CITY OF TOMBALL

MAJOR THOROUGHFARE PLAN REPORT

Prepared for:

City of Tomball

Prepared by:

SCHAUMBURG & POLK, INC.

FEBRUARY 2009

Table of Contents

Appendices

Section 1 - Introduction

The City of Tomball (the City) contracted with Schaumburg & Polk, Inc. (SPI) to update and make various additions to the City's Major Thoroughfare Plan (MTP). Services to be provided as part of this update included developing a clearly defined thoroughfare classification system, including typical sections for each classification; thereby defining parameters such as right-of-way (ROW) width, pavement and median widths, number of lanes, etc. Once the hierarchy was established, the City's Major Thoroughfare Map was evaluated and updated to establish a comprehensive transportation plan that promotes desirable traffic circulation within and throughout the City utilizing the newly defined roadway classifications. Thoroughfares adjacent to and/or within the City of Tomball identified either on the City of Houston's Major Thoroughfare and Freeway Plan or on Harris County's Major Thoroughfare list were also considered and incorporated into the Plan. Section 2 provides a summary of the MTP Updates, and the proposed City of Tomball Major Thoroughfare Plan is included as Appendix A.

Traffic Impact Analysis guidelines for new development within the City of Tomball were developed (see Appendix B). The guidelines define the general purpose of a TIA, provide a TIA Trip Generation Worksheet to aid in determining if a TIA is needed, provide thresholds for requiring a TIA and define the minimum requirements for a TIA if and when one is required. Reference to "City of Tomball TIA Guidelines" was also added to the Major Thoroughfare Plan itself.

Upon completion of the Major Thoroughfare Plan and TIA Guidelines, a review of the City's Zoning Ordinance was conducted to identify any potential conflicts. Section 3 provides a summary of the findings, which mainly relate to conflicting use of the roadway classification terms between the documents.

The City of Tomball expressed interest in the possibility of designating truck routes within the City limits in the future, and requested a summary of the steps to be taken should the City wish to proceed with designating a truck route. Appendix C provides a brief overview on the background and state laws regarding truck routing, an outline for a general administrative process for local governments to use when considering various truck-routing alternatives, a discussion of strategies to handle various truck-routing issues, guidelines for developing a truck-routing ordinance and a sample truck-routing ordinance. In the event that the City decides to proceed with implementing a truck route, it is recommended that the City Attorney provide oversight and guidance regarding the required procedures and documentation.

Section 2 - City of Tomball Major Thoroughfare Plan Updates and Modifications

Introduction to Major Thoroughfare Plans

Major thoroughfare plans (MTPs) are developed and utilized by local governments and agencies as a planning tool to identify new roadway connections and existing infrastructure updates that will meet the needs of the community's system. These plans identify a functional classification system (or hierarchy) of roadways that designates the role of each major route within the local and regional transportation network. Each classification is intended to serve defined needs with a specific balance between movement and access, and each has specific right-of-way, pavement width and "number-of-lanes" requirements. Adoption of a MTP not only serves to aid in transportation planning, it also provides the community the authority to request right-of-way through the development process, as well as the opportunity to coordinate local transportation planning activities with those occurring on a regional or State-wide basis.

The current City of Tomball Major Thoroughfare Plan (MTP) as adopted by ordinance on February 5, 2007 consists solely of a map that identifies the City's major thoroughfares using a somewhat undefined roadway classification system. The purpose of this section is to provide a summary of the proposed updates and modifications to the MTP, which include:

a) Establishing and clearly defining a thoroughfare classification hierarchy system:

While the existing COT MTP Map utilizes a roadway classification system to define the major thoroughfares throughout the City, little information is provided regarding the characteristics of those classifications. As part of this study, a modified classification hierarchy system has been established, and the characteristics of each classification level have been identified and clearly defined. These parameters are summarized in a table on Page 2 of the proposed Major Thoroughfare Plan. The table not only includes a description of each classification's purpose, but also defines the associated right-of-way requirements, number of lanes, lane widths, etc. A copy of the table is also provided on the following page.

City of Tomball Major Thoroughfare Roadway Classification Hierarchy

Roadway Classification	Minimum Right-of-Way Width (feet)	Number of Lanes	Divided (D)/ Undivided (U)	Pavement Width (feet, F-F)	Median Width (feet, F-F)	Description
State Highway (SH / FM)	Varies	4-8	D or U	Varies	Varies	The main purpose of State Highways and FM Roadways is to move large volumes of traffic through urban areas and provide direct access to local freeways, while also providing controlled access to adjacent businesses.
Major Arterial	100-120*	4	D	24	32	Major arterials provide support and relief to the SH and FM roadways by providing additional east-west and/or north-south routes designed to accommodate high traffic volumes.
Minor Arterial	80	4	D	24	14	Minor Arterials distribute traffic from SH/FM roadways and Major Arterials to the Collector system and to adjacent land uses. Found in areas of significant traffic movement (industrial parks, retail centers, etc.)
Collector	60	2	U	40	N/A	Collect traffic from local areas and distribute it to the arterial network. Typically accommodates 2 lanes of traffic and on-street parking along both sides of the roadway. For higher traffic roadways, a four-lane section is possible.

* Proposed right-of-way for Medical Complex Drive is 120 feet

b) Updating the Major Thoroughfare Map to establish a comprehensive transportation plan that promotes desirable traffic circulation within and throughout the City, and that uses the newly defined roadway classifications:

Once a hierarchy system was established and the characteristics of each classification were clearly defined, the existing Major Thoroughfare Map was evaluated and modified to appropriately incorporate the new classifications. In general, “Arterials” became “Major Arterials,” “Major Roads” became “Minor Arterials,” and “Minor Roads” became “Collectors.” A few exceptions to that generality were implemented after evaluating the system for overall circulation and for its ability to effectively move traffic from the local networks to the arterial networks and eventually to the SH/FM roads. Several roadways previously designated as

"Major Roads" and/or "Minor Roads" have potential to, and would serve the City well in the future as a form of arterial. Those roadways have been appropriately designated on the proposed MTP Map.

It may be noted that the identified "State Highways – SH/FM" roadways are owned and maintained by the Texas Department of Transportation (TxDOT). In addition, many of the identified major thoroughfares within the City of Tomball are actually rights-of-way that are owned and maintained by Harris County (for a full list of the Harris-County owned roads within the City of Tomball, see Appendix D). The County has identified several of their facilities as "Major Thoroughfares" and issued a letter to the City of Tomball on March 30, 2000 requesting that, during the platting process, the City request the dedication of right-of-way as appropriate. A copy of this letter is included in Appendix E. The ultimate right-of-way widths requested by Harris County are addressed by the classifications assigned to these roadways. At minimum, the MTP matches the County's ultimate ROW requirement, and in the case of Brown and Hufsmith, the COT MTP calls for 100-foot ROW, while the County requires only 80 feet. This has been identified as a Major Arterial, as it has the potential to serve as the major east-west corridor for the northern half of the City between FM 2920 and FM 2978 and beyond.

Another modification to the MTP Map is the addition of the City of Houston Major Thoroughfare and Freeway Plan (COH MTFP) alignments adjacent to, and/or intersecting the COT Extra-Territorial Jurisdiction (ETJ) limits. The City of Tomball shares its ETJ boundary with the City of Houston to its west, south and east. It is important to note the locations of the COH MTFP alignments, and that they align with specific City of Tomball MTP alignments. This is crucial in the effort to provide not only desirable traffic circulation within the City of Tomball on a local level, but also to provide transportation connectivity on a regional basis. It may be noted that the MTFP identifies connections to FM 2920 from the Medical Complex / Agg Road alignment via Treichel Road on the west and via Mahaffey on the east. This alignment has been reflected on the COT Map, as well as an alternative alignment of the west end of Medical Complex up to FM 2920, as identified in the 2008 Medical Complex Preliminary Engineering Report / Feasiblity Study. Additionally, connections to Holderreith to the east and to the west are provided on the COH MTFP. The COT MTP did not previously identify the future Grand Parkway alignment, but it has been added to the map via the COH MTFP.

It should be noted that, with now clearly defined right-of-way requirements for each classification, new development may be required to dedicate right-of-way where such dedication may not have been previously required. It is critical; however, that focus on the future of the overall transportation system is maintained, and that dedication of right-of-way as appropriate for each classification is enforced as development continues.

c) Establishing guidelines and requirements for Traffic Impact Analysis studies, and including a reference within the MTP itself noting that development shall adhere to these criteria.

The City of Tomball does not currently maintain requirements or guidelines for developers to conduct traffic impact analysis (TIA) studies, nor has the City historically required these studies. As the City experiences continued growth in development, it will become increasingly important to require certain developments to evaluate their impact on the traffic operations of the roadways and intersections in the vicinity of the development.

TIA Guidelines have been assembled specifically for the City of Tomball, and are included in Appendix B. The guidelines define the general purpose of a TIA, provide a TIA Trip Generation Worksheet to aid in determining if a TIA is needed, provide thresholds for requiring a TIA and define the minimum requirements for a TIA if and when one is required. In addition, Page 2 of the Major Thoroughfare Plan states that, "Developers and/or land owners shall coordinate with the City of Tomball Engineering & Planning Department, and shall adhere to the City of Tomball Traffic Impact Analysis Guidelines." Components from TIA guidelines for other local agencies including Harris County, City of Houston, City of Sugar Land and City of Pearland were utilized in compiling a set of TIA guidelines appropriate for the City of Tomball.

Section 3 – Coordination with Zoning Ordinance

In conjunction with completing the proposed Major Thoroughfare Plan, a review of the City of Tomball Zoning Ordinance (Ordinance 2008-01) was conducted in an effort to identify any potential conflicts between the two documents. The following list is a summary of the findings, along with recommended action items as applicable:

- The TIA Guidelines require that the Trip Generation Worksheet be filled out as part of a plat and/or site plan application. It is recommended that the City consider adding language related to this requirement to Chapter 70 of the Code of Ordinances, as well as to the zoning ordinance.
- The zoning ordinance frequently uses the term, "Arterial" and often uses the terms "Collector" and "Major Thoroughfare;" however, the context in which these terms are used is in conflict with the terms as defined in the proposed Major Thoroughfare Plan.
    - It may be noted that Section 40.6.B defines a "major thoroughfare" as a thoroughfare having a right-of-way of at least 60 feet, which is in accordance with the hierarchy presented in the proposed MTP. No modifications to this section recommended.
    - Reference is made in the zoning ordinance that the terms "arterial" and "major thoroughfare" are synonymous (p. 171 – definition of "street"). Recommend removing the words, "or arterial" from the definition.
    - More restrictive setback distance requirements for each zoning classification refer to "arterials." It is likely that the intent of the zoning ordinance was to impose these more restrictive requirements to developments along all major thoroughfares, in which case it

is recommended that all references to “arterials” when discussing setback distances be changed to refer to “major thoroughfares.”

- It is recommended to delete the redundant words “collectors or” from the sentence, “…at the intersection of major collectors or thoroughfares…” in Section 27.1.
- It is recommended to delete the redundant words “and collector streets” from the sentence, “Convenient access to thoroughfares and collector streets is also a primary consideration…” in Section 30.1.

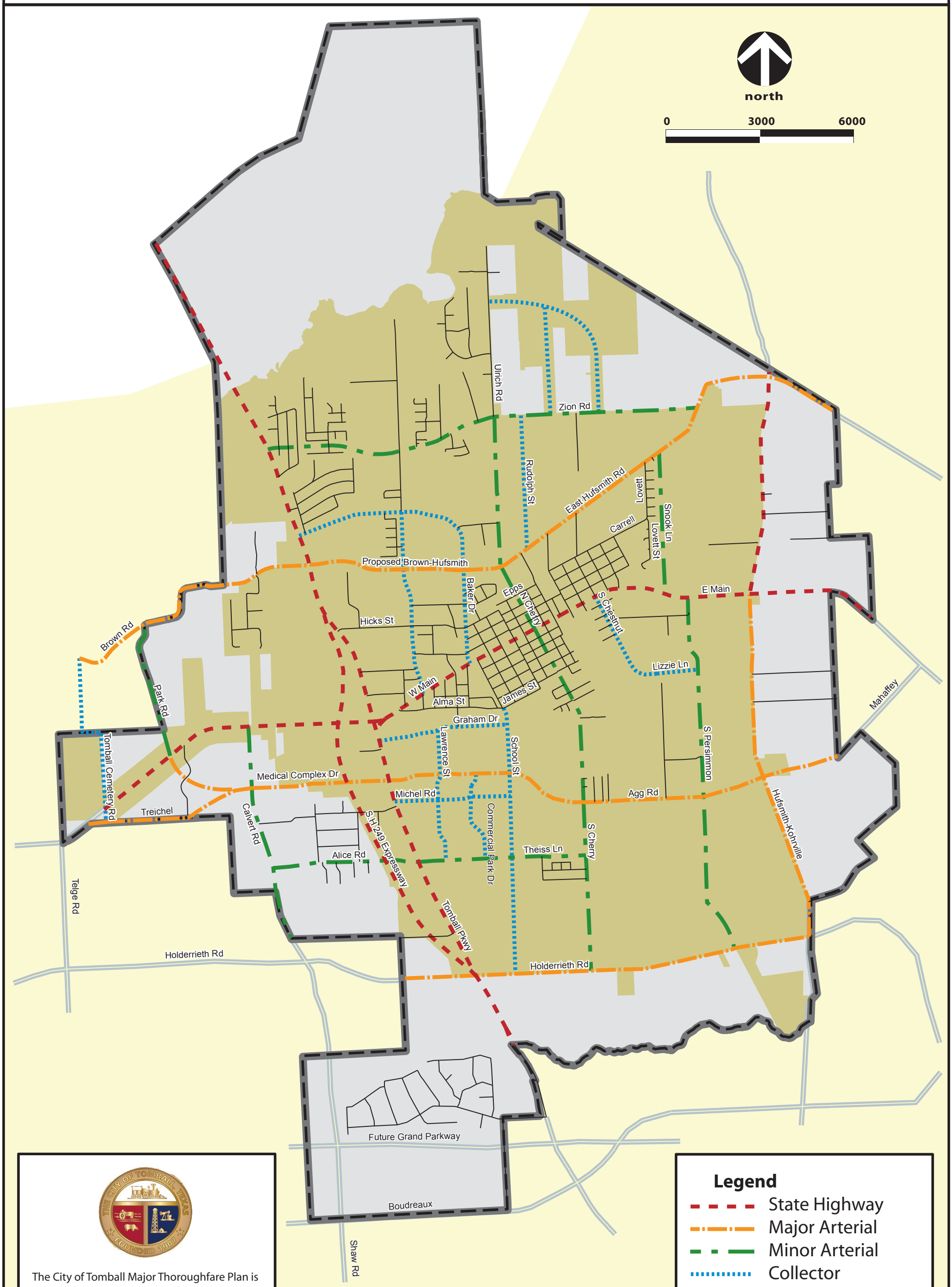
Section 4 – References

- City of Tomball 2006 Major Thoroughfare Plan
- City of Houston 2007 Major Thoroughfare & Freeway Plan (http://www.houstontx.gov/planning/DevelopmentRegs/mtfp2007.zip)
- Harris County Public Infrastructure “Guidelines for Engineers Having Engineering Contracts with Harris County, Texas for the Design of Roads and Bridges and the Preparation of Plans and Specifications, August 23, 1988
- Harris County Traffic Impact Analysis Guidelines
- City of Pearland Traffic Impact Analysis Guidelines
- City of Houston Traffic Impact Analysis Guidelines, August, 2007
- City of Sugar Land Traffic Impact Analysis Guidelines October, 2007
- “Regional Trucking Issues: Truck-Routing Alternatives, Geometric Considerations for Large Trucks, and Regulation of Texas Trucking,” as prepared by the Transportation Department of the North Central Texas Council of Governments (NCTCOG), May 1994. (http://ntl.bts.gov/DOCS/TEX.html)
- City of Tomball Zoning Ordinance (Ordinance 2008-01)
- Institute of Transportation Engineers (ITE) Trip Generation Manual Highway Capacity Manual, Special Report 209

Appendix A

City of Tomball Major Thoroughfare Plan (Proposed)

City Of Tomball Major Thoroughfare Plan



The City of Tomball Major Thoroughfare Plan is updated regularly to include all new roadways within the City's Limits and ETJ. Future roadway locations/classifications are updated or changed only by approval of the City of Tomball City Council. This map was approved by the City Ordinance No.____ _on _____.

Legend

- State Highway
- Major Arterial
- Minor Arterial
- Collector
- Minor Streets
- Tomball ETJ
- Tomball City Limits
- COH ETJ
- COH MTFP

City of Tomball Major Thoroughfare Plan

Introduction - The guidelines and information presented below have been adopted as part of the City of Tomball Major Thoroughfare Plan, and serve to accompany the Major Thoroughfare Map. A thoroughfare system contains a hierarchy of roadways, each of which is intended to serve defined needs with a specific balance between movement and access. The elements of the City of Tomball Major Thoroughfare Plan are State Highways (SH/FM), Major Arterials, Minor Arterials and Collectors. The characteristics of each thoroughfare roadway classification type are listed in the table and illustrated in the typical sections below.

City of Tomball Major Thoroughfare Roadway Classification Hierarchy

Roadway Classification	Minimum Right-of-Way Width (feet)	Number of Lanes	Divided (D)/ Undivided (U)	Pavement Width (feet, F-F)	Median Width (feet, F-F)	Description
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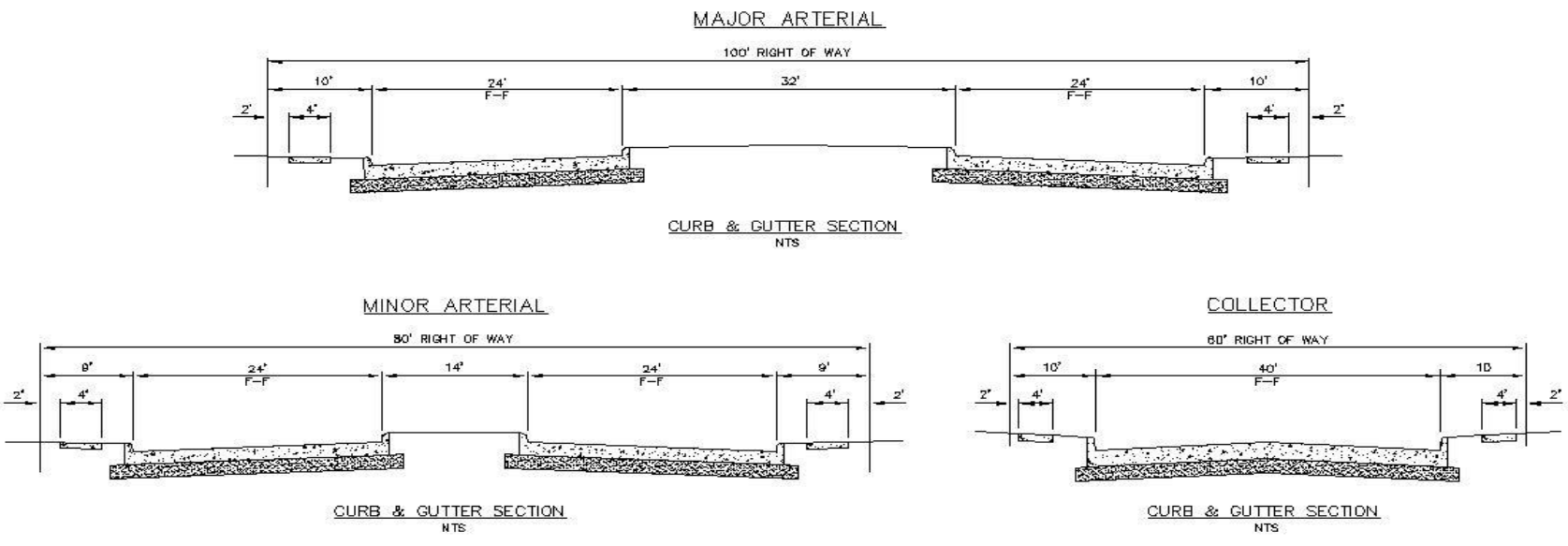
* Proposed right-of-way for Medical Complex Drive is 120 feet

Typical Sections - City of Tomball Major Thoroughfares



Traffic Impact Analysis (TIA) - A TIA is often necessary to define the magnitude of the projected impact of a proposed development on the traffic operations of the roadways and intersections in the vicinity of the development. If the impact of the development is significant, a TIA will determine the improvements to the roadway system that are necessary to accommodate the traffic in the site vicinity. Developers and/or land owners shall coordinate with the City of Tomball Engineering & Planning Department, and shall adhere to the City of Tomball Traffic Impact Analysis Guidelines.

Requests for Amendments - Requests for amendment to the City of Tomball Major Thoroughfare shall be coordinated through the City of Tomball Engineering & Planning Department.

Other Jurisdictions - Development along facilities identified in this Plan that are under the ownership or jurisdiction of agencies such as Harris County or the Texas Department of Transportation shall adhere to that agency's requirements in addition to the City of Tomball Requirements and Guidelines.

Additional Notes:

1. The City of Tomball Major Thoroughfare Plan map shows approximate roadway alignments. The map has been produced from various sources. While every effort has been made to ensure the accuracy of the map, the City of Tomball assumes no liability or damages due to errors or ommissions. Actual alignment for new and/or additional roadway right-of-way may vary.

2. Street right-of-way (ROW) width requirements shall comply with the street hierarchy classification. The City reserves the right to require additional ROW at intersections or other locations as deemed necessary to enhance mobility. Minor streets and/or streets that do not have an assigned classification remain subject to all other applicable City of Tomball Codes of Ordinances and design requirements.

Appendix B

City of Tomball Traffic Impact Analysis Guidelines (Proposed)

TRAFFIC IMPACT ANALYSIS GUIDELINES

CITY OF TOMBALL, TEXAS
FEBRUARY 2009

PURPOSE OF THE GUIDELINES

The City may require a traffic impact analysis (TIA) if it is determined a development could have a significant impact on the street system in the vicinity of the development. The purpose of these guidelines is:

- To describe the purpose of the TIA
- To determine when a TIA is required, and
- To describe the minimum requirements of the TIA

PURPOSE OF THE TIA

A TIA is often necessary to define the magnitude of the projected impact of a proposed development on the traffic operations of the roadways and intersections in the vicinity of the development. If the impact of the development is significant, a TIA will also determine the improvements to the roadway system that are necessary to accommodate the traffic in the site vicinity.

WHEN A TIA IS REQUIRED

TIA Trip Generation Worksheet

A completed TIA Trip Generation Worksheet (included herein) shall be submitted with each plat and/or site plan that does not have an approved TIA on file with the City for the development. Upon review of this worksheet, the Engineering & Planning department will make the final determination regarding the need for a TIA. The Trip Generation Worksheet shall be completed using the latest edition of the ITE Trip Generation Manual.

If the type of development use is not known at the time of the submittal, the applicant should make assumptions based on the worst-case scenario for the site. If this is the case, the following items shall be evaluated at a minimum:

- The type of land use allowed by the city's zoning criteria for the site.
- The maximum amount of developable land based on setbacks and other restrictions (ie: detention, etc.)
- Logical assumptions by the developer
- Adjacent land uses

If the proposed development is not listed in the ITE Trip Generation Manual, a letter documenting the type of development and identifying the number of trips generated shall be submitted in lieu of the Trip Generation Worksheet. This letter shall be written, signed and sealed by a professional engineer with adequate experience in transportation/ traffic engineering.

TIA Requirement Thresholds

The City may require a TIA for a proposed development under the following conditions:

- The development is projected to generate 1,000 or more vehicular trips in a 24-hour period.
- The development is projected to generate 100 or more vehicular trips in the peak hour.
- The development involves an area of 100 acres or more.
- The development is a proposed and/or modified school.
- The development is a shopping center of 100,000 square feet or more.
- Planned Development (PD) requests
- Rezoning requests
- If requested by the Director of Engineering & Planning, City Planner or the Planning and Zoning Commission.

If it is determined that a TIA must be performed, the Developer and their qualified consulting engineer shall schedule a meeting with the City's Engineering & Planning Department to determine the scope of the TIA and the requirements for the TIA content. Any work on the TIA completed prior to meeting with the City is at the applicant's risk and the City reserves the right to have the applicant revise the TIA without a formal review or comments.

MINIMUM REQUIREMENTS OF A TIA

As a minimum, a TIA prepared for the City should include the following:

- ***Existing Conditions***: a description of the study area including roadways and development and an analysis of the traffic operations at significant intersections. The study area shall be based on the characteristics of the surrounding area. The traffic engineer preparing the study shall determine the limits of the study area (including the intersections to be analyzed). The Director of Engineering & Planning must approve the limits of the study area prior to proceeding with the study.
- ***Proposed Development***: a description of the proposed development, calculation of the projected trips generated by the proposed development, and the projected distribution of the generated trips to the roadway network.

- ***Capacity Analysis*** – Capacity analysis must be performed at each of the major streets and project site access intersection locations (signalized and unsignalized) within the study area. Signalized intersections in coordinated systems must be analyzed as a system. In addition, analysis must be completed for roadway segments considered sensitive to site traffic within the study area. The operational analysis and methodology in the current version of the "Highway Capacity Manual, Special Report 209" (Transportation Research Board, National Research Council, Washington, D.C.) should be used for analyzing existing conditions, traffic impacts, access requirements, or other future conditions for which traffic, geometric and control parameters can be established.

    - No-Build Traffic Analysis: an analysis of the projected traffic conditions in the study area at the build-out year if the proposed development is not developed. The "build-out year" is the anticipated opening year of the development, assuming full build-out and occupancy.

    - Build Traffic Analysis: an analysis of the projected traffic conditions in the study area at the build-out year if the proposed development is developed.

  The recommendations of the traffic impact shall provide safe and efficient movement of traffic to and from and within and past the proposed development, while minimizing the impact to non-site trips. The current levels of service (as defined by the Highway Capacity Manual) must:

    1. Be maintained if they are "C" or less, and

    2. Not deteriorate to worse than "C" if they are currently "A" or "B".

- ***Proposed Improvements***: a description of the proposed improvements in the study area, as necessary, and an analysis of the projected traffic conditions in the site vicinity with the improvements.

- ***Conclusions:*** a summary of the key findings and recommendations in the TIA.

If the proposed development includes multiple phases of development, the TIA may need to analyze the no-build traffic conditions, the build traffic conditions, and the proposed improvements for multiple phases.

TIA reports shall be completed, signed and sealed by a professional engineer registered in the State of Texas with adequate experience in transportation/ traffic engineering.

Development abutting Harris County and/or TxDOT-owned rights-of-way may be subject to additional TIA guidelines, and shall adhere to the more restrictive guidelines.

City of Tomball
Trip Generation Worksheet

This form shall be completed as an aid to determine if the proposed development requires a traffic impact analysis (TIA).

Project Name:	
Location:	
Applicant / Contact:	
Contact Phone Number:	
Contact E-mail:	

Anticipated Land Use	ITE Code	Unit[1]	24-Hour		AM Peak Hour		PM Peak Hour	
			Rate[2]	Trips[3]	Rate[2]	Trips[3]	Rate[2]	Trips[3]
Total	-	-	-		-		-	

[1]Unit is the variable (dwelling units, square feet, employees, etc.) for which the anticipated land use is to be evaluated.

[2]All rates shall be the trip generation rates published in the latest edition of the ITE Trip Generation Manual.

[3]The product of the unit and the rate equals the trips for each anticipated land use.

The thresholds used to determine when a TIA is necessary are contained in the City of Tomball Traffic Impact Analysis Guidelines which is available at:

http://www.ci.tomball.tx.us/engineering-planning/docs/2009/traffic-impact.pdf

Applicant's Signature: _____

Date: _____

For Informational Purposes:

Level of Service Definitions

For signalized and unsignalized intersections, LOS can be calculated using the methodology from the Highway Capacity Manual, Transportation Research Board, 2000. Each LOS corresponds to a range of delay. LOS worsens as delay increases. Corresponding LOS and ranges of delay for unsignalized and signalized intersections is listed in **Table 2** and **Table 3**, respectively.

Table 2: *Level of Service Criteria for Unsignalized Intersections*.

Level of Service	Control Delay Range (seconds)
A	≤ 10
B	>10 and ≤ 15
C	>15 and ≤ 25
D	>25 and ≤ 35
E	>35 and ≤ 50
F	> 50

Table 3 *Level of Service Criteria for Signalized Intersections*.

Level of Service	Control Delay Range (seconds)
A	≤ 10
B	>10 and ≤ 20
C	>20 and ≤ 35
D	>35 and ≤ 55
E	>55 and ≤ 80
F	> 80

Appendix C

Truck Route Designation Requirements

APPENDIX C

TRUCK ROUTE DESIGNATION REQUIREMENTS

The following information was obtained from the abstract "Regional Trucking Issues: Truck-Routing Alternatives, Geometric Considerations for Large Trucks, and Regulation of Texas Trucking," as prepared by the Transportation Department of the North Central Texas Council of Governments (NCTCOG), May 1994. (http://ntl.bts.gov/DOCS/TEX.html). Various sections of the abstract have been taken (in most cases, taken verbatim) and arranged into the following report intended to provide the City of Tomball with information and guidance for the various steps to be taken in order to establish and designate truck routes within the City of Tomball.

While the NCTCOG is not the Metropolitan Planning Organization (MPO) for the Tomball area (the Houston-Galveston Area Council (H-GAC) is the MPO for Harris County), the information presented in the abstract is not specific to the NCTCOG region. The information and guidelines presented in the report may be applicable to all local governments within the State of Texas. The abstract indicated that very few guidelines for designating truck routes exist: *"A literature review revealed that few resources exist for truck-routing guidelines or standards. In general, cities faced with traffic problems involving trucks have responded by developing their own ordinances to address issues involving truck movements. These local laws are limited to the arterial streets within their jurisdiction. Federal and state legislation applies to the state maintained highways…" "…The Lamkin and Honan report entitled Texas' Cities Truck Route Ordinance Development has been the principal reference source. This reference provides a comprehensive review of truck-routing issues for cities considering truck ordinance development with special emphasis for Texas..."*

Table of Contents

INTRODUCTION

The purpose of this document is to provide information and guidelines to the City of Tomball regarding trucking issues. This report provides information regarding alternative solutions that allow safe and efficient operation of trucks on the local arterial street system. Generally, this report includes:

1. A brief overview on the background and state laws regarding truck routing. Also included is a summary of findings of several local governments having legislated truck-routing ordinances, and a sample truck-routing ordinance is provided in Exhibit 1.
2. An outline for a general administrative process for the City to use when considering various truck-routing alternatives, and discussion of several strategies to handle various truck-routing issues.
3. A discussion of potential alternatives, and guidelines for developing a truck-routing ordinance.

OVERVIEW - TRUCK ROUTES IN THE STATE OF TEXAS, AND LOCAL ORDINANCES

The laws in the State of Texas regarding the trucking industry are primarily tied to the federal mandates. The Texas legislature adopted the federal Surface Transportation Assistance Act regulations when it enacted House Bill 1601 and House Bill 1602 to bring the State into compliance. Both bills authorized the operation of STAA (Surface Transportation Assistance Act) commercial vehicles on all public highways in Texas as well as the designated Interstate highways and Federal Aid Primary highways.

Texas allows local governments to have authority to define access on routes under their jurisdiction. Many of the cities in Texas, especially the larger cities, use some form of truck ordinance. Cities have the authority to restrict truck access on any public street within the corporate limits of the city. However, local governments are obliged to accept all federal and state highways as designated truck routes under federal and state transportation laws that authorize large truck access.

The NCTCOG requested information on the use of truck routes from 20 cities in the Dallas-Fort Worth region. Nineteen of the surveyed cities responded describing the use of some form of ordinance to govern truck movements. These cities were medium to large in size with populations ranging between 30,000 to over 1,000,000. Sixteen cities have established truck routes, and three others prohibit trucks on certain roadways. Also, designated hazardous material truck routes are mandated in 16 of the 19 cities that were surveyed. Common elements of the city truck-routing ordinances included truck-route

signs and markings, parking restrictions on trucks, restrictions on truck size and weight, and enforcement and associated penalties for deviations from the truck route.

A sample truck-routing ordinance is provided as Exhibit 1. This sample ordinance includes the basic truck-routing ordinance elements used by most cities but does not represent a complete listing. Each city should design its truck-routing ordinance to address its specific concerns by including only the necessary elements required to satisfy its needs.

LOCAL GOVERNMENT PROCESS

A process is presented in this section for the City to evaluate and develop a truck-routing ordinance. The process is based on a comprehensive assessment of the truck problem and highlights a procedure to systematically determine a successful solution. The basic process could be applied to the solution of almost any trucking problem. The local government process may be generally interpreted as an administrative procedure. The process involves collecting and analyzing data to define the work scope, evaluate alternatives, develop and implement regulations, and establish a periodic review to determine the overall effectiveness of the regulations and amend the ordinance as necessary to achieve the desired results. This process involves the following basic steps:

A. Data collection
B. Define scope of the problem
C. Evaluate alternatives
D. Develop the truck ordinance
E. Implement truck-routing ordinance

A. Data Collection

A successful truck-routing ordinance begins with a thorough understanding of the unique characteristics of the problem. The city should start by collecting the transportation information needed to document the traffic problem:

- PHYSICAL ASPECTS OF THE ROADWAY
    - Bridges
    - Tunnels
    - Street configuration and geometrics
    - Narrow streets

    - Congested intersections
    - Grade crossings
    - Clearances
- POPULATION DENSITY
    - What is the population density along the proposed truck route?
- TYPE OF URBAN OR INDUSTRIAL DEVELOPMENT
    - Does the truck route pass through a highly industrialized area or near a school, hospital, or major shopping center? What are the implications of trucks passing through these areas?
- THE ENVIRONMENT
    - Does the proposed route pass through a historical or natural area where an accident could cause additional harm? Is the route by a reservoir or along a river area that can be easily polluted? Can a spill accident enter the city's sewage system?
- TRAFFIC CONDITIONS
    - What are the traffic conditions along the proposed routes? What is the average daily traffic? What are the peak hours of traffic?
- THE ORIGIN AND DESTINATION OF THE SHIPMENT
    - Where would the carrier enter and exit the route?
- THE ECONOMICS OF THE ROUTE
    - Are additional costs imposed on the carrier? Are there additional costs to the shipper? Is the proposed route such that local service is curtailed or made very expensive due to restrictions? Circuity of route and travel time enroute should also be evaluated.
- THE TIME OF THE DAY AND THE DAY OF THE WEEK
    - Is the ordinance applicable 24 hours a day and seven days a week? Are deviations from the route allowed for certain hours of the day or days of the week?

B. Define the Scope of the Problem

After the initial data gathering phase is complete, the scope of the problem can be defined. This step involves analyzing of traffic accident records, including all affected users in the overall process, and setting achievable goals. These three areas are discussed in more detail below.

1) Accident Analysis

An obvious signal of deficient geometric design is repetitive traffic accidents. It is important to consider the subset of accidents directly related to the involvement of large trucks.

2) All Affected Users Included

After the initial data has been gathered to define the scope of the problem, the city must decide whether or not to proceed with the development of a truck ordinance. If the city decides to proceed, it is important to include everyone that would be affected by the regulations. Creating a committee to oversee the problem definition and alternatives analysis is one way of determining a fair and workable solution. The Lamkin and Honan report titled Texas' Cities Truck Route Ordinance Development emphasizes the use of a committee approach lead by an appropriate government agency. This committee would include all the following disciplines: governmental agencies, trucking interests, and other interest groups. Exhibit 2 provides a sample list of participants, as well as showing the type of input to be requested from each proposed participant. The involvement of all affected parties in the development of the truck-routing ordinance improves the basis for alternative evaluation and selection.

3) Goals Established

After the city has collected and analyzed the available information and decided to develop appropriate regulations, it is time to establish the goals of the ordinance. Setting proper goals is the responsibility of the members of the ordinance committee. The committee must determine the goals based on the available information on the problem being studied. To be successful, the goals must be reasonable, achievable, and enforceable.

C. Evaluate the Alternatives

The city must carefully evaluate the proposed alternatives to remedy the truck traffic problem. The alternatives vary depending on the scope of the problem. Potential solutions can range

from minor roadway-design changes to creating a comprehensive truck-routing system. The committee must determine if a truck-routing ordinance is the proper solution considering all aspects of the problem and the implications to the public, the carriers, the shippers and receivers, and the local government.

This report addresses three basic alternatives that influence truck movements through either truck routes or truck restrictions. These include: 1) bypass/through truck routes, 2) intracity circulation truck routes, and 3) prohibition of truck movements. Bypass and circulator alternatives specifically define the routes trucks may follow. These alternatives can be used independently or in combination to achieve a workable solution.

1) **Bypass/Through Routes**

   Bypass routes for through traffic can significantly reduce traffic congestion in a Central Business District. This alternative creates two routes: a circumferential bypass route around a city for through movements and a business route along the original roadway providing access to the business district. Bypass routes require a major capital expense for right-of-way acquisition, roadway construction, and the long-term maintenance of the roadway.

2) **Intracity Circulation Routes**

   Intracity circulation routes direct trucks onto specific routes based on roadway design factors, traffic congestion, zoning or land uses, and exposure factors as in the case of hazardous material routes. These routes link activity centers with the National Network of accepted truck routes.

3) **Prohibition of Trucks**

   In some cases, regulations are developed prohibiting through-truck movements. Truck prohibitions can be established for a site-specific application through proper signing. This alternative applies to localized truck traffic problems such as preventing cut-through traffic from intruding upon residential neighborhoods.

In addition to the three alternatives discussed above, various other options are available. Some of these solutions include revision of the traffic signal system, designating a one-way street

system, or imposing zoning restrictions on businesses generating truck traffic. These options have limited effect and generally apply to congested business districts only.

The alternatives evaluation should include a do-nothing alternative. This will provide a basis for evaluating the effectiveness of the proposed regulations. A cost-benefit analysis could provide further information to rate the effectiveness of the truck-routing ordinance.

D. Develop the Truck Route Ordinance

Once the alternatives are evaluated, the committee can then move to coordinate the development of the chosen solution. Truck route development should consider criteria such as existing and planned roadway network, street type, street condition, number of lanes, lane width, truck volume, traffic accident histories, vehicle speeds, trucking terminal locations, and railroad-highway grade crossings.

The initial data collected is extremely important in the route selection process. This data is gathered to document the existing conditions that are critical to the problem being reviewed. The design features of the street and highway configuration, the structural strength of the streets, and the existing capacity to handle more truck traffic all contribute to impact the feasibility of implementing truck routes. Careful study should be given to truck routes taking into consideration, at a minimum, public safety and direct routing. Public safety should receive primary attention. Keeping the routes as direct as possible has the benefit of minimizing public exposure while keeping in mind high-risk exposure areas (i.e., hospitals, malls, schools, office complexes, etc.). The design features and structural strength of the streets selected for the truck route must accommodate the anticipated vehicle requirements. The vehicle sizes and weights should match the ability of the roadway to serve the design requirements of the most prevalent truck traffic. The committee should keep in mind that commercial areas necessitate higher levels of truck traffic in the normal order of business. However, high volumes of trucks passing through the downtown area may require critical evaluation of strategies.

E. Implementing the Truck-Routing Ordinance

After developing the truck route, the committee must pass a truck-routing ordinance to empower the regulations. The NCTCOG conducted a local government survey of truck-routing

ordinances, which showed that most cities use similar elements in their truck-routing ordinances. These common elements include:

- route signs and markings
- hazardous material truck routes
- specific truck exemptions
- enforcement
- size/weight restrictions
- parking restrictions

Truck operators should be adequately informed concerning truck routes and/or restrictions. The local news media are valuable sources for informing the public and trucking- industry of the development of a truck-routing ordinance. Truck-routing maps should be provided to all area trucking companies and be made readily available to any other users. The work done to educate the truck drivers on the truck routes will result in better compliance and reduce the burden of enforcement.

GEOMETRIC DESIGN FOR LARGE TRUCKS

Geometric design features that significantly affect truck operation, highway safety, and capacity are important considerations in determining appropriate truck routes. Critical geometric design factors that directly influence truck-routing guidelines include such factors as vertical clearance, lateral clearance, weight limits, and turning radii. A Policy on Geometric Design of Highways and Streets, by the American Association of State Highway and Transportation Officials (AASHTO), describes the basic elements of geometric design needed for most of these aspects.

CLOSING SUMMARY

Local governments charged with the responsibility for traffic control often face traffic problems involving large trucks. In Texas, local governments have limited power to restrict commercial truck travel within or through its jurisdiction. However, there are many viable alternatives to truck traffic problems. All applicable options should be carefully studied while keeping in mind the unique characteristics of the truck problem to find the most fitting solution. A truck-routing ordinance begins with a clear definition of the traffic problem leading to the development of a fair, workable solution. In developing a truck-routing ordinance, the city should consider forming an ordinance committee to

assemble an effective scope of work to define and resolve the issue. It is important to involve all disciplines on the ordinance committee that may be affected including governmental agencies, trucking firms, and interest groups. The experience and knowledge of this committee can provide valuable insight in defining the problem and essential data collection efforts. The solution must consider all aspects of the problem, including the environmental impacts, and address the implications to the public, the carriers, the shippers and receivers, and the local government. Possible solutions include minor engineering design changes, development of an entire truck-routing system, prohibiting trucks from specified areas, revision of the traffic signal system, designating a one-way street system, imposing zoning restrictions on truck traffic generating businesses, or even building new parallel truck-only roadways. The final solution may involve combining alternatives to achieve the desired results. The ordinance committee should compare its solution against a do-nothing alternative to provide a basis of comparison to assess the results. In determining appropriate truck routes, geometric design features of the roadways are important considerations that significantly affect traffic operation and safety. Critical geometric design factors that directly influence truck-routing guidelines include vertical clearance, lateral clearance, weight limits, and turning radii. The standards used to design many of the existing urban roadways are often inadequate to handle today's longer trucks. A thorough review of any proposed route must include these basic factors and should also consider the standard design vehicle requirements for the most prevalent truck being driven on the route.

Appendix D

Harris County Road Log – Major and Minor Roads within the City of Tomball Belonging to Precinct 4

MAJOR ROADS WITHIN CITY OF TOMBALL BELONGING TO PRECINCT 4

STREET NAME	BEGINNING LIMITS	ENDING LIMITS	R.O.W. WIDTH
GRAHAM DRIVE	F M 249	HOLDERRIETH ROAD	60'
HOLDERRIETH ROAD	577' EAST OF SOUTH CHERRY	SH-249	70'
HOLDERRIETH ROAD	HUFSMITH - KOHRVILLE ROAD	577' EAST OF SOUTH CHERRY	60'
HUFSMITH ROAD	ZION ROAD	BAKER ROAD	40'
HUFSMITH ROAD	STANDOLIND ROAD	ZION ROAD	40'
HUFSMITH-KOHRVILLE ROAD	HOLDERREITH ROAD	FM-2920	60'
NORTH CHERRY STREET	MAIN FM-2920	EPPS	60'
NORTH CHERRY STREET	EPPS	HUFSMITH ROAD	60'
SOUTH CHERRY STREET	2581' NORTH OF HOLDERREITH ROAD	FM-2920	60'
SOUTH CHERRY STREET	HOLDERREITH ROAD	2581' NORTH OF HOLDERREITH ROAD	80'
QUINN ROAD TOMBALL	BAKER ROAD	390' N OF BAKER ROAD	60'
ULRICH ROAD	HUFSMITH ROAD	ZION ROAD	40'
ZION ROAD	HUFSMITH ROAD	QUINN ROAD	60'

FLOOD CONTROL UNITS

OUTFALL	BEGINNING	ENDING	COMMENTS
UNIT J131 / BOX CULVERTS	HICKS	MAIN FM-2920	PCT. 4 HAS REPAIRED SINKHOLES AT BOX CULVERTS
UNIT M125 / OPEN DITCH	ALMA	GRAHAM	PCT. 4 HAS USED INMATES TO CUT GRASS TWICE A YEAR

MINOR ROADS WITHIN CITY OF TOMBALL BELONGING TO PRECINCT 4

STREET NAME	BEGINNING LIMITS	ENDING LIMITS	R.O.W. WIDTH
ALMA ROAD TOMBALL	FM-2920	.70 MILES EAST OF FM-2920	60'
HICKS STREET	QUINN ROAD	SH-249	40'
HIGH MEADOWS	HIRSCHFIELD	DEAD END	60'
HIRSCHFIELD	SH 249	RED FOX ROAD	60'
INWOOD STREET	BAKER DRIVE	QUINN ROAD	40'
MEDICAL COMPLEX DRIVE	SH 249	2428' WEST OF SH-249	60'
MEDICAL COMPLEX DRIVE	2428' WEST OF SH-249	CALVERT ROAD	60'
PARK ROAD	477' NORTH OF FM-2920	BROWN ROAD	60'
SNOOK LANE	HUFSMITH RD	EAST MAIN / FM-2920	60'
THEIS LANE	SOUTH CHERRY STREET	500' E OF SH 249	
TOMBALL CEMETERY ROAD	543' NORTH OF FM-2920	BROWN ROAD	60'
TREICHEL ROAD	503' SOUTHWEST OF FM-2920	613' SOUTHEAST OF FM-2920	60'

Appendix E

Harris County Letter to City of Tomball re: Future Right-of-Way Requirements for Harris County Major Thoroughfares within the City of Tomball

JERRY EVERSOLE, COMMISSIONER

March 3, 2000

Warren Driver, City Manager
City of Tomball
401 W. Market Street, Suite C
Tomball, Texas 77375

Dear ~~Mr. Driver~~ Warren:

We spoke recently regarding subdivision plats filed with the city of Tomball Planning Commission and approved by city council for residential and commercial developments adjacent to county maintained streets. Harris County has concerns regarding if and when the plats are brought to Harris County for consideration and about right of way dedications for future major thoroughfare widenings. Currently, Precinct Four maintains approximately 11 miles of roadway in Tomball's city limit and extra-territorial jurisdiction (ETJ). A list of the roads, all of which are major east/west or north/south collectors, is attached.

We understand development plats are brought to Harris County essentially for recording after being approved by Tomball's Planning Commission. We would appreciate the plats being submitted to Tomball Planning Commission and Harris County for review and consideration concurrently. This can be accomplished either by your staff forwarding an extra copy or requiring the developer or his agent submit the documents. Additionally, it would help if the Planning Commission approval could be contingent upon review and approval at Harris County.

Developments adjacent to Harris County's major thoroughfares in Houston's ETJ are required to dedicate road right of way in the development plat for future roadway widening. The purpose being to minimize government's expense and insure structures do not encroach in the future right of way. Additionally, this allows the developer to plan residential and commercial development so that a road widening project does not reduce a backyard depth, eliminate parking in front of a business or reduce/remove a building. To our knowledge, Tomball's development code does not require right of way dedications and therefore places future road widenings and extensions in jeopardy.

Tomball's thoroughfare plan identifies road extensions of existing city and county roads. Platting considerations are also paramount in determining right of way widths, alignments, intersection placement, etc.

Precinct Four and Harris County Public Infrastructure Department would appreciate an opportunity to discuss the above items further at your convenience. We will be calling in the near future to establish a meeting date.

Thank you for your consideration and we look forward to visiting in the near future. Please call me, at (281) 353-8100, should you have any questions.

Sincerely,

Ed Shackelford, P.E.
Precinct Engineer

EHS/lrs
attachment

cc: J. Younts, Chief of Staff
A. Storey, Harris County Public Infrastructure Department
J. Freeman, Harris County Public Infrastructure Department
R. Gilmore, Harris County Public Infrastructure Department

ATTACHMENT

Major Thoroughfare List

		Present Right of Way	Future Right of Way
1.	Hufsmith Khorville Road	60	100
2.	Holderrieth Road	60	100
3.	Cherry Street	60	80
4.	Zion Road	60	80
5.	Hufsmith Road	60	80
6.	Brown Road	60	80