



2014 City of Norman

*Moving Forward*

# COMPREHENSIVE TRANSPORTATION PLAN



In Association with:  
Alliance Transportation Group  
Garver

**Final Report: May 13, 2014**  
**Adopted by Resolution No. R-1314-112**



A RESOLUTION OF THE COUNCIL OF THE CITY OF NORMAN, OKLAHOMA ADOPTING THE COMPREHENSIVE TRANSPORTATION PLAN ESTABLISHING A FRAMEWORK FOR TRANSPORTATION DECISIONS AND IMPROVEMENTS THAT ARE PLANNED, DESIGNED AND MAINTAINED TO INTEGRATE VEHICULAR, WALKING, BICYCLING AND TRANSIT USE WHILE PROMOTING SAFE AND EFFICIENT OPERATIONS FOR ALL USERS IN THE COMMUNITY.

- § 1. WHEREAS, the Norman City Council adopts its first Comprehensive Transportation Plan; and
- § 2. WHEREAS, the Comprehensive Transportation Plan is based on guiding principles, goals and objectives established as part of the 2011 Community Listening Phase and reflect the desire for safe, convenient and widely available well connected modes of transportation for all people; and
- § 3. WHEREAS, the Comprehensive Transportation Plan expands on the work of the Norman 2025 Land Use and Transportation Plan from a transportation perspective; and
- § 4. WHEREAS, the Comprehensive Transportation Plan addresses integrated modes of travel within Norman and its planning area on thoroughfares, for bicycles and pedestrians, and for transit systems; and
- § 5. WHEREAS, the Comprehensive Transportation Plan includes multi-modal components, forecasted roadway projections, and more accurate socio-demographic data; and
- § 6. WHEREAS, City staff will be able to use the Comprehensive Transportation Plan as a tool to properly classify and design streets, to better coordinate complex transportation issues with other entities, and to build the annual Capital Improvement Program; and
- § 7. WHEREAS, the Norman City Council appointed a 45-member Transportation Subcommittee to assist in the guidance and development of the multi-modal plan elements; and
- § 8. WHEREAS, the City held numerous public and informational meetings, supported by project website, to solicit input in to the Comprehensive Transportation Plan, and the citizens who attended expressed an interest in having mobility choices to move about the city, and the Comprehensive Transportation Plan reflects those concerns; and
- § 9. WHEREAS, the Comprehensive Transportation Plan is intended to be used as a guide in day-to-day decisions affecting transportation in Norman and will be updated periodically to reflect the growth of the community; and



- § 10. WHEREAS, the Comprehensive Transportation Plan contains four Chapters with Chapter 1 containing the Basis for the Plan, Chapter 2 contains the Transportation System Needs, Chapter 3 contains the Transportation System Master Plan, and Chapter 4 contains the Transportation System Implementation Plan; and
- § 11. WHEREAS, the Comprehensive Transportation Plan contains eight Appendices with Appendix A containing Public Involvement materials, Appendix B contains information relative to Current Conditions and Trends, Appendix C contains the Modeling of Future Conditions, Appendix D contains Street Typical Sections, Appendix E contains the Special Corridor Concepts, Appendix F contains Other Corridor Concepts, Appendix G contains Complete Streets Policies and Guidelines, and Appendix H contains the various Project Assessments; and
- § 12. WHEREAS, the Comprehensive Transportation Plan contains a Norman Thoroughfare Plan (Figure 3.6) and a Bicycle and Pedestrian Transportation Plan (Figure 3.7) that will supersede the functional classifications of roadways referenced in Norman 2025 Land Use and Transportation Plan and the 2013 Edition of the Bike Route Map upon adoption of the Comprehensive Transportation Plan; and
- § 13. WHEREAS, the acceptance of the data and maps and adoption of the principles outlined in the Comprehensive Transportation Plan does not commit the City of Norman to any specific funding strategy.
- § 14. WHEREAS, nothing in the Comprehensive Transportation Plan is intended to negate or prevent future planning efforts including but not limited to the 2014 Center City Vision project and an update of the 2025 Land Use and Transportation Plan which will provide more up-to-date analyses of and more refined approaches to traffic, multi-modal and parking concerns.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF NORMAN, OKLAHOMA, AS FOLLOWS:

- § 15. The Comprehensive Transportation Plan, dated 5/13, 2014, as included in Exhibit A" to this Resolution, is hereby adopted and is hereby recognized as the Norman Comprehensive Transportation Plan



AND ADOPTED this 13<sup>th</sup> day of May, 2014.

Cindy Rostel  
 Mayor

Lorenda Hall  
 City Clerk

## Acknowledgements

### City Council

Cindy Rosenthal, Mayor	Robert Castleberry, Ward 3	James Griffith, Ward 6
Greg Heiple, Ward 1	Gregory Jungman, Ward 4	Stephen Holman, Ward 7
Tom Kovach, Ward 2	Lynne Miller, Ward 5	Chad Williams, Ward 8

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### Citizens Visioning Committee (CVC)

Note: (CVC) beside the person’s name indicates original membership in the CVC that contributed to the formation of the initial project guiding principles, goals and strategies and helped to formulate the scope of the plan development effort. From that initial set of CVC members, additional members were added to assist with input and feedback to the project development team of city staff and consultants, and were grouped into subcommittees.

#### CVC Subcommittee: Automobile Capacity, Quality of Service and Parking

Joe Sparks (CVC), Co-Chair	Robin Allen	Chuck Thompson (CVC)
Charles Hollingsworth, Co-Chair	Bill Nations	Suzanne Mcauley
Rainey Powell	Stephen Koranda	
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Brad Worster (CVC), Co-Chair	David Huddleston	Larry Walker (CVC)
Evan Dunn	John High	Roger Brown (CVC)
Jennifer Newell	Marguerite Larson	Renee O’Leary (CVC)

#### CVC Subcommittee: Transit Capacity and Quality of Service

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Tom Sherman (CVC), Co-Chair	Karleen Smith	Teresa Capps (CVC)
Rachel Butler	Linda Shannon	Marion Hutchison (CVC)
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## List of Abbreviations

AASHTO	American Associations of State Highway and Transportation Officials
ACOG	Association of Central Oklahoma Governments
ADA	Americans with Disabilities Act
APS	Accessible Pedestrian Signals
ARRA	American Recovery and Reinvestment Act
BAC	Bicycle Advisory Committee
CART	Cleveland Area Rapid Transit
CCS	Commuter Corridors Study
CDBG	Community Development Block Grant
CIP	Capital Improvements Program
COTPA	Central Oklahoma Transportation and Parking Authority
CTP	Comprehensive Transportation Plan
CVC	Citizen Visioning Committee
E+C	Existing plus Committed
FAA	Federal Aviation Administration
FAF	Freight Analysis Framework
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
HSR	High Speed Rail
LOS	Level of Service
MAP-21	Moving Ahead for Progress in the 21st Century Act
MTP	Metropolitan Transportation Plan
NACTO	National Association of City Transportation Officials
ODOT	Oklahoma Department of Transportation
OKC	Oklahoma City
OU	University of Oklahoma
STIP	State Transportation Improvement Program
STP-UZA	Surface Transportation Plan, Urbanized Area
TIA	Traffic Impact Assessment
TIF	Tax Increment Financing
TIP	Transportation Improvement Program
TMC	Traffic Management Center
TRB	Transportation Research Board
V/C	Volume to Capacity ratio



## Chapter 1: Basis for the Plan

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## Introduction

The City of Norman has completed a multi-year process to develop a Comprehensive Transportation Plan (CTP) for our community. The Norman CTP identifies future transportation needs for the area, goals and policies, and short-term and long-term capital investments for improvements to existing roads, construction of new roads, bicycle, pedestrian, and transit facilities. It will provide a framework for a balanced transportation system that offers choices in how people travel, supported by a realistic approach to fund improvements.

The “Moving Forward” Plan, as the Norman CTP has been named, will serve as Norman’s long-term vision for a range of transportation options and accommodations including personal and commercial vehicles, bicycling, walking, and public transit services. As an initial stage of the Norman CTP, the City conducted a visioning process where a series of public meetings identified many issues to be addressed and the goals to be achieved by the CTP. Community input, including an on-line survey, provided during 2011 and early 2012, helped to provide direction for preparing goals and policies and served as the foundation and vision for drafting the Norman CTP, which was approved to proceed at the end of 2012 with a target for adoption in early 2014.

Two groups were appointed to guide the development of the scope for the development of the Norman CTP. These include a Citizens Visioning Committee (CVC) and a Steering Committee. The CVC assisted in developing a mental picture of what residents want Norman to look and feel like in the future and continued that involvement during development of the CTP. The Steering Committee served as the liaison to the Norman City Council and kept the decision-makers in step with the plan as it progressed. These committees provided input and recommendations and helped guide the community involvement for the CTP. Further information on the formative public input and the work of these committees can be found in **Appendix A**.

## Guiding Principles, Goals and Objectives

In 2011, an initial phase of effort involved the development of vision and goals for the Norman CTP. A series of community listening sessions were conducted in Council Wards around Norman as well as with special interest groups during late October and November of 2011 to obtain input from residents and stakeholders in the community in an effort to establish goals and priorities for preparing the Norman CTP. These meetings involved listening, conversation, and deliberation in exploring transportation options necessary to accommodate future growth and enhance the quality of life in Norman. Community input helped provide policy direction for decisions related to planning transportation facilities in the City. The primary goal of this process was to plan for a well-balanced transportation system that offers choices in how people travel and is supported by a realistic plan to fund these improvements. Guiding principles and numerous project goals were developed and strategies put forth that were considered to generally represent the community values and aspirations that were expressed during this process. Documentation on this formative process is included in Appendix A. To guide the development of the Norman CTP and its implementation, the compilation of five guiding principles, twenty goals and numerous draft strategies were refined into a set of five goals and associated objectives to re-state the formative work.

## *Guiding Principle#1: A Special Place to Live*

A vibrant Norman community in 2035 will be achieved by ensuring transportation and infrastructure investments that focus on both people and places. These investments should enhance transportation choices and accessibility, and also create a unique place with lasting value that blends seamlessly with the character and vision of Norman's neighborhoods, employment centers and activity centers.

**Goal #1: Provide a transportation system planned and designed with people and places in mind, including amenities and aesthetic treatments to enhance the traveling experience for all modes of transportation.**

**Objective S1.** Adopt policies, ordinances and programs that promote multimodal, context sensitive considerations and aesthetics into the planning and project funding of transportation facilities in Norman.

**Objective S2.** Institute departmental processes and procedures to ensure coordination of land use and transportation planning, while including context sensitive solutions for design and implementation of transportation corridors and facilities in Norman.

**Objective S3.** Provide transportation investments and procedures that help enhance traffic access and circulation, walkability, bikeability, aesthetics and amenities of the central core of Norman including Downtown, Campus Corner, the University of Oklahoma (OU), and surrounding neighborhoods.

**Objective S4.** Enhance the aesthetics of the section line roadway corridors that lead residents and visitors to the central core and major areas of retail and development and to significant attractions in Norman such as Lake Thunderbird State Park.

**Objective S5.** Invest in improvements to minimize the impacts of railroad delay and noise through Norman.

**Objective S6.** Provide a wayfinding system of signage, markers and other devices to inform visitors and residents of the special areas and attractions in Norman.

### ***Guiding Principle #2: Mobility***

The provision of transportation options and solutions within Norman will create a seamless system. This principle is illustrated in Norman CTP through efficient system management and operations, through context sensitive and complete streets designs, and with a range of accessible and convenient transportation choices. A multi-modal network will provide connections between neighborhoods and destinations throughout Norman, with good connections to the Oklahoma City region, through a system offering opportunities to drive, walk, bike and take transit.

**Goal #2: Provide efficient and effective mobility to, from and within Norman by providing multi-modal transportation options and management for existing and anticipated future needs.**

**Objective M1.** Provide mobility for people who live, work and visit Norman - especially those who are economically, socially or physically challenged - in order to support their full participation in society and contributions to Norman’s economic productivity.

**Objective M2.** Invest in timely street improvements for a network of section line roads in the area beyond the core of Norman that support the effective movement of vehicles around rather than through the central core of Norman, while accommodating bicyclists and pedestrians in the roadway corridor.

**Objective M3.** Invest in improvements to the arterial and collector street network, as well as parking, in the core of Norman to support the balanced mobility of motorists, pedestrians, bicyclists and commerce.

**Objective M4.** Provide a modern, corridor-focused transit network that has enhanced frequency and hours of service and efficient connectivity to current and future regional transit services with the intent to provide viable options to the personal vehicle.

**Objective M5.** Support efforts to develop a regional transit system including rail transit, and serve as leaders in regional rail transit discussions.

**Objective M6.** Provide a network of bicycle and pedestrian facilities, including sidewalks, bike routes, bike lanes and paths, that provides mobility options, regional and multimodal connectivity and recreational opportunities for Norman residents.

### ***Guiding Principle #3: Maintain and Improve Existing Infrastructure***

Through efficient system management, Moving Forward places high priority upon maintenance, rehabilitation, safety and reconstruction of basic infrastructure systems. As neighborhoods in Norman mature, we will rise to the challenge of keeping them viable and strong by maintaining high quality transportation infrastructure including streets, sidewalks, and other public infrastructure facilities. Investments will provide a balance between the transportation needs of the community and the needs of the local neighborhoods.

#### **Goal #3: Prioritize investments to ensure the maintenance, rehabilitation, safety and reconstruction of current infrastructure systems.**

**Objective P1.** Design, operate and manage the transportation system to maintain or improve the quality of multimodal mobility, access and safety for those traveling in and living within Norman.

**Objective P2.** Develop and implement transportation performance measures and programs to regularly monitor, evaluate, and forecast the degree to which the transportation system investments accomplish community goals and mobility objectives.

**Objective P3.** Minimize the impacts of project implementation upon the multimodal access to businesses and neighborhoods during construction.

**Objective P4.** Manage, reduce and avoid roadway congestion and increase mobility and safety for all roadway users through operational improvements, targeted capacity enhancements, and promotion of alternative means of transportation.

**Objective P5.** Develop and promote programs to incorporate public and business observations of and assistance with the conditions assessment and maintenance of the multimodal transportation infrastructure and corridor amenities.

### ***Guiding Principle#4: Fiscal Stewardship***

Norman Moving Forward strives to provide a detailed roadmap of actions for transportation and infrastructure investments based on an approach that maximizes the benefits for multiple user groups in a way that is both fiscally and environmentally responsible. Future investments will include input from the community at large and the priorities as identified through regular ongoing dialog with stakeholders.

**Goal #4: Optimize the use of City of Norman funds and leverage additional funding for transportation to maximize the Norman public return on investment in transportation infrastructure and operations.**

**Objective F1.** Identify and pursue private, regional, state and federal revenue sources for funding multimodal transportation improvements in Norman, and actively engage in regional efforts to identify new dedicated funding sources.

**Objective F2.** Integrate state and federal long-range transportation planning factors with local and regional transportation planning to maximize future funding opportunities for surface transportation projects in Norman.

**Objective F3.** Provide transparency and meaningful public awareness, ongoing citizen input, and participation opportunities to implement and update the Norman CTP.

**Objective F4.** Plan for and preserve rights-of-way and other real property for future multimodal transportation and supporting infrastructure investments in advance of economic development.

**Objective F5.** Develop a policy and programs for city consideration of private/public partnerships and donations to fund transportation infrastructure, amenities and aesthetics.

**Objective F6.** Create and implement tax assessments for transportation and supporting improvements associated with special initiatives, including bridge repair and rail transit.



### ***Guiding Principle #5: Enhance Economic Vitality***

Norman Moving Forward supports economic vitality that promotes economic growth while using resources in an efficient and effective manner. These fiscally sound efforts are intended to achieve a diverse, vibrant local economy with a strong tax base, thus reducing the future fiscal burden on residents to provide city services.

#### **Goal #5: Invest in transportation improvements that support the physical and economic vitality of Norman’s neighborhoods, businesses, employment and education districts.**

**Objective E1.** Initiate and promote a managed parking system(s) and/or district(s) to support and encourage increased activity and density of development within the core of Norman and specifically to address the needs of Downtown, Campus Corner and OU.

**Objective E2.** Provide for effective trucking, railroad and air freight movement to, from and through Norman, including supporting facilities and airspace, while minimizing their impact on the quality of life.

**Objective E3.** Identify and promote land development strategies and suitable locations to maximize and support multi-modal development, such as mixed-use districts and transit oriented development, which maximize the benefits of transit investments.

**Objective E4.** Identify and implement policies and programs to support and incentivize development initiatives within the city by establishment of special districts for use in timely implementation of transportation improvements.

**Objective E5.** Identify and implement policies and programs to streamline the project development process and to reduce transportation improvement implementation time.

## Public Involvement

Development of the Norman CTP was an open and collaborative process involving citizens, multiple entities and various interest groups.

### *Citizens Visioning Committee*

A Citizens Visioning Committee (CVC) was convened by the Mayor and City Council to provide direct input in the formative stages of the Plan development. As part of the information gathering during the formative stages of the Plan, a Citizens Survey was conducted to assess the issues of importance to the general citizenry of Norman, which are summarized in **Appendix A**. With this input and that of the CVC, the guiding principles and a set of draft goals were developed to initiate the development of the Plan.

After the formation of the guiding principles, draft goals and strategies, the CVC membership was enhanced with additional members to focus on four modal elements to continue direct involvement and input into the development of the Plan. The CVC members were organized into four subcommittees:

1. Automobile Capacity, Quality of Service and Parking
2. Bicycle and Pedestrian Mobility, Safety and Streetscape
3. Transit Capacity and Quality of Service
4. Freight Movement, Airport and Emergency Response

The subcommittees met with the plan development team five times throughout the process, helping to refine the goals and develop a set of objectives for the Plan, affirm the identification of the existing transportation conditions, discuss and prioritize the transportation system and policy needs for Norman, provide feedback on potential system improvements. Further information on the activities and contributions of the CVC and its subcommittees is included in **Appendix A**.

### *Public Meetings and Presentations*

Two public meetings and several interim presentations were made to review and discuss the existing conditions and needs, modal plans, policies and programs and implementation strategies for the CTP. The materials presented at these meetings and some of the comments received are summarized in **Appendix A** and included:

- City Council Briefing on Goals & Objectives, Existing Conditions and Needs
- Public Open House #1: Goals & Objectives, Existing Conditions and Needs
- OU Student Open House - Goals & Objectives, Existing Conditions and Needs
- Presentation to Chamber of Commerce Airport & Transportation Committee
- Presentation to City Bicycle Advisory Committee
- City Council Briefing on Modal Plans, Policies and Programs
- Public Open House #2: Modal Plans, Policies and Programs
- Public Hearing #1: Modal Plans, Policies and Programs, Implementation
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### **Interstate Highway 35 (I-35)**

I-35 is a freeway facility carrying the highest traffic volumes through Norman and, though it primarily serves trips that begin and end outside of Norman, the I-35 corridor serves as a critical linkage between Norman and Oklahoma City. Within Norman, the current average annual daily traffic volume on I-35 (total of both directions) range from 70,000 south of SH9, to 97,000 at Indian Hills Road, and increasing at each interchange to the north of Norman. Current ODOT plans call for the widening of I-35 to six-lanes to just south of Norman by 2018. Currently, improvements are underway at SH9, Lindsey Street and Main Street and ODOT intends improvements at Indian Hills Road as part of the overall widening effort. In 2011, as part of the I-35 widening, improvements were made to the northeast quadrant of the Robinson Road interchange.

The continued growth of the University North Park area, as well as the northern portion of Norman in general, place a critical need for the evaluation of interchanges at Rock Creek Road and Indian Hills Road. Analyses of traffic operations under full build-out of University North Park (one as part of the CTP and another done separately) point to a critical need for additional access to/from I-35 in order to relieve heavy demands forecasted to occur at Robinson Street. Access to and from I-35 near Rock Creek Road would provide direct benefit to forecasted area traffic operations, if implemented.

As Norman continues to grow to the north (coupled with southward growth from Moore and Oklahoma City), reconfiguration of the Indian Hills Road interchange should also be considered. As currently planned, enhancements to the current configuration may not adequately accommodate projected travel demands of the area. Reconfiguration to a more conventional footprint should be considered in order to maximize the carrying capacity of the interchange as well as, to facilitate adequate access to this growth area.

### **State Highway 9 (SH-9), East of I-35**

East of I-35, SH-9 is an important divided/non-divided highway route that serves east-west traffic in south Norman. Projects have been programmed to address current capacity and safety issues. There may be additional room for improvements, specifically along the segment of SH-9 just east of I-35 near the OU campus area. Consideration of adaptive traffic signal control along this segment of SH-9 could provide a method to ensure long-term quality operations for highly variable traffic demands on this corridor.

### **SH-9, West of I-35**

West of I-35, SH-9 is offset from the east segment and south of the Canadian River. SH-9 connects across rural areas to US 62, and then along the tolled H.E. Bailey Spur to I-44. This corridor facilitates the movement from I-44 in the west to I-35 at Norman. When I-35 is congested, SH 9 also provides an alternative route for drivers from Norman and points south to drive into Oklahoma City via I-44, though tolls would be incurred and travel length may be longer. The corridor potential appears to be underutilized.

### **US Highway-77 (US-77)**

US-77 is a vital route providing a mixture of mobility and access through core Norman. US-77 shares its alignment with I-35 at the north city limit before splitting off at Flood Avenue, sharing an alignment with parts of Flood Avenue, Tecumseh Road, 12<sup>th</sup> Avenue E, and Classen Boulevard. US-77 is limited as a



north-south regional mobility route with I-35 providing a better option for most regional travelers, particularly those with trip ends outside of Norman city limits. Maintaining US-77 as a viable regional transportation alternative for trips travelling to and from the north, the southeast, or points in between should remain a priority.

### Arterial Roadways

The one mile grid of arterial roadways is disrupted by natural and man-made features, including: the BNSF railroad and the Downtown grid that is aligned with the railroad, the Canadian River, Lake Thunderbird and Lake Stanley Draper, and the creeks and tributaries to the lakes. These features constrain and channelize area traffic connectivity to key select arterial corridors.

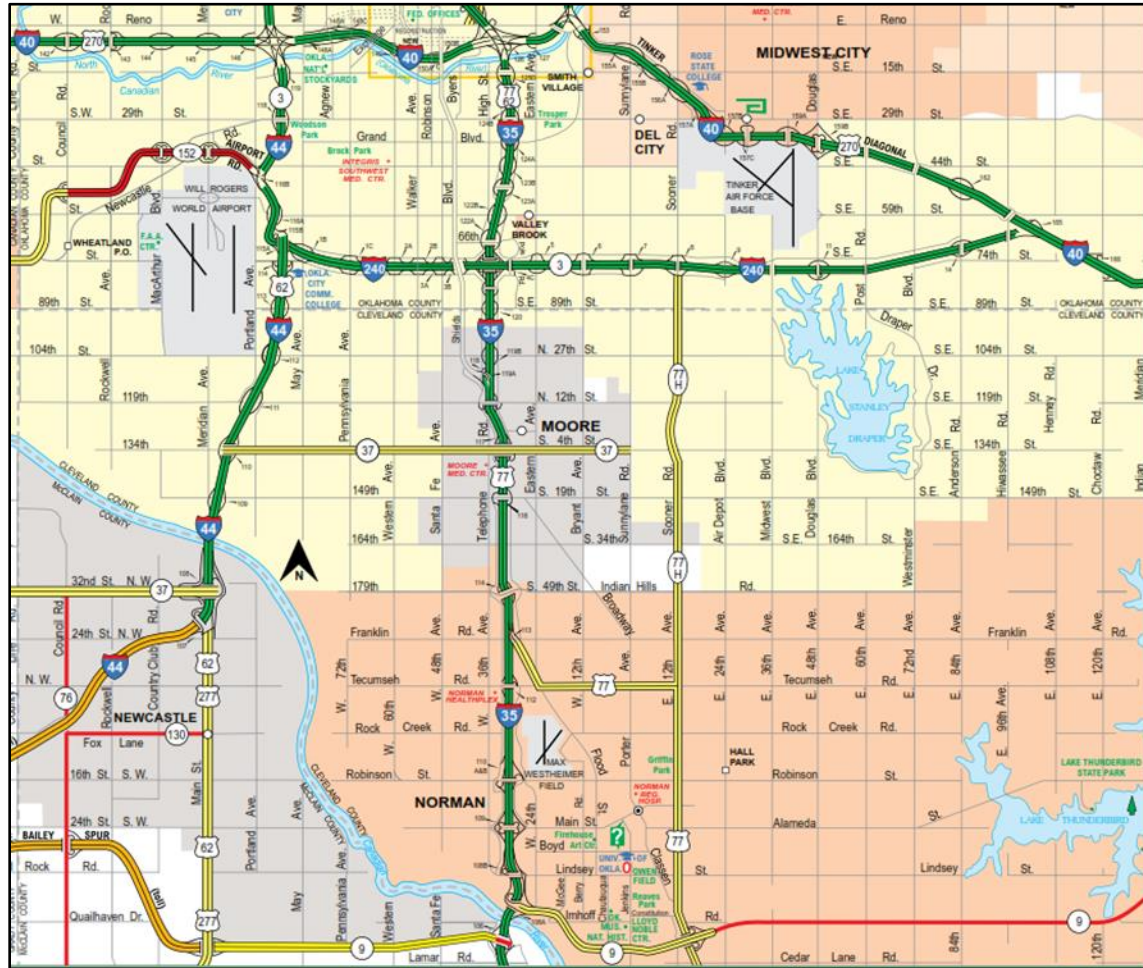


Figure 2.2 Norman Area Arterial Roadway Network

### North-South Connectivity

From a regional mobility and connections perspective, the significant north-south arterial routes in Norman are:

- 60<sup>th</sup> Avenue W. (continues as Western Avenue in Oklahoma City (OKC))
- 48<sup>th</sup> Avenue W. (continues as Santa Fe Avenue in OKC)
- 36<sup>th</sup> Avenue W. (continues as Telephone Road in Moore)
- 24<sup>th</sup> Avenue W. north of Tecumseh (continues as Eastern Avenue in Moore and OKC)
- 12<sup>th</sup> Avenue E. (continues as Sooner Road in Moore and OKC)
- Porter Avenue (continues as Sunnyslane Road in OKC ties to Broadway in Moore)

These arterial roadways provide for high-quality automobile service, especially along the outer areas of the city. Future traffic growth should be planned for on these vital routes and improvements should be implemented to maintain acceptable level of service for vehicle users travelling across the city.

While trips along the outside edges of the city are currently well-served, there are a number of facilities that have current needs for capacity improvements to better serve more regional long-distance trips. Near the downtown area, the collective arterial capacity of Berry Road, Flood Avenue and Porter Avenue do not provide enough north-south capacity for origins-destinations south of downtown. With limited right-of-way on each of these corridors, widening for capacity is not feasible. A connection of James Garner Avenue northward from Acres Street to north of Robinson Street should be considered for adding the overall system capacity needed at this location.

### East-West Connectivity

At a regional mobility and connection level, the east-west arterial routes (as identified in Appendix B) provide for high-quality automobile service, especially along the outer areas of the city. Future traffic growth and demand should be planned for on these vital routes and improvements should be implemented to maintain acceptable conditions for vehicle users travelling across the city.

Robinson Street, Main Street, Boyd Street and Lindsey Street were all determined to have segments operating at a current Level of Service (LOS) D or worse based on daily traffic volumes during PM peak traffic conditions. Given their proximity to one another and their importance in accommodating longer-distance east-west trips around the city, additional capacity should be planned for one or more of these facilities so that they are not all four failing to meet user demands in the future.

The growth in north and west Norman, coupled with the growth of the Newcastle community to the west and the lack of east-west connections across the Canadian River in this area, indicate a potential need for planning and consideration to upgrade the Tecumseh Road corridor in west Norman. A new bridge structure across the Canadian River at this location may be found to be a worthwhile long range investment for the communities directly involved and for the region as a whole, supporting future growth of this area and providing for increased mobility for regional travelers. However, there is a significant amount of floodplain that exists along the Canadian River, resulting in a costly bridge serving a significant amount of undevelopable land along the corridor.

### Regional Freight Movement

The movement of freight within Norman is primarily handled through railroad and truck operations. Though no formal truck or rail studies/modeling have been conducted by the City of Norman or ACOG, freight movement is critically important to the local, state, and regional economy.



Automatic gates are provided for frequent crossings by BNSF's Mid-Con rail line

### Rail Operations

According to the 2012 *Oklahoma Statewide Freight and Passenger Rail Plan*, Norman is serviced by a single railroad - a Class 1 operation owned by BNSF that is subject to heavy traffic and is known as the Mid-Continent (Mid-Con) corridor. Through Oklahoma, the Mid-Con roughly parallels the I-35 corridor between Kansas and Texas and carries over 50 million tons of freight through the state. Within Norman, the Mid-Con BNSF line parallels Flood Avenue on the north side of the city, continues southeast through

the CBD, and then follows a path parallel to Porter Avenue/Classen Boulevard south to the Cleveland County border. No spurs, short line railroads, switching yards, or intermodal facilities are associated with the Mid-Con through Norman (though a secondary bypass track is provided from north of Rock Creek Road to south of Robinson Street). Due to the national significance of the line, approximately 24 trains per day pass through the city, with train activity expected to increase in the future. This high train frequency can have an impact on local traffic operations as the line features 17 at-grade crossings and only two grade-separated crossings within the city limits, at SH 9 and at Robinson Street.

### **Truck Operations**

Within Oklahoma, truck movement data from the FHWA Freight Analysis Framework (FAF) indicate an average of 8,500 trucks daily along IH-35 carrying 546 ton-miles of freight in 2007. Forecasts from the FAF of total freight flows are projecting an increase of nearly 200% to 1,417 ton-miles by 2035. Truck traffic volumes within Norman are generally handled by I-35 and SH-9. Truck estimates, gathered from ACOG data and previous studies, indicate that I-35 traffic is composed of 15% trucks while SH-9 features approximately 6% trucks within the overall traffic stream.

In 2007, ODOT prepared a study to evaluate truck traffic along the I-35 corridor within Garvin County. The purpose of the study was to examine alternative by-pass routes from I-35 between Davis and Pauls Valley to I-40 east of Oklahoma City. While no definitive action resulted from the study, future study should be considered as trucking demands continue to rise within the Norman and OKC metropolitan area.

The city does not restrict trucks to specific routes, but 12 load-posted bridges are located in Cleveland County that could potentially influence truck traffic. Though most of these locations are located in rural parts of the county on routes with low traffic volumes, four of these locations are located within the city limits. One city location (E. Post Oak Road) carries relatively minor traffic volumes in a less developed area, but the other three posted crossings (Porter Avenue, Franklin Road, and 60<sup>th</sup> Avenue E.) are located near industrial areas with opportunities for heavy vehicle traffic.

### **General Aviation Airport**

The Max Westheimer Airport, operated by the University of Oklahoma, is a reliever airport to the Will Rogers World Airport in Oklahoma City and provides small aircraft access directly to Norman from the region and beyond. It's ground transportation is well served by I-35 on the west, US 77/Flood Avenue on the east, Robinson Street on the south, and Tecumseh Road on the north. Of concern to the airport is the advancement of nearby residential development north of the airport that may be sensitive to the noise associated with the operations of the airport and its growth over time.

### **Regional Transit**

The following regional transit needs assessment is based on a detailed evaluation of the currently provided public transportation services, anticipated future needs, as well as concerns and issues raised by the Transit Subcommittee.

#### ***Transit Subcommittee Concerns and Suggestions***

The members of the Transit Subcommittee, which serves in an advisory capacity to the CVC for the Norman CTP development, discussed multiple issues concerning public transportation needs within the City of Norman during their five subcommittee meetings. Issues raised by the committee members affecting regional transit needs are mentioned in this subsection, whereas those issues raised in regard

to local transit services are discussed in the *Local Mobility and Safety* subsection of this *Transportation Needs Assessment* chapter.

The Transit Subcommittee suggested supporting a Regional Transportation Authority, and is in favor of developing a regional commuter rail system. To increase transit efficiencies, the Transit Subcommittee recognized the need for higher density development around transit stations and encouraged appropriate modification to the city's land use plan. The committee also recommended that value capture mechanisms, such as tax increment financing (TIF), be considered for potential commuter rail stations to enhance and advance funding for transit supportive station area development.

#### *Express Bus*

The Cleveland Area Rapid Transit, CART, operates a week-day only commuter express bus route, the Sooner Express (Route 24), between Downtown Norman and Downtown Oklahoma City. The Sooner Express connects the OU Campus with METRO Transit's Downtown Oklahoma City transit center. This commuter express bus service is jointly operated in coordination with METRO Transit operated by Central Oklahoma Transportation and Parking Authority, COTPA, and offers six daily round-trips during peak travel times.

The express bus service provides an alternative to private automobile travel between the cities of Norman and Oklahoma City. However, since the bus operates in mixed traffic, and for a large portion of its route travels on I-35, it is subject to the same congestion delays experienced by commuters traveling by car. The congestion delays are reflected in the daily traffic volume of 136,800 vehicles per day that have been recorded along sections of I-35.

An increase in the number of daily round-trips should be considered to provide more convenient transportation options for commuters, along with a realignment of the current bus route or the implementation of a high-occupancy vehicle lane on I-35 between Norman and Oklahoma City to minimize existing congestion delays for the Sooner Express bus.

#### *Connection to METRO Transit Service*

METRO Transit bus service (Route 40) extends into Moore as far south as S 104<sup>th</sup> Street between Western Avenue and Santa Fe Avenue. CART bus service (West Norman Link – N20) extends as far north as Tecumseh Road at 36<sup>th</sup> Avenue W, which serves the Norman Regional HealthPlex facility.

METRO Transit's Route 40 connects directly to the transit center in Downtown Oklahoma City, whereas the West Norman Link (N20) provides a connection to Downtown Norman and the OU Campus via transfer to the Main Street route (N10).

A north-south distance of seven miles, plus an east-west distance of one mile, separates the two routes. A connector service between the two routes may prove beneficial to patrons of both transit systems.

#### **Potential Impacts of Proposed Regional Projects**

The City of Norman and the nearby metropolitan areas are presently served by Amtrak. Although no other local rail-based transit currently exists, interest in streetcar and commuter rail service has picked up with the recent adoption of the third round of Metropolitan Area Projects (MAPS 3) program in Oklahoma City. The MAPS 3 program includes the building of a downtown streetcar system, the conceptual design of an intermodal transportation hub, and the study of regional commuter corridors. The recently completed *Intermodal Transportation Hub Master Plan for Central Oklahoma* and the



ongoing *Central Oklahoma Commuter Corridors Study* are briefly discussed in the following paragraphs, along with proposed enhancements to Amtrak service and current high speed rail planning efforts. Current information can be found at [www.acogok.org](http://www.acogok.org) and [www.CentralOKGo.org](http://www.CentralOKGo.org).

#### ***Central Oklahoma Intermodal Transportation Hub***

In 2010, the Association of Central Oklahoma Governments (ACOG), in partnership with COTPA and the City of Oklahoma City, commissioned a study to assess the best location and conceptual lay-out for an intermodal transportation hub facility that would integrate all existing and planned transit modes within the vicinity of Downtown Oklahoma City. The central focus of the study was to determine how this intermodal hub would accommodate COTPA's existing fixed-route bus service; the anticipated streetcar implementation; possible future bus transit improvements; potential commuter rail lines to the cities of Edmond, Midwest City, and Norman; as well as potential future high speed rail.

The *Intermodal Transportation Hub Master Plan* was completed in June 2011. The plan's impact on public transit within the City of Norman will be determined by its ability to accommodate commuter rail and high speed rail connections. These additional transportation options would ultimately offer Norman residents more transit choices to reach other parts of the Oklahoma City metropolitan area or other metropolitan areas such as Tulsa, OK; Newton, KS; Kansas City, MO; and Dallas/Fort Worth, TX.

#### ***Central Oklahoma Commuter Corridors Study***

In Spring 2013, ACOG initiated the *Central Oklahoma Commuter Corridors Study* for regional transit service to lay the foundation for an integrated, high-capacity, commuter system that would connect communities to employment, entertainment, and housing opportunities throughout Central Oklahoma. The purpose of the *Commuter Corridors Study* (CCS) is to analyze the most suitable transit technology and route alignment to determine which will best meet the corridor's purpose and needs. The alternatives to be studied will reflect a range of high and low cost capital improvements, including non-fixed guideway (no build) options, which will serve as a baseline for measuring the merits of higher level investments. The final product of the CCS will be the selection of the transit best mode (i.e. bus, bus rapid transit, commuter rail, etc.), and the location of the associated alignment to meet the corridor's purpose and needs.

One of the three commuter corridors studied would serve the Cities of Moore and Norman. This corridor would extend from Downtown Oklahoma City to Downtown Norman near the intersection of E Lindsey Street and Classen Boulevard. It would run roughly parallel to I-35 and is envisioned to have three or more station locations in Norman: one near Tecumseh Road, a second stop co-located with the Amtrak station, and the third stop north of SH 9, plus a potential special events platform near the OU Campus.

The Norman CTP can assist the *Central Oklahoma Commuter Corridors Study* by helping identify the preferred location of the proposed stations within the City of Norman and any design options that may be further identified during the ensuing preliminary engineering and design development phases.

#### ***Amtrak Enhancements***

At this time, the Oklahoma (ODOT), Kansas (KDOT), and Texas (TxDOT) Departments of Transportation are actively considering the extension of the current Amtrak *Heartland Flyer* service beyond the once daily roundtrip from Oklahoma City, OK to Fort Worth, TX. ODOT and KDOT have just completed a *Service Development Plan* for the expansion of service from Oklahoma City to Newton, KS. A stand-alone daytime service from Kansas City, KS to Fort Worth, TX via Oklahoma City was also considered as part of that plan.

TxDOT, in coordination with ODOT and KDOT, has also begun assessing the expansion of the *Heartland Flyer* with a second daily roundtrip, which would double the currently available passenger rail capacity along the route, directly benefitting Norman residents.

### *High Speed Rail (HSR)*

The U.S. Department of Transportation has been actively working with ODOT and TxDOT regarding the HSR South Central Corridor, which extends from Tulsa, OK to Dallas/Fort Worth, TX and beyond. TxDOT has retained the services of a consultant team to develop a *Corridor Investment Plan* for the 850-mile corridor, which encompasses the metropolitan areas of Oklahoma City, Dallas/Fort Worth, Austin, and San Antonio, TX. The estimated completion date for this study is January 2015. Study progress should be monitored by City of Norman staff for any findings relevant to the City of Norman.

## *Regional Bicycling*

### **Connections to Oklahoma City Facilities**

Oklahoma City has developed and is planning expansion of a large network of interconnected trails and on-street bikeways. One of the proposed loop network of trails with on-street connections would extend around Lake Stanley Draper, where signed on-street bike routes are currently designated around all but the very northern end of the lake along E. Stanley Draper Drive. The Draper Lake loop bike route and future trail network is just over three miles (along 72<sup>nd</sup> Avenue NE/S. Westminster Road) from the Little River Wildlife Management Area on Franklin Road, where the Norman Spine/Loop Trail is proposed in the Norman Parks and Recreation Master Plan (see Appendix B). A coordinated effort is needed to join these two planned trail systems as well as enhance the on-street bicycling along 72<sup>nd</sup>/Westminster for Norman bicyclists to access the Draper Lake loop bike route.



Figure 2.3 from OKC Trails Plan

### **Long Distance Bicycling and Touring**

Bicycle touring and long distance riding for exercise and enjoyment typically use the areas roadway network to accomplish their goals: an enjoyable ride without too much traffic interference that takes them past interesting countryside or to interesting sites or places. In some parts of the country, multiday bicycle touring is attractive for commercial tourism. Such corridors for long distance riding and tourism in the vicinity of Norman include:

- US 77 heading south from Norman, through the small towns of Noble, Purcell and beyond, even as far as the Arbuckle Mountains;
- SH 9 heading east from the center of Norman to Lake Thunderbird and beyond;

Provision of a minimum of 8 foot wide shoulder lanes along these highways would help to facilitate bicycling in the corridors.

Even with no particular destination in mind, bicyclists enjoy riding on rural roadways in good condition with very little traffic to ride with very little interruption for distances of 20 miles or more on one excursion. These area excursion routes, when formally identified for group rides by local bicycling groups, should be targeted for signage indicating the potential presence of bicyclist on the roadway.

## Local Mobility and Safety

### Roadways

The roadway network should provide for safe mobility and access to properties in and around Norman, just as it does for the longer-distance trips discussed in the “Regional Mobility and Connection” section earlier in this chapter. This section of the report focuses on more local trips that can include arterials, collectors and local roads. At lower levels of the functional classification system, providing access becomes prioritized over higher travel speeds and the service of larger traffic volumes. Typically, fewer lanes are required, lower speeds are expected, and on-street parking is allowable on local and collector streets.



Figure 2.4 Norman Arterial Roadway Network

Solutions for limiting or perhaps reducing the number of driveways (or access) along all arterial routes should be considered. City policy/procedure improvements and evaluation of specific corridors, with the highest numbers of signals and driveways, should be evaluated for active access management improvements. The number of traffic signals and driveways affects north-south and east-west routes through Norman and the ability of the city’s arterial system to provide for regional mobility, safety and service of longer-distance trips. AASHTO’s Transportation Glossary (4th Ed.--2009) defines access management as “the condition where the right of owners or occupants of abutting land, or other persons, to access, light, air, or view in connection with a highway is fully or partially controlled by public authority”. At higher levels of the functional classification system, mobility is favored over providing local access to adjacent land uses. Relatively high travel speeds are expected from arterial type routes though many impediments exist that reduce travel speed and increase the probability of stopping (and crashes). These impediments include the number and spacing of traffic signals, inefficient signal timings, a high number of access points, a lack of turn lanes or median presence, and poor geometrics.



## Core Norman

The Core Norman area is defined as the area serving Downtown, Campus Corner, and the surrounding neighborhoods near the center core of the city, generally bounded by Berry Road on the west, Lindsey Street on the south, Robinson Street on the north, and 12th Avenue E on the east. Locally oriented traffic operations level of service through the Core Norman area is generally acceptable with some possible room for improvements available with well-placed off-street parking amenities which, in turn, could improve access by reducing the need for drivers to search for available on-street parking spaces. Enhanced connectivity and synergy between the Downtown sector and the Campus Corner sector should be retained as both of these areas are such vital elements of the city of Norman. Enhancements could include improved roadway aesthetics, streetscape, continued maintenance where needed, on-street parking and other improvements to add to and maintain the viability of both sectors.

### *Main Street*

Main Street extends from I-35 to Downtown as a four-lane divided roadway that splits into a one-way couplet east of University Boulevard and west of Porter Avenue, with Main Street eastbound and Gray Street westbound each having three travel lanes and angled parking along both sides of most of the roadway. The three travel lanes in each direction on the couplet provides more than ample capacity for the traffic on Main and Gray Streets, which contributes to higher speeds than desired in Downtown and lessens the cohesiveness of the two sides of the streets. A current City Center Visioning effort to plan for a revitalized Downtown and connection to Campus Corner is very interested in modifying Main and Gray Streets to better complement the intended look and feel of Downtown. Concepts to convert the pair back to two-way streets target several benefits including: promoting a more walkable environment, establishing critical mass to support other transportation options such as commuter rail and biking, taking advantage of the roadway grid network to slow down traffic and create a pedestrian friendly atmosphere, and creating a range of land uses aimed at reducing vehicular trips. As this visioning effort proceeds, the CTP needs to be flexible to incorporate the consensus Downtown Vision regarding context sensitive transportation solutions.

If the City of Norman chooses to further pursue the conversion of Main and Gray Streets to the two-way configuration, it is recommended that an engineering feasibility analysis be completed to include traffic congestion and safety impacts, multimodal opportunities, parking implications, infrastructure impacts and costs as well as other challenges and opportunities. The cost of such a feasibility analysis is estimated to be less than \$100,000 due to the availability of data and technical information included in this Plan as well as previous studies of the corridor.

### **East-West Circulation**

Between I-35 and US 77, the one-mile grid of east-west section line roadways is disrupted by the railroad and the airport, creating significant vehicular movement on the minor arterial and collector roadways. Robinson Street and Lindsey Street are the only two section line roads that extend through the core of Norman, with Main and Alameda Streets disjointed near the railroad and Rock Creek Road interrupted by the airport. Local intra-city trips contribute to the arterial congestion referred to previously and would benefit from the solutions noted. An issue that has been observed in the past in Norman regards collectors and local streets that have experienced more use (and higher speeds) than intended by traffic diverting from congested arterials. Providing for added capacity, as feasible, on adjacent arterials is the most direct solution to address this issue. One project is underway that will enhance capacity, add bike lanes, and improve safety for Lindsey Street between 24<sup>th</sup> Avenue W. and Berry Road. However, there will remain a portion of Lindsey Street, between Berry road and Elm

Avenue, which should be improved as well to enhance capacity, add bike lanes and sidewalks, and improve safety conditions for all modes.

At-grade intersections between east-west arterials and the railroad (BNSF and Amtrak operations) can cause delay and detriment to the response times as services provided by emergency responders. A grade separated crossing over the railroad is provided for SH 9, and a grade separated intersection has been recently constructed for Robinson Street to cross under the railroad. Potential railroad grade-separated crossings at Tecumseh Road and Lindsey Street would create two-mile intervals of grade separations in Norman, enhancing emergency access across Norman.

### **North-South Circulation**

Between I-35 and US 77, the one-mile grid of north-south section line roadways is also disrupted by the railroad and the airport, creating significant vehicular movement on the minor arterial and collector roadways. Due to the alignment of the railroad, no north-south streets cross the tracks. The 2025 plan does not specifically call out any routes as collector facilities, though north-south corridors such as Peters Avenue and Pickard Avenue serve collector purposes. One issue that has occurred with collectors and local streets is that they have experienced more use (and higher speeds) than intended by traffic diverting from congested arterials. Providing for added capacity, as feasible, on adjacent arterials is the most direct solution to address this issue.

### **Rural Norman**

The east region of rural Norman around Lake Thunderbird has seen steady growth in recent years, even though development is limited to one household per 10 acres. The city should continue to plan for investments to key east-west routes connecting this area to core Norman such as Alameda Street, SH-9, 60<sup>th</sup> Avenue E, Franklin Road and other routes to support additional residential and recreational growth in this area of the city. A network of rural collector roadways would serve to minimize the need to widen the rural arterials beyond the two lane roadways befitting the rural environment.

### **Local Transit**

The following local transit needs assessment is again based on a detailed evaluation of the currently provided public transportation services, anticipated future needs, as well as concerns and issues raised by the Transit Subcommittee.

### **Transit Subcommittee Concerns and Suggestions**

The Transit Subcommittee identified the following three items as the major deficiencies of the existing system: the limited Saturday and evening bus service, the absence of night-time and Sunday service, and the need for an overall increase in bus frequencies. However, the committee also indicated that it was well aware of the fact that transit funding would be the most limiting factor constraining transit service expansion.

The Transit Subcommittee, therefore, suggested multiple potential new funding strategies, including time-limited sales tax, property tax, development fees, increased student fees, a possible fare increase, or value capture-based financing. Alternately, the committee suggested that a fare-free transit system be considered for the City of Norman to attract additional ridership.

The Transit Subcommittee also recommended policies be adopted by the City of Norman to encourage increased residential and employment densities near transit hubs and along transit lines to support

transit efficiency, particularly in Downtown Norman, and, as previously discussed, to support the proposed commuter rail stations. A desire for a more grid-like transit system was also stated.

### 2008 CART Plan

Based on the findings of a needs assessment undertaken in 2003 by the City of Norman, the University of Oklahoma and CART, the *2008 CART Long-Range Public Transportation Plan* identified several transit improvement initiatives for phased implementation, including the following:

#### *Phase I Improvement Recommendations*

Address requests for longer service hours:

- Extended service hours on high-ridership core routes
- Initiation of Sunday service.
- Downtown/Campus Corner Circulator operating at 20-minute headways.

#### *Phase II Improvement Recommendations*

Address requests for higher frequency more effective and understandable routes:

- Creation of a grid of corridor routes
- Operate the key grid routes at 30-minute headways

#### *Phase III Improvement Recommendations*

Add routes along new service corridors, including:

- State Highway 9 Circulator,
- West Norman Circulator,
- East Norman Circulator, and
- Berry Road Corridor (expand existing).
- Main Street Corridor extension west to Sooner Mall

### Major Destinations and Activity Centers

The current fixed-route service in the study area was compared to the location of major activity centers and destinations, including: intermodal transit connections, shopping centers and malls, hospitals and medical complexes, large educational institutions, high-concentration employment centers, as well as densely populated areas (i.e. large apartment complexes). Through this comparison, it was determined that geographic coverage of these activity centers and major destinations was adequate with the following exceptions:

- At this time, the Norman Oklahoma Veterans Center is located more than 0.5 miles from the nearest existing transit route. The additional transit routes envisioned as part of Phase III of CART's *2008 Long-Range Public Transportation Plan* could provide a direct connection to the Veterans Affairs Center, which is located southwest of 24<sup>th</sup> Avenue NE and Robinson Street.
- The only other major activity center or destination not currently tied into the existing or planned transit network is the Moore Norman Technology Center, located southeast of Franklin Road and 12<sup>th</sup> Avenue NW. The Franklin Road campus of the technology center has an approximate enrollment of 1,000, consisting of both high school and adult students. At this time, the Moore Norman Technology Center provides a shuttle bus service from Norman High School to the technology center campus, which is open to all attending high school students.
- Several of the anticipated future population and employment growth areas are currently not well served by fixed-route transit. The addition of the new routes identified in CART's *2008 Long-Range Public Transportation Plan* would be able to reach most high-growth areas.

**Figure 2.5** shows the expanded service proposed in the *2008 Long-Range Public Transportation Plan* in relationship to anticipated high-growth areas. (Note that the *Sooner Express* transit route continues north to Downtown Oklahoma City and was not depicted in its entirety.)

### Special Transit Services for Limited Mobility Populations

Households with an income at or below poverty level, households with persons aged 65+, households without vehicles, and persons with disabilities often have a higher degree of difficulty in securing the transportation services they need to get to work, medical appointments, educational institutions, or simply to a grocery store. Assessment of the current transit service in regard to limited mobility populations was undertaken in two steps.

#### *Households with Low Income, with Persons 65 Years and Older, or No Available Vehicle*

Currently, there are no special transit services provided for these limited mobility populations, unless transit patrons have a documented disability. However, to assess how well CART's current transit system provides access to limited mobility households, the fixed bus routes were compared to the latest available U.S. Census information on median household income, age, and car ownership.

A preliminary analysis of this information indicated that CART's current fixed-route bus service provides mobility options to most persons and households influenced by these mobility limiting factors. However, weekday night-time and weekend services are very limited and should be expanded to enhance transportation options for these segments of the population.

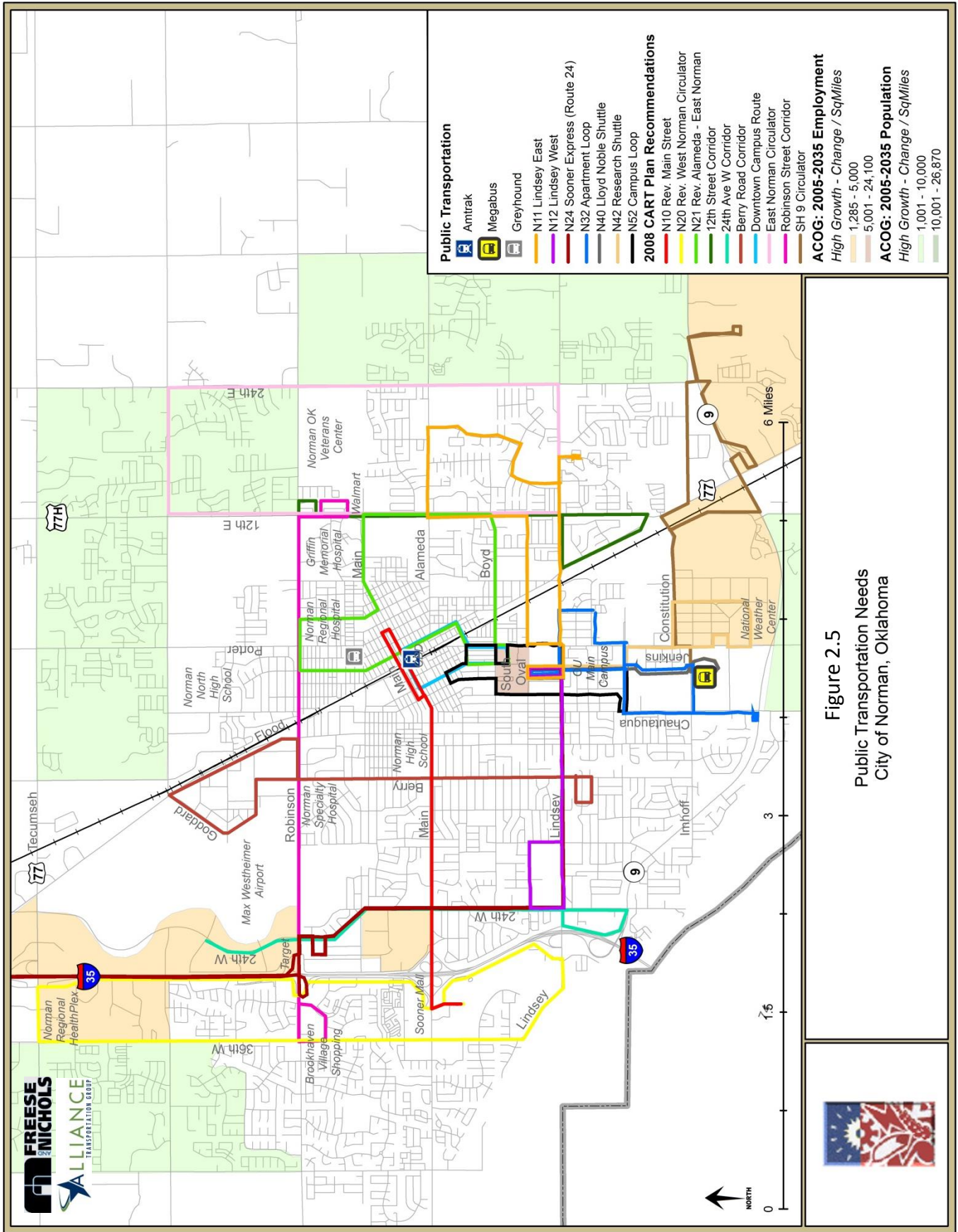
#### *Persons with Disabilities*

Many persons with mobility disabilities are able to utilize the fixed route transit services provided by CART. Specialized transit services for persons with disabilities are provided by CARTaccess throughout the entire City of Norman area, during the service hours provided for fixed route transit. The provision of weekday night-time and expanded weekend services would also greatly enhance transportation options for this segment of the population.

### City-Wide Transit Concerns

After review of the existing conditions and the anticipated improvements of the transportation system, the following concerns remain, and should be considered in future decision-making relative to the transit system within the City of Norman.

- The implementation of all of CART's 2008 Long-Range Public Transportation Plan recommendations would provide significant enhancements to service hours and service frequency, as well as geographic coverage. However, most identified long-range transit projects have not yet been realized as implementation of all Phase I through III improvements largely hinges upon the availability of funding.
- As almost all transit trips begin and end with pedestrian travel, connections between pedestrian facilities and transit stops are important to transit riders. These connections are currently limited in many areas, therefore making it difficult for transit passengers to travel from home to transit stops and from transit stops to their final destination.
- Congestion bottlenecks affect the travel times experienced on many transit routes. These travel delays impact service reliability, and the willingness of travelers to rely on transit connections.
- In addition, the Federal Transit Administration is changing the way it quantifies limited mobility and assesses transit dependency to include households with persons under the age of 18. This represents a new approach to the evaluation of transit services.





## Bicycling and Walking

The students at OU and many local residents of Norman make use of bicycling and walking as modes of transportation and recreation. They would be well served by a more extensive pedestrian and bicycle facilities network that provides access to desired destinations. Walking should be further encouraged by landscaping and other enhancements to the travel way and at least 3 feet of separation from moving traffic. Bicycling should be further encouraged by the provisions of bicycle parking accommodations at popular destinations and preferential fees and discounts for bicycling rather than using or parking a car.

### On-Street Bicycling

Local bicycling for utilitarian purposes should target the accommodation of bicyclists on routes that make as direct as possible connections between origin and designation. An example of such facilities would be the connection of off-campus housing to the university facilities, such as the bike lanes along Brooks Street from campus to Porter Avenue. In many cases, the suitability of the route for bicycling can be improved by the provision of striped bicycle lanes through narrowing lane widths to 10 feet or eliminating one or more travel lanes (road diets), or other treatments. A “bicycle boulevard” can be created by the connection of local streets with a trail segment or other treatment, creating a through passage for bicyclists and pedestrians but not for motor vehicles. The Norman Bicycle Transportation Plan Bike Route Map, updated in 2011 (see Appendix B), incorporates the map of existing and proposed bike routes and bike lanes and existing multiuse paths that have been proposed by the Norman Bicycle Advisory Committee (BAC).

Local bicycling for exercise or recreation can be accommodated through the provision of looping routes – a network of bicycle friendly streets and/or trails that provide an interesting excursion of 10 to 20 miles with minimal interaction with motorized vehicles. The roadways in the rural eastern portion of Norman provide good opportunity for development of such facilities with the provision of 4- to 6-foot wide shoulder lanes on a rural roadway section or the provision of bike lanes as the roadways urbanize in development. The potential improvement of 36<sup>th</sup> Avenue E and/or 48<sup>th</sup> Avenue E would be candidate streets for the formation of a portion of the larger loop roadways. Creation of smaller looping routes can use the facilities targeted for the utilitarian bicyclists.

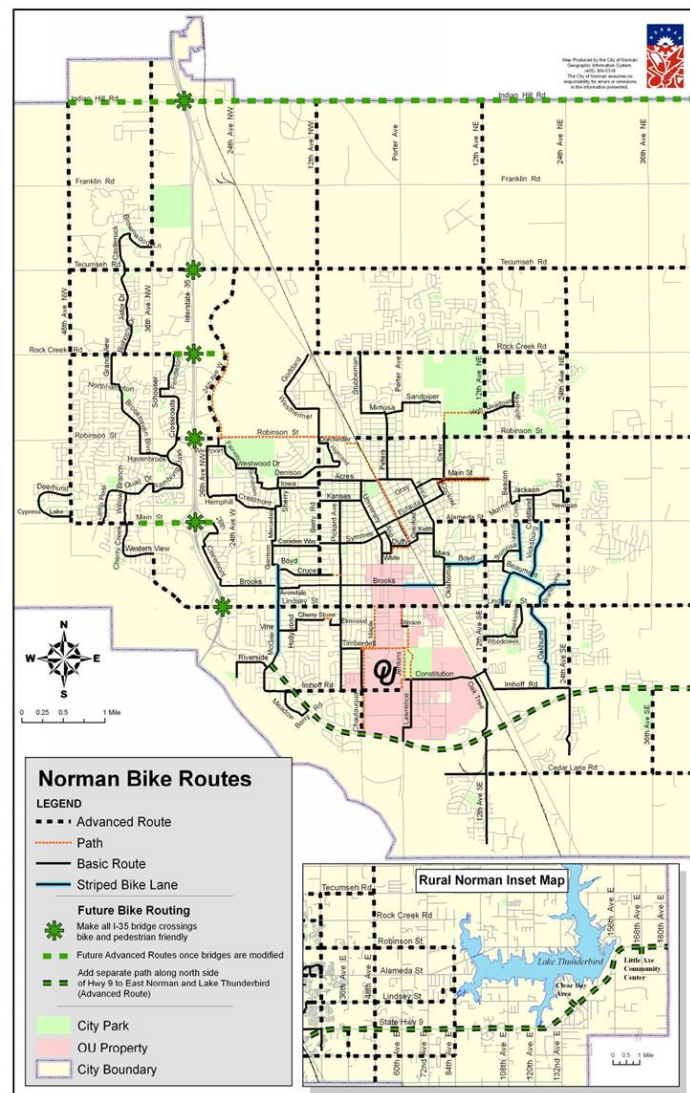


Figure 2.6 Norman Bike Plan Routes

### Trails

Multi-use paths, sometimes referred to as hike and bike trails, can encourage a healthy and active lifestyle for Norman residents. Trails located nearby to residential areas or local parks can see very high levels of usage, especially if designed with good sightlines to points of interest and with routing and amenities placed with a variety of user groups in mind. Local examples include the Legacy Trail (University of Oklahoma campus, Downtown Norman, Andrews Park, University North Park with historical interpretive stations and landscaping) and the Castle Rock Utility Easement Trail (using a power line easement that connects Castle Rock subdivision, an elementary school, Carrington Place subdivision, and the future Ruby Grant Park). A long range plan for trails in Norman is included in the Greenway Plan component of the Parks and Recreation Master Plan (see **Appendix B**).

These trails can be very expensive, depending on the localized conditions. The further away from residential development and destinations like parks, the lower the benefit to cost ratio of the facility. It will be important to develop a prioritized and coordinated implementation plan for a network of trails and on-street bicycling facilities so that the community can get the optimal return on its investment.

### Sidewalks

The city's sidewalk inventory highlights the many gaps in the existing sidewalk system. Some of the gaps are more critical than others. A prioritization scheme should be applied to identify the most urgent needs for sidewalk improvements. Such priorities may consider current complaints from sidewalk users, especially those of the mobility impaired, sidewalks that would create a safe route to a public school or activity center, and sidewalks that would connect residential areas to nearby retail, employment or recreational opportunities. Once a prioritization tool is established, an annual budget for sidewalk improvements, including ramps and other treatments for accessibility compliance, needs to be justified and established.

### Parking

Parking demand needs and management of the existing parking supply are issues for two locations in central Norman - Downtown and the "Campus Corner district". A number of needs are present at both locations, as described further in **Appendix B**. A parking enterprise fund to manage revenues and support development of needed parking improvements should be formed by the city. Consideration should be given to incentivizing private owners allowing some level of public parking availability at key locations.

As of January 2013, the recently constructed Downtown Gray Street lot features "smart" parking meters as part of a downtown parking management system being implemented by the city. This system includes multi-space meters (a total of three serves the entire lot), hand held enforcement devices, and parking space vehicle sensors. The meters accept cash, credit cards, tokens, and cell phone payments, and could accommodate a validation program by merchants for customer refunds if applicable. The meters offer the advantage of being easily reprogrammed to respond to changes in fee structures or time limits. A similar system for the on-street parking in the Campus Corner district has also been created to increase vehicle turnover and collect additional revenue.

After these updates, a review of downtown parking meter fees (unchanged since the study) and the establishment of a parking authority should be explored. The parking authority would manage funds/fees and ongoing improvements that should be provided in the short-term horizon. The established authority would ideally assist in collection and allocation of funds prioritized for future



parking investments and maintenance in Downtown and Campus Corner. A comprehensive parking study may need to be performed again since the last study is now ten years old.

### Downtown

A revised feasibility analysis should be performed to measure demand for a multi-level public or private parking garage on or near Main Street in the downtown area. Retail, commercial, and residential uses could be incorporated on the lower and upper floors of the parking garage development to ensure that the area is being used to its highest potential and that the parking garage will see consistent demand. Additionally, high-density development should be considered and possibly supported near the Main Street garage to best serve the expected high-demand parking areas. While results from a 2003 Parking Study indicated that the costs of such a structure for the downtown area would be prohibitive, recent development and conditions downtown have changed enough, and with consideration of a potential commuter rail stop at the Downtown station, these issues merit reconsideration including possible improved funding mechanisms.

### Campus Corner

A shortage of parking remains in Campus Corner, particularly at locations nearest the most popular destinations. While private parking may be adequate, a general lack of public parking is available in the general area. The lack of general use parking in the core areas causes additional traffic and congestion as visitors must circulate in search of an open parking space near their destination, and they cannot park once in a private lot if planning on using a variety of land uses within the area. Parking additions along or near Asp Avenue, University Boulevard and along the southern area of Campus Corner should be considered to provide much-needed capacity.

Adjacent private lots could be adjoined (likely would require incentives) to increase the number of spaces and provide easier circulation/access.

A revised feasibility analysis should be performed to measure demand for a multi-level public or private parking garage somewhere in the southern portion of Campus Corner. Retail, commercial, and residential uses could be incorporated on the lower and upper floors of the parking garage development to ensure that the areas is being used to its highest potential and that the parking garage will see consistent demand. Additionally, high-density development should be considered and possibly supported near the garages to best serve the expected high-demand parking areas. A parking garage at this location would also be highly utilized for games and events associated with the OU stadium and other venues.



**On Street Parking on Asp Ave in Campus Corner nears 100%**

## Safety

As a part of this CTP process, crash data on Norman streets was analyzed to gauge roadway safety throughout the city. According to the city GIS, between 2007 and 2011, approximately 15,000 crashes occurred on city streets, which included 3,825 injury collisions and 26 fatal collisions. An analysis was performed to determine the most common crash locations as well as the corridors with the highest crash rates. Detailed information regarding the collision data is provided in Appendix B.

## Causal Factors

Recent crash data suggests that the Lindsey Street and Berry Road corridors generate crash rates significantly higher than the statewide average for municipal two or three lane facilities. These high crash rates can be attributed to many factors, including the presence of numerous driveways and access points located along these routes as well as intersections with other busy arterial routes. Other corridors (including segments of Robinson Street, Tecumseh Road, 24<sup>th</sup> Avenue W, Porter Avenue, Classen Boulevard and 12<sup>th</sup> Avenue E) have crash rates greater than the statewide average as well.

## Mitigation Measures

Measures that could be implemented in an attempt to reduce crash rates on Lindsey Street, Berry Road and others includes access management techniques which could include the construction of a raised median along portions of the corridor, right-in/right-out commercial driveways, closure of driveways/streets on high-crash corridor arterials, consolidation of driveways, incentives supplied for cross-lot access additions, and other treatments. The control and limitation of future access points near busy intersections and along high-crash corridors should be given consideration. The periodic re-timing of signal corridors to increase vehicle platooning may also help traffic entering the roadway from a driveway or cross street successfully identify an appropriate gap in traffic.

## Traffic Calming Program

In 2003, in an effort to deal with the growing problem of neighborhood speeding, the City of Norman researched what other cities around the country had done about this problem, and created its own Traffic Calming Program to address the issue. The City Council appropriated about \$100,000 per year to fund the Program and, until about 2010, was immensely popular. In February 2009, the City Council formalized a document entitled the Neighborhood Traffic Management and Calming Program (a.k.a. the Calming Manual) which outlined the objectives, the qualifying criteria, the excluded routes, the calming tools, and the process for neighborhoods to pursue traffic calming projects. As part of the process, a “Speeding and Traffic Calming” brochure summarizing the program was written and is distributed to interested parties. Both the Calming Manual and brochure can be found on the city’s website at the following links:

<http://www.ci.norman.ok.us/sites/default/files/WebFM/Norman/Public%20Works/Traffic%20Calming.pdf>

<http://www.ci.norman.ok.us/sites/default/files/WebFM/Norman/Public%20Works/TrafficCalmingProgramProceduresManual.pdf>

The proliferation of traffic calming projects proved to be “too much, too fast” and the City Council began receiving complaints from citizens who were annoyed by all the calming devices. As this coincided in time with a need for fiscal belt-tightening, the Council chose to not fund Traffic Calming for a couple of years, and to de-emphasize physical traffic calming in favor of non-physical means that were less intrusive, when it resumed. Although no traffic calming projects have been constructed since then, City

staff still receives inquiries about traffic calming and still evaluates requesting neighborhoods for eligibility. The Calming Manual remains as the source document for the Program.

## *Urban Planning and Design*

### **Strengthening “City Districts”**

The City’s Planning Department has been working with established neighborhoods, especially those in the core of Norman, to strengthen their “livability” by planning for non-motorized connections to adjacent land uses, calming local street traffic operations and maintaining the integrity of its land uses. These Neighborhood Plans need to be incorporated into the transportation planning, roadway design and infrastructure development program for the city. Improvement plans have been completed for the five neighborhoods that are eligible to receive Community Development Block Grant (CDBG) funding.

### **Roadway Typical Sections**

The City’s current design standards include an urban and a rural typical section for arterials, collectors and residential streets, as shown in **Appendix B**. The range of potential permutations of typical cross sections need to be expanded to allow for the creation of a specific street environment for such conditions as the provision of bike routes, increased sidewalk widths and side paths, enhanced landscaping and other desired attributes responsive to the context of the street surroundings.

## *Roadway Corridor Enhancements*

### **Streetscape**

#### **Urban Roadway Landscapes**

Walking and bicycling in the urbanized areas of Norman can be greatly encouraged by the provisions of pedestrian scale amenities. These include plantings, benches, wayfinding signage, lighting, buffers from roadways, and other treatments. The space allocation and option to provide these urban streetscape elements need to be incorporated into the city street design standards. A wayfinding signage master plan has recently been adopted by the city.

#### **Rural Roadway Landscapes**

The Norman Parks Plan describes rural landscapes as areas of natural vegetation, wind row trees established along fence lines, visually consisting of long and open vistas, typical of the Oklahoma landscape. Such landscapes may be experienced in various ways, including the use of hike and bike trails and driving along rural roads. To be effective, it requires expansive lands seen over a distance uncluttered by development, signs, and utilities. This may be achieved with winding roads, well defined views and strong controls over signs and building structure placement. A manner in which the rural experience can be maintained without compromising development opportunities is through the application of the principles of Conservation Planning and Design. Key corridors for application include Highway 9 to Little Axe, Franklin Road, Rock Creek Road, and Alameda near Lake Thunderbird. One of the most basic principles is to demand single loaded roads whereby roads serve as access to developed areas yet at the same time provide rural experiences through views on the surrounding landscapes.

## Forecast Transportation Conditions

### *2025 Future Land Use Plan*

Development of the Norman CTP utilized the future land use plan from the Norman 2025 Land Use and Transportation Plan, adopted by the City in 2004, and its ongoing updates. Annually, City staff prepares a Status Report on Norman Development and the Norman 2025 Plan. The report describes:

- Ongoing long range planning activities, such as special ordinances, preservation zones, neighborhood plans, and the work of special committees and commissions;
- Construction activity, both residential and non-residential, is tracked closely, mapped and tabulated to denote trends;
- Comparison of the Land Use Plan and zoning amendments granted;
- Planning and subdivision activity; and
- An overall summary of the status of the 2025 Future Land Use Plan.

### *ACOG Encompass 2035 Model with Norman Land Uses*

During the development of the region's long-range transportation plan, City of Norman staff worked with ACOG modeling staff to help ACOG incorporate the adopted Norman Land Use Plan, and its most recent updates and refinements, into the regional travel demand model for development of the Encompass 2035.

A collaborative meeting was held with senior staff from the Norman Public Works Department and Planning Department as well as from ACOG at the onset of the Norman CTP development effort. This meeting was held to review whether the land uses incorporated into ACOG's travel demand model for the Norman area continued to be valid. Maps of residential and non-residential land use quantities and densities were produced from the provided ACOG model and reviewed at this collaborative meeting. The participants at the meeting generally concurred that the land uses represented in the ACOG 2035 travel demand model were a good representation of the current status of future land use planning within the City of Norman. A map of the population and employment is shown in **Appendix B**.

### *2035 Norman Subarea Model*

With City staff and ACOG concurrence on the appropriateness of the land uses represented, the ACOG model was then adapted for use in the examination of the transportation needs and the testing of the implications of potential transportation improvements in the Norman area. Some adaptations were made to reflect recently planned developments, including:

- University North Park, located on the west side of Max Westheimer Airport, was considered to be partially developed in the ACOG model. Recent plans indicate that the model should assume the development to be fully realized by the 2035 forecast year.
- The City of Norman has held meetings to discuss a high-density residential zoning district for the area between Downtown and the OU Campus. However, this modification to the 2025 Future Land Use Plan was directed not to be incorporated into the initial modeling assessment.

### *2035 Norman Existing-Plus-Committed Roadway Network*

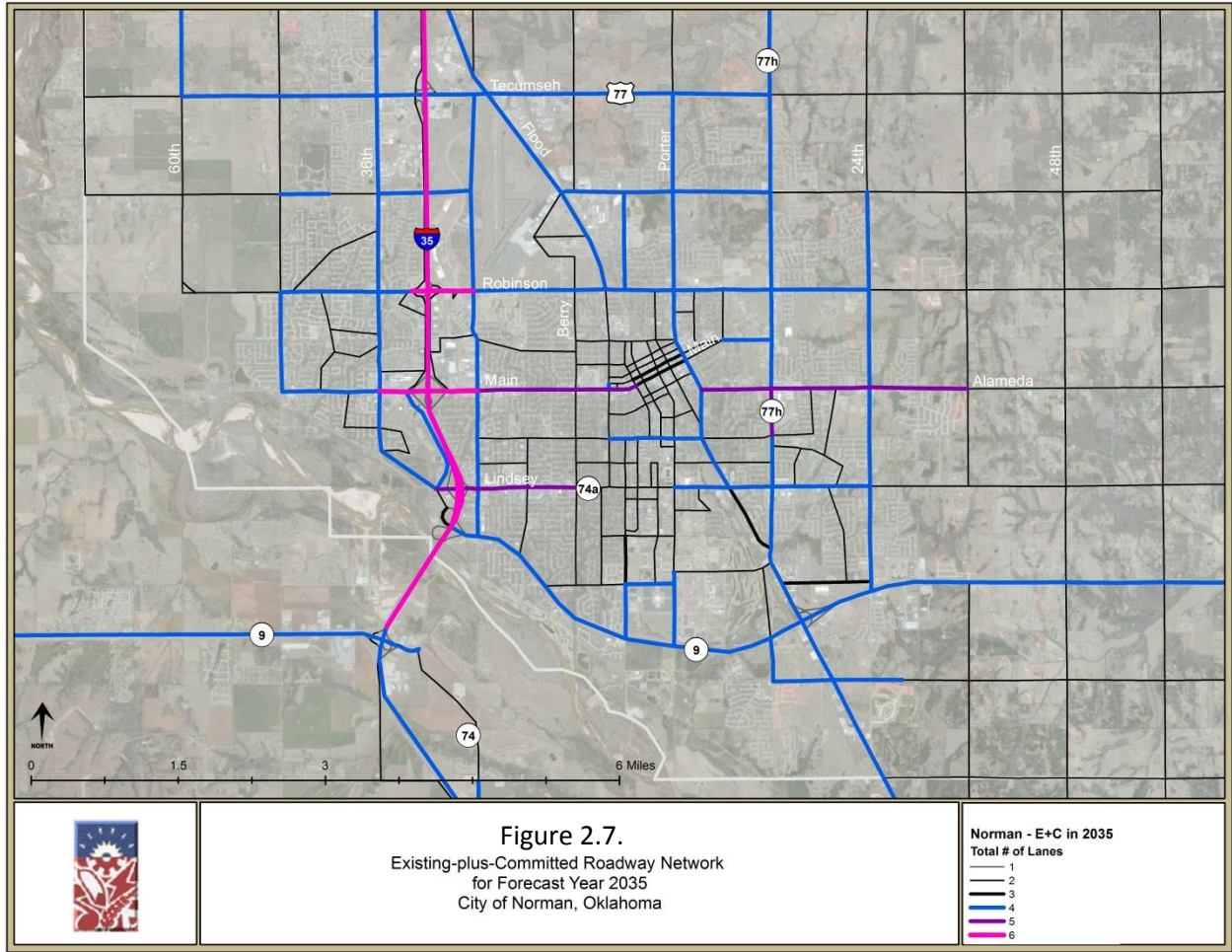
The analysis of the Norman subarea model network began by looking at the performance of the forecasted 2035 travel demand on the existing-plus-committed (E+C) network, which includes those roadway improvements that either have already been built, are currently under construction, or are committed to be implemented through the assignment of programmed funding. The committed and planned projects are further described in **Appendix B**.

The following list summarizes the committed projects that were included in the 2035 Norman subarea model in order to arrive at the existing-plus-committed network, prior to the initial travel demand analysis:

- 12<sup>th</sup> Avenue E, from SH 9 to Cedar Lane Road: widen from 2 lanes to 4 lanes,
- 24<sup>th</sup> Avenue E, from Robinson Street to Lindsey Street: widen from 2 lanes to 4 lanes,
- 36<sup>th</sup> Avenue W, from Indian Hills Road to Tecumseh Road: widen from 2 lanes to 4 lanes,
- 60<sup>th</sup> Avenue W, from Indian Hills Road to Tecumseh Road: widen from 2 lanes to 4 lanes,
- Alameda Street, from Ridge Lake Blvd to 36<sup>th</sup> Avenue E: widen from 2 lanes to 5 lanes,
- Cedar Lane Road, from 12<sup>th</sup> Avenue E to 0.5 miles E of 24<sup>th</sup> Avenue E: widen from 2 to 4 lanes,
- Lindsey Street, from 36<sup>th</sup> Avenue W to Berry Road: widen from 3 and 4 lanes to 5 lanes (note that the currently approved design section is a 4-lane divided roadway),
- Lindsey Street, from Jenkins Avenue to Classen Blvd: widen from 2 lanes to 4 lanes,
- Porter Avenue, from Tecumseh Road to Rock Creek Road: widen from 3 lanes to 4 lanes,
- Rock Creek Road, from 36<sup>th</sup> Avenue W to 24<sup>th</sup> Avenue W: widen from 2 lanes to 4 lanes,
- Rock Creek Road, from Porter Avenue to 12<sup>th</sup> Avenue E: widen from 2 lanes to 4 lanes,
- I-35, 0.5 miles of either side of Main Street: widen from 4 lanes to 6 lanes (Oklahoma Department of Transportation [ODOT] jurisdiction),
- I-35, Main Street Interchange: reconstruction (ODOT jurisdiction),
- I-35, Lindsey Street Interchange: reconstruction (ODOT jurisdiction),
- I-35, SH 9 Interchange: reconstruction (ODOT jurisdiction),
- SH 9, from 24<sup>th</sup> Avenue E to 36<sup>th</sup> Avenue E: widen from 2 lanes to 4 lanes, and
- SH 9, from 36<sup>th</sup> Avenue E to 72<sup>nd</sup> Avenue E: widen from 2 lanes to 4 lanes.

The resulting network configuration and number of through lanes on each segment is shown in **Figure 2.7**.





### 2035 E+C Modeled Results

To assist in the review of the 2035 Norman E+C travel demand forecast results, multiple maps were created, which showed number of total lanes, daily traffic volumes by direction, as well as LOS information based on volume-to-capacity (V/C) ratios for the morning and the afternoon peak periods. These peak period analyses results, as shown in Figures 2.8 and 2.9, are reflective of the worst congestion conditions throughout the day. Refer to **Appendix C** for a detailed description of the modeling and illustrations of the results.

The 2035 Norman E+C network showed a considerable amount of congestion as it only included those roadway improvements that had either begun or completed construction since the initial development of the ACOG model, plus those projects that were committed through programmed funding. The 2035 Norman E+C results allow for a look at the system deficiencies that would occur if the improvements planned for construction by 2035 were not completed. They also allow an opportunity to assess alternative ways to address those deficiencies.

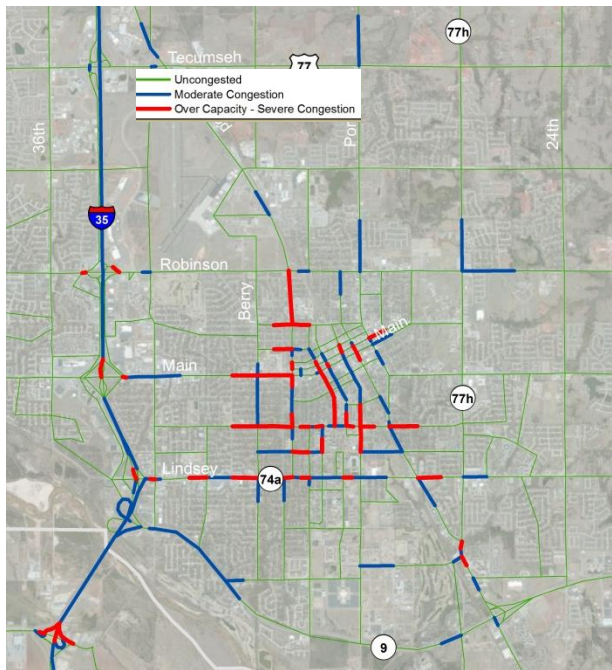


Figure 2.8. Norman E+C AM Peak Model Results

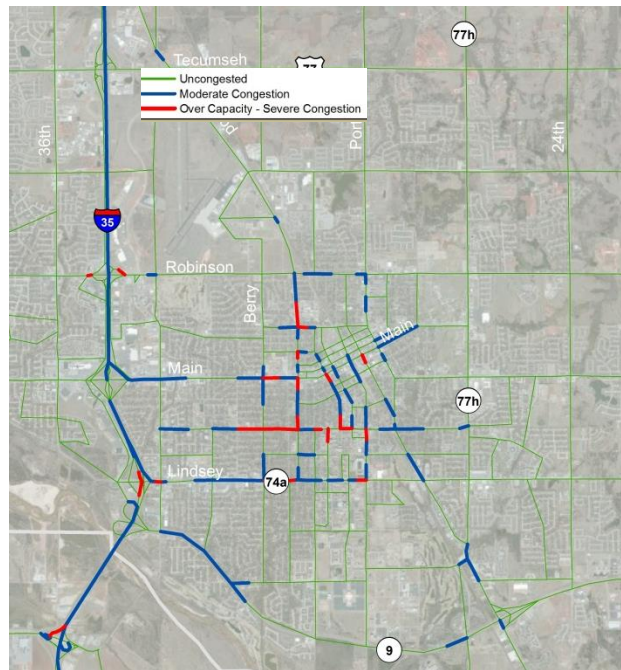


Figure 2.9. Norman E+C PM Peak Model Results

The following are the most congested roadways in the E+C network that were identified as performing poorly in the 2035 travel demand analysis during either the morning and/or afternoon peak period:

- Main Street, west of Downtown to I-35, more prominently in the AM peak
- Boyd Street, west and east of campus between 24<sup>th</sup> Avenue W and 12<sup>th</sup> Avenue E, more prominently in the AM peak
- Lindsey Street, west of Jenkins Avenue to I-35, more prominently in the AM peak
- Flood Avenue, from Robinson Street to Lindsey Street, more prominently in the AM peak
- University Boulevard from Gray Street to Boyd Street

In addition, some degradation of travel speeds was also indicated in the model results on 12<sup>th</sup> Avenue E (Sooner Road), from Rock Creek Road to Robinson Street.

## Transportation System Needs

As seen in the modeling analysis, while the currently committed projects listed above address some of the roadway needs, there are many current and short range needs for roadway, transit, bicycle and pedestrian modes of transportation that are yet unmet, as discussed earlier in this chapter. The following paragraphs discuss specific facility needs for each of the modes. Some of these improvement projects address the specific deficiencies noted in the modeling results described above.

### Identified Short Range Needs

Short range needs address currently identified capacity, safety and network gap issues and those anticipated to arise within the next 5 to 10 years. Many of these short range needs were identified during meetings with the CVC Subcommittees.

### Identified Roadway Short Range Needs

The CVC subcommittee on automobile capacity and quality of service and parking identified the following current and pending needs:

- Improve Main Street operations for all modes and enhance its appearance between Flood Avenue and I-35. Create a sense of arrival and of place and improve mobility for all modes in the core of downtown from Flood Avenue to Porter Avenue.
- Improve Lindsey Street operations between OU and Berry Road to facilitate movement between OU and I-35 as well as through traffic on Lindsey Street.
- Improve traffic operations on Boyd Street, between 24<sup>th</sup> Avenue W and 12<sup>th</sup> Avenue E, to facilitate local access and circulation for all modes
- Improve traffic operations along SH 9 (through more adaptive signal control and access management) to facilitate movement in and out of the southern sector of Norman and points south of SH 9, improve and create a preferred access route to OU from I-35, and accommodate future growth in this corridor.
- Improve and enhance Robinson Street and Tecumseh Road as the arterial roadways of choice for traffic movements between I-35 and the northern and eastern sectors of Norman and US 77.
- Improve the US 77 connections into the core of Norman by enhancing the operations of Flood Avenue south of Robinson Street to Lindsey Street and creating a direct connection from US 77 into Downtown.
- Improve Chautauqua Avenue and Jenkins Avenue, between SH 9 and Lindsey Street, to facilitate access to and egress from campus parking areas and accentuate the preferred access route to and from the OU campus.
- Improve Acres Street, between Berry Road and Porter Avenue, as a crossing circulation roadway for all modes.

As noted, many of these needs are apparent in the results of the E+C modeling.

### Identified Transit Short Range Needs

The CVC subcommittee on transit capacity and quality of service identified the following current and pending needs:

- Expanded service hours,
- Increased service frequency on key routes,
- Realigned routes to create a grid-like system with more efficient transfers,
- Dedicated local funding source,
- Enhanced bus stop amenities, and
- Improved pedestrian access and safety near bus stops.



Many of these needs were identified in CART’s 2008 Norman Long-Range Public Transportation Plan (2008 CART Plan), such as the expanded service hours and increased frequencies, as well as a restructured route system. As noted above, some additional needs were identified in discussions among the subcommittee members.

**Identified Bicycling Short Range Needs**

The CVC subcommittee on pedestrians, bicyclists and streetscape identified the following current and pending bicyclist needs:

- Create bike lanes and other designated facilities for the mobility of basic (average) bicyclists within the core of Norman. Target specific destinations of OU students for off-campus origins and destinations.
- Accentuate the connection between the OU Campus and Downtown Norman.
- Expand the network of multi-use paths (hike & bike trails) throughout Norman to provide increased opportunities for utilitarian as well as recreational riding.

Some of the lack of useful roadway network for bicycling and the call for bike lanes on arterial streets comes from the lack of an adequate number of and/or sufficiently wide collector streets within in the urban street network. Addressing this need will be a long term effort.

**Identified Pedestrian Mobility and Accessibility Short Range Needs**

The CVC subcommittee on pedestrians, bicyclists and streetscape also identified the following current and pending pedestrian needs:

- The Sidewalk Gap analysis conducted by City staff presents the big picture view of the sidewalk needs for pedestrians in Norman. The short range needs are prioritized using the following criteria:
  - Main Street corridor, from 24<sup>th</sup> Avenue W to 12<sup>th</sup> Avenue E,
  - Core Norman neighborhoods,
  - School access routes within one mile of Elementary and Middle Schools, and
  - ADA compliance for all ramps in these areas.

Current roadway design standards call for 5-foot wide sidewalks on all principal and minor arterial roadways and 4-foot wide sidewalks on all collector, commercial/industrial and local streets.

A concept has been proposed to allow developers to pay into a Sidewalk Bank, upon approval from City staff, rather than install a short segment of discontinuous sidewalk along an arterial roadway adjacent to their development. This bank could be used to fund the construction of higher priority sidewalks.

***Non-Committed Planned Projects for Consideration***

**Table 2.1** presents a list of those Encompass 2035 projects affecting the City of Norman that are included in the Encompass 2035 model network, but were not included in the E+C network described above. These projects, and their proposed timing, were assessed for their ability to meet the foreseen transportation needs in Norman by 2035.

<b>Table 2.1. Non-committed Planned Projects from Encompass 2035 for Consideration</b>	
<b>Medium Range – 2016-2025</b>	<b>Model Assessment of Proposed Treatment</b>
<ul style="list-style-type: none"> <li>12<sup>th</sup> Avenue W, from Tecumseh Road to Rock Creek Road: widen from 2 lanes to 4 lanes, plus on-street bike route and sidewalks</li> </ul>	<ul style="list-style-type: none"> <li>2035 E+C good LOS, lower priority</li> </ul>
<ul style="list-style-type: none"> <li>Franklin Road, from 60<sup>th</sup> Avenue W to I-35: widen from 2 lanes to 4 lanes, plus on-street bike route and sidewalks</li> </ul>	<ul style="list-style-type: none"> <li>2035 E+C mostly good LOS, lower priority except near freeway</li> </ul>
<ul style="list-style-type: none"> <li>Imhoff Road, from Classen Blvd to 24<sup>th</sup> Avenue E: widen from 3 lanes to 4 lanes, plus on-street bike route and sidewalks</li> </ul>	<ul style="list-style-type: none"> <li>2035 E+C good LOS, but adjacent planned OU development</li> </ul>
<ul style="list-style-type: none"> <li>James Garner Avenue, from Main Street to Tonhawa Street: realign 2 lanes with on-street bike routes and sidewalks</li> </ul>	<ul style="list-style-type: none"> <li>2035 E+C fair to good LOS, medium priority</li> </ul>
<ul style="list-style-type: none"> <li>Lindsey Street, from 24<sup>th</sup> Avenue E to 36<sup>th</sup> Avenue E: widen from 2 lanes to 5 lanes, plus on-street bike route and sidewalks</li> </ul>	<ul style="list-style-type: none"> <li>2035 E+C good LOS, emerging development, lower priority</li> </ul>
<ul style="list-style-type: none"> <li>Porter Avenue, from Indian Hills Road to Rock Creek Road: widen from 2 lanes to 4 lanes, plus on-street bike route</li> </ul>	<ul style="list-style-type: none"> <li>2035 E+C good LOS, lower priority</li> </ul>
<ul style="list-style-type: none"> <li>Rock Creek Road, from Grand View Avenue to 36<sup>th</sup> Avenue W: widen from 2 lanes to 4 lanes</li> </ul>	<ul style="list-style-type: none"> <li>2035 E+C good LOS, lower priority, add bike lanes/shoulder lanes</li> </ul>
<ul style="list-style-type: none"> <li>SH 9, from 24<sup>th</sup> Avenue W to 12<sup>th</sup> Avenue E: widen from 4 lanes to 6 lanes</li> </ul>	<ul style="list-style-type: none"> <li>2035 E+C fair to good LOS, lower priority</li> </ul>
<ul style="list-style-type: none"> <li>University Boulevard, from Daws Street to Boyd Street: convert to one-way</li> </ul>	<ul style="list-style-type: none"> <li>2035 E+C poor to good LOS, medium priority (pair)</li> </ul>
<ul style="list-style-type: none"> <li>Webster Avenue/Asp Avenue, from Acres Street to Boyd Street: convert to one-way</li> </ul>	<ul style="list-style-type: none"> <li>2035 E+C fair to good LOS, medium priority (pair)</li> </ul>
<b>Long Range – 2026-2035</b>	<b>Assessment of Proposed Treatment</b>
<ul style="list-style-type: none"> <li>48<sup>th</sup> Avenue E, from Franklin Road to SH 9: widen from 2 lanes to 4 lanes, plus on-street bike route and sidewalks</li> </ul>	<ul style="list-style-type: none"> <li>2035 E+C good LOS, strategic north-south rural corridor, medium priority</li> </ul>
<ul style="list-style-type: none"> <li>48<sup>th</sup> Avenue W, from Indian Hills Road to Robinson Street: widen from 2 lanes to 4 lanes, plus on-street bike route and sidewalks</li> </ul>	<ul style="list-style-type: none"> <li>2035 E+C good LOS, add bike lanes, lower priority</li> </ul>
<ul style="list-style-type: none"> <li>Berry Road, from Robinson Street to Imhoff Road: widen from 2 lanes to 4 lanes, plus on-street bike route and sidewalks</li> </ul>	<ul style="list-style-type: none"> <li>2035 E+C good LOS, strategic bike lanes, medium priority</li> </ul>
<ul style="list-style-type: none"> <li>Broadway Avenue, from Indian Hills Road to Franklin Road: widen from 2 lanes to 4 lanes</li> </ul>	<ul style="list-style-type: none"> <li>2035 E+C good LOS, lower priority</li> </ul>
<ul style="list-style-type: none"> <li>Classen Blvd, from Lindsey Street to 12<sup>th</sup> Avenue E: widen from 3 lanes to 4 lanes, plus on-street bike route and sidewalks</li> </ul>	<ul style="list-style-type: none"> <li>2035 E+C fair to good LOS, lower priority</li> </ul>
<ul style="list-style-type: none"> <li>Flood Avenue, from Robinson Street to Main Street: widen from 2 lanes to 4 lanes, plus on-street bike route and sidewalks</li> </ul>	<ul style="list-style-type: none"> <li>2035 E+C poor to good LOS, medium priority</li> </ul>

<ul style="list-style-type: none"> <li>Imhoff Road, from SH 9 to Chautauqua Avenue: widen from 2 lanes to 4 lanes, plus on-street bike route and sidewalks</li> </ul>	<ul style="list-style-type: none"> <li>2035 E+C poor to good LOS, ROW constraints, medium priority</li> </ul>
<ul style="list-style-type: none"> <li>Indian Hills Road, from 48<sup>th</sup> Avenue W to I-35: widen from 2 lanes to 4 lanes, plus on-street bike route and sidewalks</li> </ul>	<ul style="list-style-type: none"> <li>2035 E+C fair to good LOS, medium priority</li> </ul>
<ul style="list-style-type: none"> <li>James Garner Avenue, from Flood Avenue to Robinson Street: new 2-lane roadway</li> </ul>	<ul style="list-style-type: none"> <li>New facility, couple with trail crossing of Robinson (part 1)</li> </ul>
<ul style="list-style-type: none"> <li>James Garner Avenue, from Robinson Street to Acres Street: new 2-lane roadway</li> </ul>	<ul style="list-style-type: none"> <li>New facility, realign/enhance existing trail (part 2)</li> </ul>
<ul style="list-style-type: none"> <li>Jenkins Avenue, from Lindsey Street to Constitution Avenue: widen from 2 lanes to 4 lanes, plus on-street bike route and sidewalks</li> </ul>	<ul style="list-style-type: none"> <li>2035 E+C fair to good LOS, medium priority</li> </ul>
<ul style="list-style-type: none"> <li>Lindsey Street, from Berry Road to Jenkins Avenue: widen from 2 lanes to 4 lanes</li> </ul>	<ul style="list-style-type: none"> <li>2035 fair to poor LOS, constrained ROW, high priority</li> </ul>
<ul style="list-style-type: none"> <li>Porter Avenue, from Robinson Street to Alameda Street: widen from 4 lanes to 5 lanes, plus on-street bike route and sidewalks</li> </ul>	<ul style="list-style-type: none"> <li>2035 E+C fair LOS, constrained ROW, not consistent with guiding principles, development concepts</li> </ul>
<ul style="list-style-type: none"> <li>SH 77 (12<sup>th</sup> Avenue E), from Indian Hills Road to Classen Boulevard: widen from 4 lanes to 6 lanes</li> </ul>	<ul style="list-style-type: none"> <li>2035 E+C good LOS, lower priority</li> </ul>
<ul style="list-style-type: none"> <li>SH 9, from 72<sup>nd</sup> Avenue E to 168<sup>th</sup> Avenue E: widen from 2 lanes to 4 lanes</li> </ul>	<ul style="list-style-type: none"> <li>2035 E+C good LOS, lower priority</li> </ul>
<ul style="list-style-type: none"> <li>SH 9, from 168<sup>th</sup> Avenue E to Pottawatomie Road: widen from 2 lanes to 4 lanes</li> </ul>	<ul style="list-style-type: none"> <li>2035 E+C good LOS, lower priority</li> </ul>

### ***2035 E+C Plus Roadway Enhancements***

Roadway improvements were conceived and modeled to address the corridors with congested conditions. Some of the uncommitted projects noted previously were included in this set. The rest of the uncommitted projects that would be on roadways with an acceptable 2035 E+C level of service were not modeled. Also tested were road diet potentials to enhance the multimodal potentials of the streets to see if their operational performance could be acceptable. **Appendix C** contains descriptions of the model development and the testing of various treatments and their performance.



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## Street Functional Classifications and Design

The various levels of classifications of streets within Norman can be provided in a myriad of configurations to best serve the context of their surroundings. A street typical section may change from block to block, though the functional classification continues. The functional classification of a street may change from one major intersection to the next depending on the collection zone of that street segment.

- **Freeways** - The freeway network includes the interstate, US, and State Highway roadways controlled by the state DOT. Limited access roadways are those that control access to the facility at designated locations, typically at other freeways and arterial streets.
- **Principal Arterials** – Principal arterial roadways carry traffic across major segments of the city, with a primary function of throughput, rather than access. Driveway access onto principal arterials is often limited by spacing requirements, and parking along arterial roadways is seldom allowed.
- **Minor Arterials** – Minor Arterial roadways also carry traffic across major segments of the city, with a primary function of throughput, rather than access. Driveway access onto minor arterials is not as constrained as on principal arterials, and parking along minor arterial roadways is sometimes allowed befitting the local surroundings. Minor arterial roadway cross sections can range from three-lane streets to four lane boulevard sections.
- **Collectors** - The function of collector roadways is to serve as a conduit between local roadways and the network of arterial streets. Collector streets are differentiated from arterial streets by their length and degree of access to adjacent development. Collector streets are typically contiguous across one or more arterial roadways, but seldom more than one or two miles in length. Driveway access onto collector roadways is seldom limited and parking along collectors is often allowed, consistent with adjacent land use. Collector roadway cross sections can range from two lane streets to four lane boulevard sections. Collector roadways are often good candidate streets for accommodating bicycles, either in shared lanes or separate bike lanes.
- **Local Streets** - Local roadways will typically be two-way streets, one lane in each direction, with curbside parallel parking on both sides. This typical section provides for minimal traffic flow accommodations and thus influences traffic calming, direct access to ground floor development, and provides for overnight parking of residential development resulting in minimized construction of off-street lots and structured parking for residential development. Many permutations on that basic configuration are possible for context sensitive solutions to the needs of the adjacent development, including one-way streets, angled parking, or no parking on one or both sides near key developments such as the future rail station.

Some enhancements to the existing street classifications and typical design standards are proposed, as described below, to enhance the operational and multimodal functionality of the street network.

### *Street Typical Sections*

Design typical sections were developed for each of these roadway classifications. Options for the provision of 8 to 10 foot wide side paths rather than sidewalks, the provision of three lanes or four lanes, and streetscape treatments are included in the typical sections. These typical design sections are included in **Appendix D**, comparing the new section to the existing City typical street standards.

### Typical Roadway Capacities

ACOG has established planning guidelines for threshold values of traffic carrying capacity for various lane configurations by facility type. In general, adding lanes and auxiliary lanes increases the vehicular capacity of the roadway. For general planning purposes, the capacity ranges for roadway configurations is shown in **Table 3-1**. These values can be used when considering roadways for the need for widening. They also can be used for initial assessments of the potential for lane reductions of existing roadways to add bike lanes or to “right-size” a roadway during a re-construction project.

Table 3-1  
ACOG Planning Level Typical Daily Vehicular Capacities of Roadway Configurations

Route Type	Lanes	LOS E Capacity
Freeways	4 lane freeway	80,000 vpd
	6 lane freeway	125,000 vpd
	8 lane freeway	165,000 vpd
City Arterials	2 lane arterial <sup>1,2</sup>	17,100 vpd
	4 lane arterial (undivided) <sup>1</sup>	34,200 vpd
	4 lane arterial (divided)	38,000 vpd
	5 lane arterial (center turn lane)	36,000 vpd
	6 lane arterial (undivided)	52,300 vpd
	6 lane arterial (divided)	58,000 vpd
	One way street (per lane)	11,000 vpd

<sup>1</sup>Apply 20% reduction if no left turn lanes provided within corridor

<sup>2</sup>Apply 5% increase for continuous center turn lane

### Freeways, Limited Access

The freeway is typically uninterrupted with grade separations at intersections and ramped entries and exits to and from the crossroads as on I-35. However, limited access freeways may also be interrupted for signalized arterial roadway crossings. Freeways typically operate at free flow speeds over 55 MPH and have two or more lanes in each travel direction. Freeways are typically barrier or median separated. Freeways, especially controlled access, are typically paralleled by service roads that serve as the interface between the freeway and the adjacent community’s arterial and collector street network.

### Freeways, Rural

Rural freeways consist of US, State, and other regionally significant roadways that extend between communities and across regions, providing for intersections with arterial and collector roadways and as needed allowing for local land access directly to the facility. State Highway 9 is an example of a rural freeway. Intersections with arterial roadways are typically signalized, as warranted, and provisions are often made for left turn lanes and occasionally right turn lanes as well to facilitate the through movements along the freeway. Freeways typically operate at free flow speeds over 55 MPH and have one or more lanes in each travel direction. Access management practices should be employed to minimize the impacts of property access along rural freeway facilities.



## Principal Arterials, Urban

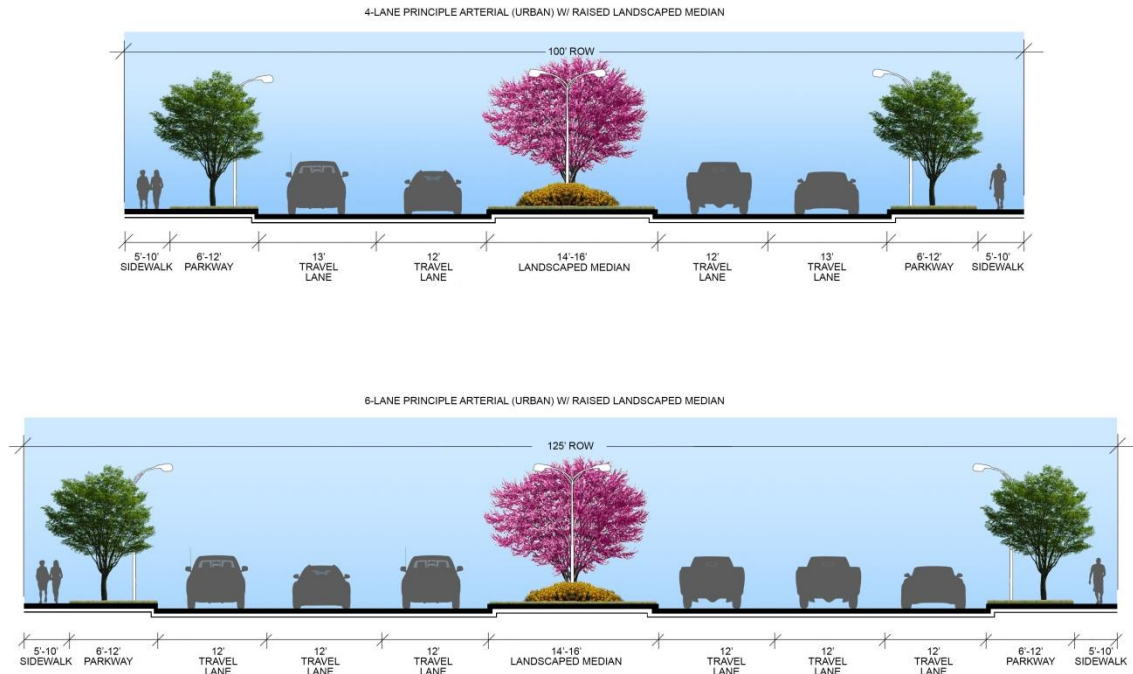


Figure 3.1 Typical Sections of Principal Urban Arterial Roadways

Urban principal arterial roadways provide the predominant passageways through the urbanized portions of the community and connect to the regional freeway network, typically providing for curb and gutter drainage. Intersections are provided at all arterial, collector and local roadways and as needed allowing for local land access directly to the facility. Intersections with arterial roadways are typically signalized and provisions made for one or more left turn lanes and occasionally right turn lanes to facilitate the through movements along the arterial. Principal urban arterial roadways are to provide at least two travel lanes in each direction plus a center median area for separations of traffic. The median area may be used to provide channelized left turn lanes, continuous left turn lanes, and/or streetscape. Where traffic operational analyses support the need for greater throughput capacity, a six-lane section may be considered. Access management practices should be employed to minimize the impacts of property access (i.e., driveways) on the principal arterial facility. When transit routes run along urban principal arterials, consideration should be given to providing a bus pullover bay for service at the bus stops to reduce the traffic delay and potential safety implications of buses stopping in the rightmost travel lane to serve passengers.

Sidewalks, 5 to 10 feet in width, should be provided along both sides of the roadway. With concurrence by the city's Bicycle Advisory Committee (BAC), principal arterials may also incorporate bike lanes within the roadway pavements to enhance the bicycle transportation network, in which case, sidewalks would be limited to 5 feet in width.

## Principal Arterials, Rural

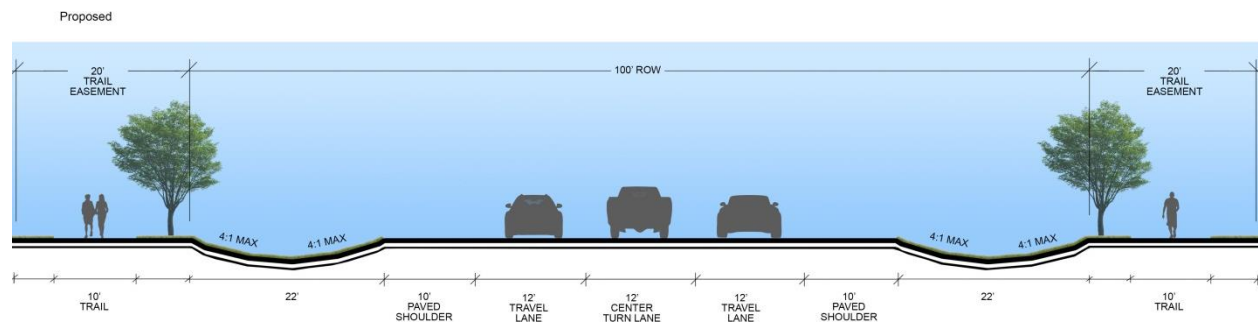


Figure 3.2 Typical Section of Principal Rural Arterial Roadways

Rural principal arterial roadways provide the predominant passageways through the rural portions of the community and connect to the regional arterial and freeway network, typically providing for open ditch drainage. Intersections are provided at all arterial, collector and local roadways. Local land access is permissible directly to the rural principal arterial facility. Intersections with arterial roadways may be signalized or stop controlled and provisions should be made for left turn lanes to facilitate the through movements along the arterial. Principal rural arterial roadways are to provide at least one and no more than two travel lanes in each direction plus a center median area for separations of traffic, provision of channelized left turn lanes, sections of continuous two-way left turn lane, and/or streetscape. Access management practices should be employed to minimize the impacts of property access in the rural principal arterial facility. The roadway is to be provided with 10-foot wide paved shoulders. Rights-of-way should be provided to allow a 10-foot trail along one or both sides of the roadway for urban trail and side path connections to the rural recreational trail network.

## Minor Arterials, Urban

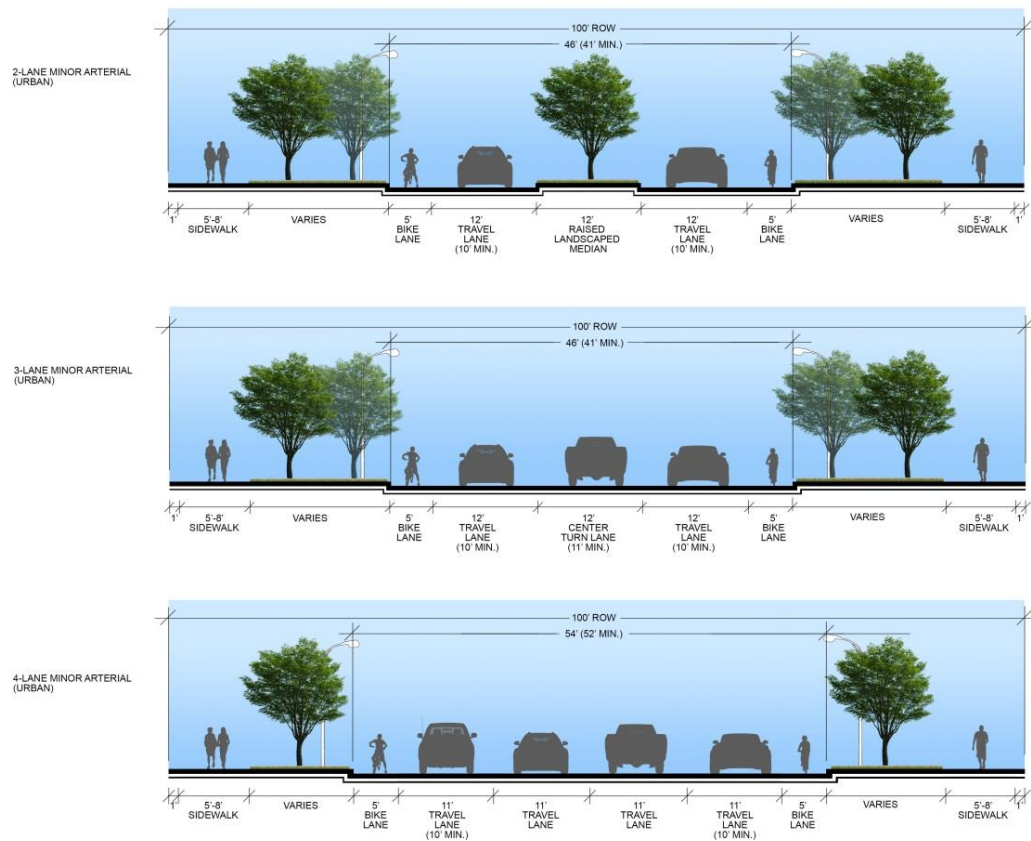


Figure 3.3 Typical Sections of Minor Urban Arterial Roadways

Urban minor arterial roadways provide passageways across segments of the urbanized portions of the community and connect to the regional arterial network, typically providing for curb and gutter drainage. Intersections, signalized as warranted, are provided at all arterial, collector and local roadways and the minor arterial allows for local land access directly to the facility. Intersections with other arterial roadways are typically signalized, as warranted. Minor arterial streets typically have significant local access needs or closely spaced intersecting local streets, and thus two optional cross sections may be applied:

- A three-lane section to allow a continuous left turn lane or raised median with left turn lane pockets to facilitate the through movements along the arterial. A special version of this three lane section would have a reversible center lane that can be allocated to the peak direction of travel by special lane markings and overhead signs.
- A four lane section that can accommodate multiple left turns and right turns into adjacent property driveways. At street intersections, the left or right lanes can be dedicated to through lanes or turning lanes as needed for intersection capacity.

Bike lanes would be provided on either typical section. Sidewalks, 5 to 8 feet in width, would be provided along both sides of the roadway.

### Minor Arterials, Rural

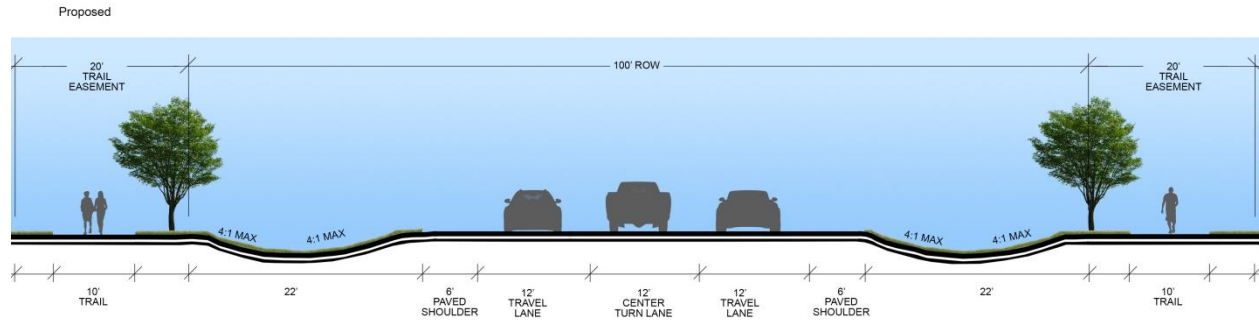


Figure 3.4 Typical Section of Rural Minor Arterial Roadways

Rural minor arterial roadways provide passageways across segments of the rural portions of the community and connect to the regional arterial network, typically providing for open ditch drainage. Intersections are provided at all arterial, collector and local roadways and the minor arterial allows for local land access directly to the facility. Intersections with arterial roadways may be signalized or stop controlled. Minor rural arterial roadways are to provide one travel lane and a 6-foot wide shoulder in each direction. Intersections with other arterial roadways may be signalized or stop controlled and provisions should be made for left turn lanes to facilitate the through movements along the arterial. Access management practices should be employed to minimize the impacts of property access in the rural minor arterial facility.

### Collectors, Urban

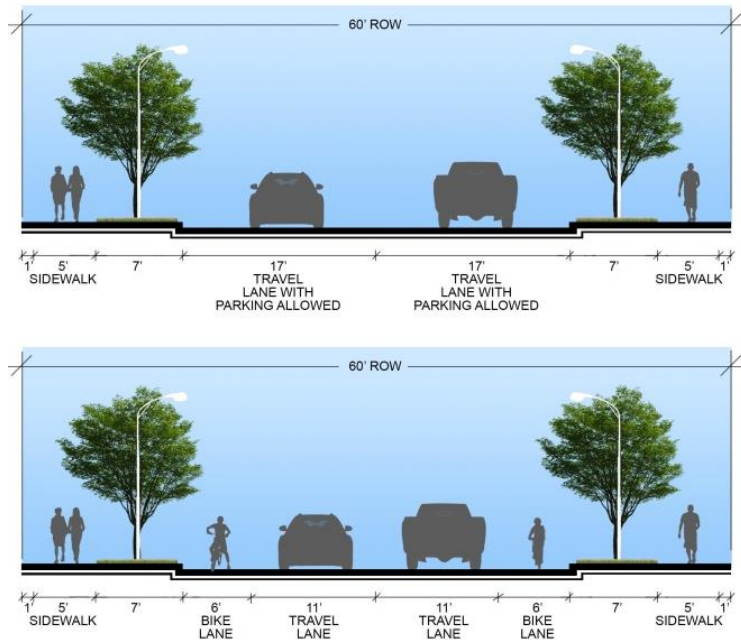


Figure 3.5 Typical Sections of Urban Collector Roadways

Collector streets are an important part of the urban street network. Collector roadways tie neighborhoods together, within the one mile grid of development blocks and across the arterial roadways. In industrial and commercial areas, collector streets serve local industrial and commercial streets and would have a thicker pavement section. The network of collectors provides numerous benefits to the transportation system:

- Focus the entry and crossing of traffic on the arterials, thus minimizing total delay;
- Allow lower speed/lower volume roadways for shorter-distance local traffic circulation; and
- Provide bicycle and pedestrian friendly connections between the one-mile grid blocks.

Collector streets should be sufficiently wide to allow for one lane of traffic in each direction and either curbside parking or bike lanes (typically not both), suitable to the needs of the neighborhood and the transportation network. An alternative section for one-way collector roadways would allow for one lane of traffic and both parking and a bike lane. A minimum 5-foot wide sidewalk will be provided along both sides of the roadway.

### ***Collectors, Rural***

Collector streets in the rural areas of Norman can serve as the one-mile grid of streets in the sparsely developed areas near Lake Thunderbird and the Canadian River. Due to the very low traffic volumes, the roadway will consist of the minimal 26-foot width of paved roadway plus a gently graded shoulder area, for safety, that would be unpaved. Sidewalks are typically not provided along rural collector roads.

### ***Local Street, Urban***

The primary function of local streets is to provide access to and from properties. Local streets feed to and from the collector street network, but occasionally may tie directly to arterial streets. The urban local street will be a 26-foot pavement width, with curb and gutter drainage and minimum 4-foot wide sidewalks on each side of the street.

### ***Local Street, Rural***

Local streets in the rural areas of Norman serve access to development in the sparsely developed areas near Lake Thunderbird and the Canadian River. Due to the very low traffic volumes, the roadway would consist of the minimal 22-foot width of paved roadway plus a gently graded shoulder area, for safety, that would be unpaved. In a rural estate setting, the 22 feet of pavement may be framed by curb and gutter. Sidewalks are typically not provided along local rural streets.

## Transportation System Plan

### *Master Thoroughfare Plan (MTP)*

#### Summary of Key MTP Features

The Thoroughfare Plan for Norman is depicted in **Figure 3.6**. Several significant changes in the MTP are made to enhance the traffic capacity, distribution and circulation of traffic, and mobility of bicyclists on the roadway network. Enhancements are also made to incorporate principles of access management and intensions for aesthetics of the corridors.

- Extension of James Garner Avenue north of Acres Street to US 77 north of Robinson Street – This improvement addresses the deficient level of service along the Flood Avenue corridor south of Robinson Street during the AM and PM peak periods, and provides a more direct entryway into Downtown Norman from the north.
- Increasing the significance of Jenkins and Chautauqua Avenues between SH 9 and Lindsey Street – This improvement enhances the flow of traffic from SH 9 to the heart of the OU campus and its parking areas. The improvement would provide bike lanes on Chautauqua Avenue and complete the sidewalks on both facilities.
- Re-thinking Main and Gray Streets through Downtown as Minor Arterials serving Downtown as a destination and less of a through-way, and consideration of reducing to two travel lanes each west of the railroad tracks, with reallocation of the lane width to enhance parking activity and to accommodate bicyclists.
- Creating a Collector Roadway network that ties the one-mile grid blocks together across the arterial roadways, to spread-out the impact of traffic on the arterials and to allow lower stress and bicycle friendly connections between the one-mile grid blocks.
- The context sensitive development of certain roadway corridors with special emphasis on serving the adjacent land uses. Specific corridors of special interest are identified for:
  - Lindsey Street, between Berry Road and Jenkins Avenue;
  - Porter Avenue, between Alameda Street and Robinson Street;
  - James Garner Avenue, between Flood Avenue/Robinson Street and Boyd Street;
  - Flood Avenue, between Robinson Street and Main Street; and
  - Berry Road, between Robinson Street and Main Street.



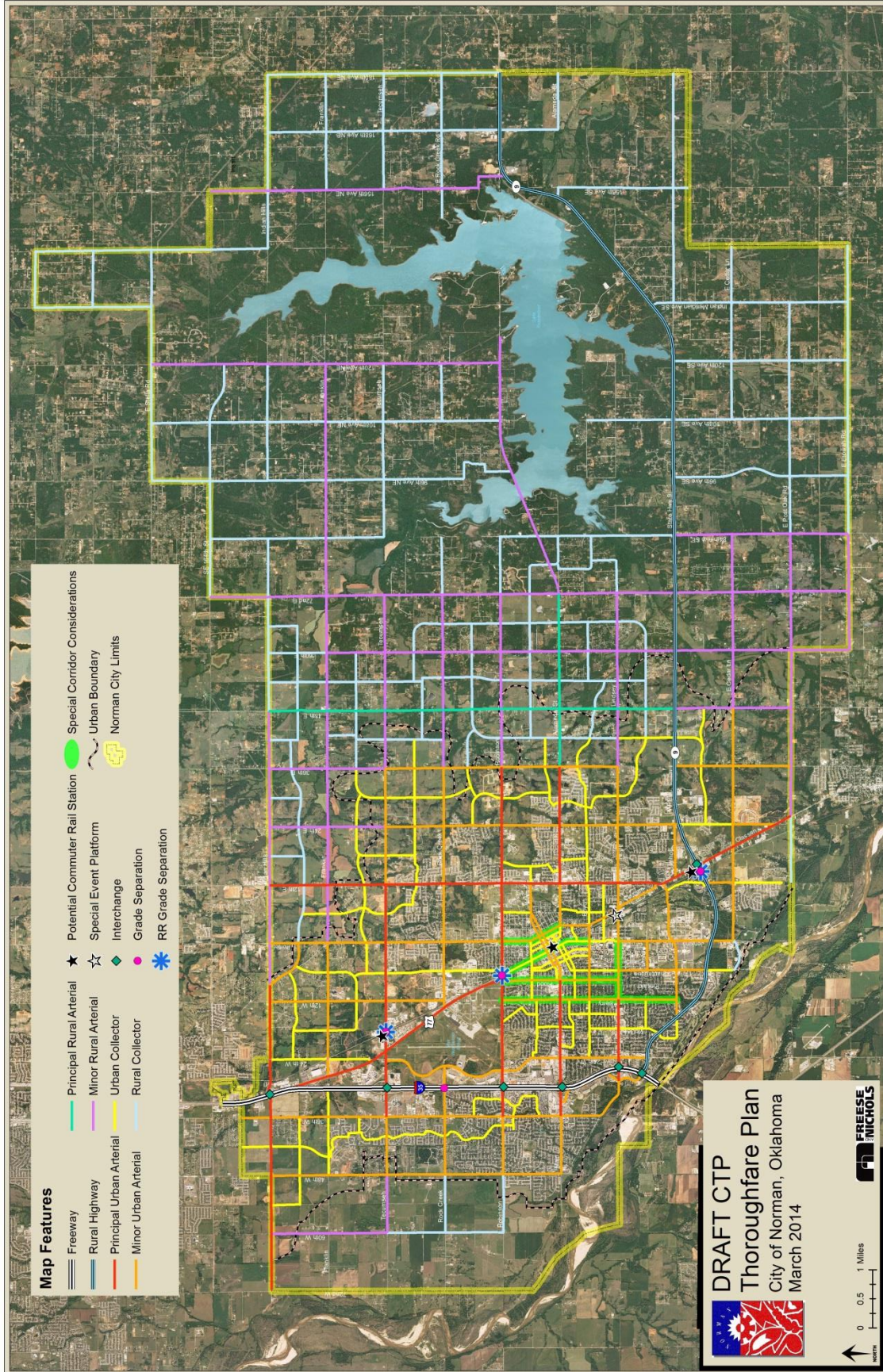


Figure 3.6 Norman Thoroughfare Plan



## *Bicyclist and Pedestrian Facilities Master Plan*

### Summary of Key Bicyclist and Pedestrian Plan Features

Based on feedback received from the CVC subcommittee on pedestrian, bicycle and streetscape, from OU Students, and from the Norman BAC, the bicycle facilities master plan was developed, as depicted in **Figure 3.7**. Key features of the plan include:

- Extension of the Legacy Trail to provide a loop around Max Westheimer Airport, including a grade separation over Robinson Street;
- Bike lanes along Lindsey Street from Elm Avenue to 24<sup>th</sup> Avenue W, connecting to the sidepaths along each side of the Lindsey crossing over I-35 to Ed Noble Parkway. Extend a trail west of Ed Noble Parkway along the north and south side of Lindsey/36<sup>th</sup> Avenue W. to Westernview/Willowbend, with a trail continuation westward to connect to 48<sup>th</sup> Avenue W.;
- Bike lanes along Ed Noble Parkway from Lindsey Street to Main Street;
- Bike lanes along Main Street from Cherry Creek to 48<sup>th</sup> Avenue W. and along 48<sup>th</sup> Avenue W. from Main Street to north of Indian Hills Road;
- Sidepaths along both sides of Rock Creek Road from Flood Avenue to 24<sup>th</sup> Avenue E.;
- Bike lanes on University Boulevard from Boyd Street to Apache Street, sharrows along Apache Street from University Boulevard to Webster Avenue, and bike lanes along Webster Avenue from Duffy Street to north of Gray Street;
- Reduce the Main Street and Gray Street one-way pair west of Porter Avenue from three lanes to two lanes, creating a buffer space between the rightmost travel lane and the parking area, with bulb-outs at the corners. This treatment will provide for shorter crossing distance for pedestrians, easier backing maneuvers for parked vehicles, and a usable roadway edge for on-street bicyclists.
- Conversion of Main Street and Gray Street, between Porter Avenue and the roundabout, from two way streets to a one-way street pair (Main Street east bound and Gray Street west bound) providing one travel lane, one parking lane/buffer lane, and one bike lane on each street;
- Widening of Acres Street to provide bike lanes from Berry Road to Porter Avenue;
- Future shoulder bike lanes on all principal and minor rural arterial roadways;
- Extension of Main Street east of 12<sup>th</sup> Avenue E as a multi-use path to tie to the local street network and extend to 24<sup>th</sup> Avenue E.
- Future multi-use trail along Robinson Street from 24<sup>th</sup> Avenue E to Lake Thunderbird Trail system, (along potential Waterline Trail from Parks Department Trails Master Plan);
- 12<sup>th</sup> Avenue E sidepaths from Tecumseh Road to Lindsey Street and along Lindsey Street from 12<sup>th</sup> Avenue E to Classen Boulevard, with a crossing of the railroad to tie to the sidepaths at OU.
- Potential road diets on some streets to introduce bike lanes.
  - Rock Creek Road between 48<sup>th</sup> Avenue W. and Grandview Avenue
  - W. Main Street between 48<sup>th</sup> Avenue W. and 36<sup>th</sup> Avenue W.
  - Alameda Street between Classen and 36<sup>th</sup> Avenue E., dependent upon the intensity of future development in the Alameda corridor and resultant future traffic volumes.
  - Rock Creek Road between 36<sup>th</sup> Avenue W. and 24<sup>th</sup> Avenue W., dependent upon the intensity of future development west of 36<sup>th</sup> Avenue W. and upon the courses of action taken to enhance access to and from I-35 north of Robinson Street.
  - Rock Creek Road between 12<sup>th</sup> Avenue W. and 12<sup>th</sup> Avenue E., dependent upon the intensity of future development in the Rock Creek Road corridor.
  - 60th Avenue W., Tecumseh Road to Indian Hills Road (currently programmed for widening from 2 lanes to 4 lanes, stripe new pavement for three lanes with bike lanes.)

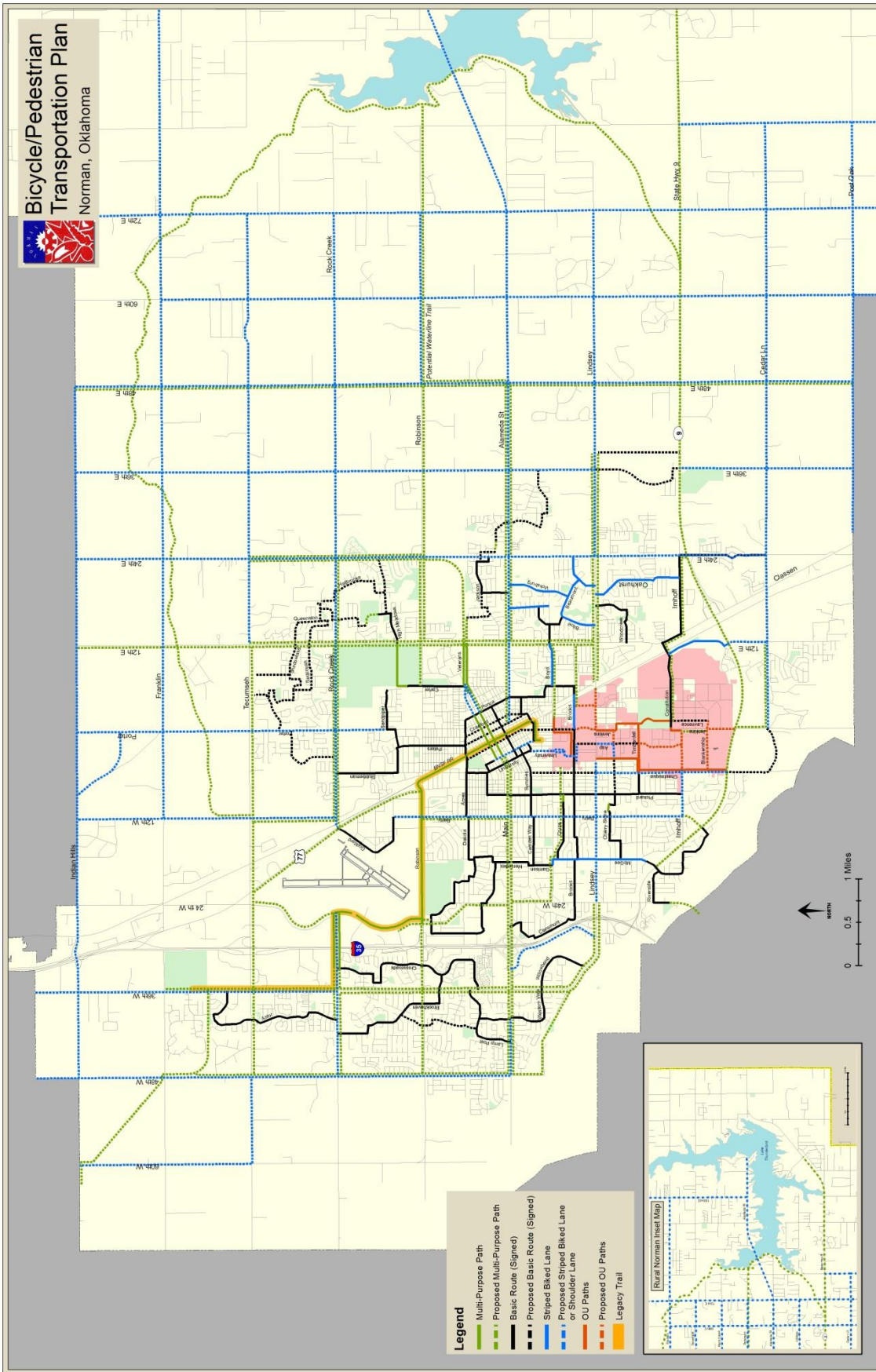


Figure 3.7 Norman Bicycle and Pedestrian Transportation Plan

### Sidewalk Completion Plan

City staff completed an inventory of existing sidewalks on arterial and collector streets recently before the preparation of the CTP. The inventory was intended to identify the gaps in existing sidewalks and other missing elements and deficiencies of the sidewalk infrastructure. Working with staff, the sidewalk gaps were classified into categories:

- Committed – Sidewalks that have funding committed towards their completion through a variety of sources from roadway projects to safe routes to schools programs.
- Uncommitted – These are the missing or deficient sidewalks needs that are within city rights of way along existing development that need to be initiated by the city.
- High Priority – These are roadway corridors with sidewalk gaps or deficiencies that were identified by the CVC Bicycle and Pedestrian Subcommittee as being of the highest priority for completion. Additionally, sidewalk access to bus stops should also be a high priority.
- Developer Driven – These sidewalks are adjacent to undeveloped property and will be installed by the developers of those properties. If they become critical links in the sidewalk network, the City should consider installing these sidewalks in advance of the development, and may consider adapting the existing street recoupment ordinance to recover the costs from the developer when they develop their property.

The Sidewalk Completion Plan is shown in **Figure 3.8**.

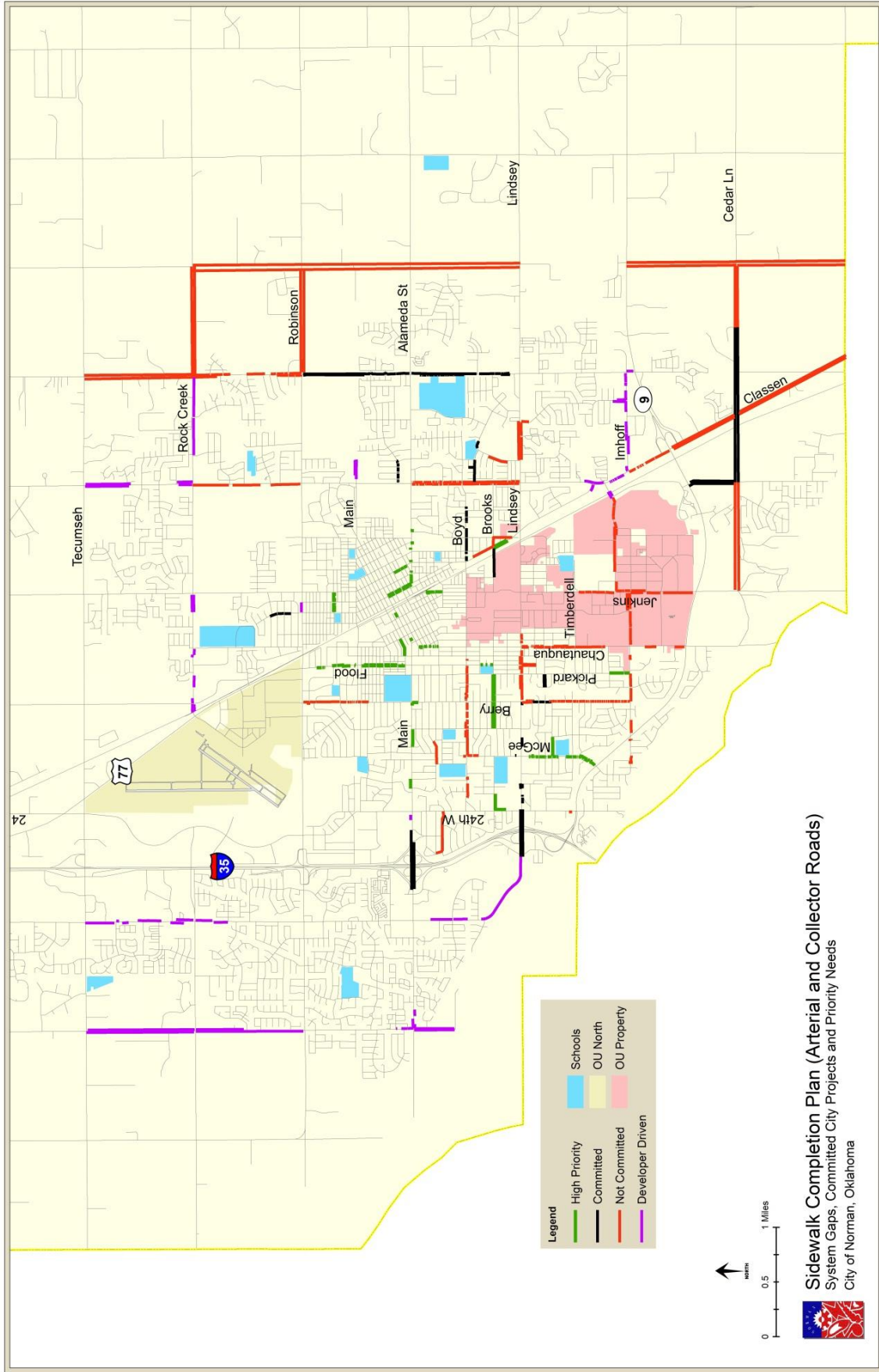


Figure 3.8 Norman Sidewalk Completion Plan



## *Transit Master Plan*

### **Summary of Key Transit Plan Features**

The 2008 CART Plan incorporates many of the recommended transit improvements, such as the often requested extended service hours and increased frequencies of service. Based on the feedback received from the Transit Subcommittee, OU students and citizens of Norman, the general consensus was to expeditiously advance the implementation schedule of the phased improvements recommended in the 2008 CART Plan. Various enhancements to the 2008 CART Plan recommendations were added during development of the CTP. The transit plan recommended improvements include:

- Of highest importance is increasing the frequency of service and expanding hours of operations for all fixed bus routes. Sunday transit service is also desired. These improvements would not only enhance mobility for Norman citizens that rely on transit, but would also provide an attractive alternative for choice riders.
- Better on-bus accommodations for transit patrons with wheelchairs, to include a more user-friendly tie-down system and an improved, on-bus circulation pattern. This improvement would provide enhanced service to transit patrons with disabilities, and could relieve some of the need currently placed on the complimentary paratransit service, CARTaccess, which is generally more expensive to operate than regular fixed route bus transit.
- Make all bus stops accessible according to the Americans with Disabilities Act (ADA) and the 2008 ADA Amendments Act (ADA AA) requirements and providing overall enhanced pedestrian access. This improvement particularly recognizes ongoing mobility concerns for the mobility challenged community. ADA compliant improvements to bus stops should, whenever possible, be combined with general improvements to pedestrian access, enhancements to bus stop amenities, and elimination of safety concerns, such as uncontrolled pedestrian crossings or lighting issues. The number of mobility challenged citizens is projected to grow rapidly over the next twenty years as the baby boom generation ages.
- Enhance the safety for transit riders crossing major roadways to reach bus stops, re-positioning bus stops as needed. Add crosswalks, signage, beacons and pedestrian crossing signals as appropriate.
- Provide a corridor-based, grid network of transit routes to serve Norman, thus creating a more rider-intuitive system that can be served efficiently and migrates from the initially OU-centric route structure to better serve the needs of all of Norman.
- Provide public transportation service to areas not considered in the 2008 CART Plan, such as along the Porter Avenue/Classen Boulevard corridor, to the Cleveland County Jail, the Moore Norman Technology Center-Franklin Road Campus, and to the growing University North Park development. These improvements would provide connectivity to currently unserved activity centers, as well as offer an additional mobility choice to growing residential areas.
- Support regional public transportation connectivity through active encouragement of the implementation of a high-capacity transit connection, such as regional commuter rail, between the City of Norman and Downtown Oklahoma City and beyond. This improvement would greatly enhance mobility options available to City of Norman commuters and visitors alike, and has the potential to alleviate congestion on I-35.

The current 2008 CART Plan recommended route changes, in concert with the conceptual routes proposed by stakeholders, are shown in **Figure 3.9**.



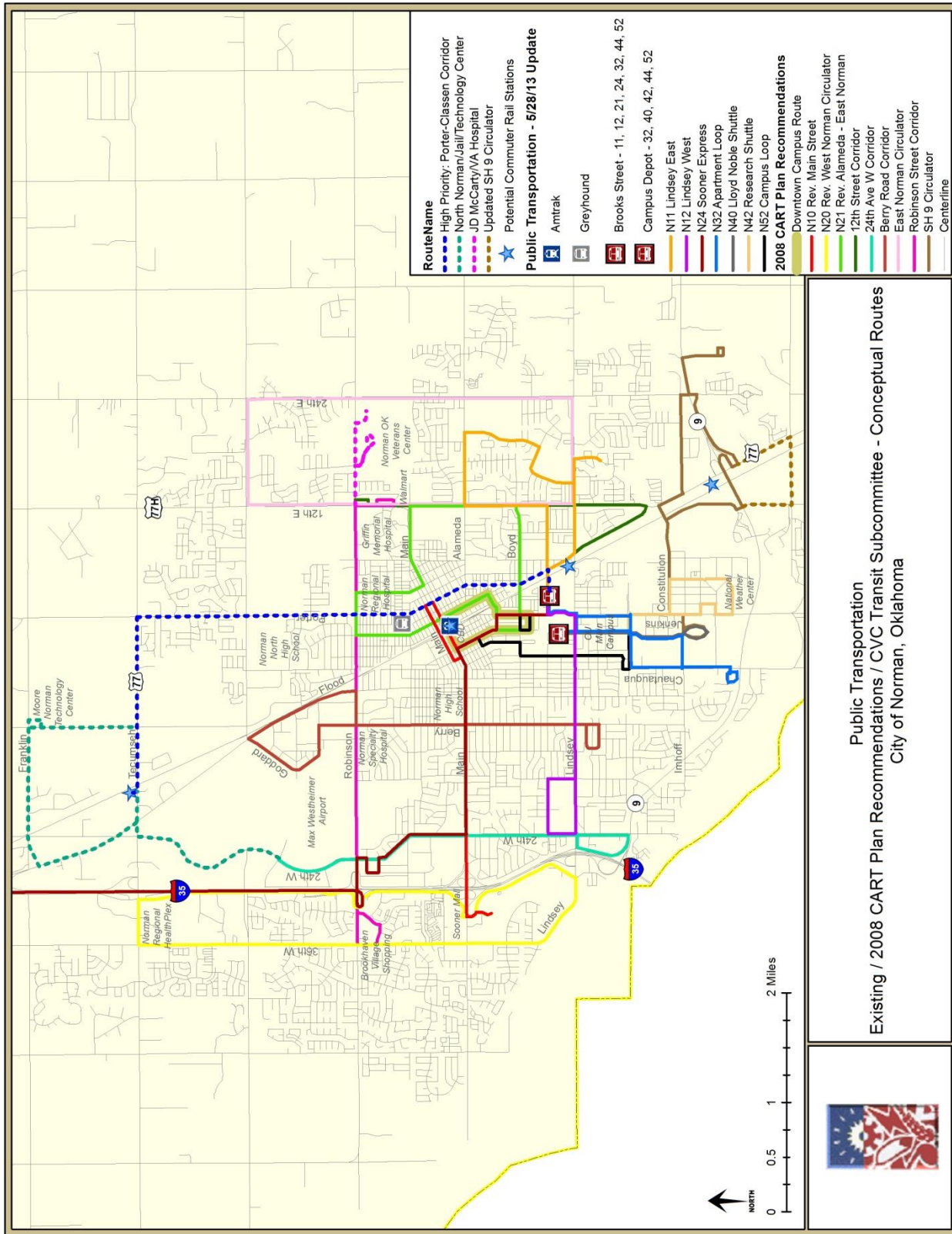


Figure 3.9 CART Fixed Route Service Plan

## Design Guidelines and Special Considerations

There are established standards for design that are utilized by communities across the United States that have been established based on research and local experience. These are the anticipated guidelines for implementation of the transportation system plan:

For Roadways:

- AASHTO [A Policy on Geometric Design of Highways and Streets](#), latest edition
- Transportation Research Board [Highway Capacity Manual](#), latest edition
- Oklahoma [Manual on Uniform Traffic Control Devices](#), latest edition
- City of Norman Street Design Standards

For Bikeways:

- AASHTO Guide for the Design of Bicycle Facilities
- NACTO Urban Bikeway Design Guide

For Sidewalks and Paths:

- AASHTO Guide for the Planning, Design and Operation of Pedestrian Facilities
- City of Norman Landscape/Tree Ordinance

For Transit Facilities:

- TRB Transit Capacity and Quality of Service Manual
- CART Facilities and Vehicles Design Standards

In addition to these established design standards, there are additional guidelines for design applications to best suit the current and anticipated conditions along the street corridor.

### *Complete Streets*

The focus of a complete streets initiative is to consider all modes during the planning, design, construction, operation and maintenance of the city's street network. Effective complete streets policies help communities routinely create safe and inviting road networks for everyone, including bicyclists, drivers, transit operators and users, and pedestrians of all ages and abilities. Instituting a Complete Streets policy ensures that transportation planners and engineers consistently design and operate the entire roadway with all users in mind. For the Complete Streets policy to be effective, a program of supporting policies and procedures need to be put in place in all City departments, including a program of land use planning guidelines, a series of project development checklists, established responsibilities for addressing modal issues, and design and operating standards for implementation and maintenance. A draft policy statement for adoption and recommended standards and guidelines from a model design manual can be found in **Appendix G**.

The Norman CTP, *Moving Forward*, contains a multimodal Thoroughfare Plan with complete streets typical street sections for new roadway corridors, a bicycle transportation network plan that is coordinated with the thoroughfare plan, and a transit plan that better uses the street grid system and targets provision of acceptable coverage and headways to encourage popular usage. The CTP also contains plans for enhancement of existing roadways, sidewalks and bicycle facilities to bring existing facilities up to complete streets standards.

### *Context Sensitive Solutions*

Though a roadway corridor on the Thoroughfare Plan may be of a particular classification designation, whether it be principal arterial, minor arterial or collector, its typical section may transition along its corridor depending upon the traffic volumes and relation to the adjacent land uses. In many cases, an arterial roadway may pass through rural into urban and sequentially commercial into residential settings and back again within a segment of the corridor. The typical sections to be considered for these roadways should be sufficiently adaptable to the context of its current surroundings and potential development. Similarly, the development of land adjacent to arterial roadways should be sensitive to the mobility function of the corridor. Thus, for each of the roadway classifications in the Thoroughfare Plan, multiple typical sections are proposed for potential application to the corridor context, with innumerable permutations possible.

### *Special Context Sensitive Corridors*

Every corridor should be designed with complete streets principles and context sensitive solutions in mind. The following corridors, in particular, are identified for heightened attention to such special considerations. The corridors will require further study and collaboration with stakeholders to identify all relevant issues and develop and design concept for each corridor.

#### **Lindsey Street, between Berry Road and Jenkins Avenue**

Significant dialogue and conceptual concepts have been exchanged between City staff and representatives of OU regarding the desired characteristics of Lindsey Street as it approaches and passes through the university campus. Lindsey Street from Classen Boulevard to Jenkins Avenue has been constructed as a 4-lane roadway with sidepaths to accommodate multimodal access to campus from the east, as well as access and circulation during sporting events. Between Jenkins Avenue and Elm Avenue, Lindsey Street is a 3-lane roadway with adjacent sidepaths to accommodate multimodal cross circulation through the campus. West of Berry Road, the City will be improving Lindsey Street to a 4-lane divided cross section with landscaped median, bike lanes, and sidewalks for a consistent section approaching I-35. Between Elm Avenue and Berry Road, Lindsey Street is a two lane open drainage tree-lined roadway with some sidewalks that generally dissipate west of Lahoma Avenue. This section of roadway is proposed to have sidewalks and bike lanes connecting the OU Campus pedestrian and bicycling network to the commercial development west of Berry Road. A context sensitive roadway typical section would be to retain one travel lane plus bike lanes in each direction, with intersection treatments, such as roundabouts, to facilitate cross street access. A concept for this treatment is shown in **Appendix E**.

#### **Porter Avenue, between Robinson Street and Alameda Street**

The Porter Avenue Corridor Plan presents a concept for a revitalized retail corridor to expand upon the successful retail development along Main Street just west of Porter Avenue. The Plan proposes that Porter Avenue be reduced to a three-lane roadway section (one lane in each direction with a center turn lane) with reallocation of 10 feet of width into enhanced pedestrian zones (sidewalk and streetscape) on each side of the roadway to facilitate retail development. A traffic operations review was conducted, as part of the development of the CTP, using Synchro traffic modeling and determined that a 3-lane operation on Porter Avenue, between Acres and Alameda but with a 4-lane section between Main and Gray, would support existing traffic volumes plus up to 50% growth in traffic. A concept for this treatment is included in **Appendix E**.

CART has targeted the Porter Avenue corridor for a new bus service route, but if the roadway is reduced to one through lane in each direction, bus service would need to be provided with a bus bay so as to not be disruptive to traffic. The Porter Avenue Corridor Plan draft report, containing the proposed corridor

enhancements and transportation recommendations, can be found on the city's website under the Planning and Development tab.

### **James Garner, between Flood Avenue/Robinson Street and Boyd Street**

Extend the existing James Garner Avenue as a two-lane roadway from Acres Street northward to a crossing over the depressed Robinson Street, using the already provided abutments created for the Robinson Street underpass of the Railroad. Create a connection to Flood Avenue north of Robinson Street. In conjunction with, and due to, the extension of James Garner Avenue north of Acres Street, realign the existing legacy trail north of Acres Street. Consider whether to cul-de-sac the side streets to not connect to the James Garner extension to enhance the safety of the Legacy Trail. Extend the Legacy Trail over the grade separated Robinson Street to eliminate the potential safety hazards of the existing at-grade trail crossing of Robinson Street.

The proposed extension of James Garner Avenue northward to tie directly to Flood Avenue will bring a component of through traffic to the segment of James Garner Avenue south of Acres Street. This section of James Garner Avenue is currently a meandering two lane roadway with on-street parking to Boyd Street. Modify the existing James Garner Avenue roadway to add pockets of left turn lanes to facilitate traffic movement while retaining essentially a two-lane roadway through downtown, and remove various areas of curbside parking and create pockets of off-street parking in the public right-of-way. A concept for this treatment is shown in **Appendix E**.

### **Flood Avenue, between Robinson Street and Main Street**

US 77/Flood Avenue forms a direct conduit from the core of Norman to and from I-35 to the north. Simulation of the 2035 travel demand and roadway network with the James Garner Extension in place from Acres Street to Flood Avenue north of Robinson Street indicates that the extension will relieve some of the traffic demand from Flood Avenue south of Robinson Street, reducing future congestion on Flood Avenue to a less severe condition. To alleviate the remaining congestion on Flood Avenue, once the James Garner Extension is in place, operational improvements should be assessed that would be supportive of the adjacent land uses. Such improvements could consist of roundabout intersection traffic control, provision of sidewalks continuously along the corridor to facilitate walking between neighborhoods and retail, and access management of driveways along the roadway. A concept for this treatment is shown in **Appendix E**. The segment between Robinson and Acres Streets would receive one treatment concept, while the segment between Acres and Main Streets would receive another more residential set of treatments.

### **Berry Road, between Robinson Street and Imhoff Road**

Berry Road is predominantly a two-lane roadway, with auxiliary lanes provided at major intersections. The development along Berry Road can be characterized as predominantly residential, with commercial development at the major intersections of Robinson Street, Main Street and Lindsey. Norman High School lies at the northeast corner of Berry Road at Main Street. South of Lindsey Street, adjacent development is single family homes. Some parallel parking provisions have been installed, with financial participation by adjacent residents, along Berry Road between Dakota and Dorchester Streets. Travel demand modeling for 2035 estimates that Berry Road will operate at acceptable levels of service as a two-lane roadway with auxiliary lanes at major intersections. As such it would make a good bicycling corridor given a few more feet of width. The Pavement Condition Index along the majority of Berry Road is below acceptable standards. Future reconstruction of Berry Road will allow the opportunity to provide a two-lane corridor with bike lanes along its length from Robinson Street to Imhoff Road. Roundabouts may be considered for intersection traffic control treatments in lieu of traffic signals at all except Robinson, Main and Lindsey Streets to affect corridor traffic calming. Other considerations for this

roadway may include constructing a three-lane roadway with bike lanes between Robinson Street and Lindsey Street that could be re-striped to a four-lane roadway if needed in the future to serve as a north-south circulator roadway to provide an alternative to 24<sup>th</sup> Avenue W. and Flood Avenue as traffic volumes increase over time.

### **Roadway Access Management**

Complementing the roadway development concepts of Complete Streets and Context Sensitive Design is the management of access points to and from a roadway to facilitate traffic flow and safety. Access management addresses the classic trade-off between the two chief functions of major roadways: (1) accommodating higher speed and through traffic, and (2) providing access to abutting properties. Roads that are designed to move the most traffic also become almost immediately attractive for adjoining land development given the visibility and volume of passersby they offer to frontage properties. However, vehicles turning into and out of driveways – and slowing down and accelerating to do so – introduce “friction” into the system. As traffic volumes increase and more access points occur along a roadway, it becomes more challenging to prevent traffic congestion and reduced travel speeds. Once these trends set in, then the full traffic-carrying potential of a road goes to waste. Subsequently, efforts are expended to try to improve the capacity of the roadway and most often involve adding travel lanes.

Access management strategies have a broad reach, drawing principles from transportation, land use, urban design, and recreation planning to create functional and aesthetically pleasing streetscapes. The following illustration reflects the wide selection of access management policies and tools. These elements can be incorporated into plans, policies, and studies; land development regulations; and design standards and guidelines. Access management treatments predominantly include raised medians and driveway consolidation, but also can involve auxiliary lanes, pedestrian sidewalks/sidepaths and crossings, landscaping and signage, and bicycling and transit accommodations.

#### **Raised Medians**

Raised medians limit cross-street movements and improve traffic flow. They have been proven in studies sponsored by the Federal Highway Administration (FHWA) to reduce crashes by over 40 percent in urban areas and over 60 percent in rural areas. Medians also serve as a safe refuge for pedestrians and bicyclists crossing the street, especially compared to two-way left-turn lanes. The placement of the median opening depends on the type of thoroughfare system. Priority should be given to thoroughfares providing mobility and access throughout the entire community. Openings should only be provided for street intersections or major developed areas. Spacing between median openings must accommodate left-turn lanes with proper deceleration and storage lengths. Median treatments can take on many different forms, including full median openings and channelized openings.

#### **Driveway Consolidation**

Research sponsored by FHWA shows that the density and design of driveways have a direct impact on roadway safety – the more access connections, the more accidents. The purpose of driveway consolidation and spacing is to limit the number of conflict points while ensuring convenient and safe access to businesses. Driveway consolidation involves the removal of existing access connections, or driveways, for the primary purpose of improving safety. This technique will impact multiple stakeholders, typically requiring cooperative agreements between each property owner and governing agency attempting to consolidate the driveways. Each driveway presents a potential conflict point, thus a safer redesign would use an internal circulation system to funnel roadway traffic through one major



access point. Driveway realignment involves the relocation of driveways so they mirror or offset one another to minimize potential conflicts.

### **Auxiliary Lanes**

Deceleration and acceleration lanes at major driveways can provide refuge for turning vehicles while maintaining travel speeds for traffic through lanes. Auxiliary turn lanes at intersections allow turning traffic to get out of the way of through traffic and wait to turn using gaps in opposing traffic. These treatments increase the capacity and average travel speed of the roadway, while enhancing driver safety.

### **Pedestrian Sidewalks/Sidepaths and Crossings**

Pedestrians are a critical user group of intra-city travel, especially in urban and mixed-use centers. Well-designed pedestrian environments not only encourage walking; they separate pedestrians from vehicular traffic to increase the safety and enjoyment of this experience. Well-designed, safe, convenient, and attractive pedestrian environments will increase the viability of walking as an alternative transportation mode. Intersections are the most dangerous pedestrian environments. The location and design of crosswalks, median rests, curb ramps, and pedestrian signals help to improve the safety and accessibility of pedestrian crossings.

### **Landscaping and Streetscaping**

Landscaping provides functional and aesthetic benefits to the streetscape through the use of scale, shade, and color. Improvements may include shade trees, hanging flower baskets, flower boxes, decorative signage, and entry features. Planting amenities can require higher maintenance costs than streetscape and street furniture, but they offer natural beauty and a much grander scale. Landscaping is also used as a traffic calming device to reduce the speed of automobiles. When street trees are placed along the sidewalk edge or in the median, their presence creates the appearance of reduced area of the roadway available to vehicles. This influence has a “traffic calming” effect.

### **Signage**

With regard to access management, roadway signs create order to traffic flow and thus improve its efficiency by:

- Regulating and channelizing motorists along streets and highways;
- Informing motorists of conflicting routes and speeds, such as driveways, intersections, and parking areas;
- Directing motorists to streets, highways, cities, towns, villages, or other significant destinations;
- Alerting motorists of changes or hazards within the roadway; and
- Providing other information of value to road users.

### **Bicycling Accommodations**

Bikeway amenities alert motor vehicles and pedestrians of bicycle traffic, while also guiding cyclists to their proper location on the roadway. Bicyclists also benefit from the other access management treatments that reduce conflict points and create order and calming effects to traffic flow.

### **Potential Application of Access Management: 12<sup>th</sup> Avenue E**

One corridor in Norman that could benefit from application of access management principles and treatments is 12<sup>th</sup> Avenue E, from Robinson Street to Classen Boulevard. Some segments of 12<sup>th</sup> Avenue E are 4 lanes and could benefit from the introduction of left turn auxiliary lanes to major driveways. Some segments of the roadway are 5 lanes wide including a flush two-way center left turn lane and could benefit from a raised median to create order to the left turning movements and enhance safety.



There are also locations of more dense retail development that could benefit from consolidation of driveways and creation of a primary driveway with deceleration lanes and directional turn lanes at a raised median opening.



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## Implementation Strategy Overview

Our guiding principles, goals and objectives for the Transportation System Plan, described in Chapter 1, will guide our steps towards implementation of the plan. The guiding principles and goals are re-stated in this chapter under each section heading: (S) for Special Place to Live, (M) for Mobility, (P) for Preservation of Existing Facilities, (F) for Fiscal Responsibility, and (E) for Economic Vitality. The objectives under each of the principles/goals are restated to form the basis for each set of actions.

An action plan is presented herein to address the stated goals and various specific objectives of the plan. Some actions are policy based and some are physical projects to be constructed. Many of the actions refer to additional information in various appendices to streamline the chapter. These actions focus on a 20-year horizon.

Within four focus areas – motor vehicle, bicycle, pedestrian and transit – a set of short and medium range projects or specific action items are proposed. The assignment of Short and Medium Range attributes to these items indicate the relative importance of their implementation. As opportunities for funding and partnerships arise, the relative importance of any one project may move within these relative priorities. The implementation plan should be flexible to allow such instances.

Finally, the infrastructure development action items of the implementation plan were then collectively assessed to assign a relative importance among the actions to guide the logical allocation of local and pursuit of non-local funding for those projects. Costs of these projects were estimated and compared to historical indications of funding of the various project types by source of funds.

## Actions to Create a Special Place to Live (S)

In accordance with this guiding principle, a vibrant Norman community in 2035 will be achieved by ensuring transportation and infrastructure investments that focus on both people and places. These investments should enhance transportation choices and accessibility, and also create a unique place with lasting value that blends seamlessly with the character and vision of Norman’s neighborhoods, employment centers and activity centers. The goal of the plan is to provide a transportation system planned and designed with people and places in mind, including amenities and aesthetic treatments to enhance the traveling experience for all modes of transportation.

### Objective S1.

***Adopt policies, ordinances and programs that promote multimodal, context sensitive considerations and aesthetics into the planning and project funding of transportation facilities in Norman.***

### ***Action S1a: Adopt Updated Thoroughfare Plan and Adaptive Typical Sections***

The Thoroughfare Plan and associated design sections for development of the roadway corridor should be formally adopted by City Council. Of special note is the designation of a network of Collector streets. Implementation of the thoroughfare plan should utilize the most recent edition of the following planning and design references:

- A Policy on Geometric Design of Highways and Streets, published by the American Association of State Highway and Transportation Officials (AASHTO), and
- City of Norman Engineering Design Criteria and the City’s Standard Specifications

***Action S1b: Adopt Updated Bicycle/Pedestrian Plan***

The Bicycle/Pedestrian Plan should be formally approved by the Norman BAC and adopted by City Council. The plan adoption should prescribe the use of the most recent edition of the following planning and design guidelines:

- Urban Bikeway Design Guide, published by the National Association of City Transportation Officials (NACTO),
- Guide for the Development of Bicycle Facilities, published by AASHTO, and
- Guide for the Planning, Design, and Operation of Pedestrian Facilities, published by AASHTO.

***Action S1c: Adopt the Updated CART Long Range Transportation Plan***

CART's Long Range Public Transportation Plan was not officially adopted by the city of Norman when the Plan was prepared in 2008, even though funding has been annually allocated by the City to CART to subsidize its operations. The updated Transit Plan should be formally approved by the CART Board of Directors and adopted by City Council, and an annual commitment of funding stipulated based on system performance.

***Action S1d: Update the City of Norman Engineering Design Criteria and Standard Specifications***

Update the typical sections and design standards contained in the existing City Engineering criteria and specifications to reflect the recommendations of the Norman CTP. Of particular note are the multiple configuration options for the various street sections that are recommended in this plan.

**Objective S2.**

***Institute departmental processes and procedures to ensure coordination of land use and transportation planning, while including context sensitive solutions for design and implementation of transportation corridors and facilities in Norman.***

***Action S2a: Adopt Complete Streets Policies, Program and Guidelines***

Wording for the draft City of Norman Complete Streets Policy is included in **Appendix G**. After adoption, the policy should be supported by a set of guidelines for its application and creation of a complete streets program of related departmental processes and procedures for implementation. Los Angeles County, California had developed a robust Policy on Livable Community and associated Guidelines, included in Appendix F, which can be incorporated in whole or in part into any community program with proper notification and acknowledgement of the authors. Recommendations for adaptation of chapters from the Los Angeles County Livable Streets manual are presented in the appendix.

***Action S2b: Coordinate the Norman Thoroughfare Plan and Transit Plan with the Norman Land Use Plan***

The recommendations for the typical sections of the arterial and collector network respond to the existing and anticipated adjacent land uses in the corridor. Urban or rural areas will have an urban or rural roadway section, respectively. Arterial roadways are either principal or minor depending on the anticipated level of travel demand. The proposed typical sections reflect the anticipated needs of the adjacent development. Changes in anticipated future land use should be reflected in the proposed typical section for the roadway. Targeted locations for regional transit stations and other transit supportive facilities should be included in the future land use plan. Coordinate advancement of the Land Use and Transportation elements of the city's Comprehensive Plans.

### ***Action S2c: Allocate a Portion of the Available Local Funds to All Modes***

To create a predictable atmosphere for gradual implementation of the multimodal plan, establish a program for allocation of local funds among the modal elements of the CTP. Establish minimum levels of annual investment/savings for bicycle and pedestrian improvements, transit service and facilities, and for maintenance of roadways and bridges. The potential leveraging of local monies with non-local and private monies, and the resulting timing of design and construction activities, could result in project development with a different balance of project types when implemented each year.

#### **Objective S3.**

***Provide transportation investments and procedures that help enhance traffic access and circulation, walkability, bikeability, aesthetics and amenities of the central core of Norman including Downtown, Campus Corner, and areas surrounding the University of Oklahoma campus.***

### ***Action S3a: Context Sensitive Roadway Improvements on Lindsey Street, Berry Road to Jenkins Avenue***

The four-lane divided roadway section west of Berry Road will transition east of Berry Road to Elm Avenue to a roadway section consisting of one thru lane in each direction plus auxiliary lanes and/or roundabouts at intersections, bike lanes in each direction and sidewalks or side paths on both sides of the roadway. An initial concept for this treatment is included in Appendix E. This typical section would be refined to fit the context of the adjacent land uses. The existing roadway segment between Elm Avenue and Jenkins Avenue would be evaluated for enhancements that better serve University of Oklahoma (OU) local traffic while serving the minor arterial roadway function of Lindsey Street. Develop the context sensitive complete streets design, and arrange funding and schedule for implementation.

### ***Action S3b: Context Sensitive Improvements on Porter Avenue, Acres Street to Alameda Street***

A study conducted of the potential enhancement of Porter Avenue, from Acres Street to Alameda Street, suggested that Porter Avenue could be reduced to a three lane typical section so that sidewalks could be enhanced to facilitate the redevelopment. Synchro modeling of an enhanced three-lane section, with four lanes between Main and Gray (an initial concept for this treatment is included in Appendix E), indicates that the three-lane section would operate well with existing levels of traffic plus growth of about 25%. The existing four-lane section was likewise modeled, with the finding that the existing four-lane section would operate well with a growth of about 25%. However, there was also a desire to introduce transit service into the Porter Avenue corridor, and a four-lane section would operate well when allow transit stops in the right most lane. For a three-lane section, the transit stops would need to be pull-overs. Develop the context sensitive complete street design, and arrange funding and schedule for implementation.

### ***Action S3c: Context Sensitive Improvements on James Garner/Jenkins Avenue, Acres Street to Boyd Street***

The proposed extension of James Garner Avenue to the north, across Robinson Street to tie to N. Flood Avenue, will displace the Legacy Trail, pass close to existing neighborhood, and allow various potential connections to Flood Avenue and Robinson Street. An initial concept for this treatment is included in Appendix E. The connection to Flood Avenue to the north will bring a component of through traffic to the segment of James Garner Avenue south of Acres Street which currently is a meandering two lane roadway with on-street parking to Boyd Street. Potential densification of development along James Garner/Jenkins Avenue, between Main Street and Boyd Street, will increase the significance of the need

for good access and circulation, off-street parking, and increased accommodations for bicycle and pedestrian mobility. Design the travel lanes, bike lanes, bus accommodations, sidewalks and corridor parking provisions to support higher density development and transit oriented development. Develop the context sensitive design with considerations for future development, and arrange funding and schedule for implementation.

### ***Action S3d: Context Sensitive Improvements on Flood Avenue, from Robinson Street to Main Street***

Traffic on Flood Avenue south of Robinson Street currently experiences moderate congestion during the AM and PM peak hours due to the capacity constraints of the two lane section just north of Acres Street, exacerbated by the driveway activity in and out of the adjacent development. Widening to a three-lane section north of Acres Street would improve throughput on Flood Avenue by allowing left turns a place to get out of the flow of traffic. An initial concept for this treatment is included in Appendix E. Provision of cross access among adjacent parking lots would allow consolidation of driveways and further improve the throughput capacity of the roadway. Provision of sidewalks along Flood Avenue would facilitate walking and bicycling trips from nearby residential areas. Develop the context sensitive design, and arrange funding and schedule for implementation.

### ***Action S3e: Context Sensitive Improvements on Main and Gray Streets from Flood Avenue to Porter Avenue and Modify the Western End of the Couplet***

The context for the Main/Gray Street couplet is to both bring traffic into the Downtown and provide access and circulation to the businesses along the Downtown streets. With the offset network of streets near Downtown, Main and Gray Streets allow movement through the Downtown for origins and destinations surrounding Downtown, and thus serve as Minor Arterials through Downtown. Prepare a detailed assessment of reducing both Main Street (eastbound) and Gray Street (westbound) to two lanes each west of the railroad crossing. Enhance the western transition of the couplet by strengthening the westbound traffic flow at University Boulevard, potentially converting University Boulevard to three one-way southbound lanes between Gray and Main Streets. Gray Street west of University Boulevard would be converted to a collector street, reduce traffic feeding onto Flood Avenue, and allow localized redevelopment along Gray Street between University Boulevard and Flood Avenue. An initial concept for this treatment is included in Appendix F. Develop the context sensitive design, and arrange funding and schedule for implementation.

### ***Action S3f: Implement the Transportation Enhancements Recommended in Core Norman Neighborhood Plans***

The city's Neighborhood Planning Program targets Norman's Core Area which is bounded roughly by Robinson Street on the north; 12th Avenue E on the east; Imhoff Road on the south, and Berry Road on the west. The Core Area contains around sixteen neighborhoods, including five lower income neighborhoods eligible for Community Development Block Grant funding. Complete the land use compatibility, parking, circulation, and neighborhood improvements planning for each of these neighborhoods. Design the needed improvements, arrange for funding and schedule the improvements.



#### **Objective S4.**

***Enhance the aesthetics of the section line roadway corridors that lead residents and visitors to the central core and major areas of retail and development and to significant attractions in Norman such as Lake Thunderbird State Park.***

#### ***Action S4a: Establish Corridor Aesthetics Standards and Enhancement Procedures for Arterials Leading to the Core and Key Destinations in Norman***

A roadway improvement is programmed for the segment of Lindsey Street, from I-35 to Berry Road, to provide for two lanes in each direction, a raised landscaped median, bike lanes in each direction and sidewalks on each side of the street, and aesthetic enhancement of the corridor. Use the project experience to establish design pallets and Public-Private Partnerships processes and procedures for corridor enhancements and maintenance for the key arterial corridors serving Norman destinations.

#### ***Action S4b: Incorporate Corridor Enhancement into Main Street between I-35 and Downtown***

A roadway improvement project is programmed for this segment of Main Street, to provide for two lanes in each direction, a raised landscaped median, and sidewalks on each side of the street. Budget for further enhancement of the corridor using the corridor aesthetics standards and procedures, and involve public private partnerships. Accommodate the planned enhanced transit service frequency on Main Street by considering bus pull-over bays at bus stops to mitigate traffic delays.

#### ***Action S4c: Incorporate Corridor Enhancement into Robinson Street between I-35 and Porter Avenue***

The Legacy Trail runs along the north side of Robinson Street adjacent to the airport, which would benefit from enhanced landscaping along the buffer between the trail and the road. Appropriate streetscaping from Flood Avenue to Porter Avenue would complete the attraction of the corridor feeding to Porter Avenue. Budget for further enhancement of the corridor using the corridor aesthetics standards and procedures, and involve public private partnerships.

#### ***Action S4d: Incorporate Corridor Enhancement into Flood Avenue North of Robinson Street***

The eastern side of Westheimer Airport is very stark, with plenty of open space, very few buildings, and very little landscape. The Legacy Trail is proposed to be extended along the east side of the airport along Flood Avenue, which would benefit from enhanced landscaping along the buffer between the airport and the road. Budget for further enhancement of the corridor using the corridor aesthetics standards and procedures, and involve public private partnerships.

#### ***Action S4e: Incorporate Corridor Enhancement into 12th Avenue E.***

A roadway improvement is programmed for this segment of US 77 (12<sup>th</sup> Avenue E.), to provide for three lanes in each direction, a raised landscaped median, and sidewalks/sidepaths on each side of the street. Budget for further landscape and other aesthetic enhancements of the corridor using the corridor aesthetics standards and procedures, and involve public private partnerships.

#### ***Action S4f: Incorporate Corridor Enhancement into SH 9 between I-35 and Lake Thunderbird State Park***

A roadway improvement is planned for eventual development by ODOT for this segment of SH 9, to provide for widening the existing two lane section to two lanes in each direction, a flush median, and

shared use path is proposed along the north side of the road. Budget for further enhancement of the corridor, from I-35 to Lake Thunderbird State Park, including a canopy of trees to frame the trail.

#### **Objective S5.**

*Invest in improvements to minimize the impacts of railroad delay and noise through Norman.*

#### ***Action S5a: Evaluate the Potential to Grade Separate Lindsey Street at the Railroad***

A railroad grade separation study, conducted for the City of Norman in 2003, evaluated the geometric feasibility of grade separations at Robinson Street and at Lindsey Street crossings of the railroad. The Robinson Street grade separation was completed in 2012. Thereafter, much discussion has transpired over the need for the Lindsey Street crossing, the significance of emergency access and the potential benefits/impacts to the university campus, highlighting the need for further assessment and discussions. Conduct a collaborative, holistic study of the potential benefits and implications of grade separating Lindsey Street at the railroad. If deemed appropriate, prepare designs, assemble local, state and federal funding and schedule the project for implementation of a railroad grade separated crossing for Lindsey Street.

#### ***Action S5b: Create a Railroad Crossing Quiet Zone at At-grade Crossings in Norman in the area between Robinson Street and Post Oak Road***

A railroad crossing quiet zone requires a system of gate arms and roadway channelization to keep traffic from crossing the tracks when trains are approaching, negating the need for the train to sound its horn when passing the street crossing. The designation of a Quiet Zone requires collaboration with the Federal Railroad Administration (FRA) and the railroad companies to meet the required provisions for authorization. The City Council in 2013 approved staff efforts to work towards creating a quiet zone for the at-grade crossings between Robinson Street and Post Oak Road. Complete the necessary evaluation studies, establish an agreement with the railroad and its operators, prepare documents to attain FRA authorization, commit City of Norman funding for the improvements, prepare plans for the creating of quiet zones, assemble state and federal funding as possible, and schedule the project for implementation.

#### **Objective S6.**

*Provide a wayfinding system of signage, markers and other devices to inform visitors and residents of the special areas and attractions in Norman.*

#### ***Action S6a: Incorporate the Wayfinding System Plan into Existing Roadways and All Relevant Roadway Improvement Projects***

The City Council, in November 2013, adopted a master plan for a wayfinding system of information, locations, graphic design and display medium to raise awareness and give guidance for locating special areas and attractions in Norman for visitors and residents of Norman. Identify collective elements of the wayfinding system plan that can be implemented together in a logical manner. First, by corridor, to take advantage of ongoing projects; then, to complete wayfinding for sets of congruous destinations. Budget for the additional enhancement in ongoing and planned roadway projects, and develop a budget and time frame for completion of the remaining wayfinding system plan.

## Actions to Enhance Mobility for All User Groups

The second guiding principle..... The provision of transportation options and solutions within Norman will create a seamless system. This principle is illustrated in Norman Moving Forward through efficient system management and operations, through context sensitive and complete streets designs, and with a range of accessible and convenient transportation choices. A multi-modal network will provide connections between neighborhoods and destinations throughout Norman, with good connections to the Oklahoma City region, through a system offering opportunities to drive, walk, bike and take transit. The goal of this guiding principle is to provide efficient and effective mobility to, from and within Norman by providing multi-modal transportation options and management for existing and anticipated future needs.

### Objective M1.

*Provide mobility for people who live, work and visit Norman and are economically, socially or physically challenged, in order to support their full participation in society and contributions to Norman's economic productivity.*

### ***Action M1a: Complete the Missing Sidewalks and ADA-Compliant Ramps on Collector and Arterial Roadways***

As identified in the Sidewalk Gap Completion Plan in Chapter 3, there are gaps in the sidewalk network on the arterial and collector streets that are anticipated to need to be completed by the City of Norman and other gaps that will be completed as development in that area occurs. These sidewalk gaps located in the core of Norman are of particular interest to those residents that need the sidewalks for their personal mobility. These gaps and missing sidewalk ramps are particularly troublesome to the mobility impaired. Prepare designs, allocate funding, and schedule construction of the sidewalks and ramps identified for City implementation. Consider the significance of those sidewalk segments that are identified for construction as part of future development and determine whether any of those should be facilitated or accelerated by city participation. The higher priority area for focused implementation is in the core of Norman and within one-half mile of schools. Budget for, design, and implement the construction of sidewalks and ramps to complete the sidewalk network on collector and arterial streets.

### ***Action M1b: Provide Pedestrian Accommodations on Urban Local Streets***

In the urbanized area of Norman, many local streets do not have sidewalks in residential neighborhoods. Establish a policy that all neighborhood streets in the urbanized areas of Norman should be walkable for the safety, health and vitality of the city. Complete the inventory of sidewalks to include local streets. Identify local streets that acceptable to not have sidewalks. Work with residential neighborhood groups to identify needed pedestrian accommodations along streets in their neighborhoods and prioritize their implementation. As needed, supplement of facilitate the pedestrian accommodations with measures to reduce traffic speeds through the neighborhoods. Establish and/or fund a Neighborhood Sidewalk completion program to match citizen funds, Safe Routes to School funds, Alternative Transportation funds, Block Grants and other potential funding to build the missing and needed sidewalk improvements.

***Action M1c: Continue Upgrading Traffic Signals to provide Accessible Pedestrian Accommodations***

Persons with mobility and visual impairments require Accessible Pedestrian Signal (APS) equipment at signalized intersections to be able to activate the pedestrian crossing signal and to utilize the crossing indications. The City has required the installation of APS equipment at all new signals since 2010, in proactive anticipation of federal regulations that will require such accommodations. Continue to install APS equipment in all new traffic signal installations in accordance with current City design standards. Implement the staff’s plan to retrofit APS into existing traffic signals, prioritized based on urgency of need. Establish a budget and timeline for implementation of the retrofit APS.

**Objective M2.**

***Invest in timely street improvements for a network of section line roads in the area beyond the core of Norman that support the effective movement of vehicles around rather than through the central core of Norman, while accommodating bicyclists and pedestrians in the roadway corridor.***

(the anticipated roadway needs for the next 20 years are listed)

***Action M2a: Improve Chautauqua Avenue, from Imhoff Road to Lindsey Street***

To facilitate the use of SH 9 for access to OU from I-35, and to facilitate traffic access and circulation on the south side of the OU campus, widen the remaining two-lane section of Chautauqua Avenue to create a four-lane roadway with sidepaths on each side between Imhoff Road and Lindsey Street. Develop the context sensitive design, and arrange funding and schedule for implementation.

***Action M2b: Improve Jenkins Avenue, from Constitution Street to Lindsey Street***

To facilitate the use of SH 9 for access to OU from I-35, and to facilitate traffic access and circulation on the south side of the OU campus, widen the remaining two-lane section of Jenkins Avenue to create a four-lane roadway with sidewalks and/or sidepaths on each side between SH 9 and Lindsey Street. Develop the context sensitive design, and arrange funding and schedule for implementation.

***Action M2c: Improve SH 9 from 24th Avenue W. to 12th Avenue E.***

To facilitate the use of SH 9 for access to OU from I-35, the current delays experienced along SH 9 need to be mitigated. The ACOG Encompass 2035 includes a medium range project for ODOT to improve SH 9, from 24th Avenue W. to 12th Avenue E. (just west of the US 77/Railroad overpass). The improvement is planned for a widening from four lanes to six lanes, but alternative configurations should be examined to include potential grade separations at certain interchanges with the local street network. Collaborate with ODOT to develop the design, assess opportunities for introduction of locally preferred alternatives, arrange for any needed local funding, and collaborate with ODOT regarding the schedule for implementation. Incorporate a trail along the north side of the corridor.

***Action M2d: Widen 12th Avenue W. from Rock Creek Road to Tecumseh Road***

Widen from 2 lanes to 4 lanes plus bike lanes and sidepaths, in anticipation of potential new commercial and light industrial development on the west side near the railroad and residential development along the east side. The sidepaths along 12<sup>th</sup> Avenue W. will complement the trails within the development east of the roadway and connect to the sidepaths along Rock Creek Road and Tecumseh Road and the western terminus of the proposed trail network along Little River. The roadway will also be in near proximity to the potential commuter rail station near Tecumseh Road and should support such traffic circulation. Develop the context sensitive design, arrange funding, and schedule for implementation.

***Action M2e: Improve Porter Avenue, from Indian Hills Road to Tecumseh Road***

Widen Porter Avenue from its current 2 lanes to 4 lanes, plus bike lanes and sidewalks to support anticipated new development along the corridor and to provide connectivity to the Moore roadways and potential bikeways in Moore. Develop the context sensitive design, and arrange funding and schedule for implementation.

***Action M2f: Realign the Southeastern Terminus of Broadway at Porter Avenue***

In conjunction with, or independent of, the improvement to Porter Avenue between Indian Hills and Tecumseh, relocate the intersection Broadway with Porter Avenue to a location midway between Franklin and Indian Hills. This treatment will move the intersection to a functionally more efficient distance away from the Franklin Road/Porter Avenue intersection to improve safety and operations. The new intersection of Broadway at Porter Avenue will also create an intersection with the collector street network. Develop the context sensitive design, and arrange funding and schedule for implementation.

***Action M2g: Widen Indian Hills Road, 48th Avenue W to 24th Avenue W and Improve the Interchange with I-35***

The current interchange of Indian Hills Road with I-35 has various on-ramp and off-ramp conflicts and configurations that become increasingly cumbersome with growing traffic levels. The two-lane Indian Hills Road crossing over I-35 will not support significant traffic growth from anticipated development of large undeveloped parcels of land along the corridor. Develop the context sensitive design for the proposed arterial roadway segment in collaboration with ODOT, and arrange for local funding of improvements to Indian Hills Road and desired interchange enhancements, to match and/or supplement the state and federal funding. Facilitate the implementation of the design and implementation of the improvements.

***Action M2h: Improve the West Side of the Interchange of Robinson Street at I-35***

A study has recently been conducted of the operations of Robinson Street at the interchange and service road connections on the west side of I-35. Collaborate with ODOT to assemble the funding for the needed improvements, dedicate the City of Norman portion of the funding, ROW, utility adjustments and other cost items, and schedule the improvements for construction.

***Action M2i: Improve Rock Creek Road, 48th Avenue W. to 36th Avenue W.***

In response to growing development west of 36<sup>th</sup> Avenue, widen the existing two-lane section of Rock Creek Road to a three lane roadway to provide protected left turn storage, and add 5-foot bike lanes westward to Grandview Street. Provide 8-foot side paths on both sides of Rock Creek Road from Grandview Street to 36<sup>th</sup> Avenue to connect to the Legacy Trail on the other side of 36<sup>th</sup> Avenue W. Re-stripe the existing 4-lane segment of Rock Creek Road west of Grandview Street to a three-lane roadway with bike lanes. Allocate funding and design and construct the corridor improvements.

***Action M2j: Improve Franklin Road, from 48th Avenue W. to N. Interstate Drive***

Improve the traffic flow along the roadway in response to growing development by widening to a three lane roadway to provide protected left turn storage to serve the expanding residential development, and add 5-foot bike lanes connecting 48<sup>th</sup> Avenue W. and N. Interstate Drive. Provide 5-foot sidewalks on both sides of the improved street. Allocate funding and design and construct the corridor improvements.



***Action M2k: Improve Lindsey Street, from 24th Avenue E. to 36th Avenue E.***

Continue the 5-lane urban arterial section from 24<sup>th</sup> Avenue E. to 36<sup>th</sup> Avenue E., transitioning to a three-lane rural section at 36<sup>th</sup> Avenue E. Provide both bike lanes and sidepaths from 24<sup>th</sup> Avenue E to 36<sup>th</sup> Avenue E, to complete the bicycle and pedestrian plan for this segment of roadway. Allocate funding and design and construct the corridor improvements.

***Action M2l: Improve Imhoff Road, from Classen Blvd to 24th Avenue E.***

Re-stripe existing 4-lane roadway pavement with 3 travel lanes plus on-street bike lanes. Widen existing two-lane section of roadway to three lanes plus bike lanes and provide sidepaths on both sides. Allocate funding, prepare the context sensitive design, and construct the corridor improvements.

***Action M2m: Improve 48th Avenue E., from Franklin Road to SH 9***

Accentuate the division between urban and rural development areas of Norman by improving the rural 2-lane section to a rural 3-lane section with shoulder bikeways and adjacent trails on both sides. Allocate funding, prepare the design, and construct the corridor improvements.

***Action M2n: Improve SH 9, from 72nd Avenue E. to 168th Avenue E.***

The ACOG 2035 Encompass Plan includes a long range project for ODOT to widen SH 9 from 2 lanes to 4 lanes to the eastern extent of Norman. Though the Norman area travel demand model did not indicate the improvement was essential for needed capacity of the corridor by 2035, the improvements would have safety benefits and fulfill the longer term purpose of SH 9 for the regional arterial network. This improvement should be accompanied by the creation of a trail along the north side of SH 9 (see Action M6h). Collaborate with ODOT to develop the design, assess opportunities for introduction of locally preferred alternatives, arrange for any needed local funding, and collaborate with ODOT regarding the schedule for implementation. Incorporate a trail along the north side of the corridor.

***Action M2o: Improve 48th Avenue W., from Indian Hills Road to Main Street***

Widen the existing 2-lane roadway to a 3-lane roadway with bike lanes in each direction and an 8-foot wide sidewalk along the eastern side of the roadway. Develop the design and arrange funding and schedule for implementation.

***Action M2p: Access Management Improvements on 12th Avenue E., from Robinson Street to Classen Boulevard***

12<sup>th</sup> Avenue E. could benefit from application of access management principles and treatments to delay the need to widen the roadway to six lanes. Improve the segments of 12th Avenue E that are 4 lanes to 4-lane divided with a raised median to introduce left turn auxiliary lanes to major driveways. Add raised medians to segments of the roadway are 5 lanes wide including a flush two-way center left turn lane to create order to the left turning movements and enhance safety. To the extent feasible at locations of more dense retail development, provide for consolidation of driveways and creation of a primary driveway with deceleration lanes and directions turn lanes at a raised median opening.

***Action M2q: Provide Access to and from I-35 and the Development along the West Side of 24th Avenue W. between Robinson Street and Tecumseh Road***

The planned intensity of development of the University North Park (UNP) and other properties along 24<sup>th</sup> Avenue W can be expected to overload the intersection of 24<sup>th</sup> Avenue W at Robinson Street as well as at Tecumseh Road. Collaborate with ODOT and development interests to develop a concept to provide better access from the UNP development to and from northbound I-35 between Robinson Street and Tecumseh Road. Collaborate with ODOT to develop the design, assess opportunities for

introduction of locally preferred alternatives, arrange for any needed local funding, and collaborate with ODOT regarding the schedule for implementation. Incorporate a trail along the north side of the corridor.

### **Objective M3.**

***Invest in improvements to the arterial and collector street network, as well as parking, in the core of Norman to support the balanced mobility of motorists, pedestrians, bicyclists and goods movement vehicles.***

#### ***Action M3a: James Garner Avenue Extension, from Acres Street to Flood Avenue***

Realign the Legacy trail and extend James Garner Avenue as a two-lane roadway from Acres Street northward to a crossing over the depressed Robinson Street, using the already provided abutments, and create a connection to Flood Avenue north of Robinson Street. An initial concept of the improvement is included in Appendix E. Consider options to tie or truncate the local streets north of Acres Street to connect or to not connect with the James Garner Avenue extension. Allocate funding and design and construct the corridor improvements.

#### ***Action M3b: Main/Gray Streets One-way Couplet, Porter Avenue to the Roundabout at Carter Avenue***

Continuing the one-way couplet of Main and Gray Streets to the east of Porter Avenue will simplify the signal operations on Porter Avenue freeing up much needed signal green time, and will allow for the provision of one lane of traffic in each direction plus bike lanes and optional parking through the residential section of each roadway. An initial concept of the improvement is included in Appendix F. Implementation will be accomplished predominantly by re-striping the street and associated modifications to traffic control, with special treatments at the fire station and the terminus at the roundabout.

#### ***Action M3c: Create a One-Way Couplet of Peters and Crawford Avenues, from Acres Street to Alameda Street***

Working with the existing roadway pavement, designate Peters Avenue as a southbound one-way street and Crawford Avenue as a northbound one-way street between Acres and Alameda Streets. An initial concept of the improvement is included in Appendix F. West of Gray Street, Peters and Crawford Avenues would each consist of one through lane with a bike lane and either a parking lane or a buffer between the travel lane and the bike lane. Between Main and Gray Streets, each street would have two lanes in one direction with curbside parking on one or both sides, simplifying the signal operations and potentially increasing the parking supply. South of Main Street, each street would have one or two lanes in one direction with curbside parking on one or both sides, depending on the width of the existing roadway. The couplet would end at Acres on the north and at Alameda on the south. A roundabout or other traffic control measure would be installed at the intersection of Alameda Street at Crawford Avenue.

#### ***Action M3d: Improve Acres Street, Berry Road to Porter Avenue***

Acres Street is a collector roadway with a rural two-lane cross section within the urban core of Norman, and is a designated bike route on the city's Bicycle Plan. Improvements are needed on Acres Street, from Berry Road to Porter Avenue, to provide an urban street section with one lane in each direction plus bike lanes. Evaluate roundabouts as an alternative to traffic signals at the collector and minor arterial street crossings. Budget for the improvements, prepare context sensitive designs responsive to the adjacent land uses, access and parking needs, and schedule the project for implementation.

***Action M3e: Improve Boyd Street, Flood Avenue to Berry Road***

Boyd Street west of Flood Avenue experiences congestion to some extent because of the severe congestion on Lindsey Street. After making improvements to Lindsey Street between Berry Road and Elm Avenue, monitor the performance of Boyd Street west of Flood Avenue to assess the need for capacity improvements at the intersections such as upgrades to traffic control, addition of turn lanes, or replacement of traffic signals with roundabouts. Refer to the neighborhood plan for other items.

***Action M3f: Improve Berry Road, Robinson Street to Lindsey Street***

A significant portion of the street pavement along Berry Road, from Robinson Street to Imhoff Road, is in need of repair or replacement in the near future, according to the Pavement Conditions Index monitoring conducted for the city. Berry Avenue is currently mostly uncongested, and the 2035 Norman travel demand model indicates that it will not be congested in the 20-year horizon. Berry Road is proposed as a minor arterial and a significant north-south spine for on-street bicycling. Berry Road should be reconstructed, retaining two through lanes plus turn lanes or roundabouts at intersections, with sections of 2-lane divided where appropriate to enhance the aesthetics of the roadway, plus bike lanes and sidewalks on both sides. Consideration should be made for replacement of existing on-street parking with other suitable accommodations. Budget for the improvements, prepare context sensitive designs responsive to the adjacent land uses, access and parking needs, and schedule the project for implementation.

***Action M3g: Improve Classen Boulevard, from Lindsey Street to 12th Avenue E.***

Add one additional lane northbound from 12<sup>th</sup> Avenue E. to Lindsey Street, and complete the 8-foot wide sidepaths along both sides of the roadway. Develop the design and arrange funding and schedule for implementation.

**Objective M4.**

***Provide a modern, corridor-focused transit network that has enhanced frequency and hours of service and efficient connectivity to current and future regional transit services with the intent to provide viable options to the personal vehicle.***

***Action M4a: Extend the CART Transit System Service Hours on Five Key Routes***

Phase 1 of the 2008 CART Long-Range Public Transportation Plan proposes extension of service hours in response to citywide surveys and rider requests, but has not been put into effect due to unavailability of funding. The enhanced service would run buses later on five key routes, Main Street, Alameda/East Norman, Lindsey East, Lindsey West and the Apartment Loop. The buses would run two hours later, to 11:00 pm Monday through Thursday, and three hours later, until midnight, on Friday and Saturday. Budget for and implement the planned service hours enhancement to the five designated routes.

***Action M4b: Add Sunday CART Transit System Service***

Phase 1 of the 2008 CART Long-Range Plan proposes adding transit service on Sunday in response to citywide surveys and rider requests, but has not been put into effect due to unavailability of funding. The enhanced service would run buses on all fixed routes from 8:00 am to 7:00 pm. Budget for and implement the planned Sunday service on the CART fixed route system.

***Action M4c: Enhance the CARTaccess Service Hours to Match Fixed Route Service***

CARTaccess is CART's origin-to-destination transportation service for individuals who are unable to use the regularly scheduled CART bus routes and features lift-equipped vans. It is the policy of CART to operate the CARTaccess service the same hours as the regular CART routes. Budget for and implement the planned CARTaccess service hours enhancements on the five designated routes in concert with Action M4a and new Sunday service in concert with Action M4b.

***Action M4d: Maintain CART Service Frequency on Lindsey East & West Routes Year Round***

Phase 1 of the 2008 CART Long-Range Plan proposes maintaining the 30-minute peak period headway on Lindsey East and Lindsey West routes year round, rather than reducing to 60-minute headways during the OU academic breaks, but has not been put into effect due to unavailability of funding. Budget for and implement the planned year round service frequency enhancement to the two Lindsey routes.

***Action M4e: Add a New Downtown/Campus Corner Circulator Route***

Phase 1 of the 2008 CART Long-Range Plan proposes augmenting the current Route 52-Campus Loop route with a Downtown-to-Campus Circulator route, which would allow consumers to travel between Downtown Norman at Main Street and Campus Corner at Boyd Street using Webster/Ash and Peters/Duffy/Jenkins Avenues to circulate. Budget for and implement the planned circulator service route, which would require the purchase of an additional bus.

***Action M4f: Pilot Project to Reconfigure Main Street Route and Supporting Routes to Create Initial Grid Network***

Phase 2 of the 2008 CART Long-Range Plan proposes a new set of corridor-focused routes to create more of a grid network of bus routes in an effort to create a more rider-intuitive network that also more efficient to operate. As a pilot project to demonstrate the effectiveness of this service framework, CART has proposed to implement a pilot project using the Main Street corridor to establish a corridor route from Sooner Mall through Downtown, adjusting other routes to create the initial grid of routes along the main Street corridor. Budget for and implement the pilot Main Street corridor-based service and prepare supporting promotional materials.

***Action M4g: Reconfigure and Add Routes to Create Grid Network***

Phase 2 of the 2008 CART Long-Range Plan proposes a new set of corridor-focused routes to create more of a grid network of bus routes in an effort to create a more rider-intuitive network that also more efficient to operate. Many of the existing routes would be reconfigured to continue along a street corridor rather than radiating from the OU campus, introducing some additional routes into the network. CART estimates that three new buses will be required to operate the realigned corridor-based route network. Budget for and implement the new corridor-based service and prepare and distribute a new system map.

***Action M4h: Add New Bus Routes to Target Key Corridors and to Expand the Serviced Area***

Phase 3 of the 2008 CART Long-Range Plan proposes to continue to expand the transit system by setting all fixed route service frequencies to 30 minutes and adding new routes for a Highway 9 Circulator, West Norman and East Norman Circulators, and new service on Porter Avenue and Berry Road. Budget for and implement the planned additional bus routes, which would require the purchase of an additional bus.

***Action M4i: Update the CART Long Range Public Transportation Plan***

Due to the longer range nature of the CART Long Range Plan Phase 3 proposed improvements in Action M4g, the CART Long Range Plan should be updated within the next five to ten years in conjunction with the planning for implementation of the proposed Phase 3 improvements from the 2008 Plan. Budget for and complete an update to the CART Long Range Plan.

***Action M4j: Create Hub Facilities for Coordinated Areawide Transit Services***

There is a need to foster collaboration between CART, AMTRAK, Greyhound, Airport Express, taxi operators and other areawide transit service providers to serve visitors and residents of Norman in a coordinated and effective transit service network. To this effect, establish hub facilities and associated inter-entity agreements to accommodate the activities and interface of transit services. The initial hub location would consist of the area surrounding the established Downtown Amtrak Station and the newly created CART transfer hub at the east edge of campus, with other intermodal transit hub facilities possible at the future commuter rail stations. Continue to foster coordinated transit services among the many service providers to the mobility impaired population in Norman.

***Action M4k: Provide Bus Pull-over Bays at Bus Stops when upgrading Urban Arterial Streets***

As bus service frequencies are increased as currently proposed on urban arterial streets, assess the feasibility of providing bus pull-over bays at bus stops to reduce delays to traffic flow along the arterial roadway. Priority consideration should be given to Lindsey, Main and Robinson Streets which are targeted by CART for frequency increases and carry significant traffic volumes. Other arterial roadways and some collector streets with enhanced bus operations may also benefit from bus pullovers.

***Action M4l: Enhance the CART Transit Accessibility, Safety and Amenities***

The CART 2008 Plan also contains recommendations to improve pedestrian access to all bus stops and ensure ADA compliant access of all stops from at least one direction. The Plan would also enhance regular fixed route buses to better accommodate patrons in wheelchairs. Increased passenger amenities at bus stops are proposed, including route schedules, signage, shelters and benches at all bus stops. Transit patron safety issues need to be addressed by improving pedestrian accommodations and safety lighting at major street intersection crossings. Budget for and implement the design and construction of the planned enhancements to the accessibility and safety aspects of the CART system.

**Objective M5.**

***Support efforts to develop a regional transit system including rail transit, and serve as leaders in regional rail transit discussions.***

***Action M5a: Encourage the use of Current Intercity Transit Services***

Encourage the use of the Sooner Express weekday-only commuter route to Oklahoma City by enhancing publicity for the service and enhancing the underwriting of its operation. In addition to increasing the utilization of this service, increased ridership will also serve as a direct indicator of the interest in the regional commuter transit service. Encourage the use of other intercity transit services AMTRAK, Greyhound, and Airport Express as well by enhancing the local publicity for these services.

### ***Action M5b: Actively Engage in Agency and Public Planning and Promoting of Intercity Transit Services***

ACOG has sponsored a feasibility study of the potential commuter rail service that would extend from Oklahoma City into its suburbs. The Edmond to Norman corridor has initially shown to be the most viable. Assign one or more City of Norman staff members to keep in close contact with ACOG staff regarding the advancement of the commuter rail concept toward reality, and report back to city leaders. City leadership should participate in higher level regional discussions of commuter rail service between Norman and Oklahoma City and the structure of the regional transit authority as needed. City leaders should fund local efforts to advance area development plans near stations and securing property acquisition considerations.

### ***Action M5c: Develop Site Planning and Property Development Concepts for Commuter Rail Station Areas***

Three stations are proposed for Norman – Northside, Downtown, and Southside. The Northside Station would be near the Tecumseh Road crossing of the railroad to facilitate the capture of Norman and Moore riders and regional traffic from the south along I-35. The Downtown Station would be at or near the station served by Amtrak. The Southside Station would be located near the SH 9 crossing of the railroad. A special events platform may be located within walking distance of the OU football stadium (near Lindsey Street). Prepare a station siting analysis to assess property availability and potential access, circulation and space needs for each of the three stations. Recommend these site plans to ACOG for incorporation into the planning for the future commuter rail service.

#### **Objective M6.**

**Provide a network of bicycle and pedestrian facilities, including sidewalks, bike routes, bike lanes and paths, that provides mobility options, regional and multimodal connectivity and recreational opportunities for Norman residents.**

### ***Action M6a: Restripe Identified Existing Streets to Install Bike Lanes***

Several streets in the Bicycle and Pedestrian Plan are proposed on streets that are currently of sufficient width to allow striping or re-striping to add 5-foot wide bike lanes. These streets include:

- Main Street, 48<sup>th</sup> Avenue W. to 36<sup>th</sup> Avenue W. (re-stripe 4 lanes to 3 lanes with 5-foot bike lanes)
- Rock Creek Road, 48<sup>th</sup> Avenue W. to Grandview Avenue (re-stripe 4 lanes to 3 lanes with 5-foot bike lanes)
- Alameda Street, Porter Avenue/Classen Boulevard to Lochwood Drive (re-stripe the existing four 12-foot through lanes to 10-foot through lanes and stripe a 4-foot bike lane next to the gutter pan in each direction)
- 60<sup>th</sup> Avenue W., Tecumseh Road to Indian Hills Road (currently programmed for widening from 2 lanes to 4 lanes, install initial striping of new pavement to provide one travel lane and one bike lane in each direction with a center turn lane.
- S. University Boulevard, Boyd Street to W. Apache Street, and Webster Avenue, Duffy Street to Daws Street (re-stripe the existing two 15-foot through lanes to 10-foot through lanes and stripe a 5-foot bike lane next to the curb in each direction)



***Action M6b: Bridge the Legacy Trail Over Robinson Street***

In conjunction with the extension of James Garner Avenue north of Acres Street, extend the Legacy Trail over the grade separated Robinson Street to eliminate the potential safety hazards of the existing at-grade trail crossing of Robinson Street. Develop design plans for the trail in conjunction with a potential bridge over Robinson Street for the James Garner Avenue extension. Secure funding for the trail improvement and schedule the improvement for implementation coordinated with the construction of the James Garner Avenue extension.

***Action M6c: Refurbish the Existing Legacy Trail along Robinson Street***

The existing trail pavement along the southern edge of Westheimer Airport is in need of repairs and should be considered for refurbishment or replacement. Secure the funding for the trail improvement and schedule the improvement for implementation.

***Action M6d: Complete the Legacy Trail Connection to Ruby Grant Park***

In conjunction with adjacent developer participation, complete the missing segments of the Legacy Trail along 24<sup>th</sup> Avenue W. and 36<sup>th</sup> Avenue W. Secure the funding for the city's portion or facilitation of design and construction of the trail segments and schedule the improvements for implementation in conjunction with adjacent development.

***Action M6e: Extend the Legacy Trail Along the West Side of Flood Avenue, Robinson Street to Rock Creek Road***

Begin the completion of the Legacy Trail around the airport with the segment connecting to Rock Creek Road, ultimately connecting to trails along Rock Creek Road to the east. Secure the funding for the trail design and construction and schedule the trail segment for implementation.

***Action M6f: Create Sidepaths along Rock Creek Road, Flood Avenue to 12<sup>th</sup> Avenue E.***

Connect the residential development along Rock Creek Road to the Legacy Trail by improving the existing sidewalks, where provided, to provide 8-foot wide sidepaths along both sides of Rock Creek Road from Flood Avenue to 12<sup>th</sup> Avenue E. Secure the funding for the trail improvement and schedule the improvements for implementation.

***Action M6g: Create a Trail along SH 9, 24<sup>th</sup> Avenue W. to Lake Thunderbird State Park***

In conjunction with the proposed ODOT improvements to SH 9 (see Actions 2Mc and 2Mo), design, program for funding and schedule for construction of a shared use path along the north side of SH 9, connecting the neighborhoods in the core of Norman and the OU Campus to the Lake Thunderbird State Park entry.

***Action M6h: Create a Sidepath along Tecumseh Road, 36<sup>th</sup> Avenue W. to 12<sup>th</sup> Avenue W., including a Bicycle/Pedestrian Crossing of I-35***

Implement the first portion of the Tecumseh Road sidepath to connect the residential development and Legacy Trail along 36<sup>th</sup> Avenue W. to the 24<sup>th</sup> Avenue W. and the 12<sup>th</sup> Avenue sidepaths, and the potential future commuter rail station. Include multi-use path accommodations on the bridge over I-35 as part of the programmed Tecumseh Road improvements at I-35. Secure the funding for the sidepath improvement and schedule the improvements for implementation.

***Action M6i: Create a Bicycle/Pedestrian Crossing of the Canadian River near 24th Avenue W.***

Create a multi-use trail leading from roadways on either side of the river to a new bridge across the Canadian River, taking advantage of the remaining bridge piers and abutments of the former 24<sup>th</sup> Avenue W. bridge over the river. Investigate the adaptive reuse of the piers and abutments for a 20-foot wide bike/ped bridge. Seek regional, state and federal funding for the bridge and trail. Budget for the local city match, design and schedule the trail and bridge for implementation.

***Action M6j: Complete the Sidepaths and Wide Outside Lanes on Constitution Street from Jenkins Avenue to Classen Boulevard***

Some segments of 8 to 10-foot wide sidepath are completed along Constitution Street east of Jenkins Avenue, with some segments of 4 to 5-foot wide sidewalk provided as well but not forming a continuous network of pedestrian accommodations along Constitution Street. Complete the sidepath network on both sides of Constitution Street, from Jenkins Avenue to Classen Boulevard, to the extent feasible. With improvements to the Constitution Street roadway, provide for wide outside lanes of 15 feet in width.

## **Actions to Facilitate Proper Operations and Maintenance**

Often addressed as an afterthought in a plan, the third guiding principle stipulates that the Plan should incorporate the maintenance and enhanced operation of existing transportation infrastructure. Through efficient system management, Moving Forward places high priority upon maintenance, rehabilitation, safety and reconstruction of basic infrastructure systems. As neighborhoods in Norman mature, we will rise to the challenge of keeping them viable and strong by maintaining high quality transportation infrastructure including streets, sidewalks, and other public infrastructure facilities. Investments will provide a balance between the transportation needs of the community and the needs of the local neighborhoods. The associated goal of the plan is to prioritize investments to ensure the maintenance, rehabilitation, safety and reconstruction of current infrastructure systems.

### **Objective P1.**

***Operate and manage the transportation system to maintain or improve the quality of multimodal mobility, access and safety for those traveling in and living within Norman.***

### ***Action P1a: Adopt Traffic Impact Assessment Preparation and Review Guidelines***

The City's Engineering Design Criteria requires a traffic impact analysis if, and when, a development has a significant impact on the traffic patterns of the adjacent streets, driveways, and intersections and sets forth thresholds for requiring a Traffic Impact Analysis (TIA) report. Prepare guidelines for preparing and reviewing the traffic impact studies as a qualified part of the development review process. The TIA procedural guidelines will address site access locations, on-site circulation, and off-site improvements necessary to permit the street system to operate at a satisfactory level-of-service. Develop the guideline document, consider input from the local development community, and submit for adoption by City Council.

### ***Action P1b: Monitor Roadway and Bridge Conditions and Perform Needed Maintenance***

Continue the ongoing practice of evaluating roadway, bridge and major culvert conditions and recommending improvements based on currently specified thresholds. Allocate funding for needed improvements to roadways and bridges/culverts, and design and schedule the improvements.

### ***Action P1c: Monitor Sidewalk and Trail Conditions and Perform Needed Maintenance***

Conduct a similar though less rigorous pavement and bridge/culvert conditions assessment for the network of sidewalks and trails in Norman, and establish a threshold for improvement recommendations. Allocate funding for needed improvements to sidewalks and trails and their bridges/culverts, and design and schedule the improvements.

### ***Action P1d: Monitor Transit Facilities and Rolling Stock Conditions and Implement Needed Improvements***

CART should continue the ongoing practice of evaluating the bus and support vehicle fleet and assessing the remaining serviceable life of each service vehicle. Include the conditions of all bus stops and stations in that inventory including signs, structures and pavement. The City of Norman should allocate funding to secure its interests in the needed improvements to transit facilities and fleet, and provide assistance to CART to design and schedule the improvements.

### ***Action P1e: Revitalize the City's Traffic Calming Program***

Review the existing policies, evaluation criteria and implementation processes and procedures of the city's Traffic Calming Program to assess the past successes and challenges with the program and determine a course for its revitalization and continued funding. Meet with representatives of advocates and adversaries of the program to attain concurrence on the validity of the traffic calming measures and their applications and the approaches to implementation. Present the revitalized plan to City Council for approval of annual funding.

#### **Objective P2.**

***Develop and implement transportation performance measures and programs to regularly monitor, evaluate, and forecast the degree to which the transportation system investments accomplish community goals and mobility objectives.***

### ***Action P2a: Assess Annually the Traffic Congestion on Major Streets in Norman***

Select key arterial streets and intersections to monitor traffic data performance measures so as to compare roadway system performance over time. The performance measures should be readily measurable and meaningful such as peak hour traffic v/c ratio, queue lengths at intersections, and "in-stream" measurements of travel time and delay. Establish the performance measures and monitoring locations, establish a budget for monitoring of performance measures, conduct the counts and analysis and prepare annual reports of roadway system performance.

### ***Action P2b: Assess Annually Transit LOS and Ridership in Norman***

Continue to collect and compile transit service ridership data by route, time of day, and other logical attributes. Conduct regular surveys of passenger origins, destinations, trip purpose and needs. Prepare comparisons and reports of system performance measures, including passengers per service mile, service area by service frequency, service duration by service frequency, and other logical performance measures. Establish the performance measures, establish a budget for monitoring of performance measures, conduct the counts, surveys and analysis and prepare annual reports of transit user activity and transit system performance.

### ***Action P2c: Assess Annually the Bicycling Conditions in Norman***

Include observations of bicyclists as part of the monitoring of traffic performance measures so as to gather data on the on-street bicycling activity over time. The performance measures should be readily measurable and meaningful such as miles of designated bicycle facility by type, number of bicyclists passing various control points, and other logical performance measures. Conduct regular surveys of bicycle rider origins, destinations, trip purpose and needs. Establish the performance measures and monitoring locations, establish a budget for monitoring of performance measures, conduct the counts and analysis and prepare annual reports of bicycling activity and bicycling network performance.

### ***Action P2d: Monitor Gaps in Sidewalk Availability on Norman Streets***

Continue to update the inventory of sidewalks along the arterial and collector roadway network in Norman. Add to the inventory the sidewalks along the local roadway network. Set annual goals for the completion of sidewalks and ramps in Norman and establish a budget for design and construction of the needed improvements. Monitor and report on the completion of identified gaps and deficiencies in the sidewalk system.

***Action P2e: Assess Annually the Availability of Safe Routes to School***

Maintain the sidewalk inventory for arterial, collector and local streets to annually assess the availability of safe routes to school for the target population of students within a one-mile radius of public schools in Norman. Update the Safe Routes to School Plan for each elementary and middle school in Norman on a regular basis, adjusting for changes in student locations, and identify the needed improvements to the pedestrian and bicycle network for access to each school. Coordinate with other planned improvements to identify needed projects to provide sidewalks, ramps, crosswalks, pedestrian signal elements and other needed improvements for a safe route to school.

***Action P2f: Assess Annually the Safety of Transportation in Norman***

Continue to monitor the location, type and severity of motor vehicle crashes, including the location and severity of motor vehicle, bicycle and pedestrian crashes in Norman. Analyze the causal factors of the crashes and prepare mitigation measures to potentially reduce the occurrence of life threatening crashes in Norman. Establish the specific performance measures and annual comparison methodologies, establish a budget for monitoring of safety performance measures, compile the data and conduct the analysis, and prepare annual reports of the transportation system safety performance.

***Action P2g: Conduct Regular Surveys of Citizen Opinions of Transportation***

In conjunction with ongoing citywide studies, conduct surveys of a sampling of Norman citizens to query a basic set of questions regarding their satisfaction with the transportation system in Norman. Establish the specific questions related to system performance measures, compile the transportation related data, and prepare a summary report of the public scorecard on transportation in Norman.

**Objective P3.**

***Minimize the impacts of project implementation upon the multimodal access to businesses and neighborhoods during construction.***

***Action P3a: Accommodate Pedestrian, Bicycle and Transit Access and Mobility During Public and Private Construction in Public ROW***

The city requires all public and private development construction activities to incorporate pedestrian mobility considerations regarding sidewalk and lane blockages within street rights-of-way. Develop streamlined procedures and standard applications to facilitate ability of private developers and utilities to collaborate with the City regarding the need to close lanes and sidewalks for construction and attain concurrence on the needed vehicular and non-motorized accommodations during construction. Provide for enhanced monitoring and enforcement of these concurred provisions during construction.

**Objective P4.**

***Manage, reduce and avoid roadway congestion and increase mobility and safety for all roadway users through operational improvements, targeted capacity enhancements, and promotion of alternative means of transportation.***

***Action P4a: Monitor Intersection Traffic Operations and Implement Mitigation Measures***

Information generated in Action P2a, along with ongoing staff monitoring of signal operations and citizen feedback, will provide information needed for the monitoring of intersection performance and

identification of issues. On an ongoing basis, prepare congestion mitigation plans and designs, submit projects for local and regional congestion mitigation funding, and schedule construction.

***Action P4b: Monitor Transit Usage Barriers and Implement Mitigation Measures***

Information generated in Action P2b, along with ongoing CART driver observations and passenger feedback, will provide information needed for the monitoring of transit system performance. On an ongoing basis, prepare transit operation improvement plans and promotion programs, submit projects for funding of local transit infrastructure, support of operations, and marketing of the service.

***Action P4c: Monitor Bicycling Utilization Barriers and Implement Mitigation Measures***

Information generated in Action P2c, along with ongoing Norman BAC observations and bicyclist feedback, will provide information needed for the monitoring of bicycling accommodations and network performance. On an ongoing basis, address issues of immediate concern to the bicycling community and implement strategic elements of the Bicycle and Pedestrian Plan.

***Action P4d: Monitor Walking Barriers and Implement Mitigation Measures***

Information generated in Action P2d, along with ongoing staff observations and advocacy group feedback, will provide information needed for the monitoring of sidewalk and street crossing safety and performance. On an ongoing basis, address issues of immediate concern to the pedestrian and mobility impaired community and implement strategic elements of the Bicycle and Pedestrian Plan.

***Action P4e: Traffic Management Center for Signal System Coordination and Monitoring***

The signal controller equipment at the majority of Norman’s intersections have been provided with or upgraded to provide newer signal equipment that can be programmed to be much more responsive to variations in traffic at the local intersection and better coordinated with nearby traffic signals. Develop a centralized traffic signal monitoring and control system that integrates with the city’s emergency management system, creating a Traffic Management Center (TMC). Allocate budget for the necessary equipment and communications network connections, design the system and schedule the TMC for implementation.

**Objective P5.**

***Develop and promote programs to incorporate public and business observations of and assistance with the conditions assessment and maintenance of the multimodal transportation infrastructure and corridor amenities.***

***Action P5a: Foster Programs to Seek Public Input on Conditions Reporting***

The citizens and visitors in Norman make observations on the conditions for driving, bicycling, walking and transit services in Norman every day. City staff members are receptive to the input offered by users of transportation in Norman, and many opportunities are offered for transportation users to call-in or personally deliver their input. Continue the formal (e.g. the Norman BAC) and informal groups that have been formed to give input on specific issues, such as bicycling conditions and the needs and issues of the mobility impaired. Encourage citizens to be the casual inspectors of the conditions of the transportation system and formalize the receipt of input and feedback of actions taken.



***Action P5b: Promote Public-Private Partnerships for the Upkeep and Embellishment of Non-roadway Elements of the Transportation System***

Transportation system users and adjacent developments they serve are in a position to be both impacted by and benefit from the conditions of the transportation system. The City of Norman already has an active adopt-a-street program, empowering neighborhoods and citizen groups to provide enhanced litter removal, landscaping and even extension of neighborhood surveillance to specific streets of the city. Expand and enhance the public-private partnerships to allow private citizens, groups and businesses to physically and financially support their interests in the upkeep of specific aspects of the transportation system serving Norman, including streetscape on arterial roadways, a much expanded trail network , bus stops and future passenger rail stations.

## **Actions to Facilitate Appropriate Fiscal Stewardship**

In the fourth guiding principle, Norman Moving Forward strives to provide a detailed roadmap of actions for transportation and infrastructure investments based on an approach that maximizes the benefits for multiple user groups in a way that is both fiscally and environmentally responsible. Future investments will include input from the community at large and the priorities as identified through regular ongoing dialog with stakeholders. The goal of the plan is to optimize the use of City of Norman funds and to leverage additional funding for transportation to maximize the Norman public return on investment in transportation infrastructure and operations.

### **Objective F1.**

***Identify and pursue private, regional, state and federal revenue sources for funding multimodal transportation improvements in Norman, and actively engage in regional efforts to identify new dedicated funding sources.***

#### ***Action F1a: Submit the Norman CTP to ACOG for inclusion of plan into the TIP and STIP***

Transportation projects and services that will utilize federal funding are required to be listed in the metropolitan Transportation Improvement Program (TIP) and the Statewide Transportation Improvement Program (STIP). Additionally, TIP projects must be consistent with the region’s long-range transportation plan, Encompass 2035, and must reflect federal, state and local transportation funds expected to be available during the four-year TIP period. The STIP is a financially constrained program which details the utilization of Oklahoma's federal and state transportation funds appropriated for regionally significant projects requiring federal action. It includes a list of priority transportation projects to be carried out in a four (4) year period. The City of Norman should submit the Norman CTP, and any updates, to ACOG for incorporation of Norman’s Short Range projects into the regional and statewide TIP, as well incorporating the Norman CTP into updates of the ACOG long range transportation plan.

#### ***Action F1b: Seek ACOG Funding for Regional Initiatives***

ACOG administers federal, state and regional funding for various initiatives either annually or as requested and issues a call for projects based upon specified rules for qualification of projects and requirements for matching funds. These funding opportunities include the annual allocation of Surface Transportation Program funds for urbanized areas and the sporadically disbursed American Recovery and Reinvestment Act funds. Prepare a set of several potential funding nominations for projects that fit the anticipated categories of funding and have a high degree of local support, relatively high ratio of project benefits to project cost, and relatively low degree of difficulty to implement (i.e., little or no ROW, no environmental issues), and have them ready to be configured into funding applications to fit the eventual rules of the administering agency. Prepare letters of support and financial participation letters and ordinances in advance of the agency call for projects.

#### ***Action F1c: Seek FTA Funding for Transit Operations in Norman***

Federal Transit Administration (FTA) funds assisted CART with the purchase of various transit capital items, property and bus maintenance, general operations and special transit services for elderly and disabled citizens. Continue to seek FTA funding for growth and efficiency of the CART transit service in terms of frequencies (additional buses), passenger amenities (bus shelters, transit hub facilities, safe routes to transit, passenger information systems), and bus operations (bus stop pavement, alternative

fuel vehicles and fueling stations, AVL, APC). Use the OU system operation and service base as leverage to serve as a pilot test location for transit operations research.

***Action F1d: Seek MAP-21 Transportation Alternatives and other Federal Funding for Bicycle and Pedestrian Facilities in Norman***

The current federal funding for surface transportation programs in the US, Moving Ahead for Progress in the 21st Century Act (MAP-21), combines previous program elements of Transportation Enhancements, Safe Routes to School and other sub-allocations and focuses their funding into a category entitled Transportation Alternatives. A portion of the funding will be administered by ODOT and a portion by ACOG, with rulemaking on the administration of these funds soon to be completed. Prepare a set of several potential funding nominations for bicycle and/or pedestrian projects that have a high degree of local support, relatively high ratio of project benefits to project cost, and relatively low degree of difficulty to implement (i.e., little or no ROW, no environmental issues), and have them ready to be configured into funding applications to fit the eventual rules of the administering agency. Prepare letters of support and financial participation letters and ordinances in advance of the agency call for projects.

***Action F1e: Continue Pursuit of FAA Funding for Airport Operations in Norman***

Continue a high level of community support for operation of Westheimer Airport to attract Federal Aviation Administration (FAA) operation of a control tower and participation in the advancement of airport operations. Participate in significant partnership with OU in the funding and preparation of regular updates to the airport development and operations plan.

***Action F1f: Collaborate with ODOT to Advance Locally Preferred Projects and Enhancements on State ROW***

Planned improvements to ODOT roadways, including US 77 and SH 9, should consider local issues and preferences for localized function and appearance. The City of Norman should collaborate with ODOT at the early stages of project development to implement elements of the Norman CTP, including goals for multimodal accommodations in the roadway corridor and aesthetic appearance of the corridor. Identify locally preferred treatments and requirements that are above and beyond ODOT financial obligations for the corridor and identify city and non-city funding sources and a timeline for their implementation. Solicit ODOT participation in signal system improvements on state-maintained roadways.

***Action F1g: Study the Needs, Methods and Implications of Establishing a Dedicated Source of Funding for CART***

Local funds gathered through Sales Tax, Special Development Impact Fees, Room Taxes, Utilities Fees and other regular sources of income to the city should be used to the extent possible as seed money or matching funds to attract private, state and federal funding sources of funding and other participation. However, to systematically plan for the provision of modern public transportation service in Norman, a reliable source of sufficient local funding is needed to implement, operate and maintain the service. Establish a city committee to assess various scenarios for creating a dedicated transit funding source, review and seek concurrence with City Council to put forward for voting by city residents.

***Action F1h: Leverage Local Funds to Secure Bonds for Needed Transportation Infrastructure Improvements***

Utilize the bonding capacity of the City of Norman to design and construct the significant transportation infrastructure projects to improve current mobility conditions and prepare for the pending transportation needs of Norman. Every two to five years, or as bonding capacity allows, prepare a list of

candidate projects, publically assess their benefits to the community, and select a slate of projects for a bond program of funding to be voted on by the citizens of Norman.

**Objective F2.**

***Integrate state and federal long-range transportation planning factors with local and regional transportation planning to maximize future funding opportunities for surface transportation projects in Norman.***

***Action F2a: Collaborate with ACOG and ODOT to Strategically Approach the Funding of Transportation Improvements***

Participate in high-level discussions with management of ACOG and ODOT regarding the availability of funds for the region, the regionally significant slate of projects to be implemented in the short range planning horizon, and develop a consensus on support of the major project funding for the region. Garner support for regionally significant projects that benefit the City of Norman and adjacent communities. Assess the availability of funding for the various multimodal project needs of Norman.

***Action F2b: Include Performance Measures in the Transportation-Related Planning and Programming of Projects for the City of Norman***

The MAP-21 program of federal funding for transportation introduced the requirement for the assessment of the planned versus actual performance of various projects that would be funded by the various administrations of the Department of Transportation. The planned performance and impacts of a project should be used to justify its implementation, and the assessment of the actual performance and its planned or unplanned impacts or consequences should influence future spending on similar projects. Review all transportation-related programs within the City of Norman to introduce performance measures into the decision making process and project follow-up procedures, consistent with the level of detail requested by ACOG.

**Objective F3.**

***Provide transparency and meaningful public awareness, ongoing citizen input, and participation opportunities to implement and update the Norman CTP.***

***Action F3a: Make the Norman CTP Available Electronically on the City's Website and in Hardcopy at City Libraries***

Post the downloadable electronic format of the CTP report and appendices on the City of Norman Website. Maintain the Moving Forward Facebook page to announce ongoing implementation and refinement of the CTP. Provide multiple hardcopies of the report and its appendices to the city's public libraries for viewing by citizens without internet or computer access.

***Action F3b: Reference the Goals and Objectives of the Norman CTP when Publicly Presenting the City's Ongoing Transportation Investments***

To allow Norman citizens and interested visitors to track the ongoing implementation of the Norman CTP, include references to the Goals, Objectives and/or targeted Action Items of the CTP in written briefings, documentation and presentations on transportation projects and initiatives at City Council meetings and other public venues.

***Action F3c: Present an Annual Report on the Status of Implementing the Action Items of the CTP Implementation Plan***

At a strategically significant point during each year, prepare an annual report on the status of each of the Goals, Objectives and Action Items of the CTP and present the report to City Council. Solicit City Council, CVC and general public review and comment on the annual report. Consider any needs for refinement of the CTP in response to the feedback, and provide City Council with a plan of action to update the CTP as needed.

***Action F3d: Include Significant Public Involvement in the Regular Updates to the Norman CTP***

At least every 5 years, prepare a formal update the Norman CTP. At that point in time, involve the citizens, business operators and property owners in Norman in the process of evaluating the plan guiding principles, goals, and objectives to create an update to the plan with a new baseline and vision of the future of Norman. For this effort, adapt the current CVC structure to provide input to the city’s efforts to update the plan.

**Objective F4.**

***Plan for and preserve rights-of-way and other real property for future multimodal transportation and supporting infrastructure investments in advance of economic development.***

***Action F4a: Identify and Enter Into Agreements to Secure the Property and Rights of Way for the Proposed Commuter Rail Stations***

Conduct station siting assessments for the stations near Tecumseh Road and SH 9. Work closely with property owners in the vicinity of the potential rail station sites to develop potential partnerships in development of the land. Secure development agreements with the targeted property owners for the future rail stations.

***Action F4b: Identify and Secure the Property and Rights of Way Required for the Proposed Trail Connecting Lindsey Street to 48<sup>th</sup> Avenue SW.***

Prepare conceptual design for the trail connecting the western end of Lindsey Street at Ed Noble Parkway to the southern end of 48<sup>th</sup> Avenue SW. Work closely with property owners along the conceptual alignment to develop potential partnerships in development of the land. Secure development agreements with the targeted property owners for the future trail segment.

***Action F4c: Identify and Secure the Trail Easements along 48<sup>th</sup> Avenue E. and Alameda Street Rural Principal Arterials***

The proposed typical section for the rural principal arterial roadways, and as called for in the bicycle and pedestrian plan, includes the acquisition of sidewalk easements for the development of multi-use paths along both sides of the corridor. Work closely with property owners in the corridors to develop potential partnerships in development and enhancement of the trail. Secure development agreements with the targeted property owners for the future multi-use paths along both sides of the rural principle arterials.

***Action F4d: Identify and Secure the Trail Easements along 24<sup>th</sup> Avenue SW. for Crossing of Canadian River***

In advance of the creation of a crossing of the Canadian River along the old alignment of 24<sup>th</sup> Avenue SW, investigate and secure the public rights of way for the corridor for the multi-use path approaches to and crossing of the river.

**Objective F5.**

***Develop a policy and programs for city consideration of private/public partnerships and donations to fund transportation infrastructure, amenities and aesthetics.***

***Action F5a: Institute a Program of Public-Private Partnerships for the Development and Management of Non-Roadway Elements of the Street ROW***

Transportation system users and the destinations and adjacent developments they serve are in a position to benefit from early implementation and localized enhancement to the transportation system. Formalize a process to actively seek public-private partnerships for incorporating enhancements into the design of transportation facilities in Norman. Develop a policy and framework for agreements to allow private citizens, groups and businesses to financially support their interests in the advancement and management of specific aspects of the transportation system serving Norman. As necessary, special districts may be established to facilitate the raising of funds and the implementation of larger and longer duration projects.

**Objective F6.**

***Create and implement tax assessments for transportation and supporting improvements associated with special initiatives, including bridge repair and rail transit.***

***Action F6a: Initiate a Specific Duration Tax Assessment to Support the Funding of Repairs and Upgrades to the Bridges and Culverts for Roadways in Norman***

The City of Norman conducts a conditions inventory of all of its bridges and major culverts every two years. The Bridge Repair Recommendations listing prepared for the city in December 2011 included 24 bridges or major culverts that were in need of minor to major repair and are the responsibility of the City of Norman. There is not a dedicated City of Norman bridge maintenance budget, so only urgent repairs are typically made, with funding drawn from available city budgets. Conduct a financial analysis to assess the need and potential fund raising tool, such as a specific duration special purpose tax, to fund the proper maintenance of the bridges with the intent of reducing the lifecycle costs of maintaining the operations and safety of the city's bridges.

***Action F6b: Initiate a Specific Duration Tax Assessment to Support the Funding of Commuter Rail Station Property Acquisitions and Enhancements in Norman***

The City of Norman is currently engaged with ACOG in the assessment of potential commuter rail service between Norman and Oklahoma City. There is not a dedicated City of Norman budget for commuter rail development, and an increasing local investment will be needed to affect preferred local configurations and aesthetics of the station areas. Conduct a financial analysis to assess the need and potential fund raising tool, such as a specific duration special purpose tax, to fund the advancement of commuter rail local enhancements and station siting, with the intent of advancing commuter rail service to Norman and creating value for the areas surrounding the potential commuter rail stations.



## Actions to Facilitate Enhanced Economic Vitality

The fifth guiding principle of Norman Moving Forward supports economic vitality that promotes economic growth while using resources in an efficient and effective manner. These fiscally sound efforts are intended to achieve a diverse, vibrant local economy with a strong tax base, thus reducing the future fiscal burden on residents to provide city services. The goal of the CTP is to invest in transportation improvements that support the physical and economic vitality of Norman's neighborhoods, businesses, employment and education districts.

### Objective E1.

***Initiate and promote a managed parking system(s) and/or district(s) to support and encourage increased activity and density of development within the core of Norman and specifically to address the needs of Downtown, Campus Corner and the areas surrounding the University of Oklahoma.***

#### ***Action E1a: Manage High Demand On-Street Parking***

Parking supply in the areas of the eastern CBD along Main Street, southern Campus Corner along Asp Avenue and University Boulevard was found in a 2003 Parking Study, and verified in 2013, to be insufficient, though ample parking is located within two blocks of these locations. The City has installed parking meters around the Courthouse and in Campus Corner and one and two-hour parking limits at the angled parking along Main and Gray Streets in Downtown and on Asp Avenue in order to increase vehicle turnover and encourage longer term parkers to use ample peripheral parking. The 2003 Parking Study also recommended additional parking meters for installation in the CBD and increased parking meter rates in Downtown and Campus Corner. Continue to monitor high-demand on-street parking locations and refine these parking management strategies to strategically accommodate focused parking activities (customers, short term) while encouraging alternative parking locations for non-critical parking activities (employees, longer term).

#### ***Action E1b: Create a Parking Management District for the area from Campus Corner to Downtown***

The 2003 Parking Study estimated that approximately 440 additional parking spaces were needed in the CBD core and as a result the city has constructed a 149- space lot near the Gray Street / Peters Avenue intersection. The 2003 study also identified a 300 space deficiency in the Campus Corner for which the study recommended that adjacent private lots could be adjoined to increase the number of spaces and provide easier access. To facilitate the orderly and logical collaboration of off-street parking lots, create a parking management district and managing authority to coordinate parking supply and usage constraints and to add new parking supply in a special management district for the area generally encompassed by Main and Gray Streets from Porter Avenue to University Boulevard, Jenkins Avenue, Boyd Street and University Boulevard. Allocate start-up budget and staffing to get the authority organized and operational. The parking management district and/or authority would manage the revenues from parking meters and support development of needed parking improvements. The authority would collaborate with Downtown merchants to establish a validation program similar to Campus Corner. A master plan for future parking provisions for the district would be developed, in collaboration with Downtown and Campus Corner merchants and property owners, and financial plans prepared for their implementation.

**Objective E2.**

*Provide for effective trucking, railroad and air freight movement to, from and through Norman, including supporting facilities and airspace, while minimizing their impact on the quality of life.*

***Action E2a: Design Roadways in Norman to Accommodate Truck Mobility and Access to Businesses***

Designate effective truck routes along arterial roadways in Norman, and design these pavements to carry significant truck loading. Maintain design standards to accommodate WB-50 truck turning radius at intersections of arterial-to-arterial and arterial-to-collector roadway intersections. Require truck loading/unloading provisions for all new commercial development. For higher density development, coordinate with businesses to provide for strategic loading zones and truck parking practices that will not impede the flow of traffic.

***Action E2b: Discourage Noise-Sensitive Development of Land Beyond the North End of the Westheimer Airport***

The CVC Subcommittees identified the need to alleviate any pressures for limitations on the general aviation operations of the airport from new residential and other noise sensitive land uses. The FAA requires the airport to create a noise compatibility program, including the creation of a noise exposure map for planned operations within the next 5 years and the identification of non-compatible uses. A burden is placed on the airport to mitigate its impacts on such noise sensitive non-compatible uses. Any growth in airport activity or intensity of use would tend to expand the noise exposure contours, potentially further burdening the airport with additional noise mitigation costs. To allow for the continues growth of the airport, the Comprehensive Land Use Plan for the City of Norman should consider the long operating range plan of Westheimer Airport and incorporate a Future Land Use Plan that does not allow non-compatible noise-sensitive uses within the longer range noise exposure contours of the airport.

***Action E2c: Evaluate the Feasibility of Grade Separating Tecumseh Road at the Railroad***

The Airports, Freight Movement and Emergency Response Subcommittee of the CVC recommended a railroad grade separation at Tecumseh Road (US 77) as part of the geographic distribution of railroad grade separations at the major street crossings, along with Robinson Street, Lindsey Street and SH 9. Conduct a feasibility study of the physical practicality, anticipated costs and anticipated benefits of the grade separation and its alternatives, including considerations for a potential commuter rail station near that location. If deemed feasible and desirable to create the grade separation, prepare designs, assemble local, state and federal funding and schedule the project for implementation of a railroad grade separated crossing for Tecumseh Road.

**Objective E3.**

*Identify and promote land development strategies and suitable locations to maximize and support multi-modal development, such as mixed-use districts and transit oriented development, which maximize the benefits of transit investments.*

***Action E3a: Coordinate the Planned Commuter Rail Stations with Future Land Use Planning, Development Controls and Incentives***

Develop small area plans for potential mixed use developments and complementary land uses within the one-half mile pedestrian catchment area surrounding the proposed commuter rail stations. Incorporate these land use concepts into the Comprehensive Land Use Plan for Norman.

**Objective E4.**

*Identify and implement policies and programs to support and incentivize development initiatives within the city by establishment of special districts for use in timely implementation of transportation improvements.*

***Action E4a: Identify and Establish Special Districts for Local Mobility and Aesthetic Improvements***

As a tool for implementing desired mobility and aesthetic attributes of a specified area, identify congruent adjacent land uses and development that could contribute to and benefit from tax increment financing and other tools to facilitate the desired enhancements. Establish district boundaries and participation, create the district and establish management of its funds and implementation of projects.

**Objective E5.**

*Identify and implement policies and programs to streamline the project development process and to reduce transportation improvement implementation time.*

***Action E5a: Review Internal Transportation Project Development Procedures for Potential Efficiency Improvements***

Create documentation of the process flow for identification of need, development of concepts, allocation of funding, design development, contracting, and construction of city transportation infrastructure. Collaborate with external resources, including design firms and construction companies, and funding sponsor agencies to evaluate each of the major steps in the project process for the potential for streamlining and concurrency to shorten the time it takes to get projects completed. Make needed modifications to internal procedures to affect the improvements.

## Prioritized Implementation of Projects and Programs

Over 100 action items are associated with implementing the various objectives of the plan. Many of the action items are to be done on an ongoing or annual basis as part of the process of implementing the CTP. There are many specific action items that will require advance planning ahead of the design of facilities to enhance the quality of the transportation infrastructure in Norman. The evaluation criteria and related project ranking system were developed to assist Policy Makers with the selection and prioritization of future projects.

To facilitate implementation of the transportation plan infrastructure improvements, projects were categorized by their desired horizon year for implementation, based on the evaluation criteria listed below. Three implementation horizons are identified, with the latter two consistent with the horizon years established in the ACOG Encompass 2035 Plan:

- Short Range (first 5 years of the plan);
- Medium Range (by the year 2025); and
- Long Range (by the year 2035).

Some of these projects in the Norman CTP are already in the ACOG Encompass 2035 long range transportation plan as either medium or long range projects. As opportunities for funding and partnerships arise, the relative importance of any one project may move within these relative priorities. Similarly, other local decisions or changes within the City may be cause for projects to be added, deleted, or moved within these relative priorities. The implementation plan should be flexible to allow such instances.

### *Project Evaluation Criteria*

The assignment of Short and Medium Range attributes to these items indicate the relative importance of their implementation, based on the following factors:

- Urgency of need, either to alleviate barriers or safety issues
- Alleviation of existing or pending traffic congestion
- Completion of gaps in the network of facilities
- Implementation of strategic elements of the transportation system
- Cost of the improvement in relation to its anticipated benefit

For consideration of state and federal funding, local evaluation should be in keeping with the regional prioritization of roadway projects, for which ACOG has established the a set of evaluation criteria, including: Average Daily Traffic , Volume/Capacity Ratio, Accident Severity Rate, Air Quality, Surface Condition, CMP Congestion Corridor, and Project Readiness. In addition to these seven evaluation criteria which are applicable to most roadway projects, ACOG sets forth additional criteria for other types of transportation improvements including bridges, independent bicycle and pedestrian Improvements, and safety improvements. ACOG has formulated a detailed weighting and scoring methodology for candidate projects, allowing agencies to pre-assess their projects for competitiveness. ACOG encourages cities to construct bicycle and/or pedestrian improvements as incidental features of roadway, intersection and bridge projects. Such projects will be scored based on the evaluation criteria and weights applicable to the appropriate roadway category, and all improvements will be funded at the federal share applicable to the roadway improvement.

### *Project Evaluations and Scoring*

The evaluations of the capital projects that are recommended in the CTP are included in **Appendix H**, with evaluation scores summarized in Table H-1.

### *Action Items to be Implemented as Soon as Possible*

Some action items establish the basis for other actions to occur, and thus are recommended to be implemented as soon as they can be formalized and acted upon.

- Action S1a: Adopt the Updated Thoroughfare Plan and Adaptive Typical Sections
- Action S1b: Adopt the Updated Bicycle/Pedestrian Plan
- Action S1c: Adopt the Updated CART Long Range Transportation Plan
- Action S1d: Update the City of Norman Engineering Design Criteria and Standard Specifications
- Action S2a: Adopt Complete Streets Policies, Program and Guidelines
- Action P1a: Adopt Traffic Impact Assessment Preparation and Review Guidelines
- Action P1e: Revitalize the City's Traffic Calming Program
- Action F1a: Submit the Norman CTP to ACOG for inclusion of the plan into the TIP and STIP
- Action F1d: Seek MAP-21 Transportation Alternatives and other Federal Funding for Bicycling and Pedestrian Facilities in Norman

### *Action Items to be Conducted on an Ongoing or Annual Basis*

Some action items establish a program of ongoing practice of procedures, reporting or other regular or annual efforts to continue the efforts of the Norman CTP.

- Action S2b: Coordinate the Norman Thoroughfare Plan with the Norman Land Use Plan
- Action S2c: Allocate a Portion of the Available Local Funds to All Modes
- Action M4j: Provide Bus Pull-over Bays at Bus Stops on Upgrades to Urban Arterial Streets
- Action M5b: Actively Engage in Agency and Public Planning and Promoting of Intercity Transit Services
- Action P1b: Monitor Roadway and Bridge Conditions and Perform Needed Maintenance
- Action P1c: Monitor Sidewalk and Trail Conditions and Perform Needed Maintenance
- Action P1d: Monitor Transit Facilities and Rolling Stock Conditions and Implement Needed Maintenance
- Action P2a: Assess Annually the Traffic Congestion on Major Streets in Norman
- Action P2b: Assess Annually the Transit LOS and Ridership on Major Streets in Norman
- Action P2c: Assess Annually the Bicycling Conditions in Norman
- Action P2d: Assess Annually the Gaps in Sidewalk Availability in Norman
- Action P2e: Assess Annually the Availability of Safe Routes to School in Norman
- Action P2f: Assess Annually the Safety of Transportation in Norman
- Action P2g: Conduct Regular Surveys of Citizen Opinions of Transportation
- Action P3a: Accommodate Pedestrian, Bicycle and Transit Access and Mobility During Public and Private Construction in Public ROW
- Action P4a: Monitor Intersection Traffic Operations and Implement Mitigation Measures
- Action P4b: Monitor Transit Usage Barriers and Implement Mitigation Measures
- Action P4c: Monitor Bicycle Utilization Barriers and Implement Mitigation Measures
- Action P4d: Monitor Walking Barriers and Implement Mitigation Measures
- Action P5a: Foster Programs to Seek Public Input on Conditions Reporting
- Action P5b: Promote Public-Private Partnerships for the Upkeep of Elements of the Transportation System
- Action F1b: Seek ACOG Funding for Regional Initiatives

- Action F1c: Seek FTA Funding for Transit Operations in Norman
- Action F1f: Continue Pursuit of FAA Funding for Airport Operations in Norman
- Action F1g: Collaborate with ODOT to Advance Locally Preferred Projects and Enhancements on State ROW
- Action F1i: Leverage Local Funds to Secure Bonds for Needed Transportation Infrastructure Improvements
- Action F2a: Collaborate with ACOG and ODOT to Strategically Approach the Funding of Transportation Improvements
- Action F3b: Reference the Goals and Objectives of the Norman CTP when Publicly Presenting the City's Ongoing Transportation Investments
- Action F3c: Present an Annual Report on the Status of Implementing the Action Items of the CTP Implementation Plan
- Action F3d: Include Significant Public Involvement in the Regular Updates to the Norman CTP
- Action F5a: Institute a Program of Public-Private Partnerships for the Development and Management of Non-Roadway Elements of the Street ROW
- Action E2a: Design Roadways in Norman to Accommodate Truck Mobility and Access to Businesses
- Action E2b: Discourage Noise-Sensitive Development of Land Beyond the North End of the Westheimer Airport
- Action E3a: Coordinate the Planned Commuter Rail Station with Future Land Use Planning, Development Controls and Incentives

### ***Short Range Projects***

Short Range projects are proposed for implementation within the first 5 years after adoption of the Norman CTP. The projects are listed separately by the four major modal groups – motor vehicles, transit, bicycles and pedestrians. These projects are recommended to be incorporated into the City of Norman Capital Improvement Program (CIP) and the ACOG TIP.

### **Short Range Thoroughfare Improvements**

- Action S3a: Context Sensitive Roadway Improvements on Lindsey Street, Berry Road to Jenkins Avenue
- Action S3f: Implement the Transportation Enhancements Recommended in Core Norman Neighborhood Plans (partial)
- Action M2h: Improve the West Side of the Interchange of Robinson Street at I-35
- Action M2i: Improve Rock Creek Road, 48th Avenue W. to 36th Avenue W.
- Action M3a: James Garner Avenue Extension, Flood Avenue to Acres Street
- Action M3b: Main/Gray Streets One-way Couplet, Porter Avenue to the Roundabout at Carter Avenue
- Action M3c: Create a One-way Couplet of Peters and Crawford Streets, from Acres Street to Alameda Street
- Action P4e: Signal System Coordination and Monitoring
- Action F6a: Initiate a Specific Duration Tax Assessment to Support the Funding of Repairs and Upgrades to the Bridges and Culverts for Roadways in Norman
- Action F6b: Initiate a Specific Duration Tax Assessment to Support the Funding of Commuter Rail Station Property Acquisitions and Enhancements in Norman
- Action E1a: Manage High Demand On-Street Parking



- Action E1b: Create a Parking Management District for the Area from Campus Corner to Downtown
- Action E4a: Identify and Establish Special Districts for Local Mobility and Aesthetic Improvements

#### **Short Range Bicycle Network Improvements**

- Action M6a: Restripe Identified Existing Streets to Install Bike Lanes
- Action M6b: Bridge the Legacy Trail over Robinson Street
- Action M6d: Complete the Legacy Trail Connection to Ruby Grant Park
- Action M6j: Complete the Sidepaths and Wide Outside Lanes on Constitution Street from Jenkins Avenue to Classen Boulevard
- Action F4b: Identify and Secure the Property and Rights of Way Required for the Proposed Trail Connecting Lindsey Street to 48th Avenue W.

#### **Short Range Pedestrian Network Improvements**

- Action S4a: Establish Corridor Aesthetics Standards and Enhancement Procedures
- Action S4b: Incorporate Corridor Enhancement into Main Street between I-35 and Downtown
- Action M1a: Complete the Missing Sidewalks and ADA-Compliant Ramps on Collector and Arterial Roadways
- Action M1c: Continue Upgrading Traffic Signals to project Accessible Pedestrian Accommodations
- Action F5a: Institute a Program of Public-Private Partnerships for the Development and Management of Non-Roadway Elements of the Street ROW

#### **Short Range Transit Network & Service Improvements**

- Action M4a: Extend the CART Transit System Service Hours on Five Key Routes
- Action M4b: Add Sunday CART Transit System Service
- Action M4c: Enhance the CART Access Service Hours to Match Fixed Route Service
- Action M4d: Maintain CART Service Frequency on Lindsey East & West Routes Year Round
- Action M4e: Add a New Downtown/Campus Corner Circulator Route
- Action M4f: Pilot Project to Reconfigure Main Street Route and Supporting Routes to Create Initial Grid Network
- Action M4k: Enhance the CART Transit Accessibility, Safety and Amenities
- Action M5a: Encourage the use of Intercity Transit Services
- Action M5c: Develop Site Planning and Property Development Concepts for Commuter Rail Station Areas
- Action F1h: Study the Needs, Methods and Implications of Establishing a Dedicated Source of Funding for CART

Some of these projects, listed in Table 4.1, may be eligible for regional, state or federal funding, and will need to be submitted to ACOG for inclusion into the regional Transportation Improvement Program (TIP) in order to be eligible for such funding.

**Table 4.1 Recommended Short Range Projects and Programs**

Project		Encompass 2035 Status	Lead Agency	MAP-21 Funding Opportunity	Est'd Project Cost, \$ Million (2014 Dollars)
ID#	Description				
<b>Thoroughfare Improvements</b>					
S3a	Lindsey, Berry to Jenkins	Long Range	Norman, OU	(Bike/Ped)	\$6.50
S3f	Neighborhood Plans (part)	n/a	Norman	Some CDBG	\$5.50
M2h	Robinson, west of I-35	To Be Added	Norman, ODOT	(Safety)	\$4.10
M2i	Rock Creek, 48 <sup>th</sup> W to 36 <sup>th</sup> W	Med. Range	Norman	(Widening)	\$2.40
M3a	James Garner Ext'n to Flood	Long Range	Norman	(Congestion)	\$6.00
M3b	Main/Gray east of Porter	To Be Added	Norman	(Congestion)	\$0.40
M3c	Peters/Crawford one-way pair	To Be Added	Norman	(congestion)	\$0.30
P4e	Traffic Mgmt Center	To Be Added	Norman	(Safety)	TBD
F6a	Fund Bridges and Culverts	n/a	Norman	n/a	TBD
F6b	Fund Rail Sta. Property & Enh.	To Be Added	Norman, ACOG	(Transit)	TBD
E1a	Manage on-street parking	n/a	Norman	n/a	n/a
E1b	Parking Management District	n/a	Norman	n/a	n/a
E4a	Mobility and Aesthetic Dist's	n/a	Norman	n/a	n/a
<b>Bicycle Network Improvements</b>					
M6a	Restripe Streets for Bike Lanes	To Be Added	Norman	(Bicycle)	\$0.30
M6b	Legacy Trail over Robinson	To Be Added	Norman	(Bike/Ped)	\$1.00
M6d	Legacy Trail to Ruby Grant Pk.	To Be Added	Norman	(Trail)	\$1.70
M6j	Constitution Sidepaths	To Be Added	Norman, OU	(Pedestrian)	\$0.50
F4b	Prop. For Trail Lindsey - 48 <sup>th</sup> W	n/a	Norman	n/a	n/a
<b>Pedestrian Network Improvements</b>					
S4a	Corridor Aesthetics St'ds	n/a	Norman	n/a	n/a
S4b	Main Street Aesthetics	n/a	Norman	n/a	\$0.50
M1a	High Priority Sidewalks, Ramps	To Be Added	Norman	(Pedestrian)	\$1.70
M1c	Upgrade Signals for APS	To Be Added	Norman	(Pedestrian)	TBD
F5a	PPP for Street Enhancements	n/a	Norman	n/a	n/a
<b>Transit Network and Service Improvements (*denotes costs from 2008 CART Plan, grown 3%/yr)</b>					
M4a	Extend Hours on Key Routes	To Be Added	CART	(Transit)	\$0.25*
M4b	Add Sunday Service	To Be Added	CART	(Transit)	\$0.20*
M4c	Extend CARTaccess hrs & Sun	To Be Added	CART	(Transit)	\$0.19*
M4d	Lindsey East & West, 30-min	To Be Added	CART	(Transit)	\$0.13*
M4e	Downtown-Campus Corner	To Be Added	CART	(Transit)	\$0.66*
M4f	Pilot Main Street Corridor Rte	n/a	CART	(Transit)	\$0.10
M4k	CART amenity, access, safety	To Be Added	CART, Norman	(Transit/Ped)	\$0.20
M5a	Encourage Intercity Transit	To Be Added	Norman, CART	(Transit)	\$0.05
M5c	Site Planning for Rail Stations	n/a	Norman, CART	n/a	\$0.10
F1h	Dedic'd Funding Source Study	n/a	Norman	n/a	\$0.10

### **Medium Range Projects**

Medium Range projects are proposed for implementation by year 2025. The projects are listed separately by the four major modal groups – motor vehicles, transit, bicycles and pedestrians.

#### **Medium Range Thoroughfare Improvements**

- Action S3b: Context Sensitive Roadway Improvements on Porter Avenue, Acres Street to Alameda Street
- Action S3c: Context Sensitive Improvements on James Garner/Jenkins Avenue, Acres Street to Boyd Street
- Action S3e: Context Sensitive Improvements on Main and Gray Streets from Flood Avenue to Porter Avenue and Modify the Western End of the Couplet
- Action S3f: Implement the Transportation Enhancements Recommended in Core Norman Neighborhood Plans (continued)
- Action S5b: Create a Railroad Crossing Quite Zone at At-Grade Crossings between Robinson Street and Post Oak Road
- Action S6a: Incorporate the Wayfinding System Plan into Existing Roadways and All Relevant Roadway Improvement Projects
- Action M2a: Improve Chautauqua Avenue, from Imhoff Road to Lindsey Street
- Action M2b: Improve Jenkins Avenue, from Constitution Street to Lindsey Street
- Action M2c: Improve SH 9 from 24<sup>th</sup> Avenue W to 12<sup>th</sup> Avenue E.
- Action M2d: Widen 12<sup>th</sup> Avenue W. from Rock Creek Road to Tecumseh Road
- Action M2l: Improve Imhoff Road, from Classen Boulevard to 24<sup>th</sup> Avenue E.
- Action M2p: Access Management Improvements on 12th Avenue E., from Robinson Street to Classen Boulevard
- Action M2q: Provide Access to and from I-35 and the Development along the West Side of 24th Avenue W. between Robinson Street and Tecumseh Road
- Action M3f: Improve Berry Road, Robinson Street to Lindsey Street
- Action M3g: Improve Classen Boulevard, Lindsey Street to 12<sup>th</sup> Avenue E.
- Action F1e: Seek FRA Funding for Lindsey Street Railroad Grade Separation

#### **Medium Range Bicycle Network Improvements**

- Action M6c: Refurbish the existing Legacy Trail along Robinson Street
- Action M6e: Extend the Legacy Trail Along the West Side of Flood Avenue, Robinson Street to Rock Creek Road
- Action M6f: Create Sidepaths along Rock Creek Road, Flood Avenue to 12<sup>th</sup> Avenue E.
- Action F4c: Identify and Secure the Trail Easements along 48<sup>th</sup> Avenue E and Alameda Street Rural Principal Arterials
- Action F4d: Identify and Secure the Trail Easements along 24<sup>th</sup> Avenue SW for Crossing of Canadian River

#### **Medium Range Pedestrian Network Improvements**

- Action M1b: Provide Pedestrian Accommodations on Urban Local Streets
- Action S4b: Incorporate Corridor Enhancement into Main Street between I-35 and Downtown

#### **Medium Range Transit Network & Service Improvements**

- Action M4g: Reconfigure and Add Routes to Create Grid Network
- Action M4i: Update the CART Long Range Public Transportation Plan
- Action M4j: Create Hub Facilities for Coordinated Areawide Transit Services

Table 4.2 Recommended Medium Range Projects					
Project		Encompass 2035 Status	Lead Agency	Funding Opportunity	Notes
ID#	Description				
<b>Thoroughfare Improvements</b>					
S3b	Porter, Acres to Alameda	Long Range	Norman	(Multimodal)	
S3c	Garner/Jenkins Acres to Boyd	Med. Range	Norman	(Multimodal)	
S3e	Main/Gray, Flood to Porter	To Be Added	Norman	(Congestion)	
S3f	Neighborhood Plans (part)	n/a	Norman	Some CDBG	
S5a	RR Grade Sep'n at Lindsey	To Be Added	Norman	(Safety)	
S5b	RR Quiet Zone Thru Norman	To Be added	Norman	(Safety)	
S6a	Incorporate Wayfinding Plan	n/a	Norman	n/a	
M2a	Chautauqua, Imhoff - Lindsey	To Be Added	Norman	(Widening)	
M2b	Jenkins, Const. to Lindsey	To Be Added	Norman	(Widening)	
M2c	SH 9, 24 <sup>th</sup> W to 12 <sup>th</sup> E	Med. Range	ODOT	(Widening)	
M2d	12 <sup>th</sup> W, Rock Cr. To Tecumseh	Med. Range	Norman	(Widening)	
M2l	Imhoff, Classen to 24 <sup>th</sup> E	Med. Range	Norman	(Multimodal)	
M2p	12 <sup>th</sup> Avenue E. Access Mgmt	Long Range	ODOT	(Safety)	
M2q	I-35 Access to Univ. No. Park	To Be Added	ODOT	(Congestion)	
M3f	Berry Road, Rob'n to Lindsey	Long Range	Norman	(Multimodal)	
M3g	Classen, Lindsey to 12 <sup>th</sup> E	Med. Range	Norman	(Widening)	
F1e	Seek FRA for Lindsey @ RR	n/a	Norman	n/a	
<b>Bicycle Network Improvements</b>					
M6c	Repave exist. Legacy Trail	To Be Added	Norman	(Bike/Ped)	
M6e	Extend Legacy along Flood	To Be Added	Norman	(Bike/Ped)	
M6f	Sidepath along Rock Creek	To Be Added	Norman	(Bike/Ped)	
F4c	Trail Easmts: 48 <sup>th</sup> E, Alameda	n/a	Norman	n/a	
F4d	Trail Easements, Canadian R.	n/a	Norman	n/a	
<b>Pedestrian Network Improvements</b>					
M1b	SW on Urban Local Streets	To Be Added	Norman	(Pedestrian)	
S4b	Enhance Main Street	Med. Range	Norman	(Safety)	
<b>Transit Network and Service Improvements</b>					
M4g	Grid Routes Realignment	To be Added	CART	(Transit)	
M4i	Update CART Long Range Plan	n/a	CART	n/a	
M4j	Create Transit Hubs	To Be Added	Norman	(Transit)	

### **Long Range Projects**

Long Range projects are proposed for implementation by year 2035. The projects are listed separately by the four major modal groups – motor vehicles, transit, bicycles and pedestrians.

#### **Long Range Thoroughfare Improvements**

- Action S3d: Context Sensitive Improvements on Flood Avenue, Robinson Street to Main Street
- Action S5a: Evaluate the Potential to Grade Separate Lindsey Street at the Railroad
- Action M2e: Improve Porter Avenue, from Indian Hills Road to Tecumseh Road
- Action M2f: Realign the Southeastern end of Broadway at Porter Avenue
- Action M2g: Widen Indian Hills Road, 48<sup>th</sup> Avenue W. to 24<sup>th</sup> Avenue W. and Improve the Interchange with I-35
- Action M2j: Improve Franklin Road, from 60<sup>th</sup> Avenue W. to N. Interstate Drive
- Action M2k: Improve Lindsey Street, from 24<sup>th</sup> Avenue E. to 36<sup>th</sup> Avenue E.
- Action M2m: Improve 48<sup>th</sup> Avenue E, from Franklin Road to SH 9
- Action M2n: Improve SH 9, from 72nd Avenue E. to 168th Avenue E.
- Action M2o: Improve 48th Avenue W., from Indian Hills Road to Main Street
- Action M3d: Improve Acres Street, Berry Road to Porter Avenue
- Action E2c: Evaluate the Feasibility of Grade Separating Tecumseh Road at the Railroad

#### **Long Range Bicycle Improvements**

- Action M6g: Create Trail along SH 9, 24<sup>th</sup> Avenue W. to Lake Thunderbird State Park
- Action M6h: Create a Sidepath along Tecumseh Road, 36<sup>th</sup> Avenue W. to 12<sup>th</sup> Avenue W., including a Bicycle/Pedestrian Crossing of I-35
- Action M6i: Create a Bicycle/Pedestrian Crossing of the Canadian River near 24<sup>th</sup> Avenue W.

#### **Long Range Pedestrian Improvements**

- Action S4c: Incorporate Corridor Enhancements into Robinson Street between I-35 and Porter Avenue
- Action S4d: Incorporate Corridor Enhancements into Flood Avenue North of Robinson Street
- Action S4e: Incorporate Corridor Enhancements into 12<sup>th</sup> Avenue E.
- Action S4f: Incorporate Corridor Enhancements into SH 9 between I-35 and Lake Thunderbird State Park

#### **Long Range Transit Improvements**

- Action M4h: Add New Bus Routes to Target Key Corridors and to Expand the Serviced Area
- Action F4a: Identify and Enter into Agreements to Secure the Property and Rights of Way for the Proposed Commuter Rail Stations

Table 4.3 Recommended Long Range Projects					
Project		Encompass 2035 Status	Lead Agency	Funding Opportunity	Notes
ID#	Description				
<b>Thoroughfare Improvements</b>					
S3d	Flood, Robinson to Main	Long Range	Norman	(Congestion)	
S5a	Evaluate Lindsey RR xing	n/a	Norman	(Safety)	
M2e	Porter, Indian H to Tec.	Med. Range	Norman	(Widening)	
M2f	Realign B'way @ Porter	To Be Added	Norman	(Safety)	
M2g	Indian H, 48 <sup>th</sup> W-24 <sup>th</sup> W	Long Range	Norman	(Widening)	
M2j	Franklin, 48 <sup>th</sup> W to N.Int.	Med. Range	Norman	(Widening)	
M2k	Lindsey, 24 <sup>th</sup> E – 36 <sup>th</sup> E	Med. Range	Norman	(Widening)	
M2m	48 <sup>th</sup> E, Franklin to SH 9	Long Range	Norman	(Widening)	
M2n	SH 9, 72 <sup>nd</sup> E to 148 <sup>th</sup> E	Long Range	Norman	(Widening)	
M2o	48 <sup>th</sup> W, Ind. H to Rob'n	Long Range	Norman	(Widening)	
M3d	Acres, Berry to Porter	To Be Added	Norman	(Multimodal)	
E2c	Eval. Tecumseh RR xing	n/a	Norman	(Safety)	
<b>Bicycle Network Improvements</b>					
M6g	SH 9 Trail, 24 <sup>th</sup> W-LTSP	Included	Norman	(Bike/Ped)	
M6h	Tecumseh ped xing I-35	To Be Added	Norman	(Bike/Ped)	
M6i	Trail xing Canadian R.	To Be Added	Norman	(Bike/Ped)	
<b>Pedestrian Network Improvements</b>					
S4c	Enh. Robinson, I-35 to E	n/a	Norman	n/a	
S4d	Enh. Flood, R'son to N	n/a	Norman	n/a	
S4e	Enhance 12 <sup>th</sup> Avenue E	n/a	Norman	n/a	
S4f	Enh. SH 9, I-35 to LTSP	n/a	Norman	n/a	
<b>Transit Network and Service Improvements</b>					
M4h	Add routes, Coverage	To Be Added	CART	(Transit)	
F4a	Station area agreement	n/a	Norman	n/a	

Projects often require multiple stages and multiple years to accomplish, so even though a project may be listed as Long Range in its implementation, there may be many steps that need to be taken earlier in the planning horizon to advance the project toward completion.

Some projects that were listed as Long Range Projects in the ACOG Encompass 2035 Plan were seen as projects that would not be needed until beyond the 2035 planning horizon. These projects include:

- 12<sup>th</sup> Avenue E. (US 77/ SH 77H) from Indian Hills Road to Classen Boulevard – widen from 4 lanes to 6 lanes. CTP project modeling of 2035 traffic with exiting 4-lanes showed acceptable traffic operations. Corridor was instead recommended to be assessed for potential access management enhancements, including raised medians and driveway consolidation. Corridor is proposed for enhanced pedestrian accommodations and neighborhood connections, as listed in Action item M2p.
- SH 9, from 168<sup>th</sup> Avenue E. to Pottawatomie Road – widen from 2 lanes to 4 lanes. Modeling of 2035 traffic with exiting 2-lanes showed acceptable traffic operations. Consider for spot intersection improvements, as listed in Action Item P4a.



Some projects that were listed as either Medium Range or Long Range projects were not seen as desirable given the other considerations of the proposed program of projects. These projects include:

- Making a one-way pair of University and Webster Streets north and south of the Main/Gray couplet. Opted to retain the less aggressive traffic on University and Webster, adding bike lanes on Webster. Opted to modify western terminus of Main/Gray couplet.
- Imhoff Road, from SH 9 to Chautauqua Avenue – widen from 2 lanes to 4 lanes. Due to ROW constraints in this section of Imhoff Road near Berry Street, opted to strengthen the Chautauqua Avenue and Jenkins Avenue connections to SH 9.

## Sources of Funding for Capital Improvements

Historically, the City of Norman has expended significant amounts of local and non-local resources on transportation, as summarized in Table 4-3.

**Table 4.3 Annual Spending on Transportation in Norman, 2002-2012, in Thousands of Dollars**

Category	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Annual Average
Bonds	683	294	81	386	2,696	4,322	4,004	6,650	5,958	3,610	2,994	3,168
Impact Fee	506	61	130	221	309	-	-	13	75	-	185	150
Sales Tax	4,121	5,785	7,322	2,720	3,039	3,403	4,172	3,979	4,267	2,482	7,750	4,604
Sewer Fee	25	277	2	-	-	-	-	-	104	-	-	41
Room Tax	-	31	55	-	-	-	-	-	-	-	-	10
Water Fee	-	50	340	7	-	-	-	14	115	-	7	59
Wastewater	-	128	-	-	-	-	-	-	-	-	-	14
Grants	-	-	38	314	47	5	25	40	21	-	3	62
TIF	-	-	262	-	144	1,002	922	4,850	1,595	1,131	2,171	1,510
STP-UZA	6,000	6,407	3,240	1,560	6,200	5,450	585	5,272	3,512	7,057	2,893	4,818
ARRA Funds	-	-	-	-	-	-	-	2,003	1,889	-	-	389
CDBG Funds	86	254	138	218	304	527	40	44	329	-	275	222
<b>TOTAL</b>	<b>11,423</b>	<b>13,288</b>	<b>11,609</b>	<b>5,425</b>	<b>12,739</b>	<b>14,710</b>	<b>9,748</b>	<b>22,865</b>	<b>17,865</b>	<b>14,281</b>	<b>13,279</b>	<b>15,046</b>

Some of these funds are locally generated and some are non-local funds. Some local and some non-local funds have various purposes and/or restrictions on their use, as described below:

**Bonds** – Funds generated from the sales of bonds, to be paid back with interest from future monies raised by the City. The issuance of bonds by the city are typically approved by a vote of its citizens, with specific purposes for the bond program of projects described for the vote and thus limiting the application of the funds appropriated under that specific bond program.

**Impact Fee** – Funds generated from developments for mitigation of impacts to implement systemic infrastructure improvements.

**Sales Tax** – Funds generated from collection of local Norman sales taxes, from which allocations are made by City Council for infrastructure improvements.

**Sewer Fee** - Funds generated from collection of local Norman sewer connection fees, from which allocations are made by City Council for sewer elements of infrastructure improvements.

**Room Tax** – Funds generated from the city’s tax on hotel rooms in Norman, from which allocations are made by City Council for infrastructure improvements.

**Water Fee** - Funds generated from collection of local Norman residential, commercial and industrial water usage fees, from which allocations are made by City Council for water infrastructure improvements within street rights of way.

**Wastewater** - Funds generated from collection of local Norman residential, commercial and industrial water usage fees, from which allocations are made by City Council for wastewater infrastructure improvements within street rights of way.

**Grants** - Various grant opportunities arise from sources at the region, state and federal level that are spread across the region or state. These grants can require significant efforts to prepare a competitive application. Grants vary in their requirement for local matching funds, ranging from none to 20 percent or more and can require significantly more local matching funds to be a more competitive application. Applications combining funds and resources from multiple entities and supporting private entities can increase the competitiveness of the application.

**Tax Increment Financing (TIF)** - The city’s first TIF — Campus Corner TIF District No. 1, originally approved in December 2001, has completed its \$1.25 million in new funds created by increased revenues in the district and the completed projects have spurred many new business and increased the tax base to the city going forward. The second TIF District for Norman, the \$54.75 million University North Park TIF No. 2 (Robinson to Tecumseh east of I-35 to the airport) was approved by City Council in 2006. The future tax revenue has been leveraged to gain current infrastructure investments by the developer for intersection and frontage road construction. The City will also be leveraging the future TIF revenue stream to issue about \$16 million in revenue bonds to reimburse the developer and create Legacy Park. Other TIF districts may be feasible for Downtown, future commuter rail station development areas, and other concentrations of emerging development and density.

**Surface Transportation Program Urbanized Areas (STP-UZA)** - ACOG manages the regionally allocated federal funds under the Surface Transportation Program of the federal transportation funding program, MAP-21. ACOG annually solicits a call for candidate projects for consideration of funding under each year’s funding allocation. Eligible projects include roadway and intersection resurfacing, widening and safety improvements, bicycle and pedestrian accommodations, transit capital, and combinations of such improvements to enhance multi-modal travel throughout the region. Submitted projects must be consistent with the region’s long-range transportation plan, Encompass 2035, and scored by the applicant using the recently updated Criteria and Process for Evaluation of STP-UZA Projects. All expenses for construction projects associated with the development of engineering plans, right-of-way acquisition and utility relocation will be the responsibility of the local government(s) initiating such projects.

Using the estimated FFY 2014 and 2015 STP-UZA funds for the OCARTS area and the project scores, a list of affordable projects will be developed by the Committee for each year. The updated project priorities will be amended into the FFY 2013-2016 OCARTS Area TIP and Statewide STIP, as required by federal law. These actions will allow 80% federal STP-UZA funds (100% for certain safety projects) to be authorized for these approved projects once all federal requirements for environmental clearance, right-of-way and encroachment clearance, and final plans have been satisfied.

Local government project sponsors are responsible for the remaining 20% local match, as well as costs related to engineering, right-of-way acquisition, and utility relocation.

**American Recovery and Reinvestment Act (ARRA) Funds** - To respond to the Great Recession, the primary objective for ARRA, enacted in 2009, was to save and create jobs almost immediately. Over \$100 Billion was allocated to infrastructure projects in the US. To have immediate effect, project were funded that were shovel ready. The program was intended as a stimulus and not a long term source of funding and is no longer allocating funds.

**Community Development Block Grant (CDBG) Funds** – This source of funding is one of the longest-running programs of the U.S. Department of Housing and Urban Development (HUD). Proposed CDBG projects must be activities that benefit low- and moderate-income people, the prevention or elimination of slums or blight, or other community development activities to address an urgent threat to health or safety. CDBG funds are allocated on a formula basis according to the population of lower income population in the city and are to be used for improvements to benefit low and moderate-income area improvements such as: real estate acquisition, relocation, demolition, rehabilitation of housing and commercial buildings; construction of water, sewer and other utilities, street paving, and sidewalks to serve those communities; construction and maintenance of neighborhood centers and the conversion of school buildings; public services; and economic development and job creation/retention activities. The City of Norman as a recipient of CBDG funds prepares and annually updates a 5-year plan to address the needs of in Norman. Infrastructure projects are limited to the (five) targeted lower income CDBG neighborhoods generally south, east and northeast of Downtown Norman: Old Silk Stocking, First Courthouse, Original Townsite, Larshmillier and University.