The Road Not Taken
By Robert Frost

Two roads diverged in a yellow wood,  
And sorry I could not travel both  
And be one traveler, long I stood  
And looked down one as far as I could  
To where it bent in the undergrowth;

Then took the other, as just as fair,  
And having perhaps the better claim,  
Because it was grassy and wanted wear;  
Though as for that the passing there  
Had worn them really about the same,

And both that morning equally lay  
In leaves no step had trodden black.  
Oh, I kept the first for another day!  
Yet knowing how way leads on to way,  
I doubted if I should ever come back.

I shall be telling this with a sigh  
Somewhere ages and ages hence:  
Two roads diverged in a wood, and I—  
I took the one less traveled by,  
And that has made all the difference.
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FORWARD I

County at a Crossroads is the deliverable from a unique mobility study. While various public entities, often working with professional consultants, have studied our regional transportation needs a number of times over the past few decades, few of their recommendations have been well received by the public. In this case, Kendall County, the City of Boerne, and the City of Fair Oaks decided to take a different approach and explore the ideas of the local citizenry. Consequently . . .

+ The KCBFOTC was comprised entirely of citizens who live and/or work in our community. TxDOT played no role. Assistance from outside experts and governmental entities was purely educational or facilitative.

+ Governance was established that required overwhelming consensus, not just a simple majority, for any suggestion to become a formal recommendation. The two people chosen to co-chair the committee did not even vote.

+ The KCBFOTC spent enormous time and effort in public outreach, and were provided with hundreds of suggestions about specific roads, intersections, sidewalks, crosswalks, hike/bike trails, safety, etc.

+ The KCBFOTC was committed to transparency. Meetings were open to everyone, publicly noticed, and welcomed public comment. Very detailed meeting notes were taken and archived on our website, for use by the readers of this report to understand the actual discussions regarding each topic.

Why are these characteristics important? Because the citizenry of our community has rejected the findings of past studies as being (a) non-responsive to their suggestions and concerns, (b) developed “behind closed doors,” (c) intended to address the needs and wishes of people living elsewhere, and (d) oblivious to the environmental consequences of “paving paradise.” While our community has done little to address growing congestion in the past few decades, we must have public trust in our process if we are to address mobility needs of the future.

It has been an honor to serve as co-chair for these 3 years, although my partner Don Durden did the vast majority of the heavy lifting along the way.

Please accept this report in the spirit in which it is intended. Our community has spoken, and we all need to leave the crossroads in the same direction.

Bob Manning, P.E. (Ret), Co-chair
A government’s ability to deliver infrastructure depends disproportionally on the level of trust its citizens have in their government. More specifically, they must believe the right projects are being done for the right reasons and that the government has the basic resources and competence to manage the delivery of those projects.

Prudent governments therefore endeavor to gain the citizens’ trust and eventually their approval before embarking on significant capital improvement programs. Sometimes, though, despite the best efforts of a government, for one reason or another, its citizens simply cannot attain the necessary levels of trust to allow the government to move forward. In other words, trust must be earned, but, ultimately, it can only be granted.

Amid rampant misinformation campaigns conducted on social media, direct mail, and even some electronic media, it is no surprise the failure to both, earn trust and grant trust is not uncommon. This hobbles a government’s ability to address its citizens’ current and future needs. Along with additional local factors, such as rapid population growth, increasingly diverse viewpoints about what is important (and what is not), and the high cost of transportation improvements, this has led to a dearth of local investment in transportation infrastructure as well as opposition to additional investment by the state.

It is ironic that much of our local congestion is attributable to TxDOT’s substantial investment in interstate and state highways (almost $150 million in Kendall County over the past decade and a half), investments that were intended to relieve congestion. As these projects conclude, some of the congestion they caused will certainly dissipate. Now, it is time for us on the local level to do our part.

Some have criticized our consensus-based process, claiming the resulting plan lacks boldness and fails to address the problem. Admittedly, it does not propose any grand vision of freeways or loops or by-passes. Still, it offers an effective plan to address traffic problems, relying on TxDOT and local governments to improve some of their existing roads, while recognizing that much of the financial and land cost of new thoroughfares will be borne by new development, it proposes investments in local roadways and pedestrian infrastructure.

More importantly, it DOES offer a vision, albeit one of a different sort. It is a vision that arises from the idea that our culture and heritage is at least as important as, and perhaps more important than our personal mobility. It is a vision that a small, mostly rural county can choose to preserve its culture and heritage and environment
and avoid being overwhelmed by encroaching urban and suburban development, at least for a while. It is a vision that believes basic problems can and should be addressed, but beyond that we must find a better way, one that avoids repeating past mistakes.

The program of projects proposed by this plan will relieve congestion . . . for a while. But it will not solve our congestion problems forever. But then, again, neither will a loop or bypass. The program of policy recommendations, though, if adopted may significantly delay the need for such disruptive solutions and thereby help preserve as much of our precious Hill Country as possible, for as long as possible.

The transportation plan proposed on the following pages includes the right projects, for the right reasons for Kendall County, and therefore is deserving of the support of not only the local governments, but of the citizens of Kendall County.

Don Durden, P.E. (Ret), Co-chair
The Kendall County Boerne Fair Oaks Transportation Committee (KCBFOTC) was established in 2019 “to develop a county wide transportation plan to mitigate current and future traffic congestion in Kendall County in a way that preserves cultural and environmental resources and promotes appropriate economic development.” The Committee met over 100 times, in spite of losing a full year to COVID-19; various subcommittees also met countless times to work on specific projects and policies.

In an effort to improve upon the traffic plans of the past several years, the Committee was made up of 20 individuals who either live or work in the community, and importantly did not include any outside agencies or consultants. It operated with complete transparency, and all meetings were open, with ample opportunities for public comment. A governance process was established that set a strict (and high) consensus threshold for any idea to become an official recommendation.

Early in the Committee’s work it became clear that to fully address the region’s congestion, it was imperative to address mobility in all of its forms, e.g., automobiles, trucks, school buses, pedestrians, bicycles, safety, trolleys, etc. The KCBFOTC used a comprehensive program to gather hundreds of specific ideas from the public, using both electronic and manual submission possibilities. It brought in regional and national experts for education on various aspects of mobility and environmental sensitivities. The Committee also assembled traffic count data from TxDOT, City of Boerne, and the “Streetlight” traffic tracking software; the data guided many decisions about project recommendations.

The Committee used an exhaustive process to evaluate each and every suggestion, regardless of the source of the idea or its potential for controversy. Each was brought to the Committee separately, with supporting mapping and description of existing problem and potential benefit. All suggestions are included in this report, regardless of disposition.

This report represents the deliverable from that work, namely (a) recommendations for short term mobility improvements, (b) recommendations for long term mobility solutions, and (c) policy recommendations to improve current and future mobility planning.

**Short Range Recommendations (Chapter 1):** The KCBFOTC offers 19 Priority recommendations, categorized into (a) TxDOT (9), (b) Major Thoroughfare Plan (MTP) (2), and (c) Local Government (8). Importantly, there are 17 additional Short Range projects included in the report. All focus on specific intersections, portions of existing roads, neighborhood interconnectivity, school traffic, traffic calming, and bicycle/trails improvements. Some recommendations would make significant local improvements in mobility at low- or no-cost. Other recommendations reflect the compelling evidence that traffic congestion is primarily due to ineffective intersections rather than inadequate roads. Priorities include, in no particular order:
1. TxDOT: Realign SH 46 west of Sharon Drive to go north of Longhorn Café. The Committee considers River/Herff/Esser to be the worst intersection in the county, and a key to long term congestion relief. This project would realign SH 46 north of its current route, to intersect with Esser/Herff north of Longhorn Café, which would allow for much more flexible traffic flows, turn lanes, and trail interconnectivity. It would be a big project with big potential dividends.

2. TxDOT: Roundabout, or other alternative intersection design at Main/School/Adler, avoiding gas station. Our local citizenry rates this intersection as terrible.

3. TxDOT: Roundabout at FM 474/Adler, with interim center lane on FM 474 north of Adler if a roundabout cannot be accomplished in the short term. The intersection at Adler/FM 474 may be the best location for our community’s first roundabout.

4. TxDOT: Improve IH 10 Westbound frontage road intersection at North Main Street, to address safety concerns.

5. TxDOT: Widen FM1376 and add shoulders from Sisterdale, north to county line.

6. TxDOT: Calm traffic and improve vehicular and pedestrian safety of SH 27 in Comfort area.

7. TxDOT: Widen FM 289 bridge over Little Joshua Creek, to facilitate truck movements.

8. TxDOT: Improve safety at SH 46/Pleasant Valley intersections.

9. TxDOT: Widen Esser (FM 474) and provide turn lanes between Bentwood and Greyhound Lane.

1. MTP: Extend Tilbury Drive to connect Buccee’s to Regent Park, by store opening date.

2. MTP: Extend Winding Woods to Champion Blvd, for neighborhood interconnectivity.

1. Local: Extend Cascade Caverns from Buckskin to South Glen. (KC/COB)

2. Local: Improve alignment and capacity of Coughran from SH 46 to Upper Balcones. (KC/COB)

3. Local: Replace signals with roundabout at Herff/Old San Antonio, another candidate location for our first roundabout. (COB)

4. Local: Rehabilitate (2 lanes plus center turn lane) Old San Antonio from Herff to Cascade Caverns. (COB)
Long Range Recommendations (Chapter 2): The KCBFOTC offers 12 Long Range recommendations, categorized into (a) TxDOT (5), (b) Major Thoroughfare Plan (6), and (c) Local Government (1). The majority of these that are not MTP projects, focus on larger, more expensive projects that would be more disruptive to implement and often involve joint funding from regional, state, or federal sources. The Committee does not recommend any significant new “greenfield” roads other than those included in adopted Thoroughfare Plans, due to (a) profound resistance from the public and the Committee, to the use of imminent domain (except to fill in small sections of existing roads), (b) stated resistance from landowners in the path of proposed routes, and (c) sense that other Committee recommendations eliminate the need for such new roads. Recommendations include, in no particular order:

1. TxDOT: Improve safety along SH 46 West from IH-10 westward to county line.
2. TxDOT: Install roundabouts at Blanco/Bentwood and FM 474/Esser.
4. TxDOT: Install roundabout at Main/River Road.
5. TxDOT: Study the feasibility of installing roundabouts on the SH 46 East corridor at Esperanza, Woods of Boerne, and Herff Road.
6. MTP: Extend FM 1376 from North Main to Johns Road.
7. MTP: Extend Adler from FM 474 to Esperanza.
8. MTP: Extend Champion Blvd north to Adler extension and provide vehicular connections at Vista Verde and Bentwood.
9. MTP: Extend a roadway from SH 46 through Georges Ranch to Ammann and then to FM 3351.
10. MTP: Extend Enterprise Parkway to IH 10 East frontage road.
11. MTP: Extend Lattimore to School Street.
12. Local: Improve Upper Balcones Road. (KC)
Trails, Multi-use Infrastructure, and Public Transportation (Chapter 3): Along with specific policy recommendations in Chapter 4, Section RP 6, in the areas of (a) Safe Routes to Schools, (b) Public and Alternative Transportation, and (c) Innovation and Disruptive Technologies, the Committee also offers a comprehensive Trails and Multi-use Infrastructure Vision in Appendix B.

Policy Recommendations (Chapter 4): The KCBFOTC offers 34 specific recommendations, in 7 broad categories, in no particular order:

1. Preserving the Hill Country Environment, Character, and Water Supply (Section RP 1): Protection of our hill country environment, character, and water supply is of primary importance to the Committee. Seven policy recommendations are offered for any new roadways to minimize (a) pollutant runoff, (b) tree destruction, and (c) light pollution; other recommendations focus on preservation of (d) quiet roads, scenic landscapes and cultural heritage, (f) riparian protection, and (g) sentinel landscape management.

2. County-wide Transportation System Planning and Development (Section RP 2): Nine policy recommendations would promote coordinated, compatible, and consistent transportation systems among TxDOT, Kendall County, and Cities of Boerne and Fair Oaks Ranch. These include (a) prioritizing efforts to increase the capacities of existing infrastructure over the construction of new roadways, (b) using consistent right-of-way standards, (c) emphasizing consideration of roundabouts (and other alternative intersection designs) at appropriate locations, (d) upgrading selected county roads to FM standards, (e) incorporating micromobility into system planning, (f) providing public transportation, (g) establishing mutually approved transportation plans among Kendall County and Cities of Boerne and Fair Oaks Ranch, (h) encouraging Kendall County Commissioners Court to establish a county-wide Transportation Plan, and (i) requiring interconnectivity between any new neighborhoods in the county, especially during morning and afternoon school traffic times.

3. New Greenfield Roads (Section RP 3): Eight policy recommendations would guide the design and alignment of any new roadways, including (a) categorizing new roadways as the last option for meeting mobility needs, (b) requiring that new roadways always address needs occurring in Kendall County, (c) avoiding sensitive environmental features, (d) promoting advance notification and engagement with property owners in the proximity of any proposed new roadway, (e) minimizing the length and number of parcels affected by any new roadway, (f) aligning any new roadways along parcel boundaries if at all possible, (g) using access management to limit the subsequent commercial and residential development, and (h) acknowledging the use of eminent domain as a last resort while discouraging its use.

4. City of Boerne Downtown Masterplan (Section RP 4): Two policy recommendations would guide the City of Boerne’s optimal control over mobility planning in the downtown area, including (a) evaluating the costs and
benefits of having Boerne assume responsibility for some, or all, of the TxDOT-controlled roadways in the downtown area, and (b) subsequently developing a downtown masterplan that builds upon the 2008 R/UDAT study.

5. Transportation Advocacy Committee (Section RP 5): One policy recommendation would permanently engage the citizenry in regional mobility planning and funding, namely establishing a Transportation Advocacy Committee with similar make-up to the KCBFOTC.

6. Trails and Multi-use Infrastructure (Section RP 6): Six policy recommendations would guide the establishment of a fully integrated network of trails and pathways to improve mobility, enhance recreation, improve safety, and foster economic well-being (full Vision document is included in Appendix B). These include: (a) supporting the Safe Routes to School Partnership, (b) promoting the establishment of micromobility corridors throughout the county, (c) establishing trails and micromobility standards, (d) connecting the trails system to the future Alamo Area Community College campus, (e) incorporating trails into thoroughfare plans, and (f) developing a system of scenic roadways in the county.

7. Public Transportation (Section RP 7): One policy recommendation would guide the creation of a committee to examine how public transportation services might be more effectively introduced to the more densely populated area of the County.
The co-chairs of the KCBFOTC would like to acknowledge and thank the following organizations and individuals for contributions that have greatly improved the quality of this report:

+ **Kendall County** – for their role in establishing the committee and setting expectations, and for funding the publication of the report.

+ **City of Boerne** – for their role in establishing the committee and setting expectations, for the use of the City Council chambers for the post-COVID meetings, for the audio/visual and Zoom assistance, and for significant staff time along the way.

+ **City of Fair Oaks Ranch** – for their role in establishing the committee and setting expectations, and for sharing the needs and desires of their community.

+ **Dr. George Veni, PhD** – who provided the committee with thorough information about the extreme sensitivity of the numerous caves and karst features in the southeastern portion of Kendall County, and the severe challenges of safely building any significant new roadways in that area.

+ **Jeremy Cashman** – Director of Engineering from the City of Carmel, Indiana who presented outstanding information about their aggressive use of roundabouts to benefit their community.

+ **Boerne ISD** – for the use of training room space at their administrative facilities during the pre-COVID first year of committee meetings, for the excellent demographic data regarding anticipated growth in the various sections of our community, and for sharing the specific impacts of needless congestion on their school buses.

+ **Alamo Area Metropolitan Planning Organization** – for their assistance in building our CrowdSource tool and tabulating/assessing the results, as well as presenting information on Traffic Demand Modeling.

+ **Jeff Carroll, P.E.** – for his attendance and valuable sharing of information during the committee’s deliberations.

+ **Erika Rowe** – for her thorough and timely meeting notes throughout the post-COVID meetings that have produced a complete record of public comments, committee discussions/debates, and final voting tallies.

+ **Elaine Maltsberger** – for her similar role as the committee scribe during the pre-COVID year.

+ **Lessly Barajas** – for diligently posting the meeting notices and agenda and providing clerical support.

+ **Northern Hendricks** – who tirelessly managed the committee’s website, tracked the process of evaluation and disposition of hundreds of potential project and policy suggestions, and provided clear graphical summaries to the committee as discussions progressed.

+ **Grit Creative** – who donated their expertise in editing, graphic design, and publishing to provide this professionally presented report, cover art, live-link document, web-use document, infographics, and helped present the Committee’s work in an attractive, professional publication.

+ **Public Participants** – who attended countless committee and subcommittee meetings, provided opinions of the merits and demerits of various ideas along the way, and who helped ensure the extreme transparency of our work.
INTRODUCTION

Purpose
The Kendall County Boerne Fair Oaks Ranch Transportation Planning Committee (KCBFOTC) was created July 22, 2019, by Kendall County Commissioners Court Order 07-22-2019. That Court Order defined the purpose of the Committee as being to develop a county wide transportation plan to mitigate current and future traffic congestion in Kendall County in a way that preserves cultural and environmental resources and promotes appropriate economic development.

The Court Order charged the Committee with producing a report that includes

A short-range program of projects and operational improvements that can be implemented in the short term to relieve current congestion.

A long-range program of transportation improvements that addresses current and projected travel demand; and

A program of recommended policies to guide the planning and design of the transportation/land use system within Kendall County.

Participants
The Court Order specified a two-tiered committee structure that included a Steering Committee and a Study Committee. The Steering Committee is comprised of County Judge Darrel L. Lux, City of Boerne Mayor Tim Handren, and City of Fair Oaks Ranch Mayor Greg Maxton¹. The Court Order envisioned a Study Committee comprised of twenty people appointed by a broad array of elected officials and local organizations.

Between July 2019 and late September 2019, individual citizens were appointed to the Study Committee, and its initial meeting was held September 23, 2019. The Study Committee met twelve times over the subsequent five months, affirming decision-making protocols, creating a website, establishing subcommittees, gathering public comment, listening to public experts, and reviewing BISD’s Demographic Study.

The Study Committee was working diligently to develop recommendations for the short-range program, with the specific intent of formulating a list of projects that might be included in possible November 2020 bond issues at each sponsoring entity. However, in early 2020, State and local responses to the novel corona virus pandemic led to suspension of the Study Committee’s work. As the pandemic progressed, the Steering Committee and Study Committee Co-Chairs agreed

¹ Former Fair Oaks Ranch Mayor Garry Manitzas was the first Steering Committee member representing Fair Oaks Ranch. He was replaced by current Mayor Greg Maxton.
the limited stay-at-home orders and the mandated closure of many non-essential businesses were likely to reduce economic activity and render the contemplated November 2020 bond issue imprudent. While some consideration was given to conducting the Study Committee business by Zoom, the consensus of the leadership group was that a Zoom meeting approach could be detrimental to the credibility the Study Committee had begun to engender.

As a result, they agreed to suspend the work indefinitely. It is notable, though, that the group stopped short of dissolving the Study Committee or terminating its work. It was noted that the regional transportation planning work done under the auspices of the Alamo Area Metropolitan Planning Organization (AAMPO) was ongoing, as were TxDOT’s normal planning processes.

In December 2020, Steering Committee members asked that the Study Committee Co-chairs review its work to see if it could recommend projects the participating agencies might submit to the Alamo Area Metropolitan Planning Organization and/or TxDOT for inclusion in the State Transportation Improvement Plan (TIP). Steering Committee members also asked that those recommendations be presented to the participating agencies in time to facilitate their responses to AAMPO and/or TxDOT calls for projects, due April 1, 2021.

The Ad Hoc Subcommittee was formed, developed an interim report, and subsequently presented it to the Kendall County Commissioners Court (January 11, 2021) and to the Boerne City Council (January 12, 2021). A copy of the Interim Report can be viewed on the Committee website (www.kcbfotc.com)

With the incidence of COVID19 beginning to wane, a meeting to re-start the Committee was held April 12, 2021. Over the next several meetings, the Committee filled positions that had become vacant during the suspension. Because the Ad Hoc Committee's Interim Report had not been vetted with the full Committee, the Committee decided to not ratify it, but to consider its recommendations along with other projects as it moved forward with the broader planning effort. In addition, some adjustments were made to the previously established subcommittees and a modified decision-making protocol was adopted.

While those who participated as members of the Committee are to be commended for their diligence and tenacity in completing this effort under adverse circumstances, commendations are due also to members of the public who monitored and participated in the Committee's meetings.
KENDALL COUNTY BOERNE FAIR OAKS RANCH TRANSPORTATION PLANNING COMMITTEE

Steering Committee
Darrel L. Lux ..................................................... Kendall County Judge
Tim Handren ..................................................... Mayor City of Boerne
Garry Manitzas / Greg Maxton ................................Mayor Fair Oaks Ranch

Study Committee
Don Durden ......................................................... Co-Chair
Bob Manning ......................................................... Co-Chair
Bryce Boddie .......................................................... Precinct 1
Bob Hartwig / Mary Lee Pratt ........................................ Precinct 2
David Anderson/Del Eulberg ........................................ Precinct 3
Gary Louie ............................................................. Precinct 4
Tim Bannwolf ......................................................... City of Boerne
Jonah Evans ......................................................... City of Boerne
John Kight ......................................................... City of Boerne
Rich Sena ......................................................... City of Boerne
Dan Banks / Bobby Balli ........................................... City of Fair Oaks Ranch
Marcus Garcia .................................................... City of Fair Oaks Ranch
Kim Blohm ........................................................ Boerne Chamber of Commerce
Ben Bunker / Steve Sharma ..................Boerne Kendall County Economic Development Corporation
Ben Eldredge ....................................................... Cow Creek Groundwater Conservation District
Northern Hendricks ............................................. The Hill County Alliance
Rankin D'Spain .................................................... Kendall County Soil and Water Conservation District
Stephen Zoeller ....................................................... Kendall County Farm Bureau
Henry Acosta ....................................................... Boerne ISD
Josh Limmer ....................................................... Comfort ISD
CHAPTER 1
SHORT RANGE PROGRAM OF PROJECTS AND OPERATIONAL IMPROVEMENTS

The Committee’s goals in formulating a Short Range Program of projects are two-fold: (a) to address existing traffic congestion; and (b) to improve pedestrian safety. In developing this list of potential projects, the Committee relied extensively on data gathered through CrowdSource, an internet-based application customized to meet local needs, as well as the expertise and insights of Committee members and the traditional transportation planning community. In all, more than 100 projects and suggestions were received. The Committee used a two-step process to translate them into a County wide Transportation Plan.

Step 1 – During the first step, Committee member Northern Hendricks developed a Project Sheet for each project or suggestion and entered them into a database for tracking and management. The Committee reviewed and deliberated each Project Sheet or Suggestion and determined if it should be:

+ Moved forward for further consideration, either as presented or with refinements, or
+ Rejected and eliminated from further consideration.

Reasons for rejection varied. Some were better described by other Project Sheets; some were outside the study area; and some were rejected because the Committee judged them unnecessary. The forty projects or suggestions eliminated from further consideration during Step 1 can be found in Table 1.1 on the next page.

Almost all decisions to move a Project/Suggestion forward or to reject it were made by consensus. In the sole case of a failure to achieve consensus, the vote to reject was an overwhelming 9-1.

Step 2 – During the second step, the Project Sheets/Suggestions were organized into logical groupings that reflect how the projects are likely to be delivered. These groupings are Major Thoroughfare Plan Projects, TxDOT Projects, and Local Government Projects.

Major Thoroughfare Plan Projects are projects that fit into the transportation network and eventually help it function as a system. A Major Thoroughfare Plan (MTP), ideally, integrates the existing road network with roadways proposed by new developments. It offers the benefit of leveraging new development to create some substantial part of the major thoroughfare system. On the other hand, the entity promulgating a Major Thoroughfare Plan has no authority to govern when and where developments occur, and this often causes “missing links” or gaps in an otherwise well thought out network.
**TxDOT Projects** involve TxDOT roadways that are designed and built to TxDOT standards and in conformance with TxDOT project delivery systems. Local governments may be able to influence the timing and character of these projects through communication and matching funds, but they generally are not able to exercise unilateral control.

**Local Government Projects** are projects over which local governments exercise the greatest degree of control. Local governments decide what design standards will apply, how the projects will be funded and financed, and when they will be done. Local governments also decide if they will cooperate with other local governments and agencies and private entities.

### Table 1.1 - Rejected Projects and Suggestions

<table>
<thead>
<tr>
<th>Database Ref.</th>
<th>Source</th>
<th>Roadway</th>
<th>Description</th>
<th>Disposition</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Proj SubComm</td>
<td>Millstone Cove</td>
<td>Roadway is blocked by a gate</td>
<td>Rejected; outside Kendall County</td>
</tr>
<tr>
<td>11</td>
<td>Committee Sourced</td>
<td>Scenic Loop at IH 10</td>
<td>Signal light timing</td>
<td>Rejected as work is already planned, underway, or completed</td>
</tr>
<tr>
<td>13</td>
<td>Committee Sourced</td>
<td>SH 46 &amp; FM 3351</td>
<td>Direct eastbound SH 46 to IH 10 via FM 3351 South</td>
<td>Rejected; traveling public will disregard</td>
</tr>
<tr>
<td>14</td>
<td>Committee Sourced</td>
<td>SH 46 and Herff Road</td>
<td>Direct eastbound SH 46 to IH 10 via Herff Road</td>
<td>Rejected; traveling public will disregard</td>
</tr>
<tr>
<td>16</td>
<td>Crowdsourced</td>
<td>Bentwood</td>
<td>Extend Bentwood to Cordova to facilitate school traffic</td>
<td>Rejected; maybe include ped route with 12, 16, 42, and 121</td>
</tr>
<tr>
<td>21</td>
<td>Committee Sourced</td>
<td>Adler/School</td>
<td>Separate intersections</td>
<td>Rejected in favor of Roundabout</td>
</tr>
<tr>
<td>25</td>
<td>Committee Sourced</td>
<td>Frey Street</td>
<td>Extend from Hickman to River Road; Negotiate ROW purchase; no eminent domain</td>
<td>Rejected in favor of Crowdsource project 24</td>
</tr>
<tr>
<td>25</td>
<td>Crowdsourced</td>
<td>Main and Herf</td>
<td>Add free right turn from Main St. N. to Herff</td>
<td>Rejected and combined with Project 144 (TxDOT)</td>
</tr>
<tr>
<td>28</td>
<td>Committee Sourced</td>
<td>Greenfield Road</td>
<td>Construct new road from SH 46 to Spring Creek east of Silent Spring, and from FM 474/Spring Creek to FM 1.376 north of N. Someday Drive</td>
<td>Rejected; does not address current or future congestion</td>
</tr>
<tr>
<td>29</td>
<td>Committee Sourced</td>
<td>IH 10 Eastbound frontage</td>
<td>Extend frontage road from FM 289 to Welfare Underpass</td>
<td>Rejected in favor of bridge widening at FM 289 to facilitate turn</td>
</tr>
<tr>
<td>29</td>
<td>Committee Sourced</td>
<td>IH 10 Eastbound Mainlanes</td>
<td>Provide Eastbound Exit to Joshua Springs Park</td>
<td>Rejected in favor of Project 149</td>
</tr>
<tr>
<td>33</td>
<td></td>
<td>Kreutzberg</td>
<td>Extend to FM 3351</td>
<td>Rejected; would change character of Kreutzberg Road for only marginal benefit</td>
</tr>
<tr>
<td>34</td>
<td>Committee Sourced</td>
<td>Old Fredericksburg Road</td>
<td>Add center turn lane and accel/decel lanes as needed from IH 10 to Kendall Pointe entrance</td>
<td>Rejected in favor of similar project with modified limits</td>
</tr>
<tr>
<td>36</td>
<td>Crowdsourced</td>
<td>Blanco and Old No 9 Trail</td>
<td>Signalize trail crossing</td>
<td>Rejected as work is already planned, underway, or completed</td>
</tr>
<tr>
<td>37</td>
<td>Crowdsourced</td>
<td>FM 1376 Extension</td>
<td>Extend FM 1376 south to Honey Bee Lane</td>
<td>Rejected in favor of Project 26 MTP</td>
</tr>
<tr>
<td>38</td>
<td>Committee Sourced</td>
<td>Greenfield road from Spencer Ranch to Johns Rd.</td>
<td>Support inclusion in and completion by MTP</td>
<td>Rejected in favor of Project 126 MTP</td>
</tr>
<tr>
<td>44</td>
<td>Crowdsourced</td>
<td>Old San Antonio/ Cascade Caverns</td>
<td>Add Roundabout</td>
<td>Rejected as work is already planned, underway, or completed</td>
</tr>
<tr>
<td>45</td>
<td>Crowdsourced</td>
<td>Herff Ranch Boulevard</td>
<td>Extend to Copper Creek development roads</td>
<td>Rejected as work is already planned, underway, or completed pursuant to development agreement with Ranches at Creekside</td>
</tr>
<tr>
<td>53</td>
<td>Crowdsourced</td>
<td>Ammann and Cibolo Ridge Trail</td>
<td>Better enforce speed limit; install all way stop</td>
<td>Rejected; traffic volumes likely do not warrant allway stop</td>
</tr>
<tr>
<td>67</td>
<td>Crowdsourced</td>
<td>Greenfield road along transmission line from SH 46 to north of Esperanza</td>
<td></td>
<td>Rejected; adverse impact on cultural resources</td>
</tr>
</tbody>
</table>
### Table 1.1 - Rejected Projects and Suggestions

<table>
<thead>
<tr>
<th>Database Ref.</th>
<th>Source</th>
<th>Roadway</th>
<th>Description</th>
<th>Disposition</th>
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</thead>
<tbody>
<tr>
<td>85</td>
<td>Crowdsourced</td>
<td>N School Street</td>
<td>Make School Street one way (northbound)</td>
<td>Rejected in favor of Roundabout</td>
</tr>
<tr>
<td>92</td>
<td>Crowdsourced</td>
<td>School Street</td>
<td>Add middle turn lane and bike lane/sidewalks on South School from IH 10 to San Antonio, and on San Antonio from School to Main Street</td>
<td>Rejected in favor of project 38</td>
</tr>
<tr>
<td>97</td>
<td>Crowdsourced</td>
<td>SH 46 and Woods of Boone</td>
<td>Install Roundabout</td>
<td>Rejected and coupled with Project 106 TxDOT</td>
</tr>
<tr>
<td>109</td>
<td>Crowdsourced</td>
<td>School Street</td>
<td>Build new bridge over Cibolo Creek to improve ride and facilitate pedestrian path along creek under bridge</td>
<td>Rejected in favor of 38</td>
</tr>
<tr>
<td>110</td>
<td>Crowdsourced</td>
<td>School Street</td>
<td>Build new bridge over Fredericks Creek to improve ride and facilitate pedestrian path along creek under bridge</td>
<td>Rejected in favor of 38</td>
</tr>
<tr>
<td>115</td>
<td>Crowdsourced</td>
<td>Herff Road - SH 46 to IH 10</td>
<td>Double deck Herff Road from SH 46 to IH 10</td>
<td>Rejected, impractical and very expensive</td>
</tr>
<tr>
<td>117</td>
<td>Proj SubComm</td>
<td>Destiny Drive</td>
<td>Extend Destiny Drive to Maravillas to facilitate school traffic</td>
<td>Rejected: Esperanza Streets are private</td>
</tr>
<tr>
<td>121</td>
<td>Crowdsourced</td>
<td>Champion Boulevard</td>
<td>Extend north to future Adler Extension</td>
<td>Rejected and combined with Project 42 MTP</td>
</tr>
<tr>
<td>124</td>
<td>Interim Committee</td>
<td>Scenic Loop - IH 10 to Balcones Creek</td>
<td></td>
<td>Rejected in favor of Project 36</td>
</tr>
<tr>
<td>130</td>
<td>Crowdsourced</td>
<td>SH 46 W. at Deep Hollow</td>
<td>Improve intersection</td>
<td>Rejected and coupled with Project 62 TxDOT</td>
</tr>
<tr>
<td>147</td>
<td>Crowdsourced</td>
<td>SH 46 and Herff</td>
<td>Install Roundabout</td>
<td>Rejected and coupled with Project 106 TxDOT</td>
</tr>
<tr>
<td>149</td>
<td>Interim Committee</td>
<td>IH 10</td>
<td>Install eastbound exit Joshua Springs Park</td>
<td>Rejected: exit signage recently installed at Welfare exit</td>
</tr>
<tr>
<td>160</td>
<td>Crowdsourced</td>
<td>Fuller Drive</td>
<td>Add speed bump on Fuller to calm traffic</td>
<td>Rejected: perhaps consider traffic calming</td>
</tr>
<tr>
<td>166</td>
<td>Crowdsourced</td>
<td>Greenfield road from RM 474 &amp; Spring Creek to RM 1376 North of North Someday Drive</td>
<td>Rejected: does not address current or future congestion; adverse impact to cultural and environmental resources</td>
<td></td>
</tr>
<tr>
<td>182</td>
<td>Crowdsourced</td>
<td>HEB Parking Lot</td>
<td>Encourage HEB to provide pickup/dropoff points for shuttle buses and shared rides</td>
<td>Rejected: possible suggestion to HEB</td>
</tr>
<tr>
<td>186</td>
<td>Crowdsourced</td>
<td>Johns Road</td>
<td>Add turn lane from IH 10 to Tapatio Springs</td>
<td>Rejected: roadway does not have sufficient driveways or cross streets to warrant continuous turn lane</td>
</tr>
<tr>
<td>192</td>
<td>Crowdsourced</td>
<td>Upper Balcones/IH 10</td>
<td>Improvements to mitigate congestion near Starbucks</td>
<td>Rejected as work is already planned, underway, or completed</td>
</tr>
<tr>
<td>193</td>
<td>Crowdsourced</td>
<td>Adler/Plant</td>
<td>Improve intersection parking on Plant impeded crosswalk near school</td>
<td>Rejected as work is already planned, underway, or completed</td>
</tr>
<tr>
<td>194</td>
<td>Crowdsourced</td>
<td>Cascade Caverns</td>
<td>Improve drainage on Cascade Caverns</td>
<td>Rejected as work is already planned, underway, or completed</td>
</tr>
<tr>
<td>217</td>
<td>Crowdsourced</td>
<td>Battle Intense/Keenerland</td>
<td>Make this an All Way Stop intersection</td>
<td>Rejected: outside Kendall County</td>
</tr>
</tbody>
</table>

### Major Thoroughfare Plan Projects

Major Thoroughfare Plan Projects identified new roads that, if constructed, would improve the transportation grid system and are likely to mitigate congestion. Some of these projects (e.g., Projects 27(a) and 126, listed on page 6) are within active, ongoing developments and therefore are likely to be completed in the next few years by the developers of those tracts. However, some of these projects (e.g., Projects 12 and 26) run across land this is not known to be currently slated for development. Therefore, when (or even if) these projects would be completed is unknown.
The Committee worked hard to develop a policy that balances the need for prudent transportation system planning with the need to acknowledge the discomfort of some landowners across whose tracts these diagrammatic major thoroughfare lines run. Several landowners testified that their properties were not as marketable with Major Thoroughfare Lines crossing them as they otherwise might be. In general, these are owners of residential “estate” tracts that are situated among or near other similar sized residential “estate” tracts.

The Committee notes that the Major Thoroughfare Plan process can contribute meaningfully to a community’s major thoroughfare system by coordinating the planning and construction efforts of developers. This places most of the burden of the cost of building major thoroughfares on the new development that generates the traffic, rather than on existing taxpayers. The local governments’ role in generating a Major Thoroughfare Plan is to establish various design standards and general, not specific alignments. The Committee suggests local governments that adopt Major Thoroughfare Plans should generally avoid depicting future major thoroughfares across areas that have already been developed as standard or estate residential lots or across larger properties that are unlikely to be developed, such as conservation easement tracts and tracts with special environmental issues. Moreover, the Committee believes the plan should demonstrate a preference for widening existing thoroughfares over creating new thoroughfares in greenfield locations. Where greenfield locations are warranted, the plan should endeavor to embrace properties that have a reasonable likelihood of being developed. Experience has shown that, from time to time, landowners will vigorously assert they will NEVER sell their land for development, but only a few years later their heirs (and in some cases the owners, themselves) will sell. Therefore, in most cases it is reasonable to plan future thoroughfares across property where future development is plausible, whether overtly planned or not.

The Committee strongly believes rights-of-way for Major Thoroughfares should be acquired almost always through the development process, not through the eminent domain process. Nevertheless, while the Committee is unwilling to recommend eminent domain NEVER be used, the Committee’s position is clear that it should be used only as a last resort to close minor gaps in the system, such as Projects 18 and 19. See Chapter 4 for policy recommendations regarding major thoroughfare planning and greenfield roads.

Within the limits of the foregoing parameters, the Committee believes eleven of the twelve MTP projects listed on page 6 are viable and valuable components of a Major Thoroughfare Plan. The five projects within active developments have been included in the Short Range Program, while the other six projects, which are not, have been identified as Long Range Program Projects.

A Special Project, in more than one way

The sole remaining Major Thoroughfare Plan project, Project 27(b), is included as a Special Project. Should the Committee strictly follow its own guidance regarding
major thoroughfare plan development (specifically, avoiding the depiction of a major thoroughfare across a tract with environmental issues), this project would normally be excluded from consideration as a Major Thoroughfare Plan Project. However, because this project is the only realistic opportunity to extend a third roadway from SH 46 south to roadways that connect to IH 10, and thereby provide some measure of relief to the current and future congestion on Herff Road and on FM 3351, special consideration and additional discussion is warranted.

Project 27(b) envisions a roadway that extends from the south boundary of The Ranches at Creekside through the 423-acre Pfeiffer tract, which is situated to the south and east. The 423-acre Pfeiffer tract is bisected by the Cibolo Creek and by an abandoned railroad grade, and it encompasses many known caves, swallets, recharge features, and other karst features. While it is almost certain Copper Canyon, Project 27(a), will be extended south toward the 423-acre Pfeiffer tract, members of the Committee hold differing opinions about the feasibility of extending Copper Canyon further south, through the Pfeiffer tract.

First, due to the probable environmental vulnerability represented by the caves, swallets, and other karst features within and beneath the Pfeiffer tract, some consider the area too environmentally sensitive to extend a road through it; others, however, believe it is possible to do so with sufficient safeguards to prevent spills and contaminated runoff from entering the aquifer. All agree extensive studies would be required to provide more clarity about the prudence and feasibility of building a road across the tract.

Second, two generations of the Pfeiffer family, whose members own the tract, testified they prefer the land be preserved and not developed. Unlike the 194-acre Copper Creek development to the north, the 423-acre Pfeiffer tract is currently used primarily for agricultural purposes, and its owners have publicly stated their preference to keep it that way.

So, regarding this Project, the Committee can only say this: While this major thoroughfare could relieve some current and future congestion, much more study is needed to determine if a roadway can be extended through the area in an environmentally responsible and sustainable manner. Moreover, even if it is possible, the current owners of the property are currently not interested in selling or developing the land and, instead, prefer to keep it in agricultural use.

In the light of all these considerations, the Committee believes the Major Thoroughfare Plan should include a thoroughfare across the 423-acre Pfeiffer tract since this would allow the City to require dedication of adequate right of way should it ever be developed. Failure to include this major thoroughfare plan segment would allow the property to develop without regard for the Major Thoroughfare Plan should current owners have a change of heart and sell.

Some on the Committee have noted it could be more detrimental to the environment for the tract develop into many residential lots than it would be to build a well-designed relief roadway running through an otherwise pristine rural tract. This leads
to the possibility of another approach, but it is one that would require the cooperation of all parties.

Under this approach, the current owners would first allow sufficient studies to be done to determine if an environmentally responsible way to extend the road across the tract exists. If the studies show there is NOT an environmentally responsible path, the road will be forever removed from the Major Thoroughfare Plan. If one or more environmentally responsible paths through the tract are found to exist, the City, the County, and the property owners would enter a good faith negotiation regarding the alignment, character, and operation of the roadway through the Pfeiffer tract in return for City and County agreement, with the property owners' consent, to prohibit development of the rest of the tract for residential or commercial uses.

<table>
<thead>
<tr>
<th>Rec#</th>
<th>Proj#</th>
<th>Source</th>
<th>Location</th>
<th>Description</th>
<th>Type</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>26</td>
<td>Committee</td>
<td>FM 1376</td>
<td>Extend FM 1376 from North Main to Johns Road</td>
<td>MTP</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>12</td>
<td>CrowdSource</td>
<td>Adler Road</td>
<td>Extend Adler from FM 474 to Esperanza</td>
<td>MTP</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>42</td>
<td>CrowdSource</td>
<td>Champion Blvd / Greenfield Roads</td>
<td>Extend Champion Blvd north to Adler Extension(P) and provide vehicular connections at Vista Verde and Bentwood</td>
<td>MTP</td>
<td>A study should be made of the environmental and cultural resources to establish feasibility</td>
</tr>
<tr>
<td>58</td>
<td>122</td>
<td>CrowdSource</td>
<td>Greenfield Road from SH 46 to FM 3351</td>
<td>Extend Road from SH 46 through Georges Ranch to Amman and then to FM 3351 as shown</td>
<td>MTP</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>20</td>
<td>Committee Source</td>
<td>Enterprise Parkway</td>
<td>Extend Enterprise Parkway to IH 10 East Frontage Road</td>
<td>MTP</td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>125</td>
<td>CrowdSource</td>
<td>Lattimore</td>
<td>Extend to Lattimore to School Street</td>
<td>MTP</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>126</td>
<td>CrowdSource</td>
<td>New Connection</td>
<td>New greenfield road thru Spence Ranch connecting SH 46 and Johns Road, with connection to IH 10 Frontage Road</td>
<td>MTP</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>18</td>
<td>Committee Source</td>
<td>Regent Blvd</td>
<td>Extend Regent Blvd to Upper Balcones</td>
<td>MTP</td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>150</td>
<td>CrowdSource</td>
<td>Winding Woods</td>
<td>Extend to Champion Boulevard</td>
<td>MTP</td>
<td></td>
</tr>
<tr>
<td>57</td>
<td>19</td>
<td>Committee</td>
<td>Tilbury Drive</td>
<td>Find a way to provide missing link between Bucoles and Regent Park</td>
<td>MTP</td>
<td></td>
</tr>
<tr>
<td>27(a)</td>
<td></td>
<td>Committee</td>
<td>Copper Creek/Cascade Caverns</td>
<td>Extend Copper Creek south to connect to Cibolo Creek</td>
<td>MTP</td>
<td></td>
</tr>
<tr>
<td>27(b)</td>
<td></td>
<td>Committee</td>
<td>Copper Creek/Cascade Caverns</td>
<td>Extend Copper Creek south to connect to Cascade Caverns south of Schotde Road</td>
<td>MTP</td>
<td>special</td>
</tr>
</tbody>
</table>

**TxDOT Projects**

Twenty-four projects and suggestions involve TxDOT roadways. Twenty-three projects came from the CrowdSource app, while one suggestion evolved from the Committee. Seventeen of these are in or near Boerne, two are in the Comfort community (84 and 96), and four are mostly in the rural areas of the County (62, 72, 149, and 209). See the table on pages 12 and 13
While the schedule for the development and delivery of the TxDOT projects is controlled by TxDOT, the Committee has designated fifteen of them as elements of a Short Range Transportation Plan. Two of the projects (84 and 72) are already on TxDOT’s Transportation Improvement Plan. Five others (149, 209, 62, 56, and 22 Committee²) present with sufficient urgency that unified community support would likely help get them added to the list at the next Call for Projects (See Appendix C – Funding Transportation, State and Federal Sources).

**Fixing the SH 46, Herff, Esser, and River Road Intersection (The WORST intersection in Kendall County)**

According to the Committee’s unscientific poll, this is the most congested intersection in the County. In professional traffic engineering vernacular, it has a Level of Service of “F”. It is also susceptible to flooding, and any construction to raise the intersection above even modest floods is nearly impossible due to the absence of a reasonable detour that could be used during construction. The Committee did avail itself of the traffic analysis services of Committee member Steve Sharma, P.E., who developed a Synchro traffic model for the intersection and various modifications. The City of Boerne also engaged one of their traffic consultants to study several alternative configurations for the intersection.

Both efforts determined relatively minor modifications could be made to marginally improve the level of service for a few years, but also found any improvement is likely to be short lived. Moreover, even the minor intersection modifications that offer short term relief would require right of way acquisition.

During the August 30, 2022, meeting, the Committee learned City of Boerne had recently purchased a 15-acre tract of land north of SH 46, between Esser Road and Sharon Drive West. This new acquisition opens several new opportunities to improve the capacity of the SH 46-Herff-Esser intersection.

One scenario envisions the realignment of SH 46 west of Sharon Drive West, routing it across Currey Creek to the northeast of Longhorn Café and curving it south to line up with Herff Road. This scenario calls for a 600-foot long bridge over both River Road and the Cibolo Creek. Esser would be extended to the south and curved to line up with City Park Road at the existing SH 46. This moves the Esser-SH 46 intersection to be just north of the existing parking lot north of Longhorn Cafe. The existing section of SH 46 between City Park Road and the new SH 46 alignment would be removed and possibly incorporated into the Fair Grounds Tract.

The two largest turning movements at the existing SH 46-Herff intersection are westbound SH46 to southbound Herff and northbound Herff to eastbound SH 46, and these turning movements exacerbate the congestion currently experienced at the

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² Note, there is a Project 22 CrowdSource and a Project 22 Committee. The Project 22 Committee, the project referred to here is the seventeenth project listed in the TxDOT grouping.
existing intersection. One advantage of this scenario above is that these problematic turning movements can be transformed into “through” movements at the relocated intersection.

Other advantages of this scenario include:

- **Making the River Road area between Main and Esser more “park-like”** - It is anticipated that the less efficient connection of River Road to SH 46 would result in somewhat diminished traffic volumes on River Road, helping it to be seen as more of a park road than a state highway.

- **Unifying the trail system and making it safer** - This scenario allows the Old No. 9 Trail to be extended under the proposed bridge and safely connect to the trail networks within the City Park and the Cibolo Nature Center. New pedestrian amenities along River Road to the west, including a possible separate use path, could connect with the Hill Country Mile trail.

- **Simpler construction phasing** – Because much of the proposed work is outside of the existing roadways, construction phasing is likely to be simpler. Existing SH 46 can remain open for much of the construction of the new Esser and new SH 46, leaving only minor “tie-ins” at SH 46 and at Esser. Once the new Esser alignment is open, the section between Longhorn and the nursing home can be accomplished, and after that, the rest of the bridge and tie in to Herff south of the Cibolo. It will be challenging and inconvenient, no doubt, but still simpler than other scenarios.
Another scenario involves the slight realignment of River Road to intersect with Esser using a roundabout, with its center about 175 feet north of where the two roads currently intersect. The roundabout would be at least partially supported by a bridge that would extend southwest across the Cibolo Creek. Under this scenario, SH 46 would be removed between the existing Herff/Esser/River Road intersection and its new alignment near Sharon Drive West. City Park Road would be extended to intersect the new SH 46 alignment east of the proposed roundabout at SH 46 and Esser.

Other scenarios exist for dealing with this intersection. The City of Boerne has performed some rudimentary analysis of other innovative intersections, such as a displaced left turn intersection.

These scenarios open the door for changing the route of SH 46 west of Sharon Drive West to follow Esser and Herff Roads. Such a change would seem to be attractive to TxDOT because it would eliminate a low water
crossing on its State Highway system and provide greater capacity than River Road could ever provide. It would be a mistake to assume, without verification, that these benefits would elicit TxDOT’s endorsement of the change. Indeed some on the Committee have expressed concerns that these changes could result in Herff Road becoming more “highway like” and open the door to future widening and/or double decking.

The Committee recommends the City of Boerne and Kendall County discuss with TxDOT the scenarios that have been identified to determine if any of them might be feasible, and then in concert with TxDOT, begin the process of improving the worst intersection in Kendall County.

City of Boerne Downtown Masterplan

Main Street is important to many people in Kendall County. 27 of the 142 CrowdSource comments involved Main Street, the most comments received on any street. Eliminating similar suggestions and grouping others, the list was reduced to five or six (Projects 57, 89, 113, 157, 158, and maybe 46). The Committee agreed to group these five or six projects together and recommend they become the focus of a City of Boerne Downtown Master Plan. These suggestions relate more to pedestrian convenience and safety than mitigating automotive congestion, and four of them envision a reduction in the speed and/or number of travel lanes with an implied enhancement to the pedestrian amenities. While not a specific part of its charge, the Committee is nevertheless compelled to include those recommendations and suggestions.

Recent decisions regarding TxDOT roads in some urban areas suggest these kinds of suggestions are not currently favored by TxDOT. Therefore, to pursue those suggestions would likely require the City of Boerne assume ownership of a significant part of the Business 87 right of way. See RP 4.1 and 4.2 in Chapter 4 related to a Boerne Downtown Master Plan. Three other projects also involve Main Street beyond the limits of “downtown” Boerne (22, 144, and 145), and they could also be included in such a master plan.

SH 46 East Roundabout Corridor

The Committee was favorably impressed by the presentation of Jeremy Kashman, the Director of Engineering from Carmel, Indiana. Known as the roundabout capital of the world, Carmel had 138 (and counting) roundabouts when he presented to the Committee in 2020. Mr. Kashman makes a strong case that roundabouts can be used in a wide range of circumstances to
ease congestion and improve traffic safety. They are also less expensive to maintain than traditional traffic signals. For these and other reasons, some metropolitan areas, including the Texas cities of Fort Worth, Denton, Midland, McKinney, and Sugar Land, are increasingly using roundabouts, and in some cases proposing “roundabout corridors.”

Some members of the Committee believe the creation of a roundabout corridor on SH 46 east would serve to calm traffic as it enters the east part of Boerne. Admittedly, such a dramatic paradigm shift would require study and analysis in conjunction with or by TxDOT. Rather than simply dismissing this novel idea, the Committee encourages the City of Boerne to discuss with TxDOT the possibility of creating such a corridor, with roundabouts potentially at the Woods of Boerne and/or Herff Road.
## Projects by or with TxDOT

<table>
<thead>
<tr>
<th>Recommen. Number</th>
<th>Project Number</th>
<th>Source</th>
<th>Location</th>
<th>Description</th>
<th>Type</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>62</td>
<td>CrowdSource</td>
<td>SH 46 West - IH 10 to county line</td>
<td>Improve roadway safety</td>
<td>TxDOT</td>
<td>At a minimum, add a center left turn lane as required; also consider acceleration and deceleration lanes at major street intersections; depending on anticipated traffic volumes anticipated consider additional traffic lanes, as an interim for short range measure make improvements at Deep Hollow</td>
</tr>
<tr>
<td>33</td>
<td>17</td>
<td>CrowdSource</td>
<td>Blanco/Bentwood and FM 474/Esse</td>
<td>Install roundabout</td>
<td>TxDOT</td>
<td>Committee believes this should not be the first roundabout in the area</td>
</tr>
<tr>
<td>39</td>
<td>96</td>
<td>CrowdSource</td>
<td>IH 10 RM 473 to US 87</td>
<td>Add new one way frontage roads</td>
<td>TxDOT</td>
<td>Consider adding this project to the package of City of Boerne Downtown Master Plan projects; as an interim project, remove some parking on east side of Main to allow a free right turn from west bound River Road to northbound Main</td>
</tr>
<tr>
<td>55</td>
<td>46</td>
<td>CrowdSource</td>
<td>Main Street and River Road</td>
<td>Install roundabout</td>
<td>TxDOT</td>
<td>Combine with CrowdSource Projects 18 and CrowdSource Project 184 (Loc Gov)</td>
</tr>
<tr>
<td>13</td>
<td>149</td>
<td>CrowdSource</td>
<td>FM 289</td>
<td>Widen bridge over Little Joshua to facilitate truck movements</td>
<td>TxDOT</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>84</td>
<td>CrowdSource</td>
<td>SH 27</td>
<td>Calm traffic, provide parking and pedestrian amenities</td>
<td>TxDOT</td>
<td>See Interim Committee narrative</td>
</tr>
<tr>
<td>17</td>
<td>22</td>
<td>CrowdSource</td>
<td>Main/School/Adler</td>
<td>Install roundabout or alternative intersection design</td>
<td>TxDOT</td>
<td>Combine with CrowdSource Projects 18 and CrowdSource Project 184 (Loc Gov)</td>
</tr>
<tr>
<td>20</td>
<td>209</td>
<td>CrowdSource</td>
<td>SH 46 at Pleasant Valley</td>
<td>Need improvements to make getting off and on SH 46 safer</td>
<td>TxDOT</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>72</td>
<td>CrowdSource</td>
<td>FM 1376 - FM 473 south of Sisterdale to county line</td>
<td>Widen Roadway and add shoulders</td>
<td>TxDOT</td>
<td>Segment south of Upper Sisterdale is in draft ARRPO TIP for FY 2024</td>
</tr>
<tr>
<td>23</td>
<td>103</td>
<td>CrowdSource</td>
<td>FM 1376 and North School</td>
<td>Illuminate intersection</td>
<td>TxDOT</td>
<td>In compliance with International Dark Sky Criteria</td>
</tr>
<tr>
<td>28</td>
<td>152</td>
<td>CrowdSource</td>
<td>Blanco Road</td>
<td>Reconfigure as two travel lanes, center turn lane, and bike lanes</td>
<td>TxDOT</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>144</td>
<td>CrowdSource</td>
<td>Main Street and Herff</td>
<td>Install roundabout</td>
<td>TxDOT</td>
<td>This is a good candidate for the first roundabout on a major street in Boerne; as an interim measure consider a free right turn from northbound Main to eastbound Herff, Committee recommends coupling this project with Project 145</td>
</tr>
<tr>
<td>36</td>
<td>145</td>
<td>CrowdSource</td>
<td>Main Street and Christus Parkway</td>
<td>Install roundabout</td>
<td>TxDOT</td>
<td>Committee recommends coupling this project with Project 144</td>
</tr>
<tr>
<td>38</td>
<td>163</td>
<td>CrowdSource</td>
<td>IH 10 from Johns Road to Ranger Creek</td>
<td>Provide oneway frontage roads and improvements to northbound frontage road at Ranger Creek Road</td>
<td>TxDOT</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>56</td>
<td>CrowdSource</td>
<td>IH 10 Westbound Frontage Road and US 87 Business (Main Street)</td>
<td>Improve intersection</td>
<td>TxDOT</td>
<td>Combine with CrowdSource Projects 22 and CrowdSource Project 184 (Loc Gov). As a backup or interim measure, a center “refuge” lane for Adler traffic turning left (north) onto FM 474 should be added to minimize queue on Adler</td>
</tr>
</tbody>
</table>

Continued on next page
Local Government Projects

After extracting the Major Thoroughfare Plan Projects and TxDOT Projects from the universe of projects and suggestions that was advanced for further consideration by the Committee, twenty-six remained to be considered for implementation as Local Government Projects.

One suggestion (#15) fed Policy Recommendations articulated in Chapter 4. Six recommendations related to the removal of vehicular and/or pedestrian gates between adjacent developments to mitigate congestion arising from school traffic. The remaining nineteen recommendations included two projects on which planning work has already begun (184, Adler Road, and 300, Coughran Road).
<table>
<thead>
<tr>
<th>Database Ref.</th>
<th>Source</th>
<th>Location Description</th>
<th>Type</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Comm. Source</td>
<td>Dana Creek Drive, Remove gate on Dana Creek Drive</td>
<td>Gate</td>
<td>Also applies to projects 10, 15, 20, 45, and 55 (???)</td>
</tr>
<tr>
<td>10</td>
<td>Comm. Source</td>
<td>Various locations in FOR</td>
<td>Gate</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Comm. Source</td>
<td>Old Fredericksburg Road - Eastern terminus of Cascade Caverns MPO Project to Balcones Creek</td>
<td>Loc Gov</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>CrowdSource</td>
<td>Herff &amp; Old San Antonio, Replace signal with Roundabout</td>
<td>Loc Gov</td>
<td>This project depends on sufficient improvement at Herff and Esser to prevent queue from backing up into the roundabout</td>
</tr>
<tr>
<td>26</td>
<td>CrowdSource</td>
<td>Johns and School, Install roundabout</td>
<td>Loc Gov</td>
<td>Include Pedestrian / School Crossing</td>
</tr>
<tr>
<td>29</td>
<td>CrowdSource</td>
<td>Calk Lane, Extend Calk Lane to Cibolo Crossing</td>
<td>Loc Gov</td>
<td>Make improvements pedestrian and hike friendly</td>
</tr>
<tr>
<td>31</td>
<td>Comm. Source</td>
<td>Cascade Caverns Road, Extend roadway configuration of MPO Project from Buckskin to Ranch/Cascade Caverns/SouthGlen Blvd</td>
<td>Loc Gov</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>CrowdSource</td>
<td>Johns Road in vicinity of Honey Bee Lane, Add center left turn lane</td>
<td>Loc Gov</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>Comm. Source</td>
<td>Scenic Loop - IH 10 to Balcones Creek, Improve roadway complete with sidewalks, bike lanes, and separate use paths as an MPO Project</td>
<td>Loc Gov</td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>Comm. Source</td>
<td>Shared use path from Kendell Estates to primary collector part of Trails Plan recommendations, Bike</td>
<td>Could this be built by Developer???</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>Public</td>
<td>School Street, Conduct comprehensive study to identify opportunities to enhance vehicular mobility in some segments and enhance pedestrian mobility and safety in all segments</td>
<td>Loc Gov</td>
<td>Include bridge improvements as required to make bridges above 100 year flood</td>
</tr>
<tr>
<td>40</td>
<td>CrowdSource</td>
<td>Esser/Adler, Establish this as a Main Street by pass by eliminating stop signs and traffic signals with roundabouts and improving roadway as needed</td>
<td>Loc Gov</td>
<td>This project incorporates TxDOT Projects 18 and 22, and Loc Gov Project 184. Additional ROW could be required to fully accomplish this project.</td>
</tr>
<tr>
<td>43</td>
<td>CrowdSource</td>
<td>Extend Destiny to Esperanza, Bike</td>
<td>Bike</td>
<td>Not possible to do this without Esperanza Concurrence</td>
</tr>
<tr>
<td>79</td>
<td>Interim Comm.</td>
<td>Old San Antonio Road, Herff to Cascade Caverns, Rehabilitate Road to provide two lanes and center left turn lane</td>
<td>Loc Gov</td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>CrowdSource</td>
<td>Deer Creek Drive, Extends from Vista Verde to Destiny Drive, remove vehicular gate</td>
<td>Gate</td>
<td></td>
</tr>
<tr>
<td>99</td>
<td>CrowdSource</td>
<td>Esser Road, Restripe to provide center left turn lane</td>
<td>Loc Gov</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>CrowdSource</td>
<td>Dietz Eiland Fair Oaks Parkway, Install roundabout</td>
<td>Loc Gov</td>
<td></td>
</tr>
<tr>
<td>101</td>
<td>CrowdSource</td>
<td>City Park Road - SH 46 to Charger Boulevard, Implement traffic calming measures</td>
<td>Loc Gov</td>
<td>See Crested Butte examples</td>
</tr>
<tr>
<td>116</td>
<td>CrowdSource</td>
<td>Ammann Road, Soften sharp curves</td>
<td>Loc Gov</td>
<td>Consider including traffic calming measures</td>
</tr>
<tr>
<td>128</td>
<td>CrowdSource</td>
<td>Telford Way/Jordan Place, Remove gate to facilitate school traffic</td>
<td>Gate</td>
<td></td>
</tr>
<tr>
<td>184</td>
<td>CrowdSource</td>
<td>Adler Road, Rehabilitate with two lanes and center left turn lane</td>
<td>Loc Gov</td>
<td>Combine with CrowdSource Projects 18 and 22 (TxDOT)</td>
</tr>
<tr>
<td>211</td>
<td>CrowdSource</td>
<td>Bess Street Wanda to South Main, Provide traffic calming measures</td>
<td>Loc Gov</td>
<td></td>
</tr>
<tr>
<td>300</td>
<td>Interim Comm.</td>
<td>Comm. Source, Couplihan - SH 46 to Upper Balcones, Improve roadway alignment and capacity</td>
<td>Loc Gov</td>
<td>County preparing schematic plans</td>
</tr>
</tbody>
</table>
Short Range Program Priorities

After the three groups of projects and suggestions were sorted into Short Range and Long Range, a total of thirty-six projects, plus the recommendation to create the Boerne Downtown Master Plan were found to be in the Short Range Program. The Co-chairs selected nineteen of these Short Range Projects as “Priority” Short Range Projects, leaving eighteen as “Other” Short Range Projects. The Project Sheets for these nineteen projects are included on the following pages. The Project Sheets for the Other Short Range Program Projects are listed following the Priority Short Range Project Sheets.

**MTP** – Two of the Priority Short Range Program Projects (150 and 19) are Major Thoroughfare Plan Projects. As such, the city is not able to control the timing of those projects. Nevertheless, the Committee recommends the City of Boerne evaluate the circumstances and seek a way to accelerate the completion of these projects through innovative approaches.

**TxDOT** – Nine of the Priority Short Range Program Projects involve TxDOT roads and highways. Two of these nine are already programmed by TxDOT, and the appropriate local government should coordinate with TxDOT and AAMPO to offer the remaining seven projects in response to AAMPO’s Call for Projects expected to occur this year. *(See Appendix C – Funding Transportation, State and Federal Sources.)*

**Local Government** – The remaining eight of the Priority Short Range Program Projects involve primarily Local Governments. Some of these may be eligible for federal funding if they are or can be designated as “functionally classified” roads. These include 31 (Cascade Caverns), (79) Old San Antonio Road, 116 (Ammann Road), 184 (Adler Road), and 300 (Coughran Road). The responsible local government(s) should determine if the size of a particular project warrants the additional administrative costs of complying with the requirements of this funding source.

**Works in Progress**

Four of the projects in the recommended Priority Short Range Program are already included in TxDOT’s Program or are being planned by Kendall County and the City of Boerne. These include 72 (FM 1376 north of Sisterdale), 84 (SH 27 in Comfort), 184 (Adler Road), and 300 (Coughran Road). The first two are not overly congested, but one has a low pavement condition index and the other has inadequate shoulders; both are already programmed for construction. The community of Comfort is already attempting to collaborate with TxDOT on the SH 27 Project design as this is a prime opportunity to influence the design to address related pedestrian safety issues. Kendall County should closely monitor the planning and design of the FM 1376 Project, with special attention to construction phasing, to avoid a repeat of the problems experienced the last few years when the southern parts of FM 1376 were reconstructed.
Round and Round We Go

Four of the projects in the Priority Short Range Program involve implementation of modern roundabouts: 22 CrowdSource (Main/School/Adler), 18 (FM 474 and Adler), 24 (Herff and Old San Antonio), and 100 (Dietz Elkhorn and Fair Oaks Parkway). A fifth modern roundabout is implied at Adler and Plant as part of other suggestions. While the Committee is favorably impressed with roundabouts, it acknowledges prudent traffic engineering is also important. Thoughtful analysis of these proposed roundabouts should be performed to verify that they will be able to satisfactorily accommodate projected traffic volumes. In addition, some consideration should be given to which location will be used to introduce roundabouts to the community.

Preliminary Scoping

The Co-chairs acknowledge the total cost of the recommended Program of Priority Short Range Projects could amount to more than the County and Cities can afford at this time. Nevertheless, work should begin as soon as possible (at least on those projects that are subject to the governments' control or influence) because complicating factors like Right of Way acquisition, utility investigation and adjustment, and environmental assessments may need to be undertaken and completed. Other matters such as right-of-way and topographic surveys, soil and geotechnical investigations, traffic studies, and inter-agency funding agreements may need to be prepared. Preliminary planning and design efforts, which would include evaluations of these matters as well as the development of a preliminary construction cost can provide a solid basis for making decisions about how and even if a project should move forward. As the list of Priority Short Range Program Projects nears completion, the responsible agencies should look to the Other Short Range Program Projects for additional projects to begin the preliminary scoping.

<table>
<thead>
<tr>
<th>Recommendation Number</th>
<th>Project Number</th>
<th>Source</th>
<th>Location</th>
<th>Description</th>
<th>Type</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>56</td>
<td>150</td>
<td>CrowdSource</td>
<td>Winding Woods</td>
<td>Extend to Champion Boulevard</td>
<td>MTP</td>
<td></td>
</tr>
<tr>
<td>57</td>
<td>19</td>
<td>Committee</td>
<td>Tilbury Drive</td>
<td>Find a way to provide missing link between Burcees and Regent Park</td>
<td>MTP</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>54</td>
<td>CrowdSource</td>
<td>Esser - Bentwood to Greyhound Lane</td>
<td>Widen road and provide turn lanes</td>
<td>TxDOT</td>
<td>Also recommended by Project Subcommittee</td>
</tr>
<tr>
<td>13</td>
<td>149</td>
<td>CrowdSource</td>
<td>FM 289</td>
<td>Widen bridge over Little Joshua to facilitate truck movements</td>
<td>TxDOT</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>84</td>
<td>CrowdSource</td>
<td>SH 27</td>
<td>Calm traffic, provide parking and pedestrian amenities</td>
<td>TxDOT</td>
<td>Already part of TxDOT TIP for 2024</td>
</tr>
<tr>
<td>17</td>
<td>22</td>
<td>CrowdSource</td>
<td>Main/School/Adler</td>
<td>Install roundabout or alternative intersection design</td>
<td>TxDOT</td>
<td>Combine with CrowdSource Projects 18 and CrowdSource Project 184 (Loe Gov)</td>
</tr>
<tr>
<td>20</td>
<td>209</td>
<td>CrowdSource</td>
<td>SH 46 at Pleasant Valley</td>
<td>Need improvements to make getting off and on SH 46 safer</td>
<td>TxDOT</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>105</td>
<td>CrowdSource</td>
<td>FM 1376 and North School</td>
<td>Illuminate intersection</td>
<td>TxDOT</td>
<td>In compliance with International Dark Sky Criteria</td>
</tr>
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</table>

Continued on next page
## Priority Short Range Program Projects

<table>
<thead>
<tr>
<th>Record Number</th>
<th>Project Number</th>
<th>Source</th>
<th>Location</th>
<th>Description</th>
<th>Type</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>56</td>
<td>CrowdSource</td>
<td>IH 10 Westbound Frontage Road and US 87 Business (Main Street)</td>
<td>Improve intersection</td>
<td>TxDOT</td>
<td></td>
</tr>
<tr>
<td>59</td>
<td>8</td>
<td>CrowdSource</td>
<td>FM 474 and Adler</td>
<td>Install roundabout</td>
<td>TxDOT</td>
<td>Combine with CrowdSource Projects 22 and CrowdSource Project 194 (LocGov). As a backup or interim measure, a center &quot;refuge&quot; lane for Adler traffic turning left (north) onto FM 474 should be added to minimize queue on Adler.</td>
</tr>
<tr>
<td>43</td>
<td></td>
<td>Committee</td>
<td>SH 46/Esster</td>
<td>SH 46 to Esster</td>
<td>TxDOT</td>
<td>Realign SH 46 from Sharon Drive West to pass north of Longhorn Café and connect to Herff; relocate intersection of SH 46 and Esster.</td>
</tr>
<tr>
<td>5</td>
<td>31</td>
<td>Comm. Source</td>
<td>Cascade Caverns Road</td>
<td>Extend roadway configuration of MPO Project from Buckskin to Ranch/Cascade Caverns/South/Glen Blvd</td>
<td>LocGov</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>36</td>
<td>Comm. Source</td>
<td>Scenic Loop - IH 10 to Balconies Creek</td>
<td>Improve roadway complete with sidewalks, bike lanes, and separate use paths on an MPO Project</td>
<td>LocGov</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>184</td>
<td>CrowdSource</td>
<td>Adler Road</td>
<td>Rehabilitate with two lanes and center left turn lane</td>
<td>LocGov</td>
<td>Combine with CrowdSource Projects 18 and 22 (TxDOT).</td>
</tr>
<tr>
<td>15</td>
<td>300</td>
<td>Interim Comm.</td>
<td>Coughran - SH 46 to Upper Balconies</td>
<td>Improve roadway alignment and capacity</td>
<td>LocGov</td>
<td>County already preparing schematic plans.</td>
</tr>
<tr>
<td>16</td>
<td>79</td>
<td>Interim Comm.</td>
<td>Old San Antonio Road - Herff to Cascade Caverns</td>
<td>Rehabilitate Road to provide two lanes and center left turn lane</td>
<td>LocGov</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>116</td>
<td>CrowdSource</td>
<td>Ammann Road</td>
<td>Soften sharp curves</td>
<td>LocGov</td>
<td>Consider including traffic calming measures.</td>
</tr>
<tr>
<td>32</td>
<td>100</td>
<td>CrowdSource</td>
<td>Dietz Elk Horn-Fair Oaks Parkway</td>
<td>Install roundabout</td>
<td>LocGov</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>24</td>
<td>CrowdSource</td>
<td>Herff &amp; Old San Antonio</td>
<td>Replace signal with Roundabout</td>
<td>LocGov</td>
<td>This project depends on sufficient improvement at Herff and Esster to prevent queue from backing up into the roundabout.</td>
</tr>
<tr>
<td>41</td>
<td>57</td>
<td>CrowdSource</td>
<td>Main Street</td>
<td>Reduce speed limit to 25 mph</td>
<td>TxDOT</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>89</td>
<td>CrowdSource</td>
<td>Main Street - Bandera to School</td>
<td>Implement a &quot;Complete Street&quot; program</td>
<td>TxDOT</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>113</td>
<td>CrowdSource</td>
<td>Main Street @ Oak Park</td>
<td>Install traffic signal</td>
<td>TxDOT</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>157</td>
<td>CrowdSource</td>
<td>Main Street - Blanco to River</td>
<td>Eliminate parallel parking, add center turn lane</td>
<td>TxDOT</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>158</td>
<td>CrowdSource</td>
<td>Main Street - North to Schleicher</td>
<td>Eliminate parallel parking</td>
<td>TxDOT</td>
<td></td>
</tr>
</tbody>
</table>
Recommendation Detail:
This short extension of Roadway would allow traffic to commute to Champion Boulevard and head North without having to access SH-46 and the two traffic signals. The Committee supports this project as shown in the 2019 Boerne Thoroughfare Plan.

Project Time Frame: As Development Occurs
Source: Crowdsourcing
Supported by Crowdsourcing Comments Ref#: 150
ROW Needed: N/A
Suggested Project Owner(s): City of Boerne Major Thoroughfare Plan
TILBURY DRIVE EXTENSION

Recommendation Detail:
This greenfield project would accommodate all modes of traffic (vehicular, bicycle, pedestrian, etc) attempting travel to and from a rapidly growing residential area in Southwest Boerne. The project would include a long section of Right-of-Way that is currently being coordinated through the City of Boerne’s development process. The Committee supports this project as shown in the 2019 Boerne Thoroughfare Plan.

Project Time Frame.................................As Development Occurs
Source..........................................................Committee Discussion
Supported by Crowdsourcing Comments Ref#......................N/A
ROW Needed..........................................................N/A
Suggested Project Owner(s)............City of Boerne Major Thoroughfare Plan
Recommendation Detail:
Add center turn lane along Esser Road from Bentwood to Greyhound Lane with a shared use pedestrian and bike path on one side.

Project Time Frame: Short Term
Source: Past Studies Subcommittee, Crowdsourcing
Supported by Crowdsourcing Comments Ref# 54, 86
ROW Needed: No
Suggested Project Owner(s): TxDOT
**#13**

**WIDEN FM 289 BRIDGE OVER LITTLE JOSHUA CREEK**

**Recommendation Detail:**
A cost-effective solution for addressing the inadequate turning radii at the Little Joshua Creek would be to widen the FM 289 bridge over the Little Joshua Creek to provide adequate turning radii for all approaches.

**Project Time Frame**
- Short Term

**Source**
- KCBFOTC Interim Report, Crowdsourcing

**Supported by Crowdsourcing Comments Ref#**
- 29, 30, 149

**ROW Needed**
- No

**Suggested Project Owner(s)**
- TxDOT
#14

SH27-RM 473 INTERSECTION, COMFORT

Recommendation Detail:
As presently configured, the intersection(s) at SH 27, FM 473, Front Street, and Fifth Street is confusing and dangerous. Moreover, as the Comfort community grows, traffic on SH 27 is increasing and the downtown retail area is expanding across SH 27, creating increased pedestrian traffic. Anecdotal accounts of elderly pedestrians crossing the five-lane SH 27 using the center dual left turn lane for refuge abound. Reconfiguring the SH 27 - RM 473 intersection to a roundabout should slow eastbound SH 27 traffic and simplify the traffic patterns at the confusing and dangerous intersection.

Project Time Frame: Short Term
Source: KCBFOTC Interim Report, Crowdsourcing
Supported by Crowdsourcing Comments Ref#: 82, 83, 84
ROW Needed: Yes
Suggested Project Owner(s): TxDOT
Recommendation Detail:
A roundabout has been considered in the past, but because that configuration involved ROW acquisition, it has not been pursued. Committee members have worked on several of the roundabout concept sketches and have several designs that are more efficient, less obtrusive, minimize ROW takings and are likely less expensive to construct. Another suggestion involves making Adler a “through” street instead of School Street; in this scenario, left hand turns from Adler to School and left hand turns from School to Adler would be prevented by a median in Adler.

Regardless of the form the intersection improvement takes, it will be important that its proximity to important pedestrian facilities be considered.

Project Time Frame. ........................................... Short Term
Source. ............................................ KCBFOTC Interim Report, Crowdsourcing
Supported by Crowdsourcing Comments Ref# ................................. 22, 85
ROW Needed. ............................................................... N/A
Suggested Project Owner(s) ............................................. TxDOT
Recommendation Detail:
Highway 46 Westbound needs a right turn lane going into Pleasant Valley; at both intersections of Pleasant Valley Dr and Hwy 46. Residents have reported difficult and dangerous conditions while attempting to enter and exit the community.

Project Time Frame .................................................. Short Term
Source .............................................................. Crowdsourcing
Supported by Crowdsourcing Comments Ref# .................. 209
ROW Needed .......................................................... Yes
Suggested Project Owner(s) ........................................ TxDOT
#23
SISTERDALE CUTOFF AND 1376 INTERSECTION

Recommendation Detail:
Install Dark Sky Friendly lighting to improve safety of intersection.

Project Time Frame. .......................................................... Short Term
Source. .......................................................... Crowdsourcing, Committee Discussion
Supported by Crowdsourcing Comments Ref# .................... 103
ROW Needed. .......................................................... No
Suggested Project Owner(s) ........................................ TxDOT
#40
“NORTH INTERCHANGE” (HWY 87 AND I-10 ACCESS ROAD) INTERSECTION IMPROVEMENTS

Recommendation Detail:
Improve intersection due to safety concerns.

Project Time Frame: ................................. Short Term
Source: .............................................. Crowdsourcing
Supported by Crowdsourcing Comments Ref# .................................. 56
ROW Needed: ........................................ No
Suggested Project Owner(s): ......................... TxDOT
**Recommendation Detail:**

Install roundabout.

As a backup or interim measure, a center “refuge” lane for Adler traffic turning left (north) onto FM 474 should be added to minimize queue on Adler.

**Project Time Frame** ............................................. Short Term

**Source** ............................................................... Crowdsourcing

**Supported by Crowdsourcing Comments Ref#** ........................... 18

**ROW Needed** .......................................................... Yes

**Suggested Project Owner(s)** ........................................ TxDOT
Recommendation Detail:
Extend the roadway configuration of MPO Cascade Caverns Improvement Project from Buckskin to Ranch/Cascade Caverns/Southglen Blvd.

Project Time Frame: Short Term
Source: Past Studies Subcommittee
Supported by Crowdsourcing Comments Ref#: 194, 118
ROW Needed: Yes
Suggested Project Owner(s): City of Boerne
#11
ADLER ROAD EXPANSION

Recommendation Detail:
Expand Adler Road to add center turn lane from “Five Points” intersection to Hwy 474

Project Time Frame................................................. Short Term
Source......................................................... Past Studies Subcommittee, Crowdsourcing
Supported by Crowdsourcing Comments Ref#............ 169, 184, 193, 20
ROW Needed...................................................... N/A
Suggested Project Owner(s)................................. City of Boerne
**Recommendation Detail:**

The development agreement with Corley Farms obligates the developer to improve that portion of Scenic Loop Rd. adjacent to the development to accommodate the increased traffic demand. The improvement involves constructing two twelve-foot lanes in each direction with fourteen-foot-wide center dual left turn lane in between. In addition, four-foot paved shoulders are provided. This leaves a 4,600-foot segment of Scenic Loop as a two-lane country road. This project improves this 4,600 foot section to the same section provided by the Boerne Bakke developer. Project should include shared use paths for bikes and pedestrians.

**Project Time Frame** .................................................. Short Term

**Source** .............................. KCBFOTC, Past Studies Subcommittee, Crowdsourcing

**Supported by Crowdsourcing Comments Ref#** ......................... 124

**ROW Needed** ............................................................... N/A

**Suggested Project Owner(s)** ........ City of Boerne, Kendall County, AAMPO
#7B
SCENIC LOOP SOUTH OF CORLEY FARMS

Recommendation Detail:
The development agreement with Corley Farms obligates the developer to improve that portion of Scenic Loop Rd. adjacent to the development to accommodate the increased traffic demand. The improvement involves constructing two twelve-foot lanes in each direction with fourteen-foot-wide center dual left turn lane in between. In addition, four-foot paved shoulders are provided. This leaves a portion of Scenic Loop south of the development as a two-lane county road. This project improves Scenic Loop between Corley Farms and the Kendall County line. Project should include shared use paths for bikes and pedestrians.

Project Time Frame. ........................................... Short Term
Source. ......................................................... Past Studies Subcommittee, Crowdsourcing
Supported by Crowdsourcing Comments Ref# ................. 124
ROW Needed. ..................................................... N/A
Suggested Project Owner(s). ................................. Kendall County
Recommendation Detail:
Upon completion of TxDOT I-10 project, northbound drivers on Upper Balcones will turn left onto the “backage” road to reach SH 46. However, at SH 46 this traffic will be forced to turn right onto SH 46 and travel toward Boerne. Drivers will not be able to turn left from the “backage” road onto SH 46 and travel toward Bandera. Drivers will soon realize that they can take Coughran Road from Upper Balcones to SH 46, where they will be able to turn left, albeit without the benefit of a traffic signal.

We recommend improvements to Coughran Road that will allow it to safely handle the additional traffic volumes. Improvements should include the widening of the roadway and the elimination of the sharp double curves for traffic safety. A traffic signal at Coughran Road and SH 46 is likely to be warranted and should be funded by the developer of property to the west of SH 46.”

Project Time Frame: ........................................ Short Term
Source: ................................. KCBFOTC, Past Studies Subcommittee
Supported by Crowdsourcing Comments Ref# ......................... N/A
ROW Needed: ........................................ Yes
Suggested Project Owner(s): .......................... City of Boerne, Kendall County
Recommendation Detail:
Demographic, travel demand, and traffic studies should be done to determine the recommended roadway configuration, including allocations for bicycle lanes, sidewalks, and other features. In this initial phase, the preliminary design for the full roadway configuration should be completed with the intent of initially constructing only one lane in each direction and a center left turn lane.

Project Time Frame. .................................................. Short Term
Source ................................................................. KCBFOTC, Crowdsourcing
Supported by Crowdsourcing Comments Ref# ...................... 79, 95, 173
ROW Needed ............................................................... Yes
Suggested Project Owner(s) ........................................ City of Boerne
AMMANN ROAD IMPROVEMENTS

Recommendation Detail:
Amman Road is a two-lane county road that provides access to primarily residential development between SH 46 and FM 3351. It also serves as an alternative to SH 46 when that highway becomes too congested by normal traffic or closed due to traffic incidents. At the eastern extreme, two ninety-degree corners interrupt long sections of straight roadway. In recent years, increased traffic has brought with it increased traffic accidents, some of which have been severe. This project will soften these right angle corners to provide low speed, appropriately designed curves that should improve traffic safety.

Project Time Frame ............................................ Short Term
Source ......................................................... Crowdsourcing, Past Studies Subcommittee
Supported by Crowdsourcing Comments Ref# ................. 116, 64, 63
ROW Needed ..................................................... N/A
Suggested Project Owner(s) ................ Kendall County, City of Fair Oaks Ranch
Recommendation Detail:
A roundabout will greatly improve traffic mobility, reduce congestion, and ease the potential for vehicular accidents. TxDOT awarded 80% funding in 2018.

Project Time Frame: Short Term
Source: Crowdsourcing
Supported by Crowdsourcing Comments Ref#: 100, 47
ROW Needed: N/A
Suggested Project Owner(s): City of Fair Oaks Ranch
Recommendation Detail:
Convert signaled intersection to roundabout. The project is contingent on the traffic queue not backing up into the roundabout on a regular basis.

Project Time Frame: Short Term
Source: Crowdsourcing
Supported by Crowdsourcing Comments Ref#: 24, 41
ROW Needed: No
Suggested Project Owner(s): TxDOT
<table>
<thead>
<tr>
<th>Recommendation Number</th>
<th>Project Number</th>
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<th>Type</th>
<th>Comments</th>
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<tbody>
<tr>
<td>9</td>
<td>126</td>
<td>CrowdSource</td>
<td>New Connection</td>
<td>New greenfield road thru Spencer Ranch connecting SH 46 and Johns Road, with connection to IH 10 frontage road</td>
<td>MTP</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>18</td>
<td>Comm. Sourced</td>
<td>Regent Blvd</td>
<td>Extend Regent Blvd to Upper Balcones</td>
<td>MTP</td>
<td></td>
</tr>
<tr>
<td>68</td>
<td>27(a)</td>
<td>Committee</td>
<td>Copper Creek/Cascade Caverns</td>
<td>Extend Copper Creek south to connect to Cibolo Creek</td>
<td>MTP</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>72</td>
<td>CrowdSource</td>
<td>FM 1376 - FM 473 south of Sisterdale to county line</td>
<td>Widen roadway and add shoulders</td>
<td>TxDOT</td>
<td>Segment south of Upper Sisterdale is in draft ARRPO TIP for FY 2024</td>
</tr>
<tr>
<td>28</td>
<td>152</td>
<td>CrowdSource</td>
<td>Blanco Road</td>
<td>Reconfigure as two travel lanes, center turn lane, and bike lanes</td>
<td>TxDOT</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>144</td>
<td>CrowdSource</td>
<td>Main Street and Herff</td>
<td>Install roundabout</td>
<td>TxDOT</td>
<td>This is a good candidate for the first roundabout on a major street in Boerne; as an interim measure consider a free right turn from northbound Main to westbound Herff. Committee recommends coupling this project with Project 145</td>
</tr>
<tr>
<td>36</td>
<td>145</td>
<td>CrowdSource</td>
<td>Main Street and Christus Parkway</td>
<td>Install roundabout</td>
<td>TxDOT</td>
<td>Committee recommends coupling this project with Project 144</td>
</tr>
<tr>
<td>38</td>
<td>163</td>
<td>CrowdSource</td>
<td>IH 10 from Johns Road to Ranger Creek</td>
<td>Provide oneway frontage roads and improvements to northbound frontage road at Ranger Creek Road</td>
<td>TxDOT</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>31</td>
<td>CrowdSource</td>
<td>Johns Road in vicinity of Honey Bee Lane</td>
<td>Add center left turn lane</td>
<td>LocGov</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>23</td>
<td>Comm. Sourced</td>
<td>Old Fredericksburg Road - Eastern terminus of Cascade Caverns MPO Project to Balcones Creek</td>
<td>Soften sharp curves and add center left turn lane</td>
<td>LocGov</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>38</td>
<td>Public</td>
<td>School Street</td>
<td>Conduct comprehensive study to identify opportunities to enhance vehicular mobility in some segments and enhance pedestrian mobility and safety in all segments</td>
<td>LocGov</td>
<td>Include bridge improvements as required to make bridges above 100 year flood</td>
</tr>
<tr>
<td>27</td>
<td>211</td>
<td>CrowdSource</td>
<td>Bess Street Wanda to South Main</td>
<td>Provide traffic calming measures</td>
<td>LocGov</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>101</td>
<td>CrowdSource</td>
<td>City Park Road - SH 46 to Channer Boulevard</td>
<td>Implement traffic calming measures</td>
<td>LocGov</td>
<td>See Crested Butte examples</td>
</tr>
<tr>
<td>42</td>
<td>26</td>
<td>CrowdSource</td>
<td>Johns and School</td>
<td>Install roundabout</td>
<td>LocGov</td>
<td>Include Pedestrian / School Crossing</td>
</tr>
<tr>
<td>55</td>
<td>40</td>
<td>CrowdSource</td>
<td>Esser/Adler</td>
<td>Establish this as a Main Street by pass by eliminating stop signs and traffic signals with roundabouts and improving roadway as needed</td>
<td>LocGov</td>
<td>This project incorporates TxDOT Projects 18 and 22, and Loc Gov Project 184. Additional ROW could be required to fully accomplish this project.</td>
</tr>
<tr>
<td>60</td>
<td>99</td>
<td>CrowdSource</td>
<td>Esser Road</td>
<td>Restripe to provide center left turn lane</td>
<td>LocGov</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>29</td>
<td>CrowdSource</td>
<td>Calk Lane</td>
<td>Extend Calk Lane to Cibolo Crossing</td>
<td>LocGov</td>
<td>Make improvements pedestrian and bike friendly</td>
</tr>
</tbody>
</table>
#9

NEW CONNECTION - JOHNS ROAD TO HWY 46 WEST WITH POSSIBLE I-10 ACCESS

Recommendation Detail:
The Committee supports the creation of a North to South roadway that would connect SH 46 West to Johns Road on the West side of IH-10. This roadway of approximately 1.5 to 2.0 miles is shown in the 2019 Boerne Thoroughfare Plan and would be required as land develops. The Committee also supports a separate roadway that runs due east from this N-S connector and intersects with the IH-10 Eastbound Access Road between Johns Road and SH 46.

Project Time Frame.................................................. Short Term
Source.......................................................... Past Studies Subcommittee, Crowdsourcing
Supported by Crowdsourcing Comments Ref#.............................. 126
ROW Needed......................................................... N/A
Suggested Project Owner(s)............. City of Boerne Major Thoroughfare Plan
#18
REGENT PARK EAST-WEST CONNECTION

Recommendation Detail:
Per City of Boerne development agreement with Regent Park, the East/West major arterial of Regent Boulevard was added. The Regent Park developer-constructed road will end at the Menger Springs development. The Menger Springs developer provided right-of-way to continue the roadway to Upper Balcones. The ROW in the Menger Springs development does not directly meet up with Upper Balcones, requiring the acquisition of land. This 1.25 Mile section of roadway will complete an East-West connection from IH-10 to Upper Balcones Road.

The Committee supports this project which is shown in the 2019 Boerne Thoroughfare Plan and would be required as land develops.

Project Time Frame ................................................................. Long Term
Source ................................................................. Past Studies Subcommittee
Supported by Crowdsourcing Comments Ref# ......................... N/A
ROW Needed ................................................................. Yes
Suggested Project Owner(s) ........ City of Boerne Major Thoroughfare Plan


**#68**

**EXTEND COPPER CREEK TO CIBOLO CREEK**

**Recommendation Detail:**
Extend Copper Creek south to connect to Cibolo Creek.

**Project Time Frame** .................................. Short Term
**Source** ...................................................... KCBFOTC Committee Member

**Supported by Crowdsourcing Comments Ref#** ......................... N/A
**ROW Needed** ......................................................... N/A
**Suggested Project Owner(s)** ........................ City of Boerne Major Thoroughfare Plan
#22
1376 ROADWAY IMPROVEMENTS

Recommendation Detail:
Widen 1376 to two-lanes 12’ width each with 3’ shoulders, and center passing lanes where appropriate. Segment south of Upper Sisterdale is in draft ARRPO TIP for FY2024.

Project Time Frame................................................. Short Term
Source................................................................. Crowdsourcing
Supported by Crowdsourcing Comments Ref#......................... 69, 72
ROW Needed.............................................................. No
Suggested Project Owner(s)........................................... TxDOT
Recommendation Detail:
It is proposed that City coordinate with TxDOT to reconfigure the pavement markings of Blanco Road to change the configuration from the existing 4 travel lanes to 3 lanes (2 travel and one center left turn). Per the federal Highway Administration (FHA) this reconfiguration, commonly called a road diet, can improve safety, calm traffic, provide better mobility and access for all road users, and enhance overall quality of life. This proposed reconfiguration would allow the creation of bike lanes along the curbs which will allow travel lanes for bikes, but will also provide a needed buffer to the existing sidewalks that are adjacent to the curbs, and improved turning lanes at the intersections of Main and Blanco, Plant and Blanco, and Esser and Blanco.

Project Time Frame ............................................. Short Term
Source .......................................................... Crowdsourcing
Supported by Crowdsourcing Comments Ref# ....................... 152
ROW Needed ...................................................... No
Suggested Project Owner(s) ..................................... TxDOT
#36
SOUTH MAIN STREET ROUNDABOUT CORRIDOR

**Recommendation Detail:**
Create South Main Street entrance corridor by installing roundabouts at the Main Street/Herff Road intersection and the Main Street/Christus Parkway intersection. In the interim, some congestion would be reduced by the construction of a free right turn from Main Street North to Herff Road.

**Project Time Frame** ................................................. Short Term
**Source** ............................................................. Crowdsourcing
**Supported by Crowdsourcing Comments Ref#** .................. 144, 25, 145
**ROW Needed** ......................................................... Yes
**Suggested Project Owner(s)** ....................................... TxDOT
#38
ACCESS ROADS EXTENSION BETWEEN RANGER CREEK ROAD AND JOHNS ROAD

Recommendation Detail:
At full build out Shoreline will need completion of access roads between Ranger Creek Drive and Johns Road to avoid congestion and expensive redesign of underpass along Cibolo Creek. Our recommendation is to fill in the frontage road gaps on both sides of IH-10 between John’s Road and Ranger Creek Road to create continuous one way frontage roads. This would create a continuous frontage road system from the Waring/Welfare grade separation south to San Antonio. It would also provide another north/south mobility circulation pattern in the northwest section of Boerne.

Project Time Frame............................................................... Short Term
Source.............................. Past Studies Subcommittee, Committee Discussion
Supported by Crowdsourcing Comments Ref# ................................. 163
ROW Needed .............................................................. N/A
Suggested Project Owner(s) ................................................ TxDOT
Recommendation Detail:
Add center turn lane with existing ROW. Add bike and pedestrian facilities on one side of Johns Road to encourage bike and pedestrian travel for Fabra Elementary and Boerne Middle School North.

Project Time Frame. ........................................... Short Term
Source. ......................................................... Past Studies Subcommittee
Supported by Crowdsourcing Comments Ref# .................. 31, 90
ROW Needed. ..................................................... Yes
Suggested Project Owner(s) ........................................ City of Boerne
OLD FREDERICKSBURG ROAD IMPROVEMENTS

Recommendation Detail:
Create high water alternative route via Old Fredericksburg Road and Lemon Creek subdivision. Improve right angle curves within existing ROW. Add center turn lane at subdivision entrances.

Project Time Frame ................................................................. Short Term
Source ............................................................... Past Studies Subcommittee, KCBFOTC Committee Member
Supported by Crowdsourcing Comments Ref# ........................................ N/A
ROW Needed ................................................................. Yes
Suggested Project Owner(s) ................................................................. Kendall County, City of Boerne
#10
SCHOOL STREET IMPROVEMENTS

Recommendation Detail:
Conduct comprehensive study to identify opportunities to enhance vehicular mobility in some segments and enhance pedestrian mobility and safety in all segments. Include bridge improvements as required to bring water crossings above the 100 year flood level.

Project Time Frame .................................................. Short Term

Source ......................................................... Past Studies Subcommittee, Crowdsourcing

Supported by Crowdsourcing Comments Ref# .......................... 38, 92, 214, 109, 110, 102

ROW Needed ................................................................. Yes

Suggested Project Owner(s) .............................................. City of Boerne
Recommendation Detail:
Bess Street, Water Street, and Wanda Street are being overwhelmed by traffic from Main Street to H-E-B’s “back entrance,” and by traffic using Bess, Water, and Wanda to bypass the major traffic light at Main/Bandera. Cars frequently run the 4-way stop sign at Bess/Water, and there are occasional races down Water Street in the evenings. Suggest installing 5 speed humps, one in the middle of each block of Bess, one in the middle of each block of Water, and one in the middle of the block on Wanda between Highland and the H-E-B entrance. This would divert more H-E-B traffic to Highland and Wanda, while also calming the Wanda traffic. It would also reduce the amount and speed of the traffic bypassing the Main/Bandera light.

Project Time Frame. ......................................................... Short Term
Source. ........................................................................... Crowdsourcing
Supported by Crowdsourcing Comments Ref# .......................... 211
ROW Needed ................................................................. N/A
Suggested Project Owner(s) .............................................. City of Boerne
#31
CITY PARK ROAD TRAFFIC CALMING

Recommendation Detail:
Implement traffic calming measures along City Park Road to slow automobile traffic and increase pedestrian safety.

Project Time Frame .................................................. Short Term
Source ................................................................. Crowdsourcing
Supported by Crowdsourcing Comments Ref# ...................... 101
ROW Needed .............................................................. N/A
Suggested Project Owner(s) .............................................. City of Boerne
#42
SCHOOL STREET AND JOHNS ROAD ROUNDABOUT

Recommendation Detail:
Convert four-way stop to roundabout with pedestrian safe crossings mid-block for students.

Project Time Frame: Short Term
Source: Crowdsourcing
Supported by Crowdsourcing Comments Ref#: 26
ROW Needed: Yes
Suggested Project Owner(s): City of Boerne
#53
ESSE/ADLER BYPASS OF MAIN STREET UTILIZING ROUNDABOUTS

**Recommendation Detail:**
Establish Esser and Adler roads as a Main Street bypass by replacing stop sighs and traffic signals with roundabouts, improving roadway and pedestrian facilities as needed.

**Project Time Frame:** Short Term

**Source:** Crowdsourcing, Committee Discussion

**Supported by Crowdsourcing Comments Ref#:** 40, 17, 139

**ROW Needed:** Yes

**Suggested Project Owner(s):** TxDOT, City of Boerne
#60
ESSER ROAD

Recommendation Detail:
Restripe Esser Road to provide center turn lane.

Project Time Frame. ............................................. Short Term
Source. ............................................................ Crowdsourcing
Supported by Crowdsourcing Comments Ref# ......................... 99
ROW Needed. ...................................................... No
Suggested Project Owner(s) .................................. City of Boerne, TxDOT
Recommendation Detail:
Connect Calk to Cibolo Crossing Drive. This will provide an alternative route during high water events.

Project Time Frame: Short Term
Source: Crowdsourcing
Supported by Crowdsourcing Comments Ref#: 105
ROW Needed: N/A
Suggested Project Owner(s): City of Boerne
CHAPTER 2
LONG RANGE PROGRAM OF TRANSPORTATION IMPROVEMENTS

The Committee's goals in formulating a Long Range Program of projects is to develop a program of transportation improvements that addresses current and projected travel demand. As the Committee's process evolved, it became apparent that the rationale for including projects in the Long Range Program was simple: If a Project is not in the Short Range Program or on the list of Rejected Projects, then it is included in the Long Range Program. This sublimely simple approach places eleven projects, plus the recommendation to investigate creating a roundabout corridor on SH 46 East, in the Long Range Program.

Six of the projects in the Long Range Program are Major Thoroughfare Projects, whose schedules depend on the development schedule, if any, of the land over which these lines run. The other five projects, however, are important projects that involve long planning and funding lead times. Four of these five involve TxDOT, so it is important that local government leadership strengthen the relationship with TxDOT and pursue a dialogue about how to begin moving this Long Range Program of TxDOT Projects forward.
| Recommen-
<p>| Project |</p>
<table>
<thead>
<tr>
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<th>Description</th>
<th>Type</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>Committee</td>
<td>FM 1376</td>
<td>Extend FM 1376 from North Main to Johns Road</td>
<td>MTP</td>
</tr>
<tr>
<td>25</td>
<td>CrowdSource</td>
<td>Adler Road</td>
<td>Extend Adler from FM 474 to Esperanza</td>
<td>MTP</td>
</tr>
<tr>
<td>30</td>
<td>CrowdSource</td>
<td>Champion Blvd / Greenfield Roads</td>
<td>Extend Champion Blvd north to Adler Extension (Project 12) and provide vehicular connections at Vista Verde and Bentwood</td>
<td>MTP</td>
</tr>
<tr>
<td>58</td>
<td>CrowdSource</td>
<td>Greenfield Road from SH 46 to FM 3351</td>
<td>Extend Road from SH 46 through Georges Ranch to Anzin and then to FM 3351 as shown</td>
<td>MTP</td>
</tr>
<tr>
<td>8</td>
<td>Comm. Source</td>
<td>Enterprise Parkway</td>
<td>Extend Enterprise Parkway to IH 10 East Frontage Road</td>
<td>MTP</td>
</tr>
<tr>
<td>37</td>
<td>CrowdSource</td>
<td>Lattimore</td>
<td>Extend to Lattimore to School Street</td>
<td>MTP</td>
</tr>
<tr>
<td>21</td>
<td>CrowdSource</td>
<td>SH 46 West - IH 10 to county line</td>
<td>Improve roadway safety</td>
<td>TxDOT</td>
</tr>
<tr>
<td>33</td>
<td>CrowdSource</td>
<td>Blanco/Bentwood and FM 474/Easer</td>
<td>Install roundabout</td>
<td>TxDOT</td>
</tr>
<tr>
<td>39</td>
<td>CrowdSource</td>
<td>IH 10 RM 473 to US 87</td>
<td>Add new one way frontage roads</td>
<td>TxDOT</td>
</tr>
<tr>
<td>55</td>
<td>CrowdSource</td>
<td>Main Street and River Road</td>
<td>Install roundabout</td>
<td>TxDOT</td>
</tr>
<tr>
<td>54</td>
<td>CrowdSource</td>
<td>Upper Balcones</td>
<td>Improve Road</td>
<td>LocGov</td>
</tr>
<tr>
<td>19</td>
<td>CrowdSourced</td>
<td>SH 46 and Esperanza/Woods of Boerne/Herrhill Road</td>
<td>Install Roundabouts</td>
<td>TxDOT</td>
</tr>
</tbody>
</table>
#24
NEW CONNECTION - 1376 TO JOHN’S ROAD

Recommendation Detail:
This greenfield project would accommodate all modes of traffic (vehicular, bicycle, pedestrian, etc) attempting to commute North and South without having to travel to IH-10 or drive through downtown. The project improves access to an Elementary and Middle School as well as Northrup Park. The Committee supports this project as shown in the 2019 Boerne Thoroughfare Plan and would be required as land develops.

Project Time Frame. ................................................. Long Term
Source. ................. Past Studies Subcommittee, Crowdsourcing, KCBFOTC
Supported by Crowdsourcing Comments Ref# ................. 37, 133
ROW Needed. .............................................................. Yes
Suggested Project Owner(s) ........ City of Boerne Major Thoroughfare Plan
#25
ADLER ROAD TO ESPERANZA GREENFIELD EXPANSION

Recommendation Detail:
This greenfield project would accommodate all modes of traffic (vehicular, bicycle, pedestrian, etc) attempting to commute East and West from the North Boerne area to the Esperanza Subdivision without having to travel to SH-46, I-10, or drive through downtown. The project improves access to Boerne High School, Middle, and more than one Elementary School. The Committee supports this project as shown in the 2019 Boerne Thoroughfare Plan and would be required as land develops.

Project Time Frame: As Development Occurs
Source: Crowdsourcing
Supported by Crowdsourcing Comments Ref#: 12, 81
ROW Needed: Yes
Suggested Project Owner(s): City of Boerne Major Thoroughfare Plan
#30
CHAMPION BLVD EXTENSION

Recommendation Detail:
This greenfield project would accommodate all modes of traffic (vehicular, bicycle, pedestrian, etc) attempting to commute from Champion Heights north to Boerne High School and various Subdivisions via a connection to Vista Verde Dr, Bentwood Dr and the future Adler Rd. The project improves access to Boerne High School and several Elementary Schools. The Committee supports this project as shown in the 2019 Boerne Thoroughfare Plan and would be required as land develops.

Project Time Frame . As Development Occurs
Source . Crowdsourcing
Supported by Crowdsourcing Comments Ref# . 121, 42, 16, 43, 117
ROW Needed . Yes
Suggested Project Owner(s) . City of Boerne Major Thoroughfare Plan
Recommendation Detail:
This greenfield project would accommodate all modes of traffic (vehicular, bicycle, pedestrian, etc) attempting to commute from the Northeast side of Boerne to South of Fair Oaks Ranch. The alignment is dependent upon the accommodations through George's Ranch (WCID#4) to Ammann Rd and would be required only if additional land develops.

Project Time Frame: As Development Occurs
Source: Crowdsourcing
Supported by Crowdsourcing Comments Ref#: 122
ROW Needed: N/A
Suggested Project Owner(s): Kendall County Thoroughfare Plan, City of Fair Oaks Ranch

*Route TBD as development occurs.*
#8 ENTERPRISE PARKWAY EXTENSION

Recommendation Detail:
Link Enterprise Parkway via Boerne Thoroughfare Plan Process on the west side of I10 to the frontage road pulling traffic east bound away from Scenic Loop Road and I10 congestion.

Project Time Frame: As Development Occurs
Source: Past Studies Subcommittee
Supported by Crowdsourcing Comments Ref#: N/A
ROW Needed: Yes
Suggested Project Owner(s): City of Boerne Major Thoroughfare Plan
Recommendation Detail:
BISD demographers labeled this as “potential multi family.” Any development here should align a neighborhood Complete Street from Lattimore to School Street. This entire area is zoned for Fabra Elementary on Lattimore.

Project Time Frame: As Development Occurs
Source: Crowdsourcing
Supported by Crowdsourcing Comments Ref#: 125
ROW Needed: Yes
Suggested Project Owner(s): City of Boerne Major Thoroughfare Plan
#21
HWY 46 WEST IMPROVEMENTS

Recommendation Detail:
Widen SH 46 from Kendall County line to Boerne. At minimum, add a center left turn lane as required; also consider acceleration and deceleration lanes at major street intersections. Depending on the anticipated traffic volumes, consider additional traffic lanes. As an interim short range measure, make improvements at Deep Hollow Road.

Project Time Frame ............................................................... Long Term
Source ................................................................. Past Studies Subcommittee, Crowdsourcing
Supported by Crowdsourcing Comments Ref# .................................. 62, 130, 208
ROW Needed ................................................................. N/A
Suggested Project Owner(s) ....................................................... TxDOT
#33
ESSER/BLANCO/BENTWOOD ROUNDABOUT

Recommendation Detail:
Study possibilities of a roundabout at the intersection of Esser Road, Blanco Road and Bentwood Drive.

Project Time Frame ............................................... Long Term
Source .............................................................. Crowdsourcing
Supported by Crowdsourcing Comments Ref# .................. 17
ROW Needed .......................................................... N/A
Suggested Project Owner(s) ..................................... TxDOT
Recommendation Detail:
Extension of the access roads from US 87 to RM 473 would allow traffic to get to and from IH 10 without going through a residential area. Suggest they be one way frontage roads.

Project Time Frame: Long Term
Source: KCBFOTC Interim Report
Supported by Crowdsourcing Comments Ref#: 96
ROW Needed: Yes
Suggested Project Owner(s): TxDOT
Recommendation Detail:
Consider adding this roundabout to the package of City of Boerne Downtown Master Plan projects. As an interim project, remove some parking on east side of Main to allow a free right turn from west bound River Road to northbound Main.

Project Time Frame ................................................. Long Term
Source .............................................................. Crowdsourcing
Supported by Crowdsourcing Comments Ref# ............................ 46
ROW Needed ........................................................... No
Suggested Project Owner(s) ........................................... TxDOT
#54
UPPER BALCONES IMPROVEMENTS

Recommendation Detail:
This 4.2 mile section of narrow roadway provides North-South access to Kendall County residents, second only to Boerne Stage Road on the West side of IH 10. Future plans to extend Regent Boulevard from Park Boulevard and to Balcones Heights Rd make this North-South Primary Collector a high priority to improve the roadway section, eliminate Four (4) Low Water Crossings and One (1) Cattle Guard as well as the dangerous sight distances blocking views from oncoming traffic at numerous sharp vertical curves, Public street intersections and private driveways. Lastly, BISD projections show several schools scheduled to be built in this immediate area which would benefit from these proposed improvements.

Project Time Frame.............................. Long Term
Source........................................Crowdsourcing, Past Studies Subcommittee
Supported by Crowdsourcing Comments Ref#........................172
ROW Needed...........................................N/A
Suggested Project Owner(s).......................Kendall County, City of Boerne
#19
HIGHWAY 46 EAST ROUNDABOUT CORRIDOR

Recommendation Detail:
Coordinate with TxDOT to study concept of implementing a Boerne Entrance roundabout corridor on SH 46 east of Boerne to calm traffic and introduce the concept to drivers entering Boerne.

Project Time Frame: Long Term
Source: Crowdsourcing
Supported by Crowdsourcing Comments Ref#: 11, 97, 106, 147
ROW Needed: Yes
Suggested Project Owner(s): TxDOT
One component of mitigating future congestion in Kendall County could involve enhancing pedestrian mobility corridors and multi-use pathways. These facilities help make pedestrian mobility safer and more enjoyable, and they can significantly improve the quality of life for people of all ages, especially when they connect parks and open space, service and retail centers, and mobility hubs.

Many new residential developments in Texas include enhanced pedestrian corridors, trails, and parks as part of their master plans because they increase the value and marketability of the residences in those developments. “Walkability” has become an amenity for new neighborhoods replacing swimming pools and golf courses in desirability. Having sidewalks on both sides of the road, greenway connections to open space, and closer proximity to shopping are increasingly in demand. These trends are driven by economic scarcity of land, higher density development, and affordability.

Governments have a role to play as well, primarily by promulgating design criteria and by providing connecting trail facilities. Governments can also find ways to encourage developments to provide these kinds of facilities through their regulatory and administrative functions.

In Bexar County, the Howard Peak Greenway Trail currently provides eighty-four miles of paved trails, many in parks and flood plains. This system is a very popular amenity, and many more miles are in various stages of planning and implementation. Surveys conducted in 2021 indicated 70% of respondents supported a greenway trail in their neighborhood and 80% were in favor of planning trails for commuter use. The most recent survey by the National Association of Homebuilders reported that walking/jogging trails ranked third or fourth among all homebuyer age groups as most desired local amenities on a list of 19. This reflects the growing prominence of trails in both the commuting and leisure dimensions of people’s lives.

The benefits of pedestrian corridors and multi-use shared pathways are diverse, ranging from economic and health, to land and watershed management. Various studies including the recent Great Springs Project (GSP) final report quantify the advantages of trail systems. A small, but high-quality base of parks and trails already exists in Kendall County, and this infrastructure could serve as a framework around which a full trail network might be established.
Safe Routes to Schools

Even casual observers will note increased levels of congestion during the normal school year. This led one of the subcommittees to engage BISD Transportation Staff to try to better understand why this occurs and what, if anything, can be done about it. One of the practical approaches involves how attendance zone boundaries are drawn. As the community and its school age population grows, new schools will be needed, and locating those schools and drawing their attendance zone boundaries with an eye to transportation corridors can affect congestion levels. Beyond that, the Committee observes that what it believes to be most students are transported to and from school by a family member or a school bus. The Committee believes significant improvements could be achieved, especially in the areas around elementary and middle schools if more students walked or biked to and from school. Kendall County is not alone in this belief. A national organization, the Safe Routes to Schools Partnership, estimates during the morning commute period, driving to school represents approximately 10% of the traffic on the road.³

The Trails Subcommittee looked at the area within a one-mile radius of each school in the County and offered recommendations for improvements that would make walking and bicycling to school safer and more enjoyable. These project sheets can be found at the end of this chapter. In some cases, the Safe Routes To Schools recommendations are also mentioned in the other recommendations (e.g., The recommendation to install traffic calming measures on City Park Road to encourage pedestrian access to and from Champion High School is also recommendation #31 in the Short Range Program.)

In general, the Committee recommends the City of Boerne and Kendall County consider more robust participation in the federally funded Safe Routes to Schools program administered by TxDOT. See Policy Recommendation 6.1.

Micromobility

Trails facilitate micromobility, which includes walking, biking, mobility scooters and golf carts for both recreation and mobility purposes. These mobility solutions are evolving with the advent of small and efficient electric motors powered by batteries.

³ Safe Routes to School | Safe Routes Partnership
Electric bikes are becoming a popular upgrade to standard bicycles. In some communities, seniors with limited mobility and on a fixed income can be seen heading to grocery stores on mobility scooters. These modes are already in limited use in Kendall County, including golf-carts in Fair Oaks Ranch, electric bikes in Boerne and mobility scooters in Comfort.

In some regions, micromobility is being embraced as a solution to congestion and facilitated through shared-use services. According to a 2021 report by the Urban Land Institute, “micromobility expands the radius that people can easily travel without a car. In fact, 36 percent of trips using shared micromobility replace a car trip.”

Sharing the road isn’t easy in Kendall County, which has limited trails and off-road paths. Fair Oaks Ranch residents complain about getting stuck behind golf carts and county residents complain about road bikers. Road bikers, meanwhile, fear for their lives when large vehicles pass mere inches from their elbow.

For the safety and well-being of all citizens and to encourage greater use of micromobility as a way to mitigate congestion, it is prudent to provide separate micromobility corridors as much as possible. Ideally, this would include creating a network of trails that integrate with off-road pathways along major state highways, arterials, and high-traffic roads.

While traditional thoroughfare plans typically focus on arterial corridors that prioritize automobiles, Kendall County has a unique opportunity to embrace a thoroughfare strategy that accounts for more community values, reduces roadway congestion, and enhances quality of life. A greenway thoroughfare plan of dedicated trail rights-of-way can be overlayed onto an arterial thoroughfare plan to facilitate the creation of multi-use trails that strategically intersect with roads, services, retail, amenities, and transportation hubs.

Through the thoroughfare process, these greenways will be reserved in the platting process and ensure a comprehensive network of trail connections between adjacent developments.
Transportation Hubs

Connecting trails and roadways at strategically placed transportation hubs can facilitate multi-modal transportation. Multi-modal refers to transportation where a commuter transitions from one method of mobility, like a bicycle or car, to another mode of transportation, like a bus, train or ride-share service.

Transportation hubs will facilitate a multi-modal transportation network that reduces congestion while providing transportation options.

Kendall County

Over the past two decades, all areas of Kendall County, including the rural parts, have become a popular destination for recreational cyclists, with organized “rides” using county roads, State FM Roads, and interstate frontage roads. Unfortunately, most of these roads lack adequate shoulders or bike lanes, and outside of the Cities, no separate use paths exist. The Trails Committee has developed a long range vision for a County Trails System that is included in Appendix B of this report. Realization of this vision would require a significant paradigm shift on the part of many Kendall County property owners. Paradigm shifts rarely occur without controversy and conflict, and this can undermine the citizens’ trust in its government.

One way to begin establishing a county wide network of trails and separate use paths is to work within the existing transportation planning system to include separate use paths within farm to market roads and within private parcels owned by property owners who might accommodate a separate use path.

Many rural property owners are offended by the fragmentation of the working farms and ranches in the county, yet at the same time, are reluctant to sell conservation easements due to concerns over future government control of their land. Moreover, when public funds are used to purchase conservation easements, there is usually a reasonable expectation that there will be public access, diminishing the attractiveness of the easement to the property owner. One way to align these interests might be to purchase a conservation easement on property where a separate use path, which would be accessible to the public, runs along its boundary, leaving the balance of the conservation easement in place with public access controlled by the property owner.

Initiatives like this can begin the long process of developing a county wide network of trails, while at the same time, helping preserve the rural atmosphere that attracts citizens and visitors to cycle in this beautiful place.
Boerne
Boerne has been proactive in the design and implementation of its network of pedestrian trails and shared-use paths. The illustration includes trails and sidewalks that are either implemented or intended by the City of Boerne.

Fair Oaks Ranch
Many of the Fair Oaks Ranch (FOR) trails are pre-existing, but not formally identified. Other trail and sidewalk components are intended to connect Fair Oaks Ranch with schools, area destinations and the City of Boerne.

Comfort
TxDOT plans to reconstruct SH 27 through Comfort, primarily to rehabilitate the roadway surface. This is a good time to consider ways to improve both traffic and pedestrian safety along SH 27.
Recommendations include reconfiguring Hwy 27 pedestrian and bike crossings that are currently hazardous due to truck traffic and increased vehicular traffic, as well as providing sidewalks and streetscape elements.

Comfort Vision 2050, a 2018-2019 community study by the Comfort Area Foundation, outlines a redesign of Front Street to reinstitute the street’s historic character. Project goals are to expand the commercial district of the town while improving pedestrian safety.

**Public and Alternative Transportation**

No comprehensive transportation plan would be complete without some consideration of the role that public and alternative transportation might play. Public transportation is widely viewed as “busses” and, in some larger urban areas, “light rail.” It is widely understood that fare revenue is inadequate to fully fund public transportation and that governmental entities providing the service must subsidize much of its cost. Still, advocates would argue that the potential efficiency of public transportation that may be supported by cost-benefit analysis, and its potential for a smaller environmental footprint warrant these subsidies.

**Current Public Transportation in Kendall County**

Public transportation agencies are categorized with respect to the size of the community served. Metropolitan Transit Authorities serve populations of more than 200,000, while Rural Transit Systems serve those areas with a population of less
than 50,000. Urban Transit Systems serve those with populations between 50,000 and 200,000.⁴ Kendall County is served by Alamo Regional Transit (ART) and operated under the auspices of the Alamo Area Council of Governments. ART is a “demand response” public transportation system, and while its fares are impeccably reasonable, the logistics of using the service discourage widespread use. The opportunity for ART to make a meaningful contribution to congestion relief is judged to be small based on its current operational mode.

As population density increases in the southern parts of Kendall County, providing public transportation could become more feasible. One approach to increasing the use of public transportation would be to improve the linkage between Kendall County and VIA, the Metropolitan Transit Authority in Bexar County. With the dearth of “affordable” housing in Kendall County, extending VIA services into Kendall County could facilitate access to Kendall County employment opportunities for Bexar County residents. The transportation hub being developed in conjunction with the Alamo College District’s Campus west of IH 10, just south of the Kendall County line provides an interim link that could test the viability of such a plan.

**Innovation and Disruptive Technologies**

Within the last ten years, innovation and disruptive technologies have begun to affect transportation systems. Ride share platforms, such as Uber and Lyft, use the internet to link drivers who have vehicles with people who need rides, and there is no small amount of speculation that autonomous vehicles will eventually eliminate the role of the vehicle drivers. Commercial enterprises, ranging from parcel delivery firms to grocery stores, to pharmacies are studying how to make home deliveries using aerial drone technology. Long haul trucking firms are testing truck “platooning,” with multiple driverless semi-trucks trailing along behind a “leader” truck. While it is almost certain things will change, it is difficult to assess the extent to which these and other technologies will affect mobility in Kendall County.

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#47
HWY 27 IN COMFORT SAFE PEDESTRIAN CROSSINGS

Recommendation Detail:
Traffic through Comfort proposes safety issues for pedestrian safety as well as preventing bike/pedestrian travel for students attending Comfort Elementary and Comfort Middle Schools. We recommend the following improvements for those hazards:

1. Safe bike and pedestrian crossings along Hwy 27.
2. Side walk and bike path improvements along and/or adjacent to secondary streets to create a bike/pedestrian safe network for residents and visitors.

Long Term: As development occurs, create a shared-use path along Cypress Creek and the Guadalupe River to provide an off-street, non-automotive route for students and the community at large.

Project Time Frame
Short Term

Source
Crowdsourcing, KCBFOTC Interim Report, Trails Subcommittee

Supported by Crowdsourcing Comments Ref# 118, 119

Suggested Project Owner(s)
Kendall County, TxDOT
Recommendation Detail:
To improve safety and encourage non-vehicular travel to and from Curington Elementary, we recommend the following improvements:

1. Sidewalk or shared use path improvements parallel to Plant Avenue and west Adler Road with pedestrian crossings at the locations noted on the map.
2. Traffic calming measures on Blanco Road with off-street shared-use paths for bike and pedestrian traffic.
3. Extend the Old #9 trail to Hwy 1376
4. Create a direct connection to the Old #9 trail network for Curington Elementary students.

Long term: As development occurs, extend the North-South shared-use path network along "No Name Creek.

Project Time Frame.................. Short Term
Source................... Crowdsourcing, Past Studies Subcommittee, Trails Subcommittee
Supported by Crowdsourcing Comments Ref#............... 21, 26, 42, 44, 45, 60, 101, 106, 138, 6, 11, 22, 20, 28, 69, 19
Suggested Project Owner(s)........... City of Boerne, City of Boerne Major Thoroughfare Plan
#49

HAWK SIGNAL AT RIVER ROAD AND SOUTH PLANT AVENUE

**Recommendation Detail:**

The Committee recommends replacing the current pedestrian crossing from South Plant Avenue to River Road Park with a High intensity Activated crossWalK (HAWK) signal closer to The Dodging Duck. The current crossing gives a false sense of security to pedestrians as the simple flashing light is often ignored by drivers on River Road.

**Project Time Frame** .......................................................... Short Term

**Source** ................................................................. Crowdsourcing

**Supported by Crowdsourcing Comments Ref#** .......................... 91, 31

**Suggested Project Owner(s)** .............................................. City of Boerne, TxDOT
#50
HERFF ELEMENTARY VICINITY
BIKE AND PEDESTRIAN IMPROVEMENTS

Recommendation Detail:
To improve safety and encourage non-vehicular travel to and from Herff Elementary, we recommend the following improvements:

1. The City pursue a pedestrian and bike trail between Bentwood Drive going east connecting to the Esperanza Subdivision at Cordova Rd. If this route proves unfeasible, alternate routes should be pursued.

Long Term: As development occurs, develop a shared use path along Brown’s Creek to connect isolated neighborhood trails with the Old #9 and larger trail network.

Project Time Frame ........................................... Short Term
Source ................................ Past Studies Subcommittee, Committee Discussion, Crowdsourcing
Supported by Crowdsourcing Comments Ref# .............................. 36, 76
Suggested Project Owner(s) ........................................ City of Boerne
#51
BOERNE HIGH SCHOOL VICINITY
BIKE AND PEDESTRIAN IMPROVEMENTS

Recommendation Detail:
To improve safety and encourage non-vehicular travel to and from Boerne High School, we recommend the following improvements:

1. Bike/Pedestrian connection(s) from Bentwood to Esperanza
2. Close gaps in sidewalks and shared use paths along Adler Road, Esser Road and Blanco Road.
4. Greenway connection between Oak Knoll and Currey Creek Trail.
5. Extend Currey Creek Trail from Blanco Road to Esser Road
6. Create Bike/Pedestrian safe crossing at Hwy 46/Herff Road to close the gap in the Old #9.

Long Term: As development and expansion occurs, create off-street shared-use paths parallel to Hwy 474.

Project Time Frame......................... Short Term
Source...... Past Studies Subcommittee, Crowdsourcing, Committee Discussion
Supported by Crowdsourcing Comments Ref# ......... 7, 24, 67, 140, 93, 9, 108, 84, 39
Suggested Project Owner(s)..................... City of Boerne, TxDOT
#52
VAN RAUB ELEMENTARY VICINITY
BIKE AND PEDESTRIAN IMPROVEMENTS

Recommendation Detail:
To improve safety and encourage non-vehicular travel to and from Van Raub Elementary, we recommend the following improvements:

1. Front Gate Subdivision students need a direct, shared use path to Van Raub
2. Install shared use paths parallel to Dietz Elkhorn
3. Dietz Elkhorn enhanced pedestrian crossings at Enchanted Glen and Elkhorn Ridge
4. Pedestrian crossings as needed along the remainder of Dietz Elkhorn

Long Term: As development occurs, look for opportunities to create a North/South trail connection along the Old #9 or the historic Pinta Trail.

Project Time Frame: Short Term

Source: Past Studies Subcommittee, Crowdsourcing, Committee Discussion, Trails Subcommittee

Supported by Crowdsourcing Comments Ref#: 129, 12

Suggested Project Owner(s): City of Fair Oaks Ranch
**#62**

**KENDALL ELEMENTARY AND BOERNE MIDDLE SCHOOL SOUTH VICINITY BIKE AND PEDESTRIAN IMPROVEMENTS**

**Recommendation Detail:**
To improve safety and encourage non-vehicular travel to and from Kendall Elementary and BMSS, we recommend the following improvements:

1. Create safe, direct path for Stonegate South subdivision and Roots at Boerne students.
2. Protected crossings of roads around South Glen at key locations to increase walkers/bike riders. Protected means clearly marked crosswalks with warning lights with Dark Sky Friendly lighting in hours of darkness.
3. Create shared use paths parallel, or adjacent to, Cascade Caverns and Old San Antonio Roads while making use of established tree cover to encourage the path’s use by students.

Long term: As development occurs, extend the shared use paths along Old Fredericksburg Road, connecting with networks from new developments.

**Project Time Frame.** Short Term

**Source.** Past Studies Subcommittee, Crowdsourcing, Trails Subcommittee

**Supported by Crowdsourcing Comments Ref#** 80

**Suggested Project Owner(s).** City of Boerne, Kendall County, Kendall County Thoroughfare Plan
BOERNE MIDDLE SCHOOL NORTH VICINITY BIKE AND PEDESTRIAN IMPROVEMENTS

Recommendation Detail:
To improve safety and encourage non-vehicular travel to and from Boerne Middle School North, we recommend the following improvements:

1. Pedestrian safety projects on Main Street.
2. Close gaps in, or make improvements to, shared use paths on Johns Road, West Highland Drive, West San Antonio, West Theissen and Oak Park Drive.
3. Traffic calming measures on Blanco with off-street shared-use paths for bike and pedestrian traffic.

Long Range:
1. As development occurs, continue the shared use path along Cibolo Creek with an eventual goal of connecting to the trail network at Northrup Park and Boerne City Lake.
2. Explore options for creating pedestrian and bike safe routes on School Street.

Project Time Frame
Source
Supported by Crowdsourcing Comments Ref# 94, 95, 133, 134, 14, 15, 16, 10, 8, 57, 58, 89, 104, 74, 117
Suggested Project Owner(s) City of Boerne, City of Boerne Major Thoroughfare Plan
#64

FABRA ELEMENTARY VICINITY
BIKE AND PEDESTRIAN RECOMMENDATIONS

**Recommendation Detail:**
To improve safety and encourage non-vehicular travel to and from Fabra Elementary, we recommend the following improvements:

1. Complete shared use path along West San Antonio to connect existing sidewalks with downtown.
2. Work with TxDOT to create pedestrian safe crossing over I-10 at Johns Road
3. Complete the approximate 140’ gap between Calk Lane and Cibolo Crossing Drive.

Long Term: As development occurs, create shared use paths along Frederick Creek, including a pedestrian safe path under I-10.

**Project Time Frame**

Source: Crowdsourcing, Trails Subcommittee, Committee Discussion

Supported by Crowdsourcing Comments Ref# 27, 75

**Suggested Project Owner(s):** City of Boerne, TxDOT, City of Boerne Major Thoroughfare Plan
CHAMPION HIGH AND CIBOLO CREEK ELEMENTARY VICINITY BIKE AND PEDESTRIAN RECOMMENDATIONS

Recommendation Detail:
To improve safety and encourage non-vehicular travel to and from Cibolo Creek Elementary and Champion High School, we recommend the following improvements:

1. Install traffic calming measures along City Park Road
2. Install sidewalks along Champion High School’s campus road
3. Connect Herff Ranch Road to the Old #9

Long Term:
1. As development occurs, create a shared use path along Brown’s Creek to connect isolated neighborhood trails with the Old #9 and larger trail network.
2. If development occurs to the Southeast, create shared use paths with possible ties to the Old #9 route or the Pinta Trail with the ultimate goal of connecting to the trail networks in Fair Oaks Ranch.

Project Time Frame.......................................................... Short Term

Source........Crowdsourcing, Trails Subcommittee, Past Studies Subcommittee

Supported by Crowdsourcing Comments Ref# .................61, 125, 124, 38

Suggested Project Owner(s)............................................. City of Boerne,
City of Boerne Major Thoroughfare Plan
Recommendation Detail:
To improve safety and encourage non-vehicular travel to and from Fair Oaks Elementary, we recommend the following improvements:

1. Improve road crossings along Dietz Elkhorn. Protected crossing of roads at key locations would increase walkers/bike riders. This includes measures such as clearly marked crosswalks with warning lights.

Project Time Frame.................. Short Term
Source.......................... Crowdsourcing, Trails Subcommittee, Past Studies Subcommittee
Supported by Crowdsourcing Comments Ref#.......................... 129
Suggested Project Owner(s).......................... City of Fair Oaks Ranch
Recommendation Detail:
To improve safety and encourage non-vehicular travel to and from the future BISD school in Corley Farms, we recommend the following:

1. Create walk/bike path from Kendall Creek Estates to Valerie Lane through the Corley Farms for students to stay off Scenic Loop Road in route to the future elementary school.
2. Complete shared use paths north and south of the developer-constructed paths on Scenic Loop Road.

Long Range: As development occurs, ensure any connections to Upper Balcones via Corley Road and/or I-10 via Enterprise Parkway include off street shared-use paths.

Project Time Frame. .............................................. Short Term
Source. ........................................ Past Studies Subcommittee, Trails Subcommittee
Supported by Crowdsourcing Comments Ref# ................................ N/A
Suggested Project Owner(s) .............. Kendall County, City of Boerne, City of Boerne Major Thoroughfare Plan
CHAPTER 4
RECOMMENDED POLICIES

As Kendall County’s population continues to grow, local governments will face a number of challenging issues. How local governments choose to address these issues will affect both current residents as well as the Kendall County that we leave for our children, grandchildren, and other future residents. To be sure, state and federal government policies, demographic changes, economic forces, and perhaps other unforeseen factors also will have significant impact on these growth-related issues. In this chapter, the Committee recommends transportation and land use policies that, if implemented, will help the County manage growth in a manner that is consistent with the values and preferences of the County’s current residents.

Preserving the Hill Country Environment, Character, and Water Supply

Many people have chosen to live in Kendall County to be closer to or immersed in the Texas Hill Country environment and/or to seek refuge from the hectic pace and urban character of Austin and San Antonio. Generally, this unique environment is characterized by gently rolling hills, significant topographic features, environmentally sensitive riparian corridors, areas containing a wide variety of flora and fauna, and an overall rural, peaceful, and tranquil feel, with relatively low density of development and population. Both temperature and humidity are lower than that in the coastal plain areas of Texas, further enhancing the Hill Country experience. Geologically, Kendall County is underlain entirely by environmentally sensitive aquifer formations interspersed with accumulations of arable soil, mostly along the County’s riparian corridors. The Glen Rose Limestone Formation underlies approximately 78% of the County’s surface area, while the Edwards Limestone Formation underlies approximately 20%. The Glen Rose Limestone Formation is highly cavernous and includes many sink holes and other karst features. These features are the natural pipelines for the karstic Lower Glen Rose Aquifer, a critically important water supply for the County. The Cascade Caverns quadrant is believed to have the highest concentration of caves and sink holes in the County and the most swallets in all of Texas. Two major caves in the County are well known to the public, Cascade Caverns and Cave Without a Name, but the longest cave in the County is not well known and has its entrance in Comal County, underlining the complexity and sensitivity of the karst aquifer across this region.
Water supply is a critical factor for any area of human habitation, but it is especially critical for Kendall County. Most of the water used in Kendall County is drawn from wells drilled into the Trinity Aquifer, a major aquifer that extends across much of the central and northeastern part of the state. According to the Texas Water Development Board, the Trinity Aquifer is one of the most extensive and heavily used groundwater resources in Texas. Although its water is primarily used by Boerne and Fair Oaks Ranch, it also is used for irrigation, livestock, and other domestic purposes. In addition to groundwater, the City of Boerne relies upon surface water (Boerne City Lake and Canyon Lake) in meeting the water needs of its residents. Obviously, from a policy perspective, any proposed County mobility enhancement must not threaten groundwater and surface water supplies.

Preserving the natural beauty and water resources of the Texas Hill Country is of fundamental importance to the Kendall County citizens and must be considered when addressing current and future transportation and mobility demands. Therefore, local governments should adopt policies that support these goals.
RP 1.1 Protect water quality through transportation planning and engineering strategies that mitigate pollution of streams and aquifers.

On new and upgraded public roads, Low Impact Development requirements commensurate with the City of Boerne’s new Stormwater Ordinance and the City of Fair Oaks Ranch Unified Development Code (UDC) requirements related to stormwater protection should be adopted. Pollution controls for both new and upgraded roadways should be developed and implemented to reduce pollutant concentrations and potential seepage into groundwater and surface water supplies over and adjacent to karst recharge areas. Trail and road system design should be thoughtfully considered to include buffers, swales, and berms to mitigate flood and stormwater runoff as well as protect water quality. In addition, aquifer fracture zones and recharge features should be protected from any ill-effects resulting from new and/or upgraded public roads.

RP 1.2 Preserving trees along right of ways should be encouraged during road design and construction processes and, wherever possible, left in a natural state.

Expansion of existing County roadways or construction of new County roadways should preserve trees as much as possible within the rights-of-way.

RP 1.3 Maintain dark skies by limiting light pollution through best practices prescribed by the International Dark Sky Association and existing light ordinances.

Where roadway illumination is necessary, such governments should comply with all of their respective “Dark Sky” regulations (The City of Boerne’s Dark Sky regulations can be found at https://www.ci.boerne.tx.us/DocumentCenter/View/16639/Boerne-Unified-Development-Code–72821. Kendall County’s Dark Sky regulations can be found at https://www.co.kendall.tx.us/upload/page/0073/docs/Development/Order%202011-27-2017%20Dark%20Sky.pdf, and the City of Fair Oaks Ranch’s Dark Sky regulations can be found in the City’s Code of Ordinances, Chapter 3, Article 3.15 (Building Regulations) at ARTICLE 3.15 - OUTDOOR LIGHTING | Code of Ordinances | Fair Oaks Ranch, TX | Municode Library;

RP 1.4 Adopt “quiet road policies” that mitigate traffic-induced road noise.

New or improved roads, especially those with speed limits of 45 mph or greater, should be designed to minimize the production of noise generated by passing vehicles. Some techniques include the using quieter road surfaces, green belts, earthen berms, and sound-deadening walls.

RP 1.5 Preserving scenic landscapes, open spaces, and historic structures should be encouraged to maintain Kendall County’s quality of life and cultural heritage.

The unique character of the Texas Hill Country is highly valued and is
maintained through preservation of natural features, open spaces (including conserved lands), and historic structures. Expansion/widening of existing roadways or construction of new roadways should preserve and protect the County’s natural and cultural heritage for current and future generations. Maintaining open spaces and undeveloped land has demonstrable economic, ecological, and other benefits.

**RP 1.6 New bridge structures should be located so that sensitive and valuable riparian ecosystems are protected.**

The Committee recognizes that the construction of new bridges for greenfield roadways can be particularly problematic for the surrounding ecosystems unless appropriate measures are taken to protect the recharge zone and other areas that provide important water quality benefits. Many soils in the County are particularly susceptible to erosion, while other areas are vulnerable to sediment loss or infiltration of water. In these areas, construction should be done in a manner which minimizes the potential disturbance of nearby vegetation and natural drainage features.

**RP 1.7 Encourage adoption and use of Camp Bullis Sentinel Landscape Management Practices**

Recently, nearly one million acres of land, including Camp Bullis and portions of several counties surrounding Camp Bullis, were designated as a Sentinel Landscape as part of a federal government initiative aimed at preserving land while protecting Defense Department facilities from land uses incompatible with such facilities’ military missions. The Sentinel Landscape Partnership, established in 2013 by the Departments of Defense, Agriculture, and Interior, seeks to connect landowners within the Sentinel Landscape footprint with government assistance programs designed to fund land protection and encourage sustainable land management practices. One of the goals of this collaborative effort is to limit commercial development surrounding Camp Bullis which can lead to light pollution, loss of agricultural lands, and flooding, all of which can disrupt the natural environment for the military training that is conducted at Camp Bullis. Since most of Kendall County is included within the Camp Bullis Sentinel Landscape, the Committee believes that local governments, as a policy matter, should actively encourage County landowners owning large acreage tracts to take advantage of local, state and/or federal programs offered through the Sentinel Landscape designation. Information is available through the Sentinel Landscape Coordinator (Daniel Oppenheimer, daniel@hillcountryalliance.org). Mr. Oppenheimer can provide landowners with information on the various programs available to help protect the Hill Country environment and to reduce the pool of developable land, thereby reducing the overall demand placed upon County roadways in the future.

**County-wide Transportation System Planning and Development**

Planning and development of new roadways as well as widening and/or modifying
the existing roadways the County should be handled in a collaborative approach between TxDOT, Kendall County and the Cities of Boerne and Fair Oaks Ranch. Careful and deliberate consideration for using the current roadway network should take precedence over governmental construction of new roadways. This will conserve fiscal reserves and may reduce the effects of increasing the impervious pavement footprint. If not already standardized, consistent design roadway standards and the associated Right-of-Way requirements should be adopted for public roadways and for private roadways that may become part of the roadway system. The following recommended policies, if adopted, can help meet this challenge.

**RP 2.1 Prioritize efforts to enhance existing infrastructure over construction of new greenfield roadways.**

City, County, and State efforts to increase the capacity of the current Kendall County transportation system should give preference to the expanding and upgrading existing infrastructure over the construction of new roadways in greenfield locations. The Committee believes enough non-freeway arterial streets and roadways can facilitate current and future access within and around Kendall County. Some of these roadways will be widened or built by entities developing land, while others will involve governmental agencies improving existing roadways. The Committee acknowledges that a developer driven transportation system likely is not the most efficient way to move traffic through the County during peak travel times, and, from time to time, that such a system likely will cause delays and congestion. The Committee believes that maintaining more rural- and suburban-scale roadways is critical to preserving the unique Hill Country environment and character and that improvements to existing roadways and intersections will go a long way toward reducing unacceptable traffic delays and congestion and maintaining an acceptable Level of Service most of the time.

**RP 2.2 Development of Consistent Right-of-Way and Roadway Geometric Standards**

The three government entities sponsoring this Report each promulgate certain standards for public rights-of-way and roadway geometry. Currently, the standards vary from entity to entity. In addition, the willingness to accept roadways constructed in conjunction with land development varies from entity to entity. The Committee recommends that the three entities collaborate to adopt a uniform and consistent approach to accepting roadways for maintenance and incorporating them into the road network, as well as a consistent set of Right-of-Way and Roadway Geometric Standards.

**RP 2.3 City and County prioritization of roadway intersection geometric standards and associated subdivision regulations should be adopted that, in the event a signed or signalized intersection is warranted, consider properly designed ROUNDABOUTS as an option to the necessary control and traffic calming, while incorporating bicycle and pedestrian friendly improvements.**
Termed as a “proven safety countermeasure” by the Federal Highway Administration Office of Safety, roundabouts have been found to reduce fatal crashes by 90 percent, injury crashes by 75 percent, and pedestrian crashes by up to 40 percent. Additionally, the same study found roundabouts to reduce vehicle delays by 40 percent and vehicle stops by 50 percent. As a result of a roundabout’s viability as an alternative to signed or signalized roadway intersections, over 7,000 roundabouts have been built in the United States. More than 300 have been built in Texas in the last 20 years. In their efforts to reduce congestion while improving safety for drivers, bicyclists and pedestrians, cities such as Fort Worth, Denton, Midland, McKinney, and Sugar Land have used roundabouts effectively in both public and private infrastructure. Success with these programs began with well-planned community outreach and public education programs. Furthermore, the Committee recommends that the consideration of roundabouts not be limited to local governments on both public infrastructure and private developments, but that those same local governments encourage more serious consideration of using roundabouts on TxDOT roadways in Kendall County where appropriate.

RP 2.4 Upgrade certain existing County roads to FM Design Standards, adding features to enhance safety of both vehicular and non-vehicular mobility.

The Committee acknowledges that parts of certain roadways may need to be widened to accommodate the increased level of traffic that is clearly coming as the population of Kendall County continues to grow. A good place to start developing an effective rural surface transportation network for Kendall County would be to identify existing County roads that currently act as major traffic arterials and upgrade those roads to FM safety and roadway design standards (including improved drainage as required). Expanding ROW on county roads to FM standards should be done on a limited basis and only where needed to ensure the function and safety of the roadway.

The Farm to Market Roads in Kendall County exist in both the clearly rural areas and the more densely populated “suburban” areas of the County. Few negative comments were shared with the Committee concerning the nature of these FM roads adversely affecting the rural character of the County, and the Committee believes that this is indicative of the overall sentiment of County residents. Pursuing a strategy of upgrading County roads where needed to ensure the function and safety of the roadway should be done on a limited basis and would involve only two types of land acquisition:

- Securing additional right-of-way to ensure an overall footprint of no more than 100 feet, which typically would require 20 to 30 feet on both sides of the existing right of way; and
- Securing additional right-of-way to comply with modern roadway design criteria where needed.
RP 2.5 Include micromobility (walkability, bikeability, “complete street”, and trails) solutions as a fundamental component of local municipalities’ mobility solutions.

As trails begin to connect open spaces to form linear parks and trails, some perhaps along waterways, the scenic views of wildlife, trees, and flowering plants will improve, and this could lead to increased tourism dollars. Micromobility solutions should be integrated into a broader network, via the approved agency thoroughfare plans, which connect and provide access to schools, businesses, parks, cultural destinations, medical services, public transportation, and other destinations. These micromobility solutions should be designed to ensure user safety and enhance the quality of life of Kendall County residents. Signage and pedestrian/cycling crossings also should be critical components of these micromobility solutions.

Ensuring a connected trail network requires incorporating trails into our thoroughfare plans, and future County and City thoroughfare plans should include easements and expanded Rights of Way specifically for trails. Parallel to the short and long terms needs of a roadway network, these separate use paths should be clearly indicated and legally designated so they are independent of roadways. Locating these trails independent of rights-of-way used for large and fast-moving vehicles will enhance user safety and the overall quality of life of many County residents.

RP 2.6 Provide mobility solutions for individuals of all ages and socio-economic backgrounds.

Providing mobility options for our youth, seniors and those with limited economic means is fundamental to a community’s social and economic well-being. This includes the provision of public transportation, in addition to the micromobility and other solutions noted above, to enable all County residents to access needed community services and amenities.

RP 2.7 Execute complementary and cooperative transportation planning between local municipalities and Kendall County Commissioners for mutual approval of Transportation Plans.

From time to time, the Cities of Boerne and Fair Oaks Ranch update their Major Thoroughfare Plan (MTP) and/or associated Master Transportation Plans (MTP). The purpose of this plan is to guide private land development planning and establish the basis for requiring dedication of right-of-way or additional right-of-way along certain new or existing rights of way for future mobility enhancements. The Cities have authority to require these dedications as part of the land development process even outside its corporate boundaries within their extraterritorial jurisdiction (ETJ).

State law requires each county to enter into an agreement with each municipality within that county to specify which governmental entity’s land
development regulations apply to development within such municipality’s ETJ and which entity administers those regulations. The four municipalities that have areas within Kendall County are the Cities of Boerne, Bulverde, Fair Oaks Ranch, and San Antonio. Currently, for those areas of Kendall County that are within the City of San Antonio’s ETJ, the County’s development regulations apply. For those areas of Kendall County that are within the City of Boerne’s ETJ and the City of Fair Oaks Ranch’s ETJ, those Cities’ development regulations apply. It is not clear which entity’s regulations apply in the small area of the City of Bulverde’s ETJ that is within Kendall County.

Under state law, a municipality has the right to develop a plan for major thoroughfares within its ETJ. Such a plan is conceptual or diagrammatic in nature and is intended to guide the land planning efforts of developers preparing master plans for their respective properties. MTP’s also serve as the basis for requiring developers to dedicate additional right-of-way when developing land next to an existing municipal or county road.⁵

RP 2.8 The Kendall County Commissioners Court should exercise its authority to prepare and maintain a County-wide Major Thoroughfare Plan.

Under state law, a county also has the same right as a municipality to develop a plan for major thoroughfares within such county that are located outside a local municipality’s ETJ. However, to date, the Commissioners Court has chosen not to exercise this right. The Committee believes Kendall County residents would benefit from the County government’s prompt exercise of this right and encourages it to prepare its own Major Thoroughfare Plan that complements and is consistent with the MTP’s adopted by the City of Boerne and the City of Fair Oaks Ranch, as amended from time to time.

In addition, the Committee recommends the respective MTP’s be developed within the legal boundaries of the local municipality, to include that municipality’s ETJ, and when such municipality’s MTP includes roadways on adjacent land out in the County, such roadways out in the County should be approved by the Kendall County Commissioners Court. The Committee believes that such complementary and cooperative planning between local municipalities and Kendall County Commissioners will enhance transportation mobility across the entire County.

RP 2.9 Promote interconnectivity by requiring that new development provide vehicular and pedestrian routes to access local schools without the need to venturing out to the connecting roadway.

The Committee is aware of several locations where access between adjacent residential developments is prevented by one or both developments restricting

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⁵ Developers’ contributions of land and infrastructure is limited by a principle known as “rough proportionality.” Under this principle, a developer may not be required to contribute more than its proportionate share of the cost of additional ROW and infrastructure.
“cut through” traffic (e.g., to include pedestrian and vehicular traffic associated with public schools). As an unfortunate result, all such traffic is required to exit these developments, travel along one or more arterial roads, and then re-enter an adjacent residential development to get to school, thereby contributing to congestion on the arterial roadway.

Some of Kendall County’s residential developments are laid out this way and provide only one or two entrances to an adjacent roadway or highway. In some cases, this occurs because the land next to such development is undeveloped. In other cases, this occurs because the roads in the development are maintained by the development’s Homeowners’ Association, and the developer/HOA has an incentive to minimize traffic in the development, by limiting the use of its roads almost exclusively to residents of that development.

Greenfield Roads

Should greenfield roads be warranted, acquiring private land for public purposes should not be undertaken lightly. Some greenfield roads will be constructed by developers in conjunction with the development of their land. However, some gaps in roadway alignments are likely to remain and may need to be filled at some point. Where such situations occur, the Committee recommends some general guidelines for the alignment and design of any new roadways; therefore, include the following recommended policies in ranked order of importance:

**RP 3.1** New roadways should be the absolute last option, not the first choice, in meeting the City’s/County’s mobility needs, and they should address a specific, identifiable mobility problem, issue, or challenge that cannot be resolved any other way.

**RP 3.2** New roadways should be built to meet the specific transportation needs of Kendall County residents only and not to meet the needs or desires of any governmental entities outside of Kendall County, unless such needs or desires align with those of Kendall County residents.

**RP 3.3** New alignments should avoid sensitive karst formations and other environmental features where possible. Where avoidance is not possible, best practices for mitigating potential damage to the features should be implemented as part of the new alignment.

**RP 3.4** All owners of any property or parcels that are considered as possible options for new alignments should be notified in advance (in much the same way as the Cities of Boerne and Fair Oaks Ranch currently notifies affected property owners within a certain proximity of proposed zoning changes) and encouraged to participate in the public transportation planning process.

**RP 3.5** New alignments should minimize the number of property owners/parcels affected and the length of the route, so that the beauty and pristine
nature of the Texas Hill Country can be preserved as much as possible.

RP 3.6 To the greatest extent possible, new alignments should follow parcel property lines and not “split” or bisect parcels owned by the same owner. In the event such “splitting up” of the owner’s property is necessary, grade-separated roadways should be considered;

RP 3.7 New alignments should have a limited footprint and should limit the number of intersections and driveways (a strategy known as “access management”) to substantially limit development and the potential for stimulating induced traffic demand.

RP 3.8 Acknowledging the use of Eminent Domain as a Last Resort

The Committee had extensive discussions and received much public input with respect to the use of eminent domain by the City of Boerne, City of Fair Oaks, and/or Kendall County to facilitate the expansion of existing intersections or roadways or the construction of new greenfield roadways. Eminent domain is a controversial topic, and some citizens in the county have expressed concerns that lines drawn on maps across their property could eventually result in part or all of their property being taken by the government. The Committee strongly believes that the construction of new greenfield roadways should be the absolute last option, not the first choice, in meeting the County’s mobility needs and that alignments should be selected in such a way as to minimize the use of eminent domain. When ROW acquisition is deemed necessary, the Committee recommends the following policies guide the process.

3.8 a. Any form of forceable property acquisition, especially when it bisects a property, is strongly discouraged and should be an absolute last option. Efforts to optimize existing infrastructure should be undertaken first.

3.8 b. The preferred method for new Right of Way acquisition should be through the local thoroughfare planning process when properties develop.

3.8 c. New Rights of Way should aim to avoid environmentally sensitive areas, parks, scenic viewsheds, conservation easements, and historically important areas unlikely to be developed.

While the Committee in general does not favor the use of eminent domain to facilitate new greenfield roadways through the County, its use for modestly expanding existing transportation infrastructure or for connecting an otherwise completed road segment through a very small section of property, will likely be better tolerated by the community. This should only occur in specific, limited circumstances when completing a missing segment of a roadway is determined by the applicable local governmental entity’s elected leaders to be a) vital and absolutely necessary for the common good and b) unlikely to be developed within the foreseeable future or within a timeframe that will meet the County’s growing mobility needs.
City of Boerne Downtown Masterplan

Many of the public concerns expressed through the Crowdsourcing App were focused on the urban core of the City of Boerne. These concerns include pedestrian safety, pedestrian access, parking, the passenger vehicle-truck ratio, and more. Because River Road, Main Street, Bandera Road, and Blanco Road are all TxDOT-controlled roadways, the City’s ability to make improvements to these roadways to address any concerns is limited.

The Committee recommends a multi-step process for the further investigation and resolution of the identified concerns through the following recommendations:

**RP 4.1 The City of Boerne and TxDOT San Antonio District Leadership should evaluate the costs associated with having the City of Boerne assume responsibility for some or all of the TxDOT-controlled roadways within its corporate limits.**

**RP 4.2 The City of Boerne and Boerne Business Community Leadership should develop a Downtown Boerne Master Plan.**

Equipped with the clarity of which entity controls the ROW, the City should undertake development of a master plan for the downtown area of Boerne. In 2008, Boerne invited a national American Institute of Architects Regional/Urban Design Assistance Team (R/UDAT) to study its downtown and make long term recommendations for its preservation and improvement. That study provides a solid starting point for the development of a downtown master plan but needs to be updated and improved. Major emphasis of such a plan should be placed on streetscape, pedestrian accessibility and safety, and parking, and include consideration of a trolley/shuttle system with one or more remote parking areas.

The Committee recognizes that any major changes to the downtown streetscape might necessitate the selection and development of an alternative north-south route paralleling IH-10, and any such selection and development must meet the general guidelines for the alignment and design of any new roadways noted above.

**Transportation Advocacy Committee**

An effective thoroughfare planning program requires a concerted effort from regional stakeholders to advocate for both funding sources and prioritization of projects. More effort should be implemented to assure Kendall County’s constituency that federal and State gas tax dollars are spent wisely and with consideration of regional prerogatives. Kendall County has one member represented amongst the policy and technical committee members of the Alamo Area Metropolitan Planning Organization (AAMPO). The County Judge is Kendall County’s sole representative on the AACOG’s 12-county Rural Regional Planning Organization. More support
and assistance should be given to the County Judge and our AAMPO member and better equip them to advocate for adequate funding of the Kendall County area’s transportation priorities.

**RP 5.1 Establish a transportation advocacy committee, made up of citizens who live and/or work in the community, representing each precinct of Kendall County, the Cities of Boerne and Fair Oaks Ranch, Boerne ISD and Cow Creek Groundwater Conservation District.**

The Committee shall be charged with collaborating with other neighboring Counties and Cities on common regional transportation issues identified by the KCBFOTC and the elected officials of the associated governmental agencies and to advocate for transportation funding resources. Resources include, yet are not limited to, State and Federal Funding and local government cost-sharing opportunities that benefit all multi-modal transportation means as they specifically relate to the planning efforts within Kendall County and the associated local governing bodies of Kendall County.

**Trails, Multi-use Infrastructure, and Public Transportation**

As Kendall County grows, its population will become more diverse and residential density will increase, especially in Boerne and areas to the south and east. Both these factors, in concert with technological advances, suggest the transportation system in the County will evolve to include a greater role for pedestrian and micromobility infrastructure, and perhaps even public transportation.

The Trails Sub-Committee developed a vision for a fully integrated network of trails and multi-use shared pathways, and it can be found in Appendix B, along with the full complement of policies that support that long range vision. Recommended policies extracted from that vision document include the following:

**RP 6.1 Support the Safe Routes to School Partnership**

Ensuring safe passage to school for children is imperative for the safety and well-being of the children and will help to reduce school-related traffic congestion. Children who actively commute experience better health outcomes, perceptions of their neighborhood, and spatial knowledge.

**RP 6.2 Promote the establishment of a system of trails, greenways, and micro mobility corridors throughout Kendall County**

The system should connect neighborhoods with amenities, services, and centers of commerce, and be accessible to all citizens for improving their physical and mental well-being by presenting opportunities for recreation, transportation, and education, each of which provides enhanced environmental and societal benefits.
RP 6.3 Create a Greenway Thoroughfare Overlay

Create a Greenway Thoroughfare plan that overlays and interacts with a traditional arterial thoroughfare plan to facilitate the creation of a comprehensive multi-modal transportation network.

RP 6.4 Establish County trail and micro-mobility design standards, as well as incentives for integrating these features into future developments.

RP 6.5 Connect the Kendall County Trail System to the public transportation hub proposed for the new Alamo College District’s campus being developed west of IH 10, near the Bexar-Kendall County boundary.

San Antonio’s public transportation system, VIA, provides service throughout Bexar County from this location. Linking our multi-modal network to this location will enable citizens of Kendall County to access the San Antonio public transportation network.

RP 6.6 Develop a system of scenic roadways in the County in coordination with the state sponsored Texas Hill Country Trail Region and local tourism and hospitality organizations.

Public Transportation

Public transportation agencies are categorized with respect to the size of the community served. Metropolitan Transit Authorities serve populations of more than 200,000, while Rural Transit Systems serve those areas with a population of less than 50,000. Urban Transit Systems serve those with populations between 50,000 and 200,000. Kendall County is served by Alamo Regional Transit (ART) and operated under the auspices of the Alamo Area Council of Governments. ART is a “demand response” public transportation system, and while its fares are impeccably reasonable, the logistics of using the service discourage widespread use. As Kendall County’s population increases beyond 50,000, its leadership should consider what, if any, Urban Transit services are warranted. It is widely understood that even the larger Metropolitan Transit Systems are not self-sustaining and that governmental subsidies are required. Nevertheless, both social and economic benefits could be realized if a cost-effective way of providing public transportation could be developed.

RP 7.1 The local governments in Kendall County should form a committee that includes local businesses and other potential beneficiaries to study the feasibility of extending public transportation into the southern parts of the County, including the City of Boerne. Approaches could include expansion of VIA’s service area, creation of an entity to provide public transportation to a transit hub in the existing VIA service area, and other mechanisms.

6 https://www.txdot.gov/inside-txdot/division/public-transportation/find-ride.html#
CHAPTER 5
STATUS QUO

Current Situation

Roadways and Highways – When the Committee formed in mid-2019, publicly owned surface transportation infrastructure in Kendall County was operated and maintained by four public entities: Kendall County, the City of Boerne, the City of Fair Oaks Ranch, and TxDOT.

- **Kendall County owns and maintains 405 miles of mostly one- and two-lane roads, 385 miles of which are paved and 20 miles of which are something other than paved.**

- **The City of Boerne owns and maintains 70.8 miles of mostly two-lane roadways, almost all of which are paved.**

- **The City of Fair Oaks owns and maintains 17.8 miles of mostly two-lane paved roadways within Kendall County.**

- **TxDOT owns and maintains 164.0 miles of roadways in Kendall County. This includes 22.8 miles of Interstate, 14.4 miles of US Highway, 20.2 miles of State Highway, and 106.6 miles of Farm to Market Class Highways.**

Since that time, a few City and County roads have been accepted for maintenance, but the numbers are essentially the same. From a county wide network perspective, Interstate 10 extends in a northwesterly direction through the County. North-south transportation components in Kendall County include US Highway 87 in its western extremes, Old No. 9 Highway, FM 1376, FM 474, and FM 3351/ Crabapple Road in its eastern extremes. East-west transportation components include SH 46, FM 473, and FM 1888, which crosses the extreme northeastern part of the county. Collectively, these roadways form a grid that almost always adequately handles current travel demands, except for certain locations in and around Boerne.

In addition, many other public and private roadways exist within Kendall County. These roads generally provide only local access and therefore typically do not contribute meaningfully to the county wide transportation network. In recent years, in conjunction with land development projects some major thoroughfares are being fully or partially built and subsequently accepted for maintenance by a political subdivision. Examples include Copper Ridge, Spencer Ranch, and Summer Glen. As other adjacent and nearby tracts are developed, it is anticipated that those major thoroughfare extensions will be constructed by those developers and eventually become part of the county wide transportation network.
**Public Transportation** – The Alamo Area Council of Governments provides public transportation bus service to all residents in its twelve-county service region, including Kendall County. The service, known as the Alamo Regional Transit (ART) provides demand response, curb-to-curb transportation service five days per week (Monday – Friday) from 7:00 a.m. and 6:00 p.m. Rides need to be arranged at least 24 hours in advance and are available on a first-come, first-served basis.

**Dedicated Pedestrian Networks** – The City of Boerne owns and operates the Old No. 9 hike and bike trail, which extends from Esser Road 1.65 miles to a point that is frustratingly four hundred feet south of the intersection of Main Street, School Street, and Adler Road.

In addition, the trail system extends approximately one mile along the north and east bank of Cibolo Creek from Elm Street at River Road (SH 46) to the northwest corner of Main Plaza. Both facilities are used primarily for recreational purposes, not for transportation, due in part to a lack of connectivity and safe routes to access schools, services, and amenities.

**County Transportation Planning History**

In the past four decades, Kendall County and/or Boerne have undertaken several studies⁷ that were intended to facilitate the development of Kendall County’s or Boerne’s transportation system. The first formal local transportation planning in Kendall County began in 1974 with the first City of Boerne Thoroughfare Plan. That plan was first updated thirty years later in 2004, and was subsequently updated in 2010, 2017, and 2019.

Another major transportation planning effort was undertaken by the Thoroughfare Planning Citizens Committee, which published its report in 2007, along with a Minority Report. Another effort, known as the R/UDAT (Regional/Urban Design Assistance Team), was completed in 2008 and focused on the Boerne area of Kendall County.

In addition to these vehicle-centric planning efforts, the City of Boerne worked with the Alamo Area Metropolitan Planning Organization to prepare Pedestrian and Bicycle Study and Recommendations in 2016 and 2018.

In 2015, the City of Boerne and Kendall County adopted a joint resolution agreeing to “work in collaboration with the Texas Department of Transportation to resume efforts to plan for future growth and to determine potential future transportation corridors needed to accommodate growth in the region.”

Although the study process included numerous stakeholder meetings, public outreach, and other initiatives intended to gather and integrate public opinion in the plan, in fact, many members of the public were skeptical that their input influenced

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⁷ See [www.kcbfotc.com](http://www.kcbfotc.com) for a list and content of Past Studies.
the recommendations in any meaningful way. Most members of the public did not have an interest in or understanding of the transportation planning process. Moreover, it was not clear if modal alternatives (e.g., public transportation or trollies) or system alternatives (e.g., using a transportation grid instead of a loop or bypass) were considered. Community members were left with the impression that the only solution to relieve congestion was a loop around Boerne, and the only alternatives were how wide it would be and where it would go. In addition, the absence of non-automobile facilities in the plan further eroded support for the plan.

Nevertheless, TxDOT moved forward to finalize its recommendations, with the ultimate width of the proposed ROW approaching Interstate Highway standards. To be fair, the Kendall Gateway Plan was never presented as an “all-or-nothing” or “take-it-or-leave-it” recommendation. One option that Commissioners Court could have taken was to negotiate the scale and extent of the plan to better suit Kendall County sensibilities. Nevertheless, the baseline recommendation conjured up visions of an urban freeway in the minds of many Kendall County citizens. While some may have considered this approach far-sighted and visionary, many more were horrified at the prospect of Kendall County becoming an urbanized area complete with its own loop. Moreover, many saw the Gateway proposal to be focused on meeting the needs of the greater San Antonio area and less focused on addressing the mobility needs of Kendall County. The plan was rejected by Commissioners Court in October 2018.

The perceived shortcomings of the Kendall Gateway Study process significantly influenced the composition of the Kendall County Boerne Fair Oaks Ranch Transportation Committee (KCBFOTC) and how it pursued its work. Committee deliberations early in the process led to the agreement that four principles would drive its approach to developing its study: Community Based Solutions, A Transparent, Open, and Inclusive Process, Minimizing Adverse Environmental Impacts, and Avoiding Latent Demand. These are addressed in more detail in Chapter 6.

Regional Transportation Context

In developing transportation plans for an area, it is prudent to consider not only the needs of that area, but also the demands imposed on the transportation system by traffic originating outside that area.

Kendall County is situated northwest of Bexar County, with San Antonio being its largest metropolitan area. San Antonio sits at the crossroads of Interstate 10 and Interstate 35 and the northern terminus of Interstate 37. Several other major highways extend through San Antonio, including US Highway 87, US Highway 90, and US Highway 281.

The highway network in Bexar County is best described as a hub-and-spoke network with these Interstate Highways, US Highways, State Highways, and other arterials forming the “spokes,” which extend from the central business district. These spokes are connected by highway loops that encircle the urban area. The original San
Antonio loop was loosely formed by urban arterials, such as WW White, SE Military Drive, Gen. McMullen, and Basse/Eisenhauer Roads. Later, that informal loop was largely supplanted by Loop 410, which was constructed “farther out,” with a radius of approximately eight miles. Although its original construction was more modest, today most of Loop 410 is an interstate class highway.

As San Antonio grew into a major economic engine, Loop 1604 was laid out to be an average of a little more than six miles beyond Loop 410. As recently as the early 1980’s, most parts of Loop 1604 consisted of two-lane Farm-to-Market class roadways, but significant growth along the northern segments of Loop 1604 has compelled transportation planners to upgrade those sections to interstate highway standards.

Examination of Google Earth shows the presence of a logical “outer loop” – i.e., beyond Loop 1604 - that is formed by several existing US and State Highways. Starting in Bandera and proceeding clockwise, these include State Highways 16, 46 and 123, US Highway 87, and State Highways 97 and 173. These highways connect the communities of Bandera, Boerne, New Braunfels, Seguin, Stockdale, Floresville, Pleasanton, Jourdanton, Devine, and Hondo.

Should this “outer loop” evolve in much the same way Loops 410 and 1604 did, one could easily conclude some segments of this outer loop are likely to be expanded to interstate class standards. Moreover, noting the robust demand for residential housing in the Hill Country, it is even easier to conclude the pressure for increased roadway capacity will be highest on those segments between Bandera and New Braunfels.

While it may be easy to arrive at that conclusion, there are some significant impediments that work against it. First, SH 46 traverses Boerne in an awkward, inefficient manner and in areas that cannot be easily or inexpensively expanded. Second, no convenient or apparent alternate rights-of-way exist to the north or south that could be used to circumvent Boerne to serve as an alternate SH 46 alignment. Finally, much of the area south of Boerne and east of Interstate 10 is already substantially developed, and this will increase both public opposition and the cost of acquiring ROW for an alternate alignment.

Further complicating the creation of a new alternate route southeast of Boerne is the environmental sensitivity of the area. According to Dr. George Veni, Executive Director of the National Cave and Karst Research Institute⁸, the surface of that area consists of the Lower Glen Rose geologic formation and contains the “highest concentration of stream swallets in Texas.” While the area has not been fully studied, there are some 83 known caves and sink holes that represent a direct link to the underlying Trinity Aquifer, a major source of drinking water for Kendall County and Northwestern Bexar County. Creating a new road through this environmentally sensitive area is challenging, and the wider such a road’s right-of-way is, the more challenging it will be.

⁸ See Appendix A for a transcript of Dr. Veni’s presentation to the Committee
An alternate SH 46 alignment to the north of Boerne would be on the Upper Glen Rose geologic formation, which is not as prone to the formation of caves and sink holes. Still, such a northern alignment would traverse the Upper Cibolo Creek Watershed which feeds the Boerne City Lake, also a significant surface water supply for the City of Boerne.

In addition, the area to the north of Boerne, like the rest of the SH 46 route from Bandera to New Braunfels, includes challenging topography and limestone formations that will increase construction costs. Overlaying these factors is the increasing public resistance to expanding transportation corridors in the hill country.

In conclusion, the increased ROW acquisition and construction costs, together with the challenges of protecting environmentally sensitive areas makes the outlook for increasing SH 46 to interstate class capacity – at least, through Kendall County - dauntingly uncertain.
Community Based

Of utmost importance to the Study Committee members was that its recommended solutions be “community-based,” i.e., that they be developed primarily by citizens with the assistance of professional transportation planners. During its work, the Committee reached out to local, regional, and national experts in transportation, mobility, and science for education and assistance:

- Alamo Area Metropolitan Planning Organization presented information on Travel Demand Modeling and offered valuable assistance in developing the CrowdSource mechanisms the Committee used to solicit public input.

- Jeremy Kashman, the City Engineer from Carmel, Indiana (AKA, the roundabout capital of the world) gave a presentation on their 138 (and counting) roundabouts, including costs, benefits, etc.

- Jeff Whitacre and Amy Avery with Kimley Horn Transportation Planners gave a presentation on reserving adequate Rights-of Ways, designing safe and efficient nodes, and building segments with function and character, all of which support the concept of “wide nodes / narrow roads.”

- Buddy Kuhn, Alamo Heights City Manager gave a presentation on the Broadway Complete Streets Project.

- Mike Howle, Kendall County GIS Manager gave a presentation on existing geospatial data.

- Committee member Rich Sena and Henry Acosta, representing BISD, gave presentations on population trends, past and future in our area, and highlighted some problem areas that contribute to congestion.

- Committee member Steve Sharma, PE., was helpful in explaining how StreetLight Data could provide relevant data in support of the Committee’s efforts. Mr. Sharma developed a model of the River Road / Herff Road intersection using the Synchro traffic modeling software to show how traffic moves through that intersection under certain conditions.

Throughout these efforts, the Committee maintained an openness to consider professional transportation planning experts without surrendering its primacy to develop a commonsense transportation plan based on Kendall County sensibilities.
Transparent, Open, and Inclusive

From the beginning, the Study Committee was designed to afford the diverse constituent group in the County a voice in the transportation planning process, and since its formation, the Committee has demonstrated a commitment to transparency, openness, and inclusion. Specifically,

- All Study Committee meetings were open to the public, and, although not statutorily required, the meetings were conducted as if they were official public meetings. With limited exceptions, standard posting requirements were followed for all Study Committee meetings.
- Ample and convenient opportunities were provided for public comment during the Study Committee meetings.
- Detailed minutes of the Study Committee meetings were prepared, approved, and remain available on the Committee’s website.
- All views, including those involving alternate mobility programs such as bike and pedestrian facilities, were given consideration.
- Members were encouraged to disclose conflicts of interest and recuse themselves from deliberations on those matters affected by the conflicts of interest.

Moreover, members of the public attending the meetings were not prevented from reasonable, limited participation in the Committee’s deliberations.

Minimizing Adverse Environmental Impacts

Traditional transportation planning includes consideration of potential environmental impacts on air, water, flora, fauna, light, noise, and cultural resources. Environmental compliance for projects that involve federal funding falls under the umbrella of the National Environmental Policy Act. Compliance for projects involving exclusively state funding follows a similar process. The Committee supports these statutory efforts to minimize adverse environmental impacts.

Beyond that though is a more fundamental desire for the Committee’s transportation planning efforts to go BEYOND legal compliance to a higher level that recognizes the distinctly rural hill country environment that may not be adequately covered by state and national policies. In other words, the combination of design criteria, local regulations, and planning choices can be made to minimize environmental impacts in Kendall County. For example, roadway illumination can be provided as it has in the past or regulatory agencies could begin to use/require International Dark Sky Association (IDA) friendly fixtures. Another example would be to make stormwater detention a routine consideration for all transportation infrastructure design, and a mandatory part of facilities in environmentally sensitive areas of the County.
The distinction between these approaches is moving from an approach that tries to minimize the expense of complying with State and National Standards toward a more balanced approach that considers the benefits of minimizing adverse environmental impacts. At the root of all this is widespread awareness that the Hill Country environment is fragile and that we need to be cautious in how it is affected by transportation plans and infrastructure.

These approaches could include non-project approaches such as public transit, establishing carpool programs, creating pedestrian-friendly spaces along roadways, etc.

Avoiding Latent Demand

Finally, the third deliverable is on overt acknowledgment of the link between the transportation system and land use, and a subtle, but clear hint that the long term, sustainable solution to traffic congestion is found not in projects, but in thoughtful land use planning and design policies, including transportation planning and design policies.

Travel demand is directly related to both population and the availability of roadways. While other factors, such as affluence, age, population density, and other characteristics affect travel demand, the most significant is population. Contrary to popular opinion, fuel prices are not a large factor in travel demand. People usually live in one area and travel to another area to work and to consume or provide a wide range of goods and services, and their need to access these services is more necessary than discretionary. The extent to which they use the road network is called “travel demand.”

Transportation planning is usually focused on reducing congestion. Indeed, congestion plays a significant role in the Committee’s charge: to develop a county wide transportation plan to mitigate current and future traffic congestion in Kendall County in a way that preserves cultural and environmental resources and promotes appropriate economic development.

The traditional approach to reducing congestion is to increase roadway capacity (i.e., build more and/or larger roads). However, many have observed that increased roadway capacity seems to invite additional traffic, and the roadway once again becomes congested. This increased traffic is known as “latent travel demand.” In the light of the futility of this well-established phenomenon, a primary transportation planning principle for Kendall County should be to avoid stimulating latent travel demand.

If we think of traffic congestion as a patient who has suffered a major trauma. The priority is to stop the bleeding (short term projects focused on mitigating congestion). The next goal is to restore the patient to health (long term improvements). The final strategy is to adopt a lifestyle that promotes health (policies that reduce the creation of latent demand.)
A thoughtful assessment of the triad of deliverables the Committee has been asked to provide can, together with literature review, provide some insight on how this might be done.

- **A short range program of projects and operational improvements that can be implemented in the short term to relieve current congestion.**
- **A long range program of transportation improvements that addresses current and projected travel demand; and**
- **A program of recommended policies to guide the planning and design of the transportation/land use system within Kendall County.**

The first deliverable, a program of projects and operation improvements, is intended to relieve current congestion. There is no question that increased roadway capacity can indeed relieve congestion, even if the relief is short lived.

The second deliverable, a program of transportation improvements, because it omits the word “projects”, includes projects, but also indicates an openness to other approaches to address projected travel demand. This could include alternate transportation modes such as micromobility and mass transit.

The final deliverable, a program of recommended policies, offers insight into how Kendall County governments might differentiate themselves from other governments in addressing future congestion by avoiding as much as possible creating latent demand.
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DR. GEORGE VENI: [00:00:00] Yes, just as a quick background... There we go.
Just as a quick background, I’ve lived in Carlsbad, New Mexico now for the past 14
and a half years but I still consider San Antonio home. I get back there a couple of
times a year, at least, to visit family, friends, take care of things and still do a lot of my
research there.

I like to annoy my New Mexican neighbors by telling them that Carlsbad is within
the boundaries of the Republic of Texas. Some of them don’t have a sense of humor
about that. [Laughter]

But more seriously though, I’m here to talk about Cibolo Creek, the lower Glen Rose
aquifer and traffic around Boerne.

And first of all, I should introduce the National Cave and Karst Research Institute
where I’m the executive director. In 1998, congress realized that 25 percent of the
country was karst or some related similar terrains and so they created the institute,
partnering with the state, New Mexico, which matched federal funding, and the City
of Carlsbad which built our headquarters, hence, the star that you see in Southeast
New Mexico, 30 miles from the state line. And so they established us there as the
national authority on caves and karst.

I’ll point out that we are not a consulting company or an advocacy organization.
We do consulting type research but our interest is in doing research that might
have broad applications. Our purpose is to provide the best available research and
information about caves and karst.
And congress gave us these mandates here that you’re welcome to read if you want. But in summary, they just say that we were established to conduct support, facilitate, promote cave and karst research, education, management, archiving of data and collaborations that support all of the above both nationally and to some level, internationally.

One of my other hats is I’m the president of the International Union of Speleology which is essentially the United Nations of cave exploration and science countries. And this year is the International Year of Caves and Karst.

I’m jumping around to this meeting, from coordinating a meeting at UNESCO headquarters in Paris where we’ll be having a major celebration of the year in September. Anyway, that’s the basic background. Let’s get into the local situation.

This is a geologic map of the area, if you haven’t seen it. We’ve got Interstate 10 moving diagonally across the area. Here’s Boerne, 46, going west to east across the area. The issue, of course, is traffic flow.

Some of what I’ll cover, well at least to start with, will be introductory or... Old news to some of you but it’s just... I think it’s useful to give these presentations starting from a level playing field.

So rerouting traffic – I’ve talked about this with a number of people. You know, one idea that immediately comes to mind... I’ve worked with TxDOT on a number of projects. I had my own consulting company for 20 years when I was in San Anton.

And so one thought is, “Well, route it to the west of Boerne.” Well that is not going to work. It’s attractive in that you’ve got this lighter green area which is the upper member of the Glen Rose formation and it has an aquifer but it is a small aquifer. It's not a very sensitive aquifer. So in that regard, you know, it’s a nice idea.

But if you look at all these lines crunched together – these are topographic contour lines – it tells you that this is a hilly rugged area and so it'd be very expensive to do it. But more fundamentally, that's not where the traffic is. The traffic, of course, is out to the east along Highway 46.

So another option, of course, would be to look at Ralph Fair Rd. 3351. And it has the advantages already there. And expanding that road has reduced cost options and benefits. But it has complexities that only a small portion of it is, of course, in Kendall County. A big chunk is in Comal. A big chunk in Bexar [colloquially pronounced “Bear”], San Antonio’s ETJ adjacent to Camp Stanley – and that has certain complications.

The other problem is that still, fundamentally, the issue is traffic. And as I understand, the problems going on and from recent visits, most of the traffic is occurring closer to Boerne – suburban development in the Boerne area and how to route or reroute that traffic. And so, the logical place to put it at... and solely in terms of traffic flow is to put a road somewhere over here – connecting 46 to I-10.
So logically, that makes sense but we just can't look at, you know, traffic flow. Of course, we need to think about other issues. Any good engineer or geologist looking at this, who may not be familiar with the area, will, of course, notice the geologic map. And it says shows right next to that line is Cascade Caverns.

Now I'm not here to focus about Cascade Cavern. But what it would tell an engineer or a geologist is, “Wait a minute. If there's a cave that's showing up on the regional geologic map, that tells me that this dark green area is lower member of the Glen Rose and it tells me that this is in fact a very cavernous, a highly-karstified unit.”

In fact, the lower Glen Rose has the longest caves in Texas. And these are all underground stream caves, one of which you can easily visit, which is Cave Without a Name, just to the north of you, near Kreutzberg. So, yeah, let’s zoom in and think about this and look at it a bit more closely.

So looking at it more closely, some of the issues and questions of concern are putting a bridge over Cibolo Creek. So let's look at Cibolo and karst features. And what we have in Cibolo Creek--

And if we focus on the Kendall portion of Cibolo Creek, we have features known as “swallets” – five swallets. Another term for these are “swallow holes.” These are holes that take all the flow of the creek or most of the flow, you know, depending on how much water is moving down the creek. This is the highest concentration of stream swallets that I know of in the state of Texas.

And I’m one of the managers of the Texas Speleological Survey. It’s a non-profit organization that manages the data on Texas caves. And I still manage the data for Bexar, Comal and Kendall counties. So it’s a high concentration. If we look at the Comal - Bexar County portion of Cibolo Creek, over here, three swallows are known.

And it’s worth pointing out, and I’ll make this point repeatedly, that we really haven’t searched this entire area. These are features that have been just casually found by people walking around happening to stumble across them. These are not from a detailed thorough search of these areas looking for karst features.

So what’s a swallet look like? This is one from the Comal-Bexar County portion. Originally, we knew of it as a cave entrance – up here above the creek bank. And most of the flow of the creek would just go right past it. But the cave went under the creek and then some years later, it collapsed in. And now all the water of Cibolo Creek goes down that and only major floods actually gets past this feature.

Now my friend here, if he steps into this cave and climbs on down, it wouldn't take him very long to reach the water table.

A point that I frequently make is that I have been swimming in your water supply. I've been down in the lower Glen Rose aquifer. I've been down in the Edwards Aquifer and other aquifers in Texas.

And the point of that is, that I'm a giant contaminant. I'm not getting filtered out. So things a lot skinnier than me like oils, grease, bacteria, heavy metals, pesticides,
herbicides, anything that may be an urban runoff, anything that may be in a spill will easily get to the aquifer and have effectively no filtration in that process. And so this is one of many examples of these swallets going right down to water.

So let’s jump away from Cibolo Creek for a moment and take a look at the Mississippi River. This is a Google Earth image. The Mississippi is this brown stream going through here, you know, over a mile wide. And I’ve highlighted it with the blue line here to show you the... you know, to make it easier to see the route of the river.

But we see these funny features and lobes here to the side and what these are, are the former route of the Mississippi. Rivers don’t stay in one place. And so at one point, the Mississippi meandered back and forth along this route. And then more recently, it cut its way through and straightened its channel.

And with time, this straighter channel will meander again. You can see more curves and arcs here and other places showing that this... you know, the river was all over the place.

So why do we care about meanders – because most streams including the Cibolo meander, additionally... And part of the definition... the major definition of “karst” is it’s an area formed by dissolving away of the bedrock. [00:10:00] Water is naturally acidic. And so the more water you have in the location, the more the rock will be dissolved. The fractures will be dissolved. Sinkholes will form. Caves will form. Fractures get larger.

Essentially, permeability, the ability of the rock to transmit water increases, the more water you have. So the highest permeability, and therefore the highest vulnerabilities to contamination, are in creek bed areas and their floodplains where the streams had meandered and increased that permeability over time.

So if we move back to the Cibolo, and we don’t look at the creek bed now but just look at the floodplain... I know of four caves and sinkholes in the Kendall portion of the Cibolo floodplain and four caves and sinkholes in the Bexar-Comal portion of the Cibolo floodplain. And again, these are just the ones that are known.

Now what do these things look like? This is the best example... the biggest example I can show you. This is not Cibolo Creek in flood. The Cibolo is back over here in the distance. What this is, is this a natural stream channel that goes to Cascade Cavern.

And the reason I’m taking this photo from where I’m at is because long ago, the owners of Cascade built a dam to keep the Cibolo from flooding the cave. And so I took this photo some years ago, standing on top of the dam facing down toward the creek.

So this keeps the flood waters from just pouring into the cave. But does it stop water from getting into the cave? No – because water will go into cracks and crevices and other sinkholes and other caves all over the area.
And in fact, Cascade Caverns will flood. Most of the floods we never see, at least in the tourist part. They happen at the lower levels of the cave. They rise and fall and never reach the tourist trail. But some of them occasionally do reach the tourist trail and the cave will flood out.

So just because we stop the water from entering at this location doesn’t mean that the cave doesn’t flood. But Cascade is one of many caves, you know, that formed by flood waters along Cibolo Creek.

Additionally, and one of the reasons I keep saying that these are the ones that we know about, is this one swallow... this one swallow hole that formed, opened up about five years ago.

So here’s the creek. And just off to the side, buried under about two to three feet of gravel and alluvium, is the cave entrance. It’s been there for a long time. It formed when the Cibolo Creek was actually over the spot, almost certainly. But then as the creek meandered over, it deposited the gravel behind.

As a result with time though, continued floods have now washed that gravel down into this thing. There’s another sinkhole over here that... just out of the photo, hidden by the vegetation and rocks.

And so when I see these things, I have to wonder how many more are there that we don’t know about. Is there one here, here, here on the other side of the creek? We don’t know. Geophysics and other tools can be used to try to look for these things. And when we do look, we tend to find them.

So these things open and close. There’s others that have opened and closed in historic time. And actually, mostly, opened. I don’t know of any that have closed recently in historic time. So there’s quite a number of features out there both known and certainly, unknown.

Now currently, focusing just on Kendall County, there are 83 caves and sinkholes known in that area. And again, that’s a minimum number because we don’t know what exists that may be covered up. This is not based on a detailed thorough grid search of the area.

And in fact, one of the 83 data points is a data point in my database that says “many sinkholes in this area,” so... and there’s no doubt about it. No one’s just going out to catalog how many those many sinkholes are. So we have an obvious area of concern – a highly, highly karstified area.

And I don’t know of such a concentration of caves and sinkholes except in the lower Glen Rose. And this is the highest concentration I know in the lower Glen Rose except for one area near Spring Branch which is also in the lower Glen Rose. But that area has also been intensively surveyed and walked to find features where this area hasn’t. So I have no doubt that walking this area we’ll find many more.

So if we take the photo that I showed you just a minute ago but shoot that...
photo from the other angle, at this point, we can see the hole in the ground down here. And that’s all formed along a fracture. So without a doubt, it’s capturing some water from down here under these soils and sediments.

But the other concern is we’ve got this bridge. And what is that? Is that Battle Intense, Keeneland Drive – one of those. Anyway, it was built since I moved to Carlsbad.

But look at this pier here. Imagine putting this pier over something like this. Building in karst areas is always tricky. Not just from the contamination point of view but also land stability.

Now in Texas, we are fortunate that sinkhole collapse is not a big issue. It’s not unheard of but it’s not a big issue. But it’s also something that certainly must be considered as we work and develop and build in karst areas.

So last slide here, “Solutions.” And as I put here at the bottom, “There are no easy options.” This is a Google Earth image of the area, you know, of course, Interstate 10. The east edge of Boerne here, 46, shoots up to the northeast there. Amman Rd. cuts across.

We see a lot of development around Boerne, along the Interstate. You know, the Fair Oaks properties over here up in this area. We have this broad undeveloped area here in the middle which is the vulnerable karst area – the area in question that, logically, for traffic flow at least, would make the most sense to find a way to weave through all of this existing development and connect to I-10.

The sign here to the left is from a project I did for TxDOT in North Austin. I think it was 2015. And they put these signs at either ends of the study area letting people know we’re entering a karst zone.

They had my crew out there during the entire four months-five months of the project, being there on-call non-stop, ready to move at a moment’s notice if they found during construction a karst feature that needed some special attention or consideration. And so they would go out, do an evaluation, bring in more help if needed or just give them the, go-ahead. “Yeah, you can go ahead and proceed.” Karst areas are difficult, challenging environments.

And so just to summarize and explain some of the challenges. The first one, “Complicated flow paths,” if contaminants get into a karst aquifer, it’s hard to say where they’re going to go. These aquifers don’t function the same way that many aquifers do. If you go south to the Carrizo-Wilcox Aquifer, it’s a [sandstock - 00:18:06] where water moves in a uniform pattern.

It’s really easy to build computer models and predict how and where that water is going to move. That doesn’t work though in karst. Water is highly channelized. Very complicated flow paths.

You also have rapid flow. The global average of velocity is one mile a day in karst
aquifers. Now that average is in, generally, wetter climates than what we see in Central Texas.

But from dye tracing I've done in the area... Let's see. I did a trace in the Edwards Aquifer during flood conditions and I got speeds of about two miles a day. I've also done traces during drought conditions that were much lower – probably averaging about a quarter of a mile a day.

Now let's stick with a “quarter of a mile” for the moment because Wellhead Protection regulations... I haven't looked at them in Texas for a few years but I believe they're still the same. And they're the same around much of the country.

What they say is you need to protect the area within a quarter mile of your wellhead – of where you're getting your... of where that public water supply is from.

Well if your water's flowing, you know, a quarter of a mile to a mile a day, that doesn't give you any lead time to turn off that water to prevent contamination, to develop other supplies if a contamination episode happens. So that's some of the complexities that we deal with karst.

No filtration. Effectively no filtration in karst aquifers. As I've said, I've been swimming in your water supply. I don't taste very good and I didn't get filtered out.

[00:20:00] Many engineers have the mistaken idea that sealing recharge features, sealing karst features will protect karst groundwater and that's not true. That's not true.

Again, going back to the example with Cascade Caverns, they built the dam. And it keeps the immediate flood waters from Cibolo Creek from flooding the cave but the cave still floods by water quickly moving into the ground through fractured sinkholes and other caves all over the place.

And most recharge features are not seen. Many of them are hidden under soil that... like the one I showed you about along Cibolo Creek that washed open. And many are hiding in plain sight. There are so many geological assessments I've looked at where people see all these cracks are on the ground and they just don't say anything about them.

I tell people, “Go out when it's raining.” You don't just go out in nice weather. Go out when it's raining and look at these cracks and you'll see that many of them... water will flow along the surface and go into this crack and not make it to the other side because it's recharging quickly.

One of the last dye traces I did when I was in Texas was for the Edwards Aquifer Authority. We went out to the north side of town, Blanco Rd. and 1604. I found a flat piece of ground. No caves. No sinkholes. No karst features. I dug about 4 inches into the dirt, about 3-foot square, and then ran a hose to it and let the hose run for a month.

Now that hole that I dug was just to hold the water and it had about a 20-gallon
capacity. During those four weeks of running that hose, I put close to 29,000 gallons of water into that 20-gallon hole and it never overflowed. I put some dye into that water and it showed up two miles away in a well.

And so this is an area whereby all of our current standards would not even be rated as a sensitive location or a feature and yet 29,000 gallons of water went down this hole in four weeks and the dye went two miles away to a water well.

So that leaves us with the last point here, that when you’re dealing with karst, the entire karst area, the entire recharge area is vulnerable, not just the features.

So this is somewhat of a doom and gloom presentation. I recognize that. And that’s just the reality of dealing with karst. It’s not a political agenda. It’s just the reality.

At the same time, reality is... society grows. Society is expanding. And in some places, society will expand and grow on karst.

And so my job here for this presentation is to make you aware of the challenges. If you want to meet again and talk about solutions and possible options, I’d be glad to brainstorm with you. But my job here right now is to point out the challenges that exist.

I thought about trying to propose some things and whatever but it’s like, “Wait. I don’t want to get into the weeds.” You guys have already probably looked at many of these things in more detail than I have and I’d just be reinventing the wheel.

I liken working in karst... building developing in karst much like to getting into your car. When I get into my truck, I know that I can die in that vehicle. And so I’m informed about the challenges. And so I put on my seatbelt. And damn it, I want that airbag, too. I want that extra measure of protection because like I said, I can die in there. Likewise with karst, it’s complicated. It’s highly sensitive. People have died because of karst ground contamination.

And so if development, if building on karst will happen, if it cannot be avoided, then be aware of the challenges. Do it in the most intelligent, the most sensitive manner possible because none of us wants our water contaminated. None of us wants our environment degraded. No one wants to see anyone get sick or ill or be damaged because of a collapsed sinkhole, that collapses appear, that collapses the road.

So that’s the gist of my presentation. Just to let you know that, yeah, there are challenges. Again, if you’d like to talk more about some of this, I’d be glad to talk now or meet with you at a later time.

My next trip to Texas will be... Well I’m still working that out. I may actually be in town very briefly in September. But then I’ll be back longer in late October-early November for a conference. [00:25:00] And I’ll be leading a field trip through, you know, Kendall-Comal counties in the lower Glen Rose. So... Any questions? And I can stop sharing my screen at this point.

SPEAKER: Well Dr. Veni, I’m [Don Durden - 00:25:12]. I’m one of the co-chairs of
the committee and I really appreciate you sharing your expertise with us. I think that there are a number of questions here. I don’t know. Can you hear or see the rest of the room?

DR. VENI: I see one side of it. I see some folks.

SPEAKER: Ben, say something. See if he can hear you.

SPEAKER: Oh yeah. I guess I do have a question. It’s a broad stroke question because you said you have all these ideas that you could offer. But I do wonder, are there best practices for constructing in a karst recharge zone that actually work, that are actually effective for protecting water quality?

DR. VENI: Yeah, that’s a great question. It’s actually something that we’re developing on. One of my other hats is that I’m chairing a subcommittee within ASTM. If you’re not familiar, ASTM is one of two international standards organizations and they build... They design standards for everything – from the chair you’re sitting on to make sure it’s stable and safe to how to test different materials and procedures and so forth. And so I’ve got an international team working on such standards.

There are a variety of methods that have been used. There have been attempts to try to do this. And one of the challenges is what I describe as many flavors of karst.

And while karst areas, in general, are defined as landscapes formed by dissolving away the bedrock, the degree of dissolution, the different shapes of the landscapes and landforms vary according to local geology and other factors. And so what works great in Virginia may not work as well in Central Texas. And what works in New Mexico here may be a little bit different. And so trying to come up with a holistic approach is one of the challenges that we’re doing.

Some years ago, what was... in 2000... I’m sorry, 1999, I published a couple of papers on a strategy of how to do environmental impact assessments in karst. And it really defaults to the fact that you need to look at the local situation and collect a lot of local data. But behind it, it provides general guidelines of the approach to take. I’d be more than happy to share it.

It was based on... Well the idea behind this was actually based on... Well back then it wasn't TCEQ. It was, what, TNRCC. But they had these guidelines to assess recharge features for the Edwards.

And they weren’t based on dye tracing or geophysics or any advanced method. They’re based on simply walking through the field and looking, “Okay. Yep, that’s a hole in the ground.” And I’m not trying to make light of it. But it was what I call a “geomorphological assessment.” You look at the size and shape.

Some people, you know, depending who you’re working for, they won’t even let you go into a cave, if it’s a cave, because they’re concerned about safety. And yet you’re supposed to say something about it. So I tried to develop a methodology that
improved the assessment method. In the end, what happened was the--

I was working extensively at Camp Bullis. And I had this extensive database from Camp Bullis. I was also doing some work at Government Canyon and other places where we looked at these karst features, some of which were open caves, some which were depressions in soil that we dug down to either a crack, to a cave, to a flat bedrock pan and using that where--

I knew what it looked like to start off with. And I knew what it was after careful assessment. I developed a method to project and say, “All right, how best can I predict these features, their vulnerability?”

And then I applied that using the TCEQ method for the same group of features. Essentially, they got it right about 33 percent of the time and underestimated the majority of the time. My method got it right – I think like 75...77 percent of the time. And if you add to like five or 10 minutes of moving some rock and dirt and soil around, I got it up to about 95 percent accuracy.

TCEQ asked me if we could apply that regionally. But it was based on some very specific features of the geology that I looked at and so I said, “Yeah, it would work in one part of the Edwards but I'd have to look at the other parts to apply it more regionally.”

[00:30:00] Likewise, I'd have to make some adjustments and collect data to apply it to the lower Glen Rose. But there are methods like that. But there's no international standard at the moment. We're trying to build one.

SPEAKER: Dr. Veni, one of the... It's a very complex system. It's not just the geology. We also have property boundaries that we have to look at. And if we were just engaging in an academic exercise that said, “Okay, we want to examine...” extending a road from Highway 46 to Interstate 10, and let's just say we're now going to look at the first consideration – not the most important but the most obvious one... property boundaries, if we can find a route, say, “Okay, let's examine that route to see how it affects the karst features and the ecology of the area,” is that the right way to approach this or you're better off looking at all the caves trying to pick a route that, you know, respects that first?

DR. VENI: One of the best projects I've done in that regard was on the north side of Austin, for Loop 45. And TxDOT said, “Look, we've got to alleviate traffic. We need to connect MoPac to 620. And we need to put a road in here somewhere.” And so they contracted me and we went out, you know, through--

We didn't search all of the area between MoPac and 620. That's an absurdly large area. But within a certain target range, we went out and searched those properties and just did what I call a “Phase one survey,” just that rough initial morphological assessment. And then based on that assessment, tweaking the methodology that I use for that area to come up with a high, medium, low ranking of vulnerability.
We color coded those features on the map. And so TxDOT then looked at those and said, “Okay, so how about if we weave the highway in this way,” which means we would take out these certain features. And these are features, you know... We can’t avoid all of the features but we can avoid some of them. And so they said, “Go and take a look at these features.”

And so we went and dug and oh, you know, we found important recharge. We found endangered species and other issues, you know. So then they re-routed again and re-routed again. Finally, they found the path of least resistance.

And there was one feature there and I said, “This cave doesn’t look like much from the surface but it’s part of a deeper system. We’re just seeing the top of a collapse.”

And they wanted to push it to make sure, you know, that they did everything right. And so I went out, did some geophysics, found the underlying cave. Sure enough, aquifer issues, endangered species and so forth. In the end, they ended up putting the road over that cave. But that was the only option that they had. And then they did some deals with U.S. Fish and Wildlife to protect those species in other areas and so forth.

But I think there’s a path to focus an area, you know, to say, “Okay, here’s a target area.” You don’t need to look at everything, you know, from Herff Rd. down to the county line. You don’t need to look at everything.

But here is, you know, let’s say, a one mile or a half mile wide area, go study and see what’s there based on property values, whatever factors you want to consider. And then, you know, come back and see what those results are.

And that would be a relatively low-cost way, just to do a phase one survey, to say, “Yeah, there are a thousand and one features out there. They look like there’s a high chance of having aquifer issues. There’s no endangered species issues in this area. Those are limited down south to Bexar County.

And then you can decide, “Yeah, we’re going to abandon it” or “No, we’re going to go ahead and...” We’ll do a phase two study and then think about a little bit more. So you can do it stage-wise and you know... That’s an option. I wouldn’t recommend just looking at the whole region. That could be, you know, quite expensive.

SPEAKER: Other questions?

SPEAKER: The question is, “What do we need to ask for, as a committee, to even consider additional roads in different regions like the northeast, southeast, northwest, which have been proposed? [00:35:00] Is there a way that we can get on a more macro level before we zone in on a smaller territory?”

DR. VENI: One thing that you can do... And I mentioned the Texas Speleological Survey. I was past president of the TSS and stepped down when I moved to New Mexico. I still work as a data manager. But it has a data request process.

Generally, TSS does not just put all its data, especially locations, on the website for
people to see. They respect private property owners and that sometimes, kids will find this information and go and hurt themselves, you know, in caves.

And so there is a data request process and you can apply to TSS and say, “Hey, we’re trying to figure out what to do. We need information.” And then they will decide, you know... Chances are they’ll give you some data. Whether they give all of it or not, I--

I’m not on the board. I don’t know what their response would be. I would expect and hope that they would provide it to a governmental agency that would try to keep the data proprietary as much as possible.

We recognize that there’s a Texas Open Records Act, that nothing can be fully strictly protected at times. But for the broader public good, I think and hope that they would approve it.

The Texas Speleological Survey, you know... I’d probably have to spell “Speleological” for you. But it’s txspeleologicalsurvey.org. Actually, I’ll just put that in the... I'll just put the link in the--

SPEAKER: I’m already talking to Andy [unintelligible - 00:37:06] over there.

DR. VENI: Okay. Great.

SPEAKER: Yeah.

DR. VENI: Great. And Andy is in charge of data requests. And in fact, one of the things that I’m about to do is a massive update of data into the TSS that I’ve been collecting.

I’ve been working on some projects. They were pretty complex. And so I want to finish those projects. So they’re going to be getting a massive update, you know, including a lot of information for this area. So they’ll be getting an update soon.

SPEAKER: Going back to one of your maps, you mentioned the darker green area is the... I believe it was the lower Glen Rose...

DR. VENI: Yes.

SPEAKER: ...and that one of the options for moving traffic, north to south, is 3351.

DR. VENI: Mm-hmm.

SPEAKER: And it seemed like 3351 crossed this karst area with four or five swallowets above and four-five below it. So I’m trying to frame in my mind which is better to have. Two smaller crossings in that area or to expand 3351 because... If that is one of the options, do you have any sense about which one would be better or less risky?

DR. VENI: What I can tell you, it... Like I say, most of the area has not been searched. But some of it has. You know, I mentioned Camp Bullis earlier. I did a lot of work at Camp Bullis. And we walked all of the Cibolo on Camp Bullis. And that
one feature that I showed you, that one swallet I showed you is on Bullis.

And I can say that there are fewer swallets downstream of 3351 than upstream. That upstream portion has more and we haven’t even looked at that area fully. I’d be more concerned with an upstream location than the downstream location of 3351. Additionally, you already have traffic there.

Now I can’t get into the cost. I’m not an engineer or a road builder. But the fact that you would not have as much, you know... I’m assuming you wouldn’t have as much of a property issue. You wouldn’t have some of those costs. You wouldn’t have as many environmental studies, you know, to do--

You’d certainly have to put in some hazmat traps around Cibolo Creek because right now it’s just, of course, you know... – Well, is it still a low water crossing, or has a bridge been built over it? I’m trying to remember. A lot has changed in the past 14 and a half years.

But factors like that would need to be considered. But the fact that you already have traffic there, you know, is one thought.

[00:40:00] Another thought that I consider, just... And these are... You know, they all have pros and cons. And this would be difficult but potentially feasible is Herff Rd. – expanding that and connecting it in.

You know, it has the benefit of being off the Glen Rose or off the lower Glen Rose but still just upstream of the lower Glen Rose where all the swallets are in. It’s a much shorter route. You all know what that looks like in terms of development. You know, that would be quite difficult.

Another option that came to mind... and it comes to mind through a project I did around San Marcos where they wanted to take Ranch Rd. 12 which was running right through the middle of town. And they had these big trucks and buses trying to navigate this in some of the narrow turns. And so they expanded that and essentially extended it through the Purgatory Creek floodplain.

And there was a lot of concern about putting this right over the recharge zone just above San Marcos Springs. And what they decided was a parkway option. And the idea being that there’s no on or off ramps. They did put in one. But the idea of the parkway is no on or off ramps. It just gets you from point A to point B. In this case, it gets you from 46 to I-10. And therefore, it minimizes traffic.

And quite frankly, it also helps minimize and reduce development around that area which would also be on the recharge zone, you know, for that karst aquifer because if you have a lot of on and off ramps then, you know, you’re just increasing your risk of contamination from urban runoff, you know, leaks from cars and vehicles, leaks from sewers and septic systems and whatever else. So you’d certainly want to minimize your urbanization of the lower Glen Rose in general.

So a parkway is, in my mind, one compromised option if you absolutely have to put it
there.

I remember working on one TxDOT project where they said, “We want to look at three routes.” And I said, “Look, I don’t want to talk myself out of a job but I’ll tell you right now, these two routes on the karst, they’re not going to work for you. They’re going to be more expensive. You’re going to have recharge features. You’re going to have endangered species. You’re going to have bridge work. Do this other option off the karst.” And they said, “Yeah, you’re probably right. But we’re required to look at all these options.”

And so, okay, we went out there. We did the searches. They ended up doing the other option just the same, you know, as I recommended.

Traffic studies require that you sometimes need to consider things like this. But if the city traffic really pushes it like that Highway 45 project, they looked at other options. And in that case, they didn’t keep it off the karst. They just had to cut through. A parkway would be one compromised position, potentially, to consider.

SPEAKER: Questions?

SPEAKER: I just think this was a very fantastic presentation. Dr. Veni, a pleasure to get to meet you virtually. I think, several times, you made an offer to come back maybe virtually again and do some deep dives and stuff. – I mean I think we’d be silly not to take him up on that offer. I don’t have any immediate questions in my mind that [unintelligible - 00:44:05]–

DR. VENI: And I mean that sincerely. You know, like I said, I still think of San Antonio as home. You know, the Hill Country as home. You know, I get back there and I just think... I take a deep breath and smell that oak-juniper mix and it’s like, “This is my air,” [laughter] you know. But also, I’ve got a lot of knowledge about the area.

So it’s not just that I’m the director of the National Institute but... I did my PhD research on the lower Glen Rose aquifer along Cibolo Creek and the Guadalupe River. You know, Bexar, Comal, Kendall counties, a little bit of Blanco County. So I know the area.

And our job at the institute is to help and provide good data. We don’t want to get into the middle of any big political discussions or wrangling or whatever.

[00:45:00] At times, you know, there have been discussions. We haven’t done it yet but there have been considerations of, you know, maybe bringing us in. If there was a major debate, you know, “Should we do X, Y, or Z,” you know, we can come in as independent evaluators focusing on the science, focusing on karst and aquifers and so forth. You know, we could provide that in that independent review.

When I was in San Antonio, people would sometimes mistake me... I joke and say, you know, people call me a “Cave hugger.” You know, I’m following the science. You know, the science says that karst aquifers are incredibly vulnerable. If the science
said that I could put a nuclear waste dump on top of my karst aquifer, I might not like it in principle but I have to say, “Go for it” and--

You know, there was a case out in west Texas back in the early ‘90s. I was working on... where someone wanted to put a hazardous waste landfill on karst. And in principle, I hated the idea but there was... Without going into the details, there was something unique, really one of a kind in that area that made it feasible. And I had to admit that. And it’s like, “Yep, I’m not thrilled with it but yeah, that would work.”

In the end, they didn’t get permitted which was to my relief because, you know, my concern would be if they permitted that, people would say, “Well you can put hazardous waste dumps anywhere in karst.”

No, that wasn’t the case. But, you know, our goal is the science. You know, we’re not advocates except for just good information and good science because ultimately, that’s what protects the people is good science and the best available information.

SPEAKER: Well Dr. Veni, again, thank you very much. [Unintelligible - 00:46:47] done nothing else for us. I think it has reinforced the fact that we all exist in this area... in the drainage area that runs through this area. And what we do, even if it's off that lower Glen Rose with... in our yards and with our trash and those things has a potential impact on that. So I think that we probably need to re-emphasize that in the broader community.

DR. VENI: People will often not... They’ll discount the impact of urban runoff. And I challenge people like that, next time it’s raining, to go down to the street, to the curb, and scoop up a glass of that gray water and ask them if they would drink it. And I don’t think anyone would. No one’s taken me up on that.

The other thing to do is to look sometimes at studies done by like the U.S. Geological Survey, looking at urban runoff. And I know I found this amazing the first time I saw it. The bacteria count – the bacteria count –you’d think this was coming off of a barnyard, you know. And it was simply, after a while with no rain, that first storm washes all the dog and cat poop off of our yards and flushes that out and the bacteria count, not counting oils and grease and the other nastier stuff, was just astounding. So yeah, urban runoff is an issue and it’s a challenge, you know.

Again, I’m not saying you can’t do anything with karst. The Edwards Plateau, the Texas Hill Country is one of the largest karst areas in the country. And you can’t go in any direction very far without stepping on it. The most vulnerable stuff is the lower Glen Rose. If you go into the upper Glen Rose, you’re better off... much better off there. But it’s hillier. It’s far more difficult to develop and work in.

SPEAKER: Well good luck in New Mexico. I’ve got relatives in New Mexico and they always shared this insight about Texans with me. They said, “You can always tell a Texan. You just can’t tell them much.” [Laughter] So [unintelligible - 00:49:12] perspectives. Thank you again very much.

SPEAKER: Thank you.

SPEAKER: Ben, thank you for making that happen. [Unintelligible - 00:49:27].

SPEAKER: Okay, I have to... That's about it. They're going to be buddies. He [unintelligible - 00:49:35] long time ago. He had a nice [unintelligible - 00:49:39].

SPEAKER: Any other observations, thoughts?

SPEAKER: [00:50:00] I concur with Jonah about asking him for another session, you know, and then we can maybe work out what topics we might want. You know, from my perspective, maybe a more regional look at what's going on in different segments around learning. Do any of them lend themselves towards, you know, an opportunity, getting back with [unintelligible - 00:50:22]? But I think it would be worthwhile.

I know, personally, on that road, [unintelligible - 00:50:29] two days down as... you know. So I know that north [unintelligible - 00:50:38] are those kinds of places and the origin around [unintelligible - 00:50:46] up there, [unintelligible - 00:50:48]. My guess is [unintelligible - 00:50:51]. And I think [unintelligible - 00:50:53].

SPEAKER: I think that was a good point. Betsy asked earlier... I think he asked if [unintelligible - 00:51:02] I'm sitting here kind of like chemistry class. I know there's a lot of information. I don't know... but I just don't know how to ask... to get it.

But I think it would be helpful for us to be able to look at Kendall County and look at the variants that we need to be aware of. I think we've focused on this primarily [because of - 00:51:21] discussion. We brought up a couple weeks ago [unintelligible - 00:51:24] that cut from 46 from the southeast quarter. They could be helpful. And several maps with this [unintelligible - 00:51:35].

SPEAKER: I think one of the smallest [unintelligible - 00:51:39] transportation. It's not looking at the environmental perspective first but rather looking at the engineering perspective and population growth and putting lines down, leaving the environment [lax - 00:51:57]. And I really like the idea of coming at it from the environmental perspective first before we actually get into the rest of the conversation.

SPEAKER: I think that's a valid point because so much of the criticism of previous efforts was, “Okay, you're identifying a recommendation spot [unintelligible - 00:52:21] avenue but you haven't done environmental studies.” So that might render those recommendations. So it would make sense to know what we're dealing with and what not.

SPEAKER: I like what you've... I'm sorry. Don, I like what you were saying at the... about... you know, we have this property boundary that we're looking at regardless of what part of the county is, you know, property boundary issues that we're thinking about. There's environmental issues, with dangerous species issues and... I mean
really it’s–

It’s like you can put a bunch of different layers on top of each other and try to find the opportunity that causes the least damage of the things that you care about the most.

And to that effect, I wonder if it’d be possible... I mean there’s lots of karsts maps that we can do. But are there maps that show specifically the most sensitive areas? I mean... because if you’re going to do any kind of development area near some karsts, obviously, the best thing you can do is avoidance. Just do it somewhere else. That’s option one.

And, you know, if you have to do it in some other area or like where you actually hitting the karst, there’s some kind of medication to or different kinds of measures to potentially minimize it.

But I just wonder if there’s something we can get from Dr. Veni or maybe Don, you know... that would give us really granular detail to help us look very close and say, “This is a specific spot we really should be avoiding” and things like that.

SPEAKER: I’ll follow up on that comment. So one of the things he mentioned was the areas, you know, that he mentioned [unintelligible - 00:54:09]. We don’t know because we have not studied our areas where it has all the [unintelligible - 00:54:18] way behind. We know that we have those same vulnerabilities but we don’t treat the same level of urgency.

You mentioned environmental factors. I think number one factor, let’s not determine who are in that or as we [unintelligible - 00:54:38] drink. And so [unintelligible - 00:54:44] water supply will probably [unintelligible - 00:54:47] because that’s what we all need to live here in [unintelligible - 00:54:51].

[00:55:00] Getting those studies done, like he was mentioning, if there’s a potentially positive place where you do a half mile wide, you know, survey, it takes time and expertise and [unintelligible - 00:55:07]. And I think that this committee doesn’t have an allocation of funding to do that at this point.

So I don’t know what the steps are [unintelligible - 00:55:16] to do that but I wouldn’t [unintelligible - 00:55:19] step. When I talked to [unintelligible - 00:55:23] conversations, we talked about the swallets. We know what those are. They’re [unintelligible - 00:55:29] that are taking things [unintelligible - 00:55:30] that we don’t know what they are.

So you really have to treat the entire area [unintelligible - 00:55:35] and to say, “Okay, [unintelligible - 00:55:37] swallet good.” This is [unintelligible - 00:55:40] you know that all of this one. So–

SPEAKER: Yeah.

SPEAKER: That’s why his talk in the future could help probably... But again, you know, the first and second slide he showed, he showed that perfect spot would be on that side – Interstate 10 – because no traffic there. And then you take into
SPEAKER: And Donna, can you... My understanding of those types of surveys is that they are generally on the ground – people walking around on the ground looking for... not something aerial.

SPEAKER: That’s right. We also do [unintelligible - 00:56:31].

SPEAKER: So--

SPEAKER: We line up right next to each other, all on-ground with all these issues because we believe the very best education [unintelligible - 00:56:40].

SPEAKER: So if that’s the case, you not only need the money, the time, the expertise, you need access to all. And so if there’s private properties that people don’t want on, that’s a whole nother [unintelligible - 00:56:57].

SPEAKER: Yes. And people are doing a lot [unintelligible - 00:57:03] expert. You have to have multiple [unintelligible - 00:57:11].

SPEAKER: One of the things... I listened to all this, first thought. Second, thanks again for this point of this subcommittee to educate us [unintelligible - 00:57:25] and it’s powerful.

But listening to a lot of his comments, it makes me [unintelligible - 00:57:30]. I want to ask that you at least consider, if we’re moving forward, a couple of the aspects that make it manageable for this committee to actually move forward and that would be, insofar as we can with very limited resources and time and manpower and all that, think about whether we even need anything through there.

If we do, can we, as a committee, pass that as a recommendation with a very strict set of sub-recommendations that this environmental work being done postpace and do that thoroughly and let’s just get it right.

Sometimes, it’s not when [unintelligible - 00:58:12] address and we actually mean it. If you’re not going to do it then it’s not a recommendation sort of thing.

And secondly, Mr. Wurzbach Parkway here, the idea of a parkway design, we’ve talked about this community a lot. And in some regards, it’s a wonderful compromise if we’re going to do it. People get on 46 and they get off at 10. There’s no development going on in the middle of it and there’s no other exposure that wasn’t absolutely necessary.

So just [unintelligible - 00:58:43]. It’s not the only thing [unintelligible - 00:58:45]. There’s a couple of ways that we can make a recommendation without having to have $50 million to go to a thorough environmental assessment.

SPEAKER: I will make one comment. I know the funding topic just came up three different times. One thing Dr. Veni could really shed some light on is the beta that we charge. What is it going to do? Who’s the downstream user, downgrading
[unintelligible - 00:59:11] the sub surface.

So if you look at what city Boston has done, west of Boston, [unintelligible - 00:59:17], south of Boston, outside the city limits, the funding protection of recharge features, it's an extensive project. There's not a lot of talk about it but it could determine through dyes, a massive [unintelligible - 00:59:31] itself.

If you understood [unintelligible - 00:59:34] it was... And actually, we [unintelligible - 00:59:37] San Antonio [unintelligible - 00:59:41]. But this recharge is [unintelligible - 00:59:44] and then try to bond that this protection [unintelligible - 00:59:48]. Just one factor [unintelligible - 00:59:51] around me again.

SPEAKER: You want to talk about [that - 00:59:59]?

SPEAKER: [01:00:00] So there are some studies that are out there that suggest that the water, the [unintelligible - 01:00:06] charge is going to the northeast... going towards San Marcos Springs, water [unintelligible - 01:00:12], I think for the last five years, [unintelligible - 01:00:25] water coast.

It's not a [unintelligible - 01:00:33]. I don't have [PhD - 01:00:35]. I mean this is something that the [unintelligible - 01:00:38] agency... National USGS, a very [unintelligible - 01:00:43]. And it's very complicated.

So funding for it, [unintelligible - 01:00:48 to 01:00:53], again with USGS now in [unintelligible - 01:00:55]. If you don't understand the [unintelligible - 01:00:57].

So I wish it [unintelligible - 01:01:06] happened then [unintelligible - 01:01:08] you want but it's something [unintelligible - 01:01:10] whether or not--


SPEAKER: Well as a county commissioner, I will say I'm as worried about development in that area as I am, maybe even more so, about development and additional transportation facilities. And our inability to regulate and control that development is very concerning to me regardless of who is the beneficiaries of underground water resources.

SPEAKER: And that creek resonates with that. We've been having discussions accordingly. We're trying to find a way to take responsible development. If internal development is going to happen, we want it to be as responsible as it can be. [Unintelligible - 01:02:16].

SPEAKER: I asked [unintelligible - 01:02:18]?

SPEAKER: [Unintelligible - 01:02:20].

SPEAKER: Okay.
SPEAKER: Don, just a quick thought, because of the [unintelligible - 01:02:26] could possibly access other funds and spring water, get things started and then find other funding sources [unintelligible - 01:02:39]?

SPEAKER: What an interesting thought, Bob. [Laughter] As you know, we have started that conversation and we are going to have a facilitated additional conversation with some national experts that may be able to help us fund some ground water modeling. I don't think it's going to be--

I don't know yet. They're working on getting the cost estimate from a hydrogeologist to see if we can fund it with the county share. And, you know, perhaps the city of Boerne would be willing to join in that.

So it remains to be seen whether we can sell it. But it is a water resources deal. There is some money allocated for water infrastructure.

And I talked with the Hill Country Alliance representative today. Their national liaison said there may be some additional sources of money. So we're going to see what we can find. – Let me get to [unintelligible - 01:03:56] and then come back. Go ahead, [Bob - 01:03:59].

SPEAKER: Yeah, as Don was saying, the USGS stuff is limited to Kendall County. It's kind of superficial. They definitely need to get some more funding. And they are whining about not getting enough funding for Kendall County. They're still trying to do it.

We've been trying for at least 10 years to get the Cascade Caverns salamander on the “Endangered species” list but the budgeting process in DC keeps pushing it off and pushing it off and pushing it off.

Another thing, you know, besides USGS, we hear the TCEQ [maps - 01:04:36] are also insufficient. And we suspect the only ranch our project is right on top of the huge recharge zone that's never been, you know, hit with Lidar or ground-penetrating radar... But the features aren't very visible on the surface there around William Ranch. But a lot of them may be, you know, concealed, taken by farmers and other things and... [01:05:00] Actually, I mentioned--

SPEAKER: Yeah, what's the [unintelligible - 01:05:04]?

BOB: I want to comment a little bit on what he said earlier about the northeast quadrant. After the southeast quadrant with at least 83 documented caves, the northeast quadrant is probably, you know, pretty close. I mean you've got about five cave clusters in Kendall County. You've got the Cibilo Cascade area but you've also, in the northeast... or roughly the northeast quadrant, you've got Kreutzberg. You've got Kendalia. You've got [Bergheim - 01:05:36].

And if you look at some of the TSS maps, which I think they're probably right now going to be the most useful to see where some of these recharge features really are if they'll give up some of that information, yeah, those areas... those other three...
areas of the northeast quadrant, I’m sure they’ve got at least 30... 40 documented especially around Frelsburg [and few names- 01:06:02]. It’s insane down there. That’s my comment.

SPEAKER: Okay. This has been like eye-opening to the... I mean people with different perspective. But considering the vulnerability of our water system over karst, not only that will affect people acutely around whatever project would go through there but potentially for miles around.

I do believe that, you know, going the environmental way first, which has been talked about for years back in 2007, I mean, you know, we, if the money’s not there, perhaps there could be some sort of GoFundMe page, something that’s done for environmental, you know, philanthropists, people who are out there that might not be part of our community but want to contribute.

And, you know, it could amount to a good amount of money. It might not amount to a lot. But I do know that there are people out there that are really concerned. And there are people in the surrounding areas that--

I think it’s important that we actually know what the risks are because I, myself, who suffer from kidney disease, just learning today about the acidity that can happen in this water or it could potentially cause physical problems for people, that’s just a whole new perspective on this problem. And I truly just... I think that the roads that are in existence can be developed with turnarounds and that... as they have in other cities.

But anyway, this is really wonderful today, that.

SPEAKER: [Unintelligible - 01:07:56].
SPEAKER: [Unintelligible - 01:07:58].
SPEAKER: Okay.

SPEAKER: I have. Is there a central database of all the good parts in... Do have that information, that databases we’re talking about?

SPEAKER: That’s where it’s coming which Dr. Veni is one of the caretakers regarding maintains that. And when a feature is found, that landowner allows them to put it into place. Obviously, documents on the website, information request form.

SPEAKER: I would just add that it’s, at least--

SPEAKER: It’s not all inclusive. That’s what I want to say.

SPEAKER: Yeah. And at least a few years ago, when I was working with that database, the term “Database,” it’s a bunch of file cabinets
SPEAKER: I think that [unintelligible - 01:09:22]. Is that right?

SPEAKER: So it literally like... they didn't want [unintelligible - 01:09:27]. I think they may have been tied [unintelligible - 01:09:30]. You have to go down there, pull file [unintelligible - 01:09:32]. If you already have a case and want to go do that, same thing, you're able to pick up the data of a certain county. So it's not like it is technically [unintelligible - 01:09:42].

SPEAKER: I think [unintelligible - 01:09:45].

SPEAKER: Yes.

SPEAKER: Same here.

SPEAKER: Yeah.

SPEAKER: [Unintelligible - 01:09:48].

SPEAKER: And it has about five years. [Unintelligible - 01:09:50]. Maybe [unintelligible - 01:09:52] private version, you know. So we'll--

SPEAKER: Per county?

SPEAKER: [01:10:00] Yes.

SPEAKER: Mm-hmm.

SPEAKER: And again, it's not all inclusive. And this is... people, they know about this.

SPEAKER: No. I think--

SPEAKER: [Nothing's done - 01:10:04].

SPEAKER: Those data that TSS Has acquired has been required over a long period of time [unintelligible - 01:10:12] as we don't know. What we don't know is [unintelligible - 01:10:28]--

SPEAKER: What you don't know might be twice as much as what you know.

SPEAKER: Right. And it might [unintelligible - 01:10:32].

SPEAKER: Again, certainly.

SPEAKER: Exactly [unintelligible - 01:10:38]. It was plotted out probably 25 years ago. And it has... I've been saying, greater than 300 and it's less than 70. So when you actually walk in, you start counting [unintelligible - 01:10:55].

SPEAKER: All right, we are coming to... the time for us to close. I'd like to kind of review where we're going for the next meeting and start by saying this meeting was not our schedule. You may recall, we agreed to meet on the first and the third
Tuesdays but because we skipped last week, it just happened. So this is the fifth Tuesday. If we hold to our schedule for the first and third Tuesday, we will meet again a week from today. Everybody okay with that? Okay.

SPEAKER: I was going to try to line up. I was working with [Jeff Carroll - 01:11:40]. We’re trying a lot of presenter for that but I don’t know that we can do it [unintelligible - 01:11:44]. I’ll talk to him. Like in general, it’s there. It’s like something that is supposed to be in time [unintelligible - 01:11:48].

SPEAKER: You want to make a separate plan?

SPEAKER: Yeah. Yes, we’ll see.

SPEAKER: I think it probably then would be not enough time. I mean considering Monday, for most people, is a holiday. So there are not many working days between now and then.

SPEAKER: No, no. [Unintelligible - 01:12:05]. [Laughter]

SPEAKER: I’ll check and look at this.

SPEAKER: [Unintelligible - 01:12:09].

SPEAKER: I’ll check [unintelligible - 01:12:13]. We want to introduce this... That’s, actually, an email I wrote to you guys about – the whole [unintelligible - 01:12:19]. You know, it’s an approach that’s been used well in Europe. And they have the ability to facilitate better traffic flow with less [unintelligible - 01:12:29], actually. Betsy is looking hard.

SPEAKER: [It would be hard at first year - 01:12:33].

SPEAKER: The date?

SPEAKER: The what?

SPEAKER: The date?

SPEAKER: The date is July the 6th.

SPEAKER: 6th?

SPEAKER: Would your committee, you think, be able to have something meaningful for us to consider in terms of presenting to us some results and what you would like to see in a plan by Tuesday?

SPEAKER: We are meeting tomorrow. So come around to request one more time. Do you want, from this committee, to say a summary of the meeting or something else?

SPEAKER: Well I think you all are coming up with a list of projects, correct, at some point in time by the end of July? Would you have a preliminary list of projects that you might say, “These are the ones that I think that we’re headed towards” and get some feedback from committee members?
SPEAKER: Actually, there are even units.

SPEAKER: Okay.

SPEAKER: And we’re [unintelligible - 01:13:43] formats. So when you’re... So just be mindful that that’s [unintelligible - 01:13:50].

SPEAKER: Well, and most people should be able to understand them, right?

SPEAKER: Yes. And one exception, [unintelligible - 01:13:59] correctly on the minutes, yeah. So I will amend that. So yeah, they’re not going to be terribly surprising. They’re going to look a whole lot like the things that we’ve talked about through the years.

And other than... I would say, there are very few [unintelligible - 01:14:24]. They don’t already... The one... I mean perhaps the northwest, that’s about [unintelligible - 01:14:34]. So at any rate, yeah, so the minutes clearly have all that narration in there. And perhaps [unintelligible - 01:14:48]. So--

SPEAKER: But consider yourself on the agenda, [unintelligible - 01:14:53].

SPEAKER: Yeah, very long in line – very long in line.

SPEAKER: [01:15:00] And I think between now and then, Bob and I will spend some time trying to get ahold of some of the pointing entities and make sure that we get this committee reloaded or reduced and we can look at that. And if possible, we will see if we can engage and follow and get an answer on the data. I think that will be enough for the meeting in that short order.

SPEAKER: And maybe I’ll just add. Bob, you said that... you mentioned that the mayor has indicated... you know, probably know what we want. It might be worth just putting some feelers out.

There’s an opportunity to find somebody with some GIS skills maybe on the city side. It might be a day of time working on this done. But I think the precursor to that has to be having our hands on the wrong data and this person that needs to work.

SPEAKER: And speaking broad data, not from him but, say, the TSS that has the data on the [games - 01:16:06], it would be nice to have maybe a conversation next time about what would be our ask for some data permanent. I think that would be very helpful.

If you’re going to talk to [unintelligible- 01:16:25], what projects committee has been curious about, many people have, is, “What kind of data do they have about the nature of route traffic in downtown?” You know, is it a trip outside the city? Is it a trip within downtown directionally? That’s the kind of data that [unintelligible - 01:16:52] when you get to downtown [unintelligible - 01:16:56]. I think it would be very helpful to have something like that, [unintelligible - 01:17:00].

SPEAKER: Okay. I’m not sure we’ll be able to get that by Tuesday.
SPEAKER: Okay. So the disclaimer is most of our team would be out of town next week. I will [unintelligible - 01:17:17] may possibly her and me [unintelligible - 01:17:22].

SPEAKER: Yeah, we won't try to make the decisions but make use of feedback about whether you're on the right track.

SPEAKER: Okay. That'd be great.

SPEAKER: Last second and last chance today for public comment?

SPEAKER: [Tom Edelstein - 01:17:41] on Kendall one, I thought [unintelligible - 01:17:44] was great. That was a great discussion.

And it seems to me, when we talk about all the money we're looking for to do these environmental studies and we get back to what he says, it almost sounds like, “Use the roads that you have because they're already out there.” We have 3251. We have [Earth - 01:18:03], maybe a parkway somewhere over [there - 01:18:06]. I don't know. It just seems that maybe sometimes we make it more difficult than it needs to be.

And if we're going to do these environmental studies about our new road, we may be looking at many years before this gets done. The issue I think that people and the mayor and the judge wanted was, “What can we do now?”

And that's a lot of what Betsy has on your list and... I think that's a good focus. And again, he seems to make sense – to use what you have. So thank you for letting me speak, [unintelligible - 01:18:39]. Thank you.

SPEAKER: [Stella - 01:18:46], thank you for being here. Steve, don't have anything to say today?AT/wo/lb
APPENDIX B

Multi-Use Trail Infrastructure
A Vision of Modern Mobility in Kendall County

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Introduction

Growth and the ease of building on undeveloped land at greater distances from cities and other developed areas has increased reliance on vehicles. That reliance triggers the expansion of highways and major arteries, increasing distances to places in the community. The lack of safety provision and dedicated pathways for non-vehicle transportation is causing pedestrian and bike travel to become more dangerous.

Pedestrian mobility corridors & multi-use pathways provide the balance between pedestrian safety, natural areas, and development by creating a network of open space and connectivity to communities, retail centers, and mobility hubs. The establishment of the KCBFOTC and subsequent assignment of a Trails Subcommittee give community leaders the opportunity to incorporate multi-modal solutions as part of a holistic approach to solving Kendall County’s transportation and mobility issues.

The benefits of pedestrian corridors and multi-use shared pathways are diverse, ranging from economic and health to land and watershed management. Various studies including the recent Great Springs Project (GSP) final report quantify the advantages of a trail systems. Kendall County/Boerne/Fair Oaks Ranch have a fledgling foundation of parks and trails to begin a full trail network as properties develop and best management practices are applied.

This vision is intended to promote mobility solutions, enhance recreational opportunities, improving safety and foster economic well-being. It offers a future-forward approach, embracing evolving micro-mobility solutions.

“It is TxDOT’s policy to consider bicyclists and pedestrians in the development of transportation projects, as part of design, construction and maintenance of state roadways and in the development of federally funded transportation projects.” (TxDOT)
Planning for Growth in Kendall County

Kendall County is witnessing rapid development with new developments being planned and platted.

County sentiment is generally opposed to this rapid development. There is widespread anxiety about water supply, loss of natural areas, scenic beauty, and Hill Country character.

Part of the collective frustration stems from a lack of county authority to regulate development in a way that safeguards our water supply and protects our quality of life.

Development is occurring without appropriate tools to manage growth and also in the absence of a county strategic plan that presents a vision for how we can preserve and enhance our quality of life as development rushes in.

This trails vision is therefore intended to help inform thoroughfare planning and future county strategic plans to better ensure conservation of natural resources, provide accessible natural areas, enhance livability, and produce an enviable future for Kendall County.

Multimodal Transportation

Multimodal transportation systems provide users with a variety of modal options, which is particularly relevant for those who are unable to drive, would prefer not to drive, or cannot afford the costs associated with motor-vehicle ownership. Non-vehicular transportation is also increasingly promoted as a means for engaging in physical activity, in response to the rising rate of obesity and obesity-related diseases such as diabetes.

Multi-use paths provide pedestrians and bicyclists with a safe place to travel, instead of alongside a high-speed curvy road with poor sight distance. Pedestrian trails in lower density areas can enhance the quality of life and provide recreational space for joggers and dog-walkers.

Continuous networks of sidewalks, bicycle facilities, and trails are essential components of a multimodal transportation system that interacts with public transportation, ride-hail, and ride-share services.

Micromobility

 Trails facilitate micro-mobility, which includes walking, biking, mobility scooters and golf-carts for both recreation and mobility purposes.

These modes are already in use in Kendall County, often sharing the road with much larger vehicles that present significant safety concerns and frustrations for both micro-mobility users and drivers of vehicles.

Electric bikes are becoming a popular upgrade to standard bicycles. In some communities, seniors with limited mobility and on fixed incomes can be seen
heading to grocery stores on mobility scooters. (Comfort has citizens who use mobility scooters to navigate the community.)

These mobility solutions are evolving with the advent of small and efficient electric motors powered by batteries. The new modes that are emerging complement existing modes already used in Kendall County and may drive greater adoption.

Neighborhood vehicles, often with speeds legally limited to 25 mph, are emerging alongside micro-cars equipped with air conditioning and air bags that reach top speeds of 50 mph.

As vehicle costs continue to rise and electrification enables the creation of smaller, lighter vehicles, we may see these micro-mobility solutions gain popularity and become a more common sight throughout our region, just as electric bikes are becoming more common on existing trails.

*Accommodating micro-vehicles may be worthy of consideration as transportation & thoroughfare planning proceeds.*

---

2022 Kendall County Parks Master Plan (adoption pending)

Throughout the survey and through public engagement, the community has shown strong support for increasing trails and connectivity opportunities throughout the county. In order to increase the quality of life throughout Kendall County, residents and visitors must have the opportunity to explore nature throughout the Texas Hill Country. Access to public green spaces has proven to increase this initiative, therefore connectivity must remain at the forefront.

**Objective 5.1.** Expand the county’s trail system and improve connectivity between current and future parkland by way of blue trails and multi-purpose trails to serve residents and attract regional users.

---

**Transportation and Safe Routes**

As outlined in the GSP Report, the several benefits of trails are derived from more pedestrian and bicycle trips for commuting and local services to replace motor vehicles and transit trips. The savings and safety benefits are associated with reduced traffic congestion, vehicle crash, road maintenance, and household vehicle operation costs.

The Safe Routes to Schools program cite traffic related hazards as an impediment to walking and bicycling to schools and parks. As motor vehicle traffic increases,
parents become more convinced that it is unsafe for their children to walk or bicycle to school. They begin driving them to school, thereby adding even more traffic to the road and sustaining the cycle.

Within the 2-mile radius of each campus, Boerne ISD bus service is limited. Trails connecting schools to neighborhoods provide a safe alternative to driving students to school, reducing traffic congestion and hazards.

See: Safe Routes to Schools Program link in the “Resources” section.

Economic Benefits of Trails

There is a direct correlation between the development of hiking/biking trails and the health of the economy and the ability of local governments to raise additional revenues. Local connections to schools, stores, offices, and services without the need for vehicles increases mobility options and access for all community members while enhancing commerce.

In addition to attracting residents looking to improve their quality of life, these amenities also attract visitors that create positive economic impact. Studies have shown that bicycle tourism contributes significantly to local and state economies. There are currently 4 Tour Operators that are organizing cycling tours in the hill country that draw tourists from around the world. The Tour de Boerne attract participants from outside of the region, generating significant economic impacts.

The Texas Historical Commission published an economic impact study in 2015 that stated 10.5 percent of travel in Texas is heritage based. The pandemic has increased that number statewide by 30%, according to Travel Texas at a recent conference. Spending for Heritage Tourism is tracked along with a multiplier factor of seven dollars ($7) for every dollar ($1) spent on Heritage tourism.

The 7:1 ratio holds true for Recreational Cycling and Environmental tourism as well. The Texas Hill Country attracts visitors and cyclists who spend for hotel accommodation, food and meals, shop retail and entertainment, and stay longer to enjoy natural and cultural assets of the community.
The costs of trails vs major and minor arterials may also be significant. Shared use paths accommodate more commuters per area of pavement, due to the smaller size of micro-mobile solutions. The load-bearing requirement of trail bridges is considerably less than those of roads for vehicles. Some modes may also make use of unpaved pathways, further reducing infrastructure costs.

**Improving Community Health**

An integrated trail system will enable mobility and increase physical activity while also encouraging recreational use. Bike riding, walking and other forms of mobility that involve physical exertion can enhance the health and well-being of county residents while providing access to vistas and natural settings that are psychologically beneficial. In this regard, they offer holistic benefits in addition to mobility.

For children and young adults walking and bicycling helps build and maintain healthy bones and muscles, reduces the risk of developing obesity and chronic diseases, reduces feelings of depression and anxiety and promotes psychological well-being.

In general, physically active people save an estimated $1,603 per person healthcare cost. (CDC)

Students exposed to more green space on their commutes demonstrate enhanced working memory and attentiveness.

Research also demonstrates that exposure to nature improves community cohesion and reduces incidents of crime.

**Sources:**

https://www.nature.com/articles/s41598-019-44097-3
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Protection for Surface and Groundwater Supplies

Increasing awareness of Kendall County’s unique and diverse ecological, geological, and hydrological systems is necessary to protect the fragile Trinity Aquifers that are the sole source of water supply for Kendall County. Surface water imported from Canyon Lake is fed by the Trinity groundwater and springs, creeks, and rivers in Kerr, and Kendall County above the dam. Surface water stored in Boerne Lake is supplied by the Trinity Aquifers as well.

Just as the Great Springs Project goal is to protect the Edwards Aquifer recharge zone, Kendall County trail rights-of-way can be utilized to protect the watersheds on the uplift of the Hill Country Trinity Aquifer.

This can be achieved through the creation of greenways, vegetated buffer strips and swales on contour that help to slow, filter, and sink water. Trails may also benefit the recharge zone by reducing impervious cover across greenway corridors.

Pollution Reduction

Roads are associated with significant air and noise pollution. As a result of its auto-centric strategy and other industrial factors, the City of San Antonio has reached a “Nonattainment Status” for air pollution. High levels of air pollution negatively impact the health of citizens.

By embracing electric micro-mobility and a multi-modal transportation system, Kendall County can prevent a similar negative impact on county citizens while also reducing noise pollution associated with roadways.
**Safety**
The law of the land mandates that we “Share the Road.”

Sharing the road hasn’t proven to be easy in Kendall County. Fair Oaks Ranch residents complain about getting stuck behind golf-carts and county residents complain about road bikers. Road bikers, meanwhile, fear for their lives when large vehicles pass mere inches from their elbow.

For the safety and well-being of all citizens, this trail vision proposes separating micro-mobile solutions from cars, trucks and other large vehicles as much as possible. This includes creating off-road pathways along major state highways, arterials, and high-traffic roads.

![Diagram of pathway and roadway separation](image)

**Off Road Paths**
Creating off-road paths within and along state highway right of ways will necessitate working with TXDOT. Judicious augmentation of county roads may also be warranted where traffic increases make roadways hazardous for micro-mobility.

**Dedicated Trail ROWs**
The best safety solution is to ensure that trails are entirely independent of vehicular lanes and right of ways (ROW). This recommendation utilizes thoroughfare planning and a ‘tool-kit’ of methods for negotiating right of way easements to establish ROWs dedicated solely to trails and micro-mobility.
These trail ROWs are intended to be wide enough to offer a linear greenway with ample vegetated buffers that can accommodate both hard-path trails and gravel trails, while increasing exposure to nature and contributing to the health and function of their respective watersheds.

**Trail Design**

Securing ROWs is the first step in expanding the trail network. This does not require that every trail segment be fully connected nor hardened with asphalt or concrete. The character of trails will likely change depending on location, mobility needs and volume of traffic. The illustration below offers some perspective on the variety of trails that may be utilized based on a variety of contexts.
Enhance Existing Trail Network & Roadways

Enhancing trail resources by building onto the existing parks, trails, roads and amenities of Kendall County will enable Boerne, Fair Oaks Ranch, Comfort and county residents to establish a network of many facilities that support walking and bicycling throughout the community.

Many of the county roads are scenic and remain safe for micro-modal use, providing an opportunity to integrate them into the trail network. As these roads experience increased traffic, off-road paths can be carefully integrated into these scenic roadways to conserve the Hill Country character cherished by county residents.

Trails & Development

Trails are amenities for both existing Kendall County residents and future residents. Trails present opportunities for a greater sense of community cohesion.

Landowners and communities lining trails can take advantage of trail right of way as an amenity that increases property value.

To maximize the extent and utility of the trail network, policy solutions should be implemented that extend trails into developments and connect with adjoining neighboring developments through public major arterial roads or public trails.

Mobility Hubs

As autonomous vehicle technology evolves to provide “full autonomous driving” for cars and buses, ride-hail and ride-share services may offer solutions traditionally provided by public transportation. Mobility hubs are intended to facilitate an efficient transition from micro-mobility to these services, which may include public transportation.

Mobility hub locations have not been formally designated in our vision, but would be placed where high-use trails intersect with state highways and major roads. This integration will facilitate a multi-modal transportation network that reduces congestion while providing transportation options for people of all ages and socioeconomic capacity.

In the near future, using trails to connect existing infrastructure to the new San Antonio Community College campus along Balcones Creek is recommended for establishing the first mobility hub.
County Trail Network Vision

It is important to note that this is a vision, not a plan. Lines that appear to be specific should be viewed as creative ideas that imply linkages or conceptual routes, not firm recommendations.

Kendall County
Boerne – Most, but not all of trail recommendations in Boerne were provided by Boerne Assist City Manager Danny Zincke. Many portions are intended but not completed, however they have been color coded to align with the visionary purpose of this document.

Connecting Old # 9 to City Park – The intersection of Herff/Esser and River Rd./Hwy 46 is a dangerous and unpleasant place for pedestrians and cyclists to cross. As the Old #9 represents a major micro-mobility route, solving this challenge may call for creative and potentially costly solutions. These might include a pedestrian bridge or means of separating pedestrian and vehicular traffic.

Whatever solutions are devised, it would be sensible to resolve the pedestrian safety concerns at this intersection.
**Fair Oaks Ranch**

Many of the Fair Oaks Ranch (FOR) trails are pre-existing, but not formally identified. Other trail and sidewalk components are intended to connect Fair Oaks Ranch with schools, area destinations and the City of Boerne. Note that, for the network to be comprehensive, Fair Oaks Ranch would agree to allow non-FOR residents to utilize their trail network.

There is a strong interest among the committee to connect trails in Fair Oaks Ranch to the City of San Antonio’s trail network, enabling other modes to access destinations like La Cantera, The Rim, and other regional parks.
Comfort
Crossings concerns have been illustrated in Comfort because they represent significant safety concerns that need to be addressed through collaboration with TXDOT.

Recommendations to enhance pedestrian safety in Comfort – Reconfigure Hwy 27 and FM 473. Pedestrian and bike crossings are hazardous when dealing with the heavy truck traffic and high-speed vehicles on Hwy 27/Front Street.

Kendall County and Comfort residents are asking that TxDOT consider intersection structures that would redirect a portion of commercial/heavy truck traffic off Hwy 27 to RM 473 for more direct access to the new interchange at IH 10. The use of RM 473 offers a wider ROW, improved traffic flow, and safer traffic conditions through the retail/business area of Comfort.

Comfort Vision 2050, a 2018-2019 community study by the Comfort Area Foundation, outlines a redesign of Front Street to reinstitute the street’s historic character. Project goals are to narrow the street, introduce head-in parking, add a continuous sidewalk, dedicated bike lanes, and invest in low impact development strategies.
Recommended Policy

Purpose:
The following Policy Statements are provided as a continuation to Policy Statements previously adopted by the transportation committee. In addition to references made in the previous Policy Statement sections regarding Trail and Multi-use facilities, they have been developed and hereby presented by a sub-committee comprised of Kendall County citizens with professional and personal knowledge of the benefits and needs of the trail and multi-modal infrastructure necessary for a safe and healthy community.

1. **Promote the establishment and maintenance of a system of trails and greenways that serves Kendall County’s diverse population while respecting and protecting the integrity of its equally diverse natural and cultural resources.**

   The system should be accessible to all Citizens for improving their physical and mental well-being by presenting opportunities for recreation, transportation, and education, each of which provides enhanced environmental and societal benefits.

2. **Support of the Safe Routes to School Partnership study, which examines the advantages of walking and bicycling to school in five areas: physical, psychological, cognitive, social, and economic.**

   Most benefits are associated with active and independent travel. Children who actively commute experience better health outcomes, perceptions of their neighborhood, and spatial knowledge. [https://www.saferoutespartnership.org/](https://www.saferoutespartnership.org/)

   Within the Boerne Independent School District (BISD), students must live more than TWO MILES from the campus of regular attendance that services their home of residence as measured by the shortest route that may be traveled on public roads from the student’s home to school.

3. **Establish a Thoroughfare Master Plan for Kendall County.**

   A thoroughfare master plan provides the regulatory authority to require developers to make improvements or take actions as they develop property, to include right of way dedications and reservations; roadway, bridge, hike and bike trail, sidewalks, and other infrastructure construction; and ensure local standards are met by other agencies, developers, and utility agencies as development occurs.

4. **Connect Boerne and Comfort to a future public transportation hub for the new Alamo Area Community Colleges campus at the IH 10/ Bexar-Kendall County boundary.**
San Antonio’s public transportation system - VIA - provides service from this destination. Linking our multi-modal network to this destination will enable citizens of Kendall County to access the San Antonio public transportation network.

Establish connectivity between San Antonio, Boerne, Fair Oaks, and Comfort to provide economic benefits to underserved communities enabling access to work, services, and medical care. Similarly, local businesses seeking employees from the colleges and San Antonio benefit from a wider labor market.

5. **Ensure all intersections are clear and visible, day or night, and are equipped with lighting, high visibility crosswalk markings and signage.**

Where vehicle speeds and volumes are high and pedestrian access is expected at regular intervals, signalized crossings preserve a safe walking environment. Where anticipated pedestrian traffic is low or intermittent, or where vehicle volumes are lower and pedestrian crossings shorter, designers may consider the use of unsignalized crossing treatments such as medians, hybrid or rapid flash beacons, or raised crossings.

According to the Federal Highway Administration, 2018 witnessed the most pedestrian fatalities since 1990, accounting for approximately 17 percent of all roadway fatalities (6,283). In 2018, 74% of pedestrian fatalities occurred away from intersections (e.g., mid-block locations) and approximately 25% occurred at intersections.

6. **Integrate public transportation with micro mobility corridors, providing those on foot, bike, and micro-modes easy access to a multi-modal community.**

In high-use areas, trail networks should intersect with transportation hubs where micro-mobility users can safely and efficiently access ride-share services and public transit. This will ensure a greater degree of mobility without reliance on larger vehicles, thereby enhancing mobility and alleviating congestion.

7. **Establish county wide trail and micro-mobility standards and developer incentives for planning and development.**

8. **Incorporate trail networks into city and county thoroughfare plans with requisite requirements to fulfill trail portions in accordance with standard thoroughfare practice, including legal designations of greenfield trails on the thoroughfare plan to serve only micro-mobility and trail use.**

9. **Provide landscape reserves or right-of-way easements on each side of a major thoroughfare to allow for separate shared use paths and landscaping. These linear parks and trails should be clear of signs, parking, and structure and with established building setbacks for lots backing up a major thoroughfare.**
10. City and county governments to adopt ordinances and regulations for trail and street systems within any development or subdivision to:

a. Provide street and trail connections to adjacent properties shall be provided to assure adequate traffic circulation within the general area.

b. Provide stub streets, trails and sidewalks to be terminated with a temporary cul-de-sac until these features are extended into the adjacent developments or properties.

c. Eliminate dead-end streets and trails by requiring stub-outs and temporary cul-de-sacs for future connectivity with adjacent developments.

d. Provide enough continuous trails, streets and major thoroughfares to accommodate the increased traffic demands generated by the subdivision shall be provided.

e. Provide all trails, arterial and major collector streets be dedicated to the public and constructed to county/city standards.

11. Design for community interconnections with parks, multi-use pathways, and transportation hubs.

12. Establish standards for berms and buffer zones along roadways to include greenway linear parks along rivers, wetlands, floodways, storm drainage, and major arterials to slow, spread, filter, and sink water. Use Best Management Practices (BMP) for all land applications.

Increasing awareness of Kendall County’s unique and diverse ecological, geological, and hydrological systems is necessary to protect the fragile Trinity Aquifers that are the sole source of water supply for Kendall County. Surface water imported from Canyon Lake is fed by the Trinity groundwater and springs, creeks, and rivers in Kerr, and Kendall County above the dam. Surface water stored in Boerne Lake is supplied by the Trinity Aquifers as well.

13. Establish County and Municipal environmentally responsible and fiscally viable development design standards to include open space and shared use trail connectivity to new developments in the County and municipalities: Standards that are green, environmentally and economically feasible for the developer and create a stable tax base to the governing agencies.

14. Develop a system of scenic roadways in the County in coordination with the state sponsored Texas Hill Country Trail Region Trail and local tourism and hospitality organizations. Leverage tourism marketing dollars for promoting trail systems, natural areas, and recreational facilities.

15. Ensure safety of bikers, joggers, and hikers along high-traffic state highways and county roads with separated side path/bike lanes adjacent to the roadway and separated by vegetation to maintain rural character.
The Texas Local Government Code provides Kendall County with authority to implement standards for subdivision and county roads. Working with TxDOT, we, in Kendall County, have an opportunity to practice and exhibit practical and attractive transportation design.

See:
- Chapter 251 of the Texas Transportation Code
- Chapter 232 of the Texas Local Government Code

The Path Forward

1. Establish a Working Committee for Multi-Modal Transportation Planning
To ensure a comprehensive plan, this committee should be composed of members from the Boerne and Comfort ISD, Kendall County Parks Advisory Board, Boerne and FOR Parks Dept, Convention and Visitors Board, Chambers of Commerce, the Boerne and Kendall County Economic Development Corporation, Kendall County Behavioral Health Initiative, and members of the Kendall County Trails Committee.

2. Develop of Comprehensive County Trails Thoroughfare Plan
The first step in implementing multimodal transportation systems is to develop a plan for each multimodal system with cost estimates and a prioritized list of improvements. At that point, projects can either be implemented through the local capital improvement process or by developers as a condition of development approval.

Comprehensive plans typically provide the framework for the development of multimodal transportation infrastructure and management programs. Inclusion of pedestrian and bicycle goals, initiatives and projects into regional long-range transportation plans can further propel these projects into action.

3. Initiate a Trails Implementation Strategy
Determine relevant public / private partners to collaborate on fulfilling the County Trails Plan. This could include city, county and state officials, local and regional conservation organizations, bike and micro-modal advocacy groups, and partnership with the Great Springs Project.

Priorities

1. Complete trail-related recommendations from the projects committee & in Comfort.
These solutions are intended to create connectors and resolve safety concerns that will significantly enhance student access to schools.

2. Plan and Implement Safe Routes to School strategy.
Safe Routes will facilitate safer passage to schools. This will encourage students to commute using micro-mobility, which may reduce traffic congestion and facilitate broader adoption of micro-mobility.
3. Establish a trail connection between Boerne and Fair Oaks Ranch
The neighboring cities of Boerne and Fair Oak Ranch share the southern boundary of Kendall County. Both cities and their residents are committed to preserve the natural beauty and culture of the Hill Country. Each has acres of parks, green space and trails. Boerne ISD serves both communities. Initial linear linkage between the two communities may be accomplished by extending the No. 9 trail to the Cibolo Creek Nature Trail Park and Pinta Trail in Fair Oaks Ranch. Success of this project is dependent on mutual accessibility.

**Funding for Trails**

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<td>United States Department of Agriculture Healthy Forests Reserve Program</td>
</tr>
<tr>
<td>United States Department of Agricultural Conservation Easement Program</td>
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<tr>
<td>Rebuilding American Infrastructure with Sustainability &amp; Equity</td>
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<tr>
<td>Infrastructure for Rebuilding America</td>
</tr>
<tr>
<td>Community Development Block Grants</td>
</tr>
<tr>
<td>Transportation Alternatives Set-Aside</td>
</tr>
<tr>
<td>Surface Transportation Block Grant</td>
</tr>
<tr>
<td>Highway Safety Improvement Program</td>
</tr>
<tr>
<td>Safe Routes to School (SRTS) Program</td>
</tr>
<tr>
<td>Environmental Contamination Cleanup Funding Sources</td>
</tr>
<tr>
<td><strong>State Funding</strong></td>
</tr>
<tr>
<td>Sources</td>
</tr>
<tr>
<td>Local Parks Grants</td>
</tr>
<tr>
<td>Green Project Reserve</td>
</tr>
<tr>
<td>The Texas Department of Agriculture and the Texas General Land Office Flood Mitigation Community Development Block Grants</td>
</tr>
<tr>
<td>The Texas Division of Emergency Management</td>
</tr>
<tr>
<td>Texas Department of Transportation Active Transportation Funds</td>
</tr>
<tr>
<td>Texas Farm and Ranch Lands Conservation Program</td>
</tr>
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</table>
**Local + Regional Agency Funding**

<table>
<thead>
<tr>
<th>Sources</th>
<th>Right-of-Way</th>
<th>Planning</th>
<th>Design</th>
<th>Construction</th>
<th>Maintenance</th>
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</thead>
<tbody>
<tr>
<td>Local Bond Initiatives</td>
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<td></td>
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<tr>
<td>Local Sales Tax</td>
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<td>Local Property Tax</td>
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<tr>
<td>Edwards Aquifer Authority (mainly conservation)</td>
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<tr>
<td>Lower Colorado River Authority Community Development Grants</td>
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<tr>
<td>San Antonio River Authority</td>
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</table>

**Private + Nonprofit Funding**

<table>
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<tr>
<th>Sources</th>
<th>Right-of-Way</th>
<th>Planning</th>
<th>Design</th>
<th>Construction</th>
<th>Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austin Parks Foundation</td>
<td></td>
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<tr>
<td>Conservation Alliance</td>
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<tr>
<td>Corporate Donations</td>
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<tr>
<td>Fundraising/Campaign Drives</td>
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<tr>
<td>Guadalupe-Bienio River Trust</td>
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<tr>
<td>Local Trail Sponsors</td>
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<tr>
<td>National Fish &amp; Wildlife Foundation: Five Star &amp; Urban Waters Restoration Grant Program</td>
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<td>Private Individual Donations</td>
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<tr>
<td>Rails to Trails Conservancy</td>
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<tr>
<td>Shild-Ayres Foundation</td>
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<tr>
<td>Bezos Earth Fund</td>
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<tr>
<td>Trust for Public Land</td>
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<tr>
<td>Volunteer Work (mostly for hiking trails)</td>
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</tbody>
</table>

For more funding opportunities, see “Funding Resources” on Page 110 of the Great Springs Project Trail Plan
## Resources

**Safe Routes to Schools**  
https://www.transportation.gov/mission/health/Safe-Routes-to-School-Programs

**Small Towns and Rural Multi-modal Networks**  

**Great Springs Project Trail Plan**  

- “Protecting the Edwards Aquifer Recharge Zone” Page 20  
- “Operations & Maintenance” on Page 68  
- “Funding Resources” on Page 110  
- “Conservation Toolbox” on Page 168
Reference

2018 AAMPO City of Boerne Bike Share Feasibility Report
https://www.kcbfotc.com/_files/
ugd/203b18_339ed844fd2f46608a4843f193533ff3.pdf?index=true

AAMPO Volume 4 - Pedestrian & Bicycle Recommendation for the City of Boerne
https://www.kcbfotc.com/_files/
ugd/203b18_6ad4d4c52fcc458fa7a5069bedbc3797.pdf?index=true

City of Boerne Master Plan

City of Boerne Parks Master Plan

Comfort Vision 2050
https://texas.planning.org/documents/4144/COMFORTVISION_2050.pdf

Hill Country Alliance Metrics Report

Kendall County Parks Master Plan (adoption pending)
https://www.kcbfotc.com/_files/ugd/203b18_e0f18166a81949afb27a69dc5038a8fd.pdf?index=true

Rudat
https://www.ci.boerne.tx.us/DocumentCenter/View/1261/RUDAT_Beerne_final-14-MB-PDF?bidId=

TXDOT Roadway Design Manual (Rev. 5/22), Chapter 6, Section 4 “Bicycle Facilities”
http://onlinemanuals.txdot.gov/txdotmanuals/rdw/bicycle_facilities.htm
Trails Sub-Committee Participants

Ben Eldredge, Member of KCBFOTC, Chair of Trails Sub-Committee
Northern Hendricks, Member of KCBFOTC
Bobby Balli, Member of KCBFOTC
Marcus Garcia, Member of KCBFOTC
Rich Sena, Member of KCBFOTC
Brad Gessner, Kendall County Parks Advisory Board, Comfort
Jonathan Piper, Kendall County Parks Advisory Board, Boerne
Brent Evans, Kendall County Parks Advisory Board, Boerne
Pamela Hodges, Kendall County
Craig McDonald, Comfort
Nolan Kuehn, Fair Oaks Ranch
Seth Mitchell, Fair Oaks Ranch
Danny Zincke, Advisor, City of Boerne
Garry Merritt, Advisor, Great Springs Project
Jim Carrillo, Advisor, Halff Associates
Marc Zak, Halff Associates
Population

The most significant drivers of travel demand are population and affluence. According to Kendall County Profile⁹, information compiled by the Texas Association of Counties, in 2021 Kendall County had a population 44,279, which results in an overall density of 66.84 people per square mile. This correlates well with the Texas Demographics Center (TDC) website,¹⁰ which shows the population of Kendall County in 2020 was 46,278. The TDC projects Kendall County will grow to 97,357 by 2040 and 137,844 by 2050.

It is important to note the current population is not distributed uniformly throughout the county, and neither is the projected growth in that population. The southeastern parts of the county, including the City of Boerne and areas to the south and east, are growing rapidly, while population growth in areas to the north and west currently lag behind, but may accelerate in the future. According to Census Data available at the time of this writing, the area south and east of a boundary formed by the Big Joshua Creek and the Guadalupe River represents only 38.4% of the County, but it contains 85.1% of its population. Population densities in this area range from a low of 53.2 people per square mile west of Interstate 10 to 2,127.7 people per square mile in the 2.8 square miles of Boerne proper. The areas of highest growth pressure have a current population density of 314 to 385 people per square mile.

Assuming the TDC growth projections come to pass that would mean Kendall County will add more than 51,000 people in the next nineteen years, more than doubling the population. If 85% of them end up living in the 254.6 square miles south of the Big Joshua-Guadalupe Line, the population of that area would be 82,800.

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⁹ https://txcip.org/tac/census/CountyProfiles.php

¹⁰ https://demographics.texas.gov/data/tpepp/projections/
and the density would be approximately 325 people per square mile. The remaining 15% would live in the other 408.4 square miles, and that would make the population 35 people per square mile.

A reasonable conclusion that can be derived from this is that the bulk of the transportation congestion over the next twenty years will occur in the southeastern part of the county.

**Selected Traffic Counts**

The Committee grappled with traffic counts since its inception. Those on the Committee with transportation planning experience felt strongly that traffic count data was needed to estimate current and future traffic congestion. Others argued current congestion was apparent and data did not need to be gathered to identify congested locations. Complicating this difference in opinion was the COVID-19 pandemic’s impact on traffic. More specifically, with normal economic activity and all in-person public school activities suspended, traffic counts, if measured in 2020, would not have represented “normal” traffic volumes. Eventually, the Committee agreed to employ existing data from various sources and do our best to project future travel demand.

TxDOT gathers traffic count data at various locations throughout the County from time to time and publishes that information on its website as part of its Statewide Traffic Analysis and Reporting System (STARS II).¹¹ Appendix D Exhibit B presents Average Annual Daily Traffic (AADT) volumes for sixty-five locations in Kendall County for 2013, 2019, and 2020. Review of that data confirms that 2020 traffic volumes were generally lower than the 2019 traffic volumes, but the extent to which they are lower varies from road to road. Specifically,

+ **The 2020 traffic counts on Interstate 10 in the Boerne area were consistently 85% of the counts observed in 2019, except for one location north of SH 46, which was 90%. Common sense suggests this reflects traffic related to local traffic using essential services found on SH 46 (HEB, Home Depot, Methodist Hospital, etc.).**

+ **The 2020 counts on US 87 from Comfort to the north ranged from 56.1% to 97.5% of the 2019 counts, with an average of 74.6%.**

+ **The 2020 Main Street traffic counts ranged from 79.0% to 94.3% of 2019 counts, with an average of 87.8%.**

+ **The 2020 SH 46 traffic counts averaged 84.6% of the 2019 counts.**

+ **The 2020 RM 473 traffic counts averaged 80.9% of the 2019 counts.**

+ **The 2020 FM 1621 traffic counts averaged 92.4% of the 2019 counts.**

The 2020 FM 1376 traffic counts averaged 90.0% of the 2019 counts.

The 2020 FM 474 traffic counts averaged 89.9% of the 2019 counts.

The 2020 FM 3351 traffic counts averaged 83.6% of the 2019 counts.

After reviewing these data, the Committee opted to use traffic counts from 2019 as the most recent valid direct counts. Appendix D Exhibit C shows the method used to project future traffic volumes. Specifically, total growth in AADT from 2013 to 2019, expressed as a percent was calculated for each location. Then, the average of those locations along a road was computed and averaged to provide an average annual growth rate for traffic on that roadway. The Average Annual Growth Rate was applied to the 2019 AADT values for eleven and twenty-one years to compute the 2030 and 2040 AADT values, respectively, at each location. (Computed projected volumes were rounded to the nearest 100 vpd).

Traffic on Interstate 10 main lanes increased an average of 24.3%, or 3.7% per year

Traffic on US 87 between Comfort and Fredericksburg increased an average of 42.6%, or 6.1% per year

Traffic on Main Street in Boerne increased an average of 20.0%, or 3.1% per year

Traffic on SH 46 from Main Street to the eastern county line increased an average of 33.1%, or 4.9% per year

Traffic on RM 473 between Comfort and Sisterdale increased 32.0%, or 4.7% per year

Traffic on RM 473 between Sisterdale and the eastern County Line increased 88.7%, or 11.2% per year

Traffic on FM 1376 between Boerne and Sisterdale increased 38.0%, or 5.5% per year

Traffic on FM 474 south of Kreutzberg increased 17.3%, or 2.7% per year

Traffic on FM 3351 south of SH 46 increased 38.3%, or 5.6% per year

Traffic on FM 3351 north of SH 46 increased 24.8%, or 3.8% per year

Additional traffic count data can be found on TxDOT’s Statewide Planning Map. This data was reviewed to glean TxDOT’s projected AADT for 2040 at the same locations as the 2013 and 2019 data. These 2040 traffic projections were compared to the measured 2019 AADT. Interstate 10 traffic is projected to increase 100% while traffic on all other TxDOT highways is projected to increase 40% by 2040. The uniformity of these projections suggests they are more likely rough estimates instead of true projections based on specific local circumstances.
In addition, the City of Boerne conducted traffic counts at several locations in 2020 and 2021. That data set included three locations that reasonably correlate to some the TxDOT collection points. The 2021 counts at these three locations were compared to TxDOT’s 2040 projected counts and to TxDOT’s 2019 counts with the following result:

- **SH 46 (River Road) east of Main Street** – City 2021 count of 14,928 correlates very well to TxDOT’s 2019 count, increased by the average growth rate of 4.9% for two years, or 14,258.

- **FM 1376 north of Business 87** – City 2021 count of 3,569 correlates reasonably well with TxDOT’s 2019 count, increased by the average growth rate of 5.5% for two years, or 3,277.

- **FM 474 north of Adler** – City 2021 count of 6,374 correlates only roughly with TxDOT’s 2019 count, increased by the average growth rate of 2.7% for two years, or 5,397.

In the light of these reasonable correlations, the Committee decided the methodology of using TxDOT’s 2019 traffic counts and extrapolating those values using the Average Annual Growth Rate for that road segment of road was valid for its purposes. Let us look at one example to galvanize understanding of this methodology:

To calculate the Projected Traffic volumes for IH 10 South of Balcones Creek in 2030, (11 years beyond 2019), we apply the average annual growth rate of 3.7% to the 2019 Traffic Count of 60,849 vpd, and we find the 2030 Projected Count to be 90,600 vpd. Extending the same growth rate to 2040, we find the Projected Count to be 130,200 vpd. While that may seem at first to be extraordinarily high, we note the 2019 Traffic Count on the IH 10 Main lanes north of Huebner Road is 153,733.

One might speculate that congestion, itself, would constrain traffic volumes, and for Peak Traffic Volumes, that may be true. The traffic counts presented in the table are Average Annual Daily Traffic. It is reasoned that these volumes can increase significantly by extending the duration of the Peak Traffic Volume. For example, Main Street, south of the Cibolo Creek in 2019 had an AADT of 23,744 vpd. One could speculate a peak hour traffic volume of 4,000 vehicles per hour. If we further assume that is the practical maximum hourly traffic, needed to accommodate the AADT Projected for 2040 of 54,000 the peak hourly traffic would need to be extended to last more than thirteen hours. What can be inferred from this is that AADT is not the best metric to use to decide how many lanes a road should have. Still AADT can be useful in making a qualitative determination about future congestion.

For example, analysis of the SH 46 – Herff – FM 3351 traffic data shows the following –

- **Maximum 2040 Projected Traffic on SH 46 east of Boerne appears to be near Herff Ranch Boulevard - 40,900 vpd**
Maximum 2040 Projected Traffic on Herff south of SH 46 appears to be 40,000 vpd

Maximum 2040 Projected Traffic on FM 3351 occurs just east of IH 10 and appears to be 51,500 vpd

2040 Projected Traffic on FM 3351 north of Amman is projected to be 20,600 vpd, less than half of the traffic at IH 10

StreetLight Data

An evolving technology commonly known as “big data” is becoming increasingly reliable not only for counting traffic, but also for analyzing traffic patterns. Commercialized as StreetLight\(^\text{12}\), the technology has demonstrated good correlation with traditionally collected traffic counts in both the US and Canada. AADT data was retrieved from StreetLight for six of the locations in Boerne where traffic counts are made by TxDOT using traditional methods. That data was compared to the 2019 TxDOT data with the following results:

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Location</th>
<th>TxDOT 2013</th>
<th>TxDOT 2019</th>
<th>TxDOT 2020</th>
<th>StreetLight 2019</th>
<th>StreetLight 2020</th>
<th>StreetLight as % of TxDOT 2019</th>
<th>StreetLight as % of TxDOT 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Street</td>
<td>South of EMS</td>
<td>6992</td>
<td>9280</td>
<td>8157</td>
<td>8547</td>
<td>8460</td>
<td>92.1%</td>
<td>103.7%</td>
</tr>
<tr>
<td></td>
<td>North of Cibolo Creek</td>
<td>16171</td>
<td>20687</td>
<td>18205</td>
<td>18656</td>
<td>15266</td>
<td>90.2%</td>
<td>83.9%</td>
</tr>
<tr>
<td></td>
<td>South of Christus</td>
<td>16780</td>
<td>19443</td>
<td>15360</td>
<td>14894</td>
<td>13090</td>
<td>76.6%</td>
<td>85.2%</td>
</tr>
<tr>
<td>SH 46</td>
<td>East of IH 10</td>
<td>16680</td>
<td>16670</td>
<td>13524</td>
<td>15188</td>
<td>13679</td>
<td>91.1%</td>
<td>101.1%</td>
</tr>
<tr>
<td></td>
<td>East of Main</td>
<td>12662</td>
<td>12957</td>
<td>10417</td>
<td>12783</td>
<td>11084</td>
<td>98.7%</td>
<td>106.4%</td>
</tr>
<tr>
<td>Herff</td>
<td>South of SH 46</td>
<td></td>
<td></td>
<td></td>
<td>15412</td>
<td>17015</td>
<td>98.7%</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Assessing existing traffic volumes and changes in those volumes could become an important part of a thoughtful infrastructure management system at the County and the two cities within its boundaries. This data can be used to more appropriately allocate scarce maintenance resources, manage development more effectively, and even allocate traffic law enforcement resources.

The Worst Intersections in Kendall County

One of the more practical planning approaches the Committee employed was to establish a popular ranking of the worst intersections in Kendall County. This was done by listing all intersections that might be candidates for the designation of “worst intersection in Kendall County.” Once a list was developed and adopted, Committee members were then asked to identify the ten worst intersections and rank them with “1” being the worst and “10” being the tenth worst.

A weighted voting tabulation was performed by translating each committee member’s ranking into a weight. The rank of 1 was assigned a weight of 10, the rank of 2 was assigned a weight of 9, and so forth. Then, the weights were summed for each project with the following result.

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Intersection</th>
<th>Total Vote Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SH-46 East (River Rd)@ Herff/Esser</td>
<td>132</td>
</tr>
<tr>
<td>2</td>
<td>Main (U.S. 87)@ River Rd (SH-46 East)</td>
<td>99</td>
</tr>
<tr>
<td>3</td>
<td>Main (U.S. 87)@ School/Adler (5 Pts)</td>
<td>75</td>
</tr>
<tr>
<td>4</td>
<td>Bandera (SH-46)@ H-E-B</td>
<td>56</td>
</tr>
<tr>
<td>5</td>
<td>Cascade Caverns@ SCenic Loop</td>
<td>49</td>
</tr>
<tr>
<td>6</td>
<td>I-10@ Bandera Road (SH-46)</td>
<td>48</td>
</tr>
<tr>
<td>7</td>
<td>Main (U.S. 87)@ Bandera (SH-46)</td>
<td>44</td>
</tr>
<tr>
<td>8</td>
<td>I-10@ SCenic Loop</td>
<td>41</td>
</tr>
<tr>
<td>9</td>
<td>Old San Antonio@ Cascade Caverns</td>
<td>33</td>
</tr>
<tr>
<td>10</td>
<td>SH-46@ Charger Blvd/Woods of Boerne</td>
<td>28</td>
</tr>
<tr>
<td>11</td>
<td>Main (U.S. 87)@ Blanco (FM-474)</td>
<td>26</td>
</tr>
<tr>
<td>12</td>
<td>SH-27@ RM-473 (Comfort)</td>
<td>22</td>
</tr>
<tr>
<td>13</td>
<td>School St@ John’s Rd</td>
<td>21</td>
</tr>
<tr>
<td>14</td>
<td>Bandera (SH-46 West)@ Coughran/Spencer</td>
<td>13</td>
</tr>
<tr>
<td>15</td>
<td>I-10@ Johns Rd</td>
<td>12</td>
</tr>
</tbody>
</table>

It is interesting that of the fifteen arguably worst intersections in Kendall County, twelve involve TxDOT roadways.
Also notable is that current congestion at two of these intersections (#6, I-10 at Bandera Road and #8, I-10 at Scenic Loop) is significantly attributed to ongoing construction projects that are anticipated to relieve congestion once they are complete, at least for a while. An insight that could be gleaned from this observation is that perhaps one of the most effective strategies to relieve congestion in the near term would be to cooperate with TxDOT to accelerate improvements at these intersections by enhancing local contributions to those projects, helping with ROW acquisition and utility relocation if required, and developing coordinated and unified expressions of support through the AAMPO and ARRPO planning processes.

**Influence of Primary and Secondary School Traffic**

Even the most casual observers are aware that traffic congestion eases considerably outside of the normal school calendar. School employees, school busses and parents driving students to and from school, and students driving to and from school – all at approximately the same time - increase the normal “rush hour” travel demands. Activation of lowered speeds in school zones and school busses stopping traffic intermittently to load and unload passengers combine with normal school business operations to further increase congestion.

One of the advantages of having local citizens involved in transportation planning is their sensitivity to congestion resulting from seemingly obscure, isolated traffic impediments. The Committee was especially fortunate to access the insights of John Martinez, the Boerne ISD Transportation Director. Mr. Martinez is responsible for school bus operations, and he confirms the presence of a problem that is repeated in several of the larger residential developments within the Boerne Independent School District: “cul-de-sac developments.”

By “cul-de-sac” development, we mean large (say, 100 lots or more) that are constructed adjacent to existing city, county, or state roadways and which do not facilitate a transportation network by connecting to adjacent developments. As a result, parents and school busses delivering students to a school that is situated in an adjacent development must exit their “home” development and use the city, county, or state roads to travel to the adjacent development to deliver their students. This increases traffic on the existing road network more than necessary. When the pedestrian networks are similarly isolated, it discourages students from walking and biking to and from school.

Developers of larger tracts often decline to connect road networks to adjacent development for economic competition reasons and to better control their market identity. In other cases, the roads in a development are owned and maintained by the Homeowners Association, which is motivated to limit the use of its roads by externally generated traffic.

Mr. Martinez and Committee member Rich Sena, who is a longtime BISD School Board member, also noted that their demographic studies support the previously stated assumption that most of the growth in the County over the next couple
of decades will be south and east of Boerne. Because there are some students already in the areas west of IH 10, but no school, vehicular travel through the IH 10 intersections is required. The implication of this is that some component of the current congestion at the IH 10 intersections with Scenic Loop, Bandera Road (SH Hwy 46 West), and Johns Road is the result of school traffic. The good news is that in the future the district is likely to build schools west of IH 10 in response to student population growth and draw attendance zone boundaries to minimize school traffic going through those intersections.

A second, related phenomenon exacerbates the school-related traffic congestion: children being transported to schools in vehicles instead of walking or biking to school. The fact that BISD does not provide bus service to areas within a two-mile radius of their schools, together with the general absence of special use paths and impeccably safe pedestrian routes to schools results in many parents transporting their children to school in vehicles.

**Funding Transportation**

**How is Transportation Infrastructure Paid For?** - Transportation planning and funding is a complex subject involving multiple parties. The parties include local governments, regional, state, and federal agencies, as well as private interests involved in the development and re-development of land. Because the surface transportation network is a system, the action or inaction of one party affects the other parties involved in developing and maintaining the system.

Moreover, because the cost of transportation infrastructure is so high, it makes sense that parties endeavor to and often do coordinate and combine their funds to jointly pursue projects of mutual interest. However, each party typically promulgates its own set of policies, design criteria, preferences, rules and procedures for planning, building, and paying for transportation infrastructure, and this contributes to increased complexity, which serves to impede progress.

As discussed above, four governmental entities own and operate the surface transportation system in Kendall County: TxDOT, Kendall County, City of Boerne, and City of Fair Oaks Ranch.

Kendall County and the Cities of Boerne and Fair Oaks Ranch derive funds for transportation infrastructure from ad valorem and sales tax revenues and from voter approved bonds serviced by general revenue. TxDOT derives its funds from state and federal motor fuel sales taxes, motor vehicle registration fees, oil and gas severance taxes, motor vehicle sales taxes, and other minor sources.

+ The City of Fair Oaks Ranch has never undertaken the construction of new roadway capacity. However, since 2008, they have spent approximately $1.92 million on roadway maintenance and reconstruction in that portion of its corporate limits within Kendall County.

+ In the past fourteen years, the City of Boerne has invested approximately $4.0 million in new surface transportation projects. The City of
Boerne has contributed $2.0 million toward the cost of three TxDOT projects: 1) IH 10 at Scenic Loop; 2) SH 46 from Herff to Amman; and 3) Construction and reconfiguration of the IH 10 Frontage Road. In addition, the City has extended Herff Road from Main Street to Christus Parkway at a cost of $2.0 million. Going forward, the City of Boerne has employed a consultant to develop plans for improvements to Cascade Caverns Road and has committed to providing 30% of the cost of the design and construction of that project.

Over the same fourteen years, Kendall County has invested approximately $11.1 million in surface transportation improvement projects in Kendall County. Since 2011, the County has contributed $1.6 million toward the cost of three TxDOT projects: 1) IH 10 and Scenic Loop; and 2) SH 46 from Herff to Amman; and 3) US Hwy 87 and IH 10 at Comfort. Kendall County also invested $9,500,000 in the Herff Road – SH 46 to Main Street Project. (The Esparanza Development contributed another $2.3 million toward that project.) At this time, Kendall County has committed an additional $1.5 million toward drainage improvements on Old San Antonio Road and on Adler Road to facilitate the improvement of those roads. In addition, Kendall County has employed a consultant to prepare at least schematic designs for Coughran Road and for Scenic Loop Road between IH 10 and the County Line.

Since 2008, TxDOT has invested $149.4 million in 43 different projects in Kendall County and over the next four years TxDOT will invest an additional $57.1 million in 11 new projects in Kendall County. These figures exclude resurfacing, seal coats, pavement markings, and recreational projects.

![Funding Transportation Infrastructure (Over the past 14 years)](chart.png)
While these numbers are approximate due to the ongoing nature of some of the projects and accounting methodologies, which vary from entity to entity, the main point here is that Kendall County citizens have funded less than $20 million in transportation projects since 2008, while TxDOT has funded or committed to fund more than $200 million over that same period.

**Local and Regional Sources** – Potential funding sources for existing local governments include current revenue, debt, and dedicated revenue streams. For example, some communities have allocated a portion of their sales tax revenue streams to mass transit. Other communities have gained authorization to add a surcharge on vehicle registration fees, and still others have dedicated a portion of their ad valorem tax rate to infrastructure. In the past there has been casual conversation in Kendall County about a county-wide tax dedicated to transportation or, more broadly, to infrastructure. The dedicated revenue streams can be used on a “pay as you go” basis and, in some cases, can be used to service debt.

In addition, some local governments (though none with populations as small as Kendall County) have created agencies known as Regional Mobility Authorities. A regional mobility authority (RMA) is an independent local government agency that is authorized to finance, design, construct, operate, maintain, and expand a wide range of transportation facilities and services.

Nine regional mobility authorities (RMA) have been created in Texas since the enabling legislation was passed in 2001. RMAs are governed by a board of directors appointed by the Governor and the Commissioners Courts of the counties they serve. Some RMAs have encountered challenges, ranging from financing, to how to deliver a project that generates a revenue stream, to how they relate to TxDOT. Other RMAs have successfully implemented projects that generate toll revenue, which eventually will likely provide a funding source for future improvements, much like the Harris County Toll Road Authority has done.

**State and Federal Sources** – The State of Texas receives revenues generated by state motor fuel taxes, state motor vehicle registration fees, tolls, and, in some years, state vehicle sales taxes and excess state oil and gas severance tax revenue. State funds are allocated by the Texas Department of Transportation generally in coordination with the planning processes used to allocate federal transportation funds, discussed below.

The Federal government receives revenue generated by motor fuel taxes, and it returns a portion of that revenue to the states. Because some of this revenue is generated by vehicles using local roads, both the State and the Federal Government have been compelled to return a portion of their revenues back to local governments to maintain and improve local roads, develop mass transit, to provide and improve pedestrian mobility, and for other purposes.

**Alamo Area Metropolitan Planning Organization (AAMPO)** – In the San Antonio region, federal and state transportation mobility funds are allocated through planning
processes managed by AAMPO, in close coordination with TxDOT and other
governments. The AAMPO study area includes all of Bexar, Comal, and Guadalupe
counties and a portion of Kendall County that includes Boerne.

One important element of AAMPO’s transportation planning mandate is delivering
the Transportation Improvement Program (TIP). The TIP is a four-year financially
constrained list of transportation projects and programs approved by AAMPO’s
Transportation Policy Board (TPB). The TIP is updated every two years and
amended quarterly. There are a variety of reasons a project or program may be
amended but new projects are generally added to the TIP through a competitive
project call and award process. The current FY 2021-2024 TIP was adopted by the
TPB in January 2021 and is available for viewing at: https://alamoareampo.org/Plans/TIP/

The FY 2023-2026 TIP was adopted by the AAMPO TPB in June 2022, and
currently under federal review, with an anticipated approval date sometime before
October 1, 2022, the first day of AAMPO’s new fiscal year, FY 2023.¹³ This TIP
includes a project sponsored by the City of Boerne on Cascade Caverns Road from
the I-10 frontage road to Buckskin Drive and includes improvements to Old San
Antonio Road and Scenic Loop Road. More specifically, the project will expand
Cascade Caverns from 2 to 4 lanes and include a center turn lane or median and
include intersection improvements, bike and pedestrian improvements including a
shared use path as well as expanding Old San Antonio Road and Scenic Loop Road
from 2 to 3 lanes. The total project cost, including the required 20% local match, is
$11.78 million. Construction is slated to start in 2025.

AAMPO is currently in the process of evaluating available federal funds, including
new funding opportunities resulting from the passage of the Infrastructure
Investment and Jobs Act (IIJA). The competitive process to get awarded federal
funds for a project begins with a project call and concludes with Federal Highway
Administration (FHWA) approval. A project call is anticipated for September or
October of this year, 2022. The project call includes an AAMPO announcement
stating projects are being solicited for consideration for award for the FY 2025-2028
TIP. Local governments, or other transportation agencies and organizations, submit
their competitive package with specifics about the proposed project. The submitted
projects are initially scored by AAMPO staff, based on criteria outlined by the
organization’s Technical Advisory Committee (TAC) and Transportation Policy Board
(TPB). This initial list of projects goes to the public for evaluation and comment and
then to AAMPO’s TAC for more extensive scoring and proposed award based on
the fiscal constraint. The result is the proposed funded projects list. This list is then
advanced to the TPB for discussion in the first month it is presented and approval
during the second month it is presented to the Board. This two-step process allows
for continued public comment during this 30-day period. Once the TPB approves the
funded projects list, the list is incorporated into the new TIP document.

¹³ The current “FY 2023-2026 TIP” currently includes thirteen (13) safety, rehabilitation, or
added capacity projects. These are listed in Appendix E.
Projects in Bexar County, due to the region’s air quality non-attainment status, must pass air quality analysis to get federal funding. The draft TIP document is presented in a two-step fashion, as previously noted, and open to public comment during this time. After the TPB approves the new TIP document with the funded projects, it is forwarded to FHWA for comment and approval. The new TIP becomes effective on October 1 of the first planning year for the document (in this case October 1, 2025) or sometime thereafter when FHWA approves it.

**Alamo Regional Rural Planning Organization (ARRPO)** – For the areas of Kendall County that are outside AAMPO, the Alamo Area Council of Governments (AACOG) coordinates the transportation planning process with the involvement of TxDOT and the Texas Transportation Institute. The document ARRPO develops is known as the Rural Transportation Improvement Plan, or RTIP, a list of projects intended to be accomplished by TxDOT over a four-year period. While the development of an RTIP within each TxDOT District is voluntary, a project must be in the RTIP to be eligible to receive federal transportation funding.

TxDOT and TTI are currently developing the San Antonio District Rural Transportation Improvement Plan 2023-2026. In 2021, TxDOT evaluated its rural road network with respect to pavement conditions, traffic projections, and other factors, including public input. TxDOT then selects several projects for inclusion in the draft plan for each county in the Alamo Regional Rural Planning Organization area. During the first six months of 2022, the San Antonio District of TxDOT, ARRPO, and TTI held workshops in each of those counties to give the public an opportunity to comment on their draft plan. In addition, a virtual public meeting for all twelve counties in the ARRPO was conducted May 25, 2022. The deadline for comments was June 7, 2022.

The current draft Kendall County RTIP 2023-2026, available in Appendix F, lists 25 projects with an estimated cost of $38.4 million. Most of these projects are preventative maintenance type projects, so, ironically, these projects are more likely to cause short term congestion than to relieve it. Nevertheless, maintenance is needed to extend the life of the infrastructure, and these projects need to be accomplished. A handful of the projects though are worth mentioning because they will improve safety or because of the magnitude of the project.

- **FM 1621 from IH 10 to Waring** will be widened and fitted with edge lines and rumble strips
- **FM 3351 from south of SH 46 to Kendall Woods Drive** will be widened to provide a continuous left turn lane
- **SH 27 in Comfort** will be rehabilitated from the County Line to US 87
- **FM 1376 from RM 473 to Upper Sisterdale** will be widened to provide shoulders
- **IH 10 from FM 473 to Cibolo Creek** will have $31 million in base repair, mill, inlay, and pavement markings done in fiscal year 2024
For more detailed information about the 2023-2026 RTIP, access https://www.txdot.gov/inside-txdot/projects/studies/san-antonio/011022.html
APPENDIX D

Average Annual Daily Traffic at Selected Locations in Kendall County

APPENDIX CONTENTS

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Exhibit C ............................. 179
## EXHIBIT B - AVERAGE ANNUAL DAILY TRAFFIC AT SELECTED LOCATIONS IN KENDALL COUNTY

<table>
<thead>
<tr>
<th>Roadway/Hwy</th>
<th>Location</th>
<th>2013 (1)</th>
<th>2019 (1)</th>
<th>2020 (1)</th>
<th>2020 as % of 2019</th>
<th>2019 growth since 2013</th>
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<td>IH 10 Main Lanes</td>
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<td>60849</td>
<td>51722</td>
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<tr>
<td></td>
<td>Near Bluebonnet</td>
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<td>-10.5%</td>
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<td>21008</td>
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<td>4.0%</td>
</tr>
<tr>
<td></td>
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<td><strong>26.5%</strong></td>
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</table>
### EXHIBIT B - AVERAGE ANNUAL DAILY TRAFFIC
AT SELECTED LOCATIONS IN KENDALL COUNTY

<table>
<thead>
<tr>
<th>Roadway/Hwy</th>
<th>Location</th>
<th>2013</th>
<th>2019</th>
<th>2020</th>
<th>2020 as % of 2019</th>
<th>2019 growth since 2013</th>
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<td>RM 473</td>
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## EXHIBIT C - CALCULATION METHODOLOGY FOR PROJECTED 2030 AND 2040 AADT AT SELECTED LOCATIONS IN KENDALL COUNTY

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| 24.3% 3.69%                | 42.6% 6.09% | 20.0% 3.1% | 26.5% 4.0% |
### EXHIBIT C - CALCULATION METHODOLOGY FOR PROJECTED 2030 AND 2040 AADT AT SELECTED LOCATIONS IN KENDALL COUNTY

| Road          | Location                  | TxDOT 2013 | TxDOT 2019 | 2019 growth since 2013 | Avg Ann Growth Rate | Projected 2030 | Projected 2040 |
|---------------|---------------------------|------------|------------|-------------------------|---------------------|----------------|----------------|----------------|
| RM 473        | West of US 87             | 2854       | 3278       | 14.9%                   | 8500                | 20100          |                |
|               | East of US 87             | 3759       | 4586       | 22.0%                   | 11900               | 28100          |                |
|               | West of FM 1376           | 625        | 887        | 41.9%                   | 2300                | 5400           |                |
|               | East of FM 1376           | 594        | 1073       | 80.6%                   | 2800                | 6600           |                |
|               | West of FM 474            | 468        | 920        | 96.6%                   | 2400                | 5600           |                |
|               | West of Kendall           | 621        | 1118       | 80.0%                   | 2900                | 6900           |                |
|               | East of Kendall           | 1119       | 2259       | 101.9%                  | 5800                | 13900          |                |
|               | East of Sattler Rd        | 1371       | 2329       | 69.9%                   | 6000                | 14300          |                |
|               | West of US 281            | 1509       | 3068       | 103.3%                  | 7900                | 18800          |                |
|               |                           |            |            |                         | 67.9%               | 9.0%           |                |
| FM 1621       | East of IH 10             | 927        | 814        | -12.2%                  |                     |                |                |
|               | South of Waring Welfare   | 536        | 532        | -0.7%                   |                     |                |                |
|               |                           |            |            |                         |                     |                |                |
|               |                           |            |            |                         | -6.5%               | -1.1%          |                |
| FM 1376       | South of County Line      | 451        | 504        | 11.8%                   | 800                 | 1100           |                |
|               | North of 473 (W)          | 712        | 863        | 21.2%                   | 1300                | 1900           |                |
|               | In Sisterdale             | 1059       | 987        | -6.8%                   | 1500                | 2200           |                |
|               | South of 473 (E)          | 930        | 1280       | 37.6%                   | 1900                | 2800           |                |
|               | North of Walnut Springs   | 2438       | 3614       | 48.2%                   | 5500                | 8000           |                |
|               | North of School Street    | 5121       | 5847       | 14.2%                   | 8900                | 12900          |                |
|               | North of US 87 (N)        | 1937       | 2944       | 52.0%                   | 4500                | 6500           |                |
|               |                           |            |            |                         | 25.5%               | 3.9%           |                |
| FM 474        | North of Adler            | 4362       | 5117       | 17.3%                   | 14600               | 37900          |                |
|               | North of Kreutzberg       | 789        | 1072       | 35.9%                   | 3100                | 7900           |                |
|               | South of FM 473           | 135        | 376        | 178.5%                  | 2800                |                |                |
|               |                           |            |            |                         | 77.2%               | 10.0%          |                |
| FM 3351       | East of IH 10             | 11031      | 18285      | 65.8%                   | 31500               | 51500          |                |
|               | North of Desparado        | 9647       | 12733      | 32.0%                   | 21900               | 35900          |                |
|               | South of Cibolo           | 8953       | 12307      | 37.5%                   | 21200               | 34700          |                |
|               | North of Amman            | 5591       | 7320       | 30.9%                   | 12600               | 20600          |                |
|               | South of SH 46            | 4438       | 5559       | 25.3%                   | 9600                | 15700          |                |
|               | North of SH 46            | 3861       | 4332       | 12.2%                   | 7500                | 12200          |                |
|               | South of FM 473           | 1095       | 1505       | 37.4%                   | 2600                | 4200           |                |
|               |                           |            |            |                         | 34.4%               | 5.1%           |                |
| Herff         | South of SH 46            | 15412      | 17554      |                         | 27000               | 40000          |                |
|               | North of Main             | 13813      | 15732      |                         | 24200               | 35800          |                |

(1) [https://www.txdot.gov/inside-txdot/division/transportation-planning/stars.html](https://www.txdot.gov/inside-txdot/division/transportation-planning/stars.html)
APPENDIX E

TxDOT Proposed Projects in Kendall County (2023-2026)

APPENDIX CONTENTS

TxDOT Projects (2008-2022) .............. 182
TxDOT Projects (2023-2026) .............. 186
## TxDOT Projects in Kendall County (2008-2022)

<table>
<thead>
<tr>
<th>Highway</th>
<th>County</th>
<th>Let Date</th>
<th>Cost</th>
<th>Project Class</th>
<th>Limits From</th>
<th>Limits To</th>
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<td>Jan-2008</td>
<td>$1,069,310</td>
<td>OV</td>
<td>IH-10, East of Comfort</td>
<td>IH-10, West of Comfort</td>
<td>Ultrathin Bonded Wearing Course &amp; Pavement Markings</td>
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<tr>
<td>0142-06-026</td>
<td>SH 27</td>
<td>Kendall</td>
<td>Jan-2008</td>
<td>$709,157</td>
<td>OV</td>
<td>.3 Mi West of US-87</td>
<td>Kerr/ Kendall C/L</td>
<td>Ultrathin Bonded Wearing Course And Pavement Markings</td>
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<td>0072-05-082</td>
<td>IH-10</td>
<td>Kendall</td>
<td>Dec-2011</td>
<td>$1,993,388</td>
<td>OV</td>
<td>1.95 Mi S of Kendall/Kerr C/L</td>
<td>16.08 Mi S of Kendall/Kerr C/L</td>
<td>Micro-surfacing &amp; Pavement Markings</td>
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<tr>
<td>0072-06-068</td>
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<td>Dec-2011</td>
<td>$873,064</td>
<td>OV</td>
<td>16.08 Mi S of Kendall/Kerr C/L</td>
<td>Kendall/ Bexar C/L</td>
<td>Micro-surfacing &amp; Pavement Markings</td>
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<tr>
<td>1042-02-021</td>
<td>SH 46</td>
<td>Kendall</td>
<td>Feb-2016</td>
<td>$724,791</td>
<td>OV</td>
<td>Spencer Rd.</td>
<td>US 87</td>
<td>Base Repair, Mill, Seal Coat, Overlay And Pavement Markings</td>
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<tr>
<td>0072-14-028</td>
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<td>Kendall</td>
<td>Jan-2018</td>
<td>$1,983,029</td>
<td>OV</td>
<td>IH-10 N</td>
<td>IH-10 S</td>
<td>Overlay And Pavement Markings</td>
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<tr>
<td>1042-09-035</td>
<td>RM 474</td>
<td>Kendall</td>
<td>Mar-2019</td>
<td>$1,906,117</td>
<td>OV</td>
<td>0.48 Miles North of Adler Road</td>
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<td>Base Repair, Sealcoat, Overlay &amp; Pavement Markings</td>
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<td>0142-15-028</td>
<td>IH-10</td>
<td>Kendall</td>
<td>Jul-2019</td>
<td>$4,938,415</td>
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<td>Kendall/Kerr C/L</td>
<td>0.09 Miles N of FM-473</td>
<td>Overlay And Pavement Markings On Main Lanes</td>
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<tr>
<td>0072-06-064</td>
<td>IH-10</td>
<td>Kendall</td>
<td>Oct-2019</td>
<td>$2,599,609</td>
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<td>Cibolo Creek</td>
<td>SH-46</td>
<td>Overlay And Pavement Markings On Main Lanes</td>
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<tr>
<td>1042-09-029</td>
<td>RM 474</td>
<td>Kendall</td>
<td>Sep-2011</td>
<td>$2,053,021</td>
<td>OV</td>
<td>1.5 Mi N of US-87 (Adler St.)</td>
<td>.</td>
<td>Rehabilitate &amp; widen to provide turn lanes, curb, sidewalk &amp; reconfig intersection at Esser Rd.</td>
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<tr>
<td>1899-01-018</td>
<td>RM 1376</td>
<td>Kendall</td>
<td>May-2019</td>
<td>$10,189,263</td>
<td>Rer</td>
<td>.</td>
<td>US 87 B</td>
<td>Rehabilitate And Widen Narrow Roadway</td>
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**Cost**  
$37,900,518

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**Bridges**

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<th>County</th>
<th>Let Date</th>
<th>Cost</th>
<th>Proj. Class</th>
<th>Limits From</th>
<th>Limits To</th>
<th>Project Description</th>
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<tr>
<td>0915-11-021</td>
<td>CR</td>
<td>Kendall</td>
<td>Nov-2010</td>
<td>$644,507</td>
<td>Br</td>
<td>River Bend Rd</td>
<td>Henning Crossing</td>
<td>Replace Narrow Bridge &amp; Approaches</td>
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<tr>
<td>0915-11-022</td>
<td>CR</td>
<td>Kendall</td>
<td>Nov-2010</td>
<td>$833,979</td>
<td>Br</td>
<td>River Bend Rd</td>
<td>Seidensticker Crossing</td>
<td>Replace Existing Low Water Crossing with Slab Span Bridge</td>
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<td>0915-11-026</td>
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<td>Apr-2011</td>
<td>$408,810</td>
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<td>Zoeller Ln @ Guadalupe River</td>
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<td>0915-11-031</td>
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<td>Jan-2017</td>
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<td>Mill Dam Road, .6 Mi S of SH-27</td>
<td>Guadalupe River</td>
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<td>0072-05-081</td>
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<td>EFR at Cibolo Creek</td>
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<td>Block Creek</td>
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<td>Rehab Bridge &amp; Approaches</td>
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<tr>
<th>Control Section Job</th>
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<th>Proj. Class</th>
<th>Limits From</th>
<th>Limits To</th>
<th>Project Description</th>
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<tbody>
<tr>
<td>0915-11-025</td>
<td>CR</td>
<td>Kendall</td>
<td>Apr-2011</td>
<td>$304,512</td>
<td>Bwr</td>
<td>Marquardt Rd at Violet Creek</td>
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<td>Replace Bridge &amp; Approaches</td>
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<td>0072-14-024</td>
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<td>Kendall</td>
<td>Jul-2012</td>
<td>$943,106</td>
<td>Bwr</td>
<td>Cibolo Creek</td>
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<td>Widen Narrow Bridge &amp; Approaches</td>
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Cost $8,650,797

**Mobility/Operational**

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<th>Let Date</th>
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<th>Limits To</th>
<th>Project Description</th>
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<tbody>
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<td>0072-14-026</td>
<td>US-87</td>
<td>Kendall</td>
<td>Feb-2009</td>
<td>$366,931</td>
<td>Wnf</td>
<td>65 Mi from IH-10</td>
<td>9 Mi from IH-10</td>
<td>Widen Existing Roadway To Add Continuous Left Turn Lane</td>
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<tr>
<td>0215-06-039</td>
<td>SH-46</td>
<td>Kendall</td>
<td>Jul-2018</td>
<td>$11,710.628</td>
<td>Wnf</td>
<td>Herff Road</td>
<td>Ammann Road</td>
<td>Expand From 2 Lanes To 4 Lanes With Raised Median or Continuous Left Turn Lane</td>
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<tr>
<td>0072-06-075</td>
<td>IH-10</td>
<td>Kendall</td>
<td>Mar-2018</td>
<td>$34,617.612</td>
<td>Foi</td>
<td>US-87South ”Y”</td>
<td>Cascade Caverns/Scenic Loop</td>
<td>Reconstruct grade separation at US-87 S. “Y”, reconfigure ramps &amp; widen frontage roads to convert to one way operation</td>
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<tr>
<td>0072-06-076</td>
<td>IH-10</td>
<td>Kendall</td>
<td>Mar-2018</td>
<td>$24,687.889</td>
<td>Foi</td>
<td>SH-46</td>
<td>US-87South “Y”</td>
<td>Reconstruct Grade Separation At SH-46, Reconfigure Ramps And Widen Eb Freeway Road To Convert To One Way Operation</td>
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<tr>
<td>0072-06-074</td>
<td>IH-10</td>
<td>Kendall</td>
<td>Apr-2019</td>
<td>$17,816.513</td>
<td>Foi</td>
<td>Cascade Caverns/Scenic Loop</td>
<td>Kendall/Bexar County Line</td>
<td>Reconfigure Ramps And Widen Frontage Road To Convert To One Way Operation</td>
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<tr>
<td>0215-06-037</td>
<td>SH-46</td>
<td>Kendall</td>
<td>Aug-2016</td>
<td>$5,575.748</td>
<td>Sp2</td>
<td>US-87</td>
<td>Kendall/Comal C/L</td>
<td>Widen Roadway To Provide Passing Lanes</td>
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<tr>
<td>0215-06-027</td>
<td>SH-46</td>
<td>Kendall</td>
<td>Apr-2008</td>
<td>$720,556</td>
<td>Msc</td>
<td>3 Mi E of Sharon Lane</td>
<td>65 Mi E of Sharon Lane</td>
<td>Widen R/Wy To Add Left Turn Lane &amp; Traffic Signal</td>
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<tr>
<td>0215-06-028</td>
<td>SH-46</td>
<td>Kendall</td>
<td>Apr-2008</td>
<td>$161,686</td>
<td>Msc</td>
<td>3 Mi E of Sharon Lane</td>
<td>45 Mi E of Sharon Lane</td>
<td>Widen R/Wy To Add Deceleration Lane</td>
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<td>0215-06-031</td>
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<td>Kendall</td>
<td>Jun-2014</td>
<td>$1,830.813</td>
<td>Msc</td>
<td>Herff Road</td>
<td>.</td>
<td>Intersection Improvements</td>
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<td>0072-06-071</td>
<td>IH-10</td>
<td>Kendall</td>
<td>Sep-2014</td>
<td>$3,536.441</td>
<td>Msc</td>
<td>SH-46</td>
<td>4 Mi West of US-87</td>
<td>Reconfigure Ramps Frontage Roads And Intersections</td>
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<tr>
<td>0072-06-072</td>
<td>IH-10</td>
<td>Kendall</td>
<td>Aug-2015</td>
<td>$11,578.718</td>
<td>Msc</td>
<td>Scenic Loop Road</td>
<td>.</td>
<td>Replace IH-10 Bridges, Reconstruct &amp; Widen Scenic Loop To 4 Lanes, Sidewalk, Bike Accommodations &amp; Intersection Improvements</td>
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</table>

Cost $120,267,521

**Safety**

<table>
<thead>
<tr>
<th>Control Section Job</th>
<th>Highway</th>
<th>County</th>
<th>Let Date</th>
<th>Cost</th>
<th>Proj. Class</th>
<th>Limits From</th>
<th>Limits To</th>
<th>Project Description</th>
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<tbody>
<tr>
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<td>CS</td>
<td>Kendall</td>
<td>Aug-2009</td>
<td>$958,407</td>
<td>Sft</td>
<td>VA LOC Around Gurtington Elementary</td>
<td>.</td>
<td>Construct Sidewalks</td>
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<td>0072-05-085</td>
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<td>Kendall</td>
<td>Oct-2009</td>
<td>$37,774</td>
<td>Sft</td>
<td>.1 Mi S of US-87</td>
<td>.95 Mi S. of US-87</td>
<td>Install Cable Median Barrier</td>
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<tr>
<td>0215-06-029</td>
<td>SH-46</td>
<td>Kendall</td>
<td>Jan-2010</td>
<td>$262,815</td>
<td>Sft</td>
<td>Brandt Road/ Los Indios Ranch Road</td>
<td>.</td>
<td>Construct Two Way Left Turn Lane</td>
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<tr>
<td>2929-03-009</td>
<td>RM-1888</td>
<td>Kendall</td>
<td>Jun-2010</td>
<td>$258,747</td>
<td>Sft</td>
<td>Gillespie C/L</td>
<td>Blanco C/L</td>
<td>Guardrail&amp;Safety Treat Fixed Objects</td>
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<tr>
<td>3212-03-016</td>
<td>FM-3351</td>
<td>Kendall</td>
<td>Aug-2010</td>
<td>$1,032,740</td>
<td>Sft</td>
<td>.072 Mi N of White</td>
<td>Water SH-46</td>
<td>Widen Existing Roadway to Add Shoulders</td>
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<tr>
<td>3212-03-017</td>
<td>FM-3351</td>
<td>Kendall</td>
<td>Aug-2010</td>
<td>$205,345</td>
<td>Sft</td>
<td>RM-473</td>
<td>SH-46</td>
<td>Safety Treat Fixed Objects</td>
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<td>Limits From</td>
<td>Limits To</td>
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<tr>
<td>1042-02-020</td>
<td>SH-46</td>
<td>Kendall</td>
<td>Feb-2015</td>
<td>$114,209</td>
<td>Sft</td>
<td>Bandera C/L</td>
<td>IH-10</td>
<td>Texturize Shoulders &amp; Centerline</td>
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<tr>
<td>0072-06-081</td>
<td>IH-10</td>
<td>Kendall</td>
<td>Nov-2016</td>
<td>$34,183</td>
<td>Sft</td>
<td>SH-46</td>
<td>.</td>
<td>Improve Traffic Signals &amp; Safety Lighting At Intersection</td>
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<tr>
<td>0072-10-006</td>
<td>FM-289</td>
<td>Kendall</td>
<td>Jul-2018</td>
<td>$783,135</td>
<td>Sft</td>
<td>1.1 Mi NW of IH-10</td>
<td>IH-10</td>
<td>Provide Additional Paved Surface Width</td>
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<tr>
<td>1042-01-037</td>
<td>RM-474</td>
<td>Kendall</td>
<td>Jul-2020</td>
<td>$69,604</td>
<td>Sft</td>
<td>.49 Mi N of Phillip Rd</td>
<td>1.4 Mi S of Krautzberg Rd</td>
<td>Install Advance Warning Signals &amp; Signs, High Friction Surface Treatment, Profile Edgeline &amp; Centerline Markings</td>
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<tr>
<td>0142-09-044</td>
<td>RM-473</td>
<td>Kendall</td>
<td>Jul-2021</td>
<td>$911,954</td>
<td>Sft</td>
<td>.727 Mi W of RM-474</td>
<td>Rm 474</td>
<td>Provide Additional Paved Surface Width, Profile Centerline &amp; Edgeline Pavement Markings</td>
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<tr>
<td>0142-10-025</td>
<td>RM-473</td>
<td>Kendall</td>
<td>Jul-2021</td>
<td>$2,081,702</td>
<td>Sft</td>
<td>1.5 Mi E of FM-3351</td>
<td>Blanco C/L</td>
<td>Led Chevrons, Safety Treat Fixed Objects, Add'l Paved Surface Width, Edge/centerline Profile Pavement Markings</td>
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<tr>
<td>0142-10-026</td>
<td>RM-473</td>
<td>Kendall</td>
<td>Jul-2021</td>
<td>$783,499</td>
<td>Sft</td>
<td>RM-474</td>
<td>1.56 Mi E of RM-474</td>
<td>Provide Additional Paved Surface Width, Profile Centerline &amp; Edgeline Pavement Markings</td>
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<tr>
<td>259-09-007</td>
<td>FM-1621</td>
<td>Kendall</td>
<td>Jun-2022</td>
<td>$7,314,033</td>
<td>Sft</td>
<td>IH-10 Wb Fr</td>
<td>N Front St</td>
<td>Provide Additional Paved Surface Width, Milled Edgeline &amp; Centerline Rumble Strips</td>
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<td>0072-14-025</td>
<td>US-87</td>
<td>Kendall</td>
<td>Oct-2012</td>
<td>$733,996</td>
<td>Ts</td>
<td>In Boerne at Schol ST, FM-474</td>
<td>Rosewood, SH-46 (N) &amp; Walmart</td>
<td>Upgrade Existing Traffic Signals</td>
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Cost $20,493,7

### Miscellaneous

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<th>Let Date</th>
<th>Cost</th>
<th>Proj. Class</th>
<th>Limits From</th>
<th>Limits To</th>
<th>Project Description</th>
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<td>0072-14-030</td>
<td>US-87</td>
<td>Kendall</td>
<td>Oct-2018</td>
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<td>Lse</td>
<td>Richter Ave</td>
<td>E. San Antonio Ave</td>
<td>Landscape Development</td>
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<td>0915-11-032</td>
<td>Various</td>
<td>Kendall</td>
<td>Jan-2022</td>
<td>$105,042</td>
<td>Twp</td>
<td>Old Tunnel Wildlife Management Area</td>
<td>Project 1</td>
<td>Seal Coat Park Roads, Parking Lots And Campsite Pullouts</td>
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<tr>
<td>0072-14-020</td>
<td>US-87</td>
<td>Kendall</td>
<td>Feb-2009</td>
<td>$2,345,884</td>
<td>Msc</td>
<td>Fredrick Street</td>
<td>San Antonio Street</td>
<td>Storm Sewer</td>
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<td>0915-11-020</td>
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<td>Kendall</td>
<td>Aug-2009</td>
<td>$200,000</td>
<td>Msc</td>
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<td>Reconstruct Parking</td>
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<td>$2,032,776</td>
<td>Msc</td>
<td>Various Locations</td>
<td>The City of Boerne</td>
<td>Trail System Expansion-extend Existing Old No. 9 Trail South From City Park 1.8 Mi &amp; North To Heath Library</td>
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Cost $4,872,130

Total Projects Cost $192,184,747

Total Number of Projects 96
## TxDOT Proposed Projects in Kendall County (2023-2026)

### Maintenance

<table>
<thead>
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<th>County</th>
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<td>SC</td>
<td>Austin Dr South</td>
<td>Frederick Creek</td>
<td>Seal Coat &amp; Pavement Markings On Elfr</td>
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<td>0072-06-086</td>
<td>IH-10</td>
<td>Oct-2022</td>
<td>$2,267</td>
<td>SC</td>
<td>IH-10 Wb Exit Ramp</td>
<td>John's Road</td>
<td>Seal Coat &amp; Pavement Markings On Wbfr</td>
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<td>IH-10</td>
<td>Oct-2022</td>
<td>$23,087</td>
<td>SC</td>
<td>Boerne City Park Entrance</td>
<td>John's Road</td>
<td>Seal Coat &amp; Pavement Markings On Wbfr</td>
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<td>0142-10-027</td>
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<td>Oct-2024</td>
<td>$388,642</td>
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<td>Kendall/Blanco C/L</td>
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<td>RM-473</td>
<td>Greyhound Lane</td>
<td>Seal Coat &amp; Pavement Markings</td>
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<td>Oct-2025</td>
<td>$185,275</td>
<td>SC</td>
<td>Gillespie/ Kendall C/L</td>
<td>Kendall/Kerr C/L</td>
<td>Seal Coat &amp; Pavement Markings</td>
</tr>
<tr>
<td>0072-04-036</td>
<td>US-87</td>
<td>Oct-2025</td>
<td>$580,872</td>
<td>SC</td>
<td>Kerr/Kendall C/L</td>
<td>IH-10 South</td>
<td>Seal Coat &amp; Pavement Markings</td>
</tr>
<tr>
<td>3212-04-009</td>
<td>FM-3351</td>
<td>Jan-2023</td>
<td>$3,311,767</td>
<td>OV</td>
<td>SH-46</td>
<td>Kendall/Comal C/L</td>
<td>Base Repair, Mill, Inlay &amp; Pavement Markings</td>
</tr>
<tr>
<td>0143-06-039</td>
<td>SH-27</td>
<td>Jan-2024</td>
<td>$7,500,000</td>
<td>Rev</td>
<td>Kerr/Kendall C/L</td>
<td>US-87</td>
<td>Rehabilitate Existing Roadway</td>
</tr>
</tbody>
</table>

**Cost** $44,495,881

### Bridges

<table>
<thead>
<tr>
<th>Highway</th>
<th>County</th>
<th>Let Date</th>
<th>Cost</th>
<th>Proj. Class</th>
<th>Limits From</th>
<th>Limits To</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0915-11-037</td>
<td>CR 33</td>
<td>Sep-2025</td>
<td>$254,000</td>
<td>BR</td>
<td>Waring-Welfare Road</td>
<td>Joshua Creek</td>
<td>Replace Bridge and Approaches</td>
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</table>

**Cost** $254,000

### Mobility/Operational

<table>
<thead>
<tr>
<th>Highway</th>
<th>County</th>
<th>Let Date</th>
<th>Cost</th>
<th>Proj. Class</th>
<th>Limits From</th>
<th>Limits To</th>
<th>Project Description</th>
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</thead>
<tbody>
<tr>
<td>0915-11-036</td>
<td>Cascade</td>
<td>May-2025</td>
<td>$9,425,844</td>
<td>Wnf</td>
<td>Cascade Caverns Rd In Boerne</td>
<td>IH-10 Frontage Rd to Buckskin Drive</td>
<td>Expand Cascade Cavern From 2 To 4 Lanes With Center Turn Lane Or Median, Expand Old San Antonio Road And Scenic Loop Road From 2 To 3 Lanes, Intersection Operational Improvements, Bike &amp; Pedestrian Improvements Including Shared Use Path.</td>
</tr>
</tbody>
</table>

**Cost** $9,425,844
<table>
<thead>
<tr>
<th>Control Section Job</th>
<th>Highway</th>
<th>County</th>
<th>Let Date</th>
<th>Cost</th>
<th>Proj. Class</th>
<th>Limits From</th>
<th>Limits To</th>
<th>Project Description</th>
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</thead>
<tbody>
<tr>
<td>3212-04-010</td>
<td>Fm 3351</td>
<td>Kendall</td>
<td>Jan-2023</td>
<td>$999,545</td>
<td>Sft</td>
<td>Kendall, Woods Dr</td>
<td>2 Mi South of SH-46</td>
<td>Widen To Install Continuous Turn Lane</td>
</tr>
<tr>
<td>0072-05-096</td>
<td>Ih 10</td>
<td>Kendall</td>
<td>Jul-2023</td>
<td>$405,852</td>
<td>Sft</td>
<td>1.3 Mi West of U-87</td>
<td>6 Mi East of US-87</td>
<td>Install Cable Median Barrier</td>
</tr>
<tr>
<td>0142-10-028</td>
<td>Rm 473</td>
<td>Kendall</td>
<td>Jul-2023</td>
<td>$359,667</td>
<td>Sft</td>
<td>RM-474</td>
<td>1 Mi East of RM-474</td>
<td>Add Left Turn Lane</td>
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<tr>
<td>1899-02-021</td>
<td>Rm 1376</td>
<td>Kendall</td>
<td>Jul-2024</td>
<td>$3,082,908</td>
<td>Sft</td>
<td>RM-473</td>
<td>8 Mi South of Upper Sisterdale Rd</td>
<td>Widen To Widen Lane(S), Construct Paved Shoulders</td>
</tr>
<tr>
<td>0215-06-047</td>
<td>Sh 46</td>
<td>Kendall</td>
<td>Sep-2024</td>
<td>$189,618</td>
<td>Sft</td>
<td>US-87</td>
<td>Kendall/Comal C/L</td>
<td>Install Signal Backplate &amp; Signal Head</td>
</tr>
<tr>
<td>3212-04-012</td>
<td>Fm 3351</td>
<td>Kendall</td>
<td>Sep-2024</td>
<td>$619,597</td>
<td>Sft</td>
<td>2 Mi North of Guthrie Rd</td>
<td>Kendall/Comal C/L</td>
<td>Install Continuous Turn Lane</td>
</tr>
</tbody>
</table>

| Cost                | $5,657,187 |
| Total Projects Cost | $59,832,912 |
| Total Number of Projects | 21 |
### Rural Transportation Improvement Program 2022-2026

<table>
<thead>
<tr>
<th>Control Section Job</th>
<th>Highway</th>
<th>County</th>
<th>Let Date</th>
<th>Cost EST.</th>
<th>Limits From</th>
<th>Limits To</th>
<th>Project Description</th>
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</thead>
<tbody>
<tr>
<td>0072-05-090</td>
<td>IH-10</td>
<td>Kendall</td>
<td>Oct. 21st</td>
<td>$540,940</td>
<td>US-87B</td>
<td>IH-10 WB ML</td>
<td>Seal coat &amp; pavement markings</td>
</tr>
<tr>
<td>0072-05-091</td>
<td>IH-10</td>
<td>Kendall</td>
<td>Oct. 21st</td>
<td>$104,001</td>
<td>FM-289</td>
<td>US-87B</td>
<td>Seal coat &amp; pavement markings on WBFR</td>
</tr>
<tr>
<td>0072-05-092</td>
<td>IH-10</td>
<td>Kendall</td>
<td>Oct. 21st</td>
<td>$74,535</td>
<td>S. of Guadalupe River</td>
<td>Joshua Ranch Road</td>
<td>Seal coat &amp; pavement markings on WBFR</td>
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<tr>
<td>0072-05-094</td>
<td>IH-10</td>
<td>Kendall</td>
<td>Oct. 21st</td>
<td>$61,365</td>
<td>US-87 (Comfort)</td>
<td>FM-289</td>
<td>Seal coat &amp; pavement markings on EBFR</td>
</tr>
<tr>
<td>1042-02-033</td>
<td>SH-46</td>
<td>Kendall</td>
<td>Oct. 21st</td>
<td>$263,791</td>
<td>Bandera/Kendall C/L</td>
<td>5 Mi West of IH-10</td>
<td>Seal coat &amp; pavement markings</td>
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<tr>
<td>0915-11-032</td>
<td>Various</td>
<td>Kendall</td>
<td>Jan. 22nd</td>
<td>$65,977</td>
<td>Wildlife Mgmt.</td>
<td></td>
<td>Seal coat park roads, parking lots &amp; campsite pullouts</td>
</tr>
<tr>
<td>2519-01-007</td>
<td>FM 1621</td>
<td>Kendall</td>
<td>Jun. 21st</td>
<td>$3,823,190</td>
<td>IH-10 WB FR</td>
<td>N. Front St.</td>
<td>Provide additional paved surface width, milled edgeline &amp; centerline rumble strips</td>
</tr>
</tbody>
</table>
## Fiscal Year 2023

<table>
<thead>
<tr>
<th>Control Section Job</th>
<th>Highway</th>
<th>County</th>
<th>Let Date</th>
<th>Cost EST.</th>
<th>Limits From</th>
<th>Limits To</th>
<th>Project Description</th>
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</thead>
<tbody>
<tr>
<td>3212-04-010</td>
<td>FM-3351</td>
<td>Kendall</td>
<td>Sept. 22nd</td>
<td>$999,545</td>
<td>Kendall Woods Dr.</td>
<td>.2 Mi S. of SH-46</td>
<td>Widen to install continuous turn lane</td>
</tr>
<tr>
<td>0072-06-085</td>
<td>IH-10</td>
<td>Kendall</td>
<td>Oct. 22nd</td>
<td>$55,053</td>
<td>Austin Dr. South</td>
<td>Frederick Creek</td>
<td>Seal coat &amp; pavement markings on EBFR</td>
</tr>
<tr>
<td>0072-06-086</td>
<td>IH-10</td>
<td>Kendall</td>
<td>Oct. 22nd</td>
<td>$2,267</td>
<td>IH-10 WB Exit Ramp</td>
<td>John’s Road</td>
<td>Seal coat &amp; pavement markings on WBFR</td>
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<tr>
<td>0072-06-087</td>
<td>IH-10</td>
<td>Kendall</td>
<td>Oct. 22nd</td>
<td>$23,087</td>
<td>Boerne City Park Entrance</td>
<td>John’s Road</td>
<td>Seal coat &amp; pavement markings on WBFR</td>
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<tr>
<td>3212-05-019</td>
<td>FM-3351</td>
<td>Kendall</td>
<td>Oct. 22nd</td>
<td>$412,221</td>
<td>RM-473</td>
<td>SH-46</td>
<td>Seal coat &amp; pavement markings</td>
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<tr>
<td>3212-04-009</td>
<td>FM-3351</td>
<td>Kendall</td>
<td>Feb. 23rd</td>
<td>$3,311,767</td>
<td>SH-46</td>
<td>Kendall/Comal C/L</td>
<td>Base repair, mill, inlay &amp; pavement markings</td>
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## Fiscal Year 2024

<table>
<thead>
<tr>
<th>Control Section Job</th>
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<th>Limits To</th>
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<tbody>
<tr>
<td>3212-04-011</td>
<td>FM-3351</td>
<td>Kendall</td>
<td>Oct. 23rd</td>
<td>$126,600</td>
<td>SH-46</td>
<td>Kendall/Comal C/L</td>
<td>Seal coat &amp; pavement markings</td>
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<tr>
<td>0142-06-029</td>
<td>SH-27</td>
<td>Kendall</td>
<td>Jan. 24th</td>
<td>$7,500,000</td>
<td>Kerr/Kendall C/L</td>
<td>US-87</td>
<td>Rehabilitate existing roadway</td>
</tr>
<tr>
<td>0072-05-089</td>
<td>IH-10</td>
<td>Kendall</td>
<td>Feb. 24th</td>
<td>$30,994,425</td>
<td>FM-473</td>
<td>Cibolo Creek</td>
<td>Base repair, mill, inlay &amp; pavement markings</td>
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<tr>
<td>1899-02-010</td>
<td>RM-1888</td>
<td>Kendall</td>
<td>Mar. 24th</td>
<td>$5,417,260</td>
<td>Green Kingdom Rd.</td>
<td>CR-207 (Maenius Rd.)</td>
<td>Widen to widen lanes, construct paved shoulders</td>
</tr>
<tr>
<td>1899-02-021</td>
<td>RM-1376</td>
<td>Kendall</td>
<td>Jul. 24th</td>
<td>$3,082,908</td>
<td>RM-473</td>
<td>.8 Mi S. of Upper Sisterdale</td>
<td>Widen to widen lanes, construct paved shoulders</td>
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## Fiscal Year 2025

<table>
<thead>
<tr>
<th>Control Section Job</th>
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<th>Cost EST.</th>
<th>Limits From</th>
<th>Limits To</th>
<th>Project Description</th>
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<tbody>
<tr>
<td>0142-09-045</td>
<td>RM-473</td>
<td>Kendall</td>
<td>Oct. 24th</td>
<td>$357,034</td>
<td>SH-27</td>
<td>RM-1376</td>
<td>Seal coat &amp; pavement markings</td>
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<tr>
<td>0142-09-046</td>
<td>RM-473</td>
<td>Kendall</td>
<td>Oct. 24th</td>
<td>$180,363</td>
<td>RM-1376</td>
<td>RM-474</td>
<td>Seal coat &amp; pavement markings</td>
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<tr>
<td>0142-10-027</td>
<td>RM-473</td>
<td>Kendall</td>
<td>Oct. 24th</td>
<td>$224,677</td>
<td>RM-474</td>
<td>FM-3351</td>
<td>Seal coat &amp; pavement markings</td>
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<tr>
<td>0159-06-046</td>
<td>SH-46</td>
<td>Kendall</td>
<td>Oct. 24th</td>
<td>$369,855</td>
<td>Ammann Rd.</td>
<td>Kendall/Comal C/L</td>
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<tr>
<td>1042-01-038</td>
<td>RM-474</td>
<td>Kendall</td>
<td>Oct. 24th</td>
<td>$221,697</td>
<td>.2 Mi S. of the Guadalupe River</td>
<td>North Esse</td>
<td>Seal coat &amp; pavement markings</td>
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<tr>
<td>1519-01-008</td>
<td>FM-1621</td>
<td>Kendall</td>
<td>Oct. 24th</td>
<td>$140,140</td>
<td>IH-10</td>
<td>N South Front St.</td>
<td>Seal coat &amp; pavement markings</td>
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## Fiscal Year 2026

<table>
<thead>
<tr>
<th>Control Section Job</th>
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<th>Cost EST.</th>
<th>Limits From</th>
<th>Limits To</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xxxxx/xxxx</td>
<td></td>
<td></td>
<td></td>
<td>$15,000,000</td>
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<td></td>
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</tr>
</tbody>
</table>
Resolution of the Cow Creek Groundwater Conservation District

COW CREEK GROUNDWATER CONSERVATION DISTRICT

RESOLUTION REQUESTING THAT ANY TRANSPORTATION PLANNING AVOID SENSITIVE RECHARGE FEATURES WITHIN KENDALL COUNTY

WHEREAS, the Cow Creek Groundwater Conservation District is charged with the stewardship and regulation of the groundwater resources within the boundaries of Kendall County; and

WHEREAS, many known and unknown sensitive recharge features exist within the District, for example, the areas around Cibolo Creek and the Lower Glen Rose formation outcrop are recognized as significant recharge features within Kendall County; and

WHEREAS, the Lower Glen Rose formation outcrop has a high density of sensitive recharge features including closed depressions, sinkholes, caves, solution cavities, solution-enlarged fractures, swallow holes, faults, fractures, bedding plane surfaces, and reef deposits; and

WHEREAS, the District opposes the location of any major proposed transportation project that may negatively affect recharge, water quality or water quantity; and

WHEREAS, the Directors of the Cow Creek Groundwater Conservation District recognize the value of recharge and the protection of sensitive recharge areas.
NOW, therefore, be it resolved and ordered by the directors of the Cow Creek Groundwater Conservation District that:

1. The District expressly requests that any transportation planning include a geologic assessment of any proposed routes.

2. The District requests the opportunity to review and comment on any geologic assessments prepared for planning purposes.

3. The District requests that alternative/existing routes be given priority consideration to any route proposing a new crossing of the Cibolo Creek.

4. The District requests that extraordinary engineering measures be taken to protect and maintain sensitive recharge features and provide for protection from spills and releases.

5. The District further requests that if a proposed route must cross any sensitive recharge areas, then that route should be designed as an elevated parkway to limit on and off ramps and impact to the surface geology/hydrology.

Signed and entered this 9th day of August 2021.

Milan J. Michalec
Board President

Attested by:
APPENDIX H

Resolution of the Trinity Groundwater Conservation District
STATE OF TEXAS §
COUNTY OF BEXAR §

TRINITY GLEN ROSE GROUNDWATER CONSERVATION DISTRICT

RESOLUTION BY THE BOARD OF DIRECTORS OF THE TRINITY GLEN ROSE GROUNDWATER CONSERVATION DISTRICT REQUESTING THAT ANY MOBILITY PLANNING AND ASSOCIATED DRAINAGE IMPROVEMENTS TAKE INTO CONSIDERATION ALL KARST FEATURES THAT MAY CONTRIBUTE TO AQUIFER RECHARGE.

WHEREAS, the Trinity Glen Rose Groundwater Conservation District ("District") is charged by the Texas Legislature with providing for the conservation, preservation, protection, and prevention of waste of groundwater, and of groundwater resources within District boundaries under §36.0015, Tex. Water Code; and

WHEREAS, many identified and unidentified sensitive recharge features exist within the District, including, the Cibolo Creek and adjacent area and the Lower Glen Rose outcrop, and are recognized as significant features within Bexar County; and

WHEREAS, the Lower Glen Rose formation outcrop has a high density of sensitive features including closed depressions, sink holes, caves, solution cavities, solution enlarged fractures, swallow holes, faults, fractures, fissures throughout the area; and

WHEREAS, the District opposes the development of any major proposed transportation project that has the potential to negatively affect recharge, water quality or water quantity of the groundwater resources.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE TRINITY GLEN ROSE GROUNDWATER CONSERVATION DISTRICT THAT:

SECTION 1. The District requests that any transportation planning include a geologic assessment of any proposed routes and that consideration be given to the sensitive nature of the Cibolo Creek and surrounding areas in developing proposed routes.

SECTION 2. The District also requests that if a proposed route must cross any sensitive geologic areas, then measures be taken to protect and negate any detrimental impact to groundwater.

The motion passed with ___ ayes, and ___ nayes.

PASSED AND APPROVED this the 9th day of September 2021.

TRINITY GLEN ROSE GROUNDWATER CONSERVATION DISTRICT
SIGNED AND SEALED the 9th day of September 2020

[Signature]
Joseph duMenil, President

ATTESTED BY:

[Signature]
George Wissmann, General Manager