

# TRANSPORTATION RECOMMENDATIONS

## CORRIDOR PRESERVATION PLAN

The creation of this Plan is a significant milestone in the preservation of the integrity of US 77 and K-18. Through the course of this study, it has been decided that the long term goal for US 77 and K-18 is to be maintained and enhanced as an expressway-type facility. The results of this study and the Plan Plates (see Appendix A) are a tool for KDOT, Junction City, Milford, and Geary County to plan for future access consolidation as well as future right-of-way for proposed improvements. The goal of the access consolidation and transportation improvements are to improve safety and ease of travel along US 77 and K-18. This chapter provides more detailed descriptions for an overall access strategy and proposed transportation improvements. Appendix A provides Plan Plate drawings at a scale allowing the proposed local street network system to be shown and defines future access to these facilities as well as the right-of-way preservation needs for associated intersection improvements.

**Plan Plate Components:** (More specific descriptions by area are included later in this section)

- **Parallel Network:** The Plan Plates show existing and proposed arterial, collector and local road network for the corridor. US 77, K-18 and these parallel roads function as an integrated system that serves different destination and travel purposes. Designing an effective street network will ultimately enhance safety and the ease of traffic flow along US 77 and K-18.
- **Proposed Right-of-Way:** The Plan Plates show an estimate of future right-of-way, highlighted by the yellow dashed line, for mainline US 77, K-18 and associated intersection improvements. Along mainline US 77, the existing right-of-way will be used to the extent possible for the future improvements. However, along much of the corridor, particularly at intersections, additional right-of-way will be required. Any proposed development within these locations should check the plates to ensure that future improvements do not occur within identified future right-of-way areas.
- **Future Driveway/Access Points:** A key goal of this Plan is to eliminate and/or consolidate identified existing access points along US 77 and K-18 and provide alternative access to the parallel City or County road network. The Plan Plates currently delineate two types of future driveway/access point strategies:
  - **Future Access Removal:** These existing access points, shown by a red "X" on the Plan Plates, represent future access removal within the near term (5 to 10 years) due to impending improvements to mainline US 77 or K-18 and/or intersection improvements.
  - **Opportunity Access Removal:** These existing access points, shown by a green square on the Plan Plates, represent "grandfathered access" to US 77 and K-18. These existing driveways may remain; however, future access removal and relocation may be triggered in the future if and when the property changes use, is subdivided, or improvements increase the square footage by 25 percent or more (excluding agricultural uses and rural residences). Prior to new building permits being issued, the property owner/developer will provide a site plan for review by the appropriate jurisdiction that shows access removal from US 77 or K-18 and relocation to the nearest County or City parallel road. See Future Land Use Plan for specific guidelines.

## CORRIDOR-WIDE ACCESS MANAGEMENT TOOLS

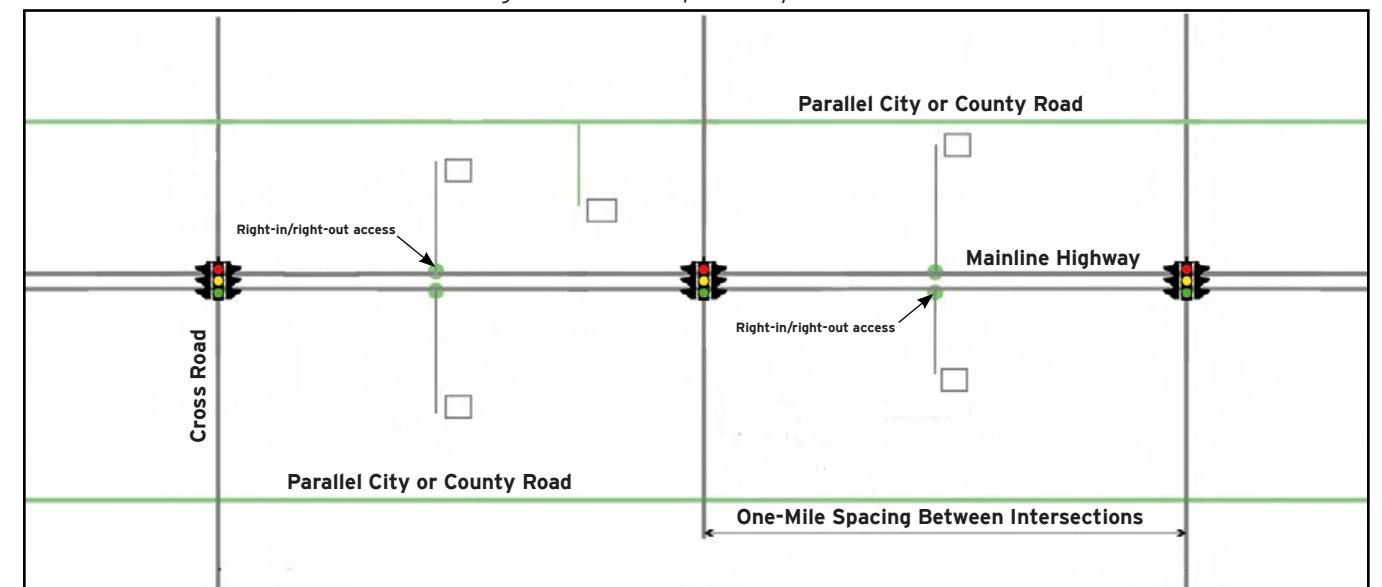
Access management is necessary to protect the safety of the public and the operational efficiency of US 77 and K-18. Effective access management also protects public investment and the continued economic vitality of these corridors. Uncontrolled access on the other hand, can impede development and produce high costs in the future as retrofits are needed. Junction City, Milford and Geary County can undertake access management activities as part of what are known as "police powers" which is the authority to take action to protect citizens' safety, health and welfare. A component of access management is regulation of traffic flow. Regulation of traffic flow could include several actions outlined in the access management tools within this section. Managing access is complicated and requires careful consideration, but, done properly, protects the driving public while also providing adjacent property owners with reasonable access to their property and the parallel road network.

### Facility Type

An **expressway-type facility** is recommended for US 77 and K-18. The general goals for this facility type are as follows:

- Primary access to US 77 and K-18 will be at controlled intersections spaced approximately one mile apart. Exceptions to this spacing are described later in this section.
- Driveway spacing will be at least one-half mile and should be right-in/right-out; all other existing access should be closed or consolidated.
- All other local access to US 77 and K-18 will be through the parallel road network or frontage roads to connect to the nearest identified intersection location.

Figure 11: Ideal Expressway Condition



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## LOCAL ACCESS GUIDELINES

Today, portions of existing US-77 and K-18 function as a city-type arterial roadway with numerous intersections and individual driveways. This condition exists through incorporated Junction City from I-70 to K-57/244 and K-18 from US-77 to Karns Drive. Because of the number of existing driveways and access points, Junction City should work with individual property owners to achieve the best possible access solution based upon existing constraints.

### Local Access Tools

- Primary access to these portions of US-77 and K-18 will be at controlled intersections.
- The ultimate goal is to have intersections spaced at one-mile with the following exceptions.

#### US 77:

- The intersection of Old Highway 40 is less than one-eighth of a mile from the I-70 ramps. Unfortunately, due to the proximity to existing development and the Union Pacific Rail line, there are no feasible options for relocating the intersection further south.
- The intersection of Lacy Drive/Goldenbelt Boulevard is approximately one-eighth of a mile from the I-70 ramps. Through the study process, several options were considered including relocating Lacy Drive/Goldenbelt Boulevard north to provide better spacing. However, due to the rather minimal benefit, coupled with significant property impacts on both sides of the road, the current intersections were recommended to remain.
- Ash Street and McFarland Road are currently spaced at approximately one-quarter mile. One study option recommended making McFarland Road a right-in/right-out. At some point in the future, if congestions along US 77 warrants, Junction City and KDOT may consider this option. However, at this time, based upon input received during the workshops and at the direction of the technical team, the McFarland intersection will continue to be signalized allowing full turning movements.

#### K-18:

- Karns Drive and Spring Valley Road are currently spaced at approximately one-half mile. Karns Drive is a new road intended to serve the Junction City Middle School. At some point in the future, this road will be extended north and south, potentially serving the surrounding neighborhood. During study workshops, participants noted that this area should serve as a transition point between the rural Geary County and Junction City.
- Driveways on parallel City streets and County roads should be located a minimum of 600-feet from collector and arterial street intersections and 1,000-feet from the nearest ramp terminal at interchanges.
- All other existing access should be consolidated through shared parking, cross access, joint access, and access easements.
  - **Shared Parking:** Shared parking between adjacent properties shall be encouraged to the greatest extent possible. The study partners should consider reducing parking requirements if adjacent property owners agree to share parking. The number of parking spaces shall be dependent upon the types of uses and size of development.

- **Cross Access:** Property owners are encouraged to provide cross access and/or shared parking areas between adjacent developments. This should ensure a safe and efficient flow of traffic throughout the study area and allow local traffic to access adjacent developments without having to enter onto US-77 or K-18. Whenever possible, adjacent property owners shall be required to enter into cross access agreements and/or provide cross access easements between properties.
- **Joint Access:** Joint access is a single point of access to one or more properties. Joint access may provide one or more points of entry and access between adjacent developments. At a minimum, property owners should be required to provide access between all adjacent developments. This should provide vehicles the opportunity to access adjacent developments without having to enter onto US-77 or K-18.
- **Access Easements:** Access roads, cross access easements and/or joint use driveways shall be incorporated in the site review process. Property owners shall dedicate an easement allowing for cross access to and from other properties served by joint use driveways. Upon approval by the City or County, the easement shall be dedicated on a plat of the property or by separate legal instrument. The plat or separate instrument shall then be recorded. Whenever possible, rear access roads and cross access points should be utilized.

## CORRIDOR PRESERVATION TOOLS

Corridor preservation is the application of planning efforts to identify needed right-of-way and control or protect it for a future transportation facility. Frequently, the application of corridor preservation also accomplishes access management goals by providing connectivity to alternate transportation facilities for existing access points that are desired to be removed. The following tools can be used to preserve right-of-way and accomplish the Plan's access goals:

**Right-of-Way Preservation:** Junction City, Milford and Geary County should use the Plan Plates to preserve future right-of-way for proposed transportation improvements. This includes integrating the Plan's Land Use Plan and Plate Maps into the site review process through local zoning and subdivision regulations.

**Access Consolidation:** As stated in the Land Use Plan section of this report, existing driveways should be considered a non-conforming use. This means, if the property owner decides to subdivide or change use of the property, the property owner should implement the Plan's access recommendations as shown in the Plan Plates at the owner's expense. In cases where the property does not change use, KDOT, Junction City, Milford and Geary County should work with individual property owners to meet the Plan's access goals. In these cases, the Partners should consider the following strategies.

**Advanced Land Acquisition:** Public sector entities have the authority to acquire land for public improvements including state highways and local roads and streets by gift, purchase, or condemnation. Sufficient land may be acquired to accommodate immediate construction needs, as well as for future needs. In appropriate circumstances, public sector entities can acquire interests in land for public improvements in advance of the date of the start of construction.

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**Land Swaps:** Land swaps can be used by local governments to relocate properties within the Study Corridor to accomplish the Plan's access goals. For example, some parcels with shallow lot depths or that are constrained from alternative access because of existing environmental or physical conditions may need to be relocated to areas better suited to provide safe access onto US-77, K-18 or the parallel road network. Once relocated, these shallow lots could be converted to open space.

**Eminent Domain:** Eminent domain or condemnation is a tool used by state and local governments to acquire land for redevelopment or for the greater good of the community. The condemning authority is obligated to provide the property owner compensation based upon "fair market value" of the property. Typically, this tool is used as a last resort.

## LOCAL STREET NETWORK IMPROVEMENTS

The proposed local street network improvements were established through a combination of input from the City and County plans and the workshop process to assess how their local street network was affected by the US 77 and K-18 recommendations. Through this input and use of general traffic planning principles, the following guidelines were established:

### Arterials:

1. The primary function is to distribute traffic away from the intersections, serve as medium to longer range travel on the local street network, and distribute traffic to the collector road system.
2. The County Arterials should be planned as two-lane facilities with additional intersection turn lanes as dictated by turning movement volumes.
3. Arterials should be planned to provide control of access as much as possible. For the arterials within Junction City, the desired intersection spacing is one-half mile with right-in/right-outs allowed at one-quarter mile spacing. A typical urban arterial street section is shown on page 31.

### Collectors:

1. The primary function is to distribute traffic away from the arterials, provide short range trips to final destinations, and provide access into developments and residential areas.
2. Collectors should be planned as two-lane facilities with an extra left turning lane if warranted.
3. A typical collector streets section is shown on page 31.
4. Generally cities and counties have ordinances that require dedication of right-of-way for roadway purposes as development occurs.

## MAINLINE AND INTERSECTION RECOMMENDATIONS

Typical sections for US 77 and K-18 mainline characteristics are provided on page 30 and 31 at the end of this section. Individual intersection or interchange observations are summarized on the following pages. The purpose of the transportation recommendations is to focus on US 77, K-18, the major intersecting highways and the adjacent local street system. US 77, K-18 and the local street network are an integrated system and it would not be prudent to focus on the mainline at the expense of the local street network, or conversely, to have a focus on the local street network at the expense of the mainline.

Before any consideration for improvements to US 77 and K-18, the Consultant Team reviewed the capacity, type, function, and parameters of these highways. Some of the varying roadway characteristics include:

- Number of lanes.
- Type of access control.
- Median divided lanes or undivided.
- Curb and gutter or shoulder.
- Traffic control at intersections.
- Posted speed limit and roadway design speed.
- Frequent driveways or limited private access.

### Segment 1: US 77 (Lyons Creek Road to I-70)

The first segment of the US 77 begins at Lyons Creek Road and extends north to the I-70 interchange. This section is currently two-lane and is primarily rural with few private driveways. A majority of this area is within the Smokey Hill River flood plain. However, there is significant industrial development near the I-70 interchange, including a Foot Locker Distribution Facility, Sewer Treatment Plant and KDOT maintenance facility. According to Junction City officials, there is interest in additional industrial uses east of the Highway.

### US 77 at Old Highway 40

- Due to the proximity to existing development and the Union Pacific Rail line, there are no feasible options for relocating this intersection further south away from I-70, therefore, the existing alignment is retained.
- A roundabout or signal is warranted at this intersection. A signal is recommended to avoid the more complex navigation of a dual roundabout (dumbbell) arrangement that would be created due to its proximity to the I-70 Interchange.

### US 77 at I-70

- A standard diamond interchange configuration is proposed at I-70. This configuration may allow the existing I-70 bridges to be salvaged. Roundabouts will be incorporated at the ramp terminals to facilitate better traffic flow.

# TRANSPORTATION RECOMMENDATIONS

## US 77 at I-70 (Continued)

- Combining Old Highway 40 with a south terminal roundabout and Lacy/Goldenbelt with a north terminal roundabout was considered, however, this configuration fails due to high turning volumes.
- A future I-70 interchange (potentially at Taylor Road) was discussed at the workshops. This possibility is accounted for in the Land Use Plan and could reduce congestion at the US 77 interchange and improve access to West Junction City. However, a break in access study and environmental process will need to be completed as well as identifying project financing to determine the feasibility and timing of any future interchange.

## Segment 2: US 77 (I-70 to Old Highway 77/Old Milford Road)

The second segment of the US 77 begins at the I-70 interchange and ends just north of Old Highway 77/Old Milford Road. This section is currently four-lane and is the most developed area with numerous businesses and emerging multi-family neighborhoods fronting US 77. Due to the amount of development, this section of US 77 operates like a City arterial. Fortunately, Junction City and KDOT have successfully controlled access as most businesses access US 77 from side streets. North of K-57/K244 to Old Highway 77/Old Milford Road is currently rural due to the Republic River flood plain and the proximity to the USACE and Fort Riley property. However, due to the traffic volumes in this area and the connections to Fort Riley and Milford Lake, this segment is identified as an improved four-lane facility with significant intersection improvements to address key safety and mobility concerns through this area.

## US 77 at Lacy/Goldenbelt Drive

- Several options were tested to consider the feasibility of relocating Lacy Drive/Goldenbelt Boulevard north to provide better spacing with the I-70 interchange ramps to the south. Relocating the intersection to the north would provide slightly more north bound US 77 storage, but would require significant impact to the bluff in the north east quadrant as well as likely acquisition of the new apartment building. Relocation of the intersection while avoiding the apartment building would possibly require significant retaining walls and/or a skewed intersection on a curve with only minimal increase in North bound US 77 storage length. Due to significant site constraints and traffic impacts, this option would be very costly.
- A roundabout or signal is warranted at this intersection. A signal was selected to avoid the more complex navigation of a dual roundabout (dumbbell) arrangement that would be created due to its proximity to the I-70 Interchange. A roundabout was tested but failed due to north bound US 77 traffic backing up into the I-70 north ramp terminal roundabout.
- To address the spacing issue, a study option shown in the Plan Plates (see Plate 3 and inset 1b) includes a provision for a "Michigan Left" that will also necessitate an additional signal slightly north coordinated with the main intersection signal. At some point in the future, if congestion within this area significantly worsens, Junction City and KDOT may consider this option. However, due to input received at the workshops, including the concerns about out-of-direction travel, the existing intersection configuration will initially remain and be signalized.

## US 77 at Lacy/Goldenbelt Drive (Continued)

- Improvements to Lacy/Goldenbelt including additional lanes to accept turning traffic to/from US 77 and the addition of left and right turn lanes are needed.

## US 77 at Ash Street

- A roundabout was tested but fails due to large turning volumes.
- Improvements will be needed to Ash Street including potential widening.

## US 77 at McFarland Road

- A full intersection would violate desired intersection spacing. A study option, shown in the Plan Plates (see Plate 4 and inset 3b), shows McFarland Road as a right-in/right-out. At some point in the future, if congestions along US 77 warrants, Junction City and KDOT may consider this option. However, at this time, based upon input received during the workshops and at the direction of the technical team, the McFarland intersection will continue to be signalized allowing full turning movements. There is some concern that a right in/right out intersection will produce undesired cut-through traffic to adjacent neighborhoods to access Spring Valley Road. In addition, Ash Street would need to be improved to accommodate additional east-west traffic across US 77.

## US 77 at K-18

- An at-grade intersection, while likely possible here, would require extensive earthwork/rock cuts and would eliminate the added safety of an interchange near the new middle school.
- The current loop ramps only meet about 25 mph design speed. If US 77 is widened to a 4-lane median section the extra width would further tighten and/or shorten the ramps if left in this configuration.
- A standard diamond interchange is proposed in order to preserve right-of-way should one be deemed desirable in the future. A rock quarry in the northeast quadrant of this intersection will likely force the east ramps to stay in tight to US 77 making a tight diamond configuration a possibility.
- The current K-18 bridge over US 77 is a concrete box girder bridge built in the late 1950s so it likely is not a great candidate for widening to accommodate a bike/pedestrian path or any turn lanes. A new bridge may be a more economical choice, especially if US 77 is widened as the existing piers may not accommodate much extra width.

## US 77 at Rucker Road

- The signalized configuration currently under construction is retained.
- A Roundabout was considered but fails due to large turning volumes. Other potential realignment options resulted in numerous property impacts that are mitigated through retention of the planned improvements.

# TRANSPORTATION RECOMMENDATIONS

## **US 77 at K-57/K-244**

- A signal is warranted at this location in the future. A roundabout fails at this location due to high traffic volumes in all directions.
- Realignment of the intersection to remove the skew was evaluated and provided little actual benefit compared to the property impacts and the extensive work required to realign the channelized intersection just to the west.
- Eliminating the channelized intersection just west of here would likely increase safety in the area.

## **US 77 at Old Milford Road**

- A signal or roundabout is warranted at this location in the future.
- A roundabout is proposed to allow continuous flow of traffic and yet slow the traffic in the area of the skewed intersection.

## **US 77 at Old Highway 77**

- A signal or roundabout is warranted at this location in the future. A roundabout is proposed to allow continuous flow of traffic and yet slow the traffic near this busy intersection.
- The intersection was realigned to the north to eliminate the extensive skew and to allow an access connection to the homes and land west of the intersection. This realignment also conforms to the desired intersection spacing along the corridor.

## **Segment 3: US 77 (Old Highway 77 to 12th Street Milford)**

The third segment of the US 77 begins at Old Highway 77/Old Milford Road and ends just north of 12th Street in Milford. This section is currently two-lane and is very rural due to the proximity of the USACE and Fort Riley Property as well as a few topographical constraints. Despite its rural nature, this section has numerous rural residences and subdivisions with driveways fronting US 77.

## **US 77 at North K-57, Lakeview Terrace, Cedar Drive, and Houston Road**

- These stop-controlled intersections function as important access points but do not produce the traffic volumes needed for more elaborate intersection controls.

## **US 77 at 12th Street in Milford**

- This stop-controlled intersection functions as an important access point but does not produce the traffic volume needed for a more elaborate intersection control. Simple improvements such as deceleration lanes would address safety concerns for turning movements in and out of Milford.
- An additional access point onto US 77 approximately 1000' south of the 12th Street intersection was considered to accommodate future development in the area. The intersection was deemed inappropriate due to its proximity to the main 12th Street intersection (would significantly violate the desired 1-mile access spacing), reasonable access being available via 12th Street, Houston Road and/or other city streets, and the possible unsafe nature of the extra intersection in regards to driver expectation and interference with future US 77 left-turn lanes and associated widening.

## **K-18 MAINLINE AND INTERSECTION RECOMMENDATIONS**

K-18 is identified as one continuous segment from the US 77 west to the county line. Several new residential subdivisions along Spring Valley Road and a new Junction City Middle School has significantly changed the character and local traffic patterns within this area. Through the study process, which included representatives from Junction City, the County and residents along K-18, participants identified the area between US 77 and Karns Drive as more suburban in character and the areas west of Karns Drive as likely to remain rural for the foreseeable future.

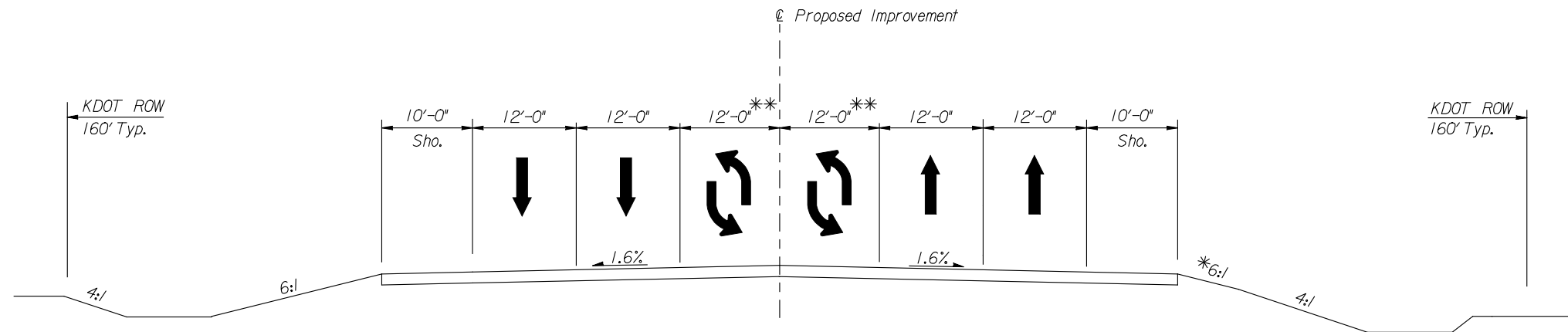
## **K-18 at Spring Valley Road**

- A signal or roundabout is warranted. A roundabout was considered; however, due to significant relief to the north of the intersection and potential impacts to a historic building in the southeast corner of the intersection, a traffic signal was selected.

## **K-18 at Karns Drive west of Middle School**

- It should be noted that this intersection was not tested to meet future warrants for a signal. However, plan participants, including a focus group of K-18 residents, requested a traffic calming device to slow traffic through the area. A roundabout was suggested to force a slowdown in the traffic stream prior to passing through the residential and middle school area and yet still provide continuous traffic flow along K-18.
- Traffic speeds through this area are a major concern for local residents and others who are concerned about the proximity of K-18 to the Junction City Middle School. Based on these concerns, a speed study is recommended to determine the 85th percentile speeds through this area. The study should also consider the effect of proposed transportation improvements. Based on this study, and public input, KDOT should work with Junction City to determine if the speed limits through this area should be adjusted.

# TRANSPORTATION RECOMMENDATIONS

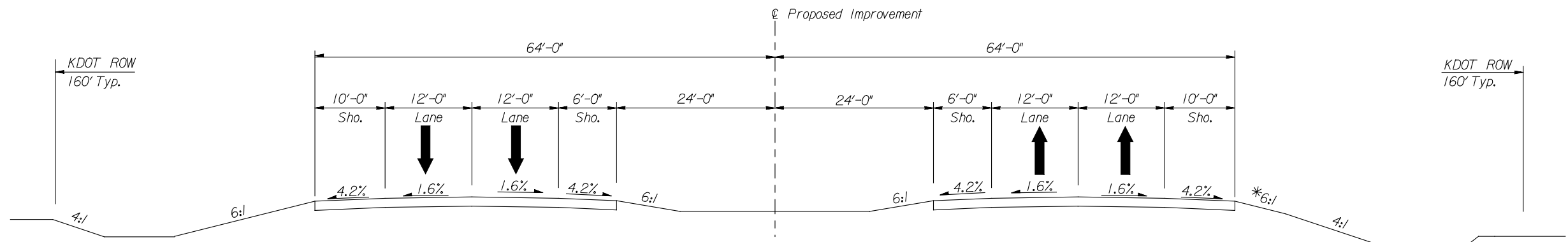


- \*\* Turn Lanes Striped and Delineated as needed
- \* 6:1 used to limits of clear zone

CUT SECTION

FILL SECTION

**US-77 4-LANE EXPRESSWAY**  
**URBAN UNDIVIDED SECTION**  
 (Not to Scale)



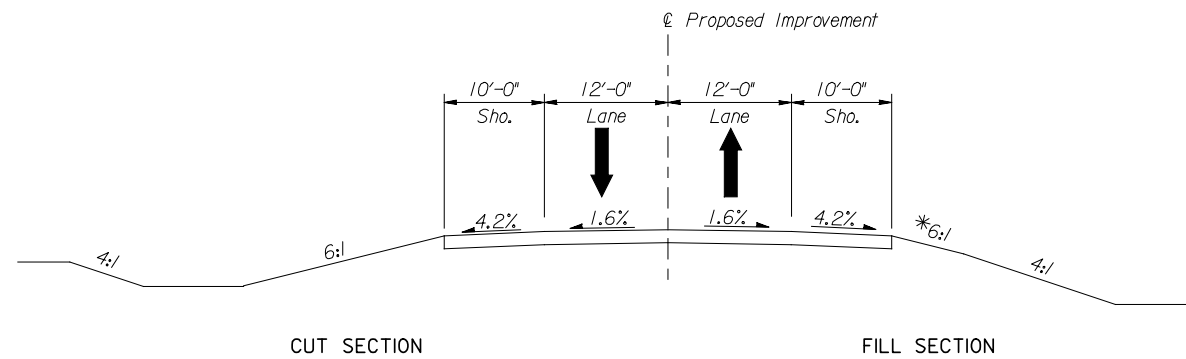
- \* 6:1 used to limits of clear zone

CUT SECTION

FILL SECTION

**US-77 4-LANE EXPRESSWAY**  
**RURAL OPEN MEDIAN SECTION**  
 (Not to Scale)

# TRANSPORTATION RECOMMENDATIONS

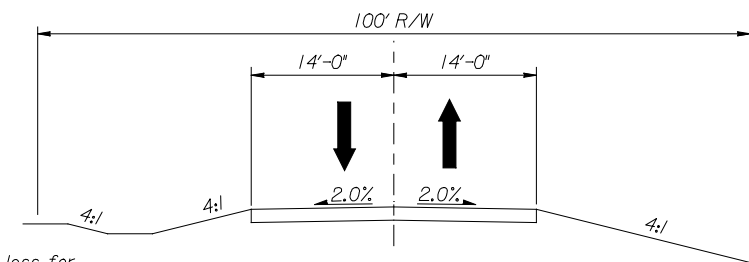


CUT SECTION

FILL SECTION

\* 6:1 used to limits of clear zone

**US-77 RURAL 2-LANE**  
(Not to Scale)

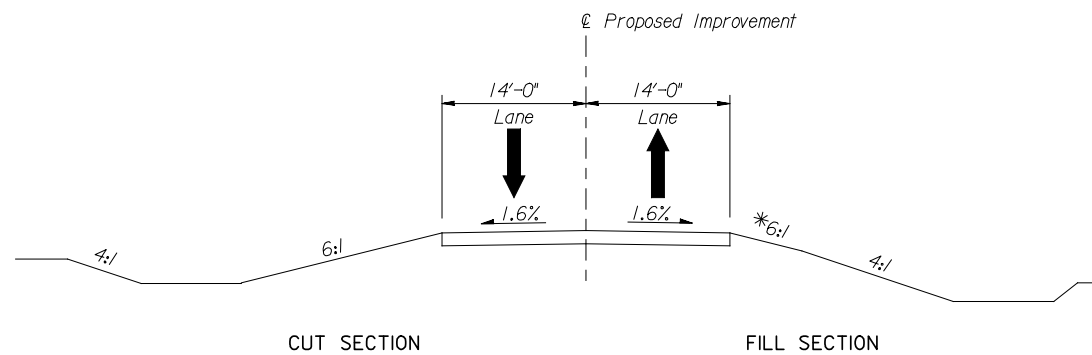


CUT SECTION

FILL SECTION

\*\* Dimensions shown may be less for an access road where appropriate.

**2-LANE COLLECTOR / ACCESS ROAD (RURAL)**  
**100' RIGHT OF WAY**  
(Not to Scale)

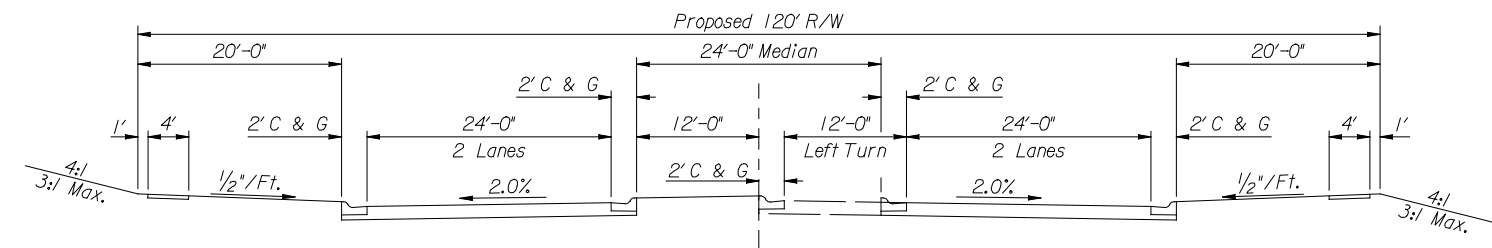


CUT SECTION

FILL SECTION

\* 6:1 used to limits of clear zone

**K-18 RURAL 2-LANE**  
(Not to Scale)



CUT SECTION

FILL SECTION

**4-LANE URBAN ARTERIAL**  
**120' RIGHT OF WAY**  
(Not to Scale)