIONS TO VERIFY DEPTHS, LOCATIONS, AND TO AVOID SUCH. ALL CONDUIT RUNS ARE SCHEMATICALLY DRAWN ON THESE PLANS.
5. THE CONTRACTOR SHALL CONTACT APS, COX AND CENTURYLINK TO VERIFY THE LOCATION OF THE SERVICE AND COMMUNICATION CONNECTIONS FOR THE TRAFFIC SIGNAL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL UTILITY PROVIDER'S REQUIREMENTS.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING ALL OVERHEAD UTILITIES THAT CONFLICT WITH THE SIGNAL EQUIPMENT. ANY AND ALL CONFLICTS SHALL BE REPORTED TO THE CITY.
7. THE EXACT LOCATION AND ELEVATION OF EACH NEW POLE FOUNDATION, PULL BOX, CONTROLLER CABINET FOUNDATION, AND UPS/ELECTRIC SERVICE PEDESTAL FOUNDATION SHALL BE APPROVED BY THE CITY PRIOR TO INSTALLATION.
8. THE TOP OF NEW POLE FOUNDATIONS SHALL BE INSTALLED LEVEL WITH THE ADJACENT SIDEWALK ELEVATION AND FINISHED. THE APRON SHALL BE PLACED PER DETAIL 4-09. 1-2 INCHES OF THE ANCHOR BOLT SHALL BE VISIBLE ABOVE THE TOP LEVELING NUT AFTER FINAL TIGHTENING OF ALL NUTS. GROUT TO BE INSTALLED UP TO BASE OF POLE.
9. TRAFFIC SIGNAL PULL BOXES AND CONDUIT SHALL BE INSTALLED PER ADOT STANDARD TRAFFIC SIGNAL DRAWINGS.
10. ALL TRAFFIC SIGNAL EQUIPMENT SHALL BE SUPPLIED BY THE CONTRACTOR UNLESS OTHERWISE NOTED ON THE PLANS OR IN THE SPECIAL PROVISIONS.
11. ALL BACKPLATES SHALL BE METAL AND LOUVERED.
12. ALL SIGNAL INDICATIONS SHALL BE LED. PEDESTRIAN SIGNALS SHALL BE FILLED-IN LED COUNTDOWN "MAN/HAND" STYLE.
13. ALL SIGNAL HOUSINGS SHALL BE ALUMINUM AND BLACK. ALL VISORS SHALL BE PAINTED BLACK AND MATERIAL APPROVED BY THE CITY PRIOR TO ORDERING.
14. DRILLING HEIGHT FOR SIGNAL FACES SHALL BE PER ADOT STD DWG T.S. 4-21. TYPE V, VII, VIII AND/OR XI MOUNTS SHALL BE USED FOR ALL SIGNAL AND PEDESTRIAN HEADS ATTACHED TO VERTICAL POLES WITH MAST ARMS. THE CONTRACTOR SHALL CONFER WITH CITY TRAFFIC ENGINEER OR DESIGNEE FOR SIDE MOUNT DRILLING LOCATIONS.
15. WHEN NOT IN FULL OPERATION, ALL SIGNAL HEADS SHALL BE BAGGED OR COVERED WITH AN OPAQUE MATERIAL THAT DOES NOT ALLOW LIGHT PENETRATION.

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## **GENERAL TRAFFIC SIGNAL NOTES**

DETAIL NO:

**2-13**

SHEET 1 OF 3

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

16. CONTRACTOR SHALL PROVIDE AND INSTALL INTERNALLY ILLUMINATED STREET NAME SIGN (IISNS). SEE CITY OF SURPRISE DETAIL 4-14 FOR PROPER SIGN FORMAT. ALL SIGN FORMATS SHALL BE APPROVED BY THE CITY TRAFFIC ENGINEER OR DESIGNEE PRIOR TO ORDERING.
17. THE PEDESTRIAN PUSH BUTTONS SHALL CONFORM TO ADOT STD DWG T.S. 11-1 EXCEPT THAT THE PUSH BUTTON SHALL BE A MINIMUM OF TWO (2) INCHES IN DIAMETER. THE PUSH BUTTON SHALL BE RAISED FROM THE FACE OF THE PUSH BUTTON HOUSING. THE FORCE REQUIRED TO ACTIVATE THE CONTROL SHALL BE NO GREATER THAN FIVE (5) POUNDS. THE CONTRACTOR SHALL INSTALL THE RIO-4B PEDESTRIAN PUSH BUTTON SIGNS.
18. THE SIGNAL CABINET SHALL BE INSTALLED SUCH THAT MAINTENANCE PERSONNEL FACING THE FRONT (DOOR SIDE) OF THE CABINET SHALL ALSO BE ABLE TO VIEW THE INTERSECTION.
19. ONLY NEW CONDUIT AND CABLE SHALL BE INSTALLED UNLESS OTHERWISE INDICATED ON THE PLANS.
20. CONTRACTOR SHALL BORE ALL CONDUIT UNDER EXISTING PAVEMENT, CONCRETE, OR SIDEWALKS UNLESS OTHERWISE APPROVED BY THE CITY.
21. ALL EXISTING CONDUIT USED SHALL BE FIELD VERIFIED FOR LOCATION AND INTEGRITY PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE CITY SHOULD AN EXISTING CONDUIT NOT BE USABLE.
22. ALL NEWLY CONSTRUCTED CONDUIT SHALL HAVE MULE PULL TAPE AND #12 AWG LOCATE WIRE INSTALLED FOR FUTURE LOCATION AND INSTALLATION OF THE CONDUCTORS.
23. ALL NEW CONDUIT SHALL BE SCHEDULE 40 PVC INSTALLED WITH A MINIMUM COVER OF THIRTY (30) INCHES BELOW FINISHED GRADE UNLESS STATED OTHERWISE ON THE PROJECT PLANS OR IN THE SPECIAL PROVISIONS.
24. ALL CONDUIT(S) SHALL BE CLEANED BY COMPRESSED AIR AND A PROPERLY SIZED CONDUIT PISTON OR MANDREL PRIOR TO CABLE INSTALLATION. NO WATER OR MOISTURE SHALL REMAIN IN CONDUIT(S) PRIOR TO INSTALLING CONDUCTORS.
25. PULL BOXES SHALL NOT BE INSTALLED WITHIN PEDESTRIAN OR DRIVEWAY RAMPS.
26. ANY PULL BOXES INSTALLED ALONG AN UNCURBED ROADWAY SHALL BE INSTALLED ADJACENT TO, BUT NOT WITHIN, THE SHOULDER AND LEVEL WITH THE FINAL GRADE.
27. A  $\frac{3}{4}$  INCH DIAMETER BY TEN (10) FEET 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 CONNECTING THE GROUND WIRE.
28. TWO (2)  $\frac{3}{4}$  INCH DIAMETER BY TEN (10) FEET LONG GROUND RODS (COPPER) SHALL BE INSTALLED IN THE CONTROLLER CABINET FOUNDATION.
29. THE HIGH VOLTAGE CABLES AND CONDUCTORS SHALL BE SEPARATED FROM THE LOW VOLTAGE CABLES AND CONDUCTORS, AND SHALL BE INSTALLED IN SEPARATE CONDUIT TO THE EXTENT POSSIBLE.

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## **GENERAL TRAFFIC SIGNAL NOTES**

DETAIL NO:

**2-13**

SHEET 2 OF 3

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

30. #14 AWG IMSA 19-1 20 CONDUCTOR CABLES SHALL BE INSTALLED CONTINUOUS AND UNSPLICED BETWEEN PULL BOXES. SEE CITY OF SURPRISE STANDARD DETAILS 4-06, 4-07, 4-08A AND 4-08B.
31. ALL CONDUCTORS USED ON THIS PROJECT SHALL CONFORM TO THE PLANS AND TO THE CONDUCTOR TABLE SHOWN IN THE CITY OF SURPRISE DETAIL 4-08B.
32. REFER TO CITY OF SURPRISE TYPICAL TRAFFIC SIGNAL WIRING SCHEMATIC, STANDARD DETAIL 4-08A FOR WIRING DETAILS FOR VEHICULAR SIGNAL HEADS, PEDESTRIAN SIGNAL HEADS, AND PEDESTRIAN PUSHBUTTONS.
33. ALL VEHICLE DETECTION LOOP WIRE SHALL BE 14 AWG IMSA 51-5-1991 CABLE. DETECTOR LEAD-IN CABLES SHALL BE 16 AWG IMSA 50-2-1991 CABLE.
34. THE DETECTOR LEAD-IN CABLE SHALL BE CONTINUOUS AND UNSPLICED BETWEEN THE CONTROLLER CABINET AND THE PULL BOX ADJACENT TO LOOP. PROVIDE FIVE (5) FEET OF SLACK AS MEASURED FROM THE LIP OF THE PULL BOX OPENING IN THE PULL BOX ADJACENT TO THE LOOP DETECTOR.
35. THE VIDEO DETECTION CABLE SHALL BE INSTALLED, CONTINUOUS AND UNSPLICED, FROM THE VIDEO CAMERA MOUNTING TO THE CONTROLLER CABINET.
36. THE EMERGENCY VEHICLE PREEMPTION (EVPE) SENSOR CABLE SHALL BE CABLE MODEL NO. 138 OR AS SPECIFIED BY THE EVPE MANUFACTURER.
37. THE LUMINAIRE STREET LIGHTING AND THE INTERNALLY ILLUMINATED STREET NAME SIGNS (IISNS) SHALL HAVE THEIR OWN SEPARATE CIRCUITS INDEPENDENT FROM THE TRAFFIC SIGNAL CIRCUITRY INSTALLED PER PLAN. EACH CIRCUIT SHALL BE CONTROLLED VIA A SEPARATE PHOTO ELECTRIC CELL INSTALLED IN THE CONTROLLER CABINET. A MINIMUM OF THREE (3) FEET OF SLACK SHALL BE MAINTAINED IN THE RESPECTIVE PULL BOX FOR BOTH THE LUMINAIRE AND IISNS CABLING. AN APS APPROVED INLINE FUSE SHALL BE INSTALLED ON CONDUCTORS WITH AN APPROPRIATE RATED FUSE AT THE SPLICE POINT IN RESPECTIVE PULL BOXES.
38. THREE (3) EACH NO. 10 AWG-THHW CONDUCTORS SHALL BE INSTALLED FROM EACH LUMINAIRE TO THE POLE'S PULL BOX THAT THE LUMINAIRE IS MOUNTED ON AND SHALL BE UNSPLICED, LEAVING A MINIMUM OF THREE (3) FEET OF SLACK AS MEASURED FROM THE CONDUIT OPENING FOR EACH CONDUCTOR.
39. ALL SIGNING AND PAVEMENT MARKING THAT PERTAINS TO THE OPERATION OF THE TRAFFIC SIGNAL SHALL BE INSTALLED IMMEDIATELY PRIOR TO THE ACTIVATION OF THE SIGNAL. THE CONTRACTOR SHALL CONTACT THE CITY TRAFFIC ENGINEER THREE (3) WORKING DAYS PRIOR TO INSTALLATION FOR APPROVAL OF STRIPING LAYOUT AND SIGN LOCATIONS.

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## **GENERAL TRAFFIC SIGNAL NOTES**

DETAIL NO:

**2-13**

SHEET 3 OF 3

## **GENERAL SIGNING AND PAVEMENT MARKING NOTES:**

1. ALL PAVEMENT MARKING, SIGNING AND CONSTRUCTION SHALL CONFORM TO THE LATEST EDITIONS OF THE ARIZONA DEPARTMENT OF TRANSPORTATION (ADOT) STANDARD DRAWINGS AND SPECIFICATIONS, ADOT SIGNING AND MARKING STANDARD DRAWINGS, THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND CITY OF SURPRISE ENGINEERING DEVELOPMENT STANDARDS UNLESS OTHERWISE NOTED IN THE SPECIAL PROVISIONS OR THESE PLANS.
2. CITY SHALL FIELD INSPECT ALL SIGNS AND MARKINGS FOR FIELD ADJUSTMENT, PRIOR TO INSTALLATION AND FINAL ACCEPTANCE.
3. ALL MEASUREMENTS SHALL BE TAKEN FROM THE EDGE OF PAVEMENT.
4. ALL SIGNS THAT ARE REMOVED AND NOT REINSTALLED SHALL BE SALVAGED AND DELIVERED TO THE CITY MAINTENANCE YARD SHOP AT 13430 W. WESTGATE, SURPRISE, AZ.
5. THE CONTRACTOR SHALL FURNISH AND INSTALL STREET NAME SIGN BRACKETS AND HARDWARE.
6. THE SIGN LOCATIONS AND QUANTITIES FOR POST LENGTHS ARE APPROXIMATE. THE CONTRACTOR SHALL SPOT MARK THE SIGN LOCATIONS, VERIFY THE ACTUAL POST LENGTHS, AND CONTACT THE CITY TRAFFIC ENGINEER OR DESIGNEE FOR INSPECTION PRIOR TO INSTALLING SIGNS. NO FOUNDATIONS, POSTS, OR SIGN PANELS SHALL BE INSTALLED WITHOUT FINAL APPROVAL FROM THE CITY TRAFFIC ENGINEER OR DESIGNEE.
7. THE CONTRACTOR SHALL NOT OVERLAY THE SIGN PANELS.
8. THE SIGN LOCATIONS SHOWN ON THESE PLANS MAY BE MODIFIED AS DIRECTED BY THE CITY TRAFFIC ENGINEER OR DESIGNEE. ANY SIGNS INSTALLED BEFORE LAYOUT INSPECTION SHALL BE REMOVED AND REINSTALLED AT THE CONTRACTOR'S EXPENSE.
9. ALL EXISTING PAVEMENT MARKINGS WHICH CONFLICT WITH PROPOSED MARKINGS SHALL BE REMOVED BY WATERBLASTING, OR CITY APPROVED METHODS, PRIOR TO THE INSTALLATION OF NEW PAVEMENT MARKINGS. REMOVALS SHALL BE TO THE SATISFACTION OF THE CITY.
10. ANY DAMAGE TO THE PAVEMENT CAUSED BY PAVEMENT MARKING REMOVAL SHALL BE REPAIRED BY METHODS ACCEPTABLE TO CITY CIVL INSPECTION PERSONNEL. WHEN ASPHALT SLURRY IS USED TO REPAIR DAMAGE TO THE PAVEMENT CAUSED BY PAVEMENT MARKING REMOVAL THE ASPHALT SLURRY SHALL BE PLACED PARALLEL TO THE NEW DIRECTION OF TRAVEL AND SHALL BE AT LEAST TWO (2) FEET IN WIDTH.
11. AT THE COMPLETION OF THE PAVEMENT SURFACE EACH DAY, THE CONTRACTOR SHALL STRIPE CENTER LINES, LANE LINES, AND STOP BARS WITH ONE APPLICATION OF TEMPORARY REFLECTORIZED TRAFFIC PAINT AT THE LOCATIONS OF FINAL STRIPING, PER CITY OF SURPRISE DETAIL 4-20I. THIRTY (30) DAYS AFTER TEMPORARY STRIPING IS PLACED, THE CONTRACTOR SHALL INSTALL FINAL PAVEMENT MARKINGS.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LAYOUT AND INSTALLATION OF PAVEMENT MARKINGS ON THE FINAL SURFACE COURSE FOLLOWING CONTROL POINTS THAT HAVE BEEN SET. CONTROL POINTS SHALL BE NO MORE THAN FIFTY (50) FEET APART ALONG THE ALIGNMENT TO BE STRIPED.
13. THE CONTRACTOR SHALL CONTACT THE CITY TRAFFIC ENGINEER OR DESIGNEE FOR INSPECTION OF TEMPORARY STRIPING AND/OR CONTROL POINTS PRIOR TO APPLICATION OF FINAL MARKINGS. ANY FINAL PAVEMENT MARKING APPLIED BEFORE INSPECTION SHALL BE REMOVED AND REAPPLIED AT THE CONTRACTOR'S EXPENSE.

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## **GENERAL SIGNING AND PAVEMENT MARKING NOTES**

DETAIL NO:

**2-14**

SHEET 1 OF 2

**GENERAL SIGNING AND PAVEMENT MARKING NOTES (CONTINUED):**

- 14. THE FINAL PAVEMENT MARKINGS SHOWN ON THESE PLANS MAY BE MODIFIED AS DIRECTED BY THE CITY TRAFFIC ENGINEER OR DESIGNEE.
- 15. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE FINAL SURFACE COURSE IS PLACED SO THAT THE STRIPING IS OFFSET ONE (1) FOOT CLEAR OF THE CONSTRUCTION JOINT, UNLESS OTHERWISE DIRECTED BY THE CITY TRAFFIC ENGINEER OR DESIGNEE.
- 16. THE DIMENSIONS SHOWN TO PAVEMENT STRIPING ARE TO THE CENTER OF THE STRIPING OR IN THE CASE OF DOUBLE STRIPING THE CENTER OF THE DOUBLE STRIPE.
- 17. THE CONTRACTOR SHALL CLEAN THE ROADWAY SURFACE TO THE SATISFACTION OF THE CITY TRAFFIC ENGINEER OR DESIGNEE, BY SWEEPING AND AIR JET BLOWING, IMMEDIATELY PRIOR TO THE PLACEMENT OF ALL PAVEMENT MARKINGS. THE ROADWAY SURFACE SHALL BE DRY PRIOR TO APPLICATION.
- 18. ALL FINAL LANE MARKINGS AND CHEVRONS SHALL BE 60 MIL (0.060 INCH) THICK HOT-SPRAYED THERMOPLASTIC REFLECTORIZED STRIPING PLACED THIRTY (30) DAYS AFTER COMPLETION OF THE FINAL PAVEMENT SURFACE. ALL OTHER MARKINGS SHALL BE APPLIED AT THE SAME TIME.
- 19. ALL FINAL STOP BARS, CROSSWALK LINES, AND PAVEMENT ARROWS AND SYMBOLS SHALL BE WHITE 90 MIL (0.090 INCH) THICK ALKYD EXTRUDED THERMOPLASTIC REFLECTORIZED MARKINGS AND PLACED THIRTY(30) DAYS AFTER COMPLETION OF THE FINAL PAVEMENT SURFACE.
- 20. THE CONTRACTOR SHALL PRESERVE ALL ROADWAY PERMANENT SIGNING, OBJECT MARKERS AND DELINEATORS. THE CONTRACTOR SHALL REPLACE AT NO ADDITIONAL COST TO THE CITY, PERMANENT SIGNING, OBJECT MARKERS AND DELINEATORS DAMAGED DURING THE ROADWAY CONSTRUCTION ACTIVITIES.
- 21. THE PAVEMENT MARKING DRAWINGS MAY BE SCHEMATIC. THE CONTRACTOR SHALL FOLLOW DIMENSIONS SHOWN ON THE PLANS AND STANDARD DETAILS WHEN INSTALLING PAVEMENT MARKINGS THAT ARE NOT DRAWN TO SCALE.
- 22. ALL DIMENSIONS ARE IN FEET UNLESS NOTED OTHERWISE ON THE PLANS.
- 23. A DOUBLE-SIDED BLUE RAISED PAVEMENT MARKER SHALL BE INSTALLED AT EACH FIRE HYDRANT LOCATION PER MAG DETAIL 122.
- 24. RAISED PAVEMENT MARKERS (RPM'S) SHALL BE INSTALLED PER ADOT STD. DWG. M-19 WITH BITUMINOUS ADHESIVE WHICH IS ON THE ADOT APPROVED PRODUCTS LIST.
- 25. SIGNING AND STRIPING SHALL BE INSTALLED SIMULTANEOUSLY. STRIPING SHALL NOT BE PLACED IF ASSOCIATED SIGNING CANNOT BE INSTALLED.

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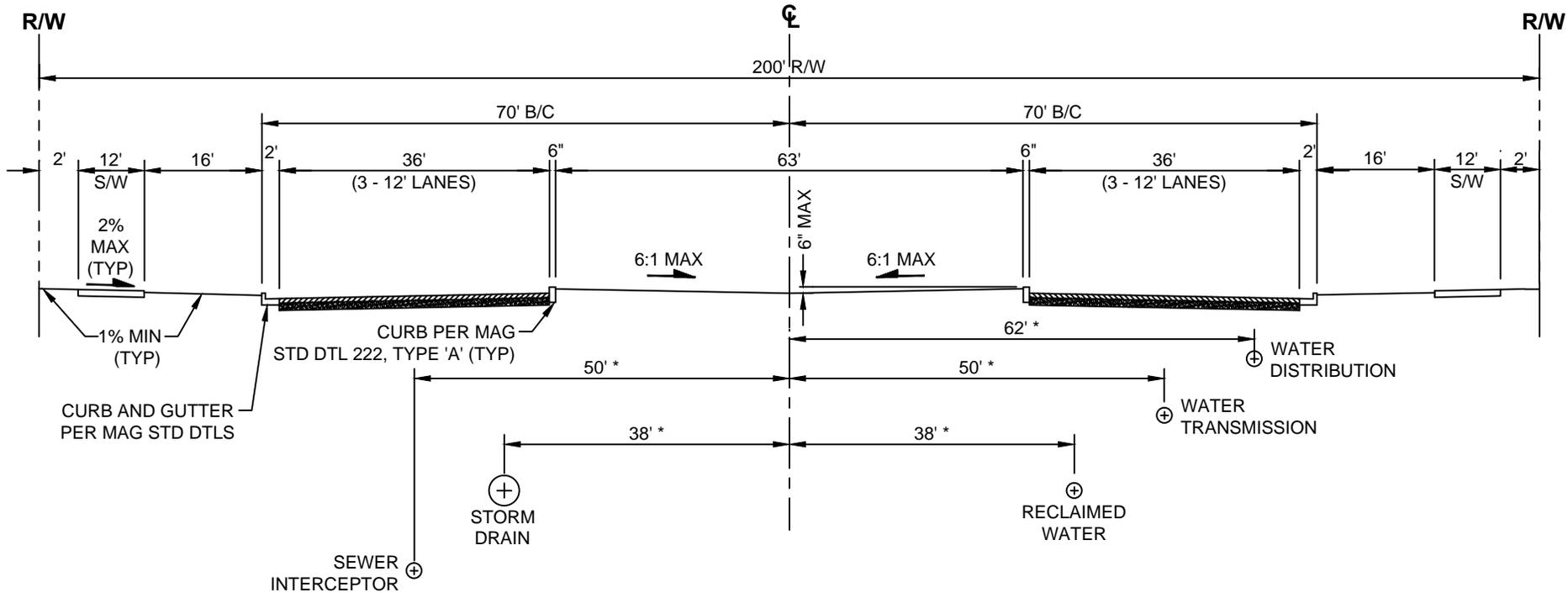


**GENERAL SIGNING AND PAVEMENT  
MARKING NOTES**

DETAIL NO:

**2-14**

SHEET 2 OF 2



**STREET CROSS SECTION - LOOKING NORTH OR EAST**

**NOTES:**

1. ALL CITY-OWNED LINES SHALL MEET MINIMUM SEPARATION AND PROTECTION REQUIREMENTS PER MAG STD DTLS 404-1, 404-2, AND 404-3 AND SECTIONS 610.5, 615.4 AND 616.3 OF THE MAG STANDARD SPECIFICATIONS.
2. DRY UTILITIES NOT SHOWN, e.g. ELECTRIC, GAS, ETC. SHALL BE PLACED IN ADJACENT PUBLIC UTILITY EASEMENTS (P.U.E.).
3. LANDSCAPED MEDIAN SHOULD BE GRADED TO HARVEST RAIN WATER WITH MAXIMUM DEPTH OF SIX INCHES BELOW THE LOWEST TOP OF THE ADJACENT CURB BUT THE SLOPE SHALL NOT STEEPER THAN 6:1. TOP ELEVATION OF THE ROCK MULCH SHOULD BE UP TO TWO INCHES BELOW THE IMMEDIATE TOP OF SIDEWALK OF TOP OF CURB ELEVATION.

\* UTILITY LOCATIONS ARE APPROXIMATE AND MAY VARY BASED ON EXISTING CONDITIONS. SEE NOTE 1 FOR MINIMUM SEPARATION AND PROTECTION REQUIREMENTS.

DATE REVISED: 8/2016

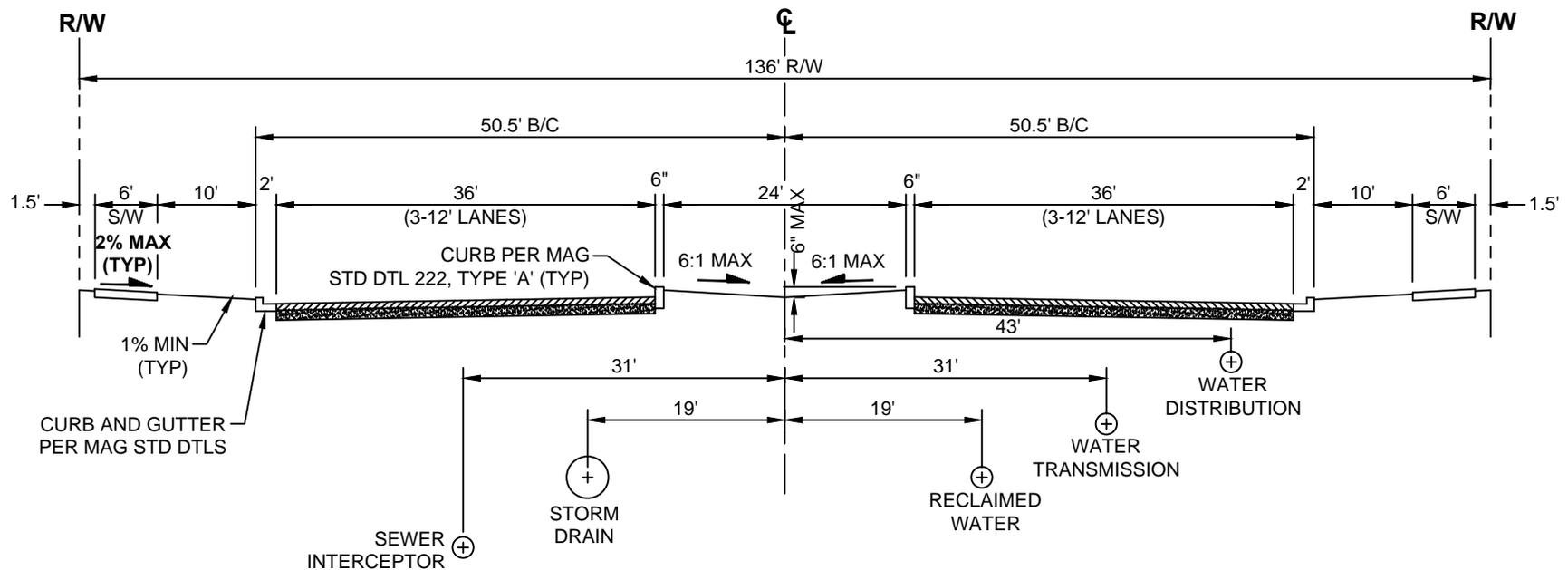
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**STANDARD STREET CROSS-SECTION  
AND UTILITY LOCATIONS -  
PARKWAY**

DETAIL NO:

**3-01**



## STREET CROSS SECTION - LOOKING NORTH OR EAST

### NOTES:

1. ALL CITY-OWNED LINES SHALL MEET MINIMUM SEPARATION AND PROTECTION REQUIREMENTS PER MAG STD DTLS 404-1, 404-2, AND 404-3 AND SECTIONS 610.5, 615.4 AND 616.3 OF THE MAG STANDARD SPECIFICATIONS.
2. DRY UTILITIES NOT SHOWN, e.g. ELECTRIC, GAS, ETC. SHALL BE PLACED IN ADJACENT PUBLIC UTILITY EASEMENTS (P.U.E.).
3. LANDSCAPED MEDIAN SHOULD BE GRADED TO HARVEST RAIN WATER WITH MAXIMUM DEPTH OF SIX INCHES BELOW THE LOWEST TOP OF THE ADJACENT CURB BUT THE SLOPE SHALL NOT STEEPER THAN 6:1. TOP ELEVATION OF THE ROCK MULCH SHOULD BE UP TO TWO INCHES BELOW THE IMMEDIATE TOP OF SIDEWALK OF TOP OF CURB ELEVATION.

\* UTILITY LOCATIONS ARE APPROXIMATE AND MAY VARY BASED ON EXISTING CONDITIONS. SEE NOTE 1 FOR MINIMUM SEPARATION AND PROTECTION REQUIREMENTS

DATE REVISED: 8/2016

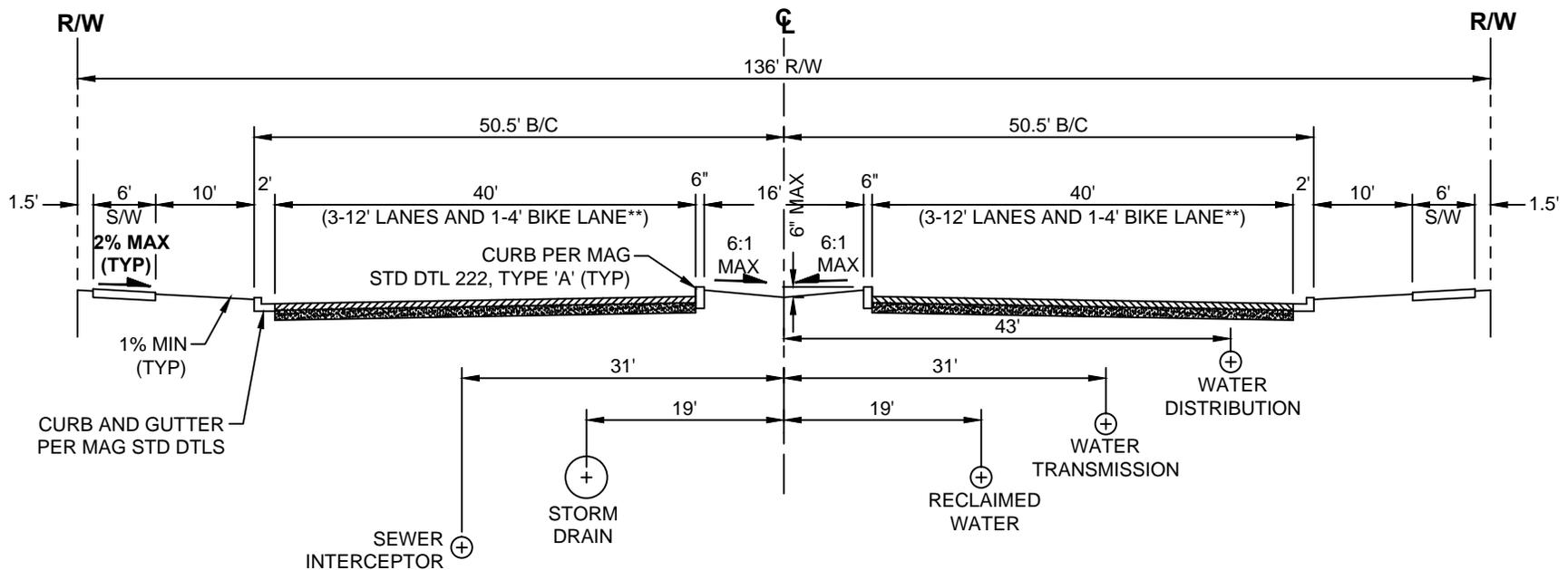
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## STANDARD STREET CROSS-SECTION AND UTILITY LOCATIONS - MAJOR ARTERIAL STREET

DETAIL NO:

3-02A



**STREET CROSS SECTION - LOOKING NORTH OR EAST**

**NOTES:**

1. ALL CITY-OWNED LINES SHALL MEET MINIMUM SEPARATION AND PROTECTION REQUIREMENTS PER MAG STD DTLS 404-1, 404-2, AND 404-3 AND SECTIONS 610.5, 615.4 AND 616.3 OF THE MAG STANDARD SPECIFICATIONS.
2. DRY UTILITIES NOT SHOWN, e.g. ELECTRIC, GAS, ETC. SHALL BE PLACED IN ADJACENT PUBLIC UTILITY EASEMENTS (P.U.E.).
3. LANDSCAPED MEDIAN SHOULD BE GRADED TO HARVEST RAIN WATER WITH MAXIMUM DEPTH OF SIX INCHES BELOW THE LOWEST TOP OF THE ADJACENT CURB BUT THE SLOPE SHALL NOT STEEPER THAN 6:1. TOP ELEVATION OF THE ROCK MULCH SHOULD BE UP TO TWO INCHES BELOW THE IMMEDIATE TOP OF SIDEWALK OF TOP OF CURB ELEVATION.

\* UTILITY LOCATIONS ARE APPROXIMATE AND MAY VARY BASED ON EXISTING CONDITIONS. SEE NOTE 1 FOR MINIMUM SEPARATION AND PROTECTION REQUIREMENTS.

\*\* BIKE LANES ON AN ARTERIAL STREET ARE APPROVED ON A CASE BY CASE BASIS BY CITY MANAGEMENT.

DATE REVISED: 8/2016

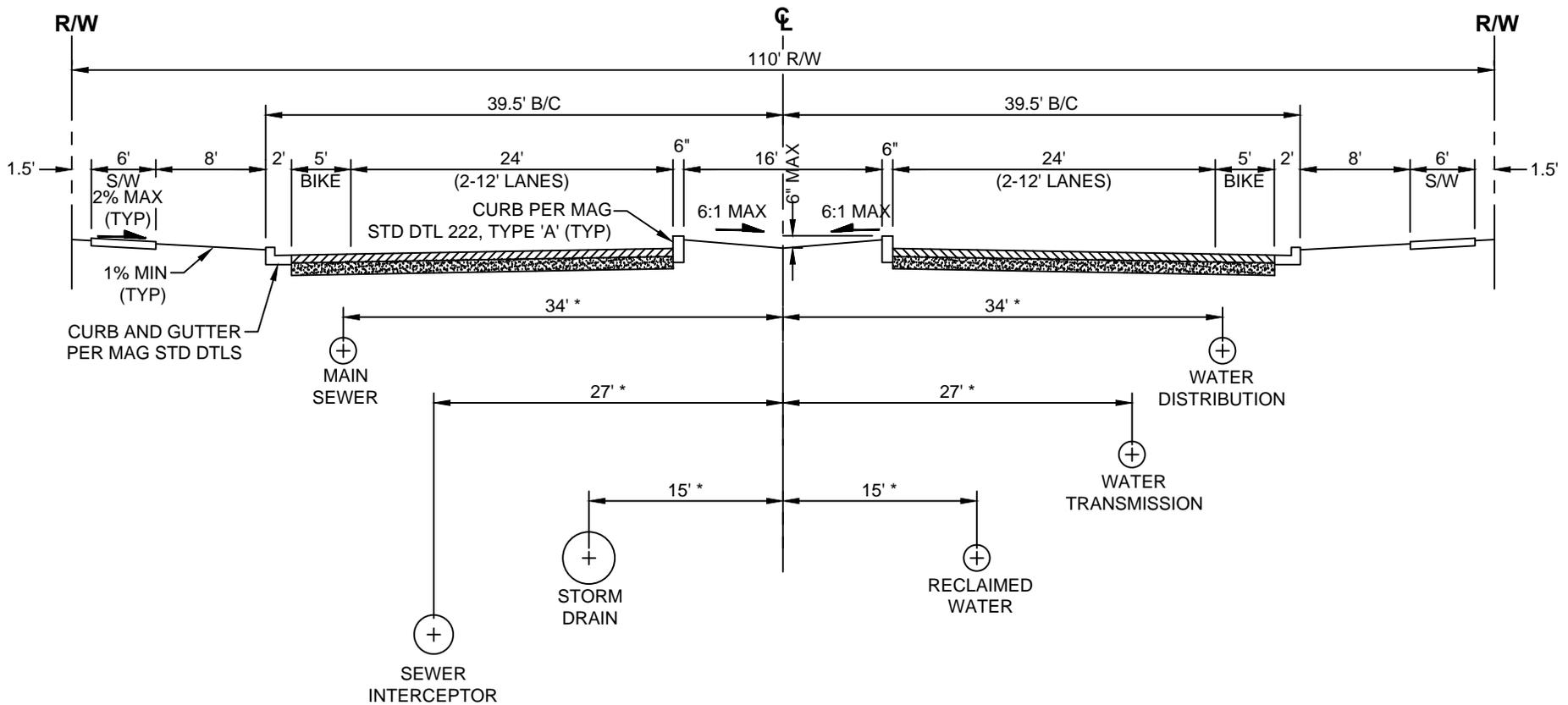
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**STANDARD STREET CROSS-SECTION  
AND UTILITY LOCATIONS - MAJOR  
ARTERIAL STREET WITH BIKE LANE**

DETAIL NO:

**3-02B**



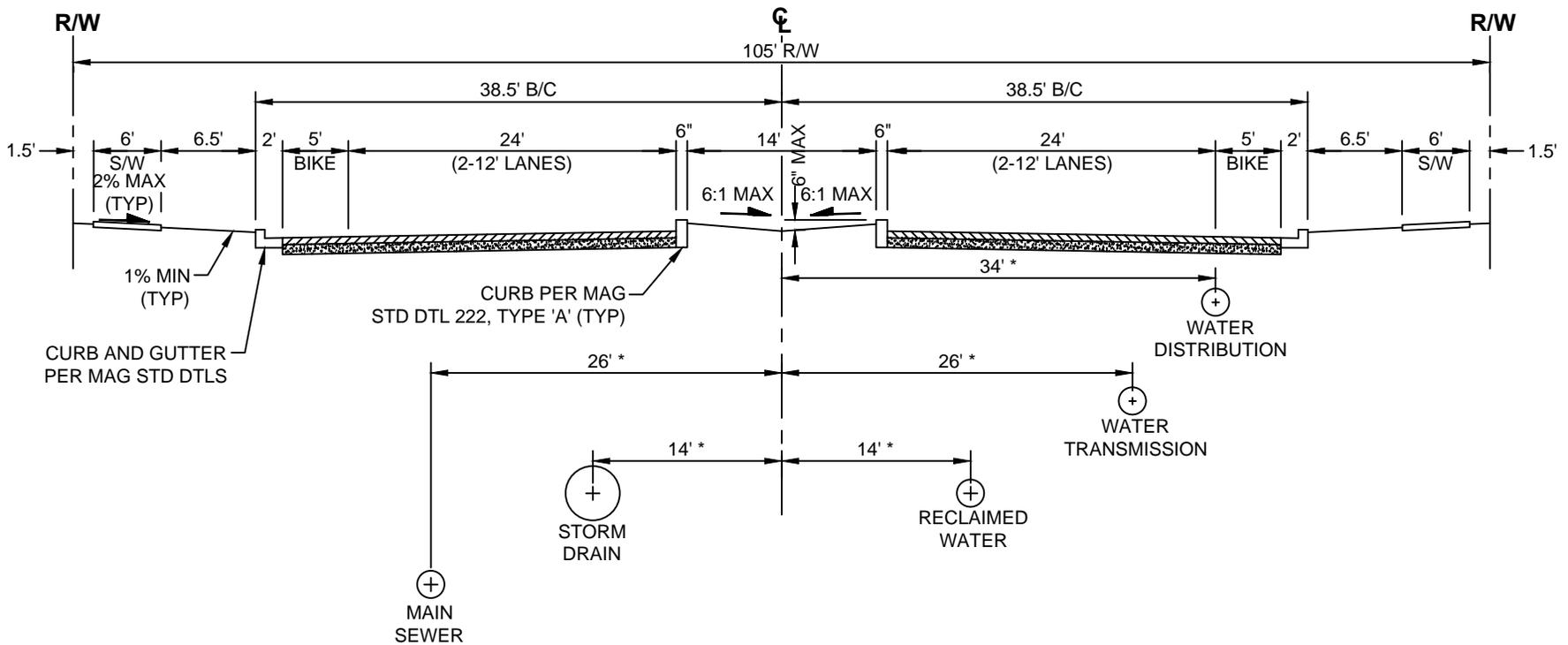
**STREET CROSS SECTION - LOOKING NORTH OR EAST**

**NOTES:**

1. ALL CITY-OWNED LINES SHALL MEET MINIMUM SEPARATION AND PROTECTION REQUIREMENTS PER MAG STD DTLS 404-1, 404-2, AND 404-3 AND SECTIONS 610.5, 615.4 AND 616.3 OF THE MAG STANDARD SPECIFICATIONS.
2. DRY UTILITIES NOT SHOWN, e.g. ELECTRIC, GAS, ETC. SHALL BE PLACED IN ADJACENT PUBLIC UTILITY EASEMENTS (P.U.E.).
3. LANDSCAPED MEDIAN SHOULD BE GRADED TO HARVEST RAIN WATER WITH MAXIMUM DEPTH OF SIX INCHES BELOW THE LOWEST TOP OF THE ADJACENT CURB BUT THE SLOPE SHALL NOT STEEPER THAN 6:1. TOP ELEVATION OF THE ROCK MULCH SHOULD BE UP TO TWO INCHES BELOW THE IMMEDIATE TOP OF SIDEWALK OF TOP OF CURB ELEVATION.

\* UTILITY LOCATIONS ARE APPROXIMATE AND MAY VARY BASED ON EXISTING CONDITIONS. SEE NOTE 1 FOR MINIMUM SEPARATION AND PROTECTION REQUIREMENTS

<p>DATE REVISED: 8/2016</p> <hr/> <p>APPROVED FOR DISTRIBUTION (SIGNATURE ON FILE)</p>	 <p><b>SURPRISE</b> ARIZONA</p>	<p><b>STANDARD STREET CROSS-SECTION AND UTILITY LOCATIONS - MINOR ARTERIAL STREET</b></p>	<p>DETAIL NO:</p> <hr/> <p align="center"><b>3-03</b></p>
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### STREET CROSS SECTION - LOOKING NORTH OR EAST

#### NOTES:

1. ALL CITY-OWNED LINES SHALL MEET MINIMUM SEPARATION AND PROTECTION REQUIREMENTS PER MAG STD DTLS 404-1, 404-2, AND 404-3 AND SECTIONS 610.5, 615.4 AND 616.3 OF THE MAG STANDARD SPECIFICATIONS.
2. DRY UTILITIES NOT SHOWN, e.g. ELECTRIC, GAS, ETC. SHALL BE PLACED IN ADJACENT PUBLIC UTILITY EASEMENTS (P.U.E.).
3. LANDSCAPED MEDIAN SHOULD BE GRADED TO HARVEST RAIN WATER WITH MAXIMUM DEPTH OF SIX INCHES BELOW THE LOWEST TOP OF THE ADJACENT CURB BUT THE SLOPE SHALL NOT STEEPER THAN 6:1. TOP ELEVATION OF THE ROCK MULCH SHOULD BE UP TO TWO INCHES BELOW THE IMMEDIATE TOP OF SIDEWALK OF TOP OF CURB ELEVATION.

\* UTILITY LOCATIONS ARE APPROXIMATE AND MAY VARY BASED ON EXISTING CONDITIONS. SEE NOTE 1 FOR MINIMUM SEPARATION AND PROTECTION REQUIREMENTS

DATE REVISED: 8/2016

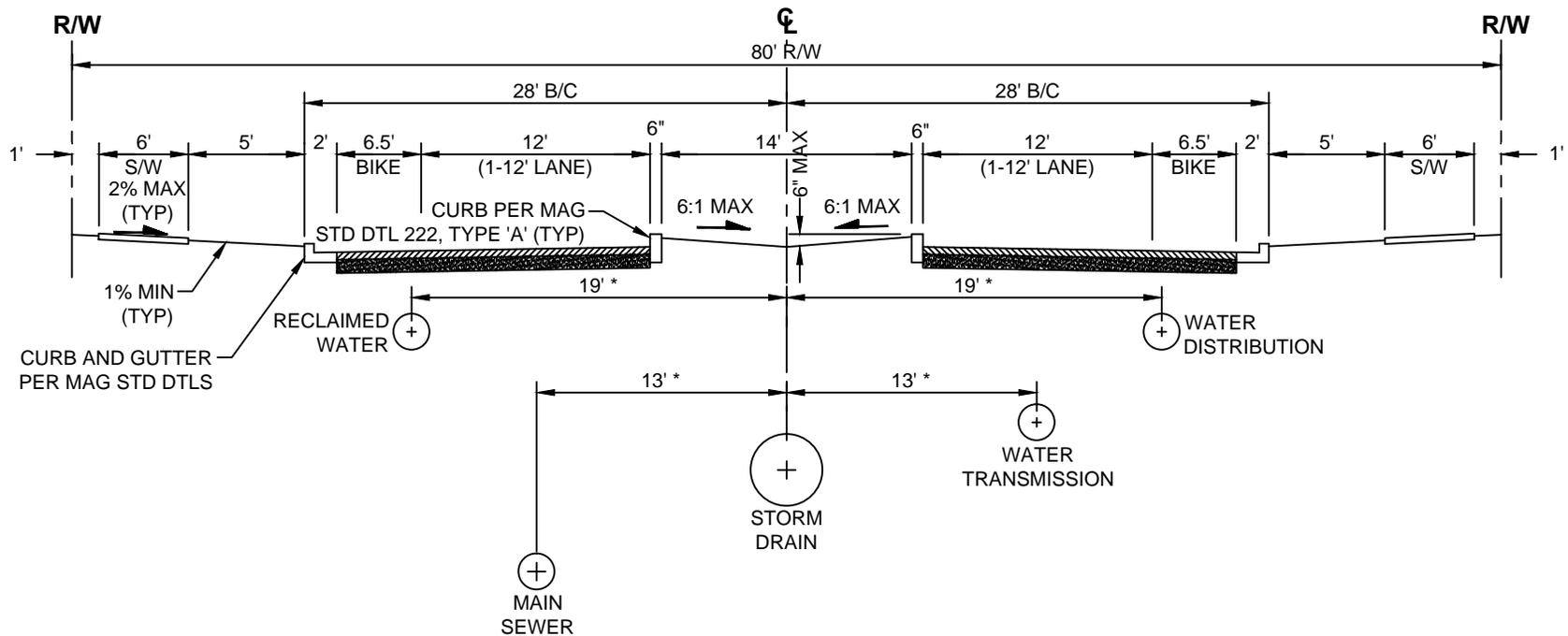
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## STANDARD STREET CROSS-SECTION AND UTILITY LOCATIONS - HIGH VOLUME COLLECTOR

DETAIL NO:

3-04



### STREET CROSS SECTION - LOOKING NORTH OR EAST

#### NOTES:

1. ALL CITY-OWNED LINES SHALL MEET MINIMUM SEPARATION AND PROTECTION REQUIREMENTS PER MAG STD DTLs 404-1, 404-2, AND 404-3 AND SECTIONS 610.5, 615.4 AND 616.3 OF THE MAG STANDARD SPECIFICATIONS.
2. DRY UTILITIES NOT SHOWN, e.g. ELECTRIC, GAS, ETC. SHALL BE PLACED IN ADJACENT PUBLIC UTILITY EASEMENTS (P.U.E.).
3. LANDSCAPED MEDIAN SHOULD BE GRADED TO HARVEST RAIN WATER WITH MAXIMUM DEPTH OF SIX INCHES BELOW THE LOWEST TOP OF THE ADJACENT CURB BUT THE SLOPE SHALL NOT STEEPER THAN 6:1. TOP ELEVATION OF THE ROCK MULCH SHOULD BE UP TO TWO INCHES BELOW THE IMMEDIATE TOP OF SIDEWALK OF TOP OF CURB ELEVATION.

\* UTILITY LOCATIONS ARE APPROXIMATE AND MAY VARY BASED ON EXISTING CONDITIONS. SEE NOTE 1 FOR MINIMUM SEPARATION AND PROTECTION REQUIREMENTS

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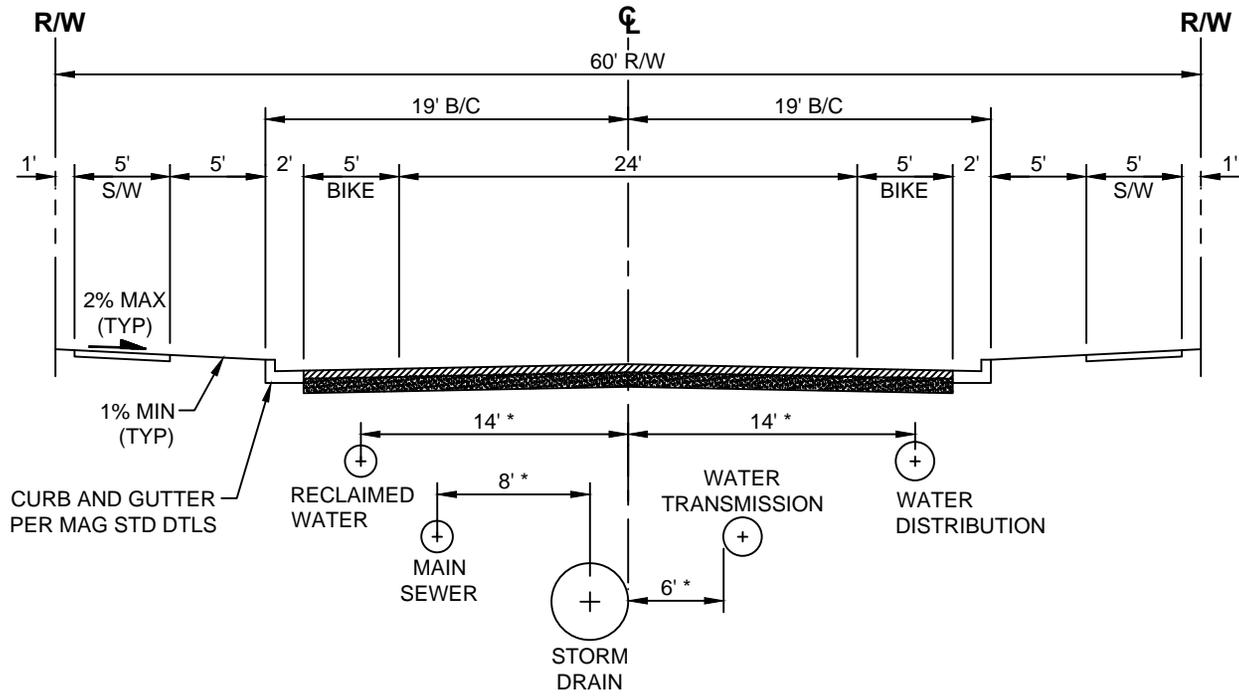
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## STANDARD STREET CROSS-SECTION AND UTILITY LOCATIONS RESIDENTIAL COLLECTOR STREET

DETAIL NO:

3-05



**STREET CROSS SECTION - LOOKING NORTH OR EAST**

**NOTES:**

1. ALL CITY-OWNED LINES SHALL MEET MINIMUM SEPARATION AND PROTECTION REQUIREMENTS PER MAG STD DTLS 404-1, 404-2, AND 404-3 AND SECTIONS 610.5, 615.4 AND 616.3 OF THE MAG STANDARD SPECIFICATIONS.
  2. DRY UTILITIES NOT SHOWN, e.g. ELECTRIC, GAS, ETC. SHALL BE PLACED IN ADJACENT PUBLIC UTILITY EASEMENTS (P.U.E.).
- \* UTILITY LOCATIONS SHOWN MAY VARY IF REQUIRED BY EXISTING CONDITIONS. SEE NOTE 1 FOR MINIMUM SEPARATION AND PROTECTION REQUIREMENTS

DATE REVISED: 8/2016

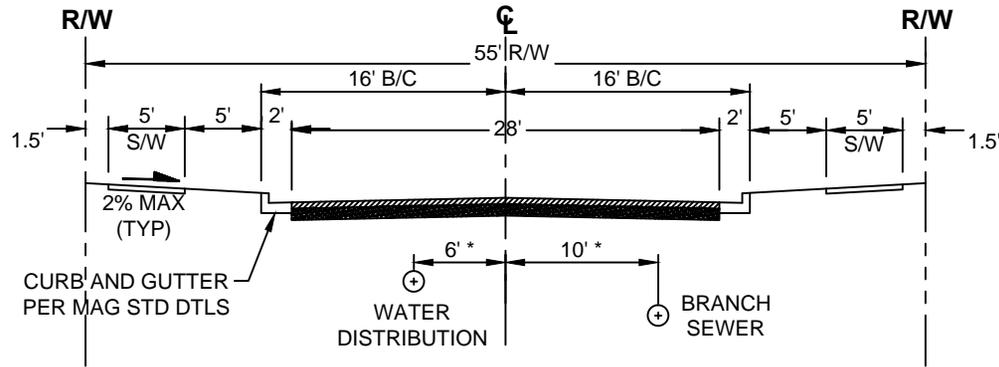
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**STANDARD STREET CROSS-SECTION  
AND UTILITY LOCATIONS -  
COMMERCIAL COLLECTOR STREET**

DETAIL NO:  
**3-06**



**LOCAL STREET WITH ON-STREET PARKING -  
LOOKING NORTH OR EAST**

**NOTES:**

1. ALL CITY-OWNED LINES SHALL MEET MINIMUM SEPARATION AND PROTECTION REQUIREMENTS PER MAG STD DTLs 404-1, 404-2, AND 404-3 AND SECTIONS 610.5, 615.4 AND 616.3 OF THE MAG STANDARD SPECIFICATIONS.
2. DRY UTILITIES NOT SHOWN, e.g. ELECTRIC, GAS, ETC. SHALL BE PLACED IN ADJACENT PUBLIC UTILITY EASEMENTS (P.U.E.).

\* UTILITY LOCATIONS SHOWN MAY VARY IF REQUIRED BY EXISTING CONDITIONS. SEE NOTE 1 FOR MINIMUM SEPARATION AND PROTECTION REQUIREMENTS

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**STANDARD STREET CROSS-SECTION  
AND UTILITY LOCATIONS -  
LOCAL STREET**

DETAIL NO:

**3-07**

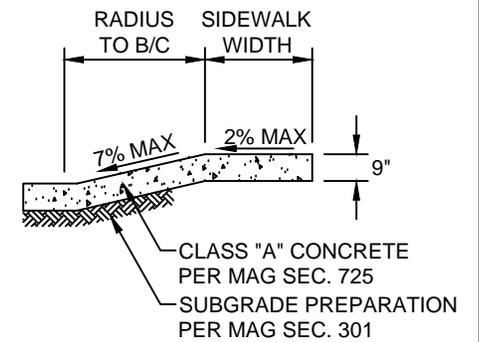
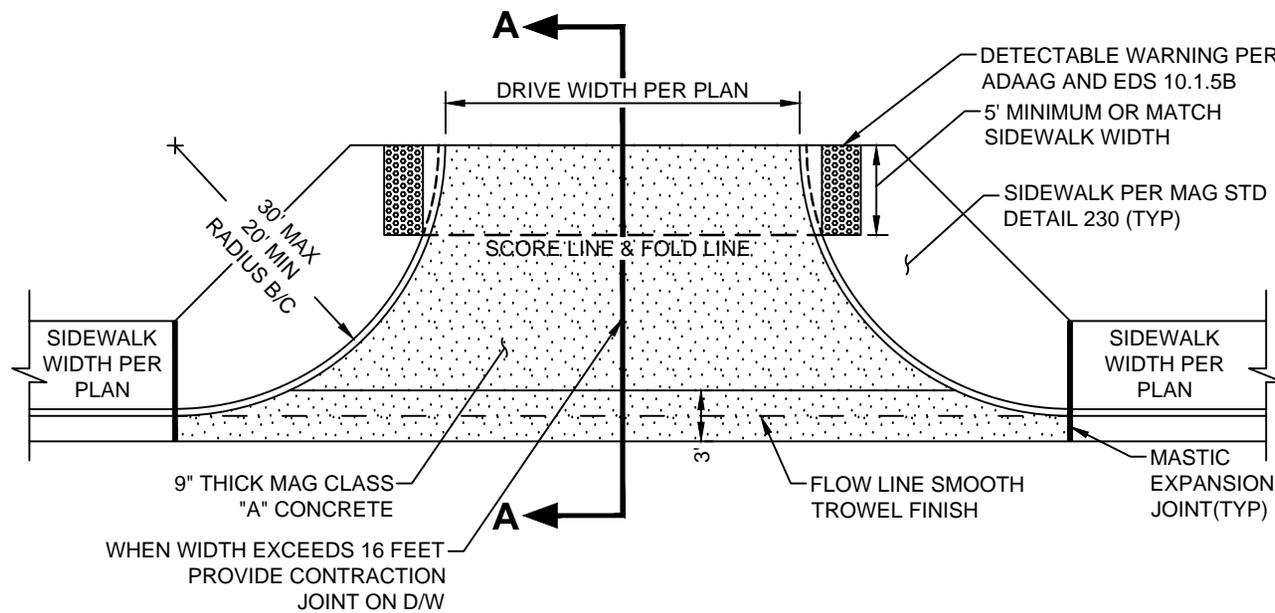
	RESIDENTIAL		COMMERCIAL INDUSTRIAL	
	SINGLE FAMILY	MULTI-FAMILY	SINGLE BUSINESS	MULTI-BUSINESS
STD. CONSTRUCTION DETAIL	MAG 250-1 OR MAG 250-2	3-09 OR 3-10	3-09 OR 3-10	3-09 OR 3-10
MIN. WIDTH (TWO WAY)	16'	24'	24'	24'
MAX. WIDTH (TWO WAY)	24'	40' 46' (W / MEDIAN)	30'	40' 46' (W / MEDIAN)
MIN. SPACE BETWEEN DRIVES (INSIDE EDGE TO INSIDE EDGE)	10'	150'	200'	200'
MIN. DIST. FROM INTERSECTION <sup>(1)</sup>	5'	150' <sup>(2)</sup>	300' ARTERIAL <sup>(2)</sup>	300' ARTERIAL <sup>(2)</sup>
MAX. NO. OF DRIVES	1	2 PER FIRST 19 UNITS	2 PER STREET	1 PER 225' FRONTAGE PER TRAFFIC PLANNING
		3 PER 1200' FRONTAGE		2 PER 800' FRONTAGE 3 PER 1200' FRONTAGE PER TRAFFIC PLANNING
		4 PER 2600' FRONTAGE		4 PER 2600' FRONTAGE PER TRAFFIC PLANNING

**NOTE:**

ALL DIMENSIONS ARE MINIMUM DESIGN REQUIREMENTS. ACTUAL DIMENSIONS SHALL BE BASED ON TRAFFIC STUDY AND SITE SPECIFIC DATA.

- (1) DISTANCE IS MEASURED FROM BACK OF CURB RETURN TO BACK OF CURB RETURN.  
(2) DEVIATIONS FROM THESE DIMENSIONS WILL BE EVALUATED ON A CASE-BY-CASE BASIS.

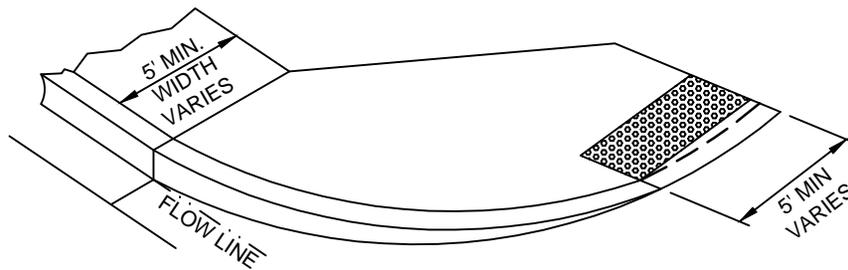
DATE REVISED: 8/2016  APPROVED FOR DISTRIBUTION (SIGNATURE ON FILE)		<h1>DRIVEWAY CRITERIA</h1>	DETAIL NO:  <h2>3-08</h2>
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**SECTION A-A**

**NOTES:**

1. EXPANSION JOINT FILLER SHALL BE HALF (1/2) INCH BITUMINOUS TYPE PRE-FORMED.
2. EXPANSION JOINT FILLER, A.S.T.M. D-1751.
3. MINIMUM SIDEWALK WIDTH SHALL BE PER TABLE 3-2.



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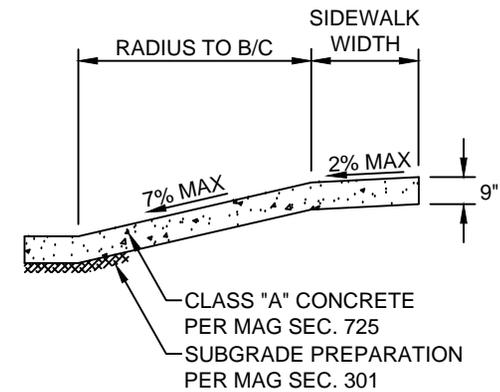
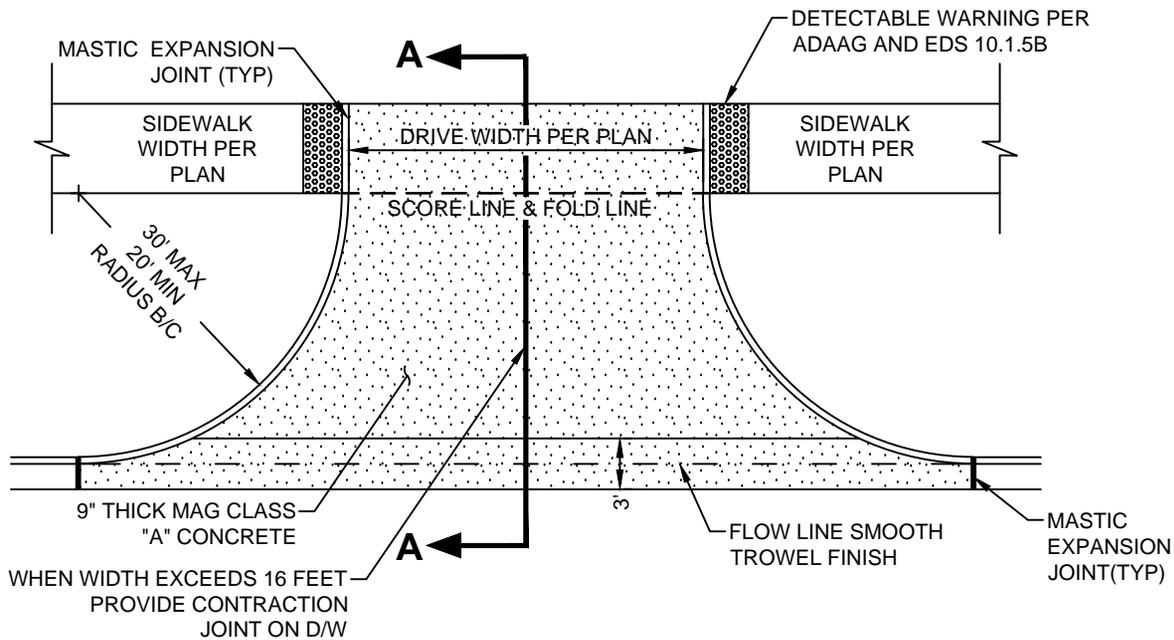
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**RETURN TYPE DRIVEWAYS WITH  
ATTACHED SIDEWALK**

DETAIL NO:

**3-09**



**SECTION A-A**

**NOTES:**

1. EXPANSION JOINT FILLER SHALL BE HALF INCH BITUMINOUS TYPE PRE-FORMED.
2. EXPANSION JOINT FILLER, A.S.T.M. D-1751.
3. MINIMUM SIDEWALK WIDTH SHALL BE PER TABLE 3-2.

DATE REVISED: 8/2016

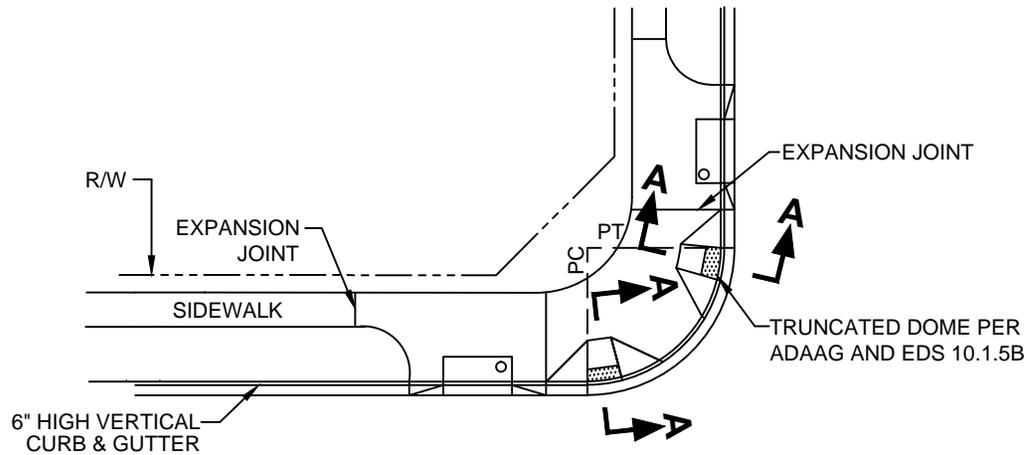
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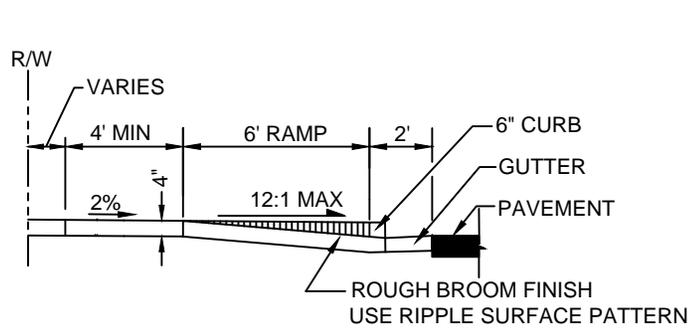
**RETURN TYPE DRIVEWAYS WITH  
DETACHED SIDEWALK**

DETAIL NO:

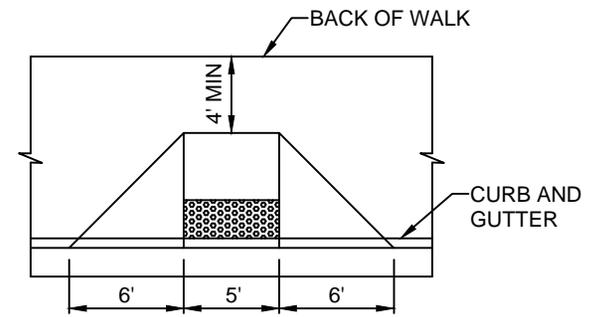
**3-10**



**SIDEWALK RAMP DETAIL WITH LANDSCAPE STRIP**



**SECTION A-A**



**RAMP DETAIL**

**NOTES:**

1. WIDTH OF SIDEWALK AND LANDSCAPE STRIP SHALL BE PER TABLE 3-2 AND STANDARD STREET CROSS SECTION DETAILS.
2. DUAL RAMPS SHALL ONLY BE INSTALLED AT ALL PARKWAY AND ARTERIAL INTERSECTIONS.
3. CONCRETE CURB AND GUTTER AT CURB RETURNS WITH RAMPS SHALL BE MAG CLASS A. CONCRETE SIDEWALK AND RAMPS AT CURB RETURNS SHALL BE MAG CLASS A.
4. RAMP CURBS MAY BE PLACED MONOLITHICALLY WITH A CONTRACTION JOINT.
5. EXPANSION JOINT FILLER SHALL BE 1/2" BITUMINOUS TYPE PREFORMED EXPANSION JOINT FILLER A.S.T.M. D-1751, INSTALLED AS SHOWN ON MAG DETAIL 230.
6. RAMPS MAY BE ROTATED AS NECESSARY TO PROVIDE SHORTEST TRAVEL PATH.

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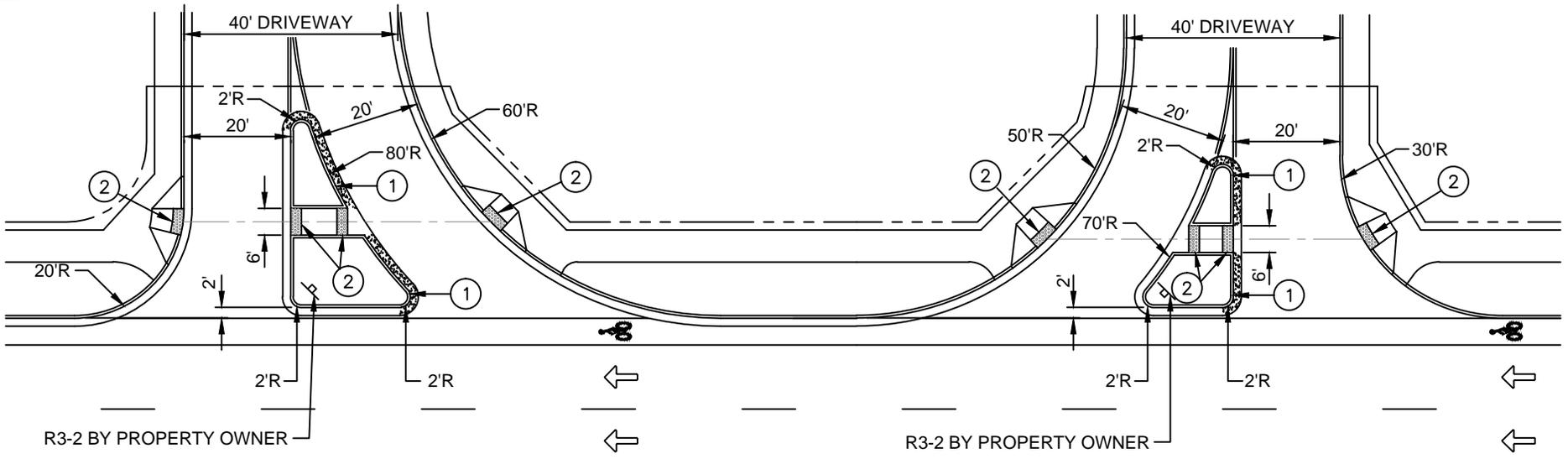


**DUAL RAMP DETAILS**

DETAIL NO:

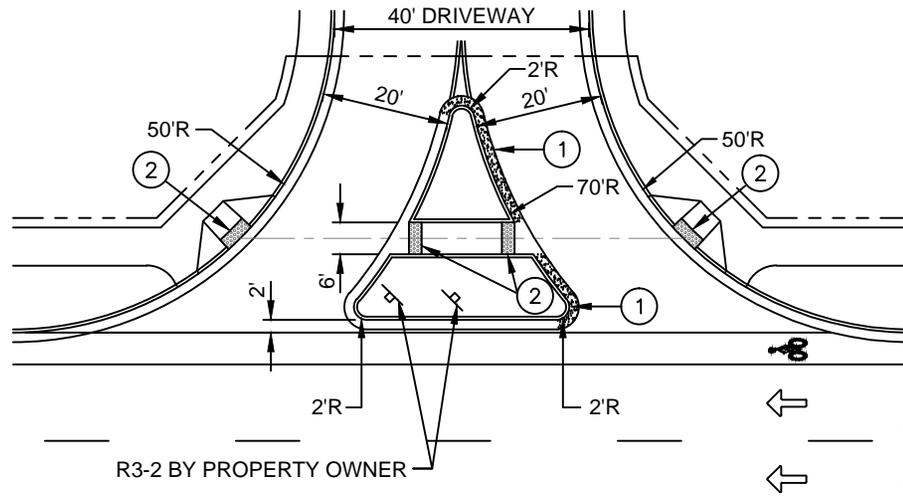
**3-11**





**PROHIBITS LEFT TURN IN**

**PROHIBITS LEFT TURN OUT**



**NOTES:**

1. RADII AND DIMENSIONS THAT ARE NOT PROVIDED ON DRAWINGS SHALL BE DESIGNED BASED ON TRAFFIC DATA AND APPROVED BY THE CITY ENGINEER.
2. ALL ISLAND CURBS SHALL BE CONSTRUCTED PER MAG STD DETAIL 220-1, VERTICAL CURB AND GUTTER TYPE "A" UNLESS NOTED OTHERWISE.
3. ALL SIGNING AND STRIPING SHALL BE IN ACCORDANCE WITH THIS DOCUMENT.

**CONSTRUCTION NOTES:**

- ① CONSTRUCT MOUNTABLE CURB AND GUTTER PER MAG STD DETAIL 220-2, TYPE "E".
- ② DETECTABLE WARNING PER ADAAG AND EDS 10.1.5B.

**PROHIBITS LEFT TURN IN AND OUT**

DATE REVISED: 8/2016

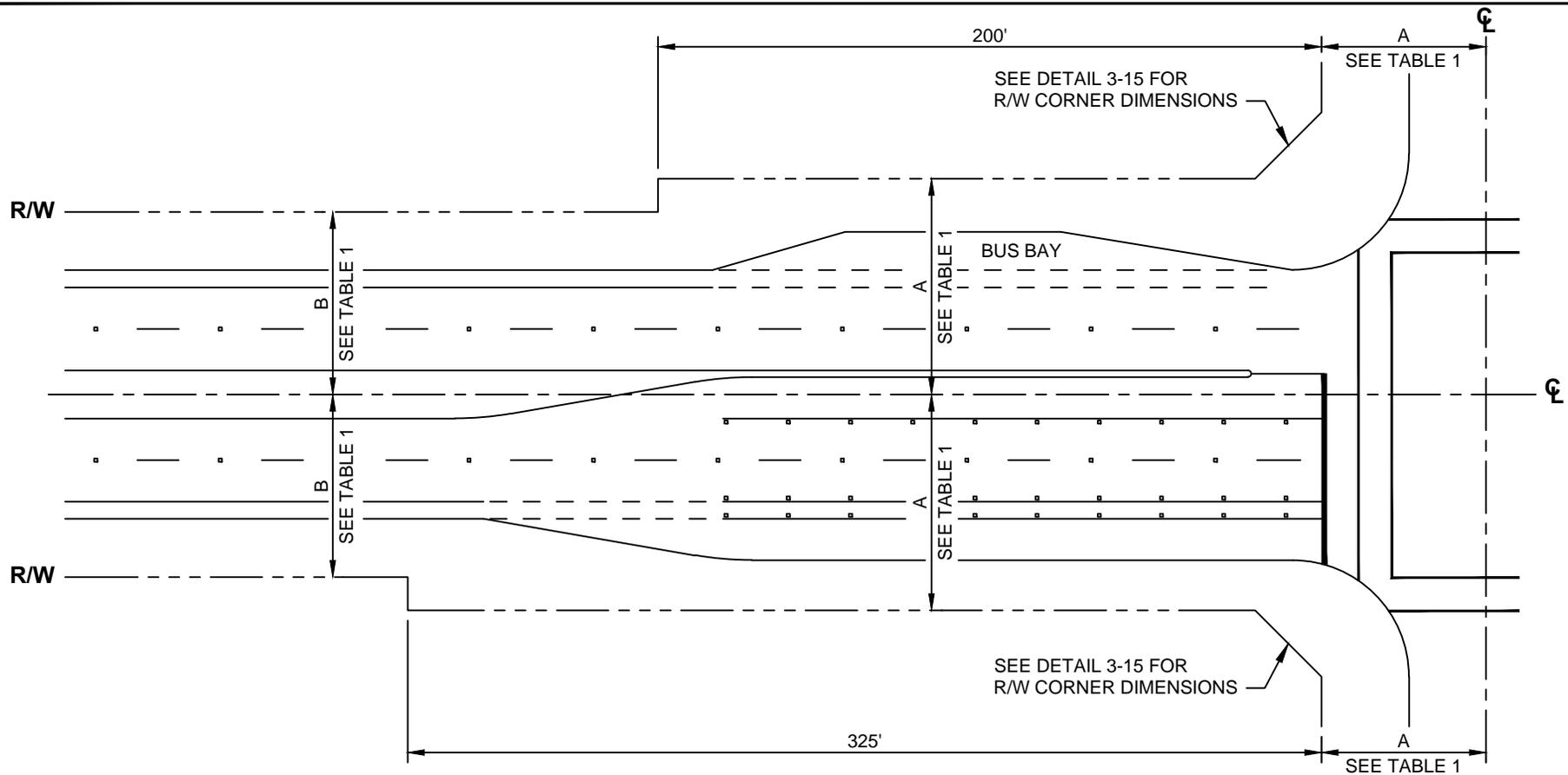
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**PORKCHOPS - NO RIGHT TURN LANE**

DETAIL NO:

**3-13**



**NOTES:**

1. DRAWING IS SCHEMATIC AND NOT TO SCALE. SEE DETAILS 3-01 THRU 3-03 FOR ROADWAY WIDTH AND CROSS SECTION.
2. SEE DETAILS IN THE 4-20 SERIES FOR PAVEMENT MARKING AND SIGNING LAYOUT DESIGN.
3. BUS BAY PER MAG STD DTL 252.

**TABLE 1**

ROAD CLASSIFICATION	A	B
PARKWAY	110'	100'
MAJOR ARTERIAL	78'	68'
MINOR ARTERIAL	65'	55'

DATE REVISED: 8/2016

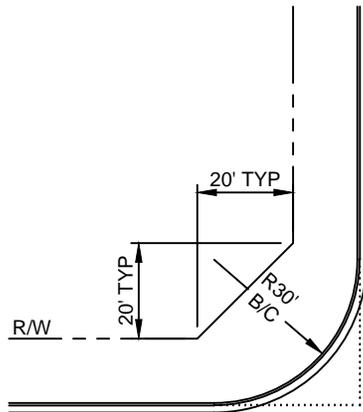
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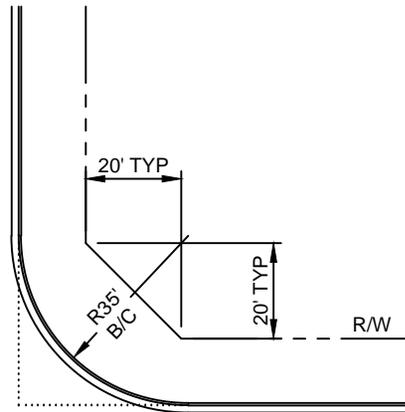
**INTERSECTION RIGHT-OF-WAY**

DETAIL NO:

**3-14**



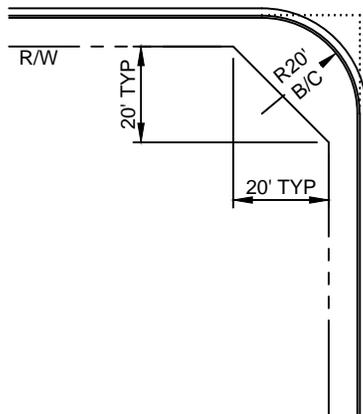
**COLLECTOR**  
(RESIDENTIAL, HIGH VOLUME, AND  
COMMERCIAL/INDUSTRIAL)



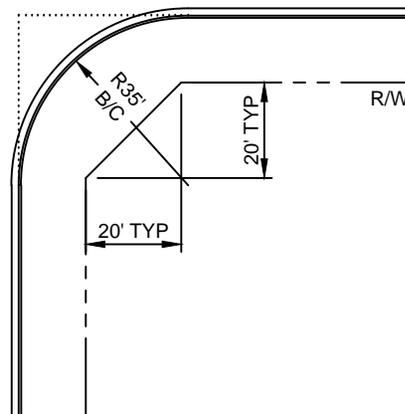
**MAJOR ARTERIAL**

**NOTES:**

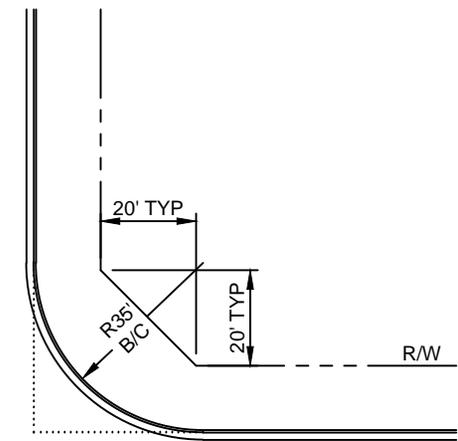
1. ALL CURB RETURNS SHALL HAVE SIDEWALK RAMPS PER MAG STANDARD DETAILS OR CITY OF SURPRISE STD DET 3-11.
2. THE PUBLIC WORKS DIRECTOR MAY REQUEST DIFFERENT DIMENSIONS TO ACCOMMODATE THE CITY'S SPECIAL NEEDS.



**LOCAL**



**MINOR ARTERIAL**



**PARKWAY**

DATE REVISED: 8/2016

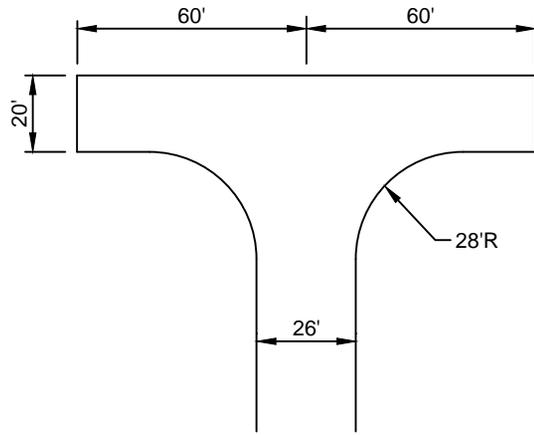
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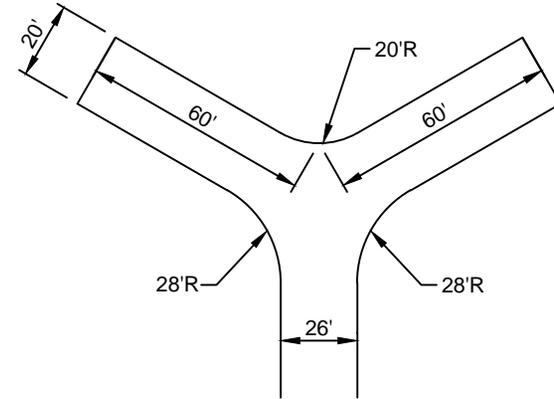
**CORNER RADII DEDICATIONS**

DETAIL NO:

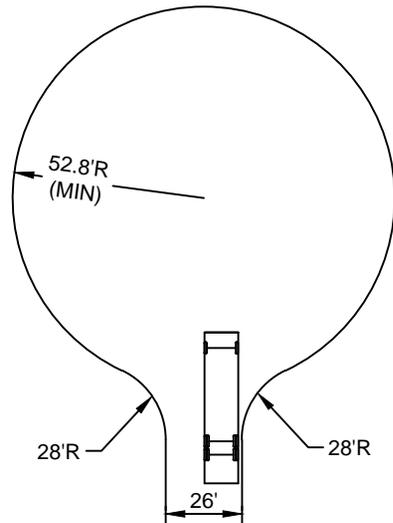
**3-15**



**HAMMERHEAD**



**ACCEPTABLE ALTERNATE  
TO HAMMERHEAD**



**CUL-DE-SAC**

**NOTES:**

1. THE DIMENSIONS ARE THE MINIMUM REQUIREMENTS. FINAL DIMENSIONS ARE DEPENDENT ON AN APPROVED TRAFFIC STUDY.
2. ALL DIMENSIONS ARE TO THE FACE OF CURB.
3. RADIUS FOR FIRE LANE PER AASHTO DETAIL SU-40.

DATE REVISED: 8/2016

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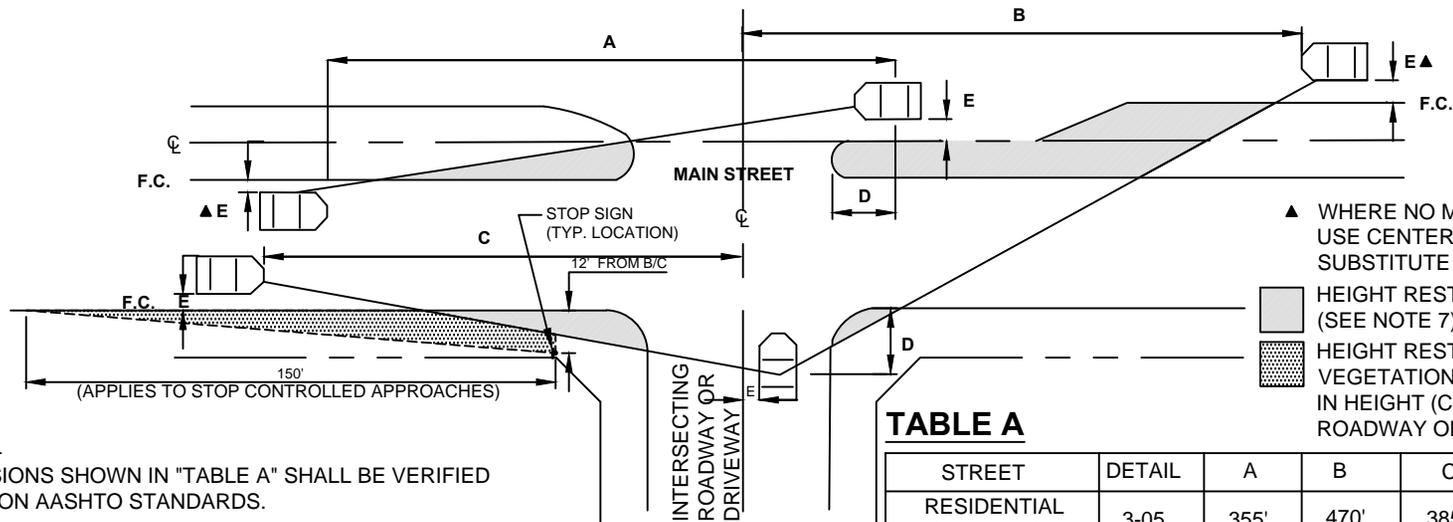


**CUL-DE-SAC AND HAMMERHEADS**

DETAIL NO:

**3-16**





**NOTES**

1. DIMENSIONS SHOWN IN "TABLE A" SHALL BE VERIFIED BASED ON AASHTO STANDARDS.
2. SIGHT DISTANCE FOR A RESIDENTIAL COLLECTOR ROADWAY IS BASED ON:
  - A. A PASSENGER CAR ON A ROADWAY.
  - B. 1-LANE IN EACH DIRECTION WITH A 14' RAISED MEDIAN.
  - C. A DESIGN SPEED OF 40 MPH.
  - D. AN APPROACH GRADE OF LESS THAN THREE PERCENT.
3. SIGHT DISTANCE FOR A HIGH VOLUME COLLECTOR
  - A. A PASSENGER CAR ON A ROADWAY.
  - B. 2-LANES IN EACH DIRECTION WITH A 14' RAISED MEDIAN.
  - C. A DESIGN SPEED OF 40 MPH.
  - D. AN APPROACH GRADE OF LESS THAN THREE PERCENT.
4. SIGHT DISTANCE FOR A MINOR ARTERIAL ROADWAY IS BASED ON:
  - A. A PASSENGER CAR ON A ROADWAY.
  - B. 2-LANES IN EACH DIRECTION WITH A 16' RAISED MEDIAN.
  - C. A DESIGN SPEED OF 50 MPH.
  - D. AN APPROACH GRADE OF LESS THAN THREE PERCENT.
5. SIGHT DISTANCE FOR A MAJOR ARTERIAL ROADWAY IS BASED ON:
  - A. A PASSENGER CAR ON A ROADWAY.
  - B. 3-LANES IN EACH DIRECTION WITH A 24' RAISED MEDIAN.
  - C. A DESIGN SPEED OF 50 MPH.
  - D. AN APPROACH GRADE OF LESS THAN THREE PERCENT.

**TABLE A**

STREET	DETAIL	A	B	C*	D	E
RESIDENTIAL COLLECTOR	3-05	355'	470'	385'	18'	3'
HIGH VOLUME COLLECTOR	3-04	480'	625'	385'	18'	3'
MINOR ARTERIAL	3-03	515'	665'	480'	18'	3'
MAJOR ARTERIAL	3-02	555'	700'	480'	18'	3'

\* FOR RIGHT TURNS AT SIDE STREET APPROACHES PROVIDING ONLY RIGHT-IN/RIGHT-OUT MOVEMENTS. WHERE LEFT TURNS ARE ALLOWED, DIMENSION "C" SHALL EQUAL DIMENSION "B".

6. NO SIGNS, FENCES, WALLS, UTILITY BOXES, STRUCTURES, SHRUBS, HEDGES, OR OTHER PLANTS, (EXCLUDING TREES), OVER 30 INCHES IN HEIGHT SHALL BE PERMITTED WITHIN THE RESTRICTED AREAS.
7. TREES ARE PERMITTED WITHIN THE RESTRICTED AREAS PROVIDED:
  - A. NO LIMBS, LEAVES NEEDLES OR OTHER FOLIAGE ABOVE 30 INCHES OR BELOW 84 INCHES ARE PERMITTED.
  - B. TREES SHALL NOT OBSTRUCT MORE THAN 20% OF THE VISIBILITY WHEN COMBINED WITH OTHER OBSTRUCTIONS PRESENT.
8. SIGHT DISTANCE FOR TYPICAL RIGHT ANGLE INTERSECTION ONLY, SKEWED INTERSECTIONS WILL REQUIRE SPECIAL CONSIDERATION.

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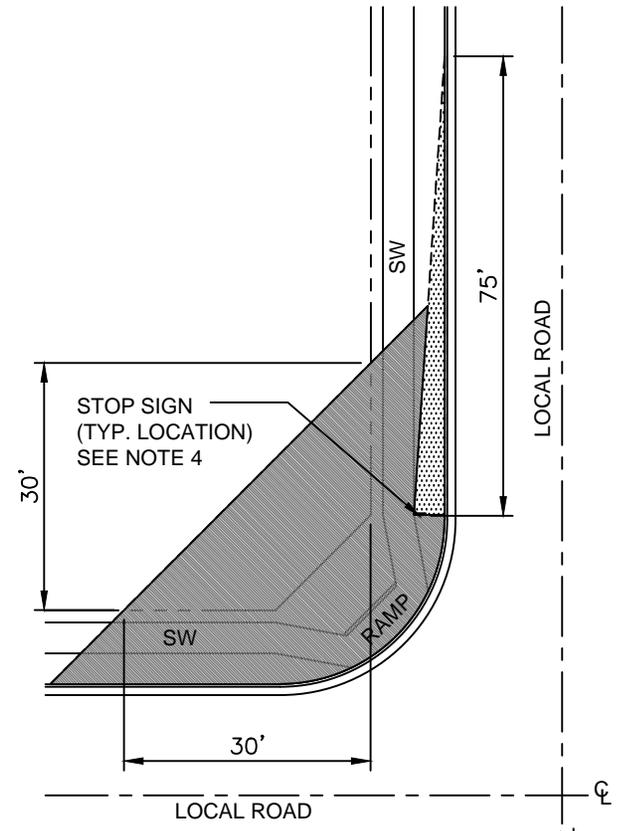
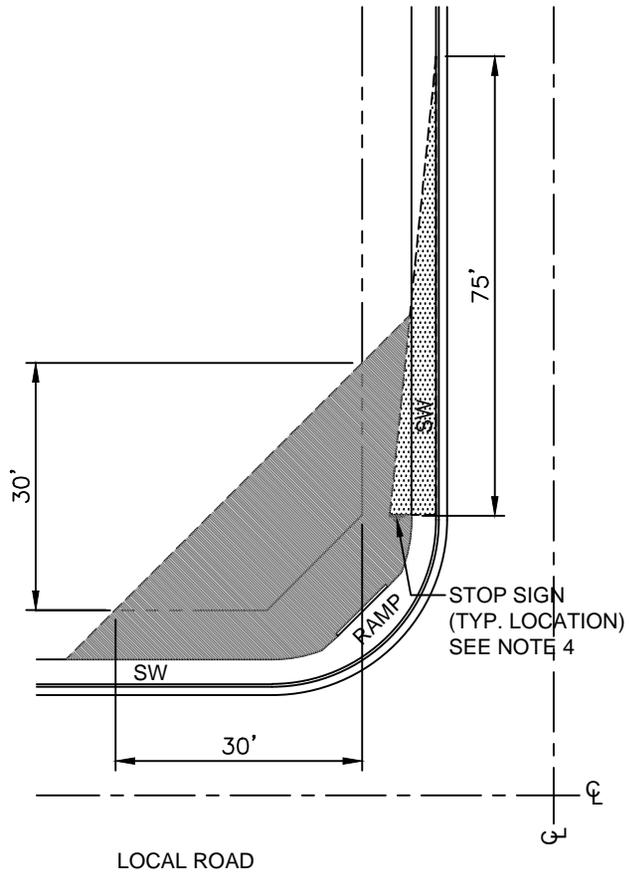
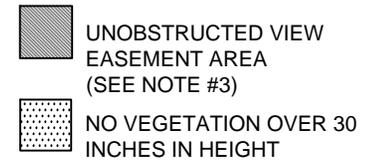
**SIGHT DISTANCE REQUIREMENTS  
FOR ARTERIAL & COLLECTOR  
STREETS**

DETAIL NO:

4-01

**NOTES:**

1. SIGNS, FENCES, WALLS, UTILITY BOXES, STRUCTURES, SHRUBS, HEDGES OR OTHER PLANTS, BUT EXCLUDING TREES OVER 30 INCHES IN HEIGHT SHALL NOT BE PERMITTED WITHIN THE RESTRICTED AREAS.
2. PLANTING WITHIN THE R/W IN VIEW EASEMENTS SHALL BE PER THE APPROVED TYPES AND DIMENSIONS AND SHALL NOT ENCROACH WITHIN THE SIGHT TRIANGLE PER AASHTO GUIDELINES.
3. TREES ARE PERMITTED WITHIN THE RESTRICTED AREAS PROVIDED:
  - A. NO LIMBS, LEAVES, NEEDLES OR OTHER FOLIAGE ABOVE 30 INCHES OR BELOW 84 INCHES ARE PERMITTED.
  - B. TREES SHALL NOT OBSTRUCT MORE THAN 20% OF THE VISIBILITY WHEN COMBINED WITH OTHER OBSTRUCTIONS PRESENT.
4. STOP SIGN SHALL BE INSTALLED 2' MINIMUM BEHIND BACK OF CURB.



DATE REVISED: 7/2015

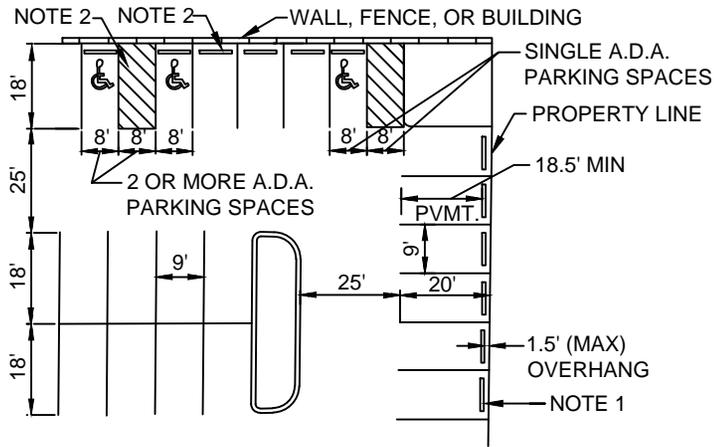
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**LOCAL STREET  
SIGHT VISIBILITY TRIANGLES**

DETAIL NO:

4-02



### 90° PARKING

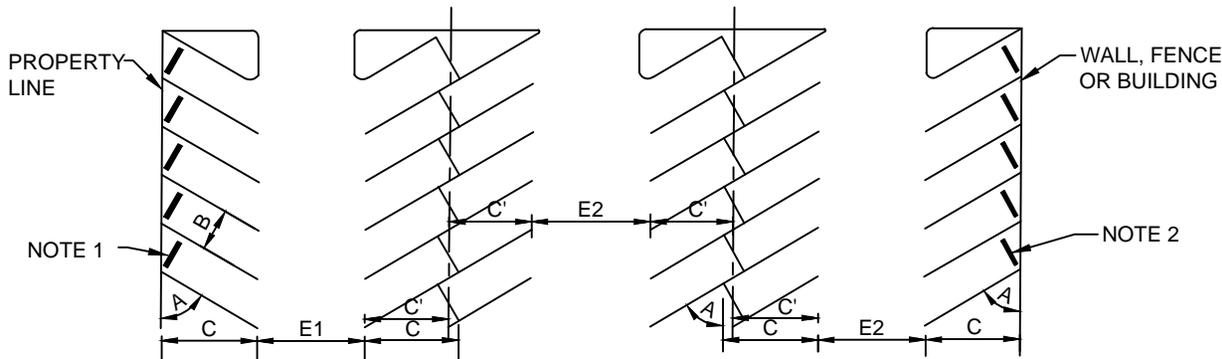
### NOTES:

1. WHERE NO WALL OR BUILDING EXISTS, A SIX (6) INCH HIGH CURB OR BUMPER GUARD IS REQUIRED SO THAT NO PART OF THE VEHICLE EXTENDS OVER OR BEYOND THE PROPERTY LINE. A SIX (6) INCH BY EIGHTEEN (18) INCH CONCRETE CURB IS REQUIRED BETWEEN AREAS OF VEHICULAR ACTIVITY AND PUBLIC RIGHT-OF-WAY, I.E., STREETS AND ALLEYS.
2. WHERE PARKING ABUTS A PERIMETER WALL/FENCE OR BUILDING, A SIX (6) INCH BUMPER GUARD IS RECOMMENDED TO PREVENT VEHICLE OR STRUCTURE DAMAGE.
3. A.D.A. PARKING SPACES FOR VAN ACCESS TO BE A MINIMUM OF EIGHT (8) FEET WIDE WITH AN EIGHT (8) FOOT WIDE AISLE. VAN ACCESS AT LEAST ELEVEN (11) FEET WIDE MAY UTILIZE A MINIMUM OF FIVE (5) FEET OF AISLE. SEE A.D.A. GUIDELINE 502.2.
4. ALL ACCESSIBLE PARKING FACILITIES SHALL COMPLY WITH A.D.A. REQUIREMENTS.

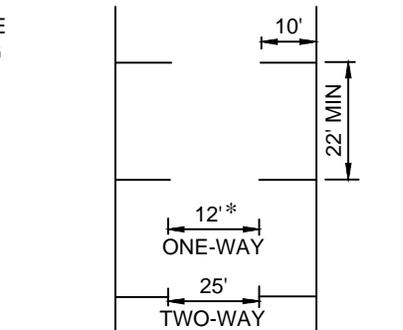
PARKING ANGLE	A	B	C	C'	DRIVEWAY WIDTH	
					E1*	E2**
30°		9'	17'	13'	12'	19'
45°		9'	19'	16'	12'	19'
60°		9'	20'	18'	16'	20'
75°		9'	20'	19'	22'	22'
90°		9'	18'	18'	25'	25'

\* 20' (MIN) WIDTH WHERE FIRE DEPT ACCESS IS REQUIRED.

\*\* 20' (MIN) WIDTH WHERE FIRE DEPT ACCESS IS REQUIRED.



### ANGLE PARKING



### PARALLEL PARKING

DATE REVISED: 8/2016

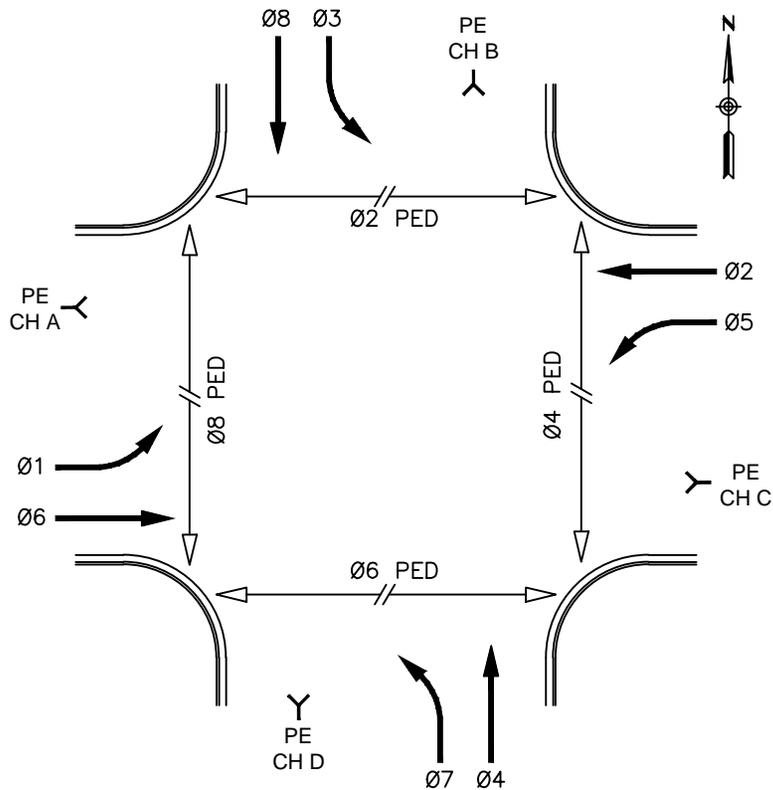
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## PARKING LOT DIMENSIONS

DETAIL NO:

4-03



### PREEMPTION (PE) CHANNELS

- PE CHANNEL A = WB PREEMPTOR 3 (Ø2)
- PE CHANNEL B = NB PREEMPTOR 4 (Ø4)
- PE CHANNEL C = EB PREEMPTOR 5 (Ø6)
- PE CHANNEL D = SB PREEMPTOR 6 (Ø8)

### NOTES:

1. PHASE 2 IS ALWAYS WESTBOUND REGARDLESS OF STREET CLASSIFICATION

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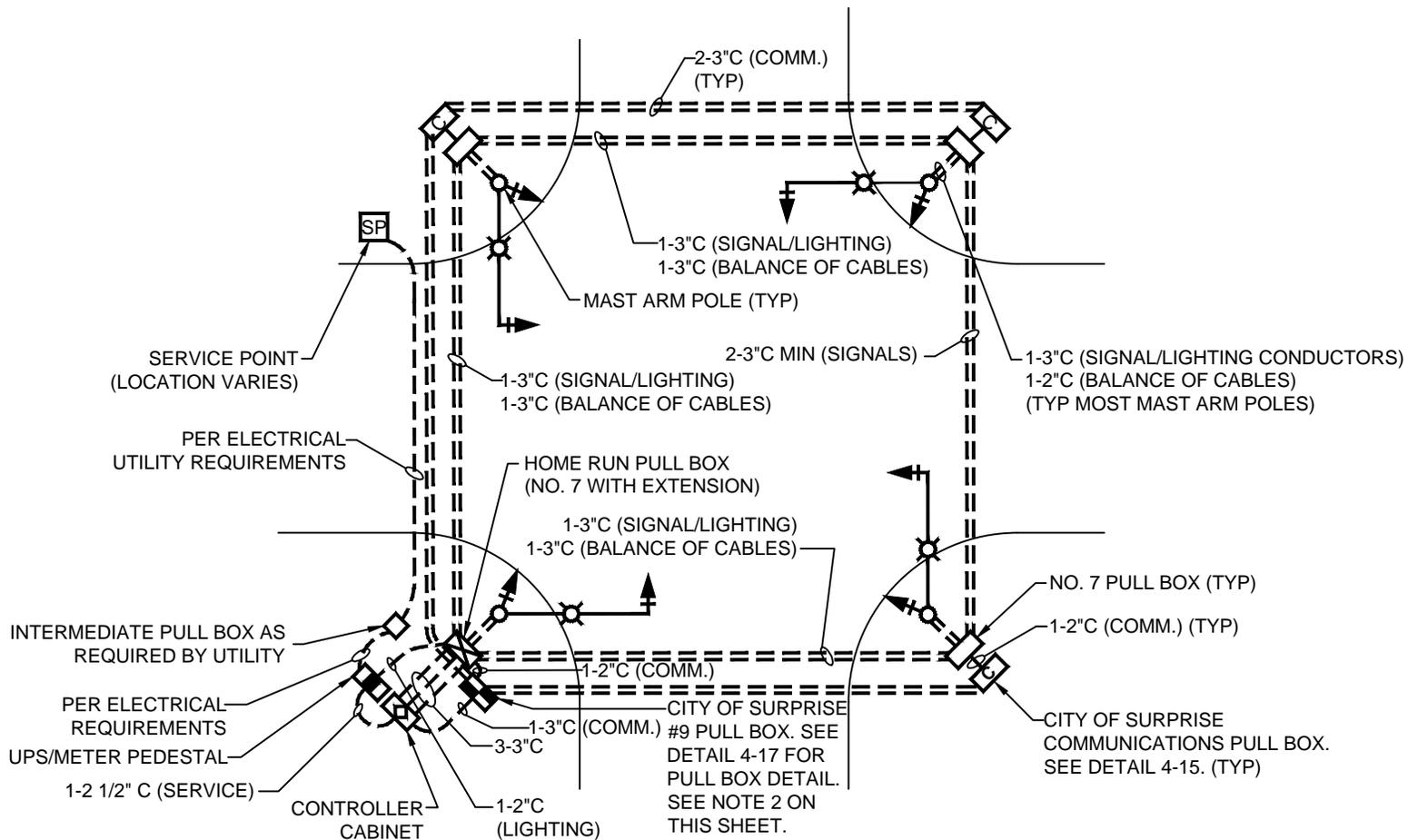
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## STANDARD TRAFFIC SIGNAL PHASING

DETAIL NO:

4-05



**NOTES:**

1. DRAWING ACCURATE FOR CONDUIT INFORMATION ONLY.
2. WHEN CONDUIT AND PULL BOXES ARE BEING CONSTRUCTED PRIOR TO TRAFFIC SIGNAL DESIGN AND INSTALLATION, CITY OF SURPRISE COMMUNICATIONS PULL BOXES SHALL BE INSTALLED ON ALL CORNERS OR AS DIRECTED BY THE CITY TRAFFIC ENGINEER OR DESIGNEE.

DATE REVISED: 8/2016

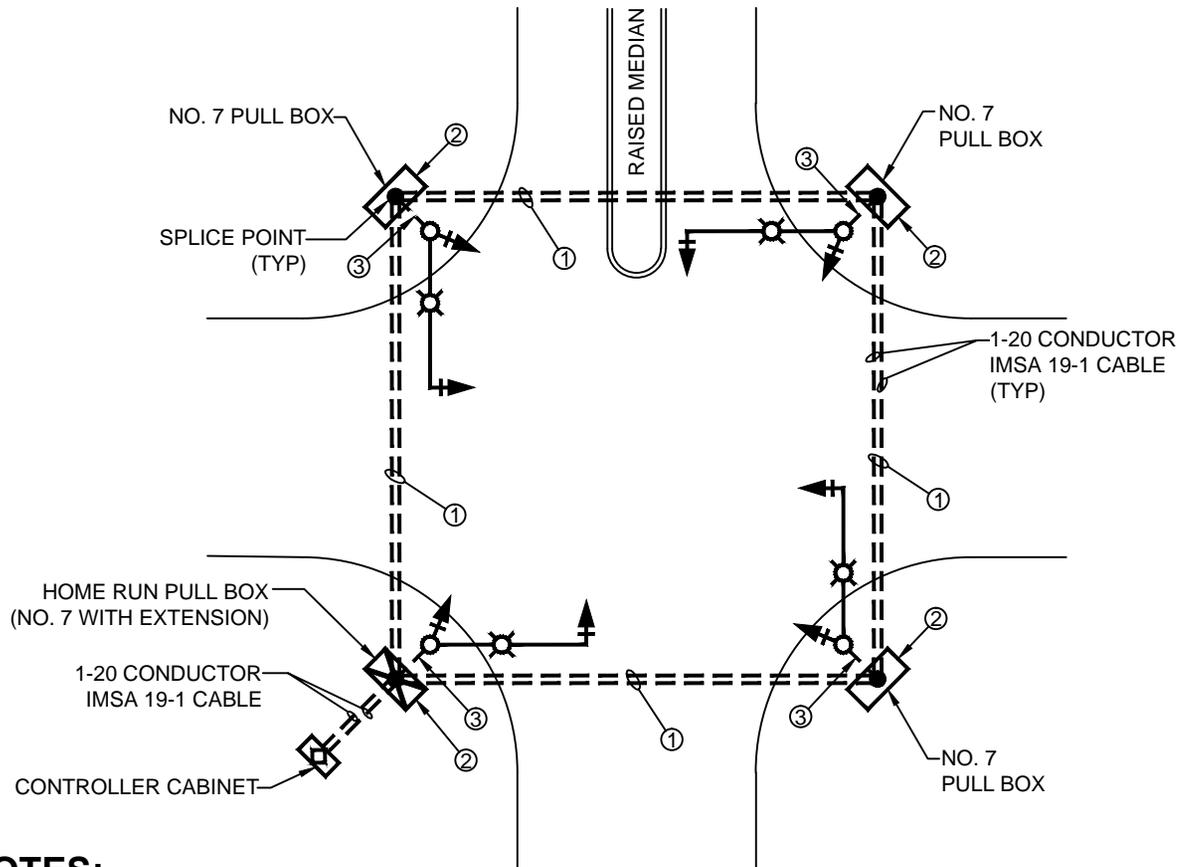
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**TYPICAL TRAFFIC SIGNAL CONDUIT  
SCHEMATIC**

DETAIL NO:

**4-06**



**NOTES:**

1. DRAWING ACCURATE FOR CABLING INFORMATION ONLY.

**CONSTRUCTION NOTES:**

- ① SPLICE PERMITTED ONLY AT DESIGNATED SPLICE LOCATIONS AS SHOWN ON THIS PLAN. EACH SIGNAL CABLE IN USE AS SHOWN SHALL BE CONTINUOUS AND UNSPLICED BETWEEN PULL BOXES.
- ② PROVIDE 1 WRAP OF SLACK (3' MIN) FOR EACH SIGNAL CABLE IN EACH PULL BOX. TERMINATE BETWEEN PULL BOXES.
- ③ LINE REPRESENTS CABLING AS SHOWN IN DETAIL 4-08A.

DATE REVISED: 8/2016

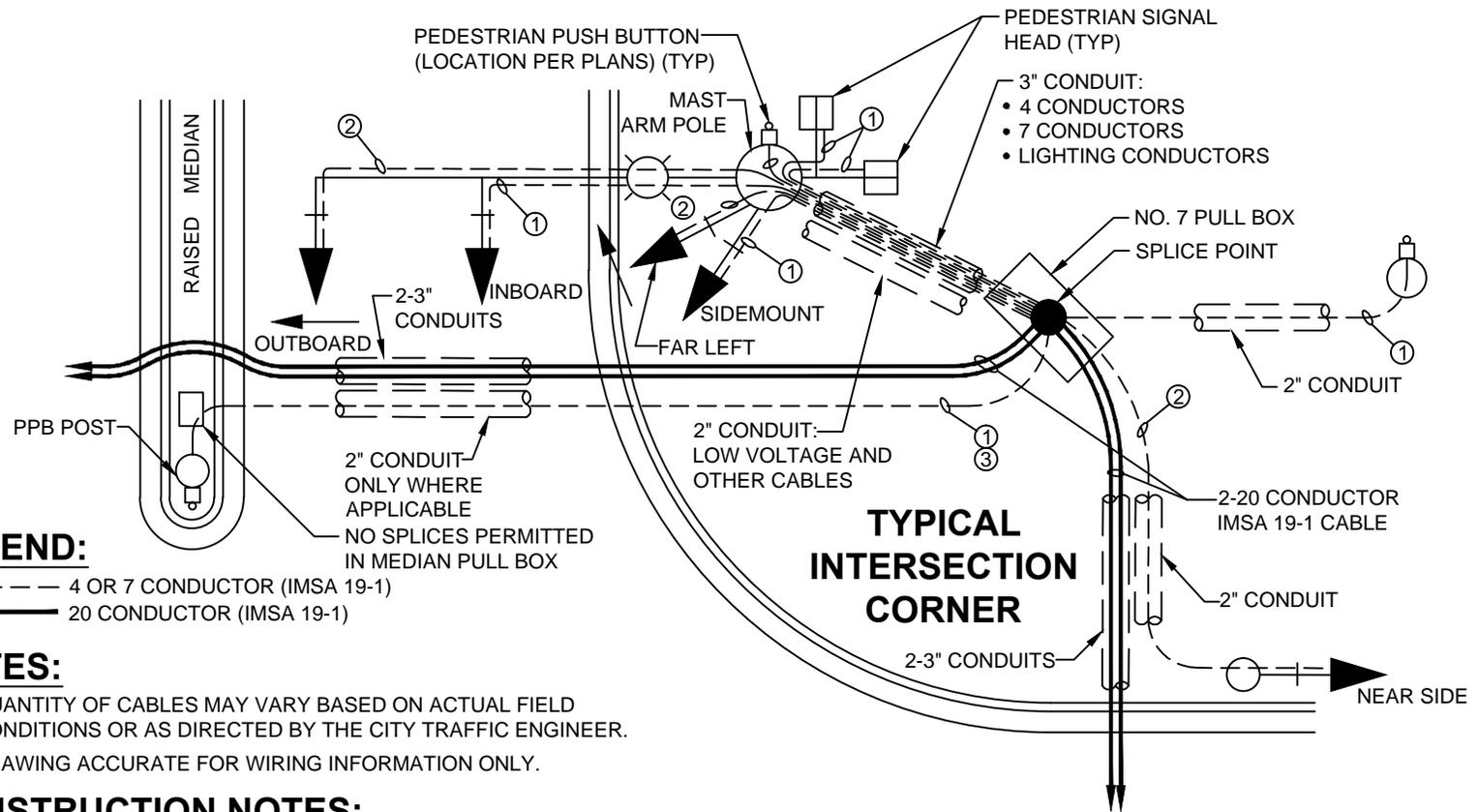
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**TYPICAL TRAFFIC SIGNAL CABLE  
SCHEMATIC**

DETAIL NO:

4-07



**LEGEND:**

- 4 OR 7 CONDUCTOR (IMSA 19-1)
- 20 CONDUCTOR (IMSA 19-1)

**NOTES:**

1. QUANTITY OF CABLES MAY VARY BASED ON ACTUAL FIELD CONDITIONS OR AS DIRECTED BY THE CITY TRAFFIC ENGINEER.
2. DRAWING ACCURATE FOR WIRING INFORMATION ONLY.

**CONSTRUCTION NOTES:**

- ① INSTALL 1-4 CONDUCTOR (IMSA 19-1) CABLE CONTINUOUS AND UNSPLICED AS SHOWN FROM PULL BOX TO EACH OF THE FOLLOWING:
  - SIDEMOUNT VEHICULAR SIGNAL
  - PEDESTRIAN SIGNAL HEAD
  - PEDESTRIAN PUSHBUTTON
  - INBOARD
- ② INSTALL 1-7 CONDUCTOR (IMSA 19-1) CABLE CONTINUOUS AND UNSPLICED AS SHOWN FROM PULL BOX TO EACH OF THE FOLLOWING:
  - OUTBOARD VEHICULAR SIGNAL
  - FAR LEFT MOUNTED VEHICULAR SIGNAL
  - NEARSIDE / RIGHT TURN OVERLAP VEHICULAR SIGNAL
- ③ CONDUCTORS TO MEDIAN SHALL BE SPLICED IN THE PULL BOX ON THE ADJACENT CORNER IN THE CLOCKWISE DIRECTION FROM THE MEDIAN.

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**TRAFFIC SIGNAL WIRING SCHEMATIC**

DETAIL NO:

4-08A

## CONDUCTOR COLOR CODING CRITERIA

### IMSA CABLE 19-1, #14 AWG, 4 CONDUCTOR & 7 CONDUCTOR

SIGNAL HEADS OUTBOARD & FAR LEFT	
7 CONDUCTOR CABLE	
BASIC COLOR	SIGNAL INTERVAL
RED	RED
BLACK	YELLOW
GREEN	GREEN
ORANGE	YELLOW ARROW
BLUE	GREEN ARROW
WHITE	VEH. COM.
WHT/BLK TR	VEH. COM.

SIGNAL HEADS INBOARD & SIDEMOUNT	
4 CONDUCTOR CABLE	
BASIC COLOR	SIGNAL INTERVAL
RED	RED
BLACK	YELLOW
GREEN	GREEN
WHITE	VEH. COM.

PEDESTRIAN HEADS	
4 CONDUCTOR CABLE	
BASIC COLOR	SIGNAL INTERVAL
RED	DON'T WALK
GREEN	WALK
WHITE	PED. COM.
BLACK	SPARE

PUSH BUTTON	
4 CONDUCTOR CABLE	
BASIC COLOR	PUSH BUTTON STATION
RED	PUSH BUTTON
WHITE	P.B. COM.
GREEN	SPARE
BLACK	SPARE

THE CABLE SHALL BE TAGGED AS TO ASSIGNED PHASE

<b>ADDITIONAL WIRE TAPE REQUIREMENTS</b>			
IN ADDITION TO THE STANDARD WIRE COLORS FOR THE IMSA CABLE AS SHOWN BELOW AND TO THE RIGHT, EACH WIRE SHALL BE WRAPPED AS FOLLOWS:			
PHASE #	(1) 3/4" WIDE WRAP	(2) 3/4" WIDE WRAP WITH 2" SPACE BETWEEN TAPE	COLOR OF TAPE
1	X		RED
2	X		WHITE
3	X		BLUE
4	X		GREEN
5		X	RED
6		X	WHITE
7		X	BLUE
8		X	GREEN

### LEGEND:

VEH. = VEHICLE  
 COM. = COMMON  
 P.B. = PUSH BUTTON  
 PED. = PEDESTRIAN

IMSA CABLE 19-1, #14 AWG, 20 CONDUCTOR				
CABLE #1	CABLE #2	CONDUCTOR COLOR		SIGNAL INTERVAL
		BASIC COLOR	TRACER STRIPE	
Ø1	Ø5 OR OVERLAP A	RED	WHITE	RED
		BLACK	WHITE	YELLOW
		GREEN	WHITE	GREEN
Ø2	Ø6 OR OVERLAP B	RED	---	RED
		ORANGE	---	YELLOW
		GREEN	---	GREEN
Ø3	Ø7 OR OVERLAP C	BLACK	RED	RED
		ORANGE	RED	YELLOW
		BLUE	RED	GREEN
Ø4	Ø8 OR OVERLAP D	RED	BLACK	RED
		ORANGE	BLACK	YELLOW
		GREEN	BLACK	GREEN
Ø2 PED.	Ø6 PED.	BLUE	---	WALK
		BLACK	---	DON'T WALK
		WHITE	BLACK	PUSH BUTTON
Ø4 PED.	Ø8 PED.	BLUE	WHITE	WALK
		RED	GREEN	DON'T WALK
		WHITE	RED	PUSH BUTTON
ALL PHASES	ALL PHASES	WHITE	---	P.B. COMMON
		BLUE	BLACK	SPARE

CABLE #2 SHALL BE MARKED WITH TWO INDIVIDUAL 3/8-INCH WIDE STAINLESS STEEL BANDS SIDE BY SIDE WITH A 1/2-INCH GAP BETWEEN BANDS, AT EACH PULL BOX LOCATION. INDIVIDUAL CONDUCTORS IN THE CABLE SHALL BE TAGGED AS TO ASSIGNED PHASE.

DATE REVISED: 8/2016

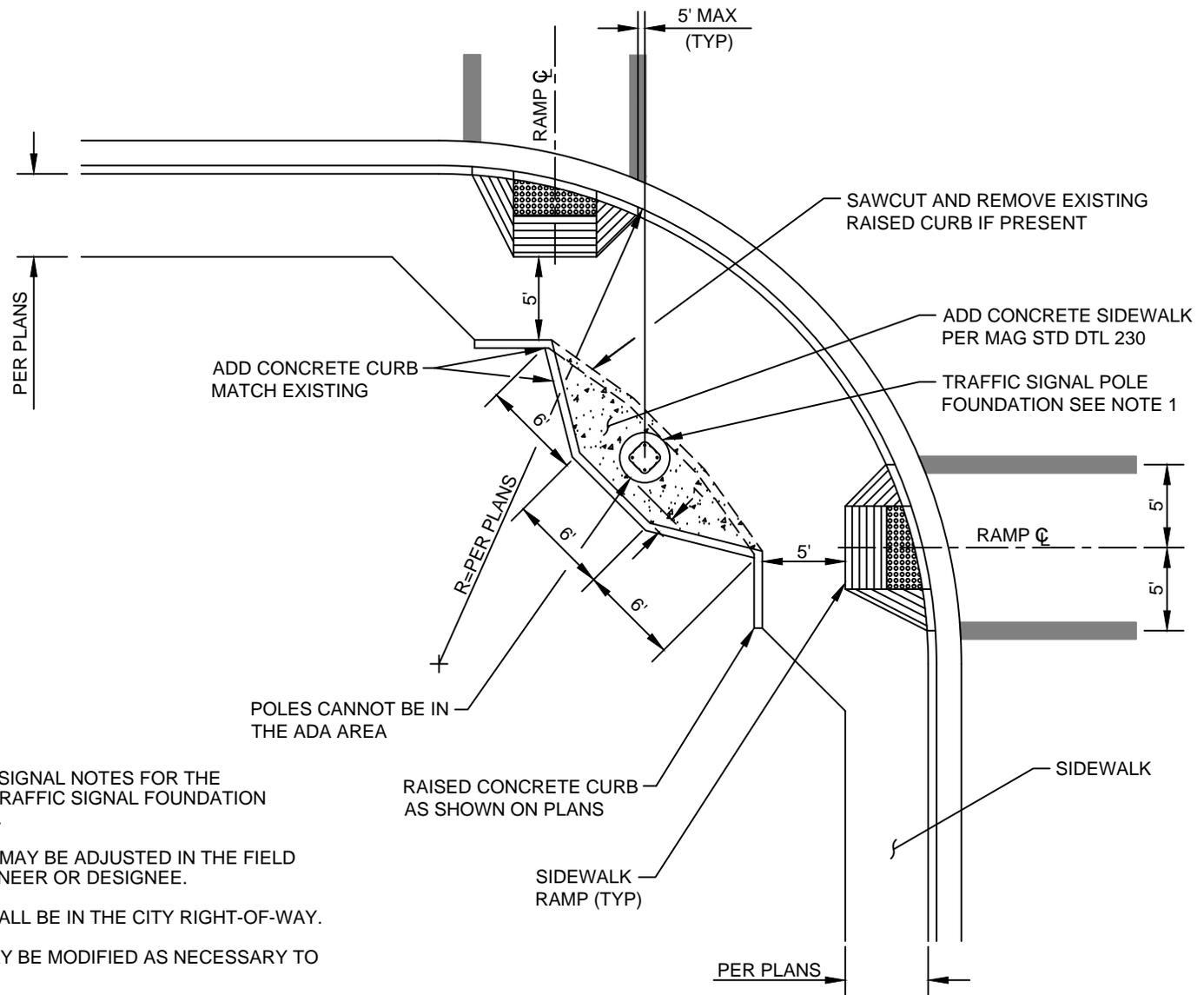
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## CONDUCTOR COLOR CODING CRITERIA

DETAIL NO:

4-08B



**NOTES:**

1. SEE GENERAL TRAFFIC SIGNAL NOTES FOR THE INSTALLATION OF THE TRAFFIC SIGNAL FOUNDATION ELEVATION AND APRON.
2. EXACT POLE LOCATION MAY BE ADJUSTED IN THE FIELD PER CITY TRAFFIC ENGINEER OR DESIGNEE.
3. ALL IMPROVEMENTS SHALL BE IN THE CITY RIGHT-OF-WAY.
4. APRON DIMENSIONS MAY BE MODIFIED AS NECESSARY TO FIT EXISTING RAMPS.

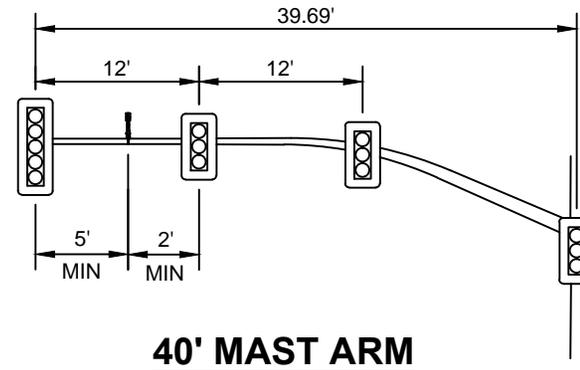
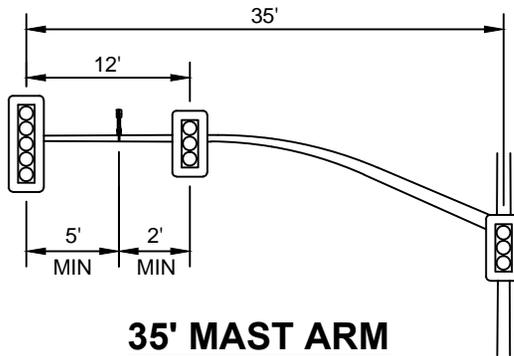
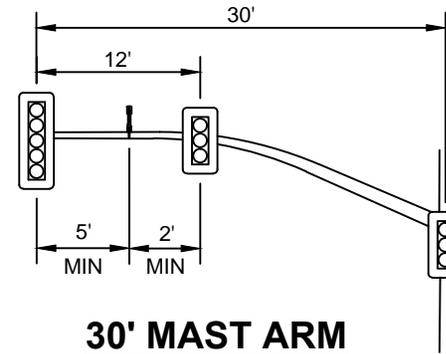
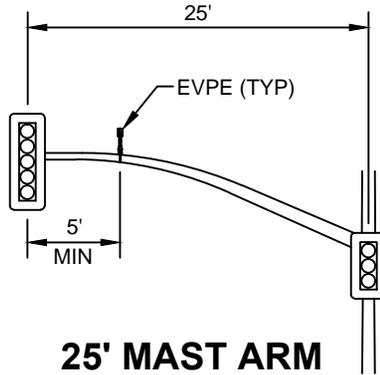
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**POLE PLACEMENT DETAILS**

DETAIL NO:

4-09



**NOTES:**

1. THERE SHALL BE A MINIMUM OF SEVENTEEN (17) FEET OF CLEARANCE BETWEEN THE SURFACE OF THE PAVEMENT AND THE BOTTOM OF EACH SIGNAL HEAD BACK PLATE MOUNTED ON THE MAST ARM.
2. SEE ADOT T.S. 4-10 IN ADOT TRAFFIC SIGNALS & LIGHTING STANDARDS FOR "Q" POLE SPECIFICATIONS.
3. SIGNAL HEAD TYPE (Q, F, OR R) AS INDICATED ON PROJECT PLANS.
4. MAST ARM DIMENSION MEASURED FROM CENTER OF UPRIGHT TO TIP OF MAST ARM.
5. THE LOCATION OF THE EVPE MAY BE MODIFIED WITH APPROVAL OF THE CITY TRAFFIC ENGINEER OR DESIGNEE.
6. THE DESIGNER SHALL PROVIDE ADDITIONAL STRUCTURAL ANALYSIS FOR ANY DEVIATIONS FROM THE DIMENSIONS SHOWN WHICH WILL RESULT IN INCREASED STRUCTURAL LOADING.

DATE REVISED: 8/2016

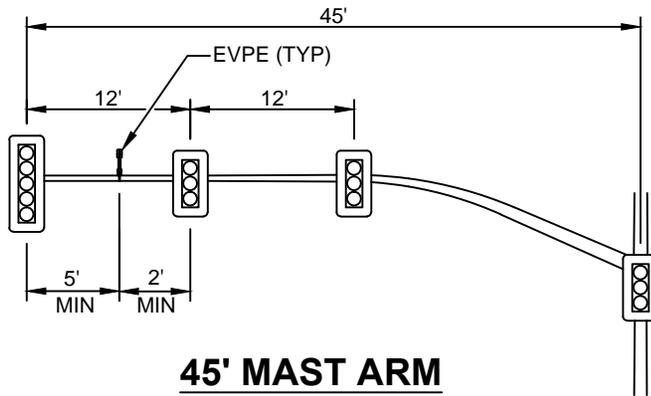
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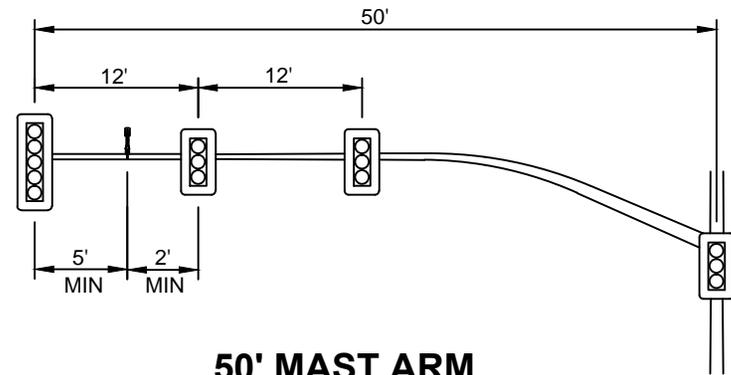
**MAST ARM LOADING DETAIL TYPE Q  
POLE**

DETAIL NO:

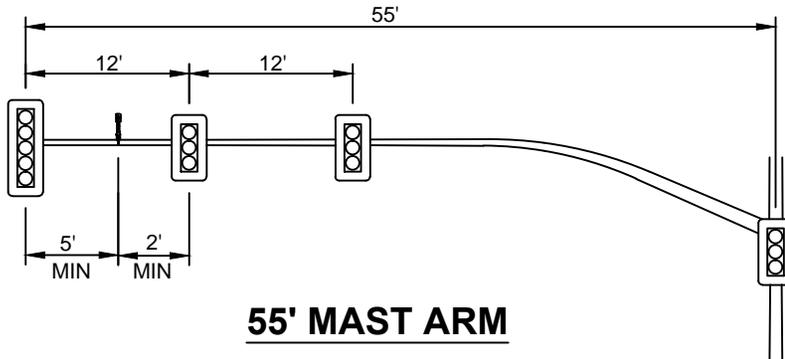
**4-10**  
SHEET 1 OF 2



**45' MAST ARM**



**50' MAST ARM**



**55' MAST ARM**

**NOTES:**

1. THERE SHALL BE A MINIMUM OF SEVENTEEN (17) FEET OF CLEARANCE BETWEEN THE SURFACE OF THE PAVEMENT AND THE BOTTOM OF EACH SIGNAL HEAD BACK PLATE MOUNTED ON THE MAST ARM.
2. SEE ADOT T.S. 4-10 IN ADOT TRAFFIC SIGNALS & LIGHTING STANDARDS FOR "Q" POLE SPECIFICATIONS.
3. SIGNAL HEAD TYPE (Q, F, OR R) AS INDICATED ON PROJECT PLANS.
4. MAST ARM DIMENSION MEASURED FROM CENTER OF UPRIGHT TO TIP OF MAST ARM.
5. THE LOCATION OF THE EVPE MAY BE MODIFIED WITH APPROVAL OF THE CITY TRAFFIC ENGINEER OR DESIGNEE.
6. THE DESIGNER SHALL PROVIDE ADDITIONAL STRUCTURAL ANALYSIS FOR ANY DEVIATIONS FROM THE DIMENSIONS SHOWN WHICH WILL RESULT IN INCREASED STRUCTURAL LOADING.

DATE REVISED: 8/2016

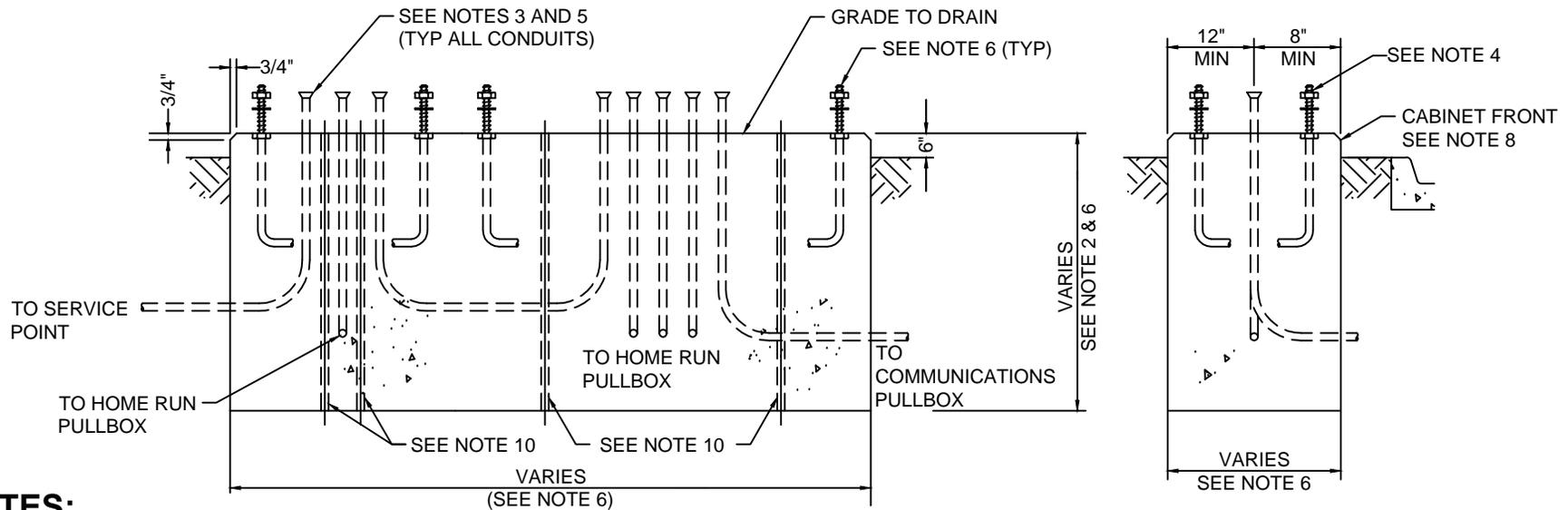
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**MAST ARM LOADING DETAIL TYPE Q  
POLE**

DETAIL NO:

**4-10**  
SHEET 2 OF 2



**NOTES:**

1. ALL MATERIALS AND INSTALLATION SHALL CONFORM TO THE CITY OF SURPRISE TRAFFIC ENGINEERING STANDARDS, LATEST EDITION; THE 2008 ARIZONA DEPARTMENT OF TRANSPORTATION (ADOT) "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION"; THE 2010 ADOT "TRAFFIC SIGNALS AND LIGHTING STANDARD DRAWINGS"; THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD); AND THE PROJECT SPECIAL PROVISIONS.
2. UNSTABLE SOIL MAY REQUIRE DEEPER FOUNDATIONS. SEE PROJECT SPECIAL PROVISIONS AND STANDARD SPECIFICATIONS.
3. FOR CONDUIT SIZE, LOCATION, AND QUANTITY, SEE PROJECT PLANS.
4. ANCHOR BOLTS SHALL BE HOT-DIPPED GALVANIZED STEEL COMPLETE WITH NUTS AND WASHERS.
5. CONDUIT PROJECTION ABOVE FOUNDATION SHALL BE TWO AND A HALF (2 1/2) INCHES MINIMUM AND FOUR (4) INCHES MAXIMUM.
6. FOUNDATION DIMENSIONS AND BOLT PATTERN SHALL BE DETERMINED BY THE CABINET MANUFACTURER'S SPECIFICATIONS.
7. USE A SILICON SEALER RTV TYPE GREY IN COLOR OR CLEAR WHICH IS ON THE ADOT APPROVED PRODUCTS LIST, BETWEEN CABINET AND FOUNDATION.
8. IN UNPAVED AREAS A RAISED CONCRETE PAD THIRTY-SIX (36) INCHES BY FOUR (4) INCHES BY THE WIDTH OF FOUNDATION, SHALL BE PLACED IN FRONT OF THE CABINET. PAD SHALL BE SET TWO (2) INCHES BELOW THE FOUNDATION ELEVATION. SLOPE PAD AWAY FROM CABINET. SEE ADOT STD. DWG. T.S. 2-1.
9. ALL CABINET FOUNDATIONS SHALL HAVE A THREE QUARTER (3/4) INCH DIAMETER BY TEN (10) FEET LONG BONDED COPPER GROUND ROD WITH A CLAMP.
10. A ONE (1) INCH DIAMETER SLEEVE (FOR GROUND ROD) SHALL BE INSERTED WHEN FOUNDATION IS POURED. INSTALL A THREE QUARTER (3/4) INCH DIAMETER BY TEN (10) FOOT LONG BONDED COPPER GROUND ROD IN EACH SLEEVE.
11. PRIOR TO POURING CONCRETE FOUNDATION, FINAL APPROVAL OF CONDUIT PLACEMENT FROM CITY TRAFFIC ENGINEER OR DESIGNEE SHALL BE OBTAINED.
12. CONTRACTOR IS RESPONSIBLE TO MAKE SURE CABINETS FIT ON BOLT PATTERN.

DATE REVISED: 8/2016

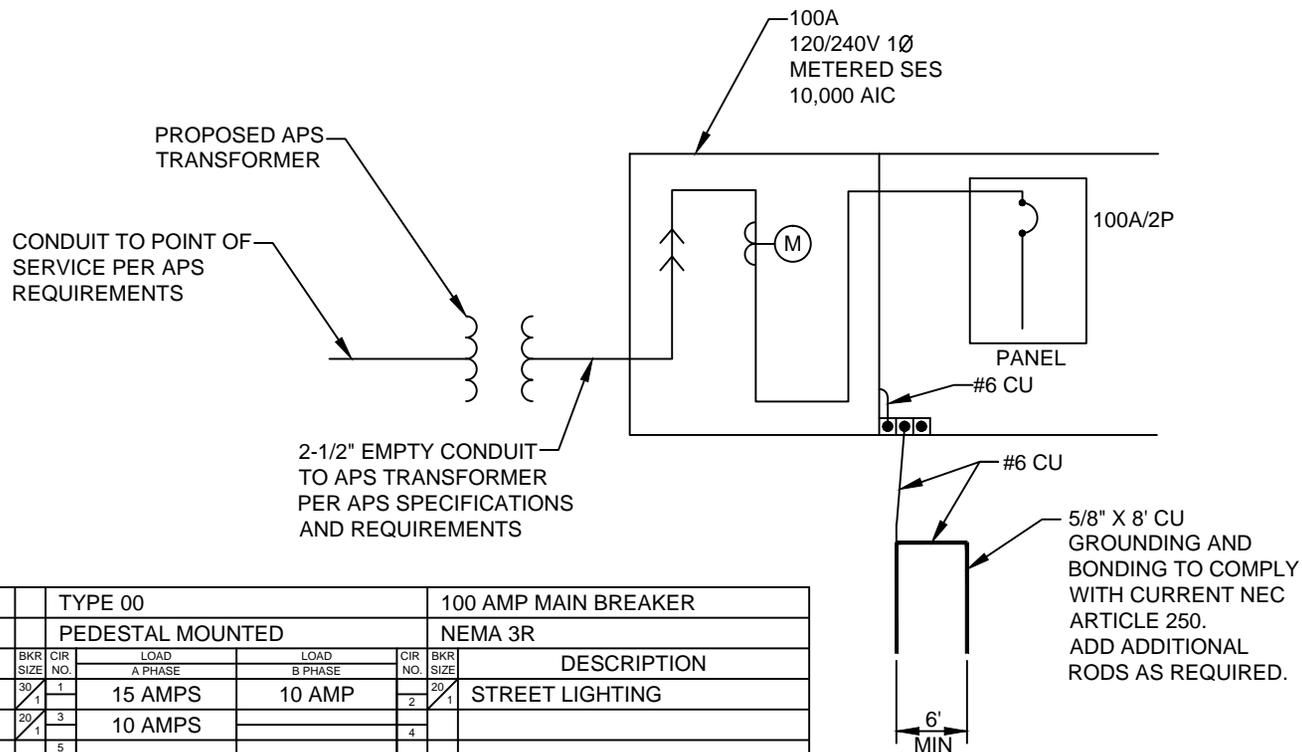
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**DUAL CABINET FOUNDATION**

DETAIL NO:

**4-11**



		TYPE 00				100 AMP MAIN BREAKER	
		PEDESTAL MOUNTED				NEMA 3R	
120/240 1Ø 3W		BKR SIZE	CIR NO.	LOAD	LOAD	CIR NO.	BKR SIZE
DESCRIPTION				A PHASE	B PHASE		DESCRIPTION
	TRAFFIC SIGNAL CONTROLLER	30	1	15 AMPS	10 AMP	2	20
	SIGN LIGHTING	20	3	10 AMPS		4	1
			5			6	
			7			8	
			9			10	
			11			12	
CODE TOTAL VA							
CODE TOTAL AMPS				25 AMPS	10 AMPS	10,000 AIC BREAKERS	

\* FIELDS TO BE FILLED OUT BY DESIGNER AND INCLUDED ON PLANS

**NOTES:**

1. ELECTRICAL EQUIPMENT RATING SHALL MEET OR EXCEED AVAILABLE FAULT CURRENT.

DATE REVISED: 8/2016

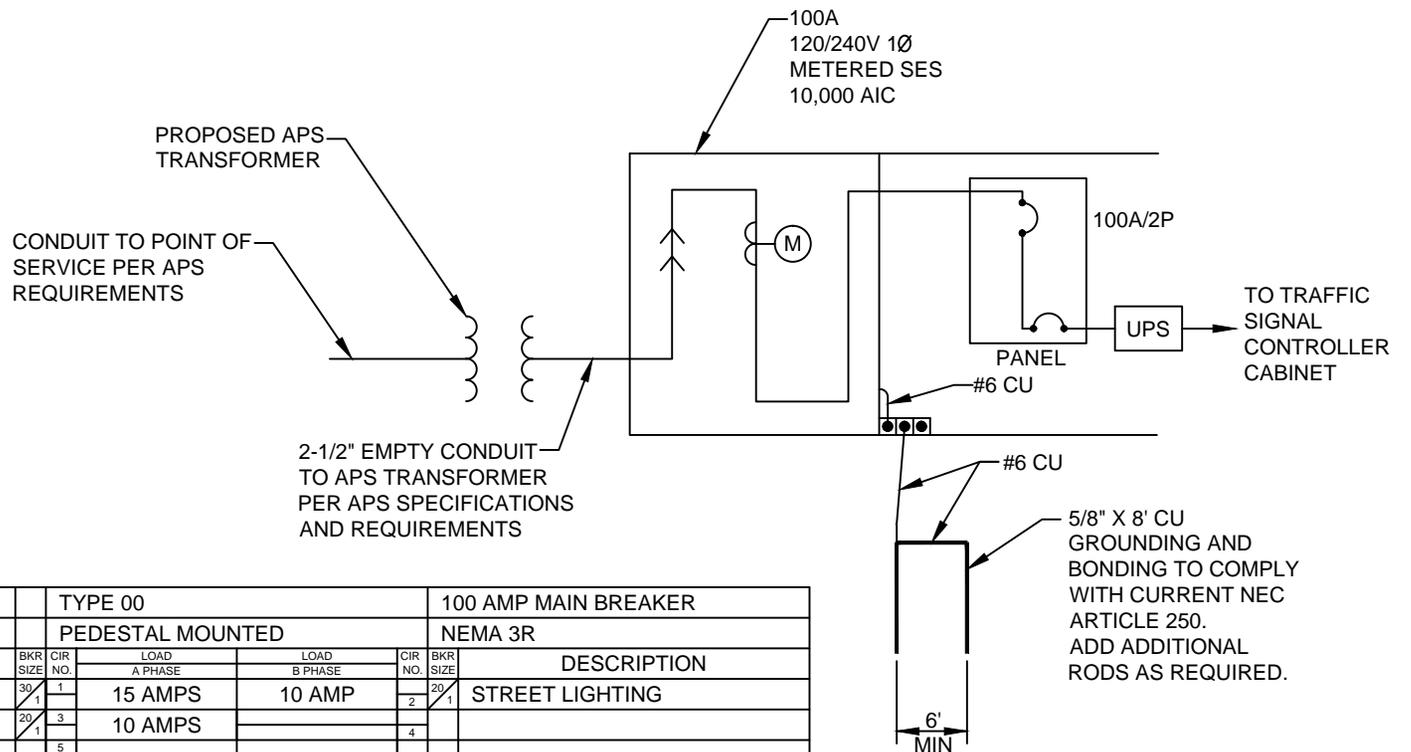
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**TYPICAL ONE-LINE DIAGRAM DETAIL**

DETAIL NO:

4-12A



		TYPE 00				100 AMP MAIN BREAKER		
120/240 1Ø 3W		PEDESTAL MOUNTED				NEMA 3R		
DESCRIPTION		BKR SIZE	CIR NO.	LOAD A PHASE	LOAD B PHASE	CIR NO.	BKR SIZE	DESCRIPTION
TRAFFIC SIGNAL CONTROLLER		30	1	15 AMPS	10 AMP	2	20	STREET LIGHTING
SIGN LIGHTING		20	3	10 AMPS		4		
			5			6		
			7			8		
			9			10		
			11			12		
CODE TOTAL VA								
CODE TOTAL AMPS				25 AMPS	10 AMPS			10,000 AIC BREAKERS

\* FIELDS TO BE FILLED OUT BY DESIGNER AND INCLUDED ON PLANS

**NOTES:**

1. ELECTRICAL EQUIPMENT RATING SHALL MEET OR EXCEED AVAILABLE FAULT CURRENT.

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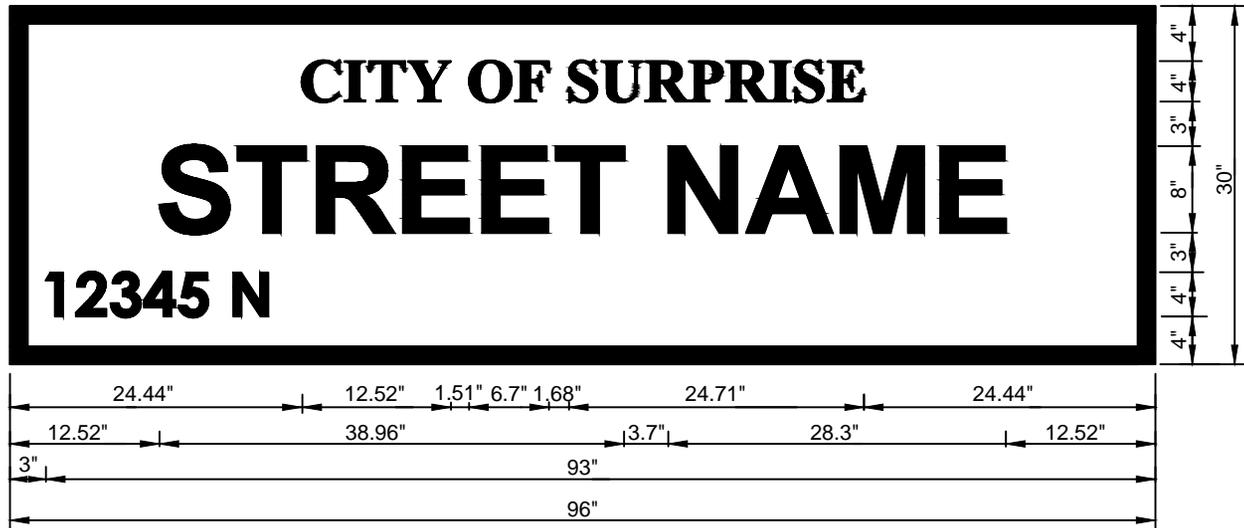
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**TYPICAL ONE-LINE DIAGRAM DETAIL  
WITH UPS**

DETAIL NO:

4-12B

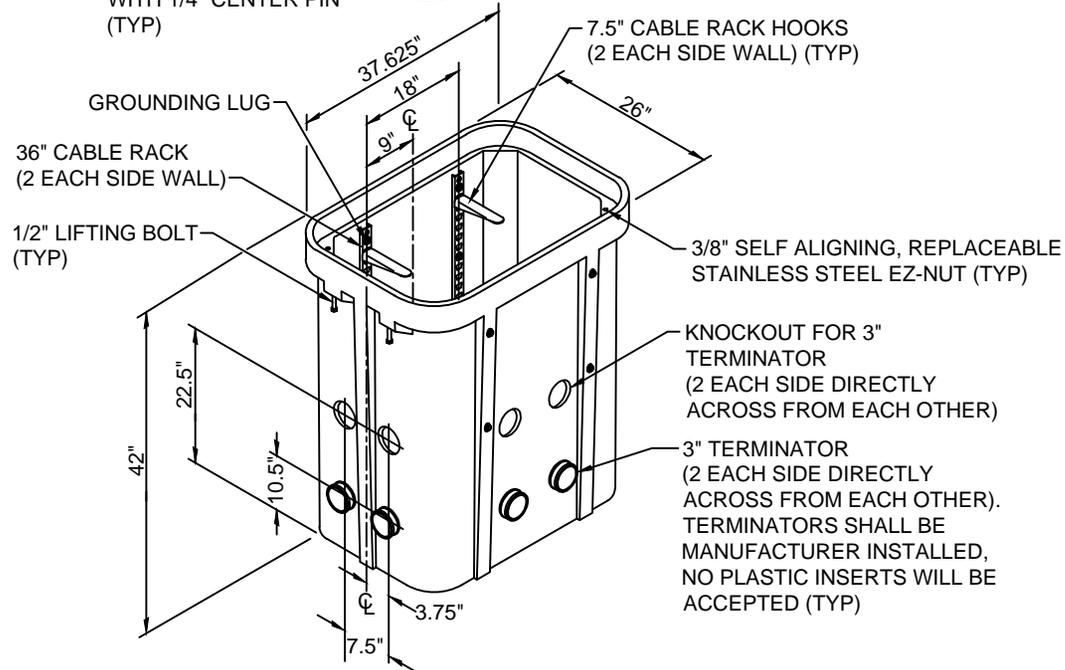
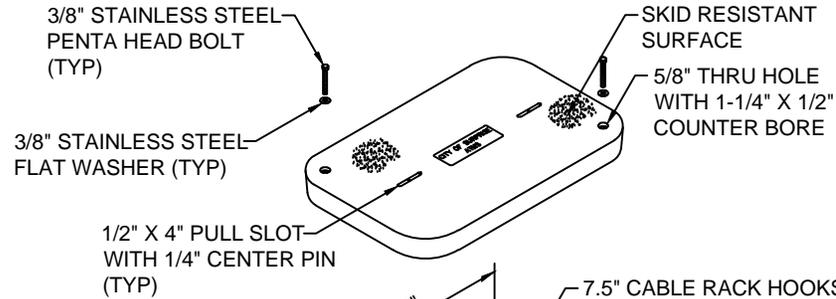


INTERNALLY ILLUMINATED STREET NAME SIGN FRONT AND BACK FACE

**INTERNALLY ILLUMINATED STREET NAME SIGN NOTES:**

- CONTACT THE CITY OF SURPRISE TRAFFIC ENGINEER FOR ADDRESS LABELS SHOWN ON THE SIGN FACE.
- FABRICATION:
  - FACES: 3/16" WHITE LEXAN FACES WITH VINYL APPLIED 1ST SURFACE BACKGROUND - #3630-59 DARK BROWN, TO BE TRANSLUCENT WITH REVERSED OUT WHITE COPY.
  - TYPESTYLES: FOR STREET NAMES, UPPERCASE HELVETICA MEDIUM FONT WITH 10% SPACING  
FOR ADDRESS NUMERALS, UPPERCASE HELVETICA MEDIUM FONT WITH STANDARD SPACING  
FOR "CITY OF SURPRISE", UPPERCASE CENTURY BOLD FONT WITH STANDARD SPACING.
- INTERNAL ILLUMINATION SHALL BE 2-LED T12 LAMPS, BI-DIRECTIONAL, RECESSED DUAL PIN, 8 FT LENGTH, 52W, 5,000K COLOR TEMPERATURE.
- PRIOR TO FABRICATION OF ANY SIGN FACE, THE CONTRACTOR SHALL SUBMIT A LAYOUT TO THE CITY TRAFFIC ENGINEER WITHIN TWO (2) WEEKS OF RECEIPT OF THE SIGN ORDER. THE FABRICATION SHALL BE DONE ONLY AFTER CITY APPROVAL OF THE LAYOUT.

DATE REVISED: 8/2016  APPROVED FOR DISTRIBUTION (SIGNATURE ON FILE)		<p align="center"><b>INTERNALLY ILLUMINATED STREET NAME SIGN FORMAT</b></p>	DETAIL NO:  <p align="center"><b>4-14</b></p>
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CITY OF SURPRISE  
ATMS  
LOGO DETAIL

**NOTES:**

1. THE BOX OF THIS ASSEMBLY SHALL MEET BOTH PERFORMANCES AND TESTING OF ANSI/SCTE 77 TIER 15. INDEPENDENT THIRD PARTY VERIFICATION OF TEST REPORTS STAMPED BY A REGISTERED PROFESSIONAL ENGINEER CERTIFYING THAT ALL TEST PROVISIONS OF THIS SPECIFICATION HAVE BEEN MET ARE REQUIRED WITH EACH SUBMITTAL.

**PLAN SYMBOL:**

NEW      EXISTING  
     

DATE REVISED: 8/2016

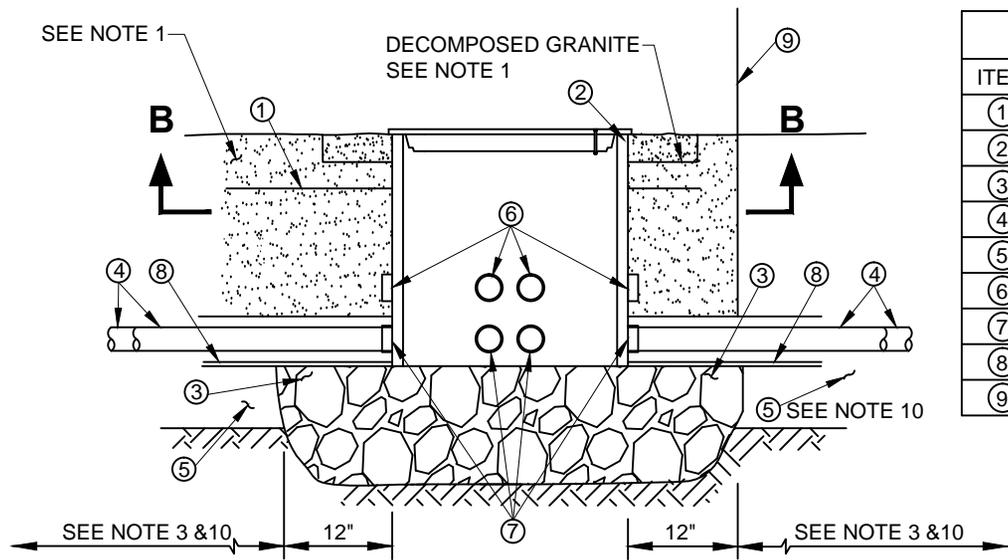
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(SIGNATURE ON FILE)



**TYPICAL FIBER PULL BOX  
INSTALLATION**

DETAIL NO:

**4-15A**  
SHEET 1 OF 2

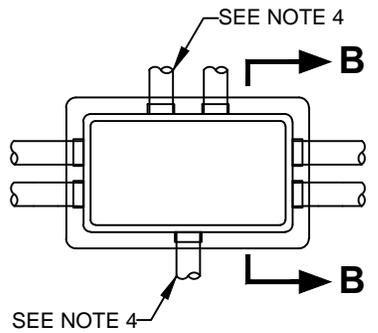


**INSTALLATION FOR FIBER PULL BOX**

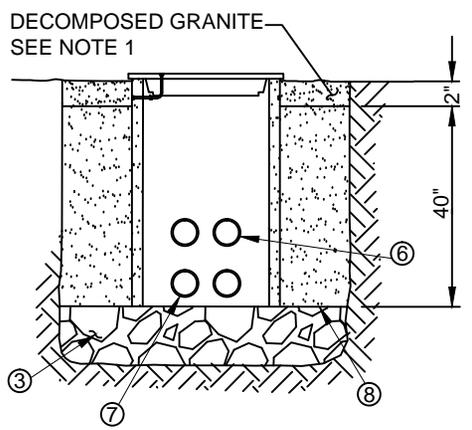
<b>MATERIAL LIST</b>	
ITEM	DESCRIPTION
①	WARNING TAPE-"CAUTION FIBER OPTIC LINE BURIED BELOW"
②	CITY OF SURPRISE FIBER PULL BOX - SEE DETAIL 4-15A
③	CLASS 'B' CONCRETE AGGREGATE DESIGNATED SIZE NO. 57
④	3" DIAMETER SCHEDULE 40 PVC CONDUITS
⑤	CONTROLLED LOW STRENGTH MATERIAL-SEE NOTE 10
⑥	3" TERMINATOR KNOCK OUT - SEE DETAIL 4-15A
⑦	3" TERMINATOR
⑧	30# FELT PAPER & GALVANIZED STEEL SCREEN - SEE NOTE 8
⑨	PULL BOX DELINEATOR (FLEXIBLE IDENTIFICATION MARKER)-SEE NOTE 9

**ATTENTION**

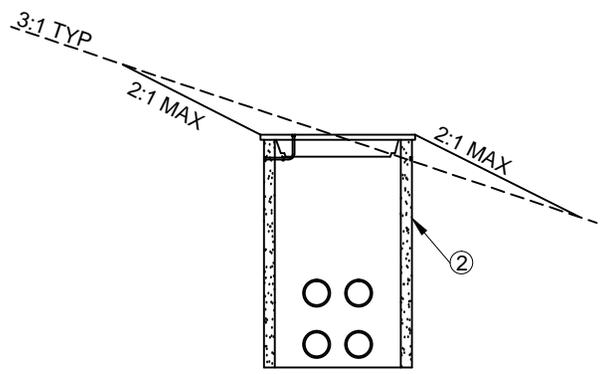
1. SEE DETAILS 4-16A AND 4-16B FOR TYPICAL FIBER TRENCH DETAIL..
2. SEE DETAIL 4-15C FOR NOTES.



**SECTION A-A**



**SECTION B-B**



**INSTALLATION ON SLOPE**

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**TYPICAL FIBER PULL BOX  
 INSTALLATION**

DETAIL NO:  
**4-15A**  
 SHEET 2 OF 2

## **TYPICAL FIBER PULL BOX INSTALLATION NOTES:**

1. BACKFILL WITH DESIGNATED SIZE NO. 57 AGGREGATE TO SIX (6) INCHES BELOW FINISH GRADE. BACKFILL WITH FOUR (4) INCHES OF SELECT EXCAVATED MATERIAL AND THOROUGHLY COMPACT. TWO (2) INCHES OF DECOMPOSED GRANITE SHALL BE USED TO MATCH SLOPES.
2. THIS PULL BOX IS DESIGNED FOR NON-TRAFFIC AREAS.
3. CONDUIT FROM THE TYPICAL TRENCH SECTION SHALL NOT DEFLECT BY MORE THAN ONE (1) INCHES PER FOOT FROM THE ALIGNMENT PRECEDING OR FOLLOWING THE PULL BOX.
4. LATERAL CONDUIT AS REQUIRED.
5. ALL POWER AND COMMUNICATIONS CABLE SHALL BE TAGGED WITH CABLE IDENTIFICATION.
6. "CITY OF SURPRISE ATMS" SHALL BE THE TITLE EMBOSSED ON THE LID.
7. PVC CONDUIT SHALL BE USED TO ATTACH TO PULL BOX TERMINATORS. SEE DETAIL 4-15A.
8. 30# FELT PAPER AND A GALVANIZED STEEL SCREEN WITH NO LARGER THAN THREE QUARTERS (3/4) OF AN INCH OPENINGS SHALL BE INSTALLED BETWEEN PULL BOX AND AGGREGATE.
9. INSTALL ORANGE FLEXIBLE IDENTIFICATION MARKERS TWELVE (12) INCHES IN FRONT OF EACH PULL BOX WITHOUT TOUCHING CONDUIT. MARKER HEIGHT SHALL BE THREE (3) FEET ABOVE GRADE AND LABELED "FIBER OPTIC CABLE". FLEXIBLE IDENTIFICATION MARKERS SHALL NOT BE INSTALLED AT PULL BOXES AT SIGNALIZED INTERSECTIONS.
10. POUR CONTROLLED LOW STRENGTH MATERIAL WITHIN TWELVE (12) INCHES OF PULL BOX.
11. PULL BOX HEIGHT ABOVE FINISHED GRADE SHALL PERMIT TWO (2) INCHES OF DECOMPOSED GRANITE TO BE USED TO MATCH SLOPE.
12. REFER TO CITY OF SURPRISE STANDARD DETAIL 4-15A FOR PULL BOX DIMENSIONS.
13. EXISTING PULL BOX CONFIGURATIONS MAY VARY. LOCATIONS WHERE PULL BOXES ARE BEING REPLACED, FIBER PULL BOXES SHALL BE INSTALLED AS SHOWN ON THIS SHEET UNLESS DIRECTED OTHERWISE BY THE CITY TRAFFIC ENGINEER OR DESIGNEE.
14. EXISTING CONDUIT ENTERING A PULL BOX MAY NOT BE CORRECTLY ALIGNED TO FACILITATE PULLING CABLES THROUGH THE PULL BOX BY USE OF A PULLING SHOE. THE FORCE ACCOUNT ITEM FOR CONDUIT RECONDITIONING DOES NOT COVER REALIGNMENT OF CONDUIT TO ALLOW FOR PULLING THROUGH AN EXISTING PULL BOX, THEREBY ELIMINATING IT AS A PULL POINT.
15. IN ALL LOCATIONS WHERE FIBER OPTIC CABLE ENTERS A PULL BOX, CABLE SLACK SHALL BE LOOSELY LOOPED USING THE RACK AND HOOK SYSTEM. THIRTY FOOT (30') OF SLACK SHALL BE LEFT WHERE THE FIBER OPTIC CABLE ENTERS/EXITS THE COMMUNICATION VAULT PROVIDING A SIXTY FOOT (60') COIL OF SLACK.

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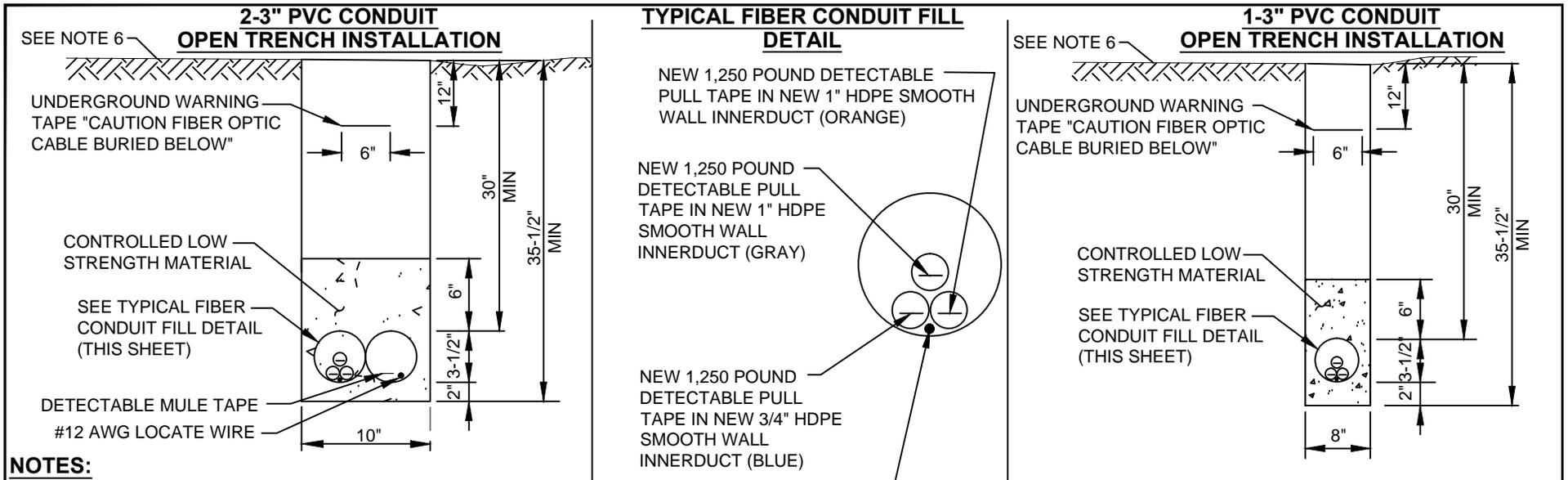
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## **TYPICAL FIBER PULL BOX INSTALLATION NOTES**

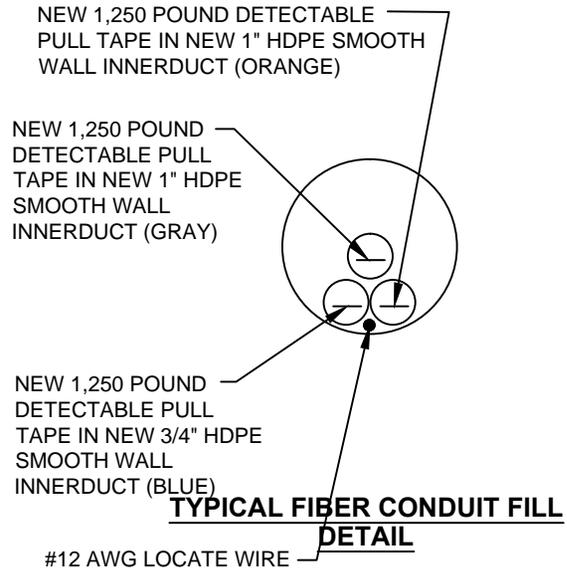
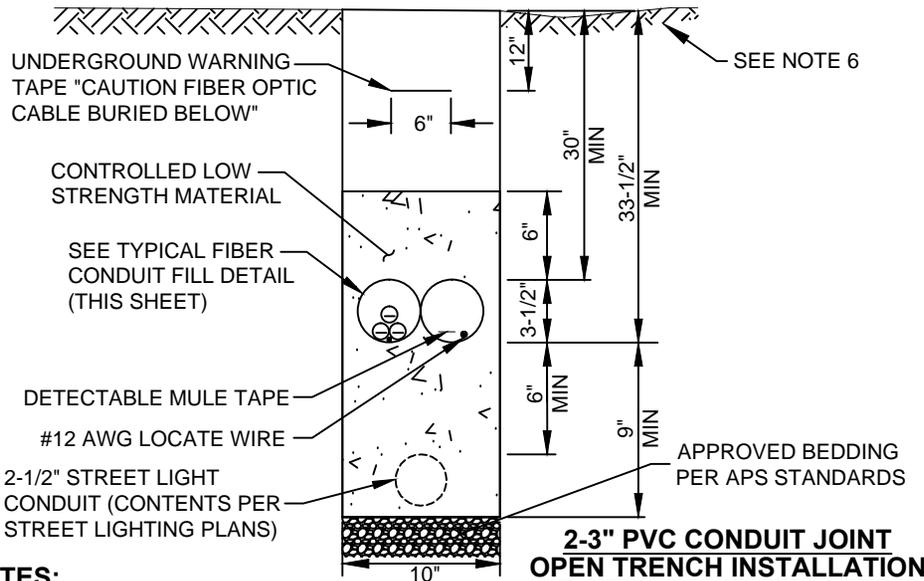
DETAIL NO:

**4-15B**



**NOTES:**

1. CONDUIT CONTENTS ARE ORIENTED ASSUMING THE SECTION FACING IN THE DIRECTION OF TRAVEL FOR THE MAJOR ARTERIAL.
2. ALL SPOIL MATERIAL SHALL BE REMOVED OFFSITE BY THE CONTRACTOR.
3. AREA SHALL BE RETURNED TO EXISTING GRADE.
4. CONDUIT COUPLINGS SHALL BE STAGGERED.
5. #12 GREEN THHN SOLID WIRE SHALL BE INSTALLED IN ALL CONDUITS. LEAVE A 10 FOOT LOOP OF WIRE IN A SMALL JUNCTION BOX (CHRISTY FIBERLYTE FL9, OR APPROVED EQUAL) WITHIN 5 FEET OF THE CONTROLLER CABINET. DETECTABLE MULE TAPE SHALL BE INSTALLED IN ALL UNUSED CONDUITS AND FLEXIBLE INNERDUCT CHAMBERS.
6. BACKFILL WITH EXCAVATED MATERIAL AND COMPACT TO 95% OF MAXIMUM DENSITY.
7. CONTROLLED LOW STRENGTH MATERIAL REQUIRED WHEN TRUNK AND/OR BRANCH FIBER-OPTIC CABLES INSTALLED IN CONDUIT.
8. INNERDUCT, MULE TAPE AND LOCATE WIRE SHALL BE INSTALLED AT TIME OF CONDUIT INSTALLATION AND SHALL TERMINATE AT EACH PULL BOX LOCATED ON PLANS.
9. IF FIBER IS BEING INSTALLED IN EXISTING CONDUIT AND INNERDUCT IS NOT PRESENT, THE 3 HDPE SMOOTH WALL INNERDUCT SHALL BE INSTALLED PRIOR TO FIBER INSTALLATION.
10. TRENCH UNDER PAVEMENT OR SIDEWALK SHALL REQUIRE MINIMUM FULL SACK SLURRY (DIRECTED BY CITY TRAFFIC ENGINEER OR DESIGNEE) AND PROVIDE 'T' TOP SURFACE REPLACEMENT AS SHOWN IN MAG DETAIL #200.
11. FIBER INSTALLATION AND TESTING SHALL CONFORM TO THE MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION SUPPLEMENT TO MAG UNIFORM STANDARDS, SPECIFICATIONS, AND DETAILS FOR PUBLIC WORKS CONSTRUCTION.
12. WHERE CONDUIT IS PLACED IN AN OPEN TRENCH, IT SHALL NOT DEVIATE MORE THAN ONE INCH PER FOOT (1":12" MAX) IN EITHER THE HORIZONTAL OR VERTICAL PLANES.
13. CONDUIT RUNS SHALL FOLLOW THE MOST DIRECT ROUTE POSSIBLE WITH NO MORE THAN TWO 90 DEG BENDS BETWEEN PULL POINTS AND NO MORE THAN A TOTAL OF 270 DEG OF BEND BETWEEN PULL POINTS.
14. NO MORE THAN ONE WEEK PRIOR TO THE INSTALLATION OF ANY CABLE, ALL NEW AND EXISTING CONDUIT RUNS IN WHICH CABLE IS TO BE INSTALLED SHALL BE CLEARED BY PULLING A METAL-DISC MANDREL OF 90% DIAMETER OF THE CONDUIT.



**NOTES:**

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# TYPICAL FIBER AND STREET LIGHTING JOINT TRENCH DETAIL

DETAIL NO:  
**4-16B**

**COMMUNICATIONS VAULT INSTALLATION NOTES:**

**GENERAL NOTES:**

1. LID SHALL OPEN 180 DEGREES WITH A TORSION BAR LIFT ASSIST.
2. LID SHALL BE DIAMOND PLATE AND HAVE A HOT DIPPED GALVANIZED FINISH.
3. COVER HARDWARE SHALL BE CADMIUM PLATED.
4. RECESSED PADLOCK MAY BE LOCATED ON EITHER SIDE OR ON THE OPENING SIDE OF THE COVER.
5. PULLING IRONS SHALL BE LOCATED AS SHOWN IN PLAN VIEW, NO DEVIATIONS EXCEPTED.
6. PULLING IRONS SHALL BE 3/4" O.D. COLD ROLLED GALVANIZED STEEL.
7. WEIGHT: COVER = 1075#  
VAULT = 3250# - 4250#  
TOTAL = 4325# - 5325#
8. ALL JOINTS SHALL BE SEALED USING CONSEAL CS-101 BUTYL RUBBER ROPE.
9. 5/8" GROUND ROD (10') SHALL BE INSTALLED IN GROUND ROD HOLE AND BONDED TO GROUND LUG ON RACK RAILING VIA # 8 CU.
10. IN ALL LOCATIONS WHERE FIBER OPTIC CABLE ENTERS A COMMUNICATION VAULT, CABLE SLACK SHALL BE LOOSELY LOOPED USING THE RACK AND HOOK SYSTEM. SIXTY FOOT (60') OF SLACK SHALL BE LEFT WHERE THE FIBER OPTIC CABLE ENTERS/EXITS THE COMMUNICATION VAULT PROVIDING ONE HUNDRED AND TWENTY FOOT (120') COIL OF SLACK.

**STRUCTURAL NOTES:**

1. CONCRETE: 28-DAY COMPRESSIVE STRENGTH  $f_c = 4500$  PSI
2. REBAR: ASTM A-615 GRADE 60
3. MESH: ASTM A-185 GRADE 65
4. DESIGN ACI-318-99 BUILDING CODE ASTM C-857 "MINIMUM STRUCTURAL DESIGN LOADING FOR UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURES".
5. LOADS: LIDS INSTALLED WITHIN THE ROADWAY OR CLEAR ZONE SHALL BE TRAFFIC RATED AND MUST MEET HS-20 TRUCK WHEEL (16 KIPS) WITH 30% IMPACT LOADING CRITERIA PER AASHTO.  
LIDS INSTALLED OUTSIDE OF THE ROADWAY OR CLEAR ZONE MUST MEET MANUFACTURER'S LOAD SPECIFICATIONS.
6. SOIL COVER: NO COVER
7. WATER TABLE: NO WATER TABLE

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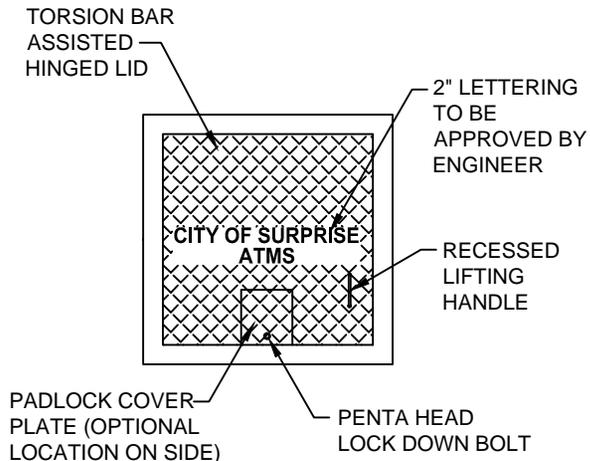
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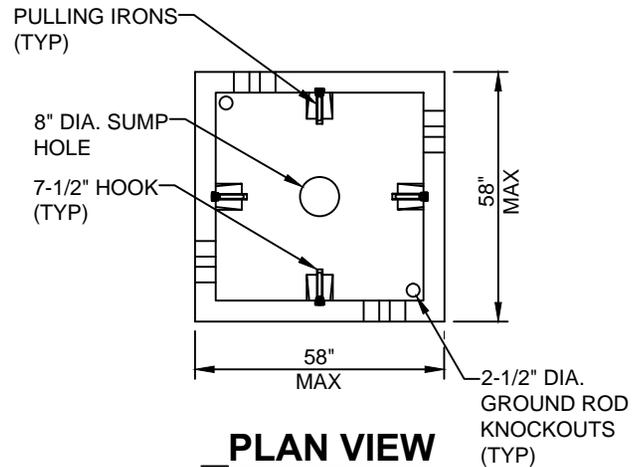
**#9 TYPICAL COMMUNICATIONS VAULT  
INSTALLATION NOTES**

DETAIL NO:

4-17A

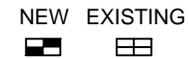


**PLAN VIEW WITH COVER**



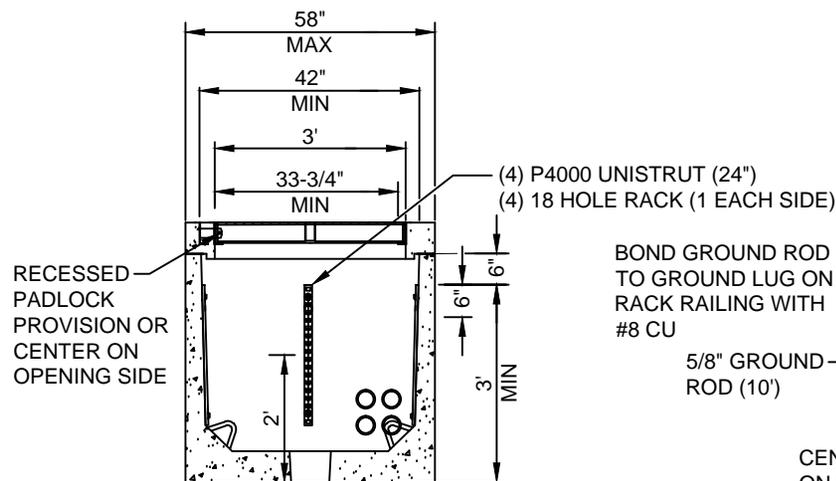
**PLAN VIEW**

**PLAN SYMBOL:**

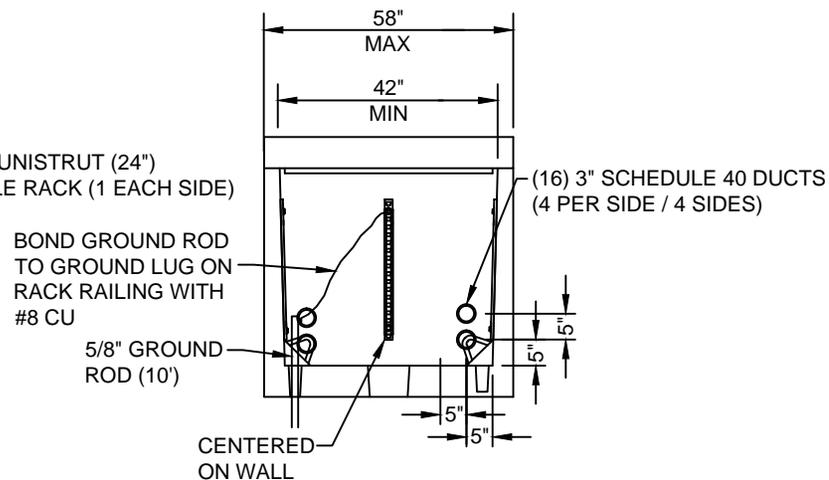


**RACKING PACKAGE**

-  4 - 18 HOLE RACK
-  8 - 1/2" SPRING NUTS AND BOLT
-  8 - 6" HOOKS



**SECTION VIEW**



**END VIEW**

DATE REVISED: 8/2016

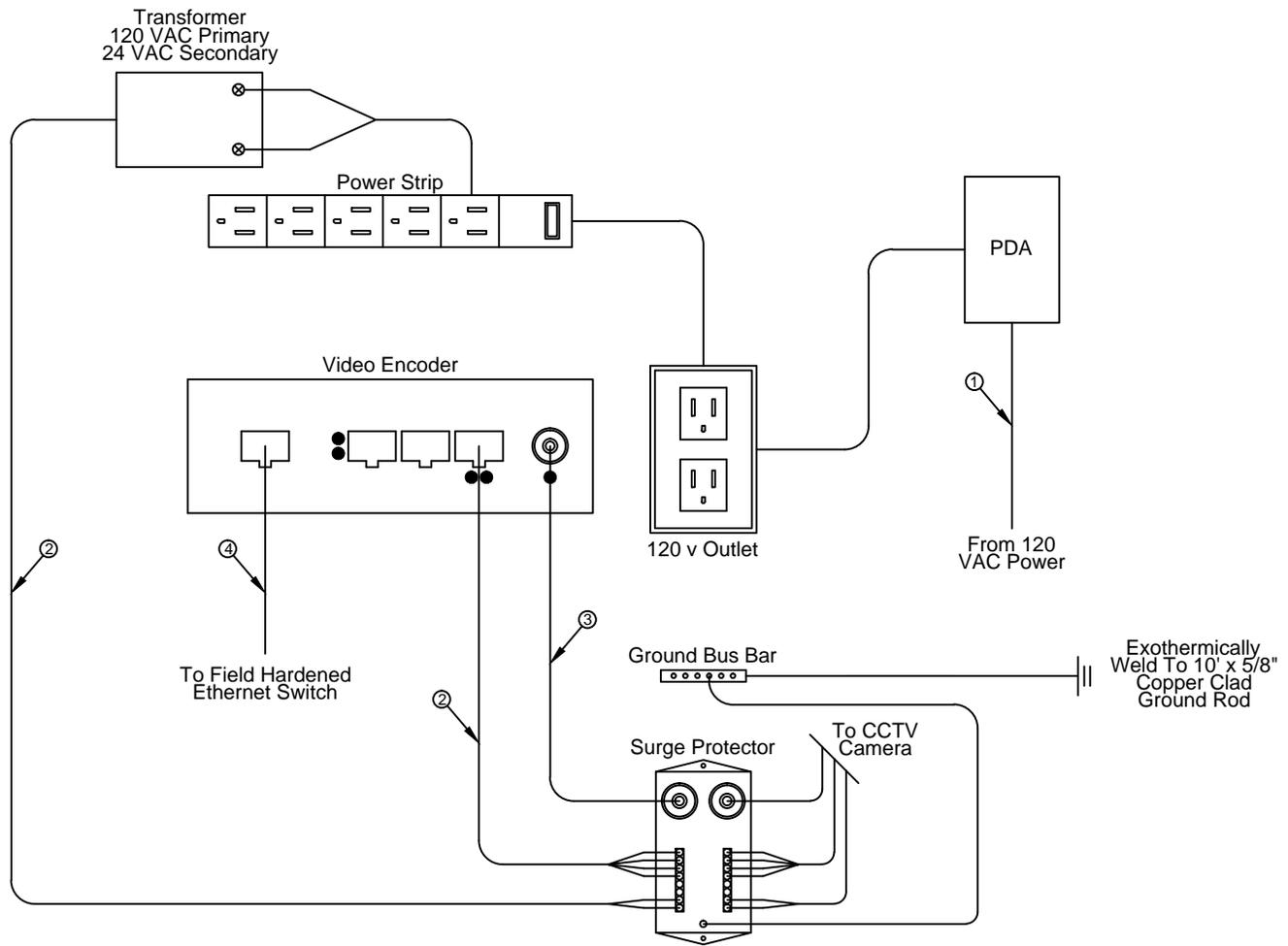
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**#9 TYPICAL COMMUNICATIONS VAULT  
INSTALLATION**

DETAIL NO:

**4-17B**



Cable Schedule	
①	12/2, St/Sh w/ Drain
②	18/2, 2 Pair, St/Tw/Sh w/ Drain
③	RG-59/U
④	Ethernet

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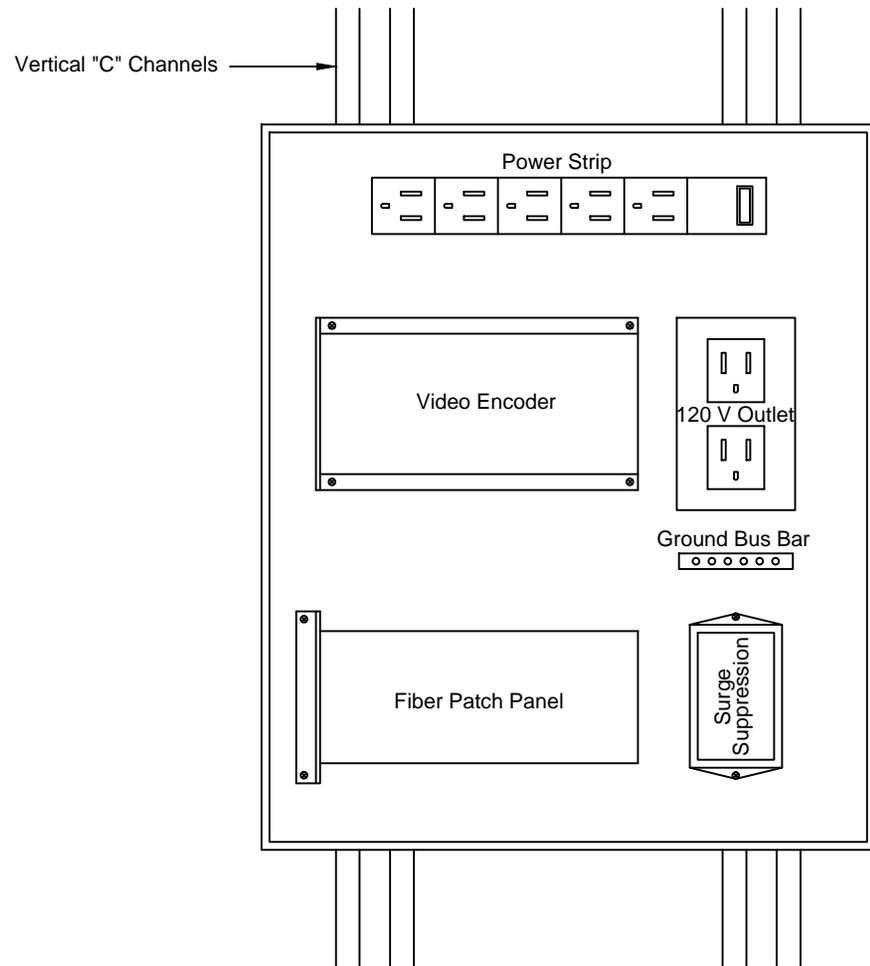
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## CCTV CAMERA WIRING DETAILS

DETAIL NO:

4-17C



DATE REVISED: 8/2016

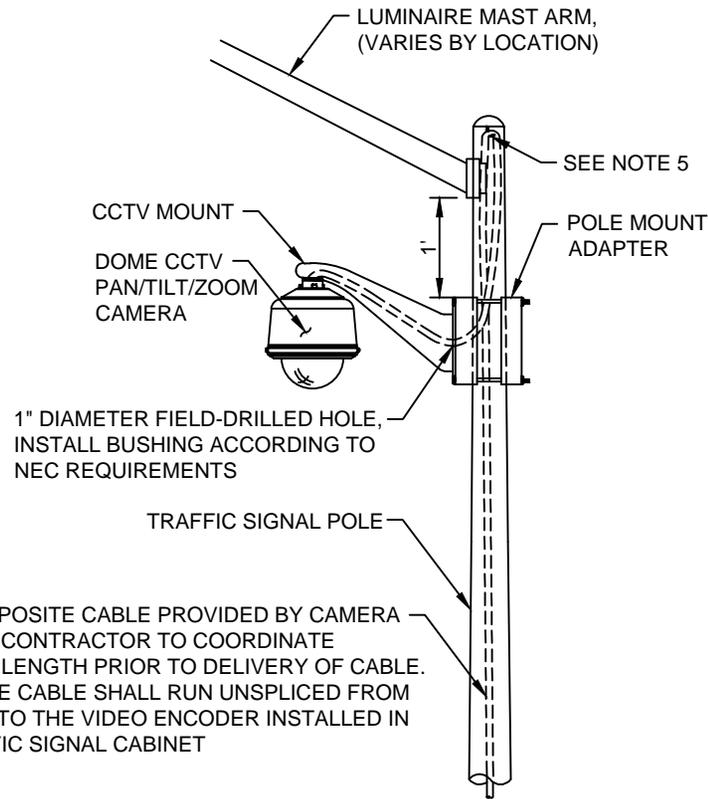
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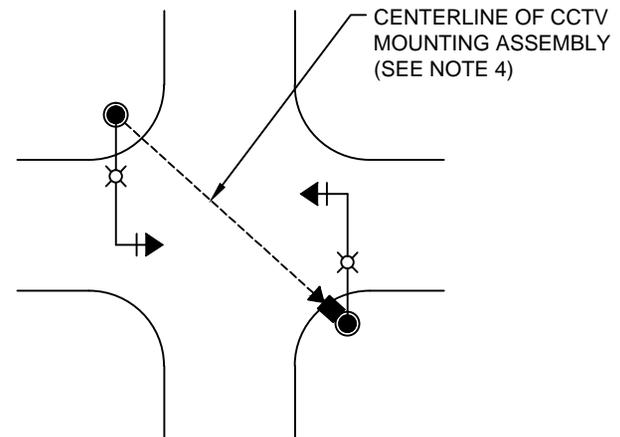
## CCTV CAMERA AND FIBER TERMINATION PANEL DETAILS

DETAIL NO:

4-17D



**TYPICAL TRAFFIC  
SIGNAL POLE**



**CCTV MOUNTING  
ASSEMBLY ORIENTATION**

**NOTES:**

1. THE CABLING SHALL BE CONTAINED INSIDE OF THE POLE. A HOLE SHALL BE DRILLED IN THE POLE FOR CABLING TO EXIT THE POLE AND FEED THROUGH THE MOUNTING ASSEMBLY. THE HOLE SHALL BE SEALED TO PREVENT ANY WATER FROM ENTERING THE POLE. CABLING WITHIN THE POLE SHALL HAVE A MEANS OF CABLE SUPPORT AT THE TOP TO PREVENT THE CABLE TENSION FROM PULLING ON THE EQUIPMENT.
2. ALL WORK TO BE PERFORMED IN THE CABINET SHALL BE COORDINATED AND SUPERVISED BY THE CITY. CONTACT CITY TRAFFIC ENGINEER AT LEAST TWO DAYS PRIOR TO ANY WORK.
3. CCTV CAMERA SHALL BE MOUNTED WITHIN ONE DEGREE OF LEVEL ON BOTH HORIZONTAL AXIS.
4. THE ROTATION OF THE CCTV MOUNT SHALL BE ALIGNED TO POINT AT THE TRAFFIC SIGNAL POLE ON THE DIAGONALLY OPPOSITE CORNER.
5. CONTRACTOR SHALL PROVIDE A 4' SERVICE LOOP COILED AND HUNG ON HOOK NEAR POLE TOP. CONTRACTOR SHALL CONTACT THE CITY TRAFFIC ENGINEER IF HOOK FOR SERVICE LOOP IS NOT EXISTING. CONTRACTOR SHALL FURNISH TWO CABLE GRIPS AND INSTALL ONE AT THE BEGINNING AND ONE AT THE END OF THE SERVICE LOOP.

DATE REVISED: 8/2016

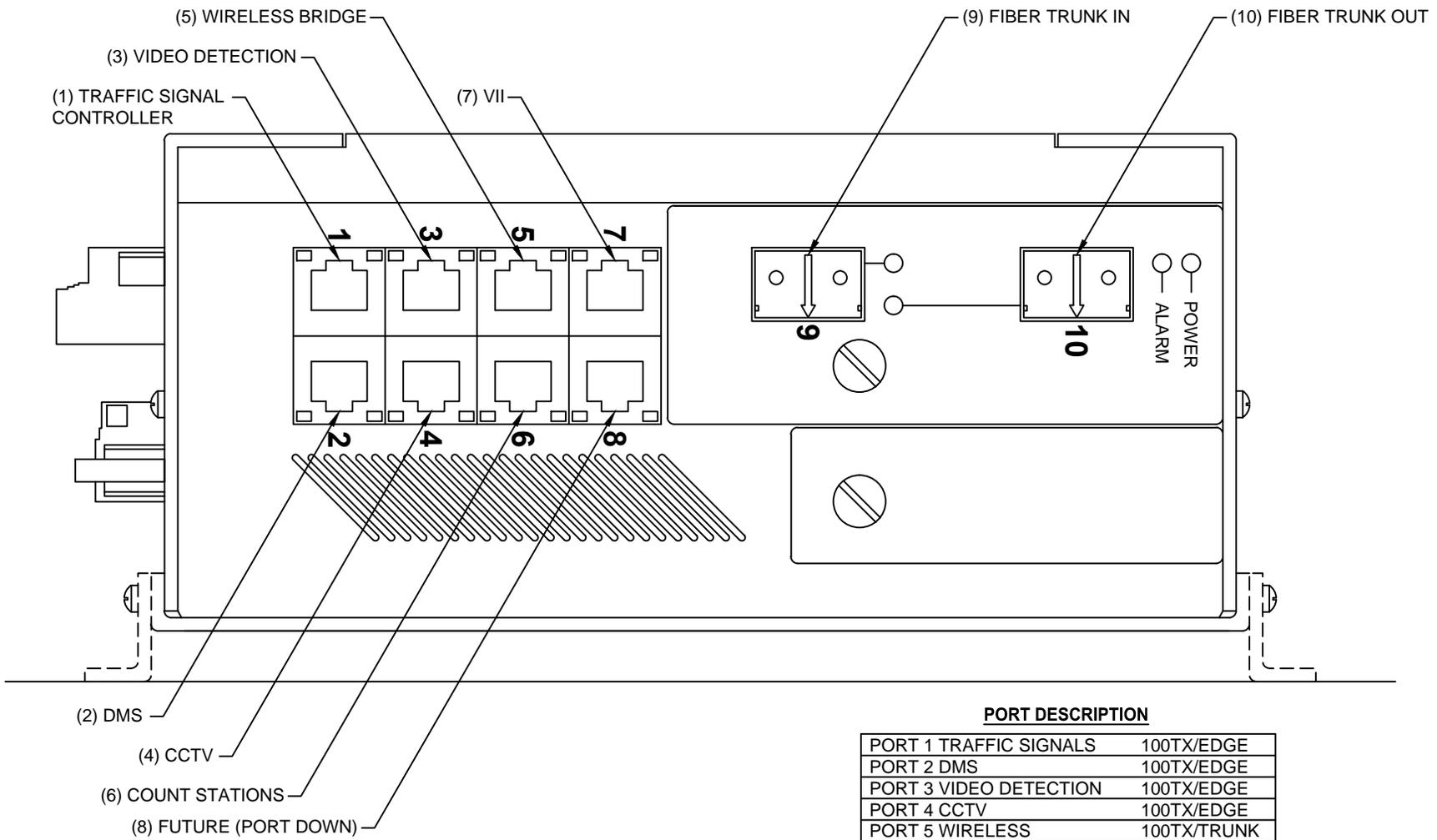
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**CCTV CAMERA POLE MOUNTING  
DETAIL**

DETAIL NO:

4-17E



**PORT DESCRIPTION**

PORT 1 TRAFFIC SIGNALS	100TX/EDGE
PORT 2 DMS	100TX/EDGE
PORT 3 VIDEO DETECTION	100TX/EDGE
PORT 4 CCTV	100TX/EDGE
PORT 5 WIRELESS	100TX/TRUNK
PORT 6 COUNT STATIONS	100TX/EDGE
PORT 7 VII (FUTURE)	100TX/EDGE
PORT 8 SPARE	100TX/OFF
PORT 9 FIBER IN	1000TX/TRUNK
PORT 10 FIBER OUT	1000TX/TRUNK

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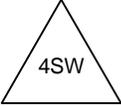
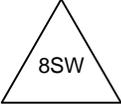
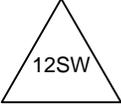
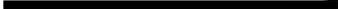
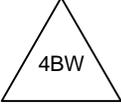
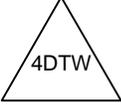
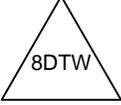
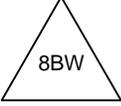
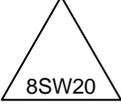


**ITS FIELD SWITCH STATIC PORT  
ASSIGNMENTS**

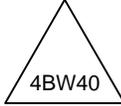
DETAIL NO:

**4-17F**

## WHITE PAVEMENT MARKINGS

		4" SOLID WHITE LINE
		8" SOLID WHITE LINE
		12" SOLID WHITE LINE
		24" SOLID WHITE LINE
		4" BROKEN WHITE LINE 10' SEGMENT, 30' GAP
		4" BROKEN WHITE LINE 2' SEGMENT, 4' GAP
		8" BROKEN WHITE LINE 2' SEGMENT, 4' GAP
		8" BROKEN WHITE LINE 3' SEGMENT, 9' GAP
		8" SOLID WHITE LINE TYPE 'G' RPM, 20' SPACING SEE DETAIL 4-19

## WHITE PAVEMENT MARKINGS

		4" BROKEN WHITE LINE 10' SEGMENT, 30' GAP TYPE 'G' RPM, 40' SPACING TYPE 'C' RPM AS DIRECTED BY CITY TRAFFIC ENGINEER OR DESIGNEE
		4" BROKEN WHITE LINE 2' SEGMENT, 4' GAP TYPE 'G' RPM, 12' SPACING

## RAISED PAVEMENT MARKER (RPM) TYPES

	TYPE G	CLEAR, ONE SIDED MARKER (REFLECTIVE)
	TYPE C	CLEAR/RED, ONE SIDED MARKER (REFLECTIVE)

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# PAVEMENT MARKING PLAN CALL OUTS - WHITE MARKINGS

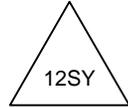
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4-18A

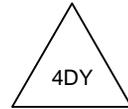
## YELLOW PAVEMENT MARKINGS



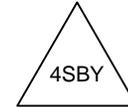
————— 4" SOLID YELLOW LINE



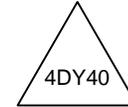
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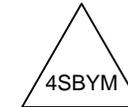
=====  
===== 4" DOUBLE YELLOW LINE



=====  
===== 4" DOUBLE YELLOW LINE  
ONE SOLID, ONE BROKEN  
10' SEGMENT, 30' GAP



□ □ □ □ □  
□ □ □ □ □  
=====  
===== 4" DOUBLE YELLOW LINE TYPE  
'D' RPM, 40' SPACING SEE  
DETAIL 4-19



□ □ □ □ □  
□ □ □ □ □  
=====  
===== 4" DOUBLE YELLOW LINE ONE  
SOLID, ONE BROKEN 10'  
SEGMENT, 30' GAP TYPE 'D' RPM,  
20' SPACING TYPE 'D' RPM, 40'  
SPACING SEE DETAIL 4-19

## RAISED PAVEMENT MARKER (RPM) TYPES



TYPE D YELLOW, TWO-SIDED MARKER (REFLECTIVE)

DATE REVISED: 8/2016

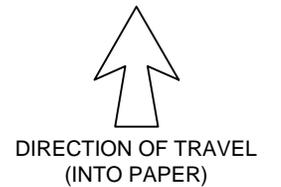
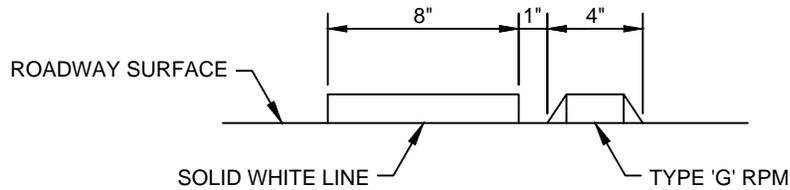
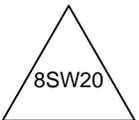
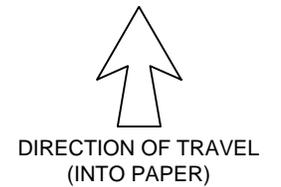
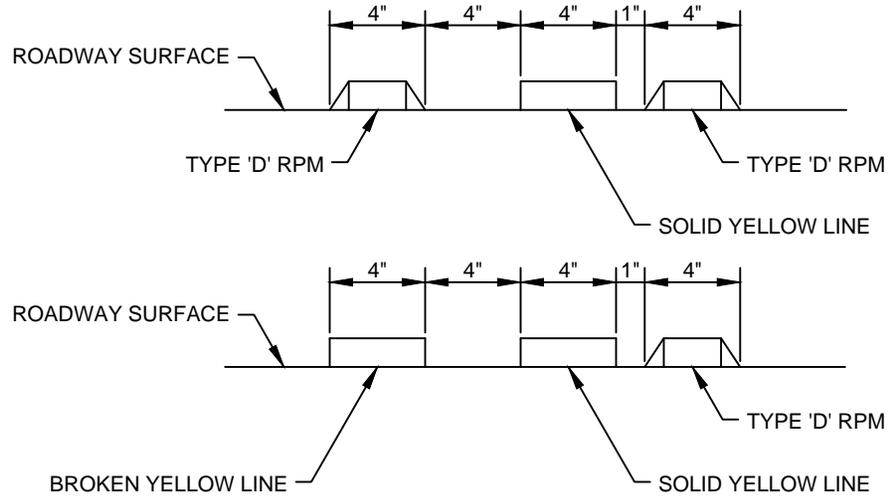
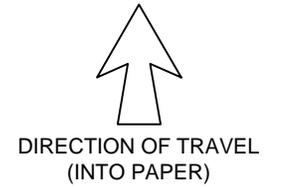
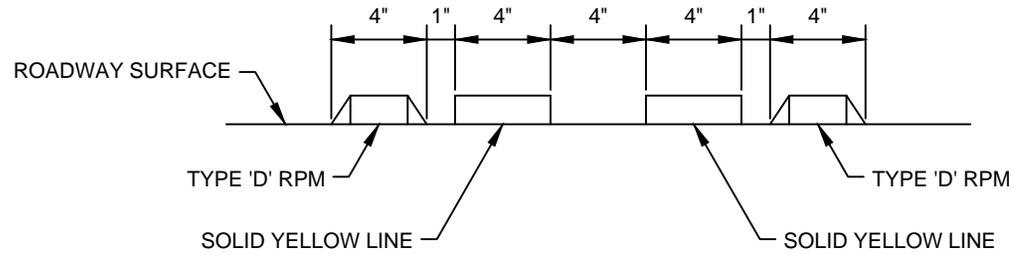
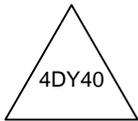
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# PAVEMENT MARKING PLAN CALL OUTS - YELLOW MARKINGS

DETAIL NO:

4-18B



DATE REVISED: 8/2016

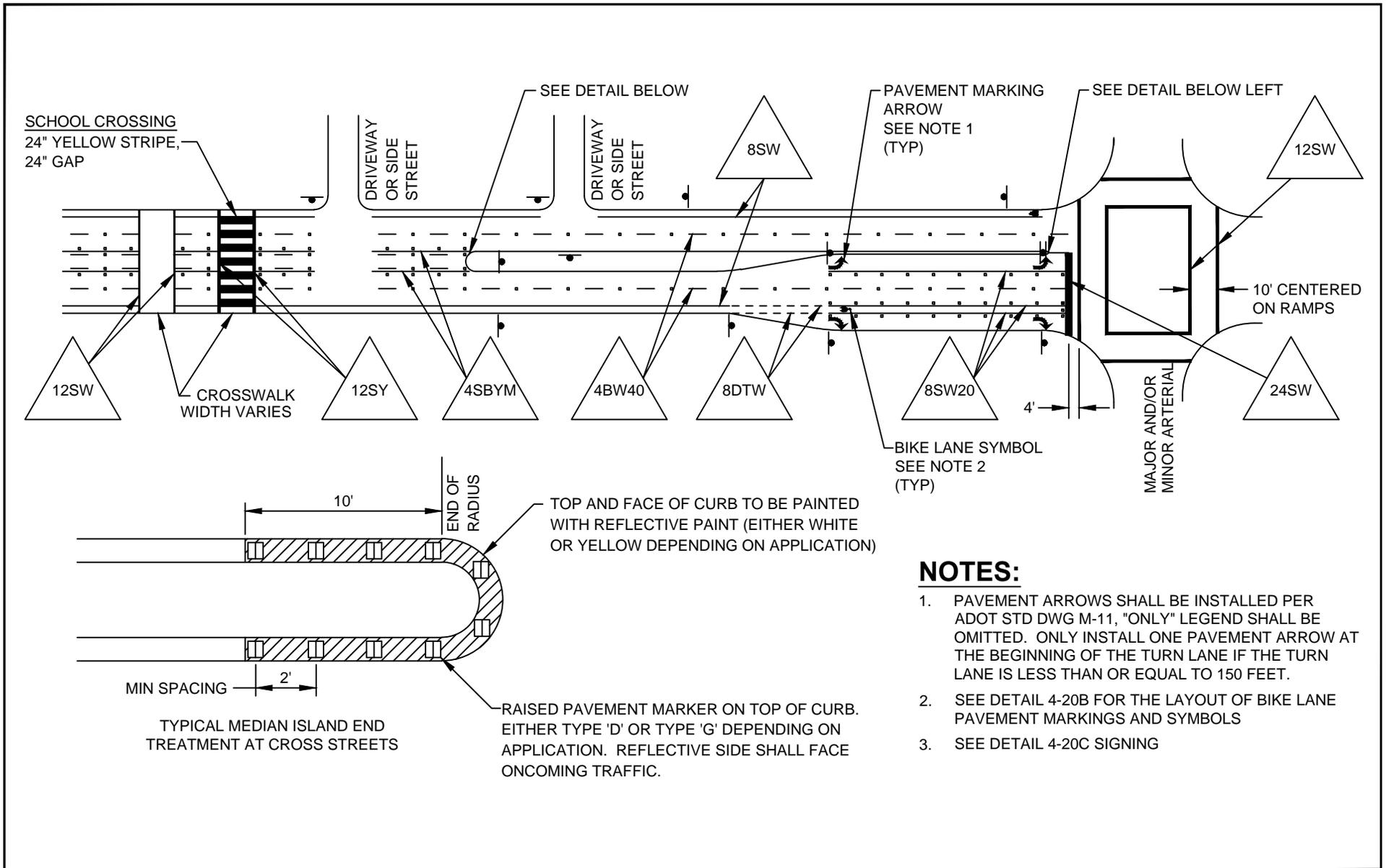
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# RAISED PAVEMENT MARKING DETAIL

DETAIL NO:

4-19



**NOTES:**

1. PAVEMENT ARROWS SHALL BE INSTALLED PER ADOT STD DWG M-11, "ONLY" LEGEND SHALL BE OMITTED. ONLY INSTALL ONE PAVEMENT ARROW AT THE BEGINNING OF THE TURN LANE IF THE TURN LANE IS LESS THAN OR EQUAL TO 150 FEET.
2. SEE DETAIL 4-20B FOR THE LAYOUT OF BIKE LANE PAVEMENT MARKINGS AND SYMBOLS
3. SEE DETAIL 4-20C SIGNING

DATE REVISED: 8/2016

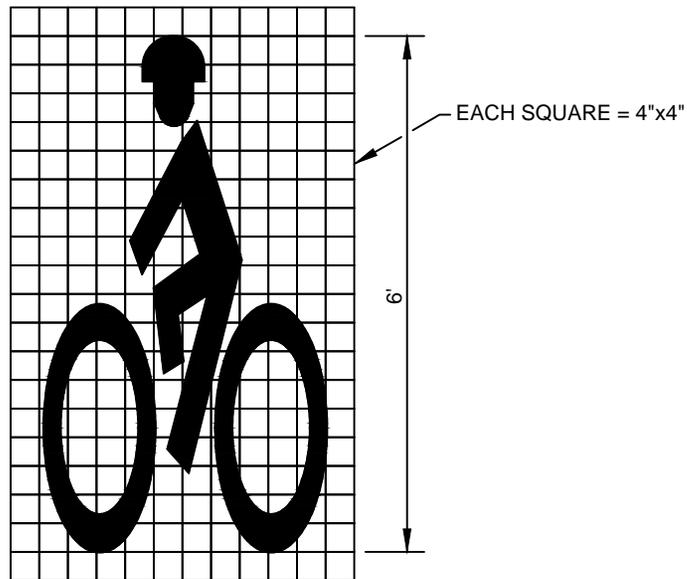
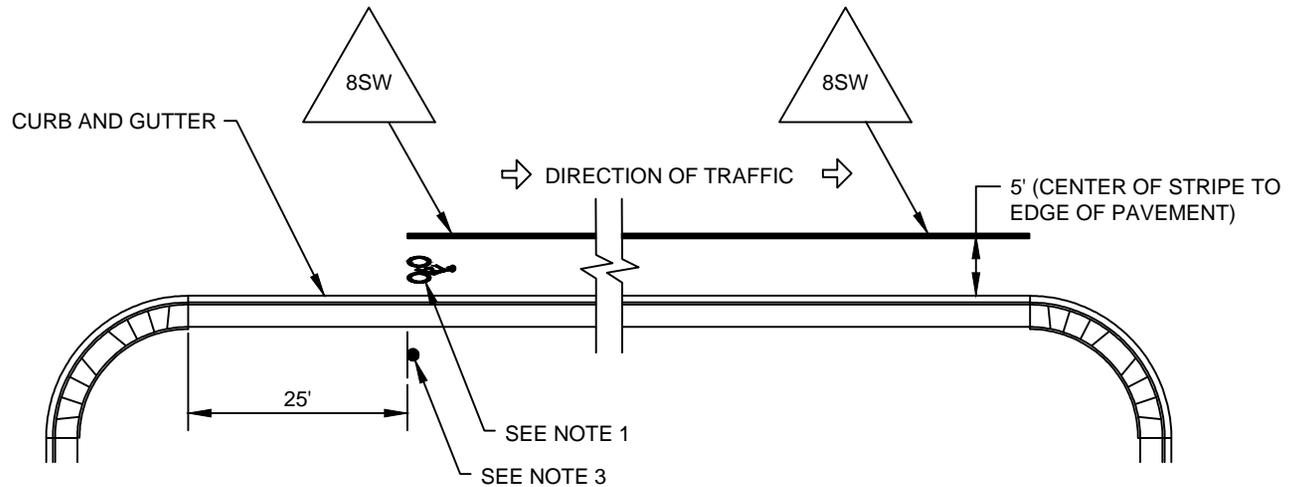
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**SIGNING & MARKING FOR TYPICAL  
INTERSECTION**

DETAIL NO:

**4-20A**



**NOTES:**

1. A BIKE SYMBOL SHALL BE INSTALLED AFTER EVERY MAJOR INTERSECTION. FOR SEGMENTS BETWEEN INTERSECTION GREATER THAN 1 MILE, AN ADDITIONAL BIKE SYMBOL SHALL BE INSTALLED HALFWAY BETWEEN THE INTERSECTIONS.
2. AT SIGNALIZED OR STOP-CONTROLLED INTERSECTIONS: WITHOUT A RIGHT TURN LANE, END BIKE LANE STRIPING 50' PRIOR TO STOP BAR. WITH A RIGHT TURN LANE, STRIPING EXTENDS TO STOP BAR AND INSTALL BIKE SYMBOL AT THE BEGINNING OF THE RIGHT TURN LANE.
3. SEE DETAIL 4-20C FOR SIGNING DETAIL.

DATE REVISED: 8/2016

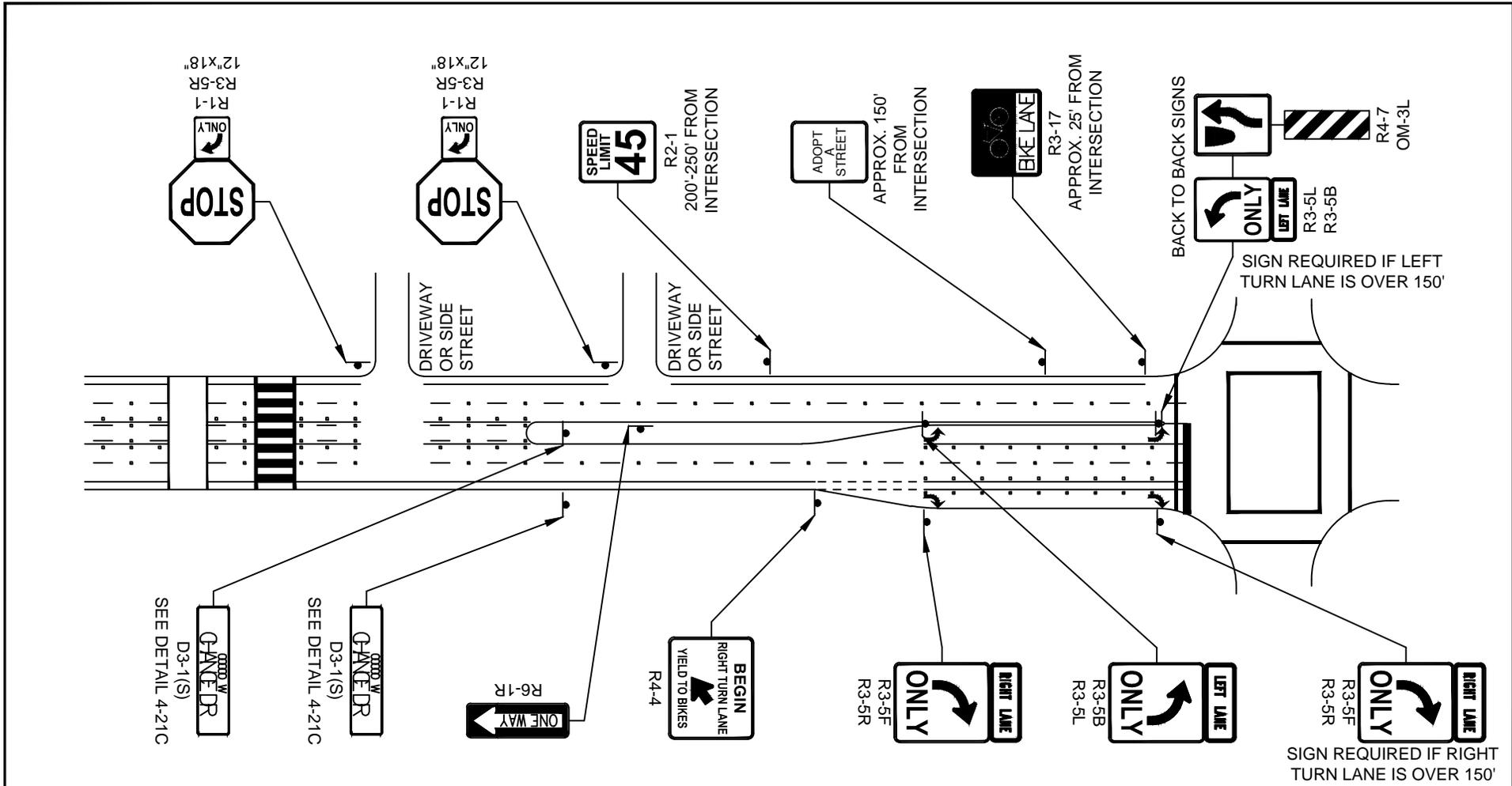
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**SIGNING & MARKING FOR TYPICAL INTERSECTION**

DETAIL NO:

4-20B



**NOTES:**

1. SEE DETAIL 4-20A FOR STRIPING DETAILS
2. SIGN DIMENSIONS SHALL BE STANDARD SIZES PER ADOT MANUAL OF APPROVED SIGNS OR AS SPECIFIED ON PLANS
3. R3-14A AND R3-14B SUPPLEMENTAL PLAQUES SHALL BE USED AS NECESSARY

DATE REVISED: 8/2016

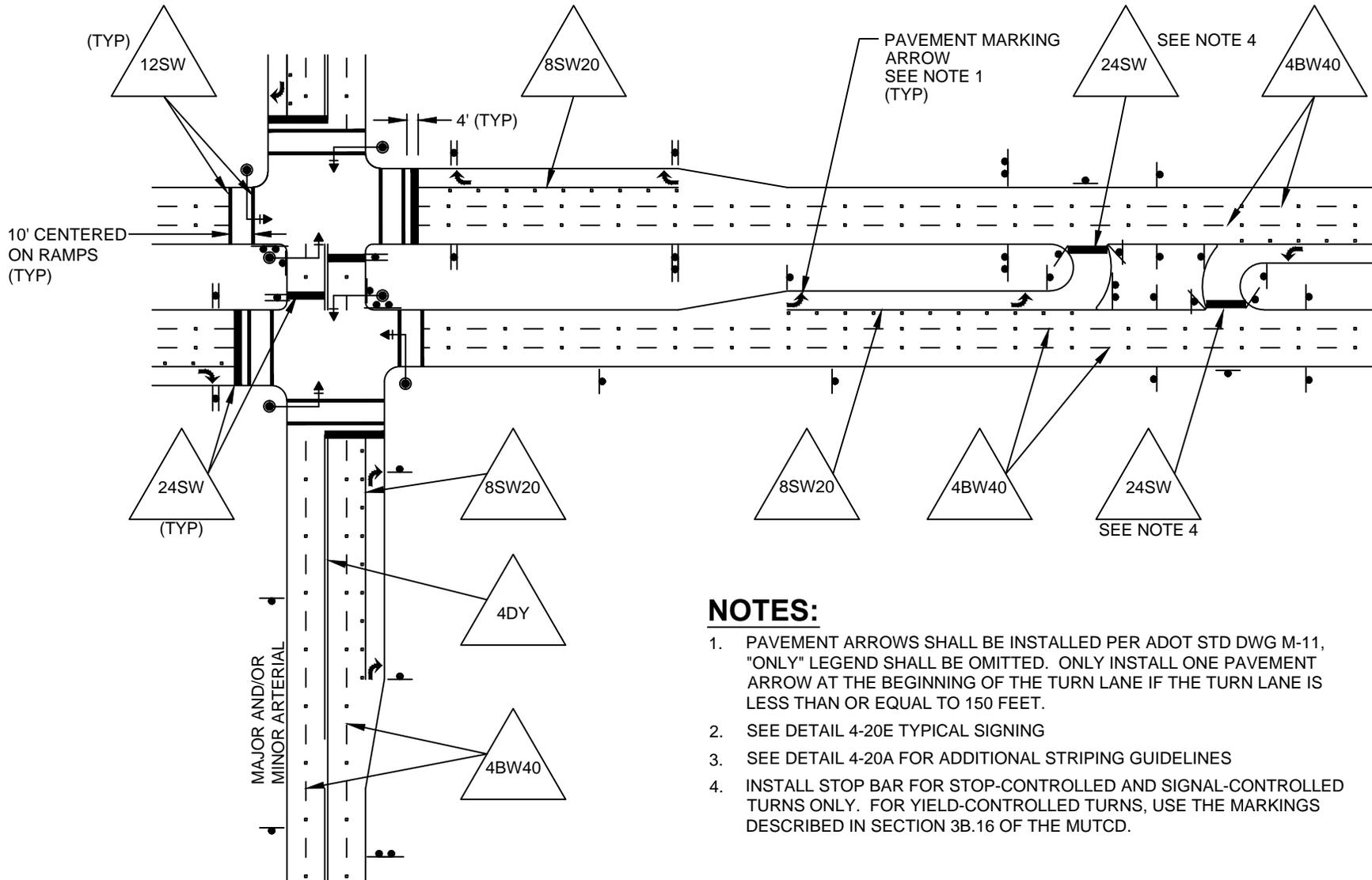
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**SIGNING & MARKING FOR TYPICAL INTERSECTION INCLUDING CROSSWALK**

DETAIL NO:  
**4-20C**



**NOTES:**

1. PAVEMENT ARROWS SHALL BE INSTALLED PER ADOT STD DWG M-11, "ONLY" LEGEND SHALL BE OMITTED. ONLY INSTALL ONE PAVEMENT ARROW AT THE BEGINNING OF THE TURN LANE IF THE TURN LANE IS LESS THAN OR EQUAL TO 150 FEET.
2. SEE DETAIL 4-20E TYPICAL SIGNING
3. SEE DETAIL 4-20A FOR ADDITIONAL STRIPING GUIDELINES
4. INSTALL STOP BAR FOR STOP-CONTROLLED AND SIGNAL-CONTROLLED TURNS ONLY. FOR YIELD-CONTROLLED TURNS, USE THE MARKINGS DESCRIBED IN SECTION 3B.16 OF THE MUTCD.

DATE REVISED: 8/2016

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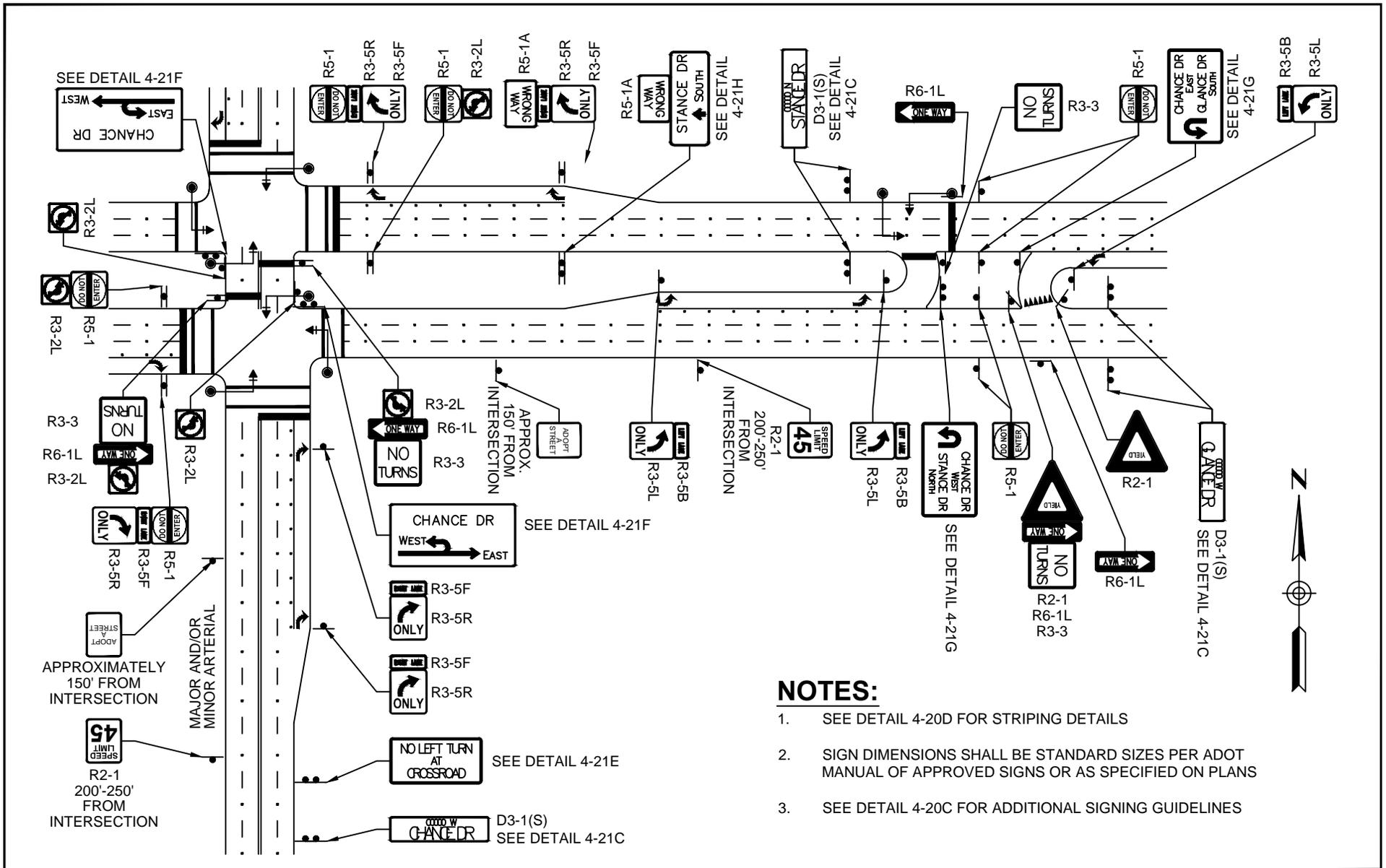
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**TYPICAL PAVEMENT MARKING**

DETAIL NO:  
**4-20D**





**NOTES:**

1. SEE DETAIL 4-20D FOR STRIPING DETAILS
2. SIGN DIMENSIONS SHALL BE STANDARD SIZES PER ADOT MANUAL OF APPROVED SIGNS OR AS SPECIFIED ON PLANS
3. SEE DETAIL 4-20C FOR ADDITIONAL SIGNING GUIDELINES

DATE REVISED: 8/2016

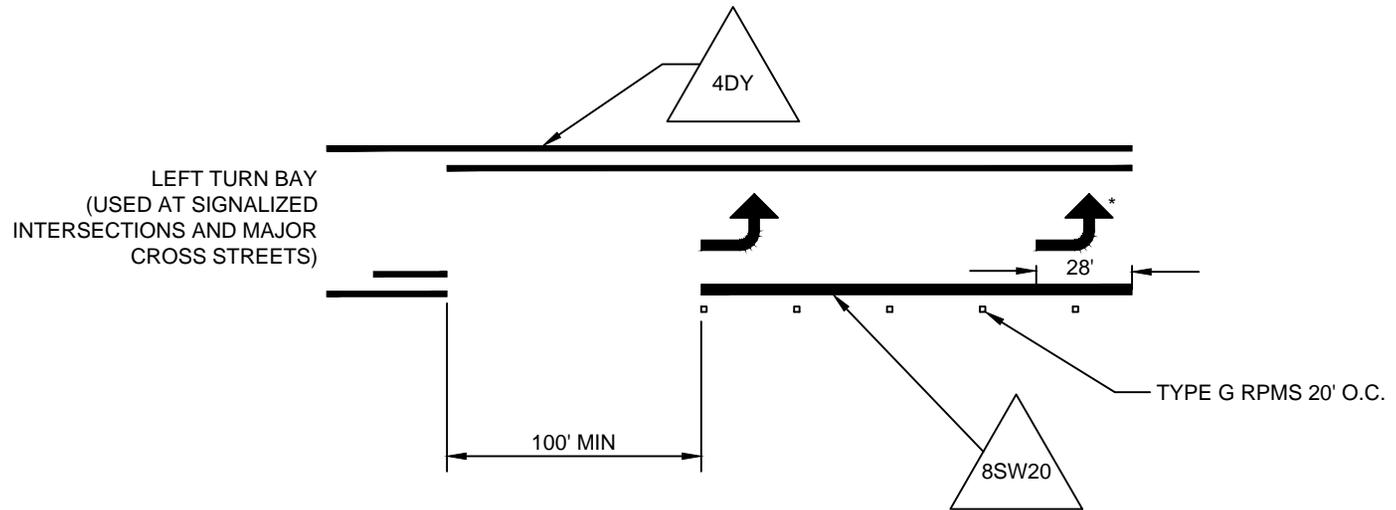
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**TYPICAL SIGNING FOR 660'  
SIGNAL-YIELD CONTROLLED  
CROSSOVER**

DETAIL NO:

**4-20F**



\*IF THE BAY IS LONGER THAN ONE HUNDRED AND FIFTY (150) FEET, A SECOND ARROW SHALL BE PLACED AT THE TOP OF THE BAY

**NOTES:**

1. PAVEMENT MARKING PLAN NOTATION/SYMBOLGY SHALL BE IN ACCORDANCE WITH MCDOT PAVEMENT MARKING MANUAL

DATE REVISED: 8/2016

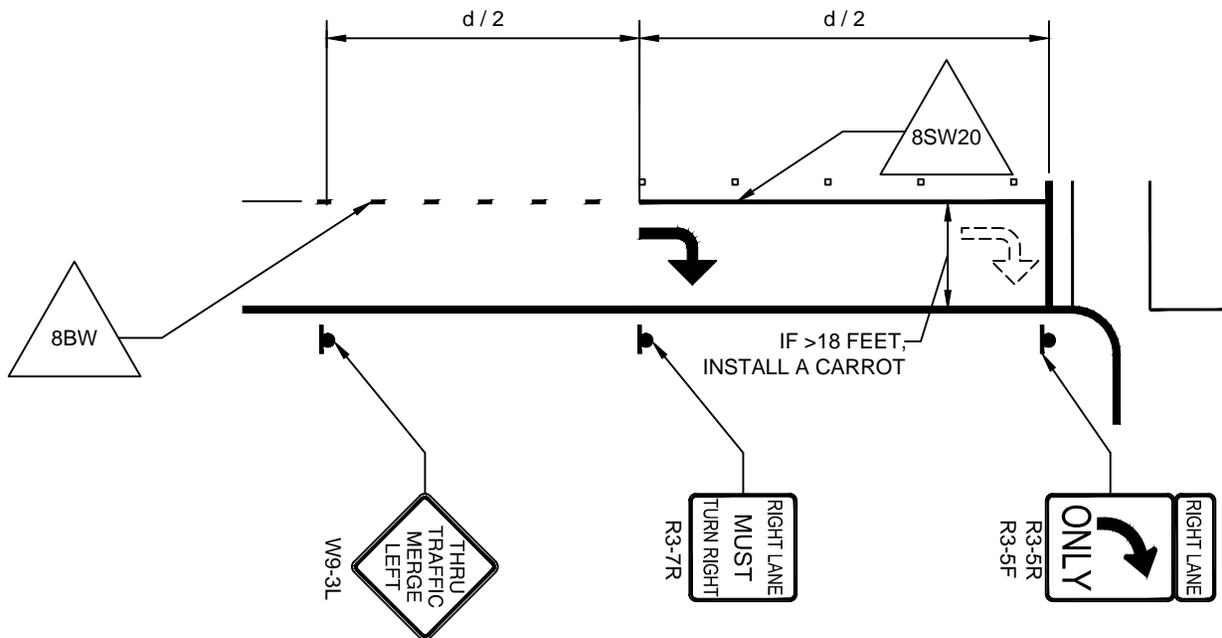
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**STANDARD LEFT TURN BAY LAYOUT**

DETAIL NO:

4-20G



*d (FT)	POSTED SPEED (MPH)
225	20
325	25
450	30
550	35
650	40
750	45
850	50
950	55
1100	60

\*EXCERPTED FROM MUTCD 2003 TABLE 2C-4

**NOTES:**

1. IF THE BAY IS ONE HUNDRED AND FIFTY (150) FEET OR MORE IN LENGTH, A SECOND ARROW SHALL BE INSTALLED AT THE END OF THE BAY

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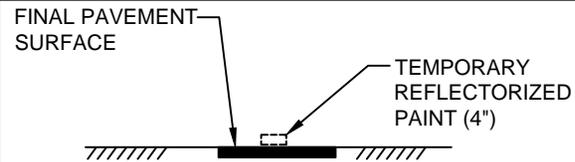
**STANDARD RIGHT TURN DROP LANE LAYOUT**

DETAIL NO:

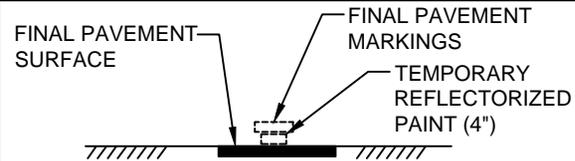
4-20H

## TEMPORARY AND FINAL PAVEMENT MARKING PLACEMENT

AFTER INSTALLATION OF THE FINAL SURFACE COURSE IS COMPLETE, TEMPORARY MARKINGS SHALL BE APPLIED AT THE LOCATIONS OF THE PROPOSED FINAL STRIPING. THE CONTRACTOR SHALL CONTACT THE CITY TRANSPORTATION ENGINEER OR DESIGNEE FOR INSPECTION AND APPROVAL OF TEMPORARY STRIPING.



30 DAYS AFTER INSTALLATION OF THE FINAL SURFACE COURSE IS COMPLETE AND THE CITY TRAFFIC ENGINEER HAS APPROVED THE LOCATIONS OF THE TEMPORARY STRIPING, THE CONTRACTOR SHALL APPLY FINAL PAVEMENT MARKINGS.



### NOTES:

1. WHEN MARKINGS ARE TO BE APPLIED TO NEW PCCP, THE CONTRACTOR SHALL REMOVE ALL CURING COMPOUND BY METHOD OF HIGH-PRESSURE WATER JET OR SANDBLASTING, FOLLOWED BY SWEEPING AND HIGH-PRESSURE AIR SPRAY. THE CURING COMPOUND SHALL BE REMOVED AT LEAST ONE INCH BEYOND THE WIDTH OF THE MARKING TO BE INSTALLED.
2. IF NEW PAVEMENT IS BEING INSTALLED IN MULTIPLE LIFTS, THE CONTRACTOR MAY BE REQUIRED TO INSTALL TEMPORARY PAINT OR CHIP SEAL MARKERS ON UNFINALIZED PAVEMENT SURFACE, AS DIRECTED BY THE CITY TRANSPORTATION ENGINEER OR DESIGNEE.
3. WHEN NO NEW PAVEMENT INSTALLATION IS REQUIRED, THE CONTRACTOR SHALL MARK CONTROL POINTS A MAXIMUM OF 50' APART IN THE LOCATIONS OF THE PROPOSED FINAL STRIPING. THE CONTRACTOR SHALL CONTACT THE CITY OF SURPRISE TRAFFIC ENGINEER OR DESIGNEE FOR INSPECTION AND APPROVAL OF THE CONTROL POINTS. AFTER CONTROL POINTS HAVE BEEN APPROVED, THE CONTRACTOR SHALL APPLY FINAL PAVEMENT MARKINGS.

DATE REVISED: 8/2016

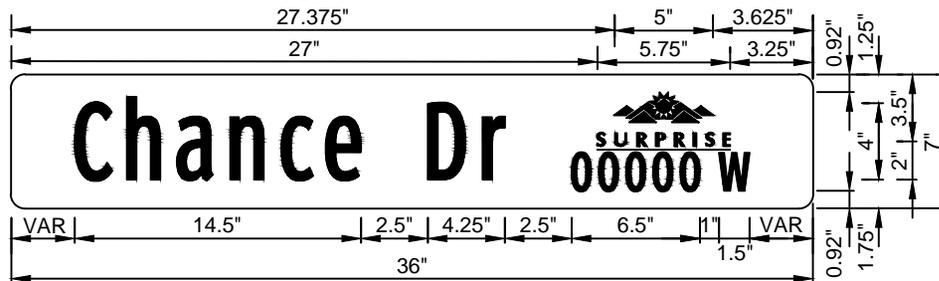
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## TEMPORARY AND FINAL PAVEMENT MARKING PLACEMENT DETAIL

DETAIL NO:

4-201



0.75" RADIUS, NO BORDER, WHITE ON BROWN;  
 "Chance" HIGHWAY C WITH 50% SPACING; "Dr" HIGHWAY C WITH 50% SPACING;  
 "00000" HIGHWAY C WITH 50% SPACING; "W" HIGHWAY C WITH 50% SPACING;

### 7-INCH STREET NAME SIGN FORMAT NOTES:

1. SIGN SHALL BE 0.080-INCH FLAT SHEET ALUMINUM WITH A SEVEN (7) INCH SIGN HEIGHT AND A VARIABLE WIDTH OF THIRTY (30) INCHES, THIRTY-SIX (36) INCHES, FORTY-TWO (42) INCHES, OR FORTY-EIGHT (48) INCHES.
2. STREET NAME LEGEND SHALL BE FOUR (4) INCHES HIGH, INCLUDING THE SUFFIX (RD, ST, AVE, DR, BLVD, ETC.). 100 BLOCK LEGEND SHALL BE TWO (2) INCHES HIGH. MINIMUM SPACING BETWEEN STREET NAME LEGEND AND 100 BLOCK AND SUFFIX LEGEND SHALL BE TWO AND A HALF (2 ½) INCHES.
3. WHEN NUMBERED STREET NAMES ARE FABRICATED, THE SUFFIX SUCH AS 'ST', 'ND', 'RD', AND 'TH' SHALL BE SUPERSCRIPIT WITH A LEGEND HEIGHT OF TWO (2) INCHES.
4. ALL LEGEND FONTS SHALL BE UPPER AND LOWER CASE HIGHWAY C WITH 50% SPACING.
5. STREET NAME LEGEND SHALL NOT HAVE A PREFIX.
6. SHEETING SHALL BE ASTM D-4956-04 PROPOSED TYPE XI SHEETING (3M DG34090 SERIES OR EQUIVALENT).
7. SIGN IMAGING SHALL BE IN COMPLIANCE WITH THE REFLECTIVE SHEETING MANUFACTURER'S MATCHED COMPONENT SYSTEM. SIGN IMAGING SHALL CONSIST OF AN ACRYLIC BASED ELECTRONIC CUTTABLE FILE (3M 1170 SERIES OR EQUIVALENT) OR SILK SCREENED (DEPENDING ON THE QUANTITY OF SIGNAGE) WITH STANDARD HIGHWAY COLORS.
8. IF CALLED OUT ON PLANS TO CREATE A GRAFFITI-PROTECTIVE COATING, A PROTECTIVE OVERLAY FILM 3M 1160 OR EQUIVALENT SHALL BE USED WHICH IS DESIGNATED TO COMPLY WITH THE UNDERLYING REFLECTIVE SHEETING MATCH COMPONENT SYSTEM.
9. NO DECALS SHALL BE PLACED ON SIGN SURFACE.
10. SIGN POST SHALL BE A ONE AND THREE-QUARTER (1-3/4) INCH TELESPAR SQUARE TUBE POST WITH ONE (1) INCH SPACED HOLES.
11. CONTACT CITY OF SURPRISE FOR ANY VARIATION TO THIS DETAIL PRIOR TO FABRICATION.
12. FOR USE AT LOCAL AND MINOR COLLECTOR INTERSECTIONS ONLY.
13. SEE DETAIL 4-22 FOR STREET SIGN FOUNDATION.

DATE REVISED: 8/2016

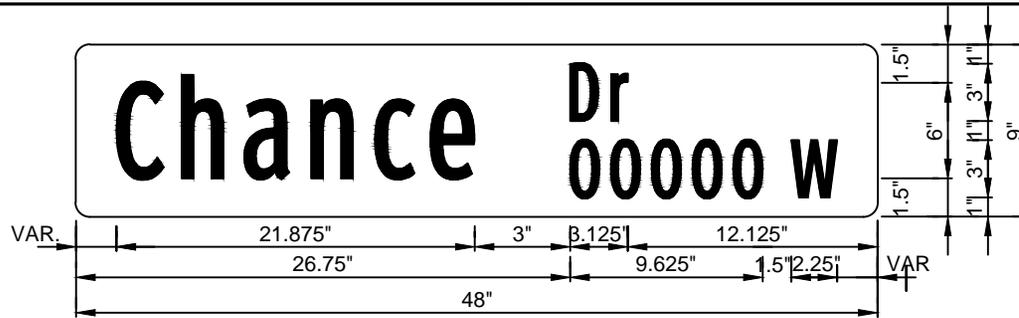
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## 7-INCH STREET NAME SIGN DETAIL

DETAIL NO:

4-21A



0.75" RADIUS, NO BORDER, WHITE ON BROWN;

"Chance" HIGHWAY C WITH 50% SPACING; "Dr" HIGHWAY C WITH 50% SPACING;

"00000" HIGHWAY C WITH 50% SPACING; "W" HIGHWAY C WITH 50% SPACING;

### 9-INCH STREET NAME SIGN FORMAT NOTES:

1. SIGN SHALL BE 0.080-INCH FLAT SHEET ALUMINUM WITH A NINE (9) INCH SIGN HEIGHT AND A VARIABLE WIDTH OF THIRTY (30) INCHES, THIRTY-SIX (36) INCHES, FORTY-TWO (42) INCHES, OR FORTY EIGHT (48) INCHES.
2. STREET NAME LEGEND SHALL BE FIVE (6) INCHES HIGH. 100 BLOCK LEGEND AND SUFFIX (RD, ST, AVE, DR, BLVD, ETC.) SHALL BE THREE (3) INCHES HIGH. MINIMUM SPACING BETWEEN STREET NAME LEGEND AND 100 BLOCK AND SUFFIX LEGEND SHALL BE TWO AND A HALF (2-1/2) INCHES.
3. WHEN NUMBERED STREET NAMES ARE FABRICATED, THE SUFFIX SUCH AS 'ST', 'ND', 'RD', AND 'TH' SHALL BE SUPERSCRIT WITH A LEGEND HEIGHT OF THREE (3) INCHES.
4. ALL LEGEND FONTS SHALL BE UPPER AND LOWER CASE HIGHWAY C WITH 50% SPACING.
5. STREET NAME LEGEND SHALL NOT HAVE A PREFIX.
6. SHEETING SHALL BE ASTM D-4956-04 PROPOSED TYPE XI SHEETING (3M DG34090 SERIES OR EQUIVALENT).
7. SIGN IMAGING SHALL BE IN COMPLIANCE WITH THE REFLECTIVE SHEETING MANUFACTURER'S MATCHED COMPONENT SYSTEM. SIGN IMAGING SHALL CONSIST OF AN ACRYLIC BASED ELECTRONIC CUTTABLE FILE (3M 1170 SERIES OR EQUIVALENT) OR SILK SCREENED (DEPENDING ON THE QUANTITY OF SIGNAGE) WITH STANDARD HIGHWAY COLORS.
8. IF CALLED OUT ON PLANS TO CREATE A GRAFFITI-PROTECTIVE COATING, A PROTECTIVE OVERLAY FILM 3M 1160 OR EQUIVALENT SHALL BE USED WHICH IS DESIGNATED TO COMPLY WITH THE UNDERLYING REFLECTIVE SHEETING MATCH COMPONENT SYSTEM.
9. NO DECALS SHALL BE PLACED ON THE SIGN SURFACE.
10. POST SHALL BE A ONE AND THREE-QUARTER (1-3/4) INCH TELES PAR SQUARE TUBE POST WITH ONE (1) INCH SPACED HOLES.
11. CONTACT CITY OF SURPRISE FOR ANY VARIATION TO THIS DETAIL PRIOR TO FABRICATION.
12. FOR USE AT UNSIGNALIZED INTERSECTIONS WHERE AT LEAST ONE STREET IS CLASSIFIED AS AN ARTERIAL OR PARKWAY.
13. SEE DETAIL 4-22 FOR STREET SIGN FOUNDATION.

DATE REVISED: 8/2016

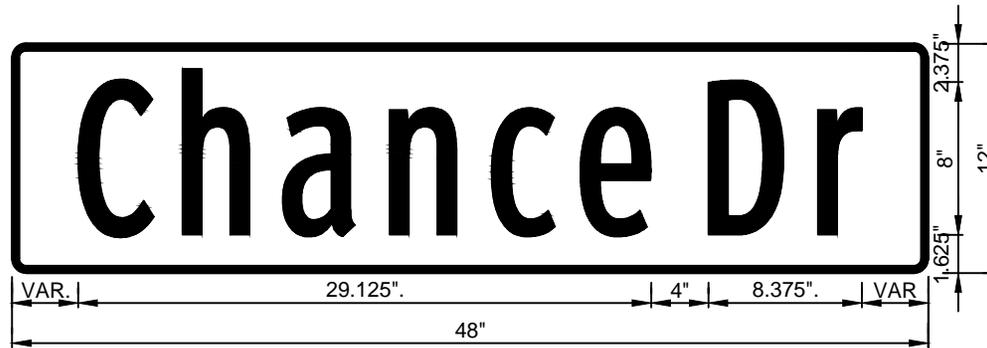
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## 9-INCH STREET NAME SIGN DETAIL D3 (9S)

DETAIL NO:

4-21B

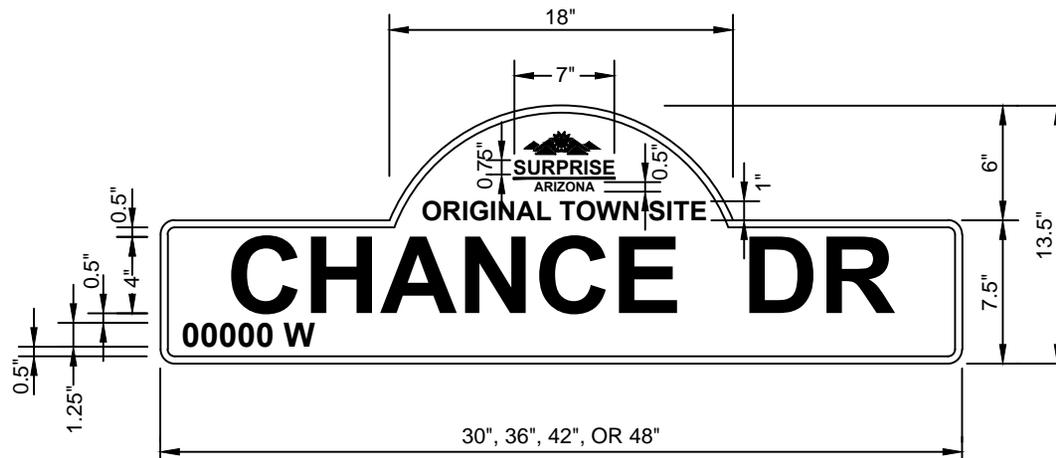


1.5" RADIUS, 0.375" BORDER, WHITE ON BROWN;  
 "Chance" HIGHWAY C WITH 50% SPACING; "Dr" HIGHWAY C WITH 50% SPACING;

**ADVANCE STREET NAME SIGN FORMAT NOTES:**

1. SIGN SHALL BE 0.08-INCH FLAT SHEET ALUMINUM WITH A TWELVE (12) INCH SIGN HEIGHT AND A WIDTH OF FORTY-EIGHT (48) INCHES TO SEVENTY-TWO (72) INCHES.
2. STREET NAME LEGEND SHALL BE EIGHT (8) INCHES HIGH, INCLUDING SUFFIX (RD, ST, AVE). MINIMUM SPACING BETWEEN STREET NAME AND SUFFIX SHALL BE THREE (3) INCHES. IF LEGEND EXCEEDS 72", INCREASE PANEL HEIGHT TO 24" AND USE TWO LINES OF TEXT WITH 2 1/2" SPACING BETWEEN LINES.
3. WHEN NUMBERED STREET NAMES ARE FABRICATED, THE SUFFIX (SUCH AS 'ST', 'ND', 'RD', AND 'TH') SHALL BE SUPERScript WITH A LEGEND HEIGHT OF FOUR (4) INCHES.
4. ALL LEGEND FONTS SHALL BE UPPER AND LOWER CASE HIGHWAY C WITH 50% SPACING CENTER JUSTIFIED ON THE SIGN FACE.
5. STREET NAME LEGEND SHALL NOT HAVE A PREFIX.
6. SHEETING SHALL BE ASTM D-4956-04 PROPOSED TYPE XI SHEETING (3M DG34090 SERIES OR EQUIVALENT).
7. SIGN IMAGING SHALL BE IN COMPLIANCE WITH THE REFLECTIVE SHEETING MANUFACTURER'S MATCHED COMPONENT SYSTEM. SIGN IMAGING SHALL CONSIST OF AN ACRYLIC BASED ELECTRONIC CUTTABLE FILE (3M 1170 SERIES OR EQUIVALENT) OR SILK SCREENED (DEPENDING ON THE QUANTITY OF SIGNAGE) WITH STANDARD HIGHWAY COLORS.
8. IF CALLED OUT ON PLANS TO CREATE A GRAFFITI-PROTECTIVE COATING, A PROTECTIVE OVERLAY FILM 3M 1160 OR EQUIVALENT SHALL BE USED WHICH IS DESIGNATED TO COMPLY WITH THE UNDERLYING REFLECTIVE SHEETING MATCH COMPONENT SYSTEM.
9. NO DECALS SHALL BE PLACED ON SIGN SURFACE.
10. SIGN SHALL BE SUPPORTED BY 2 POSTS. EACH POST SHALL BE A ONE AND THREE-QUARTER (1-3/4) INCH TELES PAR SQUARE TUBE POST WITH ONE (1) INCH SPACED HOLES.
11. CONTACT CITY OF SURPRISE FOR ANY VARIATION TO THIS DETAIL PRIOR TO FABRICATION.
12. SIGN SHALL BE USED ON ARTERIALS AND PARKWAYS AND PLACED 250-350 FEET IN ADVANCE OF INTERSECTING COLLECTORS, ARTERIALS, OR PARKWAYS (SEE DETAIL 4-20C, 4-20E, OR 4-20F).
13. SEE DETAIL 4-22 FOR STREET SIGN FOUNDATION.

DATE REVISED: 8/2016		<b>12-INCH STREET NAME SIGN DETAIL</b> <b>D3 (12S)</b>	DETAIL NO:
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0.75" Radius, 0.375" Border, Copperplate Bold Font – White on Brown

### **DECORATIVE STREET NAME SIGN FORMAT NOTES:**

1. SIGN SHALL BE 0.080-INCH FLAT SHEET ALUMINUM WITH A THIRTEEN AND ONE HALF (13.5) INCH SIGN HEIGHT AND A VARIABLE WIDTH OF THIRTY (30) INCHES, THIRTY-SIX (36) INCHES, FORTY-TWO (42) INCHES, OR FORTY-EIGHT (48) INCHES. SIGN PANEL SHALL BE BROWN.
2. STREET NAME LEGEND SHALL BE FOUR (4) INCHES HIGH, INCLUDING SUFFIX (RD, ST, AVE, BLVD, ETC.). 100 BLOCK LEGEND SHALL BE TWO (1.25) INCHES HIGH. ALL LEGENDS AND LOGO SHALL BE WHITE.
3. WHEN NUMBERED STREET NAMES ARE FABRICATED, THE SUFFIX SUCH AS 'ST', 'ND', 'RD', AND 'TH' SHALL BE SUPERSCRIPIT WITH A LEGEND HEIGHT OF TWO (2) INCHES.
4. STREET NAME LEGEND SHALL NOT HAVE A PREFIX.
5. SHEETING SHALL BE ASTM D-4956-04 PROPOSED TYPE XI SHEETING (3M DG34090 SERIES OR EQUIVALENT).
6. SIGN IMAGING SHALL BE IN COMPLIANCE WITH THE REFLECTIVE SHEETING MANUFACTURER'S MATCHED COMPONT SYSTEM. SIGN IMAGING SHALL CONSIST OF AN ACRYLIC BASED ELECTRONIC CUTTABLE FILM (3M 1170 SERIES OR EQUIVALENT) OR SILK SCREENED (DEPENDING ON THE QUANTITY OF SIGNAGE) WITH STANDARD HIGHWAY COLORS.
7. IF CALLED OUT ON PLANS TO CREATE A GRAFFITI-PROTECTIVE COATING, A PROTECTIVE OVERLAY FILM (3M 1160 OR EQUIVLENT) SHALL BE USED WHICH IS DESIGNED TO COMPLY WITH THE UNDERLYING REFLECTIVE SHEETING MATCH COMPONENT SYSTEM.
8. NO DECALS SHALL BE PLACED ON SIGN SURFACE.
9. CONTACT CITY OF SURPRISE FOR SIGN POST AND FOUNDATION DETAILS.
10. CONTACT CITY OF SURPRISE FOR ANY VARIATION TO THIS DETAIL PRIOR TO FABRICATION.

DATE REVISED: 8/2016

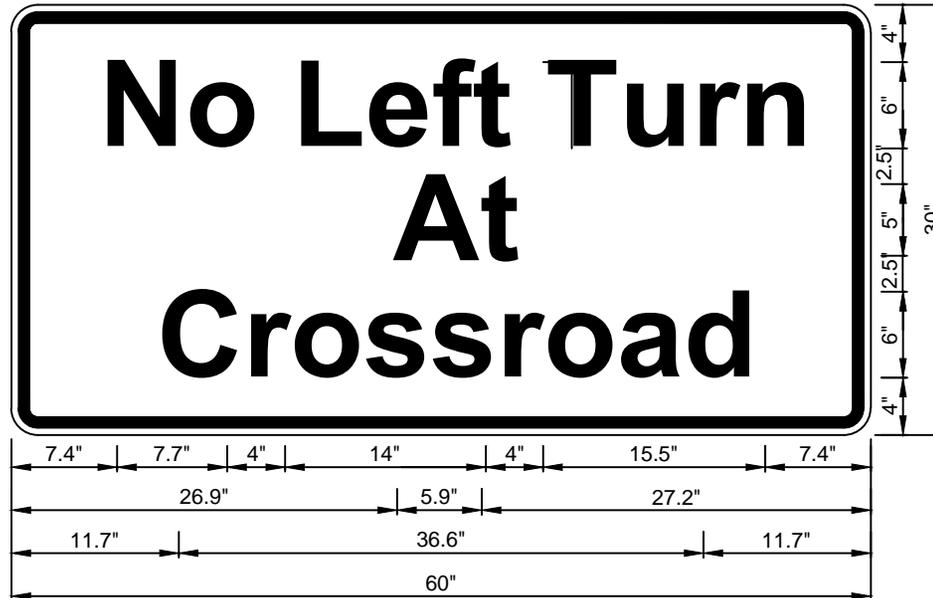
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## **ORIGINAL TOWN SITE STREET NAME SIGN DETAIL D3 (OTS)**

DETAIL NO:

4-21D



1.9" RADIUS, 0.8" BORDER, 0.5" INDENT, WHITE ON GREEN; [NO] C SPACING; [TURN] C 75 SPACING; [LEFT] C 75 75 SPACING; [AT] C SPACING; ALL DIMENSIONS ARE IN INCHES \* [CROSSROAD] C 75 SEE NOTE 10

### ARIZONA PARKWAY ADVANCE GUIDE SIGN FORMAT

#### NOTES:

1. SIGN SHALL BE ONE EIGHTH (1/8) OF AN INCH FLAT SHEET ALUMINUM WITH A 30" SIGN HEIGHT AND A WIDTH OF 60" IN LENGTH.
2. LEGEND SHALL BE SIX (6) AND FIVE (5) INCHES HIGH AS SHOWN. MINIMUM SPACING BETWEEN WORDING SHALL BE FOUR (4) INCHES HORIZONTALLY AND TWO AND A HALF (2-1/2) INCHES VERTICALLY.
3. ALL LEGEND FONTS SHALL BE CAPITAL TYPE HIGHWAY C CENTER JUSTIFIED ON THE SIGN FACE.
4. SHEETING SHALL BE ASTM D-4956-04 PROPOSED TYPE XI SHEETING (3M DG34090 SERIES OR EQUIVALENT).
5. SIGN IMAGING SHALL BE IN COMPLIANCE WITH THE REFLECTIVE SHEETING MANUFACTURER'S MATCHED COMPONENT SYSTEM. SIGN IMAGING SHALL CONSIST OF AN ACRYLIC BASED ELECTRONIC CUTTABLE FILE (3M 1170 SERIES OR EQUIVALENT) OR SILK SCREENED (DEPENDING ON THE QUANTITY OF SIGNAGE) WITH STANDARD HIGHWAY COLORS.
6. IF A GRAFFITI-PROTECTIVE COATING IS CALLED FOR ON THE PROJECT PLANS, A PROTECTIVE OVERLAY FILM (3M 1160 OR EQUIVALENT) THAT IS DESIGNATED TO COMPLY WITH THE UNDERLYING REFLECTIVE SHEETING MATCHED COMPONENT SYSTEM SHALL BE USED.
7. NO DECALS SHALL BE PLACED ON THE SIGN SURFACE.
8. CONTACT CITY OF SURPRISE FOR ANY VARIATION TO THIS DETAIL PRIOR TO FABRICATION.
9. SEE DETAILS 4-20E AND 4-20F FOR TYPICAL SIGN PLACEMENT.
10. THE CROSSROAD NAME CAN BE USED IN PLACE OF 'CROSSROAD' ON THE SIGN PANEL. THE NAME SHALL BE TYPE C FONT, 75% SPACING, ALL CAPS AND SHALL REMAIN ON ONE LINE. THE SIGN PANEL WIDTH OF SIXTY (60) INCHES SHALL BE MAINTAINED. THE CROSSROAD NAME SHALL NOT BE GREATER THAN 13 CHARACTERS, INCLUDING SPACES.
11. SEE DETAIL 4-22 FOR STREET SIGN FOUNDATION.

DATE REVISED: 8/2016

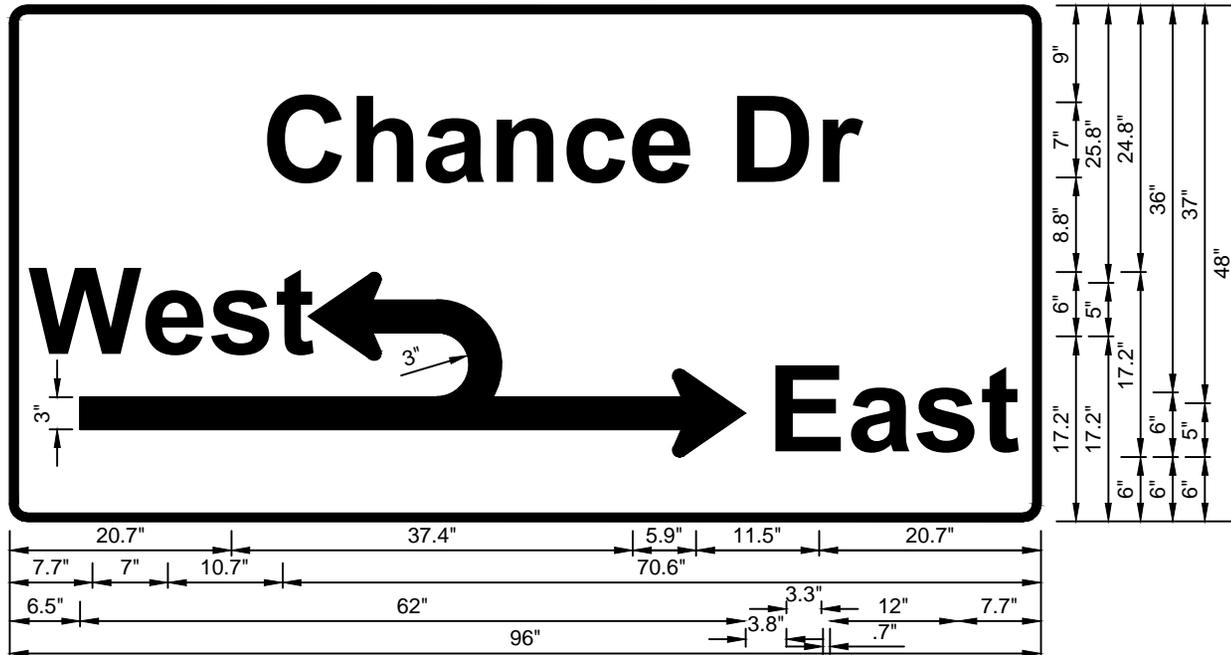
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(SIGNATURE ON FILE)



## ARIZONA PARKWAY ADVANCE GUIDE SIGN

DETAIL NO:

4-21E



1.6" Radius, 0.8" Border, White on Green;

[CHANCE DR] ClearviewHwy-3-W; [WEST] ClearviewHwy-3-W; ARROW; [E] ClearviewHwy-3-W;

[AST] ClearviewHwy-3-W;

ALL DIMENSIONS ARE IN INCHES

\* DIMENSION VARIES BY NUMBER OF CHARACTERS

### ARIZONA PARKWAY GUIDE SIGN FORMAT NOTES:

- SIGN SHALL BE ONE-EIGHTH (1/8) OF AN INCH FLAT SHEET ALUMINUM WITH A FORTY-EIGHT (48) INCH SIGN HEIGHT AND A WIDTH OF NINETY-SIX (96) INCHES, OR AS NECESSARY BASED ON THE STREET NAME.
- ALL LEGEND SIZE, FONT, AND CASE SHALL BE AS SHOWN. MINIMUM SPACING BETWEEN WORDING SHALL BE AS SHOWN.
- SHEETING SHALL BE ASTM D-4956-04 PROPOSED TYPE XI SHEETING (3M DG34090 SERIES OR EQUIVALENT).
- SIGN IMAGING SHALL BE IN COMPLIANCE WITH THE REFLECTIVE SHEETING MANUFACTURER'S MATCHED COMPONENT SYSTEM. SIGN IMAGING SHALL CONSIST OF AN ACRYLIC-BASED ELECTRONIC CUTTABLE FILE (3M 1170 SERIES OR EQUIVALENT) OR SILK SCREENED (DEPENDING ON THE QUANTITY OF SIGNAGE) WITH STANDARD HIGHWAY COLORS.
- IF A GRAFFITI-PROTECTIVE COATING IS CALLED FOR ON THE PROJECT PLANS, A PROTECTIVE OVERLAY FILM (3M 1160 OR EQUIVALENT) THAT IS DESIGNATED TO COMPLY WITH THE UNDERLYING REFLECTIVE SHEETING-MATCHED COMPONENT SYSTEM SHALL BE USED.
- NO DECALS SHALL BE PLACED ON THE SIGN SURFACE.
- CONTACT THE CITY OF SURPRISE FOR ANY VARIATION TO THIS DETAIL PRIOR TO FABRICATION.
- SEE DETAILS 4-20E AND 4-20F FOR TYPICAL SIGN PLACEMENT.
- SEE DETAIL 4-22 FOR STREET SIGN FOUNDATION.

DATE REVISED: 8/2016

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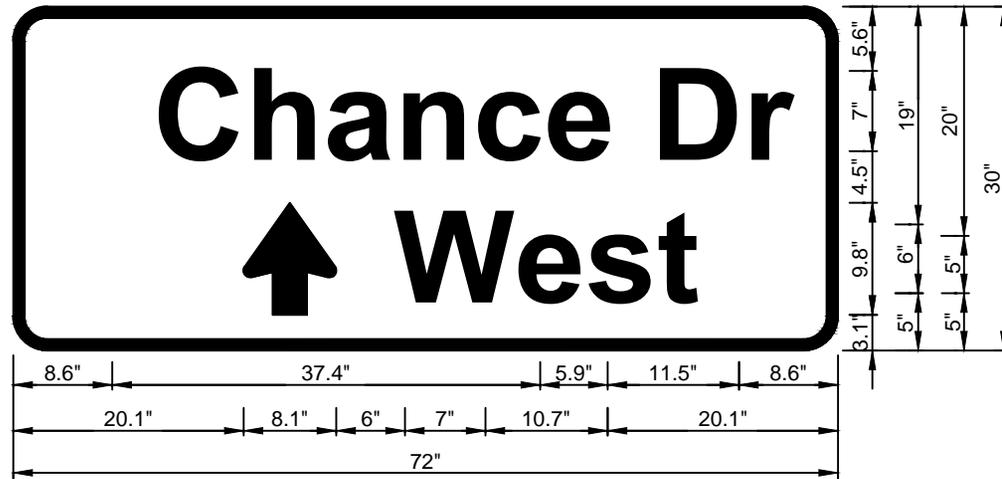


## ARIZONA PARKWAY GUIDE SIGN

DETAIL NO:

4-21F





3.0" RADIUS, 1.0" BORDER, WHITE ON GREEN; [CHANCE DR]  
 CLEARVIEWHWY-3-W; STANDARD ARROW CUSTOM 9.8" X 8.1" 90;  
 [WEST] CLEARVIEWHWY-3-W; ALL DIMENSIONS ARE IN INCHES \*  
 DIMENSION VARIES BY NUMBER OF CHARACTERS

### ARIZONA PARKWAY GUIDE SIGN FORMAT

#### **NOTES:**

1. SIGN SHALL BE ONE EIGHTH (1/8) OF AN INCH FLAT SHEET ALUMINUM WITH A THIRTY (30) INCH SIGN HEIGHT AND A WIDTH OF SEVENTY-TWO (72) INCHES IN LENGTH OR AS NECESSARY BASED ON THE STREET NAME.
2. STREET NAME LEGEND SHALL BE SEVEN (7) INCHES HIGH AND CENTERED ON THE SIGN PANEL. THE FIRST LETTER OF CARDINAL DIRECTION SHALL BE SIX (6) INCHES HIGH, AND THE REMAINDER OF THE LETTERS SHALL BE FIVE (5) INCHES HIGH.
3. ALL LEGEND FONTS SHALL BE CLEARVIEW HIGHWAY 3W. LETTER CASE SHALL BE AS SHOWN.
4. SHEETING SHALL BE ASTM D-4956-04 PROPOSED TYPE XI SHEETING (3M DG34090 SERIES OR EQUIVALENT).
5. SIGN IMAGING SHALL BE IN COMPLIANCE WITH THE REFLECTIVE SHEETING MANUFACTURER'S MATCHED COMPONENT SYSTEM. SIGN IMAGING SHALL CONSIST OF AN ACRYLIC-BASED ELECTRONIC CUTTABLE FILE (3M 1170 SERIES OR EQUIVALENT) OR SILK SCREENED (DEPENDING ON THE QUANTITY OF SIGNAGE) WITH STANDARD HIGHWAY COLORS.
6. IF A GRAFFITI-PROTECTIVE COATING IS CALLED FOR ON THE PROJECT PLANS, A PROTECTIVE OVERLAY FILM (3M 1160 OR EQUIVALENT) THAT IS DESIGNATED TO COMPLY WITH THE UNDERLYING REFLECTIVE SHEETING-MATCHED COMPONENT SYSTEM SHALL BE USED.
7. NO DECALS SHALL BE PLACED ON THE SIGN SURFACE.
8. CONTACT THE CITY OF SURPRISE FOR ANY VARIATION TO THIS DETAIL PRIOR TO FABRICATION.
9. SEE DETAILS 4-20E AND 4-20F FOR TYPICAL SIGN PLACEMENT.
10. SEE DETAIL 4-22 FOR STREET SIGN FOUNDATION.

DATE REVISED: 8/2016

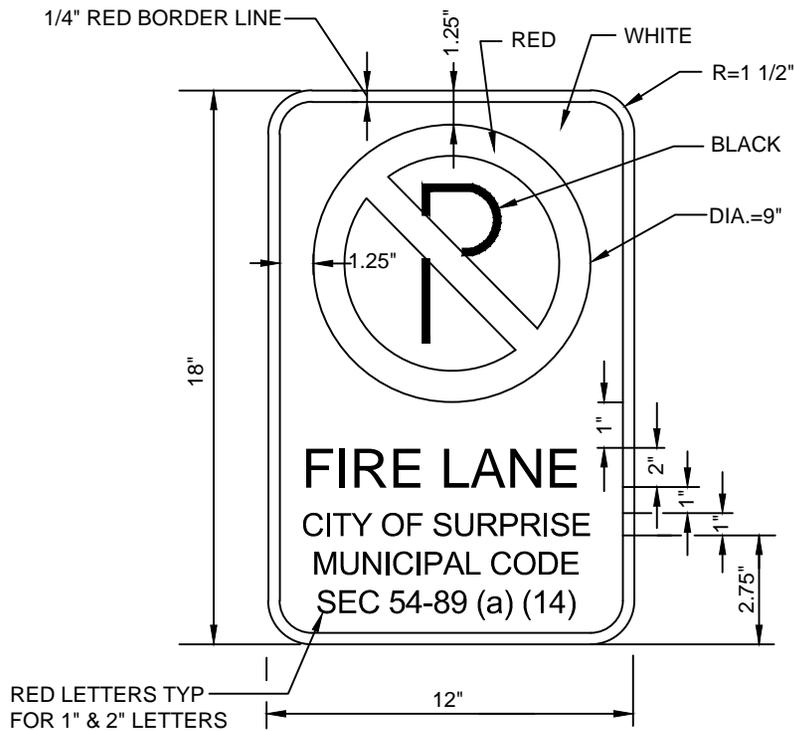
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## ARIZONA PARKWAY GUIDE SIGN

DETAIL NO:

4-21H



### NOTES:

1. FIRE LANE SIGNS SHALL BE INSTALLED AS REQUIRED BY FIRE PREVENTION
  - A. SIGNS SHALL BE ONE EIGHTH (1/8) OF AN INCH FLAT ALUMINUM SHEET, TWELVE (12) INCHES WIDE, AND EIGHTEEN (18) INCHES LONG.
  - B. THEY SHALL BE MOUNTED ON A STURDY METAL ONE AND THREE-QUARTER (1-3/4) INCH SQUARE TUBE POSTS. SEE DETAIL 4-22 FOR SIGN POST INSTALLATION DETAIL. HEIGHT OF SIGN SHALL CONFORM TO MUTCD STANDARDS.
  - C. SIGNS SHALL BE MOUNTED PERPENDICULAR TO THE ROAD SO THAT THEY ARE VISIBLE FROM THE DIRECTION OF TRAVEL.
  - D. THE SIGN SHALL READ AS FOLLOWS:
 

FIRE LANE  
CITY OF SURPRISE  
MUNICIPAL CODE  
SEC 54-89 (a) (14)
2. SIGNS SHALL BE PROVIDED BY AND MAINTAINED BY THE PROPERTY OWNER/OCCUPANT, INCLUDING SIGNS ON PRIVATE PROPERTY.
3. AFTER REQUIRED SIGNS ARE INSTALLED, TRAFFIC ENGINEERING WILL INSPECT AND APPROVE ALL SIGNS.

DATE REVISED: 8/2016

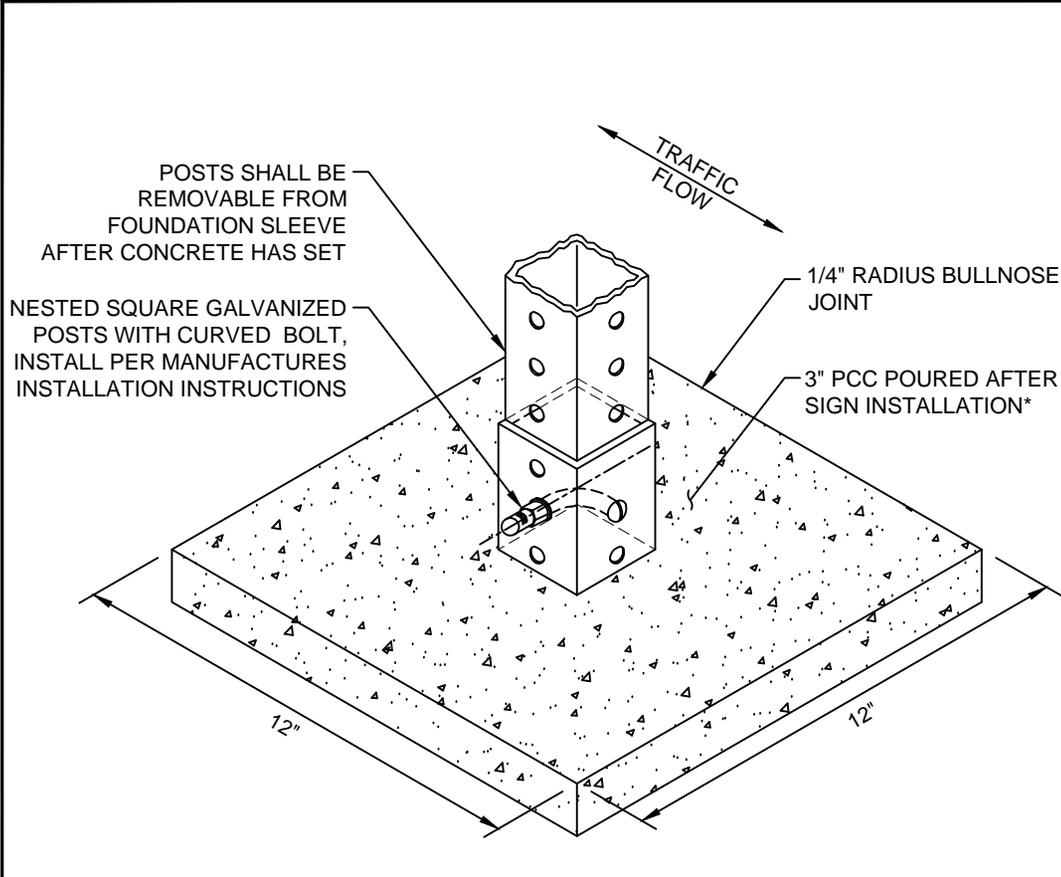
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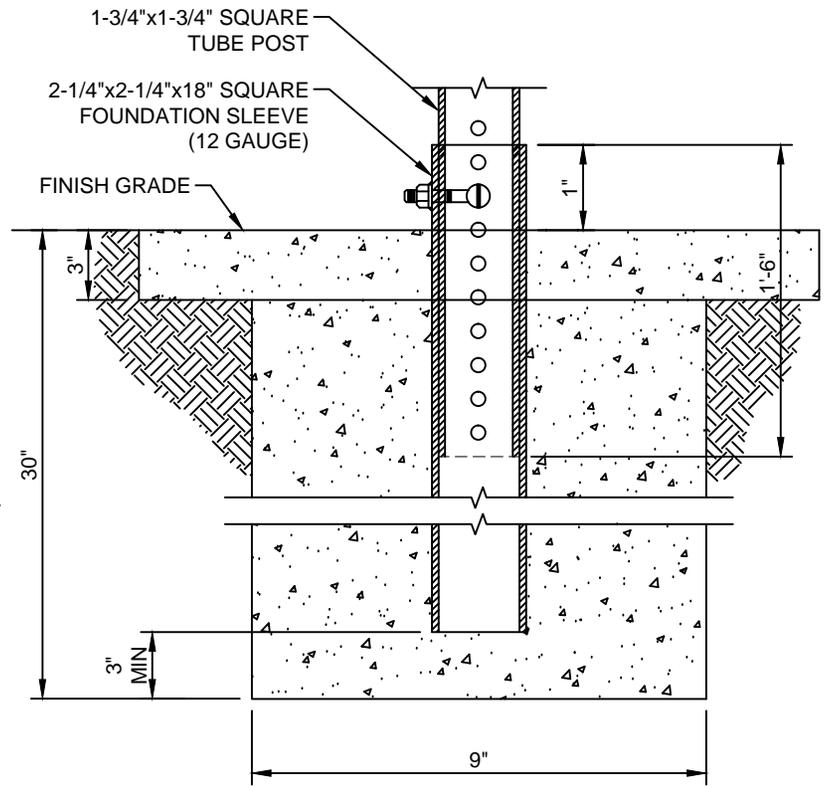
## FIRE LANE SIGN

DETAIL NO:

4-211



**SIDEWALK OR PAVEMENT  
INSTALLATION**



**TYPICAL STREET SIGN  
FOUNDATION**

\*INSTALL 12" X 12" CONCRETE BLOCKOUT W/ SIGNPOST CENTERED TO FACILITATE REMOVAL OF FOUNDATION W/O REPLACING ENTIRE CONCRETE FLAG WHERE SIGN IS MOUNTED.

DATE REVISED: 8/2016

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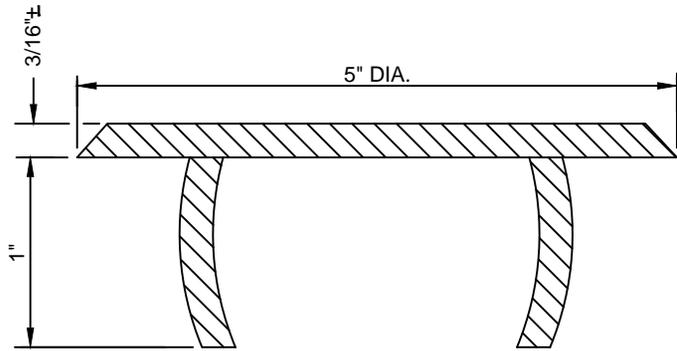


**STREET SIGN FOUNDATION DETAIL**

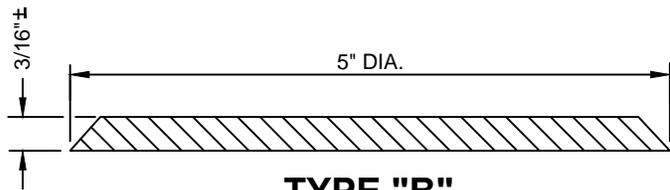
DETAIL NO:

**4-22**





**TYPE "A"**  
TO BE INSTALLED IN WET CONCRETE  
DURING CONSTRUCTION



**TYPE "B"**  
TO BE INSTALLED WITH ADHESIVE  
ON EXISTING STRUCTURES



**NOTES:**

1. MATERIAL: CAST ALUMINUM.
2. THE TOTAL WIDTH OF INDIVIDUAL LETTERS TO BE SUCH THAT LETTERS AND WORDS ARE EQUALLY SPACED AND BALANCED.
3. LETTERS TO BE 1/2" IN HEIGHT. TYPE OF LETTERS TO BE SUBMITTED FOR APPROVAL.

DATE REVISED: 8/2016

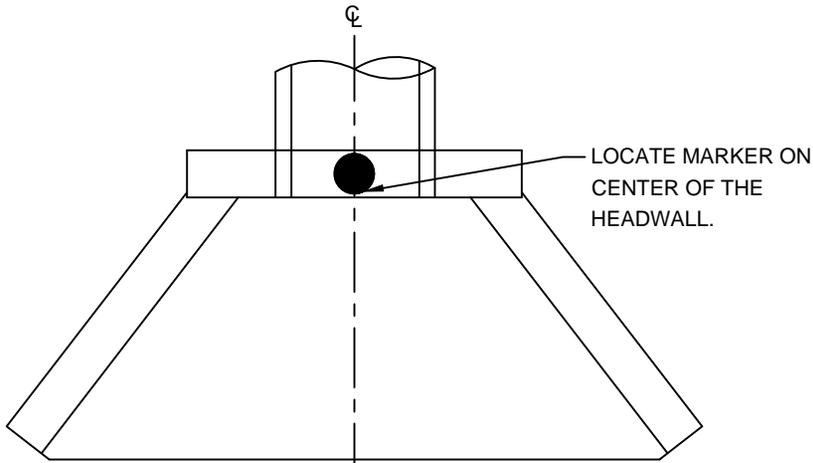
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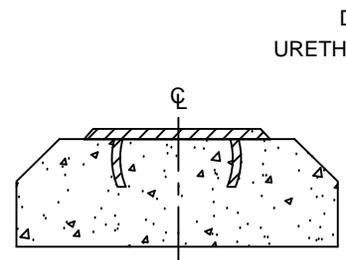
**STORM DRAIN INLET MARKER**

DETAIL NO:

5-01

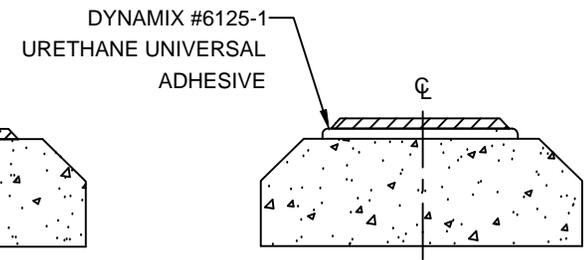


**PLAN VIEW**



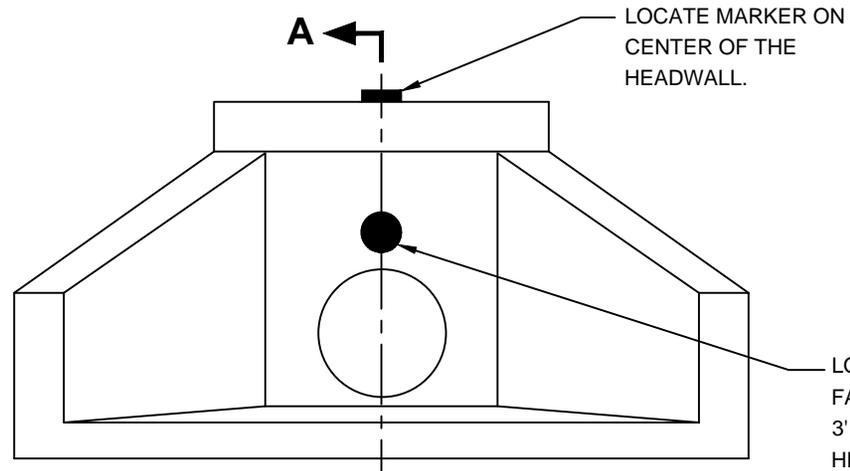
**TYPE "A"**

TO BE INSTALLED IN WET CONCRETE DURING CONSTRUCTION

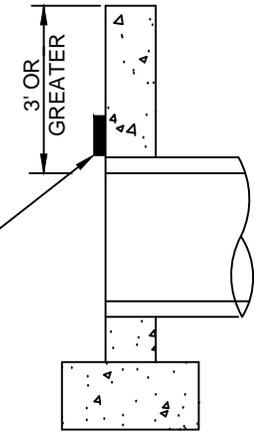


**TYPE "B"**

TO BE INSTALLED WITH ADHESIVE ON EXISTING STRUCTURES



**SIDE VIEW**



**SECTION A-A**

DATE REVISED: 8/2016

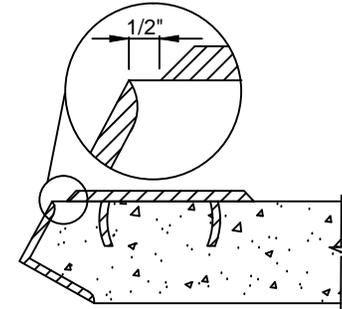
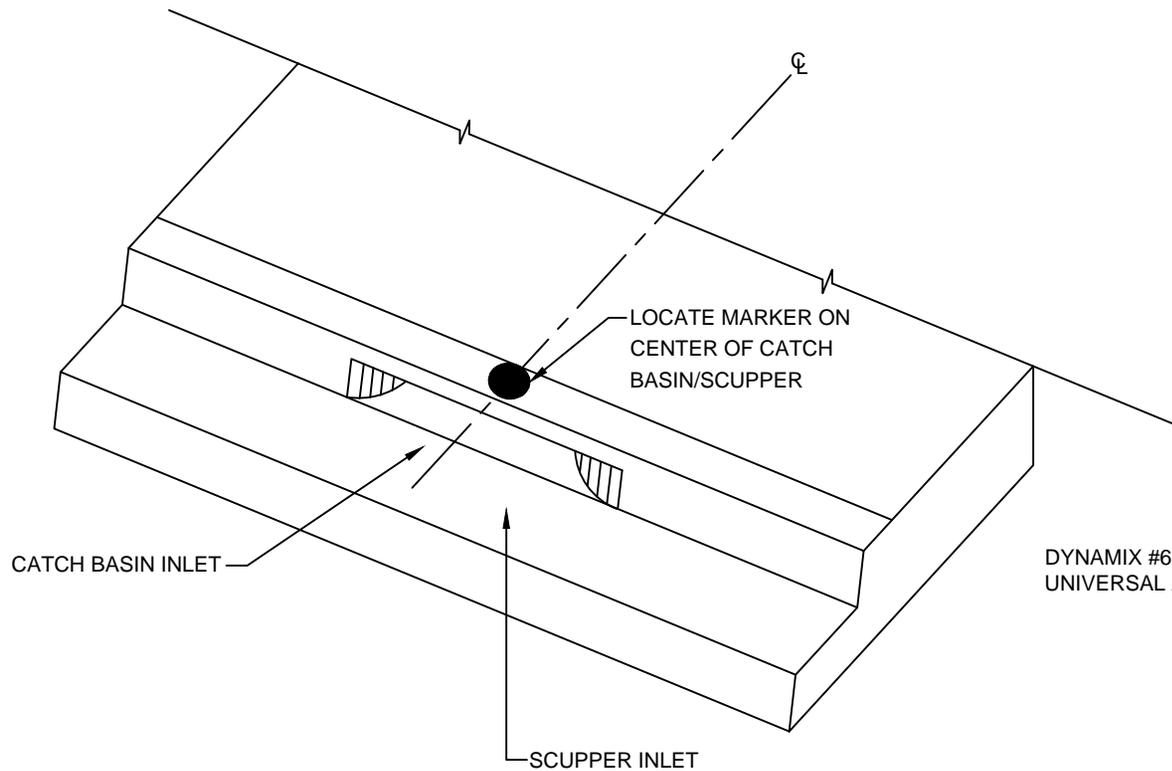
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(SIGNATURE ON FILE)



**STORM DRAIN INLET MARKER ON HEADWALL**

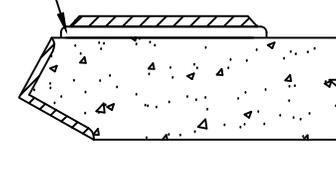
DETAIL NO:

5-02A



**TYPE "A"**  
TO BE INSTALLED IN WET CONCRETE  
DURING CONSTRUCTION

DYNAMIX #6125-1 URETHANE  
UNIVERSAL ADHESIVE



**TYPE "B"**  
TO BE INSTALLED WITH ADHESIVE  
ON EXISTING STRUCTURES

DATE REVISED: 8/2016

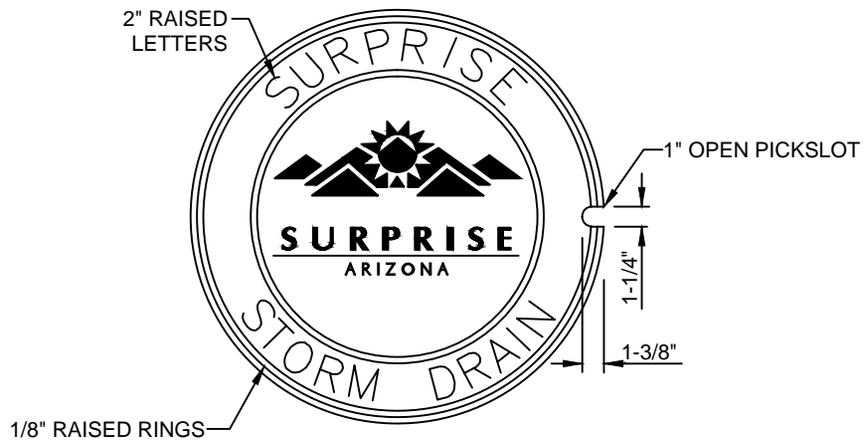
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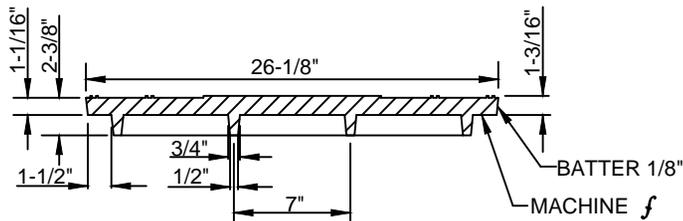
## STORM DRAIN INLET MARKER ON CATCH BASIN SCUPPER

DETAIL NO:

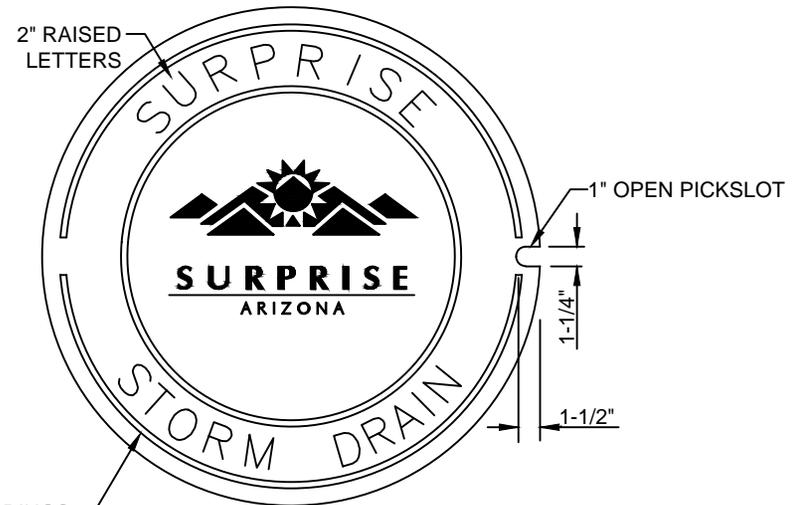
5-02B



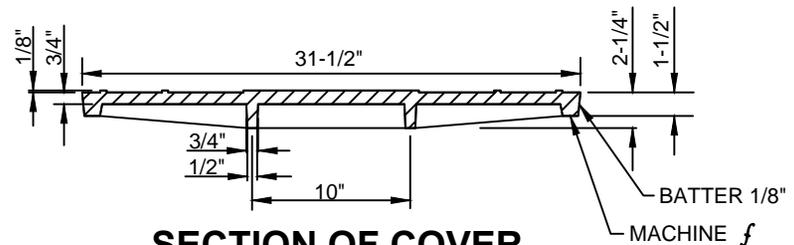
**TOP VIEW**



**SECTION OF COVER  
24" MANHOLE COVER**



**TOP VIEW**



**SECTION OF COVER  
30" MANHOLE COVER**

**NOTES:**

1. MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B, UNPAINTED.
2. THE TOTAL WIDTH OF INDIVIDUAL LETTERS TO BE SUCH THAT LETTERS AND WORDS ARE EQUALLY SPACED AND BALANCED.
3. LETTERS TO BE 2" IN HEIGHT AND RAISED 1/8" ABOVE LEVEL OF COVER. TYPE OF LETTERS TO BE SUBMITTED FOR APPROVAL.
4. WEIGHT OF CASTINGS SHALL BE NO MORE THAN 2% LESS THAN WEIGHT SPECIFIED. CASTINGS SHALL CONFORM TO MAG SECTION 787.
5. MANHOLE FRAME SHALL BE PER MAG STD DTL 424, AS APPLICABLE PER SIZE.

DATE REVISED: 8/2016

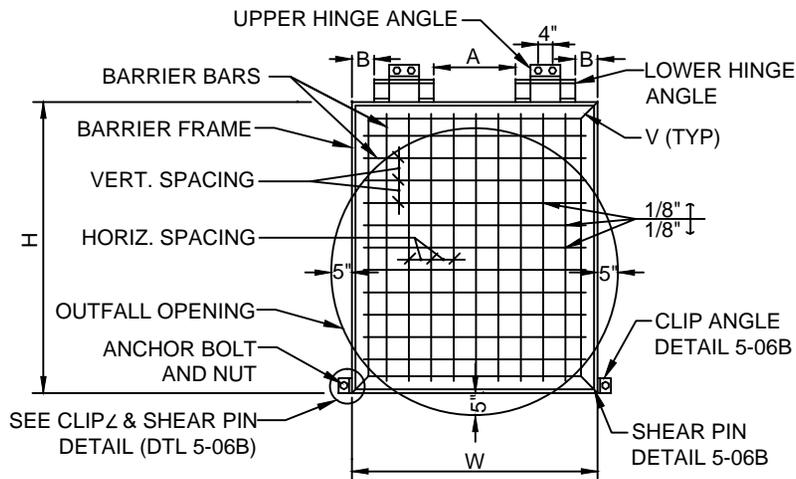
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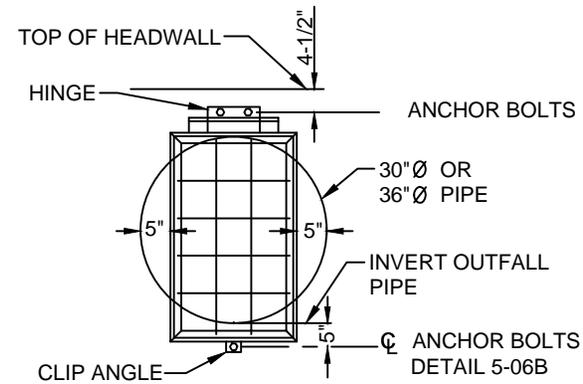
**STORM DRAIN MANHOLE COVER**

DETAIL NO:

**5-03**



**TYPICAL BARRIER DETAIL**



FOR DETAILED DIMENSIONS, REFERENCE DETAIL TO THE LEFT AND BARRIER SCHEDULE DETAIL 5-06C

**30" Ø & 36" Ø PIPES ONLY,  
SINGLE HINGE & CLIP ANGLE DETAIL**

**NOTES:**

1. ALL SHEAR PIN ANGLES SHALL FIT SNUGLY AND TRULY FACE TO FACE. COVER WITH WATERPROOF GREASE PRIOR TO INSTALLATION OF PIN.
2. GALVANIZE ALL FERROUS PARTS AFTER FABRICATION.
3. THE SHEAR PIN HOLES IN THE ANGLE SHALL BE DRILLED FOR A TIGHT FIT OF THE SHEAR PINS.
4. FRAME AND HINGE ANGLES SHALL HAVE THE OUTSTANDING LEGS OUT FOR OUTLETS.
5. ALL ANCHOR BOLTS SHALL BE 5/8" Ø ANCHOR BOLTS EMBEDDED 4" (MINIMUM) INTO EPOXY GROUT.
6. ALL SHEAR PINS ARE TO BE PEENED BOTH ENDS AFTER INSTALLATION.
7. SHEAR PIN MATERIAL SHALL BE COMMERCIAL PURE ALUMINUM WIRE.
8. SEE BARRIER SCHEDULE, DETAIL 5-06C FOR VARIABLE DIMENSIONS.
9. COVER ALL MOVABLE CONTACT SURFACE WITH A COAT OF WATERPROOF GREASE PRIOR TO INSTALLATION.
10. ALL BARRIER BARS TO BE 1/2" PLAIN.

DATE REVISED: 8/2016

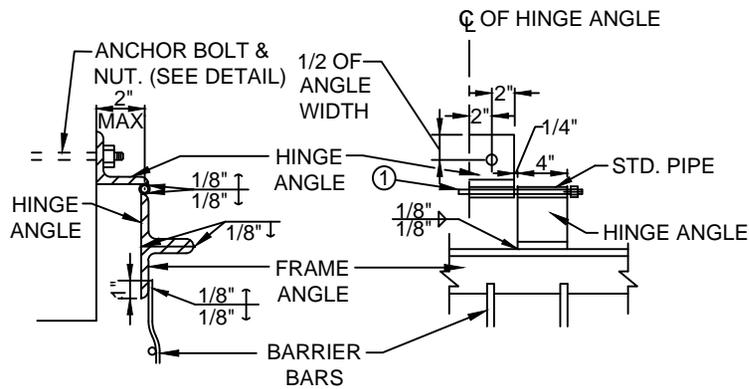
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**STORM SEWER OUTFALL ACCESS  
BARRIER**

DETAIL NO:

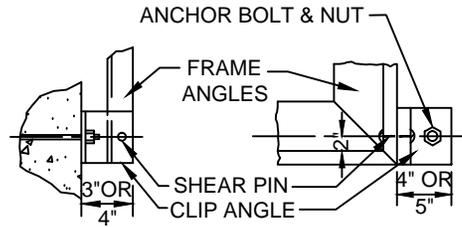
**5-04A**



**SECTION**

**HINGE INSTALLATION DETAIL**

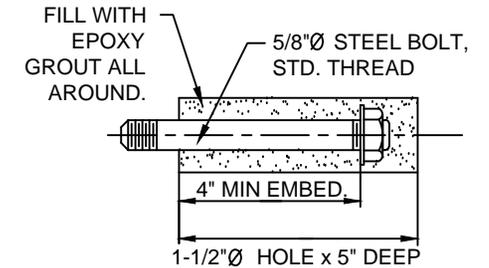
**FRONT ELEV.**



**SIDE ELEV.**

**FRONT ELEV.**

**CLIP ANGLE & SHEAR PIN DETAIL**



**ANCHOR BOLT**

**DETAIL**

**CONSTRUCTION NOTES:**

① HINGE PIN SHALL BE STOCKED WITH BOLTS, THREAD BOTH ENDS SO NUT & LOCK WASHER ARE FLUSH WITH LOWER ANGLE. EXPOSED THREADS SHALL NOT BE UPSET OR DAMAGED. COAT PIN WITH WATERPROOF GREASE BEFORE INSTALLATION.

**NOTES:**

1. ALL SHEAR PIN ANGLES SHALL FIT SNUGLY AND TRULY FACE TO FACE. COVER WITH WATERPROOF GREASE PRIOR TO INSTALLATION OF PIN.
2. GALVANIZE ALL FERROUS PARTS AFTER FABRICATION
3. THE SHEAR PIN HOLES IN THE ANGLE SHALL BE DRILLED FOR A TIGHT FIT OF THE SHEAR PINS
4. FRAME AND HINGE ANGLES SHALL HAVE THE OUTSTANDING LEGS OUT FOR OUTLETS
5. ALL ANCHOR BOLTS SHALL BE 5/8"Ø ANCHOR BOLTS EMBEDDED 4" (MIN) INTO EPOXY GROUT
6. ALL SHEAR PINS ARE TO BE PEENED BOTH ENDS AFTER INSTALLATION
7. SHEAR PIN MATERIAL SHALL BE COMMERCIAL PURE ALUMINUM WIRE
8. SEE BARRIER SCHEDULE, DET. 5-06C FOR VARIABLE DIMENSIONS
9. COVER ALL MOVABLE CONTACT SURFACE WITH A COAT OF WATERPROOF GREASE PRIOR TO INSTALLATION
10. ALL BARRIER BARS TO BE 1/2" PLAIN

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**STORM SEWER OUTFALL ACCESS  
BARRIER**

DETAIL NO:

**5-04B**

SIZE OF OUTFALL CONDUIT	FRAME ANGLES (INCH)	SHEAR PIN CLIP ANGLES (INCH)	SHEAR PINS (INCH)	HINGE PINS (INCH)	HINGE ANGLES (INCH)	HINGE STD. PIPE (INCH)	* NO. OF EQUAL BARRIER BAR SPACES (HORIZ.)	NO. OF EQUAL BARRIER BAR SPACES (VERT.)	H (OUT TO OUT FRAME ANGLES)	* W (OUT TO OUT FRAME ANGLES)	A	B
30"	2 X 2 X ¼"	4 X 4 X ¼"	1-⅛"Ø	½"Ø	2 X 2 X ¼"	¾"	3	5	34"	20"	SINGLE HINGE CENTERED	
36"	2 X 2 X ¼"	4 X 4 X ¼"	1-⅛"Ø	¾"Ø	2-½" X 2-½" X ¼"	1"	4	6	40"	26"	SINGLE HINGE CENTERED	
42"	2 X 2 X ¼"	4 X 4 X ¼"	2-⅛"Ø	½"Ø	2 X 2 X ¼"	¾"	5	6	42"	32"	0	0
48"	3 X 3 X ⅞"	5 X 3 X ¼"	2-⅛"Ø	¾"Ø	2-½" X 2-½" X ¼"	1"	5	7	47"	38"	3"	1"
54"	3 X 3 X ⅞"	5 X 3 X ¼"	2-⅛"Ø	¾"Ø	2-½" X 2-½" X ¼"	1"	6	8	54"	44"	5"	3"
60"	3 X 3 X ⅞"	5 X 3 X ¼"	2-⅛"Ø	¾"Ø	2-½" X 2-½" X ¼"	1"	7	9	60"	50"	9"	4"
66"	3 X 3 X ⅞"	5 X 3 X ¼"	2-⅛"Ø	¾"Ø	2-½" X 2-½" X ¼"	1"	8	10	66"	56"	11"	6"
72"	4 X 4 X ⅝"	5 X 3 X ¼"	2-⅜"Ø	1"Ø	3 X 3 X ⅜"	1-¼"	9	11	73"	62"	15"	7"
78"	4 X 4 X ⅝"	5 X 3 X ¼"	2-⅜"Ø	1"Ø	3 X 3 X ⅜"	1-¼"	10	11	79"	68"	17"	9"
84"	4 X 4 X ⅝"	5 X 3 X ¼"	2-⅜"Ø	1"Ø	3 X 3 X ⅜"	1-¼"	11	13	86"	74"	21"	10"
90"	4 X 4 X ⅝"	5 X 3 X ¼"	2-⅜"Ø	1"Ø	3 X 3 X ⅜"	1-¼"	12	13	92"	80"	23"	12"
96"	4 X 4 X ⅝"	5 X 3 X ¼"	2-⅜"Ø	1"Ø	3 X 3 X ⅜"	1-¼"	12	14	98"	86"	29"	12"

\* NOTE: ADJUST THESE VALUES FOR SKEWED CONDUITS. PROVIDE 5" MAXIMUM OPENING AT EACH SIDE AND BETWEEN BARS.

DATE REVISED: 8/2016

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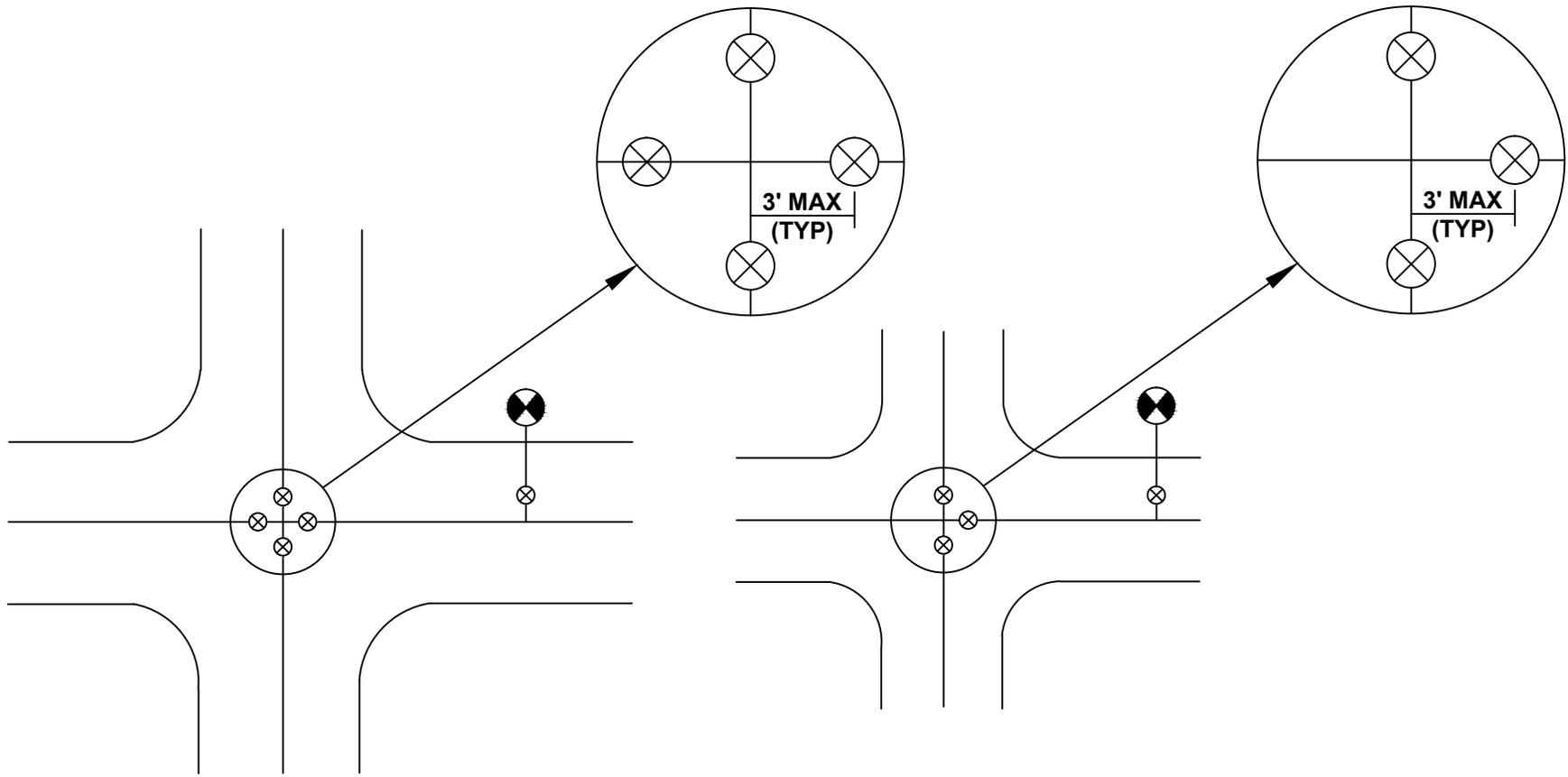


## BARRIER SPECIFICATIONS SCHEDULE

DETAIL NO:

5-04C





**PARKWAYS AND ARTERIAL STREETS**

**LOCAL AND COLLECTOR STREETS**

DATE REVISED: 8/2016

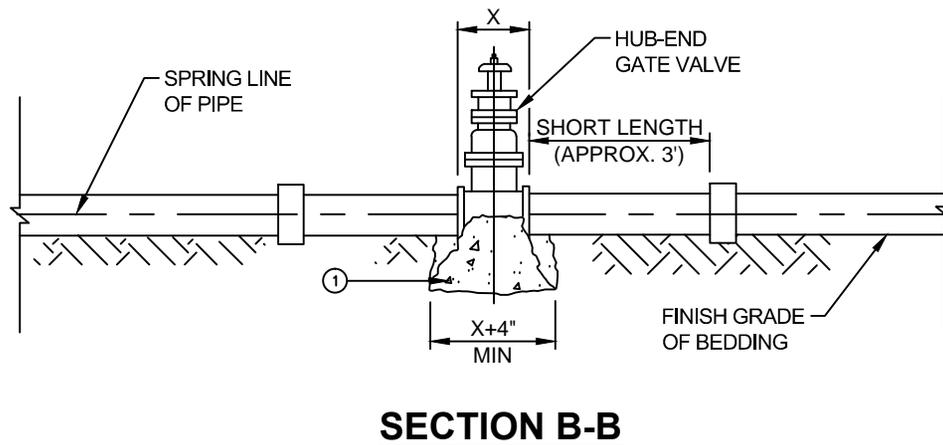
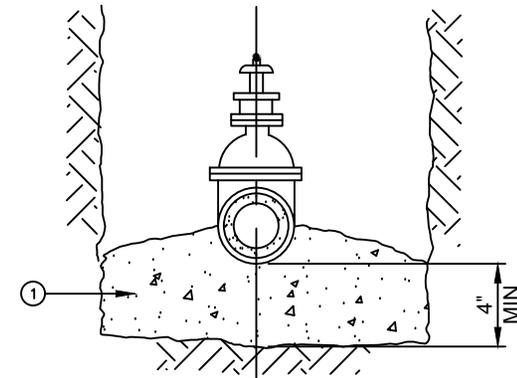
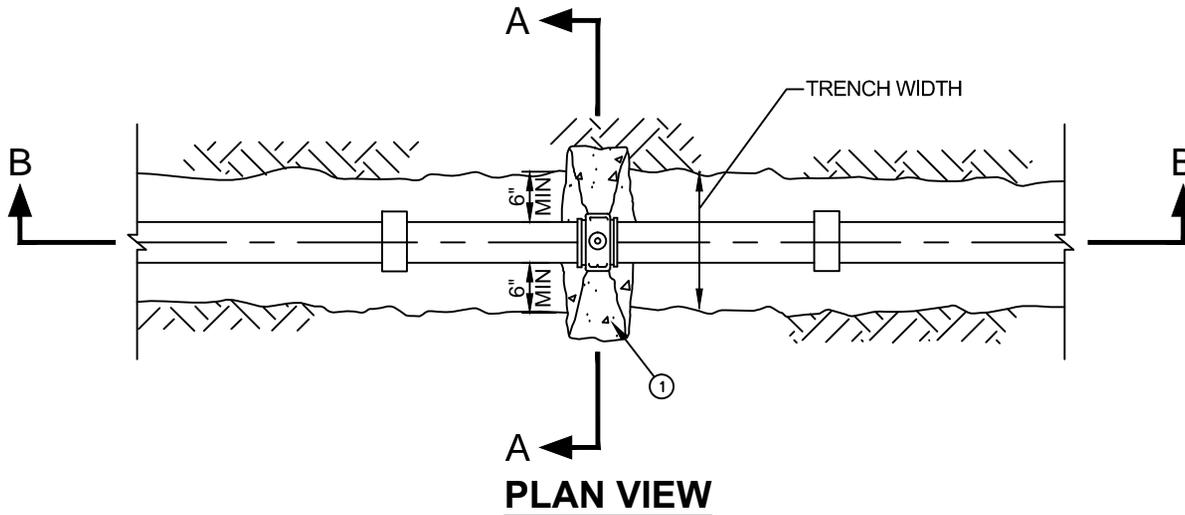
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**TYPICAL VALVE LOCATIONS**

DETAIL NO:

**6-01**



**NOTES:**

1. THIS DETAIL COVERS WATER GATE VALVES, 4" TO 16" INCLUSIVE, REGARDLESS OF TYPE OF PIPE USED. LARGER LINES TO BE DETAILED ON PLANS.

**CONSTRUCTION NOTES:**

1. CONCRETE SHALL BE CLASS "C" CONCRETE PER MAG SECTION 725. FORMS ARE REQUIRED TO KEEP CLEAR OF JOINTS.

DATE REVISED: 8/2016

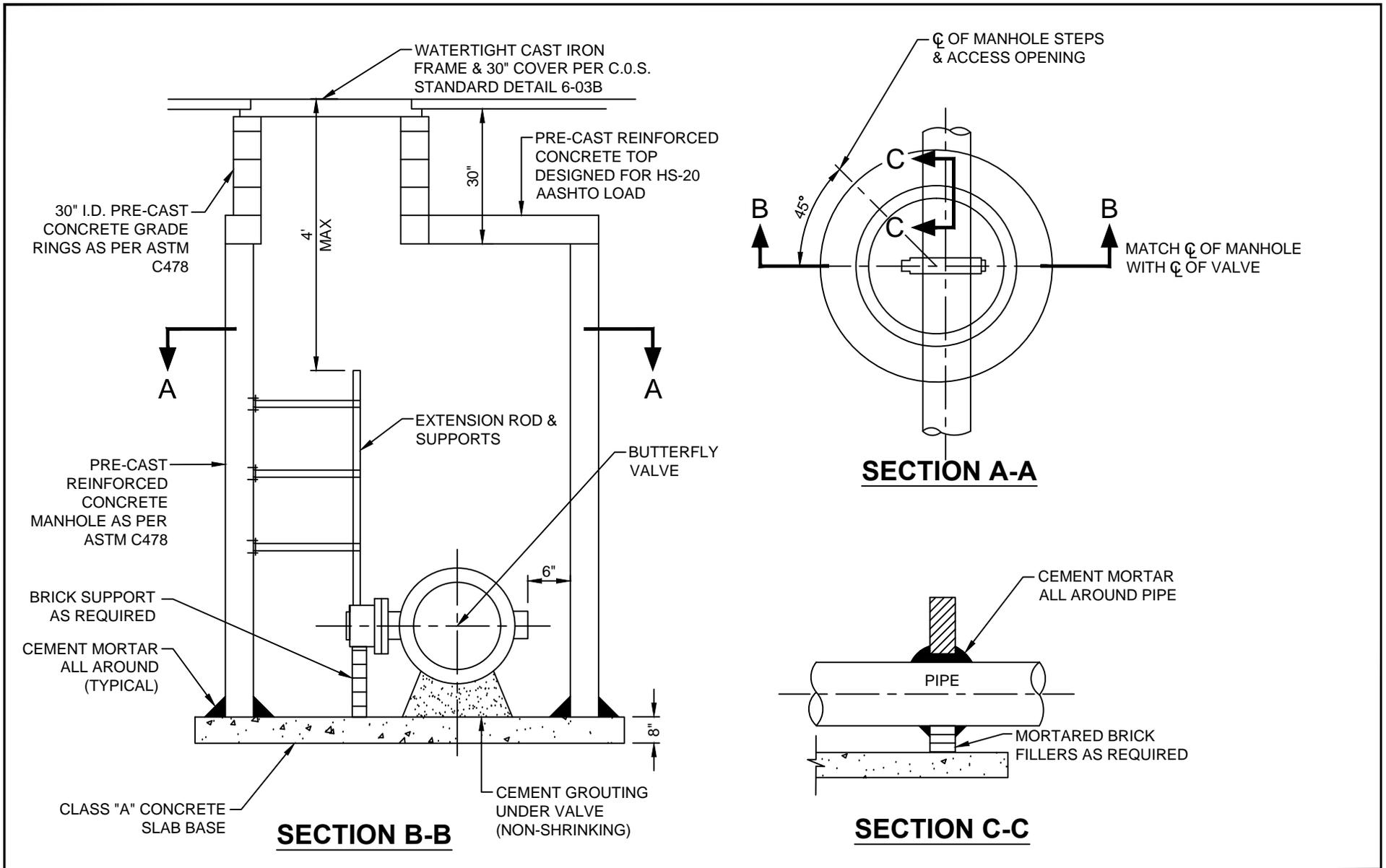
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**BLOCKING FOR WATER  
GATE VALVES**

DETAIL NO:

6-02



DATE REVISED: 8/2016

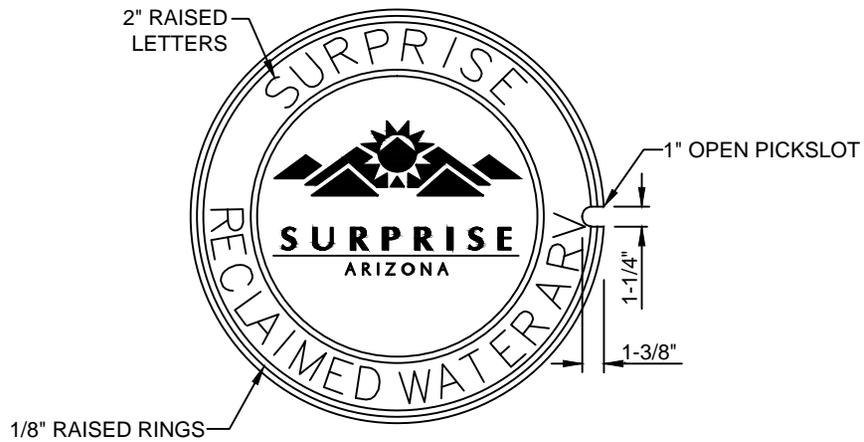
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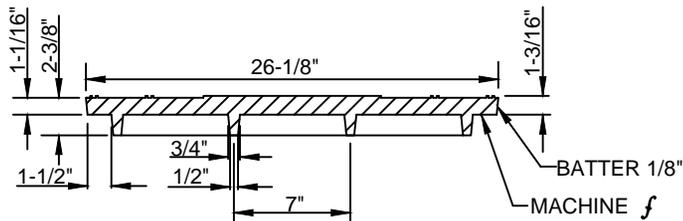
# MANHOLE FOR BUTTERFLY VALVES

DETAIL NO:

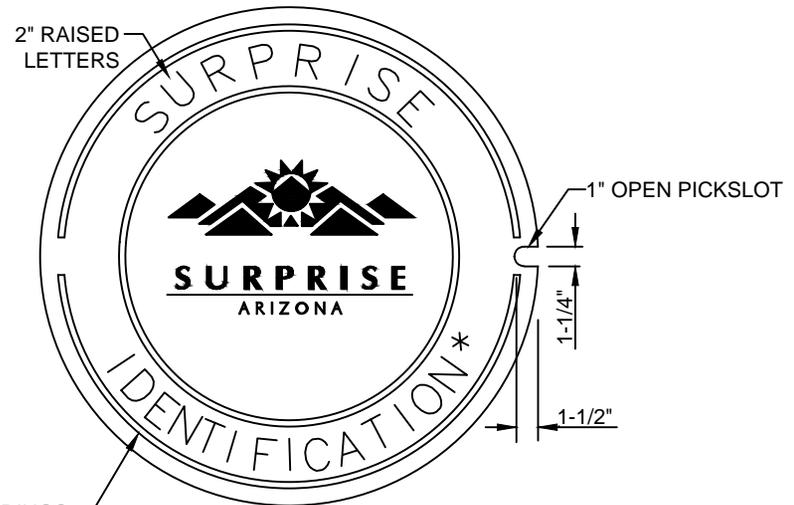
6-03A



**TOP VIEW**

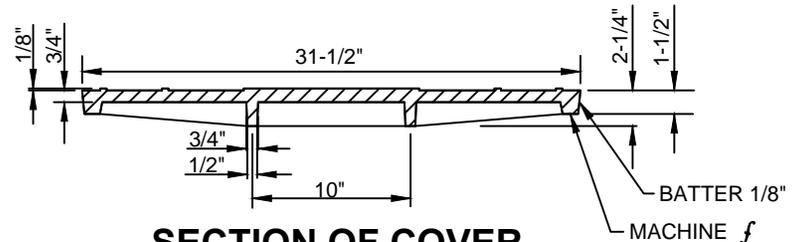


**SECTION OF COVER  
24" MANHOLE COVER**



**TOP VIEW**

\* "WATER" OR "RECLAIMED WATER" AS APPROPRIATE



**SECTION OF COVER  
30" MANHOLE COVER**

**NOTES:**

1. MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B, UNPAINTED.
2. THE TOTAL WIDTH OF INDIVIDUAL LETTERS TO BE SUCH THAT LETTERS AND WORDS ARE EQUALLY SPACED AND BALANCED.
3. LETTERS TO BE 2" IN HEIGHT AND RAISED 1/8" ABOVE LEVEL OF COVER. TYPE OF LETTERS TO BE SUBMITTED FOR APPROVAL.
4. WEIGHT OF CASTINGS SHALL BE NO MORE THAN 2% LESS THAN WEIGHT SPECIFIED. CASTINGS SHALL CONFORM TO MAG SECTION 787.
5. MANHOLE FRAME SHALL BE PER MAG STD DTL 424, AS APPLICABLE PER SIZE.

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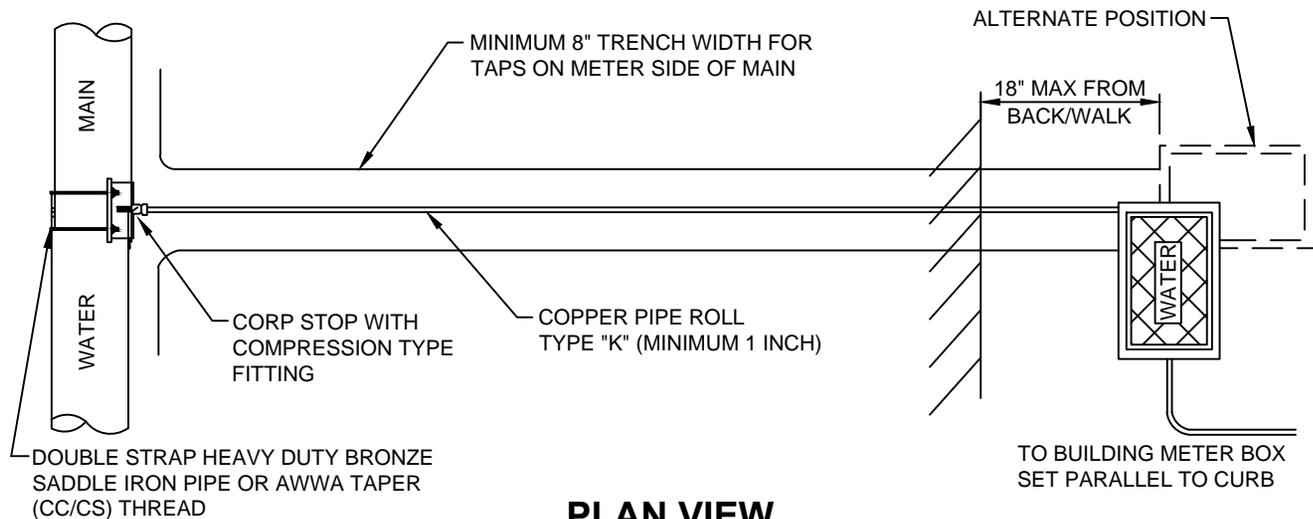
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**BUTTERFLY AND AIR RELEASE  
VALVES MANHOLE COVER**

DETAIL NO:

**6-03B**



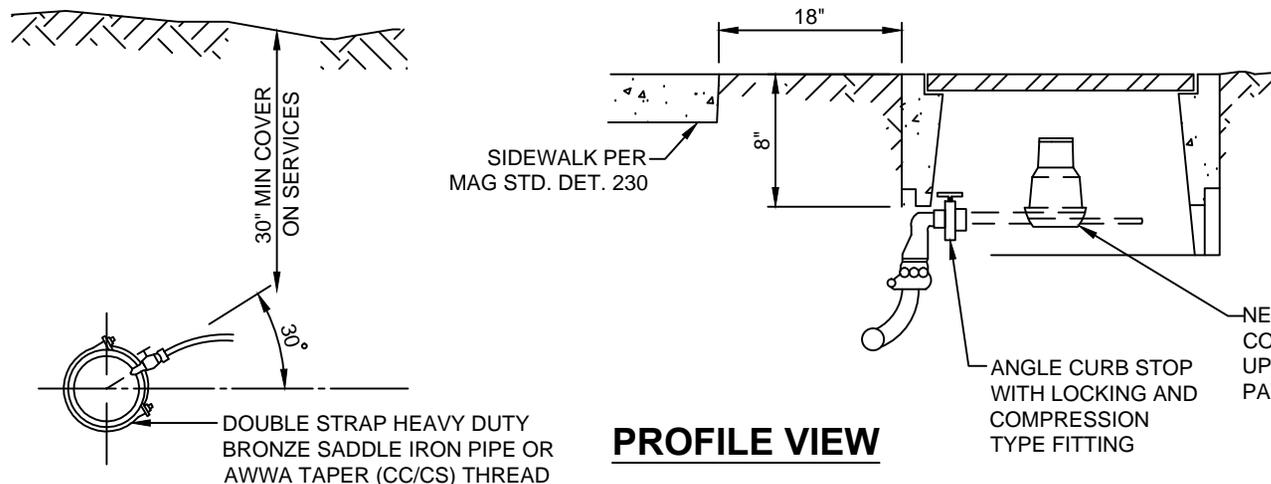
**PLAN VIEW**

NEPTUNE METER (SIZE AND TYPE)	TOTAL LENGTH* (INCHES)
5/8" T-10	10
3/4" T-10	11.625
1" T-10	13.5
1 1/2" HP TURBINE	12.88
2" HP TURBINE	16.88

\*LENGTHS DO NOT INCLUDE GASKETS

**NOTES:**

1. ALL TAPS MUST BE MADE BY USING A SERVICE SADDLE AS SHOWN.
2. IF CONTRACTOR IS TO TAP THE MAIN AND INSTALL WATER SERVICES THEY SHALL INCLUDE THE CORP STOP, SERVICE PIPE, APPURTENANT FITTINGS, CURB STOP, METER BOX AND COVER.
3. TAP SIZE SHALL MATCH METER SIZE.



**PROFILE VIEW**

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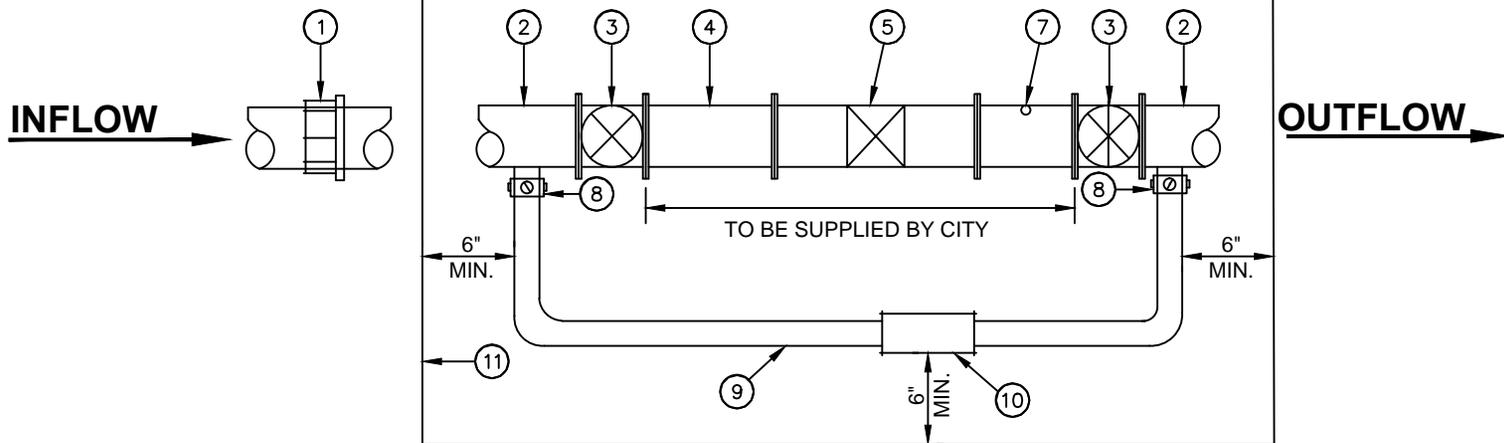
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**WATER SERVICE CONNECTIONS - 2" AND SMALLER**

DETAIL NO:

6-05



**PLAN VIEW**

**NOTES:**

- 1. SUPPORTS UNDER ALL VALVES AND METER PER MAG STD. DET. 345-1. VAULT TOP TO BE EQUIPPED WITH A 36" X 60" TORSION SPRING ASSISTED DOOR. UTILITY VAULT CO. CATALOG NO. 3660, OR APPROVED EQUAL.

**CONSTRUCTION NOTES:**

- ① ADAPTER, FLANGED TO MECHANICAL JOINT FOR A.C.P. A 4" X 3" REDUCER IS REQUIRED FOR A 3" METER. REDUCER SHALL BE BETWEEN 4" SUPPLY PIPE AND 3" GATE VALVE.
- ② D.I.P. SPOOL, 12" FLANGED WITH 2" TAP.
- ③ R.S. GATE VALVE, FLANGED, WITH HAND WHEEL, LEFT TO OPEN.
- ④ SPOOL, FLANGE TO FLANGE.
- ⑤ METER, TO BE SUPPLIED BY CITY.
- ⑦ SPOOL, FLANGE TO FLANGE WITH TEST PORT.
- ⑧ CORPORATION STOP, 2" (BALL TYPE).
- ⑨ 2" HARD (K) COPPER.
- ⑩ 2" FLEX COUPLING.
- ⑪ PRE-CAST VAULT (UTILITY VAULT CO. CATALOG NO. 3660 OR APPROVED EQUAL).

METER SIZE (INCHES)	TOTAL LENGTH (INCHES)
3	36 1/2
4	50 1/2
6	78 1/2
8	92 1/2

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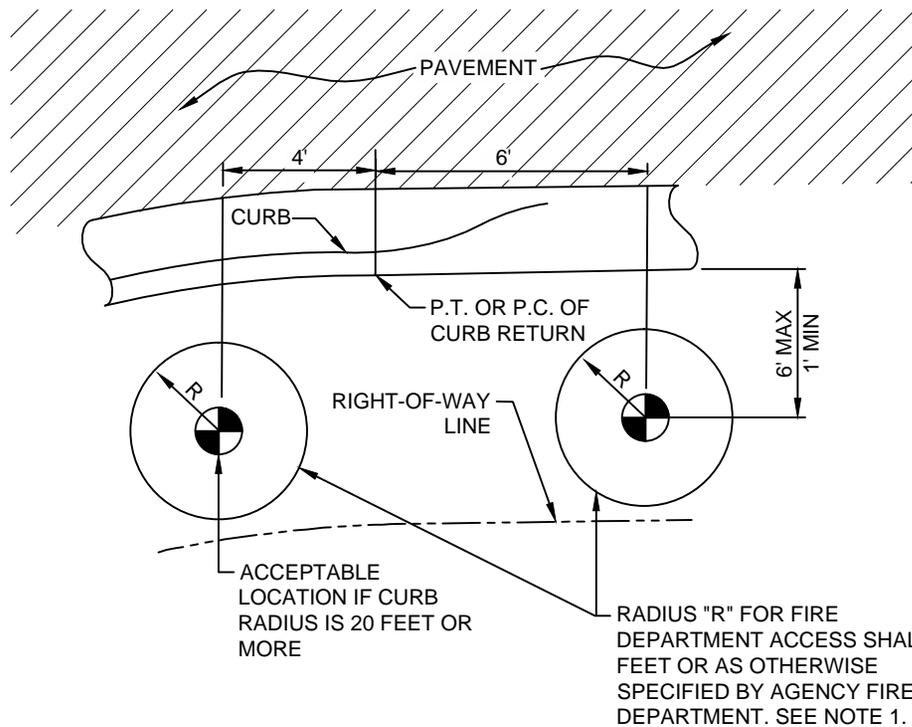
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**METER ASSEMBLY  
3" AND LARGER**

DETAIL NO:

**6-07**



## NOTES:

1. NO OBSTRUCTION WITHIN 3 FEET OF HYDRANT. OBSTRUCTIONS SUCH AS UTILITY POLES, STREET SIGNS, IRRIGATION BOXES, FENCES, LANDSCAPING, ETC., MUST NOT BE PLACED BETWEEN THE CURB AND HYDRANT AND WITHIN THE RADIUS FOR FIRE DEPARTMENT ACCESS. ANY DEVIATIONS REQUIRE SURPRISE FIRE DEPARTMENT APPROVAL.
2. REFER TO MAG STANDARD DETAIL 122 FOR FIRE HYDRANT MARKER LOCATIONS.
3. FOR ROADWAYS WITHOUT CURBS, REFER TO AASHTO, A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, CHAPTER 5, "HORIZONTAL CLEARANCES TO OBSTRUCTIONS" UNDER LOCAL RURAL ROADS.
4. FIRE HYDRANTS SHALL NOT BE LOCATED IMMEDIATELY ABOVE RECLAIMED WATER.
5. FOR ROADWAYS WITH RAISED MEDIANS PLACE HYDRANTS AT 1000' SPACING ON EACH SIDE OF ROADWAY. STAGGER SPACING SIDE TO SIDE.

## TYPICAL FIRE HYDRANT LOCATIONS

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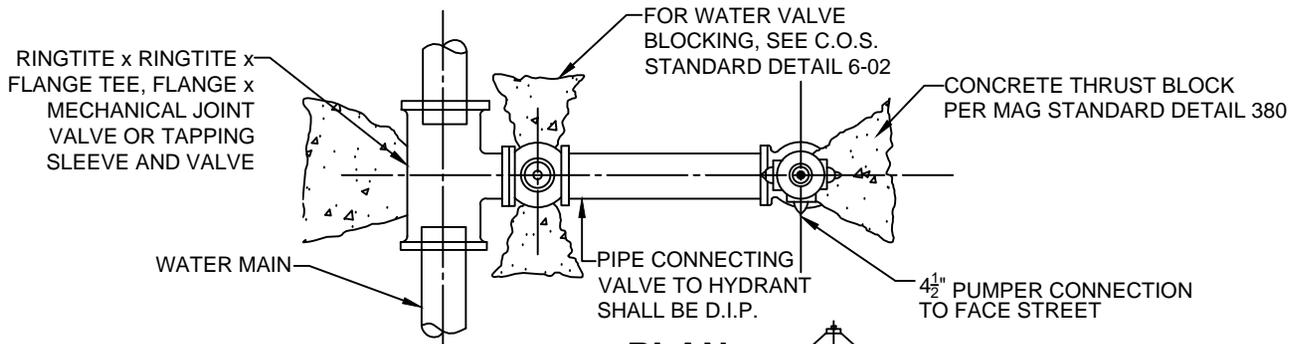
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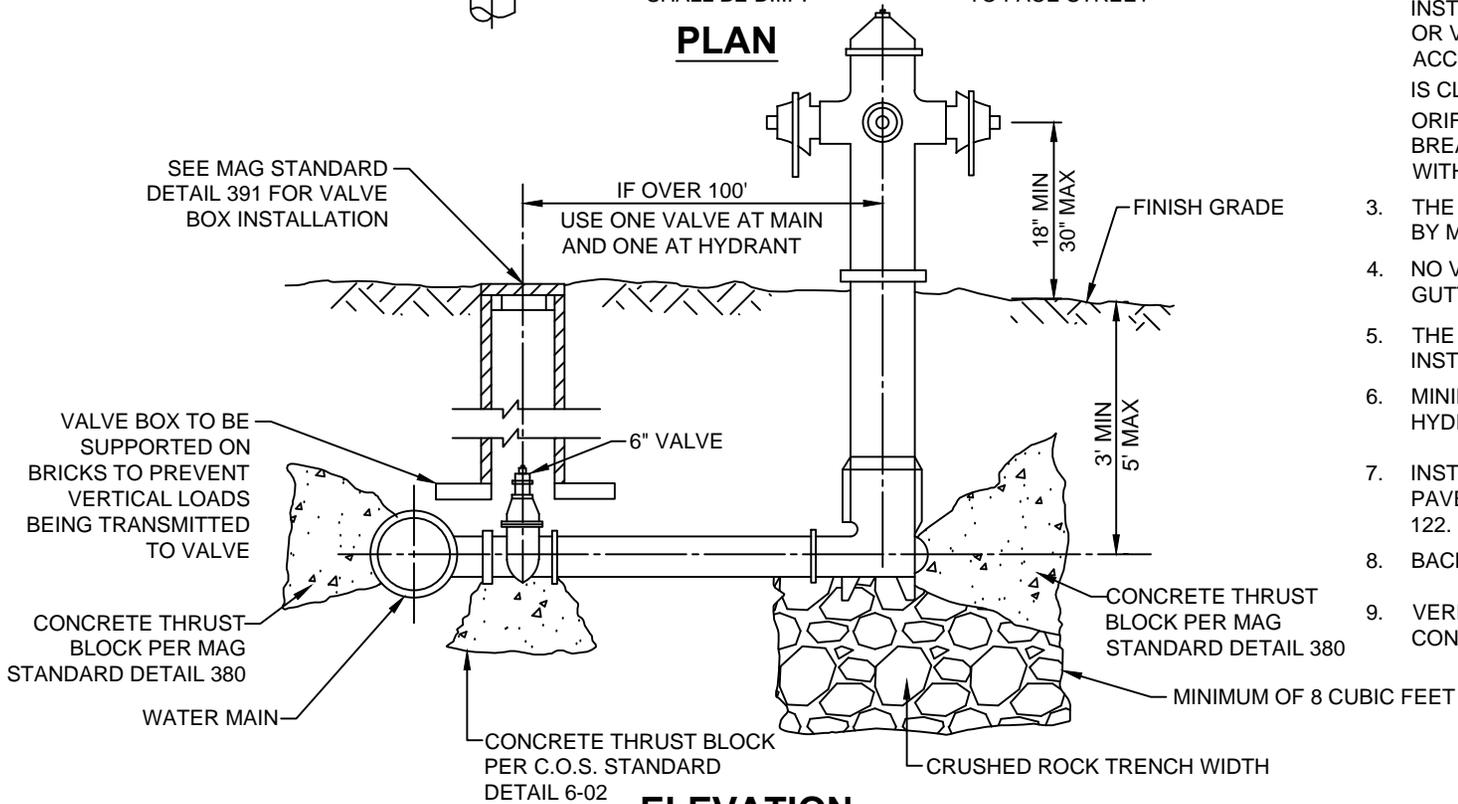
## LOCATION FOR NEW FIRE HYDRANTS

DETAIL NO:

6-08



**PLAN**



**ELEVATION**

**NOTES:**

1. ALL JOINTS SHALL BE RESTRAINED.
2. APPROVED HYDRANTS INCLUDE: MUELLER "CENTURIAN", CLOW "MEDALLION", WATEROUS "PACER WB67-250", AND WATERMASTER "5CD250" WITH THE TYPICAL "T" DESIGN AND TWO 2 1/2" NATIONAL STANDARDS THREAD (NST) ORIFICES AND ONE 4 1/2" NST ORIFICE, INSTALLED WITH EITHER A HORIZONTAL OR VERTICAL SHOE. THE ONLY ACCEPTABLE WET BARREL FIRE HYDRANT IS CLOW MODEL 860 WITH TWO 2 1/2" NST ORIFICES AND ONE 4 1/2" NST ORIFICE. BREAK-OFF CHECK VALVE SHALL BE USED WITH WET BARREL HYDRANT.
3. THE 6" GATE VALVE SHALL BE FLANGED BY MECHANICAL JOINT.
4. NO VALVES ARE TO BE IN CONCRETE GUTTER.
5. THE 4 1/2" PORT ON THE HYDRANT SHALL BE INSTALLED FACING THE STREET.
6. MINIMUM 3' RADIUS CLEARANCE AROUND HYDRANT.
7. INSTALL FIRE HYDRANT MARKER ON PAVEMENT PER MAG STANDARD DETAIL 122.
8. BACKFILL WITH NATIVE SOIL.
9. VERIFY WEEP HOLES ARE CLEAR OF CONCRETE.

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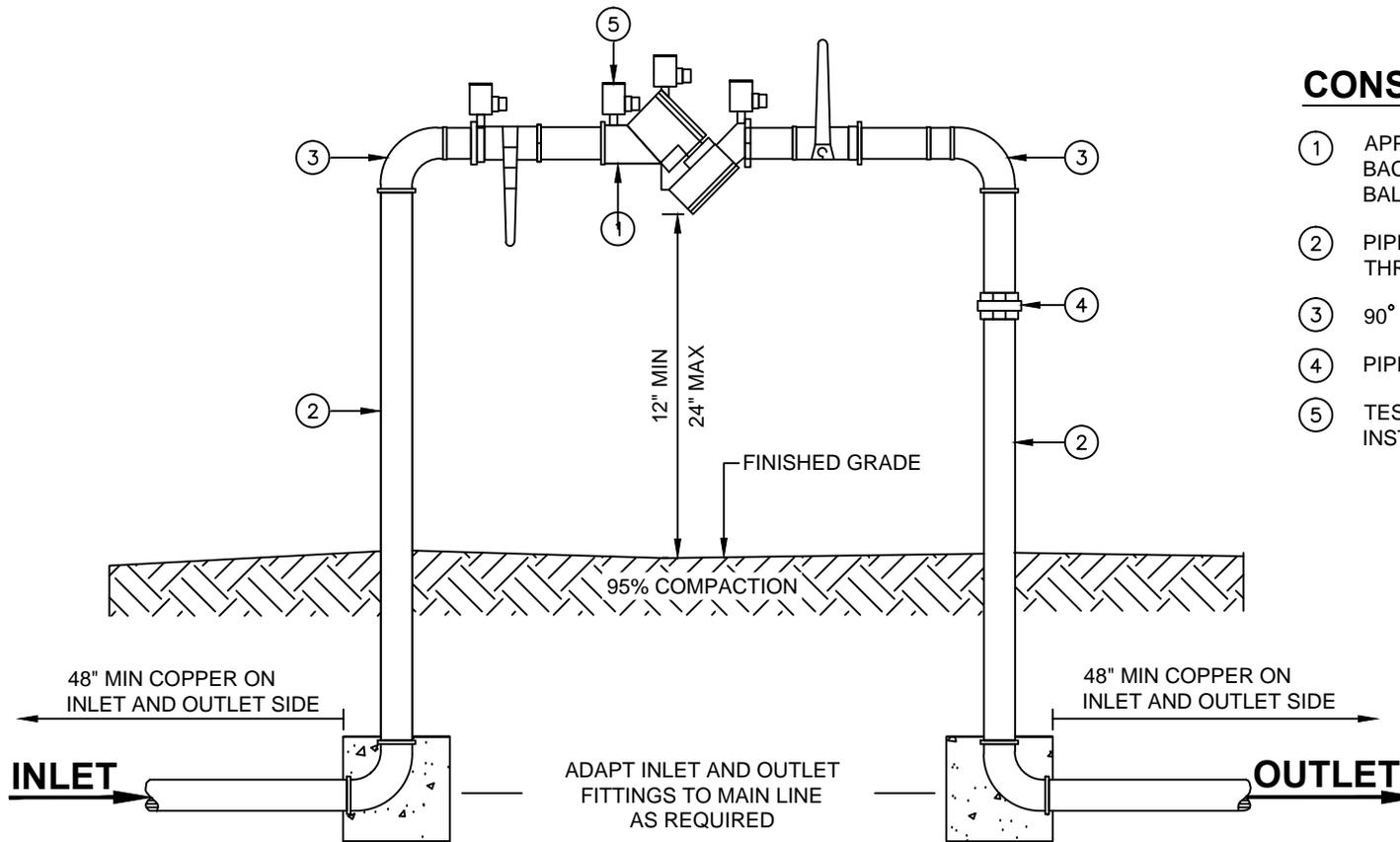
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**METHOD OF SETTING FIRE  
HYDRANTS**

DETAIL NO:

**6-09**



**SIDE VIEW**

**CONSTRUCTION NOTES:**

- ① APPROVED DOUBLE CHECK VALVE BACKFLOW PREVENTION ASSEMBLY, BALL VALVES INCLUDED.
- ② PIPE SPOOL, TYPE "K" COPPER, 3/4" THROUGH 2-1/2".
- ③ 90° COPPER ELL, 3/4" THROUGH 2-1/2".
- ④ PIPE UNION, BRASS OR COPPER.
- ⑤ TEST COCKS WITH BRASS PLUGS INSTALLED (4 REQUIRED).

**NOTES:**

- 1. CONTACT CITY OF SURPRISE FOR THE LATEST LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES AND CERTIFIED TESTERS.
- 2. BACKFLOW PREVENTERS MUST BE TESTED BY A CERTIFIED TESTER BEFORE FINAL APPROVAL IS ISSUED.
- 3. COPPER FITTINGS SHALL BE CONNECTED WITH LEAD FREE SOLDER JOINTS.
- 4. SEE CITY OF SURPRISE STANDARD DETAIL 6-14 FOR METAL CAGE DETAILS.
- 5. ALL TEST COCKS SHALL HAVE BRASS PLUGS OR TEST COCK ADAPTERS AND CAPS IN PLACE. TEST COCKS SHALL BE USED FOR TESTING ONLY.
- 6. ALL BRASS SHALL MEET COS LOW LEAD STANDARD AND SHALL BE ON THE APPROVED LIST BY USC-FCCCHR (EDS 6.15.8).
- 7. BACKFLOW PREVENTERS SHALL BE PAINTED "ROLLING STONE #CLC 1249W" AS DISTRIBUTED BY FRAZEE PAINT, OR APPROVED EQUAL, OR A COLOR TO MATCH THE BUILDING. DO NOT PAINT THE NAME PLATE OR ANY BRASS PARTS ON THE ASSEMBLY

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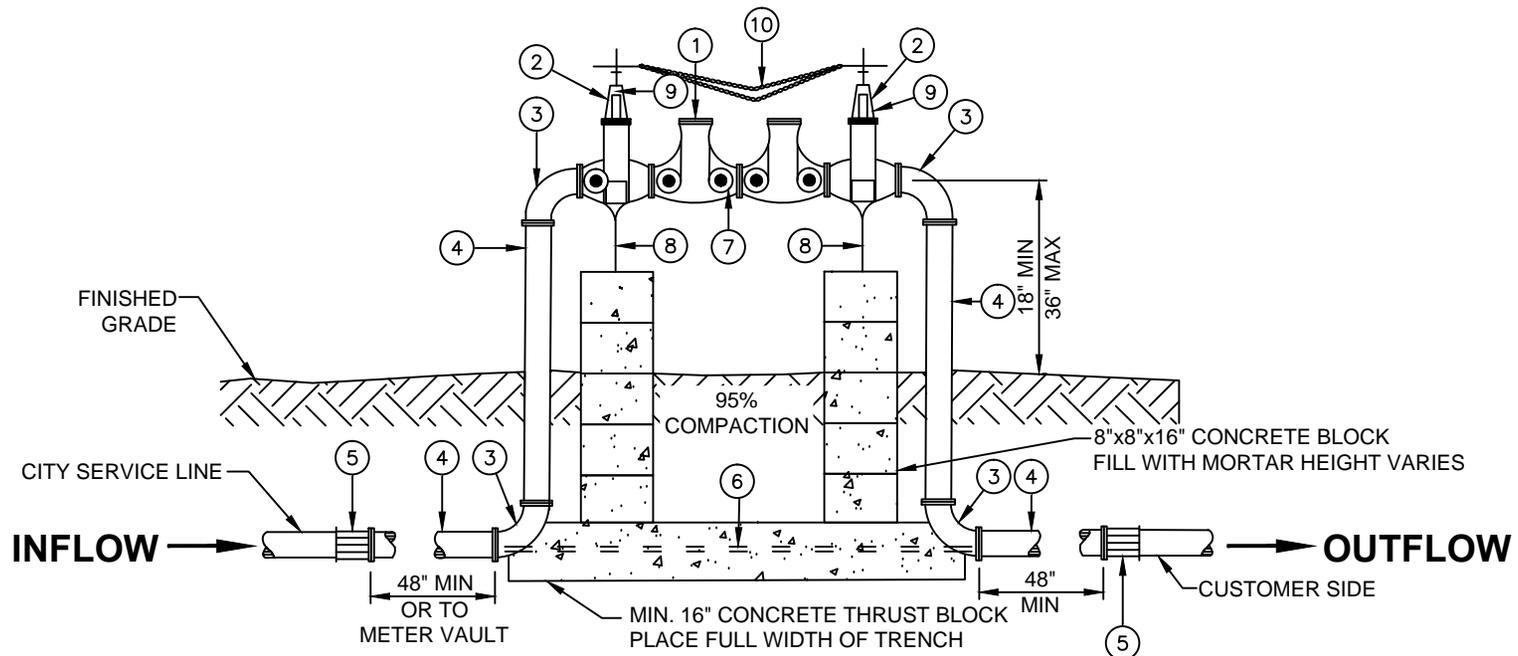
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**DOUBLE CHECK VALVE  
BACKFLOW PREVENTION  
ASSEMBLIES - 2 1/2" AND SMALLER**

DETAIL NO:  
**6-10**



**NOTES:**

1. CONTACT CITY OF SURPRISE FOR THE LATEST LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES AND CERTIFIED TESTERS.
2. BACKFLOW PREVENTERS MUST BE TESTED BY A CERTIFIED TESTER BEFORE FINAL APPROVAL IS ISSUED.
3. BACKFLOW PREVENTERS SHALL BE PAINTED "ROLLING STONE #CLC 1249W" AS DISTRIBUTED BY FRAZEE PAINT, OR APPROVED EQUAL, OR A COLOR TO MATCH THE BUILDING. DO NOT PAINT THE NAME PLATE OR ANY BRASS PARTS ON THE ASSEMBLY.
4. BACKFLOW PREVENTERS ADJACENT TO BUILDINGS MUST BE PROTECTED BY A SCREENING WALL. ALL OTHERS SHALL BE PROTECTED BY GUARD POSTS. SEE DETAIL 6-16.
5. ALL BRASS SHALL MEET COS LOW-LEAD STANDARDS AND SHALL BE ON THE APPROVED LIST BY USC-FCCCHR (EDS 6.15.8).

**CONSTRUCTION NOTES:**

- ① APPROVED DOUBLE CHECK VALVE BACKFLOW PREVENTION ASSEMBLY.
- ② RESILIENT SEATED GATE VALVE O.S. & Y. (FIRE LINE CONNECTION) N.R.S. (NON FIRE LINE).
- ③ 90° ELL FLANGED D.I.P. 3" THRU 10".
- ④ PIPE SPOOL FLANGED D.I.P. 3" THRU 10".
- ⑤ FLANGED ADAPTER (WHEN REQUIRED).
- ⑥ 3/4" ZINC COATED THREADED ROD, BOLT TO FLANGES AS SHOWN, TYPICAL BOTH SIDES.
- ⑦ TEST COCKS WITH BRASS PLUGS INSTALLED (4 REQUIRED).
- ⑧ ADJUSTABLE METAL PIPE SUPPORTS (ASSEMBLIES 4" AND LARGER).
- ⑨ BACKFLOW PREVENTERS ON FIRE LINES SHALL REQUIRE TAMPER SWITCHES ON THE SHUT-OFF VALVES.
- ⑩ BACKFLOW PREVENTERS SHALL BE CHAINED AND LOCKED.

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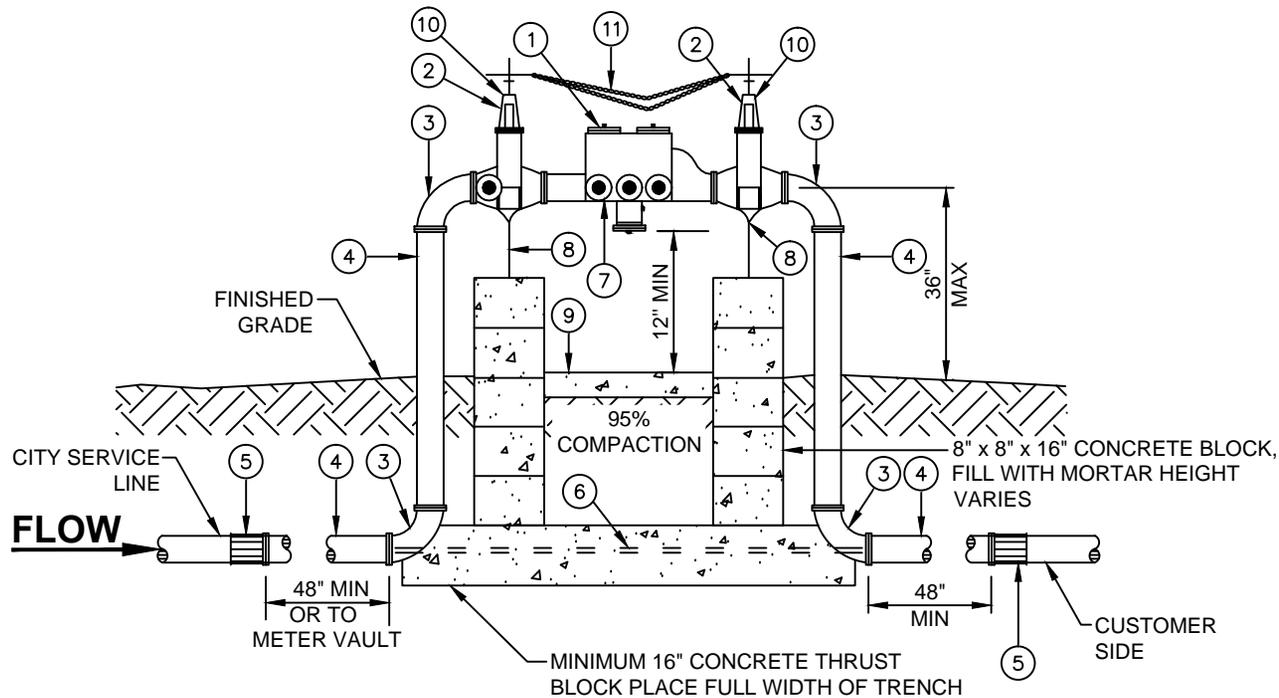
**DOUBLE CHECK VALVE  
BACKFLOW PREVENTION  
ASSEMBLIES - 3" AND LARGER**

DETAIL NO:

**6-11**

## CONSTRUCTION NOTES:

- ① APPROVED REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY.
- ② RESILIENT SEATED GATE VALVE. O.S. & Y. (FIRE LINE CONNECTION) N.R.S. (NON FIRE LINE).
- ③ 90° ELL FLANGED D.I.P. 3" THRU 10".
- ④ PIPE SPOOL FLANGED D.I.P. 3" THRU 10".
- ⑤ FLANGED ADAPTER (WHEN REQUIRED).
- ⑥ 3/4" ZINC COATED THREADED ROD, BOLT TO FLANGES AS SHOWN, TYPICAL BOTH SIDES.
- ⑦ TEST COCKS WITH BRASS PLUGS INSTALLED (4 REQUIRED).
- ⑧ ADJUSTABLE METAL PIPE SUPPORTS (ASSEMBLIES 4" AND LARGER).
- ⑨ CONCRETE SPLASH PAD 4" THICK BY MINIMUM 18" WIDE REQUIRED BENEATH 4" AND LARGER ASSEMBLIES.
- ⑩ BACKFLOW PREVENTERS ON FIRE LINES SHALL REQUIRE TAMPER SWITCHES ON THE SHUT OFF VALVES.
- ⑪ BACKFLOW PREVENTER SHALL BE CHAINED AND LOCKED .



## NOTES:

1. CONTACT CITY OF SURPRISE FOR THE LATEST LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES AND CERTIFIED TESTERS.
2. BACKFLOW PREVENTERS MUST BE TESTED BY A CERTIFIED TESTER BEFORE FINAL APPROVAL IS ISSUED.
3. BACKFLOW PREVENTERS SHALL BE PAINTED "ROLLING STONE #CLC 1249W" AS DISTRIBUTED BY FRAZEE PAINT, OR APPROVED EQUAL, OR A COLOR TO MATCH THE BUILDING. DO NOT PAINT THE NAME PLATE OR ANY BRASS PARTS ON THE ASSEMBLY
4. BACKFLOW PREVENTERS ADJACENT TO BUILDINGS MUST BE PROTECTED BY A SCREENING WALL. ALL OTHERS SHALL BE PROTECTED BY GUARD POSTS. SEE DETAIL 6-16.
5. ALL BRASS SHALL MEET COS LOW-LEAD STANDARDS AND SHALL BE ON THE APPROVED LIST BY USC-FCCCHR.

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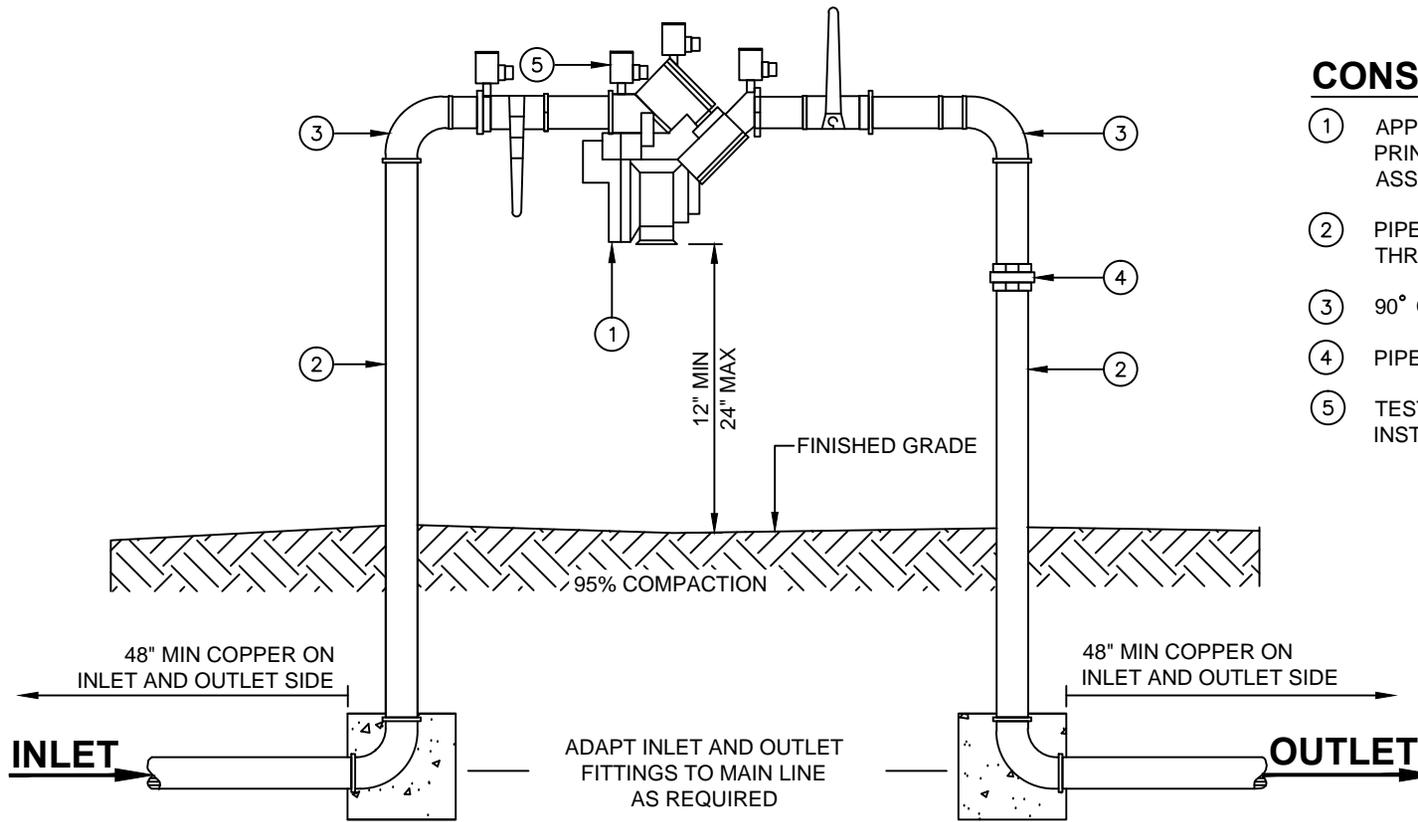
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# REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLIES - 3" AND LARGER

DETAIL NO:

6-12



**CONSTRUCTION NOTES:**

- ① APPROVED REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY, BALL VALVES INCLUDED .
- ② PIPE SPOOL, TYPE "K" COPPER, 3/4" THROUGH 2-1/2".
- ③ 90° COPPER ELL, 3/4" THROUGH 2-1/2".
- ④ PIPE UNION, BRASS OR COPPER.
- ⑤ TEST COCKS WITH BRASS PLUGS INSTALLED (4 REQUIRED).

**SIDE VIEW**

**NOTES:**

- 1. CONTACT CITY OF SURPRISE FOR THE LATEST LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES AND CERTIFIED TESTERS.
- 2. BACKFLOW PREVENTERS MUST BE TESTED BY A CERTIFIED TESTER BEFORE FINAL APPROVAL IS ISSUED.
- 3. COPPER FITTINGS SHALL BE CONNECTED WITH LEAD-FREE SOLDER JOINTS.
- 4. SEE CITY OF SURPRISE STANDARD DETAIL 6-14 FOR METAL CAGE DETAILS.
- 5. ALL BRASS SHALL MEET COS LOW LEAD STANDARDS AND SHALL BE ON THE APPROVED LIST BY USC-FCCCHR (EDS 6.15.8).

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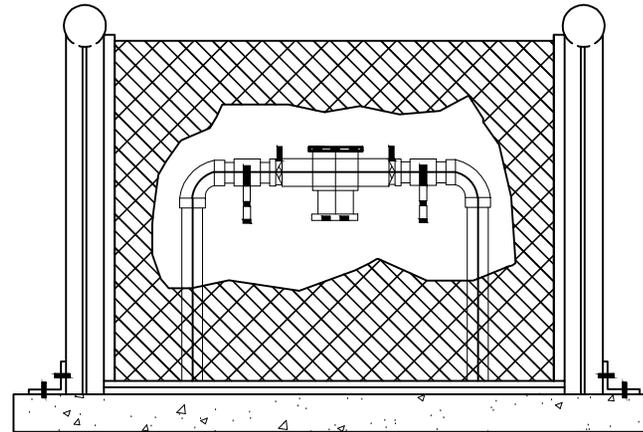
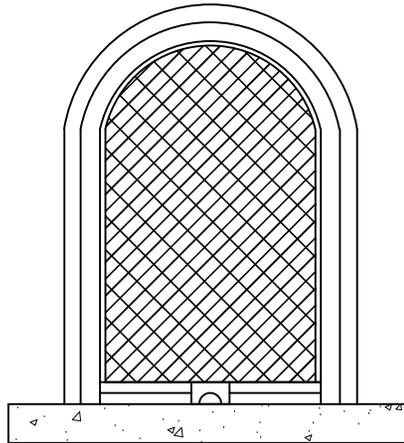
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**REDUCED PRESSURE PRINCIPLE  
BACKFLOW PREVENTION  
ASSEMBLIES - 2 1/2" AND SMALLER**

DETAIL NO:

**6-13**



**NOTES:**

1. SET EYEBOLT WITH BOTTOM OF CIRCLE FLUSH WITH CONCRETE BASE. THEN EYEBOLT CANNOT BE TURNED WHEN BRACKET IS IN PLACE.
2. BOLT BRACKETS TO ENCLOSURE ON ENDS OR BOTH SIDES. USE 1/4" x 1-1/4" TAMPER-PROOF BOLTS WITH HEX NUTS AND WASHERS PROVIDED.
3. SUGGESTED PAD DIMENSIONS - 32" L x 18" W x 3-3/4" THICK.
4. FOR BACKFLOW PREVENTION ASSEMBLIES CONNECTED TO THE RECLAIMED WATER SYSTEM. COLOR OF CAGE SHALL BE PAINTED PURPLE AND TAGGED FOR "RECLAIMED WATER". OTHERWISE, COLOR OF CAGE SHALL BE PAINTED "ROLLING STONE #CLC 1249W" AS DISTRIBUTED BY FRAZEE PAINT, OR APPROVED EQUAL, OR A COLOR TO MATCH THE BUILDING.
5. ALL A/C BOLT SHALL BE IN ENCLOSED TO PROTECT EYEBOLT AND LOCK.

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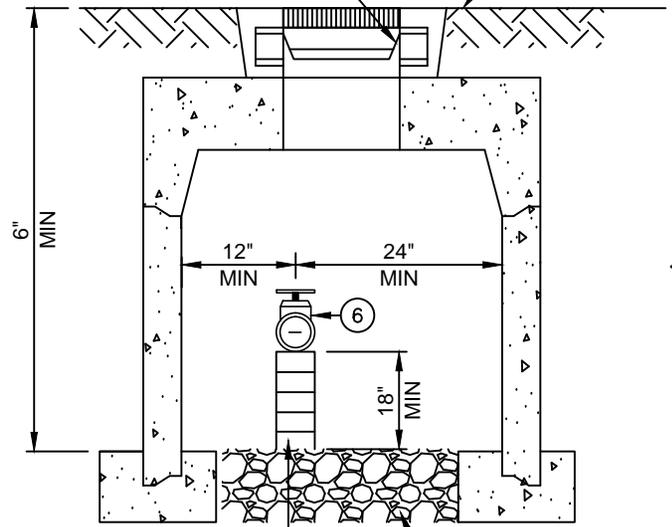


**METAL CAGE FOR REDUCED PRESSURE  
PRINCIPAL BACKFLOW PREVENTION  
ASSEMBLIES - 2 1/2" OR LESS**

DETAIL NO:

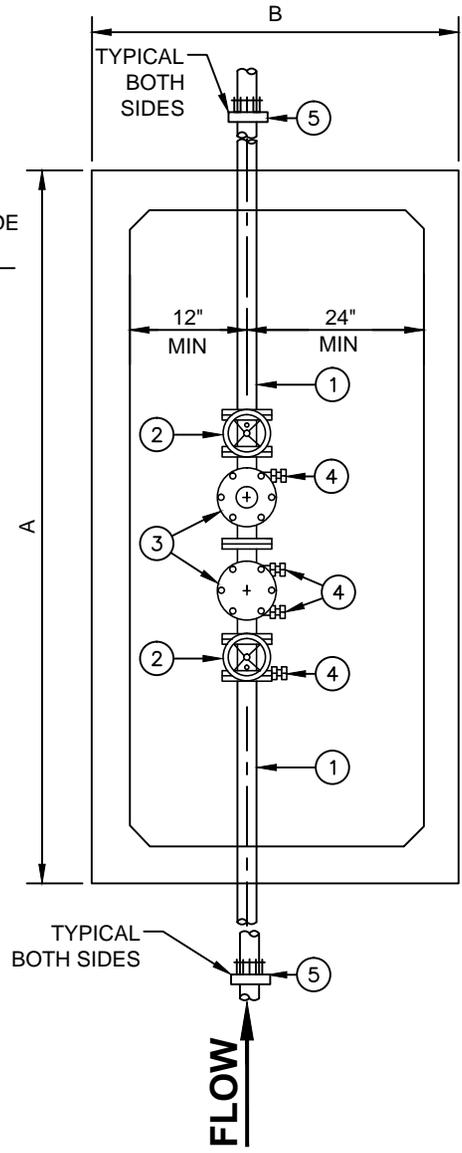
6-14

FOR VAULT CONSTRUCTION  
SEE MAG STD. DET. 321



8" x 8" x 16" CONC. BLOCK  
FILL WITH MORTAR - HEIGHT  
MAY VARY LOCATED UNDER  
EACH GATE VALVE

6" CRUSHED ROCK



**CONSTRUCTION NOTES:**

- ① PIPE SPOOL (FLANGED D.I.P.).
- ② O.S. & Y. GATE VALVE (FIRE LINE CONNECTION)  
N.R.S. GATE VALVE (NON FIRE LINE CONNECTION).
- ③ APPROVED DOUBLE CHECK ASSEMBLY.
- ④ TEST COCKS (4 REQUIRED), SHALL BE FITTED  
WITH BRASS PLUGS.
- ⑤ FLANGED ADAPTER (WHEN REQUIRED), ONE ADAPTER  
MUST BE LOCATED INSIDE VAULT.
- ⑥ FIRE LINE CONNECTION SHALL BE TAMPER SWITCHED.

**NOTES:**

- 1. VAULT TOP TO BE EQUIPPED WITH A 36" x 60" TORSION  
SPRING ASSISTED DOOR. UTILITY VAULT CO. CATALOG  
NO. 3660, OR APPROVED EQUAL.

**VAULT DIMENSION TABLE**

ASSEMBLY SIZE	3" & 4"	6"	8"	10"
(A) O.D.	7'-4"	8'-8"	10'-8"	12'-0"
(B) O.D.	5'-4"	6'-8"	7'-4"	7'-4"

**ACCEPTABLE PRE-CAST VAULTS**

ASSEMBLY SIZE	UTILITY VAULT CO. CATALOG NUMBER. *
3"	4484
4"	5106
6"	612-5X

\*OR APPROVED EQUAL

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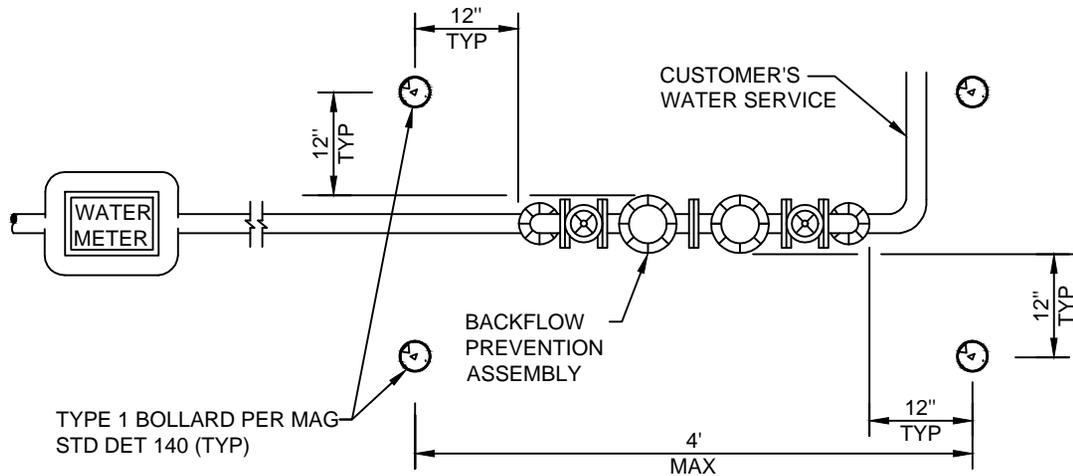
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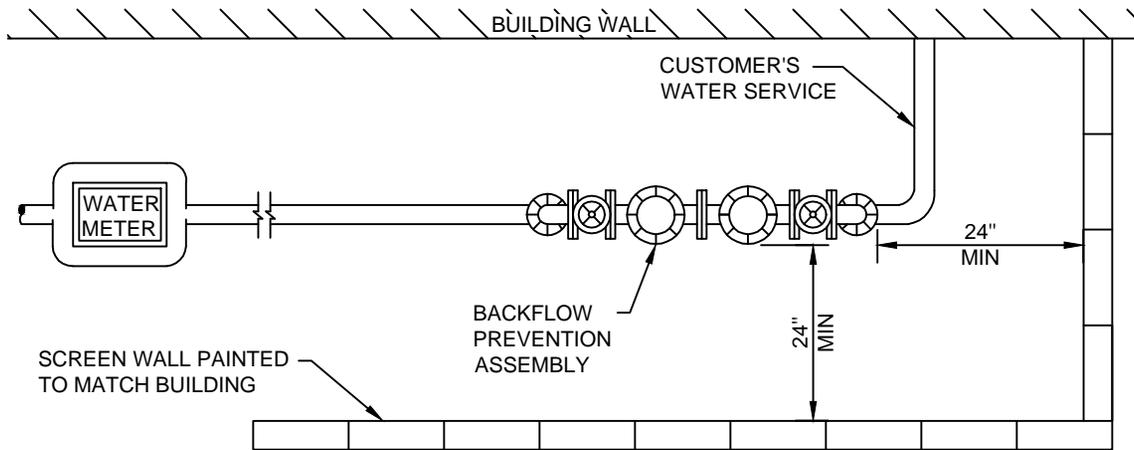
**DOUBLE CHECK VALVE  
BACKFLOW PREVENTION  
ASSEMBLY VAULT INSTALLATION**

DETAIL NO:

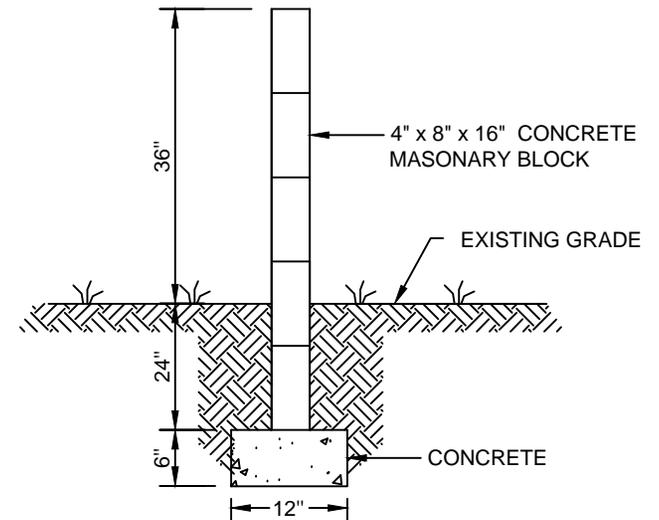
**6-15**



**GUARD POST FOR BACKFLOW PREVENTION ASSEMBLY**



**SCREEN WALL FOR BACKFLOW PREVENTION ASSEMBLY**



**SCREEN WALL SECTION**

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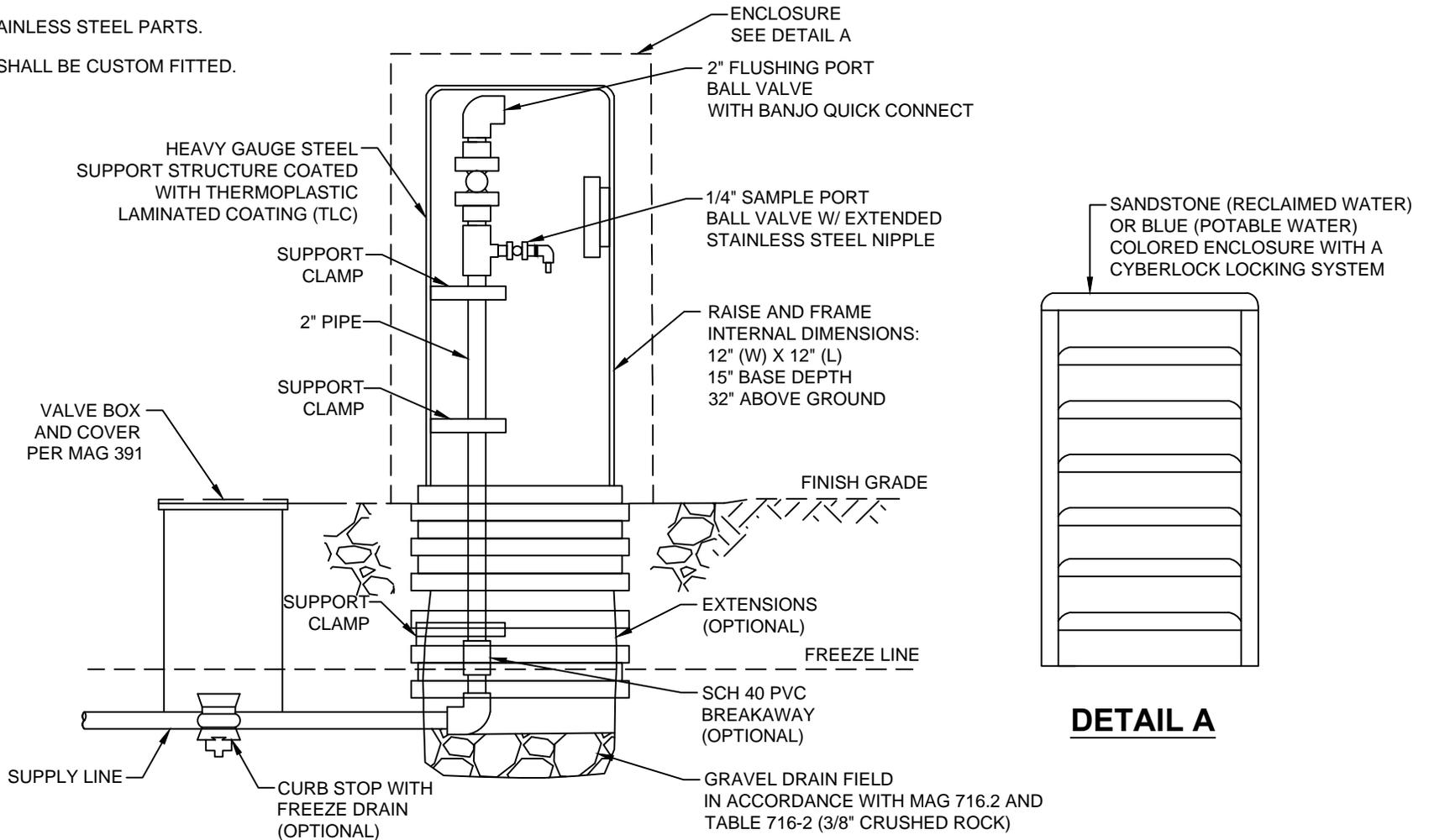
**BACKFLOW PREVENTION  
ASSEMBLIES PROTECTION**

DETAIL NO:

**6-16**

**NOTES:**

1. ALL INTERIOR PIPING, FITTINGS, AND VALVES SHALL BE STAINLESS STEEL CONSTRUCTION.
2. ENCLOSURE SHALL BE UV-PROTECTED, SANDSTONE COLORED FOR RECLAIMED WATER OR BLUE COLORED FOR POTABLE WATER AND INCLUDE A CUSTOM NAME PLATE PER LOCATION AND DESIGNATION.
3. USE ALL STAINLESS STEEL PARTS.
4. BRACKETS SHALL BE CUSTOM FITTED.



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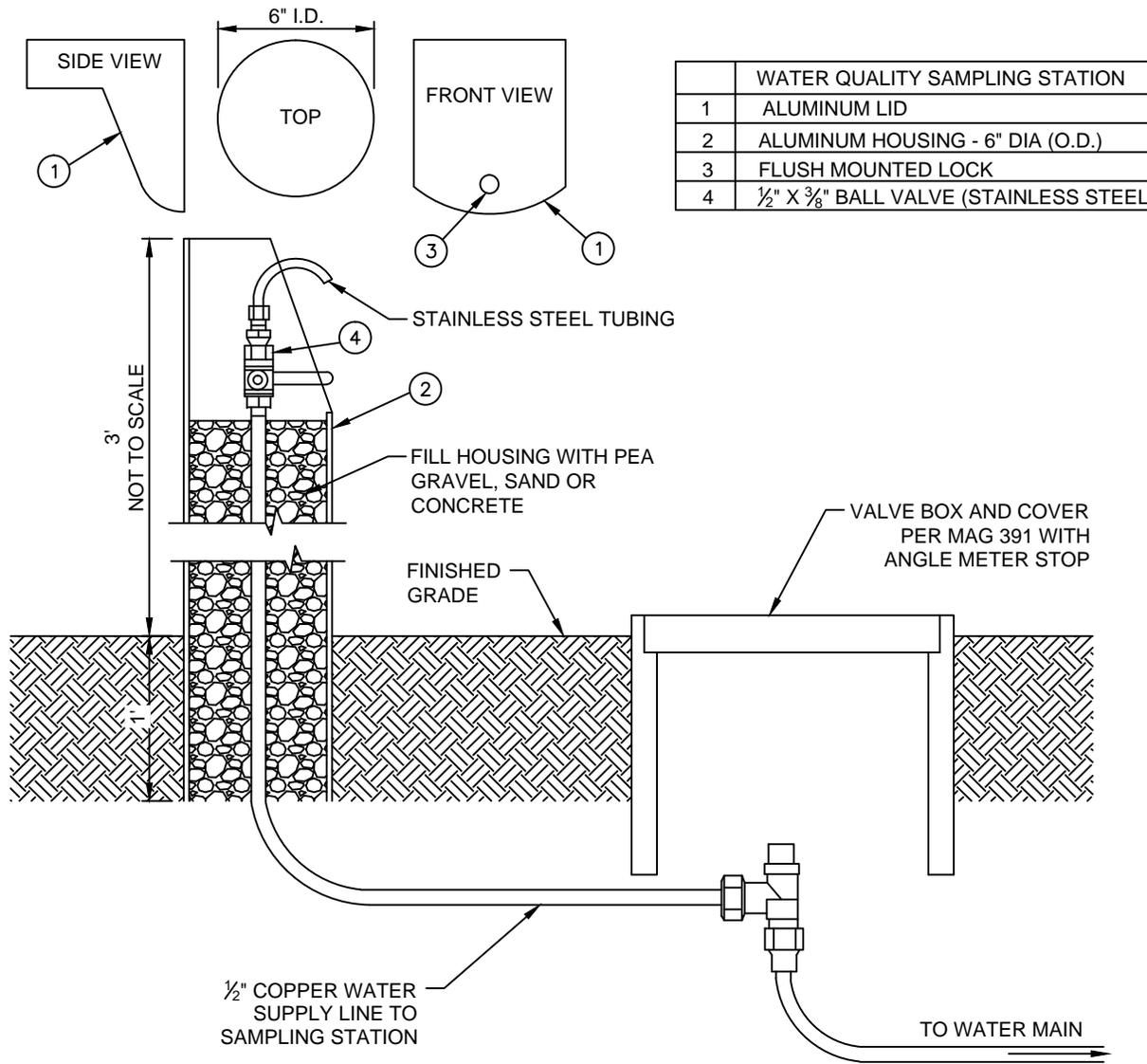
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**BACTERIOLOGICAL SAMPLE  
STATION - 2" PIPE  
(RECLAIMED WATER ONLY)**

DETAIL NO:

**6-17A**



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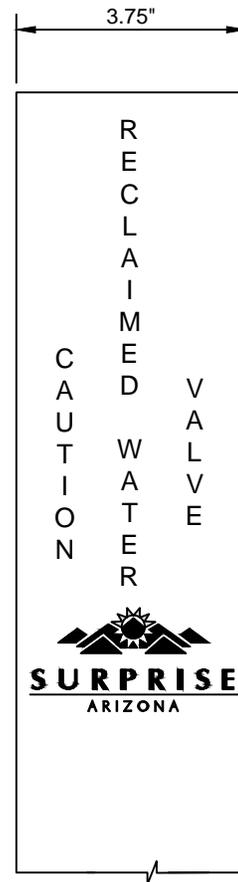
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**WATER QUALITY  
SAMPLING STATION  
(POTABLE WATER)**

DETAIL NO:

**6-17B**



**NOTES:**

1. OFF-ROAD MANHOLE AND VALVE MARKER SHALL BE COLORED BLUE FOR WATER VALVES, GREEN FOR SEWER MANHOLES, RED FOR RAW WATER, OR PURPLE FOR RECLAIMED WATER.
2. CARSONITE CONTINUOUS GLASS FIBER & RESIN REINFORCED CUM-375 COMPOSITE MARKER WITH ANCHOR KIT SHALL BE USED FOR MARKER MATERIAL.

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**OFF-ROAD MANHOLE AND  
VALVE MARKERS**

DETAIL NO:

6-18

**RECLAIMED WATER  
DO NOT DRINK  
NO TOMAR**

**IDENTIFICATION TAG:**

3" x 8" x 3/16" PURPLE POLYETHYLENE PLASTIC WITH MINIMUM 1/2" HIGH BLACK LETTERING IN ACCORDANCE WITH MAG SECTION 616. TAG TO BE ATTACHED TO METER & VALVE WITH STAINLESS STEEL WIRE.

**IDENTIFICATION DECAL:**

5" x 16" x 3/16" PURPLE POLYETHYLENE PLASTIC WITH MINIMUM 1" HIGH BLACK LETTERING IN ACCORDANCE WITH MAG SECTION 616. DECAL TO BE ATTACHED WITH AN EPOXY ADHESIVE.

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**LARGE RECLAIMED WATER  
IDENTIFICATION TAG AND  
DECAL**

DETAIL NO:

6-19A



**FRONT**



**BACK**

**IDENTIFICATION TAG:**

IN ACCORDANCE WITH CHRISTY'S SPECIFICATIONS  
OR APPROVED EQUAL. TAG TO BE ATTACHED TO  
METER & VALVE WITH STAINLESS STEEL WIRE.

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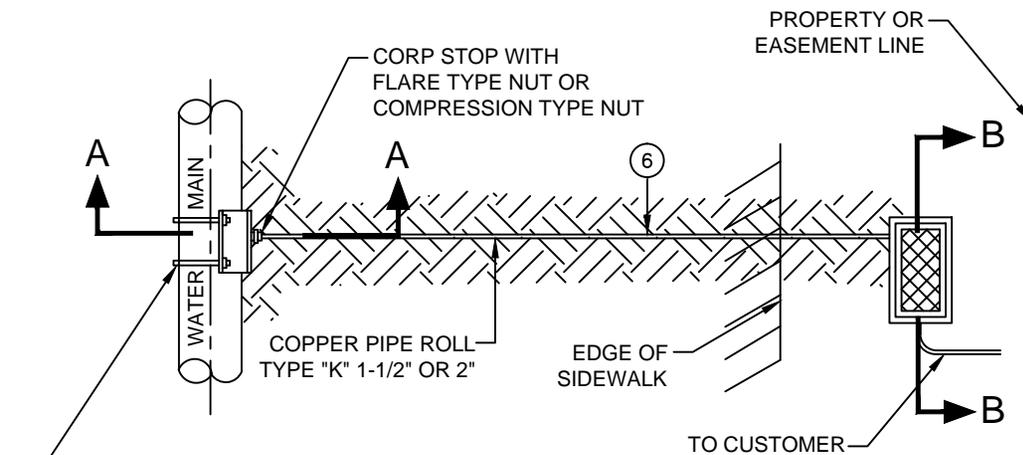
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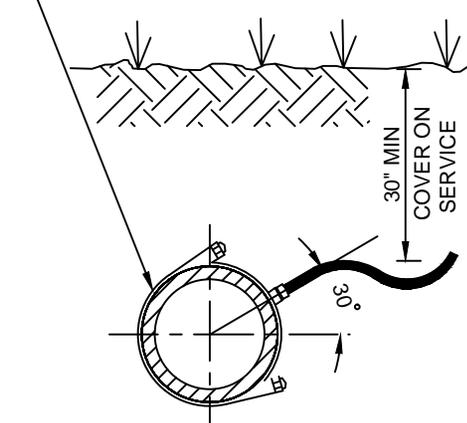
**SMALL RECLAIMED WATER  
IDENTIFICATION TAG**

DETAIL NO:

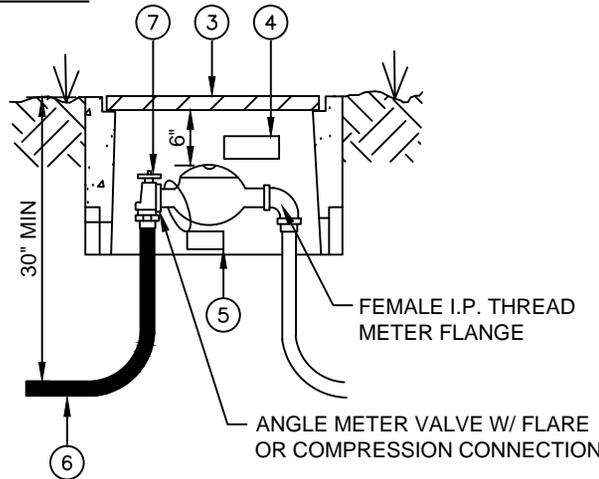
6-19B



**PLAN VIEW**



**SECTION A-A  
ALL SERVICES**



**SECTION B-B  
1-1/2" & 2" SERVICE**

**CONSTRUCTION NOTES:**

- ① SADDLES SHALL MEET APPROVED SYSTEM MATERIAL SPECIFICATIONS BELOW: FORD S90, FORD F202, MUELLER H-1300, AND JCM 403 FOR C900 PVC. FORD F202, AND JCM 404 FOR C905 PVC. FORD F202, JCM 404, AND MUELLER BR2B FOR ACP. FORD F202, JCM 402, AND MUELLER BR2B FOR DIP.
- ② METER TO BE SET BY CITY OF SURPRISE UPON PAYMENT OF FEES.
- ③ CONCRETE METER BOX PER MAG STD. DET. 320. BOX TO BE SET PARALLEL TO BACK OF WALK OR CURB. BOX TO MATCH SLOPE OF FINISH GRADE AND SET 1" ABOVE FINISH GRADE OR BACK OF WALK OR CURB.
- ④ IDENTIFICATION DECAL PER CITY OF SURPRISE STD. DET. 6-19A.
- ⑤ VALVE TAG PER CITY OF SURPRISE STD. DET. 6-19A OR 6-19B AS SIZE PERMITS.
- ⑥ RECLAIMED LINE COPPER PIPE TO BE WRAPPED WITH PURPLE POLYETHYLENE TAPE.
- ⑦ ANGLE BALL METER VALVE, FLARE COPPER BY METER FLANGE. TEE HEAD TO BE STAMPED "RECLAIMED WATER".

DATE REVISED: 8/2016

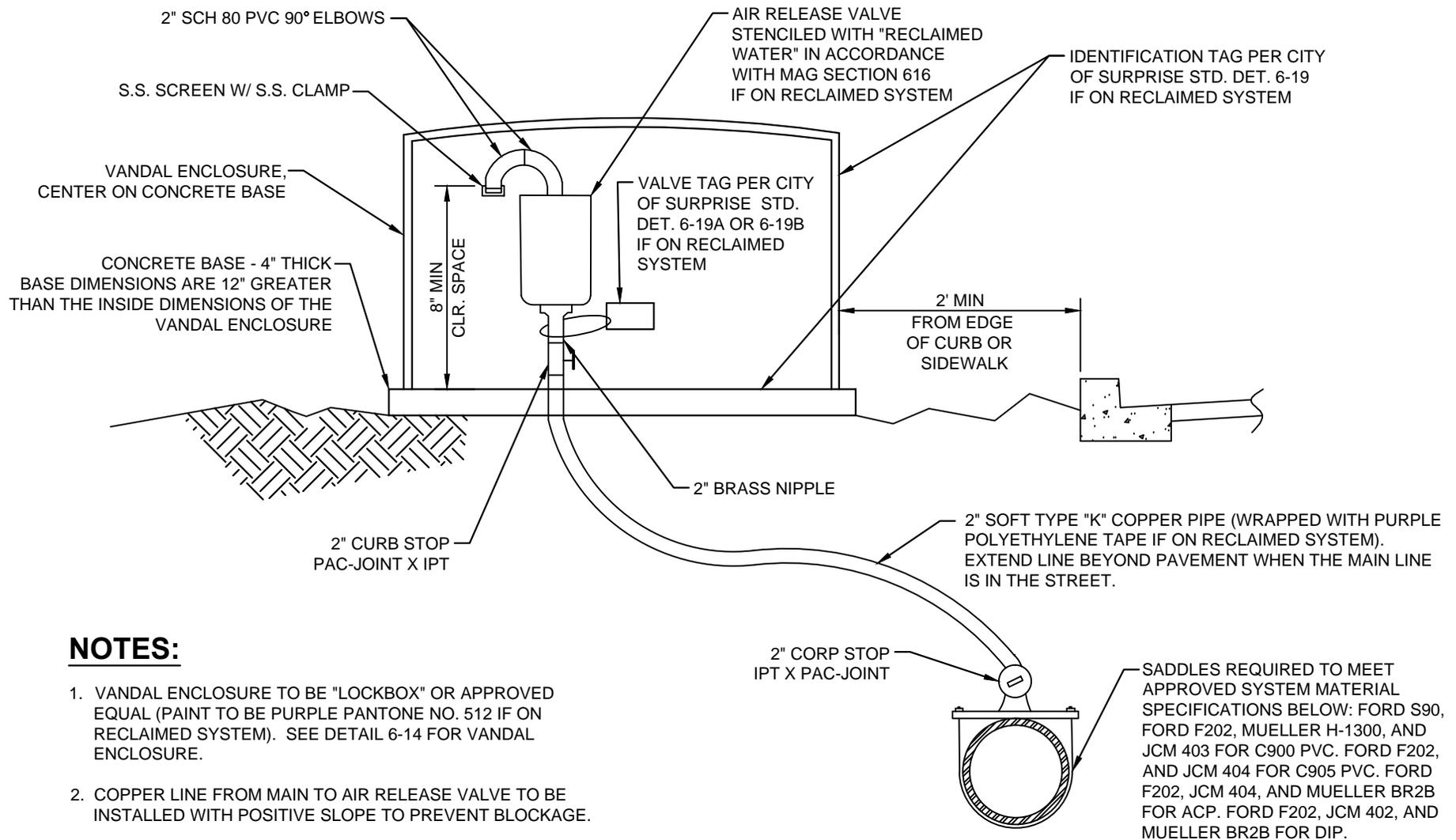
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**RECLAIMED WATER SERVICE  
CONNECTION**

DETAIL NO:

**6-20**



**NOTES:**

- VANDAL ENCLOSURE TO BE "LOCKBOX" OR APPROVED EQUAL (PAINT TO BE PURPLE PANTONE NO. 512 IF ON RECLAIMED SYSTEM). SEE DETAIL 6-14 FOR VANDAL ENCLOSURE.
- COPPER LINE FROM MAIN TO AIR RELEASE VALVE TO BE INSTALLED WITH POSITIVE SLOPE TO PREVENT BLOCKAGE.

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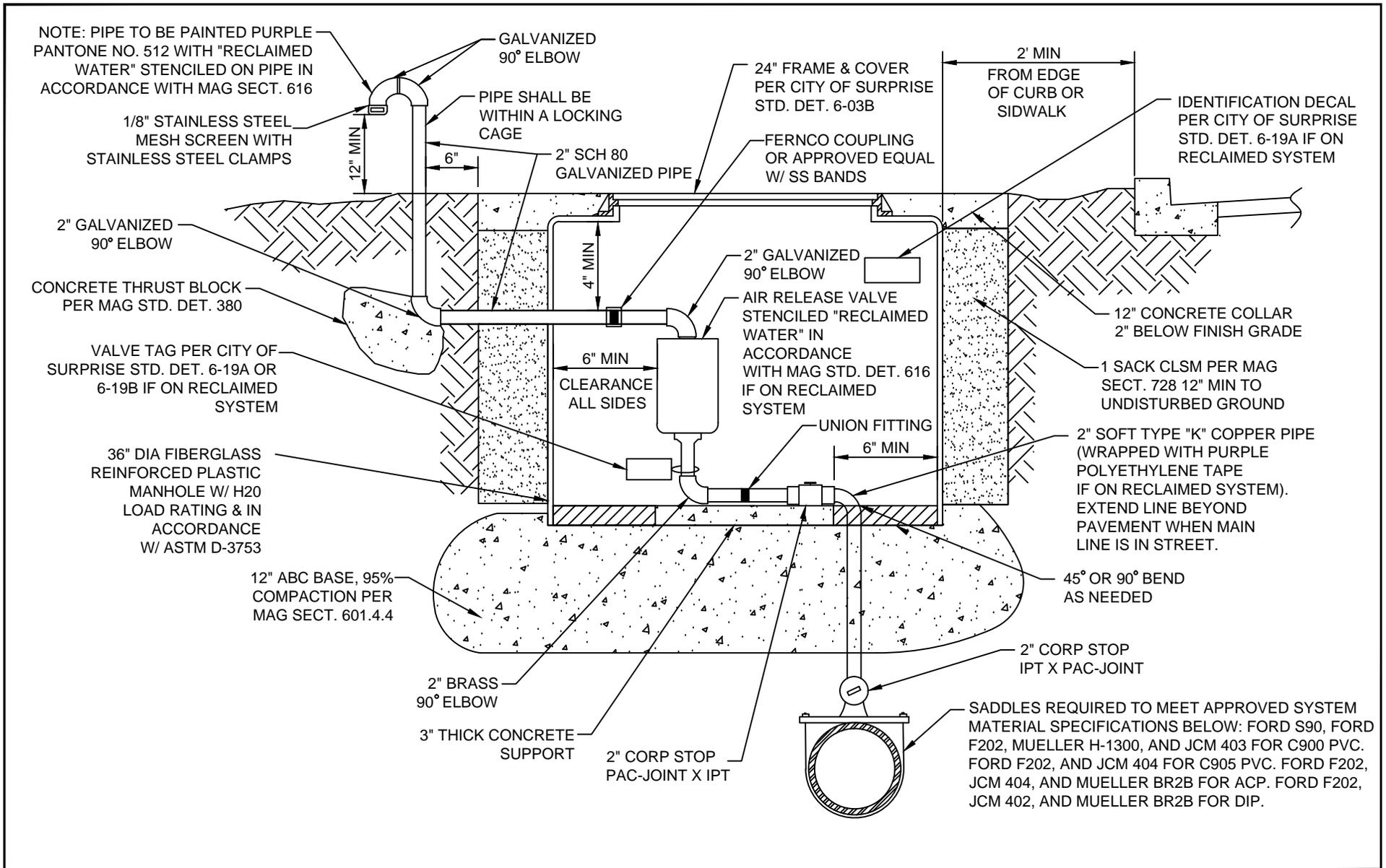
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**AIR RELEASE VALVE**

DETAIL NO:

**6-21**



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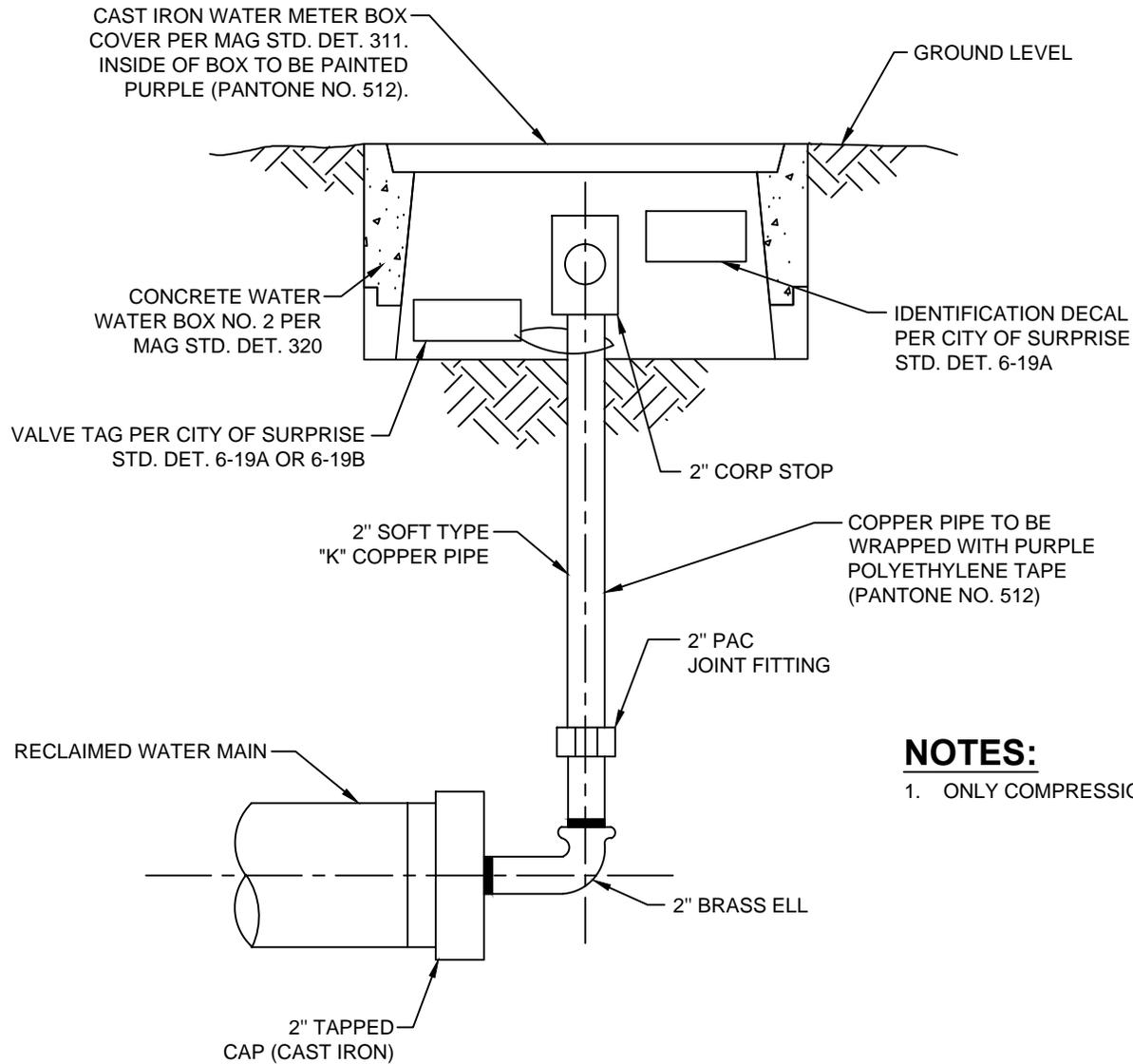
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# UNDERGROUND AIR RELEASE VALVE

DETAIL NO:

6-22



**NOTES:**

1. ONLY COMPRESSION JOINTS SHALL BE USED.

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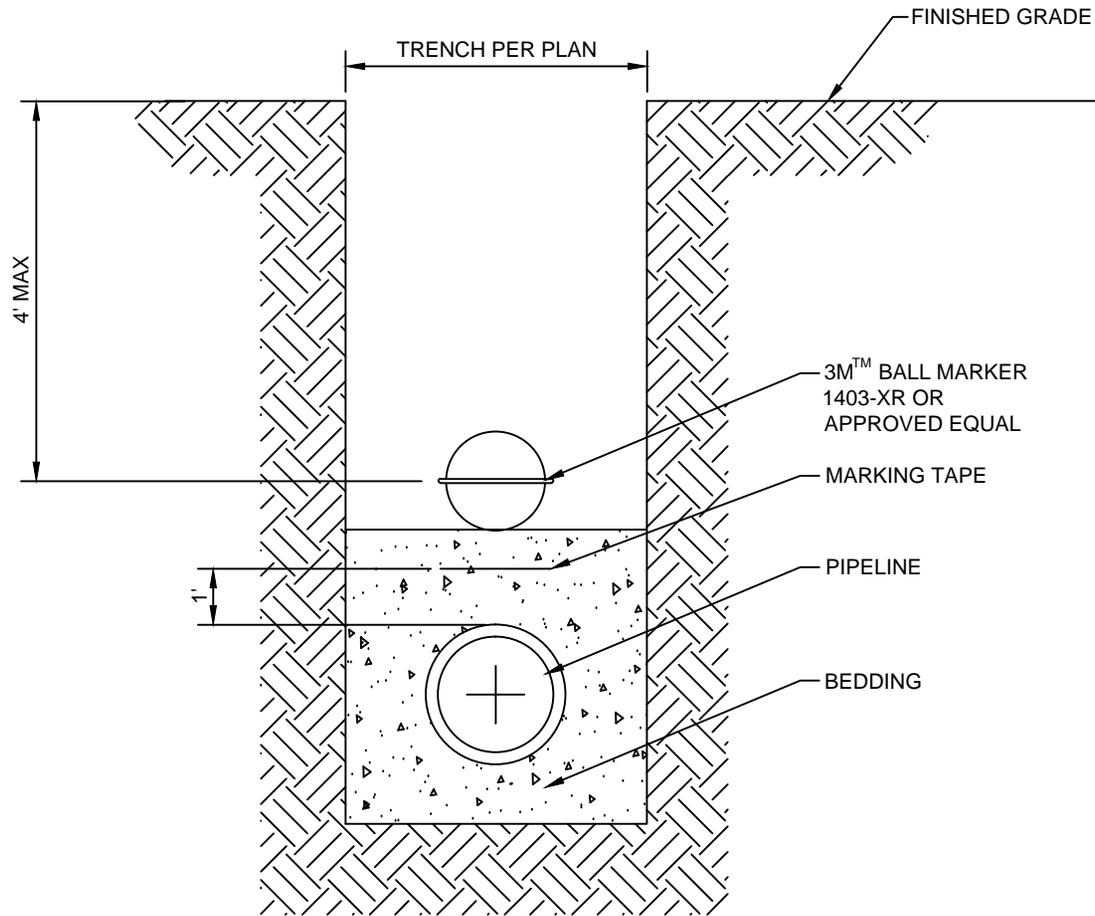


**RECLAIMED WATER CURB  
STOP (BLOW-OFF) WITH  
FLUSHING PIPE**

DETAIL NO:

**6-23**





**NOTES:**

1. MAXIMUM DISTANCE FROM GROUND SURFACE TO MARKER IS AS FOLLOWS:  
  
3M™ BALL MARKER MODEL 1403-XR OR APPROVED EQUAL
  - MAXIMUM INSTALLATION DEPTH - 4-FOOT DETECTION RANGE.
2. TO INCREASE DETECTION AREA ON SURFACE, IT IS RECOMMENDED THAT THE MARKER BE PLACED AT ITS RATED DEPTH. THIS WILL PRODUCE A DETECTION AREA APPROXIMATELY 6 FEET IN DIAMETER.
3. IF FILL TO FINISH GRADE IS ANTICIPATED, PLACE THE MARKER AT A DEPTH OF 2 FEET . THIS MAY VARY DEPENDING ON THE AMOUNT OF FILL REQUIRED.
4. IF A CUT TO FINISH GRADE IS ANTICIPATED, PLACE THE MARKER AT ITS MAXIMUM RATED DISTANCE OF 4 FEET FOR CE MODELS AND 5 FEET FOR US MODELS.
5. IF IT IS ANTICIPATED THAT THERE WILL BE A NEED TO REPROGRAM THE ID MARKER AFTER IT HAS BEEN BURIED, PLACE THE MARKER AT A MAXIMUM DEPTH OF 1 FOOT.
6. MARKING TAPE SHALL BE INSTALLED 1 FOOT ABOVE PIPE IN THE COLOR TO MATCH THE WATER TYPE: BLUE FOR POTABLE AND TRANSMISSION AND PURPLE FOR RECLAIMED.

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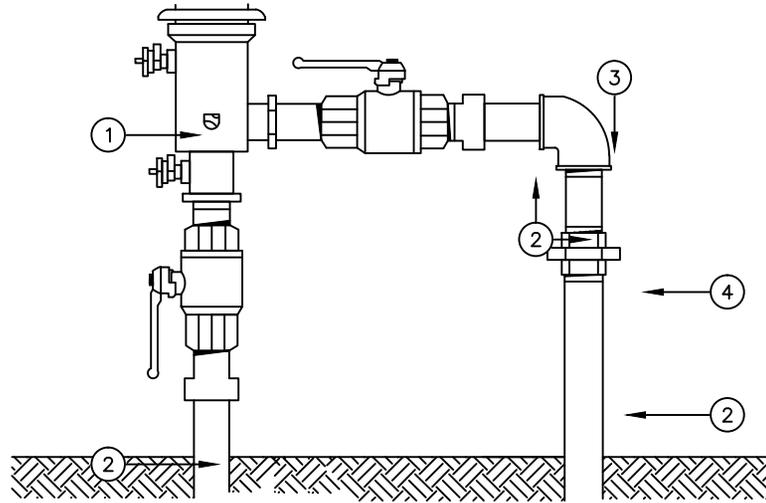
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**RECLAIMED AND POTABLE  
WATER LINE MARKER BALL  
AND MARKING TAPE**

DETAIL NO:

**6-25**



**CONSTRUCTION NOTES:**

- ① APPROVED PRESSURE VACUUM BREAKER ASSEMBLY (INCLUDES BALL VALVES).
- ② PIPE SPOOL, TYPE "K" COPPER, 1/2" THRU 2".
- ③ 90° COPPER ELL, 3/4" THRU 2".
- ④ PIPE UNION, COPPER OR BRASS.

**NOTES:**

1. CONTACT CITY OF SURPRISE FOR LATEST APPROVED LIST OF BACKFLOW PREVENTION ASSEMBLIES.
2. ASSEMBLY SHALL BE APPROVED BY U.S.C. FOUNDATION FOR CROSS-CONNECTION CONTROL AND HYDRAULIC RESEARCH.
3. TWO TEST COCKS SHALL BE INSTALLED AS PER U.S.C.
4. SHUT OFF BALL VALVES MUST BE RESILIENT SEATED VALVES AS PER U.S.C.
5. ASSEMBLY MUST BE INSTALLED 12 INCHES ABOVE ALL DOWNSTREAM PIPING AND THE HIGHEST OUTLET ON THE SYSTEM. IF THIS DISTANCE EXCEEDS 36 INCHES A REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY, CITY OF SURPRISE STANDARD DETAIL 6-10 MUST BE UTILIZED.
6. ASSEMBLY SHALL BE TESTED BY A CERTIFIED TESTER BEFORE FINAL APPROVAL.
7. BALL VALVES ARE REQUIRED UPSTREAM AND DOWNSTREAM OF THE ASSEMBLY.
8. A PLUMBING PERMIT IS REQUIRED FOR INSTALLATION.
9. ASSEMBLIES MUST BE INSTALLED AS DESIGNED AND CONSTRUCTED BY THE MANUFACTURER.
10. PRESSURE VACUUM BREAKER ASSEMBLY SHALL BE PAINTED "ROLLING STONE #CLC 1249W" AS DISTRIBUTED BY FRAZEE PAINT, OR APPROVED EQUAL, OR A COLOR TO MATCH THE BUILDING. DO NOT PAINT THE NAME PLATE OR ANY BRASS PARTS ON THE ASSEMBLY

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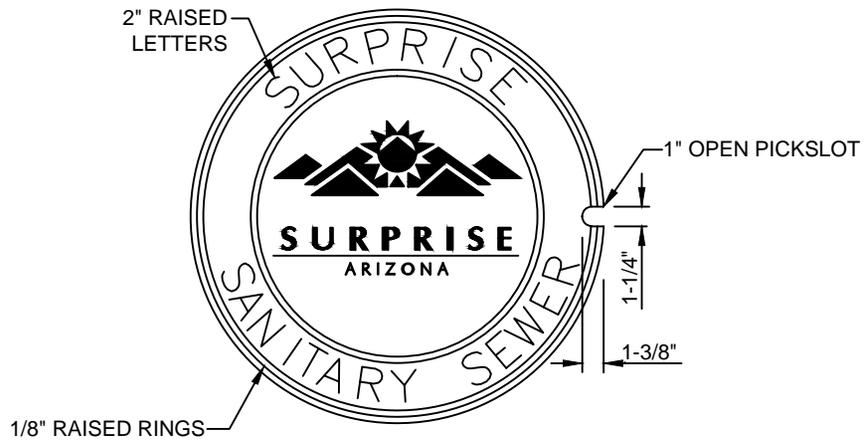


**PRESSURE VACUUM  
BREAKER ASSEMBLY**

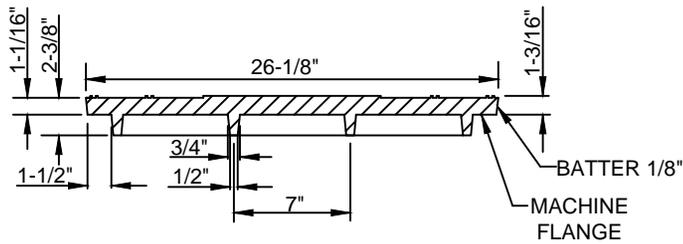
DETAIL NO:

**6-26**

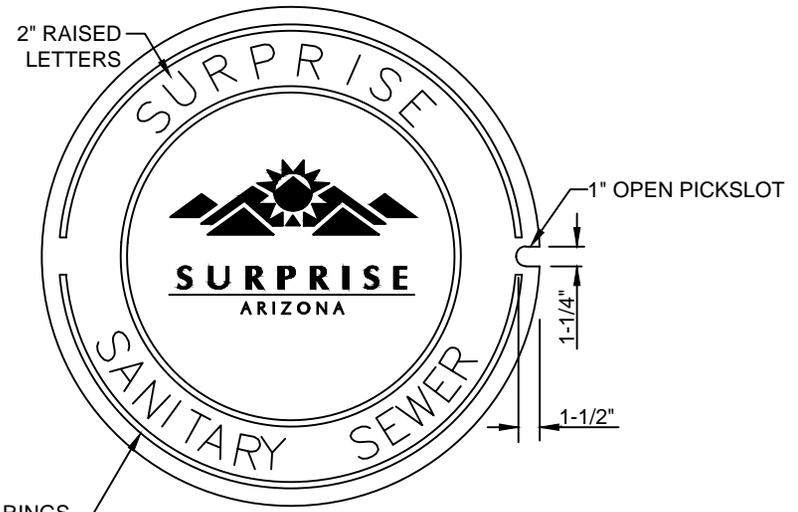




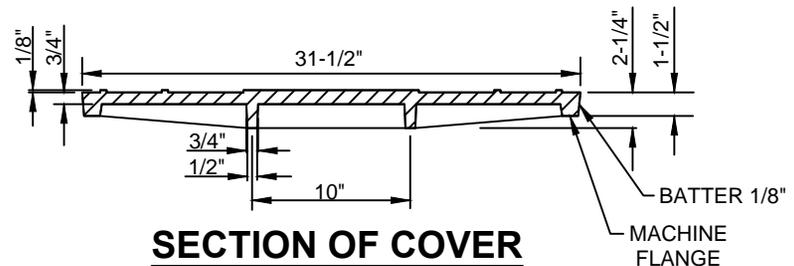
**TOP VIEW**



**SECTION OF COVER  
24" MANHOLE COVER**



**TOP VIEW**



**SECTION OF COVER  
30" MANHOLE COVER**

**NOTES:**

1. MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B, UNPAINTED.
2. THE TOTAL WIDTH OF INDIVIDUAL LETTERS TO BE SUCH THAT LETTERS AND WORDS ARE EQUALLY SPACED AND BALANCED.
3. LETTERS TO BE 2" IN HEIGHT AND RAISED 1/8" ABOVE LEVEL OF COVER. TYPE OF LETTERS TO BE SUBMITTED FOR APPROVAL.
4. WEIGHT OF CASTINGS SHALL BE NO MORE THAN 2% LESS THAN WEIGHT SPECIFIED. CASTINGS SHALL CONFORM TO MAG SECTION 787.
5. MANHOLE FRAME SHALL BE PER MAG STD DTL 424, AS APPLICABLE PER SIZE.

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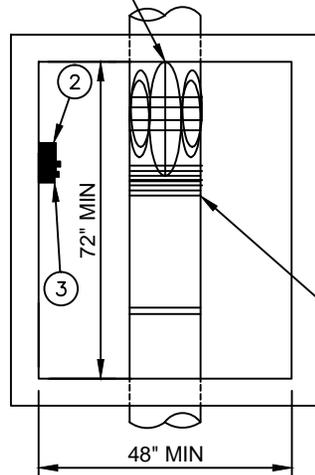


**SANITARY SEWER MANHOLE COVER**

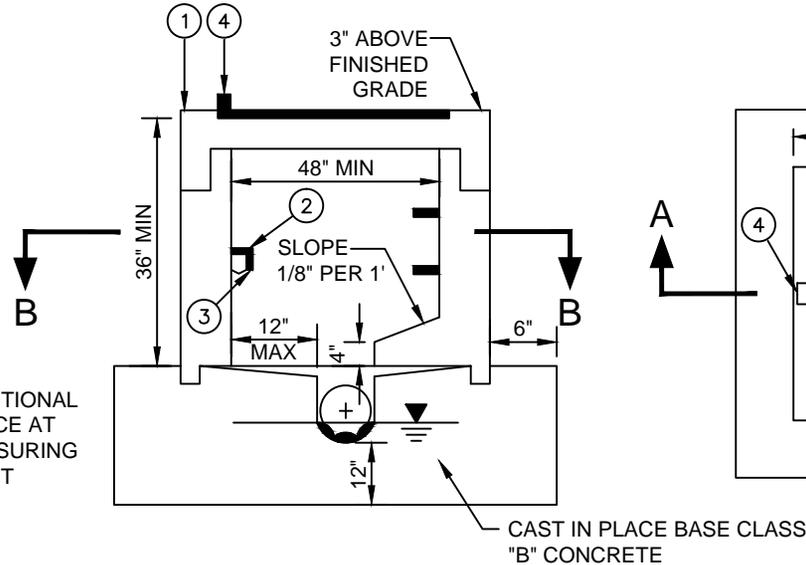
DETAIL NO:

7-01

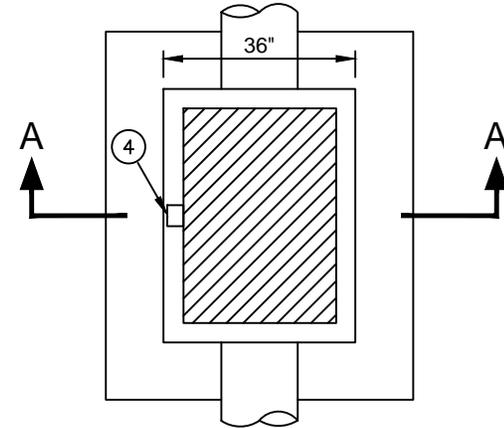
PALMER BOWLUS  
FLUME OR  
APPROVED EQUAL



**SECTION B-B**



**SECTION A-A**



**PLAN VIEW**

**NOTES:**

1. MINIMUM INSIDE DIMENSIONS SHALL BE 48 INCHES BY 72 INCHES, WITH A MINIMUM INSIDE HEIGHT OF 36 INCHES FROM THE TOP OF THE FLUME. ANY ALTERATIONS TO THESE REQUIREMENTS WILL BE REVIEWED ON A CASE-BY-CASE BASIS BY THE DIVISION.
2. ACCESS TO THE VAULT MUST BE BY A BILCO-STYLE DOOR WITH A FACTORY-INSTALLED LOCKING MECHANISM AND A MINIMUM INSIDE OPENING DIAMETER OF 29 INCHES. THE LOAD SPECIFICATIONS OF THE DOOR WILL BE REVIEWED DEPENDING ON THE LOCATION OF THE VAULT.
3. THE VAULT SHALL BE CONSTRUCTED ON A STRAIGHT RUN OF BUILDING SEWER WITH 24-HOUR ACCESSIBILITY AND LOCATED ON THE OWNER'S PROPERTY AS CLOSE TO THE PUBLIC RIGHT-OF-WAY AS POSSIBLE.
4. THE PALMER BOWLUS FLUME OR APPROVED EQUAL SHALL BE INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS.
5. THE TOP OF THE VAULT SHALL BE BETWEEN 3 AND 24 INCHES ABOVE THE FINISHED GRADE.
6. THE VAULT SHALL BE SUPPLIED WITH 120 VAC IN AN EXPLOSION-PROOF BOX (INSTALLED TO CODE).
7. THE INDUSTRY MAY BE REQUIRED TO INSTALL FLOW-MONITORING EQUIPMENT THAT HAS BEEN APPROVED BY THE CITY. A JUNCTION BOX SHALL BE PROVIDED IN THE THE VAULT WITH AN AMPHENOL CONNECTOR 973102A14s6p AND CAP #9760-14.

**CONSTRUCTION NOTES:**

- ① PRECAST CONCRETE VAULT AND COVER.
- ② 120 VAC JUNCTION BOX (EXPLOSION PROOF).
- ③ JUNCTION BOX WITH AMPHENOL CONNECTOR FOR 4-20 MA OUTPUT OR PULSE OUTPUT.
- ④ LID MUST BE EQUIPPED WITH FACTORY INSTALLED LOCKING MECHANISM.

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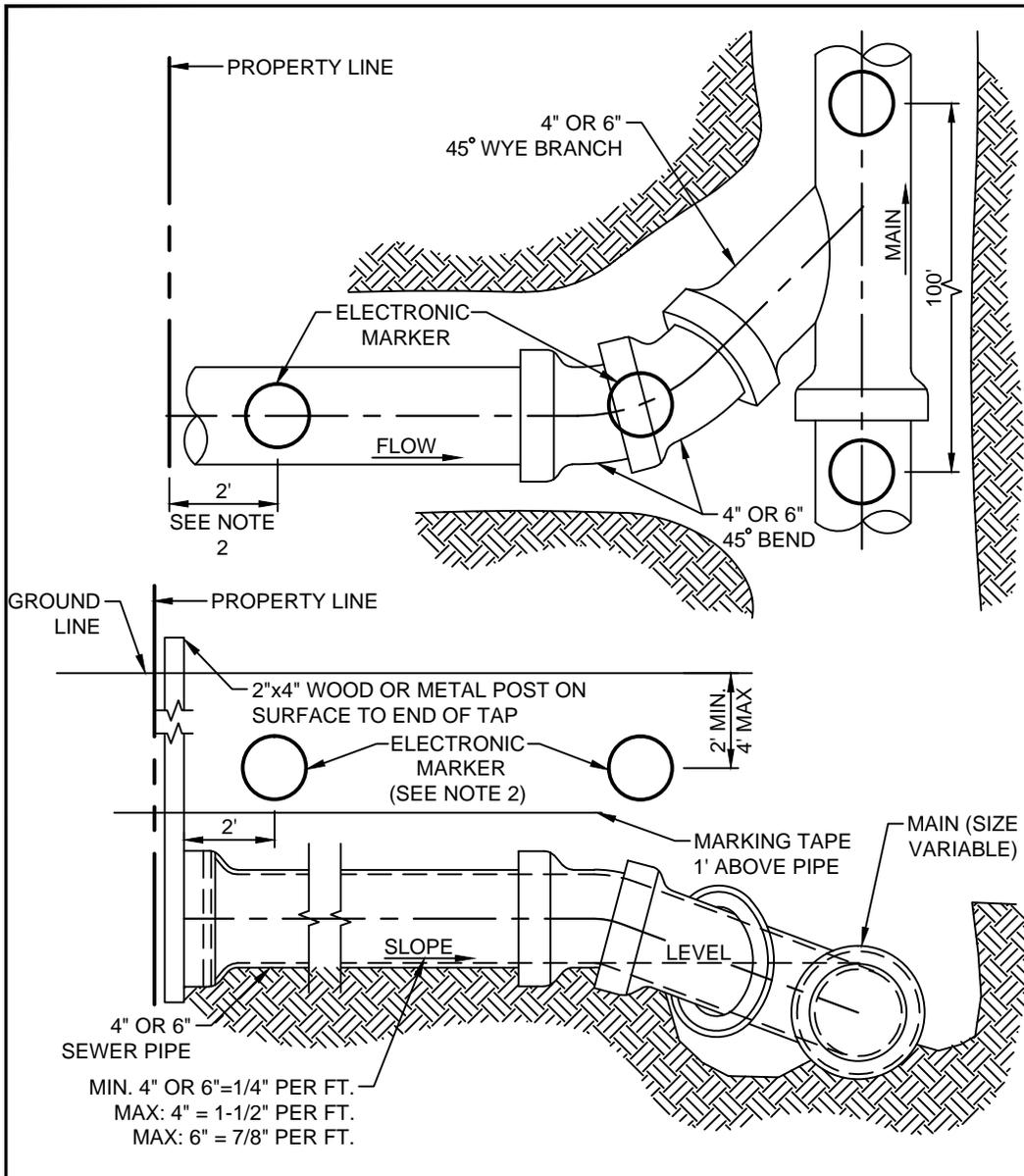
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**CONTROL SAMPLING VAULT**

DETAIL NO:

7-02



**NOTES:**

1. ELECTRONIC MARKER SHALL BE A 3M [4" DIAMETER SELF LEVELING MARKER BALL GREEN IN COLOR] OR APPROVED EQUAL..
2. MARKER SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S DIRECTIONS, 2' BACK FROM THE END OF THE SEWER SERVICES STUB AND CINCH TIED TO PIPE OR ABOVE PIPE AS REQUIRED BY THE CITY. AN ADDITIONAL MARKER SHALL BE INSTALLED AT EACH SERVICE STUB BEND.
3. ELECTRONIC MARKER SHALL BE RESTORED BY CONTRACTOR IF DISTURBED WHEN PRIVATE SERVICE LINE CONNECTION IS INSTALLED.
4. MARKER SHALL BE USED IN ADDITION TO A 2"x4" WOOD OR METAL POST.
5. CONSTRUCTION DETAIL APPLIES WHERE CONTRACTOR BUILDS HOUSE CONNECTION. TAP EXTENDS TO PROPERTY LINE IN ALLEYS OR STREETS OR TO EASEMENTS LINE.
6. SIZE OF TAP SHALL BE DESIGNATED ON PLANS.
7. CONSTRUCT TAP AT MINIMUM SLOPE IF COVER WILL BE LESS THAN 5' AT THE PROPERTY LINE.
8. ALL FITTING SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D-2321. THE CONTRACTOR MAY VARY FROM THE DRAWING TO USE THE APPROPRIATE WYES, TEE-WYES, AND BENDS TO ENSURE NO MISALIGNMENT OF THE PIPE AND FITTINGS. BLOCK OR BRACE FITTINGS JOINTS TO ENSURE ZERO DEGREES ANGULAR JOINT DEFLECTION.
9. END OF TAP TO BE SEALED AND MARKED AS NOTED.
10. ELECTRONIC MARKERS TO BE PLACED AT ALL SEWER LINE FITTINGS AND ON ALL SEWER MAINS AT 100' INTERVALS WHERE DISTANCE BETWEEN FITTINGS IS GREATER THAN 100'. REFER TO CITY OF SURPRISE ENGINEERING DEVELOPMENT STANDARDS CHAPTER 7.
11. MARKING TAPE TO BE PLACED 1' ABOVE ALL SEWER LINES IN RIGHT OF WAY. REFER TO CITY OF SURPRISE ENGINEERING DEVELOPMENT STANDARDS CHAPTER 7.

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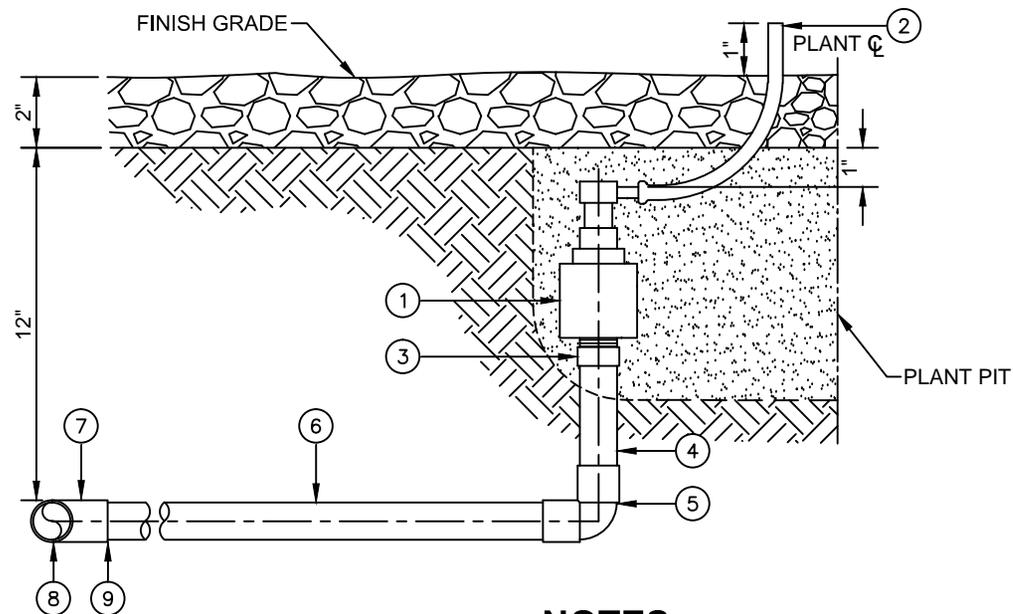


**SEWER LINE MARKER BALL  
AND MARKING TAPE**

DETAIL NO:

**7-03**





**CONSTRUCTION NOTES:**

- ① SERIES SINGLE PORT EMITTER LOCATE ON UPHILL SIDE OF PLANT CENTERLINE.
- ② 1/4 INCH POLY FLEX HOSE EMITTER TUBING (6 FEET MAXIMUM).
- ③ 1/2 INCH PVC SCH 40 MALE ADAPTOR.
- ④ 1/2 INCH I.P.S. FLEXIBLE VINYL PVC PIPE OR APPROVED EQUAL.
- ⑤ 1/2 INCH PVC SCH 40 90° ELBOW.
- ⑥ 1/2 INCH PVC CL 315 PIPE.
- ⑦ 1/2 INCH PVC SCH 40 FITTING.
- ⑧ PVC CL 315 FOR 1/2 INCH LATERALS, PVC CL 200 FOR LATERALS GREATER THAN 1/2 INCH.
- ⑨ INSTALL BUSHING AS REQUIRED.

**NOTES:**

- 1. PIPE CEMENT & PRIMER SHALL BE USED FOR FLEXIBLE AND RIGID PIPE CONNECTIONS.
- 2. EMITTER TUBING EMISSION POINTS SHALL BE EQUALLY SPACED AND LOCATED TO DIRECT WATER FLOW TO THE PERIMETER OF THE DRIP LINE.
- 3. NUMBER OF OPENINGS AND EMITTER TUBES REQUIRED IS BASED ON PLANT SIZE (SEE COS STD. DET. 8-03).
- 4. MAXIMUM EMITTER TUBING LENGTH = 6 FEET.
- 5. NO EMITTER LATERALS OR PIPING SHALL BE INSTALLED THROUGH OR BENEATH PLANT PITS. MINIMUM DISTANCE BETWEEN PLANT PIT PERIMETER AND PIPING SHALL BE 12".
- 6. EQUIPMENT MANUFACTURED BY HUNTER INDUSTRIES SAN MARCOS, CALIFORNIA OR APPROVED EQUAL.

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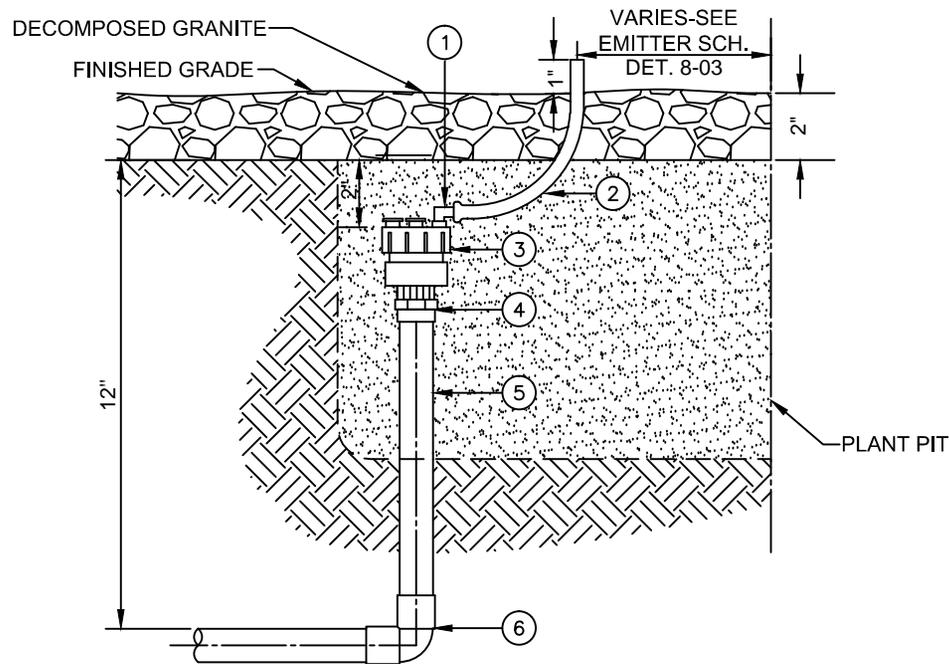
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**SINGLE-OUTLET EMITTERS - ALL  
SHRUBS AND GROUND COVER**

DETAIL NO:

**8-01**



**CONSTRUCTION NOTES:**

- ① SWIVEL OUTLET 90° ELBOW.
- ② 1/4 INCH POLY FLEX HOSE EMITTER TUBING (6 FEET MAXIMUM).
- ③ BOWSMITH ML 200 SERIES MULTI-PORT EMITTER OR APPROVED EQUAL. LOCATE ON UPHILL SIDE OF PLANT ☼.
- ④ 1/2 INCH PVC SCH 40 MALE ADAPTER.
- ⑤ AG PRODUCTS 1/2 INCH I.P.S. FLEXIBLE VINYL PVC PIPE OR APPROVED EQUAL.
- ⑥ 1/2 INCH PVC SCH 40 FITTING.

**NOTES:**

- 1. PIPE CEMENT & PRIMER SHALL BE USED FOR FLEXIBLE AND RIGID PIPE CONNECTIONS.
- 2. EMITTER TUBING EMISSION POINTS SHALL BE EQUALLY SPACED AND LOCATED TO DIRECT WATER FLOW TO THE PERIMETER OF THE DRIP LINE.
- 3. NUMBER OF OPENINGS AND EMITTER TUBES REQUIRED IS BASED ON PLANT SIZE (SEE COS STD. DET. 8-03).
- 4. MAXIMUM EMITTER TUBING LENGTH = 6 FEET.
- 5. NO EMITTER LATERALS OR PIPING SHALL BE INSTALLED THROUGH OR BENEATH PLANT PITS. MINIMUM DISTANCE BETWEEN PLANT PIT PERIMETER AND PIPING SHALL BE 12 INCHES.

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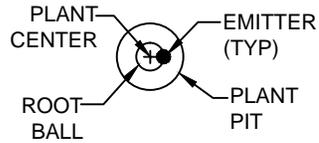
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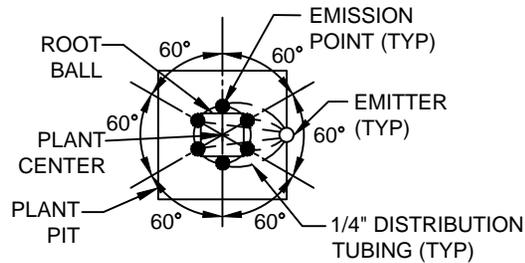
**MULTI-OUTLET EMITTERS - FOR  
TREES ONLY**

DETAIL NO:

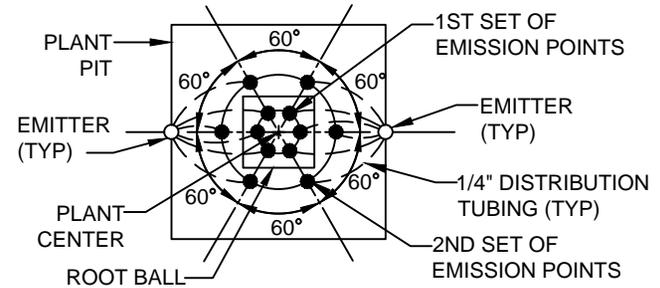
**8-02**



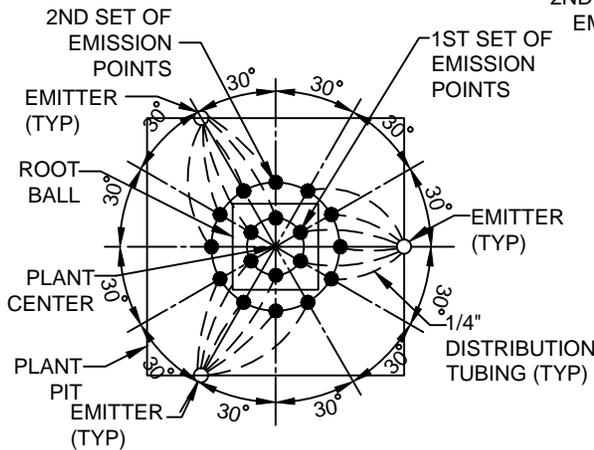
**SHRUB EMITTER  
SINGLE OUTLET**



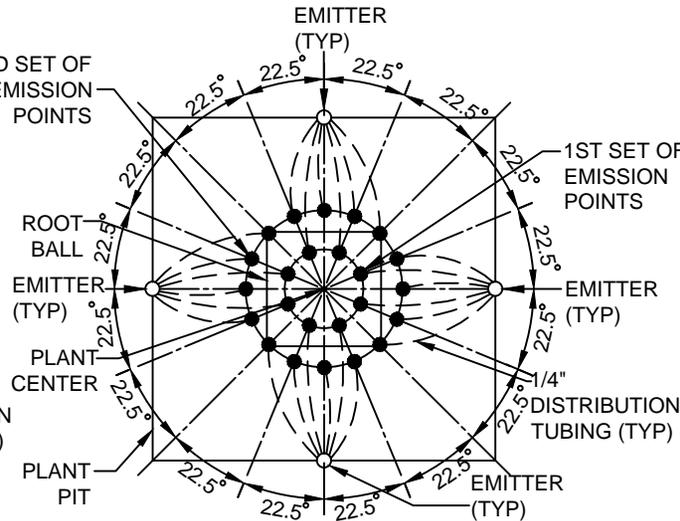
**TREE EMITTER-MULTI OUTLET  
15 GAL. TO 42" BOX TREES**  
(SEE EMITTER SCHEDULE)



**TREE EMITTER-MULTI OUTLET  
48" BOX TO 60" BOX TREES**  
(SEE EMITTER SCHEDULE)



**TREE EMITTER-MULTI OUTLET  
66" BOX TO 84" BOX TREES**  
(SEE EMITTER SCHEDULE)



**TREE EMITTER-MULTI OUTLET  
96" BOX TREES**  
(SEE EMITTER SCHEDULE)

EMITTER SCHEDULE			
TREE SIZE	NUMBER OF MULTI OUTLET EMITTERS - OUTLET QUANTITY = EMITTER GPH TOTAL	DISTANCE FROM TRUNK	
		1ST SET OF EMISSION POINTS	2ND SET OF EMISSION POINTS
15 GAL.	1-1 GPH=6 GPH	3 @ 12"	
24" BOX	1-1 GPH=6 GPH	4 @ 18"	
30" BOX	1-1 GPH=6 GPH	6 @ 21"	
36" BOX	1-2 GPH=12 GPH	6 @ 24"	
42" BOX	1-2 GPH=12 GPH	6 @ 27"	
48" BOX	2-2 GPH=24 GPH	6 @ 12"	4 @ 42"
54" BOX	2-2 GPH=24 GPH	6 @ 15"	5 @ 45"
60" BOX	2-2 GPH=24 GPH	6 @ 18"	6 @ 48"
66" BOX	3-2 GPH=36 GPH	6 @ 24"	12 @ 54"
72" BOX			
78" BOX	3-2 GPH=36 GPH	6 @ 30"	12 @ 60"
84" BOX			
≥ 90" BOX	4-2 GPH=48 GPH	8 @ 33"	16 @ 66"

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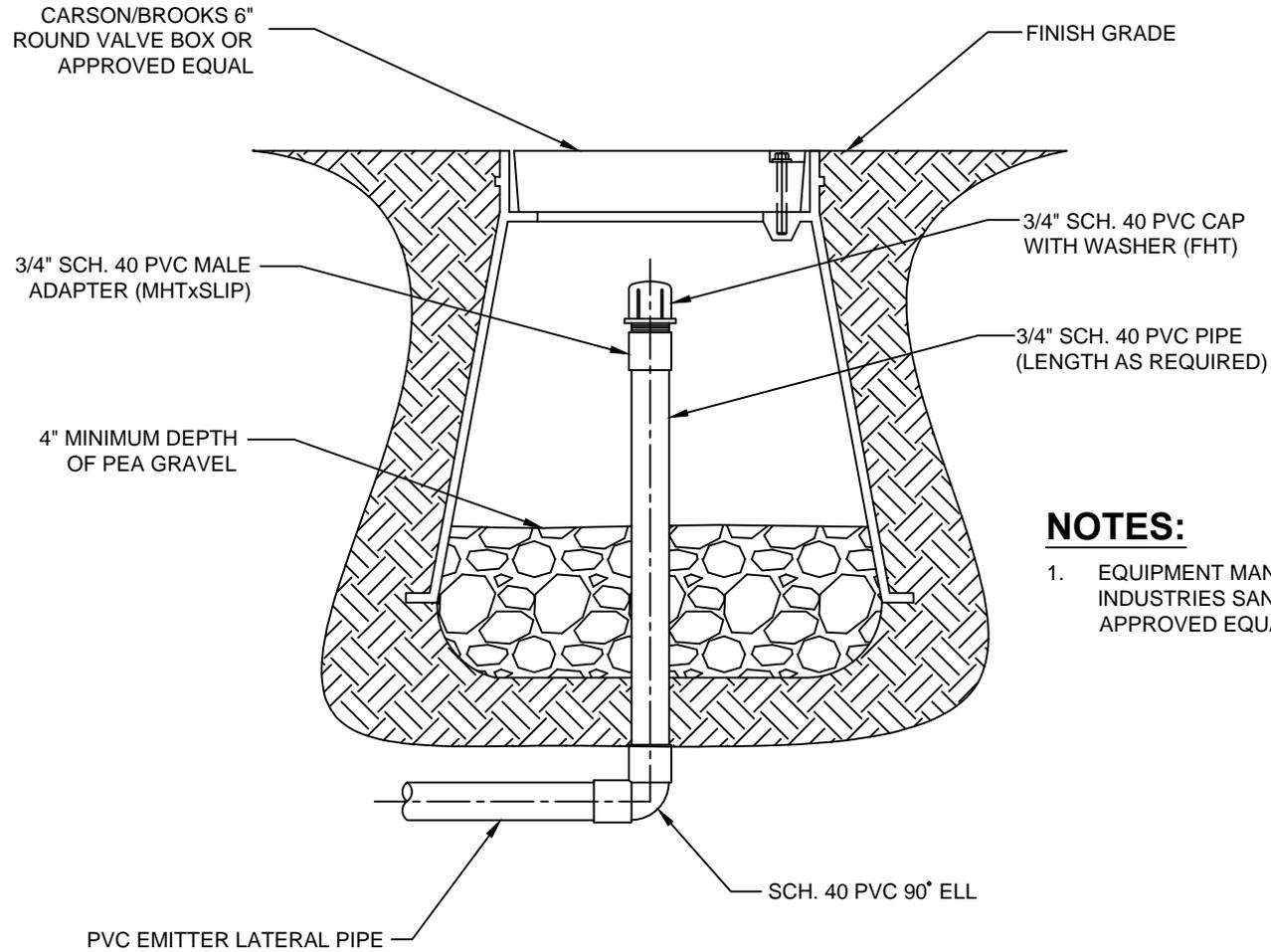
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**IRRIGATION EMITTER LAYOUT**

DETAIL NO:

**8-03**



**NOTES:**

1. EQUIPMENT MANUFACTURED BY HUNTER INDUSTRIES SAN MARCOS, CALIFORNIA OR APPROVED EQUAL.

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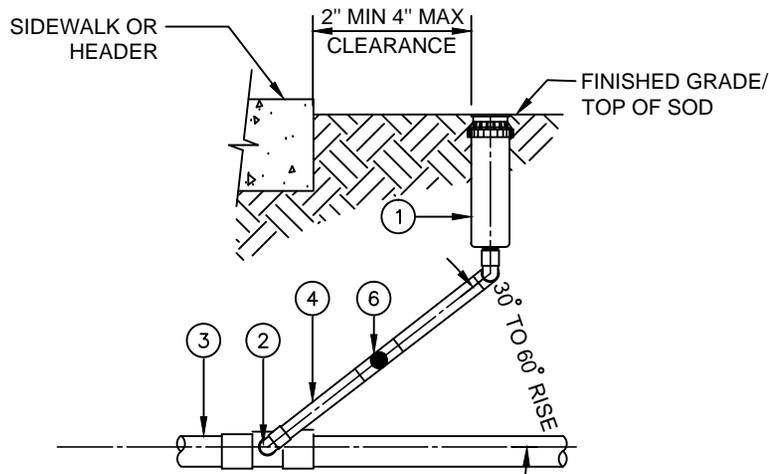
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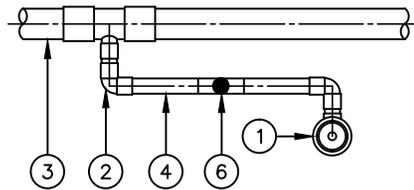
**EMITTER FLUSH CAP ASSEMBLY**

DETAIL NO:

8-04



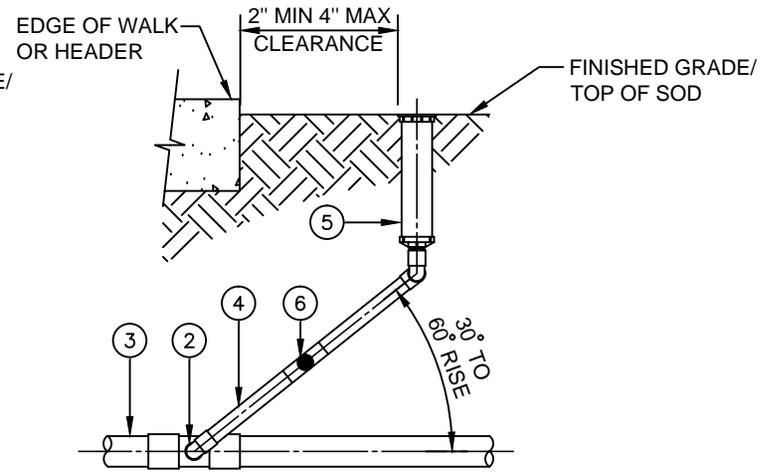
**ROTOR SPRINKLER ELEVATION**



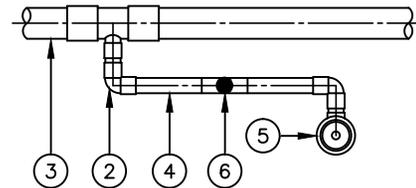
**ROTOR SPRINKLER PLAN**

**CONSTRUCTION NOTES:**

- ① ROTOR SPRINKLER HEAD.
- ② STREET ELL SCH 40 PVC.
- ③ PVC LATERAL PIPE.
- ④ SCH 80 NIPPLE TBE.
- ⑤ 4" POP-UP SPRAY SPRINKLER HEAD.
- ⑥ VERTICAL STOP FOR RISERS.



**POP-UP SPRINKLER ELEVATION**



**POP-UP SPRINKLER PLAN**

**NOTES:**

- 1. SWING JOINT TO BE THE SAME SIZE AS SPRINKLER HEAD INLET.
- 2. NO PRE-FAB SWING JOINTS.
- 3. NO MARLEX FITTINGS.
- 4. EQUIPMENT MANUFACTURED BY HUNTER INDUSTRIES SAN MARCOS, CALIFORNIA OR APPROVED EQUAL.

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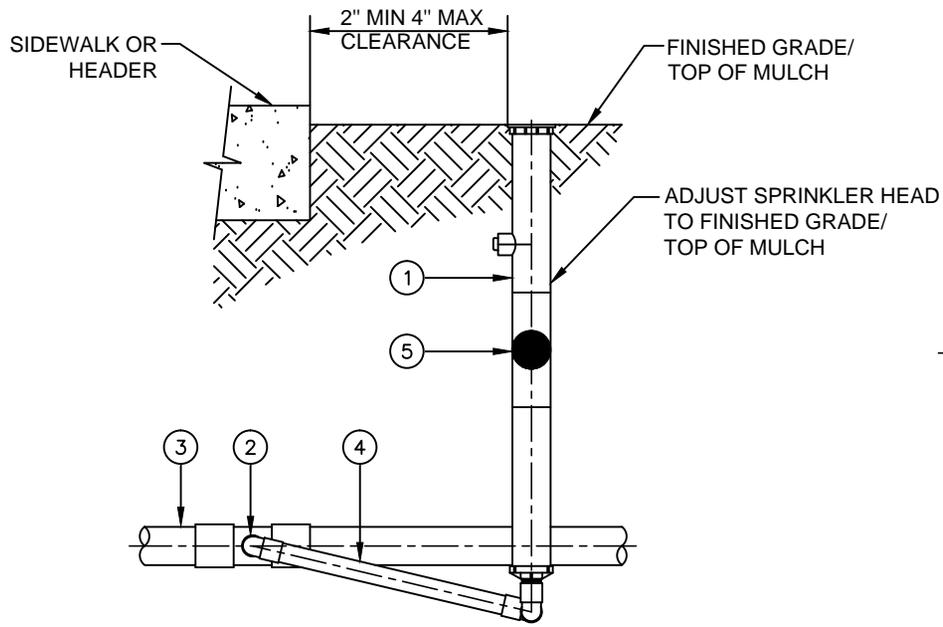
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**SWING JOINT ASSEMBLY FOR ROTOR  
AND POP-UP SPRINKLERS**

DETAIL NO:

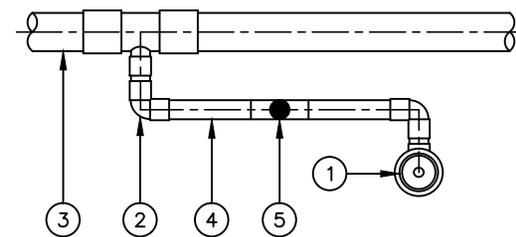
8-05



**SWING JOINT ASSEMBLY ELEVATION**

**CONSTRUCTION NOTES:**

- ① 12" POP-UP SPRAY SPRINKLER HEAD.
- ② STREET ELL SCH 40 PVC.
- ③ PVC LATERAL PIPE.
- ④ SCH 80 NIPPLE TBE.
- ⑤ VERTICAL STOP FOR RISERS.



**SWING JOINT ASSEMBLY PLAN**

**NOTES:**

- 1. SWING JOINT TO BE THE SAME SIZE AS THE SPRINKLER HEAD INLET.
- 2. SWING JOINT SHALL BE CONNECTED TO THE BOTTOM OUTLET.
- 3. NO PRE-FAB SWING JOINTS.
- 4. NO MARLEX FITTINGS.
- 5. EQUIPMENT MANUFACTURED BY HUNTER INDUSTRIES SAN MARCOS, CALIFORNIA OR APPROVED EQUAL.

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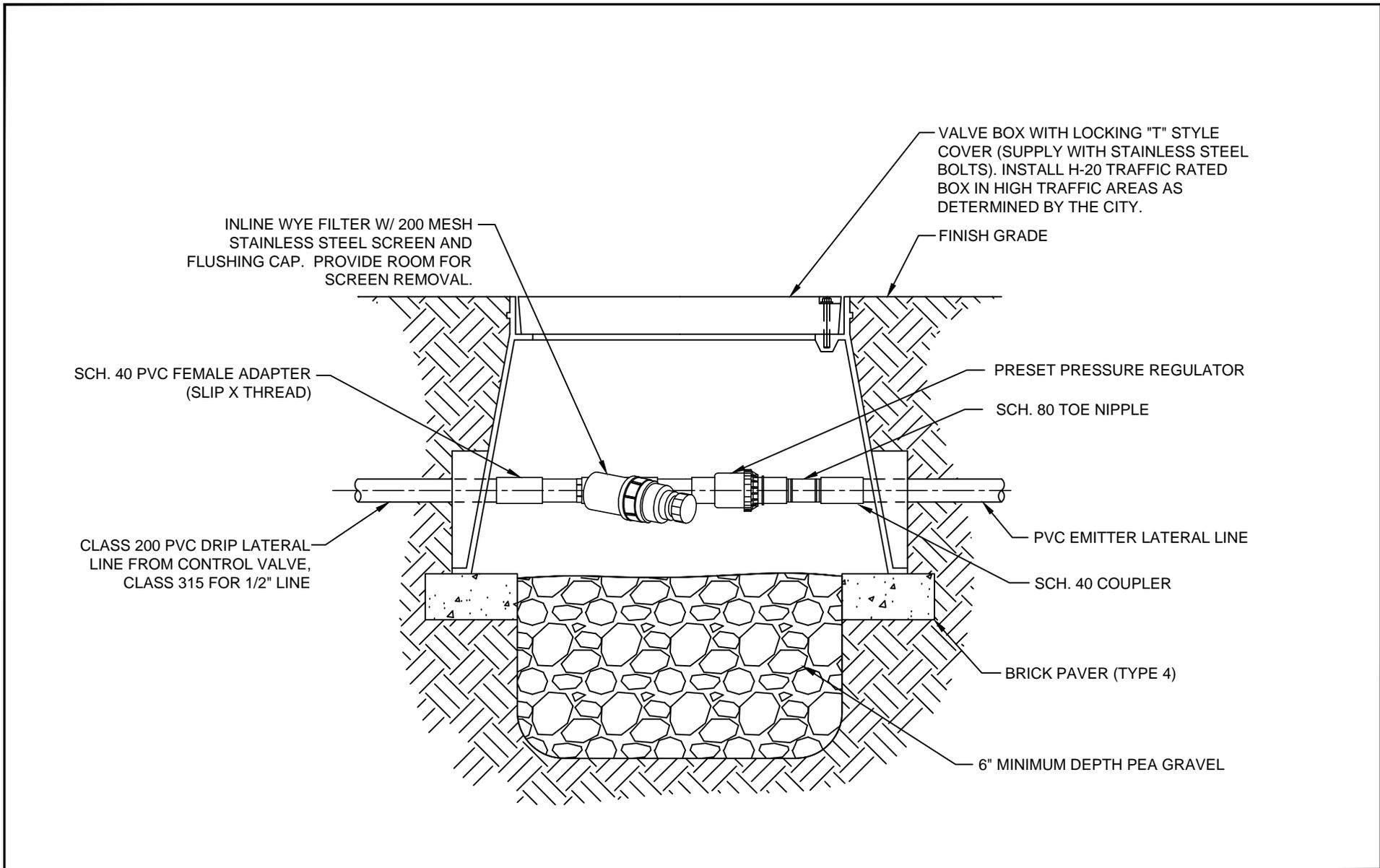
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**SHRUB POP-UP SPRINKLER  
ASSEMBLY**

DETAIL NO:

8-06



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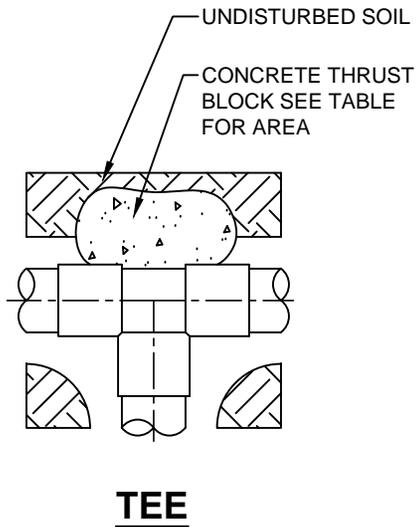
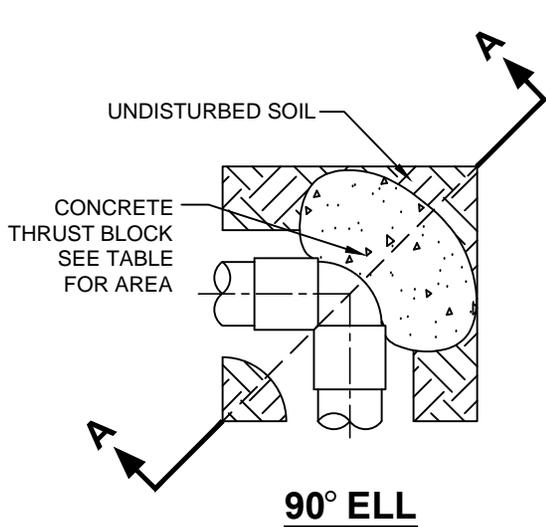
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# DRIP FILTER AND PRESSURE REGULATOR

DETAIL NO:

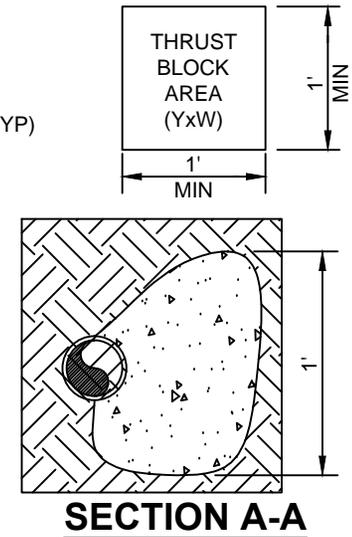
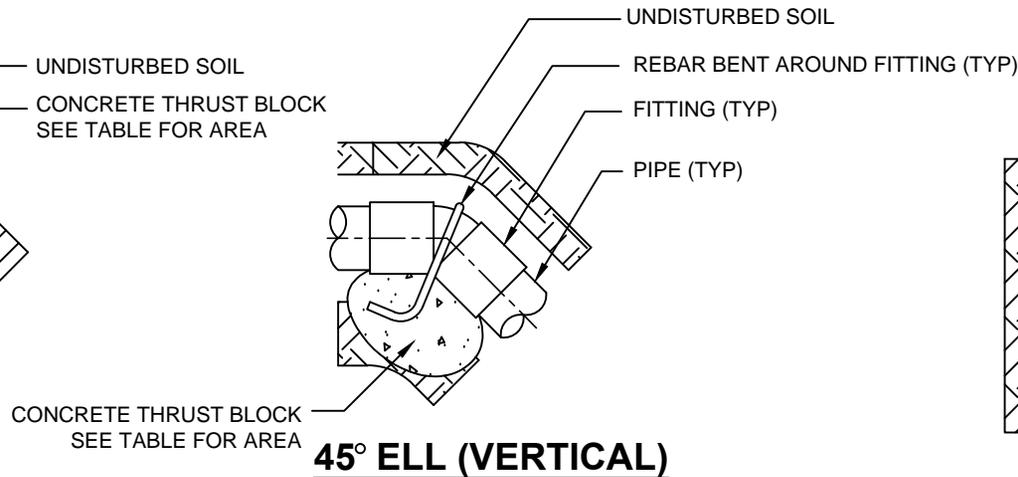
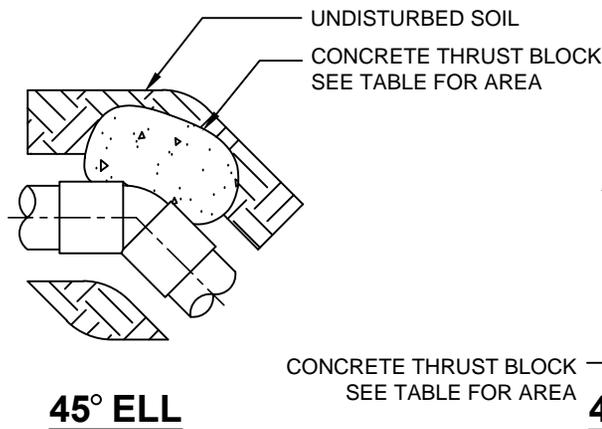
**8-07**



PIPE SIZE	MINIMUM THRUST BLOCK AREA (YxW)	
	IRRIGATION PIPE	
	TEE, DEAD END, 90° BEND	45° AND 22.5° BEND
3"	1 SF	0.5 SF
4"	1.5 SF	1 SF
5" & LARGER	2 SF	1.5 SF
	PER MAG DETAIL 380	PER MAG DETAIL 380

**NOTES:**

1. MINIMUM THRUST BLOCK AREAS ARE BASED ON A SOIL BEARING CAPACITY OF 3000 LBS/SF.
2. THRUST BLOCK SHALL EXTEND TO UNDISTURBED SOIL.
3. THRUST BLOCK SHALL BE MAG SECT. 725-CLASS C.
4. MAINLINE PIPING 4" AND LARGER SHALL HAVE MEGALUG, OR APPROVED EQUAL, JOINT RESTRAINTS INSTALLED (IN LIEU OF CONCRETE THRUST BLOCK) AT ALL FLOW DIRECTION CHANGES.



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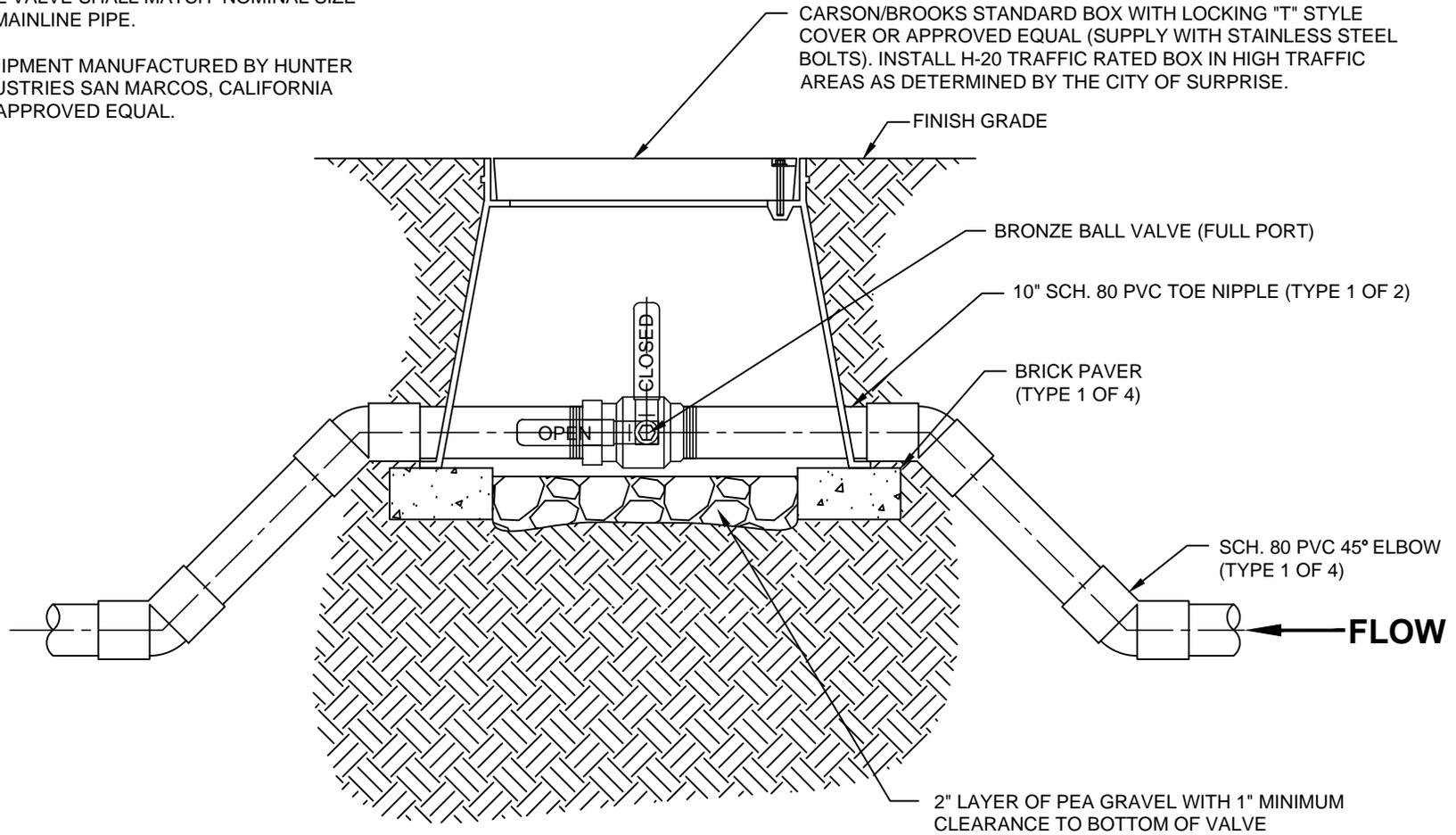
**IRRIGATION THRUST BLOCK**

DETAIL NO:

**8-08**

**NOTES:**

1. BALL VALVE SHALL MATCH NOMINAL SIZE OF MAINLINE PIPE.
2. EQUIPMENT MANUFACTURED BY HUNTER INDUSTRIES SAN MARCOS, CALIFORNIA OR APPROVED EQUAL.



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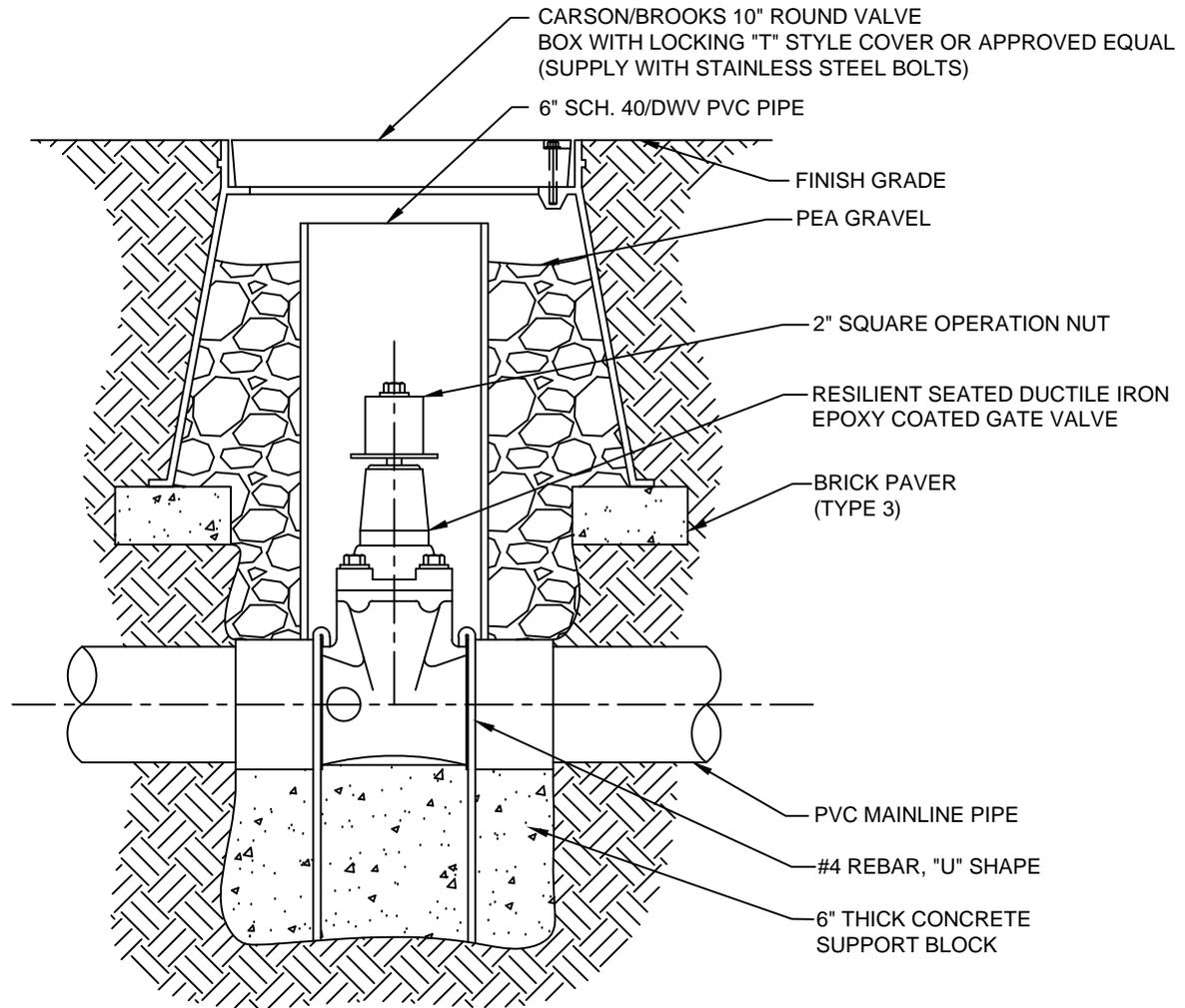
**1-1/2" AND SMALLER MAINLINE BALL VALVE**

DETAIL NO:

**8-09**

**NOTES:**

1. GATE VALVE SHALL MATCH NOMINAL SIZE OF MAINLINE PIPE.
2. PROTECT VALVE BODY WITH 10-MIL PLASTIC PRIOR TO INSTALLATION OF REBAR & SUPPORT BLOCK.
3. EQUIPMENT MANUFACTURED BY HUNTER INDUSTRIES SAN MARCOS, CALIFORNIA OR APPROVED EQUAL.



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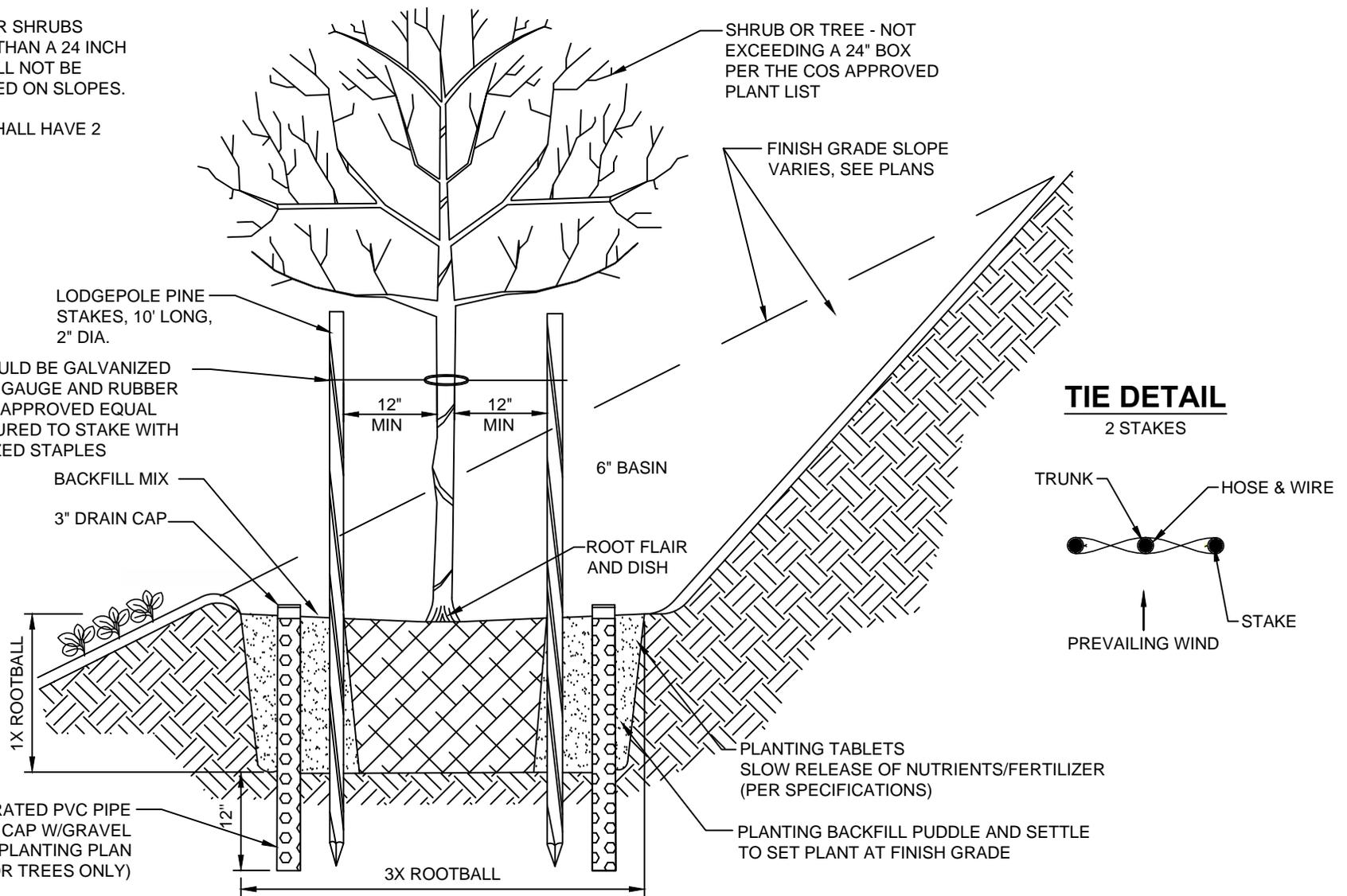
**2" AND LARGER MAINLINE  
ISOLATION GATE VALVE**

DETAIL NO:

**8-10**

**NOTES:**

1. TREES OR SHRUBS LARGER THAN A 24 INCH BOX SHALL NOT BE PERMITTED ON SLOPES.
2. TREES SHALL HAVE 2 STAKES.



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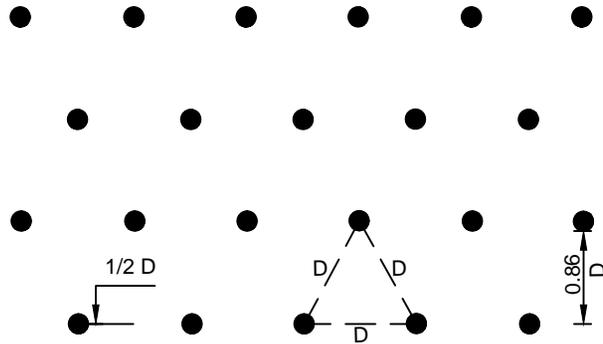
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**TREE OR SHRUB PLANTING ON SLOPE**  
**- 5 GAL., 15 GAL. AND 24" BOX**

DETAIL NO:

8-12

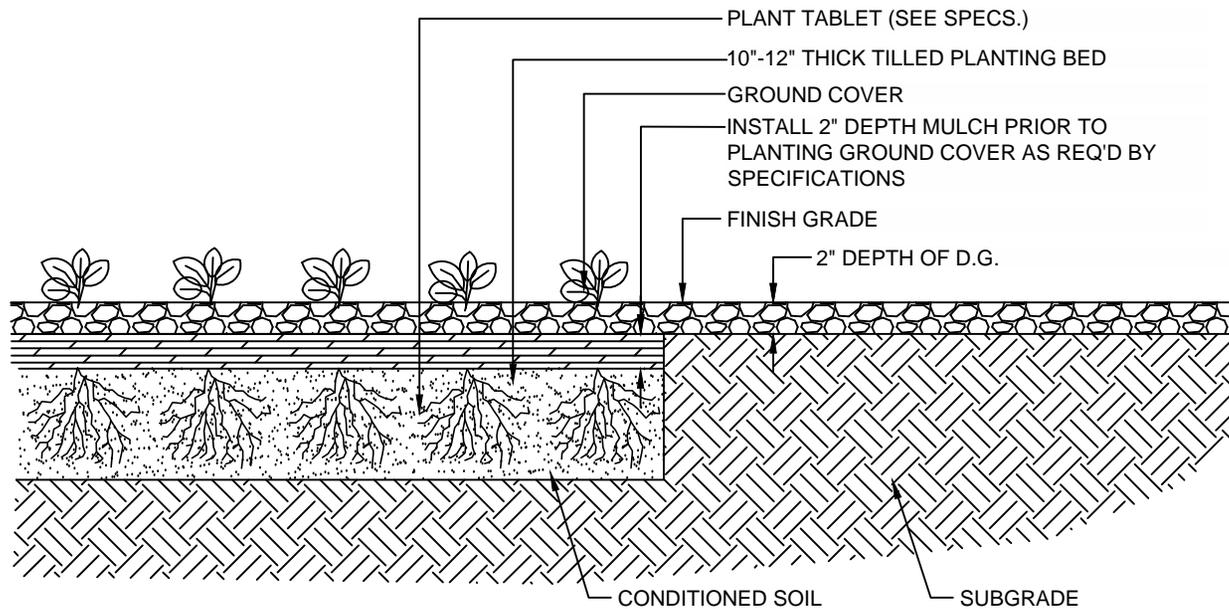


**PLANT PACING DIAGRAM**

EDGE OF PAVING, WALK, WALL, ETC.

**NOTES:**

1. LOCATE PLANTS SPACED EQUIDISTANT (D) FROM EACH OTHER AS SHOWN. D = GROUND COVER SPACING (DIMENSION AS SHOWN ON PLANTING PLAN).
2. PLANTS SHALL BE AS APPROVED BY COMMUNITY DEVELOPMENT PLANNING DIVISION.



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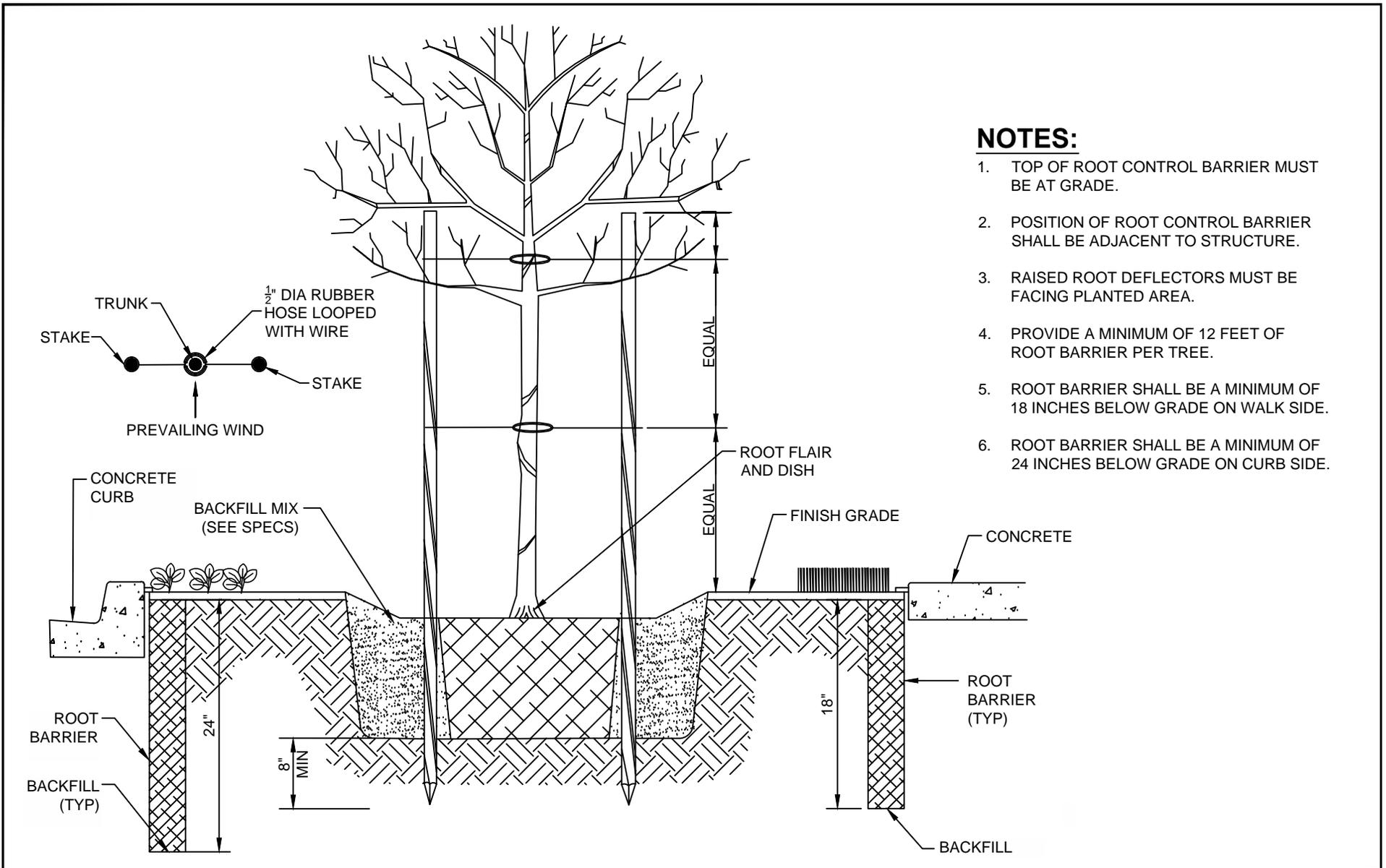
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**MULCH LAYER AND GROUND  
COVER PLANTING**

DETAIL NO:

**8-13**



**NOTES:**

1. TOP OF ROOT CONTROL BARRIER MUST BE AT GRADE.
2. POSITION OF ROOT CONTROL BARRIER SHALL BE ADJACENT TO STRUCTURE.
3. RAISED ROOT DEFLECTORS MUST BE FACING PLANTED AREA.
4. PROVIDE A MINIMUM OF 12 FEET OF ROOT BARRIER PER TREE.
5. ROOT BARRIER SHALL BE A MINIMUM OF 18 INCHES BELOW GRADE ON WALK SIDE.
6. ROOT BARRIER SHALL BE A MINIMUM OF 24 INCHES BELOW GRADE ON CURB SIDE.

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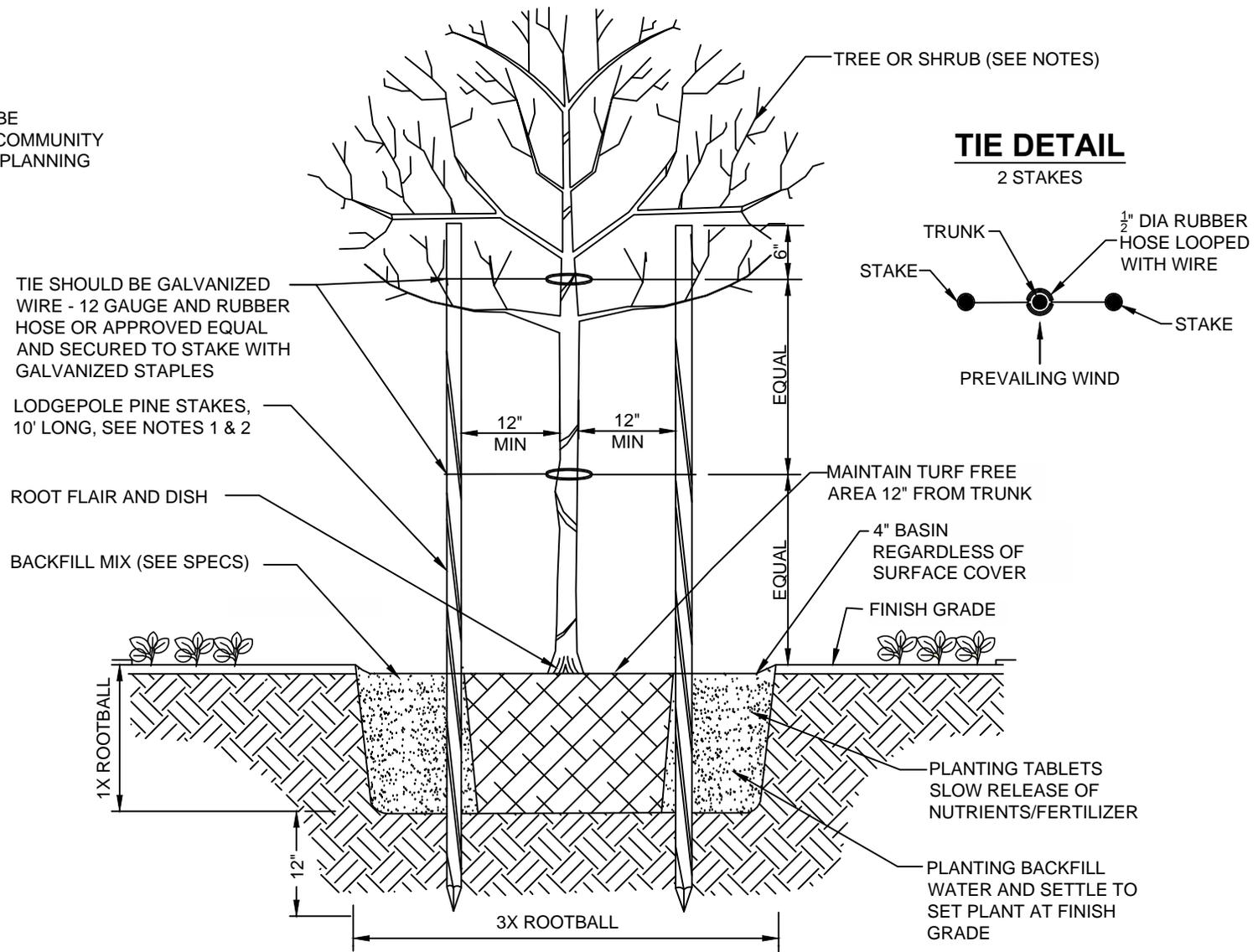
**ROOT BARRIER**

DETAIL NO:

**8-14**

**NOTES:**

1. PLANTS SHALL BE APPROVED BY COMMUNITY DEVELOPMENT PLANNING DIVISION



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**SHRUB OR TREE PLANTING**

DETAIL NO:

8-15

