

City of Tempe Utility Permit and Construction Manual



*Requirements for Securing a Permit and
Utility Construction Guidelines
in Public Rights-of-Way and Utility Easements*



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UTILITY PERMIT AND CONSTRUCTION MANUAL

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PURPOSE

This manual is intended to outline the requirements and provide guidance for working in public rights-of-way and public utility easements. It provides specifics for obtaining a right-of-way permit and also includes utility construction guidelines.

GENERAL INFORMATION

The City of Tempe grants permission for placement of all proposed utilities and for all construction or maintenance work in public rights-of-way and public utility easements by issuing a permit from the City Engineer's Office, as specified in Section 29 of the City Code.

Right-of-way permits are issued to utility companies, irrigation and power districts, governmental agencies, as well as other companies providing cable television, communication lines, telecommunications, electricity, gas, irrigation and petroleum.

The City of Tempe administers all utility planning, permitting and construction processes in accordance with the Maricopa Association of Governments (MAG) Uniform Standard Specifications, the City of Tempe Supplement to the MAG and the Arizona Utility Coordinating Committee (AUCC) Public Improvement Project Guide, except as modified by this manual.

Impact Reduction of New Utilities to Existing Utilities

The following directives were implemented as of January 16, 2008 in order to reduce the impact of new utilities to existing utilities:

- Utilities shall be installed by open cut at all arterial intersections or intersections containing major utilities.
- Utilities shall be installed by open cut across all arterial streets or streets containing major utilities.
- Utilities may be installed by boring in areas where open cuts are not possible (railroads, etc.) after approval from the City Engineer.
- When utilities are installed by boring, a bore profile shall be submitted for review and approval prior to start of bore and shall be based on the best available information including as-builts, potholes, etc.

Major utilities include but are not limited to water/sewer transmission mains, high pressure gas lines, high capacity communication lines, nitrogen gas lines, etc. when impacts could cause significant outages and/or result in costly repairs.

Need for a Permit

Permits are required for not only constructing or maintaining utility company facilities within rights-of-way, but also for all barricading for traffic control and locating existing facilities within public rights-of-way and public utility easements.

The City of Tempe requires permits in order to ensure that all utility company facilities are:

- Constructed in the proper location with adequate spacing

- Built with acceptable materials and in accordance with current specifications
- Installed in a safe manner

In addition the permit ensures:

- Infrastructure is protected
- Landscaping is restored
- Final completion is assured and accepted
- Liability issues are properly addressed

Engineered construction plans must be submitted for review as part of the permit process. The objectives are to make optimum utilization of the space available in the public rights-of-way and public utility easements to ensure compliance with all City policies; to coordinate with the construction work of other utility companies, agencies, and City projects; and to reduce risk and inconvenience to the public.

See Exhibit A for an overview of the utility permit processing and construction flowchart.

A general list of the permits issued by the Engineering Division for work in the right-of-way is as follows:

Utility Permit

A Utility Permit issued by the Engineering Division agency is required in order for work to take place within the right-of-way. This permit allows the utility company or a contractor hired by a utility company to conduct work within the right-of-way and is required prior to submitting the Traffic Control Plan. The permit number shall be identified on the Traffic Control Plan (TCP) so that Traffic Engineering staff has all the information necessary to proceed with review of the TCP.

Miscellaneous Trenching Permit

If the permit application is contingent upon a customer/developer provided trench and conduit, a miscellaneous trenching permit shall be obtained by the customer. No work shall begin within City right-of-way until the miscellaneous trenching permit has been issued.

Pothole Permit

If the permit application is contingent upon a customer/developer needing to pothole within City right-of-way to verify utility depths or pothole for any other reason, a pothole permit shall be obtained by the customer needing to pothole. No work shall begin within City right-of-way until either a miscellaneous trenching permit or pothole permit has been issued.

Semi-Annual Maintenance Permit

If the permit application is contingent upon a customer needing to maintain its facilities within the City right-of-way, a semi-annual maintenance permit shall be obtained by the customer. No work shall begin within City right-of-way until the semi-annual maintenance permit has been issued. Maintenance shall be defined as access to existing facilities to perform operations where no excavation is needed.

Semi-Annual Emergency Permit

If the permit application is contingent upon a customer needing to repair or replace its facilities due to an emergency situation within the City right-of-way, a semi-annual emergency permit shall be obtained by the customer. No work shall begin within City right-of-way until the semi-annual emergency permit has been issued. Emergency shall be defined as anything that results in the unplanned disruption of existing service. Excavation is allowed under this permit. A pre-construction conference with City of Tempe staff is required before the start of any work related to this permit.

The exception to this rule is when a temporary facility is being constructed for the purpose of continuing an unexpected service disruption. In this case, a pre-construction conference is not required but notice within 24 hours to the City of Tempe Engineering Division via the on-line “Notice of Construction” is required. A Utility Permit submittal as a follow up to the emergency construction work is required. Any temporary lines shall be removed within a six (6) week time frame.

Other Semi-Annual Permits

The City of Tempe may issue other semi-annual permits in order to meet the special needs of the utility company. Examples for these semi-annual permits include pole inspection and replacement, gas pipeline inspection (TRIMP), and energization of street lights.

PERMIT APPLICATION AND FEES

Permit Application

A "Utility Permit Application Form" is submitted to the City of Tempe Engineering Division together with a minimum of three (3) complete sets of construction plans (drawings, details, notes, etc.) At least one set shall be an 11"x 17" size. The Utility Permit Application Form can be found at <http://www.tempe.gov/dryutilities>.

Prior to submittal of the permit application, the utility company is encouraged to verify and reconcile the address selected for the work. The verification can be made at the Engineering Division Front Counter.

Upon receiving the application and plans, a technical review will be performed by the City in order to:

- Verify that the work is in the public right-of-way or public utility easement
- Check for compliance with construction standards and City requirements
- Approve alignments
- Determine if other work is occurring at the same time or on the same site
- Verify that all joint trench opportunities have been incorporated into the design
- Check for facilities alignment conflicts
- Determine if the work is in newly paved streets or alleys
- Check traffic flow requirements
- Verify that proper pavement replacement or horizontal drilling requirements have been incorporated into the plans

The City requires that all permitted projects comply with the Arizona Utility Coordinating Committee project models, including the Joint Trench Use Model and the Western Underground Trench Formula. See <http://arizona.apwa.net/education/auccpipgs/> for more information.

Upon completion of the review (allow up to fifteen (15) business days), a permit will either be issued to the applicant or the application will be returned for further modifications. If additions or corrections are required, the applicant will be notified and must resubmit after changes have been made. Note that these are target turn-around times only.

Utility Permits are generally issued for one calendar year and extensions may be issued on a case by case basis. If more than two extensions are requested, a new plan and permit submittal will be required. Special conditions or stipulations may have been added to the permit application before issuance; therefore it is important that these conditions be carefully reviewed by the applicant for compliance.

Fees

Permit fees will be collected upon issuance of the permit in accordance with the fee schedule as set forth by City policy. The engineering permit fees can be found in the City Code, Appendix A at www.tempe.gov/citycode. Proof of insurance with agreed to limits of liability and the City of Tempe named as additionally insured, as outlined in Exhibit D, must be provided before any permits will be issued. The fee and insurance requirements may be satisfied by license or franchise agreement. Seal coat charges in accordance with MAG Standard Specification 336.2.4 are also collected upon permit issuance.

Due to the City's Pavement Management Program, efforts are made to avoid cutting new street pavement or newly resurfaced pavement. In the event that a street opening occurs in a pavement less than seven years old cannot be avoided, a surcharge fee to cover damages and early deterioration will be assessed based on the fees shown in the City Code, Appendix A. On joint trench projects, the surcharge fee will be apportioned to the participating utilities. Potholing will be exempt from the surcharge. Resurfaced pavements include micro-surfacing and slurry sealing but do not include local street fog seals.

CONSTRUCTION PLANS

Plan Requirements

Complete construction plan drawings shall be provided showing:

- All plans must be submitted on a maximum size sheet of 24" x 36" and be legible at 50% reduction. At least one set in the submittal shall be no larger than 11" x 17" size. The maximum engineering scale for plans is 1"=30'.
- Existing and proposed rights-of-way and public utility easements with dimensions. This information is available at the Engineering Information Counter, (480) 350-8288.
- Location and size of all existing and proposed facilities and street improvements to which the proposed construction will either cross or run parallel within the right-of-way corridor. All proposed facilities shall maintain a six (6) foot parallel separation from city facilities.
 - When proposed facilities are located within an alley or behind a curb and gutter, all of the following existing facilities shall be shown and drawn to scale for the entire alley or area behind the curb: curb, gutters, sidewalks, paving, storm drains, sanitary sewer lines, water lines, irrigation facilities, street lights, other utilities, landscaping, structures and traffic signals. Simply using symbols to indicate these facilities is not sufficient; a legend should be included.
 - Service installations in alleys (excluding bores) or public utility easements shall show sufficient information to indicate location and to prevent conflict or hazard.
- Locations and limits of proposed construction.
- Dimensioned ties to monument lines in streets and to property lines in alleys and easements.
- Topography taken by field or aerial surveys or from up-to-date City record drawings showing existing features in the area of proposed construction.
- A vicinity map indicating major cross streets and north arrow.

- A note stating “Notify Arizona Blue Stake before Construction.”
- Tempe General Notes for Utility Construction, as shown in Exhibit E.

Profile Requirements

Two methods are available to a Utility Company for permitting of conduits installed by horizontal drilling. Method “A” is the traditional method of permitting in which the permit submittals to the City consist of first, a Pothole Permit request and second, a Utility Permit request. The Utility Permit submittal would show the information as listed in the Plan Requirements (above) and a bore profile for the entire proposed conduit run. Method “B” is a two-step approval process in which the Plan Review is completed in the office and the Bore Profile approval is deferred to Field Approval (the Pothole Approval is included with the Plan Approval).

Method “A”

Complete profile drawings showing the following minimum requirements shall be provided for all projects that require utilities to be bored. An accurate profile must be approved on the permitted plans before starting the bore. These requirements apply to not only longitudinal and lateral street bores but also utility bores outside paved areas that cross existing utilities:

- A plan and profile of each proposed bore, per Tempe Standard Detail T-455, along with boring and receiving pit locations. Pothole locations shall also be identified on the plans.
- Elevations taken from the existing surface grades at intervals of 100’ or less in the same alignment as the proposed construction. The profile shall be shown as a continuous line on the plans throughout the project. Finished and/or natural grade profile shall be shown within the proposed construction area.
- All existing and proposed facilities that the proposed construction would cross. Storm drains, irrigation lines, sanitary sewer lines, waterlines, services, conduit systems and underground utilities shall be drawn to scale. When exact depths are unreliable on as-built plans, existing utilities must be potholed in the field and their locations shown accurately on the plans before a permit is issued.
- A soil analysis showing the gradation of the soil in the bore area that indicates the feasibility of boring through the existing material. Submit the completed data sheet, Exhibit B, to complete bore planning. Reliable historical information about the existing soil conditions, such as previous project soil analyses, may be used instead of providing new soil data.
- For clarity, a vertical scale that adequately depicts installation of existing facilities is required. Please specify scale (1” = 2’, 1” = 3’, 1” = 4’, 1” = 5’). It is recommended to use different vertical and horizontal scales on profile details.
- Elevation shall be City of Tempe datum and indicated on the plans.
- Existing facilities shall be drawn showing their approximate outside dimensions.
- Profile designs shall provide a minimum of 24 inches of clearance between the outer edges of the facilities being bored to any city owned infrastructure including water, sewer, storm drain and irrigation lines. Clearances to all other utilities shall be a minimum of 12 inches or per the requirements of the owner of the utility, whichever is greater.

Method “B”

This method has the Plan Review being reviewed and permitted and the Bore Profile approval being deferred to Field Approval. The pothole approval is included with the plan approval. The permit method is as follows:

- Approve plan with proposed running line.
 - Plan should show bore pit locations with street name and station/ offset for each pit or street name and unique identifier for each pit or, if in an alley, alley referenced with parallel street name (ex. Alley north of Fairmont Street).
 - Plans should show bore length between each pit.
 - Identify all utility crossings (inclusive of water and sewer services) of the proposed running line.
- Before starting any bore in the public right of way or public utility easement, the contractor shall schedule a separate field meeting with the project inspector to verify that all Arizona Blue Stake and City of Tempe design requirements are met.
 - Contractor shall mark the proposed running line.
 - Bluestake markings shall be complete prior to calling to schedule the pre-construction meeting.
 - Contractor shall call 480-350-8475 (City of Tempe Inspection Hotline) a minimum of 24 hours prior to the pre-construction meeting to schedule the meeting.
- Pre-construction meeting
 - Inspector will verify running line.
 - Horizontal clearance to City of Tempe water, sewer, storm and flood irrigation mains shall be 6-feet minimum.
 - Horizontal clearance to non-city utilities shall be 2-foot minimum.
 - Contractor shall identify all proposed pothole locations.
- Contractor shall submit two copies of the profile of each proposed bore to the City of Tempe Inspector prior to installing the bore. Contractor shall use the 11” x 17” bore profile template as provided on City of Tempe website, www.tempe.gov/dryutilities.
 - For clarity, the contractor should use a recommended horizontal scale of 1” = 20’ or greater. The maximum horizontal scale allowed is 1” = 30’. The recommended vertical scale is 1” = 2’. The maximum vertical scale allowed is shall not be greater than 1” = 3’.
 - The plan sheet number shall be shown on the bore profile sheet as a cross-reference.
 - The bore pit locations with street name and station/ offset for each pit or street name and unique identifier for each pit or, if in an alley, alley referenced with parallel street name (ex. Alley north of Fairmont Street) shall be shown on the bore profile sheet.
 - The bore length between each pit shall be shown on the profile.
 - Each existing utilities being crossed (including all sewer and water services) shall be shown and identified as to type of utility and size on the profile.
 - The proposed utility with clearances to existing utilities shall be shown on the profile. The clearances required by the City of Tempe are as follows:
 - 1-foot vertically to non-City of Tempe Utilities; and
 - 2-feet vertically to City of Tempe Utilities.
 - The Utility Company representative or authorized agent of the utility company shall sign the profile prior to contractor submittal to City inspector.
- The City of Tempe Inspector will review the Bore Profile onsite with the Contractor prior to start of bore.

- If the bore profile meets the City of Tempe standards for clearances, the inspector signs the original 11x17 profile(s) as prepared by Contractor. The statement for signature will read “The signature of the inspector on the this sheet, the contractor’s bore profile, only confirms that the proposed bore path is not in conflict with Tempe Engineering utility clearance standards based on the contractor's representation of the location of the utilities.”
 - Inspector retains the signed original 11x17 profile(s).
 - The inspector will stamp one copy of the original 11x17 profile(s) for the contractor or Utility Company representative. The stamp will have the statement “Original Signed by City of Tempe Inspector” and will have the date of stamping written in the “Date _____”.
 - The Contractor shall not proceed with the bore until after receiving a stamped copy of the profile.
- Revisions to Bore Profile
 - If a profile changes due to field conditions, the original profile as signed by the inspector will be marked as void and retained in the City records. The contractor shall submit two copies of the revised bore profile to the inspector prior to installing the bore.
 - The City of Tempe Inspector will confirm vertical clearance from City facilities at crossings after pull back of conduits. No permanent backfill shall be installed until after the City of Tempe Inspector has confirmed the vertical clearance.
 - A correction notice may be issued if the clearance standards from City utilities are not met.
 - The City of Tempe Inspector will document in their Daily Inspection form that the bore cleared City facilities per profile.
 - Final inspection.
 - All permits require final inspection and/ or final walk through.
 - After all restoration work is complete, Contractor shall contact the assigned utility inspector and schedule a final inspection.

Underground Requirements

- All new facilities are required to be installed underground unless specific approval is obtained from the City Engineer.
- Temporary overhead services for construction may be permitted for a specified period. No final occupancy will be given until all temporary services are removed.
- Location of new utilities shall be in accordance with City of Tempe Standard Details.
- Minimum cover requirements (depths) shall be in accordance with Exhibit F.

CONSTRUCTION REQUIREMENTS

Any work in the street/alley or right-of-way requires a right-of-way permit, approved construction plans and a site-specific Traffic Control Plan (TCP). These three items must be available at the project site at all times. Lack of any of these items may cause construction to be halted.

All installations shall:

- Be governed by the City of Phoenix Traffic Barricade Manual and/or added specific traffic regulation, which shall be attached to the approved permit whenever applicable.
- Conform to the latest applicable MAG Uniform Standard Details and Specifications and the current Tempe Standard Details Supplement to the MAG Uniform Standard Details.

Traffic Control Plan

Although it is not part of the construction plans that must be submitted, a TCP must be approved by the City Transportation Department before construction may commence. Contact the City Transportation Department at (480) 350-8219. An Off-Duty Tempe Police Officer is preferred when the work zone is within 300 feet of a signalized intersection. City of Tempe Police Department civilian personnel who have traffic control training may be substituted for the requirement of an Off-Duty Tempe Police Officer to control traffic within the City of Tempe. Contact Kay Pence, Tempe Police Department at 480-350-8789 for scheduling of Off-Duty Tempe Police Officers. See Exhibit J for Intersection Traffic Control Requirements.

Notification of Construction

Prior to the start of construction work, the city must be notified that construction will be commencing within the next 24 hours. This notification shall be done via the on-line “Notification of Construction” found at <http://www.tempe.gov/dryutilities>. Businesses and/or residences adjacent to the work shall be notified prior to the start of the construction work.

Inspections

The utility company is to inspect its work with the City providing periodic oversight. Requests for City inspections must be coordinated with the Inspector assigned to the project. Excavations may not be backfilled without satisfactory City inspection.

Backfill (streets and alleys)

All alley and street excavations shall be compacted to a minimum of 95% of standard proctor density, or half-sack slurry backfill; all alleys are to be surfaced with a minimum of 6” of ABC and repaved where paving exists. All street repairs shall be presumed to require specification of Detail T-450. The approved plan alley grade shall not be changed by more than one tenth of a foot in a crowned alley. Inverted alleys shall be graded to match the original plan grade and original construction. Paved streets and alleys shall be repaved in a manner that matches the grade of undisturbed pavement before construction.

Street Bores

Before starting any street bore that crosses a major roadway, the contractor must schedule a separate field meeting with the project inspector to verify that all Arizona Blue Stake and design requirements are met.

Construction Schedules

When specified by the City Engineer on the approved permit, a construction schedule must be submitted one week prior to start of construction. This schedule shall include proposed starting and completion dates. This schedule must be faxed or mailed to the appropriate inspector.

Construction Signs

All utility construction projects on major streets must have stationary signs posted at the beginning and end of the construction location provided that the project is either:

- one mile or greater in length OR
- lasting 30 days or longer.

Signs must be posted one week before the project begins until the project is completed. The signs shall indicate the name and phone number of the permit holder as well as the start and estimated completion dates for the project.

All other utility company construction projects (less than one mile in length or lasting less than 30 days) must have portable signs posted for the duration of the project indicating the permit holder's name and phone number. This does not apply to routine maintenance work.

Abandonment of Facilities

All facilities that are being abandoned shall be removed and existing infrastructure restored. No facility which use is abandoned may remain in place.

Final Inspection/Walk Through

All permits require final inspection and/or final walk through. Please contact your assigned utility inspector and schedule a final walk through.

Special Construction Considerations

Steel Trench Plates in the Roadway

When installing plates refer to MAG Standard Detail 211, but note that Tempe requires the pavement to be milled and plates to be depressed at speeds of 25 mph and greater. Plates shall be secured to ensure they will not shift. An after-hours contact name and phone number shall be shown on the traffic control plan in the event the plates need to be re-secured.

Steel Trench Plates in the Alley

Tempe requires the use of steel plates in all alleys. Plates shall be secured to ensure they will not shift under the weight of any size roadway vehicle. An after-hours contact name and phone number shall be shown on the traffic control plan in the event the plates need to be re-secured.

Vacuum Excavation

Vacuum excavation in the right-of-way shall be accomplished as follows:

- A pothole permit is required for all utility location work, and an approved traffic plan must be with the crew at all times.
- A site plan must be submitted to Engineering showing the location and quantity of potholes.
- Potholes shall not exceed 12" x 12" and shall conform to MAG Standard Detail 212.
- Within seven working days of the vacuum excavation a 6-inch thick hot mix permanent patch, placed in 2-inch lifts, will be placed over one of the following backfill strategies:
 - Pea gravel for full depth on holes to be re-excavated.
 - ½ sack CLSM from 6 inches above the top of the highest utility to the bottom of the new asphalt.
- No steel plates or plugs will be allowed.
- Unauthorized nighttime/weekend digging will not be allowed.
At least one hole at each location must be marked with the initials of the excavating company. A spray stencil is acceptable.

Telecommunications Cable Installation (Copper or Fiber Optic)

Cable providing telecommunications service by connecting regions or states or by connecting central offices within a metropolitan area, known as “Trunk Lines,” shall be installed as described below:

- If the cable is to be installed within an open trench then the cable shall be placed within a schedule 40 PVC or an approved equivalent conduit. The conduit shall be buried at a minimum depth of 48 inches, measured to the top of the conduit. A 6-inch thick colored concrete cap shall be poured above the conduit. Color coded plastic warning tape with a minimum thickness of 5 mil and a minimum width of 3 inches shall be installed in the trench above and centered over the concrete cap at a depth of 12 to 18 inches below the surface.
- Cable crossing under existing paved streets shall be accomplished by jacking or boring unless open trenching is authorized by the City Engineer. The cable shall be placed within a schedule 40 PVC conduit, or approved equivalent, at a minimum depth of 48 inches.
- Cables that are installed in existing duct banks shall be placed in a manner that provides the best protection for the cables in order to minimize the chance for damage to the cables by excavation around the duct banks.

Telecommunications cables other than “Trunk Lines” shall be installed as described below:

- If a cable is to be installed within the right-of-way of a local street then it shall be placed within a schedule 40 PVC or approved equivalent conduit. The conduit shall be placed at a minimum depth of 36 inches. However if the conduit is placed under a planned street pavement, it shall be placed at a minimum depth of 48 inches.
- Cable crossings under existing paved streets shall be accomplished by jacking or boring, unless open trenching is authorized by the City Engineer.
- Cables to be installed in existing duct banks shall be placed within the bank in a manner that provides protection appropriate for the level of service provided by the cable.

If a cable that is to be installed is fiber optic then a tracing or locating wire shall be installed in the conduit or the trench.

GENERAL CONSTRUCTION GUIDELINES FOR CONTRACTORS

Exhibit F contains general utility and right-of-way construction guidelines for contractors.

AVOIDANCE ZONES FOR NEW PEDESTALS

Exhibit I shows zones within alleys that are considered as avoidance areas when new pedestals are being placed. These zones are based on the turning radius of solid waste vehicles, emergency vehicles (fire) and public works service trucks. The avoidance zone indicates an area where the bumper of the vehicle could reasonable impact any object above ground. If an existing pedestal is within an avoidance zone and

is being replaced in kind, the utility company should coordinate the location with the Engineering Division and make best efforts to relocate the pedestal to outside of the zone.

ENGINEERING FEES

Fees are set by the Tempe City Code, Appendix A – Fee Schedule, Chapter 19. See <http://www.tempe.gov/dryutilities>

ARIZONA BLUESTAKE

As provided in A.R.S. §40-360.22, permittees are required to locate all underground facilities before start of excavation or boring and take measures to protect the facilities during construction. See <http://www.tempe.gov/dryutilities>

RECORD DRAWINGS (INSTALLATION RECORDS)

Record drawings of the complete construction shall be maintained by permittee in accordance with Arizona State Statutes and shall be provided by the permittee if requested by the City Engineer.

REFERENCES

- A. Utility Permit Application Form: <http://www.tempe.gov/dryutilities>
- B. Maricopa County Association of Government (MAG) Uniform Standard Specifications and Details for Public Works Construction:
http://www.azmag.gov/communications/Specs_and_Details/default.asp
- C. City of Tempe Supplement to the MAG Specifications and Details:
<http://www.tempe.gov/index.aspx?page=2147>
- D. City of Phoenix Traffic Barricade Manual: <http://phoenix.gov/streets/traffic/index.html> and/or Manual on Uniform Traffic Control Devices (MUTCD): <http://mutcd.fhwa.dot.gov/>
- E. Arizona Blue Stake, Inc.: <http://www.azbluestake.com/>
- F. Arizona Utility Coordinating Committee (a subcommittee of the Arizona Chapter of the American Public Works Association) Public Improvement Project Guide:
<http://arizona.apwa.net/resources/pipg/>
- G. Arizona Revised Statutes: <http://www.azleg.state.az.us/ArizonaRevisedStatutes.asp>
- H. Code of the City of Tempe: <http://www.tempe.gov/citycode/>

Exhibit A

Utility Permit Processing and Construction Flow Chart

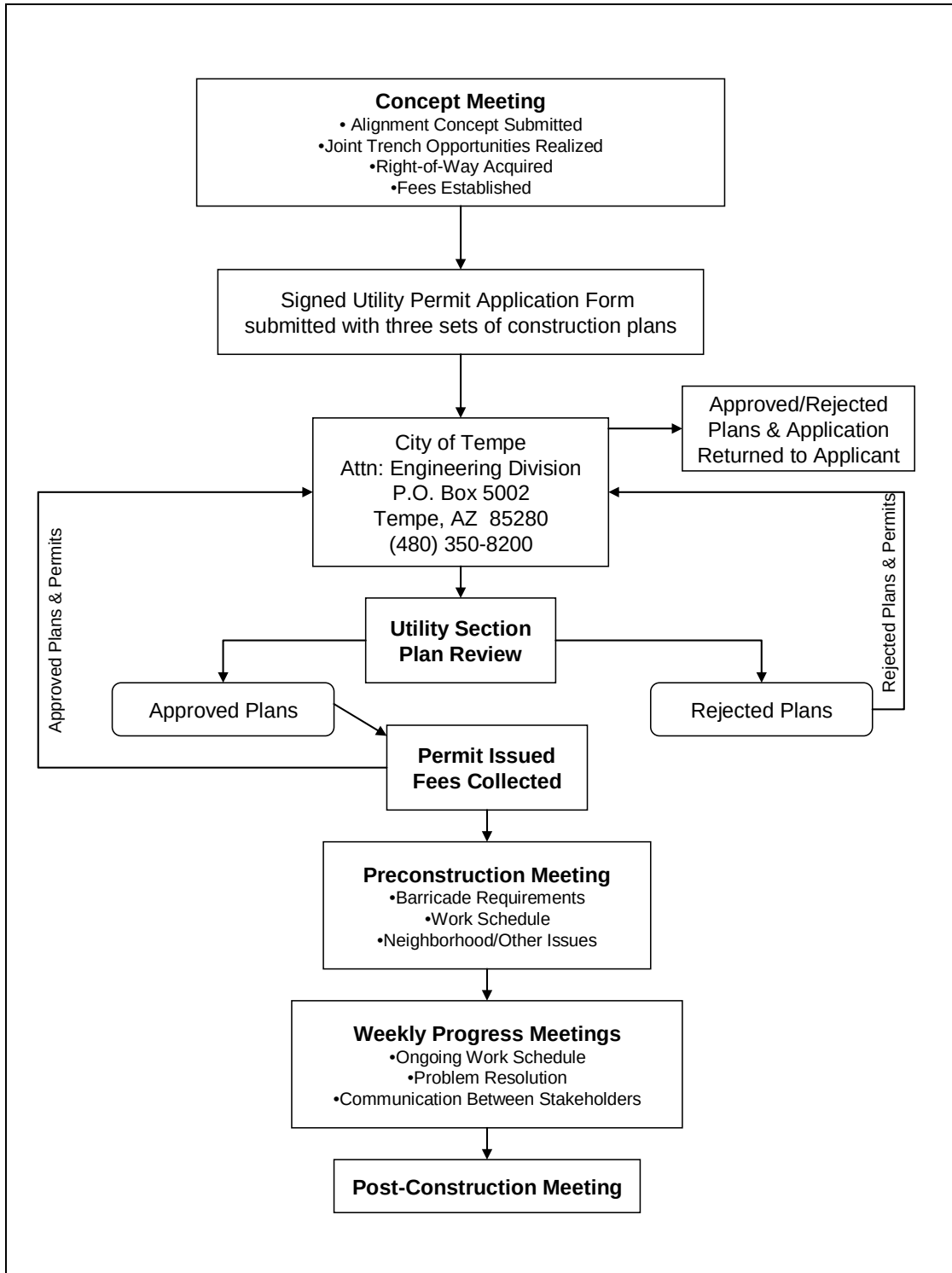


Exhibit B

Drilling Fluids Bore Planning

Customer:
Job Number:
Location:

Length of Bore:	Average Depth:	Product Installing:	
Hole Size Shooting Out:	Pre-Reamed Size:	Finished Hole Size:	
Drilling Conditions (sand, gravel, clay, etc.):			
Water Source:			pH:
Disposal Location:			
Start Time:	Finish Time:	Standby Time:	Breakdown Time:

Pilot Hole Size ____ = ____ gal. per ft. volume x ____ ft length = ____ total volume of hole
 Total volume ____ x _1 _2 _3 _4 _5 (amount of fluid required to liquefy soil) = ____ total estimate
 gallons of fluid required to remove cuttings.

Back Ream Size ____ = ____ gal. per ft. volume x ____ ft length = ____ total volume of hole
 Total volume ____ x _1 _2 _3 _4 _5 (amount of fluid required to liquefy soil) = ____ total estimate
 gallons of fluid required to remove cuttings.

Total gallons drilling fluid for pilot hole:
Total gallons drilling fluid for back ream:
Total gallons drilling fluid required:

Total gallons drilling fluid required ____ divided by mix tank size ____ = ____ total number of tanks
 needed for the bore

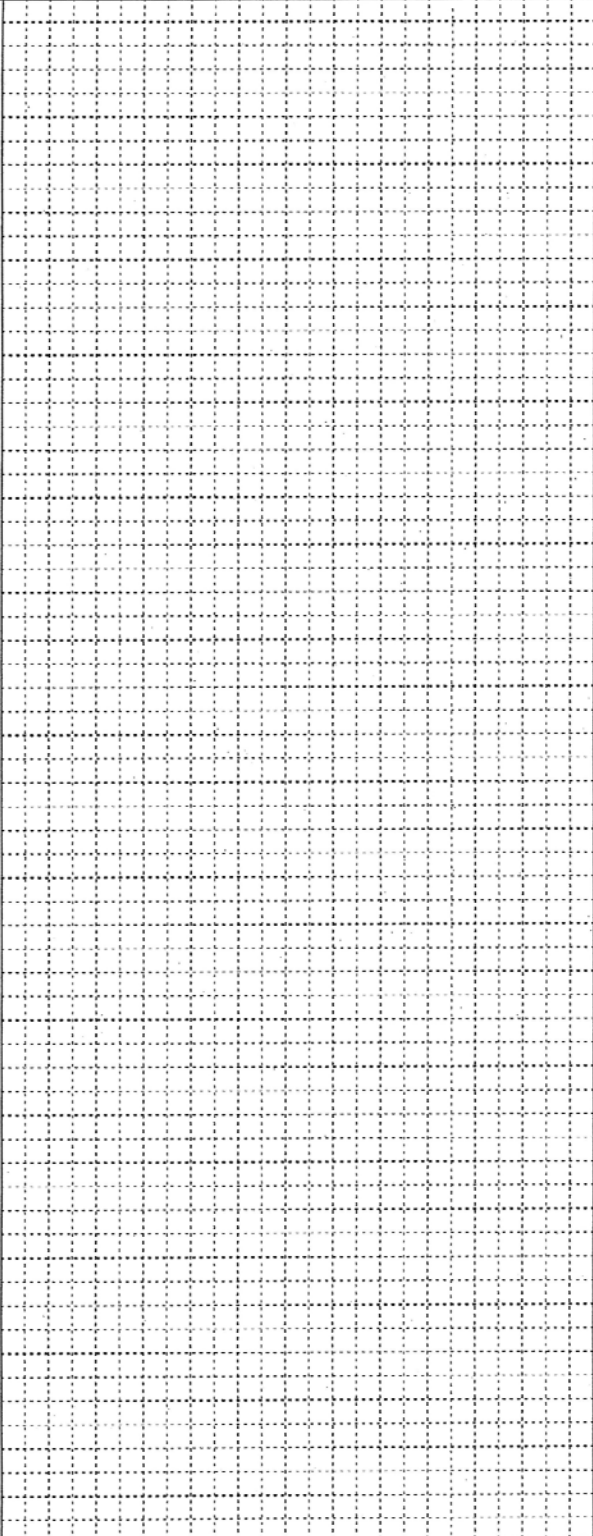
Mixing Information	PH of water:	Required viscosity:	
Bags bentonite (per tank):	Polymer:	Detergent:	Soda Ash:
Total bags of bentonite needed:	Total Polymer:	Total Detergent:	Total Soda Ash:

Total cost of drilling fluids \$ ____ divided by length of bore = ____ fluid cost per ft.

Exhibit C

Example of Bore Profile Sheet

Download of the sheet is available at www.tempe.gov/dryutilities

CITY OF TEMPE PERMIT NO. _____ INSPECTOR _____ LOCATION/STREET NAME _____ SHEET NO. _____	UTILITY COMPANY _____ UTILITY JOB NO. _____ CONTRACTOR _____ FOREMAN _____	
HORIZONTAL SCALE: 1" = 30' VERTICAL SCALE: 1" = 2'		SIGN _____ PRINT _____ UTILITY COMPANY REPRESENTATIVE OR AUTHORIZED AGENT DATE _____ DATE _____ The signature of the inspector on this sheet, the contractor's bore profile only confirms that the proposed bore path is not in conflict with Tempe Engineering utility clearance standards based on the contractor's representation of the location of the utilities. INSPECTOR _____ TEMPE ENGINEERING DIVISION DATE _____ DATE _____

NOTES:

1. Provide Proposed Location of Bore and All Utilities With Vertical & Horizontal Dimensions, as Well as Dimensions of Facilities To Be Crossed
2. See MAG. 212 for all pipelines.
3. 24" Min. Vertical Clearance shall be Provided From All C&T Facilities.

Revised 01/01/2011 10:00 AM

Exhibit D

Insurance Requirements For Right-Of-Way Permits

A permit for work in the City of Tempe public right-of-way shall not be issued until both a valid **Certificate of Insurance** and a copy of the contractor's valid **State of Arizona Contractor's License** are on file with the City of Tempe Engineering Division as follows:

1. If not already on file, a copy of the contractor's valid State of Arizona Contractor's License shall be submitted to the City of Tempe, Engineering Division, at P.O. Box 5002, Tempe, AZ 85280 or via fax at (480) 350-8591.
2. A valid Certificate of Insurance that meets the following requirements shall be submitted to the City of Tempe, Engineering Division, at the address or fax number listed above.

Any Certificate of Insurance that is not in compliance with the requirements below will be returned to the insured for revision until all the requirements are met.

- ❖ Certificate holder shall be: City of Tempe
Attn: Engineering Division
P.O. Box 5002
Tempe, AZ 85280
- ❖ **City of Tempe** shall be named as Additional Insured for **General Liability, Automobile Liability** and **Excess Liability** if used to reach required limits. The following language is not acceptable in additional insured statement:
“...if/as required by written contract...”
- ❖ **Commercial General Liability** combined single limit shall be at least **\$1,000,000**.
- ❖ **Automobile Liability** combined single limit shall be at least **\$1,000,000**.
- ❖ The Cancellation Clause shall provide no less than thirty (30) days advance written notice of **cancellation** or termination, with the allowance of a ten (10) day notice for non-payment of premium. The Cancellation Clause shall not include the phrases “endeavor to” or “**but failure to do so shall impose no obligation or liability of any kind upon the insurer, its agents or representatives**”.
- ❖ “**Binders**” are **not acceptable**. A Certificate of Insurance is only acceptable when a policy number is noted.

If you have any questions regarding these requirements, please contact the Engineering Division at (480) 350-8200.

Exhibit E

City Of Tempe General Notes For Utility Construction

- i. The contractor shall have a copy of the approved construction plans and approved traffic control plan at the project site at all times.
- ii. All utilities crossing existing City streets must be open cut unless permission to bore has been given in writing by the City Engineer or his authorized representative. Before starting any street cut or bore that crosses a major roadway, the contractor must schedule a separate field meeting with the project inspector to verify that all Blue Stake and design requirements are met.
- iii. Utility companies are required to coordinate alley work with the Refuse Section at (480) 350-8265.
- iv. The utility company shall call the Engineering Division a minimum of 24 hours in advance of starting work giving location and permit number at 480-350-8475 in order to schedule inspections. Status updates shall be made weekly.
- v. Alignment on plans may not deviate more than 1' without getting the approval of the City of Tempe.
- vi. All work requiring asphalt replacement, concrete replacement, or resurfacing alleys in City right of way will require a final inspection with the utility company representative at time of completion.
- vii. All work performed in City of Tempe's right of way shall be governed by the latest City of Phoenix Traffic Control and Barricade Manual.
- viii. All alley and street excavations shall be compacted to a minimum of 95% of standard proctor density, or one half-sack CLSM slurry backfilled; all alleys are to be surfaced with a minimum of 6" of ABC and repaved where paving exists. All street repairs shall be presumed to require specification of Detail T-450. The approved plan alley grade shall not be changed by more than one tenth of a foot in a crowned alley. Inverted alleys shall be graded to match the original plan grade and original construction. Paved streets and alleys shall be repaved in a manner that matches the grade of undisturbed pavement before construction.
- ix. Abandoned facilities shall be removed.
- x. Protective devices are required.

Section 29-4 of the "CODE OF THE CITY OF TEMPE, ARIZONA" requires that anyone working within the right-of-way be equipped with *protective devices*. These protective devices include, orange vest (daytime), reflectorized orange vest (nighttime), traffic cones, barricades, flashing lights, flares, and any other traffic control device as required by the City.

Any person violating any of the provisions of this section shall be guilty of a misdemeanor and punishable as set forth in Section 1-7 of this code.

Sec. 1-7 (a) states that a misdemeanor is punishable by a fine not exceeding two thousand five hundred dollars (\$2,500.00) plus applicable surcharges, imprisonment, etc.; for a term not exceeding six (6) months, or by both such fine and imprisonment.

Revised June 30, 2009

Exhibit F
Minimum Cover Requirements
for
Proposed Utilities in Public Rights-of-way

<i>ITEM</i>	<i>DESCRIPTION</i>	<i>MAJOR STREET</i>	<i>COLLECTOR STREET</i>	<i>LOCAL STS. & ALLEYS</i>	<i>UNDEVELOPED (No curb & gutter)</i>
Power					
	0-600 Volts	36" *	36"	24"	36" *
	601-7200 Volts	42"	42"	42"	48"
	12 KV (Local Dist)	42"	42"	42"	48"
	12 KV + (30 feeder)	48"	48"	48"	54"
	Street Light Circuit Back of sidewalk	24"	24"	24"	36"
Gas					
	Services	36"	36"	29"	48"
	1" – 6" diameter	36" *	36"	36"	48"
	> 6" diameter	48"	48"	—	54"
Manholes		36"	36"	36"	48"
Conduits		36" *	36"	36"	48"
Telecommunications (copper or fiber optic)					
	Trunklines	48"	48"	48"	54"
	Copper Service Drops	36"	36"	24"	—
	Other	36" *	36"	36"	48"
CATV	Coaxial	36" *	24"	24"	48"

* 48" depth is required when installation is the first utility back of sidewalk.

NOTE: The City Engineer may approve deviations from these standards under unusual and compelling circumstances.

Exhibit G

Utility and ROW Construction Guidelines for Contractors

Welcome to the City of Tempe. The City of Tempe Engineering Department is committed to providing the highest quality infrastructure planning and inspection to meet the present and future needs of the City in an efficient and effective manner.

The purpose of these guidelines is to facilitate the efficient and timely construction of projects within City rights-of-way.

Preconstruction Meeting

Preconstruction meetings are mandatory when working within the public rights-of-way. The preconstruction meeting should cover the following:

1. Verification that each agency has a copy of the approved plan and permit. All approved plans are stamped "approved" with the date.
2. Traffic control plans can be discussed, but must be approved by the City of Tempe Transportation Division at (480) 350-8219. If possible, sidewalks should remain open at all times. In the event that sidewalks need to be closed, please discuss the situation with the Transportation Division so the sidewalk closure can be shown on the TCP.
3. Verification that a utility survey was completed. This survey is conducted to locate all existing utilities that could conflict with the construction, and is verified by comparing the bore profile to the Bluestake marks in the field. When establishing clearances, carefully consider the possible migration of the back reamer of the pilot bore towards utility due to excessive steering or tight radius.
4. Inspection and documentation of noticeable and obvious existing conditions before construction.

City Notification

The City of Tempe Engineering Department requires notification to be submitted online 24 hours before commencement of any construction work. **Do not** leave notification on the inspector's cellular telephone. The form can be found at: <http://www.tempe.gov/dryutilities>. All inspection requests shall be called into the inspector hotline, 480-350-8475. The option for the assigned inspector is shown on the Utility Permit.

Construction Process

During the Construction Process:

- ❖ The constructing agency should retain a copy of the packet, which includes the notification form, the “actual” bore profile, the approved and signed traffic control plan, the schedule of work and the citizen notification information on the jobsite at all times.
- ❖ All sidewalks shall remain open and reflective vests worn at all times.
- ❖ Drilling rig stake system should be utilized.
- ❖ Confirmation of utility locations by potholing (vacuum excavation or other non-destructive means) must always be performed before drilling. Review bore profile.

Permits will be suspended and a complaint with the Corporation Commission will be filed if blind boring is determined.

- ❖ Two foot vertical clearance is required from the installation to existing City facilities. Inspection of this clearance is required.
- ❖ Minimum coverage and inspection of coverage is required (See Exhibit F in the City of Tempe Utility Permit and Construction Manual.)
- ❖ Small plates (1’ by 1’ and smaller) are prohibited.
- ❖ All trench plates shall be recessed on streets where the posting speed limit is 25 mph or greater (note that the minimum speed differs from MAG Standard 211.) Steel plates must be able to withstand heavy traffic without any movement. Steel plates must recess on top of milled surface a minimum of 18" on all sides of the trench. Refer to MAG Standard 211 for details.
- ❖ Plates shall be removed within 7 calendar days.
- ❖ Trenches must be cleared of excess debris before slurry.
- ❖ One-half sack CLSM slurry is required. Refer to Tempe Supplement T-450.
- ❖ Slurry must aerate (air dry) a minimum of two days.
- ❖ Excess barricades shall be picked up or "bundled" and placed in a conspicuous location daily.

Emergency Situation Contacts:

Engineering Department	(480) 250-5374
Police Department - (Traffic signals and streetlight outages)	(480) 350-8311
Fire Department - ("Out of Service" hydrant notification - 24 Hours)	(480) 967-7511
Water Department 24-Hour Emergency Hotline	(480) 350-2669
Southwest Gas Emergency	(602) 271-4277
El Paso Gas 24-Hour Hotline	(602) 438-4200

Restoration - Restore to current code

- ❖ Pavement replacement shall conform to Tempe Supplement T-450. All patches shall be T-Topped and crack sealed. Laydown machine required, unless inspector overrides this requirement. All paint stripping shall be replaced in kind.
- ❖ Concrete curbs, gutters, sidewalks, sidewalk ramps, driveways and alley entrances restorations shall conform to MAG Standard Specification 340 and Tempe Supplement to the MAG:
 - ✓ Damaged concrete shall be removed joint to joint. Existing concrete sidewalks and driveways which abut the new sidewalks and driveway entrances shall be removed to a distance required to maintain a correct slope.
 - ✓ Expansion joints shall be full depth and shall match existing joints.
 - ✓ Contractor shall stamp name and year.
 - ✓ Gutter flow will be maintained: the face, top back, and flow line of the curb and gutter shall be tested with a 10-foot straightedge or curve template, longitudinally along the surface.

Exhibit H

Utility and Right-of-Way Construction Checklist

Before construction:

☐	Schedule Preconstruction Meeting	See Permit for Inspector's Phone Number
☐	Traffic Control Plan	Fax to (480) 350-8878
☐	Verify Trash pick up dates	(480) 350-8265
☐	Bluestake	811 or (602) 263-1100
☐	Compare Bluestake, bore profile and approved construction plans to field conditions	
☐	Online Notification	http://www.tempe.gov/dryutilities

After Construction:

☐	Asphalt and concrete restored to current code and to MAG and Tempe Supplement requirements	
☐	Crack seal around asphalt patch	
☐	Potholes restored correctly: Landscaped areas – tamped Streets/Sidewalks – slurried	
☐	Spoil piles removed (No back dragging dirt)	
☐	Private property, public utility easement and city rights-of-way restored to like or better condition	
☐	Sidewalk, curb and gutter cleaned. All litter removed.	
☐	Barricades removed (do not depend on barricading company)	
☐	Stripping Restoration	
☐	Ask Inspector for final report	See Permit for Inspector's Phone Number

Exhibit I **Avoidance Zones for New Pedestals**

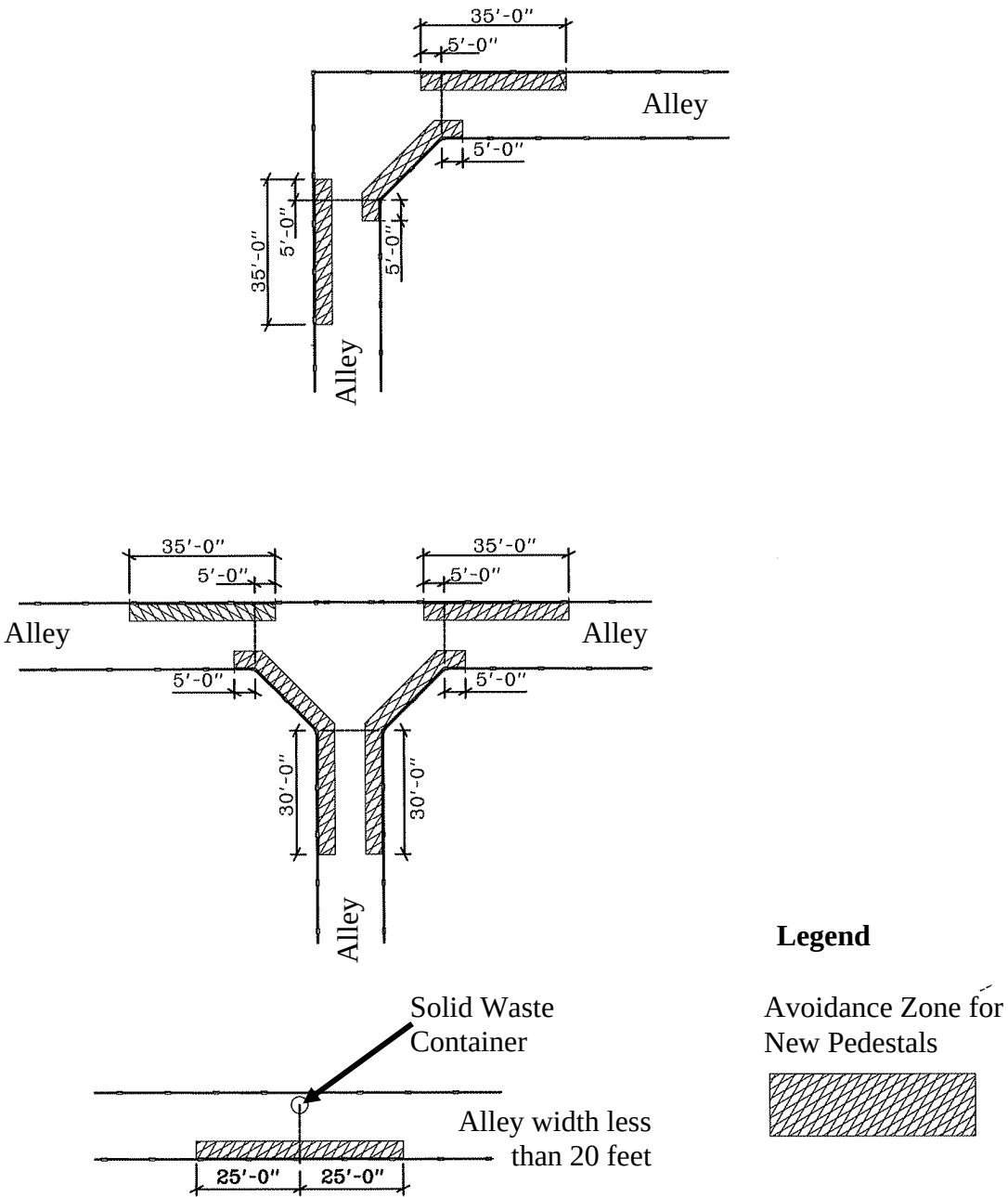


Exhibit J

Intersection Traffic Control Requirements

When police officers are hired to support construction, maintenance or special event efforts, expectations are that they shall:

Perform in a manner that favorably reflects on Tempe.

Be Arizona POST certified and currently employed by an Arizona Law Enforcement Agency *

Wear agency's uniform, gun and safety vest at all times.

Station their vehicle in a manner that does not block sidewalks or block traffic.

Remain on-site and visible at all times except for planned breaks.

Have a skeleton key to access the traffic signal cabinet panel and know how to operate the intersection using "Stop Time" (i.e. manually control the traffic signal).

- To attain a skeleton key or if Stop Time training is required, call 480-350-8284 Monday through Friday between 7 AM and 4:30PM. Outside of normal business hours, call 480-250-5167.

Stay for the duration they are hired while traffic restrictions are in place (i.e. if hired for 4 hours and the work is completed in 2 hours but barricades still remain and cause traffic congestion, stay the full 4 hours and assist with Stop Timing the intersection as necessary).

To ensure the safety of the public near the construction site, traffic control duties include, but are not limited to the following:

Actively direct traffic from within the intersection if the intersection is "dark".

Position themselves in such a manner as to have access to the traffic signal cabinet, yet maintain a full view (360-degree vision) of ALL traffic, bicycle and pedestrian movements.

If Stop Time is necessary, Stop Time intersection in such a manner so as to benefit pedestrians, public vehicular traffic, as well as construction traffic.

- Do not Stop Time from a vehicle because a full view of ALL traffic, bicycle and pedestrian movements is required for safe operations.

Assure that no tripping hazards or physical obstructions prevent access for pedestrians or bicyclists (i.e. vehicles, construction debris or tools, etc.).

Assist pedestrians, bicyclists, and motorists through the work zone when needed or when requested.

Monitor and direct pedestrian and bicyclist movements to ensure they are crossing at designated paths and they obey any temporary traffic control set-ups (i.e. not crossing in a closed crosswalk).

Monitor and direct vehicular movements to ensure they obey any temporary traffic control set-ups (i.e. if left turns are restricted)

Monitor and direct vehicular, pedestrian and bicyclists in an effort to assist construction vehicles in and out of the work zone safely.