

**616.8.6A (TA-6A) Shoulder Work with Minor Encroachment**

- Always use advance warning signs and channelizers:**
  - Set additional warning signs at each intersection with another state highway within the work zone.
- Always use a protective vehicle when workers are present. If available, use a truck/trailer mounted attenuator (TMA).**
  - Activate high-intensity rotating, flashing, oscillating, or strobe lights.
  - Position the vehicle or equipment a minimum of 150 feet in advance of the work space.
  - If the protective vehicle is equipped with a truck/trailer mounted attenuator (TMA), place a static sign under the flashing arrow panel and use four-corner or alternating diamond caution mode.
  - A work vehicle may be used as a protective vehicle.
  - Once you exit the work/protective vehicle, return only when ready to leave the work location.
- Lane Encroachment:** If 10 feet of driving surface is not provided, refer to appropriate encroachment or lane closure typical application (TA).

- For other operations, refer to:**
- Temporary Traffic Barriers:**
    - EPG 616.6.8.5 Temporary Traffic Barriers.
    - 616.8.6B (TA-6B) Shoulder Work with Minor Encroachment with Temporary Traffic Barrier.
  - Long-Term Stationary Operations:**
    - EPG 616.6.2.2 Flags and Advance Warning Rail System.
    - EPG 616.6.7.8 Temporary Markings.

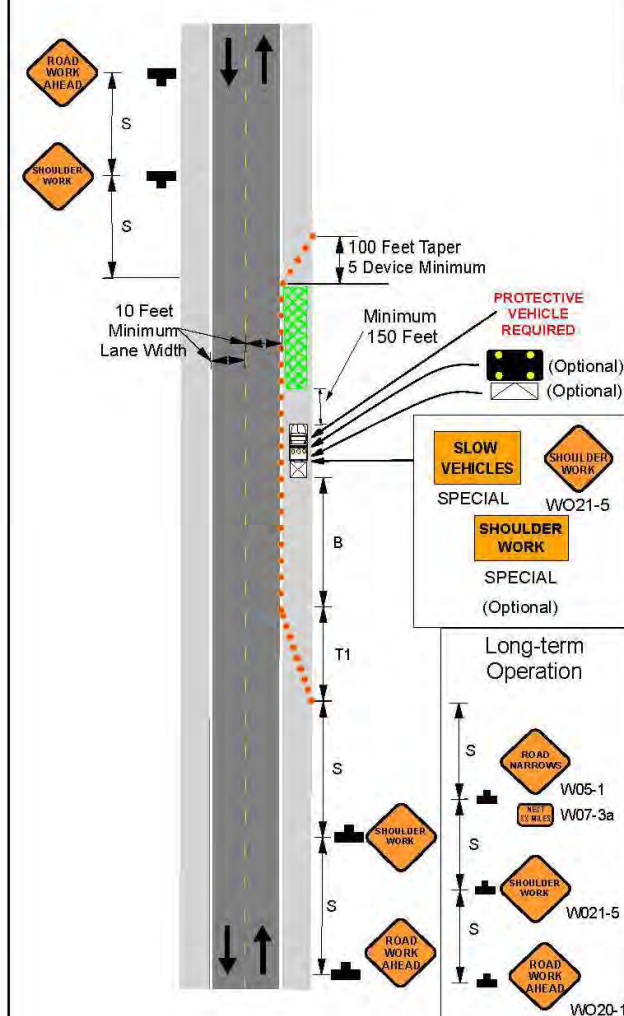
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**616.8.6A (TA-6A) Shoulder Work with Minor Encroachment**

SPEED	SIGN SPACING (ft)	TAPER LENGTH (ft)	RECOMMENDED CHANNELIZER SPACING (ft)		
Permanent Posted (mph)	Undivided (B)	Shoulder (1)	Buffer Length (B)	Tapers	Buffer Work Areas
0-35	200	70	250	35	40
40-45	350	150	360	40	80
50-55	500	185	495	50	80
60-70	1000	235	730	60	120

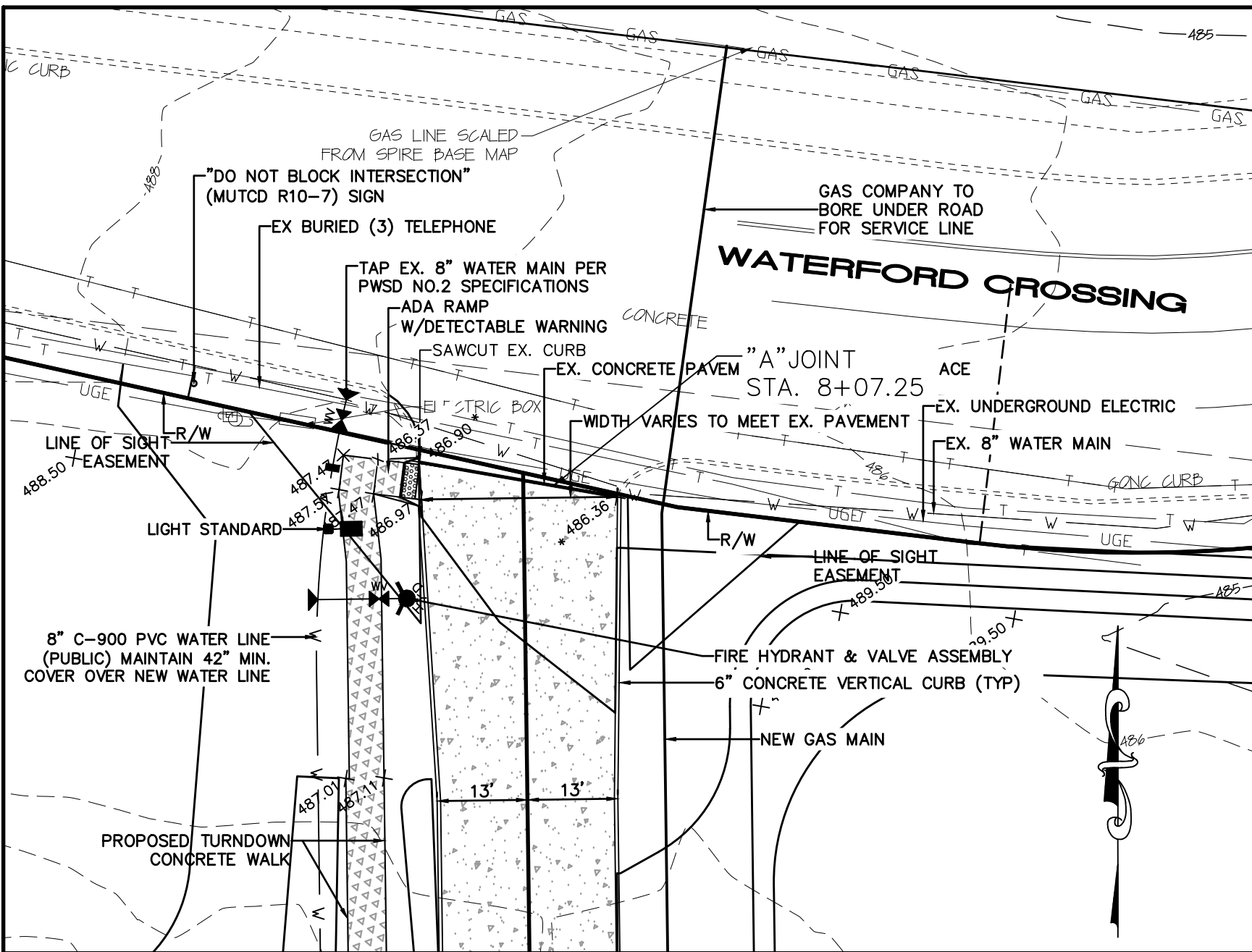
1. Shoulder taper length based on 10 ft. (standard shoulder width) offset. 2. Lane taper length based on 12 ft. (standard lane width) offset.

TYPE OF ROADWAY	SIGN HEIGHT (MIN/MAX)	MAXIMUM WORK ZONE LENGTH (MIN)	Channelizer	Truck Mounted Attenuator (TMA)	Work Space
URBAN	7' Portable / 7' Fixed	114'	Sign / Flashing Arrow Panel	Truck Mounted Attenuator (TMA)	Work Space
RURAL DIVIDED	7' Portable / 7' Fixed	214'	Sign / Flashing Arrow Panel	Truck Mounted Attenuator (TMA)	Work Space
VEHICLE	48 inches	Recommended			



Date: \_\_\_\_\_  
 Type of Work: \_\_\_\_\_  
 Location: \_\_\_\_\_  
 Work Zone Specialist: \_\_\_\_\_  
 Field Notes: \_\_\_\_\_

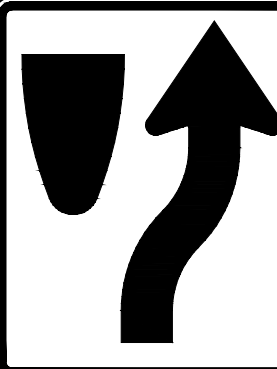
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**Waterford Crossing Entrance Detail**

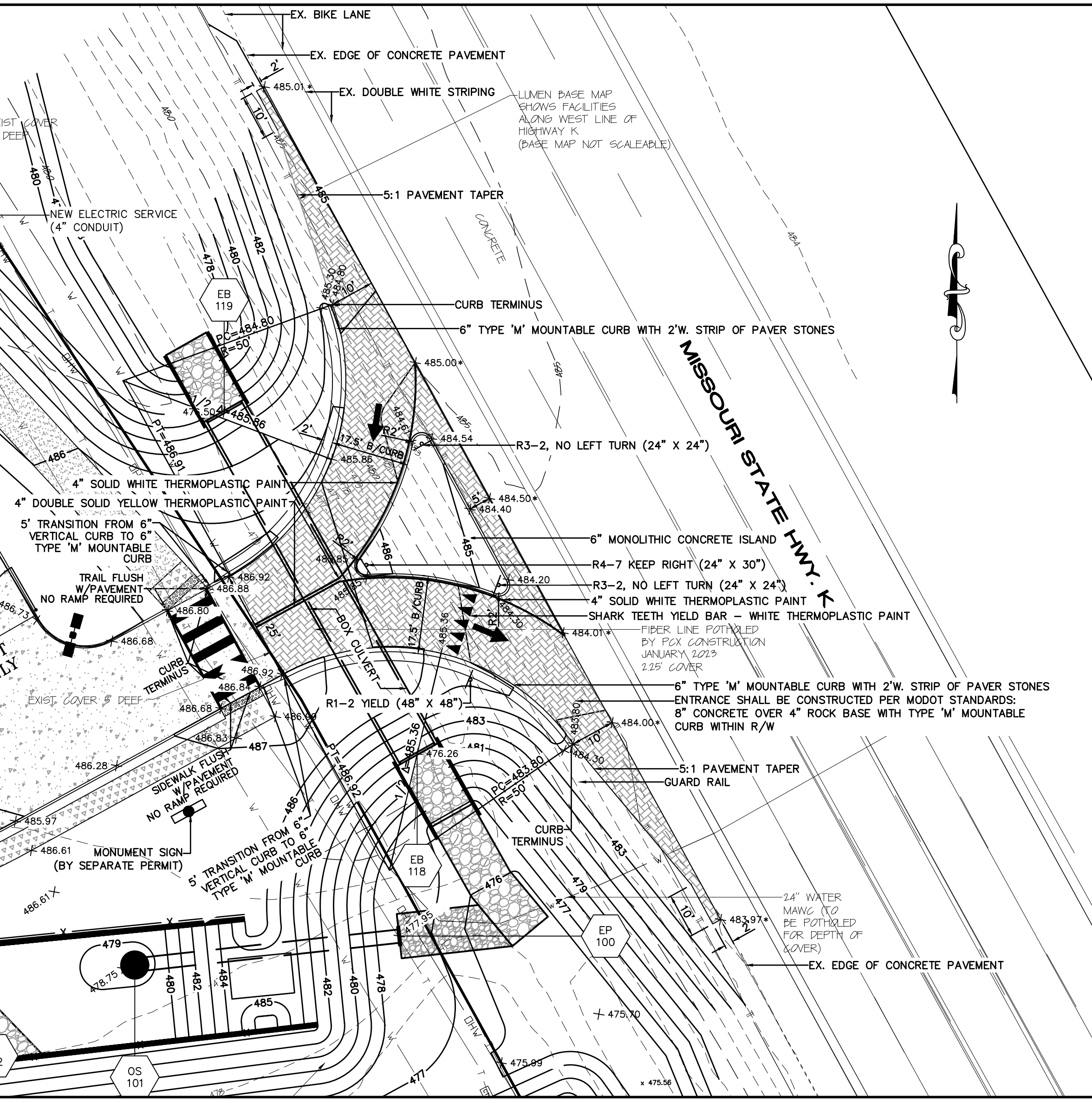
- LEGEND:
- 3" ASPHALT OVER 4" ROCK
  - 4" CONCRETE OVER 4" ROCK
  - 6" CONCRETE OVER 4" ROCK
  - 8" CONCRETE OVER 4" ROCK

- ENTRANCE DETAIL NOTES:
- ALL ELEVATIONS ARE TOP OF PAVEMENT.
  - ALL DIMENSIONS ARE TO FACE OF CURB.
  - "\*" = EXISTING ELEVATION
  - ENTRANCE DRIVE SHALL NOT EXCEED 2% CROSS SLOPE ACROSS CONTINUATION OF TRAIL THROUGH DRIVE.

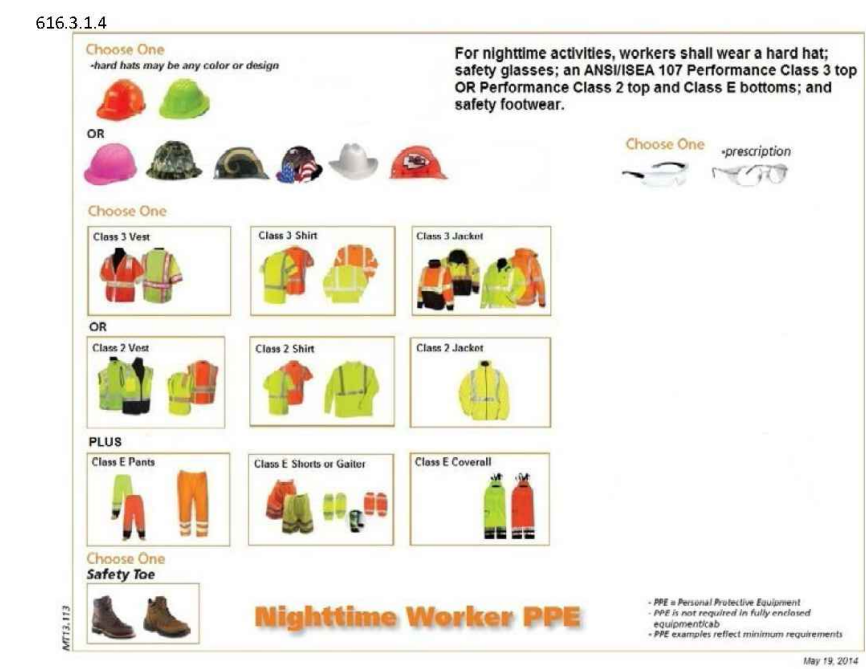
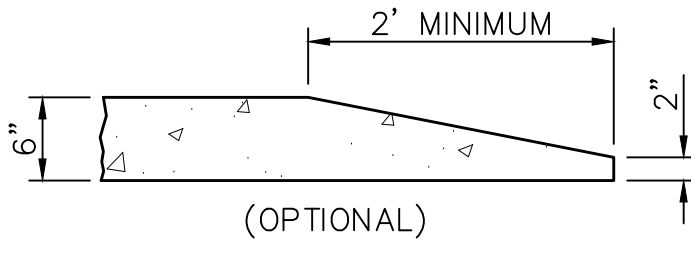


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UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE INFORMATION AND THEREFORE THEIR LOCATIONS SHALL BE CONSIDERED APPROXIMATE ONLY. THE VERIFICATION OF THE LOCATION OF ALL UNDERGROUND UTILITIES, EITHER SHOWN OR NOT SHOWN ON THESE PLANS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, AND SHALL BE LOCATED PRIOR TO ANY GRADING OR CONSTRUCTION OF THE IMPROVEMENTS.



**Hwy. K Entrance Detail**



**Support.** Equally as important as the safety of road users traveling through the TTC zone is the safety of workers. TTC zones present temporary and constantly changing conditions that are unexpected by the road user. This creates an even higher degree of vulnerability for workers on or near the roadway.

Maintaining TTC zones with road user flow inhibited as little as possible, and using TTC devices that get the road user's attention and provide positive direction are of particular importance. Likewise, equipment and vehicles moving within the activity area create a risk to workers on foot. When possible, the separation of moving equipment and construction vehicles from workers on foot provides the operator of these vehicles with a greater separation clearance and improved sight lines to minimize exposure to the hazards of moving vehicles and equipment.

**Guidance.** The following are the key elements of worker safety and TTC management that should be considered to improve worker safety:

- Training** — all workers should be trained on how to work next to motor vehicle traffic in a way that minimizes their vulnerability. Workers having specific TTC responsibilities should be trained in TTC techniques, device usage, and placement.
- Temporary Traffic Barriers** — temporary traffic barriers should be placed along the work space depending on factors such as lateral clearance of workers from adjacent traffic, speed of traffic, duration and type of operations, time of day, and volume of traffic.
- Speed Reduction** — reducing the speed of vehicular traffic, mainly through regulatory speed zoning, funneling, lane reduction, or the use of uniformed law enforcement officers or flaggers, should be considered.
- Activity Area** — planning the internal work designated by a trained person to minimize backing-up maneuvers of construction vehicles should be considered to minimize the exposure to risk.
- Worker Safety Planning** — a trained person designated by a basic hazard assessment for the worksite and job classifications required in the activity area. This safety professional should determine whether engineering, administrative, or personal protection measures should be implemented. This plan should be in accordance with the Occupational Safety and Health Act of 1970, as amended, "General Duty Clause" Section 2(a)(1), Public Law 91-596, 84 Stat. 1590, December 29, 1970, as amended, and with the requirement to assess worker risk exposures for each job site and job classification, as per 29 CFR 1926.20 (b)(2) of Occupational Safety and Health Administration Regulations, *General Safety and Health Provisions* (see EPG 900.1.11).
- Safety Apparel** — All workers within highway right of way shall wear approved ANSI/ISEA 107 Performance Class 2 or 3 safety apparel and more specifically as follows:
  - Daytime Flagger.** During daytime activities, flaggers shall wear a high visibility hard hat, safety glasses, a Performance Class 3 top OR a Performance Class 2 top, and safety footwear. Hard hats other than high visibility orange or green shall be covered with a high visibility covering.
  - Daytime Worker.** During daytime activities, workers shall wear a hard hat, safety glasses, a Performance Class 3 top OR a Performance Class 2 top, and safety footwear.
  - Nighttime Flagger.** During nighttime activities, flaggers shall wear a high visibility/reflective hard hat, safety glasses, a Performance Class 3 top AND Class E bottom, OR Performance Class 2 top AND Class E bottom, and safety footwear. Hard hats shall be reflective or covered with a high visibility covering.
  - Nighttime Worker.** During nighttime activities, workers shall wear a hard hat, safety glasses, a Performance Class 3 top OR Performance Class 2 top AND Class E bottom, and safety footwear.

See also EPG 616.5.2 High-Visibility Safety Apparel. A graphical representation of personal protective equipment is available.

**Standard.** All workers, including emergency responders, within the right-of-way who are exposed either to traffic (vehicles using the highway for purposes of travel) or to work vehicles and construction equipment within the TTC zone shall wear high-visibility safety apparel that meets the Performance Class 2 or 3 requirements of the ANSI/ISEA 107-2004 publication entitled *American National Standard for High-Visibility Safety Apparel and Headwear* (see EPG 900.1.11), or equivalent revisions, and labeled as meeting the ANSI 107-2004 standard performance for Class 2 or 3 risk exposure, except as provided in the below option. A person designated by the employer to be responsible for worker safety shall make the selection of the appropriate class of garment.

**Option.** Emergency and incident responders and law enforcement personnel within the TTC zone may wear high-visibility safety apparel that meets the performance requirements of the ANSI/ISEA 207-2006 publication entitled *American National Standard for High-Visibility Public Safety Vests* (see EPG 900.1.11), or equivalent revisions, and labeled as ANSI/ISEA 107-2004 apparel.

**Standard.** When uniformed law enforcement personnel are used to direct traffic, to investigate crashes, or to handle lane closures, obstructed roadways, and disasters, high-visibility safety apparel as described in this Section shall be worn by the law enforcement personnel.

Except as provided in the below option, firefighters or other emergency responders working within the right-of-way shall wear high-visibility safety apparel as described in this article.

**Option.** Firefighters or other emergency responders working within the right of way and engaged in emergency operations that directly expose them to flame, fire, heat, and/or hazardous materials may wear retroreflective turn-out gear that is specified and regulated by other organizations, such as the National Fire Protection Association.

The following are additional elements of TTC management that may be considered to improve worker safety:

- Shadow Vehicle** — in the case of mobile and constantly moving operations, such as pothole patching and striping operations, a shadow vehicle, equipped with appropriate lights and warning signs, may be used to protect the workers from impacts by errant vehicles. The shadow vehicle may be equipped with a rear-mounted impact attenuator.
- Road Closure** — if alternate routes are available to handle road users, the road may be closed temporarily. This may also facilitate project completion and thus further reduce worker vulnerability.
- Law Enforcement Use** — in highly vulnerable work situations, particularly those of relatively short duration, law enforcement units may be stationed to heighten the awareness of passing vehicular traffic and to improve safety through the TTC zone.
- Lighting** — for nighttime work, the TTC zone and approaches may be lighted.
- Special Devices** — these include rumble strips, changeable message signs, hazard identification beacons, flags, and warning lights. Intrusion warning devices may be used to alert workers to the approach of errant vehicles.

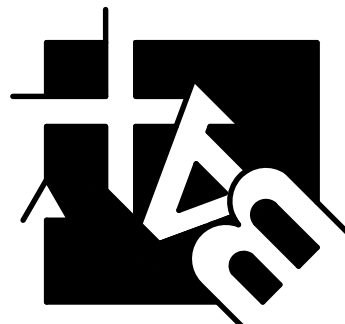
**Support.** Judicious use of the special devices described in Item E, above, might be helpful for certain difficult TTC situations, but misuse or overuse of special devices or techniques might lessen their effectiveness.

**PROJECT TITLE:**  
**CONSTRUCTION PLANS FOR**  
**Scrubbers Car Wash**  
 Highway K  
 O'Fallon, MO 63368

Issue Date: 07/21/2023

**ENGINEERING**  
**PLANNING**  
**SURVEYING**

221 Point West Blvd.  
 St. Charles, MO 63301  
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**REVISIONS**

08-03-23	FORCE MAIN
09-13-23	CONTRACT/FWSD
09-27-23	COMMENTS
10-26-23	CITY COMMENTS
11-08-23	PAY CANOPY REV.
12-06-23	CITY COMMENTS
12-13-23	PWSD COMMENTS
12-18-23	MODOT COMMENTS
01-10-24	LIGHT STANDARDS

**Developer / Owner:**  
 Tifton Car Wash, L.L.C.  
 P.O. Box 7726  
 Tifton, GA 31793  
 (229) 520-2244

**P+Z No.** 22-007743  
**Approved:** 10-06-22

**City No.** #

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**ENTRANCE DETAIL**