

KITTITAS COUNTY COMMUNITY DEVELOPMENT SERVICES

411 N. Ruby St., Suite 2, Ellensburg, WA 98926

CDS@CO.KITTITAS.WA.US

Office (509) 962-7506

Fax (509) 962-7682

"Building Partnerships – Building Communities"

SEPA ENVIRONMENTAL CHECKLIST

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

Instructions for applicants:

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals: [\[help\]](#)

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the [SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS \(part D\)](#). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

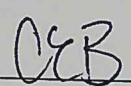

APPLICATION FEES:

\$600.00 Kittitas County Community Development Services (KCCDS)

\$70.00 Kittitas County Department of Public Works

\$670.00 Total fees due for this application (One check made payable to KCCDS)

FOR STAFF USE ONLY

Application Received by (CDS Staff Signature): 	DATE: <u>1.23.17</u>	RECEIPT# <u>32719</u>	
DATE STAMP IN BOX			

**GODZILLA THORP, LLC
Kittitas County, Washington**

GODZILLA TRUCK STOP COMPLEX

STATE ENVIRONMENTAL POLICY ACT

ENVIRONMENTAL CHECKLIST

Prepared by



HLA

Engineering and Land Surveying, Inc.

2803 River Road
Yakima, WA 98902

509.966.7000
Fax 509.965.3800

www.hlacivil.com

**HLA Project No. 16139
December 2016**

STATE ENVIRONMENTAL POLICY ACT
ENVIRONMENTAL CHECKLIST

A. BACKGROUND

1. *Name of Proposal, if Applicable:* Godzilla Truck Stop Complex

2. *Name of Proponent:* Godzilla Thorp, LLC
(Luke Xitco)
Phone Number: (206) 753-8098
Address of Proponent: P.O. Box 1376
Tacoma, WA 98401

3. *Person Completing Form:* Michael R. Heit, PE
Phone Number: (509) 966-7000
Address: HLA Engineering and Land Surveying, Inc. (HLA)
2803 River Road
Yakima, WA 98902

Jeff Slothower, Attorney at Law
(509) 925-6916
Lathrop, Winbauer, Harrel, Slothower & Denison
L.L.P.
P.O. Box 1088
Ellensburg, WA 98926

4. *Date Checklist Prepared:* December 13, 2016

5. *Agency Requesting Checklist:* Kittitas County

6. *Proposed timing or schedule (including phasing, if applicable):*

The development will be developed in multiple phases. The buildings and site improvements will not all be constructed simultaneously, but will be constructed as the tenants are secured until the development is complete. Construction is anticipated to start in July 2017.

7. *Do you have any plans for future additions, expansions, or further activity related to or connected with this proposal? If yes, explain.*

This SEPA is in conjunction with the eventual civil site improvement plans and construction of the proposed commercial/retail buildings on the site plan.

8. *List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.*

The applicant is not aware of any specific environmental information which has been prepared for this property. However, there have been recent projects adjacent to this property. Any environmental information prepared would be available at the Kittitas County Planning Department.

9. *Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.*

The applicant is not aware of any pending applications, or governmental approvals for this property.

10. *List any governmental approvals or permits that will be needed for your proposal, if known.*

Kittitas County – SEPA Site Plan Approval.

Kittitas County – SEPA Determination.

Kittitas County – Civil Site Plan Approval.

Kittitas County – Stormwater Approval.

Kittitas County – Building Permit Approval.

Washington State DOH – LOSS modification Approval

Washington State DOH – Group A TNC Water System Approval (Exempt Well)

11. *Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page.*

Godzilla Truck Stop Complex property project proposal is to create a multi-use retail or commercial center comprising of two parcels. The proposal would be to create an unmanned card-lock fueling station facility, and a 6,000 square foot new restaurant building with a drive-thru, and 39 parking spaces. The property currently encompasses two undeveloped parcels, totaling 3.56 acres. The development will bring new retail and restaurant establishments to the Kittitas County. The multi-use development will have a shared access agreement.

The proposed multi-use development is constructed immediately adjacent to the existing multi-use center containing an Arco Station, and Thorp Fruit. The proposed development will complement the existing businesses creating an Oasis type site out of the existing ARCO Station, Thorp Fruit, proposed Card Lock, and Fast Food. Much of the traffic frequenting the combination of the four businesses will be synergistic in nature "one stop shopping." The customer demographics are vehicles passing through the I-90 corridor, traveling to and from Western Washington, Eastern Washington, and beyond. The site creates a natural stopping point for travelers to refuel, eat, stretch their legs, walk the dog, and generally refresh prior to resuming their trip.

The property is serviced by Interstate 90, Thorp Highway, and Gladmar Road. The project will construct three additional access points on Gladmar Road. Gladmar Road and

the West bound I-90 exit 101 was previously improved to accommodate Interstate Semi Truck traffic, as well as future traffic accessing Gladmar Road.

The property is currently vacant with the only structure on the site is the pump house/shed for the existing well. Previously there was a manufactured home on the site, a seasonal commercial fruit stand, and an espresso stand.

The project is proposed to be served with private water and sewer. The development is anticipated to be connected to the existing private Large On-Site Septic System (LOSS), for the Arco Station and Fruit Stand. The LOSS will be modified as necessary to accommodate the proposed development. The existing on-site exempt well was previously permitted a Group A TNC exempt water system, and the well will be re-permitted to be used a Group A TNC water system for the proposed development. A private fire main and hydrant will be extended from the neighboring fire system as necessary to meet fire code.

The sources of stormwater runoff from the proposed parking lot area will be primarily from rainfall and snowmelt. Stormwater runoff is proposed to be collected and managed on-site via surface retention and infiltration facilities. Stormwater treatment and disposal facilities will be designed and sized in accordance with the Stormwater Management Manual for Eastern Washington and Kittitas County standards. This project will not result in the discharge of storm water into a surface water body.

12. *Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit application related to this checklist.*

The proposed Godzilla Truck Stop Complex is located at the intersection of Thorp Highway and Gladmar Road, Kittitas County, Washington. Parcel number 958324, and 958325; Northeast Quarter of Section 13, Township 18 North, Range 17 East, W.M. Please refer to the attached map for additional information.

B. ENVIRONMENTAL ELEMENTS

1. EARTH

- a. *General description of the site (underline one): Flat, rolling, hilly, steep slopes, mountainous, other (Gently Sloping).*

The existing site gently slopes from the northwest to the southeast.

- b. *What is the steepest slope on the site (approximate percent slope)?*

The majority of the site slopes approximately 0.5 percent, while the steepest slope on the site is approximately 1.0 percent.

- c. *What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.*

The primary soil type is Vanderbilt Ashy Loam, 0 to 2 percent slopes, which is a CL or A-6 soil type. The Vanderbilt Ashy Loam soil mapping indicates: 0" - 8" Ashy Loam, 8" - 28" Ashy Loam, 28" - 38" Clay Loam, 38" - 60" Clay Loam. Permeability of the Vanderbilt Ashy Loam is low, the runoff is moderate and the water erosion hazard is low.

The U.S. Department of Agriculture Natural Resource Conservation Service (USDA-NRCS) classifies this soil type if irrigated.

The proposal does not require removing any soils. The site will be regraded to create an earthwork balance.

- d. *Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.*

There are no known indications of unstable soils on site or in the immediate vicinity.

- e. *Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.*

The project consists of usual and normal embankment construction for new parking lots and building lots. As it applies to the entire development, there is minimal grading proposed for parking lot construction and lot development expected. The site is relatively flat and there is not expected to be any significant areas of cut or fill. Normal clearing and grubbing of the property of vegetative top soil will occur during construction as necessary to obtain native soil and a clean unyielding surface for the parking lot base. No fill is proposed and no net increase or decrease in quantity of material is anticipated. Earthwork quantities will be determined during the design phase of the development. Source of fill will be from on-site excavations or from approved/permitted borrow site. Backfilling for utilities will consist of crushed aggregate for pipe zone bedding and native material for trench backfill. All excess soil will be re-distributed on site for landscaping beds.

- f. *Could erosion occur as a result of clearing, construction, or use? If so, generally describe.*

Erosion is not expected to occur as a result of clearing or construction. The site is relatively flat and the soil does not lend itself to erosion. Because of the relatively flat topography, water-borne erosion is not expected to be a problem during construction. Construction of the improvements will not affect wind-borne or water-borne soil erosion following project completion. After construction is completed the development will be primarily covered with hard surfacing, or landscaping preventing the likelihood of erosion.

- g. *About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or building)?*

The proposed development consists of a new retail/restaurant building, a card-lock fueling station, and the associated parking lots. When complete it will be approximately 50-60 percent impervious. The lot coverage maximum in the Highway Commercial zone is 100 percent.

- h. *Proposed measures to reduce or control erosion, or other impacts to the earth, if any:*

During the site development and construction activities, the contractor will be required to utilize appropriate erosion control Best Management Practices, and regulatory erosion control stormwater management plans will be implemented. Silt fencing and dust control measures will be implemented. Storm drainage improvements will be constructed to comply with Kittitas County (Stormwater Management Manual for Eastern Washington) standards. The site will be permanently stabilized post-construction by sodding, and landscaping.

2. AIR

- a. *What types of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.*

Typical emissions of dust and automobile odors will be generated during construction. Dust control procedures will be in place during construction to limit the dust to the maximum extent practicable. Construction activity will be limited to area immediately adjacent to the construction area. Dust is not expected after construction as the site will be fully landscaped and irrigated, or will be covered with impervious surfacing. After project completion, there will be no adverse effects on the air, the emissions will be from automobiles already traveling on the adjacent interstate, that stop at the truck stop complex. Therefore, it will not generate new emissions. Minimal emissions from commercial heating devices may occur after project completion. Approximate quantities are not known.

- b. *Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.*

None are known to exist.

- c. *Proposed measures to reduce or control emissions or other impacts to air, if any:*

The contractor shall comply with Ecology: Eastern Regional Office regulatory requirements. The contractor may be required to use dust control measures such as watering of the construction area to eliminate wind-borne erosion if a problem arises. The contractor will also be required to clean mud and dust from public roadways as necessary. In addition, construction equipment will be well maintained to prevent excessive exhaust emissions.

3. WATER

a. Surface Water:

1. *Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.*

There are no existing surface bodies of water or streams within the development. Yakima River is located approximately 3,200 feet to the east of the property, and there are two manmade lakes, from old borrow pits used to create the overpass approximately 1,400 feet to the east of the property.

2. *Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.*

There will be no work over or in any bodies of water.

3. *Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.*

No fill or dredge material will be placed or removed from any surface water or wetlands.

4. *Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.*

The new development will not require any surface water withdrawals or diversions.

5. *Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.*

According to FIRM mapping, the site does not lie within the 100-year floodplain.

6. *Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.*

No, the proposal does not discharge any waste material to surface waters.

b. Ground Water:

1. *Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.*

The site has an existing deep water source exempt well that was previously permitted a Group A TNC water system, and the well will be re-permitted to be used

a Group A TNC water system to service the restaurant and card-lock facility. The proposal will not withdraw or discharge to ground water. Ground water is not anticipated to be withdrawn for construction dewatering.

2. *Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: domestic sewage, industrial, containing the following chemicals...; agricultural, etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.*

Waste materials will not be discharged from any source into the ground on this site. The project is proposed to be served with private water and sewer. The development is anticipated to be connected to the existing private Large On-Site Septic System (LOSS), for the Arco Station and Fruit Stand. The LOSS will be modified as necessary to meet Washington State DOH requirements for the combined developments.

c. *Water Runoff (including storm water):*

1. *Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will the water flow? Will this water flow into other waters? If so, describe.*

The sources of water runoff will be primarily from rainfall and snowmelt. The runoff is proposed to be collected and managed on-site via surface retention and infiltration facilities or underground infiltration facilities. Stormwater treatment and disposal facilities will be designed and sized in accordance with the Stormwater Management Manual for Eastern Washington and Kittitas County standards. This project will not result in the discharge of storm water into a surface water body.

2. *Could waste materials enter ground or surface waters? If so, generally describe.*

No waste materials are anticipated to enter ground or surface waters.

3. *Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.*

No drainage patterns are anticipated to be altered.

4. *Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:*

Storm water runoff from the private parking lot and building will be retained, treated, and disposed of on-site via surface retention and infiltration facilities, or underground infiltration facilities. Accepted BMP engineering practices for stormwater drainage systems will be implemented to collect and manage the surface and runoff water impacts in accordance with the Stormwater Management Manual for Eastern Washington and Kittitas County standards.

4. PLANTS

- a. *Check or underline type of vegetation found on the site:*

☒ deciduous tree: alder, maple, aspen, other
☐ evergreen tree: fir, cedar, pine, other
☐ shrubs
☐ grass
☐ pasture
☐ crop or grain
☐ Orchards, vineyards or other permanent crops
☐ wet soil plants; cattail, buttercup, bullrush, skunk cabbage, other
☐ water plants: water lily, eelgrass, milfoil, other
☒ other types of vegetation

- b. *What kind and amount of vegetation will be removed or altered?*

The development site is primarily vacant land and there isn't any additional vegetation anticipated to be removed.

- c. *List threatened or endangered species known to be on or near the site.*

There are no listed endangered or threatened plants on the project site or within the general project vicinity.

- d. *Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:*

See site plan for anticipated landscaping areas to enhance the environment and meet Kittitas County code.

- e. *List all noxious weeds and invasive species known to be on or near the site.*

There are none known to exist.

5. ANIMALS

- a. *List any birds and other animals which have been observed on or near the site or are known to be on or near the site. (Underline all that apply) Examples include:*

Bird: hawk, heron, eagle, songbird, other
Mammals: deer, bear, elk, beaver, other
Fish: bass, salmon, trout, herring, shellfish, other

- b. *List any threatened or endangered species known to be on or near the site.*

There are no known endangered or threatened animals that occur within the general project vicinity.

- c. *Is this site part of a migration route? If so, explain.*

Most of Washington State is part of the Pacific Flyway migratory route for birds.

- d. *Proposed measures to preserve or enhance wildlife, if any:*

None.

- e. *List any invasive animal species known to be on or near the site.*

None.

6. ENERGY AND NATURAL RESOURCES

- a. *What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.*

It is anticipated that electricity and/or natural gas will be the primary sources of cooling and heating the buildings. Electricity will also be used for normal commercial demands of lighting, etc. During construction: equipment fuel.

- b. *Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.*

The project would not affect the potential use of solar energy by adjacent properties.

- c. *What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:*

New construction will be built to Washington State Energy Codes and as required by the International Building Code.

7. ENVIRONMENTAL HEALTH

- a. *Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.*

There are no known environmental health hazards that could occur as a result of this proposal restaurant portion of the proposal. A fuel spill may occur as a result of construction activities.

The fueling station will have three above ground fuel tanks and a fueling island, with the potential for fire, and explosion. The fuel tanks will be surrounded by a fuel containment area for potential spills.

1. *Describe any known or possible contamination at the site from present or past uses.*

There is no known past or present contamination that will affect the project.

2. *Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmissions pipelines located within the project area and in the vicinity.*

There are no known existing hazardous chemicals that will affect the project. There are natural gas lines within the project area.

3. *Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.*

The only known hazardous chemicals that will be stored, used, or produced during the project development or construction, or at any time during the operating life of the project will be the fuel for the fueling station.

4. *Describe special emergency services that might be required.*

There are no known emergency services that would be needed as a result of this development. Emergency medical aid may be required should an injury occur during or after construction. Emergency fire services may be required should an injury or fire occur during or after construction.

5. *Proposed measures to reduce or control environmental health hazards, if any:*

A fuel spill containment system will be placed around the fuel tanks. There are no other known environmental health hazards associated with this proposal, therefore there are no other proposed measures.

b. Noise

1. *What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?*

Traffic noise from adjacent public interstate, but it is not anticipated to affect the project.

2. *What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.*

Short-term noise: Consists of construction activities associated with commercial construction. Construction noise can be expected from approximately 7:00 a.m. to 7:00 p.m.

Long term noise is expected from standard noise emanating from a fueling station and restaurant.

Long-term noise is expected from the typical commercial maintenance equipment, i.e. lawn mowers, leaf blowers, power trimmers, snow blowers, etc. during daylight hours.

3. *Proposed measures to reduce or control noise impacts, if any:*

No adverse noise impacts are anticipated; however, we propose to restrict construction to 7:00 a.m. to 7:00 p.m. In addition, we will comply with the Kittitas County Noise Ordinance, as it applies to this project.

8. LAND AND SHORELINE USE

a. *What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.*

The project area consists primarily of two undeveloped lots. There is commercial property located to the south of the proposed lot, and agricultural to all sides. The proposal will not affect nearby or adjacent properties.

b. *Has the project site been used as working farmlands or working forest land? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?*

There is no known agriculture or forest land use on the site.

1. *Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:*

No.

c. *Describe any structures on the site.*

The only current structure on the site is the pump house/shed for the existing well. Previously there was a manufactured home, seasonal commercial fruit stand, and an espresso stand, which were removed in approximately July, 2011.

- d. *Will any structures be demolished? If so, what?*

No structures will be demolished.

- e. *What is the current zoning classification of the site?*

The current zoning of the site is Highway Commercial.

- f. *What is the current comprehensive plan designation of the site?*

The project lies within Kittitas County and the current comprehensive plan designation of the site is Highway Commercial, and Thorp LAMRID (Limited Area of More Intense Rural Development).

- g. *If applicable, what is the current shoreline master program designation of the site?*

Not applicable.

- h. *Has any part of the site been classified as a critical area by the city or county? If so, specify.*

No part of the site has been classified as an "critical" area.

- i. *Approximately how many people would reside or work in the completed project?*

No residential, about 10 full time employees and 30 part time employees would work on-site.

- j. *Approximately how many people would the completed project displace?*

The project will not displace any people.

- k. *Proposed measures to avoid or reduce displacement impacts, if any:*

Not applicable.

- l. *Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:*

Project meets the current and future land use plans of Kittitas County.

- m. *Proposed measures to ensure the proposal is compatible with nearby agricultural and forest lands of long-term commercial significance, if any:*

Not applicable.

9. HOUSING

- a. *Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.*

Not applicable.

- b. *Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.*

Not applicable.

- c. *Proposed measures to reduce or control housing impacts, if any:*

Not applicable.

10. AESTHETICS

- a. *What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?*

Most likely less than 30 feet in max height. Principal building materials will consist of stone, brick, stucco, and wood.

- b. *What views in the immediate vicinity would be altered or obstructed?*

No known views would be altered or obstructed.

- c. *Proposed measures to reduce or control aesthetic impacts, if any:*

No adverse aesthetic impacts are anticipated. The project will vastly improve the aesthetic value of the subject site, and surrounding area. Compliance with zoning and building code regulations regarding building height, lot coverage and setbacks will also be in effect. The proposed buildings will be similar in size and appearance as neighboring buildings to further control aesthetic impacts.

11. LIGHT AND GLARE

- a. *What type of light or glare will the proposal produce? What time of day would it mainly occur?*

Light would be mostly on-site from exterior parking lights, exterior business lights or business signage at night. Glare will occur the same as any other fueling station or restaurant.

- b. *Could light or glare from the finished project be a safety hazard or interfere with views?*

The light or glare is not expected to pose any safety hazards or interfere with any views.

- c. *What existing off-site sources of light or glare may affect your proposal?*

There are no existing off-site sources that are expected to affect our proposal.

- d. *Proposed measures to reduce or control light and glare impacts, if any:*

The light impacts will be controlled by shades and covers to ensure the impacts and lighted areas remain within the project boundary. Proposed street lighting, security lighting, and possible accent lighting will be directed toward the interior of the development. Encourage the use of lowest necessary wattages and to direct lights inward and outward.

12. RECREATION

- a. *What designated and informal recreational opportunities are in the immediate vicinity?*

The Thorp elementary school lies approximately 6,000 feet to the northwest, and recreational activities take place at the school fields. John Wayne Pioneer Trail runs immediately adjacent to the site, which provides biking and walking/jogging. It should be noted that the property has no direct access to the John Wayne Trail. Other known recreational activities in the general area consist of fishing and golfing.

- b. *Would the proposed project displace any existing recreational uses? If so, describe.*

The proposal will not displace any existing recreational areas.

- c. *Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:*

None needed. Proposal will provide more restaurant opportunities to support local recreation than currently exist.

13. HISTORIC AND CULTURAL PRESERVATION

- a. *Area there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers located on or near the site? If so, specifically describe.*

According to the Department of Archaeology & Historic Preservation's (DAHP) Washington Information System for Architectural and Archeological Records Data (WISAARD), there are no registered properties within or adjacent to the project limits.

- b. *Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Is there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.*

There are no known landmarks or evidence of historic, archaeological, scientific, or other cultural significance located on or near the site.

- c. *Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.*

WISAARD, EZ-1 Form

- d. *Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.*

There are no known impacts, therefore no measures are proposed. If, during construction, artifacts are found, then work within the area will cease and the proper authority will be notified.

14. TRANSPORTATION

- a. *Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.*

The property is serviced by Interstate 90, Thorp Highway, and Gladmar Road. The proposed development has frontage along Gladmar Road to the south, and Thorp Highway to the west. See attached site plan. The project will construct three additional access points on Gladmar Road. Gladmar Road and the West bound I-90 exit 101 was previously improved to accommodate Interstate Semi Truck traffic, as well as future traffic accessing Gladmar Road.

- b. *Is the site or affected geographic area currently served by public transit? If so, general describe. If not, what is the approximate distance to the nearest transit stop?*

There is no public transit in the area.

- c. *How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?*

The project will provide 39 parking spaces for the restaurant. The fueling station is unmanned, and does not propose any parking spaces. No spaces will be eliminated.

- d. *Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).*

There are currently no improvements proposed to the West bound I-90 exit 101, Thorp Highway or Gladmar Road. Gladmar Road and the West bound I-90 exit 101 was previously improved to accommodate Interstate Semi Truck traffic, as well as, future traffic accessing Gladmar Road.

A traffic impact analysis prepared by Transpo Group (attached) analyzed the above referenced roads and intersections to determine if they will continue to operate at acceptable levels of service. The proposed development will complement the existing businesses creating an Oasis type site out of the existing ARCO Station, Thorp Fruit, proposed Card Lock, and Fast Food. Traffic frequenting the combination of the four business will be synergistic in nature, creating a "one stop shopping center" for vehicles passing through the I-90 corridor, traveling to and from Western Washington, Eastern Washington, and beyond. The TIA determined that off-site intersections will continue to operate at a LOS C or better, and no improvements are needed. See the TIA for the detailed analysis.

New private access isles will be extended throughout the site to provide access to each of the proposed lots.

See attached mapping.

- e. *Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.*

The proposal will not use water, rail, or air transportation.

- f. *How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and non-passenger vehicles). What data or transportation models were used to make these estimates?*

As previously discussed, the proposed development will complement the existing businesses creating an Oasis type site out of the existing ARCO Station, Thorp Fruit, proposed Card Lock, and Fast Food. So the number of customers frequenting any one of the four business would likely shop at more than one of these businesses, and thus mitigating the incremental number of vehicle trips on Gladmar Road.

The TIA determined the proposed project is anticipated to generate approximately 1,360 net new vehicle trips per day, with 146 net new AM peak hour vehicle trips, and 116 net new PM peak hour vehicle trips.

- g. *Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.*

No.

h. Proposed measures to reduce or control transportation impacts, if any:

No measures are planned. The proposed development will complement the existing businesses creating an Oasis type site out of the existing ARCO Station, Thorp Fruit, proposed Card Lock, and Fast Food. Much of the traffic frequenting the combination of the four business will be synergistic in nature "one stop shopping." The customer demographics are existing vehicles passing through the I-90 corridor, traveling to and from Western Washington, Eastern Washington, and beyond. Traffic is expected to be spread equally westbound and eastbound on Interstate 90. The Interstate 90 exit, Thorp Highway, and Gladmar Road service level was designed to accommodate traffic loads from within the development.

15. PUBLIC SERVICES

a. Would the project result in an increased need for public services (for example: fire protection, police protection, health care, schools, other?) If so, generally describe.

The project may result in an increased need for fire and police protection. The project is anticipated to have commercial fueling and a restaurant.

b. Proposed measures to reduce or control direct impacts on public services, if any.

The proposed building could have sprinkler or other fire suppression systems installed, and the buildings could have security cameras installed to help reduce or control direct impact to public services. No measures are proposed. A private fire main and hydrant will be extended from the neighboring fire system as necessary to meet fire code.

16. UTILITIES

a. Underline the utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, irrigation, cable TV, drains, other.

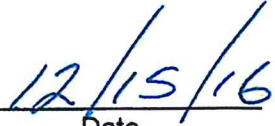

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

Domestic Water:	Group A TNC Well
Sanitary Sewer:	Large On-Site Sewer System (LOSS)
Refuse:	Private Company
Power:	Kittitas County PUD
Telephone:	Qwest, Charter, or CenturyLink
Fire:	A private fire main and hydrant will be extended from the neighboring fire system as necessary to meet fire code.

General construction activities will consist of trenching associated with placement of underground utility services from their present location to the project building site.

C. SIGNATURE

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.



Michael R. Heit, P.E. Date
Project Consulting Engineer
HLA Engineering and Land Surveying, Inc.

D. SUPPLEMENTAL SHEET FOR NONPROJECT ACTION

1. *How would the proposal be likely to increase discharge to water; emissions to air; production, storage or release of toxic or hazardous substances; or production of noise?*

This proposal will not increase discharges to water, emissions to air, produce or release of toxic or hazardous substances; or increase noise pollution.

Proposed measures to avoid or reduce such increases are:

No measures are proposed.

2. *How would the proposal be likely to affect plants, animals, fish, or marine life?*

The proposal will not create any adverse impacts on plants, animals, fish or marine life.

Proposed measures to protect or conserve plants, animals, fish or marine life are:

No measures are proposed.

3. *How would the proposal be likely to deplete energy or natural resources?*

The proposal will not deplete energy or natural resources other than through normal building operations of commercial businesses.

Proposed measures to protect or conserve energy and natural resources are:

Energy efficient measures will be installed wherever practicable; for instance, water efficient fixtures and non-incandescent light bulbs will be used.

4. *How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?*

The proposal will not affect any sensitive areas or areas designated for governmental protection.

Proposed measures to protect such resources or to avoid or reduce impacts are:

No measures are proposed.

5. *How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?*

The proposal will not affect land or shoreline use.

Proposed measures to avoid or reduce shoreline and land use impacts are:

No measures are proposed.

6. *How would the proposal be likely to increase demands on transportation or public services and utilities?*

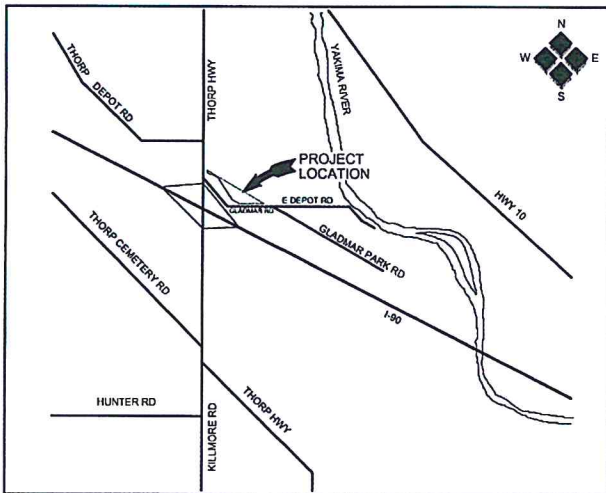
This proposal will have a slight increase of daily trips above the existing site, however the increase can be accommodated by the existing surface streets which were constructed to accommodate heavy traffic from surrounding land uses.

Proposed measures to reduce or respond to such demand(s) are:

No measures are proposed.

7. *Identify, if possible whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.*

The proposal is not known to conflict with local, state, or federal laws protecting the environment.



VICINITY MAP

GODZILLA THORP, LLC

KITTITAS COUNTY

WASHINGTON

GODZILLA TRUCK STOP COMPLEX KITTITAS, WASHINGTON

PART OF THE NORTHWEST QUARTER OF SECTION
13, TOWNSHIP 18 NORTH, RANGE 17 EAST, W.M.

HLA PROJECT NO. 16139

DECEMBER 2016

NOTES:

1. A LARGE ON-SITE SEPTIC SYSTEM ON THE ADJACENT DEVELOPMENT WILL BE EXTENDED TO PROVIDE SEPTIC SERVICE TO THE GODZILLA TRUCK STOP COMPLEX DEVELOPMENT.
2. ON-SITE COMMUNITY WELL WILL PROVIDE DOMESTIC WATER TO THE GODZILLA TRUCK STOP COMPLEX DEVELOPMENT.
3. A PRIVATE FIRE SYSTEM ON THE ADJACENT DEVELOPMENT WILL BE EXTENDED TO PROVIDE FIRE SERVICE TO THE GODZILLA TRUCK STOP COMPLEX DEVELOPMENT.
4. ALL ON-SITE DRAINAGE TO BE RETAINED AND DISPOSED OF ON SITE IN ACCORDANCE WITH KITTITAS COUNTY PUBLIC WORKS REQUIREMENTS. DESIGN OF STORM DRAINAGE FACILITIES NOT COMPLETED AT THIS TIME. STORM DRAINAGE FACILITIES SHOWN ON THIS PLAN ARE APPROXIMATE.
5. FIRE HYDRANT LOCATIONS NOT YET DETERMINED AND NOT SHOWN ON THIS PLAN.
6. GARBAGE DUMPSTER LOCATION IS APPROXIMATE.
7. FINAL SIDE SEWER SERVICE LINES AND DOMESTIC WATER SERVICES AND FIRE SERVICES TO BE DETERMINED DURING FINAL DESIGN.
8. ON-SITE MAIL BOX LOCATIONS TO BE DETERMINED WITH U.S. POST OFFICE.

LEGEND

EXISTING WATER
EXISTING SEWER
EXISTING MANHOLE
EXISTING FIRE HYDRANT
PROPOSED WATERMAIN
PROPOSED SEWERMAIN
PROPOSED SIDE SEWER
PROPOSED MANHOLE
PROPOSED DUMPSTER
APPROXIMATE INFILTRATION SYSTEM

ENGINEER

HLA Engineering & Land Surveying, Inc.
2803 River Road
Yakima, WA 98902
Mike Heil, PE
(509) 966-7000

DEVELOPER

Godzilla Thorp, LLC
P.O. Box 1376
Tacoma, WA 98401
Luke Xigco
(206) 753-8098

PARCEL 958324 - PARKING	
USE:	FUELING STATION
ZONING:	HIGHWAY COMMERCIAL
UNIT SIZE:	N/A
REQUIRED PARKING:	N/A
PARKING PROVIDED:	N/A

PARCEL 958324 - LOT COVERAGE	
LOT AREA:	78,716 S.F.
IMPERVIOUS SURFACES:	29,032 S.F.
LOT COVERAGE:	50% (100% ALLOWED)

PARCEL 958325 - PARKING	
USE:	RESTAURANT
ZONING:	HIGHWAY COMMERCIAL
UNIT SIZE:	6,000 S.F.
REQUIRED PARKING:	1 SPACE PER 200 S.F. = 30 SPACES
PARKING PROVIDED:	39 SPACE, INCLUDING 2 HANDICAP

PARCEL 958325 - LOT COVERAGE	
LOT AREA:	70,252 S.F. (75,025 S.F. IF NO 10' ROW)
IMPERVIOUS SURFACES:	41,184 S.F.
LOT COVERAGE:	59% (100% ALLOWED)
PARKING LOT AREA:	17,552 S.F.
LANDSCAPE AREA:	5,196 S.F.
LANDSCAPING COVERAGE:	29%

NOTE: Impervious surfaces include all structures, paving, cement or asphalt patios and walkways, driveway s, paved parking and all other impervious surfaces.



2803 River Road
Yakima, WA 98902
509.966.7000
Fax 509.965.3800
www.hlacivil.com

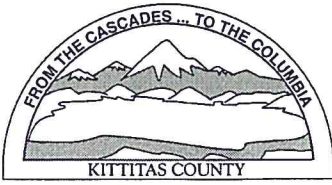


JOB NUMBER:	16139	DATE:	12-16-16
FILE NAMES:			
DRAWING:	16139.dwg		
DESIGNED BY:	MRH	ENTERED BY:	BFP
REVISION	DATE		

GODZILLA THORP, LLC
GODZILLA TRUCK STOP COMPLEX
KITTITAS COUNTY, WASHINGTON

COVER

SHEET
1
OF
2



KITTITAS COUNTY PERMIT CENTER
411 N. RUBY STREET, ELLENSBURG, WA 98926

RECEIPT NO.: 00032719

COMMUNITY DEVELOPMENT SERVICES
(509) 962-7506

PUBLIC HEALTH DEPARTMENT
(509) 962-7698

DEPARTMENT OF PUBLIC WORKS
(509) 962-7523

Account name: 032329

Date: 1/23/2017

Applicant: GODZILLA THORP LLC

Type: check # 4939

<u>Permit Number</u>	<u>Fee Description</u>	<u>Amount</u>
SE-17-00001	CDS SEPA FEE	600.00
SE-17-00001	PW SEPA	70.00
	Total:	670.00

Transportation Impact Analysis

THORP FAST-FOOD & GAS STATION

Prepared for:
Godzilla Thorp
PO Box 2116, Tacoma, WA 98401
253-753-8098

December 2016

Prepared by:



Mike Swenson, PE, PTOE
12131 113th Ave NE #203
Kirkland, WA 98034-7120
Phone: 425-821-3665
Fax: 425-825-8434
www.transpogroup.com

14329.00

© 2016 Transpo Group

Proposed Development	1
Existing Conditions	4
Study Area & Scope	4
Site Accessibility	4
Traffic Safety	5
Non-Motorized Facilities	7
Transit Facilities	7
Projected Traffic	8
Background Traffic	8
Site Traffic	8
Total Network Traffic	10
Traffic Analysis	13
Traffic Operations	13
Traffic Safety Impact	15
Circulation & Parking	15
Findings and Conclusions	19

Appendix

- Appendix A: Traffic Counts
- Appendix B: LOS Definitions
- Appendix C: LOS Worksheets
- Appendix D: Trip Generation Worksheets

Figures

Figure 1.	Site Vicinity & Study Intersections	2
Figure 2.	Preliminary Site Plan	3
Figure 3.	Existing (2016) Weekday PM Peak Hour Traffic Volumes	6
Figure 4.	Future (2020) Without-Project Weekday PM Peak Hour Traffic Volumes	9
Figure 5.	Weekday PM Peak Hour Project Trip Distribution & Assignment	11
Figure 6.	Future (2020) With-Project Weekday PM Peak Hour Traffic Volumes	12
Figure 7.	West Driveway Sight Distance	16
Figure 8.	Middle Driveway Sight Distance	17
Figure 9.	East Driveway Sight Distance	18

Tables

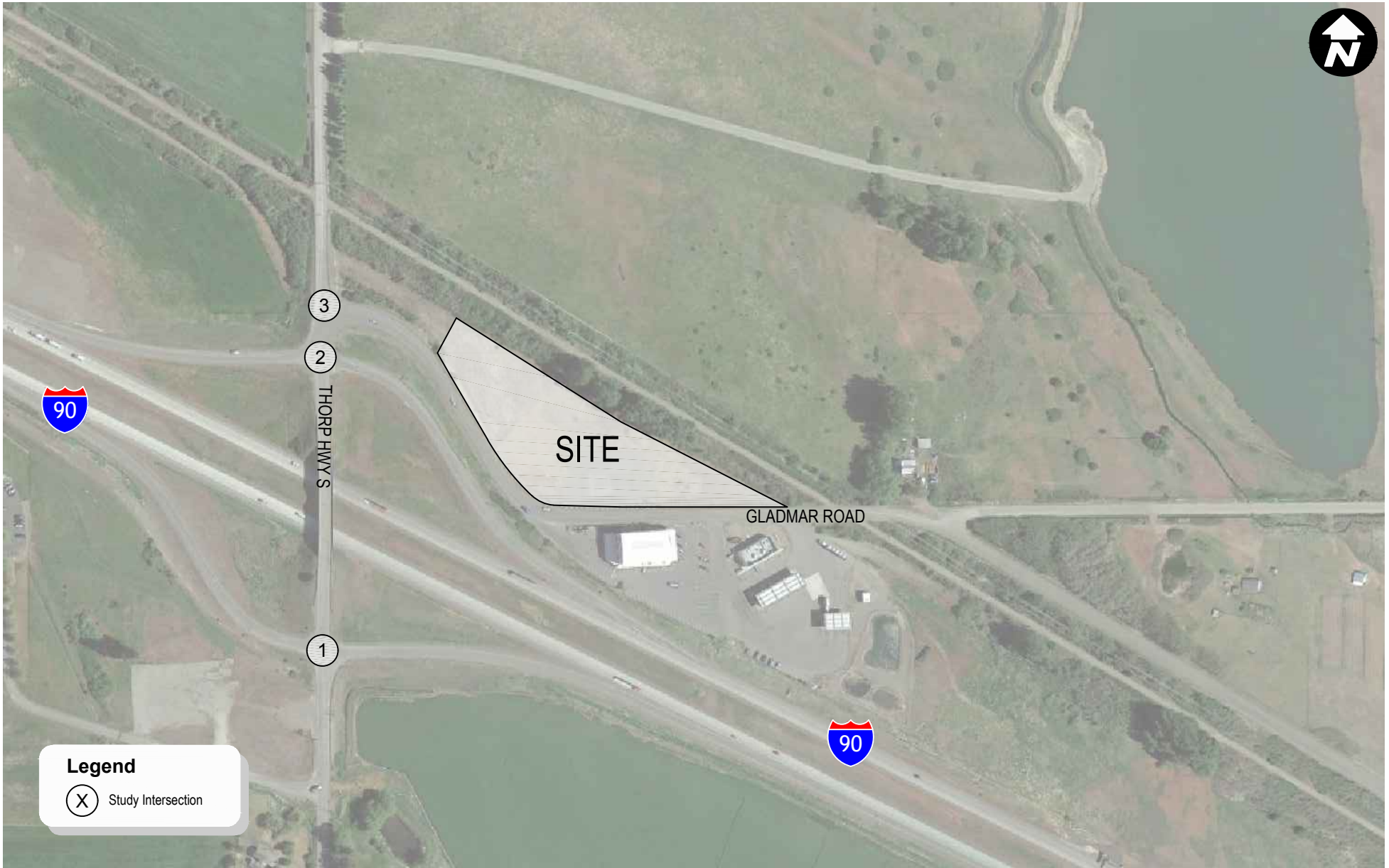
Table 1.	Study Area Existing Street System Summary	4
Table 2.	Three-Year Collision Summary – 2013 through 2015	5
Table 3.	Estimated Weekday Vehicle Trip Generation	8
Table 4.	Existing (2016) Study Intersection Traffic Operations Summary	13
Table 5.	Future (2020) Without & With-Project Seasonally Adjusted Study Intersection Traffic Operations Summary	14
Table 6.	Future (2020) With-Project Seasonally Adjusted Site Access Driveway Traffic Operations Summary	14

Proposed Development

The purpose of this transportation impact analysis (TIA) is to identify potential traffic-related impacts associated with the proposed Thorp Fast-Food Restaurant and neighboring Card Lock gas station. As necessary, mitigation measures are identified that would offset or reduce significant impacts

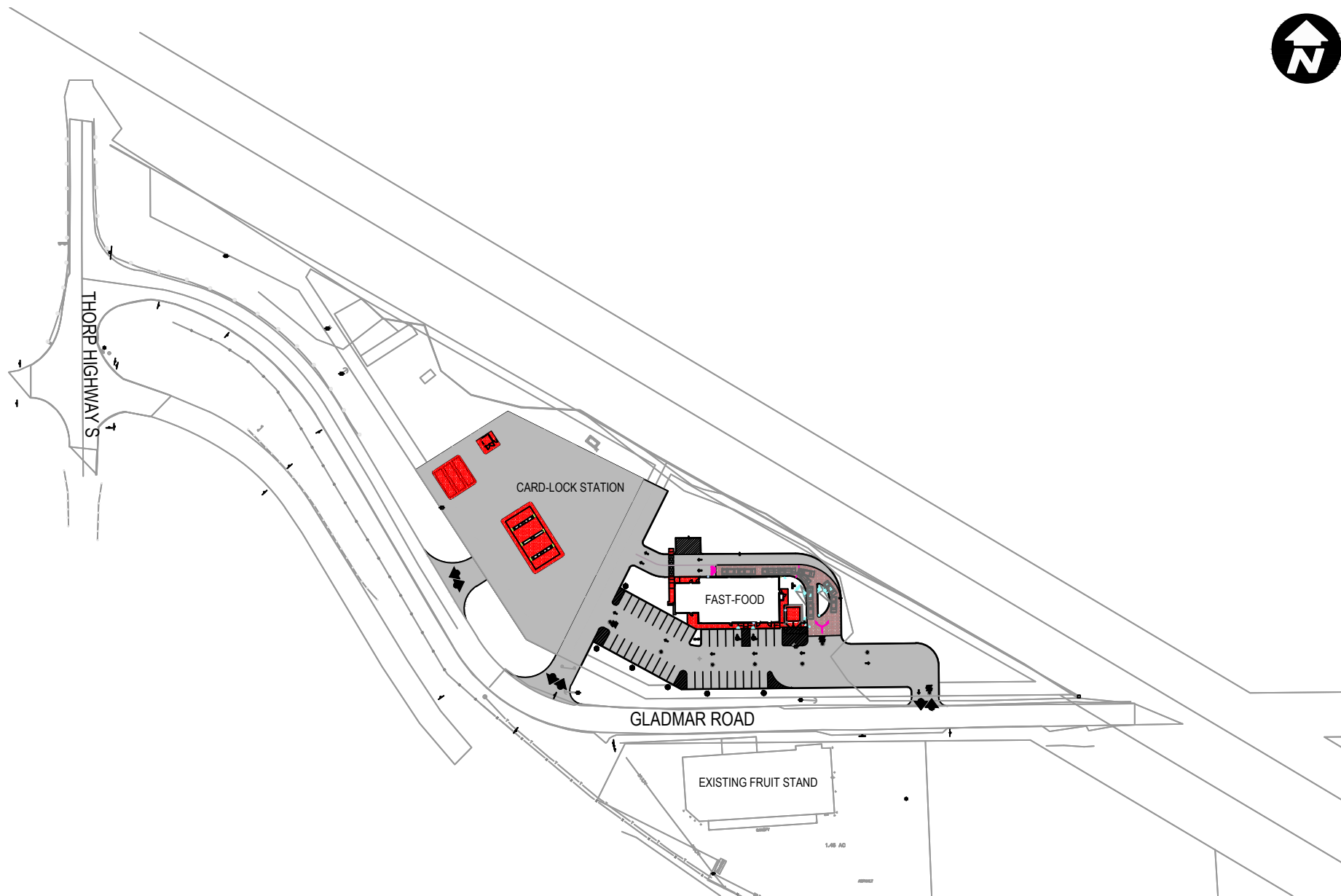
The proposed project is located north of Gladmar Road, east of Thorp Highway South and south of the John Wayne Pioneer Trail in Thorp as shown in Figure 1. The proposed project would construct a 5,000 square feet fast food restaurant with drive-through window. In addition, a members-only gas station for trucks only would also be constructed west of the proposed restaurant. Figure 2 illustrates the preliminary site plan. It is anticipated that the development would be constructed and operational by 2020.

A total of 39 parking spaces would be provided in the restaurant surface parking lot while no parking would be provided adjacent to the Card Lock fuel station. Access to both uses would be provided through three driveways. The two easternmost driveways would be aligned with existing driveways to the south that currently serve Thorp fruit stand, gas station and convenience store. The third is located further west and would generally serve only Card Lock fuel station traffic. The project site is currently vacant.



Site Vicinity & Study Intersections

Thorp Fast-Food Restaurant & Gas Station



Preliminary Site Plan

Thorp Fast-Food Restaurant & Gas Station

Existing Conditions

This section describes existing conditions within the study area. This review of the study area includes a review of the limits of the study area, the existing and proposed zoning and uses, and any other anticipated development potentially impacting the study area. This is followed by a review of the existing accessibility of the project site that includes a summary of the roadway system, existing traffic volumes, collision history, transit service, and non-motorized facilities.

Study Area & Scope

This analysis is consistent with the requirements outlined in the Traffic Impact Analysis Guidelines for Kittitas County Department of Public Works provided in Appendix A. The project site location is currently categorized as Highway Commercial Zoning per the Official County Map and the proposed zoning will remain the same. No specific other planned off-site development projects are anticipated before the 2020 analysis year.

The analysis focuses on the weekday PM peak period (4:00 to 6:00 p.m.) operations at three off-site intersections and the three proposed site driveways on Gladmar Road. This period represents the highest cumulative total traffic for the adjacent street system providing a conservative timeframe for level of service (LOS) analysis. The study off-site intersections include: 1) I-90 Eastbound Ramps / Thorp Highway S, 2) I-90 Westbound Ramps / Thorp Highway S, and 3) Thorp Highway S / Gladmar Road.

Site Accessibility

The following sections describe the accessibility of the project site.

Roadway System

The characteristics of the existing street system in the proposed project vicinity is described in Table 1.

Table 1. Study Area Existing Street System Summary

Roadway	Posted Speed Limit	Number of Travel Lanes	Parking	Sidewalks	Bicycle Facilities
Interstate 90 (I-90)	70 mph	4	No	No	No
Thorp Highway S	35 mph	2	No	No	No
Gladmar Road	35 mph	2	No	No	No

Based on a review of the Kittitas County 2015 – 2020 *Capital Improvement Program* (CIP), no funded future transportation projects are identified to potentially impact study intersections and roadways.

Traffic Volumes

Traffic counts were collected at each study intersection in November 2016. Due to the seasonal fluctuation in traffic volumes of the site vicinity and since a large portion of existing study area traffic is destined to and from the Thorp Fruit Stand and neighboring fuel stations south of the proposed site, existing traffic volumes were adjusted to estimate peak summer traffic conditions to provide a conservative forecast of future conditions. Based on transactions data provided from Thorp LLC for the existing fruit stand and neighboring fuel stations, the average August month was the highest sales period and with the number of

transactions 2.13 times greater than November conditions. As a conservative estimate, all traffic counts collected in November 2016 at the study intersections and existing site access driveways were increased by a factored of 2.13 factor to estimate peak August traffic volume conditions.

Figure 3 illustrates the existing weekday PM peak hour traffic volumes at the study intersections, rounded to the nearest 5 vehicles for both the observed and seasonally adjusted volumes. Detailed November 2016 traffic counts are provided in Appendix A.

Traffic Safety

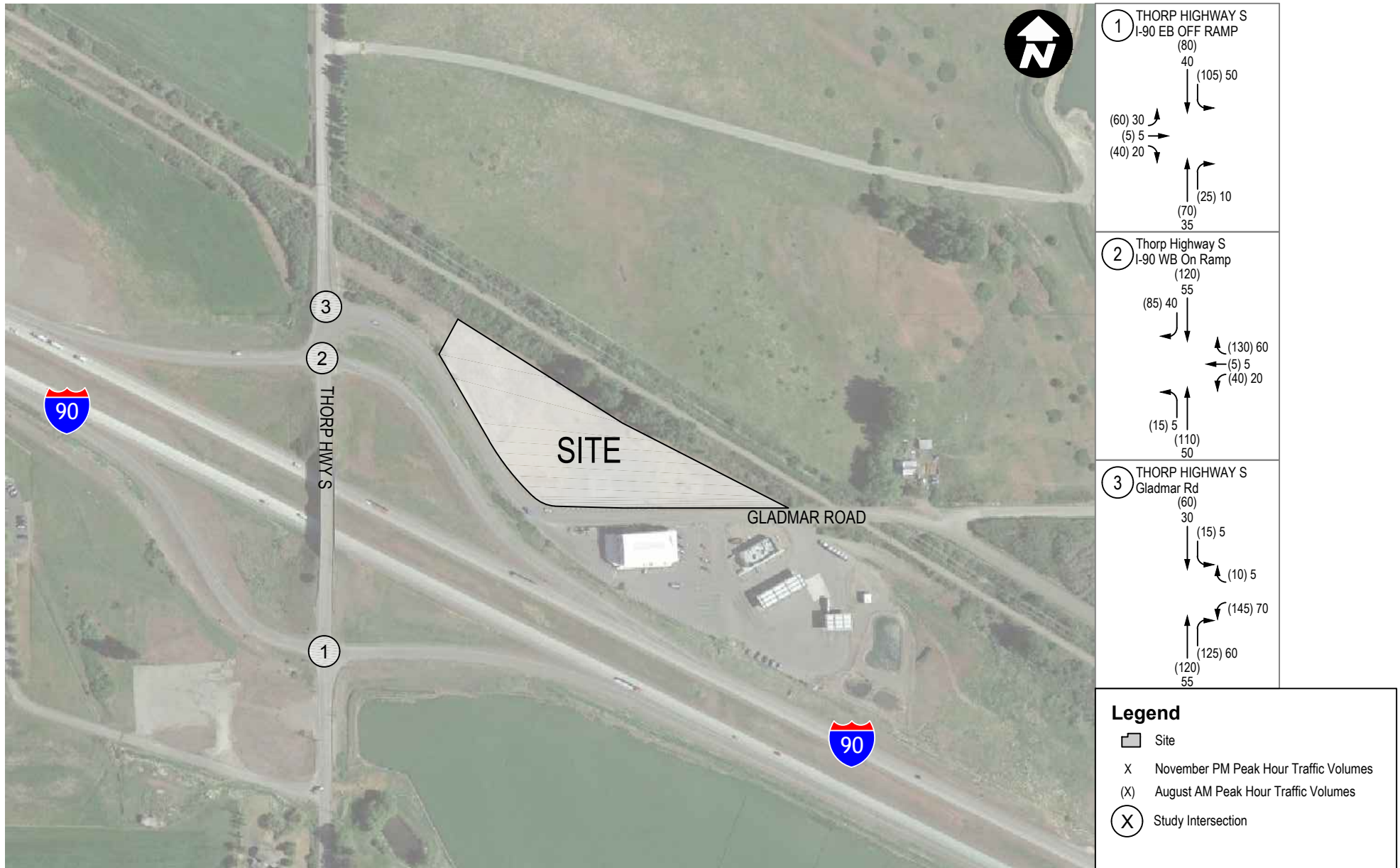
The Washington State Department of Transportation (WSDOT) provided collision data for three most recent calendar year for intersections and roadway segments within the study area. Specifically, the data was summarized between January 1, 2013 and December 31, 2015. Table 2 provides a summary of collision history within the study area.

Table 2. Three-Year Collision Summary – 2013 through 2015

Location	Number of Collisions			Total	Annual Average
	2013	2014	2015		
I-90 EB Ramps & Thorp Hwy S	1	0	1	2	0.67
I-90 WB Ramps & Thorp Hwy S	0	0	0	0	0
Thorp Hwy S & Gladmar Rd	0	1	0	1	0.33

Source: Transpo Group, 2016

Per the Kittitas County Long Range Transportation Plan, High Accident Locations are defined as corridors and intersections that have had three or more collisions reported during a 3-year analysis period. As summarized, no study intersection or roadway segment experienced more than two accidents over a 3-year period and averaged less than 1 collision per year. Of the three total collisions in the study area, two involved an angled collision and the remaining collision involved striking a fixed object and no injuries were noted in the collision reports.



Weekday Existing PM Peak Hour Traffic Volumes

Thorp Fast-Food Restaurant & Gas Station

Non-Motorized Facilities

There are no sidewalks, crosswalks or designated walking paths on the roadway or at intersections within the site vicinity. Immediately north of the site, the unpaved Iron Horse-John Wayne Pioneer Trail is available for recreational use for pedestrians and bicycles. This recreational trail has an unmarked crossing of Thorp Highway approximately 200 feet north of the Gladmar Road intersection. The trail also crosses Gladmar Road approximately 200 feet east of the project site and an unmarked crossing.

The Institute of Transportation Engineers' (ITE's) *Traffic Control Devices Handbook* (2nd Edition) provides guidance for when pedestrian or trail crossings are recommended. Specifically, where a minimum of 20 pedestrians typically cross a roadway within a one-hour period, a marked crosswalk is recommended. Based on the recreational and seasonal nature of trail activity, it is unlikely that a marked crosswalk would be recommended by *Traffic Control Devices Handbook* criteria.

Transit Facilities

Based on a review of HopeSource and Central Transit services, no dedicated transit facilities or scheduled service is provided within the project vicinity. HopeSource does provide shuttle services throughout the broader region but no fixed route service is provided.

Projected Traffic

This section documents the forecasting of future traffic volumes in the project vicinity, including traffic generated by the proposed project.

Background Traffic

Future (2020) without-project traffic volumes were forecasted by applying an average annual growth rate to existing (2016) traffic volumes. A compounding annual growth rate of 3.5 percent per year was applied to the existing seasonally adjusted weekday PM peak hour traffic volumes. This growth rate was identified based on historical average annual daily traffic (AADT) provided by WSDOT at the nearest permanent traffic recorder (PTR). This PTR is located approximately 18 miles west of the project site on I-90 near Cle Elum. Future (2020) without-project seasonally adjusted weekday PM peak hour traffic volumes reflecting background growth are shown on Figure 4.

Site Traffic

The number of vehicular trips and the distribution of the new trips to the surrounding roadway system is described in the following sections.

Trip Generation

Vehicular trips generated by the proposed fast-food restaurant with drive-through window were forecast based on the average trip generation rate for the Land Use #934 (Fast-Food Restaurant with Drive-Through Window) published in the Institute of Transportation Engineers' (ITE's) *Trip Generation Manual* (9th Edition). Weekday peak hour pass-by rates from *Trip Generation Handbook* (3rd Edition) were used. No weekday daily pass-by rates are provided within the *Trip Generation Handbook* but were assumed to be 50 percent based on the similarity between AM and PM peak pass-by rates.

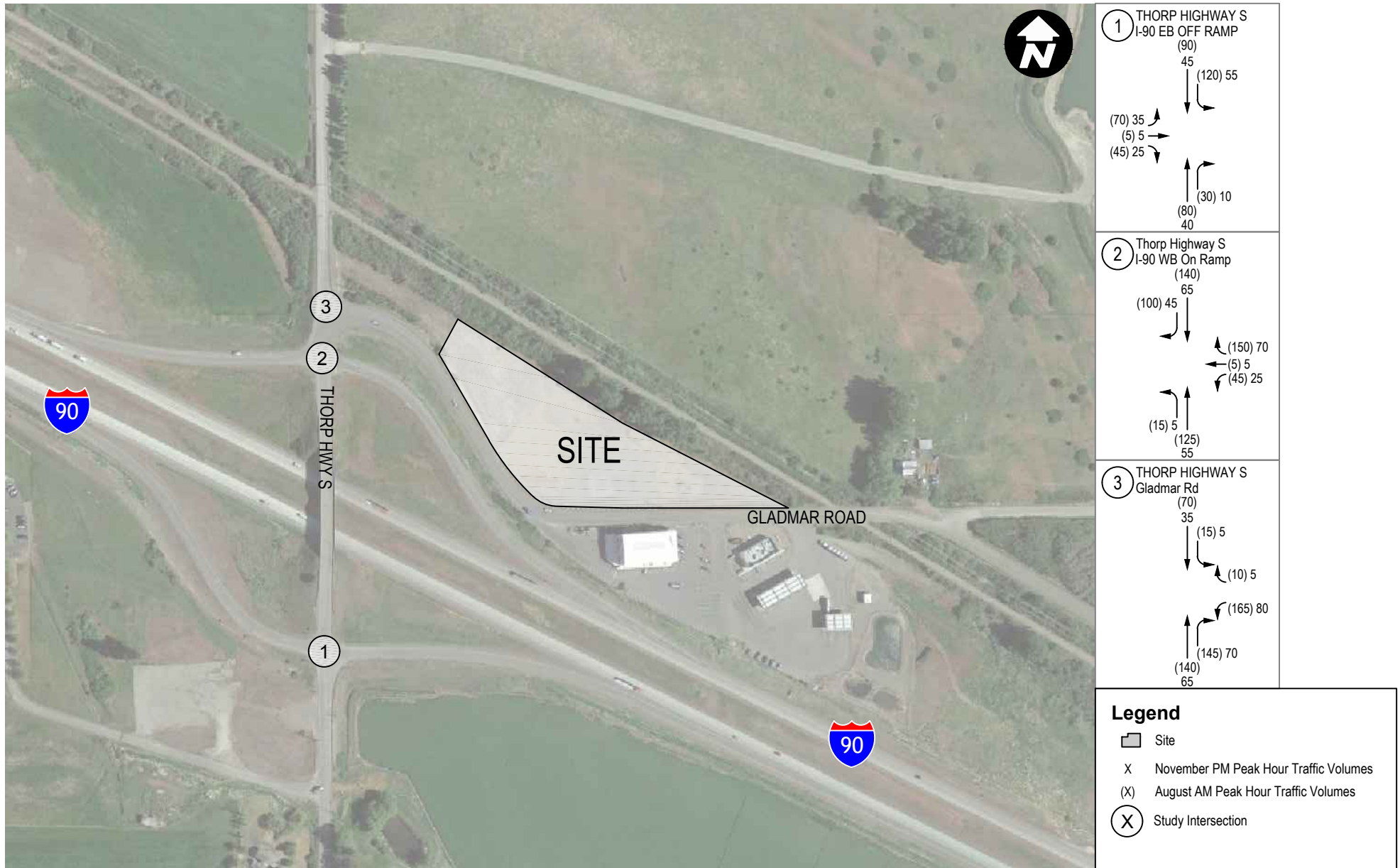
Because of the members-only nature of the proposed Card Lock fuel station, trips generated by the station were based on a trip generation study of similar facilities throughout Washington State. This study identified an average trip generation across four existing facilities but without regard to the number of fueling positions given the variability of trucks to passenger vehicles and the site's distances from freeway facilities. This study also indicated that no specific rate of pass-by trips was determined and provides for a conservative evaluation of potential off-site traffic impacts. A copy of this study is provided in Appendix X. Table 3 summarizes the estimated weekday daily and AM and PM peak hour trip generation for the proposed land uses. Appendix D provides the detailed trip generation calculation.

Table 3.		Estimated Weekday Vehicle Trip Generation						
Land Use	Size	Daily Trips	AM Peak-Hour Trips			PM Peak-Hour Trips		
			In	Out	Total	In	Out	Total
Fast-Food with Drive-Through ¹	5,000 sf	2,480	116	111	227	85	78	163
- Pass-By ¹ (49% AM, 50% PM, 50% daily)		-1,240	-56	-56	-112	-39	-39	-78
Card Lock Gas Station ²	4 pumps	120	16	15	31	16	15	31
Total		1,360	76	70	146	62	54	116

Notes: sf = square-feet

1. Based on rates found in *Trip Generation*, 9th Edition, ITE, 2012 for Land Use 934. Peak hour pass-by rates provided in *Trip Generation Handbook* (3rd Edition) and daily rate assumed to be 50 percent based on similar AM and PM rates.

2. Based on rates found in *104th Street Card Lock Traffic Impact Analysis* trip generation study (April 2014).



2020 Without-Project Weekday PM Peak Hour Traffic Volumes

Thorp Fast-Food Restaurant & Gas Station

FIGURE

4

As shown in Table 3 (page 8), the proposed project is anticipated to generate approximately 1,360 new daily vehicle trips with 146 net new vehicle trips during the AM peak hour and 116 net new vehicle trips during the PM peak hour. An additional 1,240 daily, 112 AM peak hour, and 78 weekday PM peak hour pass-by vehicle trips would be attracted to the site from I-90.

Project Trip Distribution & Assignment

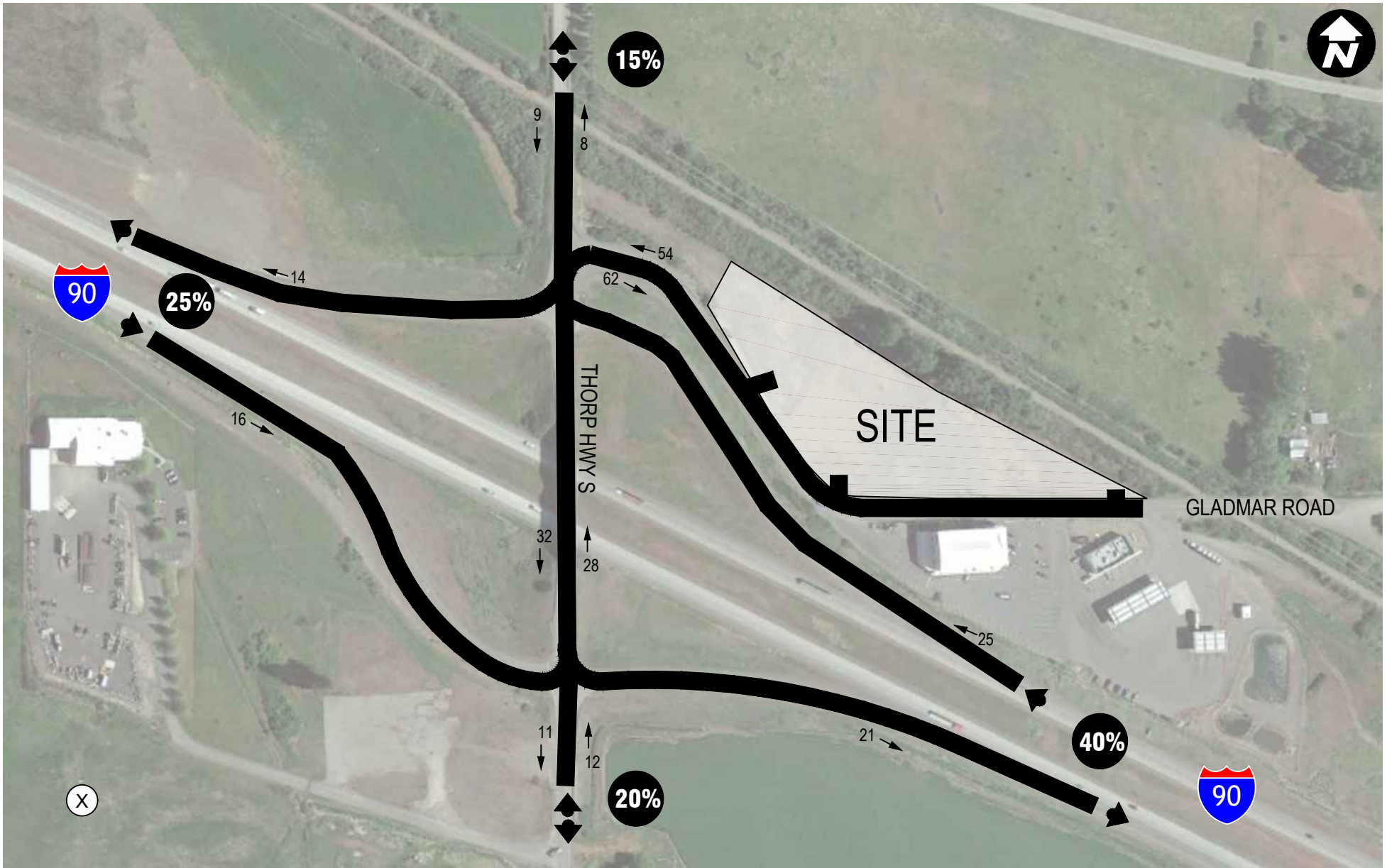
The distribution pattern of vehicle trips travelling to and from the proposed project were estimated based on existing driveway and study intersection traffic counts. The resulting distribution is shown in Figure 5. Restaurant pass-by trips were distributed based on existing on and off-ramp counts at the I-90 interchange. This results in approximately 65 percent to and from the east and 35 percent to and from the west.

All Card Lock fuel station trips were assumed to be heavy vehicles and would enter the fuel station site via the westernmost driveway. Primary restaurant trips (non-pass-by trips) were assumed to access the site via the middle proposed drive given its proximity to the on-site parking. Pass-by restaurant trips were assumed to enter via the eastern driveway given its location near the drive-through window lane, and to then exit the site via the middle driveway near the exit of the drive-through window.

The assignment of weekday PM peak hour project generated traffic based on these distributions is also summarized in Figure 5.

Total Network Traffic

The assignment of weekday PM peak hour project generated traffic was added to future (2020) seasonally adjusted without-project traffic volumes at the study intersections and site access driveways. The resulting 2020 with-project traffic volumes are shown in Figure 6.



Note: Figure excludes 78 pass-by trips generated by the fast-food restaurant

Project Net Trip Distribution & Assignment

Thorp Fast-Food Restaurant & Gas Station

Nov 23, 2016 - 12:38pm darwin\l\sr\dfs-wa\MM_Projects\Projects\14\14329.00 - Thorp Retail\Graphics\Graphics Nov2016 V2.dwg Layout: Dist



2020 With-Project Weekday PM Peak Hour Traffic Volumes

Thorp Fast-Food Restaurant & Gas Station

FIGURE

6

Traffic Analysis

This section of the report summarizes existing and forecast traffic operations at the site access driveways and study intersections considering both delays/levels-of-service and queuing. In addition, impacts of site circulation and parking, and traffic safety are also summarized.

Traffic Operations

The following sections summarize traffic operations for observed and seasonally adjusted existing conditions, as well as future without and with-project conditions. The review of future wit-project conditions also describes site access circulation and operations.

Existing Traffic Operations

Existing weekday PM peak hour traffic operations were evaluated at the study intersections and site access driveways consistent with the procedures identified in the *Highway Capacity Manual* (2010), and evaluated using Synchro version 9.1. This methodology provides an estimate of vehicular delays and corresponding levels-of-service (LOS) values. In addition, an estimated of 95th-percentile queue lengths at unsignalized intersections such as the off-site and site access study intersections is also provided.

At stop-sign-controlled intersections, LOS is measured in the delay per vehicle for the worst operating approach or lane group. Traffic operations for an intersection can be described alphabetically with a range of levels of service (LOS A through F), with LOS A indicating free-flowing traffic and LOS F indicating extreme congestion and long vehicle delays. Appendix B contains a detailed explanation of LOS criteria and definitions. HCM calculations used heavy vehicle percentages observed during the November 2016 data collection. With increased traffic volumes, the relative magnitude of the peak traffic flow can vary relative to the remainder of the peak one-hour period. Thus, the Peak Hour Factor (PHF) used for the seasonally adjusted condition could be based on information published in NCHRP 599 report¹ for ranges of intersection volumes. For the existing seasonally adjusted scenario, no PHF adjustment was needed as traffic volumes remain below the minimum thresholds for updating this parameter.

Table 4 summarizes the existing weekday PM peak hour LOS and 95th-percentile queue lengths at study intersections under existing observed conditions (November 2016 counts) and seasonally adjusted existing condition volumes. The detailed LOS and queue length worksheets are provided in Appendix C.

Table 4. Existing (2016) Study Intersection Traffic Operations Summary

Intersection	November 2016 Counts			Seasonally Adjusted		
	LOS ¹	Delay ²	WM ³ & Queue ⁴	LOS	Delay	WM & Queue
I-90 EB Ramps & Thorp Highway S	B	10	EB - <1 veh	B	13	EB - 1 veh
I-90 WB Ramps & Thorp Highway S	A	10	WB - <1 veh	B	12	WB - 2 veh
Thorp Highway S & Gladmar Road	B	10	WB - <1 veh	B	14	WB - 2 veh

1. Level of service, based on 2010 Highway Capacity Manual methodology.

2. Average delay in seconds per vehicle.

3. Worst movement reported for unsignalized intersections.

4. 95th-percentile queue length reported. 95 percent of queues occurring during the peak hour are shorter than the 95th-percentile.

¹ National Cooperative Highway Research Program (NCHRP) Report 599. *Default Values for Highway Capacity and Level of Service Analyses*

Based on the Kittitas County Long Range Transportation Plan, Kittitas County has adopted an LOS standard of LOS C for all intersections located in the designated rural area. As shown in Table 4, all existing study intersections currently operate at LOS B or better during either observed (November 2016) or seasonal peak conditions. Queue lengths are also 2 vehicles or shorter and do not extend into adjacent intersections, driveways, or near mainline I-90.

Future Without & With-Project Traffic Operations

Future (2020) traffic operations were evaluated consistent with the existing conditions analysis (HCM methodology). Because of increased traffic volumes related to seasonal adjustment factors and both background traffic growth, Peak Hour Factors for study intersections recommended by NCHRP 599 were used for the analysis of future operations. In addition, traffic generated by the proposed Card Lock fuel station is anticipated to be almost exclusively semi-truck vehicles. The heavy vehicle percentages used in the operational analysis have been adjusted to reflect this increased truck traffic for future with-project conditions.

Table 5 summarizes future (2020) without and with-project conditions at the three off-site study intersections. Site access driveway operations as summarized in Table 6. The detailed LOS and queue length worksheets are provided in Appendix C.

Table 5. Future (2020) Without & With-Project Seasonally Adjusted Study Intersection Traffic Operations Summary

Intersection	2020 Without-Project			2020 With-Project		
	LOS ¹	Delay ²	WM ³ & Queue ⁴	LOS	Delay	WM & Queue
I-90 EB Ramps & Thorp Highway S	B	15	EB – 2 veh	C	17	EB - 2 veh
I-90 WB Ramps & Thorp Highway S	B	12	WB - 2 veh	B	13	WB - 2 veh
Thorp Highway S & Gladmar Road	B	14	WB – 2 veh	C	21	WB - 4 veh

1. Level of service, based on 2010 Highway Capacity Manual methodology.

2. Average delay in seconds per vehicle.

3. Worst movement reported for unsignalized intersections.

4. 95th-percentile queue length reported. 95 percent of queues occurring during the peak hour are shorter than the 95th-percentile.

Table 6. Future (2020) With-Project Seasonally Adjusted Site Access Driveway Traffic Operations Summary

Driveway Intersection	November 2016 Counts		
	LOS ¹	Delay ²	WM ³ & Queue ⁴
West Driveway & Gladmar Road	B	11	WB - <1 veh
Middle Driveway & Gladmar Road	C	15	NB - <1 veh
East Driveway & Gladmar Road	A	10	NB - <1 veh

1. Level of service, based on 2010 Highway Capacity Manual methodology.

2. Average delay in seconds per vehicle.

3. Worst movement reported for unsignalized intersections.

4. 95th-percentile queue length reported. 95 percent of queues occurring during the peak hour are shorter than the 95th-percentile.

As shown in Table 5, all off-site study intersections would operate at LOS C with both background and project generated traffic growth during forecast peak season conditions. This forecast meets Kittitas County's LOS C standard identified in the Long Range Transportation Plan. Table 6 shows that the worst operating movements at the site access driveways is anticipated to be the driveway approach and not occur on Gladmar Road. The worst movement at all three driveways is forecast to operate at LOS C or better with peak queues

during the peak season that are less than one vehicle based on HCM queue length methodologies.

Traffic Safety Impact

Potential impact to vehicular and pedestrian/bicyclist safety were reviewed.

Traffic generated by the proposed project would likely result in a proportionate increase in the probability of collisions. It is unlikely, however, that this traffic would create a safety hazard or significantly increase the number of reported collisions in the study area.

Vehicular sight distance at the site access driveways was also reviewed. Based on Kittitas County sight distance requirements,² sight distance at the three proposed site driveways was analyzed based on the posted speed limit of 35 mph. County requirements indicate 250 feet of sight distance is required and is illustrated for each driveway location in Figure 7, Figure 8, and Figure 9 for west, middle, and east driveways, respectively.

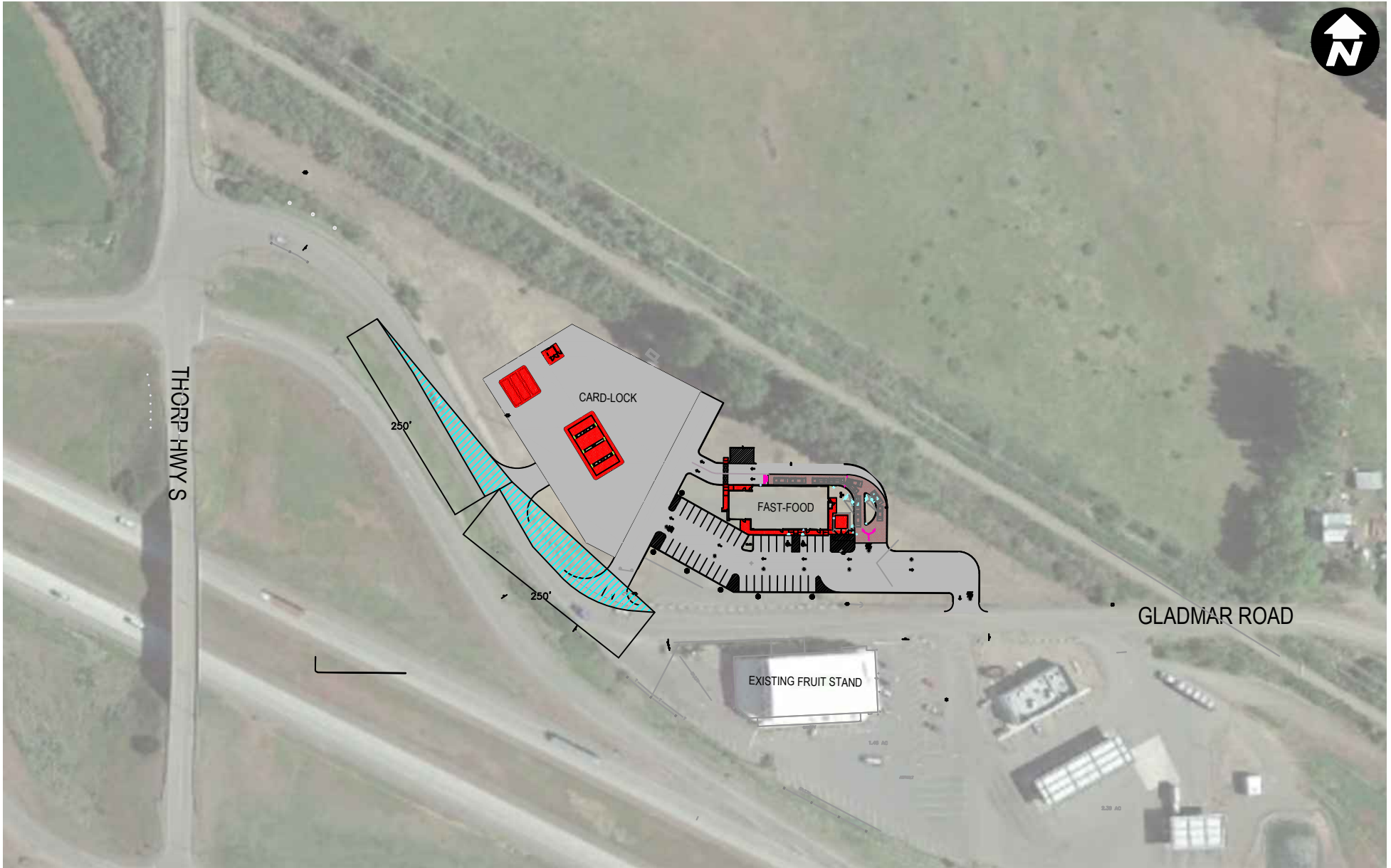
Based on the project's proposed uses, nearly all project trips are expected to be vehicular; minimal increases to pedestrian and bicycle travel is expected. In addition, the majority of project traffic is expected to travel to/from I-90 and would not notably increase vehicular traffic and non-motorized conflicts at the Iron Horse-John Wayne Pioneer Trail crossing located north and east of the project site when also considering the low volume recreational nature of the trail.

Circulation & Parking

A surface parking lot would be provided adjacent to the proposed restaurant use and no parking would be provide adjacent to the Card Lock fuel station. Access to would be provided through three driveways and traffic can circulate on-site to enter and depart via any of the three different driveway. The preliminary site plan shown in Figure 2 (page 3) illustrates these features.

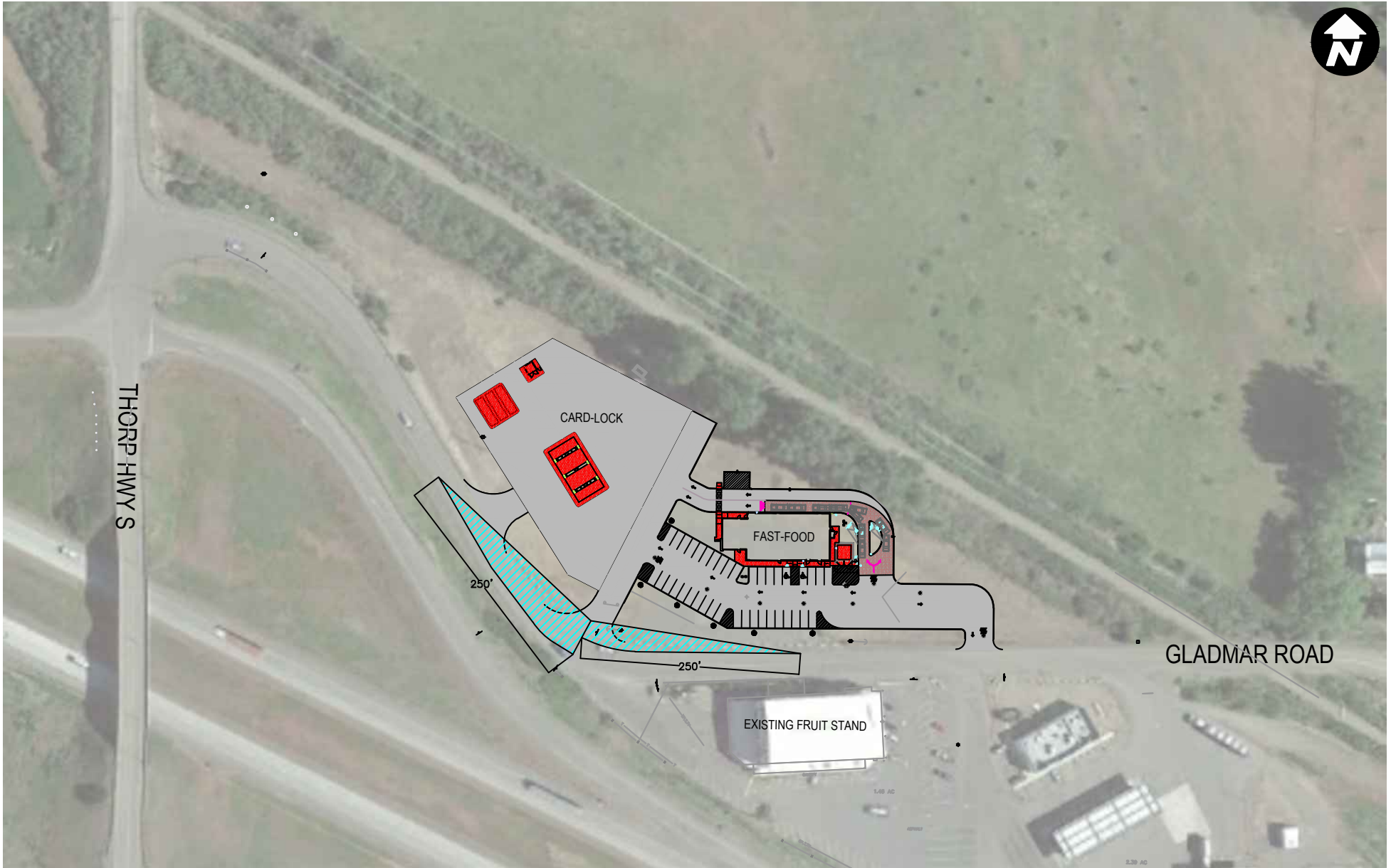
The two easternmost driveways would be aligned with existing driveways to the south that currently serve Thorp fruit stand, gas station and convenience store. The third is located further west and would generally serve only Card Lock fuel station traffic. As previously described, the site access driveways operate acceptably with development of the proposed restaurant and fuel station uses.

² Kittitas County Code. Chapter 12.05, Table 5-2 Sight Distance Requirements



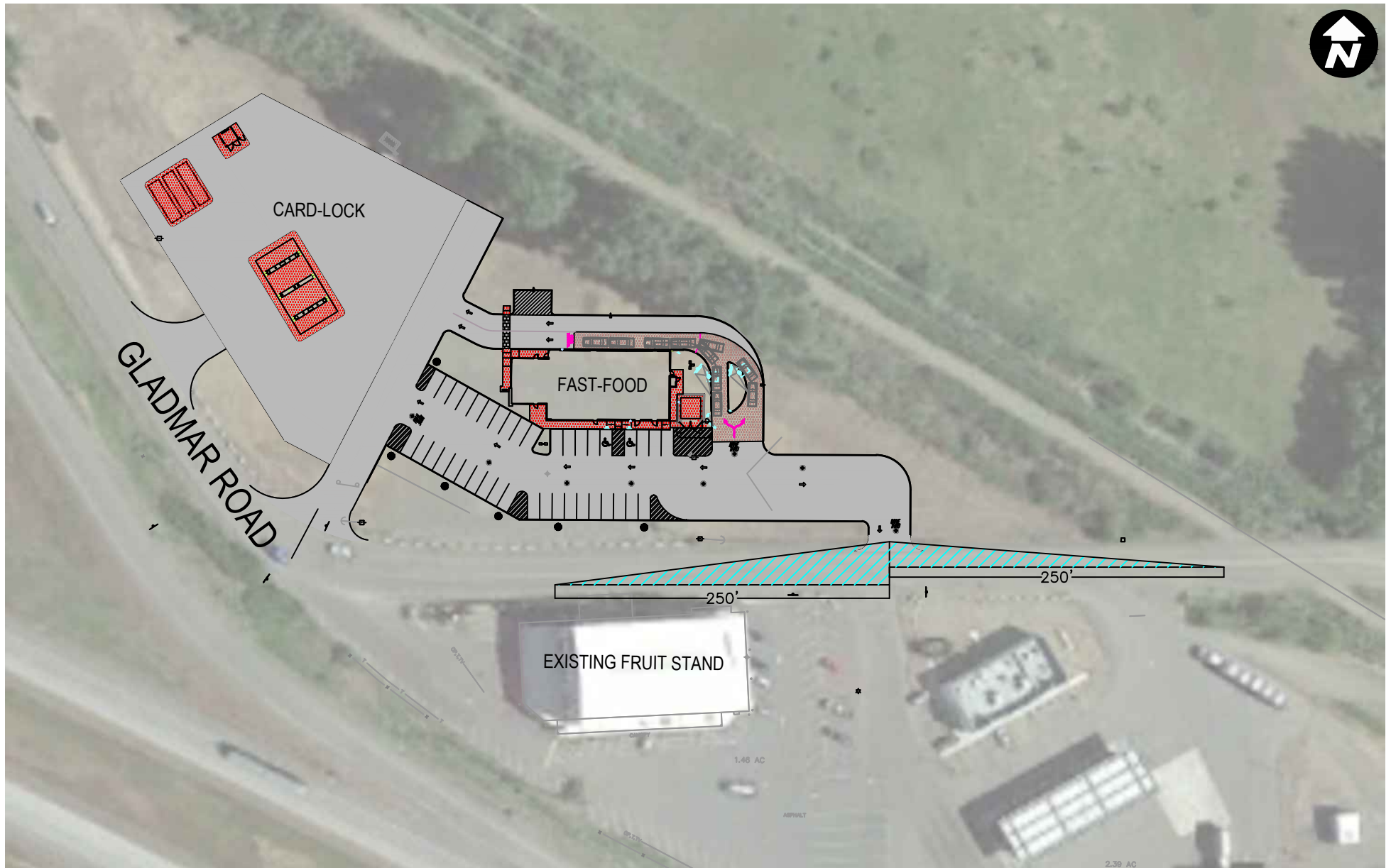
West Driveway (A) Sight Distance

Thorp Fast-Food Restaurant & Gas Station



Middle Driveway (B) Sight Distance

Thorp Fast-Food Restaurant & Gas Station



East Driveway (C) Sight Distance

Thorp Fast-Food Restaurant & Gas Station

Nov 28, 2016 - 1:14pm darwinl \\srv-dfs-wa\MM_Projects\Projects\14\14329.00 - Thorp Retail\Graphics\Graphics Nov2016 V2.dwg Layout: Sight Distance 3

FIGURE

9

Findings and Conclusions

This TIA summarizes the transportation impacts associated with the fast-food restaurant and card-lock gas station located in Thorp, Washington. General findings and recommendations include:

- The proposed project would construct a 5,000 square feet fast-food restaurant with drive-through and a 4-pump card-lock gas station. 39 parking spaces would be provided on a surface parking lot.
- The proposed project is anticipated to generate approximately 1,360 net new daily vehicle trips with 146 net new vehicle trips during the AM peak hour and 116 net new vehicle trips during the PM peak hour.
- Access to the proposed site would be provided through three new driveways on the north side of Gladmar Road.
- All the off-site study intersections are anticipated to operate at LOS C or better with the project which would meet Kittitas County LOS standards.
- The three site driveways are also expected to meet LOS standards during future November and peak August conditions.

E DWY GLADMAR RD

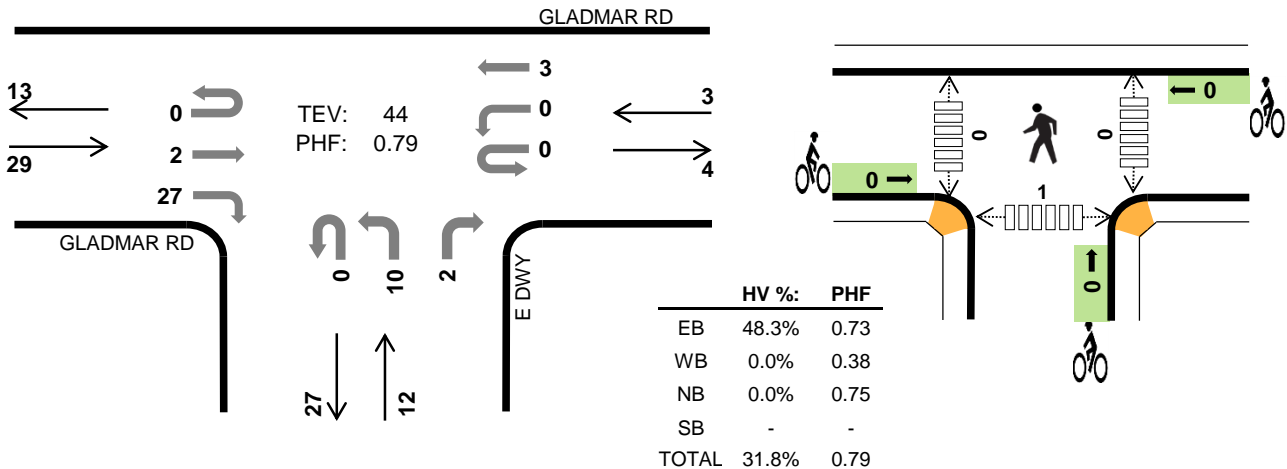


Peak Hour

Date: Wed, Nov 09, 2016

Count Period: 4:00 PM to 6:00 PM

Peak Hour: 4:30 PM to 5:30 PM



Two-Hour Count Summaries

Interval Start	GLADMAR RD Eastbound				GLADMAR RD Westbound				E DWY Northbound				0 Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	9	0	0	0	0	0	1	0	0	0	0	0	0	10	0
4:15 PM	0	0	2	1	0	0	0	0	0	1	0	0	0	0	0	0	4	0
4:30 PM	0	0	0	6	0	0	1	0	0	0	0	1	0	0	0	0	8	0
4:45 PM	0	0	1	9	0	0	0	0	0	3	0	1	0	0	0	0	14	36
5:00 PM	0	0	0	8	0	0	2	0	0	3	0	0	0	0	0	0	13	39
5:15 PM	0	0	1	4	0	0	0	0	0	4	0	0	0	0	0	0	9	44
5:30 PM	0	0	0	7	0	0	0	0	0	1	0	0	0	0	0	0	8	44
5:45 PM	0	0	0	2	0	0	0	0	0	3	0	0	0	0	0	0	5	35
Count Total	0	0	4	46	0	0	3	0	0	16	0	2	0	0	0	0	71	0
Peak Hour	0	0	2	27	0	0	3	0	0	10	0	2	0	0	0	0	44	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0
4:15 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
4:30 PM	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0
4:45 PM	5	0	0	0	5	0	0	0	0	0	0	0	0	1	1
5:00 PM	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0
5:15 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
5:30 PM	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0
5:45 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0
Count Total	25	0	0	0	25	0	0	0	0	0	0	0	0	1	1
Peak Hr	14	0	0	0	14	0	0	0	0	0	0	0	0	1	1

MIDDLE DWY GLADMAR RD

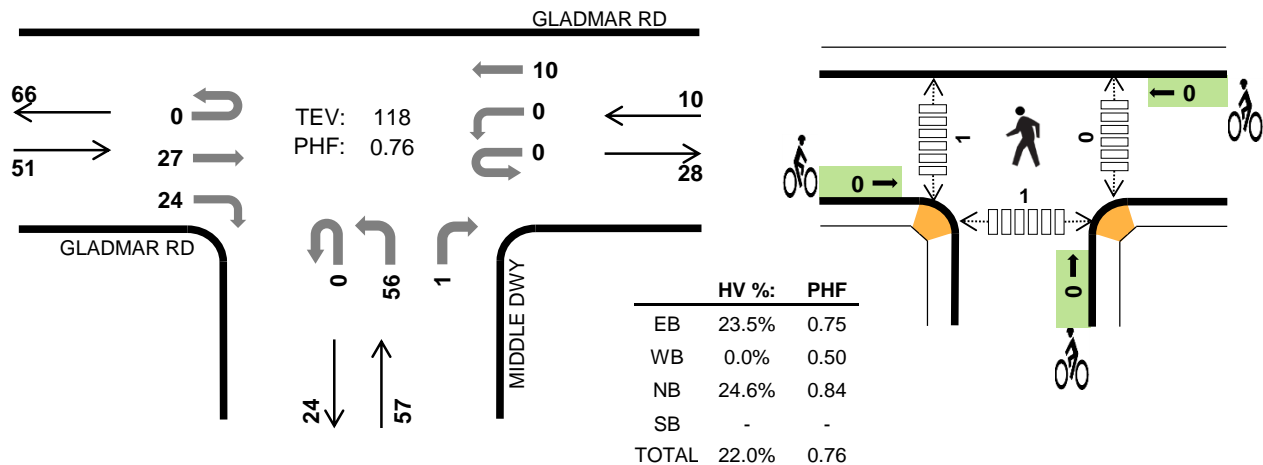


Peak Hour

Date: Wed, Nov 09, 2016

Count Period: 4:00 PM to 6:00 PM

Peak Hour: 4:15 PM to 5:15 PM



Two-Hour Count Summaries

Interval Start	GLADMAR RD Eastbound				GLADMAR RD Westbound				MIDDLE DWY Northbound				0 Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	9	3	0	0	1	0	0	21	0	0	0	0	0	0	34	0
4:15 PM	0	0	2	6	0	0	1	0	0	13	0	1	0	0	0	0	23	0
4:30 PM	0	0	6	3	0	0	1	0	0	13	0	0	0	0	0	0	23	0
4:45 PM	0	0	10	7	0	0	3	0	0	13	0	0	0	0	0	0	33	113
5:00 PM	0	0	9	8	0	0	5	0	0	17	0	0	0	0	0	0	39	118
5:15 PM	0	0	5	2	0	0	4	0	0	10	0	0	0	0	0	0	21	116
5:30 PM	0	0	7	4	0	0	1	0	0	7	0	0	0	0	0	0	19	112
5:45 PM	0	0	2	4	0	0	3	0	0	4	0	0	0	0	0	0	13	92
Count Total	0	0	50	37	0	0	19	0	0	98	0	1	0	0	0	0	205	0
Peak Hour	0	0	27	24	0	0	10	0	0	56	0	1	0	0	0	0	118	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	4	0	3	0	7	0	0	0	0	0	0	0	0	0	0
4:15 PM	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0
4:30 PM	3	0	3	0	6	0	0	0	0	0	0	0	0	0	0
4:45 PM	4	0	6	0	10	0	0	0	0	0	0	0	0	1	1
5:00 PM	4	0	4	0	8	0	0	0	0	0	0	1	0	0	1
5:15 PM	1	0	3	0	4	0	0	0	0	0	0	0	0	0	0
5:30 PM	4	0	2	0	6	0	0	0	0	0	0	0	0	0	0
5:45 PM	2	0	1	0	3	0	0	0	0	0	0	0	0	0	0
Count Total	23	0	23	0	46	0	0	0	0	0	0	1	0	1	2
Peak Hr	12	0	14	0	26	0	0	0	0	0	0	1	0	1	2

W DWY GLADMAR RD

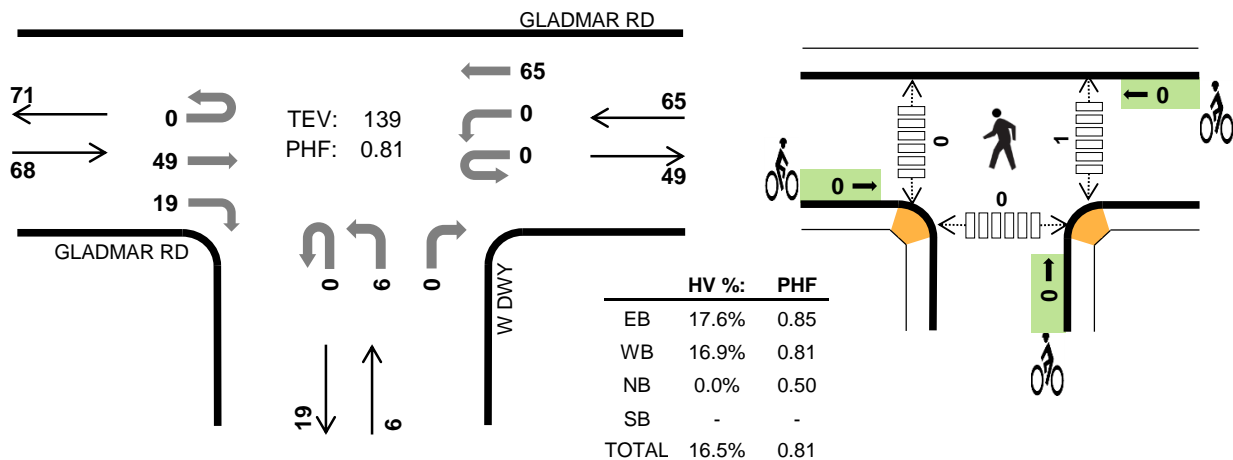


Peak Hour

Date: Wed, Nov 09, 2016

Count Period: 4:00 PM to 6:00 PM

Peak Hour: 4:15 PM to 5:15 PM



Two-Hour Count Summaries

Interval Start	GLADMAR RD Eastbound				GLADMAR RD Westbound				W DWY Northbound				0 Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	12	5	0	0	24	0	0	0	0	0	0	0	0	0	41	0
4:15 PM	0	0	7	5	0	0	15	0	0	1	0	0	0	0	0	0	28	0
4:30 PM	0	0	9	7	0	0	13	0	0	1	0	0	0	0	0	0	30	0
4:45 PM	0	0	17	3	0	0	17	0	0	1	0	0	0	0	0	0	38	137
5:00 PM	0	0	16	4	0	0	20	0	0	3	0	0	0	0	0	0	43	139
5:15 PM	0	0	7	3	0	0	16	0	0	2	0	0	0	0	0	0	28	139
5:30 PM	0	0	10	1	0	0	8	0	0	4	0	0	0	0	0	0	23	132
5:45 PM	0	0	6	1	0	0	8	0	0	0	0	0	0	0	0	0	15	109
Count Total	0	0	84	29	0	0	121	0	0	12	0	0	0	0	0	0	246	0
Peak Hour	0	0	49	19	0	0	65	0	0	6	0	0	0	0	0	0	139	0

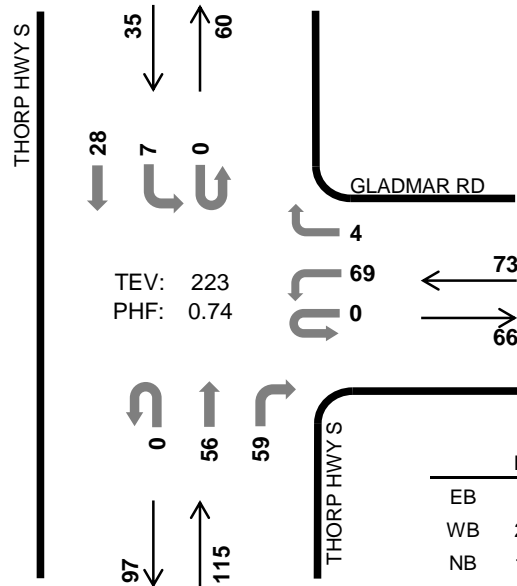
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	4	3	0	0	7	0	0	0	0	0	0	0	0	0	0
4:15 PM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0
4:30 PM	3	2	0	0	5	0	0	0	0	0	0	0	0	0	0
4:45 PM	4	5	0	0	9	0	0	0	0	0	0	0	0	0	0
5:00 PM	4	3	0	0	7	0	0	0	0	0	1	0	0	0	1
5:15 PM	1	3	0	0	4	0	0	0	0	0	0	0	0	0	0
5:30 PM	2	2	0	0	4	0	0	0	0	0	0	0	0	0	0
5:45 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0
Count Total	21	19	0	0	40	0	0	0	0	0	1	0	0	0	1
Peak Hr	12	11	0	0	23	0	0	0	0	0	1	0	0	0	1

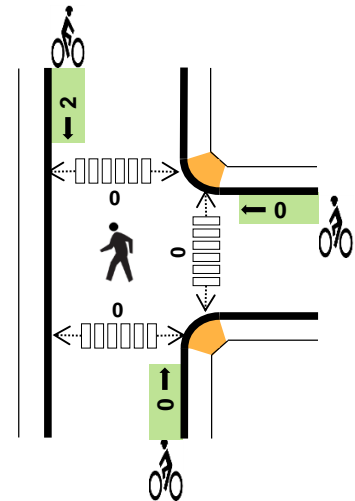
THORP HWY S GLADMAR RD



Peak Hour



Date: Wed, Nov 09, 2016
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM



	HV %:	PHF
EB	-	-
WB	23.3%	0.70
NB	12.2%	0.85
SB	0.0%	0.49
TOTAL	13.9%	0.74

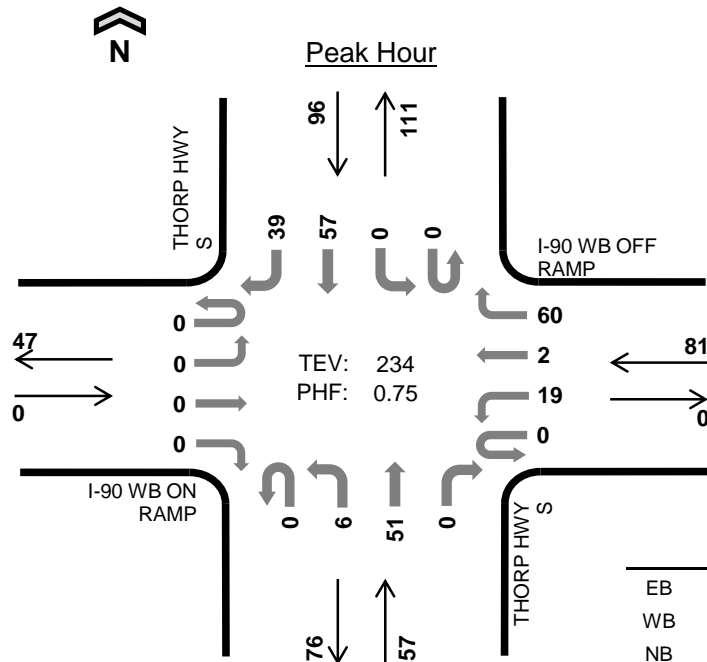
Two-Hour Count Summaries

Interval Start	0				GLADMAR RD				THORP HWY S				THORP HWY S				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	20	0	2	0	0	7	14	0	2	11	0	56	0
4:15 PM	0	0	0	0	0	17	0	1	0	0	8	11	0	2	4	0	43	0
4:30 PM	0	0	0	0	0	13	0	1	0	0	6	16	0	0	4	0	40	0
4:45 PM	0	0	0	0	0	14	0	1	0	0	17	17	0	3	4	0	56	195
5:00 PM	0	0	0	0	0	25	0	1	0	0	13	18	0	3	15	0	75	214
5:15 PM	0	0	0	0	0	17	0	1	0	0	20	8	0	1	5	0	52	223
5:30 PM	0	0	0	0	0	10	0	1	0	0	8	9	0	3	6	0	37	220
5:45 PM	0	0	0	0	0	8	0	2	0	0	6	7	0	0	7	0	30	194
Count Total	0	0	0	0	0	124	0	10	0	0	85	100	0	14	56	0	389	0
Peak Hour	0	0	0	0	0	69	0	4	0	0	56	59	0	7	28	0	223	0

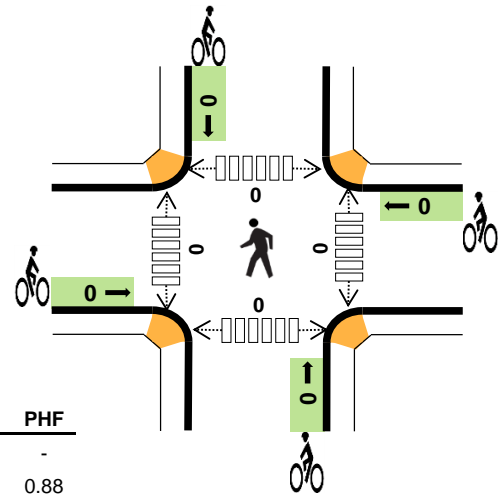
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	3	6	0	9	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	2	1	0	3	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	2	4	0	6	0	0	0	1	1	0	0	0	0	0
4:45 PM	0	6	5	0	11	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	5	4	0	9	0	0	0	1	1	0	0	0	0	0
5:15 PM	0	4	1	0	5	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	2	4	0	6	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	1	2	0	3	0	0	0	0	0	0	0	0	0	0
Count Total	0	25	27	0	52	0	0	0	2	2	0	0	0	0	0
Peak Hr	0	17	14	0	31	0	0	0	2	2	0	0	0	0	0

THORP HWY S I-90 WB ON RAMP



Date: Wed, Nov 09, 2016
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM



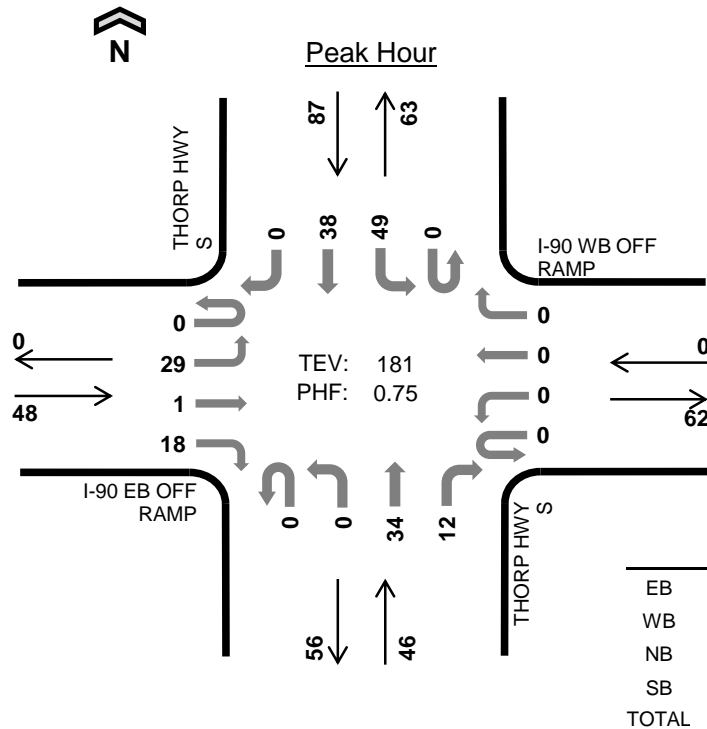
Two-Hour Count Summaries

Interval Start	I-90 WB ON RAMP				I-90 WB OFF RAMP				THORP HWY S				THORP HWY S				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	14	0	0	7	0	0	0	19	11	51	0
4:15 PM	0	0	0	0	0	0	1	11	0	2	6	0	0	0	15	6	41	0
4:30 PM	0	0	0	0	0	3	0	14	0	0	7	0	0	0	8	9	41	0
4:45 PM	0	0	0	0	0	3	1	19	0	1	12	0	0	0	9	9	54	187
5:00 PM	0	0	0	0	0	7	0	15	0	0	17	0	0	0	26	13	78	214
5:15 PM	0	0	0	0	0	6	1	12	0	5	15	0	0	0	14	8	61	234
5:30 PM	0	0	0	0	0	2	0	6	0	2	10	0	0	0	13	4	37	230
5:45 PM	0	0	0	0	0	5	0	7	0	0	7	0	0	0	12	4	35	211
Count Total	0	0	0	0	0	26	3	98	0	10	81	0	0	0	116	64	398	0
Peak Hour	0	0	0	0	0	19	2	60	0	6	51	0	0	0	57	39	234	0

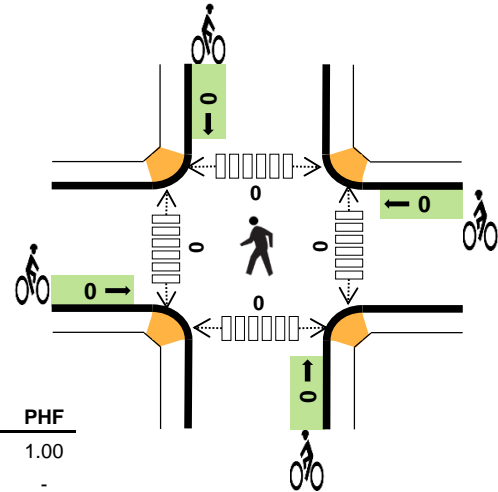
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	2	3	2	7	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	1	2	3	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	3	1	2	6	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	2	2	5	9	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	3	4	5	12	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	1	0	3	4	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	1	3	3	7	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	1	1	1	3	0	0	0	0	0	0	0	0	0	0
Count Total	0	13	15	23	51	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	9	7	15	31	0	0	0	0	0	0	0	0	0	0

THORP HWY S I-90 EB OFF RAMP



Date: Wed, Nov 09, 2016
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM



Two-Hour Count Summaries

Interval Start	I-90 EB OFF RAMP				I-90 WB OFF RAMP				THORP HWY S				THORP HWY S				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	4	0	5	0	0	0	0	0	0	3	4	0	15	4	0	35	0
4:15 PM	0	4	1	3	0	0	0	0	0	0	4	3	0	10	4	0	29	0
4:30 PM	0	4	0	4	0	0	0	0	0	0	3	2	0	5	7	0	25	0
4:45 PM	0	7	1	4	0	0	0	0	0	0	8	2	0	9	5	0	36	125
5:00 PM	0	9	0	3	0	0	0	0	0	0	7	5	0	17	19	0	60	150
5:15 PM	0	5	0	7	0	0	0	0	0	0	15	3	0	11	10	0	51	172
5:30 PM	0	8	0	4	0	0	0	0	0	0	4	2	0	12	4	0	34	181
5:45 PM	0	4	0	2	0	0	0	0	0	0	3	1	0	9	9	0	28	173
Count Total	0	45	2	32	0	0	0	0	0	0	47	22	0	88	62	0	298	0
Peak Hour	0	29	1	18	0	0	0	0	0	0	34	12	0	49	38	0	181	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	2	0	0	2	4	0	0	0	0	0	0	0	0	0	0
4:15 PM	2	0	0	2	4	0	0	0	0	0	0	0	0	0	0
4:30 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
4:45 PM	2	0	0	4	6	0	0	0	0	0	0	0	0	0	0
5:00 PM	1	0	0	3	4	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	3	0	0	1	4	0	0	0	0	0	0	0	0	0	0
5:45 PM	1	0	0	1	2	0	0	0	0	0	0	0	0	0	0
Count Total	12	0	0	13	25	0	0	0	0	0	0	0	0	0	0
Peak Hour	6	0	0	8	14	0	0	0	0	0	0	0	0	0	0

Highway Capacity Manual 2010

Signalized intersection level of service (LOS) is defined in terms of a weighted average control delay for the entire intersection. Control delay quantifies the increase in travel time that a vehicle experiences due to the traffic signal control as well as provides a surrogate measure for driver discomfort and fuel consumption. Signalized intersection LOS is stated in terms of average control delay per vehicle (in seconds) during a specified time period (e.g., weekday PM peak hour). Control delay is a complex measure based on many variables, including signal phasing and coordination (i.e., progression of movements through the intersection and along the corridor), signal cycle length, and traffic volumes with respect to intersection capacity and resulting queues. Table 1 summarizes the LOS criteria for signalized intersections, as described in the *Highway Capacity Manual 2010* (Transportation Research Board, 2010).

Table 1. Level of Service Criteria for Signalized Intersections

Level of Service	Average Control Delay (seconds/vehicle)	General Description
A	≤10	Free Flow
B	>10 – 20	Stable Flow (slight delays)
C	>20 – 35	Stable flow (acceptable delays)
D	>35 – 55	Approaching unstable flow (tolerable delay, occasionally wait through more than one signal cycle before proceeding)
E	>55 – 80	Unstable flow (intolerable delay)
F ¹	>80	Forced flow (congested and queues fail to clear)

Source: *Highway Capacity Manual 2010*, Transportation Research Board, 2010.

1. If the volume-to-capacity (v/c) ratio for a lane group exceeds 1.0 LOS F is assigned to the individual lane group. LOS for overall approach or intersection is determined solely by the control delay.

Unsignalized intersection LOS criteria can be further reduced into two intersection types: all-way stop and two-way stop control. All-way stop control intersection LOS is expressed in terms of the weighted average control delay of the overall intersection or by approach. Two-way stop-controlled intersection LOS is defined in terms of the average control delay for each minor-street movement (or shared movement) as well as major-street left-turns. This approach is because major-street through vehicles are assumed to experience zero delay, a weighted average of all movements results in very low overall average delay, and this calculated low delay could mask deficiencies of minor movements. Table 2 shows LOS criteria for unsignalized intersections.

Table 2. Level of Service Criteria for Unsignalized Intersections




Level of Service	Average Control Delay (seconds/vehicle)
A	0 – 10
B	>10 – 15
C	>15 – 25
D	>25 – 35
E	>35 – 50
F ¹	>50

Source: *Highway Capacity Manual 2010*, Transportation Research Board, 2010.

1. If the volume-to-capacity (v/c) ratio exceeds 1.0, LOS F is assigned an individual lane group for all unsignalized intersections, or minor street approach at two-way stop-controlled intersections. Overall intersection LOS is determined solely by control delay.

HCM 2010 TWSC
1: I-90 EB Ramps & Thorp Highway S

Thorp Fast Food + Gas Station
Existing November PM Peak

Intersection												
Int Delay, s/veh	4.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	5	20	0	0	0	0	35	10	50	40	0
Future Vol, veh/h	30	5	20	0	0	0	0	35	10	50	40	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	13	13	13	0	0	0	0	0	0	9	9	9
Mvmt Flow	40	7	27	0	0	0	0	47	13	67	53	0
Major/Minor	Minor2			Major1			Major2					
Conflicting Flow All	240	247	53				-	0	0	60	0	0
Stage 1	187	187	-				-	-	-	-	-	-
Stage 2	53	60	-				-	-	-	-	-	-
Critical Hdwy	6.53	6.63	6.33				-	-	-	4.19	-	-
Critical Hdwy Stg 1	5.53	5.63	-				-	-	-	-	-	-
Critical Hdwy Stg 2	5.53	5.63	-				-	-	-	-	-	-
Follow-up Hdwy	3.617	4.117	3.417				-	-	-	2.281	-	-
Pot Cap-1 Maneuver	725	637	984				0	-	-	1500	-	0
Stage 1	819	725	-				0	-	-	-	-	0
Stage 2	942	824	-				0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	692	0	984				-	-	-	1500	-	-
Mov Cap-2 Maneuver	692	0	-				-	-	-	-	-	-
Stage 1	781	0	-				-	-	-	-	-	-
Stage 2	942	0	-				-	-	-	-	-	-
Approach	EB			NB			SB					
HCM Control Delay, s	10.1			0			4.2					
HCM LOS	B											
Minor Lane/Major Mvmt	NBT	NBR	EBLn1	SBL	SBT							
Capacity (veh/h)	-	-	785	1500	-							
HCM Lane V/C Ratio	-	-	0.093	0.044	-							
HCM Control Delay (s)	-	-	10.1	7.5	0							
HCM Lane LOS	-	-	B	A	A							
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-							




HCM 2010 TWSC
2: Thorp Highway S & I-90 WB ramps

Thorp Fast Food + Gas Station
Existing November PM Peak

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↕			↕	
Traffic Vol, veh/h	0	0	0	20	5	60	5	50	0	0	55	40
Future Vol, veh/h	0	0	0	20	5	60	5	50	0	0	55	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	11	11	11	12	12	12	16	16	16
Mvmt Flow	0	0	0	27	7	80	7	67	0	0	73	53
Major/Minor				Minor1			Major1			Major2		
Conflicting Flow All				180	207	67	127	0	-	-	-	0
Stage 1				80	80	-	-	-	-	-	-	-
Stage 2				100	127	-	-	-	-	-	-	-
Critical Hdwy				6.51	6.61	6.31	4.22	-	-	-	-	-
Critical Hdwy Stg 1				5.51	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.51	5.61	-	-	-	-	-	-	-
Follow-up Hdwy				3.599	4.099	3.399	2.308	-	-	-	-	-
Pot Cap-1 Maneuver				789	674	972	1399	-	0	0	-	-
Stage 1				921	811	-	-	-	0	0	-	-
Stage 2				902	774	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver				785	0	972	1399	-	-	-	-	-
Mov Cap-2 Maneuver				785	0	-	-	-	-	-	-	-
Stage 1				916	0	-	-	-	-	-	-	-
Stage 2				902	0	-	-	-	-	-	-	-
Approach				WB			NB			SB		
HCM Control Delay, s				9.5			0.7			0		
HCM LOS				A								
Minor Lane/Major Mvmt	NBL	NBTWBLn1	SBT	SBR								
Capacity (veh/h)	1399	-	917	-	-							
HCM Lane V/C Ratio	0.005	-	0.124	-	-							
HCM Control Delay (s)	7.6	0	9.5	-	-							
HCM Lane LOS	A	A	A	-	-							
HCM 95th %tile Q(veh)	0	-	0.4	-	-							




HCM 2010 TWSC
3: Gladmar Road & Thorp Highway S

Thorp Fast Food + Gas Station
Existing November PM Peak

Intersection						
Int Delay, s/veh	3.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	70	5	55	60	5	30
Future Vol, veh/h	70	5	55	60	5	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	23	23	12	12	0	0
Mvmt Flow	95	7	74	81	7	41
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	169	115	0	0	155	0
Stage 1	115	-	-	-	-	-
Stage 2	54	-	-	-	-	-
Critical Hdwy	6.63	6.43	-	-	4.1	-
Critical Hdwy Stg 1	5.63	-	-	-	-	-
Critical Hdwy Stg 2	5.63	-	-	-	-	-
Follow-up Hdwy	3.707	3.507	-	-	2.2	-
Pot Cap-1 Maneuver	775	884	-	-	1438	-
Stage 1	860	-	-	-	-	-
Stage 2	918	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	771	884	-	-	1438	-
Mov Cap-2 Maneuver	771	-	-	-	-	-
Stage 1	860	-	-	-	-	-
Stage 2	913	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	10.3	0		1.1		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	778	1438	-	
HCM Lane V/C Ratio	-	-	0.13	0.005	-	
HCM Control Delay (s)	-	-	10.3	7.5	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0.4	0	-	

HCM 2010 TWSC
1: I-90 EB Ramps & Thorp Highway S

Thorp Fast Food + Gas Station
Existing August PM Peak

Intersection												
Int Delay, s/veh	5.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	60	5	40	0	0	0	0	70	25	105	80	0
Future Vol, veh/h	60	5	40	0	0	0	0	70	25	105	80	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	13	13	13	0	0	0	0	0	0	9	9	9
Mvmt Flow	80	7	53	0	0	0	0	93	33	140	107	0
Major/Minor	Minor2			Major1			Major2					
Conflicting Flow All	497	514	107				-	0	0	127	0	0
Stage 1	387	387	-				-	-	-	-	-	-
Stage 2	110	127	-				-	-	-	-	-	-
Critical Hdwy	6.53	6.63	6.33				-	-	-	4.19	-	-
Critical Hdwy Stg 1	5.53	5.63	-				-	-	-	-	-	-
Critical Hdwy Stg 2	5.53	5.63	-				-	-	-	-	-	-
Follow-up Hdwy	3.617	4.117	3.417				-	-	-	2.281	-	-
Pot Cap-1 Maneuver	513	449	918				0	-	-	1417	-	0
Stage 1	663	591	-				0	-	-	-	-	0
Stage 2	888	770	-				0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	459	0	918				-	-	-	1417	-	-
Mov Cap-2 Maneuver	459	0	-				-	-	-	-	-	-
Stage 1	593	0	-				-	-	-	-	-	-
Stage 2	888	0	-				-	-	-	-	-	-
Approach	EB			NB			SB					
HCM Control Delay, s	13.3			0			4.4					
HCM LOS	B											
Minor Lane/Major Mvmt	NBT	NBR	EBLn1	SBL	SBT							
Capacity (veh/h)	-	-	574	1417	-							
HCM Lane V/C Ratio	-	-	0.244	0.099	-							
HCM Control Delay (s)	-	-	13.3	7.8	0							
HCM Lane LOS	-	-	B	A	A							
HCM 95th %tile Q(veh)	-	-	1	0.3	-							




HCM 2010 TWSC
2: Thorp Highway S & I-90 WB ramps

Thorp Fast Food + Gas Station
Existing August PM Peak

Intersection												
Int Delay, s/veh		4.3										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↕			↕	
Traffic Vol, veh/h	0	0	0	40	5	130	15	110	0	0	120	85
Future Vol, veh/h	0	0	0	40	5	130	15	110	0	0	120	85
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	11	11	11	12	12	12	16	16	16
Mvmt Flow	0	0	0	53	7	173	20	147	0	0	160	113
Major/Minor				Minor1			Major1			Major2		
Conflicting Flow All				404	460	147	273	0	-	-	-	0
Stage 1				187	187	-	-	-	-	-	-	-
Stage 2				217	273	-	-	-	-	-	-	-
Critical Hdwy				6.51	6.61	6.31	4.22	-	-	-	-	-
Critical Hdwy Stg 1				5.51	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.51	5.61	-	-	-	-	-	-	-
Follow-up Hdwy				3.599	4.099	3.399	2.308	-	-	-	-	-
Pot Cap-1 Maneuver				586	485	877	1235	-	0	0	-	-
Stage 1				824	729	-	-	-	0	0	-	-
Stage 2				798	668	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver				575	0	877	1235	-	-	-	-	-
Mov Cap-2 Maneuver				575	0	-	-	-	-	-	-	-
Stage 1				809	0	-	-	-	-	-	-	-
Stage 2				798	0	-	-	-	-	-	-	-
Approach				WB			NB			SB		
HCM Control Delay, s				11.6			1			0		
HCM LOS				B								
Minor Lane/Major Mvmt	NBL	NBT	WBLn1	SBT	SBR							
Capacity (veh/h)	1235	-	781	-	-							
HCM Lane V/C Ratio	0.016	-	0.299	-	-							
HCM Control Delay (s)	8	0	11.6	-	-							
HCM Lane LOS	A	A	B	-	-							
HCM 95th %tile O(veh)	0	-	1.3	-	-							




HCM 2010 TWSC
3: Gladmar Road & Thorp Highway S

Thorp Fast Food + Gas Station
Existing August PM Peak

Intersection						
Int Delay, s/veh	5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	145	10	120	125	15	60
Future Vol, veh/h	145	10	120	125	15	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	23	23	12	12	0	0
Mvmt Flow	196	14	162	169	20	81
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	369	247	0	0	331	0
Stage 1	247	-	-	-	-	-
Stage 2	122	-	-	-	-	-
Critical Hdwy	6.63	6.43	-	-	4.1	-
Critical Hdwy Stg 1	5.63	-	-	-	-	-
Critical Hdwy Stg 2	5.63	-	-	-	-	-
Follow-up Hdwy	3.707	3.507	-	-	2.2	-
Pot Cap-1 Maneuver	592	743	-	-	1240	-
Stage 1	747	-	-	-	-	-
Stage 2	854	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	582	743	-	-	1240	-
Mov Cap-2 Maneuver	582	-	-	-	-	-
Stage 1	747	-	-	-	-	-
Stage 2	839	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	14.4		0		1.6	
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	590	1240	-	
HCM Lane V/C Ratio	-	-	0.355	0.016	-	
HCM Control Delay (s)	-	-	14.4	8	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	1.6	0.1	-	




HCM 2010 TWSC
1: I-90 EB Ramps & Thorp Highway S

Thorp Fast Food + Gas Station
2020 Without-Project November PM Peak

Intersection												
Int Delay, s/veh	5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	35	5	25	0	0	0	0	40	10	55	45	0
Future Vol, veh/h	35	5	25	0	0	0	0	40	10	55	45	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	13	13	13	0	0	0	0	0	0	9	9	9
Mvmt Flow	47	7	33	0	0	0	0	53	13	73	60	0
Major/Minor	Minor2			Major1			Major2					
Conflicting Flow All	267	274	60				-	0	0	67	0	0
Stage 1	207	207	-				-	-	-	-	-	-
Stage 2	60	67	-				-	-	-	-	-	-
Critical Hdwy	6.53	6.63	6.33				-	-	-	4.19	-	-
Critical Hdwy Stg 1	5.53	5.63	-				-	-	-	-	-	-
Critical Hdwy Stg 2	5.53	5.63	-				-	-	-	-	-	-
Follow-up Hdwy	3.617	4.117	3.417				-	-	-	2.281	-	-
Pot Cap-1 Maneuver	699	615	975				0	-	-	1491	-	0
Stage 1	802	710	-				0	-	-	-	-	0
Stage 2	935	818	-				0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	663	0	975				-	-	-	1491	-	-
Mov Cap-2 Maneuver	663	0	-				-	-	-	-	-	-
Stage 1	761	0	-				-	-	-	-	-	-
Stage 2	935	0	-				-	-	-	-	-	-
Approach	EB			NB			SB					
HCM Control Delay, s	10.3			0			4.1					
HCM LOS	B											
Minor Lane/Major Mvmt	NBT	NBR	EBLn1	SBL	SBT							
Capacity (veh/h)	-	-	765	1491	-							
HCM Lane V/C Ratio	-	-	0.113	0.049	-							
HCM Control Delay (s)	-	-	10.3	7.5	0							
HCM Lane LOS	-	-	B	A	A							
HCM 95th %tile Q(veh)	-	-	0.4	0.2	-							




HCM 2010 TWSC
2: Thorp Highway S & I-90 WB ramps

Thorp Fast Food + Gas Station
2020 Without-Project November PM Peak

Intersection												
Int Delay, s/veh		3.7										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	25	5	70	5	55	0	0	65	45
Future Vol, veh/h	0	0	0	25	5	70	5	55	0	0	65	45
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	11	11	11	12	12	12	16	16	16
Mvmt Flow	0	0	0	33	7	93	7	73	0	0	87	60
Major/Minor				Minor1			Major1			Major2		
Conflicting Flow All				204	234	73	147	0	-	-	-	0
Stage 1				87	87	-	-	-	-	-	-	-
Stage 2				117	147	-	-	-	-	-	-	-
Critical Hdwy				6.51	6.61	6.31	4.22	-	-	-	-	-
Critical Hdwy Stg 1				5.51	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.51	5.61	-	-	-	-	-	-	-
Follow-up Hdwy				3.599	4.099	3.399	2.308	-	-	-	-	-
Pot Cap-1 Maneuver				765	651	964	1376	-	0	0	-	-
Stage 1				914	806	-	-	-	0	0	-	-
Stage 2				886	759	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver				761	0	964	1376	-	-	-	-	-
Mov Cap-2 Maneuver				761	0	-	-	-	-	-	-	-
Stage 1				909	0	-	-	-	-	-	-	-
Stage 2				886	0	-	-	-	-	-	-	-
Approach				WB			NB			SB		
HCM Control Delay, s				9.7			0.6			0		
HCM LOS				A								
Minor Lane/Major Mvmt	NBL	NBT	WBLn1	SBT	SBR							
Capacity (veh/h)	1376	-	901	-	-							
HCM Lane V/C Ratio	0.005	-	0.148	-	-							
HCM Control Delay (s)	7.6	0	9.7	-	-							
HCM Lane LOS	A	A	A	-	-							
HCM 95th %tile O(veh)	0	-	0.5	-	-							




HCM 2010 TWSC
3: Gladmar Road & Thorp Highway S

Thorp Fast Food + Gas Station
2020 Without-Project November PM Peak

Intersection						
Int Delay, s/veh	3.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	80	5	65	70	5	35
Future Vol, veh/h	80	5	65	70	5	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	23	23	12	12	0	0
Mvmt Flow	108	7	88	95	7	47
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	196	135	0	0	182	0
Stage 1	135	-	-	-	-	-
Stage 2	61	-	-	-	-	-
Critical Hdwy	6.63	6.43	-	-	4.1	-
Critical Hdwy Stg 1	5.63	-	-	-	-	-
Critical Hdwy Stg 2	5.63	-	-	-	-	-
Follow-up Hdwy	3.707	3.507	-	-	2.2	-
Pot Cap-1 Maneuver	747	861	-	-	1405	-
Stage 1	842	-	-	-	-	-
Stage 2	911	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	743	861	-	-	1405	-
Mov Cap-2 Maneuver	743	-	-	-	-	-
Stage 1	842	-	-	-	-	-
Stage 2	906	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	10.7	0		0.9		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	749	1405	-	
HCM Lane V/C Ratio	-	-	0.153	0.005	-	
HCM Control Delay (s)	-	-	10.7	7.6	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0.5	0	-	




HCM 2010 TWSC
1: I-90 EB Ramps & Thorp Highway S

Thorp Fast Food + Gas Station
2020 Without-Project August PM Peak

Intersection												
Int Delay, s/veh	6.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	70	5	45	0	0	0	0	80	30	120	90	0
Future Vol, veh/h	70	5	45	0	0	0	0	80	30	120	90	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	13	13	13	0	0	0	0	0	0	9	9	9
Mvmt Flow	93	7	60	0	0	0	0	107	40	160	120	0
Major/Minor	Minor2			Major1			Major2					
Conflicting Flow All	567	587	120				-	0	0	147	0	0
Stage 1	440	440	-				-	-	-	-	-	-
Stage 2	127	147	-				-	-	-	-	-	-
Critical Hdwy	6.53	6.63	6.33				-	-	-	4.19	-	-
Critical Hdwy Stg 1	5.53	5.63	-				-	-	-	-	-	-
Critical Hdwy Stg 2	5.53	5.63	-				-	-	-	-	-	-
Follow-up Hdwy	3.617	4.117	3.417				-	-	-	2.281	-	-
Pot Cap-1 Maneuver	467	407	903				0	-	-	1393	-	0
Stage 1	626	559	-				0	-	-	-	-	0
Stage 2	872	755	-				0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	410	0	903				-	-	-	1393	-	-
Mov Cap-2 Maneuver	410	0	-				-	-	-	-	-	-
Stage 1	549	0	-				-	-	-	-	-	-
Stage 2	872	0	-				-	-	-	-	-	-
Approach	EB			NB			SB					
HCM Control Delay, s	14.9			0			4.5					
HCM LOS	B											
Minor Lane/Major Mvmt	NBT	NBR	EBLn1	SBL	SBT							
Capacity (veh/h)	-	-	521	1393	-							
HCM Lane V/C Ratio	-	-	0.307	0.115	-							
HCM Control Delay (s)	-	-	14.9	7.9	0							
HCM Lane LOS	-	-	B	A	A							
HCM 95th %tile Q(veh)	-	-	1.3	0.4	-							




HCM 2010 TWSC
2: Thorp Highway S & I-90 WB ramps

Thorp Fast Food + Gas Station
2020 Without-Project August PM Peak

Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	45	5	150	15	125	0	0	140	100
Future Vol, veh/h	0	0	0	45	5	150	15	125	0	0	140	100
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	11	11	11	12	12	12	16	16	16
Mvmt Flow	0	0	0	52	6	172	17	144	0	0	161	115
Major/Minor				Minor1			Major1			Major2		
Conflicting Flow All				396	454	144	276	0	-	-	-	0
Stage 1				178	178	-	-	-	-	-	-	-
Stage 2				218	276	-	-	-	-	-	-	-
Critical Hdwy				7.21	6.61	6.31	4.22	-	-	-	-	-
Critical Hdwy Stg 1				6.21	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2				6.21	5.61	-	-	-	-	-	-	-
Follow-up Hdwy				3.599	4.099	3.399	2.308	-	-	-	-	-
Pot Cap-1 Maneuver				548	489	880	1231	-	0	0	-	-
Stage 1				803	735	-	-	-	0	0	-	-
Stage 2				764	666	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver				542	482	880	1231	-	-	-	-	-
Mov Cap-2 Maneuver				542	482	-	-	-	-	-	-	-
Stage 1				791	724	-	-	-	-	-	-	-
Stage 2				764	666	-	-	-	-	-	-	-
Approach				WB			NB			SB		
HCM Control Delay, s				11.8			0.9			0		
HCM LOS				B								
Minor Lane/Major Mvmt	NBL	NBTWBLn1	SBT	SBR								
Capacity (veh/h)	1231	-	758	-	-							
HCM Lane V/C Ratio	0.014	-	0.303	-	-							
HCM Control Delay (s)	8	0	11.8	-	-							
HCM Lane LOS	A	A	B	-	-							
HCM 95th %tile O(veh)	0	-	1.3	-	-							




HCM 2010 TWSC
3: Gladmar Road & Thorp Highway S

Thorp Fast Food + Gas Station
2020 Without-Project August PM Peak

Intersection						
Int Delay, s/veh	4.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	165	10	140	145	15	70
Future Vol, veh/h	165	10	140	145	15	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	23	23	12	12	0	0
Mvmt Flow	190	11	161	167	17	80
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	359	244	0	0	328	0
Stage 1	244	-	-	-	-	-
Stage 2	115	-	-	-	-	-
Critical Hdwy	6.63	6.43	-	-	4.1	-
Critical Hdwy Stg 1	5.63	-	-	-	-	-
Critical Hdwy Stg 2	5.63	-	-	-	-	-
Follow-up Hdwy	3.707	3.507	-	-	2.2	-
Pot Cap-1 Maneuver	600	746	-	-	1243	-
Stage 1	750	-	-	-	-	-
Stage 2	860	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	592	746	-	-	1243	-
Mov Cap-2 Maneuver	592	-	-	-	-	-
Stage 1	750	-	-	-	-	-
Stage 2	848	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	14		0		1.4	
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	599	1243	-	
HCM Lane V/C Ratio	-	-	0.336	0.014	-	
HCM Control Delay (s)	-	-	14	7.9	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	1.5	0	-	




HCM 2010 TWSC
1: I-90 EB Ramps & Thorp Highway S

Thorp Fast Food + Gas Station
2020 With-Project November PM Peak

Intersection												
Int Delay, s/veh	6.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	65	5	25	0	0	0	0	52	10	90	56	0
Future Vol, veh/h	65	5	25	0	0	0	0	52	10	90	56	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	16	16	16	0	0	0	3	3	3	14	14	14
Mvmt Flow	87	7	33	0	0	0	0	69	13	120	75	0
Major/Minor	Minor2			Major1			Major2					
Conflicting Flow All	391	398	75				-	0	0	83	0	0
Stage 1	315	315	-				-	-	-	-	-	-
Stage 2	76	83	-				-	-	-	-	-	-
Critical Hdwy	6.56	6.66	6.36				-	-	-	4.24	-	-
Critical Hdwy Stg 1	5.56	5.66	-				-	-	-	-	-	-
Critical Hdwy Stg 2	5.56	5.66	-				-	-	-	-	-	-
Follow-up Hdwy	3.644	4.144	3.444				-	-	-	2.326	-	-
Pot Cap-1 Maneuver	587	519	949				0	-	-	1442	-	0
Stage 1	709	631	-				0	-	-	-	-	0
Stage 2	913	799	-				0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	536	0	949				-	-	-	1442	-	-
Mov Cap-2 Maneuver	536	0	-				-	-	-	-	-	
Stage 1	647	0	-				-	-	-	-	-	-
Stage 2	913	0	-				-	-	-	-	-	-
Approach	EB			NB			SB					
HCM Control Delay, s	12.4			0			4.8					
HCM LOS	B											
Minor Lane/Major Mvmt	NBT	NBR	EBLn1	SBL	SBT							
Capacity (veh/h)	-	-	610	1442	-							
HCM Lane V/C Ratio	-	-	0.208	0.083	-							
HCM Control Delay (s)	-	-	12.4	7.7	0							
HCM Lane LOS	-	-	B	A	A							
HCM 95th %tile Q(veh)	-	-	0.8	0.3	-							

HCM 2010 TWSC
2: Thorp Highway S & I-90 WB ramps

Thorp Fast Food + Gas Station
2020 With-Project November PM Peak

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	25	5	120	5	97	0	0	111	84
Future Vol, veh/h	0	0	0	25	5	120	5	97	0	0	111	84
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	14	14	14	16	16	16	20	20	20
Mvmt Flow	0	0	0	33	7	160	7	129	0	0	148	112
Major/Minor				Minor1			Major1			Major2		
Conflicting Flow All				347	403	129	260	0	-	-	-	0
Stage 1				143	143	-	-	-	-	-	-	-
Stage 2				204	260	-	-	-	-	-	-	-
Critical Hdwy				6.54	6.64	6.34	4.26	-	-	-	-	-
Critical Hdwy Stg 1				5.54	5.64	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.54	5.64	-	-	-	-	-	-	-
Follow-up Hdwy				3.626	4.126	3.426	2.344	-	-	-	-	-
Pot Cap-1 Maneuver				626	518	890	1227	-	0	0	-	-
Stage 1				855	756	-	-	-	0	0	-	-
Stage 2				802	671	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver				622	0	890	1227	-	-	-	-	-
Mov Cap-2 Maneuver				622	0	-	-	-	-	-	-	-
Stage 1				850	0	-	-	-	-	-	-	-
Stage 2				802	0	-	-	-	-	-	-	-
Approach				WB			NB			SB		
HCM Control Delay, s				10.7			0.4			0		
HCM LOS				B								
Minor Lane/Major Mvmt	NBL	NBT	WBLn1	SBT	SBR							
Capacity (veh/h)	1227	-	828	-	-							
HCM Lane V/C Ratio	0.005	-	0.242	-	-							
HCM Control Delay (s)	8	0	10.7	-	-							
HCM Lane LOS	A	A	B	-	-							
HCM 95th %tile O(veh)	0	-	0.9	-	-							




HCM 2010 TWSC

3: Gladmar Road & Thorp Highway S

Thorp Fast Food + Gas Station
2020 With-Project November PM Peak

Intersection

Int Delay, s/veh 5.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	165	13	65	162	14	35
Future Vol, veh/h	165	13	65	162	14	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	28	28	17	17	2	2
Mvmt Flow	223	18	88	219	19	47

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	282	197	0
Stage 1	197	-	-
Stage 2	85	-	-
Critical Hdwy	6.68	6.48	4.12
Critical Hdwy Stg 1	5.68	-	-
Critical Hdwy Stg 2	5.68	-	-
Follow-up Hdwy	3.752	3.552	2.218
Pot Cap-1 Maneuver	656	782	1254
Stage 1	778	-	-
Stage 2	877	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	646	782	1254
Mov Cap-2 Maneuver	646	-	-
Stage 1	778	-	-
Stage 2	863	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.7	0	2.3
HCM LOS	B		




Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	654	1254
HCM Lane V/C Ratio	-	-	0.368	0.015
HCM Control Delay (s)	-	-	13.7	7.9
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	1.7	0

HCM 2010 TWSC
4: West Driveway & Gladmar Road

Thorp Fast Food + Gas Station
2020 With-Project November PM Peak

Intersection

Int Delay, s/veh 1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	15	119	0	16	119
Future Vol, veh/h	0	15	119	0	16	119
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	100	100	17	17	26	26
Mvmt Flow	0	19	147	0	20	147

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	333	147	0	0	147	0
Stage 1	147	-	-	-	-	-
Stage 2	186	-	-	-	-	-
Critical Hdwy	7.4	7.2	-	-	4.36	-
Critical Hdwy Stg 1	6.4	-	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-	-
Follow-up Hdwy	4.4	4.2	-	-	2.434	-
Pot Cap-1 Maneuver	502	695	-	-	1300	-
Stage 1	688	-	-	-	-	-
Stage 2	657	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	493	695	-	-	1300	-
Mov Cap-2 Maneuver	493	-	-	-	-	-
Stage 1	688	-	-	-	-	-
Stage 2	646	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	10.3		0		0.9
HCM LOS	B				

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 695	1300	-
HCM Lane V/C Ratio	-	- 0.027	0.015	-
HCM Control Delay (s)	-	- 10.3	7.8	0
HCM Lane LOS	-	- B	A	A
HCM 95th %tile Q(veh)	-	- 0.1	0	-

HCM 2010 TWSC
5: Gladmar Road & Middle Driveway

Thorp Fast Food + Gas Station
2020 With-Project November PM Peak

Intersection

Int Delay, s/veh 3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	46	94	25	0	114	0	5	0	0	0	0	78
Future Vol, veh/h	46	94	25	0	114	0	5	0	0	0	0	78
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	18	18	18	17	17	17	0	0	0	0	0	0
Mvmt Flow	57	116	31	0	141	0	6	0	0	0	0	96





Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	141	0	0	147	0	0	434	386	131	386	401	141
Stage 1	-	-	-	-	-	-	245	245	-	141	141	-
Stage 2	-	-	-	-	-	-	189	141	-	245	260	-
Critical Hdwy	4.28	-	-	4.27	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.362	-	-	2.353	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1349	-	-	1348	-	-	536	551	924	576	541	912
Stage 1	-	-	-	-	-	-	763	707	-	867	784	-
Stage 2	-	-	-	-	-	-	817	784	-	763	697	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1349	-	-	1348	-	-	463	526	924	556	516	912
Mov Cap-2 Maneuver	-	-	-	-	-	-	463	526	-	556	516	-
Stage 1	-	-	-	-	-	-	728	674	-	827	784	-
Stage 2	-	-	-	-	-	-	731	784	-	728	665	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.2	0	12.9	9.4
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	463	1349	-	-	1348	-	-	912
HCM Lane V/C Ratio	0.013	0.042	-	-	-	-	-	0.106
HCM Control Delay (s)	12.9	7.8	0	-	0	-	-	9.4
HCM Lane LOS	B	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	0.4




HCM 2010 TWSC
6: Gladmar Road & East Driveway

Thorp Fast Food + Gas Station
2020 With-Project November PM Peak

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	39	5	30	0	5	0	10	0	5	0	0	0
Future Vol, veh/h	39	5	30	0	5	0	10	0	5	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	48	48	48	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	6	38	0	6	0	13	0	6	0	0	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	6	0	0	44	0	0	130	130	25	133	149	6
Stage 1	-	-	-	-	-	-	124	124	-	6	6	-
Stage 2	-	-	-	-	-	-	6	6	-	127	143	-
Critical Hdwy	4.58	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.632	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1360	-	-	1564	-	-	843	761	1051	839	743	1077
Stage 1	-	-	-	-	-	-	880	793	-	1016	891	-
Stage 2	-	-	-	-	-	-	1016	891	-	877	779	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1360	-	-	1564	-	-	819	733	1051	810	716	1077
Mov Cap-2 Maneuver	-	-	-	-	-	-	819	733	-	810	716	-
Stage 1	-	-	-	-	-	-	847	764	-	978	891	-
Stage 2	-	-	-	-	-	-	1016	891	-	839	750	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	4.1			0			9.2			0		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	884	1360	-	-	1564	-	-	-				
HCM Lane V/C Ratio	0.021	0.036	-	-	-	-	-	-				
HCM Control Delay (s)	9.2	7.7	0	-	0	-	-	0				
HCM Lane LOS	A	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	-				




HCM 2010 TWSC
1: I-90 EB Ramps & Thorp Highway S

Thorp Fast Food + Gas Station
2020 With-Project August PM Peak

Intersection												
Int Delay, s/veh	7.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	100	5	45	0	0	0	0	92	30	155	101	0
Future Vol, veh/h	100	5	45	0	0	0	0	92	30	155	101	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	16	16	16	0	0	0	3	3	3	14	14	14
Mvmt Flow	115	6	52	0	0	0	0	106	34	178	116	0
Major/Minor	Minor2			Major1			Major2					
Conflicting Flow All	595	612	116				-	0	0	140	0	0
Stage 1	472	472	-				-	-	-	-	-	-
Stage 2	123	140	-				-	-	-	-	-	-
Critical Hdwy	6.56	6.66	6.36				-	-	-	4.24	-	-
Critical Hdwy Stg 1	5.56	5.66	-				-	-	-	-	-	-
Critical Hdwy Stg 2	5.56	5.66	-				-	-	-	-	-	-
Follow-up Hdwy	3.644	4.144	3.444				-	-	-	2.326	-	-
Pot Cap-1 Maneuver	445	390	900				0	-	-	1373	-	0
Stage 1	599	536	-				0	-	-	-	-	0
Stage 2	869	755	-				0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	383	0	900				-	-	-	1373	-	-
Mov Cap-2 Maneuver	383	0	-				-	-	-	-	-	-
Stage 1	516	0	-				-	-	-	-	-	-
Stage 2	869	0	-				-	-	-	-	-	-
Approach	EB			NB			SB					
HCM Control Delay, s	17.2			0			4.9					
HCM LOS	C											
Minor Lane/Major Mvmt	NBT	NBR	EBLn1	SBL	SBT							
Capacity (veh/h)	-	-	466	1373	-							
HCM Lane V/C Ratio	-	-	0.37	0.13	-							
HCM Control Delay (s)	-	-	17.2	8	0							
HCM Lane LOS	-	-	C	A	A							
HCM 95th %tile Q(veh)	-	-	1.7	0.4	-							

HCM 2010 TWSC
2: Thorp Highway S & I-90 WB ramps

Thorp Fast Food + Gas Station
2020 With-Project August PM Peak




Intersection												
Int Delay, s/veh	4.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	45	5	200	15	167	0	0	186	139
Future Vol, veh/h	0	0	0	45	5	200	15	167	0	0	186	139
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	14	14	14	16	16	16	20	20	20
Mvmt Flow	0	0	0	52	6	230	17	192	0	0	214	160
Major/Minor				Minor1			Major1			Major2		
Conflicting Flow All				520	600	192	374	0	-	-	-	0
Stage 1				226	226	-	-	-	-	-	-	-
Stage 2				294	374	-	-	-	-	-	-	-
Critical Hdwy				6.54	6.64	6.34	4.26	-	-	-	-	-
Critical Hdwy Stg 1				5.54	5.64	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.54	5.64	-	-	-	-	-	-	-
Follow-up Hdwy				3.626	4.126	3.426	2.344	-	-	-	-	-
Pot Cap-1 Maneuver				496	399	820	1112	-	0	0	-	-
Stage 1				784	695	-	-	-	0	0	-	-
Stage 2				730	597	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver				488	0	820	1112	-	-	-	-	-
Mov Cap-2 Maneuver				488	0	-	-	-	-	-	-	-
Stage 1				771	0	-	-	-	-	-	-	-
Stage 2				730	0	-	-	-	-	-	-	-
Approach				WB			NB			SB		
HCM Control Delay, s				13.1			0.7			0		
HCM LOS				B								
Minor Lane/Major Mvmt	NBL	NBT	WBLn1	SBT	SBR							
Capacity (veh/h)	1112	-	729	-	-							
HCM Lane V/C Ratio	0.016	-	0.394	-	-							
HCM Control Delay (s)	8.3	0	13.1	-	-							
HCM Lane LOS	A	A	B	-	-							
HCM 95th %tile O(veh)	0	-	1.9	-	-							

HCM 2010 TWSC
3: Gladmar Road & Thorp Highway S

Thorp Fast Food + Gas Station
2020 With-Project August PM Peak

Intersection

Int Delay, s/veh 7.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	250	18	140	237	24	70
Future Vol, veh/h	250	18	140	237	24	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	28	28	17	17	2	2
Mvmt Flow	287	21	161	272	28	80

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	433	297	0	0	433	0
Stage 1	297	-	-	-	-	-
Stage 2	136	-	-	-	-	-
Critical Hdwy	6.68	6.48	-	-	4.12	-
Critical Hdwy Stg 1	5.68	-	-	-	-	-
Critical Hdwy Stg 2	5.68	-	-	-	-	-
Follow-up Hdwy	3.752	3.552	-	-	2.218	-
Pot Cap-1 Maneuver	534	685	-	-	1127	-
Stage 1	698	-	-	-	-	-
Stage 2	830	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	520	685	-	-	1127	-
Mov Cap-2 Maneuver	520	-	-	-	-	-
Stage 1	698	-	-	-	-	-
Stage 2	808	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	20.9		0		2.1
HCM LOS	C				




Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT	
Capacity (veh/h)	-	-	529	1127	-
HCM Lane V/C Ratio	-	-	0.582	0.024	-
HCM Control Delay (s)	-	-	20.9	8.3	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	3.7	0.1	-

HCM 2010 TWSC
4: West Driveway & Gladmar Road

Thorp Fast Food + Gas Station
2020 With-Project August PM Peak

Intersection

Int Delay, s/veh 0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	15	209	0	16	204
Future Vol, veh/h	0	15	209	0	16	204
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	100	100	17	17	26	26
Mvmt Flow	0	19	258	0	20	252





Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	549	258	0	0	258	0
Stage 1	258	-	-	-	-	-
Stage 2	291	-	-	-	-	-
Critical Hdwy	7.4	7.2	-	-	4.36	-
Critical Hdwy Stg 1	6.4	-	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-	-
Follow-up Hdwy	4.4	4.2	-	-	2.434	-
Pot Cap-1 Maneuver	363	592	-	-	1179	-
Stage 1	603	-	-	-	-	-
Stage 2	580	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	356	592	-	-	1179	-
Mov Cap-2 Maneuver	356	-	-	-	-	-
Stage 1	603	-	-	-	-	-
Stage 2	568	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.3	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	592	1179
HCM Lane V/C Ratio	-	-	0.031	0.017
HCM Control Delay (s)	-	-	11.3	8.1
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1

HCM 2010 TWSC
5: Gladmar Road & Middle Driveway





Thorp Fast Food + Gas Station
2020 With-Project August PM Peak

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	46	159	45	0	199	0	15	0	0	0	0	78
Future Vol, veh/h	46	159	45	0	199	0	15	0	0	0	0	78
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	18	18	18	17	17	17	0	0	0	0	0	0
Mvmt Flow	53	183	52	0	229	0	17	0	0	0	0	90

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	229	0	0	234	0	0	588	543	209	543	569	229
Stage 1	-	-	-	-	-	-	314	314	-	229	229	-
Stage 2	-	-	-	-	-	-	274	229	-	314	340	-
Critical Hdwy	4.28	-	-	4.27	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.362	-	-	2.353	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1250	-	-	1250	-	-	423	450	836	454	435	815
Stage 1	-	-	-	-	-	-	701	660	-	778	718	-
Stage 2	-	-	-	-	-	-	736	718	-	701	643	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1250	-	-	1250	-	-	362	428	836	437	414	815
Mov Cap-2 Maneuver	-	-	-	-	-	-	362	428	-	437	414	-
Stage 1	-	-	-	-	-	-	667	628	-	740	718	-
Stage 2	-	-	-	-	-	-	655	718	-	667	611	-

Approach	EB	WB		NB		SB	
HCM Control Delay, s	1.5	0		15.4		10	
HCM LOS				C		B	

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	362	1250	-	-	1250	-	-	815
HCM Lane V/C Ratio	0.048	0.042	-	-	-	-	-	0.11
HCM Control Delay (s)	15.4	8	0	-	0	-	-	10
HCM Lane LOS	C	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.4

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	39	5	70	0	5	0	25	0	5	0	0	0
Future Vol, veh/h	39	5	70	0	5	0	25	0	5	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	48	48	48	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	6	89	0	6	0	32	0	6	0	0	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	6	0	0	95	0	0	155	155	51	159	200	6
Stage 1	-	-	-	-	-	-	149	149	-	6	6	-
Stage 2	-	-	-	-	-	-	6	6	-	153	194	-
Critical Hdwy	4.58	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.632	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1360	-	-	1499	-	-	812	737	1017	807	696	1077
Stage 1	-	-	-	-	-	-	854	774	-	1016	891	-
Stage 2	-	-	-	-	-	-	1016	891	-	849	740	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1360	-	-	1499	-	-	788	709	1017	779	670	1077
Mov Cap-2 Maneuver	-	-	-	-	-	-	788	709	-	779	670	-
Stage 1	-	-	-	-	-	-	822	745	-	977	891	-
Stage 2	-	-	-	-	-	-	1016	891	-	812	712	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	2.7			0			9.6			0		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	819	1360	-	-	1499	-	-	-				
HCM Lane V/C Ratio	0.046	0.036	-	-	-	-	-	-				
HCM Control Delay (s)	9.6	7.7	0	-	0	-	-	0				
HCM Lane LOS	A	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	-				

Updated Trip Generation (December 2016)													
Land Use	Size	Daily		AM					PM				
		Daily Rate	Daily Trips	AM Rate	AM Total	%Inbound	AM IN	AM OUT	PM Rate	PM Total	%Inbound	PM IN	PM Out
Restaurant with drive-thru	5,000 sf	496.12	2480	45.42	227	51%	116	111	32.65	163	52%	85	78
<i>Pass-By (50% Daily, 49% AM, 50% PM)¹</i>			-1240				-56	-56				-39	-39
Truck Gas Station (Card Lock) ²	4 pumps		120				16	15				16	15
Net Total			1360				76	70				62	54

1. Based on rates found in *Trip Generation*, 9th Edition, ITE 2012 for Land Use 934. Peak hour pass-by rates provided in *Trip Generation Handbook* (3rd Edition) and daily rate assumed to be 50 percent based on similar AM and PM rates.

2. Based on rates found in *104th Street Card Lock Traffic Impact Analysis* trip generation study (April 2014).