GARLAND

AGENDA

CITY COUNCIL WORK SESSION
City of Garland
Work Session Room, City Hall
William E. Dollar Municipal Building
200 North Fifth Street
Garland, Texas
Monday, December 6, 2021
6:00 p.m.

DEFINITIONS:

Written Briefing: **Items that generally do not require a presentation or discussion by the staff or Council. On these items the staff is seeking direction from the Council or providing information in a written format.**

Verbal Briefing: **These items do not require written background information or are an update on items previously discussed by the Council.**
The meeting will be broadcast by webinar or telephone at the following URL:

https://garlandtx.zoom.us/webinar/register/WN_ZoTdGLiLRKi-JXTc3Jf1tw

Registration for the online meeting is required. The meeting will be recorded and will be available for viewing the next day at www.garlandtx.gov.
For those without internet access to the meeting, a dial-in option is available. The numbers are:

346-248-7799
470-250-9358
470-381-2552

The Meeting ID is: 868 2803 3158

NOTICE: The City Council may recess from the open session and convene in a closed executive session if the discussion of any of the listed agenda items concerns one or more of the following matters:

(1) Pending/contemplated litigation, settlement offer(s), and matters concerning privileged and unprivileged client information deemed confidential by Rule 1.05 of the Texas Disciplinary Rules of Professional Conduct. Sec. 551.071, Tex. Gov't Code.

(2) The purchase, exchange, lease or value of real property, if the deliberation in an open meeting would have a detrimental effect on the position of the City in negotiations with a third person. Sec. 551.072, Tex. Gov't Code.

(3) A contract for a prospective gift or donation to the City, if the deliberation in an open meeting would have a detrimental effect on the position of the City in negotiations with a third person. Sec. 551.073, Tex. Gov't Code.

(4) Personnel matters involving the appointment, employment, evaluation, reassignment, duties, discipline or dismissal of a public officer or employee or to hear a complaint against an officer or employee. Sec. 551.074, Tex. Gov't Code.

(5) The deployment, or specific occasions for implementation of security personnel or devices. Sec. 551.076, Tex. Gov't Code.

(6) Discussions or deliberations regarding commercial or financial information that the City has received from a business prospect that the City seeks to have locate, stay, or expand in or near the territory of the City and with which the City is conducting economic development negotiations; or to deliberate the offer of a financial or other incentive to a business prospect of the sort described in this provision. Sec. 551.087, Tex. Gov't Code.

(7) Discussions, deliberations, votes, or other final action on matters related to the City's competitive activity, including information that would, if disclosed, give advantage to competitors or prospective competitors and is reasonably related to one or more of the following categories of information:

- generation unit specific and portfolio fixed and variable costs, including forecasts of those costs, capital improvement plans for generation units, and generation unit operating characteristics and outage scheduling;
- bidding and pricing information for purchased power, generation and fuel, and Electric Reliability Council of Texas bids, prices, offers, and related services and strategies;
- effective fuel and purchased power agreements and fuel transportation arrangements and contracts;
- risk management information, contracts, and strategies, including fuel hedging and storage;
- plans, studies, proposals, and analyses for system improvements, additions, or sales, other than transmission and distribution system improvements inside the service area for which the public power utility is the sole certificated retail provider; and
- customer billing, contract, and usage information, electric power pricing information, system load characteristics, and electric power marketing analyses and strategies. Sec. 551.086; Tex. Gov't Code; Sec. 552.133, Tex. Gov't Code]

1. Public Comments on Work Session Items

Persons who desire to address the City Council on any item on the Work Session agenda are allowed three minutes to speak. Speakers are taken only at the beginning of the meeting, other than invited testimony.

Speakers are grouped by Work Session item and will be taken in the order of the Work Session agenda. Speakers must submit to the City Secretary a completed speaker's card before the beginning of the meeting. Speaker cards will not be accepted after the Mayor calls the meeting to order. Speaker cards are available in the lobby, at the visitor's side of the Work Session Room, and from members of staff.

Speakers are limited to addressing items on the Work Session agenda – any item relating to a Regular Session agenda item should be addressed at the Regular Session and any item not on an agenda may be addressed during the open microphone at the end of the Regular Session.

2. Consider the Consent Agenda

A member of the City Council may ask for discussion or further information on an item posted as a consent agenda item on the next Regular Meeting of the City Council. The Council Member may also ask that an item on the posted consent agenda be pulled from the consent agenda and considered for a vote separate from consent agenda items on the regular agenda. All discussions or deliberations on this portion of the work session agenda are limited to posted agenda items and may not include a new or unposted subject matter.

3. Written Briefings:

a. West Kingsley Road Railroad Crossing Rehabilitation Agreement

Council is requested to consider authorizing the City Manager to execute an agreement with the Kansas City Southern Railway Company (KCS) to rehabilitate the West Kingsley Road railroad crossing. The existing tracks, concrete crossing surface and the concrete pavement on both sides of the tracks will be reconstructed. The track/crossing surface construction will be completely performed by KCS's contractor at the City's expense, which is estimated at $214,257. After the track construction is complete, the City's arterial concrete repair contractor will perform the concrete pavement reconstruction. This work will provide a better riding surface when motorists cross the railroad tracks. Unless otherwise directed by Council, this item will be scheduled for formal consideration at the December 14, 2021 Regular Meeting.

b. West Miller Road Railroad Crossing Cost Reimbursement Agreement

Council is requested to authorize the City Manager to execute an agreement with Dallas, Garland & Northeastern Railroad Inc. (DGNO) to rehabilitate the West Miller Road railroad crossing. The existing tracks, concrete crossing surface and the concrete pavement on both sides of the tracks will be reconstructed. The

track/crossing surface construction will be completely performed by DGNO's contractor at the City's expense, which is estimated at $146,743.00. After the track reconstruction is complete, the City's concrete repair contractor will perform the concrete pavement reconstruction. This work will provide a better riding surface when motorists cross the railroad tracks. Unless otherwise directed by Council, this item will be scheduled for formal consideration at the December 14, 2021 Regular Meeting.

c. Miller Park Road Railroad Crossing Improvements

Council is requested to approve a resolution in which the Dallas, Garland & Northeastern Railroad, Inc. (DGNO) agrees to allow the City to remove the existing railroad tracks and pavement materials and reconstruct the roadway crossing areas with reinforced concrete pavement. The resolution also acknowledges DGNO's continued rights, title and interest to and upon these spur crossings and retains their ability to reinstall crossing facilities in the future at their expense. Unless otherwise directed by Council, this item will be scheduled for formal consideration at the December 14, 2021 Regular Meeting.

d. South Jupiter Road Railroad Crossing Improvements

Council is requested to approve a resolution authorizing the City Manager to execute an agreement with Dallas, Garland & Northeastern Railroad, Inc. (DGNO) to rehabilitate the South Jupiter Road railroad crossing. The existing double tracks, concrete crossing surface and the concrete pavement on both sides of the tracks (approximately 300 feet on each side) will be reconstructed. The double track/crossing surface construction will be completely performed by DGNO's contractor at the City's expense, which is estimated at $237,240.00. After the track reconstruction is complete, the City's contractor will perform the concrete pavement reconstruction. This work will provide a better riding surface when motorists cross the railroad tracks. This agreement also provides approval for DGNO's contractor to perform temporary improvements adjacent to the existing double tracks to improve rideability for the traveling public until such time as the reconstruction work is completed. Unless otherwise directed by Council, this item will be scheduled for formal consideration at the December 14, 2021 Regular Meeting.

e. Neighborhood Vitality Matching Grant Fall 2021 Applications

The Community Services Committee recommends approval for Crystal Lake HOA, Fall Creek HOA, and Rainbow Estates as submitted. The Community Services Committee recommends partial approval for Captain's Quarters HOA, Provence at Firewheel HOA and Town North HOA in adherence with the current Neighborhood Vitality Matching Grant guidelines. Unless otherwise directed by Council, this item will be scheduled for formal consideration at the December 14, 2021 Regular Meeting.

f. Impact Fee Study Re-adoption

Section 395.052 of the Texas Local Government Code mandates updates every five years to the land use assumptions and capital improvements plan for a political subdivision imposing an impact fee. The City may re-adopt previous impact fee studies that are still deemed valid. In 2016 (with a March 1, 2017 effective date), the City Council adopted the Land Use Assumptions, Roadway and Water Impact Fee Capital Improvement Plan, and a Maximum Roadway and Water Impact Fee, as drafted by consultant Kimley-Horn. Staff has determined that the impact fee study is still valid for another five (5) years and recommends re-adoption. This item will be considered at a future Council meeting.

g. Donation Request from Garland Emergency Corps

The Garland Emergency Corps (GEC) has expressed "an interest in adding to our inventory some retired or surplus City of Garland equipment to increase our usefulness to the citizens of Garland and the general fulfillment of our mission of service to our community during disasters, matters of emergency or events with opportunities to support public safety missions." The GEC is seeking a donation by the City of some or all of the items. If Council chooses to donate one or both items, a resolution for the donation will be placed on a future Regular Session for formal approval by City Council. Unless directed by Council to do otherwise, staff will proceed with the donation of Item #1 (Dump Truck) and Item #4 (Utility Equipment or Flatbed Trailer).

4. Verbal Briefings:

a. Public Safety Committee Update - EMS Transports

The Public Safety Committee was asked to review the emergency transport policy for EMS transports to area hospitals. The Committee discussed complaints by residents of quality of care when taken to certain hospitals. As a result of Fire's research and analysis, EMS' operating policies are being modified to give residents options for different qualified hospitals at the time of their transport unless the department is in ambulance overload or if the medical need dictates that time is of the essence.

b. COVID-19 Briefing

Staff will provide an update to Council and ask for direction, if needed, on various matters related to COVID-19 and actions being taken by the City.

5. Announce Future Agenda Items

A member of the City Council, with a second by another member, or the Mayor alone, may ask that an item be placed on a future agenda of the City Council or a committee of the City Council. No substantive discussion of that item will take place at this time.

6. Council will move into Executive Session

EXECUTIVE SESSION
AGENDA

NOTICE: The City Council may recess from the open session and convene in a closed executive session if the discussion of any of the listed agenda items concerns one or more of the following matters:

Council will adjourn into executive session pursuant to Sections 551.133 and 551.071 of the Texas Government Code to deliberate, discuss, vote, and take final action with regard to competitive matters on the following:

A resolution relating to electric utility competitive matters; approving First Amendment to Solar Renewable Energy Purchase Agreement with Delilah Solar Energy LLC, and authorizing the City Manager to execute the same (551.133); and attorney/client matters concerning privileged and unprivileged client information (551.071).

7. Adjourn

GARLAND
POLICY REPORT

City Council Work Session Agenda **3. a.**

Meeting Date: December 6, 2021
Item Title: West Kingsley Road Railroad Crossing Rehabilitation Agreement
Submitted By: Steve Oliver, Streets Director
Strategic Focus Areas: Well-Maintained City Infrastructure

ISSUE

The existing railroad crossing on West Kingsley Road between National Drive and Industrial Lane has settled and deteriorated over time and needs to be reconstructed to improve the roadway surface at this crossing. This existing railroad crossing belongs to the Kansas City Southern Railway Company (KCS).

OPTIONS

The City Council has two options:

1. Approve the attached resolution authorizing the City Manager to execute an agreement with KCS to rehabilitate the West Kingsley Road railroad crossing. The existing tracks, concrete crossing surface and the concrete pavement on both sides of the tracks will be reconstructed. The track/crossing surface construction will be completely performed by KCS's contractor at the City's expense, which is estimated at $214,257.00. After the track construction is complete, the City's arterial concrete repair contractor will perform the concrete pavement reconstruction. This work will provide a better riding surface when motorists cross the railroad tracks.
2. Do nothing. This will leave the track crossing in poor condition, which will continue to impact and impede the flow of traffic on West Kingsley Road at the track location.

RECOMMENDATION

The City Attorney's Office has prepared the attached resolution authorizing the City Manager to execute an agreement with KCS to rehabilitate the West Kingsley Road Railroad Crossing at the sole expense of the City of Garland. Unless otherwise directed by Council, this item will be scheduled for formal consideration at the December 14, 2021 Regular Meeting.

BACKGROUND

The existing railroad crossing on West Kingsley Road between National Drive and Industrial Lane was constructed in conjunction with the West Kingsley Road Paving and Drainage Improvements Project in 1964. Track/roadway settlement, as well as roadway deterioration around the existing railroad crossing has occurred, making the travel surface rough at any reasonable speed. As part of the effort to improve the roadway pavement surface at this railroad crossing, KCS must approve any work within their existing right-of-way. KCS is requiring that the railroad tracks and crossing surface be removed and replaced as part of the overall improvements to the roadway. Their contractor will make these improvements. Once the track has been replaced, the City's contractor will perform pavement improvements adjacent to the railroad tracks/crossing.

CONSIDERATION

If City Council approves this resolution, the crossing rehabilitation agreement with KCS will be executed by the City Manager. Funding for the track improvements and this agreement will then be sent to KCS for project execution. KCS requires up to three months to purchase and receive the materials to make these track improvements. While KCS's contractor is replacing the railroad track, West Kingsley Road will be completely closed to vehicular traffic at the crossing. The Street Department will direct the arterial concrete repair contractor to mobilize and replace the concrete pavement adjacent to the railroad tracks after the track improvements are complete.

Attachments

W. Kingsley RR Agreement

Resolution W. Kingsley Road

AGREEMENT FOR CROSSING REHABILITATION
WEST KINGSLEY ROAD

This AGREEMENT is entered into this_____day of_____, 2021 by and between **THE KANSAS CITY SOUTHERN RAILWAY COMPANY,** a Missouri corporation, called herein "KCS," to be addressed at 4601 Hilry Huckaby III Drive, Shreveport LA 71107, and the **CITY OF GARLAND, TEXAS**, called herein "City", to be addressed at 200 North Fifth Street., Garland, TX 75040 (KCS and the City being sometimes individually called a "Party" and sometimes together called the "Parties").

WHEREAS, there is an existing highway-rail at-grade crossing in Garland, Texas, where West Kingsley Road crosses KCS's line at railroad mile post 000.70 on the White Rock Industrial track on KCS's White Rock Subdivision, DOT # 021-604-M ("Crossing"); and

WHEREAS, the City wishes to reconstruct the Crossing as part of the West Kingsley Road improvements project; and

WHEREAS, KCS is agreeable to perform the work necessary to install new crossing surface panels to allow the City to make roadway improvements, but only subject to the terms and conditions of this Agreement.

NOW, THEREFORE, KCS and the City agree as follows:

1. The City, with the cooperation of KCS, will be responsible for obtaining all required governmental authorizations, including approval of the Texas Department of Transportation.

2. KCS shall provide the necessary materials and labor to rehabilitate the grade crossing surface from end of tie to end of tie at the Crossing as per Exhibit A (altogether, the "Project").

3. KCS's estimate of the costs required to perform the Project is attached hereto as Exhibit B. The City shall pay 100% of KCS's actual costs of the Project, including temporary asphalt road approaches, labor, equipment, materials, shipping and handling of the material, and standard additives. The Parties acknowledge that Exhibit B is only an estimate, and that the City shall be responsible for 100% of the actual cost of the labor, material and other expenses incurred by KCS for the Project, determined according to the methodology shown in Exhibit B, whether such actual cost is more or less than shown on Exhibit B.

4. KCS estimates the cost to perform the Project to be TWO HUNDRED FOURTEEN THOUSAND TWO HUNDRED AND FIFTY-SEVEN DOLLARS ($214,257.00), as shown on Exhibit B. Prior to KCS performing any work on the Project, City will deposit with KCS TWO HUNDRED FOURTEEN THOUSAND TWO HUNDRED AND

FIFTY-SEVEN DOLLARS ($214,257.00) to cover 100% of the estimated cost of the Project. KCS shall be under no obligation to provide any materials or perform any labor until the City's deposit has been received and has cleared KCS's bank. The City acknowledges that KCS has advised the City that procurement of crossing surfaces normally requires several months. Following completion of the Project, KCS shall determine its actual cost of the Project. If the actual cost exceeds the estimated amount stated above, KCS shall invoice the City the difference between the estimated amount and the actual cost and the City shall pay that additional invoice within 30 days after the date it is received. If the estimated amount exceeds the actual cost, KCS shall refund to the City the difference between the estimated amount and the actual cost within 30 days of KCS determining the actual cost.

5. The City shall design, construct and maintain the road and approaches for the Crossing, including grading and the installation of all structures and facilities necessary to maintain the existing drainage, including installation of drainage pipe to maintain adequate flow of ditch line. All approach surfaces shall be constructed and maintained of a material that will not wash off or clog the ditch line, and that will provide adequate traction over the entire right of way. The road, approaches and drainage facilities must be constructed in such a manner as to avoid any damage to the embankment, roadbed, signal systems and tracks. The approaches and road will, to the greatest extent possible, be built to the same width as the Crossing and level with the Crossing surface.

   Approaches must be constructed and maintained flat to the cross level of the track for first ten feet (10') on each side from the centerline of track, and shall allow no more than three inches (3") of change in elevation within the next thirty feet (30') from the track on the west side of the Crossing and no more than three inches (3") of change in elevation within the next thirty feet (30') from the track on the east side of the Crossing. The City shall be solely responsible for determining whether to restrict low ground clearance vehicles from using the Crossing due to the slope on the east side of the Crossing being in excess of KCS standard, and shall, if the City determines to restrict access by such vehicles to the Crossing, shall post appropriate advance warning signs at the Crossing. Prior to any construction or maintenance, City shall (unless otherwise agreed in writing by KCS, in KCS's sole discretion) give five (5) days advance notice to KCS at 318-676-6269.

6. City shall be responsible for providing and paying for all traffic and pedestrian control (including but not limited to barriers and flagmen) and be responsible for any required notification of the public if necessary during the Project (including the required 60 hour full closure), all in accordance with the Manual on Uniform Traffic Control Devices and other applicable safety standards, including KCS's. Whenever City's contractor or its personnel or equipment are within twenty-five feet (25') of KCS's track, their activities shall be attended by a KCS-approved railroad flagger, hired and paid by the City or its contractor. The City's contractor and its personnel and equipment shall clear the KCS track when so instructed by the railroad flagger. City and its contractors performing any work within KCS's right of way shall carry appropriate insurance which is sufficient, in the City's reasonable opinion, to fully compensate for any injury to or

death of any person and for any damage to property occurring while City or its contractors are performing any work within KCS's right of way. City shall apply for a Right of Entry (ROE) (including payment of applicable costs) prior to the City performing any of its work within 25 feet of the nearest rail. Information and ROE application can be obtained by contacting:

Denise Case
Jones Lang LaSalle Americas, Inc.
(817) 230-2614 – Office
Denise.case@am.jll.com
4200 Buckingham Road | Suite 110
Fort Worth, TX 76155

7. Upon completion of the Project, the crossing surface shall thereafter be maintained by KCS throughout the useful life of the crossing surface.

8. All work will be done in accordance with the Manual on Uniform Traffic Control Devices.

9. KCS shall maintain reasonably detailed records of all work done under this Agreement and of all expenses incurred for which KCS seeks payment or reimbursement and shall promptly provide such records to the City upon request. Such books and records will be maintained in accordance with generally accepted principles of accounting and will be adequate to enable determination of: 1) the substantiation and accuracy of any payment required to be made under this agreement; and 2) compliance with the provisions of this Agreement.

10. This Agreement may be terminated under the following conditions: (a) By mutual agreement and consent of both KCS and City; (b) By either Party, upon the failure of the other Party to fulfill its obligations under this Agreement; or (c) By satisfactory completion of all services and obligations described herein.

11. This Agreement and all of the transactions contemplated herein shall be governed by and construed in accordance with the laws of the State of Texas. The provisions and obligations of this Agreement are performable in Dallas County, Texas such that exclusive venue for any action arising out of this Agreement shall be in Dallas County, Texas.

12. It is understood and agreed that this Agreement contains the entire agreement between the Parties and supersedes any and all prior agreements, arrangements or understandings between the Parties relating to the subject matter. No oral understandings, statements, promises or inducements contrary to the terms of this Agreement exist. This Agreement cannot be changed or terminated orally.

13. Nothing contained in this Agreement shall be deemed or construed by the Parties hereto or by any third party to create the relationship of principal and agent or of partnership or of joint venture or of any association whatsoever between the Parties, it being expressly

understood and agreed that no provision contained in this Agreement nor any act or acts of the Parties hereto shall be deemed to create any relationship between the Parties other than the relationship of independent parties contracting with each other solely for the purpose of effecting the provisions of this Agreement.

14. To the extent, if any, that this Agreement imposes an obligation on the City to make a payment or other expenditure of any sort, such payment or expenditure shall be payable solely from current revenues that are immediately available for such purposes, and no debt is or is intended to be created by reason of this Agreement. The obligations under this Agreement shall never be construed to be a debt or pecuniary obligation of the City of such kind as to require the City to levy and collect ad valorem taxes to discharge its obligations and no obligation of the City to make a payment or other expenditure under this Agreement shall be payable through funds raised by taxation. The City has not created and is not required to create any sort of sinking fund to secure the obligations of payment or other expenditure under this Agreement. To the extent not otherwise covered in this Agreement, the City retains its governmental and sovereign immunities and its limitations of liability. The Parties agree that the City is entering into this Agreement in its governmental capacity and the subject and nature of this Agreement are governmental rather than proprietary.

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be executed in duplicate by their duly-authorized representatives effective the day and year first above written.

THE KANSAS CITY SOUTHERN RAILWAY COMPANY	CITY OF GARLAND, TEXAS
Signature:_____	Signature:_____
Printed Name:_____	Printed Name:_____
Title:_____	Title:_____
Date: _____	Date: _____

RESOLUTION NO.

A RESOLUTION AUTHORIZING THE CITY MANAGER TO EXECUTE AN AGREEMENT TO REHABILITATE THE WEST KINGSLEY ROAD CROSSING WITH THE KANSAS CITY SOUTHERN RAILWAY COMPANY; AND PROVIDING AN EFFECTIVE DATE.

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF GARLAND, TEXAS:

Section 1

That the City Manager is hereby authorized to execute an Agreement entitled Agreement for Crossing Rehabilitation West Kingsley Road with the Kansas City Southern Railway Company in the form and substance of that attached hereto as Exhibit "A" and incorporated herein by reference.

Section 2

That pursuant to the terms and conditions of the Agreement, the City Manager is authorized to execute any ancillary documents, necessary to fulfill the obligations of the City under the Agreement.

Section 3

That this Resolution shall be and become effective immediately upon and after its adoption and approval.

PASSED AND APPROVED this the _____ of _____, 2021.

CITY OF GARLAND, TEXAS

_____
Mayor

ATTEST:

_____
City Secretary

GARLAND
POLICY REPORT

City Council Work Session Agenda **3. b.**

Meeting Date: December 6, 2021
Item Title: West Miller Road Railroad Crossing Cost Reimbursement Agreement
Submitted By: Steve Oliver, Streets Director
Strategic Focus Areas: Well-Maintained City Infrastructure

ISSUE

The existing railroad crossing on West Miller Road between Sherwin Street and South Shiloh Road has settled and deteriorated over time and needs to be reconstructed to improve the roadway surface at this crossing. This existing railroad crossing belongs to the Dallas, Garland & Northeastern Railroad Inc. (DGNO).

OPTIONS

The City Council has two options:

1. Approve the attached resolution authorizing the City Manager to execute an agreement with DGNO to rehabilitate the West Miller Road railroad crossing. The existing tracks, concrete crossing surface and the concrete pavement on both sides of the tracks will be reconstructed. The track/crossing surface construction will be completely performed by DGNO's contractor at the City's expense, which is estimated at $146,743.00. After the track reconstruction is complete, the City's concrete repair contractor will perform the concrete pavement reconstruction. This work will provide a better riding surface when motorists cross the railroad tracks.
2. Do nothing. This will leave the track crossing in poor condition, which will continue to impact and impede the flow of traffic on West Miller Road at the track location.

RECOMMENDATION

The City Attorney's Office has prepared the attached resolution authorizing the City Manager to execute an agreement with DGNO to rehabilitate the West Miller Road Railroad Crossing at the sole expense of the City of Garland. Unless otherwise directed by Council, this item will be scheduled for formal consideration at the December 14, 2021 Regular Meeting.

BACKGROUND

The existing railroad crossing on West Miller Road between Sherwin Street and South Shiloh Road was constructed in 1981 in conjunction with the Miller Road Paving and Drainage Improvements Project. Track crossing settlement, as well as roadway deterioration around the existing railroad crossing has occurred, making the travel surface rough at any reasonable speed. As part of the effort to improve the roadway pavement surface at this railroad crossing, DGNO must approve any work occurring within their existing right-of-way. DGNO is requiring that the railroad tracks and crossing surface materials be removed and replaced as a part of the overall improvements to the roadway. Their contractor will make these crossing improvements. Once the track has been replaced, the City's contractor will perform the paving improvements adjacent to the railroad tracks/crossing.

CONSIDERATION

If City Council approves this resolution, the attached crossing rehabilitation agreement with DGNO will be executed by the City Manager and sent to DGNO for project execution. DGNO does not require payment in advance for the track replacement. They will invoice the City for the actual cost of the replacement once it is completed. While DGNO's contractor is replacing the railroad track, West Miller Road will be completely closed to vehicular traffic at the crossing. The Street Department will direct the concrete repair contractor to mobilize and replace the concrete pavement adjacent to the railroad tracks after the track improvements are complete.

Attachments

Resolution - W. Miller Road

W. Miller Road Crossing Agreement

RESOLUTION NO. DRAFT 11/09/2021

A RESOLUTION AUTHORIZING THE CITY MANAGER TO EXECUTE AN AGREEMENT TO REHABILITATE THE WEST MILLER ROAD CROSSING WITH THE DALLAS, GARLAND & NORTHEASTERN RAILROAD, INC.; AND PROVIDING AN EFFECTIVE DATE.

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF GARLAND, TEXAS:

Section 1

That the City Manager is hereby authorized to execute an Agreement entitled Crossing Cost Reimbursement Agreement with Dallas, Garland & Northeastern Railroad, Inc., in the form and substance of that attached hereto as Exhibit "A" and incorporated herein by reference.

Section 2

That pursuant to the terms and conditions of the Agreement, the City Manager is authorized to execute any ancillary documents, necessary to fulfill the obligations of the City under the Agreement.

Section 3

That this Resolution shall be and become effective immediately upon and after its adoption and approval.

PASSED AND APPROVED this the _____ of _____, 2021.

CITY OF GARLAND, TEXAS

_____
Mayor

ATTEST:

_____
City Secretary

Crossing Cost Reimbursement Agreement

This agreement (the "Agreement") dated as of November 1, 2021 (the "Effective Date") is between Dallas, Garland & Northeastern Railroad, Inc. ("Railroad") with an address of 13901 Sutton Park Drive South, Suite 270, Jacksonville, Florida 32224 and the City of Garland, Texas (the "City") with an address of 200 North Fifth Street, Garland, TX 75040.

WHEREAS, the parties have either already agreed or will endeavor to agree on the design for improvements to the crossing ("Permitted Improvements"), located on the W. Miller Road, DOT# 415245P at MP 753.40 (the "Crossing"), the cost of which is estimated to be $146,743.00 (the "Expenses"); and

WHEREAS, this Agreement governs the City's reimbursement of the Expenses to be incurred by Railroad.

NOW THEREFORE, in view of the foregoing statements, which form the factual basis of this Agreement and are a material part of this Agreement, and in further view of other good and valuable consideration, the parties agree as follows:

1. Permitted Improvements and Reimbursement.

(a) Railroad agrees to perform work at the Crossing in order to implement the Permitted Improvements (the "Work"), as shown on the design and/or plan attached hereto as Exhibit A and made a part hereof. The Work to be scheduled and coordinated between the parties to minimize any disruption in the use of the Crossing by the City. Any modifications to the Work will be documented and approved, in writing, by both Railroad and City.

(b) Railroad will act as the project manager throughout the duration of the Work, which includes the procurement of materials and engagement of labor necessary to complete the Work.

(c) All construction or replacement of track shall be compliant with applicable federal and state regulations for the construction of railroad / highway crossings and using engineering standards as issued by AREMA.

(d) Prior to starting the Work, City shall furnish Railroad with any other necessary construction drawings and the Work will conform to such drawings. In the event of any conflict between the drawings and the standards referenced in the foregoing subsection (c), Railroad will notify the City and the parties will agree upon any deviation from the drawings reasonably required to comply with such standards.

(e) The City agrees to reimburse Railroad for the Expenses in accordance with the estimate attached hereto as Exhibit B and made a part hereof and the invoicing process described herein. Invoices will be sent to City of Garland, Street Department, Attention: Timothy M. Tumulty, P.E., 1775 Gasoline Alley, Garland, TX 75040.

(f) The completion date for the Work is 6 months from the date of final execution of this Agreement, estimated to be on or prior to January 1, 2022, with completion of the Work scheduled to be on / or before July 1, 2022. The Work is to be completed in conjunction with other City construction projects which may delay Railroad construction. Any delays in construction will be fully documented via email between Railroad and City and Railroad shall have no liability for any such delays.

2. Term.

This Agreement shall be effective from the Effective Date through July 2022; however, Railroad's obligation to invoice as set forth in Section 3 and the City's obligation to make payment, as set forth in Section 1, shall survive the expiration or termination of this Agreement.

3. Invoicing for Reimbursement of Expenses.

(a) Railroad will invoice the City for the Expenses based on actual costs (including overhead) with documentation to substantiate such costs.

(b) All payments due Railroad from the City will be paid by the City within thirty (30) days after receipt of an invoice and documentation from Railroad.

4. Miscellaneous.

(a) This Agreement constitutes the entire agreement between the parties with respect to the subject matter hereof and merges and replaces all prior negotiations, discussions, representations, warranties, offers, promises and agreements with respect to such subject matter.

(b) This Agreement has been executed by the authorized officials of the parties and may not be amended unless in writing and signed by the authorized officials of the parties.

(c) This Agreement is the result of the mutual negotiations of the parties and shall not be construed against either of them as the drafter.

(d) This Agreement may not be assigned by either party without the written consent of the other party, which shall not be unreasonably withheld.

(e) Any waiver of any provision must be in writing and issued by the party granting the waiver. The waiver applies only for the specific facts contained in the waiver and shall not be construed as a waiver of such facts for the future.

(f) No party shall be liable to the other party for any consequential, indirect, incidental, exemplary, special or punitive damages (including but not limited to, cost of capital, decline in market value, business interruption expenses, attorneys' fees and lost sales) of any kind arising out of this Agreement regardless of whether the party against whom such

damages might be otherwise sought knew or reasonably should have known of the possibility of such damages.

(g) This Agreement may be executed in multiple counterparts, each of which shall, for all purposes, be deemed an original but which together shall constitute one and the same instrument, and counterparts of this Agreement may also be exchanged via electronically and any electronic facsimile of any party's signature shall be deemed to be an original signature for all purposes.

IN WITNESS WHEREOF, the parties have caused duly authorized representatives to execute this Agreement as of the date first written above.

Dallas, Garland & Northeastern Railroad, Inc.

By: _____

James Irvin
President
13901 Sutton Park Drive South
Suite 270
Jacksonville, Florida 32224

Date: _____

City of Garland

By: _____

Mr. Bryan L. Bradford
City Manager
City of Garland
William E. Dollar Municipal Building
200 N. 5th Street
Garland, Texas 75040

Date: _____

EXHIBIT "B" EXPENSES

Dallas, Garland, Northeastern RR

SOUTHERN REGION ENGINEERING ESTIMATE

Dot#: 415245P	Sprecher Lead MP 753.40	Railroad Project#: 21DGNO (TBD)

Crossing Surface Labor & Materials	$133,764.50
DGNO Project Management & Labor	$3,000.00
On-site, EIC labor, Flagging, Estimates, Construction Planning	
Legal, Administrative, Accounting Management	$2,500.00
Drawings, Design, Lay-out, Engineered Circuit Design, Accounting, Legal, Administrative	
Estimated Taxes & Handling Fees	$7,478.50
Total Project Cost Estimate	***$146,743.00***

Date: 7/1/2021

RR Responsible Party

Don Spainhower / Darius Williams / Dale Hanshew

**City to Handle Detour in Conjunction with City Project*

Note: Estimate was prepared based upon current site conditions, anticipated work duration periods, material prices, labor rates, manpower, resource availability, and other factors known to railroad as of the date prepared. The actual cost of railroad work may vary, or differ, based upon the Agency's requirements, their contractors' work procedures and/or other conditions that become apparent once construction commences and during the progression of work. If extended time lapses from the date of this estimate, the railroad reserves the right to update this estimate to current prices and costs, as needed. The Agency shall approve any such price/cost adjustments before any work by the railroad will commence or continue.

GARLAND
POLICY REPORT

City Council Work Session Agenda **3. c.**

Meeting Date: December 6, 2021
Item Title: Miller Park Road Railroad Crossing Improvements
Submitted By: Steve Oliver, Streets Director
Strategic Focus Areas: Well-Maintained City Infrastructure

ISSUE

The asphalt/concrete pavement and track materials at the railroad spur crossings located at Miller Park Road north and south of Marquis Drive have deteriorated. The existing pavement and track materials needs to be removed and replaced with reinforced concrete pavement. The existing spur line crossings north and south of Marquis Drive, which belong to the Dallas, Garland & Northeastern Railroad, Inc. (DGNO), are currently inactive.

OPTIONS

The City Council has two options:

1. Approve the attached resolution, in which DGNO agrees to allow the City to remove the existing railroad tracks and pavement materials and reconstruct the roadway crossing areas with reinforced concrete pavement. The resolution also acknowledges DGNO's continued rights, title and interest to and upon these spur crossings and retains their ability to reinstall crossing facilities in the future at their entire expense.
2. Do nothing and the Street Department will continue to maintain the existing pavement at this location.

RECOMMENDATION

The City Attorney’s Office has prepared the attached resolution acknowledging DGNO's continued rights, title and interest to and upon the spur line railroad crossings on Miller Park Road both north and south of Marquis Drive and granting them permission to reinstall the crossing facilities in the future at their request and sole cost and expense. Unless otherwise directed by Council, this item will be scheduled for formal consideration at the December 14, 2021 Regular Meeting.

BACKGROUND

The existing railroad spur line crossings on Miller Park Road north and south of Marquis Drive have deteriorated and need various improvements to provide a better travel surface at those locations. Representatives of DGNO indicated that these two existing spur lines are currently inactive, and they granted permission to the City to remove the track materials at each crossing (after DGNO cuts the rails) and replace the crossing with reinforced concrete pavement. DGNO will permit this construction in their right-of-way, contingent upon the City of Garland passing the attached resolution acknowledging that DGNO has not abandoned their rights to the crossing and that DGNO can reinstall the crossing facilities at each crossing at a future date at their sole cost and expense, should they choose to do so.

CONSIDERATION

If City Council approves this resolution, the Street Department will have its concrete repair contractor replace the pavement in the railroad right-of-way once the contractor has applied for and received permits from DGNO to perform such construction activities at each location.

Attachments

Resolution Miller Park Road Crossings

RESOLUTION NO. _____ **DRAFT 11/15/2021**

A RESOLUTION ACKNOWLEDGING THE DALLAS GARLAND NORTHEASTERN RAILROAD INCORPORATED'S CONTINUED RIGHTS, TITLE, AND INTEREST TO AND UPON THAT CERTAIN SPUR RAILROAD CROSSINGS ALONG WITH THE PUBLIC RIGHT-OF-WAY ON MILLER PARK ROAD NORTH AND SOUTH OF MARQUIS DRIVE, AND GRANTING PERMISSION TO REINSTALL CROSSING FACILITIES IN THE FUTURE; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, the City of Garland desires to remove existing rails, track crossing material and the asphalt/concrete pavement located within the existing inactive railroad spur line crossings (DOT Crossing Inventory No. 415876R and a non-assigned DOT crossing located at GPS location 32.902653 -96.690675) ("Crossings") along the public right-of-way on Miller Park Road North and South of Marquis Drive and replace it with concrete reinforced pavement;

WHEREAS, The Dallas, Garland and Northeastern Railroad Company ("DGNO") has agreed to allow the City to enter upon and into its Crossing for the removal of the existing rails, track crossing materials and the asphalt/concrete pavement and provide concrete replacement construction at each location;

WHEREAS, DGNO's authorization is conditioned upon the City acknowledging that DGNO is not abandoning any of its rights, title, or interests in the Crossing and expressly agreeing to allow DGNO to reinstall the railroad crossing in the future as a spur if necessary for railroad service at the DGNO's expense;

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF GARLAND, TEXAS:

Section 1

That the City Council hereby acknowledges that in exchange for allowing the City to enter into and upon the Crossing to remove the existing rail, track crossing materials and the asphalt/concrete pavement and replace it with reinforced concrete pavement, DGNO has not abandoned any of its rights, title, or interest in or to the Crossing, and further expressly agrees to allow DGNO to reinstall, at DGNO's request and sole cost and expense, a spur crossing in the future if necessary for railroad service.

Section 2

That this Resolution shall be and become effective immediately upon and after its adoption and approval.

PASSED AND APPROVED this the ____ day of _____, 2021.

CITY OF GARLAND, TEXAS

_____
Mayor

ATTEST:

_____
City Secretary

GARLAND
POLICY REPORT

City Council Work Session Agenda **3. d.**

Meeting Date: December 6, 2021
Item Title: South Jupiter Road Railroad Crossing Improvements
Submitted By: Steve Oliver, Streets Director
Strategic Focus Areas: Well-Maintained City Infrastructure

ISSUE

The existing railroad crossing on South Jupiter Road between Forest Lane and Miller Park Drive has settled and deteriorated over time and needs to be reconstructed to improve the roadway surface at this crossing. This existing railroad crossing belongs to the Dallas, Garland & Northeastern Railroad Inc. (DGNO).

OPTIONS

The City Council has two options:

1. Approve the attached resolution authorizing the City Manager to execute an agreement with DGNO to rehabilitate the South Jupiter Road railroad crossing. The existing double tracks, concrete crossing surface and the concrete pavement on both sides of the tracks (approximately 300 feet on each side) will be reconstructed. The double track/crossing surface construction will be completely performed by DGNO's contractor at the City's expense, which is estimated at $237,240.00. After the track reconstruction is complete, the City's contractor will perform the concrete pavement reconstruction. This work will provide a better riding surface when motorists cross the railroad tracks. This agreement also provides approval for DGNO's contractor to perform temporary improvements adjacent to the existing double tracks to improve rideability for the traveling public until such time as the reconstruction work is completed.
2. Do nothing. This will leave the track crossing in poor condition, which will continue to impact and impede the flow of traffic on South Jupiter Road at the track location.

RECOMMENDATION

The City Attorney's Office has prepared the attached resolution authorizing the City Manager to execute an agreement with DGNO to rehabilitate the South Jupiter Road Railroad Crossing at the sole expense of the City of Garland. Unless otherwise directed by Council, this item will be scheduled for formal consideration at the December 14, 2021 Regular Meeting.

BACKGROUND

The existing railroad crossing on South Jupiter Road between Forest Lane and Miller Park Drive was constructed in 1982 in conjunction with the Jupiter Road Paving and Drainage Improvements Project (Forest Lane to Miller Road). Track crossing settlement, as well as roadway deterioration around the existing double track railroad crossing has occurred, making the travel surface rough at any reasonable speed. As part of the effort to improve the roadway pavement surface at this railroad crossing, DGNO must approve any work occurring within their existing right-of-way. DGNO is requiring that the railroad tracks and crossing surface materials be removed and replaced as a part of the overall improvements to the roadway. Their contractor will make these crossing improvements. Once the tracks have been replaced, the City's contractor will perform the paving improvements adjacent to the railroad tracks/crossing. DGNO will make temporary improvements around these tracks to improve the rideability over the crossing until permanent crossing improvements can be made.

CONSIDERATION

If City Council approves this resolution, the attached crossing cost reimbursement agreement with DGNO will be executed by the City Manager and sent to DGNO for project execution. DGNO does not require payment in advance for the track replacement. They will invoice the City for the actual cost of the replacement once it is completed. While DGNO's contractor is replacing the railroad tracks, South Jupiter Road will be partially closed (one side at a time) at the crossing. The Street Department will bid the project to remove and replace the existing concrete pavement on both sides of the crossing (approximately 300 feet) after the track improvements are completed by DGNO.

Attachments

Resolution South Jupiter Road Railroa Crossing

Jupiter Road Crossing Agreement

RESOLUTION NO. DRAFT 11/19/2021

A RESOLUTION AUTHORIZING THE CITY MANAGER TO EXECUTE AN AGREEMENT TO REHABILITATE THE SOUTH JUPITER ROAD CROSSING WITH THE DALLAS, GARLAND & NORTHEASTERN RAILROAD, INC.; AND PROVIDING AN EFFECTIVE DATE.

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF GARLAND, TEXAS:

Section 1

That the City Manager is hereby authorized to execute an Agreement entitled Crossing Cost Reimbursement Agreement with Dallas, Garland & Northeastern Railroad, Inc., in the form and substance of that attached hereto as Exhibit "A" and incorporated herein by reference.

Section 2

That pursuant to the terms and conditions of the Agreement, the City Manager is authorized to execute any ancillary documents, necessary to fulfill the obligations of the City under the Agreement.

Section 3

That this Resolution shall be and become effective immediately upon and after its adoption and approval.

PASSED AND APPROVED this the _____ of _____, 2021.

CITY OF GARLAND, TEXAS

_____
Mayor

ATTEST:

_____
City Secretary

Crossing Cost Reimbursement Agreement

This agreement (the "Agreement") dated as of November 15, 2021 (the "Effective Date") is between Dallas, Garland & Northeastern Railroad, Inc. ("Railroad") with an address of 13901 Sutton Park Drive South, Suite 270, Jacksonville, Florida 32224 and the City of Garland, Texas (the "City") with an address of 200 North Fifth Street, Garland, TX 75040.

WHEREAS, the parties have either already agreed or will endeavor to agree on the design for improvements to the 2 tracks at the crossing ("Permitted Improvements"), located on Jupiter Road, DOT# 415249S at MP 753.69 (the "Crossing"), the cost of which is estimated to be $237,240.00 (the "Expenses"); and

WHEREAS, this Agreement governs the City's reimbursement of the Expenses to be incurred by Railroad.

NOW THEREFORE, in view of the foregoing statements, which form the factual basis of this Agreement and are a material part of this Agreement, and in further view of other good and valuable consideration, the parties agree as follows:

1. Permitted Improvements and Reimbursement.

(a) Railroad agrees to perform work at the Crossing in order to implement the Permitted Improvements (the "Work"), as shown on the design and/or plan attached hereto as Exhibit A and made a part hereof. The Work to be scheduled and coordinated between the parties to minimize any disruption in the use of the Crossing by the City. Any modifications to the Work will be documented and approved, in writing, by both Railroad and City.

(b) Railroad will act as the project manager throughout the duration of the Work, which includes the procurement of materials and engagement of labor necessary to complete the Work.

(c) All construction or replacement of track shall be compliant with applicable federal and state regulations for the construction of railroad / highway crossings and using engineering standards as issued by AREMA.

(d) Prior to starting the Work, City shall furnish Railroad with any other necessary construction drawings and the Work will conform to such drawings. In the event of any conflict between the drawings and the standards referenced in the foregoing subsection (c), Railroad will notify the City and the parties will agree upon any deviation from the drawings reasonably required to comply with such standards.

(e) The City agrees to reimburse Railroad for the Expenses in accordance with the estimate attached hereto as Exhibit B and made a part hereof and the invoicing process described herein. Invoices will be sent to City of Garland, Street Department, Attention: Timothy M. Tumulty, P.E., 1775 Gasoline Alley, Garland, TX 75040.

(f) The completion date for the Work is 9 months from the date of final execution of this Agreement, estimated to be on or prior to January 1, 2022, with completion of the Work scheduled to be on / or before October 1, 2022. The Work is to be completed in conjunction with other City construction projects which may delay Railroad construction. Any delays in construction will be fully documented via email between Railroad and City and Railroad shall have no liability for any such delays.

2. Term.

This Agreement shall be effective from the Effective Date through October 31, 2022; however, Railroad's obligation to invoice as set forth in Section 3 and the City's obligation to make payment, as set forth in Section 1, shall survive the expiration or termination of this Agreement.

3. Invoicing for Reimbursement of Expenses.

(a) Railroad will invoice the City for the Expenses based on actual costs (including overhead) with documentation to substantiate such costs.

(b) All payments due Railroad from the City will be paid by the City within thirty (30) days after receipt of an invoice and documentation from Railroad.

4. Miscellaneous.

(a) This Agreement constitutes the entire agreement between the parties with respect to the subject matter hereof and merges and replaces all prior negotiations, discussions, representations, warranties, offers, promises and agreements with respect to such subject matter.

(b) This Agreement has been executed by the authorized officials of the parties and may not be amended unless in writing and signed by the authorized officials of the parties.

(c) This Agreement is the result of the mutual negotiations of the parties and shall not be construed against either of them as the drafter.

(d) This Agreement may not be assigned by either party without the written consent of the other party, which shall not be unreasonably withheld.

(e) Any waiver of any provision must be in writing and issued by the party granting the waiver. The waiver applies only for the specific facts contained in the waiver and shall not be construed as a waiver of such facts for the future.

(f) No party shall be liable to the other party for any consequential, indirect, incidental, exemplary, special or punitive damages (including but not limited to, cost of capital, decline in market value, business interruption expenses, attorneys' fees and lost sales) of any kind arising out of this Agreement regardless of whether the party against whom such

damages might be otherwise sought knew or reasonably should have known of the possibility of such damages.

(g) This Agreement may be executed in multiple counterparts, each of which shall, for all purposes, be deemed an original but which together shall constitute one and the same instrument, and counterparts of this Agreement may also be exchanged via electronically and any electronic facsimile of any party's signature shall be deemed to be an original signature for all purposes.

IN WITNESS WHEREOF, the parties have caused duly authorized representatives to execute this Agreement as of the date first written above.

Dallas, Garland & Northeastern Railroad, Inc.

By: _____

James Irvin
President
13901 Sutton Park Drive South
Suite 270
Jacksonville, Florida 32224

Date: _____

City of Garland

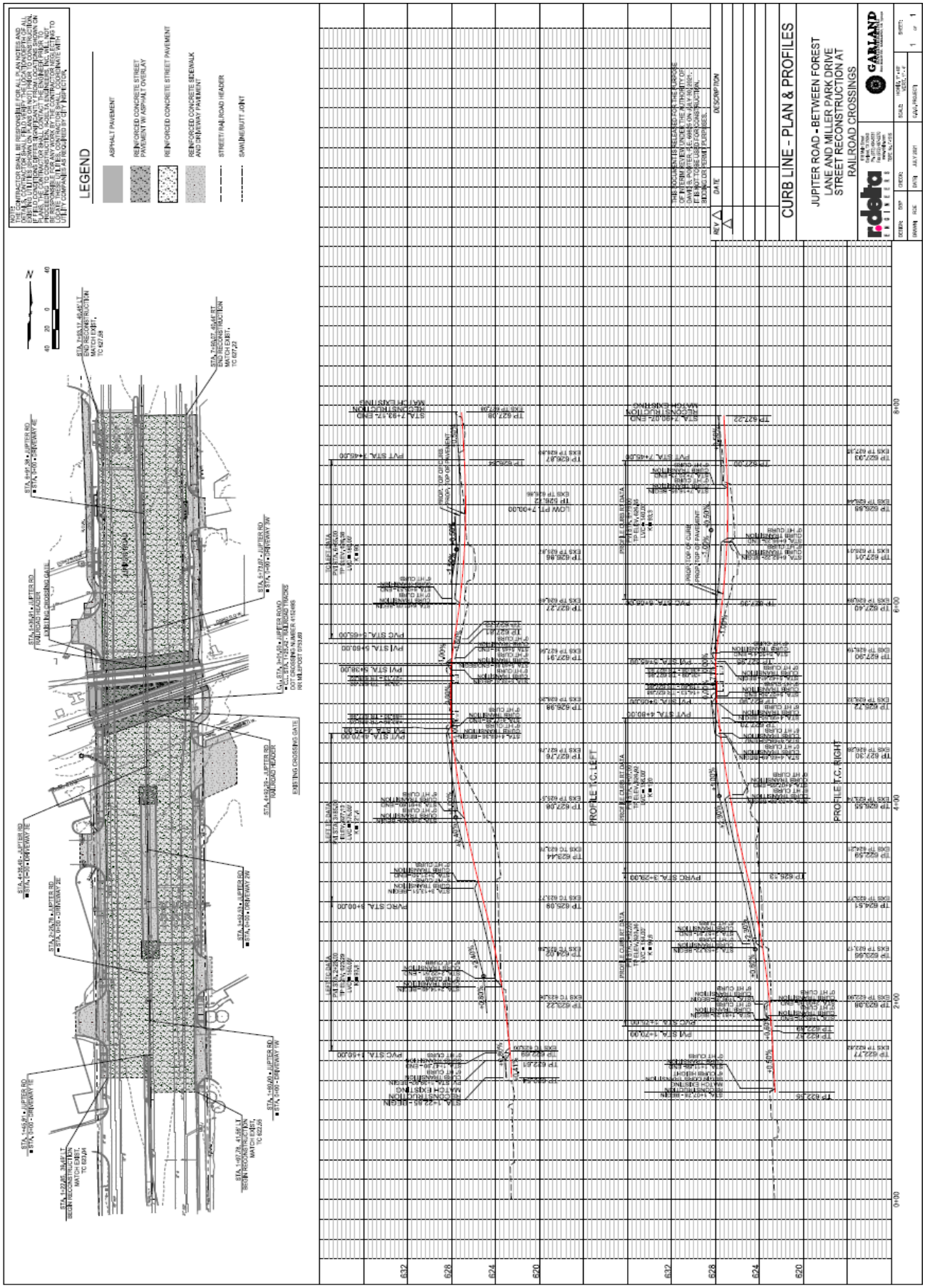
By: _____

Mr. Bryan L. Bradford
City Manager
City of Garland
William E. Dollar Municipal Building
200 N. 5th Street
Garland, Texas 75040

Date: _____

EXHIBIT "A"

SCOPE OF WORK



The Railroad agrees to address the current need of milling the crossing through use of a contractor. During milling operation, City will coordinate and provide traffic control at City's expense.

During Railroad construction, that is currently scheduled in Feb and/or March 2022, the Railroad will partner with the City for the rehabilitation of the (2) tracks at the crossing as follows:

a) Railroad will be responsible for all labor and equipment, and costs associated, for the removal and installation of the crossings. Labor will include any tie-ins to the crossings after installation of track panels.
b) City agrees to facilitate any detour necessary to complete this project and scope of work at their expense.

Railroad Responsibility:

1) Mill current approaches and fill back in with our contractor, prior to approval and scheduling of crossing rehabilitation.
2) When approved and scheduled by the City, Railroad will provide labor and equipment to remove, build and install approximately 200 track feet of road crossing (100 ft per track – 2 track).
3) Railroad will clean-up and dispose of all material necessary for installation and removal.

City of Garland Responsibility:

1) City to provide flagging protection for milling operation
2) City to compensate Railroad for actual costs of purchase of material for rehabilitation, as provided estimate.

   Material will include the following:

   a) 480 lf of 115 lb rail
   b) 200 – 10 ft switch ties
   c) 500 pandrol plates
   d) 1000 pandrol clips
   e) 1800 pandrol screw spikes
   f) 200 track feet of concrete crossing material
   g) 4 – 115 lb field welds
   h) 4 rh 115 lb to 90.20 transition rails -rh
   i) 4 lh 115 lb to 90.20 transition rails – lh

3) City will provide asphalt and labor for final paving of crossing approaches
4) City will provide detour plan and traffic control associated with the project
5) City will work with Railroad to assist with maximum installation of crossings, which will involve lane closures for installation and welding of track panels – to be scheduled/coordinated prior to rehabilitation work

EXHIBIT "B" EXPENSES

DGNO

Dallas, Garland & Northeastern Railroad, Inc.

Dot#:	**415249S**	**Southern Region**	**Railroad**	**DGNO**
MP#:	**753.69**		**State**	**TEXAS**

Crossing/Project Name: Garland, TX - Jupiter Road - 2 Crossings

Signal / Crossing Warning System	$0.00

*Includes Installation & Materials

***Does not include sales tax, freight, and misc handling fees**

Crossing Surface/Resurface	$224,090.00

*Includes Installation & Materials

***Does not include sales tax, freight, and misc handling fees**

Engineering & Signal Project Management	$2,400.00

Labor for Project Mangement

Flagging Services	$0.00

Estimates for Traffic Flagging and Railroad Flagging Services when required

A/C Power Service Upgrade	$0.00

All power service fees for the installation of a new power service

Legal, Administrative, Accounting Management	$2,400.00

Estimated Taxes & Handling Fees	$8,350.00

Total Cost Estimate	**$237,240.00**

Date: 9/26/2021

Responsible Party
City of Garland, TX
100% rebillable

Note: Estimate prepared based upon current site conditions, anticipated work duration, material prices, current labor rates, manpower, resource availability, and other factors known as of the date prepared. The actual cost of work may vary or differ based upon the agency's requirements, the contractors' work procedures and/or other conditions as construction commences and during the progress of project. If any extended time lapses, from the date of this estimate, the railroad will reserve the right to update the estimate to current prices and costs as needed, and require the agency's approval before any work by the railroad continues.

Contractor Estimate as of 9/1/2021.

From: Alvin Chandler
To: Donald Spainhower; David trak-time.com
Subject: RE: Jupiter street
Date: Wednesday, September 1, 2021 8:51:47 AM

Don

We can mill the asphalt approaches for both crossings at Jupiter Rd for $10,750- . We have been in contact with the City of Garland and they have agreed to support us with traffic control for this project at no charge, the bid price is based on that support. The bid also includes us providing a flagman.

Please let us know as soon as possible and we will get it scheduled.

Thanks for the opputunity

Alvin E. Chandler, COO
214-435-0205 Cell
214-771-0400 Office
214-771-0412 Fax
Alvin@Trak-Time.com

GARLAND
CITY COUNCIL ITEM SUMMARY SHEET

City Council Work Session Agenda **3. e.**

Meeting Date: December 6, 2021

Item Title: Neighborhood Vitality Matching Grant Fall 2021 Applications

Submitted By: Scott Bollinger, Neighborhood Resource Manager

Summary of Request/Problem

The Community Services Committee recommends approval for Crystal Lake HOA, Fall Creek HOA, and Rainbow Estates as submitted. The Community Services Committee recommends partial approval for Captain's Quarters HOA, Provence at Firewheel HOA and Town North HOA in adherence with the current Neighborhood Vitality Matching Grant guidelines.

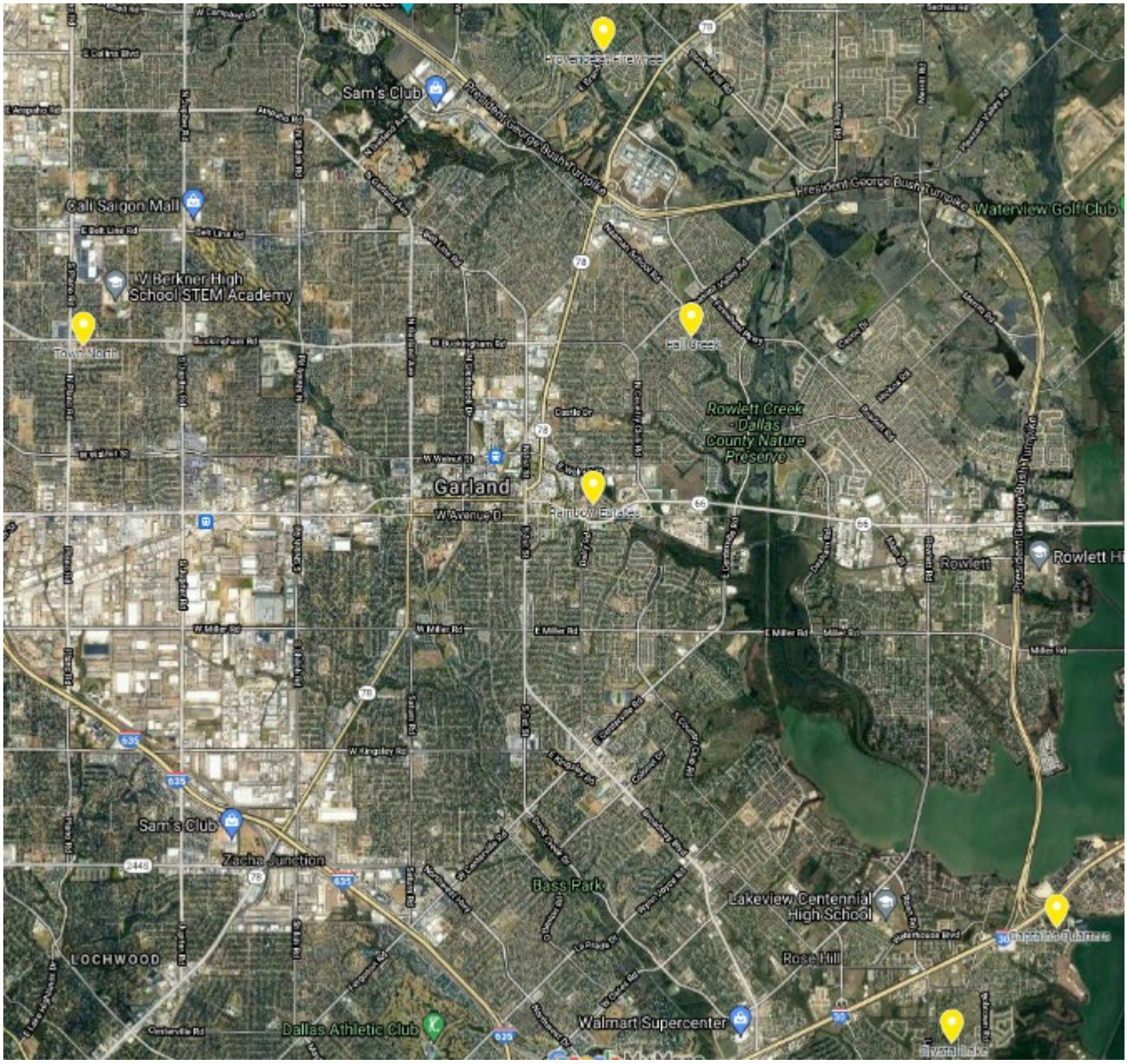
Recommendation/Action Requested and Justification

Request approval of applications as recommended by the Community Services Committee, to be placed on the December 14, Regular City Council Meeting Consent Agenda. Staff has reviewed the applications to ensure compliance with the program guidelines. Issues identified during the review process are indicated on the project summary sheets.

Attachments

2021 NVMG Fall Projects

Proposed Project Locations for Matching Grant Program
Fall 2021



1. Captain's Quarters	2. Crystal Lake	3. Fall Creek
4. Provence	5. Rainbow Estates	6. Town North

NEIGHBORHOOD VITALITY MATCHING GRANT

FALL 2021

1. Neighborhood-Based Group: Captain's Quarters HOA
Project Name: Retaining Walls Construction
Project Location: Marina Drive

Total Project Cost:	$41,125.40
Requesting Amount:	$32,900.32
Neighborhood Match:	$8,225.08
Match %:	20%

Project Summary

- Replace four large retaining walls with enhanced drainage
- Install four (4) heavy duty park benches

Location

5800 – 5900 Marina Drive

Identified Neighborhood Boundaries

North – Marina Drive

South – Longcrest Drive

West – Shoregate

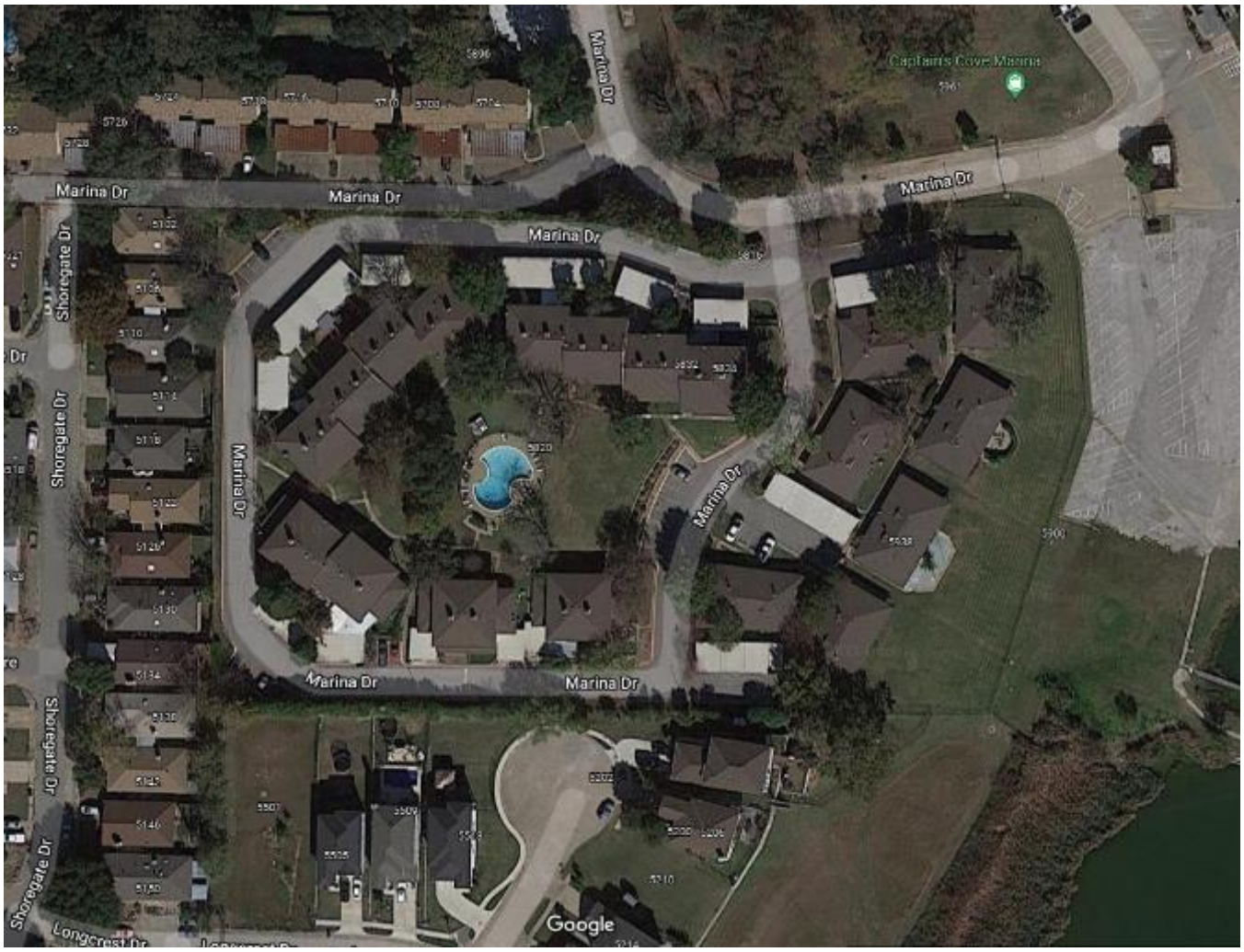
East – Captain's Cove Marina

Stated Goals

"To protect our common areas and provide erosion control as well as add park benches for comfort, relaxation, and have a nice area to visit with neighbors."

Stated Maintenance

Biannual inspection performed by installer. Repairs as necessary.



Comments from Letter of Intent Phase

Neighborhood Vitality

- Common area or recreational improvements (new construction) and neighborhood park improvements are both eligible projects under the matching grant program. Repairs or maintenance of existing structures are not eligible.

Building Inspection

- Retaining walls over 4’ in height require a permit and engineering design. If they are not over 4’ in height no permit required.

Engineering

- Provide exact locations of retaining walls in order for us to give more specific feedback.

Application Phase Comments

Neighborhood Vitality

- Common area or recreational improvements (new construction) and neighborhood park improvements are both eligible projects under the matching grant program. Repairs or maintenance of existing structures are not eligible.
- 9/28/2021: requested exact locations of retaining walls, as these were not included in the application despite direction to do so in the Letter of Intent feedback
- Similar to Fall 2020 application from Windjammer HOA, which was denied.

Building Inspection

- A Building Permit is required from the Building Inspection Department for all retaining walls greater than 4’ and must be engineered.

Engineering

- Provide exact locations of retaining walls in order for us to give more specific feedback. Please show/label the locations of the 4 retaining walls on an aerial imagery map.
    - This was requested on September 28 (see ONV comments, above). No response to date has been given by the applicant.

2. Neighborhood-Based Group: Crystal Lake Estates
Project Name: Retaining Walls and Erosion Control
Project Location: Shoreline at lake behind Sasaki Way

Total Project Cost:	$109,925.00
Requesting Amount:	$82,443.75
Neighborhood Match:	$27,481.25
Match %:	25%

Project Summary

- Install 164 linear feet of riprap retaining wall along the eastern shoreline

Location

Between Crystal Lane and Sasaki Way

Identified Neighborhood Boundaries

North – Crystal Lane

South – Sasaki Way

West – Bobtown Road

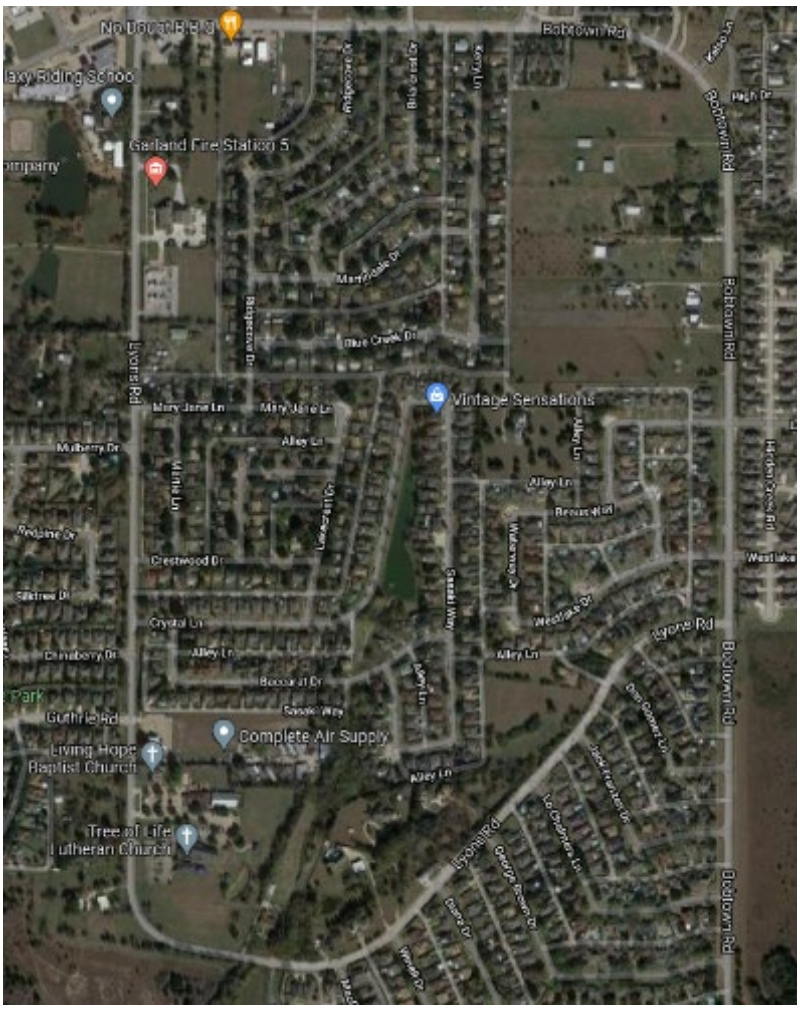
East – Sasaki Way

Stated Goals

“The lake located inside the Crystal Lake HOA neighborhood provides residents a beautiful place to gather and exercise. Over time, the lake banks have eroded back and are dangerously close to residents [sic] backyard fences.”

Stated Maintenance

Inspected by Knight Erosion on an as-needed basis.



Comments from Letter of Intent Phase

Neighborhood Vitality

- Common area or recreational improvements (new construction) and neighborhood park improvements are both eligible projects under the matching grant program. Repairs or maintenance of existing structures are not eligible.

Building Inspection

- Retaining walls over 4’ in height require a permit and engineering design. If they are not over 4’ in height no permit required.

Engineering

- The proposed retaining wall will be considered private by the Engineering Department since the wall will be located outside of public R.O.W. and within the HOA Common Area lot per the Crystal Lake plat.
- Refer to the Technical Standards Manual Section 7.05 for design criteria that may apply to the proposed retaining wall.
    i. Be advised: at the discretion of the Director of Engineering, the Director may require the developer to reimburse the City for the City's structural engineering consultant's evaluation of the structural integrity of retaining walls within the zone of influence of public right-of-way and easements.
    ii. One applicable criterion is walls exceeding 4' in height must be engineered and the structural design must be submitted to the Building Inspections Department for review.

Application Phase Comments

Neighborhood Vitality

- Common area or recreational improvements (new construction) and neighborhood park improvements are both eligible projects under the current matching grant program guidelines, as long as a license agreement is obtained and the improvements are made available to the general public.
- Repairs or maintenance of existing structures are not eligible are not eligible under current program guidelines.

Building Inspection

- Retaining walls over 4' in height require a permit and engineering design. If they are not over 4' in height no permit required.

Engineering

- Same as Letter of Intent comments.

3. Neighborhood-Based Group: Fall Creek Estates HOA
Project Name: Park and Playground
Project Location: 2002 Harvest Run

Total Project Cost:	$79,000
Requesting Amount:	$59,250
Neighborhood Match:	$19,750
Match %:	25%

*$59,266.34 eligible for the City's contribution for proposed NVMG projects, see Neighborhood Vitality comment, below.

Project Summary

- Shaded picnic area with tables and benches
- Gated playground
- Contingency, additional features
- First phase of three planned phases

Location

Greenspace east of Harvest Run cul-de-sac

Identified Neighborhood Boundaries

North – Turning Leaf

South – Harvest Run

West – Shalimar

East – Mossy Glen

Stated Goals

"…encourage a strong sense of community for our neighbors to create a safe, welcoming neighborhood that promotes acceptance and well being [sic]. We want to encourage all neighbors to know each other, welcome one another, and to not feel isolated in times of need."

Stated Maintenance

Playground safety inspection conducted every three years or as advised by the playground manufacturer, whichever is more frequent.

Comments from Letter of Intent Phase

Neighborhood Vitality

- Common area or recreational improvements (new construction) are eligible projects under the matching grant program.
- A gate around the playground is permitted and can have normal park operating hours. May not be closed off to the general public.
- The City of Garland does not support charging a fee for non-HOA residents to use future amenities.

Parks and Recreation

- The area at the end of the cul-de-sac outlined in green for proposed activity is owned by the City of Garland.

Building Inspection

- Permits will be required for different structures such indoor activity center, fencing, lighting, pool, any pavilions and possible some of the playground equipment. There are also other plans in the works by a homeowner for this property.

Engineering

- See General Note #1 for the Lot 36, Block 2 common area shown on the Fall Creek Estates plat:

  GENERAL NOTES:

  1. Lot 9 and Lot 36, Block 2 are dedicated to the City of Garland as easements for landscape, utilities, public access, and drainage. The mandatory Homeowners Association responsibilities for these areas are outlined in the " Homeowners Association Agreement" on page 2 of this plat.

- You may need to verify with the City Surveyor, but based on the our reading of the plat, a Real Property Improvement Authorization will likely be required through the Engineering Department for the proposed playground in the HOA common area.
- Existing 100-year floodplain elevation is approximately 486.08 at the downstream face of the Ravine Crossing Drive culvert (see record drawing #DEV2001046), which is likely much lower than the playground and fence. Verify, but do not locate any proposed improvements within the 100-year floodplain plus 1' of freeboard.
- The area at the end of the Harvest Run cul-de-sac is owned by the City of Garland (see pink shading on the GIS map). You cannot place buildings or amenities on City of Garland owned property. If interested in purchasing (or leasing?) the property for the proposed use, you would need to talk to the Parks Department or City Surveyor.

Application Phase Comments

Neighborhood Vitality

- A gate around the playground is permitted and the playground may operate with normal park hours. May not be closed off to the general public. Signage should be included.
- A NVMG project was completed in 2018, starting the $100,000 five-year timeframe as provided in the current NVMG guidelines. Within this timeframe, the City of Garland has disbursed $41,233.66 to Fall Creek Estates HOA, leaving $59,266.34 eligible for the City's contribution for proposed NVMG projects.
- Maintenance plan should include costs associated with trash bins.

Building Inspection

- The shade structure will require a permit through Building Inspection and will need to be engineered. However, fabric is not an approved roofing material and will need to be changed to something else such a shingles or an approved metal.
- A permit will be required for the fence and possibly some of the playground equipment depending on what is being built or installed

Engineering

- The area at the end of the Harvest Run cul-de-sac is owned by the City of Garland. If other departments approve of these improvements on City property, City of Garland would need to execute a License Agreement through the Engineering Department. See Appendix 3D of the Technical Standards Manual for further instructions.

4. Neighborhood-Based Group: Provence at Firewheel HOA
Project Name: Entrance and Common Area Improvements
Project Location: Provence Boulevard and 1201 Howard

Total Project Cost:	$109,172.95
Requesting Amount:	$81,879.71
Neighborhood Match:	$27,293.24
Match %:	25%

*Last project completed in January 2017. See Neighborhood Vitality note, below.

Project Summary

- Landscaping improvements around existing pavilion
- Landscaping improvements around existing pond
- Landscaping improvements at entryway
- Landscaping improvements along screening wall
- Landscaping improvements along wrought iron fence

Location

Identified Neighborhood Boundaries

North – Chumley

South – Rimes

West – Provence

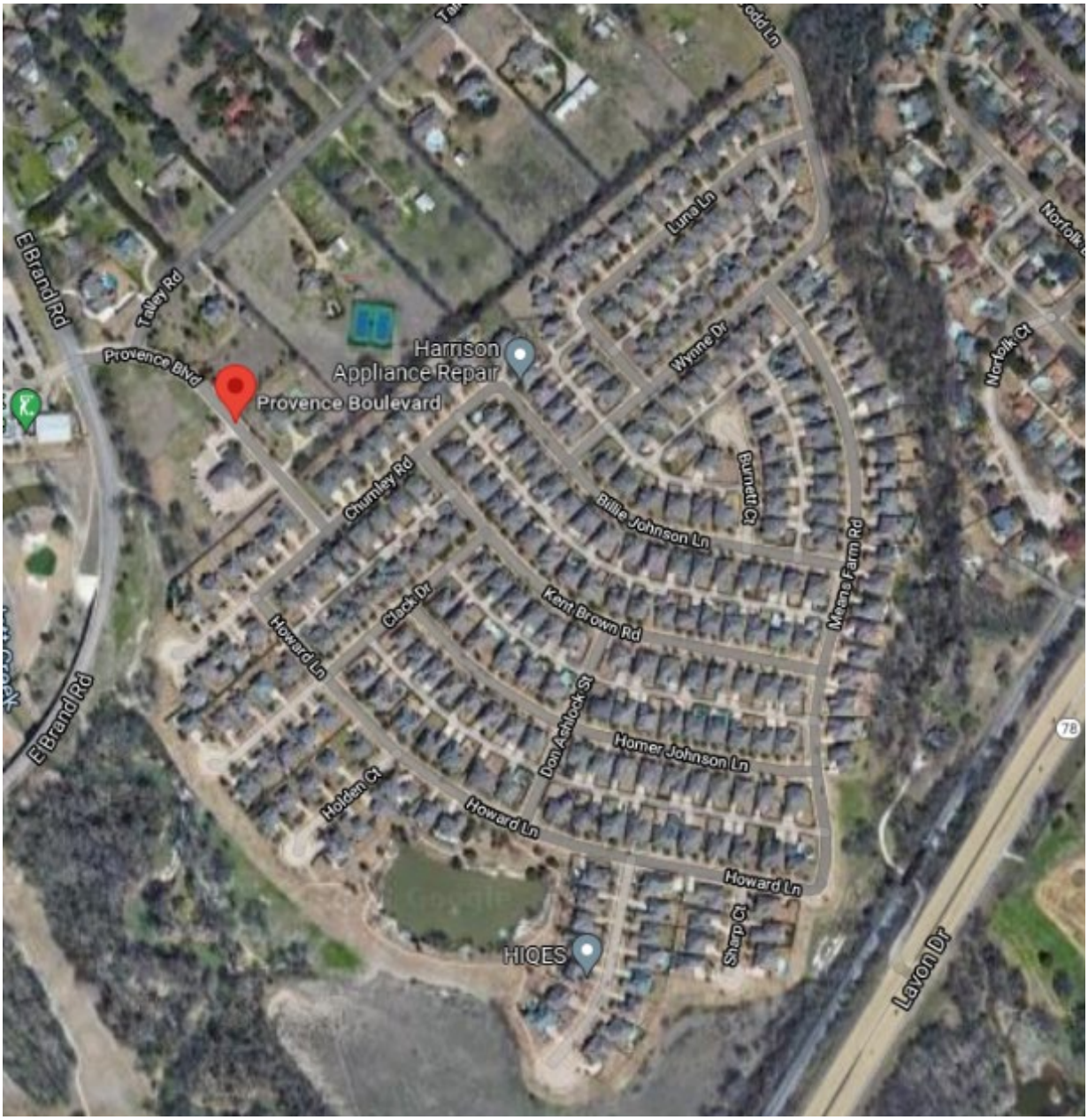
East – Todd

Stated Goals

“To increase the look of the entrance to our neighborhood and common space.”

Stated Maintenance

None included in application.



Comments from Letter of Intent Phase

Neighborhood Vitality

- As of August 2nd, City Council voted for that softscape is now an ineligible project in this program. A gate around the playground is permitted and can have normal park operating hours. May not be closed off to the general public.
- Entry features and common area improvements (new construction) are permitted under the matching grant program.

Building Inspection

- If it is just landscaping, plants and shrubs then no permit required from Building Inspection. If they are installing any irrigation, lighting or entry wall features permits will be required.

Engineering

- Replace any medium/large trees in the same location. If proposing new location, you will need to provide and exhibit to Engineering so we can verify the locations relative to public utility lines.

Application Phase Comments

Neighborhood Vitality

- No maintenance plan is included.
- As of August 2, 2021, "softscape," or live vegetation, is not an eligible program expenditure. Using the estimate provided, $56,850.32 of the total estimate is eligible.
- Provence at Firewheel HOA was approved for a project in Spring 2016, which was completed in September 2016, and was approved for a project in Fall 2016, which was completed in January 2017. September 2016 would be the start of their five-year $100,000 timeframe, which they did not exceed. Their five year-timeframe would restart with any approved project henceforth.

Building Inspection

- If only landscaping, plants and shrubs, then no permit required from Building Inspection. If they are installing any irrigation, lighting or entry wall features, permits will be required.

Engineering

- Replacement of any medium/large trees in the same location does not require further review. If proposing a new location, the applicant must provide and exhibit to Engineering so we can verify the locations relative to public utility lines.

5. Neighborhood-Based Group: Rainbow Estates
Project Name: Neighborhood Benches
Project Location: Neighborhood Entrance, Parker Drive, Parker Circle, Davidson

Total Project Cost:	$10,000
Requesting Amount:	$10,000
Neighborhood Match:	$0
Match %:	0%

Project Summary

- Four benches placed throughout the neighborhood
- Picnic table at park
- Flowers around monument sign
- Trash bins

Location

Identified Neighborhood Boundaries

North – Davidson

South – Hwy. 66

West – Parker

East – Davidson

Stated Goals

"Our goal is beautification with a more down-home look and feel to the community."

Stated Maintenance

None included in application.

Comments from Letter of Intent Phase

No letter of intent submitted, none required.

Application Phase Comments

Neighborhood Vitality

- Neighborhood Vitality will work with Rainbow Estates regarding the details of the project.
- Any equipment on City-owned property would require a license agreement, including maintenance conditions for fixtures and waste collectors.

Building Inspection

- No permit required for picnic tables and benches. If a shade structure is built, then a permit will be required.

Engineering

- We cannot confirm the exact location of the proposed improvements within the subdivision. Please show/label the locations of all proposed improvements on an overall aerial imagery map.
- No landscaping such as trees, hedges, above and underground structures can be located within existing utility / drainage easements OR right of way without an approved Real Property Improvement Authorization form or License Agreement. See Appendix 3D & 3E of the Technical Standards Manual for further instructions.

6. Neighborhood-Based Group: Town North HOA
Project Name: River Rock Flower Beds
Project Location: East and west common areas

Total Project Cost:	$12,736.26
Requesting Amount:	$10,825.82
Neighborhood Match:	$1,910.44
Match %:	15%

Project Summary

- Landscaping in four flower beds within the HOA village, including hardscaping and metal sculptures

Location

Identified Neighborhood Boundaries

North – Buckingham

South – Justice

West – Plano

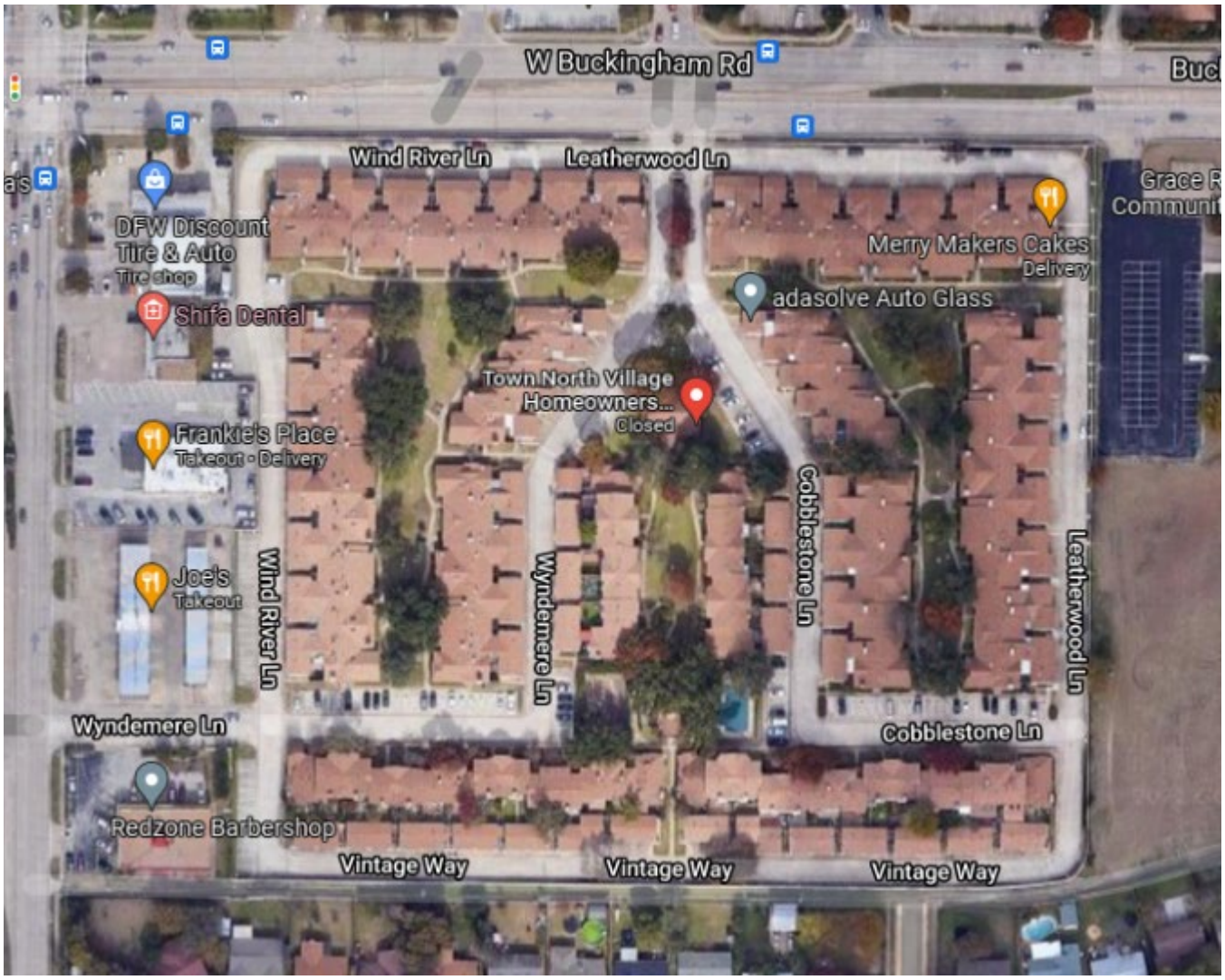
East – Rice

Stated Goals

To improve the appearance of the common area flower beds.

Stated Maintenance

HOA will replace where needed, improvements intended to be permanent.



Comments from Letter of Intent Phase

Neighborhood Vitality

- As of August 2nd, City Council voted for that softscape is now an ineligible project in this program.
- Entry features and common area improvements (new construction) are permitted under the matching

Building Inspection

- We would need to know exactly what they are doing with the entrance wall, it may or may not require a permit. No comment on the landscaping.

Engineering

- There are public water and wastewater mains running through the east and west common areas.
- Large trees cannot be placed on top of our public utility lines.
- Do not install any objects that penetrate the ground more than 36-inches to avoid any damage to the public mains.
- Texas811 should be called to locate the public utility lines prior to construction.
- The entrance wall is within the public Right of Way. Any expansion or replacement of the existing entry sign may require a License Agreement from the Engineering Department since we do not have one on file.

Application Phase Comments

Neighborhood Vitality

- Proposed work to the entryway feature has been dropped from the application.
- As of August 2, 2021, “softscape,” or live vegetation, is not an eligible program expenditure. Using the estimate provided, $11,748.31 of the total estimate is eligible.

Building Inspection

- We do not require a permit for landscaping and probably not for the metal art but we would need more details on that.

Engineering

- There are public water and wastewater mains running through the east and west common areas (see record drawing #720841). We do not recommend locating the sculptures within 7.5 feet on either side of the public mains in case of emergency repair.
- Do not install any objects that penetrate the ground more than 36-inches to avoid any damage to the public mains.
- Texas811 should be called to locate the public utility lines prior to installation.

Funding Summary

Total All Projects	$271,358
Total Neighborhood Match	$63,589
Total City Contribution	$207,769

Community Services Committee Recommendation

- Crystal Lake HOA: approve as submitted
- Fall Creek HOA: approve as submitted, with acknowledgement that fabric roof coverings are not allowed
- Rainbow Estates: approve as submitted, with acknowledgement that Neighborhood Vitality will work with this neighborhood to design and manage specifics

- Captain's Quarters HOA: approve park benches only
- Provence at Firewheel HOA: approve application, except for items that are live vegetation, or "softscape," in accordance with current guidelines
- Town North HOA: approve application, except for items that are live vegetation, or "softscape," in accordance with current guidelines

GARLAND
PLANNING REPORT

City Council Work Session Agenda **3. f.**

Meeting Date: December 6, 2021

Item Title: Consider re-adopting the 2016 Water and Roadway Impact Fee Study: Land Use Assumptions, Roadway and Water Impact Fee CIP, and Maximum Fee.

Submitted By: Will Guerin, Planning Director

REQUEST

Consider re-adopting the Land Use Assumptions, Roadway and Water Impact Fee Capital Improvement Plan, and a Maximum Roadway and Water Impact Fee.

PLAN COMMISSION RECOMMENDATION

During their November 11, 2021 meeting, the Plan Commission, in its acting capacity as the Capital Improvements Advisory Committee (CIAC), recommended re-adoption of the Land Use Assumptions, Roadway and Water Impact Fee Capital Improvement Plan, and a Maximum Roadway and Water Impact Fee with a six (6) to zero (0) vote.

STAFF RECOMMENDATION

Staff recommends re-adoption of the Land Use Assumptions, Roadway and Water Impact Fee Capital Improvement Plan, and a Maximum Roadway and Water Impact Fee. The study and subsequent impact fees remain valid for another five (5) years.

BACKGROUND

Section 395.052 of the Texas Local Government Code mandates updates every five years to the land use assumptions and capital improvements plan for a political subdivision imposing an impact fee. The City may re-adopt previous impact fee studies that are still deemed valid.

In December 2016 (with a March 1, 2017 effective date), the Garland City Council adopted the Land Use Assumptions, Roadway and Water Impact Fee Capital Improvement Plan, and a Maximum Roadway and Water Impact Fee, as drafted by consultant Kimley-Horn. Since it is approaching five years since adoption, consideration of this item is being brought forward.

CONSIDERATIONS

1. Impact fees are a one-time fee assessed to recover infrastructure costs required to serve new development. The City of Garland currently assesses impact fees for roadways and water. The purpose of an impact fee study is, per the Texas Local Government Code, to provide an analysis which formulates land use assumptions from which to base any needed impact fee changes, and to recommend a maximum water and roadway impact fee to the Capital Improvements Advisory Committee (CIAC) and the City Council.

2. Chapter 395 of the Texas Local Government Code requires a Capital Improvements Advisory Committee (CIAC) be appointed to provide comments on proposed amendments to the impact fees, land use assumptions and capital improvements plan upon which calculation of the impact fee is based. Per the current impact fee ordinance, the Plan Commission serves as the Capital Improvements Advisory Committee (CIAC). It is common for municipalities to appoint their Planning Commissions as the acting CIAC.

3. Staff determines that the impact fee study is still valid for another five (5) years. As bond projects and other capital projects are completed, an updated study will be likely needed in another five years.

4. A City may charge impact fees up to the maximum fee identified per the study. The City of Garland collects the maximum rate for water impact fees. Meanwhile, the City collects 45% of the maximum roadway impact fee for commercial / retail / institutional development, 60% for residential development, and 15% for industrial development. Attached are impact fee comparison charts, comparing Garland's impact fee rates with other cities in the Dallas/Fort Worth region.

5. Attached are the Water Impact Fee Study and Roadway Impact Fee Study, as well as the impact fee comparisons for the Council's consideration. In accordance with procedures per State law, a public hearing will be scheduled for the City Council to formally consider re-adoption of the impact fee study items.

Attachments

Roadway Impact Fee Study
Water Impact Fee Study
Impact Fee Comparison Charts
PC Minutes

CITY OF GARLAND, TEXAS
ROADWAY IMPACT FEE STUDY
FINAL DRAFT

GARLAND

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October 2016

Prepared for the City of Garland

Prepared by:

Kimley-Horn and Associates, Inc.

801 Cherry Street, Unit 11, Suite 950

Fort Worth, TX 76102

Phone 817 335 6511

TBPE Firm Registration Number: F-928

Project Number: 063551021

Table of Contents

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EXECUTIVE SUMMARY

Introduction

Impact Fees are a mechanism for funding the public infrastructure necessitated by new development. Across the country, they are used to fund police and fire facilities, parks, schools, roads and utilities. In Texas, the legislature has allowed their use for water, wastewater, roadway and drainage facilities. Historically, they have been used to fund public water, wastewater, and roadway improvements in the City of Garland. The focus of this study is on roadway impact fees.

In the most basic terms, impact fees are meant to recover the incremental cost of the impact of each new unit of development creating new infrastructure needs. In the case of roadway impact fees, the infrastructure need is the increased capacity on arterial and collector roadways that serve the overall transportation system. The purpose of the 2016 Roadway Impact Fee Study is to identify the fee per unit of new development necessary to fund these improvements in accordance with the enabling legislation, Chapter 395 of the Texas Local Government Code.

Impact Fee Basics

Roadway Impact Fees are determined by several key variables, each described below in greater detail.

Impact Fee Study

The primary purpose of the 2016 Roadway Impact Fee Study is to determine the maximum impact fee per unit of new development chargeable as allowed by the state law. This determination is not a recommendation; the actual fee amount ultimately assessed is at the discretion of the Garland City Council, so long as it does not exceed the maximum assessable allowed by law. The study looks at a period of 10 years to project new growth and corresponding capacity needs, as required by state law. The study (and corresponding maximum fees) must be restudied at least every five years. However, the study can be updated at any time to accommodate significant changes in any of the key variables of the impact fee equation.

Service Areas

A Service Area is a geographic area within which a unique maximum impact fee is determined. All fees collected within the Service Area must be spent on eligible improvements within the same Service Area. For Roadway Impact Fees, the Service Area may not exceed 6 miles. From 2003-2016, there were 18 existing service areas. As a result of this study, these 18 service areas were aggregated into 4 larger service areas following the 6-mile limit. A map of the Service Areas can be found on Page 6.

In defining the Service Area boundaries, the project team considered the corporate boundary, required size limit, adjacent land uses, and topography. Since each Service Area has a unique maximum impact fee, the per-unit maximum fee for an identical land use will vary from one Service Area to the next. For this reason, the team contained areas of uniform land use within the same Service Area boundary where possible.

Land Use Assumptions

The maximum Roadway Impact Fee determination is required to be based on the projected growth and corresponding capacity needs in a ten year window. This study considers the years 2016-2026.

To project future development in the ten year window, growth assumptions were made based on the demographic projections developed for the ongoing Garland Water and Wastewater Master Plan. Research of historical building permits was performed to compare the projected ten year growth against historical data.

Roadway Impact Fee Capital Improvement Plan (CIP)

The Roadway Impact Fee CIP is distinct and separate from the City's traditional Capital Improvements Plan. The Roadway Impact Fee CIP is simply the list of projects eligible for funding through impact fees. Only those capacity improvements included in the City's adopted Thoroughfare Plan are included in the Roadway Impact Fee CIP. Capacity improvements may include the addition of lanes, intersection improvements, or the extension of a new road. Resurfacing or other maintenance activities do not qualify as capacity improvements under impact fee law in Texas.

Only the projects listed in the Roadway Impact Fee CIP are eligible to utilize impact fee funds. In order to optimize future flexibility, all capacity improvement projects included in the Master Thoroughfare Plan are included in the Roadway Impact Fee CIP and will be eligible to utilize impact fee funds. Only the costs associated with providing the additional capacity necessitated by 10-years of growth can be used to calculate the maximum impact fee.

In order to calculate the maximum impact fee, the total cost of the Roadway Impact Fee CIP at build-out was reduced to account for:

- The portion of new capacity that will address existing needs, and
- The portion of new capacity that will not be necessitated until beyond the 10-year growth window.

A ratio that compares 10 years' demand for capacity to the net supply of capacity (total new capacity in the Roadway Impact Fee CIP minus existing needs) can be calculated. This ratio, which may not exceed 100%, is then applied to the cost of the net capacity supplied. The result is a determination of the costs attributable to the next 10 years' growth, which is then used to calculate the maximum impact fee in accordance with state law. The result is known as the cost of the Roadway Impact Fee CIP Attributable to Growth (i.e. recoverable portion of the Roadway Impact Fee CIP):

Service Areas	A	B	C	D
Cost of Roadway Impact Fee CIP Attributable to Growth and Financing	$ 32,090,045	$ 24,781,968	$ 28,927,845	$ 21,141,890

Service Units

The impact fee law defines a service unit as follows: "Service Unit means a standardized measure of consumption attributable to an individual unit of development calculated in accordance with generally accepted engineering or planning standards and based on historical data and trends applicable to the political subdivision in which the individual unit of development is located during the previous 10 years."

The 2016 Roadway Impact Fee Study defines a *service unit* as the number of vehicle-miles. Based on the City's 10-year growth projections the associated demand (consumption) values for each service area are as follows in terms of vehicle-miles:

Service Areas	A	B	C	D
Total Growth (2016 - 2026) in Vehicle-Miles	30,833	11,872	10,840	14,170

Impact Fee Calculation

The maximum impact fee allowable in each of the five service areas is then calculated by dividing the Roadway Impact Fee CIP Attributable to Growth by the number of vehicle-miles in the corresponding Service Area in the above table. This calculation is performed for each service area individually; each service area has a stand-alone Roadway Impact Fee CIP and 10-year growth projection.

Below is the listing of the 2016 Roadway Impact Fee Study's Maximum Assessable Impact Fee Per Service Unit (Vehicle-Mile):

Service Areas	A	B	C	D
2016 Roadway Impact Fee Study Maximum Assessible Fee Per Vehilce-Mile	$ 1,032	$ 2,081	$ 2,661	$ 1,486

Chapter 395 Required Adoption Process

Chapter 395 of the Texas Local Government Code stipulates a specific process for the adoption of Roadway Impact Fees. A Capital Improvement Advisory Committee (CIAC) is required to review the Land Use Assumptions and Roadway Impact Fees CIP used in calculating the maximum fee, and to provide the Committee's findings for consideration by the City Council. This CIAC also reviews the Roadway Impact Fee ordinance and provides its findings to the City Council. The composition of the CIAC is required to adequately represent the building and development communities. For this study, the Plan Commission serves as the CIAC. The City Council then conducts a first public hearing on the Land Use Assumptions and Roadway Impact Fee CIP and a second public hearing on the Roadway Impact Fee Ordinance.

Following policy adoption, the CIAC is tasked with advising the City Council of the need to update the Land Use Assumptions or the Roadway Impact Fee CIP at any time within five years of adoption. Finally, the CIAC oversees the proper administration of the Impact Fee, once in place, and advises the Council as necessary.

Collection and Use of Transportation Impact Fees

Roadway Impact fees are assessed when a final plat is recorded. The assessment defines the impact of each unit at the time of platting, according to land use, and may not exceed the maximum impact fee allowed by law. Roadway Impact Fees are collected when a building permit is issued. Therefore, funds are not collected until development-impacts are introduced to the transportation system. Funds collected within a service area can be used only within the same service area. Finally, fees must be utilized within 10 years of collection, or must be refunded with interest.

I. INTRODUCTION

Chapter 395 of the Texas Local Government Code describes the procedure political subdivisions must follow in order to create and implement impact fees. Senate Bill 243 (SB 243) amended Chapter 395 in 2001 to define an Impact Fee as "a charge or assessment imposed by a political subdivision against new development in order to generate revenue for funding or recouping the costs of capital improvements or facility expansions necessitated by and attributable to the new development."

The City retained Kimley-Horn and Associates, Inc. to provide professional transportation engineering services for the 2016 Roadway Impact Fee Study. This report includes details of the Roadway Impact Fee calculation methodology in accordance with Chapter 395, the applicable Land Use Assumptions, development of the Roadway Impact Fee Capital Improvements Plan, and the Land Use Equivalency Table.

This report references two of the basic inputs to the Roadway Impact Fee:

1) **Land Use Assumptions** (Pg. 3)

2) **Roadway Impact Fee Capital Improvements Plan (CIP)** (Pg. 8)

Information from these Land Use Assumptions and Roadway Impact Fee CIP is used extensively throughout the remainder of the report.

There is a detailed discussion of the methodology for the computation of impact fees. This discussion is broken into two components:

1) **Computation Method for Roadway Impact Fees** (Pg. 17)

2) **Roadway Impact Fee Calculation** (Pg. 33)

The components of the **Computation Method for Roadway Impact Fee** include development of:

- Service Areas (Pg. 17)
- Service Units (Pg. 17)
- Cost Per Service Unit (Pg. 19)
- Roadway Impact Fee CIP Costing Methodology (Pg. 19)
- Summary of Roadway Impact Fee CIP Costs (Pg. 23)
- Service Unit Calculation (Pg. 28)

The Roadway Impact Fee is then calculated as:

- Maximum Assessable Impact Fee Per Service Unit (Pg. 33)
- Service Unit Demand Per Unit of Development (Pg. 37)

This report also includes a section concerning the **Plan for Financing and the Ad Valorem Tax Credit**. This plan details the maximum assessable impact fee per service unit the City of Garland may apply under Chapter 395 of the Texas Local Government Code.

The final section of the report is the **Conclusion,** which presents the findings of the update analysis and summarizes the report.

II. LAND USE ASSUMPTIONS

A. Purpose and Overview

In order to assess an impact fee, Land Use Assumptions must be developed to provide the basis for residential and employment growth projections within a political subdivision. As defined by Chapter 395 of the Texas Local Government Code, these assumptions include a description of changes in land uses, densities, and development in the service area. The land use assumptions are then used in determining the need and timing of transportation improvements to serve future development.

Information from the following sources was compiled to complete the land use assumptions:

- Dallas County Appraisal District (DCAD)
- Envision Garland Future Land Use Plan and Map
- Envision Garland 2030 Comprehensive Plan
- Ongoing Water and Wastewater Master Plan Update
- Centerville Marketplace Revitalization Strategy – Final Report
- Forest-Jupiter Transit-Oriented Redevelopment Plan
- City of Garland staff
- Historic Building Permit Data

The Land Use Assumptions include the following components:

- **Land Use Assumptions Methodology** – An overview of the general methodology used to generate the land use assumptions.
- **Roadway Impact Fee Service Areas** – Explanation of the division of Garland into service areas for transportation facilities.
- **Residential and Employment**– Data on residential and employment growth within the service area over the next ten years (2016 – 2026).
- **Land Use Assumptions Summary** – A synopsis of the land use assumptions.

The residential and employment estimates and projections were compiled in accordance with the following categories:

Units: Number of dwelling units, both single and multi-family.

Employment: Square feet of building area based on three (3) different classifications. Each classification has unique trip making characteristics.

Retail: Land use activities which provide for the retail sale of goods which primarily serve households and whose location choice is oriented toward the household sector, such as grocery stores and restaurants.

Service: Land use activities which provide personal and professional services, such as government and other professional offices.

Basic: Land use activities that produce goods and services such as those which are exported outside of the local economy, such as manufacturing, construction, transportation, wholesale, trade, warehousing, and other industrial uses.

These broader categories are used in the development of the assumptions for impact fees; however, expanded classifications used in the assessment of impact fees are found in the Land Use / Vehicle-Mile Equivalency Table (Pg. 39).

B. Land Use Assumptions Methodology

The residential and non-residential growth projections formulated in this report were performed using reasonable and generally accepted planning principles. The following factors were considered in developing these projections:

- Character, type, density, and quantity of existing development;
- Current zoning;
- Growth trends;
- Location of vacant land;
- Physical restrictions (i.e. flood plains, railroads); and
- Physical development capacity of Garland.

Existing residential and employment estimates were obtained using DCAD parcel data and an aerial survey of existing development.

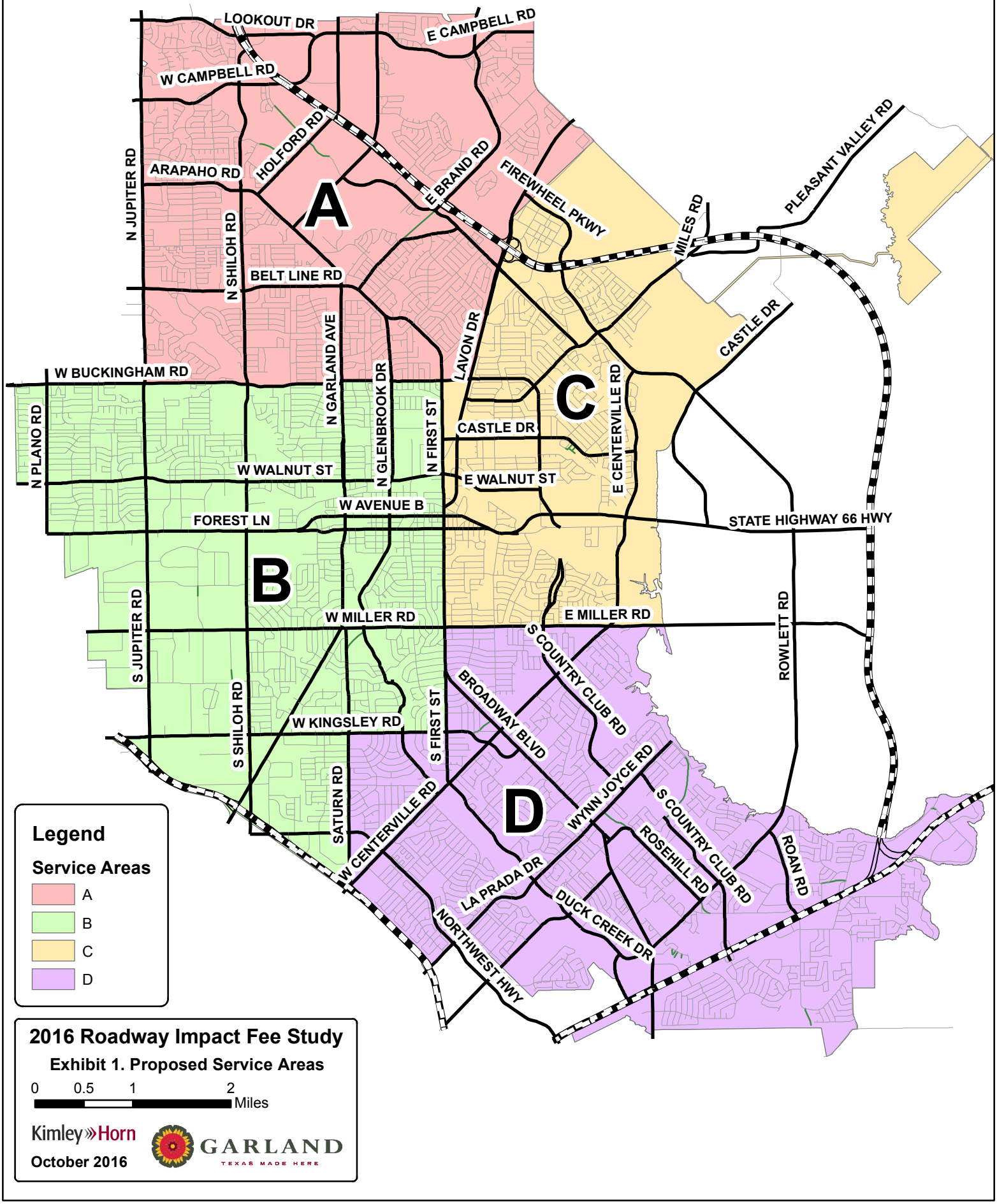
For the remaining undeveloped areas, assumptions based upon the City's Future Land Use Plan were used to estimate the ultimate buildout of residential and employment development. To project future development in the ten-year window, the known developing areas identified in the City's adopted planning documents and projections in the ongoing Water and Wastewater Master Plan were used as a basis to estimate the residential and employment development expected to occur by the year 2026.

Research of historical building permits was performed to compare the projected growth of these known developments with previous growth trends in the City of Garland over the last ten years. During the last ten years, approximately 3,107 residential units and 7 million square feet of employment were developed. It is projected that the next ten years of development will be reasonably close to these estimates.

C. Roadway Impact Fee Service Areas

The geographic boundary of the proposed impact fee service areas for transportation facilities is shown in **Exhibit 1**. The City of Garland is currently divided into 18 service areas. As part of this study, it is proposed to group the existing 18 service areas into four (4) larger service areas, each based upon the six (6) mile limit, as required in Chapter 395 (explained on Pg. 17). For roadway facilities, the service areas as required by state law are limited to areas within the current corporate limits. Therefore, areas within the extraterritorial jurisdiction (ETJ) are excluded from this study.

It should be noted that at locations where service area boundaries follow a City thoroughfare facility, the proposed boundary is intended to follow the centerline of the roadway, unless otherwise noted. In cases where a service area boundary follows the City Limits, only those portions of the transportation facility within the City Limits are included in the service area.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ARAPAHO RD
N JUPITER RD
N SHILOH RD
BELT LINE RD
E BRAND RD
FIREWHEEL PKWY
MILES RD
PLEASANT VALLEY RD
CASTLE DR
LAVON DR
W BUCKINGHAM RD
N PLANO RD
N GARLAND AVE
N GLENBROOK DR
N FIRST ST
CASTLE DR
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W AVENUE B
FOREST LN
STATE HIGHWAY 66 HWY
S JUPITER RD
W MILLER RD
E MILLER RD
S COUNTRY CLUB RD
ROWLETT RD
S SHILOH RD
W KINGSLEY RD
S FIRST ST
BROADWAY BLVD
SATURN RD
W CENTERVILLE RD
WYNN JOYCE RD
S COUNTRY CLUB RD
ROSEHILL RD
ROAN RD
LA PRADA DR
DUCK CREEK DR
NORTHWEST HWY
A
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Service Areas
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2016 Roadway Impact Fee Study
Exhibit 1. Proposed Service Areas
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Kimley»Horn
October 2016
GARLAND
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D. Residential and Employment

Residential and Employment estimates for the base year (2016) were performed based upon a survey of the existing land uses and aerial verification. Ten-year growth projections were prepared based upon the City's adopted planning documents, coordination with City staff, and the ongoing Water and Wastewater Master Plan.

E. Land Use Assumptions Summary

Table 1 summarizes the residential and employment 10-year growth projections. The growth is shown by service area and displays the groupings of the existing service areas into the proposed service areas. The projected growth over the next ten years is reasonable compared to the historical growth over the previous ten years, as described in the Land Use Assumptions Methodology (Pg. 4).

Table 1. Residential and Employment 10-Year Growth Projections

Proposed Service Area	Previous Service Areas	Single Family	Multi-Family	Basic	Service	Retail
		Dwelling Units	Dwelling Units	Sq. Ft.	Sq. Ft.	Sq. Ft.
A	1, 2, 4, 5	896	523	412,000	1,613,000	1,172,000
B	7, 8, 10, 11, 13	281	467	513,000	489,000	251,000
C	3, 6, 9	518	298	152,000	378,000	457,000
D	12, 14, 15, 16, 17, 18	689	310	185,000	437,000	710,000
Subtotal		**2,384**	**1,598**	**1,262,000**	**2,917,000**	**2,590,000**
Total		**3,982**		**6,769,000**		

III. ROADWAY IMPACT FEE CAPITAL IMPROVEMENTS PLAN

Development of a 10-year Roadway Impact Fee Capital Improvement Plan is required per Chapter 395 of the Texas local Government Code. The current Garland Master Thoroughfare Plan was used as the basis for this Roadway Impact Fee CIP, in addition to the ongoing Bottleneck Study. The Roadway Impact Fee CIP includes arterial and collector class roadway facilities that serve the overall transportation system, as well as major intersection improvements. All of the facilities identified are included in the current mobility plan map.

The proposed Roadway Impact Fee CIP is listed in **Tables 2.A – 2.D** and mapped in **Exhibits 2.A – 2.D.** The tables show the length of each project as well as the facility's Thoroughfare Plan classification. The Roadway Impact Fee CIP was developed in conjunction with input from City of Garland staff and represents those projects that will be needed to accommodate the growth projected in the Land Use Assumptions section of this report.

Table 2.A. 10-Year Roadway Impact Fee Capital Improvements Plan – Service Area A

Proj. #	IF Class	Roadway	Limits	Length (mi)	% In Service Area
A-1	B (1/3)	Arapaho Rd (1)	Elm Ridge Ln to Shiloh Rd	0.77	100%
A-2	B (1/3)	Arapaho Rd (2)	Shiloh Rd to N. Garland Ave	0.68	100%
A-3	C1	Brand Rd (1)	Bellaire Rd to Belt Line Rd	0.64	100%
A-4	C1	Brand Rd (2)	Naaman Forest Blvd to West Brand Rd	0.47	100%
A-5	C1	Brand Rd (3)	Murfield Rd to PGBT N Frontage Rd	0.56	100%
A-6	B (1/3)	Campbell Rd (1)	N. Jupiter Rd to Shiloh Rd	1.06	100%
A-7	B (1/3)	Campbell Rd (2)	Shiloh Rd to PGBT S Frontage Rd	0.41	100%
A-8	B (1/3)	Campbell Rd (3)	Lookout Dr to PGBT N Frontage Rd	0.59	100%
A-9	B (1/3)	Campbell Rd (4)	Lookout Dr to N. Garland Ave	0.64	100%
A-10	B (1/3)	Campbell Rd (5)	N. Garland Ave to Water Oak Dr	0.52	100%
A-11	B	Campbell Rd (6)	Water Oak Dr to Murphy Rd	1.24	100%
A-12	D1	Ferris Rd	Campbell Rd to Holford Rd	0.36	100%
A-13	A	Firewheel Parkway (1)	Lavon Dr to 530' E of Lavon Dr	0.10	100%
A-14	D1	Holford Rd (1)	Naaman Forest (Future) to Arapaho Rd	0.75	100%
A-15	C2	Holford Rd (2)	PGBT S Frontage Rd to Naaman Forest (Future)	0.33	100%
A-16	C2	Holford Rd (3)	N City Limits to PGBT N Frontage Rd	0.99	100%
A-17	B (1/3)	Lookout Dr (1)	Courtside Dr to Spring Dr	0.11	50%
A-18	B (1/3)	Lookout Dr (2)	Spring Dr to PGBT S Frontage Rd	0.80	50%
A-19	B (1/3)	Lookout Dr (3)	PGBT N Frontage Rd to Campbell Rd	0.72	100%
A-20	F	Mapleridge (1)	Shiloh Rd to Mapleridge Dr	0.09	100%
A-21	F	Mapleridge (2)	Mapleridge Dr (Existing) to Holford Rd	0.36	100%
A-22	B (1/3)	Garland Ave (1)	N City Limits to PGBT N Frontage Rd	1.29	100%
A-23	B (1/3)	Garland Ave (2)	Arapaho Rd to PGBT S Frontage Rd	1.14	100%
A-24	B-S (1/3)	Garland Ave (3)	Arapaho Rd to Belt Line Rd	0.79	100%
A-25	B (1/3)	Garland Ave (4)	Belt Line Rd to Buckingham Rd	0.97	100%
A-26	B (1/3)	Shiloh Rd (1)	PGBT S Frontage Rd to Campbell Rd	0.37	100%
A-27	B (1/3)	Shiloh Rd (2)	Campbell Rd to north bridge end	0.41	100%
A-28	B (1/3)	Shiloh Rd (3)	Collins Blvd to Arapaho Rd	0.59	100%
A-29	B (1/3)	Shiloh Rd (4)	Arapaho Rd to Belt Line Rd	1.03	100%
A-30	B (1/3)	Shiloh Rd (5)	Belt Line Rd to Buckingham Rd	0.96	100%
A-31	D1	Naaman Forest Blvd	W. Naaman Forest Blvd. to E. Naaman Forest Blvd.	0.33	100%
A-32	D1	Naaman School Rd	Brand Rd to Lavon Dr	0.88	100%
A-33	D1	Naaman Forest Blvd	Ranger to Brand Rd	0.26	100%
I-1	Shiloh Rd and Campbell Rd		Extend WB RT lane		100%
I-2	Arapaho Rd and Shiloh Rd		Add NB and SB RT lanes		100%
I-3	Apollo Rd and Garland Ave		Add EB RT Lane		100%
I-4	Wagon Wheel Rd and Garland Ave		WB RT Lane		100%
I-5	Belt Line Rd and Garland Ave		WB RT Lane		100%
I-6	Belt Line Rd and Shiloh Rd		EB RT Lane		100%
I-7	Buckingham Rd and Plano Rd		NB RT Lane, EB and WB Dual LT Lanes		100%
I-8	Shiloh Rd and Buckingham Rd		Add dual lefts WB, NB, and SB		50%

Note: The 10-Year Roadway Impact Fee CIP is not in a prioritized order.
Projects starting with "I-" are intersection improvements as identified by the ongoing Bottleneck Study

Table 2.B. 10-Year Roadway Impact Fee Capital Improvements Plan – Service Area B

Proj. #	IF Class	Roadway	Limits	Length (mi)	% In Service Area
B-1	E	Kings Rd	Marquis Dr to Kings Rd (Existing)	0.10	100%
B-2	E	Leon Rd (1)	Shiloh Rd to S. Garland Ave	0.18	100%
B-3	E	Leon Rd (2)	Leon Rd (Existing) to Millay Blvd (Future)	0.04	100%
B-4	E	Marketplace ext (1)	Towngate Blvd to Northwest Hwy	0.26	100%
B-5	E	Marketplace ext (2)	Pendleton Dr to Marketplace Dr	0.13	100%
B-6	E	Millay Blvd (Future)	Leon Rd to Millay Blvd (Existing)	0.22	100%
B-7	B (1/3)	Shiloh Rd (6)	Buckingham Rd to W Walnut St	1.00	100%
B-8	B	Shiloh Rd (7)	W Walnut St to Forest Ln	0.50	100%
B-9	B	Shiloh Rd (8)	Forest Ln to Miller Rd	1.01	100%
B-10	B	Shiloh Rd (9)	Miller Rd to Kingsley Rd	1.07	100%
B-11	B	Shiloh Rd (10)	Kingsley Rd to McCree Rd	0.50	100%
B-12	B	Shiloh Rd (11)	Garland Ave to IH-635 WBFR	0.29	100%
B-13	F	New road east of Industrial Ln	Kingsley Rd to McCree Rd	0.50	100%
B-14	D2	Saturn Rd	Saturn Rd (Existing) to Miller Rd	0.31	100%
B-15	E	Sherwin	Sherwin St (Existing) to Wood Dr	0.13	100%
I-9	Plano Rd and Walnut St		NB an SB RT Lane		100%
I-10	Forest Ln and Jupiter Rd		EB and NB RT Lane, NB Dual LT Lanes		100%
I-11	Forest Ln and Shiloh Rd		SB and NB RT Lanes, Dual NB LT Lanes		100%
I-12	Avenue B (SH 78) and First St		SB RT Lane		100%
I-13	Avenue D and First St		EB RT Lane, EB Dual LT Lanes		100%
I-15	Jupiter Rd and Miller Rd		SB RT Lane		100%
I-16	Miller Rd and Shiloh Rd		SB RT Lane		100%
I-17	Garland Ave and Miller Rd		SB, EB, and WB RT Lanes		100%
I-18	Glenbrook Dr and Miller Rd		EB and WB LT Lanes		100%
I-19	First St and Miller Rd		Add EB RT & NB, SB Dual Lefts		33%
I-20	Broadway Blvd and First St		Triple LT from NB First St		50%
I-21	Jupiter Rd and Kingsley Rd		WB RT Lane		100%
I-22	Garland Ave and Kingsley Rd		NB RT Lane		100%
I-24	Garland Ave and MCree Rd / Shiloh Rd		SWB Dual LT Lanes		100%

Note: The 10-Year Roadway Impact Fee CIP is not in a prioritized order.
Projects starting with "I-" are intersection improvements as identified by the ongoing Bottleneck Study

Table 2.C. 10-Year Roadway Impact Fee Capital Improvements Plan – Service Area C

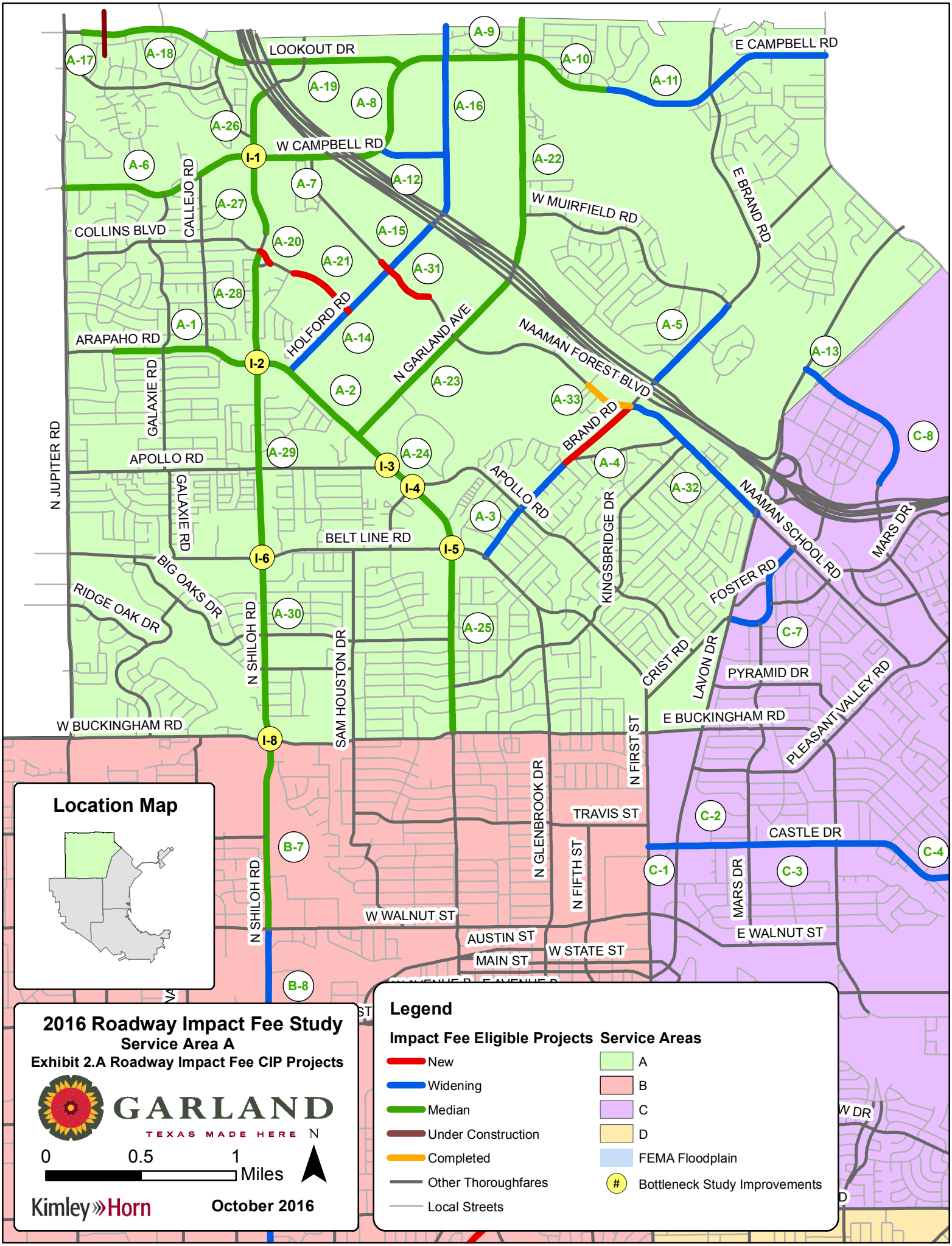
Proj. #	IF Class	Roadway	Limits	Length (mi)	% In Service Area
C-1	D1	Castle Dr (1)	N. First St to Lavon Dr	0.15	100%
C-2	D1	Castle Dr (2)	Lavon Dr to Mars Dr	0.38	100%
C-3	E	Castle Dr (3)	Mars Dr to Country Club Rd	0.46	100%
C-4	E	Castle Dr (4)	Country Club Rd to Centerville Rd	1.05	100%
C-5	E	Castle Dr (5)	2660' south of Firewheel Pkwy to Firewheel Pkwy	0.50	50%
C-6	E	Castle Dr (6)	Firewheel Pkwy to Miles Rd	0.84	50%
C-7	D2	Crist Rd	Lavon Dr to Naaman School Rd	0.62	100%
C-8	A	Firewheel Parkway (2)	530' E of Lavon Dr to 310' S of Town Center Blvd	0.77	100%
C-9	C1	Pleasant Valley Rd (1)	Creek Meadow Ln to Miles Rd	0.50	100%
C-10,D-5	B (1/3)	E. Miller Rd	Centerville Rd to 2,815' E of Centerville Rd	0.53	50%
C-11	C1	Pleasant Valley Rd (2)	Firewheel Pkwy to Creek Meadow Ln	0.58	100%
C-12,D-21	B	Miller Rd Bridge	2,815' E of Centerville Rd to East City Limits	0.04	50%
I-14	Centerville Rd and SH 66		Add dual LT lanes NB and WB		100%
I-19	First St and Miller Rd		Add EB RT & NB, SB Dual Lefts		33%

Note: The 10-Year Roadway Impact Fee CIP is not in a prioritized order.
Projects starting with "I-" are intersection improvements as identified by the ongoing Bottleneck Study

Table 2.D. 10-Year Roadway Impact Fee Capital Improvements Plan – Service Area D

Proj. #	IF Class	Roadway	Limits	Length (mi)	% In Service Area
D-1	S	Bobtown Rd (1)	Rowlett Rd to Bobtown Rd (Existing)	0.17	100%
D-2	E-S	Bobtown Rd (2)	Bobtown Rd (Future) to Waterhouse Blvd	0.34	100%
D-3	E	Bobtown Rd (3)	400' S of High Dr to Lyons Rd	0.38	100%
D-4	E	Bobtown Rd (4)	Lyons Rd to South City Limits	0.50	50%
C-10,D-5	B (1/3)	E. Miller Rd	Centerville Rd to 2,815' E of Centerville Rd	0.53	50%
D-6	F	E. Oates Rd (Future)	Country Club Rd to E. Oates Rd (Existing)	0.58	100%
D-7	B (1/3)	La Prada Dr	IH 635 E frontage road to Northwest Hwy	0.32	50%
D-8	E	Locust Grove Rd	290' E of Oceanport Dr to East City Limits	0.54	100%
D-9	B	Lyons Rd (1)	Bobtown Rd to Guthire Rd	0.61	100%
D-10	B	Lyons Rd (2)	Guthire Rd to Lyons Rd (Future)	0.17	100%
D-11	B	Lyons Rd (Future) (3)	Lyons Rd to South City Limits	0.23	100%
D-12	F	Rosehill Rd (1)	Rosehill Rd (Existing) to Wynn Joyce Rd	0.30	100%
D-13	B (1/3)	Rosehill Rd (2)	Bobtown Rd to IH 30 N loop	0.29	100%
D-14	A (1/3)	Rowlett Rd (1)	Broadway Blvd to Rosehill Rd	0.70	100%
D-15	A (1/3)	Rowlett Rd (2)	Rosehill Rd to Roan Rd	0.99	100%
D-16	A	Rowlett Rd (3)	Roan Rd to City Limits	0.30	100%
D-17	B (1/3)	S. Country Club Rd	Rowlett Rd to Bobtown Rd	0.33	100%
D-18	E	Zion Rd	Locust Grove Rd to Bobtown Rd	0.20	100%
D-19	B	Northwest Hwy	Centerville Rd to La Prada Dr	1.22	100%
D-20	E	Dairy Rd	Celeste Rd to Broadway Blvd	0.49	100%
C-12,D-21	B	Miller Rd Bridge	2,815' E of Centerville Rd to East City Limits	0.04	50%
I-19	First St and Miller Rd		Add EB RT & NB, SB Dual Lefts		33%
I-20	Broadway Blvd and First St		Triple LT from NB First St		50%
I-23	Broadway Blvd and Centerville Rd		Dual Lefts SWB, NEB and NWB		100%
I-25	Broadway Blvd and Rowlett Rd		Add EB RT Lane		100%
I-26	Broadway Blvd and IH-30 EBFR		Dual NB RT Lanes		100%

Note: The 10-Year Roadway Impact Fee CIP is not in a prioritized order.
Projects starting with "I-" are intersection improvements as identified by the ongoing Bottleneck Study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COLLINS BLVD
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W MUIRFIELD RD
E BRAND RD
HOLFORD RD
N GARLAND AVE
NAAMAN FOREST BLVD
ARAPAHO RD
GALAXIE RD
N JUPITER RD
APOLLO RD
BRAND RD
BELT LINE RD
BIG OAKS DR
RIDGE OAK DR
N SHILOH RD
SAM HOUSTON DR
KINGSBRIDGE DR
NAAMAN SCHOOL RD
MARS DR
FOSTER RD
CRIST RD
LAVON DR
PYRAMID DR
E BUCKINGHAM RD
W BUCKINGHAM RD
PLEASANT VALLEY RD
N FIRST ST
N GLENBROOK DR
N FIFTH ST
TRAVIS ST
CASTLE DR
W WALNUT ST
E WALNUT ST
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MAIN ST
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Location Map
2016 Roadway Impact Fee Study
Service Area A
Exhibit 2.A Roadway Impact Fee CIP Projects
GARLAND
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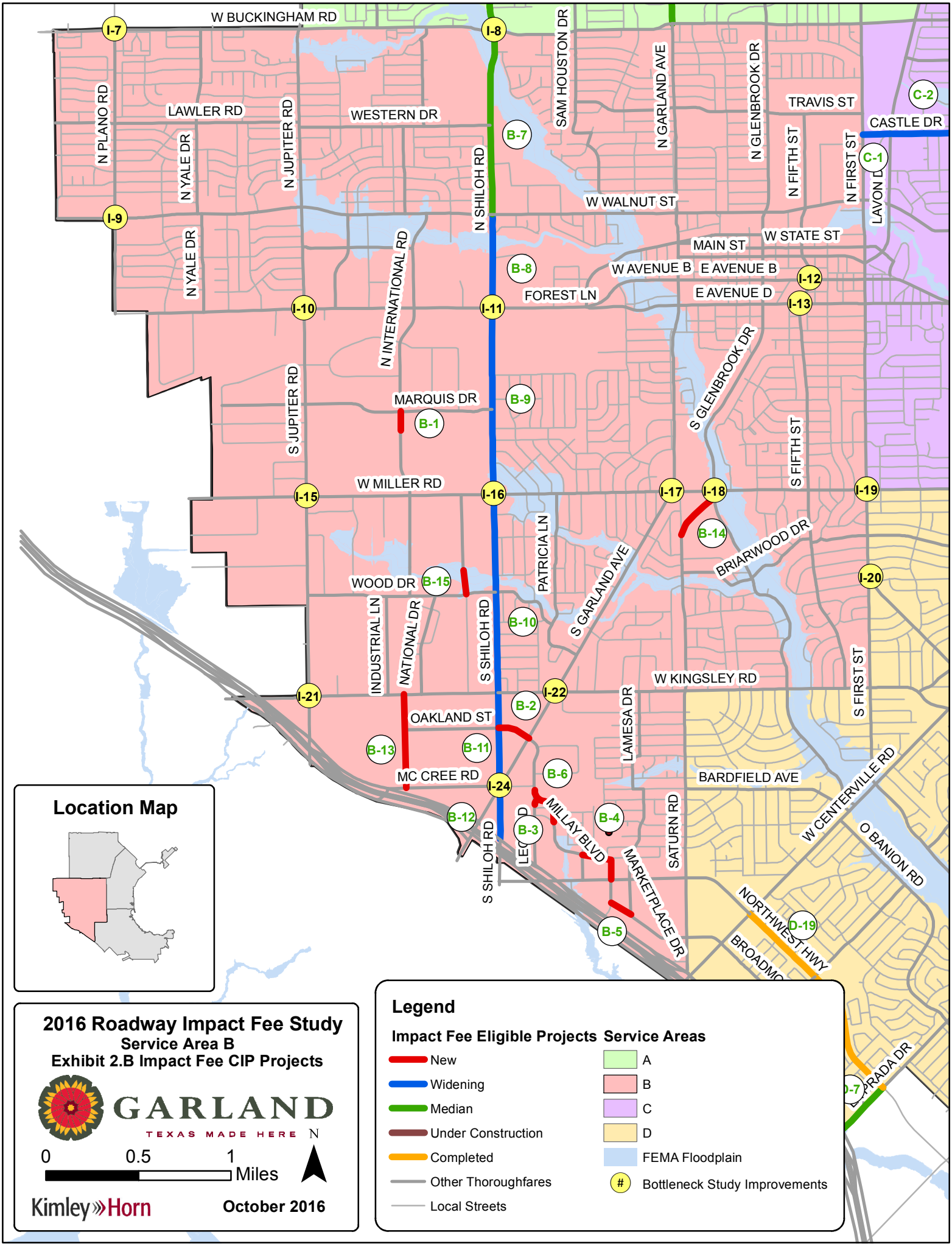
Miles
Kimley»Horn
October 2016
Legend
Impact Fee Eligible Projects
New
Widening
Median
Under Construction
Completed
Other Thoroughfares
Local Streets
Service Areas
A
B
C
D
FEMA Floodplain
Bottleneck Study Improvements



Location Map

2016 Roadway Impact Fee Study
Service Area B
Exhibit 2.B Impact Fee CIP Projects

GARLAND
TEXAS MADE HERE

N

0 0.5 1 Miles

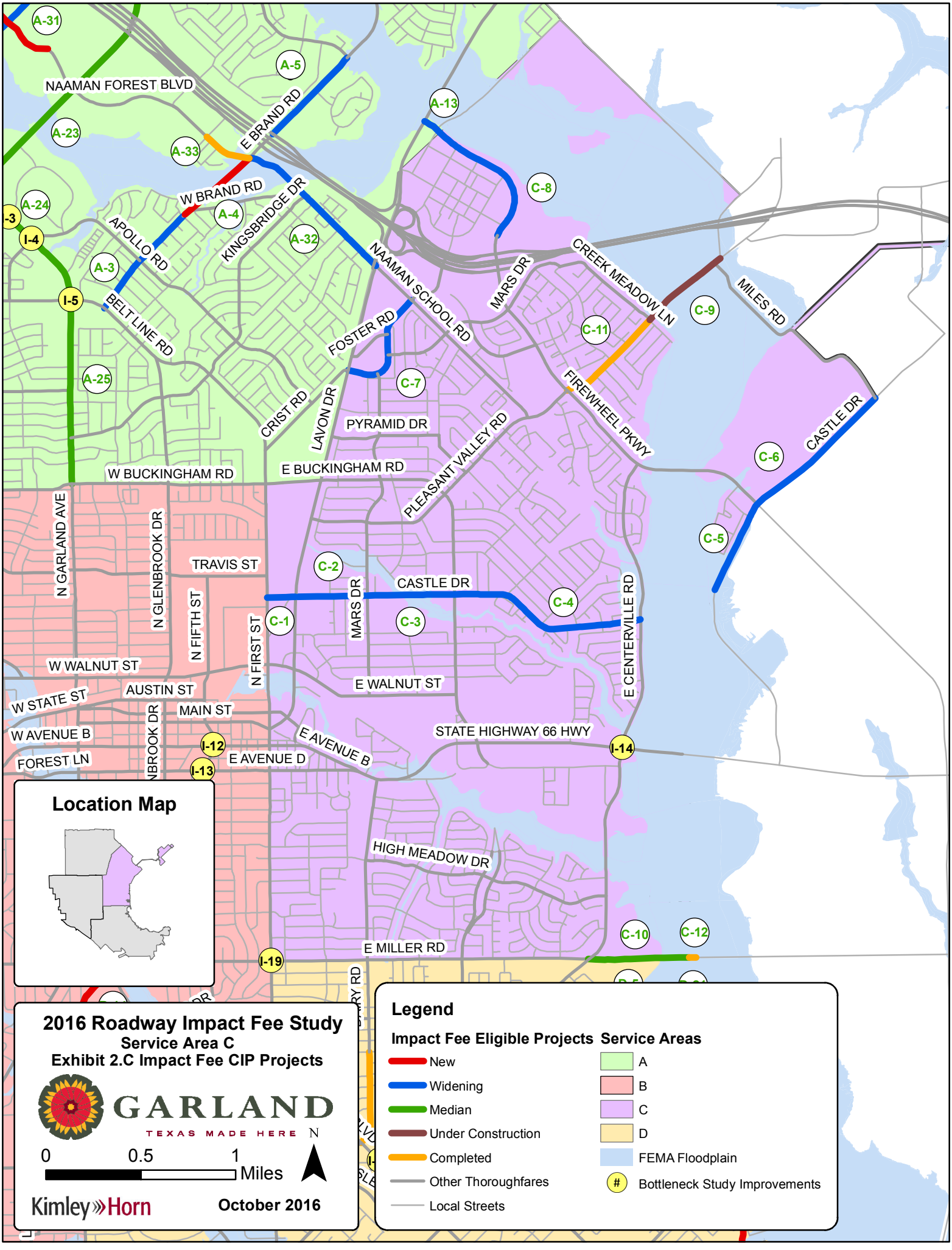
Kimley»Horn

October 2016

Legend

Impact Fee Eligible Projects
- New
- Widening
- Median
- Under Construction
- Completed
- Other Thoroughfares
- Local Streets

Service Areas
- A
- B
- C
- D
- FEMA Floodplain
- # Bottleneck Study Improvements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A-5
NAAMAN FOREST BLVD
A-13
A-23
A-33
E BRAND RD
W BRAND RD
C-8
A-24
A-4
KINGSBRIDGE DR
APOLLO RD
A-32
I-4
A-3
NAAMAN SCHOOL RD
MARS DR
CREEK MEADOW LN
C-9
MILES RD
I-5
BELT LINE RD
FOSTER RD
C-11
A-25
C-7
FIREWHEEL PKWY
CRIST RD
LAVON DR
PYRAMID DR
CASTLE DR
C-6
W BUCKINGHAM RD
E BUCKINGHAM RD
PLEASANT VALLEY RD
N GARLAND AVE
N GLENBROOK DR
C-5
TRAVIS ST
C-2
CASTLE DR
N FIFTH ST
MARS DR
C-4
C-1
C-3
N FIRST ST
E CENTERVILLE RD
W WALNUT ST
E WALNUT ST
W STATE ST
AUSTIN ST
MAIN ST
W AVENUE B
E AVENUE B
STATE HIGHWAY 66 HWY
I-14
I-12
FOREST LN
E AVENUE D
I-13
HIGH MEADOW DR
C-10
C-12
E MILLER RD
I-19
Location Map
2016 Roadway Impact Fee Study
Service Area C
Exhibit 2.C Impact Fee CIP Projects
GARLAND
TEXAS MADE HERE
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Miles
Kimley»Horn
October 2016
Legend
Impact Fee Eligible Projects
New
Widening
Median
Under Construction
Completed
Other Thoroughfares
Local Streets
Service Areas
A
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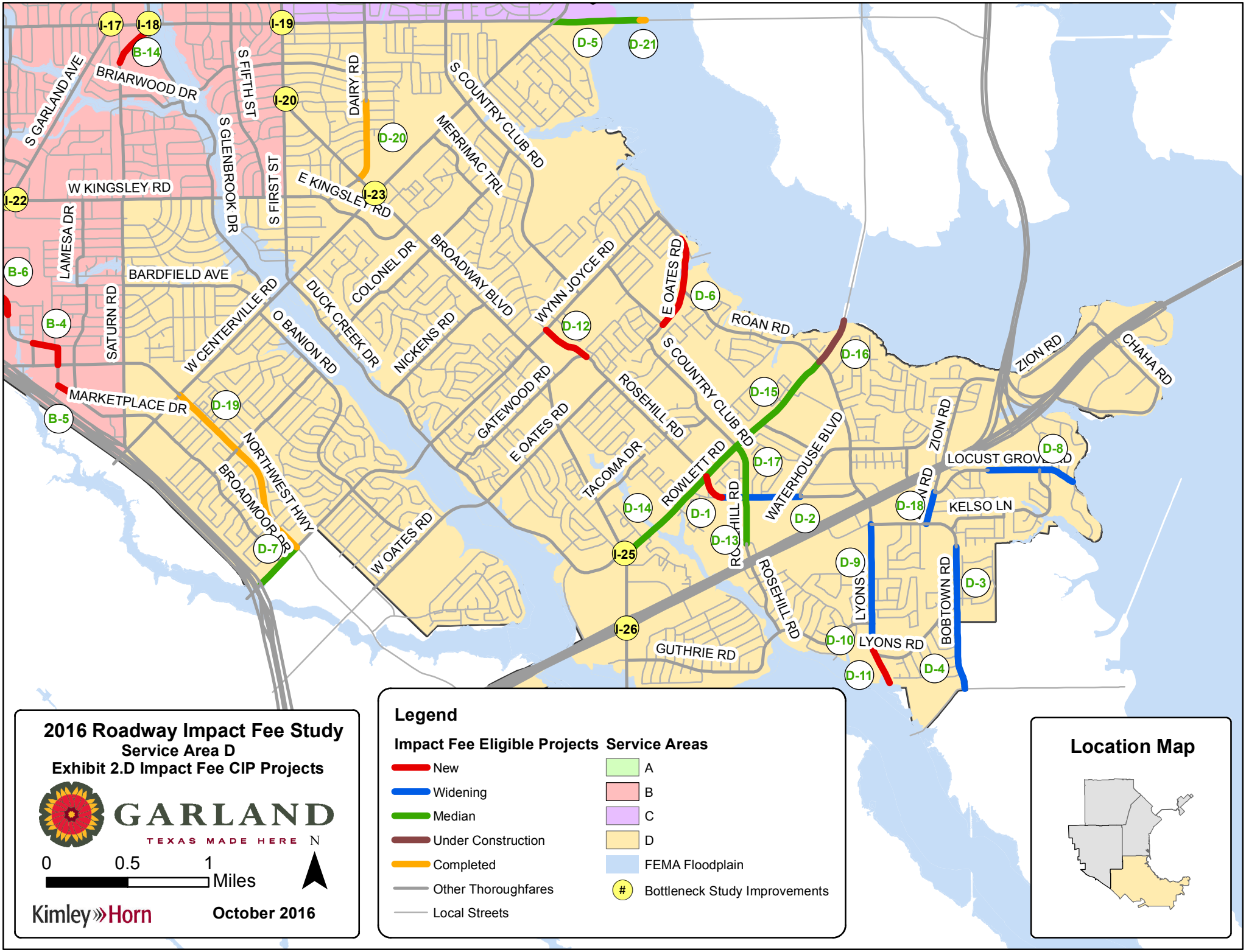
FEMA Floodplain
Bottleneck Study Improvements


I-17
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B-14
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D-11
D-4
BRIARWOOD DR
S GARLAND AVE
S FIFTH ST
S GLENBROOK DR
S FIRST ST
DAIRY RD
S COUNTRY CLUB RD
MERRIMAC TRL
E KINGSLEY RD
W KINGSLEY RD
LAMESA DR
SATURN RD
BARDFIELD AVE
W CENTERVILLE RD
O BANION RD
DUCK CREEK DR
COLONEL DR
BROADWAY BLVD
NICKENS RD
WYNN JOYCE RD
E OATES RD
ROAN RD
ZION RD
CHAHA RD
MARKETPLACE DR
NORTHWEST HWY
BROADMOOR DR
GATEWOOD RD
ROSEHILL RD
TACOMA DR
ROWLETT RD
WATERHOUSE BLVD
LOCUST GROVE RD
KELSO LN
LYONS RD
BOBTOWN RD
W OATES RD
GUTHRIE RD
2016 Roadway Impact Fee Study
Service Area D
Exhibit 2.D Impact Fee CIP Projects
GARLAND
TEXAS MADE HERE
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Miles
Kimley»Horn
October 2016
Legend
Impact Fee Eligible Projects
New
Widening
Median
Under Construction
Completed
Other Thoroughfares
Local Streets
Service Areas
A
B
C
D
FEMA Floodplain
Bottleneck Study Improvements
Location Map

IV. COMPUTATION METHOD FOR ROADWAY IMPACT FEES

A. Service Areas

The four (4) service areas used in the 2016 Roadway Impact Fee Study are shown in **Exhibit 1**. These service areas cover the entire corporate area of the City of Garland. Chapter 395 of the Texas Local Government Code specifies that "the service area is limited to an area within the corporate boundaries of the political subdivision and shall not exceed six (6) miles."

B. Service Units

The "service unit" is a measure of consumption or use of the capital facilities by new development. In other words, it is the unit of measure used in the 2016 Roadway Impact Fee Study to quantify the supply and demand for roads in the City. For transportation purposes, the service unit is defined as a vehicle-mile. Below is the definition for vehicle-mile.

Vehicle-Mile: The capacity consumed in a single lane in the PM peak hour by a vehicle making a trip one mile in length. The PM Peak is used as the basis for transportation planning and the estimation of trips caused by new development.

Total Vehicle-Miles of Supply: Based on the total length (miles), number of lanes, and capacity (vehicles per hour) provided by the Garland Thoroughfare Plan (see **Appendix B**).

Total Vehicle-Miles of Demand: Based on the 10-year growth projections (Pg. 32). The demand is equal to PM Trip Rate (trips) * Trip Length (miles).

The capacity values used in the 2016 Roadway Impact Fee Study are based upon Thoroughfare Capacity Criteria published by the North Central Texas Council of Governments (NCTCOG) and applied to City of Garland thoroughfare standards. **Tables 3A** and **3B** show the service volumes as a function of the facility classification and type.

Table 3A. Service Volumes for Proposed Facilities

(used in Appendix B – Roadway Impact Fee CIP Service Units of Supply)

Facility Classification	Median Configuration	Hourly Vehicle-Mile Capacity per Lane-Mile of Roadway Facility
A (Regional Arterial)	Divided	750
A-C (Urban One-Way Couplet)	Divided	750
B (Regional Arterial)	Divided	750
C1, C2 (Minor Arterial)	Divided	650
D1 (Major Collector)	Divided	650
D2 (Major Collector)	Undivided	650
D3 (Major Collector)	Undivided	550
E (Minor Collector)	Undivided	550
F (Minor Collector)	Undivided	425

Table 3B. Service Volumes for Existing Facilities

(used in Appendix C – Existing Roadway Facilities Inventory)

Roadway Type	Description	Hourly Vehicle-Mile Capacity per Lane-Mile of Roadway Facility
2U-R	Rural Cross-Section (i.e., gravel, dirt, etc.)	150
2U	Two lane undivided	425
2D	Two lane divided	550
3U	Three lane undivided (two-way, left-turn lane)	550
4U	Four lane undivided	550
4D	Four lane divided	650
5U	Five lane undivided (two-way, left-turn lane)	700
6U	Six Lane Undivided	725
6D	Six lane divided	750
7U	Seven lane undivided (two-way, left-turn lane)	725

C. Cost Per Service Unit

A fundamental step in the impact fee process is to establish the cost for each service unit. In the case of the Roadway Impact Fee, this is the cost for each vehicle-mile of travel. Thus, it is the cost to construct a roadway (lane-mile) needed to accommodate a vehicle-mile of travel. The cost per service unit is calculated for each service area based on the roadway projects within that service area.

The second component of the cost per service unit is the determination of the number of service units in each service area. This number is the measure of the growth in transportation demand that is projected to occur in the ten-year period.

D. Roadway Impact Fee CIP Costing Methodology

All of the project costs for an arterial or collector facility which serves the overall transportation system are eligible to be included in the Roadway Impact Fee Capital Improvements Plan. Chapter 395 of the Texas Local Government Code specifies that the allowable costs are "…including and limited to the:

1. Construction contract price;
2. Surveying and engineering fees;
3. Land acquisition costs, including land purchases, court awards and costs, attorney's fees, and expert witness fees; and
4. Fees actually paid or contracted to be paid to an independent qualified engineer or financial consultant preparing or updating the capital improvements plan who is not an employee of the political subdivision."

The engineer's opinion of the probable costs of the projects in the Roadway Impact Fee CIP is based, in part, on the calculation of a unit cost of construction. This means that a cost per linear foot of roadway is calculated based on an average price for the various components of roadway construction. This allows the probable cost to be determined by the type of facility being constructed, the number of lanes, and the length of the project. The cost for location specific items such as bridges, highway ramps, drainage structures, and any other

special components are added to each project, as appropriate. The following is a detailed description of the costing worksheet/methodology for the Roadway Impact Fee CIP.

1. Overview of Roadway Impact Fee CIP Costing Worksheets

For each project a specific costing worksheet was developed (see **Appendix A**). Each worksheet contained the following four (4) main components:

- Project Information,
- Construction Pay Items,
- Construction Component Allowances and
- Summary of Costs and Allowances

Project Information

Construction Pay Items

Construction Component Allowances

Summary of Costs and Allowances

City of Garland
2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 8/31/2016

Project Information:		**Description:**	**Project No.**	**A-1**
Name:	Arapaho Rd (1)	**This project consists of the construction of the median lanes to complete the six lane divided regional arterial**		
Limits:	Elm Ridge Ln to Shiloh Rd			
Impact Fee Class:	B (1/3)			
Ultimate Class:	Regional Arterial			
Length (lf):	4,075			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
110	Unclassified Street Excavation	5,886	cy	$ 8.00	$ 47,089
210	6" Lime Stabilization Subgrade	11,319	sy	$ 2.60	$ 29,431
310	Street Cut Paving Concrete - Class C Construct	10,414	sy	$ 70.00	$ 728,972
410	Curb 6" Integral	8,150	lf	$ 1.95	$ 15,893
510	Sidwalk 4" Class A Construct	0	sy	$ 43.00	$ -
610	Turn Lanes and Median Openings	926	sy	$ 70.00	$ 64,830
				Paving Construction Cost Subtotal:	**$ 886,214**

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 44,311
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 26,586
	Roadway Drainage	None Anticipated	0%	$ -
	Illumination		0%	$ -
	Special Drainage Structures	None Anticipated	0%	$ -
	Water	None Anticipated	0%	$ -
	Sewer	None Anticipated	0%	$ -
√	Landscaping and Irrigation		4%	$ 35,449
	Miscellaneous:		$0	$ -
**Allow ances based on % of Paving Construction Cost Subtotal		**Allowance Subtotal:**		**$ 106,346**

Paving and Allowance Subtotal:		**$ 992,559**
Construction Contingency:	10%	$ 99,256
Mobilization	5%	$ 49,628
Prep ROW	5%	$ 49,628
Construction Cost TOTAL:		**$ 1,192,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 1,192,000**
Engineering/Survey/Testing:		16%	$ 190,720
Previous City contribution			
Other			
ROW/Easement Acquisition:	No ROW Acquisition Costs included	0%	$ -
		Impact Fee Project Cost TOTAL:	**$ 1,383,000**

NOTE: The planning level cost projections listed in this appendix have been developed for Impact Fee calculations only and should not be used for any future Capital Improvement Planning within the City of Garland.
The planning level cost projections shall not supersede the City's design standards contained or the determination of the City Engineer for a specific project.

2. Project Information

In order to correctly estimate the cost of a roadway project, several attributes are first identified:

- Project Number – Identifies which Service Area the project is in with a corresponding number. The corresponding number does not represent any prioritizations and is used only to identify projects. For example, Project A-26 is in Service Area A and is the 26th project on the list.
- Name – A unique identifier for each project.
- Limits – Represents the beginning and ending location for each project.
- Impact Fee Class – The costing class to be used in the analysis. The impact fee class provides the width for the various elements in the roadway. The construction costs are variable, based on the proposed Thoroughfare Plan classification of the roadway. For example, A represents regional arterial roads. An A Impact Fee Class means the entire roadway is to be constructed. Additional classifications are utilized in cases where a portion of the facility currently exists and the road is only to be widened. The following notations are used for these projects:
  - "(1/2)" for facilities where half the facility still needs to be constructed;
  - "(1/3)" for future six-lane regional arterial facilities where two additional median lanes are needed
- Ultimate Class – The functional classification on Garland's Master Thoroughfare Plan.
- Length (ft) – The distance measured in feet that is used to cost out the project.
- Service Area(s) – Represents the service area(s) where the project is located. In some cases the project is partially located in the ETJ.
- Description – Used to describe the project type assumed in the costing such as a widening or reconstruction.

3. Construction Pay Items

A typical roadway project consists of a number of costs, including the following: planning, survey, design engineering, permitting, right-of way acquisition, and construction and inspection. While the construction cost component of a project may actually consist of approximately 100 various pay items, a simplified approach was used for developing the

conceptual level project costs. The construction pay items for impact fee CIP roads are shown below:

- Unclassified street excavation
- Concrete pavement
- Lime Stabilized Subgrade
- Curb
- Sidewalk
- Turn lanes and median openings

4. Construction Component Allowances

A percentage of the paving construction cost is allotted for various major construction component allowances, as appropriate. These allowances include traffic control, pavement markings and signage, roadway drainage, illumination, minor water and sewer adjustments, landscaping and irrigation. These allowance percentages are also based on historical data.

In addition, lump sum dollar allowances are provided for special drainage structures, railroad crossings, and intersection improvements where needs are anticipated. The paving and allowance subtotal is given a fifteen percent (15%) contingency, five percent (5%) mobilizations, and two percent (2%) preparation of right-of-way to determine the construction cost total.

5. Summary of Cost and Allowances

To determine the total Impact Fee Project Cost, sixteen percent (16%) of the construction cost total is added for engineering, surveying, and testing.

Percentages are also allotted ROW/easement acquisition. ROW/easement acquisition was based on whether the project was an existing alignment or future alignment. For an existing alignment, the ROW/easement acquisition cost was provided an allotment equal to 10% of the construction cost total. For a new alignment, the ROW/easement acquisition cost was equal to 20% of the construction cost total. The value for ROW/easement acquisition is an estimated contribution allocation and does not represent actual ROW/easement acquisition needs. For TxDOT facilities no ROW/easement acquisition was allotted.

The Impact Fee Project Cost Total is then the Construction Cost Total plus engineering, surveying, testing, and inspection; plus ROW/easement acquisition; and minus roadway escrow agreements.

E. Summary of Roadway Impact Fee CIP Costs

Tables 4.A – 4.D are the 10-Year Roadway Impact Fee CIP project lists for each service area with planning level project costs. Individual project cost worksheets can be seen in **Appendix A**, Conceptual Level Project Cost Projections. It should be noted that these tables reflect only conceptual-level opinions or assumptions regarding the portions of future project costs that are recoverable through impact fees. Actual project costs are likely to change with time and are dependent on market and economic conditions that cannot be predicted.

The Roadway Impact Fee CIP establishes the list of projects for which Impact Fees may be utilized. Projects not included in the Roadway Impact Fee CIP are not eligible to receive impact fee funding. The cost projections utilized in this study should not be utilized for the City's construction CIP.

Table 4.A – 10-Year Roadway Impact Fee CIP with Conceptual Level Cost Projections – Service Area A

Proj. #	Class	Roadway	Limits	Length (mi)	% In Service Area	Cost in Service Area
A-1	B (1/3)	Arapaho Rd (1)	Elm Ridge Ln to Shiloh Rd	0.77	100%	$ 1,383,000
A-2	B (1/3)	Arapaho Rd (2)	Shiloh Rd to N. Garland Ave	0.68	100%	$ 1,210,000
A-3	C1	Brand Rd (1)	Bellaire Rd to Belt Line Rd	0.64	100%	$ 4,092,000
A-4	C1	Brand Rd (2)	Naaman Forest Blvd to West Brand Rd	0.47	100%	$ 8,172,000
A-5	C1	Brand Rd (3)	Murfield Rd to PGBT N Frontage Rd	0.56	100%	$ 3,590,000
A-6	B (1/3)	Campbell Rd (1)	N. Jupiter Rd to Shiloh Rd	1.06	100%	$ 1,901,000
A-7	B (1/3)	Campbell Rd (2)	Shiloh Rd to PGBT S Frontage Rd	0.41	100%	$ 740,000
A-8	B (1/3)	Campbell Rd (3)	Lookout Dr to PGBT N Frontage Rd	0.59	100%	$ 1,065,000
A-9	B (1/3)	Campbell Rd (4)	Lookout Dr to N. Garland Ave	0.64	100%	$ 1,150,000
A-10	B (1/3)	Campbell Rd (5)	N. Garland Ave to Water Oak Dr	0.52	100%	$ 929,000
A-11	B	Campbell Rd (6)	Water Oak Dr to Murphy Rd	1.24	100%	$ 11,065,000
A-12	D1	Ferris Rd	Campbell Rd to Holford Rd	0.36	100%	$ 2,258,000
A-13	A	Firewheel Parkway (1)	Lavon Dr to 530' E of Lavon Dr	0.10	100%	$ 824,000
A-14	D1	Holford Rd (1)	Naaman Forest (Future) to Arapaho Rd	0.75	100%	$ 5,347,000
A-15	C2	Holford Rd (2)	PGBT S Frontage Rd to Naaman Forest (Future)	0.33	100%	$ 2,717,000
A-16	C2	Holford Rd (3)	N City Limits to PGBT N Frontage Rd	0.99	100%	$ 8,118,000
A-17	B (1/3)	Lookout Dr (1)	Courtside Dr to Spring Dr	0.11	50%	$ 100,500
A-18	B (1/3)	Lookout Dr (2)	Spring Dr to PGBT S Frontage Rd	0.80	50%	$ 714,000
A-19	B (1/3)	Lookout Dr (3)	PGBT N Frontage Rd to Campbell Rd	0.72	100%	$ 1,107,000
A-20	F	Mapleridge (1)	Shiloh Rd to Mapleridge Dr	0.09	100%	$ 384,000
A-21	F	Mapleridge (2)	Mapleridge Dr (Existing) to Holford Rd	0.36	100%	$ 3,513,000
A-22	B (1/3)	Garland Ave (1)	N City Limits to PGBT N Frontage Rd	1.29	100%	$ 2,313,000
A-23	B (1/3)	Garland Ave (2)	Arapaho Rd to PGBT S Frontage Rd	1.14	100%	$ 2,044,000
A-24	B-S (1/3)	Garland Ave (3)	Arapaho Rd to Belt Line Rd	0.79	100%	$ 1,421,000
A-25	B (1/3)	Garland Ave (4)	Belt Line Rd to Buckingham Rd	0.97	100%	$ 1,732,000
A-26	B (1/3)	Shiloh Rd (1)	PGBT S Frontage Rd to Campbell Rd	0.37	100%	$ 657,000
A-27	B (1/3)	Shiloh Rd (2)	Campbell Rd to north bridge end	0.41	100%	$ 733,000
A-28	B (1/3)	Shiloh Rd (3)	Collins Blvd to Arapaho Rd	0.59	100%	$ 1,065,000
A-29	B (1/3)	Shiloh Rd (4)	Arapaho Rd to Belt Line Rd	1.03	100%	$ 1,836,000
A-30	B (1/3)	Shiloh Rd (5)	Belt Line Rd to Buckingham Rd	0.96	100%	$ 1,714,000
A-31	D1	Naaman Forest Blvd	W. Naaman Forest Blvd. to E. Naaman Forest Blvd.	0.33	100%	$ 2,079,000
A-32	D1	Naaman School Rd	Brand Rd to Lavon Dr	0.88	100%	$ 6,047,000
A-33	D1	Naaman Forest Blvd	Ranger to Brand Rd	0.26	100%	$ 3,904,483
I-1	Shiloh Rd and Campbell Rd		Extend WB RT lane		100%	$ 634,000
I-2	Arapaho Rd and Shiloh Rd		Add NB and SB RT lanes		100%	
I-3	Apollo Rd and Garland Ave		Add EB RT Lane		100%	
I-4	Wagon Wheel Rd and Garland Ave		WB RT Lane		100%	
I-5	Belt Line Rd and Garland Ave		WB RT Lane		100%	
I-6	Belt Line Rd and Shiloh Rd		EB RT Lane		100%	
I-7	Buckingham Rd and Plano Rd		NB RT Lane, EB and WB Dual LT Lanes		100%	
I-8	Shiloh Rd and Buckingham Rd		Add dual lefts WB, NB, and SB		50%	
					Service Area Project Cost Subtotal	**$ 86,558,983**
					2016 Roadway Impact Fee Study Cost Per Service Area	**$ 15,840**
					Total Cost in SERVICE AREA A	**$ 86,574,823**

a. These planning level cost projections have been developed for Impact Fee calculations only and should not be used for any future Capital Improvement Projects within the City of Garland.

b. These planning level cost projections shall not supersede the City's design standards or the determination of the City Engineer for a specific project.

Table 4.B – 10-Year 10-Year Roadway Impact Fee CIP with Conceptual Level Cost Projections – Service Area B

Proj. #	Class	Roadway	Limits	Length (mi)	% In Service Area	Cost in Service Area
B-1	E	Kings Rd	Marquis Dr to Kings Rd (Existing)	0.10	100%	$ 551,000
B-2	E	Leon Rd (1)	Shiloh Rd to S. Garland Ave	0.18	100%	$ 959,000
B-3	E	Leon Rd (2)	Leon Rd (Existing) to Millay Blvd (Future)	0.04	100%	$ 212,000
B-4	E	Marketplace ext (1)	Towngate Blvd to Northwest Hwy	0.26	100%	$ 1,398,000
B-5	E	Marketplace ext (2)	Pendleton Dr to Marketplace Dr	0.13	100%	$ 666,000
B-6	E	Millay Blvd (Future)	Leon Rd to Millay Blvd (Existing)	0.22	100%	$ 1,180,000
B-7	B (1/3)	Shiloh Rd (6)	Buckingham Rd to W Walnut St	1.00	100%	$ 1,784,000
B-8	B	Shiloh Rd (7)	W Walnut St to Forest Ln	0.50	100%	$ 4,590,000
B-9	B	Shiloh Rd (8)	Forest Ln to Miller Rd	1.01	100%	$ 8,552,000
B-10	B	Shiloh Rd (9)	Miller Rd to Kingsley Rd	1.07	100%	$ 9,087,000
B-11	B	Shiloh Rd (10)	Kingsley Rd to McCree Rd	0.50	100%	$ 4,129,000
B-12	B	Shiloh Rd (11)	Garland Ave to IH-635 WBFR	0.29	100%	$ 2,368,000
B-13	F	New road east of Industrial Ln	Kingsley Rd to McCree Rd	0.50	100%	$ 2,260,000
B-14	D2	Saturn Rd	Saturn Rd (Existing) to Miller Rd	0.31	100%	$ 2,215,000
B-15	E	Sherwin	Sherwin St (Existing) to Wood Dr	0.13	100%	$ 2,432,000
I-9	Plano Rd and Walnut St		NB an SB RT Lane		100%	$ 379,000
I-10	Forest Ln and Jupiter Rd		EB and NB RT Lane, NB Dual LT Lanes		100%	
I-11	Forest Ln and Shiloh Rd		SB and NB RT Lanes, Dual NB LT Lanes		100%	
I-12	Avenue B (SH 78) and First St		SB RT Lane		100%	
I-13	Avenue D and First St		EB RT Lane, EB Dual LT Lanes		100%	
I-15	Jupiter Rd and Miller Rd		SB RT Lane		100%	
I-16	Miller Rd and Shiloh Rd		SB RT Lane		100%	
I-17	Garland Ave and Miller Rd		SB, EB, and WB RT Lanes		100%	
I-18	Glenbrook Dr and Miller Rd		EB and WB LT Lanes		100%	
I-19	First St and Miller Rd		Add EB RT & NB, SB Dual Lefts		33%	
I-20	Broadway Blvd and First St		Triple LT from NB First St		50%	
I-21	Jupiter Rd and Kingsley Rd		WB RT Lane		100%	
I-22	Garland Ave and Kingsley Rd		NB RT Lane		100%	
I-24	Garland Ave and MCree Rd / Shiloh Rd		SWB Dual LT Lanes		100%	
					Service Area Project Cost Subtotal	**$ 42,762,000**
					2016 Roadway Impact Fee Study Cost Per Service Area	**$ 15,840**
					Total Cost in SERVICE AREA B	**$ 42,777,840**

a. These planning level cost projections have been developed for Impact Fee calculations only and should not be used for any future Capital Improvement Projects within the City of Garland.

b. These planning level cost projections shall not supersede the City's design standards or the determination of the City Engineer for a specific project.

Table 4.C – 10-Year Roadway Impact Fee CIP with Conceptual Level Cost Projections – Service Area C

Proj. #	Class	Roadway	Limits	Length (mi)	% In Service Area	Cost in Service Area
C-1	D1	Castle Dr (1)	N. First St to Lavon Dr	0.15	100%	$ 953,000
C-2	D1	Castle Dr (2)	Lavon Dr to Mars Dr	0.38	100%	$ 2,390,000
C-3	E	Castle Dr (3)	Mars Dr to Country Club Rd	0.46	100%	$ 2,424,000
C-4	E	Castle Dr (4)	Country Club Rd to Centerville Rd	1.05	100%	$ 5,536,000
C-5	E	Castle Dr (5)	2660' south of Firewheel Pkwy to Firewheel Pkwy	0.50	50%	$ 1,329,500
C-6	E	Castle Dr (6)	Firewheel Pkwy to Miles Rd	0.84	50%	$ 2,216,500
C-7	D2	Crist Rd	Lavon Dr to Naaman School Rd	0.62	100%	$ 4,436,000
C-8	A	Firewheel Parkway (2)	530' E of Lavon Dr to 310' S of Town Center Blvd	0.77	100%	$ 6,292,000
C-9	C1	Pleasant Valley Rd (1)	Creek Meadow Ln to Miles Rd	0.50	100%	$ 10,773,000
C-10,D-5	B (1/3)	E. Miller Rd	Centerville Rd to 2,815' E of Centerville Rd	0.53	50%	$ 477,500
C-11	C1	Pleasant Valley Rd (2)	Firewheel Pkwy to Creek Meadow Ln	0.58	100%	$ 3,603,239
C-12,D-21	B	Miller Rd Bridge	2,815' E of Centerville Rd to East City Limits	0.04	50%	$ 1,371,942
I-14	Centerville Rd and SH 66		Add dual LT lanes NB and WB		100%	$ 141,000
I-19	First St and Miller Rd		Add EB RT & NB, SB Dual Lefts		33%	
					Service Area Project Cost Subtotal	**$ 41,943,681**
					2016 Roadway Impact Fee Study Cost Per Service Area	**$ 15,840**
					Total Cost in SERVICE AREA C	**$ 41,959,520**

a. These planning level cost projections have been developed for Impact Fee calculations only and should not be used for any future Capital Improvement Projects within the City of Garland.

b. These planning level cost projections shall not supersede the City's design standards or the determination of the City Engineer for a specific project.

Table 4.D – 10-Year Roadway Impact Fee CIP with Conceptual Level Cost Projections – Service Area D

Proj. #	Class	Roadway	Limits	Length (mi)	% In Service Area	Cost in Service Area
D-1	S	Bobtown Rd (1)	Rowlett Rd to Bobtown Rd (Existing)	0.17	100%	$ 929,000
D-2	E-S	Bobtown Rd (2)	Bobtown Rd (Future) to Waterhouse Blvd	0.34	100%	$ 1,779,000
D-3	E	Bobtown Rd (3)	400' S of High Dr to Lyons Rd	0.38	100%	$ 1,995,000
D-4	E	Bobtown Rd (4)	Lyons Rd to South City Limits	0.50	50%	$ 1,327,000
C-10,D-5	B (1/3)	E. Miller Rd	Centerville Rd to 2,815' E of Centerville Rd	0.53	50%	$ 477,500
D-6	F	E. Oates Rd (Future)	Country Club Rd to E. Oates Rd (Existing)	0.58	100%	$ 3,219,000
D-7	B (1/3)	La Prada Dr	IH 635 E frontage road to Northwest Hwy	0.32	50%	$ 283,500
D-8	E	Locust Grove Rd	290' E of Oceanport Dr to East City Limits	0.54	100%	$ 2,859,000
D-9	B	Lyons Rd (1)	Bobtown Rd to Guthire Rd	0.61	100%	$ 5,014,000
D-10	B	Lyons Rd (2)	Guthire Rd to Lyons Rd (Future)	0.17	100%	$ 1,366,000
D-11	B	Lyons Rd (Future) (3)	Lyons Rd to South City Limits	0.23	100%	$ 2,811,000
D-12	F	Rosehill Rd (1)	Rosehill Rd (Existing) to Wynn Joyce Rd	0.30	100%	$ 1,364,000
D-13	B (1/3)	Rosehill Rd (2)	Bobtown Rd to IH 30 N loop	0.29	100%	$ 513,000
D-14	A (1/3)	Rowlett Rd (1)	Broadway Blvd to Rosehill Rd	0.70	100%	$ 1,254,000
D-15	A (1/3)	Rowlett Rd (2)	Rosehill Rd to Roan Rd	0.99	100%	$ 1,781,000
D-16	A	Rowlett Rd (3)	Roan Rd to City Limits	0.30	100%	$ 2,486,000
D-17	B (1/3)	S. Country Club Rd	Rowlett Rd to Bobtown Rd	0.33	100%	$ 599,000
D-18	E	Zion Rd	Locust Grove Rd to Bobtown Rd	0.20	100%	$ 1,075,000
D-19	B	Northwest Hwy	Centerville Rd to La Prada Dr	1.22	100%	$ 2,904,782
D-20	E	Dairy Rd	Celeste Rd to Broadway Blvd	0.49	100%	$ 3,597,758
C-12,D-21	B	Miller Rd Bridge	2,815' E of Centerville Rd to East City Limits	0.04	50%	$ 1,371,942
I-19	First St and Miller Rd		Add EB RT & NB, SB Dual Lefts		33%	
I-20	Broadway Blvd and First St		Triple LT from NB First St		50%	
I-23	Broadway Blvd and Centerville Rd		Dual Lefts SWB, NEB and NWB		100%	$ 236,000
I-25	Broadway Blvd and Rowlett Rd		Add EB RT Lane		100%	
I-26	Broadway Blvd and IH-30 EBFR		Dual NB RT Lanes		100%	
					Service Area Project Cost Subtotal	**$ 39,242,482**
					2016 Roadway Impact Fee Study Cost Per Service Area	**$ 15,840**
					Total Cost in SERVICE AREA D	**$ 39,258,321**

a. These planning level cost projections have been developed for Impact Fee calculations only and should not be used for any future Capital Improvement Projects within the City of Garland.

b. These planning level cost projections shall not supersede the City's design standards or the determination of the City Engineer for a specific project.

F. Service Unit Calculation

The basic service unit for the computation of Garland's Roadway Impact Fees is the vehicle-mile of travel during the afternoon peak-hour (as explained on Pg. 17). To determine the cost per service unit, it is necessary to project the growth in vehicle-miles of travel for the service area for the ten-year period.

The growth in vehicle-miles from 2016 to 2026 is based upon projected changes in residential units and employment for the period. In order to determine this growth, estimates of residential units, basic employment, service employment, and retail employment for 2016 were made, along with growth projections for each of these demographic statistics through 2026. The Land Use Assumptions section of this report details the growth estimates used for impact fee determination.

For the purposes of impact fees, all developed and developable land is categorized as either residential or non-residential. For residential land uses, the existing and projected number of dwelling units are estimated. The number of dwelling units in each service area is multiplied by a *transportation demand factor* (discussed in more detail below) to compute the vehicle-miles of travel that occur during the afternoon peak hour. This factor indicates the average amount of demand created by the residential land uses in the service area.

For non-residential land uses, the process is similar. The Land Use Assumptions section of this report provides existing and projected number of building square footages for three (3) categories of employment – basic, service, and retail. These categories correspond to an aggregation of other specific land use categories based on the North American Industrial Classification System (NAICS).

Building square footage is the most common independent variable for the estimation of non-residential trips in the *Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition*. This characteristic is more appropriate than the number of employees, because building square footage is tied more closely to trip generation and is known at the time of application for any development that would require the assessment of an impact fee.

The existing and projected land use assumptions for the dwelling units and the square footage of basic, service, and retail land uses provide the basis for the projected increase in vehicle-miles of travel. As noted earlier, a *transportation demand factor* is applied to these values and then summed to calculate the total peak hour vehicle-miles of demand for each service area.

The *transportation demand factors* are aggregate rates derived from three sources – the *ITE Trip Generation Manual, 9th Edition*, the National Household Travel Survey performed by the FHWA, and NCTCOG. The *ITE Trip Generation Manual, 9th Edition* provides the number of trips that are produced or attracted to the land use for each dwelling unit, square foot of building, or other corresponding unit. For the retail category of land uses, the rate is adjusted to account for the fact that a percentage of retail trips are made by people who would otherwise be traveling past that particular establishment anyway, such as a trip between work and home. For example, a stop at a nearby supermarket on the way home from work does not create a new trip onto the roadway network. These trips are called pass-by trips, and since the travel demand is accounted for in the land use calculations relative to the primary trip, it is necessary to discount the retail trip generation rates to avoid double counting trips.

The next component of the *transportation demand factor* accounts for the length of each trip. The average trip length for each category is based on the National Household Travel Survey (NHTS) conducted by the Federal Highway Administration (FHWA). A dataset for the Dallas-Fort Worth (DFW) area was pulled from the NHTS to estimate trip lengths in Garland. Trip lengths for some land uses were adjusted based on trip length information obtained from NCTCOG.

The computation of the *transportation demand factor* is based on the following equation:

$$TDF = T * (1 - P_b) * L_{\max}$$

$$\text{where...} L_{\max} = \min(L * OD \text{ or } 6)$$

Variables:

TDF = Transportation Demand Factor,
T = Trip Rate (peak hour trips / unit),
P_b = Pass-By Discount (% of trips),
L_{max} = Maximum Trip Length (miles),
L = Average Trip Length (miles), and
OD = Origin-Destination Reduction (50%)

The maximum trip length was limited to six (6) miles based on the maximum trip length within each service area. Chapter 395 of the Texas Local Government Code allows for a service area of six (6) miles, and the service areas within Garland are closely approximated with a six (6) mile distance.

The adjustment made to the average trip length statistic in the computation of the maximum trip length is the origin-destination reduction. This adjustment is made because the Roadway Impact Fee is charged to both the origin and destination end of the trip. For example, impact fee methodology will account for a trip from home to work within Garland to both residential and non-residential land uses. To avoid counting these trips twice as both residential and non-residential trips, a 50% origin-destination (OD) reduction factor is applied. Therefore, only half of the trip length is assessed to each land use, and the total trip is only counted once.

Table 5 shows the derivation of the *Transportation Demand Factor* for the residential land uses and the three (3) non-residential land use categories. The values utilized for all variables shown in the *transportation demand factor* equation are also shown in the table.

Table 5. Transportation Demand Factor Calculations

Variable	Residential	Basic	Service	Retail
T	1.00	0.97	1.49	3.71
P_b	0%	0%	0%	34%
L	9.79	14.65	14.65	5.60
L_{max} *	4.90	6.00	6.00	2.80
TDF	**4.90**	**5.82**	**8.94**	**6.86**

* L_{max} is less than 6 miles for residential and retail land uses; therefore this lower trip length is used for calculating the TDF for these land uses.

Variables:

TDF = Transportation Demand Factor,
T = Trip Rate (peak hour trips / unit),
P_b = Pass-By Discount (% of trips),
L_{max} = Maximum Trip Length (miles),
L = Average Trip Length (miles), and
OD = Origin-Destination Reduction (50%)

The application of the demographic projections and the *transportation demand factors* are presented in the 10-Year Growth Projections in **Table 7**. This table shows the total vehicle-miles by service area for the years 2016 and 2026. These estimates and projections lead to the Vehicle-Miles of Travel for both 2016 and 2026.

Table 6. 10-Year Growth Projections

2016- 2026 Growth Projections[1]

SERVICE AREA	RESIDENTIAL VEHICLE-MILES					NON-RESIDENTIAL SQUARE FEET[5]			TRANS. DEMAND FACTOR[6]			NON-RESIDENTIAL VEHICLE-MILES[10]				TOTAL VEHICLE MILES[11]
	Single Family Units	Trip Rate TDF[2]	Multi-Family Units	Trip Rate TDF[3]	VEHICLE MILES[4]	BASIC	SERVICE	RETAIL	BASIC[7]	SERVICE[8]	RETAIL[9]	BASIC	SERVICE	RETAIL	TOTAL	
		1.00		*0.62*					*0.97*	*1.49*	*3.71*					
A	896	4.90	523	3.03	5,975	412,000	1,613,000	1,172,000	5.82	8.94	6.86	2,398	14,420	8,040	24,858	30,833
B	281		467		2,792	513,000	489,000	251,000				2,986	4,372	1,722	9,080	11,872
C	518		298		3,441	152,000	378,000	457,000				885	3,379	3,135	7,399	10,840
D	689		310		4,315	185,000	437,000	710,000				1,077	3,907	4,871	9,855	14,170
Totals	**2,384**		**1,598**		**16,524**	**1,262,000**	**2,917,000**	**2,590,000**				**7,346**	**26,078**	**17,768**	**51,192**	**67,716**

VEHICLE-MILES OF INCREASE (2016 - 2026)

SERVICE AREA	VEH-MILES
A	30,833
B	11,872
C	10,840
D	14,170

Notes:

[1] From *City of Garland 2016 Land Use Assumptions for Roadway Impact Fees*

[2] Transportation Demand Factor for each Service Area (from LUVMET) using Single Family Detached Housing land use and trip generation rate

[3] Transportation Demand Factor for each Service Area (from LUVMET) using *Apartment/Multi-family land use and trip generation rate*

[4] Calculated by multiplying TDF by the number of dwelling units

[5] From *City of Garland 2016 Land Use Assumptions for Roadway Impact Fees*

[6] *Trip generation rate* and Transportation Demand Factors from LUVMET for each land use

[7] 'Basic' corresponds to General Light Industrial land use and *trip generation rate*

[8] 'Service' corresponds to General Office land use and *trip generation rate*

[9] 'Retail' corresponds to Shopping Center land use and *trip generation rate*

[10] Calculated by multiplying Transportation Demand Factor by the number of thousand square feet for each land use

[11] Residential plus non-residential vehicle-mile totals for each Service Area

V. ROADWAY IMPACT FEE CALCULATION

A. Maximum Assessable Impact Fee Per Service Unit

This section presents the maximum assessable impact fee rate calculated for each service area. The maximum assessable impact fee is the sum of the eligible Roadway Impact Fee CIP costs for the service area divided by the growth in travel attributable to new development projected to occur within the 10-year period. A majority of the components of this calculation have been described and presented in previous sections of this report. The purpose of this section is to document the computation for each service area and to demonstrate that the guidelines provided by Chapter 395 of the Texas Local Government Code have been addressed. **Table 7** illustrates the computation of the maximum assessable impact fee computed for each service area. Each row in the table is numbered to simplify explanation of the calculation. The calculation of the maximum assessable impact fee is shown in **Table 8**.

Table 7. Maximum Assessable Roadway Impact Fee Computation

Line	Title	Description
1	*Total Vehicle-Miles of Capacity Added by the Roadway Impact Fee CIP*	The total number of vehicle-miles added to the service area based on the capacity, length, and number of lanes in each project (from **Appendix B** – CIP Units of Supply)

Each project identified in the CIP will add a certain amount of capacity to the City's roadway network based on its length and classification. This line displays the total amount added within each service area.

2	*Total Vehicle-Miles of Existing Demand*	A measure of the amount of traffic currently using the roadway facilities upon which capacity is being added. (from **Appendix B** – CIP Units of Supply)

A number of facilities identified in the CIP have traffic currently utilizing a portion of their existing capacity. This line displays the total amount of capacity along these facilities currently being used by existing traffic.

3	*Total Vehicle-Miles of Existing Deficiencies*	Number of vehicle-miles of travel that are not accommodated by the existing roadway system (from **Appendix C** – Existing Roadway Facilities Inventory)

In order to ensure that existing deficiencies on the City's roadway network are not recoverable through impact fees, this line is based on the entire roadway network within the service area. Any roadway within the service area that is deficient – even those not identified on the Roadway Impact Fee CIP – will have these additional trips removed from the calculation.

4	*Net Amount of Vehicle-Miles of Capacity Added*	A measurement of the amount of vehicle-miles added by the Roadway Impact Fee CIP that will not be utilized by existing demand **(Line 1 – Line 2 – Line 3)**

This calculation identifies the portion of the Roadway Impact Fee CIP (in vehicle-miles) that may be recoverable through the collection of impact fees.

5	*Total Cost of the Roadway Impact Fee CIP within the Service Area*	The total cost of the projects within each service area (from **Table 5**: 10-Year Roadway Impact Fee Capital Improvements Plan with Conceptual Level Cost Opinions)

This line simply identifies the total cost of all of the projects identified in each service area.

6	*Cost of Net Capacity Supplied*	The total Roadway Impact Fee CIP cost (**Line 5**) prorated by the ratio of Net Capacity Added (**Line 4**) to Total Capacity Added (**Line 1**). **[(Line 4 / Line 1) * (Line 5)]**

Using the ratio of vehicle-miles added by the Roadway Impact Fee CIP available to serve future growth to the total vehicle-miles added, the total cost of the CIP is reduced to the amount available for future growth (i.e. excluding existing usage and deficiencies).

7	*Cost to Meet Existing Needs and Usage*	The difference between the Total Cost of the Roadway Impact Fee CIP (**Line 5**) and the Cost of the Net Capacity supplied (**Line 6**). **(Line 5 – Line 6)**

This line is provided for information purposes only – it is to present the portion of the total cost of the Roadway Impact Fee CIP that is required to meet existing demand.

8	*Total Vehicle-Miles of New Demand over Ten Years*	Based upon the growth projection provided in the **Land Use Assumptions**, an estimate of the number of new vehicle-miles within the service area over the next ten years. (from **Table 7**)

This line presents the amount of growth (in vehicle-miles) projected to occur within each service area over the next ten years.

9	*Percent of Capacity Added Attributable to New Growth*	The result of dividing Total Vehicle-Miles of New Demand (**Line 8**) by the Net Amount of Capacity Added (**Line 4**), limited to 100% (**Line 10**). This calculation is required by Chapter 395 to ensure capacity added is attributable to new growth.
10	*Chapter 395 Check*	

In order to ensure that the vehicle-miles added by the Roadway Impact Fee CIP do not exceed the amount needed to accommodate growth beyond the ten-year window, a comparison of the two values is performed. If the amount of vehicle-miles added by the Roadway Impact Fee CIP exceeds the growth projected to occur in the next ten years, the Roadway Impact Fee CIP cost is reduced accordingly.

11	*Cost of Roadway Impact Fee CIP Attributable to New Growth*	The result of multiplying the Cost of Net Capacity Added (**Line 6**) by the Percent of Capacity Added Attributable to New Growth, limited to 100% (**Line 9**).

This value is the total Roadway Impact Fee CIP project costs (excluding financial costs) that may be recovered through impact fees. This line is determined considering the limitations to impact fees required by the Texas legislature.

B. Plan for Financing and the Ad Valorem Tax Credit

Chapter 395 of the Texas Local Government Code requires the Roadway Impact Fee Capital Improvements Plan for Roadway Impact Fees to contain specific enumeration of a plan for awarding the impact fee credit. Section 395.014 of the Code requires:

> (A) a credit for the portion of ad valorem tax and utility service revenues generated by new service units during the program period that is used for the payment of improvements, including the payment of debt, that are included in the capital improvements plan; or
>
> (B) In the alternative, a credit equal to 50 percent of the total projected cost of implementing the capital improvements plan…"

The plan is summarized, as prepared by NewGen Strategies in **Appendix D** and **Appendix E**, Plan for Awarding the Transportation Impact Fee Credit. The following table summarizes the portions of **Table 8** that utilize this credit calculation.

Line	Title	Description
12	*Financing Costs*	(from **Appendix D** – Plan for Awarding the Transportation Impact Fee Credit)
13	*Interest Earnings + Principal Paid on Existing Debt*	(from **Appendix D** – Plan for Awarding the Transportation Impact Fee Credit)
14	*Existing Impact Fee Fund Balance*	(from **Appendix D** – Plan for Awarding the Transportation Impact Fee Credit)
15	*Cost of the Roadway Impact Fee CIP and Financing Attributable to New Growth*	The sum of the Cost of Capacity Added Attributable to New Growth, Financing Costs, and Interest Earnings. (**Line 11 + Line 12 + Line 13 + Line 14**)
16	*Pre-Credit Maximum Fee Per Service Unit*	Found by dividing the Cost of the TIP and Financing Attributable to New Growth (**Line 15**) by the Total Vehicle-Miles of New Demand Over Ten Years (**Line 8**). (**Line 15 / Line 8**)
17	*Credit for Ad Valorem Taxes*	A credit for the portion of ad valorem taxes projected to be generated by the new service units, as per Section 395.014 of the Local Government Code. (from **Appendix D** – Plan for Awarding the Transportation Impact Fee Credit)
18	*Recoverable Cost of the Roadway Impact Fee CIP and Financing*	The difference between the Cost of the TIP and Financing Attributable to New Growth (**Line 15**) and the Credit for Ad Valorem Taxes (**Line 17**). (**Line 15 + Line 17**)
19	*Maximum Assessable Fee Per Service Unit*	Found by dividing the Recoverable Cost of the TIP and Financing (**Line 18**) by the Total Vehicle-Miles of New Demand Over Ten Years (**Line 8**). (**Line 18 / Line 8**)

Table 8. Maximum Assessable Roadway Impact Fee

	SERVICE AREA:	A	B	C	D
1	TOTAL VEH-MI OF CAPACITY ADDED BY THE ROADWAY IMPACT FEE CIP (FROM ROADWAY IMPACT FEE CIP SERVICE UNITS OF SUPPLY, **APPENDIX B)**	110,133	27,381	21,086	33,845
2	TOTAL VEH-MI OF EXISTING DEMAND (FROM ROADWAY IMPACT FEE CIP SERVICE UNITS OF SUPPLY, **APPENDIX B**)	27,386	9,268	3,783	6,736
3	TOTAL VEH-MI OF EXISTING DEFICIENCIES (FROM EXISTING ROADWAY FACILITIES INVENTORY, **APPENDIX C**)	305	4,758	1,591	28
4	NET AMOUNT OF VEH-MI OF CAPACITY ADDED (LINE 1 - LINE 2 - LINE 3)	82,442	13,355	15,712	27,081
5	TOTAL COST OF THE ROADWAY IMPACT FEE CIP WITHIN SERVICE AREA (FROM **TABLES 4A TO 4E**)	$ 86,574,823	$ 42,776,840	$ 41,959,520	$ 39,258,321
6	COST OF NET CAPACITY SUPPLIED (LINE 4 / LINE 1) * (LINE 5)	$ 64,807,111	$ 20,864,274	$ 31,265,673	$ 31,412,457
7	COST TO MEET EXISTING NEEDS AND USAGE (LINE 5 - LINE 6)	$ 21,767,712	$ 21,912,566	$ 10,693,847	$ 7,845,864
8	TOTAL VEH-MI OF NEW DEMAND OVER TEN YEARS (FROM **TABLE 7** AND **LAND USE ASSUMPTIONS**)	30,833	11,872	10,840	14,170
9	PERCENT OF CAPACITY ADDED ATTRIBUTABLE TO GROWTH (LINE 8 / LINE 4)	37.3%	88.8%	68.9%	52.3%
10	IF LINE 8 > LINE 4, REDUCE LINE 9 TO 100%, OTHERWISE NO CHANGE	37.3%	88.8%	68.9%	52.3%
11	COST OF ROADWAY IMPACT FEE CIP ATTRIBUTABLE TO GROWTH (LINE 6 * LINE 10)	$ 24,173,052	$ 18,527,475	$ 21,542,049	$ 16,428,715
12	FINANCING COSTS (FROM **APPENDIX D)**	$ 10,530,329	$ 8,175,922	$ 9,115,235	$ 6,799,841
13	INTEREST EARNINGS + PRINCIPAL PAID ON EXISTING DEBT (FROM **APPENDIX D**)	$ (1,354,039)	$ (1,012,470)	$ (1,227,386)	$ (973,044)
14	EXISTING IMPACT FEE FUND BALANCE (FROM **APPENDIX D**)	$ (1,259,298)	$ (908,960)	$ (502,053)	$ (1,113,622)
15	COST OF THE ROADWAY IMPACT FEE CIP AND FINANCING ATTRIBUTABLE TO NEW GROWTH (LINE 11 + LINE 12 + LINE 13 + LINE 14)	$ 32,090,045	$ 24,781,968	$ 28,927,845	$ 21,141,890
16	PRE-CREDIT MAXIMUM FEE PER SERVICE UNIT (LINE 15 / LINE 8)	$ 1,041	$ 2,087	$ 2,669	$ 1,492
17	CREDIT FOR AD VALOREM TAXES (FROM **APPENDIX D**)	$ (269,345)	$ (77,232)	$ (85,047)	$ (88,284)
18	RECOVERABLE COST OF ROADWAY IMPACT FEE CIP AND FINANCING (LINE 15 + LINE 17)	$ 31,820,700	$ 24,704,735	$ 28,842,799	$ 21,053,606
19	MAXIMUM ASSESSABLE FEE PER SERVICE UNIT (LINE 18 / LINE 8)	$ 1,032	$ 2,081	$ 2,661	$ 1,486

C. Service Unit Demand Per Unit of Development

The Roadway Impact Fee is determined by multiplying the impact fee rate by the number of service units projected for the proposed development. For this purpose, the City will utilize the Land Use/Vehicle-Mile Equivalency Table (LUVMET), presented in **Table 9**. This table lists the predominant land uses that may occur within the City of Garland. For each land use, the development unit that defines the development's magnitude with respect to transportation demand is shown. Although every possible use cannot be anticipated, the majority of local uses are found in this table. The descriptions for each land use are presented in **Table 10**. If the exact use is not listed, one similar in trip-making characteristics can serve as a reasonable proxy. The individual land uses are grouped into categories, such as residential, office, commercial, industrial, and institutional.

The trip rates presented for each land use is a fundamental component of the LUVMET. The trip rate is the average number of trips generated during the afternoon peak hour by each land use per development unit. The next column in **Table 9**, if applicable to the land use, presents the number of trips to and from certain land uses reduced by pass-by trips, as previously discussed.

The definitive source of the trip generation and pass-by statistics is the *ITE Trip Generation Manual, 9th Edition*, the latest edition. This manual utilizes trip generation studies for a variety of land uses throughout the United States, and is the standard used by traffic engineers and transportation planners for traffic impact analysis, site design, and transportation planning. However, for land uses not contained within the 9th Edition of the *ITE Trip Generation Manual,* an alternative service unit demand could be calculated by completing a trip generation study based on the procedure identified in the *ITE Trip Generation Handbook*.

To convert vehicle trips to vehicle-miles, it is necessary to multiply trips by trip length. The trip length values are based on a DFW subset of the NHTS performed by the FHWA, and on trip length information from NCTCOG. The other adjustment to trip length is the 50% origin-destination reduction to avoid double counting of trips. At this stage, another important aspect of the state law is applied – the limit on transportation service unit demand. If the adjusted trip length is above six (6) miles, the maximum trip length used for calculation is

reduced to six (6) miles. This reduction, as discussed previously, limits the maximum trip length to the approximate size of the service areas.

The remaining column in the LUVMET shows the vehicle-miles per development unit. This number is the product of the trip rate and the maximum trip length. This number, previously referred to as the *Transportation Demand Factor*, is used in the impact fee to compute the number of service units attributed to each land use category. The number of service units is multiplied by the impact fee rate (established by City ordinance) in order to determine the impact fee for a development.

Table 9 - Land Use / Vehicle-Mile Equivalency Table (LUVMET)

Land Use Category	ITE Land Use Code	Development Unit	Trip Gen Rate (PM)	Pass-by Rate	Pass-by Source	Trip Rate	NHTS Trip Length (mi)	Adj. For O-D	Adj. Trip Length (mi)	Max Trip Length (mi)	Veh-Mi Per Dev-Unit
PORT AND TERMINAL											
Truck Terminal	030	Acre	6.55			6.55	14.65	50%	7.33	6.00	39.30
INDUSTRIAL											
General Light Industrial	110	1,000 SF GFA	0.97			0.97	14.65	50%	7.33	6.00	5.82
General Heavy Industrial	120	1,000 SF GFA	0.68			0.68	14.65	50%	7.33	6.00	4.08
Industrial Park	130	1,000 SF GFA	0.85			0.85	14.65	50%	7.33	6.00	5.10
Warehousing	150	1,000 SF GFA	0.32			0.32	14.65	50%	7.33	6.00	1.92
Mini-Warehouse	151	1,000 SF GFA	0.26			0.26	14.65	50%	7.33	6.00	1.56
RESIDENTIAL											
Single-Family Detached Housing	210	Dwelling Unit	1.00			1.00	9.79	50%	4.90	4.90	4.90
Apartment/Multi-family	220	Dwelling Unit	0.62			0.62	9.79	50%	4.90	4.90	3.03
Residential Condominium/Townhome	230	Dwelling Unit	0.52			0.52	9.79	50%	4.90	4.90	2.55
Mobile Home Park / Manufactured Housing	240	Dwelling Unit	0.59			0.59	9.79	50%	4.90	4.90	2.89
Senior Adult Housing-Detached	251	Dwelling Unit	0.27			0.27	9.79	50%	4.90	4.90	1.32
Senior Adult Housing-Attached	252	Dwelling Unit	0.25			0.25	9.79	50%	4.90	4.90	1.22
Assisted Living	254	Beds	0.22			0.22	9.79	50%	4.90	4.90	1.08
LODGING											
Hotel	310	Room	0.60			0.60	6.43	50%	3.22	3.22	1.93
Motel / Other Lodging Facilities	320	Room	0.47			0.47	6.43	50%	3.22	3.22	1.51
RECREATIONAL											
Golf Driving Range	432	Tee	1.25			1.25	7.86	50%	3.93	3.93	4.91
Golf Course	430	Acre	0.30			0.30	7.86	50%	3.93	3.93	1.18
Recreational Community Center	495	1,000 SF GFA	2.74			2.74	7.86	50%	3.93	3.93	10.77
Ice Skating Rink	465	1,000 SF GFA	2.36			2.36	7.86	50%	3.93	3.93	9.27
Miniature Golf Course	431	Hole	0.33			0.33	7.86	50%	3.93	3.93	1.30
Multiplex Movie Theater	445	Screens	13.64			13.64	7.86	50%	3.93	3.93	53.61
Racquet / Tennis Club	491	Court	3.35			3.35	7.86	50%	3.93	3.93	13.17
INSTITUTIONAL											
Church	560	1,000 SF GFA	0.55			0.55	8.31	50%	4.16	4.16	2.29
Day Care Center	565	1,000 SF GFA	12.34	44%	B	6.91	3.49	50%	1.75	1.75	12.06
Primary/Middle School (1-8)	522	Students	0.16			0.16	3.49	50%	1.75	1.75	0.28
High School	530	Students	0.13			0.13	3.49	50%	1.75	1.75	0.23
Junior / Community College	540	Students	0.12			0.12	10.44	50%	5.22	5.22	0.63
University / College	550	Students	0.17			0.17	10.44	50%	5.22	5.22	0.89
MEDICAL											
Clinic	630	1,000 SF GFA	5.18			5.18	9.85	50%	4.93	4.93	25.51
Hospital	610	1,000 SF GFA	0.93			0.93	9.85	50%	4.93	4.93	4.58
Nursing Home	620	Beds	0.22			0.22	9.85	50%	4.93	4.93	1.08
Animal Hospital/Veterinary Clinic	640	1,000 SF GFA	4.72	30%	B	3.30	9.85	50%	4.93	4.93	16.25
OFFICE											
Corporate Headquarters Building	714	1,000 SF GFA	1.41			1.41	14.65	50%	7.33	6.00	8.46
General Office Building	710	1,000 SF GFA	1.49			1.49	14.65	50%	7.33	6.00	8.94
Medical-Dental Office Building	720	1,000 SF GFA	3.57			3.57	9.85	50%	4.93	4.93	17.58
Single Tenant Office Building	715	1,000 SF GFA	1.74			1.74	14.65	50%	7.33	6.00	10.44
Office Park	750	1,000 SF GFA	1.48			1.48	14.65	50%	7.33	6.00	8.88

Key to Sources of Pass-by Rates:

A: ITE Trip Generation Handbook 3rd Edition (August 2014)

B: Estimated by Kimley-Horn based on ITE rates for similar categories

C: ITE rate adjusted upward by KHA based on logical relationship to other categories

Table 9 (Cont'd). Land Use / Vehicle-Mile Equivalency Table (LUVMET)

Land Use Category	ITE Land Use Code	Development Unit	Trip Gen Rate (PM)	Pass-by Rate	Pass-by Source	Trip Rate	NHTS Trip Length (mi)	Adj. For O-D	Adj. Trip Length (mi)	Max Trip Length (mi)	Veh-Mi Per Dev-Unit
COMMERCIAL											
Automobile Related											
Automobile Care Center	942	1,000 SF Occ. GLA	3.11	40%	B	1.87	4.45	50%	2.23	2.23	4.16
Automobile Parts Sales	843	1,000 SF GFA	5.98	43%	A	3.41	4.45	50%	2.23	2.23	7.59
Gasoline/Service Station	944	Vehicle Fueling Position	13.87	42%	A	8.04	1.20	50%	0.60	0.60	4.82
Gasoline/Service Station w/ Conv Market	945	Vehicle Fueling Position	13.51	56%	B	5.94	1.20	50%	0.60	0.60	3.56
Gasoline/Service Station w/ Conv Market and Car Wash	946	Vehicle Fueling Position	13.86	56%	A	6.10	1.20	50%	0.60	0.60	3.66
New Car Sales	841	1,000 SF GFA	2.62	20%	B	2.10	4.45	50%	2.23	2.23	4.67
Quick Lubrication Vehicle Shop	941	Servicing Positions	5.19	40%	B	3.11	4.45	50%	2.23	2.23	6.92
Self-Service Car Wash	947	Stall	5.54	40%	B	3.32	1.20	50%	0.60	0.60	1.99
Automated Car Wash	948	Stall	14.12	40%	B	8.47		50%	0.00	0.00	0.00
Tire Store	848	1,000 SF GFA	4.15	28%	A	2.99	4.45	50%	2.23	2.23	6.65
Dining											
Fast Food Restaurant with Drive-Thru Window	934	1,000 SF GFA	32.65	50%	A	16.33	5.64	50%	2.82	2.82	46.05
Fast Food Restaurant without Drive-Thru Window	933	1,000 SF GFA	26.15	50%	B	13.08	5.64	50%	2.82	2.82	36.89
High Turnover (Sit-Down) Restaurant	932	1,000 SF GFA	9.85	43%	A	5.61	6.07	50%	3.04	3.04	17.03
Quality Restaurant	931	1,000 SF GFA	7.49	44%	A	4.19	6.07	50%	3.04	3.04	12.72
Coffee/Donut Shop with Drive-Thru Window	937	1,000 SF GFA	42.80	70%	A	12.84	4.53	50%	2.27	2.27	29.08
Other Retail											
Free-Standing Discount Store	815	1,000 SF GFA	4.98	30%	C	3.49	5.60	50%	2.80	2.80	9.77
Nursery (Garden Center)	817	1,000 SF GFA	6.94	30%	B	4.86	5.60	50%	2.80	2.80	13.61
Home Improvement Superstore	862	1,000 SF GFA	2.33	48%	A	1.21	5.60	50%	2.80	2.80	3.39
Pharmacy/Drugstore w/o Drive-Thru Window	880	1,000 SF GFA	8.40	53%	A	3.95	5.60	50%	2.80	2.80	11.06
Pharmacy/Drugstore w/ Drive-Thru Window	881	1,000 SF GFA	9.91	49%	A	5.05	5.60	50%	2.80	2.80	14.14
Shopping Center	820	1,000 SF GLA	3.71	34%	A	2.45	5.60	50%	2.80	2.80	6.86
Supermarket	850	1,000 SF GFA	9.48	36%	A	6.07	5.60	50%	2.80	2.80	17.00
Toy/Children's Superstore	864	1,000 SF GFA	4.99	30%	B	3.49	5.60	50%	2.80	2.80	9.77
Department Store	875	1,000 SF GFA	1.87	30%	B	1.31	5.60	50%	2.80	2.80	3.67
SERVICES											
Walk-In Bank	911	1,000 SF GFA	12.13	40%	B	7.28	4.45	50%	2.23	2.23	16.20
Drive-In Bank	912	Drive-in Lanes	33.24	47%	A	17.62	4.45	50%	2.23	2.23	39.20
Hair Salon	918	1,000 SF GLA	1.45	30%	B	1.02	4.45	50%	2.23	2.23	2.27

Key to Sources of Pass-by Rates:

A: ITE Trip Generation Handbook 3rd Edition (August 2014)

B: Estimated by Kimley-Horn based on ITE rates for similar categories

C: ITE rate adjusted upward by KHA based on logical relationship to other categories

Table 10 - Land Use Descriptions

Land Use Category	ITE Land Use Code	Land Use Description
PORT AND TERMINAL		
Truck Terminal	030	Point of good transfer between trucks or between trucks and rail
INDUSTRIAL		
General Light Industrial	110	Emphasis on activities other than manufacturing; typically employing fewer than 500 workers
General Heavy Industrial	120	Primary activity is conversion of raw materials or parts into finished products
Industrial Park	130	Area containing a number of industries or related facilities
Warehousing	150	Devoted to storage of materials but may included office and maintenance areas
Mini-Warehouse	151	Facilities with a number of units rented to others for the storage of goods
RESIDENTIAL		
Single-Family Detached Housing	210	Single-family detached homes on individual lots
Apartment/Multi-family	220	At least 4 rental dwelling units per building
Residential Condominium/Townhome	230	Single-family ownership units that have at least one other single-family owned unit within the same building
Senior Adult Housing-Detached	251	Consists of detached independent living developments that include amenities such as golf courses and swimming pools
Senior Adult Housing-Attached	252	Consists of attached independent living developments that include limited social or recreation services
Assisted Living	254	Residential settings that provide either routine general protective oversight or assistance with activities.
LODGING		
Hotel	310	Lodging facilities that typically have on-site restaurants, lounges, meeting and/or banquet rooms, or other retail shops and services
Motel / Other Lodging Facilities	320	Lodging facilities that may have small on-site restaurant or buffet area but little or no meeting space
RECREATIONAL		
Golf Driving Range	432	Facilities with driving tees for practice; may provide individual or group lessons; may have prop shop and/or refreshment facilities
Golf Course	430	May include municipal courses and private country clubs; may have driving ranges, pro shops, and restaurant/banquet facilities
Recreational Community Center	495	Category includes racquet clubs, health/fitness clubs, can include facilities such as YMCA's
Ice Skating Rink	465	Rinks for ice skating and related sports; may contain spectator areas and refreshment facilities
Miniature Golf Course	431	One or more individual putting courses; category should not be used when part of a larger entertainment center(with batting cages, video game centers, etc)
Multiplex Movie Theater	445	Movie theater with audience seating, minimum of ten screens, lobby, and refreshment area.
Racquet / Tennis Club	491	Indoor or outdoor facilities specifically designed for playing tennis
INSTITUTIONAL		
Church	560	Churches and houses of worship
Day Care Center	565	Generally includes facilities for care of pre-school aged children, generally includes classrooms, offices, eating areas, and playgrounds
Primary/Middle School (1-8)	522	Serves students who have not yet entered high school
High School	530	Serves students who have completed middle or junior high school
Junior / Community College	540	Two-year junior, community, or technical colleges
University / College	550	Four-year universities or colleges that may or may not offer graduate programs
MEDICAL		
Clinic	630	Facilities with limited diagnostic and outpatient care
Hospital	610	Medical and surgical facilities with overnight accommodations
Nursing Home	620	Rest and convalescent homes with residents who do little or no driving
Animal Hospital/Veterinary Clinic	640	Rest and convalescent homes with residents who do little or no driving
OFFICE		
Corporate Headquarters Building	714	Office building housing corporate headquarters of a single company or organization
General Office Building	710	Office buildings which house multiple tenants
Medical-Dental Office Building	720	Multi-tenant building with offices for physicians and/or dentists
Single Tenant Office Building	715	Single tenant office buildings other than corporate headquarters
Office Park	750	Office buildings (typically low-rise) in a campus setting and served by a common roadway system

Table 1 (Cont'd). Land Use Descriptions

Land Use Category	ITE Land Use Code	Land Use Description
COMMERCIAL		
Automobile Related		
Automobile Care Center	942	Automobile repair and servicing including stereo installations and upholstering
Automobile Parts Sales	843	Retail sale of auto parts but no on-site vehicle repair
Gasoline/Service Station	944	Gasoline sales without convenience store or car wash; may include repair
Gasoline/Service Station w/ Conv Market	945	Gasoline sales with convenience store where the primary business is gasoline sales
Gasoline/Service Station w/ Conv Market and Car V	946	Gasoline sales with convenience store and car washes where the primary business is gasoline sales
New Car Sales	841	New car dealerships, typically with automobile servicing, part sales, and used car sales
Quick Lubrication Vehicle Shop	941	Primary business is to perform oil changes and fluid/filter changes with other repair services not provided
Self-Service Car Wash	947	Has stalls for driver to park and wash the vehicle
Tire Store	848	Primary business is sales and installation of tires; usually do not have large storage or warehouse area
Dining		
Fast Food Restaurant with Drive-Thru Window	934	High-turnover fast food restaurant for carry-out and eat-in customers with a drive-thru window
Fast Food Restaurant without Drive-Thru Window	933	High-turnover fast food restaurant for carry-out and eat-in customers, but without a drive-thru window
High Turnover (Sit-Down) Restaurant	932	Restaurants with turnover rates less than one hour; typically includes moderately-priced chain restaurants
Quality Restaurant	931	Restaurants with turnover rates of one hour or longer; typically require reservations
Coffee/Donut Shop with Drive-Thru Window	937	Coffee and Donut restaurants with drive-through windows, hold long store hours and have limited indoor seating
Other Retail		
Free-Standing Discount Store	815	Category includes free-standing stores with off-street parking; typically offer a variety of products and services with long store hours
Nursery (Garden Center)	817	Building with a yard of planting or landscape stock; may have office, storage, shipping or greenhouse facilities
Home Improvement Superstore	862	Warehouse-type facilities offering a large variety of products and services including lumber, tool, paint, lighting, and fixtures, among other items.
Pharmacy/Drugstore w/o Drive-Thru Window	880	Facilities that primarily sell prescription and non-prescription drugs without a drive-through window
Pharmacy/Drugstore w/ Drive-Thru Window	881	Facilities that primarily sell prescription and non-prescription drugs with a drive-through window
Shopping Center	820	Integrated group of commercial establishments; planning, owned, and managed as a unit
Supermarket	850	Primary business is sale of groceries, food, and household cleaning items; may include photo, pharmacy, video rental, and/or ATM
Toy/Children's Superstore	864	Businesses specializing in child-oriented merchandise
Department Store	875	Free-standing stores that specialize in the sale of apparel, footwear, bedding, home products, jewelry, etc.
SERVICES		
Walk-In Bank	911	Banks with their own parking lots, no drive-in lanes but contain non-drive-through ATMs
Drive-In Bank	912	Banking facilities to conduct financial transactions from the vehicle; also usually apart of walk-in bank
Hair Salon	918	Facilities that specialize in cosmetic and beauty services including hair cutting and styling

VI. SAMPLE CALCULATIONS

The following section details two (2) examples of maximum assessable Roadway Impact Fee calculations.

Example 1:
Development Type - One (1) Unit of Single-Family Housing in Service Area A

Roadway Impact Fee Calculation Steps – Example 1	
Step 1	**Determine Development Unit and Vehicle-Miles Per Development Unit**
	From Table 10 [Land Use – Vehicle-Mile Equivalency Table] Development Type: 1 Dwelling Unit of Single-Family Detached Housing Number of Development Units: 1 Dwelling Unit Veh-Mi Per Development Unit: 4.90
Step 2	**Determine Maximum Assessable Impact Fee Per Service Unit (Vehicle-Mile)**
	From Table 9, Line 14 [Maximum Assessable Fee Per Service Unit] Service Area A: $1,032
Step 3	**Determine Maximum Assessable Impact Fee**
	Impact Fee = # of Development Units * Veh-Mi Per Dev Unit * Max. Fee Per Service Unit Impact Fee = 1 * 4.90 * $1,032 Maximum Assessable Impact Fee = $5,057

Example 2:
Development Type – 125,000 square foot Home Improvement Superstore in Service Area D

Roadway Impact Fee Calculation Steps – Example 2	
Step 1	**Determine Development Unit and Vehicle-Miles Per Development Unit**
	From Table 10 [Land Use – Vehicle-Mile Equivalency Table] Development Type: 125,000 square feet of Home Improvement Superstore Development Unit: 1,000 square feet of Gross Floor Area Veh-Mi Per Development Unit: 3.39
Step 2	**Determine Maximum Assessable Impact Fee Per Service Unit (Vehicle-Mile)**
	From Table 9, Line 14 [Maximum Assessable Fee Per Service Unit] Service Area D: $1,486
Step 3	**Determine Maximum Assessable Impact Fee**
	Impact Fee = # of Development Units * Veh-Mi Per Dev Unit * Max. Fee Per Service Unit Impact Fee = 125 * 3.39 * $1,486 Maximum Assessable Impact Fee = $1,011,491

VII. ADOPTION AND ADMINISTRATION OF ROADWAY IMPACT FEES

A. Adoption Process

Chapter 395 of the Texas Local Government Code stipulates a specific process for the adoption of Roadway Impact Fees. A Capital Improvement Advisory Committee (CIAC) is required to review the Land Use Assumptions and Roadway Impact Fees CIP used in calculating the maximum fee, and to provide the Committee's findings for consideration by the City Council. This CIAC also reviews the Roadway Impact Fee ordinance and provides its findings to the City Council. The composition of the CIAC is required to adequately represent the building and development communities. The City Council then conducts a first public hearing on the Land Use Assumptions and Roadway Impact Fee CIP and a second public hearing on the Roadway Impact Fee Ordinance.

Following policy adoption, the CIAC is tasked with advising the City Council of the need to update the Land Use Assumptions or the Roadway Impact Fees CIP at any time within five years of adoption. Finally, the CIAC oversees the proper administration of the Impact Fee, once in place, and advises the Council as necessary.

B. Collection and Use of Transportation Impact Fees

Roadway Impact fees are assessed when a final plat is recorded. The assessment defines the impact of each unit at the time of platting, according to land use, and may not exceed the maximum impact fee allowed by law. Roadway Impact Fees are collected when a building permit is issued. Therefore, funds are not collected until development-impacts are introduced to the transportation system. Funds collected within a service area can be used only within the same service area. Finally, fees must be utilized within 10 years of collection, or must be refunded with interest.

VIII. CONCLUSIONS

The City of Garland has established a process to implement the assessment and collection of Roadway Impact Fees through the adoption of an impact fee ordinance that is consistent with Chapter 395 of the Texas Local Government Code.

This report establishes the maximum allowable Roadway Impact Fee that could be assessed by the City of Garland, as shown in the previously referenced **Table 8**.

This document serves as a guide to the assessment of Roadway Impact Fees pertaining to future development, and the City's need for transportation improvements to accommodate that growth. Following the public hearing process, the City Council may establish an impact fee amount to be collected, up to the calculated maximum and establish the Roadway Impact Fee Ordinance accordingly.

In conclusion, it is our opinion that the data and methodology used in this analysis are appropriate and consistent with Chapter 395 of the Texas Local Government Code. Furthermore, the Land Use Assumptions and the proposed Roadway Impact Fee Capital Improvements Plan are appropriately incorporated into the development of the maximum assessable Roadway Impact Fee.

Below is the listing of the 2016 Roadway Impact Fee Study's Maximum Assessable Impact Fee Per Service Unit (Vehicle-Mile):

Service Areas	A	B	C	D
2016 Roadway Impact Fee Study Maximum Assessible Fee Per Vehilce-Mile	$ 1,032	$ 2,081	$ 2,661	$ 1,486

APPENDICES

A. Conceptual Level Project Cost Projections

SERVICE AREA A
SERVICE AREA B
SERVICE AREA C
SERVICE AREA D

B. Roadway Impact Fee CIP Service Units of Supply

C. Existing Roadway Facilities Inventory

D. Plan for Awarding the Transportation Impact Fee Credit Summary

E. Plan for Awarding the Transportation Impact Fee Credit Supporting Exhibits

Appendix A – Conceptual Level Project Cost Projections

City of Garland - 2016 Roadway Impact Fee Study

Capital Improvement Plan for Roadway Impact Fees

Summary of Conceptual Level Project Cost Projections

Roadway Improvements - Service Area A

#	IF Class	Project	Limits		Status	Percent in Service Area	Project Cost	Total Cost in Service Area
			From	To				
A-1	B (1/3)	Arapaho Rd (1)	Elm Ridge Ln	Shiloh Rd	Median	100	$ 1,383,000	$ 1,383,000
A-2	B (1/3)	Arapaho Rd (2)	Shiloh Rd	N. Garland Ave	Median	100	$ 1,210,000	$ 1,210,000
A-3	C1	Brand Rd (1)	Bellaire Rd	Belt Line Rd	Widening	100	$ 4,092,000	$ 4,092,000
A-4	C1	Brand Rd (2)	Naaman Forest Blvd	West Brand Rd	New	100	$ 8,172,000	$ 8,172,000
A-5	C1	Brand Rd (3)	Murfield Rd	PGBT N Frontage Rd	Widening	100	$ 3,590,000	$ 3,590,000
A-6	B (1/3)	Campbell Rd (1)	N. Jupiter Rd	Shiloh Rd	Median	100	$ 1,901,000	$ 1,901,000
A-7	B (1/3)	Campbell Rd (2)	Shiloh Rd	PGBT S Frontage Rd	Median	100	$ 740,000	$ 740,000
A-8	B (1/3)	Campbell Rd (3)	Lookout Dr	PGBT N Frontage Rd	Median	100	$ 1,065,000	$ 1,065,000
A-9	B (1/3)	Campbell Rd (4)	Lookout Dr	N. Garland Ave	Median	100	$ 1,150,000	$ 1,150,000
A-10	B (1/3)	Campbell Rd (5)	N. Garland Ave	Water Oak Dr	Median	100	$ 929,000	$ 929,000
A-11	B	Campbell Rd (6)	Water Oak Dr	Murphy Rd	Widening	100	$ 11,065,000	$ 11,065,000
A-12	D1	Ferris Rd	Campbell Rd	Holford Rd	Widening	100	$ 2,258,000	$ 2,258,000
A-13	A	Firewheel Parkway (1)	Lavon Dr	530' E of Lavon Dr	Widening	100	$ 824,000	$ 824,000
A-14	D1	Holford Rd (1)	Naaman Forest (Future)	Arapaho Rd	Widening	100	$ 5,347,000	$ 5,347,000
A-15	C2	Holford Rd (2)	PGBT S Frontage Rd	Naaman Forest (Future)	Widening	100	$ 2,717,000	$ 2,717,000
A-16	C2	Holford Rd (3)	N City Limits	PGBT N Frontage Rd	Widening	100	$ 8,118,000	$ 8,118,000
A-17	B (1/3)	Lookout Dr (1)	Courtside Dr	Spring Dr	Median	50	$ 201,000	$ 100,500
A-18	B (1/3)	Lookout Dr (2)	Spring Dr	PGBT S Frontage Rd	Median	50	$ 1,428,000	$ 714,000
A-19	B (1/3)	Lookout Dr (3)	PGBT N Frontage Rd	Campbell Rd	Median	100	$ 1,107,000	$ 1,107,000
A-20	F	Mapleridge (1)	Shiloh Rd	Mapleridge Dr	New	100	$ 384,000	$ 384,000
A-21	F	Mapleridge (2)	Mapleridge Dr (Existing)	Holford Rd	New	100	$ 3,513,000	$ 3,513,000
A-22	B (1/3)	Garland Ave (1)	N City Limits	PGBT N Frontage Rd	Median	100	$ 2,313,000	$ 2,313,000
A-23	B (1/3)	Garland Ave (2)	Arapaho Rd	PGBT S Frontage Rd	Median	100	$ 2,044,000	$ 2,044,000
A-24	B-S (1/3)	Garland Ave (3)	Arapaho Rd	Belt Line Rd	Median	100	$ 1,421,000	$ 1,421,000
A-25	B (1/3)	Garland Ave (4)	Belt Line Rd	Buckingham Rd	Median	100	$ 1,732,000	$ 1,732,000
A-26	B (1/3)	Shiloh Rd (1)	PGBT S Frontage Rd	Campbell Rd	Median	100	$ 657,000	$ 657,000
A-27	B (1/3)	Shiloh Rd (2)	Campbell Rd	north bridge end	Median	100	$ 733,000	$ 733,000
A-28	B (1/3)	Shiloh Rd (3)	Collins Blvd	Arapaho Rd	Median	100	$ 1,065,000	$ 1,065,000
A-29	B (1/3)	Shiloh Rd (4)	Arapaho Rd	Belt Line Rd	Median	100	$ 1,836,000	$ 1,836,000
A-30	B (1/3)	Shiloh Rd (5)	Belt Line Rd	Buckingham Rd	Median	100	$ 1,714,000	$ 1,714,000
A-31	D1	Naaman Forest Blvd	W. Naaman Forest Blvd.	E. Naaman Forest Blvd.	New	100	$ 2,079,000	$ 2,079,000
A-32	D1	Naaman School Rd	Brand Rd	Lavon Dr	Widening	100	$ 6,047,000	$ 6,047,000
A-33	D1	Naaman Forest Blvd	Ranger	Brand Rd	Completed	100	$ 3,904,483	$ 3,904,483
						TOTAL	$ 86,739,483	$ 85,924,983

Bottleneck Study Improvements - Service Area A

#	Intersection	Improvement(s)	Percent in Service Area	Total Project Cost in Service Area	10-Year Growth Cost in Service Area
I-1	Shiloh Rd and Campbell Rd	Extend WB RT lane	100%		
I-2	Arapaho Rd and Shiloh Rd	Add NB and SB RT lanes	100%		
I-3	Apollo Rd and Garland Ave	Add EB RT Lane	100%		
I-4	Wagon Wheel Rd and Garland Ave	WB RT Lane	100%	$ 2,625,000.00	$ 634,000.00
I-5	Belt Line Rd and Garland Ave	WB RT Lane	100%		
I-6	Belt Line Rd and Shiloh Rd	EB RT Lane	100%		
I-7	Buckingham Rd and Plano Rd	NB RT Lane, EB and WB Dual LT Lanes	100%		
I-8	Shiloh Rd and Buckingham Rd	Add dual lefts WB, NB, and SB	50%		

NOTE: These planning level cost projections listed in this Appendix have been developed for Impact Fee calculations only and should not be used for any future Capital Improvement Planning within the City of Garland. These planning level cost projections shall not supersede the City's design standards or the determination of the City Engineer for a specific project.

City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-1**
Name:	Arapaho Rd (1)	**This project consists of the construction of the median lanes to complete the six lane divided regional arterial**		
Limits:	Elm Ridge Ln to Shiloh Rd			
Impact Fee Class:	B (1/3)			
Ultimate Class:	Regional Arterial			
Length (lf):	4,075			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
110	Unclassified Street Excavation	5,886	cy	$ 8.00	$ 47,089
210	6" Lime Stabilization Subgrade	11,319	sy	$ 2.60	$ 29,431
310	Street Cut Paving Concrete - Class C Construct	10,414	sy	$ 70.00	$ 728,972
410	Curb 6" Integral	8,150	lf	$ 1.95	$ 15,893
510	Sidwalk 4" Class A Construct	0	sy	$ 43.00	$ -
610	Turn Lanes and Median Openings	926	sy	$ 70.00	$ 64,830

Paving Construction Cost Subtotal: $ 886,214

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 44,311
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 26,586
	Roadway Drainage	None Anticipated	0%	$ -
	Illumination		0%	$ -
	Special Drainage Structures	None Anticipated	0%	$ -
	Water	None Anticipated	0%	$ -
	Sewer	None Anticipated	0%	$ -
√	Landscaping and Irrigation		4%	$ 35,449
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 106,346

Paving and Allowance Subtotal: $ 992,559
Construction Contingency: 10% $ 99,256
Mobilization 5% $ 49,628
Prep ROW 5% $ 49,628
Construction Cost TOTAL: $ 1,192,000

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 1,192,000**
Engineering/Survey/Testing:		16%	$ 190,720
Previous City contribution			
Other			
ROW/Easement Acquisition:	No ROW Acquisition Costs included	0%	$ -

Impact Fee Project Cost TOTAL: $ 1,383,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-2**
Name:	Arapaho Rd (2)	**This project consists of the construction of the median lanes to complete the six lane divided regional arterial**		
Limits:	Shiloh Rd to N. Garland Ave			
Impact Fee Class:	B (1/3)			
Ultimate Class:	Regional Arterial			
Length (lf):	3,565			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
110	Unclassified Street Excavation	5,149	cy	$ 8.00	$ 41,196
210	6" Lime Stabilization Subgrade	9,903	sy	$ 2.60	$ 25,747
310	Street Cut Paving Concrete - Class C Construct	9,111	sy	$ 70.00	$ 637,739
410	Curb 6" Integral	7,130	lf	$ 1.95	$ 13,904
510	Sidwalk 4" Class A Construct	0	sy	$ 43.00	$ -
610	Turn Lanes and Median Openings	810	sy	$ 70.00	$ 56,716

Paving Construction Cost Subtotal: $ 775,301

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 38,765
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 23,259
	Roadway Drainage	None Anticipated	0%	$ -
	Illumination		0%	$ -
	Special Drainage Structures	None Anticipated	0%	$ -
	Water	None Anticipated	0%	$ -
	Sewer	None Anticipated	0%	$ -
√	Landscaping and Irrigation		4%	$ 31,012
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 93,036

Paving and Allowance Subtotal:		**$ 868,337**
Construction Contingency:	10%	$ 86,834
Mobilization	5%	$ 43,417
Prep ROW	5%	$ 43,417
Construction Cost TOTAL:		**$ 1,043,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 1,043,000**
Engineering/Survey/Testing:		16%	$ 166,880
Previous City contribution			
Other			
ROW/Easement Acquisition:	No ROW Acquisition Costs included	0%	$ -

Impact Fee Project Cost TOTAL: $ 1,210,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-3**
Name:	Brand Rd (1)	**This project consists of the reconstruction of the existing facility as a four lane divided minor arterial**		
Limits:	Bellaire Rd to Belt Line Rd			
Impact Fee Class:	C1			
Ultimate Class:	Minor Arterial			
Length (lf):	3,375			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
107	Unclassified Street Excavation	9,750	cy	$ 8.00	$ 78,000
207	6" Lime Stabilization Subgrade	19,125	sy	$ 2.60	$ 49,725
307	Street Cut Paving Concrete - Class C Construct	18,750	sy	$ 70.00	$ 1,312,500
407	Curb 6" Integral	13,500	lf	$ 1.95	$ 26,325
507	Sidwalk 4" Class A Construct	4,500	sy	$ 43.00	$ 193,500
607	Turn Lanes and Median Openings	1,552	sy	$ 70.00	$ 108,639

Paving Construction Cost Subtotal: $ 1,768,689

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 88,434
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 53,061
√	Roadway Drainage	Standard Internal System	30%	$ 530,607
√	Illumination		6%	$ 106,121
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 53,061
√	Sewer	Minor Adjustments	2%	$ 35,374
√	Landscaping and Irrigation		4%	$ 70,748
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 937,405

Paving and Allowance Subtotal:		**$ 2,706,094**
Construction Contingency:	10%	$ 270,609
Mobilization	5%	$ 135,305
Prep ROW	5%	$ 135,305
Construction Cost TOTAL:		**$ 3,248,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 3,248,000**
Engineering/Survey/Testing:		16%	$ 519,680
Previous City contribution			
Other			
ROW/Easement Acquisition:	Existing Alignment	10%	$ 324,800

Impact Fee Project Cost TOTAL: $ 4,092,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-4**
Name:	Brand Rd (2)	**This project consists of the construction of a new four lane divided minor arterial**		
Limits:	Naaman Forest Blvd to West Brand Rd			
Impact Fee Class:	C1			
Ultimate Class:	Minor Arterial			
Length (lf):	2,500			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
107	Unclassified Street Excavation	7,222	cy	$ 8.00	$ 57,778
207	6" Lime Stabilization Subgrade	14,167	sy	$ 2.60	$ 36,833
307	Street Cut Paving Concrete - Class C Construct	13,889	sy	$ 70.00	$ 972,222
407	Curb 6" Integral	10,000	lf	$ 1.95	$ 19,500
507	Sidwalk 4" Class A Construct	3,333	sy	$ 43.00	$ 143,333
607	Turn Lanes and Median Openings	1,150	sy	$ 70.00	$ 80,473

Paving Construction Cost Subtotal: $ 1,310,140

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 65,507
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 39,304
√	Roadway Drainage	Standard Internal System	30%	$ 393,042
√	Illumination		6%	$ 78,608
√	Special Drainage Structures	Bridge Crossing	0%	$ 3,400,000
√	Water	Minor Adjustments	3%	$ 39,304
√	Sewer	Minor Adjustments	2%	$ 26,203
√	Landscaping and Irrigation		4%	$ 52,406
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 4,094,374

Paving and Allowance Subtotal:		**$ 5,404,514**
Construction Contingency:	10%	$ 540,451
Mobilization	5%	$ 270,226
Prep ROW	5%	$ 270,226
Construction Cost TOTAL:		**$ 6,486,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 6,486,000**
Engineering/Survey/Testing:		16%	$ 1,037,760
Previous City contribution			
Other			
ROW/Easement Acquisition:	Existing Alignment	10%	$ 648,600

Impact Fee Project Cost TOTAL: $ 8,172,000

NOTE: The planning level cost projections listed in this appendix have been developed for Impact Fee calculations only and should not be used for any future Capital Improvement Planning within the City of Garland.

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-5**
Name:	Brand Rd (3)	**This project consists of the reconstruction of the existing facility as a four lane divided minor arterial**		
Limits:	Murfield Rd to PGBT N Frontage Rd			
Impact Fee Class:	C1			
Ultimate Class:	Minor Arterial			
Length (lf):	2,960			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
107	Unclassified Street Excavation	8,551	cy	$ 8.00	$ 68,409
207	6" Lime Stabilization Subgrade	16,773	sy	$ 2.60	$ 43,611
307	Street Cut Paving Concrete - Class C Construct	16,444	sy	$ 70.00	$ 1,151,111
407	Curb 6" Integral	11,840	lf	$ 1.95	$ 23,088
507	Sidwalk 4" Class A Construct	3,947	sy	$ 43.00	$ 169,707
607	Turn Lanes and Median Openings	1,361	sy	$ 70.00	$ 95,281

Paving Construction Cost Subtotal: $ 1,551,206

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 77,560
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 46,536
√	Roadway Drainage	Standard Internal System	30%	$ 465,362
√	Illumination		6%	$ 93,072
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 46,536
√	Sewer	Minor Adjustments	2%	$ 31,024
√	Landscaping and Irrigation		4%	$ 62,048
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 822,139

Paving and Allowance Subtotal:		**$ 2,373,345**
Construction Contingency:	10%	$ 237,335
Mobilization	5%	$ 118,667
Prep ROW	5%	$ 118,667
Construction Cost TOTAL:		**$ 2,849,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 2,849,000**
Engineering/Survey/Testing:		16%	$ 455,840
Previous City contribution			
Other			
ROW/Easement Acquisition:	Existing Alignment	10%	$ 284,900

Impact Fee Project Cost TOTAL: $ 3,590,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-6**
Name:	Campbell Rd (1)	**This project consists of the construction of the median lanes to complete the six lane divided regional arterial**		
Limits:	N. Jupiter Rd to Shiloh Rd			
Impact Fee Class:	B (1/3)			
Ultimate Class:	Regional Arterial			
Length (lf):	5,605			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
110	Unclassified Street Excavation	8,096	cy	$ 8.00	$ 64,769
210	6" Lime Stabilization Subgrade	15,569	sy	$ 2.60	$ 40,481
310	Street Cut Paving Concrete - Class C Construct	14,324	sy	$ 70.00	$ 1,002,672
410	Curb 6" Integral	11,210	lf	$ 1.95	$ 21,860
510	Sidwalk 4" Class A Construct	0	sy	$ 43.00	$ -
610	Turn Lanes and Median Openings	1,274	sy	$ 70.00	$ 89,170

Paving Construction Cost Subtotal: $ 1,218,952

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 60,948
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 36,569
	Roadway Drainage	None Anticipated	0%	$ -
	Illumination		0%	$ -
	Special Drainage Structures	None Anticipated	0%	$ -
	Water	None Anticipated	0%	$ -
	Sewer	None Anticipated	0%	$ -
√	Landscaping and Irrigation		4%	$ 48,758
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 146,274

Paving and Allowance Subtotal:		**$ 1,365,226**
Construction Contingency:	10%	$ 136,523
Mobilization	5%	$ 68,261
Prep ROW	5%	$ 68,261
Construction Cost TOTAL:		**$ 1,639,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 1,639,000**
Engineering/Survey/Testing:		16%	$ 262,240
Previous City contribution			
Other			
ROW/Easement Acquisition:	No ROW Acquisition Costs included	0%	$ -

Impact Fee Project Cost TOTAL: $ 1,901,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-7**
Name:	Campbell Rd (2)	**This project consists of the construction of the median lanes to complete the six lane divided regional arterial**		
Limits:	Shiloh Rd to PGBT S Frontage Rd			
Impact Fee Class:	B (1/3)			
Ultimate Class:	Regional Arterial			
Length (lf):	2,180			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
110	Unclassified Street Excavation	3,149	cy	$ 8.00	$ 25,191
210	6" Lime Stabilization Subgrade	6,056	sy	$ 2.60	$ 15,744
310	Street Cut Paving Concrete - Class C Construct	5,571	sy	$ 70.00	$ 389,978
410	Curb 6" Integral	4,360	lf	$ 1.95	$ 8,502
510	Sidwalk 4" Class A Construct	0	sy	$ 43.00	$ -
610	Turn Lanes and Median Openings	495	sy	$ 70.00	$ 34,682

Paving Construction Cost Subtotal: $ 474,097

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 23,705
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 14,223
	Roadway Drainage	None Anticipated	0%	$ -
	Illumination		0%	$ -
	Special Drainage Structures	None Anticipated	0%	$ -
	Water	None Anticipated	0%	$ -
	Sewer	None Anticipated	0%	$ -
√	Landscaping and Irrigation		4%	$ 18,964
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 56,892

Paving and Allowance Subtotal:		**$ 530,989**
Construction Contingency:	10%	$ 53,099
Mobilization	5%	$ 26,549
Prep ROW	5%	$ 26,549
Construction Cost TOTAL:		**$ 638,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 638,000**
Engineering/Survey/Testing:		16%	$ 102,080
Previous City contribution			
Other			
ROW/Easement Acquisition:	No ROW Acquisition Costs included	0%	$ -

Impact Fee Project Cost TOTAL: $ 740,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-8**
Name:	Campbell Rd (3)	**This project consists of the construction of the median lanes to complete the six lane divided regional arterial**		
Limits:	Lookout Dr to PGBT N Frontage Rd			
Impact Fee Class:	B (1/3)			
Ultimate Class:	Regional Arterial			
Length (lf):	3,140			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
110	Unclassified Street Excavation	4,536	cy	$ 8.00	$ 36,284
210	6" Lime Stabilization Subgrade	8,722	sy	$ 2.60	$ 22,678
310	Street Cut Paving Concrete - Class C Construct	8,024	sy	$ 70.00	$ 561,711
410	Curb 6" Integral	6,280	lf	$ 1.95	$ 12,246
510	Sidwalk 4" Class A Construct	0	sy	$ 43.00	$ -
610	Turn Lanes and Median Openings	714	sy	$ 70.00	$ 49,955
				Paving Construction Cost Subtotal:	**$ 682,874**

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 34,144
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 20,486
	Roadway Drainage	None Anticipated	0%	$ -
	Illumination		0%	$ -
	Special Drainage Structures	None Anticipated	0%	$ -
	Water	None Anticipated	0%	$ -
	Sewer	None Anticipated	0%	$ -
√	Landscaping and Irrigation		4%	$ 27,315
	Miscellaneous:		$0	$ -
**Allowances based on % of Paving Construction Cost Subtotal			**Allowance Subtotal:**	**$ 81,945**

Paving and Allowance Subtotal:		**$ 764,819**
Construction Contingency:	10%	$ 76,482
Mobilization	5%	$ 38,241
Prep ROW	5%	$ 38,241
Construction Cost TOTAL:		**$ 918,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 918,000**
Engineering/Survey/Testing:		16%	$ 146,880
Previous City contribution			
Other			
ROW/Easement Acquisition:	No ROW Acquisition Costs included	0%	$ -
		Impact Fee Project Cost TOTAL:	**$ 1,065,000**

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-9**
Name:	Campbell Rd (4)	**This project consists of the construction of the median lanes to complete the six lane divided regional arterial**		
Limits:	Lookout Dr to N. Garland Ave			
Impact Fee Class:	B (1/3)			
Ultimate Class:	Regional Arterial			
Length (lf):	3,390			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
110	Unclassified Street Excavation	4,897	cy	$ 8.00	$ 39,173
210	6" Lime Stabilization Subgrade	9,417	sy	$ 2.60	$ 24,483
310	Street Cut Paving Concrete - Class C Construct	8,663	sy	$ 70.00	$ 606,433
410	Curb 6" Integral	6,780	lf	$ 1.95	$ 13,221
510	Sidwalk 4" Class A Construct	0	sy	$ 43.00	$ -
610	Turn Lanes and Median Openings	770	sy	$ 70.00	$ 53,932
				Paving Construction Cost Subtotal:	**$ 737,243**

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 36,862
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 22,117
	Roadway Drainage	None Anticipated	0%	$ -
	Illumination		0%	$ -
	Special Drainage Structures	None Anticipated	0%	$ -
	Water	None Anticipated	0%	$ -
	Sewer	None Anticipated	0%	$ -
√	Landscaping and Irrigation		4%	$ 29,490
	Miscellaneous:		$0	$ -
**Allowances based on % of Paving Construction Cost Subtotal			**Allowance Subtotal:**	**$ 88,469**

Paving and Allowance Subtotal:		**$ 825,712**
Construction Contingency:	10%	$ 82,571
Mobilization	5%	$ 41,286
Prep ROW	5%	$ 41,286
Construction Cost TOTAL:		**$ 991,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 991,000**
Engineering/Survey/Testing:		16%	$ 158,560
Previous City contribution			
Other			
ROW/Easement Acquisition:	No ROW Acquisition Costs included	0%	$ -
		Impact Fee Project Cost TOTAL:	**$ 1,150,000**

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-10**
Name:	Campbell Rd (5)	**This project consists of the construction of the median lanes to complete the six lane divided regional arterial**		
Limits:	N. Garland Ave to Water Oak Dr			
Impact Fee Class:	B (1/3)			
Ultimate Class:	Regional Arterial			
Length (lf):	2,740			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
110	Unclassified Street Excavation	3,958	cy	$ 8.00	$ 31,662
210	6" Lime Stabilization Subgrade	7,611	sy	$ 2.60	$ 19,789
310	Street Cut Paving Concrete - Class C Construct	7,002	sy	$ 70.00	$ 490,156
410	Curb 6" Integral	5,480	lf	$ 1.95	$ 10,686
510	Sidwalk 4" Class A Construct	0	sy	$ 43.00	$ -
610	Turn Lanes and Median Openings	623	sy	$ 70.00	$ 43,591
				Paving Construction Cost Subtotal:	**$ 595,884**

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 29,794
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 17,877
	Roadway Drainage	None Anticipated	0%	$ -
	Illumination		0%	$ -
	Special Drainage Structures	None Anticipated	0%	$ -
	Water	None Anticipated	0%	$ -
	Sewer	None Anticipated	0%	$ -
√	Landscaping and Irrigation		4%	$ 23,835
	Miscellaneous:		$0	$ -
**Allowances based on % of Paving Construction Cost Subtotal			**Allowance Subtotal:**	**$ 71,506**

Paving and Allowance Subtotal:		**$ 667,390**
Construction Contingency:	10%	$ 66,739
Mobilization	5%	$ 33,369
Prep ROW	5%	$ 33,369
Construction Cost TOTAL:		**$ 801,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 801,000**
Engineering/Survey/Testing:		16%	$ 128,160
Previous City contribution			
Other			
ROW/Easement Acquisition:	No ROW Acquisition Costs included	0%	$ -
		Impact Fee Project Cost TOTAL:	**$ 929,000**

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-11**
Name:	Campbell Rd (6)	**This project consists of the reconstruction of the existing facility as a six lane divided regional arterial**		
Limits:	Water Oak Dr to Murphy Rd			
Impact Fee Class:	B			
Ultimate Class:	Regional Arterial			
Length (lf):	6,545			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
109	Unclassified Street Excavation	25,453	cy	$ 8.00	$ 203,622
209	6" Lime Stabilization Subgrade	50,178	sy	$ 2.60	$ 130,464
309	Street Cut Paving Concrete - Class C Construct	49,451	sy	$ 70.00	$ 3,461,578
409	Curb 6" Integral	26,180	lf	$ 1.95	$ 51,051
509	Sidwalk 4" Class A Construct	8,727	sy	$ 43.00	$ 375,247
609	Turn Lanes and Median Openings	2,415	sy	$ 70.00	$ 169,030

Paving Construction Cost Subtotal: $ 4,390,991

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 219,550
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 131,730
√	Roadway Drainage	Standard Internal System	30%	$ 1,317,297
√	Illumination		6%	$ 263,459
√	Special Drainage Structures	Bridge Crossing	0%	$ 600,000
√	Water	Minor Adjustments	3%	$ 131,730
√	Sewer	Minor Adjustments	2%	$ 87,820
√	Landscaping and Irrigation		4%	$ 175,640
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 2,927,225

Paving and Allowance Subtotal:		**$ 7,318,216**
Construction Contingency:	10%	$ 731,822
Mobilization	5%	$ 365,911
Prep ROW	5%	$ 365,911
Construction Cost TOTAL:		**$ 8,782,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 8,782,000**
Engineering/Survey/Testing:		16%	$ 1,405,120
Previous City contribution			
Other			
ROW/Easement Acquisition:	Existing Alignment	10%	$ 878,200

Impact Fee Project Cost TOTAL: $ 11,065,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-12**
Name:	Ferris Rd	**This project consists of the reconstruction of the existing facility as a four lane divided major collector**		
Limits:	Campbell Rd to Holford Rd			
Impact Fee Class:	D1			
Ultimate Class:	Major Collector			
Length (lf):	1,885			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
103	Unclassified Street Excavation	5,446	cy	$ 8.00	$ 43,564
203	6" Lime Stabilization Subgrade	10,682	sy	$ 2.60	$ 27,772
303	Street Cut Paving Concrete - Class C Construct	10,472	sy	$ 70.00	$ 733,056
403	Curb 6" Integral	7,540	lf	$ 1.95	$ 14,703
503	Sidwalk 4" Class A Construct	2,513	sy	$ 43.00	$ 108,073
603	Turn Lanes and Median Openings	695	sy	$ 70.00	$ 48,682

Paving Construction Cost Subtotal: $ 975,850

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 48,793
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 29,276
√	Roadway Drainage	Standard Internal System	30%	$ 292,755
√	Illumination		6%	$ 58,551
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 29,276
√	Sewer	Minor Adjustments	2%	$ 19,517
√	Landscaping and Irrigation		4%	$ 39,034
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 517,201

Paving and Allowance Subtotal:		**$ 1,493,051**
Construction Contingency:	10%	$ 149,305
Mobilization	5%	$ 74,653
Prep ROW	5%	$ 74,653
Construction Cost TOTAL:		**$ 1,792,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 1,792,000**
Engineering/Survey/Testing:		16%	$ 286,720
Previous City contribution			
Other			
ROW/Easement Acquisition:	Existing Alignment	10%	$ 179,200

Impact Fee Project Cost TOTAL: $ 2,258,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-13**
Name:	Firewheel Parkway (1)	**This project consists of the reconstruction of the existing facility as a six lane divided regional arterial**		
Limits:	Lavon Dr to 530' E of Lavon Dr			
Impact Fee Class:	A			
Ultimate Class:	Regional Arterial			
Length (lf):	530			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
111	Unclassified Street Excavation	2,061	cy	$ 8.00	$ 16,489
211	6" Lime Stabilization Subgrade	4,063	sy	$ 2.60	$ 10,565
311	Street Cut Paving Concrete - Class C Construct	4,004	sy	$ 70.00	$ 280,311
411	Curb 6" Integral	2,120	lf	$ 1.95	$ 4,134
511	Sidwalk 4" Class A Construct	707	sy	$ 43.00	$ 30,387
611	Turn Lanes and Median Openings	201	sy	$ 70.00	$ 14,060
				Paving Construction Cost Subtotal:	**$ 355,945**

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 17,797
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 10,678
√	Roadway Drainage	Standard Internal System	30%	$ 106,784
√	Illumination		6%	$ 21,357
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 10,678
√	Sewer	Minor Adjustments	2%	$ 7,119
√	Landscaping and Irrigation		4%	$ 14,238
	Miscellaneous:		$0	$ -
**Allowances based on % of Paving Construction Cost Subtotal			**Allowance Subtotal:**	**$ 188,651**

Paving and Allowance Subtotal:		**$ 544,596**
Construction Contingency:	10%	$ 54,460
Mobilization	5%	$ 27,230
Prep ROW	5%	$ 27,230
Construction Cost TOTAL:		**$ 654,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 654,000**
Engineering/Survey/Testing:		16%	$ 104,640
Previous City contribution			
Other			
ROW/Easement Acquisition:	Existing Alignment	10%	$ 65,400
		Impact Fee Project Cost TOTAL:	**$ 824,000**

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-14**
Name:	Holford Rd (1)	**This project consists of the reconstruction of the existing facility as a four lane divided major collector**		
Limits:	Naaman Forest (Future) to Arapaho Rd			
Impact Fee Class:	D1			
Ultimate Class:	Major Collector			
Length (lf):	3,960			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
103	Unclassified Street Excavation	11,440	cy	$ 8.00	$ 91,520
203	6" Lime Stabilization Subgrade	22,440	sy	$ 2.60	$ 58,344
303	Street Cut Paving Concrete - Class C Construct	22,000	sy	$ 70.00	$ 1,540,000
403	Curb 6" Integral	15,840	lf	$ 1.95	$ 30,888
503	Sidwalk 4" Class A Construct	5,280	sy	$ 43.00	$ 227,040
603	Turn Lanes and Median Openings	1,461	sy	$ 70.00	$ 102,270

Paving Construction Cost Subtotal: $ 2,050,062

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 102,503
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 61,502
√	Roadway Drainage	Standard Internal System	30%	$ 615,019
√	Illumination		6%	$ 123,004
√	Special Drainage Structures	Bridge Crossing	0%	$ 400,000
√	Water	Minor Adjustments	3%	$ 61,502
√	Sewer	Minor Adjustments	2%	$ 41,001
√	Landscaping and Irrigation		4%	$ 82,002
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 1,486,533

Paving and Allowance Subtotal:		**$ 3,536,595**
Construction Contingency:	10%	$ 353,659
Mobilization	5%	$ 176,830
Prep ROW	5%	$ 176,830
Construction Cost TOTAL:		**$ 4,244,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 4,244,000**
Engineering/Survey/Testing:		16%	$ 679,040
Previous City contribution			
Other			
ROW/Easement Acquisition:	Existing Alignment	10%	$ 424,400

Impact Fee Project Cost TOTAL: $ 5,347,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-15**
Name:	Holford Rd (2)	**This project consists of the reconstruction of the**		
Limits:	PGBT S Frontage Rd to Naaman Forest (Futur	**existing facility as a four lane divided minor arterial**		
Impact Fee Class:	C2			
Ultimate Class:	Minor Arterial			
Length (lf):	1,750			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
108	Unclassified Street Excavation	6,806	cy	$ 8.00	$ 54,444
208	6" Lime Stabilization Subgrade	13,417	sy	$ 2.60	$ 34,883
308	Street Cut Paving Concrete - Class C Construct	13,222	sy	$ 70.00	$ 925,556
408	Curb 6" Integral	7,000	lf	$ 1.95	$ 13,650
508	Sidwalk 4" Class A Construct	2,333	sy	$ 43.00	$ 100,333
608	Turn Lanes and Median Openings	646	sy	$ 70.00	$ 45,195

Paving Construction Cost Subtotal: $ 1,174,062

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 58,703
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 35,222
√	Roadway Drainage	Standard Internal System	30%	$ 352,219
√	Illumination		6%	$ 70,444
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 35,222
√	Sewer	Minor Adjustments	2%	$ 23,481
√	Landscaping and Irrigation		4%	$ 46,962
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 622,253

Paving and Allowance Subtotal:		**$ 1,796,314**
Construction Contingency:	10%	$ 179,631
Mobilization	5%	$ 89,816
Prep ROW	5%	$ 89,816
Construction Cost TOTAL:		**$ 2,156,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 2,156,000**
Engineering/Survey/Testing:		16%	$ 344,960
Previous City contribution			
Other			
ROW/Easement Acquisition:	Existing Alignment	10%	$ 215,600

Impact Fee Project Cost TOTAL: $ 2,717,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-16**
Name:	Holford Rd (3)	**This project consists of the reconstruction of the existing facility as a four lane divided minor arterial**		
Limits:	N City Limits to PGBT N Frontage Rd			
Impact Fee Class:	C2			
Ultimate Class:	Minor Arterial			
Length (lf):	5,230			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
108	Unclassified Street Excavation	20,339	cy	$ 8.00	$ 162,711
208	6" Lime Stabilization Subgrade	40,097	sy	$ 2.60	$ 104,251
308	Street Cut Paving Concrete - Class C Construct	39,516	sy	$ 70.00	$ 2,766,089
408	Curb 6" Integral	20,920	lf	$ 1.95	$ 40,794
508	Sidwalk 4" Class A Construct	6,973	sy	$ 43.00	$ 299,853
608	Turn Lanes and Median Openings	1,930	sy	$ 70.00	$ 135,069

Paving Construction Cost Subtotal: $ 3,508,767

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 175,438
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 105,263
√	Roadway Drainage	Standard Internal System	30%	$ 1,052,630
√	Illumination		6%	$ 210,526
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 105,263
√	Sewer	Minor Adjustments	2%	$ 70,175
√	Landscaping and Irrigation		4%	$ 140,351
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 1,859,647

Paving and Allowance Subtotal:		**$ 5,368,414**
Construction Contingency:	10%	$ 536,841
Mobilization	5%	$ 268,421
Prep ROW	5%	$ 268,421
Construction Cost TOTAL:		**$ 6,443,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 6,443,000**
Engineering/Survey/Testing:		16%	$ 1,030,880
Previous City contribution			
Other			
ROW/Easement Acquisition:	Existing Alignment	10%	$ 644,300

Impact Fee Project Cost TOTAL: $ 8,118,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-17**
Name:	Lookout Dr (1)	**This project consists of the construction of the median lanes to complete the six lane divided regional arterial**		
Limits:	Courtside Dr to Spring Dr			
Impact Fee Class:	B (1/3)			
Ultimate Class:	Regional Arterial			
Length (lf):	590			
Service Area(s):	A,ETJ			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
110	Unclassified Street Excavation	852	cy	$ 8.00	$ 6,818
210	6" Lime Stabilization Subgrade	1,639	sy	$ 2.60	$ 4,261
310	Street Cut Paving Concrete - Class C Construct	1,508	sy	$ 70.00	$ 105,544
410	Curb 6" Integral	1,180	lf	$ 1.95	$ 2,301
510	Sidwalk 4" Class A Construct	0	sy	$ 43.00	$ -
610	Turn Lanes and Median Openings	134	sy	$ 70.00	$ 9,386
				Paving Construction Cost Subtotal:	**$ 128,311**

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 6,416
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 3,849
	Roadway Drainage	None Anticipated	0%	$ -
	Illumination		0%	$ -
	Special Drainage Structures	None Anticipated	0%	$ -
	Water	None Anticipated	0%	$ -
	Sewer	None Anticipated	0%	$ -
√	Landscaping and Irrigation		4%	$ 5,132
	Miscellaneous:		$0	$ -
**Allowances based on % of Paving Construction Cost Subtotal			**Allowance Subtotal:**	**$ 15,397**

Paving and Allowance Subtotal:		**$ 143,708**
Construction Contingency:	10%	$ 14,371
Mobilization	5%	$ 7,185
Prep ROW	5%	$ 7,185
Construction Cost TOTAL:		**$ 173,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 173,000**
Engineering/Survey/Testing:		16%	$ 27,680
Previous City contribution			
Other			
ROW/Easement Acquisition:	No ROW Acquisition Costs included	0%	$ -
		Impact Fee Project Cost TOTAL:	**$ 201,000**

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-18**
Name:	Lookout Dr (2)	**This project consists of the construction of the median lanes to complete the six lane divided regional arterial**		
Limits:	Spring Dr to PGBT S Frontage Rd			
Impact Fee Class:	B (1/3)			
Ultimate Class:	Regional Arterial			
Length (lf):	4,210			
Service Area(s):	A,ETJ			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
110	Unclassified Street Excavation	6,081	cy	$ 8.00	$ 48,649
210	6" Lime Stabilization Subgrade	11,694	sy	$ 2.60	$ 30,406
310	Street Cut Paving Concrete - Class C Construct	10,759	sy	$ 70.00	$ 753,122
410	Curb 6" Integral	8,420	lf	$ 1.95	$ 16,419
510	Sidwalk 4" Class A Construct	0	sy	$ 43.00	$ -
610	Turn Lanes and Median Openings	957	sy	$ 70.00	$ 66,977

Paving Construction Cost Subtotal: $ 915,573

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 45,779
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 27,467
	Roadway Drainage	None Anticipated	0%	$ -
	Illumination		0%	$ -
	Special Drainage Structures	None Anticipated	0%	$ -
	Water	None Anticipated	0%	$ -
	Sewer	None Anticipated	0%	$ -
√	Landscaping and Irrigation		4%	$ 36,623
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 109,869

Paving and Allowance Subtotal:		**$ 1,025,442**
Construction Contingency:	10%	$ 102,544
Mobilization	5%	$ 51,272
Prep ROW	5%	$ 51,272
Construction Cost TOTAL:		**$ 1,231,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 1,231,000**
Engineering/Survey/Testing:		16%	$ 196,960
Previous City contribution			
Other			
ROW/Easement Acquisition:	No ROW Acquisition Costs included	0%	$ -

Impact Fee Project Cost TOTAL: $ 1,428,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-19**
Name:	Lookout Dr (3)	**This project consists of the construction of the median lanes to complete the six lane divided regional arterial**		
Limits:	PGBT N Frontage Rd to Campbell Rd			
Impact Fee Class:	B (1/3)			
Ultimate Class:	Regional Arterial			
Length (lf):	3,785			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
110	Unclassified Street Excavation	5,467	cy	$ 8.00	$ 43,738
210	6" Lime Stabilization Subgrade	10,514	sy	$ 2.60	$ 27,336
310	Street Cut Paving Concrete - Class C Construct	9,673	sy	$ 70.00	$ 677,094
410	Curb 6" Integral	7,570	lf	$ 1.95	$ 14,762
510	Sidwalk 4" Class A Construct	0	sy	$ 43.00	$ -
610	Turn Lanes and Median Openings	860	sy	$ 70.00	$ 60,216
				Paving Construction Cost Subtotal:	**$ 823,146**

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 41,157
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 24,694
	Roadway Drainage	None Anticipated	0%	$ -
	Illumination		0%	$ -
	Special Drainage Structures	None Anticipated	0%	$ -
	Water	None Anticipated	0%	$ -
	Sewer	None Anticipated	0%	$ -
√	Landscaping and Irrigation		4%	$ 32,926
	Miscellaneous:		$0	$ -
**Allowances based on % of Paving Construction Cost Subtotal			**Allowance Subtotal:**	**$ 98,777**

Paving and Allowance Subtotal:		**$ 921,923**
Construction Contingency:	10%	$ 92,192
Mobilization	5%	$ 46,096
Prep ROW	5%	$ 46,096
Construction Cost TOTAL:		**$ 1,107,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 1,107,000**
Engineering/Survey/Testing:		16%	$ 177,120
Previous City contribution			
Other			
ROW/Easement Acquisition:	No ROW Acquisition Costs included	0%	$ -
		Impact Fee Project Cost TOTAL:	**$ 1,284,000**

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-20**
Name:	Mapleridge (1)	**This project consists of the construction of a new two lane undivided minor collector**		
Limits:	Shiloh Rd to Mapleridge Dr			
Impact Fee Class:	F			
Ultimate Class:	Minor Collector			
Length (lf):	450			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
101	Unclassified Street Excavation	1,000	cy	$ 8.00	$ 8,000
201	6" Lime Stabilization Subgrade	1,950	sy	$ 2.60	$ 5,070
301	Street Cut Paving Concrete - Class C Construct	1,850	sy	$ 70.00	$ 129,500
401	Curb 6" Integral	900	lf	$ 1.95	$ 1,755
501	Sidwalk 4" Class A Construct	400	sy	$ 43.00	$ 17,200
601	Turn Lanes and Median Openings	32	sy	$ 70.00	$ 2,231

Paving Construction Cost Subtotal: $ 163,756

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
	Traffic Control	None Anticipated	0%	$ -
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 4,913
√	Roadway Drainage	Standard Internal System	30%	$ 49,127
√	Illumination		6%	$ 9,825
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 4,913
√	Sewer	Minor Adjustments	2%	$ 3,275
√	Landscaping and Irrigation		4%	$ 6,550
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 78,603

Paving and Allowance Subtotal:		**$ 242,359**
Construction Contingency:	10%	$ 24,236
Mobilization	5%	$ 12,118
Prep ROW	1%	$ 2,424
Construction Cost TOTAL:		**$ 282,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 282,000**
Engineering/Survey/Testing:		16%	$ 45,120
Previous City contribution			
Other			
ROW/Easement Acquisition:	New Roadway Alignment	20%	$ 56,400

Impact Fee Project Cost TOTAL: $ 384,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-21**
Name:	Mapleridge (2)	**This project consists of the construction of a new**		
Limits:	Mapleridge Dr (Existing) to Holford Rd	**two lane undivided minor collector**		
Impact Fee Class:	F			
Ultimate Class:	Minor Collector			
Length (lf):	1,905			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
101	Unclassified Street Excavation	4,233	cy	$ 8.00	$ 33,867
201	6" Lime Stabilization Subgrade	8,255	sy	$ 2.60	$ 21,463
301	Street Cut Paving Concrete - Class C Construct	7,832	sy	$ 70.00	$ 548,217
401	Curb 6" Integral	3,810	lf	$ 1.95	$ 7,430
501	Sidwalk 4" Class A Construct	1,693	sy	$ 43.00	$ 72,813
601	Turn Lanes and Median Openings	135	sy	$ 70.00	$ 9,446

Paving Construction Cost Subtotal: $ 693,235

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
	Traffic Control	None Anticipated	0%	$ -
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 20,797
√	Roadway Drainage	Standard Internal System	30%	$ 207,970
√	Illumination		6%	$ 41,594
√	Special Drainage Structures	Bridge Crossing	0%	$ 1,200,000
√	Water	Minor Adjustments	3%	$ 20,797
√	Sewer	Minor Adjustments	2%	$ 13,865
√	Landscaping and Irrigation		4%	$ 27,729
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 1,532,753

Paving and Allowance Subtotal:		**$ 2,225,987**
Construction Contingency:	10%	$ 222,599
Mobilization	5%	$ 111,299
Prep ROW	1%	$ 22,260
Construction Cost TOTAL:		**$ 2,583,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 2,583,000**
Engineering/Survey/Testing:		16%	$ 413,280
Previous City contribution			
Other			
ROW/Easement Acquisition:	New Roadway Alignment	20%	$ 516,600

Impact Fee Project Cost TOTAL: $ 3,513,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-22**
Name:	Garland Ave (1)	**This project consists of the construction of the median lanes to complete the six lane divided regional arterial**		
Limits:	N City Limits to PGBT N Frontage Rd			
Impact Fee Class:	B (1/3)			
Ultimate Class:	Regional Arterial			
Length (lf):	6,820			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
110	Unclassified Street Excavation	9,851	cy	$ 8.00	$ 78,809
210	6" Lime Stabilization Subgrade	18,944	sy	$ 2.60	$ 49,256
310	Street Cut Paving Concrete - Class C Construct	17,429	sy	$ 70.00	$ 1,220,022
410	Curb 6" Integral	13,640	lf	$ 1.95	$ 26,598
510	Sidwalk 4" Class A Construct	0	sy	$ 43.00	$ -
610	Turn Lanes and Median Openings	1,550	sy	$ 70.00	$ 108,500
				Paving Construction Cost Subtotal:	**$ 1,483,185**

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 74,159
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 44,496
	Roadway Drainage	None Anticipated	0%	$ -
	Illumination		0%	$ -
	Special Drainage Structures	None Anticipated	0%	$ -
	Water	None Anticipated	0%	$ -
	Sewer	None Anticipated	0%	$ -
√	Landscaping and Irrigation		4%	$ 59,327
	Miscellaneous:		$0	$ -
**Allowances based on % of Paving Construction Cost Subtotal			**Allowance Subtotal:**	**$ 177,982**

Paving and Allowance Subtotal:		**$ 1,661,167**
Construction Contingency:	10%	$ 166,117
Mobilization	5%	$ 83,058
Prep ROW	5%	$ 83,058
Construction Cost TOTAL:		**$ 1,994,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 1,994,000**
Engineering/Survey/Testing:		16%	$ 319,040
Previous City contribution			
Other			
ROW/Easement Acquisition:	No ROW Acquisition Costs included	0%	$ -
		Impact Fee Project Cost TOTAL:	**$ 2,313,000**

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-23**
Name:	Garland Ave (2)	**This project consists of the construction of the median lanes to complete the six lane divided regional arterial**		
Limits:	Arapaho Rd to PGBT S Frontage Rd			
Impact Fee Class:	B (1/3)			
Ultimate Class:	Regional Arterial			
Length (lf):	6,025			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
110	Unclassified Street Excavation	8,703	cy	$ 8.00	$ 69,622
210	6" Lime Stabilization Subgrade	16,736	sy	$ 2.60	$ 43,514
310	Street Cut Paving Concrete - Class C Construct	15,397	sy	$ 70.00	$ 1,077,806
410	Curb 6" Integral	12,050	lf	$ 1.95	$ 23,498
510	Sidwalk 4" Class A Construct	0	sy	$ 43.00	$ -
610	Turn Lanes and Median Openings	1,369	sy	$ 70.00	$ 95,852
				Paving Construction Cost Subtotal:	**$ 1,310,291**

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 65,515
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 39,309
	Roadway Drainage	None Anticipated	0%	$ -
	Illumination		0%	$ -
	Special Drainage Structures	None Anticipated	0%	$ -
	Water	None Anticipated	0%	$ -
	Sewer	None Anticipated	0%	$ -
√	Landscaping and Irrigation		4%	$ 52,412
	Miscellaneous:		$0	$ -
**Allowances based on % of Paving Construction Cost Subtotal			**Allowance Subtotal:**	**$ 157,235**

Paving and Allowance Subtotal:		**$ 1,467,526**
Construction Contingency:	10%	$ 146,753
Mobilization	5%	$ 73,376
Prep ROW	5%	$ 73,376
Construction Cost TOTAL:		**$ 1,762,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 1,762,000**
Engineering/Survey/Testing:		16%	$ 281,920
Previous City contribution			
Other			
ROW/Easement Acquisition:	No ROW Acquisition Costs included	0%	$ -
		Impact Fee Project Cost TOTAL:	**$ 2,044,000**

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-24**
Name:	Garland Ave (3)	**This project consists of the construction of the median lanes to complete the six lane divided regional arterial**		
Limits:	Arapaho Rd to Belt Line Rd			
Impact Fee Class:	B (1/3)			
Ultimate Class:	Regional Arterial			
Length (lf):	4,190			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
110	Unclassified Street Excavation	6,052	cy	$ 8.00	$ 48,418
210	6" Lime Stabilization Subgrade	11,639	sy	$ 2.60	$ 30,261
310	Street Cut Paving Concrete - Class C Construct	10,708	sy	$ 70.00	$ 749,544
410	Curb 6" Integral	8,380	lf	$ 1.95	$ 16,341
510	Sidwalk 4" Class A Construct	0	sy	$ 43.00	$ -
610	Turn Lanes and Median Openings	952	sy	$ 70.00	$ 66,659

Paving Construction Cost Subtotal: $ 911,223

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 45,561
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 27,337
	Roadway Drainage	None Anticipated	0%	$ -
	Illumination		0%	$ -
	Special Drainage Structures	None Anticipated	0%	$ -
	Water	None Anticipated	0%	$ -
	Sewer	None Anticipated	0%	$ -
√	Landscaping and Irrigation		4%	$ 36,449
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 109,347

Paving and Allowance Subtotal:		**$ 1,020,570**
Construction Contingency:	10%	$ 102,057
Mobilization	5%	$ 51,029
Prep ROW	5%	$ 51,029
Construction Cost TOTAL:		**$ 1,225,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 1,225,000**
Engineering/Survey/Testing:		16%	$ 196,000
Previous City contribution			
Other			
ROW/Easement Acquisition:	No ROW Acquisition Costs included	0%	$ -

Impact Fee Project Cost TOTAL: $ 1,421,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-25**
Name:	Garland Ave (4)	**This project consists of the construction of the median lanes to complete the six lane divided regional arterial**		
Limits:	Belt Line Rd to Buckingham Rd			
Impact Fee Class:	B (1/3)			
Ultimate Class:	Regional Arterial			
Length (lf):	5,105			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
110	Unclassified Street Excavation	7,374	cy	$ 8.00	$ 58,991
210	6" Lime Stabilization Subgrade	14,181	sy	$ 2.60	$ 36,869
310	Street Cut Paving Concrete - Class C Construct	13,046	sy	$ 70.00	$ 913,228
410	Curb 6" Integral	10,210	lf	$ 1.95	$ 19,910
510	Sidwalk 4" Class A Construct	0	sy	$ 43.00	$ -
610	Turn Lanes and Median Openings	1,160	sy	$ 70.00	$ 81,216

Paving Construction Cost Subtotal: $ 1,110,214

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 55,511
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 33,306
	Roadway Drainage	None Anticipated	0%	$ -
	Illumination		0%	$ -
	Special Drainage Structures	None Anticipated	0%	$ -
	Water	None Anticipated	0%	$ -
	Sewer	None Anticipated	0%	$ -
√	Landscaping and Irrigation		4%	$ 44,409
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 133,226

Paving and Allowance Subtotal:		**$ 1,243,439**
Construction Contingency:	10%	$ 124,344
Mobilization	5%	$ 62,172
Prep ROW	5%	$ 62,172
Construction Cost TOTAL:		**$ 1,493,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 1,493,000**
Engineering/Survey/Testing:		16%	$ 238,880
Previous City contribution			
Other			
ROW/Easement Acquisition:	No ROW Acquisition Costs included	0%	$ -

Impact Fee Project Cost TOTAL: $ 1,732,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-26**
Name:	Shiloh Rd (1)	**This project consists of the construction of the median lanes to complete the six lane divided regional arterial**		
Limits:	PGBT S Frontage Rd to Campbell Rd			
Impact Fee Class:	B (1/3)			
Ultimate Class:	Regional Arterial			
Length (lf):	1,935			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
110	Unclassified Street Excavation	2,795	cy	$ 8.00	$ 22,360
210	6" Lime Stabilization Subgrade	5,375	sy	$ 2.60	$ 13,975
310	Street Cut Paving Concrete - Class C Construct	4,945	sy	$ 70.00	$ 346,150
410	Curb 6" Integral	3,870	lf	$ 1.95	$ 7,547
510	Sidwalk 4" Class A Construct	0	sy	$ 43.00	$ -
610	Turn Lanes and Median Openings	440	sy	$ 70.00	$ 30,784
				Paving Construction Cost Subtotal:	**$ 420,816**

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 21,041
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 12,624
	Roadway Drainage	None Anticipated	0%	$ -
	Illumination		0%	$ -
	Special Drainage Structures	None Anticipated	0%	$ -
	Water	None Anticipated	0%	$ -
	Sewer	None Anticipated	0%	$ -
√	Landscaping and Irrigation		4%	$ 16,833
	Miscellaneous:		$0	$ -
**Allowances based on % of Paving Construction Cost Subtotal			**Allowance Subtotal:**	**$ 50,498**

Paving and Allowance Subtotal:		**$ 471,313**
Construction Contingency:	10%	$ 47,131
Mobilization	5%	$ 23,566
Prep ROW	5%	$ 23,566
Construction Cost TOTAL:		**$ 566,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 566,000**
Engineering/Survey/Testing:		16%	$ 90,560
Previous City contribution			
Other			
ROW/Easement Acquisition:	No ROW Acquisition Costs included	0%	$ -
		Impact Fee Project Cost TOTAL:	**$ 657,000**

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-27**
Name:	Shiloh Rd (2)	**This project consists of the construction of the median lanes to complete the six lane divided regional arterial**		
Limits:	Campbell Rd to north bridge end			
Impact Fee Class:	B (1/3)			
Ultimate Class:	Regional Arterial			
Length (lf):	2,160			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
110	Unclassified Street Excavation	3,120	cy	$ 8.00	$ 24,960
210	6" Lime Stabilization Subgrade	6,000	sy	$ 2.60	$ 15,600
310	Street Cut Paving Concrete - Class C Construct	5,520	sy	$ 70.00	$ 386,400
410	Curb 6" Integral	4,320	lf	$ 1.95	$ 8,424
510	Sidwalk 4" Class A Construct	0	sy	$ 43.00	$ -
610	Turn Lanes and Median Openings	491	sy	$ 70.00	$ 34,364
				Paving Construction Cost Subtotal:	**$ 469,748**

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 23,487
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 14,092
	Roadway Drainage	None Anticipated	0%	$ -
	Illumination		0%	$ -
	Special Drainage Structures	None Anticipated	0%	$ -
	Water	None Anticipated	0%	$ -
	Sewer	None Anticipated	0%	$ -
√	Landscaping and Irrigation		4%	$ 18,790
	Miscellaneous:		$0	$ -
**Allowances based on % of Paving Construction Cost Subtotal			**Allowance Subtotal:**	**$ 56,370**

Paving and Allowance Subtotal:		**$ 526,117**
Construction Contingency:	10%	$ 52,612
Mobilization	5%	$ 26,306
Prep ROW	5%	$ 26,306
Construction Cost TOTAL:		**$ 632,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 632,000**
Engineering/Survey/Testing:		16%	$ 101,120
Previous City contribution			
Other			
ROW/Easement Acquisition:	No ROW Acquisition Costs included	0%	$ -
		Impact Fee Project Cost TOTAL:	**$ 733,000**

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-28**
Name:	Shiloh Rd (3)	**This project consists of the construction of the median lanes to complete the six lane divided regional arterial**		
Limits:	Collins Blvd to Arapaho Rd			
Impact Fee Class:	B (1/3)			
Ultimate Class:	Regional Arterial			
Length (lf):	3,140			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
110	Unclassified Street Excavation	4,536	cy	$ 8.00	$ 36,284
210	6" Lime Stabilization Subgrade	8,722	sy	$ 2.60	$ 22,678
310	Street Cut Paving Concrete - Class C Construct	8,024	sy	$ 70.00	$ 561,711
410	Curb 6" Integral	6,280	lf	$ 1.95	$ 12,246
510	Sidwalk 4" Class A Construct	0	sy	$ 43.00	$ -
610	Turn Lanes and Median Openings	714	sy	$ 70.00	$ 49,955
				Paving Construction Cost Subtotal:	**$ 682,874**

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 34,144
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 20,486
	Roadway Drainage	None Anticipated	0%	$ -
	Illumination		0%	$ -
	Special Drainage Structures	None Anticipated	0%	$ -
	Water	None Anticipated	0%	$ -
	Sewer	None Anticipated	0%	$ -
√	Landscaping and Irrigation		4%	$ 27,315
	Miscellaneous:		$0	$ -
**Allowances based on % of Paving Construction Cost Subtotal			**Allowance Subtotal:**	**$ 81,945**

Paving and Allowance Subtotal:		**$ 764,819**
Construction Contingency:	10%	$ 76,482
Mobilization	5%	$ 38,241
Prep ROW	5%	$ 38,241
Construction Cost TOTAL:		**$ 918,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 918,000**
Engineering/Survey/Testing:		16%	$ 146,880
Previous City contribution			
Other			
ROW/Easement Acquisition:	No ROW Acquisition Costs included	0%	$ -
		Impact Fee Project Cost TOTAL:	**$ 1,065,000**

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-29**
Name:	Shiloh Rd (4)	**This project consists of the construction of the median lanes to complete the six lane divided regional arterial**		
Limits:	Arapaho Rd to Belt Line Rd			
Impact Fee Class:	B (1/3)			
Ultimate Class:	Regional Arterial			
Length (lf):	5,415			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
110	Unclassified Street Excavation	7,822	cy	$ 8.00	$ 62,573
210	6" Lime Stabilization Subgrade	15,042	sy	$ 2.60	$ 39,108
310	Street Cut Paving Concrete - Class C Construct	13,838	sy	$ 70.00	$ 968,683
410	Curb 6" Integral	10,830	lf	$ 1.95	$ 21,119
510	Sidwalk 4" Class A Construct	0	sy	$ 43.00	$ -
610	Turn Lanes and Median Openings	1,231	sy	$ 70.00	$ 86,148

Paving Construction Cost Subtotal: $ 1,177,631

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 58,882
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 35,329
	Roadway Drainage	None Anticipated	0%	$ -
	Illumination		0%	$ -
	Special Drainage Structures	None Anticipated	0%	$ -
	Water	None Anticipated	0%	$ -
	Sewer	None Anticipated	0%	$ -
√	Landscaping and Irrigation		4%	$ 47,105
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 141,316

Paving and Allowance Subtotal:		**$ 1,318,947**
Construction Contingency:	10%	$ 131,895
Mobilization	5%	$ 65,947
Prep ROW	5%	$ 65,947
Construction Cost TOTAL:		**$ 1,583,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 1,583,000**
Engineering/Survey/Testing:		16%	$ 253,280
Previous City contribution			
Other			
ROW/Easement Acquisition:	No ROW Acquisition Costs included	0%	$ -

Impact Fee Project Cost TOTAL: $ 1,836,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-30**
Name:	Shiloh Rd (5)	**This project consists of the construction of the median lanes to complete the six lane divided regional arterial**		
Limits:	Belt Line Rd to Buckingham Rd			
Impact Fee Class:	B (1/3)			
Ultimate Class:	Regional Arterial			
Length (lf):	5,055			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
110	Unclassified Street Excavation	7,302	cy	$ 8.00	$ 58,413
210	6" Lime Stabilization Subgrade	14,042	sy	$ 2.60	$ 36,508
310	Street Cut Paving Concrete - Class C Construct	12,918	sy	$ 70.00	$ 904,283
410	Curb 6" Integral	10,110	lf	$ 1.95	$ 19,715
510	Sidwalk 4" Class A Construct	0	sy	$ 43.00	$ -
610	Turn Lanes and Median Openings	1,149	sy	$ 70.00	$ 80,420

Paving Construction Cost Subtotal: $ 1,099,340

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 54,967
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 32,980
	Roadway Drainage	None Anticipated	0%	$ -
	Illumination		0%	$ -
	Special Drainage Structures	None Anticipated	0%	$ -
	Water	None Anticipated	0%	$ -
	Sewer	None Anticipated	0%	$ -
√	Landscaping and Irrigation		4%	$ 43,974
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 131,921

Paving and Allowance Subtotal:		**$ 1,231,261**
Construction Contingency:	10%	$ 123,126
Mobilization	5%	$ 61,563
Prep ROW	5%	$ 61,563
Construction Cost TOTAL:		**$ 1,478,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 1,478,000**
Engineering/Survey/Testing:		16%	$ 236,480
Previous City contribution			
Other			
ROW/Easement Acquisition:	No ROW Acquisition Costs included	0%	$ -

Impact Fee Project Cost TOTAL: $ 1,714,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-31**
Name:	Naaman Forest Blvd	**This project consists of the construction of a new**		
Limits:	W. Naaman Forest Blvd. to E. Naaman Forest	**four lane divided major collector**		
Impact Fee Class:	D1			
Ultimate Class:	Major Collector			
Length (lf):	1,720			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
103	Unclassified Street Excavation	4,969	cy	$ 8.00	$ 39,751
203	6" Lime Stabilization Subgrade	9,747	sy	$ 2.60	$ 25,341
303	Street Cut Paving Concrete - Class C Construct	9,556	sy	$ 70.00	$ 668,889
403	Curb 6" Integral	6,880	lf	$ 1.95	$ 13,416
503	Sidwalk 4" Class A Construct	2,293	sy	$ 43.00	$ 98,613
603	Turn Lanes and Median Openings	635	sy	$ 70.00	$ 44,420

Paving Construction Cost Subtotal: $ 890,431

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
	Traffic Control	None Anticipated	0%	$ -
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 26,713
√	Roadway Drainage	Standard Internal System	30%	$ 267,129
√	Illumination		6%	$ 53,426
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 26,713
√	Sewer	Minor Adjustments	2%	$ 17,809
√	Landscaping and Irrigation		4%	$ 35,617
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 427,407

Paving and Allowance Subtotal:		**$ 1,317,838**
Construction Contingency:	10%	$ 131,784
Mobilization	5%	$ 65,892
Prep ROW	1%	$ 13,178
Construction Cost TOTAL:		**$ 1,529,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 1,529,000**
Engineering/Survey/Testing:		16%	$ 244,640
Previous City contribution			
Other			
ROW/Easement Acquisition:	New Roadway Alignment	20%	$ 305,800

Impact Fee Project Cost TOTAL: $ 2,079,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-32**
Name:	Naaman School Rd	**This project consists of the reconstruction of the existing facility as a four lane divided major collector**		
Limits:	Brand Rd to Lavon Dr			
Impact Fee Class:	D1			
Ultimate Class:	Major Collector			
Length (lf):	4,670			
Service Area(s):	A			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
103	Unclassified Street Excavation	13,491	cy	$ 8.00	$ 107,929
203	6" Lime Stabilization Subgrade	26,463	sy	$ 2.60	$ 68,805
303	Street Cut Paving Concrete - Class C Construct	25,944	sy	$ 70.00	$ 1,816,111
403	Curb 6" Integral	18,680	lf	$ 1.95	$ 36,426
503	Sidwalk 4" Class A Construct	6,227	sy	$ 43.00	$ 267,747
603	Turn Lanes and Median Openings	1,723	sy	$ 70.00	$ 120,606

Paving Construction Cost Subtotal: $ 2,417,624

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 120,881
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 72,529
√	Roadway Drainage	Standard Internal System	30%	$ 725,287
√	Illumination		6%	$ 145,057
√	Special Drainage Structures	Minor Stream Crossing	0%	$ 300,000
√	Water	Minor Adjustments	3%	$ 72,529
√	Sewer	Minor Adjustments	2%	$ 48,352
√	Landscaping and Irrigation		4%	$ 96,705
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 1,581,341

Paving and Allowance Subtotal:		**$ 3,998,964**
Construction Contingency:	10%	$ 399,896
Mobilization	5%	$ 199,948
Prep ROW	5%	$ 199,948
Construction Cost TOTAL:		**$ 4,799,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 4,799,000**
Engineering/Survey/Testing:		16%	$ 767,840
Previous City contribution			
Other			
ROW/Easement Acquisition:	Existing Alignment	10%	$ 479,900

Impact Fee Project Cost TOTAL: $ 6,047,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**A-33**
Name:	Naaman Forest Blvd	**This completed project consists of the widening of Naaman Forest Boulevard to a four lane divided major collector. The total cost of this project is $3,904,483.**		
Limits:	Ranger to Brand Rd			
Impact Fee Class:	D1			
Ultimate Class:	Major Collector			
Length (lf):	1,363			
Service Area(s):	A			

Impact Fee Project Cost Summary

Impact Fee Project Cost TOTAL:	**$ 3,904,483**

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**I-1:I-8**
Name:	Bottleneck Study Improvements	**This project consists of intersection improvements identified in the ongoing Bottleneck study. The total cost of these improvements in Service Area A is estimated to be $2,625,000. The cost attributable to projected growth in Service Area A (24%) is $634.000.**		
Limits:	N/A			
Impact Fee Class:	N/A			
Ultimate Class:	N/A			
Length (lf):	N/A			
Service Area(s):	A			

Impact Fee Project Cost Summary

Impact Fee Project Cost TOTAL:	**$ 634,000**

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City of Garland - 2016 Roadway Impact Fee Study

Capital Improvement Plan for Roadway Impact Fees

Summary of Conceptual Level Project Cost Projections

Roadway Improvements - Service Area B

#	IF Class	Project	Limits		Status	Percent in Service Area	Project Cost	Total Cost in Service Area
			From	To				
B-1	E	Kings Rd	Marquis Dr	Kings Rd (Existing)	New	100	$ 551,000	$ 551,000
B-2	E	Leon Rd (1)	Shiloh Rd	S. Garland Ave	New	100	$ 959,000	$ 959,000
B-3	E	Leon Rd (2)	Leon Rd (Existing)	Millay Blvd (Future)	New	100	$ 212,000	$ 212,000
B-4	E	Marketplace ext (1)	Towngate Blvd	Northwest Hwy	New	100	$ 1,398,000	$ 1,398,000
B-5	E	Marketplace ext (2)	Pendleton Dr	Marketplace Dr	New	100	$ 666,000	$ 666,000
B-6	E	Millay Blvd (Future)	Leon Rd	Millay Blvd (Existing)	New	100	$ 1,180,000	$ 1,180,000
B-7	B (1/3)	Shiloh Rd (6)	Buckingham Rd	W Walnut St	Median	100	$ 1,784,000	$ 1,784,000
B-8	B	Shiloh Rd (7)	W Walnut St	Forest Ln	Widening	100	$ 4,590,000	$ 4,590,000
B-9	B	Shiloh Rd (8)	Forest Ln	Miller Rd	Widening	100	$ 8,552,000	$ 8,552,000
B-10	B	Shiloh Rd (9)	Miller Rd	Kingsley Rd	Widening	100	$ 9,087,000	$ 9,087,000
B-11	B	Shiloh Rd (10)	Kingsley Rd	McCree Rd	Widening	100	$ 4,129,000	$ 4,129,000
B-12	B	Shiloh Rd (11)	Garland Ave	IH-635 WBFR	Widening	100	$ 2,368,000	$ 2,368,000
B-13	F	New road east of Industrial Ln	Kingsley Rd	McCree Rd	New	100	$ 2,260,000	$ 2,260,000
B-14	D2	Saturn Rd	Saturn Rd (Existing)	Miller Rd	New	100	$ 2,215,000	$ 2,215,000
B-15	E	Sherwin	Sherwin St (Existing)	Wood Dr	New	100	$ 2,432,000	$ 2,432,000
						TOTAL	$ 13,404,000	$ 42,383,000

Bottleneck Study Improvements - Service Area B

#	Intersection	Improvement(s)	Percent in Service Area	Total Project Cost in Service Area	10-Year Growth Cost in Service Area
I-9	Plano Rd and Walnut St	NB an SB RT Lane	100%		
I-10	Forest Ln and Jupiter Rd	EB and NB RT Lane, NB Dual LT Lanes	100%		
I-11	Forest Ln and Shiloh Rd	SB and NB RT Lanes, Dual NB LT Lanes	100%		
I-12	Avenue B (SH 78) and First St	SB RT Lane	100%		
I-13	Avenue D and First St	EB RT Lane, EB Dual LT Lanes	100%		
I-15	Jupiter Rd and Miller Rd	SB RT Lane	100%		
I-16	Miller Rd and Shiloh Rd	SB RT Lane	100%		
I-17	Garland Ave and Miller Rd	SB, EB, and WB RT Lanes	100%	$ 9,205,000.00	$ 378,000.00
I-18	Glenbrook Dr and Miller Rd	EB and WB LT Lanes	100%		
I-19	First St and Miller Rd	Add EB RT & NB, SB Dual Lefts	33%		
I-20	Broadway Blvd and First St	Triple LT from NB First St	50%		
I-21	Jupiter Rd and Kingsley Rd	WB RT Lane	100%		
I-22	Garland Ave and Kingsley Rd	NB RT Lane	100%		
I-24	Garland Ave and MCree Rd / Shiloh Rd	SWB Dual LT Lanes	100%		

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**B-1**
Name:	Kings Rd	**This project consists of the construction of a new four lane undivided minor collector**		
Limits:	Marquis Dr to Kings Rd (Existing)			
Impact Fee Class:	E			
Ultimate Class:	Minor Collector			
Length (lf):	545			
Service Area(s):	B			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
102	Unclassified Street Excavation	1,453	cy	$ 8.00	$ 11,627
202	6" Lime Stabilization Subgrade	2,846	sy	$ 2.60	$ 7,400
302	Street Cut Paving Concrete - Class C Construct	2,725	sy	$ 70.00	$ 190,750
402	Curb 6" Integral	1,090	lf	$ 1.95	$ 2,126
502	Sidwalk 4" Class A Construct	484	sy	$ 43.00	$ 20,831
602	Turn Lanes and Median Openings	39	sy	$ 70.00	$ 2,702

Paving Construction Cost Subtotal: $ 235,435

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
	Traffic Control	None Anticipated	0%	$ -
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 7,063
√	Roadway Drainage	Standard Internal System	30%	$ 70,631
√	Illumination		6%	$ 14,126
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 7,063
√	Sewer	Minor Adjustments	2%	$ 4,709
√	Landscaping and Irrigation		4%	$ 9,417
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 113,009

Paving and Allowance Subtotal:		**$ 348,444**
Construction Contingency:	10%	$ 34,844
Mobilization	5%	$ 17,422
Prep ROW	1%	$ 3,484
Construction Cost TOTAL:		**$ 405,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 405,000**
Engineering/Survey/Testing:		16%	$ 64,800
Previous City contribution			
Other			
ROW/Easement Acquisition:	New Roadway Alignment	20%	$ 81,000

Impact Fee Project Cost TOTAL: $ 551,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**B-2**
Name:	Leon Rd (1)	**This project consists of the construction of a new four lane undivided minor collector**		
Limits:	Shiloh Rd to S. Garland Ave			
Impact Fee Class:	E			
Ultimate Class:	Minor Collector			
Length (lf):	950			
Service Area(s):	B			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
102	Unclassified Street Excavation	2,533	cy	$ 8.00	$ 20,267
202	6" Lime Stabilization Subgrade	4,961	sy	$ 2.60	$ 12,899
302	Street Cut Paving Concrete - Class C Construct	4,750	sy	$ 70.00	$ 332,500
402	Curb 6" Integral	1,900	lf	$ 1.95	$ 3,705
502	Sidwalk 4" Class A Construct	844	sy	$ 43.00	$ 36,311
602	Turn Lanes and Median Openings	67	sy	$ 70.00	$ 4,710

Paving Construction Cost Subtotal: $ 410,392

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
	Traffic Control	None Anticipated	0%	$ -
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 12,312
√	Roadway Drainage	Standard Internal System	30%	$ 123,118
√	Illumination		6%	$ 24,624
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 12,312
√	Sewer	Minor Adjustments	2%	$ 8,208
√	Landscaping and Irrigation		4%	$ 16,416
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 196,988

Paving and Allowance Subtotal:		**$ 607,380**
Construction Contingency:	10%	$ 60,738
Mobilization	5%	$ 30,369
Prep ROW	1%	$ 6,074
Construction Cost TOTAL:		**$ 705,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 705,000**
Engineering/Survey/Testing:		16%	$ 112,800
Previous City contribution			
Other			
ROW/Easement Acquisition:	New Roadway Alignment	20%	$ 141,000

Impact Fee Project Cost TOTAL: $ 959,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**B-3**
Name:	Leon Rd (2)	**This project consists of the construction of a new four lane undivided minor collector**		
Limits:	Leon Rd (Existing) to Millay Blvd (Future)			
Impact Fee Class:	E			
Ultimate Class:	Minor Collector			
Length (lf):	210			
Service Area(s):	B			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
102	Unclassified Street Excavation	560	cy	$ 8.00	$ 4,480
202	6" Lime Stabilization Subgrade	1,097	sy	$ 2.60	$ 2,851
302	Street Cut Paving Concrete - Class C Construct	1,050	sy	$ 70.00	$ 73,500
402	Curb 6" Integral	420	lf	$ 1.95	$ 819
502	Sidwalk 4" Class A Construct	187	sy	$ 43.00	$ 8,027
602	Turn Lanes and Median Openings	15	sy	$ 70.00	$ 1,041

Paving Construction Cost Subtotal: $ 90,718

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
	Traffic Control	None Anticipated	0%	$ -
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 2,722
√	Roadway Drainage	Standard Internal System	30%	$ 27,215
√	Illumination		6%	$ 5,443
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 2,722
√	Sewer	Minor Adjustments	2%	$ 1,814
√	Landscaping and Irrigation		4%	$ 3,629
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 43,545

Paving and Allowance Subtotal:		**$ 134,263**
Construction Contingency:	10%	$ 13,426
Mobilization	5%	$ 6,713
Prep ROW	1%	$ 1,343
Construction Cost TOTAL:		**$ 156,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 156,000**
Engineering/Survey/Testing:		16%	$ 24,960
Previous City contribution			
Other			
ROW/Easement Acquisition:	New Roadway Alignment	20%	$ 31,200

Impact Fee Project Cost TOTAL: $ 212,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**B-4**
Name:	Marketplace ext (1)	**This project consists of the construction of a new four lane undivided minor collector**		
Limits:	Towngate Blvd to Northwest Hwy			
Impact Fee Class:	E			
Ultimate Class:	Minor Collector			
Length (lf):	1,385			
Service Area(s):	B			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
102	Unclassified Street Excavation	3,693	cy	$ 8.00	$ 29,547
202	6" Lime Stabilization Subgrade	7,233	sy	$ 2.60	$ 18,805
302	Street Cut Paving Concrete - Class C Construct	6,925	sy	$ 70.00	$ 484,750
402	Curb 6" Integral	2,770	lf	$ 1.95	$ 5,402
502	Sidwalk 4" Class A Construct	1,231	sy	$ 43.00	$ 52,938
602	Turn Lanes and Median Openings	98	sy	$ 70.00	$ 6,867

Paving Construction Cost Subtotal: $ 598,308

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
	Traffic Control	None Anticipated	0%	$ -
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 17,949
√	Roadway Drainage	Standard Internal System	30%	$ 179,493
√	Illumination		6%	$ 35,899
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 17,949
√	Sewer	Minor Adjustments	2%	$ 11,966
√	Landscaping and Irrigation		4%	$ 23,932
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 287,188

Paving and Allowance Subtotal:		**$ 885,497**
Construction Contingency:	10%	$ 88,550
Mobilization	5%	$ 44,275
Prep ROW	1%	$ 8,855
Construction Cost TOTAL:		**$ 1,028,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 1,028,000**
Engineering/Survey/Testing:		16%	$ 164,480
Previous City contribution			
Other			
ROW/Easement Acquisition:	New Roadway Alignment	20%	$ 205,600

Impact Fee Project Cost TOTAL: $ 1,398,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**B-5**
Name:	Marketplace ext (2)	**This project consists of the construction of a new four lane undivided minor collector**		
Limits:	Pendleton Dr to Marketplace Dr			
Impact Fee Class:	E			
Ultimate Class:	Minor Collector			
Length (lf):	660			
Service Area(s):	B			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
102	Unclassified Street Excavation	1,760	cy	$ 8.00	$ 14,080
202	6" Lime Stabilization Subgrade	3,447	sy	$ 2.60	$ 8,961
302	Street Cut Paving Concrete - Class C Construct	3,300	sy	$ 70.00	$ 231,000
402	Curb 6" Integral	1,320	lf	$ 1.95	$ 2,574
502	Sidwalk 4" Class A Construct	587	sy	$ 43.00	$ 25,227
602	Turn Lanes and Median Openings	47	sy	$ 70.00	$ 3,273
				Paving Construction Cost Subtotal:	**$ 285,115**

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
	Traffic Control	None Anticipated	0%	$ -
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 8,553
√	Roadway Drainage	Standard Internal System	30%	$ 85,534
√	Illumination		6%	$ 17,107
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 8,553
√	Sewer	Minor Adjustments	2%	$ 5,702
√	Landscaping and Irrigation		4%	$ 11,405
	Miscellaneous:		$0	$ -
**Allowances based on % of Paving Construction Cost Subtotal			**Allowance Subtotal:**	**$ 136,855**

Paving and Allowance Subtotal:		**$ 421,969**
Construction Contingency:	10%	$ 42,197
Mobilization	5%	$ 21,098
Prep ROW	1%	$ 4,220
Construction Cost TOTAL:		**$ 490,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 490,000**
Engineering/Survey/Testing:		16%	$ 78,400
Previous City contribution			
Other			
ROW/Easement Acquisition:	New Roadway Alignment	20%	$ 98,000
		Impact Fee Project Cost TOTAL:	**$ 666,000**

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**B-6**
Name:	Millay Blvd (Future)	**This project consists of the construction of a new four lane undivided minor collector**		
Limits:	Leon Rd to Millay Blvd (Existing)			
Impact Fee Class:	E			
Ultimate Class:	Minor Collector			
Length (lf):	1,170			
Service Area(s):	B			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
102	Unclassified Street Excavation	3,120	cy	$ 8.00	$ 24,960
202	6" Lime Stabilization Subgrade	6,110	sy	$ 2.60	$ 15,886
302	Street Cut Paving Concrete - Class C Construct	5,850	sy	$ 70.00	$ 409,500
402	Curb 6" Integral	2,340	lf	$ 1.95	$ 4,563
502	Sidwalk 4" Class A Construct	1,040	sy	$ 43.00	$ 44,720
602	Turn Lanes and Median Openings	83	sy	$ 70.00	$ 5,801

Paving Construction Cost Subtotal: $ 505,430

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
	Traffic Control	None Anticipated	0%	$ -
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 15,163
√	Roadway Drainage	Standard Internal System	30%	$ 151,629
√	Illumination		6%	$ 30,326
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 15,163
√	Sewer	Minor Adjustments	2%	$ 10,109
√	Landscaping and Irrigation		4%	$ 20,217
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 242,607

Paving and Allowance Subtotal:		**$ 748,037**
Construction Contingency:	10%	$ 74,804
Mobilization	5%	$ 37,402
Prep ROW	1%	$ 7,480
Construction Cost TOTAL:		**$ 868,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 868,000**
Engineering/Survey/Testing:		16%	$ 138,880
Previous City contribution			
Other			
ROW/Easement Acquisition:	New Roadway Alignment	20%	$ 173,600
		Impact Fee Project Cost TOTAL:	**$ 1,180,000**

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**B-7**
Name:	Shiloh Rd (6)	**This project consists of the construction of the median lanes to complete the six lane divided regional arterial**		
Limits:	Buckingham Rd to W Walnut St			
Impact Fee Class:	B (1/3)			
Ultimate Class:	Regional Arterial			
Length (lf):	5,260			
Service Area(s):	B			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
110	Unclassified Street Excavation	7,598	cy	$ 8.00	$ 60,782
210	6" Lime Stabilization Subgrade	14,611	sy	$ 2.60	$ 37,989
310	Street Cut Paving Concrete - Class C Construct	13,442	sy	$ 70.00	$ 940,956
410	Curb 6" Integral	10,520	lf	$ 1.95	$ 20,514
510	Sidwalk 4" Class A Construct	0	sy	$ 43.00	$ -
610	Turn Lanes and Median Openings	1,195	sy	$ 70.00	$ 83,682

Paving Construction Cost Subtotal: $ 1,143,922

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 57,196
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 34,318
	Roadway Drainage	None Anticipated	0%	$ -
	Illumination		0%	$ -
	Special Drainage Structures	None Anticipated	0%	$ -
	Water	None Anticipated	0%	$ -
	Sewer	None Anticipated	0%	$ -
√	Landscaping and Irrigation		4%	$ 45,757
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 137,271

Paving and Allowance Subtotal:		**$ 1,281,193**
Construction Contingency:	10%	$ 128,119
Mobilization	5%	$ 64,060
Prep ROW	5%	$ 64,060
Construction Cost TOTAL:		**$ 1,538,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 1,538,000**
Engineering/Survey/Testing:		16%	$ 246,080
Previous City contribution			
Other			
ROW/Easement Acquisition:	No ROW Acquisition Costs included	0%	$ -

Impact Fee Project Cost TOTAL: $ 1,784,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**B-8**
Name:	Shiloh Rd (7)	**This project consists of the reconstruction of the existing facility as a six lane divided regional arterial**		
Limits:	W Walnut St to Forest Ln			
Impact Fee Class:	B			
Ultimate Class:	Regional Arterial			
Length (lf):	2,665			
Service Area(s):	B			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
109	Unclassified Street Excavation	10,364	cy	$ 8.00	$ 82,911
209	6" Lime Stabilization Subgrade	20,432	sy	$ 2.60	$ 53,122
309	Street Cut Paving Concrete - Class C Construct	20,136	sy	$ 70.00	$ 1,409,489
409	Curb 6" Integral	10,660	lf	$ 1.95	$ 20,787
509	Sidwalk 4" Class A Construct	3,553	sy	$ 43.00	$ 152,793
609	Turn Lanes and Median Openings	983	sy	$ 70.00	$ 68,826

Paving Construction Cost Subtotal: $ 1,787,928

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 89,396
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 53,638
√	Roadway Drainage	Standard Internal System	30%	$ 536,378
√	Illumination		6%	$ 107,276
√	Special Drainage Structures	Minor Stream Crossing	0%	$ 300,000
√	Water	Minor Adjustments	3%	$ 53,638
√	Sewer	Minor Adjustments	2%	$ 35,759
√	Landscaping and Irrigation		4%	$ 71,517
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 1,247,602

Paving and Allowance Subtotal:		**$ 3,035,530**
Construction Contingency:	10%	$ 303,553
Mobilization	5%	$ 151,777
Prep ROW	5%	$ 151,777
Construction Cost TOTAL:		**$ 3,643,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 3,643,000**
Engineering/Survey/Testing:		16%	$ 582,880
Previous City contribution			
Other			
ROW/Easement Acquisition:	Existing Alignment	10%	$ 364,300

Impact Fee Project Cost TOTAL: $ 4,590,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**B-9**
Name:	Shiloh Rd (8)	**This project consists of the reconstruction of the existing facility as a six lane divided regional arterial**		
Limits:	Forest Ln to Miller Rd			
Impact Fee Class:	B			
Ultimate Class:	Regional Arterial			
Length (lf):	5,315			
Service Area(s):	B			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
109	Unclassified Street Excavation	20,669	cy	$ 8.00	$ 165,356
209	6" Lime Stabilization Subgrade	40,748	sy	$ 2.60	$ 105,946
309	Street Cut Paving Concrete - Class C Construct	40,158	sy	$ 70.00	$ 2,811,044
409	Curb 6" Integral	21,260	lf	$ 1.95	$ 41,457
509	Sidwalk 4" Class A Construct	7,087	sy	$ 43.00	$ 304,727
609	Turn Lanes and Median Openings	1,961	sy	$ 70.00	$ 137,264

Paving Construction Cost Subtotal: $ 3,565,793

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 178,290
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 106,974
√	Roadway Drainage	Standard Internal System	30%	$ 1,069,738
√	Illumination		6%	$ 213,948
√	Special Drainage Structures	Minor Stream Crossing	0%	$ 200,000
√	Water	Minor Adjustments	3%	$ 106,974
√	Sewer	Minor Adjustments	2%	$ 71,316
√	Landscaping and Irrigation		4%	$ 142,632
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 2,089,870

Paving and Allowance Subtotal:		**$ 5,655,664**
Construction Contingency:	10%	$ 565,566
Mobilization	5%	$ 282,783
Prep ROW	5%	$ 282,783
Construction Cost TOTAL:		**$ 6,787,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 6,787,000**
Engineering/Survey/Testing:		16%	$ 1,085,920
Previous City contribution			
Other			
ROW/Easement Acquisition:	Existing Alignment	10%	$ 678,700

Impact Fee Project Cost TOTAL: $ 8,552,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**B-10**
Name:	Shiloh Rd (9)	**This project consists of the reconstruction of the existing facility as a six lane divided regional arterial**		
Limits:	Miller Rd to Kingsley Rd			
Impact Fee Class:	B			
Ultimate Class:	Regional Arterial			
Length (lf):	5,660			
Service Area(s):	B			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
109	Unclassified Street Excavation	22,011	cy	$ 8.00	$ 176,089
209	6" Lime Stabilization Subgrade	43,393	sy	$ 2.60	$ 112,823
309	Street Cut Paving Concrete - Class C Construct	42,764	sy	$ 70.00	$ 2,993,511
409	Curb 6" Integral	22,640	lf	$ 1.95	$ 44,148
509	Sidwalk 4" Class A Construct	7,547	sy	$ 43.00	$ 324,507
609	Turn Lanes and Median Openings	2,088	sy	$ 70.00	$ 146,174

Paving Construction Cost Subtotal: $ 3,797,251

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 189,863
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 113,918
√	Roadway Drainage	Standard Internal System	30%	$ 1,139,175
√	Illumination		6%	$ 227,835
√	Special Drainage Structures	Minor Stream Crossing	0%	$ 200,000
√	Water	Minor Adjustments	3%	$ 113,918
√	Sewer	Minor Adjustments	2%	$ 75,945
√	Landscaping and Irrigation		4%	$ 151,890
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 2,212,543

Paving and Allowance Subtotal:		**$ 6,009,794**
Construction Contingency:	10%	$ 600,979
Mobilization	5%	$ 300,490
Prep ROW	5%	$ 300,490
Construction Cost TOTAL:		**$ 7,212,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 7,212,000**
Engineering/Survey/Testing:		16%	$ 1,153,920
Previous City contribution			
Other			
ROW/Easement Acquisition:	Existing Alignment	10%	$ 721,200

Impact Fee Project Cost TOTAL: $ 9,087,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**B-11**
Name:	Shiloh Rd (10)	**This project consists of the reconstruction of the existing facility as a six lane divided regional arterial**		
Limits:	Kingsley Rd to McCree Rd			
Impact Fee Class:	B			
Ultimate Class:	Regional Arterial			
Length (lf):	2,660			
Service Area(s):	B			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
109	Unclassified Street Excavation	10,344	cy	$ 8.00	$ 82,756
209	6" Lime Stabilization Subgrade	20,393	sy	$ 2.60	$ 53,023
309	Street Cut Paving Concrete - Class C Construct	20,098	sy	$ 70.00	$ 1,406,844
409	Curb 6" Integral	10,640	lf	$ 1.95	$ 20,748
509	Sidwalk 4" Class A Construct	3,547	sy	$ 43.00	$ 152,507
609	Turn Lanes and Median Openings	981	sy	$ 70.00	$ 68,697
				Paving Construction Cost Subtotal:	**$ 1,784,574**

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 89,229
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 53,537
√	Roadway Drainage	Standard Internal System	30%	$ 535,372
√	Illumination		6%	$ 107,074
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 53,537
√	Sewer	Minor Adjustments	2%	$ 35,691
√	Landscaping and Irrigation		4%	$ 71,383
	Miscellaneous:		$0	$ -
**Allowances based on % of Paving Construction Cost Subtotal			**Allowance Subtotal:**	**$ 945,824**

Paving and Allowance Subtotal:		**$ 2,730,398**
Construction Contingency:	10%	$ 273,040
Mobilization	5%	$ 136,520
Prep ROW	5%	$ 136,520
Construction Cost TOTAL:		**$ 3,277,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 3,277,000**
Engineering/Survey/Testing:		16%	$ 524,320
Previous City contribution			
Other			
ROW/Easement Acquisition:	Existing Alignment	10%	$ 327,700
		Impact Fee Project Cost TOTAL:	**$ 4,129,000**

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**B-12**
Name:	Shiloh Rd (11)	**This project consists of the reconstruction of the existing facility as a six lane divided regional arterial**		
Limits:	Garland Ave to IH-635 WBFR			
Impact Fee Class:	B			
Ultimate Class:	Regional Arterial			
Length (lf):	1,525			
Service Area(s):	B			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
109	Unclassified Street Excavation	5,931	cy	$ 8.00	$ 47,444
209	6" Lime Stabilization Subgrade	11,692	sy	$ 2.60	$ 30,398
309	Street Cut Paving Concrete - Class C Construct	11,522	sy	$ 70.00	$ 806,556
409	Curb 6" Integral	6,100	lf	$ 1.95	$ 11,895
509	Sidwalk 4" Class A Construct	2,033	sy	$ 43.00	$ 87,433
609	Turn Lanes and Median Openings	563	sy	$ 70.00	$ 39,384

Paving Construction Cost Subtotal: $ 1,023,111

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 51,156
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 30,693
√	Roadway Drainage	Standard Internal System	30%	$ 306,933
√	Illumination		6%	$ 61,387
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 30,693
√	Sewer	Minor Adjustments	2%	$ 20,462
√	Landscaping and Irrigation		4%	$ 40,924
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 542,249

Paving and Allowance Subtotal:		**$ 1,565,360**
Construction Contingency:	10%	$ 156,536
Mobilization	5%	$ 78,268
Prep ROW	5%	$ 78,268
Construction Cost TOTAL:		**$ 1,879,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 1,879,000**
Engineering/Survey/Testing:		16%	$ 300,640
Previous City contribution			
Other			
ROW/Easement Acquisition:	Existing Alignment	10%	$ 187,900

Impact Fee Project Cost TOTAL: $ 2,368,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**B-13**
Name:	New road east of Industrial Ln	**This project consists of the construction of a new two lane undivided minor collector**		
Limits:	Kingsley Rd to McCree Rd			
Impact Fee Class:	F			
Ultimate Class:	Minor Collector			
Length (lf):	2,660			
Service Area(s):	B			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
101	Unclassified Street Excavation	5,911	cy	$ 8.00	$ 47,289
201	6" Lime Stabilization Subgrade	11,527	sy	$ 2.60	$ 29,969
301	Street Cut Paving Concrete - Class C Construct	10,936	sy	$ 70.00	$ 765,489
401	Curb 6" Integral	5,320	lf	$ 1.95	$ 10,374
501	Sidwalk 4" Class A Construct	2,364	sy	$ 43.00	$ 101,671
601	Turn Lanes and Median Openings	188	sy	$ 70.00	$ 13,189

Paving Construction Cost Subtotal: $ 967,981

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
	Traffic Control	None Anticipated	0%	$ -
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 29,039
√	Roadway Drainage	Standard Internal System	30%	$ 290,394
√	Illumination		6%	$ 58,079
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 29,039
√	Sewer	Minor Adjustments	2%	$ 19,360
√	Landscaping and Irrigation		4%	$ 38,719
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 464,631

Paving and Allowance Subtotal:		**$ 1,432,612**
Construction Contingency:	10%	$ 143,261
Mobilization	5%	$ 71,631
Prep ROW	1%	$ 14,326
Construction Cost TOTAL:		**$ 1,662,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 1,662,000**
Engineering/Survey/Testing:		16%	$ 265,920
Previous City contribution			
Other			
ROW/Easement Acquisition:	New Roadway Alignment	20%	$ 332,400

Impact Fee Project Cost TOTAL: $ 2,260,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**B-14**
Name:	Saturn Rd	**This project consists of the construction of a new four lane w/ center turn major collector**		
Limits:	Saturn Rd (Existing) to Miller Rd			
Impact Fee Class:	D2			
Ultimate Class:	Major Collector			
Length (lf):	1,615			
Service Area(s):	B			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
105	Unclassified Street Excavation	5,742	cy	$ 8.00	$ 45,938
205	6" Lime Stabilization Subgrade	11,305	sy	$ 2.60	$ 29,393
305	Street Cut Paving Concrete - Class C Construct	10,946	sy	$ 70.00	$ 766,228
405	Curb 6" Integral	3,230	lf	$ 1.95	$ 6,299
505	Sidwalk 4" Class A Construct	2,153	sy	$ 43.00	$ 92,593
605	Turn Lanes and Median Openings	114	sy	$ 70.00	$ 8,008

Paving Construction Cost Subtotal: $ 948,458

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
	Traffic Control	None Anticipated	0%	$ -
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 28,454
√	Roadway Drainage	Standard Internal System	30%	$ 284,537
√	Illumination		6%	$ 56,907
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 28,454
√	Sewer	Minor Adjustments	2%	$ 18,969
√	Landscaping and Irrigation		4%	$ 37,938
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 455,260

Paving and Allowance Subtotal:		**$ 1,403,718**
Construction Contingency:	10%	$ 140,372
Mobilization	5%	$ 70,186
Prep ROW	1%	$ 14,037
Construction Cost TOTAL:		**$ 1,629,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 1,629,000**
Engineering/Survey/Testing:		16%	$ 260,640
Previous City contribution			
Other			
ROW/Easement Acquisition:	New Roadway Alignment	20%	$ 325,800

Impact Fee Project Cost TOTAL: $ 2,215,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**B-15**
Name:	Sherwin	**This project consists of the construction of a new four lane undivided minor collector**		
Limits:	Sherwin St (Existing) to Wood Dr			
Impact Fee Class:	E			
Ultimate Class:	Minor Collector			
Length (lf):	690			
Service Area(s):	B			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
102	Unclassified Street Excavation	1,840	cy	$ 8.00	$ 14,720
202	6" Lime Stabilization Subgrade	3,603	sy	$ 2.60	$ 9,369
302	Street Cut Paving Concrete - Class C Construct	3,450	sy	$ 70.00	$ 241,500
402	Curb 6" Integral	1,380	lf	$ 1.95	$ 2,691
502	Sidwalk 4" Class A Construct	613	sy	$ 43.00	$ 26,373
602	Turn Lanes and Median Openings	49	sy	$ 70.00	$ 3,421
				Paving Construction Cost Subtotal:	**$ 298,074**

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
	Traffic Control	None Anticipated	0%	$ -
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 8,942
√	Roadway Drainage	Standard Internal System	30%	$ 89,422
√	Illumination		6%	$ 17,884
√	Special Drainage Structures	Bridge Crossing	0%	$ 1,100,000
√	Water	Minor Adjustments	3%	$ 8,942
√	Sewer	Minor Adjustments	2%	$ 5,961
√	Landscaping and Irrigation		4%	$ 11,923
	Miscellaneous:		$0	$ -
**Allowances based on % of Paving Construction Cost Subtotal			**Allowance Subtotal:**	**$ 1,243,076**

Paving and Allowance Subtotal:		**$ 1,541,150**
Construction Contingency:	10%	$ 154,115
Mobilization	5%	$ 77,057
Prep ROW	1%	$ 15,411
Construction Cost TOTAL:		**$ 1,788,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 1,788,000**
Engineering/Survey/Testing:		16%	$ 286,080
Previous City contribution			
Other			
ROW/Easement Acquisition:	New Roadway Alignment	20%	$ 357,600
		Impact Fee Project Cost TOTAL:	**$ 2,432,000**

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**I-9:I-24**
Name:	Bottleneck Study Improvements	**This project consists of intersection improvements identified in the ongoing Bottleneck study. The total cost of these improvements in Service Area B is estimated to be $9,205,000. The cost attributable to projected growth in Service Area B (4%) is $379,000.**		
Limits:	N/A			
Impact Fee Class:	N/A			
Ultimate Class:	N/A			
Length (lf):	N/A			
Service Area(s):	B			

Impact Fee Project Cost Summary		
Impact Fee Project Cost TOTAL:	**$**	**379,000**

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City of Garland - 2016 Roadway Impact Fee Study

Capital Improvement Plan for Roadway Impact Fees

Summary of Conceptual Level Project Cost Projections

Roadway Improvements - Service Area C

#	IF Class	Project	Limits		Status	Percent in Service Area	Project Cost	Total Cost in Service Area
			From	To				
C-1	D1	Castle Dr (1)	N. First St	Lavon Dr	Widening	100	$ 953,000	$ 953,000
C-2	D1	Castle Dr (2)	Lavon Dr	Mars Dr	Widening	100	$ 2,390,000	$ 2,390,000
C-3	E	Castle Dr (3)	Mars Dr	Country Club Rd	Widening	100	$ 2,424,000	$ 2,424,000
C-4	E	Castle Dr (4)	Country Club Rd	Centerville Rd	Widening	100	$ 5,536,000	$ 5,536,000
C-5	E	Castle Dr (5)	2660' south of Firewheel Pkwy	Firewheel Pkwy	Widening	50	$ 2,659,000	$ 1,329,500
C-6	E	Castle Dr (6)	Firewheel Pkwy	Miles Rd	Widening	50	$ 4,433,000	$ 2,216,500
C-7	D2	Crist Rd	Lavon Dr	Naaman School Rd	Widening	100	$ 4,436,000	$ 4,436,000
C-8	A	Firewheel Parkway (2)	530' E of Lavon Dr	310' S of Town Center Blvd	Widening	100	$ 6,292,000	$ 6,292,000
C-9	C1	Pleasant Valley Rd (1)	Creek Meadow Ln	Miles Rd	Under Construction	100	$ 10,773,000	$ 10,773,000
C-10,D-5	B (1/3)	E. Miller Rd	Centerville Rd	2,815' E of Centerville Rd	Median	50	$ 955,000	$ 477,500
C-11	C1	Pleasant Valley Rd (2)	Firewheel Pkwy	Creek Meadow Ln	Completed	100	$ 3,603,239	$ 3,603,239
C-12,D-21	B	Miller Rd Bridge	2,815' E of Centerville Rd	East City Limits	Completed	50	$ 2,743,883	$ 1,371,942
						TOTAL	$ 47,198,122	$ 41,802,681

Bottleneck Study Improvements - Service Area C

#	Intersection	Improvement(s)	Percent in Service Area	Total Project Cost in Service Area	10-Year Growth Cost in Service Area
I-14	Centerville Rd and SH 66	Add dual LT lanes NB and WB	100%	$ 1,030,000	$ 141,000
I-19	First St and Miller Rd	Add EB RT & NB, SB Dual Lefts	33%		

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**C-1**
Name:	Castle Dr (1)	**This project consists of the reconstruction of the existing facility as a four lane divided major collector**		
Limits:	N. First St to Lavon Dr			
Impact Fee Class:	D1			
Ultimate Class:	Major Collector			
Length (lf):	795			
Service Area(s):	C			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
103	Unclassified Street Excavation	2,297	cy	$ 8.00	$ 18,373
203	6" Lime Stabilization Subgrade	4,505	sy	$ 2.60	$ 11,713
303	Street Cut Paving Concrete - Class C Construct	4,417	sy	$ 70.00	$ 309,167
403	Curb 6" Integral	3,180	lf	$ 1.95	$ 6,201
503	Sidwalk 4" Class A Construct	1,060	sy	$ 43.00	$ 45,580
603	Turn Lanes and Median Openings	293	sy	$ 70.00	$ 20,531
				Paving Construction Cost Subtotal:	**$ 411,565**

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 20,578
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 12,347
√	Roadway Drainage	Standard Internal System	30%	$ 123,470
√	Illumination		6%	$ 24,694
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 12,347
√	Sewer	Minor Adjustments	2%	$ 8,231
√	Landscaping and Irrigation		4%	$ 16,463
	Miscellaneous:		$0	$ -
**Allowances based on % of Paving Construction Cost Subtotal			**Allowance Subtotal:**	**$ 218,130**

Paving and Allowance Subtotal:		**$ 629,695**
Construction Contingency:	10%	$ 62,970
Mobilization	5%	$ 31,485
Prep ROW	5%	$ 31,485
Construction Cost TOTAL:		**$ 756,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 756,000**
Engineering/Survey/Testing:		16%	$ 120,960
Previous City contribution			
Other			
ROW/Easement Acquisition:	Existing Alignment	10%	$ 75,600
		Impact Fee Project Cost TOTAL:	**$ 953,000**

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**C-2**
Name:	Castle Dr (2)	**This project consists of the reconstruction of the existing facility as a four lane divided major collector**		
Limits:	Lavon Dr to Mars Dr			
Impact Fee Class:	D1			
Ultimate Class:	Major Collector			
Length (lf):	1,995			
Service Area(s):	C			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
103	Unclassified Street Excavation	5,763	cy	$ 8.00	$ 46,107
203	6" Lime Stabilization Subgrade	11,305	sy	$ 2.60	$ 29,393
303	Street Cut Paving Concrete - Class C Construct	11,083	sy	$ 70.00	$ 775,833
403	Curb 6" Integral	7,980	lf	$ 1.95	$ 15,561
503	Sidwalk 4" Class A Construct	2,660	sy	$ 43.00	$ 114,380
603	Turn Lanes and Median Openings	736	sy	$ 70.00	$ 51,522

Paving Construction Cost Subtotal: $ 1,032,796

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 51,640
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 30,984
√	Roadway Drainage	Standard Internal System	30%	$ 309,839
√	Illumination		6%	$ 61,968
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 30,984
√	Sewer	Minor Adjustments	2%	$ 20,656
√	Landscaping and Irrigation		4%	$ 41,312
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 547,382

Paving and Allowance Subtotal:		**$ 1,580,178**
Construction Contingency:	10%	$ 158,018
Mobilization	5%	$ 79,009
Prep ROW	5%	$ 79,009
Construction Cost TOTAL:		**$ 1,897,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 1,897,000**
Engineering/Survey/Testing:		16%	$ 303,520
Previous City contribution			
Other			
ROW/Easement Acquisition:	Existing Alignment	10%	$ 189,700

Impact Fee Project Cost TOTAL: $ 2,390,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**C-3**
Name:	Castle Dr (3)	**This project consists of the reconstruction of the existing facility as a four lane undivided minor collector**		
Limits:	Mars Dr to Country Club Rd			
Impact Fee Class:	E			
Ultimate Class:	Minor Collector			
Length (lf):	2,425			
Service Area(s):	C			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
102	Unclassified Street Excavation	6,467	cy	$ 8.00	$ 51,733
202	6" Lime Stabilization Subgrade	12,664	sy	$ 2.60	$ 32,926
302	Street Cut Paving Concrete - Class C Construct	12,125	sy	$ 70.00	$ 848,750
402	Curb 6" Integral	4,850	lf	$ 1.95	$ 9,458
502	Sidwalk 4" Class A Construct	2,156	sy	$ 43.00	$ 92,689
602	Turn Lanes and Median Openings	172	sy	$ 70.00	$ 12,024

Paving Construction Cost Subtotal: $ 1,047,580

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 52,379
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 31,427
√	Roadway Drainage	Standard Internal System	30%	$ 314,274
√	Illumination		6%	$ 62,855
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 31,427
√	Sewer	Minor Adjustments	2%	$ 20,952
√	Landscaping and Irrigation		4%	$ 41,903
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 555,217

Paving and Allowance Subtotal:		**$ 1,602,797**
Construction Contingency:	10%	$ 160,280
Mobilization	5%	$ 80,140
Prep ROW	5%	$ 80,140
Construction Cost TOTAL:		**$ 1,924,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 1,924,000**
Engineering/Survey/Testing:		16%	$ 307,840
Previous City contribution			
Other			
ROW/Easement Acquisition:	Existing Alignment	10%	$ 192,400

Impact Fee Project Cost TOTAL: $ 2,424,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**C-4**
Name:	Castle Dr (4)	**This project consists of the reconstruction of the existing facility as a four lane undivided minor collector**		
Limits:	Country Club Rd to Centerville Rd			
Impact Fee Class:	E			
Ultimate Class:	Minor Collector			
Length (lf):	5,540			
Service Area(s):	C			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
102	Unclassified Street Excavation	14,773	cy	$ 8.00	$ 118,187
202	6" Lime Stabilization Subgrade	28,931	sy	$ 2.60	$ 75,221
302	Street Cut Paving Concrete - Class C Construct	27,700	sy	$ 70.00	$ 1,939,000
402	Curb 6" Integral	11,080	lf	$ 1.95	$ 21,606
502	Sidwalk 4" Class A Construct	4,924	sy	$ 43.00	$ 211,751
602	Turn Lanes and Median Openings	392	sy	$ 70.00	$ 27,469

Paving Construction Cost Subtotal: $ 2,393,234

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 119,662
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 71,797
√	Roadway Drainage	Standard Internal System	30%	$ 717,970
√	Illumination		6%	$ 143,594
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 71,797
√	Sewer	Minor Adjustments	2%	$ 47,865
√	Landscaping and Irrigation		4%	$ 95,729
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 1,268,414

Paving and Allowance Subtotal:		**$ 3,661,648**
Construction Contingency:	10%	$ 366,165
Mobilization	5%	$ 183,082
Prep ROW	5%	$ 183,082
Construction Cost TOTAL:		**$ 4,394,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 4,394,000**
Engineering/Survey/Testing:		16%	$ 703,040
Previous City contribution			
Other			
ROW/Easement Acquisition:	Existing Alignment	10%	$ 439,400

Impact Fee Project Cost TOTAL: $ 5,536,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**C-5**
Name:	Castle Dr (5)	**This project consists of the reconstruction of the existing facility as a four lane undivided minor collector**		
Limits:	2660' south of Firewheel Pkwy to Firewheel Pk			
Impact Fee Class:	E			
Ultimate Class:	Minor Collector			
Length (lf):	2,660			
Service Area(s):	C,ETJ			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
102	Unclassified Street Excavation	7,093	cy	$ 8.00	$ 56,747
202	6" Lime Stabilization Subgrade	13,891	sy	$ 2.60	$ 36,117
302	Street Cut Paving Concrete - Class C Construct	13,300	sy	$ 70.00	$ 931,000
402	Curb 6" Integral	5,320	lf	$ 1.95	$ 10,374
502	Sidwalk 4" Class A Construct	2,364	sy	$ 43.00	$ 101,671
602	Turn Lanes and Median Openings	188	sy	$ 70.00	$ 13,189

Paving Construction Cost Subtotal: $ 1,149,098

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 57,455
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 34,473
√	Roadway Drainage	Standard Internal System	30%	$ 344,729
√	Illumination		6%	$ 68,946
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 34,473
√	Sewer	Minor Adjustments	2%	$ 22,982
√	Landscaping and Irrigation		4%	$ 45,964
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 609,022

Paving and Allowance Subtotal:		**$ 1,758,120**
Construction Contingency:	10%	$ 175,812
Mobilization	5%	$ 87,906
Prep ROW	5%	$ 87,906
Construction Cost TOTAL:		**$ 2,110,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 2,110,000**
Engineering/Survey/Testing:		16%	$ 337,600
Previous City contribution			
Other			
ROW/Easement Acquisition:	Existing Alignment	10%	$ 211,000

Impact Fee Project Cost TOTAL: $ 2,659,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**C-6**
Name:	Castle Dr (6)	**This project consists of the reconstruction of the existing facility as a four lane undivided minor collector**		
Limits:	Firewheel Pkwy to Miles Rd			
Impact Fee Class:	E			
Ultimate Class:	Minor Collector			
Length (lf):	4,435			
Service Area(s):	C,ETJ			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
102	Unclassified Street Excavation	11,827	cy	$ 8.00	$ 94,613
202	6" Lime Stabilization Subgrade	23,161	sy	$ 2.60	$ 60,217
302	Street Cut Paving Concrete - Class C Construct	22,175	sy	$ 70.00	$ 1,552,250
402	Curb 6" Integral	8,870	lf	$ 1.95	$ 17,297
502	Sidwalk 4" Class A Construct	3,942	sy	$ 43.00	$ 169,516
602	Turn Lanes and Median Openings	314	sy	$ 70.00	$ 21,990

Paving Construction Cost Subtotal: $ 1,915,883

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 95,794
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 57,476
√	Roadway Drainage	Standard Internal System	30%	$ 574,765
√	Illumination		6%	$ 114,953
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 57,476
√	Sewer	Minor Adjustments	2%	$ 38,318
√	Landscaping and Irrigation		4%	$ 76,635
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 1,015,418

Paving and Allowance Subtotal:		**$ 2,931,301**
Construction Contingency:	10%	$ 293,130
Mobilization	5%	$ 146,565
Prep ROW	5%	$ 146,565
Construction Cost TOTAL:		**$ 3,518,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 3,518,000**
Engineering/Survey/Testing:		16%	$ 562,880
Previous City contribution			
Other			
ROW/Easement Acquisition:	Existing Alignment	10%	$ 351,800

Impact Fee Project Cost TOTAL: $ 4,433,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**C-7**
Name:	Crist Rd	**This project consists of the reconstruction of the existing facility as a four lane w/ center turn major collector**		
Limits:	Lavon Dr to Naaman School Rd			
Impact Fee Class:	D2			
Ultimate Class:	Major Collector			
Length (lf):	3,265			
Service Area(s):	C			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
105	Unclassified Street Excavation	11,609	cy	$ 8.00	$ 92,871
205	6" Lime Stabilization Subgrade	22,855	sy	$ 2.60	$ 59,423
305	Street Cut Paving Concrete - Class C Construct	22,129	sy	$ 70.00	$ 1,549,061
405	Curb 6" Integral	6,530	lf	$ 1.95	$ 12,734
505	Sidwalk 4" Class A Construct	4,353	sy	$ 43.00	$ 187,193
605	Turn Lanes and Median Openings	231	sy	$ 70.00	$ 16,189

Paving Construction Cost Subtotal: $ 1,917,471

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 95,874
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 57,524
√	Roadway Drainage	Standard Internal System	30%	$ 575,241
√	Illumination		6%	$ 115,048
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 57,524
√	Sewer	Minor Adjustments	2%	$ 38,349
√	Landscaping and Irrigation		4%	$ 76,699
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 1,016,260

Paving and Allowance Subtotal:		**$ 2,933,731**
Construction Contingency:	10%	$ 293,373
Mobilization	5%	$ 146,687
Prep ROW	5%	$ 146,687
Construction Cost TOTAL:		**$ 3,521,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 3,521,000**
Engineering/Survey/Testing:		16%	$ 563,360
Previous City contribution			
Other			
ROW/Easement Acquisition:	Existing Alignment	10%	$ 352,100

Impact Fee Project Cost TOTAL: $ 4,436,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**C-8**
Name:	Firewheel Parkway (2)	**This project consists of the reconstruction of the existing facility as a six lane divided regional arterial**		
Limits:	530' E of Lavon Dr to 310' S of Town Center Bl			
Impact Fee Class:	A			
Ultimate Class:	Regional Arterial			
Length (lf):	4,050			
Service Area(s):	C			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
111	Unclassified Street Excavation	15,750	cy	$ 8.00	$ 126,000
211	6" Lime Stabilization Subgrade	31,050	sy	$ 2.60	$ 80,730
311	Street Cut Paving Concrete - Class C Construct	30,600	sy	$ 70.00	$ 2,142,000
411	Curb 6" Integral	16,200	lf	$ 1.95	$ 31,590
511	Sidwalk 4" Class A Construct	5,400	sy	$ 43.00	$ 232,200
611	Turn Lanes and Median Openings	1,535	sy	$ 70.00	$ 107,440

Paving Construction Cost Subtotal: $ 2,719,960

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 135,998
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 81,599
√	Roadway Drainage	Standard Internal System	30%	$ 815,988
√	Illumination		6%	$ 163,198
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 81,599
√	Sewer	Minor Adjustments	2%	$ 54,399
√	Landscaping and Irrigation		4%	$ 108,798
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 1,441,579

Paving and Allowance Subtotal:		**$ 4,161,539**
Construction Contingency:	10%	$ 416,154
Mobilization	5%	$ 208,077
Prep ROW	5%	$ 208,077
Construction Cost TOTAL:		**$ 4,994,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 4,994,000**
Engineering/Survey/Testing:		16%	$ 799,040
Previous City contribution			
Other			
ROW/Easement Acquisition:	Existing Alignment	10%	$ 499,400

Impact Fee Project Cost TOTAL: $ 6,292,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**C-9**
Name:	Pleasant Valley Rd (1)	**This project consists of the construction of a new four lane divided minor arterial**		
Limits:	Creek Meadow Ln to Miles Rd			
Impact Fee Class:	C1			
Ultimate Class:	Minor Arterial			
Length (lf):	2,615			
Service Area(s):	C			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
107	Unclassified Street Excavation	7,554	cy	$ 8.00	$ 60,436
207	6" Lime Stabilization Subgrade	14,818	sy	$ 2.60	$ 38,528
307	Street Cut Paving Concrete - Class C Construct	14,528	sy	$ 70.00	$ 1,016,944
407	Curb 6" Integral	10,460	lf	$ 1.95	$ 20,397
507	Sidwalk 4" Class A Construct	3,487	sy	$ 43.00	$ 149,927
607	Turn Lanes and Median Openings	1,203	sy	$ 70.00	$ 84,175

Paving Construction Cost Subtotal: $ 1,370,407

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
	Traffic Control	None Anticipated	0%	$ -
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 41,112
√	Roadway Drainage	Standard Internal System	30%	$ 411,122
√	Illumination		6%	$ 82,224
√	Special Drainage Structures	Bridge Crossing	0%	$ 4,800,000
√	Water	Minor Adjustments	3%	$ 41,112
√	Sewer	Minor Adjustments	2%	$ 27,408
√	Landscaping and Irrigation		4%	$ 54,816
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 5,457,795

Paving and Allowance Subtotal:		**$ 6,828,202**
Construction Contingency:	10%	$ 682,820
Mobilization	5%	$ 341,410
Prep ROW	1%	$ 68,282
Construction Cost TOTAL:		**$ 7,921,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 7,921,000**
Engineering/Survey/Testing:		16%	$ 1,267,360
Previous City contribution			
Other			
ROW/Easement Acquisition:	New Roadway Alignment	20%	$ 1,584,200

Impact Fee Project Cost TOTAL: $ 10,773,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**C-10,D-5**
Name:	E. Miller Rd	**This project consists of the construction of the median lanes to complete the six lane divided regional arterial**		
Limits:	Centerville Rd to 2,815' E of Centerville Rd			
Impact Fee Class:	B (1/3)			
Ultimate Class:	Regional Arterial			
Length (lf):	2,815			
Service Area(s):	C,D			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
110	Unclassified Street Excavation	4,066	cy	$ 8.00	$ 32,529
210	6" Lime Stabilization Subgrade	7,819	sy	$ 2.60	$ 20,331
310	Street Cut Paving Concrete - Class C Construct	7,194	sy	$ 70.00	$ 503,572
410	Curb 6" Integral	5,630	lf	$ 1.95	$ 10,979
510	Sidwalk 4" Class A Construct	0	sy	$ 43.00	$ -
610	Turn Lanes and Median Openings	640	sy	$ 70.00	$ 44,784

Paving Construction Cost Subtotal: $ 612,194

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 30,610
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 18,366
	Roadway Drainage	None Anticipated	0%	$ -
	Illumination		0%	$ -
	Special Drainage Structures	None Anticipated	0%	$ -
	Water	None Anticipated	0%	$ -
	Sewer	None Anticipated	0%	$ -
√	Landscaping and Irrigation		4%	$ 24,488
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 73,463

Paving and Allowance Subtotal:		**$ 685,658**
Construction Contingency:	10%	$ 68,566
Mobilization	5%	$ 34,283
Prep ROW	5%	$ 34,283
Construction Cost TOTAL:		**$ 823,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 823,000**
Engineering/Survey/Testing:		16%	$ 131,680
Previous City contribution			
Other			
ROW/Easement Acquisition:	No ROW Acquisition Costs included	0%	$ -

Impact Fee Project Cost TOTAL: $ 955,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**C-11**
Name:	Pleasant Valley Rd (2)	**This completed project consisted of widening the previously existing facility to a 4 lane divided minor arterial. The total cost of the project was $5,372,133, of which the City contributed $3,603,239**		
Limits:	Firewheel Pkwy to Creek Meadow Ln			
Impact Fee Class:	C1			
Ultimate Class:	Minor Arterial			
Length (lf):	3,075			
Service Area(s):	C			

Impact Fee Project Cost Summary

Impact Fee Project Cost TOTAL:	**$ 3,603,239**

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**C-12,D-21**
Name:	Miller Rd Bridge	**This completed project consisted of widening the existing bridge to a 6 lane divided regional arterial. The total cost of the project was $24,710,481, of which the City contributed $2,743,883**		
Limits:	2,815' E of Centerville Rd to East City Limits			
Impact Fee Class:	B			
Ultimate Class:	Regional Arterial			
Length (lf):	194			
Service Area(s):	C,D			

Impact Fee Project Cost Summary	
Impact Fee Project Cost TOTAL:	**$ 2,743,883**

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**I-14,I-19**
Name:	Bottleneck Study Improvements	**This project consists of intersection improvements identified in the ongoing Bottleneck study. The total cost of these improvements in Service Area C is estimated to be $1,030,000. The cost attributable to projected growth in Service Area C (14%) is $141,000.**		
Limits:	N/A			
Impact Fee Class:	N/A			
Ultimate Class:	N/A			
Length (lf):	N/A			
Service Area(s):	C			

Impact Fee Project Cost Summary

Impact Fee Project Cost TOTAL:	**$ 141,000**

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City of Garland - 2016 Roadway Impact Fee Study

Capital Improvement Plan for Roadway Impact Fees

Summary of Conceptual Level Project Cost Projections

Roadway Improvements - Service Area D

#	IF Class	Project	Limits		Status	Percent in Service Area	Project Cost	Total Cost in Service Area
			From	To				
D-1	S	Bobtown Rd (1)	Rowlett Rd	Bobtown Rd (Existing)	New	100	$ 929,000	$ 929,000
D-2	E-S	Bobtown Rd (2)	Bobtown Rd (Future)	Waterhouse Blvd	Widening	100	$ 1,779,000	$ 1,779,000
D-3	E	Bobtown Rd (3)	400' S of High Dr	Lyons Rd	Widening	100	$ 1,995,000	$ 1,995,000
D-4	E	Bobtown Rd (4)	Lyons Rd	South City Limits	Widening	50	$ 2,654,000	$ 1,327,000
C-10,D-5	B (1/3)	E. Miller Rd	Centerville Rd	2,815' E of Centerville Rd	Median	50	$ 955,000	$ 477,500
D-6	F	E. Oates Rd (Future)	Country Club Rd	E. Oates Rd (Existing)	New	100	$ 3,219,000	$ 3,219,000
D-7	B (1/3)	La Prada Dr	IH 635 E frontage road	Northwest Hwy	Median	50	$ 567,000	$ 283,500
D-8	E	Locust Grove Rd	290' E of Oceanport Dr	East City Limits	Widening	100	$ 2,859,000	$ 2,859,000
D-9	B	Lyons Rd (1)	Bobtown Rd	Guthire Rd	Widening	100	$ 5,014,000	$ 5,014,000
D-10	B	Lyons Rd (2)	Guthire Rd	Lyons Rd (Future)	Widening	100	$ 1,366,000	$ 1,366,000
D-11	B	Lyons Rd (Future) (3)	Lyons Rd	South City Limits	New	100	$ 2,811,000	$ 2,811,000
D-12	F	Rosehill Rd (1)	Rosehill Rd (Existing)	Wynn Joyce Rd	New	100	$ 1,364,000	$ 1,364,000
D-13	B (1/3)	Rosehill Rd (2)	Bobtown Rd	IH 30 N loop	Median	100	$ 513,000	$ 513,000
D-14	A (1/3)	Rowlett Rd (1)	Broadway Blvd	Rosehill Rd	Median	100	$ 1,254,000	$ 1,254,000
D-15	A (1/3)	Rowlett Rd (2)	Rosehill Rd	Roan Rd	Median	100	$ 1,781,000	$ 1,781,000
D-16	A	Rowlett Rd (3)	Roan Rd	City Limits	Under Construction	100	$ 2,486,000	$ 2,486,000
D-17	B (1/3)	S. Country Club Rd	Rowlett Rd	Bobtown Rd	Median	100	$ 599,000	$ 599,000
D-18	E	Zion Rd	Locust Grove Rd	Bobtown Rd	Widening	100	$ 1,075,000	$ 1,075,000
D-19	B	Northwest Hwy	Centerville Rd	La Prada Dr	Completed	100	$ 2,904,782	$ 2,904,782
D-20	E	Dairy Rd	Celeste Rd	Broadway Blvd	Completed	100	$ 3,597,758	$ 3,597,758
C-12,D-21	B	Miller Rd Bridge	2,815' E of Centerville Rd	East City Limits	Completed	50	$ 2,743,883	$ 1,371,942
						TOTAL	$ 42,466,423	$ 39,006,482

Bottleneck Study Improvements - Service Area D

#	Intersection	Improvement(s)	Percent in Service Area	Total Project Cost in Service Area	10-Year Growth Cost in Service Area
I-19	First St and Miller Rd	Add EB RT & NB, SB Dual Lefts	33%		
I-20	Broadway Blvd and First St	Triple LT from NB First St	50%		
I-23	Broadway Blvd and Centerville Rd	Dual Lefts SWB, NEB and NWB	100%	$ 2,630,000	$ 236,000
I-25	Broadway Blvd and Rowlett Rd	Add EB RT Lane	100%		
I-26	Broadway Blvd and IH-30 EBFR	Dual NB RT Lanes	100%		

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**D-1**
Name:	Bobtown Rd (1)	**This project consists of the construction of a new four lane undivided minor collector**		
Limits:	Rowlett Rd to Bobtown Rd (Existing)			
Impact Fee Class:	E			
Ultimate Class:	Special Functional Classification			
Length (lf):	920			
Service Area(s):	D			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
102	Unclassified Street Excavation	2,453	cy	$ 8.00	$ 19,627
202	6" Lime Stabilization Subgrade	4,804	sy	$ 2.60	$ 12,492
302	Street Cut Paving Concrete - Class C Construct	4,600	sy	$ 70.00	$ 322,000
402	Curb 6" Integral	1,840	lf	$ 1.95	$ 3,588
502	Sidwalk 4" Class A Construct	818	sy	$ 43.00	$ 35,164
602	Turn Lanes and Median Openings	65	sy	$ 70.00	$ 4,562

Paving Construction Cost Subtotal: $ 397,432

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
	Traffic Control	None Anticipated	0%	$ -
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 11,923
√	Roadway Drainage	Standard Internal System	30%	$ 119,230
√	Illumination		6%	$ 23,846
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 11,923
√	Sewer	Minor Adjustments	2%	$ 7,949
√	Landscaping and Irrigation		4%	$ 15,897
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 190,768

Paving and Allowance Subtotal:		**$ 588,200**
Construction Contingency:	10%	$ 58,820
Mobilization	5%	$ 29,410
Prep ROW	1%	$ 5,882
Construction Cost TOTAL:		**$ 683,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 683,000**
Engineering/Survey/Testing:		16%	$ 109,280
Previous City contribution			
Other			
ROW/Easement Acquisition:	New Roadway Alignment	20%	$ 136,600

Impact Fee Project Cost TOTAL: $ 929,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**D-2**
Name:	Bobtown Rd (2)	**This project consists of the reconstruction of the existing facility as a four lane undivided minor collector**		
Limits:	Bobtown Rd (Future) to Waterhouse Blvd			
Impact Fee Class:	E			
Ultimate Class:	Minor Collector			
Length (lf):	1,780			
Service Area(s):	D			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
102	Unclassified Street Excavation	4,747	cy	$ 8.00	$ 37,973
202	6" Lime Stabilization Subgrade	9,296	sy	$ 2.60	$ 24,168
302	Street Cut Paving Concrete - Class C Construct	8,900	sy	$ 70.00	$ 623,000
402	Curb 6" Integral	3,560	lf	$ 1.95	$ 6,942
502	Sidwalk 4" Class A Construct	1,582	sy	$ 43.00	$ 68,036
602	Turn Lanes and Median Openings	126	sy	$ 70.00	$ 8,826

Paving Construction Cost Subtotal: $ 768,945

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 38,447
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 23,068
√	Roadway Drainage	Standard Internal System	30%	$ 230,684
√	Illumination		6%	$ 46,137
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 23,068
√	Sewer	Minor Adjustments	2%	$ 15,379
√	Landscaping and Irrigation		4%	$ 30,758
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 407,541

Paving and Allowance Subtotal:		**$ 1,176,486**
Construction Contingency:	10%	$ 117,649
Mobilization	5%	$ 58,824
Prep ROW	5%	$ 58,824
Construction Cost TOTAL:		**$ 1,412,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 1,412,000**
Engineering/Survey/Testing:		16%	$ 225,920
Previous City contribution			
Other			
ROW/Easement Acquisition:	Existing Alignment	10%	$ 141,200

Impact Fee Project Cost TOTAL: $ 1,779,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**D-3**
Name:	Bobtown Rd (3)	**This project consists of the reconstruction of the existing facility as a four lane undivided minor collector**		
Limits:	400' S of High Dr to Lyons Rd			
Impact Fee Class:	E			
Ultimate Class:	Minor Collector			
Length (lf):	1,995			
Service Area(s):	D			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
102	Unclassified Street Excavation	5,320	cy	$ 8.00	$ 42,560
202	6" Lime Stabilization Subgrade	10,418	sy	$ 2.60	$ 27,088
302	Street Cut Paving Concrete - Class C Construct	9,975	sy	$ 70.00	$ 698,250
402	Curb 6" Integral	3,990	lf	$ 1.95	$ 7,781
502	Sidwalk 4" Class A Construct	1,773	sy	$ 43.00	$ 76,253
602	Turn Lanes and Median Openings	141	sy	$ 70.00	$ 9,892

Paving Construction Cost Subtotal: $ 861,823

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 43,091
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 25,855
√	Roadway Drainage	Standard Internal System	30%	$ 258,547
√	Illumination		6%	$ 51,709
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 25,855
√	Sewer	Minor Adjustments	2%	$ 17,236
√	Landscaping and Irrigation		4%	$ 34,473
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 456,766

Paving and Allowance Subtotal:		**$ 1,318,590**
Construction Contingency:	10%	$ 131,859
Mobilization	5%	$ 65,929
Prep ROW	5%	$ 65,929
Construction Cost TOTAL:		**$ 1,583,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 1,583,000**
Engineering/Survey/Testing:		16%	$ 253,280
Previous City contribution			
Other			
ROW/Easement Acquisition:	Existing Alignment	10%	$ 158,300

Impact Fee Project Cost TOTAL: $ 1,995,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**D-4**
Name:	Bobtown Rd (4)	**This project consists of the reconstruction of the existing facility as a four lane undivided minor collector**		
Limits:	Lyons Rd to South City Limits			
Impact Fee Class:	E			
Ultimate Class:	Minor Collector			
Length (lf):	2,655			
Service Area(s):	D, ETJ			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
102	Unclassified Street Excavation	7,080	cy	$ 8.00	$ 56,640
202	6" Lime Stabilization Subgrade	13,865	sy	$ 2.60	$ 36,049
302	Street Cut Paving Concrete - Class C Construct	13,275	sy	$ 70.00	$ 929,250
402	Curb 6" Integral	5,310	lf	$ 1.95	$ 10,355
502	Sidwalk 4" Class A Construct	2,360	sy	$ 43.00	$ 101,480
602	Turn Lanes and Median Openings	188	sy	$ 70.00	$ 13,164

Paving Construction Cost Subtotal: $ 1,146,938

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 57,347
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 34,408
√	Roadway Drainage	Standard Internal System	30%	$ 344,081
√	Illumination		6%	$ 68,816
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 34,408
√	Sewer	Minor Adjustments	2%	$ 22,939
√	Landscaping and Irrigation		4%	$ 45,878
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 607,877

Paving and Allowance Subtotal:		**$ 1,754,815**
Construction Contingency:	10%	$ 175,481
Mobilization	5%	$ 87,741
Prep ROW	5%	$ 87,741
Construction Cost TOTAL:		**$ 2,106,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 2,106,000**
Engineering/Survey/Testing:		16%	$ 336,960
Previous City contribution			
Other			
ROW/Easement Acquisition:	Existing Alignment	10%	$ 210,600

Impact Fee Project Cost TOTAL: $ 2,654,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**C-10,D-5**
Name:	E. Miller Rd	**This project consists of the construction of the median lanes to complete the six lane divided regional arterial**		
Limits:	Centerville Rd to 2,815' E of Centerville Rd			
Impact Fee Class:	B (1/3)			
Ultimate Class:	Regional Arterial			
Length (lf):	2,815			
Service Area(s):	C,D			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
110	Unclassified Street Excavation	4,066	cy	$ 8.00	$ 32,529
210	6" Lime Stabilization Subgrade	7,819	sy	$ 2.60	$ 20,331
310	Street Cut Paving Concrete - Class C Construct	7,194	sy	$ 70.00	$ 503,572
410	Curb 6" Integral	5,630	lf	$ 1.95	$ 10,979
510	Sidwalk 4" Class A Construct	0	sy	$ 43.00	$ -
610	Turn Lanes and Median Openings	640	sy	$ 70.00	$ 44,784

Paving Construction Cost Subtotal: $ 612,194

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 30,610
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 18,366
	Roadway Drainage	None Anticipated	0%	$ -
	Illumination		0%	$ -
	Special Drainage Structures	None Anticipated	0%	$ -
	Water	None Anticipated	0%	$ -
	Sewer	None Anticipated	0%	$ -
√	Landscaping and Irrigation		4%	$ 24,488
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 73,463

Paving and Allowance Subtotal:		**$ 685,658**
Construction Contingency:	10%	$ 68,566
Mobilization	5%	$ 34,283
Prep ROW	5%	$ 34,283
Construction Cost TOTAL:		**$ 823,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 823,000**
Engineering/Survey/Testing:		16%	$ 131,680
Previous City contribution			
Other			
ROW/Easement Acquisition:	No ROW Acquisition Costs included	0%	$ -

Impact Fee Project Cost TOTAL: $ 955,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**D-6**
Name:	E. Oates Rd (Future)	**This project consists of the construction of a new two lane undivided minor collector**		
Limits:	Country Club Rd to E. Oates Rd (Existing)			
Impact Fee Class:	F			
Ultimate Class:	Minor Collector			
Length (lf):	3,045			
Service Area(s):	D			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
101	Unclassified Street Excavation	6,767	cy	$ 8.00	$ 54,133
201	6" Lime Stabilization Subgrade	13,195	sy	$ 2.60	$ 34,307
301	Street Cut Paving Concrete - Class C Construct	12,518	sy	$ 70.00	$ 876,283
401	Curb 6" Integral	6,090	lf	$ 1.95	$ 11,876
501	Sidwalk 4" Class A Construct	2,707	sy	$ 43.00	$ 116,387
601	Turn Lanes and Median Openings	216	sy	$ 70.00	$ 15,098

Paving Construction Cost Subtotal: $ 1,108,084

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
	Traffic Control	None Anticipated	0%	$ -
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 33,243
√	Roadway Drainage	Standard Internal System	30%	$ 332,425
√	Illumination		6%	$ 66,485
√	Special Drainage Structures	Bridge Crossing	0%	$ 400,000
√	Water	Minor Adjustments	3%	$ 33,243
√	Sewer	Minor Adjustments	2%	$ 22,162
√	Landscaping and Irrigation		4%	$ 44,323
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 931,880

Paving and Allowance Subtotal:		**$ 2,039,964**
Construction Contingency:	10%	$ 203,996
Mobilization	5%	$ 101,998
Prep ROW	1%	$ 20,400
Construction Cost TOTAL:		**$ 2,367,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 2,367,000**
Engineering/Survey/Testing:		16%	$ 378,720
Previous City contribution			
Other			
ROW/Easement Acquisition:	New Roadway Alignment	20%	$ 473,400

Impact Fee Project Cost TOTAL: $ 3,219,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**D-7**
Name:	La Prada Dr	**This project consists of the construction of the median lanes to complete the six lane divided regional arterial**		
Limits:	IH 635 E frontage road to Northwest Hwy			
Impact Fee Class:	B (1/3)			
Ultimate Class:	Regional Arterial			
Length (lf):	1,670			
Service Area(s):	D, ETJ			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
110	Unclassified Street Excavation	2,412	cy	$ 8.00	$ 19,298
210	6" Lime Stabilization Subgrade	4,639	sy	$ 2.60	$ 12,061
310	Street Cut Paving Concrete - Class C Construct	4,268	sy	$ 70.00	$ 298,744
410	Curb 6" Integral	3,340	lf	$ 1.95	$ 6,513
510	Sidwalk 4" Class A Construct	0	sy	$ 43.00	$ -
610	Turn Lanes and Median Openings	380	sy	$ 70.00	$ 26,568
				Paving Construction Cost Subtotal:	**$ 363,185**

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 18,159
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 10,896
	Roadway Drainage	None Anticipated	0%	$ -
	Illumination		0%	$ -
	Special Drainage Structures	None Anticipated	0%	$ -
	Water	None Anticipated	0%	$ -
	Sewer	None Anticipated	0%	$ -
√	Landscaping and Irrigation		4%	$ 14,527
	Miscellaneous:		$0	$ -
**Allowances based on % of Paving Construction Cost Subtotal			**Allowance Subtotal:**	**$ 43,582**

Paving and Allowance Subtotal:		**$ 406,767**
Construction Contingency:	10%	$ 40,677
Mobilization	5%	$ 20,338
Prep ROW	5%	$ 20,338
Construction Cost TOTAL:		**$ 489,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 489,000**
Engineering/Survey/Testing:		16%	$ 78,240
Previous City contribution			
Other			
ROW/Easement Acquisition:	No ROW Acquisition Costs included	0%	$ -
		Impact Fee Project Cost TOTAL:	**$ 567,000**

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**D-8**
Name:	Locust Grove Rd	**This project consists of the reconstruction of the existing facility as a four lane undivided minor collector**		
Limits:	290' E of Oceanport Dr to East City Limits			
Impact Fee Class:	E			
Ultimate Class:	Minor Collector			
Length (lf):	2,860			
Service Area(s):	D			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
102	Unclassified Street Excavation	7,627	cy	$ 8.00	$ 61,013
202	6" Lime Stabilization Subgrade	14,936	sy	$ 2.60	$ 38,832
302	Street Cut Paving Concrete - Class C Construct	14,300	sy	$ 70.00	$ 1,001,000
402	Curb 6" Integral	5,720	lf	$ 1.95	$ 11,154
502	Sidwalk 4" Class A Construct	2,542	sy	$ 43.00	$ 109,316
602	Turn Lanes and Median Openings	203	sy	$ 70.00	$ 14,181

Paving Construction Cost Subtotal: $ 1,235,496

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 61,775
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 37,065
√	Roadway Drainage	Standard Internal System	30%	$ 370,649
√	Illumination		6%	$ 74,130
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 37,065
√	Sewer	Minor Adjustments	2%	$ 24,710
√	Landscaping and Irrigation		4%	$ 49,420
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 654,813

Paving and Allowance Subtotal:		**$ 1,890,309**
Construction Contingency:	10%	$ 189,031
Mobilization	5%	$ 94,515
Prep ROW	5%	$ 94,515
Construction Cost TOTAL:		**$ 2,269,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 2,269,000**
Engineering/Survey/Testing:		16%	$ 363,040
Previous City contribution			
Other			
ROW/Easement Acquisition:	Existing Alignment	10%	$ 226,900

Impact Fee Project Cost TOTAL: $ 2,859,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**D-9**
Name:	Lyons Rd (1)	**This project consists of the reconstruction of the existing facility as a six lane divided regional arterial**		
Limits:	Bobtown Rd to Guthire Rd			
Impact Fee Class:	B			
Ultimate Class:	Regional Arterial			
Length (lf):	3,230			
Service Area(s):	D			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
109	Unclassified Street Excavation	12,561	cy	$ 8.00	$ 100,489
209	6" Lime Stabilization Subgrade	24,763	sy	$ 2.60	$ 64,385
309	Street Cut Paving Concrete - Class C Construct	24,404	sy	$ 70.00	$ 1,708,311
409	Curb 6" Integral	12,920	lf	$ 1.95	$ 25,194
509	Sidwalk 4" Class A Construct	4,307	sy	$ 43.00	$ 185,187
609	Turn Lanes and Median Openings	1,192	sy	$ 70.00	$ 83,417

Paving Construction Cost Subtotal: $ 2,166,983

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 108,349
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 65,009
√	Roadway Drainage	Standard Internal System	30%	$ 650,095
√	Illumination		6%	$ 130,019
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 65,009
√	Sewer	Minor Adjustments	2%	$ 43,340
√	Landscaping and Irrigation		4%	$ 86,679
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 1,148,501

Paving and Allowance Subtotal:		**$ 3,315,483**
Construction Contingency:	10%	$ 331,548
Mobilization	5%	$ 165,774
Prep ROW	5%	$ 165,774
Construction Cost TOTAL:		**$ 3,979,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 3,979,000**
Engineering/Survey/Testing:		16%	$ 636,640
Previous City contribution			
Other			
ROW/Easement Acquisition:	Existing Alignment	10%	$ 397,900

Impact Fee Project Cost TOTAL: $ 5,014,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**D-10**
Name:	Lyons Rd (2)	**This project consists of the reconstruction of the existing facility as a six lane divided regional arterial**		
Limits:	Guthire Rd to Lyons Rd (Future)			
Impact Fee Class:	B			
Ultimate Class:	Regional Arterial			
Length (lf):	880			
Service Area(s):	D			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
109	Unclassified Street Excavation	3,422	cy	$ 8.00	$ 27,378
209	6" Lime Stabilization Subgrade	6,747	sy	$ 2.60	$ 17,541
309	Street Cut Paving Concrete - Class C Construct	6,649	sy	$ 70.00	$ 465,422
409	Curb 6" Integral	3,520	lf	$ 1.95	$ 6,864
509	Sidwalk 4" Class A Construct	1,173	sy	$ 43.00	$ 50,453
609	Turn Lanes and Median Openings	325	sy	$ 70.00	$ 22,727
				Paving Construction Cost Subtotal:	**$ 590,385**

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 29,519
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 17,712
√	Roadway Drainage	Standard Internal System	30%	$ 177,116
√	Illumination		6%	$ 35,423
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 17,712
√	Sewer	Minor Adjustments	2%	$ 11,808
√	Landscaping and Irrigation		4%	$ 23,615
	Miscellaneous:		$0	$ -
**Allowances based on % of Paving Construction Cost Subtotal			**Allowance Subtotal:**	**$ 312,904**
			Paving and Allowance Subtotal:	**$ 903,290**
			Construction Contingency: 10%	$ 90,329
			Mobilization 5%	$ 45,164
			Prep ROW 5%	$ 45,164
			Construction Cost TOTAL:	**$ 1,084,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 1,084,000**
Engineering/Survey/Testing:		16%	$ 173,440
Previous City contribution			
Other			
ROW/Easement Acquisition:	Existing Alignment	10%	$ 108,400
		Impact Fee Project Cost TOTAL:	**$ 1,366,000**

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**D-11**
Name:	Lyons Rd (Future) (3)	**This project consists of the construction of a new six lane divided regional arterial**		
Limits:	Lyons Rd to South City Limits			
Impact Fee Class:	B			
Ultimate Class:	Regional Arterial			
Length (lf):	1,190			
Service Area(s):	D			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
109	Unclassified Street Excavation	4,628	cy	$ 8.00	$ 37,022
209	6" Lime Stabilization Subgrade	9,123	sy	$ 2.60	$ 23,721
309	Street Cut Paving Concrete - Class C Construct	8,991	sy	$ 70.00	$ 629,378
409	Curb 6" Integral	4,760	lf	$ 1.95	$ 9,282
509	Sidwalk 4" Class A Construct	1,587	sy	$ 43.00	$ 68,227
609	Turn Lanes and Median Openings	439	sy	$ 70.00	$ 30,733
				Paving Construction Cost Subtotal:	**$ 798,362**

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
	Traffic Control	None Anticipated	0%	$ -
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 23,951
√	Roadway Drainage	Standard Internal System	30%	$ 239,509
√	Illumination		6%	$ 47,902
√	Special Drainage Structures	Bridge Crossing	0%	$ 600,000
√	Water	Minor Adjustments	3%	$ 23,951
√	Sewer	Minor Adjustments	2%	$ 15,967
√	Landscaping and Irrigation		4%	$ 31,934
	Miscellaneous:		$0	$ -
**Allowances based on % of Paving Construction Cost Subtotal			**Allowance Subtotal:**	**$ 983,214**

Paving and Allowance Subtotal:		**$ 1,781,576**
Construction Contingency:	10%	$ 178,158
Mobilization	5%	$ 89,079
Prep ROW	1%	$ 17,816
Construction Cost TOTAL:		**$ 2,067,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 2,067,000**
Engineering/Survey/Testing:		16%	$ 330,720
Previous City contribution			
Other			
ROW/Easement Acquisition:	New Roadway Alignment	20%	$ 413,400
		Impact Fee Project Cost TOTAL:	**$ 2,811,000**

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**D-12**
Name:	Rosehill Rd (1)	**This project consists of the construction of a new**		
Limits:	Rosehill Rd (Existing) to Wynn Joyce Rd	**two lane undivided minor collector**		
Impact Fee Class:	F			
Ultimate Class:	Minor Collector			
Length (lf):	1,605			
Service Area(s):	D			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
101	Unclassified Street Excavation	3,567	cy	$ 8.00	$ 28,533
201	6" Lime Stabilization Subgrade	6,955	sy	$ 2.60	$ 18,083
301	Street Cut Paving Concrete - Class C Construct	6,598	sy	$ 70.00	$ 461,883
401	Curb 6" Integral	3,210	lf	$ 1.95	$ 6,260
501	Sidwalk 4" Class A Construct	1,427	sy	$ 43.00	$ 61,347
601	Turn Lanes and Median Openings	114	sy	$ 70.00	$ 7,958
				Paving Construction Cost Subtotal:	**$ 584,064**

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
	Traffic Control	None Anticipated	0%	$ -
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 17,522
√	Roadway Drainage	Standard Internal System	30%	$ 175,219
√	Illumination		6%	$ 35,044
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 17,522
√	Sewer	Minor Adjustments	2%	$ 11,681
√	Landscaping and Irrigation		4%	$ 23,363
	Miscellaneous:		$0	$ -
**Allowances based on % of Paving Construction Cost Subtotal			**Allowance Subtotal:**	**$ 280,351**

Paving and Allowance Subtotal:		**$ 864,415**
Construction Contingency:	10%	$ 86,441
Mobilization	5%	$ 43,221
Prep ROW	1%	$ 8,644
Construction Cost TOTAL:		**$ 1,003,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 1,003,000**
Engineering/Survey/Testing:		16%	$ 160,480
Previous City contribution			
Other			
ROW/Easement Acquisition:	New Roadway Alignment	20%	$ 200,600
		Impact Fee Project Cost TOTAL:	**$ 1,364,000**

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**D-13**
Name:	Rosehill Rd (2)	**This project consists of the construction of the median lanes to complete the six lane divided regional arterial**		
Limits:	Bobtown Rd to IH 30 N loop			
Impact Fee Class:	B (1/3)			
Ultimate Class:	Regional Arterial			
Length (lf):	1,510			
Service Area(s):	D			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
110	Unclassified Street Excavation	2,181	cy	$ 8.00	$ 17,449
210	6" Lime Stabilization Subgrade	4,194	sy	$ 2.60	$ 10,906
310	Street Cut Paving Concrete - Class C Construct	3,859	sy	$ 70.00	$ 270,122
410	Curb 6" Integral	3,020	lf	$ 1.95	$ 5,889
510	Sidwalk 4" Class A Construct	0	sy	$ 43.00	$ -
610	Turn Lanes and Median Openings	343	sy	$ 70.00	$ 24,023
				Paving Construction Cost Subtotal:	**$ 328,388**

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 16,419
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 9,852
	Roadway Drainage	None Anticipated	0%	$ -
	Illumination		0%	$ -
	Special Drainage Structures	None Anticipated	0%	$ -
	Water	None Anticipated	0%	$ -
	Sewer	None Anticipated	0%	$ -
√	Landscaping and Irrigation		4%	$ 13,136
	Miscellaneous:		$0	$ -
**Allowances based on % of Paving Construction Cost Subtotal			**Allowance Subtotal:**	**$ 39,407**

Paving and Allowance Subtotal:		**$ 367,795**
Construction Contingency:	10%	$ 36,780
Mobilization	5%	$ 18,390
Prep ROW	5%	$ 18,390
Construction Cost TOTAL:		**$ 442,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 442,000**
Engineering/Survey/Testing:		16%	$ 70,720
Previous City contribution			
Other			
ROW/Easement Acquisition:	No ROW Acquisition Costs included	0%	$ -
		Impact Fee Project Cost TOTAL:	**$ 513,000**

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**D-14**
Name:	Rowlett Rd (1)	**This project consists of the construction of the median lanes to complete the six lane divided regional arterial**		
Limits:	Broadway Blvd to Rosehill Rd			
Impact Fee Class:	A (1/3)			
Ultimate Class:	Regional Arterial			
Length (lf):	3,695			
Service Area(s):	D			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
112	Unclassified Street Excavation	5,337	cy	$ 8.00	$ 42,698
212	6" Lime Stabilization Subgrade	10,264	sy	$ 2.60	$ 26,686
312	Street Cut Paving Concrete - Class C Construct	9,443	sy	$ 70.00	$ 660,994
412	Curb 6" Integral	7,390	lf	$ 1.95	$ 14,411
512	Sidwalk 4" Class A Construct	0	sy	$ 43.00	$ -
0	Turn Lanes and Median Openings	840	sy	$ 70.00	$ 58,784

Paving Construction Cost Subtotal: $ 803,573

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 40,179
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 24,107
	Roadway Drainage	None Anticipated	0%	$ -
	Illumination		0%	$ -
	Special Drainage Structures	None Anticipated	0%	$ -
	Water	None Anticipated	0%	$ -
	Sewer	None Anticipated	0%	$ -
√	Landscaping and Irrigation		4%	$ 32,143
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 96,429

Paving and Allowance Subtotal:		**$ 900,002**
Construction Contingency:	10%	$ 90,000
Mobilization	5%	$ 45,000
Prep ROW	5%	$ 45,000
Construction Cost TOTAL:		**$ 1,081,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 1,081,000**
Engineering/Survey/Testing:		16%	$ 172,960
Previous City contribution			
Other			
ROW/Easement Acquisition:	No ROW Acquisition Costs included	0%	$ -

Impact Fee Project Cost TOTAL: $ 1,254,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**D-15**
Name:	Rowlett Rd (2)	**This project consists of the construction of the median lanes to complete the six lane divided regional arterial**		
Limits:	Rosehill Rd to Roan Rd			
Impact Fee Class:	A (1/3)			
Ultimate Class:	Regional Arterial			
Length (lf):	5,250			
Service Area(s):	D			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
112	Unclassified Street Excavation	7,583	cy	$ 8.00	$ 60,667
212	6" Lime Stabilization Subgrade	14,583	sy	$ 2.60	$ 37,917
312	Street Cut Paving Concrete - Class C Construct	13,417	sy	$ 70.00	$ 939,167
412	Curb 6" Integral	10,500	lf	$ 1.95	$ 20,475
512	Sidwalk 4" Class A Construct	0	sy	$ 43.00	$ -
0	Turn Lanes and Median Openings	1,193	sy	$ 70.00	$ 83,523

Paving Construction Cost Subtotal: $ 1,141,748

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 57,087
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 34,252
	Roadway Drainage	None Anticipated	0%	$ -
	Illumination		0%	$ -
	Special Drainage Structures	None Anticipated	0%	$ -
	Water	None Anticipated	0%	$ -
	Sewer	None Anticipated	0%	$ -
√	Landscaping and Irrigation		4%	$ 45,670
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 137,010

Paving and Allowance Subtotal:		**$ 1,278,757**
Construction Contingency:	10%	$ 127,876
Mobilization	5%	$ 63,938
Prep ROW	5%	$ 63,938
Construction Cost TOTAL:		**$ 1,535,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 1,535,000**
Engineering/Survey/Testing:		16%	$ 245,600
Previous City contribution			
Other			
ROW/Easement Acquisition:	No ROW Acquisition Costs included	0%	$ -

Impact Fee Project Cost TOTAL: $ 1,781,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**D-16**
Name:	Rowlett Rd (3)	**This project consists of the construction of a new six lane divided regional arterial**		
Limits:	Roan Rd to City Limits			
Impact Fee Class:	A			
Ultimate Class:	Regional Arterial			
Length (lf):	1,585			
Service Area(s):	D			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
111	Unclassified Street Excavation	6,164	cy	$ 8.00	$ 49,311
211	6" Lime Stabilization Subgrade	12,152	sy	$ 2.60	$ 31,594
311	Street Cut Paving Concrete - Class C Construct	11,976	sy	$ 70.00	$ 838,289
411	Curb 6" Integral	6,340	lf	$ 1.95	$ 12,363
511	Sidwalk 4" Class A Construct	2,113	sy	$ 43.00	$ 90,873
611	Turn Lanes and Median Openings	601	sy	$ 70.00	$ 42,048

Paving Construction Cost Subtotal: $ 1,064,478

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
	Traffic Control	None Anticipated	0%	$ -
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 31,934
√	Roadway Drainage	Standard Internal System	30%	$ 319,343
√	Illumination		6%	$ 63,869
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 31,934
√	Sewer	Minor Adjustments	2%	$ 21,290
√	Landscaping and Irrigation		4%	$ 42,579
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 510,950

Paving and Allowance Subtotal:		**$ 1,575,428**
Construction Contingency:	10%	$ 157,543
Mobilization	5%	$ 78,771
Prep ROW	1%	$ 15,754
Construction Cost TOTAL:		**$ 1,828,000**

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 1,828,000**
Engineering/Survey/Testing:		16%	$ 292,480
Previous City contribution			
Other			
ROW/Easement Acquisition:	New Roadway Alignment	20%	$ 365,600

Impact Fee Project Cost TOTAL: $ 2,486,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**D-17**
Name:	S. Country Club Rd	**This project consists of the construction of the median lanes to complete the six lane divided regional arterial**		
Limits:	Rowlett Rd to Bobtown Rd			
Impact Fee Class:	B (1/3)			
Ultimate Class:	Regional Arterial			
Length (lf):	1,765			
Service Area(s):	D			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
110	Unclassified Street Excavation	2,549	cy	$ 8.00	$ 20,396
210	6" Lime Stabilization Subgrade	4,903	sy	$ 2.60	$ 12,747
310	Street Cut Paving Concrete - Class C Construct	4,511	sy	$ 70.00	$ 315,739
410	Curb 6" Integral	3,530	lf	$ 1.95	$ 6,884
510	Sidwalk 4" Class A Construct	0	sy	$ 43.00	$ -
610	Turn Lanes and Median Openings	401	sy	$ 70.00	$ 28,080

Paving Construction Cost Subtotal: $ 383,845

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 19,192
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 11,515
	Roadway Drainage	None Anticipated	0%	$ -
	Illumination		0%	$ -
	Special Drainage Structures	None Anticipated	0%	$ -
	Water	None Anticipated	0%	$ -
	Sewer	None Anticipated	0%	$ -
√	Landscaping and Irrigation		4%	$ 15,354
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 46,061

Paving and Allowance Subtotal: $ 429,906
Construction Contingency: 10% $ 42,991
Mobilization 5% $ 21,495
Prep ROW 5% $ 21,495
Construction Cost TOTAL: $ 516,000

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 516,000**
Engineering/Survey/Testing:		16%	$ 82,560
Previous City contribution			
Other			
ROW/Easement Acquisition:	No ROW Acquisition Costs included	0%	$ -

Impact Fee Project Cost TOTAL: $ 599,000

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**D-18**
Name:	Zion Rd	**This project consists of the reconstruction of the existing facility as a four lane undivided minor collector**		
Limits:	Locust Grove Rd to Bobtown Rd			
Impact Fee Class:	E			
Ultimate Class:	Minor Collector			
Length (lf):	1,075			
Service Area(s):	D			

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
102	Unclassified Street Excavation	2,867	cy	$ 8.00	$ 22,933
202	6" Lime Stabilization Subgrade	5,614	sy	$ 2.60	$ 14,596
302	Street Cut Paving Concrete - Class C Construct	5,375	sy	$ 70.00	$ 376,250
402	Curb 6" Integral	2,150	lf	$ 1.95	$ 4,193
502	Sidwalk 4" Class A Construct	956	sy	$ 43.00	$ 41,089
602	Turn Lanes and Median Openings	76	sy	$ 70.00	$ 5,330

Paving Construction Cost Subtotal: $ 464,391

Major Construction Component Allowances:**

	Item Description	Notes	Allowance	Item Cost
√	Traffic Control	Construction Phase Traffic Control	5%	$ 23,220
√	Pavement Markings/Signs/Posts	Includes Striping/Signs for Bicycle Facilties	3%	$ 13,932
√	Roadway Drainage	Standard Internal System	30%	$ 139,317
√	Illumination		6%	$ 27,863
	Special Drainage Structures	None Anticipated	0%	$ -
√	Water	Minor Adjustments	3%	$ 13,932
√	Sewer	Minor Adjustments	2%	$ 9,288
√	Landscaping and Irrigation		4%	$ 18,576
	Miscellaneous:		$0	$ -

**Allowances based on % of Paving Construction Cost Subtotal

Allowance Subtotal: $ 246,127

Paving and Allowance Subtotal: $ 710,518
Construction Contingency: 10% $ 71,052
Mobilization 5% $ 35,526
Prep ROW 5% $ 35,526
Construction Cost TOTAL: $ 853,000

Impact Fee Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction:		-	**$ 853,000**
Engineering/Survey/Testing:		16%	$ 136,480
Previous City contribution			
Other			
ROW/Easement Acquisition:	Existing Alignment	10%	$ 85,300

Impact Fee Project Cost TOTAL: $ 1,075,000

NOTE: The planning level cost projections listed in this appendix have been developed for Impact Fee calculations only and should not be used for any future Capital Improvement Planning within the City of Garland.

The planning level cost projections shall not supersede the City's design standards contained or the determination of the City Engineer for a specific project.

City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**D-19**
Name:	Northwest Hwy	**This completed project consisted of widening the existing facility to a six lane divided regional arterial. The total cost of this project was $5,654,782, of which the City contributed $2,904,782.**		
Limits:	Centerville Rd to La Prada Dr			
Impact Fee Class:	B			
Ultimate Class:	Regional Arterial			
Length (lf):	6,437			
Service Area(s):	D			

Impact Fee Project Cost Summary

Impact Fee Project Cost TOTAL:	**$ 2,904,782**

NOTE: The planning level cost projections listed in this appendix have been developed for Impact Fee calculations only and should not be used for any future Capital Improvement Planning within the City of Garland.

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**D-20**
Name:	Dairy Rd	**This completed project consists of widening the facility to a three lane undivided minor collector. The City cost of this project is $3,597,758.**		
Limits:	Celeste Rd to Broadway Blvd			
Impact Fee Class:	E			
Ultimate Class:	Minor Collector			
Length (lf):	2,611			
Service Area(s):	D			

Impact Fee Project Cost Summary

Impact Fee Project Cost TOTAL:	**$ 3,597,758**

NOTE: The planning level cost projections listed in this appendix have been developed for Impact Fee calculations only and should not be used for any future Capital Improvement Planning within the City of Garland.

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City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**C-12,D-21**
Name:	Miller Rd Bridge	**This completed project consisted of widening the existing bridge to a 6 lane divided regional arterial. The total cost of the project was $24,710,481, of which the City contributed $2,743,883**		
Limits:	2,815' E of Centerville Rd to East City Limits			
Impact Fee Class:	B			
Ultimate Class:	Regional Arterial			
Length (lf):	194			
Service Area(s):	C,D			

Impact Fee Project Cost Summary	
Impact Fee Project Cost TOTAL:	**$ 2,743,883**

NOTE: The planning level cost projections listed in this appendix have been developed for Impact Fee calculations only and should not be used for any future Capital Improvement Planning within the City of Garland.

The planning level cost projections shall not supersede the City's design standards contained or the determination of the City Engineer for a specific project.

City of Garland

2016 Roadway Impact Fee Study
Conceptual Level Project Cost Projection

Kimley-Horn and Associates, Inc.
updated: 9/13/2016

Project Information:		**Description:**	**Project No.**	**I-19:I-26**
Name:	Bottleneck Study Improvements	**This project consists of intersection improvements identified in the ongoing Bottleneck study. The total cost of these improvements in Service Area D is estimated to be $2,630,000. The cost attributable to projected growth in Service Area D (8%) is $236,000.**		
Limits:	N/A			
Impact Fee Class:	N/A			
Ultimate Class:	N/A			
Length (lf):	N/A			
Service Area(s):	D			

Impact Fee Project Cost Summary		
Impact Fee Project Cost TOTAL:	**$**	**236,000**

NOTE: The planning level cost projections listed in this appendix have been developed for Impact Fee calculations only and should not be used for any future Capital Improvement Planning within the City of Garland.

The planning level cost projections shall not supersede the City's design standards contained or the determination of the City Engineer for a specific project.

Appendix B – Roadway Impact Fee CIP Service Units of Supply

City of Garland - 2016 Roadway Impact Fee Study

CIP Service Units of Supply

Service Area A

9/14/2016

Project ID #	ROADWAY	LIMITS	LENGTH (MI)	LANES	IMPACT FEE CLASSIFICATION	PEAK HOUR VOLUME	% IN SERVICE AREA	VEH-MI CAPACITY PK-HR PER LN	VEH-MI SUPPLY PK-HR TOTAL[1]	VEH-MI TOTAL DEMAND PK-HR[2]	EXCESS CAPACITY PK-HR VEH-MI[3]	TOTAL PROJECT COST	TOTAL PROJECT COST IN SERVICE AREA
A-1	Arapaho Rd (1)	Elm Ridge Ln to Shiloh Rd	0.77	6	B (1/3)	2,365	100%	900	4168	1825	2,343	$ 1,383,000	$ 1,383,000
A-2	Arapaho Rd (2)	Shiloh Rd to N. Garland Ave	0.68	6	B (1/3)	2,143	100%	900	3646	1447	2199	$ 1,210,000	$ 1,210,000.00
A-3	Brand Rd (1)	Bellaire Rd to Belt Line Rd	0.64	6	C1	737	100%	900	3452	471	2981	$ 4,092,000	$ 4,092,000.00
A-4	Brand Rd (2)	Naaman Forest Blvd to West Brand Rd	0.47	6	C1	New	100%	900	2557	0	2,557	$ 8,172,000	$ 8,172,000
A-5	Brand Rd (3)	Murfield Rd to PGBT N Frontage Rd	0.56	6	C1	911	100%	900	3027	511	2,516	$ 3,590,000	$ 3,590,000
A-6	Campbell Rd (1)	N. Jupiter Rd to Shiloh Rd	1.06	6	B (1/3)	1,645	100%	900	5732	1746	3,986	$ 1,901,000	$ 1,901,000
A-7	Campbell Rd (2)	Shiloh Rd to PGBT S Frontage Rd	0.41	6	B (1/3)	1,489	100%	900	2230	615	1,615	$ 740,000	$ 740,000
A-8	Campbell Rd (3)	Lookout Dr to PGBT N Frontage Rd	0.59	6	B (1/3)	789	100%	900	3211	469	2,742	$ 1,065,000	$ 1,065,000
A-9	Campbell Rd (4)	Lookout Dr to N. Garland Ave	0.64	6	B (1/3)	1,550	100%	900	3467	995	2,472	$ 1,150,000	$ 1,150,000
A-10	Campbell Rd (5)	N. Garland Ave to Water Oak Dr	0.52	6	B (1/3)	1,071	100%	900	2802	556	2,246	$ 929,000	$ 929,000
A-11	Campbell Rd (6)	Water Oak Dr to Murphy Rd	1.24	6	B	1,071	100%	900	6694	1328	5,366	$ 11,065,000	$ 11,065,000
A-12	Ferris Rd	Campbell Rd to Holford Rd	0.36	6	D1	New	100%	900	1928	0	1,928	$ 2,258,000	$ 2,258,000
A-13	Firewheel Parkway (1)	Lavon Dr to 530' E of Lavon Dr	0.10	6	A	1,129	100%	925	557	113	444	$ 824,000	$ 824,000
A-14	Holford Rd (1)	Naaman Forest (Future) to Arapaho Rd	0.75	6	D1	327	100%	900	4050	245	3805	$ 5,347,000	$ 5,347,000.00
A-15	Holford Rd (2)	PGBT S Frontage Rd to Naaman Forest (Future)	0.33	6	C2	327	100%	900	1790	108	1682	$ 2,717,000	$ 2,717,000.00
A-16	Holford Rd (3)	N City Limits to PGBT N Frontage Rd	0.99	6	C2	102	100%	900	5349	101	5,248	$ 8,118,000	$ 8,118,000
A-17	Lookout Dr (1)	Courtside Dr to Spring Dr	0.11	6	B (1/3)	324	50%	900	302	18	284	$ 201,000	$ 100,500
A-18	Lookout Dr (2)	Spring Dr to PGBT S Frontage Rd	0.80	6	B (1/3)	324	50%	900	2153	129	2,024	$ 1,428,000	$ 714,000
A-19	Lookout Dr (3)	PGBT N Frontage Rd to Campbell Rd	0.72	6	B (1/3)	1,550	100%	900	3871	1111	2,760	$ 1,107,000	$ 1,107,000
A-20	Mapleridge (1)	Shiloh Rd to Mapleridge Dr	0.09	2	F	New	100%	525	89	0	89	$ 384,000	$ 384,000
A-21	Mapleridge (2)	Mapleridge Dr (Existing) to Holford Rd	0.36	2	F	New	100%	525	379	0	379	$ 3,513,000	$ 3,513,000
A-22	Garland Ave (1)	N City Limits to PGBT N Frontage Rd	1.29	6	B (1/3)	1,103	100%	900	6975	1425	5,550	$ 2,313,000	$ 2,313,000
A-23	Garland Ave (2)	Arapaho Rd to PGBT S Frontage Rd	1.14	6	B (1/3)	2,322	100%	900	6162	2650	3,512	$ 2,044,000	$ 2,044,000
A-24	Garland Ave (3)	Arapaho Rd to Belt Line Rd	0.79	6	B-S (1/3)	2,353	100%	900	4285	1867	2,418	$ 1,421,000	$ 1,421,000
A-25	Garland Ave (4)	Belt Line Rd to Buckingham Rd	0.97	6	B (1/3)	1,852	100%	900	5221	1791	3,430	$ 1,732,000	$ 1,732,000
A-26	Shiloh Rd (1)	PGBT S Frontage Rd to Campbell Rd	0.37	6	B (1/3)	1,500	100%	900	1979	550	1,429	$ 657,000	$ 657,000
A-27	Shiloh Rd (2)	Campbell Rd to north bridge end	0.41	6	B (1/3)	1,698	100%	900	2209	695	1,514	$ 733,000	$ 733,000
A-28	Shiloh Rd (3)	Collins Blvd to Arapaho Rd	0.59	6	B (1/3)	1,949	100%	900	3211	1159	2,052	$ 1,065,000	$ 1,065,000
A-29	Shiloh Rd (4)	Arapaho Rd to Belt Line Rd	1.03	6	B (1/3)	2,059	100%	900	5538	2112	3,426	$ 1,836,000	$ 1,836,000
A-30	Shiloh Rd (5)	Belt Line Rd to Buckingham Rd	0.96	6	B (1/3)	2,299	100%	900	5170	2201	2,969	$ 1,714,000	$ 1,714,000
A-31	Naaman Forest Blvd	W. Naaman Forest Blvd. to E. Naaman Forest Blvd.	0.33	6	D1	New	100%	900	1759	0	1,759	$ 2,079,000	$ 2,079,000
A-32	Naaman School Rd	Brand Rd to Lavon Dr	0.88	6	D1	1,080	100%	900	4776	955	3,821	$ 6,047,000	$ 6,047,000
A-33	Naaman Forest Blvd	Ranger to Brand Rd	0.26	6	D1	749	100%	900	1394	193	1,201	$ 3,904,483	$ 3,904,483
I-1	Shiloh Rd and Campbell Rd	Extend WB RT lane											
I-2	Arapaho Rd and Shiloh Rd	Add NB and SB RT lanes											
I-3	Apollo Rd and Garland Ave	Add EB RT Lane											
I-4	Wagon Wheel Rd and Garland Ave	WB RT Lane										$ 634,000	$ 634,000
I-5	Belt Line Rd and Garland Ave	WB RT Lane											
I-6	Belt Line Rd and Shiloh Rd	EB RT Lane											
I-7	Buckingham Rd and Plano Rd	NB RT Lane, EB and WB Dual LT Lanes											
I-8	Shiloh Rd and Buckingham Rd	Add dual lefts WB, NB, and SB											
SUBTOTAL									**110,133**	**27,386**	**82,747**	**$ 87,373,483**	**$ 86,558,983**

2016 Roadway Impact Fee Study Cost Per Service Area $ 15,840

TOTAL COST IN SERVICE AREA A $ 86,574,823

1. Veh-Mi Supply Pk-Hr Total = [Length (mi)] * [Exist Lanes] * [Veh-Mi Capacity Pk-Hr Per Ln] * [% in Service Area]

2. Veh-Mi Demand Pk-Hr Total = [Length (mi)] * [PM Peak Hour Vol] * [% In Service Area]

3. Excess Capacity Pk-Hr Veh-Mi = [Veh-Mi Supply Pk-Hr Total] - [Veh-Mi Demand Pk-Hr Total]

Note: Mileage lengths are shown as rounded to the nearest 0.01. Actual calculations were performed using exact mileage length [Length (ft) / 5,280]. If minimal traffic is anticipated on an existing roadway, an average volume based on roadways of similar class was used.

City of Garland - 2016 Roadway Impact Fee Study

CIP Service Units of Supply

Service Area B

9/14/2016

Project ID #	ROADWAY	LIMITS	LENGTH (MI)	LANES	IMPACT FEE CLASSIFICATION	PEAK HOUR VOLUME	% IN SERVICE AREA	VEH-MI CAPACITY PK-HR PER LN	VEH-MI SUPPLY PK-HR TOTAL[1]	VEH-MI TOTAL DEMAND PK-HR[2]	EXCESS CAPACITY PK-HR VEH-MI[3]	TOTAL PROJECT COST	TOTAL PROJECT COST IN SERVICE AREA
B-1	Kings Rd	Marquis Dr to Kings Rd (Existing)	0.10	4	E	New	100%	525	217	0	217	$ 551,000	$ 551,000
B-2	Leon Rd (1)	Shiloh Rd to S. Garland Ave	0.18	4	E	New	100%	525	378	0	378	$ 959,000	$ 959,000.00
B-3	Leon Rd (2)	Leon Rd (Existing) to Millay Blvd (Future)	0.04	4	E	New	100%	525	84	0	84	$ 212,000	$ 212,000
B-4	Marketplace ext (1)	Towngate Blvd to Northwest Hwy	0.26	4	E	New	100%	525	551	0	551	$ 1,398,000	$ 1,398,000
B-5	Marketplace ext (2)	Pendleton Dr to Marketplace Dr	0.13	4	E	New	100%	525	263	0	263	$ 666,000	$ 666,000
B-6	Millay Blvd (Future)	Leon Rd to Millay Blvd (Existing)	0.22	4	E	New	100%	525	465	0	465	$ 1,180,000	$ 1,180,000
B-7	Shiloh Rd (6)	Buckingham Rd to W Walnut St	1.00	6	B (1/3)	2,448	100%	900	5380	2,439	2,941	$ 1,784,000	$ 1,784,000
B-8	Shiloh Rd (7)	W Walnut St to Forest Ln	0.50	6	B	2,133	100%	900	2726	1,077	1,649	$ 4,590,000	$ 4,590,000
B-9	Shiloh Rd (8)	Forest Ln to Miller Rd	1.01	6	B	2,240	100%	900	5436	2,255	3,181	$ 8,552,000	$ 8,552,000
B-10	Shiloh Rd (9)	Miller Rd to Kingsley Rd	1.07	6	B	1,969	100%	900	5789	2,111	3,678	$ 9,087,000	$ 9,087,000
B-11	Shiloh Rd (10)	Kingsley Rd to McCree Rd	0.50	6	B	1,681	100%	900	2720	847	1,873	$ 4,129,000	$ 4,129,000
B-12	Shiloh Rd (11)	Garland Ave to IH-635 WBFR	0.29	6	B	1,867	100%	900	1560	539	1,021	$ 2,368,000	$ 2,368,000
B-13	New road east of Industrial Ln	Kingsley Rd to McCree Rd	0.50	2	F	New	100%	525	529	0	529	$ 2,260,000	$ 2,260,000
B-14	Saturn Rd	Saturn Rd (Existing) to Miller Rd	0.31	4	D2	New	100%	825	1009	0	1,009	$ 2,215,000	$ 2,215,000
B-15	Sherwin	Sherwin St (Existing) to Wood Dr	0.13	4	E	New	100%	525	274	0	274	$ 2,432,000	$ 2,432,000
I-9	Plano Rd and Walnut St	NB an SB RT Lane											
I-10	Forest Ln and Jupiter Rd	EB and NB RT Lane, NB Dual LT Lanes											
I-11	Forest Ln and Shiloh Rd	SB and NB RT Lanes, Dual NB LT Lanes											
I-12	Avenue B (SH 78) and First St	SB RT Lane											
I-13	Avenue D and First St	EB RT Lane, EB Dual LT Lanes											
I-15	Jupiter Rd and Miller Rd	SB RT Lane											
I-16	Miller Rd and Shiloh Rd	SB RT Lane											
I-17	Garland Ave and Miller Rd	SB, EB, and WB RT Lanes										$ 378,000	$ 378,000
I-18	Glenbrook Dr and Miller Rd	EB and WB LT Lanes											
I-19	First St and Miller Rd	Add EB RT & NB, SB Dual Lefts											
I-20	Broadway Blvd and First St	Triple LT from NB First St											
I-21	Jupiter Rd and Kingsley Rd	WB RT Lane											
I-22	Garland Ave and Kingsley Rd	NB RT Lane											
I-24	Garland Ave and MCree Rd / Shiloh Rd	SWB Dual LT Lanes											
SUBTOTAL									**27,381**	**9,268**	**18,113**	**$ 42,761,000**	**$ 42,761,000**

2016 Roadway Impact Fee Study Cost Per Service Area $ 15,840

TOTAL COST IN SERVICE AREA B $ 42,776,840

1. Veh-Mi Supply Pk-Hr Total = [Length (mi)] * [Exist Lanes] * [Veh-Mi Capacity Pk-Hr Per Ln] * [% in Service Area]

2. Veh-Mi Demand Pk-Hr Total = [Length (mi)] * [PM Peak Hour Vol] * [% In Service Area]

3. Excess Capacity Pk-Hr Veh-Mi = [Veh-Mi Supply Pk-Hr Total] - [Veh-Mi Demand Pk-Hr Total]

Note: Mileage lengths are shown as rounded to the nearest 0.01. Actual calculations were performed using exact mileage length [Length (ft) / 5,280]. If minimal traffic is anticipated on an existing roadway, an average volume based on roadways of similar class was used.

City of Garland - 2016 Roadway Impact Fee Study

CIP Service Units of Supply

Service Area C

9/14/2016

Project ID #	ROADWAY	LIMITS	LENGTH (MI)	LANES	IMPACT FEE CLASSIFICATION	PEAK HOUR VOLUME	% IN SERVICE AREA	VEH-MI CAPACITY PK-HR PER LN	VEH-MI SUPPLY PK-HR TOTAL[1]	VEH-MI TOTAL DEMAND PK-HR[2]	EXCESS CAPACITY PK-HR VEH-MI[3]	TOTAL PROJECT COST	TOTAL PROJECT COST IN SERVICE AREA
C-1	Castle Dr (1)	N. First St to Lavon Dr	0.15	6	D1	237	100%	900	813	36	777	$ 953,000	$ 953,000
C-2	Castle Dr (2)	Lavon Dr to Mars Dr	0.38	6	D1	561	100%	900	2040	212	1828	$ 2,390,000	$ 2,390,000.00
C-3	Castle Dr (3)	Mars Dr to Country Club Rd	0.46	4	E	378	100%	525	964	174	790	$ 2,424,000	$ 2,424,000.00
C-4	Castle Dr (4)	Country Club Rd to Centerville Rd	1.05	4	E	510	100%	525	2203	535	1,668	$ 5,536,000	$ 5,536,000
C-5	Castle Dr (5)	2660' south of Firewheel Pkwy to Firewheel Pkwy	0.50	4	E	206	50%	525	529	52	477	$ 2,659,000	$ 1,329,500
C-6	Castle Dr (6)	Firewheel Pkwy to Miles Rd	0.84	4	E	418	50%	525	882	176	706	$ 4,433,000	$ 2,216,500
C-7	Crist Rd	Lavon Dr to Naaman School Rd	0.62	4	D2	500	100%	825	2041	309	1,732	$ 4,436,000	$ 4,436,000
C-8	Firewheel Parkway (2)	530' E of Lavon Dr to 310' S of Town Center Blvd	0.77	6	A	1,450	100%	925	4257	1,112	3,145	$ 6,292,000	$ 6,292,000
C-9	Pleasant Valley Rd (1)	Creek Meadow Ln to Miles Rd	0.50	6	C1	796	100%	900	2674	394	2,280	$ 10,773,000	$ 10,773,000
C-10,D-5	E. Miller Rd	Centerville Rd to 2,815' E of Centerville Rd	0.53	6	B (1/3)	1,122	50%	900	1439	299	1,140	$ 955,000	$ 477,500
C-11	Pleasant Valley Rd (2)	Firewheel Pkwy to Creek Meadow Ln	0.58	6	C1	796	100%	900	3145	464	2,681	$ 3,603,239	$ 3,603,239
C-12,D-21	Miller Rd Bridge	2,815' E of Centerville Rd to East City Limits	0.04	6	B	1,063	50%	900	99	20	79	$ 2,743,883	$ 1,371,942
I-14	Centerville Rd and SH 66	Add dual LT lanes NB and WB										$ 141,000	$ 141,000
I-19	First St and Miller Rd	Add EB RT & NB, SB Dual Lefts											
SUBTOTAL									**21,086**	**3,783**	**17,303**	**$ 47,339,122**	**$ 41,943,681**

2016 Roadway Impact Fee Study Cost Per Service Area $ 15,840

TOTAL COST IN SERVICE AREA C $ 41,959,521

1. Veh-Mi Supply Pk-Hr Total = [Length (mi)] * [Exist Lanes] * [Veh-Mi Capacity Pk-Hr Per Ln] * [% in Service Area]

2. Veh-Mi Demand Pk-Hr Total = [Length (mi)] * [PM Peak Hour Vol] * [% In Service Area]

3. Excess Capacity Pk-Hr Veh-Mi = [Veh-Mi Supply Pk-Hr Total] - [Veh-Mi Demand Pk-Hr Total]

Note: Mileage lengths are shown as rounded to the nearest 0.01. Actual calculations were performed using exact mileage length [Length (ft) / 5,280]. If minimal traffic is anticipated on an existing roadway, an average volume based on roadways of similar class was used.

City of Garland - 2016 Roadway Impact Fee Study

CIP Service Units of Supply

Service Area D

9/14/2016

Project ID #	ROADWAY	LIMITS	LENGTH (MI)	LANES	IMPACT FEE CLASSIFICATION	PEAK HOUR VOLUME	% IN SERVICE AREA	VEH-MI CAPACITY PK-HR PER LN	VEH-MI SUPPLY PK-HR TOTAL[1]	VEH-MI TOTAL DEMAND PK-HR[2]	EXCESS CAPACITY PK-HR VEH-MI[3]	TOTAL PROJECT COST	TOTAL PROJECT COST IN SERVICE AREA
D-1	Bobtown Rd (1)	Rowlett Rd to Bobtown Rd (Existing)	0.17	2	S	New	100%	525	183	0	183	$ 929,000	$ 929,000.00
D-2	Bobtown Rd (2)	Bobtown Rd (Future) to Waterhouse Blvd	0.34	0	E-S	367	100%	0	0	124	-124	$ 1,779,000	$ 1,779,000.00
D-3	Bobtown Rd (3)	400' S of High Dr to Lyons Rd	0.38	4	E	541	100%	525	793	204	589	$ 1,995,000	$ 1,995,000.00
D-4	Bobtown Rd (4)	Lyons Rd to South City Limits	0.50	4	E	541	50%	525	528	136	392	$ 2,654,000	$ 1,327,000.00
C-10,D-5	E. Miller Rd	Centerville Rd to 2,815' E of Centerville Rd	0.53	6	B (1/3)	1,122	50%	900	1439	299	1,140	$ 955,000	$ 477,500
D-6	E. Oates Rd (Future)	Country Club Rd to E. Oates Rd (Existing)	0.58	2	F	New	100%	525	606	0	606	$ 3,219,000	$ 3,219,000
D-7	La Prada Dr	IH 635 E frontage road to Northwest Hwy	0.32	6	B (1/3)	1,145	50%	900	854	181	673	$ 567,000	$ 283,500
D-8	Locust Grove Rd	290' E of Oceanport Dr to East City Limits	0.54	4	E	284	100%	525	1138	154	984	$ 2,859,000	$ 2,859,000
D-9	Lyons Rd (1)	Bobtown Rd to Guthire Rd	0.61	6	B	509	100%	900	3303	311	2,992	$ 5,014,000	$ 5,014,000
D-10	Lyons Rd (2)	Guthire Rd to Lyons Rd (Future)	0.17	6	B	161	100%	900	900	27	873	$ 1,366,000	$ 1,366,000
D-11	Lyons Rd (Future) (3)	Lyons Rd to South City Limits	0.23	6	B	New	100%	900	1217	0	1,217	$ 2,811,000	$ 2,811,000
D-12	Rosehill Rd (1)	Rosehill Rd (Existing) to Wynn Joyce Rd	0.30	2	F	667	100%	525	319	203	116	$ 1,364,000	$ 1,364,000
D-13	Rosehill Rd (2)	Bobtown Rd to IH 30 N loop	0.29	6	B (1/3)	667	100%	900	1544	191	1,353	$ 513,000	$ 513,000
D-14	Rowlett Rd (1)	Broadway Blvd to Rosehill Rd	0.70	6	A (1/3)	1,492	100%	925	3884	1044	2,840	$ 1,254,000	$ 1,254,000
D-15	Rowlett Rd (2)	Rosehill Rd to Roan Rd	0.99	6	A (1/3)	1,111	100%	925	5518	1105	4,413	$ 1,781,000	$ 1,781,000
D-16	Rowlett Rd (3)	Roan Rd to City Limits	0.30	6	A	1,999	100%	925	1666	600	1,066	$ 2,486,000	$ 2,486,000
D-17	S. Country Club Rd	Rowlett Rd to Bobtown Rd	0.33	6	B (1/3)	324	100%	900	1805	108	1,697	$ 599,000	$ 599,000
D-18	Zion Rd	Locust Grove Rd to Bobtown Rd	0.20	4	E	423	100%	525	428	86	342	$ 1,075,000	$ 1,075,000
D-19	Northwest Hwy	Centerville Rd to La Prada Dr	1.22	6	B	1,362	100%	900	6583	1660	4,923	$ 2,904,782	$ 2,904,782
D-20	Dairy Rd	Celeste Rd to Broadway Blvd	0.49	4	E	570	100%	525	1038	282	756	$ 3,597,758	$ 3,597,758
C-12,D-21	Miller Rd Bridge	2,815' E of Centerville Rd to East City Limits	0.04	6	B	1,122	50%	900	99	21	78	$ 2,743,883	$ 1,371,942
I-19	First St and Miller Rd	Add EB RT & NB, SB Dual Lefts											
I-20	Broadway Blvd and First St	Triple LT from NB First St											
I-23	Broadway Blvd and Centerville Rd	Dual Lefts SWB, NEB and NWB										$ 236,000	$ 236,000
I-25	Broadway Blvd and Rowlett Rd	Add EB RT Lane											
I-26	Broadway Blvd and IH-30 EBFR	Dual NB RT Lanes											
SUBTOTAL									**33,845**	**6,736**	**27,109**	**$ 42,702,423**	**$ 39,242,482**

2016 Roadway Impact Fee Study Cost Per Service Area $ 15,840

TOTAL COST IN SERVICE AREA D $ 39,258,322

1. Veh-Mi Supply Pk-Hr Total = [Length (mi)] * [Exist Lanes] * [Veh-Mi Capacity Pk-Hr Per Ln] * [% in Service Area]
2. Veh-Mi Demand Pk-Hr Total = [Length (mi)] * [PM Peak Hour Vol] * [% In Service Area]
3. Excess Capacity Pk-Hr Veh-Mi = [Veh-Mi Supply Pk-Hr Total] - [Veh-Mi Demand Pk-Hr Total]

Note: Mileage lengths are shown as rounded to the nearest 0.01. Actual calculations were performed using exact mileage length [Length (ft) / 5,280]. If minimal traffic is anticipated on an existing roadway, an average volume based on roadways of similar class was used.

Appendix C – Existing Roadway Facilities Inventory

City of Garland - 2016 Roadway Impact Fee Update
Existing Roadway Facilities Inventory

Service Area A

9/14/2016

ROADWAY	FROM	TO	LENGTH (ft)	LENGTH (mi)	EXIST LANES		EXIST LANES	CLASS	FUTURE LANES	PM PEAK HOUR VOL		% IN SERVICE AREA	VEH-MI CAPACITY PK-HR PER LN		VEH-MI SUPPLY PK-HR TOTAL[1]		VEH-MI DEMAND PK-HR TOTAL[2]		EXCESS CAPACITY PK-HR VEH-MI[3]		EXISTING DEFICIENCIES PK-HR VEH-MI[4]	
					NB/EB	SB/WB				NB/EB	SB/WB		NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
Apollo Rd	Brand	Kingsbridge Dr	3533	0.67	1	1	2U	Minor Collector	F	151	151	100%	525	525	351	351	101	101	250	250		
Apollo Rd	Arapaho Rd	W Brand Rd	3585	0.68	1	1	2U	Minor Collector	F	265	240	100%	525	525	356	356	180	163	176	193		
Apollo Rd	Kingsbridge Dr	Crist	2872	0.54	1	1	2U	Minor Collector	F	151	151	100%	525	525	286	286	82	82	204	204		
Apollo Rd	N. Jupiter	Galaxie Rd	2705	0.51	1	1	3U	Minor Collector	F	243	223	100%	575	575	295	295	124	114	171	181		
Apollo Rd	Shiloh Rd	Arapaho Rd	3651	0.69	1	1	3U	Minor Collector	F	301	283	100%	575	575	398	398	208	196	190	202		
Apollo Rd	Galaxie Road	Shiloh Rd	2616	0.50	1	1	3U	Minor Collector	F	283	246	100%	575	575	285	285	140	122	145	163		
Arapaho Rd	Callejo Rd	Shiloh Rd	1495	0.28	2	2	4D	Regional Arterial	B	1,144	1,221	100%	900	900	510	510	324	346	186	164		
Arapaho Rd	Holford Rd	N. Garland	2618	0.50	2	2	4D	Regional Arterial	B	1,050	1,093	100%	900	900	893	893	521	542	372	351		
Arapaho Rd	Elm Ridge Ln	Galaxie Rd	1355	0.26	2	2	4D	Regional Arterial	B	1,125	1,195	100%	900	900	462	462	289	307	173	155		
Arapaho Rd	Galaxie Rd	Callejo Rd	1226	0.23	2	2	4D	Regional Arterial	B	1,144	1,221	100%	900	900	418	418	266	284	152	134		
Arapaho Rd	Shiloh Rd	Holford Rd	947	0.18	2	2	4D	Regional Arterial	B	1,050	1,093	100%	900	900	323	323	188	196	135	127		
Arapaho Rd	N. Jupiter	Elm Ridge Ln	1340	0.25	3	3	6D	Regional Arterial	B	1,125	1,195	100%	925	925	704	704	286	303	418	401		
Beltline Rd	Kingsbridge Dr	Crist	2722	0.52	3	3	6D	Regional Arterial	B	888	858	100%	925	925	1,431	1,431	458	442	973	989		
Beltline Rd	Galaxie Rd	N. Shiloh Rd	2448	0.46	3	3	6D	Regional Arterial	B	1,291	1,277	100%	925	925	1,287	1,287	599	592	688	695		
Beltline Rd	Apollo Rd	N. Garland Ave	1706	0.32	3	3	6D	Regional Arterial	B	1,033	1,035	100%	925	925	897	897	334	334	563	563		
Beltline Rd	W Brand Rd	N. Glenbrook	1999	0.38	3	3	6D	Regional Arterial	B	1,144	1,097	100%	925	925	1,051	1,051	433	415	618	636		
Beltline Rd	N. Jupiter	Galaxie Rd	1852	0.35	3	3	6D	Regional Arterial	B	1,358	1,374	100%	925	925	973	973	476	482	497	491		
Beltline Rd	Big Oaks Dr	Galaxie Rd	1097	0.21	3	3	6D	Regional Arterial	B	1,358	1,374	100%	925	925	577	577	282	285	295	292		
Beltline Rd	N. Shiloh	Sam Houston Dr	2562	0.49	3	3	6D	Regional Arterial	B	1,121	1,101	100%	925	925	1,347	1,347	544	534	803	813		
Beltline Rd	Sam Houston Dr	Apollo Rd	1035	0.20	3	3	6D	Regional Arterial	B	1,033	1,035	100%	925	925	544	544	202	203	342	341		
Beltline Rd	N. Garland Ave	W Brand Rd	971	0.18	3	3	6D	Regional Arterial	B	1,144	1,097	100%	925	925	510	510	210	202	300	308		
Beltline Rd	N. Glenbrook	Kingsbridge Dr	1636	0.31	3	3	6D	Regional Arterial	B	888	858	100%	925	925	860	860	275	266	585	594		
Big Oaks	Diamond Oaks Dr	Shiloh Rd	3121	0.59	1	1	2U	Minor Collector	F	42	45	100%	525	525	310	310	25	27	285	283		
Big Oaks	Laurel Oaks Dr	Diamond Oaks Dr	1647	0.31	1	1	2U	Minor Collector	F	265	240	100%	525	525	164	164	83	75	81	89		
Clear Springs	Lookout	Shiloh	2721	0.52	1	1	2U	Minor Collector	F	265	240	100%	525	525	271	271	137	124	134	147		
Collins	Callejo Rd	Shiloh Rd	1720	0.33	1	1	2U	Minor Collector	F	265	240	100%	525	525	171	171	86	78	85	93		
Collins	N. Jupiter	Galaxie Rd	2463	0.47	1	1	2U	Minor Collector	F	265	240	100%	525	525	245	245	124	112	121	133		
Collins	Galaxie Rd	Callejo Rd	1463	0.28	1	1	2U	Minor Collector	F	265	240	100%	525	525	145	145	73	67	72	79		
Crist Rd	Beltline	SH 78	3242	0.61	2	2	4U	Minor Collector	E	523	552	100%	525	525	645	645	321	339	324	306		
Diamond Oaks Dr	Ridge Oak Dr	Buckingham Rd	3434	0.65	1	1	2U	Minor Collector	F	71	79	100%	525	525	341	341	46	51	295	290		
Diamond Oaks Dr	Big Oaks Dr	Ridge Oak Dr	1953	0.37	1	1	2U	Minor Collector	F	265	240	100%	525	525	194	194	98	89	96	105		
Brand Rd	Campbell Rd	Provence Blvd	4533	0.86	1	1	2U	Special Functional Classification	S	247	228	100%	525	525	451	451	212	196	239	255		
Brand Rd	Muirfield Rd	PGBT	2960	0.56	1	1	2U	Special Functional Classification	S	481	430	100%	525	525	294	294	270	241	24	53		
Brand Rd	North City Limits	Campbell Rd	1763	0.33	1	1	2U	Special Functional Classification	S	132	139	100%	525	525	175	175	44	46	131	129		
Brand Rd	Talley Rd	Muirfield Dr	2106	0.40	1	1	2U	Special Functional Classification	S	265	240	100%	525	525	209	209	106	96	103	113		
Brand Rd	PGBT Frontage Road	PGBT Frontage Road	456	0.09	3	3	6D	Minor Arterial	C1	1,460	1,485	100%	925	925	240	240	126	128	114	112		
Brand Rd	PGBT	Naaman Forest Blvd	336	0.06	3	3	6D	Minor Arterial	C1	1,460	1,485	100%	925	925	177	177	93	95	84	83		
E. Buckingham Rd	First St	375' E of First St	477	0.09	3	3	6D	Regional Arterial	B	1,418	1,336	50%	925	925	125	125	64	60	61	65		
E. Buckingham Rd	375' E of First St	Lavon Dr	1065	0.20	3	3	7U	Regional Arterial	B	1,418	1,336	50%	925	925	280	280	143	135	137	145		
Campbell Rd	Brand Rd	City Limits	3574	0.68	1	1	2U	Regional Arterial	B	426	411	100%	525	525	355	355	288	278	67	77		
Campbell Rd	Water Oak	Murphy	2970	0.56	1	1	2U	Regional Arterial	B	532	539	100%	525	525	295	295	299	303	-4	-8	4	8
Ferris Rd	Campbell	Holford	1883	0.36	1	1	2U	Major Collector	D1	265	240	100%	525	525	187	187	95	86	92	101		
Galaxie	Apollo Rd	Sweet Gum St	2056	0.39	1	1	2D	Minor Collector	F	265	240	100%	575	575	224	224	103	93	121	131		
Galaxie	Campbell Rd	Collins Blvd	1514	0.29	1	1	2U	Minor Collector	F	265	240	100%	525	525	151	151	76	69	75	82		
Galaxie	Collins Blvd	Arapaho Rd	3242	0.61	1	1	2U	Minor Collector	F	265	240	100%	525	525	322	322	163	147	159	175		
Galaxie	Sweet Gum St	Belt Line Rd	422	0.08	1	1	2U	Minor Collector	F	265	240	100%	525	525	42	42	21	19	21	23		
Galaxie	Arapaho Rd	Apollo Rd	3328	0.63	1	1	3U	Minor Collector	F	202	124	100%	575	575	362	362	127	78	235	284		
Holford Rd	Campbell Rd	310' S of Campbell Rd	240	0.05	1	1	2D	Minor Arterial	C2	55	47	100%	575	575	26	26	3	2	24	24		
Holford Rd	275' N of PGBT N frontage	PGBT N frontage road	230	0.04	1	1	2D	Minor Arterial	C2	55	47	100%	575	575	25	25	2	2	23	23		
Holford Rd	200' N of Arapaho Rd	Arapaho Rd	243	0.05	1	1	2D	Major Collector	D1	183	144	100%	575	575	26	26	8	7	18	19		
Holford Rd	Naaman Forest (Future)	200' N of Arapaho Rd	3718	0.70	1	1	2U	Major Collector	D1	183	144	100%	525	525	370	370	129	101	241	269		
Holford Rd	310' S of Campbell Rd	Ferris Rd	2456	0.47	1	1	2U	Minor Arterial	C2	55	47	100%	525	525	244	244	26	22	218	222		
Holford Rd	North City Limits	Campbell	877	0.17	1	1	2U	Minor Arterial	C2	265	240	100%	525	525	87	87	44	40	43	47		
Holford Rd	Ferris	275' N of PGBT N frontage r	1426	0.27	1	1	2U	Minor Arterial	C2	55	47	100%	525	525	142	142	15	13	127	129		
Holford Rd	PGBT S frontage road	Naaman Forest (Future)	1748	0.33	1	1	2U	Minor Arterial	C2	183	144	100%	525	525	174	174	61	48	113	126		
Holford Rd	PGBT N frontage raod	PGBT S frontage road	427	0.08	3	3	6D	Minor Arterial	C2	1,460	1,485	100%	925	925	224	224	118	120	106	104		
Homestead	Sam Houston Dr	Garland Ave	2717	0.51	1	1	2U	Minor Collector	F	265	240	100%	525	525	270	270	136	124	134	147		
Homestead	Shiloh	Sam Houston Dr	2498	0.47	1	1	2U	Minor Collector	F	265	240	100%	525	525	248	248	125	114	123	134		
Kingsbridge	Apollo Rd	Naaman School Rd	4837	0.92	1	1	2U	Minor Collector	F	103	50	100%	525	525	481	481	94	46	387	435		
Kingsbridge	Garland	Glenbrook Dr	2880	0.55	1	1	2U	Minor Collector	F	265	240	100%	525	525	286	286	145	131	141	155		
Kingsbridge	Glenbook Dr	First St	1555	0.29	1	1	2U	Minor Collector	F	265	240	100%	525	525	155	155	78	71	77	84		
Kingsbridge	First St	Apollo Rd	1218	0.23	1	1	2U	Minor Collector	F	265	240	100%	525	525	121	121	61	55	60	66		
Laurel Oaks Dr	Beltline	Laurel Oaks Dr	182	0.03	1	1	2D	Minor Collector	F	34	34	100%	575	575	20	20	1	1	19	19		
State Highway 78 (Lavon)	Murphy Rd	Firewheel Pkwy	4861	0.92	3	3	6D	Regional Arterial	A	2,673	2,620	100%	925	925	2,555	2,555	2,461	2,412	94	143		
State Highway 78 (Lavon)	Firewheel Pkwy	PGBT N ramp	2832	0.54	3	3	6D	Regional Arterial	A	2,252	2,389	50%	925	925	744	744	604	641	140	103		
State Highway 78 (Lavon)	PGBT ramp end N	PGBT ramp end S	683	0.13	2	4	6D	Regional Arterial	A	1,460	1,485	50%	925	925	120	239	94	96	26	143		
State Highway 78 (Lavon)	PGBT ramp end south	Naaman School Rd	794	0.15	3	3	6D	Regional Arterial	A	2,268	2,268	50%	925	925	209	209	171	171	38	38		
State Highway 78 (Lavon)	Naaman School Rd	Foster Rd	2601	0.49	3	3	6D	Regional Arterial	A	2,268	2,268	50%	925	925	684	684	559	559	125	125		
State Highway 78 (Lavon)	Foster Rd	Crist Rd	398	0.08	3	3	6D	Regional Arterial	A	2,268	2,268	100%	925	925	209	209	171	171	38	38		
State Highway 78 (Lavon)	Crist Rd	Pyramid Dr	1897	0.36	3	3	6D	Regional Arterial	A	2,047	2,078	50%	925	925	499	499	368	373	131	126		
State Highway 78 (Lavon)	Pyramid Dr	E Buckingham Rd	1265	0.24	3	3	6D	Regional Arterial	A	2,047	2,078	50%	925	925	332	332	245	249	87	83		
Lookout Dr	Telecom	Campbell	2766	0.52	2	1	4D	Regional Arterial	B	152	223	100%	900	900	943	471	80	117	863	354		

Service Area A Continued

9/14/2016

ROADWAY	FROM	TO	LENGTH (ft)	LENGTH (mi)	EXIST LANES		EXIST LANES	CLASS	FUTURE LANES	PM PEAK HOUR VOL		% IN SERVICE AREA	VEH-MI CAPACITY PK-HR PER LN		VEH-MI SUPPLY PK-HR TOTAL[1]		VEH-MI DEMAND PK-HR TOTAL[2]		EXCESS CAPACITY PK-HR VEH-MI[3]		EXISTING DEFICIENCIES PK-HR VEH-MI[4]	
					NB/EB	SB/WB				NB/EB	SB/WB		NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
Lookout Dr	Spring Dr	Clear Springs Pkwy	3441	0.65	2	2	4D	Regional Arterial	B	151	173	100%	900	900	1,173	1,173	98	113	1,075	1,060		
Lookout Dr	PGBT N frontage road	Telecom	1021	0.19	2	2	4D	Regional Arterial	B	780	770	100%	900	900	348	348	151	149	197	199		
Lookout Dr	Clear Springs Pkwy	PGBT S frontage road	769	0.15	2	2	4D	Regional Arterial	B	151	173	100%	900	900	262	262	22	25	240	237		
Lookout Dr	Courtside Dr	Spring Dr	591	0.11	3	3	6D	Regional Arterial	B	151	173	100%	925	925	311	311	17	19	294	292		
Lookout Dr	PGBT S frontage road	PGBT N frontage rd	583	0.11	3	3	6D	Regional Arterial	B	1,460	1,485	100%	925	925	306	306	161	164	145	142		
Lookout Dr	N. Jupiter	Courtside Dr	513	0.10	3	3	6D	Regional Arterial	B	151	173	100%	925	925	270	270	15	17	255	253		
Mapleridge Dr	E of Shiloh Rd	End of Mapleridge Dr	729	0.14	1	1	2U	Minor Collector	F	265	240	100%	525	525	72	72	37	33	35	39		
N. First Street	Crist	Buckingham Rd	940	0.18	3	3	6D	Regional Arterial	B	1,080	1,179	100%	925	925	494	494	192	210	302	284		
N. Garland Ave	E. Naaman Forest	Arapaho	3843	0.73	2	2	4D	Regional Arterial	B	1,010	1,312	100%	900	900	1,310	1,310	735	955	575	355		
N. Garland Ave	Homestead Pl	Buckingham Rd	2604	0.49	2	2	4D	Regional Arterial	B	965	887	100%	900	900	888	888	476	437	412	451		
N. Garland Ave	Wagon Wheel Rd	Belt Line Rd	2105	0.40	2	2	4D	Regional Arterial	B-S	1,242	1,111	100%	900	900	718	718	495	443	223	275		
N. Garland Ave	North City Limits	Campbell Rd	1027	0.19	2	2	4D	Regional Arterial	B	489	488	100%	900	900	350	350	95	95	255	255		
N. Garland Ave	Campbell Rd	Muirfield Dr	4394	0.83	2	2	4D	Regional Arterial	B	555	548	100%	900	900	1,498	1,498	462	456	1,036	1,042		
N. Garland Ave	Muirfield Dr	PGBT Frontage Road	1400	0.27	2	2	4D	Regional Arterial	B	555	548	100%	900	900	477	477	147	145	330	332		
N. Garland Ave	South PGBT Frontage Roa	E. Naaman Forest	2183	0.41	2	2	4D	Regional Arterial	B	1,010	1,312	100%	900	900	744	744	418	542	326	202		
N. Garland Ave	Garland Ave	Apollo Rd	1211	0.23	2	2	4D	Regional Arterial	B-S	1,242	1,111	100%	900	900	413	413	285	255	128	158		
N. Garland Ave	Apollo Rd	Wagon Wheel Rd	876	0.17	2	2	4D	Regional Arterial	B-S	1,242	1,111	100%	900	900	299	299	206	184	93	115		
N. Garland Ave	Belt Line Rd	Homestead Pl	2503	0.47	2	2	4D	Regional Arterial	B	965	887	100%	900	900	853	853	457	420	396	433		
N. Garland Ave	North PGBT Frontage Roa	South PGBT Frontage Road	475	0.09	3	3	6D	Regional Arterial	B	1,460	1,485	100%	925	925	250	250	131	134	119	116		
N. Glenbrook Dr	Beltline	Kingsbridge Dr	1118	0.21	2	2	4D	Major Collector	D1	275	256	100%	900	900	381	381	58	54	323	327		
N. Glenbrook Dr	Kingsbridge Dr	Buckingham Rd	2415	0.46	2	2	4D	Major Collector	D1	275	256	100%	900	900	823	823	126	117	697	706		
Jupiter Rd	North City Limits	Springpark Wy	1513	0.29	3	3	6D	Regional Arterial	B	1,374	1,732	50%	925	925	398	398	197	248	201	150		
Jupiter Rd	Springpark Wy	W Campbell Rd	3329	0.63	3	3	6D	Regional Arterial	B	1,374	1,732	50%	925	925	875	875	433	546	442	329		
Jupiter Rd	W Campbell Rd	Collins Blvd	1945	0.37	3	3	6D	Regional Arterial	B	1,848	1,546	50%	925	925	511	511	340	285	171	226		
Jupiter Rd	Collins Blvd	Arapaho Rd	2632	0.50	3	3	6D	Regional Arterial	B	1,848	1,546	50%	925	925	692	692	461	385	231	307		
Jupiter Rd	Arapaho Rd	Apollo Rd	3321	0.63	3	3	6D	Regional Arterial	B	1,713	1,582	50%	925	925	873	873	539	498	334	375		
Jupiter Rd	Apollo Rd	Belt Line Rd	2260	0.43	3	3	6D	Regional Arterial	B	1,713	1,582	50%	925	925	594	594	367	339	227	255		
Jupiter Rd	Belt Line Rd	Ridge Oak Dr	1432	0.27	3	3	6D	Regional Arterial	B	1,713	1,582	50%	925	925	376	376	232	215	144	161		
Jupiter Rd	Ridge Oak Dr	W Buckingham Rd	3697	0.70	3	3	6D	Regional Arterial	B	1,713	1,582	50%	925	925	972	972	600	554	372	418		
N. Shiloh Rd	Campbell Rd	bridge end	2160	0.41	2	2	4D	Regional Arterial	B	868	830	100%	900	900	736	736	355	340	381	396		
N. Shiloh Rd	Rich Oak Dr	Buckingham Rd	1985	0.38	1	1	4D	Regional Arterial	B	1,175	1,124	100%	900	900	338	338	442	423	-104	-85	104	85
N. Shiloh Rd	Homestead Pl	Richoak Dr	947	0.18	2	2	4D	Regional Arterial	B	1,175	1,124	100%	900	900	323	323	211	202	112	121		
N. Shiloh Rd	Belt Line Rd	Homestead Pl	2125	0.40	2	2	4D	Regional Arterial	B	1,175	1,124	100%	900	900	724	724	473	452	251	272		
N. Shiloh Rd	Apollo Rd	Belt Line Rd	2498	0.47	2	2	4D	Regional Arterial	B	1,041	1,018	100%	900	900	852	852	493	482	359	370		
N. Shiloh Rd	Arapaho Rd	Apollo Rd	2917	0.55	2	2	4D	Regional Arterial	B	943	936	100%	900	900	994	994	521	517	473	477		
N. Shiloh Rd	Mapleridge Dr	Arapaho Rd	2726	0.52	2	2	4D	Regional Arterial	B	1,021	928	100%	900	900	929	929	527	479	402	450		
N. Shiloh Rd	Collins Blvd	Mapleridge Dr	415	0.08	2	2	4D	Regional Arterial	B	1,021	928	100%	900	900	141	141	80	73	61	68		
N. Shiloh Rd	Clear Springs Pkwy	Campbell Rd	579	0.11	2	2	4D	Regional Arterial	B	752	748	100%	900	900	197	197	82	82	115	115		
N. Shiloh Rd	PGBT S frontage rd	Clear Springs Pkwy	1359	0.26	2	2	4D	Regional Arterial	B	752	748	100%	900	900	463	463	194	193	269	270		
N. Shiloh Rd	bridge end	Collins Blvd	537	0.10	2	2	4D	Regional Arterial	B	868	830	100%	900	900	183	183	88	84	95	99		
N. Shiloh Rd	PGBT N frontage road	PGBT S frontage road	409	0.08	3	3	6D	Regional Arterial	B	1,460	1,485	100%	925	925	215	215	113	115	102	100		
E. Naaman Forest	N Garland Ave	E Brand Rd	5700	1.08	2	2	4D	Major Collector	D1	409	340	100%	900	900	1,943	1,943	442	367	1,501	1,576		
W. Naaman Forest	Campbell Rd	Naaman Forest (Future)	1225	0.23	2	2	4D	Major Collector	D1	780	770	100%	900	900	418	418	181	179	237	239		
E. Naaman Forest	Naaman Forest (Future)	N Garland Ave	1344	0.25	2	2	4D	Major Collector	D1	780	770	100%	900	900	458	458	199	196	259	262		
Naaman School Rd	Kingsbridge Dr	Lavon Dr	2780	0.53	1	1	2U	Major Collector	D1	642	438	100%	525	525	276	276	338	231	-62	45	62	
Naaman School Rd	E Brand Rd	W Brand Rd	1566	0.30	1	1	2U	Major Collector	D1	642	438	100%	525	525	156	156	190	130	-34	26	34	
Naaman School Rd	W Brand Rd	Kingsbridge Dr	326	0.06	1	1	2U	Major Collector	D1	642	438	100%	525	525	32	32	40	27	-8	5	8	
Richoak	Shiloh Rd	Sam Houston Dr	2440	0.46	1	1	2U	Minor Collector	F	265	240	100%	525	525	243	243	122	111	121	132		
Richoak	Fulton	Shiloh Rd	492	0.09	1	1	2U	Minor Collector	F	265	240	100%	525	525	49	49	25	22	24	27		
Ridge Oak	N. Jupiter	160' of Jupiter Rd	581	0.11	1	1	2D	Minor Collector	F	60	52	100%	575	575	63	63	7	6	56	57		
Ridge Oak	160' E of Jupiter Rd	Diamond Oaks Dr	2009	0.38	1	1	2U	Minor Collector	F	60	52	100%	525	525	200	200	23	20	177	180		
Sam Houston/Meadowcrest	Beltline	Homestead Pl	2542	0.48	1	1	2U	Minor Collector	F	201	242	100%	525	525	253	253	97	117	156	136		
Sam Houston/Meadowcrest	Homestead Pl	Richoak Dr	763	0.14	1	1	2U	Minor Collector	F	201	242	100%	525	525	76	76	29	35	47	41		
Sam Houston/Meadowcrest	Richoak Dr	Buckingham Rd	1989	0.38	1	1	4D	Minor Collector	F	201	242	100%	900	900	339	339	76	91	263	248		
Springpark Way	N. Jupiter	Clear Springs Pkwy	4535	0.86	2	2	4D	Major Collector	D1	69	75	100%	900	900	1,546	1,546	59	64	1,487	1,482		
Talley Rd	Provence Blvd	City Limits	3095	0.59	1	1	2U	Minor Collector	F	82	74	100%	525	525	308	308	48	43	260	265		
Telecom Pkwy	Lookout Dr	PGBT N frontage road	1086	0.21	2	2	4D	Major Collector	D1	780	770	100%	900	900	370	370	160	158	210	212		
Telecom Pkwy	North City Limits	Lookout Dr	686	0.13	2	2	4D	Major Collector	D1	780	770	100%	900	900	234	234	101	100	133	134		
Brand Rd	Bellaire	Apollo Rd	1723	0.33	1	1	2U	Minor Arterial	C1	385	352	100%	525	525	171	171	126	115	45	56		
Brand Rd	Namaan School	Bellaire	3311	0.63	1	1	2U	Minor Collector	F	345	345	100%	525	525	329	329	216	216	113	113		
Brand Rd	Apollo Rd	Beltline	1651	0.31	1	1	2U	Minor Arterial	C1	385	352	100%	525	525	164	164	120	110	44	54		
W. Buckingham Rd	N Glenbrook Dr	Belt Line Rd	2709	0.51	3	3	6D	Regional Arterial	B	730	1,947	50%	925	925	712	712	187	499	525	213		
W. Buckingham Rd	Potomac Dr	Shiloh Rd	1947	0.37	3	3	6D	Regional Arterial	B	1,515	1,539	50%	925	925	512	512	279	284	233	228		
W. Buckingham Rd	Shiloh Rd	Sam Houston Dr	2337	0.44	3	3	6D	Regional Arterial	B	1,616	1,531	50%	925	925	614	614	358	339	256	275		
W. Buckingham Rd	Sam Houston Dr	N Garland Ave	2802	0.53	3	3	6D	Regional Arterial	B	1,521	1,544	50%	925	925	736	736	404	410	332	326		
W. Buckingham Rd	N Garland Ave	N Glenbrook Dr	2677	0.51	3	3	6D	Regional Arterial	B	1,300	1,359	50%	925	925	703	703	330	345	373	358		
W. Buckingham Rd	N Jupiter Rd	Diamond Oaks Dr	2229	0.42	3	3	6D	Regional Arterial	B	1,515	1,539	50%	925	925	586	586	320	325	266	261		
W. Buckingham Rd	Diamond Oaks Dr	Potomac Dr	1398	0.26	3	3	6D	Regional Arterial	B	1,515	1,539	50%	925	925	367	367	201	204	166	163		
Campbell Rd	Lookout Dr	Ferris Rd	2409	0.46	2	2	4D	Regional Arterial	B	416	373	100%	900	900	821	821	190	170	631	651		
Campbell Rd	N. Garland Ave	Water Oak	2738	0.52	2	2	4D	Regional Arterial	B	532	539	100%	900	900	933	933	276	280	657	653		
Campbell Rd	Shiloh Rd	Naaman Forest	1611	0.31	2	2	4D	Regional Arterial	B	764	725	100%	900	900	549	549	233	221	316	328		
Campbell Rd	Ferris Rd	PGBT N Frontage Road	729	0.14	2	2	4D	Regional Arterial	B	416	373	100%	900	900	249	249	57	51	192	198		
Campbell Rd	Holford Rd	N. Garland Ave	2100	0.40	2	2	4D	Regional Arterial	B	780	770	100%	900	900	716	716	310	306	406	410		
Campbell Rd	Lookout Dr	Holford	1290	0.24	2	2	4D	Regional Arterial	B	780	770	100%	900	900	440	440	191	188	249	252		
Campbell Rd	N. Jupiter	Galaxie Rd	2841	0.54	2	2	4D	Regional Arterial	B	852	793	100%	900	900	969	969	458	427	511	542		
Campbell Rd	Galaxie Rd	Callejo Rd	1100	0.21	2	2	4D	Regional Arterial	B	852	793	100%	900	900	375	375	178	165	198	210		
Campbell Rd	Callejo Rd	Shiloh Rd	1663	0.31	2	2	4D	Regional Arterial	B	852	793	100%	900	900	567	567	268	250	299	317		
Campbell Rd	Naaman Forest Blvd	PGBT S frontage road	570	0.11	2	2	4D	Regional Arterial	B	764	725	100%	900	900	194	194	82	78	112	116		
Campbell Rd	PGBT N Frpmtage Rpad	PGBT S Frontage Road	681	0.13	3	3	6D	Regional Arterial	B	1,460	1,485	100%	925	925	358	358	188	192	170	166		
Muirfield Dr	N. Garland Ave	Brand Rd	6919	1.31	1	1	2D	Major Collector	D1	78	55	100%	575	575	753	753	102	72	651	681		
Wagon Wheel	Belt Line	Arapaho Rd	1944	0.37	1	1	2U	Minor Collector	F	265	240	100%	525	525	193	193	98	88	95	105		
SUBTOTAL			301834	57.17											**72,928**	**72,575**	**34,383**	**33,936**	**38,545**	**38,639**	**212**	**93**
															145,503		**68,319**		**77,184**		**305**	

City of Garland - 2016 Roadway Impact Fee Update
Existing Roadway Facilities Inventory

Service Area B

9/14/2016

ROADWAY	FROM	TO	LENGTH (ft)	LENGTH (mi)	EXIST LANES		EXIST LANES	CLASS	FUTURE LANES	PM PEAK HOUR VOL		% IN SERVICE AREA	VEH-MI CAPACITY PK-HR PER LN		VEH-MI SUPPLY PK-HR TOTAL[1]		VEH-MI DEMAND PK-HR TOTAL[2]		EXCESS CAPACITY PK-HR VEH-MI[3]		EXISTING DEFICIENCIES PK-HR VEH-MI[4]	
					NB/EB	SB/WB				NB/EB	SB/WB		NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
Austin	Garland	Glenbrook Dr	2,434	0.46	1	1	2U	Minor Collector	E	135	120	100%	525	525	242	242	62	55	180	187		
Austin	Glenbrook Dr	N. Fifth	1,109	0.21	1	1	2U	Minor Collector	E	135	120	100%	525	525	110	110	28	25	82	85		
Lamesa/Bardfield	Barfield Avenue	Northwest Fwy	2,974	0.56	1	1	2U	Minor Collector	F	64	64	100%	525	525	296	296	36	36	260	260		
Brookside	Meadowcrest	W. Walnut	2,800	0.53	1	1	2U	Minor Collector	F	45	45	100%	525	525	278	278	24	24	255	255		
E. Avenue B	S Garland Ave	S Glenbrook Dr	2,406	0.46	4	0	4D	Urban One-way Couplet	A-C	0	1,614	100%	900	900	1,640	0	0	735	1,640	-735		735
E. Avenue B	S Glenbrook Dr	S Fifth St	1,338	0.25	4	0	4D	Urban One-way Couplet	A-C	0	1,593	100%	900	900	912	0	0	404	912	-404		404
E. Avenue B	S Fifth St	S First St	1,578	0.30	4	0	4D	Urban One-way Couplet	A-C	0	1,594	100%	900	900	1,076	0	0	476	1,076	-476		476
E. Avenue D	S Garland Ave	S Glenbrook Dr	2,402	0.45	0	4	4D	Urban One-way Couplet	A-C	1,784	0	100%	900	900	0	1,638	812	0	-812	1,638	812	
E. Avenue D	S Glenbrook Dr	S Fifth St	1,049	0.20	0	4	4D	Urban One-way Couplet	A-C	1,625	0	100%	900	900	0	715	323	0	-323	715	323	
E. Avenue D	S Fifth St	S First St	1,867	0.35	0	4	4D	Urban One-way Couplet	A-C	1,704	0	100%	900	900	0	1,273	603	0	-603	1,273	603	
Edgewood	N Barnes Dr	N International Rd	1,832	0.35	1	1	2U	Minor Collector	F	135	120	100%	525	525	182	182	47	42	135	141		
Edgewood	S. Jupiter	N Barnes Dr	1,316	0.25	1	1	2U	Minor Collector	F	135	120	100%	525	525	131	131	34	30	97	101		
Forest Ln	Forest Ln	Marion Dr	1,134	0.21	0	3	6D	Urban One-way Couplet	A-C	1,360	0	100%	925	925	0	596	292	0	-292	596	292	
Forest Ln	Marion Dr	S Garland Ave	1,546	0.29	0	4	4D	Urban One-way Couplet	A-C	1,360	0	100%	900	900	0	1,054	398	0	-398	1,054	398	
Forest Ln	Shiloh Rd	W Avenue B/D	2,690	0.51	3	3	6D	Regional Arterial	A	1,421	1,430	100%	925	925	1,414	1,414	724	729	690	685		
Forest Ln	Shepherd	Jupiter Rd	4,467	0.85	3	3	6D	Regional Arterial	A	1,929	1,921	100%	925	925	2,348	2,348	1,632	1,625	716	723		
Forest Ln	Jupiter Rd	International Rd	3,139	0.59	3	3	6D	Regional Arterial	A	1,550	1,526	100%	925	925	1,650	1,650	921	907	728	743		
Forest Ln	International Rd	Shiloh Rd	2,228	0.42	3	3	6D	Regional Arterial	A	1,523	1,511	100%	925	925	1,171	1,171	643	638	528	533		
Goodwin/Potomac	Buckingham	Western	2,930	0.55	1	1	2U	Minor Collector	F	127	127	100%	525	525	291	291	70	70	221	221		
Industrial Ln	Wood	W. Kingsley	2,810	0.53	1	1	2U	Minor Collector	E	88	90	100%	525	525	279	279	47	48	233	232		
Kings	Kings (Future)	Miller	1,897	0.36	1	1	2U	Minor Collector	E	135	120	100%	525	525	189	189	49	43	140	146		
Lamesa/Bardfield	Kingsley	Barfield Avenue	2,915	0.55	1	1	2U	Minor Collector	F	64	64	100%	525	525	290	290	35	35	255	255		
Lawler Rd	N Yale Dr	N. Jupiter Rd	2,935	0.56	1	1	2U	Minor Collector	F	195	173	100%	525	525	292	292	108	96	183	196		
Lawler Rd	West City Limits	N Plano Rd	1,703	0.32	1	1	2U	Minor Collector	F	135	120	100%	525	525	169	169	44	39	126	131		
Lawler Rd	N. Plano Rd	N. Yale Dr	2,320	0.44	1	1	2U	Minor Collector	F	195	173	100%	525	525	231	231	86	76	145	155		
Leon Rd	S. Garland Ave	S of McCree Rd	1,609	0.30	1	1	2U	Major Collector	D2	417	243	100%	525	525	160	160	127	74	33	86		
Leon Rd	S of McCree Rd	IH 635	2,124	0.40	1	1	3U	Minor Collector	E	417	243	100%	575	575	231	231	168	98	64	134		
Lonnecker Dr	W. Miller	1000' N of Wood Dr	2,036	0.39	1	1	2U	Minor Collector	E	26	29	100%	525	525	202	202	10	11	192	191		
Lonnecker Dr	1000' N of Wood Dr	Wood Dr	832	0.16	1	1	2U	Minor Collector	E	26	29	100%	525	525	83	83	4	5	79	78		
Main St	Glenbrook Dr	Fifth St	1,136	0.22	1	1	2U	Minor Collector	E	248	285	100%	525	525	113	113	53	61	60	52		
Main St	Fifth St	First St	1,821	0.18	1	1	3U	Minor Collector	E	273	343	100%	575	575	104	104	49	62	55	42		
Main St	Garland	Glenbrook Dr	2,414	2.73	1	1	3U	Minor Collector	E	279	275	100%	575	575	1,571	1,571	762	751	809	819		
Marketplace	Northwest Hwy	Saturn Rd	2,834	0.68	1	1	3U	Major Collector	D2	182	176	100%	575	575	394	394	125	121	269	273		
Marquis Dr	Miller Park Dr	Jupiter Rd	2,383	0.27	1	1	2U	Minor Collector	E	135	120	100%	525	525	144	144	37	33	107	111		
Marquis Dr	S. Jupiter	N International Rd	2,767	0.52	1	1	4U	Minor Collector	E	118	133	100%	525	525	275	275	62	70	213	205		
Marquis Dr	N International Rd	Shiloh Rd	2,624	0.50	1	1	4U	Minor Collector	E	103	111	100%	525	525	261	261	51	55	210	206		
Maydelle	Western	W Walnut St	2,490	0.47	1	1	2U	Minor Collector	F	135	120	100%	525	525	248	248	64	57	184	191		
McCree Rd	IH 635	S. Garland	3,179	0.60	1	1	2U	Minor Collector	F	135	114	100%	525	525	316	316	81	69	235	247		
Sam Houston/Meadowcrest	Sam Houston Dr	Nash St	525	0.10	1	1	2U	Minor Collector	F	135	120	100%	525	525	52	52	13	12	39	40		
Millay	Leon	Towngate	1,437	0.27	1	1	2U	Major Collector	D2	135	120	100%	525	525	143	143	37	33	106	110		
Barnes	Edgewood Dr	Forest Ln	1,854	0.35	1	1	2U	Minor Collector	F	135	120	100%	525	525	184	184	47	42	137	142		
Barnes	W Walnut St	Edgewood Dr	935	0.18	1	1	2U	Minor Collector	F	135	120	100%	525	525	93	93	24	21	69	72		
N. Fifth Street	Austin St	W State St	367	0.07	2	1	2U	Minor Collector	E	120	135	100%	525	525	73	36	8	9	65	27		
N. Fifth Street	W. Walnut	Austin St	783	0.15	1	2	3U	Minor Collector	E	120	135	100%	575	575	85	171	18	20	67	151		
N. Fifth Street	Travis	W. Walnut	2,660	0.50	2	2	4U	Minor Collector	E	37	40	100%	525	525	529	529	19	20	510	509		
N. Fifth Street	W State St	Main	248	0.05	2	2	4U	Minor Collector	E	120	135	100%	525	525	49	49	6	6	44	43		
N. First Street	Buckingham Rd	Travis St	2,562	0.49	3	3	6D	Regional Arterial	B	940	901	50%	925	925	673	673	228	219	445	455		
N. First Street	W. Walnut	W State St.	1,339	0.25	3	3	6D	Regional Arterial	B	1,254	1,211	50%	925	925	352	352	159	154	193	198		
N. First Street	Travis St	Castle Dr	598	0.11	3	3	6D	Regional Arterial	B	940	901	100%	925	925	314	314	106	102	208	212		
N. First Street	Castle Dr	Walnut St	1,864	0.35	3	3	6D	Regional Arterial	B	1,108	957	50%	925	925	490	490	196	169	294	321		
N. First Street	W. State St	Main St	462	0.09	3	3	6D	Regional Arterial	B	1,254	1,211	50%	925	925	121	121	55	53	67	68		
N. Garland Ave	Travis St	Walnut St	3,005	0.57	3	3	6D	Regional Arterial	B	927	1,019	100%	925	925	1,579	1,579	528	580	1,052	999		
N. Garland Ave	Buckingham Rd	Travis St	2,396	0.45	3	3	6D	Regional Arterial	B	927	1,019	100%	925	925	1,259	1,259	421	462	839	797		
N. Garland Ave	Walnut St	Austin St	844	0.16	3	3	6D	Regional Arterial	B	1,257	1,297	100%	925	925	444	444	201	207	243	236		
N. Garland Ave	Austin St	Main St	419	0.08	3	3	6D	Regional Arterial	B	1,257	1,297	100%	925	925	220	220	100	103	120	117		
N. Glenbrook Dr	W Walnut St	Austin St	649	0.12	1	1	3U	Major Collector	D3	298	267	100%	575	575	71	71	37	33	34	38		
N. Glenbrook Dr	Austin St	Main St	618	0.12	1	1	3U	Major Collector	D3	298	267	100%	575	575	67	67	35	31	32	36		
N. Glenbrook Dr	Travis St	W Walnut St	2,883	0.55	2	2	4D	Major Collector	D1	514	488	100%	900	900	983	983	281	266	702	716		
N. Glenbrook Dr	Buckingham Rd	Travis St	2,519	0.48	2	2	4D	Major Collector	D1	514	488	100%	900	900	859	859	245	233	614	626		
International Rd	Forest Ln	Marquis	3,074	0.58	1	1	4U	Minor Collector	E	85	77	100%	525	525	306	306	49	45	256	261		
International Rd	W. Walnut	Edgewood Dr	1,095	0.21	1	1	4U	Minor Collector	E	112	110	100%	525	525	109	109	23	23	86	86		
International Rd	Edgewood Dr	Forest Ln	1,697	0.32	2	2	4U	Minor Collector	E	112	110	100%	525	525	337	337	36	35	301	302		
Jupiter Rd	Western Dr	Walnut St	2,277	0.43	3	3	6D	Regional Arterial	B	1,855	1,546	100%	925	925	1,197	1,197	800	667	397	530		
Jupiter Rd	Buckingham Rd	Western Dr	2,810	0.53	3	3	6D	Regional Arterial	B	1,915	1,970	100%	925	925	1,477	1,477	1,019	1,048	458	428		
Jupiter Rd	W Walnut St	Edgewood Dr	1,134	0.21	3	3	6D	Regional Arterial	B	1,491	1,502	100%	925	925	596	596	320	323	276	273		
Plano Rd	W Walnut St	Forest Ln	2,722	0.52	3	3	6D	Regional Arterial	B	1,746	1,845	50%	925	925	715	715	450	476	265	240		
Plano Rd	W. Buckingham	Lawler Rd	2,668	0.51	3	3	6D	Regional Arterial	B	1,659	1,694	100%	925	925	1,402	1,402	838	856	564	546		
Plano Rd	Lawler Rd	W Walnut St	2,705	0.51	3	3	6D	Regional Arterial	B	1,631	1,675	100%	925	925	1,422	1,422	836	858	586	564		
N. Shiloh Rd	W Walnut St	Forest Ln	2,665	0.50	2	2	4D	Regional Arterial	B	1,124	1,009	100%	900	900	909	909	567	509	341	399		
N. Shiloh Rd	Buckingham Rd	Western Dr	2,713	0.51	2	2	4D	Regional Arterial	B	1,248	1,200	100%	900	900	925	925	641	617	284	308		
N. Shiloh Rd	Western Dr	W Walnut St	2,547	0.48	2	2	4D	Regional Arterial	B	1,248	1,200	100%	900	900	868	868	602	579	266	289		
Yale Dr	W Walnut St	Forest Ln	2,806	0.53	1	1	2U	Minor Collector	F	60	62	100%	525	525	279	279	32	33	247	246		
Yale Dr	W. Buckingham	Lawler Rd	2,676	0.51	1	1	2U	Minor Collector	F	163	157	100%	525	525	266	266	83	80	183	187		
Yale Dr	Lawler Rd	W Walnut St	2,593	0.49	1	1	2U	Minor Collector	F	80	98	100%	525	525	258	258	39	48	219	210		

Service Area B Continued

9/14/2016

ROADWAY	FROM	TO	LENGTH (ft)	LENGTH (mi)	EXIST LANES		EXIST LANES	CLASS	FUTURE LANES	PM PEAK HOUR VOL		% IN SERVICE AREA	VEH-MI CAPACITY PK-HR PER LN		VEH-MI SUPPLY PK-HR TOTAL[1]		VEH-MI DEMAND PK-HR TOTAL[2]		EXCESS CAPACITY PK-HR VEH-MI[3]		EXISTING DEFICIENCIES PK-HR VEH-MI[4]	
					NB/EB	SB/WB				NB/EB	SB/WB		NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
National	Wood	Kingsley	2,864	0.54	1	1	2U	Minor Collector	E	135	120	100%	525	525	285	285	73	65	212	220		
Northwest Highway	Marketplace Dr	Saturn Rd	1,606	0.30	3	3	6D	Regional Arterial	B	1,341	1,031	100%	925	925	844	844	408	314	436	530		
Northwest Highway	Pendleton Dr	Marketplace Dr	540	0.10	3	3	6D	Regional Arterial	B	1,471	1,644	100%	925	925	284	284	150	168	133	116		
Northwest Highway	Towngate Blvd	Pendleton Dr	808	0.15	3	3	6D	Minor Collector	E	1,471	1,644	100%	925	925	425	425	225	252	200	173		
Northwest Highway	LBJ E road	Towngate Blvd	728	0.14	3	3	6D	Minor Collector	E	1,471	1,644	100%	925	925	383	383	203	227	180	156		
Northwest Highway	City Limits	LBJ E Road	1,646	0.31	3	3	6D	Minor Collector	E	1,415	1,415	100%	925	925	865	865	441	441	424	424		
	W end of Oakland St	S Shiloh Rd	2,671	0.51	1	1	2U	Minor Collector	F	135	120	100%	525	525	266	266	68	61	197	205		
Patricia	Miller	Garland	5,201	0.99	1	1	2U	Minor Collector	F	135	120	100%	525	525	517	517	133	118	384	399		
Pendleton Drive	Northwest Fwy	Center	671	0.13	1	1	2U	Major Collector	D2	135	120	100%	525	525	67	67	17	15	50	51		
N. Fifth Street	Avenue D	W. Miller	5,312	1.01	1	1	2U	Minor Collector	E	199	189	100%	525	525	528	528	200	190	328	338		
S. Fifth Street	W Daugherty Dr	W Kingsley Rd	4,343	0.82	1	1	2U	Minor Collector	F	135	120	100%	525	525	432	432	111	99	321	333		
S. Fifth Street	W. Miller	Daugherty Dr	1,505	0.29	1	1	2U	Minor Collector	F	135	120	100%	525	525	150	150	38	34	111	115		
N. Fifth Street	Main	Avenue B	722	0.14	2	2	4U	Minor Collector	E	120	135	100%	525	525	144	144	16	18	127	125		
N. Fifth Street	Avenue B	Avenue D	758	0.14	2	2	4U	Minor Collector	E	120	135	100%	525	525	151	151	17	19	134	131		
S. First Street	Broadway	Kingsley Rd	3,154	0.60	2	2	4D	Major Collector	D1	980	1,080	50%	900	900	538	538	293	323	245	215		
S. First Street	E Avenue D	E Miller Rd	5,311	1.01	3	3	6D	Regional Arterial	B	2,182	2,058	50%	925	925	1,396	1,396	1,097	1,035	298	361		
S. First Street	Main St	W Avenue B	465	0.09	3	3	6D	Regional Arterial	B	2,111	2,128	50%	925	925	122	122	93	94	29	28		
S. First Street	W Avenue B	E Avenue D	694	0.13	3	3	6D	Regional Arterial	B	1,415	1,415	50%	925	925	182	182	93	93	89	89		
N. Garland Ave	W Avenue B	W Avenue D	721	0.14	2	2	5U	Regional Arterial	B	904	1,432	100%	850	850	232	232	123	196	109	37		
N. Garland Ave	Main	W Avenue B	654	0.12	2	2	5U	Regional Arterial	B	945	1,030	100%	850	850	211	211	117	128	94	83		
S. Garland Ave	Shiloh Rd	IH 635	2,453	0.46	3	3	6D	Regional Arterial	B	1,104	790	100%	925	925	1,289	1,289	513	367	776	922		
S. Garland Ave	W Avenue F	W Miller Rd	4,558	0.86	3	3	6D	Regional Arterial	B	1,257	1,344	100%	925	925	2,396	2,396	1,085	1,160	1,310	1,235		
S. Garland Ave	W Miller Rd	Patricia Ln	5,388	1.02	3	3	6D	Regional Arterial	B	1,315	1,370	100%	925	925	2,832	2,832	1,342	1,398	1,490	1,434		
S. Garland Ave	Patricia Ln	W Kingsley Rd	1,222	0.23	3	3	6D	Regional Arterial	B	1,315	1,370	100%	925	925	642	642	304	317	338	325		
S. Garland Ave	W Kingsley Rd	Leon Rd	1,531	0.29	3	3	6D	Regional Arterial	B	1,177	1,439	100%	925	925	805	805	341	417	463	387		
S. Garland Ave	Leon Rd	Shiloh Rd	1,586	0.30	3	3	6D	Regional Arterial	B	1,177	1,439	100%	925	925	834	834	354	432	480	401		
S. Garland Ave	Avenue D	W Avenue F	787	0.15	3	3	6U	Regional Arterial	B	1,257	1,344	100%	925	925	414	414	187	200	226	213		
S. Glenbrook Dr	Pt on S Glenbrook Dr	Pt on S Glenbrook Dr	1,218	0.23	1	1	2D	Major Collector	D3	212	217	100%	575	575	133	133	49	50	84	83		
S. Glenbrook Dr	W. Miller	Briarwood dr	2,766	0.52	1	1	2U	Minor Collector	F	154	90	100%	525	525	275	275	81	47	194	228		
S. Glenbrook Dr	Briarwood Dr	W Kingsley Rd	3,816	0.72	1	1	2U	Minor Collector	F	154	90	100%	525	525	379	379	111	65	268	314		
S. Glenbrook Dr	Avenue B	Avenue D	687	0.13	1	1	3U	Major Collector	D3	301	303	100%	575	575	75	75	39	39	36	35		
S. Glenbrook Dr	Avenue D	Pt on S Glenbrook Dr	3,529	0.67	1	1	3U	Major Collector	D3	212	217	100%	575	575	384	384	142	145	243	239		
S. Glenbrook Dr	Main	Avenue B	675	0.13	1	1	3U	Major Collector	D3	301	303	100%	575	575	74	74	38	39	35	35		
S. Glenbrook Dr	Pt on S Glenbrook Dr	W. Miller	1,066	0.20	1	1	3U	Major Collector	D3	212	217	100%	575	575	116	116	43	44	73	72		
Jupiter Rd	Wood Dr	W Kingsley Rd	2,887	0.55	3	3	6D	Regional Arterial	B	1,609	1,527	50%	925	925	759	759	440	417	319	341		
Jupiter Rd	Edgewood Dr	Forest Ln	1,765	0.33	3	3	6D	Regional Arterial	B	1,491	1,502	100%	925	925	928	928	498	502	429	426		
Jupiter Rd	Forest Ln	Marquis Dr	2,724	0.52	3	3	6D	Regional Arterial	B	1,411	1,326	100%	925	925	1,432	1,432	728	684	704	748		
Jupiter Rd	Marquis Dr	W Miller Rd	2,633	0.50	3	3	6D	Regional Arterial	B	1,556	1,607	100%	925	925	1,384	1,384	776	801	608	582		
Jupiter Rd	W Miller Rd	Wood Dr	2,814	0.53	3	3	6D	Regional Arterial	B	1,515	1,412	100%	925	925	1,479	1,479	807	753	672	726		
Jupiter Rd	W Kingsley Rd	IH 635	1,941	0.37	3	3	6D	Regional Arterial	B	1,740	1,657	100%	925	925	1,020	1,020	640	609	380	411		
S. Shiloh Rd	McCree Rd	IH 635	2,811	0.53	2	2	4D	Regional Arterial	B	986	881	100%	900	900	958	958	525	469	433	489		
S. Shiloh Rd	Forest Ln	Marquis Dr	2,893	0.55	2	2	4D	Regional Arterial	B	1,184	1,056	100%	900	900	986	986	649	579	338	408		
S. Shiloh Rd	Marquis Dr	W Miller Rd	2,423	0.46	2	2	4D	Regional Arterial	B	1,138	1,062	100%	900	900	826	826	522	487	304	339		
S. Shiloh Rd	W Miller Rd	Wood Dr	2,782	0.53	2	2	4D	Regional Arterial	B	1,033	936	100%	900	900	948	948	544	493	404	455		
S. Shiloh Rd	Wood Dr	W Kingsley Rd	2,875	0.54	2	2	4D	Regional Arterial	B	971	898	100%	900	900	980	980	529	489	451	491		
S. Shiloh Rd	W Kingsley Rd	Oakland St	1,021	0.19	2	2	4D	Regional Arterial	B	865	816	100%	900	900	348	348	167	158	181	190		
S. Shiloh Rd	Oakland St	McCree Rd	1,638	0.31	2	2	4D	Regional Arterial	B	865	816	100%	900	900	558	558	268	253	290	305		
Sam Houston/Meadowcrest	Buckingham Rd	Travis St	2,030	0.38	1	1	2U	Minor Collector	F	110	116	100%	525	525	202	202	42	45	160	157		
Sam Houston/Meadowcrest	Travis St	Meadowcrest Dr	873	0.17	1	1	2U	Minor Collector	F	135	120	100%	525	525	87	87	22	20	64	67		
Saturn Rd	S of Miller Rd	W. Kingsley	4,444	0.84	1	1	3U	Major Collector	D2	467	423	100%	575	575	484	484	393	356	91	128		
Sherwin	Miller	Sherwin (Future)	2,163	0.41	1	1	2U	Minor Collector	E	135	120	100%	525	525	215	215	55	49	160	166		
Towngate	Northwest Hwy	Millay	739	0.14	2	2	4D	Minor Collector	E	995	935	100%	900	900	252	252	139	131	113	121		
Travis	Sam Houston	Garland Ave	2,892	0.55	1	1	2U	Minor Collector	F	135	120	100%	525	525	288	288	74	66	214	222		
Travis	Garland Ave	Sylvan Dr	1,500	0.28	1	1	2U	Minor Collector	F	135	120	100%	525	525	149	149	38	34	111	115		
Travis	Sylvan Dr	N Glenbrook Dr	1,181	0.22	1	1	2U	Minor Collector	F	135	120	100%	525	525	117	117	30	27	87	91		
Travis	N Glenbrook Dr	Fifth St	1,049	0.20	1	1	2U	Minor Collector	F	135	120	100%	525	525	104	104	27	24	77	80		
Travis	Fifth St	First St	1,664	0.32	1	1	2U	Minor Collector	F	135	120	100%	525	525	165	165	43	38	123	128		
W. Avenue B	Forest	S. Garland	2,875	0.54	3	0	6D	Urban One-way Couplet	A-C	0	1,275	100%	925	925	1,511	0	0	694	1,511	-694		694
W. Buckingham Rd	West City Limits	Plano Rd	1,320	0.25	3	3	6D	Regional Arterial	B	1,415	1,415	50%	925	925	347	347	177	177	170	170		
W. Buckingham Rd	Plano Rd	N Yale Dr	2,459	0.47	3	3	6D	Regional Arterial	B	1,415	1,415	50%	925	925	646	646	329	329	317	317		
W. Buckingham Rd	N Yale Dr	N Jupiter Rd	2,807	0.53	3	3	6D	Regional Arterial	B	1,415	1,415	50%	925	925	738	738	376	376	362	362		
W. Kingsley Rd	National Dr	S Shiloh Rd	2,175	0.41	2	2	4D	Regional Arterial	B	817	696	100%	900	900	741	741	337	287	405	455		
W. Kingsley Rd	IH 635 E frontage road	Jupiter Rd	1,523	0.29	2	2	4D	Regional Arterial	B	698	536	100%	900	900	519	519	201	155	318	365		
W. Kingsley Rd	S Jupiter Rd	Industrial Ln	2,253	0.43	2	2	4D	Regional Arterial	B	817	696	100%	900	900	768	768	349	297	419	471		
W. Kingsley Rd	Industrial Ln	National Dr	959	0.18	2	2	4D	Regional Arterial	B	817	696	100%	900	900	327	327	148	126	179	201		
W. Kingsley Rd	S. Shiloh	S Garland Ave	1,633	0.31	2	2	4D	Major Collector	D1	954	898	100%	900	900	557	557	295	278	262	279		
W. Kingsley Rd	S Garland Ave	Lamesa Dr	2,392	0.45	2	2	4D	Major Collector	D1	954	898	100%	900	900	815	815	432	407	383	409		
W. Kingsley Rd	Lamesa Dr	Saturn Rd	1,319	0.25	2	2	4D	Major Collector	D1	954	898	100%	900	900	450	450	238	224	211	225		
W. Kingsley Rd	City Limits	IH 635 E frontage rd	866	0.16	3	3	6D	Regional Arterial	B	1,415	1,415	100%	925	925	455	455	232	232	223	223		
W Miller Rd	Lonnecker Dr	S Shiloh Rd	2,381	0.45	2	2	4D	Regional Arterial	B	906	900	100%	900	900	812	812	409	406	403	406		
W. Miller Rd	S Glenbrook Dr	S Fifth St	2,679	0.51	2	2	4D	Major Collector	D1	966	909	100%	900	900	913	913	490	461	423	452		
W. Miller Rd	430' E of S Jupiter Rd	Lonnecker Dr	2,323	0.44	2	2	4D	Regional Arterial	B	906	900	100%	900	900	792	792	399	396	393	396		
W. Miller Rd	S. Shiloh	W Miller Rd	2,505	0.47	2	2	4D	Major Collector	D1	786	752	100%	900	900	854	854	373	357	481	497		
W. Miller Rd	S Fifth St	S. First	1,666	0.32	2	2	4D	Major Collector	D1	843	851	100%	900	900	568	568	266	269	302	299		
W. Miller Rd	S Garland Ave	S Glenbrook Dr	1,222	0.23	2	2	4U	Major Collector	D1	1,142	1,004	100%	525	525	243	243	264	232	-21	11	21	
W. Miller Rd	Ridgecrest Dr	S Garland Ave	2,577	0.49	2	2	4U	Major Collector	D1	786	752	100%	525	525	512	512	384	367	129	145		

Service Area B Continued

9/14/2016

ROADWAY	FROM	TO	LENGTH (ft)	LENGTH (mi)	EXIST LANES		EXIST LANES	CLASS	FUTURE LANES	PM PEAK HOUR VOL		% IN SERVICE AREA	VEH-MI CAPACITY PK-HR PER LN		VEH-MI SUPPLY PK-HR TOTAL[1]		VEH-MI DEMAND PK-HR TOTAL[2]		EXCESS CAPACITY PK-HR VEH-MI[3]		EXISTING DEFICIENCIES PK-HR VEH-MI[4]	
					NB/EB	SB/WB				NB/EB	SB/WB		NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
W. Miller Rd	West City Limits	S. Jupiter	3,358	0.64	3	3	6D	Regional Arterial	B	1,075	1,158	100%	925	925	1,765	1,765	684	736	1,081	1,028		
W. Miller Rd	S. Jupiter	430' E of S Jupiter Rd	624	0.12	3	3	6D	Regional Arterial	B	906	900	100%	925	925	328	328	107	106	221	222		
State	Forest	Garland	3,618	0.69	1	1	2U	Minor Collector	E	190	190	100%	525	525	360	360	130	130	230	230		
State	Fifth St	First St	1,801	0.34	1	1	2U	Minor Collector	F	135	135	120%	525	525	215	215	55	55	160	160		
State	Garland	Glenbrook Dr	2,588	0.49	1	1	2U	Minor Collector	F	135	120	100%	525	525	257	257	66	59	191	199		
State	Glenbrook Dr	Fifth St	1,113	0.21	1	1	2U	Minor Collector	F	135	120	120%	525	525	133	133	34	30	99	102		
W. Walnut St	West City Limits	Plano Rd	1,641	0.31	2	2	4D	Regional Arterial	B	1,104	902	100%	900	900	559	559	343	280	216	279		
W. Walnut St	Fifth St	First St	1,677	0.32	2	2	4D	Major Collector	D1	707	712	100%	900	900	572	572	225	226	347	346		
W. Walnut St	Plano Rd	Purdue Dr	1,362	0.26	2	2	4D	Major Collector	D2	961	994	100%	900	900	464	464	248	256	216	208		
W. Walnut St	Forest Crest Dr	Jupiter Rd	1,505	0.29	2	2	4D	Major Collector	D2	1,056	1,022	100%	900	900	513	513	301	291	212	222		
W. Walnut St	Jupiter Rd	Barnes Dr	1,339	0.25	2	2	4D	Major Collector	D2	844	878	100%	900	900	456	456	214	223	242	234		
W. Walnut St	435' west of Shiloh Rd	Shiloh Rd	529	0.10	2	2	4D	Major Collector	D2	844	878	100%	900	900	180	180	85	88	96	92		
W. Walnut St	Shiloh Rd	Muriel Dr	1,662	0.31	2	2	4D	Major Collector	D2	1,003	999	100%	900	900	567	567	316	314	251	252		
W. Walnut St	Rita Dr	Brookside Dr	819	0.16	2	2	4D	Major Collector	D2	1,003	999	100%	900	900	279	279	156	155	124	124		
W. Walnut St	550' west of Garland Ave	N. Garland Ave	687	0.13	2	2	4D	Major Collector	D2	1,003	999	100%	900	900	234	234	131	130	104	104		
W. Walnut St	N. Garland Ave	Glenbook Dr	2,508	0.48	2	2	4D	Major Collector	D1	790	775	100%	900	900	855	855	375	368	480	487		
W. Walnut St	Glenbook Dr	Fifth St	1,167	0.22	2	2	4D	Major Collector	D1	995	935	100%	900	900	398	398	220	207	178	191		
W. Walnut St	Brookside Dr	550' west of Garland Ave	835	0.16	2	2	5U	Major Collector	D2	1,003	999	100%	850	850	269	269	159	158	110	111		
W. Walnut St	Purdue Dr	Yale Dr	993	0.19	2	2	5U	Major Collector	D2	961	994	100%	850	850	320	320	181	187	139	133		
W. Walnut St	Yale Dr	Forest Crest Dr	1,474	0.28	2	2	5U	Major Collector	D2	1,056	1,022	100%	850	850	475	475	295	285	180	189		
W. Walnut St	Barnes Dr	International Rd	2,244	0.43	2	2	5U	Major Collector	D2	844	878	100%	850	850	723	723	359	373	364	349		
W. Walnut St	International Rd	435' west of Shiloh Rd	1,350	0.26	2	2	5U	Major Collector	D2	844	878	100%	850	850	435	435	216	224	219	210		
W. Walnut St	Muriel Dr	Rita Dr	1,263	0.24	2	2	5U	Major Collector	D2	1,003	999	100%	850	850	407	407	240	239	167	168		
Western	Jupiter	Maydelle Ln	2,958	0.56	1	1	2U	Minor Collector	F	135	120	100%	525	525	294	294	76	67	218	227		
Western	Maydelle Ln	Goodwin Dr	593	0.11	1	1	2U	Minor Collector	F	135	120	100%	525	525	59	59	15	13	44	45		
Western	Goodwin Dr	Shiloh	1,894	0.36	1	1	2U	Minor Collector	F	135	120	100%	525	525	188	188	48	43	140	145		
Wood	Jupiter	Lonnecker Dr	2,924	0.55	1	1	2U	Minor Collector	F	135	120	100%	525	525	291	291	75	66	216	224		
Wood	Lonnecker Dr	160' W of Market St	1,413	0.27	1	1	2U	Minor Collector	F	135	120	100%	525	525	140	140	36	32	104	108		
Wood	160' W of Market St	Shiloh	1,043	0.20	1	1	2U	Minor Collector	F	135	120	100%	525	525	104	104	27	24	77	80		
SUBTOTAL			355,531	69.42											94,743	94,928	45,329	44,104	49,415	50,824	2,449	2,309
															189,672		89,433		100,239		4,758	

City of Garland - 2016 Roadway Impact Fee Update
Existing Roadway Facilities Inventory

Service Area C

9/14/2016

ROADWAY	FROM	TO	LENGTH (ft)	LENGTH (mi)	EXIST LANES		EXIST LANES	CLASS	FUTURE LANES	PM PEAK HOUR VOL		% IN SERVICE AREA	VEH-MI CAPACITY PK-HR PER LN		VEH-MI SUPPLY PK-HR TOTAL[1]		VEH-MI DEMAND PK-HR TOTAL[2]		EXCESS CAPACITY PK-HR VEH-MI[3]		EXISTING DEFICIENCIES PK-HR VEH-MI[4]	
					NB/EB	SB/WB				NB/EB	SB/WB		NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
Castle Dr	Lavon Dr	Mars	1,994	0.38	1	1	2U	Major Collector	D1	275	286	100%	525	525	198	198	104	108	94	90		
Castle Dr	Toyah Creek Ln	Centerville	2,871	0.54	1	1	2U	Minor Collector	E	255	252	100%	525	525	285	285	139	137	147	148		
Castle Dr	Firewheel Pkwy	Miles	4,434	0.84	1	1	2U	Minor Collector	E	220	198	50%	525	525	220	220	92	83	128	137		
Castle Dr	Dexham Rd	Firewheel Pkwy	2,658	0.50	1	1	2U	Minor Collector	E	100	106	50%	525	525	132	132	25	27	107	105		
Castle Dr	N. First	Lavon Dr	793	0.15	1	1	2U	Major Collector	D1	114	123	100%	525	525	79	79	17	18	62	60		
Castle Dr	Mars	Country Club Rd	2,424	0.46	1	1	2U	Minor Collector	E	197	181	100%	525	525	241	241	90	83	151	158		
Castle Dr	Country Club Rd	Toyah Creek Ln	2,669	0.51	1	1	2U	Minor Collector	E	252	258	100%	525	525	265	265	127	130	138	135		
Commerce St	SH 66	Hebron	667	0.13	1	2	3U	Minor Arterial	C1	255	252	100%	575	575	73	145	32	32	40	113		
Crist Rd	Mars Dr	Naaman School Rd	1,770	0.34	1	1	2U	Major Collector	D2	239	261	100%	525	525	176	176	80	87	96	89		
Crist Rd	Lavon Dr	Mars Dr	1,493	0.28	1	1	2U	Major Collector	D2	239	261	100%	525	525	148	148	68	74	81	75		
Crist Rd	PGBT S frontage road	PGBT N frontage road	269	0.05	2	2	4D	Major Collector	D2	710	740	100%	900	900	92	92	36	38	56	54		
Crist Rd	Naaman School	PGBT S frontage rd	1,425	0.27	2	2	5U	Major Collector	D2	257	336	100%	850	850	459	459	69	91	389	368		
Crosslands	Mars	Firewheel	2,427	0.46	1	1	2U	Minor Collector	F	190	195	100%	525	525	241	241	87	90	154	152		
Dairy Rd	SH 66	E. Miller	5,043	0.96	2	2	4U	Minor Collector	E	544	468	100%	525	525	1,003	1,003	520	447	483	556		
E. Avenue B	S First St	Merge with Ave D	2,645	0.50	4	0	4D	Urban One-way Couplet	A-C	0	1,416	100%	900	900	1,803	0	0	709	1,803	-709		709
E. Avenue D	S. First	Merge with Ave B	2,483	0.47	0	4	4D	Urban One-way Couplet	A-C	1,352	0	100%	900	900	0	1,693	636	0	-636	1,693	636	
E. Buckingham Rd	Mars Dr	Pleasant Valley	1,926	0.36	2	2	4D	Regional Arterial	B	932	1,006	100%	900	900	657	657	340	367	317	290		
E. Buckingham Rd	Lavon Dr	Mars Dr	1,659	0.31	2	2	4D	Regional Arterial	B	932	1,006	100%	900	900	566	566	293	316	273	249		
E. Centerville Rd	Hwy 66	High Meadow Dr	4,205	0.80	3	3	6D	Regional Arterial	B	1,225	1,202	100%	925	925	2,210	2,210	976	957	1,234	1,253		
E. Centerville Rd	Firewheel Pkwy	Castle Dr	4,529	0.86	3	3	6D	Regional Arterial	B	723	666	100%	925	925	2,380	2,380	620	571	1,760	1,809		
E. Centerville Rd	Castle Dr	Hwy 66	3,687	0.70	3	3	6D	Regional Arterial	B	892	838	100%	925	925	1,938	1,938	623	585	1,315	1,353		
E. Centerville Rd	High Meadow Dr	E Miller Rd	1,933	0.37	3	3	6D	Regional Arterial	B	1,225	1,202	100%	925	925	1,016	1,016	448	440	567	576		
E. Walnut St	N. First	Walnut Cir E	408	0.08	2	2	4D	Minor Collector	E	710	740	100%	900	900	139	139	55	57	84	82		
E. Walnut St	Mars Dr	N. Country Club	2,419	0.46	2	2	4U	Minor Collector	E	512	486	100%	525	525	481	481	235	223	246	258		
E. Walnut St	Walnut Cir E	Lavon Dr	340	0.06	2	2	4U	Minor Collector	E	510	500	100%	525	525	68	68	33	32	35	35		
E. Walnut St	Lavon Dr	Mars Dr	2,292	0.43	2	2	4U	Minor Collector	E	467	547	100%	525	525	456	456	203	237	253	218		
Firewheel Parkway	Lavon Dr	S of Town Center Blvd	4,583	0.87	2	2	4D	Regional Arterial	A	710	740	100%	900	900	1,562	1,562	616	642	946	920		
Firewheel Parkway	E Centerville Rd	Castle Dr	3,697	0.70	3	3	6D	Regional Arterial	A	1,108	1,073	100%	925	925	1,943	1,943	776	751	1,167	1,192		
Firewheel Parkway	PGBT N frontage road	PGBT S frontage road	451	0.09	3	3	6D	Regional Arterial	A	1,250	1,295	100%	925	925	237	237	107	111	130	126		
Firewheel Parkway	PGBT S frontage road	Mars Dr	1,136	0.22	3	3	6D	Regional Arterial	A	1,167	1,133	100%	925	925	597	597	251	244	346	353		
Firewheel Parkway	Mars Dr	Crosslands Dr	1,264	0.24	3	3	6D	Regional Arterial	A	1,028	1,286	100%	925	925	664	664	246	308	418	356		
Firewheel Parkway	Crosslands Dr	Pleasant Valley Rd	1,553	0.29	3	3	6D	Regional Arterial	A	1,028	1,286	100%	925	925	816	816	302	378	514	438		
Firewheel Parkway	Pleasant Valley Rd	E Centerville Rd	2,834	0.54	3	3	6D	Regional Arterial	A	1,450	1,423	100%	925	925	1,489	1,489	778	764	711	726		
Firewheel Parkway	S of Town Center Blvd	PGBT N frontage road	527	0.10	3	3	6D	Regional Arterial	A	513	616	100%	925	925	277	277	51	61	226	215		
Foster	SH 78	Crist	1,231	0.23	1	1	2U	Minor Collector	F	190	195	100%	525	525	122	122	44	45	78	77		
Garvon St	State St	Avenue A	419	0.08	1	1	2U	Minor Collector	E	190	195	100%	525	525	42	42	15	15	27	26		
State Highway 78 (Lavon)	Castle Dr	E Walnut St	2,016	0.38	3	3	6D	Regional Arterial	A	1,347	1,584	100%	925	925	1,060	1,060	514	605	545	455		
State Highway 78 (Lavon)	E Buckingham Rd	Pleasant Valley Rd	1,100	0.21	3	3	6D	Regional Arterial	A	1,563	1,609	100%	925	925	578	578	326	335	253	243		
State Highway 78 (Lavon)	Pleasant Valley Rd	Castle Dr	2,225	0.42	3	3	6D	Regional Arterial	A	1,563	1,609	100%	925	925	1,169	1,169	659	678	511	491		
State Highway 78 (Lavon)	E Walnut St	W State St	1,388	0.26	3	3	6D	Regional Arterial	A	1,473	1,463	100%	925	925	729	729	387	385	342	345		
State Highway 78 (Lavon)	W State St	First St	588	0.11	3	3	6D	Regional Arterial	A	1,473	1,463	100%	925	925	309	309	164	163	145	146		
Mars Dr	Crist	Naaman School	1,801	0.34	1	1	2U	Minor Collector	F	190	195	100%	525	525	179	179	65	67	114	113		
Mars Dr	Firewheel Pkwy	Valley Creek	1,349	0.26	1	1	2U	Minor Collector	E	190	195	100%	525	525	134	134	49	50	86	84		
Mars Dr	Naaman School	Firewheel Pkwy	1,958	0.37	1	1	4U	Minor Collector	E	510	500	100%	525	525	195	195	189	185	6	9		
Meandering	Pyramid	Pleasant Valley	1,344	0.25	1	1	2U	Minor Collector	F	190	195	100%	525	525	134	134	48	50	85	84		
Miles Rd	Pleasant Valley	Castle	6,406	1.21	1	1	2U	Minor Collector	F	24	24	50%	525	525	318	318	15	15	304	304		
N. Country Club Rd	Castle Dr	E Walnut St	2,788	0.53	2	2	4D	Minor Arterial	C1	659	669	100%	900	900	950	950	348	353	602	597		
N. Country Club Rd	Pleasant Valley Rd	Castle Dr	2,854	0.54	2	2	4D	Minor Arterial	C1	655	655	100%	900	900	973	973	354	354	619	619		
N. Country Club Rd	Walnut	S.H. 66	1,501	0.28	2	2	4D	Minor Arterial	C1	836	911	100%	900	900	512	512	238	259	274	253		
Naaman School Rd	Mars Dr	Pleasant Valley Rd	3,283	0.62	2	2	4D	Major Collector	D1	367	374	100%	900	900	1,119	1,119	228	233	891	887		
Naaman School Rd	Crist Rd	Mars Dr	1,333	0.25	2	2	4D	Major Collector	D1	710	740	100%	900	900	454	454	179	187	275	268		
Naaman School Rd	Lavon Dr	Crist Rd	1,376	0.26	2	2	5U	Major Collector	D2	255	335	100%	850	850	443	443	66	87	377	356		
Pleasant Valley Rd	Mars Dr	Country Club Rd	2,493	0.47	1	1	2U	Minor Collector	F	190	195	100%	525	525	248	248	90	92	158	156		
Pleasant Valley Rd	Lavon Dr	Mars Dr	1,550	0.29	1	1	2U	Minor Collector	F	190	195	100%	525	525	154	154	56	57	98	97		
Pleasant Valley Rd	City Limits	Creek Meadow Ln	2,614	0.50	1	1	2U-R	Minor Arterial	C1	384	412	100%	150	150	74	74	190	204	-116	-130	116	130
Pleasant Valley Rd	Creek Meadow Ln	Firewheel Pkwy	3,076	0.58	2	2	4D	Minor Arterial	C1	384	412	100%	900	900	1,049	1,049	224	240	825	809		
Pleasant Valley Rd	Naaman School Rd	Pyramid Dr	2,338	0.44	2	2	4D	Minor Arterial	C1	710	740	100%	900	900	797	797	314	328	483	469		
Pleasant Valley Rd	Firewheel Pkwy	Naaman School Rd	1,374	0.26	2	2	4D	Minor Arterial	C1	760	764	100%	900	900	468	468	198	199	271	270		
Pleasant Valley Rd	Pyramid Dr	Buckingham Rd	843	0.16	2	2	4D	Minor Arterial	C1	710	740	100%	900	900	287	287	113	118	174	169		
Pyramid	SH 78	Meandering	3,004	0.57	1	1	2U	Minor Collector	F	190	195	100%	525	525	299	299	108	111	191	188		
S. Country Club Rd	Mill Crossing	E. Miller	5,684	1.08	2	2	4D	Minor Arterial	C1	236	178	100%	900	900	1,938	1,938	254	192	1,684	1,746		
State Highway 66	S. Country Club	Centerville Rd	4,034	0.76	3	3	6D	Regional Arterial	A	1,458	1,475	100%	925	925	2,120	2,120	1,114	1,127	1,006	993		
State Highway 66	Avenue B	Dairy Rd	552	0.10	3	3	6D	Regional Arterial	A	1,345	1,348	100%	925	925	290	290	141	141	150	149		
State Highway 66	Dairy Rd	Davidson Dr	885	0.17	3	3	6D	Regional Arterial	A	1,296	1,375	100%	925	925	465	465	217	230	248	235		
State Highway 66	Hebron Dr	Commerce St	576	0.11	3	3	6D	Regional Arterial	A	1,296	1,375	100%	925	925	303	303	141	150	161	153		
State Highway 66	Centerville Rd	East City Limits	1,684	0.32	3	3	6D	Regional Arterial	A	1,840	1,903	100%	925	925	885	885	587	607	298	278		
State Highway 66	Davidson Dr	Hebron Dr	1,686	0.32	3	3	7U	Regional Arterial	A	1,296	1,375	100%	925	925	886	886	414	439	472	447		
State St	Lavon Dr	Garvon St	430	0.08	1	1	2U	Minor Collector	F	190	195	100%	525	525	43	43	15	16	27	27		
State St	First St	Lavon Dr	540	0.10	1	1	2U	Minor Collector	F	190	195	100%	525	525	54	54	19	20	34	34		
SUBTOTAL			143,831	27.24											42,694	42,656	17,160	17,536	25,534	25,120	752	839
															85,351		34,696		50,655		1,591	

City of Garland - 2016 Roadway Impact Fee Update
Existing Roadway Facilities Inventory

Service Area D

9/14/2016

ROADWAY	FROM	TO	LENGTH (ft)	LENGTH (mi)	EXIST LANES		EXIST LANES	CLASS	FUTURE LANES	PM PEAK HOUR VOL		% IN SERVICE AREA	VEH-MI CAPACITY PK-HR PER LN		VEH-MI SUPPLY PK-HR TOTAL[1]		VEH-MI DEMAND PK-HR TOTAL[2]		EXCESS CAPACITY PK-HR VEH-MI[3]		EXISTING DEFICIENCIES PK-HR VEH-MI[4]	
					NB/EB	SB/WB				NB/EB	SB/WB		NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
Bardfield	Saturn	Centerville	4,840	0.92	1	1	2U	Minor Collector	F	66	66	100%	525	525	481	481	61	61	421	421		
Bass Pro	Zion	Chaha	698	0.13	1	1	2U	Minor Collector	F	26	30	100%	525	525	69	69	3	4	66	65		
Bass Pro	Zion	Chaha	363	0.07	1	1	2U	Minor Collector	F	465	188	100%	525	525	36	36	32	13	4	23		
Birchwood	Northwest Fwy	O'Banion	3,679	0.70	1	1	2U	Minor Collector	F	195	165	100%	525	525	366	366	136	115	230	251		
Birchwood	Broadmoor Dr	Northwest Fwy	1,102	0.21	1	1	2U-R	Minor Collector	F	50	50	100%	150	150	31	31	10	10	21	21		
Bobtown Rd	Rosehill Rd	Waterhouse Blvd	1,778	0.34	1	1	2U	Minor Collector	E-S	199	168	100%	525	525	177	177	67	57	110	120		
Bobtown Rd	Lyons	South City Limits	2,657	0.50	1	1	2U	Minor Collector	E	274	267	100%	525	525	264	264	138	134	126	130		
Bobtown Rd	E of Rosehill Rd	Rosehill Rd	780	0.15	1	1	2U	Minor Collector	E-S	165	130	100%	525	525	78	78	24	19	53	58		
Bobtown Rd	400' S of High Dr	Lyons Rd	1,996	0.38	1	1	3U	Minor Collector	E	274	267	100%	575	575	217	217	104	101	114	116		
Bobtown Rd	Lyons Rd	Zion Rd	1,792	0.34	1	1	3U	Minor Collector	E	274	267	100%	575	575	195	195	93	91	102	105		
Bobtown Rd	Zion Rd	400' S of High Dr	1,460	0.28	1	1	3U	Minor Collector	E	274	267	100%	575	575	159	159	76	74	83	85		
Bobtown Rd	Waterhouse Blvd	Roan	1,915	0.36	2	2	4U	Minor Collector	E-S	199	168	100%	525	525	381	381	72	61	309	320		
Bobtown Rd	Roan	Lyons	600	0.11	2	2	6D	Regional Arterial	B	330	309	100%	925	925	210	210	38	35	173	175		
Bobtown Rd	Roan	Lyons	431	0.08	2	2	6D	Regional Arterial	B	741	766	100%	925	925	151	151	60	63	91	88		
Bobtown Rd	IH 30 N frontage road	IH 30 S frontage rd	218	0.04	3	3	6D	Regional Arterial	B	330	309	100%	925	925	115	115	14	13	101	102		
Broadmoor Dr	Birchwood Dr	La Prada	3,693	0.70	1	1	2U	Minor Collector	F	156	128	100%	525	525	367	367	109	90	258	278		
Broadmoor Dr	Delray Dr	Birchwood Dr	1,261	0.24	1	1	2U	Minor Collector	F	156	128	100%	525	525	125	125	37	31	88	95		
Broadmoor Dr	W. Centerville	N of Chevy Chase Dr	575	0.11	1	1	3U	Minor Collector	E	156	128	100%	575	575	63	63	17	14	46	49		
Broadmoor Dr	N of Chevy Chase Dr	Delray Dr	742	0.14	1	1	3U	Minor Collector	F	156	128	100%	575	575	81	81	22	18	59	63		
Broadway Blvd	Gatewood Rd	E Oates Rd	1,532	0.29	3	3	6D	Regional Arterial	B	1,441	1,539	100%	925	925	805	805	418	447	387	359		
Broadway Blvd	Duck Creek/Rowlett Rd	IH 30 N frontage Rd	2,075	0.39	3	3	6D	Regional Arterial	B	2,033	1,979	100%	925	925	1,091	1,091	799	778	292	313		
Broadway Blvd	Guthrie Rd	South City Limits	1,489	0.28	3	3	6D	Regional Arterial	B	1,156	1,163	100%	925	925	783	783	326	328	457	455		
Broadway Blvd	S. First	Dairy Rd	3,510	0.66	3	3	6D	Regional Arterial	B	1,125	1,092	100%	925	925	1,845	1,845	748	726	1,097	1,119		
Broadway Blvd	E Oates Rd	Tacoma Dr	2,661	0.50	3	3	6D	Regional Arterial	B	1,500	1,606	100%	925	925	1,399	1,399	756	809	643	589		
Broadway Blvd	Dairy Rd	Centerville Rd	722	0.14	3	3	6D	Regional Arterial	B	1,125	1,092	100%	925	925	379	379	154	149	226	230		
Broadway Blvd	Centerville Rd	Kingsley Rd	1,420	0.27	3	3	6D	Regional Arterial	B	1,694	1,720	100%	925	925	746	746	456	463	291	284		
Broadway Blvd	Kingsley Rd	Colonel Dr	1,114	0.21	3	3	6D	Regional Arterial	B	1,694	1,720	100%	925	925	585	585	357	363	228	223		
Broadway Blvd	Colonel Dr	Nickens Rd	2,506	0.47	3	3	6D	Regional Arterial	B	1,624	1,658	100%	925	925	1,317	1,317	771	787	546	530		
Broadway Blvd	Nickens Rd	Wynn Joyce Rd	2,005	0.38	3	3	6D	Regional Arterial	B	1,535	1,579	100%	925	925	1,054	1,054	583	600	471	454		
Broadway Blvd	Wynn Joyce Rd	Gatewood Rd	1,405	0.27	3	3	6D	Regional Arterial	B	1,441	1,539	100%	925	925	738	738	383	410	355	329		
Broadway Blvd	Tacoma Dr	Rowlett Rd	1,942	0.37	3	3	6D	Regional Arterial	B	1,500	1,606	100%	925	925	1,021	1,021	552	591	469	430		
Broadway Blvd	IH 30 N frontage road	IH 30 S frontage rd	363	0.07	3	3	6D	Regional Arterial	B	1,430	1,445	100%	925	925	191	191	98	99	92	91		
Broadway Blvd	IH 30 S frontage road	Guthrie Rd	1,007	0.19	3	3	6D	Regional Arterial	B	1,562	1,496	100%	925	925	529	529	298	285	231	244		
Chaha Rd	Bass Pro	Lake Hubbard Pkwy	1,794	0.34	1	1	2U	Minor Collector	F	160	138	100%	525	525	178	178	54	47	124	131		
Colonel Dr	Broadway	S. Country Club	4,204	0.80	1	1	2U	Minor Collector	F	116	128	100%	525	525	418	418	92	102	326	316		
Colonel Dr	Duck Creek	Broadway	4,250	0.80	2	2	4D	Major Collector	D1	182	183	100%	900	900	1,449	1,449	146	147	1,302	1,302		
Dairy Rd	Celeste Dr	Broadway	2,611	0.49	1	1	3U	Minor Collector	E	284	286	100%	575	575	284	284	140	141	144	143		
Dairy Rd	E. Miller	Daugherty Dr	1,636	0.31	1	1	4U	Minor Collector	E	284	286	100%	525	525	163	163	88	89	75	74		
Dairy Rd	Daugherty Dr	Celeste Dr	933	0.18	1	1	4U	Minor Collector	E	284	286	100%	525	525	93	93	50	51	43	42		
Duck Creek Rd	E Oates Rd	Browadway Blvd	5,492	1.04	2	2	4D	Minor Arterial	C1	670	617	100%	900	900	1,872	1,872	697	642	1,175	1,230		
Duck Creek Rd	Red Wood Dr	E Oates Rd	1,481	0.28	2	2	4D	Minor Arterial	C1	638	639	100%	900	900	505	505	179	179	326	326		
Duck Creek Rd	Colonel Dr	Nickens Rd	2,620	0.50	2	2	4D	Minor Arterial	C1	635	624	100%	900	900	893	893	315	310	578	584		
Duck Creek Rd	E. Centerville	Colonel Dr	2,389	0.45	2	2	4D	Minor Arterial	C1	658	695	100%	900	900	814	814	298	314	517	500		
Duck Creek Rd	La Prada Dr	Red Wood Dr	1,207	0.23	2	2	4D	Minor Arterial	C1	638	639	100%	900	900	411	411	146	146	266	265		
Duck Creek Rd	Nickens Rd	La Prada Dr	2,082	0.39	2	2	4D	Minor Arterial	C1	610	551	100%	900	900	710	710	241	217	469	493		
E. Kingsley Rd	W Centerville Rd	Broadway Blvd	2,119	0.40	2	2	4D	Major Collector	D1	585	560	100%	900	900	722	722	235	225	488	498		
E. Kingsley Rd	S. First	350' E of S First St	482	0.09	2	2	4D	Major Collector	D1	476	469	100%	900	900	164	164	43	43	121	122		
E. Kingsley Rd	Honeysuckle Dr	W Centerville Rd	1,290	0.24	2	2	4D	Major Collector	D1	476	469	100%	900	900	440	440	116	115	323	325		
E. Kingsley Rd	350' E of S First St	Honeysuckle Dr	672	0.13	2	2	5U	Major Collector	D1	476	469	100%	850	850	216	216	61	60	156	157		
E. Miller Rd	S Country Club Rd	Centerville Rd	3,506	0.66	2	2	4D	Minor Arterial	C1	435	415	50%	900	900	598	598	144	138	453	460		
E. Miller Rd	S. First	Dairy	2,680	0.51	2	2	4D	Major Collector	D1	588	559	50%	900	900	457	457	149	142	308	315		
E. Miller Rd	Centerville Rd	East City Limits	3,008	0.57	2	2	4D	Regional Arterial	B	571	551	50%	900	900	513	513	163	157	350	356		
E. Miller Rd	Dairy	S Country Club Rd	2,634	0.50	2	2	4D	Minor Arterial	C1	535	528	50%	900	900	449	449	133	132	316	317		
E. Oates Rd	Broadway	Rosehill	2,260	0.43	1	1	2U	Major Collector	D1-S	123	127	100%	525	525	225	225	53	54	172	170		
E. Oates	Wynn Joyce	E. Oates (Future)	1,138	0.22	1	1	3U	Minor Collector	F	230	225	100%	575	575	124	124	50	48	74	75		
E. Oates Rd	Duck Creek	Broadway	3,321	0.63	2	2	4D	Minor Arterial	C1	468	362	100%	900	900	1,132	1,132	294	228	838	904		
Oak Tree/Redwood/Gatewoo	Duck Creek	Broadway	4,253	0.81	1	1	2U	Minor Collector	F	195	165	100%	525	525	423	423	157	133	266	290		
Gatewood Dr	Broadway	Rosehill	358	0.07	1	1	3U	Minor Collector	F	230	225	100%	575	575	39	39	16	15	23	24		
Guthrie Rd	Broadway Blvd	Rosehill Rd	5,862	1.11	1	1	4U	Minor Collector	E	111	116	100%	525	525	583	583	123	129	460	454		
Guthrie Rd	Rosehill Rd	Lyons Rd	3,364	0.64	1	1	4U	Minor Collector	E	92	83	100%	525	525	334	334	59	53	276	282		
Hayman Dr	Rowlett Rd	Waterhouse	2,302	0.44	1	1	2U	Minor Collector	F	138	157	100%	525	525	229	229	60	68	169	160		
Kelso	Bobtown	Meadow Vista Ln	1,917	0.36	1	1	2U	Minor Collector	F	195	165	100%	525	525	191	191	71	60	120	131		
Kelso	Meadow Vista Ln	Hollow Bend	1,155	0.22	1	1	2U	Minor Collector	F	195	165	100%	525	525	115	115	43	36	72	79		
La Prada Dr	IH 635 E frontage road	Northwest Hwy	1,672	0.32	2	2	4D	Regional Arterial	B	585	560	100%	900	900	570	570	185	177	385	393		
La Prada Dr	Northwest Hwy	O Banon Rd	2,619	0.50	2	2	4D	Minor Arterial	C1	457	447	100%	900	900	893	893	227	222	666	671		
La Prada Dr	O Banon Rd	Taos Dr	1,550	0.29	2	2	4D	Minor Arterial	C1	451	439	100%	900	900	528	528	132	129	396	400		
La Prada Dr	Taos Dr	Duck Creek	1,664	0.32	3	3	6D	Minor Arterial	C1	451	439	100%	925	925	875	875	142	138	732	736		
Locust Grove Rd	150' E of Oceanport Dr	City Limits	2,862	0.54	1	1	2U	Minor Collector	E	135	149	100%	525	525	285	285	73	81	211	204		
Locust Grove Rd	Zion	150' E of Oceanport Dr	2,043	0.39	1	1	2U	Minor Collector	E	135	149	100%	525	525	203	203	52	58	151	145		
Lyons Dr	Bobtown	Guthire Rd	3,229	0.61	1	1	2U	Regional Arterial	B	252	257	100%	525	525	321	321	154	157	167	164		
Lyons Dr	MacGregor Dr	Bobtown	2,490	0.47	1	1	2U	Minor Collector	F	74	87	100%	525	525	248	248	35	41	213	207		
Lyons Dr	Guthire Rd	Lyons Rd	882	0.17	1	1	2U	Regional Arterial	B	74	87	100%	525	525	88	88	12	15	75	73		
Lyons Dr	Lyons	MacGregor Dr	931	0.18	1	1	2U	Minor Collector	F	74	87	100%	525	525	93	93	13	15	80	77		
Marketplace	Saturn Rd	Centerville Rd	1,043	0.20	1	1	2U	Major Collector	D2	665	383	100%	525	525	104	104	131	76	-28	28	28	

Service Area D

9/14/2016

ROADWAY	FROM	TO	LENGTH (ft)	LENGTH (mi)	EXIST LANES		EXIST LANES	CLASS	FUTURE LANES	PM PEAK HOUR VOL		% IN SERVICE AREA	VEH-MI CAPACITY PK-HR PER LN		VEH-MI SUPPLY PK-HR TOTAL[1]		VEH-MI DEMAND PK-HR TOTAL[2]		EXCESS CAPACITY PK-HR VEH-MI[3]		EXISTING DEFICIENCIES PK-HR VEH-MI[4]	
					NB/EB	SB/WB				NB/EB	SB/WB		NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
Kelso	Kelso Ln	Kelso Ln	197	0.04	1	1	2U	Minor Collector	F	195	165	100%	525	525	20	20	7	6	12	13		
Merrimac	Centerville	Colonel	2,637	0.50	1	1	2U	Minor Collector	F	195	165	100%	525	525	262	262	97	82	165	180		
Nickens Rd	Duck Creek	Broadway	4,334	0.82	1	1	2U	Minor Collector	F	170	154	100%	525	525	431	431	140	126	291	305		
Northwest Highway	Birchwood Dr	La Prada Dr	3,859	0.73	3	3	6D	Regional Arterial	B	697	665	100%	925	925	2,028	2,028	509	486	1,519	1,542		
Northwest Highway	W. Centerville	Birchwood Dr	2,579	0.49	3	3	6D	Regional Arterial	B	653	689	100%	925	925	1,355	1,355	319	337	1,036	1,019		
Northwest Highway	Centerville Rd	Saturn Rd	2,209	0.42	3	3	6D	Regional Arterial	B	1,203	1,179	100%	925	925	1,161	1,161	503	493	658	668		
O'Banion Rd	W. Centerville	Birchwood Dr	2,594	0.49	1	1	2U	Minor Collector	F	269	287	100%	525	525	258	258	132	141	126	117		
O'Banion Rd	Birchwood Dr	La Prada Dr	4,918	0.93	1	1	2U	Minor Collector	F	137	136	100%	525	525	489	489	128	127	361	362		
O'Banion Rd	La Prada Dr	W. Oates	2,773	0.53	1	1	2U	Minor Collector	F	127	121	100%	525	525	276	276	67	64	209	212		
Peninsula Way	Locust Grove	Hollow Bend	1,880	0.36	1	1	2U	Minor Collector	F	195	165	100%	525	525	187	187	69	59	118	128		
Roan Rd	E. Oates (Future)	Rowlett Rd	5,282	1.00	2	2	4D	Major Collector	D1	84	115	100%	900	900	1,801	1,801	84	115	1,717	1,686		
Roan Rd	Rowlett Rd	Waterhouse Blvd	3,058	0.58	2	2	4D	Arterial	C2-S	741	766	100%	900	900	1,043	1,043	429	444	613	599		
Roan Rd	Waterhouse Blvd	Bobtown Rd	1,388	0.26	2	2	4D	Arterial	C2-S	741	766	100%	900	900	473	473	195	201	278	272		
Rosehill Rd	Columbine Dr	Rowlett Rd	2,516	0.48	1	1	2U	Minor Collector	F	381	327	100%	525	525	250	250	182	156	69	94		
Rosehill Rd	E Oates Rd	Hopewell Dr	618	0.12	1	1	2U	Minor Collector	F	381	327	100%	525	525	61	61	45	38	17	23		
Rosehill Rd	Gatewood	E Oates Rd	2,253	0.43	1	1	3U	Minor Collector	F	230	225	100%	575	575	245	245	98	96	147	149		
Rosehill Rd	Hopewell	Columbine Dr	1,359	0.26	1	1	3U	Minor Collector	F	381	327	100%	575	575	148	148	98	84	50	64		
Rosehill Rd	Bobtown	IH 30 N loop	1,510	0.29	2	2	4D	Regional Arterial	B	333	334	100%	900	900	515	515	95	96	420	419		
National	IH 30 S loop	Guthire Rd	2,018	0.38	1	1	4U	Minor Collector	E	270	285	100%	525	525	201	201	103	109	97	92		
Rosehill Rd	IH 30 N loop	IH 30 S frontage road	711	0.13	2	2	4U	Regional Arterial	B	307	307	100%	525	525	141	141	41	41	100	100		
National	IH 30 S frontage road	IH 30 S loop	398	0.08	2	2	4U	Minor Collector	E	255	265	100%	525	525	79	79	19	20	60	59		
Rowlett Rd	S Country Club Rd	Roan Rd	3,866	0.73	2	2	4D	Regional Arterial	A	567	544	100%	900	900	1,318	1,318	415	398	903	920		
Rowlett Rd	Broadway	Rosehill Rd	3,696	0.70	2	2	4D	Regional Arterial	A	820	672	100%	900	900	1,260	1,260	574	470	686	790		
Rowlett Rd	Rosehill Rd	S Country Club Rd	1,384	0.26	2	2	4D	Regional Arterial	A	567	544	100%	900	900	472	472	149	143	323	329		
Rowlett Rd	Roan Rd	City Limits	1,583	0.30	2	2	4D	Regional Arterial	A	952	1,047	100%	900	900	540	540	285	314	254	226		
S. Country Club Rd	Wynn Joyce	Rowlett Rd	1,430	0.27	1	1	2U	Minor Collector	F	195	165	100%	525	525	142	142	53	45	89	98		
S. Country Club Rd	E Oates Rd	Rowlett Rd	4,570	0.87	1	1	2U	Minor Collector	F	104	110	100%	525	525	454	454	90	95	364	359		
S. Country Club Rd	Wynn Joyce	Rowlett Rd	1,254	0.24	1	1	2U	Minor Collector	F	195	165	100%	525	525	125	125	46	39	78	86		
S. Country Club Rd	E Oates Rd	E of E Oates Rd	701	0.13	1	1	2U	Minor Collector	F	195	165	100%	525	525	70	70	26	22	44	48		
S. Country Club Rd	Rowlett Rd	Bobtown	1,763	0.33	2	2	4D	Regional Arterial	B	169	155	100%	900	900	601	601	56	52	545	549		
S. Country Club Rd	E. Miller	E. Centerville	2,881	0.55	2	2	4D	Minor Arterial	C1	231	225	100%	900	900	982	982	126	123	856	859		
S. First Street	Kingsley Rd	Centerville Rd	2,780	0.53	2	2	4D	Major Collector	D1	1,009	1,062	100%	900	900	948	948	531	559	416	389		
S. First Street	W Miller Rd	W Daugherty Dr	1,299	0.25	3	3	6D	Regional Arterial	B	2,037	2,059	50%	925	925	341	341	251	253	91	88		
S. First Street	Daugherty Dr	S First St	1,208	0.23	3	3	6D	Regional Arterial	B	2,037	2,059	50%	925	925	317	317	233	236	84	82		
S. Glenbrook Dr	W Kingsley Rd	W Centerville Rd	4,027	0.76	1	1	2U	Minor Collector	F	195	165	100%	525	525	400	400	149	126	252	275		
Saturn Rd	Northwest Hwy	Marketplace Dr	1,699	0.32	2	2	4D	Minor Arterial	C1	439	336	50%	900	900	290	290	71	54	219	236		
Saturn Rd	Marketplace Dr	IH 635	1,006	0.19	2	2	4D	Minor Arterial	C1	439	336	50%	900	900	171	171	42	32	130	139		
Saturn Rd	Mayfield Ave	Northwest Hwy	855	0.16	2	2	4D	Major Collector	D2	838	801	50%	900	900	146	146	68	65	78	81		
Saturn Rd	Susannah Dr	Mayfield Ave	954	0.18	2	2	4U	Major Collector	D2	838	801	50%	525	525	95	95	76	72	19	22		
Saturn Rd	W. Kingsley	Susannah Dr	3,529	0.67	2	2	5U	Major Collector	D2	838	801	50%	850	850	568	568	280	268	288	300		
Centerville Rd	O Banion Rd	Northwest Pkwy	3,722	0.70	3	3	6D	Regional Arterial	B	1,976	2,060	100%	925	925	1,956	1,956	1,393	1,452	563	504		
Centerville Rd	E Miller Rd	S Country Club Rd	3,890	0.74	3	3	6D	Regional Arterial	B	1,197	1,152	100%	925	925	2,044	2,044	882	849	1,163	1,196		
Centerville Rd	S Country Club Rd	Merrimac Trl	1,516	0.29	3	3	6D	Regional Arterial	B	1,395	1,326	100%	925	925	797	797	401	381	396	416		
Centerville Rd	Merrimac Trl	Broadway Blvd	2,697	0.51	3	3	6D	Regional Arterial	B	1,395	1,326	100%	925	925	1,417	1,417	713	677	705	740		
Centerville Rd	Broadway Blvd	E Kingsley Rd	947	0.18	3	3	6D	Regional Arterial	B	1,402	1,308	100%	925	925	498	498	251	235	246	263		
Centerville Rd	E Kingsley Rd	Duck Creek Dr	3,001	0.57	3	3	6D	Regional Arterial	B	1,402	1,308	100%	925	925	1,577	1,577	797	743	780	834		
Centerville Rd	Duck Creek Dr	S Glenbrook Dr	837	0.16	3	3	6D	Regional Arterial	B	2,277	2,285	100%	925	925	440	440	361	362	79	78		
Centerville Rd	S Glenbrook Dr	Bardfield Ave	245	0.05	3	3	6D	Regional Arterial	B	2,277	2,285	100%	925	925	129	129	106	106	23	23		
Centerville Rd	Bardfield Ave	O Banon Rd	353	0.07	3	3	6D	Regional Arterial	B	2,277	2,285	100%	925	925	186	186	152	153	33	33		
Centerville Rd	Northwest Pkwy	Broadmoor Dr	1,162	0.22	3	3	6D	Regional Arterial	B	1,679	1,752	100%	925	925	611	611	370	386	241	225		
Centerville Rd	Broadmoor Dr	LBJ Fwy	1,291	0.24	3	3	6D	Regional Arterial	B	2,016	2,289	100%	925	925	679	679	493	560	186	119		
Centerville Rd	LBJ Fwy	IH 635 S frontage road	657	0.12	3	3	6D	Regional Arterial	B	1,430	1,445	100%	925	925	345	345	178	180	167	165		
W. Kingsley Rd	Saturn Rd	S Glenbrook Dr	2,905	0.55	2	2	4D	Major Collector	D1	888	876	50%	900	900	495	495	244	241	251	254		
W. Kingsley Rd	S Glenbook Dr	S Fifth St	1,651	0.31	2	2	4D	Major Collector	D1	888	876	50%	900	900	281	281	139	137	143	144		
W. Kingsley Rd	S Fifth St	S First St	720	0.14	2	2	4D	Major Collector	D1	888	876	50%	900	900	123	123	61	60	62	63		
W. Oates Rd	O'Banion	Duck Creek	2,744	0.52	2	2	4D	Minor Arterial	C1	752	653	100%	900	900	935	935	391	339	545	596		
W. Oates Rd	City Limits	O'Banion	2,083	0.39	2	2	4D	Minor Arterial	C1	796	715	100%	900	900	710	710	314	282	396	428		
Waterhouse	Bobtown	Hayman	1,553	0.29	1	1	2U	Minor Collector	F	195	165	100%	525	525	154	154	57	49	97	106		
Waterhouse	Whitehaven Dr	Wellington	1,052	0.20	1	1	3U	Minor Collector	E	94	149	100%	575	575	115	115	19	30	96	85		
Waterhouse (Future)	Wellington	Zion	1,657	0.31	1	1	4U	Minor Collector	E	94	149	100%	525	525	165	165	29	47	135	118		
Waterhouse	Hayman	Roan Rd	930	0.18	1	1	4U	Minor Collector	E	255	265	100%	525	525	92	92	45	47	48	46		
Waterhouse	Roan Rd	Whitehaven Dr	770	0.15	1	1	4U	Minor Collector	E	94	149	100%	525	525	77	77	14	22	63	55		
Wellington Ave	Waterhouse	IH30	973	0.18	1	1	2U	Minor Collector	F	195	165	100%	525	525	97	97	36	30	61	66		
Wynn Joyce Rd	S Country Club Rd	Oates	2,412	0.46	1	1	3U	Minor Collector	F	235	234	100%	575	575	263	263	107	107	155	156		
Wynn Joyce Rd	Broadway	S Country Club Rd	2,432	0.46	1	1	3U	Minor Collector	F	253	259	100%	575	575	265	265	117	119	148	146		
Wynn Joyce Rd	S Country Club Rd	S Country Club Rd	1,286	0.24	1	1	3U	Minor Collector	F	253	259	100%	575	575	140	140	62	63	78	77		
Wynn Joyce Rd	Duck Creek	Broadway	4,442	0.84	2	2	4D	Minor Arterial	C1	345	346	100%	900	900	1,514	1,514	290	291	1,224	1,223		
Zion Rd	Locust Grove Rd	Bobtown	1,076	0.20	1	1	2U	Minor Collector	E	249	174	100%	525	525	107	107	51	35	56	72		
Zion Rd	Bass Pro	IH 30	2,767	0.52	1	1	2U	Minor Collector	F	195	165	100%	525	525	275	275	102	86	173	189		
Zion Rd	IH 30 S ramp	Locust Grove Rd	338	0.06	1	1	2U	Minor Collector	E	249	174	100%	525	525	34	34	16	11	18	22		
Zion Rd	West of 190	IH 30 N ramp	3,093	0.59	1	1	3U	Minor Collector	E	146	134	100%	575	575	337	337	86	78	251	258		
Zion Rd	IH 30 N ramp	IH 30 S ramp	1,183	0.22	2	2	4U	Minor Collector	E	255	265	100%	525	525	235	235	57	59	178	176		
SUBTOTAL			294,297	55.74											72,757	72,757	28,599	28,068	44,158	44,689	28	0
															145,514		56,666		88,848		28	

Appendix D – Plan for Awarding the Transportation Impact Fee Credit Summary

(as prepared by NewGen Strategies.)

SUMMARY OF ROADWAY IMPACT FEE DETERMINATION

Service Area A

Recoverable Impact Fee CIP Costs	$	24,173,052	Line 11, Max Fee Calculation Table
Principal Paid on Existing Debt Funded Project Costs		(80,054)	Page 4 of Appendix E - Service Area A
Financing Costs		10,530,329	See Detail Below
Existing Fund Balance		(1,259,298)	Page 1 of Appendix E - Service Area A
Interest Earnings		(1,273,984)	Page 5 of Appendix E - Service Area A
Pre Credit Recoverable Cost for Impact Fee	$	32,090,045	Sum of Above
Credit for Ad Valorem Revenues		(269,345)	Page 8 of Appendix E - Service Area A
Maximum Recoverable Cost for Impact Fee	**$**	**31,820,700**	

Recoverable Impact Fee CIP Costs:

Represents the portion of capital improvement costs that are eligible for funding through impact fees. Reference is Service Area A column, line 11 on the Max Fee Calculation Table.

Principal Paid on Existing Debt Funded Project Costs:

Represents the portion of principal already paid for existing debt funded projects from a detailed project funding list and debt service schedules provided by the City. (Page 4 of Appendix E - Service Area A)

Financing Costs:

Represents the interest costs associated with debt financing the new impact fee project costs. It is assumed 80% of the new impact fee project costs will be funded through new debt issues (Page 7 of Appendix E - Service Area A). Interest costs are derived from forecasted debt issues.

New Annual Debt Service	$	28,384,994	(Page 3 of Appendix E - Service Area A)
Existing Annual Debt Service		1,650,403	(Page 3 of Appendix E - Service Area A)
Principal Component		(19,505,068)	(Page 4 of Appendix E - Service Area A)
Financing Costs	$	10,530,329	

Existing Fund Balance:

Represents impact fee revenue collected but not yet expended. To avoid charging twice for the same project, the impact fee revenues collected but yet to be expended (i.e. fund balance) are credited against the recoverable costs. Reference is page 1 of Appendix E - Service Area A.

Interest Earnings:

Represents the interest earned on cash flows. Assumes a 0.451% annual interest rate based on the City's GO Interest and Sinking Fund yield as of June 30, 2016. The Impact Fee Statute states that interest earnings are funds of the impact fee account and are held to the same restrictions as impact fee revenues. Therefore in order to recognize that interest earnings are used to fund capital improvements, interest earnings are credited against the recoverable costs. Reference is the sum of Accumulated Interest on page 5 of Appendix E - Service Area A.

Pre Credit Recoverable Cost for Impact Fee

Represents Recoverable Impact Fee CIP Costs plus Financing Costs less Interest Earnings.

Credit for Ad Valorem Revenues:

In 2001, the Impact Fee Statute was amended to include a credit for ad valorem and utility revenues generated by new service units during the ten-year timeframe that are used to fund impact fee eligible projects for which the new service units were charged an impact fee. The intent of this amendment is to avoid double-charging the new service units for impact fee capital improvements. The credit recognizes ad valorem revenues used to fund the debt service of debt financed impact fee eligible projects and assumes that all non-debt funded impact fee eligible project costs will be funded solely through impact fee revenues or non-ad valorem revenue sources. Reference is page 8 of Appendix E - Service Area A.

Maximum Recoverable Cost for Impact Fee:

Represents Pre Credit Recoverable Cost for Impact Fee less Credit for Ad Valorem Revenues. This is the maximum cost that can be recovered through impact fees.

SUMMARY OF ROADWAY IMPACT FEE DETERMINATION

Service Area B

Recoverable Impact Fee CIP Costs	$	18,527,475	Line 11, Max Fee Calculation Table
Principal Paid on Existing Debt Funded Project Costs		-	Page 4 of Appendix E - Service Area B
Financing Costs		8,175,922	See Detail Below
Existing Fund Balance		(908,960)	Page 1 of Appendix E - Service Area B
Interest Earnings		(1,012,470)	Page 5 of Appendix E - Service Area B
Pre Credit Recoverable Cost for Impact Fee	$	24,781,968	Sum of Above
Credit for Ad Valorem Revenues		(77,232)	Page 8 of Appendix E - Service Area B
Maximum Recoverable Cost for Impact Fee	**$**	**24,704,735**	

Recoverable Impact Fee CIP Costs:

Represents the portion of capital improvement costs that are eligible for funding through impact fees. Reference is Service Area B column, line 11 on the Max Fee Calculation Table.

Principal Paid on Existing Debt Funded Project Costs:

After review of a detailed project funding list provided by City Staff, there have been no prior debt payments for projects included in the impact fee CIP for this area. (Page 4 of Appendix E - Service Area B)

Financing Costs:

Represents the interest costs associated with debt financing the new impact fee project costs. It is assumed 80% of the new impact fee project costs will be funded through new debt issues (Page 7 of Appendix E - Service Area B). Interest costs are derived from forecasted debt issues.

New Annual Debt Service	$	22,985,230	(Page 3 of Appendix E - Service Area B)
Principal Component		(14,809,308)	(Page 4 of Appendix E - Service Area B)
Financing Costs	$	8,175,922	

Existing Fund Balance:

Represents impact fee revenue collected but not yet expended. To avoid charging twice for the same project, the impact fee revenues collected but yet to be expended (i.e. fund balance) are credited against the recoverable costs. Reference is page 1 of Appendix E - Service Area B.

Interest Earnings:

Represents the interest earned on cash flows. Assumes a 0.451% annual interest rate based on the City's GO Interest and Sinking Fund yield as of June 30, 2016. The Impact Fee Statute states that interest earnings are funds of the impact fee account and are held to the same restrictions as impact fee revenues. Therefore in order to recognize that interest earnings are used to fund capital improvements, interest earnings are credited against the recoverable costs. Reference is the sum of Accumulated Interest on page 5 of Appendix E - Service Area B.

Pre Credit Recoverable Cost for Impact Fee

Represents Recoverable Impact Fee CIP Costs plus Financing Costs less Interest Earnings.

Credit for Ad Valorem Revenues:

In 2001, the Impact Fee Statute was amended to include a credit for ad valorem and utility revenues generated by new service units during the ten-year timeframe that are used to fund impact fee eligible projects for which the new service units were charged an impact fee. The intent of this amendment is to avoid double-charging the new service units for impact fee capital improvements. The credit recognizes ad valorem revenues used to fund the debt service of debt financed impact fee eligible projects and assumes that all non-debt funded impact fee eligible project costs will be funded solely through impact fee revenues or non-ad valorem revenue sources. Reference is page 8 of Appendix E - Service Area B.

Maximum Recoverable Cost for Impact Fee:

Represents Pre Credit Recoverable Cost for Impact Fee less Credit for Ad Valorem Revenues. This is the maximum cost that can be recovered through impact fees.

SUMMARY OF ROADWAY IMPACT FEE DETERMINATION

Service Area C

Recoverable Impact Fee CIP Costs	$	21,542,049	Line 11, Max Fee Calculation Table
Principal Paid on Existing Debt Funded Project Costs		(157,544)	Page 4 of Appendix E - Service Area C
Financing Costs		9,115,235	See Detail Below
Existing Fund Balance		(502,053)	Page 1 of Appendix E - Service Area C
Interest Earnings		(1,069,842)	Page 5 of Appendix E - Service Area C
Pre Credit Recoverable Cost for Impact Fee	$	28,927,845	Sum of Above
Credit for Ad Valorem Revenues		(85,047)	Page 8 of Appendix E - Service Area C
Maximum Recoverable Cost for Impact Fee	**$**	**28,842,799**	

Recoverable Impact Fee CIP Costs:

Represents the portion of capital improvement costs that are eligible for funding through impact fees. Reference is Service Area C column, line 11 on the Max Fee Calculation Table.

Principal Paid on Existing Debt Funded Project Costs:

Represents the portion of principal already paid for existing debt funded projects from a detailed project funding list and debt service schedules provided by the City. (Page 4 of Appendix E - Service Area C)

Financing Costs:

Represents the interest costs associated with debt financing the new impact fee project costs. It is assumed 80% of the new impact fee project costs will be funded through new debt issues (Page 7 of Appendix E - Service Area C). Interest costs are derived from forecasted debt issues.

New Annual Debt Service	$	23,557,919	(Page 3 of Appendix E - Service Area C)
Existing Annual Debt Service		2,473,171	(Page 3 of Appendix E - Service Area C)
Principal Component		(16,915,855)	(Page 4 of Appendix E - Service Area C)
Financing Costs	$	9,115,235	

Existing Fund Balance:

Represents impact fee revenue collected but not yet expended. To avoid charging twice for the same project, the impact fee revenues collected but yet to be expended (i.e. fund balance) are credited against the recoverable costs. Reference is page 1 of Appendix E - Service Area C.

Interest Earnings:

Represents the interest earned on cash flows. Assumes a 0.451% annual interest rate based on the City's GO Interest and Sinking Fund yield as of June 30, 2016. The Impact Fee Statute states that interest earnings are funds of the impact fee account and are held to the same restrictions as impact fee revenues. Therefore in order to recognize that interest earnings are used to fund capital improvements, interest earnings are credited against the recoverable costs. Reference is the sum of Accumulated Interest on page 5 of Appendix E - Service Area C.

Pre Credit Recoverable Cost for Impact Fee

Represents Recoverable Impact Fee CIP Costs plus Financing Costs less Interest Earnings.

Credit for Ad Valorem Revenues:

In 2001, the Impact Fee Statute was amended to include a credit for ad valorem and utility revenues generated by new service units during the ten-year timeframe that are used to fund impact fee eligible projects for which the new service units were charged an impact fee. The intent of this amendment is to avoid double-charging the new service units for impact fee capital improvements. The credit recognizes ad valorem revenues used to fund the debt service of debt financed impact fee eligible projects and assumes that all non-debt funded impact fee eligible project costs will be funded solely through impact fee revenues or non-ad valorem revenue sources. Reference is page 8 of Appendix E - Service Area C.

Maximum Recoverable Cost for Impact Fee:

Represents Pre Credit Recoverable Cost for Impact Fee less Credit for Ad Valorem Revenues. This is the maximum cost that can be recovered through impact fees.

SUMMARY OF ROADWAY IMPACT FEE DETERMINATION

Service Area D

Recoverable Impact Fee CIP Costs	$	16,428,715	Line 11, Max Fee Calculation Table
Principal Paid on Existing Debt Funded Project Costs		(184,293)	Page 4 of Appendix E - Service Area D
Financing Costs		6,799,841	See Detail Below
Existing Fund Balance		(1,113,622)	Page 1 of Appendix E - Service Area D
Interest Earnings		(788,751)	Page 5 of Appendix E - Service Area D
Pre Credit Recoverable Cost for Impact Fee	$	21,141,890	Sum of Above
Credit for Ad Valorem Revenues		(88,284)	Page 8 of Appendix E - Service Area D
Maximum Recoverable Cost for Impact Fee	**$**	**21,053,606**	

Recoverable Impact Fee CIP Costs:

Represents the portion of capital improvement costs that are eligible for funding through impact fees. Reference is Service Area D column, line 11 on the Max Fee Calculation Table.

Principal Paid on Existing Debt Funded Project Costs:

Represents the portion of principal already paid for existing debt funded projects from a detailed project funding list and debt service schedules provided by the City. (Page 4 of Appendix E - Service Area D)

Financing Costs:

Represents the interest costs associated with debt financing the new impact fee project costs. It is assumed 80% of the new impact fee project costs will be funded through new debt issues (Page 7 of Appendix E - Service Area D). Interest costs are derived from forecasted debt issues.

New Annual Debt Service	$	16,289,926	(Page 3 of Appendix E - Service Area D)
Existing Annual Debt Service		3,508,652	(Page 3 of Appendix E - Service Area D)
Principal Component		(12,998,737)	(Page 4 of Appendix E - Service Area D)
Financing Costs	$	6,799,841	

Existing Fund Balance:

Represents impact fee revenue collected but not yet expended. To avoid charging twice for the same project, the impact fee revenues collected but yet to be expended (i.e. fund balance) are credited against the recoverable costs. Reference is page 1 of Appendix E - Service Area D.

Interest Earnings:

Represents the interest earned on cash flows. Assumes a 0.451% annual interest rate based on the City's GO Interest and Sinking Fund yield as of June 30, 2016. The Impact Fee Statute states that interest earnings are funds of the impact fee account and are held to the same restrictions as impact fee revenues. Therefore in order to recognize that interest earnings are used to fund capital improvements, interest earnings are credited against the recoverable costs. Reference is the sum of Accumulated Interest on page 5 of Appendix E - Service Area D.

Pre Credit Recoverable Cost for Impact Fee

Represents Recoverable Impact Fee CIP Costs plus Financing Costs less Interest Earnings.

Credit for Ad Valorem Revenues:

In 2001, the Impact Fee Statute was amended to include a credit for ad valorem and utility revenues generated by new service units during the ten-year timeframe that are used to fund impact fee eligible projects for which the new service units were charged an impact fee. The intent of this amendment is to avoid double-charging the new service units for impact fee capital improvements. The credit recognizes ad valorem revenues used to fund the debt service of debt financed impact fee eligible projects and assumes that all non-debt funded impact fee eligible project costs will be funded solely through impact fee revenues or non-ad valorem revenue sources. Reference is page 8 of Appendix E - Service Area D.

Maximum Recoverable Cost for Impact Fee:

Represents Pre Credit Recoverable Cost for Impact Fee less Credit for Ad Valorem Revenues. This is the maximum cost that can be recovered through impact fees.

Appendix E – Plan for Awarding the Transportation Impact Fee Credit Supporting Exhibits

(as prepared by NewGen Strategies.)

City of Garland 2016 Roadway Impact Fee Study

Capital Improvement Plan for Impact Fees

Appendix E - Impact Fee Calculation Assumptions

Service Area A

I. General Assumptions

Annual Interest Rate on Deposits[1]	0.451%
Annual Service Unit Growth[2]	3,083
Existing Fund Balance[3]	1,259,298

Portion of Projects Funded by Existing Debt[3]	$ 1,296,765
Non-debt Funded New Project Cost[4]	4,587,929
New Project Cost Funded Through New Debt[5]	18,288,358
Total Recoverable Project Cost[6]	**$ 24,173,052**

II. New Debt Issues Assumptions

Year	Principal[7]	Interest[8]	Term
1	$ 1,828,836	3.02%	20
2	1,828,836	3.77%	20
3	1,828,836	4.02%	20
4	1,828,836	4.27%	20
5	1,828,836	4.52%	20
6	1,828,836	4.77%	20
7	1,828,836	5.02%	20
8	1,828,836	5.27%	20
9	1,828,836	5.52%	20
10	1,828,836	5.77%	20
Total	**$ 18,288,358**		

III. Capital Expenditure Assumptions

Year	Annual Capital Expenditures[9]
1	$ 1,715,722
2	2,287,629
3	2,287,629
4	2,287,629
5	2,287,629
6	2,287,629
7	2,287,629
8	2,287,629
9	2,287,629
10	2,859,536
Total	**$ 22,876,287**

(1) Current Yield for GO Interest and Sinking Fund as of June 30, 2016
(2) Derived from the 10-year Growth Projections Report, Table 7
(3) Totals provided by City Staff on September 23, 2016
(4) Assumes 20% of new project costs funded through sources other than debt unless otherwise specified
(5) Assumes 80% of new project costs funded through new debt issues unless otherwise specified
(6) Line 11 of the Max Fee Table Report
(7) Assumes new debt issued in equal annual amounts
(8) Estimated interest cost provided by City's Financial Advisor on September 28, 2016
(9) Assumes new debt proceeds expended over a 2-year timeframe with Year 10 bond proceeds spent fully in tenth year; Non-debt funded capital expenditures made in equal annual amounts

City of Garland 2016 Roadway Impact Fee Study

Capital Improvement Plan for Impact Fees

Appendix E - Impact Fee Calculation Assumptions

Service Area A

I. New Debt Service Detail

Year	Series 1	Series 2	Series 3	Series 4	Series 5	Series 6	Series 7	Series 8	Series 9	Series 10	Total Annual New Debt Service
1	$ 123,154	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 123,154
2	123,154	131,843	-	-	-	-	-	-	-	-	254,996
3	123,154	131,843	134,807	-	-	-	-	-	-	-	389,804
4	123,154	131,843	134,807	137,806	-	-	-	-	-	-	527,610
5	123,154	131,843	134,807	137,806	140,838	-	-	-	-	-	668,447
6	123,154	131,843	134,807	137,806	140,838	143,902	-	-	-	-	812,350
7	123,154	131,843	134,807	137,806	140,838	143,902	146,999	-	-	-	959,349
8	123,154	131,843	134,807	137,806	140,838	143,902	146,999	150,129	-	-	1,109,478
9	123,154	131,843	134,807	137,806	140,838	143,902	146,999	150,129	153,290	-	1,262,768
10	123,154	131,843	134,807	137,806	140,838	143,902	146,999	150,129	153,290	156,482	1,419,250
11	123,154	131,843	134,807	137,806	140,838	143,902	146,999	150,129	153,290	156,482	1,419,250
12	123,154	131,843	134,807	137,806	140,838	143,902	146,999	150,129	153,290	156,482	1,419,250
13	123,154	131,843	134,807	137,806	140,838	143,902	146,999	150,129	153,290	156,482	1,419,250
14	123,154	131,843	134,807	137,806	140,838	143,902	146,999	150,129	153,290	156,482	1,419,250
15	123,154	131,843	134,807	137,806	140,838	143,902	146,999	150,129	153,290	156,482	1,419,250
16	123,154	131,843	134,807	137,806	140,838	143,902	146,999	150,129	153,290	156,482	1,419,250
17	123,154	131,843	134,807	137,806	140,838	143,902	146,999	150,129	153,290	156,482	1,419,250
18	123,154	131,843	134,807	137,806	140,838	143,902	146,999	150,129	153,290	156,482	1,419,250
19	123,154	131,843	134,807	137,806	140,838	143,902	146,999	150,129	153,290	156,482	1,419,250
20	123,154	131,843	134,807	137,806	140,838	143,902	146,999	150,129	153,290	156,482	1,419,250
21	-	131,843	134,807	137,806	140,838	143,902	146,999	150,129	153,290	156,482	1,296,096
22	-	-	134,807	137,806	140,838	143,902	146,999	150,129	153,290	156,482	1,164,253
23	-	-	-	137,806	140,838	143,902	146,999	150,129	153,290	156,482	1,029,446
24	-	-	-	-	140,838	143,902	146,999	150,129	153,290	156,482	891,640
25	-	-	-	-	-	143,902	146,999	150,129	153,290	156,482	750,802
26	-	-	-	-	-	-	146,999	150,129	153,290	156,482	606,900
27	-	-	-	-	-	-	-	150,129	153,290	156,482	459,901
28	-	-	-	-	-	-	-	-	153,290	156,482	309,772
29	-	-	-	-	-	-	-	-	-	156,482	156,482
	$ 2,463,078	$ 2,636,852	$ 2,696,147	$ 2,756,117	$ 2,816,752	$ 2,878,046	$ 2,939,990	$ 3,002,576	$ 3,065,796	$ 3,129,642	$ 28,384,994

City of Garland 2016 Roadway Impact Fee Study

Capital Improvement Plan for Impact Fees

Appendix E - Impact Fee Calculation Assumptions

II. Summary of Annual Expenses

Year	New Annual Debt Service[1]	Annual Capital Expenditures[2]	Annual Bond Proceeds[2]	Existing Annual Debt Service[3]	Annual Credit[4]	Total Expense
1	$ 123,154	$ 1,715,722	$ (1,828,836)	$ 91,112	$ (1,006)	$ 100,146
2	254,996	2,287,629	(1,828,836)	108,941	(3,401)	819,330
3	389,804	2,287,629	(1,828,836)	108,830	(6,956)	950,471
4	527,610	2,287,629	(1,828,836)	108,814	(11,783)	1,083,433
5	668,447	2,287,629	(1,828,836)	108,889	(17,907)	1,218,222
6	812,350	2,287,629	(1,828,836)	108,925	(25,351)	1,354,716
7	959,349	2,287,629	(1,828,836)	108,807	(34,135)	1,492,814
8	1,109,478	2,287,629	(1,828,836)	108,834	(44,293)	1,632,812
9	1,262,768	2,287,629	(1,828,836)	108,839	(55,846)	1,774,554
10	1,419,250	2,859,536	(1,828,836)	105,432	(68,666)	2,486,716
11	1,419,250	-	-	105,443	-	1,524,693
12	1,419,250	-	-	105,504	-	1,524,754
13	1,419,250	-	-	61,925	-	1,481,175
14	1,419,250	-	-	62,072	-	1,481,322
15	1,419,250	-	-	61,929	-	1,481,179
16	1,419,250	-	-	62,112	-	1,481,361
17	1,419,250	-	-	62,052	-	1,481,302
18	1,419,250	-	-	61,942	-	1,481,192
19	1,419,250	-	-	-	-	1,419,250
20	1,419,250	-	-	-	-	1,419,250
21	1,296,096	-	-	-	-	1,296,096
22	1,164,253	-	-	-	-	1,164,253
23	1,029,446	-	-	-	-	1,029,446
24	891,640	-	-	-	-	891,640
25	750,802	-	-	-	-	750,802
26	606,900	-	-	-	-	606,900
27	459,901	-	-	-	-	459,901
28	309,772	-	-	-	-	309,772
29	156,482	-	-	-	-	156,482
	$ 28,384,994	$ 22,876,287	$ (18,288,358)	$ 1,650,403	$ (269,345)	$ 34,353,982

III. Summary of Principal Paid to Date for Existing Debt[3]

	Principal Paid on Issuance 2005	Principal Paid on Debt 2008	Principal Paid on Debt 2011	Principal Paid on Debt 2015	Total Principal Paid to Date
2005	-	-	-	-	-
2006	-	-	-	-	-
2007	-	-	-	-	-
2008	-	-	-	-	-
2009	-	874	-	-	874
2010	-	1,243	-	-	1,243
2011	-	1,313	-	-	1,313
2012	-	1,888	-	-	1,888
2013	-	1,975	-	-	1,975
2014	-	2,068	8,096	-	10,164
2015	-	2,148	8,096	12,620	22,863
2016	-	2,254	8,096	29,383	39,733
	$ -	$ 13,764	$ 24,287	$ 42,003	$ 80,054

IV. Summary of Debt Financing

Existing Debt Funded Project Costs[5]	$	1,296,765
-Less Principal Paid to Date		80,054
Outstanding Debt Principal		1,216,710
New Project Costs Debt Principal[5]		18,288,358
Principal Component	**$**	**19,505,068**

(1) Appendix E - Service Area A, Page 2
(2) Appendix E - Service Area A, Page 1
(3) Prior Debt Funding Provided by City Staff
(4) Appendix E - Service Area A, Page 8
(5) Appendix E - Service Area A, Page 1

City of Garland 2016 Roadway Impact Fee Study

Capital Improvement Plan for Impact Fees

Appendix E - Impact Fee Calculation Assumptions

Service Area A

Year	Impact Fee	Service Units	Impact Fee Revenue	Annual Expenses	Sub-Total	Accumulated Interest	Estimated Fund Balance
Initial							$ 1,259,298
1	$ 1,032	3,083	$ 3,182,070	$ 100,146	$ 3,081,924	$ 12,629	4,353,851
2	1,032	3,083	3,182,070	819,330	2,362,740	24,964	6,741,555
3	1,032	3,083	3,182,070	950,471	2,231,599	35,437	9,008,591
4	1,032	3,083	3,182,070	1,083,433	2,098,637	45,361	11,152,589
5	1,032	3,083	3,182,070	1,218,222	1,963,848	54,727	13,171,164
6	1,032	3,083	3,182,070	1,354,716	1,827,354	63,523	15,062,041
7	1,032	3,083	3,182,070	1,492,814	1,689,256	71,739	16,823,036
8	1,032	3,083	3,182,070	1,632,812	1,549,258	79,365	18,451,660
9	1,032	3,083	3,182,070	1,774,554	1,407,516	86,391	19,945,567
10	1,032	3,083	3,182,070	2,486,716	695,354	91,523	20,732,443
11	-	-	-	1,524,693	(1,524,693)	90,065	19,297,815
12	-	-	-	1,524,754	(1,524,754)	83,595	17,856,656
13	-	-	-	1,481,175	(1,481,175)	77,193	16,452,674
14	-	-	-	1,481,322	(1,481,322)	70,861	15,042,214
15	-	-	-	1,481,179	(1,481,179)	64,500	13,625,535
16	-	-	-	1,481,361	(1,481,361)	58,111	12,202,285
17	-	-	-	1,481,302	(1,481,302)	51,692	10,772,675
18	-	-	-	1,481,192	(1,481,192)	45,245	9,336,728
19	-	-	-	1,419,250	(1,419,250)	38,908	7,956,386
20	-	-	-	1,419,250	(1,419,250)	32,683	6,569,819
21	-	-	-	1,296,096	(1,296,096)	26,707	5,300,431
22	-	-	-	1,164,253	(1,164,253)	21,280	4,157,457
23	-	-	-	1,029,446	(1,029,446)	16,429	3,144,440
24	-	-	-	891,640	(891,640)	12,171	2,264,971
25	-	-	-	750,802	(750,802)	8,522	1,522,690
26	-	-	-	606,900	(606,900)	5,499	921,289
27	-	-	-	459,901	(459,901)	3,118	464,506
28	-	-	-	309,772	(309,772)	1,396	156,131
29	-	-	-	156,482	(156,482)	351	(0)
			$ 31,820,700	$ 34,353,982		$ 1,273,984	

City of Garland 2016 Roadway Impact Fee Study

Capital Improvement Plan for Impact Fees

Appendix E - Impact Fee Calculation Assumptions

Service Area A

Year	Number of Years to End of Period	Future Value Escalation: Interest Rate Factor	Future Value Escalation: Recovery Fee Factor	Annual Service Units: Actual	Annual Service Units: Escalated	Annual Expense: Actual	Annual Expense: Escalated
1	29	1.1368	1.0000	3,083	3,505	$ 100,146	$ 113,849
2	28	1.1317	1.0000	3,083	3,489	819,330	927,261
3	27	1.1267	1.0000	3,083	3,474	950,471	1,070,848
4	26	1.1216	1.0000	3,083	3,458	1,083,433	1,215,170
5	25	1.1166	1.0000	3,083	3,443	1,218,222	1,360,213
6	24	1.1115	1.0000	3,083	3,427	1,354,716	1,505,825
7	23	1.1066	1.0000	3,083	3,412	1,492,814	1,651,877
8	22	1.1016	1.0000	3,083	3,397	1,632,812	1,798,680
9	21	1.0966	1.0000	3,083	3,381	1,774,554	1,946,044
10	20	1.0917	1.0000	3,083	3,366	2,486,716	2,714,785
11	19	1.0868	1.0000	-	-	1,524,693	1,657,057
12	18	1.0819	1.0000	-	-	1,524,754	1,649,683
13	17	1.0771	1.0000	-	-	1,481,175	1,595,338
14	16	1.0722	1.0000	-	-	1,481,322	1,588,333
15	15	1.0674	1.0000	-	-	1,481,179	1,581,049
16	14	1.0626	1.0000	-	-	1,481,361	1,574,145
17	13	1.0579	1.0000	-	-	1,481,302	1,567,014
18	12	1.0531	1.0000	-	-	1,481,192	1,559,863
19	11	1.0484	1.0000	-	-	1,419,250	1,487,920
20	10	1.0437	1.0000	-	-	1,419,250	1,481,240
21	9	1.0390	1.0000	-	-	1,296,096	1,346,634
22	8	1.0343	1.0000	-	-	1,164,253	1,204,219
23	7	1.0297	1.0000	-	-	1,029,446	1,060,004
24	6	1.0251	1.0000	-	-	891,640	913,985
25	5	1.0205	1.0000	-	-	750,802	766,163
26	4	1.0159	1.0000	-	-	606,900	616,536
27	3	1.0113	1.0000	-	-	459,901	465,105
28	2	1.0068	1.0000	-	-	309,772	311,871
29	1	1.0023	1.0000	-	-	156,482	156,835
					34,352	$ 34,353,982	$ 36,887,546

Total Escalated Expense for Entire Period	$	36,887,546
Total Escalated Service Units		34,352
Impact Fee for Service Area A	**$**	**1,032**

City of Garland 2016 Roadway Impact Fee Study

Capital Improvement Plan for Impact Fees

Appendix E - Impact Fee Calculation Assumptions

Service Area A

Impact Fee Project Name[1]	Impact Fee Project No.[1]	Total Project Cost [1]	Percent in Service Area [1]	Cost in Service Area[1]	Impact Fee Recoverable Cost[2]	Debt Funded[3] Existing	Debt Funded[3] Proposed	Non-Debt Funded[3]	Impact Fee Recoverable Cost
Arapaho Rd (1)	A-1	$ 1,383,000	100%	$ 1,383,000	$ 385,973	$ -	$ 308,778	$ 77,195	$ 385,973
Arapaho Rd (2)	A-2	1,210,000	100%	1,210,000	337,691	-	270,153	67,538	337,691
Brand Rd (1)	A-3	4,092,000	100%	4,092,000	1,142,011	-	913,609	228,402	1,142,011
Brand Rd (2)	A-4	8,172,000	100%	8,172,000	2,280,673	-	1,824,538	456,135	2,280,673
Brand Rd (3)	A-5	3,590,000	100%	3,590,000	1,001,911	-	801,529	200,382	1,001,911
Campbell Rd (1)	A-6	1,901,000	100%	1,901,000	530,538	-	424,431	106,108	530,538
Campbell Rd (2)	A-7	740,000	100%	740,000	206,522	-	165,218	41,304	206,522
Campbell Rd (3)	A-8	1,065,000	100%	1,065,000	297,224	-	237,779	59,445	297,224
Campbell Rd (4)	A-9	1,150,000	100%	1,150,000	320,946	-	256,757	64,189	320,946
Campbell Rd (5)	A-10	929,000	100%	929,000	259,269	-	207,415	51,854	259,269
Campbell Rd (6)	A-11	11,065,000	100%	11,065,000	3,088,063	-	2,470,450	617,613	3,088,063
Ferris Rd	A-12	2,258,000	100%	2,258,000	630,171	-	504,137	126,034	630,171
Firewheel Parkway (1)	A-13	824,000	100%	824,000	229,965	-	183,972	45,993	229,965
Holford Rd (1)	A-14	5,347,000	100%	5,347,000	1,492,261	-	1,193,809	298,452	1,492,261
Holford Rd (2)	A-15	2,717,000	100%	2,717,000	758,271	-	606,617	151,654	758,271
Holford Rd (3)	A-16	8,118,000	100%	8,118,000	2,265,602	-	1,812,482	453,120	2,265,602
Lookout Dr (1)	A-17	201,000	50%	100,500	28,048	-	22,438	5,610	28,048
Lookout Dr (2)	A-18	1,428,000	50%	714,000	199,266	-	159,413	39,853	199,266
Lookout Dr (3)	A-19	1,107,000	100%	1,107,000	308,946	-	247,157	61,789	308,946
Mapleridge (Future) (1)	A-20	384,000	100%	384,000	107,168	-	85,735	21,434	107,168
Mapleridge (Future) (2)	A-21	3,513,000	100%	3,513,000	980,421	-	784,337	196,084	980,421
Garland Ave (1)	A-22	2,313,000	100%	2,313,000	645,521	-	516,417	129,104	645,521
Garland Ave (2)	A-23	2,044,000	100%	2,044,000	570,447	-	456,358	114,089	570,447
Garland Ave (3)	A-24	1,421,000	100%	1,421,000	396,578	-	317,262	79,316	396,578
Garland Ave (4)	A-25	1,732,000	100%	1,732,000	483,373	-	386,699	96,675	483,373
Shiloh Rd (1)	A-26	657,000	100%	657,000	183,358	-	146,686	36,672	183,358
Shiloh Rd (2)	A-27	733,000	100%	733,000	204,568	-	163,655	40,914	204,568
Shiloh Rd (3)	A-28	1,065,000	100%	1,065,000	297,224	-	237,779	59,445	297,224
Shiloh Rd (4)	A-29	1,836,000	100%	1,836,000	512,398	-	409,918	102,480	512,398
Shiloh Rd (5)	A-30	1,714,000	100%	1,714,000	478,350	-	382,680	95,670	478,350
Naaman Forest Blvd	A-31	2,079,000	100%	2,079,000	580,215	207,086	298,503	74,626	580,215
Naaman School Rd	A-32	6,047,000	100%	6,047,000	1,687,620	-	1,350,096	337,524	1,687,620
Naaman Forest Blvd	A-33	3,904,483	100%	3,904,483	1,089,678	1,089,678	-	-	1,089,678
Bottleneck Study Improvements - Service Area A	Various	634,000	100%	634,000	176,939	-	141,551	35,388	176,939
Study Costs		15,840	100%	15,840	15,840	-	-	15,840	15,840
Total		**$ 87,389,323**		**$ 86,574,823**	**$ 24,173,052**	**$ 1,296,765**	**$ 18,288,358**	**$ 4,587,929**	**$ 24,173,052**

(1) 2016 Roadway Impact Fee Study As Assigned to Service Area, Appendix A

(2) Line 11 of the Max Fee Table Report

(3) Based on Contributions by Project and Planned Future Debt Financing

City of Garland 2016 Roadway Impact Fee Study

Capital Improvement Plan for Impact Fees

Appendix E - Impact Fee Calculation Assumptions

Service Area A

2016 Vehicle Miles (All Service Areas) [1]	653,797	
Ten Year Growth in Vehicle Miles (Service Area A) [2]	30,833	
	10	years
Annual Growth in Vehicle Miles	3,083	

	1	2	3	4	5	6	7	8	9	10	Total
Total Debt Service Eligible for Impact Fees	$ 214,266	$ 363,937	$ 498,634	$ 636,423	$ 777,336	$ 921,274	$ 1,068,156	$ 1,218,312	$ 1,371,607	$ 1,524,682	$ 8,594,628
2016 Vehicle Miles plus Service Area A Growth	656,881	659,964	663,047	666,131	669,214	672,297	675,380	678,464	681,547	684,630	
Total Debt Service Eligible for Impact Fees per Vehicle Mile	$ 0.33	$ 0.55	$ 0.75	$ 0.96	$ 1.16	$ 1.37	$ 1.58	$ 1.80	$ 2.01	$ 2.23	
Annual Growth in Service Area A Vehicle Miles (Cumulative)	3,083	6,167	9,250	12,333	15,417	18,500	21,583	24,666	27,750	30,833	
Annual Ad Valorem Revenue Generated by Vehicle Miles for Debt Service Eligible for Impact Fees	$ 1,006	$ 3,401	$ 6,956	$ 11,783	$ 17,907	$ 25,351	$ 34,135	$ 44,293	$ 55,846	$ 68,666	$ 269,345

Credit Amount **$ 269,345**

(1) Engineer's calculation

(2) Line 8 of the Max Fee Table Report

City of Garland 2016 Roadway Impact Fee Study

Capital Improvement Plan for Impact Fees

Appendix E - Impact Fee Calculation Assumptions

Service Area B

I. General Assumptions

Annual Interest Rate on Deposits[1]	0.451%
Annual Service Unit Growth[2]	1,187
Existing Fund Balance[3]	908,960
Non-debt Funded New Project Cost[4]	3,718,167
New Project Cost Funded Through New Debt[5]	14,809,308
Total Recoverable Project Cost[6]	**$ 18,527,475**

II. New Debt Issues Assumptions

Year	Principal[7]	Interest[8]	Term
1	$ 1,480,931	3.02%	20
2	1,480,931	3.77%	20
3	1,480,931	4.02%	20
4	1,480,931	4.27%	20
5	1,480,931	4.52%	20
6	1,480,931	4.77%	20
7	1,480,931	5.02%	20
8	1,480,931	5.27%	20
9	1,480,931	5.52%	20
10	1,480,931	5.77%	20
Total	**$ 14,809,308**		

III. Capital Expenditure Assumptions

Year	Annual Capital Expenditures[9]
1	$ 1,389,561
2	1,852,748
3	1,852,748
4	1,852,748
5	1,852,748
6	1,852,748
7	1,852,748
8	1,852,748
9	1,852,748
10	2,315,934
Total	**$ 18,527,475**

(1) Current Yield for GO Interest and Sinking Fund as of June 30, 2016
(2) Derived from the 10-year Growth Projections Report, Table 7
(3) Totals provided by City Staff on September 23, 2016
(4) Assumes 20% of new project costs funded through sources other than debt unless otherwise specified
(5) Assumes 80% of new project costs funded through new debt issues unless otherwise specified
(6) Line 11 of the Max Fee Table Report
(7) Assumes new debt issued in equal annual amounts
(8) Estimated interest cost provided by City's Financial Advisor on September 28, 2016
(9) Assumes new debt proceeds expended over a 2-year timeframe with Year 10 bond proceeds spent fully in tenth year; Non-debt funded capital expenditures made in equal annual amounts

City of Garland 2016 Roadway Impact Fee Study

Capital Improvement Plan for Impact Fees

Appendix E - Impact Fee Calculation Assumptions

Service Area B

I. New Debt Service Detail

Year	Series 1	Series 2	Series 3	Series 4	Series 5	Series 6	Series 7	Series 8	Series 9	Series 10	Total Annual New Debt Service
1	$ 99,726	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 99,726
2	99,726	106,762	-	-	-	-	-	-	-	-	206,488
3	99,726	106,762	109,163	-	-	-	-	-	-	-	315,650
4	99,726	106,762	109,163	111,591	-	-	-	-	-	-	427,241
5	99,726	106,762	109,163	111,591	114,046	-	-	-	-	-	541,287
6	99,726	106,762	109,163	111,591	114,046	116,527	-	-	-	-	657,814
7	99,726	106,762	109,163	111,591	114,046	116,527	119,035	-	-	-	776,849
8	99,726	106,762	109,163	111,591	114,046	116,527	119,035	121,569	-	-	898,418
9	99,726	106,762	109,163	111,591	114,046	116,527	119,035	121,569	124,129	-	1,022,547
10	99,726	106,762	109,163	111,591	114,046	116,527	119,035	121,569	124,129	126,714	1,149,262
11	99,726	106,762	109,163	111,591	114,046	116,527	119,035	121,569	124,129	126,714	1,149,262
12	99,726	106,762	109,163	111,591	114,046	116,527	119,035	121,569	124,129	126,714	1,149,262
13	99,726	106,762	109,163	111,591	114,046	116,527	119,035	121,569	124,129	126,714	1,149,262
14	99,726	106,762	109,163	111,591	114,046	116,527	119,035	121,569	124,129	126,714	1,149,262
15	99,726	106,762	109,163	111,591	114,046	116,527	119,035	121,569	124,129	126,714	1,149,262
16	99,726	106,762	109,163	111,591	114,046	116,527	119,035	121,569	124,129	126,714	1,149,262
17	99,726	106,762	109,163	111,591	114,046	116,527	119,035	121,569	124,129	126,714	1,149,262
18	99,726	106,762	109,163	111,591	114,046	116,527	119,035	121,569	124,129	126,714	1,149,262
19	99,726	106,762	109,163	111,591	114,046	116,527	119,035	121,569	124,129	126,714	1,149,262
20	99,726	106,762	109,163	111,591	114,046	116,527	119,035	121,569	124,129	126,714	1,149,262
21	-	106,762	109,163	111,591	114,046	116,527	119,035	121,569	124,129	126,714	1,049,536
22	-	-	109,163	111,591	114,046	116,527	119,035	121,569	124,129	126,714	942,774
23	-	-	-	111,591	114,046	116,527	119,035	121,569	124,129	126,714	833,611
24	-	-	-	-	114,046	116,527	119,035	121,569	124,129	126,714	722,021
25	-	-	-	-	-	116,527	119,035	121,569	124,129	126,714	607,975
26	-	-	-	-	-	-	119,035	121,569	124,129	126,714	491,448
27	-	-	-	-	-	-	-	121,569	124,129	126,714	372,412
28	-	-	-	-	-	-	-	-	124,129	126,714	250,843
29	-	-	-	-	-	-	-	-	-	126,714	126,714
	$ 1,994,519	$ 2,135,235	$ 2,183,251	$ 2,231,812	$ 2,280,913	$ 2,330,546	$ 2,380,706	$ 2,431,387	$ 2,482,580	$ 2,534,280	$ 22,985,230

City of Garland 2016 Roadway Impact Fee Study

Capital Improvement Plan for Impact Fees

Appendix E - Impact Fee Calculation Assumptions

II. Summary of Annual Expenses

Year	New Annual Debt Service[1]	Annual Capital Expenditures[2]	Annual Bond Proceeds[2]	Existing Annual Debt Service[3]	Annual Credit[4]	Total Expense
1	$ 99,726	$ 1,389,561	$ (1,480,931)	$ -	$ (181)	$ 8,175
2	206,488	1,852,748	(1,480,931)	-	(747)	577,557
3	315,650	1,852,748	(1,480,931)	-	(1,710)	685,757
4	427,241	1,852,748	(1,480,931)	-	(3,081)	795,977
5	541,287	1,852,748	(1,480,931)	-	(4,870)	908,233
6	657,814	1,852,748	(1,480,931)	-	(7,090)	1,022,541
7	776,849	1,852,748	(1,480,931)	-	(9,750)	1,138,915
8	898,418	1,852,748	(1,480,931)	-	(12,864)	1,257,371
9	1,022,547	1,852,748	(1,480,931)	-	(16,442)	1,377,922
10	1,149,262	2,315,934	(1,480,931)	-	(20,497)	1,963,769
11	1,149,262	-	-	-	-	1,149,262
12	1,149,262	-	-	-	-	1,149,262
13	1,149,262	-	-	-	-	1,149,262
14	1,149,262	-	-	-	-	1,149,262
15	1,149,262	-	-	-	-	1,149,262
16	1,149,262	-	-	-	-	1,149,262
17	1,149,262	-	-	-	-	1,149,262
18	1,149,262	-	-	-	-	1,149,262
19	1,149,262	-	-	-	-	1,149,262
20	1,149,262	-	-	-	-	1,149,262
21	1,049,536	-	-	-	-	1,049,536
22	942,774	-	-	-	-	942,774
23	833,611	-	-	-	-	833,611
24	722,021	-	-	-	-	722,021
25	607,975	-	-	-	-	607,975
26	491,448	-	-	-	-	491,448
27	372,412	-	-	-	-	372,412
28	250,843	-	-	-	-	250,843
29	126,714	-	-	-	-	126,714
	$ 22,985,230	$ 18,527,475	$ (14,809,308)	$ -	$ (77,232)	$ 26,626,165

City of Garland 2016 Roadway Impact Fee Study

Capital Improvement Plan for Impact Fees

Appendix E - Impact Fee Calculation Assumptions

III. Summary of Principal Paid to Date for Existing Debt[3]

The projects related to this area have not been previously funded with debt.

IV. Summary of Debt Financing

Existing Debt Funded Project Costs[5]	$	-
-Less Principal Paid to Date		-
Outstanding Debt Principal		-
New Project Costs Debt Principal[5]		14,809,308
Principal Component	**$**	**14,809,308**

(1) Appendix E - Service Area B, Page 2
(2) Appendix E - Service Area B, Page 1
(3) Not applicable for this service area
(4) Appendix E - Service Area B, Page 8
(5) Appendix E - Service Area B, Page 1

City of Garland 2016 Roadway Impact Fee Study

Capital Improvement Plan for Impact Fees

Appendix E - Impact Fee Calculation Assumptions

Service Area B

Year	Impact Fee	Service Units	Impact Fee Revenue	Annual Expenses	Sub-Total	Accumulated Interest	Estimated Fund Balance
Initial							$ 908,960
1	$ 2,081	1,187	$ 2,470,474	$ 8,175	$ 2,462,298	$ 9,652	3,380,910
2	2,081	1,187	2,470,474	577,557	1,892,916	19,516	5,293,343
3	2,081	1,187	2,470,474	685,757	1,784,717	27,898	7,105,957
4	2,081	1,187	2,470,474	795,977	1,674,497	35,824	8,816,278
5	2,081	1,187	2,470,474	908,233	1,562,241	43,284	10,421,803
6	2,081	1,187	2,470,474	1,022,541	1,447,933	50,267	11,920,003
7	2,081	1,187	2,470,474	1,138,915	1,331,558	56,762	13,308,323
8	2,081	1,187	2,470,474	1,257,371	1,213,103	62,756	14,584,182
9	2,081	1,187	2,470,474	1,377,922	1,092,552	68,238	15,744,972
10	2,081	1,187	2,470,474	1,963,769	506,705	72,152	16,323,829
11	-	-	-	1,149,262	(1,149,262)	71,029	15,245,596
12	-	-	-	1,149,262	(1,149,262)	66,166	14,162,501
13	-	-	-	1,149,262	(1,149,262)	61,281	13,074,521
14	-	-	-	1,149,262	(1,149,262)	56,375	11,981,634
15	-	-	-	1,149,262	(1,149,262)	51,446	10,883,818
16	-	-	-	1,149,262	(1,149,262)	46,494	9,781,051
17	-	-	-	1,149,262	(1,149,262)	41,521	8,673,310
18	-	-	-	1,149,262	(1,149,262)	36,525	7,560,574
19	-	-	-	1,149,262	(1,149,262)	31,507	6,442,819
20	-	-	-	1,149,262	(1,149,262)	26,466	5,320,023
21	-	-	-	1,049,536	(1,049,536)	21,627	4,292,114
22	-	-	-	942,774	(942,774)	17,231	3,366,571
23	-	-	-	833,611	(833,611)	13,303	2,546,264
24	-	-	-	722,021	(722,021)	9,855	1,834,099
25	-	-	-	607,975	(607,975)	6,901	1,233,024
26	-	-	-	491,448	(491,448)	4,453	746,029
27	-	-	-	372,412	(372,412)	2,525	376,142
28	-	-	-	250,843	(250,843)	1,131	126,430
29	-	-	-	126,714	(126,714)	284	(0)
			$ 24,704,735	$ 26,626,165		$ 1,012,470	

City of Garland 2016 Roadway Impact Fee Study

Capital Improvement Plan for Impact Fees

Appendix E - Impact Fee Calculation Assumptions

Service Area B

Year	Number of Years to End of Period	Future Value Escalation: Interest Rate Factor	Future Value Escalation: Recovery Fee Factor	Annual Service Units: Actual	Annual Service Units: Escalated	Annual Expense: Actual	Annual Expense: Escalated
1	29	1.1368	1.0000	1,187	1,350	$ 8,175	$ 9,294
2	28	1.1317	1.0000	1,187	1,344	577,557	653,640
3	27	1.1267	1.0000	1,187	1,338	685,757	772,608
4	26	1.1216	1.0000	1,187	1,332	795,977	892,761
5	25	1.1166	1.0000	1,187	1,326	908,233	1,014,093
6	24	1.1115	1.0000	1,187	1,320	1,022,541	1,136,598
7	23	1.1066	1.0000	1,187	1,314	1,138,915	1,260,270
8	22	1.1016	1.0000	1,187	1,308	1,257,371	1,385,100
9	21	1.0966	1.0000	1,187	1,302	1,377,922	1,511,082
10	20	1.0917	1.0000	1,187	1,296	1,963,769	2,143,875
11	19	1.0868	1.0000	-	-	1,149,262	1,249,033
12	18	1.0819	1.0000	-	-	1,149,262	1,243,425
13	17	1.0771	1.0000	-	-	1,149,262	1,237,842
14	16	1.0722	1.0000	-	-	1,149,262	1,232,285
15	15	1.0674	1.0000	-	-	1,149,262	1,226,752
16	14	1.0626	1.0000	-	-	1,149,262	1,221,244
17	13	1.0579	1.0000	-	-	1,149,262	1,215,761
18	12	1.0531	1.0000	-	-	1,149,262	1,210,303
19	11	1.0484	1.0000	-	-	1,149,262	1,204,869
20	10	1.0437	1.0000	-	-	1,149,262	1,199,459
21	9	1.0390	1.0000	-	-	1,049,536	1,090,459
22	8	1.0343	1.0000	-	-	942,774	975,137
23	7	1.0297	1.0000	-	-	833,611	858,356
24	6	1.0251	1.0000	-	-	722,021	740,115
25	5	1.0205	1.0000	-	-	607,975	620,413
26	4	1.0159	1.0000	-	-	491,448	499,250
27	3	1.0113	1.0000	-	-	372,412	376,626
28	2	1.0068	1.0000	-	-	250,843	252,543
29	1	1.0023	1.0000	-	-	126,714	127,000
					13,227	$ 26,626,165	$ 28,560,194

Total Escalated Expense for Entire Period	$	28,560,194
Total Escalated Service Units		13,227
Impact Fee for Service Area B	**$**	**2,081**

City of Garland 2016 Roadway Impact Fee Study

Capital Improvement Plan for Impact Fees

Appendix E - Impact Fee Calculation Assumptions

Service Area B

Impact Fee Project Name[1]	Impact Fee Project No.[1]	Total Project Cost [1]	Percent in Service Area [1]	Cost in Service Area[1]	Impact Fee Recoverable Cost[2]	Debt Funded[3] Existing	Debt Funded[3] Proposed	Non-Debt Funded[3]	Impact Fee Recoverable Cost
Kings Rd (Future)	B-1	$ 551,000	100%	$ 551,000	$ 238,533	$ -	$ 190,826	$ 47,707	$ 238,533
Leon Rd (1)	B-2	959,000	100%	959,000	415,160	-	332,128	83,032	415,160
Leon Rd (2)	B-3	212,000	100%	212,000	91,777	-	73,421	18,355	91,777
Marketplace ext (1)	B-4	1,398,000	100%	1,398,000	605,207	-	484,166	121,041	605,207
Marketplace ext (2)	B-5	666,000	100%	666,000	288,318	-	230,654	57,664	288,318
Millay Blvd (Future)	B-6	1,180,000	100%	1,180,000	510,833	-	408,666	102,167	510,833
Shiloh Rd (6)	B-7	1,784,000	100%	1,784,000	772,310	-	617,848	154,462	772,310
Shiloh Rd (7)	B-8	4,590,000	100%	4,590,000	1,987,054	-	1,589,643	397,411	1,987,054
Shiloh Rd (8)	B-9	8,552,000	100%	8,552,000	3,702,240	-	2,961,792	740,448	3,702,240
Shiloh Rd (9)	B-10	9,087,000	100%	9,087,000	3,933,847	-	3,147,078	786,769	3,933,847
Shiloh Rd (10)	B-11	4,129,000	100%	4,129,000	1,787,483	-	1,429,986	357,497	1,787,483
Shiloh Rd (11)	B-12	2,368,000	100%	2,368,000	1,025,129	-	820,103	205,026	1,025,129
New road east of Industrial Ln	B-13	2,260,000	100%	2,260,000	978,375	-	782,700	195,675	978,375
Saturn Rd (Future)	B-14	2,215,000	100%	2,215,000	958,894	-	767,115	191,779	958,894
Sherwin (Future)	B-15	2,432,000	100%	2,432,000	1,052,835	-	842,268	210,567	1,052,835
Bottleneck Study Improvements - Service Area B	Various	378,000	100%	378,000	163,640	-	130,912	32,728	163,640
Study Costs		15,840	100%	15,840	15,840	-	-	15,840	15,840
Total		**$ 42,776,840**		**$ 42,776,840**	**$ 18,527,475**	**$ -**	**$ 14,809,308**	**$ 3,718,167**	**$ 18,527,475**

(1) 2016 Roadway Impact Fee Study As Assigned to Service Area, Appendix A

(2) Line 11 of the Max Fee Table Report

(3) Based on Contributions by Project and Planned Future Debt Financing

City of Garland 2016 Roadway Impact Fee Study

Capital Improvement Plan for Impact Fees

Appendix E - Impact Fee Calculation Assumptions

Service Area B

2016 Vehicle Miles (All Service Areas) [1]	653,797	
Ten Year Growth in Vehicle Miles (Service Area B) [2]	11,872	
	10	years
Annual Growth in Vehicle Miles	1,187	

	1	2	3	4	5	6	7	8	9	10	Total
Total Debt Service Eligible for Impact Fees	$ 99,726	$ 206,488	$ 315,650	$ 427,241	$ 541,287	$ 657,814	$ 776,849	$ 898,418	$ 1,022,547	$ 1,149,262	$ 6,095,282
2016 Vehicle Miles plus Service Area B Growth	654,984	656,172	657,359	658,546	659,733	660,920	662,108	663,295	664,482	665,669	
Total Debt Service Eligible for Impact Fees per Vehicle Mile	$ 0.15	$ 0.31	$ 0.48	$ 0.65	$ 0.82	$ 1.00	$ 1.17	$ 1.35	$ 1.54	$ 1.73	
Annual Growth in Service Area B Vehicle Miles (Cumulative)	1,187	2,374	3,562	4,749	5,936	7,123	8,310	9,498	10,685	11,872	
Annual Ad Valorem Revenue Generated by Vehicle Miles for Debt Service Eligible for Impact Fees	$ 181	$ 747	$ 1,710	$ 3,081	$ 4,870	$ 7,090	$ 9,750	$ 12,864	$ 16,442	$ 20,497	$ 77,232

Credit Amount **$ 77,232**

(1) Engineer's calculation

(2) Line 8 of the Max Fee Table Report

City of Garland 2016 Roadway Impact Fee Study

Capital Improvement Plan for Impact Fees

Appendix E - Impact Fee Calculation Assumptions

Service Area C

I. General Assumptions

Annual Interest Rate on Deposits[1]	0.451%
Annual Service Unit Growth[2]	1,084
Existing Fund Balance[3]	502,053

Portion of Projects Funded by Existing Debt[3]	$ 1,895,110
Non-debt Funded New Project Cost[4]	4,468,650
New Project Cost Funded Through New Debt[5]	15,178,290
Total Recoverable Project Cost[6]	**$ 21,542,049**

II. New Debt Issues Assumptions

Year	Principal[7]	Interest[8]	Term
1	$ 1,517,829	3.02%	20
2	1,517,829	3.77%	20
3	1,517,829	4.02%	20
4	1,517,829	4.27%	20
5	1,517,829	4.52%	20
6	1,517,829	4.77%	20
7	1,517,829	5.02%	20
8	1,517,829	5.27%	20
9	1,517,829	5.52%	20
10	1,517,829	5.77%	20
Total	**$ 15,178,290**		

III. Capital Expenditure Assumptions

Year	Annual Capital Expenditures[9]
1	$ 1,473,520
2	1,964,694
3	1,964,694
4	1,964,694
5	1,964,694
6	1,964,694
7	1,964,694
8	1,964,694
9	1,964,694
10	2,455,867
Total	**$ 19,646,939**

(1) Current Yield for GO Interest and Sinking Fund as of June 30, 2016
(2) Derived from the 10-year Growth Projections Report, Table 7
(3) Totals provided by City Staff on September 23, 2016
(4) Assumes 20% of new project costs funded through sources other than debt unless otherwise specified
(5) Assumes 80% of new project costs funded through new debt issues unless otherwise specified
(6) Line 11 of the Max Fee Table Report
(7) Assumes new debt issued in equal annual amounts
(8) Estimated interest cost provided by City's Financial Advisor on September 28, 2016
(9) Assumes new debt proceeds expended over a 2-year timeframe with Year 10 bond proceeds spent fully in tenth year; Non-debt funded capital expenditures made in equal annual amounts

City of Garland 2016 Roadway Impact Fee Study

Capital Improvement Plan for Impact Fees

Appendix E - Impact Fee Calculation Assumptions

Service Area C

I. New Debt Service Detail

Year	Series 1	Series 2	Series 3	Series 4	Series 5	Series 6	Series 7	Series 8	Series 9	Series 10	Total Annual New Debt Service
1	$ 102,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 102,211
2	102,211	109,422	-	-	-	-	-	-	-	-	211,632
3	102,211	109,422	111,882	-	-	-	-	-	-	-	323,515
4	102,211	109,422	111,882	114,371	-	-	-	-	-	-	437,886
5	102,211	109,422	111,882	114,371	116,887	-	-	-	-	-	554,773
6	102,211	109,422	111,882	114,371	116,887	119,431	-	-	-	-	674,204
7	102,211	109,422	111,882	114,371	116,887	119,431	122,001	-	-	-	796,205
8	102,211	109,422	111,882	114,371	116,887	119,431	122,001	124,598	-	-	920,803
9	102,211	109,422	111,882	114,371	116,887	119,431	122,001	124,598	127,222	-	1,048,025
10	102,211	109,422	111,882	114,371	116,887	119,431	122,001	124,598	127,222	129,871	1,177,896
11	102,211	109,422	111,882	114,371	116,887	119,431	122,001	124,598	127,222	129,871	1,177,896
12	102,211	109,422	111,882	114,371	116,887	119,431	122,001	124,598	127,222	129,871	1,177,896
13	102,211	109,422	111,882	114,371	116,887	119,431	122,001	124,598	127,222	129,871	1,177,896
14	102,211	109,422	111,882	114,371	116,887	119,431	122,001	124,598	127,222	129,871	1,177,896
15	102,211	109,422	111,882	114,371	116,887	119,431	122,001	124,598	127,222	129,871	1,177,896
16	102,211	109,422	111,882	114,371	116,887	119,431	122,001	124,598	127,222	129,871	1,177,896
17	102,211	109,422	111,882	114,371	116,887	119,431	122,001	124,598	127,222	129,871	1,177,896
18	102,211	109,422	111,882	114,371	116,887	119,431	122,001	124,598	127,222	129,871	1,177,896
19	102,211	109,422	111,882	114,371	116,887	119,431	122,001	124,598	127,222	129,871	1,177,896
20	102,211	109,422	111,882	114,371	116,887	119,431	122,001	124,598	127,222	129,871	1,177,896
21	-	109,422	111,882	114,371	116,887	119,431	122,001	124,598	127,222	129,871	1,075,685
22	-	-	111,882	114,371	116,887	119,431	122,001	124,598	127,222	129,871	966,263
23	-	-	-	114,371	116,887	119,431	122,001	124,598	127,222	129,871	854,381
24	-	-	-	-	116,887	119,431	122,001	124,598	127,222	129,871	740,010
25	-	-	-	-	-	119,431	122,001	124,598	127,222	129,871	623,123
26	-	-	-	-	-	-	122,001	124,598	127,222	129,871	503,692
27	-	-	-	-	-	-	-	124,598	127,222	129,871	381,691
28	-	-	-	-	-	-	-	-	127,222	129,871	257,093
29	-	-	-	-	-	-	-	-	-	129,871	129,871
	$ 2,044,214	$ 2,188,436	$ 2,237,648	$ 2,287,419	$ 2,337,743	$ 2,388,613	$ 2,440,023	$ 2,491,966	$ 2,544,435	$ 2,597,423	$ 23,557,919

City of Garland 2016 Roadway Impact Fee Study

Capital Improvement Plan for Impact Fees

Appendix E - Impact Fee Calculation Assumptions

II. Summary of Annual Expenses

Year	New Annual Debt Service[1]	Annual Capital Expenditures[2]	Annual Bond Proceeds[2]	Existing Annual Debt Service[3]	Annual Credit[4]	Total Expense
1	$ 102,211	$ 1,473,520	$ (1,517,829)	$ 143,934	$ (407)	$ 201,429
2	211,632	1,964,694	(1,517,829)	145,060	(1,179)	802,379
3	323,515	1,964,694	(1,517,829)	144,744	(2,318)	912,807
4	437,886	1,964,694	(1,517,829)	144,702	(3,838)	1,025,614
5	554,773	1,964,694	(1,517,829)	144,940	(5,753)	1,140,825
6	674,204	1,964,694	(1,517,829)	144,923	(8,069)	1,257,923
7	796,205	1,964,694	(1,517,829)	144,798	(10,796)	1,377,072
8	920,803	1,964,694	(1,517,829)	144,833	(13,950)	1,498,551
9	1,048,025	1,964,694	(1,517,829)	132,776	(17,361)	1,610,304
10	1,177,896	2,455,867	(1,517,829)	132,710	(21,376)	2,227,269
11	1,177,896	-	-	132,769	-	1,310,665
12	1,177,896	-	-	132,840	-	1,310,736
13	1,177,896	-	-	130,521	-	1,308,417
14	1,177,896	-	-	130,831	-	1,308,727
15	1,177,896	-	-	130,529	-	1,308,425
16	1,177,896	-	-	130,914	-	1,308,810
17	1,177,896	-	-	130,789	-	1,308,685
18	1,177,896	-	-	130,557	-	1,308,453
19	1,177,896	-	-	-	-	1,177,896
20	1,177,896	-	-	-	-	1,177,896
21	1,075,685	-	-	-	-	1,075,685
22	966,263	-	-	-	-	966,263
23	854,381	-	-	-	-	854,381
24	740,010	-	-	-	-	740,010
25	623,123	-	-	-	-	623,123
26	503,692	-	-	-	-	503,692
27	381,691	-	-	-	-	381,691
28	257,093	-	-	-	-	257,093
29	129,871	-	-	-	-	129,871
	$ 23,557,919	$ 19,646,939	$ (15,178,290)	$ 2,473,171	$ (85,047)	$ 30,414,693

City of Garland 2016 Roadway Impact Fee Study

Capital Improvement Plan for Impact Fees

Appendix E - Impact Fee Calculation Assumptions

III. Summary of Principal Paid to Date for Existing Debt[3]

	Principal Paid on Issuance 2005	Principal Paid on Debt 2008	Principal Paid on Debt 2011	Principal Paid on Debt 2015	Total Principal Paid to Date
2005	1,408	-	-	-	1,408
2006	4,625	-	-	-	4,625
2007	4,876	-	-	-	4,876
2008	5,128	-	-	-	5,128
2009	5,379	7	-	-	5,386
2010	5,630	10	-	-	5,640
2011	5,932	11	-	-	5,942
2012	6,234	15	-	-	6,249
2013	6,585	16	-	-	6,601
2014	6,937	17	396	-	7,350
2015	7,289	17	396	26,599	34,302
2016	7,691	18	396	61,932	70,038
	$ 67,714	$ 110	$ 1,189	$ 88,531	$ 157,544

IV. Summary of Debt Financing

Existing Debt Funded Project Costs[5]	$ 1,895,110
-Less Principal Paid to Date	157,544
Outstanding Debt Principal	1,737,565
New Project Costs Debt Principal[5]	15,178,290
Principal Component	**$ 16,915,855**

(1) Appendix E - Service Area C, Page 2
(2) Appendix E - Service Area C, Page 1
(3) Prior Debt Funding Provided by City Staff
(4) Appendix E - Service Area C, Page 8
(5) Appendix E - Service Area C, Page 1

City of Garland 2016 Roadway Impact Fee Study

Capital Improvement Plan for Impact Fees

Appendix E - Impact Fee Calculation Assumptions

Service Area C

Year	Impact Fee	Service Units	Impact Fee Revenue	Annual Expenses	Sub-Total	Accumulated Interest	Estimated Fund Balance
Initial							$ 502,053
1	$ 2,661	1,084	$ 2,884,280	$ 201,429	$ 2,682,851	$ 8,314	3,193,218
2	2,661	1,084	2,884,280	802,379	2,081,901	19,096	5,294,215
3	2,661	1,084	2,884,280	912,807	1,971,473	28,323	7,294,011
4	2,661	1,084	2,884,280	1,025,614	1,858,666	37,087	9,189,764
5	2,661	1,084	2,884,280	1,140,825	1,743,455	45,377	10,978,597
6	2,661	1,084	2,884,280	1,257,923	1,626,356	53,181	12,658,134
7	2,661	1,084	2,884,280	1,377,072	1,507,208	60,487	14,225,829
8	2,661	1,084	2,884,280	1,498,551	1,385,729	67,283	15,678,841
9	2,661	1,084	2,884,280	1,610,304	1,273,975	73,584	17,026,401
10	2,661	1,084	2,884,280	2,227,269	657,011	78,271	17,761,683
11	-	-	-	1,310,665	(1,310,665)	77,150	16,528,167
12	-	-	-	1,310,736	(1,310,736)	71,586	15,289,018
13	-	-	-	1,308,417	(1,308,417)	66,003	14,046,604
14	-	-	-	1,308,727	(1,308,727)	60,399	12,798,276
15	-	-	-	1,308,425	(1,308,425)	54,770	11,544,621
16	-	-	-	1,308,810	(1,308,810)	49,115	10,284,925
17	-	-	-	1,308,685	(1,308,685)	43,434	9,019,674
18	-	-	-	1,308,453	(1,308,453)	37,728	7,748,949
19	-	-	-	1,177,896	(1,177,896)	32,292	6,603,345
20	-	-	-	1,177,896	(1,177,896)	27,125	5,452,574
21	-	-	-	1,075,685	(1,075,685)	22,165	4,399,054
22	-	-	-	966,263	(966,263)	17,661	3,450,451
23	-	-	-	854,381	(854,381)	13,635	2,609,705
24	-	-	-	740,010	(740,010)	10,101	1,879,796
25	-	-	-	623,123	(623,123)	7,073	1,263,746
26	-	-	-	503,692	(503,692)	4,564	764,617
27	-	-	-	381,691	(381,691)	2,588	385,514
28	-	-	-	257,093	(257,093)	1,159	129,580
29	-	-	-	129,871	(129,871)	292	0
			$ 28,842,799	$ 30,414,693		$ 1,069,842	

City of Garland 2016 Roadway Impact Fee Study

Capital Improvement Plan for Impact Fees

Appendix E - Impact Fee Calculation Assumptions

Service Area C

Year	Number of Years to End of Period	Future Value Escalation: Interest Rate Factor	Future Value Escalation: Recovery Fee Factor	Annual Service Units: Actual	Annual Service Units: Escalated	Annual Expense: Actual	Annual Expense: Escalated
1	29	1.1368	1.0000	1,084	1,232	$ 201,429	$ 228,991
2	28	1.1317	1.0000	1,084	1,227	802,379	908,077
3	27	1.1267	1.0000	1,084	1,221	912,807	1,028,414
4	26	1.1216	1.0000	1,084	1,216	1,025,614	1,150,321
5	25	1.1166	1.0000	1,084	1,210	1,140,825	1,273,795
6	24	1.1115	1.0000	1,084	1,205	1,257,923	1,398,236
7	23	1.1066	1.0000	1,084	1,200	1,377,072	1,523,802
8	22	1.1016	1.0000	1,084	1,194	1,498,551	1,650,781
9	21	1.0966	1.0000	1,084	1,189	1,610,304	1,765,922
10	20	1.0917	1.0000	1,084	1,183	2,227,269	2,431,543
11	19	1.0868	1.0000	-	-	1,310,665	1,424,448
12	18	1.0819	1.0000	-	-	1,310,736	1,418,129
13	17	1.0771	1.0000	-	-	1,308,417	1,409,265
14	16	1.0722	1.0000	-	-	1,308,727	1,403,270
15	15	1.0674	1.0000	-	-	1,308,425	1,396,648
16	14	1.0626	1.0000	-	-	1,308,810	1,390,786
17	13	1.0579	1.0000	-	-	1,308,685	1,384,410
18	12	1.0531	1.0000	-	-	1,308,453	1,377,949
19	11	1.0484	1.0000	-	-	1,177,896	1,234,889
20	10	1.0437	1.0000	-	-	1,177,896	1,229,344
21	9	1.0390	1.0000	-	-	1,075,685	1,117,629
22	8	1.0343	1.0000	-	-	966,263	999,433
23	7	1.0297	1.0000	-	-	854,381	879,742
24	6	1.0251	1.0000	-	-	740,010	758,555
25	5	1.0205	1.0000	-	-	623,123	635,871
26	4	1.0159	1.0000	-	-	503,692	511,689
27	3	1.0113	1.0000	-	-	381,691	386,010
28	2	1.0068	1.0000	-	-	257,093	258,835
29	1	1.0023	1.0000	-	-	129,871	130,164
					12,077	$ 30,414,693	$ 32,706,948

Total Escalated Expense for Entire Period	$	32,706,948
Total Escalated Service Units		12,077
Impact Fee for Service Area C	**$**	**2,661**

City of Garland 2016 Roadway Impact Fee Study

Capital Improvement Plan for Impact Fees

Appendix E - Impact Fee Calculation Assumptions

Service Area C

Impact Fee Project Name[1]	Impact Fee Project No.[1]	Total Project Cost [1]	Percent in Service Area [1]	Cost in Service Area[1]	Impact Fee Recoverable Cost[2]	Debt Funded[3] Existing	Debt Funded[3] Proposed	Non-Debt Funded[3]	Impact Fee Recoverable Cost
Castle Dr (1)	C-1	$ 953,000	100%	$ 953,000	$ 489,096	$ -	$ 391,277	$ 97,819	$ 489,096
Castle Dr (2)	C-2	2,390,000	100%	2,390,000	1,226,589	-	981,271	245,318	1,226,589
Castle Dr (3)	C-3	2,424,000	100%	2,424,000	1,244,038	-	995,230	248,808	1,244,038
Castle Dr (4)	C-4	5,536,000	100%	5,536,000	2,841,169	-	2,272,935	568,234	2,841,169
Castle Dr (5)	C-5	2,659,000	50%	1,329,500	682,322	-	545,858	136,464	682,322
Castle Dr (6)	C-6	4,433,000	50%	2,216,500	1,137,545	-	910,036	227,509	1,137,545
Crist Rd	C-7	4,436,000	100%	4,436,000	2,276,631	-	1,821,304	455,326	2,276,631
Firewheel Parkway (2)	C-8	6,292,000	100%	6,292,000	3,229,161	-	2,583,329	645,832	3,229,161
Pleasant Valley Rd (1)	C-9	10,773,000	100%	10,773,000	5,528,887	-	4,423,109	1,105,777	5,528,887
E. Miller Rd	C-10,D-5	955,000	50%	477,500	245,061	-	196,049	49,012	245,061
Pleasant Valley Rd (2)	C-11	3,603,239	100%	3,603,239	1,849,243	1,822,042	-	27,202	1,849,243
Miller Rd Bridge	C-12,D-21	2,743,883	50%	1,371,942	704,104	73,068	-	631,036	704,104
Bottleneck Study Improvements - Service Area C		141,000	100%	141,000	72,364	-	57,891	14,473	72,364
Study Costs		15,840	100%	15,840	15,840	-	-	15,840	15,840
Total		**$ 47,354,962**		**$ 41,959,521**	**$ 21,542,049**	**$ 1,895,110**	**$ 15,178,290**	**$ 4,468,650**	**$ 21,542,049**

(1) 2016 Roadway Impact Fee Study As Assigned to Service Area, Appendix A

(2) Line 11 of the Max Fee Table Report

(3) Based on Contributions by Project and Planned Future Debt Financing

City of Garland 2016 Roadway Impact Fee Study

Capital Improvement Plan for Impact Fees

Appendix E - Impact Fee Calculation Assumptions

Service Area C

2016 Vehicle Miles (All Service Areas) [1]	653,797	
Ten Year Growth in Vehicle Miles (Service Area C) [2]	10,840	
	10	years
Annual Growth in Vehicle Miles	1,084	

	1	2	3	4	5	6	7	8	9	10	Total
Total Debt Service Eligible for Impact Fees	$ 246,145	$ 356,693	$ 468,259	$ 582,588	$ 699,713	$ 819,127	$ 941,003	$ 1,065,636	$ 1,180,801	$ 1,310,606	$ 7,670,569
2016 Vehicle Miles plus Service Area C Growth	654,881	655,965	657,049	658,133	659,217	660,301	661,385	662,469	663,553	664,637	
Total Debt Service Eligible for Impact Fees per Vehicle Mile	$ 0.38	$ 0.54	$ 0.71	$ 0.89	$ 1.06	$ 1.24	$ 1.42	$ 1.61	$ 1.78	$ 1.97	
Annual Growth in Service Area C Vehicle Miles (Cumulative)	1,084	2,168	3,252	4,336	5,420	6,504	7,588	8,672	9,756	10,840	
Annual Ad Valorem Revenue Generated by Vehicle Miles for Debt Service Eligible for Impact Fees	$ 407	$ 1,179	$ 2,318	$ 3,838	$ 5,753	$ 8,069	$ 10,796	$ 13,950	$ 17,361	$ 21,376	$ 85,047

Credit Amount **$ 85,047**

(1) Engineer's calculation

(2) Line 8 of the Max Fee Table Report

City of Garland 2016 Roadway Impact Fee Study

Capital Improvement Plan for Impact Fees

Appendix E - Impact Fee Calculation Assumptions

Service Area D

I. General Assumptions

Annual Interest Rate on Deposits[1]	0.451%
Annual Service Unit Growth[2]	1,417
Existing Fund Balance[3]	1,113,622

Portion of Projects Funded by Existing Debt[3]	$ 2,687,484
Non-debt Funded New Project Cost[4]	3,245,686
New Project Cost Funded Through New Debt[5]	10,495,546
Total Recoverable Project Cost[6]	**$ 16,428,715**

II. New Debt Issues Assumptions

Year	Principal[7]	Interest[8]	Term
1	$ 1,049,555	3.02%	20
2	1,049,555	3.77%	20
3	1,049,555	4.02%	20
4	1,049,555	4.27%	20
5	1,049,555	4.52%	20
6	1,049,555	4.77%	20
7	1,049,555	5.02%	20
8	1,049,555	5.27%	20
9	1,049,555	5.52%	20
10	1,049,555	5.77%	20
Total	**$ 10,495,546**		

III. Capital Expenditure Assumptions

Year	Annual Capital Expenditures[9]
1	$ 1,030,592
2	1,374,123
3	1,374,123
4	1,374,123
5	1,374,123
6	1,374,123
7	1,374,123
8	1,374,123
9	1,374,123
10	1,717,654
Total	**$ 13,741,231**

(1) Current Yield for GO Interest and Sinking Fund as of June 30, 2016
(2) Derived from the 10-year Growth Projections Report, Table 7
(3) Totals provided by City Staff on September 23, 2016
(4) Assumes 20% of new project costs funded through sources other than debt unless otherwise specified
(5) Assumes 80% of new project costs funded through new debt issues unless otherwise specified
(6) Line 11 of the Max Fee Table Report
(7) Assumes new debt issued in equal annual amounts
(8) Estimated interest cost provided by City's Financial Advisor on September 28, 2016
(9) Assumes new debt proceeds expended over a 2-year timeframe with Year 10 bond proceeds spent fully in tenth year; Non-debt funded capital expenditures made in equal annual amounts

City of Garland 2016 Roadway Impact Fee Study

Capital Improvement Plan for Impact Fees

Appendix E - Impact Fee Calculation Assumptions

Service Area D

I. New Debt Service Detail

Year	Series 1	Series 2	Series 3	Series 4	Series 5	Series 6	Series 7	Series 8	Series 9	Series 10	Total Annual New Debt Service
1	$ 70,677	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 70,677
2	70,677	75,663	-	-	-	-	-	-	-	-	146,340
3	70,677	75,663	77,365	-	-	-	-	-	-	-	223,705
4	70,677	75,663	77,365	79,086	-	-	-	-	-	-	302,791
5	70,677	75,663	77,365	79,086	80,826	-	-	-	-	-	383,617
6	70,677	75,663	77,365	79,086	80,826	82,584	-	-	-	-	466,201
7	70,677	75,663	77,365	79,086	80,826	82,584	84,362	-	-	-	550,563
8	70,677	75,663	77,365	79,086	80,826	82,584	84,362	86,158	-	-	636,721
9	70,677	75,663	77,365	79,086	80,826	82,584	84,362	86,158	87,972	-	724,692
10	70,677	75,663	77,365	79,086	80,826	82,584	84,362	86,158	87,972	89,804	814,496
11	70,677	75,663	77,365	79,086	80,826	82,584	84,362	86,158	87,972	89,804	814,496
12	70,677	75,663	77,365	79,086	80,826	82,584	84,362	86,158	87,972	89,804	814,496
13	70,677	75,663	77,365	79,086	80,826	82,584	84,362	86,158	87,972	89,804	814,496
14	70,677	75,663	77,365	79,086	80,826	82,584	84,362	86,158	87,972	89,804	814,496
15	70,677	75,663	77,365	79,086	80,826	82,584	84,362	86,158	87,972	89,804	814,496
16	70,677	75,663	77,365	79,086	80,826	82,584	84,362	86,158	87,972	89,804	814,496
17	70,677	75,663	77,365	79,086	80,826	82,584	84,362	86,158	87,972	89,804	814,496
18	70,677	75,663	77,365	79,086	80,826	82,584	84,362	86,158	87,972	89,804	814,496
19	70,677	75,663	77,365	79,086	80,826	82,584	84,362	86,158	87,972	89,804	814,496
20	70,677	75,663	77,365	79,086	80,826	82,584	84,362	86,158	87,972	89,804	814,496
21	-	75,663	77,365	79,086	80,826	82,584	84,362	86,158	87,972	89,804	743,819
22	-	-	77,365	79,086	80,826	82,584	84,362	86,158	87,972	89,804	668,156
23	-	-	-	79,086	80,826	82,584	84,362	86,158	87,972	89,804	590,791
24	-	-	-	-	80,826	82,584	84,362	86,158	87,972	89,804	511,705
25	-	-	-	-	-	82,584	84,362	86,158	87,972	89,804	430,880
26	-	-	-	-	-	-	84,362	86,158	87,972	89,804	348,295
27	-	-	-	-	-	-	-	86,158	87,972	89,804	263,933
28	-	-	-	-	-	-	-	-	87,972	89,804	177,776
29	-	-	-	-	-	-	-	-	-	89,804	89,804
	$ 1,413,541	$ 1,513,268	$ 1,547,298	$ 1,581,714	$ 1,616,512	$ 1,651,688	$ 1,687,237	$ 1,723,155	$ 1,759,436	$ 1,796,077	$ 16,289,926

City of Garland 2016 Roadway Impact Fee Study

Capital Improvement Plan for Impact Fees

Appendix E - Impact Fee Calculation Assumptions

II. Summary of Annual Expenses

Year	New Annual Debt Service[1]	Annual Capital Expenditures[2]	Annual Bond Proceeds[2]	Existing Annual Debt Service[3]	Annual Credit[4]	Total Expense
1	$ 70,677	$ 1,030,592	$ (1,049,555)	$ 200,319	$ (586)	$ 251,448
2	146,340	1,374,123	(1,049,555)	200,676	(1,498)	670,088
3	223,705	1,374,123	(1,049,555)	200,218	(2,739)	745,754
4	302,791	1,374,123	(1,049,555)	200,178	(4,323)	823,214
5	383,617	1,374,123	(1,049,555)	200,499	(6,262)	902,422
6	466,201	1,374,123	(1,049,555)	200,496	(8,559)	982,707
7	550,563	1,374,123	(1,049,555)	200,293	(11,222)	1,064,203
8	636,721	1,374,123	(1,049,555)	200,340	(14,267)	1,147,363
9	724,692	1,374,123	(1,049,555)	190,489	(17,511)	1,222,240
10	814,496	1,717,654	(1,049,555)	190,434	(21,319)	1,651,711
11	814,496	-	-	190,521	-	1,005,017
12	814,496	-	-	190,622	-	1,005,119
13	814,496	-	-	190,347	-	1,004,844
14	814,496	-	-	190,799	-	1,005,295
15	814,496	-	-	190,359	-	1,004,855
16	814,496	-	-	190,921	-	1,005,417
17	814,496	-	-	190,738	-	1,005,235
18	814,496	-	-	190,400	-	1,004,896
19	814,496	-	-	-	-	814,496
20	814,496	-	-	-	-	814,496
21	743,819	-	-	-	-	743,819
22	668,156	-	-	-	-	668,156
23	590,791	-	-	-	-	590,791
24	511,705	-	-	-	-	511,705
25	430,880	-	-	-	-	430,880
26	348,295	-	-	-	-	348,295
27	263,933	-	-	-	-	263,933
28	177,776	-	-	-	-	177,776
29	89,804	-	-	-	-	89,804
	$ 16,289,926	$ 13,741,231	$ (10,495,546)	$ 3,508,652	$ (88,284)	$ 22,955,979

City of Garland 2016 Roadway Impact Fee Study

Capital Improvement Plan for Impact Fees

Appendix E - Impact Fee Calculation Assumptions

III. Summary of Principal Paid to Date for Existing Debt[3]

	Principal Paid on Issuance 2005	Principal Paid on Debt 2008	Principal Paid on Debt 2011	Principal Paid on Debt 2015	Total Principal Paid to Date
2005	1,147	-	-	-	1,147
2006	3,769	-	-	-	3,769
2007	3,974	-	-	-	3,974
2008	4,179	-	-	-	4,179
2009	4,384	-	-	-	4,384
2010	4,588	-	-	-	4,588
2011	4,834	-	-	-	4,834
2012	5,080	-	-	-	5,080
2013	5,367	-	-	-	5,367
2014	5,653	-	-	-	5,653
2015	5,940	-	-	38,791	44,731
2016	6,268	-	-	90,319	96,587
	$ 55,183	$ -	$ -	$ 129,110	$ 184,293

IV. Summary of Debt Financing

Existing Debt Funded Project Costs[5]	$ 2,687,484
-Less Principal Paid to Date	184,293
Outstanding Debt Principal	2,503,191
New Project Costs Debt Principal[5]	10,495,546
Principal Component	**$ 12,998,737**

(1) Appendix E - Service Area D, Page 2
(2) Appendix E - Service Area D, Page 1
(3) Prior Debt Funding Provided by City Staff
(4) Appendix E - Service Area D, Page 8
(5) Appendix E - Service Area D, Page 1

City of Garland 2016 Roadway Impact Fee Study

Capital Improvement Plan for Impact Fees

Appendix E - Impact Fee Calculation Assumptions

Service Area D

Year	Impact Fee	Service Units	Impact Fee Revenue	Annual Expenses	Sub-Total	Accumulated Interest	Estimated Fund Balance
Initial							$ 1,113,622
1	$ 1,486	1,417	$ 2,105,361	$ 251,448	$ 1,853,913	$ 9,203	2,976,738
2	1,486	1,417	2,105,361	670,088	1,435,273	16,662	4,428,672
3	1,486	1,417	2,105,361	745,754	1,359,607	23,039	5,811,318
4	1,486	1,417	2,105,361	823,214	1,282,146	29,100	7,122,565
5	1,486	1,417	2,105,361	902,422	1,202,939	34,835	8,360,339
6	1,486	1,417	2,105,361	982,707	1,122,654	40,237	9,523,229
7	1,486	1,417	2,105,361	1,064,203	1,041,157	45,298	10,609,684
8	1,486	1,417	2,105,361	1,147,363	957,998	50,010	11,617,692
9	1,486	1,417	2,105,361	1,222,240	883,121	54,387	12,555,200
10	1,486	1,417	2,105,361	1,651,711	453,649	57,647	13,066,496
11	-	-	-	1,005,017	(1,005,017)	56,664	12,118,142
12	-	-	-	1,005,119	(1,005,119)	52,386	11,165,410
13	-	-	-	1,004,844	(1,004,844)	48,090	10,208,656
14	-	-	-	1,005,295	(1,005,295)	43,774	9,247,135
15	-	-	-	1,004,855	(1,004,855)	39,439	8,281,718
16	-	-	-	1,005,417	(1,005,417)	35,083	7,311,385
17	-	-	-	1,005,235	(1,005,235)	30,708	6,336,858
18	-	-	-	1,004,896	(1,004,896)	26,313	5,358,275
19	-	-	-	814,496	(814,496)	22,329	4,566,108
20	-	-	-	814,496	(814,496)	18,756	3,770,368
21	-	-	-	743,819	(743,819)	15,327	3,041,876
22	-	-	-	668,156	(668,156)	12,212	2,385,932
23	-	-	-	590,791	(590,791)	9,428	1,804,570
24	-	-	-	511,705	(511,705)	6,985	1,299,849
25	-	-	-	430,880	(430,880)	4,891	873,860
26	-	-	-	348,295	(348,295)	3,156	528,721
27	-	-	-	263,933	(263,933)	1,789	266,577
28	-	-	-	177,776	(177,776)	801	89,602
29	-	-	-	89,804	(89,804)	202	0
			$ 21,053,606	$ 22,955,979		$ 788,751	

City of Garland 2016 Roadway Impact Fee Study

Capital Improvement Plan for Impact Fees

Appendix E - Impact Fee Calculation Assumptions

Service Area D

Year	Number of Years to End of Period	Future Value Escalation: Interest Rate Factor	Future Value Escalation: Recovery Fee Factor	Annual Service Units: Actual	Annual Service Units: Escalated	Annual Expense: Actual	Annual Expense: Escalated
1	29	1.1368	1.0000	1,417	1,611	$ 251,448	$ 285,855
2	28	1.1317	1.0000	1,417	1,604	670,088	758,359
3	27	1.1267	1.0000	1,417	1,597	745,754	840,203
4	26	1.1216	1.0000	1,417	1,589	823,214	923,311
5	25	1.1166	1.0000	1,417	1,582	902,422	1,007,605
6	24	1.1115	1.0000	1,417	1,575	982,707	1,092,321
7	23	1.1066	1.0000	1,417	1,568	1,064,203	1,177,597
8	22	1.1016	1.0000	1,417	1,561	1,147,363	1,263,917
9	21	1.0966	1.0000	1,417	1,554	1,222,240	1,340,355
10	20	1.0917	1.0000	1,417	1,547	1,651,711	1,803,198
11	19	1.0868	1.0000	-	-	1,005,017	1,092,266
12	18	1.0819	1.0000	-	-	1,005,119	1,087,472
13	17	1.0771	1.0000	-	-	1,004,844	1,082,293
14	16	1.0722	1.0000	-	-	1,005,295	1,077,918
15	15	1.0674	1.0000	-	-	1,004,855	1,072,609
16	14	1.0626	1.0000	-	-	1,005,417	1,068,390
17	13	1.0579	1.0000	-	-	1,005,235	1,063,400
18	12	1.0531	1.0000	-	-	1,004,896	1,058,269
19	11	1.0484	1.0000	-	-	814,496	853,906
20	10	1.0437	1.0000	-	-	814,496	850,072
21	9	1.0390	1.0000	-	-	743,819	772,822
22	8	1.0343	1.0000	-	-	668,156	691,092
23	7	1.0297	1.0000	-	-	590,791	608,328
24	6	1.0251	1.0000	-	-	511,705	524,529
25	5	1.0205	1.0000	-	-	430,880	439,695
26	4	1.0159	1.0000	-	-	348,295	353,825
27	3	1.0113	1.0000	-	-	263,933	266,920
28	2	1.0068	1.0000	-	-	177,776	178,980
29	1	1.0023	1.0000	-	-	89,804	90,006
					15,788	$ 22,955,979	$ 24,725,516

Total Escalated Expense for Entire Period	$	24,725,516
Total Escalated Service Units		15,788
Impact Fee for Service Area D	**$**	**1,486**

City of Garland 2016 Roadway Impact Fee Study

Capital Improvement Plan for Impact Fees

Appendix E - Impact Fee Calculation Assumptions

Service Area D

Impact Fee Project Name[1]	Impact Fee Project No.[1]	Total Project Cost [1]	Percent in Service Area [1]	Cost in Service Area[1]	Impact Fee Recoverable Cost[2]	Debt Funded[3] Existing	Debt Funded[3] Proposed	Non-Debt Funded[3]	Impact Fee Recoverable Cost
Bobtown Rd (1)	D-1	$ 929,000	100%	$ 929,000	$ 388,547	$ -	$ 310,838	$ 77,709	$ 388,547
Bobtown Rd (2)	D-2	1,779,000	100%	1,779,000	744,053	-	595,243	148,811	744,053
Bobtown Rd (3)	D-3	1,995,000	100%	1,995,000	834,394	-	667,515	166,879	834,394
Bobtown Rd (4)	D-4	2,654,000	50%	1,327,000	555,008	-	444,006	111,002	555,008
E. Miller Rd	C-10,D-5	955,000	50%	477,500	199,711	-	159,769	39,942	199,711
E. Oates Rd (Future)	D-6	3,219,000	100%	3,219,000	1,346,323	-	1,077,058	269,265	1,346,323
La Prada Dr	D-7	567,000	50%	283,500	118,572	-	94,857	23,714	118,572
Locust Grove Rd	D-8	2,859,000	100%	2,859,000	1,195,755	-	956,604	239,151	1,195,755
Lyons Rd (1)	D-9	5,014,000	100%	5,014,000	2,097,068	-	1,677,654	419,414	2,097,068
Lyons Rd (2)	D-10	1,366,000	100%	1,366,000	571,319	-	457,055	114,264	571,319
Lyons Rd (Future) (3)	D-11	2,811,000	100%	2,811,000	1,175,680	-	940,544	235,136	1,175,680
Rosehill Rd (1)	D-12	1,364,000	100%	1,364,000	570,483	-	456,386	114,097	570,483
Rosehill Rd (2)	D-13	513,000	100%	513,000	214,558	-	171,647	42,912	214,558
Rowlett Rd (1)	D-14	1,254,000	100%	1,254,000	524,476	-	419,581	104,895	524,476
Rowlett Rd (2)	D-15	1,781,000	100%	1,781,000	744,890	-	595,912	148,978	744,890
Rowlett Rd (3)	D-16	2,486,000	100%	2,486,000	1,039,751	-	831,801	207,950	1,039,751
S. Country Club Rd	D-17	599,000	100%	599,000	250,527	-	200,422	50,105	250,527
Zion Rd	D-18	1,075,000	100%	1,075,000	449,611	-	359,689	89,922	449,611
Northwest Hwy	D-19	2,904,782	100%	2,904,782	1,214,903	1,214,903	-	-	1,214,903
Dairy Rd	D-20	3,597,758	100%	3,597,758	1,504,735	1,413,035	-	91,701	1,504,735
Miller Rd Bridge	C-12,D-21	2,743,883	50%	1,371,942	573,804	59,546	-	514,258	573,804
Bottleneck Study Improvements - Service Area D	Various	236,000	100%	236,000	98,705	-	78,964	19,741	98,705
Study Costs		15,840	100%	15,840	15,840	-	-	15,840	15,840
Total		**$ 42,718,263**		**$ 39,258,322**	**$ 16,428,715**	**$ 2,687,484**	**$ 10,495,546**	**$ 3,245,686**	**$ 16,428,715**

(1) 2016 Roadway Impact Fee Study As Assigned to Service Area, Appendix A

(2) Line 11 of the Max Fee Table Report

(3) Based on Contributions by Project and Planned Future Debt Financing

City of Garland 2016 Roadway Impact Fee Study

Capital Improvement Plan for Impact Fees

Appendix E - Impact Fee Calculation Assumptions

Service Area D

2016 Vehicle Miles (All Service Areas) [1]	653,797	
Ten Year Growth in Vehicle Miles (Service Area D) [2]	14,170	
	10	years
Annual Growth in Vehicle Miles	1,417	

	1	2	3	4	5	6	7	8	9	10	Total
Total Debt Service Eligible for Impact Fees	$ 270,996	$ 347,017	$ 423,924	$ 502,969	$ 584,116	$ 666,697	$ 750,856	$ 837,061	$ 915,182	$ 1,004,931	$ 6,303,748
2016 Vehicle Miles plus Service Area D Growth	655,214	656,631	658,048	659,465	660,882	662,300	663,717	665,134	666,551	667,968	
Total Debt Service Eligible for Impact Fees per Vehicle Mile	$ 0.41	$ 0.53	$ 0.64	$ 0.76	$ 0.88	$ 1.01	$ 1.13	$ 1.26	$ 1.37	$ 1.50	
Annual Growth in Service Area D Vehicle Miles (Cumulative)	1,417	2,834	4,251	5,668	7,085	8,502	9,919	11,336	12,753	14,170	
Annual Ad Valorem Revenue Generated by Vehicle Miles for Debt Service Eligible for Impact Fees	$ 586	$ 1,498	$ 2,739	$ 4,323	$ 6,262	$ 8,559	$ 11,222	$ 14,267	$ 17,511	$ 21,319	$ 88,284

Credit Amount **$ 88,284**

(1) Engineer's calculation

(2) Line 8 of the Max Fee Table Report

CITY OF GARLAND, TEXAS
WATER IMPACT FEE STUDY
FINAL DRAFT

GARLAND

TEXAS MADE HERE

October 2016

Prepared for the City of Garland

Prepared by:

Kimley-Horn and Associates, Inc.

12750 Merit Drive, Suite 1000

Dallas, TX 75251

Phone 972-770-1300

TBPE Firm Registration Number: F-928

Project Number: 063551021

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EXECUTIVE SUMMARY

This study was performed to update the City of Garland's (City) water system impact fees. The implementation of an impact fee is a way to shift a portion of the burden of paying for new facilities onto new development.

Capital Improvements to elements of the water system, including storage facilities, pumping facilities, and the distribution network itself, were provided by the City. Population and land use projections were developed by Freese and Nichols, Inc.

Generally, new water infrastructure is designed beyond the 10-year requirements of the Impact Fee; however, Texas' impact fee law (Chapter 395 of the *Local Government Code*) only allows recovery of costs to serve the 10-year planning period. A portion of the remaining costs past the 10-year window may be recovered as a result of impact fee updates in the future.

The impact fee law defines a service unit as "a standardized measure of consumption, use, generation, or discharge attributable to an individual unit of development calculated in accordance with generally accepted engineering or planning standards and based on historical data and trends applicable to the political subdivision in which the individual unit of development is located during the previous 10 years". For the purpose of this report, the City defines a service unit as a unit of development that consumes the amount of water requiring a standard 5/8" x 3/4" meter. For developments that require a different size meter, a service unit equivalent has been determined as a multiplier of the 5/8" x 3/4" meter based on its required operating capacity. These service unit equivalency factors and associated maximum assessable impact fees are shown in Table 1.

After analysis of the City's 10-year growth projections and the associated demand values, 3,270 additional service units will need water by the year 2026. Based on these additional service units and recoverable costs calculated from the City's Capital Improvements Plan, the City may assess a maximum of $593 per service unit. Support and calculations for these results are included in the following report.

Table 1: Maximum Assessable Water Impact Fee for Commonly Used Meters

Meter Size*	Maximum Continuous Operating Capacity (GPM)**	Service Unit Equivalent	Maximum Assessable Fee ($)
5/8"x 3/4" PD	10	1	593
3/4" PD	15	1.5	890
1" PD	25	2.5	1,483
1 1/2" PD	50	5	2,965
2" PD	80	8	4,744
2" Compound	80	8	4,744
2" Turbine	160	16	9,488
3" Compound	175	17.5	10,378
3" Turbine	350	35	20,755
4" Compound	300	30	17,790
4" Turbine	650	65	38,545
6" Compound	675	67.5	40,028
6" Turbine	1,400	140	83,020
8" Compound	900	90	53,370
8" Turbine	2,400	240	142,320
10" Turbine	3,500	350	207,550

* PD = Positive Displacement Meter (Typical Residential Meter)
** Operating capacities obtained from American Water Works (AWWA) C-700, C-701 & C-702

Introduction

The City contracted Kimley-Horn and Associates, Inc. (Kimley-Horn) to update the existing water impact fee. The most recent water impact fee update was completed by Water Resources Management, LP in November, 2003. The purpose of the report is to satisfy the requirements of the law and provide the City with an updated impact fee capital improvements plan and associated impact fees.

For convenience and reference, the following is excerpted from Chapter 395 of the Local Government Code.

(a) The political subdivision shall use qualified professionals to prepare the capital improvements plan and to calculate the impact fee. The capital improvements plan must contain specific enumeration of the following items:

(1) a description of the existing capital improvements within the service area and the costs to upgrade, update, improve, expand, or replace the improvements to meet existing needs and usage and stricter safety, efficiency, environmental, or regulatory standards, which shall be prepared by a qualified professional engineer licensed to perform the professional engineering services in this state;

(2) an analysis of the total capacity, the level of current usage, and commitments for usage of capacity of the existing capital improvements, which shall be prepared by a qualified professional engineer licensed to perform the professional engineering services in this state;

(3) a description of all or the parts of the capital improvements or facility expansions and their costs necessitated by and attributable to new development in the service area based on the approved land use assumptions, which shall be prepared by a qualified professional engineer licensed to perform the professional engineering services in this state;

(4) a definitive table establishing the specific level or quantity of use, consumption, generation, or discharge of a service unit for each category of capital improvements or facility expansions and an equivalency or conversion table establishing the ratio of a service unit to various types of land uses, including residential, commercial, and industrial;

(5) the total number of projected service units necessitated by and attributable to new development within the service area based on the approved land use assumptions and calculated in accordance with generally accepted engineering or planning criteria;

(6) the projected demand for capital improvements or facility expansions required by new service units projected over a reasonable period of time, not to exceed 10 years; and

(7) a plan for awarding:

(A) a credit for the portion of ad valorem tax and utility service revenues generated by new service units during the program period that is used for the payment of improvements, including the payment of debt, that are included in the capital improvements plan; or

(B) in the alternative, a credit equal to 50 percent of the total projected cost of implementing the capital improvements plan.

The impact fees are based on recommended capital improvements and the population growth projections provided by the City.

The study process involved the following two tasks:

1. IMPACT FEE CAPITAL IMPROVEMENTS PLAN

This task involved developing cost projections for the capital improvement projects that the City has identified to be built in the 10-year planning window. It also involved estimating the utilized capacity of the existing and proposed capital improvement projects to determine their 10-year recoverable cost.

2. IMPACT FEE ANALYSIS AND REPORT

This task included calculating the additional service units and service unit equivalents. These values were then used to determine the impact fee per service unit and the maximum assessable impact fee by meter size.

Water Service Area

The build-out service area boundary for the City's water system is shown on the enclosed Water System Service Area Map (Exhibit 1). This area encompasses almost all the land within the City's limits and includes approximately 35,900 acres.

Water System Definitions

The following terms are used throughout this report.

Capital Improvements Plan (CIP)

Recommended improvement to the water distribution system based on growth and water demand projections.

Demand (Consumption)

Volume of water used for a given time period, typically measured in million gallons per day (mgd) or gallons per minute (gpm).

EST

Elevated Storage Tank

gpd

Gallons per day

GST

Ground Storage Tank

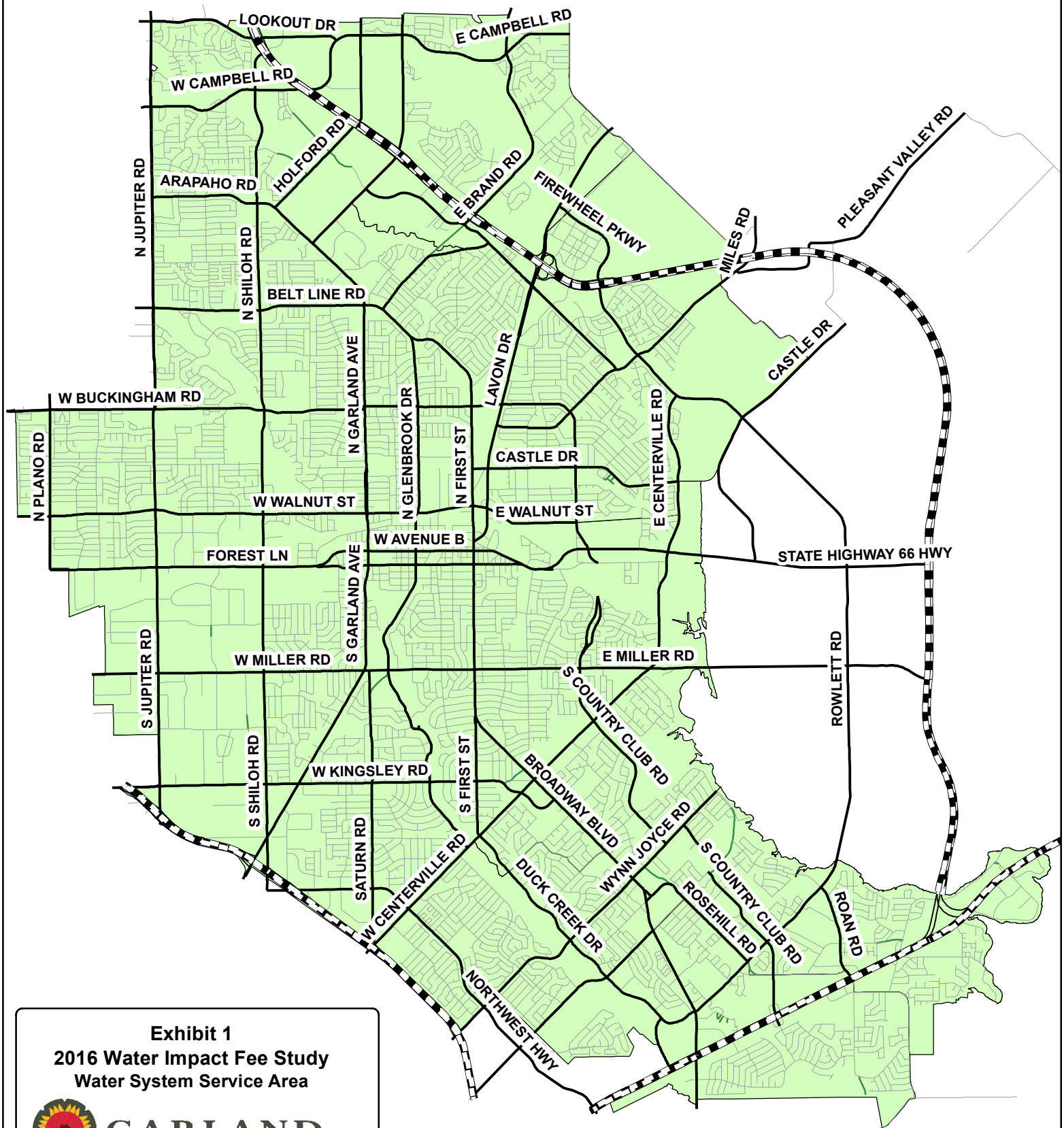

Exhibit 1
2016 Water Impact Fee Study
Water System Service Area

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0 0.5 1 2 Miles

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Kimley»Horn

October 2016

Legend

Water system Service Area

EXISTING WATER DISTRIBUTION SYSTEM

Infrastructure Eligible for Impact Fees

There is some existing City water system infrastructure which has additional capacity to serve future growth within the City's service area. A portion of the cost of this infrastructure is eligible for recoverable cost in the updated impact fee. Table 2 shows the recoverable cost of the projects that were determined to be eligible for impact fee consideration. These projects are also illustrated in Exhibit 2. The recoverable cost is calculated by multiplying the 2026-2016 capacity utilization percentage by the total project cost.

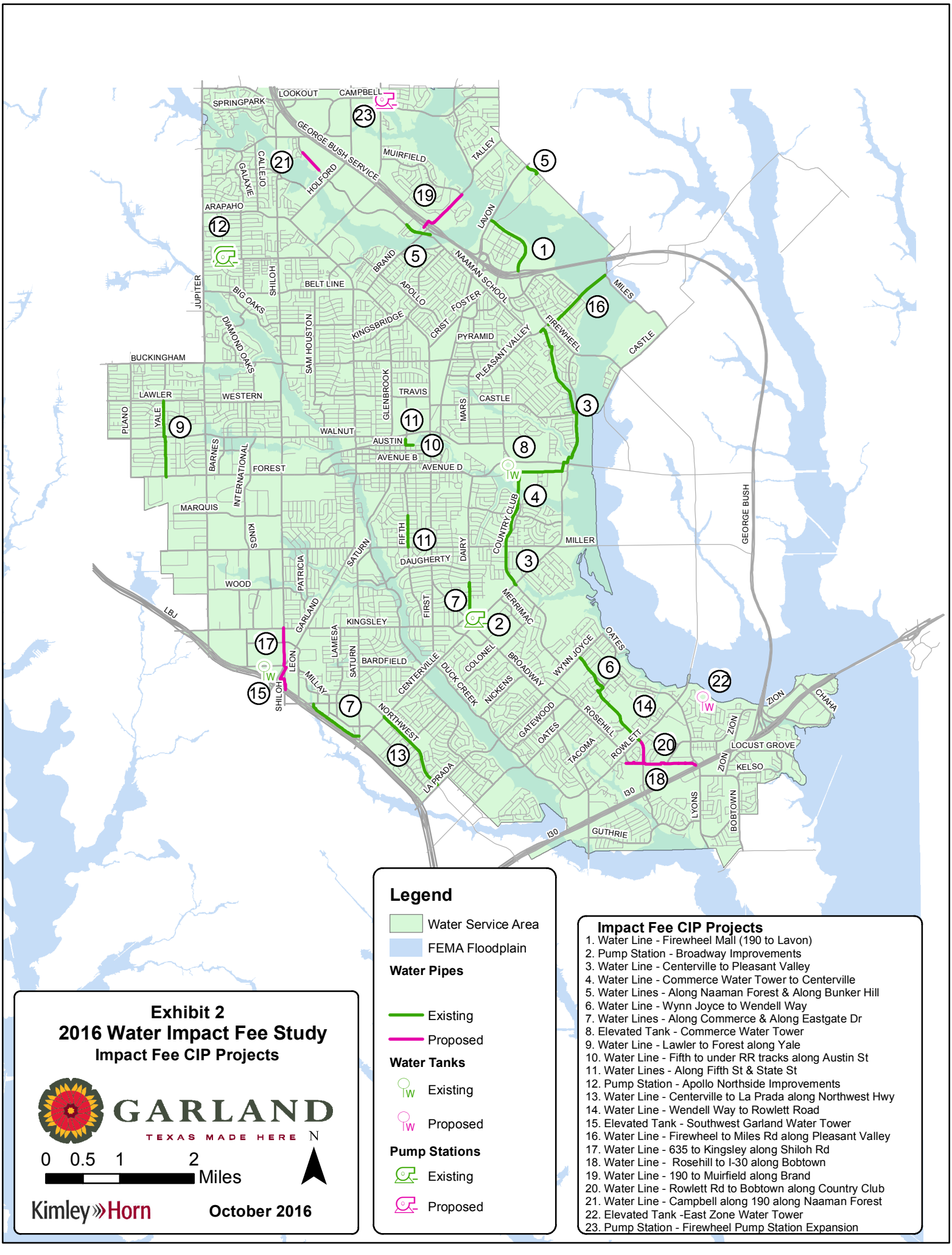
Table 2: Project Costs for Existing Infrastructure Eligible for Impact Fees

Project No.	Existing Improvement Description	2016 Capacity (% Utilization)	2026 Capacity (% Utilization)	2026 - 2016 Capacity (% Utilization)	Total Project Cost*	2026 Projected Recoverable Cost*
1	Water Line - Firewheel Mall (190 to Lavon)	81%	85%	4%	$ 542,360	$ 21,694
2	Pump Station - Broadway Improvements	81%	85%	4%	$ 5,429,318	$ 217,173
3	Water Line - Centerville to Pleasant Valley	81%	85%	4%	$ 4,596,873	$ 183,875
4	Water Line - Commerce Water Tower to Centerville	81%	85%	4%	$ 623,561	$ 24,942
5	Water Lines - Along Naaman Forest & Along Bunker Hill	81%	85%	4%	$ 1,397,000	$ 55,880
6	Water Line - Wynn Joyce to Wendell Way	81%	85%	4%	$ 500,000	$ 20,000
7	Water Lines - Along Commerce & Along Eastgate Dr	81%	85%	4%	$ 1,500,000	$ 60,000
8	Elevated Tank - Commerce Water Tower	81%	85%	4%	$ 4,978,939	$ 199,158
9	Water Line - Lawler to Forest along Yale	81%	85%	4%	$ 814,373	$ 32,575
10	Water Line - Fifth to under RR tracks along Austin St	81%	85%	4%	$ 513,000	$ 20,520
11	Water Lines - Along Fifth St & State St	81%	85%	4%	$ 1,613,000	$ 64,520
12	Pump Station - Apollo Northside Improvements	81%	85%	4%	$ 6,555,322	$ 262,213
13	Water Line - Centerville to La Prada along Northwest Hwy	81%	85%	4%	$ 1,760,000	$ 70,400
14	Water Line - Wendell Way to Rowlett Road	81%	85%	4%	$ 2,800,000	$ 112,000
15	Elevated Tank - Southwest Garland Water Tower	81%	85%	4%	$ 21,376,000	$ 855,040
16	Water Line - Firewheel to Miles Rd along Pleasant Valley	81%	85%	4%	$ 700,000	$ 28,000
	TOTAL				**$ 55,699,746**	**$ 2,227,990**

* Does not include financing costs.

WATER IMPACT FEE CAPITAL IMPROVEMENTS PLAN

The City of Garland identified a list of projects that will be required to supply water to the City's customers in the future. Eight (8) projects are determined eligible for recoverable cost through impact fee over the next 10 years. These impact fee capital improvement projects are summarized in Table 3 and illustrated in Exhibit 2.



Legend

- Water Service Area
- FEMA Floodplain

Water Pipes

- Existing
- Proposed

Water Tanks

- Existing
- Proposed

Pump Stations

- Existing
- Proposed

Impact Fee CIP Projects

1. Water Line - Firewheel Mall (190 to Lavon)
2. Pump Station - Broadway Improvements
3. Water Line - Centerville to Pleasant Valley
4. Water Line - Commerce Water Tower to Centerville
5. Water Lines - Along Naaman Forest & Along Bunker Hill
6. Water Line - Wynn Joyce to Wendell Way
7. Water Lines - Along Commerce & Along Eastgate Dr
8. Elevated Tank - Commerce Water Tower
9. Water Line - Lawler to Forest along Yale
10. Water Line - Fifth to under RR tracks along Austin St
11. Water Lines - Along Fifth St & State St
12. Pump Station - Apollo Northside Improvements
13. Water Line - Centerville to La Prada along Northwest Hwy
14. Water Line - Wendell Way to Rowlett Road
15. Elevated Tank - Southwest Garland Water Tower
16. Water Line - Firewheel to Miles Rd along Pleasant Valley
17. Water Line - 635 to Kingsley along Shiloh Rd
18. Water Line - Rosehill to I-30 along Bobtown
19. Water Line - 190 to Muirfield along Brand
20. Water Line - Rowlett Rd to Bobtown along Country Club
21. Water Line - Campbell along 190 along Naaman Forest
22. Elevated Tank -East Zone Water Tower
23. Pump Station - Firewheel Pump Station Expansion

Exhibit 2
2016 Water Impact Fee Study
Impact Fee CIP Projects

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October 2016

Table 3: Estimated Project Costs for
Proposed Capital Improvement Projects

Project No.	Proposed Improvement Description	2016 Capacity (% Utilization)	2026 Capacity (% Utilization)	2026 - 2016 Capacity (% Utilization)	Estimated Total Project	2026 Projected Recoverable Cost
17	Water Line - 635 to Kingsley along Shiloh Rd	81%	85%	4%	$1,000,000	$ 40,000
18	Water Line - Rosehill to I-30 along Bobtown	81%	85%	4%	$1,200,000	$ 48,000
19	Water Line - 190 to Muirfield along Brand	81%	85%	4%	$500,000	$ 20,000
20	Water Line - Rowlett Rd to Bobtown along Country Club	81%	85%	4%	$1,000,000	$ 40,000
21	Water Line - Campbell along 190 along Naaman Forest	81%	85%	4%	$130,000	$ 5,200
22	Elevated Tank -East Zone Water Tower	81%	85%	4%	$7,000,000	$ 280,000
23	Pump Station - Firewheel PS Expansion	81%	85%	4%	$8,000,000	$ 320,000
24	Water Master Plan Update	0%	100%	100%	$550,000	$ 550,000
	Total Project Cost				$19,380,000	$ 1,303,200
	*Financing Cost				$ 10,852,800	$ 729,792
	TOTAL				**$30,232,800**	**$ 2,032,992**

*Includes 20-year simple interest loan @ 4.7% APR

WATER IMPACT FEE CALCULATION

In accordance with Chapter 395 of the *Local Government Code*, the City defines a service unit based on historical water usage over the last 10 years as compared to the estimated residential units. The residential unit is the development type that typically uses a 5/8" x 3/4" meter. The measure of the consumption per service unit is based on a 5/8" x 3/4" meter and the data shown in Table 4.

Table 4: Service Unit Consumption Calculation

Year	Population	Service Units (3.08 persons/unit)	Water Usage Average Day Demand (MGD)	Consumption per Service Unit (GPD)
2006	222,432	72,218	36.18	501
2007	224,988	73,048	30.69	420
2008	226,144	73,423	35.76	486
2009	225,865	73,333	31.57	430
2010	226,876	73,661	35.72	485
2011	231,596	75,194	36.67	488
2012	233,623	75,852	31.97	420
2013	234,694	76,199	29.06	381
2014	235,597	76,493	26.17	342
2015	236,897	76,915	27.24	354
10-Year Average Consumption per Service Unit:				431

* Water Usage Source: City of Garland

* Population Source: Freese and Nichols

Additional Service Unit and Water Impact Fee Calculation

According to the City's 10-year growth projections and corresponding water demand projections, water service will be required for an additional 3,270 service units. The calculation is summarized below:

- A service unit, which is a unit of development that consumes approximately 431 GPD, is a typical residential connection that uses a 5/8" x 3/4" meter. Table 5 details the future water demand projections and how it effects the service units projected for the next 10 years.

Table 5: 10-Year Additional Service Units Calculation

Year	Average Day Demand (MGD)	Service Unit Demand (GPD)	Service Units
2016	27.24	431	63,234
2026	28.65	431	66,504
10-Year Additional Service Units			3,270

Impact fee law allows for a credit calculation to credit back the development community based on the utility revenues or ad valorem taxes that are allocated for paying a portion of future capital improvements. The intent of this credit is to prevent the City from double-charging development for future capital improvements via impact fees and utility rates. If the City chooses not to do a financial analysis to determine the credit value, law requires them to reduce the recoverable cost by 50 percent. The City has decided to forgo the financial analysis and reduce the recoverable cost by 50 percent. The maximum recoverable cost for impact fee is shown in Table 6.

Table 6: Recoverable Cost Breakdown

Water System Facility	Total Project Cost	2026 Recoverable Cost
Existing Bond Projects	$ 55,699,746	$ 2,227,990
Proposed Capital Improvement Projects	$ 30,232,800	$ 2,032,992
Planning Expenses - Water Impact Fee	$ 36,594	$ 36,594
Existing Water Impact Fee Fund Balance	$ (414,123)	$ (414,123)
Totals	**$ 85,555,017**	**$ 3,883,452**

The impact fee per service unit is calculated as follows:

- Assessable Cost = 50% of Recoverable Cost = $1,941,726
- Impact fee per service unit = $\frac{\text{Assessable Cost}}{\text{Additional service units}}$

- Impact fee per service unit = $\frac{\$1,941,726}{3,270} = \$593$

Therefore, the maximum assessable impact fee per service unit is $593.

For developments that require a different size meter, a service unit equivalent has been determined as a multiplier of the 5/8" x 3/4" meter based on its required operating capacity. The maximum impact fee that could be assessed for other meter sizes is based on the values shown in Table 7.

Table 7: Service Unit Equivalency Table for Commonly Used Meters

Meter Size*	Maximum Continuous Operating Capacity (GPM)**	Service Unit Equivalent	Maximum Assessable Fee ($)
5/8"x 3/4" PD	10	1	593
3/4" PD	15	1.5	890
1" PD	25	2.5	1,483
1 1/2" PD	50	5	2,965
2" PD	80	8	4,744
2" Compound	80	8	4,744
2" Turbine	160	16	9,488
3" Compound	175	17.5	10,378
3" Turbine	350	35	20,755
4" Compound	300	30	17,790
4" Turbine	650	65	38,545
6" Compound	675	67.5	40,028
6" Turbine	1,400	140	83,020
8" Compound	900	90	53,370
8" Turbine	2,400	240	142,320
10" Turbine	3,500	350	207,550

* PD = Positive Displacement Meter (Typical Residential Meter)
** Operating capacities obtained from American Water Works (AWWA) C-700, C-701 & C-702

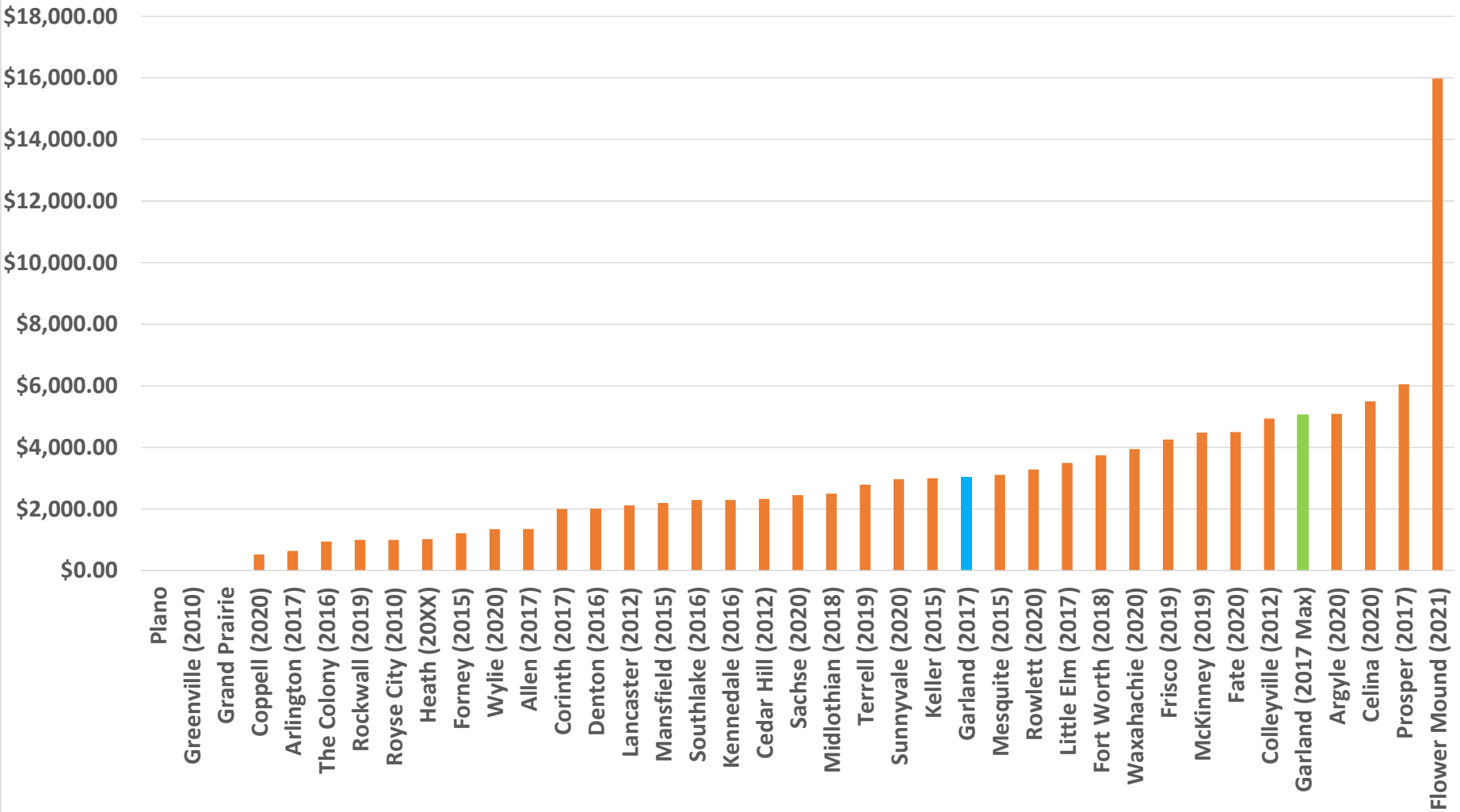
Appendix A – Capacity Calculations

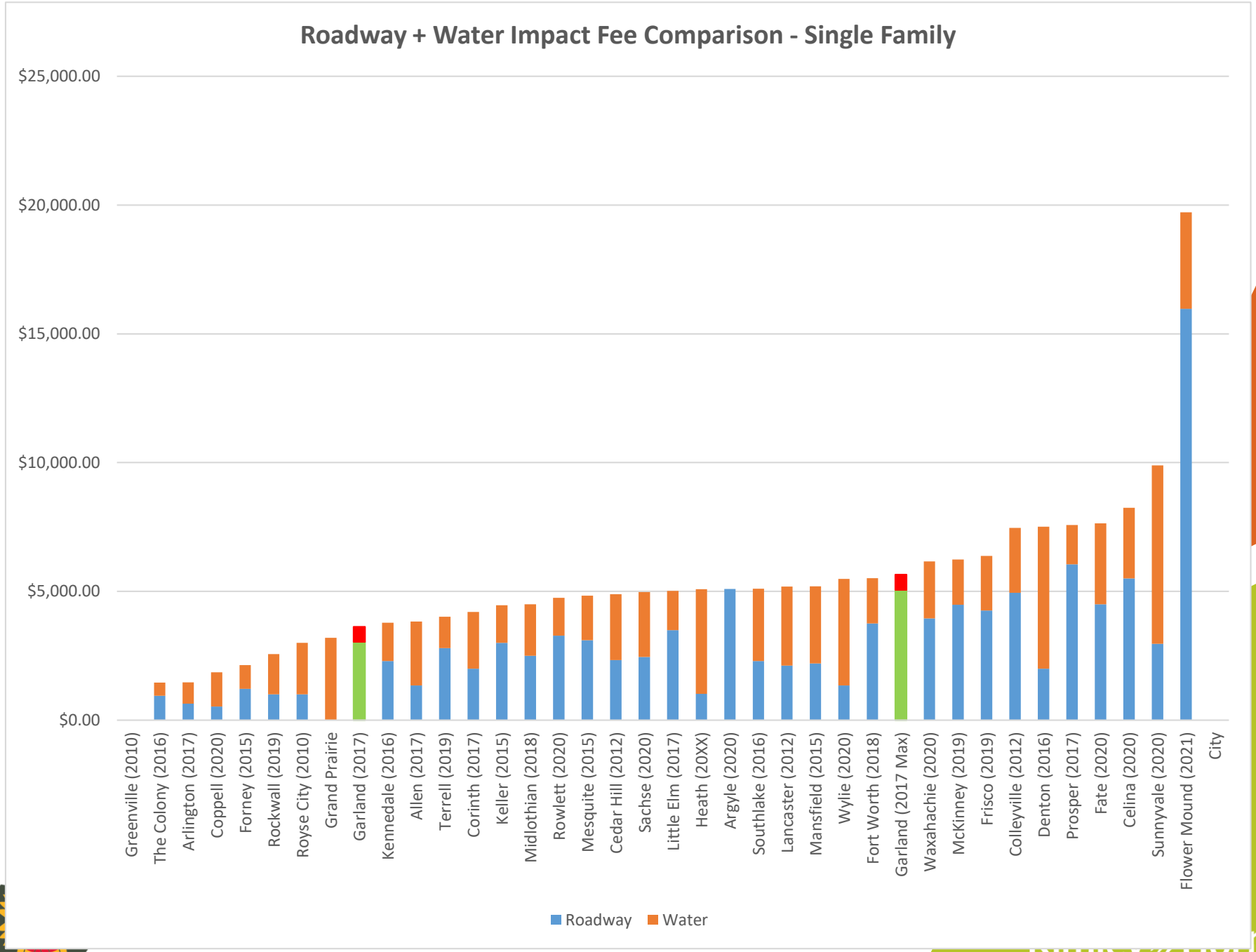
Table A1: Additional Service Unit & Capacity Calculations

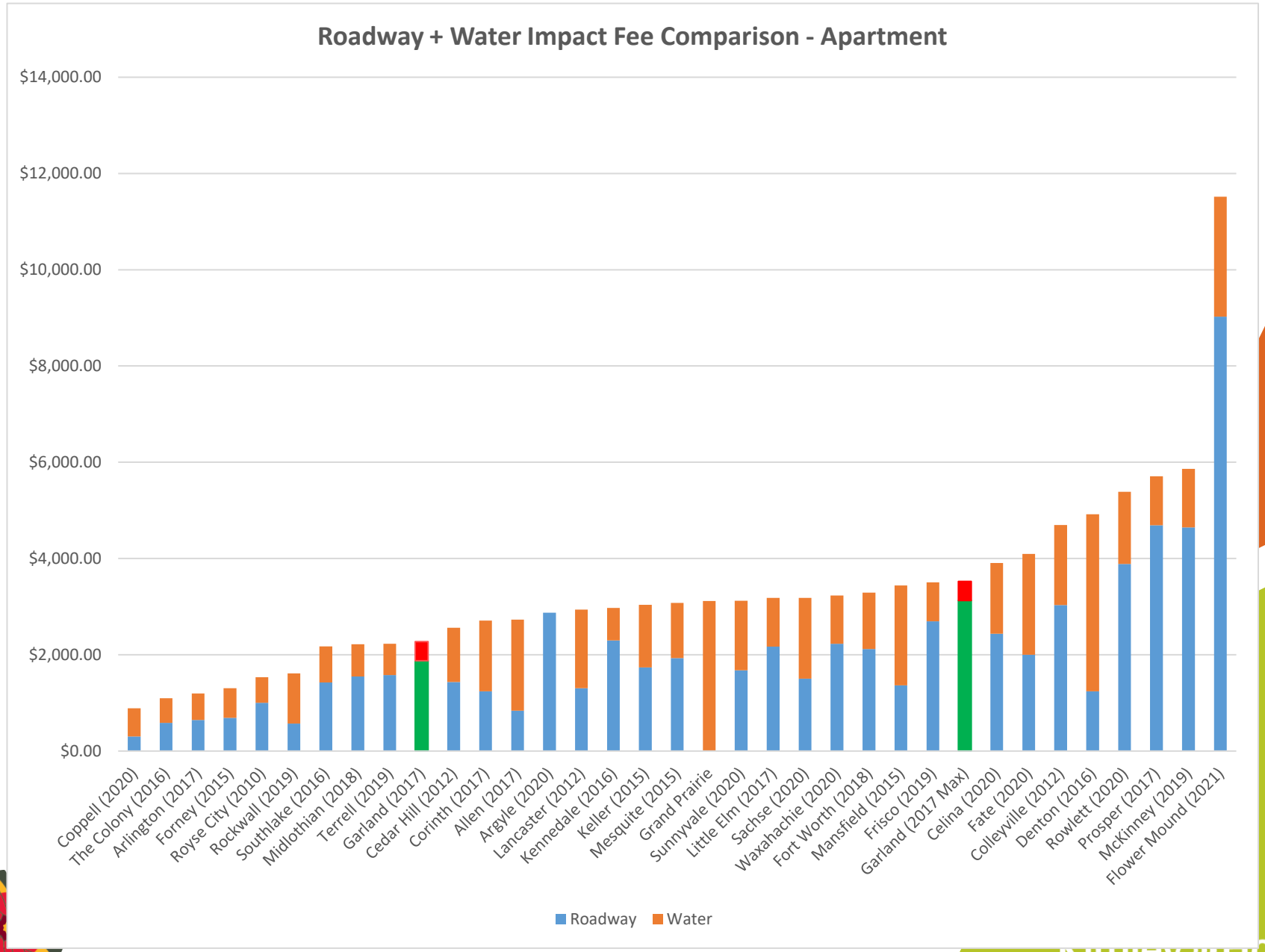
10-Year Additional Service Units Calculation

Year	Average Day Demand (MGD)	Service Unit Demand (GPD)	Service Units	Capacity
2016	27.24	431	63,234	81%
2026	28.65	431	66,504	85%
Buildout	33.55	431	77,878	100%
10-Year Additional Service Units			3,270	

Roadway Impact Fees Comparison - Single Family




Roadway + Water Impact Fee Comparison - Single Family
$25,000.00
$20,000.00
$15,000.00
$10,000.00
$5,000.00
$0.00
Greenville (2010)
The Colony (2016)
Arlington (2017)
Coppell (2020)
Forney (2015)
Rockwall (2019)
Royse City (2010)
Grand Prairie
Garland (2017)
Kennedale (2016)
Allen (2017)
Terrell (2019)
Corinth (2017)
Keller (2015)
Midlothian (2018)
Rowlett (2020)
Mesquite (2015)
Cedar Hill (2012)
Sachse (2020)
Little Elm (2017)
Heath (20XX)
Argyle (2020)
Southlake (2016)
Lancaster (2012)
Mansfield (2015)
Wylie (2020)
Fort Worth (2018)
Garland (2017 Max)
Waxahachie (2020)
McKinney (2019)
Frisco (2019)
Colleyville (2012)
Denton (2016)
Prosper (2017)
Fate (2020)
Celina (2020)
Sunnyvale (2020)
Flower Mound (2021)
City
Roadway
Water



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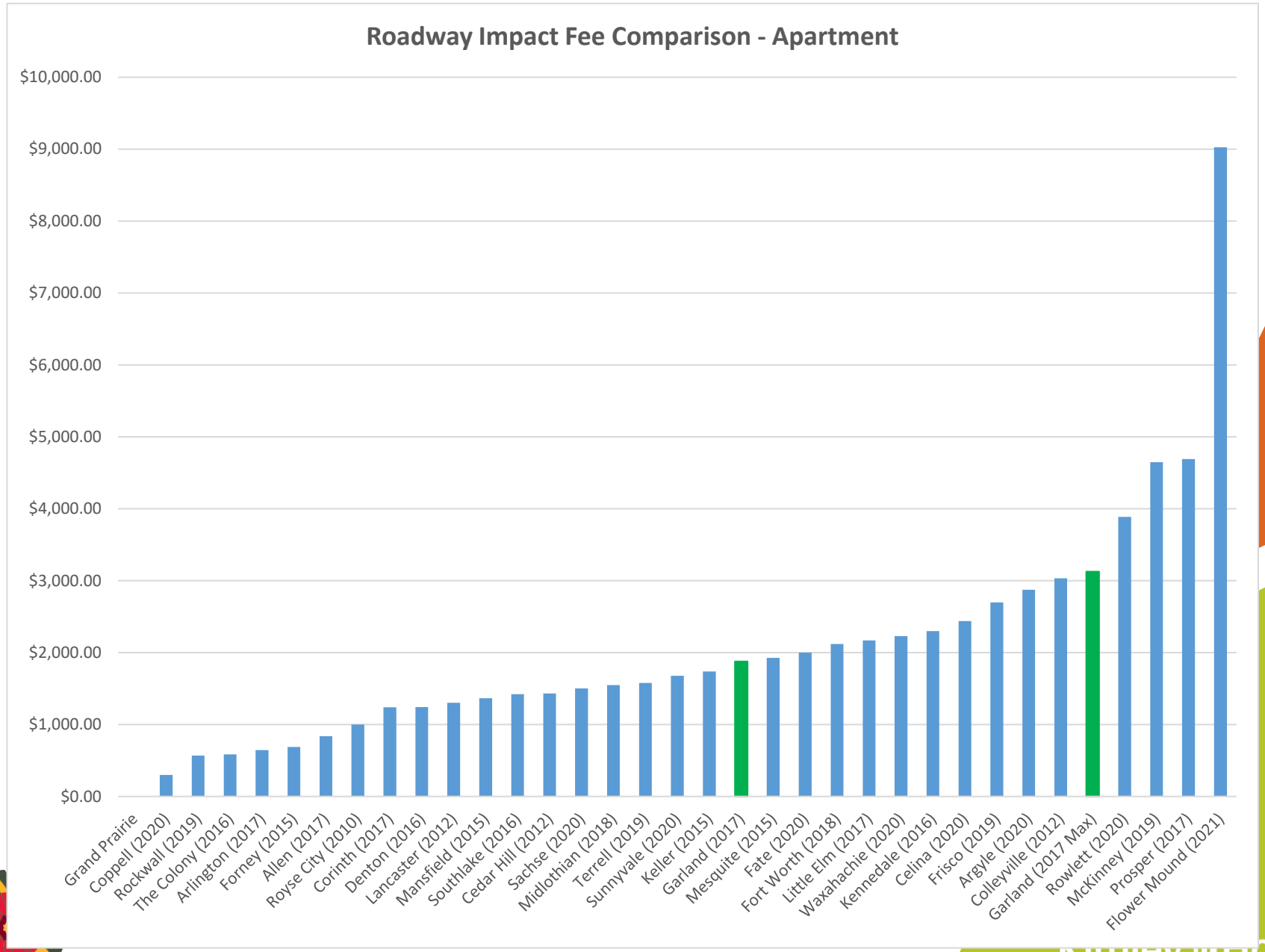
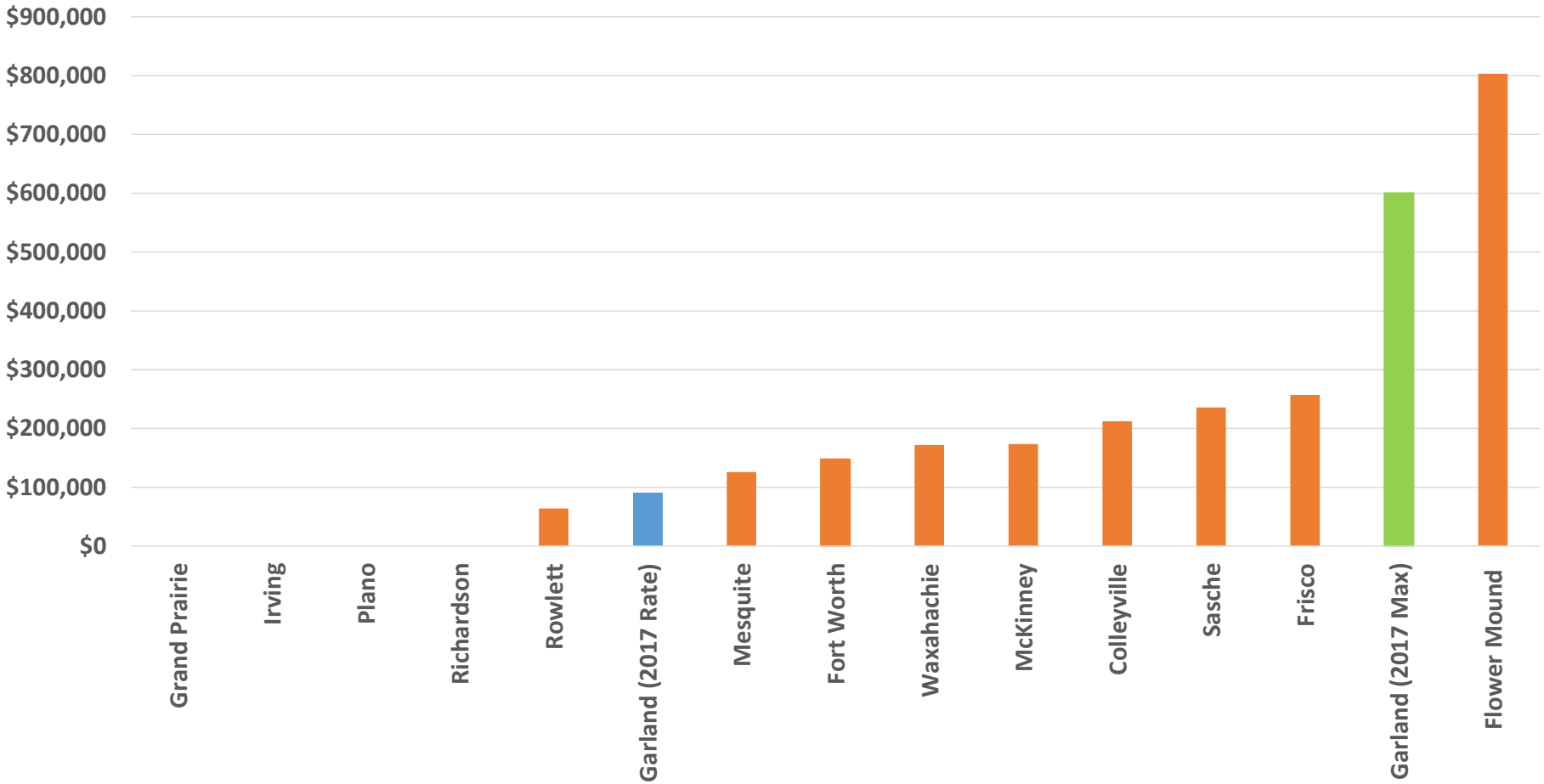

Roadway Impact Fee Comparison - Apartment
$10,000.00
$9,000.00
$8,000.00
$7,000.00
$6,000.00
$5,000.00
$4,000.00
$3,000.00
$2,000.00
$1,000.00
$0.00
Grand Prairie
Coppell (2020)
Rockwall (2019)
The Colony (2016)
Arlington (2017)
Forney (2015)
Allen (2017)
Royse City (2010)
Corinth (2017)
Denton (2016)
Lancaster (2012)
Mansfield (2015)
Southlake (2016)
Cedar Hill (2012)
Sachse (2020)
Midlothian (2018)
Terrell (2019)
Sunnyvale (2020)
Keller (2015)
Garland (2017)
Mesquite (2015)
Fate (2020)
Fort Worth (2018)
Little Elm (2017)
Waxahachie (2020)
Kennedale (2016)
Celina (2020)
Frisco (2019)
Argyle (2020)
Colleyville (2012)
Garland (2017 Max)
Rowlett (2020)
McKinney (2019)
Prosper (2017)
Flower Mound (2021)

Roadway Impact Fees Comparison - 100,000 Sq. Ft. Industrial



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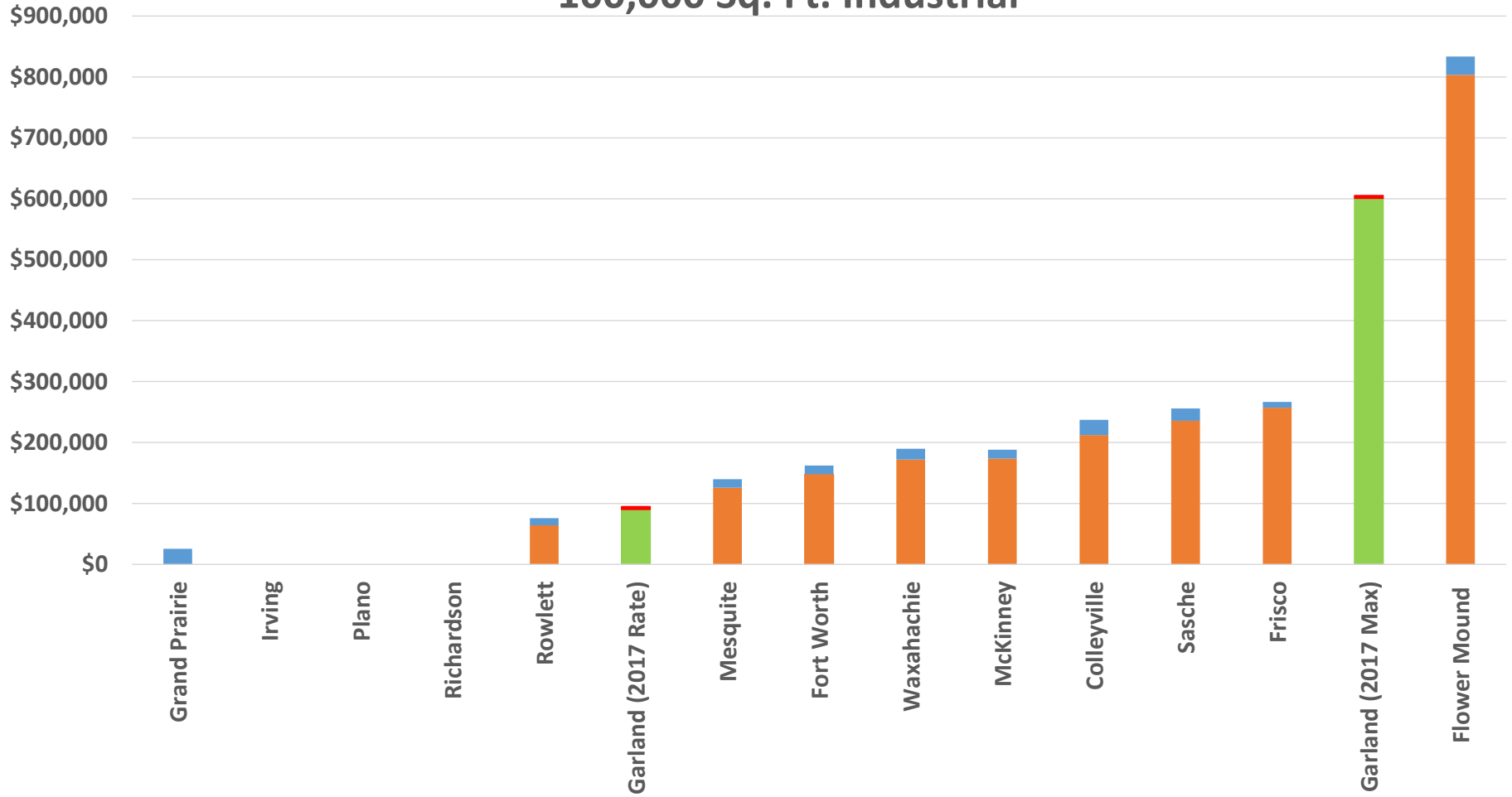
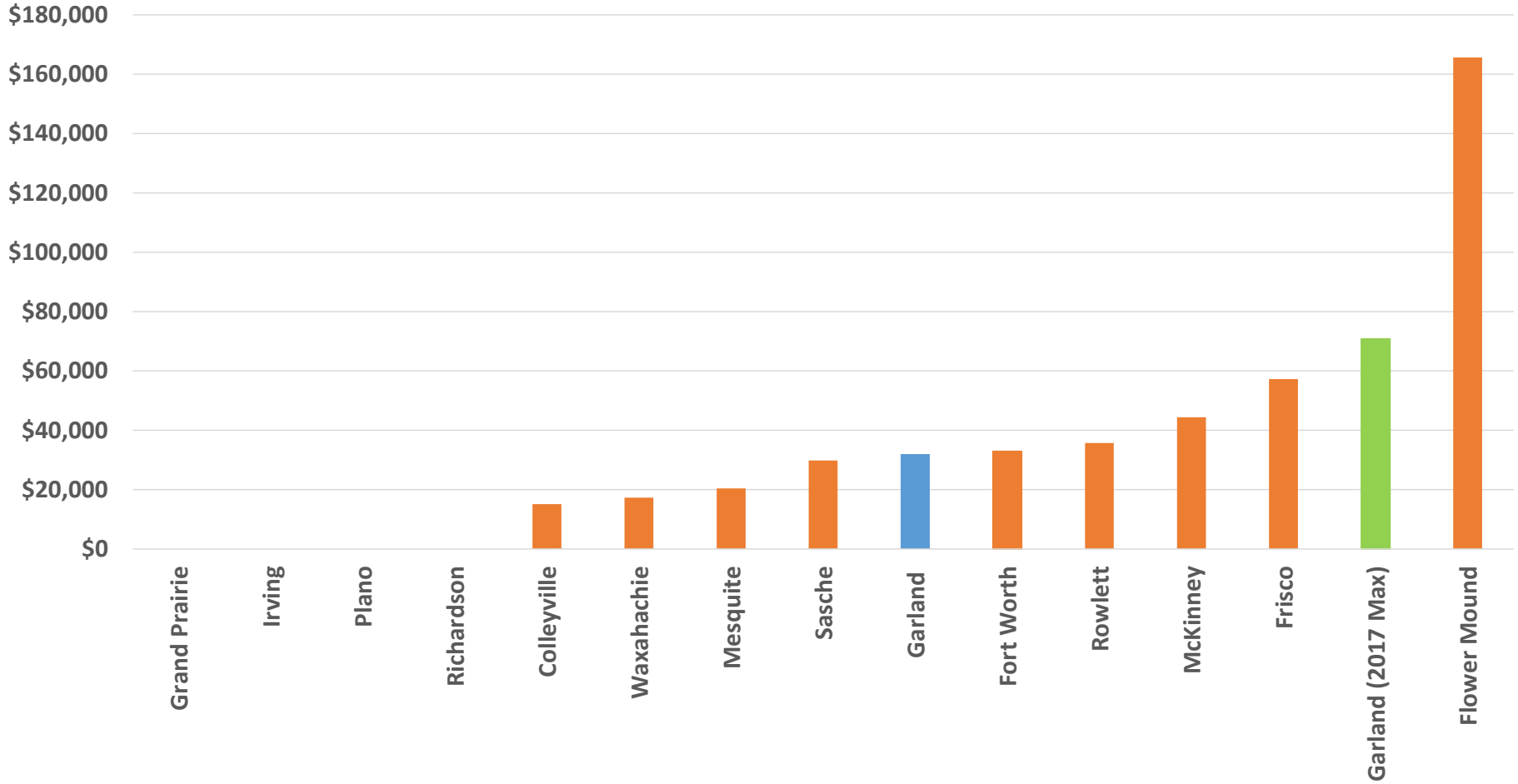
Roadway + Water Impact Fees Comparison - 100,000 Sq. Ft. Industrial



Roadway Impact Fees Comparison - 10,000 Sq. Ft. Retail



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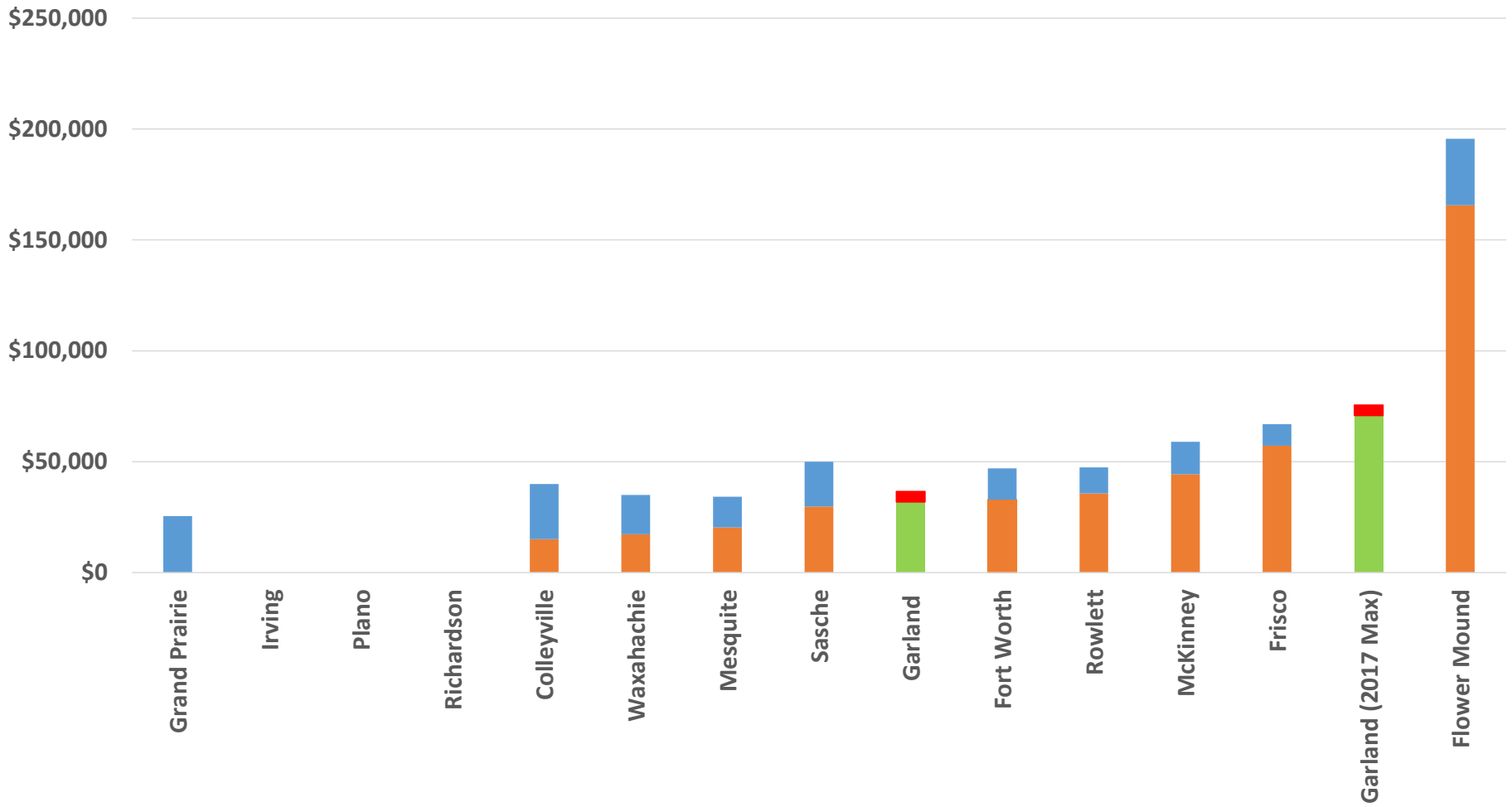
Roadway + Water Impact Fees Comparison - 10,000 Sq. Ft. Retail



MINUTES

P.C. Meeting, November 11, 2021

Consideration and possible recommendation to re-adopt the 2016 Water and Roadway Impact Fee Study: Land Use Assumptions, Roadway and Water Impact Fee CIP, and Maximum Fee.

There was a brief discussion among the Plan Commission regarding the increase of fees. There was discussion regarding increasing the collection rate for multi-family developments.

Motion was made by Commissioner Jenkins to **approve** the request. Seconded by Commissioner Lucht. **Motion carried: 6** Ayes, **0** Nays.

GARLAND
POLICY REPORT

City Council Work Session Agenda **3. g.**

Meeting Date: December 6, 2021
Item Title: Donation Request from Garland Emergency Corps
Submitted By: Mitch Bates, Deputy City Manager
Strategic Focus Areas: Safe Community

ISSUE

The Garland Emergency Corps (GEC) has expressed "*an interest in adding to our inventory some retired or surplus City of Garland equipment to increase our usefulness to the citizens of Garland and the general fulfillment of our mission of service to our community during disasters, matters of emergency or events with opportunities to support public safety missions.*"

(1) Small dump truck
(2) Mobile Community Service Box Truck
(3) Mobile Shower Trailer
(4) 20' / 22' Utility Equipment trailer

The GEC is seeking a donation by the City of some or all of the items listed above.

Item #2 (Mobile Community Service Box Truck) is 1997 Ford with 205,000 miles. Estimated value at auction is $5,000 - $7,000. However, this vehicle was obtained through the Police Narcotic Seizure process and is not eligible for donation.

Item #3 (Mobile Shower Trailer) is the Decontamination Trailer for the Garland Health Department. It was obtained via federal grant funds many years ago and has been used to serve the Garland, Rowlett, and Sachse area for many years, when needed. It is seldom used now. However, since the vehicle was obtained via the federal grant process, it is not likely a viable option for donation to the GEC.

However, the other 2 items are surplus and were scheduled for a future City auction:

Item #1 (Dump Truck) is a 2011 International with 3,298 hours (such heavy equipment is measured in "hours" instead of "mileage"). Estimated value at auction is $15,000 - $17,000.

Item #4 (Utility Equipment or Flatbed Trailer) is not currently in working condition. The City possesses 2 such trailers that are both in need of repairs (estimated at $12,000 for both) to

return to working condition. Estimated value at auction is $7,000 - $8,000. In lieu of the cost of repairs compared to the estimated value, the City has chosen to purchase a new trailer at a future date (trailers were used by the Streets and Storm Water Departments).

OPTIONS

Option 1: Donate one or both of Item #1 (Dump Truck) and/or Item #4 (Utility Equipment or Flatbed Trailer).

Option 2: Choose not to donate one or more of the two listed items.

RECOMMENDATION

If Council chooses to donate one or both items, a resolution for the donation will be placed on a future Regular Session for formal approval by City Council. Unless directed by Council to do otherwise, staff will proceed with the donation of Item #1 (Dump Truck) and Item #4 (Utility Equipment or Flatbed Trailer).

Attachments

GED Letter - Request for Donation(s)

Photo - Dump Truck

Photo - Mobile Community Service Box Truck

Photo - Decontamination or Shower Trailer

Photo - Utility Equipment or Flatbed Trailer

The GEC has an interest in adding to our inventory some retired or surplus City of Garland equipment to increase our usefulness
to the citizens of Garland and the general fulfillment of our mission of service to our community during disasters, matters of emergency or events with opportunities to support public safety missions.

(1) Small dump truck
(2) Mobile Community Service Box Truck
(3) Mobile Shower Trailer
(4) 20' / 22' Utility Equipment trailer

Attached are some pictures of the equipment

Thank you so much for any and all consideration

Chief Jeffery Andrews # 901
The Garland Emergency Corps


ENTRANCE
ENTRANCE

GARLAND
POLICY REPORT

City Council Work Session Agenda **4. a.**

Meeting Date: December 6, 2021
Item Title: Public Safety Committee Update-EMS Transports
Submitted By: Jeffrey Bryan, Chief of Police
Strategic Focus Areas: Safe Community

ISSUE

The Public Safety Committee was asked to review the emergency transport policy for EMS transports to area hospitals. The Committee discussed complaints by residents of quality of care when taken to certain hospitals. It was proposed in Committee that EMS should give residents options for different hospitals at the time of their transport. The Fire Department researched response times, transport times and restoration between the four main hospitals and the impact of giving patients a choice of where to be transported to in order to propose a new departmental transport policy.

RECOMMENDATION

After research and analysis the Fire Department will give patients a choice of where to be transported unless EMS is on a divert status. If EMS is on divert, then the patient will be transported to the closest and most appropriate facility capable of treating the type of emergency and/or illness.

BACKGROUND

Council Member B.J. Williams provided feedback from the community on the Fire Department's current practice of only transporting to the closest appropriate facility. Based upon that feedback, the Fire Department has chosen to revise the current departmental policy and include options for patient destinations as detailed below.

Moving forward, the Garland Fire Department will follow accepted industry practices of transporting patients to facilities appropriate for the primary, and secondary impression as determined by the paramedics and/or medical director. For instance, patients presenting with symptoms of a cardiac event will continue to be transported to a facility recognized for the cardiac catheterization lab capabilities. A person having a stroke will likewise go to a facility recognized for their stroke capabilities and trauma will go to recognized trauma facilities.

The change will be to include multiple cardiac centers, stroke centers, and trauma facilities that may be available based upon patient condition first, and preference second. This will allow the department's paramedics to have conversations about which facility the patient wishes to be

transported to while also making recommendations on which facility the medics recommend. For instance, the following hospitals are available for the following conditions:

Hospitals with Cardiac Catheterization Labs

- Methodist Renner
- Baylor Scott & White (BS&W) Lakepointe Rowlett
- BS&W Sunnyvale
- Dallas Regional on Galloway
- City Hospital White Rock
- Texas Health Resources (THR) Dallas (formerly Presbyterian of Dallas)
- Medical City Heart & Spine
- Heart BS&W Hospital Plano
- Medical City Plano

Comprehensive Stroke Centers

- Medical City Plano
- BS&W Plano
- Medical City Dallas
- Methodist Renner
- THR Dallas

Primary Stroke Centers

- BS&W Lakepointe
- BS&W Sunnyvale
- City Hospital White Rock
- Dallas Regional on Galloway

Trauma

- Medical City Plano
- THR Dallas
- Parkland
- Baylor Dallas
- BS&W Lake Pointe
- Children's Dallas
- Dallas Regional Galloway
- Medical City Dallas
- Medical City Children's
- Methodist Renner

Some of these have higher levels of care than others and the medics will use discretion in determining the appropriate trauma facility.

Major Burns

- Medical City Plano
- Parkland

Adult Medical (not listed above)

- BS&W Lake Pointe

- BS&W Plano
- BS&W Sunnyvale
- City Hospital White Rock
- Dallas Regional on Galloway
- Medical City Dallas
- Medical City Plano
- Methodist Renner
- THR Dallas
- THR Rockwall

There will be times that in the medic's, or medical control's opinion that time is of the essence and the patient will be transported to the closest appropriate facility without regard for patient wishes. Yet, when in the patient's best interest, or desires, the department will consider other facilities on the list.

When ambulance resources are low (three or less available in the city) the fire department enters into what is known as "Ambulance Overload" and all units are advised that the department is in a condition of limited resources. When this occurs, all patients are transported to the closest appropriate facility without regard to patient or family wishes. This practice allows units to return to the city, and their districts quicker in order to be available for another call for service.

GARLAND
CITY COUNCIL ITEM SUMMARY SHEET

City Council Work Session Agenda **4. b.**

Meeting Date: December 6, 2021

Item Title: COVID-19 Briefing

Summary of Request/Problem

Staff will provide an update to Council and ask for direction, if needed, on various matters related to COVID-19 and actions being taken by the City.

Recommendation/Action Requested and Justification

Council discussion.
