

# Lone Tree Overpass

## Design & Aesthetic Considerations

### **Incorporation of Community Ideals & Concepts**

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# Lone Tree Overpass Design Philosophy

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Bridges can simply be a functional structure that span a gap and connects point A with B. But because of structural efficiencies they can often be viewed as beautiful. Each bridge serves a specific overall purpose in its required spans and engineering requirements. But a bridge can be more than just utilitarian.

In today's world there is a growing recognition that bridges are identifiable symbols of a community's identity. They have a fundamental aesthetic and a unique quality and even an emotional connection for residents that are identified with their city. Bridges are engineered but also have an architectural essence.

After World War II bridge design became more functional utilizing from the book repetitions. Forgotten were some of the important lessons learned in FDSs (Works Progress Administration) WPA were art was an integral component of all designs both in the macro overall design and decorative aspect. The WPA projects proved that purely functional designs were in fact not optimal designs. WPA projects were inclusive of art and architectural design in roads, dams, tunnels, and bridges. Quality artistically designed projects have lasted the test of time as thoughtful public works projects. With the WPA philosophy in mind there is a unique opportunity for the Lone Tree Overpass as a local project. Local decision making can differ from Federal projects that can be more entrenched in bureaucratic thought processes. Local design decisions can consider conceptual aesthetics at the earliest aspects of the project.

The required route of the Lone Tree Over Pass presents itself as a curvilinear form in plan view and perspective. The world is made up of curves and organic forms that have proven to be efficient in both nature and efficient engineering. How the overpass will be viewed and perceived visually from adjacent roads, trails and sidewalks and neighborhoods is just as important as a box-beam vs. an I beam (which could also impact aesthetics).

Efficient/aesthetic design is by its nature beautiful, energy-efficient, and ecologically sustainable. Efficient and affordable transportation is now developed

with pedestrian and cycling integrated with vehicular design with a consideration for all citizen needs. Infrastructure development extends beyond just the bridge and should provide a dynamic result with human considerations. A bridge can be integrated into its environment as a community asset and provide multimodal transportation at a human scale; the adopted Southside Plan has that in mind.

Design sensibilities and community needs should not be isolated from the engineering design of the bridge overpass itself. As an example, how will the south terminus of the overpass be engineered? Will it use large Geofam (structural Expanded Poly-styrene foam) Blocks for fill that allow for a stepped interesting architectural form at its edges? Or will it be a landscaped structural fill at an angle of repose? It could be a vertical poured reinforced concrete wall or a little of all of these combined. The point is that structural design decisions impact aesthetics as well as opportunities for the Southside community and the multimodal public that will use the bridge. As another example: Is it necessary to develop the full width Elden loop road serving nothing? Or would this route be better served with a FUTS route and park space and parking for a park? As a final example: Where the fill of the roadway ends, and the bridge span begins impacts the opportunity for a protected roof to be used as a public space such as for basketball. The point of the aforementioned is that early bridge design decisions has an impact on what public opportunities are possible.

The car is no longer the priority for urban planning. Loosening up on rigid thinking and considering biological forms and curvy geometry can triumph over inflexible ideals and result in beautiful ecological design that is efficient in the use of materials and is sustainable with consideration of all users within a neighborhood context.

## Lone Tree Overpass *design considerations*

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### On road design considerations

- Overpass bridge design – overall considerations: *The routing of the bridge overpass requires a significant curvilinear form starting from the southside neighborhood, over the tracks and to the crest of the hill on Route 66. The curved form presents the opportunity for a landmark bridge design much different than the other bridges to the east that are straight spans. The visual of this curved form opens design alternatives that can enhance and further identify the Flagstaff community through the overpasses curved design and its enhancements. This is not to say that it should be over decorative, but per the architectural saying that “less is more”, where simple elegant design is more effective.*
- Road design, sight-line considerations and opportunities in design: *The driver’s experience on the curved form of the overpass’s roadbed needs consideration in regard to sight-lines for safety as well as providing for a “sense of place”. In providing for a sense of place the overpass becomes less about being a speed way and more about destination place and a point of arrival to the southside or Route 66.*
- Signalization at 66 and southside with stacking slowdown: *As with many intersections in Flagstaff a considerable segment of the roadway is required for stacking of cars when at a signal. Some consideration should be given to slowing of traffic prior to the primary signal. The down-hill route into the southside residential neighborhood is of particular concern in regard to slowing speed as well as with snow and ice conditions. Design can take the form of traffic signals (flashing, “your speed”, etc.) as well as design features such as an archway or other design elements.*
- “Traffic Calming” and pedestrian safety considerations: *Special considerations shall be given to calming traffic on the overpass bridge with its integration and the likely high utilization by pedestrians and bicyclists. The loading and unloading of pedestrians and bicyclist onto the FUTS facilities requires separation as well as slower traffic to*
- Entry features: monuments, sculptural art, archway, identity etc. into Southside and onto Route 66: *There is an opportunity to establish something sculptural and monumental at both entry (exit) points of the overpass. Features that artistic that identify aspects of Flagstaff. It is presumed that there are 4 location with 2 at each end. The identity features need not be identical but can be unique to each side and end. The forth street bridge has monuments that are modeled after pueblos with mountain/desert forms applied to the railing/fence. Though forth street bridge has artistic features Flagstaff should strive for more with the unique possibilities possible with the Lone Tree Overpass.*
- FUTS west side of overpass design considerations: *It would seem that the FUTS route developed in conjunction with the overpass should be not only designed to FUTS requirements but expanded to provide a safe, enjoyable, buffed path for both pedestrians and bicyclists. Step aside areas can be developed that could possibly include landscaping, benches, art and interpretation. A significantly tall fence is required to protect and separate pedestrians from the tracks. The fence can either be a detractor or a design asset.*

- Pedestrian, east sidewalk design considerations: *In light of the extra design amenities on the west FUTS route it would seem prudent to not provide a sidewalk on the east and concentrate travel on the west FUTS. Safe pedestrian and bike amenities are to be incorporated at each end.*
- Street Furnishings (Lighting, bollards, railings, plantings, etc.): *The so-called street furnishings; Lighting, bollards, railings, plantings, etc. that can be included to enhance the overpass should be carefully considered for aesthetics, longevity and thematic considerations. The street furnishings shall be compatible with the entry features and tie the entire design together. Lighting shall be “dark sky” and presents a real opportunity of identity that is a noticeable difference from daytime to nighttime. Bollards may be standard or unique as possible art or interpretive elements. The placement of bollards is primary to separate ped/bike routes and protect features such as light poles. There should be several opportunities for the placement of live plantings to complete the enhancement of the overpass. The likely placement for plants will be at both entry/exit points. There is also the possibility of planters and focused landscaped areas along the FUTS route for resting and viewing opportunities.*
- FUTS and Pedestrian sidewalk train track railing design: *The railing/fence design that protects the track shall be more than simply meeting the required specification of height and anti-climb requirements. The railing/fence can become a major design feature that incorporates safety, security, interpretive art and overall aesthetics. The construction can combine vertical, horizontal and fencing elements into an identifiable rhythmic architectural pattern.*
- Historic interpretive elements that include but are not limited to plaques, design features, overall overpass visual design: *Interpretation of Flagstaffs history and cultural heritage shall be woven into all aspects of the design of the bridge structure itself and all other features and improvements. The overpass shall be readily identifiable as celebrating flagstaff. The heritage aspects will likely focus upon Route 66 on the north end and the ethnic and industrial aspects of the southside neighborhood. Route 66 heritage is based upon the automobiles of 30s – 60s but generally recognized in the architecture of the 50s and 60s and Flagstaff’s roadside motels and restaurants and services. The Southside’s heritage is closely related to ethnic groups that inhabited of the area and built their homes, raised their families and practiced their faith. Various ethnic groups organized identifiable neighborhoods that were focused around the social centers of each which were the churches.*

#### **Under road design considerations**

- Structural System alternatives of underside of road deck bridge with consideration of appearance: *Whatever the chosen structural system is chosen for the overpass this will override any aesthetic considerations. It is assumed though that there will be several alt*
- Structure and appearance of pedestrian and FUTS at underside and side walls.
- Structure and appearance of support columns and column capitals and base.
- Structure and appearance of retaining wall/grade buildup façade.
- Usable Space under bridge for program alternatives (sports, shelter, etc.)

#### Road Retaining Walls, usable space and purpose as structure

- West side
- East side

#### Public Park in consideration of aforementioned structural alternatives

- West side

- Under bridge & bridge structure
- East side
- Urban Park – hardscape/green %

#### Public Art

- Monumental at entry points
- 66 side vs. Southside
- Large and playful

## **Comprehensive & Neighborhood Planning's response to questions regarding the Lone Tree Overpass Project.**

Prepared by Mark Reavis, HPO – AICP, NCARB

#### **Question Goal:**

**Confirm that design strategies, requirements, and conditions have not changed substantially with respect to the preferred alternative 3 in the Lone Tree Overpass Study (LTOS). As a reminder from the previous email update, we are also including the section of Lone Tree from Butler to Sawmill in this review.**

#### **Questions:**

**#1 Are there operational issues or concerns with the LTOS preferred alternative 3, or is this proposed improvement generally consistent with your needs and expectations?**

There are some concerns and operational issues with the Lone Tree Overpass Study in fully understanding preferred alternative #3 in regard to how the major impediments will impact the LTO road and LTO bridge design. These would be the status and location of the BNSF rail road spur and its continued use, BNSF's plans for new construction, how much land is and is not acquired and to what extent LTO will be constructed on fill and what will be the bridge's structural construction; these being the major design parameter questions. All of these design decisions will have a significant impact upon the ability to develop public spaces in conjunction with LTO's development. The development of an urban style park in association with the LTO was a top priority of the Southside Planning document which is currently under its final compilation and public review.

It would be helpful to have a better understanding of BNSF's commitment to alternative #3, how much land is required for the LTO and how much of the parcel will remain for the public's benefit as usable space. When land is being acquired will the negotiation include considerations of a park development for additional public space? Will the design of the LTO be modified to accommodate public space purposes?

**#2 What would you request for revisions/adjustments on the preferred alternative in regard to your programs and operations?**

Within the design the Elden Street extension is proposed, what is the purpose of the Elden Street extension? A full width road seems costly, takes up most of the acquired property and leaves very little developable space for business construction. If the same amount of land could be acquired the area could accommodate a FUTS route, a maintenance road, and developed park area.

Two urban park concepts were developed and are a component of the Southside Plan. One concept was to place significant portions of the park under the shelter of the LTO bridge areas with examples shown from other urban areas. A second concept was developed with a better understanding of more roadway fill with a shorter bridge span. Both concepts provide for a unique opportunity in developing an urban park that will be able to accommodate community input from the Southside Plan. With an understanding of preferred alternative #3 the second concept of developing a park adjacent, not under the LTO fits alternative #3. Multiple concept sketches have been drawn to communicate the potential of utilizing the embankment fill and adjacent acquired land for the development of an Urban Park. The sketches show a landscaped embankment that connects with a more developed hardscape on the adjacent flat parcel. The configuration and design of the west vs. east reflects development opportunities of each.

*NOTE: The write up of the Urban Park concept and sketches are available and shall be referenced as additional input response to these questions as a separate document.*

Comprehensive and Neighborhood Planning is also proposing a cost saving solution that works in conjunction with enhancements to bike/ped and amenities improvements in providing additional public spaces to the LTO. The general concept is to eliminate the sidewalk on the east while adding several feet to the FUTS plus enhanced public space improvements. Two concept drawings show an LTO width reduction of 7 feet over the entire length of the LTO. 5 feet is then added to the west to widen the FUTS by 2 feet and 3 feet for benches, planters, lighting, etc. The proposed width of 117 feet is reduced to 110 feet. The western edge of the LTO lines up with the existing FUTS to the south on Lone Tree. The concept has various issues to resolve but seems to be a positive opportunity to develop a unique and enjoyable public space that is more than a roadway. *We have discussed this design adjustment with Martin Ince in regards to FUTS development.*

**#3 Please identify any projects have been completed since the 2010 Study, or if any are planned that would change conditions.**

The 2020 Southside Community Plan as previously noted is directly applicable to the LTO project. The plan has included concepts and considerable public comments regarding the development of an active use public space best described as an urban park.

Comprehensive and Neighborhood Planning requests that the aforementioned comments and the separate supplemental information and sketches be provided to the selected design-build

consultant. A summary of the input is provided here, but the entire document shall be referenced. It has been noted that City programs and community Transportation partners are to be asked to participate in the chartering of this project; there is an expectation that all will be involved in design development and review on a continuing basis. With approximately half of the Overpass project located within the Southside planning area the developed Southside Plan shall be directly referenced when seeking a qualified team with a Request for Statement of Qualifications in soliciting a Design-Build team to develop the construction documents and construct the improvements.

The LTO bridge and road project is going to be a asset or a detriment to a new and emerging area. As such, it has the potential to promote redevelopment and tax revenue or impede the quality and redevelopment opportunities of nearby properties. These requests are not just because it is nice and pretty but also because this is a central piece of land and thus a potential economic opportunity for both private and public entities. The economic recovery of the community was a major concern of Council at the work session on Tuesday. So there is a need to balance project costs with the economic viability of the surrounding property that should not be lost.

We do not believe that there are resource studies for the historic properties impacted by the bridge development. Letter reports should be prepared sooner than later so that the mitigation of demolishing these buildings can be considered in the design. Comprehensive and Neighborhood Planning is able to work with all involved with LTO in neighborhood planning and heritage compliance.

## **Lone Tree Park & Overpass**

### **Project Concepts**

Prepared by Mark Reavis, Neighborhood Planner – Heritage Preservation Officer AICP, NCARB

**Introduction:** While collecting public comments in developing the South Side Plan, it became apparent that the neighborhood had lost various recreation areas over time. One example is the South Beaver Elementary School's playground when purchased by NAU that tuned lawn into a parking lot. NAU's purchase of the school and its use was a positive for its historic preservation but a loss of a green ball field. Other playground and park like areas, developed and undeveloped were lost as well. A noted priority for the Southside, as noted in the Southside Neighborhood Plan is to provide areas for the recreation and the social needs of the Southside neighborhood. Small pocket areas for the potential of green space have been identified within the Southside Plan. No areas of substantial land for recreation and public gatherings was identified except for land potentially left over from property acquisition for the

Lone Tree Overpass project. Plans for a park in conjunction with the overpass have been incorporated into the Southside Plan. As a working title "Lone Tree Park" has been selected, though this name maybe entirely appropriate, its final naming and dedication may be more closely linked to the Southside, its history or a person.

**Park Concept:** An opportunity now exists with the development of the Lone Tree Overpass for integrating the overpass's development with an "Urban Park". What is meant by an urban park is a social and recreation development that is more hardscape than manicured lawns. This park archetype has living landscape but with plants and landscaped areas placed within the hardscape design. Urban parks concentrate activities into a vital and fully developed public space. There are various examples within the United States of creative urban spaces that are a component of roadway development. Aesthetic aspects and their incorporation in bridge design along with inclusion of pedestrian and bicycle accommodations mandates "complete streets". With the overpass currently being developed with local funding, there is an opportunity in developing creative solutions early in the design process. Design decisions that may not be typical in Federal projects, can be more easily accomplished in the local realm. Though Federal projects have in recent years established special funding that considers improvements to historic district neighborhoods, public aesthetic improvements and multi-modal installations. While the project is still in its early design phases, efforts for the integration of an urban park shall be initiated as a component of the overpass's design.

Various alternatives have been studied and adjustment for the overpass's design have occurred, but in general terms the routing and curvilinear shape of the overpass has been established. During the Southside plan's development design parameter adjustments for the overpass have resulted in 2 conceptual plans for an urban park development as presented in the Southside Plan. The urban park concepts were adjusted during the Southside plan's development and may still require adjustment in such aspects as the accommodation of a railroad spur and its clearances required. The length of the bridge portion vs. the fill portion of the overpass will likely dictate park design opportunities. The bridge span and the fill portion both lend themselves to potential utilization depending on what is planned to be constructed. Areas under the bridge have the potential of sheltered utilization and fill retainage techniques and their design have the potential for a dual use of slope stabilization and public use and landscaping.

The Southside residents provided considerable input in the planning process and noted preferences in the development of an urban style park in conjunction with the Lone Tree Overpass development. Southside participants voiced developing many amenities and park features within hard-scape area and for providing living landscaped areas. Concepts presented in the plan include a concentration of social and recreational improvements that are inclusive of all ages. There was acknowledgement that recreation will tend to be focused on ball games that can be accommodated within the hardscape; though there is potential for a grassed field for

recreation adjacent to the hardscape dependent upon available land. A FUTS trail appears to be possible that connects the west to the east areas with a route under the overpass.

Social aspects of an urban park range from sitting and watching children to areas that allow people to congregating for small or larger organized events. A food truck area has even been mentioned for larger events. Public art that expresses the ethnic nature of the South Side has been emphasized. Interpretation of the history of the ethnic neighborhoods and the lumber industry has been called out. Improvements can be made to the overpass's adjacent areas that will accommodate various activities. A quality design with extensive utilization is essential in establishing safe public spaces. The final design of the overpass and land acquisition will have a significant impact on the size and design of an urban park. The total design of the overpass shall not exclude considerations of acquisition of additional land for the quality development of an urban park for the Southside.

The Lone Tree Overpass road will tend to divide the land into two distinct areas. The area which seems to have the most room for an urban park development is the west side of the overpass's construction. The westward location also relates best to the majority of the Southside neighborhood that is in need of public space. The west side may also have a greater opportunity for park space development including larger landscaped areas and relationship to how the Rio will be detailed as soft drainage. The western edge of the proposed overpass road aligns with the FUTS south on Lone Tree Street. Integration of pedestrian routes and FUTS width trails into the park design will add interest and active utilization.

The east side of the overpass road has been targeted for higher density development called out as "Live-Make" in the Southside Plan. The live-make concept is based upon small loft living where the occupants are artists and artisans that make and manufacture products in their studio spaces. The taller buildings, concentrated population and potential of available land does make areas east of the overpass ideal for a specific type of park development. Open plazas for public market weekend events would work well here and would support "makers" efforts. The live-make designation does also provide for an opportunity of shared parking in conjunction with the Live-Make area as it develops with its high-density population also needing safe access to the urban park. The connection of the east plaza areas with parking shall be and easy, natural, and obvious connection. This makes the cross connection at the start of the overpass's initial span heading north so important to be safe and inviting. The emphasis is on creative FUTS (Flagstaff Urban Trail System) design, well-lit and traveled.

Two site plan scenarios for a park have been developed within the Southside plan. In both instances the concept is to develop both the road embankment immediately adjacent to the overpass road as well as develop the remnants of the land parcels acquired primarily for the road's construction. These parcel remnants are ideal for creative development of an urban park. How the road-base fill will be retained presents opportunities. For example: road embankments and their presumed requirements along with its curved form presents opportunities for stadium style seating, paths and landscaping. Instead of a single slope, a

benched step-up or step-down construction can be a component of the design and include various improvements.

#### URBAN PARK CONCEPTUAL SKETCHES:

Several conceptual sketches show the landscaped development of a stepped slope, bench seating that overlooks the hardscaped area. The drawings show a western conceptual option of steps that lead up to the overpass's FUTS that is part of the bridge's west side structure. As an artistic exercise of possibilities, the sketch shows a waterfall adjacent to the steps that ends at a meandering stream bed. The waterfall can cycle off and on as Flagstaff's precipitation and runoff does. Another sketch shows a closeup of the feel of the proposed urban park and its activities. It is hardscape showing kids playing, people gathered on built-in seating and 2 men playing chess, concepts that were generated from citizen input in the Southside Plan.

The question may be asked of why you would provide for aesthetic improvements and park amenities that are not a direct component of an engineered design? Because the aesthetic, recreational, social and functional opportunities of this publicly funded project are readily apparent to the Southside neighborhood and Flagstaff residents and that the overpass's implementation becomes a public use benefit and more than just a roadway overpass. Additional sketches show an enhanced FUTS as a component of the overpass and its relationship to the proposed urban park. Shown are various potential ways to enhance the space adjacent to the FUTS with sitting walls, benches, planters, lighting and a textured surface. The drawings are intended to show possibilities and are not a final determination of a design.

#### THE OVERPASS & ITS AMENITIES:

There is a real opportunity with the Lone Tree Overpass project to develop an iconic structure that is inclusive of various far-reaching community goals. There can be a tendency to focus upon the overpass' engineering design separate from its amenities, amenities that are an add-on to a engineered design. Maybe amenities or enhancements is not the correct terms for the Overpass's development, what should be indicated is integrated programming. A programming approach that considers pedestrians, cyclists, public spaces, landscaping, future development, art, environment and value-added engineering. This may be the nomenclature I am looking for but with an add on - "Value-added Engineering Plus". The "Plus" being all of the other considerations that will add value to the overpass project, making it much more than a road project.

Presented is an alternative concept that has the potential to save on overpass construction costs as well as provide for improved public facilities. As previously mentioned, terraced fill can be a substantial structural road base and used as a landscaped park area. Another concept that can potentially save on construction costs while improving on pedestrian safety would be to eliminate the eastern sidewalk, while adding some additional width to the western pedestrian edge. In concept this would reduce the bridge width from 117 feet to 110 feet. As conceived the western edge could have 2 feet added to the FUTS for 12 foot FUTS, a 3 foot bonus area

containing benches, plants, lighting, etc., the typical 5 foot parkway and 2 feet of structure on each side for a total of 22 feet. This concept still saves 7 feet of overpass structure over the entire length of the roadway. The western edge now becomes a much more enjoyable and safe public space.

Success of the western area's expanded FUTS concept is contingent upon safe and well identified pedestrian crossings at both the north and south road intersections of the overpass project. Well defined and designed crosswalks with possible central islands and pedestrian signal interface may be a required solution. The existing north FUTS parallel to Route 66 may still have the ability to go under the overpass at the north end. The existing FUTS at Lone Tree and Butler is on the west side of Lone Tree Boulevard and can easily cross Butler and load onto the overpass road as well as include access to the proposed park on the west and link to the east portion going under the overpass.

It should be noted that the curvilinear shape of the overpass presents itself as an iconic piece of art that will be readily recognizable as Flagstaff. Many communities are identified by unique bridges. This artistic expression of structure should be recognized and enhanced in its edge walls and transitional detailing from bridge to ground interface. Visual considerations should be an equal priority to structural systems, traffic design and ped/bike accommodations. Aesthetic design review should be performed in a manner similar to building design review.

Substantial monumental art is also proposed to anchor the overpass's identity and link it to the community's history. A concept sketch shows the north terminus with a tower inspired by the Navajo "Hogan" with 8 sides and 4 primary directions. The concept calls out the Navajo colors on mosaic artwork panels with white on the east, Turquoise on the south, yellow to the west and black north. This is a concept to show a potential art installation. At the south a similar monumental art piece is shown as a loose depiction that would likely be interpretive of the Southside neighborhood.

The Lone Tree Overpass project presents itself as an essential and iconic opportunity, that can provide significant public benefit and public spaces. All of Flagstaff's staff, officials and the community shall be involved in the Lone Tree Overpass area's development.