CITY OF TUCSON
TRANSPORTATION & MOBILITY

PUBLIC UTILITY ADMINISTRATIVE MANUAL

Effective Date: August 20, 2021

Revised: May 2023

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FIGURES

EXHIBITS

1. AUTHORITY

The Constitution of the State of Arizona, The Tucson City Charter, Chapters 7a-d, Chapter 23, Chapter 25, and Chapter 30 of the Tucson City Code, and the Arizona Revised Statutes (ARS) Title 9, Chapters 4, 5, all other applicable federal, state and local laws, codes, rules and regulations, and the City's police powers and authority over the public Right-of-way or Public Utility Easements.

2. REFERENCES

All construction shall be performed in accordance with the requirements of the following separate documents:

- **Current Edition: PAG Standard Specifications for Public Improvements, and Standard Details for Public Improvements**, https://apps.pagregion.com/standardspecifications/
- **Current Edition: Tucson Water Design Standards Manual**, https://www.tucsonaz.gov/water/dsm
- **Current Edition: Tucson Water, Standard Specifications and Details,** http://www.tucsonaz.gov/water/spec-book
- **Current Edition: Pima County Regional Wastewater Reclamation Department Standard Specifications and Details for Construction**, http://www.pima.gov/wastewaterreclamation
- **Current Edition: Manual on Uniform Traffic Control Devices for Streets and Highways, and Amendments**, http://mutcd.fhwa.dot.gov/pdfs/2009/pdf_index.htm
- **Current Edition: Arizona Supplement to the Manual on Uniform Traffic Control Devices (MUTCD)**, https://azdot.gov/sites/default/files/2019/07/arizona-supplement-to-the-manual-on-uniform-traffic-control-devices-2009-mutcd-edition.pdf
- **Current Edition: Additions by the City of Tucson to the Manual on Uniform Traffic Control Devices for Temporary Traffic Control**, https://www.tucsonaz.gov/files/transportation/files/2015_COT_Additions_Final.pdf

- **Current Edition: Pima County and City of Tucson Department of Transportation Signing Manual**, http://www.dot.pima.gov/trafeng/DesignManual/SigningManual.pdf
- **Arizona Department of Environmental Quality (ADEQ), Waste Programs Divisions, Solid Waste Management, Petroleum-Contaminated Soils, Arizona Revised Statutes ARS § 49- 851.A.3, and ARS § 49-152**, http://www.azdeq.gov/environ/waste/solid/special.html
- **Current Edition: Pima County and City of Tucson Department of Transportation Pavement Marking Design Manual, October 2002**, http://dot.pima.gov/trafeng/DesignManual/PavementManual.pdf
- **Grant of a Franchise ARS § 9-501**
- **National Electric Safety Code**, https://standards.ieee.org/products-services/nesc/index.html
- **City of Tucson Uniform Development Code Technical Standards Manual** https://codelibrary.amlegal.com/codes/tucson/latest/tucson_az_udc/0-0-0-10261#JD_TECHNICALSTANDARDSMANUAL
- **Pima County Outdoor Lighting Code**, https://webcms.pima.gov/UserFiles/Servers/Server_6/File/Government/Development%20Services/Building/OLC.pdf
- **Pima County Native Plant Preservation Plan**, https://webcms.pima.gov/UserFiles/Servers/Server_6/File/Government/Development%20Services/Building/Native%20Plant%20Preservation.pdf
- **City of Tucson Wireless in the ROW Standard Designs and Concepts**, https://www.tucsonaz.gov/files/transportation/files/Small_Wireless_Facilities_Design_Standards_-_Final.pdf

3. DEFINITIONS

For the purposes of this City of Tucson Public Utility Administrative Manual (the "Manual"):

"Accessory Equipment" means any ancillary equipment that is needed to complete the infrastructure that is above ground or requires excavation for foundations and is necessary for the operation and support of utility infrastructure and service.

"Annual Permit" means a Right-of-way permit with special conditions that allow applicants to complete maintenance work on existing infrastructure within a specified length of time.

"Antenna" means communications equipment that transmits or receives electromagnetic radio frequency signals used to provide wireless service.

"Cantenna" means the part of a small cell facility typically located at the top of small cell poles, which covers, shrouds, or otherwise conceals that part of the facility used for the purpose of housing the antenna(s), antenna mount(s), cable connections, radio equipment and other hardware.

"Colocate or colocation" means to install, mount, maintain, modify, operate or replace wireless facilities on, within or adjacent to a wireless support structure or utility pole.

"CSA" means cost sharing agreement between the Utility Company and Tucson Department of Transportation (DTM) for expectations and assignment of costs related to utility removal from a City street made as part of a capital or pavement maintenance project.

"DTM" means Department of Transportation and Mobility.

"Emergency Restoration" means a situation requiring prompt action to restore system outage, public safety, or restoration of critical equipment to support utility operations.

"FCC" means The Federal Communications Commission.

"Maintenance" means work to existing infrastructure that requires equipment relocation, repair, replacement, or upgrade.

"Major Impact Traffic Zone ("MITZ")" means major impact traffic zone and refers to arterial or collector streets and their surrounding areas that provide transportation corridors throughout the City of Tucson.

"Shading" means the trench backfill above the bedding material of an underground facility.

"TCP" means traffic control plan.

"Microsurface Treatment" means a slurry type pavement treatment having aggregate size qualifying it to be considered a microsurface as defined by PAG Specifications, Section 404.

"NESC" means the National Electric Safety Code.

"NEC" means the National Electric Code

"New Project" means new placement of utility infrastructure and does not include work considered either Maintenance or Emergency Restoration.

"Night" means hours defined per Tucson City Code 16-31

"Owner" means a person with a legal or equitable interest in ownership of real or personal property.

"Power Sharing Agreement" means an agreement between the City and a cellular company that is added to a Site License Agreement for an individual SWF. The agreement determines the rate and obligates the cellular company to pay the City an annual fee to use an existing power source for the power consumption of the SWF radio and related equipment to a City owned street light pole intended to be shared.

"Professional" means a person who is knowledgeable in a recognized area or specialty, trained, and performs the design of respective work as a livelihood.

"PUE" means public utility easement and describes the allowance of designated land for the use and installation of utilities in compliance with the City's construction requirements.

"Right-of-way ("ROW")" - The area on, below or above a public roadway, highway, street, sidewalk, alley, or utility easement. Right-of-way does not include a Federal Interstate Highway, a state highway or state route under the jurisdiction of the Department of Transportation, a private easement, or property that is owned by a special taxing district.

"Small Wireless Facility (SWF)" as defined in ARS § 9-951(19), means a wireless facility that meets both of the following qualifications:

1. All antennas are located inside an enclosure of not more than six cubic feet in volume or, in the case of an antenna that has exposed elements, the antenna and all exposed elements fit within an imaginary enclosure of not more than six cubic feet in volume.
2. All other wireless equipment associated with the facility is cumulatively not more than twenty-eight cubic feet in volume, or fifty cubic feet in volume if the equipment was ground mounted before August 9, 2017. The following types of associated ancillary equipment are not included in the calculation of equipment volume pursuant to this subdivision:
    - An electric meter.
    - Concealment elements.
    - A telecommunications demarcation box.
    - Grounding equipment.

- A power transfer switch.
- A cutoff switch.
- Vertical cable runs for the connection of power and other services.

"Standard Utility Placement" means a generally accepted corridor within the ROW used for planning and coordination of the placement of respective utilities.

"Stealth Design Techniques" means the use of materials, colors, screening, undergrounding, or other concealment elements intended to blend the new equipment and existing pole into the surrounding setting.

"TNE" means temporary noise exemption and is required for work performed during night hours.

"Topped Pole" means a utility pole where electrical facilities have been removed, the top of the pole is cut, and telecommunications equipment remains on the pole.

"UCC" as established by ordinance 4465 for the planning and coordination of the construction and modification of existing and proposed infrastructure within the public Right-of-way, means Utility (Planning) and Coordination Committee.

"Utility Company" means a public or private entity seeking to construct, manage, operate or maintain infrastructure and/or facilities within, on, across, above or beneath the public right-of-way for public or private use and includes, but is not limited to, public service corporations, telecommunications corporations, wireless service providers, wireless infrastructure providers, video service providers, common carriers, sewer corporations, fiber companies and gas and water utilities.

"Utility Pole" means a pole or similar structure that is used in whole or in part for communications services, electric distribution, lighting or traffic signals. Utility pole does not include a monopole.

"Utility Waiver Request" means the request that a Utility Company must submit to receive a waiver of applicable Manual requirements.

"Verticality" means a vertical element located in the public right of way and may include utility poles, wireless support structures, streetlight poles, and signposts.

"Voter Approved Franchise Agreement" means a voter approved franchise granted by the City to a Utility Company pursuant to A.R.S. § 9-502.

4. Purpose and Application

The purpose of this manual is to:

- Inform Utility Companies of the requirements and expectations for processing a request to construct and install utility infrastructure within the City of Tucson right of way (ROW) or PUE.
- Advise Utility Companies of shared space and approved utility locations to coexist within a limited space.
- Advise Utility Companies of what must be considered when designing, coordinating, and constructing public utility main infrastructure within City of Tucson ROW and maintaining existing mobility, landscaping, access, safety, and street materials as deemed to be in the public's interest.
- Inform the Utility Companies of the permit communication expectations for the City and its residents.
- Provide direction to City Staff for review, approval, and inspection of work within the ROW.

Utility Companies shall acknowledge and understand the steps the City of Tucson will need to follow to assess the complexity of the project presented as it pertains to the public, the ROW limitations, and needs and uses. Mobility concerns, communication, and construction quality expectations will be addressed by the conditions discussed herein.

4.1 APPLICATION

This document applies to all utility operations and infrastructure in the public ROW. New utility companies to the City of Tucson shall make application and receive approval for a license agreement, provide proof of operating area approval, and must be current in annual fee payments. Utility Companies having voter approved Franchise Agreements must follow the franchise agreement and this manual.

5. ROW Management and Permit Considerations

Any activity in the ROW requires a permit as stated in section 25-13 of the Tucson City Code. A ROW permit advises the City of Tucson and citizens of the activity and if there is a need to follow up with an inspection for safety or quality and to let the residents or business know of activity. It is important to DTM and to the public that complete and accurate contact information is included with each ROW permit to address any concerns that may arise during design and construction.

The number of open permits per Applicant may affect the approval of new ROW applications. The Applicant shall make all efforts to ensure that permits are completed and closed out before the expiration date.

5.1 ANNUAL PERMIT

If maintenance is required, an Annual Utility Maintenance Permit ("Annual Permit") exists for the expediency of this work. The Annual Permit is most applicable to residential locations which do not require special plans or "New Work" notifications. Arterial and collector locations are generally not suitable for an Annual Permit due to the mobility concerns, business access, and duration limitations.

Conditions apply when operating under an Annual Permit. Utility Companies are allowed to perform work with minimal construction documents provided the work is completed within an eight-hour period including excavation, backfill, permanent pavement patching, and ROW restoration. Access to residences, buildings and property must be maintained. Pavement patches must be marked with white paint identifying the Utility responsible for the work. Breaking up construction activity into phases that last eight hours each over the course of multiple days is not allowed.

Utilities shall work with the DTM Utility Coordinator to execute a memorandum of understanding (MOU) describing Annual Permit conditions. Execution of this MOU is required for the issuance of the Annual Permit. The MOU outlines the approved scope of work, reporting requirements and frequency, and applicable operational requirements when working under the Annual Permit. Any modification or exception to conditions herein will

be reviewed and approved or denied by the City Engineer whose decision is final. Any approved modification or exception to the conditions herein shall be included in the corresponding MOU. Any determination regarding modifications or exceptions to the Annual Permit conditions herein are made at the City's sole discretion.

Reporting, workmanship, site safety, and ROW restoration must be made each day work occurs. Impacts to commuter traffic are important for DTM to know and report on. Work examples include flushing of fire hydrants, power outage emergency repair, pole removals, and other related routine maintenance activities that may affect street capacity with trucks, equipment, water, materials, or debris. Reports should be submitted via the Annual Permit Work Report found at https://docs.tucsonaz.gov/Forms/PDSD-Annual-Permit-Work-Report unless otherwise specified in the MOU. Proof that material specifications and workmanship meet the specifications and the requirements in this manual will be provided to the Permit Center as part of the Utility's Annual Permit reporting obligations. Should a Utility Company find they need additional time to complete the work, the Utility must apply for an Emergency ROW permit within 48 hours of work beginning.

The City will review the performance of Utility Companies against Annual Permit criteria on a quarterly basis. Failure to comply with the intent and expectations of an Annual Permit may lead to its revocation.

Work that begins (other than for Emergency Restoration) without a ROW permit being issued or has expired is subject to citation and fine per City Code Chapter 25-45.1., in addition to any additional remedies available to the City by law, including a Stop-Work Order.

5.2 PERMIT CONSIDERATIONS

Requirements of work allowed vary based upon the type of utility and its location in relation to other utilities, infrastructure and buildings. Requirements such as work hours, seasonal restrictions, events, other work scheduled, and restoration methods and materials to address the concerns of businesses, City events, capital projects, commuters, pedestrians, bicyclists, transit users, and other stakeholder needs may be imposed. Approval of permits, work dates and hours may be delayed to accommodate other ROW users.

Work within Major Impact Traffic Zones (MITZ) may have special design considerations, utility location changes, work hour restrictions, and other specialized considerations applied to the review and approval. It includes the downtown city center and its immediate surroundings **generally bounded by Toole Ave/4th Avenue, 6th St, Granada Avenue, and Cushing Street.**

Figure 1: MITZ

Work in residential areas may also have special design considerations such as utility location changes, work hour restrictions, and other specialized requirements applied to address the needs and the concerns of residents. Considerations may include landscape and tree planting opportunities, off-street parking, mail and package delivery, pedestrian access, and placement of equipment.

Except for emergencies, work done at night will require an approved temporary noise exemption (TNE) and special inspection fees. Work to be done on the weekends or after hours should be requested in advance and may have special inspection fee rates.

5.2.1 Support Drawings

All new projects shall require drawings which accurately depict the utilities and street infrastructure. Project documents shall be prepared by design professionals, knowledgeable of their respective industry standards and requirements, as allowed by the Arizona State Board of Technical Registration, or as required by the respective Utility Company owning the infrastructure. See Section 9 of this manual for additional details.

A record copy shall be provided to the inspector at the close out of the permit where applicable. Record drawings shall depict as-built infrastructure, including all horizontal runs of power, communications, or other facilities necessary to the installed infrastructure as well as any changes made during the construction. Refer to section 14.5 for a complete description of the permit close out process.

5.3 WORK RESTRICTIONS AND RIGHT OF WAY MANAGEMENT

Work is evaluated based upon other ROW activity and events. Restrictions and scheduling of work will be made a condition of the permit. The following restrictions may impact Utility operations and should be considered when planning work in the ROW.

Holiday Moratorium – During the period of Thanksgiving Day to January 2nd issuance of new permits is reduced for work affecting certain arterials and collectors due to the increased number of winter visitors. See link below for more information. These restrictions do not apply to Emergency Restoration. Construction sites in progress along these routes shall cooperate by minimizing impact to street capacity and business access during this time. A list of streets affected can be found in **Exhibit D** and at https://www.tucsonaz.gov/tdot/barricading-and-detours. New work may be approved with special conditions to meet the intent of this restriction and the requirements described herein.

Street Capacity Restored – Lanes that are restricted shall be strongly encouraged to be restored each day for the use and safety of drivers, pedestrians, and bicyclists at the end of approved traffic setup times.

Events - The Utility Company will consider and account for work restrictions during temporary events. Most events occur downtown. Traffic congestion shall be minimized by complying with scheduling and permit conditions.

Other Construction – Capital projects, emergency repairs, and other types of work may impact the schedule proposed by the Utility Company's permit request. The Utility Company

shall be informed by the City of these occurrences and cooperate with emergency or planned work requests.

Development - Utility Companies shall be aware of and consider other business operations and access, capital project schedules, noise restrictions, peak traffic hour times, and holidays or events. Communication with all affected, including commuters through message boards and public service announcements may be required.

Construction Noise – Due to excessive noise, construction may not be allowed during normal business hours in some areas. A Temporary Noise Exemption (TNE) pursuant to Tucson Code section 16-31(d), may be necessary if the construction zone impacts the normal use of the street and business access at specified times. The link to request and submit one can be found at https://docs.tucsonaz.gov/Forms/Temporary-Noise-Exemption.

Street or Intersection Closing - Closing of streets or intersections will not be allowed in residential areas without an approved permit and delivery of construction notifications to impacted addresses. A TNE may be required unless work is for Emergency Restoration.

Closing of arterial or collector intersections may be considered on a case-by-case basis if work is done at night to minimize impacts to businesses, commuters, and emergency services. For New Projects, advanced message board notifications are required in addition to a TNE as discussed above. If an emergency closure is extended over multiple days, advanced message board notifications may be required.

Weather - Utility Companies should account for seasonal weather delays when considering construction timelines and scheduling. Permittees should consider work on weekends and longer shifts to meet the ROW permit expiration date. Applicable inspection overtime fees may apply.

6. Planning and Design Coordination

It is important that the City of Tucson is made aware of upcoming utility projects that may impact planned capital projects and other activities. Regular coordination meetings will be held so that potential issues may be discussed and resolved before proceeding. All utility companies shall have an opportunity to attend and present proposed projects upon request to the City's Utility Coordinator.

6.1 PAVEMENT COORDINATION

It is the desire of the City of Tucson to keep the ROW uniform in appearance. Opportunities to partner with the Department of Transportation and Mobility (DTM) for roads scheduled to be resurfaced may be available to help coordinate the timing and reduce the costs for pavement restoration. It is in the best interest of the Utility and the City to minimize impacts, disruption, and costs associated with any activity where possible with advanced planning and continued communications. If coordination options do not exist, the Utility Company may be required to apply additional surfacing material over disturbed pavement.

6.1.1 Downtown Streets

Special consideration should be given when planning the upgrade and installation of wet or dry utilities downtown. Many downtown streets contain a concrete sub-base under the pavement. Special patching requirements and limits described in section 10.4 of this manual shall apply to improve the appearance of downtown streets to like new condition regardless of the street's age or appearance.

6.2 PUBLIC INVOLVEMENT

Mobility, property access, safety, pavement damage, service interruption, and public awareness are areas of concern expressed by the City's inhabitants. Opportunities for public comment on proposed work will be afforded to residents, business owners, and users of the public ROW.

6.2.1 Public Notification Process (Design)

Businesses, residents, and affected stakeholders shall be allowed to view and comment on all New Projects proposed in the planning/design stage. Proof of public outreach must be provided as part of the review submittal in the design stage. The Utility Company should reach out to the affected areas before designs have completed review for approval. While notification to impacted stakeholders is pending, the City of Tucson may not stop or delay the permit process. The City of Tucson places a great emphasis on transparency and public engagement and strongly encourages Utility Companies to show a willingness to work with residents to evaluate alternate locations if there is a strong resistance to an initial placement.

All NEW or major utility installations, major repairs, or capital infrastructure replacement shall follow this process. This requirement does not apply to maintenance, emergency restoration or individual business and new house service connections. Construction Notifications follow a different protocol and are required for all utility permits. These notifications shall occur during the design stage and be concurrent with permit review and approval.

1. Prepare an Informational Letter describing the work planned and the benefits provided by this improvement. Describe when the design is to be completed, the expected construction start date and duration, and where residents may send their responses. Provide Utility Company contact info and include TDOTConcerns@tucsonaz.gov for comments to the City. Notifications shall be sent out to property owners and businesses within a minimum 300-foot radius of the proposed project limits, the City's Utility Coordinator, the affected Ward office, and the neighborhood representative (if one exists). The City shall provide a list of addresses and stakeholders requiring notification. The Utility Company shall not be held responsible for failing to notify those not included on this list.

2. For above ground equipment, identify the potential site for placement within the project area or neighborhood. Factors to consider in selecting the site should include aesthetics, technical/engineering restrictions, and PUE and/or ROW areas. Above ground equipment does not include manhole rims, water box valves, pullboxes, or other accessories that are flush with the pavement or ground.

3. For new above-ground infrastructure in residential areas, the packet will include a "before" and "after" (with the new structure superimposed and all accessory equipment) picture plus a diagram showing all work considered to be performed, including trenching or boring in the area. A 15-business day citizen response period will begin upon DTM advising that the application is complete. The Utility must provide certification to DTM during plan review that a packet was sent to all addresses, ward offices, and neighborhood representatives on the list provided by the City. Residents who have been notified of the improvements may send their responses to TDOTConcerns@tucsonaz.gov.

4. If infrastructure is in a public utility easement (PUE) or less than 50-ft from a residence, a utility company customer service representative will attempt to make personal contact with the property owner either by letter, phone, virtual meeting, or in person to discuss any concerns the property owner might have. Document the conversation to include time, date, person spoken with, and results. Share response with the DTM Utility Coordination section during the review period, or with the ROW Inspector during the preconstruction meeting.

5. The Utility Company shall post a 2'x1.5' wire frame sign at all locations where above ground equipment or accessory equipment will be located. The sign shall contain information as to where details can be found, the contact person for the utility company, and where comments can be emailed to.

If the Utility Company already has a proactive and comprehensive public information program, they implement in advance of New Projects that meet the intent of this requirement, they may continue to follow it in lieu of these steps subject to confirmation from the City's Utility Coordinator.

6.3 UTILITY REVIEW

The Utility Company or representative shall contact the neighboring utilities affected for depth (when applicable), clearance and location. Conflict resolution should be made before submitting to DTM for review and processing. Any use of a PUE shall be consistent with the terms of the easement and applicable law, code and regulation.

Utilities to review include:

- Electric Lines (Tucson Electric Power)
- Potable and Reclaimed Water (Tucson Water)
- Sanitary Sewer (Pima County Regional Wastewater Reclamation Department)
- Natural Gas (Southwest Gas)
- Telecommunications (various fiber and cable)
- Traffic Signal and Street Lighting (City of Tucson)
- Drainage (Pima County Flood Control District and City of Tucson)
- Landscape Irrigation (City of Tucson)
- Storm Drain (City of Tucson)

Plans and supporting documents may be submitted to the following address for review: DOT-Engineering-Review-Section@tucsonaz.gov. Plans shall indicate the degree of accuracy and provide confirmation that other utilities have been accounted for to the best of the company's knowledge.

6.4 STATE HISTORICAL PRESERVATION OFFICE (SHPO)

Historical review, archeological review, and monitoring requirements may be required as part of the application. Check for location at the "Historic Preservation" layer on Map Tucson https://maps2.tucsonaz.gov/Html5Viewer/?viewer=maptucson/.

The Utility Company must provide confirmation of any monitoring requirements needed for the work to be done in an archeological sensitive area. This MUST be discussed with the inspector at the preconstruction meeting if it is a requirement of the ROW permit or in a known archeologically sensitive area.

6.5 NATIVE PLANT PRESERVATION PLAN (NPPP)

All plans must depict any vegetation growing in the project area, consistent with UDC Section 7.7.4. Impacts to vegetation must be addressed before, during, and after construction in accordance with these requirements and current City Ordinances. No damage to said trees shall occur without provisions for mitigation, pruning, or replacement as described in Section 10.10.

6.6 STORMWATER POLLUTION PROTECTION PLAN (SWPPP)

Stormwater management within the construction site is the responsibility of the permittee. Where required, the permittee shall obtain all necessary National Pollution Discharge Elimination System (NPDES) permits and comply with all applicable requirements therein. The need to obtain this permit is dependent on the use of ROW area for equipment staging, materials staging, disturbance to ground areas by equipment routes in the construction zone. A Notice of Termination (NOT) will be necessary before the project is closed out.

Figure 2: Stormwater Protection

For project sites of less than one acre that are occupied and disturbed by construction or maintenance activity, work shall follow best management practices for site housekeeping.

6.7 DRAINAGE/FLOODPLAIN

The permittee is responsible for ensuring drainage is not impeded during and after construction.

City streets are used to convey stormwater drainage. Many local streets are jurisdictional floodways in nature and carry at least 100-cfs in the right-of-way during a 100-year storm event. All infrastructure, above ground or below ground, proposed in a regulated floodplain shall require a Floodplain-Use Permit. The Applicant is referred to Chapter 26 Floodplain and Stormwater of the Tucson City Code.

Design calculations for scour depth and a description of measures to be taken during and as part of the improvements must be provided for review and approval when crossing washes and crossings. Impacts to major wash bank protection shall require Pima County Flood Control approval and inspection.

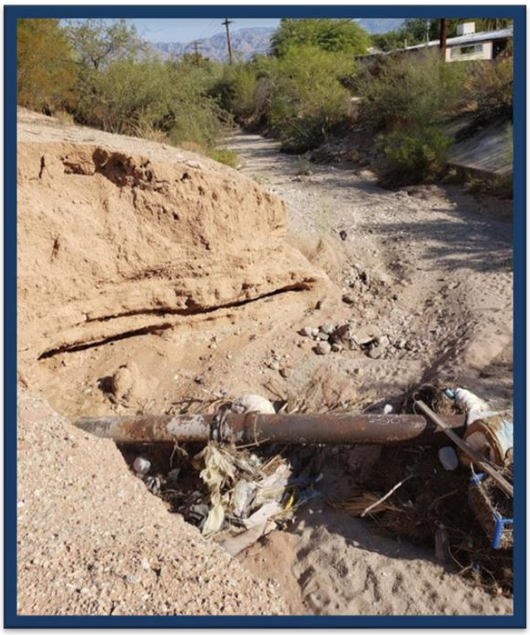


Figure 4: Erosion Exposure

Figure 3: MapTucson Floodplain Layer

6.8 ADOT OR OTHER AGENCIES IMPACTED

Work being done near a railroad Union Pacific Railroad (UPRR), freeway, or other State regulated roadways may need their own separate permit. The applicant will need to determine if any work will enter the jurisdiction's ROW including the barricade footprint. A separate ADOT, UPRR, Pima County, or other agency ROW permit will be required if there is encroachment, and the permit must be secured by the Applicant prior to beginning the proposed work.

6.9 SUN LINK STREETCAR (SLS) UTILITY COORDINATION

All work within the Modern Streetcar Corridor (MSC) must also be reviewed by Sun Link for any street having MSC track and overhead power. If approved, Sun Link will issue a Track Access Permit. The Modern Streetcar Corridor within the public right-of-way is defined as 5-feet from the outside of guideway curbs over which this transit route operates.

https://www.tucsonaz.gov/files/transportation/SOP_101_13_Rev03_Track_Access_Request_20 160511.pdf

Work near or around the overhead power lines may require a de-energizing of the MSC powerlines and work will need to be done at night. Coordination of this requirement will be included in the ROW permit application.

Figure 5: SunLink Streetcar

7. Utility Locations

The location of the work is a key element in assessing impacts to the community. The duration of the permit, the time when work can be done, and other construction details that must be followed are described herein. The Utility Company must ensure that the location of all infrastructure installed is carefully documented for future reference. Considerations to move a utility location may be approved provided it is compatible with other utility service lines and is approved by the city. The following list includes some main items that will be reviewed for compatibility, use, and any special requirements.

- Utility corridor locations
- Utility separation requirements
- Depths and heights
- Proximity to Modern Streetcar
- Downtown & MITZ restrictions

7.1 OPERATIONS CONSIDERATIONS

Impacts of limited ROW space, abandonment of infrastructure, existing vegetation, and pavement restoration requirements are all important for Utility Companies to understand prior to beginning work. Failure to plan for these items may result in delays to planned work and unexpected costs. Utility Companies should consider the following when planning activities in the ROW.

7.1.1 Specialized Location Markers

Markers identifying the location of underground infrastructure shall be limited to low profile style markers that are flush with the ground. The use of location markers must be shown on the plans and approved. Use of vertical identification markers might be considered in locations where utilities are difficult to identify as being present.

Figure 6: Low Profile Marker

7.1.2 Alley Clearance

Meters or above ground splice closures shall be screened where possible in residential areas. Placement of screens, poles, meters, or pedestals in alleys shall be placed with clearance in mind so to allow for Solid Waste Collection equipment and vehicles.

Residential alleys are typically 20-ft across but may be as little as 16-ft wide. Trucks vary in width and may be as much as 8-feet wide at the wheels. Items such as refuse containers vary in diameter but may be wider than 4-ft across the top. See example in Figure 8 below.

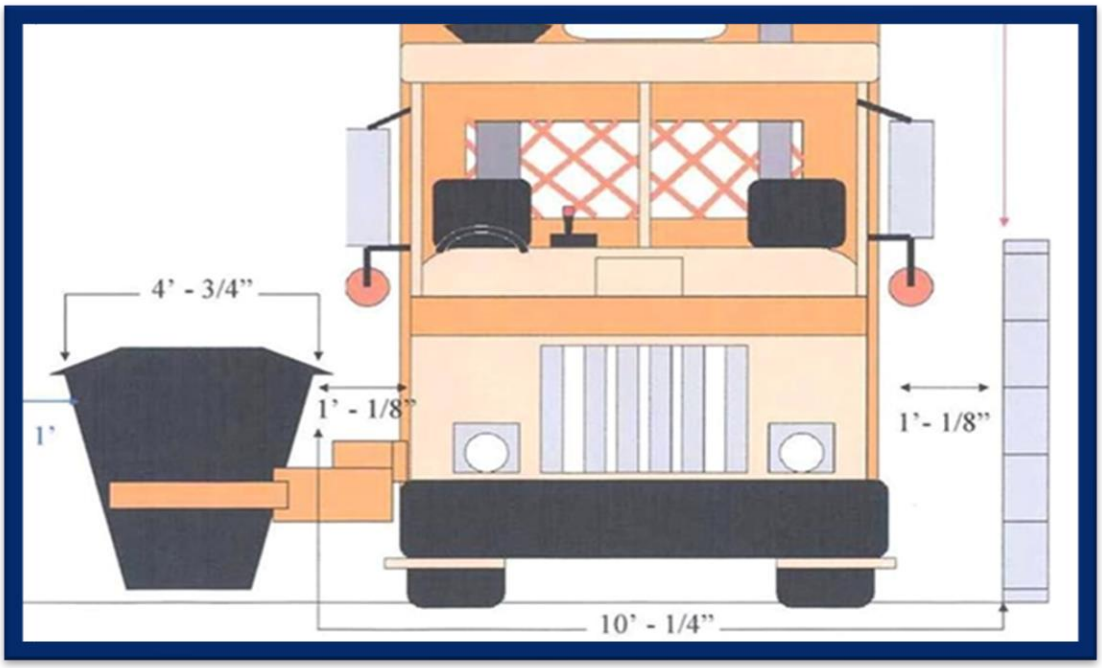


Figure 7: Solid Waste Equipment Clearance

7.1.3 Abandoned Facilities

Abandoned infrastructure, including any structure at or above grade, shall not be left in place unless first approved by the City and only under special circumstances. The cost to the Utility Company shall not be a reason for not removing the abandoned infrastructure. Empty conduits may be left in place if they are usable in the future, in the proper utility corridor, and will not hinder future utility installation requests. Should conduits be reserved for future use but are empty, they must be markable by an AZ811 request.

Work to remove underground pipes and conduit materials may be deferred to a later date and coordinated with DTM capital, street maintenance projects, or combined with other construction activity that exposes the material to reduce the costs associated with the removals. The cost to remove the abandoned material shall be borne by the owner of the infrastructure and if made in conjunction and cooperation with a DTM project, the payment amount, and details for collecting or assisting with its removal shall be captured by a Cost Sharing Agreement (CSA)

7.1.4 Tree Locations

The City of Tucson is committed to planting 1,000,000 trees in the right-of-way for shade to pedestrian paths between the curb and the property line. All Utility Companies shall keep this in mind when planning, designing, or modifying their infrastructure within City of Tucson rights-of- way. The City of Tucson shall also consider placement of trees and impacts to existing overhead and underground utility infrastructure. Water harvesting infrastructure design shall refer to and consider https://www.tucsonaz.gov/tdot/water-harvesting for guidance.

Figure 8: Conceptual Tree Replacement Locations

7.2 UTILITY PLACEMENT IN THE ROW

When planning the installation of infrastructure, Utility Companies should consider the following standards and guidelines to determine compatibility with existing assets in the ROW. Additional design standards and separation requirements may apply depending on the scope of work. Example utility locations for different ROW widths are shown in Figures 10 and 11. The more stringent horizontal or vertical separation requirements established by the owner of the infrastructure, Federal, State, Local Codes, ordinances shall take precedence, or applicable governing national standards.

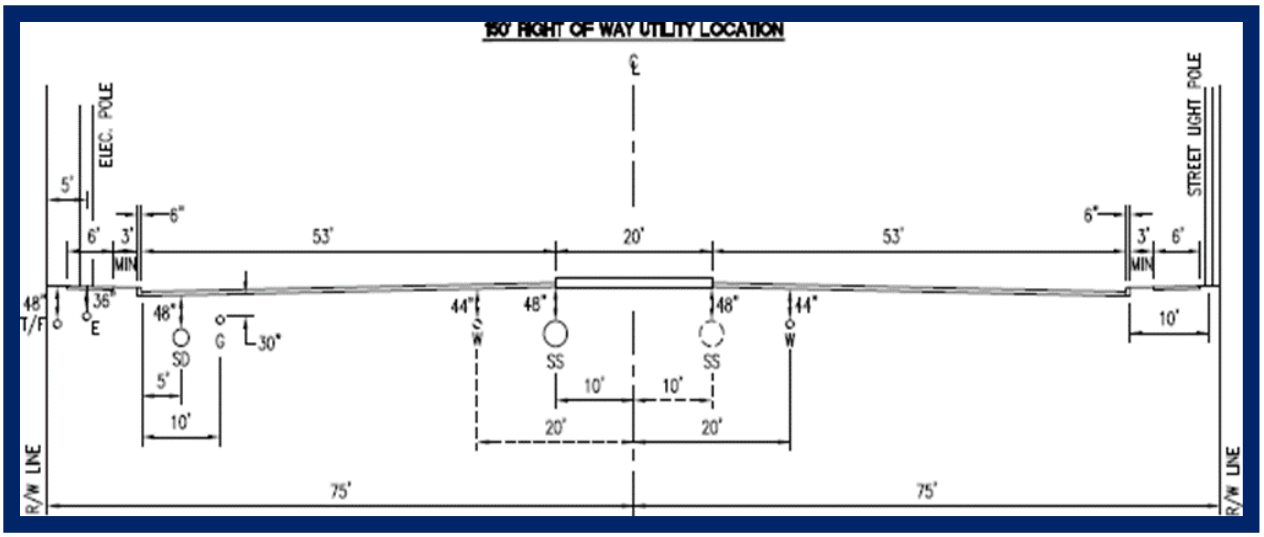


Figure 9: Arterial Street Utility Locations

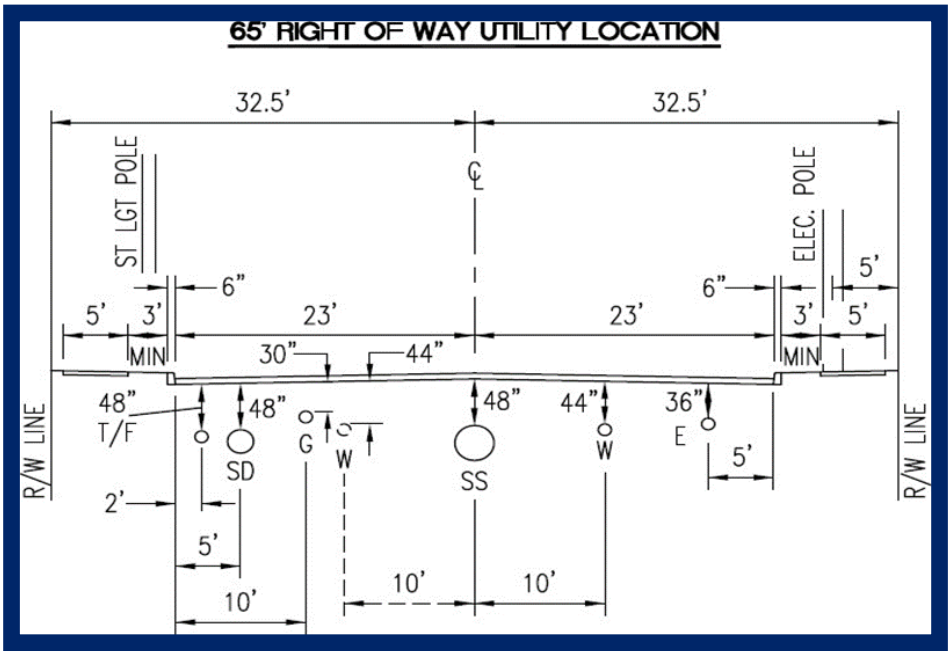


Figure 10: Residential Street Utility Locations

E – Electric
T/F – Telephone, Cable, or Fiber
SD – Storm drain
SS – Sanitary Sewer
W – Water

Deviations from standard utility placements that comply with all aspects of this utility manual may be approved in advance through a utility waiver request. Evidence that all possible locations meeting the intent of applicable placement standards have been explored and found infeasible must be included with each request.

Guidelines for alternate locations included herein may be used to demonstrate this intent should a waiver be necessary. Waivers will be granted or denied at the City's sole discretion. Waiver requests should be submitted using the Utility Waiver Request Form located at https://docs.tucsonaz.gov/Forms/DTM-Utility-Waiver.

7.2.1 Sight Visibility Triangle (SVT)

Poles, equipment, or other above ground infrastructure shall be placed so as not to obscure any portion of any Sight Visibility Triangle (SVT), consistent with the City of Tucson Unified Development Code (UDC) Sections 10-01.5.0 – 10-01.5.4 (Sight Visibility). Any deviation from this requirement requires approval from the City of Tucson through the Utility Waiver Request process.

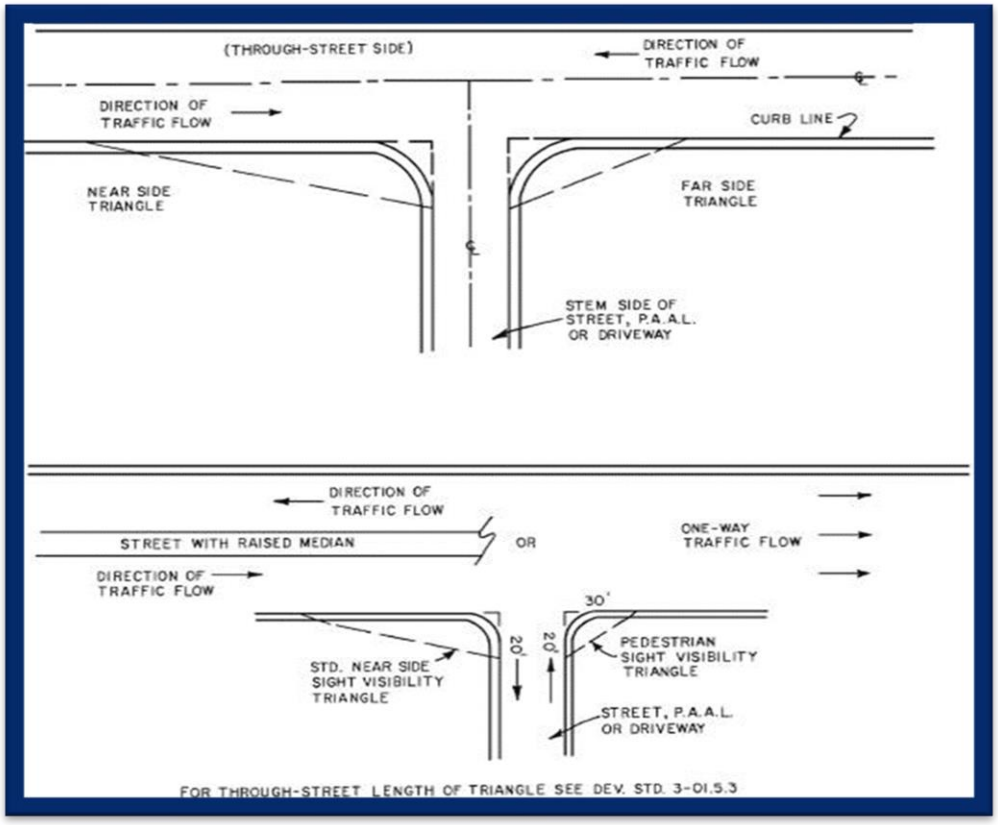


Figure 11: Sight Visibility Triangle

7.2.2 Vaults

A Utility Company may deem it necessary to construct a vault within the street ROW at locations where major intersection of power or communication systems occur. Vaults may be positioned under the pavement to avoid conflicts provided there are no other locations possible. The vaults must be separated from other utilities in the right-of-way. A vault constructed under pavement must be traffic rated to withstand the expected traffic volume loadings. The vault must be designed and constructed to sustain H20 loading (minimum) as defined by the Federal Highway Administration.

The vault is the property of the respective Utility Company and said Utility Company will be responsible to adjust the vault elevation in the pavement should the City of Tucson add a pavement overlay or modify the street profile that causes an elevation change at this location.

7.2.3 Pole Placement

New electrical or communication poles shall be placed within 1'-3' of the ROW/property line (if practicable). Additionally, new poles shall not be placed within five (5) feet of the perpendicular extension of the ROW-facing façade of any single or multifamily dwelling unit (if practicable). The perpendicular extension shall be derived by drawing a straight line following the roofline on each side of the façade to and through the ROW. Service poles for private use shall be on private property only. Individual service poles shall be reduced and eliminated where possible by moving overhead service lines to compatible underground locations.

New utility poles, streetlight poles, power poles, or wireless support structures shall be a minimum 150 feet (radially) from an existing Verticality unless approved by a Utility Waiver Request. Utilities are encouraged to collocate on an existing verticality to meet this requirement.

Streetlight poles or dusk to dawn poles shall additionally be spaced based upon safety lighting design requirements. All lighting must be LED and must meet City of Tucson and Pima County Outdoor Lighting Code and UDC standards.

7.2.4 Meters, Services, and Pedestals

Meters, controllers, and meter pedestals shall be located strategically so to limit their placement in the SVT, where possible, in arterial or collector rights-of-way.

It is the intent to place meters, controllers, and meter pedestals at locations other than in front of homes or within pedestrian pathways in residential areas. This may be accomplished by locating them in alleys, easements, or near drainageways unless screened to meet the intent of this direction.

Power to a streetlight or SWF may be extended within the ROW from the nearest available power source for poles having streetlights.

Underground electrical services for irrigation for **private use** shall not exceed 100-ft in the public ROW without a temporary revocable easement from the City of Tucson and special protective design requirements prescribed by the department. Electric services for public equipment shall be designed and conductors sized in accordance with applicable codes.

7.2.5 Pullboxes

Pullboxes should be placed outside of existing or future pedestrian paths where possible. If the existing ROW is not wide enough or there are other obstructions that may prevent this, the pullbox may be in the pedestrian path provided it is flush with the ground and is within a concrete collar that will help support it from settling. All pullboxes located in alleys or streets shall use a traffic rated design and made of materials to withstand H20 traffic loading.

Figure 12: Pullbox prior to installation

8. Utility Corridor Approved Locations

WET Utilities

All wet utilities shall generally be located under the street pavement for ALL streets and street classifications unless they exist in a pre-existing utility easement. Wet utilities are liquid or gas, conveyed in conduits or pipes that could be under pressure.

Figure 13: Wet Utility Pipes

WET utilities may be located outside of the pavement area provided they do not conflict with proposed tree or water harvest basin locations; do not cause sight visibility issues for drivers using intersections or driveways; and are compatible with the utilities already in the vicinity.

WET utilities may be in dedicated utility easements or in prior rights easement locations.

DRY Utilities

Dry utilities include power, cable, or fiberoptic communication lines and their supporting equipment. These may be located on existing power poles or below ground. SWF equipment shall be screened in accordance with this manual.

If dry utility infrastructure is above ground, the poles, pedestals, equipment cabinets, or other supporting equipment should not interfere with the sight visibility of drivers at intersections, alleys, or driveways. Also, placement of new equipment shall not be positioned to interfere with pedestrian paths or landscape amenities- future or present.

Support poles are approved to be positioned near the right of way /property line. All dry utility lines must be coordinated in height to allow for maintenance. For communication/fiberoptic or cable lines that are currently aerial, a 10-ft vertical separation (or as allowed/required by the

Utility Company) is typically required between overhead power and communication or street lighting lines or equipment.

If dry utilities are located below ground, the conduits constructed under the pavement shall maintain the designated separation requirements described herein. If this is not possible, a joint trench with compatible utilities can be made.

Communication, fiber, cable, or electric conduits installed underneath pavement between the curb and the property line shall be constructed with special protection such as a concrete cap when the depth is less than two feet.

Approval may be given to install utilities in alignments generally reserved for another utility type; but should be requested through a Utility Waiver request.

8.1 UTILITY SEPARATION AND CLEARANCES

- A 5-ft minimum horizontal separation from any dry underground utility shall be provided for water and sewer lines. The minimum horizontal separation is measured from outside of water/sewer main to the outside of the underground utility.
- No less than a-6-ft horizontal separation between water and sanitary sewer shall be maintained.
- A-minimum 2-ft vertical separation between wet utilities shall be provided unless additional pipe material modifications are made to the system at the crossing per agency requirements.
- A 2-ft minimum vertical separation from any dry underground utility crossing for water mains, water services, sewer mains, and sewer services. The minimum vertical separation is measured from the outside of water/sewer main/service to outside of the underground utility.
- A 4-ft minimum vertical clearance underneath existing trees or vegetation shall be maintained for wet and dry utilities. Trees shall not be planted within 10-ft of existing sanitary sewer or water mains.
- A 5-ft minimum vertical and horizontal clearance from Modern Streetcar tracks for all utilities.

Any and all, more stringent separation requirements required by the owner of the infrastructure, Federal, State, Local Codes, ordinances and applicable governing national standards shall take precedence.

A Utility Company requesting a variance from the above minimum clearances must do so in writing in the form of a Utility Waiver Request to the Engineering Division, Utility Coordination Section as part of the permit application or review process. The request shall identify each utility clearance requirement for which a variance is requested and the reasons why a variance should be granted. Waiver requests should be submitted using the Utility Waiver Request Form located at https://docs.tucsonaz.gov/Forms/DTM-Utility-Waiver

The DTM's Utility Coordinator will decide whether a variance should be granted. When utility conflicts are found during construction, all variances and **major** changes must be preceded by an approved plan revision.

8.2 AERIAL INSTALLATION HEIGHTS

Figure 14: Aerial Installation Heights

Aerial electric, cable, or fiber optic lines shall be a minimum of 18-ft high when crossing signalized street intersections, pavement, or alleys. The height above ground, outside of paved areas and all other intersections shall be no less than 16-ft at lowest sag locations. Adding of additional poles shall not be considered if the height cannot be maintained at the sag between pole spacing. The lines in violation shall be raised or moved to an underground location per the requirements of this manual. However, these requirements shall not apply to the pole owner when the pole owner adheres to the NESC.

Aerial installations shall be located on approved pole locations with permission by the utility pole owner. **No new aerial attachments shall be made on poles pending utility relocations or on topped poles scheduled to be removed.**

8.3 OVERLASHING

All aerial runs of fiber in Licensee's Fiber Optic Network shall minimize the use of slack fiber to no more than 100 feet per 1000' of cable and any such slack fiber shall be mounted to the adjacent pole or temporarily on the strand using strand mount snowshoes for no longer than 60 days during installation of the applicable Facilities. Licensee shall comply with Tucson Code Section 7B-15 for use, rental or lease of utility poles for aerial runs of fiber and shall remove such aerial runs within 90 days of said utility permanently removing their facilities from the applicable pole.

8.4 FACILITY ATTACHMENTS TO BRIDGES OR ROADWAY STRUCTURES

Communication or electric power facilities may be installed as attachments to bridges or roadway structures only where the Utility Company has demonstrated that all other means of installation is not practicable. Other means shall include, but are not limited to, underground and independent poles. Most new bridge designs include empty conduits for this purpose. Special negotiations and lease of the conduit may be necessary.

If an above-ground attachment must be made, submittals shall include sealed plans, profiles, and details on the proposed attachment to the structure and method of attachment, along with sealed structural calculations for all brackets and connection devices into the structure. An Arizona Registered Structural Engineer must seal the plans and calculations. This shall apply for each new attachment request not considered by the previously approved analysis.

WET utilities carry a significant added weight and will be discouraged from attaching to a bridge or structure unless the requesting Utility Company is willing to pay for the added costs necessary to support the loading and address access requirements necessary to do maintenance to its own respective infrastructure without significantly affecting traffic capacity. Requests will be considered on a case-by-case basis.

Facility installations conveying commodities that are volatile, flammable, corrosive, or present high degrees of risk to persons and property in the event of damage to or failure of that facility is highly discouraged but may be reviewed and approved on a case-by-case basis.

9. Submittal Requirements for Utility Work

The Utility Company must provide design drawings prepared by professionals in their respective field that depict the utilities and street infrastructure correctly including driveways, bus stops, landscaping, existing trees or vegetation, and sidewalks. The professional assigned by the Utility Company to prepare the drawings will be responsible on behalf of the Utility Company to ensure that all work is done in accordance with the latest PAG Standard Specifications and City of Tucson requirements. Here are some general coordination items to address:

1. Work to be done in street corridors planned for expansion shall be coordinated with pending capital project plan designs for horizontal and vertical locations.
2. Barricade plans shall be prepared by an ATSSA certified specialist and include all mobility impacts planning for safe travel through the construction zone.
3. Existing utility locations shall be investigated for depth at crossings through pothole or record drawing information in advance to avoid conflicts and delays during construction.
4. Existing plants and trees to be impacted shall be evaluated for protection or replacement.
5. All existing conditions shall be replaced to at least the original condition or better as described herein.

Repair of the pavement disturbed, replacement of the landscape, and restoration of sidewalk or hardscape shall be included as part of the work description on the ROW permit application.

9.1 PROTECTION OF UTILITY SERVICE CONNECTIONS REQUIRED

The designer shall also identify all business and private services to buildings and properties. The plans shall include notes to advise the Utility Company to locate all house or business utility service connections along the property frontages affected. All house or business service connections shall be identified before new installation of utility lines are installed whether it

be by trenching or jack and bore methods. The record drawings provided as part of the permit close out process shall identify the locations confirmed or found in the field.

Plans shall indicate the degree of accuracy and provide confirmation that other utilities have been accounted for to the best of the company's knowledge.

9.2 PLAN DETAILS REQUIRED

A complete Site Plan and Construction Plan approved by engineering review is generally required for permit issuance. A Site Plan provides necessary information regarding the applicant, scope of work, and construction methods. A Construction Plan consists of detailed civil drawings which identify the location, size, and dimensions of existing and proposed improvements to scale. These plans allow review staff to identify specific conflicts and ensure the planned work meets all applicable standards and specifications.

If work does not require a full site plan and construction plan, the Utility may prepare a plan with modified detail requirements as described below. Any aerial images used to meet the plan requirements below must include ROW lines.

SITE PLAN REQUIREMENTS

1. Provide a cover sheet which shows:
    a. A completed title block including the utility owner, project name, project contact information, and utility project work number/order.
    b. A "Location Map" labeling Major Streets and Routes, project site limits, North arrow, Township Range and Section information, Tucson, Pima County and Arizona. Scale is typically 1" = 3 miles.
2. Provide a Sheet Index, stating plan sheet numbers and corresponding sheet names.
3. Provide a Sheet Index Map indicating plan sheet numbers and limits. Show North Arrow, ROW lines, and label street names. Show boundary for other jurisdictions (Pima County, ADOT, UPRR, etc.) if applicable. Note: Sheet Index Map does not need to be to scale.
4. Include Arizona 811 Blue Stake note stating, "Notify Arizona 811 two working days before construction. Call 811 or 1-800-STAKE-IT (1-800-782-5348)."

5. Provide a Legend accurately showing all line types, symbols and abbreviations used on construction plans.
6. Include City of Tucson General Construction Notes. (i.e. trench details, pavement patch repair, sidewalk repair, aerial notes)

CONSTRUCTION PLAN REQUIREMENTS

1. Include a North arrow on each plan sheet. Orient the layout so North is at either the top or the left of the page.
2. Provide a scale or dimension adequate to accurately identify physical features and their potential conflicts within the construction area. Scale should be no smaller than 1" = 100' for aerial/above ground projects and 1" = 40' for underground.
3. Label and dimension all existing or proposed Right-of-Way limits and adjacent easements. Label all street names and alleys. Stationing is required for work on MSR streets and must also include the survey control line.
4. Show matchlines.
5. Show all existing and proposed improvements including landscaping, surface features and underground structures.
6. Provide lineal feet summary of installations and abandonments within the ROW.
7. Provide work method for construction (i.e. excavation/trenching, bore, insertion/pull thru, aerial/overlashing)
8. For underground work, show the location and size of all existing and proposed facilities in relation to the Right-of-Way.
    a. Provide a primary dimension from existing and proposed facilities to either the ROW limit or ROW centerline (not centerline of street).
    b. Provide a secondary dimension to surface features (i.e., edge of pavement or behind of curb). Dimensions should be measured parallel to ROW limits or surface features.
9. When the road is uncurbed provide dimensions between survey monuments located at the nearest cross street.
10. Provide a dimension that accurately describes all proposed utility crossings (underground and overhead) when measured at a 90-degree angle, plus or minus 10 degrees or parallel with intersecting road.
11. When crossing other utilities larger than 12-inches in diameter, include a vertical profile with a scale of 1" =4' showing 2' minimum separation.

12. Proposed and existing storm drains, sanitary sewer lines, water lines, and vertical poles over 12-inches in diameter shall be drawn to scale.
13. All proposed conduit or conduit systems over 12-inches in diameter or width shall be drawn to scale if proposed construction is within 10-feet of existing conduit.
14. Show all Railroad and Modern Streetcar tracks.
15. Show approximate FEMA floodplain or City of Tucson local flood limits and label all rivers, washes, and watercourses.
16. Show all existing topography affected by the proposed construction if it may affect the vertical elevation or depth of a utility installation.

9.2.1 Modified Plan Requirements

1. A completed title block including the utility owner, project name, project contact information, and utility project work number/order.
2. Show a "Location Map" labeling Major Streets and Routes, project site limits, North arrow, Township Range and Section information, Tucson, Pima County and Arizona. Scale is typically 1" = 3 miles.
3. Provide a Legend showing all line types, symbols and abbreviations used on the Site Plan.
4. Provide a site map which includes a North arrow, street and alley names, roadway and lane widths, all excavation extents, and clearly shows the location and offsets of proposed work in relation to:
    a. ROW Limits and Easements
    b. Existing Utilities
    c. Back of Curb or Edge of Pavement
    d. Location of Sidewalk
5. Show boundary for other jurisdictions (Pima County, ADOT, UPRR, etc.) if applicable.
6. Include Arizona 811 Blue Stake note stating, "Notify Arizona 811 two working days before construction. Call 811 or 1-800-STAKE-IT (1-800-782-5348)."
7. Include City of Tucson General Construction Notes. (i.e. Trench Details, Pavement patch repair, sidewalk repair, aerial notes.)

9.2.2 Complete Profile Requirements (when utilities are underground)

NOTE: Complete profile drawings showing all intersections return curve to return curve for Major Street to Major Street, or Major Street to Collector Street shall be provided when proposed construction crosses existing or proposed facilities. Profiles may also be required when clarity of a proposed crossing is necessary. **The profile shall include, but not be limited to, the following:**

1. Existing and proposed grades should be at intervals of 100-feet 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.
2. Show all existing facilities that the proposed utility will cross (storm drains, sanitary sewer lines, waterlines, and conduit systems).

Figure 15: Underground Utility Infrastructure

3. Storm drains, sanitary sewer lines, and water lines over 12-inch in diameter shall be drawn to scale. NOTE: All conduit systems over 12-inch in diameter or width shall be shown to scale if proposed construction is within 2-feet of another existing conduit system.
4. Provide a vertical scale that adequately depicts installation of existing facilities. Please specify scale (i.e.,1-inch = 2-feet, 1-inch = -feet', etc.)
5. Elevations shall be City of Tucson datum and indicated on the plans.

9.3 OVERHEAD INSTALLATIONS, RELOCATIONS, AND MAINTENANCE REQUIREMENTS

1. Minimum overhead clearance shall be 18-feet or more over street pavement and alleys. Overhead lines shall not obstruct or interfere with traffic signal visibility. Indicate the heights on the plans.
2. Existing underground facilities need not be shown on plans for overhead installations or maintenance (including overlashing) unless excavations are also included in the work. Overlashing expectations are described in the License Agreement for each respective utility.
3. Permits for overhead lines must comply with any License Agreement with licensed and franchised companies.
4. Guy wires must be out of the pedestrian path.

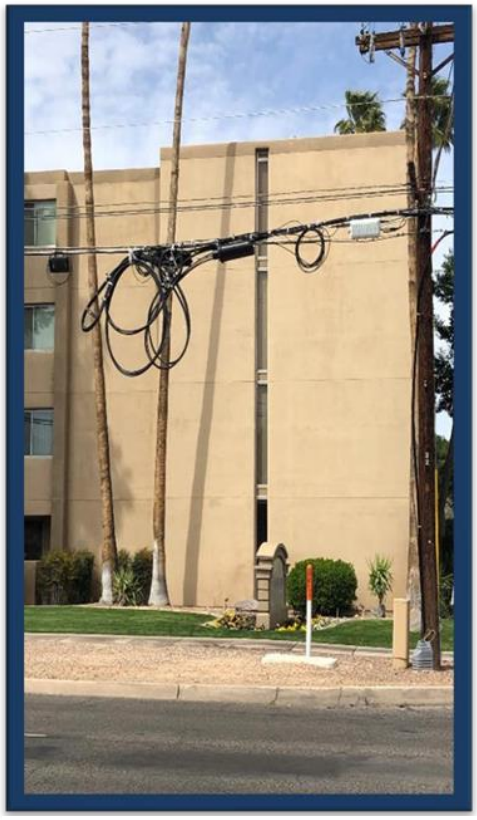


Figure 16: Excess Overlashing

9.4 TRAFFIC CONTROL PLAN

The City of Tucson governs all work in the right of way including any restrictions. Traffic control devices utilized in the right-of-way must include provisions for all modes of transportation and accessibility. All work must comply with the requirements of the Manual of Uniform Traffic Control Devices (MUTCD) and current Additions by The City of Tucson to the Manual on Uniform Traffic Control Devices for Temporary Traffic Control supplement.

A traffic control plan (TCP) approved by DTM engineering review is required with Right-of-way permit applications as outlined below. TCPs with a Right-of-way application for work in residential areas are reviewed in the field at the preconstruction meeting.

Applicants must certify that the Traffic Control Devices and Plan are in conformance to Part VI of the Manual on Traffic Control Devices (MUTCD) as amended by the State of Arizona, Tucson's City Code 25, and any other standards set forth by the City Transportation Director.

Work requiring a Traffic Control Plan includes but is not limited to the following:

- Activities along Sun Link Streetcar route
- Activities in the MITZ or Downtown Area (Central Business District)
- If traffic control extends through a signalized intersection
- If activities impact any arterial or collector street
- Complete closure of any street or named alley
- If traffic control extends through a railroad crossing

9.4.1 Traffic Control Plan Information Checklist

Please follow the CHECKLIST below when preparing and planning all work within the ROW. Lack of consideration for the different modes of transportation may affect the amount of time needed to review and respond to permit applications. Blue "Business Access" signs shall be required for construction affecting business access. If the traffic control plan is for multiple locations, the entire project must be submitted for analysis and review at the same time.

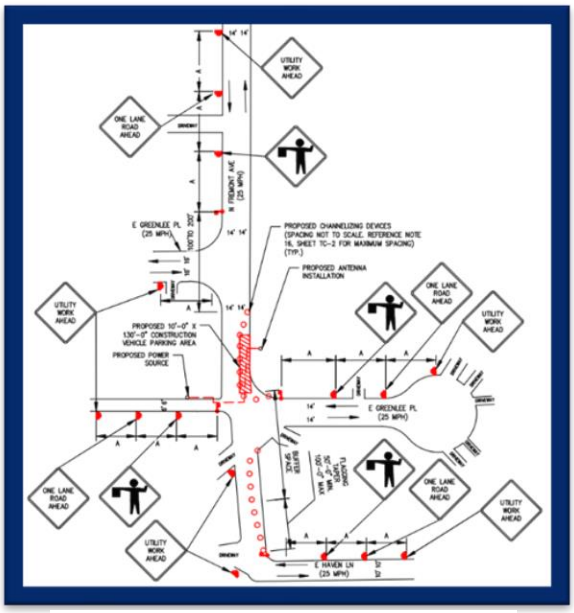


Figure 17: Traffic Control Plan

1. A plan view of the area to be barricaded.
2. Must have a North arrow, oriented so North is at either the top or the left of the page.
3. All streets must be labeled and show posted speed limits.
4. All intersections shown.
5. All side streets and alleys must be shown and labeled by name and if an alley as "alley".
6. All driveways must be shown.
7. Dimension current lane widths.
8. Show all transit stops.

9. Label or depict barricades, devices, and signs to be used respectively.
10. Indicate respective spacing of signs and barricades.
11. Show face of barricade direction.
12. Dimension width of area to be reserved/used for the work and restrictions.
13. Show all tapers and lengths.
14. Provide double sided blue "business access" signs at all business driveways.
15. Depict provisions for pedestrians, bicyclists, and transit riders.

Figure 18: Pedestrian Provisions

NOTE: Pedestrian provisions must be made through the construction site for all arterial and collector streets. Bicycles can be directed to vehicle travel lanes provided the appropriate speed limit reductions are included and "Share the Road" signs provided.

9.5 DESIGN WAIVER REQUEST

Some utility installations do not need the same level of detail than is typically required for a "New Project". In those cases, a written request for waiver requesting simplification of the document may be submitted with the permit application justifying the omission of detail. Waiver requests are reviewed on a case-by-case basis and may not be applied to any future work.

10. Construction and Material Replacement

The City of Tucson must coordinate new work and manage the use of the ROW to protect its own infrastructure. This may include but is not limited to paving, sidewalk, curb, traffic signals, street lighting, signage, landscaping, and storm drainage. The City's infrastructure must be maintained, replaced, or improved as part of any activity within the public ROW.

Standards and requirements for street pavements are described in this manual and the City of Tucson Unified Development Code Technical Standards Manual per Ordinance 11025 and Ordinance 8727. Requirements in Section 10 – Transportation, provide direction to reviewers and give expectations to utility companies for the repair of pavements caused by the installation of utility infrastructure. These two documents complement one another. Should differences exist between them, the more stringent requirement shall be required and enforced.

All striping and pavement markings interrupted by pavement patching shall be replaced in kind. Utility Companies are required to complete their pavement restoration work unless a cost sharing agreement is executed listing the cost, payment schedule, and expectations of parties to restore the street to a better condition in accordance with Chapter 25 of the City Code.

10.1 SHADING

Shading shall extend to one foot above the top of the highest projection of the facility being installed and conform to the respective utility owner's specifications.

10.2 BACKFILL

Backfill in non-paved areas may be replaced with native material compacted to a minimum of ninety-five percent of the material's maximum density.

10.2.1 Under Pavement

Backfill under pavement is important to the integrity of a pavement patch. The City of Tucson has determined that the failure of most patches begins with poor workmanship and the type of backfill material used to backfill trenches or other excavations. Regardless of the age and condition of the pavement, the following will be required of all disturbance to existing pavement in streets or bike path areas:

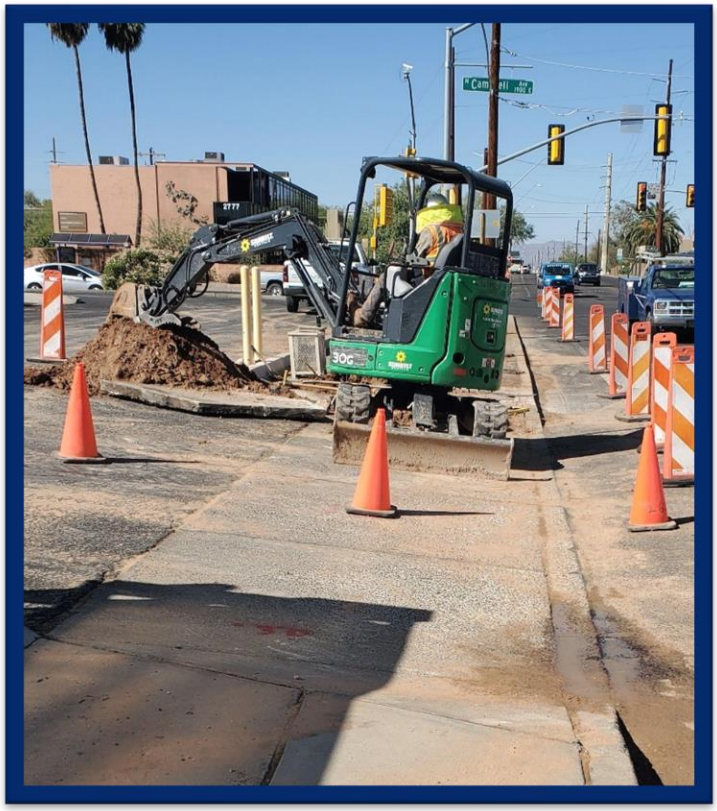


Figure 19: Backfill Material

For all trenches and excavations beyond four inches in width and under pavement, the backfill of trenches shall be void of native soils and for utility mains or services under asphalt concrete (AC) shall be made with aggregate base (AB) material that meets current Pima Association of Governments (PAG) Standards and specifications. AB must be compacted to 100-percent of the respective material maximum density. Density tests shall be made by a certified material testing laboratory. A density test shall be taken each day work occurs and for every 100-CY of material compacted. More tests may be specified as needed. The results shall be reported to the City's Inspector and included in the ROW permit close out.

10.2.2 Concrete Caps or Encasement

A 6-inch concrete cap or concrete encasement of installed conduit shall be used as required under Section 8 for utilities installed underground that have less than 24-inches of cover. Class S concrete must be used when capping or encasing conduit. Alternative cap methods may be evaluated on a case-by-case basis.

10.3 PAVEMENT PATCHING AND RESTORATION

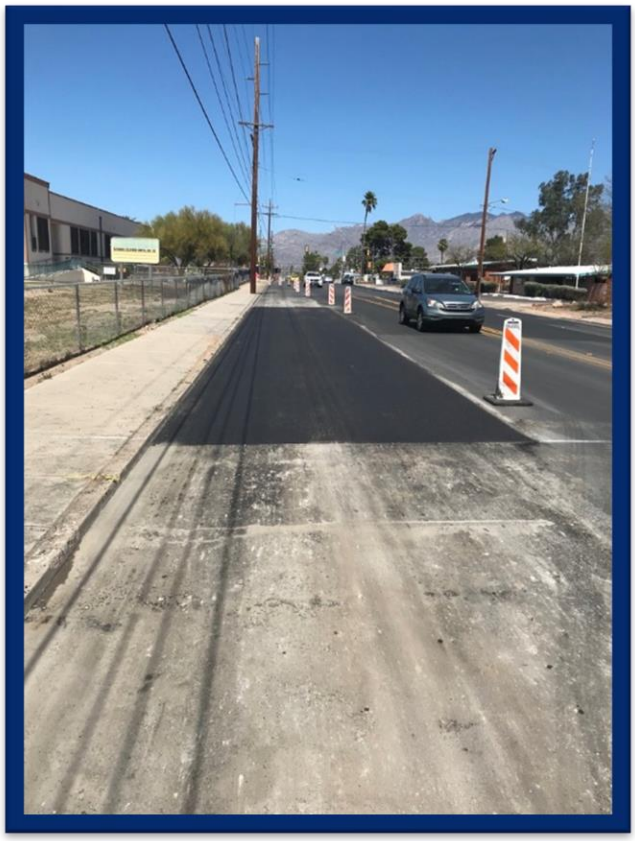


Figure 20: Pavement Patch

Patch limits for pavements not under moratorium shall follow a T-Top Detail **(Exhibit A)**. T-Top patches in concrete pavement will require Class P concrete. Class S concrete may be used for T-top patches in all other pavement types. The Utility Company shall apply an approved SEAL COAT PRODUCT to the affected patch area for 25-ft beyond the trench limits in all travel directions and for the width of the lane affected. The SEAL COAT product must have the following characteristics to be considered:

- Asphalt seal coat (airport grade?)
- Black emulsion
- Polymer modified
- Surface preparation per manufacturer
- Application made per manufacturer
- Curing time between 8-24 hrs
- Thickness applications required

Seal coat products that may be considered include the following:

- https://sealmaster.net/products/pavement-sealers/masterseal-asphalt-blacktop-sealcoating
- https://www.homedepot.com/p/Latex-ite-4-75-Gal-Airport-Grade-Asphalt-Driveway-Filler- Sealer-73066/100479155
- https://jetcoatinc.com/

10.3.1 Pavement Moratorium

The City of Tucson has established a no cut pavement moratorium for new pavements and pavement rehabilitation projects. There are two types: a 5-year moratorium and a 3-year moratorium. The conditions for each are described below. The ROW inspector will confirm the treatment required for pavement restoration at the preconstruction meeting.

5 Year No-Cut Moratorium:

- Applies to streets in the Central Business District, and arterial and collector streets included on the current version of the Major Streets and Routes Plan.
- Lasts five years from the date of acceptance of the last installation of asphaltic concrete pavement or overlay.
- Triggered by installation of asphaltic concrete pavement or overlay.
- Restoration of pavement cuts on these streets as described in section 10.3.2 is required.

3 Year No-Cut Moratorium:

- Applies to residential and local streets on the Protected List that are not included on the Major Streets and Routes Plan.
- Lasts three years from the date of acceptance of the last installation of asphaltic concrete pavement or overlay.
- Triggered by any pavement treatment except a fog seal.
- Restoration of pavement cuts on these streets must meet the patch limits shown in **Exhibit C** and match the pavement treatment type that triggered moratorium status.

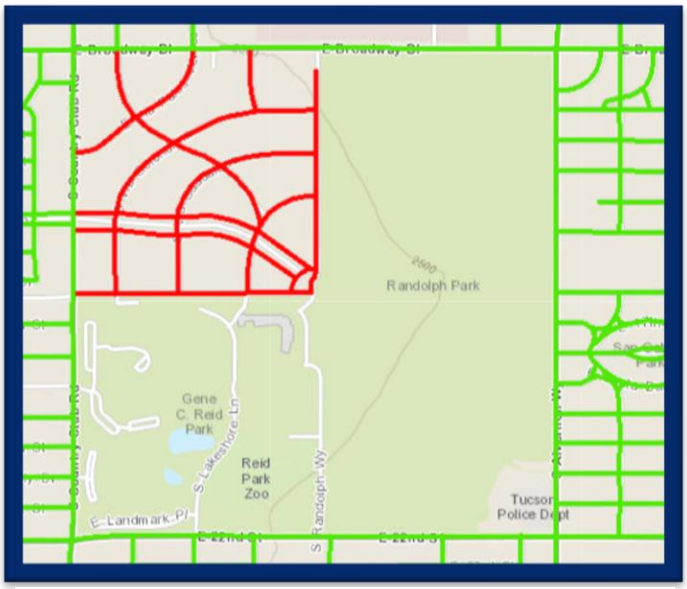


Figure 21: Moratorium Streets (Red)

Additional details for the no-cut moratorium can be found in section 10-02 of the City of Tucson Technical Standards Manual. Streets currently under moratorium status can be found at https://maps2.tucsonaz.gov/Html5Viewer/?viewer=maptucson. Open the layer list and select the layers shown in Figure 22 to view all moratorium streets.

10.3.2 Moratorium Pavement Repair

Pavements under the 5-year moratorium requiring repair due to activity by a Utility Company shall be milled 2-inches and overlaid with 2-inches of a City approved asphalt mix. Pavements under the 3-year moratorium requiring repair due to activity by a Utility Company shall receive the same treatment that triggered moratorium status. Pavement patch limits for pavements under moratorium is a T-Top Pavement patch, 25-ft beyond the limits of the trench on both sides of the excavation and for the width of the lane affected. See **Exhibit C**.

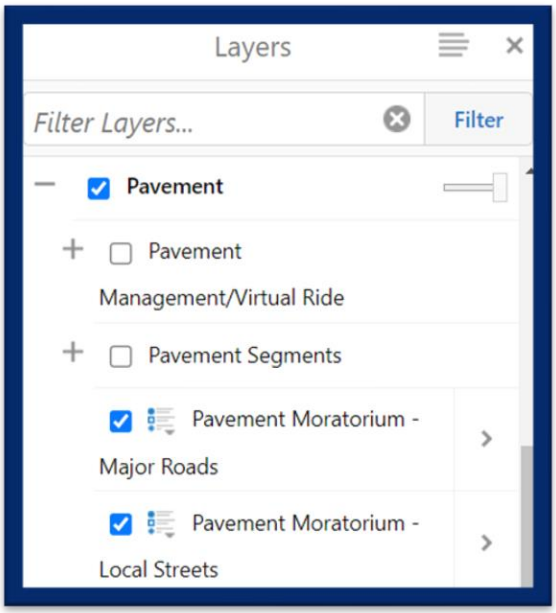


Figure 22: Pavement Moratorium Map Layers

10.3.3 Downtown Streets Pavement Replacement Requirements

All downtown streets affected by a pavement cut shall be resurfaced by milling and replacing the pavement in the lane affected. The depth of the mill and pavement replacement shall be 2-inches thick and 25-ft in both directions from the edge of the pavement patch method used.

For pavement cuts to local streets and alleys in the Central Business District that have not received installation of asphaltic concrete pavement or overlay in the last three years, Utilities may perform a slurry seal within the 25-ft moratorium patch limits in lieu of the regular 2-inch mill and overlay requirement.

10.3.4 Multiple Cuts

Multiple cuts means more than one and by the same permit. If multiple cuts and patches are made to the same street and within the existing pavement, the street surface for the duration of the cuts and patches shall be milled 2-inches and overlaid with 2-inches of a City approved asphalt mix on arterial and collector streets.

For non-moratorium residential streets, if multiple cuts are made to the same street and within the same block (intersection to intersection), an approved SEAL COAT treatment shall be added to the surface of the patched area for the entire width of lane affected between cuts upon completion of the pavement patch in lieu of a mill and overlay. In residential areas, the treatment shall extend to the center of the street. If both sides of the street have been cut, the entire street shall be covered over between the limits of the first cut to the last cut on the same respective street.

10.3.5 Moratorium Pavement Repair Exceptions

New individual service line connections and individual service line repairs may be made in new pavements without a moratorium patch requirement provided the backfill and pavement repair includes NO native backfill and the pavement area affected is less than 4-ft wide to complete the T-Top Patch Detail. If the width exceeds the 4-ft maximum width, the area of patch must comply with moratorium patch requirements. Where cuts to pavement under moratorium occur due to an emergency, Utilities may follow the non-moratorium pavement repair requirements described above in lieu of the requirements in section 10.3.2.

10.4 LOCATING UTILITIES, IRRIGATION LINES, AND HOUSE SERVICE CONNECTIONS

Potholes are sometimes required to locate existing utilities, irrigation lines, and house service connections. Most utility line locations may be determined with electronic measuring devices. House service connection information might not be available. Vacuum extraction is often used, but the pavement must be disturbed to extract the soil. Pavements shall be

Figure 23: Pothole

patched upon determining or verifying the desired utility service connection information or status.

New pavement (under moratorium) may be cored for potholes and replaced per **Exhibit B** provided a flat, vertical surface is maintained and left in place upon completion of its repair. Pavements older than 5-years shall be treated as a patch and resurfaced with the materials and for the areas described in 10.3.4.

10.5 SAWCUT AND MILL

Any excavation into Portland Cement (PC) concrete or asphaltic concrete (AC) pavement shall either be cored or sawcut to provide a face to join the new PC concrete or asphaltic concrete material together. For pavement replacements that require milling, the edges shall be sawcut and the edge made smooth to tack and join the old to the new material.

10.6 CONCRETE CURB REPAIRS

Concrete curbs that are removed or damaged over the course of construction shall be replaced by first saw cutting the curb at the nearest joint. The Utility Company shall be careful to not remove beyond 2-inches of the pavement adjacent to the curb. Broken pavement or a sawcut beyond 2- inches shall follow the pavement patching direction described herein.

10.7 CONCRETE SIDEWALK OR HARDSCAPE REPLACEMENT

Concrete sidewalks that are removed or damaged during construction shall first be sawcut at the nearest joint and be fully replaced. The sidewalk shall have a minimum thickness of 4-inches and a minimum thickness of 6-inches is required in driveway areas. Construction expansion joint material shall be provided on both sides of the sidewalk match and extend vertically the entire depth of the sidewalk face.

Where concrete tint or integral color are necessary, the Utility Company shall match the current color as closely as possible for the area impacted.

10.8 AZ 811 MARKINGS REMOVAL

Painted AZ 811 utility location markings for the work performed on residential streets shall be removed from all locations outside of the street pavement upon request from the City. This includes concrete sidewalk, curb, and landscape areas. AZ 811 markings are not legally active after 15 days and must be removed within 30 days of the City requesting removal of said marking information. The site shall not be deemed complete and restored until the requested markings for the project have been removed to the Inspector's satisfaction.

Figure 24: AZ 811 Markings

10.9 LANDSCAPE IRRIGATION AND GROUNDCOVER REPLACEMENT

Landscaping within the public ROW may have some additional requirements and coordination. Irrigation lines under new or modified driveways will be required to be sleeved with Schedule 40 PVC sleeving before rebuilding the existing improvements.

Groundcover shall be replaced in kind to match. Decomposed granite (DG) used for ground cover, and rock plating shall be replaced to its original thickness and DG shall be no less than 2-inches over the top of newly excavated and compacted area. Rock plating shall have a thickness of at least 1.5 times the average diameter of the rock disturbed.

DO NOT replace the cover material with contaminated, blended, material set aside before construction unless it can be kept from blending with the soil underneath. Protected DG, new DG, or other decorative rock cover will need to be used that matches most closely in color. The ROW Inspector will determine if existing disturbed materials are too contaminated to reuse.

10.10 TREE REPLACEMENT AND/OR PRUNING

Trees and shrubs that are removed shall be replaced in kind and watered for a minimum period of 6- months. Existing irrigation systems must be repaired and may be modified with approval from the DTM Irrigation Section. Where no irrigation systems exist, the watering schedule and duration is recommended per the information in **Exhibit G** and monitored by the DTM Landscape Architect or designated representative.

Trees that need to be pruned to allow room for equipment or to allow for installation of infrastructure shall be performed by a worker that is an arborist, certified by the International Society of Arboriculture. Certified Tree Workers under the supervision of an ISA Certified Arborist, may also perform the pruning.

10.11 ADA IMPACTS AND PLANNING

The Utility Company shall repair all curb access ramps disturbed by the construction. Paving of the street disturbed may trigger curb access ramp modification or updates. Pedestrian access will need to be provided during construction.

Figure 25: ADA Impacts

No redirection of pedestrians on an arterial or collector street shall be allowed by the TCP. A traffic lane may need to be reserved/restricted to provide pedestrian access utilizing water or concrete barrier protection. A temporary paved path (2-inch thick by 5-ft wide min) detour may be constructed through the construction zone to satisfy this requirement.

10.12 OPEN EXCAVATION

All excavations shall be secured for safety and to provide pedestrian access at the end of each shift. Where pedestrian access is not possible, a separate pedestrian path shall be provided with the use of concrete or water barrier in the street and signed to allow safe use of the road. A temporary pavement ramp may be necessary to provide pedestrians with the opportunity for a safe transition to access the new path elevation from the curb.

All open trenches shall be protected by Type 2 Barricades with Type A flashers and surrounded by a barrier fence. For trenches deeper than 4ft, a chain link fence shall completely surround the trench. Excavations may need to be covered by steel plates or approved materials in accordance with the City's supplement to the MUTCD at the end of each shift.

Figure 26: Open Excavation

11. SWF Design Guidelines and Standards

Small wireless facilities shall be designed and located to minimize the impact to homeowners and business owners and to maintain the character and appearance of the surrounding neighborhood. Design considerations include lot line location, pole appearance/aesthetics, safety, pedestrian access, and compatibility with existing utility infrastructure. To that end support equipment shall be minimized, and above ground electric meters shall be included within the pole makeup where possible and at approved locations. These and other design requirements are described below and in the City of Tucson Wireless in the ROW Standard Designs and Concepts.

11.1 POLE LOCATIONS AND SPACING CONSIDERATIONS

Companies installing SWFs are encouraged to use existing power pole locations or replace existing streetlights with a dual-use (combination of small cell and street lighting) pole. New SWF poles may not be closer than 150-feet radially from existing Verticality unless approved through a Utility Waiver Request. The SWF design should attempt to replace an existing Verticality to meet this intent.

Figure 27: Small Wireless Facility

Wooden poles having overhead lines that are designated to be removed/relocated shall not be considered as a viable candidate for adding streetlights and SWF equipment. If a wood pole needs to be lengthened, it shall be replaced with a painted steel pole with equipment internal to the pole, or with accessory equipment placed at strategic locations to meet the intent of this manual.

The location of replacement poles, new poles, and supporting equipment must comply with the Americans with Disabilities Act, city construction and sidewalk clearance standards, city ordinances, and state and federal laws and regulations to provide a clear and safe passage within the rights-of-way.

11.1.1 Setback Locations

SWF poles proposed along arterials streets or collectors must be set back from the curb and be located behind an existing sidewalk or future 6-feet to 8-feet sidewalk area. The pole may not be located closer than the nearest streetlight pole at street corners having existing traffic signals. If less than the desired pedestrian path separation is available, the provider may install a curb access ramp with a reduced dimension having no less than 5-feet in width.

SWF poles proposed in residential neighborhoods may place the pole behind the curb at existing street sign locations provided there are no additional support communications equipment above ground such as a metered pedestal cabinet. Placement of the SWF pole must consider pedestrian access to meet current or future ADA compliance setbacks.

11.1.2 Property Frontages and Common Property Lines

SWF poles may not be placed anywhere along a residential frontage except for at property corners unless approved by a Utility Waiver Request. If the Utility Waiver Request is for a midblock placement, the SWF must be located at a common property line.

In some cases where driveways are in nonconformance with current approved driveway locations per Chapter 25 of the City Code, poles may be placed to meet the intent of separation between driveways and proximity to the property line. A distance no less than 5- feet from existing driveways should be maintained without additional protection such as post barricades.

Figure 28: Pole Location at Common Property Line

11.1.3 Trees

SWF poles shall not be placed in water harvesting areas or areas with Green Stormwater Infrastructure improvements without proper precautions and care to protect and maintain trees and shrubs that could be impacted by the construction activity. SWF poles shall be separated from existing trees and their canopy along property frontages. A separation of 25 feet is desirable.

Figure 29: Separation from Driveways and Trees

11.2 COLOCATION

Colocation requires permission from the existing pole owner. Potential locations include replacement of an existing Verticality such as other streetlight poles, dusk to dawn poles, or possibly existing traffic signs. The cellular provider should minimize the number of above ground pieces of accessory equipment and include screening of any above ground equipment in residential areas.

The pole must be able to withstand the extra weight of colocation equipment, fiber installations, and wind loading. A structural analysis will be required. New steel and painted poles are desired to be used and will be required at locations where streetlights currently exist or where DTM wooden poles are located.

A SWF pole may replace an existing signpost at a local street intersection in a residential neighborhood provided the following conditions are met:

1. Pedestrian access is maintained.
2. No other above ground equipment is included.
3. The curb access ramp at the street corner is modified as part of this construction to meet ADA regulations.
4. Use of other existing utility infrastructure such as fire hydrants will not be affected.

Should colocation not be possible, freestanding poles equipped with a mast arm and luminaire for potential street lighting shall be located to meet the ends described herein.

11.3 POWER SHARING

Power sharing shall be in accordance with existing contract arrangements established with the City of Tucson. Power sharing, where available, may be requested by executing and submitting a Power Sharing Rider to Wireless Right-of- Way License Agreement along with the associated approved Site License Agreement (SLA). Both documents must be included with the SWF permit application. Power sharing is permitted at the sole discretion of the City.

Existing "Dusk-to-dawn" or steel streetlight poles already have power and their auxiliary equipment in place. Power sharing agreements can be established more easily with these locations. Cellular providers are strongly encouraged to seek out and use these locations first where possible.

11.4 MINIMIZING ROW SPACE FOR ACCESORY EQUIPMENT

All accessory equipment should be contained within the SWF pole to limit the number of above ground obstructions that must be placed within the available right-of-way. SWF poles should utilize "meter on pole" designs to meet this intent **(Exhibit H). New meter pedestals and equipment cabinets will require prior approval, at the City's sole discretion, upon a showing of necessity.**

All small wireless facility carrier equipment in residential areas shall be placed in utility easements, alleys, drainageway access roads, or other out of view locations where possible. The intent is to hide or minimize visual impacts equitably among adjacent and nearby properties. If this cannot be done, the equipment must be screened and hidden behind an exterior shroud to maintain the best look of the neighborhood and must be placed in proximity to a common property line between adjoining residential properties. Accessory equipment should avoid landscaping and pedestrian pathways.

Accessory equipment is allowed on arterial and collector streets and may be separate from the pole in arterial and collector locations unless these street classifications pass through a residential area. Accessory equipment may be placed adjacent to a residential property located on a corner lot provided it is not in the SVT. If accessory equipment is restricted to midblock locations, the small wireless facility shall be placed away from it so that a cluster of obstructions is not formed.

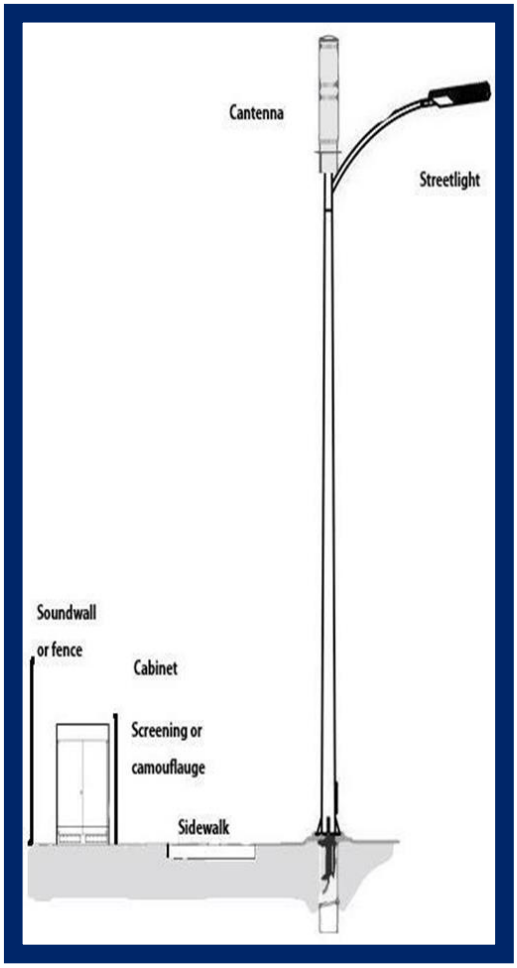


Figure 30: Accessory Screening

11.5 COLOR AND DESIGN CONSIDERATIONS

All new or replacement poles and accessory equipment installed must match the look and feel of the surrounding area. The exterior mounted equipment shroud shall match the pole aesthetics. Care should be taken to integrate the mounting attachments into the enclosure design. Wires and cabling shall be hidden from view. Cables and wires shall be located internal to the pole until they reach a cable grommet. Weatherproof grommets shall be installed at all cable entry points. All pole openings shall be weatherproofed to prevent interior rusting of the pole.

One equipment shroud containing all required small cell equipment shall be installed per pole. (Exception: one additional equipment shroud may be allowed per pole if the antenna is located within the second equipment shroud.)

All SWF poles and accessory equipment shall be painted to provide the best aesthetics to match the area they are located within. Various colors have been selected by affected neighborhoods. New colors may be added based upon input received from stakeholders. See **Exhibit F** for a list of approved colors. Directions on the color choices shall be given to the Utility Company during the permit application process.

In locations where historical lighting architecture is required to be matched, the Utility Company shall match the architectural elements in style and color to the satisfaction of the community. SWFs in these locations should include a decorative transition over the base equipment cabinet upper bolts, hidden hardware connections, and a restriction of horizontal flat spaces greater than 1.5 inches to prevent cups, trash, and other objects from being placed on the pole components. Each pole component shall be architecturally compatible to create a cohesive aesthetic.

11.6 TYPES OF SMALL WIRELESS FACILITIES

There are three main types of Small Wireless Facilities installed in the City of Tucson. Design standards for these variations are described in the City of Tucson Wireless in the ROW Standard Designs and Concepts. These standards are not exhaustive and the City, as the owner, keeper and manager of the ROW retains the right to modify or adjust the requirements on a case-by-case basis. The most common installation types are described below.

- **Type 1: Attachments to existing utility poles**
- **Type 2: Replacement of wood or metal streetlight poles**
- **Type 3: New Steel Pole**

11.6.1 Type 1: Utility Pole Attachment

A Type 1 Utility Pole attachment is a colocation of SWF equipment on an existing power pole. The pole must first be tall enough to accommodate the attachment and provide safety separations to consider its use. Use of existing poles must first be approved by the pole owner. Existing wooden poles can generally support strand mounted equipment but cannot support small wireless attachments to the pole.

Strand mounted equipment shrouds are limited as described by the Arizona Revised Statute ARS § 9-506 for size and number of antennae allowed per location. The separation between power and any equipment shall meet the Power Company's separation and attachment guidelines to allow safe maintenance for all users. Type 1 SWFs are generally not eligible for power sharing.

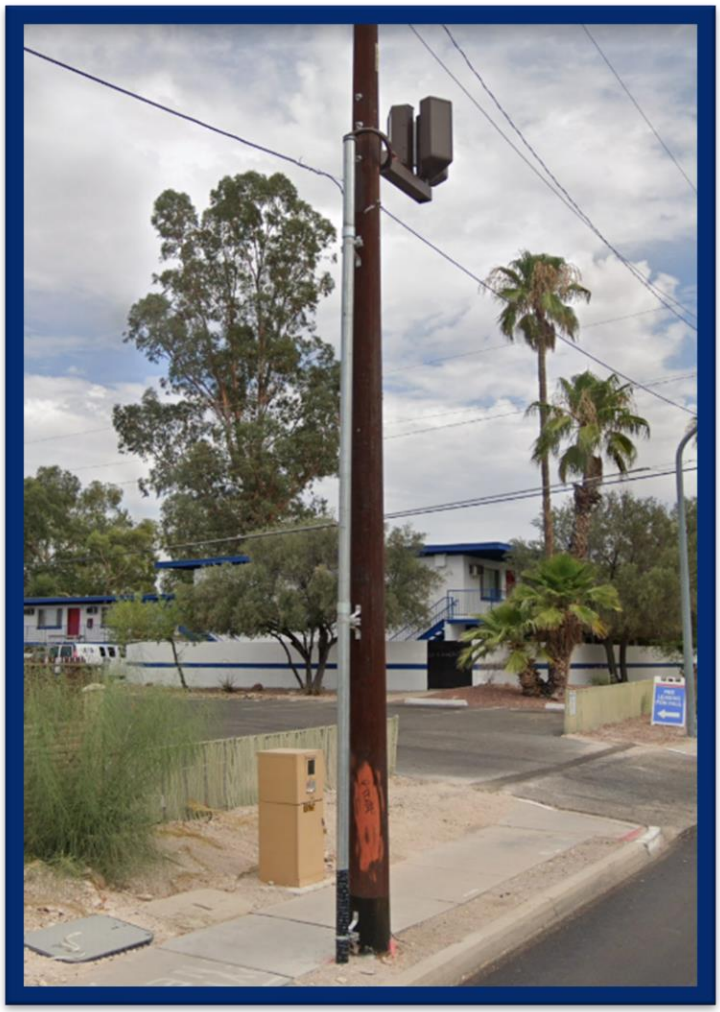


Figure 31: Type 1 SWF

11.6.2 Type 2: Steel Replacement Pole (SWF and Streetlight)

A Type 2 SWF replaces an existing wooden or steel streetlight pole with a new steel streetlight pole capable of supporting SWF equipment. If the existing pole selected for replacement does not have street lighting, any replacement pole must have the potential to provide street lighting capability in the future. Power sharing agreements may apply in this instance.

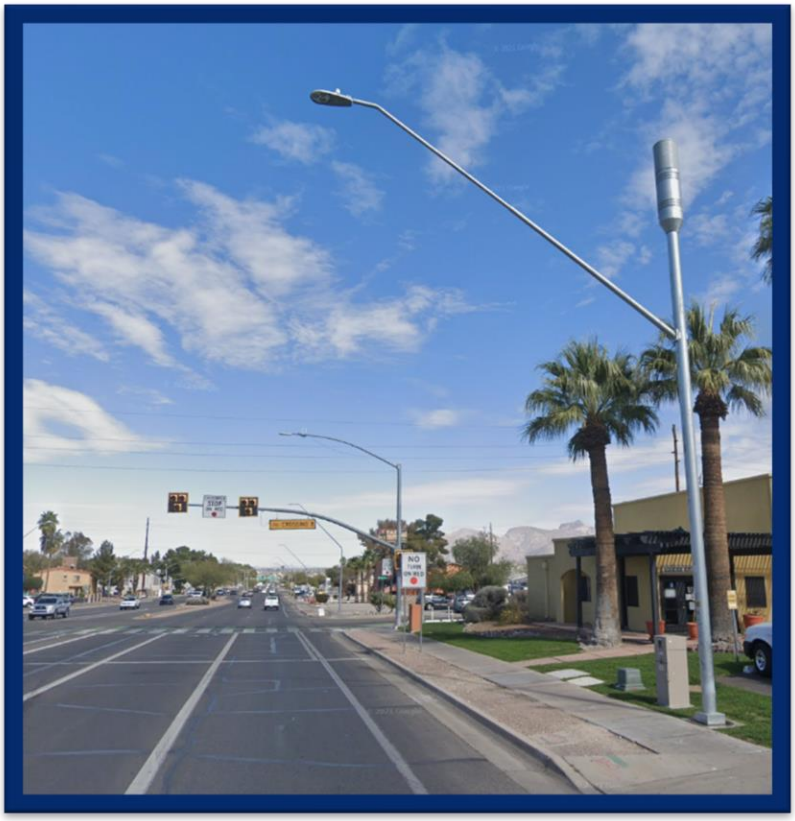


Figure 32: Type 2 SWF

All street lighting to be added or replaced must meet all requirements of the City of Tucson and Pima County Outdoor Lighting Code and UDC Standards. If additional lighting is not desired at the location of the freestanding pole, the mast arm and luminaire shall be delivered to DTM's electric shop in case lighting is requested for the site later.

11.6.3 Type 3: New Pole

A Type 3 SWF is a new wireless support structure installed for the purposes of supporting SWF equipment. Type 3 SWFs shall incorporate the highest level of stealth and concealment of the antennas and wireless equipment to minimize the visual impact of the site to the public. The City may require the new wireless support structure to be constructed of a specific material that will enhance the stealth and concealment of the site. The wireless provider is solely responsible for the cost of all stealth and concealment elements and the installation of other elements required by the City.

Figure 33: Type 3 SWF

Type 3 SWFs shall meet the intent of reducing above ground equipment or obstructions. To that end, cellular providers are strongly encouraged to utilize meter-on-pole designs and collocate with an existing verticality wherever possible. All small cell carrier equipment should be housed internal to the pole or screened/hidden behind an exterior shroud.

If a streetlight does not exist at a new, proposed location, the pole will be equipped and wired for a streetlight for potential future street lighting. The new wireless support structure shall be designed in consultation with various internal City stakeholders and may include external stakeholders. No new wireless support structure shall be constructed without the consent and simple majority approval of the key stakeholders.

11.7 SWF DESIGN WAIVER REQUEST

If these placement or design requirements are not technically feasible, the applicant may submit a Utility Waiver Request to the City's Utility Coordinator requesting the small wireless facility be exempt from these requirements and offer alternative locations or designs reasonably meeting the intent of these standards and minimizing impacts among residential properties.

A waiver must be part of the review application and proof that all other design options have been explored to meet the intent of these guidelines. The waiver shall contain:

- **DESCRIPTION:** the description of the infrastructure proposed and the public review interaction.
- **LOCATION:** The location of the proposed facility and a list of accessory equipment shall be provided.
- **REASON:** Provide the reason why a waiver is requested.
- **IMPACTS:** List the impacts to other utilities and to citizens or businesses.
- **DESIGN OPTIONS CONSIDERED:** Describe what other considerations were made before moving to the waiver request and why they do not work here.
- **CONCESSION:** Describe what will be done as a concession if this waiver is approved. This may include screening, protection, pavement replacement, additional landscape or other improvements that are beyond the scope of this improvement.

The City of Tucson will review and provide a response within five business days.

12. Design Review Steps for All Utility ROW Permits

The number of people needed to review and process a permit depends on its complexity, impacts, and the accuracy of the information contained in the permit application. The permit status will be provided online. Plans and review requests can be made through Tucson Development Center Online (TDC) https://tdc-online.tucsonaz.gov. The following steps are generally followed for all utility work:

APPLICATION

1. Utility submits permit application through Tucson Development Center Online.
2. DTM Staff verify License Agreement/ Franchise Agreement Status (if applicable).
3. Staff check for completeness (Y/N). If complete, assigned for engineering review.
4. Addresses requiring design stage notifications provided to applicant.
5. If not complete, the applicant submits a new, complete application. DTM notifies Applicant of acceptance if complete.
6. Applicant sends design stage notification out to public, copies Utility Coordinator, Ward Offices, and Neighborhood Association contacts. The 15-business day public comment period applies to NEW infrastructure only. (Emergency or maintenance requests do not go through this design notification process.)
7. Applicant submits certification of design stage notifications.
8. The application and plans are assigned to review staff.

REVIEW

1. Engineering staff reviews for accuracy and compliance with requirements herein.
2. If review is passed, permit is set to “Approved” status.
3. If corrections are needed, permit is set to “Needs Resubmittal” status.
4. Review notes, required revisions, and permit status are made available to applicants in TDC.

5. If resubmittal is required, Applicant completes required revisions to the appropriate documents and resubmits. Additional reviews and resubmittals may be necessary if modifications are not made completely and satisfactorily.
6. Special permit conditions applied where necessary.
7. All fees are invoiced by permit staff and paid by the Applicant.
8. Permit issued.

CONSTRUCTION

1. Permittee schedules preconstruction meeting with ROW Inspector using TDC.
2. Utility Company sends resident notifications when work is scheduled and ready to start **(5-days in advance. See Section 13.1).**
3. On-site preconstruction meeting is held before work begins. Construction expectations discussed with ROW Inspector. Proof of notifications provided. Dates, description, and contact info on resident notification confirmed. **(Work cannot start until this meeting is held. See Section 13.2)**
4. Work Begins
5. Progress inspections scheduled and made live or virtually **(See Section 14.1).**
6. Project completed; site restored.
7. Final "close out" inspection scheduled.
8. Final inspection passed.
9. Record drawing/as-built and materials testing information submitted to via TDC.
10. ROW permit closed out.

RENEWALS

1. Applicant opens the permit requiring renewal in TDC and selects the "Sub-Records" tab.
2. Click "Apply" button next to "Request Renewal/Extension of Existing Plan or Permit".
3. In the description, applicant states reason for needing an extension or renewal, and the duration; 30, 60, or 90 days.
4. Applicant confirms the billing contact and completes the request.
5. DTM staff review the renewal request and if approved, invoice applicable fees.
6. Applicant pays renewal fees.
7. DTM staff renews the permit for the duration requested.

13. Construction Procedures

Every day a permit is open necessitates maintenance and inspection of the site. The Utility Company is encouraged to complete expeditiously. Work on weekends is not permitted without advance notification to the City and shall incur inspection overtime fees. Upon receiving confirmation that a permit has been approved, the Applicant or Applicant's contractor shall take steps to comply with the following:

13.1 CONSTRUCTION NOTIFICATIONS REQUIRED

Before a preconstruction meeting occurs, the Utility Company shall notify residents five (5) days in advance of the start of construction. Notification shall be made to residences within 300 feet of the proposed site explaining what will occur. For New Projects, the Utility Company will establish a point of contact for the given New Project to serve the citizens of the City of Tucson. This requirement does not apply to regular maintenance, emergency restoration, commercial business, and residential utility service connections, or to work completed by utilities with a voter-approved Franchise Agreement.

Resident Notifications shall include:

- Permit Number
- Utility Contact Information for the project
- Public Notification Firm Contact Information (If one was used)
- A description of the work to be done
- The expected start and end dates
- The expected work hours
- A description of coordination measures to be taken during construction for parking, pedestrian access, mail delivery, garbage pickup, and miscellaneous needs

The City shall provide the addresses of the impacted residents and neighborhood association contact information to the Utility Company requiring notification. The Utility Company shall not be held responsible for failing to notify those not included on this list. The notification must contain the appropriate information described in the steps listed above to be acceptable.

Utility Companies must upload to TDC a certification stating that the list of properties and contacts provided by the City received construction notifications and a copy of the actual notification issued in advance of the Preconstruction Meeting. If the construction notification requirement is incomplete, notifications will need to be issued to the residents omitted. No work may commence until the inspector receives and accepts certification that all required notifications have been issued.

13.2 PRECONSTRUCTION MEETING REQUIRED

A preconstruction meeting must be held before construction begins to outline the expectations to be followed during construction. Preconstruction meetings should be scheduled through https://tdc-online.tucsonaz.gov. City of Tucson inspection staff, the applicant and designated contractor are required to participate in this meeting.

At a minimum, the topics to be covered at the preconstruction meeting between the Utility Company and Inspector shall include the following:

- Resident/Business Notification verification
- Work hours
- Material Submittal documentation
- Communication and expectations
- Site safety expectations
- Mobility considerations
- Required inspections (for SWF: add foundation, pole delivery, installation, connections)
- Design changes
- Final inspection (for SWF: add testing)
- Close out (for SWF: add power release)

13.3 COPY OF PLANS AND PERMIT

Permits will be posted online by the City of Tucson. The Utility Company will be required to have a hard copy of the permit and corresponding plans available when on site, including the traffic control plan.

13.4 STEEL PLATES

Open excavations shall be secured with steel plates and shall be secured in place per Section 10.12. All steel plates must be secured with either a cold mix wedge per PAG Standard Detail 217 or recessed into the existing pavement as follows:

- Steel plates shall be placed flush with the existing roadway surface on streets where posted traffic speeds exceed 25-mph and all downtown streets or MITZ.
- Construction locations where steel plates are used, and where work is to take longer than 5 days shall be recessed into the pavement regardless of posted traffic speeds.

Figure 34: Plate Covering

14. Inspection Expectations

Except for emergency restoration, regular maintenance, or commercial business and residential service connections, no work may be done unless a permit is active, resident notification made, and a preconstruction meeting has been held. Preconstruction meetings may be on site or virtual depending on the scheduling and availability of the Inspector.

The number of inspections will vary based upon the activity and milestones. Site safety will be checked regularly, and good housekeeping measures always enforced. Inspections maybe made on-site, virtually, and in case of emergency, with sufficient notification and documentation required by the ROW permit process made in a reasonable and prudent time.

14.1 PROGRESS INSPECTIONS

The DTM Inspector shall make regular scheduled or nonscheduled progress inspections. The construction site must be safe, clean, and all work in compliance with the PAG Standard Specifications and Details. Failure to meet these requirements are grounds to stop work.

14.2 FIELD DESIGN CHANGES

Field design changes may be necessary when submitted plan information conflicts with actual existing field conditions. Major design changes must be submitted to DTM for review and approval. The decision to make changes in the field lies with the ROW inspector and shall be guided by the following:

Minor change

A change in alignment of no more than 5-ft horizontally and 2-ft vertically is generally considered minor. The infrastructure must remain in the same specified, approved, utility corridor. Utility Companies shall request an inspection for minor changes. The inspector may approve the change or require an additional engineering review for approval before the proposed change can be implemented. The Utility Company shall upload revised plans (redlines are acceptable) showing any changes as part of final inspection and permit close out.

Major change

An alignment or location change exceeding the description for a minor change. A major change shall require a plan revision to be submitted for engineering review and approval for location and/or depth before work can continue.

14.3 GOOD HOUSEKEEPING MEASURES

Figure 35: Dust Control

At a minimum, the Utility Company shall comply with the following items as described in the ADOT Erosion and Pollution Control Manual during the planning, design, and construction of new, modified, or maintained utility infrastructure:

- Off-site construction support activities.
- Spill prevention and response.
- Vehicle and equipment entrances.
- Chemical and materials storage.
- Solid waste management.
- Dust control.
- Soil stabilization.
- Erosion control.
- Any non-stormwater discharges.

The Utility Company should refer to the ADOT Erosion and Pollution Control Manual to determine the best management practices (BMP) for each item listed above.

14.4 MATERIALS TESTING AND CERTIFICATION

The Utility Company shall provide the inspector with records of material delivery tickets for materials used on site to backfill and patch the street. Materials used must meet current, approved City of Tucson mix designs on file with the DTM Testing Laboratory. Material

density test results shall also be provided at the frequency required for the respective type and quantity of the material as discussed at the preconstruction meeting. The records shall reflect the date, time, and company providing the material or tests.

These delivery tickets and testing results should be submitted in PDF format. Materials testing and certification documentation shall be provided by the applicant or their contractor as a condition of permit close out.

14.5 FINAL INSPECTION AND CLOSE OUT

All permits are required to be closed out by scheduling a final, 'close out' inspection. A permit passes final inspection when the site is restored to its original condition or better; barricades are removed; and "ROW Permit Close Out Checklist" is completed **(Exhibit E)**. If the site fails final inspection, the permit will not be closed out. If the Utility Company is unable to complete the work in the time stated on the permit, additional permits may be required.

The Utility Company shall be responsible for any below ground damage caused by their work and bears the responsibility to pay for and make any repairs or replacement to infrastructure or services found damaged by this work.

14.5.1 Record Drawings

The Utility Company is required to keep the construction documents available at the work site and submit any changes to the approved plans. Copies of materials delivery tickets and testing results shall be provided and made part of the permit record. A final document shall be provided to the City Inspector at the completion of the work including any applicable bore logs, elevations, and dimension changes that were confirmed during construction. The document should be submitted in PDF format to TDC.

14.6 PERMIT DURATION AND RENEWALS

The permit duration shall be as applied for unless a renewal has occurred. A permit renewal grants the permittee an additional 30, 60, or 90 days from the date of expiration to complete any unfinished work. All work must be completed within this time. Permits are not eligible

for renewal unless a preconstruction meeting has occurred. Renewals must be made in anticipation of the permit expiring and remaining work must start within 10 days of the approved renewal date. Permits may not be renewed more than once.

Additional permits may delay the completion of the Utility Company's work and make availability of materials difficult. In some cases, other work and activities will compete for space in the ROW and result in additional restrictions or delays. The costs to all who are responsible for site safety and compliance increase each day that work is not completed. Additional fees may be assessed if work is done after the permit expiration and if not renewed. Work that is done under an expired permit may warrant a citation for work without a permit.

14.6.1 Number of Permits Allowed to Remain Open at One Time

It is the intent to make any utility installation less impactful to City of Tucson residents. Expeditious completion of the work is expected and will help develop better public relations with City of Tucson residents. Regulation of permit approval and issuance will be employed to ensure that this intent is met. Utility work is either a New Project, Maintenance, or Emergency Restoration. The direction in this section applies to New Projects.

No Utility Company shall have more than 100 active permits concurrently where work is required to pass final inspection. The City reserves the right to reduce the number of permits issued based upon staff availability and Utility Company performance to address complaints and complete permitted work in a timely manner. This may affect the ability of the applicant or their agent to receive additional permits.

14.7 FAILURE TO COMPLETE ON TIME

ROW permits will not be renewed beyond the approved duration. Permits that have expired and are not closed out will be counted towards the total number of active permits for the Utility Company. Should follow-up work be required, a new permit will need to be obtained. The City shall notify the impacted Utility Company 30 days in advance of reducing the number of permits allowed.

14.8 ABATEMENT

Abatement for violations of these standards shall consist of a reduction in permits issued. The number of permits allowed to remain open will be determined by the City Engineer, or their designee. The City shall notify the impacted Utility Company 30 days in advance of reducing the number of issued permits. The Utility Company must provide a list of permits they will continue working to the DTM Permits and Codes Section within 10 business days after written notice has been issued by the City. Any permits not included on the list provided will receive a Stop Work Order and be placed on hold.

Sites must be completed, inspected, and closed out before additional applications will be considered. As permits on the list provided by the Utility Company are closed out, Stop Work Orders will be lifted from the remaining permits and work will be allowed to continue. This abatement process shall be followed until the number of active permits falls below the threshold stated in the City's initial abatement notice. This process does NOT apply to emergency work.

14.9 MODIFICATIONS AND APPEALS

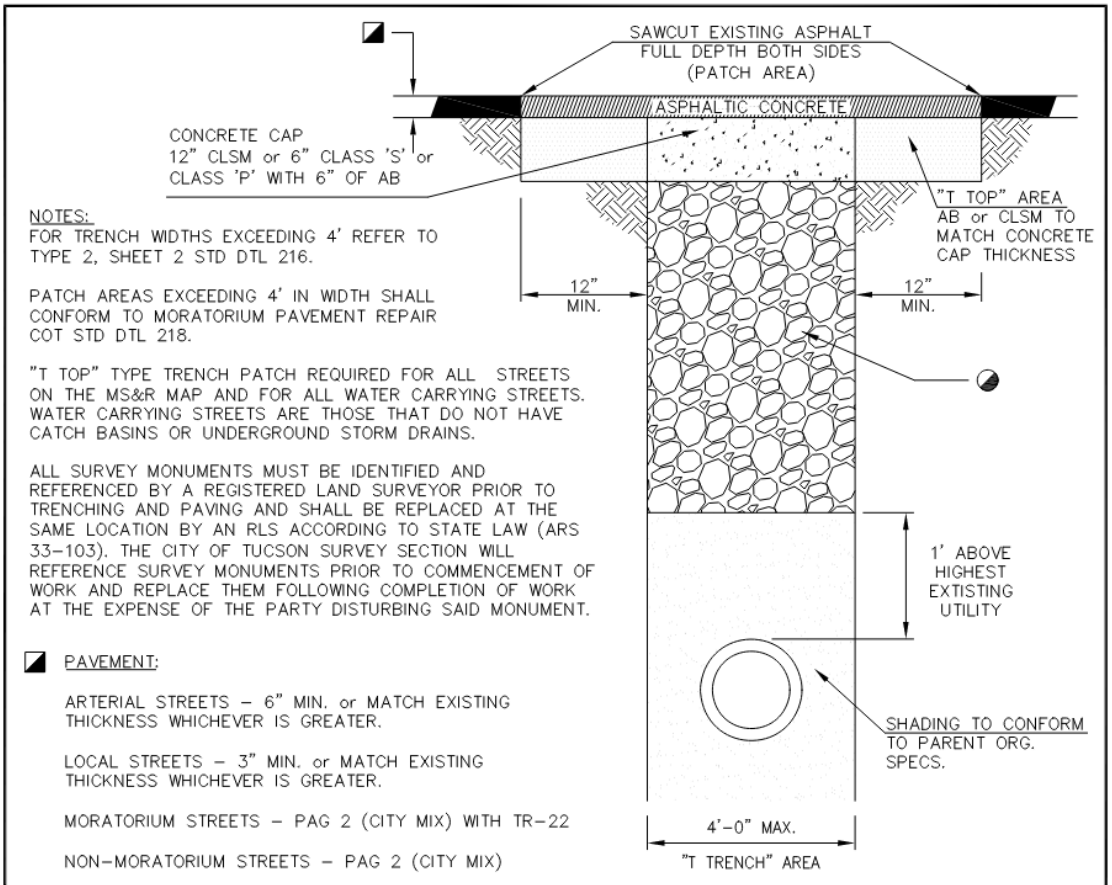
Emergency situations and other conditions not specifically addressed by this standard shall be judged on a case-by-case basis by the City Engineer, or designated representative, without setting precedent.

Review of and modifications to this manual shall be made periodically. After modifications have been made, the City will notify and issue a revised copy of this manual to stakeholders and the public. The City of Tucson will receive and consider comments on revisions to this manual for at least 30 days following its release to stakeholders and the public.

Appeals to rulings made under this standard by the City Engineer or their representative shall be to the Director of Transportation, whose decision shall be final.

EXHIBITS

EXHIBIT A: Utility Trench Patch Detail (SD-216)



NOTES:
FOR TRENCH WIDTHS EXCEEDING 4' REFER TO TYPE 2, SHEET 2 STD DTL 216.

PATCH AREAS EXCEEDING 4' IN WIDTH SHALL CONFORM TO MORATORIUM PAVEMENT REPAIR COT STD DTL 218.

"T TOP" TYPE TRENCH PATCH REQUIRED FOR ALL STREETS ON THE MS&R MAP AND FOR ALL WATER CARRYING STREETS. WATER CARRYING STREETS ARE THOSE THAT DO NOT HAVE CATCH BASINS OR UNDERGROUND STORM DRAINS.

ALL SURVEY MONUMENTS MUST BE IDENTIFIED AND REFERENCED BY A REGISTERED LAND SURVEYOR PRIOR TO TRENCHING AND PAVING AND SHALL BE REPLACED AT THE SAME LOCATION BY AN RLS ACCORDING TO STATE LAW (ARS 33-103). THE CITY OF TUCSON SURVEY SECTION WILL REFERENCE SURVEY MONUMENTS PRIOR TO COMMENCEMENT OF WORK AND REPLACE THEM FOLLOWING COMPLETION OF WORK AT THE EXPENSE OF THE PARTY DISTURBING SAID MONUMENT.

◪ PAVEMENT:

ARTERIAL STREETS – 6" MIN. or MATCH EXISTING THICKNESS WHICHEVER IS GREATER.

LOCAL STREETS – 3" MIN. or MATCH EXISTING THICKNESS WHICHEVER IS GREATER.

MORATORIUM STREETS – PAG 2 (CITY MIX) WITH TR-22

NON-MORATORIUM STREETS – PAG 2 (CITY MIX)

PAVEMENT SHALL BE SAW CUT, TACKED AND JOINED FOR THINNER SECTIONS

IF PAVEMENT IS ESPECIALLY THICK, THE PAVEMENT IN THE "T TOP" AREA CAN BE MILLED AND REPLACED WITH 3" OF AC INSTEAD OF REMOVING AND REPLACING THE ENTIRE PAVEMENT AREA. TO BE TACKED AND JOINED.

ALL MATERIALS SHALL BE TESTED FOR DENSITY AND CONFORMANCE TO PAG AND CITY OF TUCSON DTM SPECIFICATIONS. THE NUMBER OF TESTS REQUIRED IS BASED UPON THE QUANTITY OF MATERIALS USED AND THE NUMBER OF BATCHES REQUIRED.

TRENCH WILL NEED TO BE PLATED AND RECESSED INTO THE EXISTING STREET UNTIL COMPLETE AND LAND SHALL BE RETURNED TO USERS AFTER WORK HOURS.

◪ BACKFILL:

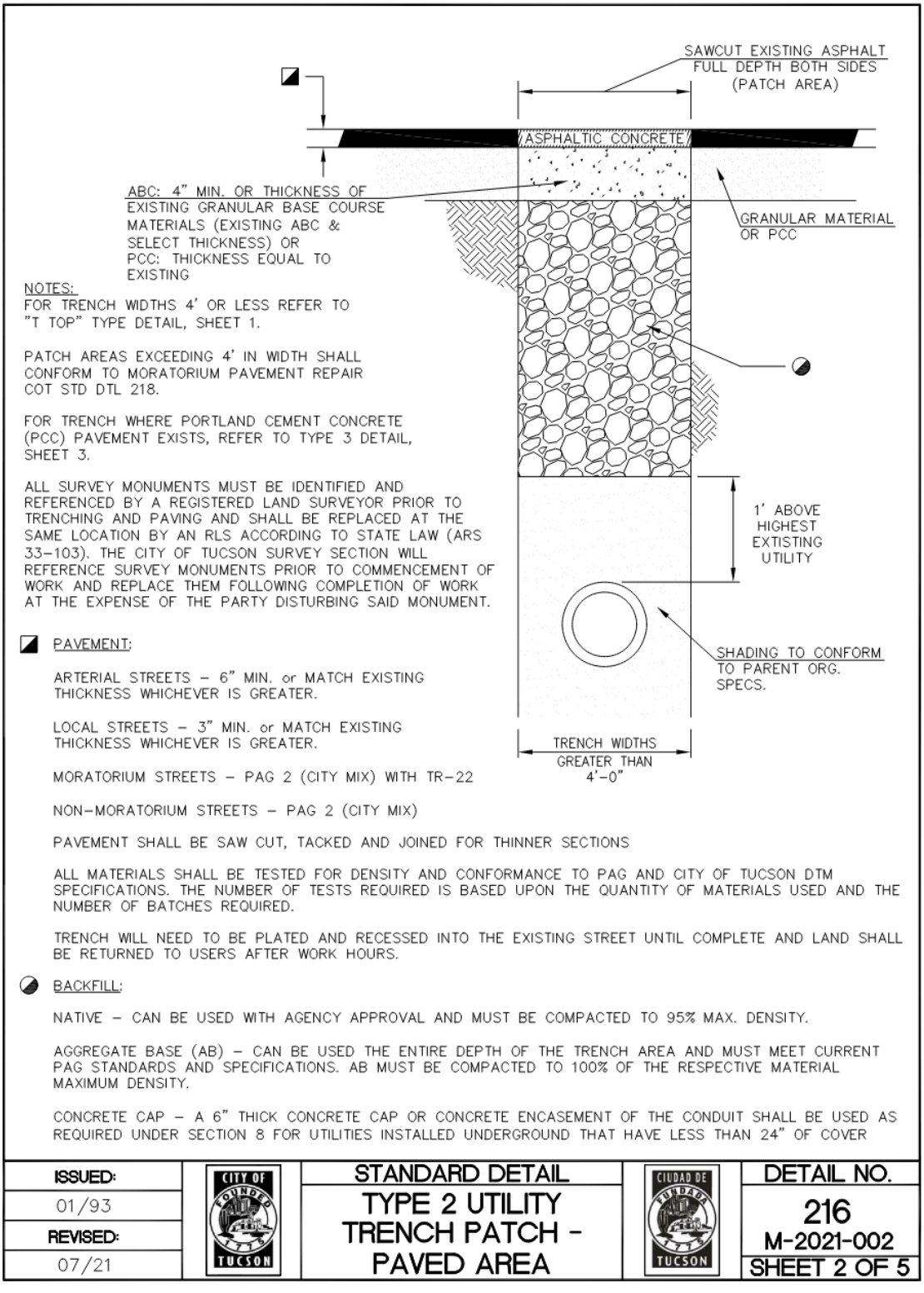
AGGREGATE BASE (AB) – CAN BE USED THE ENTIRE DEPTH OF THE "T TRENCH" AREA TO THE BOTTOM OF THE "T TOP" AREA AND MUST MEET CURRENT PAG STANDARDS AND SPECIFICATIONS. AB MUST BE COMPACTED TO 100% OF THE RESPECTIVE MATERIAL MAXIMUM DENSITY.

CONCRETE CAP – 12" THICK IF CLSM IS USED, 6" THICK IF CLASS 'S' OR CLASS 'P' USED WITH 6" OF AB. THE LIMITS OF BACKFILL NEED ONLY GO TO THE BOTTOM OF THE "T TOP" AREA OF THE PAVEMENT PATCH. A 6" THICK CONCRETE CAP OR CONCRETE ENCASEMENT OF THE CONDUIT SHALL BE USED AS REQUIRED UNDER SECTION 8 FOR UTILITIES INSTALLED UNDERGROUND THAT HAVE LESS THAN 24" OF COVER.

FULL DEPTH CLSM MATERIAL CAN BE USED TO THE BOTTOM OF THE AB LAYER IN THE "T TOP" AREA.

ISSUED:	STANDARD DETAIL	DETAIL NO.
01/93	"T TOP" TYPE TRENCH PATCH - PAVED AREA	216
REVISED:		M-2021-002
07/21		SHEET 1 OF 5

EXHIBIT A: Utility Trench Patch Detail (SD-216)



NOTES:

FOR TRENCH WIDTHS 4' OR LESS REFER TO "T TOP" TYPE DETAIL, SHEET 1.

PATCH AREAS EXCEEDING 4' IN WIDTH SHALL CONFORM TO MORATORIUM PAVEMENT REPAIR COT STD DTL 218.

FOR TRENCH WHERE PORTLAND CEMENT CONCRETE (PCC) PAVEMENT EXISTS, REFER TO TYPE 3 DETAIL, SHEET 3.

ALL SURVEY MONUMENTS MUST BE IDENTIFIED AND REFERENCED BY A REGISTERED LAND SURVEYOR PRIOR TO TRENCHING AND PAVING AND SHALL BE REPLACED AT THE SAME LOCATION BY AN RLS ACCORDING TO STATE LAW (ARS 33-103). THE CITY OF TUCSON SURVEY SECTION WILL REFERENCE SURVEY MONUMENTS PRIOR TO COMMENCEMENT OF WORK AND REPLACE THEM FOLLOWING COMPLETION OF WORK AT THE EXPENSE OF THE PARTY DISTURBING SAID MONUMENT.

◪ PAVEMENT:

ARTERIAL STREETS – 6" MIN. or MATCH EXISTING THICKNESS WHICHEVER IS GREATER.

LOCAL STREETS – 3" MIN. or MATCH EXISTING THICKNESS WHICHEVER IS GREATER.

MORATORIUM STREETS – PAG 2 (CITY MIX) WITH TR-22

NON-MORATORIUM STREETS – PAG 2 (CITY MIX)

PAVEMENT SHALL BE SAW CUT, TACKED AND JOINED FOR THINNER SECTIONS

ALL MATERIALS SHALL BE TESTED FOR DENSITY AND CONFORMANCE TO PAG AND CITY OF TUCSON DTM SPECIFICATIONS. THE NUMBER OF TESTS REQUIRED IS BASED UPON THE QUANTITY OF MATERIALS USED AND THE NUMBER OF BATCHES REQUIRED.

TRENCH WILL NEED TO BE PLATED AND RECESSED INTO THE EXISTING STREET UNTIL COMPLETE AND LAND SHALL BE RETURNED TO USERS AFTER WORK HOURS.

◪ BACKFILL:

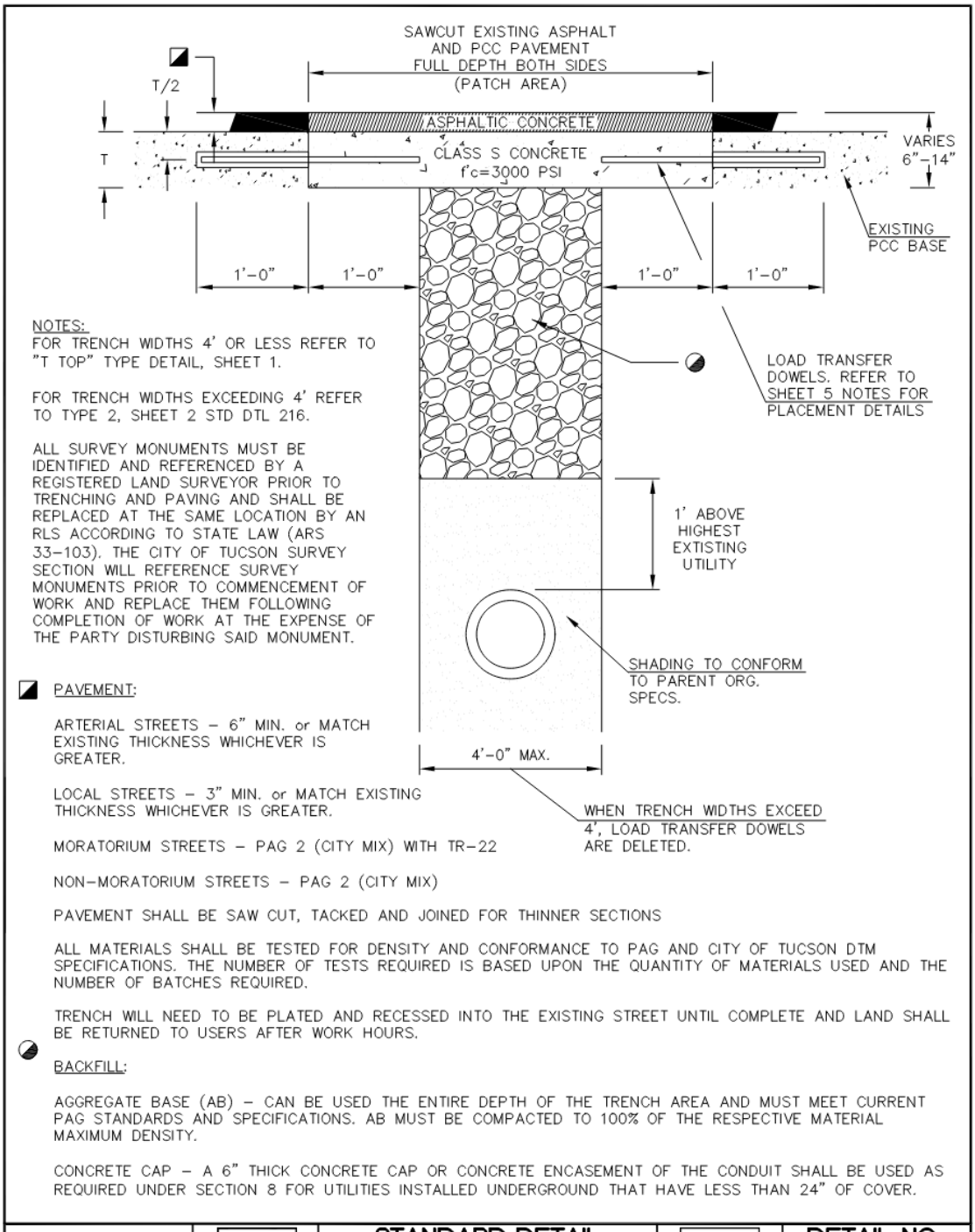
NATIVE – CAN BE USED WITH AGENCY APPROVAL AND MUST BE COMPACTED TO 95% MAX. DENSITY.

AGGREGATE BASE (AB) – CAN BE USED THE ENTIRE DEPTH OF THE TRENCH AREA AND MUST MEET CURRENT PAG STANDARDS AND SPECIFICATIONS. AB MUST BE COMPACTED TO 100% OF THE RESPECTIVE MATERIAL MAXIMUM DENSITY.

CONCRETE CAP – A 6" THICK CONCRETE CAP OR CONCRETE ENCASEMENT OF THE CONDUIT SHALL BE USED AS REQUIRED UNDER SECTION 8 FOR UTILITIES INSTALLED UNDERGROUND THAT HAVE LESS THAN 24" OF COVER

ISSUED:	STANDARD DETAIL	DETAIL NO.
01/93	TYPE 2 UTILITY TRENCH PATCH - PAVED AREA	216
REVISED:		M-2021-002
07/21		SHEET 2 OF 5

EXHIBIT A: Utility Trench Patch Detail (SD-216)



NOTES:
FOR TRENCH WIDTHS 4' OR LESS REFER TO "T TOP" TYPE DETAIL, SHEET 1.

FOR TRENCH WIDTHS EXCEEDING 4' REFER TO TYPE 2, SHEET 2 STD DTL 216.

ALL SURVEY MONUMENTS MUST BE IDENTIFIED AND REFERENCED BY A REGISTERED LAND SURVEYOR PRIOR TO TRENCHING AND PAVING AND SHALL BE REPLACED AT THE SAME LOCATION BY AN RLS ACCORDING TO STATE LAW (ARS 33–103). THE CITY OF TUCSON SURVEY SECTION WILL REFERENCE SURVEY MONUMENTS PRIOR TO COMMENCEMENT OF WORK AND REPLACE THEM FOLLOWING COMPLETION OF WORK AT THE EXPENSE OF THE PARTY DISTURBING SAID MONUMENT.

PAVEMENT:

ARTERIAL STREETS – 6" MIN. or MATCH EXISTING THICKNESS WHICHEVER IS GREATER.

LOCAL STREETS – 3" MIN. or MATCH EXISTING THICKNESS WHICHEVER IS GREATER.

MORATORIUM STREETS – PAG 2 (CITY MIX) WITH TR–22

NON–MORATORIUM STREETS – PAG 2 (CITY MIX)

PAVEMENT SHALL BE SAW CUT, TACKED AND JOINED FOR THINNER SECTIONS

ALL MATERIALS SHALL BE TESTED FOR DENSITY AND CONFORMANCE TO PAG AND CITY OF TUCSON DTM SPECIFICATIONS. THE NUMBER OF TESTS REQUIRED IS BASED UPON THE QUANTITY OF MATERIALS USED AND THE NUMBER OF BATCHES REQUIRED.

TRENCH WILL NEED TO BE PLATED AND RECESSED INTO THE EXISTING STREET UNTIL COMPLETE AND LAND SHALL BE RETURNED TO USERS AFTER WORK HOURS.

BACKFILL:

AGGREGATE BASE (AB) – CAN BE USED THE ENTIRE DEPTH OF THE TRENCH AREA AND MUST MEET CURRENT PAG STANDARDS AND SPECIFICATIONS. AB MUST BE COMPACTED TO 100% OF THE RESPECTIVE MATERIAL MAXIMUM DENSITY.

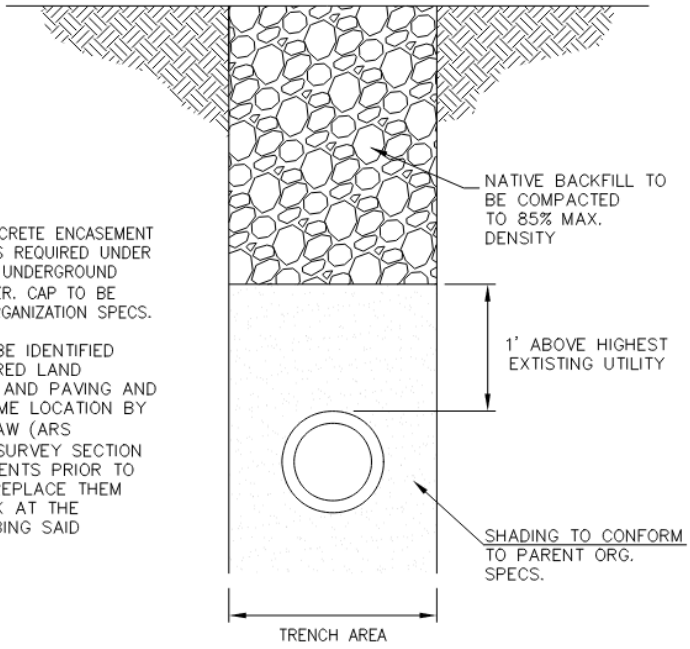
CONCRETE CAP – A 6" THICK CONCRETE CAP OR CONCRETE ENCASEMENT OF THE CONDUIT SHALL BE USED AS REQUIRED UNDER SECTION 8 FOR UTILITIES INSTALLED UNDERGROUND THAT HAVE LESS THAN 24" OF COVER.

ISSUED:	STANDARD DETAIL	DETAIL NO.
01/93	TYPE 3 UTILITY TRENCH PATCH – PAVED AREA	216
REVISED:		M-2021-002
07/21		SHEET 3 OF 5

EXHIBIT A: Utility Trench Patch Detail (SD-216)

NOTE:
A 6" THICK CONCRETE CAP OR CONCRETE ENCASEMENT OF THE CONDUIT SHALL BE USED AS REQUIRED UNDER SECTION 8 FOR UTILITIES INSTALLED UNDERGROUND THAT HAVE LESS THAN 24" OF COVER. CAP TO BE PLACED AS DIRECTED BY PARENT ORGANIZATION SPECS.

ALL SURVEY MONUMENTS MUST BE IDENTIFIED AND REFERENCED BY A REGISTERED LAND SURVEYOR PRIOR TO TRENCHING AND PAVING AND SHALL BE REPLACED AT THE SAME LOCATION BY AN RLS ACCORDING TO STATE LAW (ARS 33-103). THE CITY OF TUCSON SURVEY SECTION WILL REFERENCE SURVEY MONUMENTS PRIOR TO COMMENCEMENT OF WORK AND REPLACE THEM FOLLOWING COMPLETION OF WORK AT THE EXPENSE OF THE PARTY DISTURBING SAID MONUMENT.



ISSUED:	STANDARD DETAIL	DETAIL NO.
01/93	TYPE 4 UTILITY TRENCH PATCH - NON-PAVED AREA	216
REVISED:		M-2021-002
07/21		SHEET 4 OF 5

EXHIBIT A: Utility Trench Patch Detail (SD-216)

NOTES:

1. MATERIAL AND COMPACTION REQUIREMENTS FOR PIPE BEDDING/SHADING SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS FOR THE APPLICABLE UTILITY PIPE.
2. TRENCH BACKFILL SHALL COMMENCE 1 FOOT ABOVE THE TOP OF PIPE AND SHALL BE PER SECTION 923-2.
3. BACKFILL COMPACTION REQUIREMENTS SHALL BE PER SECTION 923-3.07.
4. THE 1 FOOT "T TOP" AREAS SHALL BE DELETED FOR TYPE 2 TRENCHES.
5. ABC SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 303-2.
6. PORTLAND CEMENT CONCRETE SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 1006.
7. ASPHALTIC TACK MATERIAL SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 1005.
8. ASPHALTIC CONCRETE SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 406 FOR THE TYPE SPECIFIED.
9. BITUMINOUS SURFACE TREATMENT (CHIP SEAL) SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 404 FOR THE TYPE SPECIFIED.
10. LOAD TRANSFER DOWELS FOR JOINTS TRANSVERSE TO THE ROADWAY CENTERLINE SHALL BE SMOOTH STEEL DOWELS IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 1003. DOWELS SHALL BE SIZED AND SPACED AS FOLLOWS:

PCCP THICKNESS	DOWEL SIZE	DOWEL LENGTH	DOWEL SPACING
6" (150mm)	#5 (NO. 16)	12" (305mm)	18" (455mm)
7" (180mm)	#6 (NO. 19)	15" (380mm)	15" (380mm)
8" (205mm)	#8 (NO. 25)	15" (380mm)	12" (305mm)
10"+(255mm)	#10 (NO. 32)	15" (380mm)	12" (305mm)

11. DEFORMED TIE BARS SHALL BE USED IN TRENCH PATCHES LONGITUDINAL TO THE ROADWAY CENTERLINE WHEN THE TRENCH LENGTH IS GREATER THAN 50 FEET. TIE BARS SHALL BE 24 INCHES LONG. DEFORMED #4 BARS FOR PCCP LESS THAN 8 INCHES THICK AND #5 BARS IF 8 INCHES THICK OR MORE. TIE BARS SHALL BE PLACED 30 INCHES CENTER-TO-CENTER.
12. HOLES SHALL BE DRILLED 1 FOOT INTO THE EXISTING SLAB FOR THE TIE BARS AND 7 INCHES FOR DOWELS. HOLES SHALL BE DIAMETER SUFFICIENT TO ACCOMMODATE THE TIE BAR ANCHORAGE OR DOWEL CAP. TIE BARS SHALL BE ANCHORED WITH AN APPROVED HIGH VISCOSITY EPOXY.
13. IF THE CONCRETE SLAB REMAINING NEXT TO A LONGITUDINAL OR TRANSVERSE JOINT IS LESS THAN 6 FEET AT ITS NARROWEST WIDTH, REMOVE AND REPLACE THE EXISTING CONCRETE TO THE JOINT.

ISSUED:	STANDARD DETAIL	DETAIL NO.
01/93	UTILITY TRENCH PATCH NON-PAVED AREA	216 M-2021-002
REVISED: 07/21		SHEET 5 OF 5

EXHIBIT B: Utility Pothole Repair (SD-219)

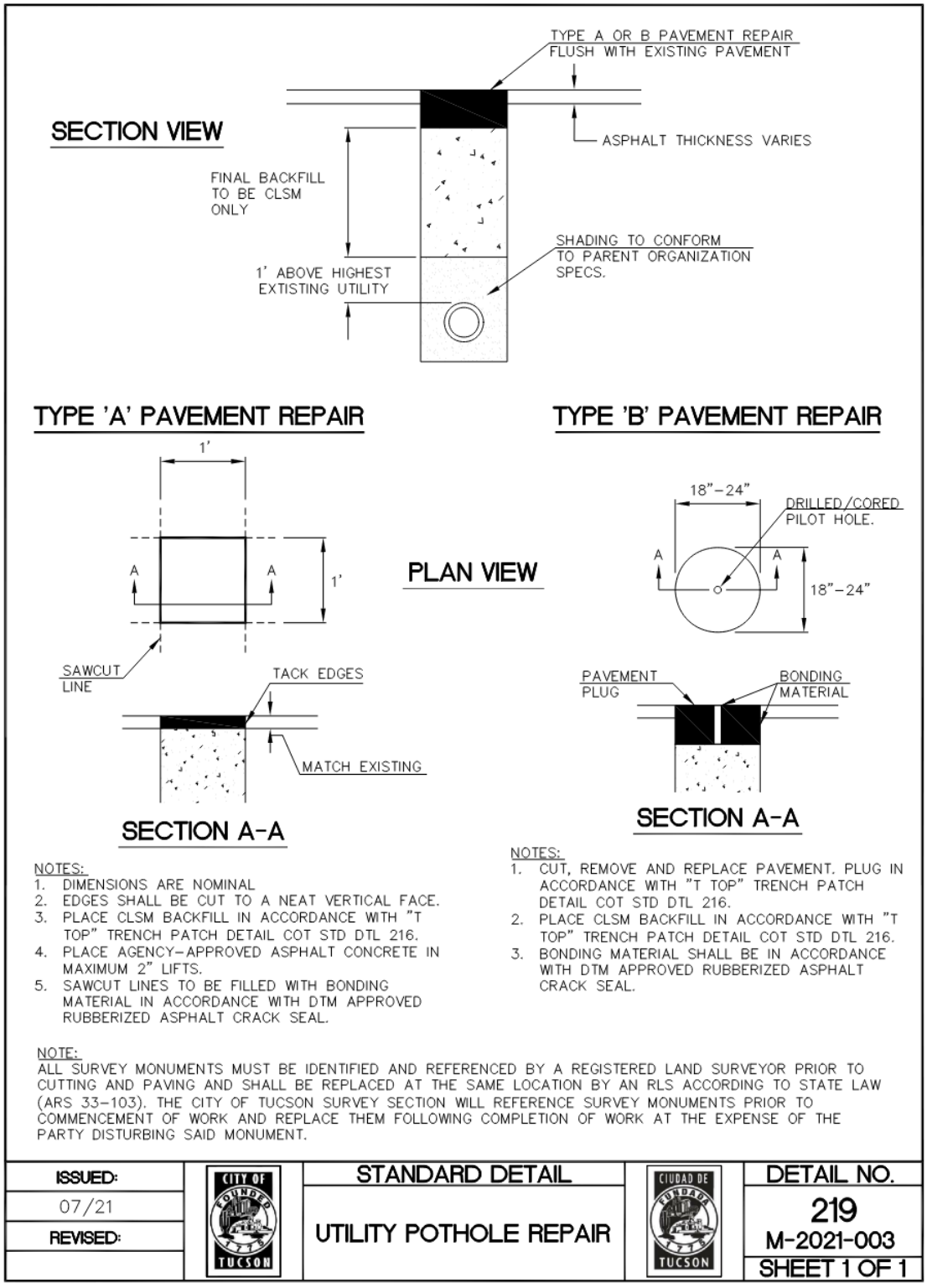


EXHIBIT C: Moratorium Pavement Patch (SD-218)

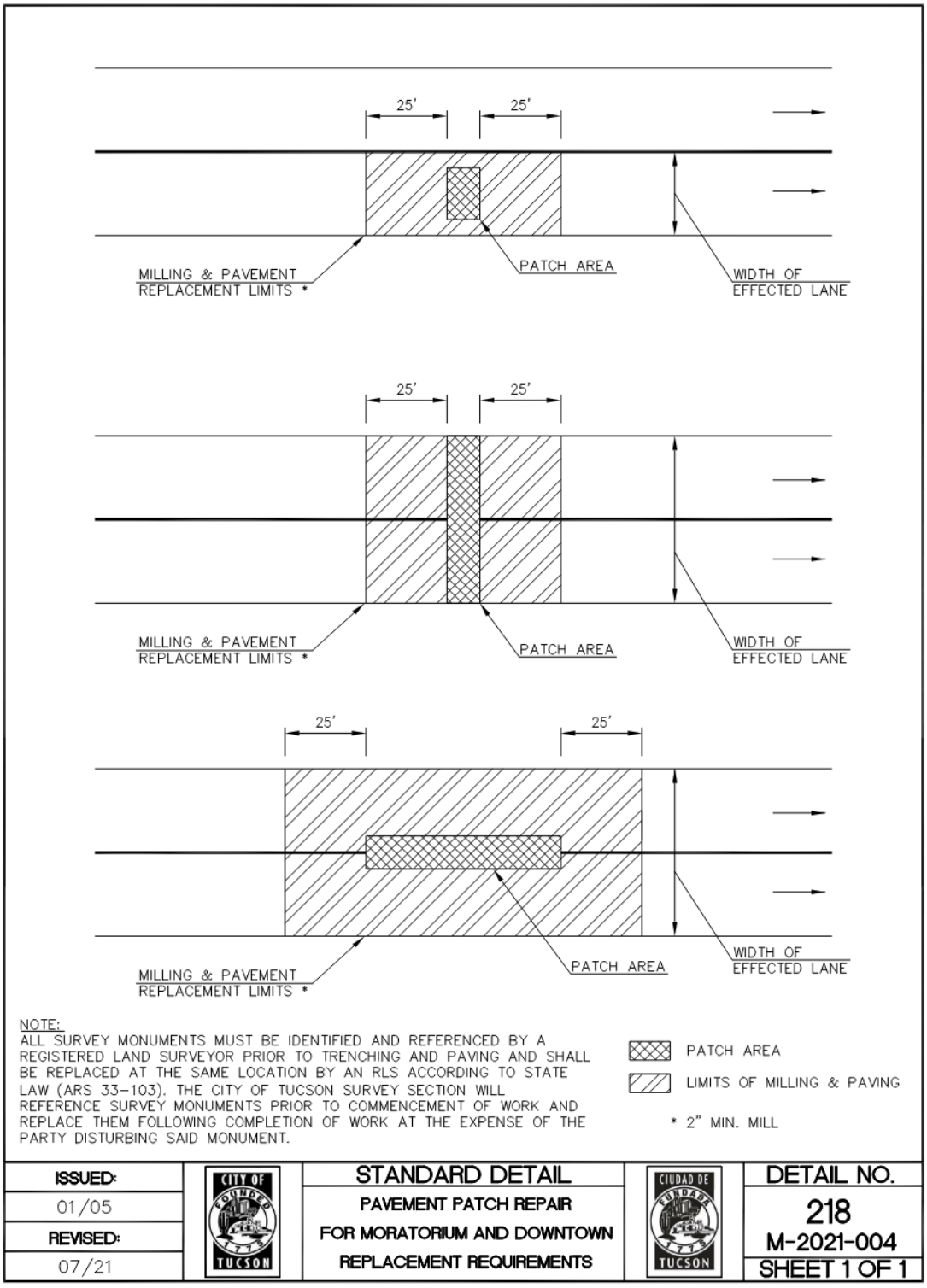


EXHIBIT D: Holiday Restrictions

Holiday Restrictions
Thanksgiving Day to January 2

A NOTICE OF TEMPORARY RESTRICTION TO ALL APPLICANTS, CONTRACTORS, UTILITIES, AND GOVERNMENT ORGANIZATIONS

Due to the ever-increasing traffic volume on many of the City's roads, it is necessary to restrict lane closures on certain roads during the holiday season. **These restrictions will be in place from Thanksgiving to one day after New Year's.** Engineering may not issue a right-of-way barricade permit for any project that occurs on any of the following roads. Engineering will grant an exception for documented emergency work or on-going construction work. *Exceptions will be evaluated on a case-by-case basis.*

➢ **Ajo Way**	Mission Rd to Country Club Rd
➢ **Alvernon Way**	Fort Lowell Rd to 36th St
➢ **Broadway Bl**	I-10 Frontage Rd to Pantano Rd
➢ **Calle Santa Cruz**	Irvington Rd to Valencia Rd
➢ **Campbell Ave**	River Rd to 22nd St
➢ **Central Business District Area**	
➢ **Congress St**	I-10 Frontage Rd to Toole Ave
➢ **Craycroft Rd**	Grant Rd to Golf Links Rd
➢ **Downtown Area**	
➢ **El Mercado Area**	
➢ **1st Ave**	Rillito River Bridge to Grant Rd
➢ **4th Ave**	Congress St to University Bl
➢ **Golf Links Rd**	Swan Rd to Kolb Rd
➢ **Grant Rd**	I-10 Frontage Rd to Tanque Verde Rd
➢ **Irvington Rd**	Mission Rd to Tucson Bl
➢ **Kino Pkwy**	22nd St to I-10 Frontage Rd
➢ **Kolb Rd**	Tanque Verde Rd to Golf Links Rd
➢ **Main Gate**	Euclid Ave to Park Ave
➢ **Oracle Rd**	River Rd to Drachman St
➢ **Pantano Rd**	Speedway Bl to 22nd St
➢ **Park Ave**	29th St to I-10 Frontage Rd
➢ **Prince Rd**	I-10 Frontage Rd to Tucson Bl
➢ **River Rd**	Oracle Rd to Campbell Ave
➢ **Roger Rd**	Flowing Wells Rd to 1st Ave
➢ **6th Ave**	I-10 Frontage Rd to Irvington Rd
➢ **Speedway Bl**	I-10 Frontage Rd to Kolb Rd
➢ **Stone Ave**	River Rd to Wetmore Rd
➢ **Swan Rd**	Rillito River Bridge to Golf Links Rd
➢ **Tanque Verde Rd**	Wilmot Rd to Pantano Rd
➢ **Tucson Bl**	Benson Hwy to Tucson International Airport
➢ **22nd St**	Kino Pkwy to Prudence Rd
➢ **Valencia Rd**	Mission Rd to Country Club Rd
➢ **Wetmore Rd**	Flowing Wells Rd to 1st Ave
➢ **Wilmot Rd**	Tanque Verde Rd to Golf Links Rd

Restrictions will be in place for the month of February for areas that involve the Gem Show Event.

➢ **Gem Show**	I-10 Frontage Rd

Rev 10/18

EXHIBIT E: Close Out Checklist

ROW PERMIT CLOSE OUT CHECKLIST

Inspection Request Date_____

Status of Permit

- ☐ Expired
- ☐ Current
- ☐ Renewed

Review for damage

- ☐ Curb
- ☐ Sidewalk
- ☐ groundcover

Landscape

- ☐ Irrigation
- ☐ Groundcover
- ☐ Plants
- ☐ trees

Hardscape

- ☐ Sidewalk
- ☐ Pavers
- ☐ Utility markings
- ☐ Curb access ramps

Pavement

- ☐ Patch
- ☐ Microsurface
- ☐ Swept

Record Drawings

- ☐ Bore logs
- ☐ Revisions noted

Quality Control

- ☐ Material delivery tickets
- ☐ Test results

Barricades

- ☐ Removed
- ☐ Utility markers

Site Restoration

- ☐ Grading
- ☐ Repairs

Other _____

Approved_____**Date:**_____

EXHIBIT F: SWF Paint Colors

Central Business District (Gucci Pole):

- Vendor: Sherwin-Williams (Envirolastic 940 DTM)
- Color: "Tempe Brown"

https://www.sherwin-williams.com/

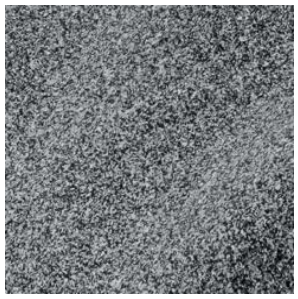
Concrete (New Poles):

(Simulates the exposed aggregate look of a concrete pole)

- Vendor: Powder Technology Inc.
- Color: Concrete Gray PB, Lab Number XTA1913, known by COT as "Concrete Aggregate"

https://www.powdertechnology.com

Concrete (Existing Poles)



- Vendor: Zolatone:
- Color: Graystone - 20-64-1 Stock Color Spatter Finish

https://tcpglobal.com/collections/splatter-finishes/products/zol-20-64-1

OR

- Color: Medusa Gray – 20-45-1 Stock Color Splatter Finish

https://tcpglobal.com/collections/splatter-finishes/products/zol-20-45-1

Downtown Streetcar:

- Vendor: Valmont
- Color: RAL 7013-Valmont, #350318 also known as Product: B13294TM15K

https://www.valmont.com/home/products-and-solutions/transportation/traffic-structures

Historic Flat Black & Silver:

The flat black is applied from the pole base to a horizontal or transverse line across the diameter of the pole 6-ft above the base. The silver is applied from a horizontal or transverse line across the diameter of the pole, 6ft above the base, and up to the top of the pole. Silver paint is not required above the black portion on galvanized poles.

- Vendor: Dunn-Edwards
- Color: DEA 187, EVSH10 also known as "Black", and DE 6367 also known as "Covered in Platinum"

https://www.dunnedwards.com/

Mountain Avenue:

- Vendor: Valmont
- Color: Columbia Cascade Caspax -7, Evergreen, Product Number DS-50-59A220 – 6S Finish known by COT as "Forest Green"

https://www.valmont.com/home/products-and-solutions/transportation/traffic-structures

Scott Avenue:

- Vendor: TIGER Drylac
- Color: RAL7013

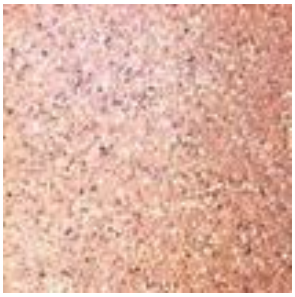
https://www.tiger-coatings.com/us-en/

Wood Pole:

- Vendor: Dunn-Edwards
- Color: DE6112 also known as "Cedar Chest"

https://www.dunnedwards.com/

Pink/Salmon Pole:



(Speckling/Spots coordinated by Alexander Oberman, Technical Manager, Valmont Structures)

- Vendor: Sherwin-Williams/Valmont
- Color: Sandbank SW 6052 – Red Paint Color

https://www.sherwin-williams.com/

https://www.valmont.com/home/products-and-solutions/transportation/traffic-structures

Meter Cabinet:

- Vendor: Dunn-Edwards
- Color: DE6137 also known as "Tan Plan"

https://www.dunnedwards.com/

EXHIBIT G: Watering Schedule

WATER USE IT WISELY.

LANDSCAPE WATERING GUIDELINES

How Much & How Often Water to the outer edge of the plant's canopy and to the depth indicated. Watering frequency will vary depending on season, plant type, weather and soil.		Seasonal Frequency — Days Between Waterings				Water This Deeply (Typical Root Depth)
		Spring Mar - May	Summer May - Oct	Fall Oct - Dec	Winter Dec - Mar	
Trees	Desert adapted	14-30 days	7-21 days	14-30 days	30-60 days	24-36 inches
	High water use	7-12 days	7-10 days	7-12 days	14-30 days	24-36 inches
Shrubs	Desert adapted	14-30 days	7-21 days	14-30 days	30-45 days	18-24 inches
	High water use	7-10 days	5-7 days	7-10 days	10-14 days	18-24 inches
Groundcovers & Vines	Desert adapted	14-30 days	7-21 days	14-30 days	21-45 days	8-12 inches
	High water use	7-10 days	2-5 days	7-10 days	10-14 days	8-12 inches
Cacti and Succulents		21-45 days	14-30 days	21-45 days	if needed	8-12 inches
Annuals		3-7 days	2-5 days	3-7 days	5-10 days	8-12 inches
Warm Season Grass		4-14 days	3-6 days	6-21 days	15-30 days	6-10 inches
Cool Season Grass		3-7 days	none	3-10 days	7-14 days	6-10 inches

These guidelines are for established plants (1 year for shrubs, 3 years for trees). Additional water is needed for new plantings or unusually hot or dry weather. Less water is needed during cool or rainy weather. Drip run times are typically 2 hours or more for each watering.

WATERINGS PER MONTH

WATERING SHOULD BE EVENLY DISTRIBUTED THROUGHOUT THE MONTH.

Smartscape offers free, practical landscape water conservation classes for homeowners & professionals. Visit **PIMASMARTSCAPE.ORG** *or call* **520-626-5161.**

	PLANT TYPE	PRECIPITATION RATE & RUN TIME*	PLANT WATER USE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
				NUMBER OF WATERING DAYS PER MONTH (EVENLY DISTRIBUTED WATERINGS THROUGHOUT EACH MONTH)											
LOAMY SAND SOIL	GRASS:	ROTOR: 28min • SPRAY: 14min		5	6	10	13	16	17	16	13	11	9	6	4
	TREE:	DRIP: 2 GPH for 85min	Low	0	1	1	3	3	3	2	1	2	2	0	1
			Medium	1	1	3	4	5	6	4	4	3	3	1	1
			High	1	3	4	7	9	10	6	6	5	5	2	2
	SHRUBS:	DRIP: 2 GPH for 57min	Low	0	1	3	3	5	5	3	2	3	2	1	1
			Medium	1	2	5	6	9	10	6	5	5	4	2	1
			High	2	4	7	11	15	15	11	9	9	7	4	2
SANDY LOAM SOIL *	GRASS:	ROTOR: 15min • SPRAY: 7min		9	11	19	25	31	30	31	26	22	17	11	8
	TREE:	DRIP: 2 GPH for 80min	Low	1	2	2	2	4	4	2	2	2	1	1	1
			Medium	1	1	4	5	6	7	5	4	3	4	1	1
			High	2	2	6	7	10	10	8	7	6	5	3	2
	SHRUBS:	DRIP: 2 GPH for 53min	Low	0	2	2	4	6	6	3	3	3	2	2	1
			Medium	1	3	5	7	11	10	7	6	5	5	3	1
			High	3	4	8	13	15	16	13	11	9	8	5	3
SILTY CLAY SOIL	GRASS:	ROTOR: 32min • SPRAY: 16min		4	5	9	11	14	15	14	12	10	8	5	4
	TREE:	DRIP: 2 GPH for 198min	Low	0	0	1	1	2	2	1	1	1	1	0	0
			Medium	0	1	2	2	3	3	2	2	2	2	0	1
			High	1	1	2	2	4	5	4	3	3	3	1	1
	SHRUBS:	DRIP: 2 GPH for 132min	Low	0	0	2	2	3	3	1	1	2	1	1	0
			Medium	0	1	1	3	5	5	3	3	3	2	1	1
			High	1	2	4	5	8	7	6	5	5	3	2	2

YOUR WATERING CHART FOR GRASS AND DRIP IRRIGATION SYSTEMS *IF YOU ARE UNFAMILIAR WITH YOUR SOIL TYPE AND PLANTS' WATER NEEDS, WE SUGGEST THAT YOU BASE YOUR WATERING SCHEDULE ON SANDY LOAM SOIL (MIDDLE SECTION ABOVE) AND MEDIUM WATER USE PLANTS. DRIP SCHEDULE IS BASED ON ONE 2-GALLON PER HOUR (GPH) EMITTER PER PLANT, ROTOR IS BASED ON 0.75 IN/HR AND SPRAY IS BASED ON 1.5 IN/HR. IF DRIP EMITTERS HAVE HIGHER OR LOWER FLOW, RUN TIME MAY BE ADJUSTED LONGER OR SHORTER. THESE GUIDELINES ARE FOR ESTABLISHED PLANTS (1 YEAR FOR SHRUBS, 3 YEARS FOR TREES).

CITY OF TUCSON TRANSPORTATION & MOBILITY

EXHIBIT H: SR-804 - TEP Meter on Pole Detail

USE: Installation option for metering equipment on customer owned poles.

SERVICE ENTRANCE ON CUSTOMER OWNED SMALL WIRELESS FACILITY (SWF) OR LIGHT POLE

These requirements apply to any request by a cable television system or provider of telecommunication service to co-locate metering equipment on a customer owned SWF or governing agency owned street light pole. All requests to attach metering equipment to a customer owned pole must be submitted by utilizing TEP's Service Application process. Approval from Company Design Services is required prior to installation of any such facility.

GENERAL NOTES:

1. Attachment of metering equipment to any pole where Service Provider owned area lighting and/or electric distribution or transmission wires are attached, is not allowed.
2. Location of pole and side of pole where service entrance is to be attached, shall be mutually agreed upon between the Customer and Design Services.
3. Designated Point of Service per this standard will be the the customer installed sub-grade pedestal.
4. Service entrance panel shall be mounted on the customer owned pole parallel to the sidewalk or roadway to prevent interference with pedestrian traffic. Installation shall be on the pole side opposite on-coming traffic to support safety of Company employees during installation and maintenance of the meter.
5. Metered and un-metered wires shall be separated by a suitable barrier and shall not pass through the same section(s) of the service entrance. Barrier(s) shall be metallic, 16 gauge minimum.
6. Protective meter cover will be required, at customer's expense, if Service Provider determines that excessive vandalism occurs to meter. Notification will be provided and 30 days allowed for installation of a protective meter cover.
7. Do not trench under Company owned pad-mount equipment without Service Provider personnel present. Service Provider's access crew can be scheduled to assist with conduit placement and/or if trenching is required under company owned equipment. Arrangements must be made by calling 520-918-8300 (TEP) or 520-761-7951 (UES), a minimum of five working days in advance.
9. Other utilities are not permitted to pass underneath any Company equipment.
10. Refer to SR-108 for Right-of-Way and Easement requirements.

CUSTOMER RESPONSIBILITIES:

1. Ensure pole is engineered to support weight and allow for solid attachment of metering equipment. Pole shall comply with applicable wind/seismic code requirements as required by the Authority Having Jurisdiction (AHJ).
2. Purchase, install and maintain meter socket per the Company SR-400 Series standards. Ringless sockets are not acceptable. All meter sockets shall be mounted between 3'-6" minimum and 6'-3" maximum from final grade to the center of the meter.
3. Provide a 17" x 30" (H-20 Rated Junction Box) sub-grade pedestal, refer to SR-308, FIGURE 1, for approved manufacturers.
4. Provide a service disconnecting device which meets all requirements of the current National Electric Code (NEC). The operation of the device shall be such that the neutral (grounded conductor) is not broken when the device is opened. The operating handle or member shall be capable of being sealed either open or closed.

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USE: Installation option for metering equipment on customer owned poles.

SERVICE ENTRANCE ON CUSTOMER OWNED SMALL WIRELESS FACILITY (SWF) OR LIGHT POLE

CUSTOMER RESPONSIBILITIES (continued):

5. The service disconnect shall be effectively grounded in compliance with the National Electrical Code (NEC) and applicable requirements of local governmental codes (AHJ).

6. A test-bypass block with rigid insulation barriers shall be furnished, installed and wired or bussed to the meter socket by the manufacturer. Connection sequence is LINE-LOAD from left to right. Each line and load position shall be clearly identified by 3/4 inch minimum block letter labeling. Test-bypass cover panels shall be sealable and fitted with a lifting handle. All panels exceeding 16 inches in width shall require two lifting handles.

7. Communication riser(s), on Service Provider pole, shall be installed in compliance with SR-805.

8. Provide and install a continuous 2 1/2 inch conduit run from Service Provider pad-mount transformer, pedestal or pole to sub-grade pedestal (Point of Service). Trench depth to be 36 inches. Conduit sweeps into existing equipment shall be 2.5" x 36" x 90 degree, grey PVC Electrical Grade, Schedule 40. The total of all deflections shall not exceed 360 degrees in any continous duct run between outlets. Refer to SR-205 (duct/concrete and mandrel pull), SR-207 (bedding and backfill), SR-209 (trenching and conduit) and SR-220 (riser).

9. The customer is to provide and install the service cable under the supervision of a Company Access Crew. An outage may be required. The conductor size shall have a range of #6 - 350kcmil, in order to connect to the Company supplied connectors at the Point-of-Service. The neutral conducotr is to be identified with white tape at both ends for 3 inches in length. An address tag (Dymo aluminum embossing tape or similar) shall be attached to the neutral conductor at the Point-of-Service. The customer owned service cable shall be in compliance with the National Elecrical Code (NEC) and applicable requirements of local governmental codes (AHJ).

SERVICE PROVIDER RESPONSIBILITIES:

1. Specify location for sub-grade pedestal, which will be considered the Point of Service, location of pedestal will normally be 7 to 12 feet from pole, in a non-traffic area.

2. If service is provided from a pole, provide and install continuation of duct on Company owned pole and ground the metal riser.

3. Provide, install and maintain service conductor from Company pad-mount transformer, pedestal or pole to a customer installed sub-grade pedestal (Point of Service). Upon connection to the Company's distribution system, the sub-grade pedestal will be maintained by the Service Provider.

4. Provide, install and maintain meter.

5. Design Services will document in Company mapping system that conductor from Point of Service to the Service Entrance is customer owned.

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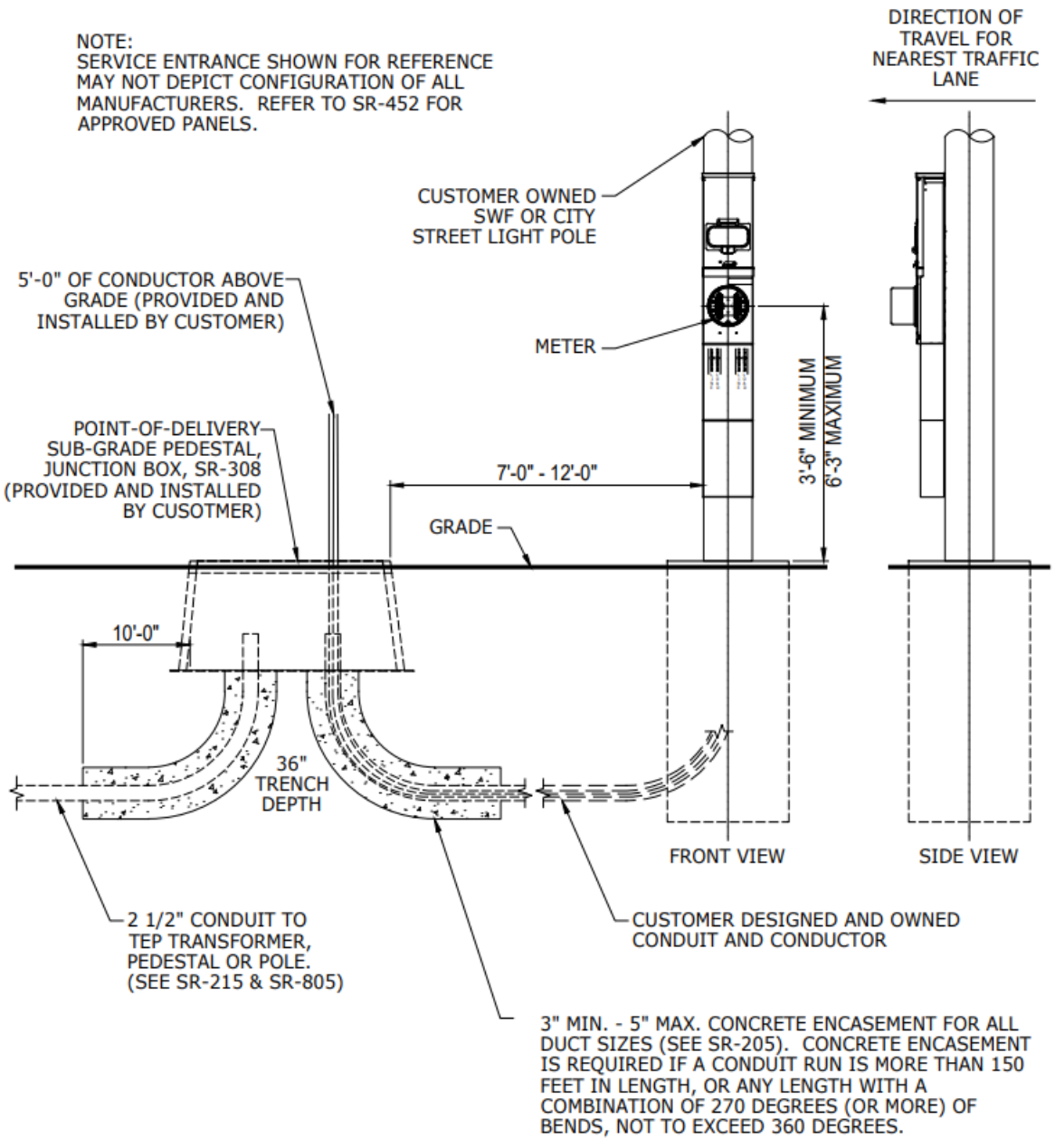
SERVICE ENTRANCE ON CUSTOMER OWNED SMALL WIRELESS FACILITY (SWF) OR LIGHT POLE

NOTE:
SERVICE ENTRANCE SHOWN FOR REFERENCE MAY NOT DEPICT CONFIGURATION OF ALL MANUFACTURERS. REFER TO SR-452 FOR APPROVED PANELS.



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