

Engineering Standards Revisions

Summary of Commissions/Committees and Public Comments

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12/06/2023 Transportation Commission

Commissioner Questions/Comments:

- Councilmember McCarthy – Sometimes when driving down Butler it is difficult to see the stop lights because the sun is right in the view. What can we do about this? Maybe another signal lower down, but maybe peds would block it. Has staff every thought about a solution to this? Santana – Retroreflective backplates on the signal heads. ADOT just recently did this all along Milton. Bauman – We have updated the ped rapid flashing beacon signal heads to include these. Do show up in Highway Safety Manual as being effective. We haven't called them out on our traffic signals at this point, but we can. One potential issue is we are very windy here and our signal heads require louvers, we cannot do the backplates and the louvers. Maybe more research on our part to see which one we can do, or if there is an option for both. There are a couple signal heads mounted at 8' high.
- Commissioner Kuhn – How often are the crosswalk marking redone? Bauman – Not sure PW schedule, but they are struggling to fill positions and that is why signing and markings are behind. The arterials twice a year for longitudinal lines, then crosswalks and stop bars half the City one year and the other half the next year. PW just cannot hire people, open positions for years. Exploring possible contractor options to catch up. Limited to shorter season. Kuhn – maybe prioritize certain locations? Bauman – Good idea, we can discuss this with them.
- Commissioner Koenig – Martin, assume went through the ATMP for bike & ped stuff? Martin – Yes, went through it and divided into three categories, easier, medium, more difficult.
- Commissioner Koenig – Can we add queuing space at intersections for bikes? If ped pushes button, where do they put themselves in the pathway, maybe increase pathway size? Martin – Can take a look at that when reviewing for curb ramps at intersections. PROWAG becoming official guideline and how it will affect curb ramps and include where to stage ped/bikes that are waiting. ADOT Milton CMP says benefit for ped/bike staging areas. PROWAG also may require this.
- Commissioner Koenig – Bike signals? Martin – Some upcoming projects may include bike specific signals and leading pedestrian time. Maybe this can be in future code updates, can investigate this.
- Commissioner Cruickshank – Bike exit and entrance ramps, is there a specific sign for this ramp? Santana – Do not believe there is a sign. Bauman – there is not a specific sign, but the pavement markings are the signal for this, the skip striping. Cruickshank – Is this enough? Bauman – There is no merging or conflict, because the line is just an extension of the curb.
- Commissioner Cruickshank – Ped Rapid Flashing Beacon and the crosswalk is offset. Santana – Safer for the peds, because makes them stop to think. Bauman – This is just a schematic, this depicts a narrow median, the normal is like 15ft, the wider will make it easier to stay on bike.
- Commissioner Cruickshank – Is there a standard for the push button location in a median? Butler & Humphreys, button is way too close to the roadway, it needs to be set back from the roadway. Bauman – This was the first one we ever installed and used flashers installed in the medians. It is also bad because they get hit often. The new typical layout requires mast arms, the median mount is just a button and can be places not so close. This crossing will get upgraded soon-ish.
- Commissioner Stone – For these types of crossings, is it standard for each side to be independent buttons? Pressing the button twice, maybe time it. Santana – Have designed these to be pushed twice, do not want to zoom across, want the peds to pause and check traffic and push button. Also, added a little LED button so peds know it is on. Bauman – False calls for

infrared detected crossing. When have offset and Z crossing, tend to run as two crossings, if narrow median, just single crossing. Responsiveness is key.

- Councilmember McCarthy – Maybe put a sign out for peds saying you must push two buttons, peds do not know to push it twice.
- Commissioner Koenig – Impact analysis and modeling. Bauman – Will be a different round.

Public Comment:

- Dapper Dre – Not sure if this is all crossings, but a heavy ped area is out in front of Crystal Magic, not good for people that are not able bodied. If in a wheelchair and go off the ramp, it aims you straight to the middle of the intersection. Maybe this can be a standard that can be added. Maybe get community/citizens to help with striping around town since PW is so short staffed. Prefer people to refer to crashes as ‘crashes’, not ‘accidents’.

12/07/2024 Bicycle Advisory Committee

Ince gave a presentation to summarize the revisions to the engineering standards that are related to the ATMP.

- Committee Member – Tunnels discussed, being able to see the end, and feeling safer? Martin – can consider this in the next round. Committee Member – Lighting requirements in tunnels? Martin – not in this round but will add to the next round.
- Committee Member – Question regarding rapid flashing beacon, the z-crossings are not great for bikes, but they are good for peds. Martin – the changes are minor structural details and adding more signage. Committee Member – Get on bike, start peddling, slam on breaks, do not love as crossing method, experiences on Butler having to push both buttons, do not like. Would prefer to go on the rdwy than use this signal. Committee Member – would imagine people in a wheelchair would struggle with the z-crossing also.
- Committee Member – making that sharp turn is difficult and do not like having to push the buttons, maybe have the drivers get out of vehicles to push the button.
- Committee Member – leading pedestrian intervals, would something like that be included in these standards? Martin – Yes, this is a spot for something like that. Committee Member – push buttons for cyclists? Martin – yes, this is the spot for something like that. We have discussed things like this, but a next round of the updates.
- Committee Member – difficult to tell if the light is flashing. Martin – Jeff point is PROWAG has detailed guidelines for audible pedestrian signals.
- Committee Member – Does not like the yield (RFB’s), likes the PHB’s better because feel safer. Martin – these are in MUTCD, they do human factor studies before they are installed. Putting anything new out needs to be learned. PHB used a lot in Tucson. If not intuitive, how long does it take to learn? Martin – follow up question is if we do not use these, what would we use? Committee Member – a regular signalized intersection. Martin – there is a half-signalized intersection on University. Estella – this is more normal and people know how to use it.
- Committee Member – Trail surfaces on FUTS, anything that has commuter traffic should be paved, so can be plowed and swept.

12/27/2024 Commission on Inclusion & Adaptive Living

Ince gave a presentation to summarize the revisions to the engineering standards that are related to the ATMP.

- Commissioner Rachael - encouraging people to put tires up on sidewalks. If abut sidewalk to street, encourage people to block sidewalk. Martin - require parkway for our cross section, maybe moving forward, if roll curb, will require parkway. Cul-de-sacs, little on street parking because driveways are so frequent.
- Commissioner Rachael - ADA requirements ramp 8.33%, 8% is perfect.
- Commissioner Russel – FUTS trail and railings? Any discussion on railings? Martin – Will look into this and see if other documents provide guidance, this may fall into the next round of revisions, because more discussion.
- Commissioner Rachael – Any recommendations/requirements for hearing disabled people? Martin - PROWAG has much info on Accessible Pedestrian Signals (APS). There hasn't been guidance on how they work before.

01/18/2024 Business Advocacy Division Meeting

David Millis gave a presentation which included a summary of the proposed Engineering Standards revisions -

- Joe - supportive of admin code changes, want to be more engaged on political sensitive items. Heads up on when that may start. Sustainability would come before the public, what to be ahead of the game on those changes.
- Chair - will go through this and get back with any questions. Echo what first guys said, interested in the next round changes. Millis - sign up for emails and we will keep updated to all rounds.
- Guillermo - appreciate looking and cleaning. Is there any chance we would add other things to this? Millis - if there are other things interested in adding to this round, give us the comments now. Depending on the extents of the change, may be able to get it this round. Guillermo - cross sections - looking at JWP & Butler things are changing. Millis - not in this round. Jeff - Butler, following council priority. Started to dive into cross sections and it got complicating fast. One of the biggest priorities was schedule. We will continue the collaboration now, but not in code now.

01/31/2024 Public Open House

City Staff: David Millis, Robert Thompson, Paul Mood, Martin Ince, Reid Miller, Steph Santana, Jeremy DeGeyter

Public: Caleb Landing (Peak Engineering), Carlton Johnson (Norris Design), Anne Dunno (Mtn Line), Tyler Denham, Dapper Dre (citizen), Adam Shimoni (FBO), Zach Markewicz (Daily Sun/Lumberjack), Mandia Gonzales (MetroPlan), Rick Schuller (Ardurra-Woodson Engineering), John Carr (Coconino County), Julie Leid (Peak Engineering), Tom Smith (Peak Engineering)

- Tyler - Safety of vertical curbs versus roll curbs for bicycles.
- Julie - Addition of professionally prepared in TCP, are they sealed. Millis - does not need to be sealed, but Trafficade, try to clarify what is on application.
- Julie - roll curbs, driveways #7 understands it now, but struggled when read it. Got hung up on access point, is it a concrete apron, Millis - maybe 'vehicular access'. Julie - work on the wording, it is a concrete dwy or apron.
- Julie - Paving all access per City - fire lanes compacted AB, not much room. Millis - language was intended to be crafted, access to code required parking/drives/etc. So if other portions of a lot,

ex pulling trailer over to other side of the lot. Julie - the fire code piece was hung up. Idea do not want tracking of material in to the rdwy. Secondary access in that case. Millis - maybe exclusion for emergency type use is not intended to have that requirement. Detail references does include option for alternative sections. Stick with typical standard for anything that is secondary access and not routinely used except for

- Julie - thank you for FUTS fencing stuff, it is helpful.
- 13-10-011 - Typo 'Slop'
- Anne Dunno - 10-10-019 - transit guidelines document, how to incorporate transit in environment. Does it just make sense to include guidelines in here. Maybe good location to discuss Mtn Line guidelines. IDS - meetings intended for that.
- Anne - Process comment, unclear how permitting process for traffic memo, Traffic Statement, TIA. Timing on when it occurs, has own separate scoping and review process. Whole separate scoping. Millis - would like to see it as requirement? Anne - Make comment in code to refer to the TIA guidelines. Steph - we will tackle that next round.
- Julie - pg. 137 - access routes for trash, saying that any route that a trash truck may have to follow has to be 20' paved clear the whole way. Ex - have angled one way stalls, that one way drive needs to be 20', so could not have a splitter island in a dwy opening within that 20'. Millis - coming from PW & Development Engineering. Ex - saw example at a school. What we did was this is a prescriptive, you meet it you meet it. If constraints, can provide additional turning movements, and show that it can fit. Do not want to burden with more asphalt. Julie - maybe a note 12 - turning movement or engineering analysis, demonstrate it works. Millis - open to looking that and make that change.
- Tyler - LOS, design speed, bike/ped. Martin & Paul - water valves, manholes, push buttons (minor stuff). Next round will be more Council discussions. Mentioned the different boards and commissions. Millis - TCP need to include more for ped & bike closures, include accessible routes along arterials & collectors.
- Caleb - 13-06-008 - TCP's - TCPs need to accommodate peds/bikes/ADA access.
- Caleb - Temp ped routes following ADA, maybe consider PROWAG. Martin - formally adopted, but not adopted as law, went from being a best practice to what need to do to meet ADA criteria. Enforceable law, not yet. Caleb - will PROWAG be the new ADA requirement. Martin - yes, XX.
- Shimoni - when will phase 2 start? Millis - what policy goals will come down from Council. Steph - cross-sections coming next, bike lanes off the rdwy, get started right away. Adam - more curious when LOS conversations come. Steph - that one is more complicating and may even come later than the next round? Need to discuss with Jeff & Paul Mood.

02/01/2024 Virtual Public Open House

City Staff: David Millis, Robert Thompson, Martin Ince, Reid Miller, Steph Santana, Dee Williams

Public: Anthony Quintile (Flagstaff Biking Organization), Carl Ramsey (Architectural & Environmental Associates), Jason Carlaftes (WSP Engineering), Payton Cooke (WSP Engineering), Taylor Davis (WSP Engineering), Guillermo Cortes (Ardurra-SWI), John Sutherland (Capstone Homes), Kayla Fleishman (Ardurra-SWI), Michelle Medina (WSP Engineering), Stephen Irwin (Ardurra-SWI), Steve Orosz (Paradigm Engineering)

- Anthony - FBO - when is timeframe for seeing bike changes in code. Martin - short answer is TBD, have identified number of places where code will require further discussion with community & to implement ATMP. Planning & Engineering & Sustainability & Transportation

going through more comprehensive analysis of code. Do not have definitive timeframe, but we have been talking about the changes and the process to get it done. Anthony - okay, always harder than it needs to be, ATMP went through lots of public input so the challenge is putting it into legal language. Millis - ??

- Guillermo - Ask to dive into more about intersections and grades, maybe look at longitudinal grades, besides intersections, along a. Millis - GC - would like us to look into changing the grades on longitudinal arterials & collectors.
- Steve Orosz - when do get up to 4% at roundabouts, 4% difficult with ice at roundabouts. Steph - Jeff did the research on this and quoted AASHTO, but would need to refer to him on what he found. Steve - just concerned with going up to 4%.
- Millis - roll curb item, trying to respond to developer concerns and City struggle to get dwy entrances in in these tighter developments.
- Kayla - saw in the markup road plates during winter, was intention plows? Millis - correct, plows hitting the plates and causing damage to the plows, do have stipulation to allow if approved, intention is to improve safety for the plows in public ROW, that is open to traffic.
- John Sutherland - Thank you for changes, removal of the ramp/driveway pertains more to where have more vertical curb, have some subdivisions that have 45' lots and others to have different price point homes, wondering if combo ramp/dwy detail been removed, narrower lot subdivisions. Millis - Maybe combo dwy entrance w/ tactile dome, will not get into this round for sure, in the meantime (getting standards updated) and if came in with something that needs this we can discuss. Do not see immediate concern as long as dwy approach is single family with no commercial. Martin - XX
- Stephen Irwin - "Are the cross section updates you mentioned the same cross sections we have been applying to recent projects where we remove the bike lanes and pour wider 11' sidewalks?" Martin - talking future updates to cross sections? Yes, then yes, that would be part of it. Guillermo - any areas where there would be both, where there is a bike route & 11' path? Martin - 2 questions, first, have identified existing rds that need to be widened in future and need this treatment, have not looked to see if benefit of both bike lanes & path. Second, limited number of streets, either improved or new in Regional Plan, retrofit Butler Ave 9.6M grant, that is not all over town. Where we can, we will provide buffer, cannot do it but in a few select corridors. Can share the map of the bike network across town.
- Kayla - min slope n value removed. Millis - ADEQ - Concern from citizen brought to our attention. ADEQ allows 0.01, but requires a separate plan? An ongoing maintenance program by water services to accomplish that. So by just having table in our Standard that conflicts w/ ADEQ, was our reason for that. Kayla - are there areas where we have those flatter runs and will have to go into maintenance agreement w/ ADEQ? Millis - did not want to be in business of adding more in there, but would have to check w/ water services to check how they are currently doing that.
- Millis - aggregate trail - maybe should not be referring to that standard. Robert - did not look at that. Millis - may need to continue that on...
- John - Bigger questions on FUTS, but also some minor ones. Plan to put on the website. Streetlights, fixtures and what to purchase. Plans say install whatever watts, but the light color, place where we can be more specific. Steph - get a list of brands & the exact model. We can work on creating something like that. Millis - conversation w/ Jeff on this. Wouldn't even need to update standards, the section talks about this. When we see luminaires that do meet standards, we will create a list, at that time w/ conversation, have not had enough submittals to create that. That is only item in standards, where City can do a review of submittal, we can still assist and that is still in code. May not need code update. Steph brain - APPROVED PRODUCT

LIST? Millis - Cannot have a list of pre-approved because so many different rdwy types and luminaires.

- John - local streets not required
- John - Mast arms centered over middle of lane. Would like some clarification on this. Steph - will talk with streetlight expert.
- John - Rural local street w/ no curb & gutter. Reid/Martin/Steph - We have not heard of them being removed. Do want this to remain in code.

02/01/2024 Bicycle Advisory Committee & Pedestrian Advisory Committee

Ince gave a presentation on the proposed revision to roll curbs and made a recommendation to remove this from this round of revisions. This will give more time to build in more safety measures or guardrails.

- Committee Member Questions/Comments:
 - Chair - Redid her street and vertical curb hold more water, then flooding happened. Flooding more common because of burning forest. Vertical curbs keep more water in the streets, glad for vertical curbs keeping her house safe.
 - Committee Member Sam - Accessibility concerns group, taken photos of sidewalks around town, people parking in parkway and on sidewalks, that happens frequently, implantation or more rolled curbs decrease access to sidewalks. Martin - Commission on Inclusion & Adaptive Living - heard this presentation and concerned for accessibility. More difficult going over rolled curb, if the pathway is blocked by a parked car.
 - Committee Member Estella - When is the second round being considered? Martin - TBD. Estella - the code analysis update is happening now, is this being considered? Martin - not sure.
 - Councilmember McCarthy - Understands more difficult to go over rolled curbs. On the other hand, looking for developers to build more affordable housing. Would save a significant amount of money to go with roll curbs. Martin – Issue with cutting driveways is more applicable to single family housing. Even for townhouses, goes from vertical to dwy to vertical to dwy, it constantly transitions because lots are so narrow.
 - Committee Member - anything that possibly takes up bicycle/ped space should not be in engineering standards, another committee member agrees.
 - Committee Member – To other point, park further apart, one safety measure have as a bicyclist, people can readily see you, people routinely try to pass bikes, if there was a broader space. Most bikeways are two-way small residential streets.
 - Committee Member Kim - in favor of looking at this more, seems there are more cons than pros, but want to consider to be equitable for everyone. But want to consider more vulnerable users.
 - Chair - FUTS shoulders question, what is a 2-ft shoulder on FUTS. Martin – 2-ft is a recovery space, not concrete, but a recovery zone, we have 2-ft shoulders as out standards now.
 - Committee Member Valerie - Vertical curbs at intersections, this should be absolutely nonnegotiable. Staff - This is already included in our standards.

02/09/2024 OpenGov Online Survey

Summary Of Annotations

As of February 13, 2024, 12:12 PM, this forum had:		Topic Start	Topic End
Attendees:	43	January 9, 2024, 9:19 PM	February 10, 2024, 9:00 PM
Annotations:	10		
Minutes of Public Comment:	30		

Individual Annotations

13-04-001: Easements

Name not available

January 24, 2024, 9:10 AM

I want no changes at all. Flagstaff is anti business and has too many restrictions as is.

13-06-007: General Notes

Name not available

February 1, 2024, 1:08 PM

General comments:

Specify the median bullnose construction.

Add language about timing of subdivision sidewalk construction with home construction.

Can an automated light system be added to crosswalks, that require lights, to save the pedestrians that don't push the button from being run over?

13-06-008: Construction Traffic Control Plans

Stephanie Santana

inside City Limits

January 12, 2024, 1:28 PM

Mtn Line - Updated a note to include that the permittee needs to reach out to the transit agency a minimum of 3-days in advance if a transit stop will need to be relocated. It would be helpful if the permittee reached out to Mountain Line if one of our routes traverses on the roads impacted by the construction. We often do not hear about a road or lane closure till it is happening and we have to change our routing on the fly.

13-09-002: Sewer System Design

Name not available

February 1, 2024, 12:40 PM

Would like to see the .010 pvc slope remain. A quarterly maintenance plan can be simple, like starting with an occasional observation of the sewer line for issues.

13-14: Bicycle Facilities

Name not available

February 1, 2024, 12:50 PM

FUTS trails are unnecessarily expensive. The expansion joint details, dowles, and saw cutting are not necessary. Aggregate surface course material should be readily available in Flagstaff like abc or cinders. Landscaping, etc. needs to be within the shoulders of the FUTS where the shoulders are in the parkway of a street. The 20' concrete section adjacent to a sidewalk is unnecessary. And a slope 5' from the edge of the FUTS should not necessitate a railing, it should be at the edge of the shoulder.

13-16-002: Signal Design Elements

Name not available

February 1, 2024, 12:53 PM

Clarify "mast arms centered over each lane" in a multi lane road.

13-21-002: Addendum to MAG

Name not available

February 1, 2024, 12:57 PM

Clarify the manhole orientation to traffic since the steps are being removed. And are the aluminum MH lids not longer required?

10-10-019: Bus Pullout

Stephanie Santana

inside City Limits
January 12, 2024, 1:30 PM

Mtn Line -

Added a note stating that when a shelter is adjacent to a FUTS, the FUTS shall be aligned behind the shelter. I'd change language from shelter to "bus stop" to be more general since we don't always have a shelter along a FUTS.

On the drawing of the FUTS with the bus pull out, it could be useful to have the dimensions of our bus pad on the drawing. Can be found in the Transit Guidelines, page 74.

10-10-035: Bicycle Exit / Entrance Ramp

Name not available

February 1, 2024, 1:00 PM

The FUTS ramp opening should match the FUTS width; 10'. Text in 13-14 also states 10' ramp.

10-10-039: Dwy-Ped Ramp Combo (T-Intersections)

Name not available

February 1, 2024, 1:02 PM

Would like to keep the combination ramp/driveway at least in a modified form.

Comment Cards

City of Flagstaff Engineering Standards Revisions

Name: Ann Durno, City Dev. Mgr.
 Company/Organization: Mountain Line

Standard Division Number	Comments
	Consider adding reference to Mountain Line Transit Guidelines in the EGR Standards. Da
	modify notation of traffic impacts to 7 days.