

Table 4-2: Controlling Design Criteria

Roadway Feature	FHWA Standard	ADOT Standard	Flagstaff/FMPO/NAIPTA Standard	Flagstaff/FMPO/NAIPTA Preferred Standard	Notes
General Purpose Lane Width	<p>Urban:</p> <ul style="list-style-type: none"> *Arterial Minimum - 10' with low truck and bus volumes Arterial desired – 12' (AASHTO 7.3 Urban Arterials) <p>* Anything below 12' has to obtain an variance from the Assistant State Engineer over Roadway Engineering Group.</p>	<p>Urban:</p> <ul style="list-style-type: none"> *Through lane Min – 11' Through lane Max – 16' <p>Rural:</p> <ul style="list-style-type: none"> Through lane Min – 12' Through lane Max – 12' <p>* Anything below 12' has to obtain an variance from the Assistant State Engineer over Roadway Engineering Group.</p>	<p>Urban Milton & US 180:</p> <ul style="list-style-type: none"> 12' <p>Suburban Milton & US 180:</p> <ul style="list-style-type: none"> 12' <p>Rural US 180:</p> <ul style="list-style-type: none"> 12' 	<p>Urban Milton & US 180:</p> <ul style="list-style-type: none"> 11' <p>Suburban Milton & US 180:</p> <ul style="list-style-type: none"> 11' <p>Rural US 180:</p> <ul style="list-style-type: none"> 12' 	<p>**For these categories, the preferred widths are less than the minimums, in contexts where the City/NAIPTA/FMPO have allowed for narrower lanes to improve multimodal functionality. In urban areas in particular, the Regional Plan supports this strategy based on a case by case assessment.</p>
Left Turn Lane	<p>Urban:</p> <ul style="list-style-type: none"> *Auxiliary lane Min. – 10' Auxiliary lane Max. – 16' <p>* Anything below 12' has to obtain an variance from the Assistant State Engineer over Roadway Engineering Group.</p>	<p>Urban:</p> <ul style="list-style-type: none"> *Auxiliary (turn) lane Min – 10' Auxiliary lane Max = none <p>Rural:</p> <ul style="list-style-type: none"> Auxiliary lane Min – 12' Auxiliary lane Max – 12' <p>* Anything below 12' has to obtain an variance from the Assistant State Engineer over Roadway Engineering Group.</p>	<p>Urban Milton & US 180:</p> <ul style="list-style-type: none"> 12' <p>Suburban Milton & US 180:</p> <ul style="list-style-type: none"> 12' <p>Rural US 180:</p> <ul style="list-style-type: none"> 11' 	<p>Urban Milton:</p> <ul style="list-style-type: none"> 11' <p>Urban US 180:</p> <ul style="list-style-type: none"> 10' <p>Suburban Milton & US 180:</p> <ul style="list-style-type: none"> 12' <p>Rural US 180:</p> <ul style="list-style-type: none"> 11' 	<p>**</p>
Right Turn Lane	<p>Urban:</p> <ul style="list-style-type: none"> *Auxiliary lane Min. – 10' Auxiliary lane Max. – 16' <p>* Anything below 12' has to obtain an variance from the Assistant State Engineer over Roadway Engineering Group.</p>	<p>Urban:</p> <ul style="list-style-type: none"> *Auxiliary (turn) lane Min – 10' Auxiliary lane Max = none <p>Rural:</p> <ul style="list-style-type: none"> Auxiliary lane Min – 12' Auxiliary lane Max – 12' <p>* Anything below 12' has to obtain an variance from the Assistant State Engineer over Roadway Engineering Group.</p>	<p>Urban Milton & US 180:</p> <ul style="list-style-type: none"> 12' <p>Suburban Milton & US 180:</p> <ul style="list-style-type: none"> 12' <p>Rural US 180:</p> <ul style="list-style-type: none"> 11' 	<p>Urban Milton & US 180:</p> <ul style="list-style-type: none"> 11' - Regional Plan policy supports no RT lanes, except at major intersections <p>Suburban Milton & US 180:</p> <ul style="list-style-type: none"> 12' <p>Rural US 180:</p> <ul style="list-style-type: none"> 11' 	<p>**</p>
Median Width	<p>Urban:</p> <ul style="list-style-type: none"> Arterial minimum Median Width – 4' Arterial minimum Median Width for pedestrian refuge – 6' *Auxiliary lane Min. – 10' Auxiliary lane Max. – 16' <p>Rural:</p> <p>Not applicable on US 180 cross sections</p> <p>* Anything below 12' has to obtain an variance from the Assistant State Engineer over Roadway Engineering Group.</p>	<p>Urban:</p> <ul style="list-style-type: none"> Raised - 16' Through lane - 4' with a turn lane <p>Rural:</p> <p>Not applicable on US 180 cross sections</p>	<p>Urban Milton & US 180:</p> <ul style="list-style-type: none"> 4' <p>Suburban Milton & US 180:</p> <ul style="list-style-type: none"> 4' <p>Rural US 180:</p> <p>Not Applicable</p>	<p>Urban Milton & US 180:</p> <ul style="list-style-type: none"> 4' <p>Suburban Milton & US 180:</p> <ul style="list-style-type: none"> 4' <p>Rural US 180:</p> <p>Not Applicable</p>	

Roadway Feature	FHWA Standard	ADOT Standard	Flagstaff/FMPO/NAIPTA Standard	Flagstaff/FMPO/NAIPTA Preferred Standard	Notes
Median Width (With Plantings)			<u>Urban Milton & US 180:</u> <ul style="list-style-type: none"> 8' <u>Suburban Milton & US 180:</u> <ul style="list-style-type: none"> 8' <u>Rural US 180:</u> Not Applicable	<u>Urban Milton:</u> <ul style="list-style-type: none"> 12' <u>Urban US 180:</u> <ul style="list-style-type: none"> 11' <u>Suburban Milton & US 180:</u> <ul style="list-style-type: none"> 12' <u>Rural US 180:</u> Not Applicable	Same as left turn lane - would be wider when combined with a median separating the turn lane from oncoming traffic
Median Width (With Turn Lane)			<u>Urban Milton & US 180:</u> <ul style="list-style-type: none"> 15' <u>Suburban Milton & US 180:</u> <ul style="list-style-type: none"> 15' <u>Rural US 180:</u> Not Applicable	<u>Urban Milton & US 180:</u> <ul style="list-style-type: none"> 15' <u>Suburban Milton & US 180:</u> <ul style="list-style-type: none"> 16' <u>Rural US 180:</u> Not Applicable	This assumes 4-foot median with no plantings. Can be narrowed up to 1 foot.
Two Way Left Turn Lane	<ul style="list-style-type: none"> Raised Max – - *TWLT Min – 10' - TWLT Max – 12' * Anything below 12' has to obtain <u>an</u> variance from the Assistant State Engineer over Roadway Engineering Group.	<ul style="list-style-type: none"> Raised Max – - *TWLT Min – 10' - TWLT Max – 12' * Anything below 12' has to obtain <u>an</u> variance from the Assistant State Engineer over Roadway Engineering Group.	<ul style="list-style-type: none"> 11' 	<ul style="list-style-type: none"> 11' (12' for Suburban US 180) 	Urban contexts have narrower turn lanes to slow truck/bus traffic and because they are not preferred in this context for loading and unloading
Landscape Buffer/Parkway	Desired - 6' Minimum - 3' if a 5' sidewalk is provided	Desired = 5' Minimum = back of curb The location of the sidewalk should be coordinated with the local government and with the Roadside Development Section when the highway project involves landscaping.	<u>Urban Milton & US 180:</u> <ul style="list-style-type: none"> 5' <u>Suburban Milton & US 180:</u> <ul style="list-style-type: none"> 5' <u>Rural US 180:</u> Not applicable	<u>Urban Milton & US 180:</u> <ul style="list-style-type: none"> 7' <u>Suburban Milton & US 180:</u> <ul style="list-style-type: none"> 8' <u>Rural US 180:</u> Not applicable	Furnishing strips and tree grates are preferred for the urban context associated with Milton and US 180 because it is consistent with the existing urban design
Utility Setback			<u>Urban Milton & US 180:</u> <ul style="list-style-type: none"> 1' <u>Suburban Milton & US 180:</u> <ul style="list-style-type: none"> 2' <u>Rural US 180:</u> Not applicable	<u>Urban Milton & US 180:</u> <ul style="list-style-type: none"> 1' <u>Suburban Milton & US 180:</u> <ul style="list-style-type: none"> 2' <u>Rural US 180:</u> Not applicable	Used for poles, signage, utilities, etc. Used for sidewalk stabilization
Shoulder	<u>Rural Shoulder:</u> Desirable – 8' Minimum – 4'	<u>Rural Shoulder:</u> Desirable – 8' DHV > 200 vph Minimum – 6' DHV < 200 vph	<u>Rural US 180:</u> Not applicable within Flagstaff City Limits	<u>Rural US 180:</u> Not applicable within Flagstaff City Limits	

Roadway Feature	FHWA Standard	ADOT Standard	Flagstaff/FMPO/NAIPTA Standard	Flagstaff/FMPO/NAIPTA Preferred Standard	Notes
Bike Lane	<p>Urban: Desirable – 5’ <u>Minimum – 4’</u></p> <p>Rural Shoulder: Desirable – 8’ <u>Minimum – 4’</u></p>	<p>Urban: <u>See ADOT Bicycle Policy –</u> (1.f) incremental costs for construction and maintenance are funded by a local agency AND 2) the bicycle lane is included as a part of a bicycle facilities plan adopted by a local agency.)</p> <p>Desirable – 5’ <u>Minimum – 4’</u></p> <p>Rural Shoulder: Desirable – 8’ DHV > 200 vph <u>Minimum – 6’ DHV < 200 vph</u></p>	<p><i>Measurements do not include gutter pan</i></p> <p>Urban Milton & US 180: • 4.5’</p> <p>Suburban Milton & US 180: • 4.5’</p> <p>Rural US 180: • 4’</p>	<p><i>Measurements do not include gutter pan</i></p> <p>Urban Milton & US 180: • 6’ with Buffer</p> <p>Suburban Milton & US 180: • 6’ with Buffer</p> <p>Rural US 180: • 8’</p>	buffer is a double stripe with crosshatch 1.5 foot wide
Sidewalk	Desired – 8’ Minimum – 4’ with a 5’ passing section every 200’.	5’ (unless local standards require greater and locals agree to pay additional cost of design, construction and agree to maintain the sidewalks.)	<p>Urban Milton & US 180: • 10’</p> <p>Suburban Milton: • 10’</p> <p>Suburban US 180: • 6’ (one-side - if paired with FUTs on other side)</p> <p>Rural US 180: Not applicable on US 180 cross sections</p>	<p>Urban Milton & US 180: • 10’</p> <p>Suburban Milton: • 10’</p> <p>Suburban US 180: • 6’ (one-side - if paired with FUTs on other side)</p> <p>Rural US 180: Not applicable on US 180 cross sections</p>	A sidewalk is preferred over a multi-use path on Milton Road.
Multi-Use Path/ Offset (parkway)			<p>Urban Milton & US 180: Not applicable</p> <p>Suburban Milton: Not applicable</p> <p>Suburban US 180: • 20’</p> <p>Rural US 180: • 15’</p>	<p>Urban Milton & US 180: Not applicable</p> <p>Suburban Milton: Not applicable</p> <p>Suburban US 180: • 20’</p> <p>Rural US 180: • 15’</p>	Dimension includes the parkway/buffer
Pedestrian Island Refuge (Pedestrian Islands at a Right Turn must meet ADA std)	6’ (info from NACTO), when 6 ft cannot be attained, narrower raised median is preferred, refuge is ideally 40 ft in length	ADOT does not have a standard for this so minimum would be AASHTO	<p>Urban Milton & US 180: • 6’</p> <p>Suburban Milton & US 180: • 6’</p> <p>Rural US 180: • 6’</p>	<p>Urban Milton: • 11’</p> <p>Urban US 180: • 10’</p> <p>Suburban Milton & US 180: • 12’</p> <p>Rural US 180: • 11’</p>	For preferred, a pedestrian island refuge can be as wide as the center lane, if one is present.

NOVEMBER 2, 2018

Roadway Feature	FHWA Standard	ADOT Standard	Flagstaff/FMPO/NAIPTA Standard	Flagstaff/FMPO/NAIPTA Preferred Standard	Notes
Bus Bay/Pullouts		<p>Bus pullouts may be required under any one of the following conditions:</p> <ol style="list-style-type: none"> 1) Posted speed limit is 35 mph or higher; and 2) There are less than three through-travel lanes in the direction that the bus is traveling 3) There is an identified bicycle facility adjacent to the travel lane. <p>If a bus stop is to be located at an intersection where the traffic on the State highway is controlled by a traffic signal or stop sign, the bus stop must be located on the far side of the intersection. A bus stop sign, denoting the front of the location of a stopped bus, must be located 85 feet from the intersection's radius return</p> <p>ADOT construction detail C-05.50 has dimensions for a bus pullout.</p>	<p><u>Urban Milton & US 180:</u></p> <ul style="list-style-type: none"> • 12' <p><u>Suburban Milton & US 180:</u></p> <ul style="list-style-type: none"> • 12' <p><u>Rural US 180:</u></p> <p>Not applicable</p>	<p><u>Urban Milton & US 180:</u></p> <ul style="list-style-type: none"> • 12' (NAIPTA does not prefer in this context, very site specific) <p><u>Suburban Milton & US 180:</u></p> <ul style="list-style-type: none"> • 12' <p><u>Rural US 180:</u></p> <ul style="list-style-type: none"> • 12' 	<p>NAIPTA will not stop in ROW in a rural context, only stop will be Snowbowl lower parking lot.</p> <p>Bus Bays will not be used in BRT Alternatives.</p>
Side running shared bus bike lane (SBBL) (with right turns)			<p><u>Urban Milton & US 180:</u></p> <ul style="list-style-type: none"> • 12' <p><u>Suburban Milton & US 180:</u></p> <ul style="list-style-type: none"> • 12' <p><u>Rural US 180:</u></p> <ul style="list-style-type: none"> • 12' 	<p><u>Urban Milton & US 180:</u></p> <ul style="list-style-type: none"> • 16' <p><u>Suburban Milton & US 180:</u></p> <ul style="list-style-type: none"> • 16' <p><u>Rural US 180:</u></p> <ul style="list-style-type: none"> • 16' 	Based on NACTO standards
Side running bus lane (with right turns)			<p><u>Urban Milton & US 180:</u></p> <ul style="list-style-type: none"> • 12' <p><u>Suburban Milton & US 180:</u></p> <ul style="list-style-type: none"> • 12' <p><u>Rural US 180:</u></p> <ul style="list-style-type: none"> • 12' 	<p><u>Urban Milton & US 180:</u></p> <ul style="list-style-type: none"> • 12' <p><u>Suburban Milton & US 180:</u></p> <ul style="list-style-type: none"> • 12' <p><u>Rural US 180:</u></p> <ul style="list-style-type: none"> • 12' 	Based on NACTO standards
Bus Stop (Back of Curb)			<p><u>Urban Milton & US 180:</u></p> <ul style="list-style-type: none"> • 8' <p><u>Suburban Milton & US 180:</u></p> <ul style="list-style-type: none"> • 8' <p><u>Rural US 180:</u></p> <ul style="list-style-type: none"> • 8' 	<p><u>Urban Milton & US 180:</u></p> <ul style="list-style-type: none"> • 10' <p><u>Suburban Milton & US 180:</u></p> <ul style="list-style-type: none"> • 10' <p><u>Rural US 180:</u></p> <ul style="list-style-type: none"> • 8' 	This standard can vary when topography is in play due to ADA standards
Center Running transit - 2 lanes + buffer			<p><u>Urban & Suburban Milton:</u></p> <ul style="list-style-type: none"> • 25' (2, 11' lanes with 2, 1.5' buffers) <p><u>Urban, Suburban, & Rural US 180:</u></p> <p>Not Applicable</p>	<p><u>Urban & Suburban Milton:</u></p> <ul style="list-style-type: none"> • 28' (2, 12' lanes with 2, 2' buffers) <p><u>Urban, Suburban, & Rural US 180:</u></p> <p>Not Applicable</p>	See Assumptions for details

Roadway Feature	FHWA Standard	ADOT Standard	Flagstaff/FMPO/NAIPTA Standard	Flagstaff/FMPO/NAIPTA Preferred Standard	Notes
Center Running Transit - Intersection Transit Station			Urban & Suburban Milton: <ul style="list-style-type: none"> 33' (2, 11' lanes with 2, 1.5' buffers and an 8' Platform) Urban, Suburban, & Rural US 180: Not Applicable	Urban & Suburban Milton: <ul style="list-style-type: none"> 34' (2, 11' lanes with 2, 2' buffers and an 8' Platform) Urban, Suburban, & Rural US 180: Not Applicable	See Assumptions for details Option A: Scissors Platforms Options B: Offset Platforms
Center Running Transit - Mid-Block Transit Station			Urban & Suburban Milton: <ul style="list-style-type: none"> 33' (2, 11' lanes with 2, 1.5' buffers and an 8' Platform) Urban, Suburban, & Rural US 180: Not Applicable	Urban & Suburban Milton: <ul style="list-style-type: none"> 34' (2, 11' lanes with 2, 2' buffers and an 8' Platform) Urban, Suburban, & Rural US 180: Not Applicable	See Assumptions for details Option A: Scissors Platforms Options B: Offset Platforms
Clear Recovery Zone	Urban: 4' - 6' Rural: 14' - 18'	14' – 18'. Can be adjusted for right of way constraints in urban areas.			

The Controlling Design Criteria would be used as a reference for each Alternative to ensure:

- Minimum ADOT/FHWA standards are being met
- If any variances or design exceptions would require FHWA approval
- Once min standards are met, which FMPO/City/NAIPTA standard is preferred
- Understanding that if max ADOT standards are exceeded, it would be the local agency's responsibility to fund such enhancements
- Ensure that we do not recommend enhancements that exceed FMPO/City/NAIPTA policy/standards
- Prior to Tier 2 Analysis, we could review each alternative to ensure and reach consensus on a spec that meets the Controlling Design Criteria

FMPO/City/NAIPTA Assumptions:

- Widths include the curb to its face
- Assumptions about widths of BRT center running features
- Center lane breakdown
- Side running lane
- Buffers could be added at for safety/landscape + beautification – approximate 2' each side (4' total)
- Some of the Preferred Minimum and Maximum Standards do not meet the City of Flagstaff's current engineering standards. The City of Flagstaff is in the process of updating its engineering standards and requested that the Preferred Minimum/Maximum standards, as shown in the Controlling Design Criteria be utilized.